



# July 17, 2024

UID	Rev	Communication System Name	Group	PAR (dB)	Unc <sup>E</sup> k =
10753	AAC	IEEE 802.11ax (160 MHz, MCS10, 90pc duty cycle)	WLAN	9.00	±9.6
0754	AAC	IEEE 802.11ax (160 MHz, MCS11, 90pc duty cycle)	WLAN	8,94	±9.6
0755	AAC	IEEE 802.11ax (160 MHz, MCS0, 99pc duty cycle)	WLAN	8.64	±9.6
0756	AAC	IEEE 802.11ax (160 MHz, MCS1, 99pc duty cycle)	WLAN	8,77	±9.6
0750	AAC	IEEE 802.11ax (160 MHz, MCS2, 99pc duty cycle)	WLAN	8.77	±9.6
0758	AAC	IEEE 802.11ax (160 MHz, MCS3, 99pc duty cycle)	WLAN	8.69	±9.6
* * * *			WLAN	8.58	±9.6
0759	AAC	IEEE 802.11ax (160 MHz, MCS4, 99pc duty cycle)			
0760	AAC	IEEE 802.11ax (160 MHz, MCS5, 99pc duty cycle)	WLAN	8.49	±9.6
0761	AAC	IEEE 802.11ax (160 MHz, MCS6, 99pc duty cycle)	WLAN		±9.6
0762	AAC	IEEE 802.11ax (160 MHz, MCS7, 99pc duty cycle)	WLAN	8.49	±9.6
0763	AAC	IEEE 802.11ax (160 MHz, MCS8, 99pc duty cycle)	WLAN	8.53	±9.6
0764	AAC	IEEE 802.11ax (160 MHz, MCS9, 96pc duty cycle)	WLAN	8.54	±9.6
0765	AAC	IEEE 802.11ax (160 MHz, MCS10, 99pc duty cycle)	WLAN	8.54	±9.6
0766	AAC	IEEE 802.11ax (160 MHz, MCS11, 99pc duty cycle)	WLAN	8.51	±9.6
0767	AAG	5G NR (CP-OFDM, 1 RB, 5MHz, QPSK, 15kHz)	5G NR FR1 TDD	7.99	±9.6
0768	AAE	5G NR (CP-OFDM, 1 RB, 10 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.01	±9.6
0769	AAD	5G NR (CP-OFDM, 1 RB, 15 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.01	±9.6
0770	AAE	5G NR (CP-OFDM, 1 RB, 20 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.02	±9.6
0771	AAD	5G NR (CP-OFDM, 1 R8, 25 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.02	±9.6
0772	AAE	5G NR (CP-OFDM, 1 RB, 30 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.23	±9.8
0773	AAF	5G NR (CP-OFDM, 1 RB, 40 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.03	±9.6
0774	AAE	5G NR (CP-OFDM, 1 RB, 50 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.02	±9.6
0775	AAF	5G NR (CP-OFDM, 50% R8, 5 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.31	±9.6
0776	AAE	5G NR (CP-OFDM, 50% RB, 10 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.30	±9.6
0777	AAC	5G NR (CP-OFDM, 50% R8, 15 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.30	19.6
0778	AAE	5G NR (CP-OFDM, 50% RB, 20 MHz, QPSK, 15 kHz)	50 NR FR1 TDD	8.34	19.6
0779	AAC	5G NR (CP-OFDM, 50% RB, 25 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.42	±9.6
0780	AAE	5G NR (CP-OFDM, 50% RB, 30 MHz, QPSK, 15 kHz)	50 NR FR1 TDD	8.38	±9.6
0780	AAF	5G NR (CP-OFDM, 50% RB, 40 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.38	19.6
0781	AAP	5G NR (CP-OFDM, 50% RB, 50 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.43	19.6
0783	AAG	5G NR (CP-OFDM, 100% RB, 5 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.31	±9.6
10784	AAE	5G NR (CP-OFDM, 100% RB, 10 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.29	±9.6
10785	AAD	5G NR (CP-OFDM, 100% RB, 15 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.40	±9.6
10786	AAE	5G NR (CP-OFDM, 100% R8, 20 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.35	±9.6
10787	AAD	5G NR (CP-OFDM, 100% RB, 25 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.44	±9.6
10788	AAE	5G NR (CP-OFDM, 100% RB, 30 MHz, QPSK, 15 kHz)	5G NR FR1 TOD	8.39	±9.6
10789	AAF	5G NR (CP-OFDM, 100% RB, 40 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.37	±9.6
10790	AAE	5G NR (CP-OFDM, 100% RB, 50 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.39	±9.6
10791	AAG	5G NR (CP-OFDM, 1 RB, 5 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	7.83	±9.6
10792	AAE.	5G NR (CP-OFDM, 1 RB, 10 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	7.92	±9.8
0793	AAD	5G NR (CP-OFDM, 1 RB, 15 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	7.95	±9.6
10794	AAE	5G NR (CP-OFDM, 1 RB, 20 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	7.82	±9.6
0795	AAD	5G NR (CP-OFDM, 1 RB, 25 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	7.84	±9.6
0796	AAE	5G NR (CP-OFDM, 1 RB, 30 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	7.82	±9.6
0797	AAF	5G NR (CP-OFDM, 1 RB, 40 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	8.01	±9.6
0798	AAE	5G NR (CP-OFDM, 1 RB, 50 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	7.89	±9.6
0799	AAF	5G NR (CP-OFDM, 1 RB, 60 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	7.93	+9.6
0801	AAF	5G NR (CP-OFDM, 1 RB, 80 MHz, QPSK, 30 kHz)	SG NR FR1 TDD	7.99	±9.6
0802	AAE	5G NR (CP-OFDM, 1 RB, 90 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	7.87	19.6
0803	AAF	5G NR (CP-OFDM, 1 RB, 100 MHz, QPSK, 30 kHz)	SG NR FR1 TDO	7.93	±9.6
0805	AAE	5G NR (CP-OFDM, 196, 10 MHz, QPSK, 30 kHz)	SG NR FR1 TDD	8.34	±9.6
0806	AAD	5G NR (CP-OFDM, 50% R8, 15 MHz, QP5K, 30 kHz)	5G NR FR1 TDD	8.34	
0809	AAE	5G NR (CP-OFDM, 50% RB, 15 MHz, QP5K, 30 kHz) 5G NR (CP-OFDM, 50% RB, 30 MHz, QP5K, 30 kHz)			±9.6
0809	AAE		5G NR FR1 TDD	8.34	±9.5
		5G NR (CP-OFDM, 50% RB, 40 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	8.34	±9.6
0812	AAF	5G NR (CP-OFDM, 50% RB, 50 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	8.35	±9.6
0817	AAG	SG NR (CP-OFDM, 100% RB, 5MHz, QPSK, 30kHz)	5G NR FR1 TDD	8.35	±9.6
0818	AAE	5G NR (CP-OFDM, 100% RB, 10 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	8.34	±9.6
0819	AAD	5G NR (CP-OFDM, 100% RB, 15 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	8.33	±9.6
0.820	AAE	5G NR (CP-OFDM, 100% RB, 20 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	8.30	±9.6
0.821	AAD	5G NR (CP-OFDM, 100% RB, 25 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	8.41	±9.6
0822	AAE	5G NR (CP-OFDM, 100% RB, 30 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	8.41	±9.6
0.823	AAF	5G NR (CP-OFDM, 100% R8, 40 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	8.36	±9.6
0824	AAE	5G NR (CP-OFDM, 100% RB, 50 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	8.39	±9.6
0.825	AAF	5G NR (CP-OFDM, 100% RB, 60 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	8.41	±9.6
0827	AAF	5G NR (CP-OFDM, 100% RB, 80 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	8.42	±9.8
0.828	AAE	5G NR (CP-OFDM, 100% RB, 90 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	8.43	±9.6

Certificate No: ES-3076\_Jul24

Page 18 of 21



	2024	

UID	Bev	Communication System Name	Group	PAR (dB)	Unc <sup>E</sup> k =
0829	AAF	5G NR (CP-OFDM, 100% RB, 100 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	8.40	±9.6
0830	AAE	5G NR (CP-OFDM, 1 RB, 10 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	7.63	±9.6
and the second	AAD	5G NR (CP-OFDM, 1 RB, 15 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	7.73	±9.6
0831	AAE	5G NR (CP-OFDM, 1 RB, 20 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	7.74	±9.6
		5G NR (CP-OFDM, 1 RB, 25 MHz, OPSK, 60 kHz)	5G NR FR1 TDD	7.70	±9.6
0833	AAD		5G NR FR1 TDD	7.75	±9.6
0834	AAE	5G NR (CP-OFDM, 1 RB, 30 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	7.70	±9.6
0835	AAF	5G NR (CP-OFDM, 1 RB, 40 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	7.65	±9.5
0836	AAE	5G NR (CP-OFDM, 1 RB, 50 MHz, OPSK, 60 kHz)	5G NR FR1 TDD	7.68	19.6
0837	AAF	5G NR (CP-OFDM, 1 RB, 60 MHz, QPSK, 60 kHz)		7.66	
0839	AAF	5G NR (CP-OFDM, 1 RB, 80 MHz, QPSK, 60 kHz)	5G NR FR1 TDD		±9.6
0840	AAE	SG NR (CP-OFDM, 1 RB, 90 MHz, OPSK, 60 kHz)	SG NR FR1 TDD	7.67	±9.8
0841	AAF	5G NR (CP-OFDM, 1 RB, 100 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	7.71	±9.6
0.843	AAD	SG NR (CP-OFDM, 50% RB, 15 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	8.49	±9.6
0844	AAE	5G NR (CP-OFDM, 50% RB, 20 MHz, QPSK, 50 kHz)	5G NR FR1 TDD	8.34	±9.6
0.846	AAE	5G NR (CP-OFDM, 50% RB, 30 MHz, QPSK, 50 kHz)	5G NR FR1 TDD	8.41	±9.8
0.854	AAE	5G NR (CP-OFDM, 100% RB, 10 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	8.34	±9.6
0.855	AAD	5G NR (CP-OFDM, 100% RB, 15 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	8.36	±9.6
0.856	AAE	5G NR (CP-OFDM, 100% RB, 20 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	8.37	±9.6
0857	AAD	5G NR (CP-OFDM, 100% RB, 25 MHz, QPSK, 60 kHz)	5G NR FR1 TOD	8.35	±9.6
0858	AAE	5G NR (CP-OFDM, 100% RB, 30 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	8.36	±9.6
0859	AAF	5G NR (CP-OFDM, 100% RB, 40 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	8.34	±9.6
0850	AAE	5G NR (CP-OFDM, 100% RB, 50 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	8.41	±9.6
0861	AAF	5G NR (CP-OFDM, 100% RB, 50 MHz, QPSK, 60 KHz)	5G NR FR1 TDD	8.40	±9.6
0.863	AAF	5G NR (CP-OFDM, 100% RB, 80 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	8.41	+9.6
0864	AAE	5G NR (CP-OFDM, 100% RB, 90 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	8.37	±9.6
0865	AAF	5G NR (CP-OFDM, 100% RB, 100 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	8.41	±9.6
0865	AAF	5G NR (DFT-s-OFDM, 100% HB, 100 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.68	±9.6
			5G NR FR1 TDD	5.89	±9.6
0.868	AAF	5G NR (DFT-s-OFDM, 100% RB, 100 MHz, QPSK, 30 kHz)	5G NR FR2 TDD	5.75	±9.6
0.869	AAE	5G NR (DFT-s-OFDM, 1 RB, 100 MHz, QPSK, 120 kHz)			
0870	AAE	5G NR (DFT-9-OFDM, 100% RB, 100 MHz, QPSK, 120 kHz)	5G NR FR2 TDD	5.85	±9.6
0871	AAE	5G NR (DFT-s-OFDM, 1 RB, 100 MHz, 16QAM, 120 kHz)	5G NR FR2 TDD	5.75	±9.6
0872	AAE	5G NR (DFT-e-OFDM, 100% FIB, 100 MHz, 16QAM, 120 kHz)	5G NR FR2 TDD	6.52	±9.6
0873	AAE	5G NR (DFT-8-OFDM, 1 RB, 100 MHz, 64QAM, 120 kHz)	5G NR FR2 TDD	6.61	±9.6
0.874	AAE	5G NR (DFT-s-OFDM, 100% RB, 100 MHz, 64QAM, 120 kHz)	5G NR FR2 TDD	6.65	±9.6
0.875	AAE	5G NR (CP-OFDM, 1 RB, 100 MHz, QPSK, 120 kHz)	5G NR FR2 TDD	7.78	±9.6
0.876	AAE	5G NR (CP-OFDM, 100% RB, 100 MHz, QPSK, 120 kHz)	5G NR FR2 TDD	8.39	±9.6
0.877	AAE	5G NR (CP-OFDM, 1 RB, 100 MHz, 16QAM, 120 kHz)	\$G NR FR2 TDD	7.95	±9.6
0.878	AAE	5G NR (CP-OFDM, 100% RB, 100 MHz, 16QAM, 120 kHz)	5G NR FR2 TDD	8.41	±9.6
0.879	AAE	5G NR (CP-OFDM, 1 RB, 100 MHz, 64QAM, 120 kHz)	5G NR FR2 TDO	8.12	±9.6
0880	AAE	5G NR (CP-OFDM, 100% RB, 100 MHz, 64QAM, 120 kHz)	5G NR FR2 TDD	5.38	±9.6
0.881	AAE	5G NR (DFT-s-OFDM, 1 RB, 50 MHz, QPSK, 120 kHz)	SG NR FR2 TDD	5.75	±9.6
0.882	AAE	5G NR (DFT-6-OFDM, 100% RB, 50 MHz, QPSK, 120 kHz)	5G NR FR2 TDD	5.96	±9.6
0.883	AAE	5G NR (DFT-s-OFDM, 1 RB, 50 MHz, 16QAM, 120 kHz)	5G NR FR2 TDD	6.57	±9.6
0884	AAE	5G NR (DFT-s-OFDM, 100% R8, 50 MHz, 16QAM, 120 kHz)	5G NR FR2 TDD	6.53	±9.6
0885	AAE	5G NR (DFTs-OFDM, 1 RB, 50 MHz, 64QAM, 120 kHz)	5G NR FR2 TDD	6.61	±9.6
0886	AAE	5G NR (DFT-e-OFDM, 100% RB, 50 MHz, 54QAM, 120 HHz)	5G NR FR2 TDD	6.65	±9.6
0.887	AAE	5G NR (CP-OFDM, 1 RB, 50 MHz, QPSK, 120 kHz)	5G NR FR2 TDD	7.78	±9.6
0888	AAE	5G NR (CP-OFDM, 100% RB, 50 MHz, QPSK, 120 kHz)	5G NR FR2 TDD	8.35	±9.6
0889	AAE	5G NR (CP-OFDM, 100% Hb, 30 MHz, 0P3N, 120 kHz)	5G NR FR2 TDD	8.02	±9.6
0890	AAE	5G NR (CP-OFDM, 196, 50 MHz, 16GAM, 120 kHz)	5G NR FR2 TDD	8.40	
	AAE	and the second			±9.6
0891		5G NR (CP-OFDM, 1 RB, 50 MHz, 64QAM, 120 kHz)	5G NR FR2 TDD	8.13	±9.6
0892	AAE	5G NR (CP-OFDM, 100% RB, 50 MHz, 64QAM, 120 kHz)	5G NR FR2 TOD	8.41	±9.6
0897	AAE	5G NR (DFT-s-OFDM, 1 RB, 5 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.66	±9.6
0898	AAC	5G NR (DFT-s-OFDM, 1 RB, 10 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.67	±9.6
0899	AAB	5G NR (DFT-s-OFDM, 1 RB, 15 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.67	±9,6
0900	AAC	5G NR (DFT-s-OFDM, 1 RB, 20 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.68	±9.6
0.901	AAB	5G NR (DFT-s-OFDM, 1 RB, 25 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.68	±9.6
0.905	AAC	5G NR (DFT-s-OFDM, 1 RB, 30 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.68	±9.6
0903	AAD	5G NR (DFT-s-OFDM, 1 RB, 40 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.68	±9.6
0.904	AAC	5G NR (DFT-s-OFDM, 1 RB, 50 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.68	±9.6
0.905	AAD	5G NR (DFT-s-OFDM, 1 RB, 60 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.68	±9.6
0.906	AAD	5G NR (DFT-8-OFDM, 1 RB, 80 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.68	±9.6
0.907	AAE	5G NR (OFT-8-OFDM, 50% RB, 5 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.78	±9.6
0.908	AAC	5G NR (DFT-8-OFDM, 50% RB, 10 MHz, QPSK, 30 kHz)	5G NR FRI TDD	5.93	±9.6
	1			and the second se	
0.909	AAB	5G NR (DFT-8-OFDM, 50% RB, 15 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.96	±9.6

Certificate No: ES-3076\_Jul24

Page 19 of 21



## July 17, 2024

UID	Rev	Communication System Name	Group	PAR (dB)	Unc <sup>E</sup> k =
10911	AAB	5G NR (DFT-s-OFDM, 50% RB, 25 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.93	±9.6
0912	AAC	5G NR (DFT-s-OFDM, 50% RB, 30 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.84	±9.6
0913	AAD	5G NR (DFT-6-OFDM, 50% RB, 40 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.84	±9.6
0914	AAC	5G NR (DFT-s-OFDM, 50% RB, 50 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.85	±9.6
0915	AAD	5G NR (DFT-s-OFDM, 50% RB, 60 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.83	±9.6
0916	AAD	5G NR (DFT-s-OFDM, 50% RB, 80 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.87	±9.6
0917	AAD	5G NR (DFT-s-OFDM, 50% RB, 100 MHz, OPSK, 30 kHz)	5G NR FR1 TDD	5.94	±9.6
0917	AAE	5G NR (DFTs-OFDM, 50% HB, 5MHz, OPSK, 30 kHz)	5G NR FR1 TDD	5.86	±9.6
0010	AAC	5G NR (DFT-s-OFDM, 100% RB, 10 MHz, QPSK, 30 kHz)	50 NR FR1 TDD	5.86	+9.6
0919	AAG	5G NR (DFT-s-OFDM, 100% RB, 15 MHz, QPSK, 30 kHz)	53 NR FR1 TDD	5.87	+9.6
0920	AAC	5G NR (DFTs-OFDM, 100% RB, 20 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.84	±9.6
0921		5G NR (DFT-s-OFDM, 100% RB, 25 MHz, OPSK, 30 kHz)	5G NR FR1 TDD	5.82	19.6
0922	AAB	5G NR (DFT-s-OFDM, 100% RB, 30MHz, QP3K, 30KHz)	53 NR FR1 TDD	5.84	19.6
0923	AAC		5G NR FR1 TDD	5.84	19.6
0.000 4	AAD	5G NR (DFT-s-OFDM, 100% RB, 40 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.95	19.6
0.925	AAC	5G NR (DFT-9-OFDM, 100% RB, 50 MHz, QPSK, 30 kHz)			
0.926	AAD	5G NR (DFT-8-OFDM, 100% RB, 60 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.84	±9.6
0927	AAD	5G NR (DFT-s-OFDM, 100% RB, 80 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.94	±9.6
0.928	AAD	5G NR (DFT-8-OFDM, 1 RB, 5 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.52	±9.6
0.959	DAA	5G NR (DFT-8-OFDM, 1 RB, 10 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.52	±9.6
0.930	AAC	5G NR (DFT-8-OFDM, 1 RB, 15 MHz, OPSK, 15 kHz)	5G NR FR1 FDD	5.52	±9.6
10.931	AAC	5G NR (DFT-8-OFDM, 1 RB, 20 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.51	±9.6
10932	AAC	5G NR (DFT-a-OFDM, 1 RB, 25 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.51	±9.6
10.933	AAC	5G NR (DFT-s-OFDM, 1 RB, 30 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.51	±9.6
10934	AAC	5G NR (DFT-s-OFDM, 1 RB, 40 MHz, QPSK, 15kHz)	5G NR FR1 FDD	5.51	±9.6
10935	AAD	5G NR (DFT-s-OFDM, 1 RB, 50 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.51	±9.6
10936	AAD	5G NR (DFT-s-OFDM, 50% RB, 5MHz, QPSK, 15kHz)	5G NR FR1 FDD	5.90	±9.6
10937	AAD	5G NR (DFT-s-OFDM, 50% RB, 10 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.77	±9.6
10938	AAC	5G NR (DFT-s-OFDM, 50% RB, 15MHz, QPSK, 15kHz)	5G NR FR1 FDD	5.90	±9.6
0939	AAC	5G NR (DFT-s-OFDM, 50% RB, 20 MHz, QPSK, 15 kHz)	SG NR FR1 FDD	5.82	±9.6
0940	AAC	5G NR (DFT-s-OFDM, 50% RB, 25 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.89	±9.6
0941	AAC	5G NR (DFT-s-OFDM, 50% RB, 30 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.83	±9.6
10942	AAC	5G NR (DFT-s-OFDM, 50% RB, 40 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.85	±9.6
10943	AAD	5G NR (DFT-8-OFDM, 50% RB, 50 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.95	±9.6
10944	AAD	5G NR (DFT-8-OFDM, 100% RB, 5MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.81	±9.6
10945	AAD	5G NR (DFT-s-OFDM, 100% RB, 10MHz, QPSK, 15kHz)	5G NR FR1 FDD	5.85	±9.6
10946	AAC	5G NR (DFT-s-OFDM, 100% RB, 15MHz, QPSK, 15kHz)	5G NR FR1 FDD	5.83	±9.6
10947	AAC	5G NR (DFT-s-OFDM, 100% RB, 20 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.87	±9.6
10948	AAC	5G NR (DFT-s-OFDM, 100% RB, 25 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.94	±9.6
10949	AAC	53 NR (DFT-s-OFDM, 100% RB, 30 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.87	±9.6
0950	AAC	5G NR (DFTs-OFDM, 100% RB, 40 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.94	±9.6
0951	GAA	5G NR (DFTs-OFDM, 100% RB, 50 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.92	±9.6
0952	AAA	5G NR DL (CP-OFDM, TM 3.1, 5MHz, 64-QAM, 15kHz)	5G NR FR1 FDD	8.25	±9.6
0.953	AAA	5G NR DL (CP-OFDM, TM 3.1, 10 MHz, 64-QAM, 15 kHz)	5G NR FR1 FDD	8.15	19.6
0954	AAA	5G NR DL (CP-OFDM, TM 3.1, 15 MHz, 64-QAM, 15 kHz)	5G NR FR1 FDD	8.23	+9.6
0955	AAA	5G NR DL (CP-OFDM, TM 3.1, 20 MHz, 64-QAM, 15 kHz)	5G NR FR1 FDD	8.42	19.6
0.956	AAA [	5G NR DL (CP-OFDM, TM 3.1, 5 MHz, 64-QAM, 30 kHz)	5G NR FR1 FDD	8.14	±9.6
0.957	AAA	5G NR DL (CP-OFDM, TM 3.1, 10 MHz, 64-QAM, 30 kHz)	5G NR FR1 FDD	8.31	±9.6
0.958	AAA	5G NR DL (CP-OFDM, TM 3.1, 15 MHz, 64-QAM, 30 kHz)	5G NR FR1 FDD	8.61	+9.6
0.959	AAA	5G NR DL (CP-OFDM, TM 3.1, 20 MHz, 64-QAM, 30 kHz)	5G NR FR1 FDD	8.33	±9.6
0960	AAE	5G NR DL (CP-OFDM, TM 3.1, 5 MHz, 64-QAM, 15 kHz)	5G NR FR1 TDD	9.32	±9.6
0961	AAC	5G NR DL (CP-OFDM, TM 3.1, 10 MHz, 64-QAM, 15 kHz)	5G NR FR1 TDD	9.35	±9.6
0962	AAB	5G NR DL (CP-OFDM, TM 3.1, 15 MHz, 64-QAM, 15 kHz)	5G NR FR1 TDD	9.40	±9.6
0.963	AAC	5G NR DL (CP-OFDM, TM 3.1, 20 MHz, 64-QAM, 15 kHz)	5G NR FR1 TDD	9.55	±9.5
0.964	AAE	5G NR DL (CP-OFDM, TM 3.1, 5 MHz, 84-QAM, 30 kHz)	5G NR FR1 TDD	9.29	±9.6
0.965	AAC	5G NR DL (CP-OFDM, TM 3.1, 10 MHz, 64-QAM, 30 kHz)	5G NR FR1 TDD	9.37	+9.6
0955	AAB	5G NR DL (CP-OFDM, TM 3.1, 15 MHz, 64-QAM, 30 kHz)	5G NR FR1 TDD	9.55	±9.6
0957	AAC	5G NR DL (CP-OFDM, TM 3.1, 20 MHz, 64-QAM, 30 kHz)	5G NR FR1 TDD	9.50	±9.6 +9.6
0968	AAD	5G NR DL (CP-OFDM, TM 3.1, 100 MHz, 64-QAM, 30 kHz)	5G NR FR1 TDD	9.42	
0972	AAC	5G NR (CP-OFDM, 1 RB, 20 MHz, QPSK, 15kHz)	5G NR FR1 TDD		±9.6
0973	AAD	5G NR (DFT-s-OFDM, 1 RB, 100 MHz, QPSK, 30 kHz)		11.59	±9.6
0973	AAD		5G NR FR1 TDD	9.06	±9.6
		5G NR (CP-OFDM, 100% RB, 100 MHz, 256-QAM, 30 kHz)	SG NR FR1 TDD	10.28	±9.6
0978	AAA	ULLA BDR	ULLA	1.16	±9.6
0979	AAA	ULLA HDR4	ULLA	8.58	±9.6
0980	AAA	ULLA HDR8	ULLA	10.32	±9.6
0981	AAA	ULLA HDRp4	ULLA	3.19	±9.6
	AAA	ULLA HDRp8	ULLA	3.43	±9.6

Certificate No: ES-3076\_Jul24



### July 17, 2024

UID	Rev	Communication System Name	Group	PAR (dB)	Unc <sup>E</sup> k = 2
10983	AAC	5G NR DL (CP-OFDM, TM 3.1, 40 MHz, 64-QAM, 15 kHz)	5G NR FR1 TDD	9.31	±9.6
10984	AAB	5G NR DL (CP-OFDM, TM 3.1, 50 MHz, 64-QAM, 15 kHz)	5G NR FR1 TDD	9.42	±9.6
10985	AAC	5G NR DL (CP-OFDM, TM 3.1, 40 MHz, 64-QAM, 30 kHz)	5G NR FR1 TDD	9.54	±9.6
10986	AAB	5G NR DL (CP-OFDM, TM 3.1, 50 MHz, 54-QAM, 30 kHz)	5G NR FR1 TDD	9,50	±9.6
10987	AAC	5G NR DL (CP-OFDM, TM 3.1, 60 MHz, 64-QAM, 30 kHz)	5G NR FR1 TDD	9.53	#9.6
10988	AAB	5G NR DL (CP-OFDM, TM 3.1, 70 MHz, 64-QAM, 30 kHz)	5G NR FR1 TDD	9.38	±9.6
10989	AAC	5G NR DL (CP-OFDM, TM 3.1, 80 MHz, 84-QAM, 30 kHz)	5G NR FR1 TDD	9.33	±9.6
10990	AAB	5G NR DL (CP-OFDM, TM 3.1, 90 MHz, 64-QAM, 30 kHz)	5G NR FR1 TDD	9.52	±9.6
11003	AAA	5G NR DL (CP-OFDM, TM 3.1, 30 MHz, 64-QAM, 15 kHz)	5G NR FR1 TOD	10.24	±9.6
11004	AAA	5G NR DL (CP-OFDM, TM 3.1, 30 MHz, 64-QAM, 30 kHz)	5G NR FR1 TDD	10.73	±9.6
11005	AAA	5G NR DL (CP-OFDM, TM 3.1, 25 MHz, 64-QAM, 15 kHz)	5G NR FR1 FOD	8.70	\$9.6
11006	AAA	5G NR DL (CP-OFDM, TM 3.1, 30 MHz, 64-QAM, 15 kHz)	5G NR FR1 FDD	8.55	±9.6
11007	AAA	5G NR DL (CP-OFDM, TM 3.1, 40 MHz, 64-QAM, 15 kHz)	5G NR FR1 FDD	8.46	±9.6
11008	AAA	5G NR DL (CP-OFDM, TM 3.1, 50 MHz, 64-QAM, 15 kHz)	5G NR FR1 FDD	8.51	19.6
11009	AAA	5G NR DL (CP-OFDM, TM 3.1, 25 MHz, 64-QAM, 30 kHz)	5G NR FR1 FDD	8.76	±9.6
11010	AAA	5G NR DL (CP-OFDM, TM 3.1, 30 MHz, 64-QAM, 30 kHz)	5G NR FR1 FDD	8.95	±9.6
11011	AAA	5G NR DL (CP-OFDM, TM 3.1, 40 MHz, 64-QAM, 30 kHz)	5G NR FR1 FDD	8.95	±9.6
11012	AAA	5G NR DL (CP-OFDM, TM 3.1, 50 MHz, 64-QAM, 30 kHz)	5G NR FR1 FDD	8.68	±9.6
11013	AAB	IEEE 802.11be (320 MHz, MCS1, 99pc duty cycle)	WLAN	8.47	±9.6
11014	AAB	IEEE 802,11be (320 MHz, MCS2, 99pc duty cycle)	WLAN	8.45	±9.6
11015	AAB	IEEE 802.11be (320 MHz, MCS3, 99pc duty cycle)	WLAN	8.44	±9.6
11018	AAB	IEEE 802.11be (320 MHz, MCS4, 99pc duty cycle)	WLAN	8.44	±9.6
11017	AAB	IEEE 802.11be (320 MHz, MCS5, 99pc duty cycle)	WLAN	8.41	±9.6
11018	AAB	IEEE 802.11be (320 MHz, MCS6, 99pc duty cycle)	WLAN	8.40	±9.6
11019	AAB	IEEE 802.11be (320 MHz, MCS7, 99pc duty cycle)	WLAN	8.29	±9.6
11020	AAB	IEEE 802,11be (320 MHz, MCS8, 99pc duty cycle)	WLAN	8.27	±9.6
11021	AAB	IEEE 802,11be (320 MHz, MCS9, 99pc duty cycle)	WLAN	8.46	±9.6
11022	AAB	IEEE 802,11be (320 MHz, MCS10, 99pc duty cycle)	WLAN	8.36	±9.6
11023	AAB	IEEE 802.11be (320 MHz, MCS11, 99pc duty cycle)	WLAN	8.09	±9.6
11024	AAB	IEEE 802.11be (320 MHz, MCS12, 99pc duty cycle)	WLAN	8.42	3.6±
11025	AAB	IEEE 802.11be (320 MHz, MCS13, 99pc duty cycle)	WLAN	8.37	±9.6
11026	AAB	IEEE 802,11be (320 MHz, MCS0, 99pc duty cycle)	WLAN	8.39	±9.6

<sup>E</sup> Uncertainty is determined using the max, deviation from linear response applying rectangular distribution and is expressed for the square of the field value.

Certificate No: ES-3076\_Jul24

Page 21 of 21



Calibration Laboratory of Schmid & Partner Engineering AG Zeughausstrasse 43, 8004 Zurich, Switzerland

1





Schweizerischer Kalibrierdienst Service suisse d'étalonnage Servizio svizzero di taratura

Servizio svizzero di taratura S Swiss Calibration Service

Accreditation No.: SCS 0108

Accredited by the Swiss Accreditation Service (SAS) The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Object         EUmmWV4 - SN:9528         2.5.24, 0.6.55         2.0.24, 0.6           Calibration procedure(s)         QA CAL-02.v9, QA CAL-25.v8, QA CAL-42.v3         Calibration procedure for E-field probes optimized for close near field evaluations in air           Calibration date         May 17, 2024         May 17, 2024           This calibration certificate documents the traceability to national standards, which realize the physical units of measurements. In the measurements and the uncertainties with confidence probability are given on the following pages and are part of the certifications have been conducted in the closed laboratory facility: environment temperature (22±3)*C and humidity <70%           Calibration Equipment used (M&TE critical for calibration)         Cal Date (Certificate No.)         Scheduled Calibra Scheduled Calibra Scheduled Calibra Scheduled Calibra Spectrum analyzer FSV40           Primary Standards         ID         Cal Date (Certificate No.)         Scheduled Calibra Scheduled Calibra Scheduled Calibra Spectrum analyzer FSV40           Primary Standards         ID         Cal Date (Certificate No.)         Scheduled Calibra Scheduled Calibra Spectrum analyzer FSV40           Primary Standards         ID         Cal Date (Certificate No.)         Scheduled Calibra Scheduled Calibra Spectrum analyzer FSV40           Primary Standards         ID         Cal Date (Certificate No.)         Scheduled Calibra Scheduled Calibra Spectrum analyzer FSV40           SN: 101832         25-Jan-24 (No. 0001A300740056)         Apr-25 <th>lient</th> <th colspan="2">Int HCT Gyeonggi-do, Republic of Korea</th> <th></th> <th colspan="2">Certificate No.</th> <th colspan="3">EUmm-9528_May24</th>	lient	Int HCT Gyeonggi-do, Republic of Korea			Certificate No.		EUmm-9528_May24		
Object         EUmmWV4 - SN:9528         Image: Solution procedure(s)         QA CAL-02.v9, QA CAL-25.v8, QA CAL-42.v3 Calibration procedure for E-field probes optimized for close near field evaluations in air           Calibration date         May 17, 2024         May 17, 2024           This calibration certificate documents the traceability to national standards, which realize the physical units of measurements ( The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certifications have been conducted in the closed laboratory facility: environment temperature (22±3)*C and humidity <70% Calibration Equipment used (M&TE critical for calibration)           Primary Standards         ID         Cal Date (Certificate No.)         Scheduled Calibra Apr 25 Spectrum analyzer FSV40         SN: 101244         04-Apr 24 (No. 0001A300740056)         Apr 25 Apr 25 Ref. Probe EUmmWV3         SN: 9374         04-Dec 23 (No. EUmm 9374_Dec23)         Dec 24 Dec 24         DAE4(p)         Dec 24         DAE4(p)         Dec 24         DAE4(p)         Dec 24         DAE4(p)         Nov-24	CALI	BRATION C	ERTIFICATE		겝	azen	24 - 1 h	1	
Calibration procedure for E-field probes optimized for close near field evaluations in air         Calibration date       May 17, 2024         This calibration certificate documents the traceability to national standards, which realize the physical units of measurements ( The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certifications have been conducted in the closed laboratory facility: environment temperature (22 ± 3) °C and humidity < 70% Calibration Equipment used (M&TE critical for calibration)         Primary Standards       ID       Cal Date (Certificate No.)       Scheduled Calibra Scheduled Calibra Scheduled Calibra Scheduled Calibra Scheduled Calibra Spectrum analyzer FSV40       SN: 101244       04-Apr-24 (No. 0001A300740056)       Apr-25         Ret. Probe EUmmWV3       SN: 9374       04-Dec-23 (No. EUmm-9374_Dec23)       Dec-24         DAE4lp       SN: 1682       08-Nov-23 (No. DAE4lp-1662_Nov23)       Nov-24	Object		EUmmWV4 - S	5N:9528		and the second second second second	1.000 C 1	J 133	
This calibration certificate documents the traceability to national standards, which realize the physical units of measurements in the uncertainties with confidence probability are given on the following pages and are part of the certifications have been conducted in the closed laboratory facility: environment temperature (22 ± 3) °C and humidity < 70%.	Calibratic	on procedure(s)	Calibration pro	cedure for E			lor close r	near field	
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certifical calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3) °C and humidity < 70% Calibration Equipment used (M&TE critical for calibration)	Calibratic	in date	May 17, 2024						
Power sensor NRP110T         SN: 101244         04-Apr-24 (No. 0001A300740056)         Apr.25           Spectrum analyzer FSV40         SN: 101832         25-Jan-24 (No. 4030-315007551)         Jan-25           Ref. Probe EUmmWV3         SN: 9374         04-Dec-23 (No. EUmm-9374_Dec23)         Dec-24           DAE4lp         SN: 1662         08-Nov-23 (No. DAE4lp-1662_Nov23)         Nov-24	The mea All calibra	surements and the ations have been co	uncertainties with confide inducted in the closed lab	nce probability ar oratory facility: er	e given on the lo	liowing pages	and are part	of the certificate.	
Spectrum analyzer FSV40         SN: 101832         25-Jan-24 (No. 4030-315007551)         Jan-25           Ref. Probe EUmmWV3         SN: 9374         04-Dec-23 (No. EUmm-9374_Dec23)         Dec-24           DAE4lp         SN: 1662         08-Nov-23 (No. DAE4lp-1662_Nov23)         Nov-24	Primary S	Standards	ID	Cal Date	(Certificate No.)		Schedu	led Calibration	
Ref. Probe EUmmWV3         SN: 9374         04-Dec-23 (No. EUmm-9374_Dec23)         Dec-24           DAE4lp         SN: 1662         08-Nov-23 (No. DAE4lp-1662_Nov23)         Nov-24	Power ser	neor NRP110T	SN: 101244	04-Apr-2	4 (No. 0001A300	0740056}	Apr-25	and conservate	
DAE4ip SN: 1662 08-Nov-23 (No. DAE4ip-1662_Nov23) Nov-24	Spectrum	analyzer FSV40	SN: 101832	25-Jan-2	4 (No. 4030-315	007551)	Jan-25	3	
	Ref. Prob	e EUmmWV3	SN: 9374	04-Dec-2	3 (No. EUmm-9	374_Dec23)	Dec-24	9	
	DAE4ip		SN: 1662	08-Nov-2	3 (No. DAE4ip-1	(662_Nov23)	Nov-24		
Secondary Standards ID Check Date (in house) Scheduled Check	Conneda	. Phandarda	D	Church D	te fle housel		Lever	in the set	

Secondary Standards	ID U	Check Date (in house)	Scheduled Check
Generator APSIN26G	SN: 669	28-Mar-17 (In house check May-23)	In house check: May-24
Generator Aglient E8251A	SN: US41140111	28-Mar-17 (in house check May-23)	In house check: May-24

	Name	Function	Signature
Calibrated by	Leif Klysner	Laboratory Technician	Seif Them
Approved by	Sven Kühn	Technical Manager	Sa
This calibration certificat	te shall not be reproduced except	in full without written approval of the lab	Issued: May 22, 2024 poratory.

Certificate No: EUmm-9528\_May24

Page 1 of 18



Calibration Laboratory of Schmid & Partner Engineering AG Zeughausstrasse 43, 8004 Zurich, Switzerland



S Schweizerischer Kalibrierdienst Service suisse d'étalonnage Servizio svizzero di taratura S Swiss Calibration Service

Accreditation No.: SCS 0108

Accredited by the Swiss Accreditation Service (SAS) The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

#### Glossary

NORMx,y DCP	sensitivity in free space diode compression point
CF	crest factor (1/duty_cycle) of the RF signal
A, B, C, D	modulation dependent linearization parameters
Polarization @	φ rotation around probe axis
Polarization #	$\vartheta$ rotation around an axis that is in the plane normal to probe axis (at measurement center), i.e., $\vartheta = 0$ is normal to probe axis
Connector Angle	information used in DASY system to align probe sensor X to the robot coordinate system
Sensor Angles	sensor deviation from the probe axis, used to calculate the field orientation and polarization
Ŕ	is the wave propagation direction

#### Calibration is Performed According to the Following Standards:

 IEEE Std 1309-2005, "IEEE Standard for calibration of electromagnetic field sensors and probes, excluding antennas, from 9 kHz to 40 GHz", December 2005

#### Methods Applied and Interpretation of Parameters:

- NORMx,y: Assessed for E-field polarization θ = 0 (f ≤ 900 MHz in TEM-cell; f > 1800 MHz: R22 waveguide). For frequencies > 6 GHz, the far field in front of waveguide horn antennas is measured for a set of frequencies in various waveguide bands up to 110 GHz.
- DCPx,y: DCP are numerical linearization parameters assessed based on the data of power sweep with CW signal, DCP does not depend on frequency nor media.
- Note: As the field is measured with a diode detector sensor, it is warrantied that the probe response is linear (E<sup>2</sup>) below the documented lowest calibrated value.
- · PAR: PAR is the Peak to Average Ratio that is not calibrated but determined based on the signal characteristics
- The frequency sensor model parameters are determined prior to calibration based on a frequency sweep (sensor model involving resistors R, R<sub>p</sub>, inductance L and capacitors C, C<sub>p</sub>).
- Ax,y; Bx,y; Cx,y; Dx,y; VR,y; A, B, C, D are numerical linearization parameters assessed based on the data of power sweep for specific modulation signal. The parameters do not depend on frequency nor media. VR is the maximum calibration range expressed in RMS voltage across the diode.
- Sensor Offset: The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.
- Connector Angle: The angle is assessed using the information gained by determining the NORMr (no uncertainty required).
- · Equivalent Sensor Angle: The two probe sensors are mounted in the same plane at different angles. The angles are
- assessed using the information gained by determining the NORMx (no uncertainty required).
- Spherical isotropy (3D deviation from isotropy): in a locally homogeneous field realized using an open waveguide / horn setup.

Certificate No: EUmm-9528\_May24

Page 2 of 18



#### May 17, 2024

## Parameters of Probe: EUmmWV4 - SN:9528

### **Basic Calibration Parameters**

	Sensor X	Sensor Y	Unc (k = 2)
Norm (µV/(V/m)²)	0.01797	0.02046	±10.1%
DCP (mV) B	105.0	105.0	±4.7%
Equivalent Sensor Angle	-61.5	35.7	

# Calibration Results for Frequency Response (750 MHz - 110 GHz)

Frequency GHz	y Target Deviation Sensor X E-Field dB		Deviation Sensor Y dB	Unc (k = 2 dB
0.75	77.2	-0.33	-0.14	±0.43
1.8	140.4	-0.02	-0.03	±0.43
2.0	133.0	0.12	0.14	±0.43
2.2	124.8	-0.06	-0.05	±0.43
2.5	123.0	0.07	0.12	±0.43
3.5	256.2	-0.14	-0.22	±0.43
3.7	249.8	-0.00	-0.11	±0.43
6.6	74.7	-0.39	-0.39	±0.98
8.0	67.2	-0.14	-0.16	±0.98
10.0	66.2	0.04	0.05	±0.98
15.0	51.2	0.22	0.26	±0.98
26.6	112.6	0.11	0.16	±0.98
30.0	121.9	-0.02	-0.01	±0.98
35.0	121.3	-0.06	-0.11	±0.98
40.0	102.3	-0.05	-0.16	±0.98
50.0	61.5	0.13	-0.01	±0.98
55.0	75.9	-0.03	-0.03	±0.98
60.0	80.5	-0.02	0.01	±0.98
65.0	77.1	0.15	0.14	±0.98
70.0	74.3	0.15	0,10	±0.98
75.0	74.8	0.00	-0.05	±0.98
75.0	96.6	0.01	-0.04	±0.98
80.0	95.4	-0.13	-0.09	±0.98
85.0	58.0	-0.06	~0.07	±0.98
90.0	84.0	0.01	0.01	±0.98
92.0	83.9	0.01	0.04	±0.98
95.0	76.2	-0.02	-0.03	±0.98
97.0	69.1	0.01	0.02	±0.98
100.0	66.9	0.11	0.12	±0.98
105.0	67.2	-0.20	-0.17	±0.98
110.0	78.1	0.11	0.04	±0.98

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage tactor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

<sup>B</sup> Linearization parameter uncertainty for maximum specified field strength.

Certificate No: EUmm-9528\_May24

Page 3 of 18



#### May 17, 2024

## Parameters of Probe: EUmmWV4 - SN:9528

### **Calibration Results for Modulation Response**

UID	Communication System Name		A dB	B dB√μV	C	dB	WR mV	Max dev.	Max Unc <sup>E</sup> k = 2
0	CW	X	0.00	0.00	1.00	0.00	109.6	±1.9%	±4.7%
	and the second second	Y	0.00	0.00	1.00		90.7		
10352	Pulse Waveform (200Hz, 10%)	X	2.72	60.00	14.62	10.00	6.0	±1.6%	±9.6%
		Y	2.30	60.00	15.54		6.0	1	
10353	Pulse Waveform (200Hz, 20%)	X	1.86	60.00	13.51	6.99	12.0	±1.0%	±9.6%
		Y	1.59	60.00	14.49		12.0	1	
10354	Pulse Waveform (200Hz, 40%)	X	1.10	60.00	12.32	3.98	23.0	±1.5%	±9.6%
	Contract Contract Strength Contracted	Y	0.96	60.00	13.26		23.0		
10355	Pulse Waveform (200Hz, 60%)	X	0.65	60.00	11.65	2.22	27.0	±0.9%	±9.6%
	212-542-515 (2019) VICTOR (2019) PROFESSION (2019)	Y	0.60	60.00	12.47		27.0		and the second second
10387	QPSK Waveform, 1 MHz	X	1.15	60.00	12.26	1.00	22.0	±1.3%	±9.6%
	C NO CONTRACTOR STORE	Y	1.18	60.00	12.27	10.55	22.0		10110000
10388	OPSK Waveform, 10 MHz	X	1.24	60.00	12.10	0.00	22.0	±0.8%	±9.6%
		Y	1.29	60.00	12.10	1.000	22.0	1.020.0	100000
10396	64-QAM Waveform, 100 kHz	X	3.40	66.23	16.35	3.01	17.0	±0.6%	±9.6%
	CONTRACTOR AND DESCRIPTION	Y	2.75	62.78	14.89		17.0		
10399	64-QAM Waveform, 40 MHz	X	2.04	60.00	12.56	0.00	19.0	±0.8%	±9.6%
		Y	2.07	60.00	12.59		19.0		
10414	WLAN CCDF, 64-QAM, 40 MHz	X	3.14	60.00	12,97	0.00	12.0	±1.0%	±9.6%
	CONTRACTOR AND A CONTRACTOR OF THE AND A CONTRACTOR OF THE AND	Y	3.16	60.00	13.00		12.0		11100975

Note: For details on UID parameters see Appendix

E Uncertainty is determined using the max: deviation from linear response applying rectangular distribution and is expressed for the square of the field value.

Certificate No: EUmm-9528\_May24

Page 4 of 18



#### May 17, 2024

## Parameters of Probe: EUmmWV4 - SN:9528

## Calibration Results for Linearity Response

Frequency GHz	Target E-Field V/m	Deviation Sensor X dB	Deviation Sensor Y dB	Unc (k = 2) dB
0.9	50.0	-0.03	0.02	±0.2
0.9	100.0	-0.03	-0.01	±0.2
0.9	500.0	-0.00	-0.01	±0.2
0.9	1000.0	0.02	0.02	±0.2
0.9	1500.0	0.01	0.01	±0.2
0.9	2100.0	-0.01	-0.01	±0.2

## Sensor Frequency Model Parameters (750 MHz - 55 GHz)

	Sensor X	Sensor Y
R (Ω)	68.28	86.08
Rp (Ω)	106.68	119.82
L (nH)	0.07057	0.07991
C (pF)	0.1962	0.2296
Cp (pF)	0.0776	0.0698

## Sensor Frequency Model Parameters (55 GHz - 110 GHz)

	Sensor X	Sensor Y
R (Ω)	37.28	25.43
R <sub>p</sub> (Ω)	160.50	102.36
L (nH)	0.08064	0.05122
C (pF)	0.0586	0.0970
Cp (pF)	0.0664	0.1000

### Sensor Model Parameters

	C1 fF	C2 fF	и V <sup>-1</sup>	T1 ms V-2	T2 msV <sup>-1</sup>	T3 ms	T4 V <sup>-2</sup>	T5 V <sup>-1</sup>	T6
х	50.8	366.42	33.34	0.92	6.83	4.99	0.00	1.62	1.01
y I	50,4	365.93	33.82	0.92	6.25	5.03	0.00	1.88	1.01

## Other Probe Parameters

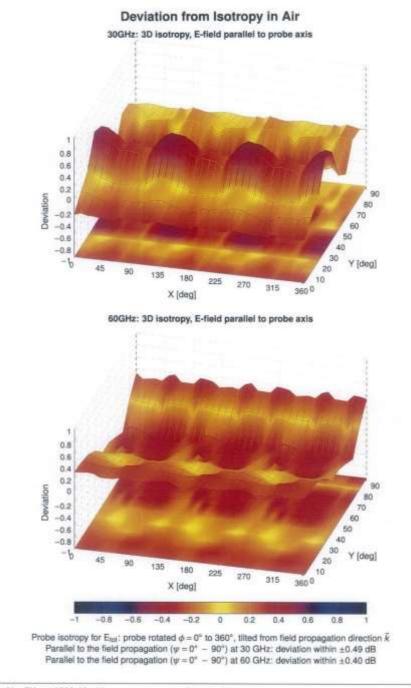
Sensor Arrangement	Rectangular
Connector Angle	67.0°
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disabled
Probe Overall Length	320 mm
Probe Body Diameter	8 mm
Tip Length	23 mm
Tip Diameter	8.0 mm
Probe Tip to Sensor X Calibration Point	1.5 mm
Probe Tip to Sensor Y Calibration Point	1.5 mm

Certificate No: EUmm-9528\_May24

Page 5 of 18



May 17, 2024



Certificate No: EUmm-9528\_May24

Page 6 of 18



### May 17, 2024

# **Appendix: Modulation Calibration Parameters**

UID	Rev	Communication System Name	Group	PAR (dB)	Unc <sup>#</sup> k =
0		CW	CW	0.00	±4.7
0010	CAB	SAR Validation (Square, 100 ms, 10 ms)	Test	10.00	±9.6
0011	CAG	UMTS-FDD (WCDMA)	WCDMA	2.91	±9.6
0012	CAB	IEEE 802 11b WIFI 2.4 GHz (DSSS, 1 Mbpt)	WLAN	1.87	±8.6
0013	CAB	IEEE 802.11p WFI 2.4 GHz (DSSS-OFDM, 6 Mbps)	WLAN	9.46	±9.6
0.021	DAC	GSM-FDD (TDMA, GMSK)	GSM	9.39	±9.6
0023	DAC	GPRS-FDD (TDMA, GMSK, TN 0)	GSM	0.57	±9.6
0024	DAC	GPRS-FDD (TDMA, GMSK, TN 0-1)	GSM	6.56	19.6
0.025	DAC	EDGE-FDD (TDMA, 8PSK, TN 0)	100000		
0.025	DAC	EDGE-FDD (TDMA, 8PSK, TN 0-1)	GSM	12.62	±9.6
and a local distance of the	DAC		GSM	9.55	±9.6
0.027	and the second second	GPRS-FDD (TDMA, GMSK, TN 0-1-2)	GSM	4.80	19.6
10028	DAC	GPRS-FDD (TDMA, GMSK, TN 0-1-2-3)	GSM	3.65	±9.6
10029	DAC	EDGE-FDD (TDMA, 8PSK, TN 0-1-2)	GSM	7.78	±9.6
10,030	CAA	IEEE 802.15.1 Bluetooth (GFSK, DH1)	Bluetooth	5.30	±9.6
10031	CAA	IEEE 802.15.1 Bluetooth (GFSK, DH3)	Bluetooth	1.87	±9.6
10:032	CAA	IEEE 802.15.1 Bluetooth (GFSK, DH5)	Bluetooth	1.18	±9.6
10:033	CAA	IEEE 802.15.1 Bluetooth (PV4-DQPSK, DH1)	Bluetooth	7.74	±9.6
10034	CAA	IEEE 809.15.1 Bluetooth (PV4-DQPSK, DH3)	Bluetooth	4.53	±9.6
10.035	CAA	IEEE 802.15.1 Buetooth (PV4-DQPSK, DH5)	Bluetooth	0.83	±9.6
10:036	CAA	IEEE 802.15.1 Bluetooth (8-DPSK, DH1)	Bluetooth	8.01	±9.6
10:037	CAA	IEEE 802.15.1 Bluetooth (8-DPSK, DH3)	Bluetooth	4,77	±9.6
10035	CAA	IEEE 802.15.1 Bluetooth (8-DPSK, DH5)	Bluetooth	4.10	+9.6
10039	CAB	CDMA2000 (1xRTT, RC1)	CDMA2000	4.57	+9.6
10042	CAB	IS-54 / IS-136 FDD (TDMA/FDM, PI/4-DQPSK, Hallrate)	AMPS	7.78	19.6
10044	CAA	IS-91/EIA/TIA-653 FDD (FDMA, FM)	AMPS	0.00	±9.6
10048	CAA	DECT (TDD, TDMA/FDM, GFSK, Full Skit, 24)	DECT	13.80	
10049	CAA	DECT (TDD, TDMA/FDM, GFSK, Double Slot, 12)	DECT	10.79	±9.8
10055	CAA	UMTS-TDD (TD-SCDMA, 1.28 Mcps)		the design of the second second	29.6
10058	DAC	EDGE-FDD (TDMA, 8PSK, TN 0-1-2-3)	TD-SCDMA	11.01	±9.6
10059	CAB	mentioned and some the boundary states and interaction to call of the to the	GSM	6.52	±9.0
10060	CAB	IEEE 802.11b WIFI 2.4 GHz (DSSS, 2 Mbpa)	WLAN	2.12	±9.6
		IEEE 802.11b WIFI 2.4 GHz (DSSS, 5.5 Mbps)	WLAN	2.83	±9.6
10061	CAS	IEEE 802.11b WIF) 2.4 GHz (DSSS, 11 Mbps)	WLAN	3.60	±9.6
10062	CAE	IEEE 802.11a/h WIFI 5 GHz (OFDM, 6 Mbps)	WLAN	8.68	±9.6
10.063	CAE	IEEE 802.11a/h WIFI 5 GHz (OFDM, 9 Mbps)	WLAN	8.63	±9,6
10054	GAE	IEEE 802.11a/h WiFi 5 GHz (OFDM, 12 Mbps)	WLAN	0.09	±9.6
10.065	CAE	IEEE 802.11a/h WIFI 5 GHz (OFDM, 18 Mbps)	WLAN	9.00	±9.6
10.065	CAE	IEEE 802.11a/n WiFI 5 GHz (OFDM, 24 Mbps)	WLAN	9.38	±9.6
10067	CAE	IEEE 802.11wh WiFi 5 GHz (OFDM, 36 Mbps)	WLAN	10.12	±9.6
10068	CAE	IEEE 802.11a/h WIFI 5 GHz (OFDM, 48 Mbps)	WLAN	10.24	:9.6
10.069	CAE	IEEE 802.11a/h WIFI 5 GHz (OFDM, 54 Mbps)	WLAN	10.56	19.6
10071	CAB	IEEE 802.11g WIFi 2.4 GHz (DSSS/OFDM, 9 Mbps)	WLAN	9.83	±9.6
10072	CAB	IEEE 802.11g WIFI 2.4 GHz (DSSS/OFDM, 12 Mbos)	WLAN	9.62	±9.6
10073	CAB	IEEE 802.11g WIFI 2.4 GHz (DSSS/OFDM, 18 Mbps)	WLAN	9.94	19.6
10074	CAB	IEEE 802.11g WIFI 2.4 GHz (DSSS/OFDM, 24 Mbps)	WLAN	10.30	19.8
10075	CAB	IEEE 802.11g WIFI 2.4 GHz (DSSS/OFDM, 36 Mbps)	WLAN	10.30	19.6
10076	CAB	IEEE 802.11g WFI 2.4 GHz (DSSS/OFDM, 48 Mbps)	WLAN	10.94	
10077	CAB	IEEE 802.11g WIFI 2.4 GHz (DSSS/OFDM, 54 Mbps)	WLAN	10.94	±9.6 ±9.6
10081	CAB	CDMA2000 (1xRTT, RC3)	a del construction de la	the second se	
10082	CAB	IS-54 / IS-136 FDO (TDMA/FDM, Pl/4-DQPSK, Fulrate)	CDMA2000	3.97	±9.6
10090	DAC	GPRS-FDD (TDMA, GMSK, TN 0-4)	AMPS	4.77	19.6
10097	CAC	UMTS-FDD (HSDPA)	GSM	6.56	±9.8
10098	CAC	UMTS-FDD (HSUPA, Subtent 2)	WCDMA	3.98	±9.6
10099	DAC		WCDMA	3,98	±9.6
	and the second second	EDGE-FDD (TDMA, 8PSK, TN 0-4)	GSM	9.55	±9.6
10100	CAF	LTE-FDD (SC-FDMA, 100% AB, 20 MHz, QPSK)	LTE-FDD	5.67	\$9.6
10101	CAF	LTE-FDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM)	LTE-FDD	6.42	±9.6
10102	CAF	LTE-FOD (SC-FOMA, 100% RB, 20 MHz, 64-QAM)	LTE-FDD	6,60	+9.6
10103	CAH	LTE-TOD (SC-FDMA, 100% RB, 20 MHz, QPSK)	LTE-TDO	9.29	±9.6
10104	CAH	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM)	LTE/TOD	9.97	±9,6
10105	CAH	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 54-QAM)	LTE-TDO	10.01	19.6
10108	CAH.	LTE-FOD (SC-FDMA, 100% RB, 10 MHz, QP5K)	LTE-FDO	5.80	28.6
10109	CAH	LTE-FDD (SC-FDMA, 100% RB, 10 MHz, 16-QAM)	LTE-FDO	6.43	±9.5
10110	CAH	LTE-FDD (SC-FDMA, 100% RB, 5 MHz, QPSK)	LTE-FDO	5.75	19.6
10111	CAH	LTE FDD (SC FDMA, 100% R8, 5 MHz, 16-QAM)	LTE-FDD	8.44	19.0

Certificate No: EUmm-9528\_May24

Page 7 of 18





### May 17, 2024

UID	Rev	Communication System Name	Group	PAR (dB)	Unc <sup>E</sup> k =
10112	CAH	LTE-FDD (SC-FDMA, 100% RB, 10 MHz, 64-GAM)	LTE-FDD	6.59	±9.6
10113	CAH	LTE-FDD (SC-FDMA, 100% R8, 5 MHz, 64-QAM)	LTE-FDD	6.62	±9.6
0114	CAE	IEEE 802.11n (HT Greenfield, 13.5 Mops, BPSK)	WLAN	8.10	±9.6
0115	CAE	IEEE 802.11n (HT Greenfield, 81 Moos, 16-GAM)	WLAN	8.46	386
0116	CAE	IEEE 802 11n (HT Greenfield, 135 Mbps, 64-QAM)	WLAN	8.15	±9.6
0117	CAE	IEEE 802.11n (HT Mixed, 13.5 Mbps, BPSK)	WLAN	8.07	19.6
0118	CAE	IEEE 802.11n (HT Mixed, 81 Mbcs, 16-QAM)	WLAN	8.59	19.6
0119	CAE	IEEE 802.11n (HT Mixed, 135 Mbps, 64-QAM)	WLAN	8.13	19.6
0140	CAF	LTE-FDD (SC-FDMA, 100% RB, 15 MHz, 16-QAM)	LTE-FDD	6.49	19.6
0141	CAF	LTE-FDD (SC-FDMA, 100% RB, 15 MHz, 64-QAM)	LTE-FDD	6.53	19.6
	CAF	LTE-FDD (SC-FDMA, 100% RB, 3 MHz, QPSK)		5.73	
0142	CAF	LTE-FDD (SC-FDMA, 100% R8, 3 MHz, GF3A) LTE-FDD (SC-FDMA, 100% R8, 3 MHz, 16-QAM)	LTE-FDD LTE-FDD	6.35	±9.6 ±9.6
0143	100.00			and the second second	and the second se
0144	CAF	LTE-FDD (SC-FDMA, 100% RB, 3 MHz, 64-QAM)	LTE-FDD	6.65	±9.6
8145	CAG	LTE-FDD (SC-FDMA, 100% RB, 1,4 MHz, QPSK)	LTE-FDD	5.76	±9.6
0146	CAG	LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, 16-GAM)	LTE-FDD	6.41	±9.6
0147	CAG	LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, 64-QAM)	LTE-FDD	0.72	±9.6
0149	CAF	LTE-FDD (SC-FDMA, 50% RB, 20 MHz, 18-QAM)	LTE-FDD	6.42	±9.6
0150	CAF	LTE-FDD (SC-FDMA, 50% RB, 20 MHz, 84-QAM)	LTE-FDD	6.60	±9.6
0151	CAH	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, QPSK)	LTE-TDD	9.28	±9.6
0152	CAH	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 16-QAM)	LTE-TDD	9.92	±9.6
0153	CAH	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 64-QAM)	LTE-TDD	10.05	±9.6
0154	CAH	LTE-FDD (SC-FDMA, 50% RB, 10 MHz, QPSK)	LTE-FDD	5.75	±9.6
0155	CAH	LTE-FDD (SC-FDMA, 50% RB, 10 MHz, 16-QAM)	LTE-FDD	6.43	±9.6
0156	CAH	LTE-FDD (SC-FDMA, 50% RB, 5 MHz, QPSK)	LTE-FDD	5.79	:19.6
10157	CAH	LTE-FDD (SC-FDMA, 50% RB, 5 MHz, 16 QAM)	LTE-FDD	6.49	±9.6
10158	CAH	LTE-FDD (SC-FDMA, 50% RB, 10 MHz, 64-QAM)	LTE-FDD	6.62	±9.6
10159	CAH	LTE-FDD (SC-FDMA, 50% BB, 5 MHz, 64-QAM)	LTE-FDD	6.56	±9.6
0160	CAF	LTE-FDD (SC-FDMA, 50% RB, 15 MHz, QPSK)	LTE-FDD	5.82	19.8
10161	CAF	LTE-FDD (SC-FDMA, 50% RB, 15 MHz, 16-QAM)	LTE-FDD	6.43	19.6
10162	CAF	LTE-FDD (SC-FDMA, 50% RB, 15 MHz, 64-QAM)	LTE-FDD	6.58	±9.6
10166	CAG	LTE-FDD (SC-FDMA, 50% RB, 1.4 MHz, QPSK)	LTE-FDD	5.46	±9.6
10.167	CAG	LTE-FDD (SC-FDMA, 50% R8, 1.4 MHz, 16-QAM)	LTE-FDD	6.21	±9.6
10168	CAG	LTE-FDD (SC-FDMA, 60% RB, 1.4 MHz, 64-QAM)	LTE-FDD	6.79	19.6
10.169	CAF	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, QPSK)	LTE-FDD	5.73	±9.6
10170	CAF	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM)	LTE-FDD	6.52	±9.6
10171	AAF	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, 64 GAM)	LTE-FDD	6.49	19.6
10172	CAH	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, GPSK)			
10173	CAH	LTE-TOD (SC-FDMA, 1 RB, 20 MHz, 16-QAM)	LTE-TOO	8.21	±9,6
10174	CAH	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 16-GAM)	LTE-TDD	9.48	±9.6
	and the second second		LTE-TDD	10.25	±9.6
10175	CAH	LTE-FDD (SC-FDMA, 1 RB, 10 MHz, QPSK)	LTE-FDD	5.72	±9.6
10176	CAH	LTE-FDD (SC-FDMA, 1 RB, 10 MHz, 16-QAM)	LTE-FDD	6,52	<b>太</b> 9.6
10177	CAJ	LTE-FDD (SC-FDMA, 1 RB, 5 MHz, QPSK)	LTE-FDD	5.73	±9.6
10178	CAH	LTE-FDD (SC-FDMA, 1 RB, 5 MHz, 16-QAM)	LTE-FDD	6.52	±9.8
10179	CAH	LTE-FDD (SC-FDMA, 1 RB, 10 MHz, 64-QAM)	LTE-FDD	6.50	<b>土9.6</b>
10180	CAH	LTE-FDD (SC-FDMA, 1 RB, 5 MHz, 64-QAM)	LTE-FDD	6.50	±9.6
10.181	CAF	LTE-FDD (SC-FDMA, 1 RB, 15 MHz, QPSK)	LTE-FDD	5.72	注9.8
10182	CAF	LTE-FDD (SC-FDMA, 1 RB, 15 MHz, 16-QAM)	LTE-FDD	6.52	±9.6
10183	AAE	LTE-FDD (SC-FDMA, 1 RB, 15MHz, 64-QAM)	LTE-FDD	6.50	±9.6
10184	CAF	LTE-FDD (SC-FDMA, 1 RB, 3 MHz, QPSK)	LTE-FDD	5.73	±9.6
0.185	CAF	LTE-FDD (SC-FDMA, 1 RB, 3 MHz, 16-QAM)	LTE-FDD	8.51	±9.6
0186	AAF	LTE-FDD (SC-FDMA, 1 RB, 3MHz, 64-QAM)	LTE-FDD	8.50	±9.6
0187	CAG	LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK)	LTE-FDD	5.73	±9.6
0188	CAG	LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, 18-QAM)	LTE-FDD	6.52	±9.6
10189	AAG	LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, 64-QAM)	LTE-FDD	6.50	±9.6
0193	CAE	IEEE 802.11n (HT Greenfield, 6.5 Mbps, 8PSK)	WLAN	8.09	±9.6
0194	CAE	IEEE 802.11n (HT Greenfield, 39 Mbps, 16-QAM)	WLAN	8.12	±9.6
0195	CAE	IEEE 802.11n (HT Greenfield, 65 Mbps, 64-QAM)	WLAN	8.21	19.6
0196	CAE	IEEE 802.11n (HT Mixed, 6.5 Mbps, BPSK)	WLAN	8.10	19.6
0197	CAE	IEEE 802.11n (HT Mixed, 30 Mbps, 16-QAM)	WLAN	8,10	
0198	CAE	IEEE 802.11n (HT Mixed, 65 Mbps, 64-QAM)	WLAN	8,13	:9.6
0219	CAE	IEEE 802.11n (HT Mixed, 7.2 Mbps, 8PSK)	and the second se	the second se	19.8
0220	CAE	IEEE 802.11n (HT Mixed, 43.3 Mbps, 18-QAM)	WLAN	8.03	19.6
0221	CAE	IEEE 802.11n (H1 Mixed, 43.3 Mbps, 16-GAM) IEEE 802.11n (HT Mixed, 72.2 Mbps, 64-GAM)	WLAN	8.13	19.6
0221	CAE		WLAN	8.27	19.6
and the second second	and the second second	IEEE 802.11n (HT Mixed, 15 Mbps, BPSK)	WLAN	8.06	19.8
0223	CAE	IEEE 802.11n (HT Mored, 90 Mbps, 16-QAM)	WLAN	8.48	±9.6
0224	CAE	IEEE 802.11n (HT Mixed, 150 Mbps, 64-QAM)	WLAN	8.08	±9.6

Certificate No: EUmm-9528\_May24

Page 8 of 18





### May 17, 2024

UID	Rev	Communication System Name	Group	PAR (dB)	Unc <sup>E</sup> k =
10225	CAC	UMTS-FDD (HSPA+)	WCOMA.	5.97	±9.6
0226	CAC	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 16-QAM)	LTE-TOD	8.49	±9.6
0227	CAC	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 64-QAM)	LTE-TDD	10.26	±9.6
0228	CAC	LTE-TDD (SC-FDMA, 1 R8, 1.4 MHz, QPSK)	LTE-TDD	9.22	+9.6
0229	CAE	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 16-QAM)	LTE-TOD	9.48	±9.6
0230	CAE	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 64-QAM)	LTE-TDD	10.25	±9.6
0231	CAE	LTE-TDD (SC-FDMA, 1 R8, 3MHz, QPSK)	LTE-TDD	9.19	±9.6
0232	CAH	LTE-TDD (SC-FDMA, 1 RB, 5MHz, 18-QAM)	LTE-TDD	9.48	10.0
0.233	CAH	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 64-QAM)	LTE-TOD	10.25	±9.6
0234	CAH	LTE-TDD (SC-FDMA, 1 RB, 5MHz, QPSK)	LTE-TDD	9.21	19.0
0.235	CAH	LTE-TOD (SC-FDMA, 1 RB, 10 MHz, 18-QAM)	and the second se		the second s
	CAH		LTE-TDD	9.48	±9.6
0236	market.	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 64-QAM)	LTE-TOD	10.25	±9.6
0237	CAH	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, QPSK)	LTE-TOD	9,21	±9.6
0238	CAG	LTE-TDD (SC-FDMA, 1 RB, 15MHz, 16-QAM)	LTE-TDD	9.48	±9.6
0239	CAG	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 64-QAM)	LTE-TDD	10,25	19.6
0240	CAG	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, QPSK)	LTE-TDD	9.21	±9.6
0.241	CAC	LTE-TDD (SC-FDMA, 50% R8, 1.4 MHz, 16-QAM)	LTE-TDD	9.82	±9.6
0242	CAC	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 64-QAM)	LTE-TDD	9,86	±9.6
0243	CAD	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, QPSK)	LTE-TDD	9.48	±9.6
0244	CAE	LTE-TOD (SC-FDMA, 50% RB, 3 MHz, 16-QAM)	LTE-TOD	10.06	19.6
0245	CAE	LTE-TDD (SC-FDMA, 50% RB. 3 MHz, 64-QAM)	LTE-TOD	10.06	±9.6
0246	CAE	LTE-TOD (SC-FDMA, 50% RB, 3MHz, QP5K)	LTE-TDD	9.30	±9.6
0247	CAH	LTE-TDD (SC-FDMA, 50% RB, 5MHz, 16-QAM)	LTE-TDD	9.91	±9.6
0248	CAH	LTE-TDD (SC-FDMA, 50% RB, 5MHz, 84-QAM)	LTE-TDD	10.09	19.6
0249	CAH	LTE-TDD (SC-FDMA, 50% RB, 5MHz, QPSK)	LTE-TDD	9.29	±9.6
0250	CAH	LTE-TDD (5C-FDMA, 50% RB, 10 MHz, 16-QAM)	LTE-TDD	9.81	19.6
10251	CAH	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 64-QAM)	LTE-TDD	10.17	and the second second
	CAH		the second se		±9.6
0252	CAG	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, OPSK)	LTE-TDD	9,24	±9.6
		LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 18-QAM)	LTE-TDD	9.90	±9.6
10254	CAG	LTE-TDD (SC-FDMA, 50% RB. 15 MHz, 64-QAM)	LTE-TOD	10.14	19.6
10255	CAG	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, QPSK)	LTE-TDD	9.20	\$9.6
0256	CAC	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 16-QAM)	LTE-TDD	9,95	±9.6
10257	CAG	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 64-GAM)	LTE-TDD	10.08	±9.8
10258	CAC	LTE-TOD (SC-FDMA, 100% RB, 1.4 MHz, QPSK)	LTE-TOD	9.34	19.6
10259	CAE	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 16-QAM)	LTE-TDD	9.98	±9.6
10260	CAE	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 64-QAM)	LTE-TDD	9.97	±9.6
10261	CAE	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, QPSK)	LTE-TDD	9.24	±9.6
10262	CAH	LTE-TOD (SC-FDMA, 100% RB, 5 MHz, 16-QAM)	LTE-TDD	9.83	19.6
10263	CAH	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 64-QAM)	LTE-TDD	10.16	19.6
10264	CAH	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, QPSK)	LTE-TDD	9.23	±9.6
10265	CAH	LTE-TOD (SC-FDMA, 100% RB, 10 MHz, 16-QAM)	LTE-TDD	9.92	±9.6
10266	CAH	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 64-QAM)	LTE-TOD	10.07	19.6
10267	CAH	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, QPSK)	LTE-TDD	9.30	19.6
10268	CAG	LTE-TDD (SC-FDMA, 100% RB, 15MHz, 16-QAM)	LTE-TDD	10.06	±9.6
10269	CAG	LTE-TDD (SC-FDMA, 100% RB, 15MHz, 64-QAM)	LTE-TOD	10.13	19.6
10270	CAG	LTE-TOD (SC-FDMA, 100% RB, 15MHz, OPSK)	LTE-TDD		and the second sec
10274	CAC	UMTS-FDD (HSUPA, Subtest 5, 3GPP Rel8.10)	WCDMA	9.58	19.6
10275	CAC	UMTS-FDD (HSUPA, Subtest 5, 3GPP Rel8.10) UMTS-FDD (HSUPA, Subtest 5, 3GPP Rel8.4)			±9.6
a sea included	CAA		WCDMA	3.96	±9.6
0277 0278	CAA	PHS (QPSK)	PHS	11.81	19.6
		PHS (OPSK, BW 884 MHz, Rolloff 0.5)	PHS	11.81	±9.6
10279	CAA	PHS (QPSK, BW 884 MHz, Rotoff 0.38)	PHS	12.18	±9.6
0290	AAB	CDMA2000, RC1, SO55, Full Rate	CDMA2000	3.91	±9.6
0291	AAB	COMA2000, RC3, SO55, Full Rate	CDMA2600	3.46	±9.6
0292	AAB	COMA2000, RC3, SO32, Full Rate	CDMA2000	3.39	±9.6
0293	AAB	CDMA2000, RC3, SO3, Full Rate	CDMA2000	3.50	±9.6
0.295	AAB	COMA2000, RC1, SO3, 1/8th Rate 25 ft.	CDMA2000	12.49	±9.6
0297	AAE	LTE FDD (SC-FDMA, 50% R8, 20 MHz, QPSK)	LTE-FDD	5.81	±9.6
0298	AAE	LTE-FDD (SC-FDMA, 50% RB, 3 MHz, QPSK)	LTE-FDD	5.72	±9.6
0299.	AAE	LTE-FDD (SC-FDMA, 50% R8, 3 MHz, 16-QAM)	LTE-FDD	6.39	19.6
0300	AAE	LTE-FDD (SC FDMA, 50% RB, 3 MHz, 64 QAM)	LTE-FDD	6.60	19.6
0301	AAA	IEEE 802.15e WIMAX (29:18, 5 ms, 10 MHz, QP5K, PUSC)	WMAX	12.03	±9.0 ±9.6
0302	AAA	IEEE 802 16e WIMAX (29:18, 5 ms, 10 MHz, QPSK, PUSC, 3 CTRL symbols)	and and and a second second	and the second s	
0302	AAA		WIMAX	12,57	±9.6
		IEEE 802 15e WIMAX (31:15, 5 ms, 10 MHz, 64QAM, PUSC)	WIMAX	12.52	±9.6
0304	AAA	IEEE 802.16e WIMAX (29:18, 5 ms, 10 MHz, 64QAM, PUSC)	XAMIW	11.88	土9.6
0305	AAA	IEEE 802.16e WIMAX (31.15, 10 ms, 10 MHz, 64QAM, PUSC, 15 symbols)	WIMAX	15.24	±9.6
0305	AAA	IEEE 802.16e WIMAX (29:18, 10 ms, 10 MHz, 64QAM, PUSC, 18 symbols)	WIMAX	54.67	±9.6

Certificate No: EUmm-9528\_May24

Page 9 of 18



## May 17, 2024

UID	Rev	Communication System Name	Group	PAR (dfl)	Unc <sup>E</sup> k =
10.307	AAA	IEEE 802.16e WMAX (29:18, 10 ms, 10 MHz, QPSK, PUSC, 18 symbols)	WIMAX	14.49	±9.6
10308	AAA	IEEE 802.16e WIMAX (29:18, 10 ms, 10 MHz, 16 GAM, PUSC)	WIMAX	14.46	29.6
0.309	AAA	IEEE 802 16e WIMAX (29:18, 10 ms, 10 MHz, 16QAM, AMC 2x3, 18 symbols)	WIMAX	14.58	28.6
0310	AAA	IEEE 802 1fie WIMAX (29:18, 10 ms, 10 MHz, QPSK, AMC 2x3, 18 symbols)	WIMAX	14.57	±9.6
0311	AAE	LTE-FDD (SC-FDMA, 100% RB, 15MHz, QPSK)	LTE-FDD	8.06	±9.6
0313	AAA	IDEN 1.9	IDEN	10.51	±9.6
0314	AAA	IDEN 1:5	IDEN	13,48	±9.6
0315	AAB	IEEE 802.11b WIFI 2.4 GHz (DSSS, 1 Mbps, 96pc duty cycle)	WLAN	1.71	±9.6
0316	AAB	IEEE 802.11g WIR 2.4 GHz (ERP-OFDM, 6 Mbps, 96pc duty cycle)	WLAN	8.36	±9.6
0317	AAE	IEEE 802.11a WIFI 5 GHz (OFOM, 6 Mbps, 96pc duty cycle)	WLAN	8.36	±9.6
0352	AAA	Pulse Waveform (200Hz, 10%)	Generic	10.00	±9.6
0353	AAA	Pulse Waveform (200Hz, 20%)	Generic	6.99	±9.5
10354	AAA	Pulse Waveform (200Hz, 40%)	Generic	3.98	±9.6
10355	AAA	Pulse Waveform (200Hz, 60%)	Generic	2.22	±9.5
10356	AAA	Pulse Waveform (200Hz. 80%)	Generic	0.97	±9.6
10387	AAA	OPSK Waveform, 1 MHz	Generic	5.10	:9.6
0388	AAA	OPSK Waveform, 10 MHz	Generic	5.22	±9.6
10396	AAA	64-QAM Waxeform, 100 kHz	Generic	6.27	29.6
10399	AAA	64-CAM Waveform, 40 MHz	Generic	6.27	±9.6
10,389	AAF.	IEEE 802 11ac WIFI (20 MHz, 64-QAM, 99pc duty cycle)	WLAN	8.37	19.6
10400	AAF	IEEE 802, 11ac WFI (20 MHz, 64-QAM, 98pc duty cycle) IEEE 802, 11ac WFI (40 MHz, 64-QAM, 98pc duty cycle)	WLAN	8.60	10.0
10402	AAF	IEEE 802.11ac WFI (40 MHz, 64-QAM, 99pc duty cycle) IEEE 802.11ac WFI (80 MHz, 64-QAM, 99pc duty cycle)	WLAN	8.53	±9.6
10402	AAB	CDMA2000 (1xEV-DO, Rev. 0)	CDMA2000	3,76	±9.6
10403	AAB	CDMA2000 (1xEV-DO, Rev. 0) CDMA2000 (1xEV-DO, Rev. A)	CDMA2000 CDMA2000	3.77	±9.0 ±9.6
the state of the local division of	AAB	CDMA2000, RC3, SC32, SCH0, Full Rate	CDMA2000	5.22	
10406	and the second second		LTE-TDD	and the second se	±9.6
10410	AAH	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9, Subframe Cort=4)	A PROPERTY OF A	7.82	19.6
10414	AAA	WLAN CCDF, 54-QAM, 40 MHz IEEE 802,11b WiFi 2.4 GHz (DSSS, 1 Mbps, 98pc duty cycle)	Generic	8.54	±9.6
10415	AAA		WLAN	1.54	±9.6
10416	AAA	IEEE 802.11g WIFI 2.4 GHz (ERP-OFDM, 6 Mops, 99pc duty cycle)	WLAN	8.23	19.6
10417	AAD	IEEE 802.11a/h WIFI 5 GHz (OFDM, 6 Mbps, 99pc duty cycle)	WLAN	8.23	19.6
10418	AAA	IEEE 802.11g WIFI 2.4 GHz (DSSS-OFDM, 6 Mbps, 99pc duty cycle, Long preambule)	WLAN	8,14	19.6
10419	AAA	IEEE 802.11g WIFI 2.4 GHz (DSSS-OFDM, 6 Mbps, 99pc duty cycle, Short preambule)	WLAN	8.19	±9.6
10422	AAD	IEEE 802.11n (HT Greenfield, 7.2 Maps, BPSK)	WLAN	8.32	19.6
10423	AAD	IEEE 802.11n (HT Greenfield, 43.3 Mops, 16-QAM)	WLAN	8,47	19.6
A Statistics	AAD	IEEE 802.11n (HT Greenfield, 72.2 Mbps, 64-QAM)	WLAN	8.40	±9.6
10425	AAD	IEEE 802.11n (HT Greenfield, 15 Mbps, BPSK)	WLAN	8.41	±9.6
10426	AAD	IEEE 802.11n (HT Greenfield, 90 Mbps, 16-QAM)	WLAN	8,45	±9.6
10427	AAD	IEEE 802.11n (HT Greenfield, 150 Mbps, 64-QAM)	WLAN	8,41	±9.6
10430	AAE	LTE-FDD (OFDMA, 5MHz, E-TM 3.1)	LTE-FDD	8.28	±9.6
10431	AAE	LTE-FDD (OFDMA, 10 MHz, E-TM 3.1)	LTE-FDD	8.38	±9.6
10432	AAD	LTE-FDD (OFDMA, 15 MHz, E-TM 3.1)	LTE-FDD	8,34	±9.6
10433	AAD	LTE-FDD (OFDMA, 20 MHz, E-TM 3.1)	LTE-FDD	8.34	±9.6
10434	BAA	W-CDMA (85 Test Model 1, 64 DPCH)	WCDMA	8.60	±9.6
10435	AAG	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, OPSK, UL Subframe=2,3,4,7,8,9)	LTE-TDD	7.82	±9.6
10447	AAE	LTE-FDD (OFDMA, 5 MHz, E-TM 3.1, Clipping 44%)	LTE-FDD	7.56	±9.6
10448	AAE	LTE-FDD (OFDMA, 16 MHz, E-TM 3.1, Clippin 44%)	LTE-FDD	7.53	±9.6
10449	AAD	LTE FDD (OFDMA, 15MHz, E-TM 3.1, Clping 44%)	LTE-FDD	7.51	±9.6
10450	AAD	LTE-FDD (OFDMA, 20 MHz, E-TM 3.1, Clipping 44%)	LTE-FDD	7.48	±9.6
10451	AAB	W-CDMA (BS Test Model 1, 64 DPCH, Clipping 44%)	WCDMA	7.59	19.6
10453	AAE	Validation (Square, 10 ms, 1 ms)	Test	10.00	±9.6
10456	AAD	IEEE 802.11ac W.Fi (160 MHz, 64-QAM, 99pc duty cycle)	WLAN	8.63	土9.6
10.457	AAB	UMTS-FDD (DC-HSDPA)	WCDMA	6.62	±9.0
10458	AAA	CDMA2000 (1xEV-DO, Rev. B, 2 carriers)	CDMA2000	6.55	±9.6
10459	AAA	CDMA2000 (1xEV-DO, Rev. 8, 3 carriers)	CDMA2000	8.25	±9.6
10460	AAB	UMTS-FDD (WCDMA, AMR)	WCDMA	2.39	±9.6
10461	AAC	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	LTE-TOD	7.82	±9.6
10462	AAC	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 16-QAM, UL Subtrame=2,3,4,7,8,9)	LTE-TOD	8.30	±9.6
10463	AAC	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	LTE-TDD	8.56	±9.6
10464	AAD	LTE-TDD (SC-FDMA, 1 R8, 3 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	LTE-TOD	7.82	±9.6
10465	AAD	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	LTE-TDD	8.32	±9.6
10466	AAD	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	LTE-TDD	B.57	±9.6
10467	AAG	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	LTE-TOD	7.82	±9.6
10468	AAG	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 16-QAM, UL Subtrame=2,3.4,7,8.9)	LTE-TDD	8.32	29.6
10469	AAG	LTE-TOD (SC-FDMA, 1 RB, 5MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	LTE-TOD	8.56	29.6
10470	AAG	LTE-TOD (SC-FDMA, 1 RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	LTE-TDD	7.82	±9.6
10471	AAG	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 15-QAM, UL Subhame=2,3,4,7,8,9)	LTE-TDD	8.32	±9.6

Certificate No: EUmm-9528\_May24

Page 10 of 18



## May 17, 2024

UND	Rev	Communication System Name	Group	PAR (dB)	Unc <sup>E</sup> k =
10.472	AAG	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 64-QAM, UL Subtrame=2.3,4,7,8,9)	LTE-TOD	8.57	±9.6
0.473	AAF	LTE-TOD (SC-FDMA, 1 RB, 15 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	LTE-TDD	7.62	±9.6
0474	AAF	LTE-TDD (SC-FOMA, 1 RB, 15MHz, 16-QAM, UL Subframe=2.3,4,7,8,9)	LTE-TDD	8.32	±9.6
0475	AAF	LTE-TDD (SC-FDMA, 1 RB, 15MHz, 64-QAM, UL Subframe=2.3.4,7.8,9)	LTE-TDD	8.57	±9.6
0477	AAG	LTE-TOD (SC-FDMA, 1 RB, 20 MHz, 16-QAM, UL Sublyame=2.3.4,7,8.9)	LTE-TDD	B.32	±9.6
0478	AAG	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 64-QAM, UL Subhame=2,3,4,7,8,9)	LTE-TDD	8.57	±9.6
0479	AAC	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	LTE-TDD	7,74	±9.6
0480	AAC	LTE-TOD (SC-FDMA, 50% RB, 1.4 MHz, 10-QAM, UL Subframe+2,3,4,7,8,9)	LTE-TDD	8.18	±9.6
0481	AAC	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 64-QAM, UL Subtrame=2,3,4,7,8,9)	LTE-TDD	8.45	±9,6
0482	AAD	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, GPSK, UL Subframe+2,3,4,7,8,9)	LTE-TDD	7.71	±9.6
0485	AAD	LTE-TOD (SC-FDMA, 50% RB, 3 MHz, 15-QAM, UL Subframe=2,3,4,7,8,9)	LTE-TDD	8.39	±9.6
0484	AAD	LTE-TOD (SC-FDMA, 50% RB, 3 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	LTE-TDD	8.47	±9.6
0485	AAG	LTE-TDD (SC-FOMA, 50% RB, 5 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	LTE-TDD	7.59	±9.8
0.486	AAG	LTE-TOD (SC-FOMA, 50% R8, 5 MHz, 16-QAM, UL Subframe=2,3,4,7,8,5)	LTE-TDD	0.38	±9,6
0487	AAG	LTE-TDD (SC-FDMA, 50% RB, 5MHz, 64-QAM, UL Subtrame=2,3,4,7,8,9)	LTE-TDD	8.60	±9.6
0488	AAG	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, QPSK, UL Subframe+2,3,4,7,8.9)	LTE-TDD	7.70	±8.6
0.489	AAG	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	LTE-TDD	.8.31	±9.6
0490	AAG	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 64-QAM, UL Subframe=2,3,4,7,5,9)	LTE-TDD	8.54	19.6
0491	AAF	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	LTE-TDD	7.74	19.6
0492	AAF	LTE-TOD (SC FDMA, 50% RB, 15 MHz, 16-QAM, UL Subframe=2,3,4,7,8.9)	LTE-TDD	8.41	19.6
0493	AAF	LTE-TDD (SC-FDMA, 50% R8, 15 MHz, 64-QAM, UL Subtrame=2,3,4,7,8,9)	LTE-TDD	8.55	±9.6
0494	AAG	LTE-TOD (SC-FDMA, 50% RB, 20 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	LTE-TDD	7.74	±9.6
0.495	AAG	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 16 QAM, UL Subframe=2,3,4,7,8,9)	LTE-TDD	8.37	±9.6
0496	EAA	LTE-TDD (SC-FDMA, 50% R8, 20 MHz, 64-QAM, UL Subframe+2,3,4,7,8,9)	LTE-TDD	8.54	±9.6
0.497	AAC	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, QPSK, UL Subframe=2.3,4,7,8,9)	LTE-TDD	7.67	±9.6
0.498	AAC	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	LTE-TDD	8.40	±9.6
0.499	AAC	LTE-TDD (SC-FDMA, 100% R8, 1.4 MHz, 64-QAM, UL Subframe+2,3,4,7,8,9)	LTE-TDD	8.68	±9.6
0.500	AAD	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, QPSK, UL Subtramev2,3,4,7,8,9)	LTE-TDD	7.67	±9.6
0501	AAD	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	LTE-TDD	8.44	±9.6
0502	AAD	LTE-TDD (SC-FDMA, 100% RB, 3MHz, 64-QAM, UL Subhame+2.3,4,7,8,9)	LTE-TDD	8.52	±9.5
0503	AAG	LTE-TDD (SC-FDMA, 100% RB, 5MHz, OPSK, UL Subframe=2,3,4,7,8,9)	LTE-TDD	7.72	19.6
0.504	AAG	LTE-TDD (SC-FDMA, 100% RB, 5MHz, 16-QAM, UI, Subhames2.3,4,7.6,9)	LTE-TDD	8.31	19.8
0505	AAG	LTE-TDD (SC-FDMA, 100% RB, 5MHz, 64-QAM, UL Subhame=2.3.4,7,8.9)	LTE-TDD	8.54	±9.8
0506	AAG	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	LTE-TOD	7:74	±9.6
10:507	AAG	LTE-TOD (SC-FDMA, 100% RB, 10 MHz, 16-QAM, UL Subframe=2.3,4,7,8,9)	LTE-TOD	8,36	±9.6
0508	AAG	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 64-QAM, UL Sublyame=2,3,4,7,8,9)	LTE-TDO	8,55	±9.6
0509	AAF	LTE-TOD (SC-FDMA, 100% RB, 15MHz, QPSK, UL Subtrame=2,3,4,7,8,9)	LTE-TDD	7.99	±9.8
0510	AAF	LTE-TDD (SC-FDMA, 100% RB, 15MHz, 18-QAM, UL Subframe=2.3,4,7,8,9)	LTE-TDO	8.49	±9.6
0511	AAF	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 84-QAM, UL Subhame-2.3,4,7,8,9)	LTE-TDD	8.51	±9.6
0512	AAG	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, QPSK, UL Subtrame=2,3,4,7,8,9)	LTE-TDD	7.74	±9.0
0513	AAG	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9) LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	LTE-TDD	8.42	±9.6
0515	AAA		LTE-TDD	8.45	+9.6
0515	AAA	IEEE 802.11b WIFI 2.4 GHz (DSSS, 2Mbps, 98pc duty cycle) IEEE 802.11b WIFI 2.4 GHz (DSSS, 5.5 Mbps, 98pc duty cycle)	WLAN	1.58	±9.6
0517	AAA	IEEE 802.11b WFF 2.4 GHz (DSSS, 3.5 Mbps, 99pc duty cycle)	WLAN	and the second se	±9.6
0518	AAD	IEEE 802.11a/h WiFi 5 GHz (OFDM, 9 Mbps, 99pc duty cycle)	WLAN	1.58	±9.6 ±9.6
0519	AAD	IEEE 802.11a/h WiFi 5 GHz (OFDM, 12 Mbps, 99pc duty cycle)	WLAN	8.39	
10.520	AAD	IEEE 802.11a/h WiFi 5 GHz (OFDM, 12 Mbps, 99pc duty cycle)	WLAN	8.12	±9.6 ±9.8
0.521	AAD	IEEE 802.11a/h WiFi 5 GHz (OFDM, 14 Mbps, 99pc duty cycle)	WLAN	7.97	Station of the local line in t
0522	AAD	IEEE 802.11a/h WIFI 5 GHz (OFDM, 24 Mbps, 99pc duty cycle)	WLAN	8.45	±9.6 ±9.5
0.523	AAD	IEEE 802.11am WiFI S GHz (OFDM, 36 Maps, 99pc duty cycle)	WLAN	8.45	19.6
0.524	AAD	IEEE 802.11a/h WFI 5 GHz (OFDM, 48 Mbps, 89pc duty cycle)	WLAN	8.27	19.6
0.525	AAD	IEEE 802.11ac WIFI (20 MHz, MCS0, 99pc duty cycle)	WLAN	8.36	±9.0 ±9.0
0.526	AAD	IEEE 802.11ac WIFI (20 MHz, MCS1, 99pc duty cycle)	WLAN	8.42	±9.6
0.527	AAD	IEEE 802.11ac WiFi (20 MHz, MCS2, 99pc duty cycle)	WLAN	8.21	±9.6
0.528	AAD	IEEE 802.11ac WIFI (20 MHz, MCS3, 98pc duty cycle)	WLAN	0.21	19.0
0529	AAD	IEEE 802.11ac WIFI (20 MHz, MCS4, 99pc duty cycle)	WLAN	8.36	±9.0
0.531	1.	IEEE 802.11ac WIFI (20 MHz, MCS6, 99pc duty cycle)	WLAN	8.43	±9.6
0.532	And in case of the local division of the loc	IEEE 802.11ac WIFI (20 MHz, MCS7, 99pc duty cycle)	WLAN	8.29	±9.6
0533	AAD		WLAN	8.38	±9.0
0534			WLAN	8.45	19.6
10535	AAD		WLAN	8.45	±9.6
0.536	AAD	IEEE 802.11ac WiFi (40 MHz, MCS2, 99cc duty cycle)	WLAN	8.40	±9.0 ±9.5
1.000	AAD	IEEE 802.11ac WiFi (40MHz, MCS2, 95pc duty cycle)	WLAN	8.44	19.6
0.537		the second s	1111111	0.44	20.0
0537	AAD	IEEE 802.11ac WIFI (40 MHz, MCS4, 99pc duty cycle)	WLAN	8.54	19.6

Certificate No: EUmm-9528\_May24

Page 11 of 18



May 17, 2024

UID	Rev	Communication System Name	Group	PAR (dB)	UncE R = 1
10541	AAD	IEEE 802 11ac WiFi (40 MHz, MCS7, 99pc duty cycle)	WLAN	8.46	±9.6
10542	AAD	IEEE 802.11ac WIFI (40 MHz, MCS8, 99pc duty cycle)	WLAN	8.65	±9.6
10543	AAD	IEEE 802.11ac WiFI (40 MHz, MCS9, 99pc duty cycle)	WLAN	8.65	±9.6
10544	AAD	IEEE 802.11ac WIFI (80 MHz, MCS0, 99pc duty cycle)	WLAN	8.47	±9.6
10545	AAD	IEEE 802.11ac WiFi (80 MHz, MCS1, 99pc duty cycle)	WLAN	8.55	±9.6
10546	AAD	IEEE 802.11ac WIFI (80 MHz, MCS2, 99pc duty cycle)	WLAN	8.35	±9.6
10547	GAA	IEEE 802 11ac WIFI (80 MHz, MCS3, 99pc duty cycle)	WLAN	8.49	±9.6
10548	AAD	IEEE 802.11ac WIFI (80 MHz, MCS4, 99pc duty cycle)	WLAN	8.37	±9.6
10550	AAD	IEEE 802.11ac WiFi (80 MHz, MCS6, 99pc duty cycle)	WLAN	8.38	±9.6
10551	AAD.	IEEE 802.11ac WIFI (80 MHz, MCS7, 99pc duty cycle)	WLAN	8.50	±9.6
10552	AAD	IEEE 802.11ac WIFI (80 MHz, MCS8, 99pc duty cycle)	WLAN	8.42	±9.6
10553	AAD	IEEE 802.11ac WIFI (80 MHz, MCS9, 99pc duty cycle)	WEAN	8.45	±9.6
10554	AAE	IEEE 802.11ac WiFi (160 MHz, MCS0, 99pc duty cycle)	WEAN	8.48	±9.6
10555	AAE	IEEE 802.11ac WiFi (160 MHz, MCS1, 99pc duty cycle)	WLAN	8.47	±9.6
10556	AAE	IEEE 802.11ac WiFi (160 MHz, MCS2, 99pc duty cycle)	WLAN	8.50	±9.6
10557	AAE	IEEE 802.11ac WiFi (160 MHz, MCS3, 99pc duty cycle)	WLAN	8.52	±9.6
10558	AAE	IEEE 802.11ac WIFI (160 MHz, MCS4, 99pc duty cycle)	WLAN .	8.61	±9.6
10560	AAE	IEEE 802.11ac WIFI (160 MHz, MCS6, 99pc duty cycle)	WLAN	8.73	±9.6
10561	AAE	IEEE 802.11ac WIFI (160 MHz, MCS7, 99pc duty cycle)	WLAN	8.56	±9.6
10562	AAE	IEEE 802.11ac WIFI (160 MHz, MCS8, 99pc duty cycle)	WLAN	8.69	±9.6
10563	AAE	IEEE 802.11ac WiFi (160 MHz, MCS9, 99pc duty cycle)	WLAN	8.77	±9.6
10584	AAA	IEEE 802.11g WIFI 2.4 GHz (DSSS-OFOM, 9 Mbps, 99pc duty cycle)	WLAN	8.25	±9.6
10565	AAA	IEEE 802.11g WIFI 2.4 GHz (DSSS-OFDM, 12 Mbps, 99pc duty cycle)	WLAN	8.45	±9.6
10566	AAA	IEEE 802.11g WIFi 2.4 GHz (DSSS-OFOM, 18 Mbps, 99pc duty cycle)	WLAN	8.13	±9.6
10567	AAA	IEEE 802.11g WIFI 2.4 GHz (DSSS-OFDM, 24 Mbps, 99pc duty cycle)	WLAN	8.00	±9.6
10568	AAA	IEEE 802.11g WIFI 2.4 GHz (DSSS-OFDM, 36 Mbps, 99pc duty cycle)	WLAN	8.37	±9.6
10569	AAA	IEEE 802.11g WIFI 2.4 GHz (DSSS-OFDM, 48 Mbps, 99pc duty cycle)	WLAN	8.10	±9.6
10570	AAA	IEEE 802.11g WIFI 2.4 GHz (DSSS-OFDM, 54 Mbps, 99pc duty cycle)	WLAN .	8.30	±9,6
10571	AAA	IEEE 802.11b WIFI 2.4 GHz (DSSS, 1 Mbps, 90pc duty cycle)	WLAN	1.99	19.6
10572	AAA	IEEE 802.116 WIFi 2.4 GHz (DSSS, 2 Mbps, 90pc duty cycle)	WLAN	1.99	±9.6
10573	AAA	IEEE 802.11b WFi 2.4 GHz (DSSS, 5.5 Mbps, 90pc duty cycle)	WLAN	1.98	±9.6
10574	AAA	IEEE 802.11b WIFI 2.4 GHz (DSSS, 11 Mbps, 90pc duty cycle)	WLAN	1.98	±9.6
10575	AAA	IEEE 802.11g WIFi 2.4 GHz (DSSS-OFDM, 6 Mbps, 90pc duty cycle)	WLAN	8.59	19.6
10576	AAA	IEEE 802.11g WIFI 2.4 GHz (DSSS-OFDM, 9 Mbps, 90pc duty cycle)	WLAN	8.60	±9.6
10577	AAA	IEEE 802.11g WIFi 2.4 GHz (DSSS-OFDM, 12 Mbps, 90pc duty cycle)	WLAN	8.70	±9.6
10578	AAA	IEEE 802.11g WIFI 2.4 GHz (DSSS-OFDM, 18 Mbps, 90pc duty cycle)	WLAN	8.49	±9.6
10579	AAA	IEEE 802 11g WIFI 2.4 GHz (DSSS-OFOM, 24 Mbps, 90pc duty cycle)	WLAN	8.36	±9.6
10580	AAA	IEEE 802 11g WIFI 2.4 GHz (DSSS-OFDM, 36 Mbps, 90pc duty cycle)	WLAN	8,76	±9.6
10581	AAA	IEEE 802.11g WIFI 2.4 GHz (DSSS-OFDM, 48 Mbps, 90pc duty cycle)	WLAN	8.35	±9.6
10582	AAA	IEEE 802.11g WFI 2.4 GHz (DSSS-OFDM, 54 Mbps, 90pc duty cycle)	WLAN	8.67	±9.6
10583	AAD	IEEE 802.11a/h WFI 5 GHz (OFOM, 6 Mbps, 90pc duty cycle)	WLAN	8.59	±9.6
10.585	AAD	IEEE 802.11a/h WFI 5 GHz (OFCM, 9 Mbps, 90pc duty cycle)	WLAN	8.60	±9.6
10.586	AAD	IEEE 802.11a/h WFI 5 GHz (OFDM, 12 Mbps, 90pc duty cycle)	WLAN	8.70	±9.6
10.587	AAD	IEEE 802.11a/h WFI 5 GHz (OFDM, 18 Mbps, 90pc duty cycle) IEEE 802.11a/h WIFI 5 GHz (OFDM, 24 Mbps, 90pc duty cycle)	WLAN	8,49	±9.6
10588	AAD	IEEE 802.11a/h WIFI 5 GHz (OFDM, 24 Mbps, 90pc duty cycle)	WLAN	8.35	±9.6
10589	AAD	IEEE 802.11wh WFI 5 GHz (OFDM, 36 Mbps, 90pc duty cycle)	WLAN	8.76	±9.6
10590	AAD	IEEE 802.11a/ti WIFI 5 GHz (OFDM, 54 Mbps, 90pc duty cycle)	WLAN	8.35	±9.0
10581	AAO	IEEE 802.11n (HT Mixed, 20 MHz, MCS0, 90pc duty cycle)	WLAN	8.67	±9.6
10092	AAD	IEEE 802.11n (HT Mixed, 20 MHz, MCS1, 90pc duty cycle)	WLAN	8.63	±9.6
10593	AAD	IEEE 802.11n (HT Mixed, 20 MHz, MCS1, 80pc duty cycle)	WLAN	8.79	±9.6
10594	AAD	IEEE 802 11n (HT Mixed, 20 MHz, MCS3, 90pc duty cycle)	WLAN	8.64	±9.6
0595	AAD	IEEE 802 11n (HT Mixed, 20 MHz, MCS4, 90pc duty cycle)	WLAN	8.74	3.6±
0596	AAD	IEEE 802.11n (HT Mixed, 20 MHz, MCS8, 90pc duty cycle)	WLAN	8.74	19.6
0597	AAD	IEEE 802.11n (HT Mixed, 20 MHz, MCS6, 90pc duty cycle)	WLAN	8.71	19.6
0598	AAD	IEEE 802.11n (HT Mixed, 20 MHz, MCS7, 90pc duty cycle)	WLAN	8.50	±9.6
0599	AAD	IEEE 802.11n (HT Mixed, 40 MHz, MCS0, 90pc duty cycle)	WLAN	8.50	±9.6
0.600	AAD	IEEE 802.11n (HT Mixed, 40 MHz, MCS1, 90pc duty cycle)	WLAN		19.6
0601	AAD	IEEE 802.11n (HT Mixed, 40 MHz, MCS1, sige duty cycle)		8.88	19.6
0.002	AAD	IEEE 802.11n (HT Mixed, 40 MHz, MCS3, 90pc duty cycle)	WLAN	8.82	19.8
0.603	AAD	IEEE 802.11n (HT Mxed, 40 MHz, MCS4, 90pc duty cycle)	WLAN	8.94	±9.6
0604	AAD	IEEE 802.11n (HT Mixed, 40 MHz, MCS5, 90pc duty cycle)	WLAN	9.03	19.6
0.005	AAD	IEEE 802.11n (H1 Mixed, 40 MHz, MCSS, 90pc duty cycle)	WLAN	8.76	±9.6
0.606	AAD	IEEE 802.11n (HT Mixed, 40 MHz, MCS0, 60pc duty cycle)	WLAN	8.97	±8.8
0807	AAD	IEEE 802.11ac WIFI (20 MHz, MCS0, 90pc duty cycle)	WLAN	8.82	±9:6
0608	AAD		WLAN	8.64	±9.6
0000	nne/	IEEE 802.11ac WIFI (20 MHz, MCS1, 90pc duty cycle)	WLAN	8.77	±9.6

Certificate No: EUmm-9528\_May24

Page 12 of 18



### May 17, 2024

UID	Rev	Communication System Name	Group	PAR (dB)	Unc <sup>E</sup> k =
10:609	AAD	IEEE 802.11ac WFI (20 MHz, MCS2, 90pc duty cycle)	WLAN	8.57	±9.6
10610	AAD	IEEE 802,11ac WIFI (20 MHz, MCS3, 90pc duty cycle)	WLAN	8.78	±9.6
10611	AAD	IEEE 802.11ac WIFI (20 MHz, MCS4, 90pc duty cycle)	WLAN	8.70	±9.6
10612	AAD	IEEE 802.11ac WIFI (20 MHz, MCS5, 90pc duty cycle)	WLAN	8.77	:9.6
10613	AAD	IEEE 802.11ac WIFI (20 MHz, MCS6, 90pc duty cycle)	WLAN	8.94	±9.6
0614	AAD	IEEE 802 11ac WFI (20 MHz, MCS7, 90pc duty cycle)	WLAN	8.59	±9.6
10815	AAD	IEEE 802 11ac WFI (20 MHz, MCS8, 90pc duty cycle)	WLAN	8.82	±9.6
10616	AAD	IEEE 802.11ac WIFI (40 MHz, MCS0, 90pc duty cycle)	WLAN	8.82	±9.6
10617	AAD	IEEE 802, 11ac WFI (40 MHz, MCS0, 90pc duty cycle)	WLAN	8.81	:9.6
10618	AAD	IEEE 802.11ac WIFI (40 MHz, MC31, 50pc duty cycle)	WLAN	8.58	the second s
10619	AAD	IEEE 802.11ac WIFI (40 MHz, MC32, 90pc duty cycle)	WLAN		±9.6
	and the state in the		00.00000	8.86	±9.6
10620	AAD	IEEE 802.11ac WIFI (40 MHz, MCS4, 90pc duty cycle)	WLAN	8.87	±9.6
10:621	AAD	IEEE 802.11ac WIFi (40 MHz, MCS5, 90pc duty cycle)	WLAN	8.77	±9.6
0.622	AAD	IEEE 802.11ac WIFI (40 MHz, MCS6, 90pc duty cycle)	WLAN	8,68	#9.6
10.623	AAD	IEEE 802.11ac WIFI (40 MHz, MCS7, 90pc duty cycle)	WLAN	8.82	±9.6
10624	DAA	IEEE 802 11ac WIFI (40 MHz, MCSB, 90pc duty cycle)	WLAN	8.96	<b>世9.6</b>
0.625	AAD	IEEE 802.11ac WIFi (40 MHz, MCS8, 90pc duty cycle)	WLAN	8.96	主9.6
0.628	AAD	IEEE 832.11ac WIFI (80 MHz, MCS0, 90pc duty cycle)	WLAN	8.83	±9.6
10627	AAD	IEEE 802.11ac WIFI (80 MHz, MCS1, 90pc duty cycle)	WLAN	8.88	±9.6
10628	AAD	IEEE 802.11ac WIFI (80 MHz, MCS2, 90pc duty cycle)	WLAN	8.71	±9.6
0.629	AAD	IEEE 802.11ac WIFI (80 MHz, MCS3, 90pc duty cycle)	WLAN	8.85	±9.6
0.630	AAD	IEEE 802 11ac WIFI (80 MHz, MCS4, 90pc duty cycle)	WLAN	8.72	主9.6
0.631	AAD	IEEE 802 11ac WIF (80 MHz, MCS5, 90pc duty cycle)	WLAN	8.81	±9.5
0632	AAD	IEEE 802.11ac WIFI (80 MHz, MCS6, 90pc duty cycle)	WLAN	8.74	±9.6
0.633	AAD	EEE 802.11ac WIFI (80 MHz, MCS7, 90pc duty cycle)	WLAN	8.83	±9.6
0.634	AAD	IEEE 802.11ac WIFI (80 MHz, MCS8, 90pc duty cycle)	WLAN	8.80	±9.6
0.635	AAD	IEEE 802.11ac WIFI (80 MHz, MCS9, 90pc duty cycle)	WLAN	8.81	±9.6
0.635	AAE	IEEE 802.11ac WIFi (160 MHz, MCS0, 90pc duty cycle)	WLAN	8.83	19.6
0.637	AAE	IEEE 802.11ac WFI (160 MHz, MCS1, 90cc duty cycle)	WLAN	8.79	±9.6
0.638	AAE	IEEE 802.11ac WIFI (160 MHz, MCS2, 90pc duty cycle)	WLAN	8.86	
0639	AAE	IEEE 802.11ac WFI (160 MHz, MCS3, 90pc duty cycle)			±9.6
0640	AAE		WLAN	8.85	±9.6
		IEEE 802.11ac WF (160 MHz, MCS4, 90pc duty cycle)	WLAN	8.98	±9.6
0.641	AAE	IEEE 802.11ac WFI (160 MHz, MCS5, 90pc duty cycle)	WLAN	9.06	±9.6
0642	AAE	IEEE 802 11ac WIFi (160 MHz, MCS6, 90pc duty cycle)	WLAN	9.06	±9.6
0643	AAE	IEEE 802.11ac WIFI (160 MHz, MCS7, 90pc duty cycle)	WLAN	8.89	±9.6
0644	AAE	EEE 802.11ac WFI (160 MHz, MCS8, 90pc duty cycle)	WLAN	9.05	±9.6
10645	AAE	IEEE 802.11ac WiFi (160 MHz, MCS9, 90pc duty cycle)	WLAN	9.11	±9.6
0646	AAH	LTE-TDD (SC-FDMA, 1 R8, 5 MHz, QPSK, UL Subframe=2,7)	LTE-TDD	11.96	±9.6
0647	AAG	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK, UL Subframe=2,7)	LTE-TOD	11.96	19.6
0648	AAA	CEMA2000 (1x Advanced)	CDMA2000	3.45	±9.6
0.652	AAF	LTE-TDD (OFDMA; 5 MHz, E-TM 3.1, Clipping 44%)	LTE-TDD	6.91	19.6
0653	AAF	LTE-TDO (OFDMA, 10 MHz, E-TM 3.1, Clipping 44%)	LTE-TDD	7.42	19.6
0.654	AAE	LTE-TDD (OFDMA, 15 MHz, E-TM 3.1, Clipping 44%)	LTE-TDO	6.96	±9.6
0.655	AAF	LTE-TDD (OFDMA, 20 MHz, E-TM 3.1, Clipping 44%)	LTE-TDO	7.21	±9.6
0658	AAB	Pulse Waveform (200Hz, 10%)	Test	10.00	±9.6
0.659	AAB	Pulae Waveform (200Hz, 20%)	Test	6.99	±9.6
0660	AAB	Pulse Waveform (200Hz, 40%)	Test	3.98	±9.6
0661	AAB	Pulse Waveform (200Hz, 60%)	Test	2.22	±9.6
0662	AAB	Pulse Waveform (200Hz, 80%)	Test	0.97	±9.6
0670	AAA	Bluetooth Low Energy	Bluetooth	2.19	and the second se
0671	AAC	IEEE 802.11ax (20 MHz, MCS0, 90pc duty cycle)	WLAN		±9.6
0672	AAC	IEEE 802.11ax (20 MHz, MCS1, 90pc duty cycla)		9.09	±9.8
0673	AAC	IEEE 802 11ax (20 MHz, MCS1, 90pc duty cycle)	WLAN	8.57	±9.6
0674	AAC	IEEE 802.11ax (20 MHz, MCS3, 90pc duty cycle)		8.78	±9.6
0675	AAC		WLAN	8.74	±9.6
0676	AAC	IEEE 802.11ax (20 MHz, MCS4, 90pc duty cycle)	WLAN	8.90	±9.6
		IEEE 802.11ax (20 MHz, MCS5, 90pc duty cycle)	WLAN	8.77	±9.6
0677	AAC	and the second second second second second	WLAN	8.73	±9.6
0.678	AAC		WLAN	8.78	±9.6
0.679	AAC	EEE 802.11ax (20 MHz, MCS8, 90pc duty cycle)	WLAN.	8.89	±8.6
0.680	AAC	IEEE 802.11ax (20 MHz, MCS9, 90pc duty cycle)	WLAN	8.80	±9.6
0.681	AAG	IEEE 802.11ax (20 MHz, MCS10, 90pc duty cycle)	WLAN	8.62	±9.6
0.682	AAC	IEEE 802.11ax (20 MHz, MCS11, 90pc duty cycle)	WLAN	8.83	±9.6
0.683	AAG	IEEE 802.11ax (20 MHz, MCS0, 99pc duty cycle)	WLAN	8.42	±9.6
0684	AAC	IEEE 802.11ax (20 MHz, MCS1, 99pc duty cycle)	WLAN	8.26	±9.6
0685	AAC	IEEE 802.11ax (20 MHz, MCS2, 99pc duty cycle)	WLAN	8.33	±9.6
0686	AAC	IEEE 802.11ax (20 MHz, MCS3, 99pc duty cycle)	WLAN	8.28	19.6

Certificate No: EUmm-9528\_May24

Page 13 of 18



## May 17, 2024

UID	Rev.	Communication System Name	Group	PAR (dB)	Unc <sup>E</sup> N =
10687	AAC	IEEE 802.11ax (20 MHz, MCS4, 99pc duty cycle)	WLAN	B.45	±9.6
10688	AAC	IEEE 802.11ax (20 MHz, MCS5, 99pc duty cycle)	WLAN	8.29	19.6
10689	AAC	IEEE 802.11ax (20 MHz, MCS6, 99pc duty cycle)	WLAN	8.55	19.6
10690	AAC	IEEE 802.11ax (20 MHz, MCS7, 99pc duty cycle)	WLAN	8.29	19.6
0691	AAC	IEEE 802.11ax (20 MHz, MCS8, 99pc duty cycle)	WLAN	8.25	±9.6
0692	AAC	IEEE 802.11ax (20 MHz, MCS9, 99pc duty cycle)	WLAN	8.29	±9.6
design and shared and	AAC	IEEE 802.11ax (20 MHz, MCS10, 99pc duty cycle)	WLAN	8.25	±9.6
0693	and the second second		WLAN	8.57	±9.6
0694	AAC	IEEE 802.11ax (20 MHz, MCS11, 99pc duty cycle)	WLAN	8.78	19.6
0.695	AAC	IEEE 802.11ax (40 MHz, MCS0, 80pc duty cycle)			and the second se
0.696	AAC	IEEE 802.11ax (40 MHz, MCS1, 90pc duty cycle)	WLAN	8.91	±9.6
0.697	AAC	IEEE 802.11ax (40 MHz, MCS2, 90pc duty cycle)	WLAN	8.61	±9.6
0.698	AAC	IEEE 802.11ax (40 MHz, MCS3, 90pc duty cycle)	WLAN	8.89	±9.6
0.699	AAC	IEEE 802.11ax (40 MHz, MCS4, 90pc duty cycle)	WLAN	8.82	±9.6
0700	AAC	IEEE 802.11ax (40 MHz, MCS5, 90pc duty cycle)	WLAN	8.73	±9.6
0701	AAC	IEEE 802.11ax (40 MHz, MCS6, 90pc duty cycle)	WLAN	8.86	±9.6
0702	AAC	IEEE 802.11ax (40 MHz, MCS7, 90pc duty cycle)	WLAN	8.70	±9.6
0703	AAC	IEEE 802.11ax (40 MHz, MCS8. 90pc duty cycle)	WEAN	8.82	±9.6
0704	AAC	IEEE 802.11ax (40 MHz, MCS9, 90pc duty cycle)	WLAN	8.56	±9.6
0705	AAC	IEEE 802.11ax (40 MHz, MCS10, 90pc duty cycle)	WLAN	8.69	±9.6
0706	AAC	IEEE 802.11ax (40 MHz, MCS11, 90pc duty cycle)	WLAN	8.66	±9.6
0707	AAC	IEEE 802.11ax (40 MHz, MCS0, 99pc duty cycle)	WLAN	8.32	±9.6
0708	AAC	IEEE 802.11ax (40 MHz, MCS1, 99pc duty cycle)	WLAN	8.55	±9.6
0709	AAC	IEEE 802 11ax (40 MHz, MCS2, 99pc duty cycle)	WLAN	8.33	±9.6
10710	AAC	IEEE 802 11ac (40 MHz, MCS3, 99pc duty cycle)	WLAN	8.29	±9.6
			WLAN	8.39	±0.0 ±9.6
10711	AAG	IEEE 802.11ax (46 MHz, MCS4, 99pc duty cycle)	and the shade of the second seco	10110-00	
10712	AAC	IEEE 802.11ax (40 MHz, MCS5, 99pc duty cycle)	WLAN	8.67	±9.6
10713	AAC	IEEE 802.11ax (40 MHz, MCS8, 99pc duty cycle)	WLAN	8.33	:9.6
0714	AAC	IEEE 802.11ax (40 MHz, MCS7, 99pc duty cycle)	WLAN	8.26	±9,6
10715	AAC	IEEE 802.11 ax (40 MHz, MCS8, 99pc duty cycle)	WLAN	8.45	±9.6
10716	AAC	IEEE 802.11ax (40 MHz, MCS9, 99pc duty cycle)	WLAN.	8.30	±9.6
10717	AAC	IEEE B02.11ax (40 MHz, MCS10, 99pc duty cycle)	WLAN	8.48	±9.6
1071B	AAC	IEEE 802.11ax (40 MHz, MCS11, 99pc duty cycle)	WLAN	8.24	±9.6
10719	AAC	IEEE 802.11ax (80 MHz, MCS0, 90pc duty cycle)	WLAN	8.81	±9.6
10720	AAC	IEEE 802.11ax (80 MHz, MCS1, 90pc duty cycle)	WLAN	8.87	±9.6
10721	AAC	IEEE 802.11ax (80 MHz, MCS2, 90pc duty cycle)	WLAN	8.76	±9.6
10722	AAC	IEEE 802.11ax (80 MHz, MCS3, 90pc duty cycle)	WLAN	8.55	±9.6
10723	AAC	IEEE 802.11ax (80 MHz, MCS4, 90pc duty cycle)	WLAN	8.70	±9.6
10724	AAC	IEEE 802.11ax (80 MHz, MCS5, 90pc duty cycle)	WLAN	8.90	+9.6
10725	AAC	IEEE 802.11ax (80 MHz, MCS8, 90pc duty cycle)	WLAN	8.74	±9.6
10726	and the second second	IEEE 802.11ax (80 MHz, MCS7, 90pc duty cycle)	WLAN	8.72	±9.6
10727	AAC	IEEE 802.11ax (80 MHz, MCS8, 90pc duty cycle)	WLAN	8.66	19.6
10728	AAC	IEEE 802.11ax (80 MHz, MCS9, 90pc duty cycle)	WLAN	8.65	+9.6
10729	AAC	IEEE 802.11ax (90 MHz, MCS10, 90pc duty cycle)	WLAN	8.64	19.6
10736	AAC	IEEE 802.11ax (80 MHz, MCS11, 90pc duty cycle)	WLAN	8.67	±9.6
10731	AAC	prompting a service service and the experience service provide a part land with the Depart		The second se	10000
and the second strength of the second strengt	- Andrewski and a state of the local diversity of the local diversit	IEEE 802.11ax (80 MHz, MCSO, 99pc duty cycle)	WLAN	8.42	±9.6
10732	AAC	IEEE 802.11ax (80 MHz, MCS1, 99pc duty cycle)	WLAN	8.46	±9.6
10733	AAG	IEEE 802.11ax (80 MHz, MCS2, 99pc duty cycle)	WLAN	8.40	±9.6
10734	AAC	IEEE 802.11ax (80 MHz, MCS3, 99pc duty cycle)	WLAN.	8.25	±9.6
10735	AAC	tEEE 802.11ax (80 MHz, MCS4, 99pc duty cycle)	WLAN	8.33	±9.6
10736	AAC	IEEE 802.11ax (80 MHz, MCS5, 99pc duty cycle)	WLAN	8.27	19.6
10737	AAC	IEEE 802.11ax (80 MHz, MCS6, 99pc duty cycle)	WLAN	8.36	19.6
10738	AAC	IEEE 802.11ax (80 MHz, MCS7, 99pc duty cycle)	WLAN	8.42	±9.6
10739	AAC	IEEE 802.11ax (80 MHz, MCS8, 99pc duty cycle)	WLAN	8.29	±9.6
10740	AAC	IEEE 802.11ax (80 MHz, MCS9, 99pc duty cycle)	WLAN .	8.48	±9.6
10741	AAC	IEEE 802.11ax (80 MHz; MCS10, 99pc duty cycle)	WLAN	8.40	±9.6
10742	AAC	IEEE 802.11ax (80 MHz, MCS11, 99pc duty cycle)	WLAN	8,43	±9.6
0743	AAC	IEEE 802.11ax (160 MHz, MCS0, 90pc duty cycle)	WLAN	8.94	+9.6
0744	and the second second	IEEE 802.11ax (160 MHz, MCS1, 90pc duty cycle)	WLAN	9.16	±9.6
10745	and the local data in the	IEEE 802.11ax (160 MHz, MCS2, 90pc duty cycle)	WLAN	8:93	±9.6
10746	and the second second	IEEE 802.11ax (160 MHz, MCS3, 90pc duty cycle)	WLAN	9.11	19.6
10747	and installed	IEEE 802.11ax (160 MHz, MCS4, 90pc duty cycle)	WLAN	9.04	19.6
10748	AAC	IEEE 802.11ax (180 MHz, MCSS, 90pc duty cycle)	WLAN	8.93	
10749	AAC	IEEE 802.11ax (160 MHz, MCS6, 90pc duty cycle)	WLAN		19.6
	-			8.90	±9.6
10750	- Andrewson and the second	IEEE 802.11ax (160 MHz, MCS7, 90pc duty cycle)	WLAN	8.79	±9.6
10751	and the local division of the local division	IEEE 802.11ax (160 MHz, MCS8, 90pc duty cycle)	WLAN	8,82	±9.6
10.752	AAC	IEEE 802.11ax (160 MHz, MCS9, 90pc duty cycle)	WLAN	8.81	±9.6

Certificate No: EUmm-9528\_May24

Page 14 of 18





### May 17, 2024

ain	Rev	Communication System Name	Group	PAR (dB)	Unc <sup>R</sup> R =
10753	AAC	IEEE 802.11ax (160 MHz, MCS10, 90pc duty cycle)	WLAN	9.00	±8.6
10754	AAC	IEEE 802.11ax (160 MHz, MCS11, 90pc duty cycle)	WLAN	8.94	±9.6
0756	AAC	IEEE 802.11ax (160 MHz, MCS0, 99pc duty cycle)	WLAN	8.64	±9.6
0756	AAC	IEEE 802.11ax (160 MHz, MCS1, 99pc duty cycle)	WLAN	8.77	±9.6
0757	AAC	IEEE 802.11ax (160 MHz, MCS2, 99pc duty cycle)	WLAN	8.77	19.6
0758	AAC	IEEE 802.11ax (160 MHz, MCS3, 99pc duty cycle)	WLAN	8.69	±9.6
0750	AAC	IEEE 802.11ax (160 MHz, MCS4, 99pc duty cycle)	WLAN	8.58	19.6
0760	AAC	IEEE 802.11ax (160 MHz, MCS5, 99pc duty cycle)	WLAN	8.49	19.6
0761	AAC	IEEE 802.11ax (160 MHz, MCS6, 99pc duty cycle)	WLAN	8.58	19.6
0762	AAC	IEEE 802.11ax (160 MHz, MCS7, 99pc duty cycle)	WLAN	8.49	±9.6
0763	AAC	IEEE 802.11ax (160 MHz, MCS8, 99pc duty cycle)	WLAN	8.53	±9.6
0764	AAC	EEE 802,11ax (160 MHz, MCS9, 99pc duty cycle)	WLAN	8.54	±9.8
0785	AAC	EEE 802 11ax (160 MHz, MCS10, 99pc duty cycle)	WLAN	6.54	19.6
0766	AAC	IEEE 802.11ax (160 MHz, MCS11, 99pc duty cycle)	WLAN	8.51	19.6
0767	AAG	5G NR (CP-OFDM, 1 RB, 5 MHz, QPSK, 15 kHz)	5G NR FR1 TOD	7.99	19.6
0768	AAE	5G NR (CP-OFDM, 1 RB, 10 MHz, QPSK, 15 kHz)	5G NR FRI TDO	8.01	19.6
0769	AAD	5G NR (CP-OFDM, 1 RB, 15MHz, QPSK, 15kHz)	5G NR FR1 TDD	8.01	19.6
0770	AAE	5G NR (CP-OFDM, 1 RB, 20 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.02	19.6
0771	AAD	5G NR (CP-OFDM, 1 RB, 25 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	and the state of t	
0772	AAE	5G NR (CP-OFDM, 1 RB, 30 MHz, GPSK, 15 MHz)	5G NR FR1 T00	8.02	19.6
0773	AAF	5G NR (CP-OFDM, 1 RB, 40 MHz, CPSK, 15 MHz)	50 NR FR1 TDD	8.23	19.6
0774	AAE	5G NR (CP-OFDM, 1 RB, 50 MHz, GPSK, 15 MHz)	5G NR FR1 TDD	8.03	19.6
0775	AAF	5G NR (CP-OFDM, FHB, 50 MHz, GPSK, 15 kHz)			±9.6
0776	AAE	50 NR (CP-OFDM, 50% RB, 10 MHz, QPSK, 15 KHz)	50 NR FR1 TD0	8.31	±9.6
0777	AAC	50 NR (CP-OFOM, 50% RB, 15 MHz, GPSK, 15 KHz)	5G NR FR1 TOO	8.30	±9.6
0778	AAE	5G NR (CP-OFDM, 50% R8, 20 MHz, CPSK, 15 Hz)	5G NR FR1 TDO	8.30	±9.6
10779	AAC	5G NR (CP-OFDM, 50% RB, 25 MHz, QPSK, 15 kHz)	5G NR FR1 TDO	8.34	19.6
0780	AAE	5G NR (CP-OFDM, 50% R8, 30 MHz, QPSK, 15 MHz)	5G NR FR1 TDD	8.42	19.6
10781	AAF	SG NR (CP-OFDM, 50% RB, 40 MHz, QPSK, 15kHz)	5G NR FR1 TDD	8.38	±9.6
0782	AAE		5G NR FRI TDD	6.38	±9.6
0783	AAG	5G NR (CP-OFDM, 50% RB, 50 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.43	±9.6
10784	AAE	5G NR (CP-OFDM, 100% RB, 5MHz, QPSK, 15kHz)	5G NR FR1 TDD	8.31	±9.6
10785	AAD	5G NR (CP-OFDM, 100% RB, 10 MHz, QPSK, 15xHz)	5G NR FR1 TDD	8.29	±9.8
	AAE	50 NR (CP-OFDM, 100% RB, 15 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	6.40	±9.6
0786	AAD	5G NR (CP-OFDM, 100% RB, 20 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.35	±9.6
10787	AAE	50 NR (CP-OFDM, 100% RB, 25 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.44	±9.6
10788	10000	50 NR (CP-OFDM, 100% RB, 30 MHz, QPSK, 15kHz)	5G NR FR1 TDD	8.39	±9.6
10789	AAF	5G NR (CP-OFDM, 100% RB, 40 MHz, QPSK, 15kHz)	5G NR FR1 TDD	8.37	±9.6
0.790	AAE	5G NR (CP-OFDM, 100% RB, 50 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.39	±9.6
10791	AAG	5G NR (CP-OFDM, 1 RB, 5MHz, GPSK, 30 kHz)	5G NR FR1 TDD	7.83	±9.6
0792	AAE	5G NR (CP-OFDM, 1 RB, 10 MHz, QPSK, 36 kHz)	5G NR FR1 TDD	7.92	±9.6
10793	AAD	5G NR (CP-OFDM, 1 RB, 15 MHz, QPSK, 30 kHz)	SG NR FR1 TDD	7.95	29.5
0794	AAE	5G NR (CP-OFDM, 1 RB, 20 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	7.82	法皇后
10795	AAD	5G NR (CP-OFDM, 1 RB, 25 MHz, QPSK, 30 kHz)	5G NR FR1 TOD	7.84	19.6
10796	AAE	5G NR (CP-OFDM, 1 RB, 30 MHz, QPSK, 30 kHz)	5G NA FR1 TOD	7.82	±9.6
10797	AAF	SG NR (CP-OFDM, 1 RB, 40 MHz, QPBK, 30 kHz)	5G NA FR1 TDD	8.01	±9.6
0798	AAE	5G NR (CP-OFDM, 1 RB, 50 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	7.89	±9.6
0799	AAF	5G NB (CP-OFDM, 1 RB, 60 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	7.93	±9.6
0801	AAF	5G NR (CP-OFDM, 1 R8, 80 MHz, QPSK, 30 kHz)	5G NR FR1 TDO	7,89	±9.6
0802	AAE	5G NR (CP-OFOM, 1 R8, 90 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	7.87	±9.6
0803	AAF	5G NR (CP-OFDM, 1 RB, 100 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	7.93	±19.6
0.805	AAE	5G NR (CP-OFDM, 50% R8, 10 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	8.34	±9.6
0.906	AAD	5G NR (CP-OFDM, 50% RB, 15 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	8,37	±9.6
0.809	AAE	6G NR (CP-OFDM, 50% RB, 30 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	8.34	±9.6
0810	AAF	5G NR (CP-OFDM, 50% RB, 40 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	8.34	±9,6
0812	AAF	5G NR (CP-OFDM, 50% RB, 60 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	8.35	±9.6
0817	AAG	5G NR (CP-OFDM, 100% RB, 5MHz, QPSK, 30kHz)	5G NR FR1 TDD	8.35	29.6
0818	AAE	5G NR (CP-OFDM, 100% RB, 10 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	8.34	±9.6
0819	AAD	5G NR (CP-OFDM, 100% RB, 15 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	8.33	19.6
0850	AAE	5G NR (CP-OFDM, 100% RB, 20 MHz, GPSK, 30 kHz)	5G NR FR1 TOD	8.30	19.6
0821	AAD	5G NR (CP-OFDM, 100% RB, 25 MHz, QPSK, 30 kHz)	56 NR FR1 TDD	8.41	19.8
0822	AAE	5G NR (CP-OFDM, 100% RB, 30 MHz, QPSK, 30 kHz)	5G NR FR1 TOD	8.41	±9.6
0823	AAF	5G NR (CP-OFOM, 100% RB, 40 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	8.36	±9.6
0824	AAE	5G NR (CP-OFDM, 100% RB, 50 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	8.39	19.6
0825	AAF	5G NR (CP-OFDM, 100% RB, 60 MHz, GPSK, 30 kHz)	50 NR FRI TDD	8.41	19.6
0827	AAF	5G NR (CP-OFDM, 100% R8, 80 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	8.42	19.6
		5G NR (CP-OFOM, 100% R8, 90 MHz, OPSK, 30 kHz)	and the second s		

Certificate No: EUmm-9528\_May24

Page 15 of 18





## May 17, 2024

UID	Rev	Communication System Name	Group	PAR (dB)	Unc <sup>E</sup> k =
6580	AAF	50 NR (CP-OFDM, 100% R8, 100 MHz, GP5K, 30 kHz)	5G NR FR1 TDD	8.40	±9.6
0830	AAE	5G NR (CP-OFDM, 1 RB, 10 MHz, QPSK, 60 kHz)	5G NR FR1 TOD	7.63	主9.6
0831	AAD	5G NR (CP-OFDM, 1 RB, 15 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	7.73	±9.5
0832	AAE	5G NR (CP-OFDM, 1 RB, 20 MHz, GPSK, 60 kHz)	5G NR FR1 TDD	7.74	±9.6
0833	AAD	5G NR (CP-OFDM, 1 RB, 25 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	7.70	±9.6
0.834	AAE	5G NR (CP-OFDM, 1 RB, 30 MHz, OPSK, 60 kHz)	5G NR FR1 TDD	7.75	±9.6
0.835	AAF	5G NR (CP-OFDM, 1 RB, 40 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	7.70	±9.5
0836	AAE	5G NR (CP-OFDM, 1 RB, 50 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	7.66	±9.5
10837	AAF.	5G NR (CP-OFDM, 1 RB, 60 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	7.68	±9.6
10839	AAF	5G NR (CP-OFOM, 1 RB, 80 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	7.70	±9.5
10.840	AAE	5G NR (CP-OFDM, 1 R8, 90 MHz, QPSK, 60 kHz)	5G NR FR1 TOD	7.67	±9.6
10841	AAF	5G NR (CP-OFDM, 1 RB, 100 MHz, OPSK, 60 kHz)	5G NR FR1 TDD	7.71	±9.5
10843	AAD	5G NR (CP-OFDM, 50% R8, 15 MHz, QPSK, 80 kHz)	5G NR FR1 TOD	8.49	19.6
10844	AAE	5G NR (CP-OFOM, 50% RB, 20 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	8.34	£9.6
10845	AAE	5G NR (CP-OFDM, 50% RB, 30 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	8,41	±9.6
10854	AAE	5G NR (CP-OFOM, 100% RB, 10 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	8.34	±9.6
10855	AAD	5G NR (CP-OFDM, 100% RB, 15 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	8.36	±9.6
10858	AAE	5G NR (CP-OFDM, 100% RB, 20 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	8.37	±9.6
10857	AAD	50 NR (CP-OFDM, 100% RB, 25 MHz, OPSK, 60 kHz)	SG NR FR1 TDD	8.35	29.6
10858	AAE	5G NR (CP-OFDM, 100% RB, 30 MHz, QPSK, 60 kHz)	SG NR FR1 TDD	8.36	±9.6
10869	AAF	5G NR (CP-OFDM, 100% RB, 40 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	8.34	±8.6
10860	AAE	5G NR (CP-OFDM, 100% RB, 50 MHz, QPSK, 60 Hz)	5G NR FR1 TDD	8:41	±9.6
10861	AAF	5G NR (CP-OFDM, 100% RB, 60 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	8.40	±9.6
10863	AAF	5G NR (CP-OFDM, 100% RB, 60 MHz, GPSK, 60 kHz)	5G NR FR1 TDD	8.41	±9.6
10864	AAE	5G NR (CP-OFDM, 100% RB, 90 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	8.37	±9.6
10865	AAF	5G NR (CP-OFDM, 100% RB, 100 MHz, CPSK, 60 kHz)	5G NR FR1 TDD	8.41	±9.6
10866	AAF	5G NR (DFTs-OFDM, 1 RB, 100 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.68	±9.6
10868	AAF	5G NR (DFT-s-OFDM, 100% RB, 100 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.89	±9.6
10869	AAE	5G NR (DFT-0-OFDM, 1 RB, 100 MHz, QPSK, 120 kHz)	5G NR FR2 TDD	5.75	±9.6
10870	AAE	5G NR (DFT-s-OFDM, 100% RB, 100 MHz, QPSK, 120 kHz)	5G NR FR2 TDD	5.86	±9.6
10871	AAE	5G NR (DFT-9-OFDM, 1 RB, 100 MHz, 16QAM, 120 kHz)	5G NR FR2 TOD	5.75	±9.6
10.872	AAE	5G NR (DFT-s-OFDM, 100% RB, 100 MHz, 15QAM, 120 kHz)	SG NR FR2 TDD	6.52	19.6
10873	AAE	5G NR (DFT-a-OFDM, 1 RB, 100 MHz, 64QAM, 120 kHz)	5G NR FR2 TDD	6.61	19.6
10874	AAE	5G NR (DFT-s-OFDM, 100% RB, 100 MHz, 84QAM, 120 kHz)	5G NR FR2 TDD	6.65	±9.6
10875	AAE	5G NR (CP-OFDM, 1 RB, 100 MHz, QPSK, 120 kHz)	5G NR FR2 TDO	7.78	±9.8
10876	AAE	5G NR (CP-OFDM, 100% RB, 100 MHz, GPSK, 120 kHz)	5G NR FR2 TDD	8.39	±9.6
10877	AAE	5G NR (CP-OFDM, 1 RB, 100 MHz, 16QAM, 120 kHz)	5G NR FR2 TDD	7.95	±9.6
10878	AAE	5G NR (CP-OFDM, 100% RB, 100 MHz, 18QAM, 120 kHz)	5G NR FR2 TDD	8.41	±9.6
10879	AAE	5G NR (CP-OFDM, 1 RB, 100 MHz, 64QAM, 120 kHz)	5G NR FR2 TDD	8.12	±9.6
10880	AAE	50 NR (CP-OFDM, 100% RB, 100 MHz, 64QAM, 120 kHz)	5G NR FR2 TOD	8.38	±9.6
10881	AAE	5G NR (DFT-s-OFDM, 1 RB, 50 MHz, GPSK, 120 kHz)	5G NR FR2 TDD	5.75	19.6
10882	AAE	50 NR (DFT-s-OFDM, 100% RB, 50 MHz, QPSK, 120 kHz)	5G NR FR2 TDD	5.96	19.6
10883	AAE	50 NR (DFT-s-OFDM, 1 RB, 50 MHz, 160AM, 120 kHz)	5G NR FR2 TDD	6.57	±9.6
10884	AAE	50 NR (DFT-s-OFDM, 100% RB, 50 MHz, 160AM, 125 kHz)	5G NR FR2 TDD	6.53	±9.6
10.885	AAE	50 NR (DFT-s-OFDM, 1 RB, 50 MHz, 64QAM, 120kHz)	5G NR FR2 TDD	6.61	19.6
10886	AAE	5G NR (DFT-e-OFDM, 100% RB, 50 MHz, 64QAM, 120 kHz)	5G NR FR2 TDD	6.65	19.6
10887	AAE	50 NR (CP-OFDM, 1 RB, 50 MHz, QPSK, 120 kHz)	5G NR FR2 TDD	7.78	±9.6
10888	AAE	5G NR (CP-OFDM, 100% RB, 50 MHz, QPSK, 120 kHz)	5G NR FR2 TDD	8.35	19.8
10889	AAE	5G NR (CP-OFDM, 1 RB, 50 MHz, 16QAM, 120 kHz)	5G NR FR2 TOD	8.02	±9.6
10,890	AAE	5G NR (CP-OFDM, 100% RB, 50 MHz, 16QAM, 120 kHz)	5G NR FR2 TDD	8.40	±9.6
10891	AAE	5G NR (CP-OFDM, 1 RB, SOMHz, 64QAM, 120kHz)	5G NR FR2 TDD	8.13	±9.6
10.892	AAE	5G NR (CP-OFDM, 100% R8, 50 MHz, 64QAM, 120 kHz)	50 NR FR2 TDD	8.41	±9.6
10897	AAE	5G NR (DFT-s-OFDM, 1 RB, 5MHz, QPSK, 30kHz)	50 NR FR1 TDD	5.66	10.0
10898	AAC	5G NR (DFT-s-OFDM, 1 RB, 10 MHz, QPSK, 30 kHz)	50 NR FR1 T00	5.67	+9.6
10899	AAB	5G NR (DFT-s-OFDM, 1 RB, 15MHz, QPSK, 30 kHz)	50 NR FR1 TDD	5.67	19.6
10900	AAC	5G NR (DFT= OFDM, 1 RB, 20 MHz, OPSK, 30 kHz)	5G NR FR1 TDD	6.68	19.6
10901	AAB	5G NR (DFT-s-OFDM, 1 RB, 25 MHz, OPSK, 30 kHz)	5G NR FR1 TDD	5.68	19.6
10902	AAC	5G NR (DFT-s-OFDM, 1 RB. 30 MHz, OPSK, 30 kHz)	5G NR FR1 TOD	5.68	19.6
10903	AAD	5G NR (DFT-e-OFDM, 1 RB, 40 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.68	10.6
10904	AAC	5G NR (DFT-8-OFDM, 1 RB, 50 MHz, OPSK, 30 kHz)	5G NR FR1 TDD	5.68	19.6
10905	AAD	53 NR (DFT=OFDM, 1 RB, 60 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.68	19.6
10906	AAD	5G NR (DFT=OFDM, 1 RB, 80 MHz, QPSK, 30 kHz)	SG NR FR1 TDD	5.68	±9.6
10907	AAE	5G NR (DFT=OFDM, 116, 80 MRz, GPSK, 30 kHz) 5G NR (DFT=OFDM, 50% RB, 5MHz, GPSK, 30 kHz)	SG NR FR1 TDD	5.78	±9.6
10907	AAC	5G NR (DFT=-OFDM, 50% RB, 10 MHz; OPSK, 30 kHz)	5G NR FR1 TDD	5.93	±9.6
10909	AAB	5G NR (DFT=OFDM, 50% RB, 15MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.95	±9.6
				in the second	±9.6
10910	AAC	5G NR (DFT-9-OFDM, 50% RB, 20 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.83	

Certificate No: EUmm-9528\_May24

Page 16 of 18





# May 17, 2024

UID	Rev	Communication System Name	Group	PAR (dB)	Unc <sup>E</sup> k =
10911	AAB	5G NR (DFT-s-OFDM, 50% R8, 25 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.93	=9.6
0912	AAC	5G NR (DFTs-OFDM, 50% RB, 30 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.84	±9.6
0913	AAD	5G NR (DFT-s-OFDM, 50% RB, 40 MHz, QPSK, 30 kHz)	5G NR FR1 TOD	5.84	±9.6
0914	AAC	53 NR (DFTs-OFDM, 50% RB, 50 MHz, QPSK, 30 kHz)	5G NR FR1 TOD	5.85	+9.6
0915	AAD	5G NR (DFTs-OFDM, 50% RB, 60 MHz, QPSK, 30 kHz)	SG NR FR1 TDD	5.83	±9.6
and the second	AAD	5G NR (DFTs-OFDM, 50% RB, 60 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.87	±9.6
0916	AAD	5G NR (DFT-s-OFDM, 50% RB, 50 MHz, GPSK, 30 KHz)	5G NR FR1 TDD	5.94	±9.6
0917	- A 5 CT				
0918	AAE	5G NR (DFT#-OFDM, 100% RB, 5MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.86	±9.6
0919	AAC	5G NR (DFT-s-OFDM, 100% RB, 10 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.86	±9,6
0920	AAB	53 NR (DFTs-OFDM, 100% RB, 15 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.87	±9.6
0921	AAC	5G NR (DFT-s-OFDM, 100% RB, 20 MHz, QPSK, 30 KHz)	5G NR FR1 TDD	5.84	±9.6
0922	AAB	5G NR (DFT-s-QFDM, 100% RB, 25 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.82	±9.6
0923	AAC	5G NR (DFT=-OFDM, 100% RB, 30 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.84	±9.6
0924	AAD	5G NR (DFTs-OFDM, 100% RB, 40 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.84	±9.6
0925	AAC	5G NR (DFT-s-OFDM, 100% RB, 50 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.95	±9.8
0926	AAD	5G NR (DFT+-OFDM, 100% RB, 60 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.84	±9.6
0927	AAD	5G NR (DFT-s-OFDM, 100% RB, 80 MHz, QPSK, 30 kHz)	5G NR FR1 TOD	5.94	±9.6
0928	AAD	5G NR (DFT-s-OFDM, 1 R8, 5 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.52	±9.6
0929	AAD	5G NR (DFT+-OFDM, 1 RB, 10 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.52	±9.6
0830	AAC	5G NR (DFFe-OFDM, 1 RB, 15 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.52	±9.6
0931	AAC	5G NR (DFT-s-OFDM, 1 RB, 20 MHz, QPSK, 15 kHz)	SG NR FR1 FDD	5.51	±9.6
0932	AAC	5G NR (DFT+)-OFDM, 1 RB, 25 MHz, QPSK, 15 HHz)	5G NR FR1 FDD	5.51	19.6
0933	AAC	5G NR (DFT+-OFDM, 1 RB, 30 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.51	±9.6
0934	AAC	50 NR (DFT+-OFDM, 1 RB, 40 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.51	±9.6
a data data data data data data data da	AAD		5G NR FR1 FDD		
0995	AAD	5G NR (DFT=-OFDM, 1 RB, 50 MHz, QPSK, 15 kHz) 5G NR (DFT=-OFDM, 50% RB, 5 MHz, QPSK, 15 kHz)	the first of the local data in the local data in the local data in the	5.51	=9.6
0936			5G NR FR1 FDD	5.90	±9.6
0907	AAD	5G NR (DFT+-OFDM, 50% RB, 10 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.77	±9.6
0938	AAC	5G NR (DFT-s-OFDM, 50% RB, 15 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.90	±9.6
0939	AAC	5G NR (DFT-s-OFDM, 50% RB, 20 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.82	±9.6
0940	AAC	5G NR (DFTs-OFDM, 50% RB, 25 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5,89	±9.6
0941	AAC	5G NR (DFT-s-OFDM, 50% RB, 30 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.83	#9.6
0942	AAC	5G NR (DFT+p-OFDM, 50% RB, 40 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.85	= = 9.6
0943	AA0	5G NR (DFTs-OFDM, 50% RB, 50 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.95	#9.6
0944	AAD	5G NR (DFTs-OFDM, 100% RB, 5MHz, QPSK, 15kHz)	5G NR FR1 FDD	5.81	±9.6
0945	AAD	5G NR (DFT:s-OFDM, 100% RB, 10 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.85	±9,6
10946	AAC	5G NR (DFT/s-OFDM, 100% RB, 15MHz, QPSK, 15kHz)	5G NR FR1 FDD	5.83	±9.6
0947	AAC	5G NR (DFT+ OFDM, 100% RB, 20 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.87	±9.6
10948	AAC	5G NR (DFT-9-OFDM, 100% RB, 25 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.94	±9.6
0949	AAC	5G NR (DFT-s-OFDM, 100% RB, 30 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.87	±9.6
0960	AAC	5G NR (DFT+-OFDM, 100% RB, 40 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.94	±9.5
0951	AAD	5G NR (DFT+-OFDM, 100% RB, 50 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.92	19.6
0952	AAA	5G NR DL (CP-OFOM, TM 3.1, 5MHz, 64-QAM, 15 kHz)			
0.953	AAA	SG NR DL (CP-OFDM, TM 3.1, 10 MHz, 84-QAM, 15 kHz)	5G NR FR1 FDD	8.25	±9.6
0954	AAA		5G NR FR1 FDD	8.15	±9.6
0955	AAA	SG NR DL (CP-OFDM, TM 3.1, 15 MHz, 64-QAM, 15 MHz)	5G NR FR1 FDD	8.23	±9.6
	distant and so that	5G NR DL (CP-OFDM, TM 3.1, 20 MHz, 64-QAM, 15 kHz)	5G NR FR1 FD0	8.42	±9.6
0955	AAA	5G NR DL (CP-OFDM, TM 3.1, 5MHz, 64-QAM, 30 kHz)	5G NR FR1 FDD	8.14	±9.6
0957	AAA	5G NR DL (CP-OFDM, TM 3.1, 10 MHz, 64-QAM, 30 kHz)	50 NR FR1 FD0	8.31	19.6
0.958	AAA	5G NR DL (CP-OFDM, TM 3.1, 15 MHz, 64-DAM, 30 kHz)	50 NR FR1 FD0	8.61	19.6
0959	AAA	5G NR DL (CP-OFOM, TM 3.1, 20 MHz, 64-QAM, 30 kHz)	50 NR FR1 FD0	8.33	19.6
0.960	AAE	5G NR DL (CP-OFDM, TM 3.1, 5 MHz, 64-QAM, 15 kHz)	5G NR FR1 TDD	9.32	19.6
0951	AAC	5G NR DL (CP-OFDM, TM 3.1, 10 MHz, 64-QAM, 15 kHz)	5G NR FR1 TDD	9.36	19.6
0.065	AAB	5G NR DL (CP-OFDM, TM 3.1, 15 MHz, 64-DAM, 15 kHz)	5G NR FR1 TDD	9.40	±9.6
0.963	AAC	50 NR DL (CP-OFDM, TM 3.1, 20 MHz, 64-DAM, 15 kHz)	5G NR FR1 TDD	9.55	±9.6
0.954	AAE	5G NR DL (CP-OFDM, TM 3.1, 5 MHz, 64-QAM, 30 kHz)	5G NR FR1 TDD	9.29	±9.6
0.965	AAC	5G NR DL (CP-OFDM, TM 3.1, 10 MHz, 64-DAM, 30 kHz)	5G NR FR1 TDD	9.37	19.6
0966	AAB	5G NR DL (CP-OFDM, TM 3.1, 15 MHz, 64-DAM, 30 kHz)	5G NR FR1 TDD	9.55	19.6
0967	AAC	5G NR DL (CP-OFDM, TM 3.1, 20 MHz, 64-QAM, 30 kHz)	5G NR FR1 TDD	9.42	±9.6
0968	AAD	5G NR DL (CP-OFDM, TM 3.1, 100 MHz, 64-QAM, 30 kHz)	5G NR FR1 TDD	9.40	±9.6
0972	AAC	5G NR (CP-OFDM, 1 RB, 20MHz, QPSK, 15kHz)	5G NR FR1 TDD	11.50	±9.6
0973	AAD	50 NR (DFTs-OFDM, 1 RB, 100 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	9:06	
0974	AAD	5G NR (CP-OFDM, 100% RB, 100 MHz, 256-QAM, 30 kHz)	Number of the second		±9.6
0978	AAA	ULLA BOR	5G NR FRI TDD	10.28	±9.6
0978		ULLA BDR	ULLA	1.16	±9.6
	AAA		ULLA	8.58	±9.6
0980	AAA	ULLA HDRS	ULLA	10.32	±9.6
0981	AAA	ULLA HDRp4	ULLA	3.19	±9.6
0982	AAA	ULLA HDRp8	ULLA	3.43	19.6

Certificate No: EUmm-9528\_May24

Page 17 of 18





#### May 17, 2024

UID	Rev	Communication System Name	Group	PAR (dB)	Unc <sup>E</sup> k = 3
10983	AAC	SG NR DL (CP-OFDM, TM 3.1, 40 MHz, 64-QAM, 15 kHz)	5G NR FR1 TDD	9.31	±9.6
10984	AAB	5G NR DL (CP-OFDM, TM 3.1, 50 MHz, 64-QAM, 15 kHz)	5G NR FR1 TDD	9.42	±9.6
10985	AAC	5G NR DL (CP-OFDM, TM 3.1, 40 MHz, 64-QAM, 30kHz)	5G NR FR1 TDD	9.54	±9.6
10986	AAB	5G NR DL (CP-OFDM, TM 3.1, 50 MHz, 64-QAM, 30 kHz)	5G NR FR1 TDD	9.50	±9.6
10987	AAC	5G NR DL (CP-OFDM, TM 3.1, 60 MHz, 64-QAM, 30 kHz)	5G NR FR1 TDD	9.53	±9.6
10988	AAB	5G NR DL (CP-OFDM, TM 3.1, 70 MHz, 64-QAM, 30 kHz)	5G NR FR1 TDD	9.38	28.6
10989	AAC	5G NR DL (CP-OFDM, TM 3.1, 80 MHz, 64-QAM, 30 kHz)	5G NR FR1 TDD	9.35	±9,5
10990	AAB	5G NR DL (CP-OFDM, TM 3.1, 80 MHz, 64-QAM, 30 kHz)	5G NR FR1 TDD	9.52	±9.6
11003	AAA	5G NR DL (CP-OFDM, TM 3.1, 30 MHz, 64-QAM, 15 kHz)	5G NR FR1 TDD	10.24	±8.6
11004	AAA	5G NR DL (CP-OFDM, TM 3.1, 30 MHz, 64-QAM, 30 kHz)	5G NR FR1 TDD	10.75	±9.6
11005	AAA	5G NR DL (CP-OFDM, TM 3.1, 25 MHz, 64-QAM, 15 kHz)	5G NR FR1 FDD	8.70	±9.6
11006	AAA	5G NR DL (CP-OFDM, TM 3.1, 30 MHz, 64-QAM, 15 kHz)	5G NR FR1 FDD	8.55	±9.6
11007	AAA	5G NR DL (CP-OFDM, TM 3.1, 40 MHz, 64-QAM, 15 kHz)	5G NR FR1 FDD	8.46	:9:6
11008	AAA	5G NR DL (CP-OFDM, TM 3.1, 50 MHz, 64-QAM, 15 kHz)	5G NR FR1 FDD	8.51	太9.6
11009	AAA	5G NR DL (CP-OFDM, TM 3.1, 25 MHz, 64-QAM, 30 kHz)	5G NR FR1 FDD	8.76	±9.6
11010	AAA.	5G NR DL (CP-OFDM, TM 3.1, 30 MHz, 64-QAM, 30 kHz)	5G NR FR1 FDD	8.95	±9.6
11011	AAA	5G NR DL (CP-OFDM, TM 3.1, 40 MHz, 64-QAM, 30 kHz)	5G NR FR1 FDD	8.96	±9.6
11012	AAA	5G NR DL (CP-OFDM, TM 3.1, 50 MHz, 64-QAM, 30 kHz)	5G NR FR1 FDD	8.68	±9:6
11013	AAB	IEEE 802.11be (320 MHz, MCS1, 99pc duty cycle)	WLAN	8.47	±9.6
11014	AAB	IEEE 802 11be (320 MHz, MCS2, 99pc duty cycle)	WLAN	8.45	±9.6
11015	AAB	IEEE 802.11be (320 MHz, MCS3, 99pc duty cycle)	WLAN	B.44	±9.6
11016	AAB	IEEE 802.11be (320 MHz, MCS4, 99pc duty cycle)	WLAN	B.44	±9.6
11017	AAB	IEEE 802.11be (320 MHz, MCS5, 99pc duty cycle)	WLAN	B.41	±9.6
11018	AAB	IEEE 802.11be (320 MHz, MCS6, 99pc duty cycle)	WLAN	8.40	±9.6
11019	AAB	IEEE 802.11be (320 MHz, MCS7, 99pc duty cycle)	WLAN	8.29	±9.6
11020	AAB	IEEE 802.11be (320 MHz, MCS8, 99pc duty cycle)	WLAN	8.27	19.6
11021	AAB	IEEE 802.11be (320 MHz, MCS9, 99pc duty cycle)	WLAN	8.46	±9.6
11022	AAB	IEEE 802.11be (320 MHz, MCS10, 99pc duty cycle)	WLAN	8.06	±9.6
11023	AAB	IEEE 802.11be (320 MHz, MCS11, 99pc duty cycle)	WLAN	8.09	±9.6
11024	AAB	IEEE 802.11be (320 MHz, MCS12, 99pc duty cycle)	WLAN	8.42	±9.6
11025	AAB	IEEE 802.11be (320 MHz, MCS13, 99pc duty cycle)	WLAN	8.37	±9.6
11026	AAB	IEEE 802.11be (320 MHz, MCS0, 99pc duty cycle)	WLAN	8.39	±9.6

E Uncertainty is determined using the max. deviation from linear response applying rectangular distribution and is expressed for the square of the field value.

Certificate No: EUmm-9528\_May24

Page 18 of 18



Calibration Laboratory of Schmid & Partner Engineering AG Zeughausstrasse 43, 8004 Zurich, Switzerland





Schweizerischer Kallbrierdienst Service suisse d'étalonnage Servizio svizzero di taratura

S Swiss Calibration Service

Accreditation No.: SCS 0108

CALIBRATION C	ERTIFICATE		전	an	ender	11
Object	EUmmWV4 - S	N:9528		SW 2024	4 94	CJ 1437) 2024.06.05
Calibration procedure(s)	QA CAL-02.v9, Calibration proc evaluations in a	cedure for E-fie			zed for clo	ose near field
Calibration date	May 17, 2024					
This calibration certificate di The measurements and the All calibrations have been or Calibration Equipment used	uncertainties with confiden anducted in the closed labo	nce probability are g pratory facility: envir	iven on the fo	liowing p	ages and are	e part of the certificate
The measurements and the All calibrations have been or Calibration Equipment used rimary Standards	uncertainties with confiden onducted in the closed labo (M&TE critical for calibratic	ce probability are g pratory facility: envir on) Cal Date (C	iven on the fr oriment temp artificate No.)	silowing p erature (2	ages and are 12 ± 3) °C and S	e part of the certificate f humidity < 70%. icheduled Calibration
The measurements and the All calibrations have been or Calibration Equipment used Primary Standards Power sensor NRP110T	uncertainties with confiden onducted in the closed labo (M&TE critical for calibratic	ce probability are g pratory facility: envir on) Cal Date (C 04-Apr-24 (1	iven on the fo	erature (2 0740056)	ages and are 12 ± 3) °C and S A	e part of the certificate 5 humidity < 70%.
The measurements and the NI calibrations have been or Calibration Equipment used rimary Standards ower sensor NRP110T pectrum analyzer FSV40 lef. Probe EUmmWV3	uncertainties with confiden onducted in the closed labo (M&TE critical for calibratio ID SN: 101244 SN: 101832 SN: 9374	ce probability are g pratory facility: envir on) Cal Date (C 04-Apr-24 (1 25-Jan-24 (1 04-Dec-23 (	iven on the fr connent temp artificate No.) No. 0001A30 No. 4030-315 No. EUmm 9	oliowing p erature (2 0740056) 007551) 374_Deci	ages and are (2 ± 3) °C and S A J 23) D	e part of the certificate ( humidity < 70%, icheduled Calibration upr 25 an-25 lec-24
The measurements and the All calibrations have been or Calibration Equipment used rimary Standards lower sensor NRP110T ipectrum analyzer FSV40 lef. Probe EUmmWV3	uncertainties with confider anducted in the closed labo (M&TE critical for calibratic ID SN: 101244 SN: 101832	ce probability are g pratory facility: envir on) Cal Date (C 04-Apr-24 (1 25-Jan-24 (1 04-Dec-23 (	iven on the fo priment temp artificate No.) io. 0001A300 io. 4030-315	oliowing p erature (2 0740056) 007551) 374_Deci	ages and are (2 ± 3) °C and S A J 23) D	e part of the certificate f humidity < 70%. icheduled Calibration pr.25 an-25
The measurements and the All calibrations have been or Calibration Equipment used Primary Standards Yower sensor NRP110T Spectrum analyzer FSV40 tet. Probe EUmmWV3 VAE4lp	uncertainties with confiden onducted in the closed labo (M&TE critical for calibratio ID SN: 101244 SN: 101832 SN: 9374	ce probability are g pratory facility: envir on) Cal Date (C 04-Apr-24 (1 25-Jan-24 (1 04-Dec-23 (	iven on the fr priment temp with 001430 via. 4030-315 No. EUmm-9 No. DAE4ip-1	oliowing p erature (2 0740056) 007551) 374_Deci	ages and are 12 ± 3) °C and S A 23) D 23) N	e part of the certificate ( humidity < 70%, icheduled Calibration upr 25 an-25 lec-24
The measurements and the All calibrations have been or Calibration Equipment used Inimary Standards Towar sensor NRP110T Spectrum analyzer FSV40 Ref. Probe EUmmWV3 WE4Ip Secondary Standards	uncertainties with confiden anducted in the closed labo (M&TE critical for calibratic SN: 101244 SN: 101832 SN: 101832 SN: 9374 SN: 1662 ID SN: 669	Cal Date (C Od-Apr-24 ( 04-Apr-24 ( 04-Dec-23 ( 08-Nov-23 ( Check Date	iven on the fr priment temp with 001430 via. 4030-315 No. EUmm-9 No. DAE4ip-1	offowing p erature (2 0740056) 007551) 374_Deci 962_Nov	ages and are 12 ± 3) °C and 12 ± 3) °C and 13 14 13 14 13 14 13 14 14 14 14 14 14 14 14 14 14	e part of the certificate i humidity < 70%. icheduled Calibration pr.25 an-25 bic-24 lov-24
The measurements and the All calibrations have been or Calibration Equipment used Inimary Standards Iower sensor NRP110T ipectrum analyzer FSV40 tet. Probe EUmmWV3 IAE4Ip iecondary Standards Generator APSIN28G	uncertainties with confiden anducted in the closed labor (M&TE critical for calibratic ID SN: 101244 SN: 101832 SN: 101832 SN: 9374 SN: 1662 ID	Cai Date (C Od-Apr-24 ( Od-Apr-24 ( Od-Apr-24 ( Od-Dec-23 ( Od-Nov-23 ( Check Date 28-Mar-17 (	iven on the fit onment temp artificate No.; vio. 0001A30 vio. 4030-315 No. 20mm-9 No. DAE4ip-1 (In house)	offowing p erature (2 0740056) 007551) 374_Dec 662_Nov	ages and are 12 ± 3) °C and 12 ± 3) °C and 13 13 13 13 13 13 13 13 13 13	e part of the certificate i humidity < 70%. icheduled Calibration ypr.25 an-25 bec-24 icheduled Check
The measurements and the All calibrations have been or Calibration Equipment used Primary Standards Rower sensor NRP110T spectrum analyzer FSV40 Ref. Probe EUmmWV3 VAE4lp Geoondary Standards Generator APSIN28G	uncertainties with confiden anducted in the closed labo (M&TE critical for calibratic SN: 101244 SN: 101832 SN: 101832 SN: 9374 SN: 1662 ID SN: 669	Cai Date (C Od-Apr-24 ( Od-Apr-24 ( Od-Apr-24 ( Od-Dec-23 ( Od-Nov-23 ( Check Date 28-Mar-17 (	iven on the fit priment temp artificate No. ( vio. 0001 A30) No. 4030-315 No. EUmm-9 No. EUmm-9 No. DAE4ip-1 (In house) n house cheo n house cheo	offowing p erature (2 0740056) 007551) 374_Dec 662_Nov	ages and are 12 ± 3) °C and 12 ± 3) °C and 13 13 13 13 13 13 13 13 13 13	e part of the certificate i humidity < 70%. icheduled Calibration yr-25 an-25 loc-24 lov-24 icheduled Check h house check: May-2 house check: May-2
The measurements and the All calibrations have been o	uncertainties with confider onducted in the closed labo (M&TE critical for calibratic SN: 101244 SN: 101832 SN: 10832 SN: 1682 ID SN: 669 SN: 669 SN: 0341140111	ce probability are g pratory facility: envir on) Cal Date (C 04-Apr-24 (1 25-Jan-24 (1 04-Dec-23 ( 08-Nov-23 ( 08-Nov-23 ( 28-Mar-17 ( 28-Mar-17 (	iven on the fit priment temp artificate No. ( vio. 0001 A30) No. 4030-315 No. EUmm-9 No. EUmm-9 No. DAE4ip-1 (In house) n house cheo n house cheo	offowing p erature (2 07740056) 007551) 374_Dec 662_Nov ck May-23 ck May-23	ages and and 12 ± 3) °C and 12 ± 3) °C and 12 ± 3) °C 12 ± 3)	e part of the certificate i humidity < 70%. icheduled Calibration yr-25 an-25 loc-24 lov-24 icheduled Check h house check: May-2 house check: May-2

Certificate No: EUmm-9528\_May24

Page 1 of 18



Calibration Laboratory of Schmid & Partner Engineering AG Zeughausstrasse 43, 8004 Zurich, Switzerland



S Schweizerischer Kalibrierdienst Service suisse d'étalonnage Servizio svizzero di taratura S Swiss Calibration Service

Accreditation No.: SCS 0108

Accredited by the Swiss Accreditation Service (SAS) The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

#### Glossary

sensitivity in free space
diode compression point
crest factor (1/duty_cycle) of the RF signal
modulation dependent linearization parameters
v rotation around probe axis
$\vartheta$ rotation around an axis that is in the plane normal to probe axis (at measurement center), i.e., $\vartheta = 0$ is normal to probe axis
information used in DASY system to align probe sensor X to the robot coordinate system
sensor deviation from the probe axis, used to calculate the field orientation and polarization
is the wave propagation direction

#### Calibration is Performed According to the Following Standards:

 IEEE Std 1309-2005, "IEEE Standard for calibration of electromagnetic field sensors and probes, excluding antennas, from 9 kHz to 40 GHz", December 2005

#### Methods Applied and Interpretation of Parameters:

- NORMx,y: Assessed for E-field polarization θ = 0 (t ≤ 900 MHz in TEM-cell; t > 1800 MHz: R22 waveguide). For frequencies > 6 GHz, the far field in front of waveguide horn antennas is measured for a set of frequencies in various waveguide bands up to 110 GHz.
- DCPx,y: DCP are numerical linearization parameters assessed based on the data of power sweep with CW signal, DCP does not depend on frequency nor media.
- Note: As the field is measured with a diode detector sensor, it is warrantied that the probe response is linear (E<sup>2</sup>) below the documented lowest calibrated value.
- · PAR: PAR is the Peak to Average Ratio that is not calibrated but determined based on the signal characteristics
- The frequency sensor model parameters are determined prior to calibration based on a frequency sweep (sensor model involving resistors R, R<sub>p</sub>, inductance L and capacitors C, C<sub>p</sub>).
- Ax,y; Bx,y; Cx,y; Dx,y; VR,y; A, B, C, D are numerical linearization parameters assessed based on the data of power sweep for specific modulation signal. The parameters do not depend on frequency nor media. VR is the maximum calibration range expressed in RMS voltage across the diode.
- Sensor Offset: The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.
- Connector Angle: The angle is assessed using the information gained by determining the NORMr (no uncertainty required).
- · Equivalent Sensor Angle: The two probe sensors are mounted in the same plane at different angles. The angles are
- assessed using the information gained by determining the NORMx (no uncertainty required).
- Spherical isotropy (3D deviation from isotropy): in a locally homogeneous field realized using an open waveguide / horn setup.

Certificate No: EUmm-9528\_May24

Page 2 of 18



#### May 17, 2024

## Parameters of Probe: EUmmWV4 - SN:9528

### **Basic Calibration Parameters**

	Sensor X	Sensor Y	Unc (k = 2)
Norm (µV/(V/m)²)	0.01797	0.02046	±10.1%
DCP (mV) B	105.0	105.0	±4.7%
Equivalent Sensor Angle	-61.5	35.7	

# Calibration Results for Frequency Response (750 MHz - 110 GHz)

Frequency GHz	Target E-Field V/m	Deviation Sensor X dB	Deviation Sensor Y dB	Unc (k = 2 dB
0.75	77.2	-0.33	-0.14	±0.43
1.8	140.4	-0.02	-0.03	±0.43
2.0	133.0	0.12	0.14	±0.43
2.2	124.8	-0.06	-0.05	±0.43
2.5	123.0	0.07	0.12	±0.43
3.5	256.2	-0.14	-0.22	±0.43
3.7	249.8	-0.00	-0.11	±0.43
6.6	74.7	-0.39	-0.39	±0.98
8.0	67.2	-0.14	-0.16	±0.98
10.0	66.2	0.04	0.05	±0.98
15.0	51.2	0.22	0.26	±0.98
26.6	112.6	0.11	0.16	±0.98
30.0	121.9	-0.02	-0.01	±0.98
35.0	121.3	-0.06	-0.11	±0.98
40.0	102.3	-0.05	-0.16	±0.98
50.0	61.5	0.13	-0.01	±0.98
55.0	75.9	-0.03	-0.03	±0.98
60.0	80.5	-0.02	0.01	±0.98
65.0	77.1	0.15	0.14	±0.98
70.0	74.3	0.15	0.10	±0.98
75.0	74.8	0.00	-0.05	±0.98
75.0	96.6	0.01	-0.04	±0.98
80.0	95.4	-0.13	-0.09	±0.98
85.0	58.0	-0.06	~0.07	±0.98
90.0	84.0	0.01	0.01	±0.98
92.0	83.9	0.01	0.04	±0.98
95.0	76.2	-0.02	-0.03	±0.98
97.0	69.1	0.01	0.02	±0.98
100.0	66.9	0.11	0.12	±0.98
105.0	67.2	-0.20	-0.17	±0.98
110.0	78.1	0.11	0.04	±0.98

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

<sup>B</sup> Linearization parameter uncertainty for maximum apecified field strength.

Certificate No: EUmm-9528\_May24

Page 3 of 18



#### May 17, 2024

## Parameters of Probe: EUmmWV4 - SN:9528

### **Calibration Results for Modulation Response**

UID	Communication System Name		A dB	B dBõV	C	dB	mV mV	Max dev.	Max Unc <sup>E</sup> k = 2
0	CW	X	0.00	0.00	1.00	0.00	109.6	±1.9%	±4.7%
		Y	0.00	0.00	1.00		90.7		
10352	Pulse Waveform (200Hz, 10%)	X	2.72	60.00	14.62	10.00	6.0	±1.6%	±9.6%
		Y	2.30	60.00	15.54		6.0		
10353	Pulse Waveform (200Hz, 20%)	X	1.86	60.00	13.51	6.99	12.0	±1.0%	±9.6%
		Y	1.59	60.00	14.49		12.0		
10354	Pulse Waveform (200Hz, 40%)	X	1.10	60.00	12.32	3.98	23.0	±1.5%	±9.69
	Constant Constant Constant Street States and Constant	Y	0.96	60.00	13.26		23.0	22.800	1000000
10355	Pulse Waveform (200Hz, 60%)	X	0.65	60.00	11.65	2.22	27.0	±0.9%	±9.69
		Y	0.60	60.00	12.47		27.0	-543,0350	
10387	QPSK Waveform, 1 MHz	X	1.15	60.00	12.26	1.00	22.0	±1.3%	±9.6%
	Construction and the second	Y	1.18	60.00	12.27	10.55	22.0		11111000
10388	QPSK Waveform, 10 MHz	X	1.24	60.00	12.10	0.00	22.0	±0.8%	±9.6%
		Y	1.29	60.00	12.10	1.000	22.0	102203	10000
10396	64-QAM Waveform, 100 kHz	X	3.40	66.23	16.35	3.01	17.0	±0.6%	±9.69
	THE WARK ST SERVICE	Y	2.75	62.78	14.89		17.0		
10399	64-QAM Waveform, 40 MHz	X	2.04	60.00	12.56	0.00	19.0	±0.8%	±9.69
		Y	2.07	60.00	12.59		19.0		
10414	WLAN CCDF, 64-QAM, 40 MHz	X	3.14	60.00	12.97	0.00	12.0	±1.0%	±9.69
	10000000000000000000000000000000000000	Y	3.16	60.00	13.00	1.2108	12.0		1116297

Note: For details on UID parameters see Appendix

E Uncertainty is determined using the max: deviation from linear response applying rectangular distribution and is expressed for the square of the field value.

Certificate No: EUmm-9528\_May24

Page 4 of 18



#### May 17, 2024

## Parameters of Probe: EUmmWV4 - SN:9528

## Calibration Results for Linearity Response

Frequency GHz	Target E-Field V/m	Deviation Sensor X dB	Deviation Sensor Y dB	Unc (k = 2) dB
0.9	50.0	-0.03	0.02	±0.2
0.9	100.0	-0.03	-0.01	±0.2
0.9	500.0	-0.00	-0.01	±0.2
0.9	1000.0	0.02	0.02	±0.2
0.9	1500.0	0.01	0.01	±0.2
0.9	2100.0	-0.01	-0.01	±0.2

## Sensor Frequency Model Parameters (750 MHz - 55 GHz)

	Sensor X	Sensor Y
R (Ω)	68.28	86.08
Rp (Ω)	106.68	119.82
L (nH)	0.07057	0.07991
C (pF)	0.1962	0.2296
Cp (pF)	0.0776	0.0698

## Sensor Frequency Model Parameters (55 GHz - 110 GHz)

	Sensor X	Sensor Y
R (Ω)	37.28	25.43
R <sub>p</sub> (Ω)	160.50	102.36
L (nH)	0.08064	0.05122
C (pF)	0.0586	0.0970
Cp (pF)	0.0664	0.1000

### Sensor Model Parameters

	C1 fF	C2 fF	и V <sup>-1</sup>	T1 ms V-2	T2 msV <sup>-1</sup>	T3 ms	T4 V-2	T5 V <sup>-1</sup>	T6
х	50.8	366.42	33.34	0.92	6.83	4.99	0.00	1.62	1.01
y I	50,4	365.93	33.82	0.92	6.25	5.03	0.00	1.88	1.01

## Other Probe Parameters

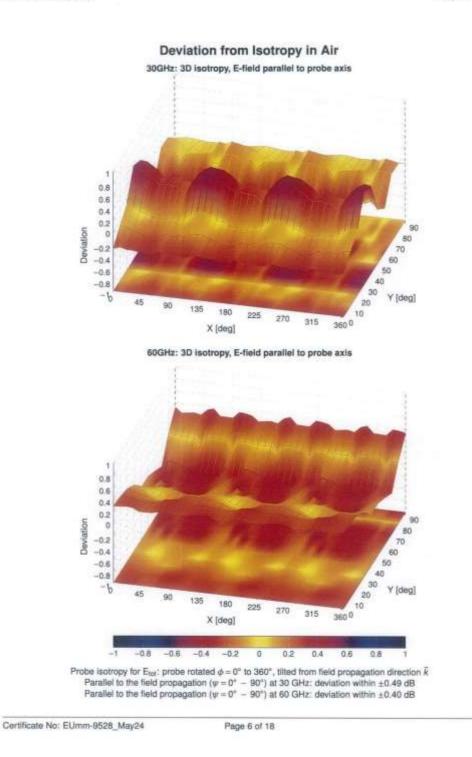
Sensor Arrangement	Rectangular
Connector Angle	67.0°
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disabled
Probe Overall Length	320 mm
Probe Body Diameter	8 mm
Tip Length	23 mm
Tip Diameter	8.0 mm
Probe Tip to Sensor X Calibration Point	1.5 mm
Probe Tip to Sensor Y Calibration Point	1.5 mm

Certificate No: EUmm-9528\_May24

Page 5 of 18



May 17, 2024





### May 17, 2024

# **Appendix: Modulation Calibration Parameters**

UID	Rev	Communication System Name	Group	PAR (dB)	Unc <sup>E</sup> k =
0		CW	CW	0.00	±4.7
0010	CAB	SAR Validation (Square, 100 ms, 10 ms)	Test	10.00	±9.6
0011	CAG	UMTS-FDD (WCOMA)	WCDMA	2.91	±9.6
0012	CAB	IEEE 802 11b WIFI 2.4 GHz (DSSS, 1 Mbps)	WLAN	1.87	+9.6
0013	CAB	IEEE 802.11g WIFI 2.4 GHz (DSSS-OFDM, 6 Mbps)	WLAN	9.46	±9.6
0021	DAC	GSM-FDD (TDMA, GMSK)	GSM	9.39	±8.6
0023	DAC	GPRS-FDD (TDMA, GMSK, TN 0)	GSM	and the second second	and the second second
				0.57	±9.8
0024	DAG	GPRS-FDD (TDMA, GMSK, TN 0-1)	GSM	6.56	±9.6
0.025	DAC	EDGE FDD (TDMA, 8PSK, TN 0)	GSM	12.62	±9.6
0.026	DAC	EDGE-FDD (TDMA, SPSK, TN 0-1)	GSM	9.55	±9.6
0.027	DAC	GPRS-FDD (TDMA, GMSK, TN 0-1-2)	GSM	4.80	±9.6
0.028	DAC	GPRS-FDD (TDMA, GMSK, TN 0-1-2-3)	GSM	3.66	<b>注9.6</b>
0.058	DAC	EDGE-FDD (TDMA, 8PSK, TN 0-1-2)	GSM	7.78	±9.6
0000	CAA	IEEE 802.15.1 Bluetpoth (GFSK, DH1)	Bluetooth	5.30	±9.6
0.031	CAA	IEEE 802.15.1 Bluetooth (GFSK, DH3)	Bluetooth	1.87	±9.6
0:032	CAA	IEEE 802.15.1 Bluetooth (GFSK, DH5)	Bluetooth	1.16	19.6
0.033	CAA	IEEE 802.15.1 Bluetooth (PV4-DQPSK, DH1)	Bluetooth	7.74	±9.6
0034	CAA	IEEE 802.15.1 Bluetooth (PV4-DQPSK, DH3)	Bluetooth	4.53	+9.6
0.035	CAA	IEEE 802.15.1 Buetooth (PV4-DQPSK, DH5)	Bluetooth	0.83	±9.6
0.036	CAA	IEEE 802.15.1 Bluetooth (8-DPSK, DH1)	Bluetooth	8.01	
	CAA			1	±9.6
0.037		IEEE 602.15.1 Bluelooth (8-DPSK, DH3)	Bluetooth	4,77	±9.6
0038	CAA	IEEE 802.15.1 Bluetooth (8-DPSK, DH5)	Bluetooth	4,10	±9.6
0039	CAB	CDMA2000 (1xRTT, BC1)	CDMA2000	4,57	±9.6
0.042	CAB	IS-54 / IS-136 FDD (TDMA/FDM, PI/4-DOPSK, Halfrate)	AMPS	7,78	19.6
10044	CAA	IS-91/EIA/TIA-553 FDD (FDMA, FM)	AMPS	0.00	±9.6
8400	CAA	DECT (TDD, TDMA/FDM, GFSK, Full Skit, 24)	DECT	13.80	±9.8
0.049	CAA	DECT (TDD, TDMA/FDM, GFSK, Double Slot, 12)	DECT	10.79	29.6
0.055	CAA	UMTS-TDD (TD-SCDMA, 128 Mops)	TD-SCOMA	11.01	±9.6
0058	DAC	EDGE-FDD (TDMA, 8PSK, TN 0-1-2-3)	GSM	6.52	±9.0
0.059	CAB	IEEE 802.11b WIFI 2.4 GHz (DSSS, 2 Mbps)	WLAN	2.12	±9.6
0.000	GAB	IEEE 802.11b WIFI 2.4 GHz (DSSS, 5.5 Mbps)	WLAN	2.83	
10.061	CAS	IEEE 802.11b WIFI 2.4 GHz (DSSS, 11 Mbps)	WLAN		±9.6
10/062	CAE	IEEE 802.11a/h WIFI 5 GHz (DSDS, 11 Mdps)	100 million 200	3.60	±9.6
10.063	CAE		WLAN	8.68	±9.6
		IEEE 802.11a/h WIFI 5 GHz (OFDM, 9 Mbps)	WLAN	8.63	±9,6
10054	GAE	IEEE 802.11a/h WiFi 5 GHz (OFDM, 12 Mbps)	WLAN	0.09	±9.6
10.065	CAE	IEEE 802.11a/h WIFI 5 GHz (OFDM, 18 Mbps)	WLAN	9.00	±9.6
10.065	CAE	IEEE 802.11a/n WiFI 5 GHz (OFDM, 24 Mbps)	WLAN	9.38	±9.6
10067	CAE	IEEE 802.11wh WIFI 5 GHz (OFDM, 36 Mbps)	WLAN	10.12	±9.6
10068	CAE	IEEE 802.11a/h WIFI 5 GHz (OFDM, 48 Mops)	WLAN	10.24	±9.6
0.069	CAE	IEEE 802.11a/h WIFI 5 GHz (OFDM, 54 Mbps)	WLAN	10.56	19.6
0071	CAB	IEEE 802.11g WIFI 2.4 GHz (DSSS/OFDM, 9 Mbps)	WLAN	9.83	±9.6
0072	CAB	IEEE 802.11g WIFI 2.4 GHz (DSSS/OFDM, 12 Mbps)	WLAN	9.62	±9.6
10073	CAB	IEEE 802.11g WIFI 2.4 GHz (DSSS/OFDM, 18 Mbps)	WLAN	9.94	19.6
10074	CAB	IEEE 802.11g WIFI 2.4 GHz (DSSS/OFDM, 18 Mbps)	WLAN	10.30	
10075	CAB	IEEE 802.11g WIFI 2.4 QHz (DSSS/OFDM, 24 Mbbs)			±9.8
0076	CAE		WLAN	10.77	19.6
the state of the s	CAB	IEEE 802.11g WFI 2.4 GHz (DSSS/OFDM, 48 Mbps)	WLAN	10.94	±9.6
0077		IEEE 802.11g WIFI 2.4 GHz (DSSS/OFDM, 54 Mbps)	WLAN	11.00	±9.6
0.081	CAB	CDMA2000 (1xRTT, RC3)	CDMA2000	3,97	±9.6
0082	CAB	IS-54 / IS-136 FDO (TDMA/FDM, PV4-DQPSK, Fuilrate)	AMPS	4.77	±9.6
0090	DAC	GPRS-FDD (TDMA, GMSK, TN 0-4)	GSM	6.56	±9.8
0.097	CAC	UMTS-FDD (HSCPA)	WCDMA	3.98	±9.6
0098	CAC	UMTS-FDD (HSUPA, Subtest 2)	WCDMA	3.98	±9.6
0099	DAC:	EDGE-FDD (TDMA, 8PSK, TN 0-4)	GSM	9.55	±9.6
0100	CAF	LTE-FOD (SC-FDMA, 100% RB, 20 MHz, QPSK)	LTE-FDD	5.67	±8.6
0101	CAF	LTE-FDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM)	LTE-FDD	6.42	±9.5
0102	CAF	LTE-FOD (SC-FOMA, 100% RB, 20 MHz, 64-QAM)	LTE-FDD	6.60	
0103	CAH	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, QPSK)	100000		:8.6
0104	CAH		LTE-TDO	9.29	±9.6
and the set		LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM)	LTE-TOO	9.97	±9,6
0105	CAH	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM)	LTE-TDO	10.01	±9.6
0108	CAH.	LTE-FDD (SC-FDMA, 100% RB, 10 MHz, QPSK)	LTE-FDO	5.80	支登,6
D109	CAH	LTE-FDD (SC-FDMA, 100% RB, 10 MHz, 16-QAM)	LTE-FDD	6.43	±9.5
0110	CAH	LTE-FDD (SC-FDMA, 100% RB, 5 MHz, QPSK)	LTE-FDO	5.75	±9.6
0111	CAH	LTE-FDD (SC-FDMA, 100% R8, 5 MHz, 16-GAM)	LTE-FDD	8.44	19.6

Certificate No: EUmm-9528\_May24

Page 7 of 18





### May 17, 2024

UID	Rev	Communication System Name	Group	PAR (dB)	Unc <sup>E</sup> k =
10112	CAH	LTE-FDD (SC-FDMA, 100% RB, 10 MHz, 64-QAM)	LTE-FDD	6.59	±9.6
10113	CAH	LTE-FDD (SC-FDMA, 100% RB, 5 MHz, 64-QAM)	LTE-FDD	6.62	±9.6
0114	CAE	IEEE 802.11n (HT Greenfield, 13.5 Mops, BPSK)	WLAN	8.10	±9.6
0115	CAE	IEEE 802.11n (HT Greenfield, 81 Moos, 16-GAM)	WLAN	8.46	386
0116	CAE	IEEE 802 11n (HT Greenfield, 135 Mbps, 64-QAM)	WLAN	8.15	±9.6
0117	CAE	IEEE 802.11n (HT Mixed, 13.5 Mbps, BPSK)	WLAN	8.07	19.6
0118	CAE	IEEE 802.11n (HT Mixed, 81 Mbcs, 16-QAM)	WLAN	8.59	19.6
0119	CAE	IEEE 802.11n (HT Mixed, 135 Mbps, 64-QAM)	WLAN	8.13	19.6
0140	CAF	LTE-FDD (SC-FDMA, 100% RB, 15 MHz, 16-QAM)	LTE-FDD	6.49	19.6
0141	CAF	LTE-FDD (SC-FDMA, 100% RB, 15 MHz, 64-QAM)	LTE-FDD	6.53	19.6
	CAF	LTE-FDD (SC-FDMA, 100% RB, 3 MHz, QPSK)		5.73	
0142	CAF	LTE-FDD (SC-FDMA, 100% R8, 3 MHz, GF3A) LTE-FDD (SC-FDMA, 100% R8, 3 MHz, 16-QAM)	LTE-FDD LTE-FDD	6.35	±9.6 ±9.6
0143	100.00			and the second second	and the second se
0144	CAF	LTE-FDD (SC-FDMA, 100% RB, 3 MHz, 64-QAM)	LTE-FDD	6.65	±9.6
8145	CAG	LTE-FDD (SC-FDMA, 100% RB, 1,4 MHz, QPSK)	LTE-FDD	5.76	±9.6
0146	CAG	LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, 16-GAM)	LTE-FDD	6.41	±9.6
0147	CAG	LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, 64-QAM)	LTE-FDD	0.72	±9.6
0149	CAF	LTE-FDD (SC-FDMA, 50% RB, 20 MHz, 18-QAM)	LTE-FDD	6.42	±9.6
0150	CAF	LTE-FDD (SC-FDMA, 50% RB, 20 MHz, 84-QAM)	LTE-FDD	6.60	±9.6
0151	CAH	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, QPSK)	LTE-TDD	9.28	±9.6
0152	CAH	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 16-QAM)	LTE-TDD	9.92	±9.6
0153	CAH	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 64-QAM)	LTE-TDD	10.05	±9.6
0154	CAH	LTE-FDD (SC-FDMA, 50% RB, 10 MHz, QPSK)	LTE-FDD	5.75	±9.6
0155	CAH	LTE-FDD (SC-FDMA, 50% RB, 10 MHz, 16-QAM)	LTE-FDD	6.43	±9.6
0156	CAH	LTE-FDD (SC-FDMA, 50% RB, 5 MHz, QPSK)	LTE-FDD	5.79	19.6
10157	CAH	LTE-FDD (SC-FDMA, 50% RB, 5 MHz, 16 QAM)	LTE-FDD	6.49	±9.6
10158	CAH	LTE-FDD (SC-FDMA, 50% RB, 10 MHz, 64-QAM)	LTE-FDD	6.62	±9.6
10159	CAH	LTE-FDD (SC-FDMA, 50% BB, 5 MHz, 64-QAM)	LTE-FDD	6.56	±9.6
0160	CAF	LTE-FDD (SC-FDMA, 50% RB, 15 MHz, QPSK)	LTE-FDD	5.82	19.8
10161	CAF	LTE-FDD (SC-FDMA, 50% RB, 15 MHz, 16-QAM)	LTE-FDD	6.43	19.6
10162	CAF	LTE-FDD (SC-FDMA, 50% RB, 15 MHz, 64-QAM)	LTE-FDD	6.58	±9.6
10166	CAG	LTE-FDD (SC-FDMA, 50% RB, 1.4 MHz, QPSK)	LTE-FDD	5.46	±9.6
10.167	CAG	LTE-FDD (SC-FDMA, 50% R8, 1.4 MHz, 16-QAM)	LTE-FDD	6.21	±9.6
10168	CAG	LTE-FDD (SC-FDMA, 60% RB, 1.4 MHz, 64-QAM)	LTE-FDD	6.79	19.6
10.169	CAF	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, QPSK)	LTE-FDD	5.73	10.0
10170	CAF	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM)	LTE-FDD	6.52	±9.6
10171	AAF	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, 64 GAM)	LTE-FDD	6.49	19.6
10172	CAH	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, GPSK)			
10173	CAH	LTE-TOD (SC-FDMA, 1 RB, 20 MHz, 16-QAM)	LTE-TOO	8.21	±9,6
10174	CAH	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 16-GAM)	LTE-TDD	9.48	±9,6
	and the second second		LTE-TDD	10.25	±9.6
10175	CAH	LTE-FDD (SC-FDMA, 1 RB, 10 MHz, QPSK)	LTE-FDD	5.72	±9.6
10176	CAH	LTE-FDD (SC-FDMA, 1 RB, 10 MHz, 16-QAM)	LTE-FDD	6,52	<b>太</b> 9.6
10177	CAJ	LTE-FDD (SC-FDMA, 1 RB, 5 MHz, QPSK)	LTE-FDD	5.73	±9.6
10178	CAH	LTE-FDD (SC-FDMA, 1 RB, 5 MHz, 16-QAM)	LTE-FDD	6.52	±9.8
10179	CAH	LTE-FDD (SC-FDMA, 1 RB, 10 MHz, 64-QAM)	LTE-FDD	6.50	<b>土9.6</b>
10180	CAH	LTE-FDD (SC-FDMA, 1 RB, 5 MHz, 64-QAM)	LTE-FDD	6.50	±9.6
10.181	CAF	LTE-FDD (SC-FDMA, 1 RB, 15 MHz, QPSK)	LTE-FDD	5.72	注9.8
10182	CAF	LTE-FDD (SC-FDMA, 1 RB, 15 MHz, 16-QAM)	LTE-FDD	6.52	±9.6
10183	AAE	LTE-FDD (SC-FDMA, 1 RB, 15MHz, 64-QAM)	LTE-FDD	6.50	±9.6
10184	CAF	LTE-FDD (SC-FDMA, 1 RB, 3 MHz, QPSK)	LTE-FDD	5.73	±9.6
0185	CAF	LTE-FDD (SC-FDMA, 1 RB, 3 MHz, 16-QAM)	LTE-FDD	8.51	±9.6
0186	AAF	LTE-FDD (SC-FDMA, 1 RB, 3MHz, 64-QAM)	LTE-FDD	8.50	±9.6
0187	CAG	LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK)	LTE-FDD	5.73	±9.6
0188	CAG	LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, 18-QAM)	LTE-FDD	6.52	±9.6
10189	AAG	LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, 64-QAM)	LTE-FDD	6.50	±9.6
0193	CAE	IEEE 802.11n (HT Greenfield, 6.5 Mbps, 8PSK)	WLAN	8.09	±9.6
0194	CAE	IEEE 802.11n (HT Greenfield, 39 Mbps, 16-QAM)	WLAN	8.12	±9.6
0195	CAE	IEEE 802.11n (HT Greenfield, 65 Mbps, 64-QAM)	WLAN	8.21	19.6
0196	CAE	IEEE 802.11n (HT Mixed, 6.5 Mbps, BPSK)	WLAN	8.10	19.6
0197	CAE	IEEE 802.11n (HT Mixed, 30 Mbps, 16-QAM)	WLAN	8,10	
0198	CAE	IEEE 802.11n (HT Mixed, 65 Mbps, 64-QAM)		and the second se	:9.6
0219	CAE	IEEE 802.11n (HT Mixed, 7.2 Mbps, 8PSK)	WLAN	8.27	19.8
0220	CAE	IEEE 802.11n (HT Mixed, 43.3 Mbps, 18-QAM)	WLAN	8.03	19.6
0221	CAE	IEEE 802.11n (H1 Mixed, 43.3 Mbps, 16-GAM) IEEE 802.11n (HT Mixed, 72.2 Mbps, 64-GAM)	WLAN	8.13	19.6
0221	CAE		WLAN	8.27	19.6
and the second second	and the second second	IEEE 802.11n (HT Mixed, 15 Mbps, BPSK)	WLAN	8.06	19.8
0223	CAE	IEEE 802.11n (HT Mored, 90 Mbps, 16-QAM)	WLAN	8.48	±9.6
0224	CAE	IEEE 802.11n (HT Mixed, 150 Mbps, 64-QAM)	WLAN	8.08	±9.6

Certificate No: EUmm-9528\_May24

Page 8 of 18





### May 17, 2024

UID	Rev	Communication System Name	Group	PAR (dB)	Unc <sup>E</sup> k =
10225	CAC	UMTS-FDD (HSPA+)	WCOMA.	5.97	±9.6
0226	CAC	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 16-QAM)	LTE-TOD	8.49	±9.6
0227	CAC	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 64-QAM)	LTE-TDD	10.26	±9.6
0228	CAC	LTE-TDD (SC-FDMA, 1 R8, 1.4 MHz, QPSK)	LTE-TDD	9.22	+9.6
0229	CAE	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 16-QAM)	LTE-TOD	9.48	±9.6
0230	CAE	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 64-QAM)	LTE-TDD	10.25	±9.6
0231	CAE	LTE-TDD (SC-FDMA, 1 R8, 3MHz, QPSK)	LTE-TDD	9.19	±9.6
0232	CAH	LTE-TDD (SC-FDMA, 1 RB, 5MHz, 18-QAM)	LTE-TDD	9.48	10.0
0.233	CAH	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 64-QAM)	LTE-TOD	10.25	±9.6
0234	CAH	LTE-TDD (SC-FDMA, 1 RB, 5MHz, QPSK)	LTE-TDD	9.21	19.0
0.235	CAH	LTE-TOD (SC-FDMA, 1 RB, 10 MHz, 18-QAM)	and the second se		the second se
	CAH		LTE-TDD	9.48	±9.6
0236	market.	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 64-QAM)	LTE-TOD	10.25	±9.6
0237	CAH	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, QPSK)	LTE-TOD	9,21	±9.6
0238	CAG	LTE-TDD (SC-FDMA, 1 RB, 15MHz, 16-QAM)	LTE-TDD	9.48	±9.6
0239	CAG	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 64-QAM)	LTE-TDD	10.25	19.6
0240	CAG	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, QPSK)	LTE-TDD	9.21	±9.6
0.241	CAC	LTE-TDD (SC-FDMA, 50% R8, 1.4 MHz, 16-QAM)	LTE-TDD	9.82	±9.6
0242	CAC	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 64-QAM)	LTE-TDD	9,86	±9.6
0243	CAD	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, QPSK)	LTE-TDD	9.48	±9.6
0244	CAE	LTE-TOD (SC-FDMA, 50% RB, 3 MHz, 16-QAM)	LTE-TOD	10.06	19.6
0245	CAE	LTE-TDD (SC-FDMA, 50% RB. 3 MHz, 64-QAM)	LTE-TOD	10.06	±9.6
0246	CAE	LTE-TOD (SC-FDMA, 50% RB, 3MHz, QP5K)	LTE-TDD	9.30	±9.6
0247	CAH	LTE-TDD (SC-FDMA, 50% RB, 5MHz, 16-QAM)	LTE-TDD	9.91	±9.6
0248	CAH	LTE-TDD (SC-FDMA, 50% RB, 5MHz, 84-QAM)	LTE-TDD	10.09	19.6
0249	CAH	LTE-TDD (SC-FDMA, 50% RB, 5MHz, QPSK)	LTE-TDD	9.29	±9.6
0250	CAH	LTE-TDD (5C-FDMA, 50% RB, 10 MHz, 16-QAM)	LTE-TDD	9.81	19.6
10251	CAH	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 64-QAM)	LTE-TDD	10.17	and the second second
	CAH		the second se		±9.6
0252	CAG	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, OPSK)	LTE-TDD	9,24	±9.6
		LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 18-QAM)	LTE-TDD	9.90	±9.6
10254	CAG	LTE-TDD (SC-FDMA, 50% RB. 15 MHz, 64-QAM)	LTE-TOD	10.14	19.6
10255	CAG	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, QPSK)	LTE-TDD	9.20	\$9.6
0256	CAC	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 16-QAM)	LTE-TDD	9,95	±9.6
10257	CAG	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 64-GAM)	LTE-TDD	10.08	±9.8
10258	CAC	LTE-TOD (SC-FDMA, 100% RB, 1.4 MHz, QPSK)	LTE-TOD	9.34	19.6
10259	CAE	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 16-QAM)	LTE-TDD	9.98	±9.6
10260	CAE	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 64-QAM)	LTE-TDD	9.97	±9.6
10261	CAE	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, QPSK)	LTE-TDD	9.24	±9.6
10262	CAH	LTE-TOD (SC-FDMA, 100% RB, 5 MHz, 16-QAM)	LTE-TDD	9.83	19.6
10263	CAH	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 64-QAM)	LTE-TDD	10.16	19.6
10264	CAH	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, QPSK)	LTE-TDD	9.23	±9.6
10265	CAH	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 16-QAM)	LTE-TDD	9.92	±9.6
10266	CAH	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 64-QAM)	LTE-TOD	10.07	19.6
10267	CAH	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, QPSK)	LTE-TDD	9.30	19.6
10268	CAG	LTE-TDD (SC-FDMA, 100% RB, 15MHz, 16-QAM)	LTE-TDD	10.06	±9.6
10269	CAG	LTE-TDD (SC-FDMA, 100% RB, 15MHz, 64-QAM)	LTE-TOD	10.13	19.6
10270	CAG	LTE-TOD (SC-FDMA, 100% RB, 15MHz, OPSK)	LTE-TDD	9.58	and the second sec
10274	CAC	UMTS-FDD (HSUPA, Subtest 5, 3GPP Rel8.10)	WCDMA	4.87	19.6
10275	CAC				±9.6
in the local data	CAA	UMTS-FDD (HSUPA, Subtest 5, 3GPP Rel8.4)	WCDMA	3.96	±9.6
0277 0278	CAA	PHS (QPSK)	PHS	11.81	19.6
		PHS (OPSK, BW 884 MHz, Rolloff 0.5)	PHS	11.81	±9.6
10279	CAA	PHS (QPSK, BW 884 MHz, Rotoff 0.38)	PHS	12.18	±9.6
0290	AAB	CDMA2000, RC1, SO55, Full Rate	CDMA2000	3.91	±9.6
0291	AAB	COMA2000, RC3, SO55, Full Rate	CDMA2600	3.46	±9.6
0292	AAB	COMA2000, RC3, SO32, Full Rate	CDMA2000	3.39	±9.6
0293	AAB	CDMA2000, RC3, SO3, Full Rate	CDMA2000	3.50	±9.6
0295	AAB	COMA2000, RC1, SO3, 1/8th Rate 25 ft.	CDMA2000	12.49	±9.6
0297	AAE	LTE FDD (SC-FDMA, 50% R8, 20 MHz, QPSK)	LTE-FDD	5.81	±9.6
0298	AAE	LTE-FOD (SC-FDMA, 50% RB, 3 MHz, QPSK)	LTE-FDD	5.72	±9.6
0299.	AAE	LTE-FDD (SC-FDMA, 50% RB, 3 MHz, 16-QAM)	LTE-FDD	6.39	19.6
0300	AAE	LTE-FDD (SC-FDMA, 50% RB, 3 MHz, 64 QAM)	LTE-FDD	6.60	19.6
0301	AAA	IEEE 802.16e WIMAX (29:18, 5 ms, 10 MHz, QP5K, PUSC)	WMAX	12.03	19.6
0302	AAA	IEEE 802 16e WIMAX (29:18, 5 ms, 10 MHz, QPSK, PUSC, 3 CTRL symbols)	WIMAX	12.57	19.6
0303	AAA	IEEE 802 15e WIMAX (31:15, 5ms, 10 MHz, 64QAM, PUSC)	WIMAX	12.52	
0304	AAA			1000	±9.6
1.00	AAA	IEEE 802.16e WIMAX (29:18, 5 ms, 10 MHz, 64QAM, PUSC)	WIMAX	11.86	±9.6
0305		IEEE 802 16e WIMAX (31:15, 10 ms, 10 MHz, 64QAM, PUSC, 15 symbols)	WIMAX	15.24	±9.0
0305	AAA	IEEE 802.16e WIMAX (29:18, 10 ms, 10 MHz, 64QAM, PUSC, 18 symbols)	WIMAX	54.67	±9.6

Certificate No: EUmm-9528\_May24

Page 9 of 18



## May 17, 2024

UID	Rev	Communication System Name	Group	PAR (dfl)	Unc <sup>E</sup> k =
10.307	AAA	IEEE 802.16e WMAX (29:18, 10 ms, 10 MHz, QPSK, PUSC, 18 symbols)	WIMAX	14.49	±9.6
10308	AAA	IEEE 802.16e WIMAX (29:18, 10 ms, 10 MHz, 16 GAM, PUSC)	WIMAX	14.46	29.6
0.309	AAA	IEEE 802 16e WIMAX (29:18, 10 ms, 10 MHz, 16QAM, AMC 2x3, 18 symbols)	WIMAX	14.58	23.6
0310	AAA	IEEE 802 1fie WIMAX (29:18, 10 ms, 10 MHz, QPSK, AMC 2x3, 18 symbols)	WIMAX	14.57	±9.6
0311	AAE	LTE-FDD (SC-FDMA, 100% RB, 15MHz, QPSK)	LTE-FDD	8.06	±9.6
0313	AAA	IDEN 1.9	IDEN	10.51	±9.6
0314	AAA	IDEN 1:5	IDEN	13,48	±9.6
0315	AAB	IEEE 802.11b WIFI 2.4 GHz (DSSS, 1 Mbps, 96pc duty cycle)	WLAN	1.71	±9.6
0316	AAB	IEEE 802.11g WIR 2.4 GHz (ERP-OFDM, 6 Mbps, 96pc duty cycle)	WLAN	8.36	±9.6
0317	AAE	IEEE 802.11a WIFI 5 GHz (OFOM, 6 Mbps, 96pc duty cycle)	WLAN	8.36	±9.6
0352	AAA	Pulse Waveform (200Hz, 10%)	Generic	10.00	±9.6
0353	AAA	Pulse Waveform (200Hz, 20%)	Generic	6.99	±9.6
10354	AAA	Pulse Waveform (200Hz, 40%)	Generic	3.98	±9.6
10355	AAA	Puise Waveform (200Hz, 60%)	Generic	2.22	±9.6
10356	AAA	Pulse Waveform (200Hz. 80%)	Generic	0.97	±9.6
10387	AAA	OPSK Waveform, 1 MHz	Generic	5.10	=9.6
0388	AAA	OPSK Waveform, 10 MHz	Generic	5.22	±9.6
0396	AAA	64-QAM Waxeform, 100 kHz	Generic	6.27	39.6
10399	AAA	64-CAM Waveform, 40 MHz	Generic	6.27	±9.6
10,389	AAF.	IEEE 802 11ac WIFI (20 MHz, 64-QAM, 99pc duty cycle)	WLAN	8.37	19.6
10400	AAF	IEEE 802, 11ac WFI (20 MHz, 64-QAM, 98pc duty cycle) IEEE 802, 11ac WFI (40 MHz, 64-QAM, 98pc duty cycle)	WLAN	8.60	10.0
10401	AAF	IEEE 802.11ac WFI (40 MHz, 64-QAM, 99pc duty cycle) IEEE 802.11ac WFI (80 MHz, 64-QAM, 99pc duty cycle)	WLAN	8.53	±9.6
10402	AAB	CDMA2000 (1xEV-DO, Rev. 0)	CDMA2000	3,76	±9.6
10403	AAB	CDMA2000 (1XEV-DD, Rev. 0) CDMA2000 (1XEV-DD, Rev. A)	CDMA2000 CDMA2000	3,76	±9.0 ±9.6
the state of the local division of	AAB	CDMA2000, RC3, SC32, SCH0, Full Rate	CDMA2000	5.22	
10406	and a state of the state		and the second se	and the second se	±9.6
10410	AAH	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9, Subframe Cont=4)	LTE-TDD	7.82	19.6
10414	AAA	WLAN CCDF, 64-QAM, 40 MHz	Generic	8.54	±9.6
10415	AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps, 99pc duty cycle)	WLAN	1.54	±9.6
10416	AAA	IEEE 802.11g WIFI 2.4 GHz (ERP-OFDM, 6 Mops, 99pc duty cycle)	WLAN	8.23	19.6
10417	AAD	IEEE 802.11a/h WIFI 5 GHz (OFDM, 6 Mbps, 99pc duty cycle)	WLAN	8.23	19.6
10418	AAA	IEEE 802.11g WIFI 2.4 GHz (DSSS-OFDM, 6 Mbps, 99pc duty cycle, Long preambule)	WLAN	8,14	19.6
10419	AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps, 99pc duty cycle, Short preambule)	WLAN	8.19	±9.6
10422	AAD	IEEE 802.11n (HT Greentield, 7.2 Mbps, BPSK)	WLAN	8.32	19.6
10423	AAD	IEEE 802.11n (HT Greenfield, 43.3 Mops, 16-QAM)	WLAN	8,47	19.6
10.424	AAD	IEEE 802.11n (HT Greenfield, 72.2 Mbps, 64-QAM)	WLAN	8.40	±9.6
10425	AAD	IEEE 802.11n (HT Greenfield, 15 Mbps, BPSK)	WLAN	8.41	±9.6
10426	AAD	IEEE 802.11n (HT Greenfield, 90 Mbps, 16-QAM)	WLAN	8,45	±9.6
10427	AAD	JEEE 802.11n (HT Greenfield, 150 Mbps, 64-QAM)	WLAN	8,41	±9.6
10.430	AAE	LTE-FDD (OFDMA, 5MHz, E-TM 3.1)	LTE-FDD	8.28	±9.6
10431	AAE	LTE-FDD (OFDMA, 10 MHz, E-TM 3.1)	LTE-FDD	8.38	±9.6
10432	AAD	LTE-FDD (OFDMA, 15MHz, E-TM 3.1)	LTE-FDD	8,34	+9.6
10433	AAD	LTE-FDD (OFDMA, 20 MHz, E-TM 3.1)	LTE-FDD	8.34	±9.6
10434	AAB	W-CDMA (85 Test Model 1, 64 DPCH)	WCDMA	8.60	±9.6
10435	AAG	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	LTE-TDD	7.82	±9.6
10447	AAE	LTE-FDD (OFDMA, 5MHz, E-TM 3.1, Clipping 44%)	LTE-FDD	7.56	:: 19.6
10448	AAE	LTE-FDD (OFDMA, 10 MHz, E-TM 3.1, Clippin 44%)	LTE-FDD	7.53	±9.6
10449	AAD	LTE-FDD (OFDMA, 15MHz, E-TM 3.1, Cliping 44%)	LTE-FDD	7.51	<b>太</b> 9.6
10450	AAD	LTE-FDD (OFDMA, 20 MHz, E-TM 3.1, Clipping 44%)	LTE-FDD	7.48	±9.6
10451	AAB	W-CDMA (BS Test Model 1, 64 DPCH, Clipping 44%)	WCDMA	7.59	19.6
10453	AAE	Validation (Square, 10 ms, 1 ms)	Test	10.00	±9.6
10456	AAD	IEEE 802.11ac WiFi (160 MHz, 64-QAM, 99pc duty cycle)	WLAN	8.63	±9.6
10.457	AAB	UMTS-FDD (DC-HSDPA)	WCDMA	6.62	±9.0
10458	AAA	CDMA2000 (1xEV-DO, Rev. B, 2 carriers)	CDMA2000	6.55	±9.6
10459	AAA	CDMA2000 (1xEV-DO, Rev. B, 3 carriers)	CDMA2000	8.25	±9.6
10460	AAB	UMTS-FDD (WCDMA, AMR)	WCDMA	2.39	±9.6
10461	AAC	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	LTE-TOD	7.82	±9.6
10.462	AAC	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 18-QAM, UL Subtrame=2,3,4,7,8,9)	LTE-TDD	8.30	±9.6
10463	AAC	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	LTE-TDD	8.56	±9.6
10464	AAD	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	LTE-TOD	7.82	±9.6
10465	AAD	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 16-QAM, UL Subtrame=2,3,4,7,8,9)	LTE-TDD	8.32	±9.6
10466	AAD	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	LTE-TDD	B.57	±9.6
10467	AAG	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	LTE-TOD	7.82	±9.6
10468	AAG	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 16-QAM, UL Subtrame=2,3,4,7,8,9)	LTE-TDD	8.32	29.6
10469	AAG	LTE-TOD (SC-FDMA, 1 RB, 5 MHz, 64 QAM, UL Subframe=2,3,4,7,8,9)	LTE-TOD	8.56	29.6
10470	AAG	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	LTE-TDD	7.82	±9.6
10471	AAG	LTE-TDD (SC-FDMA, 1 RB, 10MHz, 15-QAM, UL Subtrame=2.3,4,7,8,9)	LTE-TDD	8.32	±9.6

Certificate No: EUmm-9528\_May24

Page 10 of 18



## May 17, 2024

UID	Rev	Communication System Name	Group	PAR (dB)	Unc <sup>E</sup> k =
10472	AAG	LTE-TOD (SC-FDMA, 1 RB, 10 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	LTE-TOD	8.57	±9.6
0.473	AAF	LTE-TOD (SC-FDMA, 1 RB, 15 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	LTE-TOD	7.82	±9.6
0474	AAF	LTE-TOD (SC-FOMA, 1 RB, 15MHz, 16-QAM, UL Subhame=2.3,4,7,8,9)	LTE-TDD	8.32	±9.6
0475	AAF	LTE-TOD (SC-FDMA, 1 RB, 15MHz, 64-QAM, UL Subframe=2.3.4,7,8,9)	LTE-TDD	8.57	±9.6
0477	AAG	LTE-TOD (SC-FOMA, 1 RB, 20 MHz, 18-QAM, UL Subframe=2.3.4.7.8.9)	LTE-TDD	8.32	±9.6
0478	AAG	LTE-TDD (SC-FDMA, 1 RB. 20 MHz, 64-QAM, UL Subframe=2.3.4,7,8,9)	LTE-TOD	8.57	±9.6
0479	AAC	LTE-TOD (SC-FDMA, 50% RB, 1.4 MHz, QPSK, UL Subframe=2,3,4,7.8,9)	LTE-TDD	7.74	+9.6
To Links	AAC	LTE-TOD (SC-FOMA, 50% RB, 1.4 MHz, 16-QAM, UL Subfame=2,3,4,7,8,9)	LTE-TDD	8.18	+9.6
0480	AAC	LTE-TOD (SC-FDMA, 50% RB, 1.4 MHz, 64-QAM, UL Subtrame=2.3.4.7.8.9)	LTE-TDD	8.45	+9.6
0481	AAD	LTE-TOD (SC-FDMA, 50% RB, 1.4 MPZ, GPSK, UL Subframe+2.3.4,7,8,9)	LTE-TOD	7.71	19.6
Se			LTE-TDD	8.39	19.6
0485	AAD	LTE-TDD (BC-FDMA, 50% RB, 3 MHz, 16 QAM, UL Subtrame=2,3,4,7,8,9)	LTE-TDD	8.47	±9.6
0484	AAD	LTE-TOD (SC-FDMA, 50% RB, 3MHz, 64-QAM, UI, Subframe=2,3,4,7,8,9)	and the second se		
0485	AAG	LTE-TOD (SC-FOMA, 50% RB, 5 MHz, OPSK, UL Subframe=2,3,4,7,8,9)	LTE-TDD	7,59	±9.6
0.486	AAG	LTE-TOD (SC-FOMA, 50% R8, 5MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	LTE-TDD	8.38	±9.6
0487	AAG	LTE-TDD (SC-FDMA, 50% RB, 5MHz, 64-QAM, UI, Subframe=2,3,4,7,8,9)	LTE-TDD	8.60	±9.6
0488	AAG	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	LTE-TDD	7.70	±0.6
0.489	AAG	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	LTE-TDD	8.31	±9.6
0490	AAG	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 64-GAM, UL Suthrame=2,3,4,7,8,9)	LTE-TDD	8.54	±9.6
0.491	AAF	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, QPSK, UL Subhame=2,3,4,7,8,9)	LTE-TDD	7.74	19.6
0.492	AAF	LTE-TOD (SC-FDMA, 50% RB, 15 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	LTE-TDD	8.41	±9.6
0493	AAF	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	LTE-TDD	8.55	±9.6
0454	AAG	LTE-TOD (SC-FDMA, 50% R8, 20 MHz, QPSK, UL Subframe=2.3,4,7,8,9)	LTE-TDD	7.74	±9.6
0495	AAG	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 16 QAM, UL Subframe=2,3,4,7,8,9)	LTE-TDD	8.37	±9.6
0.496	AAG	LTE-TDD (SC-FDMA, 50% R8, 20 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	LTE-TDD	8.54	19.6
0497	AAC	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, QPSK, UL Subframe-2,3,4,7,8,9)	LTE-TDD	7.67	±9.6
0.498	AAC	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 16-QAM, UL Subframe=2.3,4,7,8,9)	LTE-TDD	8.40	19.6
0.499	AAC	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	LTE-TDD	8.68	±9.6
0.500	AAD	LTE-TDD (SC-FDMA, 100% RB, 3MHz, QPSK, UL Subtramev2.3.4,7.8.9)	LTE-TDD	7.67	±9.6
0501	AAD	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 16-QAM, UL Subtrame=2.3.4,7,8,9)	LTE-TDD	8.44	19.6
0502	AAD	LTE-TDD (SC-FDMA, 100% RB, 3MHz, 19 GMM, 0L Sobhamerz, 34,7,8,2) LTE-TDD (SC-FDMA, 100% RB, 3MHz, 64-GAM, UL Subhamer2, 34,7,8,9)	LTE-TDD	8.52	19.5
	Sector Sector		and the second se		
10503	AAG	LTE-TDD (SC-FDMA, 100% RB, 5MHz, QPSK, UL Subframe=2,3,4,7,8,9)	LTE-TDD	7.72	19.6
10504	AAG	LTE-TDD (SC-FDMA, 100% RB, 5MHz, 15-QAM, UI, Subhamex2.3,4,7,8,9)	LTE-TDD	8.31	1.9.6
10:505	AAG.	LTE-TDD (SC-FDMA, 100% RB, 5MHz, 64-QAM, UL Subhame=2.3.4,7,8.9)	LTE-TDD	8.54	±9.8
10506	AAG	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, QPSK, UL Subhame=2,3,4,7,8.9)	LTE-TDD	7:74	±9.5
10507	AAG	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 16-QAM, UL Subframe=2.3.4.7,8,9)	LTE-TDD	8.36	±9.6
10508	AAG	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 64-QAM, UL Subl/ame=2,3,4,7,8,9)	LTE-TDD	8,55	±9.0
10509	AAF	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	LTE-TDD	7.99	±9.8
10510	AAF	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	LTE-TDD	8,49	±9.6
10511	AAF	LTE-TOD (SC-FDMA, 100% RB, 15 MHz, 84-QAM, UL Subframe=2,3,4,7,8,9)	LTE-TDD	8.51	±9.6
10512	AAG	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, QPSK, UL Subtrame=2,3,4,7,8,9)	LTE-TDD	7.74	±9.0
10513	AAG	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM, UL Subframe-2,3,4,7,8,9)	LTE-TDD	8.42	±9.6
10514	AAG	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	LTE-TDD	8.45	+9.6
0515	AAA	IEEE 802.11b WIFI 2.4 GHz (DSSS, 2 Mbps, 99pc duty cycle)	WLAN	1.58	±9.6
10518	AAA	IEEE 802.11b WIFI 2.4 GHz (DSSS, 5.5 Mbps, 99pc duly cycle)	WLAN	1.57	±9.6
10517	AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 11 Mbps, 99pc duty cycle)	WLAN	1.58	19.6
10518	AAD	IEEE 802.11wh WiFI 5 GHz (OFDM, 9 Mbps, 99pc duty cycle)	WLAN	8.23	±9.6
10519	AAD	IEEE 802.11a/h WiFi 5 GHz (OFDM, 12 Mbps, 99pc duty cycle)	WLAN	8.39	±9.6
0.520	AAD	IEEE 802.11a/h WiFi 5 GHz (OFDM, 18 Mbps, 99pc duty cycle)	WLAN	8.12	±9.6
0.521	AAD	IEEE 802.11a/h WIFI 5 GHz (OFDM, 24 Mbps, 99pc duty cycle)	WLAN	7.97	19.6
0.522	AAD	IEEE 802.11a/h WIFI 5 GHz (OFDM, 24 Mbps, 99pc duty cycle)	WLAN	8.45	19.0
0.523	AAD	IEEE 802.11a/h WiFi 5 GHz (OFDM, 38 Mbps, 99pc duty cycle)	WLAN	8.45	
0.524	AAD	IEEE 802.11am WiFI 5 GHz (OFDM, 48 Mbps, 99pc duty cycle)	WLAN	8.08	±9.6
0.525	AAD		and the second second		19.6
And in case of		IEEE 802.11ac WIFI (20 MHz, MCS0, 99pc duty cycle)	WLAN	8.36	±9.6
0526	AAD	IEEE 802.11ac WIFI (20 MHz, MCS1, 99pc duty cycle)	WLAN	8.42	±9.6
0.527	AAD	IEEE 802.11ec WIFI (20 MHz, MCS2, 99pc duty cycle)	WLAN	8,21	±9.6
0.528	AAD	IEEE 802.11ac WIFI (20 MHz, MCS3, 99pc duty cycle)	WLAN	0.36	±9.6
0.529	AAD	IEEE 802.11ac WiFI (20 MHz, MCS4, 99pc duty cycle)	WLAN	8-36	±9.0
0.531	AAD	IEEE 802.11ac WIFI (20 MHz, MCS6, 99pc duty cycle)	WLAN	8.43	±9.6
0.532	AAD	IEEE 802.11ac WIFI (20 MHz, MCS7, 99pc duty cycle)	WLAN	8.29	±9.6
0.533	AAD	IEEE 802.11ac WIFI (20 MHz, MCS8, 99pc duty cycle)	WLAN	8.38	±9.6
0534	AAD	IEEE 802.11ab WIFI (40 MHz, MCS0, 99pc duty cycle)	WLAN	8.45	±9.6
0535	AAD	IEEE 802.11ac WIFI (40 MHz, MCS1, 99pc duty cycle)	WLAN	8.45	±9.6
10.536	AAD	IEEE 802.11ac WIFI (40 MHz, MCS2, 99pc duty cycle)	WLAN	8.32	±9.5
10537	AAD	IEEE 802.11ac WIFI (40 MHz, MCS3, 95pc duty cycle)	WLAN	8.44	19.6
0538	AAD	IEEE 802.11 so WIFI (40 MHz, MCS4, 96pc duty cycle)	WLAN	8.54	19.6
	AAD	IEEE 802.11ac WIFI (40 MHz, MCS6, 96pc duty cycle)	WLAN	8.39	100

Certificate No: EUmm-9528\_May24

Page 11 of 18



May 17, 2024

UID	Rev	Communication System Name	Group	PAR (dB)	UncE R =
10541	AAD	IEEE 802 11ac WiFi (40 MHz, MCS7, 99pc duty cycle)	WLAN	8.46	±9.6
10543	AAD	IEEE 802.11ac WIFI (40 MHz, MCS8, 99pc duty cycle)	WLAN	8.65	±9.6
10543	AAD	IEEE 802.11ac WiFI (40 MHz, MCS9, 99pc duty cycle)	WLAN	8.65	29.6
10544	AAD	IEEE 802.11ac WIFI (80 MHz, MCS0, 99pc duty cycle)	WLAN	8.47	±9.6
10.545	AAD	IEEE 802.11ac WiFi (80 MHz, MCS1, 99pc duty cycle)	WLAN	8.55	±9.6
10546	AAD	IEEE 802.11ac WIFI (80 MHz, MCS2, 99pc duty cycle)	WLAN	8.35	±9.6
10547	GAA	IEEE 802 11ac WIFI (80 MHz, MCS3, 99pc duty cycle)	WLAN	8.49	±9.6
10548	AAD	IEEE 802.11ac WIFI (80 MHz, MCS4, 99pc duty cycle)	WLAN	8.37	±9.6
10550	AAD	IEEE 802.11ac WiFi (80 MHz, MCS6, 99pc duty cycle)	WLAN	8.38	±9.6
10551	AAD.	IEEE 802.11ac WIFI (80 MHz, MCS7, 99pc duty cycle)	WLAN	8.50	±9.6
10552	AAD	IEEE 802.11ac WIFI (80 MHz, MCS8, 99pc duty cycle)	WLAN	8.42	±9.6
10553	AAD	IEEE 802.11ac WIFI (80 MHz, MCS9, 99pc duty cycle)	WEAN	8.45	±9.6
10554	AAE	IEEE 802.11ac WiFi (160 MHz, MCS0, 99pc duty cycle)	WEAN	8.48	±9.6
10555	AAE	IEEE 802.11ac WiFi (160 MHz, MCS1, 99pc duty cycle)	WLAN	8.47	±9.6
10556	AAE	IEEE 802.11ac WiFi (160 MHz, MCS2, 99pc duty cycle)	WLAN	8.50	±9.6
10557	AAE	IEEE 802.11ac WiFi (160 MHz, MCS3, 99pc duty cycle)	WLAN	8.52	±9.6
10558	AAE	IEEE 802.11ac WIFI (160 MHz, MCS4, 99pc duty cycle)	WLAN .	8.61	±9.6
10560	AAE	IEEE 802.11ac WIFI (160 MHz, MCS6, 99pc duty cycle)	WLAN	8.73	±9.6
10561	AAE	IEEE 802.11ac WIFI (160 MHz, MCS7, 99pc duty cycle)	WLAN	8.56	±9.6
10562	AAE	IEEE 802.11ac WIFI (160 MHz, MCS8, 99pc duty cycle)	WLAN	8.69	±9.6
10563	AAE	IEEE 802.11ac WiFi (160 MHz, MCS9, 99pc duty cycle)	WLAN	8.77	±9.6
10584	AAA	IEEE 802 11g WIFI 2.4 GHz (DSSS-OFOM, 9 Mbps, 99pc duty cycle)	WLAN	8.25	±9.6
10565	AAA	IEEE 802.11g WIFI 2.4 GHz (DSSS-OFDM, 12 Mbps, 99pc duty cycle)	WLAN	8.45	±9.6
10566	AAA	IEEE 802.11g WIFi 2.4 GHz (DSSS-OFOM, 18 Mbps, 99pc duty cycle)	WLAN	8,13	±9.6
10567	AAA	IEEE B02.11g WIFI 2.4 GHz (DSSS-OFDM, 24 Mbps, 99pc duty cycle)	WLAN	8.00	±8.6
10568	AAA	IEEE 802 11g WIFI 2.4 GHz (DSSS-OFDM, 36 Mbps, 99pc duty cycle)	WLAN	8.37	±9.6
10569	AAA	IEEE 802.11g WIFI 2.4 GHz (DSSS-OFDM, 48 Mbps, 99pc duty cycle)	WLAN	8.10	±9.6
10570	AAA	IEEE 802.11g WIFI 2.4 GHz (DSSS-OFDM, 54 Mbps, 99pc duty cycle)	WLAN .	8.30	±9,6
10571	AAA	IEEE 802.11b WIFI 2.4 GHz (DSSS, 1 Mbps, 90pc duty cycle)	WLAN	1.99	±9.6
0572	AAA	IEEE 802.116 WIFi 2.4 GHz (DSSS, 2 Mbps, 90pc duty cycle)	WLAN	1.99	±9.6
10573	AAA	IEEE 802.11b WIFi 2.4 GHz (DSSS, 5.5 Mbps, 90pc duty cycle)	WLAN	1.98	±9.6
10574	AAA	IEEE 802.11b WIFI 2.4 GHz (DSSS, 11 Mbps, 90pc duty cycle)	WLAN	1.98	±9.6
10575	AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps, 90pc duty cycle)	WLAN	8.59	±9.6
10576	AAA	IEEE 802.11g WIFI 2.4 GHz (DSSS-OFDM, 9 Mbps, 90pc duty cycle)	WLAN	8.60	±9.6
10577	AAA	IEEE 802.11g WIFi 2.4 GHz (DSSS-OFDM, 12 Mbps, 90pc duty cycle)	WLAN	8.70	±9.6
10578	AAA	IEEE 802.11g WIFI 2.4 GHz (DSSS-OFDM, 18 Mbps, 90pc duty cycle)	WLAN	8.49	±9,6
10579	AAA	IEEE 802.11g WIFI 2.4 GHz (DSSS-OFOM, 24 Mbps, 90pc duty cycle)	WLAN	8.36	±9.6
200000	AAA	EEE 802 11g WIF 2.4 GHz (DSSS-OFDM, 36 Mbps, 90pc duty cycle)	WLAN	8,76	±9.6
10581	AAA	IEEE 802.11g WIFI 2.4 GHz (DSSS-OFDM, 48 Mbps, 90pc duty cycle)	WLAN	8.35	±9.6
10583	AAD	IEEE 802.11g WFI 2.4 GHz (DSSS-OFDM, 54 Mbps, 90pc duty cycle)	WLAN	8.67	±9.6
10584	AAD	IEEE 802.11a/h WiFI 5 GHz (CFDM, 6 Mbps, 90pc duty cycle)	WLAN	8.69	±9.6
10.585	AAD	IEEE 802.11a/h WFI 5 GHz (OFOM, 9 Mbps, 90pc duty cycle) IEEE 802.11a/h WFI 5 GHz (OFDM, 12 Mbps, 90pc duty cycle)	WLAN	8.60	±9.6
10.586	AAD		WLAN	8.70	±9.6
10.587	AAD	IEEE 802.11a/h WFI 5 GHz (OFDM, 18 Mbps, 90pc duty cycle) IEEE 802.11a/h WIFI 5 GHz (OFDM, 24 Mbps, 90pc duty cycle)	WLAN	8,49	±9.6
10588	AAD	IEEE 802.11a/h WIFI 5 GHz (OFDM, 24 Mbps, 90pc duty cycle)	WLAN	8,35	±9.6
10589	AAD	IEEE 802.11wh WIFI 5 GHz (OFDM, 48 Mbps, 90pc duty cycle)	WLAN	8.76	±9.6
10590	AAD	IEEE 802.11a/h WIFI 5 GHz (OFDM, 54 Mbps, 90pc duty cycle)	WLAN	8.35	±9.0
0581	AAO	IEEE 802.11n (HT Mixed, 20 MHz, MCS0, 90pc duty cycle)	WLAN	8.67	±9.6
0092	AAD	IEEE 802.11n (HT Mixed, 20 MHz, MCS1, 90pc duty cycle)	WLAN	8.63	±9.6
0583	AAD	IEEE 802.11n (HT Mixed, 20 MHz, MCS2, 90pc duty cycle)	WLAN WLAN	8.79	±9.6
10594	AAD	IEEE 802 11n (HT Mixed, 20 MHz, MCS3, 90pc duty cycle)	and a first state of the local s	8.64	±9.6
10595	AAD	IEEE 802 11n (HT Mixed, 20 MHz, MCS4, 90pc duty cycle)	WLAN	8.74	±9.6
0596	AAD	IEEE 802.11n (HT Mixed, 20 MHz, MCS5, 90pc duty cycle)	WLAN	8.74	19.6
0597	AAD	IEEE 802.11n (HT Mixed, 20 MHz, MCS6, 90pc duty cycle)	WLAN		19.6
0598	AAD	IEEE 802 11n (HT Mixed, 20 MHz, MCS7, 90pc duty cycle)	WLAN	8.50	±9.6 ±9.6
0599	AAD	IEEE 802.11n (HT Mixed, 40 MHz, MCS0, 90pc duty cycle)	WLAN	8.50	and the second se
0600	AAD	IEEE 802.11n (HT Mixed, 40 MHz, MCS1, 90pc duty cycle)	WLAN	8.68	±9.6
0.601	AAD	IEEE 802.11n (HT Mixed, 40 MHz, MCS2, 90pc duty cycle)	WLAN		19.6
0.002	AAD	IEEE 802.11n (HT Mixed, 40 MHz, MCS3, 90pc duty cycle)	WLAN	8.82	19.8
0.603	AAD	IEEE 802.11n (HT Mxed, 40 MHz, MCS4, 90pc duty cycle)	and the second sec	8.94	19.6
0604	AAD	IEEE 802.11n (HT Mixed, 40 MHz, MCS5, 90pc duty cycle)	WLAN	9.03	19.6
0.005	AAD	IEEE 802.11n (HT Mxed, 40 MHz, MCS6, 90pc duty cycle)	WLAN	8.76	±9.6
0.606	AAD	IEEE 802.11n (HT Mixed, 40 MHz, MCS0, 60pc duty cycle)	WLAN WEAN	8.97	±8.8
0807	AAD	IEEE 802.11ac WIFI (20 MHz, MCS0, 90pc duty cycle)	WLAN	8.82	±9:6
			WLAN	8.64	±9.6 ±9.6
10608	AAD	IEEE 802.11ac WIFI (20 MHz, MCS1, 90pc duty cycle)	WLAN	8.77	-

Certificate No: EUmm-9528\_May24

Page 12 of 18



### May 17, 2024

UID	Rev	Communication System Name	Group	PAR (dB)	Unc <sup>E</sup> k =
10:609	AAD	IEEE 802.11ac WFI (20 MHz, MCS2, 90pc duty cycle)	WLAN	8.57	±9.6
10610	AAD	IEEE 802,11ac WIFI (20 MHz, MCS3, 90pc duty cycle)	WLAN	8.78	±9.6
10611	AAD	IEEE 802.11ac WIFI (20 MHz, MCS4, 90pc duty cycle)	WLAN	8.70	±9.6
10612	AAD	IEEE 802.11ac WIFI (20 MHz, MCS5, 90pc duty cycle)	WLAN	8.77	:9.6
10613	AAD	IEEE 802.11ac WIFI (20 MHz, MCS6, 90pc duty cycle)	WLAN	8.94	±9.6
0614	AAD	IEEE 802 11ac WFI (20 MHz, MCS7, 90pc duty cycle)	WLAN	8.59	±9.6
10815	AAD	IEEE 802 11ac WFI (20 MHz, MCS8, 90pc duty cycle)	WLAN	8.82	±9.6
10616	AAD	IEEE 802.11ac WIFI (40 MHz, MCS0, 90pc duty cycle)	WLAN	8.82	±9.6
10617	AAD	IEEE 802, 11ac WFI (40 MHz, MCS0, 90pc duty cycle)	WLAN	8.81	:9.6
10618	AAD	IEEE 802.11ac WIFI (40 MHz, MC31, 50pc duty cycle)	WLAN	8.58	the second s
10619	AAD	IEEE 802.11ac WIFI (40 MHz, MC32, 90pc duty cycle)	WLAN		±9.6
	and the state in the		00.00000	8.86	±9.6
10620	AAD	IEEE 802.11ac WIFI (40 MHz, MCS4, 90pc duty cycle)	WLAN	8.87	±9.6
10:621	AAD	IEEE 802.11ac WIFi (40 MHz, MCS5, 90pc duty cycle)	WLAN	8.77	±9.6
0.622	AAD	IEEE 802.11ac WIFI (40 MHz, MCS6, 90pc duty cycle)	WLAN	8,68	#9.6
10.623	AAD	IEEE 802.11ac WIFI (40 MHz, MCS7, 90pc duty cycle)	WLAN	8.82	±9.6
10624	DAA	IEEE 802 11ac WIFI (40 MHz, MCSB, 90pc duty cycle)	WLAN	8.96	<b>世9.6</b>
0.625	AAD	IEEE 802.11ac WIFi (40 MHz, MCS8, 90pc duty cycle)	WLAN	8.96	主9.6
0.628	AAD	IEEE 832.11ac WiFi (80 MHz, MCS0, 90pc duty cycle)	WLAN	8.83	±9.6
10627	AAD	IEEE 802.11ac WIFI (80 MHz, MCS1, 90pc duty cycle)	WLAN	8.88	±9.6
10628	AAD	IEEE 802.11ac WIFI (80 MHz, MCS2, 90pc duty cycle)	WLAN	8.71	±9.6
0629	AAD	IEEE 802.11ac WIFI (80 MHz, MCS3, 90pc duty cycle)	WLAN	8.85	±9.6
0.630	AAD	IEEE 802 11ac WIFI (80 MHz, MCS4, 90pc duty cycle)	WLAN	8.72	主9.6
0.631	AAD	IEEE 802 11ac WIF (80 MHz, MCS5, 90pc duty cycle)	WLAN	8.81	±9.5
0632	AAD	IEEE 802.11ac WIFI (80 MHz, MCS6, 90pc duty cycle)	WLAN	8.74	±9.6
0.633	AAD	EEE 802.11ac WIFI (80 MHz, MCS7, 90pc duty cycle)	WLAN	8.83	±9.6
0.634	AAD	IEEE 802.11ac WIFI (80 MHz, MCS8, 90pc duty cycle)	WLAN	8.80	±9.6
0.635	AAD	IEEE 802.11ac WIFI (80 MHz, MCS9, 90pc duty cycle)	WLAN	8.81	19.6
0.635	AAE	IEEE 802.11ac WIFi (160 MHz, MCS0, 90pc duty cycle)	WLAN	8.83	19.6
0.637	AAE	IEEE 802.11ac WFI (160 MHz, MCS1, 90cc duty cycle)	WLAN	8.79	±9.6
0.638	AAE	IEEE 802.11ac WIFI (160 MHz, MCS2, 90pc duty cycle)	WLAN	8.86	
0639	AAE	IEEE 802.11ac WFI (160 MHz, MCS3, 90pc duty cycle)			±9.6
0640	AAE		WLAN	8.85	±9.6
	AAE	IEEE 802.11ac WF (160 MHz, MCS4, 90pc duty cycle)	WLAN	8.98	±9.6
0.641	A	IEEE 802.11ac WFI (160 MHz, MCS5, 90pc duty cycle)	WLAN	9.06	±9.6
0642	AAE	IEEE 802 11ac WIFi (160 MHz, MCS6, 90pc duty cycle)	WLAN	9.06	±9.6
0643	AAE	IEEE 802 11ac WIFI (160 MHz, MCS7, 90pc duty cycle)	WLAN	8.89	±9.6
0644	AAE	EEE 802.11ac WFI (160 MHz, MCS8. 90pc duty cycle)	WLAN	9.05	±9.6
0645	AAE	IEEE 802.11ac WiFi (160 MHz, MCS9, 90pc duty cycle)	WLAN	9.11	±9.6
0.645	AAH	LTE-TOD (SC-FDMA, 1 R8, 5 MHz, QPSK, UL Subframe=2,7)	LTE-TOD	11.96	±9.6
0647	AAG	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK, UL Subframe=2,7)	LTE-TDD	11.96	19.6
0648	AAA	CDMA2000 (1x Advanced)	CDMA2000	3.45	±9.6
0.652	AAF	LTE-TDD (OFDMA, 5 MHz, E-TM 3.1, Clipping 44%)	LTE-TDD	6.91	±9.6
0653	AAF	LTE-TOD (OFDMA, 10 MHz, E-TM 3.1, Clipping 44%)	LTE-TDD	7,42	±9.6
0654	AAE	LTE-TDD (OFDMA, 15MHz, E-TM 3.1, Clipping 44%)	LTE-TDD	6.96	±9.6
0.655	AAF	LTE-TDD (OFDMA, 20 MHz, E-TM 3.1, Clipping 44%)	LTE-TDO	7.21	±9.6
0658	AAB	Pulse Waveform (200Hz, 10%)	Test	10.00	±9.6
0659	AAB	Pulae Waveform (200Hz, 20%)	Test	6.99	±9.6
0660	AAB	Pulse Waveform (200Hz, 40%)	Test	3.98	±9.6
0661	AAB	Pulse Waveform (200Hz, 60%)	Test	2.22	±9.6
0662	AAB	Pulse Waveform (200Hz, 80%)	Test	0.97	±9.6
0670	AAA	Bluetooth Low Energy	Bluelooth	2.19	±9.6
0.671	AAC	IEEE 802.11ax (20 MHz, MCS0, 90pc duty cycle)	WLAN	9.09	19.8
0672	AAC	IEEE 802.11ax (20 MHz, MCS1, 90pc duty cycle)	WLAN	8.57	±9.6
0673	AAC	IEEE 802.11ax (20 MHz, MCS2, 90pc duty cycle)	WLAN	8.78	
0674	AAC	IEEE 802.11ax (20 MHz, MCS3, 90pc duty cycle)	WLAN		±9.6
0675	AAC	IEEE 802.11ax (20 MHz, MCS4, 90pc duty cycle)		8.74	±9.6
0676	AAC	IEEE 802.11ax (20 MHz, MCB5, 90pc duty cycle)	WLAN	8.90	±9.6
0677	AAC		WLAN	8.77	±9.6
0.678	AAC	and the second second second second second	WLAN	8.73	±9.6
			WLAN	8.78	±9.6
0.679	AAC	EEE 802.11ax (20 MHz, MCS8, 90pc duty cycle)	WI.AN	8.89	±9.6
0.680	AAC	EEE B02 11ax (20 MHz, MCS9, 90pc duty cycle)	WLAN	8.80	±9.6
0.681	AAC	IEEE 802.11ax (20 MHz, MCS10, 90pc duty cycle)	WLAN	8.62	±9.6
0.682	AAC	IEEE 802.11ax (20 MHz, MCS11, 90pc duty cycle)	WLAN	8.83	±9.6
0683	AAC	IEEE 802.11ax (20 MHz, MCS0, 99pc duty cycle)	WLAN	8.42	±9.6
0.684	AAC	IEEE 802.11ax (20 MHz, MCS1, 99pc duty cycle)	WLAN	8.26	±9.6
0685	AAC	IEEE 802.11ax (20 MHz, MCS2, 99pc duty cycle)	WLAN	8.33	±9.6
0686	AAC	IEEE 802.11ax (20 MHz, MCS3, 99pc duty cycle)	WLAN	8.28	19.6

Certificate No: EUmm-9528\_May24

Page 13 of 18



## May 17, 2024

UID	Rev.	Communication System Name	Group	PAR (dB)	Unc <sup>E</sup> N =
10687	AAC	IEEE 802.11ax (20 MHz, MCS4, 99pc duty cycle)	WLAN	B.45	±9.6
10688	AAC	IEEE 802.11ax (20 MHz, MCS5, 99pc duty cycle)	WLAN	8.29	19.6
0689	AAC	IEEE 802.11ax (20 MHz, MCS6, 99pc duty cycle)	WLAN	8.55	19.6
0690	AAC	IEEE 802.11ax (20 MHz, MCS7, 99pc duty cycle)	WLAN	8.29	19.6
0691	AAC	IEEE 802.11ax (20 MHz, MCS8, 99pc duty cycle)	WLAN	8.25	±9.6
0692	AAC	IEEE 802.11ax (20 MHz, MCS9, 99pc duty cycle)	WLAN	8.29	±9.6
			WLAN	8.25	±9.6
0693	AAC	IEEE 802.11ax (20 MHz, MCS10, 99pc duty cycle)		8.57	
0694	AAC	IEEE 802.11ax (20 MHz, MCS11, 99pc duty cycle)	WLAN	8.78	±9.6
0695	AAC	IEEE 802.11ax (40 MHz, MCS0, 80pc duty cycle)	WLAN		±9.8
0696	AAC	IEEE 802.11ax (40 MHz, MCS1, 90pc duty cycle)	WLAN	8.91	±9.6
0.697	AAC	IEEE 802.11ax (40 MHz, MCS2, 90pc duty cycle)	WLAN	8.61	±9.6
0.698	AAC	IEEE 802.11ax (40 MHz, MCS3, 90pc duty cycle)	WLAN	8.89	±9.6
0.099	AAC	IEEE 802.11ax (40 MHz, MCS4, 90pc duty cycle)	WLAN	8.82	±8.6
0700	AAC	IEEE 802.11ax (40 MHz, MCS5, 90pc duty cycle)	WLAN	8.73	±9.8
0701	AAC	IEEE 802.11ax (40 MHz, MCS6, 90pc duty cycle)	WLAN	8.86	±9.6
0702	AAC	IEEE 802.11ax (40 MHz, MCS7, 90pc duty cycle)	WLAN	8.70	±9.6
0703	AAC	IEEE 802.11ax (40 MHz, MCS8. 90pc duty cycle)	WLAN	8.82	±9.6
0704	AAC	IEEE 802.11ax (40 MHz, MCS9, 90pc duty cycle)	WLAN	8.66	±9.6
0705	AAC	IEEE 802.11ax (40 MHz, MCS10, 90pc duty cycle)	WLAN	8.69	±9.6
0706	AAC	IEEE 902.11ax (40 MHz, MCS11, 90pc duty cycle)	WLAN	8.66	±9.6
0707	AAC	IEEE 802.11ax (40 MHz, MCS0, 99pc duty cycle)	WLAN	8.32	±9.6
0708	AAC	IEEE 802.11ax (40 MHz, MCS1, 99pc duty cycle)	WLAN	8.55	±9.6
0709	AAC	The state is to device a state is a state of the state	WLAN	8.33	±9.6
	and the second	IEEE 802 11ax (40 MHz, MCS2, 99pc duty cycle)	WLAN	8.29	
0710	AAC	IEEE 802.11ae (40 MHz, MCS3, 99pc duty cycle)	2252220000		±9.6
0711	AAG	IEEE 802.11ax (40 MHz, MCS4, 99pc duty cycle)	WLAN	8.39	±9.6
0712	AAC	IEEE 802.11ax (40 MHz, MCS5, 99pc duty cycle)	WLAN	8.67	±9.6
0713	AAC	IEEE 802.11ax (40 MHz, MCS8, 99pc duty cycle)	WLAN	8.33	:9.6
0714	AAC	IEEE 802.11ax (40 MHz, MCS7, 99pc duty cycle)	WLAN	8.26	±9,6
0715	AAC	IEEE 802.11ax (40 MHz, MCS8, 99pc duty cycle)	WLAN	8.45	±9.6
0716	AAC	IEEE 802,11ax (40 MHz, MCS9, 99pc duty cycle)	WLAN.	8.30	±9.6
0717	AAC	IEEE 802.11ax (40 MHz, MCS10, 99pc duty cycle)	WLAN	8.48	±9.6
0718	AAC	IEEE 802.11ax (40 MHz, MCS11, 99pc duty cycle)	WLAN	8.24	±9.6
0719	AAC	IEEE 802.11ax (80 MHz, MCS0, 90pc duty cycle)	WLAN	8.81	±9.6
0720	AAC	IEEE 802.11ax (80 MHz, MCS1, 90pc duty cycle)	WLAN	8.87	19.6
0721	AAC	IEEE 802.11ax (80 MHz, MCS2, 90pc duty cycle)	WLAN	8.76	±9.6
0722	AAC	IEEE 802.11ax (80 MHz, MCS3, 90pc duty cycle)	WLAN	8.55	±9.6
0723	AAC	IEEE 802.11ax (80 MHz, MCS4, 90pc duty cycle)	WLAN	8.70	±9.6
0724	AAC	IEEE 802 11ax (80 MHz, MCS5, 90pc duty cycle)	WLAN	8.90	+9.6
0725	AAC	IEEE 802.11ax (80 MHz, MCS6, 90pc duty cycle)	WLAN	8.74	±8.6
0726	AAC	IEEE 802.11ax (80 MHz, MCS7, 90pc duty cycle)	WLAN	8.72	±9.6
0727	AAC	IEEE 802.11ax (80 MHz, MCS8, 80pc duty cycle)	WLAN	8.66	19.6
0728	AAC	IEEE 802.11ax (80 MHz, MCS9, 90pc duty cycle)	WLAN	8.65	and the second s
0729	AAC	IEEE 802 11ax (80 MHz, MCS10, 90pc duty cycle)	the second se	and the second se	19.6
ter balances in			WLAN	8.64	±9.6
0736	AAC	IEEE 802.11ax (80 MHz, MCS11, 90pc duty cycle)	WLAN	8.67	±9.6
0731	AAC	IEEE 802.11 ax (80 MHz, MCSO, 99pc duty cycle)	WLAN	8.42	±9.6
10732	AAC	IEEE 802.11ax (80 MHz, MCS1, 99pc duty cycle)	WLAN	8.46	±9.6
0733	AAC	IEEE 802.11ax (80 MHz, MC52, 99pc duty cycle)	WLAN	8.40	±9.6
0734	AAC	IEEE 802.11ax (80 MHz, MCS3, 99pc duty cycle)	WLAN	8.25	±9.6
0735	AAC	IEEE 802.11ax (80 MHz, MCS4, 99pc duty cycle)	WLAN	8:33	±9.6
0736	AAC	IEEE 802.11ax (80 MHz, MCS5, 99pc duty cycle)	WLAN	8.27	±9.6
0737	AAC	IEEE 802.11ax (80 MHz, MCS6, 99pc duty cycle)	WLAN.	8.36	19.6
0738	AAC	IEEE 802.11ax (80 MHz, MCS7, 99pc duty cycle)	WLAN	8.42	±9.6
0739	AAC	IEEE 802.11ax (80 MHz, MCS8, 99pc duty cycle)	WLAN	8.29	±9.6
0740	AAC	IEEE 802.11ax (80 MHz, MCS9, 99pc duty cycle)	WLAN	8.48	±9.6
0741	AAC	IEEE 802.11ax (80 MHz, MCS10, 99pc duty cycle)	WLAN	8.40	±8.6
0742	AAC	IEEE 802 11ax (80 MHz, MCS11, 99pc duty cycle)	WLAN	8.43	19.6
0743	AAC	IEEE 802.11ax (160 MHz, MCS0, 90pc duty cycle)	WLAN	8.94	+9.6
0744	and the second second	IEEE 802.11ax (160 MHz, MCS1, 90pc duty cycle)	WLAN	9.16	19.6
0745	AAC	IEEE 602 11ax (160 MHz, MCS2, 90pc duty cycle)	WLAN	8.93	19.6
0746	AAC	IEEE 802.11ax (160 MHz, MCS2, stope duty cycle)			and the second s
- Andrewson and a start of the	and in the local division of the local divis		WLAN	9.11	19.6
0747	AAC	IEEE 802.11 ax (160 MHz, MCS4, 90pc duty cycle)	WLAN	9,04	19.6
0748	AAC	IEEE 802.11ax (160 MHz, MCS5, 90pc duty cycle)	WLAN	8.93	±9.6
0749	AAC	IEEE 802.11ax (160 MHz, MCS6, 90pc duty cycle)	WLAN	8.90	±9.6
0750	AAC	IEEE 802.11ax (160 MHz, MCS7, 90pc duty cycle)	WLAN	8.79	±9.6
0751	AAC	IEEE 802.11ax (160 MHz, MCS8, 90pc duty cycle)	WLAN	8,82	+9.6
0.752	AAC	IEEE 802.11ax (160 MHz, MCS9, 90pc duty cycle)	WLAN	8.81	±9.6

Certificate No: EUmm-9528\_May24

Page 14 of 18





### May 17, 2024

diD	Rev	Communication System Name	Group	PAR (dB)	Unc <sup>R</sup> R =
10753	AAC	IEEE 802.11ax (160 MHz, MCS10, 90pc duty cycle)	WLAN	8.00	±8.6
0754	AAC	IEEE 802.11ax (160 MHz, MCS11, 90pc duty cycle)	WLAN	8.94	±9.6
0756	AAC	IEEE 802.11ax (160 MHz, MCS0, 99pc duty cycle)	WLAN	8.64	±9.6
0756	AAC	IEEE 802.11ax (160 MHz, MCS1, 99pc duty cycle)	WLAN	8.77	±9.6
0757	AAC	IEEE 802.11ax (160 MHz, MCS2, 99pc duty cycle)	WLAN	8.77	19.6
0758	AAC	IEEE 802.11ax (160 MHz, MCS3, 99pc duty cycle)	WLAN	8.69	±9.6
0750	AAC	IEEE 802.11ax (160 MHz, MCS4, 99pc duty cycle)	WLAN	8.58	19.6
0760	AAC	IEEE 802.11ax (160 MHz, MCS5, 99pc duty cycle)	WLAN	8.49	19.6
0761	AAC	IEEE 802.11ax (160 MHz, MCS6, 99pc duty cycle)	WLAN	8.58	19.6
0762	AAC	IEEE 802 11 ax (160 MHz, MCS7, 99pc duty cycle)	WLAN	8.49	±9.6
0763	AAC	IEEE 802 11ax (160 MHz, MCS8, 99pc duty cycle)	WLAN	8.53	±9.6
0764	AAC	IEEE 802.11ax (160 MHz, MCS9, 99pc duty cycle)	WLAN	8.54	±9.8
0785	AAC	EEE 802.11ax (160 MHz, MC510, 99pc duty cycle)	WLAN	8.54	±9.6
0766	AAC	IEEE 802.11ax (160 MHz, MCS11, 99pc duty cycle)	WLAN	8.51	±9.6
0767	AAG	5G NR (CP-OFDM, 1 RB, 5 MHz, QPSK, 15 kHz)	5G NR FR1 TOD	7.99	19.6
0768	AAE	SG NR (CP-OFDM, 1 RB, 10 MHz, QPSK, 15 kHz)	5G NR FRI TDO	8.01	19.6
0769	AAD	5G NR (CP-OFDM, 1 RB, 15MHz, QPSK, 15kHz)	5G NR FRI TDD	8.01	19.6
0770	AAE	5G NR (CP-OFOM, 1 RB, 20 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.02	19.6
0771	AAD	5G NR (CP-OFDM, 1 RB, 25 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.02	19.6
0772	AAE	5G NR (CP-OFDM, 1 RB, 30 MHz, GPSK, 15 kHz)	5G NR FR1 TOD	8.23	19.6
0773	AAF	5G NR (CP-OFOM, 1 RB, 40 MHz, QPSK, 15 kHz)	50 NR FR1 TDD	8.03	19.6
0774	AAE	5G NR (CP-OFDM, 1 RB, 50 MHz, QPSK, 15 kHz)	50 NR FR1 TDO	8.02	19.6
0775	AAF	5G NR (CP-OFDM, 50% RB, 5 MHz, QPSK, 15 kHz)	50 NR FR1 TDD	8.31	19.6
077fi	AAE	5G NR (CP-OFDM, 50% RB, 10 MHz, QPSK, 15 kHz)	5G NR FR1 TDO	8.30	19.6
0777	AAC	5G NR (CP-OFOM, 50% R8, 15 MHz, QPSK, 15 kHz)	50 NR FR1 TDO	8.30	19.6
0778	AAE	5G NR (CP-OFDM, 60% R8, 20 MHz, QPSK, 15 kHz)	5G NR FR1 TDO	8.34	19.6
10779	AAC	5G NR (CP-OFDM, 50% RB, 25 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.42	19.6
0780	AAE	5G NR (CP-OFOM, 50% R8, 30 MHz, QPSK, 15 kHz)	5G NR FR1 TDO	8.38	19.6
0781	AAF	5G NR (CP-OFDM, 50% RB, 40 MHz, QPSK, 15 kHz)	5G NR FRI TDD	6.38	±9.6
0782	AAE	5G NR (CP-OFOM, 50% R8, 50 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.43	19.6
0783	AAG	5G NR (CP-OFDM, 100% RB, 5 MHz, QPSK, 15kHz)	5G NR FR1 TDD	8.31	±0.6
0784	AAE	5G NR (CP-OFDM, 100% RB, 10 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.29	10.0
0785	AAD	5G NR (CP-OFDM, 100% RB, 15 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.40	±9.6
0786	AAE	5G NR (CP-OFDM, 100% RB, 20 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8,35	±9.6
0787	AAD	5G NR (CP-OFDM, 100% RB, 25 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.44	±9.6
0788	AAE	50 NR (CP-OFDM, 100% RB 30 MHz, OPSK, 15kHz)	5G NR FR1 TDD	8.39	±9.6
0789	AAF	5G NR (CP-OFDM, 100% RB, 40 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.37	19.6
0.790	AAE	5G NR (CP-OFDM, 100% RB, 50 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.35	±9.6
0791	AAG	5G NR (CP-OFDM, 1 RB, 5 MHz, GPSK, 30 kHz)	5G NR FR1 TDD	7.83	19.6
0792	AAE	5G NR (CP-OFDM, 1 RB, 10 MHz, QPSK, 36 kHz)	5G NR FR1 TDD	7.92	19.6
0793	AAD	5G NR (CP-OFDM, 1 RB, 15 MHz, QPSK, 30 kHz)	SG NR FR1 TDD	7.95	19.5
0794	AAE	5G NR (CP-OFDM, 1 RB, 20 MHz, QPSK, 30 kHz)	50 NR FR1 TOD	7.82	19.6
0795	AAD	5G NR (CP-OFDM, 1 RB, 25 MHz, QPSK, 30 kHz)	5G NR FRI TOD	7.84	19.6
0796	AAE	5G NR (CP-OFDM, 1 RB, 30 MHz, QPSK, 30 kHz)	5G NA FR1 TOD	7.82	19.6
0797	AAF	5G NR (CP-OFDM, 1 R8, 40 MHz, QPSK, 30 kHz)	5G NA FR1 TD0	8.01	±9.6
0798	AAE	5G NR (CP-OFDM, 1 R8, 50 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	7.89	±9.6
0799	AAF	5G NR (CP-OFDM, 1 RB, 60 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	7.93	19.6
0801	AAF	5G NR (CP-OFDM, 1 R8, 80 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	7.89	±9.6
0802	AAE	5G NR (CP-OFOM, 1 R8, 90 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	7.87	±9.6
0803	AAF	5G NR (CP-OFDM, 1 RB, 100 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	7.93	±9.6 ±9.6
0.805	AAE	5G NR (CP-OFDM, 50% R8, 10 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	8.34	±9.6
0.808	AAD	5G NR (CP-OFDM, 50% R8, 15 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	8.34	±9.6
0.809	AAE	5G NR (CP-OFDM, 50% RB, 30 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	8.34	±9.6 ±9.6
0810	AAF	5G NR (CP-OFDM, 50% RB, 40 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	8.34	29.6
0.812	AAF	5G NR (CP-OFDM, 50% RB, 60 MHz, QPSK, 30kHz)	5G NR FR1 TDD	8.35	29,6
0817	AAG	5G NR (CP-OFDM, 100% RB, 5 MHz, QPSK, 30 kHz)	5G NR FRI TDD	8.35	29.6
0818	AAE	5G NR (CP-OFDM, 100% R8, 10 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	8.34	19.6
0819	AAD	5G NR (CP-OFDM, 100% RB, 15 MHz, QPSK, 30 kHz)	5G NR FR1 TOD	8.33	
0620	AAE	5G NR (CP-OFDM, 100% RB, 20 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	8.30	±9.6 ±9.6
0821	AAD	5G NR (CP-OFDM, 100% RB, 25 MHz, QPSK, 30 kHz)	5G NR FR1 TOD	8.41	
0822	AAE	5G NR (CP-OFDM, 100% RB, 30 MHz, OP5K, 30 kHz)	5G NR FR1 TOD	8.41	19.6
0823	AAF	5G NR (CP-OFOM, 100% R8, 40 MHz, QPSK, 30 kHz)	5G NR FR1 TOD	8.36	±9.6
0824	AAE	5G NR (CP-OFDM, 100% R8, 50 MHz, QPSK, 30 kHz)	SG NR FR1 TDD	the second s	19.6
0825	AAF	5G NR (CP-OFDM, 100% RB, 60 MHz, GPSK, 30 kHz)	50 NR FR1 TDD	8.39	19.6
0827	AAF	5G NR (CP-OFDM, 100% R8, 80 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	8.41	19.6
0828	AAE	5G NR (CP-OFOM, 100% R8, 90 MHz, OPSK, 30 kHz)	5G NR FR1 TDD	B.42	19.6
	and the second second	and the second s	DG NR PRI TDD	8.43	±9.6

Certificate No: EUmm-9528\_May24

Page 15 of 18





# May 17, 2024

UID	Rev	Communication System Name	Group	PAR (dB)	Unc <sup>E</sup> k =
6580	AAF	50 NR (CP-OFDM, 100% R8, 100 MHz, GP5K, 30 kHz)	5G NR FR1 TDD	8.40	±9.6
0830	AAE	5G NR (CP-OFDM, 1 RB, 10 MHz, QPSK, 60 kHz)	5G NR FR1 TOD	7.63	主9.6
0831	AAD	5G NR (CP-OFDM, 1 RB, 15 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	7.73	±9.5
0832	AAE	5G NR (CP-OFDM, 1 RB, 20 MHz, GPSK, 60 kHz)	5G NR FR1 TDD	7.74	±9.6
0833	AAD	5G NR (CP-OFDM, 1 RB, 25 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	7.70	±9.6
0.834	AAE	5G NR (CP-OFDM, 1 RB, 30 MHz, OPSK, 60 kHz)	5G NR FR1 TDD	7.75	±9.6
0835 AAF 5G NR (CP-OFDM, 1 RB, 40 MHz, QPSK, 60 kHz)		5G NR (CP-OFDM, 1 RB, 40 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	7.70	±9.5
0836	AAE	5G NR (CP-OFDM, 1 RB, 50 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	7.66	±9.5
10837	AAF.	5G NR (CP-OFDM, 1 RB, 60 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	7.68	±9.6
10839	AAF	5G NR (CP-OFOM, 1 RB, 80 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	7.70	±9.5
10.840	AAE	5G NR (CP-OFDM, 1 R8, 90 MHz, QPSK, 60 kHz)	5G NR FR1 TOD	7.67	±9.6
10841	AAF	5G NR (CP-OFDM, 1 RB, 100 MHz, OPSK, 60 kHz)	5G NR FR1 TDD	7.71	±9.5
10843	AAD	5G NR (CP-OFDM, 50% R8, 15 MHz, QPSK, 80 kHz)	5G NR FR1 TOD	8.49	19.6
10844	AAE	5G NR (CP-OFOM, 50% RB, 20 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	8.34	£9.6
10845	AAE	5G NR (CP-OFDM, 50% RB, 30 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	8,41	±9.6
10854	AAE	5G NR (CP-OFOM, 100% RB, 10 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	8.34	±9.6
10855	AAD	5G NR (CP-OFDM, 100% RB, 15 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	8.36	±9.6
10858	AAE	5G NR (CP-OFDM, 100% RB, 20 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	8.37	±9.6
10857	AAD	50 NR (CP-OFDM, 100% RB, 25 MHz, OPSK, 60 kHz)	SG NR FR1 TDD	8.35	29.6
10858	AAE	5G NR (CP-OFDM, 100% RB, 30 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	8.36	±9.6
10869	AAF	5G NR (CP-OFDM, 100% RB, 40 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	8.34	±8.6
10860	AAE	5G NR (CP-OFDM, 100% RB, 50 MHz, QPSK, 60 Hz)	5G NR FR1 TDD	8:41	±9.6
10861	AAF	5G NR (CP-OFDM, 100% RB, 60 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	8.40	±9.6
10863	AAF	5G NR (CP-OFDM, 100% RB, 60 MHz, GPSK, 60 kHz)	5G NR FR1 TDD	8.41	±9.6
10864	AAE	5G NR (CP-OFDM, 100% RB, 90 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	8.37	±9.6
10865	AAF	5G NR (CP-OFDM, 100% RB, 100 MHz, CPSK, 60 kHz)	5G NR FR1 TDD	8.41	±9.6
10866	AAF	5G NR (DFTs-OFDM, 1 RB, 100 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.68	±9.6
10868	AAF	5G NR (DFT-s-OFDM, 100% RB, 100 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.89	±9.6
10869	AAE	5G NR (DFT-0-OFDM, 1 RB, 100 MHz, QPSK, 120 kHz)	5G NR FR2 TDD	5.75	±9.6
10870	AAE	5G NR (DFT-s-OFDM, 100% RB, 100 MHz, QPSK, 120 kHz)	5G NR FR2 TDD	5.86	±9.6
10871	AAE	5G NR (DFT-9-OFDM, 1 RB, 100 MHz, 16QAM, 120 kHz)	5G NR FR2 TOD	5.75	±9.6
10.872	AAE	5G NR (DFT-s-OFDM, 100% RB, 100 MHz, 15QAM, 120 kHz)	SG NR FR2 TDD	6.52	19.6
10873	AAE	5G NR (DFT-a-OFDM, 1 RB, 100 MHz, 64QAM, 120 kHz)	5G NR FR2 TDD	6.61	19.6
10874	AAE	5G NR (DFT-s-OFDM, 100% RB, 100 MHz, 84QAM, 120 kHz)	5G NR FR2 TDD	6.65	±9.6
10875	AAE	5G NR (CP-OFDM, 1 RB, 100 MHz, QPSK, 120 kHz)	5G NR FR2 TDO	7.78	±9.8
10876	AAE	5G NR (CP-OFDM, 100% RB, 100 MHz, GPSK, 120 kHz)	5G NR FR2 TDD	8.39	±9.6
10877	AAE	5G NR (CP-OFDM, 1 RB, 100 MHz, 16QAM, 120 kHz)	5G NR FR2 TDD	7.95	±9.6
10878	AAE	5G NR (CP-OFDM, 100% RB, 100 MHz, 18QAM, 120 kHz)	5G NR FR2 TDD	8.41	±9.6
10879	AAE	5G NR (CP-OFDM, 1 RB, 100 MHz, 64QAM, 120 kHz)	5G NR FR2 TDD	8.12	±9.6
10880	AAE	50 NR (CP-OFDM, 100% RB, 100 MHz, 64QAM, 120 kHz)	5G NR FR2 TOD	8.38	±9.6
10881	AAE	5G NR (DFT-s-OFDM, 1 RB, 50 MHz, GPSK, 120 kHz)	5G NR FR2 TDD	5.75	19.6
10882	AAE	50 NR (DFT-s-OFDM, 100% RB, 50 MHz, QPSK, 120 kHz)	5G NR FR2 TDD	5.96	19.6
10883	AAE	50 NR (DFT-s-OFDM, 1 RB, 50 MHz, 160AM, 120 kHz)	5G NR FR2 TDD	6.57	±9.6
10884	AAE	50 NR (DFT-s-OFDM, 100% RB, 50 MHz, 160AM, 125 kHz)	5G NR FR2 TDD	6.53	±9.6
10.885	AAE	50 NR (DFT-s-OFDM, 1 RB, 50 MHz, 64QAM, 120kHz)	5G NR FR2 TDD	6.61	19.6
10886	AAE	5G NR (DFT-e-OFDM, 100% RB, 50 MHz, 64QAM, 120 kHz)	5G NR FR2 TDD	6.65	19.6
10887	AAE	50 NR (CP-OFDM, 1 RB, 50 MHz, QPSK, 120 kHz)	5G NR FR2 TDD	7.78	±9.6
10888	AAE	5G NR (CP-OFDM, 100% RB, 50 MHz, QPSK, 120 kHz)	5G NR FR2 TDD	8.35	19.8
10889	AAE	5G NR (CP-OFDM, 1 RB, 50 MHz, 16QAM, 120 kHz)	5G NR FR2 TOD	8.02	±9.6
10,890	AAE	5G NR (CP-OFDM, 100% RB, 50 MHz, 16QAM, 120 kHz)	5G NR FR2 TDD	8.40	±9.6
10891	AAE	5G NR (CP-OFDM, 1 RB, SOMHz, 64QAM, 120kHz)	5G NR FR2 TDD	8.13	±9.6
10.892	AAE	5G NR (CP-OFDM, 100% R8, 50 MHz, 64QAM, 120 kHz)	50 NR FR2 TDD	8.41	±9.6
10897	AAE	5G NR (DFT-s-OFDM, 1 RB, 5MHz, QPSK, 30kHz)	50 NR FR1 TDD	5.66	10.0
10898	AAC	5G NR (DFT-s-OFDM, 1 RB, 10 MHz, QPSK, 30 kHz)	50 NR FR1 T00	5.67	+9.6
10899	AAB	5G NR (DFT-s-OFDM, 1 RB, 15MHz, QPSK, 30 kHz)	50 NR FR1 TDD	5.67	19.6
10900	AAC	5G NR (DFT= OFDM, 1 RB, 20 MHz, OPSK, 30 kHz)	5G NR FR1 TDD	6.68	19.6
10901	AAB	5G NR (DFT-s-OFDM, 1 RB, 25 MHz, OPSK, 30 kHz)	5G NR FR1 TDD	5.68	19.6
10902	AAC	5G NR (DFT-s-OFDM, 1 RB. 30 MHz, OPSK, 30 kHz)	5G NR FR1 TOD	5.68	19.6
10903	AAD	5G NR (DFT-e-OFDM, 1 RB, 40 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.68	10.6
10904	AAC	5G NR (DFT-8-OFDM, 1 RB, 50 MHz, OPSK, 30 kHz)	5G NR FR1 TDD	5.68	19.6
10905	AAD	53 NR (DFT=OFDM, 1 RB, 60 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.68	19.6
10906	AAD	5G NR (DFT=OFDM, 1 RB, 80 MHz, QPSK, 30 kHz)	SG NR FR1 TDD	5.68	±9.6
10907	AAE	5G NR (DFT=OFDM, 116, 80 MRz, GPSK, 30 kHz) 5G NR (DFT=OFDM, 50% RB, 5MHz, GPSK, 30 kHz)	SG NR FR1 TDD	5.78	±9.6
10907	AAC	5G NR (DFT=-OFDM, 50% RB, 10 MHz; OPSK, 30 kHz)	5G NR FR1 TDD	5.93	±9.6
10909	AAB	5G NR (DFT=OFDM, 50% RB, 15MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.95	±9.6
				in the second	±9.6
10910	AAC	5G NR (DFT-9-OFDM, 50% RB, 20 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.83	

Certificate No: EUmm-9528\_May24

Page 16 of 18





# May 17, 2024

UID	Rev	Communication System Name	Group	PAR (dB)	Unc <sup>E</sup> k =
0911	AAB	5G NR (DFT=s-OFDM, 50% R8, 25 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.93	±9.6
0912	AAC	5G NR (DFT-s-OFDM, 50% RB, 30 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.84	±9.6
0913	AAD	5G NR (DFT-s-OFDM, 50% RB, 40 MHz, QPSK, 30 kHz)	5G NR FR1 TOD	5.84	±9.6
0914	AAC	53 NR (DFTs-OFDM, 50% RB, 50 MHz, QPSK, 30 kHz)	5G NR FR1 TOD	5.85	±9.6
0915	AAD	5G NR (DFTs-OFDM, 50% RB, 60 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.83	±9.6
0916	AAD	5G NR (DFTs-OFDM, 50% RB, 80 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.87	=9.6
0917	AAD	5G NR (DFT-s-OFDM, 50% RB, 100 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.94	±9.6
	AAE		5G NR FR1 TDD	5.86	±9.6
0918	AAC	50 NR (DFT+-OFDM, 100% RB, 5MHz, QPSK, 30 kHz)	SG NR FR1 TDD	5.86	#9.6
2222	10000	5G NR (DFTs-OFDM, 100% RB, 10 MHz, QPSK, 30 kHz)	E of the big	and the second sec	And and a state of the local sta
0920	AAB	5G NR (DFTs-OFDM, 100% RB, 15 MHz, QPSK, 30 NHz)	5G NR FR1 TDD	5.87	±9.6
0921	AAC	5G NR (DFT-s-OFDM, 100% R8, 20 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.84	±9.6
0922	AAB	5G NR (DFT-s-OFDM, 100% RB, 25 MHz, QPSK, 30 KHz)	5G NR FR1 TDD 5G NR FR1 TDD	5.82	±9.6
0923		5G NR (DFT=OFDM, 100% RB, 30 MHz, QPSK, 30 KHz)		5.84	+9.6
0924	AAD	5G NR (DFTs-OFDM, 100% RB, 40 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.84	±9.6
0925	AAC	5G NR (DFT-s-OFDM, 100% RB, 50 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.95	±9.8
0926	AAD	5G NR (DFT+-OFDM, 100% RB, 60 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.84	±9.6
0927	AAD	5G NR (DFT-s-OFDM, 100% RB, 80 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.94	±9.6
0.0558	AAD	5G NR (DFT-9-OFDM, 1 R8, 5 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5,52	±9,6
0929	AAD.	5G NR (DFT==OFDM, 1 RB, 10 MHz, QPSK, 15 HHz)	5G NR FR1 FDD	5.52	±9.6
0.930	AAC	53 NR (DFTs-OFDM, 1 RB, 15 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.52	±9.6
0991	AAC	5G NR (DFT-6-OFDM, 1 R8, 20 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.51	±9.6
10935	AAC	53 NR (DFT-s-OFDM, 1 RB, 25 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.51	#9.6
10933	AAC	5G NR (DFT-s-OFDM, 1 RB, 30 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.51	±9.6
0934	AAC	5G NR (DFTs-OFDM, 1 RB, 40 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5,51	±9,6
10995	AAD	50 NR (DFT-s-OFDM, 1 RB, 50 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.51	· ±9.6
10936	AAD	5G NR (DFT-s-OFDM, 50% RB, 5 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.90	±8.6
10907	AAD	5G NR (DFT-s-OFDM, 50% RB, 10 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.77	±9.6
10938	AAC	5G NR (DFT-s-OFDM, 50% RB, 15 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.90	±9.6
10939	AAC	5G NR (DFT-e-OFDM, 50% RB, 20 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.82	±9.6
10940	AAC	5G NR (DFT-s-OFDM, 50% RB, 25 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.89	±9.6
10941	AAC	5G NR (DFT-s-OFDM, 50% RB, 30 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.83	±9.6
10942	AAC	5G NR (DFT-p-OFDM, 50% RB, 40 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.85	=9.6
10943	AA0	5G NR (DFTs-OFDM, 50% RB, 50 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.95	#9.6
10944	AAD	5G NR (DFTs-OFDM, 100% RB, 5MHz, QPSK, 15kHz)	5G NR FR1 FDD	5.81	=9.6
10945	AAD	5G NR (DFTs-OFDM, 100% RB, 10 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.85	=9.6
10946	AAC	5G NR (DFT s-OFDM, 100% RB, 15MHz, QPSK, 15kHz)	5G NR FR1 FDD	5.83	19.6
10947	AAC	5G NR (DFT+-OFDM, 100% RB, 20 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.87	±9.6
10948	AAC	5G NR (DFT-s-OFDM, 100% RB, 25 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.94	±9.6
10949	AAC	5G NR (DFT-s-OFDM, 100% RB, 30 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.87	±9.6
10960	AAC	5G NR (DFT+ OFDM, 100% RB, 40 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.94	±9.5
10951	AAD	5G NR (DFT+-OFDM, 100% RB, 50 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.92	19.6
10952	AAA	5G NR DL (CP-OFOM, TM 3.1, 5MHz, 64-QAM, 15kHz)	5G NR FR1 FDD	8.25	±9.6
0.953	AAA	5G NR DL (CP-OFDM, TM 3.1, 10 MHz, 64-QAM, 15 kHz)	5G NR FR1 FD0	8.15	19.6
0954	AAA	5G NR DL (CP-OFDM, TM 3.1, 15 MHz, 64-QAM, 15 kHz)	5G NR FR1 FDD	8.23	19.6
0955	AAA	5G NR DL (CP-OFDM, TM 3.1, 20 MHz, 64-QAM, 15 kHz)	5G NR FR1 FD0	8.42	and the second se
0955	AAA	5G NR DL (CP-OFDM, TM 3.1, 5MHz, 64-QAM, 30 kHz)		and the second second second	±9.6
0957	AAA	5G NR DL (CP-OFDM, TM 3.1, 10 MHz, 64-QAM, 30 kHz)	5G NR FR1 FDD 5G NR FR1 FDD	8.94	±9.6
0958	AAA	5G NR DL (CP-OFDM, TM 3.1, 15MHz, 64-QAM, 30kHz)		8.31	19.6
0959	AAA	5G NR DL (CP-OFDM, TM 3.1, TO MHZ, 64-QAM, 30 HZ) 5G NR DL (CP-OFDM, TM 3.1, 20 MHZ, 64-QAM, 30 kHz)	50 NR FR1 FD0	8.61	19.6
0960	AAE	5G NR DL (CP-OFDM, TM 3.1, 5MHz, 64-QAM, 30 KHz)	50 NR FR1 FD0	8.33	19.6
0951	AAC		5G NR FR1 TDO	9.32	19.6
0.062	AAB	5G NR DL (CP-OFDM, TM 3.1, 10 MHz, 64-QAM, 15 HHz)	5G NR FR1 TDD	9.36	19.6
0.963	AAC	5G NR DL (CP-OFDM, TM 3.1, 15 MHz, 64-QAM, 15 kHz)	5G NR FR1 TDD	9.40	19.6
0.963	AAC	5G NR DL (CP-OFDM, TM 3.1, 20 MHz, 64-QAM, 15 kHz)	5G NR FR1 TDD	9.55	±9.6
and a local dama	AAE	5G NR DL (CP-OFDM, TM 3.1, 5 MHz, 64-QAM, 30 kHz)	5G NR FR1 TDD	9,29	±9.6
0.965		5G NR DL (CP-OFDM, TM 3.1, 10 MHz, 64-QAM, 30 kHz)	5G NR FR1 TDD	9.37	±9.6
0965	AAB	5G NR DL (CP-OFDM, TM 3.1, 15 MHz, 64-QAM, 39 kHz)	5G NR FR1 TDD	9.55	±9.6
0967	AAC	5G NR DL (CP-OFDM, TM 3.1, 20 MHz, 64-QAM, 30 kHz)	5G NR FRI TDD	9.42	±9.6
0.968	AAD	5G NR DL (CP-OFDM, TM 3.1, 100 MHz, 64-QAM, 30 kHz)	5G NR FR1 TDD	9.40	±9.6
0972	AAC	5G NR (CP-OFDM, 1 RB, 20MHz, QPSK, 15kHz)	5G NR FR1 TDD	11.50	±9.6
0973	GAA	50 NR (DF7s-OFDM, 1 RB, 100 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	9.06	±9.6
0974	GAA	5G NR (CP-OFDM, 100% RB, 100 MHz, 256-QAM, 30 kHz)	5G NR FR1 TDD	10.28	±9.6
0978	AAA	ULLA BOR	LALLA	1.16	±9.6
0979	<b>AAA</b>	ULLA HDR4	ULLA	8.58	±9.6
0980	AAA	ULLA HDRS	ULLA	10.32	±9.6
0981	AAA	ULLA HORp4	ULLA	3.19	±9.6
0982	AAA	ULLA HORp8	ULLA	3.43	19.6

Certificate No: EUmm-9528\_May24

Page 17 of 18





#### May 17, 2024

UID	Rev	Communication System Name	Group	PAR (dB)	Unc <sup>E</sup> k = 1
10983	AAC	5G NR DL (CP-OFDM, TM 3.1, 40 MHz, 64-QAM, 15 kHz)	5G NR FR1 TDD	9.31	±9.6
10984	AAB	5G NR DL (CP-OFDM, TM 3.1, 50 MHz, 64-QAM, 15 kHz)	5G NR FR1 TDD	9.42	±9.6
10985	AAC	5G NR DL (CP-OFDM, TM 3.1, 40 MHz, 64-QAM, 30kHz)	5G NR FR1 TDD	9.54	±9.6
10986	AAB	5G NR DL (CP-OFDM, TM 3.1, 50 MHz, 64-QAM, 30kHz)	5G NR FR1 TDD	9.50	19.6
10987	AAC	5G NR DL (CP-OFDM, TM 3.1, 60 MHz, 64-QAM, 30 kHz)	5G NR FR1 TDD	9.53	±9.6
10988	AAB	5G NR DL (CP-OFDM, TM 3.1, 70 MHz, 64-QAM, 30 kHz)	5G NR FR1 TDD	9.38	28.6
10989	AAC	5G NR DL (CP-OFDM, TM 3.1, 80 MHz, 64-QAM, 30 kHz)	5G NR FR1 TDD	9.35	±9,5
10990	AAB	5G NR DL (CP-OFDM, TM 3.1, 80 MHz, 64-QAM, 30 kHz)	5G NR FR1 TDD	9.52	±9.6
11003	AAA	5G NR DL (CP-OFDM, TM 3.1, 30 MHz, 64-QAM, 15 kHz)	5G NR FR1 TDD	10.24	±9.6
11004	AAA	5G NR DL (CP-OFDM, TM 3.1, 30 MHz, 64-QAM, 30 kHz)	5G NR FR1 TDD	10.75	±9.6
11005	AAA	5G NR DL (CP-OFDM, TM 3.1, 25 MHz, 64-QAM, 15 kHz)	5G NR FR1 FDD	8.70	±9.6
11006	AAA	5G NR DL (CP-OFDM, TM 3.1, 30 MHz, 64-QAM, 15 kHz)	5G NR FR1 FDD	8.55	±9.6
11007	AAA	5G NR DL (CP-OFDM, TM 3.1, 40 MHz, 64-QAM, 15 kHz)	5G NR FR1 FDD	8.46	±9.6
11008	AAA	5G NR DL (CP-OFDM, TM 3.1, 50 MHz, 64-QAM, 15 kHz)	5G NR FR1 FDD	8.51	太母,日
11009	AAA	5G NR DL (CP-OFDM, TM 3.1, 25 MHz, 64-QAM, 30 kHz)	5G NR FR1 FDD	8,76	±9.6
11010	AAA.	5G NR DL (CP-OFDM, TM 3.1, 30 MHz, 64-QAM, 30 kHz)	5G NR FR1 FDD	8.95	19.6
11011	AAA	5G NR DL (CP-OFDM, TM 3.1, 40 MHz, 64-QAM, 30 kHz)	5G NR FR1 FDD	8.96	±9.6
11012	AAA	5G NR DL (CP-OFDM, TM 3.1, 50 MHz, 64-QAM, 30 kHz)	5G NR FR1 FDD	8.68	±9.6
11013	AAB	IEEE 802.11be (320 MHz, MOS1, 99pc duty cycle)	WLAN	8.47	±9.6
11014	AAB	IEEE 802 11be (320 MHz, MCS2, 99pc duty cycle)	WLAN	8.45	±9.6
11015	AAB	IEEE 802.11be (320 MHz, MCS3, 99pc duty cycle)	WLAN	B.44	±9.6
11016	AAB	IEEE 802.11be (320 MHz, MCS4, 99pc duty cycle)	WLAN	B.44	±9.6
11017	AAB	IEEE 802.11be (320 MHz, MCS5, 99pc duty cycle)	WLAN	B.41	±9.6
11018	AAB	IEEE 802.11be (320 MHz, MCS6, 99pc duty cycle)	WLAN	8.40	±9.6
11019	AAB	IEEE 802.11be (320 MHz, MCS7, 99pc duty cycle)	WLAN	6.29	#9.6
11020	AAB	IEEE 802.11be (320 MHz, MCS8, 99pc duty cycle)	WLAN	8.27	19.6
11021	AAB	IEEE 802.11be (320 MHz, MCS9, 99pc duty cycle)	WLAN	8.46	±9.6
11022	AAB	IEEE 802.11be (320 MHz, MCS10, 99pc duty cycle)	WLAN	8.36	±9.6
11023	AAB	IEEE 802.11be (320 MHz, MCS11, 99pc duty cycle)	WLAN	8.09	±9.6
11024	AAB	IEEE 802.11be (320 MHz, MCS12, 99pc duty cycle)	WLAN	8.42	±9.6
11025	AAB	IEEE 802.11be (320 MHz, MCS13, 99pc duty cycle)	WLAN	8.37	±9.6
11026	AAB	IEEE 802.11be (320 MHz, MCS0, 99pc duty cycle)	WLAN	8.39	±9.6

E Uncertainty is determined using the max. deviation from linear response applying rectangular distribution and is expressed for the square of the field value.

Certificate No: EUmm-9528\_May24

Page 18 of 18





Appendix G. – Dipole Calibration Data



chmid & Partner Engineering AG rughausstrasse 43, 8004 Zurich,	Of Switzerland		Sender sulers d'étalonnane
credited by the Swiss Accreditation the Swiss Accreditation Service is ultilateral Agreement for the rec	s one of the signatories		Accreditation No.: SCS 0108
lient HCT Gyeonggi-do, Republic	o of Korea	Certificate No.	D750V3-1014_May24
ALIBRATION CI	ERTIFICATE	机工	
			wing Mi
Object	D750V3 - SN:101	4 500	4691 CJ 31321
		2025	4.06-05 2024 06-05
Calibration procedure(s)	QA CAL-05.v12	Contraction of the second	1.5.9
	Constation 1 1000	dure for SAR Validation Source	DAVALLY INTER
Calibration date:	May 20, 2024		CARLEND BERT LIVE LEAD
All calibrations have been conducte	ed in the closed laborator	obability are given on the following pages a y facility: environment temperature (22 ± 3)	
All calibrations have been conducte Calibration Equipment used (M&TE	ed in the closed laborator	y facility: environment temperature (22 ± 3)	
All calibrations have been conducte Calibration Equipment used (M&TE Primary Standards	ed in the closed laborator critical for calibration)		*C and humidity < 70%.
al calibrations have been conducte calibration Equipment used (M&TE mmary Standards 'ower moter NRP2	ed in the closed laborator critical for calibration)	y facility: environment temperature (22 ± 3) Cal Date (Certificate No.)	*C and humidity < 70%. Scheduled Calibration
II calibrations have been conducte Calibration Equipment used (M&TE Primary Standards Power motor NRP2 Power aansor NRP-Z01	ed in the closed laborator critical for calibration) ID # SN: 104778	y facility: environment temperature (22 ± 3) Cal Date (Certificate No.) 26-Mar-24 (No. 217-04036/04037)	*C and humidity < 70%. Scheduled Calibration Mar-25
All calibrations have been conducte Calibration Equipment used (M&TE Primary Standards Power motor NRP2 Power assor NRP-291 Power sensor NRP-291	ed in the closed laborator ortical for calibration) D 8 SN: 104778 SN: 103244	y facility: environment temperature (22 ± 3) Cal Date (Certificate No.) 26-Mar-24 (No. 217-04036/04037) 26-Mar-24 (No. 217-04036)	*C and humidity < 70%. Scheduled Calibration Mar-25 Mar-25 Mar-25 Mar-25 Mar-25
All calibrations have been conducte Calibration Equipment used (M&TE Primary Standards Power sensor NRP-201 Power sensor NRP-201 Power sensor NRP-201 Reference 20 dB Attenuator Type-N mismatch combination	ed in the closed laborator ortical for calibration) ID # SN: 104778 SN: 103244 SN: 103245 SN: 03245 SN: 03245 SN: 03245 SN: 03245 SN: 310962 / 06327	y facility: environment temperature (22 ± 3) Cal Date (Certificate No.) 26-Mar-24 (No. 217-04036/04037) 26-Mar-24 (No. 217-04036) 26-Mar-24 (No. 217-04037) 26-Mar-24 (No. 217-04046) 26-Mar-24 (No. 217-04047)	*C and humidity < 70%. Scheduled Calibration Mar-25 Mar-25 Mar-25 Mar-25 Mar-25 Mar-25
All calibrations have been conducte Calibration Equipment used (M&TE Primary Standards Power meter NRP2 Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB Attenuator Type-N mismatch combination Reference Probe EX3DV4	ed in the closed laborator ortical for calibration) ID # SN: 104778 SN: 103244 SN: 103246 SN: 9149394 (20k) SN: 310982 / 06327 SN: 7349	y facility: environment temperature (22 ± 3) Cal Date (Certificate No.) 26-Mar-24 (No. 217-04036/04037) 26-Mar-24 (No. 217-04036) 26-Mar-24 (No. 217-04037) 26-Mar-24 (No. 217-04046) 26-Mar-24 (No. 217-04047) 03-Nov-23 (No. EX3-7349_Nov23)	*C and humidity < 70%. Scheduled Calibration Mar-25 Mar-25 Mar-25 Mar-25 Mar-25 Nov-24
All calibrations have been conducte Calibration Equipment used (M&TE Primary Standards Power meter NRP2 Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB Attenuator Type-N mismatch combination Reference Probe EX3DV4	ed in the closed laborator ortical for calibration) ID # SN: 104778 SN: 103244 SN: 103245 SN: 03245 SN: 03245 SN: 03245 SN: 03245 SN: 310962 / 06327	y facility: environment temperature (22 ± 3) Cal Date (Certificate No.) 26-Mar-24 (No. 217-04036/04037) 26-Mar-24 (No. 217-04036) 26-Mar-24 (No. 217-04037) 26-Mar-24 (No. 217-04046) 26-Mar-24 (No. 217-04047)	*C and humidity < 70%. Scheduled Calibration Mar-25 Mar-25 Mar-25 Mar-25 Mar-25 Mar-25
All calibrations have been conducte Calibration Equipment used (M&TE Primary Standards Power meter NRP-201 Power aensor NRP-201 Power sensor NRP-201 Reference 20 dB Attenuator Type-N mismatch combination Reference Probe EX3DV4 DAE4	ed in the closed laborator ortical for calibration) ID # SN: 104778 SN: 103244 SN: 103246 SN: 9149394 (20k) SN: 310982 / 06327 SN: 7349	y facility: environment temperature (22 ± 3) Cal Date (Certificate No.) 26-Mar-24 (No. 217-04036/04037) 26-Mar-24 (No. 217-04036) 26-Mar-24 (No. 217-04037) 26-Mar-24 (No. 217-04046) 26-Mar-24 (No. 217-04047) 03-Nov-23 (No. EX3-7349_Nov23)	*C and humidity < 70%. Scheduled Calibration Mar-25 Mar-25 Mar-25 Mar-25 Mar-25 Nov-24
All calibrations have been conducte Calibration Equipment used (M&TE Primary Standards Power meter NRP2 Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB Attenuator (ype-N mismatch combination Reference Probe EX3DV4 DAE4 Secondary Standards	ed in the closed laborator ortical for calibration) ID 8 SN: 104778 SN: 103244 SN: 103246 SN: 8H8394 (20k) SN: 810894 (20k) SN: 310882 (06327 SN: 7349 SN: 781	y facility: environment temperature (22 ± 3) Cal Date (Certificate No.) 26-Mar-24 (No. 217-04036)(26-Mar-24 (No. 217-04036) 26-Mar-24 (No. 217-04037) 26-Mar-24 (No. 217-04047) 26-Mar-24 (No. 217-04047) 03-Nov-23 (No. EX3-7349_Nov23) 16-Fev-24 (No. DAE4-781_Fev24)	*C and humidity < 70%. Scheduled Calibration Mar-25 Mar-25 Mar-25 Mar-25 Nov-24 Fev-25
All calibrations have been conducte Calibration Equipment used (M&TE Primary Standards Power motor NRP-291 Power sensor NRP-291 Reference 20 dB Attenuator Type-N mismatch combination Reference Probe EX3DV4 DAE4 Secondary Standards Power meter E4419B	ed in the closed laborator ortical for calibration) ID # SN: 104778 SN: 103244 SN: 103245 SN: 03245 SN: 03245 SN: 081994 (20k) SN: 310982 / 06327 SN: 7349 SN: 781 ID #	y facility: environment temperature (22 ± 3) Cal Date (Certificate No.) 26-Mar-24 (No. 217-04036) 26-Mar-24 (No. 217-04036) 26-Mar-24 (No. 217-04047) 26-Mar-24 (No. 217-04047) 03-Nov-23 (No. EX3-7349_Nov23) 16-Fev-24 (No. DAE4-781_Fev24) Check Date (in house)	*C and humidity < 70%. Scheduled Calibration Mar-25 Mar-25 Mar-25 Mar-25 Nov-24 Fev-25 Scheduled Check
	et in the closed laborator critical for calibration) ID # SN: 104778 SN: 103244 SN: 103244 SN: 103245 SN: 03245 SN: 03245 SN: 03245 SN: 03245 SN: 7349 SN: 781 ID M SN: GB39512475	y facility: environment temperature (22 ± 3)* Cal Date (Certificate No.) 26-Mar-24 (No. 217-04036/04037) 26-Mar-24 (No. 217-04036) 26-Mar-24 (No. 217-04037) 26-Mar-24 (No. 217-04046) 26-Mar-24 (No. 217-04046) 26-Mar-24 (No. 217-04047) 03-Nov-23 (No. EX3-7349_Nov23) 16-Fev-24 (No. DAE4-781_Fev24) Check Date (in house) 30-Oct-14 (in house check Oct-22)	*C and humidity < 70%. Scheduled Calibration Mar-25 Mar-25 Mar-25 Mar-25 Nov-24 Fev-25 Scheduled Check In house check: Oct-24
All calibrations have been conducte Calibration Equipment used (M&TE Primary Standards Power neter NRP-2 Power sensor NRP-201 Power sensor NRP-201 Power sensor NRP-201 Reference 20 dB Attenuator (ype-N mismatch combination Reference Probe EX3DV4 DAE4 Secondary Standards Power meter E4419B Power sensor NP 8481A Power sensor NP 8481A	ed in the closed laborator critical for calibration) ID 8 SN: 104778 SN: 103244 SN: 103245 SN: 310962 (206) SN: 310962 (206) SN: 310962 (206) SN: 781 ID W SN: (0839512475 SN: U337292763 SN: W37292763 SN: 100972	y facility: environment temperature (22 ± 3)* Cal Date (Certificate No.) 26-Mar-24 (No. 217-04036)(26-Mar-24 (No. 217-04036) 26-Mar-24 (No. 217-04036) 26-Mar-24 (No. 217-04046) 26-Mar-24 (No. 217-04047) 03-Nov-23 (No. EX3-7349, Nov23) 16-Fev-24 (No. DAE4-781_Fev24) Check Date (in house) 30-Oct-14 (in house check Oct-22) 07-Oct-15 (in house check Oct-22) 16-Jun-15 (in house check Oct-22) 16-Jun-15 (in house check Oct-22)	*C and humidity < 70%. Scheduled Calibration Mar-25 Mar-25 Mar-25 Mar-25 Nov-24 Fev-25 Scheduled Check In house check: Oct-24 In house check: Oct-24
All calibrations have been conducte Calibration Equipment used (M&TE Primary Standards Power meter NRP-201 Power sensor NRP-201 Power sensor NRP-201 Reference 20 dB Attenuator Type-N mismatch combination Reference Probe EX3DV4 DAE4 Secondary Standards Power sensor HP 8481A Reference HP 8481A RF generator R&S SMT-06	d in the closed laborator ortical for calibration) ID # SN: 104778 SN: 103244 SN: 103245 SN: 103245 SN: 103245 SN: 103246 SN: 103245 SN: 103245 SN: 103245 SN: 7349 SN: 7349 SN: 781 ID # SN: 0839512475 SN: US37292763 SN: WY41093315	y facility: environment temperature (22 ± 3) Cal Date (Certificate No.) 26-Mar-24 (No. 217-04036)04037) 26-Mar-24 (No. 217-04036) 26-Mar-24 (No. 217-04037) 26-Mar-24 (No. 217-04046) 26-Mar-24 (No. 217-04046) 26-Mar-24 (No. 217-04047) 03-Nov-23 (No. EX3-7349_Nov23) 16-Fev-24 (No. DAE4-781_Fev24) Check Date (in house) 30-Oct-14 (in house check Oct-22) 07-Oct-15 (in house check Oct-22) 07-Oct-15 (in house check Oct-22)	*C and humidity < 70%. Scheduled Calibration Mar-25 Mar-25 Mar-25 Mar-25 Mar-25 Nov-24 Fev-25 Scheduled Check In house check: Oct-24 In house check: Oct-24 In house check: Oct-24
All calibrations have been conducte Calibration Equipment used (M&TE Primary Standards Power meter NRP-201 Power sensor NRP-201 Power sensor NRP-201 Reference 20 dB Attenuator Type-N mismatch combination Reference Probe EX3DV4 DAE4 Secondary Standards Power sensor HP 8481A Reference HP 8481A RF generator R&S SMT-06	ed in the closed laborator critical for calibration) ID 8 SN: 104778 SN: 103244 SN: 103245 SN: 310962 (206) SN: 310962 (206) SN: 310962 (206) SN: 781 ID W SN: (0839512475 SN: U337292763 SN: W37292763 SN: 100972	y facility: environment temperature (22 ± 3)* Cal Date (Certificate No.) 26-Mar-24 (No. 217-04036)(26-Mar-24 (No. 217-04036) 26-Mar-24 (No. 217-04036) 26-Mar-24 (No. 217-04046) 26-Mar-24 (No. 217-04047) 03-Nov-23 (No. EX3-7349, Nov23) 16-Fev-24 (No. DAE4-781_Fev24) Check Date (in house) 30-Oct-14 (in house check Oct-22) 07-Oct-15 (in house check Oct-22) 16-Jun-15 (in house check Oct-22) 16-Jun-15 (in house check Oct-22)	*C and humidity < 70%. Scheduled Calibration Mar-25 Mar-25 Mar-25 Mar-25 Nov-24 Fev-25 Scheduled Check In house check: Oct-24 In house check: Oct-24
All calibrations have been conducte Calibration Equipment used (M&TE Primary Standards Power meter NRP-201 Power sensor NRP-201 Power sensor NRP-201 Reference 20 dB Attenuator Type-N mismatch combination Reference Probe EX3DV4 DAE4 Secondary Standards Power meter E4419B Power sensor HP 8481A Power sensor HP 8481A RF generator R&S SMT-06 Network Analyzer Agilent E8358A	ed in the closed laborator ortical for calibration) ID # SN: 104778 SN: 103244 SN: 103244 SN: 103245 SN: 084994 (20k) SN: 7819 ID # SN: 781 ID # SN: 0839512475 SN: 0839512475 SN: US37292783 SN: WY41093315 SN: US41080477	y facility: environment temperature (22 ± 3) Cal Date (Certificate No.) 26-Mar-24 (No. 217-04036) 26-Mar-24 (No. 217-04037) 26-Mar-24 (No. 217-04047) 26-Mar-24 (No. 217-04047) 26-Mar-24 (No. 217-04047) 03-Nov-23 (No. EX3-7349_Nov23) 16-Fev-24 (No. DAE4-781_Fev24) Check Date (in house) 30-Oct-14 (in house check Oct-22) 07-Oct-15 (in house check Oct-22) 07-Oct-15 (in house check Oct-22) 15-Jun-15 (in house check Oct-22) 31-Mar-14 (in house check Oct-22)	*C and humidity < 70%. Scheduled Calibration Mar-25 Mar-25 Mar-25 Mar-25 Nov-24 Fev-25 Scheduled Check In house check: Oct-24 In house check: Oct-24
All calibrations have been conducte Calibration Equipment used (M&TE Primary Standards Power motor NRP-201 Power sensor NRP-201 Power sensor NRP-201 Reference 20 dB Attenuator Type-N mismatch combination Reference Probe EX3DV4 DAE4 Secondary Standards Power meter E4419B Power sensor HP 8481A Power sensor HP 8481A RF generator R&S SMT-06 Network Analyzer Agilent E8358A	ed in the closed laborator ortical for calibration) ID # SN: 104778 SN: 103244 SN: 103244 SN: 103245 SN: 03245 SN: 049994 (20k) SN: 7349 SN: 7349 SN: 781 ID # SN: 0839512475 SN: US37292783 SN: WY41093315 SN: US37292783 SN: WY41093315 SN: 100972 SN: US41080477 Name	24 facility: environment temperature (22 ± 3) Cal Date (Certificate No.) 25-Mar-24 (No. 217-04036)(26-Mar-24 (No. 217-04036) 26-Mar-24 (No. 217-04037) 26-Mar-24 (No. 217-04046) 26-Mar-24 (No. 217-04046) 26-Mar-24 (No. 217-04047) 03-Nov-23 (No. EX3-7349_Nov23) 16-Fev-24 (No. DAE4-781_Fev24) Check Date (in house) 30-Oct-14 (in house check Oct-22) 07-Oct-15 (in house check Oct-22) 07-Oct-15 (in house check Oct-22) 16-Jun-15 (in house check Oct-22) 16-Jun-15 (in house check Oct-22) 31-Mar-14 (in house check Oct-22) Function	*C and humidity < 70%. Scheduled Calibration Mar-25 Mar-25 Mar-25 Mar-25 Nov-24 Fev-25 Scheduled Check In house check: Oct-24 In house check: Oct-24
All calibrations have been conducte Calibration Equipment used (M&TE Primary Standards Power sensor NRP-201 Power sensor NRP-201 Power sensor NRP-201 Reference 20 dB Attenuator Type-N mismatch combination Reference Probe EX3DV4 DAE4 Secondary Standards Power meter E4419B Power sensor MP 8481A	ed in the closed laborator ortical for calibration) ID # SN: 104778 SN: 103244 SN: 103244 SN: 103245 SN: 03245 SN: 049994 (20k) SN: 7349 SN: 7349 SN: 781 ID # SN: 0839512475 SN: US37292783 SN: WY41093315 SN: US37292783 SN: WY41093315 SN: 100972 SN: US41080477 Name	24 facility: environment temperature (22 ± 3) Cal Date (Certificate No.) 25-Mar-24 (No. 217-04036)(26-Mar-24 (No. 217-04036) 26-Mar-24 (No. 217-04037) 26-Mar-24 (No. 217-04046) 26-Mar-24 (No. 217-04046) 26-Mar-24 (No. 217-04047) 03-Nov-23 (No. EX3-7349_Nov23) 16-Fev-24 (No. DAE4-781_Fev24) Check Date (in house) 30-Oct-14 (in house check Oct-22) 07-Oct-15 (in house check Oct-22) 07-Oct-15 (in house check Oct-22) 16-Jun-15 (in house check Oct-22) 16-Jun-15 (in house check Oct-22) 31-Mar-14 (in house check Oct-22) Function	*C and humidity < 70%. Scheduled Calibration Mar-25 Mar-25 Mar-25 Mar-25 Nov-24 Fev-25 Scheduled Check In house check: Oct-24 In house check: Oct-24
All calibrations have been conducte Calibration Equipment used (M&TE Primary Standards Power motor NRP-201 Power sensor NRP-201 Power sensor NRP-201 Reference 20 dB Attenuator Type-N mismatch combination Reference Probe EX3DV4 DAE4 Secondary Standards Power meter E4419B Power sensor HP 8481A RF generator R&S SMT-06 Network Analyzer Agilent E8358A Calibrated by:	ed in the closed laborator ortical for calibration) ID 8 SN: 104778 SN: 103244 SN: 103246 SN: 103246 SN: 310982 (206) SN: 310982 (206) SN: 781 ID # ID # SN: (3839512475 SN: (3839512475) SN: (3839512475 SN: (3839512475) SN: (383951245) SN: (383951245) SN: (383951245) SN: (383951245) SN: (383951245) SN: (383951245) SN: (383951245) SN: (383951245)	y facility: environment temperature (22 ± 3)* Cal Date (Certificate No.) 26-Mar-24 (No. 217-04036) 26-Mar-24 (No. 217-04036) 26-Mar-24 (No. 217-04047) 26-Mar-24 (No. 217-04047) 26-Mar-24 (No. 217-04047) 03-Nov-23 (No. EX3-7349, Nov23) 16-Fev-24 (No. DAE4-781_Fev24) Check Date (in house) 30-Oct-14 (in house check Oct-22) 07-Oct-15 (in house check Oct-22) 07-Oct-15 (in house check Oct-22) 16-Jun-15 (in house check Oct-22) 15-Jun-15 (in house check Oct-22) 31-Mar-14 (in house check Oct-22) 31-Mar-14 (in house check Oct-22) Function Laboratory Technicaen	*C and humidity < 70%. Scheduled Calibration Mar-25 Mar-25 Mar-25 Mar-25 Nov-24 Fev-25 Scheduled Check In house check: Oct-24 In house check: Oct-24
All calibrations have been conducte Calibration Equipment used (M&TE Primary Standards Power motor NRP-201 Power sensor NRP-201 Power sensor NRP-201 Reference 20 dB Attenuator Type-N mismatch combination Reference Probe EX3DV4 DAE4 Secondary Standards Power sensor HP 8481A RF generator R&S SMT-06 Network Analyzer Agilent E8358A Calibrated by:	ed in the closed laborator ortical for calibration) ID 8 SN: 104778 SN: 103244 SN: 103246 SN: 103246 SN: 310982 (206) SN: 310982 (206) SN: 781 ID # ID # SN: (3839512475 SN: (3839512475) SN: (3839512475 SN: (3839512475) SN: (383951245) SN: (383951245) SN: (383951245) SN: (383951245) SN: (383951245) SN: (383951245) SN: (383951245) SN: (383951245)	y facility: environment temperature (22 ± 3)* Cal Date (Certificate No.) 26-Mar-24 (No. 217-04036) 26-Mar-24 (No. 217-04036) 26-Mar-24 (No. 217-04047) 26-Mar-24 (No. 217-04047) 26-Mar-24 (No. 217-04047) 03-Nov-23 (No. EX3-7349, Nov23) 16-Fev-24 (No. DAE4-781_Fev24) Check Date (in house) 30-Oct-14 (in house check Oct-22) 07-Oct-15 (in house check Oct-22) 07-Oct-15 (in house check Oct-22) 16-Jun-15 (in house check Oct-22) 15-Jun-15 (in house check Oct-22) 31-Mar-14 (in house check Oct-22) 31-Mar-14 (in house check Oct-22) Function Laboratory Technicaen	*C and humidity < 70%. Scheduled Calibration Mar-25 Mar-25 Mar-25 Nov-24 Fev-25 Scheduled Check In house check: Oct-24 In house check: Oct-24

Certificate No: D750V3-1014\_May24

Page 1 of 6

Schweizerischer Kalibrierdienst

Service suisse d'étalonnage

Servizio svizzero di taratura

Swiss Calibration Service Accreditation No.: SCS 0108

S

C

S



Calibration Laboratory of Schmid & Partner Engineering AG Zeughausstrasse 43, 8004 Zurich, Switzerland

Accredited by the Swiss Accreditation Service (SAS)

The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

# Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

#### Calibration is Performed According to the Following Standards:

- a) IEC/IEEE 62209-1528, "Measurement Procedure For The Assessment Of Specific Absorption Rate Of Human Exposure To Radio Frequency Fields From Hand-Held And Body-Worn Wireless Communication Devices - Part 1528: Human Models, Instrumentation And Procedures (Frequency Range of 4 MHz to 10 GHz)", October 2020.
- b) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

#### Additional Documentation:

c) DASY System Handbook

#### Methods Applied and Interpretation of Parameters:

- Measurement Conditions: Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- Antenna Parameters with TSL: The source is mounted in a touch configuration below the center marking of the flat phantom.
- Return Loss: This parameter is measured with the source positioned under the liquid filled phantom (as described in the measurement condition clause). The Return Loss ensures low reflected power. No uncertainty required.
- SAR measured: SAR measured at the stated antenna input power.
- SAR normalized: SAR as measured, normalized to an input power of 1 W at the antenna connector.
- SAR for nominal TSL parameters: The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement. multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%

Certificate No: D750V3-1014\_May24

Page 2 of 6





# **Measurement Conditions**

DASY system configuration, as far as not given on page 1.

DASY Version	DASY52	V52.10.4
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	15 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	750 MHz ± 1 MHz	

# Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	41.9	0.89 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	43.2 ± 6 %	0.88 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 "C	and a second	****

### SAR result with Head TSL

SAR averaged over 1 cm <sup>3</sup> (1 g) of Head TSL	Condition		
SAR measured	250 mW input power	2.09 W/kg	
SAR for nominal Head TSL parameters	normalized to 1W	8.50 W/kg ± 17.0 % (k=2)	
SAR averaged over 10 cm <sup>2</sup> (10 g) of Head TSL	condition		
SAR measured	250 mW input power	1.37 W/kg	
SAR measured SAR for nominal Head TSL parameters	250 mW input power normalized to 1W	1.37 W/kg 5.54 W/kg ± 16.5 % (k=2	

Certificate No: D750V3-1014\_May24

Page 3 of 6



# Appendix (Additional assessments outside the scope of SCS 0108)

### Antenna Parameters with Head TSL

Impedance, transformed to feed point	53.6 Ω + 2.7 jΩ	
Return Loss	- 27.3 dB	

#### General Antenna Parameters and Design

Electrical Delay (one direction)	1,037 ns	
----------------------------------	----------	--

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.

No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged,

#### Additional EUT Data

Manufactured by	SPEAG

Certificate No: D750V3-1014\_May24

Page 4 of 6



### **DASY5 Validation Report for Head TSL**

Date: 20.05.2024

Test Laboratory: SPEAG, Zurich, Switzerland

#### DUT: Dipole 750 MHz; Type: D750V3; Serial: D750V3 - SN:1014

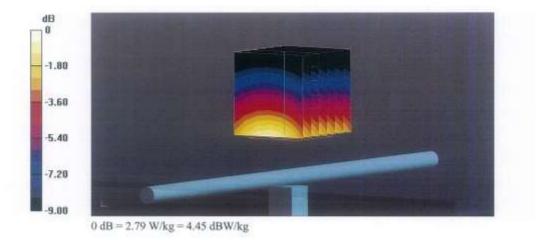
Communication System: UID 0 - CW; Frequency: 750 MHz Medium parameters used: f = 750 MHz;  $\sigma$  = 0.88 S/m;  $\varepsilon_r$  = 43.2; p = 1000 kg/m<sup>3</sup> Phantom section: Flat Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 SN7349; ConvF(10.11, 10.11, 10.11) @ 750 MHz; Calibrated: 03.11.2023
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- · Electronics: DAE4 Sn781; Calibrated: 16.02.2024
- Phantom: Flat Phantom 4.9 (front); Type: QD 00L P49 AA; Serial: 1001
- DASY52 52.10.4(1535); SEMCAD X 14.6.14(7501)

### Dipole Calibration for Head Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm Reference Value = 59.58 V/m; Power Drift = 0.03 dB Peak SAR (extrapolated) = 3.13 W/kg SAR(1 g) = 2.09 W/kg; SAR(10 g) = 1.37 W/kg Smallest distance from peaks to all points 3 dB below = 24.1 mm Ratio of SAR at M2 to SAR at M1 = 66.4% Maximum value of SAR (measured) = 2.79 W/kg



Certificate No: D750V3-1014\_May24

Page 5 of 6



# Impedance Measurement Plot for Head TSL

				F	4	8		A		0000 582 0000	66 p	H	42	3.578 .8524 975 m 35.094	C U
				Ę	5	Z	Ż	Ì	7						
	th 1 Aug 1	20			~	1	-						-		
Ch1: Star	Ch 1 Awg * r 550.000 k	29 Hite	-				~	1 7	50.0	0000		_		1336 (	
Ch1: Star 10.00 5.00 5.00 5.00	r 550.000 k						~	1 7	50.0	0000	0 MH	_		-	
Ch1: Star 5.00 5.00 5.00 10.00 10.00	r 550.000 k	20 HHa —					~		50.0	0000	0 MH	_		-	
Ch1: Star	r 550.000 k	29 Hite					/ , /	1 7	50.0	0000		_		-	-
Ch1: Star 5.00 5.00 5.00 5.00 10.00 15.00 20.09	r 550.000 k	29 1Ha					, , ,	1 7	50.0	0000		_		-	

Certificate No: D750V3-1014\_May24

Page 6 of 6



			000 0100
ccredited by the Swiss Accreditation he Swiss Accreditation Service ultilateral Agreement for the rec	is one of the signatorie		Accreditation No.: SCS 0108
Rent HCT Gyeonggi-do, Republi	c of Korea	Certificate No.	D835V2-441_Apr24
CALIBRATION C	ERTIFICATE		N TO THE OWNER
Dbject	D835V2 - SN:441	a 71 24 :	1 12:
			e n
Calibration procedure(5)	QA CAL-05.v12 Calibration Proce	dure for SAR Validation Sources	
Calibration date:	April 18, 2024		
	ed in the closed laborator	obability are given on the following pages and y facility: environment temperature (22 $\pm$ 3)*C	
Calibration Equipment used (M&TH Primary Standards	ed in the closed laborator E critical for calibration)	y facility: environment temperature (22 ± 3)*C Cal Date (Certificate No.)	and humidity < 70%. Scheduled Calibration
Calibration Equipment used (M&TF himary Standards hower meter NRP2	ed in the closed laborator E critical for calibration) ID # SN: 104776	y facility: environment temperature (22 ± 3)*C Cal Date (Certificate No.) 28-Mar-24 (No. 217-04036/04037)	c and humidity < 70%. Scheduled Calibration Mar-25
Calibration Equipment used (M&T) Inimary Standards Power meter NRP2 Power sensor NRP-291	ed in the closed laborator 5 critical for calibration) ID # 5N: 104775 SN: 103244	y facility: environment temperature (22 ± 3)*C Cal Date (Certificate No.) 28-Mar-24 (No. 217-04036/04037) 28-Mar-24 (No. 217-04036)	2 and humidity < 70%. Scheduled Calibration Mar-25 Mar-25
Calibration Equipment used (M&TF Primary Standards Power meter NRP2 Power sensor NRP-291 Power sensor NRP-291	ed in the closed laborator E ortical for calibration) IID # SN: 104776 SN: 103244 SN: 103245	y facility: environment temperature (22 ± 3)*C Cal Date (Certificate No.) 28-Mar-24 (No. 217-04036/04037) 28-Mar-24 (No. 217-04038) 26-Mar-24 (No. 217-04037)	2 and humidity < 70%. Scheduled Calibration Mar-25 Mar-25 Mar-25
Calibration Equipment used (M&TH Primary Standards *ower meter NRP2 *ower sensor NRP-291 *ower sensor NRP-291 Reference 20 dB Attenuator	ed in the closed laborator critical for calibration) ID # SN: 104776 SN: 103244 SN: 103245 SN: BH8394 (20k)	y facility: environment temperature (22 ± 3)*C Cal Date (Certificate No.) 28-Mar-24 (No. 217-04036/04037) 28-Mar-24 (No. 217-04030) 26-Mar-24 (No. 217-04046)	2 and humidity < 70%. Scheduled Calibration Mar-25 Mar-25 Mar-25 Mar-25
Calibration Equipment used (M&TH Primary Standards Power meter NRP2 Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB Attenuator Type-N mismatch combinetion	ed in the closed laborator critical for calibration) ID # SN: 104778 SN: 103244 SN: 103245 SN: 2103245 SN: BH9394 (20k) SN: 310982 / 06327	y facility: environment temperature (22 ± 3)*C Cal Date (Certificate No.) 28-Mar-24 (No. 217-04036/04037) 28-Mar-24 (No. 217-04038) 26-Mar-24 (No. 217-04037) 26-Mar-24 (No. 217-04047)	Scheduled Calibration Mar-25 Mar-25 Mar-25 Mar-25 Mar-25 Mar-25 Mar-25
Calibration Equipment used (M&TH Primary Standards Power meter NRP-291 Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB Attenuator Type-N mismatch combination Reference Probe EX3DV4	ed in the closed laborator critical for calibration) ID # SN: 104776 SN: 103244 SN: 103245 SN: BH8394 (20k)	y facility: environment temperature (22 ± 3)*C Cal Date (Certificate No.) 28-Mar-24 (No. 217-04036/04037) 28-Mar-24 (No. 217-04030) 26-Mar-24 (No. 217-04046)	2 and humidity < 70%. Scheduled Calibration Mar-25 Mar-25 Mar-25 Mar-25
Calibration Equipment used (M&TH Primary Standards Power meter NRP2 Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB Attenuator Type-N mismatch combination Reference Probe EX3DV4 DAE4 Secondary Standards	ed in the closed laborator critical for calibration) ID # SN: 104776 SN: 103244 SN: 103245 SN: 103245 SN: 103245 SN: 310982 / 06327 SN: 7349 SN: 601 ID #	y facility: environment temperature (22 ± 3)*C Cal Date (Certificate No.) 28-Mar-24 (No. 217-04036/04037) 28-Mar-24 (No. 217-04036) 26-Mar-24 (No. 217-04046) 26-Mar-24 (No. 217-04046) 26-Mar-24 (No. 217-04047) 03-Nov-23 (No. EX3-7349_Nov23) 30-Jan-24 (No. DAE4-601_Jan24) Check Date (in house)	2 and humidity < 70%. Scheduled Calibration Mar-25 Mar-25 Mar-25 Mar-25 Mar-25 Nov-24 Jan-25 Scheduled Check
Calibration Equipment used (M&TH Primary Standards Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB Attenuator Type-N mismatch combination Reference Probe EX3DV4 DAE4 Secondary Standards Power meter E4419B	ed in the closed laborator critical for calibration) ID # SN: 104776 SN: 103244 SN: 103245 SN: 8H9394 (20k) SN: 310962 / 06327 SN: 7349 SN: 601 ID # SN: 601	y facility: environment temperature (22 ± 3)*C Cal Date (Certificate No.) 28-Mar-24 (No. 217-04036/04037) 28-Mar-24 (No. 217-04036/0 26-Mar-24 (No. 217-04037) 26-Mar-24 (No. 217-04046) 26-Mar-24 (No. 217-04047) 03-Nov-23 (No. EX3-7349 Nov23) 30-Jan-24 (No. DAE4-601_Jan24) Check Date (in house) 30-Oct-14 (in house check Oct-22)	2 and humidity < 70%. Scheduled Calibration Mar-25 Mar-25 Mar-25 Mar-25 Mar-25 Nov-24 Jan-25 Scheduled Check In house check: Oct-24
Calibration Equipment used (M&TH Primary Standards Power meter NRP2 Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB Attenuator Type-N mismatch combination Reference Probe EX3DV4 DAE4 Secondary Standards Power meter E44198 Power sensor HP 84811A	ed in the closed laborator critical for calibration) ID # SN: 104776 SN: 103244 SN: 103245 SN: 103245 SN: 103245 SN: 103245 SN: 103245 SN: 310982 / 06327 SN: 7349 SN: 601 ID # SN: 601 SN: 603	y facility: environment temperature (22 ± 3)*C Cal Date (Certificate No.) 28-Mar-24 (No. 217-04036/04037) 28-Mar-24 (No. 217-04036) 26-Mar-24 (No. 217-04047) 26-Mar-24 (No. 217-04047) 03-Nov-23 (No. 217-04047) 03-Nov-23 (No. 2X3-7349_Nov23) 30-Jan-24 (No. DAE4-601_Jan24) Check Date (in house) 30-Oct-14 (in house check Oct-22) 07-Oct-15 (in house check Oct-22)	2 and humidity < 70%. Scheduled Calibration Mar-25 Mar-25 Mar-25 Mar-25 Mar-25 Mar-25 Nov-24 Jan-25 Scheduled Check In house check: Oct-24 In house check: Oct-24
Calibration Equipment used (M&TH Primary Standards Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB Attonuator Type-N mismatch combination Reference Probe EX3DV4 DAE4 Secondary Standards Power meter E44198 Power sensor HP 8481A Power sensor HP 8481A	ed in the closed laborator critical for calibration) ID # SN: 104775 SN: 103244 SN: 103245 SN: 310982 / 06327 SN: 310982 / 06327 SN: 7349 SN: 601 ID # SN: 601 ID # SN: 0839512475 SN: US37292783 SN: WY41093315	y facility: environment temperature (22 ± 3)*C Cal Date (Certificate No.) 28-Mar-24 (No. 217-04036/04037) 26-Mar-24 (No. 217-04037) 26-Mar-24 (No. 217-04037) 26-Mar-24 (No. 217-04047) 03-Nov-23 (No. EX3-7349_Nov/23) 30-Jan-24 (No. DAE4-601_Jan24) Check Date (in house) 30-Oct-14 (in house check Oct-22) 07-Oct-15 (in house check Oct-22) 07-Oct-15 (in house check Oct-22)	2 and humidity < 70%. Scheduled Calibration Mar-25 Mar-25 Mar-25 Mar-25 Mar-25 Mar-25 Nov-24 Jan-25 Scheduled Check In house check: Oct-24 In house check: Oct-24 In house check: Oct-24
Calibration Equipment used (M&TH Primary Standards Power sensor NRP-291 Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB Attanuator Type-N mismatch combination Reference Probe EX3DV4 DAE4 Secondary Standards Power meter E44198 Power sensor HP 8481A Power sensor HP 8481A RF generator R&S SMT-06	ed in the closed laborator cartical for calibration) ID # SN: 104776 SN: 103244 SN: 103245 SN: 103245 SN: 310982 / 06327 SN: 7348 SN: 601 ID # SN: 601 ID # SN: 6839512475 SN: US37292783 SN: US37292783 SN: 100972	y facility: environment temperature (22 ± 3)*C Cal Date (Certificate No.) 28-Mar-24 (No. 217-04036/04037) 26-Mar-24 (No. 217-04038) 26-Mar-24 (No. 217-04038) 26-Mar-24 (No. 217-04048) 26-Mar-24 (No. 217-04047) 03-Nor-23 (No. EX3-7349_Nor/23) 30-Jan-24 (No. DAE-4-601_Jan/24) Check Date (in house) 30-Oct-14 (in house check Oct-22) 07-Oct-15 (in house check Oct-22) 15-Jun-15 (in house check Oct-22)	2 and humidity < 70%. Scheduled Calibration Mar-25 Mar-25 Mar-25 Mar-25 Mar-25 Nov-24 Jan-25 Scheduled Check In house check: Oct-24 In house check: Oct-24 In house check: Oct-24 In house check: Oct-24
Calibration Equipment used (M&TH Primary Standards Power meter NRP-291 Power sensor NRP-291 Reference 20 dB Attonuator Type-N mismatch combination Reference Probe EX3DV4 DAE4 Secondary Standards Power meter E44198 Power sensor HP 8481A Power sensor HP 8481A RF generator R&S SMT-06	ed in the closed laborator critical for calibration) ID # SN: 104776 SN: 103244 SN: 103245 SN: 103245 SN: 103245 SN: 310982 / 06327 SN: 7349 SN: 601 ID # SN: GB39512475 SN: US37262783 SN: MY41093315 SN: US3100972 SN: US41080477	Cal Date (Certificate No.)         28-Mar-24 (No. 217-04036/04037)         28-Mar-24 (No. 217-04036/04037)         28-Mar-24 (No. 217-04036)         28-Mar-24 (No. 217-04048)         28-Mar-24 (No. 217-04047)         03-Nov-23 (No. EX3-7349 (Nov23)         30-Jan-24 (No. DAE4-601_Jan24)         Check Date (in house)         30-Oct-14 (in house check Oct-22)         07-Oct-15 (in house check Oct-22)         15-Jan-15 (in house check Oct-22)         31-Mar-14 (in house check Oct-22)	2 and humidity < 70%. Scheduled Calibration Mar-25 Mar-25 Mar-25 Mar-25 Mar-25 Mar-25 Nov-24 Jan-25 Scheduled Check In house check: Oct-24 In house check: Oct-24 In house check: Oct-24
Calibration Equipment used (M&TH Primary Standards Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB Attenuator Type-N mismatch combination Reference Probe EX3DV4 DAE4 Secondary Standards Power meter E44198 Power sensor HP 8481A Power sensor HP 8481A RF generator R&S SMT-06 Network Analyzer Agilent E8358A	ed in the closed laborator critical for calibration) ID # SN: 104776 SN: 103244 SN: 103245 SN: 8H9394 (20k) SN: 310982 / 06327 SN: 7349 SN: 601 ID # SN: 6B39512475 SN: US37262783 SN: US37262783 SN: US3726773 SN: US3726773 SN: US41060477 Name	y facility: environment temperature (22 ± 3)*C Cal Date (Certificate No.) 28-Mar-24 (No. 217-04036/04037) 28-Mar-24 (No. 217-04036) 26-Mar-24 (No. 217-04037) 26-Mar-24 (No. 217-04047) 03-Nov-23 (No. EX3-7349_Nov23) 30-Jan-24 (No. DAE4-601_Jan24) Check Date (in house) 30-Oct-14 (in house check Oct-22) 07-Oct-15 (in house check Oct-22) 07-Oct-15 (in house check Oct-22) 15-Jun-15 (in house check Oct-22) 31-Mar-14 (in house check Oct-22) Function	2 and humidity < 70%. Scheduled Calibration Mar-25 Mar-25 Mar-25 Mar-25 Mar-25 Nov-24 Jan-25 Scheduled Check In house check: Oct-24 In house check: Oct-24 In house check: Oct-24 In house check: Oct-24
Calibration Equipment used (M&TH Primary Standards Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB Attenuator Type-N mismatch combination Reference Probe EX3DV4 DAE4 Secondary Standards Power meter E44198 Power sensor HP 8481A Power sensor HP 8481A RF generator R&S SMT-06 Network Analyzer Agilent E8358A	ed in the closed laborator critical for calibration) ID # SN: 104776 SN: 103244 SN: 103245 SN: 103245 SN: 103245 SN: 310982 / 06327 SN: 7349 SN: 601 ID # SN: GB39512475 SN: US37262783 SN: MY41093315 SN: US3100972 SN: US41080477	Cal Date (Certificate No.)         28-Mar-24 (No. 217-04036/04037)         28-Mar-24 (No. 217-04036/04037)         28-Mar-24 (No. 217-04036)         28-Mar-24 (No. 217-04048)         28-Mar-24 (No. 217-04047)         03-Nov-23 (No. EX3-7349 (Nov23)         30-Jan-24 (No. DAE4-601_Jan24)         Check Date (in house)         30-Oct-14 (in house check Oct-22)         07-Oct-15 (in house check Oct-22)         15-Jan-15 (in house check Oct-22)         31-Mar-14 (in house check Oct-22)	2 and humidity < 70%. Scheduled Calibration Mer-25 Mar-25 Mar-25 Mar-25 Mar-25 Mar-25 Scheduled Check In house check: Oct-24 In house check: Oct-24
Calibration Equipment used (M&TH Primary Standards Power meter NRP-291 Power sensor NRP-291 Reference 20 dB Attonuator Type-N mismatch combination Reference Probe EX3DV4 DAE4 Secondary Standards Power meter E44198 Power sensor HP 8481A Power sensor HP 8481A RF generator R&S SMT-06 Network Analyzer Agilent E8358A Calibrated by:	ed in the closed laborator critical for calibration) ID # SN: 104776 SN: 103244 SN: 103245 SN: 8H8394 (20k) SN: 310982 (20k) SN: 310982 (20k) SN: 7348 SN: 601 ID # ID # SN: (B39512475 SN: US37292783 SN: W341080315 SN: 100972 SN: US41060477 Name Pado Pina	y facility: environment temperature (22 ± 3)*C Cal Date (Certificate No.) 28-Mar-24 (No. 217-04036004037) 26-Mar-24 (No. 217-04038) 26-Mar-24 (No. 217-04048) 26-Mar-24 (No. 217-04048) 26-Mar-24 (No. 217-04048) 26-Mar-24 (No. 217-04048) 30-Jan-24 (No. 217-04048) 30-Jan-24 (No. 217-04048) 30-Jan-24 (No. DAE-4-601_Jan24) Check Date (in house) 30-Oct-14 (in house check Oct-22) 07-Oct-15 (in house check Oct-22) 07-Oct-15 (in house check Oct-22) 31-Mar-14 (in house check Oct-22) 31-Mar-14 (in house check Oct-22) Function Laboratory Technician	2 and humidity < 70%. Scheduled Calibration Mer-25 Mar-25 Mar-25 Mar-25 Mar-25 Mar-25 Scheduled Check In house check: Oct-24 In house check: Oct-24
Calibration Equipment used (M&TH Primary Standards Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB Attenuator Type-N mismatch combination Reference Probe EX3DV4 DAE4 Secondary Standards Power meter E44198 Power sensor HP 8481A Power sensor HP 8481A RF generator R&S SMT-06 Network Analyzer Agilent E8358A	ed in the closed laborator critical for calibration) ID # SN: 104776 SN: 103244 SN: 103245 SN: 8H9394 (20k) SN: 310982 / 06327 SN: 7349 SN: 601 ID # SN: 6B39512475 SN: US37262783 SN: US37262783 SN: US3726773 SN: US3726773 SN: US41060477 Name	y facility: environment temperature (22 ± 3)*C Cal Date (Certificate No.) 28-Mar-24 (No. 217-04036/04037) 28-Mar-24 (No. 217-04036) 26-Mar-24 (No. 217-04037) 26-Mar-24 (No. 217-04047) 03-Nov-23 (No. EX3-7349_Nov23) 30-Jan-24 (No. DAE4-601_Jan24) Check Date (in house) 30-Oct-14 (in house check Oct-22) 07-Oct-15 (in house check Oct-22) 07-Oct-15 (in house check Oct-22) 15-Jun-15 (in house check Oct-22) 31-Mar-14 (in house check Oct-22) Function	2 and humidity < 70%. Scheduled Calibration Mar-25 Mar-25 Mar-25 Mar-25 Mar-25 Mar-25 Scheduled Check In house check: Oct-24 In house check: Oct-24

Certificate No: D835V2-441\_Apr24 Page 1 of 6

Schweizerischer Kalibrierdienst

Service suisse d'étalonnage

Servizio svizzero di taratura

Swiss Calibration Service Accreditation No.: SCS 0108

s

С

S



Calibration Laboratory of Schmid & Partner Engineering AG Zeughausstrasse 43, 8004 Zurich, Switzerland

Accredited by the Swiss Accreditation Service (SAS) The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

#### Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

#### Calibration is Performed According to the Following Standards:

- a) IEC/IEEE 62209-1528, "Measurement Procedure For The Assessment Of Specific Absorption Rate Of Human Exposure To Radio Frequency Fields From Hand-Held And Body-Worn Wireless Communication Devices - Part 1528: Human Models, Instrumentation And Procedures (Frequency Range of 4 MHz to 10 GHz)", October 2020.
- b) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

#### Additional Documentation:

c) DASY System Handbook

#### Methods Applied and Interpretation of Parameters:

- Measurement Conditions: Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- Antenna Parameters with TSL: The source is mounted in a touch configuration below the center marking of the flat phantom.
- Return Loss: This parameter is measured with the source positioned under the liquid filled phantom (as described in the measurement condition clause). The Return Loss ensures low reflected power. No uncertainty required.
- SAR measured: SAR measured at the stated antenna input power.
- SAR normalized: SAR as measured, normalized to an input power of 1 W at the antenna connector.
- SAR for nominal TSL parameters: The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement. multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

Certificate No: D835V2-441\_Apr24

Page 2 of 6



#### **Measurement Conditions**

DASY system configuration, as far as not given on page 1.

DASY Version	DASY52	V52.10.4
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	15 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	835 MHz ± 1 MHz	

# Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	41.5	0.90 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	42.6 ± 6 %	0.93 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C		

# SAR result with Head TSL

Condition	
250 mW input power	2.48 W/kg
normalized to 1W	9.73 W/kg ± 17.0 % (k=2)
condition	
condition 250 mW input power	1.62 W/kg
	250 mW input power

Page 3 of 6



### Appendix (Additional assessments outside the scope of SCS 0108)

#### Antenna Parameters with Head TSL

Impedance, transformed to feed point	49.5 Ω - 2.5 jΩ	
Return Loss	- 31,7 dB	

#### General Antenna Parameters and Design

Electrical Delay (one direction)	1,374 ns
----------------------------------	----------

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.

No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

#### Additional EUT Data

Manufactured by	SPEAG
-----------------	-------

Page 4 of 6



# **DASY5 Validation Report for Head TSL**

Date: 18.04.2024

Test Laboratory: SPEAG, Zurich, Switzerland

### DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN:441

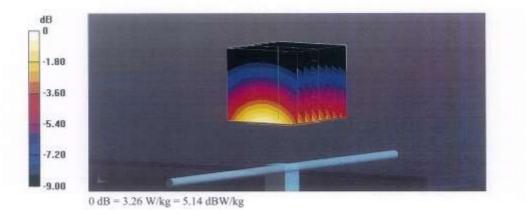
Communication System: UID 0 - CW; Frequency: 835 MHz Medium parameters used: f = 835 MHz;  $\sigma$  = 0.93 S/m;  $\epsilon_r$  = 42.6;  $\rho$  = 1000 kg/m<sup>3</sup> Phantom section: Flat Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 SN7349; ConvF(9.69, 9.69, 9.69) @ 835 MHz; Calibrated: 03.11.2023
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- · Electronics: DAE4 Sn601; Calibrated: 30.01.2024
- Phantom: Flat Phantom 4.9 (front); Type: QD 00L P49 AA; Serial: 1001
- DASY52 52.10.4(1535); SEMCAD X 14.6.14(7501)

### Dipole Calibration for Head Tissue/Pin=250 mW, d=15mm/Zoom Scan (8x8x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm Reference Value = 63.37 V/m; Power Drift = 0.00 dB Peak SAR (extrapolated) = 3.71 W/kg SAR(1 g) = 2.48 W/kg; SAR(10 g) = 1.62 W/kg Smallest distance from peaks to all points 3 dB below = 16 mm Ratio of SAR at M2 to SAR at M1 = 66.8% Maximum value of SAR (measured) = 3.26 W/kg



Certificate No: D835V2-441\_Apr24

Page 5 of 6



# Impedance Measurement Plot for Head TSL

			4	5	$\langle \rangle$	Ę	-ALL			000 75.69 000	12 pF	-	-2	1 458 5182 195 n 00.7	Ω nU
			F	F	X	X	Ê	Į							
Ch1: 1	Ch 1 Avg * Start 635.000			×	$\sim$	E	Y						Ttop 1	03500	G Ha
Ch-1: 1 10.00 5.00			-	X		E,	y	835	000	000	MH:	-		63500 738	
10.00 5.00 0.00	Scart 635.000					P	7	835	.co0	1000	MH:	-			
t0.60 5.00	Scart 635.000						2	835	000	1000	MH)	-			
10.00 5.00 0.00 -5.00	Scart 635.000			X				835	000	1000	N/H)	-			
10.00 5.00 0.00 -5.00 -10.00	Scart 635.000						×	835	(00	000	N/H)	-			
10,00 5,00 0,00 -0,00 -10,00 -15,00 -25,00 -25,00	Scart 635.000						×	835	000	1000	MHI	-			
10.00 5.00 45.00 45.00 45.00 45.00 45.00 45.00 45.00	Scart 635.000						8	835		1000	N/H)	-			
10,00 5,00 0,00 -0,00 -10,00 -15,00 -25,00 -25,00	Scart 635.000						8	835	000	000	MH	-			

Certificate No: DB35V2-441\_Apr24

Page 6 of 6



eughausstrasse 43, 8004 Zurich,	, Switzerland	San S	Swiss Calibration Service
coredited by the Swiss Accreditation the Swiss Accreditation Service I Jultilateral Agreement for the rec	is one of the signatorie		Accreditation No.: SCS 0108
lient HCT Gyeonggi-do, Republic	c of Korea	Certificate No.	D1800V2-2d007_Apr24
CALIBRATION CI	ERTIFICATE	2 4 4 4 V	자 파 빈 자
14 (21)	D-00010 010	21 76 21	5 K
Object	D1800V2 - SN:20	1007 1 4 2024-95-	2-15 Ro 1894
Calibration procedure(s)	QA CAL-05.v12 Calibration Proce	dure for SAR Validation Sources	i between 0.7-3 GHz
Calibration date:	April 15, 2024		
	ed in the closed laborator	obability are given on the following pages an y facility: environment temperature (22 ± 3)*0	
All calibrations have been conducts Calibration Equipment used (M&TE Primary Standards	ed in the closed laborator critical for calibration)	y facility: environment temperature (22 ± 3)*0 Cal Date (Certificate No.)	C and humidity < 70%. Scheduled Calibration
All calibrations have been conducte Calibration Equipment used (M&TE Primary Standards Power meter NRP2	ed in the closed laborator critical for calibration) ID # SN: 104778	y facility: environment temperature (22 ± 3)*0 Cal Date (Certificate No.) 26-Mar-24 (No. 217-04036/94037)	C and humidity < 70%. Scheduled Calibration Mar-25
NI calibrations have been conducts Calibration Equipment used (M&TE Primary Standards Power meter NRP2 Power sensor NRP-291	ad in the closed laborator critical for calibration) ID # SN: 104778 SN: 103244	y facility: environment temperature (22 ± 3)*0 Cal Date (Certificate No.) 26-Mar-24 (No. 217-04036/04037) 26-Mar-24 (No. 217-04036)	C and humidity < 70%. Scheduled Calibration Mar-25 Mar-25
All calibrations have been conducts Calibration Equipment used (M&TE Primary Standards Power meter NRP2 Power sensor NRP-291 Power sensor NRP-291	ad in the closed laborator critical for calibration) ID # SN: 104778 SN: 103244 SN: 103245	y facility: environment temperature (22 ± 3)*0 Cal Date (Certificate No.) 28-Mar-24 (No. 217-04036/04037) 28-Mar-24 (No. 217-04036) 28-Mar-24 (No. 217-04037)	C and humidity < 70%. Scheduled Calibration Mar-25 Mar-25 Mar-25
All calibrations have been conducts Calibration Equipment used (M&TE Primary Standards Prower meter NRP2 Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB Attenuator	ad in the closed laborator critical for calibration) ID # SN: 104778 SN: 103244 SN: 103245 SN: BH9394 (20K)	y facility: environment temperature (22 ± 3)*C Cal Date (Certificate No.) 26-Mar-24 (No. 217-04036/04037) 26-Mar-24 (No. 217-04036) 26-Mar-24 (No. 217-04037) 26-Mar-24 (No. 217-04046)	C and humidity < 70%. Scheduled Calibration Mar-25 Mar-25 Mar-25 Mar-25
All calibrations have been conducts Calibration Equipment used (M&TE Primary Standards Power meter NRP2 Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB Attenuator Type-N mismatch combination	ad in the closed laborator critical for calibration) ID # SN: 104778 SN: 103244 SN: 103245 SN: 03245 SN: 03245 SN: 03245 SN: 03245 SN: 03245 SN: 03245	y facility: environment temperature (22 ± 3)*C Cal Date (Certificate No.) 26-Mar-24 (No. 217-04036/04037) 26-Mar-24 (No. 217-04036) 26-Mar-24 (No. 217-04037) 26-Mar-24 (No. 217-04046) 26-Mar-24 (No. 217-04047)	C and humidity < 70%. Scheduled Calibration Mar-25 Mar-25 Mar-25 Mar-25 Mar-25
All calibrations have been conducts Calibration Equipment used (M&TE Primary Standards Power meter NRP2 Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB Attenuator Type-N mismatch combination Reference Probe EX3DV4	ad in the closed laborator critical for calibration) ID # SN: 104778 SN: 104245 SN: 104245 SN: 5H0994 (20k) SN: 310982 / 06327 SN: 7349	y facility: environment temperature (22 ± 3)*0 Cal Date (Certificate No.) 26-Mar-24 (No. 217-04036/84037) 26-Mar-24 (No. 217-04036) 26-Mar-24 (No. 217-04037) 26-Mar-24 (No. 217-04046) 26-Mar-24 (No. 217-04047) 03-Nov-23 (No. EX3-7348_Nov23)	C and humidity < 70%. Scheduled Calibration Mar-25 Mar-25 Mar-25 Mar-25 Nar-25 Nar-25 Nar-25
All calibrations have been conducts Calibration Equipment used (M&TE Primary Standards Power meter NRP2 Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB Attenuator Type-N mismatch combination Reference Probe EX3DV4	ad in the closed laborator critical for calibration) ID # SN: 104778 SN: 103244 SN: 103245 SN: 03245 SN: 03245 SN: 03245 SN: 03245 SN: 03245 SN: 03245	y facility: environment temperature (22 ± 3)*C Cal Date (Certificate No.) 26-Mar-24 (No. 217-04036/04037) 26-Mar-24 (No. 217-04036) 26-Mar-24 (No. 217-04037) 26-Mar-24 (No. 217-04046) 26-Mar-24 (No. 217-04047)	C and humidity < 70%. Scheduled Calibration Mar-25 Mar-25 Mar-25 Mar-25 Mar-25
All calibrations have been conducts Calibration Equipment used (M&TE Primary Standards Power meter NRP-291 Power sensor NRP-291 Reference 20 dB Attenuator Type-N mismatch combination Reference Probe EX3DV4 DAE4	ad in the closed laborator critical for calibration) ID # SN: 104778 SN: 104245 SN: 104245 SN: 5H0994 (20k) SN: 310982 / 06327 SN: 7349	y facility: environment temperature (22 ± 3)*0 Cal Date (Certificate No.) 26-Mar-24 (No. 217-04036/84037) 26-Mar-24 (No. 217-04036) 26-Mar-24 (No. 217-04037) 26-Mar-24 (No. 217-04046) 26-Mar-24 (No. 217-04047) 03-Nov-23 (No. EX3-7348_Nov23)	C and humidity < 70%. Scheduled Calibration Mar-25 Mar-25 Mar-25 Mar-25 Nar-25 Nar-25 Nar-25
All calibrations have been conducts Calibration Equipment used (M&TE Primary Standards Power meter NRP2 Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB Attenuator Type-N mismatch combination Reference Probe EX3DV4 DAE4 Secondary Standards	ad in the closed laborator critical for calibration) ID # SN: 104778 SN: 103244 SN: 103245 SN: 03245 SN: 03245 SN: 03245 SN: 040994 (20k) SN: 310962 / 06327 SN: 7349 SN: 601 ID # SN: GB39512475	y facility: environment temperature (22 ± 3)*C Cal Date (Certificate No.) 26-Mar-24 (No. 217-04036/04037) 26-Mar-24 (No. 217-04036) 26-Mar-24 (No. 217-04037) 26-Mar-24 (No. 217-04046) 20-Mar-24 (No. 217-04047) 03-Nov-23 (No. EX3-7348_Nov23) 30-Jan-24 (No. DAE4-601_Jan24) Check Date (in house) 30-Oct-14 (in house check Oct-22)	C and humidity < 70%. Scheduled Calibration Mar-25 Mar-25 Mar-25 Mar-25 Mar-25 Nov-24 Jan-25 Scheduled Check In trouse check: Oct-24
All calibrations have been conducts Calibration Equipment used (M&TE Primary Standards Power meter NRP2 Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB Attenuator Type-N mismatch combination Reference Probe EX3DV4 DAE4 Secondary Standards Power meter E4419B	ad in the closed laborator critical for calibration) ID # SN: 104778 SN: 103244 SN: 103245 SN: 819394 (20k) SN: 31982 / 06327 SN: 7349 SN: 601 ID #	y facility: environment temperature (22 ± 3)*0 Cal Date (Certificate No.) 26-Mar-24 (No. 217-04036/04037) 26-Mar-24 (No. 217-04036) 26-Mar-24 (No. 217-04037) 26-Mar-24 (No. 217-04047) 03-Nov-23 (No. EX3-7348_Nov23) 30-Jan-24 (No. DAE4-601_Jan24) Check Date (in house)	C and humidity < 70%. Scheduled Calibration Mar-25 Mar-25 Mar-25 Mar-25 Nov-24 Jan-25 Scheduled Check
All calibrations have been conducts Calibration Equipment used (M&TE Primary Standards Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB Attenuator Type-N mismatch combination Reference Probe EX3DV4 DAE4 Secondary Standards Power meter E44198 Power sensor HP 8481A Power sensor HP 8481A	ad in the closed laborator critical for calibration) ID # SN: 104778 SN: 103244 SN: 103245 SN: 03245 SN: 03245 SN: 03245 SN: 03245 SN: 03245 SN: 03245 SN: 03245 SN: 04 ID # SN: GB39512475 SN: US37292783 SN: WY41093315	y facility: environment temperature (22 ± 3)*0 Cal Date (Certificate No.) 26-Mar-24 (No. 217-04030/04037) 26-Mar-24 (No. 217-04036) 26-Mar-24 (No. 217-04037) 26-Mar-24 (No. 217-04046) 26-Mar-24 (No. 217-04047) 03-Nov-23 (No. EX3-7348_Nov23) 30-Jan-24 (No. DAE4-601_Jan24) Check Date (in house) 30-Oct-14 (in house check Oct-22) 07-Oct-15 (in house check Oct-22) 07-Oct-15 (in house check Oct-22)	C and humidity < 70%. Scheduled Calibration Mar-25 Mar-25 Mar-25 Mar-25 Mar-25 Nov-24 Jan-25 Scheduled Check In frouse check: Oct-24 In house check: Oct-24 In house check: Oct-24 In house check: Oct-24
All calibrations have been conducts Calibration Equipment used (M&TE Primary Standards Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB Attenuator Fype-N mismatch combination Reference Probe EX3DV4 DAE4 Secondary Standards Power sensor HP 8481A Power sensor HP 8481A RF generator R&S SMT-06	ad in the closed laborator critical for calibration) ID # SN: 104778 SN: 103245 SN: 103245 SN: 103245 SN: 103245 SN: 310962 / 06327 SN: 310962 / 06327 SN: 601 ID # SN: 6631 ID # SN: 66316512475 SN: US37292783 SN: MY41093315 SN: 100972	y facility: environment temperature (22 ± 3)*0 Cal Date (Certificate No.) 26-Mar-24 (No. 217-04036/04037) 26-Mar-24 (No. 217-04036) 26-Mar-24 (No. 217-04037) 26-Mar-24 (No. 217-04048) 26-Mar-24 (No. 217-04048) 26-Mar-24 (No. 217-04048) 30-Jan-24 (No. 217-04048) 30-Jan-24 (No. 237-348, Nov23) 30-Jan-24 (No. DAE4-601_Jan24) Check Date (in house) 30-Dcti-14 (in house check Oct-22) 07-Oct-15 (in house check Oct-22) 15-Jun-15 (in house check Oct-22)	C and humidity < 70%. Scheduled Calibration Mar-25 Mar-25 Mar-25 Mar-25 Mar-25 Nov-24 Jan-25 Schedulet Check In trouse check: Oct-24 In house check: Oct-24 In house check: Oct-24 In house check: Oct-24 In house check: Oct-24
All calibrations have been conducts Calibration Equipment used (M&TE Primary Standards Power meter NRP-291 Power sensor NRP-291 Reference 20 dB Attenuator Type-N mismatch combination Reference Probe EX3DV4 DAE4 Secondary Standards Power meter E4419B Power sensor HP 8481A Power sensor HP 8481A RF generator R&S SMT-06	ad in the closed laborator critical for calibration) ID # SN: 104778 SN: 103244 SN: 103245 SN: 03245 SN: 03245 SN: 03245 SN: 03245 SN: 03245 SN: 03245 SN: 03245 SN: 04 ID # SN: GB39512475 SN: US37292783 SN: WY41093315	y facility: environment temperature (22 ± 3)*0 Cal Date (Certificate No.) 26-Mar-24 (No. 217-04030/04037) 26-Mar-24 (No. 217-04036) 26-Mar-24 (No. 217-04037) 26-Mar-24 (No. 217-04046) 26-Mar-24 (No. 217-04047) 03-Nov-23 (No. EX3-7348_Nov23) 30-Jan-24 (No. DAE4-601_Jan24) Check Date (in house) 30-Oct-14 (in house check Oct-22) 07-Oct-15 (in house check Oct-22) 07-Oct-15 (in house check Oct-22)	C and humidity < 70%. Scheduled Calibration Mar-25 Mar-25 Mar-25 Mar-25 Mar-25 Nov-24 Jan-25 Scheduled Check In frouse check: Oct-24 In house check: Oct-24 In house check: Oct-24 In house check: Oct-24
All calibrations have been conducts Calibration Equipment used (M&TE Primary Standards Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB Attenuator Type-N mismatch combination Reference Probe EX3DV4 DAE4 Secondary Standards Power sensor HP 8481A Power sensor HP 8481A RF generator R&S SMT-06	ad in the closed laborator critical for calibration) ID # SN: 104778 SN: 103245 SN: 103245 SN: 103245 SN: 103245 SN: 310962 / 06327 SN: 310962 / 06327 SN: 601 ID # SN: 6631 ID # SN: 66316512475 SN: US37292783 SN: MY41093315 SN: 100972	y facility: environment temperature (22 ± 3)*0 Cal Date (Certificate No.) 26-Mar-24 (No. 217-04036/04037) 26-Mar-24 (No. 217-04036) 26-Mar-24 (No. 217-04037) 26-Mar-24 (No. 217-04048) 26-Mar-24 (No. 217-04048) 26-Mar-24 (No. 217-04048) 30-Jan-24 (No. 217-04048) 30-Jan-24 (No. 237-348, Nov23) 30-Jan-24 (No. DAE4-601_Jan24) Check Date (in house) 30-Dcti-14 (in house check Oct-22) 07-Oct-15 (in house check Oct-22) 15-Jun-15 (in house check Oct-22)	C and humidity < 70%. Scheduled Calibration Mar-25 Mar-25 Mar-25 Mar-25 Mar-25 Nov-24 Jan-25 Schedulet Check In ticuse check: Oct-24 In house check: Oct-24
All calibrations have been conducts Calibration Equipment used (M&TE Primary Standards Prower meter NRP2 Power sensor NRP-291 Reference 20 dB Attenuator Type-N mismatch combination Reference Probe EX3DV4 DAE4 Secondary Standards Power sensor HP 8481A Power sensor HP 8481A RF generator R&S SMT-06 Network Analyzer Agilent E8358A	ad in the closed laborator critical for calibration) ID # SN: 104778 SN: 103244 SN: 103245 SN: 8H9994 (20k) SN: 310982 / 06327 SN: 601 ID # SN: 661 ID # SN: 6639512475 SN: 0537292783 SN: WY41093315 SN: US3729278 SN: US37292783	y facility: environment temperature (22 ± 3)*0 Cal Date (Certificate No.) 26-Mar-24 (No. 217-04036/04037) 26-Mar-24 (No. 217-04036) 26-Mar-24 (No. 217-04037) 26-Mar-24 (No. 217-04047) 03-Nov-23 (No. EX3-734B_Nov23) 30-Jan-24 (No. DAE4-601_Jan24) Check Date (in house) 30-Oct-14 (in house check Oct-22) 07-Oct-15 (in house check Oct-22) 15-Jan-15 (in house check Oct-22) 31-Mar-14 (in house check Oct-22) 31-Mar-14 (in house check Oct-22)	C and humidity < 70%. Scheduled Calibration Mar-25 Mar-25 Mar-25 Mar-25 Mar-25 Nov-24 Jan-25 Scheduled Check In frouse check: Oct-24 In house check: Oct-24 In house check: Oct-24 In house check: Oct-24 In house check: Oct-24
All calibrations have been conducts Calibration Equipment used (M&TE Primary Standards Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB Attenuator Type-N mismatch combination Reference Probe EX3DV4 DAE4 Secondary Standards Power sensor HP 8481A Power sensor HP 8481A RF generator R&S SMT-06 Network Analyzer Agilent E8358A Calibrated by:	ad in the closed laborator critical for calibration) ID # SN: 104778 SN: 103245 SN: 103245 SN: 103245 SN: 103245 SN: 103245 SN: 310962 (20k) SN: 310962 (20k) SN: 601 ID # SN: GB39512475 SN: US37292783 SN: MY41093315 SN: 100972 SN: US41090477 Name Paulo Pina	y facility: environment temperature (22 ± 3)*0 Cal Date (Certificate No.) 26-Mar-24 (No. 217-04036/04037) 26-Mar-24 (No. 217-04036) 28-Mar-24 (No. 217-04037) 26-Mar-24 (No. 217-04048) 20-Mar-24 (No. 217-04048) 20-Mar-24 (No. 217-04048) 30-Jan-24 (No. 218-04848) 30-Jan-24 (No. 218-0	C and humidity < 70%. Scheduled Calibration Mar-25 Mar-25 Mar-25 Mar-25 Mar-25 Nov-24 Jan-25 Scheduled Check In frouse check: Oct-24 In house check: Oct-24 In house check: Oct-24 In house check: Oct-24 In house check: Oct-24
All calibrations have been conducts Calibration Equipment used (M&TE Primary Standards Prower meter NRP2 Power sensor NRP-291 Reference 20 dB Attenuator Type-N mismatch combination Reference Probe EX3DV4 DAE4 Secondary Standards Power sensor HP 8481A Power sensor HP 8481A RF generator R&S SMT-06 Network Analyzer Agilent E8358A	ad in the closed laborator critical for calibration) ID # SN: 104778 SN: 103244 SN: 103245 SN: 03245 SN: 03245 SN: 040994 (20k) SN: 310982 / 06327 SN: 7349 SN: 601 ID # SN: GB39512470 SN: US37292783 SN: MY41093315 SN: US372972 SN: US41090477 Name	y facility: environment temperature (22 ± 3)*0 Cal Date (Certificate No. ) 26-Mar-24 (No. 217-04038/04037) 26-Mar-24 (No. 217-04038) 26-Mar-24 (No. 217-04037) 26-Mar-24 (No. 217-04047) 03-Nov-23 (No. EX3-7348_Nov23) 30-Jan-24 (No. DAE4-601_Jan24) Check Date (in house) 30-Oct-14 (in house check Oct-22) 07-Oct-15 (in house check Oct-22) 15-Jun-15 (in house check Oct-22) 15-Jun-15 (in house check Oct-22) 31-Mar-14 (in house check Oct-22) Function	C and humidity < 70%. Scheduled Calibration Mar-25 Mar-25 Mar-25 Mar-25 Mar-25 Nov-24 Jain-25 Scheduled Check In trouse check: Oct-24 In house check: Oct-24 In house check: Oct-24 In house check: Oct-24 In house check: Oct-24

Certificate No: D1800V2-2d007\_Apr24

Page 1 of 6

Schweizerischer Kalibrierdienst

Service suisse d'étaionnage

Servizio svizzero di taratura

Swiss Calibration Service Accreditation No.: SCS 0108

S

C

S



Calibration Laboratory of Schmid & Partner Engineering AG Zeughausstrasse 43, 8004 Zurich, Switzerland

Accredited by the Swiss Accreditation Service (SAS) The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

#### Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

### Calibration is Performed According to the Following Standards:

- a) IEC/IEEE 62209-1528, "Measurement Procedure For The Assessment Of Specific Absorption Rate Of Human Exposure To Radio Frequency Fields From Hand-Held And Body-Worn Wireless Communication Devices - Part 1528: Human Models, Instrumentation And Procedures (Frequency Range of 4 MHz to 10 GHz)", October 2020.
- b) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

#### Additional Documentation:

c) DASY System Handbook

#### Methods Applied and Interpretation of Parameters:

- Measurement Conditions: Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- Antenna Parameters with TSL: The source is mounted in a touch configuration below the center marking of the flat phantom.
- Return Loss: This parameter is measured with the source positioned under the liquid filled phantom (as described in the measurement condition clause). The Return Loss ensures low reflected power. No uncertainty required.
- SAR measured: SAR measured at the stated antenna input power.
- SAR normalized: SAR as measured, normalized to an input power of 1 W at the antenna connector.
- SAR for nominal TSL parameters: The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

Certificate No: D1800V2-2d007\_Apr24

Page 2 of 6



### Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY52	V52.10.4
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	1800 MHz ± 1 MHz	

### Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	40.0	1.40 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	40.8 ± 6 %	1.39 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 *C		

# SAR result with Head TSL

SAR averaged over 1 cm <sup>3</sup> (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	9.67 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	39.0 W/kg ± 17.0 % (k=2)
SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL	condition	
SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL SAR measured	condition 250 mW input power	5.08 W/kg

Certificate No: D1800V2-2d007\_Apr24

Page 3 of 6



# Appendix (Additional assessments outside the scope of SCS 0108)

### Antenna Parameters with Head TSL

Impedance, transformed to feed point	45.9 Ω - 7.0 jΩ	
Return Loss	- 21.5 dB	

#### General Antenna Parameters and Design

Electrical Delay (one direction)	1.203 ns
----------------------------------	----------

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.

No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

#### Additional EUT Data

Manufactured by	SPEAG

Certificate No: D1800V2-2d007\_Apr24

Page 4 of 6



# **DASY5 Validation Report for Head TSL**

Date: 15.04.2024

Test Laboratory: SPEAG, Zurich, Switzerland

# DUT: Dipole 1800 MHz; Type: D1800V2; Serial: D1800V2 - SN:2d007

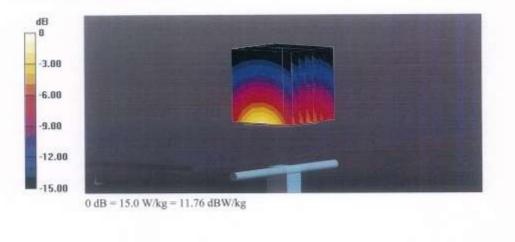
Communication System: UID 0 - CW; Frequency: 1800 MHz Medium parameters used: f = 1800 MHz;  $\sigma$  = 1.39 S/m;  $\epsilon_r$  = 40.8;  $\rho$  = 1000 kg/m<sup>3</sup> Phantom section: Flat Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 SN7349; ConvF(8.63, 8.63, 8.63) @ 1800 MHz; Calibrated: 03.11.2023
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.01.2024
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.10.4(1535); SEMCAD X 14.6.14(7501)

# Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm Reference Value = 109.6 V/m; Power Drift = 0.05 dB Peak SAR (extrapolated) = 17.9 W/kg SAR(1 g) = 9.67 W/kg; SAR(10 g) = 5.08 W/kg Smallest distance from peaks to all points 3 dB below = 10 mm Ratio of SAR at M2 to SAR at M1 = 54.5% Maximum value of SAR (measured) = 15.0 W/kg



Certificate No: D1800V2-2d007\_Apr24

Page 5 of 6



# Impedance Measurement Plot for Head TSL

45.916 C -7.0096 C 84.354 mL -116.05	880000 GHz 12.614 pF 800000 GHz	A	EX.	$\overline{\langle}$	6	4				
		Ì		Z	t	Ę				
		1000								
	\$00000 GHz	Y 1 1	E,			_	-	20 QHg —	Ch 1 Avg = art 1 49000	0.00
3kop 2.00000 GH	800000 CHz		P ,				-	20 0He	art 1.60000	0.00
	800000 GHz	1 1						20 UHE	art 1.60000	0.00
	800000 CHz							20 (J.Ha	art 1.60000	0.00
	\$00000 CHz							20 DHe	art 1.60000	0.00 1.00 5.00 10.00 15.00 25.00 25.00
	800000 GHz								art 1.60000	0.00 1.00 5.00 10.00 15.00 20.00

Page 6 of 6



ughausstrasse 43, 8004 Zurich	, Switzerland	Mandalada			rvizio svizzero di taratu fiss Calibration Service	
coredited by the Swiss Accreditation he Swiss Accreditation Service ultilateral Agreement for the rec	is one of the signatorie			Acor	reditation No.: SCS 0	108
lient HCT			Certificat	e No. Dite	900V2-5d032 Ja	024
Gyeonggi-do, Republi	ic of Korea			DI.	50042-50052_00	112.4
				_	and the second second	_
CALIBRATION C	ERTIFICATI	E		_		
20.210 41						
Dbject	D1900V2 - SN:50	1032				
Calibration procedure(s)	QA CAL-05.v12					
	Calibration Proce	dure for SAR Valid	fation Sou	irces betw	ween 0.7-3 GHz	
			a Tat		4 10 41	
			21	ZIE	11.	
Calibration date:	January 18, 2024	2.	18	212	n	
vanoranum oane.	January 10, 2024	117	500	JAK	(4 444	
		11	2024.	52.07	2024.02.01	
The measurements and the uncertion of the uncertion of the second of the	ainties with confidence p ad in the closed laborator	M 2000	following pag	pes and are (	part of the certificate.	
The measurements and the uncerti- NI calibrations have been conducts Calibration Equipment used (M&TE	ainties with confidence p ad in the closed laborator E critical for calibration)	robability are given on the y facility: environment ten	following pag	pes and are (	part of the certificate.	
The measurements and the uncert UI calibrations have been conducts Calibration Equipment used (M&TE Primary Standards	ainties with confidence p ad in the closed laborator E critical for calibration)	obability are given on the y facility: environment ten Cal Date (Certificate N	following pag operature (22 o.)	pes and are (	part of the certificate. humidity < 70%. Scheduled Calibration	
The measurements and the uncerts UI calibrations have been conducts Calibration Equipment used (M&TE Primary Standards Power meter NRP2	ainties with confidence p ad in the closed laborator E critical for calibration) ID # SN: 104778	Cel Date (Certificate N 30-Mar-23 (No. 217-03	following pag nperature (22 o.) 804/03805)	pes and are (	part of the certificate. humidity < 70%. Scheduled Calibration Mar-24	
The measurements and the uncert UI calibrations have been conducts Calibration Equipment used (M&TE Primary Standards Power meter NRP2 Power sensor NRP-281	ainties with confidence p ad in the closed laborator E critical for calibration)	Cel Date (Certificate N 30-Mar-23 (No. 217-03 30-Mar-23 (No. 217-03	following pag nperature (22 a.) 804/03805) 804)	pes and are (	part of the certificate. humidity < 70%. Scheduled Calibration	
The measurements and the uncert NI calibrations have been conducts Calibration Equipment used (M&TE Primary Standards Power meter NRP2 Power sensor NRP-291 Power sensor NRP-291	ainties with confidence p and in the closed laborator E critical for calibration) IID # SN: 104778 SN: 103244	Cel Date (Certificate N 30-Mar-23 (No. 217-03	following pag operature (22 0.) 804/03805) 804) 805)	pes and are (	part of the certificate. humidity < 70%. Scheduled Calibration Mar-24 Mar-24	
The measurements and the uncert All calibrations have been conducts Calibration Equipment used (M&TE Primary Standards Power meter NRP2 Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB Attenuator	ainties with confidence p and in the closed laborator ciritical for calibration) ID # SN: 104778 SN: 103244 SN: 103245	Cal Date (Certificate N 30-Mar-23 (No. 217-03 30-Mar-23 (No. 217-03 30-Mar-23 (No. 217-03	following pag operature (22 0.) 804/03805) 804) 805) 809)	pes and are (	part of the certificate. humidity < 70%. Scheduled Calibration Mer-24 Mar-24 Mar-24	
The measurements and the uncert All calibrations have been conduction Calibration Equipment used (M&TE Primary Standards Prower sensor NRP-291 Prower sensor NRP-291 Reference 20 dB Attenuator Type-N mismatch combination Reference Probe EX3DV4	ainties with confidence p ad in the closed laborator critical for calibration) 107 # SN: 104778 SN: 103245 SN: 103245 SN: 310982 / 06327 SN: 310982 / 06327 SN: 7349	Cal Date (Certificate N 30-Mar-23 (No. 217-03 30-Mar-23 (No. 217-03 30-Mar-23 (No. 217-03 30-Mar-23 (No. 217-03 30-Mar-23 (No. 217-03 30-Mar-23 (No. 217-03 03-Nov-23 (No. 217-03	following pag aperature (22 a.) 804/03805) 804/0 805) 805) 809) 810) 349_Nov23)	pes and are (	sart of the certificate. humidity < 70%. Scheduled Calibration Mar-24 Mar-24 Mar-24 Mar-24 Mar-24 Nov-24 Nov-24	
The measurements and the uncert All calibrations have been conduction Calibration Equipment used (M&TE Primary Standards Prower sensor NRP-291 Prower sensor NRP-291 Reference 20 dB Attenuator Type-N mismatch combination Reference Probe EX3DV4	ainties with confidence p ad in the closed laborator critical for calibration) ID # SN: 104778 SN: 103244 SN: 103245 SN: 103245 SN: 103245 SN: 103245 SN: 310982 / 06327	Cal Date (Certificate N 30-Mar-23 (No. 217-03 30-Mar-23 (No. 217-03 30-Mar-23 (No. 217-03 30-Mar-23 (No. 217-03 30-Mar-23 (No. 217-03	following pag aperature (22 a.) 804/03805) 804/0 805) 805) 809) 810) 349_Nov23)	pes and are (	sart of the certificate. humidity < 70%. Scheduled Calibration Mar-24 Mar-24 Mar-24 Mar-24 Mar-24	
The measurements and the uncert All calibrations have been conducts Calibration Equipment used (M&TE Primary Standards Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB Attenuator Type-N mismatch combination Beference Probe EX3DIV4 DAE4	ainties with confidence p ad in the closed laborator critical for calibration) 107 # SN: 104778 SN: 103245 SN: 103245 SN: 310982 / 06327 SN: 310982 / 06327 SN: 7349	Cal Date (Certificate N 30-Mar-23 (No. 217-03 30-Mar-23 (No. 217-03 30-Mar-23 (No. 217-03 30-Mar-23 (No. 217-03 30-Mar-23 (No. 217-03 30-Mar-23 (No. 217-03 30-Mar-23 (No. 217-03 03-Nov-23 (No. 217-03 03-Nov-23 (No. 217-03	following pag aperature (22 a.) 804/03805) 804/0 805) 805) 809) 810) 349_Nov23)	pes and are (	part of the certificate. humidity < 70%. Scheduled Calibration Mar-24 Mar-24 Mar-24 Mar-24 Mar-24 Mar-24 Nar-24 Nay-24 Nov-24 Oct-24	
The measurements and the uncert All calibrations have been conducts Calibration Equipment used (M&TE Primary Standards Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB Attenuator Type-N mismatch combination Reference Probe EX3DV4 DAE4 Secondary Standards	ainties with confidence p and in the closed laborator critical for calibration) 10 # SN: 104778 SN: 103245 SN: 103245 SN: 103245 SN: 103245 SN: 103245 SN: 103245 SN: 310982 / 06327 SN: 510982 / 06327 SN: 7349 SN: 501	Cal Date (Certificate N 30-Mar-23 (No. 217-03 30-Mar-23 (No. 217-03 30-Mar-23 (No. 217-03 30-Mar-23 (No. 217-03 30-Mar-23 (No. 217-03 30-Mar-23 (No. 217-03 03-Nov-23 (No. 217-03 03-Nov-23 (No. DAE4-0 Check Date (in house)	following pag aperature (22 a) 804/03805) 804) 805) 809) 810) 949_Nov23) 901_Oct23)	pes and are (	scheduled Calibration Mar-24 Mar-24 Mar-24 Mar-24 Mar-24 Mar-24 Nov-24 Nov-24 Cot-24 Scheduled Check	
The measurements and the uncert All calibrations have been conducts Calibration Equipment used (M&TE Primary Standards Power meter NRP2 Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB Attenuator Type-N mismatch combination Reference Probe EX3DV4 DAE4 Secondary Standards Power meter E4419B	ainties with confidence p and in the closed laborator critical for calibration) 1D # SN: 104778 SN: 103244 SN: 103244 SN: 103245 SN: 10325 SN: 10325 SN: 10325 SN: 10325 SN: 10325 SN: 10355 SN: 103555 SN: 103555 SN: 1035555 SN: 1035555 SN: 10355555 SN: 103555555555555555555555555555555555555	Cal Date (Certificate N 30-Mar-23 (No. 217-03 30-Mar-23 (No. 217-03 30-Mar-23 (No. 217-03 30-Mar-23 (No. 217-03 30-Mar-23 (No. 217-03 30-Mar-23 (No. 217-03 30-Mar-23 (No. 217-03 03-Nov-23 (No. 217-03 03-Nov-23 (No. 217-03	following pag aperature (22 a) 804/03805) 804) 805) 809) 810) 849_Nov23) 801_Oct23) 90k Oct-22)	pes and are (	part of the certificate. humidity < 70%. Scheduled Calibration Mar-24 Mar-24 Mar-24 Mar-24 Mar-24 Mar-24 Nar-24 Nay-24 Nov-24 Oct-24	
The measurements and the uncert All calibrations have been conducts Calibration Equipment used (M&TE Primary Standards Power sensor NRP-281 Power sensor NRP-281 Power sensor NRP-281 Reference 20 dB Attenuator Type-N mismatch combination Reference Probe EX3DV4 DAE4 Secondary Standards Power meter E4419B Power sensor HP 8481A Power sensor HP 8481A	ainties with confidence p and in the closed laborator critical for calibration) ID # SN: 104778 SN: 103244 SN: 103244 SN: 103245 SN: 8H9394 (20k) SN: 310982 / 06327 SN: 501 ID # SN: 601	Cel Date (Certificate N 30-Mar-23 (No. 217-03 30-Mar-23 (No. 217-03 30-Mar-23 (No. 217-03 30-Mar-23 (No. 217-03 30-Mar-23 (No. 217-03 30-Mar-23 (No. 217-03 03-Nor-23 (No. 217-03 03-Nor-23 (No. EX3-73 03-Oct-23 (No. DAE4-0 Check Date (in house) 30-Oct-14 (in house ch	following pag sperature (22 a.) 804/03805) 804) 805) 809) 810) 849, Nov23) 801, Oct23) eck Oct-22) eck Oct-22)	pes and are (	scheduled Calibration Mar-24 Mar-24 Mar-24 Mar-24 Mar-24 Mar-24 Mar-24 Nov-24 Cet-24 Scheduled Check In house check: Oct-24	
The measurements and the uncert All calibrations have been conducts Calibration Equipment used (M&TE Primary Standards Power sensor NRP-281 Power sensor NRP-281 Power sensor NRP-281 Power sensor NRP-281 Reference 20 dB Attenuator Type-N mismatch combination Reference Probe EX3DV4 DAE4 Secondary Standards Power meter E4419B Power sensor HP 8481A Power sensor HP 8481A Power sensor HP 8481A RF generator R&S SMT-06	ainties with confidence p and in the closed laborator critical for calibration) ID # SN: 104778 SN: 103244 SN: 103244 SN: 103244 SN: 103245 SN: 310982 (20k) SN: 310982 (20k) SN: 310982 (20k) SN: 510982 (20k) SN: 501 ID # SN: 601 ID # SN: 603 ID # SN: 603 ID # SN: 053292783 SN: MY41093315 SN: 100972	Cel Date (Certificate N 30-Mar-23 (No. 217-03 30-Mar-23 (No. 217-03 30-Mar-23 (No. 217-03 30-Mar-23 (No. 217-03 30-Mar-23 (No. 217-03 30-Mar-23 (No. 217-03 30-Mar-23 (No. 217-03 03-Nor-23 (No. 217-0	following pag aperature (22 a) 804(03805) 804) 805) 806) 809) 810) 489_Nov23) 810) 49_Nov23) 810) 90K Oct-22) eck Oct-22) eck Oct-22) eck Oct-22)	pes and are (	sart of the certificate. humidity < 70%. Scheduled Calibration Mar-24 Mar-24 Mar-24 Mar-24 Nov-24 Oct-24 Scheduled Check In house check: Oct-24 In house check: Oct-24	
The measurements and the uncert All calibrations have been conducts Calibration Equipment used (M&TE Primary Standards Power sensor NRP-281 Power sensor NRP-281 Power sensor NRP-281 Power sensor NRP-281 Reference 20 dB Attenuator Type-N mismatch combination Reference Probe EX3DV4 DAE4 Secondary Standards Power meter E4419B Power sensor HP 8481A Power sensor HP 8481A Power sensor HP 8481A RF generator R&S SMT-06	ainties with confidence p and in the closed laborator critical for calibration) ID # SN: 104778 SN: 103244 SN: 103244 SN: 103244 SN: 103245 SN: 103245 SN: 103245 SN: 103245 SN: 103246 SN: 103245 SN: 103245 SN: 103245 SN: 1037292783 SN: US37292783 SN: WY41093315	Cal Date (Certificate N 30-Mar-23 (No. 217-03 30-Mar-23 (No. 217-03 30-Mar-23 (No. 217-03 30-Mar-23 (No. 217-03 30-Mar-23 (No. 217-03 30-Mar-23 (No. 217-03 30-Mar-23 (No. 217-03 03-Nov-23 (No. 217-03 03-Nov-23 (No. EX3-7 03-Oct-23 (No. EX3-7 03-Oct-23 (No. EX3-7 03-Oct-23 (No. EX3-7) 03-Oct-23 (No. EX3-7) 03-Oct-23 (No. EX3-7) 03-Oct-23 (No. EX3-7) 03-Oct-23 (No. EX3-7) 03-Oct-23 (No. EX3-7) 03-Oct-23 (No. EX3-7)	following pag aperature (22 a) 804(03805) 804) 805) 806) 809) 810) 489_Nov23) 810) 49_Nov23) 810) 90K Oct-22) eck Oct-22) eck Oct-22) eck Oct-22)	pes and are (	part of the certificate. humidRy < 70%. Scheduled Calibration Mar-24 Mar-24 Mar-24 Mar-24 Mar-24 Nov-24 Cet-24 Scheduled Check In house check: Oct-24 In house check: Oct-24 In house check: Oct-24 In house check: Oct-24	
The measurements and the uncert All calibrations have been conducts Calibration Equipment used (M&TE Primary Standards Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB Attenuator Type-N mismatch combination Reference Probe EX3DV4 DAE4 Secondary Standards Power meter E4419B Power sensor HP 8481A	ainties with confidence p and in the closed laborator critical for calibration) ID # SN: 104778 SN: 103244 SN: 103244 SN: 103244 SN: 103245 SN: 310982 (20k) SN: 310982 (20k) SN: 310982 (20k) SN: 510982 (20k) SN: 501 ID # SN: 601 ID # SN: 603 ID # SN: 603 ID # SN: 053292783 SN: MY41093315 SN: 100972	Cal Date (Certificate N 30-Mar-23 (No. 217-03 30-Mar-23 (No. 217-03 03-Oct-23 (No. DAE4-0 Check Date (in house) 30-Oct-15 (in house ch 07-Oct-15 (in house ch 03-1-Mar-14 (in house ch	following pag aperature (22 a) 804(03805) 804) 805) 806) 809) 810) 489_Nov23) 810) 49_Nov23) 810) 90K Oct-22) eck Oct-22) eck Oct-22) eck Oct-22)	pes and are (	sart of the certificate. Scheduled Calibration Mer-24 Mar-24 Mar-24 Mar-24 Mar-24 Nov-24 Cet-24 Scheduled Check In house check: Oct-24 In house check: Oct-24	
The measurements and the uncert Wil calibrations have been conducts Calibration Equipment used (M&TE Primary Standards Prover sensor NRP-291 Prover meter E44198 Prover meter E44198 Prover meter E44198 Prover sensor HP 8481A Prover sensor HP 8481	ainties with confidence p and in the closed laborator critical for calibration) 10 # SN: 104778 SN: 103244 SN: 103244 SN: 103245 SN: 103245 SN: 103245 SN: 103245 SN: 103245 SN: 103244 SN: 310982 / 06327 SN: 601 10 # SN: 603 10 # SN: 603 10 # SN: 603 10 # SN: 60392512475 SN: US37292783 SN: W141093315 SN: 100972 SN: US41080477	Cal Date (Certificate N 30-Mar-23 (No. 217-03 30-Mar-23 (No. 217-03 30-Mar-23 (No. 217-03 30-Mar-23 (No. 217-03 30-Mar-23 (No. 217-03 30-Mar-23 (No. 217-03 30-Mar-23 (No. 217-03 03-Nov-23 (No. 217-03 03-Nov-23 (No. 217-03 03-Oct-23 (No. 217-03 03-Oct-24 (III) house (No. 217-03 03-Oct-25 (III) house (No. 217-03) house (No. 217-	following pag aperature (22 a) 804/03805) 804) 805) 809) 810) 949_Nov23) 949_Nov23) 949_Nov23) 949_Nov23) 949_Nov23) 949_Nov23) 949_Nov23) 940_Nov2	pes and are (	sart of the certificate. humidity < 70%. Scheduled Calibration Mar-24 Mar-24 Mar-24 Mar-24 Nov-24 Oct-24 Scheduled Check In house check: Oct-24 In house check: Oct-24	
The measurements and the uncert All calibrations have been conducts Calibration Equipment used (M&TE Primary Standards Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB Attenuator Type-N mismatch combination Reference Probe EX3DV4 DAE4 Secondary Standards Power meter E4419B Power sensor HP 8481A Power sensor HP 8481A	ainties with confidence p and in the closed laborator critical for calibration) ID # SN: 104778 SN: 103244 SN: 103244 SN: 103245 SN: 103245 SN: 103245 SN: 103245 SN: 103245 SN: 103245 SN: 103245 SN: 103245 SN: 601 ID # SN: 603 SN: 601 ID # SN: 6339512475 SN: 0537292783 SN: US37292783 SN: US37292783 SN: US37292783 SN: US37292783 SN: US37292783 SN: US37292783 SN: US37292783	Cal Date (Certificate N 30-Mar-23 (No. 217-03 30-Mar-23 (No. 217-03 30-Mar-23 (No. 217-03 30-Mar-23 (No. 217-03 30-Mar-23 (No. 217-03 30-Mar-23 (No. 217-03 30-Mar-23 (No. 217-03 03-Nov-23 (No. 217-03 03-Nov-23 (No. 217-03 03-Oct-23 (No. 217-03 03-Oct-24 (III) house (No. 217-03 03-Oct-25 (III) house (No. 217-03) house (No. 217-	following pag aperature (22 a) 804(03805) 804) 805) 806) 809) 810) 489_Nov23) 810) 49_Nov23) 810) 90K Oct-22) eck Oct-22) eck Oct-22) eck Oct-22)	pes and are (	sart of the certificate. Scheduled Calibration Mer-24 Mar-24 Mar-24 Mar-24 Mar-24 Nov-24 Cet-24 Scheduled Check In house check: Oct-24 In house check: Oct-24	
The measurements and the uncert All calibrations have been conducts Calibration Equipment used (M&TE Power sensor NRP-281 Power sensor NRP-281 Power sensor NRP-281 Reference 20-dB Attenuator Type-N mismatch combination Reference Probe EX3DV4 DAE4 Secondary Standards Power meter E4419B Power sensor HP 8481A Power sensor HP 8481A RF generator R&S SMT-06 Network Analyzer Agtent E8368A Calibrated by:	anties with confidence p and in the closed laborator E critical for calibration) 10 # SN: 104778 SN: 103244 SN: 103244 SN: 103244 SN: 103245 SN: 103245 SN: 103245 SN: 103246 SN: 310982 / 66327 SN: 103246 SN: 601 10 # SN: 6839512475 SN: 0537292783 SN: 0537292783 SN: 0537292783 SN: 0537292783 SN: 100972 SN: 0541080477 Name Paulo Pina	Cal Date (Certificate N 30-Mar-23 (No. 217-03 30-Mar-23 (No. 217-03 03-Nox-23 (No. 217-03 03-Oct-23 (No. 217-0	following pag operature (22 0.) 804/03805) 804) 805) 806) 809) 810) 492 Nov23) 810) 493 Nov23) 810) 493 Nov23) 810) 494 Nov23) 810) 495 Nov23) 801 Oct-22) eck Oct-22) eck Oct-22) eck Oct-22) Technician	pes and are (	sart of the certificate. Scheduled Calibration Mer-24 Mar-24 Mar-24 Mar-24 Mar-24 Nov-24 Cet-24 Scheduled Check In house check: Oct-24 In house check: Oct-24	
The measurements and the uncert All calibrations have been conducts Calibration Equipment used (M&TE Primary Standards Power sensor NRP-281 Power sensor NRP-291 Reference 20 dB Attenuator Type-N mismatch combination Reference Probe EX3DV4 DAE4 Secondary Standards Power meter E4419B Power sensor HP 8481A Power sensor HP 8481A Ref generator PI&S SMT-06 Network Analyzer Agtent E8368A Calibrated by:	ainties with confidence p and in the closed laborator critical for calibration) ID # SN: 104778 SN: 103244 SN: 103244 SN: 103245 SN: 103245 SN: 103245 SN: 103245 SN: 103245 SN: 103245 SN: 103245 SN: 103245 SN: 601 ID # SN: 603 SN: 601 ID # SN: 6339512475 SN: 0537292783 SN: US37292783 SN: US37292783 SN: US37292783 SN: US37292783 SN: US37292783 SN: US37292783 SN: US37292783	Cal Date (Certificate N 30-Mar-23 (No. 217-03 30-Mar-23 (No. 217-03 30-Mar-23 (No. 217-03 30-Mar-23 (No. 217-03 30-Mar-23 (No. 217-03 30-Mar-23 (No. 217-03 30-Mar-23 (No. 217-03 03-Nov-23 (No. 217-03 03-Nov-23 (No. 217-03 03-Oct-23 (No. 217-03 03-Oct-24 (III) house (No. 217-03 03-Oct-25 (III) house (No. 217-03) house (No. 217-	following pag operature (22 0.) 804/03805) 804) 805) 806) 809) 810) 492 Nov23) 810) 493 Nov23) 810) 493 Nov23) 810) 494 Nov23) 810) 495 Nov23) 801 Oct-22) eck Oct-22) eck Oct-22) eck Oct-22) Technician	pes and are (	sart of the certificate. Scheduled Calibration Mer-24 Mar-24 Mar-24 Mar-24 Mar-24 Nov-24 Cet-24 Scheduled Check In house check: Oct-24 In house check: Oct-24	
The measurements and the uncert All calibrations have been conducts Calibration Equipment used (M&TE Primary Standards Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB Attenuator Type-N mismatch combination Reference Probe EX3DV4 DAE4 Secondary Standards Power meter E4419B Power sensor HP 8481A Power sensor HP 8481A	anties with confidence p and in the closed laborator E critical for calibration) 10 # SN: 104778 SN: 103244 SN: 103244 SN: 103244 SN: 103245 SN: 103245 SN: 103245 SN: 103246 SN: 310982 / 66327 SN: 103246 SN: 601 10 # SN: 6839512475 SN: 0537292783 SN: 0537292783 SN: 0537292783 SN: 0537292783 SN: 100972 SN: 0541080477 Name Paulo Pina	Cal Date (Certificate N 30-Mar-23 (No. 217-03 30-Mar-23 (No. 217-03 03-Nox-23 (No. 217-03 03-Oct-23 (No. 217-0	following pag operature (22 0.) 804/03805) 804) 805) 806) 809) 810) 492 Nov23) 810) 493 Nov23) 810) 493 Nov23) 810) 494 Nov23) 810) 495 Nov23) 801 Oct-22) eck Oct-22) eck Oct-22) eck Oct-22) Technician	pes and are (	sart of the certificate. Scheduled Calibration Mer-24 Mar-24 Mar-24 Mar-24 Mar-24 Nov-24 Cet-24 Scheduled Check In house check: Oct-24 In house check: Oct-24	
The measurements and the uncert All calibrations have been conducts Calibration Equipment used (M&TE Primary Standards Power sensor NRP-281 Power sensor NRP-291 Paterence 20 dB Attenuator Type-N mismatch combination Paterence 20 dB Attenuator Type-N mismatch combination Paterence Probe EX3DV4 DAE4 Secondary Standards Power meter E4419B Power sensor HP 8481A Power 8481A Powe	anties with confidence p and in the closed laborator E critical for calibration) 10 # SN: 104778 SN: 103244 SN: 103244 SN: 103244 SN: 103245 SN: 103245 SN: 103245 SN: 103246 SN: 310982 / 66327 SN: 103246 SN: 601 10 # SN: 6839512475 SN: 0537292783 SN: 0537292783 SN: 0537292783 SN: 0537292783 SN: 100972 SN: 0541080477 Name Paulo Pina	Cal Date (Certificate N 30-Mar-23 (No. 217-03 30-Mar-23 (No. 217-03 03-Nox-23 (No. 217-03 03-Oct-23 (No. 217-0	following pag operature (22 0.) 804/03805) 804) 805) 806) 809) 810) 492 Nov23) 810) 493 Nov23) 810) 493 Nov23) 810) 494 Nov23) 810) 495 Nov23) 801 Oct-22) eck Oct-22) eck Oct-22) eck Oct-22) Technician	pes and are (	sart of the certificate. Scheduled Calibration Mer-24 Mar-24 Mar-24 Mar-24 Mar-24 Nov-24 Cet-24 Scheduled Check In house check: Oct-24 In house check: Oct-24	Λ.

F-TP22-03 (Rev. 06)



Calibration Laboratory of Schmid & Partner Engineering AG Zeughausstrasse 43, 8004 Zurich, Switzerland



Schweizerischer Kallbrierdienst Service suisse d'étalonnage Servizio svizzero di taratura Swiss Calibration Service

Accreditation No.: SCS 0108

S

C

S

Accredited by the Swiss Accreditation Service (SAS) The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

#### Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

# Calibration is Performed According to the Following Standards:

- a) IEC/IEEE 62209-1528, "Measurement Procedure For The Assessment Of Specific Absorption Rate Of Human Exposure To Radio Frequency Fields From Hand-Held And Body-Worn Wireless Communication Devices - Part 1528: Human Models, Instrumentation And Procedures (Frequency Range of 4 MHz to 10 GHz)", October 2020.
- b) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

### Additional Documentation:

c) DASY System Handbook

# Methods Applied and Interpretation of Parameters:

- Measurement Conditions: Further details are available from the Validation Report at the end
  of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- Antenna Parameters with TSL: The source is mounted in a touch configuration below the center marking of the flat phantom.
- Return Loss: This parameter is measured with the source positioned under the liquid filled phantom (as described in the measurement condition clause). The Return Loss ensures low reflected power. No uncertainty required.
- SAR measured: SAR measured at the stated antenna input power.
- SAR normalized: SAR as measured, normalized to an input power of 1 W at the antenna connector.
- SAR for nominal TSL parameters: The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

Certificate No: D1900V2-5d032\_Jan24

Page 2 of 6



#### **Measurement Conditions**

DASY system configuration, as far as not given on page 1.

DASY Version	DASY52	V52.10.4
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	1900 MHz ± 1 MHz	

# Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22,0 °C	40.0	1.40 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) "C	41.3±6%	1.40 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C		-

#### SAR result with Head TSL

SAR averaged over 1 cm <sup>3</sup> (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	9.97 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	40.2 W/kg ± 17.0 % (k=2)
SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL	condition	
SAR averaged over 10 cm <sup>8</sup> (10 g) of Head TSL SAR measured	condition 250 mW input power	5.22 W/kg

Certificate No: D1900V2-5d032\_Jan24

Page 3 of 6



# Appendix (Additional assessments outside the scope of SCS 0108)

# Antenna Parameters with Head TSL

Impedance, transformed to feed point	50.2 Ω + 6.8 jΩ	
Return Loss	- 23.4 dB	

#### General Antenna Parameters and Design

ns
ł

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps, are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.

No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

#### **Additional EUT Data**

Manufactured by	SPEAG

Certificate No: D1900V2-5d032\_Jan24

Page 4 of 6



### **DASY5 Validation Report for Head TSL**

Date: 18.01.2024

Test Laboratory: SPEAG, Zurich, Switzerland

#### DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:5d032

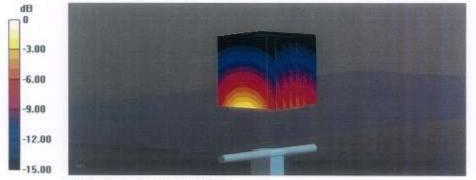
 $\begin{array}{l} \mbox{Communication System: UID 0 - CW; Frequency: 1900 MHz} \\ \mbox{Medium parameters used: } f = 1900 MHz; \mbox{$\sigma$} = 1.4 \mbox{ S/m; $\epsilon$} = 41.3; \mbox{$\rho$} = 1000 \mbox{ kg/m}^3 \\ \mbox{Phantom section: Flat Section} \\ \mbox{Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)} \\ \end{array}$ 

DASY52 Configuration:

- Probe: EX3DV4 SN7349; ConvF(8.43, 8.43, 8.43) @ 1900 MHz; Calibrated: 03.11.2023
- · Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- · Electronics: DAE4 Sn601; Calibrated: 03.10.2023
- · Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.10.4(1535); SEMCAD X 14.6.14(7501)

#### Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm Reference Value = 109.9 V/m; Power Drift = 0.03 dB Peak SAR (extrapolated) = 18.3 W/kg SAR(1 g) = 9.97 W/kg; SAR(10 g) = 5.22 W/kg Smallest distance from peaks to all points 3 dB below = 9.8 mm Ratio of SAR at M2 to SAR at M1 = 54.9% Maximum value of SAR (measured) = 15.5 W/kg



0 dB = 15.5 W/kg = 11.90 dBW/kg

Certificate No: D1900V2-5d032\_Jan24

Page 5 of 6



# Impedance Measurement Plot for Head TSL

e ⊻iew ⊑					4	KA	X	Ę	7775	Sel-	1	80	0000 587 0000	19	pH		6.77 7.45	205 0 712 0 0 ml 402
			ti I		F	Ł	£		R	Ż	7							
	1 Berry	20			/	2	$\leq$	F	F	ļ								
Ch1: Start	1 Awg = 1 76000 0	29 Ha -	_	-		2	$\leq$	ŧ		/	1	40	080	1 G	FHZ	-	-	000 (SI
Ch1: Start 10.00	1.76000.0	29 Ha				< T	$\leq$	È			1	.90	000	0 G	Hz	-	-	000 Gi
Ch1: Start	1.76000.0	29 Ha					$\leq$	Ł	1		1	.90	880	0 G	Hz	-	-	
Ch1: Rent 5.00 6.00 5.00 5.00 5.00 10.00 -10.00	1.76000.0	29 Ha									1	80	000	0 G	Hz	-	-	
Ch1: Start 10.00 5.00 0.00 5.00 -10.05	1.76000.0	29									1	90	800	0 6	Hz	-	-	
Ch1: Start 5.00 6.00 10.00 10.00 15.00 20.00	1.76000.0	29									1	90	000	0 6	Hz	-	-	

Certificate No: D1900V2-5d032\_Jan24

Page 6 of 6



Calibration Laborator Schmid & Partner Engineering AG Zeughausstrasse 43, 8004 Zuric			Schweizerischer Kalibrier Service suisse d'étalonne Servizio svizzero di tarata Swiss Calibration Service	age ura
ccredited by the Swiss Accreditat The Swiss Accreditation Service fulfilateral Agreement for the re	is one of the signatori		Accreditation No.: SCS	0108
lient HCT			Certificate No. D2300V2-1010 Jul	23
Gyeonggi-do, Repub				
CALIBRATION C	ERTIFICAT	E		
Dbject	D2300V2 - SN:1	010		
Calibration procedure(s)	QA CAL-05.v12 Calibration Proce	edure for SAR Validat	ion Sources between 0.7-3 GHz	
Calibration date:	July 19, 2023			
he measurements and the uncert	tainties with confidence p	robability are given on the foll	the physical units of measurements (SI): owing pages and are part of the certificate. ature (22 ± 3)°C and humidity < 70%.	
Calibration Equipment used (M&T)	E critical for calibration)			
rimary Standards	10 #	Cal Date (Certificate No.)	Scheduled Calibration	
ower meter NRP2	SN: 104778	30-Mar-23 (No. 217-03804		
ower sensor NRP-291 ower sensor NRP-291	SN: 103244	30-Mer-23 (No. 217-03804		
aference 20 dB Attenuator	SN: 103245	30-Mar-23 (No. 217-03805		
pe-N mismatch combination	SN: BH9394 (20k) SN: 310982 / 06327	30-Mar-23 (No. 217-03809		
eference Probe EX30V4	SN: 7349	30-Mar-23 (No. 217-03810		
AE4	SN: 601	10-Jan-23 (No. EX3-7349_ 19-Dec-22 (No. DAE4-601		
econdary Standards	iD #	Check Date (in house)	Taken to a Physical	
ower meter E4419B	SN: GB39512475	30-Oct-14 (In house check	Scheduled Check Oct-22) In house check: Oct-24	_
ower sensor HP 8481A	SN: US37292783	07-Oct-15 (in house check		
ower sensor HP 8481A	SN: MY41093315	07-Oct-15 (in house check	The second secon	
F generator R&S SMT-06	SN: 100972	15-Jun-15 (In house check		
etwork Analyzer Agilent E8358A	SN: US41080477	31-Mar-14 (in house check		
	Name	Function	Signature	
alibrated by:	Paulo Pine	Laboratory Tec	tinician	_
			ton the	_
aproved by:	Sven Kühn	Technical Man	ager 5.45	
			Issued: July 19, 2023	
his calibration certificate shall not	be reproduced except in	full without written approvel o	the laboratory.	1 21
rtificate No: D2300V2-1010_J	lul23	Page 1 of 6	The h	1.
				· · · ·
			THE DL HINE CT	- ++2

F-TP22-03 (Rev. 06)



Calibration Laboratory of Schmid & Partner Engineering AG Zeughausstrasse 43, 8004 Zurich, Switzerland





Schweizerischer Kallbrierdienst Service sulsse d'étalonnage Servizio svizzero di taratura Swiss Calibration Service

Accreditation No.: SCS 0108

S

C

S

Accredited by the Swiss Accreditation Service (SAS) The Swiss Accreditation Service Is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

### Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

# Calibration is Performed According to the Following Standards:

- a) IEC/IEEE 62209-1528, "Measurement Procedure For The Assessment Of Specific Absorption Rate Of Human Exposure To Radio Frequency Fields From Hand-Held And Body-Worn Wireless Communication Devices - Part 1528: Human Models, Instrumentation And Procedures (Frequency Range of 4 MHz to 10 GHz)", October 2020.
- b) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

#### Additional Documentation:

c) DASY System Handbook

#### Methods Applied and Interpretation of Parameters:

- Measurement Conditions: Further details are available from the Validation Report at the end
  of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- Antenna Parameters with TSL: The source is mounted in a touch configuration below the center marking of the flat phantom.
- Return Loss: This parameter is measured with the source positioned under the liquid filled phantom (as described in the measurement condition clause). The Return Loss ensures low reflected power. No uncertainty required.
- SAR measured: SAR measured at the stated antenna input power.
- SAR normalized: SAR as measured, normalized to an input power of 1 W at the antenna connector.
- SAR for nominal TSL parameters: The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

Certificate No: D2300V2-1010\_Jul23

Page 2 of 6



### Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY52	V52.10.4
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	2300 MHz ± 1 MHz	

### Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	39.5	1.67 mha/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	38.3 ± 6 %	1.68 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C		

### SAR result with Head TSL

SAR averaged over 1 cm <sup>3</sup> (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	12.2 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	48.3 W/kg ± 17.0 % (k=2)
SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL	condition	
SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL SAR measured	condition 250 mW input power	5.95 W/kg

Gertificate No: D2300V2-1010\_Jul23

Page 3 of 6



# Appendix (Additional assessments outside the scope of SCS 0108)

### Antenna Parameters with Head TSL

Impedance, transformed to feed point	48.4 Ω - 0.9 jΩ	
Return Loss	- 34,6 dB	

#### General Antenna Parameters and Design

E	Electrical Delay (one direction)	1.170 ns
-		

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.

No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

#### **Additional EUT Data**

Manufactured by	00540
witanialdotured by	SPEAG

Page 4 of 6



# **DASY5 Validation Report for Head TSL**

Date: 19.07.2023

Test Laboratory: SPEAG, Zurich, Switzerland

# DUT: Dipole 2300 MHz; Type: D2300V2; Serial: D2300V2 - SN:1010

Communication System; UID 0 - CW; Frequency: 2300 MHz Medium parameters used; f = 2300 MHz;  $\sigma$  = 1.68 S/m;  $\epsilon_e$  = 38.3;  $\rho$  = 1000 kg/m<sup>3</sup> Phantom section: Flat Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 SN7349; ConvF(7.98, 7.98, 7.98) @ 2300 MHz; Calibrated: 10.01.2023
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 19.12.2022
- Phantom: Flat Phantom 5.0 (front); Type: QD 000 P50 AA; Serial: 1001
- DASY52 52.10.4(1535); SEMCAD X 14.6.14(7501)

# Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm Reference Value = 115.7 V/m; Power Drift = -0.02 dB Peak SAR (extrapolated) = 21.7 W/kg SAR(1 g) = 12.2 W/kg; SAR(10 g) = 5.95 W/kg Smallest distance from peaks to all points 3 dB below = 9 mm Ratio of SAR at M2 to SAR at M1 = 56.5% Maximum value of SAR (measured) = 18.9 W/kg



Certificate No: D2300V2-1010\_Jul23

Page 5 of 6



# Impedance Measurement Plot for Head TSL

					~		E	X	2.30000			8.400 CI 3,75 mCI
				É	4	Å	Ă		2.30000	U GHz		524 mU 150.85 *
				ł	Q	X	E	Ì	/			
		20					1 -					
10.00	Ch 1 Aug 4 Inst 2,100001	0.642	-	_	-			1	2 20000	n clus	-	2 70010 GHG
_	Rest 2,100001	0H2	-				>	1	2,30000	0 GHz	-	2.10010 GHU 1.846: dB
10.00 5.00 8.00 6.30	Rest 2,100001						,	1	2,30000	0 GHz	-	-
10.00 5.60 8.00 6.00 -01.00 -15.00	Rest 2,100001						,		2.30000	0 GHz	-	-
10.00 5.00 6.00 6.00 (11.00 (11.00 (15.00 (20.00)	Rest 2,100001						>		2.30000	0 GHz	-	-
10.00 5.00 10.00 5.30 -10.00 -10.00 -25.00	Rest 2,100001						,		2.30000	0 GHz	-	-
10.00 5.00	Rest 2,100001						,		2.30000	0 GHz	-	-

Certificate No: D2300V2-1010\_Jut23

Page 6 of 6



# **Certification of Calibration**

Object	D2300V2 – SN:1010
Calibration procedure(s)	Procedure for Calibration Extension for SAR Dipoles.
Extended Calibration date	Jul.19, 2025
Description	SAR Validation Dipole at 2300 Młz

Note: Calibrated Before Testing. Prior to testing, the measurement paths containing a cable, amplifier, attenuator, coupler or filter were connected to a calibrated source (i.e. signal generator) to determine the losses of the measurement path.



# **Dipole Calibration Extension**

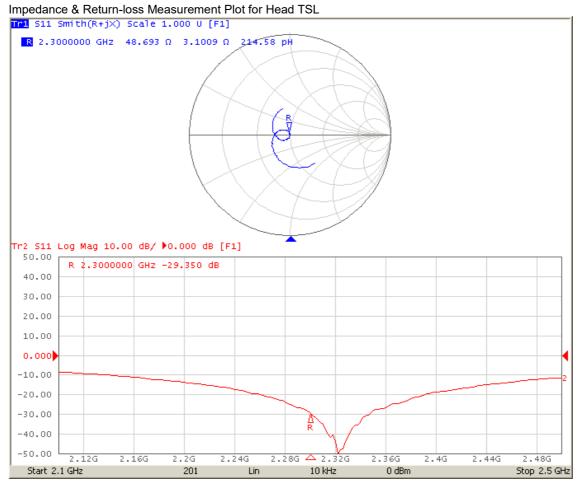
Per HDB 865664 D01, calibration intervals of up to three years may be considered for reference dipoles when it is demonstrated that the SAR target, impedance and return loss of a dipole have remained stable according to the following requirements:

- 1. The measured SAR does not deviate more than 10% from the target on the calibration certificate.
- 2. The return-loss does not deviate more than 20% from the previous measurement and meets the required 20dB minimum return-loss requirement.
- 3. The measurement of real or imaginary parts of impedance does not deviate more than  $5\Omega$  from the previous measurement.

The following dipole was checked to pass the above 3 requirements to have 2-year calibration period from the calibration date:

Calibratio Date	n Extenstion Date	Electrical	Certificate SAR Target Head(1g) W/kg@17.0dBm	SAR(1g)	Deviation 1 = (%)	Certificate SAR Target Head(10g) W/kg@17.0dBm	SAR(10g)	Deviation 10m(%)	Certificate Impedance Head(Ohm) Real			Certificate Impedance Head(Ohm) Imaginary	Measured Impedance Head(Ohm) Imaginary	Difference (Ohm) Imaginary	Certificate ReturnLoss Head(dB)	Measured ReturnLoss Head(dB)	Deviation(%)	PASS/FAIL
07/19/20	4 07/19/2025	1.17	2.415	2.4	-0.62	1.18	1.15	-2.54	48.4	48.693	-0.3	-0.9	3.1009	-4.0009	-34.6	-29.35	-15.17	PASS





# Result

Calibration Date	Extenstion Date	Electrical	Certificate SAR Target Head(1g) W/kg@17.0dBm	SAR(1g)	Deviation 10(%)	Certificate SAR Target Head(10g) W/kg@17.0dBm	SAR(10g)	Deviation 10c(%)	Certificate Impedance Head(Ohm) Real			Certificate Impedance Head(Ohm) Imaginary	Measured Impedance Head(Ohm) Imaginary	Difference (Ohm) Imaginary	Certificate ReturnLoss Head(dB)	Measured ReturnLoss Head(dB)	Deviation(%)	PASS/FAIL
07/19/2024	07/19/2025	1.17	2.415	2.4	-0.62	1.18	1.15	-2.54	48.4	48.693	-0.3	-0.9	3.1009	-4.0009	-34.6	-29.35	-15.17	PASS



Accredited by the Swiss Accreditation Service The Swiss Accreditation Service Aultilateral Agreement for the re	is one of the signatoria		S Swiss Calibration Service Accreditation No.: SCS 010
Client HCT		Certificate #	No. D2450V2-743_Mar24
Gyeonggi-do, Repub	lic of Korea		
CALIBRATION C	ERTIFICAT	E 2 4 9	사 환 이 자
		12	3
Object	D2450V2 - SN:7	43 74 12 4 11/11 50 1	12 11 10 1474 124 20240424
Calibration procedure(s)	QA CAL-05.v12	L. II QUARTE	and a second and
community proventine(s)		adure for SAR Validation Sourc	
	Galbration Proce	dure for SAM valuation Sourc	es between 0.7-3 GHz
Calibration date:	March 14 2024		
CARDON BOLCET-CHEMA	March 14, 2024		
All calibrations have been conduct	ed in the closed laborator	ry laciility: environment temperature (22 ± 3	8)°C and humidity < 70%.
Calibration Equipment used (M&T)	E critical for calibration)		
Calibration Equipment used (M&T) nimary Standards	E critical for calibration)	Cal Date (Certificate No.)	Scheduled Calibration
Calibration Equipment used (M&T) rimary Standards Yower meter NRP2	E critical for calibration) ID # SN: 104778	Cal Date (Certificate No.) 30-Mar-23 (No. 217-03804/03805)	Scheduled Galibration Mar-24
Calibration Equipment used (M&T) Primary Standards Yower mater NRP2 Yower sensor NRP-291	E critical for calibration) ID # SN: 104778 SN: 103244	Cal Date (Certificate No.) 30-Mar-23 (No. 217-03804/03805) 30-Mar-23 (No. 217-03804)	Scheduled Calibration Mar-24 Mar-24
Calibration Equipment used (M&T) Primary Standards Power meter NRP2 Power sensor NRP-Z91 Power sensor NRP-Z91	E ortileal for calibration) ID # SN: 104778 SN: 103244 SN: 103245	Cal Date (Certificate No.) 30-Mar-23 (No. 217-03804/03805) 30-Mar-23 (No. 217-03804) 30-Mar-23 (No. 217-03805)	Scheduled Calibration Mar-24 Mar-24 Mar-24
Calibration Equipment used (M&T) Primary Standards Power meter NRP2 Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB Attenuator	E critical for calibration) ID # SN: 104778 SN: 103244	Cal Date (Certificate No.) 30-Mar-23 (No. 217-03604/03805) 30-Mar-23 (No. 217-03804) 30-Mar-23 (No. 217-03805) 30-Mar-23 (No. 217-03809)	Scheduled Calibration Mar-24 Mar-24 Mar-24 Mar-24
Calibration Equipment used (M&T) Primary Standards Power meter NRP2 Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB Attenuator Type-N mismatch combination	E ortifical for calibration) ID # SN: 104778 SN: 103244 SN: 103245 SN: 8H9394 (20k)	Cal Date (Certificate No.) 30-Mar-23 (No. 217-03804/03805) 30-Mar-23 (No. 217-03804) 30-Mar-23 (No. 217-03805) 30-Mar-23 (No. 217-03808) 30-Mar-23 (No. 217-03810)	Scheduled Calibration Mar-24 Mar-24 Mar-24 Mar-24 Mar-24
Calibration Equipment used (M&T) Primary Standards Power meter NRP-29 Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB Attanuator Vpe-N mismatch combination Reference Probe EX3DV4	E critical for calibration) ID # SN: 104778 SN: 103244 SN: 103245 SN: 8H9394 (20k) SN: 310862 / 06327	Cal Date (Certificate No.) 30-Mar-23 (No. 217-03604/03805) 30-Mar-23 (No. 217-03804) 30-Mar-23 (No. 217-03805) 30-Mar-23 (No. 217-03809)	Scheduled Calibration Mar-24 Mar-24 Mar-24 Mar-24
Calibration Equipment used (M&TI Primary Standards <sup>2</sup> ower meter NRP2 <sup>3</sup> ower sensor NRP-291 <sup>3</sup> ower sensor NRP-291 Peterence 20 dB Attenuator (ype-N mismatch combination Reference Probe EX3DV4 3AE4	E ortifical for calibration) ID # SN: 104778 SN: 103244 SN: 103245 SN: 8H9394 (20k) SN: 310862 / 06327 SN: 7340 SN: 601	Cal Date (Certificate No.) 30-Mar-23 (No. 217-03804/03805) 30-Mar-23 (No. 217-03804) 30-Mar-23 (No. 217-03805) 30-Mar-23 (No. 217-03809) 30-Mar-23 (No. 217-03810) 03-Nov-23 (No. 237-349, Nov23) 30-Jan-24 (No. DAE4-601_Jan24)	Scheduled Calibration Mar-24 Mar-24 Mar-24 Mar-24 Mar-24 Nov-24 Jan-25
Calibration Equipment used (M&TI Primary Standards Power mater NRP2 Power sensor NRP-291 Power sensor NRP-291 Peterence 20 dB Attenuator (ype-N mismatch combination Reference Probe EX3DV4 DAE4 Secondary Standards	E ortifical for calibration) ID # SN: 104778 SN: 103244 SN: 103245 SN: 8H9394 (20k) SN: 310862 / 06327 SN: 7340 SN: 601 ID #	Cal Date (Certificate No.) 30-Mar-23 (No. 217-03804/03805) 30-Mar-23 (No. 217-03804) 30-Mar-23 (No. 217-03805) 30-Mar-23 (No. 217-03809) 30-Mar-23 (No. 217-03810) 03-Nov-23 (No. EX3-7349, Nov23) 30-Jan-24 (No. DAE4-601_Jan24) Check Date (in house)	Scheduled Calibration Mar-24 Mar-24 Mar-24 Mar-24 Mar-24 Nov-24 Jan-25 Scheduled Check
Calibration Equipment used (M&TI Primary Standards Power meter NRP2 Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB Attenuator (ype-N mismatch combination Reference Probe EX3DV4 DAE4 Secondary Standards Power meter E4419B	E ortifical for calibration) ID # SN: 104778 SN: 103244 SN: 103245 SN: 8H9394 (20k) SN: 310862 / 06327 SN: 7340 SN: 601 ID # SN: GB39512475	Cal Date (Certificate No.) 30-Mar-23 (No. 217-03804/03805) 30-Mar-23 (No. 217-03804) 30-Mar-23 (No. 217-03805) 30-Mar-23 (No. 217-03809) 30-Mar-23 (No. 217-03810) 03-Nov-23 (No. EX3-7349, Nov23) 30-Jan-24 (No. DAE4-601_ulen24) Check Date (in house) 30-Oct-14 (in house check Oct-22)	Scheduled Calibration Mar-24 Mar-24 Mar-24 Mar-24 Mar-24 Mar-24 Nov-24 Jan-25 Scheduled Check In house check: Oct-24
Calibration Equipment used (M&TT Primary Standards Power meter NRP2 Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB Attenuator (ype-N mismatch combination Reference Probe EX3C/V4 OAE4 Secondary Standards Power meter E44198 Power sensor HP B481A	E ortifical for calibration) ID # SN: 104778 SN: 103244 SN: 103245 SN: 103245 SN: 103245 SN: 103245 SN: 103245 SN: 103245 SN: 103245 SN: 601 ID # SN: 6B39512475 SN: US37292783	Cal Date (Certificate No.) 30-Mar-23 (No. 217-03804/03805) 30-Mar-23 (No. 217-03804) 30-Mar-23 (No. 217-03805) 30-Mar-23 (No. 217-03809) 30-Mar-23 (No. 217-03810) 03-Nov-23 (No. 217-03810) 03-Nov-23 (No. EX3-7349, Nov23) 30-Jan-24 (No. DAE4-601_Jan24) Check Date (in house) 30-Oct-14 (in house check Oct-22) 07-Oct-15 (in house check Oct-22)	Scheduled Calibration Mar-24 Mar-24 Mar-24 Mar-24 Mar-24 Nov-24 Jan-25 Scheduled Chack In house check: Oct-24 in house check: Oct-24
Calibration Equipment used (M&TI Primary Standards Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB Attenuator Type-N mismatch combination Reference Probe EX30V4 OAE4 Secondary Standards Power sensor HP 8481A Power sensor HP 8481A	E critical for calibration) ID # SN: 104778 SN: 103244 SN: 103245 SN: 103245 SN: 103245 SN: 103245 SN: 103245 SN: 103245 SN: 103245 SN: 103245 SN: 601 ID # SN: 6B39512475 SN: US37292783 SN: WY41093315	Cal Date (Certificate No.) 30-Mar-23 (No. 217-03804/03805) 30-Mar-23 (No. 217-03804) 30-Mar-23 (No. 217-03805) 30-Mar-23 (No. 217-03809) 30-Mar-23 (No. 217-03810) 03-Nov-23 (No. 217-03810) 03-Nov-23 (No. EX3-7349, Nov23) 30-Jan-24 (No. DAE4-601_Jan24) Check Date (in house) 30-Oct-14 (in house check Oct-22) 07-Oct-15 (in house check Oct-22) 07-Oct-15 (in house check Oct-22)	Scheduled Calibration Mar-24 Mar-24 Mar-24 Mar-24 Mar-24 Nov-24 Jan-25 Scheduled Check In house check: Oct-24 In house check: Oct-24 In house check: Oct-24 In house check: Oct-24
Calibration Equipment used (M&TI Primary Standards <sup>3</sup> ower meter NRP2 <sup>3</sup> ower sensor NRP-291 <sup>3</sup> ower sensor NRP-291 Reference 20 dB Attenuator (ype-N mismatch combination Reference Probe EX3DV4 OAE4 Secondary Standards <sup>2</sup> ower sensor HP 8481A <sup>3</sup> ower sensor HP 8481A <sup>1</sup> F generator R&S SMT-06	E ortifical for calibration) ID # SN: 104778 SN: 103244 SN: 103245 SN: 103245 SN: 103245 SN: 103245 SN: 103245 SN: 103245 SN: 103245 SN: 601 ID # SN: 6B39512475 SN: US37292783	Cal Date (Certificate No.) 30-Mar-23 (No. 217-03804/03805) 30-Mar-23 (No. 217-03804) 30-Mar-23 (No. 217-03805) 30-Mar-23 (No. 217-03809) 30-Mar-23 (No. 217-03810) 03-Nov-23 (Nov	Scheduled Calibration Mar-24 Mar-24 Mar-24 Mar-24 Mar-24 Nov-24 Jan-25 Scheduled Check In house check: Oct-24 In house check: Oct-24
Calibration Equipment used (M&TI Primary Standards <sup>3</sup> ower meter NRP2 <sup>3</sup> ower sensor NRP-291 <sup>3</sup> ower sensor NRP-291 Reference 20 dB Attenuator (ype-N mismatch combination Reference Probe EX3DV4 OAE4 Secondary Standards <sup>2</sup> ower sensor HP 8481A <sup>3</sup> ower sensor HP 8481A <sup>1</sup> F generator R&S SMT-06	E ortilicel for calibration) ID # SN: 104778 SN: 103244 SN: 103245 SN: 8H9394 (20k) SN: 310862 / 66327 SN: 734P SN: 601 ID # SN: 6B39512475 SN: US37292783 SN: US37292783 SN: 4V41093315 SN: 100972	Cal Date (Certificate No.) 30-Mar-23 (No. 217-03804/03805) 30-Mar-23 (No. 217-03804) 30-Mar-23 (No. 217-03805) 30-Mar-23 (No. 217-03809) 30-Mar-23 (No. 217-03810) 03-Nov-23 (No. 217-03810) 03-Nov-23 (No. EX3-7349, Nov23) 30-Jan-24 (No. DAE4-601_Jan24) Check Date (in house) 30-Oct-14 (in house check Oct-22) 07-Oct-15 (in house check Oct-22) 07-Oct-15 (in house check Oct-22)	Scheduled Calibration Mar-24 Mar-24 Mar-24 Mar-24 Mar-24 Nov-24 Jan-25 Scheduled Check In house check: Oct-24 In house check: Oct-24 In house check: Oct-24 In house check: Oct-24
Calibration Equipment used (M&TI Primary Standards Power meter NRP2 Power sensor NRP-291 Reference 20 dB Attenuator Type-N mismatch combination Reference Probe EX30V4 DAE4 Secondary Standards Power meter E4419B Power sensor HP 8481A Power sensor HP 8481A	E ortilicel for calibration) ID # SN: 104778 SN: 103244 SN: 103245 SN: 8H9394 (20k) SN: 310862 / 66327 SN: 734P SN: 601 ID # SN: 6B39512475 SN: US37292783 SN: US37292783 SN: 4V41093315 SN: 100972	Cal Date (Certificate No.) 30-Mar-23 (No. 217-03804/03805) 30-Mar-23 (No. 217-03804) 30-Mar-23 (No. 217-03805) 30-Mar-23 (No. 217-03809) 30-Mar-23 (No. 217-03810) 03-Nov-23 (Nov	Scheduled Calibration Mar-24 Mar-24 Mar-24 Mar-24 Mar-24 Nov-24 Jan-25 Scheduled Check In house check: Oct-24 In house check: Oct-24
Calibration Equipment used (M&TT Primary Standards Power meter NRP2 Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB Attenuator Type-N mismatch combination Reference Probe EX30V4 DAE4 Secondary Standards Power meter E44198 Power sensor HP 8481A Power sensor HP 8481A Power sensor HP 8481A Secondary R&S SMT-06 Ketwork Analyzer Agient E8358A	E ortifical for calibration) ID # SN: 104778 SN: 103244 SN: 103245 SN: 8H9394 (20k) SN: 310862 / 06327 SN: 601 ID # ID # SN: 6B39512475 SN: US37292783 SN: WY4109315 SN: US41080477	Cal Date (Certificate No.) 30-Mar-23 (No. 217-03804/03805) 30-Mar-23 (No. 217-03804) 30-Mar-23 (No. 217-03805) 30-Mar-23 (No. 217-03809) 30-Mar-23 (No. 217-03810) 03-Nov-23 (No. 217-03810) 03-Nov-23 (No. EX3-7349, Nov23) 30-Jan-24 (No. DAE4-601_Jan24) Check Date (in house) 30-Dct-14 (in house check Oct-22) 07-Oct-15 (in house check Oct-22) 07-Oct-15 (in house check Oct-22) 15-Jan-15 (in house check Oct-22) 31-Mar-14 (in house check Oct-22)	Scheduled Calibration Mar-24 Mar-24 Mar-24 Mar-24 Mar-24 Jar-25 Scheduled Check In house check: Oct-24 In house check: Oct-24
All calibrations have been conduct Calibration Equipment used (M&TI Primary Standards Power meter NBP2 Power sensor NBP-291 Power sensor NBP-291 Reference 20 dB Attanuator Type-N mismatch combination Reference Probe EX3DV4 DAE4 Secondary Standards Power sensor HP 8481A Power sensor HP	E ortifical for calibration) ID # SN: 104778 SN: 103244 SN: 103245 SN: 8H9394 (20k) SN: 310882 / 06327 SN: 310882 / 06327 SN: 601 ID # SN: 6B39512475 SN: US37292783 SN: WY41003315 SN: US37292783 SN: WY41003315 SN: US370872 SN: US41080477 Name	Cal Date (Certificate No.) 30-Mar-23 (No. 217-03804/03805) 30-Mar-23 (No. 217-03804) 30-Mar-23 (No. 217-03805) 30-Mar-23 (No. 217-03809) 30-Mar-23 (No. 217-03810) 03-Nov-23 (No. EX3-7349, Nov23) 30-Jan-24 (No. DAE4-601_Jan/24) Check Date (in house) 30-Oct-14 (in house check Oct-22) 07-Oct-15 (in house check Oct-22) 07-Oct-15 (in house check Oct-22) 15-Jun-15 (in house check Oct-22) 31-Mar-14 (in house check Oct-22) 31-Mar-14 (in house check Oct-22) Function	Scheduled Calibration Mar-24 Mar-24 Mar-24 Mar-24 Mar-24 Jar-25 Scheduled Check In house check: Oct-24 In house check: Oct-24
Calibration Equipment used (M&TI Primary Standards Power mater NRP2 Power sensor NRP-291 Reference 20 dB Attenuator Type-N mismatch combination Reference Probe EX30V4 DAE4 Secondary Standards Power sensor HP 8481A Power sensor HP 8481A Power sensor HP 8481A Second HP 84	E ortilicel for calibration) ID # SN: 104778 SN: 103244 SN: 103245 SN: BH9394 (20k) SN: 310862 / 06327 SN: 310862 / 06327 SN: 601 ID # SN: 601 ID # SN: 603292783 SN: US37292783 SN: US37292783 SN: 100972 SN: 100972 SN: 100972 SN: 100972 SN: 100972 SN: US41080477 Name Krešimir Franja	Cal Date (Certificato No.) 30-Mar-23 (No. 217-03804/03805) 30-Mar-23 (No. 217-03804) 30-Mar-23 (No. 217-03806) 30-Mar-23 (No. 217-03800) 30-Mar-23 (No. 217-03810) 03-Nov-23 (No. 217-03800) 03-Nov-23 (No.	Scheduled Calibration Mar-24 Mar-24 Mar-24 Mar-24 Mar-24 Jar-25 Scheduled Check In house check: Oct-24 In house check: Oct-24
Calibration Equipment used (M&TI Primary Standards Power meter NBP2 Power sensor NBP-291 Power sensor NBP-291 Reference 20 dB Attenuator Type-N mismatch combination Reference Probe EX30V4 DAE4 Secondary Standards Power meter E44198 Power sensor HP 8481A Power sensor HP 8481A Power sensor HP 8481A RF generator R&S SMT-06 Network Analyzer Agilent E8358A	E ortifical for calibration) ID # SN: 104778 SN: 103244 SN: 103245 SN: 8H9394 (20k) SN: 310882 / 06327 SN: 310882 / 06327 SN: 601 ID # SN: 6B39512475 SN: US37292783 SN: WY41003315 SN: US37292783 SN: WY41003315 SN: US370872 SN: US41080477 Name	Cal Date (Certificate No.) 30-Mar-23 (No. 217-03804/03805) 30-Mar-23 (No. 217-03804) 30-Mar-23 (No. 217-03805) 30-Mar-23 (No. 217-03809) 30-Mar-23 (No. 217-03810) 03-Nov-23 (No. EX3-7349, Nov23) 30-Jan-24 (No. DAE4-601_Jan/24) Check Date (in house) 30-Oct-14 (in house check Oct-22) 07-Oct-15 (in house check Oct-22) 07-Oct-15 (in house check Oct-22) 15-Jun-15 (in house check Oct-22) 31-Mar-14 (in house check Oct-22) 31-Mar-14 (in house check Oct-22) Function	Scheduled Calibration Mar-24 Mar-24 Mar-24 Mar-24 Mar-24 Jar-25 Scheduled Check In house check: Oct-24 In house check: Oct-24
Calibration Equipment used (M&TI Primary Standards <sup>1</sup> ower meter NRP2 <sup>3</sup> ower sensor NRP-291 <sup>3</sup> ower sensor NRP-291 <sup>3</sup> eference 20 dB Attanuator (ype-N mismatch combination Feference Probe EX3DV4 0AE4 <sup>3</sup> ower sensor HP 8481A <sup>5</sup> ower sensor HP 8481A <sup>5</sup> ower sensor HP 8481A <sup>1</sup> F generator R&S SMT-06 tetwork Analyzer Agilent E8358A Calibrated by:	E ortilicel for calibration) ID # SN: 104778 SN: 103244 SN: 103245 SN: BH9394 (20k) SN: 310862 / 06327 SN: 310862 / 06327 SN: 601 ID # SN: 601 ID # SN: 603292783 SN: US37292783 SN: US37292783 SN: 100972 SN: 100972 SN: 100972 SN: 100972 SN: 100972 SN: US41080477 Name Krešimir Franja	Cal Date (Certificato No.) 30-Mar-23 (No. 217-03804/03805) 30-Mar-23 (No. 217-03804) 30-Mar-23 (No. 217-03806) 30-Mar-23 (No. 217-03800) 30-Mar-23 (No. 217-03810) 03-Nov-23 (No. 217-03800) 03-Nov-23 (No.	Scheduled Calibration Mar-24 Mar-24 Mar-24 Mar-24 Mar-24 Jar-25 Scheduled Check In house check: Oct-24 In house check: Oct-24

Certificate No: D2450V2-743\_Mar24

Page 1 of 7



Calibration Laboratory of Schmid & Partner Engineering AG Zeughausstrasse 43, 8004 Zurich, Switzerland





S Schweizerischer Kalibrierdienst C Service suisse d'étaionnage

Servizio svizzero di taratura Swiss Calibration Service

Accreditation No.: SCS 0108

S

Accredited by the Swiss Accreditation Service (SAS) The Swiss Accreditation Service Is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

#### Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

# Calibration is Performed According to the Following Standards:

- a) IEC/IEEE 62209-1528, "Measurement Procedure For The Assessment Of Specific Absorption Rate Of Human Exposure To Radio Frequency Fields From Hand-Held And Body-Worn Wireless Communication Devices - Part 1528: Human Models, Instrumentation And Procedures (Frequency Range of 4 MHz to 10 GHz)", October 2020.
- b) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

#### Additional Documentation:

c) DASY System Handbook

#### Methods Applied and Interpretation of Parameters:

- Measurement Conditions: Further details are available from the Validation Report at the end
  of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- Antenna Parameters with TSL: The source is mounted in a touch configuration below the center marking of the flat phantom.
- Return Loss: This parameter is measured with the source positioned under the liquid filled phantom (as described in the measurement condition clause). The Return Loss ensures low reflected power. No uncertainty required.
- SAR measured: SAR measured at the stated antenna input power.
- SAR normalized: SAR as measured, normalized to an input power of 1 W at the antenna connector.
- SAR for nominal TSL parameters: The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

Certificate No: D2450V2-743\_Mar24

Page 2 of 7



#### Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY52	V52.10.4
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	2450 MHz ± 1 MHz	

# Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	39.2	1.80 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	38.5 ± 6 %	1.83 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	annes.	

#### SAR result with Head TSL

SAR averaged over 1 cm <sup>3</sup> (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	13.1 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	51.8 W/kg ± 17.0 % (k=2)
SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL	condition	
SAR measured	250 mW input power	6.09 W/kg
	soo maa mpor poarer	o.us wing

Certificate No: D2450V2-743\_Mar24

Page 3 of 7



#### Appendix (Additional assessments outside the scope of SCS 0108)

#### Antenna Parameters with Head TSL

Impedance, transformed to feed point	54,5 Ω + 6.1 jΩ	
Return Loss	- 22.8 dB	

#### General Antenna Parameters and Design

Electrical Delay (one direction)	1.159 ns

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.

No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

#### Additional EUT Data

Manufactured by SPEAG	
-----------------------	--

Certificate No: D2450V2-743\_Mar24

Page 4 of 7



#### **DASY5 Validation Report for Head TSL**

Date: 14.03.2024

Test Laboratory: SPEAG, Zurich, Switzerland

#### DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN:743

Communication System: UID 0 - CW; Frequency: 2450 MHz Medium parameters used: f = 2450 MHz;  $\sigma$  = 1.83 S/m;  $\epsilon_r$  = 38.5;  $\rho$  = 1000 kg/m<sup>3</sup> Phantom section: Flat Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 SN7349; ConvF(7.96, 7.96, 7.96) @ 2450 MHz; Calibrated: 03.11.2023
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.01.2024
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.10.4(1535); SEMCAD X 14.6.14(7501)

# Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm Reference Value = 115.1 V/m; Power Drift = 0.07 dB Peak SAR (extrapolated) = 26.4 W/kg SAR(1 g) = 13.1 W/kg; SAR(10 g) = 6.09 W/kg Smallest distance from peaks to all points 3 dB below = 9 mm Ratio of SAR at M2 to SAR at M1 = 50.1% Maximum value of SAR (measured) = 21.4 W/kg



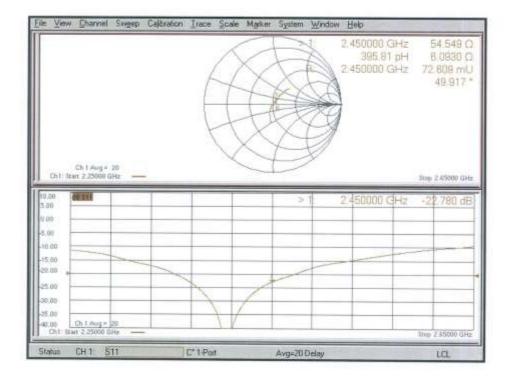
0 dB = 21.4 W/kg = 13.30 dBW/kg

Certificate No: D2450V2-743\_Mar24

Page 5 of 7



# Impedance Measurement Plot for Head TSL



Certificate No: D2450V2-743\_Mar24

Page 6 of 7



# Appendix: Transfer Calibration at Four Validation Locations on SAM Head<sup>1</sup>

#### **Evaluation Condition**

SAM Head Phantom	For usage with cSAR3DV2-R/L
	SAM Head Phantom

# SAR result with SAM Head (Top ≅ C0)

SAR averaged over 1 cm <sup>3</sup> (1 g) of Head TSL	Condition	
SAR for nominal Head TSL parameters	normalized to 1W	55.2 W/kg ± 17.5 % (k=2)
SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL	condition	

# SAR result with SAM Head (Mouth ≅ F90)

nalized to 1W	56.3 W/kg ± 17.5 % (k=2)
condition	
	27.0 W/kg ± 16.9 % (k=2)
	malized to 1W

# SAR result with SAM Head (Neck ≅ H0)

SAR averaged over 1 cm3 (1 g) of Head TSL	Condition	
SAR for nominal Head TSL parameters	normalized to 1W	53.0 W/kg ± 17.5 % (k=2)
SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL	condition	

# SAR result with SAM Head (Ear ≅ D90)

SAR averaged over 1 cm <sup>3</sup> (1 g) of Head TSL	Condition	
SAR for nominal Head TSL parameters	normalized to 1W	34.0 W/kg ± 17.5 % (k=2)
SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL	condition	

Additional assessments outside the current scope of SCS 0108

Certificate No: D2450V2-743\_Mar24

Page 7 of 7



Engineering AG Zeughausstrasse 43, 8004 Zurich	y of		Schweizerischer Kalibrierdienst Service suisse d'étalonnage Servizio svizzero di taratura Swiss Calibration Service
ccredited by the Swiss Accreditat he Swiss Accreditation Service fulfilateral Agreement for the re-	is one of the signatorie		Accreditation No.: SCS 0108
lient HCT Gyeonggi-do, Republ	lic of Korea	Certificate No.	D2600V2-1015_Apr24
CALIBRATION C	ERTIFICAT	E	
	Dossalla Oh A	1 D1 21 b	N N
Dbject	D2600V2 - SN:1	015 1 0 1 2	K
		NAPAN 5- 1-1	24 6 /2152
Calibration procedure(s)	QA CAL-05.v12 Calibration Proce	dure for SAR Validation Sources	
Calibration date:	April 22, 2024		
		ry facility: environment temperature (22 $\pm$ 3)*C	C and numidity < 70%.
albration Equipment used (MATE rimary Standards		ry facility: environment temperature (22 ± 3)-0 Cel Date (Certificate No.) 26-Mar-24 (No. 217-04036/04037)	C and humidity < 70%. Scheduled Calibration Mar-25
albration Equipment used (M&TE rimary Standards ower meter NRP2 ower sensor NRP-291	E critical for calibration) ID # SN: 104778 SN: 103244	Cal Date (Certilicate No.) 26-Mar-24 (No. 217-04036/04037) 26-Mar-24 (No. 217-04036)	Scheduled Calibration
alibration Equipment used (M&TE rimary Standards ower meter NRP2 ower sensor NRP-291 ower sensor NRP-291	E oritical for calibration) ID # SN: 104778 SN: 103244 SN: 103245	Cal Date (Certificate No.) 26-Mar-24 (No. 217-04036/04037) 26-Mar-24 (No. 217-04036) 26-Mar-24 (No. 217-04037)	Scheduled Calibration Mar-25 Mar-25 Mar-25
alibration Equipment used (M&TE rimary Standards ower metor NRP2 ower sensor NRP-291 ower sensor NRP-291 eference 20 dB Attenuator	artical for calibration) ID # SN: 104778 SN: 103244 SN: 103245 SN: BH9394 (20k)	Cal Date (Certificate No.) 26-Mar-24 (No. 217-04036/04037) 26-Mar-24 (No. 217-04036) 26-Mar-24 (No. 217-04037) 26-Mar-24 (No. 217-04046)	Scheduled Calibration Mar-25 Mar-25 Mar-25 Mar-25
alibration Equipment used (M&TE nmary Standards ower meter NRP2 ower sensor NRP-291 over sensor NRP-291 eference 20 dB Attenuator ype-N mismatch combination	antical for calibration) ID # SN: 104778 SN: 103244 SN: 103245 SN: 513245 SN: 8H8394 (20k) SN: 310982 / 06327	Cal Date (Certificate No.) 26-Mar-24 (No. 217-04036/04037) 26-Mar-24 (No. 217-04036) 26-Mar-24 (No. 217-04037) 26-Mar-24 (No. 217-04046) 26-Mar-24 (No. 217-04047)	Scheduled Calibration Mar-25 Mar-25 Mar-25 Mar-25 Mar-25
alibration Equipment used (M&TE ower meter NBP2 ower sensor NBP-291 ower sensor NBP-291 eference 20 B Attenuator spe-N mismatch combination eference Probe EX30V4	artical for calibration) ID # SN: 104778 SN: 103244 SN: 103245 SN: BH9394 (20k)	Cal Date (Certificate No.) 26-Mar-24 (No. 217-04036/04037) 26-Mar-24 (No. 217-04036) 26-Mar-24 (No. 217-04037) 26-Mar-24 (No. 217-04046)	Scheduled Calibration Mar-25 Mar-25 Mar-25 Mar-25
alibration Equipment used (M&TE nmary Standards ower meter NRP2 ower sensor NRP-291 eference 20 dB Attenuator ype-N mismatch combination aference Probe EX30V4 AE4 econdary Standards	E ortilical for calibration) ID # SN: 104778 SN: 103244 SN: 103245 SN: 8H9394 (20k) SN: 310982 / 06327 SN: 7349 SN: 601 ID #	Cal Date (Certificate No.) 26-Mar-24 (No. 217-04036/04037) 26-Mar-24 (No. 217-04036) 26-Mar-24 (No. 217-04040) 26-Mar-24 (No. 217-04047) 03-Nov-23 (No. EX3-7349_Nov23)	Scheduled Calibration Mar-25 Mar-25 Mar-25 Mar-25 Mar-25 Nov-24
alibration Equipment used (M&TE rimary Standards ower meter NRP2 ower sensor NRP-291 eference 20 dB Attenuator ype-N mismatch combination eference Probe EX30V4 AE4 econdary Standards ower meter E44198	antical for calibration) ID # SN: 104778 SN: 104778 SN: 103244 SN: 103245 SN: 8H9394 (20k) SN: 310982 / 06327 SN: 7349 SN: 601 ID # SN: 6839512475	Cal Date (Certificate No.) 26-Mar-24 (No. 217-04036/04037) 26-Mar-24 (No. 217-04036) 26-Mar-24 (No. 217-04037) 26-Mar-24 (No. 217-04046) 26-Mar-24 (No. 217-04047) 03-Nov-23 (No. EX3-7349, Nov23) 30-Jan-24 (No. DAE4-601_Jan/24) Check Date (in house) 30-Oct-14 (in house check Oct-22)	Scheduled Calibration Mar-25 Mar-25 Mar-25 Mar-25 Mar-25 Nov-24 Jan-25
alibration Equipment used (M&TE rimary Standards ower meter NRP2 ower sensor NRP-291 efference 20 dB Attenuator ype-N mismatch combination isference Probe EX30V4 (AE4 econdary Standards ower meter E44198 ower sensor HP 8481A	antical for calibration) ID # SN: 104778 SN: 103244 SN: 103245 SN: 8H9394 (20k) SN: 310982 / 06327 SN: 7349 SN: 601 ID # SN: 6839512475 SN: US37292783	Cal Date (Certificate No.) 26-Mar-24 (No. 217-04036/04037) 26-Mar-24 (No. 217-04036) 26-Mar-24 (No. 217-04037) 26-Mar-24 (No. 217-04046) 26-Mar-24 (No. 217-04047) 03-Nov-23 (No. EX3-7349_Nov23) 30-Jan-24 (No. DAE4-601_Jan24) Check Date (in house) 30-Oct-14 (in house check Oct-22) 07-Oct-15 (in house check Oct-22)	Scheduled Calibration Mar-25 Mar-25 Mar-25 Mar-25 Mar-25 Nov-24 Jan-25 Scheduled Check
alibration Equipment used (M&TE rimary Standards ower meter NRP2 fower sensor NRP-291 efference 20 dB Attenuator ype-N mismatch combination leference Probe EX3DV4 (AE4 econdary Standards ower meter E44198 ower meter E44198 ower sensor HP 8481A	antical for calibration) ID # SN: 104778 SN: 103244 SN: 103245 SN: 8H9394 (20k) SN: 310982 / 06327 SN: 7349 SN: 601 ID # SN: 0839512475 SN: US37282783 SN: WY41083315	Cal Date (Certificate No.) 26-Mar-24 (No. 217-04036/04037) 26-Mar-24 (No. 217-04036) 26-Mar-24 (No. 217-04047) 26-Mar-24 (No. 217-04047) 03-Nov-23 (No. EX3-7349_Nov23) 30-Jan-24 (No. DAE4-601_Jan24) Check Date (In house) 30-Oct-14 (In house check Oct-22) 07-Oct-15 (In house check Oct-22) 07-Oct-15 (In house check Oct-22)	Scheduled Calibration Mar-25 Mar-25 Mar-25 Mar-25 Nov-24 Jan-25 Scheduled Check In house check: Oct-24 In house check: Oct-24 In house check: Oct-24
alibration Equipment used (M&TE rimary Standards over meter NRP-2 over sensor NRP-291 over sensor NRP-291 eference 20 dB Attenuator ype-N mismatch combination etenance Probe EX30V4 AE4 econdary Standards over meter E44198 over sensor HP 8481A over sensor HP 8481A F generator R&S SMT-05	E ortilical for calibration) ID # SN: 104778 SN: 103244 SN: 103245 SN: 8H8394 (20k) SN: 310982 / 06327 SN: 310982 / 06327 SN: 310982 / 06327 SN: 601 ID # SN: 6B39512475 SN: US37282783 SN: US37282783 SN: 100972	Cal Date (Certificate No.) 26-Mar-24 (No. 217-04036/04037) 26-Mar-24 (No. 217-04036) 26-Mar-24 (No. 217-04037) 26-Mar-24 (No. 217-04047) 26-Mar-24 (No. 217-04047) 03-Nov-23 (No. EX3-7349, Nov23) 30-Jan-24 (No. DAE4-601, Jan-24) Check Date (in house) 30-Oct:14 (in house check Oct-22) 07-Oct:15 (in house check Oct-22) 15-Jun-15 (in house check Oct-22)	Scheduled Calibration Mar-25 Mar-25 Mar-25 Mar-25 Nov-24 Jan-25 Scheduled Check In house check: Oct-24 In house check: Oct-24 In house check: Oct-24 In house check: Oct-24 In house check: Oct-24
alibration Equipment used (M&TE rimary Standards over meter NRP-2 over sensor NRP-291 over sensor NRP-291 eference 20 dB Attenuator ype-N mismatch combination eference Probe EX30V4 AE4 econdary Standards over meter E44198 over sensor HP 8481A over sensor HP 8481A F generator B&S SMT-06	antical for calibration) ID # SN: 104778 SN: 103244 SN: 103245 SN: 8H9394 (20k) SN: 310982 / 06327 SN: 7349 SN: 601 ID # SN: 0839512475 SN: US37282783 SN: WY41083315	Cal Date (Certificate No.) 26-Mar-24 (No. 217-04036/04037) 26-Mar-24 (No. 217-04036) 26-Mar-24 (No. 217-04047) 26-Mar-24 (No. 217-04047) 03-Nov-23 (No. EX3-7349_Nov23) 30-Jan-24 (No. DAE4-601_Jan24) Check Date (in house) 30-Oct-14 (in house check Oct-22) 07-Oct-15 (in house check Oct-22) 07-Oct-15 (in house check Oct-22)	Scheduled Calibration Mar-25 Mar-25 Mar-25 Mar-25 Nov-24 Jan-25 Scheduled Check In house check: Oct-24 In house check: Oct-24 In house check: Oct-24
Calibration Equipment used (M&TE Immary Standards Inver meter NRP2 Iower meter NRP-291 Iower sensor NRP-291 Ieference 20 dB Attenuator ype-N mismatch combination Ieference Probe EX3DV4 IAE4 econdary Standards Iower meter E44198 Iower meter E44198 Iower sensor HP 8481A Iower sensor HP 8481A IF generator R&S SMT-05 Iefwork Analyzer Agikent E8358A	antical for calibration) ID # SN: 104778 SN: 104778 SN: 103244 SN: 103245 SN: 103245 SN: 103245 SN: 310982 / 06327 SN: 7349 SN: 601 ID # SN: 601 ID # SN: 603 SN: 0839512475 SN: US37282783 SN: US3788 SN: US37888 SN: US3788 SN: US37888 SN: US3788 SN: US3788 SN: US3	Cal Date (Certificate No.) 26-Mar-24 (No. 217-04036/04037) 26-Mar-24 (No. 217-04036) 26-Mar-24 (No. 217-04047) 26-Mar-24 (No. 217-04047) 03-Nov-23 (No. EX3-7349, Nov23) 30-Jan-24 (No. DAE4-601_Jan/24) Check Date (In house) 30-Oct-14 (In house check Oct-22) 07-Oct-15 (In house check Oct-22) 15-Jun-15 (In house check Oct-22) 31-Mar-14 (In house check Oct-22) Function	Scheduled Calibration Mar-25 Mar-25 Mar-25 Mar-25 Nov-24 Jan-25 Scheduled Check In house check: Oct-24 In house check: Oct-24 In house check: Oct-24 In house check: Oct-24 In house check: Oct-24
Calibration Equipment used (M&TE Inmary Standards Inwer meter NRP2 Iower sensor NRP-291 Iower sensor NRP-291 Ieference 20 dB Attenuator ype-N mismatch combination Ieference Probe EX3DV4 IAE4 Iecondary Standards Iower meter E44198 Iower meter E44198 Iower sensor HP 8481A Ir generator R&S SMT-05 Iefwork Analyzar Agilent E8358A	ID #           ID #           SN: 104778           SN: 103244           SN: 103245           SN: 810894 (20k)           SN: 31082 / 06327           SN: 601           ID #           SN: 603           SN: 0839512475           SN: US37282783           SN: WY4108315           SN: US41080477	Cal Date (Certificate No.) 26-Mar-24 (No. 217-04036/04037) 26-Mar-24 (No. 217-04036) 26-Mar-24 (No. 217-04037) 26-Mar-24 (No. 217-04046) 26-Mar-24 (No. 217-04047) 03-Nov-23 (No. EX3-7349, Nov23) 30-Jan-24 (No. DAE4-601, Jan/24) Check Date (In house) 30-Oct-14 (In house check Oct-22) 07-Oct-15 (In house check Oct-22) 07-Oct-15 (In house check Oct-22) 16-Jun-15 (In house check Oct-22) 31-Mar-14 (In house check Oct-22)	Scheduled Calibration Mar-25 Mar-25 Mar-25 Mar-25 Mar-25 Nov-24 Jan-25 Scheduled Check In house check: Oct-24 In house check: Oct-24
Calibration Equipment used (M&TE Primary Standards Power meter NRP-291 Power sensor NRP-291 Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB Attenuator Sype-N mismatch combination Reference Probe EX3DV4 DAE4 Secondary Standards Power sensor HP 8481A Power sensor HP 8481A Power sensor HP 8481A Reference R&S SMT-05 Setwork Analyzer Agitent EBSSBA Calibrated by:	antical for calibration) ID # SN: 104778 SN: 104778 SN: 103244 SN: 103245 SN: 103245 SN: 103245 SN: 310982 / 06327 SN: 7349 SN: 601 ID # SN: 601 ID # SN: 603 SN: 0839512475 SN: US37282783 SN: US3788 SN: US37888 SN: US3788 SN: US37888 SN: US3788 SN: US3788 SN: US3	Cal Date (Certificate No.) 26-Mar-24 (No. 217-04036/04037) 26-Mar-24 (No. 217-04036) 26-Mar-24 (No. 217-04047) 26-Mar-24 (No. 217-04047) 03-Nov-23 (No. EX3-7349, Nov23) 30-Jan-24 (No. DAE4-601_Jan/24) Check Date (In house) 30-Oct-14 (In house check Oct-22) 07-Oct-15 (In house check Oct-22) 15-Jun-15 (In house check Oct-22) 31-Mar-14 (In house check Oct-22) Function	Scheduled Calibration Mar-25 Mar-25 Mar-25 Mar-25 Mar-25 Nov-24 Jan-25 Scheduled Check In house check: Oct-24 In house check: Oct-24
All calibrations have been conducts Calibration Equipment used (MATE Primary Standards Power meter NRP2 Power sensor NRP-291 Power sensor NRP-291 Reference O dB Attenuator Type-N mismatch combination Reference Probe EX3DV4 DAE4 Secondary Standards Power meter E44198 Power sensor HP 8481A Power sensor HP 8481A Power sensor HP 8481A Power sensor HP 8481A Secondary Standards Power sensor HP 8481A Power sensor HP 8481A Power sensor HP 8481A Power sensor HP 8481A Calibrated by:	antical for calibration) ID # SN: 104778 SN: 103244 SN: 103245 SN: 8H9394 (20k) SN: 310982 / 06327 SN: 310982 / 06327 SN: 310982 / 06327 SN: 061 ID # SN: 0839512475 SN: 0839512475 SN: US37292783 SN: US37292783 SN: 100972 SN: US41080477 Name Joanna Lieshaj	Cal Date (Certificate No.) 26-Mar-24 (No. 217-04036/04037) 26-Mar-24 (No. 217-04036) 26-Mar-24 (No. 217-04037) 26-Mar-24 (No. 217-04046) 26-Mar-24 (No. 217-04047) 03-Nov-23 (No. EX3-7349, Nov23) 30-Jan-24 (No. DAE4-601, Jan-24) Check Date (In house) 30-Oct-14 (In house check Oct-22) 07-Oct-15 (In house check Oct-22) 16-Jun-15 (In house check Oct-22) 31-Mar-14 (In house check Oct-22) Check Date (In house check Oct-22) 31-Mar-14 (In house check Oct-22) 31-Mar-14 (In house check Oct-22) 31-Mar-14 (In house check Oct-22)	Scheduled Calibration Mar-25 Mar-25 Mar-25 Mar-25 Mar-25 Nov-24 Jan-25 Scheduled Check In house check: Oct-24 In house check: Oct-24

Certificate No: D2600V2-1015\_Apr24

Page 1 of 6



Calibration Laboratory of Schmid & Partner Engineering AG Zeughausstrasse 43, 8004 Zurich, Switzerland





S

C

S

Schweizerischer Kalibrierdienst Service suisse d'étalonnage Servizio svizzero di taratura Swiss Calibration Service

Accreditation No.: SCS 0108

Accredited by the Swiss Accreditation Service (SAS) The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

#### Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

#### Calibration is Performed According to the Following Standards:

- a) IEC/IEEE 62209-1528, "Measurement Procedure For The Assessment Of Specific Absorption Rate Of Human Exposure To Radio Frequency Fields From Hand-Held And Body-Worn Wireless Communication Devices - Part 1528: Human Models, Instrumentation And Procedures (Frequency Range of 4 MHz to 10 GHz)", October 2020.
- b) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

#### Additional Documentation:

c) DASY System Handbook

#### Methods Applied and Interpretation of Parameters:

- Measurement Conditions: Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- Antenna Parameters with TSL: The source is mounted in a touch configuration below the center marking of the flat phantom.
- Return Loss: This parameter is measured with the source positioned under the liquid filled phantom (as described in the measurement condition clause). The Return Loss ensures low reflected power. No uncertainty required.
- SAR measured: SAR measured at the stated antenna input power.
- SAR normalized: SAR as measured, normalized to an input power of 1 W at the antenna connector.
- SAR for nominal TSL parameters: The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

Certificate No: D2600V2-1015\_Apr24

Page 2 of 6



#### Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY52	V52.10.4
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	2600 MHz ± 1 MHz	

#### Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	39.0	1.96 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	37.4 ± 6 %	2.04 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C		

#### SAR result with Head TSL

SAR averaged over 1 cm <sup>3</sup> (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	14.5 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	56.4 W/kg ± 17.0 % (k=2)
SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL	condition	
SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL SAR measured	condition 250 mW input power	6:41 W/kg

Certificate No: D2600V2-1015\_Apr24

Page 3 of 6



#### Appendix (Additional assessments outside the scope of SCS 0108)

#### Antenna Parameters with Head TSL

Impedance, transformed to feed point	48.4 Ω - 5.1 jΩ	
Return Loss	- 25.2 dB	

#### General Antenna Parameters and Design

Electrical Delay (che difection)	Electrical Delay (one direction)	1.150 ns
----------------------------------	----------------------------------	----------

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.

No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

#### Additional EUT Data

Manufactured by	SPEAG

Certificate No: D2600V2-1015\_Apr24

Page 4 of 6



## **DASY5 Validation Report for Head TSL**

Date: 22.04.2024

Test Laboratory: SPEAG, Zurich, Switzerland

#### DUT: Dipole 2600 MHz; Type: D2600V2; Serial: D2600V2 - SN:1015

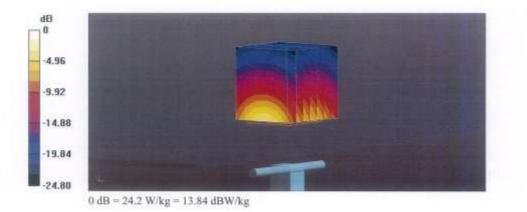
Communication System: UID 0 - CW; Frequency: 2600 MHz Medium parameters used: f = 2600 MHz;  $\sigma = 2.04$  S/m;  $\epsilon_e = 37.4$ ;  $\rho = 1000$  kg/m<sup>3</sup> Phantom section: Flat Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 SN7349; ConvF(7.84, 7.84, 7.84) @ 2600 MHz; Calibrated: 03.11.2023
- · Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.01.2024
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.10.4(1535); SEMCAD X 14.6.14(7501)

#### Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm Reference Value = 119.3 V/m; Power Drift = 0.05 dB Peak SAR (extrapolated) = 29.4 W/kg SAR(1 g) = 14.5 W/kg; SAR(10 g) = 6.41 W/kg Smallest distance from peaks to all points 3 dB below = 9 mm Ratio of SAR at M2 to SAR at M1 = 49.4% Maximum value of SAR (measured) = 24.2 W/kg



Certificate No: D2600V2-1015\_Apr24

Page 5 of 6



# Impedance Measurement Plot for Head TSL

			F	4	A		0	600000 11.90 600000	17 pF	-5.1 54.8	384 C 408 C 97 mL )4,46 1
			F	£	X	Å	Ŋ				
	Ch L Sugar	20.		-		1					
10.00	Ch I Avg n Itari 2.40000	20 GHz —	 T			~	1 2	\$00000	CHz	- Maria	оосо ан 241 dE
10.00	Rart 2,40000	20 GH2				>1	2	800000	GHz	- Maria	ооо ин 241 dE
10.00 5.00 0.00 5.00	Rart 2,40000	20 GHz				~	2	600000	CH2	- Maria	
10.80 5.00 0.00 5.00 10.08 15.00	Rart 2,40000	20 GHz				>1	2	800000	CH2	- Maria	
	Rart 2,40000	20 GH2				~	2	800000	GHz	- Maria	
10.00 5.00 0.00 5.00 10.00 15.00 15.00 20.00	Rart 2,40000	20 GHz					2	800000	GHz	- Maria	

Certificate No: D2600V2-1015\_Apr24

Page 6 of 6



ughausstrasse 43, 8004 Zurich			Swiss Calibration Service
ccredited by the Swiss Accreditation Service he Swiss Accreditation Service fultilateral Agreement for the re	Is one of the signatorie		Accreditation No.: SCS 0108
Nient HCT	и же	Certificate No	D5GHzV2-1107_Apr24
Gynonggi-do, Repub	10000000000000000000000000000000000000		
CALIBRATION C	ERTIFICATI	E Fail II II	
Dbject	D5GHzV2 - SN:1		t R.
Calibration procedure(s)	QA CAL-22.v7	1424.050	312 CT / May 8 2024 1979 8
	Calibration Proce	adure for SAR Validation Source	s between 3-10 GHz
Calibration date:	April 19, 2024	and determined the	
The measurements and the uncer		robability are given on the following pages a ry facility: environment temperature $(22 \pm 3)^{\circ}$	nd are part of the certificate.
The measurements and the uncert NI calibrations have been conduct Calibration Equipment used (M&T)	lainties with confidence p ed in the closed laborator E oritical for calibration)	robability are given on the following pages a ry facility: environment temperature (22 ± 3)*	nd are part of the certificate. °C and humidity < 70%.
The measurements and the uncert All calibrations have been conduct Calibration Equipment used (M&T) Primaty Standards	tainties with confidence p ed in the closed laborator	robability are given on the following pages a ry facility: environment temperature (22 ± 3)* Cal Date (Certificate No.)	nd are part of the certificate. C and humidity < 70%. Scheduled Calibration
The measurements and the uncert of calibrations have been conduct Calibration Equipment used (M&T) Primary Standards Power meter NRP2	ainties with confidence p ed in the closed laborator E oritical for calibration)	robability are given on the following pages a ry facility: environment temperature (22 ± 3)*	nd are part of the certificate. °C and humidity < 70%.
The measurements and the uncert all calibrations have been conduct calibration Equipment used (M&T) frimaty Standards fower meter NRP2 fower sensor NRP-291	ainties with confidence p ed in the closed laborator E oritical for calibration) ID # SN: 104778	robability are given on the following pages a ry facility: environment temperature (22 ± 3) <sup>o</sup> Cat Date (Certificate No.) 26-Mar-24 (No. 217-04036/04037)	nd are part of the certificate. 'C and humidity < 70%. Scheduled Calibration Mar-25
The measurements and the uncert all calibrations have been conduct calibration Equipment used (M&TI rimaty Standards rower meter NRP2 rower sensor NRP-291 rower sensor NRP-291	tainties with confidence p ed in the closed laborator E critical for calibration) ID # SN: 104778 SN: 103244	robability are given on the following pages a ry facility: environment temperature (22 ± 3)* Cal Date (Certificate No.) 26-Mar-24 (No. 217-04036/04037) 26-Mar-24 (No. 217-04036)	nd are part of the certificate. 'C and humidity < 70%. Scheduled Calibration Mar-25 Mar-25
The measurements and the uncert all calibration Equipment used (M&TT calibration Equipment used (M&TT calibration Equipment used (M&TT calibration NRP-2 calibration NRP-291 calibration NRP-291 Reference 20 dB Attenuator ype-N mismatch combination	tainties with confidence p ed in the closed laborator E critical for calibration) ID # SN: 104778 SN: 103244 SN: 103245	robability are given on the following pages a ry facility: environment temperature (22 ± 3)* Cal Date (Certificate No.) 26-Mar-24 (No. 217-04036/04037) 26-Mar-24 (No. 217-04036) 26-Mar-24 (No. 217-04037)	nd are part of the certificate. 'C and humidity < 70%. Scheduled Calibration Mar-25 Mar-25 Mar-25
The measurements and the uncert All calibrations have been conduct Calibration Equipment used (M&T) Primary Standards Power meter NRP2 Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB Attenuator Type-N mismatch combination Reference Probe EX3DV4	tainties with confidence p ed in the closed laborator E oritical for calibration) ID # SN: 104778 SN: 103244 SN: 103244 SN: 103245 SN: 8H4394 (20k) SN: 310682 / 06327 SN: 3503	robability are given on the following pages a ry facility: environment temperature (22 ± 3)* Call Date (Certificate No.) 26-Mar-24 (No. 217-04036/04037) 26-Mar-24 (No. 217-04036) 28-Mar-24 (No. 217-04037) 26-Mar-24 (No. 217-04046)	nd are part of the certificate. 'C and humidity < 70%. Scheduled Calibration Mar-25 Mar-25 Mar-25 Mar-25 Mar-25 Mar-25
The measurements and the uncert all calibrations have been conduct calibration Equipment used (M&TI *rimary Standards *ower meter NRP2 *ower sensor NRP-291 *ower sensor NRP-291 Reference 20 dB Attenuator ype-N mismatch combination Reference Probe EX3DV4	tainties with confidence p ed in the closed laborator E ortical for calibration) ID # SN: 104778 SN: 103244 SN: 103245 SN: 103245 SN: 8H9394 (20k) SN: 310982 / 06327	robability are given on the following pages a ry facility: environment temperature (22 ± 3)* Cal Date (Certificate No.) 26-Mar-24 (No. 217-04036/04037) 26-Mar-24 (No. 217-04038) 26-Mar-24 (No. 217-04037) 26-Mar-24 (No. 217-04048) 26-Mar-24 (No. 217-04047)	nd are part of the certificate. 'C and humidity < 70%. Scheduled Calibration Mar-25 Mar-25 Mar-25 Mar-25 Mar-25
The measurements and the uncert All calibrations have been conduct Calibration Equipment used (M&T) Primary Standards Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB Attenuator Type-N mismatch combination Reference Probe EX3DV4 DAE4	tainties with confidence p ed in the closed laborator E oritical for calibration) ID # SN: 104778 SN: 103244 SN: 103244 SN: 103245 SN: 8H4394 (20k) SN: 310682 / 06327 SN: 3503	robability are given on the following pages a ry facility: environment temperature (22 ± 3)* Cat Date (Certificate No.) 26-Mar-24 (No. 217-04036/04037) 26-Mar-24 (No. 217-04038) 28-Mar-24 (No. 217-04038) 26-Mar-24 (No. 217-04048) 26-Mar-24 (No. 217-04047) 07-Mar-24 (No. EX3-3503_Mar24)	nd are part of the certificate. *C and humidity < 70%. Scheduled Calibration Mar-25 Mar-25 Mar-25 Mar-25 Mar-25 Mar-25 Mar-25 Mar-25 Mar-25 Jan-25
The measurements and the uncert All calibrations have been conduct Calibration Equipment used (M&T) Primary Standards Power meter NRP2 Power sensor NRP-291 Reference 20 dB Attienuator Pype-N mismatch combination Reference Probe EX3DV4 JAE4 Jecondary Standards	tainties with confidence p ed in the closed laborator E critical for calibration) ID # SN: 104278 SN: 103244 SN: 103244 SN: 103245 SN: 103245 SN: 103245 SN: 103245 SN: 103245 SN: 103245 SN: 104278 SN: 104778 SN: 104778 SN: 104778 SN: 104778 SN: 104778 S	robability are given on the following pages a ry facility: environment temperature (22 ± 3)* Cat Date (Certificate No.) 26-Mar-24 (No. 217-04036/04037) 26-Mar-24 (No. 217-04036) 26-Mar-24 (No. 217-04037) 26-Mar-24 (No. 217-04048) 26-Mar-24 (No. 217-04048) 26-Mar-24 (No. 217-04047) 07-Mar-24 (No. EX3-3503_Mar24) 30-Jan-24 (No. DAE4-601_Jan24)	nd are part of the certificate. 'C and humidity < 70%. Scheduled Calibration Mar-25 Mar-25 Mar-25 Mar-25 Mar-25 Mar-25 Mar-25
The measurements and the uncert All calibrations have been conduct Calibration Equipment used (M&T) Primaty Standards Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB Attenuator Type-N mismatch combination Reference Probe EX3DV4 DAE4 Secondary Standards Power meter E4419B	tainties with confidence p ed in the closed laborator E critical for calibration) ID # SN: 104778 SN: 103244 SN: 103244 SN: 103245 SN: 103245 SN: 8HR394 (20k) SN: 310682 / 06327 SN: 3503 SN: 601 ID #	robability are given on the following pages a ry facility: environment temperature (22 ± 3)* Cal Date (Certificate No.) 26-Mar-24 (No. 217-04036/04037) 26-Mar-24 (No. 217-04036) 26-Mar-24 (No. 217-04037) 26-Mar-24 (No. 217-04048) 26-Mar-24 (No. 217-04047) 07-Mar-24 (No. EX3-3503_Mar24) 30-Jan-24 (No. DAE4-601_Jan24) Check Date (in house)	nd are part of the certificate. C and humidity < 70%. Scheduled Calibration Mar-25 Mar-25 Mar-25 Mar-25 Mar-25 Mar-25 Mar-25 Jan-25 Scheduled Check
The measurements and the uncert All calibrations have been conduct Calibration Equipment used (M&TI Primary Standards Power meter NRP2 Power sensor NRP-291 Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB Attenuator Type-N mistriation combination Reference Probe EX3DV4 DAE4 Secondary Standards Power meter E4419B Power sensor HP 8481A Power sensor HP 8481A	tainties with confidence p ed in the closed laborator E critical for calibration) ID # SN: 104778 SN: 103244 SN: 103245 SN: 013245 SN: 014278 SN: 310682 / 06327 SN: 3503 SN: 601 ID # SN: GB39512475	robability are given on the following pages a ry facility: environment temperature (22 ± 3)* Call Date (Certificate No.) 26-Mar-24 (No. 217-04036/04037) 26-Mar-24 (No. 217-04036) 26-Mar-24 (No. 217-04046) 26-Mar-24 (No. 217-04047) 07-Mar-24 (No. 217-04047)	nd are part of the certificate. 'C and humidity < 70%. Scheduled Calibration Mar-25 Mar-25 Mar-25 Mar-25 Mar-25 Jan-25 Jan-25 Scheduled Check In house check: Cict-24
The measurements and the uncert All calibrations have been conduct Calibration Equipment used (M&TI Primary Standards Power sensor NRP-291 Power sensor NRP-291 Reference 20 dRP-291 Reference 20 dRP-291 Reference Probe EX3DV4 DAE4 Secondary Standards Power meter E44198 Power sensor HP 8481A RP generator R&S SMT-06	tainties with confidence p ed in the closed laborator E oritical for calibration) ID # SN: 104778 SN: 103245 SN: 103245 SN: 103245 SN: 8H9394 (20k) SN: 310982 / 06327 SN: 3503 SN: 601 ID # SN: 6B39512475 SN: 0537282783 SN: MY41093315 SN: 100972	robability are given on the following pages a ry facility: environment temperature (22 ± 3)* Cal Date (Certificate No.) 26-Mar-24 (No. 217-04036/04037) 26-Mar-24 (No. 217-04036) 26-Mar-24 (No. 217-04037) 26-Mar-24 (No. 217-04048) 26-Mar-24 (No. 217-04048) 26-Mar-24 (No. 217-04048) 30-Jan-24 (No. 217-04047) 07-Mar-24 (No. 247-3503, Mar24) 30-Jan-24 (No. DAE4-601_Jan24) Check Date (in house) 30-Oct-14 (in house check Oct-22) 07-Oct-15 (in house check Oct-22) 15-Jun-15 (in house check Oct-22)	nd are part of the certificate. C and humidity < 70%. Scheduled Calibration Mar-25 Mar-25 Mar-25 Mar-25 Mar-25 Mar-25 Jan-25 Scheduled Check In house check: Oct-24 In house check: Oct-24
The measurements and the uncert All calibrations have been conduct Calibration Equipment used (M&TI Primary Standards Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB Attenuator Type-N mismatch combination Reference Probe EX3DIV4 DAE4 Secondary Standards Power meter E44198 Power sensor HP 8481A Power sensor HP 8481A Power sensor HP 8481A Power sensor HP 8481A Power sensor HP 8481A	tainties with confidence p ed in the closed laborator E oritical for calibration) ID # SN: 104778 SN: 103244 SN: 103245 SN: 103245 SN: 103827 06327 SN: 310982 / 06327 SN: 3503 SN: 601 ID # SN: GB39512475 SN: US37282783 SN: MY41093315	robability are given on the following pages a ry facility: environment temperature (22 ± 3)* Cat Date (Certificate No.) 26-Mar-24 (No. 217-04036/04037) 26-Mar-24 (No. 217-04038) 26-Mar-24 (No. 217-04038) 26-Mar-24 (No. 217-04048) 26-Mar-24 (No. 217-04048) 26-Mar-24 (No. 217-04048) 26-Mar-24 (No. EX3-3563_Mar24) 30-Jan-24 (No. DAE4-601_Jan24) Check Date (in house) 30-Oct-14 (in house check Oct-22) 07-Oct-15 (in house check Oct-22) 07-Oct-15 (in house check Oct-22)	nd are part of the certificate. C and humidity < 70%. Scheduled Calibration Mar-25 Mar-25 Mar-25 Mar-25 Mar-25 Mar-25 Scheduled Check In house check: Oct-24 In house check: Oct-24 In house check: Oct-24 In house check: Oct-24
The measurements and the uncert All calibrations have been conduct Calibration Equipment used (M&T) Primary Standards Power meter NRP2 Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB Attenuator Type-N mismatch combination Reference Probe EX3DV4 DAE4 Secondary Standards Power meter E44198 Power sensor HP 8481A Power sensor HP 8481A RF generator R&S SMT-05 Vetwork Analyzer Agtent E8358A	tainties with confidence p ed in the closed laborator E critical for calibration) ID # SN: 104778 SN: 103244 SN: 103245 SN: 103245 SN: 103245 SN: 103245 SN: 103245 SN: 103245 SN: 310982 / 06327 SN: 3503 SN: 0601 ID # SN: GB39512475 SN: US37282783 SN: US37282783 SN: WY4109315 SN: 100972 SN: US41080477 Name	robability are given on the following pages a ry facility: environment temperature (22 ± 3)* Cal Date (Certificate No.) 26-Mar-24 (No. 217-04036/04037) 26-Mar-24 (No. 217-04036) 26-Mar-24 (No. 217-04037) 26-Mar-24 (No. 217-04048) 26-Mar-24 (No. 217-04048) 26-Mar-24 (No. 217-04048) 30-Jan-24 (No. 217-04047) 07-Mar-24 (No. 247-3503, Mar24) 30-Jan-24 (No. DAE4-601_Jan24) Check Date (in house) 30-Oct-14 (in house check Oct-22) 07-Oct-15 (in house check Oct-22) 15-Jun-15 (in house check Oct-22)	nd are part of the certificate. C and humidity < 70%. Scheduled Calibration Mar-25 Mar-25 Mar-25 Mar-25 Mar-25 Jan-25 Scheduled Check In house check: Oct-24 In house check: Oct-24
The measurements and the uncert All calibrations have been conduct Calibration Equipment used (M&T) Primary Standards Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB Attenuator Type-N mismatch combination Reference Probe EX3DV4 DAE4 Secondary Standards Power meter E44198 Power sensor HP 8481A Power sensor HP 8481A SF generator R&S SMT-05 Vetwork Analyzer Agtent E8358A	tainties with confidence p ed in the closed laborator E critical for calibration) ID # SN: 104778 SN: 103244 SN: 103245 SN: 103245 SN: 103245 SN: 103245 SN: 103245 SN: 103245 SN: 103245 SN: 310982 / 06327 SN: 0633 SN: 601 ID # SN: GB39512475 SN: US3728783 SN: US3728783 SN: US3728783 SN: US3728783	robability are given on the following pages a ry facility: environment temperature (22 ± 3)* Cal Date (Certificate No.) 26-Mar-24 (No. 217-04036/04037) 26-Mar-24 (No. 217-04036) 26-Mar-24 (No. 217-04037) 26-Mar-24 (No. 217-04048) 26-Mar-24 (No. 217-04048) 26-Mar-24 (No. 217-04047) 07-Mar-24 (No. 217-04047) 07-Mar-24 (No. 217-04047) 07-Mar-24 (No. DAE4-601_Jan24) Check Date (in house) 30-Oct-14 (in house check Oct-22) 07-Oct-15 (in house check Oct-22) 07-Oct-15 (in house check Oct-22) 31-Mar-14 (in house check Oct-22) 31-Mar-14 (in house check Oct-22)	nd are part of the certificate. C and humidity < 70%. Scheduled Calibration Mar-25 Mar-25 Mar-25 Mar-25 Mar-25 Mar-25 Jan-25 Scheduled Check In house check: Oct-24 In house check: Oct-24
The measurements and the uncert All calibrations have been conduct Calibration Equipment used (M&TI Primaly Standards Power meter NRP2 Power sensor NRP-291 Power sensor NRP-291 Reference 20 dR9 Attenuetor Type-N mismatch combination Reference Probe EX3DV4 DAE4 Secondary Standards Power meter E44198 Power sensor HP 8481A RF generator R&S SMT-06 Vetwork Analyzer Agitent E8358A Calibrated by:	tainties with confidence p ed in the closed laborator E oritical for calibration) ID # SN: 104778 SN: 103244 SN: 103245 SN: 103245 SN: 003245 SN: 310982 / 06327 SN: 310982 / 06327 SN: 3503 SN: 601 ID # SN: GB39512475 SN: US37292783 SN: WY4109315 SN: US37292783 SN: WY4109315 SN: US37292783 SN: WY4109315 SN: US37292783	robability are given on the following pages a ry facility: environment temperature (22 ± 3)* Cat Date (Certificate No.) 26-Mar-24 (No. 217-04038/04037) 26-Mar-24 (No. 217-04038) 26-Mar-24 (No. 217-04048) 26-Mar-24 (No. 217-04048) 26-Mar-24 (No. 217-04047) 07-Mar-24 (No. EX3-3503_Mar24) 30-Jan-24 (No. EX3-3503_Mar24) 30-Jan-24 (No. DAE4-601_Jan24) Check Date (in house) 30-Oct-14 (in house check Oct-22) 07-Oct-15 (in house check Oct-22) 07-Oct-15 (in house check Oct-22) 07-Oct-15 (in house check Oct-22) 15-Jun-15 (in house check Oct-22) 31-Mar-14 (in house check Oct-22) Function Laboratory Technician	nd are part of the certificate. C and humidity < 70%. Scheduled Calibration Mar-25 Mar-25 Mar-25 Mar-25 Mar-25 Mar-25 Jan-25 Scheduled Check In house check: Oct-24 In house check: Oct-24
The measurements and the uncert All calibrations have been conduct Calibration Equipment used (M&T) Primary Standards Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB Attenuator Type-N mismatch combination Reference Probe EX3DV4 DAE4 Secondary Standards Power meter E44198 Power sensor HP 8481A Power sensor HP 8481A SF generator R&S SMT-05 Vetwork Analyzer Agtent E8358A	tainties with confidence p ed in the closed laborator E critical for calibration) ID # SN: 104778 SN: 103244 SN: 103245 SN: 103245 SN: 103245 SN: 103245 SN: 103245 SN: 103245 SN: 310982 / 06327 SN: 3503 SN: 901 ID # SN: GB39512475 SN: US37282783 SN: WY4109315 SN: 100972 SN: US41080477 Name	robability are given on the following pages a ry facility: environment temperature (22 ± 3)* Cal Date (Certificate No.) 26-Mar-24 (No. 217-04036/04037) 26-Mar-24 (No. 217-04036) 26-Mar-24 (No. 217-04036) 26-Mar-24 (No. 217-04048) 26-Mar-24 (No. 217-04048) 26-Mar-24 (No. 217-04047) 07-Mar-24 (No. EX3-3503_Mar24) 30-Jan-24 (No. DAE4-601_Jan24) Check Date (in house) 30-Oct-14 (in house) 30-Oct-14 (in house check Oct-22) 07-Oct-15 (in house check Oct-22) 07-Oct-15 (in house check Oct-22) 15-Jun-15 (in house check Oct-22) 31-Mar-14 (in house check Oct-22) Function	nd are part of the certificate. C and humidity < 70%. Scheduled Calibration Mar-25 Mar-25 Mar-25 Mar-25 Mar-25 Mar-25 Jan-25 Scheduled Check In house check: Oct-24 In house check: Oct-24
The measurements and the uncert All calibrations have been conduct Calibration Equipment used (M&TI Primary Standards Power meter NRP2 Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB Attenuator Type-N mismatch combination Reference Probe EX3DV4 DAE4 Secondary Standards Power sensor HP 6481A Power sensor HP 6481A Reference R&S SMT-06 Vetwork Analyzer Agitent E8358A Calibrated by:	tainties with confidence p ed in the closed laborator E oritical for calibration) ID # SN: 104778 SN: 103244 SN: 103245 SN: 103245 SN: 003245 SN: 310982 / 06327 SN: 310982 / 06327 SN: 3503 SN: 601 ID # SN: GB39512475 SN: US37292783 SN: WY4109315 SN: US37292783 SN: WY4109315 SN: US37292783 SN: WY4109315 SN: US37292783	robability are given on the following pages a ry facility: environment temperature (22 ± 3)* Cat Date (Certificate No.) 26-Mar-24 (No. 217-04038/04037) 26-Mar-24 (No. 217-04038) 26-Mar-24 (No. 217-04048) 26-Mar-24 (No. 217-04048) 26-Mar-24 (No. 217-04047) 07-Mar-24 (No. EX3-3503_Mar24) 30-Jan-24 (No. EX3-3503_Mar24) 30-Jan-24 (No. DAE4-601_Jan24) Check Date (in house) 30-Oct-14 (in house check Oct-22) 07-Oct-15 (in house check Oct-22) 07-Oct-15 (in house check Oct-22) 07-Oct-15 (in house check Oct-22) 15-Jun-15 (in house check Oct-22) 31-Mar-14 (in house check Oct-22) Function Laboratory Technician	nd are part of the certificate. C and humidity < 70%. Scheduled Calibration Mar-25 Mar-25 Mar-25 Mar-25 Mar-25 Mar-25 Jan-25 Scheduled Check In house check: Oct-24 In house check: Oct-24

F-TP22-03 (Rev. 06)



Calibration Laboratory of Schmid & Partner Engineering AG Zeughausstrasse 43, 8004 Zurich, Switzerland





Schweizerischer Kallbrierdienst Service suisse d'étalonnage Servizio svizzero di taratura Swiss Calibration Service

Accreditation No.: SCS 0108

Accredited by the Swiss Accreditation Service (SAS) The Swiss Accreditation Service is one of the signatories to the EA

# Multilateral Agreement for the recognition of calibration certificates

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

# Calibration is Performed According to the Following Standards:

- a) IEC/IEEE 62209-1528, "Measurement Procedure For The Assessment Of Specific Absorption Rate Of Human Exposure To Radio Frequency Fields From Hand-Held And Body-Worn Wireless Communication Devices - Part 1528: Human Models, Instrumentation And Procedures (Frequency Range of 4 MHz to 10 GHz)", October 2020.
- b) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

#### Additional Documentation:

c) DASY System Handbook

#### Methods Applied and Interpretation of Parameters:

- Measurement Conditions: Further details are available from the Validation Report at the end
  of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- Antenna Parameters with TSL: The source is mounted in a touch configuration below the center marking of the flat phantom.
- Return Loss: This parameter is measured with the source positioned under the liquid filled phantom (as described in the measurement condition clause). The Return Loss ensures low reflected power. No uncertainty required.
- SAR measured: SAR measured at the stated antenna input power.
- SAR normalized: SAR as measured, normalized to an input power of 1 W at the antenna connector.
- SAR for nominal TSL parameters: The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

Page 2 of 11



#### Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY52	V52.10.4
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom V5.0	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy = 4.0 mm, dz = 1.4 mm	Graded Ratio = 1.4 (Z direction)
Frequency	5250 MHz ± 1 MHz 5600 MHz ± 1 MHz 5750 MHz ± 1 MHz 5800 MHz ± 1 MHz	

# Head TSL parameters at 5250 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	35.9	4.71 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) *C	37.1±6%	4.65 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C		

# SAR result with Head TSL at 5250 MHz

SAR averaged over 1 cm <sup>3</sup> (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	7.97 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	80.2 W/kg ± 19.9 % (k=2)
SAP supremed over 10 um) (10 u) of Mand TRI	and the second second	
SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL	condition	
SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL SAR measured	condition 100 mW input power	2.29 W/kg

Certificate No: D5GHzV2-1107\_Apr24

Page 3 of 11



# Head TSL parameters at 5600 MHz

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	35.5	5.07 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	36.5±6%	5.05 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	1,14114-0	

# SAR result with Head TSL at 5600 MHz

SAR averaged over 1 cm <sup>2</sup> (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	8.17 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	82.1 W/kg ± 19.9 % (k=2)
SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL	condition	
SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL SAR measured	condition 100 mW input power	2.33 W/kg

#### Head TSL parameters at 5750 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	35.4	5.22 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	36.3±6%	5.22 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C		

#### SAR result with Head TSL at 5750 MHz

SAR averaged over 1 cm <sup>3</sup> (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	7.95 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	79.9 W/kg ± 19.9 % (k=2)
SAR averaged over 10 cm <sup>2</sup> (10 g) of Head TSL	condition	
	condition	
SAR measured	100 mW innut nawn	2 38 Willia

SAR measured	100 mW input power	2.26 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	22.8 W/kg ± 19.5 % (k=2)

Certificate No: D5GHzV2-1107\_Apr24

Page 4 of 11



#### Head TSL parameters at 5800 MHz

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	35.3	5.27 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	36.2 ± 6 %	5.27 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C		

#### SAR result with Head TSL at 5800 MHz

SAR averaged over 1 cm <sup>3</sup> (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	7.89 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	79.3 W/kg ± 19.9 % (k=2)
SAR averaged over 10 cm <sup>2</sup> (10 g) of Head TSL	condition	
SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL SAR measured	condition 100 mW input power	2.24 W/kg

Certificate No: D5GHzV2-1107\_Apr24

Page 5 of 11



#### Appendix (Additional assessments outside the scope of SCS 0108)

## Antenna Parameters with Head TSL at 5250 MHz

Impedance, transformed to feed point	49.0 Ω - 2.7 jΩ
Return Loss	- 30.8 dB

#### Antenna Parameters with Head TSL at 5600 MHz

Impedance, transformed to feed point	54.2 Ω + 1.9 jΩ	
Return Loss	- 27.1 dB	

#### Antenna Parameters with Head TSL at 5750 MHz

Impedance, transformed to feed point	56.1 Ω + 1.6 jΩ
Return Loss	- 24.6 dB

# Antenna Parameters with Head TSL at 5800 MHz

Impedance, transformed to feed point	55.3 Ω + 0.5 jΩ	
Return Loss	- 25.9 dB	

#### General Antenna Parameters and Design

Electrical Delay (one direction)	1,196 ns	
----------------------------------	----------	--

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.

No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

#### Additional EUT Data

Manufactured by	SPEAG

Certificate No: D5GHzV2-1107\_Apr24

Page 6 of 11



#### **DASY5 Validation Report for Head TSL**

Date: 19.04.2024

Test Laboratory: SPEAG, Zurich, Switzerland

#### DUT: Dipole D5GHzV2; Type: D5GHzV2; Serial: D5GHzV2 - SN:1107

Communication System: UID 0 - CW; Frequency: 5250 MHz, Frequency: 5600 MHz, Frequency: 5750 MHz, Frequency: 5800 MHz Medium parameters used: f = 5250 MHz;  $\sigma$  = 4.65 S/m;  $\varepsilon_r$  = 37.1;  $\rho$  = 1000 kg/m<sup>3</sup>, Medium parameters used: f = 5600 MHz;  $\sigma$  = 5.05 S/m;  $\varepsilon_r$  = 36.5;  $\rho$  = 1000 kg/m<sup>3</sup>, Medium parameters used: f = 5750 MHz;  $\sigma$  = 5.22 S/m;  $\varepsilon_r$  = 36.3;  $\rho$  = 1000 kg/m<sup>3</sup>, Medium parameters used: f = 5800 MHz;  $\sigma$  = 5.27 S/m;  $\varepsilon_r$  = 36.2;  $\rho$  = 1000 kg/m<sup>3</sup> Medium parameters used: f = 5800 MHz;  $\sigma$  = 5.27 S/m;  $\varepsilon_r$  = 36.2;  $\rho$  = 1000 kg/m<sup>3</sup>

DASY52 Configuration:

- Probe: EX3DV4 SN3503; ConvF(5.39, 5.39, 5.39) @ 5250 MHz, ConvF(5, 5, 5) @ 5600 MHz, ConvF(4.98, 4.98, 4.98) @ 5750 MHz, ConvF(4.86, 4.86, 4.86) @ 5800 MHz; Calibrated: 07.03.2024
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.01.2024
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.10.4(1535); SEMCAD X 14.6.14(7501)

Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5250 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm Reference Value = 73.63 V/m; Power Drift = 0.09 dB Peak SAR (extrapolated) = 26.9 W/kg SAR(1 g) = 7.97 W/kg; SAR(10 g) = 2.29 W/kg Smallest distance from peaks to all points 3 dB below = 7.2 mm Ratio of SAR at M2 to SAR at M1 = 70.9% Maximum value of SAR (measured) = 18.2 W/kg

Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5600 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm Reference Value = 72.81 V/m; Power Drift = 0.07 dB Peak SAR (extrapolated) = 30.3 W/kg SAR(1 g) = 8.17 W/kg; SAR(10 g) = 2.33 W/kg Smallest distance from peaks to all points 3 dB below = 7.2 mm Ratio of SAR at M2 to SAR at M1 = 68% Maximum value of SAR (measured) = 19.4 W/kg

Certificate No: D5GHzV2-1107\_Apr24

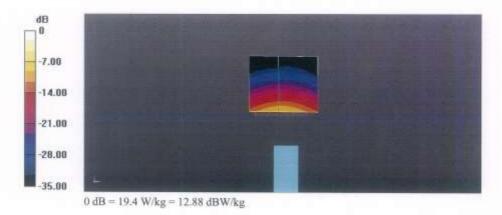
Page 7 of 11

# HCT

Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5750 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm Reference Value = 71.06 V/m; Power Drift = 0.09 dB Peak SAR (extrapolated) = 30.9 W/kg SAR(1 g) = 7.95 W/kg; SAR(10 g) = 2.26 W/kg Smallest distance from peaks to all points 3 dB below = 7.2 mm Ratio of SAR at M2 to SAR at M1 = 66.2% Maximum value of SAR (measured) = 19.1 W/kg

Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5800 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm Reference Value = 71.08 V/m; Power Drift = 0.08 dB Peak SAR (extrapolated) = 31.1 W/kg SAR(1 g) = 7.89 W/kg; SAR(10 g) = 2.24 W/kg Smallest distance from peaks to all points 3 dB below = 7.2 mm Ratio of SAR at M2 to SAR at M1 = 65.8%

Maximum value of SAR (measured) = 19.2 W/kg



Certificate No: D5GHzV2-1107\_Apr24

Page 8 of 11



# Impedance Measurement Plot for Head TSL

			ŀ	4	X		1: 2: 2:	5) 5) 5)	250000 GHz 11.014.p5 600000 GHz 14.295.p.H 750000 GHz 44.311.p.H	48 029 0 2.6795 0 1.9104 0 38.056 0 1.8001 0
			+	-	Þ	×	NR: Re		930000 GHz 14,852 pH 500000 GHz	55,385 () 541,25 m0 10,917 m0 11,718 (
Ch1:	Ch 1 Aug = Itart 5 00000 0				1.				Trop	6.00000 GHz
55.00 5.00	acont	1	1	T		1	1	-	50000 GHz	30,022 48
	201221							5 5	150000 GHz	-24.572 dB
5.00 0.00 -5.00							1	5.5	50000 GHz 00000 GHz 50000 GHz	32.077.48

Certificate No: D5GHzV2-1107\_Apr24

Page 9 of 11



# Appendix: Transfer Calibration at Four Validation Locations on SAM Head<sup>1</sup>

# Evaluation Conditions (f=5250 MHz)

Phantom	SAM Head Phantom	For usage with cSAR3DV2-R/L
---------	------------------	-----------------------------

#### SAR result with SAM Head (Top)

SAR averaged over 1 cm <sup>3</sup> (1 g) of Head TSL	Condition	
SAR for nominal Head TSL parameters	normalized to 1W	85.8 W/kg ± 20.3 % (k=2)
		the state of the s
SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL	condition	

# SAR result with SAM Head (Mouth)

SAR averaged over 1 cm <sup>1</sup> (1 g) of Head TSL	Condition	
SAR for nominal Head TSL parameters	normalized to 1W	85.0 W/kg ± 20.3 % (k=2)
SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL	condition	

#### SAR result with SAM Head (Neck)

SAR averaged over 1 cm <sup>3</sup> (1 g) of Head TSL	Condition	
SAR for nominal Head TSL parameters	normalized to 1W	83.1 W/kg ± 20.3 % (k=2)
SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL	condition	

# SAR result with SAM Head (Ear)

SAR averaged over 1 cm <sup>3</sup> (1 g) of Head TSL	Condition	
SAR for nominal Head TSL parameters	normalized to 1W	53.8 W/kg ± 20.3 % (k=2)
CAD exempted over 10 and 110 at at land TPI	200.0000	
SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL	condition	

<sup>1</sup> Additional assessments outside the current scope of SCS 0108

Certificate No: D5GHzV2-1107\_Apr24

Page 10 of 11



# Appendix: Transfer Calibration at Four Validation Locations on SAM Head<sup>2</sup>

# Evaluation Conditions (f=5800 MHz)

	Phantom	SAM Head Phantom	For usage with cSAR3DV2-R/L
--	---------	------------------	-----------------------------

# SAR result with SAM Head (Top)

SAR averaged over 1 cm <sup>3</sup> (1 g) of Head TSL	Condition	
SAR for nominal Head TSL parameters	normalized to 1W	82.4 W/kg ± 20.3 % (k=2)
SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL	condition	

# SAR result with SAM Head (Mouth)

SAR averaged over 1 cm3 (1 g) of Head TSL	Condition	
SAR for nominal Head TSL parameters	normalized to 1W	89.1 W/kg ± 20.3 % (k=2)
	Contraction of the second se	
SAR averaged over 10 cm <sup>2</sup> (10 g) of Head TSL	condition	

#### SAR result with SAM Head (Neck)

SAR averaged over 1 cm <sup>3</sup> (1 g) of Head TSL	Condition	
SAR for nominal Head TSL parameters	normalized to 1W	79.5 W/kg ± 20.3 % (k=2)
SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL	condition	

# SAR result with SAM Head (Ear)

SAR averaged over 1 cm <sup>3</sup> (1 g) of Head TSL	Condition	
SAR for nominal Head TSL parameters	normalized to 1W	56.6 W/kg ± 20.3 % (k=2)
SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL	condition	

<sup>2</sup> Additional assessments outside the current scope of SCS 0108

Certificate No: D5GHzV2-1107\_Apr24

Page 11 of 11



credited by the Swiss Accreditation e Swiss Accreditation Service is		s to the EA	Act	reditation No.:	SCS 0108
uttilateral Agreement for the reco					
Hent HCT Gyeonggi-tio, Roput	lic of Korea	1000	Certificate No.	D6.5GHz	V2-1012_Sep24
CALIBRATION CE	ERTIFICATE	결	1.12	15917 - J	11 전 전 전 전 전 전 전 전 전 전 전 전 전 전 전 전 전 전
		재	7/217		12
Dbject	D6.5GHzV2 - SN	1012	NI	1	a Man
Calibration procedura(s)	QA CAL-22.v7	 	[2024.Re. # F	1. T.	202410.02
	Calibration Proce	dure for SAR Vali	199011 OULC	a Derween a	-TO GHZ
Calibration date:	September 17, 20	124			Charles and the
This calibration certificate document	ts the traceability to natio	onal standards, which rea			
This calibration certificate document The measurements and the uncerta All calibrations have been conducted	ts the traceability to natio inties with confidence pr d in the closed laborator	anal standards, which rea robability are given on the	e following pages a	nd are part of the	e certificate.
This calibration certificate document The measurements and the uncerta All calibrations have been conducter Calibration Equipment used (M&TE	ts the traceability to natio inties with confidence pr d in the closed laborator	anal standards, which rea robability are given on the	s following pages a nperature (22 ± 3)	nd are part of the	e certificate.
This calibration certificate document The measurements and the uncerta All calibrations have been conducter Calibration Equipment used (M&TE Primary Standards Power sensor R&S NRP33T	ts the traceability to natio inties with confidence pr d in the closed laborator critical for calibration) ID # SN: 100967	onal standards, which rep obability are given on the y facility: environment ler Cal Date (Certificate N 28-Mar-24 (No. 217-0	s following pages a npersiture (22 ± 3) Io.) IO36)	nd are part of the "C and humidity - Schedu Mar-25	e certificate. < 70%.
This calibration certificate document The measurements and the uncerta All calibrations have been conducter Calibration Equipment used (M&TE Primary Standards Power sensor R&S NRP33T Reference 20 dB Attenuator	ts the traceability to natio inties with confidence pr d in the closed laborator critical for calibration) ID # SN: 100967 SN: BH9394 (20k)	chal standards, which rec obability are given on the y facility: environment ler Cal Date (Certificate N 28-Mar-24 (No. 217-0 26-Mar-24 (No. 217-0	a following pages a nperature (22 ± 3) Io.) 1038) 1046)	nd are part of the "C and humidity - Schedu Mar-25 Mar-25	e certificate. < 70%.
This calibration certificate document The measurements and the uncerta All calibrations have been conducter Calibration Equipment used (M&TE Primary Standards Power sensor R&S NRP33T Reference 20 dB Attenuator Vilamatch combination	Is the traceability to natio inties with confidence pr d in the closed laborator critical for calibration) ID # SN: 100967 SN: 9H9394 (20k) SN: 84224 / 360D	chal standards, which reprobability are given on the obability: environment ter Cal Date (Certificate N 26-Mar-24 (No. 217-0 26-Mar-24 (No. 217-0 28-Mar-24 (No. 217-0 28-	a following pages a nperature (22 ± 3) Io.) IO36) IO46) IO50)	nd are part of the 'C and humidity - Schedu Mar-25 Mar-25 Mar-25	e certificate. < 70%.
This calibration certificate document The measurements and the uncerta All calibrations have been conducter Calibration Equipment used (M&TE Primary Standards Power sensor R&S NRP33T Reference 20 dB Attenuator Warnatch combination Reference Probe EX3DV4	ts the traceability to natio inties with confidence pr d in the closed laborator critical for calibration) ID # SN: 100967 SN: BH9394 (20k)	chal standards, which rec obability are given on the y facility: environment ler Cal Date (Certificate N 28-Mar-24 (No. 217-0 26-Mar-24 (No. 217-0	a following pages a nperature (22 ± 3) (0.) (038) (058) (050) (05.) (050)	nd are part of the "C and humidity - Schedu Mar-25 Mar-25	e certificate. < 70%.
This calibration certificate document The measurements and the uncerta All calibrations have been conducter Calibration Equipment used (M&TE Primary Standards Power sensor R&S NRP33T Reference 20 dB Attenuator Mismatch combination Reference Probe EX3DV4	Is the traceability to natio intes with confidence pr d in the closed laborator critical for calibration) ID # SN: 100967 SN: BH9394 (20k) SN: 84224 / 360D SN: 7405	Cai Bate (Certificate N 28-Mar-24 (No. 217-0 28-Mar-24 (No. 217-0 28-Mar-24 (No. 217-0 28-Mar-24 (No. 217-0 01-Jul-24 (No. 217-0 01-Jul-24 (No. 217-0	a following pages a nperature (22 ± 3) (0.) (038) (058) (050) (05.) (050)	nd are part of the C and humidity Schedu Mar-25 Mar-25 Jul-25	e certificate. < 70%.
This calibration certificate document The measurements and the uncerta All calibrations have been conducter Calibration Equipment used (M&TE Power sensor R&S NRP33T Reference 20 dB Attenuator Mismatch combination Reference Probe EX3DV4 DAE4 Secondary Standards	Is the traceability to natio inties with confidence pr d in the closed laborator critical for calibration) ID # SN: 100967 SN: 919394 (20k) SN: 84224 / 360D SN: 7405 SN: 906	chal standards, which rec obability are given on the y facility: environment ler Cal Date (Certificate N 28-Mar-24 (No. 217-0 29-Mar-24 (No. 217-0 28-Mar-24 (No. 217-0 01-Jul-24 (No. 217-0 01-Jul-24 (No. 2X3-74 27-Mar-24 (No. DAE4	a following pages a nperature (22 ± 3) (a.) (038) (050	nd are part of the I'C and humidity Schedu Mar-25 Mar-25 Jul-25 Mar-25 Schedu	e certificate. < 70%. led Calibration
This calibration certificate document The measurements and the uncerta All calibrations have been conducter Calibration Equipment used (M&TE Primary Standards Power sensor R&S NRP33T Reference 20 dB Attenuator Mismatch combination Reference Probe EX3DV4 DAE4 Secondary Standards RF generator Anapico APS/IN20G	Is the traceability to natio inties with confidence pr d in the closed laborator critical for calibration) ID # SN: 100967 SN: 9H9394 (20k) SN: 9H9394 (20k)	chal standards, which recordsbilly are given on the obability: environment ler Cal Date (Certificate N 28-Mar-24 (No. 217-0) 28-Mar-24 (No. 217-0) 28-Mar-2	a following pages a nperature (22 ± 3) (a.) (038) (050	nd are part of the C and humidity Schedu Mar-25 Mar-25 Jul-25 Mar-25 Schedu In hous	e cartificate. < 70%. fed Calibration led Check e check: Jan-25
This calibration certificate document The measurements and the uncerta All calibrations have been conducter Calibration Equipment used (M&TE Primary Standards Power sensor R&S NRP33T Reference 20 dB Attenuator Mismatch combination Reference Probe EX3DV4 DAE4 Secondary Standards RF generator Anapico APSIN20G Power sensor NRP-223	ts the traceability to natio inties with confidence pr d in the closed laborator critical for calibration) ID # SN: 100967 SN: 84224 / 360D SN: 84224 / 360D SN: 7405 SN: 908 ID # SN: 827 SN: 100169	Cai Date (Certificate N 28-Mar-24 (No. 217-0 28-Mar-24 (No. 217-0 28-Mar-24 (No. 217-0 28-Mar-24 (No. 217-0 01-Jul-24 (No. 217-0 0) 27-Mar-24 (No. 217-0 0)	a following pages a nperature (22 ± 3) (036) (036) (050) (05	nd are part of the 'C and humidity Schedu Mar-25 Mar-25 Jul-25 Mar-25 Schedu In hous In hous In hous	e cartificate. < 70%. led Calibration led Check e check: Jan-25 e check: Jan-25
This calibration certificate document The measurements and the uncerta All calibrations have been conducted Calibration Equipment used (M&TE Primary Standards Power sensor R&S NRP33T Reference 20 dB Attenuator Mismatch combination Reference Probe EX3DV4 DAE4 Secondary Standards RF generator Anapico APSIN20G Power sensor NRP-223 Power sensor NRP-18T	ts the traceability to natio inties with confidence pr d in the closed laborator critical for calibration) ID # SN: 100967 SN: 9H9394 (20k) SN: 84224 / 360D SN: 7405 SN: 908	chal standards, which recordsbilly are given on the obability: environment ler Cal Date (Certificate N 28-Mar-24 (No. 217-0) 28-Mar-24 (No. 217-0) 28-Mar-2	a following pages a nperature (22 ± 3) (036) (036) (050) 05_Jut24) 906_Mar24) Neck Jan-24) heck Jan-24) heck Jan-24)	nd are part of the 'C and humidity Schedu Mar-25 Mar-25 Jul-25 Mar-25 Jul-25 Schedu In hous In hous In hous	e cartificate. < 70%. fed Calibration led Check e check: Jan-25
This calibration certificate document The measurements and the uncerta All calibrations have been conducter Calibration Equipment used (M&TE Power sensor R&S NRP33T Reference 20 dB Attenuator Mismatch combination Reference Probe EX3DV4 DAE4 Secondary Standards RF generator Anapico APS/N20G Power sensor NRP-18T Network Analyzer Keysight E5063A	ts the traceability to natio inties with confidence pr d in the closed laborator critical for calibration) ID # SN: 100967 SN: 9H9394 (20k) SN: 84224 / 360D SN: 7405 SN: 908	Cail Date (Certificate N 28-Mar-24 (No. 217-0 28-Mar-24 (No. 217-0 28-Mar-24 (No. 217-0 28-Mar-24 (No. 217-0 28-Mar-24 (No. 217-0 28-Mar-24 (No. 217-0 01-Jul-24 (No. 217-0 0) (No. 200-0 10) (No. 200-0 (No. 2	a following pages a nperature (22 ± 3) (036) (036) (050) 05_Jut24) 906_Mar24) Neck Jan-24) heck Jan-24) heck Jan-24)	nd are part of the 'C and humidity Schedu Mar-25 Mar-25 Jul-25 Mar-25 Jul-25 Schedu In hous In hous In hous	e cartificate. < 70%. led Calibration led Check e check: Jan-25 e check: Jan-25 e check: Jan-25
This calibration certificate document The measurements and the uncerta All calibrations have been conducted Calibration Equipment used (M&TE Primary Standards Power sensor R&S NRP33T Reference 20 dB Attenuator Mismatch combination Reference Probe EX3DV4 DAE4 Secondary Standards RF generator Anapico APSIN20G Power sensor NRP-223 Power sensor NRP-18T	ts the traceability to natio inties with confidence pr d in the closed laborator critical for calibration) ID # SN: 100967 SN: 9H9394 (20k) SN: 84224 / 360D SN: 7405 SN: 908	Cail Date (Certificate N 28-Mar-24 (No. 217-0 28-Mar-24 (No. 217-0 28-Mar-24 (No. 217-0 28-Mar-24 (No. 217-0 28-Mar-24 (No. 217-0 28-Mar-24 (No. 217-0 01-Jul-24 (No. 217-0 0) (No. 200-0 10) (No. 200-0 (No. 2	a following pages a nperature (22 ± 3) (038) (038) (050) (05	nd are part of the 'C and humidity Schedu Mar-25 Mar-25 Jul-25 Mar-25 Jul-25 Schedu In hous In hous In hous	e cartificate. < 70%. fed Calibration led Check e check: Jan-25 e check: Jan-25 e check: Jan-25 e check: Och-24
This calibration certificate document The measurements and the uncerta All calibrations have been conducter Calibration Equipment used (M&TE Primary Standards Power sensor R&S NRP33T Reference 20 dB Attenuator Mismatch combination Reference 20 dB Attenuator Mismatch combination Reference Probe EX3DV4 DAE4 DAE4 Secondary Standards RF generator Anapoco APSIN20G Power sensor NRP-223 Power sensor NRP-218T Network Analyzer Keysight E5063A	Is the traceability to natio inter with confidence pr d in the closed laborator critical for calibration) ID # SN: 100967 SN: 8H9394 (20k) SN: 9H9394 (20k) SN:	Cai Date (Certificate N 28-Mar-24 (No. 217-0 28-Mar-24 (No. 217-0 28-Mar-24 (No. 217-0 28-Mar-24 (No. 217-0 28-Mar-24 (No. 217-0 01-Jul-24 (No. 217-0 01-Jul-24 (No. 217-0 01-Jul-24 (No. 217-0 01-Jul-24 (No. 217-0 10-Jan-24 (No. 217-0 01-Jul-24 (No. 217-0 01-Jul-24 (No. 217-0 01-Jul-24 (No. 217-0 28-Mar-24 (No. 217-0 01-Jul-24 (No. 217-0 28-Mar-24 (No. 217-0 1) 18-Deo-18 (in house of 10-Jan-19 (in house of 31-Oct-19 (in house of 31-Oct-19 (in house of Function	a following pages a nperature (22 ± 3) (038) (038) (050) (05	nd are part of the 'C and humidity Schedu Mar-25 Mar-25 Jul-25 Mar-25 Schedtu In hous In hous In hous In hous In hous	e cartificate. < 70%. led Calibration led Check e check: Jan-25 e check: Jan-25 e check: Jan-25 e check: Och-24 ire
This calibration certificate document The measurements and the uncerta All calibrations have been conducted Calibration Equipment used (M&TE Primary Standards Power sensor R&S NRP33T Reference 20 dB Attenuator Mismatch combination Reference Probe EX3DV4 DAE4 Secondary Standards RF generator Anapico APSIN20G Power sensor NRP-223 Power sensor NRP-18T	ts the traceability to natio inties with confidence pr d in the closed laborator critical for calibration) ID # SN: 100967 SN: 9H9394 (20k) SN: 9H9394 (20k) SN: 94224 / 360D SN: 7405 SN: 908 ID # SN: 10045 SN: 10045 SN: 100450 SN: 10050 SN: 10050 SN: 10050 SN: MY54504221	Cai Date (Certificate N 28-Mar-24 (No. 217-0 28-Mar-24 (No. 217-0 28-Mar-24 (No. 217-0 28-Mar-24 (No. 217-0 28-Mar-24 (No. 217-0 01-Jul-24 (No. 217-0 01-Jul-24 (No. 217-0 01-Jul-24 (No. 217-0 01-Jul-24 (No. 217-0 10-Jan-24 (No. 217-0 01-Jul-24 (No. 217-0 01-Jul-24 (No. 217-0 01-Jul-24 (No. 217-0 28-Mar-24 (No. 217-0 01-Jul-24 (No. 217-0 28-Mar-24 (No. 217-0 1) 18-Deo-18 (in house of 10-Jan-19 (in house of 31-Oct-19 (in house of 31-Oct-19 (in house of Function	a following pages a nperature (22 ± 3) (a.) (038) (046) (05_Jut24) 906_Mar24) 906_Mar24) 906_Mar24) heck Jan-24) heck Jan-24) heck Jan-24) heck Jan-24) heck Jan-24) heck Jan-24) heck Jan-24) heck Jan-24)	nd are part of the 'C and humidity Schedu Mar-25 Mar-25 Jul-25 Mar-25 Schedtu In hous In hous In hous In hous Signatu	e cartificate. < 70%. led Calibration led Check e check: Jan-25 e check: Jan-25 e check: Jan-25 e check: Och-24 ire



Calibration Laboratory of Schmid & Partner Engineering AG Zeughausstrasse 43, 8004 Zurich, Switzerland





Schweizerischer Kalibrierdienst Service suisse d'étalonnage Servizio svizzero di taratura Swiss Calibration Service

Accreditation No.: SCS 0108

Accredited by the Swiss Accreditation Service (SAS)

The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

# Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

#### Calibration is Performed According to the Following Standards:

 a) IEC/IEEE 62209-1528, "Measurement Procedure For The Assessment Of Specific Absorption Rate Of Human Exposure To Radio Frequency Fields From Hand-Held And Body-Worn Wireless Communication Devices - Part 1528: Human Models, Instrumentation And Procedures (Frequency Range Of 4 MHz To 10 GHz)", October 2020.

#### Additional Documentation:

b) DASY System Handbook

#### Methods Applied and Interpretation of Parameters:

- Measurement Conditions: Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- Antenna Parameters with TSL: The dipole is mounted with the spacer to position its feed point
  exactly below the center marking of the flat phantom section, with the arms oriented parallel to the
  body axis.
- Feed Point Impedance and Return Loss: These parameters are measured with the dipole positioned under the liquid filled phantom. The Return Loss ensures low reflected power. No uncertainty required.
- SAR measured: SAR measured at the stated antenna input power.
- SAR normalized: SAR as measured, normalized to an input power of 1 W at the antenna connector.
- SAR for nominal TSL parameters: The measured TSL parameters are used to calculate the nominal SAR result.
- The absorbed power density (APD): The absorbed power density is evaluated according to Samaras T, Christ A, Kuster N, "Compliance assessment of the epithelial or absorbed power density above 6 GHz using SAR measurement systems", Bioelectromagnetics, 2021 (submitted). The additional evaluation uncertainty of 0.55 dB (rectangular distribution) is considered.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

Certificate No: D6.5GHzV2-1012\_Sep24

Page 2 of 6



# Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY6	V16.2
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	5 mm	with Spacer
Zoom Scan Resolution	dx, dy = 3,4 mm, dz = 1,4 mm	Graded Ratio = 1.4 (Z direction)
Frequency	6500 MHz ± 1 MHz	

# Head TSL parameters

The following parameters and calculations were applied

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	34.5	6.07 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) "C	34.6 ± 6 %	6.24 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C		

## SAR result with Head TSL

SAR averaged over 1 cm <sup>3</sup> (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	29.7 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	297 W/kg ± 24.7 % (k=2)
SAR averaged over 8 cm <sup>3</sup> (8 g) of Head TSL	Condition	
SAR measured	100 mW input power	6.64 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	66.5 W/kg ± 24.4 % (k=2)
SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL	condition	
SAR measured	100 mW input power	5.45 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	54.6 W/kg ± 24.4 % (k=2)

Page 3 of 6



#### Appendix (Additional assessments outside the scope of SCS 0108)

#### Antenna Parameters with Head TSL

Impedance, transformed to feed point	51.1 Ω - 5.5 jΩ
Return Loss	- 25.1 dB

#### APD (Absorbed Power Density)

APD averaged over 1 cm <sup>2</sup>	Condition	
APD measured	100 mW input power	296 W/m <sup>3</sup>
APD measured	normalized to 1W	2960 W/m <sup>2</sup> ± 29.2 % (k=2)
	1000 mar 100	
APD averaged over 4 cm <sup>2</sup>	condition	
APD averaged over 4 cm <sup>2</sup> APD measured	condition 100 mW input power	133 W/m <sup>2</sup>

"The reported APD values have been derived using the psSAR1g and psSAR8g.

#### General Antenna Parameters and Design

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.

No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

#### Additional EUT Data

Manufactured by	SPEAG

Certificate No: D6.5GHzV2-1012\_Sep24

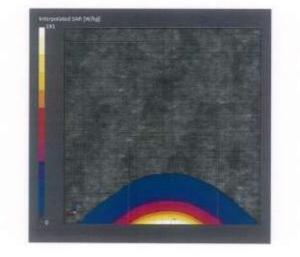
Page 4 of 6



# DASY6 Validation Report for Head TSL

Measurement Report for D6.5GHz-1012, UID 0 -, Channel 6500 (6500.0MHz)

Device under Test Propertie Name, Manufacturer		Dimensions [mm]		IMEI DUT Type		e	
D6.5GHz 16.0 x 6.0 x 300.0		300.0 51	1012				
Exposure Con	ditions						
Phantom	Position, Test	Band	Group,	Frequency	Conversion	TSL Cond.	TSL
Section, TSL	Distance [mm]		UID	[MHz]	Factor	[\$/m]	Permittivity
Flat, HSL	5.00	Band	CW,	6500	5,14	6.24	34.6
Hardware Set	up						
Phantom		TSL		Probe, Calibration Date		DAE, Calibration Date	
MFP V8.0 Center - 1182 H88L600-10000V6		000V6	EX3DV4 - SN7405, 2024-07-01		DAE4 Sn908, 2024-03-27		
Scan Setup Zoom			Measurement Results				
		Zoom Scan				Zoom Scar	
Grid Extents [mm] 22.0 x 22.0 x 22.0		Date		2024-09-17, 13:56			
Grid Steps (mm) 3.4 x 3.4 x 1		3.4 x 3.4 x 1.4	psSAR1g [W/Kg]		29.7		
Sensor Surface [mm] 1		psSAR8g [W/Kg]		6.64			
Graded Grid Ye		psSAR10g [W/Kg]		5.45			
Grading Ratio		1.4	Power Drift [dB]		-0.02		
MAIA		N/A	Power Scaling		Disabled		
Surface Detection VMS		VM5 + 6p	5p Scaling Factor (dB)				
Scan Method		Measured		TSL Correction		No correction	
				M2/M1 [%			50.5
				Dist 3d8 P	ook (mm]		4.8

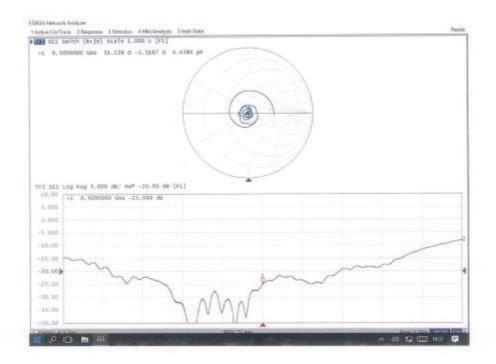


Certificate No: D6.5GHzV2-1012\_Sep24

Page 5 of 6



# Impedance Measurement Plot for Head TSL



Certificate No: D6.5GHzV2-1012\_Sep24

Page 6 of 6