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SAR TEST REPORT





The following samples were submitted and identified on behalf of the client as:

Nautiz X9 **Equipment Under Test** handheld **Brand Name**

14249 -RF2-B Model No.

Handheld Group AB **Company Name**

Kinnegatan 17, 53133, Lidköping, Sweden **Company Address Standards** IEEE/ANSI C95.1-1992, IEEE 1528-2013,

> KDB248227D01v02r02,KDB865664D01v01r04, KDB865664D02v01r02,KDB941225D01v03r01, KDB941225D05v02r05,KDB941225D06v02r01, KDB447498D01v06,KDB648474D04v01r03

FCC ID YY3-14249-RF2

Oct. 17, 2016 **Date of Receipt**

Date of Test(s) Oct. 28, 2016 ~ Nov. 08, 2016

Date of Issue Mar. 02, 2018

In the configuration tested, the EUT complied with the standards specified above.

Remarks:

This report details the results of the testing carried out on one sample, the results contained in this test report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

This report may only be reproduced and distributed in full. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of SGS Taiwan Electronic & Communication Laboratory or testing done by SGS Taiwan Electronic & Communication Laboratory in connection with distribution or use of the product described in this report must be approved by SGS Taiwan Electronic & Communication Laboratory in writing.

Signed on behalf of SGS

Clerk / Ruby Ou	Engineer / Matt Kuo	Asst. Manager / John Yeh		
Ruby Ou	Mate Kno	John Teh		
		Date: Mar. 02, 2018		

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Revision History

			_
Report Number	Revision	Description	Issue Date
E5/2018/20035	Rev.00	Initial creation of document	Mar. 02, 2018
6			
		56	

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1. General Information

1.1 Testing Laboratory

SGS Taiwan Ltd. Elec	tronics & Communication Laboratory
No. 2, Keji 1 st Rd., Gui	shan Township, Taoyuan County, 33383, Taiwan
Tel	+886-2-2299-3279
Fax	+886-2-2298-0488
Internet	http://www.tw.sgs.com/

1.2 Details of Applicant

Company Name	Handheld Group AB
Company Address	Kinnegatan 17, 53133, Lidköping, Sweden

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1.3 Description of EUT

EUT Name	Nautiz X9				
Brand Name	handheld				
Model No.	14249 -RF2-B				
Mode of Operation	SGSM SGPRS SEDGE WCDMA SHSDPA SHSUP SLTE FDD SCDMA 1x EVDO Re SMI ANGO 11 - √2/2/2/2/(2004/4004)	ev.0/ Rev.A			
	WLAN802.11 a/b/g/n(20M/40M)	⊠Bluetooth			
	GSM (DTM multi class B) GPRS (support multi class 12 max)	1/8.3 1/2 (1Dn4UP) 1/2.76 (1Dn3UP) 1/4.1 (1Dn2UP) 1/8.3 (1Dn1UP)			
Duty Cycle	EDGE (support multi class 12 max)	1/2 (1Dn4UP) 1/2.76 (1Dn3UP) 1/4.1 (1Dn2UP) 1/8.3 (1Dn1UP)			
	WCDMA	1			
	CDMA 1xRTT/ EVDO Rev.0/ Rev. A	1			
	LTE FDD	1			
	WLAN802.11 a/b/g/n(20M/40M)	1			
	Bluetooth	1			
	GSM850	824 — 848			
	GSM1900	1850 — 1910			
TX Frequency Range (MHz)	WCDMA Band II	1850 — 1910			
	WCDMA Band V	824 — 849			
(1411 12)	LTE FDD Band II	1850 — 1910			
	LTE FDD Band IV	1710 — 1755			
	LTE FDD Band V	824 — 849			

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	LTE FDD Band VII	2500	_	2570
	LTE FDD Band XII	699	_	716
	LTE FDD Band XIII	777	_	787
	LTE FDD Band XVII	704	70	716
	CDMA Cellular BC0	824		849
	CDMA PCS BC1	1850	4	1910
TX Frequency Range (MHz)	WLAN802.11 b/g/n(20M)	2412	_	2462
(1411 12)	WLAN802.11 n(40M)	2422	_	2452
	WLAN802.11 a/n(20M) 5.2G	5180	_	5240
	WLAN802.11 n(40M) 5.2G	5190	_	5230
	WLAN802.11 a/n(20M) 5.8G	5745	_	5825
	WLAN802.11 n(40M) 5.8G	5755	_	5795
	Bluetooth	2402		2480
	GSM850	128	7	251
	GSM1900	512	1	810
Channel Number (ARFCN)	WCDMA Band II	9262	_	9538
	WCDMA Band V	4132	_	4233
	LTE FDD Band II	18607	_	19193
C	LTE FDD Band IV	19957	_	20393
	LTE FDD Band V	20407		20643

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	LTE FDD Band VII	20775	_	21425
	LTE FDD Band XII	23007	_	23173
	LTE FDD Band XIII	23205	_	23255
	LTE FDD Band XVII	23755	3 -€	23825
	CDMA Cellular BC0	1013	1-1	777
Channel Number	CDMA PCS BC1	25	_	1175
(ARFCN)	WLAN802.11 b/g/n(20M)	1	_	11
	WLAN802.11 n(40M)	3	_	9
	WLAN802.11 a/n(20M) 5.2G	36	_	48
	WLAN802.11 n(40M) 5.2G	38	_	46
	WLAN802.11 a/n(20M) 5.8G	149	_	165
	WLAN802.11 n(40M) 5.8G	151		159
	Bluetooth	0		78

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Max. SAR (1 g) (Unit: W/Kg)						
Band	Measured	Reported	Position / Channel			
GSM 850	0.022	0.032	□Left ⊠Right ⊠Cheek □Tilt 190 Channel			
GSM 1900	0.036	0.042	□Left ⊠Right □Cheek □Tilt 810 Channel			
WCDMA Band II	0.092	0.092	□Left ⊠Right □Cheek □Tilt <u>9538</u> Channel			
WCDMA Band V	0.018	0.025	☐Left ☐Right ☐Cheek ☐Tilt 4183 Channel			
LTE FDD Band II	0.091	0.091	□Left ⊠Right □Cheek □Tilt ■18900 Channel			
LTE FDD Band IV	0.010	0.011	□Left □Right □Cheek □Tilt □20050 Channel			
LTE FDD Band V	0.013	0.013	□Left ⊠Right □Cheek □Tilt <u>20600</u> Channel			
LTE FDD Band VII	0.008	0.010	☐Left ☐Right ☐Cheek ☐Tilt ☐Channel			
LTE FDD Band XII	0.071	0.079	□Left ⊠Right □Cheek □Tilt <u>23130</u> Channel			
LTE FDD Band XIII	0.066	0.074	□Left ⊠Right □Cheek □Tilt 23230 Channel			
LTE FDD Band XVII	0.067	0.084	□Left ⊠Right □Cheek □Tilt 23780 Channel			
	GSM 850 GSM 1900 WCDMA Band II WCDMA Band V LTE FDD Band IV LTE FDD Band V LTE FDD Band V LTE FDD Band VII LTE FDD Band XIII LTE FDD Band XIII	Band Measured GSM 850 0.022 GSM 1900 0.036 WCDMA Band II 0.092 WCDMA Band V 0.018 LTE FDD Band II 0.091 LTE FDD Band IV 0.010 LTE FDD Band V 0.013 LTE FDD Band VII 0.008 LTE FDD Band XII 0.071 LTE FDD Band XIII 0.066	Band Measured Reported GSM 850 0.022 0.032 GSM 1900 0.036 0.042 WCDMA Band II 0.092 0.092 WCDMA Band V 0.018 0.025 LTE FDD Band II 0.091 0.091 LTE FDD Band IV 0.010 0.011 LTE FDD Band VII 0.008 0.010 LTE FDD Band XII 0.071 0.079 LTE FDD Band XIII 0.066 0.074			

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Max. SAR (1 g) (Unit: W/Kg)					
Mode	Band	Measured	Reported	Position / Channel	
8	CDMA Cellular BC0	0.003	0.004	☐Left ☐Right ☐Cheek ☐Tilt 384 Channel	
	CDMA PCS BC1	0.276	0.369	□ Left □ Right□ Cheek □ Tilt□ 25 Channel	
Head	WLAN802.11 b	0.012	0.012	☐Left ☐Right ☐Cheek ☐Tilt ☐Channel	
	WLAN802.11 a 5.2G	0.020	0.020	☐Left ☐Right ☐Cheek ☐Tilt ☐Channel	
8	WLAN802.11 a 5.8G	0.055	0.056	□Left □Right □Cheek □Tilt ■165 Channel	

Max. SAR (1 g) (Unit: W/Kg)						
Mode	Band	Measured	Reported	Position / Channel		
	GSM 850	0.110	0.159	☐Front ⊠Back 190 Channel		
	GSM 1900	0.201	0.236	☐Front ☐Back 810 Channel		
Dody word	CDMA Cellular BC0	0.035	0.051	☐Front ☐Back 1013 Channel		
Body-worn	CDMA PCS BC1	0.484	0.647	☐Front ⊠Back Channel		
	WLAN802.11 a 5.2G	0.344	0.347	☐Front ☐Back 40 Channel		
	WLAN802.11 a 5.8G	0.422	0.428	☐Front ⊠Back 165 Channel		

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Max. SAR (1 g) (Unit: W/Kg)						
Mode	Band	Measured	Reported	Position / Channel		
	GPRS 850 (1Dn4UP)	0.258	0.438	☐Front ☐Back ☐Bottom ☐Right 128 Channel		
	GPRS 1900 (1Dn4UP)	0.435	0.587	☐Front ☐Back☐Bottom☐Right 610 Channel		
	WCDMA Band II	1.070	1.087	☐Front ☐Back ☐Bottom ☐Right <u>9400</u> Channel		
	WCDMA Band V	0.101	0.142	☐Front ☐Back ☐Bottom ☐Right 4183 Channel		
d	LTE FDD Band II	0.711	0.711	☐Front ☐Back ☐Bottom ☐Right		
Hotspot mode	LTE FDD Band IV	0.200	0.229	☐Front ☐Back ☐Bottom ☐RightChannel		
	LTE FDD Band V	0.079	0.082	☐Front ☐Back ☐Bottom ☐Right Channel		
	LTE FDD Band VII	0.290	0.354	☐Front ☐Back ☐Bottom ☐Right Channel		
	LTE FDD Band XII	0.232	0.259	☐Front ☐Back☐Bottom☐Right 23130 Channel		
	LTE FDD Band XIII	0.206	0.230	☐Front ☐Back ☐Bottom ☐Right23230 _Channel		
C	LTE FDD Band VXII	0.209	0.262	☐Front ☐Back ☐Bottom ☐Right23780 _Channel		

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	Max. SAR (1 g) (Unit: W/Kg)											
Mode	Band	Measured	Reported	Position / Channel								
	CDMA Cellular BC0	0.061	0.086	☐Front ☐Back ☐Bottom ☐Right 1013 Channel								
Hotspot mode	CDMA PCS BC1	0.814	1.051	☐Front ☐Back☐Bottom☐Right☐1175☐Channel								
	WLAN802.11 b	0.061	0.063	☐Front ☐Back ☐Bottom ☐Right 1 _Channel								

Max. SAR (10 g) (Unit: W/Kg)											
Mode	Band	Measured	Reported	Position	/ Channel						
product	WLAN802.11 a 5.2G	0.371	0.374	☐Front ☐Top 40	⊠Back □Left _Channel						
specific 10-g SAR	WLAN802.11 a 5.8G	0.554	0.562	Front Top 165	⊠Back □Left Channel						

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GSM/GPRS/EDGE conducted power table:

EUT mode	Frequency (MHz)	СН	Max. Rated Avg. Power + Max.	Burst average power	Source -based time average power	
			Tolerance (dBm)	Avg. (dBm)	Avg. (dBm)	
CCMOEO	824.2	128	34	32.40	23.37	
GSM850 (GMSK)	836.6	190	34	32.40	23.37	
(diviort)	848.8	251	34	32.30	23.27	
The di	vision facto	r compared	to the numb	per of TX tir	ne slot	
	Divisio		1 TX time slot			
	וטופועום	TIACIOI		-9.03		

			Burst avera	age power		
	Max. Rated Avg. Power + Max. Tolerance (dBm)			33.5	32	31.5
			1Dn1UP	1Dn2UP	1Dn3UP	1Dn4UP
EUT mode	Frequency (MHz)	CH	Avg. (dBm)	Avg. (dBm)	Avg. (dBm)	Avg. (dBm)
GPRS	824.2	128	32.40	31.80	30.20	29.20
850	836.6	190	32.40	31.80	30.20	29.10
650	848.8	848.8 251		31.80	31.80 30.20	
		S	ource-based tim	e average powe	er	
GPRS	824.2	128	23.37	25.78	25.94	26.19
850	836.6	190	23.37	25.78	25.94	26.09
850	848.8	251	23.27	25.78	25.94	25.99
	The div	rision fa	actor compared	to the number of	of TX time slot	
Div	ision factor	·	1 TX time slot	2 TX time slot	3 TX time slot	4 TX time slot
	7131011 Tactor		-9.03	-6.02	-4.26	-3.01

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			Burst avera	age power						
Max. Rated Avg. Power + Max. Tolerance (dBm)			28	27.5	26	25.5				
			1Dn1UP	1Dn2UP	1Dn3UP	1Dn4UP				
EUT mode	Frequency (MHz) CH		Avg. (dBm)	Avg. (dBm)	Avg. (dBm)	Avg. (dBm)				
EDGE	824.2	128	27.90	26.90	25.00	23.90				
850	850 836.6 190		27.80	26.80	24.90	23.80				
(MCS5)	848.8	251	27.70	26.70	26.70 24.80					
		S	ource-based tim	ne average powe	er					
EDGE	824.2	128	18.87	20.88	20.74	20.89				
850	836.6	190	18.77	20.78	20.64	20.79				
(MCS5)	848.8	251	18.67	20.68	20.54	20.69				
	The div	rision fa		to the number of						
Div	vision factor			2 TX time slot						
	noion idoloi		-9.03	-6.02	-4.26	-3.01				

EUT mode	(MHZ)		Max. Rated Avg. Power + Max. Tolerance (dBm)	Burst average power Avg. (dBm)	Source -based time average power Avg. (dBm)	
00144000	1850.2	512	31	30.00	20.97	
GSM1900 (GMSK)	1800	661	31	30.20	21.17	
(GIVIOIT)	1909.8	810	31	30.30	21.27	
The di	vision facto	r compared	to the numb	oer of TX tir	ne slot	
	Divisio		1 TX time slot			
	וטופועום	TIACIOI		-9.03		

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			Burst avera	age power							
	ted Avg. Pow olerance (dBr		31	30.5	29	28.5					
			1Dn1UP	1Dn2UP	1Dn3UP	1Dn4UP					
EUT mode	Frequency (MHz)	CH	Avg. (dBm)	Avg. (dBm)	Avg. (dBm)	Avg. (dBm)					
GPRS	1850.2	512	30.00	29.40	27.80	26.60					
1900	1880	661	30.20	29.60	28.00	26.90					
1900	1909.8 810		30.30	29.70	28.20	27.20					
		S	ource-based tim	ne average powe	er						
GPRS	1850.2	512	20.97	23.38	23.54	23.59					
1900	1880	661	21.17	23.58	23.74	23.89					
1900	1909.8	810	21.27	23.68	23.94	24.19					
	The div	ision fa		to the number of		4 TX time slot					
Div	ision factor		1 TX time slot	2 TX time slot	2 TX time slot 3 TX time slot						
	rision factor		-9.03	-6.02 -4.26		-3.01					

	Burst average power										
	ted Avg. Pow olerance (dBr		28	27.5	26	25.5					
			1Dn1UP	1Dn2UP	1Dn3UP	1Dn4UP					
EUT mode	ode Frequency (MHz) CH		Avg. (dBm)	Avg. (dBm)	Avg. (dBm)	Avg. (dBm)					
EDGE	1850.2	512	27.30	26.20	24.20	23.00					
1900	1880	661	27.40	26.30	24.30	23.10					
(MCS5)	1909.8	810	27.60	26.40 24.40		23.20					
		S	ource-based tim	e average powe	er						
EDGE	1850.2	512	18.27	20.18	19.94	19.99					
1900	1880	661	18.37	20.28	20.04	20.09					
(MCS5)	1909.8	810	18.57	20.38	20.14	20.19					
	The div	ision fa	actor compared	to the number o	f TX time slot						
Div	vision factor		1 TX time slot 2 TX time slot			4 TX time slot					
	rision factor		-9.03	-6.02	-4.26	-3.01					

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WCDMA Band II / Band V - HSDPA / HSUPA conducted power table:

	Band	WCDMA II			
	TX Channel	9262	9400	9538	
F	requency (MHz)	1852.4	1880	1907.6	
Max. Rated Avg	. Power+Max. Tolerance (dBm)		25.00		
3GPP Rel 99	RMC 12.2Kbps	24.74	24.93	24.98	
3GPP Rel 5	HSDPA Subtest-1	23.57	23.86	24.11	
	HSDPA Subtest-2	22.39	22.73	23.28	
SGFF Ners	HSDPA Subtest-3	21.74	21.66	22.36	
	HSDPA Subtest-4	21.66	21.61	22.02	
	HSUPA Subtest-1	23.49	23.63	23.14	
	HSUPA Subtest-2	23.26	23.42	23.87	
3GPP Rel 6	HSUPA Subtest-3	22.96	23.20	23.61	
	HSUPA Subtest-4	22.77	22.98	23.39	
	HSUPA Subtest-5	22.55	22.84	24.02	

	Band		WCDMA V		
	TX Channel	4132	4183	4233	
F	requency (MHz)	826.4	836.6	846.6	
Max. Rated Avg	. Power+Max. Tolerance (dBm)		25.00		
3GPP Rel 99	RMC 12.2Kbps	RMC 12.2Kbps 23.45 23.53			
	HSDPA Subtest-1	22.24	22.33	22.19	
3GPP Rel 5	HSDPA Subtest-2	22.13	22.19	21.98	
3GFF Nei 3	HSDPA Subtest-3	21.86	21.96	21.83	
	HSDPA Subtest-4	21.84	21.89	21.78	
	HSUPA Subtest-1	22.13	22.21	22.02	
	HSUPA Subtest-2	21.76	21.87	21.63	
3GPP Rel 6	HSUPA Subtest-3	21.95	22.08	21.89	
	HSUPA Subtest-4	21.84	21.96	21.77	
	HSUPA Subtest-5	22.28	22.37	22.13	

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Sub-test for HSDPA

SUB-TEST	β_{c}	β_{d}	β _d (SF)	β_c/β_d	β _{HS} (Note1, Note 2)	CM (dB) (Note 3)	MPR (dB) (Note 3)
1	2/15	15/15	64	2/15	4/15	0.0	0.0
2	12/15	15/15	64	12/15	24/15	1.0	0.0
3	15/15	8/15	64	15/8	30/15	1.5	0.5
4	15/15	4/15	64	15/4	30/15	1.5	0.5

Sub-test for HSUPA

SUB-TEST	βο	β _d	β _d (SF)	β _σ /β _d	β _{HS} (Note1)	β _{ec}	β _{ed} (Note 5) (Note 6)	β _{ed} (SF)	β _{ed} (Codes)	CM (dB) (Note 2)	MPR (dB) (Note 2)	AG Index (Note 6)	E-TFCI
1	11/15	15/15	64	11/15	22/15	209/225	1309/225	4	1	1.0	0.0	20	7 5
2	6/15	15/15	64	6/15	12/15	12/15	94/75	4	1	3.0	2.0	12	67
3	15/15	9/15	64	15/9	30/15	30/15	β _{ed} 1: 47/15 β _{ed} 2: 47/15	4 4	2	2.0	1.0	15	92
4	2/15	15/15	64	2/15	4/15	2/15	56/75	4	1	3.0	2.0	17	71
5	15/15	15/15	64	15/15	30/15	24/15	134/15	4	1	1.0	0.0	21	81

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LTE FDD Band II / Band IV / Band V / Band VII / Band XII / Band XIII / Band XVII

				FDD Band 2				
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
				1860	18700	23.23	23.5	0
			0	1880	18900	23.20	23.5	0
				1900	19100	23.12	23.5	0
				1860	18700	22.79	23.5	0
		1 RB	50	1880	18900	23.50	23.5	0
				1900	19100	23.34	23.5	0
				1860	18700	23.12	23.5	0
			99	1880	18900	23.00	23.5	0
				1900	19100	23.44	23.5	0
				1860	18700	22.21	22.5	0-1
	QPSK		0	1880	18900	22.47	22.5	0-1
				1900	19100	22.25	22.5	0-1
				1860	18700	22.05	22.5	0-1
		50 RB	25	1880	18900	22.48	22.5	0-1
				1900	19100	22.43	22.5	0-1
				1860	18700	22.07	22.5	0-1
			50	1880	18900	22.45	22.5	0-1
				1900	19100	22.50	22.5	0-1
				1860	18700	22.14	22.5	0-1
		100	ORB	1880	18900	22.46	22.5	0-1
20				1900	19100	22.48	22.5	0-1
20				1860	18700	22.18	22.5	0-1
			0	1880	18900	22.46	22.5	0-1
				1900	19100	22.13	22.5	0-1
			3	1860	18700	21.82	22.5	0-1
	1	1 RB	50	1880	18900	22.41	22.5	0-1
				1900	19100	22.48	22.5	0-1
				1860	18700	22.40	22.5	0-1
			99	1880	18900	22.05	22.5	0-1
				1900	19100	22.47	22.5	0-1
				1860	18700	21.14	21.5	0-2
	16-QAM		0	1880	18900	21.31	21.5	0-2
				1900	19100	21.15	21.5	0-2
				1860	18700	20.90	21.5	0-2
		50 RB	25	1880	18900	21.42	21.5	0-2
				1900	19100	21.37	21.5	0-2
				1860	18700	20.99	21.5	0-2
			50	1880	18900	21.33	21.5	0-2
				1900	19100	21.42	21.5	0-2
				1860	18700	21.06	21.5	0-2
		100)RB	1880	18900	21.38	21.5	0-2
				1900	19100	21.34	21.5	0-2

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BW(Mhz) Modulation RB Size RB Offset RB Offset (MHz) Channel Conducted power (dBm) Max. Tolerance (dBm) (dBm) 1 RB	PR red per P(dB)
BW(Mhz) Modulation RB Size RB Offset Frequency (MHz) Channel Conducted power (dBm) Power + Max. Tolerance (dBm) 3GI	red per P(dB) 0
0 1880 18900 23.20 23.5 1902.5 19125 23.09 23.5 1857.5 18675 22.80 23.5 1902.5 19125 23.31 23.5 1902.5 19125 23.31 23.5 1857.5 18675 22.79 23.5 1857.5 18675 22.79 23.5 1902.5 19125 23.35 23.5 1857.5 18675 22.12 22.5 1857.5 18675 22.12 22.5 1857.5 18675 22.12 22.5 1902.5 19125 23.31 22.5 1857.5 18675 22.12 22.5 1857.5 18675 22.31 22.5 1857.5 18675 22.00 22.5 1902.5 19125 22.44 22.5 1902.5 19125 22.44 22.5 1857.5 18675 21.92 21.92 22.5 1857.5 18675 21.92 21.92	0
1 RB 1 1 RB 36 1857.5 18675 22.80 23.5 1800.23.31 23.5 1902.5 19125 23.31 23.5 1902.5 1857.5 18675 22.79 23.5 1857.5 18675 22.79 23.5 1880 18900 23.11 23.5 1902.5 19125 23.35 23.5 1902.5 1857.5 18675 22.12 22.5 0 1880 18900 22.39 22.5 1902.5 19125 22.31 22.5 1857.5 18675 22.00 22.5 1902.5 1902.5 19125 22.44 22.5 1902.5 1902.5 19125 22.44 22.5 1902.5 1857.5 18675 22.44 22.5	
1 RB 36 1857.5 18675 22.80 23.5 1902.5 19125 23.31 23.5 1857.5 18675 22.79 23.5 1857.5 18675 22.79 23.5 1880 18900 23.11 23.5 1902.5 19125 23.35 23.5 1902.5 19125 23.35 23.5 23.5 1857.5 18675 22.12 22.5 0 1880 18900 22.39 22.5 1902.5 19125 22.31 22.5 1857.5 18675 22.00 22.5 1902.5 1902.5 19125 22.44 22.5 1902.5 1857.5 18675 22.44 22.5 1857.5 18675 22.44 22.5	
PSK 1 RB 36 1880 18900 23.31 23.5 1902.5 1857.5 18675 22.79 23.5 74 1880 18900 23.11 23.5 1857.5 18807 1902.5 19125 23.35 23.5 1857.5 18675 22.12 22.5 1880 18900 22.39 22.5 1902.5 19125 22.31 22.5 1857.5 18675 22.00 22.5 1902.5 1902.5 19125 22.44 22.5 1902.5 1857.5 18675 22.44 22.5 1857.5 18675 22.44 22.5	0
PSK 1902.5 19125 23.31 23.5 1857.5 18675 22.79 23.5 1880 18900 23.11 23.5 1902.5 19125 23.35 23.5 1857.5 18675 22.12 22.5 1880 18900 22.39 22.5 1902.5 19125 22.31 22.5 1857.5 18675 22.00 22.5 1857.5 18675 22.00 22.5 1802.5 19125 22.44 22.5 1857.5 18675 21.92 22.5	0
PSK 1857.5	0
QPSK 1880 18900 23.11 23.5 1902.5 19125 23.35 23.5 1857.5 18675 22.12 22.5 1880 18900 22.39 22.5 1902.5 19125 22.31 22.5 1857.5 18675 22.00 22.5 1857.5 18675 22.00 22.5 1902.5 19125 22.44 22.5 1857.5 18675 21.92 22.5	0
QPSK 0 1857.5 18675 22.12 22.5 1880 18900 22.39 22.5 1902.5 19125 22.31 22.5 1857.5 18675 22.00 22.5 1857.5 18675 22.00 22.5 1857.5 18675 22.44 22.5 1857.5 18675 21.92 22.5	0
QPSK 0 1857.5 18675 22.12 22.5 1880 18900 22.39 22.5 1902.5 19125 22.31 22.5 1857.5 18675 22.00 22.5 18902.5 19125 22.44 22.5 1857.5 18675 21.92 22.5 1857.5 18675 21.92 22.5	0
QPSK 0 1880 18900 22.39 22.5 1902.5 19125 22.31 22.5 1857.5 18675 22.00 22.5 1902.5 19125 22.45 22.5 1902.5 19125 22.44 22.5 1857.5 18675 21.92 22.5	0
1902.5 19125 22.31 22.5 1857.5 18675 22.00 22.5 1880 18900 22.45 22.5 1902.5 19125 22.44 22.5 1857.5 18675 21.92 22.5)-1
1857.5 18675 22.00 22.5 180 18900 22.45 22.5 1902.5 19125 22.44 22.5 1857.5 18675 21.92 22.5)-1
36 RB 18 1880 18900 22.45 22.5 1902.5 19125 22.44 22.5 1857.5 18675 21.92 22.5)-1
1902.5 19125 22.44 22.5 1857.5 18675 21.92 22.5)-1
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				EDD D 15				
				FDD Band 2				
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
				1855	18650	22.76	23.5	0
			0	1880	18900	22.84	23.5	0
	•			1905	19150	23.02	23.5	0
				1855	18650	22.79	23.5	0
		1 RB	25	1880	18900	23.17	23.5	0
				1905	19150	23.37	23.5	0
			49	1855	18650	22.40	23.5	0
				1880	18900	22.85	23.5	0
				1905	19150	23.04	23.5	0
				1855	18650	22.04	22.5	0-1
	QPSK		0	1880	18900	22.33	22.5	0-1
				1905	19150	22.42	22.5	0-1
				1855	18650	21.98	22.5	0-1
		25 RB	12	1880	18900	22.42	22.5	0-1
				1905	19150	22.48	22.5	0-1
				1855	18650	21.93	22.5	0-1
			25	1880	18900	22.34	22.5	0-1
				1905	19150	22.49	22.5	0-1
				1855	18650	22.00	22.5	0-1
		50	RB	1880	18900	22.37	22.5	0-1
10			T	1905	19150	22.44	22.5	0-1
				1855	18650	22.07	22.5	0-1
			0	1880	18900	21.67	22.5	0-1
				1905	19150	22.04	22.5	0-1
		1 DD	0.5	1855	18650	22.14	22.5	0-1
		1 RB	25	1880	18900	22.07	22.5	0-1
				1905	19150	22.43	22.5	0-1
			49	1855 1880	18650 18900	21.52 21.65	22.5 22.5	0-1 0-1
			49	1905	19150	21.84	22.5	0-1
				1855	18650	20.88	21.5	0-1
	16-QAM		0	1880			21.5	0-2
	10 QAW			1905	18900 19150	21.29 21.41	21.5	0-2
				1855	18650	20.93	21.5	0-2
		25 RB	12	1880	18900	21.34	21.5	0-2
		20110	12	1905	19150	21.54	21.5	0-2
				1855	18650	20.87	21.5	0-2
			25	1880	18900	21.28	21.5	0-2
				1905	19150	21.36	21.5	0-2
				1855	18650	20.96	21.5	0-2
		50	RB	1880	18900	21.32	21.5	0-2
		30	1	1905	19150	21.40	21.5	0-2
				1000	10100	0	_1.0	, , <u>, , , , , , , , , , , , , , , , , </u>

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				FDD Band 2				
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
		_		1852.5	18625	22.86	23.5	0
			0	1880	18900	23.24	23.5	0
				1907.5	19175	23.46	23.5	0
				1852.5	18625	22.67	23.5	0
		1 RB	12	1880	18900	23.03	23.5	0
				1907.5	19175	23.02	23.5	0
			24	1852.5	18625	22.81	23.5	0
				1880	18900	23.16	23.5	0
				1907.5	19175	23.38	23.5	0
				1852.5	18625	21.90	22.5	0-1
	QPSK		0	1880	18900	22.27	22.5	0-1
				1907.5	19175	22.38	22.5	0-1
				1852.5	18625	21.79	22.5	0-1
		12 RB	6	1880	18900	22.26	22.5	0-1
				1907.5	19175	22.23	22.5	0-1
				1852.5	18625	21.85	22.5	0-1
			13	1880	18900	22.29	22.5	0-1
				1907.5	19175	22.32	22.5	0-1
				1852.5	18625	21.86	22.5	0-1
		25	RB	1880	18900	22.25	22.5	0-1
5				1907.5	19175	22.30	22.5	0-1
3				1852.5	18625	21.98	22.5	0-1
			0	1880	18900	22.29	22.5	0-1
				1907.5	19175	22.44	22.5	0-1
				1852.5	18625	21.85	22.5	0-1
		1 RB	12	1880	18900	22.27	22.5	0-1
				1907.5	19175	22.43	22.5	0-1
				1852.5	18625	22.29	22.5	0-1
	1		24	1880	18900	22.29	22.5	0-1
				1907.5	19175	22.49	22.5	0-1
				1852.5	18625	21.03	21.5	0-2
	16-QAM		0	1880	18900	21.37	21.5	0-2
				1907.5	19175	21.40	21.5	0-2
				1852.5	18625	20.88	21.5	0-2
		12 RB	6	1880	18900	21.34	21.5	0-2
				1907.5	19175	21.32	21.5	0-2
				1852.5	18625	20.98	21.5	0-2
			13	1880	18900	21.31	21.5	0-2
				1907.5	19175	21.38	21.5	0-2
				1852.5	18625	21.00	21.5	0-2
		25	RB	1880	18900	21.39	21.5	0-2
				1907.5	19175	21.36	21.5	0-2

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				FDD Band 2				
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
		_		1851.5	18615	22.71	23.5	0
			0	1880	18900	22.98	23.5	0
				1908.5	19185	23.06	23.5	0
				1851.5	18615	22.76	23.5	0
		1 RB	7	1880	18900	23.06	23.5	0
				1908.5	19185	23.13	23.5	0
				1851.5	18615	22.69	23.5	0
			14	1880	18900	23.00	23.5	0
				1908.5	19185	23.11	23.5	0
				1851.5	18615	21.85	22.5	0-1
	QPSK		0	1880	18900	22.11	22.5	0-1
				1908.5	19185	22.35	22.5	0-1
			4	1851.5	18615	21.82	22.5	0-1
		8 RB		1880	18900	22.11	22.5	0-1
				1908.5	19185	22.37	22.5	0-1
				1851.5	18615	21.83	22.5	0-1
			7	1880	18900	22.11	22.5	0-1
				1908.5	19185	22.36	22.5	0-1
	_			1851.5	18615	21.89	22.5	0-1
		15	RB	1880	18900	22.14	22.5	0-1
3				1908.5	19185	22.37	22.5	0-1
Ü				1851.5	18615	21.82	22.5	0-1
			0	1880	18900	21.94	22.5	0-1
				1908.5	19185	22.36	22.5	0-1
				1851.5	18615	21.98	22.5	0-1
		1 RB	7	1880	18900	21.86	22.5	0-1
				1908.5	19185	22.37	22.5	0-1
				1851.5	18615	21.93	22.5	0-1
	1		14	1880	18900	22.26	22.5	0-1
				1908.5	19185	22.48	22.5	0-1
				1851.5	18615	20.83	21.5	0-2
	16-QAM		0	1880	18900	21.09	21.5	0-2
				1908.5	19185	21.48	21.5	0-2
				1851.5	18615	20.89	21.5	0-2
		8 RB	4	1880	18900	21.27	21.5	0-2
				1908.5	19185	21.49	21.5	0-2
			_	1851.5	18615	20.87	21.5	0-2
			7	1880	18900	21.20	21.5	0-2
				1908.5	19185	21.43	21.5	0-2
				1851.5	18615	20.81	21.5	0-2
		15	RB	1880	18900	21.14	21.5	0-2
				1908.5	19185	21.31	21.5	0-2

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				FDD Band 2				
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
		_		1850.7	18607	22.93	23.5	0
			0	1880	18900	23.14	23.5	0
				1909.3	19193	23.31	23.5	0
				1850.7	18607	22.80	23.5	0
		1 RB	2	1880	18900	23.21	23.5	0
				1909.3	19193	23.29	23.5	0
				1850.7	18607	22.88	23.5	0
			5	1880	18900	23.15	23.5	0
				1909.3	19193	23.37	23.5	0
				1850.7	18607	22.92	23.5	0
	QPSK		0	1880	18900	23.29	23.5	0
				1909.3	19193	23.36	23.5	0
				1850.7	18607	22.89	23.5	0
		3 RB	2	1880	18900	23.28	23.5	0
				1909.3	19193	23.32	23.5	0
				1850.7	18607	22.86	23.5	0
			3	1880	18900	23.26	23.5	0
				1909.3	19193	23.30	23.5	0
				1850.7	18607	22.06	22.5	0-1
		6	RB	1880	18900	22.34	22.5	0-1
1.4				1909.3	19193	22.50	22.5	0-1
1.4				1850.7	18607	22.03	22.5	0-1
			0	1880	18900	22.19	22.5	0-1
				1909.3	19193	22.45	22.5	0-1
				1850.7	18607	22.09	22.5	0-1
		1 RB	2	1880	18900	22.44	22.5	0-1
				1909.3	19193	22.41	22.5	0-1
				1850.7	18607	22.04	22.5	0-1
	1		5	1880	18900	22.20	22.5	0-1
				1909.3	19193	22.45	22.5	0-1
				1850.7	18607	22.06	22.5	0-1
	16-QAM		0	1880	18900	22.20	22.5	0-1
				1909.3	19193	22.49	22.5	0-1
				1850.7	18607	22.02	22.5	0-1
		3 RB	2	1880	18900	22.07	22.5	0-1
				1909.3	19193	22.32	22.5	0-1
				1850.7	18607	22.02	22.5	0-1
			3	1880	18900	22.14	22.5	0-1
				1909.3	19193	22.46	22.5	0-1
l				1850.7	18607	21.12	21.5	0-2
		6RB		1880	18900	21.46	21.5	0-2
				1909.3	19193	21.47	21.5	0-2

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				EDD D				
				FDD Band 4				
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
				1720	20050	23.72	24.5	0
			0	1732.5	20175	23.80	24.5	0
	•			1745	20300	23.89	24.5	0
				1720	20050	23.91	24.5	0
		1 RB	50	1732.5	20175	23.83	24.5	0
				1745	20300	23.87	24.5	0
				1720	20050	23.81	24.5	0
			99	1732.5	20175	23.81	24.5	0
				1745	20300	23.80	24.5	0
				1720	20050	22.90	23.5	0-1
	QPSK		0	1732.5	20175	22.95	23.5	0-1
				1745	20300	22.97	23.5	0-1
				1720	20050	22.89	23.5	0-1
		50 RB	25	1732.5	20175	22.93	23.5	0-1
				1745	20300	22.91	23.5	0-1
				1720	20050	22.91	23.5	0-1
			50	1732.5	20175	22.96	23.5	0-1
				1745	20300	22.89	23.5	0-1
				1720	20050	22.86	23.5	0-1
		100)RB	1732.5	20175	22.96	23.5	0-1
20			T	1745	20300	22.93	23.5	0-1
				1720	20050	23.29	23.5	0-1
			0	1732.5	20175	23.11	23.5	0-1
				1745	20300	23.41	23.5	0-1
		1 DD	50	1720	20050	22.75	23.5	0-1
		1 RB	50	1732.5	20175	23.02	23.5	0-1
				1745	20300	23.00 23.13	23.5	0-1
			99	1720 1732.5	20050 20175	22.99	23.5 23.5	0-1 0-1
			99	1732.5	20300	22.99	23.5	0-1
				1743	20050	21.89	22.5	0-1
	16-QAM		0	1732.5	20175			0-2
	10 QAW			1732.3	20300	22.02 21.98	22.5 22.5	0-2
				1743	20050	21.88	22.5	0-2
		50 RB	25	1732.5	20175	21.96	22.5	0-2
		30 110		1732.5	20300	21.96	22.5	0-2
				1743	20050	21.89	22.5	0-2
			50	1732.5	20175	21.09	22.5	0-2
				1732.3	20300	21.94	22.5	0-2
				1743	20050	21.94	22.5	0-2
		100)RB	1732.5	20175	21.99	22.5	0-2
		1.00		1745	20300	21.87	22.5	0-2
				1,750	20000	21.07	<i>LL</i> .0	V 2

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BW(Mhz) Modulation RB Size RB Offset Frequency (Mhz) Channel power (dBm) Target power (dBm) Target power (dBm) Max Max Allowed per (dBm) Max Max Allowed per (dBm) Max					EDD D 1.1				
BW(Mhz) Modulation RB Size RB Offset Frequency (MHz) Conducted power (dBm) Conducted pow					FDD Band 4				
OPSK 1 RB 36 1 RB 36 1 732.5 20175 20252 23.87 24.5 0 1747.5 20252 23.82 24.5 0 1747.5 20252 23.84 24.5 0 1747.5 20252 23.84 24.5 0 1747.5 20252 23.87 24.5 0 1747.5 20252 23.87 24.5 0 1747.5 20252 23.87 24.5 0 1747.5 20252 23.87 24.5 0 1747.5 20252 23.87 24.5 0 1747.5 20252 23.87 24.5 0 1747.5 20252 23.85 24.5 0 1747.5 20252 23.85 24.5 0 1747.5 20252 23.85 24.5 0 1747.5 20252 23.85 24.5 0 1747.5 20252 22.98 23.5 0-1 1747.5 20252 22.98 23.5 0-1 1747.5 20252 22.99 23.5 0-1 1747.5 20252 22.99 23.5 0-1 1747.5 20252 22.99 23.5 0-1 1747.5 20252 22.99 23.5 0-1 1747.5 20252 22.99 23.5 0-1 1747.5 20252 22.97 23.5 0-1 1747.5 20252 22.99 23.5 0-1 1747.5 20252 22.97 23.5 0-1 1747.5 20252 22.98 23.5 0-1 1747.5 20252 22.99 23.5 0-1 1747.5 20252 22.97 23.5 0-1 1747.5 20252 22.90 23.5 0-1 1747.5 20252 22.90 23.5	BW(Mhz)	Modulation	RB Size	RB Offset		Channel		Power + Max. Tolerance	Allowed per
1 RB 36 1747.5 20325 23.87 24.5 0 1717.5 20025 23.82 24.5 0 1717.5 20025 23.82 24.5 0 1723.5 20175 23.84 24.5 0 1717.5 20025 23.87 24.5 0 1717.5 20025 23.87 24.5 0 1717.5 20025 23.85 24.5 0 1717.5 20025 23.85 24.5 0 174 1732.5 20175 23.85 24.5 0 174 1732.5 20175 23.85 24.5 0 174 1732.5 20175 23.85 24.5 0 174 1732.5 20175 23.85 24.5 0 174 1732.5 20175 23.85 24.5 0 174 1732.5 20175 22.98 23.5 0-1 174 174 174 174 174 174 174 174 174 174					1717.5	20025	23.71	24.5	0
1 RB 36 1717.5 20025 23.82 24.5 0 1732.5 20175 23.84 24.5 0 1747.5 20325 23.87 24.5 0 1747.5 20325 23.87 24.5 0 1747.5 20025 23.85 24.5 0 1748.5 20175 23.85 24.5 0 1749.5 20025 23.85 24.5 0 1749.5 20325 23.71 24.5 0 1741.5 20325 23.71 24.5 0 1747.5 20325 23.71 24.5 0 1747.5 20325 22.86 23.5 0-1 1747.5 20025 22.86 23.5 0-1 1747.5 20025 22.89 23.5 0-1 1747.5 20025 22.89 23.5 0-1 1747.5 20025 22.89 23.5 0-1 1747.5 20025 22.89 23.5 0-1 1747.5 20025 22.89 23.5 0-1 1747.5 20025 22.99 23.5 0-1 1747.5 20025 22.99 23.5 0-1 1747.5 20025 22.99 23.5 0-1 1747.5 20025 22.99 23.5 0-1 1747.5 20025 22.99 23.5 0-1 1747.5 20025 22.99 23.5 0-1 1747.5 20025 22.99 23.5 0-1 1747.5 20025 22.99 23.5 0-1 1747.5 20025 22.99 23.5 0-1 1747.5 20025 22.87 23.5 0-1 1747.5 20025 22.87 23.5 0-1 1747.5 20025 22.89 23.5 0-1 1747.5 20025 23.25 23.5 0-1 1747.5 20025 23.25 23.5 0-1 1747.5 20025 23.25 23.5 0-1 1747.5 20025 23.25 23.5 0-1 1747.5 20025 23.25 23.5 0-1 1747.5 20025 23.25 23.5 0-1 1747.5 20025 23.90 23.5 0-2 1747.5 20025 23.90 22.5 0-2 1747.5 20025 23.90 22.5 0-2 1747.5 20025 23.90 22.5 0-2 1747.5 20025 23.90 22.5 0-2 1747.5 20025 2				0	1732.5	20175	23.90	24.5	0
APPRINCE OF SERVICE OF					1747.5	20325	23.87	24.5	0
OPSK					1717.5	20025	23.82	24.5	0
A 1717.5 20025 23.85 24.5 0 1732.5 20175 23.85 24.5 0 1741.5 20025 23.85 24.5 0 1741.5 20025 23.85 24.5 0 1741.5 20025 23.85 24.5 0 1741.5 20025 23.85 24.5 0 1741.5 20025 23.86 23.5 0-1 1741.5 20025 22.86 23.5 0-1 1741.5 20025 22.89 23.5 0-1 1741.5 20025 22.89 23.5 0-1 1741.5 20025 22.89 23.5 0-1 1741.5 20025 22.89 23.5 0-1 1741.5 20025 22.99 23.5 0-1 1741.5 20025 22.99 23.5 0-1 1741.5 20025 22.99 23.5 0-1 1741.5 20025 22.99 23.5 0-1 1741.5 20025 22.99 23.5 0-1 1741.5 20025 22.99 23.5 0-1 1741.5 20025 22.99 23.5 0-1 1741.5 20025 22.90 23.5 0-1 1741.5 20025 22.90 23.5 0-1 1741.5 20025 22.90 23.5 0-1 1741.5 20025 22.90 23.5 0-1 1741.5 20025 22.90 23.5 0-1 1741.5 20025 22.90 23.5 0-1 1741.5 20025 22.90 23.5 0-1 1741.5 20025 23.80 23.5 0-1 1741.5 20025 23.80 23.5 0-1 1741.5 20025 23.80 23.5 0-1 1741.5 20025 23.90 23.5 0-1 1741.5 20025			1 RB	36	1732.5	20175	23.84	24.5	0
APSK					1747.5	20325	23.87	24.5	0
QPSK 1747.5 20325 23.71 24.5 0				74			23.85	24.5	0
OPSK 1717.5 20025 22.86 23.5 0-1 1732.5 20175 22.98 23.5 0-1 1747.5 20025 22.89 23.5 0-1 1747.5 20025 22.89 23.5 0-1 1747.5 20025 22.89 23.5 0-1 1747.5 20025 22.99 23.5 0-1 1747.5 20025 22.99 23.5 0-1 1747.5 20025 22.91 23.5 0-1 1747.5 20025 22.93 23.5 0-1 1747.5 20025 22.93 23.5 0-1 1747.5 20025 22.96 23.5 0-1 1747.5 20025 22.97 23.5 0-1 1747.5 20025 22.87 23.5 0-1 1747.5 20025 22.88 23.5 0-1 1747.5 20025 22.88 23.5 0-1 1747.5 20025 22.88 23.5 0-1 1747.5 20025 22.82 23.5 0-1 1747.5 20025 23.25 23.5 0-1 1747.5 20025 23.25 23.5 0-1 1747.5 20025 23.96 23.5 0-1 1747.5 20025 23.95 23.5 0-1 1747.5 20025 23.90 23.5 0-1 1747.5 20025 23.90 23.5 0-1 1747.5 20025 23.90 23.5 0-1 1747.5 20025 23.90 23.5 0-1 1747.5 20025 23.90 23.5 0-1 1747.5 20025 23.90 23.5 0-1 1747.5 20025 23.91 23.5 0-1 1747.5 20025 23.91 23.5 0-1 1747.5 20025 23.91 23.5 0-1 1747.5 20025 23.91 22.5 0-2 1747.5 20025 21.93 22.5 0-2 1747.5 20025 21.93 22.5 0-2 1747.5 20025 21.93 22.5 0-2 1747.5 20025 21.97 22.5 0-2 1747.5 20025 21.97 22.5 0-2 1747.5 20025 21.97 22.5 0-2 1747.5 20025 21.97 22.5 0-2 1747.5 20025 21.97 22.5 0-2 1747.5 20025 21.97 22.5 0-2 1747.5 20025 21.97 22.5 0-2 1747.5 20025 21.98 22.5 0-2 1747.5 20025 21.98 22.5 0-2 1747.5 20025 21.98 22.5 0-2 1747.5 20025 21.98 22.5 0-2 1747.5 20025 21.98 22.5 0-2 1747.5 20025 21.98 22.5 0-2 1747.5 20025 21.98 22.5 0-2 1747.5 20025 21.98 22.5 0-2 1747.5 20025 21.98 22.5 0-2 1747.5 20025 21.98 22.5 0-2								24.5	0
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				EDD D				
			1	FDD Band 4				
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
				1715	20000	23.76	24.5	0
			0	1732.5	20175	23.85	24.5	0
	ή.			1750	20350	23.75	24.5	0
				1715	20000	23.83	24.5	0
		1 RB	25	1732.5	20175	23.85	24.5	0
				1750	20350	23.91	24.5	0
				1715	20000	23.74	24.5	0
			49	1732.5	20175	23.57	24.5	0
				1750	20350	23.68	24.5	0
				1715	20000	22.81	23.5	0-1
	QPSK		0	1732.5	20175	22.93	23.5	0-1
				1750	20350	22.85	23.5	0-1
				1715	20000	22.80	23.5	0-1
		25 RB	12	1732.5	20175	22.93	23.5	0-1
				1750	20350	22.86	23.5	0-1
				1715	20000	22.80	23.5	0-1
			25	1732.5	20175	22.94	23.5	0-1
				1750	20350	22.86	23.5	0-1
				1715	20000	22.85	23.5	0-1
		50	RB	1732.5	20175	22.94	23.5	0-1
10			ı	1750	20350	22.87	23.5	0-1
				1715	20000	22.79	23.5	0-1
			0	1732.5	20175	22.94	23.5	0-1
				1750	20350	23.03	23.5	0-1
		1 DD	0.5	1715	20000	23.00	23.5	0-1
		1 RB	25	1732.5	20175	22.76	23.5	0-1
				1750	20350	22.70	23.5	0-1
			49	1715 1732.5	20000 20175	22.96 23.32	23.5 23.5	0-1 0-1
			49	1752.5	20175	22.62	23.5	0-1
				1730	20000	21.84	22.5	0-1
	16-QAM		0	1713	20175	21.96		0-2
	10 QAW			1752.5	20350	21.93	22.5 22.5	0-2
				1730	20000	21.89	22.5	0-2
		25 RB	12	1713	20175	21.89	22.5	0-2
		20110	12	1752.5	20175	21.09	22.5	0-2
				1730	20000	21.87	22.5	0-2
			25	1732.5	20175	21.99	22.5	0-2
				1752.5	20350	21.85	22.5	0-2
				1715	20000	21.82	22.5	0-2
		50	RB	1732.5	20175	22.02	22.5	0-2
				1750	20350	21.90	22.5	0-2
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				FDD Band 4				
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
				1712.5	19975	23.69	24.5	0
			0	1732.5	20175	23.87	24.5	0
	h.			1752.5	20375	23.76	24.5	0
				1712.5	19975	23.77	24.5	0
		1 RB	12	1732.5	20175	23.96	24.5	0
				1752.5	20375	23.77	24.5	0
				1712.5	19975	23.73	24.5	0
			24	1732.5	20175	23.79	24.5	0
				1752.5	20375	23.63	24.5	0
				1712.5	19975	22.76	23.5	0-1
	QPSK		0	1732.5	20175	22.96	23.5	0-1
				1752.5	20375	22.92	23.5	0-1
				1712.5	19975	22.79	23.5	0-1
		12 RB	6	1732.5	20175	22.98	23.5	0-1
				1752.5	20375	22.89	23.5	0-1
				1712.5	19975	22.79	23.5	0-1
			13	1732.5	20175	22.95	23.5	0-1
				1752.5	20375	22.88	23.5	0-1
				1712.5	19975	22.76	23.5	0-1
		25	RB	1732.5	20175	22.91	23.5	0-1
5				1752.5	20375	22.85	23.5	0-1
J				1712.5	19975	23.15	23.5	0-1
			0	1732.5	20175	22.80	23.5	0-1
				1752.5	20375	23.01	23.5	0-1
				1712.5	19975	22.77	23.5	0-1
		1 RB	12	1732.5	20175	23.34	23.5	0-1
				1752.5	20375	22.70	23.5	0-1
				1712.5	19975	22.82	23.5	0-1
	1		24	1732.5	20175	22.86	23.5	0-1
				1752.5	20375	22.82	23.5	0-1
				1712.5	19975	21.83	22.5	0-2
	16-QAM		0	1732.5	20175	22.04	22.5	0-2
				1752.5	20375	21.92	22.5	0-2
				1712.5	19975	21.80	22.5	0-2
		12 RB	6	1732.5	20175	22.03	22.5	0-2
				1752.5	20375	21.90	22.5	0-2
				1712.5	19975	21.81	22.5	0-2
			13	1732.5	20175	21.94	22.5	0-2
				1752.5	20375	21.91	22.5	0-2
				1712.5	19975	21.76	22.5	0-2
		25	RB	1732.5	20175	21.94	22.5	0-2
				1752.5	20375	21.89	22.5	0-2

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				FDD Band 4				
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
				1711.5	19965	23.53	24.5	0
			0	1732.5	20175	23.72	24.5	0
				1753.5	20385	23.68	24.5	0
				1711.5	19965	23.75	24.5	0
		1 RB	7	1732.5	20175	23.86	24.5	0
				1753.5	20385	23.70	24.5	0
			14	1711.5	19965	23.63	24.5	0
				1732.5	20175	23.76	24.5	0
				1753.5	20385	23.70	24.5	0
				1711.5	19965	22.74	23.5	0-1
	QPSK		0	1732.5	20175	22.95	23.5	0-1
				1753.5	20385	22.89	23.5	0-1
				1711.5	19965	22.74	23.5	0-1
		8 RB	4	1732.5	20175	22.90	23.5	0-1
				1753.5	20385	22.87	23.5	0-1
				1711.5	19965	22.81	23.5	0-1
			7	1732.5	20175	22.95	23.5	0-1
				1753.5	20385	22.84	23.5	0-1
				1711.5	19965	22.74	23.5	0-1
		15	RB	1732.5	20175	22.93	23.5	0-1
3				1753.5	20385	22.84	23.5	0-1
J				1711.5	19965	23.12	23.5	0-1
			0	1732.5	20175	22.75	23.5	0-1
				1753.5	20385	22.83	23.5	0-1
				1711.5	19965	22.81	23.5	0-1
		1 RB	7	1732.5	20175	23.27	23.5	0-1
				1753.5	20385	22.94	23.5	0-1
				1711.5	19965	22.94	23.5	0-1
	1		14	1732.5	20175	22.86	23.5	0-1
				1753.5	20385	22.79	23.5	0-1
				1711.5	19965	21.85	22.5	0-2
	16-QAM		0	1732.5	20175	21.97	22.5	0-2
				1753.5	20385	21.96	22.5	0-2
				1711.5	19965	21.81	22.5	0-2
		8 RB	4	1732.5	20175	22.02	22.5	0-2
				1753.5	20385	21.79	22.5	0-2
				1711.5	19965	21.86	22.5	0-2
			7	1732.5	20175	21.99	22.5	0-2
				1753.5	20385	21.90	22.5	0-2
				1711.5	19965	21.79	22.5	0-2
		15	RB	1732.5	20175	21.97	22.5	0-2
				1753.5	20385	21.87	22.5	0-2

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				FDD Band 4				
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
				1710.7	19957	23.60	24.5	0
			0	1732.5	20175	23.78	24.5	0
				1754.3	20393	23.78	24.5	0
				1710.7	19957	23.66	24.5	0
		1 RB	2	1732.5	20175	23.89	24.5	0
				1754.3	20393	23.77	24.5	0
				1710.7	19957	23.65	24.5	0
			5	1732.5	20175	23.84	24.5	0
				1754.3	20393	23.73	24.5	0
			0	1710.7	19957	23.75	24.5	0
	QPSK			1732.5	20175	23.87	24.5	0
				1754.3	20393	23.84	24.5	0
				1710.7	19957	23.66	24.5	0
		3 RB	2	1732.5	20175	23.92	24.5	0
				1754.3	20393	23.81	24.5	0
				1710.7	19957	23.74	24.5	0
			3	1732.5	20175	23.91	24.5	0
				1754.3	20393	23.80	24.5	0
	_		-	1710.7	19957	22.71	23.5	0-1
		6F	RB	1732.5	20175	22.91	23.5	0-1
1.4				1754.3	20393	22.82	23.5	0-1
1.4				1710.7	19957	22.77	23.5	0-1
			0	1732.5	20175	23.25	23.5	0-1
				1754.3	20393	23.19	23.5	0-1
				1710.7	19957	22.95	23.5	0-1
		1 RB	2	1732.5	20175	23.11	23.5	0-1
				1754.3	20393	23.02	23.5	0-1
			3	1710.7	19957	22.77	23.5	0-1
	1		5	1732.5	20175	23.26	23.5	0-1
				1754.3	20393	23.24	23.5	0-1
				1710.7	19957	22.75	23.5	0-1
	16-QAM		0	1732.5	20175	22.94	23.5	0-1
				1754.3	20393	22.73	23.5	0-1
				1710.7	19957	22.75	23.5	0-1
		3 RB	2	1732.5	20175	22.80	23.5	0-1
				1754.3	20393	22.67	23.5	0-1
				1710.7	19957	22.69	23.5	0-1
			3	1732.5	20175	22.88	23.5	0-1
				1754.3	20393	22.69	23.5	0-1
				1710.7	19957	21.71	22.5	0-2
		6F	RB	1732.5	20175	21.95	22.5	0-2
				1754.3	20393	21.83	22.5	0-2

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					EDD D 1-				
BW(Mhz) Modulation RB Size RB Offset Frequency (MHz) Channel Conducted power (dBm) Max. Tolerance (dBm) GSPP(dE dBm) GSPP		1		1	FDD Band 5				1
0 836.5 20525 22.24 22.5 0 844 20600 22.35 22.5 0 829 20450 22.27 22.5 0 829 20450 22.27 22.5 0 829 20450 22.27 22.5 0 829 20450 22.27 22.5 0 829 20450 22.26 22.5 0 829 20450 22.26 22.5 0 829 20450 22.26 22.5 0 829 20450 21.25 21.5 0-1 829 20450 21.25 21.5 0-1 829 20450 21.25 21.5 0-1 829 20450 21.25 21.5 0-1 829 20450 21.27 21.5 0-1 829 20450 21.27 21.5 0-1 829 20450 21.27 21.5 0-1 829 20450 21.27 21.5 0-1 829 20450 21.27 21.5 0-1 829 20450 21.30 21.5 0-1 829 20450 21.30 21.5 0-1 829 20450 21.30 21.5 0-1 829 20450 21.31 21.5 0-1 829 20450 21.31 21.5 0-1 829 20450 21.31 21.5 0-1 829 20450 21.27 21.5 0-1 844 20600 21.30 21.5 0-1 829 20450 21.27 21.5 0-1 844 20600 21.30 21.5 0-1 829 20450 21.27 21.5 0-1 844 20600 21.30 21.5 0-1 829 20450 21.37 21.5 0-1 829 20450 21.37 21.5 0-1 829 20450 21.37 21.5 0-1 829 20450 21.37 21.5 0-1 844 20600 21.30 21.5 0-1 844 20600 21.41 21.5 0-1 844 20600 21.41 21.5 0-1 844 20600 21.41 21.5 0-1 844 20600 21.41 21.5 0-1 844 20600 21.41 21.5 0-1 844 20600 21.41 21.5 0-1 844 20600 21.41 21.5 0-1 844 20600 21.41 21.5 0-1 849 836.5 20525 21.34 21.5 0-1 849 836.5 20525 21.34 21.5 0-1 849 836.5 20525 21.31 21.5 0-1 849 836.5 20525 21.31 21.5 0-1 849 836.5 20525 21.31 21.5 0-1 849 836.5 20525 20.38 20.5 0-2 829 20450 20.37 20.5 0-2 829 20450 20.37 20.5 0-2 829 20450 20.37 20.5 0-2	BW(Mhz)	Modulation	RB Size	RB Offset		Channel		Power + Max. Tolerance	MPR Allowed per 3GPP(dB)
APSK 1 RB 25 844 20600 22.35 22.5 0 829 20450 22.27 22.5 0 844 20600 22.27 22.5 0 844 20600 22.27 22.5 0 844 20600 22.27 22.5 0 844 20600 22.27 22.5 0 829 20450 22.26 22.5 0 844 20600 22.16 22.5 0 829 20450 21.25 21.5 0-1 829 20450 21.25 21.5 0-1 829 20450 21.25 21.5 0-1 829 20450 21.27 21.5 0-1 829 20450 21.27 21.5 0-1 829 20450 21.27 21.5 0-1 829 20450 21.27 21.5 0-1 844 20600 21.30 21.5 0-1 844 20600 21.30 21.5 0-1 844 20600 21.25 21.31 21.5 0-1 844 20600 21.25 21.5 0-1 844 20600 21.25 21.5 0-1 844 20600 21.25 21.5 0-1 844 20600 21.25 21.5 0-1 844 20600 21.25 21.5 0-1 844 20600 21.25 21.5 0-1 844 20600 21.25 21.5 0-1 844 20600 21.25 21.5 0-1 844 20600 21.27 21.5 0-1 844 20600 21.27 21.5 0-1 844 20600 21.27 21.5 0-1 844 20600 21.27 21.5 0-1 844 20600 21.27 21.5 0-1 844 20600 21.27 21.5 0-1 844 20600 21.27 21.5 0-1 844 20600 21.27 21.5 0-1 844 20600 21.27 21.5 0-1 844 20600 21.27 21.5 0-1 844 20600 21.27 21.5 0-1 844 20600 21.27 21.5 0-1 844 20600 21.41 21.5 0-1 844 20600 21.41 21.5 0-1 844 20600 21.41 21.5 0-1 844 20600 21.41 21.5 0-1 844 20600 21.41 21.5 0-1 844 20600 21.41 21.5 0-1 844 20600 21.41 21.5 0-1 844 20600 21.41 21.5 0-1 844 20600 21.41 21.5 0-1 844 20600 21.41 21.5 0-1 844 20600 21.41 21.5 0-1 844 20600 21.41 21.5 0-1 844 20600 21.51 0-1 844 20600 21.51 0-1 844 20600 21.51 0-1 849 836.5 20525 21.31 21.5 0-1 844 20600 21.51 0-1 849 836.5 20525 21.31 21.5 0-1 844 20600 20.32 20.5 0-2 844 20600 20.37 20.5 0-2 844 20600 20.37 20.5 0-2 844 20600 20.31 20.5 0-2					829	20450	22.18	22.5	0
APSK REPRESENT NAME 1 RB				0	836.5	20525	22.24	22.5	0
1 RB 25 836.5 20525 22.27 22.5 0 844 20600 22.27 22.5 0 836.5 20525 22.17 22.5 0 836.5 20525 22.17 22.5 0 844 20600 22.16 22.5 0 844 20600 22.16 22.5 0 844 20600 21.26 22.5 0 829 20450 21.25 21.5 0-1 844 20600 21.29 21.5 0-1 829 20450 21.27 21.5 0-1 829 20450 21.27 21.5 0-1 829 20450 21.27 21.5 0-1 829 20450 21.27 21.5 0-1 829 20450 21.31 21.5 0-1 829 20450 21.31 21.5 0-1 829 20450 21.31 21.5 0-1 829 20450 21.31 21.5 0-1 829 20450 21.31 21.5 0-1 844 20600 21.30 21.5 0-1 844 20600 21.30 21.5 0-1 844 20600 21.30 21.5 0-1 844 20600 21.30 21.5 0-1 844 20600 21.30 21.5 0-1 844 20600 21.30 21.5 0-1 844 20600 21.30 21.5 0-1 844 20600 21.41 21.5 0-1 829 20450 21.37 21.5 0-1 829 20450 21.37 21.5 0-1 829 20450 21.37 21.5 0-1 829 20450 21.37 21.5 0-1 829 20450 21.37 21.5 0-1 829 20450 21.37 21.5 0-1 829 20450 21.37 21.5 0-1 829 20450 21.37 21.5 0-1 829 20450 21.37 21.5 0-1 829 20450 21.31 21.5 0-1 829 20450 21.31 21.5 0-1 829 20450 21.31 21.5 0-1 829 20450 21.32 21.5 0-1 829 20450 21.31 21.5 0-1 829 20450 21.31 21.5 0-1 829 20450 21.32 21.5 0-1 829 20450 21.32 21.5 0-1 829 20450 21.32 21.5 0-1 829 20450 21.32 21.5 0-1 829 20450 21.32 21.5 0-1 829 20450 21.32 21.5 0-1 829 20450 21.32 21.5 0-1 829 20450 21.32 21.5 0-1 829 20450 21.32 21.5 0-1 829 20450 21.32 21.5 0-1 829 20450 20.32 20.5 0-2 844 20600 21.41 21.5 0-1 829 20450 20.32 20.5 0-2 844 20600 20.27 20.5 0-2 849 836.5 20525 20.38 20.5 0-2 849 829 20450 20.31 20.5 0-2		0			844	20600	22.35	22.5	0
APSK QPSK					829	20450	22.27	22.5	0
A9 829 20450 22.26 22.5 0 836.5 20525 22.17 22.5 0 844 20600 22.16 22.5 0 829 20450 21.25 21.5 0-1 829 20450 21.25 21.5 0-1 844 20600 21.29 21.5 0-1 829 20450 21.27 21.5 0-1 829 20450 21.27 21.5 0-1 829 20450 21.27 21.5 0-1 829 20450 21.31 21.5 0-1 844 20600 21.30 21.5 0-1 829 20450 21.31 21.5 0-1 25 836.5 20525 21.31 21.5 0-1 829 20450 21.27 21.5 0-1 829 20450 21.27 21.5 0-1 829 20450 21.30 21.5 0-1 829 20450 21.27 21.5 0-1 829 20450 21.27 21.5 0-1 829 20450 21.27 21.5 0-1 829 20450 21.27 21.5 0-1 844 20600 21.30 21.5 0-1 844 20600 21.30 21.5 0-1 844 20600 21.30 21.5 0-1 844 20600 21.30 21.5 0-1 844 20600 21.41 21.5 0-1 844 20600 21.41 21.5 0-1 829 20450 21.42 21.5 0-1 844 20600 21.41 21.5 0-1 829 20450 21.41 21.5 0-1 829 20450 21.47 21.5 0-1 844 20600 21.41 21.5 0-1 829 20450 21.47 21.5 0-1 844 20600 21.41 21.5 0-1 844 20600 21.41 21.5 0-1 844 20600 21.41 21.5 0-1 844 20600 21.41 21.5 0-1 844 20600 21.41 21.5 0-1 844 20600 21.41 21.5 0-1 844 20600 21.41 21.5 0-1 844 20600 21.41 21.5 0-1 844 20600 21.50 21.51 0-1 844 20600 21.50 21.51 0-1 844 20600 21.50 21.50 0-1 844 20600 21.50 21.50 0-1 844 20600 21.50 21.50 0-1 844 20600 21.50 21.50 0-1 844 20600 21.50 21.50 0-1 844 20600 21.50 21.50 0-1 844 20600 21.50 21.50 0-1 844 20600 21.50 21.50 0-1 844 20600 21.50 21.50 0-1 844 20600 21.50 21.50 0-1 844 20600 21.50 21.50 0-1 844 20600 21.50 21.50 0-1 844 20600 20.27 20.5 0-2 844 20600 20.27 20.5 0-2 844 20600 20.27 20.5 0-2			1 RB	25	836.5	20525	22.27	22.5	0
OPSK OPSK 0 836.5 20525 22.17 22.5 0 844 20600 22.16 22.5 0 829 20450 21.25 21.5 0-1 836.5 20525 21.34 21.5 0-1 829 20450 21.27 21.5 0-1 829 20450 21.27 21.5 0-1 829 20450 21.27 21.5 0-1 829 20450 21.27 21.5 0-1 829 20450 21.30 21.5 0-1 829 20450 21.31 21.5 0-1 829 20450 21.31 21.5 0-1 829 20450 21.31 21.5 0-1 829 20450 21.31 21.5 0-1 829 20450 21.31 21.5 0-1 844 20600 21.30 21.5 0-1 829 20450 21.27 21.5 0-1 829 20450 21.27 21.5 0-1 829 20450 21.27 21.5 0-1 844 20600 21.30 21.5 0-1 844 20600 21.30 21.5 0-1 844 20600 21.30 21.5 0-1 844 20600 21.31 21.5 0-1 844 20600 21.41 21.5 0-1 844 20600 21.50 21.50 0-1 844 20600 21.50 21.50 0-1 844 20600 21.50 21.50 0-1 844 20600 20.27 20.5 0-2 829 20450 20.31 20.5 0-2					844	20600	22.27	22.5	0
QPSK QPSK 0 836.5 20525 21.34 21.5 0-1 829 20450 21.25 21.5 0-1 844 20600 21.29 21.5 0-1 829 20450 21.29 21.5 0-1 829 20450 21.29 21.5 0-1 829 20450 21.30 21.5 0-1 829 20450 21.31 21.5 0-1 844 20600 21.30 21.5 0-1 829 20450 21.31 21.5 0-1 829 20450 21.31 21.5 0-1 829 20450 21.31 21.5 0-1 829 20450 21.31 21.5 0-1 829 20450 21.32 21.5 0-1 829 20450 21.31 21.5 0-1 829 20450 21.36 21.5 0-1 829 20450 21.36 21.5 0-1 829 20450 21.36 21.5 0-1 844 20600 21.30 21.5 0-1 844 20600 21.30 21.5 0-1 829 20450 21.36 21.5 0-1 844 20600 21.41 21.5 0-1 829 20450 21.36 21.5 0-1 829 20450 21.36 21.5 0-1 829 20450 21.36 21.5 0-1 829 20450 21.36 21.5 0-1 829 20450 21.36 21.5 0-1 829 20450 21.22 21.5 0-1 829 20450 21.22 21.5 0-1 829 20450 21.22 21.5 0-1 829 20450 21.22 21.5 0-1 829 20450 21.22 21.5 0-1 829 20450 21.22 21.5 0-1 829 20450 21.22 21.5 0-1 829 20450 21.22 21.5 0-1 829 20450 21.22 21.5 0-1 829 20450 21.22 20.5 0-2 829 20450 20.32 20.5 0-2 829 20450 20.32 20.5 0-2 829 20450 20.31 20.5 0-2					829	20450	22.26	22.5	0
QPSK 0 829 20450 21.25 21.34 21.5 0-1 844 20600 21.29 21.5 0-1 829 20450 21.27 21.5 0-1 829 20450 21.27 21.5 0-1 829 20450 21.27 21.5 0-1 829 20450 21.27 21.5 0-1 829 20450 21.31 21.5 0-1 829 20450 21.31 21.5 0-1 829 20450 21.31 21.5 0-1 829 20450 21.31 21.5 0-1 829 20450 21.31 21.5 0-1 829 20450 21.31 21.5 0-1 829 20450 21.27 21.5 0-1 829 20450 21.27 21.5 0-1 829 20450 21.27 21.5 0-1 829 20450 21.30 21.5 0-1 829 20450 21.30 21.5 0-1 829 20450 21.30 21.5 0-1 829 20450 21.41 21.5 0-1 836.5 20525 21.42 21.5 0-1 844 20600 21.41 21.5 0-1 849 869 20450 20.32 20.5 0-2 829 20450 20.32 20.5 0-2 829 20450 20.31 20.5 0-2				49	836.5	20525	22.17	22.5	0
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				FDD Band 5				
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
				826.5	20425	22.17	22.5	0
			0	836.5	20525	22.26	22.5	0
	ė.			846.5	20625	22.17	22.5	0
				826.5	20425	22.17	22.5	0
		1 RB	12	836.5	20525	22.35	22.5	0
				846.5	20625	22.19	22.5	0
				826.5	20425	22.07	22.5	0
			24	836.5	20525	22.24	22.5	0
				846.5	20625	22.16	22.5	0
				826.5	20425	21.29	21.5	0-1
	QPSK		0	836.5	20525	21.35	21.5	0-1
				846.5	20625	21.30	21.5	0-1
				826.5	20425	21.28	21.5	0-1
		12 RB	6	836.5	20525	21.32	21.5	0-1
				846.5	20625	21.28	21.5	0-1
				826.5	20425	21.24	21.5	0-1
			13	836.5	20525	21.33	21.5	0-1
				846.5	20625	21.26	21.5	0-1
				826.5	20425	21.22	21.5	0-1
		25	RB	836.5	20525	21.29	21.5	0-1
5				846.5	20625	21.24	21.5	0-1
				826.5	20425	21.26	21.5	0-1
			0	836.5	20525	21.44	21.5	0-1
				846.5	20625	21.29	21.5	0-1
				826.5	20425	21.13	21.5	0-1
		1 RB	12	836.5	20525	21.31	21.5	0-1
				846.5	20625	21.12	21.5	0-1
				826.5	20425	21.45	21.5	0-1
	1		24	836.5	20525	21.47	21.5	0-1
				846.5	20625	21.30	21.5	0-1
				826.5	20425	20.36	20.5	0-2
	16-QAM		0	836.5	20525	20.33	20.5	0-2
				846.5	20625	20.33	20.5	0-2
		10.55		826.5	20425	20.30	20.5	0-2
		12 RB	6	836.5	20525	20.37	20.5	0-2
				846.5	20625	20.23	20.5	0-2
			4.0	826.5	20425	20.32	20.5	0-2
			13	836.5	20525	20.36	20.5	0-2
				846.5	20625	20.27	20.5	0-2
			DD	826.5	20425	20.28	20.5	0-2
		25	RB	836.5	20525	20.28	20.5	0-2
			846.5	20625	20.22	20.5	0-2	

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				FDD Band 5				
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
				825.5	20415	22.09	22.5	0
			0	836.5	20525	22.22	22.5	0
	•			847.5	20635	22.09	22.5	0
				825.5	20415	22.30	22.5	0
		1 RB	7	836.5	20525	22.17	22.5	0
				847.5	20635	22.10	22.5	0
				825.5	20415	22.09	22.5	0
			14	836.5	20525	22.09	22.5	0
				847.5	20635	22.13	22.5	0
				825.5	20415	21.27	21.5	0-1
	QPSK		0	836.5	20525	21.29	21.5	0-1
				847.5	20635	21.24	21.5	0-1
				825.5	20415	21.23	21.5	0-1
		8 RB	4	836.5	20525	21.28	21.5	0-1
				847.5	20635	21.24	21.5	0-1
				825.5	20415	21.27	21.5	0-1
			7	836.5	20525	21.30	21.5	0-1
				847.5	20635	21.23	21.5	0-1
				825.5	20415	21.26	21.5	0-1
		15	RB	836.5	20525	21.26	21.5	0-1
3				847.5	20635	21.21	21.5	0-1
9				825.5	20415	21.28	21.5	0-1
			0	836.5	20525	21.48	21.5	0-1
				847.5	20635	21.09	21.5	0-1
				825.5	20415	21.37	21.5	0-1
		1 RB	7	836.5	20525	21.18	21.5	0-1
				847.5	20635	21.34	21.5	0-1
				825.5	20415	21.30	21.5	0-1
	1		14	836.5	20525	21.36	21.5	0-1
				847.5	20635	21.45	21.5	0-1
				825.5	20415	20.36	20.5	0-2
	16-QAM		0	836.5	20525	20.37	20.5	0-2
				847.5	20635	20.36	20.5	0-2
				825.5	20415	20.36	20.5	0-2
		8 RB	4	836.5	20525	20.31	20.5	0-2
				847.5	20635	20.25	20.5	0-2
				825.5	20415	20.23	20.5	0-2
			7	836.5	20525	20.27	20.5	0-2
				847.5	20635	20.30	20.5	0-2
				825.5	20415	20.31	20.5	0-2
		15	RB	836.5	20525	20.28	20.5	0-2
				847.5	20635	20.14	20.5	0-2

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				FDD Band 5				
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
				824.7	20407	22.22	22.5	0
			0	836.5	20525	22.19	22.5	0
				848.3	20643	22.10	22.5	0
				824.7	20407	22.25	22.5	0
		1 RB	2	836.5	20525	22.28	22.5	0
				848.3	20643	22.49	22.5	0
				824.7	20407	22.13	22.5	0
			5	836.5	20525	22.16	22.5	0
				848.3	20643	22.11	22.5	0
				824.7	20407	22.27	22.5	0
	QPSK		0	836.5	20525	22.47	22.5	0
				848.3	20643	22.22	22.5	0
		3 RB	2	824.7	20407	22.25	22.5	0
				836.5	20525	22.23	22.5	0
				848.3	20643	22.17	22.5	0
				824.7	20407	22.23	22.5	0
			3	836.5	20525	22.28	22.5	0
				848.3	20643	22.26	22.5	0
				824.7	20407	21.26	21.5	0-1
		6F	RB	836.5	20525	21.22	21.5	0-1
1.4				848.3	20643	21.19	21.5	0-1
1.4		1 RB		824.7	20407	21.42	21.5	0-1
			0	836.5	20525	21.45	21.5	0-1
				848.3	20643	21.05	21.5	0-1
			2	824.7	20407	21.37	21.5	0-1
				836.5	20525	21.24	21.5	0-1
				848.3	20643	21.42	21.5	0-1
				824.7	20407	21.16	21.5	0-1
	1		5	836.5	20525	21.40	21.5	0-1
				848.3	20643	21.33	21.5	0-1
				824.7	20407	21.26	21.5	0-1
	16-QAM		0	836.5	20525	21.31	21.5	0-1
				848.3	20643	21.31	21.5	0-1
				824.7	20407	21.20	21.5	0-1
		3 RB	2	836.5	20525	21.40	21.5	0-1
				848.3	20643	20.89	21.5	0-1
				824.7	20407	21.28	21.5	0-1
			3	836.5	20525	21.19	21.5	0-1
				848.3	20643	21.20	21.5	0-1
				824.7	20407	20.43	20.5	0-2
		6F	RB	836.5	20525	20.43	20.5	0-2
				848.3	20643	19.77	20.5	0-2

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				FDD Band 7				
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
				2510	20850	21.61	22.5	0
			0	2535	21100	21.63	22.5	0
	Α			2560	21350	21.46	22.5	0
				2510	20850	21.50	22.5	0
		1 RB	50	2535	21100	21.46	22.5	0
				2560	21350	21.22	22.5	0
				2510	20850	21.58	22.5	0
			99	2535	21100	21.44	22.5	0
				2560	21350	21.34	22.5	0
				2510	20850	20.68	21.5	0-1
	QPSK		0	2535	21100	20.57	21.5	0-1
				2560	21350	20.40	21.5	0-1
		\		2510	20850	20.62	21.5	0-1
		50 RB	25	2535	21100	20.52	21.5	0-1
				2560	21350	20.32	21.5	0-1
				2510	20850	20.62	21.5	0-1
			50	2535	21100	20.54	21.5	0-1
				2560	21350	20.37	21.5	0-1
				2510	20850	20.63	21.5	0-1
		100)RB	2535	21100	20.54	21.5	0-1
20			1	2560	21350	20.34	21.5	0-1
			0	2510	20850	21.00	21.5	0-1
			0	2535	21100	20.96	21.5	0-1
				2560	21350 20850	20.62	21.5	0-1
		1 RB	50	2510		20.69	21.5	0-1 0-1
		IND	50	2535 2560	21100 21350	20.58 20.41	21.5 21.5	0-1
				2510	20850	20.41	21.5	0-1
	\		99	2535	21100	20.76	21.5	0-1
			00	2560	21350	20.44	21.5	0-1
				2510	20850	19.68	20.5	0-2
	16-QAM		0	2535	21100	19.56	20.5	0-2
				2560	21350	19.34	20.5	0-2
				2510	20850	19.67	20.5	0-2
		50 RB	25	2535	21100	19.47	20.5	0-2
				2560	21350	19.36	20.5	0-2
				2510	20850	19.61	20.5	0-2
			50	2535	21100	19.61	20.5	0-2
				2560	21350	19.28	20.5	0-2
			-	2510	20850	19.65	20.5	0-2
		100)RB	2535	21100	19.54	20.5	0-2
				2560	21350	19.34	20.5	0-2

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				FDD Band 7				
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
				2507.5	20825	21.69	22.5	0
			0	2535	21100	21.52	22.5	0
				2562.5	21375	21.31	22.5	0
				2507.5	20825	21.59	22.5	0
		1 RB	36	2535	21100	21.41	22.5	0
				2562.5	21375	21.23	22.5	0
				2507.5	20825	21.50	22.5	0
			74	2535	21100	21.55	22.5	0
				2562.5	21375	21.28	22.5	0
				2507.5	20825	20.67	21.5	0-1
	QPSK		0	2535	21100	20.57	21.5	0-1
				2562.5	21375	20.38	21.5	0-1
				2507.5	20825	20.67	21.5	0-1
		36 RB	18	2535	21100	20.61	21.5	0-1
				2562.5	21375	20.34	21.5	0-1
				2507.5	20825	20.65	21.5	0-1
	\		37	2535	21100	20.54	21.5	0-1
				2562.5	21375	20.36	21.5	0-1
		7.5	D D	2507.5	20825	20.67	21.5	0-1
		/5	RB	2535	21100	20.53	21.5	0-1
15			1	2562.5	21375	20.39	21.5	0-1
			0	2507.5	20825	20.54	21.5	0-1
			0	2535	21100	20.42	21.5	0-1
				2562.5 2507.5	21375 20825	20.77 20.63	21.5 21.5	0-1 0-1
		1 RB	36	2535	21100	20.63	21.5	0-1
		I ND	30	2562.5	21375	20.61	21.5	0-1
				2502.5	20825	20.41	21.5	0-1
			74	2535	21100	20.86	21.5	0-1
			, ,	2562.5	21375	20.72	21.5	0-1
				2507.5	20825	19.73	20.5	0-2
	16-QAM		0	2535	21100	19.58	20.5	0-2
				2562.5	21375	19.34	20.5	0-2
				2507.5	20825	19.70	20.5	0-2
		36 RB	18	2535	21100	19.62	20.5	0-2
	1			2562.5	21375	19.31	20.5	0-2
				2507.5	20825	19.67	20.5	0-2
	1		37	2535	21100	19.54	20.5	0-2
				2562.5	21375	19.29	20.5	0-2
				2507.5	20825	19.68	20.5	0-2
		75	RB	2535	21100	19.56	20.5	0-2
				2562.5	21375	19.37	20.5	0-2

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				FDD Band 7				
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
				2505	20800	21.69	22.5	0
			0	2535	21100	21.43	22.5	0
	Α			2565	21400	21.21	22.5	0
				2505	20800	21.58	22.5	0
		1 RB	25	2535	21100	21.36	22.5	0
				2565	21400	21.18	22.5	0
				2505	20800	21.61	22.5	0
			49	2535	21100	21.42	22.5	0
				2565	21400	21.29	22.5	0
				2505	20800	20.64	21.5	0-1
	QPSK		0	2535	21100	20.51	21.5	0-1
				2565	21400	20.32	21.5	0-1
		25 RB	12	2505	20800	20.64	21.5	0-1
				2535	21100	20.47	21.5	0-1
				2565	21400	20.31	21.5	0-1
				2505	20800	20.66	21.5	0-1
			25	2535	21100	20.51	21.5	0-1
				2565	21400	20.31	21.5	0-1
		50	DD.	2505	20800	20.66	21.5	0-1
		50	RB	2535	21100	20.54	21.5	0-1
10			1	2565	21400	20.34	21.5	0-1
		0	2505	20800	20.52	21.5	0-1	
			0	2535	21100	20.50	21.5	0-1
				2565	21400 20800	20.46 20.72	21.5	0-1
		1 RB	25	2505 2535	21100	20.72	21.5 21.5	0-1 0-1
		I ND	23	2565	21400	20.93	21.5	0-1
				2505	20800	20.69	21.5	0-1
	\		49	2535	21100	20.72	21.5	0-1
			.0	2565	21400	20.58	21.5	0-1
				2505	20800	19.66	20.5	0-2
	16-QAM		0	2535	21100	19.44	20.5	0-2
				2565	21400	19.29	20.5	0-2
				2505	20800	19.68	20.5	0-2
		25 RB	12	2535	21100	19.48	20.5	0-2
		20113		2565	21400	19.27	20.5	0-2
			25	2505	20800	19.65	20.5	0-2
				2535	21100	19.52	20.5	0-2
				2565	21400	19.23	20.5	0-2
			-	2505	20800	19.69	20.5	0-2
		50	RB	2535	21100	19.55	20.5	0-2
				2565	21400	19.26	20.5	0-2

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				FDD Band 7				
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
				2502.5	20775	21.68	22.5	0
			0	2535	21100	21.40	22.5	0
	Α			2567.5	21425	21.29	22.5	0
				2502.5	20775	21.52	22.5	0
		1 RB	12	2535	21100	21.36	22.5	0
				2567.5	21425	21.26	22.5	0
				2502.5	20775	21.64	22.5	0
			24	2535	21100	21.46	22.5	0
				2567.5	21425	21.11	22.5	0
				2502.5	20775	20.71	21.5	0-1
	QPSK		0	2535	21100	20.56	21.5	0-1
				2567.5	21425	20.33	21.5	0-1
				2502.5	20775	20.70	21.5	0-1
		12 RB	6	2535	21100	20.55	21.5	0-1
				2567.5	21425	20.33	21.5	0-1
				2502.5	20775	20.68	21.5	0-1
			13	2535	21100	20.50	21.5	0-1
				2567.5	21425	20.33	21.5	0-1
				2502.5	20775	20.67	21.5	0-1
		25	RB	2535	21100	20.46	21.5	0-1
5				2567.5	21425	20.30	21.5	0-1
3				2502.5	20775	21.03	21.5	0-1
			0	2535	21100	20.84	21.5	0-1
				2567.5	21425	20.78	21.5	0-1
				2502.5	20775	21.04	21.5	0-1
		1 RB	12	2535	21100	20.79	21.5	0-1
				2567.5	21425	20.48	21.5	0-1
				2502.5	20775	20.48	21.5	0-1
	1		24	2535	21100	20.30	21.5	0-1
				2567.5	21425	20.20	21.5	0-1
				2502.5	20775	19.74	20.5	0-2
	16-QAM		0	2535	21100	19.60	20.5	0-2
				2567.5	21425	19.30	20.5	0-2
				2502.5	20775	19.69	20.5	0-2
		12 RB	6	2535	21100	19.49	20.5	0-2
				2567.5	21425	19.32	20.5	0-2
				2502.5	20775	19.75	20.5	0-2
			13	2535	21100	19.55	20.5	0-2
				2567.5	21425	19.38	20.5	0-2
				2502.5	20775	19.68	20.5	0-2
		25	RB	2535 2567.5	21100	19.56	20.5	0-2
					21425	19.30	20.5	0-2

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				FDD Band 12				
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
				704	23060	22.42	23	0
			0	707.5	23095	22.25	23	0
	•			711	23130	22.38	23	0
				704	23060	22.45	23	0
		1 RB	25	707.5	23095	22.47	23	0
				711	23130	22.41	23	0
				704	23060	22.39	23	0
			49	707.5	23095	22.50	23	0
				711	23130	22.53	23	0
				704	23060	21.39	22	0-1
	QPSK		0	707.5	23095	21.43	22	0-1
				711	23130	21.45	22	0-1
				704	23060	21.42	22	0-1
		25 RB	12	707.5	23095	21.47	22	0-1
				711	23130	21.48	22	0-1
				704	23060	21.48	22	0-1
			25	707.5	23095	21.47	22	0-1
				711	23130	21.53	22	0-1
				704	23060	21.42	22	0-1
		50	RB	707.5	23095	21.48	22	0-1
10			1	711	23130	21.53	22	0-1
				704	23060	21.54	22	0-1
			0	707.5	23095	21.78	22	0-1
				711	23130	21.90	22	0-1
		1 DD	0.5	704	23060	21.65	22	0-1
		1 RB	25	707.5	23095	21.73	22	0-1
				711	23130	22.00	22	0-1
			49	704 707.5	23060 23095	22.00 21.76	22 22	0-1 0-1
			49	707.5	23130	21.76	22	0-1
				711	23060	20.40	21	0-1
	16-QAM		0	707.5			21	
	IO QAM			707.5	23095 23130	20.51 20.42	21	0-2 0-2
				711	23060	20.42	21	0-2
		25 RB	12	707.5	23095	20.43	21	0-2
		20110	12	707.5	23130	20.50	21	0-2
				711	23060	20.51	21	0-2
			25	707.5	23095	20.57	21	0-2
			25	707.3	23130	20.53	21	0-2
				704	23060	20.43	21	0-2
		50	RB	707.5	23095	20.45	21	0-2
		30	1	711	23130	20.49	21	0-2
				, , , ,	20100	20.70	-1	\ L

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				FDD Band 12				
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
				701.5	23035	22.25	23	0
			0	707.5	23095	22.42	23	0
	h.			713.5	23155	22.40	23	0
				701.5	23035	22.35	23	0
		1 RB	12	707.5	23095	22.44	23	0
				713.5	23155	22.45	23	0
				701.5	23035	22.24	23	0
			24	707.5	23095	22.40	23	0
				713.5	23155	22.46	23	0
				701.5	23035	21.43	22	0-1
	QPSK		0	707.5	23095	21.45	22	0-1
				713.5	23155	21.50	22	0-1
				701.5	23035	21.47	22	0-1
		12 RB	6	707.5	23095	21.50	22	0-1
				713.5	23155	21.54	22	0-1
				701.5	23035	21.45	22	0-1
			13	707.5	23095	21.56	22	0-1
				713.5	23155	21.63	22	0-1
				701.5	23035	21.39	22	0-1
		25	RB	707.5	23095	21.44	22	0-1
5				713.5	23155	21.49	22	0-1
Ŭ				701.5	23035	21.41	22	0-1
			0	707.5	23095	21.62	22	0-1
				713.5	23155	21.45	22	0-1
				701.5	23035	21.62	22	0-1
		1 RB	12	707.5	23095	21.54	22	0-1
				713.5	23155	21.93	22	0-1
				701.5	23035	21.91	22	0-1
	1		24	707.5	23095	21.62	22	0-1
				713.5	23155	22.00	22	0-1
				701.5	23035	20.45	21	0-2
	16-QAM		0	707.5	23095	20.48	21	0-2
				713.5	23155	20.44	21	0-2
				701.5	23035	20.39	21	0-2
		12 RB	6	707.5	23095	20.59	21	0-2
				713.5	23155	20.60	21	0-2
				701.5	23035	20.53	21	0-2
			13	707.5	23095	20.64	21	0-2
				713.5	23155	20.66	21	0-2
				701.5	23035	20.42	21	0-2
		25	RB	707.5	23095	20.49	21	0-2
				713.5	23155	20.48	21	0-2

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BW(Mhz) Modulation RB Size RB Offset Frequency (MHz) Channel Conducted power (dBm) Max. Tolerance (dBm) Allowed per 3GPP(dB (dBm) Tolerance (dBm) Tolera					500 D				
BW(Mhz) Modulation RB Size RB Offset Frequency (MHz) Channel Conducted power (dBm) Max. Tolerance (dBm) Allowed per GGPP(dBm) Max. Tolerance (dBm) GGPP(dBm) GGPP(FDD Band 12				
OPSK	BW(Mhz)	Modulation	RB Size	RB Offset		Channel		Power + Max. Tolerance	MPR Allowed per 3GPP(dB)
A PART OF THE PART					700.5	23025	22.32	23	0
A RB PR PROPERTY OF THE PROPER				0	707.5	23095	22.28	23	0
APSK OPSK 1 RB 7 707.5 23095 22.34 23 0 714.5 23165 22.44 23 0 700.5 23025 22.32 23 0 714.5 23165 22.40 23 0 714.5 23165 22.40 23 0 714.5 23165 22.40 23 0 700.5 23025 21.53 22 0-1 700.5 23025 21.53 22 0-1 714.5 23165 21.50 22 0-1 714.5 23165 21.50 22 0-1 714.5 23165 21.50 22 0-1 700.5 23025 21.44 22 0-1 714.5 23165 21.56 22 0-1 700.5 23025 21.48 22 0-1 700.5 23025 21.70 22 0-1 700.5 23025 21.70 22 0-1 714.5 23165 21.56 22 0-1 700.5 23025 21.38 22 0-1 714.5 23165 21.51 22 0-1 714.5 23165 21.51 22 0-1 714.5 23165 21.51 22 0-1 714.5 23165 21.54 22 0-1 714.5 23165 21.54 22 0-1 714.5 23165 21.54 22 0-1 714.5 23165 21.54 22 0-1 714.5 23165 21.54 22 0-1 714.5 23165 21.40 22 0-1 714.5 23165 21.78 22 0-1 714.5 23165 21.42 22 0-1 714.5 23165 21.44 22 0-1 714.5 23165 21.44 22 0-1 714.5 23165 21.44 22 0-1 714.5 23165 21.44 22 0-1 714.5 23165 21.44 22 0-1 714.5 23165 21.44 22 0-1 714.5 23165 21.88 22 0-1 714.5 23165 21.98 22 0-1		1			714.5	23165	22.41	23	0
14 714.5 23165 22.44 23 0					700.5	23025	22.39	23	0
APSK QPSK			1 RB	7	707.5	23095	22.34	23	0
APSK QPSK QPSK 0 707.5 23095 714.5 23165 22.40 23 0 700.5 23025 21.53 22 0-1 707.5 23095 21.44 22 0-1 714.5 23165 22.40 23 0 707.5 23095 21.44 22 0-1 714.5 23165 21.50 22 0-1 700.5 23025 21.45 22 0-1 700.5 23025 21.48 22 0-1 700.5 23095 21.48 22 0-1 700.5 23095 21.48 22 0-1 700.5 23095 21.49 22 0-1 700.5 23095 21.49 22 0-1 714.5 23165 21.51 22 0-1 714.5 23165 21.51 22 0-1 714.5 23165 21.54 22 0-1 707.5 23095 21.45 22 0-1 707.5 23095 21.45 22 0-1 714.5 23165 21.54 22 0-1 700.5 23025 21.85 22 0-1 700.5 23095 21.42 22 0-1 714.5 23165 21.78 22 0-1 714.5 23165 21.78 22 0-1 714.5 23165 21.78 22 0-1 714.5 23165 21.78 22 0-1 714.5 23165 21.78 22 0-1 714.5 23165 21.78 22 0-1 714.5 23165 21.78 22 0-1 714.5 23165 21.78 22 0-1 714.5 23165 21.76 22 0-1 714.5 23165 21.76 22 0-1 714.5 23165 21.98 22 0-1 714.5 23165 21.98 22 0-1 714.5 23165 21.98 22 0-1 714.5 23165 21.98 22 0-1 714.5 23165 20.50 21 0-2 714.5 23165 20.50 21 0-2 714.5 23165 20.50 21 0-2 714.5 23165 20.50 21 0-2 714.5 23165 20.50 21 0-2 714.5 23165 20.50 21 0-2					714.5	23165	22.44	23	0
QPSK QPSK 0 70.5 23025 21.53 22 0-1 700.5 23095 21.44 22 0-1 714.5 23165 21.50 22 0-1 700.5 23025 21.50 22 0-1 700.5 23025 21.48 22 0-1 700.5 23025 21.48 22 0-1 700.5 23025 21.48 22 0-1 700.5 23025 21.48 22 0-1 700.5 23025 21.49 22 0-1 700.5 23025 21.70 22 0-1 700.5 23025 21.70 22 0-1 700.5 23025 21.39 22 0-1 714.5 23165 21.51 22 0-1 700.5 23025 21.38 22 0-1 700.5 23025 21.38 22 0-1 15RB 0 707.5 23095 21.45 22 0-1 714.5 23165 21.54 22 0-1 714.5 23165 21.54 22 0-1 714.5 23165 21.54 22 0-1 714.5 23165 21.78 22 0-1 714.5 23165 21.78 22 0-1 714.5 23165 21.78 22 0-1 714.5 23165 21.42 22 0-1 714.5 23165 21.42 22 0-1 714.5 23165 21.44 22 0-1 714.5 23165 21.44 22 0-1 714.5 23165 21.44 22 0-1 714.5 23165 21.44 22 0-1 714.5 23165 21.44 22 0-1 714.5 23165 21.76 22 0-1 714.5 23165 21.98 22 0-1 714.5 23165 21.98 22 0-1 714.5 23165 21.98 22 0-1 714.5 23165 21.98 22 0-1 714.5 23165 21.98 22 0-1 714.5 23165 21.98 22 0-1 714.5 23165 21.98 22 0-1 714.5 23165 21.98 22 0-1 714.5 23165 20.50 21 0-2 714.5 23165 20.50 21 0-2 714.5 23165 20.50 21 0-2 714.5 23165 20.50 21 0-2 714.5 23165 20.50 21 0-2 714.5 23165 20.50 21 0-2 714.5 23165 20.51 21 0-2						23025	22.32		
QPSK 0 700.5 23025 21.53 22 0-1 707.5 23095 21.44 22 0-1 714.5 23165 21.50 22 0-1 700.5 23025 21.45 22 0-1 707.5 23095 21.48 22 0-1 707.5 23095 21.48 22 0-1 700.5 23025 21.56 22 0-1 700.5 23025 21.70 22 0-1 700.5 23025 21.70 22 0-1 700.5 23025 21.70 22 0-1 707.5 23095 21.49 22 0-1 714.5 23165 21.51 22 0-1 700.5 23025 21.38 22 0-1 714.5 23165 21.51 22 0-1 700.5 23025 21.38 22 0-1 714.5 23165 21.54 22 0-1 714.5 23165 21.54 22 0-1 714.5 23165 21.54 22 0-1 714.5 23165 21.54 22 0-1 714.5 23165 21.85 22 0-1 700.5 23025 21.85 22 0-1 714.5 23165 21.78 22 0-1 714.5 23165 21.78 22 0-1 714.5 23165 21.40 22 0-1 714.5 23165 21.40 22 0-1 714.5 23165 21.40 22 0-1 714.5 23165 21.76 22 0-1 714.5 23095 21.44 22 0-1 714.5 23165 21.76 22 0-1 714.5 23165 21.76 22 0-1 714.5 23165 21.98 22 0-1 714.5 23165 21.98 22 0-1 714.5 23165 21.98 22 0-1 714.5 23165 20.50 21 0-2 700.5 23025 20.50 21 0-2 700.5 23025 20.50 21 0-2 700.5 23025 20.50 21 0-2				14					
3 O									
3 15RB 15RB 1 1 1 1 1 1 1 1 1								22	0-1
8 RB 4 700.5 23025 21.45 22 0-1 707.5 23095 21.48 22 0-1 714.5 23165 21.56 22 0-1 700.5 23025 21.70 22 0-1 700.5 23095 21.49 22 0-1 714.5 23165 21.51 22 0-1 714.5 23165 21.51 22 0-1 700.5 23025 21.38 22 0-1 700.5 23025 21.38 22 0-1 714.5 23165 21.54 22 0-1 714.5 23165 21.54 22 0-1 714.5 23165 21.54 22 0-1 714.5 23165 21.54 22 0-1 714.5 23165 21.78 22 0-1 714.5 23165 21.78 22 0-1 714.5 23165 21.78 22 0-1 714.5 23165 21.78 22 0-1 714.5 23165 21.40 22 0-1 714.5 23165 21.40 22 0-1 714.5 23165 21.40 22 0-1 714.5 23165 21.44 22 0-1 714.5 23165 21.44 22 0-1 714.5 23165 21.44 22 0-1 714.5 23165 21.44 22 0-1 714.5 23165 21.98 22 0-1 714.5 23165 21.98 22 0-1 714.5 23165 21.98 22 0-1 714.5 23165 21.98 22 0-1 714.5 23165 21.98 22 0-1 714.5 23165 21.98 22 0-1 714.5 23165 21.98 22 0-1 714.5 23165 21.98 22 0-1 714.5 23165 21.98 22 0-1 714.5 23165 21.98 22 0-1 714.5 23165 21.98 22 0-1 714.5 23165 21.98 22 0-1 714.5 23165 21.98 22 0-1		QPSK		0				22	0-1
8 RB 4 707.5 23095 21.48 22 0-1 714.5 23165 21.56 22 0-1 700.5 23025 21.70 22 0-1 707.5 23095 21.49 22 0-1 714.5 23165 21.51 22 0-1 700.5 23025 21.38 22 0-1 700.5 23025 21.38 22 0-1 714.5 23165 21.54 22 0-1 714.5 23165 21.54 22 0-1 714.5 23095 21.45 22 0-1 700.5 23025 21.85 22 0-1 700.5 23025 21.85 22 0-1 714.5 23165 21.78 22 0-1 714.5 23165 21.78 22 0-1 714.5 23165 21.78 22 0-1 700.5 23025 21.40 22 0-1 714.5 23165 21.40 22 0-1 714.5 23165 21.40 22 0-1 714.5 23165 21.44 22 0-1 714.5 23165 21.88 22 0-1 14 707.5 23095 21.44 22 0-1 714.5 23165 21.88 22 0-1 14 707.5 23095 21.76 22 0-1 714.5 23165 21.98 22 0-1 14 707.5 23095 20.50 21 0-2 714.5 23165 20.50 21 0-2 714.5 23165 20.50 21 0-2 714.5 23165 20.51 21 0-2									
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714.5 23165 21.98 22 0-1 700.5 23025 20.50 21 0-2 707.5 23095 20.63 21 0-2 714.5 23165 20.51 21 0-2				14					
16-QAM 0 700.5 23025 20.50 21 0-2 707.5 23095 20.63 21 0-2 714.5 23165 20.51 21 0-2				17					
16-QAM 0 707.5 23095 20.63 21 0-2 714.5 23165 20.51 21 0-2									
714.5 23165 20.51 21 0-2		16-QAM		0					
700.5 23025 20.39 21 0-2					700.5	23025	20.39	21	0-2
8 RB 4 707.5 23095 20.60 21 0-2			8 RB	4					
714.5 23165 20.58 21 0-2									
700.5 23025 20.46 21 0-2									
7 707.5 23095 20.52 21 0-2				7					
714.5 23165 20.63 21 0-2									
700.5 23025 20.47 21 0-2									
15RB 707.5 23095 20.46 21 0-2			15	RB					
714.5 23165 20.51 21 0-2							20.51	21	0-2

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				FDD Band 12				
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
				699.7	23017	22.38	23	0
			0	707.5	23095	22.31	23	0
				715.3	23173	22.47	23	0
				699.7	23017	22.36	23	0
		1 RB	2	707.5	23095	22.53	23	0
				715.3	23173	22.57	23	0
				699.7	23017	22.27	23	0
			5	707.5	23095	22.34	23	0
				715.3	23173	22.45	23	0
				699.7	23017	22.34	23	0
	QPSK		0	707.5	23095	22.47	23	0
				715.3	23173	22.59	23	0
				699.7	23017	22.40	23	0
		3 RB	2	707.5	23095	22.40	23	0
				715.3	23173	22.47	23	0
				699.7	23017	22.35	23	0
			3	707.5	23095	22.46	23	0
				715.3	23173	22.61	23	0
				699.7 707.5	23017	21.37	22	0-1
		6F	6RB		23095	21.51	22	0-1
1.4			1	715.3	23173	21.49	22	0-1
			_	699.7	23017	21.60	22	0-1
			0	707.5	23095	21.55	22	0-1
				715.3	23173	21.64	22	0-1
		4.00		699.7	23017	21.92	22	0-1
		1 RB	2	707.5	23095	21.94	22	0-1
				715.3	23173	21.79	22	0-1
			5	699.7	23017	21.57	22	0-1
			5	707.5	23095	21.40	22	0-1
				715.3	23173	21.73	22	0-1
	16-QAM		0	699.7 707.5	23017	21.42 21.57	22 22	0-1
	16-QAIVI		U		23095			0-1
				715.3 699.7	23173 23017	21.65 21.50	22	0-1
		3 RB	2	707.5		21.31	22 22	0-1 0-1
		טחט		707.3	23095 23173	21.55	22	0-1
				699.7	23173	21.35	22	0-1
			3	707.5	23017	21.46	22	0-1
			J	707.5	23173	21.54	22	0-1
				699.7	23017	20.63	21	0-1
		61	RB	707.5	23017	20.63	21	0-2
		OI OI	1	715.3	23173	20.43	21	0-2
			3	/15.3	231/3	20./1	21	0-2

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FDD Band 13								
			ı	FDD Ballu 13				
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
			0	782	23230	22.92	23.5	0
		1 RB	25	782	23230	23.03	23.5	0
	4		49	782	23230	22.99	23.5	0
	QPSK		0	782	23230	22.04	22.5	0-1
		25 RB	12	782	23230	21.97	22.5	0-1
			25	782	23230	21.97	22.5	0-1
10		50RB		782	23230	22.03	22.5	0-1
10			0	782	23230	22.24	22.5	0-1
		1 RB	25	782	23230	21.90	22.5	0-1
16-0			49	782	23230	22.44	22.5	0-1
	16-QAM		0	782	23230	21.08	21.5	0-2
		25 RB	12	782	23230	21.08	21.5	0-2
			25	782	23230	21.03	21.5	0-2
		50	50RB		23230	20.99	21.5	0-2

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				FDD Band 13				
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
				779.5	23205	22.91	23.5	0
			0	782	23230	22.91	23.5	0
				784.5	23255	22.90	23.5	0
				779.5	23205	23.03	23.5	0
		1 RB	12	782	23230	22.93	23.5	0
				784.5	23255	22.96	23.5	0
				779.5	23205	22.82	23.5	0
			24	782	23230	22.85	23.5	0
				784.5	23255	22.90	23.5	0
				779.5	23205	22.06	22.5	0-1
	QPSK		0	782	23230	22.03	22.5	0-1
				784.5	23255	22.04	22.5	0-1
				779.5	23205	21.99	22.5	0-1
		12 RB	6	782	23230	22.02	22.5	0-1
				784.5	23255	21.97	22.5	0-1
				779.5	23205	21.98	22.5	0-1
			13	782	23230	22.03	22.5	0-1
				784.5	23255	21.97	22.5	0-1
	_			779.5	23205	21.99	22.5	0-1
		25	25RB		23230	21.96	22.5	0-1
5				784.5	23255	21.97	22.5	0-1
3				779.5	23205	22.11	22.5	0-1
			0	782	23230	22.49	22.5	0-1
				784.5	23255	21.92	22.5	0-1
				779.5	23205	22.39	22.5	0-1
		1 RB	12	782	23230	22.18	22.5	0-1
				784.5	23255	22.40	22.5	0-1
			3	779.5	23205	21.82	22.5	0-1
	1		24	782	23230	22.05	22.5	0-1
				784.5	23255	21.93	22.5	0-1
				779.5	23205	21.01	21.5	0-2
	16-QAM		0	782	23230	21.10	21.5	0-2
				784.5	23255	20.99	21.5	0-2
				779.5	23205	21.07	21.5	0-2
		12 RB	6	782	23230	21.05	21.5	0-2
				784.5	23255	20.98	21.5	0-2
				779.5	23205	21.04	21.5	0-2
			13	782	23230	21.09	21.5	0-2
				784.5	23255	21.02	21.5	0-2
				779.5	23205	20.93	21.5	0-2
		25	RB	782	23230	21.02	21.5	0-2
				784.5	23255	20.96	21.5	0-2

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				FDD Band 17				
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
				709	23780	22.19	23.5	0
			0	710	23790	22.25	23.5	0
				711	23800	22.20	23.5	0
				709	23780	22.31	23.5	0
		1 RB	25	710	23790	22.44	23.5	0
				711	23800	22.50	23.5	0
				709	23780	22.52	23.5	0
			49	710	23790	22.50	23.5	0
				711	23800	22.44	23.5	0
				709	23780	21.32	22.5	0-1
	QPSK		0	710	23790	21.36	22.5	0-1
				711	23800	21.36	22.5	0-1
				709	23780	21.38	22.5	0-1
		25 RB	12	710	23790	21.44	22.5	0-1
				711	23800	21.39	22.5	0-1
				709	23780	21.50	22.5	0-1
			25	710	23790	21.49	22.5	0-1
				711	23800	21.45	22.5	0-1
				709	23780	21.43	22.5	0-1
		50	RB	710	23790	21.42	22.5	0-1
10			Ī	711	23800	21.44	22.5	0-1
			_	709	23780	21.86	22.5	0-1
			0	710	23790	21.24	22.5	0-1
				711	23800	21.85	22.5	0-1
		4.00	0.5	709	23780	21.97	22.5	0-1
		1 RB	25	710	23790	22.03	22.5	0-1
				711	23800	21.87	22.5	0-1
			40	709	23780	21.92	22.5	0-1
			49	710	23790	22.07	22.5	0-1
				711	23800	21.77	22.5	0-1
	16-QAM		0	709 710	23780 23790	20.39	21.5 21.5	0-2 0-2
	16-QAIVI		U			20.37		
				711	23800	20.41	21.5	0-2
		25 RB	12	709 710	23780	20.37	21.5	0-2
		20 ND	14	710	23790	20.47	21.5	0-2
				711 709	23800 23780	20.43 20.47	21.5	0-2 0-2
			25	709	23780	20.47	21.5 21.5	0-2
			20	710	23790	20.45	21.5	0-2
				711	23780	20.51	21.5	0-2
		50	RB	709	23780	20.44	21.5	0-2
		30		711	23800	20.41	21.5	0-2
\ \				/ 11	23000	20.43	21.5	U-Z

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				FDD Band 17				
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
				706.5	23755	22.31	23.5	0
			0	710	23790	22.32	23.5	0
				713.5	23825	22.28	23.5	0
				706.5	23755	22.26	23.5	0
		1 RB	12	710	23790	22.33	23.5	0
				713.5	23825	22.36	23.5	0
				706.5	23755	22.29	23.5	0
			24	710	23790	22.31	23.5	0
				713.5	23825	22.42	23.5	0
				706.5	23755	21.37	22.5	0-1
	QPSK		0	710	23790	21.45	22.5	0-1
				713.5	23825	21.47	22.5	0-1
				706.5	23755	21.36	22.5	0-1
		12 RB	6	710	23790	21.42	22.5	0-1
				713.5	23825	21.51	22.5	0-1
				706.5	23755	21.39	22.5	0-1
			13	710	23790	21.46	22.5	0-1
				713.5	23825	21.53	22.5	0-1
				706.5	23755	21.31	22.5	0-1
		25	RB	710	23790	21.39	22.5	0-1
5				713.5	23825	21.42	22.5	0-1
Ŭ				706.5	23755	21.49	22.5	0-1
			0	710	23790	21.54	22.5	0-1
				713.5	23825	21.55	22.5	0-1
				706.5	23755	21.42	22.5	0-1
		1 RB	12	710	23790	21.87	22.5	0-1
				713.5	23825	21.38	22.5	0-1
				706.5	23755	21.50	22.5	0-1
	1		24	710	23790	21.59	22.5	0-1
				713.5	23825	22.00	22.5	0-1
				706.5	23755	20.38	21.5	0-2
	16-QAM		0	710	23790	20.49	21.5	0-2
				713.5	23825	20.46	21.5	0-2
			_	706.5	23755	20.39	21.5	0-2
		12 RB	6	710	23790	20.46	21.5	0-2
				713.5	23825	20.52	21.5	0-2
			40	706.5	23755	20.37	21.5	0-2
			13	710	23790	20.51	21.5	0-2
				713.5	23825	20.60	21.5	0-2
			DD.	706.5	23755	20.41	21.5	0-2
		25	RB	710	23790	20.44	21.5	0-2
				713.5	23825	20.46	21.5	0-2

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CDMA conducted power table:

		Target		1xRTT				EVDO		
Band	Channel	Frequency (MHz)	Power + Max. Toleranc	SO55	SO55	TDSO/SO32	TDSO/SO32	1x EvDO Rev. 0, FTAP/RTAP	1x EvDO Rev. A, FETAP/RETAP	
			e (dBm)	RC1	RC3	FCH+SCH	FCH	Subtype 0/1	Subtype 2	
0.11.1	1013	824.7	26.50	24.84	24.89	24.54	24.83	25.00	24.91	
Cellular (BC0)	384	836.52	26.50	24.11	24.21	23.84	24.48	24.99	24.95	
(500)	777	848.31	26.50	23.95	24.13	23.77	24.06	24.83	24.78	
200	25	1851.25	26.00	24.69	24.74	24.91	25.18	25.96	24.83	
PCS (BC1)	600	1880	26.00	24.07	24.12	24.79	24.87	24.95	24.77	
(551)	1175	1908.75	26.00	24.01	24.18	24.66	24.76	24.89	24.62	

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WLAN802.11 a/b/g/n(20M/40M) conducted power table:

	802.11 b	Max. Rated Avg.	Average conducted output power (dBm)
СН	Frequency	Power + Max. Tolerance (dBm)	Data Rate (Mbps)
СП	(MHz)	Tolerance (ubili)	1
1	2412	14.5	14.35
6	2437	14.5	14.33
11	2462	14.5	14.19

	802.11 g	Max. Rated Avg.	Average conducted output power (dBm)		
СН	Frequency	Power + Max. Tolerance (dBm)	Data Rate (Mbps)		
СП	(MHz)	Tolerance (dbiii)	6		
1	2412	11.5	10.55		
6	2437	11.5	11.41		
11	2462	11.5	10.26		

80	2.11 n(20M)	Max. Rated Avg.	Average conducted output power (dBm)		
СН	Frequency	Power + Max.	Data Rate (Mbps)		
СП	(MHz)	Tolerance (dBm)	6.5		
1	2412	11.5	10.55		
6	2437	11.5	11.41		
11	2462	11.5	10.41		

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80	2.11 n(40M)	Max. Rated Avg.	Average conducted output power (dBm) Data Rate (Mbps)						
СП	Frequency	Power + Max. Tolerance (dBm)							
CH	(MHz)	Tolerance (dbiii)	6.5						
3	2422	11.5	8.57						
6	2437	11.5	11.42						
9	2452	11.5	8.47						

802.11 a			Average conducted output		
5.2/5.8G		Max. Rated Avg. Power + Max.	power(dBm)		
СН	Frequency	Tolerance (dBm)	Data Rate (Mbps)		
СП	(MHz)		6		
36	5180	12	11.82		
40	5200	12	11.96		
44	5220	12	11.74		
48	5240	12	11.77		
149	5745	10.5	10.35		
157	5785	10.5	10.42		
165	5825	10.5	10.44		

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	2.11 n(20M) 5.2/5.8G	Max. Rated Avg.	Average conducted output power(dBm)				
СН	Frequency	Power + Max. Tolerance (dBm)	Data Rate (Mbps)				
СП	(MHz)		6.5				
36	5180	12	11.86				
40	5200	12	11.92				
44	5220	12	11.91				
48	5240	12	11.97				
149	5745	10.5	10.27				
157	5785	10.5	10.47				
165	5825	10.5	10.41				

802	.11 n(40M)		Average conducted output		
5	5.2/5.8G	Max. Rated Avg. Power + Max.	power(dBm)		
СН	Frequency	Tolerance (dBm)	Data Rate (Mbps) 13.5		
ОП	(MHz)				
38	5190	11	10.89		
46	5230	11	10.97		
151	5755	9.5	9.45		
159	5795	9.5	9.14		

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Bluetooth conducted power table:

Mode	Channel	Frequency(MHz)	Tuno un (dPm)	Average power (dBm)			
			Tune-up (dBm)	1Mbps	2Mbps	3Mbps	
	CH 00	2402		2.31	2.02	1.54	
BR/EDR	CH 39	2441	4.5	2.00	1.82	1.48	
	CH 78	2480		1.84	1.71	1.22	

ĺ	Mode	Channal	Frequency(MHz)	Tune-up (dBm)	Average power (dBm)
l	iviode	Charmer	Frequency(IVIFIZ)	rune-up (ubin)	GFSK
ĺ		CH 00	2402		-4.05
	LE	CH 20	2442	-2	-4.28
	CH 39 2480			-4.83	

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1.4 Test Environment

Ambient Temperature: 22±2° C Tissue Simulating Liquid: 22±2° C

1.5 Operation Description

- The EUT is controlled by using a Radio Communication Tester (Anritsu MT8820C), and the communication between the EUT and the tester is established by air link.
- 2. Measurements are performed respectively on the lowest, middle and highest channels of the operating band(s). The EUT is set to maximum power level during all tests, and at the beginning of each test the battery is fully charged.
- During the SAR testing, the DASY 5 system checks power drift by comparing the
 e-field strength of one specific location measured at the beginning with that
 measured at the end of the SAR testing.
- 4. SAR test reduction for GPRS and EDGE modes is determined by the source-based time-averaged output power. The data mode with highest specified time-averaged output power should be tested for SAR compliance. The GMSK EDGE configurations are grouped with GPRS and considered with respect to time-averaged maximum output power to determine compliance. The 3G SAR test reduction procedure is applied to 8-PSK EDGE with GMSK GPRS/EDGE as the primary mode. Since the maximum output power in a secondary mode (8-PSK EDGE) is ≤ ¼ dB higher than the primary mode (GMSK GPRS/EDGE), SAR measurement is not required for the secondary mode (8-PSK EDGE).
- 5. The 3G SAR test reduction procedure is applied to HSDPA with 12.2 kbps RMC as the primary mode. Since the maximum output power in a secondary mode (HSDPA) is ≤ 1/4 dB higher than the primary mode (WCDMA), SAR measurement is not required for the secondary mode (HSDPA).
- 6. The 3G SAR test reduction procedure is applied to HSPA (HSUPA/HSDPA with RMC) with 12.2 kbps RMC as the primary mode. Since the maximum output power in a secondary mode (HSPA) is ≤ ¼ dB higher than the primary mode (WCDMA), SAR measurement is not required for the secondary mode (HSPA).
- 7. SAR for next to the ear head exposure is measured in RC3 with the handset configured to transmit at full rate in SO55. The 3G SAR test reduction procedure is applied to RC1 with RC3 as the primary mode since the maximum output power in

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a secondary mode (RC1) is $\leq \frac{1}{4}$ dB higher than the primary mode (RC3). When VOIP is supported by Ev-Do devices for next to the ear use, head exposure SAR is required. 1x Ev-Do Rev. A may support VOIP operations.

- 8. Body-worn accessory SAR is measured in RC3 with the handset configured in TDSO/SO32 to transmit at full rate on FCH only with all other code channels disabled. The 3G SAR test reduction procedure is applied to the multiple code channel configuration (FCH+SCHn), with FCH only as the primary mode. The 3G SAR test reduction procedure is applied to body-worn accessory SAR in RC1 with RC3 as the primary mode. For handsets with Ev-Do capabilities, the 3G SAR test reduction procedure is applied to Ev-Do Rev. 0 with 1x RTT RC3 as the primary mode to determine body-worn accessory test requirements. The 3G SAR test reduction procedure is applied separately to Rev. A and Rev. B, with Rev. 0 as the primary mode to determine body-worn accessory SAR test requirements. When SAR is not required for Rev. 0, the 3G SAR test reduction is applied with 1x RTT RC3 as the primary mode.
- Hotspot SAR is measured using Subtype 0/1 Physical Layer configurations for Rev. 0. The 3G SAR test reduction procedure is applied to Rev. A, Subtype 2 Physical layer configuration, with Rev. 0 as the primary mode
- 10. LTE modes test according to KDB 941225D05v02r05.
 - a. Per Section 5.2.1, the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation.
 - Using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
 - When the reported SAR is ≤ 0.8 W/kg, testing of the remaining RB offset configurations and required test channels is not required for 1 RB allocation; otherwise, SAR is required for the remaining required test channels and only for the RB offset configuration with the highest output power for that channel.
 - When the reported SAR of a required test channel is > 1.45 W/kg, SAR is required for all three RB offset configurations for that required test channel.
 b. Per Section 5.2.2, the largest channel bandwidth and measure SAR for QPSK with 50% RB allocation
 - The procedures required for 1 RB allocation in 5.2.1 are applied to measure the SAR for QPSK with 50% RB allocation.
 - c. Per Section 5.2.3, the largest channel bandwidth and measure SAR for QPSK with 100% RB allocation
 - For QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation in 5.2.1 and 5.2.2 are ≤ 0.8 W/kg.

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Otherwise, SAR is measured for the highest output power channel and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also

d. Per Section 5.2.4, Higher order modulations

- For each modulation besides QPSK; e.g., 16-QAM, 64-QAM, apply the QPSK procedures in sections 5.2.1, 5.2.2 and 5.2.3 to determine the QAM configurations that may need SAR measurement. For each configuration identified as required for testing, SAR is required only when the highest maximum output power for the configuration in the higher order modulation is > 1/2 dB higher than the same configuration in QPSK or when the reported SAR for the QPSK configuration is > 1.45 W/kg.
- e. Per Section 5.3, other channel bandwidth standalone SAR test requirements
- For the other channel bandwidths used by the device in a frequency band, apply all the procedures required for the largest channel bandwidth in section 5.2 to determine the channels and RB configurations that need SAR testing and only measure SAR when the highest maximum output power of a configuration requiring testing in the smaller channel bandwidth is > 1/2 dB higher than the equivalent channel configurations in the largest channel bandwidth configuration or the reported SAR of a configuration for the largest channel bandwidth is > 1.45 W/kg. The equivalent channel configuration for the RB allocation, RB offset and modulation etc. is determined for the smaller channel bandwidth according to the same number of RB allocated in the largest channel bandwidth.

WLAN

802.11b DSSS SAR Test Requirements:

- 11. SAR is measured for 2.4 GHz 802.11b DSSS mode using the highest measured maximum output power channel, when the reported SAR of the highest measured maximum output power channel for the exposure configuration is ≤ 0.8 W/kg, no further SAR testing is required for 802.11b DSSS in that exposure configuration.
- 12. When the reported SAR is > 0.8 W/kg, SAR is required for that exposure configuration using the next highest measured output power channel. When any reported SAR is > 1.2 W/kg, SAR is required for the third channel; i.e., all channels require testing.
- 802.11g/n OFDM SAR Test Exclusion Requirements:
- 13. SAR is not required for 802.11g/n since the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg.

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Initial Test Configuration:

- 14. An initial test configuration is determined for OFDM transmission modes according to the channel bandwidth, modulation and data rate combination(s) with the highest maximum output power specified for production units in each standalone and aggregated frequency band.
- 15. SAR is measured using the highest measured maximum output power channel. When the reported SAR of the initial test configuration is > 0.8 W/kg, SAR measurement is required for the subsequent next highest measured output power channel(s) in the initial test configuration until the reported SAR is ≤ 1.2 W/kg or all required channels are tested.
- 16. For WLAN antenna, 5.2a/5.8a is chosen to be the initial test configurations.
- 17. Since the highest reported SAR for the initial test configuration is adjusted by the ratio of the subsequent test configuration to initial test configuration specified maximum output power and the adjusted SAR is < 1.2 W/kg, SAR is not required for subsequent test configuration.
- 18. BT and WLAN use the same antenna path and Bluetooth can't transmit simultaneously with WLAN.
- 19. CDMA and GSM/WCDMA/LTE use the different antenna path but they can't transmit simultaneously.
- 20. WLAN hotspot function is only supported in WLAN 2.4GHz only.
- 21. According to **KDB447498D01v06**, testing of other required channels is not required when the reported 1-g SAR for the highest output channel is \leq 0.8 W/kg, when the transmission band is \leq 100 MHz.
- 22. According to **KDB865664D01v01r04**, SAR measurement variability must be assessed for each frequency band. When the original highest measured SAR is ≥ 0.8 W/kg, repeated that measurement once. Perform a second repeated measurement only if the ratio of largest to smallest SAR for the original and first repeated measurements is > 1.20 or when the original or repeated measurement is ≥ 1.45 W/kg (~ 10% from the 1-g SAR limit)

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23. According to **KDB447498D01v06** – The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances≤ 50 mm are determined by: [(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)] $\cdot [\sqrt{f(GHz)}] \le 3.0$ for 1-g SAR, and ≤ 7.5 for product specific 10-g SAR.

mode	position	max. power (dB)	max. power (mW)	f(GHz)	calculation	SAR exclusion threshold	SAR test exclusion
ВТ	body-worn	4.5	2.818	2.48	0.296	3	yes

24. The device supports NFC function. Per KDB 648474 D04v01r03 Phones with built-in NFC functions do not require separate SAR testing and can generally be tested according to the SAR measurement procedures normally required for the phone. Influences of the hardware introduced by the built-in NFC functions are inherently considered through testing of the other transmitters that require SAR.

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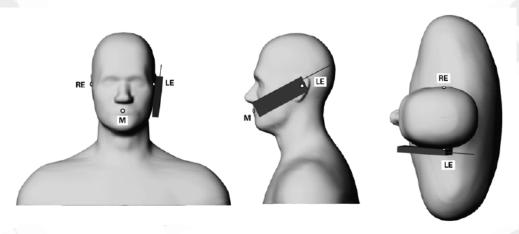
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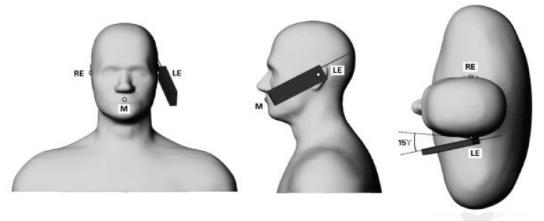


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1.6 Positioning Procedure Head SAR measurement statement



Phone position 1, "cheek" or "touch" position. The reference points for the right ear (RE), left ear (LE) and mouth (M), which define the reference plane for phone positioning.



Phone position 2, "tilted position." The reference points for the right ear (RE), left ear (LE) and mouth (M), which define the reference plane for phone positioning.

Cheek/Touch Position:

The handset was brought toward the mouth of the head phantom by pivoting against the ear reference point until any point of the mouthpiece or keypad touched the phantom.

Ear/Tilt Position:

With the phone aligned in the Cheek/Touch position, the handset was tilted away from the mouth with respect to the test device reference point by 15 degrees.

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Body SAR measurement statement

1. Body-worn exposure: 15mm

Body-worn accessory exposure is typically related to voice mode operations when handsets are carried in body-worn accessories. The body-worn accessory procedures in KDB Publication 447498 D01 should be used to test for body-worn accessory SAR compliance, without a headset connected to it. When the same wireless transmission configuration is used for testing body-worn accessory and hotspot mode SAR, respectively, in voice and data mode, SAR results for the most conservative test separation distance configuration may be used to support both SAR conditions. When the reported SAR for a body-worn accessory, measured without a headset connected to the handset, is > 1.2 W/kg, the highest reported SAR configuration for that wireless mode and frequency band should be repeated for the body-worn accessory with a headset attached to the handset.

2. Hotspot exposure: 10mm

A test separation distance of 10 mm is required between the phantom and all surfaces and edges with a transmitting antenna located within 25 mm from that surface or edge when the form factor of a handset is larger than $9 \text{ cm} \times 5 \text{ cm}$

3. Phablet SAR test consideration

Since the device is a phablet (overall diagonal dimension > 16.0 cm), the UMPC mini-tablet procedures must also be applied to test the SAR of all surfaces and edges with an antenna located at ≤ 25 mm from that surface or edge, in direct contact with a flat phantom, for product specific 10-g SAR. When hotspot mode applies, product specific 10-g SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg; however, when power reduction applies to hotspot mode the measured SAR must be scaled to the maximum output power, including tolerance, allowed for phablet modes to compare with the 1.2 W/kg SAR test reduction threshold.

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1.7 Evaluation Procedures

The entire evaluation of the spatial peak values is performed within the Post-processing engine (SEMCAD). The system always gives the maximum values for the 1 g and 10 g cubes. The algorithm to find the cube with highest averaged SAR is divided into the following stages:

- 1. The extraction of the measured data (grid and values) from the Zoom Scan.
- 2. The calculation of the SAR value at every measurement point based on all stored data (A/D values and measurement parameters).
- 3. The generation of a high-resolution mesh within the measured volume.
- 4. The interpolation of all measured values from the measurement grid to the high-resolution grid.
- 5. The extrapolation of the entire 3-D field distribution to the phantom surface over the distance from sensor to surface.
- 6. The calculation of the averaged SAR within masses of 1g and 10g.

The probe is calibrated at the center of the dipole sensors that is located 1 to 2.7mm away from the probe tip. During measurements, the probe stops shortly above the phantom surface, depending on the probe and the surface detecting system. Both distances are included as parameters in the probe configuration file. The software always knows exactly how far away the measured point is from the surface. As the probe cannot directly measure at the surface, the values between the deepest measured point and the surface must be extrapolated. The angle between the probe axis and the surface normal line is less than 30 degree.

In the Area Scan, the gradient of the interpolation function is evaluated to find all the extreme of the SAR distribution. The uncertainty on the locations of the extreme is less than 1/20 of the grid size. Only local maximum within –2 dB of the global maximum are searched and passed for the Cube Scan measurement. In the Cube Scan, the interpolation function is used to extrapolate the Peak SAR from the lowest measurement points to the inner phantom surface (the extrapolation distance). The uncertainty increases with the extrapolation distance. To keep the uncertainty within 1% for the 1 g and 10 g cubes, the extrapolation distance should not be larger than 5mm.

The maximum search is automatically performed after each area scan measurement. It is based on splines in two or three dimensions. The procedure can find the maximum for most SAR distributions even with relatively large grid spacing. After the area scanning measurement, the probe is automatically moved to a position at the interpolated maximum. The following scan can directly use this position for reference, e.g., for a finer resolution grid or the cube evaluations. The 1g and 10g peak evaluations are only available for the predefined cube 7x7x7 scans.

The routines are verified and optimized for the grid dimensions used in these cube measurements. The measured volume of 30x30x30mm contains about 30g of tissue. The first procedure is an extrapolation (incl. Boundary correction) to get the points

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between the lowest measured plane and the surface. The next step uses 3D interpolation to get all points within the measured volume. In the last step, a 1g cube is placed numerically into the volume and its averaged SAR is calculated. This cube is the moved around until the highest averaged SAR is found.

If the highest SAR is found at the edge of the measured volume, the system will issue a warning: higher SAR values might be found outside of the measured volume. In that case the cube measurement can be repeated, using the new interpolated maximum as the center.

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1.8 Probe Calibration Procedures

For the calibration of E-field probes in lossy liquids, an electric field with an accurately known field strength must be produced within the measured liquid. For standardization purposes it would be desirable if all measurements which are necessary to assess the correct field strength would be traceable to standardized measurement procedures. In the following two different calibration techniques are summarized:

1.8.1 Transfer Calibration with Temperature Probes

In lossy liquids the specific absorption rate (SAR) is related both to the electric field (E) and the temperature gradient ($\delta T / \delta t$) in the liquid.

$$SAR = \frac{\sigma}{\rho} |E|^2 = c \frac{\delta T}{\delta t}$$

Whereby σ is the conductivity, ρ the density and c the heat capacity of the liquid.

Hence, the electric field in lossy liquid can be measured indirectly by measuring the temperature gradient in the liquid. Non-disturbing temperature probes (optical probes or thermistor probes with resistive lines) with high spatial resolution (<1-2 mm) and fast reaction time (<1 s) are available and can be easily calibrated with high precision [1]. The setup and the exciting source have no influence on the calibration; only the relative positioning uncertainties of the standard temperature probe and the E-field probe to be calibrated must be considered. However, several problems limit the available accuracy of probe calibrations with temperature probes:

 The temperature gradient is not directly measurable but must be evaluated from temperature measurements at different time steps. Special precaution is necessary to avoid measurement errors caused by temperature gradients due to energy equalizing effects or convection currents in the liquid. Such effects cannot be completely avoided, as the measured field itself destroys the

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thermal equilibrium in the liquid. With a careful setup these errors can be kept small.

- 2. The measured volume around the temperature probe is not well defined. It is difficult to calculate the energy transfer from a surrounding gradient temperature field into the probe. These effects must be considered, since temperature probes are calibrated in liquid with homogeneous temperatures. There is no traceable standard for temperature rise measurements.
- 3. The calibration depends on the assessment of the specific density, the heat capacity and the conductivity of the medium. While the specific density and heat capacity can be measured accurately with standardized procedures (~ 2% for c; much better for ρ), there is no standard for the measurement of the conductivity. Depending on the method and liquid, the error can well exceed ±5%.
- 4. Temperature rise measurements are not very sensitive and therefore are often performed at a higher power level than the E-field measurements. The nonlinearities in the system (e.g., power measurements, different components, etc.) must be considered.

Considering these problems, the possible accuracy of the calibration of E-field probes with temperature gradient measurements in a carefully designed setup is about ±10% (RSS) [2]. Recently, a setup which is a combination of the waveguide techniques and the thermal measurements was presented in [3]. The estimated uncertainty of the setup is ±5% (RSS) when the same liquid is used for the calibration and for actual measurements and ±7-9% (RSS) when not, which is in good agreement with the estimates given in [2].

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1.8.2 Calibration with Analytical Fields

In this method a technical setup is used in which the field can be calculated analytically from measurements of other physical magnitudes (e.g., input power). This corresponds to the standard field method for probe calibration in air; however, there is no standard defined for fields in lossy liquids.

When using calculated fields in lossy liquids for probe calibration, several points must be considered in the assessment of the uncertainty:

- 1. The setup must enable accurate determination of the incident power.
- 2. The accuracy of the calculated field strength will depend on the assessment of the dielectric parameters of the liquid.
- 3. Due to the small wavelength in liquids with high permittivity, even small setups might be above the resonant cutoff frequencies. The field distribution in the setup must be carefully checked for conformity with the theoretical field distribution.

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- (2) K. Meier, M. Burkhardt, T. Schmid, and N. Kuster, \Broadband calibration of E-field probes in lossy media", IEEE Transactions on Microwave Theory and Techniques, vol. 44, no. 10, pp. 1954{1962, Oct. 1996.
- (3) K. Jokela, P. Hyysalo, and L. Puranen, \Calibration of specific absorption rate (SAR) probes in waveguide at 900 MHz", IEEE Transactions on Instrumentation and Measurements, vol. 47, no. 2, pp. 432{438, Apr. 1998.

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1.9 The SAR Measurement System

A block diagram of the SAR measurement system is given in Fig. a. This SAR measurement system uses a Computer-controlled 3-D stepper motor system (SPEAG DASY 5 professional system). Model EX3DV4 field probes are used to determine the internal electric fields. The SAR can be obtained from the equation SAR= σ (|Ei|2)/ ρ where σ and ρ are the conductivity and mass density of the tissue-simulant.

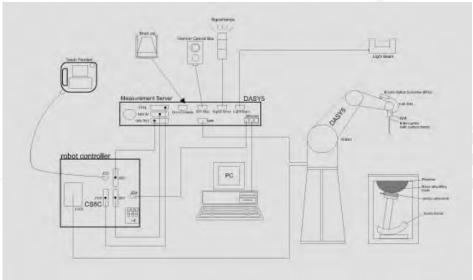


Fig. a A block diagram of the SAR measurement system

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The DASY 5 system for performing compliance tests consists of the following items:

- 1. A standard high precision 6-axis robot (Staubli RX family) with controller, teach pendant and software. An arm extension is for accommodating the data acquisition electronics (DAE).
- 2. A dosimetric probe, i.e., an isotropic E-field probe optimized and calibrated for usage in tissue simulating liquid. The probe is equipped with an optical surface detector system.
- 3. Data acquisition electronics (DAE) which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.
- 4. The Electro-optical converter (EOC) performs the conversion between optical and electrical of the signals for the digital communication to the DAE and for the analog signal from the optical surface detection. The EOC is connected to the measurement server.
- 5. The function of the measurement server is to perform the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
- 6. A probe alignment unit which improves the (absolute) accuracy of the probe positioning.
- 7. A computer operating Windows7
- 8. DASY 5 software.
- 9. Remote control with teach pendant and additional circuitry for robot safety such as warning lamps, etc.
- 10. The SAM twin phantom enabling testing left-hand and right-hand usage.
- 11. The device holder for handheld mobile phones.
- 12. Tissue simulating liquid mixed according to the given recipes.
- 13. Validation dipole kits allowing to validate the proper functioning of the system.

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1.10 System Components

EX3DV4 E-Field Probe

<u> </u>	leid Plobe					
Construction	Symmetrical design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)					
Calibration	Basic Broad Band Calibration in air Conversion Factors (CF) for HSL750/835/1750/1900/2450/2600/5200/ 5800 MHz Additional CF for other liquids and frequencies upon request					
Frequency	10 MHz to > 6 GHz, Linearity: ± 0.6 dB					
Directivity	± 0.3 dB in HSL (rotation around probe axis) ± 0.5 dB in tissue material (rotation normal to probe axis)					
Dynamic Range Dimensions	10 μW/g to > 100 mW/g Linearity: ± 0.2 dB (noise: typically < 1 μW/g) Tip diameter: 2.5 mm					
Application	High precision dosimetric measurements in any exposure scenario (e.g., very strong gradient fields). Only probe which enables compliance testing for frequencies up to 6 GHz with precision of better 30%.					

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SAM PHANT	OM V4.0C						
Construction:	The shell corresponds to the specifications of the Specific						
	Anthropomorphic Mannequin (SA	Anthropomorphic Mannequin (SAM) phantom defined in IEEE 1528					
	and IEC 62209.						
	It enables the dosimetric evaluati	on of left and right hand phone					
	usage as well as body mounted u	usage at the flat phantom region. A					
	cover prevents evaporation of the	e liquid. Reference markings on the					
	phantom allow the complete setu	p of all predefined phantom					
	positions and measurement grids	by manually teaching three points					
	with the robot.						
Shell	2 ± 0.2 mm						
Thickness:		(The same of the					
Filling	Approx. 25 liters						
Volume:		1 1					
Dimensions:	Height: 850 mm;						
	Length: 1000 mm;						
	Width: 500 mm						
		The second secon					

DEVICE HOLDER

Construction	In combination with the Twin SAM Phantom	
	V4.0/V4.0C or Twin SAM, the Mounting	
	Device (made from POM) enables the	
	rotation of the mounted transmitter in	
	spherical coordinates, whereby the rotation	
	point is the ear opening. The devices can	
	be easily and accurately positioned	
	according to IEC, IEEE, CENELEC, FCC or	

Device Holder

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other specifications. The device holder can

be locked at different phantom locations

(left head, right head, flat phantom).

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1.11 SAR System Verification

The microwave circuit arrangement for system verification is sketched in Fig. b. The daily system accuracy verification occurs within the flat section of the SAM phantom. A SAR measurement was performed to see if the measured SAR was within +/- 10% (according to KDB865664D01v01r04) from the target SAR values.

These tests were done at 750/835/1750/1900/2450/2600/5200/5800 MHz. The tests were conducted on the same days as the measurement of the DUT. The obtained results from the system accuracy verification are displayed in the table 1. During the tests, the ambient temperature of the laboratory was 21.7°C, the relative humidity was 62% and the liquid depth above the ear reference points was above 15 cm (≤3G) or 10 cm (>3G) in all the cases. It is seen that the system is operating within its specification, as the results are within acceptable tolerance of the reference values.

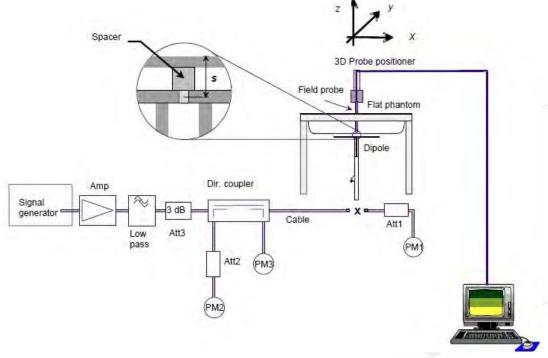


Fig. b The block diagram of system verification

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Validation Kit	S/N	Frequency (MHz)		1W Target SAR-1g (mW/g)	Measured SAR-1g (mW/g)	Measured SAR-1g normalized to 1W (mW/a)	Deviation (%)	Measured Date	
D750V3	1015	750	Head	8.32	2.03	8.12	-2.40%	Oct. 28, 2016	
D/30V3	1015	750	Body	8.77	2.24	8.96	2.17%	Nov. 01, 2016	
D835V2	4d063	835	Head	9.40	2.36	9.44	0.43%	Nov. 05, 2016	
D033 V Z	40003	55	Body	9.57	2.38	9.52	-0.52%	Nov. 07, 2016	
D1750V2	1008	1000	1750	Head	37.20	9.57	38.28	2.90%	Nov. 05, 2016
D1/30V2		1730	Body	37.30	8.93	35.72	-4.24%	Nov. 07, 2016	
D1900V2	54027	d027 1900	Head	38.70	9.6	38.4	-0.78%	Nov. 06, 2016	
D1900 V2	3u021		Body	39.70	10.10	40.4	1.76%	Nov. 08, 2016	
D2450V2	727	2450	Head	51.00	12.7	50.8	-0.39%	Nov. 06, 2016	
D2450V2	121	121 2450	Body	49.60	12.9	51.6	4.03%	Nov. 08, 2016	
D2600V2	1005	2600	Head	55.20	13.8	55.2	0.00%	Nov. 06, 2016	
D2000 V2	1005	2000	Body	53.90	14.3	57.2	6.12%	Nov. 02, 2016	
		5200	Head	77	7.5	75	-2.60%	Nov. 02, 2016	
D5GHzV2	1023	5200	Body	71.9	7.54	75.4	4.87%	Nov. 02, 2016	
D3G112V2	1023	5900	Head	77.3	7.98	79.8	3.23%	Nov. 02, 2016	
		5800	Body	75.3	7.59	75.9	0.80%	Nov. 02, 2016	

Table 1. Results of system validation

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1.12 Tissue Simulant Fluid for the Frequency Band

The dielectric properties for this Head-simulant fluid were measured by using the Agilent Model 85070E Dielectric Probe (rates frequency band 200 MHz to 20 GHz) in conjunction with Network Analyzer.

All dielectric parameters of tissue simulates were measured within 24 hours of SAR measurements. The depth of the tissue simulant in the flat section of the phantom was at least 15 cm (≤3G) or 10 cm (>3G) during all tests. (Appendix Fig.

Tissue Type	Measured Frequency (MHz)	Target Dielectric Constant, εr	Target Conductivity, σ (S/m)	Measured Dielectric Constant, Er	Measured Conductivity, σ (S/m)	% dev εr	% dev σ	Measurement Date
	709	42.155	0.890	41.936	0.853	0.52%	4.18%	
	711	42.144	0.890	41.726	0.855	0.99%	3.97%	2016/10/28
	750	41.942	0.893	41.205	0.894	1.76%	-0.07%	2016/10/28
	782	41.775	0.896	40.728	0.926	2.51%	-3.36%	
	824.7	41.554	0.899	40.183	0.865	3.30%	3.80%	
	835	41.500	0.900	40.183	0.866	3.17%	3.78%	
	836.5	41.500	0.902	40.182	0.867	3.18%	3.84%	
	836.52	41.500	0.902	40.182	0.867	3.18%	3.84%	
	836.6	41.500	0.902	40.182	0.867	3.18%	3.85%	2016/11/5
	844	41.500	0.910	40.174	0.875	3.20%	3.81%	2016/11/5
	1720	40.126	1.354	39.935	1.374	0.48%	-1.50%	
	1732.5	40.107	1.361	39.883	1.381	0.56%	-1.48%	
	1745	40.087	1.368	39.861	1.402	0.56%	-2.47%	
Head	1750	40.079	1.371	39.809	1.412	0.67%	-2.99%	
	1851.25	40.000	1.400	38.841	1.386	2.90%	1.00%	
	1880	40.000	1.400	38.727	1.405	3.18%	-0.36%	
	1900	40.000	1.400	38.592	1.416	3.52%	-1.14%	
	1907.6	40.000	1.400	38.577	1.423	3.56%	-1.64%	
	1909.8	40.000	1.400	38.554	1.425	3.61%	-1.79%	0016/11/6
	2412	39.268	1.766	39.274	1.808	-0.02%	-2.37%	2016/11/6
	2450	39.200	1.800	39.021	1.841	0.46%	-2.28%	
	2510	39.124	1.865	38.260	1.868	2.21%	-0.14%	
	2535	39.092	1.893	38.219	1.894	2.23%	-0.07%	
	2600	39.009	1.964	37.938	1.959	2.75%	0.24%	
	5200	35.986	4.655	34.721	4.603	3.51%	1.12%	
	5800	35.300	5.270	34.121	5.203	3.34%	1.27%	2016/11/2
	5825	35.271	5.296	34.096	5.228	3.33%	1.28%	

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Tissue Type	Measured Frequency (MHz)	Target Dielectric Constant, εr	Target Conductivity, σ (S/m)	Measured Dielectric Constant, εr	Measured Conductivity, σ (S/m)	% dev εr	% dev σ	Measurement Date
	709	55.691	0.960	54.101	0.920	2.85%	4.18%	
	711	55.683	0.960	54.049	0.922	2.93%	3.99%	2016/11/1
	750	55.531	0.963	53.674	0.961	3.34%	0.25%	2010/11/1
	782	55.406	0.966	53.245	0.993	3.90%	-2.81%	
	824.2	55.242	0.969	53.812	0.994	2.59%	-2.56%	
	824.7	55.240	0.969	53.795	0.995	2.62%	-2.66%	
	835	55.200	0.970	53.767	0.997	2.60%	-2.78%	
	836.6	55.195	0.972	53.615	0.999	2.86%	-2.78%	
	844	55.172	0.981	53.531	1.007	2.97%	-2.64%	2016/11/7
	1720	53.511	1.469	54.573	1.415	-1.99%	3.71%	
	1732.5	53.478	1.477	54.555	1.427	-2.01%	3.41%	
	1745	53.445	1.485	54.514	1.440	-2.00%	3.05%	
	1750	53.432	1.488	54.426	1.445	-1.86%	2.92%	
Body	1851.25	53.300	1.520	54.309	1.510	-1.89%	0.66%	
	1852.4	53.300	1.520	54.216	1.511	-1.72%	0.59%	
	1880	53.300	1.520	54.115	1.539	-1.53%	-1.25%	
	1900	53.300	1.520	54.025	1.559	-1.36%	-2.57%	
	1907.6	53.300	1.520	54.018	1.566	-1.35%	-3.03%	2016/11/8
	1908.75	53.300	1.520	54.015	1.567	-1.34%	-3.09%	
	1909.8	53.300	1.520	54.008	1.568	-1.33%	-3.16%	
	2412	52.751	1.914	52.204	1.939	1.04%	-1.32%	
	2450	52.700	1.950	51.977	1.977	1.37%	-1.38%	
	2510	52.624	2.035	52.037	2.037	1.11%	-0.09%	
	2535	52.592	2.071	51.862	2.062	1.39%	0.41%	
	2600	52.509	2.163	51.797	2.127	1.36%	1.65%	2016/11/2
	5200	49.014	5.299	47.721	5.486	2.64%	-3.52%	2010/11/2
	5800	48.200	6.000	46.926	6.086	2.64%	-1.43%	
	5825	48.166	6.029	46.901	6.111	2.63%	-1.36%	

Table 2. Dielectric Parameters of Tissue Simulant Fluid

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The composition of the tissue simulating liquid:

The composition of the tissue simulating liquid.								
Гиа жи сана ал <i>с</i>	Mode	Ingredient						
Frequency (MHz)		DGMBE	Water	Salt	Preventol D-7	Cellulose	Sugar	Total amount
750	Head	-	532.98 g	18.3 g	2.4 g	3.2 g	766 g	1.3L(Kg)
	Body	_	631.68 g	11.72 g	1.2 g	-	600 g	1.0L(Kg)
850	Head	-	532.98 g	18.3 g	2.4 g	3.2 g	766 g	1.3L(Kg)
	Body	-	631.68 g	11.72 g	1.2 g		600 g	1.0L(Kg)
1750	Head	444.52 g	552.42 g	3.06 g	-	_	_	1.0L(Kg)
	Body	300.67 g	716.56 g	4.0 g	ı	1	_	1.0L(Kg)
1900	Head	444.52 g	552.42 g	3.06 g	ı	ı	_	1.0L(Kg)
	Body	300.67 g	716.56 g	4.0 g	ı	I	_	1.0L(Kg)
2450	Head	550ml	450ml	_	ı	1	_	1.0L(Kg)
	Body	301.7ml	698.3ml	_	ı	ı		1.0L(Kg)
2600	Head	550ml	450ml	_		70		1.0L(Kg)
	Body	301.7ml	698.3ml	_	_	C-15	(2)	1.0L(Kg)

Simulating Liquids for 5 GHz, Manufactured by SPEAG:

Ingredients	Water	Esters, Emulsifiers, Inhibitors	Sodium and Salt
(% by weight)	60-80	20-40	0-1.5

Table 3. Recipes for tissue simulating liquid

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1.13 Test Standards and Limits

According to FCC 47CFR §2.1093(d) The limits to be used for evaluation are based generally on criteria published by the American National Standards Institute (ANSI) for localized specific absorption rate ("SAR") in Section 4.2 of "IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz," ANSI/IEEE C95.1, By the Institute of Electrical and Electronics Engineers, Inc., New York, New York 10017.

These criteria for SAR evaluation are similar to those recommended by the National Council on Radiation Protection and Measurements (NCRP) in "Biological Effects and Exposure Criteria for Radio frequency Electromagnetic Fields," NCRP Report No. 86, Section 17.4.5. Copyright NCRP, 1986, Bethesda, Maryland 20814. SAR is a measure of the rate of energy absorption due to exposure to an RF transmitting source. SAR values have been related to threshold levels for potential biological hazards. The criteria to be used are specified in paragraphs (d)(1) and (d)(2) of this section and shall apply for portable devices transmitting in the frequency range from 100 kHz to 6 GHz. Portable devices that transmit at frequencies above 6 GHz are to be evaluated in terms of the MPE limits specified in § 1.1310 of this chapter.

Measurements and calculations to demonstrate compliance with MPE field strength or power density limits for devices operating above 6 GHz should be made at a minimum distance of 5 cm from the radiating source.

1. Limits for Occupational/Controlled exposure: 0.4 W/kg as averaged over the whole-body and spatial peak SAR not exceeding 8 W/kg as averaged over any 1 gram of tissue (defined as a tissue volume in the shape of a cube). Exceptions are the hands, wrists, feet and ankles where the spatial peak SAR shall not exceed 20 W/kg, as averaged over a 10 grams of tissue (defined as a tissue volume in the shape of a cube).

Occupational/Controlled limits apply when persons are exposed as a consequence of their employment provided these persons are fully aware of and exercise control over their exposure. Awareness of exposure can be accomplished by use of warning labels or by specific training or education through appropriate means, such as an RF safety program in a work environment.

2. Limits for General Population/Uncontrolled exposure: 0.08 W/kg as averaged over the whole-body and spatial peak SAR not exceeding 1.6 W/kg as averaged over any 1 gram of tissue (defined as a tissue volume in the shape of a cube).

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Exceptions are the hands, wrists, feet and ankles where the spatial peak SAR shall not exceed 4 W/kg, as averaged over any 10 grams of tissue (defined as a tissue volume in the shape of a cube).

General Population/Uncontrolled limits apply when the general public may be exposed, or when persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or do not exercise control over their exposure.

Warning labels placed on consumer devices such as cellular telephones will not be sufficient reason to allow these devices to be evaluated subject to limits for occupational/controlled exposure in paragraph (d)(1) of this section.(Table .6)

Human Exposure	Uncontrolled Environment General Population	Controlled Environment Occupational		
Spatial Peak SAR (Brain)	1.60 W/kg	8.00 W/kg		
Spatial Average SAR (Whole Body)	0.08 W/kg	0.40 W/kg		
Spatial Peak SAR (Hands/Feet/Ankle/Wrist)	4.00 W/kg	20.00 W/kg		

Table 4. RF exposure limits

Notes:

- Uncontrolled environments are defined as locations where there is potential exposure of individuals who have no knowledge or control of their potential exposure.
- Controlled environments are defined as locations where there is potential exposure of individuals who have knowledge of their potential exposure and can exercise control over their exposure.

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2. Summary of Results

GSM 850

Mode	Position	Distanc e (mm)	СН	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power	Scaling	1 (W/	kg)	Plot page
		, ,			,	(dBm)		Measured	Reported	
	Re Cheek	-	190	836.6	34.00	32.40	44.54%	0.022	0.032	101
GSM850	Re Tilt	-	190	836.6	34.00	32.40	44.54%	0.017	0.025	-
(Head)	Le Cheek	-	190	836.6	34.00	32.40	44.54%	0.021	0.030	-
	Le Tilt	-	190	836.6	34.00	32.40	44.54%	0.013	0.019	-
GSM850	Front side	15	190	836.6	34.00	33.70	7.15%	0.002	0.002	-
(Body-Worn)	Back side	15	190	836.6	34.00	32.40	44.54%	0.110	0.159	102
	Front side	10	128	824.2	31.50	29.20	69.82%	0.056	0.095	-
GPRS850	Back side	10	128	824.2	31.50	29.20	69.82%	0.258	0.438	103
(Hotspot) (1Dn4UP)	Bottom side	10	128	824.2	31.50	29.20	69.82%	0.183	0.311	-
(1=11131)	Right side	10	128	824.2	31.50	29.20	69.82%	0.077	0.131	-

GSM 1900

Mode	Position	Distanc e (mm)	СН	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power	Scaling	Averaged 1 (W/	g	Plot page
		(111111)			Tolerance (dbiii)	(dBm)		Measured	Reported	
	Re Cheek	- (810	1909.8	31.00	30.30	17.49%	0.036	0.042	104
GSM1900	Re Tilt		810	1909.8	31.00	30.30	17.49%	0.023	0.027	-
(Head)	Le Cheek	1 - 5	810	1909.8	31.00	30.30	17.49%	0.021	0.025	-
	Le Tilt		810	1909.8	31.00	30.30	17.49%	0.021	0.025	-
GSM1900	Front side	15	810	1909.8	31.00	30.30	17.49%	0.006	0.007	-
(Body-Worn)	Back side	15	810	1909.8	31.00	30.30	17.49%	0.201	0.236	105
GPRS1900	Front side	10	810	1909.8	28.50	27.20	34.90%	0.073	0.098	-
(Hotspot)	Back side	10	810	1909.8	28.50	27.20	34.90%	0.435	0.587	106
(1Dn4UP)	Bottom side	10	810	1909.8	28.50	27.20	34.90%	0.312	0.421	-
	Right side	10	810	1909.8	28.50	27.20	34.90%	0.093	0.125	-

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WCDMA Band II

Mode	Position	Distanc e (mm)	СН	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power	Scaling	1	SAR over g /kg)	Plot page
		(111111)			Tolerance (abiii)	(dBm)		Measured	Reported	
	RE Cheek	-	9538	1907.6	25	24.98	0.46%	0.092	0.092	107
R99	RE Tilt	-	9538	1907.6	25	24.98	0.46%	0.040	0.040	-
(Head)	LE Cheek	-	9538	1907.6	25	24.98	0.46%	0.055	0.055	-
	LE Tilt	-	9538	1907.6	25	24.98	0.46%	0.062	0.062	-
	Front side	10	9538	1907.6	25	24.98	0.46%	0.121	0.122	-
	Back side	10	9262	1852.4	25	24.74	6.17%	1.010	1.072	-
	Back side	10	9400	1880	25	24.93	1.62%	1.070	1.087	108
Hotspot	Back side*	10	9400	1880	25	24.93	1.62%	1.060	1.077	-
	Back side	10	9538	1907.6	25	24.98	0.46%	0.921	0.925	-
	Bottom side	10	9262	1852.4	25	24.98	0.46%	0.536	0.538	-
	Right side	10	9262	1852.4	25	24.98	0.46%	0.175	0.176	-

^{* -} repeated at the highest SAR measurement according to the KDB865664D01v01r04

WCDMA Band V

Mode	Position	Distanc e (mm)	СН	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power	Scaling	1	SAR over g /kg)	Plot page
		(111111)			Tolcrance (dbiii)	(dBm)		Measured	Reported	
	RE Cheek	-	4183	836.6	25	23.53	40.28%	0.018	0.025	109
R99	RE Tilt	-/	4183	836.6	25	23.53	40.28%	0.015	0.021	-
(Head)	LE Cheek		4183	836.6	25	23.53	40.28%	0.017	0.024	-
	LE Tilt	-	4183	836.6	25	23.53	40.28%	0.010	0.014	-
	Front side	10	4183	836.6	25	23.53	40.28%	0.004	0.006	-
Hotspot	Back side	10	4183	836.6	25	23.53	40.28%	0.101	0.142	110
поізроі	Bottom side	10	4183	836.6	25	23.53	40.28%	0.059	0.083	-
	Right side	10	4183	836.6	25	23.53	40.28%	0.002	0.003	-

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LTE FDD Band II

Mode	Bandwidth (MHz)	Madulation	DR Size	DR start	Position	Distance	СН	Freq.	Max. Rated Avg. Power +	Measure d Avg.	Scaling	Averaged 1g (V	SAR over V/kg)	Plot
wode	(MHz)	viodulatioi	ND SIZE	nd Start	FOSILION	(mm)	GH	(MHz)	Max. Toleranc e (dBm)	Power (dBm)	Scaling	Measured	Reported	page
					RE Cheek	-	18900	1880	23.5	23.50	0.00%	0.091	0.091	111
			1 RB	50	RE Tilt	-	18900	1880	23.5	23.50	0.00%	0.048	0.048	-
	\		IND	50	LE Cheek	-	18900	1880	23.5	23.50	0.00%	0.042	0.042	-
					LE Tilt	-	18900	1880	23.5	23.50	0.00%	0.040	0.040	-
LTE David					RE Cheek	-	18900	1880	22.5	22.48	0.46%	0.071	0.071	-
LTE Band	20MHz	QPSK	50 RB	25	RE Tilt	-	18900	1880	22.5	22.48	0.46%	0.034	0.034	-
(Head)	ZUIVITZ	QFSIN	30 NB	25	LE Cheek	-	18900	1880	22.5	22.48	0.46%	0.033	0.033	-
(Hicaa)					LE Tilt	-	18900	1880	22.5	22.48	0.46%	0.032	0.032	-
					RE Cheek	1	19100	1900	22.5	22.48	0.46%	0.066	0.066	-
			100	RB	RE Tilt	-	19100	1900	22.5	22.48	0.46%	0.031	0.031	-
			100	ND	LE Cheek	(-/	19100	1900	22.5	22.48	0.46%	0.029	0.029	-
					LE Tilt	-	19100	1900	22.5	22.48	0.46%	0.027	0.027	-
					Front side	10	18900	1880	23.5	23.50	0.00%	0.084	0.084	-
			1 RB	50	Back side	10	18900	1880	23.5	23.50	0.00%	0.711	0.711	112
			IND	50	Bottom side	10	18900	1880	23.5	23.50	0.00%	0.459	0.459	-
			\	4	Right side	10	18900	1880	23.5	23.50	0.00%	0.120	0.120	-
LTE Dand					Front side	10	18900	1880	22.5	22.48	0.46%	0.063	0.063	-
LTE Band	20MHz	OBek	50 RB	25	Back side	10	18900	1880	22.5	22.48	0.46%	0.568	0.571	-
(Hotspot)	ZUIVITZ	QPSK 5	30 NB	25	Bottom side	10	18900	1880	22.5	22.48	0.46%	0.358	0.360	-
(c.opot)					Right side	10	18900	1880	22.5	22.48	0.46%	0.095	0.095	-
					Front side	10	19100	1900	22.5	22.48	0.46%	0.044	0.044	-
			100	RB	Back side	10	19100	1900	22.5	22.48	0.46%	0.357	0.359	-
	1		100	ND	Bottom side	10	19100	1900	22.5	22.48	0.46%	0.208	0.209	-
					Right side	10	19100	1900	22.5	22.48	0.46%	0.068	0.068	-

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LTE FDD Band IV

Mode	Bandwidth (MHz)	Modulation	DR Sizo	BR start	Position	Distance	СН	Freq.	Max. Rated Avg. Power +	Measure d Avg.	Scaling	Averaged 1g (V		Plot
ivioue	(MHz)	viodulatioi	TID SIZE	TID Start	i osidon	(mm)	OH	(MHz)	Max. Toleranc e (dBm)	Power (dBm)	Scaling	Measured	Reported	page
					RE Cheek	-	20050	1720	24.5	23.91	14.55%	0.010	0.011	113
			1 RB	50	RE Tilt	-	20050	1720	24.5	23.91	14.55%	0.009	0.010	-
	\		IRB	50	LE Cheek	-	20050	1720	24.5	23.91	14.55%	0.004	0.005	-
					LE Tilt	-	20050	1720	24.5	23.91	14.55%	0.007	0.008	-
LTE Daniel					RE Cheek	-	20300	1745	23.5	22.97	12.98%	0.009	0.010	-
LTE Band	20MHz	QPSK	50 RB	0	RE Tilt	-	20300	1745	23.5	22.97	12.98%	0.008	0.009	-
(Head)	ZUIVITZ	QFSIN	50 HB	U	LE Cheek	-	20300	1745	23.5	22.97	12.98%	0.003	0.003	-
(Fload)					LE Tilt	-	20300	1745	23.5	22.97	12.98%	0.005	0.006	-
					RE Cheek	1-	20175	1732.5	23.5	22.96	13.24%	0.008	0.009	-
			100	RB	RE Tilt	-	20175	1732.5	23.5	22.96	13.24%	0.007	0.008	-
			100	, up	LE Cheek	(-	20175	1732.5	23.5	22.96	13.24%	0.003	0.003	-
					LE Tilt	-	20175	1732.5	23.5	22.96	13.24%	0.004	0.005	-
					Front side	10	20050	1720	24.5	23.91	14.55%	0.006	0.007	-
			1 RB	50	Back side	10	20050	1720	24.5	23.91	14.55%	0.200	0.229	114
			1110	30	Bottom side	10	20050	1720	24.5	23.91	14.55%	0.083	0.095	-
			\	4	Right side	10	20050	1720	24.5	23.91	14.55%	0.005	0.006	-
LTE Band					Front side	10	20300	1745	23.5	22.97	12.98%	0.004	0.005	-
4	20MHz	QPSK	50 RB	0	Back side	10	20300	1745	23.5	22.97	12.98%	0.174	0.197	-
(Hotspot)	ZOIVII IZ	QI SIX	30 110	U	Bottom side	10	20300	1745	23.5	22.97	12.98%	0.079	0.089	-
(Right side	10	20300	1745	23.5	22.97	12.98%	0.002	0.002	-
					Front side	10	20175	1732.5	23.5	22.96	13.24%	0.003	0.003	-
			100	RB	Back side	10	20175	1732.5	23.5	22.96	13.24%	0.145	0.164	-
	1		100	יונט	Bottom side	10	20175	1732.5	23.5	22.96	13.24%	0.055	0.062	-
					Right side	10	20175	1732.5	23.5	22.96	13.24%	0.001	0.001	-

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LTE FDD Band V

Mode	Bandwidth (MHz)	Modulation	BB Sizo	RR etart	Position	Distance	СН	Freq.	Max. Rated Avg. Power +	Measure d Avg.	Scaling		SAR over V/kg)	Plot
Wode	(MHz)	viodulatioi	TID SIZE	TID Start	1 Ostuon	(mm)	OH	(MHz)	Max. Toleranc e (dBm)	Power (dBm)	Scamig	Measured	Reported	page
					RE Cheek	-	20600	844	22.5	22.35	3.51%	0.013	0.013	115
			1 RB	0	RE Tilt	-	20600	844	22.5	22.35	3.51%	0.008	0.008	-
	\		TRB	0	LE Cheek	-	20600	844	22.5	22.35	3.51%	0.011	0.011	-
					LE Tilt	-	20600	844	22.5	22.35	3.51%	0.006	0.006	-
LTE David					RE Cheek	-	20525	836.5	21.5	21.34	3.75%	0.010	0.010	-
LTE Band 5	10MHz	QPSK	25 RB	0	RE Tilt	-	20525	836.5	21.5	21.34	3.75%	0.006	0.006	-
(Head)	TOWINZ	JIVIHZ QPSK	23 NB		LE Cheek	-	20525	836.5	21.5	21.34	3.75%	0.009	0.009	•
(Hoda)					LE Tilt	-	20525	836.5	21.5	21.34	3.75%	0.005	0.005	-
					RE Cheek	1-	20525	836.5	21.5	21.34	3.75%	0.009	0.009	•
			50	DD	RE Tilt		20525	836.5	21.5	21.34	3.75%	0.006	0.006	ı
			30	ND	LE Cheek	(-	20525	836.5	21.5	21.34	3.75%	0.008	0.008	•
					LE Tilt	-	20525	836.5	21.5	21.34	3.75%	0.004	0.004	ı
					Front side	10	20600	844	22.5	22.35	3.51%	0.010	0.010	•
			1 RB	0	Back side	10	20600	844	22.5	22.35	3.51%	0.079	0.082	116
			1110		Bottom side	10	20600	844	22.5	22.35	3.51%	0.050	0.052	-
				4	Right side	10	20600	844	22.5	22.35	3.51%	0.003	0.003	-
LTE Band					Front side	10	20525	836.5	21.5	21.34	3.75%	0.008	0.008	•
	10MHz	OPSK	25 RB	0	Back side	10	20525	836.5	21.5	21.34	3.75%	0.052	0.054	-
(Hotspot)	5 10MHz QPSK otspot)	QI SIX	23110		Bottom side	10	20525	836.5	21.5	21.34	3.75%	0.042	0.044	-
(Right side	10	20525	836.5	21.5	21.34	3.75%	0.002	0.002	-	
					Front side	10	20525	836.5	21.5	21.34	3.75%	0.007	0.007	
			50	RR	Back side	10	20525	836.5	21.5	21.34	3.75%	0.047	0.049	-
	1		30	ווט	Bottom side	10	20525	836.5	21.5	21.34	3.75%	0.038	0.039	
					Right side	10	20525	836.5	21.5	21.34	3.75%	0.002	0.002	-

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LTE FDD Band VII

Mode	Bandwidth (MHz)	Madulation	DD Sizo	DP start	Position	Distance	СН	Freq.	Max. Rated Avg. Power +	Measure d Avg.	Scaling	Averaged 1g (V		Plot
Wiode	(MHz)	viodulatioi	ND SIZE	nd Start	Fosition	(mm)	GH	(MHz)	Max. Toleranc e (dBm)	Power (dBm)	Scaling	Measured	Reported	page
					RE Cheek	-	21100	2535	22.5	21.63	22.18%	0.008	0.010	117
			1 RB	0	RE Tilt	-	21100	2535	22.5	21.63	22.18%	0.007	0.009	-
	\		IND	U	LE Cheek	-	21100	2535	22.5	21.63	22.18%	0.007	0.009) -
					LE Tilt	-	21100	2535	22.5	21.63	22.18%	0.007	0.008	-
LTE David					RE Cheek	-	20850	2510	21.5	20.68	20.78%	0.008	0.010	-
LTE Band 7	20MHz	QPSK	50 RB	0	RE Tilt	-	20850	2510	21.5	20.68	20.78%	0.007	0.008	-
(Head)	201011 12	QI SIN	30 NB	U	LE Cheek	-	20850	2510	21.5	20.68	20.78%	0.006	0.007	-
(Hoda)					LE Tilt	-	20850	2510	21.5	20.68	20.78%	0.005	0.006	-
					RE Cheek	1-	20850	2510	21.5	20.63	22.18%	800.0	0.010	-
			100	RR	RE Tilt	-	20850	2510	21.5	20.63	22.18%	0.007	0.009	-
			100	TID	LE Cheek	(-	20850	2510	21.5	20.63	22.18%	0.006	0.007	-
					LE Tilt	-	20850	2510	21.5	20.63	22.18%	0.005	0.006	-
					Front side	10	21100	2535	22.5	21.63	22.18%	0.009	0.011	-
			1 RB	0	Back side	10	21100	2535	22.5	21.63	22.18%	0.290	0.354	118
			1110	U	Bottom side	10	21100	2535	22.5	21.63	22.18%	0.057	0.070	-
					Right side	10	21100	2535	22.5	21.63	22.18%	0.007	0.009	-
LTE Band					Front side	10	20850	2510	21.5	20.68	20.78%	0.007	0.008	-
7	20MHz	QPSK	50 RB	0	Back side	10	20850	2510	21.5	20.68	20.78%	0.117	0.141	-
(Hotspot)	20101112	QI SIN	30 110	U	Bottom side	10	20850	2510	21.5	20.68	20.78%	0.043	0.052	-
(Right side	10	20850	2510	21.5	20.68	20.78%	0.005	0.006	-
					Front side	10	20850	2510	21.5	20.63	22.18%	0.006	0.007	-
			100	RR	Back side	10	20850	2510	21.5	20.63	22.18%	0.114	0.139	-
			100	יווט	Bottom side	10	20850	2510	21.5	20.63	22.18%	0.041	0.050	-
					Right side	10	20850	2510	21.5	20.63	22.18%	0.004	0.005	-

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LTE FDD Band XII

Mode	Bandwidth (MHz)	Modulation	BR Sizo	BR start	Position	Distance	СН	Freq.	Max. Rated Avg. Power +	Measure d Avg.	Scaling	Averaged 1g (V		Plot
Wode	(MHz)	viodulatioi	TID SIZE	TID Start	1 Osition	(mm)	OH	(MHz)	Max. Toleranc e (dBm)	Power (dBm)	Scaling	Measured	Reported	page
					RE Cheek	-	23130	711	23	22.53	11.43%	0.071	0.079	119
			1 RB	49	RE Tilt	-	23130	711	23	22.53	11.43%	0.052	0.058	-
	\		IND	49	LE Cheek	-	23130	711	23	22.53	11.43%	0.023	0.026	-
					LE Tilt	-	23130	711	23	22.53	11.43%	0.017	0.019	-
LTE Dand					RE Cheek	-	23130	711	22	21.53	11.43%	0.062	0.069	١
LTE Band 12	10MHz	QPSK	25 RB	25	RE Tilt	-	23130	711	22	21.53	11.43%	0.044	0.049	
(Head)	TOWNIZ	INZ QFSK	23 NB	23	LE Cheek	-	23130	711	22	21.53	11.43%	0.019	0.021	1
(1.000)				LE Tilt	-	23130	711	22	21.53	11.43%	0.013	0.014	٠	
					RE Cheek	1-	23130	711	22	21.53	11.43%	0.061	0.068	
			50	RR	RE Tilt		23130	711	22	21.53	11.43%	0.041	0.046	-
			30	110	LE Cheek		23130	711	22	21.53	11.43%	0.017	0.019	-
					LE Tilt	-	23130	711	22	21.53	11.43%	0.011	0.012	-
					Front side	10	23130	711	23	22.53	11.43%	0.013	0.014	-
			1 RB	49	Back side	10	23130	711	23	22.53	11.43%	0.232	0.259	120
			1110	10	Bottom side	10	23130	711	23	22.53	11.43%	0.092	0.103	-
			\	4	Right side	10	23130	711	23	22.53	11.43%	0.117	0.130	-
LTE Band					Front side	10	23130	711	22	21.53	11.43%	0.008	0.009	-
	10MHz	OPSK	25 RB	25	Back side	10	23130	711	22	21.53	11.43%	0.193	0.215	-
(Hotspot)	12 10MHz QPSK otspot)	QI OIX	23110	25	Bottom side	10	23130	711	22	21.53	11.43%	0.070	0.078	-
(Right side	10	23130	711	22	21.53	11.43%	0.091	0.101	-	
					Front side	10	23130	711	22	21.53	11.43%	0.007	0.008	-
			50	RB	Back side	10	23130	711	22	21.53	11.43%	0.189	0.211	-
					Bottom side	10	23130	711	22	21.53	11.43%	0.065	0.072	-
					Right side	10	23130	711	22	21.53	11.43%	0.087	0.097	-

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LTE FDD Band XIII

Mode	Bandwidth (MHz)	Modulation	DD Sizo	DP start	Position	Distance	СН	Freq.	Max. Rated Avg. Power +	Measure d Avg.	Scaling	Averaged 1g (V	SAR over V/kg)	Plot
Mode	(MHz)	viodulatioi	ND SIZE	nd Start	FOSILION	(mm)	GH	(MHz)	Max. Toleranc e (dBm)	Power (dBm)	Scaling	Measured	Reported	page
					RE Cheek	-	23230	782	23.5	23.03	11.43%	0.066	0.074	121
			1 RB	25	RE Tilt	-	23230	782	23.5	23.03	11.43%	0.046	0.051	-
	\		IND	25	LE Cheek	-	23230	782	23.5	23.03	11.43%	0.050	0.056	-
					LE Tilt	-	23230	782	23.5	23.03	11.43%	0.041	0.046	-
LTE David					RE Cheek	-	23230	782	22.5	22.04	11.17%	0.056	0.062	-
LTE Band 13	10MHz	QPSK	25 RB	0	RE Tilt	-	23230	782	22.5	22.04	11.17%	0.039	0.043	-
(Head)	TOWNIZ	12 QPSK 2	23 NB	U	LE Cheek	-	23230	782	22.5	22.04	11.17%	0.044	0.049	-
(Houd)					LE Tilt	-	23230	782	22.5	22.04	11.17%	0.034	0.038	-
					RE Cheek	1-	23230	782	22.5	22.03	11.43%	0.053	0.059	-
			50	DR.	RE Tilt		23230	782	22.5	22.03	11.43%	0.038	0.042	-
			30	ווט	LE Cheek	(-	23230	782	22.5	22.03	11.43%	0.043	0.048	-
					LE Tilt	-	23230	782	22.5	22.03	11.43%	0.032	0.036	-
					Front side	10	23230	782	23.5	23.03	11.43%	0.047	0.052	-
			1 RB	25	Back side	10	23230	782	23.5	23.03	11.43%	0.206	0.230	122
			1110	23	Bottom side	10	23230	782	23.5	23.03	11.43%	0.128	0.143	-
			\	4	Right side	10	23230	782	23.5	23.03	11.43%	0.114	0.127	-
LTE Band					Front side	10	23230	782	22.5	22.04	11.17%	0.014	0.016	-
13	10MHz	OPSK	25 RB	0	Back side	10	23230	782	22.5	22.04	11.17%	0.167	0.186	-
(Hotspot)	10MHz QPSK	23110	· ·	Bottom side	10	23230	782	22.5	22.04	11.17%	0.105	0.117	-	
(Right side	10	23230	782	22.5	22.04	11.17%	0.092	0.102	-
					Front side	10	23230	782	22.5	22.03	11.43%	0.009	0.010	-
			50	RR	Back side	10	23230	782	22.5	22.03	11.43%	0.147	0.164	-
			30		Bottom side	10	23230	782	22.5	22.03	11.43%	0.090	0.100	-
					Right side	10	23230	782	22.5	22.03	11.43%	0.079	0.088	-

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LTE FDD Band XVII

Mode	Bandwidth (MHz)	Modulation	DD Sizo	DP start	Position	Distance	СН	Freq.	Max. Rated Avg. Power +	Measure d Avg.	Scaling		SAR over N/kg)	Plot
Mode	(MHz)	viodulatioi	ND SIZE	nd Start	FOSITION	(mm)	GH	(MHz)	Max. Toleranc e (dBm)	Power (dBm)	Scamig	Measured	Reported	page
					RE Cheek	-	23780	709	23.5	22.52	25.31%	0.067	0.084	123
			1 RB	49	RE Tilt	-	23780	709	23.5	22.52	25.31%	0.048	0.060	-
	\		IND	49	LE Cheek	-	23780	709	23.5	22.52	25.31%	0.023	0.029	-
					LE Tilt	-	23780	709	23.5	22.52	25.31%	0.016	0.020	-
LTE Daniel					RE Cheek	-	23780	709	22.5	21.50	25.89%	0.052	0.065	1
LTE Band 17	10MHz	QPSK	25 RB	25	RE Tilt	-	23780	709	22.5	21.50	25.89%	0.038	0.048	1
(Head)	TOWINZ	IZ QPSK Z	23 NB	23	LE Cheek	-	23780	709	22.5	21.50	25.89%	0.015	0.019	1
(1.000)					LE Tilt	-	23780	709	22.5	21.50	25.89%	0.013	0.016	-
					RE Cheek	1-	23800	711	22.5	21.44	27.64%	0.047	0.060	1
			50	DR	RE Tilt		23800	711	22.5	21.44	27.64%	0.034	0.043	
			30	ווט	LE Cheek	(-	23800	711	22.5	21.44	27.64%	0.013	0.017	1
					LE Tilt	-	23800	711	22.5	21.44	27.64%	0.012	0.015	
					Front side	10	23780	709	23.5	22.52	25.31%	0.013	0.016	-
			1 RB	25	Back side	10	23780	709	23.5	22.52	25.31%	0.209	0.262	124
i			1110	23	Bottom side	10	23780	709	23.5	22.52	25.31%	0.083	0.104	-
				4	Right side	10	23780	709	23.5	22.52	25.31%	0.111	0.139	-
LTE Band					Front side	10	23780	709	22.5	21.50	25.89%	0.007	0.009	-
17	10MHz	OPSK	25 RB	0	Back side	10	23780	709	22.5	21.50	25.89%	0.186	0.234	-
(Hotspot)	10MHz QPSK	23110	U	Bottom side	10	23780	709	22.5	21.50	25.89%	0.063	0.079	-	
(Right side	10	23780	709	22.5	21.50	25.89%	0.088	0.111	-
					Front side	10	23800	711	22.5	21.44	27.64%	0.005	0.006	
			50	RR	Back side	10	23800	711	22.5	21.44	27.64%	0.178	0.227	-
	1		30	ווט	Bottom side	10	23800	711	22.5	21.44	27.64%	0.055	0.070	
					Right side	10	23800	711	22.5	21.44	27.64%	0.083	0.106	-

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CDMA Cellular BC0

Mode	Service	Position	Distance (mm)	СН	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged 1 (W/	9	Plot page
						Tolerance (ubili)	(dBIII)		Measured	Reported	
		Re Cheek	-	1013	824.7	26.5	24.89	44.88%	0.002	0.003	125
1xRTT Cellular BC0	SO55/RC3	Re Tilt	-	1013	824.7	26.5	24.89	44.88%	0.001	0.001	-
(Head)	3033/1103	Le Cheek	-	1013	824.7	26.5	24.89	44.88%	0.001	0.001	-
		Le Tilt	-	1013	824.7	26.5	24.89	44.88%	0.001	0.001	-
		Re Cheek	-	384	836.52	26.5	24.95	42.89%	0.003	0.004	126
1xEVDO	ular BC0 Rev. A	Re Tilt	-	384	836.52	26.5	24.95	42.89%	0.001	0.001	-
(Head)	ular BC0 Rev. A	Le Cheek	-	384	836.52	26.5	24.95	42.89%	0.002	0.003	-
,	Head) Subtype 2	Le Tilt	-	384	836.52	26.5	24.95	42.89%	0.001	0.001	-
1xRTT Cellular BC0	RTT	Front side	15	1013	824.7	26.5	24.83	46.89%	0.001	0.001	-
(Body-worn)	3032/FGH	Back side	15	1013	824.7	26.5	24.83	46.89%	0.029	0.043	127
1xRTT Cellular BC0	SO55/RC3	Front side	15	1013	824.7	26.5	24.89	44.88%	0.001	0.001	-
(Body-worn)	3033/1103	Back side	15	1013	824.7	26.5	24.89	44.88%	0.035	0.051	128
	3ody-worn)	Front side	10	1013	824.7	26.5	25	41.25%	0.002	0.003	-
1xEVDO	Rev. 0	Back side	10	1013	824.7	26.5	25	41.25%	0.061	0.086	129
(Hotspot)	Subtype 0/1	Top side	10	1013	824.7	26.5	25	41.25%	0.028	0.040	-
		Right side	10	1013	824.7	26.5	25	41.25%	0.012	0.017	-

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CDMA PCS BC1

	Mode	Service	Position	Distance (mm)	СН	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged 19 (W/	g	Plot page
							, ,	` ,		Measured		
	1xRTT		Re Cheek	-	25	1851.25	26	24.74	33.66%	0.201	0.269	-
	PCS BC1	SO55/RC3	Re Tilt	-	25	1851.25	26	24.74	33.66%	0.154	0.206	-
	(Head)	0000,1100	Le Cheek	-	25	1851.25	26	24.74	33.66%	0.276	0.369	130
			Le Tilt	-	25	1851.25	26	24.74	33.66%	0.213	0.285	-
			Re Cheek	-	25	1851.25	26	24.83	30.92%	0.215	0.281	-
	1xRTT	Rev. A	Re Tilt	-	25	1851.25	26	24.83	30.92%	0.162	0.212	-
		Subtype 2	Le Cheek	-	25	1851.25	26	24.83	30.92%	0.260	0.340	131
			Le Tilt	-	25	1851.25	26	24.83	30.92%	0.214	0.280	-
	PCS BC1 SO32 (Body-worn)	SO32/FCH	Front side	15	25	1851.25	26	25.18	20.78%	0.097	0.117	-
		3032/I OII	Back side	15	25	1851.25	26	25.18	20.78%	0.466	0.563	132
	1xRTT PCS BC1	•	Front side	15	25	1851.25	26	24.74	33.66%	0.095	0.127	-
	(Body-worn)	0000/1100	Back side	15	25	1851.25	26	24.74	33.66%	0.484	0.647	133
	1xEVDO PCS BC1	Rev. 0	Front side	15	25	1851.25	26	25.96	0.93%	0.094	0.095	-
	(Body-worn)	Subtype 0/1	Back side	15	25	1851.25	26	25.96	0.93%	0.475	0.479	134
			Front side	10	25	1851.25	26	25.96	0.93%	0.094	0.095	-
			Back side	10	25	1851.25	26	25.96	0.93%	0.846	0.854	135
7	EVDO		Back side*	10	25	1851.25	26	25.96	0.93%	0.844	0.852	-
V	PCS BC1	Rev. 0 Subtype 0/1	Back side	10	600	1880	26	24.95	27.35%	0.804	1.024	-
	(Hotspot)	1.5/1.2	Back side	10	1175	1908.75	26	24.89	29.12%	0.814	1.051	-
			Top side	10	25	1851.25	26	25.96	0.93%	0.495	0.500	-
			Right side	10	25	1851.25	26	25.96	0.93%	0.259	0.261	-

^{* -} repeated at the highest SAR measurement according to the KDB865664D01v01r04

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WLAN802.11 b

Mode	Position	Distance (mm)	СН	CH Freq. (MHz)	Avg. Power + Max. Tolerance (dRm)	Measured Avg. Power	Scaling	Averaged S (W/		Plot page
						(dBm)		Measured	Reported	
	RE Cheek	-	1	2412	14.5	14.35	3.51%	0.012	0.012	136
WLAN 802.11b	RE Tilt	-	1	2412	14.5	14.35	3.51%	0.011	0.011	-
(Head)	LE Cheek	-	1	2412	14.5	14.35	3.51%	0.006	0.006	_
	LE Tilt	-	1	2412	14.5	14.35	3.51%	0.006	0.006	-
	Front side	10	1	2412	14.5	14.35	3.51%	0.011	0.011	-
Hotspot	Back side	10	1	2412	14.5	14.35	3.51%	0.061	0.063	137
Ποιδροί	Top side	10	1	2412	14.5	14.35	3.51%	0.034	0.035	-
	Left side	10	1	2412	14.5	14.35	3.51%	0.052	0.054	-

WLAN802.11 a 5.2G

Mode	Position	Position Distance (mm) CH		m) CH (MHz) Pov		Measured Avg. Power	Scaling	Averaged SAR over 1g (W/kg)		Plot page
		` ,		` ,	Tolerance (dBm)	(dBm)		Measured	Reported	
WLAN	RE Cheek	-	40	5200	12	11.96	0.93%	0.020	0.020	138
802.11a	RE Tilt	-	40	5200	12	11.96	0.93%	0.010	0.010	-
5.2G	LE Cheek	-	40	5200	12	11.96	0.93%	0.006	0.006	-
(Head)	LE Tilt	-	40	5200	12	11.96	0.93%	0.009	0.009	-
Body-worn	Front side	15	40	5200	12	11.96	0.93%	0.002	0.002	-
Body-worn	Back side	15	40	5200	12	11.96	0.93%	0.344	0.347	139

Mode	Position	Position Distance (mm)	I (:H I	Freq. (MHz)	Avg. Power + Max.	Measured Avg. Power	Scaling	Averaged SAR over 10g (W/kg)		Plot page
					Tolerance (dBm)	(dBm)		Measured	Reported	
WLAN	Front side	0	40	5200	12	11.96	0.93%	0.018	0.018	-
802.11a 5.2G	Back side	0	40	5200	12	11.96	0.93%	0.371	0.374	140
(Product	Top side	0	40	5200	12	11.96	0.93%	0.078	0.079	-
specific 10-	Left side	0	40	5200	12	11.96	0.93%	0.358	0.361	-

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WLAN802.11 a 5.8G

Mode	Position	Distance (mm)	СН	Freq. (MHz)	Max. Rated Avg. Power + Max.	Measured Avg. Power	Scaling	Averaged SAR over 1g (W/kg)		Plot page
				,	Tolerance (dBm)	(dBm)		Measured	Reported	
WLAN	RE Cheek	-	165	5825	10.5	10.44	1.39%	0.055	0.056	141
802.11a	RE Tilt	-	165	5825	10.5	10.44	1.39%	0.038	0.039	-
5.8G	LE Cheek	-	165	5825	10.5	10.44	1.39%	0.011	0.011	-
(Head)	LE Tilt	-	165	5825	10.5	10.44	1.39%	0.012	0.012	-
Rody worn	Front side	15	165	5825	10.5	10.44	1.39%	0.017	0.017	-
Body-worn	Back side	15	165	5825	10.5	10.44	1.39%	0.422	0.428	142

Mode	Position Distance (mm) CF		- I CH I'		Max. Rated Avg. Power + Max.	Measured Avg. Power	Scaling	Averaged SAR over 10g (W/kg)		Plot page
		, ,		,	Tolerance (dBm)	(dBm)		Measured	Reported	
WLAN	Front side	0	165	5825	10.5	10.44	1.39%	0.017	0.017	-
802.11a 5.8G	Back side	0	165	5825	10.5	10.44	1.39%	0.554	0.562	143
(Product	Top side	0	165	5825	10.5	10.44	1.39%	0.158	0.160	-
specific 10-	Left side	0	165	5825	10.5	10.44	1.39%	0.541	0.549	-

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3. Simultaneous Transmission Analysis

Simultaneous Transmission Scenarios:

Simultaneous Transmit Configurations	Head	Body-Worn	Hotspot	Product specific 10-g SAR
GSM + 2.4GHz Wi-Fi	Yes	Yes	No	Yes
GPRS/EDGE + 2.4GHz Wi-Fi	No	No	Yes	Yes
WCDMA + 2.4GHz Wi-Fi	Yes	Yes	Yes	Yes
CDMA + 2.4GHz Wi-Fi	Yes	Yes	Yes	Yes
LTE + 2.4GHz Wi-Fi	Yes	Yes	Yes	Yes
GSM + BT	No	Yes	No	Yes
GPRS/EDGE + BT	No	No	No	Yes
WCDMA + BT	No	Yes	No	Yes
CDMA + BT	No	Yes	No	Yes
LTE + BT	No	Yes	No	Yes
GSM + 5GHz Wi-Fi	Yes	Yes	No	Yes
GPRS/EDGE + 5GHz Wi-Fi	No	No	No	Yes
WCDMA + 5GHz Wi-Fi	Yes	Yes	No	Yes
LTE + 5GHz Wi-Fi	Yes	Yes	No	Yes

Notes:

- 1. The device does not support DTM function. Body-worn accessory testing is typically associated with voice operations. Therefore, GSM voice was evaluated for body-worn SAR.
- 2. Held to ear configurations are not applicable to Bluetooth for this device.
- 3. Based on KDB447498D01 note 36, when SAR test exclusion is allowed by other published RF exposure KDB procedures, such as the 2.5 cm hotspot mode SAR test exclusion for an edge or surface, then estimated SAR is not required to determine simultaneous SAR test exclusion. Also, based on KDB648474D04 note 6, simultaneous transmission SAR for product specific 10g SAR requires consideration only when standalone 10-g SAR is required.

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3.1 Estimated SAR calculation

According to KDB447498 D01v06, when standalone SAR test exclusion applies to an antenna that transmits simultaneously with other antennas, the standalone SAR must be estimated according to following to determine simultaneous transmission SAR test exclusion:

(max. power of channel, including tune-up tolerance, mW) / (min. test separation distance, mm)]·[$\sqrt{f(GHz)/x}$] W/kg for test separation distances \leq 50 mm, where x = 7.5 for 1-g SAR.

When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion

mode	position	max. power (dB)	max. power (mW)	f(GHz)	distance (mm)	х	Estimated SAR
ВТ	body-worn	4.5	2.818	2.48	15	7.5	0.039 (1g)

3.2 SPLSR evaluation and analysis

Per KDB447498D01, when the sum of SAR is larger than the limit, SAR test exclusion is determined by the SAR sum to peak location separation ratio(SPLSR).

The simultaneous transmitting antennas in each operating mode and exposure condition combination must be considered one pair at a time to determine the SAR to peak location separation ratio to qualify for test exclusion.

The ratio is determined by (SAR1 + SAR2)^1.5/Ri, rounded to two decimal digits, and must be ≤ 0.04 for all antenna pairs in the configuration to qualify for 1-g SAR test exclusion.

SAR1 and SAR2 are the highest reported or estimated SAR for each antenna in the pair, and Ri is the separation distance between the peak SAR locations for the antenna pair in mm.

When standalone test exclusion applies, SAR is estimated; the peak location is assumed to be at the feed-point or geometric center of the antenna.

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Simultaneous Transmission Combination

reported SAR WWAN and WLAN 2.4GHz, ΣSAR evaluation											
Frequency	D	!!!	reported S	SAR / W/kg	ΣSAR						
band	P	osition	WWAN	WLAN	<1.6W/kg						
		Right cheek	0.032	0.012	0.044						
GSM 850	Head	Right tilt	0.025	0.011	0.036						
GSIVI 650	пеац	Left cheek	0.030	0.006	0.036						
		Left tilt	0.019	0.006	0.025						
		Front	0.095	0.011	0.106						
		Back	0.438	0.063	0.501						
GPRS 850	Hotspot	Тор	-	0.035	-						
(1Dn4UP)	Ποιδροί	Bottom	0.311	-	-						
		Right	0.131	1	-						
		Left	-	0.054	-						
		Right cheek	0.042	0.012	0.054						
GSM 1900	Head	Right tilt	0.027	0.011	0.038						
GSW 1900		Left cheek	0.025	0.006	0.031						
		Left tilt	0.025	0.006	0.031						
		Front	0.098	0.011	0.109						
		Back	0.587	0.063	0.650						
GPRS 1900	Hotspot	Top	-	0.035	-						
(1Dn4UP)	Ποιδροί	Bottom	0.421	-	-						
		Right	0.125	-	-						
		Left	-	0.054	-						
	R	Right cheek	0.092	0.012	0.104						
	Head	Right tilt	0.040	0.011	0.051						
	Tieau	Left cheek	0.055	0.006	0.061						
		Left tilt	0.062	0.006	0.068						
WCDMA		Front	0.122	0.011	0.133						
Band II		Back	1.087	0.063	1.150						
	Hotenot	Тор	-	0.035	-						
	Hotspot -	Bottom	0.538	-	-						
		Right	0.176	-	-						
		Left	-	0.054	-						

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reported SAR WWAN and WLAN 2.4GHz, ΣSAR evaluation										
•	ed SAR W	WAN and WL								
Frequency	Po	osition	•	AR / W/kg	ΣSAR					
band			WWAN	WLAN	<1.6W/kg					
		Right cheek	0.025	0.012	0.037					
	Head	Right tilt	0.021	0.011	0.032					
	11000	Left cheek	0.024	0.006	0.030					
		Left tilt	0.014	0.006	0.020					
WCDMA		Front	0.006	0.011	0.017					
Band V		Back	0.142	0.063	0.205					
	Hotspot	Тор	-	0.035	- \					
	Ποιδροί	Bottom	0.083	1	-					
		Right	0.003	1	-					
		Left	1-0	0.054	-					
		Right cheek	0.091	0.012	0.103					
	Head	Right tilt	0.048	0.011	0.059					
		Left cheek	0.042	0.006	0.048					
		Left tilt	0.040	0.006	0.046					
LTE FDD	Halanat	Front	0.084	0.011	0.095					
Band II		Back	0.711	0.063	0.774					
		Тор	-	0.035	-					
	Hotspot	Bottom	0.459	-	-					
		Right	0.120	-	- \					
		Left	-	0.054	-					
		Right cheek	0.011	0.012	0.023					
	Heed	Right tilt	0.010	0.011	0.021					
\	Head	Left cheek	0.005	0.006	0.011					
		Left tilt	0.008	0.006	0.014					
LTE FDD		Front	0.007	0.011	0.018					
Band IV		Back	0.229	0.063	0.292					
	Hotopot	Тор	-	0.035	-					
	Hotspot	Bottom	0.095	-	-					
		Right	0.006	-	-					
		Left	-	0.054	-					

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reporte	ed SAR W	WAN and WL	AN 2.4GHz,	ΣSAR evalu	uation
Frequency		:	reported S	SAR / W/kg	ΣSAR
band	P	osition	WWAN	WLAN	<1.6W/kg
		Right cheek	0.013	0.012	0.025
	Head	Right tilt	0.008	0.011	0.019
	пеаи	Left cheek	0.011	0.006	0.017
		Left tilt	0.006	0.006	0.012
LTE FDD		Front	0.010	0.011	0.021
Band V		Back	0.082	0.063	0.145
	Hotspot	Тор	-	0.035	- /
	поізроі	Bottom	0.052	-	-
		Right	0.003	-	-
		Left		0.054	-
		Right cheek	0.010	0.012	0.022
	Head	Right tilt	0.009	0.011	0.020
		Left cheek	0.009	0.006	0.015
		Left tilt	0.008	0.006	0.014
LTE FDD		Front	0.011	0.011	0.022
Band VII		Back	0.354	0.063	0.417
	Lletenet	Тор	-	0.035	\-
	Hotspot	Bottom	0.070	-	-
		Right	0.009	-	- \
		Left	-	0.054	-
		Right cheek	0.079	0.012	0.091
	Head	Right tilt	0.058	0.011	0.069
	Head	Left cheek	0.026	0.006	0.032
		Left tilt	0.019	0.006	0.025
LTE FDD		Front	0.014	0.011	0.025
Band XII		Back	0.259	0.063	0.322
	Llotonot	Тор	-	0.035	- 1
	Hotspot	Bottom	0.103	-	-
		Right	0.130	-	-
		Left	-	0.054	-

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reported SAR WWAN and WLAN 2.4GHz, ΣSAR evaluation											
-	d SAR W	WAN and WL									
Frequency	Po	osition	•	AR / W/kg	ΣSAR						
band			WWAN	WLAN	<1.6W/kg						
		Right cheek	0.074	0.012	0.086						
	Head	Right tilt	0.051	0.011	0.062						
		Left cheek	0.056	0.006	0.062						
		Left tilt	0.046	0.006	0.052						
LTE FDD		Front	0.052	0.011	0.063						
Band XIII		Back	0.230	0.063	0.293						
	Hotspot	Тор	-	0.035	- _						
	Hotspot	Bottom	0.143	-	-						
		Right	0.127	-	-						
		Left	2	0.054	-						
		Right cheek	0.084	0.012	0.096						
	Head	Right tilt	0.060	0.011	0.071						
		Left cheek	0.029	0.006	0.035						
		Left tilt	0.020	0.006	0.026						
LTE FDD		Front	0.016	0.011	0.027						
Band XVII		Back	0.262	0.063	0.325						
	Hotopot	Тор	-	0.035	-						
	Hotspot	Bottom	0.104	-	-						
		Right	0.139	-	- \						
		Left	-	0.054	-						
		Right cheek	0.004	0.012	0.016						
	Hood	Right tilt	0.001	0.011	0.012						
\	Head	Left cheek	0.003	0.006	0.009						
		Left tilt	0.001	0.006	0.007						
CDMA		Front	0.003	0.011	0.014						
Callular BC0		Back	0.086	0.063	0.149						
	Hotopot	Тор	0.040	0.035	0.075						
	Hotspot	Bottom	-	-	-						
		Right	0.017	-	-						
		Left	-	0.054	-						

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reported SAR WWAN and WLAN 2.4GHz, ΣSAR evaluation								
Frequency		osition	reported SAR / W/kg		ΣSAR			
band	Г	JSILIOTI	WWAN	WLAN	<1.6W/kg			
		Right cheek	0.281	0.012	0.293			
	Head	Right tilt	0.212	0.011	0.223			
	пеац	Left cheek	0.369	0.006	0.375			
		Left tilt	0.285	0.006	0.291			
CDMA PCS		Front	0.095	0.011				
BC1		Back	1.051	0.063	1.114			
	Hotspot	Тор	0.500	0.035	0.535			
	rioispoi	Bottom		-	-			
		Right	0.261	-	<1.6W/kg 0.293 0.223 0.375 0.291 0.106 1.114			
		Left		0.054	-			

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Frequency band Position reported SAR /W/kg ∑SAR GSM 850 Head Bead Feet Band Right cheek Right tilt Right tilt Right tilt Right tilt Rough Sar Right tilt Right Ri							
Band Position WWAN WLAN <1.6W/kg	report	ed SAR V	WAN and WI				
Head Head Right cheek 0.032 0.056 0.088 Right tilt 0.025 0.039 0.064 Left cheek 0.030 0.011 0.041 Left tilt 0.019 0.012 0.031 Right tilt 0.025 0.039 0.064 Left tilt 0.019 0.012 0.031 Right tilt 0.019 0.012 0.031 Right tilt 0.025 0.0428 0.587 Right tilt 0.027 0.039 0.066 Left cheek 0.042 0.056 0.098 Right tilt 0.027 0.039 0.066 Left cheek 0.025 0.011 0.036 Left tilt 0.025 0.012 0.037 Right cheek 0.025 0.016 0.048 Right tilt 0.040 0.039 0.079 Left cheek 0.055 0.011 0.066 Left tilt 0.062 0.012 0.074 Right cheek 0.025 0.056 0.081 Right cheek 0.025 0.056 0.081 Right tilt 0.021 0.039 0.060 Left cheek 0.024 0.011 0.035 Left cheek 0.024 0.011 0.035 Left tilt 0.014 0.012 0.026 Right cheek 0.024 0.011 0.035 Left cheek 0.024 0.011 0.035 Left cheek 0.042 0.011 0.055 Left cheek 0.042 0.011 0.053 Left cheek 0.042 0.011 0.056 0.067 Right cheek 0.005 0.011 0.016 Left cheek 0.		Р	osition			ΣSAR	
Head Right tilt 0.025 0.039 0.064 Left cheek 0.030 0.011 0.041 Left tilt 0.019 0.012 0.031 Bodyworn Back 0.159 0.428 0.587 Right tilt 0.027 0.039 0.066 Right tilt 0.027 0.039 0.066 Left cheek 0.025 0.011 0.036 Left tilt 0.025 0.011 0.036 Left tilt 0.025 0.012 0.037 Left tilt 0.025 0.012 0.037 Back 0.236 0.428 0.664 Right tilt 0.040 0.039 0.079 Left cheek 0.092 0.056 0.148 Right tilt 0.040 0.039 0.079 Left tilt 0.062 0.011 0.066 Left tilt 0.062 0.012 0.074 Back - 0.428 - Head Head Right tilt 0.021 0.039 0.060 Left tilt 0.014 0.012 0.026 Right tilt 0.014 0.012 0.026 Left tilt 0.014 0.012 0.026 Left tilt 0.014 0.012 0.026 Left tilt 0.048 0.039 0.087 Left cheek 0.042 0.011 0.053 Left tilt 0.040 0.012 0.052 Left tilt 0.040 0.013 0.049 Left cheek 0.011 0.056 0.067 Right tilt 0.010 0.039 0.049 Left cheek 0.005 0.011 0.016	band	·		WWAN	WLAN	<1.6W/kg	
Ceft cheek 0.030 0.011 0.041			Right cheek	0.032	0.056	0.088	
Left cheek 0.030 0.011 0.041		Head	Right tilt	0.025	0.039	0.064	
Bodyworn Bodyworn Back Deft tilt Deft cheek D	GSM 850	ricad	Left cheek	0.030	0.011	0.041	
Back 0.159 0.428 0.587	GOIVI 030		Left tilt	0.019	0.012	0.031	
Head Head Right cheek 0.042 0.056 0.098 Right tilt 0.027 0.039 0.066 Left cheek 0.025 0.011 0.036 Left tilt 0.025 0.012 0.037 Right tilt 0.025 0.012 0.037 Right tilt 0.040 0.017 0.024 Right tilt 0.040 0.039 0.079 Left cheek 0.092 0.056 0.148 Right tilt 0.040 0.039 0.079 Left cheek 0.055 0.011 0.066 Left tilt 0.062 0.012 0.074 Right cheek 0.025 0.056 0.081 Right tilt 0.021 0.039 0.060 Left cheek 0.025 0.056 0.081 Right tilt 0.021 0.039 0.060 Left cheek 0.024 0.011 0.035 Left tilt 0.014 0.012 0.026 Right tilt 0.014 0.012 0.026 Left tilt 0.048 0.039 0.087 Left cheek 0.042 0.011 0.053 Left tilt 0.040 0.012 0.052 Right cheek 0.011 0.056 0.067 Right tilt 0.010 0.039 0.049 Left cheek 0.005 0.011 0.016 Left tilt 0.010 0.039 0.049 Left cheek 0.005 0.011 0.016 Left tilt 0.010 0.039 0.049 Left cheek 0.005 0.011 0.016 Left ch		Body-	Front	0.002	0.017	0.019	
Head Left cheek 0.025 0.011 0.036 Left cheek 0.025 0.011 0.036 Left tilt 0.025 0.012 0.037 Bodyworn Back 0.236 0.428 0.664 WCDMA Band II Head Right tilt 0.040 0.039 0.079 Left cheek 0.055 0.011 0.066 Left tilt 0.062 0.012 0.074 Left cheek 0.055 0.011 0.066 Left tilt 0.062 0.012 0.074 Bodyworn Back - 0.428 - 0.428 Head Right tilt 0.021 0.039 0.060 Left cheek 0.025 0.056 0.081 Right tilt 0.021 0.039 0.060 Left cheek 0.024 0.011 0.035 Left tilt 0.014 0.012 0.026 Bodyworn Back - 0.428 - 0.428 - 0.428 Left tilt 0.048 0.039 0.087 Left cheek 0.042 0.011 0.053 Left cheek 0.042 0.011 0.053 Left cheek 0.042 0.011 0.053 Left tilt 0.040 0.012 0.052 Bodyworn Back - 0.428 - 0.052 Bodyworn Back - 0.017 - 0.052 Bodyworn Back - 0.017 - 0.052 Bodyworn Back - 0.017 - 0.052 Right cheek 0.011 0.056 0.067 Right tilt 0.010 0.039 0.049 Left cheek 0.005 0.011 0.016		worn	Back	0.159	0.428	0.587	
Carrell			Right cheek	0.042	0.056	0.098	
Carrell Carr		Hood	Right tilt	0.027	0.039	0.066	
Left tilt 0.025 0.012 0.037	GSM 1000	пеац	Left cheek	0.025	0.011	0.036	
WCDMA Band II Head Bodyworn Right cheek Band III 0.236 0.428 0.056 0.148 0.664 0.092 0.056 0.148 WCDMA Band II Head Bodyworn Right tilt 0.040 0.039 0.079 0.079 0.066 0.011 0.066 Left cheek 0.055 0.011 0.066 0.074 0.012 0.074 D.017 0.074 0.074 0.017 0.074 0.074 0.017 0.074 0.017 0.021 0.026 0.081 0.024 0.011 0.039 0.060 0.081 0.024 0.011 0.035 0.026 0.081 0.024 0.011 0.035 0.026 0.024 0.011 0.035 0.026 0.024 0.011 0.035 0.026 0.024 0.011 0.035 0.026 0.024 0.011 0.035 0.026 0.024 0.011 0.035 0.026 0.024 0.011 0.035 0.026 0.024 0.011 0.056 0.026 0.024 0.011 0.056 0.026 0.024 0.011 0.056 0.026 0.024 0.011 0.053 0.026 0.024 0.011 0.053 0.026 0.024 0.011 0.053 0.026 0.024 0.011 0.053 0.026 0.024 0.011 0.053 0.026 0.026 0.024 0.011 0.053 0.026	G3W 1900		Left tilt	0.025	0.012	0.037	
Head Head Right cheek 0.092 0.056 0.148		Body-	Front	0.007	0.017	0.024	
WCDMA Band II Right tilt 0.040 0.039 0.079 Band II Left cheek 0.055 0.011 0.066 Left tilt 0.062 0.012 0.074 Bodyworn Front - 0.017 - Back - 0.428 - Right cheek 0.025 0.056 0.081 Right tilt 0.021 0.039 0.060 Left cheek 0.024 0.011 0.035 Left cheek 0.024 0.011 0.035 Left tilt 0.014 0.012 0.026 Back - 0.428 - Right cheek 0.091 0.056 0.147 Right tilt 0.048 0.039 0.087 Left cheek 0.042 0.011 0.053 Left tilt 0.040 0.012 0.052 Badyworn Back - 0.428 - Left tilt 0.040 0.017 - Back		worn	Back	0.236	0.428	0.664	
NCDMA Band II		Head	Right cheek	0.092	0.056	0.148	
Left cheek 0.055 0.011 0.066 Left tilt 0.062 0.012 0.074 Bodyworn Back - 0.428 - Right cheek 0.025 0.056 0.081 Right tilt 0.021 0.039 0.060 Left cheek 0.024 0.011 0.035 Left tilt 0.014 0.012 0.026 Bodyworn Back - 0.017 - WCDMA Band V Eft cheek 0.091 0.056 0.147 Right cheek 0.091 0.056 0.147 Right tilt 0.048 0.039 0.087 Left cheek 0.042 0.011 0.053 Left tilt 0.040 0.012 0.052 Bodyworn Back - 0.017 - WCDMA Band V Eight tilt 0.048 0.039 0.087 Left cheek 0.042 0.011 0.053 Left tilt 0.040 0.012 0.052 Bodyworn Back - 0.017 - Right cheek 0.011 0.056 0.067 Right tilt 0.010 0.039 0.049 Left cheek 0.005 0.011 0.016			Right tilt	0.040	0.039	0.079	
Bodyworn Back - 0.017 -	WCDMA		Left cheek	0.055	0.011	0.066	
WCDMA Band V Back - 0.428 - WCDMA Band V Right cheek 0.025 0.056 0.081 Right tilt 0.021 0.039 0.060 Left cheek 0.024 0.011 0.035 Left tilt 0.014 0.012 0.026 Bodyworn Front - 0.017 - Back - 0.428 - Right cheek 0.091 0.056 0.147 Right tilt 0.048 0.039 0.087 Left cheek 0.042 0.011 0.053 Left tilt 0.040 0.012 0.052 Bodyworn Front - 0.017 - Back - 0.428 - Back - 0.428 - Head Right cheek 0.011 0.056 0.067 Right tilt 0.010 0.039 0.049 Left cheek 0.005 0.011 0.016	Band II		Left tilt	0.062	0.012	0.074	
Head Head Right cheek 0.025 0.056 0.081		Body-	Front	-	0.017	-	
Head Head Right tilt 0.021 0.039 0.060 Left cheek 0.024 0.011 0.035 Left tilt 0.014 0.012 0.026 Bodyworn Back - 0.017 - Back - 0.428 - Right tilt 0.048 0.039 0.087 Left cheek 0.042 0.011 0.053 Left tilt 0.040 0.012 0.052 Bodyworn Back - 0.017 - Bodyworn Back - 0.428 - Right cheek 0.011 0.056 0.067 Right tilt 0.010 0.039 0.049 Left cheek 0.005 0.011 0.016 Left cheek 0.005 0.011 0.016 Left cheek 0.005 0.011 0.016		worn	Back	-	0.428	-\	
WCDMA Band V Left cheek 0.024 0.011 0.035 Band V Left tilt 0.014 0.012 0.026 Bodyworn Front - 0.017 - Back - 0.428 - Right cheek 0.091 0.056 0.147 Right tilt 0.048 0.039 0.087 Left cheek 0.042 0.011 0.053 Left tilt 0.040 0.012 0.052 Bodyworn Front - 0.017 - Back - 0.428 - Right cheek 0.011 0.056 0.067 Right tilt 0.010 0.039 0.049 Left cheek 0.005 0.011 0.016		Head	Right cheek	0.025	0.056	0.081	
Left cheek 0.024 0.011 0.035			Right tilt	0.021	0.039	0.060	
Bodyworn Front - 0.017 -	WCDMA		Left cheek	0.024	0.011	0.035	
Worn Back - 0.428 -	Band V		Left tilt	0.014	0.012	0.026	
Head Head Right cheek 0.091 0.056 0.147 Right tilt 0.048 0.039 0.087 Left cheek 0.042 0.011 0.053 Left tilt 0.040 0.012 0.052 Bodyworn Back - 0.428 - Right cheek 0.011 0.056 0.067 Right tilt 0.010 0.039 0.049 Left cheek 0.005 0.011 0.016	\		Front	-	0.017	-	
Head Head Right tilt 0.048 0.039 0.087 Left cheek 0.042 0.011 0.053 Left tilt 0.040 0.012 0.052 Bodyworn Back - 0.017 - Worn Back - 0.428 - Right cheek 0.011 0.056 0.067 Right tilt 0.010 0.039 0.049 Left cheek 0.005 0.011 0.016			Back	-	0.428	-	
LTE FDD Band II Head Left cheek 0.042 0.011 0.053 Bodyworn Front F			Right cheek	0.091	0.056	0.147	
Left cheek 0.042 0.011 0.053		l la a al	Right tilt	0.048	0.039	0.087	
Bodyworn Back - 0.428 - Right cheek 0.011 0.056 0.067 Right tilt 0.010 0.039 0.049 Left cheek 0.005 0.011 0.016	LTE FDD	неаа	Left cheek	0.042	0.011	0.053	
worn Back - 0.428 - Right cheek 0.011 0.056 0.067 Right tilt 0.010 0.039 0.049 Left cheek 0.005 0.011 0.016			Left tilt	0.040	0.012	0.052	
worn Back - 0.428 - Right cheek 0.011 0.056 0.067 Right tilt 0.010 0.039 0.049 Left cheek 0.005 0.011 0.016		Body-	Front	-	0.017	-	
Head Head Right cheek 0.011 0.056 0.067 Right tilt 0.010 0.039 0.049 Left cheek 0.005 0.011 0.016			Back	-	0.428	-	
LTE FDD Head Right tilt 0.010 0.039 0.049 Left cheek 0.005 0.011 0.016	LTE FDD		Right cheek	0.011	0.056	0.067	
LTE FDD				0.010	0.039	0.049	
		Head			0.011	0.016	
2011 111 0.000 0.012 0.020			Left tilt	0.008	0.012	0.020	
Body- Front - 0.017 -		Body-	Front	-	0.017	-	
worn Back - 0.428 -		-		-		-	

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reported SAR WWAN and WLAN 5GHz, ΣSAR evaluation							
Frequency			-	ed SAR / W/kg ΣSAR			
band	P	osition	WWAN	WLAN	<1.6W/kg		
		Right cheek	0.013	0.056	0.069		
		Right tilt	0.008	0.039	0.047		
LTE FDD	Head	Left cheek	0.011	0.011	0.022		
Band V		Left tilt	0.006	0.012	0.018		
	Body-	Front	-	0.017			
	worn	Back	-	0.428	- 1		
		Right cheek	0.010	0.056	0.066		
	llaad	Right tilt	0.009	0.039	0.048		
LTE FDD	Head	Left cheek	0.009	0.011	0.020		
Band VII		Left tilt	0.008	0.012	0.020		
	Body- worn	Front	-	0.017	-		
		Back	-	0.428	-		
	Head	Right cheek	0.079	0.056	0.135		
		Right tilt	0.058	0.039	0.097		
LTE FDD		Left cheek	0.026	0.011	0.037		
Band XII		Left tilt	0.019	0.012	0.031		
	Body-	Front	-	0.017	-		
	worn	Back	-	0.428	-		
		Right cheek	0.074	0.056	0.130		
	Head	Right tilt	0.051	0.039	0.090		
LTE FDD	ricad	Left cheek	0.056	0.011	0.067		
Band XIII		Left tilt	0.046	0.012	0.058		
	Body-	Front	1	0.017	-		
	worn	Back	-	0.428	-		
LTE FDD		Right cheek	0.084	0.056	0.140		
	Head	Right tilt	0.060	0.039	0.099		
	ricad	Left cheek	0.029	0.011	0.040		
Band XVII		Left tilt	0.020	0.012	0.032		
	Body-	Front	-	0.017	-		
	worn	Back	-	0.428	-		

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reported SAR WWAN and WLAN 5GHz, ΣSAR evaluation							
Frequency	Position		reported S	eported SAR / W/kg			
band	_	OSILIOTI	WWAN	WLAN	<1.6W/kg		
		Right cheek	0.004	0.056	0.060		
	Head	Right tilt	0.001	0.039	0.040		
CDMA	Body- worn	Left cheek	0.003	0.011	0.014		
Callular BC0		Left tilt	0.001	0.012	0.013		
		Front	0.001	0.017	0.018		
		Back	0.051	0.428	0.479		
		Right cheek	0.281	0.056	0.337		
		Right tilt	0.212	0.039	0.251		
CDMA PCS BC1		Left cheek	0.369	0.011	0.380		
		Left tilt	0.285	0.012	0.297		
	Body-	Front	0.127	0.017	0.144		
	worn	Back	0.647	0.428	1.075		

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reported SAR WWAN and Bluetooth, ΣSAR evaluation							
Frequency	Doo	ition	reported S	SAR / W/kg	ΣSAR		
band	POS	illon	WWAN Bluetooth		<1.6W/kg		
GSM 850	Body-	Front	0.002	0.039	0.041		
G3W 630	Worn	Back	0.159	0.039	0.198		
GSM 1900	Body-	Front	0.007	0.039	0.046		
GOW 1300	Worn	Back	0.236	0.039	0.275		
WCDMA	Body-	Front	-	0.039			
Band II	Worn	Back	<u> </u>	0.039	-		
WCDMA	Body-	Front	- \	0.039	-		
Band V	Worn	Back	-	0.039	-		
LTE FDD Band	Body-	Front		0.039	-		
II	Worn	Back	-	0.039	-		
LTE FDD Band	Body-	Front	-	0.039	-		
IV	Worn	Back	-	0.039	-		
LTE FDD Band	Body-	Front	-	0.039	-		
V	Worn	Back	-	0.039			
LTE FDD Band	Body-	Front	-	0.039			
VII	Worn	Back	-	0.039	-		
LTE FDD Band	Body-	Front	-	0.039			
XII	Worn	Back	-	0.039	-		
LTE FDD Band	Body-	Front	-	0.039	-		
XIII	Worn	Back	-	0.039	-		
LTE FDD Band	Body-	Front	-	0.039	-		
XVII	Worn	Back	-	0.039			
CDMA Callular	Body-	Front	0.001	0.039	0.040		
BC0	Worn	Back	0.051	0.039	0.090		
CDMA PCS	Body-	Front	0.127	0.039	0.166		
BC1	Worn	Back	0.647	0.039	0.686		

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reported SAR WWAN and WLAN 5G, ΣSAR evaluation							
Frequency			reported S	SAR / W/kg	ΣSAR		
band	P(osition	WWAN	WLAN	<4.0W/kg		
	product	Front	-	0.018	-		
GSM 850	specific	Back	-	0.562	-		
G3IVI 630	10-g	Тор	-	0.160	-		
	SAR	Left	-	0.549			
	product	Front	-	0.018	-		
CDDC 050	specific	Back	-	0.562	\ - -		
GPRS 850	10-g	Тор	-	0.160	-		
	SAR	Left	-	0.549	-		
	product	Front		0.018	-		
CCM 1000	specific	Back		0.562	-		
GSM 1900	10-g SAR	Тор	-	0.160	-		
		Left	-	0.549	-		
	product specific 10-g	Front	-	0.018	-		
0000 4000		Back	-	0.562	-		
GPRS 1900		Тор	-	0.160			
	SAR	Left	-	0.549			
·	product specific 10-g SAR	Front	-	0.018	\ 0		
WCDMA		Back	-	0.562	-		
Band II		Тор	-	0.160	\-		
		Left	-	0.549	-		
	product	Front	-	0.018	-		
WCDMA	specific	Back	-	0.562	-		
Band V	10-g	Тор	-	0.160	-		
	SAR	Left	-	0.549	-		
	product	Front	-	0.018			
LTE FDD Band II	specific	Back	-	0.562	-		
	10-g	Тор	-	0.160	-		
	SAR	Left	-	0.549	-		
	product	Front	-	0.018	-		
LTE FDD	specific	Back	-	0.562	-		
Band IV	10-g	Тор	-	0.160	-		
	SAR	Left	-	0.549	-		

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reported SAR WWAN and WLAN 5G, ΣSAR evaluation							
Frequency	D	osition	reported S	SAR / W/kg	ΣSAR		
band	PO	OSILION	WWAN	WLAN	<4.0W/kg		
	product	Front	-	0.018	-		
LTE FDD	specific	Back	-	0.562	-		
Band V	10-g	Тор	-	0.160	-		
	SAR	Left	-	0.549	-		
	product	Front	-	0.018	-		
LTE FDD	specific	Back	-	0.562	-		
Band VII	10-g	Тор	-	0.160	-		
	SAR	Left	-	0.549	-		
	product	Front		0.018	-		
LTE FDD	specific 10-g	Back		0.562	-		
Band XII		Тор	-	0.160	-		
	SAR	Left	-	0.549	-		
	product	Front	-	0.018	-		
LTE FDD	specific	Back	-	0.562	-		
Band XIII	10-g	Тор	-	0.160	-		
	SAR	Left	-	0.549	-		
	product	Front	-	0.018			
LTE FDD	specific	Back	-	0.562	-		
Band XVII	10-g	Top	-	0.160	_		
	SAR	Left	-	0.549	-		
	product	Front	-	0.018	-		
CDMA Callular BC0	specific	Back	-	0.562	-		
	10-g	Тор	-	0.160	-		
	SAR	Left	-	0.549	-		
	product	Front	-	0.018			
CDMA PCS	specific	Back	-	0.562	-		
BC1	10-g	Тор	-	0.160			
	SAR	Left	-	0.549	-		

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4. Instruments List

Manufacturer	Device	Туре	Serial number	Date of last calibration	Date of next calibration
Schmid & Partner Engineering AG	Dosimetric E-Field Probe	EX3DV4	3831	Jan.27,2016	Jan.26,2017
		D750V3	1015	Aug.30,2016	Aug.29,2017
		D835V2	4d063	Aug.25,2016	Aug.25,2017
Schmid &		D1750V2	1008	Aug.31,2016	Aug.30,2017
Partner	System Validation Dipole	D1900V2	5d027	Apr.25,2016	Apr.24,2017
Engineering AG	S Bipole	D2450V2	727	Apr.19,2016	Apr.18,2017
		D2600V2	1005	Jan.21,2016	Jan.20,2017
		D5GHzV2	1023	Jan.26,2016	Jan.25,2017
Schmid & Partner Engineering AG	Data acquisition Electronics	DAE4	1374	Aug.23,2016	Aug.22,2017
Schmid & Partner Engineering AG	Software	DASY 52 V52.8.8	N/A	Calibration not required	Calibration not required
Schmid & Partner Engineering AG	Phantom	SAM	N/A	Calibration not required	Calibration not required
Network Analyzer	Agilent	E5071C	MY46107530	Jan.07,2016	Jan.06,2017
Agilent	Dielectric Probe Kit	85070E	MY44300677	Calibration not required	Calibration not required
Agilent	Dual-directional	772D	MY52180142	Apr.13,2016	Apr.12,2017
Aglient	coupler	778D	MY52180302	Apr.13,2016	Apr.12,2017

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Manufacturer	Device	Туре	Serial number	Date of last calibration	Date of next calibration
Agilent	RF Signal Generator	N5181A	MY50145142	Feb.19,2016	Feb.18,2017
Agilent	Power Meter	E4417A	MY51410006	Jan.07,2016	Jan.06,2017
Agilopt	Power Sensor	E9301H	MY51470001	Jan.07,2016	Jan.06,2017
Agilent		E9301H	MY51470002	Jan.07,2016	Jan.06,2017
TECPEL	Digital thermometer	DTM-303A	TP130073	Feb.26,2016	Feb.25,2017
Anritsu	Radio Communication Test	MT8820C	6201061049	Apr.08,2016	Apr.07,2017

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5. Measurements

Date: 2016/11/5

GSM 850 Head Re Cheek CH 190

Communication System: GSM; Frequency: 836.6 MHz

Medium parameters used: f = 837 MHz; $\sigma = 0.867$ S/m; $\varepsilon_r = 40.182$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY5 Configuration:

Probe: EX3DV4 - SN3831; ConvF(8.84, 8.84, 8.84); Calibrated: 2016/1/27;

Sensor-Surface: 2mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1374; Calibrated: 2016/8/23

Phantom: Head

DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Body/Area Scan (81x141x1): Interpolated grid: dx=15 mm, dy=15

Maximum value of SAR (interpolated) = 0.0245 W/kg

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm,

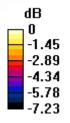
dv=8mm, dz=5mm

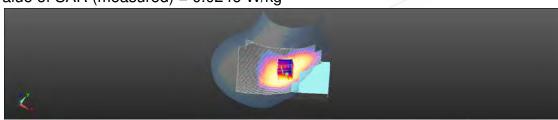
Reference Value = 3.283 V/m; Power Drift = 0.15 dB

Peak SAR (extrapolated) = 0.0260 W/kg

SAR(1 g) = 0.022 W/kg; SAR(10 g) = 0.018 W/kg

Maximum value of SAR (measured) = 0.0246 W/kg





0 dB = 0.0246 W/kg = -16.10 dBW/kg

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Date: 2016/11/7

GSM 850 Body-worn Back side CH 190 15mm

Communication System: GSM; Frequency: 836.6 MHz

Medium parameters used: f = 837 MHz; $\sigma = 0.999$ S/m; $\varepsilon_r = 53.615$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 SN3831; ConvF(9.08, 9.08, 9.08); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1374; Calibrated: 2016/8/23
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Body/Area Scan (81x131x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.134 W/kg

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm,

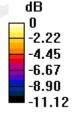
dy=8mm, dz=5mm

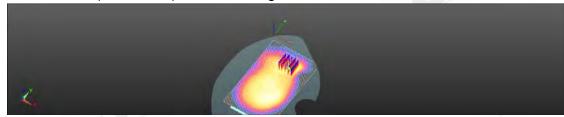
Reference Value = 10.04 V/m; Power Drift = 0.07 dB

Peak SAR (extrapolated) = 0.153 W/kg

SAR(1 g) = 0.110 W/kg; SAR(10 g) = 0.073 W/kg

Maximum value of SAR (measured) = 0.136 W/kg





0 dB = 0.136 W/kg = -8.68 dBW/kg

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Date: 2016/11/7

GPRS 850 Hotspot Back side CH 128 10mm

Communication System: GPRS (1Dn4Up); Frequency: 824.2 MHz

Medium parameters used: f = 824.2 MHz; $\sigma = 0.994 \text{ S/m}$; $\varepsilon_r = 53.812$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 SN3831; ConvF(9.08, 9.08, 9.08); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1374; Calibrated: 2016/8/23
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Body/Area Scan (81x131x1): Interpolated grid: dx=15 mm, dy=15

Maximum value of SAR (interpolated) = 0.321 W/kg

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm,

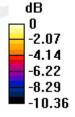
dy=8mm, dz=5mm

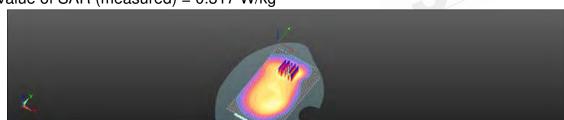
Reference Value = 14.25 V/m; Power Drift = -0.06 dB

Peak SAR (extrapolated) = 0.358 W/kg

SAR(1 g) = 0.258 W/kg; SAR(10 g) = 0.174 W/kg

Maximum value of SAR (measured) = 0.317 W/kg





0 dB = 0.317 W/kg = -5.00 dBW/kg

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Date: 2016/11/6

GSM 1900 Head Re Cheek CH 810

Communication System: GSM; Frequency: 1909.8 MHz

Medium parameters used: f = 1910 MHz; $\sigma = 1.425$ S/m; $\epsilon_r = 38.554$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 SN3831; ConvF(7.66, 7.66, 7.66); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1374; Calibrated: 2016/8/23
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Body/Area Scan (81x141x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.0486 W/kg

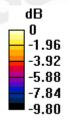
Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm,

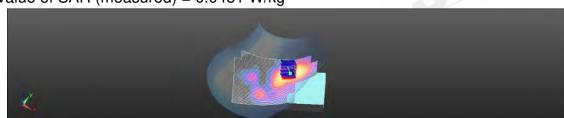
dy=8mm, dz=5mm

Reference Value = 2.763 V/m; Power Drift = -0.14 dB

Peak SAR (extrapolated) = 0.0570 W/kg

SAR(1 g) = 0.036 W/kg; SAR(10 g) = 0.023 W/kgMaximum value of SAR (measured) = 0.0451 W/kg





0 dB = 0.0451 W/kg = -13.46 dBW/kg

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Date: 2016/11/8

GSM 1900 Body-worn Back side CH 810 15mm

Communication System: GSM; Frequency: 1909.8 MHz

Medium parameters used: f = 1910 MHz; $\sigma = 1.568 \text{ S/m}$; $\epsilon_r = 54.008$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 SN3831; ConvF(7.54, 7.54, 7.54); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1374; Calibrated: 2016/8/23
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Body/Area Scan (81x131x1): Interpolated grid: dx=15 mm, dy=15

Maximum value of SAR (interpolated) = 0.272 W/kg

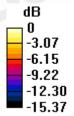
Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm,

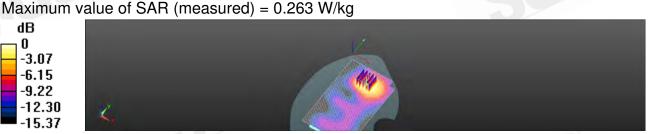
dy=8mm, dz=5mm

Reference Value = 4.367 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 0.317 W/kg

SAR(1 g) = 0.201 W/kg; SAR(10 g) = 0.119 W/kg





0 dB = 0.263 W/kg = -5.80 dBW/kg

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Date: 2016/11/8

GPRS 1900 Hotspot Back side CH 810 10mm

Communication System: GPRS (1Dn4Up); Frequency: 1909.8 MHz

Medium parameters used: f = 1910 MHz; $\sigma = 1.568$ S/m; $\epsilon_r = 54.008$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 SN3831; ConvF(7.54, 7.54, 7.54); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1374; Calibrated: 2016/8/23
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Body/Area Scan (81x131x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.603 W/kg

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm,

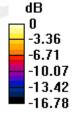
dy=8mm, dz=5mm

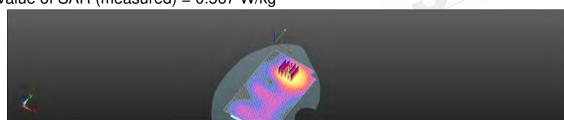
Reference Value = 6.279 V/m; Power Drift = -0.07 dB

Peak SAR (extrapolated) = 0.686 W/kg

SAR(1 g) = 0.435 W/kg; SAR(10 g) = 0.255 W/kg

Maximum value of SAR (measured) = 0.567 W/kg





0 dB = 0.567 W/kg = -2.46 dBW/kg

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Date: 2016/11/6

WCDMA Band II_Head_Re Cheek_CH 9538

Communication System: WCDMA; Frequency: 1907.6 MHz

Medium parameters used: f = 1908 MHz; $\sigma = 1.423$ S/m; $\epsilon_r = 38.577$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 SN3831; ConvF(7.66, 7.66, 7.66); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1374; Calibrated: 2016/8/23
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Body/Area Scan (81x141x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.113 W/kg

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm,

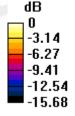
dy=8mm, dz=5mm

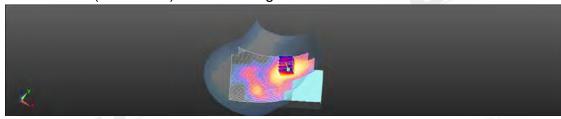
Reference Value = 3.706 V/m; Power Drift = 0.15 dB

Peak SAR (extrapolated) = 0.148 W/kg

SAR(1 g) = 0.092 W/kg; SAR(10 g) = 0.055 W/kg

Maximum value of SAR (measured) = 0.118 W/kg





0 dB = 0.118 W/kg = -9.29 dBW/kg

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Date: 2016/11/8

WCDMA Band II_Hotspot_Back side_CH 9400_10mm

Communication System: WCDMA; Frequency: 1880 MHz

Medium parameters used: f = 1880 MHz; $\sigma = 1.539$ S/m; $\epsilon_r = 54.115$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 SN3831; ConvF(7.54, 7.54, 7.54); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1374; Calibrated: 2016/8/23
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Body/Area Scan (81x131x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 1.49 W/kg

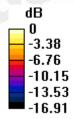
Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm,

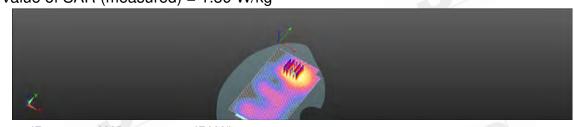
dy=8mm, dz=5mm

Reference Value = 10.03 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 1.67 W/kg

SAR(1 g) = 1.07 W/kg; SAR(10 g) = 0.633 W/kg Maximum value of SAR (measured) = 1.39 W/kg





0 dB = 1.39 W/kg = 1.43 dBW/kg

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Date: 2016/11/5

WCDMA Band V Head Re Cheek CH 4183

Communication System: WCDMA; Frequency: 836.6 MHz

Medium parameters used: f = 837 MHz; $\sigma = 0.867$ S/m; $\varepsilon_r = 40.182$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 SN3831; ConvF(8.84, 8.84, 8.84); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1374; Calibrated: 2016/8/23
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Body/Area Scan (81x141x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.0203 W/kg

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm,

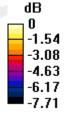
dy=8mm, dz=5mm

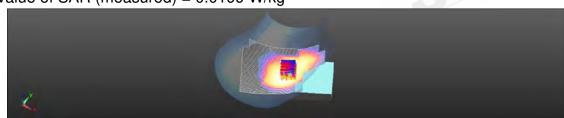
Reference Value = 3.331 V/m; Power Drift = -0.19 dB

Peak SAR (extrapolated) = 0.0210 W/kg

SAR(1 g) = 0.018 W/kg; SAR(10 g) = 0.015 W/kg

Maximum value of SAR (measured) = 0.0199 W/kg





0 dB = 0.0199 W/kg = -17.00 dBW/kg

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Date: 2016/11/7

WCDMA Band V_Hotspot Back side CH 4183 10mm

Communication System: WCDMA; Frequency: 836.6 MHz

Medium parameters used: f = 837 MHz; $\sigma = 0.999$ S/m; $\varepsilon_r = 53.615$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 SN3831; ConvF(9.08, 9.08, 9.08); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1374; Calibrated: 2016/8/23
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Body/Area Scan (81x131x1): Interpolated grid: dx=15 mm, dy=15

Maximum value of SAR (interpolated) = 0.127 W/kg

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm,

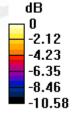
dy=8mm, dz=5mm

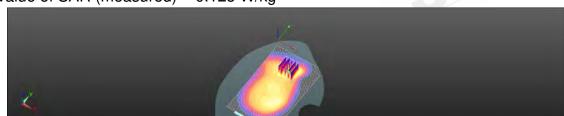
Reference Value = 8.967 V/m; Power Drift = 0.07 dB

Peak SAR (extrapolated) = 0.141 W/kg

SAR(1 g) = 0.101 W/kg; SAR(10 g) = 0.068 W/kg

Maximum value of SAR (measured) = 0.125 W/kg





0 dB = 0.125 W/kg = -9.03 dBW/kg

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Date: 2016/11/6

LTE Band 2 (20MHz)_Head_Re Cheek_CH 18900_QPSK_1-50

Communication System: LTE; Frequency: 1880 MHz

Medium parameters used: f = 1880 MHz; $\sigma = 1.405$ S/m; $\epsilon_r = 38.727$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 SN3831; ConvF(7.66, 7.66, 7.66); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1374; Calibrated: 2016/8/23
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Body/Area Scan (81x141x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.118 W/kg

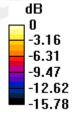
Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm,

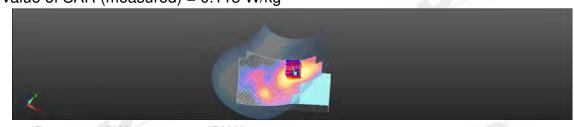
dy=8mm, dz=5mm

Reference Value = 3.595 V/m; Power Drift = 0.12 dB

Peak SAR (extrapolated) = 0.145 W/kg

SAR(1 g) = 0.091 W/kg; SAR(10 g) = 0.055 W/kg Maximum value of SAR (measured) = 0.113 W/kg





0 dB = 0.113 W/kg = -9.46 dBW/kg

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Date: 2016/11/8

LTE Band 2 (20MHz)_Hotspot_Back side_CH 18900_QPSK_1-50_10mm

Communication System: LTE; Frequency: 1880 MHz

Medium parameters used: f = 1880 MHz; $\sigma = 1.539$ S/m; $\epsilon_r = 54.115$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 SN3831; ConvF(7.54, 7.54, 7.54); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1374; Calibrated: 2016/8/23
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Body/Area Scan (81x131x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 1.01 W/kg

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm,

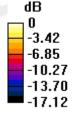
dy=8mm, dz=5mm

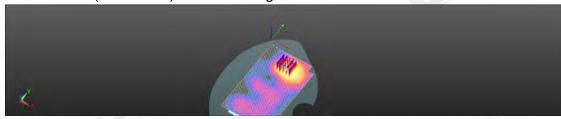
Reference Value = 8.326 V/m; Power Drift = -0.13 dB

Peak SAR (extrapolated) = 1.12 W/kg

SAR(1 g) = 0.711 W/kg; SAR(10 g) = 0.419 W/kg

Maximum value of SAR (measured) = 0.925 W/kg





0 dB = 0.925 W/kg = -0.34 dBW/kg

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Date: 2016/11/5

LTE Band 4 (20MHz) Head Re Cheek CH 20050 QPSK 1-50

Communication System: LTE; Frequency: 1720 MHz

Medium parameters used: f = 1720 MHz; $\sigma = 1.374 \text{ S/m}$; $\epsilon_r = 39.935$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 SN3831; ConvF(7.92, 7.92, 7.92); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1374; Calibrated: 2016/8/23
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Body/Area Scan (81x141x1): Interpolated grid: dx=15 mm, dy=15

Maximum value of SAR (interpolated) = 0.0120 W/kg

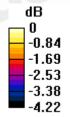
Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm,

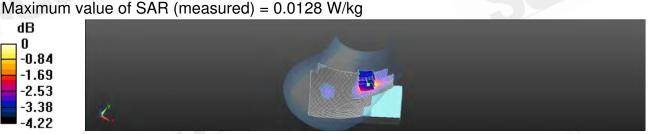
dy=8mm, dz=5mm

Reference Value = 1.804 V/m; Power Drift = 0.16 dB

Peak SAR (extrapolated) = 0.0160 W/kg

SAR(1 g) = 0.010 W/kg; SAR(10 g) = 0.00825 W/kg





0 dB = 0.0128 W/kg = -18.94 dBW/kg

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Date: 2016/11/7

LTE Band 4 (20MHz) Hotspot Back side CH 20050 QPSK 1-50 10mm

Communication System: LTE; Frequency: 1720 MHz

Medium parameters used: f = 1720.05 MHz; $\sigma = 1.415 \text{ S/m}$; $\epsilon_r = 54.573$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 SN3831; ConvF(7.74, 7.74, 7.74); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1374; Calibrated: 2016/8/23
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Body/Area Scan (81x131x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.267 W/kg

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm,

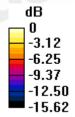
dy=8mm, dz=5mm

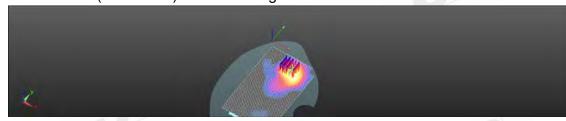
Reference Value = 3.008 V/m; Power Drift = 0.12 dB

Peak SAR (extrapolated) = 0.316 W/kg

SAR(1 g) = 0.200 W/kg; SAR(10 g) = 0.117 W/kg

Maximum value of SAR (measured) = 0.259 W/kg





0 dB = 0.259 W/kg = -5.87 dBW/kg

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Date: 2016/11/5

LTE Band 5 (10MHz) Head Re Cheek CH 20600 QPSK 1-0

Communication System: LTE; Frequency: 844 MHz

Medium parameters used: f = 844 MHz; $\sigma = 0.875$ S/m; $\varepsilon_r = 40.174$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 SN3831; ConvF(8.84, 8.84, 8.84); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1374; Calibrated: 2016/8/23
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Body/Area Scan (81x141x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.0142 W/kg

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm,

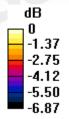
dy=8mm, dz=5mm

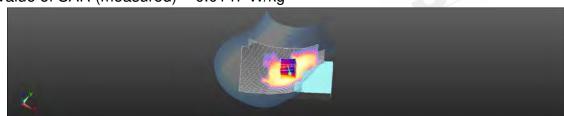
Reference Value = 2.389 V/m; Power Drift = 0.12 dB

Peak SAR (extrapolated) = 0.0160 W/kg

SAR(1 g) = 0.013 W/kg; SAR(10 g) = 0.011 W/kg

Maximum value of SAR (measured) = 0.0147 W/kg





0 dB = 0.0147 W/kg = -18.32 dBW/kg

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Date: 2016/11/7

LTE Band 5 (10MHz) Hotspot Back side CH 20600 QPSK 1-0 10mm

Communication System: LTE; Frequency: 844 MHz

Medium parameters used: f = 844 MHz; $\sigma = 1.007$ S/m; $\varepsilon_r = 53.531$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 SN3831; ConvF(9.08, 9.08, 9.08); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1374; Calibrated: 2016/8/23
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Body/Area Scan (81x131x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.0932 W/kg

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm,

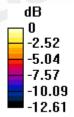
dy=8mm, dz=5mm

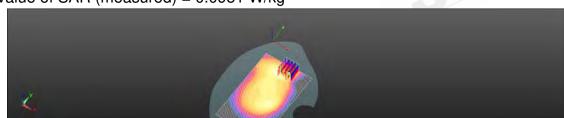
Reference Value = 7.554 V/m; Power Drift = 0.08 dB

Peak SAR (extrapolated) = 0.108 W/kg

SAR(1 g) = 0.079 W/kg; SAR(10 g) = 0.051 W/kg

Maximum value of SAR (measured) = 0.0951 W/kg





0 dB = 0.0951 W/kg = -10.22 dBW/kg

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Date: 2016/11/6

LTE Band 7 (20MHz) Head Re Cheek CH 21100 QPSK 1-0

Communication System: LTE; Frequency: 2535 MHz

Medium parameters used: f = 2535 MHz; $\sigma = 1.894$ S/m; $\epsilon_r = 38.219$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 SN3831; ConvF(6.71, 6.71, 6.71); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1374; Calibrated: 2016/8/23
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Body/Area Scan (101x171x1): Interpolated grid: dx=12 mm, dy=12 mm

Maximum value of SAR (interpolated) = 0.0207 W/kg

Configuration/Body/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm,

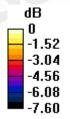
dy=5mm, dz=5mm

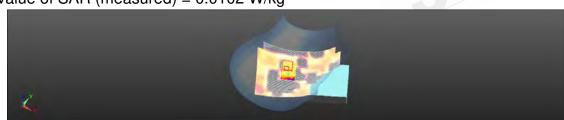
Reference Value = 1.725 V/m; Power Drift = 0.13 dB

Peak SAR (extrapolated) = 0.0140 W/kg

SAR(1 g) = 0.00829 W/kg; SAR(10 g) = 0.00702 W/kg

Maximum value of SAR (measured) = 0.0102 W/kg





0 dB = 0.0102 W/kg = -19.90 dBW/kg

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Date: 2016/11/2

LTE Band 7 (20MHz) Hotspot Back side CH 21100 QPSK 1-0 10mm

Communication System: LTE; Frequency: 2535 MHz

Medium parameters used: f = 2535 MHz; $\sigma = 2.062$ S/m; $\varepsilon_r = 51.862$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 SN3831; ConvF(6.71, 6.71, 6.71); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1374; Calibrated: 2016/8/23
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Body/Area Scan (81x131x1): Interpolated grid: dx=12 mm, dy=12 mm

Maximum value of SAR (interpolated) = 0.369 W/kg

Configuration/Body/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm,

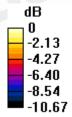
dy=5mm, dz=5mm

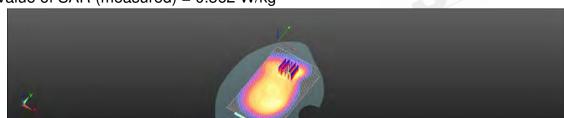
Reference Value = 10.32 V/m; Power Drift = 0.07 dB

Peak SAR (extrapolated) = 0.416 W/kg

SAR(1 g) = 0.290 W/kg; SAR(10 g) = 0.194 W/kg

Maximum value of SAR (measured) = 0.362 W/kg





0 dB = 0.362 W/kg = -4.41 dBW/kg

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Date: 2016/10/28

LTE Band 12 (10MHz) Head Re Cheek CH 23130 QPSK 1-49

Communication System: LTE; Frequency: 711 MHz

Medium parameters used: f = 711 MHz; $\sigma = 0.855$ S/m; $\varepsilon_r = 41.726$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 SN3831; ConvF(9.38, 9.38, 9.38); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1374; Calibrated: 2016/8/23
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Body/Area Scan (81x141x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.0828 W/kg

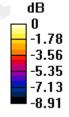
Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm,

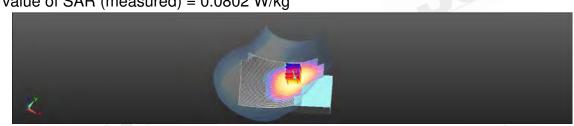
dy=8mm, dz=5mm

Reference Value = 3.236 V/m; Power Drift = 0.07 dB

Peak SAR (extrapolated) = 0.0870 W/kg

SAR(1 g) = 0.071 W/kg; SAR(10 g) = 0.056 W/kg Maximum value of SAR (measured) = 0.0802 W/kg





0 dB = 0.0802 W/kg = -10.96 dBW/kg

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Date: 2016/11/1

LTE Band 12 (10MHz)_Hotspot_Back side_CH 23130_QPSK_1-49_10mm

Communication System: LTE; Frequency: 711 MHz

Medium parameters used: f = 711 MHz; $\sigma = 0.922$ S/m; $\varepsilon_r = 54.049$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 SN3831; ConvF(9.25, 9.25, 9.25); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1374; Calibrated: 2016/8/23
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Body/Area Scan (81x131x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.260 W/kg

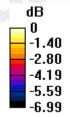
Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm,

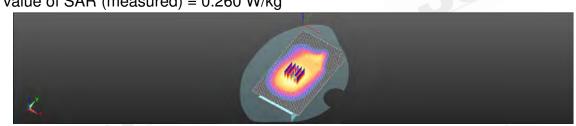
dy=8mm, dz=5mm

Reference Value = 17.49 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 0.276 W/kg

SAR(1 g) = 0.232 W/kg; SAR(10 g) = 0.182 W/kg Maximum value of SAR (measured) = 0.260 W/kg





0 dB = 0.260 W/kg = -5.85 dBW/kg

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Date: 2016/10/28

LTE Band 13 (10MHz) Head Re Cheek CH 23230 QPSK 1-25

Communication System: LTE; Frequency: 782 MHz

Medium parameters used: f = 782 MHz; $\sigma = 0.926$ S/m; $\varepsilon_r = 40.728$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 SN3831; ConvF(9.38, 9.38, 9.38); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1374; Calibrated: 2016/8/23
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Body/Area Scan (81x141x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.0737 W/kg

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm,

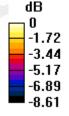
dy=8mm, dz=5mm

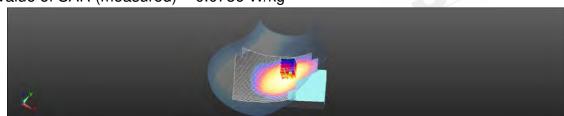
Reference Value = 5.086 V/m; Power Drift = 0.17 dB

Peak SAR (extrapolated) = 0.0780 W/kg

SAR(1 g) = 0.066 W/kg; SAR(10 g) = 0.051 W/kg

Maximum value of SAR (measured) = 0.0736 W/kg





0 dB = 0.0736 W/kg = -11.33 dBW/kg

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Date: 2016/11/1

LTE Band 13 (10MHz)_Hotspot_Back side_CH 23230_QPSK_1-25_10mm

Communication System: LTE; Frequency: 782 MHz

Medium parameters used: f = 782 MHz; $\sigma = 0.993$ S/m; $\varepsilon_r = 53.245$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 SN3831; ConvF(9.25, 9.25, 9.25); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1374; Calibrated: 2016/8/23
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Body/Area Scan (81x131x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.265 W/kg

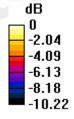
Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm,

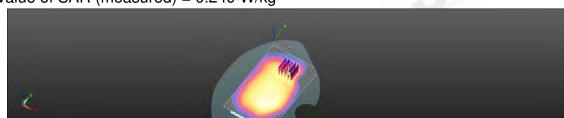
dy=8mm, dz=5mm

Reference Value = 14.52 V/m; Power Drift = -0.18 dB

Peak SAR (extrapolated) = 0.286 W/kg

SAR(1 g) = 0.206 W/kg; SAR(10 g) = 0.140 W/kg Maximum value of SAR (measured) = 0.249 W/kg





0 dB = 0.249 W/kg = -6.04 dBW/kg

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Date: 2016/10/28

LTE Band 17 (10MHz) Head Re Cheek CH 23780 QPSK 1-49

Communication System: LTE; Frequency: 709 MHz

Medium parameters used: f = 709 MHz; $\sigma = 0.853$ S/m; $\varepsilon_r = 41.936$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 SN3831; ConvF(9.38, 9.38, 9.38); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1374; Calibrated: 2016/8/23
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Body/Area Scan (81x141x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.0784 W/kg

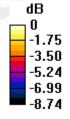
Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm,

dy=8mm, dz=5mm

Reference Value = 3.233 V/m; Power Drift = 0.14 dB

Peak SAR (extrapolated) = 0.0820 W/kg

SAR(1 g) = 0.067 W/kg; SAR(10 g) = 0.053 W/kg Maximum value of SAR (measured) = 0.0761 W/kg





0 dB = 0.0761 W/kg = -11.19 dBW/kg

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Date: 2016/11/1

LTE Band 17 (10MHz) Hotspot Back side CH 23780 QPSK 1-25 10mm

Communication System: LTE; Frequency: 709 MHz

Medium parameters used: f = 709 MHz; $\sigma = 0.92$ S/m; $\varepsilon_r = 54.101$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 SN3831; ConvF(9.25, 9.25, 9.25); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1374; Calibrated: 2016/8/23
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Body/Area Scan (81x131x1): Interpolated grid: dx=15 mm, dy=15

Maximum value of SAR (interpolated) = 0.236 W/kg

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm,

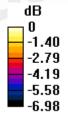
dy=8mm, dz=5mm

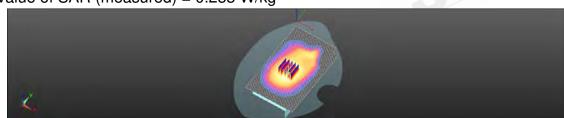
Reference Value = 16.73 V/m; Power Drift = 0.00 dB

Peak SAR (extrapolated) = 0.248 W/kg

SAR(1 g) = 0.209 W/kg; SAR(10 g) = 0.164 W/kg

Maximum value of SAR (measured) = 0.233 W/kg





0 dB = 0.233 W/kg = -6.32 dBW/kg

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Date: 2016/11/5

1xRTT Cellular BC0_Head_Re Cheek_CH 1013_SO55/RC3

Communication System: CDMA; Frequency: 824.7 MHz

Medium parameters used: f = 825 MHz; $\sigma = 0.865$ S/m; $\varepsilon_r = 40.183$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 SN3831; ConvF(8.84, 8.84, 8.84); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1374; Calibrated: 2016/8/23
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Body/Area Scan (81x141x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.00728 W/kg

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm,

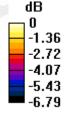
dy=8mm, dz=5mm

Reference Value = 1.550 V/m; Power Drift = 0.06 dB

Peak SAR (extrapolated) = 0.00260 W/kg

SAR(1 g) = 0.00171 W/kg; SAR(10 g) = 0.00125 W/kg

Maximum value of SAR (measured) = 0.00188 W/kg





0 dB = 0.00188 W/kg = -27.26 dBW/kg

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Date: 2016/11/5

1xEVDO Cellular BC0 Head Re Cheek CH 384 Rev. A

Communication System: CDMA; Frequency: 836.52 MHz

Medium parameters used: f = 837 MHz; $\sigma = 0.867$ S/m; $\varepsilon_r = 40.182$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 SN3831; ConvF(8.84, 8.84, 8.84); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1374; Calibrated: 2016/8/23
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Body/Area Scan (61x121x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.00622 W/kg

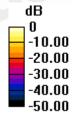
Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm,

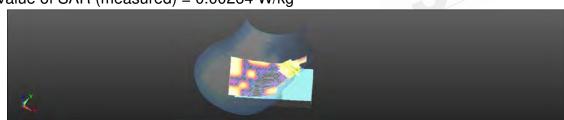
dy=8mm, dz=5mm

Reference Value = 0 V/m; Power Drift = 0.09 dB

Peak SAR (extrapolated) = 0.0120 W/kg

SAR(1 g) = 0.00259 W/kg; SAR(10 g) = 0.00198 W/kg Maximum value of SAR (measured) = 0.00264 W/kg





0 dB = 0.00264 W/kg = -25.79 dBW/kg

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Date: 2016/11/7

1xRTT Cellular BC0_Body-worn_Back side_CH 1013_15mm_SO32/FCH

Communication System: CDMA; Frequency: 824.7 MHz

Medium parameters used: f = 825 MHz; $\sigma = 0.995$ S/m; $\varepsilon_r = 53.795$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 SN3831; ConvF(9.08, 9.08, 9.08); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1374; Calibrated: 2016/8/23
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Body/Area Scan (81x131x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.0344 W/kg

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm,

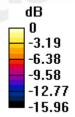
dy=8mm, dz=5mm

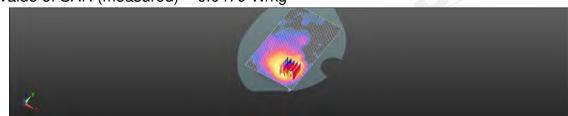
Reference Value = 1.832 V/m; Power Drift = 0.08 dB

Peak SAR (extrapolated) = 0.0600 W/kg

SAR(1 g) = 0.029 W/kg; SAR(10 g) = 0.017 W/kg

Maximum value of SAR (measured) = 0.0479 W/kg





0 dB = 0.0479 W/kg = -13.20 dBW/kg

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Date: 2016/11/7

1xRTT Cellular BC0 Body-worn Back side CH 1013 15mm SO55/RC3

Communication System: CDMA; Frequency: 824.7 MHz

Medium parameters used: f = 825 MHz; $\sigma = 0.995$ S/m; $\varepsilon_r = 53.795$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 SN3831; ConvF(9.08, 9.08, 9.08); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1374; Calibrated: 2016/8/23
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Body/Area Scan (81x131x1): Interpolated grid: dx=15 mm, dy=15

Maximum value of SAR (interpolated) = 0.0884 W/kg

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm,

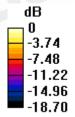
dy=8mm, dz=5mm

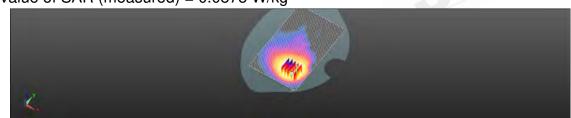
Reference Value = 2.282 V/m; Power Drift = 0.18 dB

Peak SAR (extrapolated) = 0.111 W/kg

SAR(1 g) = 0.035 W/kg; SAR(10 g) = 0.027 W/kg

Maximum value of SAR (measured) = 0.0875 W/kg





0 dB = 0.0875 W/kg = -10.58 dBW/kg

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Date: 2016/11/7

1xEVDO Cellular BC0_Hotspot_Back side_CH 1013_10mm_Rev. 0

Communication System: CDMA; Frequency: 824.7 MHz

Medium parameters used: f = 825 MHz; $\sigma = 0.995$ S/m; $\varepsilon_r = 53.795$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 SN3831; ConvF(9.08, 9.08, 9.08); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1374; Calibrated: 2016/8/23
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Body/Area Scan (81x131x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.0891 W/kg

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm,

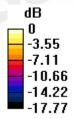
dy=8mm, dz=5mm

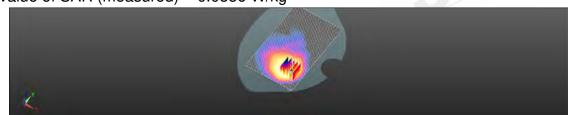
Reference Value = 1.937 V/m; Power Drift = 0.17 dB

Peak SAR (extrapolated) = 0.128 W/kg

SAR(1 g) = 0.061 W/kg; SAR(10 g) = 0.035 W/kg

Maximum value of SAR (measured) = 0.0856 W/kg





0 dB = 0.0856 W/kg = -10.67 dBW/kg

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Date: 2016/11/6

1xRTT PCS BC1 Head Le Cheek CH 25 SO55/RC3

Communication System: CDMA; Frequency: 1851.25 MHz

Medium parameters used: f = 1851.25 MHz; $\sigma = 1.386 \text{ S/m}$; $\epsilon_r = 38.841$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

DASY5 Configuration:

- Probe: EX3DV4 SN3831; ConvF(7.66, 7.66, 7.66); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1374; Calibrated: 2016/8/23
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Body/Area Scan (81x141x1): Interpolated grid: dx=15 mm, dy=15

Maximum value of SAR (interpolated) = 0.401 W/kg

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm,

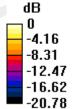
dy=8mm, dz=5mm

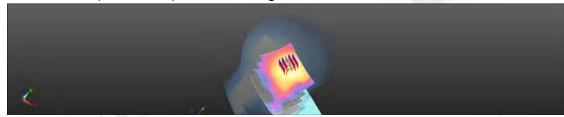
Reference Value = 9.015 V/m; Power Drift = -0.17 dB

Peak SAR (extrapolated) = 0.529 W/kg

SAR(1 g) = 0.276 W/kg; SAR(10 g) = 0.148 W/kg

Maximum value of SAR (measured) = 0.400 W/kg





0 dB = 0.400 W/kg = -3.98 dBW/kg

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Date: 2016/11/6

1xEVDO PCS BC1 Head Le Cheek CH 25 Rev. A

Communication System: CDMA; Frequency: 1851.25 MHz

Medium parameters used: f = 1851.25 MHz; $\sigma = 1.386 \text{ S/m}$; $\epsilon_r = 38.841$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

DASY5 Configuration:

- Probe: EX3DV4 SN3831; ConvF(7.66, 7.66, 7.66); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1374; Calibrated: 2016/8/23
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Body/Area Scan (61x121x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.354 W/kg

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm,

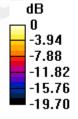
dy=8mm, dz=5mm

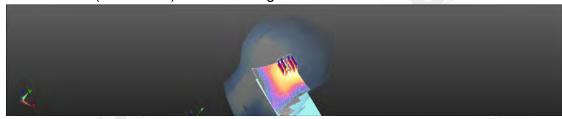
Reference Value = 8.771 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 0.493 W/kg

SAR(1 g) = 0.260 W/kg; SAR(10 g) = 0.141 W/kg

Maximum value of SAR (measured) = 0.374 W/kg





0 dB = 0.374 W/kg = -4.27 dBW/kg

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Date: 2016/11/8

1xRTT PCS BC1 Body-worn Back side CH 25 15mm SO32/FCH

Communication System: CDMA; Frequency: 1851.25 MHz

Medium parameters used: f = 1851.71 MHz; $\sigma = 1.51 \text{ S/m}$; $\epsilon_r = 54.309$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 SN3831; ConvF(7.54, 7.54, 7.54); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1374; Calibrated: 2016/8/23
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Body/Area Scan (81x131x1): Interpolated grid: dx=15 mm, dy=15

Maximum value of SAR (interpolated) = 0.639 W/kg

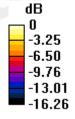
Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm,

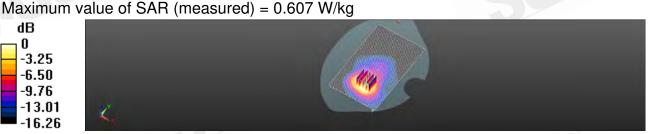
dy=8mm, dz=5mm

Reference Value = 5.611 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 0.730 W/kg

SAR(1 g) = 0.466 W/kg; SAR(10 g) = 0.281 W/kg





0 dB = 0.607 W/kg = -2.17 dBW/kg

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Date: 2016/11/8

1xRTT PCS BC1_Body-worn_Back side_CH 25_15mm_SO55/RC3

Communication System: CDMA; Frequency: 1851.25 MHz

Medium parameters used: f = 1851.71 MHz; $\sigma = 1.51 \text{ S/m}$; $\epsilon_r = 54.309$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 SN3831; ConvF(7.54, 7.54, 7.54); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1374; Calibrated: 2016/8/23
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Body/Area Scan (81x131x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.669 W/kg

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm,

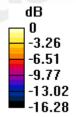
dy=8mm, dz=5mm

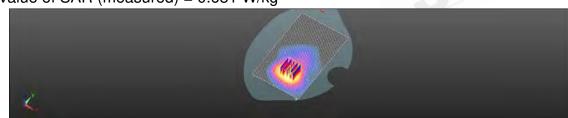
Reference Value = 5.468 V/m; Power Drift = -0.04 dB

Peak SAR (extrapolated) = 0.760 W/kg

SAR(1 g) = 0.484 W/kg; SAR(10 g) = 0.292 W/kg

Maximum value of SAR (measured) = 0.631 W/kg





0 dB = 0.631 W/kg = -2.00 dBW/kg

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Date: 2016/11/8

1xEVDO PCS BC1 Body-worn Back side CH 25 15mm Rev. 0

Communication System: CDMA; Frequency: 1851.25 MHz

Medium parameters used: f = 1851.71 MHz; $\sigma = 1.51 \text{ S/m}$; $\epsilon_r = 54.309$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 SN3831; ConvF(7.54, 7.54, 7.54); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1374; Calibrated: 2016/8/23
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Body/Area Scan (81x131x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.685 W/kg

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm,

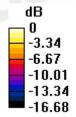
dy=8mm, dz=5mm

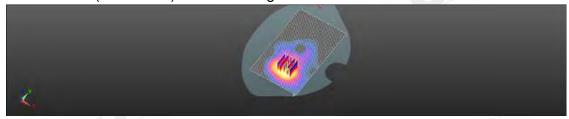
Reference Value = 5.753 V/m; Power Drift = -0.15 dB

Peak SAR (extrapolated) = 0.905 W/kg

SAR(1 g) = 0.475 W/kg; SAR(10 g) = 0.286 W/kg

Maximum value of SAR (measured) = 0.649 W/kg





0 dB = 0.649 W/kg = -1.87 dBW/kg

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Date: 2016/11/8

1xEVDO PCS BC1 Hotspot Back side CH 25 10mm Rev. 0

Communication System: CDMA; Frequency: 1851.25 MHz

Medium parameters used: f = 1851.71 MHz; $\sigma = 1.51 \text{ S/m}$; $\epsilon_r = 54.309$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 SN3831; ConvF(7.54, 7.54, 7.54); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1374; Calibrated: 2016/8/23
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Body/Area Scan (81x131x1): Interpolated grid: dx=15 mm, dy=15

Maximum value of SAR (interpolated) = 0.959 W/kg

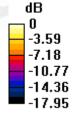
Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm,

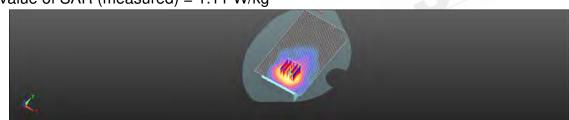
dy=8mm, dz=5mm

Reference Value = 6.030 V/m; Power Drift = -0.15 dB

Peak SAR (extrapolated) = 1.31 W/kg

SAR(1 g) = 0.846 W/kg; SAR(10 g) = 0.489 W/kgMaximum value of SAR (measured) = 1.11 W/kg





0 dB = 1.11 W/kg = 0.44 dBW/kg

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Date: 2016/11/6

WLAN 802.11b Head Re Cheek CH 1

Communication System: WLAN(2.45G); Frequency: 2412 MHz

Medium parameters used: f = 2412 MHz; $\sigma = 1.808$ S/m; $\varepsilon_r = 39.274$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 SN3831; ConvF(6.92, 6.92, 6.92); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1374; Calibrated: 2016/8/23
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Body/Area Scan (101x171x1): Interpolated grid: dx=12 mm, dy=12 mm

Maximum value of SAR (interpolated) = 0.0293 W/kg

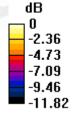
Configuration/Body/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm,

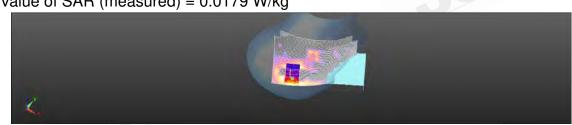
dy=5mm, dz=5mm

Reference Value = 2.112 V/m; Power Drift = 0.17 dB

Peak SAR (extrapolated) = 0.0230 W/kg

SAR(1 g) = 0.012 W/kg; SAR(10 g) = 0.00731 W/kg Maximum value of SAR (measured) = 0.0179 W/kg





0 dB = 0.0179 W/kg = -17.46 dBW/kg

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Date: 2016/11/8

WLAN 802.11b Hotspot Back side CH 1 10mm

Communication System: WLAN(2.45G); Frequency: 2412 MHz

Medium parameters used: f = 2412 MHz; $\sigma = 1.939$ S/m; $\epsilon_r = 52.204$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 SN3831; ConvF(7.05, 7.05, 7.05); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1374; Calibrated: 2016/8/23
- · Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Body/Area Scan (101x161x1): Interpolated grid: dx=12 mm, dy=12 mm

Maximum value of SAR (interpolated) = 0.0850 W/kg

Configuration/Body/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm,

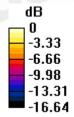
dy=5mm, dz=5mm

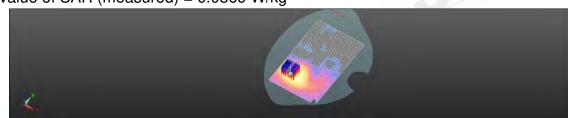
Reference Value = 1.089 V/m; Power Drift = 0.11 dB

Peak SAR (extrapolated) = 0.113 W/kg

SAR(1 g) = 0.061 W/kg; SAR(10 g) = 0.033 W/kg

Maximum value of SAR (measured) = 0.0869 W/kg





0 dB = 0.0869 W/kg = -10.61 dBW/kg

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Date: 2016/11/2

WLAN 802.11a 5.2G Head Re Cheek CH 40

Communication System: WLAN(5G); Frequency: 5200 MHz

Medium parameters used: f = 5200 MHz; $\sigma = 4.603 \text{ S/m}$; $\epsilon_r = 34.721$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 SN3831; ConvF(4.76, 4.76, 4.76); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1374; Calibrated: 2016/8/23
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Body/Area Scan (121x191x1): Interpolated grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 0.0860 W/kg

Configuration/Body/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm,

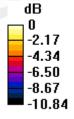
dy=4mm, dz=2mm

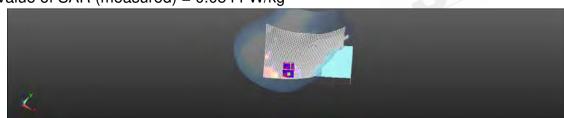
Reference Value = 1.128 V/m; Power Drift = -0.14 dB

Peak SAR (extrapolated) = 0.102 W/kg

SAR(1 g) = 0.020 W/kg; SAR(10 g) = 0.00632 W/kg

Maximum value of SAR (measured) = 0.0544 W/kg





0 dB = 0.0544 W/kg = -12.64 dBW/kg

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Date: 2016/11/2

WLAN 802.11a 5.2G Body-worn Back side CH 40 15mm

Communication System: WLAN(5G); Frequency: 5200 MHz

Medium parameters used: f = 5200 MHz; $\sigma = 5.486 \text{ S/m}$; $\epsilon_r = 47.721$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 SN3831; ConvF(4.07, 4.07, 4.07); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1374; Calibrated: 2016/8/23
- · Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Body/Area Scan (121x191x1): Interpolated grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 0.627 W/kg

Configuration/Body/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm,

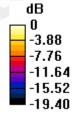
dy=4mm, dz=2mm

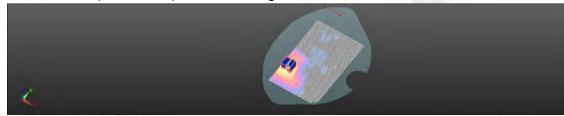
Reference Value = 1.852 V/m; Power Drift = 0.11 dB

Peak SAR (extrapolated) = 1.12 W/kg

SAR(1 g) = 0.344 W/kg; SAR(10 g) = 0.140 W/kg

Maximum value of SAR (measured) = 0.621 W/kg





0 dB = 0.621 W/kg = -2.07 dBW/kg

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Date: 2016/11/2

WLAN 802.11a 5.2G_Product specific 10-g SAR_Back side_CH 40_0mm

Communication System: WLAN(5G); Frequency: 5200 MHz

Medium parameters used: f = 5200 MHz; $\sigma = 5.486$ S/m; $\epsilon_r = 47.721$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 SN3831; ConvF(4.07, 4.07, 4.07); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1374; Calibrated: 2016/8/23
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Body/Area Scan (121x191x1): Interpolated grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 2.50 W/kg

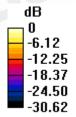
Configuration/Body/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm,

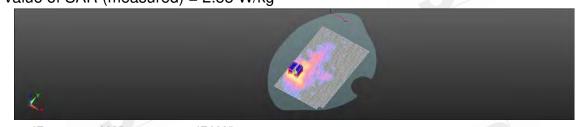
dy=4mm, dz=2mm

Reference Value = 1.384 V/m; Power Drift = 0.11 dB

Peak SAR (extrapolated) = 4.62 W/kg

SAR(1 g) = 1.25 W/kg; SAR(10 g) = 0.371 W/kg Maximum value of SAR (measured) = 2.53 W/kg





0 dB = 2.53 W/kg = 4.04 dBW/kg

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Date: 2016/11/2

WLAN 802.11a 5.8G Head Re Cheek CH 165

Communication System: WLAN(5G); Frequency: 5825 MHz

Medium parameters used: f = 5825 MHz; $\sigma = 5.228$ S/m; $\epsilon_r = 34.096$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 SN3831; ConvF(4.1, 4.1, 4.1); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1374; Calibrated: 2016/8/23
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Body/Area Scan (121x191x1): Interpolated grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 0.160 W/kg

Configuration/Body/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm,

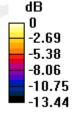
dy=4mm, dz=2mm

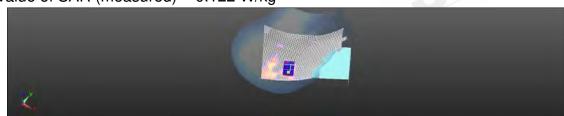
Reference Value = 1.098 V/m; Power Drift = 0.14 dB

Peak SAR (extrapolated) = 0.265 W/kg

SAR(1 g) = 0.055 W/kg; SAR(10 g) = 0.016 W/kg

Maximum value of SAR (measured) = 0.122 W/kg





0 dB = 0.122 W/kg = -9.13 dBW/kg

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Date: 2016/11/2

WLAN 802.11a 5.8G Body-worn Back side CH 165 15mm

Communication System: WLAN(5G); Frequency: 5825 MHz

Medium parameters used: f = 5825 MHz; $\sigma = 6.111 \text{ S/m}$; $\epsilon_r = 46.901$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 SN3831; ConvF(3.52, 3.52, 3.52); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1374; Calibrated: 2016/8/23
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Body/Area Scan (121x191x1): Interpolated grid: dx=10 mm, dy=10

Maximum value of SAR (interpolated) = 0.752 W/kg

Configuration/Body/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm,

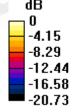
dy=4mm, dz=2mm

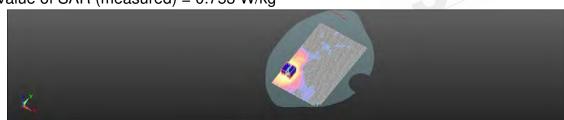
Reference Value = 1.470 V/m; Power Drift = 0.17 dB

Peak SAR (extrapolated) = 1.40 W/kg

SAR(1 g) = 0.422 W/kg; SAR(10 g) = 0.177 W/kg

Maximum value of SAR (measured) = 0.753 W/kg





0 dB = 0.753 W/kg = -1.23 dBW/kg

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Date: 2016/11/2

WLAN 802.11a 5.8G Product specific 10-g SAR Back side CH 165 0mm

Communication System: WLAN(5G); Frequency: 5825 MHz

Medium parameters used: f = 5825 MHz; $\sigma = 6.111 \text{ S/m}$; $\epsilon_r = 46.901$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 SN3831; ConvF(3.52, 3.52, 3.52); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1374; Calibrated: 2016/8/23
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Body/Area Scan (121x191x1): Interpolated grid: dx=10 mm, dy=10

Maximum value of SAR (interpolated) = 3.39 W/kg

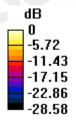
Configuration/Body/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm,

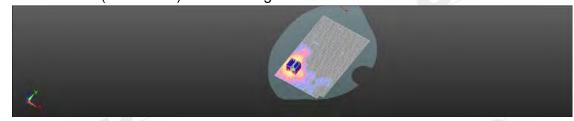
dy=4mm, dz=2mm

Reference Value = 0.5700 V/m; Power Drift = 0.12 dB

Peak SAR (extrapolated) = 6.42 W/kg

SAR(1 g) = 1.63 W/kg; SAR(10 g) = 0.554 W/kgMaximum value of SAR (measured) = 3.42 W/kg





0 dB = 3.42 W/kg = 5.35 dBW/kg

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6. SAR System Performance Verification

Date: 2016/10/28

Dipole 750 MHz SN:1015 Head

Communication System: CW; Frequency: 750 MHz

Medium parameters used: f = 750 MHz; $\sigma = 0.894 \text{ S/m}$; $\varepsilon_r = 41.205$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 - SN3831; ConvF(9.38, 9.38, 9.38); Calibrated: 2016/1/27;

Sensor-Surface: 2mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1374; Calibrated: 2016/8/23

Phantom: Head

DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Pin=250mW/Area Scan (51x121x1): Interpolated grid: dx=15 mm,

dv=15 mm

Maximum value of SAR (interpolated) = 2.55 W/kg

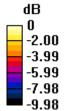
Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid:

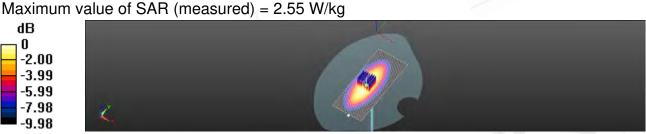
dx=5mm, dy=5mm, dz=5mm

Reference Value = 52.39 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 2.99 W/kg

SAR(1 g) = 2.03 W/kg; SAR(10 g) = 1.35 W/kg





0 dB = 2.55 W/kg = 4.07 dBW/kg

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Date: 2016/11/1

Dipole 750 MHz SN:1015 Body

Communication System: CW; Frequency: 750 MHz

Medium parameters used: f = 750 MHz; $\sigma = 0.961$ S/m; $\varepsilon_r = 53.674$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 SN3831; ConvF(9.25, 9.25, 9.25); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1374; Calibrated: 2016/8/23
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Pin=250mW/Area Scan (51x121x1): Interpolated grid: dx=15 mm, dv=15 mm

Maximum value of SAR (interpolated) = 2.63 W/kg

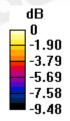
Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid:

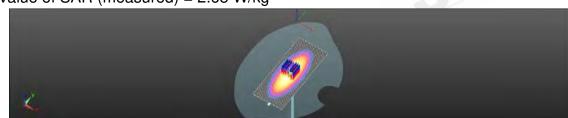
dx=5mm, dy=5mm, dz=5mm

Reference Value = 56.51 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 3.08 W/kg

SAR(1 g) = 2.24 W/kg; SAR(10 g) = 1.45 W/kgMaximum value of SAR (measured) = 2.65 W/kg





0 dB = 2.65 W/kg = 4.24 dBW/kg

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Date: 2016/11/5

Dipole 835 MHz SN:4d063 Head

Communication System: UID 10000, CW; Frequency: 835 MHz

Medium parameters used: f = 835 MHz; $\sigma = 0.866$ S/m; $\varepsilon_r = 40.183$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 SN3831; ConvF(8.84, 8.84, 8.84); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1374; Calibrated: 2016/8/23
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Pin=250mW/Area Scan (51x121x1): Interpolated grid: dx=15 mm,

Maximum value of SAR (interpolated) = 3.03 W/kg

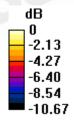
Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid:

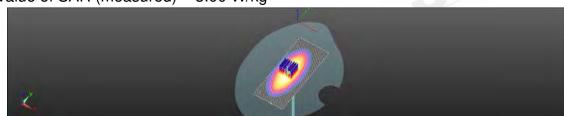
dx=5mm, dy=5mm, dz=5mm

Reference Value = 54.65 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 3.57 W/kg

SAR(1 g) = 2.36 W/kg; SAR(10 g) = 1.54 W/kgMaximum value of SAR (measured) = 3.00 W/kg





0 dB = 3.00 W/kg = 4.77 dBW/kg

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Date: 2016/11/7

Dipole 835 MHz SN:4d063 Body

Communication System: CW; Frequency: 835 MHz

Medium parameters used: f = 835 MHz; $\sigma = 0.997$ S/m; $\varepsilon_r = 53.767$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 SN3831; ConvF(9.08, 9.08, 9.08); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1374; Calibrated: 2016/8/23
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Pin=250mW/Area Scan (51x111x1): Interpolated grid: dx=15 mm,

Maximum value of SAR (interpolated) = 2.88 W/kg

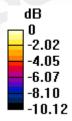
Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid:

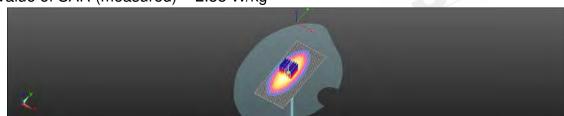
dx=5mm, dy=5mm, dz=5mm

Reference Value = 53.87 V/m; Power Drift = 0.09 dB

Peak SAR (extrapolated) = 3.35 W/kg

SAR(1 g) = 2.38 W/kg; SAR(10 g) = 1.55 W/kgMaximum value of SAR (measured) = 2.88 W/kg





0 dB = 2.88 W/kg = 4.59 dBW/kg

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Date: 2016/11/5

Dipole 1750 MHz SN:1008 Head

Communication System: CW; Frequency: 1750 MHz

Medium parameters used: f = 1750 MHz; $\sigma = 1.412 \text{ S/m}$; $\epsilon_r = 39.809$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 SN3831; ConvF(7.92, 7.92, 7.92); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1374; Calibrated: 2016/8/23
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Pin=250mW/Area Scan (51x101x1): Interpolated grid: dx=15 mm,

Maximum value of SAR (interpolated) = 13.2 W/kg

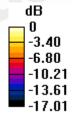
Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid:

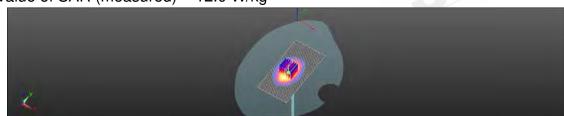
dx=5mm, dy=5mm, dz=5mm

Reference Value = 89.99 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 15.5 W/kg

SAR(1 g) = 9.57 W/kg; SAR(10 g) = 4.93 W/kg Maximum value of SAR (measured) = 12.0 W/kg





0 dB = 12.0 W/kg = 10.79 dBW/kg

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Date: 2016/11/7

Dipole 1750 MHz SN:1008 Body

Communication System: CW; Frequency: 1750 MHz

Medium parameters used: f = 1750 MHz; $\sigma = 1.445 \text{ S/m}$; $\varepsilon_r = 54.426$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 SN3831; ConvF(7.74, 7.74, 7.74); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1374; Calibrated: 2016/8/23
- · Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Pin=250mW/Area Scan (51x101x1): Interpolated grid: dx=15 mm,

Maximum value of SAR (interpolated) = 14.5 W/kg

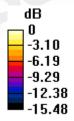
Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid:

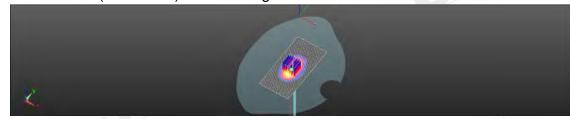
dx=5mm, dy=5mm, dz=5mm

Reference Value = 96.82 V/m; Power Drift = -0.08 dB

Peak SAR (extrapolated) = 15.4 W/kg

SAR(1 g) = 8.93 W/kg; SAR(10 g) = 4.89 W/kg Maximum value of SAR (measured) = 12.4 W/kg





0 dB = 12.4 W/kg = 10.93 dBW/kg

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Date: 2016/11/6

Dipole 1900 MHz SN:5d027 Head

Communication System: CW; Frequency: 1900 MHz

Medium parameters used: f = 1900 MHz; $\sigma = 1.416 \text{ S/m}$; $\epsilon_r = 38.592$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 SN3831; ConvF(7.66, 7.66, 7.66); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1374; Calibrated: 2016/8/23
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Pin=250mW/Area Scan (41x81x1): Interpolated grid: dx=15 mm,

Maximum value of SAR (interpolated) = 14.1 W/kg

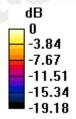
Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid:

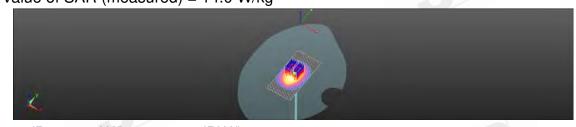
dx=5mm, dy=5mm, dz=5mm

Reference Value = 100.1 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 18.3 W/kg

SAR(1 g) = 9.6 W/kg; SAR(10 g) = 4.89 W/kgMaximum value of SAR (measured) = 14.0 W/kg





0 dB = 14.0 W/kg = 11.46 dBW/kg

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Date: 2016/11/8

Dipole 1900 MHz SN:5d027 Body

Communication System: CW; Frequency: 1900 MHz

Medium parameters used: f = 1900 MHz; $\sigma = 1.559 \text{ S/m}$; $\varepsilon_r = 54.025$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 SN3831; ConvF(7.54, 7.54, 7.54); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1374; Calibrated: 2016/8/23
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Pin=250mW/Area Scan (41x81x1): Interpolated grid: dx=15 mm,

Maximum value of SAR (interpolated) = 14.9 W/kg

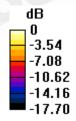
Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid:

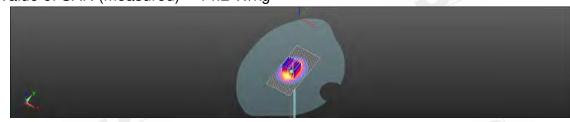
dx=5mm, dy=5mm, dz=5mm

Reference Value = 97.00 V/m; Power Drift = -0.10 dB

Peak SAR (extrapolated) = 17.8 W/kg

SAR(1 g) = 10.1 W/kg; SAR(10 g) = 5.29 W/kgMaximum value of SAR (measured) = 14.2 W/kg





0 dB = 14.2 W/kg = 11.51 dBW/kg

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Date: 2016/11/6

Dipole 2450 MHz SN:727 Head

Communication System: CW; Frequency: 2450 MHz

Medium parameters used: f = 2450 MHz; $\sigma = 1.841 \text{ S/m}$; $\epsilon_r = 39.021$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 SN3831; ConvF(6.92, 6.92, 6.92); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1374; Calibrated: 2016/8/23
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Pin=250mW/Area Scan (51x91x1): Interpolated grid: dx=12 mm,

Maximum value of SAR (interpolated) = 22.8 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid:

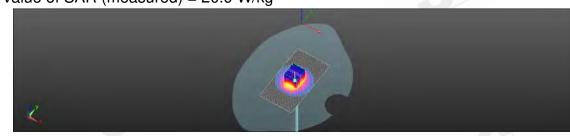
dx=5mm, dy=5mm, dz=5mm

-4.33-8.66 -12.99-17.32-21.65

Reference Value = 113.1 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 27.8 W/kg

SAR(1 g) = 12.7 W/kg; SAR(10 g) = 6.01 W/kgMaximum value of SAR (measured) = 20.9 W/kg



0 dB = 20.9 W/kg = 13.19 dBW/kg

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Date: 2016/11/8

Dipole 2450 MHz SN:727 Body

Communication System: CW; Frequency: 2450 MHz

Medium parameters used: f = 2450 MHz; $\sigma = 1.977$ S/m; $\epsilon_r = 51.977$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 SN3831; ConvF(7.05, 7.05, 7.05); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1374; Calibrated: 2016/8/23
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Pin=250mW/Area Scan (61x121x1): Interpolated grid: dx=12 mm, dv=12 mm

Maximum value of SAR (interpolated) = 20.7 W/kg

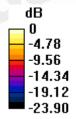
Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid:

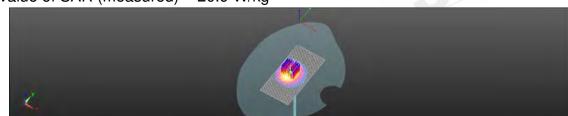
dx=5mm, dy=5mm, dz=5mm

Reference Value = 91.32 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 28.3 W/kg

SAR(1 g) = 12.9 W/kg; SAR(10 g) = 5.87 W/kg Maximum value of SAR (measured) = 20.9 W/kg





0 dB = 20.9 W/kg = 13.20 dBW/kg

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Date: 2016/11/6

Dipole 2600 MHz SN:1005 Head

Communication System: CW; Frequency: 2600 MHz

Medium parameters used: f = 2600 MHz; $\sigma = 1.959 \text{ S/m}$; $\epsilon_r = 37.938$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 SN3831; ConvF(6.71, 6.71, 6.71); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1374; Calibrated: 2016/8/23
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Pin=250mW/Area Scan (51x101x1): Interpolated grid: dx=12 mm,

Maximum value of SAR (interpolated) = 22.4 W/kg

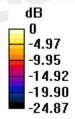
Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid:

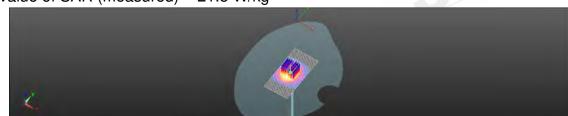
dx=5mm, dy=5mm, dz=5mm

Reference Value = 104.1 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 30.5 W/kg

SAR(1 g) = 13.8 W/kg; SAR(10 g) = 6.04 W/kgMaximum value of SAR (measured) = 21.5 W/kg





0 dB = 21.5 W/kg = 13.33 dBW/kg

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Date: 2016/11/2

Dipole 2600 MHz SN:1005 Body

Communication System: CW; Frequency: 2600 MHz

Medium parameters used: f = 2600 MHz; $\sigma = 2.127 \text{ S/m}$; $\epsilon_r = 51.797$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 SN3831; ConvF(6.71, 6.71, 6.71); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1374; Calibrated: 2016/8/23
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Pin=250mW/Area Scan (51x91x1): Interpolated grid: dx=12 mm,

Maximum value of SAR (interpolated) = 24.6 W/kg

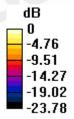
Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid:

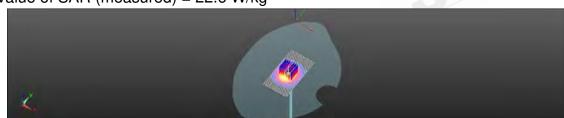
dx=5mm, dy=5mm, dz=5mm

Reference Value = 102.3 V/m; Power Drift = -0.06 dB

Peak SAR (extrapolated) = 31.2 W/kg

SAR(1 g) = 14.3 W/kg; SAR(10 g) = 6.33 W/kg Maximum value of SAR (measured) = 22.6 W/kg





0 dB = 22.6 W/kg = 13.54 dBW/kg

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Date: 2016/11/2

Dipole 5200 MHz SN:1023 Head

Communication System: CW; Frequency: 5200 MHz

Medium parameters used: f = 5200 MHz; $\sigma = 4.603 \text{ S/m}$; $\epsilon_r = 34.721$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 SN3831; ConvF(4.76, 4.76, 4.76); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1374; Calibrated: 2016/8/23
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Pin=100mW/Area Scan (61x81x1): Interpolated grid: dx=10 mm, dv=10 mm

Maximum value of SAR (interpolated) = 19.9 W/kg

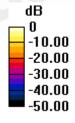
Configuration/Pin=100mW/Zoom Scan (7x7x12)/Cube 0: Measurement grid:

dx=4mm, dy=4mm, dz=2mm

Reference Value = 67.02 V/m; Power Drift = -0.09 dB

Peak SAR (extrapolated) = 38.8 W/kg

SAR(1 g) = 7.5 W/kg; SAR(10 g) = 2.22 W/kgMaximum value of SAR (measured) = 19.8 W/kg





0 dB = 19.8 W/kg = 12.97 dBW/kg

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Date: 2016/11/2

Dipole 5200 MHz SN:1023 Body

Communication System: CW; Frequency: 5200 MHz

Medium parameters used: f = 5200 MHz; $\sigma = 5.486 \text{ S/m}$; $\epsilon_r = 47.721$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 SN3831; ConvF(4.07, 4.07, 4.07); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1374; Calibrated: 2016/8/23
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Pin=100mW/Area Scan (61x81x1): Interpolated grid: dx=10 mm, dv=10 mm

Maximum value of SAR (interpolated) = 17.9 W/kg

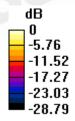
Configuration/Pin=100mW/Zoom Scan (7x7x12)/Cube 0: Measurement grid:

dx=4mm, dy=4mm, dz=2mm

Reference Value = 51.26 V/m; Power Drift = -0.14 dB

Peak SAR (extrapolated) = 32.8 W/kg

SAR(1 g) = 7.54 W/kg; SAR(10 g) = 2.06 W/kg Maximum value of SAR (measured) = 18.3 W/kg





0 dB = 18.3 W/kg = 12.62 dBW/kg

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Date: 2016/11/2

Dipole 5800 MHz SN:1023 Head

Communication System: CW; Frequency: 5800 MHz

Medium parameters used: f = 5700 MHz; $\sigma = 5.203 \text{ S/m}$; $\varepsilon_r = 34.121$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 SN3831; ConvF(4.1, 4.1, 4.1); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1374; Calibrated: 2016/8/23
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Pin=100mW/Area Scan (61x81x1): Interpolated grid: dx=10 mm,

Maximum value of SAR (interpolated) = 17.1 W/kg

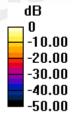
Configuration/Pin=100mW/Zoom Scan (7x7x12)/Cube 0: Measurement grid:

dx=4mm, dy=4mm, dz=2mm

Reference Value = 60.10 V/m; Power Drift = -0.05 dB

Peak SAR (extrapolated) = 37.1 W/kg

SAR(1 g) = 7.98 W/kg; SAR(10 g) = 2.26 W/kgMaximum value of SAR (measured) = 17.2 W/kg





0 dB = 17.2 W/kg = 12.37 dBW/kg

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Date: 2016/11/2

Dipole 5800 MHz SN:1023 Body

Communication System: CW; Frequency: 5800 MHz

Medium parameters used: f = 5800 MHz; $\sigma = 6.086 \text{ S/m}$; $\epsilon_r = 46.926$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 SN3831; ConvF(3.52, 3.52, 3.52); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1374; Calibrated: 2016/8/23
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Pin=100mW/Area Scan (61x81x1): Interpolated grid: dx=10 mm, dv=10 mm

Maximum value of SAR (interpolated) = 15.4 W/kg

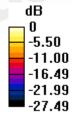
Configuration/Pin=100mW/Zoom Scan (7x7x12)/Cube 0: Measurement grid:

dx=4mm, dy=4mm, dz=2mm

Reference Value = 51.95 V/m; Power Drift = -0.14 dB

Peak SAR (extrapolated) = 29.3 W/kg

SAR(1 g) = 7.59 W/kg; SAR(10 g) = 2.16 W/kg Maximum value of SAR (measured) = 15.8 W/kg





0 dB = 15.8 W/kg = 11.98 dBW/kg

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7. DAE & Probe Calibration Certificate

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





5 Schweizerischer Kallbrierdienst C Servizio svizzero di taratura Swiss Calibration Service

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

SGS-TW (Auden)

Accreditation No.: SCS 0108

Certificate No: DAE4-1374_Aug16 CALIBRATION CERTIFICATE DAE4 - SD 000 D04 BM - SN: 1374 Object Calibration procedure(s) QA CAL-06,v29 Calibration procedure for the data acquisition electronics (DAE) August 23, 2016 Calibration date: This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI) The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate. All calibrations have been conducted in the classed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%. Calibration Equipment used (M&TE prince) for calibration) Cal Date (Certificate No.) Scheduled Calibration DA Primary Standards SN: 0810278 09-Sep-15 (No:17153) Sep-16 Keithley Multimeter Type 2001 Scheduled Check Secondary Standards ID # Check Date (in house) SE UWS 053 AA 1001 05-Jan-16 (in house check) In house check: Jan-17 Auto DAE Calibration Unit SE UMS 006 AA 1002 05-Jan-16 (in house check) in house check; Jan-17 Calibrator Box V2.1 Signature Dominique Station Technican Deputy Technical Manager Fin Bomholi IN B/ Lune Approved by: Issued: August 23, 2016 This calibration certificate shall not be reproduced except in full without written approval of the laborat

Certificate No: DAE4-1374_Aug16

Page 1 at 5

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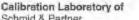
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Schmid & Partner Engineering AG Zoughausstrasse 43, 8664 Zurich, Switzerland





Service suisse d'étalonnag C Servizio avizzaro di taretura 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

DAE data acquisition electronics

information used in DASY system to align probe sensor X to the robot Connector angle

coordinate system.

Methods Applied and Interpretation of Parameters

DC Voltage Measurement: Calibration Factor assessed for use in DASY system by comparison with a calibrated instrument traceable to national standards. The figure given corresponds to the full scale range of the voltmeter in the respective range

- Connector angle: The angle of the connector is assessed measuring the angle mechanically by a tool inserted. Uncertainty is not required.
- The following parameters as documented in the Appendix contain technical information as a result from the performance test and require no uncertainty,
 - DC Voltage Measurement Linearity: Verification of the Linearity at +10% and -10% of the nominal calibration voltage. Influence of offset voltage is included in this
 - Common mode sensitivity; Influence of a positive or negative common mode voltage on the differential measurement,
 - Channel separation: Influence of a voltage on the neighbor channels not subject to an
 - AD Converter Values with Inputs shorted: Values on the Internal AD converter corresponding to zero input voltage
 - Input Offset Measurement. Output voltage and statistical results over a large number of zero voltage measurements.
 - Input Offset Current: Typical value for information; Maximum channel input offset current, not considering the input resistance.
 - Input resistance: Typical value for information: DAE input resistance at the connector, during internal auto-zeroing and during measurement.
 - Low Battery Alarm Voltage: Typical value for information. Below this voltage, a battery alarm signal is generated.
 - Power consumption: Typical value for Information. Supply currents in various operating

Certificate No: DAE4-1374_Aug16

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DC Voltage Measurement A/D - Converter Resolution inominal

High Range: 1LSB = full range = 100...+300 mV Low Range: ILSB = 61nV full range = DASY measurement parameters: Auto Zero Time, 3 sec. Measuring time; 3 sec.

Calibration Factors	X	Υ	Z
High Range	403.637 ± 0.02% (k=2)	403.886 ± 0.02% (k=2)	404.160 ± 0.02% (k=2)
Low Range	3.98275 ± 1.50% (k=2).	3,96719 ± 1,50% (1=2)	3.99036 ± 1.50% (⊫≥)

Connector Angle

Connector Angle to be used in DASY system	42.5°±1°

Contricate No: DAE4-1374 Aug 15

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Appendix (Additional assessments outside the scope of SCS0108)

High Range	Reading (µV)	Difference (µV)	Error (%)
Channel X + Input	200039.11	0.18	0.00
Channel X + Input	20005.23	0.57	0.00
Channel X - Input	-20004.46	1.52	-0.01
Channel Y + Input	200041 10	3.98	0.00
Channel Y + Input	20002.96	-1,76	-0.01
Channel Y - Input	-20007,46	-1.33	0.01
Channel Z + Input	200039.71	2.56	0.00
Channel Z + Input	20002.57	-2.04	-0.01
Channel Z - Input	-20008.39	-2.20	0.01

Low Range	Reading (µV)	Difference (µV)	Error (%)
Channel X + Input	2001.14	0.37	0.02
Channel X + Input	200.90	0.07	0.03
Channel X - Input	-198.75	0.41	-0.20
Channel Y + Input	2000.82	0.06	0.00
Channel Y + Input	200.17	-0.51	-0.25
Channel Y - Input	-199,47	-0.29	0.15
Channel Z + Input	2000.50	-0.29	-0.01
Channel Z + Input	199.36	-1,24	-0.62
Channel Z - Input	-200.79	-1.45	0.73
the second secon			

2. Common mode sensitivity

	Common mode Input Voltage (mV)	High Range Average Reading (µV)	Low Range Average Reading (µV)
Channel X	200	6,08	3.93
	-200	-2.69	-4.73
Channel Y	200	7,56	7.12
	200	-8.69	-8.88
Channel Z	200.	5.83	817.c
	- 200	-8.94	-B 1B

3. Channel separation

DASY measurement parameters: Auto Zoro Time: 3 sec. Measuring lime: 3 sec.

	Input Voltage (mV)	Channel X (µV)	Channel Y (µV)	Channel Z (µV)
Channel X	200	1	-2.29	-1.91
Channel Y	200	4.85		-1.13
Channel Z	200	10.99	2.02	-

Certificate No: DAE4-1374_Aug16

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DASY measurement parameters; Auto Zero Time: 3 sec; Measuring time: 3 sec

	High Range (LSB)	Low Range (LSB)
Channel X	15938	14709
Channel Y	18155	14646
Channel Z	16095	15566

5. Input Offset Measurement

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

			v.	4.	N	v.	w
lni	21	ш	E.	21	ч	N	11.

	Average (μV)	min. Offset (μV)	max. Offset (μV)	Std. Daviation (µV)
Channel X	1.17	0.20	1.90	0.33
Channel Y	0.61	-0.17	1.24	0.30
Channel Z	-1,30	-2.42	-0.33	0.37

6. Input Offset Current

Nominal input circuitry offset current on all charmels: <25fA

7 Input Resistance /Turical values for information

	Zerolng (kOhm)	Measuring (MOhm)
Channel X	200	500
Channel Y	500	200
Channel Z	200	200

B. Low Battery Alarm Voltage (Typical values for information)

Typical values	Alarm Level (VDC)	
Supply (+ Voc)	+7.9	
Supply (- Vcc)	-7.6	

9. Power Consumption (Typical values for information)

Typical values	Switched off (mA)	Stand by (mA)	Transmitting (mA)	
Supply (+ Vcc)	+0.01	+6	+14	
Supply (- Vcc)	-0.01	-6	-0	

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Calibration Laboratory of Schmid & Partner

Engineering AG Zeughausstrasse 43, 8504 Zurich, Switzerland





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Accreditation No.: SCS 0108

Accredited by the Swiss Accreditation Service (SAS)

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SGS-TW (Audan)

Certificate No: EX3-3831 Jan16

CALIBRATION CERTIFICATE

Dissect

EX3DV4 - SN/3831

Calbindon procedure(s)

QA GAL-01.V9, QA CAL-14.V4, QA CAL-23.V5, QA CAL-25.VB

Calibration procedure for dosimetric Effeid probas

Calibration date:

January 27, 2016

This calibration conflicate documents the tracerbility to national standards, which makes the physical units of measurements (51) The measurements and the uncontinuous with confidence probability are given on the following pages and are part of the confidence

All collections have been conducted in the closed absorably facility environment temperature (22 ± 3) °C and humbby = 70° is

Calibration Equipment used (M&TE critical for cultivation)

Primary Standards	ID	Cai Dare (Certificate No.)	Scheduled Calibrition
Fower meter E44198	3B41293874	01-Apr-15 (No. 217-02138)	Mari Mi
Fower sensor E4412A	MY41498087	01-Apr-15 (No. 217-02128)	Mar-16
Reference 3 dB Attenuated	5N: 85064 (3c)	01-Apr-15 (No. 217-02129)	Mar-16
Reference 20 dtl Atlenuator	SN: 95277 (20a)	01-Apr-15 (No. 217-02132)	Mai-15
Refinunce 30 dB Atturipator	SN: \$5129 (30b)	61-Apr-15 (No. 217-62133)	Mar-1fi
Reference Probe ESSDV2	SN 3013	51-Dec-15 (No. ES3-3013_Dec15)	Geo. til
DAG4	SN: 650	23-Dec-15 (No DAE4-RED ORC15)	Dec-15
Secondary Standards	1D	Creck Date (in house)	Scheduled Check
RF generator HP 5649C	US3642D01700	4-Aug-98 (in house check Apr-13)	In house check. Apr-16
Nerwork Analyzes HP 8757E	US37390565	18-Oct-01 (in house check Oct-15)	to house check: Dct. 16

	Name	Function	Signature
Carbrated by:	. іншен Кластрії	Cabinitory Techniques	f= Le-
Approved by	Kinga Policovic	Tarahnasa) Mapagia	Rely
			issued: January 70, 7010

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Calibration Laboratory of

Schmid & Partner

Engineering AG ausstrasse 43, 8004 Zurich, Switzerla





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Accreditation No.: SCS 0108

Accredited by the Swiss Accreditation Santos (SAS)

The Swiss Accreditation Service is one of the signatorios to the EA Multilateral Agreement for the recognition of calibration certification

Glossary:

tissue simulating liquid NORMx,y,z sensitivity in tree space sensitivity in TSL / NORMx,y,z ConvP DOP Gode compression point

crest factor (1/duty_cycle) of the RF signal modulation dependent investigation parameters. CF A.B.C.D

Polarization at u rotation around probe axis

a rotation around an axis linal is in the plane normal to probe axis (at measurement center). Polarization St

i.m., % = 0 is normal to probe axis

information used in DASY system to align probe sensor X to the robat coordinate system Connector Angle

Calibration is Performed According to the Following Standards:

- IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific. Absorption Rate (SAR) in the Human Head from Wireless Communications Devices; Measurement.
- Techniques", June 2013
 IEC 62209 1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close b proximity to the ear (frequency range of 300 MHz to 3 GHz)*, February 2005 IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices
- used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)*, March 2010
- KDB 855664, 'SAR Measurement Requirements for 100 MHz to 8 GHz'

Methods Applied and Interpretation of Parameters:

- MORMX,y,z: Assessed for E-field polarization II = 0 (f ≤ 900 MHz in TEM-cell; t > 1800 MHz; R22 waveguide). NORMx,y,z are only intermediate values, i.e., the uncertainties of NORMx,y,z does not affect the E2 field uncertainty inside TSL (see below ConvF).
- NORM(f)x,y,z = NORMx,y,z "frequency_response (see Frequency Response Chart). This linearization is implemented in DASY4 software versions later than 4.2. The uncertainty of the frequency response is included in the stated uncertainty of ConvF.
- DGPx,y,z: DCP are numerical linearization personetrics assessed based on the data of power swimp with CW signal (no uncertainty required). DCP data not depend on frequency rior media.
- PAR: PAR is the Peak to Average Ratio that is not calibrated but determined based on the signal characteristics
- Ax.y.z. Bx.y.z. Cx.y.z. Dx.y.z. VRx.y.z. A, 6, C. D are numerical linearization parameters desensed broad on the data of power sweep for specific modulation signal. The parameters do not depend on frequency for modula. VR is the maximum calibration range expressed in RMS voltage across the diode.
- ConvF and Boundary Effect Parameters: Assessed in flat phantom using E-field (or Temperature Transfer Standard for $f \le 800$ MHz) and inside waveguide using analytical field distributions based on power measurements for $f \ge 800$ MHz. The same satisfys are used for assessment of the parameters applied for boundary comparestion (alpha, depth) of which typical uncertainty values are given. These parameters are used in DASY4 software to improve probe accuracy close to the boundary. The sensitivity in TSL corresponds to NORA6s, y.z.* CoreF whereby the uncertainty corresponds to that given for CoreF. A frequency department ConvF ≤ used in DASY version 4.4 and higher which allows extending the validity from ± 50 MHz to ± 100.
- Spherical isotropy (3D deviation from Isotropy): In a field of low gradients restized using a the phantom
- exposed by a patch arrienne.

 Sensor Offset The sensor offset corresponds to the offset of virtual measurement center from the probe lip. ion probe sxis). No tolerance required.
- Connector Angle: The angle is assessed using the information gained by determining the NORMs (no. uncertainty required)

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EX3DV4 - SN:3831

January 27, 2016



Probe EX3DV4

SN:3831

Manufactured: Calibrated:

September 6, 2011 January 27, 2016

Calibrated for DASY/EASY Systems (Note: non-compatible with DASY2 system!)

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EX3DV4-SN:3831

January 27, 2016

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3831

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm (µV/(V/m) ²) ^A	0.45	0.42	0.43	± 10.1 %
DCP (mV) ^R	100.7	102.6	99.9	

Modulation Calibration Parameters

UID	Communication System Name		A dB	B dB√μV	С	D dB	VR mV	Une ^{tt} (k=2)
0	CW	X	0.0	0.0	1.0	0.00	153.7	±3.3 %
	1	Y	0.0	0.0	1.0		139.5	
		Z	0.0	0.0	1.0		143.5	

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%.

The uncertainties of Norm X,Y,Z do not effect the E2-field uncertainty inside TSL (see Pages 5 and 6).

Numerical linearization parameter: uncertainty not required,
Uncertainty is determined using the max, deviation from linear response applying rectangular distribution and is expressed for the square of the fleid value.

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EX3DV4-SN:3831

January 27, 2016

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3831

Calibration Parameter Determined in Head Tissue Simulating Media

f (MHz) ^C	Relative Permittivity ^F	Conductivity (S/m) ^F	ConvF X	ConvF Y	ConvF Z	Alpha ^G	Depth ⁸ (mm)	Unc (k=2)
750	41.9	0.89_	9.38	9.38	9.38	0.23	1.35	± 12.0 %
835	41.5	0.90	8.84	8.84	8.84	0.19	1.62	± 12.0 %
900	41.5	0.97	8.77	8.77	8.77	0.20	1.51	± 12.0 %
1450	40.5	1.20	8.17	8.17	8.17	0.28	0.97	± 12.0 %
1750	40.1	1.37	7.92	7.92	7.92	0.41	0.80	± 12.0 %
1900	40.0	1.40	7.66	7.86	7.66	0.37	0.80	± 12.0 %
2000	40.0	1.40	7.61	7.61	7.61	0.32	0.80	± 12.0 %
2300	39.5	1.67	7.33	7.33	7.33	0.31	0.96	± 12.0 %
2450	39.2	1.80	6.92	6.92	6.92	0.27	1.09	± 12.0 %
2600	39.0	1.96	6.71	6.71	6.71	0.40	0.89	± 12.0 %
3500	37.9	2.91	6.41	6.41	6.41	0.42	1.03	±_13.1 %
5200	36.0	4.66	4.76	4.76	4.76	0.35	1.80	± 13.1 %
5300	35.9	4.76	4.46	4.46	4.46	0.40	1.80	± 13.1 %
5600	35.5	5.07	4.08	4.08	4.08	0.50	1.80	± 13.1 %
5800	35.3	5.27	4.10	4.10	4.10	0.50	1.80	± 13.1 %

⁶ Frequency whichly above 300 MHz of ± 100 MHz only applies for DASY vd.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ComF uncertainty at catasetion frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ComF assessments at 30, 64, 25, 160 and 220 MHz respectively. Above 5 GHz frequency validity can be extended to ± 110 MHz.

At frequencies below 3 GHz, the validity of tissue parameters (c and c) can be refered to ± 10% if fliquid compensation formule is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (c and c) is restricted to ± 6%. The uncertainty is the RSS of the ComF uncertainty for indicated target tissue parameters are the compensation of the ComF uncertainty for indicated target tissue parameters are the compensation of the ComF uncertainty for indicated target tissue parameters.

AphatoPeph are determined during contration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz and below ± 2% for frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.

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EX3DV4- SN:3831

January 27, 2016

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3831

Calibration Parameter Determined in Body Tissue Simulating Media

Calibration	alibration Parameter Determined in Body Hissue Simulating Media										
f (MHz) ^c	Relative Permittivity ⁵	Conductivity (S/m) ^F	ConvF X	ConvF Y	ConvF Z	Alpha 6	Depth ^G (mm)	Unc (k=2)			
750	55.5	0.96	9.25	9.25	9.25	0.26	1.29	±12.0%			
835	55.2	0.97	9.08	9.08	9.08	0.35	1.04	± 12.0 %			
900	55.0	1,05	9.05	9.05	9.05	0.30	1.12	± 12.0 %			
1750	53.4	1.49	7.74	7.74	7.74	0.27	1.01	± 12.0 %			
1900	53.3	1.52	7.54	7.54	7.54	0.35	0.85	± 12.0 %			
2000	53.3	1.52	7.62	7.62	7.62	0.37	0.84	± 12.0 %			
2300	52.9	1.81	7.06	7.06	7.06	0.35	0.80	± 12.0 %			
2450	52.7	1.95	7.05_	7.05	7.05	0.34	0.80	± 12.0 %			
2600	52.5	2.16	6.71	6.71	6.71	0.37	0.80	± 12.0 %			
5200	49.0	5.30	4.07	4.07	4.07	0.50	1.90	± 13.1 %			
5300	48.9	5.42	3.81	3.81	3.81	0.55	1.90	± 13.1 %			
5600	48.5	5.77	3,47	3,47	3.47_	0.55	1.90	± 13.1 %			
5800	48.2	6.00	3.52	3.52	3.52	0.60	1.90	± 13.1 %			

Frequency validity above 300 MHz of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else t is restricted to ± 90 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Above 5 GHz frequency validity can be extended to ± 110 MHz.

*At frequencies below 3 GHz, the validity of tissue parameters (c and o) can be reliased to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (s and o) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target fiscue parameters.

*AphatDepth are determined during calibration. SPEMG warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz and below ± 2% for frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.

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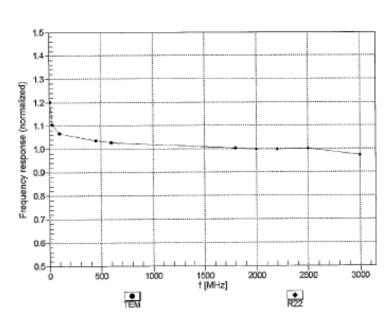
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EX3DV4- SN:3831

January 27, 2016

Frequency Response of E-Field

(TEM-Cell:ifi110 EXX, Waveguide: R22)



Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

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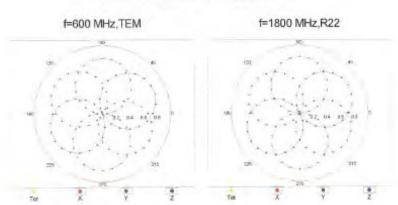


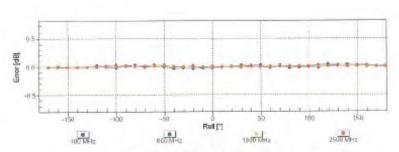
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EX3DV4- SN:3831

January 27, 2016

Receiving Pattern (ϕ), $\theta = 0^{\circ}$





Uncertainty of Axial Isotropy Assessment: ± 0.5% (k=2)

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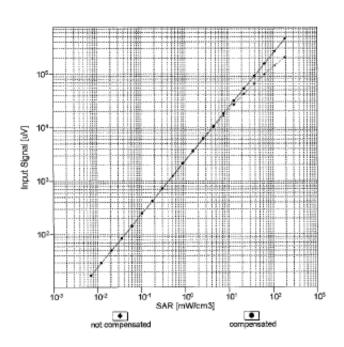


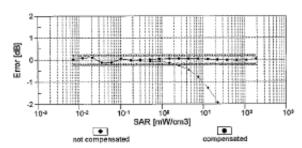
Page: 173 of 238

EX3DV4- SN:3831

January 27, 2016

Dynamic Range f(SAR_{head}) (TEM cell , feval= 1900 MHz)





Uncertainty of Linearity Assessment: ± 0.6% (k=2)

Certificate No: EX3-3831_Jan16

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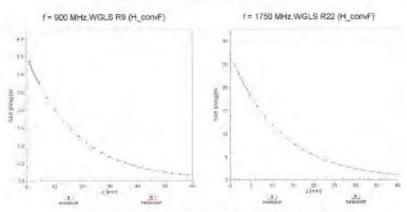
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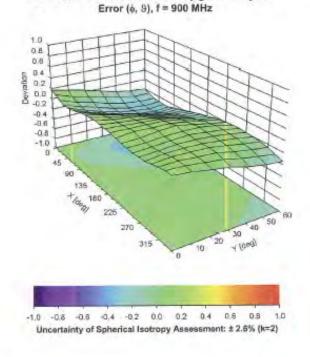
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January 27, 2016 EX3DV4- SN:3831

Conversion Factor Assessment



Deviation from Isotropy in Liquid



Certificate No. EX3-3831_Jan16

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EX3DV4-SN:3831

January 27, 2016

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3831

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	-20.3
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disabled
Probe Overali Length	337 mm
Probe Body Diameter	10 mm
Tip Length	9 mm
Tip Diameter	2.5 mm
Probe Tip to Sensor X Calibration Point	1 mm
Probe Tip to Sensor Y Calibration Point	1 mm
Probe Tip to Sensor Z Calibration Point	1 mm
Recommended Measurement Distance from Surface	1.4 mm

Certificate No: EX3-3831_Jan16

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8. Uncertainty Budget

Measurement Uncertainty evaluation template for DUT SAR test (3-6G)

А	С	D	е		f	g	h=c * f / e	i=c * g / e	k
Source of Uncertainty	Tolerance/ Uncertainty	Probabilit v	Div	Div Value	ci (1g)	ci (10g)	Standard uncertainty	Standard uncertainty	vi, or Veff
Measurement system									
Probe calibration	6.55%	N	1	1	1	1	6.55%	6.55%	œ
Isotropy , Axial	3.50%	R	√3	1.732	1	1	2.02%	2.02%	œ
Isotropy, Hemispherical	9.60%	R	√3	1.732	1	1	5.54%	5.54%	œ
Modulation Response	2.40%	R	√3	1.732	1	1	1.40%	1.40%	∞
Boundary Effect	1.00%	R	√3	1.732	1	1	0.58%	0.58%	œ
Linearity	4.70%	R	√3	1.732	1	1	2.71%	2.71%	œ
Detection Limits	1.00%	R	√3	1.732	1	1	0.58%	0.58%	œ
Readout Electronics	0.30%	N	1	1	1	1	0.30%	0.30%	œ
Response time	0.80%	R	√3	1.732	1	1	0.46%	0.46%	œ
Integration Time	2.60%	R	√3	1.732	1	1	1.50%	1.50%	00
Measurement drift (class A evaluation)	1.75%	R	√3	1.732	1	1	1.01%	1.01%	œ
RF ambient condition - noise	3.00%	R	√3	1.732	1	1	1.73%	1.73%	00
RF ambient conditions - reflections	3.00%	R	√3	1.732	1	1	1.73%	1.73%	œ
Probe positioner Mechanical restrictions	0.40%	R	√3	1.732	1	1	0.23%	0.23%	œ
Probe Positioning with respect to phantom	2.90%	R	√3	1.732	1	1	1.67%	1.67%	œ
Post-processing	1.00%	R	√3	1.732	1	1	0.58%	0.58%	œ
Max SAR Eval	1.00%	R	√3	1.732	1	1	0.58%	0.58%	90
Test Sample related									
Test sample positioning	2.90%	N	1	1	1	1	2.90%	2.90%	M-1
Device Holder Uncertainty	3.60%	N	1	1	1	1	3.60%	3.60%	M-1
Drift of output power	5.00%	R	√3	1.732	1	1	2.89%	2.89%	œ
Phantom and Setup									
Phantom Uncertainty	4.00%	R	√3	1.732	1	1	2.31%	2.31%	œ
Liquid permittivity (mea.)	3.51%	N	1	1	0.64	0.43	2.25%	1.51%	М
Liquid Conductivity (mea.)	3.52%	N	1	1	0.6	0.49	2.11%	1.72%	М
Combined standard uncertainty		RSS					12.11%	11.93%	
Expant uncertainty (95% confidence							24.23%	23.86%	

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Measurement Uncertainty evaluation template for DUT SAR test (0.3-3G)

Α	С	D	е		f	g	h=c * f / e	i=c * g / e	k
Source of Uncertainty	Tolerance/ Uncertainty	Probabilit v	Div	Div Value	ci (1g)	ci (10g)	Standard uncertainty	Standard uncertainty	vi, or Veff
Measurement system									
Probe calibration	6.00%	N	1	1	1	1	6.00%	6.00%	∞
Isotropy , Axial	3.50%	R	√3	1.732	1	1	2.02%	2.02%	∞
Isotropy, Hemispherical	9.60%	R	√3	1.732	1	1	5.54%	5.54%	∞
Modulation Response	2.40%	R	√3	1.732	1	1	1.40%	1.40%	∞
Boundary Effect	1.00%	R	√3	1.732	1	1	0.58%	0.58%	∞
Linearity	4.70%	R	√3	1.732	1	1	2.71%	2.71%	∞
Detection Limits	1.00%	R	√3	1.732	1	1	0.58%	0.58%	∞
Readout Electronics	0.30%	N	1	1	1	1	0.30%	0.30%	∞
Response time	0.80%	R	√3	1.732	1	1	0.46%	0.46%	∞
Integration Time	2.60%	R	√3	1.732	1	1	1.50%	1.50%	∞
Measurement drift (class A evaluation)	1.75%	R	√3	1.732	1	1	1.01%	1.01%	∞
RF ambient condition -	3.00%	R	√3	1.732	1	1	1.73%	1.73%	∞
RF ambient conditions - reflections	3.00%	R	√3	1.732	1	1	1.73%	1.73%	∞
Probe positioner Mechanical restrictions	0.40%	R	√3	1.732	1	1	0.23%	0.23%	∞
Probe Positioning with respect to phantom	2.90%	R	√3	1.732	1	1	1.67%	1.67%	∞
Post-processing	1.00%	R	√3	1.732	1	1	0.58%	0.58%	∞
Max SAR Eval	1.00%	R	√3	1.732	1	1	0.58%	0.58%	∞
Test Sample related									
Test sample positioning	2.90%	N	1	1	1	1	2.90%	2.90%	M-1
Device Holder	3.60%	N	1	1	1	1	3.60%	3.60%	M-1
Uncertainty Drift of output power	5.00%	R	√3	1.732	1	1	2.89%	2.89%	∞
Phantom and Setup									
Phantom Uncertainty	4.00%	R	√3	1.732	1	1	2.31%	2.31%	∞
Liquid permittivity (mea.)	3.90%	N	1	1	0.64	0.43	2.50%	1.68%	М
Liquid Conductivity (mea.)	4.18%	N	1	1	0.6	0.49	2.51%	2.05%	М
Combined standard uncertainty		RSS					11.95%	11.71%	
Expant uncertainty (95% confidence							23.91%	23.42%	

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9. Phantom Description

Schmis & Panner Engineering AG

Zeugheusstresse 43, 8004 Zurich, Switzerten Phone +41 1 245 9700, Fax +41 1 245 9779

Certificate of Conformity / First Article Inspection

item	SAM Twin Phentom V4.0	
Type No .	QD 000 P40 C	
Series No	TP-1150 and higher	
Manufacturer	SPEAG Zeughausstrasse 43 CH-8004 Zürich Switzerland	

Tests
The series production process used allows the limitation to test of first articles.
Complete tests were made on the pre-series Type No. QD 000 P40 AA. Serial No. TP-1001 and on the series first article Type No. QD 000 P40 BA, Serial No. TP-1006. Certain parameters have been retested using further series items (called samples) or are tested at each item

Test	Requirement	Details	Units tested
Dimensions	Compliant with the geometry according to the CAD model.	IT'IS CAD File (*)	First article, Samples
Material thickness of shell	Compliant with the requirements according to the standards	2mm +/- 0.2mm in flat and specific areas of head section	First article, Samples, TP-1314 ff,
Material thickness at ERP	Compliant with the requirements according to the standards	6mm +/- 0.2mm at ERP	First article, All items
Material parameters	Dielectric parameters for required frequencies	300 MHz = 6 GHz: Relative permittivity < 5. Loss tangent < 0.05	Moterial samples
Material resistivity	The material has been tested to be compatible with the liquids defined in the standards if handled and cleaned according to the instructions. Observe technical Note for material compatibility.	DEGMBE based simulating liquids	Pre-saries, First article, Material samples
Sagging	Compliant with the requirements according to the standards. Sagging of the flat section when filled with lissue simulating liquid.	< 1% typical < 0.6% if siled with 155mm of HSL900 and without OUT below	Prototypes, Sample testing

- CENELEC EN 50361 IEEE Std 1528-2003 IEC 62209 Part I

- FCC OET Sulletin 65, Supplement C, Edition 01-01
 The IT'IS CAD file is derived from [2] and is also within the tolerance requirements of the shapes of

Based on the sample tests above, we certify that this item is in compliance with the uncertainty requirements of SAR measurements specified in standards [1] to [4]

07.07.2005

Signature / Stamp

Page

TITLE

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10. System Validation from Original Equipment Supplier

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





Service suisse d'étalonnage C Servizio svizzero di teratura 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 cartificates

SGS-TW (Auden) Certificate No: D750V3-1015 Aug 16 CALIBRATION CERTIFICATE D750V3 - SN: 1015 Calibration procedurals? QA CAL-05 v9 Calibration procedure for dipole validation kits above 700 MHz August 30, 2016 This calibration certificate documents the trapsability to national standards, which realize the physical units of measurements (Sti, The measurements and the uncortainties with confidence probability are given on the following pages and are part of the certificate. All 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) DA Cal Date (Certificate No.) Primary Standards SN: 104778 06-Apr-16 (No. 217-02288/02288) Power mater NRP Power sensor NRP-Z91 SN: 103244 06-Apr-15 (No. 217-02288) Apr-17 Power sensor NAP-Z91 SN: 100245 06-Apr-16 [No. 217-02289] Apr-17 Reference 20 dB Attenuator SN: 5058 (200) Bb-Apr-16 (No. 217-02292) Apr-17 SN: 5047.2 / 06327 06-Apr-16 (No. 217-02295) Type-N mismatch combination Apr-17 SN: 7349 15-Jun-16 (No. EX3-7349_aun16) Apt-17 Reference Prote EX3DV4 30-Dec-15 (No. DAE4-601_Dec15) Check Date (in house) Scheduled Check Secondary Standards Power meter EPM-442A SN: G837480704 07-Oct-15 (No. 217-02222) in house check: Oct-16 97-Oct-15 (No. 217-02222) In house check, Oct-16 Power sunsor HP 8481A SN: US37292783 SN: MY41092317 07-Clot-15 (No. 217-02223) in house check. Oct-16 Power sensor HP 8481A RF generator R&S SMT-06 SN: 100972 15-Jun 15 (in house check Jun-15) In house check: Oct-16 Network Analyzer HP 8763E SN US37390585 18-Did-O1 (in house check Oct+15) In house check: Oct-16 Function Michael Water Laboratory Technicien Technical Manager Approved by Katia Pokovic

Certificate No: D750V3-1015_Aug16

Page 1 at 8:

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Issued. August 30, 2016



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Service suisse d'étalonnag C Servizio avizzaro di tarature Swigs Calibration Service

creditation No.: SCS 0108

According by the Bass Accordination Service (SAS)

The Series Accreditation Service is one of the signatories to the EA Multisterni Agreement for the recognition of calibration certificans

Glossary:

TSL ConvF N/A

tissue simulating liquid

sensitivity in TSL / NORM x,y,z not applicable or not measured

Calibration is Performed According to the Following Standards.

- a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) In the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
- b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)". February 2005
- c) IEC 62209-2, "Procedure to determine the Specific Absorption Rata (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
- d) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

e) DASY4/5 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 impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- Electrical Delay: One-way delay between the SMA connector and the antenna feed point. 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: D750V3-1015 Aug16

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Measurement Conditions

DASVIO

DASY Version	DASY5	V52.8.B
Extrapolation	Advanced Extrapolation	
Phanton	Modular Flat Phanton	
Distance Dipole Center - TSL.	13 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 m/no/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	42.4 ± 6 %	0.91 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C		-

SAR result with Head TSL

SAR averaged over 1 cm2 (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	2.11 W/kg
SAR for nominal Head TSL parameters	normalized to 1V9	8.32 W/kg ± 17.0 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	1.38 W/kg
SAR for nominal Head TSL parameters	Wr of beginnen	5.45 W/kg ± 16.5 % (k=2)

Body TSL parameters

ing parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22,0 °C	55.5	0,96 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	54.9 ± 6 %	0,99 mhs/m ± 5 %
Body TSL temperature change during test	<0.5°C	-	_

SAR result with Body TSL

SAR averaged over 1 cm2 (1 g) of Body TSL	Condition	
SAFI measured	250 mW input power	2,25 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	8.77 W/kg ± 17.0 % (k±2)

SAR averaged over 10 cm1 (10 g) of Body TSL	condition	
SAFI measured	250 mW input power	1.47 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	5.76 W/kg ± 16.5 % (k=2)

Certificato No: D750V3-1015_Aug16

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Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	53.1 Ω - 9.2 <u>βΩ</u> -30.5 dB	
Return Loss		

Antenna Parameters with Body TSL

Impedance, transformed to feed point	49.0 \O = 2.0 \O
Return Loss	30.5 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1,037 hs

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 simingld coaxial cable. The center conductor of the leading 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 clipple arms in order to improve matching when leaded 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 excassive force must be applied to the dipole erms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG	
Manufactured on	March 22, 2010	

Camillogia No. D780V3-1015 Aug16

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DASY5 Validation Report for Head TSL

Date: 30,08,2016

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 750 MHz; Type: D750V3; Serial: D750V3 - SN: 1015

Communication System: UID 0 - CW; Frequency: 750 MHz

Medium parameters used: f = 750 MHz, $\sigma = 0.91 \text{ S/m}$; $\varepsilon_t = 42.4$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 SN7349; ConvF(10.07, 10.07, 10.07); Calibrated: 15.06.2016;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.12,2015
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7372)

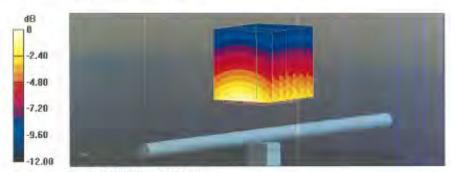
Dipole Calibration for Head Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm Reference Value = 58.26 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 3.16 W/kg

SAR(1 g) = 2.11 W/kg; SAR(10 g) = 1.38 W/kg

Maximum value of SAR (measured) = 2.81 W/kg



0 dB = 2.81 W/kg = 4.49 dBW/kg

Certificate No: D750V3-1015_Aug16

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DASY5 Validation Report for Body TSL

Date: 30.08.2016

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 750 MHz; Type: D750V3; Serial: D750V3 - SN: 1015

Communication System: UID 0 - CW; Frequency: 750 MHz

Medium parameters used: l = 750 MHz; $\sigma = 0.99 \text{ S/m}$; $\epsilon_r = 54.9$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

Probe: EX3DV4 - SN7349; ConvF(9.99, 9.99, 9.99); Calibrated: 15.06.2016;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn601; Calibrated: 30.12.2015

Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001.

DASY52 52.8.8(1258); SEMCAD X 14.6.10(7372)

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

Measurement grid: dx=5mm, dy=5mm, dz=5mm Reference Value = 57.47 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 3.39 W/kg

SAR(1 g) = 2.25 W/kg; SAR(10 g) = 1.47 W/kg

Maximum value of SAR (measured) = 2.97 W/kg



0 dB = 2.97 W/kg = 4.73 dBW/kg

Certificate No: D750V3-1015_Aug16

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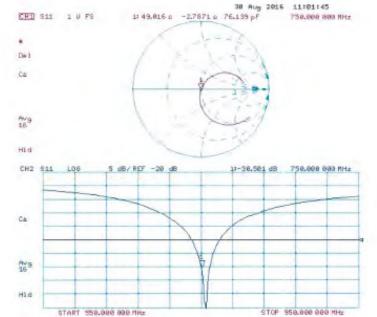
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Impedance Measurement Plot for Body TSL





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





Schweizenscher Kallorierdienst Service suisse d'étalonnage C Servizio svizzero di taratura Swiss Calibration Service

Accreditation No.: SCS 0108 Accredited by the Swiss Accreditation Service (SAS)

The Swise Accreditation Service is one of the signaturies to the EA Multilateral Agreement for the recognition of calibration certificates

SGS-TW (Auden)

Certificate No: D835V2-4d063_Aug16

CALIBRATION CERTIFICATE

D835V2 - SN:4d063 Otioci

Dalibration procedure(s) QA CAL-05.V9

Calibration procedure for dipole validation kits above 700 MHz

August 25, 2016 Cellbrition date:

The contration conficate documents the transability to national standards which regize the physical units of measurements [60]. The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the cineed laboratory facility, environment temperature (22 ± 3)*C and humility < 70%.

Calibration Equipment isset (M&TE critical for calibration)

Primary Standards	ID #	Gal Detri (Certificallà No.)	Scheduled Calibration
Power mose NPP	5N: 104778	DS Apr 15 (No. 217-02288/02289)	Apr-17
Power sensor MRP-291	SN: 103244	16-Ap/-15 (No. 217-02288)	Apr-17
Power sensor NRP-Z91	SNŁ 103240	06-Apr-10 (No. 217-02289)	Apr-17
Reference 20 dB Attenuator	SN: 5058 (20k)	05-Apr-16 (No. 217-02292)	Apr-17
Type-N mismatch combination	SN: E04T 2 / 06327	(15-Apr-16 (No. 217-02295)	Apr-17
Reference Probe EX3DV4	SN: 7348	15-Jun-16 (No. EX3-7349_Jun16)	Jun-17
DAE4	SN: 601	30-Dec-15 (No. DA54-901_Dec15)	Deb/16
Secondary Standards	ID #	Check Date (in house)	Senaduled Chack
Power meter EPM-142A	SN: GB37480704	07-Dct-15 (No. 217-02822)	in house theck: Oct-15
Power sensor HP 8481A	SN: US37292783	07-Oct-16 (No. 217-02222)	In house check: Oct-16
Power sensor HF 8481A	SN: MY41002317	07-Oct 16 (No. 217-02223)	Hirhouse check Dct-16
DF concentor FAS SMT-06	SN: 100972	15-Jun-15 (in house check Jun-10)	In house check, Cict-10
Network Analyzer HP 8753E	SN: US27390585	18-Oct-01 (in house child) Oct-15)	In house arreck: Clat-18
	Marrie	Function	Signature
Calibrated by:	Michael Webs	Laboratory Teromister	Milletes
Approved try:	Kalja Pokovio	Technical Manager	All-
			ssued: August 29, 2076

Certificate No: D835V2-4d063_Aug16

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Calibration Laboratory of Schmid & Partner Engineering AG aughausstrassu 43, 8004 Zurich, Switzenum





Schweizerragner Kallbrieren Service waless d'étalonnage Servicio evizzero di taretura Swiss Calturation Service

Accreditmen No.: SCS 0108

Accredited by the Swiss Accreditation Service (SAS). The Swine Ascreditation Service is one of the signal-ring to the EA Multimeral Agreement for the recognition of calibration cartificates

Glossary:

TSU ConvF N/A

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

Calibration is Performed According to the Following Standards:

- a) IEEE Std 1528-2013, TEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
- b) IEC 62209-1, 'Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)*.
- IEC 62209-2, 'Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)*, March 2010
- d) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

e) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- Measurement Conditions: Further details are available from the Validation Report at the and 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 load 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 impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- Electrical Delay: One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- SAR measured: SAR measured at the stated antenna inpul power.
- SAR normalized: SAR as measured, normalized to an input power of 1 W at the antenna
- 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%

Gertilipate No. GrasV3-46063_Aug16

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Measurement Conditions

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

DASY Version	DASY5	V52.8.8
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	Parmittivity	Conductivity
Nominal Head TSL parameters	22,0 °C	41.5	0,90 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	42.1 ± 6 %	0.93 mha/m ± 6 %
Head TSL lemperature change during test	< 0.5 °C		-

SAR result with Head TSL

SAR averaged over 1 cm ³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	2.40 W/kg
SAR for nominal Head TSL parameters	W of basilermon	9.40 W/kg = 17.0 % (k=2)

SAR averaged over 10 cm ² (10 g) of Head TSL	condition	
SAFI measured	250 mW input power	1.54 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	6.05 W/kg ± 16.5 % (k=2)

Body TSL parameters

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	55,2	0.97 mhoym
Measured Body TSL parameters	(22.0 ± 0.2) °C	54.7 ± 6.%	1.01 mbom = 6 %
Body TSL temperature change during test	< 0,5 °C	-	-

SAR result with Body TSL

SAR averaged over 1 cm ² (1 g) of Body TSL	Consision	
SAR measured	250 mW input power	2.47 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	9.57 W/kg ± 17.0 % (k=2)

SAR averaged over 10 cm2 (10 g) of Body TSL	candition	
SAR measured	250 mW input power	1.81 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	8,28 W/kg ± 16,5 % (k=2)

Certificate No: D835V2-4d0G3_Aug16

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Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	51.2 \O - 2.8 j\O	
Helum Loss	- 30.3 dB	

Antenna Parameters with Body TSL

Impedance, transformed to feed point	47.3 Ω - 5,5 jΩ	
Relum Loss	-24.0 dB	

General Antenna Parameters and Design

Electrical Delay (one direction)	1.392 ns
Electrical panel for in american	From He

After long tarm 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 entenna 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 "Messurement Conditions" paragraph. The SAFI 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 of the subleted connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	November 27, 2006

Certificate No. D635V2-4d063_Aug16

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DASY5 Validation Report for Head TSL

Date: 25.08.2016

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN:4d063

Communication System: UID 0 - CW; Frequency: 835 MHz.

Medium parameters used: f = 835 MHz; $\sigma = 0.93 \text{ S/m}$; $\varepsilon_r = 42.1$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 SN7349; ConvF(9.72, 9.72, 9.72); Calibrated: 15.06.2016;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.12.2015
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7372)

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

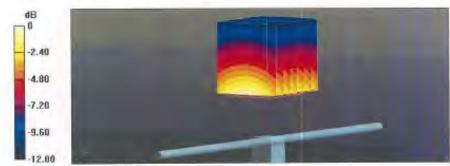
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 61.75 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 3.65 W/kg

SAR(1 g) = 2.4 W/kg; SAR(10 g) = 1.54 W/kg

Maximum value of SAR (measured) = 3.24 W/kg



0 dB = 3.24 W/kg = 5.11 dBW/kg

Certificate No: D835V2-4d063_Aug16

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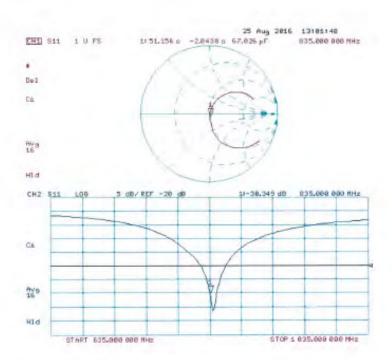


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Impedance Measurement Plot for Head TSL

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DASY5 Validation Report for Body TSL

Date: 25.08.2016

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 835 MHz; Type; D835V2; Serial: D835V2 - SN:4d063

Communication System: UID 0 - CW; Frequency; 835 MHz

Medium parameters used: f = 835 MHz; $\sigma = 1.01$ S/m; $\epsilon_r = 54.7$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63 19-2011)

DASY52 Configuration:

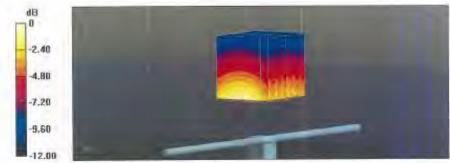
- Probe: EX3DV4 SN7349; ConvF(9.73, 9.73, 9.73); Calibrated: 15.06.2016;
- Sensor-Surface: L4mm (Mechanical Surface Detection)
- Electronics: DAE4 Su601; Calibrated: 30.12.2015
- Phantom: Flat Phantom 4.9L; Type; QD000P49AA; Serial: 1001
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7372)

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

Measurement grid: dx=5mm, dy=5mm, dz=5mm Reference Value = 59.83 V/m; Power Drift = -0.00 dB Peak SAR (extrapolated) = 3.63 W/kg

SAR(1 g) = 2.47 W/kg; SAR(10 g) = 1.61 W/kg

Maximum value of SAR (measured) = 3.25 W/kg



0 dB = 3.25 W/kg = 5.12 dBW/kg

Genilicate No: DB35V2-4d003_Aug16

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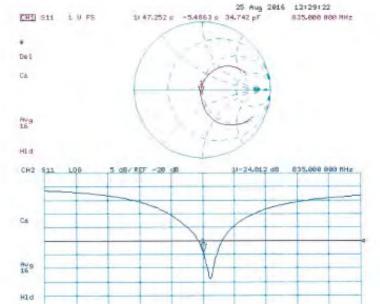


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Impedance Measurement Plot for Body TSL

START 635,800 000 MHz

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Certificate No: D835V2-4d063_Aug16

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f (886-2) 2298-0488

SGS Taiwan Ltd.

No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路 134 號

STOP 1 035,000 000 MHz



Page: 194 of 238

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





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

Accerdited by the Swiss Accreditation Service (SAS)

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

SGS-TW (Auden)

Accreditation No. SCS 0108

Cortificate No: D1750V2-1008_Aug16

CALIBRATION CERTIFICATE

Object

D1750V2 - SN:1008

Calibration procedure(s)

QA CAL-05:v9

Calibration procedure for dipole validation kits above 700 MHz

Calibration date:

August 31, 2016

This calibration partitions documents the traceptativito national standards, which region the previous units of measurements (SI) The measurements and the uncertainties with confidence probability are given on the following pages and are part of the cestificate.

All calibrations have been conducted in the closed laboratory legitly; environment temperature (22 ± 3) C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID#	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NAP	SN: 164778	06-April 16 (No. 217-02288/02299)	Apr-17
Power sensor NRP-Z91	SN: 103244	06-Apr-16 (No. 217-02288)	Apr-17
Power sensor NRP-Z91	SN: 103245	06-Apr-16 (No. 217-02289)	Apr-17
Reference 20 dB Attenuator	SN: 5058 (20k)	05-Apr-15 (No 217-02292)	Apr-17
Type-N mismatch combination	SN: 5047.2 / 06827	05-Apr-16 (No. 217-02295)	Apr-17
Reference Probe EX3DV4	SN: 7349	15-Jun-16 (No. EX3-7349_Jun16)	Jun-17
DAE4	SN: 601	30-Dec-15 (No. DAE4-601_Dec15)	Dec-16
Secondary Standards	ID4	Check Date (in house)	Scheduled Check
Power meter EPN-442A	SN: GB37480704	07-Oct-15 (No. 217-02222)	In house dheck: Oct-16
Power sensor HP 8461A	SN: US37292783	07-Oct-15 (No. 217-02222)	In house check. Dcf-16
Power sensor HP 8481A	SN: MY41092317	07-Oct-15 (No. 217-02223)	In house check, Oct-16
RF generator R&S SMT-05	SN: 100972	15-Jun-15 (in house chack Jun-15)	In house check: Oct-16
Network Analyzar HP 8753E	SN: US37390586	18-Oct-01 (in ricuse chards Oct-15)	In house check: Oct-16
	Name	Function	Signature
Calibrated by:	Johannes Kumka	Laboratory Technician	you we
Approved by	Katja Pokovio	Technical Manager	Mulle

Certificate No: D1750V2-1008 Aug/16

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Calibration Laboratory of

Schmid & Partner Engineering AG Zeughausstrasse 43, 8004 Zurtch, Switzerland





Service suisse d'étalonnage C Servizio svizzero di tergiura S Swiss Calibration Service

Actrecitation 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 cortilicates

Glossary:

TSL

tissue simulating liquid

sensitivity in TSL / NORM x,y,z ConvE N/A not applicable or not measured

Calibration is Performed According to the Following Standards:

- a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques*, June 2013
- b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)*, February 2005
- IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30) MHz to 6 GHz)*, March 2010
- d) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

e) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- Measurement Conditions: Further details are svailable from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- Anterina 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 impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- Electrical Delay: One-way delay between the SMA connector and the antenna feed point. 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
- SAR for riominal 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%.

Gertificate No. D1750V2-1006. Aun 19

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Measurement Conditions

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

DASY Version	DASY5	V52.8.8
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	1750 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	40.1	1.37 m/no/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	40:3 ± 6 %	1:37 mha/m ± 8 %
Head TSL temperature change during test	< 0.5 °C	-	

SAR result with Head TSL

SAR averaged over 1 cm ² (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	9.28 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	37.2 W/kg = 17.0 % (k=2)

SAR everaged over 10 cm3 (10 g) of Head TSL	condition	
SAR measured	250 mW input power	4.90 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	19.6 W/kg ± 16.5 % (k=2)

Body TSL parameters

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	53,4	1,sl9 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	50.1 ± 6 %	1.49 mho/m ± 6.%
Body TSL temperature change during test	<0.5°C	-	-

SAR result with Body TSL

SAR averaged over 1 cm2 (1 g) of Body TSL	Condition	
SAR measured	250 mW inpul power	9.34 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	37.3 W/kg + 17.0 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	4.96 W/kg
SAR for nominal Body TSL parameters	mormalized to 1W	19.9 W/kg ± 16.5 % (k=2)

Certificate No. D1750V2-1008_Aug18

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Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, transformed to lead point	51.0 Ω - 0.2 jΩ
Ratum Loss	-40.1 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	46.7 Ω - 0.5 jΩ
Return Loss	29,3 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.221 ris
Electrical Doley (one alreadon)	1-64110

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 entenna is therefore short-circulied 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 date are not affected by this change. The overell 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 pear the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	May 27, 2003

Cartilloale No: D1756V2-1008_Aug16

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台灣檢驗科技股份有限公司

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DASY5 Validation Report for Head TSL

Date: 24.08.2016

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1750 MHz; Type: D1750V2; Serial: D1750V2 - SN:1008

Communication System: UID 0 - CW; Frequency: 1750 MHz

Medium parameters used: f = 1750 MHz; $\sigma = 1.37 \text{ S/m}$; $\epsilon_r = 40.3$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

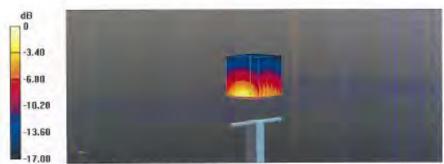
DASY52 Configuration:

- Probe: EX3DV4 SN7349; ConvF(8.46, 8.46, 8.46); Calibrated: 15.06.2016;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.12.2015
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52,8.8(1258); SEMCAD X 14.6.10(7372)

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 = 105.8 V/m; Power Drift = 0.03 dB Peak SAR (extrapolated) = 17.2 W/kg

SAR(1 g) = 9.28 W/kg; SAR(10 g) = 4.9 W/kgMaximum value of SAR (measured) = 14.3 W/kg



0 dB = 14.3 W/kg = 11.55 dBW/kg

Certificate No: D1750V2-1008_Aug16

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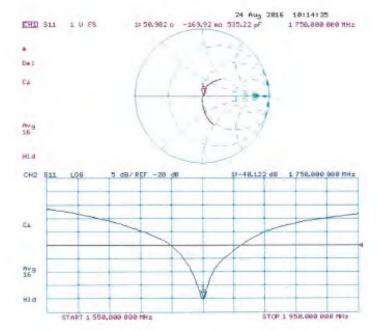
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Impedance Measurement Plot for Head TSL

SGS



Certificate No: D1750V2-1008_Aug16

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DASY5 Validation Report for Body TSL

Date: 31.08 2016

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1750 MHz; Type: D1750V2; Serial; D1750V2 - SN:1008

Communication System: UID 0 - CW; Frequency: 1750 MHz

Medium parameters used: f = 1750 MHz; $\sigma = 1.49 \text{ S/m}$; $\varepsilon_c = 53.1$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

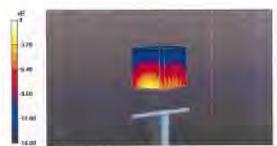
DASY52 Configuration:

- Probe: EX3DV4 SN7349; ConvF(8.25, 8.25, 8.25); Calibrated: 15.06.2016;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.12.2015
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: (002
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7372)

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

Measurement grid: dx=5mm, dy=5mm, dz=5mm Reference Value = 100.8 V/m; Power Drift = -0.02 dB Peak SAR (extrapolated) = 16.4 W/kg SAR(1 g) = 9.34 W/kg; SAR(10 g) = 4.98 W/kg

Maximum value of SAR (measured) = 13.9 W/kg



0 dB = 13.9 W/kg = 11.43 dBW/kg

Certificate No: D1750V2-1008_Aug16

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Impedance Measurement Plot for Body TSL



Hld START 1 550,800 000 MHz STOP 1 958,888 888 MHz

26 Aug 2016

-472,56 mg 192,41 pl

15:16:05

1:-29.341 dB 1,758,000,000 MHz

1 758,686 888 MHz

Certificate No: D1750V2-1008_Aug16

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Calibration Laboratory of Schmid & Partner

Engineering AG Zeughausstrasse 43, 8004 Zurich, Switzerland





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SGS-TW (Auden)

Certificate No: D1900V2-5d027 Apr 16

CALIBRATION CERTIFICATE

D1900V2 - SN: 5d027

Calibration procedure(s)

OA CAL-05.V9

Calibration procedure for dipole validation kits above 700 MHz

Calibration date

April 25, 2016

This continuous autilicate documents the traceability to national standards, which realize the physical units of measurements (SI) The measurements and the propertainties with confidence probability are given on the following pages and are part of the certificate.

All 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)

Primary Standards	ID#	Cal Date (Certificate No.)	Scheduled Carbration
Power meter NRP	5N: 104778	06-Apr-16 (No. 217-02288/02289)	Apr-17
Power sensor NRP-Z91	SN: 103244	06-Apr-16 (No. 217-02288)	Apr.17
Power sensor NRP-Z91	SN: 103245	06-Apr-16 (No. 217-02289)	Apr-17
Reference 20 dB Attenuator	5N: 5058 (20k)	85-Apr-16 (No. 217-02292)	Apr-37
Type-N mismaich combination	SN:3047.2 / 06327	05-Apr-16 (No. 217 02295)	Apr-17
Reference Probe EX3DV4	SN: 7349	31-Dec-15 (No. EX3-7349_Dec15)	Dec-16
DAE4	SN: 601	30-Dec-15 (No. DAE4-601, Dec15)	Dec-16
Secondary Standards	ID e	Check Date (In house)	Scheduled Check
Power meter EPM-442A	SN: GB37480704	07-Oct-15 (No. 217-02222)	In house check: Oct-16
Power sensor HP 8481A	SN: US37292783	07-Oct-15 (No. 2)7-02222)	in house check: Oct-16
Power sensor HP 8481A	SN: MY41092317	07-Oct/15 (No. 217-02223)	In house check: Oct-18
RF generalor R&S SMT-06	SN: 100972	15-Jun-15 (in house check Jun-15)	In house check: Oct-16
Network Analyzer HP 8753E	SN: US3/990685	16-Oct-01 (in house check Oct-15)	In house check: Cld-16
	Name	Function	Signature
Calibrated by:	Michael Weber	Laboratory Technician	M. Webes
Approved by:	Katja Pokovic	Tachnical Manager	AU 15

Certificate No: D1900V2-5d027 Apr16

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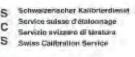


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Accreditation No.: SCS 0108

Accepted by the Sweet Acceptation Service (SAS)

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

Glossary:

TSL ConvF

N/A

tissue simulating liquid

sensitivity in TSL / NORM x,y,z not applicable or not measured

Calibration is Performed According to the Following Standards:

 a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013

b) IEC 62209-1, 'Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)*, February 2005

 c) IEC 82209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010

d) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

a) DASY4/5 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 tilled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- Electrical Delay: One-way delay between the SMA connector and the antenna feed point. 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
- 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: D1900V2-5d027, April 6

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Measurement Conditions

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

DASY Version	DASY5	V52.8.8
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

	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	40.0 ± 6 %	1.37 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C		

SAR result with Head TSL

SAR averaged over 1 cm ³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	9.55 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	38.7 W/kg ± 17.0 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	5.03 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	20.3 W/kg ± 16.5 % (k=2)

Body TSL parameters

ng parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	53.3	1.52 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	52.9 ± 6 %	1.49 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C		

SAR result with Body TSL

SAR averaged over 1 cm ³ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	9.83 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	39.7 W/kg ± 17.0 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	5.21 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	21.0 W/kg ± 16.5 % (k=2)

Certificate No: D1900V2-5d027_Apr16

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Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	50.8 Ω + 4.4 jΩ
Return Loss	- 27.0 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	46.5 Ω + 5.6 jΩ
Return Loss	- 23.3 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 leaded 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
Manufactured on	December 17, 2002

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DASY5 Validation Report for Head TSL

Date: 25.04.2016

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN: 5d027

Communication System: UID 0 - CW; Frequency: 1900 MHz

Medium parameters used: f = 1900 MHz; $\sigma = 1.37 \text{ S/m}$; $\epsilon_c = 40$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Measurement Standard; DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 SN7349; ConvF(8,2, 8,2, 8,2); Calibrated: 31,12,2015;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.12.2015
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7372)

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

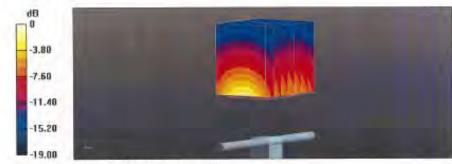
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 106.9 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 17.2 W/kg

SAR(1 g) = 9.55 W/kg; SAR(10 g) = 5.03 W/kg

Maximum value of SAR (measured) = 14.3 W/kg



0 dB = 14.3 W/kg = 11.55 dBW/kg

Certificate No: D1900V2-5d027_Apr16

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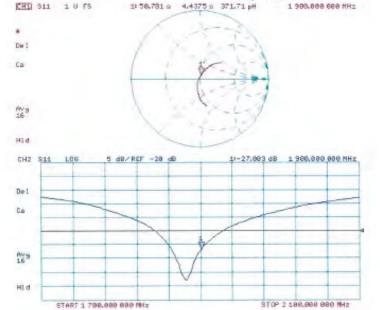


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Impedance Measurement Plot for Head TSL

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25 Apr 2816

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DASY5 Validation Report for Body TSL

Date: 25.04.2016

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN: 5d027

Communication System: UID 0 - CW; Frequency: 1900 MHz

Medium parameters used: f = 1900 MHz; $\sigma = 1.49 \text{ S/m}$; $\varepsilon_c = 52.9$; $\rho = 1000 \text{ kg/m}^5$

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 SN7349; ConvF(8.03, 8.03, 8.03); Calibrated; 31.12.2015;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.12.2015
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7372).

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

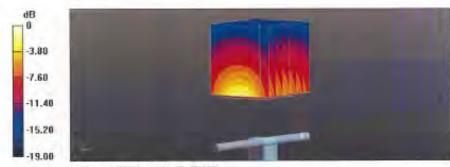
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 104.2 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 17.2 W/kg

SAR(1 g) = 9.83 W/kg; SAR(10 g) = 5.21 W/kg

Maximum value of SAR (measured) = 14.7 W/kg



0 dB = 14.7 W/kg = 11.67 dBW/kg

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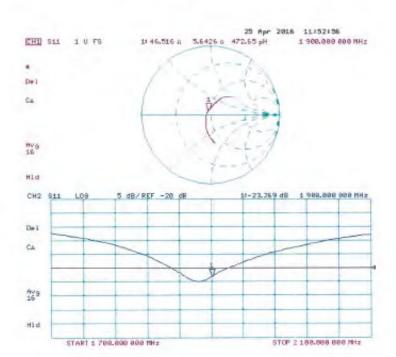


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Impedance Measurement Plot for Body TSL

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Calibration Laboratory of Schmid & Partner Engineering AG usstrasse 43, 5004 Zurich, Switzerland





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Accredited by the Swiss Accreditation Service (SAS) The Swiss Accreditation Service is one of the signaturies to the EA Multilateral Agreement for the recognition of calibration certificates Accreditation No.: SCS 0108

SGS-TW (Auden)

Certificate No: D2450V2-727_Apr16

CALIBRATION CERTIFICATE

Object

D2450V2 - SN:727

Calibration procedure(s)

QA CAL-05.v9

Calibration procedure for dipole validation kits above 700 MHz

Calibration date:

April 19, 2016

This calibration certificate documents the insceptivity to national standards, which was see the physical units of measurer The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate:

All calibrations have been conducted in the closed subtrainty lacility, surviorament temperature (22 ± 3)°C and humidity = 70%.

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power mister NRP	SN: 104778	06-Apr-16 (No. 217-02288/02289)	Apr-17
Power sensor NRP-Z91	SN: 103244	06-Apr-16 (No. 217-02288)	Apr-17
Power sensor NRP-Z91	SN: 103245	06-Apr-16 (No. 217-02289)	Apr-17
Reference 20 dB Attenuator	SN: 5058 (20k)	05-Apr-16 (No. 217-02292)	Apr-17
Type-N mismatch combination	SN: 9047,2 / 06327	95-Apr-16 (No. 217-02295)	Apr-17
Reference Probe EX3DV4	SN: 7349	31-Dec-15 (No. EX3-7349_Dec15)	Dec-1fi
DAE4	SN: 601	30-Dec-15 (No. DAE4-601_Dec15)	Dec-16
Secondary Standards	104	Check Date (in house)	Scheduled Check
Power meter EPM-442A	SN 0837480704	07-Oct-15 (No. 217-02222)	In house check: Oct-16
Power sensor HP 8481A	SN US37292769	07-Oct-15 (No. 217-02222)	In house check: Opt-16
Power sensor HP 8481A	SN: MY41092317	07-Oct-16 (No. 217-02223)	in house check; Oct-16
Fif generator R&S SMT-06	SNL 100972	(5-Jun-15 (in house check Jun-15)	in nouse check: Oct-16
Network Analyzer HP 6753E	SN-US37390585	18-Oct-01 (in house check Oct-15)	In house check: Oct-16
	Name	Function	Signature
Catherstad by:	Michael Weber	Laboratory Fechnician	M.Welses
Approved by:	Kalja Pokowo	Technical Manager	DOM.

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Issued: April 20, 2016



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Calibration Laboratory of Schmid & Partner

Engineering AG Zeughausstrasse 43, 8004 Zurich, Switzerland





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Acceptibilities No.: SCS 0108

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The Swise Acapetitation Service is one of the signatories to the EA
Multilinium Agreement for the recognition of calibration certificates

Glossary:

TSL ti ConvF s N/A

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

Calibration is Performed According to the Following Standards:

- a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
- EC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)". February 2005.
- iEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
- d) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

e) DASY4/5 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 impedance stated is transformed from the
 measurement at the SMA connector to the feed point. The Return Loss ensures low
 reflected power. No uncertainty required.
- Electrical Delay: One-way delay between the SMA connector and the antenna feed point.
 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%.

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Measurement Conditions

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

DASY Version	DASY5	V52.8.8
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	40.0 ± 6 %	1.83 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C		

SAR result with Head TSL

SAR averaged over 1 cm ² (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	12.8 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	51.0 W/kg ± 17.0 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	5.93 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	23.7 W/kg ± 16.5 % (k=2)

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	52.7	1.95 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	52.7 ± 6 %	1.98 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C		

SAR result with Body TSL

SAR averaged over 1 cm ² (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	12.5 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	49.6 W/kg ± 17.0 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	5.86 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	23.3 W/kg ± 16.5 % (k=2)

Certificate No: D2450V2-727_Apr16

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Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	55.3 Ω + 2.0 jΩ
Return Loss	- 25.4 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	52.1 Ω + 4.8 jΩ
Return Loss	- 25.9 dB

General Antenna Parameters and Design

1	Electrical Delay (one direction)	1.148 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
Manufactured on	January 09, 2003

Certificate No: D2450V2-727_Apr16

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DASY5 Validation Report for Head TSL

Date: 19.04.2016

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN: 727

Communication System: UID 0 - CW; Frequency; 2450 MHz

Medium parameters used: f = 2450 MHz; $\sigma = 1.83 \text{ S/m}$; $\epsilon_r = 40$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 SN7349; ConvF(7.76, 7.76, 7.76); Calibrated: 31.12.2015;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.12.2015.
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7372)

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

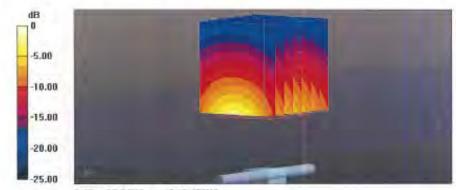
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 112.1 V/m; Power Drift = 0.05 dB

Peak SAR (extrapolated) = 25.7 W/kg

SAR(1 g) = 12.8 W/kg; SAR(10 g) = 5.93 W/kg

Maximum value of SAR (measured) = 20.8 W/kg



0 dB = 20.8 W/kg = 13.18 dBW/kg

Certificate No. D2450V2-727 Apr16

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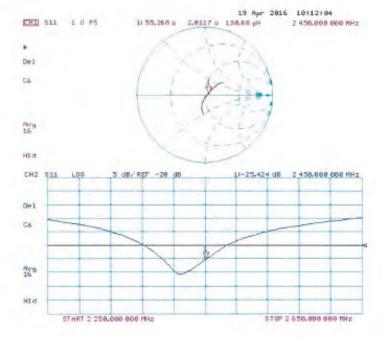
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Impedance Measurement Plot for Head TSL





Certificate No: D2450V2-727_Apr16

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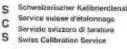


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SGS-TW (Auden)

Accreditation No.: SCS 0108

Certificate No: D2600V2-1005 Jan 16

CALIBRATION CERTIFICATE

D2600V2 - SN: 1005

Calibration procedurers) QA CAL-05.V9

Calibration procedure for dipole validation kits above 700 MHz

Conformium date January 21, 2016

This calibration perificate documents the trapeability to national standards, which make the physical units of measurements (Si). The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certifican

All collaborations have been conducted in the closed laboratory facility, environment temperature (22 ± 3)°C and humidity < 70%;

Calibration Equipment used (MS/TE critical for calibration)

Primary Standards	ID.A	Cal Date (Certificate No.)	Scheduled Calibration
Power motor EPM-442A	GB37480704	07-Oct-15 (No. 217-02222)	Oct-16
Power sensor HP 8481A	US37292783	07-Oct-15 (No. 217-02222)	Oct-16
Power sensor HP 8481A	MY41092317	07-Oct-15 (No. 217-02223)	Oct-16
Reference 20 dBl Attenuator	SN: 5058 (204)	01-Apr-15 (No. 217-82131)	Mar-16
Type N mismatch combination	SN: 5047.2 / 06327	01-Apr-15 (No. 217-92134)	Mai-16
Releience Probe EX3DV4	SN: 7349	31-Dec-15 (No. EX3-7349_Dec15)	Dec-16
DAE4	SN: 601	30-Dec-15 (No. DAE4-601, Dec15)	Dec-15
Secondary Standards	ID W	Check Date (in house)	Scheduled Creck
RF generator R&S SMT-06	100972	15 Jun-15 (in house check Jun-15)	In house check: Jun-18
Network Analyzon HP 87535	US37300585 S4206	18-Oct-01 (in trouse check Oct-15)	In house check: Oct-16

Technical Manager

Name Function Californiad by Let Klys Laboratory Technicia

Issued January 26, 2016

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Кађе Рокомс

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Approved by:

Certificate No: D2600V2-1005 Jan 10



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Calibration Laboratory of

Schmid & Partner Engineering AG Zeughausstrasse 45, 8004 Zurich, Switzerland





Schweizerischer Kallbrierdierts Service suisse d'Williannage Servizio svizzero di territora Swies 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 cartificates

Glossary:

TSI

tissue simulating liquid

ConvF N/A.

sensitivity in TSL / NORM x,y,z not applicable or not measured

Calibration is Performed According to the Following Standards:

- a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless. Communications Devices: Measurement Techniques*, June 2013.
- IEC 62209-1, 'Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
- c) IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)*, March 2010.
- d) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

e) DASY4/5 System Handbook

Methods Applied and interpretation of Parameters:

- Measurement Conditions: Further details are available from the Validation Report at the end. of the cartificate. All figures stated in the cartificate 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 impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- Electrical Delay: One-way delay between the SMA connector and the antenna feed point. 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
- 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%

Certifique No: D2600V2-1005 Jan 16

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Measurement Conditions

DASY system configuration, as far as not given on nane 1

DASY Version	DASY5	V52.8.8
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 mha/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	37.3 ± 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 ³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	14.2 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	55.2 W/kg ± 17.0 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	6.29 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	24.7 W/kg ± 16.5 % (k=2)

Body TSL parameters

rs and calculations were applied

The following parenters and detectations from applicat			
	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	52.5	2.16 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	51.6 ± 6 %	2.22 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C		

SAR result with Body TSL

SAR averaged over 1 cm ³ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	13.7 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	53.9 W/kg ± 17.0 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Body TSL condition		
SAR measured	250 mW input power	6.10 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	24.2 W/kg ± 16.5 % (k=2)

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Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	51.2 Ω - 4.2 jΩ	
Return Loss	- 27.2 dB	

Antenna Parameters with Body TSL

Impedance, transformed to feed point	45.6 Ω - 3.3 <u>j</u> Ω	
Return Loss	- 24.8 dB	

General Antenna Parameters and Design

Electrical Delay (one direction)	1.154 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	
Manufactured on	December 23, 2006	

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DASY5 Validation Report for Head TSL

Date: 21.01.2016

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 2600 MHz; Type: D2600V2; Serial: D2600V2 - SN: 1005

Communication System: UID 0 - CW; Frequency: 2600 MHz

Medium parameters used: f = 2600 MHz; $\sigma = 2.04 \text{ S/m}$; $s_r = 37.3$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

Probe: EX3DV4 - SN7349; ConvF(7.49, 7.49, 7.49); Calibrated: 31.12.2015;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn601; Calibrated: 30.12.2015

Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001

DASY52 52.8.8(1258); SEMCAD X 14.6.10(7372)

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 = 114.8 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 30.2 W/kg

SAR(1 g) = 14.2 W/kg; SAR(10 g) = 6.29 W/kgMaximum value of SAR (measured) = 24.0 W/kg



0 dB = 24.0 W/kg = 13.80 dBW/kg

Certificate No: D2600V2-1005_Jan16

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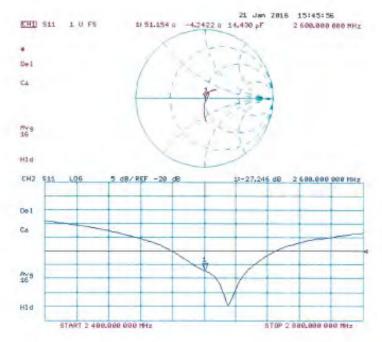
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Impedance Measurement Plot for Head TSL



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DASY5 Validation Report for Body TSL

Date: 21.01.2016

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 2600 MHz; Type: D2600V2; Serial: D2600V2 - SN: 1005

Communication System: UID 0 - CW; Frequency: 2600 MHz

Medium parameters used: f = 2600 MHz; $\sigma = 2.22 \text{ S/m}$; $\epsilon_r = 51.6$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

Probe: EX3DV4 - SN7349; ConvF(7.6, 7.6, 7.6); Calibrated: 31.12.2015;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn601; Calibrated: 30.12.2015

Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002

DASY52 52.8,8(1258); SEMCAD X 14.6.10(7372)

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

Measurement grid: dx=5mm, dy=5mm, dz=5mm Reference Value = 106.7 V/m; Power Drift = 0.02 dB Peak SAR (extrapolated) = 28.4 W/kg

SAR(1 g) = 13.7 W/kg; SAR(10 g) = 6.1 W/kgMaximum value of SAR (measured) = 22.8 W/kg



Certificate No: D2600V2-1005_Jan16

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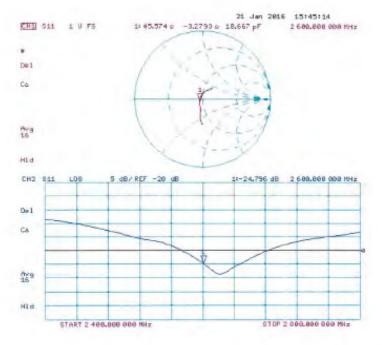
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Impedance Measurement Plot for Body TSL



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





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SGS-TW (Auden)

Accreditation No.: SCS 0108

Certificate No. D5GHzV2-1023 Jan 16

CALIBRATION CERTIFICATE

D5GHzV2 - SN: 1023

Calibration procedure(s)

QA CAL-22.V2

Calibration procedure for dipole validation kits between 3-6 GHz

Calibration date:

January 26, 2016

This colloration certificate documents the traceability to national standards, which realize the physical units of measurements (Si) The measurements and the uncontainties with confidence probability are given on the following pages and are cart of the certificate.

All collorations have been conducted in the closed laboratory facility: environment temperature (22 s. 91°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID 4	Cai Date (Certificate No.)	Scheduled Calibration
Power meter EPM-442A	GB37480704	07-Oct 15 (No. 217-02222)	Clef-16
Power sensor HP 8461A	US37292783	97-Oct-15 (No. 217-02222)	Oct-16
Power sensor HP 8481A	MY41092917	07-Oct-15 (No. 217-02223)	Oct-16
Reference 20 dB Attenuator	SN: 5055 (20k)	01-Apr-15 (No. 217-02131)	Mar-16
Type-N mismatch combination	SN: 5047.2 / 06327	81-Apr-15 (No. 217-02154)	May-16
Reference Probe EX3DV4	SN 3503	31 Dec-15 (No. EX3-3503_Dec/15)	Dec-16
DAE4	SN. 801	30-Dec-15 (No. DAE4-601_Dec15)	Dec-16
Secondary Standards	10.4	Check Date (In house)	Scheduled Check
RF generator R&S SMT-06	100972	15-Jun-15 (in house check Jun-15)	In house check: Jun-18
Network Analyzar HP 8753E	US37390685 \$4206	18-Oct-01 (in house check Oct-15)	In house check: Oct-16

Calibrated by

Name Michael Webe

Function Liaboratory Technician

Kata Poković Technical Minniger

lested: January 28, 2018

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Certificate No: 05GHzV2-1023_Jan16

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Glossary:

TSI

tissue simulating liquid

ConvF N/A

sensitivity in TSL / NORM x,y,z not applicable or not measured

Calibration is Performed According to the Following Standards:

- a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
- b) IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30. MHz to 6 GHz), March 2010
- c) KDB 865664, "SAR Measurement Requirements for 100 MHz to 5 GHz"

Additional Documentation:

d) DASY4/5 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.
- Fixed Point Impedance and Return Loss: These parameters are measured with the dipole positioned under the liquid filled phantom. The Impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required,
- Electrical Delay: One-way delay between the SMA connector and the antenna feed point. 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
- 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%.

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Measurement Conditions

WST system configuration, as lar as not	given on page 1.	
DASY Version	DASY5	V52.8.8
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	5200 MHz ± 1 MHz 5300 MHz ± 1 MHz 5600 MHz ± 1 MHz 5600 MHz ± 1 MHz	

Head TSL parameters at 5200 MHz

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	36.0	4.66 m/ho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	35.2 ± 6 %	4.51 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C		

SAR result with Head TSL at 5200 MHz

SAR averaged over 1 cm ³ (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	7.74 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	77.0 W/kg ± 19.9 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Head TSL	condition	
SAR measured	100 mW input power	2.23 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	22.1 W/kg ± 19.5 % (k=2)

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Head TSL parameters at 5300 MHz

The following parameters and calculations were applied

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	35.9	4.76 mha/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	35.1 ± 6 %	4.60 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C		

SAR result with Head TSL at 5300 MHz

SAR averaged over 1 cm3 (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	8.03 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	79.9 W / kg ± 19.9 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Head TSL	condition	
SAR measured	100 mW input power	2.33 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	23.1 W/kg ± 19.5 % (k=2)

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	34.7 ± 6 %	4.90 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C		

SAR result with Head TSL at 5600 MHz

SAR averaged over 1 cm ³ (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	8.31 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	82.6 W/kg ± 19.9 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Head TSL	condition	
SAR measured	100 mW input power	2.38 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	23.6 W/kg ± 19.5 % (k=2)

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Head TSL parameters at 5800 MHz

The following parameters and calculations were applied.

	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	34.4 ± 6 %	5.10 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 ³ (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	7.78 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	77.3 W/kg ± 19.9 % (k=2)

SAR averaged over 10 cm ⁵ (10 g) of Head TSL	condition	
SAR measured	100 mW input power	2.22 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	22.0 W/kg ± 19.5 % (k=2)

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The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	49.0	5.30 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	47.1 ± 6 %	5.37 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C		

SAR result with Body TSL at 5200 MHz

SAR averaged over 1 cm ³ (1 g) of Body TSL	Condition	
SAR measured	100 mW input power	7.25 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	71.9 W/kg ± 19.9 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Body TSL	condition	
SAR measured	100 mW input power	2.05 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	20.3 W/kg ± 19.5 % (k=2)

Body TSL parameters at 5300 MHz

ving parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	48.9	5.42 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	46.9 ± 6 %	5.50 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C		

SAR result with Body TSL at 5300 MHz

SAR averaged over 1 cm3 (1 g) of Body TSL	Condition	
SAR measured	100 mW input power	7.57 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	75.1 W/kg ± 19.9 % (k=2)

SAR averaged over	10 cm ³ (10 g) of Body TSL	condition	
SAR measured		100 mW input power	2.14 W/kg
SAR for nominal Bod	y TSL parameters	normalized to 1W	21.2 W/kg ± 19.5 % (k=2)

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The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	48.5	5.77 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	46.4 ± 6 %	5.91 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C		

SAR result with Body TSL at 5600 MHz

SAR averaged over 1 cm ³ (1 g) of Body TSL	Condition	
SAR measured	100 mW input power	7.89 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	78.3 W/kg ± 19.9 % (k=2)

SAR averaged over 10 cm² (10 g) of Body TSL	condition	
SAR measured	100 mW input power	2.23 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	22.1 W/kg ± 19.5 % (k=2)

Body TSL parameters at 5800 MHz

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	48.2	6.00 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	46.0 ± 6 %	6.19 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C		

SAR result with Body TSL at 5800 MHz

SAR averaged over 1 cm3 (1 g) of Body TSL	Condition	
SAR measured	100 mW input power	7.59 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	75.3 W/kg ± 19.9 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Body TSL	condition	
SAR measured	100 mW input power	2.13 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	21.1 W/kg ± 19.5 % (k=2)

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Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL at 5200 MHz

Impedance, transformed to feed point	49.1 Ω - 8.4 jΩ
Return Loss	- 21.4 dB

Antenna Parameters with Head TSL at 5300 MHz

Impedance, transformed to feed point	49.6 Ω · 4.2 jΩ
Return Loss	- 27.4 dB

Antenna Parameters with Head TSL at 5600 MHz

Impedance, transformed to feed point	54.9 Ω - 1.4 jΩ
Return Loss	- 26.3 dB

Antenna Parameters with Head TSL at 5800 MHz

Impedance, transformed to feed point	55.9 Ω + 2.2 jΩ
Return Loss	- 24.5 dB

Antenna Parameters with Body TSL at 5200 MHz

Impedance, transformed to feed point	49.4 Ω - 6.8 jΩ
Return Loss	- 23.3 dB

Antenna Parameters with Body TSL at 5300 MHz

Impedance, transformed to feed point	50.9 Ω - 2.4 jΩ
Return Loss	- 31.8 dB

Antenna Parameters with Body TSL at 5600 MHz

Impedance, transformed to feed point	56.0 Ω - 0.1 jΩ
Return Loss	- 25.0 dB

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Antenna Parameters with Body TSL at 5800 MHz

Impedance, transformed to feed point	56.4 Ω + 2.4 jΩ
Return Loss	- 23.8 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.199 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
Manufactured on	February 05, 2004

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DASY5 Validation Report for Head TSL

Date: 26.01.2016

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole D5GHzV2; Type: D5GHzV2; Serial: D5GHzV2 - SN: 1023

Communication System: UID 0 - CW; Frequency: 5200 MHz, Frequency: 5300 MHz, Frequency: 5600 MHz, Frequency: 5800 MHz

Medium parameters used: f = 5200 MHz; $\sigma = 4.51 \text{ S/m}$; $\varepsilon_e = 35.2$; $\rho = 1000 \text{ kg/m}^3$, Medium parameters used: f = 5300 MHz; $\sigma = 4.6$ S/m; $\epsilon_r = 35.1$; $\rho = 1000$ kg/m³, Medium parameters used: f = 5600 MHz; $\sigma = 1000$ kg/m³, Medium parameters used: $\sigma = 1000$ kg/m³, $\sigma = 1000$ kg/m³, Medium parameters used: $\sigma = 1000$ kg/m³, $\sigma = 1000$ kg/m³, Medium parameters used: $\sigma = 1000$ kg/m³, $\sigma = 1000$ kg/m³, $\sigma = 1000$ kg/m³, Medium parameters used: $\sigma = 1000$ kg/m³, $\sigma =$ 4.9 S/m; $\varepsilon_r = 34.7$; $\rho = 1000 \text{ kg/m}^3$, Medium parameters used: f = 5800 MHz; $\sigma = 5.1 \text{ S/m}$; $\varepsilon_r = 34.4$; $\rho =$ 1000 kg/m3

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

Probe: EX3DV4 - SN3503; ConvF(5.59, 5.59, 5.59); Calibrated: 31.12.2015, ConvF(5.25, 5.25, 5.25); Calibrated: 31.12.2015, ConvF(4.99, 4.99, 4.99); Calibrated: 31.12.2015, ConvF(4.95, 4.95, 4.95); Calibrated: 31.12.2015;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn601; Calibrated: 30.12.2015

Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Scrial: 1001

DASY52 52.8.8(1258); SEMCAD X 14.6.10(7372)

Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5200 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 72.68 V/m; Power Drift = 0.07 dB

Peak SAR (extrapolated) = 28.1 W/kg

SAR(1 g) = 7.74 W/kg; SAR(10 g) = 2.23 W/kg

Maximum value of SAR (measured) = 17.8 W/kg

Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5300 MHz/Zoom Scan,

dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 73.14 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 30.0 W/kg

SAR(1 g) = 8.03 W/kg; SAR(10 g) = 2.33 W/kg

Maximum value of SAR (measured) = 18.7 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 = 73.32 V/m; Power Drift = 0.08 dB

Peak SAR (extrapolated) = 32.6 W/kg

SAR(1 g) = 8.31 W/kg; SAR(10 g) = 2.38 W/kg

Maximum value of SAR (measured) = 19.8 W/kg

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Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5800 MHz/Zoom Scan,

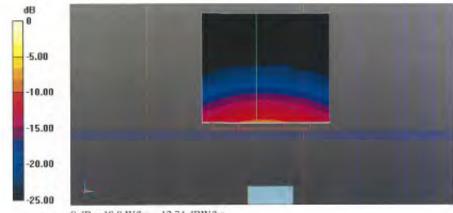
dist=1.4mm (8x8x7)/Cube 0: Measurement grid; dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 70.15 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 32.0 W/kg

SAR(1 g) = 7.78 W/kg; SAR(10 g) = 2.22 W/kg

Maximum value of SAR (measured) = 18.8 W/kg



0 dB = 18.8 W/kg = 12.74 dBW/kg

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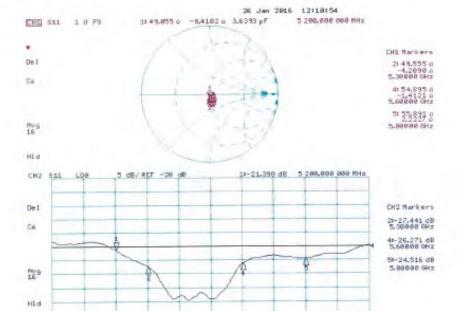
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Impedance Measurement Plot for Head TSL

START 5 888,888 888 MHz



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STOP 5 000,000 000 MHz



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DASY5 Validation Report for Body TSL

Date: 25.01.2016

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 5GHz; Type: D5GHzV2; Serial: D5GHzV2 - SN: 1023

Communication System: UID 0 - CW; Frequency: 5200 MHz, Frequency: 5300 MHz, Frequency: 5600

MHz, Frequency: 5800 MHz

Medium parameters used: f=5200 MHz; $\sigma=5.37$ S/m; $\epsilon_r=47.1$; $\rho=1000$ kg/m³, Medium parameters used: f=5300 MHz; $\sigma=5.5$ S/m; $\epsilon_r=46.9$; $\rho=1000$ kg/m³, Medium parameters used: f=5600 MHz; $\sigma=5.91$ S/m; $\epsilon_r=46.4$; $\rho=1000$ kg/m³, Medium parameters used: f=5800 MHz; $\sigma=6.19$ S/m; $\epsilon_r=46.9$; $\rho=1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 SN3503; ConvF(4.99, 4.99, 4.99); Calibrated: 31.12.2015, ConvF(4.75, 4.75, 4.75); Calibrated: 31.12.2015, ConvF(4.35, 4.35, 4.35); Calibrated: 31.12.2015, ConvF(4.27, 4.27, 4.27); Calibrated: 31.12.2015;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.12.2015
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7372)

Dipole Calibration for Body Tissue/Pin=100mW, dist=10mm, f=5200 MHz/Zoom Scan,

dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 66.72 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 27.1 W/kg

SAR(1 g) = 7.25 W/kg; SAR(10 g) = 2.05 W/kg

Maximum value of SAR (measured) = 16.8 W/kg

Dipole Calibration for Body Tissue/Pin=100mW, dist=10mm, f=5300 MHz/Zoom Scan,

dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 67.43 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 29.1 W/kg

SAR(1 g) = 7.57 W/kg; SAR(10 g) = 2.14 W/kg

Maximum value of SAR (measured) = 17.7 W/kg

Dipole Calibration for Body 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 = 67.67 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 32.6 W/kg

SAR(1 g) = 7.89 W/kg; SAR(10 g) = 2.23 W/kg

Maximum value of SAR (measured) = 19.1 W/kg

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Dipole Calibration for Body 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 = 65.76 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 33.0 W/kg

SAR(1 g) = 7.59 W/kg; SAR(10 g) = 2.13 W/kg

Maximum value of SAR (measured) = 18.5 W/kg



0 dB = 18.5 W/kg = 12.67 dBW/kg

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Impedance Measurement Plot for Body TSL

25 Jan 2016 15:02:01

CHI Harkers

25 Jan 2016 15:02:01

CLI 1 U.FS 1:49,402 0 -6,7695 0 4,5212 pF 5 200,000 800 MHz

CLI 25,39000 GHz

CLI 3,30000 GHz

CLI 3,30000 GHz

CLI 3,11 LOG 5 dB/RFF -20 dB 11-23,323 dB 5 200,000 800 MHz

CLI 3,11 LOG 5 dB/RFF -20 dB 11-23,323 dB 5 200,000 800 MHz

CLI 3,11 LOG 5 dB/RFF -20 dB 11-23,323 dB 5 200,000 800 MHz

CLI 3,11 LOG 5 dB/RFF -20 dB 11-23,323 dB 5 200,000 800 MHz

CLI 4,123,000 GHz

CLI 4,130 GHz

CLI 5,30000 GHz

CLI 6,130 GHz

CLI 6,

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- End of 1st part of report -

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