10575-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps, 90pc duty cycle)	X	4.35	66.71	16.26	0.46	130.0	± 9.6 %
		Y	4.30	66.33	16.09		130.0	
		Z	4.43	66.70	16.37		130.0	
10576-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 9 Mbps, 90pc duty cycle)	X	4.39	66.95	16.37	0.46	130.0	± 9.6 %
		Y	4.33	66.56	16.19		130.0	
		Z	4.46	66.91	16.46		130.0	
10577-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 12 Mbps, 90pc duty cycle)	X	4.53	67.16	16.51	0.46	130.0	± 9.6 %
		Y	4.48	66.78	16.33		130.0	
		Z	4.62	67.14	16.60		130.0	
10578-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 18 Mbps, 90pc duty cycle)	X	4.45	67.33	16.63	0.46	130.0	± 9.6 %
		Y	4.39	66.92	16.44		130.0	
		Z	4.52	67.28	16.71		130.0	
10579-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 24 Mbps, 90pc duty cycle)	X	4.18	66.40	15.81	0.46	130.0	± 9.6 %
		Y	4.14	66.03	15.63		130.0	
		Z	4.28	66.46	15.95		130.0	
10580-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 36 Mbps, 90pc duty cycle)	X	4.20	66.40	15.80	0.46	130.0	± 9.6 %
		Y	4.16	66.06	15.64		130.0	
		Z	4.31	66.50	15.97		130.0	
10581-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 48 Mbps, 90pc duty cycle)	X	4.37	67.44	16.63	0.46	130.0	± 9.6 %
		Y	4.30	67.01	16.42		130.0	
		Z	4.44	67.38	16.70		130.0	
10582-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 54 Mbps, 90pc duty cycle)	X	4.10	66.14	15.57	0.46	130.0	± 9.6 %
		Y	4.06	65.79	15.40		130.0	
		Z	4.20	66.22	15.73		130.0	
10583-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps, 90pc duty cycle)	X	4.35	66.71	16.26	0.46	130.0	± 9.6 %
		Y	4.30	66.33	16.09		130.0	
		Z	4.43	66.70	16.37		130.0	
10584-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 9 Mbps, 90pc duty cycle)	X	4.39	66.95	16.37	0.46	130.0	± 9.6 %
		Y	4.33	66.56	16.19		130.0	
		Z	4.46	66.91	16.46		130.0	
10585-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 12 Mbps, 90pc duty cycle)	X	4.53	67.16	16.51	0.46	130.0	± 9.6 %
		Y	4.48	66.78	16.33		130.0	
		Z	4.62	67.14	16.60		130.0	
10586-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 18 Mbps, 90pc duty cycle)	X	4.45	67.33	16.63	0.46	130.0	± 9.6 %
		Y	4.39	66.92	16.44		130.0	
		Z	4.52	67.28	16.71		130.0	
10587-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 24 Mbps, 90pc duty cycle)	X	4.18	66.40	15.81	0.46	130.0	± 9.6 %
		Y	4.14	66.03	15.63		130.0	
		Z	4.28	66.46	15.95		130.0	
10588-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 36 Mbps, 90pc duty cycle)	X	4.20	66.40	15.80	0.46	130.0	± 9.6 %
		Y	4.16	66.06	15.64		130.0	
		Z	4.31	66.50	15.97		130.0	
10589-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 48 Mbps, 90pc duty cycle)	X	4.37	67.44	16.63	0.46	130.0	± 9.6 %
		Y	4.30	67.01	16.42		130.0	
		Z	4.44	67.38	16.70		130.0	
10590-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 54 Mbps, 90pc duty cycle)	X	4.10	66.14	15.57	0.46	130.0	± 9.6 %
		Y	4.06	65.79	15.40		130.0	
		Z	4.20	66.22	15.73		130.0	

10591-AAB	IEEE 802.11n (HT Mixed, 20MHz, MCS0, 90pc duty cycle)	X	4.52	66.84	16.41	0.46	130.0	± 9.6 %
		Y	4.46	66.46	16.24		130.0	
		Z	4.59	66.79	16.49		130.0	
10592-AAB	IEEE 802.11n (HT Mixed, 20MHz, MCS1, 90pc duty cycle)	X	4.62	67.09	16.52	0.46	130.0	± 9.6 %
		Y	4.57	66.73	16.36		130.0	
		Z	4.70	67.07	16.61		130.0	
10593-AAB	IEEE 802.11n (HT Mixed, 20MHz, MCS2, 90pc duty cycle)	X	4.54	66.96	16.37	0.46	130.0	± 9.6 %
		Y	4.48	66.59	16.20		130.0	
		Z	4.62	66.95	16.47		130.0	
10594-AAB	IEEE 802.11n (HT Mixed, 20MHz, MCS3, 90pc duty cycle)	X	4.59	67.15	16.55	0.46	130.0	± 9.6 %
		Y	4.54	66.78	16.38		130.0	
		Z	4.68	67.13	16.64		130.0	
10595-AAB	IEEE 802.11n (HT Mixed, 20MHz, MCS4, 90pc duty cycle)	X	4.55	67.13	16.46	0.46	130.0	± 9.6 %
		Y	4.50	66.75	16.29		130.0	
		Z	4.64	67.11	16.55		130.0	
10596-AAB	IEEE 802.11n (HT Mixed, 20MHz, MCS5, 90pc duty cycle)	X	4.48	67.05	16.43	0.46	130.0	± 9.6 %
		Y	4.43	66.69	16.26		130.0	
		Z	4.57	67.07	16.54		130.0	
10597-AAB	IEEE 802.11n (HT Mixed, 20MHz, MCS6, 90pc duty cycle)	X	4.43	66.92	16.28	0.46	130.0	± 9.6 %
		Y	4.38	66.55	16.10		130.0	
		Z	4.52	66.94	16.39		130.0	
10598-AAB	IEEE 802.11n (HT Mixed, 20MHz, MCS7, 90pc duty cycle)	X	4.44	67.20	16.58	0.46	130.0	± 9.6 %
		Y	4.38	66.80	16.39		130.0	
		Z	4.52	67.17	16.66		130.0	
10599-AAB	IEEE 802.11n (HT Mixed, 40MHz, MCS0, 90pc duty cycle)	X	5.20	67.24	16.67	0.46	130.0	± 9.6 %
		Y	5.18	67.00	16.58		130.0	
		Z	5.27	67.24	16.74		130.0	
10600-AAB	IEEE 802.11n (HT Mixed, 40MHz, MCS1, 90pc duty cycle)	X	5.26	67.48	16.76	0.46	130.0	± 9.6 %
		Y	5.28	67.39	16.75		130.0	
		Z	5.36	67.57	16.88		130.0	
10601-AAB	IEEE 802.11n (HT Mixed, 40MHz, MCS2, 90pc duty cycle)	X	5.22	67.44	16.76	0.46	130.0	± 9.6 %
		Y	5.19	67.20	16.67		130.0	
		Z	5.27	67.38	16.80		130.0	
10602-AAB	IEEE 802.11n (HT Mixed, 40MHz, MCS3, 90pc duty cycle)	X	5.25	67.28	16.59	0.46	130.0	± 9.6 %
		Y	5.26	67.13	16.55		130.0	
		Z	5.35	67.37	16.71		130.0	
10603-AAB	IEEE 802.11n (HT Mixed, 40MHz, MCS4, 90pc duty cycle)	X	5.31	67.54	16.87	0.46	130.0	± 9.6 %
		Y	5.31	67.39	16.83		130.0	
		Z	5.42	67.67	17.00		130.0	
10604-AAB	IEEE 802.11n (HT Mixed, 40MHz, MCS5, 90pc duty cycle)	X	5.18	67.09	16.61	0.46	130.0	± 9.6 %
		Y	5.17	66.89	16.55		130.0	
		Z	5.30	67.26	16.77		130.0	
10605-AAB	IEEE 802.11n (HT Mixed, 40MHz, MCS6, 90pc duty cycle)	X	5.25	67.33	16.73	0.46	130.0	± 9.6 %
		Y	5.25	67.17	16.69		130.0	
		Z	5.35	67.43	16.86		130.0	
10606-AAB	IEEE 802.11n (HT Mixed, 40MHz, MCS7, 90pc duty cycle)	X	5.07	66.89	16.36	0.46	130.0	± 9.6 %
		Y	5.06	66.68	16.29		130.0	
		Z	5.15	66.91	16.45		130.0	

10607-AAB	IEEE 802.11ac WiFi (20MHz, MCS0, 90pc duty cycle)	X	4.37	66.21	16.07	0.46	130.0	± 9.6 %
		Y	4.31	65.78	15.88		130.0	
		Z	4.44	66.16	16.15		130.0	
10608-AAB	IEEE 802.11ac WiFi (20MHz, MCS1, 90pc duty cycle)	X	4.48	66.49	16.20	0.46	130.0	± 9.6 %
		Y	4.43	66.08	16.01		130.0	
		Z	4.57	66.48	16.29		130.0	
10609-AAB	IEEE 802.11ac WiFi (20MHz, MCS2, 90pc duty cycle)	X	4.38	66.32	16.02	0.46	130.0	± 9.6 %
		Y	4.33	65.90	15.82		130.0	
		Z	4.47	66.31	16.11		130.0	
10610-AAB	IEEE 802.11ac WiFi (20MHz, MCS3, 90pc duty cycle)	X	4.44	66.50	16.20	0.46	130.0	± 9.6 %
		Y	4.38	66.09	16.00		130.0	
		Z	4.52	66.48	16.28		130.0	
10611-AAB	IEEE 802.11ac WiFi (20MHz, MCS4, 90pc duty cycle)	X	4.35	66.27	16.03	0.46	130.0	± 9.6 %
		Y	4.29	65.86	15.83		130.0	
		Z	4.43	66.28	16.13		130.0	
10612-AAB	IEEE 802.11ac WiFi (20MHz, MCS5, 90pc duty cycle)	X	4.32	66.35	16.04	0.46	130.0	± 9.6 %
		Y	4.27	65.96	15.85		130.0	
		Z	4.42	66.40	16.16		130.0	
10613-AAB	IEEE 802.11ac WiFi (20MHz, MCS6, 90pc duty cycle)	X	4.32	66.16	15.88	0.46	130.0	± 9.6 %
		Y	4.27	65.77	15.69		130.0	
		Z	4.42	66.21	16.00		130.0	
10614-AAB	IEEE 802.11ac WiFi (20MHz, MCS7, 90pc duty cycle)	X	4.31	66.45	16.17	0.46	130.0	± 9.6 %
		Y	4.25	66.02	15.97		130.0	
		Z	4.39	66.45	16.26		130.0	
10615-AAB	IEEE 802.11ac WiFi (20MHz, MCS8, 90pc duty cycle)	X	4.33	66.09	15.77	0.46	130.0	± 9.6 %
		Y	4.28	65.68	15.58		130.0	
		Z	4.43	66.11	15.90		130.0	
10616-AAB	IEEE 802.11ac WiFi (40MHz, MCS0, 90pc duty cycle)	X	5.00	66.41	16.24	0.46	130.0	± 9.6 %
		Y	4.96	66.09	16.11		130.0	
		Z	5.08	66.43	16.32		130.0	
10617-AAB	IEEE 802.11ac WiFi (40MHz, MCS1, 90pc duty cycle)	X	5.02	66.47	16.25	0.46	130.0	± 9.6 %
		Y	4.99	66.20	16.14		130.0	
		Z	5.11	66.54	16.35		130.0	
10618-AAB	IEEE 802.11ac WiFi (40MHz, MCS2, 90pc duty cycle)	X	4.94	66.56	16.31	0.46	130.0	± 9.6 %
		Y	4.90	66.23	16.17		130.0	
		Z	5.03	66.61	16.40		130.0	
10619-AAB	IEEE 802.11ac WiFi (40MHz, MCS3, 90pc duty cycle)	X	4.98	66.45	16.18	0.46	130.0	± 9.6 %
		Y	4.95	66.17	16.07		130.0	
		Z	5.05	66.46	16.26		130.0	
10620-AAB	IEEE 802.11ac WiFi (40MHz, MCS4, 90pc duty cycle)	X	5.02	66.37	16.19	0.46	130.0	± 9.6 %
		Y	5.00	66.10	16.08		130.0	
		Z	5.11	66.43	16.29		130.0	
10621-AAB	IEEE 802.11ac WiFi (40MHz, MCS5, 90pc duty cycle)	X	5.05	66.54	16.40	0.46	130.0	± 9.6 %
		Y	5.01	66.21	16.27		130.0	
		Z	5.12	66.55	16.47		130.0	
10622-AAB	IEEE 802.11ac WiFi (40MHz, MCS6, 90pc duty cycle)	X	5.03	66.60	16.43	0.46	130.0	± 9.6 %
		Y	4.99	66.30	16.31		130.0	
		Z	5.11	66.63	16.51		130.0	

10623-AAB	IEEE 802.11ac WiFi (40MHz, MCS7, 90pc duty cycle)	X	4.93	66.19	16.08	0.46	130.0	± 9.6 %
		Y	4.89	65.86	15.94		130.0	
		Z	5.01	66.20	16.16		130.0	
10624-AAB	IEEE 802.11ac WiFi (40MHz, MCS8, 90pc duty cycle)	X	5.12	66.43	16.27	0.46	130.0	± 9.6 %
		Y	5.08	66.13	16.15		130.0	
		Z	5.20	66.46	16.35		130.0	
10625-AAB	IEEE 802.11ac WiFi (40MHz, MCS9, 90pc duty cycle)	X	5.22	66.64	16.44	0.46	130.0	± 9.6 %
		Y	5.19	66.35	16.33		130.0	
		Z	5.28	66.57	16.47		130.0	
10626-AAB	IEEE 802.11ac WiFi (80MHz, MCS0, 90pc duty cycle)	X	5.35	66.41	16.19	0.46	130.0	± 9.6 %
		Y	5.31	66.11	16.07		130.0	
		Z	5.41	66.44	16.27		130.0	
10627-AAB	IEEE 802.11ac WiFi (80MHz, MCS1, 90pc duty cycle)	X	5.55	66.98	16.45	0.46	130.0	± 9.6 %
		Y	5.55	66.80	16.40		130.0	
		Z	5.63	67.04	16.54		130.0	
10628-AAB	IEEE 802.11ac WiFi (80MHz, MCS2, 90pc duty cycle)	X	5.33	66.36	16.06	0.46	130.0	± 9.6 %
		Y	5.29	66.07	15.96		130.0	
		Z	5.40	66.42	16.16		130.0	
10629-AAB	IEEE 802.11ac WiFi (80MHz, MCS3, 90pc duty cycle)	X	5.45	66.63	16.20	0.46	130.0	± 9.6 %
		Y	5.44	66.42	16.13		130.0	
		Z	5.51	66.62	16.26		130.0	
10630-AAB	IEEE 802.11ac WiFi (80MHz, MCS4, 90pc duty cycle)	X	5.58	67.21	16.50	0.46	130.0	± 9.6 %
		Y	5.62	67.16	16.51		130.0	
		Z	5.72	67.46	16.68		130.0	
10631-AAB	IEEE 802.11ac WiFi (80MHz, MCS5, 90pc duty cycle)	X	5.60	67.42	16.80	0.46	130.0	± 9.6 %
		Y	5.59	67.20	16.72		130.0	
		Z	5.70	67.52	16.90		130.0	
10632-AAB	IEEE 802.11ac WiFi (80MHz, MCS6, 90pc duty cycle)	X	5.58	67.27	16.74	0.46	130.0	± 9.6 %
		Y	5.58	67.08	16.68		130.0	
		Z	5.64	67.24	16.78		130.0	
10633-AAB	IEEE 802.11ac WiFi (80MHz, MCS7, 90pc duty cycle)	X	5.35	66.43	16.14	0.46	130.0	± 9.6 %
		Y	5.31	66.13	16.03		130.0	
		Z	5.43	66.50	16.23		130.0	
10634-AAB	IEEE 802.11ac WiFi (80MHz, MCS8, 90pc duty cycle)	X	5.39	66.68	16.32	0.46	130.0	± 9.6 %
		Y	5.35	66.35	16.19		130.0	
		Z	5.46	66.70	16.38		130.0	
10635-AAB	IEEE 802.11ac WiFi (80MHz, MCS9, 90pc duty cycle)	X	5.23	65.85	15.61	0.46	130.0	± 9.6 %
		Y	5.20	65.57	15.51		130.0	
		Z	5.31	65.95	15.74		130.0	
10636-AAC	IEEE 802.11ac WiFi (160MHz, MCS0, 90pc duty cycle)	X	5.79	66.75	16.27	0.46	130.0	± 9.6 %
		Y	5.75	66.48	16.18		130.0	
		Z	5.85	66.79	16.35		130.0	
10637-AAC	IEEE 802.11ac WiFi (160MHz, MCS1, 90pc duty cycle)	X	5.87	66.98	16.38	0.46	130.0	± 9.6 %
		Y	5.87	66.78	16.32		130.0	
		Z	5.96	67.08	16.48		130.0	
10638-AAC	IEEE 802.11ac WiFi (160MHz, MCS2, 90pc duty cycle)	X	5.93	67.13	16.43	0.46	130.0	± 9.6 %
		Y	5.90	66.89	16.35		130.0	
		Z	5.99	67.17	16.50		130.0	

10639-AAC	IEEE 802.11ac WiFi (160MHz, MCS3, 90pc duty cycle)	X	5.87	66.97	16.39	0.46	130.0	± 9.6 %
		Y	5.84	66.71	16.30		130.0	
		Z	5.94	67.03	16.47		130.0	
10640-AAC	IEEE 802.11ac WiFi (160MHz, MCS4, 90pc duty cycle)	X	5.80	66.76	16.23	0.46	130.0	± 9.6 %
		Y	5.78	66.52	16.15		130.0	
		Z	5.89	66.90	16.36		130.0	
10641-AAC	IEEE 802.11ac WiFi (160MHz, MCS5, 90pc duty cycle)	X	5.92	66.91	16.32	0.46	130.0	± 9.6 %
		Y	5.92	66.73	16.28		130.0	
		Z	6.00	67.00	16.43		130.0	
10642-AAC	IEEE 802.11ac WiFi (160MHz, MCS6, 90pc duty cycle)	X	5.94	67.12	16.60	0.46	130.0	± 9.6 %
		Y	5.91	66.86	16.51		130.0	
		Z	6.02	67.19	16.68		130.0	
10643-AAC	IEEE 802.11ac WiFi (160MHz, MCS7, 90pc duty cycle)	X	5.78	66.77	16.31	0.46	130.0	± 9.6 %
		Y	5.76	66.54	16.24		130.0	
		Z	5.87	66.88	16.43		130.0	
10644-AAC	IEEE 802.11ac WiFi (160MHz, MCS8, 90pc duty cycle)	X	5.83	66.93	16.41	0.46	130.0	± 9.6 %
		Y	5.81	66.68	16.33		130.0	
		Z	5.92	67.05	16.53		130.0	
10645-AAC	IEEE 802.11ac WiFi (160MHz, MCS9, 90pc duty cycle)	X	5.96	67.02	16.42	0.46	130.0	± 9.6 %
		Y	5.95	66.81	16.36		130.0	
		Z	6.04	67.10	16.52		130.0	
10646-AAD	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, QPSK, UL Subframe=2,7)	X	5.44	86.39	29.87	9.30	60.0	± 9.6 %
		Y	5.81	87.60	30.48		60.0	
		Z	8.19	97.49	34.99		60.0	
10647-AAC	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK, UL Subframe=2,7)	X	4.80	83.95	29.04	9.30	60.0	± 9.6 %
		Y	5.16	85.32	29.73		60.0	
		Z	6.96	93.94	33.85		60.0	
10648-AAA	CDMA2000 (1x Advanced)	X	0.46	61.39	7.82	0.00	150.0	± 9.6 %
		Y	0.37	60.00	5.96		150.0	
		Z	0.50	61.65	8.29		150.0	
10652-AAB	LTE-TDD (OFDMA, 5 MHz, E-TM 3.1, Clipping 44%)	X	3.12	66.28	15.70	2.23	80.0	± 9.6 %
		Y	3.02	65.66	15.43		80.0	
		Z	3.33	67.03	16.40		80.0	
10653-AAB	LTE-TDD (OFDMA, 10 MHz, E-TM 3.1, Clipping 44%)	X	3.68	65.65	16.11	2.23	80.0	± 9.6 %
		Y	3.61	65.21	15.95		80.0	
		Z	3.84	66.09	16.56		80.0	
10654-AAB	LTE-TDD (OFDMA, 15 MHz, E-TM 3.1, Clipping 44%)	X	3.72	65.26	16.17	2.23	80.0	± 9.6 %
		Y	3.65	64.85	16.03		80.0	
		Z	3.85	65.65	16.58		80.0	
10655-AAB	LTE-TDD (OFDMA, 20 MHz, E-TM 3.1, Clipping 44%)	X	3.80	65.15	16.21	2.23	80.0	± 9.6 %
		Y	3.73	64.76	16.08		80.0	
		Z	3.92	65.55	16.60		80.0	
10658-AAA	Pulse Waveform (200Hz, 10%)	X	4.75	72.59	13.37	10.00	50.0	± 9.6 %
		Y	4.19	71.13	12.85		50.0	
		Z	100.00	107.57	23.92		50.0	
10659-AAA	Pulse Waveform (200Hz, 20%)	X	22.00	88.58	17.14	6.99	60.0	± 9.6 %
		Y	3.94	73.01	12.37		60.0	
		Z	100.00	108.47	23.27		60.0	

10660-AAA	Pulse Waveform (200Hz, 40%)	X	100.00	102.05	19.10	3.98	80.0	± 9.6 %
		Y	1.41	67.41	8.85		80.0	
		Z	100.00	113.17	24.00		80.0	
10661-AAA	Pulse Waveform (200Hz, 60%)	X	100.00	106.07	19.76	2.22	100.0	± 9.6 %
		Y	0.27	60.00	4.29		100.0	
		Z	100.00	121.09	26.01		100.0	
10662-AAA	Pulse Waveform (200Hz, 80%)	X	100.00	125.21	25.72	0.97	120.0	± 9.6 %
		Y	8.44	216.63	6.72		120.0	
		Z	100.00	139.04	31.03		120.0	

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

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Zeughausstrasse 43, 8004 Zurich, Switzerland

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

Accreditation No.: SCS 0108

Client Huawei-SZ (Auden)

Certificate No: EX3-3736_Apr18

CALIBRATION CERTIFICATE

Object	EX3DV4 - SN:3736
Calibration procedure(s)	QA CAL-01.v9, QA CAL-14.v4, QA CAL-23.v5, QA CAL-25.v6 Calibration procedure for dosimetric E-field probes
Calibration date:	April 27, 2018

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 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 Calibration
Power meter NRP	SN: 104778	04-Apr-18 (No. 217-02672/02673)	Apr-19
Power sensor NRP-Z91	SN: 103244	04-Apr-18 (No. 217-02672)	Apr-19
Power sensor NRP-Z91	SN: 103245	04-Apr-18 (No. 217-02673)	Apr-19
Reference 20 dB Attenuator	SN: S5277 (20x)	04-Apr-18 (No. 217-02682)	Apr-19
Reference Probe ES3DV2	SN: 3013	30-Dec-17 (No. ES3-3013_Dec17)	Dec-18
DAE4	SN: 660	21-Dec-17 (No. DAE4-660_Dec17)	Dec-18
Secondary Standards	ID	Check Date (in house)	Scheduled Check
Power meter E4419B	SN: GB41293874	06-Apr-16 (in house check Jun-16)	In house check: Jun-18
Power sensor E4412A	SN: MY41498087	06-Apr-16 (in house check Jun-16)	In house check: Jun-18
Power sensor E4412A	SN: 000110210	06-Apr-16 (in house check Jun-16)	In house check: Jun-18
RF generator HP 8648C	SN: US3642U01700	04-Aug-99 (in house check Jun-16)	In house check: Jun-18
Network Analyzer HP 8753E	SN: US37390585	18-Oct-01 (in house check Oct-17)	In house check: Oct-18

	Name	Function	Signature
Calibrated by:	Jeton Kastrati	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: April 28, 2018

Glossary:

TSL	tissue simulating liquid
NORMx,y,z	sensitivity in free space
ConvF	sensitivity in TSL / NORMx,y,z
DCP	diode compression point
CF	crest factor (1/duty_cycle) of the RF signal
A, B, C, D	modulation dependent linearization parameters
Polarization φ	φ rotation around probe axis
Polarization ϑ	ϑ rotation around an axis that is in the plane normal to probe axis (at measurement center), i.e., ϑ = 0 is normal to probe axis
Connector Angle	information used in DASY system to align probe sensor X to the robot coordinate system

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, ", "Measurement procedure for the assessment of Specific Absorption Rate (SAR) from hand-held and body-mounted devices used next to the ear (frequency range of 300 MHz to 6 GHz)", July 2016
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"

Methods Applied and Interpretation of Parameters:

- *NORMx,y,z:* Assessed for E-field polarization ϑ = 0 (f ≤ 900 MHz in TEM-cell; f > 1800 MHz: R22 waveguide). NORMx,y,z are only intermediate values, i.e., the uncertainties of NORMx,y,z does not affect the E^2-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*.
- *DCPx,y,z:* DCP are numerical linearization parameters assessed based on the data of power sweep with CW signal (no uncertainty required). DCP does not depend on frequency nor 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, B, C, D* are numerical linearization parameters assessed based on the data of power sweep for specific modulation signal. The parameters do not depend on frequency nor media. *VR* is the maximum calibration range expressed in RMS voltage across the diode.
- *ConvF and Boundary Effect Parameters:* Assessed in flat phantom using E-field (or Temperature Transfer Standard for f ≤ 800 MHz) and inside waveguide using analytical field distributions based on power measurements for f > 800 MHz. The same setups are used for assessment of the parameters applied for boundary compensation (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 *NORMx,y,z * ConvF* whereby the uncertainty corresponds to that given for *ConvF*. A frequency dependent *ConvF* is used in DASY version 4.4 and higher which allows extending the validity from ± 50 MHz to ± 100 MHz.
- *Spherical isotropy (3D deviation from isotropy)*: in a field of low gradients realized using a flat phantom exposed by a patch antenna.
- *Sensor Offset*: The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.
- *Connector Angle*: The angle is assessed using the information gained by determining the *NORMx* (no uncertainty required).

Probe EX3DV4

SN:3736

Manufactured: February 15, 2010
Calibrated: April 27, 2018

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

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3736

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu V/(V/m)^2$)[A]	0.38	0.39	0.38	± 10.1 %
DCP (mV)[B]	104.2	104.2	100.8	

Modulation Calibration Parameters

UID	Communication System Name		A dB	B $dB\sqrt{\mu V}$	C	D dB	VR mV	Unc[E] (k=2)
0	CW	X	0.0	0.0	1.0	0.00	140.9	±3.3 %
		Y	0.0	0.0	1.0		139.4	
		Z	0.0	0.0	1.0		138.7	

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%.

[A] The uncertainties of Norm X,Y,Z do not affect the E^2-field uncertainty inside TSL (see Pages 5 and 6).
[B] Numerical linearization parameter: uncertainty not required.
[E] Uncertainty is determined using the max. deviation from linear response applying rectangular distribution and is expressed for the square of the field value.

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3736

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 [G] (mm)	Unc (k=2)
750	41.9	0.89	9.10	9.10	9.10	0.48	0.80	± 12.0 %
850	41.5	0.92	8.86	8.86	8.86	0.47	0.80	± 12.0 %
1450	40.5	1.20	8.51	8.51	8.51	0.44	0.80	± 12.0 %
1750	40.1	1.37	8.32	8.32	8.32	0.33	0.86	± 12.0 %
1900	40.0	1.40	7.85	7.85	7.85	0.35	0.84	± 12.0 %
2000	40.0	1.40	7.74	7.74	7.74	0.33	0.88	± 12.0 %
2300	39.5	1.67	7.51	7.51	7.51	0.32	0.85	± 12.0 %
2450	39.2	1.80	7.13	7.13	7.13	0.36	0.84	± 12.0 %
2600	39.0	1.96	6.93	6.93	6.93	0.37	0.87	± 12.0 %
3500	37.9	2.91	6.86	6.86	6.86	0.22	1.20	± 13.1 %
3700	37.7	3.12	6.69	6.69	6.69	0.25	1.20	± 13.1 %
5250	35.9	4.71	4.73	4.73	4.73	0.35	1.80	± 13.1 %
5400	35.8	4.86	4.70	4.70	4.70	0.35	1.80	± 13.1 %
5600	35.5	5.07	4.38	4.38	4.38	0.40	1.80	± 13.1 %
5750	35.4	5.22	4.62	4.62	4.62	0.40	1.80	± 13.1 %
5850	35.1	5.32	4.45	4.45	4.45	0.40	1.80	± 13.1 %

[C] Frequency validity above 300 MHz of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 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.
[F] At frequencies below 3 GHz, the validity of tissue parameters (ε and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ε and σ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.
[G] Alpha/Depth are determined during calibration. 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.

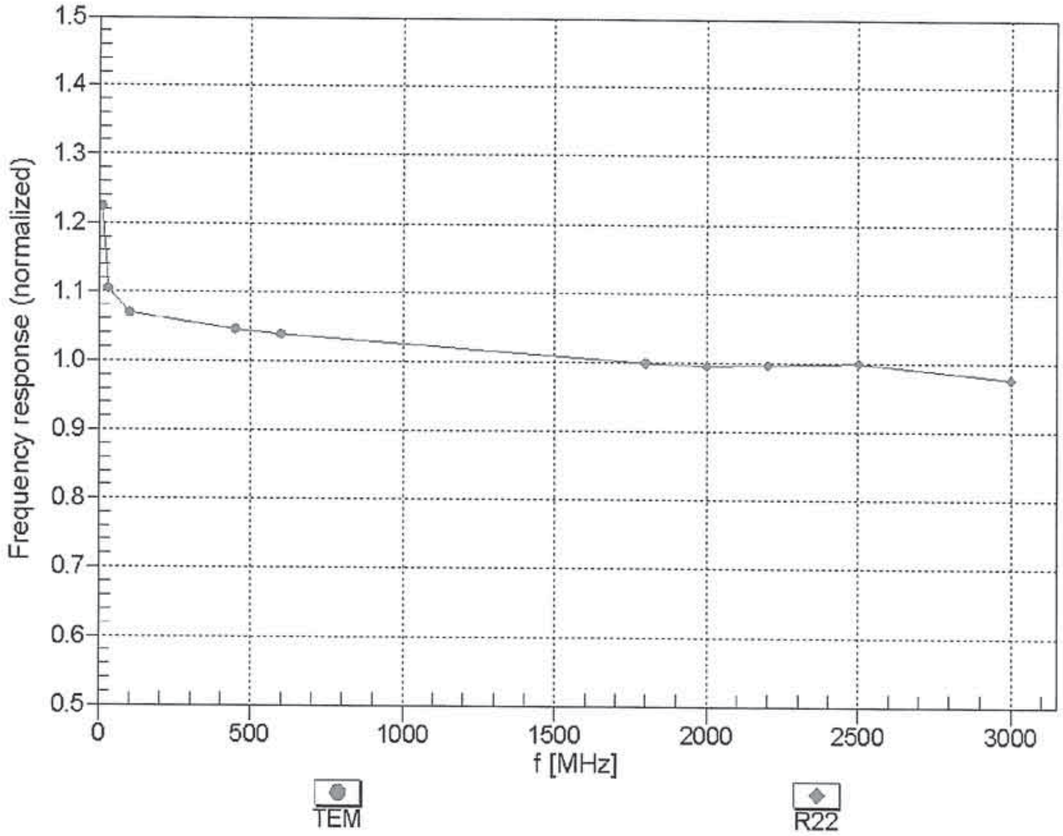
DASY/EASY - Parameters of Probe: EX3DV4 - SN:3736

Calibration Parameter Determined in Body Tissue Simulating Media

f (MHz) [C]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha [G]	Depth [G] (mm)	Unc (k=2)
750	55.5	0.96	9.28	9.28	9.28	0.46	0.80	± 12.0 %
850	55.2	0.99	9.10	9.10	9.10	0.40	0.87	± 12.0 %
1450	54.0	1.30	7.88	7.88	7.88	0.40	0.80	± 12.0 %
1750	53.4	1.49	7.66	7.66	7.66	0.41	0.82	± 12.0 %
1900	53.3	1.52	7.52	7.52	7.52	0.42	0.80	± 12.0 %
2300	52.9	1.81	7.05	7.05	7.05	0.40	0.84	± 12.0 %
2450	52.7	1.95	7.02	7.02	7.02	0.31	0.92	± 12.0 %
2600	52.5	2.16	6.90	6.90	6.90	0.20	1.05	± 12.0 %
3500	51.3	3.31	6.79	6.79	6.79	0.23	1.25	± 13.1 %
3700	51.0	3.55	6.58	6.58	6.58	0.25	1.25	± 13.1 %
5250	48.9	5.36	4.01	4.01	4.01	0.50	1.90	± 13.1 %
5400	48.7	5.53	3.80	3.80	3.80	0.50	1.90	± 13.1 %
5600	48.5	5.77	3.58	3.58	3.58	0.50	1.90	± 13.1 %
5750	48.3	5.94	3.93	3.93	3.93	0.50	1.90	± 13.1 %
5850	48.1	6.06	3.78	3.78	3.78	0.50	1.90	± 13.1 %

[C] Frequency validity above 300 MHz of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 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.
[F] At frequencies below 3 GHz, the validity of tissue parameters (ε and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ε and σ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.
[G] Alpha/Depth are determined during calibration. 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.

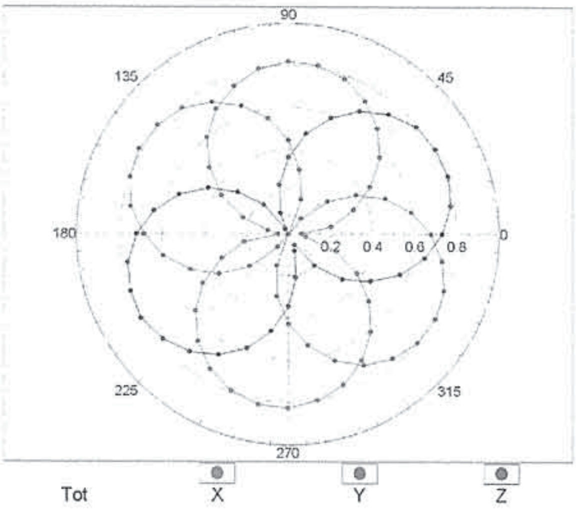
Frequency Response of E-Field
(TEM-Cell:ifi110 EXX, Waveguide: R22)



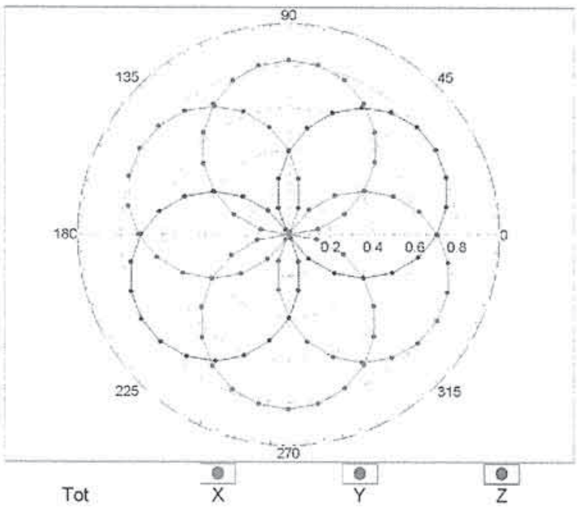
Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

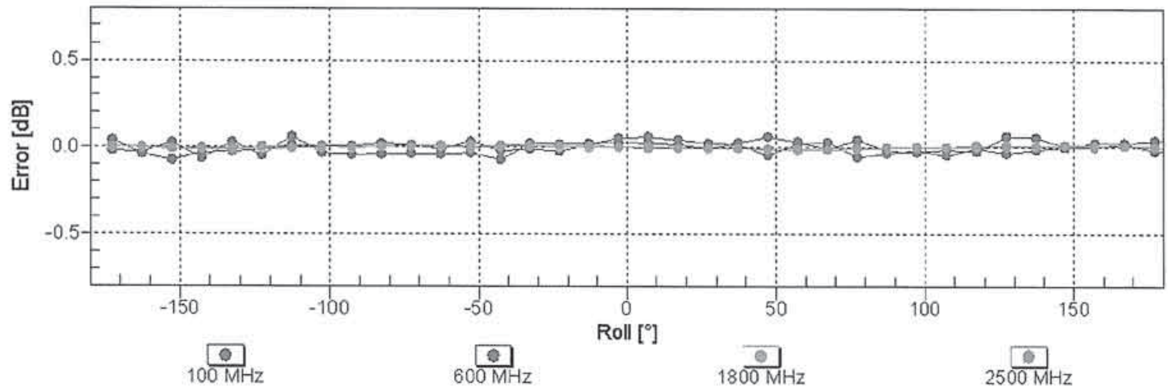
Receiving Pattern (ϕ), ϑ = 0°

f=600 MHz,TEM



f=1800 MHz,R22

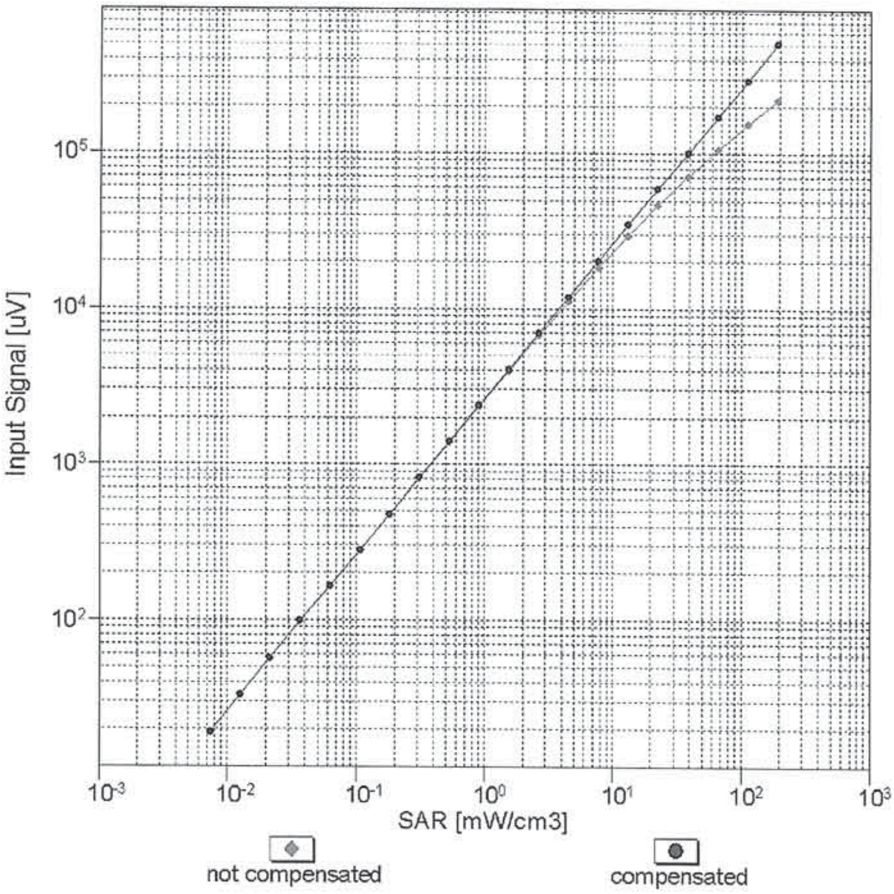


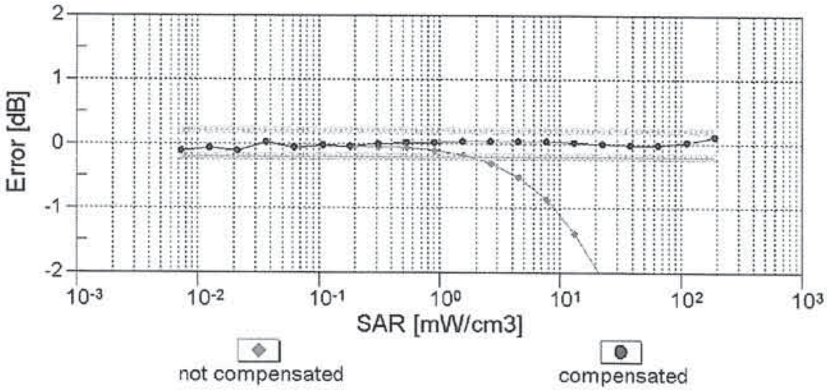


Uncertainty of Axial Isotropy Assessment: ± 0.5% (k=2)

Dynamic Range f(SAR_{head})

(TEM cell , f_{eval}= 1900 MHz)

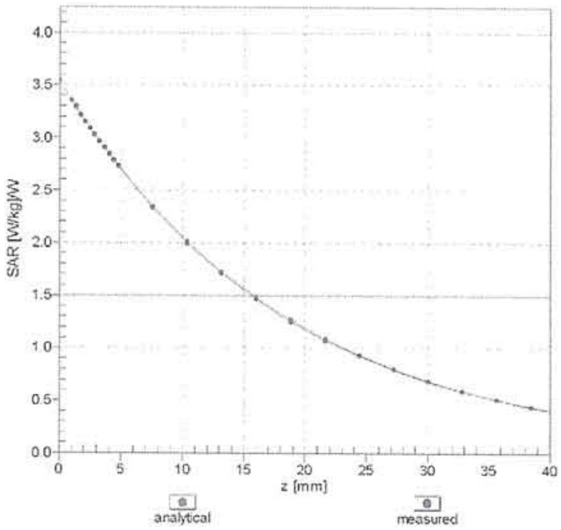




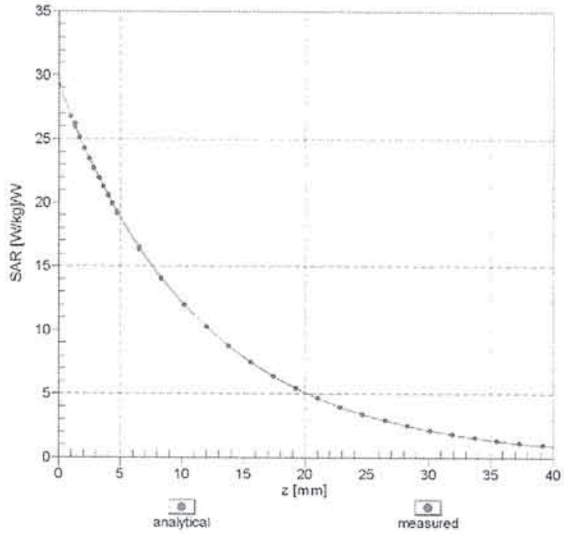
Uncertainty of Linearity Assessment: ± 0.6% (k=2)

Conversion Factor Assessment

f = 850 MHz,WGLS R9 (H_convF)

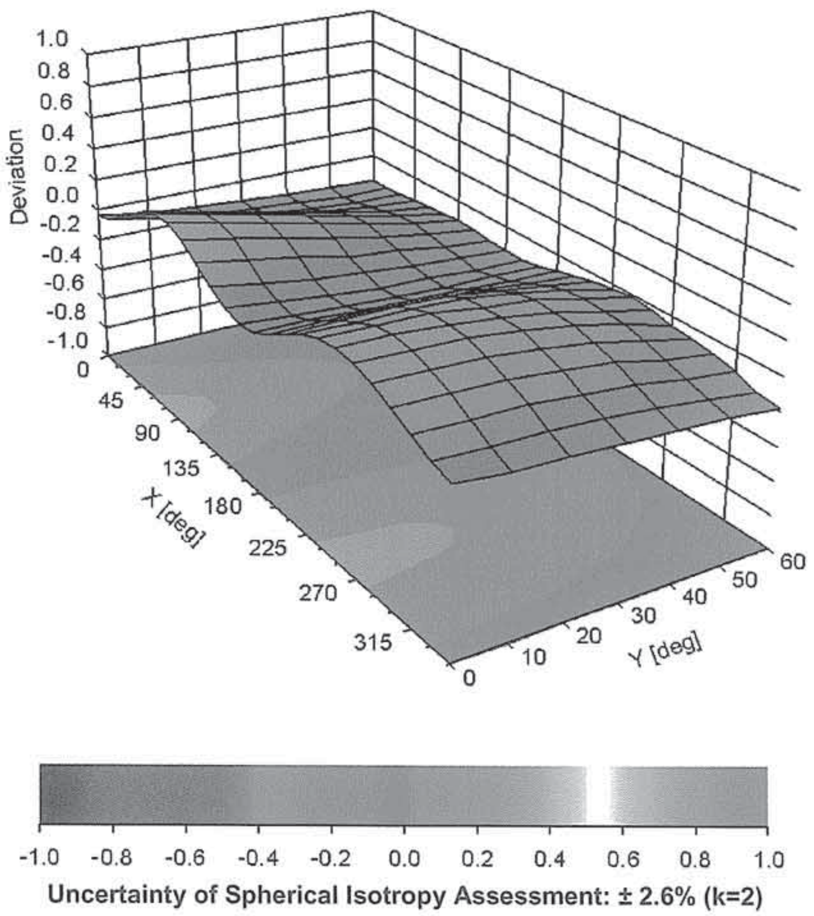


f = 1900 MHz,WGLS R22 (H_convF)



Deviation from Isotropy in Liquid

Error (ϕ, ϑ), f = 900 MHz



Uncertainty of Spherical Isotropy Assessment: ± 2.6% (k=2)

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3736

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	37.3
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disabled
Probe Overall 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

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Accredited by the Swiss Accreditation Service (SAS)
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Accreditation No.: **SCS 0108**

Client **Huawei-SZ (Auden)**

Certificate No: **EX3-3744_Jul18**

CALIBRATION CERTIFICATE

Object	EX3DV4 - SN:3744
Calibration procedure(s)	QA CAL-01.v9, QA CAL-23.v5, QA CAL-25.v6 Calibration procedure for dosimetric E-field probes
Calibration date:	July 25, 2018

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 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 Calibration
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Power sensor NRP-Z91	SN: 103245	04-Apr-18 (No. 217-02673)	Apr-19
Reference 20 dB Attenuator	SN: S5277 (20x)	04-Apr-18 (No. 217-02682)	Apr-19
Reference Probe ES3DV2	SN: 3013	30-Dec-17 (No. ES3-3013_Dec17)	Dec-18
DAE4	SN: 660	21-Dec-17 (No. DAE4-660_Dec17)	Dec-18
Secondary Standards	ID	Check Date (in house)	Scheduled Check
Power meter E4419B	SN: GB41293874	06-Apr-16 (in house check Jun-18)	In house check: Jun-20
Power sensor E4412A	SN: MY41498087	06-Apr-16 (in house check Jun-18)	In house check: Jun-20
Power sensor E4412A	SN: 000110210	06-Apr-16 (in house check Jun-18)	In house check: Jun-20
RF generator HP 8648C	SN: US3642U01700	04-Aug-99 (in house check Jun-18)	In house check: Jun-20
Network Analyzer E8358A	SN: US41080477	31-Mar-14 (in house check Oct-17)	In house check: Oct-18

	Name	Function	Signature
Calibrated by:	Claudio Leubler	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: July 28, 2018

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Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

Glossary:

TSL	tissue simulating liquid
NORMx,y,z	sensitivity in free space
ConvF	sensitivity in TSL / NORMx,y,z
DCP	diode compression point
CF	crest factor (1/duty_cycle) of the RF signal
A, B, C, D	modulation dependent linearization parameters
Polarization φ	φ rotation around probe axis
Polarization ϑ	ϑ rotation around an axis that is in the plane normal to probe axis (at measurement center), i.e., ϑ = 0 is normal to probe axis
Connector Angle	information used in DASY system to align probe sensor X to the robot coordinate system

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, ", "Measurement procedure for the assessment of Specific Absorption Rate (SAR) from hand-held and body-mounted devices used next to the ear (frequency range of 300 MHz to 6 GHz)", July 2016
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"

Methods Applied and Interpretation of Parameters:

- *NORMx,y,z:* Assessed for E-field polarization ϑ = 0 (f ≤ 900 MHz in TEM-cell; f > 1800 MHz: R22 waveguide). NORMx,y,z are only intermediate values, i.e., the uncertainties of NORMx,y,z does not affect the E^2-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*.
- *DCPx,y,z:* DCP are numerical linearization parameters assessed based on the data of power sweep with CW signal (no uncertainty required). DCP does not depend on frequency nor 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, B, C, D* are numerical linearization parameters assessed based on the data of power sweep for specific modulation signal. The parameters do not depend on frequency nor media. *VR* is the maximum calibration range expressed in RMS voltage across the diode.
- *ConvF and Boundary Effect Parameters:* Assessed in flat phantom using E-field (or Temperature Transfer Standard for f ≤ 800 MHz) and inside waveguide using analytical field distributions based on power measurements for f > 800 MHz. The same setups are used for assessment of the parameters applied for boundary compensation (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 *NORMx,y,z * ConvF* whereby the uncertainty corresponds to that given for *ConvF*. A frequency dependent *ConvF* is used in DASY version 4.4 and higher which allows extending the validity from ± 50 MHz to ± 100 MHz.
- *Spherical isotropy (3D deviation from isotropy)*: in a field of low gradients realized using a flat phantom exposed by a patch antenna.
- *Sensor Offset*: The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.
- *Connector Angle*: The angle is assessed using the information gained by determining the *NORMx* (no uncertainty required).

Probe EX3DV4

SN:3744

Manufactured: March 26, 2010
Calibrated: July 25, 2018

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

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3744

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm (μV/(V/m)^2)[A]	0.47	0.48	0.40	± 10.1 %
DCP (mV)[B]	97.6	99.6	113.8	

Modulation Calibration Parameters

UID	Communication System Name		A dB	B dB√μV	C	D dB	VR mV	Unc[E] (k=2)
0	CW	X	0.0	0.0	1.0	0.00	156.2	±3.0 %
		Y	0.0	0.0	1.0		156.0	
		Z	0.0	0.0	1.0		170.2	

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%.

[A] The uncertainties of Norm X,Y,Z do not affect the E^2-field uncertainty inside TSL (see Pages 5 and 6).
[B] Numerical linearization parameter: uncertainty not required.
[E] Uncertainty is determined using the max. deviation from linear response applying rectangular distribution and is expressed for the square of the field value.

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3744

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 [G] (mm)	Unc (k=2)
750	41.9	0.89	9.40	9.40	9.40	0.54	0.80	± 12.0 %
850	41.5	0.92	8.96	8.96	8.96	0.49	0.84	± 12.0 %
1750	40.1	1.37	8.27	8.27	8.27	0.10	1.12	± 12.0 %
1900	40.0	1.40	7.99	7.99	7.99	0.10	0.83	± 12.0 %
2000	40.0	1.40	7.78	7.78	7.78	0.10	0.80	± 12.0 %
2300	39.5	1.67	7.74	7.74	7.74	0.30	0.90	± 12.0 %
2450	39.2	1.80	7.24	7.24	7.24	0.30	0.95	± 12.0 %
2600	39.0	1.96	6.90	6.90	6.90	0.30	0.95	± 12.0 %

[C] Frequency validity above 300 MHz of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 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.
[F] At frequencies below 3 GHz, the validity of tissue parameters (ε and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ε and σ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.
[G] Alpha/Depth are determined during calibration. 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.

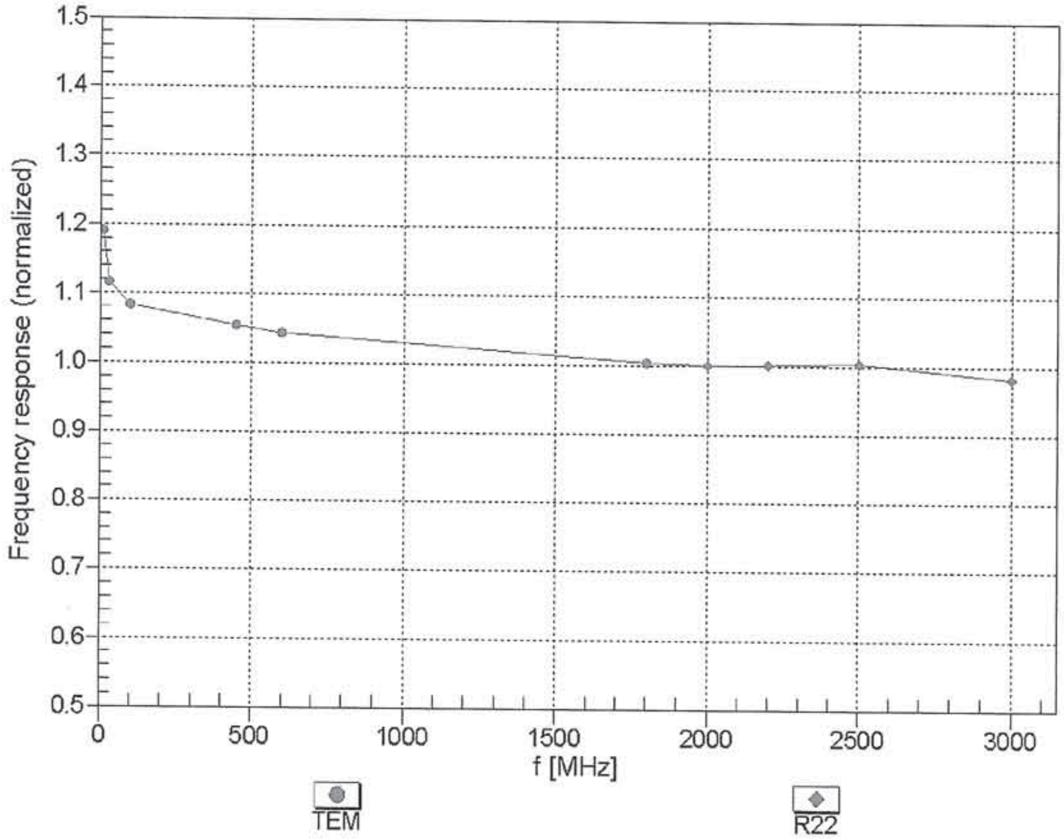
DASY/EASY - Parameters of Probe: EX3DV4 - SN:3744

Calibration Parameter Determined in Body Tissue Simulating Media

f (MHz) [C]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha [G]	Depth [G] (mm)	Unc (k=2)
750	55.5	0.96	9.54	9.54	9.54	0.49	0.80	± 12.0 %
850	55.2	0.99	9.12	9.12	9.12	0.53	0.80	± 12.0 %
1750	53.4	1.49	7.74	7.74	7.74	0.45	0.80	± 12.0 %
1900	53.3	1.52	7.60	7.60	7.60	0.40	0.84	± 12.0 %
2300	52.9	1.81	7.56	7.56	7.56	0.45	0.85	± 12.0 %
2450	52.7	1.95	7.39	7.39	7.39	0.35	0.85	± 12.0 %
2600	52.5	2.16	7.35	7.35	7.35	0.30	0.99	± 12.0 %

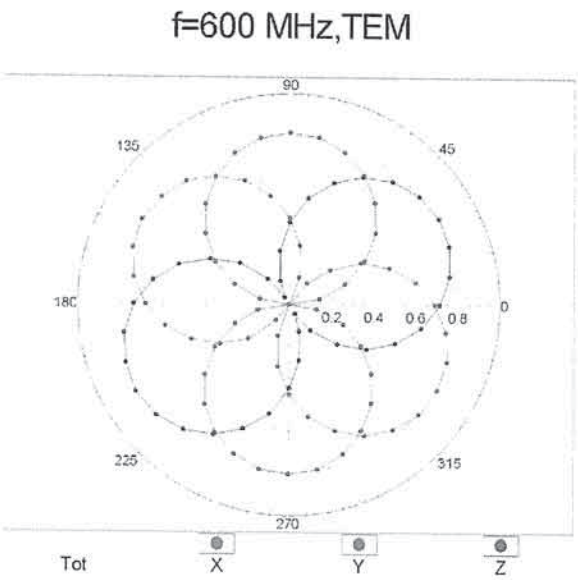
[C] Frequency validity above 300 MHz of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz 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.
[F] At frequencies below 3 GHz, the validity of tissue parameters (ε and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ε and σ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.
[G] Alpha/Depth are determined during calibration. 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.

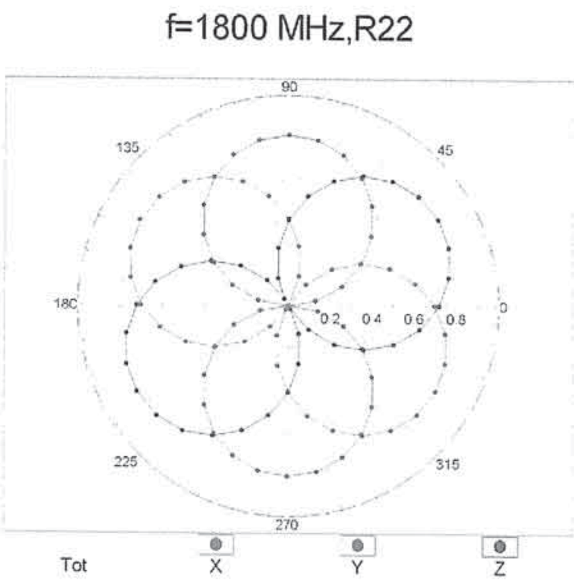
Frequency Response of E-Field
(TEM-Cell:ifi110 EXX, Waveguide: R22)

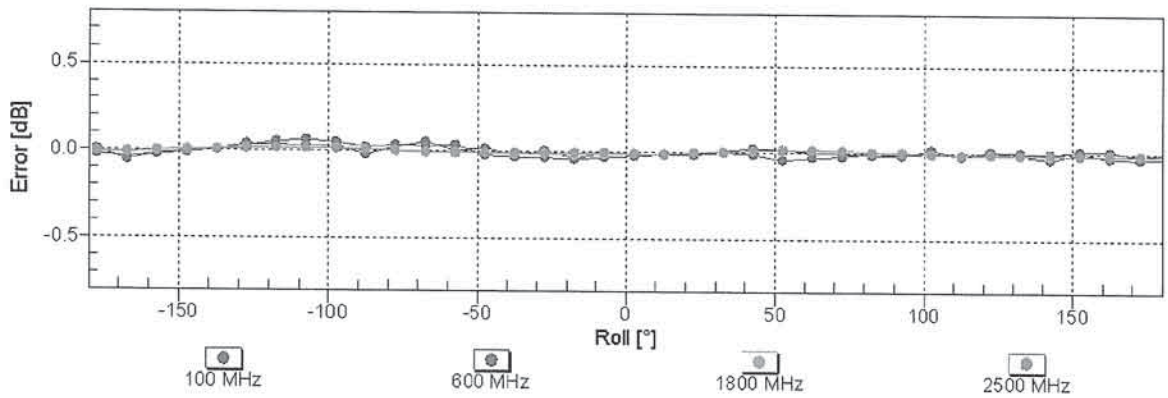


Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

Receiving Pattern (φ), $\vartheta = 0°$

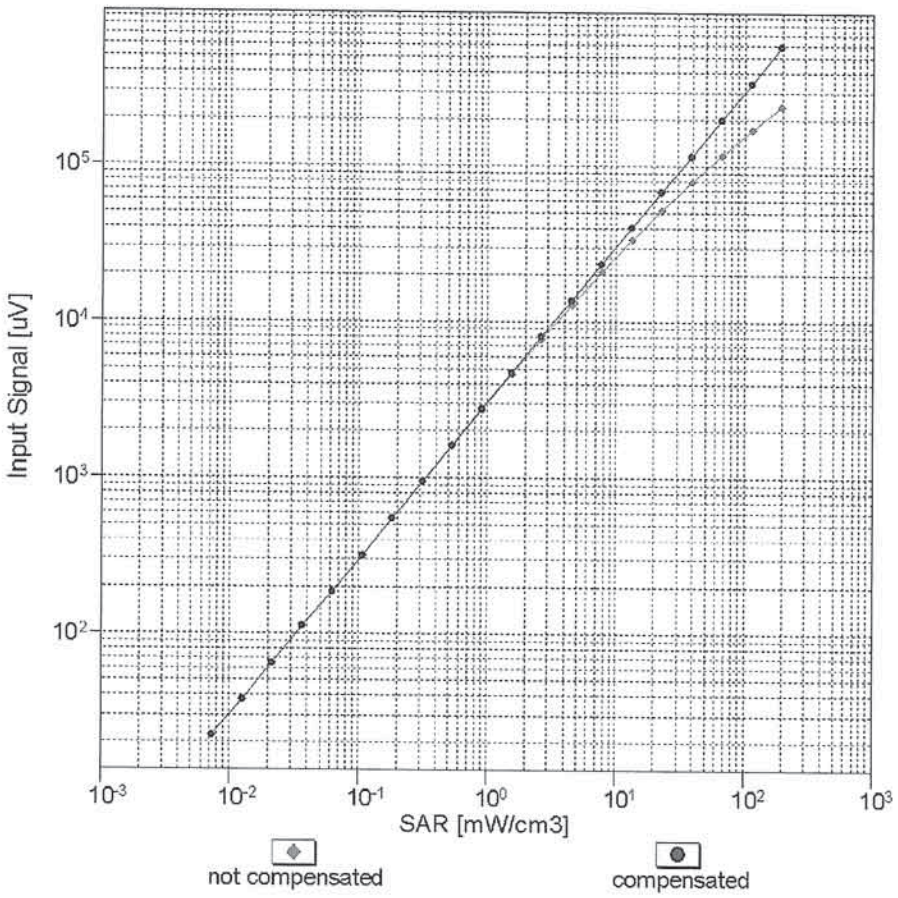


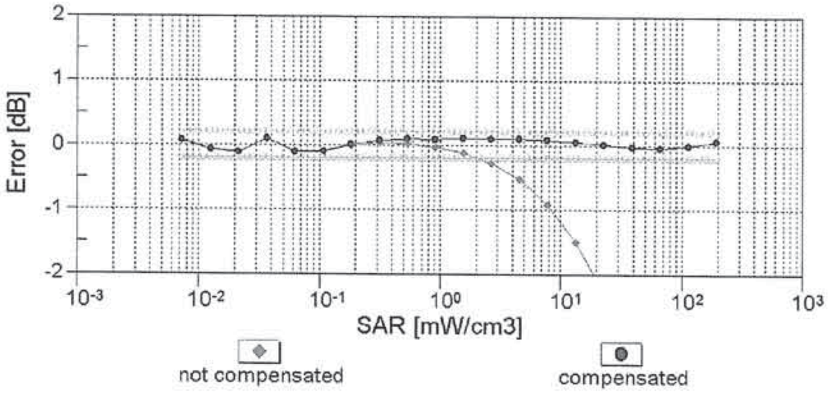




Uncertainty of Axial Isotropy Assessment: ± 0.5% (k=2)

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

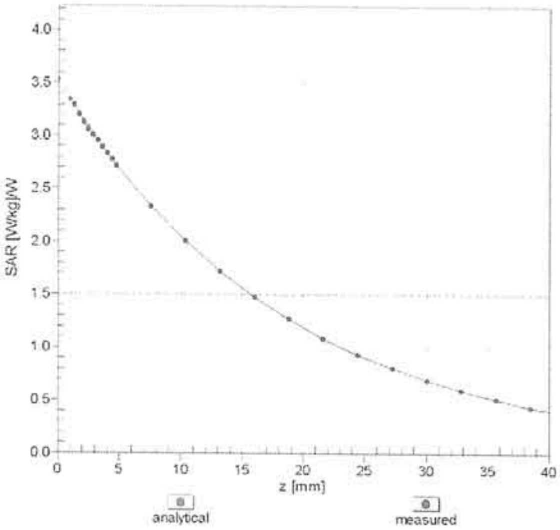




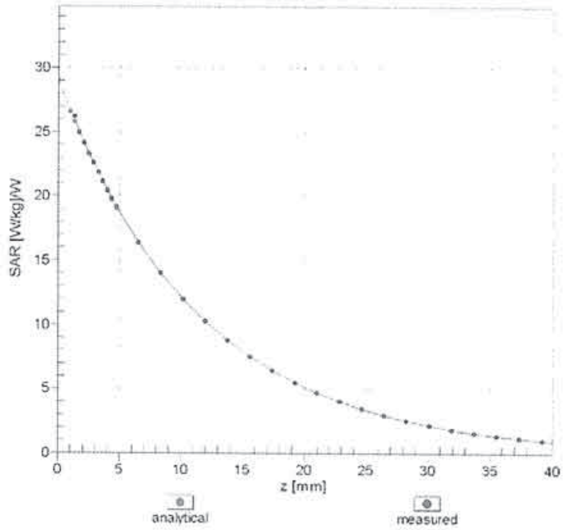
Uncertainty of Linearity Assessment: ± 0.6% (k=2)

Conversion Factor Assessment

f = 850 MHz,WGLS R9 (H_convF)

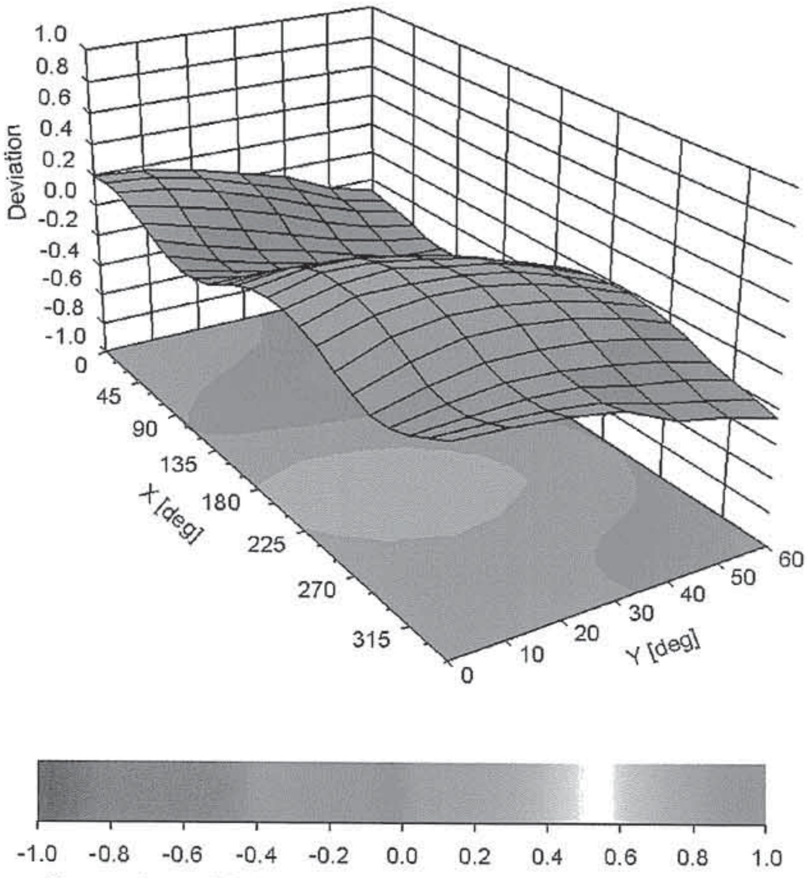


f = 1900 MHz,WGLS R22 (H_convF)



Deviation from Isotropy in Liquid

Error (ϕ, ϑ), f = 900 MHz



Uncertainty of Spherical Isotropy Assessment: ± 2.6% (k=2)

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3744

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	72.5
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disabled
Probe Overall 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

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IMPORTANT NOTICE

USAGE OF THE DAE 4

The DAE unit is a delicate, high precision instrument and requires careful treatment by the user. There are no serviceable parts inside the DAE. Special attention shall be given to the following points:

Battery Exchange: The battery cover of the DAE4 unit is closed using a screw, over tightening the screw may cause the threads inside the DAE to wear out.

Shipping of the DAE: Before shipping the DAE to SPEAG for calibration, remove the batteries and pack the DAE in an antistatic bag. This antistatic bag shall then be packed into a larger box or container which protects the DAE from impacts during transportation. The package shall be marked to indicate that a fragile instrument is inside.

E-Stop Failures: Touch detection may be malfunctioning due to broken magnets in the E-stop. Rough handling of the E-stop may lead to damage of these magnets. Touch and collision errors are often caused by dust and dirt accumulated in the E-stop. To prevent E-stop failure, the customer shall always mount the probe to the DAE carefully and keep the DAE unit in a non-dusty environment if not used for measurements.

Repair: Minor repairs are performed at no extra cost during the annual calibration. However, SPEAG reserves the right to charge for any repair especially if rough unprofessional handling caused the defect.

DASY Configuration Files: Since the exact values of the DAE input resistances, as measured during the calibration procedure of a DAE unit, are not used by the DASY software, a nominal value of 200 MOhm is given in the corresponding configuration file.

Important Note:
Warranty and calibration is void if the DAE unit is disassembled partly or fully by the Customer.

Important Note:
Never attempt to grease or oil the E-stop assembly. Cleaning and readjusting of the E-stop assembly is allowed by certified SPEAG personnel only and is part of the annual calibration procedure.

Important Note:
To prevent damage of the DAE probe connector pins, use great care when installing the probe to the DAE. Carefully connect the probe with the connector notch oriented in the mating position. Avoid any rotational movement of the probe body versus the DAE while turning the locking nut of the connector. The same care shall be used when disconnecting the probe from the DAE.

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

Accreditation No.: SCS 0108

Client **Huawei (Auden)**

Certificate No: DAE4-1531_Jan18

CALIBRATION CERTIFICATE

Object	DAE4 - SD 000 D04 BM - SN: 1531
Calibration procedure(s)	QA CAL-06.v29 Calibration procedure for the data acquisition electronics (DAE)
Calibration date:	January 03, 2018

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 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 Calibration
Keithley Multimeter Type 2001	SN: 0810278	31-Aug-17 (No:21092)	Aug-18
Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Auto DAE Calibration Unit	SE UWS 053 AA 1001	05-Jan-17 (in house check)	In house check: Jan-18
Calibrator Box V2.1	SE UMS 006 AA 1002	05-Jan-17 (in house check)	In house check: Jan-18

	Name	Function	Signature
Calibrated by:	Adrian Gehring	Laboratory Technician	A. Gehring
Approved by:	Sven Kühn	Deputy Manager	i.V. Blumer

Issued: January 3, 2018

Glossary

DAE	data acquisition electronics
Connector angle	information used in DASY system to align probe sensor X to the robot 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 measurement.
  - *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 input voltage.
  - *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 modes.

DC Voltage Measurement

A/D - Converter Resolution nominal

High Range: 1LSB = 6.1μV , full range = -100...+300 mV

Low Range: 1LSB = 61nV , full range = -1.......+3mV

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

Calibration Factors	X	Y	Z
High Range	406.844 ± 0.02% (k=2)	405.731 ± 0.02% (k=2)	406.033 ± 0.02% (k=2)
Low Range	4.00869 ± 1.50% (k=2)	3.96843 ± 1.50% (k=2)	3.96705 ± 1.50% (k=2)

Connector Angle

Connector Angle to be used in DASY system	178.0 ° ± 1 °

Appendix (Additional assessments outside the scope of SCS0108)

1. DC Voltage Linearity

High Range		Reading (μV)	Difference (μV)	Error (%)
Channel X	+ Input	199993.49	-0.96	-0.00
Channel X	+ Input	20002.74	1.45	0.01
Channel X	- Input	-20000.81	0.50	-0.00
Channel Y	+ Input	199995.70	0.88	0.00
Channel Y	+ Input	20000.97	-0.36	-0.00
Channel Y	- Input	-20003.23	-1.98	0.01
Channel Z	+ Input	199995.35	0.64	0.00
Channel Z	+ Input	20000.39	-0.79	-0.00
Channel Z	- Input	-20001.40	0.01	-0.00

Low Range		Reading (μV)	Difference (μV)	Error (%)
Channel X	+ Input	2001.39	0.42	0.02
Channel X	+ Input	201.54	0.15	0.08
Channel X	- Input	-197.99	0.52	-0.26
Channel Y	+ Input	2001.63	0.68	0.03
Channel Y	+ Input	201.18	-0.14	-0.07
Channel Y	- Input	-199.14	-0.63	0.32
Channel Z	+ Input	2001.32	0.48	0.02
Channel Z	+ Input	200.59	-0.62	-0.31
Channel Z	- Input	-199.33	-0.65	0.33

2. Common mode sensitivity

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

	Common mode Input Voltage (mV)	High Range Average Reading (μV)	Low Range Average Reading (μV)
Channel X	200	6.66	4.59
	- 200	-3.58	-5.41
Channel Y	200	-2.04	-2.09
	- 200	1.54	1.29
Channel Z	200	11.05	10.73
	- 200	-13.27	-12.78

3. Channel separation

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

	Input Voltage (mV)	Channel X (μV)	Channel Y (μV)	Channel Z (μV)
Channel X	200	-	5.02	6.29
Channel Y	200	-4.47	-	6.73
Channel Z	200	9.36	-6.86	-

4. AD-Converter Values with inputs shorted

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

	High Range (LSB)	Low Range (LSB)
Channel X	16282	15914
Channel Y	16047	15932
Channel Z	15393	16628

5. Input Offset Measurement

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec
Input 10MΩ

	Average (μV)	min. Offset (μV)	max. Offset (μV)	Std. Deviation (μV)
Channel X	0.52	-1.21	2.70	0.59
Channel Y	-0.57	-1.85	0.45	0.43
Channel Z	-1.07	-3.40	0.22	0.54

6. Input Offset Current

Nominal Input circuitry offset current on all channels: <25fA

7. Input Resistance (Typical values for information)

	Zeroing (kOhm)	Measuring (MOhm)
Channel X	200	200
Channel Y	200	200
Channel Z	200	200

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

Typical values	Alarm Level (VDC)
Supply (+ Vcc)	+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	-8	-9

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IMPORTANT NOTICE

USAGE OF THE DAE 4

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Battery Exchange: The battery cover of the DAE4 unit is closed using a screw, over tightening the screw may cause the threads inside the DAE to wear out.

Shipping of the DAE: Before shipping the DAE to SPEAG for calibration, remove the batteries and pack the DAE in an antistatic bag. This antistatic bag shall then be packed into a larger box or container which protects the DAE from impacts during transportation. The package shall be marked to indicate that a fragile instrument is inside.

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Repair: Minor repairs are performed at no extra cost during the annual calibration. However, SPEAG reserves the right to charge for any repair especially if rough unprofessional handling caused the defect.

DASY Configuration Files: Since the exact values of the DAE input resistances, as measured during the calibration procedure of a DAE unit, are not used by the DASY software, a nominal value of 200 MOhm is given in the corresponding configuration file.

Important Note:
Warranty and calibration is void if the DAE unit is disassembled partly or fully by the Customer.

Important Note:
Never attempt to grease or oil the E-stop assembly. Cleaning and readjusting of the E-stop assembly is allowed by certified SPEAG personnel only and is part of the annual calibration procedure.

Important Note:
To prevent damage of the DAE probe connector pins, use great care when installing the probe to the DAE. Carefully connect the probe with the connector notch oriented in the mating position. Avoid any rotational movement of the probe body versus the DAE while turning the locking nut of the connector. The same care shall be used when disconnecting the probe from the DAE.

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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

Accreditation No.: SCS 0108

Client **Huawei (Auden)**

Certificate No: DAE4-1554_Jun18

CALIBRATION CERTIFICATE

Object	DAE4 - SD 000 D04 BN - SN: 1554
Calibration procedure(s)	QA CAL-06.v29 Calibration procedure for the data acquisition electronics (DAE)
Calibration date:	June 05, 2018

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 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 Calibration
Keithley Multimeter Type 2001	SN: 0810278	31-Aug-17 (No:21092)	Aug-18
Secondary Standards	**ID #**	**Check Date (in house)**	**Scheduled Check**
Auto DAE Calibration Unit	SE UWS 053 AA 1001	04-Jan-18 (in house check)	In house check: Jan-19
Calibrator Box V2.1	SE UMS 006 AA 1002	04-Jan-18 (in house check)	In house check: Jan-19

	Name	Function	Signature
Calibrated by:	Eric Hainfeld	Laboratory Technician	
Approved by:	Sven Kühn	Deputy Manager	i.V.

Issued: June 5, 2018

Glossary

DAE	data acquisition electronics
Connector angle	information used in DASY system to align probe sensor X to the robot 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 measurement.
  - *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 input voltage.
  - *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 modes.

DC Voltage Measurement

A/D - Converter Resolution nominal

High Range: 1LSB = 6.1μV , full range = -100...+300 mV

Low Range: 1LSB = 61nV , full range = -1.......+3mV

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

Calibration Factors	X	Y	Z
High Range	406.024 ± 0.02% (k=2)	405.924 ± 0.02% (k=2)	406.209 ± 0.02% (k=2)
Low Range	3.98212 ± 1.50% (k=2)	3.97915 ± 1.50% (k=2)	3.98350 ± 1.50% (k=2)

Connector Angle

Connector Angle to be used in DASY system	210.0 ° ± 1 °

Appendix (Additional assessments outside the scope of SCS0108)

1. DC Voltage Linearity

High Range		Reading (µV)	Difference (µV)	Error (%)
Channel X	+ Input	200027.91	-5.34	-0.00
Channel X	+ Input	20006.65	1.59	0.01
Channel X	- Input	-20002.02	2.87	-0.01
Channel Y	+ Input	200030.12	-3.23	-0.00
Channel Y	+ Input	20002.70	-2.31	-0.01
Channel Y	- Input	-20004.95	-0.03	0.00
Channel Z	+ Input	200031.84	-1.46	-0.00
Channel Z	+ Input	20002.85	-2.20	-0.01
Channel Z	- Input	-20005.94	-0.95	0.00

Low Range		Reading (µV)	Difference (µV)	Error (%)
Channel X	+ Input	2001.16	-0.04	-0.00
Channel X	+ Input	201.70	0.51	0.26
Channel X	- Input	-198.00	0.77	-0.39
Channel Y	+ Input	2001.60	0.45	0.02
Channel Y	+ Input	200.69	-0.39	-0.20
Channel Y	- Input	-199.47	-0.59	0.30
Channel Z	+ Input	2001.35	0.33	0.02
Channel Z	+ Input	200.10	-0.87	-0.43
Channel Z	- Input	-199.78	-0.84	0.42

2. Common mode sensitivity

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

	Common mode Input Voltage (mV)	High Range Average Reading (µV)	Low Range Average Reading (µV)
Channel X	200	6.04	3.27
	- 200	-1.32	-3.50
Channel Y	200	0.96	1.11
	- 200	-1.70	-2.29
Channel Z	200	-12.95	-13.16
	- 200	10.95	11.12

3. Channel separation

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

	Input Voltage (mV)	Channel X (µV)	Channel Y (µV)	Channel Z (µV)
Channel X	200	-	-1.94	-2.04
Channel Y	200	6.04	-	-0.26
Channel Z	200	11.40	3.06	-

4. AD-Converter Values with inputs shorted

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

	High Range (LSB)	Low Range (LSB)
Channel X	15826	15551
Channel Y	15980	15779
Channel Z	15976	15433

5. Input Offset Measurement

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec
Input 10MΩ

	Average (μV)	min. Offset (μV)	max. Offset (μV)	Std. Deviation (μV)
Channel X	0.63	-1.03	2.15	0.41
Channel Y	-0.03	-0.89	0.99	0.41
Channel Z	1.15	-0.69	2.09	0.41

6. Input Offset Current

Nominal Input circuitry offset current on all channels: <25fA

7. Input Resistance (Typical values for information)

	Zeroing (kOhm)	Measuring (MOhm)
Channel X	200	200
Channel Y	200	200
Channel Z	200	200

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

Typical values	Alarm Level (VDC)
Supply (+ Vcc)	+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	-8	-9

IMPORTANT NOTICE

USAGE OF THE DAE 4

The DAE unit is a delicate, high precision instrument and requires careful treatment by the user. There are no serviceable parts inside the DAE. Special attention shall be given to the following points:

Battery Exchange: The battery cover of the DAE4 unit is closed using a screw, over tightening the screw may cause the threads inside the DAE to wear out.

Shipping of the DAE: Before shipping the DAE to SPEAG for calibration, remove the batteries and pack the DAE in an antistatic bag. This antistatic bag shall then be packed into a larger box or container which protects the DAE from impacts during transportation. The package shall be marked to indicate that a fragile instrument is inside.

E-Stop Failures: Touch detection may be malfunctioning due to broken magnets in the E-stop. Rough handling of the E-stop may lead to damage of these magnets. Touch and collision errors are often caused by dust and dirt accumulated in the E-stop. To prevent E-stop failure, the customer shall always mount the probe to the DAE carefully and keep the DAE unit in a non-dusty environment if not used for measurements.

Repair: Minor repairs are performed at no extra cost during the annual calibration. However, SPEAG reserves the right to charge for any repair especially if rough unprofessional handling caused the defect.

DASY Configuration Files: Since the exact values of the DAE input resistances, as measured during the calibration procedure of a DAE unit, are not used by the DASY software, a nominal value of 200 MOhm is given in the corresponding configuration file.

Important Note:
Warranty and calibration is void if the DAE unit is disassembled partly or fully by the Customer.

Important Note:
Never attempt to grease or oil the E-stop assembly. Cleaning and readjusting of the E-stop assembly is allowed by certified SPEAG personnel only and is part of the annual calibration procedure.

Important Note:
To prevent damage of the DAE probe connector pins, use great care when installing the probe to the DAE. Carefully connect the probe with the connector notch oriented in the mating position. Avoid any rotational movement of the probe body versus the DAE while turning the locking nut of the connector. The same care shall be used when disconnecting the probe from the DAE.

Calibration Laboratory of
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S **Schweizerischer Kalibrierdienst**
C **Service suisse d'étalonnage**
S **Servizio svizzero di taratura**
S **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

Accreditation No.: SCS 0108

Client **Huawei-SZ (Auden)**

Certificate No: DAE4-1235_Nov17

CALIBRATION CERTIFICATE

Object	DAE4 - SD 000 D04 BM - SN: 1235
Calibration procedure(s)	QA CAL-06.v29 Calibration procedure for the data acquisition electronics (DAE)
Calibration date:	November 16, 2017

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 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 Calibration
Keithley Multimeter Type 2001	SN: 0810278	31-Aug-17 (No:21092)	Aug-18
Secondary Standards	**ID #**	**Check Date (in house)**	**Scheduled Check**
Auto DAE Calibration Unit	SE UWS 053 AA 1001	05-Jan-17 (in house check)	In house check: Jan-18
Calibrator Box V2.1	SE UMS 006 AA 1002	05-Jan-17 (in house check)	In house check: Jan-18

	Name	Function	Signature
Calibrated by:	Eric Hainfeld	Laboratory Technician	
Approved by:	Sven Kühn	Deputy Manager	i.V.

Issued: November 16, 2017

Glossary

DAE	data acquisition electronics
Connector angle	information used in DASY system to align probe sensor X to the robot 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 measurement.
  - *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 input voltage.
  - *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 modes.

DC Voltage Measurement

A/D - Converter Resolution nominal

High Range: 1LSB = 6.1μV , full range = -100...+300 mV

Low Range: 1LSB = 61nV , full range = -1.......+3mV

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

Calibration Factors	X	Y	Z
High Range	405.059 ± 0.02% (k=2)	403.801 ± 0.02% (k=2)	404.495 ± 0.02% (k=2)
Low Range	3.98331 ± 1.50% (k=2)	3.98987 ± 1.50% (k=2)	4.00170 ± 1.50% (k=2)

Connector Angle

Connector Angle to be used in DASY system	205.0 ° ± 1 °

Appendix (Additional assessments outside the scope of SCS0108)

1. DC Voltage Linearity

High Range		Reading (μV)	Difference (μV)	Error (%)
Channel X	+ Input	199993.98	-1.45	-0.00
Channel X	+ Input	20002.16	0.62	0.00
Channel X	- Input	-19998.69	2.43	-0.01
Channel Y	+ Input	199990.18	-5.04	-0.00
Channel Y	+ Input	20000.13	-1.41	-0.01
Channel Y	- Input	-20001.42	-0.31	0.00
Channel Z	+ Input	199991.13	-4.07	-0.00
Channel Z	+ Input	19999.72	-1.64	-0.01
Channel Z	- Input	-20002.58	-1.38	0.01

Low Range		Reading (μV)	Difference (μV)	Error (%)
Channel X	+ Input	2000.94	-0.05	-0.00
Channel X	+ Input	201.20	-0.18	-0.09
Channel X	- Input	-198.86	-0.40	0.20
Channel Y	+ Input	2001.17	0.23	0.01
Channel Y	+ Input	200.91	-0.48	-0.24
Channel Y	- Input	-199.10	-0.68	0.34
Channel Z	+ Input	2001.10	0.31	0.02
Channel Z	+ Input	200.43	-0.77	-0.38
Channel Z	- Input	-200.12	-1.54	0.78

2. Common mode sensitivity

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

	Common mode Input Voltage (mV)	High Range Average Reading (μV)	Low Range Average Reading (μV)
Channel X	200	5.59	3.80
	- 200	-3.66	-5.26
Channel Y	200	-23.64	-23.79
	- 200	23.21	22.97
Channel Z	200	6.38	6.07
	- 200	-8.80	-8.85

3. Channel separation

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

	Input Voltage (mV)	Channel X (μV)	Channel Y (μV)	Channel Z (μV)
Channel X	200	-	2.39	-5.00
Channel Y	200	8.36	-	3.68
Channel Z	200	9.75	6.01	-

4. AD-Converter Values with inputs shorted

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

	High Range (LSB)	Low Range (LSB)
Channel X	16153	13693
Channel Y	16253	14943
Channel Z	15847	15917

5. Input Offset Measurement

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec
Input 10MΩ

	Average (μV)	min. Offset (μV)	max. Offset (μV)	Std. Deviation (μV)
Channel X	0.38	-0.60	1.15	0.38
Channel Y	-0.02	-1.49	1.63	0.43
Channel Z	0.21	-0.89	1.65	0.38

6. Input Offset Current

Nominal Input circuitry offset current on all channels: <25fA

7. Input Resistance (Typical values for information)

	Zeroing (kOhm)	Measuring (MOhm)
Channel X	200	200
Channel Y	200	200
Channel Z	200	200

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

Typical values	Alarm Level (VDC)
Supply (+ Vcc)	+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	-8	-9