10575-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps, 90pc duty cycle)	X	4.61	66.75	16.46	0.46	130.0	± 9.6 %
		Y	4.89	69.69	19.60		130.0	
		Z	4.78	67.29	17.42		130.0	
10576-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 9 Mbps, 90pc duty cycle)	X	4.64	66.95	16.54	0.46	130.0	± 9.6 %
		Y	4.95	70.06	19.77		130.0	
		Z	4.81	67.49	17.50		130.0	
10577-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 12 Mbps, 90pc duty cycle)	X	4.80	67.16	16.68	0.46	130.0	± 9.6 %
		Y	5.13	70.24	19.85		130.0	
		Z	5.03	67.79	17.66		130.0	
10578-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 18 Mbps, 90pc duty cycle)	X	4.70	67.28	16.77	0.46	130.0	± 9.6 %
		Y	5.09	70.76	20.18		130.0	
		Z	4.93	68.04	17.82		130.0	
10579-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 24 Mbps, 90pc duty cycle)	X	4.47	66.55	16.09	0.46	130.0	± 9.6 %
		Y	4.78	69.67	19.29		130.0	
		Z	4.68	67.27	17.10		130.0	
10580-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 36 Mbps, 90pc duty cycle)	X	4.50	66.61	16.11	0.46	130.0	± 9.6 %
		Y	4.83	69.78	19.33		130.0	
		Z	4.73	67.29	17.11		130.0	
10581-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 48 Mbps, 90pc duty cycle)	X	4.62	67.36	16.75	0.46	130.0	± 9.6 %
		Y	5.05	71.16	20.34		130.0	
		Z	4.84	68.14	17.81		130.0	
10582-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 54 Mbps, 90pc duty cycle)	X	4.40	66.35	15.90	0.46	130.0	± 9.6 %
		Y	4.70	69.39	19.04		130.0	
		Z	4.63	67.01	16.87		130.0	
10583-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps, 90pc duty cycle)	X	4.61	66.75	16.46	0.46	130.0	± 9.6 %
		Y	4.89	69.69	19.60		130.0	
		Z	4.78	67.29	17.42		130.0	
10584-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 9 Mbps, 90pc duty cycle)	X	4.64	66.95	16.54	0.46	130.0	± 9.6 %
		Y	4.95	70.06	19.77		130.0	
		Z	4.81	67.49	17.50		130.0	
10585-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 12 Mbps, 90pc duty cycle)	X	4.80	67.16	16.68	0.46	130.0	± 9.6 %
		Y	5.13	70.24	19.85		130.0	
		Z	5.03	67.79	17.66		130.0	
10586-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 18 Mbps, 90pc duty cycle)	X	4.70	67.28	16.77	0.46	130.0	± 9.6 %
		Y	5.09	70.76	20.18		130.0	
		Z	4.93	68.04	17.82		130.0	
10587-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 24 Mbps, 90pc duty cycle)	X	4.47	66.55	16.09	0.46	130.0	± 9.6 %
		Y	4.78	69.67	19.29		130.0	
		Z	4.68	67.27	17.10		130.0	
10588-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 36 Mbps, 90pc duty cycle)	X	4.50	66.61	16.11	0.46	130.0	± 9.6 %
		Y	4.83	69.78	19.33		130.0	
		Z	4.73	67.29	17.11		130.0	
10589-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 48 Mbps, 90pc duty cycle)	X	4.62	67.36	16.75	0.46	130.0	± 9.6 %
		Y	5.05	71.16	20.34		130.0	
		Z	4.84	68.14	17.81		130.0	
10590-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 54 Mbps, 90pc duty cycle)	X	4.40	66.35	15.90	0.46	130.0	± 9.6 %
		Y	4.70	69.39	19.04		130.0	
		Z	4.63	67.01	16.87		130.0	

10591-AAB	IEEE 802.11n (HT Mixed, 20MHz, MCS0, 90pc duty cycle)	X	4.77	66.84	16.58	0.46	130.0	± 9.6 %
		Y	5.01	69.51	19.56		130.0	
		Z	4.92	67.30	17.48		130.0	
10592-AAB	IEEE 802.11n (HT Mixed, 20MHz, MCS1, 90pc duty cycle)	X	4.89	67.12	16.70	0.46	130.0	± 9.6 %
		Y	5.17	69.92	19.71		130.0	
		Z	5.09	67.67	17.62		130.0	
10593-AAB	IEEE 802.11n (HT Mixed, 20MHz, MCS2, 90pc duty cycle)	X	4.81	67.00	16.57	0.46	130.0	± 9.6 %
		Y	5.10	69.86	19.61		130.0	
		Z	5.02	67.60	17.51		130.0	
10594-AAB	IEEE 802.11n (HT Mixed, 20MHz, MCS3, 90pc duty cycle)	X	4.86	67.16	16.72	0.46	130.0	± 9.6 %
		Y	5.16	70.08	19.80		130.0	
		Z	5.07	67.77	17.67		130.0	
10595-AAB	IEEE 802.11n (HT Mixed, 20MHz, MCS4, 90pc duty cycle)	X	4.83	67.15	16.64	0.46	130.0	± 9.6 %
		Y	5.15	70.14	19.75		130.0	
		Z	5.04	67.74	17.58		130.0	
10596-AAB	IEEE 802.11n (HT Mixed, 20MHz, MCS5, 90pc duty cycle)	X	4.76	67.11	16.63	0.46	130.0	± 9.6 %
		Y	5.09	70.21	19.81		130.0	
		Z	4.98	67.77	17.60		130.0	
10597-AAB	IEEE 802.11n (HT Mixed, 20MHz, MCS6, 90pc duty cycle)	X	4.71	66.99	16.49	0.46	130.0	± 9.6 %
		Y	5.04	70.07	19.66		130.0	
		Z	4.93	67.68	17.49		130.0	
10598-AAB	IEEE 802.11n (HT Mixed, 20MHz, MCS7, 90pc duty cycle)	X	4.70	67.18	16.73	0.46	130.0	± 9.6 %
		Y	5.05	70.51	20.07		130.0	
		Z	4.92	67.97	17.79		130.0	
10599-AAB	IEEE 802.11n (HT Mixed, 40MHz, MCS0, 90pc duty cycle)	X	5.45	67.31	16.83	0.46	130.0	± 9.6 %
		Y	5.92	70.28	19.80		130.0	
		Z	5.63	67.84	17.64		130.0	
10600-AAB	IEEE 802.11n (HT Mixed, 40MHz, MCS1, 90pc duty cycle)	X	5.54	67.64	16.98	0.46	130.0	± 9.6 %
		Y	6.41	71.93	20.55		130.0	
		Z	5.89	68.70	18.04		130.0	
10601-AAB	IEEE 802.11n (HT Mixed, 40MHz, MCS2, 90pc duty cycle)	X	5.45	67.44	16.89	0.46	130.0	± 9.6 %
		Y	5.92	70.44	19.87		130.0	
		Z	5.71	68.21	17.81		130.0	
10602-AAB	IEEE 802.11n (HT Mixed, 40MHz, MCS3, 90pc duty cycle)	X	5.54	67.48	16.83	0.46	130.0	± 9.6 %
		Y	6.08	70.62	19.84		130.0	
		Z	5.80	68.19	17.71		130.0	
10603-AAB	IEEE 802.11n (HT Mixed, 40MHz, MCS4, 90pc duty cycle)	X	5.61	67.75	17.10	0.46	130.0	± 9.6 %
		Y	6.25	71.29	20.32		130.0	
		Z	5.86	68.45	17.97		130.0	
10604-AAB	IEEE 802.11n (HT Mixed, 40MHz, MCS5, 90pc duty cycle)	X	5.49	67.39	16.90	0.46	130.0	± 9.6 %
		Y	6.11	70.89	20.12		130.0	
		Z	5.62	67.77	17.62		130.0	
10605-AAB	IEEE 802.11n (HT Mixed, 40MHz, MCS6, 90pc duty cycle)	X	5.54	67.52	16.97	0.46	130.0	± 9.6 %
		Y	6.18	71.09	20.21		130.0	
		Z	5.81	68.36	17.92		130.0	
10606-AAB	IEEE 802.11n (HT Mixed, 40MHz, MCS7, 90pc duty cycle)	X	5.33	67.01	16.57	0.46	130.0	± 9.6 %
		Y	5.76	69.87	19.47		130.0	
		Z	5.50	67.51	17.36		130.0	

ID	Description	Axis						
10607-AAB	IEEE 802.11ac WiFi (20MHz, MCS0, 90pc duty cycle)	X	4.61	66.18	16.22	0.46	130.0	± 9.6 %
		Y	4.99	69.45	19.52		130.0	
		Z	4.80	66.76	17.19		130.0	
10608-AAB	IEEE 802.11ac WiFi (20MHz, MCS1, 90pc duty cycle)	X	4.75	66.49	16.35	0.46	130.0	± 9.6 %
		Y	5.19	69.93	19.71		130.0	
		Z	5.00	67.21	17.36		130.0	
10609-AAB	IEEE 802.11ac WiFi (20MHz, MCS2, 90pc duty cycle)	X	4.65	66.34	16.19	0.46	130.0	± 9.6 %
		Y	5.10	69.85	19.59		130.0	
		Z	4.89	67.08	17.22		130.0	
10610-AAB	IEEE 802.11ac WiFi (20MHz, MCS3, 90pc duty cycle)	X	4.69	66.48	16.34	0.46	130.0	± 9.6 %
		Y	5.16	70.05	19.78		130.0	
		Z	4.95	67.26	17.39		130.0	
10611-AAB	IEEE 802.11ac WiFi (20MHz, MCS4, 90pc duty cycle)	X	4.61	66.29	16.20	0.46	130.0	± 9.6 %
		Y	5.06	69.84	19.63		130.0	
		Z	4.86	67.06	17.24		130.0	
10612-AAB	IEEE 802.11ac WiFi (20MHz, MCS5, 90pc duty cycle)	X	4.60	66.41	16.24	0.46	130.0	± 9.6 %
		Y	5.10	70.22	19.79		130.0	
		Z	4.88	67.27	17.31		130.0	
10613-AAB	IEEE 802.11ac WiFi (20MHz, MCS6, 90pc duty cycle)	X	4.60	66.25	16.09	0.46	130.0	± 9.6 %
		Y	5.06	69.85	19.53		130.0	
		Z	4.88	67.13	17.18		130.0	
10614-AAB	IEEE 802.11ac WiFi (20MHz, MCS7, 90pc duty cycle)	X	4.56	66.43	16.31	0.46	130.0	± 9.6 %
		Y	5.06	70.34	19.95		130.0	
		Z	4.83	67.37	17.45		130.0	
10615-AAB	IEEE 802.11ac WiFi (20MHz, MCS8, 90pc duty cycle)	X	4.61	66.17	15.99	0.46	130.0	± 9.6 %
		Y	5.04	69.57	19.32		130.0	
		Z	4.86	66.85	16.99		130.0	
10616-AAB	IEEE 802.11ac WiFi (40MHz, MCS0, 90pc duty cycle)	X	5.25	66.49	16.40	0.46	130.0	± 9.6 %
		Y	5.64	69.19	19.26		130.0	
		Z	5.47	67.18	17.30		130.0	
10617-AAB	IEEE 802.11ac WiFi (40MHz, MCS1, 90pc duty cycle)	X	5.29	66.60	16.44	0.46	130.0	± 9.6 %
		Y	5.83	69.82	19.54		130.0	
		Z	5.57	67.45	17.40		130.0	
10618-AAB	IEEE 802.11ac WiFi (40MHz, MCS2, 90pc duty cycle)	X	5.20	66.66	16.48	0.46	130.0	± 9.6 %
		Y	5.70	69.84	19.59		130.0	
		Z	5.44	67.45	17.43		130.0	
10619-AAB	IEEE 802.11ac WiFi (40MHz, MCS3, 90pc duty cycle)	X	5.23	66.52	16.34	0.46	130.0	± 9.6 %
		Y	5.73	69.64	19.40		130.0	
		Z	5.46	67.24	17.25		130.0	
10620-AAB	IEEE 802.11ac WiFi (40MHz, MCS4, 90pc duty cycle)	X	5.29	66.51	16.38	0.46	130.0	± 9.6 %
		Y	5.75	69.42	19.33		130.0	
		Z	5.55	67.25	17.30		130.0	
10621-AAB	IEEE 802.11ac WiFi (40MHz, MCS5, 90pc duty cycle)	X	5.30	66.59	16.54	0.46	130.0	± 9.6 %
		Y	5.69	69.32	19.43		130.0	
		Z	5.53	67.33	17.46		130.0	
10622-AAB	IEEE 802.11ac WiFi (40MHz, MCS6, 90pc duty cycle)	X	5.29	66.68	16.58	0.46	130.0	± 9.6 %
		Y	5.69	69.47	19.50		130.0	
		Z	5.59	67.66	17.62		130.0	

10623-AAB	IEEE 802.11ac WiFi (40MHz, MCS7, 90pc duty cycle)	X	5.18	66.28	16.25	0.46	130.0	± 9.6 %
		Y	5.50	68.71	18.98		130.0	
		Z	5.42	67.02	17.18		130.0	
10624-AAB	IEEE 802.11ac WiFi (40MHz, MCS8, 90pc duty cycle)	X	5.38	66.52	16.43	0.46	130.0	± 9.6 %
		Y	5.76	69.09	19.20		130.0	
		Z	5.62	67.23	17.34		130.0	
10625-AAB	IEEE 802.11ac WiFi (40MHz, MCS9, 90pc duty cycle)	X	5.46	66.64	16.55	0.46	130.0	± 9.6 %
		Y	5.89	69.35	19.38		130.0	
		Z	6.16	68.72	18.11		130.0	
10626-AAB	IEEE 802.11ac WiFi (80MHz, MCS0, 90pc duty cycle)	X	5.59	66.53	16.36	0.46	130.0	± 9.6 %
		Y	5.90	68.67	18.87		130.0	
		Z	5.75	67.11	17.17		130.0	
10627-AAB	IEEE 802.11ac WiFi (80MHz, MCS1, 90pc duty cycle)	X	5.80	67.11	16.63	0.46	130.0	± 9.6 %
		Y	6.49	70.42	19.67		130.0	
		Z	6.08	67.95	17.53		130.0	
10628-AAB	IEEE 802.11ac WiFi (80MHz, MCS2, 90pc duty cycle)	X	5.58	66.53	16.27	0.46	130.0	± 9.6 %
		Y	5.94	68.81	18.83		130.0	
		Z	5.81	67.30	17.16		130.0	
10629-AAB	IEEE 802.11ac WiFi (80MHz, MCS3, 90pc duty cycle)	X	5.68	66.71	16.36	0.46	130.0	± 9.6 %
		Y	6.19	69.43	19.12		130.0	
		Z	5.91	67.42	17.20		130.0	
10630-AAB	IEEE 802.11ac WiFi (80MHz, MCS4, 90pc duty cycle)	X	5.90	67.55	16.79	0.46	130.0	± 9.6 %
		Y	7.22	72.66	20.63		130.0	
		Z	6.74	70.04	18.48		130.0	
10631-AAB	IEEE 802.11ac WiFi (80MHz, MCS5, 90pc duty cycle)	X	5.87	67.55	16.96	0.46	130.0	± 9.6 %
		Y	6.54	70.88	20.03		130.0	
		Z	6.36	69.06	18.21		130.0	
10632-AAB	IEEE 802.11ac WiFi (80MHz, MCS6, 90pc duty cycle)	X	5.80	67.25	16.83	0.46	130.0	± 9.6 %
		Y	6.57	70.92	20.07		130.0	
		Z	6.03	67.97	17.69		130.0	
10633-AAB	IEEE 802.11ac WiFi (80MHz, MCS7, 90pc duty cycle)	X	5.61	66.60	16.34	0.46	130.0	± 9.6 %
		Y	5.98	68.94	18.93		130.0	
		Z	5.86	67.41	17.23		130.0	
10634-AAB	IEEE 802.11ac WiFi (80MHz, MCS8, 90pc duty cycle)	X	5.63	66.77	16.47	0.46	130.0	± 9.6 %
		Y	5.95	68.96	19.00		130.0	
		Z	5.84	67.43	17.31		130.0	
10635-AAB	IEEE 802.11ac WiFi (80MHz, MCS9, 90pc duty cycle)	X	5.50	66.10	15.88	0.46	130.0	± 9.6 %
		Y	5.74	67.89	18.17		130.0	
		Z	5.71	66.70	16.67		130.0	
10636-AAC	IEEE 802.11ac WiFi (160MHz, MCS0, 90pc duty cycle)	X	6.02	66.89	16.46	0.46	130.0	± 9.6 %
		Y	6.37	68.91	18.82		130.0	
		Z	6.19	67.50	17.24		130.0	
10637-AAC	IEEE 802.11ac WiFi (160MHz, MCS1, 90pc duty cycle)	X	6.13	67.18	16.59	0.46	130.0	± 9.6 %
		Y	6.68	69.80	19.23		130.0	
		Z	6.40	68.03	17.48		130.0	
10638-AAC	IEEE 802.11ac WiFi (160MHz, MCS2, 90pc duty cycle)	X	6.16	67.25	16.61	0.46	130.0	± 9.6 %
		Y	6.73	69.91	19.26		130.0	
		Z	6.40	68.01	17.45		130.0	

10639-AAC	IEEE 802.11ac WiFi (160MHz, MCS3, 90pc duty cycle)	X	6.12	67.12	16.58	0.46	130.0	± 9.6 %
		Y	6.51	69.26	18.99		130.0	
		Z	6.34	67.85	17.41		130.0	
10640-AAC	IEEE 802.11ac WiFi (160MHz, MCS4, 90pc duty cycle)	X	6.08	67.03	16.48	0.46	130.0	± 9.6 %
		Y	6.51	69.27	18.93		130.0	
		Z	6.37	67.91	17.39		130.0	
10641-AAC	IEEE 802.11ac WiFi (160MHz, MCS5, 90pc duty cycle)	X	6.18	67.11	16.54	0.46	130.0	± 9.6 %
		Y	6.71	69.64	19.12		130.0	
		Z	6.38	67.72	17.31		130.0	
10642-AAC	IEEE 802.11ac WiFi (160MHz, MCS6, 90pc duty cycle)	X	6.19	67.27	16.78	0.46	130.0	± 9.6 %
		Y	6.61	69.48	19.23		130.0	
		Z	6.42	67.99	17.61		130.0	
10643-AAC	IEEE 802.11ac WiFi (160MHz, MCS7, 90pc duty cycle)	X	6.05	67.00	16.54	0.46	130.0	± 9.6 %
		Y	6.48	69.27	19.02		130.0	
		Z	6.27	67.72	17.38		130.0	
10644-AAC	IEEE 802.11ac WiFi (160MHz, MCS8, 90pc duty cycle)	X	6.10	67.17	16.65	0.46	130.0	± 9.6 %
		Y	6.52	69.39	19.10		130.0	
		Z	6.49	68.39	17.73		130.0	
10645-AAC	IEEE 802.11ac WiFi (160MHz, MCS9, 90pc duty cycle)	X	6.23	67.23	16.64	0.46	130.0	± 9.6 %
		Y	8.13	73.48	20.97		130.0	
		Z	7.16	69.86	18.40		130.0	
10646-AAF	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, QPSK, UL Subframe=2,7)	X	14.37	107.54	38.67	9.30	60.0	± 9.6 %
		Y	100.00	173.43	59.73		60.0	
		Z	41.71	138.31	48.26		60.0	
10647-AAF	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK, UL Subframe=2,7)	X	11.83	103.39	37.49	9.30	60.0	± 9.6 %
		Y	100.00	175.64	60.71		60.0	
		Z	31.40	131.83	46.69		60.0	
10648-AAA	CDMA2000 (1x Advanced)	X	0.78	64.45	11.55	0.00	150.0	± 9.6 %
		Y	100.00	252.99	79.22		150.0	
		Z	100.00	133.79	33.09		150.0	
10652-AAD	LTE-TDD (OFDMA, 5 MHz, E-TM 3.1, Clipping 44%)	X	3.52	66.54	16.16	2.23	80.0	± 9.6 %
		Y	8.14	87.06	27.02		80.0	
		Z	3.95	69.55	18.84		80.0	
10653-AAD	LTE-TDD (OFDMA, 10 MHz, E-TM 3.1, Clipping 44%)	X	4.09	66.02	16.48	2.23	80.0	± 9.6 %
		Y	5.06	73.38	22.02		80.0	
		Z	4.25	67.48	18.20		80.0	
10654-AAD	LTE-TDD (OFDMA, 15 MHz, E-TM 3.1, Clipping 44%)	X	4.12	65.68	16.52	2.23	80.0	± 9.6 %
		Y	4.73	71.45	21.37		80.0	
		Z	4.18	66.90	18.08		80.0	
10655-AAE	LTE-TDD (OFDMA, 20 MHz, E-TM 3.1, Clipping 44%)	X	4.19	65.62	16.57	2.23	80.0	± 9.6 %
		Y	4.70	70.76	21.10		80.0	
		Z	4.23	66.83	18.08		80.0	
10658-AAA	Pulse Waveform (200Hz, 10%)	X	41.21	102.79	26.07	10.00	50.0	± 9.6 %
		Y	100.00	106.36	23.50		50.0	
		Z	100.00	111.02	25.76		50.0	
10659-AAA	Pulse Waveform (200Hz, 20%)	X	100.00	116.17	28.29	6.99	60.0	± 9.6 %
		Y	100.00	106.95	22.38		60.0	
		Z	100.00	114.34	26.00		60.0	

10660-AAA	Pulse Waveform (200Hz, 40%)	X	100.00	122.06	29.37	3.98	80.0	± 9.6 %
		Y	49.59	60.00	30.00		80.0	
		Z	100.00	138.13	34.35		80.0	
10661-AAA	Pulse Waveform (200Hz, 60%)	X	100.00	132.93	32.77	2.22	100.0	± 9.6 %
		Y	0.08	60.00	30.00		100.0	
		Z	100.00	150.00	96.42		100.0	
10662-AAA	Pulse Waveform (200Hz, 80%)	X	100.00	153.73	39.90	0.97	120.0	± 9.6 %
		Y	0.05	60.00	30.00		120.0	
		Z	0.04	60.00	50.00		120.0	
10670-AAA	Bluetooth Low Energy	X	100.00	134.60	33.73	2.19	100.0	± 9.6 %
		Y	0.10	60.00	30.00		100.0	
		Z	100.00	250.27	77.09		100.0	

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

ilac-MRA

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S 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

Accreditation No.: **SCS 0108**

Client   **Huawei-SZ (Auden)**

Certificate No: **EX3-7489_Feb19**

CALIBRATION CERTIFICATE

Object	EX3DV4 - SN:7489
Calibration procedure(s)	QA CAL-01.v9, QA CAL-14.v5, QA CAL-23.v5, QA CAL-25.v7 Calibration procedure for dosimetric E-field probes
Calibration date:	February 28, 2019

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
DAE4	SN: 660	19-Dec-18 (No. DAE4-660_Dec18)	Dec-19
Reference Probe ES3DV2	SN: 3013	31-Dec-18 (No. ES3-3013_Dec18)	Dec-19
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-18)	In house check: Oct-19

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

Issued: March 2, 2019

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.

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

Accredited by the Swiss Accreditation Service (SAS)   Accreditation No.: **SCS 0108**
The Swiss Accreditation Service is one of the signatories to the EA
Multilateral Agreement for the recognition of calibration certificates

Glossary:

TSL	tissue simulating liquid
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).

DASY/EASY - Parameters of Probe: EX3DV4 - SN:7489

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm $(\mu V/(V/m)^2)^A$	0.49	0.43	0.49	± 10.1 %
DCP $(mV)^B$	102.4	98.9	102.3	

Calibration Results for Modulation Response

UID	Communication System Name		A dB	B dB√µV	C	D dB	VR mV	Max dev.	Max Unc^E (k=2)
0	CW	X	0.00	0.00	1.00	0.00	187.9	± 3.5 %	± 4.7 %
		Y	0.00	0.00	1.00		174.1		
		Z	0.00	0.00	1.00		186.6		
10352-AAA	Pulse Waveform (200Hz, 10%)	X	15.00	89.43	20.39	10.00	60.0	± 3.1 %	± 9.6 %
		Y	1.60	61.84	8.17		60.0		
		Z	15.00	88.70	20.00		60.0		
10353-AAA	Pulse Waveform (200Hz, 20%)	X	15.00	94.64	21.85	6.99	80.0	± 2.1 %	± 9.6 %
		Y	0.96	61.34	6.60		80.0		
		Z	15.00	92.58	20.83		80.0		
10354-AAA	Pulse Waveform (200Hz, 40%)	X	15.00	117.48	31.39	3.98	95.0	± 1.3 %	± 9.6 %
		Y	0.41	60.00	4.32		95.0		
		Z	15.00	100.65	23.36		95.0		
10355-AAA	Pulse Waveform (200Hz, 60%)	X	15.00	150.10	44.27	2.22	120.0	± 1.6 %	± 9.6 %
		Y	0.85	161.06	9.23		120.0		
		Z	15.00	114.15	28.19		120.0		
10387-AAA	QPSK Waveform, 1 MHz	X	0.49	60.00	6.90	0.00	150.0	± 3.5 %	± 9.6 %
		Y	0.42	60.00	4.36		150.0		
		Z	0.77	63.38	9.78		150.0		
10388-AAA	QPSK Waveform, 10 MHz	X	2.32	69.87	16.97	0.00	150.0	± 1.5 %	± 9.6 %
		Y	1.72	65.14	13.80		150.0		
		Z	2.49	70.50	17.13		150.0		
10396-AAA	64-QAM Waveform, 100 kHz	X	2.36	67.72	17.86	3.01	150.0	± 3.9 %	± 9.6 %
		Y	1.68	64.77	17.20		150.0		
		Z	3.15	72.11	19.63		150.0		
10399-AAA	64-QAM Waveform, 40 MHz	X	3.52	67.70	16.29	0.00	150.0	± 2.8 %	± 9.6 %
		Y	3.17	65.85	14.91		150.0		
		Z	3.54	67.64	16.20		150.0		
10414-AAA	WLAN CCDF, 64-QAM, 40MHz	X	4.75	65.91	15.83	0.00	150.0	± 4.2 %	± 9.6 %
		Y	4.49	65.10	15.16		150.0		
		Z	4.81	65.80	15.73		150.0		

Note: For details on UID parameters see Appendix

> 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:7489

Sensor Model Parameters

	C1 fF	C2 fF	α V^{-1}	T1 ms.V^{-2}	T2 ms.V^{-1}	T3 ms	T4 V^{-2}	T5 V^{-1}	T6
X	34.8	260.91	35.92	8.90	0.05	5.10	0.00	0.34	1.00
Y	30.1	234.21	37.97	3.17	0.09	5.05	0.00	0.01	1.02
Z	41.6	308.88	35.35	10.73	0.08	5.09	0.88	0.32	1.01

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	8.8
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