

10112-CAF	LTE-FDD (SC-FDMA, 100% RB, 10 MHz, 64-QAM)	X	2.74	67.47	15.80	0.00	150.0	± 9.6 %
		Y	3.01	68.49	16.64		150.0	
		Z	2.63	67.46	15.47		150.0	
10113-CAF	LTE-FDD (SC-FDMA, 100% RB, 5 MHz, 64-QAM)	X	2.52	69.06	16.02	0.00	150.0	± 9.6 %
		Y	2.90	70.76	17.42		150.0	
		Z	2.40	69.05	15.53		150.0	
10114-CAC	IEEE 802.11n (HT Greenfield, 13.5 Mbps, BPSK)	X	4.85	67.10	16.54	0.00	150.0	± 9.6 %
		Y	5.01	67.40	16.77		150.0	
		Z	4.69	67.08	16.26		150.0	
10115-CAC	IEEE 802.11n (HT Greenfield, 81 Mbps, 16-QAM)	X	5.09	67.17	16.57	0.00	150.0	± 9.6 %
		Y	5.27	67.46	16.79		150.0	
		Z	4.91	67.15	16.27		150.0	
10116-CAC	IEEE 802.11n (HT Greenfield, 135 Mbps, 64-QAM)	X	4.92	67.25	16.54	0.00	150.0	± 9.6 %
		Y	5.11	67.62	16.80		150.0	
		Z	4.75	67.24	16.26		150.0	
10117-CAC	IEEE 802.11n (HT Mixed, 13.5 Mbps, BPSK)	X	4.82	66.96	16.49	0.00	150.0	± 9.6 %
		Y	5.00	67.35	16.76		150.0	
		Z	4.67	66.99	16.23		150.0	
10118-CAC	IEEE 802.11n (HT Mixed, 81 Mbps, 16-QAM)	X	5.18	67.44	16.71	0.00	150.0	± 9.6 %
		Y	5.35	67.70	16.92		150.0	
		Z	4.97	67.29	16.35		150.0	
10119-CAC	IEEE 802.11n (HT Mixed, 135 Mbps, 64-QAM)	X	4.93	67.30	16.57	0.00	150.0	± 9.6 %
		Y	5.10	67.61	16.81		150.0	
		Z	4.76	67.27	16.28		150.0	
10140-CAE	LTE-FDD (SC-FDMA, 100% RB, 15 MHz, 16-QAM)	X	3.09	67.34	15.89	0.00	150.0	± 9.6 %
		Y	3.34	68.25	16.56		150.0	
		Z	2.97	67.29	15.60		150.0	
10141-CAE	LTE-FDD (SC-FDMA, 100% RB, 15 MHz, 64-QAM)	X	3.22	67.55	16.12	0.00	150.0	± 9.6 %
		Y	3.47	68.39	16.75		150.0	
		Z	3.11	67.58	15.86		150.0	
10142-CAE	LTE-FDD (SC-FDMA, 100% RB, 3 MHz, QPSK)	X	1.65	68.54	14.75	0.00	150.0	± 9.6 %
		Y	2.23	72.50	17.47		150.0	
		Z	1.45	67.51	13.76		150.0	
10143-CAE	LTE-FDD (SC-FDMA, 100% RB, 3 MHz, 16-QAM)	X	2.04	68.18	14.12	0.00	150.0	± 9.6 %
		Y	2.77	72.39	17.05		150.0	
		Z	1.79	67.15	12.96		150.0	
10144-CAE	LTE-FDD (SC-FDMA, 100% RB, 3 MHz, 64-QAM)	X	1.68	64.77	11.84	0.00	150.0	± 9.6 %
		Y	2.17	67.69	14.28		150.0	
		Z	1.45	63.78	10.64		150.0	
10145-CAF	LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, QPSK)	X	0.57	60.00	5.87	0.00	150.0	± 9.6 %
		Y	0.86	62.73	9.11		150.0	
		Z	0.48	60.00	5.03		150.0	
10146-CAF	LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, 16-QAM)	X	0.85	60.00	5.89	0.00	150.0	± 9.6 %
		Y	1.15	61.47	7.56		150.0	
		Z	0.69	60.00	4.71		150.0	
10147-CAF	LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, 64-QAM)	X	0.86	60.00	5.95	0.00	150.0	± 9.6 %
		Y	1.22	62.00	7.94		150.0	
		Z	0.70	60.00	4.76		150.0	

10149-CAE	LTE-FDD (SC-FDMA, 50% RB, 20 MHz, 16-QAM)	X	2.62	67.46	15.77	0.00	150.0	± 9.6 %
		Y	2.89	68.60	16.66		150.0	
		Z	2.51	67.39	15.41		150.0	
10150-CAE	LTE-FDD (SC-FDMA, 50% RB, 20 MHz, 64-QAM)	X	2.75	67.54	15.86	0.00	150.0	± 9.6 %
		Y	3.02	68.57	16.69		150.0	
		Z	2.64	67.55	15.53		150.0	
10151-CAF	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, QPSK)	X	6.60	79.47	22.11	3.98	65.0	± 9.6 %
		Y	6.59	78.37	21.43		65.0	
		Z	5.32	77.23	21.01		65.0	
10152-CAF	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 16-QAM)	X	5.33	73.23	19.77	3.98	65.0	± 9.6 %
		Y	5.58	73.27	19.68		65.0	
		Z	4.46	71.33	18.57		65.0	
10153-CAF	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 64-QAM)	X	5.80	74.65	20.79	3.98	65.0	± 9.6 %
		Y	6.01	74.50	20.60		65.0	
		Z	4.89	72.87	19.68		65.0	
10154-CAF	LTE-FDD (SC-FDMA, 50% RB, 10 MHz, QPSK)	X	1.99	69.55	16.25	0.00	150.0	± 9.6 %
		Y	2.44	72.19	18.04		150.0	
		Z	1.82	68.87	15.60		150.0	
10155-CAF	LTE-FDD (SC-FDMA, 50% RB, 10 MHz, 16-QAM)	X	2.38	68.92	15.90	0.00	150.0	± 9.6 %
		Y	2.75	70.72	17.36		150.0	
		Z	2.27	68.91	15.43		150.0	
10156-CAF	LTE-FDD (SC-FDMA, 50% RB, 5 MHz, QPSK)	X	1.40	67.46	13.55	0.00	150.0	± 9.6 %
		Y	2.14	73.17	17.29		150.0	
		Z	1.18	66.04	12.26		150.0	
10157-CAF	LTE-FDD (SC-FDMA, 50% RB, 5 MHz, 16-QAM)	X	1.42	64.20	10.93	0.00	150.0	± 9.6 %
		Y	2.05	68.56	14.27		150.0	
		Z	1.16	62.82	9.46		150.0	
10158-CAF	LTE-FDD (SC-FDMA, 50% RB, 10 MHz, 64-QAM)	X	2.53	69.18	16.09	0.00	150.0	± 9.6 %
		Y	2.91	70.88	17.49		150.0	
		Z	2.41	69.20	15.62		150.0	
10159-CAF	LTE-FDD (SC-FDMA, 50% RB, 5 MHz, 64-QAM)	X	1.47	64.37	11.06	0.00	150.0	± 9.6 %
		Y	2.17	69.13	14.58		150.0	
		Z	1.20	62.92	9.54		150.0	
10160-CAE	LTE-FDD (SC-FDMA, 50% RB, 15 MHz, QPSK)	X	2.54	69.31	16.47	0.00	150.0	± 9.6 %
		Y	2.87	70.85	17.58		150.0	
		Z	2.32	68.65	15.89		150.0	
10161-CAE	LTE-FDD (SC-FDMA, 50% RB, 15 MHz, 16-QAM)	X	2.63	67.51	15.68	0.00	150.0	± 9.6 %
		Y	2.92	68.64	16.63		150.0	
		Z	2.51	67.49	15.29		150.0	
10162-CAE	LTE-FDD (SC-FDMA, 50% RB, 15 MHz, 64-QAM)	X	2.75	67.78	15.85	0.00	150.0	± 9.6 %
		Y	3.03	68.85	16.76		150.0	
		Z	2.62	67.80	15.48		150.0	
10166-CAF	LTE-FDD (SC-FDMA, 50% RB, 1.4 MHz, QPSK)	X	3.17	69.88	19.75	3.01	150.0	± 9.6 %
		Y	3.43	70.48	19.76		150.0	
		Z	2.81	68.26	18.43		150.0	
10167-CAF	LTE-FDD (SC-FDMA, 50% RB, 1.4 MHz, 16-QAM)	X	3.81	72.89	20.15	3.01	150.0	± 9.6 %
		Y	4.38	74.23	20.42		150.0	
		Z	3.25	70.82	18.68		150.0	

10168-CAF	LTE-FDD (SC-FDMA, 50% RB, 1.4 MHz, 64-QAM)	X	4.50	76.69	22.26	3.01	150.0	± 9.6 %
		Y	5.20	77.95	22.40		150.0	
		Z	3.82	74.38	20.74		150.0	
10169-CAE	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, QPSK)	X	2.60	68.07	18.92	3.01	150.0	± 9.6 %
		Y	2.86	69.54	19.35		150.0	
		Z	2.42	66.98	17.74		150.0	
10170-CAE	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM)	X	3.49	74.33	21.57	3.01	150.0	± 9.6 %
		Y	4.36	77.73	22.58		150.0	
		Z	3.17	72.75	20.22		150.0	
10171-AAE	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, 64-QAM)	X	2.78	69.40	18.22	3.01	150.0	± 9.6 %
		Y	3.30	71.79	18.96		150.0	
		Z	2.51	68.00	16.90		150.0	
10172-CAF	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK)	X	5.91	86.87	27.62	6.02	65.0	± 9.6 %
		Y	6.32	86.01	26.16		65.0	
		Z	3.09	75.39	22.58		65.0	
10173-CAF	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM)	X	13.09	98.55	29.49	6.02	65.0	± 9.6 %
		Y	12.30	93.80	26.59		65.0	
		Z	5.66	84.54	24.14		65.0	
10174-CAF	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 64-QAM)	X	8.21	89.21	25.92	6.02	65.0	± 9.6 %
		Y	7.97	85.68	23.40		65.0	
		Z	3.39	75.61	20.33		65.0	
10175-CAF	LTE-FDD (SC-FDMA, 1 RB, 10 MHz, QPSK)	X	2.56	67.73	18.64	3.01	150.0	± 9.6 %
		Y	2.82	69.16	19.06		150.0	
		Z	2.39	66.65	17.46		150.0	
10176-CAF	LTE-FDD (SC-FDMA, 1 RB, 10 MHz, 16-QAM)	X	3.50	74.35	21.59	3.01	150.0	± 9.6 %
		Y	4.37	77.76	22.59		150.0	
		Z	3.17	72.78	20.23		150.0	
10177-CAH	LTE-FDD (SC-FDMA, 1 RB, 5 MHz, QPSK)	X	2.58	67.87	18.72	3.01	150.0	± 9.6 %
		Y	2.85	69.33	19.15		150.0	
		Z	2.40	66.77	17.53		150.0	
10178-CAF	LTE-FDD (SC-FDMA, 1 RB, 5 MHz, 16-QAM)	X	3.47	74.17	21.48	3.01	150.0	± 9.6 %
		Y	4.32	77.50	22.46		150.0	
		Z	3.15	72.62	20.14		150.0	
10179-CAF	LTE-FDD (SC-FDMA, 1 RB, 10 MHz, 64-QAM)	X	3.09	71.68	19.74	3.01	150.0	± 9.6 %
		Y	3.76	74.51	20.58		150.0	
		Z	2.79	70.11	18.36		150.0	
10180-CAF	LTE-FDD (SC-FDMA, 1 RB, 5 MHz, 64-QAM)	X	2.78	69.36	18.19	3.01	150.0	± 9.6 %
		Y	3.29	71.72	18.91		150.0	
		Z	2.51	67.97	16.87		150.0	
10181-CAE	LTE-FDD (SC-FDMA, 1 RB, 15 MHz, QPSK)	X	2.58	67.85	18.72	3.01	150.0	± 9.6 %
		Y	2.84	69.31	19.15		150.0	
		Z	2.40	66.75	17.53		150.0	
10182-CAE	LTE-FDD (SC-FDMA, 1 RB, 15 MHz, 16-QAM)	X	3.46	74.14	21.47	3.01	150.0	± 9.6 %
		Y	4.31	77.47	22.45		150.0	
		Z	3.15	72.59	20.13		150.0	
10183-AAD	LTE-FDD (SC-FDMA, 1 RB, 15 MHz, 64-QAM)	X	2.77	69.34	18.18	3.01	150.0	± 9.6 %
		Y	3.28	71.69	18.90		150.0	
		Z	2.51	67.95	16.86		150.0	

10184-CAE	LTE-FDD (SC-FDMA, 1 RB, 3 MHz, QPSK)	X	2.59	67.89	18.74	3.01	150.0	± 9.6 %
		Y	2.85	69.35	19.17		150.0	
		Z	2.40	66.79	17.55		150.0	
10185-CAE	LTE-FDD (SC-FDMA, 1 RB, 3 MHz, 16-QAM)	X	3.48	74.22	21.51	3.01	150.0	± 9.6 %
		Y	4.33	77.57	22.50		150.0	
		Z	3.16	72.68	20.17		150.0	
10186-AAE	LTE-FDD (SC-FDMA, 1 RB, 3 MHz, 64-QAM)	X	2.79	69.40	18.21	3.01	150.0	± 9.6 %
		Y	3.30	71.77	18.93		150.0	
		Z	2.52	68.00	16.89		150.0	
10187-CAF	LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK)	X	2.60	67.99	18.84	3.01	150.0	± 9.6 %
		Y	2.87	69.44	19.26		150.0	
		Z	2.42	66.90	17.66		150.0	
10188-CAF	LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, 16-QAM)	X	3.60	74.96	21.95	3.01	150.0	± 9.6 %
		Y	4.53	78.50	22.98		150.0	
		Z	3.27	73.38	20.59		150.0	
10189-AAF	LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, 64-QAM)	X	2.85	69.84	18.51	3.01	150.0	± 9.6 %
		Y	3.39	72.31	19.27		150.0	
		Z	2.57	68.39	17.17		150.0	
10193-CAC	IEEE 802.11n (HT Greenfield, 6.5 Mbps, BPSK)	X	4.22	66.74	16.16	0.00	150.0	± 9.6 %
		Y	4.41	67.05	16.50		150.0	
		Z	4.10	66.98	15.94		150.0	
10194-CAC	IEEE 802.11n (HT Greenfield, 39 Mbps, 16-QAM)	X	4.36	66.95	16.30	0.00	150.0	± 9.6 %
		Y	4.56	67.31	16.63		150.0	
		Z	4.22	67.13	16.07		150.0	
10195-CAC	IEEE 802.11n (HT Greenfield, 65 Mbps, 64-QAM)	X	4.39	66.96	16.31	0.00	150.0	± 9.6 %
		Y	4.60	67.33	16.65		150.0	
		Z	4.24	67.10	16.06		150.0	
10196-CAC	IEEE 802.11n (HT Mixed, 6.5 Mbps, BPSK)	X	4.20	66.72	16.14	0.00	150.0	± 9.6 %
		Y	4.40	67.07	16.50		150.0	
		Z	4.08	66.92	15.90		150.0	
10197-CAC	IEEE 802.11n (HT Mixed, 39 Mbps, 16-QAM)	X	4.36	66.95	16.31	0.00	150.0	± 9.6 %
		Y	4.57	67.32	16.64		150.0	
		Z	4.22	67.12	16.07		150.0	
10198-CAC	IEEE 802.11n (HT Mixed, 65 Mbps, 64-QAM)	X	4.38	66.95	16.31	0.00	150.0	± 9.6 %
		Y	4.60	67.33	16.65		150.0	
		Z	4.23	67.09	16.06		150.0	
10219-CAC	IEEE 802.11n (HT Mixed, 7.2 Mbps, BPSK)	X	4.16	66.77	16.11	0.00	150.0	± 9.6 %
		Y	4.36	67.12	16.48		150.0	
		Z	4.04	67.00	15.89		150.0	
10220-CAC	IEEE 802.11n (HT Mixed, 43.3 Mbps, 16-QAM)	X	4.36	66.91	16.29	0.00	150.0	± 9.6 %
		Y	4.56	67.28	16.62		150.0	
		Z	4.21	67.08	16.06		150.0	
10221-CAC	IEEE 802.11n (HT Mixed, 72.2 Mbps, 64-QAM)	X	4.40	66.90	16.30	0.00	150.0	± 9.6 %
		Y	4.61	67.26	16.63		150.0	
		Z	4.25	67.06	16.06		150.0	
10222-CAC	IEEE 802.11n (HT Mixed, 15 Mbps, BPSK)	X	4.80	66.97	16.48	0.00	150.0	± 9.6 %
		Y	4.97	67.32	16.74		150.0	
		Z	4.65	66.99	16.22		150.0	

10223-CAC	IEEE 802.11n (HT Mixed, 90 Mbps, 16-QAM)	X	5.04	67.12	16.56	0.00	150.0	± 9.6 %
		Y	5.26	67.55	16.86		150.0	
		Z	4.85	67.05	16.24		150.0	
10224-CAC	IEEE 802.11n (HT Mixed, 150 Mbps, 64-QAM)	X	4.84	67.10	16.47	0.00	150.0	± 9.6 %
		Y	5.01	67.44	16.72		150.0	
		Z	4.69	67.14	16.22		150.0	
10225-CAB	UMTS-FDD (HSPA+)	X	2.48	66.09	14.60	0.00	150.0	± 9.6 %
		Y	2.74	67.15	15.74		150.0	
		Z	2.35	66.01	13.97		150.0	
10226-CAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 16-QAM)	X	14.63	100.77	30.27	6.02	65.0	± 9.6 %
		Y	13.50	95.53	27.22		65.0	
		Z	6.14	86.10	24.79		65.0	
10227-CAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 64-QAM)	X	14.28	98.83	28.99	6.02	65.0	± 9.6 %
		Y	12.07	92.18	25.50		65.0	
		Z	5.79	84.16	23.43		65.0	
10228-CAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK)	X	7.72	92.84	29.85	6.02	65.0	± 9.6 %
		Y	8.40	91.70	28.18		65.0	
		Z	3.85	80.05	24.56		65.0	
10229-CAC	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 16-QAM)	X	13.19	98.68	29.54	6.02	65.0	± 9.6 %
		Y	12.39	93.91	26.64		65.0	
		Z	5.71	84.67	24.19		65.0	
10230-CAC	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 64-QAM)	X	12.76	96.74	28.27	6.02	65.0	± 9.6 %
		Y	11.09	90.72	24.97		65.0	
		Z	5.35	82.75	22.86		65.0	
10231-CAC	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, QPSK)	X	7.26	91.45	29.29	6.02	65.0	± 9.6 %
		Y	7.93	90.49	27.69		65.0	
		Z	3.69	79.12	24.10		65.0	
10232-CAE	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 16-QAM)	X	13.17	98.65	29.53	6.02	65.0	± 9.6 %
		Y	12.38	93.90	26.63		65.0	
		Z	5.70	84.65	24.18		65.0	
10233-CAE	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 64-QAM)	X	12.71	96.69	28.26	6.02	65.0	± 9.6 %
		Y	11.07	90.70	24.96		65.0	
		Z	5.33	82.71	22.85		65.0	
10234-CAE	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, QPSK)	X	6.94	90.39	28.79	6.02	65.0	± 9.6 %
		Y	7.56	89.42	27.20		65.0	
		Z	3.57	78.42	23.69		65.0	
10235-CAE	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 16-QAM)	X	13.20	98.72	29.56	6.02	65.0	± 9.6 %
		Y	12.41	93.95	26.65		65.0	
		Z	5.70	84.66	24.19		65.0	
10236-CAE	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 64-QAM)	X	12.89	96.88	28.31	6.02	65.0	± 9.6 %
		Y	11.19	90.84	25.00		65.0	
		Z	5.38	82.84	22.89		65.0	
10237-CAE	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, QPSK)	X	7.27	91.51	29.31	6.02	65.0	± 9.6 %
		Y	7.94	90.56	27.72		65.0	
		Z	3.68	79.11	24.10		65.0	
10238-CAE	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 16-QAM)	X	13.14	98.63	29.53	6.02	65.0	± 9.6 %
		Y	12.35	93.88	26.62		65.0	
		Z	5.68	84.62	24.17		65.0	

10239-CAE	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 64-QAM)	X	12.66	96.64	28.25	6.02	65.0	± 9.6 %
		Y	11.03	90.67	24.95		65.0	
		Z	5.31	82.67	22.84		65.0	
10240-CAE	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, QPSK)	X	7.25	91.49	29.30	6.02	65.0	± 9.6 %
		Y	7.92	90.52	27.70		65.0	
		Z	3.67	79.11	24.10		65.0	
10241-CAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 16-QAM)	X	8.07	83.66	26.60	6.98	65.0	± 9.6 %
		Y	8.23	82.37	25.42		65.0	
		Z	6.15	79.65	24.57		65.0	
10242-CAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 64-QAM)	X	7.13	81.10	25.49	6.98	65.0	± 9.6 %
		Y	7.19	79.66	24.27		65.0	
		Z	5.16	76.21	23.08		65.0	
10243-CAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, QPSK)	X	5.70	77.08	24.75	6.98	65.0	± 9.6 %
		Y	5.79	76.18	23.77		65.0	
		Z	4.35	72.84	22.46		65.0	
10244-CAC	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 16-QAM)	X	3.90	69.73	14.28	3.98	65.0	± 9.6 %
		Y	4.14	69.75	14.43		65.0	
		Z	2.32	64.19	10.29		65.0	
10245-CAC	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 64-QAM)	X	3.76	68.99	13.88	3.98	65.0	± 9.6 %
		Y	4.05	69.22	14.14		65.0	
		Z	2.29	63.87	10.07		65.0	
10246-CAC	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, QPSK)	X	3.54	71.57	15.31	3.98	65.0	± 9.6 %
		Y	4.20	73.49	16.58		65.0	
		Z	2.19	66.68	12.21		65.0	
10247-CAE	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 16-QAM)	X	3.93	70.34	15.60	3.98	65.0	± 9.6 %
		Y	4.37	71.41	16.50		65.0	
		Z	2.89	67.23	13.31		65.0	
10248-CAE	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 64-QAM)	X	3.84	69.61	15.25	3.98	65.0	± 9.6 %
		Y	4.32	70.82	16.23		65.0	
		Z	2.83	66.58	12.98		65.0	
10249-CAE	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, QPSK)	X	6.16	80.46	20.36	3.98	65.0	± 9.6 %
		Y	6.18	79.81	20.33		65.0	
		Z	3.97	75.17	17.64		65.0	
10250-CAE	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 16-QAM)	X	5.62	76.39	20.75	3.98	65.0	± 9.6 %
		Y	5.74	75.93	20.59		65.0	
		Z	4.58	74.22	19.36		65.0	
10251-CAE	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 64-QAM)	X	5.03	73.18	18.92	3.98	65.0	± 9.6 %
		Y	5.31	73.34	19.08		65.0	
		Z	4.06	70.93	17.39		65.0	
10252-CAE	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, QPSK)	X	7.24	83.33	23.20	3.98	65.0	± 9.6 %
		Y	6.94	81.44	22.37		65.0	
		Z	5.41	79.92	21.58		65.0	
10253-CAE	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 16-QAM)	X	5.26	72.84	19.45	3.98	65.0	± 9.6 %
		Y	5.49	72.84	19.41		65.0	
		Z	4.40	71.02	18.22		65.0	
10254-CAE	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 64-QAM)	X	5.65	74.03	20.30	3.98	65.0	± 9.6 %
		Y	5.87	73.92	20.21		65.0	
		Z	4.76	72.26	19.12		65.0	

10255-CAE	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, QPSK)	X	6.29	78.80	21.96	3.98	65.0	± 9.6 %
		Y	6.30	77.79	21.37		65.0	
		Z	5.06	76.49	20.76		65.0	
10256-CAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 16-QAM)	X	2.61	64.47	10.42	3.98	65.0	± 9.6 %
		Y	2.96	65.33	11.13		65.0	
		Z	1.66	61.09	7.28		65.0	
10257-CAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 64-QAM)	X	2.56	63.97	10.05	3.98	65.0	± 9.6 %
		Y	2.92	64.89	10.82		65.0	
		Z	1.65	60.87	7.05		65.0	
10258-CAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, QPSK)	X	2.21	64.99	10.99	3.98	65.0	± 9.6 %
		Y	2.77	67.33	12.75		65.0	
		Z	1.46	61.94	8.37		65.0	
10259-CAC	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 16-QAM)	X	4.60	72.78	17.56	3.98	65.0	± 9.6 %
		Y	4.92	73.23	18.04		65.0	
		Z	3.51	69.91	15.55		65.0	
10260-CAC	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 64-QAM)	X	4.59	72.39	17.37	3.98	65.0	± 9.6 %
		Y	4.92	72.90	17.90		65.0	
		Z	3.52	69.59	15.38		65.0	
10261-CAC	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, QPSK)	X	6.31	80.89	21.20	3.98	65.0	± 9.6 %
		Y	6.19	79.71	20.87		65.0	
		Z	4.43	76.66	19.01		65.0	
10262-CAE	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 16-QAM)	X	5.59	76.27	20.67	3.98	65.0	± 9.6 %
		Y	5.72	75.84	20.52		65.0	
		Z	4.55	74.08	19.27		65.0	
10263-CAE	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 64-QAM)	X	5.02	73.16	18.92	3.98	65.0	± 9.6 %
		Y	5.30	73.32	19.07		65.0	
		Z	4.06	70.92	17.39		65.0	
10264-CAE	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, QPSK)	X	7.12	83.00	23.05	3.98	65.0	± 9.6 %
		Y	6.85	81.18	22.25		65.0	
		Z	5.32	79.60	21.43		65.0	
10265-CAE	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 16-QAM)	X	5.33	73.24	19.78	3.98	65.0	± 9.6 %
		Y	5.58	73.28	19.69		65.0	
		Z	4.46	71.34	18.58		65.0	
10266-CAE	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 64-QAM)	X	5.79	74.63	20.77	3.98	65.0	± 9.6 %
		Y	6.01	74.49	20.59		65.0	
		Z	4.89	72.85	19.66		65.0	
10267-CAE	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, QPSK)	X	6.58	79.40	22.08	3.98	65.0	± 9.6 %
		Y	6.57	78.32	21.41		65.0	
		Z	5.30	77.16	20.98		65.0	
10268-CAE	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 16-QAM)	X	5.96	73.22	20.37	3.98	65.0	± 9.6 %
		Y	6.21	73.29	20.22		65.0	
		Z	5.14	71.69	19.40		65.0	
10269-CAE	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 64-QAM)	X	5.96	72.84	20.22	3.98	65.0	± 9.6 %
		Y	6.20	72.91	20.10		65.0	
		Z	5.18	71.41	19.28		65.0	
10270-CAE	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, QPSK)	X	6.23	76.00	20.96	3.98	65.0	± 9.6 %
		Y	6.35	75.47	20.49		65.0	
		Z	5.32	74.55	20.15		65.0	

10274-CAB	UMTS-FDD (HSUPA, Subtest 5, 3GPP Rel8.10)	X	2.34	66.81	14.69	0.00	150.0	± 9.6 %
		Y	2.62	68.03	15.92		150.0	
		Z	2.21	66.68	14.08		150.0	
10275-CAB	UMTS-FDD (HSUPA, Subtest 5, 3GPP Rel8.4)	X	1.44	68.53	15.18	0.00	150.0	± 9.6 %
		Y	1.86	72.07	17.62		150.0	
		Z	1.32	67.78	14.48		150.0	
10277-CAA	PHS (QPSK)	X	2.18	61.09	6.72	9.03	50.0	± 9.6 %
		Y	2.24	61.20	6.85		50.0	
		Z	1.56	59.15	4.54		50.0	
10278-CAA	PHS (QPSK, BW 884MHz, Rolloff 0.5)	X	3.31	65.77	11.35	9.03	50.0	± 9.6 %
		Y	3.43	66.36	11.86		50.0	
		Z	2.47	63.10	8.79		50.0	
10279-CAA	PHS (QPSK, BW 884MHz, Rolloff 0.38)	X	3.36	65.91	11.47	9.03	50.0	± 9.6 %
		Y	3.51	66.55	12.01		50.0	
		Z	2.51	63.19	8.90		50.0	
10290-AAB	CDMA2000, RC1, SO55, Full Rate	X	0.55	60.70	6.89	0.00	150.0	± 9.6 %
		Y	1.57	71.17	13.79		150.0	
		Z	0.43	60.00	5.78		150.0	
10291-AAB	CDMA2000, RC3, SO55, Full Rate	X	0.35	60.00	5.89	0.00	150.0	± 9.6 %
		Y	0.88	68.42	12.36		150.0	
		Z	0.31	60.00	5.29		150.0	
10292-AAB	CDMA2000, RC3, SO32, Full Rate	X	0.34	60.13	6.21	0.00	150.0	± 9.6 %
		Y	32.57	110.87	25.46		150.0	
		Z	0.30	60.00	5.55		150.0	
10293-AAB	CDMA2000, RC3, SO3, Full Rate	X	0.47	62.79	8.16	0.00	150.0	± 9.6 %
		Y	100.00	129.73	30.90		150.0	
		Z	0.34	60.84	6.50		150.0	
10295-AAB	CDMA2000, RC1, SO3, 1/8th Rate 25 fr.	X	21.80	94.03	24.61	9.03	50.0	± 9.6 %
		Y	10.29	83.42	21.60		50.0	
		Z	18.76	90.39	22.23		50.0	
10297-AAD	LTE-FDD (SC-FDMA, 50% RB, 20 MHz, QPSK)	X	2.48	69.89	16.70	0.00	150.0	± 9.6 %
		Y	2.90	71.99	18.00		150.0	
		Z	2.30	69.40	16.27		150.0	
10298-AAD	LTE-FDD (SC-FDMA, 50% RB, 3 MHz, QPSK)	X	0.80	62.04	8.74	0.00	150.0	± 9.6 %
		Y	1.54	69.24	13.91		150.0	
		Z	0.63	60.57	7.13		150.0	
10299-AAD	LTE-FDD (SC-FDMA, 50% RB, 3 MHz, 16-QAM)	X	1.28	62.79	8.90	0.00	150.0	± 9.6 %
		Y	1.89	66.17	11.32		150.0	
		Z	0.83	59.79	5.92		150.0	
10300-AAD	LTE-FDD (SC-FDMA, 50% RB, 3 MHz, 64-QAM)	X	1.04	60.46	6.87	0.00	150.0	± 9.6 %
		Y	1.40	62.36	8.64		150.0	
		Z	0.71	58.57	4.53		150.0	
10301-AAA	IEEE 802.16e WiMAX (29:18, 5ms, 10MHz, QPSK, PUSC)	X	4.74	67.13	17.88	4.17	50.0	± 9.6 %
		Y	4.69	66.45	17.92		50.0	
		Z	4.19	65.82	16.84		50.0	
10302-AAA	IEEE 802.16e WiMAX (29:18, 5ms, 10MHz, QPSK, PUSC, 3 CTRL symbols)	X	5.21	67.89	18.77	4.96	50.0	± 9.6 %
		Y	5.09	66.62	18.38		50.0	
		Z	4.70	66.71	17.77		50.0	



10303-AAA	IEEE 802.16e WiMAX (31:15, 5ms, 10MHz, 64QAM, PUSC)	X	5.02	67.85	18.70	4.96	50.0	± 9.6 %
		Y	4.86	66.33	18.21		50.0	
		Z	4.51	66.60	17.64		50.0	
10304-AAA	IEEE 802.16e WiMAX (29:18, 5ms, 10MHz, 64QAM, PUSC)	X	4.62	66.40	17.42	4.17	50.0	± 9.6 %
		Y	4.67	66.23	17.75		50.0	
		Z	4.22	65.74	16.72		50.0	
10305-AAA	IEEE 802.16e WiMAX (31:15, 10ms, 10MHz, 64QAM, PUSC, 15 symbols)	X	5.39	72.72	20.66	6.02	35.0	± 9.6 %
		Y	4.79	70.33	20.43		35.0	
		Z	4.15	68.57	18.14		35.0	
10306-AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, 64QAM, PUSC, 18 symbols)	X	5.13	69.90	19.93	6.02	35.0	± 9.6 %
		Y	4.84	68.23	19.72		35.0	
		Z	4.35	67.45	18.21		35.0	
10307-AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, QPSK, PUSC, 18 symbols)	X	5.08	70.20	19.92	6.02	35.0	± 9.6 %
		Y	4.77	68.50	19.72		35.0	
		Z	4.25	67.50	18.09		35.0	
10308-AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, 16QAM, PUSC)	X	5.12	70.64	20.16	6.02	35.0	± 9.6 %
		Y	4.77	68.84	19.93		35.0	
		Z	4.25	67.77	18.27		35.0	
10309-AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, 16QAM, AMC 2x3, 18 symbols)	X	5.14	69.95	20.02	6.02	35.0	± 9.6 %
		Y	4.87	68.35	19.83		35.0	
		Z	4.35	67.48	18.29		35.0	
10310-AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, QPSK, AMC 2x3, 18 symbols)	X	5.13	70.13	19.99	6.02	35.0	± 9.6 %
		Y	4.81	68.40	19.75		35.0	
		Z	4.32	67.59	18.24		35.0	
10311-AAD	LTE-FDD (SC-FDMA, 100% RB, 15 MHz, QPSK)	X	2.83	68.90	16.32	0.00	150.0	± 9.6 %
		Y	3.26	70.86	17.46		150.0	
		Z	2.65	68.52	15.97		150.0	
10313-AAA	iDEN 1:3	X	3.36	72.20	15.56	6.99	70.0	± 9.6 %
		Y	3.23	71.05	14.93		70.0	
		Z	2.47	70.33	14.60		70.0	
10314-AAA	iDEN 1:6	X	7.46	85.19	22.96	10.00	30.0	± 9.6 %
		Y	5.21	79.23	20.77		30.0	
		Z	8.81	89.37	24.10		30.0	
10315-AAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps, 96pc duty cycle)	X	0.97	64.18	15.35	0.17	150.0	± 9.6 %
		Y	1.09	65.56	16.62		150.0	
		Z	0.95	63.77	14.73		150.0	
10316-AAB	IEEE 802.11g WiFi 2.4 GHz (ERP-OFDM, 6 Mbps, 96pc duty cycle)	X	4.27	66.73	16.30	0.17	150.0	± 9.6 %
		Y	4.44	66.97	16.55		150.0	
		Z	4.11	66.81	16.00		150.0	
10317-AAC	IEEE 802.11a WiFi 5 GHz (OFDM, 6 Mbps, 96pc duty cycle)	X	4.27	66.73	16.30	0.17	150.0	± 9.6 %
		Y	4.44	66.97	16.55		150.0	
		Z	4.11	66.81	16.00		150.0	
10400-AAD	IEEE 802.11ac WiFi (20MHz, 64-QAM, 99pc duty cycle)	X	4.31	66.93	16.26	0.00	150.0	± 9.6 %
		Y	4.53	67.33	16.61		150.0	
		Z	4.13	66.97	15.96		150.0	
10401-AAD	IEEE 802.11ac WiFi (40MHz, 64-QAM, 99pc duty cycle)	X	4.97	66.63	16.27	0.00	150.0	± 9.6 %
		Y	5.22	67.18	16.63		150.0	
		Z	4.86	66.85	16.09		150.0	

10402-AAD	IEEE 802.11ac WiFi (80MHz, 64-QAM, 99pc duty cycle)	X	5.35	67.25	16.49	0.00	150.0	± 9.6 %
		Y	5.52	67.59	16.72		150.0	
		Z	5.21	67.33	16.26		150.0	
10403-AAB	CDMA2000 (1xEV-DO, Rev. 0)	X	0.55	60.70	6.89	0.00	115.0	± 9.6 %
		Y	1.57	71.17	13.79		115.0	
		Z	0.43	60.00	5.78		115.0	
10404-AAB	CDMA2000 (1xEV-DO, Rev. A)	X	0.55	60.70	6.89	0.00	115.0	± 9.6 %
		Y	1.57	71.17	13.79		115.0	
		Z	0.43	60.00	5.78		115.0	
10406-AAB	CDMA2000, RC3, SO32, SCH0, Full Rate	X	100.00	121.47	29.36	0.00	100.0	± 9.6 %
		Y	100.00	116.93	27.68		100.0	
		Z	100.00	111.07	24.20		100.0	
10410-AAE	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9, Subframe Conf=4)	X	100.00	127.60	32.19	3.23	80.0	± 9.6 %
		Y	47.53	108.69	25.78		80.0	
		Z	7.51	90.42	21.34		80.0	
10415-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps, 99pc duty cycle)	X	0.89	63.20	14.69	0.00	150.0	± 9.6 %
		Y	1.01	64.66	16.11		150.0	
		Z	0.90	63.14	14.25		150.0	
10416-AAA	IEEE 802.11g WiFi 2.4 GHz (ERP-OFDM, 6 Mbps, 99pc duty cycle)	X	4.21	66.70	16.23	0.00	150.0	± 9.6 %
		Y	4.41	67.06	16.58		150.0	
		Z	4.08	66.88	15.99		150.0	
10417-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps, 99pc duty cycle)	X	4.21	66.70	16.23	0.00	150.0	± 9.6 %
		Y	4.41	67.06	16.58		150.0	
		Z	4.08	66.88	15.99		150.0	
10418-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps, 99pc duty cycle, Long preamble)	X	4.21	66.94	16.30	0.00	150.0	± 9.6 %
		Y	4.41	67.28	16.64		150.0	
		Z	4.08	67.11	16.07		150.0	
10419-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps, 99pc duty cycle, Short preamble)	X	4.23	66.86	16.28	0.00	150.0	± 9.6 %
		Y	4.43	67.20	16.62		150.0	
		Z	4.09	67.03	16.04		150.0	
10422-AAB	IEEE 802.11n (HT Greenfield, 7.2 Mbps, BPSK)	X	4.33	66.82	16.29	0.00	150.0	± 9.6 %
		Y	4.53	67.16	16.62		150.0	
		Z	4.19	66.99	16.05		150.0	
10423-AAB	IEEE 802.11n (HT Greenfield, 43.3 Mbps, 16-QAM)	X	4.45	67.07	16.37	0.00	150.0	± 9.6 %
		Y	4.67	67.43	16.71		150.0	
		Z	4.29	67.21	16.12		150.0	
10424-AAB	IEEE 802.11n (HT Greenfield, 72.2 Mbps, 64-QAM)	X	4.38	67.01	16.35	0.00	150.0	± 9.6 %
		Y	4.60	67.39	16.69		150.0	
		Z	4.22	67.14	16.10		150.0	
10425-AAB	IEEE 802.11n (HT Greenfield, 15 Mbps, BPSK)	X	5.04	67.22	16.60	0.00	150.0	± 9.6 %
		Y	5.22	67.55	16.84		150.0	
		Z	4.84	67.12	16.26		150.0	
10426-AAB	IEEE 802.11n (HT Greenfield, 90 Mbps, 16-QAM)	X	5.08	67.41	16.68	0.00	150.0	± 9.6 %
		Y	5.25	67.68	16.90		150.0	
		Z	4.88	67.29	16.34		150.0	

10427-AAB	IEEE 802.11n (HT Greenfield, 150 Mbps, 64-QAM)	X	5.02	67.08	16.52	0.00	150.0	± 9.6 %
		Y	5.21	67.45	16.78		150.0	
		Z	4.85	67.10	16.25		150.0	
10430-AAC	LTE-FDD (OFDMA, 5 MHz, E-TM 3.1)	X	4.34	73.60	18.73	0.00	150.0	± 9.6 %
		Y	4.67	74.31	19.65		150.0	
		Z	4.56	75.21	18.83		150.0	
10431-AAC	LTE-FDD (OFDMA, 10 MHz, E-TM 3.1)	X	3.81	67.34	16.02	0.00	150.0	± 9.6 %
		Y	4.07	67.85	16.58		150.0	
		Z	3.64	67.45	15.66		150.0	
10432-AAC	LTE-FDD (OFDMA, 15 MHz, E-TM 3.1)	X	4.14	67.15	16.26	0.00	150.0	± 9.6 %
		Y	4.37	67.55	16.66		150.0	
		Z	3.98	67.29	15.98		150.0	
10433-AAC	LTE-FDD (OFDMA, 20 MHz, E-TM 3.1)	X	4.40	67.05	16.37	0.00	150.0	± 9.6 %
		Y	4.61	67.43	16.71		150.0	
		Z	4.25	67.19	16.13		150.0	
10434-AAA	W-CDMA (BS Test Model 1, 64 DPCH)	X	4.41	74.13	18.22	0.00	150.0	± 9.6 %
		Y	5.02	75.91	19.74		150.0	
		Z	4.48	75.04	17.90		150.0	
10435-AAE	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	100.00	127.28	32.04	3.23	80.0	± 9.6 %
		Y	37.77	105.68	25.00		80.0	
		Z	6.65	88.77	20.79		80.0	
10447-AAC	LTE-FDD (OFDMA, 5 MHz, E-TM 3.1, Clipping 44%)	X	2.99	66.80	14.43	0.00	150.0	± 9.6 %
		Y	3.36	68.04	15.68		150.0	
		Z	2.75	66.44	13.65		150.0	
10448-AAC	LTE-FDD (OFDMA, 10 MHz, E-TM 3.1, Clipping 44%)	X	3.68	67.14	15.90	0.00	150.0	± 9.6 %
		Y	3.93	67.65	16.46		150.0	
		Z	3.53	67.26	15.55		150.0	
10449-AAC	LTE-FDD (OFDMA, 15 MHz, E-TM 3.1, Clipping 44%)	X	3.99	66.98	16.16	0.00	150.0	± 9.6 %
		Y	4.20	67.40	16.58		150.0	
		Z	3.85	67.13	15.89		150.0	
10450-AAC	LTE-FDD (OFDMA, 20 MHz, E-TM 3.1, Clipping 44%)	X	4.21	66.83	16.23	0.00	150.0	± 9.6 %
		Y	4.41	67.22	16.58		150.0	
		Z	4.07	66.98	15.98		150.0	
10451-AAA	W-CDMA (BS Test Model 1, 64 DPCH, Clipping 44%)	X	2.72	66.13	13.34	0.00	150.0	± 9.6 %
		Y	3.20	67.97	15.02		150.0	
		Z	2.40	65.33	12.26		150.0	
10456-AAB	IEEE 802.11ac WiFi (160MHz, 64-QAM, 99pc duty cycle)	X	6.02	67.79	16.78	0.00	150.0	± 9.6 %
		Y	6.18	68.16	17.02		150.0	
		Z	6.18	68.79	17.02		150.0	
10457-AAA	UMTS-FDD (DC-HSDPA)	X	3.59	65.49	15.98	0.00	150.0	± 9.6 %
		Y	3.73	65.74	16.31		150.0	
		Z	3.53	65.80	15.77		150.0	
10458-AAA	CDMA2000 (1xEV-DO, Rev. B, 2 carriers)	X	3.34	70.08	15.60	0.00	150.0	± 9.6 %
		Y	4.35	74.00	18.36		150.0	
		Z	2.73	67.81	13.63		150.0	
10459-AAA	CDMA2000 (1xEV-DO, Rev. B, 3 carriers)	X	4.80	69.70	17.95	0.00	150.0	± 9.6 %
		Y	5.15	70.28	18.81		150.0	
		Z	4.66	69.99	17.32		150.0	

10460-AAA	UMTS-FDD (WCDMA, AMR)	X	0.87	70.93	16.52	0.00	150.0	± 9.6 %
		Y	1.46	79.26	21.40		150.0	
		Z	0.76	68.76	15.32		150.0	
10461-AAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	100.00	133.64	34.98	3.29	80.0	± 9.6 %
		Y	100.00	121.27	29.54		80.0	
		Z	11.51	98.13	24.42		80.0	
10462-AAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	1.56	66.37	11.18	3.23	80.0	± 9.6 %
		Y	0.87	60.00	7.45		80.0	
		Z	0.67	60.00	6.91		80.0	
10463-AAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	0.80	60.00	7.65	3.23	80.0	± 9.6 %
		Y	0.89	60.00	6.91		80.0	
		Z	0.69	60.00	6.22		80.0	
10464-AAB	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	100.00	130.01	33.13	3.23	80.0	± 9.6 %
		Y	30.66	103.77	24.63		80.0	
		Z	3.86	82.95	19.21		80.0	
10465-AAB	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	1.24	64.19	10.21	3.23	80.0	± 9.6 %
		Y	0.87	60.00	7.39		80.0	
		Z	0.67	60.00	6.85		80.0	
10466-AAB	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	0.80	60.00	7.60	3.23	80.0	± 9.6 %
		Y	0.90	60.00	6.88		80.0	
		Z	0.69	60.00	6.19		80.0	
10467-AAD	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	100.00	130.52	33.35	3.23	80.0	± 9.6 %
		Y	47.97	109.22	25.94		80.0	
		Z	4.78	85.69	20.10		80.0	
10468-AAD	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	1.33	64.86	10.52	3.23	80.0	± 9.6 %
		Y	0.87	60.00	7.41		80.0	
		Z	0.67	60.00	6.88		80.0	
10469-AAD	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	0.80	60.00	7.61	3.23	80.0	± 9.6 %
		Y	0.89	60.00	6.87		80.0	
		Z	0.69	60.00	6.19		80.0	
10470-AAD	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	100.00	130.55	33.36	3.23	80.0	± 9.6 %
		Y	49.35	109.54	26.00		80.0	
		Z	4.82	85.81	20.13		80.0	
10471-AAD	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	1.31	64.74	10.46	3.23	80.0	± 9.6 %
		Y	0.87	60.00	7.39		80.0	
		Z	0.66	60.00	6.86		80.0	
10472-AAD	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	0.80	60.00	7.59	3.23	80.0	± 9.6 %
		Y	0.89	60.00	6.86		80.0	
		Z	0.69	60.00	6.17		80.0	
10473-AAD	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	100.00	130.51	33.34	3.23	80.0	± 9.6 %
		Y	48.03	109.20	25.91		80.0	
		Z	4.74	85.60	20.06		80.0	
10474-AAD	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	1.30	64.69	10.43	3.23	80.0	± 9.6 %
		Y	0.87	60.00	7.39		80.0	
		Z	0.66	60.00	6.86		80.0	
10475-AAD	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	0.80	60.00	7.59	3.23	80.0	± 9.6 %
		Y	0.89	60.00	6.86		80.0	
		Z	0.69	60.00	6.17		80.0	

10477-AAE	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	1.23	64.18	10.18	3.23	80.0	± 9.6 %
		Y	0.87	60.00	7.37		80.0	
		Z	0.66	60.00	6.83		80.0	
10478-AAE	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	0.80	60.00	7.58	3.23	80.0	± 9.6 %
		Y	0.89	60.00	6.85		80.0	
		Z	0.69	60.00	6.16		80.0	
10479-AAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	100.00	126.80	33.24	3.23	80.0	± 9.6 %
		Y	16.83	96.78	24.93		80.0	
		Z	17.83	99.90	25.23		80.0	
10480-AAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	100.00	110.98	25.88	3.23	80.0	± 9.6 %
		Y	4.24	73.22	15.24		80.0	
		Z	1.74	65.87	11.40		80.0	
10481-AAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	16.05	88.37	19.67	3.23	80.0	± 9.6 %
		Y	2.80	68.08	12.86		80.0	
		Z	1.19	61.90	9.13		80.0	
10482-AAB	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	1.57	64.75	11.63	2.23	80.0	± 9.6 %
		Y	2.36	69.10	14.35		80.0	
		Z	0.89	60.11	8.42		80.0	
10483-AAB	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	2.03	64.54	11.14	2.23	80.0	± 9.6 %
		Y	2.19	64.68	11.58		80.0	
		Z	1.14	60.00	7.47		80.0	
10484-AAB	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	1.90	63.58	10.68	2.23	80.0	± 9.6 %
		Y	2.12	64.08	11.29		80.0	
		Z	1.17	60.00	7.46		80.0	
10485-AAD	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	3.45	74.98	17.66	2.23	80.0	± 9.6 %
		Y	3.58	75.04	18.20		80.0	
		Z	1.95	68.57	14.43		80.0	
10486-AAD	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	2.25	65.84	12.95	2.23	80.0	± 9.6 %
		Y	2.80	68.12	14.63		80.0	
		Z	1.49	62.13	10.33		80.0	
10487-AAD	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	2.22	65.29	12.67	2.23	80.0	± 9.6 %
		Y	2.76	67.57	14.36		80.0	
		Z	1.49	61.80	10.12		80.0	
10488-AAD	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	3.71	75.02	19.43	2.23	80.0	± 9.6 %
		Y	3.72	74.14	19.13		80.0	
		Z	2.67	71.23	17.54		80.0	
10489-AAD	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	3.33	70.04	17.15	2.23	80.0	± 9.6 %
		Y	3.44	69.76	17.22		80.0	
		Z	2.72	68.09	15.79		80.0	
10490-AAD	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	3.38	69.72	17.01	2.23	80.0	± 9.6 %
		Y	3.50	69.51	17.12		80.0	
		Z	2.77	67.83	15.66		80.0	
10491-AAD	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	3.67	72.22	18.70	2.23	80.0	± 9.6 %
		Y	3.79	71.87	18.50		80.0	
		Z	2.91	69.73	17.36		80.0	
10492-AAD	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	3.59	68.89	17.30	2.23	80.0	± 9.6 %
		Y	3.72	68.74	17.28		80.0	
		Z	3.08	67.54	16.30		80.0	

10493-AAD	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	3.63	68.68	17.20	2.23	80.0	± 9.6 %
		Y	3.77	68.57	17.21		80.0	
		Z	3.12	67.39	16.21		80.0	
10494-AAE	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	4.02	73.80	19.26	2.23	80.0	± 9.6 %
		Y	4.14	73.43	19.01		80.0	
		Z	3.12	70.94	17.86		80.0	
10495-AAE	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	3.62	69.18	17.57	2.23	80.0	± 9.6 %
		Y	3.76	69.07	17.51		80.0	
		Z	3.11	67.77	16.60		80.0	
10496-AAE	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	3.69	68.89	17.47	2.23	80.0	± 9.6 %
		Y	3.82	68.78	17.42		80.0	
		Z	3.19	67.60	16.55		80.0	
10497-AAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	0.98	60.00	7.66	2.23	80.0	± 9.6 %
		Y	1.21	61.40	9.41		80.0	
		Z	0.85	60.00	6.48		80.0	
10498-AAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	1.17	60.00	6.48	2.23	80.0	± 9.6 %
		Y	1.25	60.00	7.54		80.0	
		Z	1.13	60.00	5.14		80.0	
10499-AAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	1.19	60.00	6.32	2.23	80.0	± 9.6 %
		Y	1.26	60.00	7.39		80.0	
		Z	1.19	60.00	4.94		80.0	
10500-AAB	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	3.61	75.28	18.49	2.23	80.0	± 9.6 %
		Y	3.60	74.56	18.55		80.0	
		Z	2.31	70.18	15.90		80.0	
10501-AAB	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	2.83	68.30	14.92	2.23	80.0	± 9.6 %
		Y	3.15	69.25	15.83		80.0	
		Z	2.02	65.03	12.70		80.0	
10502-AAB	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	2.81	67.87	14.64	2.23	80.0	± 9.6 %
		Y	3.17	68.94	15.62		80.0	
		Z	2.02	64.68	12.43		80.0	
10503-AAD	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	3.64	74.69	19.28	2.23	80.0	± 9.6 %
		Y	3.66	73.87	19.00		80.0	
		Z	2.62	70.94	17.40		80.0	
10504-AAD	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	3.30	69.88	17.06	2.23	80.0	± 9.6 %
		Y	3.41	69.63	17.15		80.0	
		Z	2.69	67.93	15.70		80.0	
10505-AAD	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	3.35	69.57	16.93	2.23	80.0	± 9.6 %
		Y	3.48	69.39	17.05		80.0	
		Z	2.74	67.69	15.57		80.0	
10506-AAD	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	3.97	73.59	19.16	2.23	80.0	± 9.6 %
		Y	4.10	73.25	18.92		80.0	
		Z	3.08	70.76	17.76		80.0	
10507-AAD	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	3.61	69.10	17.52	2.23	80.0	± 9.6 %
		Y	3.74	68.99	17.47		80.0	
		Z	3.10	67.69	16.55		80.0	

10508-AAD	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	3.67	68.79	17.42	2.23	80.0	± 9.6 %
		Y	3.81	68.69	17.37		80.0	
		Z	3.18	67.50	16.48		80.0	
10509-AAD	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	4.19	71.63	18.46	2.23	80.0	± 9.6 %
		Y	4.34	71.54	18.29		80.0	
		Z	3.49	69.77	17.46		80.0	
10510-AAD	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	4.02	68.41	17.47	2.23	80.0	± 9.6 %
		Y	4.18	68.47	17.43		80.0	
		Z	3.54	67.28	16.67		80.0	
10511-AAD	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	4.08	68.19	17.41	2.23	80.0	± 9.6 %
		Y	4.24	68.23	17.36		80.0	
		Z	3.62	67.16	16.64		80.0	
10512-AAE	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	4.39	73.11	18.91	2.23	80.0	± 9.6 %
		Y	4.57	73.09	18.76		80.0	
		Z	3.55	70.80	17.76		80.0	
10513-AAE	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	3.92	68.58	17.57	2.23	80.0	± 9.6 %
		Y	4.08	68.69	17.52		80.0	
		Z	3.44	67.34	16.73		80.0	
10514-AAE	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	3.95	68.18	17.44	2.23	80.0	± 9.6 %
		Y	4.10	68.28	17.40		80.0	
		Z	3.50	67.06	16.65		80.0	
10515-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 2 Mbps, 99pc duty cycle)	X	0.85	63.44	14.76	0.00	150.0	± 9.6 %
		Y	0.97	65.05	16.30		150.0	
		Z	0.86	63.31	14.29		150.0	
10516-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 5.5 Mbps, 99pc duty cycle)	X	1.00	82.07	20.52	0.00	150.0	± 9.6 %
		Y	6.58	117.44	34.05		150.0	
		Z	0.52	71.82	16.88		150.0	
10517-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 11 Mbps, 99pc duty cycle)	X	0.71	65.99	15.57	0.00	150.0	± 9.6 %
		Y	0.90	69.36	18.20		150.0	
		Z	0.69	65.04	14.76		150.0	
10518-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 9 Mbps, 99pc duty cycle)	X	4.21	66.82	16.23	0.00	150.0	± 9.6 %
		Y	4.40	67.17	16.57		150.0	
		Z	4.07	67.02	15.99		150.0	
10519-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 12 Mbps, 99pc duty cycle)	X	4.34	66.98	16.31	0.00	150.0	± 9.6 %
		Y	4.56	67.34	16.66		150.0	
		Z	4.19	67.14	16.06		150.0	
10520-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 18 Mbps, 99pc duty cycle)	X	4.20	66.91	16.23	0.00	150.0	± 9.6 %
		Y	4.42	67.30	16.59		150.0	
		Z	4.06	67.06	15.98		150.0	
10521-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 24 Mbps, 99pc duty cycle)	X	4.13	66.86	16.20	0.00	150.0	± 9.6 %
		Y	4.35	67.28	16.58		150.0	
		Z	3.99	66.98	15.94		150.0	
10522-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 36 Mbps, 99pc duty cycle)	X	4.17	66.96	16.28	0.00	150.0	± 9.6 %
		Y	4.41	67.42	16.68		150.0	
		Z	4.01	67.01	15.97		150.0	

10523-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 48 Mbps, 99pc duty cycle)	X	4.12	67.05	16.25	0.00	150.0	± 9.6 %
		Y	4.33	67.40	16.59		150.0	
		Z	3.99	67.23	16.03		150.0	
10524-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 54 Mbps, 99pc duty cycle)	X	4.13	66.97	16.30	0.00	150.0	± 9.6 %
		Y	4.35	67.37	16.67		150.0	
		Z	3.98	67.09	16.04		150.0	
10525-AAB	IEEE 802.11ac WiFi (20MHz, MCS0, 99pc duty cycle)	X	4.18	66.09	15.94	0.00	150.0	± 9.6 %
		Y	4.39	66.46	16.28		150.0	
		Z	4.05	66.29	15.72		150.0	
10526-AAB	IEEE 802.11ac WiFi (20MHz, MCS1, 99pc duty cycle)	X	4.29	66.34	16.05	0.00	150.0	± 9.6 %
		Y	4.52	66.77	16.40		150.0	
		Z	4.14	66.48	15.80		150.0	
10527-AAB	IEEE 802.11ac WiFi (20MHz, MCS2, 99pc duty cycle)	X	4.23	66.32	15.98	0.00	150.0	± 9.6 %
		Y	4.45	66.75	16.35		150.0	
		Z	4.08	66.48	15.75		150.0	
10528-AAB	IEEE 802.11ac WiFi (20MHz, MCS3, 99pc duty cycle)	X	4.24	66.33	16.02	0.00	150.0	± 9.6 %
		Y	4.46	66.76	16.38		150.0	
		Z	4.09	66.47	15.77		150.0	
10529-AAB	IEEE 802.11ac WiFi (20MHz, MCS4, 99pc duty cycle)	X	4.24	66.33	16.02	0.00	150.0	± 9.6 %
		Y	4.46	66.76	16.38		150.0	
		Z	4.09	66.47	15.77		150.0	
10531-AAB	IEEE 802.11ac WiFi (20MHz, MCS6, 99pc duty cycle)	X	4.20	66.33	15.98	0.00	150.0	± 9.6 %
		Y	4.44	66.81	16.38		150.0	
		Z	4.04	66.44	15.72		150.0	
10532-AAB	IEEE 802.11ac WiFi (20MHz, MCS7, 99pc duty cycle)	X	4.09	66.19	15.91	0.00	150.0	± 9.6 %
		Y	4.31	66.68	16.32		150.0	
		Z	3.95	66.32	15.67		150.0	
10533-AAB	IEEE 802.11ac WiFi (20MHz, MCS8, 99pc duty cycle)	X	4.25	66.42	16.02	0.00	150.0	± 9.6 %
		Y	4.47	66.85	16.39		150.0	
		Z	4.09	66.58	15.79		150.0	
10534-AAB	IEEE 802.11ac WiFi (40MHz, MCS0, 99pc duty cycle)	X	4.82	66.28	16.10	0.00	150.0	± 9.6 %
		Y	5.01	66.66	16.38		150.0	
		Z	4.67	66.35	15.86		150.0	
10535-AAB	IEEE 802.11ac WiFi (40MHz, MCS1, 99pc duty cycle)	X	4.86	66.40	16.17	0.00	150.0	± 9.6 %
		Y	5.07	66.83	16.46		150.0	
		Z	4.69	66.42	15.91		150.0	
10536-AAB	IEEE 802.11ac WiFi (40MHz, MCS2, 99pc duty cycle)	X	4.75	66.37	16.13	0.00	150.0	± 9.6 %
		Y	4.96	66.84	16.44		150.0	
		Z	4.60	66.44	15.89		150.0	
10537-AAB	IEEE 802.11ac WiFi (40MHz, MCS3, 99pc duty cycle)	X	4.84	66.47	16.18	0.00	150.0	± 9.6 %
		Y	5.01	66.80	16.43		150.0	
		Z	4.68	66.51	15.93		150.0	
10538-AAB	IEEE 802.11ac WiFi (40MHz, MCS4, 99pc duty cycle)	X	4.88	66.35	16.16	0.00	150.0	± 9.6 %
		Y	5.08	66.76	16.45		150.0	
		Z	4.71	66.38	15.90		150.0	
10540-AAB	IEEE 802.11ac WiFi (40MHz, MCS6, 99pc duty cycle)	X	4.81	66.30	16.16	0.00	150.0	± 9.6 %
		Y	5.01	66.72	16.45		150.0	
		Z	4.65	66.34	15.90		150.0	



10541-AAB	IEEE 802.11ac WiFi (40MHz, MCS7, 99pc duty cycle)	X	4.80	66.22	16.09	0.00	150.0	± 9.6 %
		Y	4.99	66.61	16.37		150.0	
		Z	4.65	66.32	15.87		150.0	
10542-AAB	IEEE 802.11ac WiFi (40MHz, MCS8, 99pc duty cycle)	X	4.95	66.33	16.17	0.00	150.0	± 9.6 %
		Y	5.14	66.71	16.44		150.0	
		Z	4.79	66.39	15.92		150.0	
10543-AAB	IEEE 802.11ac WiFi (40MHz, MCS9, 99pc duty cycle)	X	5.05	66.50	16.28	0.00	150.0	± 9.6 %
		Y	5.22	66.78	16.50		150.0	
		Z	4.85	66.47	15.99		150.0	
10544-AAB	IEEE 802.11ac WiFi (80MHz, MCS0, 99pc duty cycle)	X	5.18	66.28	16.07	0.00	150.0	± 9.6 %
		Y	5.35	66.69	16.34		150.0	
		Z	5.04	66.36	15.85		150.0	
10545-AAB	IEEE 802.11ac WiFi (80MHz, MCS1, 99pc duty cycle)	X	5.38	66.85	16.32	0.00	150.0	± 9.6 %
		Y	5.55	67.20	16.55		150.0	
		Z	5.18	66.73	16.00		150.0	
10546-AAB	IEEE 802.11ac WiFi (80MHz, MCS2, 99pc duty cycle)	X	5.21	66.40	16.10	0.00	150.0	± 9.6 %
		Y	5.39	66.83	16.38		150.0	
		Z	5.06	66.45	15.86		150.0	
10547-AAB	IEEE 802.11ac WiFi (80MHz, MCS3, 99pc duty cycle)	X	5.34	66.70	16.25	0.00	150.0	± 9.6 %
		Y	5.47	66.95	16.43		150.0	
		Z	5.17	66.69	15.98		150.0	
10548-AAB	IEEE 802.11ac WiFi (80MHz, MCS4, 99pc duty cycle)	X	5.46	67.25	16.50	0.00	150.0	± 9.6 %
		Y	5.68	67.76	16.81		150.0	
		Z	5.19	66.93	16.08		150.0	
10550-AAB	IEEE 802.11ac WiFi (80MHz, MCS6, 99pc duty cycle)	X	5.33	66.84	16.34	0.00	150.0	± 9.6 %
		Y	5.46	67.06	16.50		150.0	
		Z	5.15	66.78	16.05		150.0	
10551-AAB	IEEE 802.11ac WiFi (80MHz, MCS7, 99pc duty cycle)	X	5.19	66.33	16.04	0.00	150.0	± 9.6 %
		Y	5.39	66.81	16.34		150.0	
		Z	5.04	66.38	15.81		150.0	
10552-AAB	IEEE 802.11ac WiFi (80MHz, MCS8, 99pc duty cycle)	X	5.18	66.41	16.08	0.00	150.0	± 9.6 %
		Y	5.36	66.79	16.33		150.0	
		Z	5.05	66.52	15.87		150.0	
10553-AAB	IEEE 802.11ac WiFi (80MHz, MCS9, 99pc duty cycle)	X	5.23	66.33	16.07	0.00	150.0	± 9.6 %
		Y	5.41	66.74	16.34		150.0	
		Z	5.09	66.42	15.85		150.0	
10554-AAC	IEEE 802.11ac WiFi (160MHz, MCS0, 99pc duty cycle)	X	5.62	66.62	16.16	0.00	150.0	± 9.6 %
		Y	5.77	67.01	16.40		150.0	
		Z	5.48	66.65	15.91		150.0	
10555-AAC	IEEE 802.11ac WiFi (160MHz, MCS1, 99pc duty cycle)	X	5.71	66.86	16.26	0.00	150.0	± 9.6 %
		Y	5.88	67.28	16.52		150.0	
		Z	5.54	66.80	15.97		150.0	
10556-AAC	IEEE 802.11ac WiFi (160MHz, MCS2, 99pc duty cycle)	X	5.78	67.06	16.35	0.00	150.0	± 9.6 %
		Y	5.92	67.39	16.56		150.0	
		Z	5.59	66.96	16.04		150.0	
10557-AAC	IEEE 802.11ac WiFi (160MHz, MCS3, 99pc duty cycle)	X	5.70	66.81	16.25	0.00	150.0	± 9.6 %
		Y	5.87	67.22	16.50		150.0	
		Z	5.54	66.82	15.99		150.0	

10558-AAC	IEEE 802.11ac WiFi (160MHz, MCS4, 99pc duty cycle)	X	5.68	66.79	16.25	0.00	150.0	± 9.6 %
		Y	5.89	67.32	16.56		150.0	
		Z	5.51	66.77	15.98		150.0	
10560-AAC	IEEE 802.11ac WiFi (160MHz, MCS6, 99pc duty cycle)	X	5.71	66.77	16.28	0.00	150.0	± 9.6 %
		Y	5.89	67.21	16.54		150.0	
		Z	5.55	66.76	16.02		150.0	
10561-AAC	IEEE 802.11ac WiFi (160MHz, MCS7, 99pc duty cycle)	X	5.66	66.78	16.32	0.00	150.0	± 9.6 %
		Y	5.83	67.22	16.58		150.0	
		Z	5.49	66.74	16.03		150.0	
10562-AAC	IEEE 802.11ac WiFi (160MHz, MCS8, 99pc duty cycle)	X	5.69	66.89	16.37	0.00	150.0	± 9.6 %
		Y	5.89	67.40	16.67		150.0	
		Z	5.52	66.86	16.09		150.0	
10563-AAC	IEEE 802.11ac WiFi (160MHz, MCS9, 99pc duty cycle)	X	5.83	67.00	16.39	0.00	150.0	± 9.6 %
		Y	5.99	67.36	16.62		150.0	
		Z	5.66	66.99	16.13		150.0	
10564-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 9 Mbps, 99pc duty cycle)	X	4.52	66.80	16.34	0.46	150.0	± 9.6 %
		Y	4.71	67.11	16.64		150.0	
		Z	4.37	66.94	16.08		150.0	
10565-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 12 Mbps, 99pc duty cycle)	X	4.71	67.24	16.68	0.46	150.0	± 9.6 %
		Y	4.92	67.55	16.97		150.0	
		Z	4.55	67.39	16.44		150.0	
10566-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 18 Mbps, 99pc duty cycle)	X	4.55	67.03	16.47	0.46	150.0	± 9.6 %
		Y	4.75	67.36	16.77		150.0	
		Z	4.39	67.14	16.20		150.0	
10567-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 24 Mbps, 99pc duty cycle)	X	4.59	67.50	16.90	0.46	150.0	± 9.6 %
		Y	4.80	67.84	17.20		150.0	
		Z	4.45	67.67	16.67		150.0	
10568-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 36 Mbps, 99pc duty cycle)	X	4.43	66.68	16.15	0.46	150.0	± 9.6 %
		Y	4.65	67.08	16.49		150.0	
		Z	4.24	66.65	15.80		150.0	
10569-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 48 Mbps, 99pc duty cycle)	X	4.60	67.82	17.09	0.46	150.0	± 9.6 %
		Y	4.78	68.07	17.33		150.0	
		Z	4.46	68.04	16.90		150.0	
10570-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 54 Mbps, 99pc duty cycle)	X	4.58	67.53	16.94	0.46	150.0	± 9.6 %
		Y	4.79	67.84	17.22		150.0	
		Z	4.42	67.66	16.69		150.0	
10571-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps, 90pc duty cycle)	X	1.05	64.80	15.67	0.46	130.0	± 9.6 %
		Y	1.17	65.98	16.71		130.0	
		Z	1.00	63.98	14.85		130.0	
10572-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 2 Mbps, 90pc duty cycle)	X	1.07	65.55	16.13	0.46	130.0	± 9.6 %
		Y	1.19	66.83	17.22		130.0	
		Z	1.01	64.59	15.26		130.0	
10573-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 5.5 Mbps, 90pc duty cycle)	X	45.90	133.30	34.49	0.46	130.0	± 9.6 %
		Y	100.00	153.39	40.97		130.0	
		Z	1.58	84.66	22.16		130.0	
10574-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 11 Mbps, 90pc duty cycle)	X	1.35	74.48	20.46	0.46	130.0	± 9.6 %
		Y	1.66	77.75	22.43		130.0	
		Z	1.11	71.01	18.64		130.0	

10575-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps, 90pc duty cycle)	X	4.32	66.63	16.40	0.46	130.0	± 9.6 %
		Y	4.48	66.85	16.63		130.0	
		Z	4.16	66.71	16.08		130.0	
10576-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 9 Mbps, 90pc duty cycle)	X	4.35	66.88	16.51	0.46	130.0	± 9.6 %
		Y	4.52	67.08	16.73		130.0	
		Z	4.19	66.99	16.21		130.0	
10577-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 12 Mbps, 90pc duty cycle)	X	4.50	67.10	16.65	0.46	130.0	± 9.6 %
		Y	4.69	67.32	16.88		130.0	
		Z	4.33	67.20	16.35		130.0	
10578-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 18 Mbps, 90pc duty cycle)	X	4.42	67.29	16.79	0.46	130.0	± 9.6 %
		Y	4.60	67.52	17.02		130.0	
		Z	4.26	67.40	16.51		130.0	
10579-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 24 Mbps, 90pc duty cycle)	X	4.15	66.32	15.93	0.46	130.0	± 9.6 %
		Y	4.34	66.61	16.20		130.0	
		Z	3.97	66.27	15.55		130.0	
10580-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 36 Mbps, 90pc duty cycle)	X	4.18	66.36	15.93	0.46	130.0	± 9.6 %
		Y	4.38	66.67	16.22		130.0	
		Z	3.97	66.21	15.49		130.0	
10581-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 48 Mbps, 90pc duty cycle)	X	4.34	67.41	16.79	0.46	130.0	± 9.6 %
		Y	4.51	67.61	16.99		130.0	
		Z	4.18	67.53	16.51		130.0	
10582-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 54 Mbps, 90pc duty cycle)	X	4.07	66.06	15.68	0.46	130.0	± 9.6 %
		Y	4.26	66.35	15.96		130.0	
		Z	3.88	65.96	15.27		130.0	
10583-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps, 90pc duty cycle)	X	4.32	66.63	16.40	0.46	130.0	± 9.6 %
		Y	4.48	66.85	16.63		130.0	
		Z	4.16	66.71	16.08		130.0	
10584-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 9 Mbps, 90pc duty cycle)	X	4.35	66.88	16.51	0.46	130.0	± 9.6 %
		Y	4.52	67.08	16.73		130.0	
		Z	4.19	66.99	16.21		130.0	
10585-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 12 Mbps, 90pc duty cycle)	X	4.50	67.10	16.65	0.46	130.0	± 9.6 %
		Y	4.69	67.32	16.88		130.0	
		Z	4.33	67.20	16.35		130.0	
10586-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 18 Mbps, 90pc duty cycle)	X	4.42	67.29	16.79	0.46	130.0	± 9.6 %
		Y	4.60	67.52	17.02		130.0	
		Z	4.26	67.40	16.51		130.0	
10587-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 24 Mbps, 90pc duty cycle)	X	4.15	66.32	15.93	0.46	130.0	± 9.6 %
		Y	4.34	66.61	16.20		130.0	
		Z	3.97	66.27	15.55		130.0	
10588-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 36 Mbps, 90pc duty cycle)	X	4.18	66.36	15.93	0.46	130.0	± 9.6 %
		Y	4.38	66.67	16.22		130.0	
		Z	3.97	66.21	15.49		130.0	
10589-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 48 Mbps, 90pc duty cycle)	X	4.34	67.41	16.79	0.46	130.0	± 9.6 %
		Y	4.51	67.61	16.99		130.0	
		Z	4.18	67.53	16.51		130.0	
10590-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 54 Mbps, 90pc duty cycle)	X	4.07	66.06	15.68	0.46	130.0	± 9.6 %
		Y	4.26	66.35	15.96		130.0	
		Z	3.88	65.96	15.27		130.0	

10591-AAB	IEEE 802.11n (HT Mixed, 20MHz, MCS0, 90pc duty cycle)	X	4.48	66.74	16.55	0.46	130.0	± 9.6 %
		Y	4.64	66.92	16.75		130.0	
		Z	4.33	66.86	16.26		130.0	
10592-AAB	IEEE 802.11n (HT Mixed, 20MHz, MCS1, 90pc duty cycle)	X	4.58	67.02	16.67	0.46	130.0	± 9.6 %
		Y	4.77	67.23	16.87		130.0	
		Z	4.41	67.10	16.37		130.0	
10593-AAB	IEEE 802.11n (HT Mixed, 20MHz, MCS2, 90pc duty cycle)	X	4.50	66.88	16.51	0.46	130.0	± 9.6 %
		Y	4.68	67.11	16.73		130.0	
		Z	4.33	66.96	16.20		130.0	
10594-AAB	IEEE 802.11n (HT Mixed, 20MHz, MCS3, 90pc duty cycle)	X	4.56	67.08	16.70	0.46	130.0	± 9.6 %
		Y	4.74	67.30	16.91		130.0	
		Z	4.39	67.16	16.40		130.0	
10595-AAB	IEEE 802.11n (HT Mixed, 20MHz, MCS4, 90pc duty cycle)	X	4.53	67.07	16.60	0.46	130.0	± 9.6 %
		Y	4.71	67.27	16.81		130.0	
		Z	4.35	67.13	16.30		130.0	
10596-AAB	IEEE 802.11n (HT Mixed, 20MHz, MCS5, 90pc duty cycle)	X	4.45	67.00	16.58	0.46	130.0	± 9.6 %
		Y	4.64	67.24	16.80		130.0	
		Z	4.27	67.01	16.25		130.0	
10597-AAB	IEEE 802.11n (HT Mixed, 20MHz, MCS6, 90pc duty cycle)	X	4.40	66.85	16.41	0.46	130.0	± 9.6 %
		Y	4.59	67.11	16.65		130.0	
		Z	4.23	66.87	16.08		130.0	
10598-AAB	IEEE 802.11n (HT Mixed, 20MHz, MCS7, 90pc duty cycle)	X	4.41	67.15	16.73	0.46	130.0	± 9.6 %
		Y	4.59	67.39	16.96		130.0	
		Z	4.26	67.25	16.45		130.0	
10599-AAB	IEEE 802.11n (HT Mixed, 40MHz, MCS0, 90pc duty cycle)	X	5.20	67.26	16.87	0.46	130.0	± 9.6 %
		Y	5.33	67.39	16.98		130.0	
		Z	5.07	67.39	16.64		130.0	
10600-AAB	IEEE 802.11n (HT Mixed, 40MHz, MCS1, 90pc duty cycle)	X	5.34	67.77	17.10	0.46	130.0	± 9.6 %
		Y	5.47	67.86	17.18		130.0	
		Z	5.05	67.37	16.59		130.0	
10601-AAB	IEEE 802.11n (HT Mixed, 40MHz, MCS2, 90pc duty cycle)	X	5.22	67.48	16.98	0.46	130.0	± 9.6 %
		Y	5.34	67.55	17.05		130.0	
		Z	5.03	67.40	16.63		130.0	
10602-AAB	IEEE 802.11n (HT Mixed, 40MHz, MCS3, 90pc duty cycle)	X	5.31	67.47	16.88	0.46	130.0	± 9.6 %
		Y	5.47	67.70	17.03		130.0	
		Z	5.04	67.16	16.42		130.0	
10603-AAB	IEEE 802.11n (HT Mixed, 40MHz, MCS4, 90pc duty cycle)	X	5.34	67.68	17.13	0.46	130.0	± 9.6 %
		Y	5.55	68.04	17.35		130.0	
		Z	5.07	67.36	16.68		130.0	
10604-AAB	IEEE 802.11n (HT Mixed, 40MHz, MCS5, 90pc duty cycle)	X	5.19	67.13	16.83	0.46	130.0	± 9.6 %
		Y	5.43	67.67	17.14		130.0	
		Z	4.98	67.00	16.46		130.0	
10605-AAB	IEEE 802.11n (HT Mixed, 40MHz, MCS6, 90pc duty cycle)	X	5.28	67.45	16.99	0.46	130.0	± 9.6 %
		Y	5.44	67.68	17.14		130.0	
		Z	5.02	67.15	16.54		130.0	
10606-AAB	IEEE 802.11n (HT Mixed, 40MHz, MCS7, 90pc duty cycle)	X	5.09	66.96	16.59	0.46	130.0	± 9.6 %
		Y	5.20	67.02	16.66		130.0	
		Z	4.89	66.84	16.22		130.0	

10607-AAB	IEEE 802.11ac WiFi (20MHz, MCS0, 90pc duty cycle)	X	4.33	66.11	16.21	0.46	130.0	± 9.6 %
		Y	4.50	66.32	16.42		130.0	
		Z	4.18	66.24	15.93		130.0	
10608-AAB	IEEE 802.11ac WiFi (20MHz, MCS1, 90pc duty cycle)	X	4.46	66.41	16.34	0.46	130.0	± 9.6 %
		Y	4.65	66.67	16.57		130.0	
		Z	4.28	66.49	16.05		130.0	
10609-AAB	IEEE 802.11ac WiFi (20MHz, MCS2, 90pc duty cycle)	X	4.35	66.23	16.15	0.46	130.0	± 9.6 %
		Y	4.54	66.50	16.39		130.0	
		Z	4.18	66.29	15.84		130.0	
10610-AAB	IEEE 802.11ac WiFi (20MHz, MCS3, 90pc duty cycle)	X	4.41	66.44	16.34	0.46	130.0	± 9.6 %
		Y	4.59	66.68	16.57		130.0	
		Z	4.24	66.51	16.05		130.0	
10611-AAB	IEEE 802.11ac WiFi (20MHz, MCS4, 90pc duty cycle)	X	4.32	66.20	16.17	0.46	130.0	± 9.6 %
		Y	4.51	66.47	16.40		130.0	
		Z	4.14	66.25	15.86		130.0	
10612-AAB	IEEE 802.11ac WiFi (20MHz, MCS5, 90pc duty cycle)	X	4.30	66.31	16.19	0.46	130.0	± 9.6 %
		Y	4.50	66.61	16.44		130.0	
		Z	4.10	66.27	15.84		130.0	
10613-AAB	IEEE 802.11ac WiFi (20MHz, MCS6, 90pc duty cycle)	X	4.29	66.09	16.01	0.46	130.0	± 9.6 %
		Y	4.49	66.41	16.28		130.0	
		Z	4.10	66.08	15.67		130.0	
10614-AAB	IEEE 802.11ac WiFi (20MHz, MCS7, 90pc duty cycle)	X	4.28	66.40	16.32	0.46	130.0	± 9.6 %
		Y	4.47	66.69	16.57		130.0	
		Z	4.11	66.46	16.02		130.0	
10615-AAB	IEEE 802.11ac WiFi (20MHz, MCS8, 90pc duty cycle)	X	4.30	66.00	15.89	0.46	130.0	± 9.6 %
		Y	4.49	66.26	16.14		130.0	
		Z	4.11	66.01	15.56		130.0	
10616-AAB	IEEE 802.11ac WiFi (40MHz, MCS0, 90pc duty cycle)	X	4.98	66.35	16.40	0.46	130.0	± 9.6 %
		Y	5.14	66.59	16.56		130.0	
		Z	4.81	66.34	16.11		130.0	
10617-AAB	IEEE 802.11ac WiFi (40MHz, MCS1, 90pc duty cycle)	X	5.02	66.47	16.44	0.46	130.0	± 9.6 %
		Y	5.20	66.77	16.63		130.0	
		Z	4.82	66.38	16.11		130.0	
10618-AAB	IEEE 802.11ac WiFi (40MHz, MCS2, 90pc duty cycle)	X	4.92	66.49	16.47	0.46	130.0	± 9.6 %
		Y	5.11	66.84	16.68		130.0	
		Z	4.75	66.49	16.18		130.0	
10619-AAB	IEEE 802.11ac WiFi (40MHz, MCS3, 90pc duty cycle)	X	4.99	66.47	16.38	0.46	130.0	± 9.6 %
		Y	5.12	66.62	16.50		130.0	
		Z	4.78	66.37	16.04		130.0	
10620-AAB	IEEE 802.11ac WiFi (40MHz, MCS4, 90pc duty cycle)	X	5.02	66.35	16.37	0.46	130.0	± 9.6 %
		Y	5.19	66.61	16.54		130.0	
		Z	4.81	66.23	16.02		130.0	
10621-AAB	IEEE 802.11ac WiFi (40MHz, MCS5, 90pc duty cycle)	X	5.02	66.45	16.56	0.46	130.0	± 9.6 %
		Y	5.19	66.74	16.74		130.0	
		Z	4.86	66.48	16.29		130.0	
10622-AAB	IEEE 802.11ac WiFi (40MHz, MCS6, 90pc duty cycle)	X	5.02	66.56	16.61	0.46	130.0	± 9.6 %
		Y	5.19	66.85	16.79		130.0	
		Z	4.84	66.54	16.31		130.0	

10623-AAB	IEEE 802.11ac WiFi (40MHz, MCS7, 90pc duty cycle)	X	4.91	66.09	16.22	0.46	130.0	± 9.6 %
		Y	5.06	66.33	16.38		130.0	
		Z	4.74	66.10	15.92		130.0	
10624-AAB	IEEE 802.11ac WiFi (40MHz, MCS8, 90pc duty cycle)	X	5.10	66.37	16.43	0.46	130.0	± 9.6 %
		Y	5.27	66.61	16.59		130.0	
		Z	4.91	66.33	16.12		130.0	
10625-AAB	IEEE 802.11ac WiFi (40MHz, MCS9, 90pc duty cycle)	X	5.22	66.63	16.63	0.46	130.0	± 9.6 %
		Y	5.38	66.84	16.77		130.0	
		Z	5.00	66.51	16.28		130.0	
10626-AAB	IEEE 802.11ac WiFi (80MHz, MCS0, 90pc duty cycle)	X	5.32	66.29	16.33	0.46	130.0	± 9.6 %
		Y	5.46	66.57	16.48		130.0	
		Z	5.17	66.30	16.05		130.0	
10627-AAB	IEEE 802.11ac WiFi (80MHz, MCS1, 90pc duty cycle)	X	5.60	67.10	16.71	0.46	130.0	± 9.6 %
		Y	5.73	67.29	16.81		130.0	
		Z	5.36	66.86	16.31		130.0	
10628-AAB	IEEE 802.11ac WiFi (80MHz, MCS2, 90pc duty cycle)	X	5.31	66.25	16.20	0.46	130.0	± 9.6 %
		Y	5.46	66.55	16.37		130.0	
		Z	5.14	66.21	15.90		130.0	
10629-AAB	IEEE 802.11ac WiFi (80MHz, MCS3, 90pc duty cycle)	X	5.49	66.72	16.44	0.46	130.0	± 9.6 %
		Y	5.57	66.76	16.47		130.0	
		Z	5.29	66.59	16.09		130.0	
10630-AAB	IEEE 802.11ac WiFi (80MHz, MCS4, 90pc duty cycle)	X	5.68	67.51	16.83	0.46	130.0	± 9.6 %
		Y	5.90	67.96	17.07		130.0	
		Z	5.34	66.93	16.27		130.0	
10631-AAB	IEEE 802.11ac WiFi (80MHz, MCS5, 90pc duty cycle)	X	5.63	67.48	17.02	0.46	130.0	± 9.6 %
		Y	5.82	67.86	17.23		130.0	
		Z	5.40	67.29	16.67		130.0	
10632-AAB	IEEE 802.11ac WiFi (80MHz, MCS6, 90pc duty cycle)	X	5.65	67.46	17.04	0.46	130.0	± 9.6 %
		Y	5.72	67.47	17.05		130.0	
		Z	5.44	67.32	16.69		130.0	
10633-AAB	IEEE 802.11ac WiFi (80MHz, MCS7, 90pc duty cycle)	X	5.32	66.30	16.27	0.46	130.0	± 9.6 %
		Y	5.51	66.72	16.50		130.0	
		Z	5.15	66.30	15.99		130.0	
10634-AAB	IEEE 802.11ac WiFi (80MHz, MCS8, 90pc duty cycle)	X	5.36	66.54	16.45	0.46	130.0	± 9.6 %
		Y	5.51	66.83	16.61		130.0	
		Z	5.20	66.59	16.19		130.0	
10635-AAB	IEEE 802.11ac WiFi (80MHz, MCS9, 90pc duty cycle)	X	5.20	65.70	15.73	0.46	130.0	± 9.6 %
		Y	5.36	66.01	15.90		130.0	
		Z	5.03	65.65	15.41		130.0	
10636-AAC	IEEE 802.11ac WiFi (160MHz, MCS0, 90pc duty cycle)	X	5.78	66.65	16.42	0.46	130.0	± 9.6 %
		Y	5.90	66.91	16.56		130.0	
		Z	5.61	66.61	16.12		130.0	
10637-AAC	IEEE 802.11ac WiFi (160MHz, MCS1, 90pc duty cycle)	X	5.90	67.00	16.58	0.46	130.0	± 9.6 %
		Y	6.04	67.28	16.73		130.0	
		Z	5.69	66.82	16.22		130.0	
10638-AAC	IEEE 802.11ac WiFi (160MHz, MCS2, 90pc duty cycle)	X	5.94	67.10	16.61	0.46	130.0	± 9.6 %
		Y	6.05	67.30	16.71		130.0	
		Z	5.75	66.99	16.28		130.0	

10639-AAC	IEEE 802.11ac WiFi (160MHz, MCS3, 90pc duty cycle)	X	5.87	66.88	16.54	0.46	130.0	± 9.6 %
		Y	6.00	67.17	16.69		130.0	
		Z	5.69	66.82	16.24		130.0	
10640-AAC	IEEE 802.11ac WiFi (160MHz, MCS4, 90pc duty cycle)	X	5.79	66.67	16.37	0.46	130.0	± 9.6 %
		Y	5.97	67.09	16.59		130.0	
		Z	5.60	66.55	16.04		130.0	
10641-AAC	IEEE 802.11ac WiFi (160MHz, MCS5, 90pc duty cycle)	X	5.95	66.94	16.53	0.46	130.0	± 9.6 %
		Y	6.07	67.17	16.65		130.0	
		Z	5.72	66.71	16.14		130.0	
10642-AAC	IEEE 802.11ac WiFi (160MHz, MCS6, 90pc duty cycle)	X	5.93	67.02	16.75	0.46	130.0	± 9.6 %
		Y	6.09	67.36	16.93		130.0	
		Z	5.75	66.97	16.45		130.0	
10643-AAC	IEEE 802.11ac WiFi (160MHz, MCS7, 90pc duty cycle)	X	5.79	66.72	16.48	0.46	130.0	± 9.6 %
		Y	5.94	67.06	16.66		130.0	
		Z	5.59	66.57	16.12		130.0	
10644-AAC	IEEE 802.11ac WiFi (160MHz, MCS8, 90pc duty cycle)	X	5.83	66.84	16.56	0.46	130.0	± 9.6 %
		Y	6.00	67.25	16.78		130.0	
		Z	5.64	66.74	16.23		130.0	
10645-AAC	IEEE 802.11ac WiFi (160MHz, MCS9, 90pc duty cycle)	X	6.00	67.07	16.64	0.46	130.0	± 9.6 %
		Y	6.21	67.54	16.89		130.0	
		Z	5.77	66.86	16.26		130.0	
10646-AAE	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, QPSK, UL Subframe=2,7)	X	10.86	99.58	34.54	9.30	60.0	± 9.6 %
		Y	12.75	100.34	33.52		60.0	
		Z	5.31	84.82	28.77		60.0	
10647-AAE	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK, UL Subframe=2,7)	X	9.54	97.33	33.94	9.30	60.0	± 9.6 %
		Y	11.34	98.50	33.07		60.0	
		Z	4.72	82.70	28.08		60.0	
10648-AAA	CDMA2000 (1x Advanced)	X	0.33	60.00	5.33	0.00	150.0	± 9.6 %
		Y	0.54	62.99	9.08		150.0	
		Z	0.29	60.00	4.72		150.0	
10652-AAC	LTE-TDD (OFDMA, 5 MHz, E-TM 3.1, Clipping 44%)	X	3.41	67.48	16.36	2.23	80.0	± 9.6 %
		Y	3.57	67.58	16.63		80.0	
		Z	3.03	66.68	15.51		80.0	
10653-AAC	LTE-TDD (OFDMA, 10 MHz, E-TM 3.1, Clipping 44%)	X	3.91	66.47	16.67	2.23	80.0	± 9.6 %
		Y	4.05	66.58	16.80		80.0	
		Z	3.59	65.97	16.06		80.0	
10654-AAC	LTE-TDD (OFDMA, 15 MHz, E-TM 3.1, Clipping 44%)	X	3.92	66.00	16.72	2.23	80.0	± 9.6 %
		Y	4.05	66.15	16.82		80.0	
		Z	3.64	65.53	16.15		80.0	
10655-AAD	LTE-TDD (OFDMA, 20 MHz, E-TM 3.1, Clipping 44%)	X	4.00	65.85	16.74	2.23	80.0	± 9.6 %
		Y	4.12	66.05	16.84		80.0	
		Z	3.73	65.37	16.19		80.0	
10658-AAA	Pulse Waveform (200Hz, 10%)	X	8.11	79.21	17.64	10.00	50.0	± 9.6 %
		Y	5.18	73.01	14.95		50.0	
		Z	4.63	71.52	13.37		50.0	
10659-AAA	Pulse Waveform (200Hz, 20%)	X	100.00	107.57	23.76	6.99	60.0	± 9.6 %
		Y	5.94	76.36	14.90		60.0	
		Z	5.07	74.93	13.37		60.0	

10660-AAA	Pulse Waveform (200Hz, 40%)	X	100.00	102.40	19.98	3.98	80.0	± 9.6 %
		Y	100.00	101.57	19.73		80.0	
		Z	9.47	80.34	13.09		80.0	
10661-AAA	Pulse Waveform (200Hz, 60%)	X	0.90	65.14	7.58	2.22	100.0	± 9.6 %
		Y	100.00	98.16	17.19		100.0	
		Z	0.28	60.00	4.46		100.0	
10662-AAA	Pulse Waveform (200Hz, 80%)	X	42.12	60.80	1.47	0.97	120.0	± 9.6 %
		Y	0.19	60.00	4.14		120.0	
		Z	1.43	244.46	28.28		120.0	

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



## **Appendix E – Dipole Calibration Data Sheets**

gm

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



**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 **RF Exposure Lab**

Certificate No: **D750V3-1053\_Aug15**

## CALIBRATION CERTIFICATE

Object **D750V3 - SN: 1053**

Calibration procedure(s) **QA CAL-05.v9**  
**Calibration procedure for dipole validation kits above 700 MHz**

Calibration date: **August 10, 2015**

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 EPM-442A	GB37480704	07-Oct-14 (No. 217-02020)	Oct-15
Power sensor HP 8481A	US37292783	07-Oct-14 (No. 217-02020)	Oct-15
Power sensor HP 8481A	MY41092317	07-Oct-14 (No. 217-02021)	Oct-15
Reference 20 dB Attenuator	SN: 5058 (20k)	01-Apr-15 (No. 217-02131)	Mar-16
Type-N mismatch combination	SN: 5047.2 / 06327	01-Apr-15 (No. 217-02134)	Mar-16
Reference Probe ES3DV3	SN: 3205	30-Dec-14 (No. ES3-3205_Dec14)	Dec-15
DAE4	SN: 601	18-Aug-14 (No. DAE4-601_Aug14)	Aug-15
Secondary Standards	ID #	Check Date (in house)	Scheduled Check
RF generator R&S SMT-06	100005	04-Aug-99 (in house check Oct-13)	In house check: Oct-16
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-14)	In house check: Oct-15

Calibrated by: **Name**  
**Michael Weber** **Function**  
**Laboratory Technician**

Approved by: **Name**  
**Katja Pokovic** **Technical Manager**

Signature

Issued: August 12, 2015

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



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**

### Glossary:

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

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

- 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
- 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 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

### Additional Documentation:

- 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%.

## Measurement Conditions

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

<b>DASY Version</b>	DASY5	V52.8.8
<b>Extrapolation</b>	Advanced Extrapolation	
<b>Phantom</b>	Modular Flat Phantom	
<b>Distance Dipole Center - TSL</b>	15 mm	with Spacer
<b>Zoom Scan Resolution</b>	dx, dy, dz = 5 mm	
<b>Frequency</b>	750 MHz ± 1 MHz	

## Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
<b>Nominal Head TSL parameters</b>	22.0 °C	41.9	0.89 mho/m
<b>Measured Head TSL parameters</b>	(22.0 ± 0.2) °C	42.1 ± 6 %	0.91 mho/m ± 6 %
<b>Head TSL temperature change during test</b>	< 0.5 °C	----	----

## SAR result with Head TSL

<b>SAR averaged over 1 cm<sup>3</sup> (1 g) of Head TSL</b>	Condition	
SAR measured	250 mW input power	2.04 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	<b>8.03 W/kg ± 17.0 % (k=2)</b>

<b>SAR averaged over 10 cm<sup>3</sup> (10 g) of Head TSL</b>	condition	
SAR measured	250 mW input power	1.33 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	<b>5.25 W/kg ± 16.5 % (k=2)</b>

## Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
<b>Nominal Body TSL parameters</b>	22.0 °C	55.5	0.96 mho/m
<b>Measured Body TSL parameters</b>	(22.0 ± 0.2) °C	56.3 ± 6 %	1.00 mho/m ± 6 %
<b>Body TSL temperature change during test</b>	< 0.5 °C	----	----

## SAR result with Body TSL

<b>SAR averaged over 1 cm<sup>3</sup> (1 g) of Body TSL</b>	Condition	
SAR measured	250 mW input power	2.18 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	<b>8.48 W/kg ± 17.0 % (k=2)</b>

<b>SAR averaged over 10 cm<sup>3</sup> (10 g) of Body TSL</b>	condition	
SAR measured	250 mW input power	1.43 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	<b>5.59 W/kg ± 16.5 % (k=2)</b>

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

### Antenna Parameters with Head TSL

Impedance, transformed to feed point	54.4 $\Omega$ - 0.4 j $\Omega$
Return Loss	- 27.5 dB

### Antenna Parameters with Body TSL

Impedance, transformed to feed point	49.5 $\Omega$ - 2.5 j $\Omega$
Return Loss	- 32.0 dB

### General Antenna Parameters and Design

Electrical Delay (one direction)	1.035 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	November 08, 2011

#### Extended Calibration

Usage of SAR dipoles calibrated less than 3 years ago but more than 1 year ago were confirmed in maintaining return loss (< -20 dB, within 20% of prior calibration) and impedance (within 5 ohm from prior calibration) requirements per extended calibrations in KDB Publication 865664 D01 v01r04.

D750V3 SN: 1053 - Head						
Date of Measurement	Return Loss (dB)	$\Delta\%$	Impedance Real ( $\Omega$ )	$\Delta\Omega$	Impedance Imaginary (j $\Omega$ )	$\Delta\Omega$
8/10/2015	-27.5		54.4		-0.4	
8/9/2016	-25.9	-5.8	54.3	-0.1	-0.5	-0.1
8/10/2017	-26.9	-2.2	54.1	-0.3	-0.3	0.1

D750V3 SN: 1053 - Body						
Date of Measurement	Return Loss (dB)	$\Delta\%$	Impedance Real ( $\Omega$ )	$\Delta\Omega$	Impedance Imaginary (j $\Omega$ )	$\Delta\Omega$
8/10/2015	-32.0		49.5		-2.5	
8/9/2016	-31.5	-1.6	51.0	1.5	-2.9	-0.4
8/10/2017	-31.2	-2.5	50.3	0.8	-2.8	-0.3

## DASY5 Validation Report for Head TSL

Date: 10.08.2015

Test Laboratory: SPEAG, Zurich, Switzerland

**DUT: Dipole 750 MHz; Type: D750V3; Serial: D750V3 - SN: 1053**

Communication System: UID 0 - CW; Frequency: 750 MHz

Medium parameters used:  $f = 750$  MHz;  $\sigma = 0.91$  S/m;  $\epsilon_r = 42.1$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(6.44, 6.44, 6.44); Calibrated: 30.12.2014;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 18.08.2014
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

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

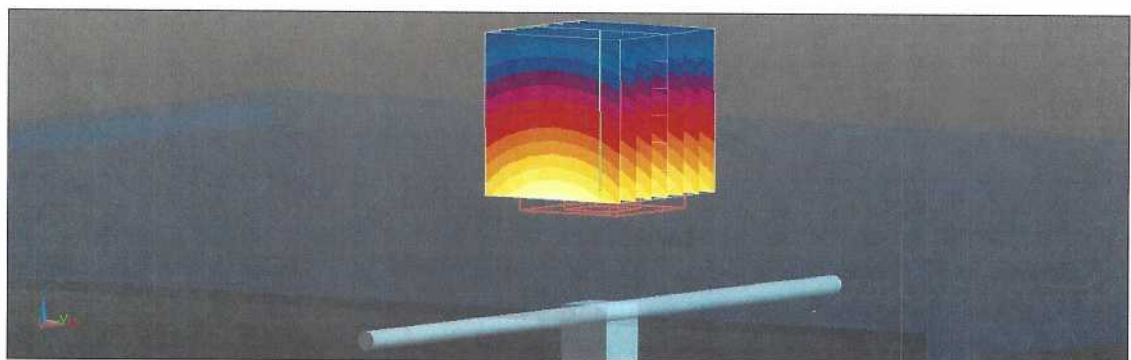
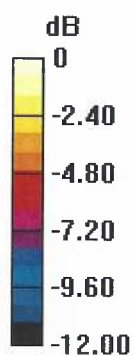
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 53.03 V/m; Power Drift = 0.00 dB

Peak SAR (extrapolated) = 3.06 W/kg

**SAR(1 g) = 2.04 W/kg; SAR(10 g) = 1.33 W/kg**

Maximum value of SAR (measured) = 2.39 W/kg



0 dB = 2.39 W/kg = 3.78 dBW/kg

# Impedance Measurement Plot for Head TSL

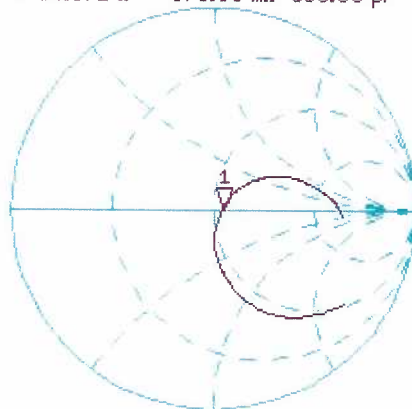
10 Aug 2015 11:47:25

CH1 S11 1 U FS

1: 54.371  $\Omega$  -375.00 m $\Omega$  565.88 pF

750.000 000 MHz

\*  
De1  
Ca



Avg  
16

H1d

CH2 S11

LOG

5 dB/REF -20 dB

1:-27.524 dB

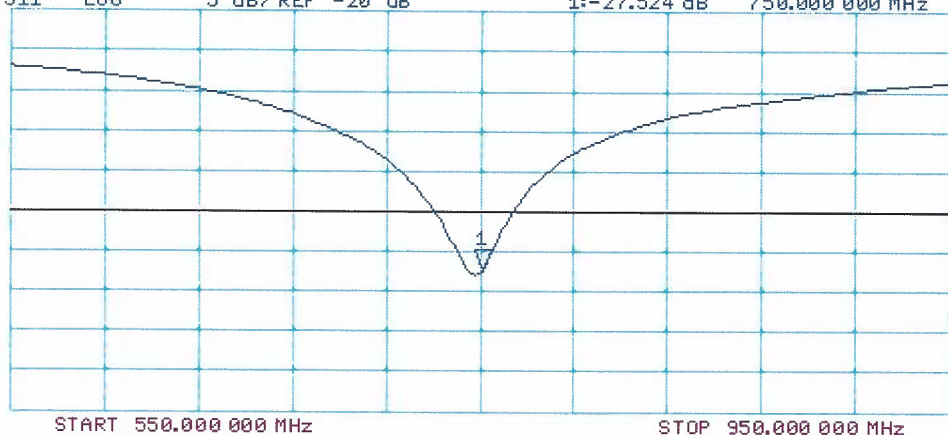
750.000 000 MHz

De1

Ca

Avg  
16

H1d



START 550.000 000 MHz

STOP 950.000 000 MHz

# DASY5 Validation Report for Body TSL

Date: 10.08.2015

Test Laboratory: SPEAG, Zurich, Switzerland

**DUT: Dipole 750 MHz; Type: D750V3; Serial: D750V3 - SN: 1053**

Communication System: UID 0 - CW; Frequency: 750 MHz

Medium parameters used:  $f = 750$  MHz;  $\sigma = 1$  S/m;  $\epsilon_r = 56.3$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(6.21, 6.21, 6.21); Calibrated: 30.12.2014;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 18.08.2014
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

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

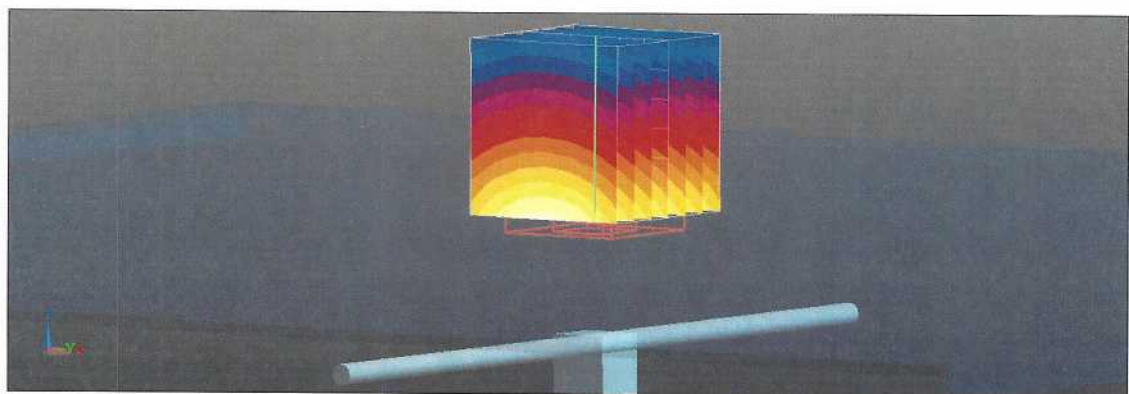
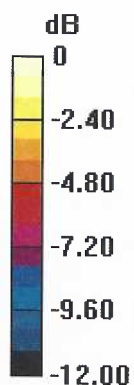
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 52.22 V/m; Power Drift = -0.00 dB

Peak SAR (extrapolated) = 3.19 W/kg

**SAR(1 g) = 2.18 W/kg; SAR(10 g) = 1.43 W/kg**

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



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



# Impedance Measurement Plot for Body TSL

10 Aug 2015 10:58:10

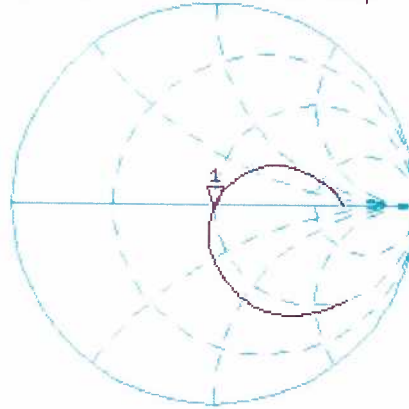
CH1 S11 1 U FS 1: 49.469  $\Omega$  -2.4551  $\Omega$  86.436 pF 750.000 000 MHz

\*  
De1

CΔ

Avg  
16

H1d



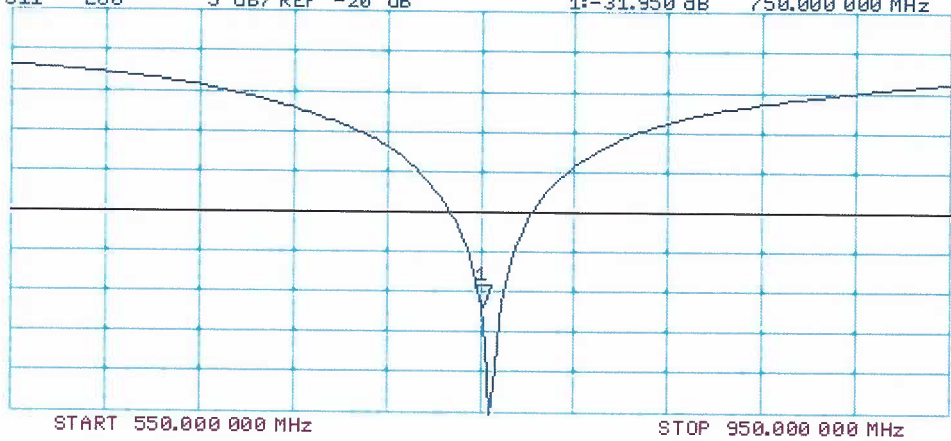
CH2 S11 LOG 5 dB/REF -20 dB 1:-31.950 dB 750.000 000 MHz

De1

CΔ

Avg  
16

H1d



gm

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



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

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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 **RF Exposure Lab**

Certificate No: **D835V2-4d131\_Aug15**

## CALIBRATION CERTIFICATE

Object **D835V2 - SN: 4d131**

Calibration procedure(s) **QA CAL-05.v9  
Calibration procedure for dipole validation kits above 700 MHz**

Calibration date: **August 10, 2015**

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 EPM-442A	GB37480704	07-Oct-14 (No. 217-02020)	Oct-15
Power sensor HP 8481A	US37292783	07-Oct-14 (No. 217-02020)	Oct-15
Power sensor HP 8481A	MY41092317	07-Oct-14 (No. 217-02021)	Oct-15
Reference 20 dB Attenuator	SN: 5058 (20k)	01-Apr-15 (No. 217-02131)	Mar-16
Type-N mismatch combination	SN: 5047.2 / 06327	01-Apr-15 (No. 217-02134)	Mar-16
Reference Probe ES3DV3	SN: 3205	30-Dec-14 (No. ES3-3205_Dec14)	Dec-15
DAE4	SN: 601	18-Aug-14 (No. DAE4-601_Aug14)	Aug-15
Secondary Standards	ID #	Check Date (in house)	Scheduled Check
RF generator R&S SMT-06	100005	04-Aug-99 (in house check Oct-13)	In house check: Oct-16
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-14)	In house check: Oct-15

Calibrated by: **Name: Michael Weber** **Function: Laboratory Technician**

Signature

Approved by: **Name: Katja Pokovic** **Function: Technical Manager**

Issued: August 12, 2015

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



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**

### Glossary:

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

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

- 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
- 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 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

### Additional Documentation:

- 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%.

## Measurement Conditions

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

<b>DASY Version</b>	DASY5	V52.8.8
<b>Extrapolation</b>	Advanced Extrapolation	
<b>Phantom</b>	Modular Flat Phantom	
<b>Distance Dipole Center - TSL</b>	15 mm	with Spacer
<b>Zoom Scan Resolution</b>	dx, dy, dz = 5 mm	
<b>Frequency</b>	835 MHz ± 1 MHz	

## Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
<b>Nominal Head TSL parameters</b>	22.0 °C	41.5	0.90 mho/m
<b>Measured Head TSL parameters</b>	(22.0 ± 0.2) °C	41.9 ± 6 %	0.93 mho/m ± 6 %
<b>Head TSL temperature change during test</b>	< 0.5 °C	----	----

## SAR result with Head TSL

<b>SAR averaged over 1 cm<sup>3</sup> (1 g) of Head TSL</b>	Condition	
SAR measured	250 mW input power	2.36 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	<b>9.23 W/kg ± 17.0 % (k=2)</b>

<b>SAR averaged over 10 cm<sup>3</sup> (10 g) of Head TSL</b>	condition	
SAR measured	250 mW input power	1.53 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	<b>6.01 W/kg ± 16.5 % (k=2)</b>

## Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
<b>Nominal Body TSL parameters</b>	22.0 °C	55.2	0.97 mho/m
<b>Measured Body TSL parameters</b>	(22.0 ± 0.2) °C	56.1 ± 6 %	1.02 mho/m ± 6 %
<b>Body TSL temperature change during test</b>	< 0.5 °C	----	----

## SAR result with Body TSL

<b>SAR averaged over 1 cm<sup>3</sup> (1 g) of Body TSL</b>	Condition	
SAR measured	250 mW input power	2.40 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	<b>9.28 W/kg ± 17.0 % (k=2)</b>

<b>SAR averaged over 10 cm<sup>3</sup> (10 g) of Body TSL</b>	condition	
SAR measured	250 mW input power	1.57 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	<b>6.11 W/kg ± 16.5 % (k=2)</b>

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

### Antenna Parameters with Head TSL

Impedance, transformed to feed point	52.3 $\Omega$ - 1.6 j $\Omega$
Return Loss	- 31.2 dB

### Antenna Parameters with Body TSL

Impedance, transformed to feed point	47.7 $\Omega$ - 3.8 j $\Omega$
Return Loss	- 26.8 dB

### General Antenna Parameters and Design

Electrical Delay (one direction)	1.394 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	July 22, 2011

#### Extended Calibration

Usage of SAR dipoles calibrated less than 3 years ago but more than 1 year ago were confirmed in maintaining return loss (< -20 dB, within 20% of prior calibration) and impedance (within 5 ohm from prior calibration) requirements per extended calibrations in KDB Publication 865664 D01 v01r04.

D835V2 SN: 4d131 - Head						
Date of Measurement	Return Loss (dB)	$\Delta\%$	Impedance Real ( $\Omega$ )	$\Delta\Omega$	Impedance Imaginary (j $\Omega$ )	$\Delta\Omega$
8/10/2015	-31.2		52.3		-1.6	
8/9/2016	-29.2	-6.4	51.3	-1.0	-1.8	-0.2
8/10/2017	-30.4	-2.6	50.6	-1.7	-1.5	0.1

D835V2 SN: 4d131 - Body						
Date of Measurement	Return Loss (dB)	$\Delta\%$	Impedance Real ( $\Omega$ )	$\Delta\Omega$	Impedance Imaginary (j $\Omega$ )	$\Delta\Omega$
8/10/2015	-26.8		47.7		-3.8	
8/9/2016	-28.5	6.3	51.2	3.5	-3.8	0.0
8/10/2017	-27.6	3.0	48.4	0.7	-3.6	0.2

# DASY5 Validation Report for Head TSL

Date: 10.08.2015

Test Laboratory: SPEAG, Zurich, Switzerland

**DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN: 4d131**

Communication System: UID 0 - CW; Frequency: 835 MHz

Medium parameters used:  $f = 835 \text{ MHz}$ ;  $\sigma = 0.93 \text{ S/m}$ ;  $\epsilon_r = 41.9$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(6.2, 6.2, 6.2); Calibrated: 30.12.2014;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 18.08.2014
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

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

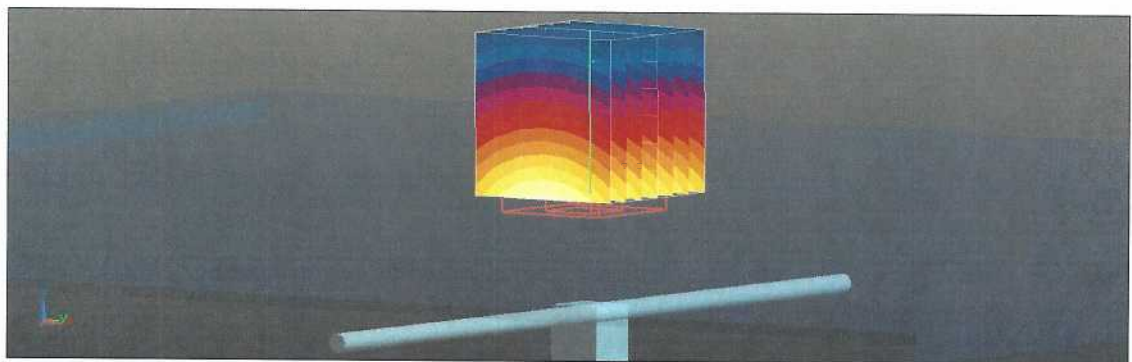
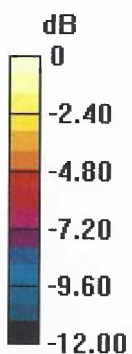
Measurement grid:  $dx=5\text{mm}$ ,  $dy=5\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 56.25 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 3.53 W/kg

**SAR(1 g) = 2.36 W/kg; SAR(10 g) = 1.53 W/kg**

Maximum value of SAR (measured) = 2.77 W/kg



0 dB = 2.77 W/kg = 4.42 dBW/kg

# Impedance Measurement Plot for Head TSL

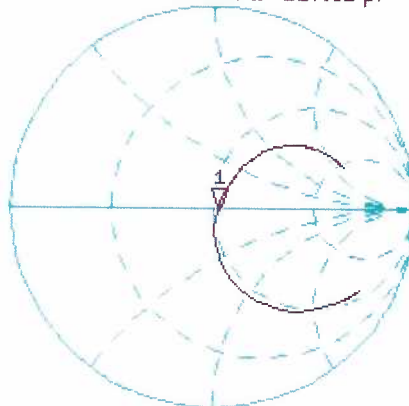
10 Aug 2015 11:56:53  
[CH1] S11 1 U FS 1: 52.279  $\Omega$  -1.6289  $\Omega$  117.01 pF 835.000 000 MHz

\*  
De1

CΔ

Avg  
16

H1 d



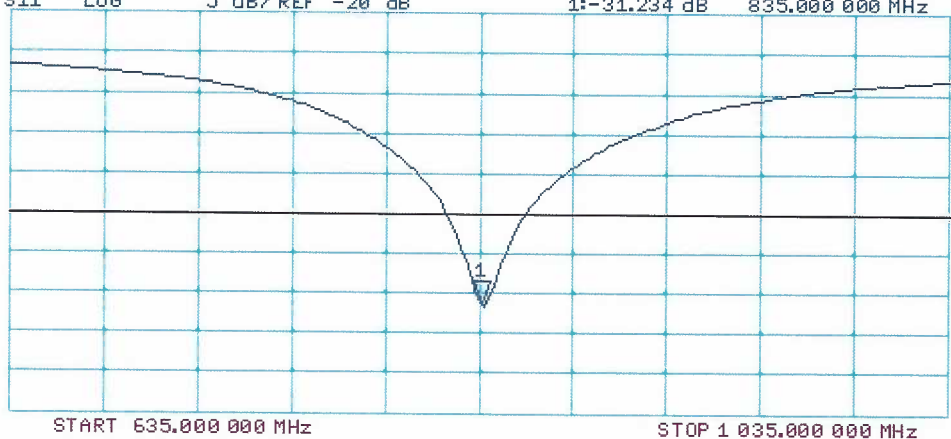
CH2 S11 LOG 5 dB/REF -20 dB 1: -31.234 dB 835.000 000 MHz

De1

CΔ

Avg  
16

H1 d



# DASY5 Validation Report for Body TSL

Date: 10.08.2015

Test Laboratory: SPEAG, Zurich, Switzerland

**DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN: 4d131**

Communication System: UID 0 - CW; Frequency: 835 MHz

Medium parameters used:  $f = 835 \text{ MHz}$ ;  $\sigma = 1.02 \text{ S/m}$ ;  $\epsilon_r = 56.1$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(6.17, 6.17, 6.17); Calibrated: 30.12.2014;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 18.08.2014
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

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

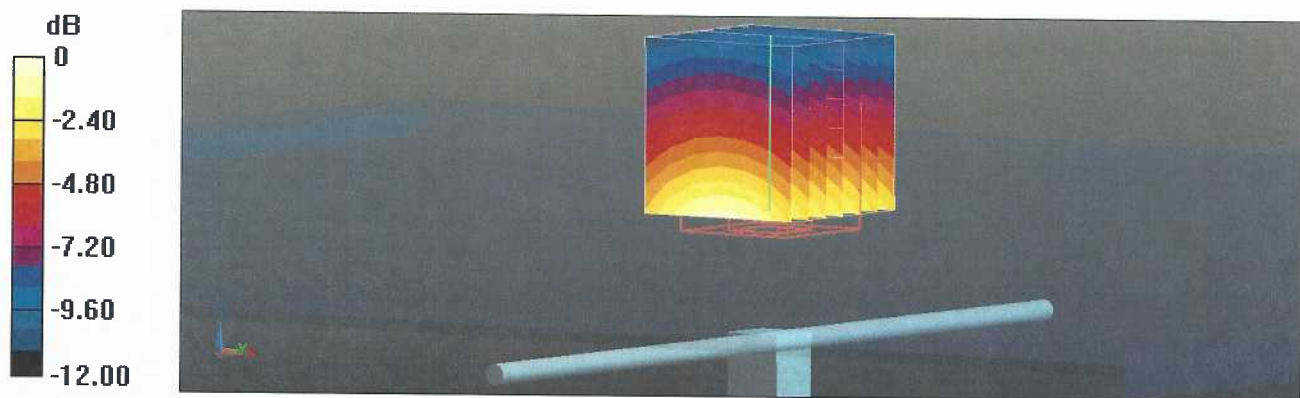
Measurement grid:  $dx=5\text{mm}$ ,  $dy=5\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 54.25 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 3.51 W/kg

**SAR(1 g) = 2.4 W/kg; SAR(10 g) = 1.57 W/kg**

Maximum value of SAR (measured) = 2.80 W/kg



0 dB = 2.80 W/kg = 4.47 dBW/kg



# Impedance Measurement Plot for Body TSL

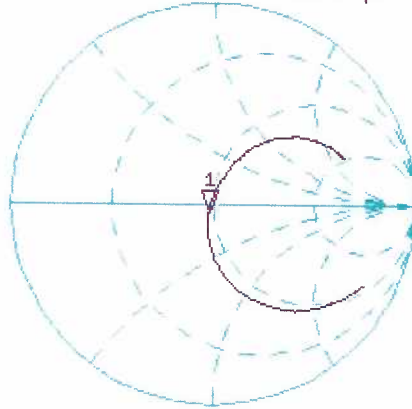
10 Aug 2015 11:11:59  
[CH1] S11 1 U FS 1: 47.674  $\Omega$  -3.8223  $\Omega$  49.867 pF 835.000 000 MHz

\*  
De1

CA

Avg  
16

H1d



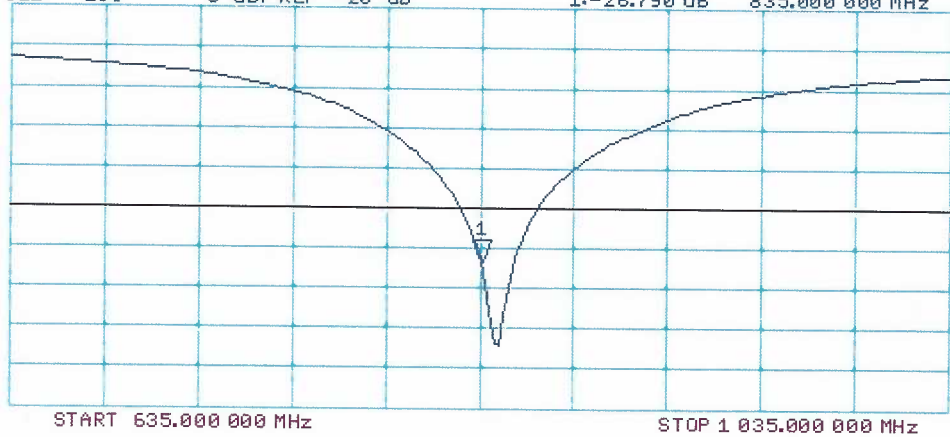
CH2 S11 LOG 5 dB/REF -20 dB 1: -26.790 dB 835.000 000 MHz

De1

CA

Avg  
16

H1d



*gm*

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



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

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Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 0108**

Client **RF Exposure Lab**

Certificate No: **D1750V2-1061\_Aug15**

## CALIBRATION CERTIFICATE

Object **D1750V2 - SN:1061**

Calibration procedure(s) **QA CAL-05.v9  
Calibration procedure for dipole validation kits above 700 MHz**

Calibration date: **August 13, 2015**

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 EPM-442A	GB37480704	07-Oct-14 (No. 217-02020)	Oct-15
Power sensor HP 8481A	US37292783	07-Oct-14 (No. 217-02020)	Oct-15
Power sensor HP 8481A	MY41092317	07-Oct-14 (No. 217-02021)	Oct-15
Reference 20 dB Attenuator	SN: 5058 (20k)	01-Apr-15 (No. 217-02131)	Mar-16
Type-N mismatch combination	SN: 5047.2 / 06327	01-Apr-15 (No. 217-02134)	Mar-16
Reference Probe ES3DV3	SN: 3205	30-Dec-14 (No. ES3-3205_Dec14)	Dec-15
DAE4	SN: 601	18-Aug-14 (No. DAE4-601_Aug14)	Aug-15
Secondary Standards	ID #	Check Date (in house)	Scheduled Check
RF generator R&S SMT-06	100005	04-Aug-99 (in house check Oct-13)	In house check: Oct-16
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-14)	In house check: Oct-15

Calibrated by:	Name <b>Jeton Kastrati</b>	Function <b>Laboratory Technician</b>	Signature 
Approved by:	Name <b>Katja Pokovic</b>	Technical Manager	

Issued: August 13, 2015

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Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 0108**

### Glossary:

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

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

- 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
- 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 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

### Additional Documentation:

- 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%.

## Measurement Conditions

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

<b>DASY Version</b>	DASY5	V52.8.8
<b>Extrapolation</b>	Advanced Extrapolation	
<b>Phantom</b>	Modular Flat Phantom	
<b>Distance Dipole Center - TSL</b>	10 mm	with Spacer
<b>Zoom Scan Resolution</b>	dx, dy, dz = 5 mm	
<b>Frequency</b>	1750 MHz ± 1 MHz	

## Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
<b>Nominal Head TSL parameters</b>	22.0 °C	40.1	1.37 mho/m
<b>Measured Head TSL parameters</b>	(22.0 ± 0.2) °C	39.8 ± 6 %	1.36 mho/m ± 6 %
<b>Head TSL temperature change during test</b>	< 0.5 °C	----	----

## SAR result with Head TSL

<b>SAR averaged over 1 cm<sup>3</sup> (1 g) of Head TSL</b>	Condition	
SAR measured	250 mW input power	9.18 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	<b>36.8 W/kg ± 17.0 % (k=2)</b>

<b>SAR averaged over 10 cm<sup>3</sup> (10 g) of Head TSL</b>	condition	
SAR measured	250 mW input power	4.90 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	<b>19.6 W/kg ± 16.5 % (k=2)</b>

## Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
<b>Nominal Body TSL parameters</b>	22.0 °C	53.4	1.49 mho/m
<b>Measured Body TSL parameters</b>	(22.0 ± 0.2) °C	52.1 ± 6 %	1.48 mho/m ± 6 %
<b>Body TSL temperature change during test</b>	< 0.5 °C	----	----

## SAR result with Body TSL

<b>SAR averaged over 1 cm<sup>3</sup> (1 g) of Body TSL</b>	Condition	
SAR measured	250 mW input power	9.43 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	<b>37.7 W/kg ± 17.0 % (k=2)</b>

<b>SAR averaged over 10 cm<sup>3</sup> (10 g) of Body TSL</b>	condition	
SAR measured	250 mW input power	5.09 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	<b>20.3 W/kg ± 16.5 % (k=2)</b>

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

### Antenna Parameters with Head TSL

Impedance, transformed to feed point	50.5 $\Omega$ + 1.2 j $\Omega$
Return Loss	- 37.8 dB

### Antenna Parameters with Body TSL

Impedance, transformed to feed point	47.3 $\Omega$ + 0.8 j $\Omega$
Return Loss	- 30.7 dB

### General Antenna Parameters and Design

Electrical Delay (one direction)	1.220 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	June 15, 2010

#### Extended Calibration

Usage of SAR dipoles calibrated less than 3 years ago but more than 1 year ago were confirmed in maintaining return loss (< -20 dB, within 20% of prior calibration) and impedance (within 5 ohm from prior calibration) requirements per extended calibrations in KDB Publication 865664 D01 v01r04.

D1750V2 SN: 1061 - Head						
Date of Measurement	Return Loss (dB)	$\Delta\%$	Impedance Real ( $\Omega$ )	$\Delta\Omega$	Impedance Imaginary (j $\Omega$ )	$\Delta\Omega$
8/13/2015	-37.8		50.5		1.2	
8/12/2016	-39.4	4.2	49.2	-1.3	0.7	-0.5
8/13/2017	-38.2	1.1	48.2	-2.3	1.1	-0.1

D1750V2 SN: 1061 - Body						
Date of Measurement	Return Loss (dB)	$\Delta\%$	Impedance Real ( $\Omega$ )	$\Delta\Omega$	Impedance Imaginary (j $\Omega$ )	$\Delta\Omega$
8/13/2015	-30.7		47.3		0.8	
8/12/2016	-29.4	-4.2	46.1	-1.2	0.6	-0.2
8/13/2017	-30.1	-2.0	45.8	-1.5	0.7	-0.1

# DASY5 Validation Report for Head TSL

Date: 13.08.2015

Test Laboratory: SPEAG, Zurich, Switzerland

**DUT: Dipole 1750 MHz; Type: D1750V2; Serial: D1750V2 - SN:1061**

Communication System: UID 0 - CW; Frequency: 1750 MHz

Medium parameters used:  $f = 1750$  MHz;  $\sigma = 1.36$  S/m;  $\epsilon_r = 39.8$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(5.2, 5.2, 5.2); Calibrated: 30.12.2014;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 18.08.2014
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

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

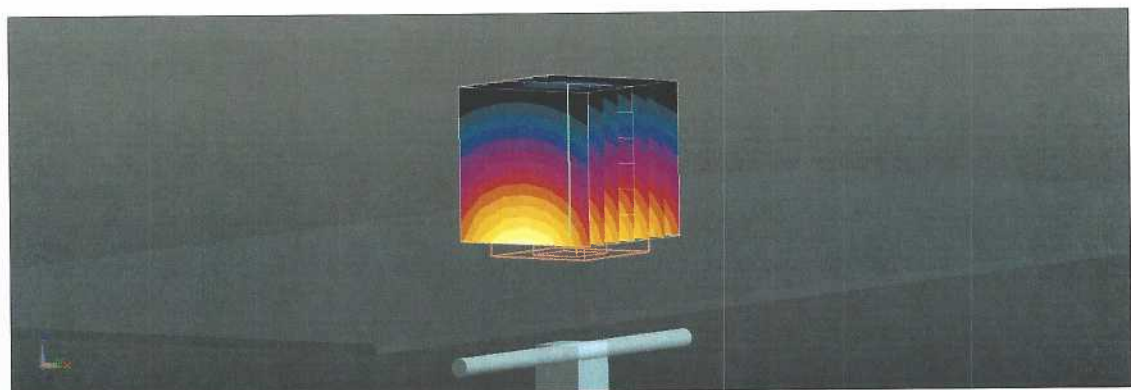
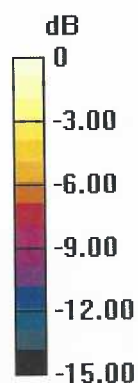
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 95.55 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 16.4 W/kg

**SAR(1 g) = 9.18 W/kg; SAR(10 g) = 4.9 W/kg**

Maximum value of SAR (measured) = 11.6 W/kg



0 dB = 11.6 W/kg = 10.64 dBW/kg

# Impedance Measurement Plot for Head TSL

13 Aug 2015 13:43:33

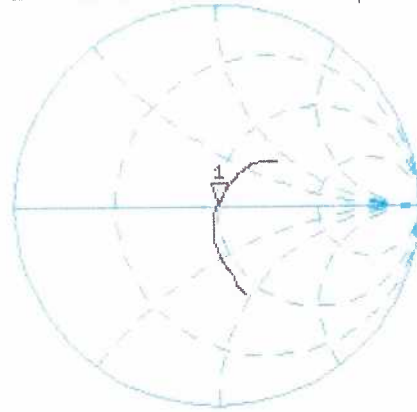
CH1 S11 1 U FS 1: 50.514  $\Omega$  1.1777  $\Omega$  107.11 pH 1 750.000 000 MHz

\*  
Del

CA

Avg  
16

H1d

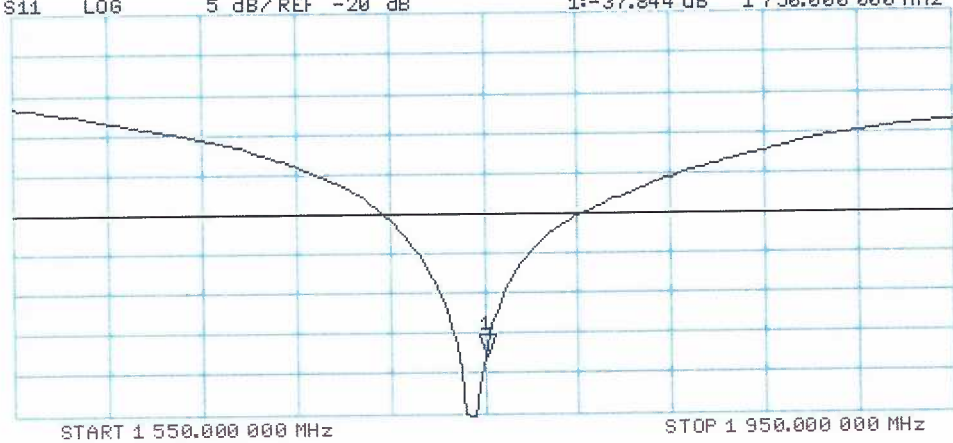


CH2 S11 LOG 5 dB/REF -20 dB 1: -37.844 dB 1 750.000 000 MHz

CA

Avg  
16

H1d



# DASY5 Validation Report for Body TSL

Date: 13.08.2015

Test Laboratory: SPEAG, Zurich, Switzerland

**DUT: Dipole 1750 MHz; Type: D1750V2; Serial: D1750V2 - SN:1061**

Communication System: UID 0 - CW; Frequency: 1750 MHz

Medium parameters used:  $f = 1750$  MHz;  $\sigma = 1.48$  S/m;  $\epsilon_r = 52.1$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.88, 4.88, 4.88); Calibrated: 30.12.2014;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 18.08.2014
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

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

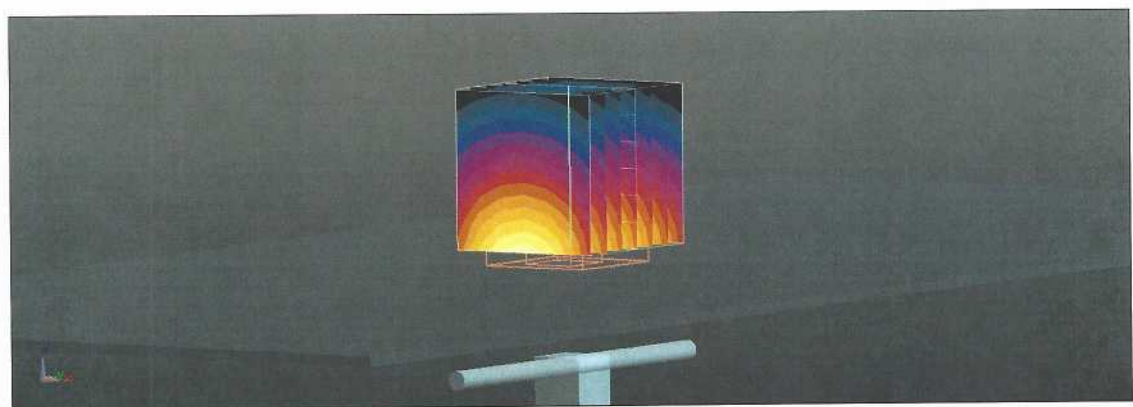
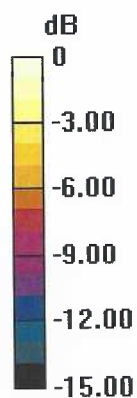
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 93.33 V/m; Power Drift = 0.00 dB

Peak SAR (extrapolated) = 16.1 W/kg

**SAR(1 g) = 9.43 W/kg; SAR(10 g) = 5.09 W/kg**

Maximum value of SAR (measured) = 11.8 W/kg



0 dB = 11.8 W/kg = 10.72 dBW/kg

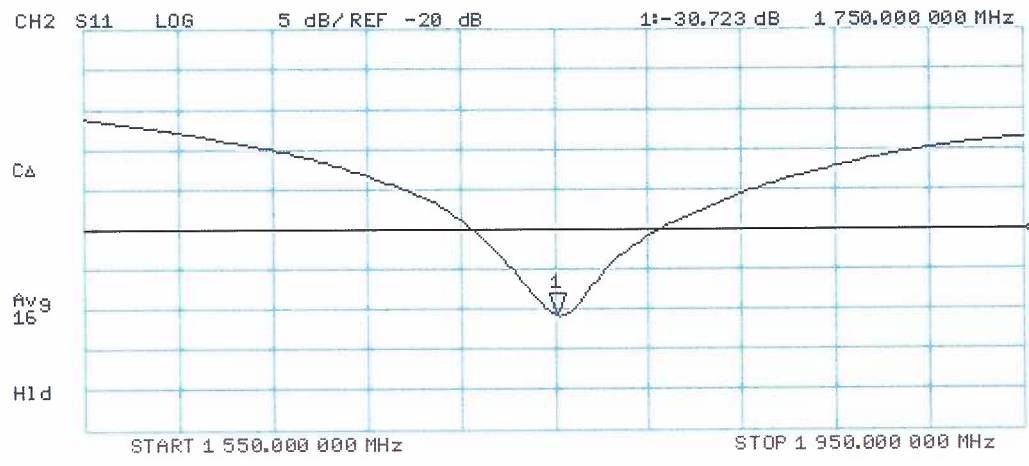
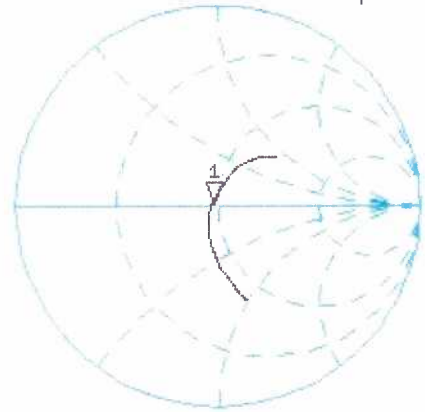


# Impedance Measurement Plot for Body TSL

13 Aug 2015 13:42:55

CH1 S11 1 U FS 1: 47.281  $\alpha$  0.7871  $\alpha$  71.584 pH 1 750.000 000 MHz

\*  
De1  
CA  
Avg  
15  
H1d



Jm

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



**S** Schweizerischer Kalibrierdienst  
**C** Service suisse d'étalonnage  
**S** Servizio svizzero di taratura  
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Accreditation No.: **SCS 0108**

Client **RF Exposure Lab**

Certificate No: **D1900V2-5d147\_Aug15**

## CALIBRATION CERTIFICATE

Object **D1900V2 - SN:5d147**

Calibration procedure(s) **QA CAL-05.v9  
Calibration procedure for dipole validation kits above 700 MHz**

Calibration date: **August 13, 2015**

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 EPM-442A	GB37480704	07-Oct-14 (No. 217-02020)	Oct-15
Power sensor HP 8481A	US37292783	07-Oct-14 (No. 217-02020)	Oct-15
Power sensor HP 8481A	MY41092317	07-Oct-14 (No. 217-02021)	Oct-15
Reference 20 dB Attenuator	SN: 5058 (20k)	01-Apr-15 (No. 217-02131)	Mar-16
Type-N mismatch combination	SN: 5047.2 / 06327	01-Apr-15 (No. 217-02134)	Mar-16
Reference Probe ES3DV3	SN: 3205	30-Dec-14 (No. ES3-3205_Dec14)	Dec-15
DAE4	SN: 601	18-Aug-14 (No. DAE4-601_Aug14)	Aug-15

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
RF generator R&S SMT-06	100005	04-Aug-99 (in house check Oct-13)	In house check: Oct-16
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-14)	In house check: Oct-15

Calibrated by: **Jeton Kastrati** (Name), **Laboratory Technician** (Function), *[Signature]* (Signature)

Approved by: **Katja Pokovic** (Name), **Technical Manager** (Function), *[Signature]* (Signature)

Issued: August 13, 2015

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Accreditation No.: **SCS 0108**

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### Glossary:

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

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

- 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
- 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 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

### Additional Documentation:

- 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%.

## Measurement Conditions

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

<b>DASY Version</b>	DASY5	V52.8.8
<b>Extrapolation</b>	Advanced Extrapolation	
<b>Phantom</b>	Modular Flat Phantom	
<b>Distance Dipole Center - TSL</b>	10 mm	with Spacer
<b>Zoom Scan Resolution</b>	dx, dy, dz = 5 mm	
<b>Frequency</b>	1900 MHz ± 1 MHz	

## Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
<b>Nominal Head TSL parameters</b>	22.0 °C	40.0	1.40 mho/m
<b>Measured Head TSL parameters</b>	(22.0 ± 0.2) °C	38.9 ± 6 %	1.39 mho/m ± 6 %
<b>Head TSL temperature change during test</b>	< 0.5 °C	----	----

## SAR result with Head TSL

<b>SAR averaged over 1 cm<sup>3</sup> (1 g) of Head TSL</b>	Condition	
SAR measured	250 mW input power	10.4 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	<b>41.5 W/kg ± 17.0 % (k=2)</b>

<b>SAR averaged over 10 cm<sup>3</sup> (10 g) of Head TSL</b>	condition	
SAR measured	250 mW input power	5.47 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	<b>21.8 W/kg ± 16.5 % (k=2)</b>

## Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
<b>Nominal Body TSL parameters</b>	22.0 °C	53.3	1.52 mho/m
<b>Measured Body TSL parameters</b>	(22.0 ± 0.2) °C	52.5 ± 6 %	1.51 mho/m ± 6 %
<b>Body TSL temperature change during test</b>	< 0.5 °C	----	----

## SAR result with Body TSL

<b>SAR averaged over 1 cm<sup>3</sup> (1 g) of Body TSL</b>	Condition	
SAR measured	250 mW input power	10.1 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	<b>40.4 W/kg ± 17.0 % (k=2)</b>

<b>SAR averaged over 10 cm<sup>3</sup> (10 g) of Body TSL</b>	condition	
SAR measured	250 mW input power	5.37 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	<b>21.5 W/kg ± 16.5 % (k=2)</b>

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

### Antenna Parameters with Head TSL

Impedance, transformed to feed point	53.1 $\Omega$ + 6.2 j $\Omega$
Return Loss	- 23.5 dB

### Antenna Parameters with Body TSL

Impedance, transformed to feed point	48.9 $\Omega$ + 6.5 j $\Omega$
Return Loss	- 23.5 dB

### General Antenna Parameters and Design

Electrical Delay (one direction)	1.193 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	March 11, 2011

#### Extended Calibration

Usage of SAR dipoles calibrated less than 3 years ago but more than 1 year ago were confirmed in maintaining return loss (< -20 dB, within 20% of prior calibration) and impedance (within 5 ohm from prior calibration) requirements per extended calibrations in KDB Publication 865664 D01 v01r04.

D1900V2 SN: 5d147 - Head						
Date of Measurement	Return Loss (dB)	$\Delta\%$	Impedance Real ( $\Omega$ )	$\Delta\Omega$	Impedance Imaginary (j $\Omega$ )	$\Delta\Omega$
8/13/2015	-23.5		53.1		6.2	
8/12/2016	-24.9	6.0	53.9	0.8	5.4	-0.8
8/13/2017	-23.8	1.3	52.7	-0.4	5.9	-0.3

D1900V2 SN: 5d147 - Body						
Date of Measurement	Return Loss (dB)	$\Delta\%$	Impedance Real ( $\Omega$ )	$\Delta\Omega$	Impedance Imaginary (j $\Omega$ )	$\Delta\Omega$
8/13/2015	-23.5		48.9		6.5	
8/12/2016	-22.8	-3.0	46.3	-2.6	6.9	0.4
8/13/2017	-22.4	-4.7	47.5	-1.4	6.7	0.2

## DASY5 Validation Report for Head TSL

Date: 13.08.2015

Test Laboratory: SPEAG, Zurich, Switzerland

**DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:5d147**

Communication System: UID 0 - CW; Frequency: 1900 MHz

Medium parameters used:  $f = 1900$  MHz;  $\sigma = 1.39$  S/m;  $\epsilon_r = 38.9$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(5, 5, 5); Calibrated: 30.12.2014;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 18.08.2014
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

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

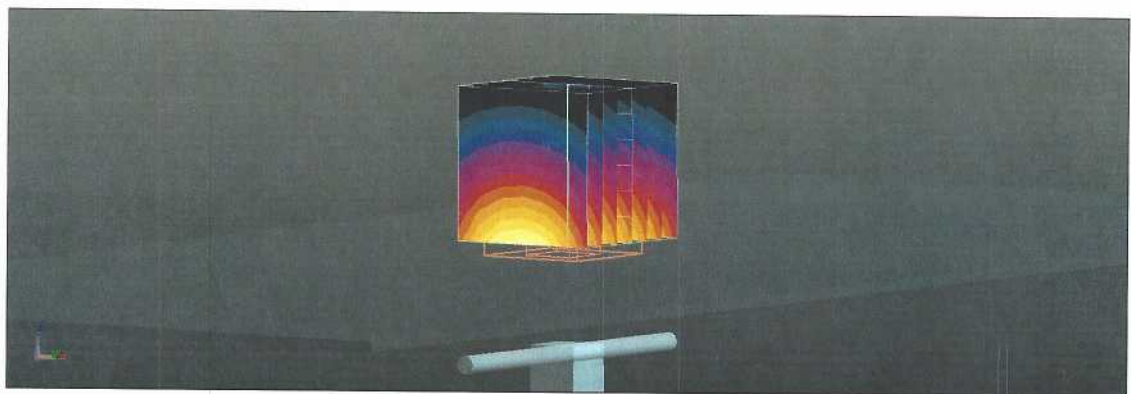
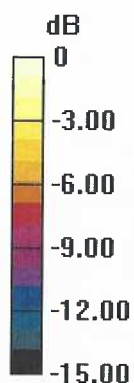
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 100.3 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 19.0 W/kg

**SAR(1 g) = 10.4 W/kg; SAR(10 g) = 5.47 W/kg**

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



0 dB = 13.2 W/kg = 11.21 dBW/kg

# Impedance Measurement Plot for Head TSL

13 Aug 2015 13:23:19

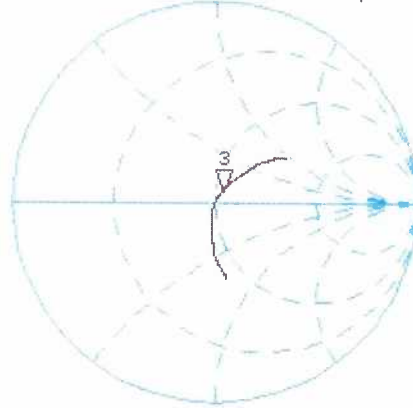
CH1 S11 1 U FS 3: 53.094  $\Omega$  6.2012  $\Omega$  519.45  $\mu$ H 1 900.000 000 MHz

\*  
Del

Ca

Avg  
16

H1d

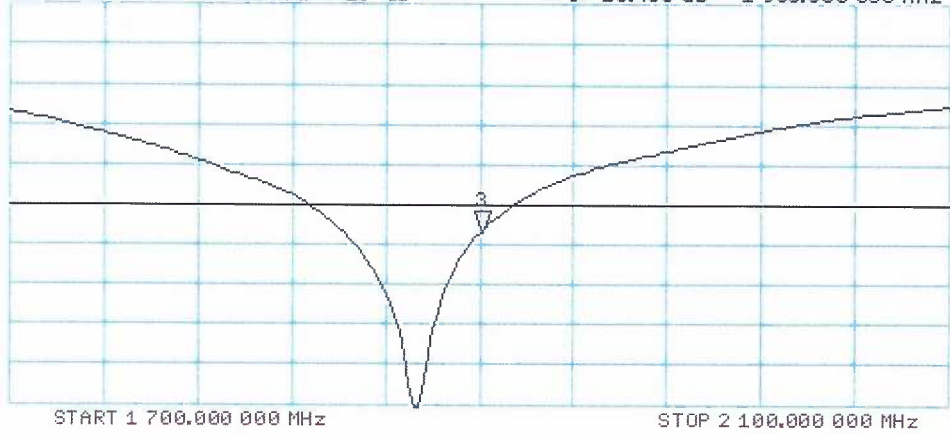


CH2 S11 LOG 5 dB/REF -20 dB 3:-23.465 dB 1 900.000 000 MHz

Ca

Avg  
16

H1d



# DASY5 Validation Report for Body TSL

Date: 13.08.2015

Test Laboratory: SPEAG, Zurich, Switzerland

**DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:5d147**

Communication System: UID 0 - CW; Frequency: 1900 MHz

Medium parameters used:  $f = 1900$  MHz;  $\sigma = 1.51$  S/m;  $\epsilon_r = 52.5$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.65, 4.65, 4.65); Calibrated: 30.12.2014;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 18.08.2014
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

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

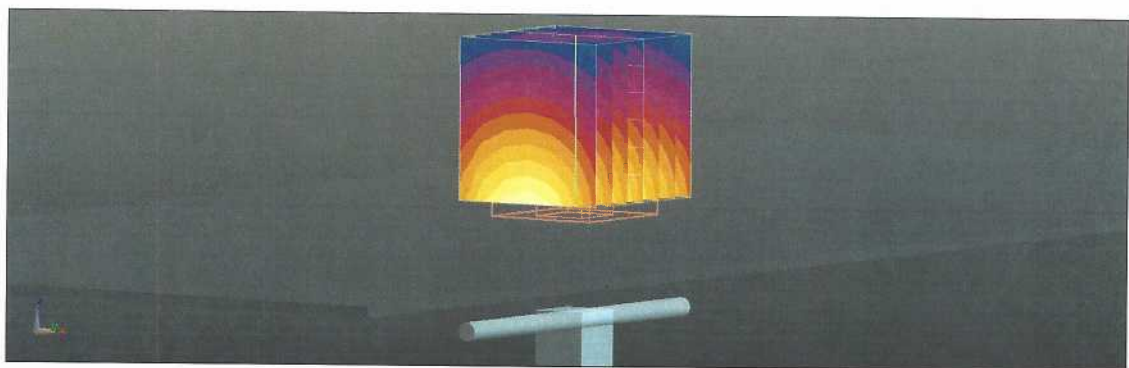
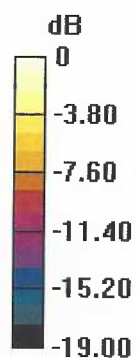
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 96.00 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 17.2 W/kg

**SAR(1 g) = 10.1 W/kg; SAR(10 g) = 5.37 W/kg**

Maximum value of SAR (measured) = 12.8 W/kg



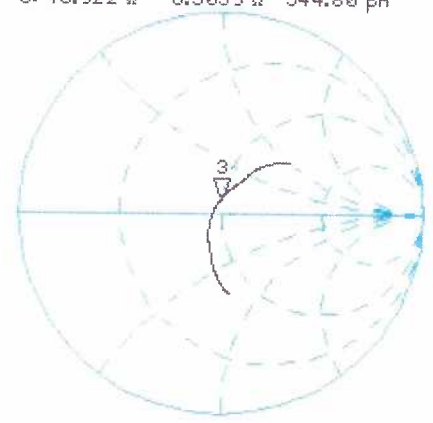
0 dB = 12.8 W/kg = 11.07 dBW/kg



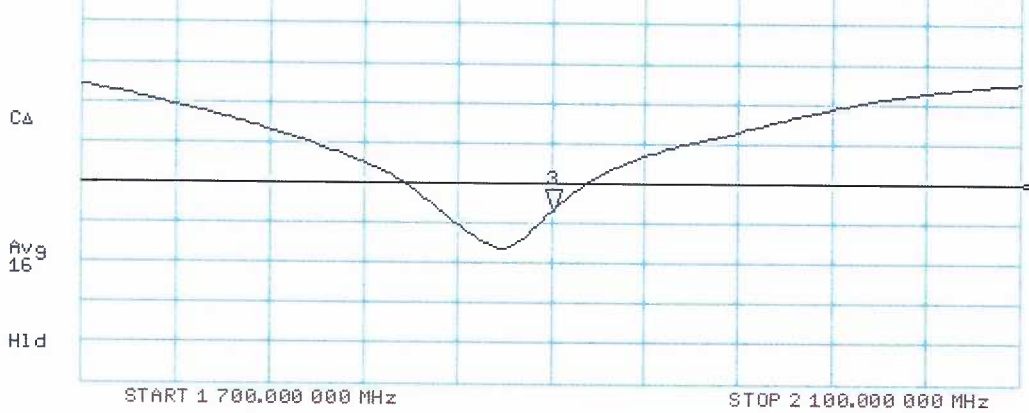
# Impedance Measurement Plot for Body TSL

13 Aug 2015 13:22:49  
[CH1] S11 1 U FS 3: 48.922  $\Omega$  6.5039  $\Omega$  544.80  $\mu$ H 1 900.000 000 MHz

\*  
De1  
Ca  
Avg  
16  
H1d



CH2 S11 LOG 5 dB/REF -20 dB 3:-23.539 dB 1 900.000 000 MHz





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 **RF Exposure Lab**

Certificate No: **D2450V2-829\_Jul18**

**CALIBRATION CERTIFICATE**

Object **D2450V2 - SN:829**

Calibration procedure(s) **QA CAL-05.v10  
Calibration procedure for dipole validation kits above 700 MHz**


Calibration date: **July 12, 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: 5058 (20k)	04-Apr-18 (No. 217-02682)	Apr-19
Type-N mismatch combination	SN: 5047.2 / 06327	04-Apr-18 (No. 217-02683)	Apr-19
Reference Probe EX3DV4	SN: 7349	30-Dec-17 (No. EX3-7349_Dec17)	Dec-18
DAE4	SN: 601	26-Oct-17 (No. DAE4-601_Oct17)	Oct-18
Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power meter EPM-442A	SN: GB37480704	07-Oct-15 (in house check Oct-16)	In house check: Oct-18
Power sensor HP 8481A	SN: US37292783	07-Oct-15 (in house check Oct-16)	In house check: Oct-18
Power sensor HP 8481A	SN: MY41092317	07-Oct-15 (in house check Oct-16)	In house check: Oct-18
RF generator R&S SMT-06	SN: 100972	15-Jun-15 (in house check Oct-16)	In house check: Oct-18
Network Analyzer Agilent E8358A	SN: US41080477	31-Mar-14 (in house check Oct-17)	In house check: Oct-18

Calibrated by: **Manu Seitz** (Name) **Laboratory Technician** (Function)  (Signature)

Approved by: **Katja Pokovic** (Name) **Technical Manager** (Function)  (Signature)

Issued: July 16, 2018

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



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Accreditation No.: **SCS 0108**

### Glossary:

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

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

- 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, "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
- 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 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

### Additional Documentation:

- 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%.

## Measurement Conditions

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

<b>DASY Version</b>	DASY5	V52.10.1
<b>Extrapolation</b>	Advanced Extrapolation	
<b>Phantom</b>	Modular Flat Phantom	
<b>Distance Dipole Center - TSL</b>	10 mm	with Spacer
<b>Zoom Scan Resolution</b>	dx, dy, dz = 5 mm	
<b>Frequency</b>	2450 MHz ± 1 MHz	

## Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
<b>Nominal Head TSL parameters</b>	22.0 °C	39.2	1.80 mho/m
<b>Measured Head TSL parameters</b>	(22.0 ± 0.2) °C	37.8 ± 6 %	1.85 mho/m ± 6 %
<b>Head TSL temperature change during test</b>	< 0.5 °C	----	----

## SAR result with Head TSL

<b>SAR averaged over 1 cm<sup>3</sup> (1 g) of Head TSL</b>	Condition	
SAR measured	250 mW input power	13.2 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	<b>51.7 W/kg ± 17.0 % (k=2)</b>

<b>SAR averaged over 10 cm<sup>3</sup> (10 g) of Head TSL</b>	condition	
SAR measured	250 mW input power	6.15 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	<b>24.3 W/kg ± 16.5 % (k=2)</b>

## Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
<b>Nominal Body TSL parameters</b>	22.0 °C	52.7	1.95 mho/m
<b>Measured Body TSL parameters</b>	(22.0 ± 0.2) °C	51.9 ± 6 %	2.02 mho/m ± 6 %
<b>Body TSL temperature change during test</b>	< 0.5 °C	----	----

## SAR result with Body TSL

<b>SAR averaged over 1 cm<sup>3</sup> (1 g) of Body TSL</b>	Condition	
SAR measured	250 mW input power	13.0 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	<b>51.0 W/kg ± 17.0 % (k=2)</b>

<b>SAR averaged over 10 cm<sup>3</sup> (10 g) of Body TSL</b>	condition	
SAR measured	250 mW input power	6.06 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	<b>24.0 W/kg ± 16.5 % (k=2)</b>

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

### Antenna Parameters with Head TSL

Impedance, transformed to feed point	52.9 $\Omega$ + 3.3 j $\Omega$
Return Loss	- 27.4 dB

### Antenna Parameters with Body TSL

Impedance, transformed to feed point	50.9 $\Omega$ + 5.9 j $\Omega$
Return Loss	- 24.5 dB

### General Antenna Parameters and Design

Electrical Delay (one direction)	1.156 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 11, 2008

## DASY5 Validation Report for Head TSL

Date: 12.07.2018

Test Laboratory: SPEAG, Zurich, Switzerland

**DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN:829**

Communication System: UID 0 - CW; Frequency: 2450 MHz

Medium parameters used:  $f = 2450$  MHz;  $\sigma = 1.85$  S/m;  $\epsilon_r = 37.8$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(7.88, 7.88, 7.88) @ 2450 MHz; Calibrated: 30.12.2017
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 26.10.2017
- Phantom: Flat Phantom 5.0 (front); Type: QD 000 P50 AA; Serial: 1001
- DASY52 52.10.1(1476); SEMCAD X 14.6.11(7439)

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

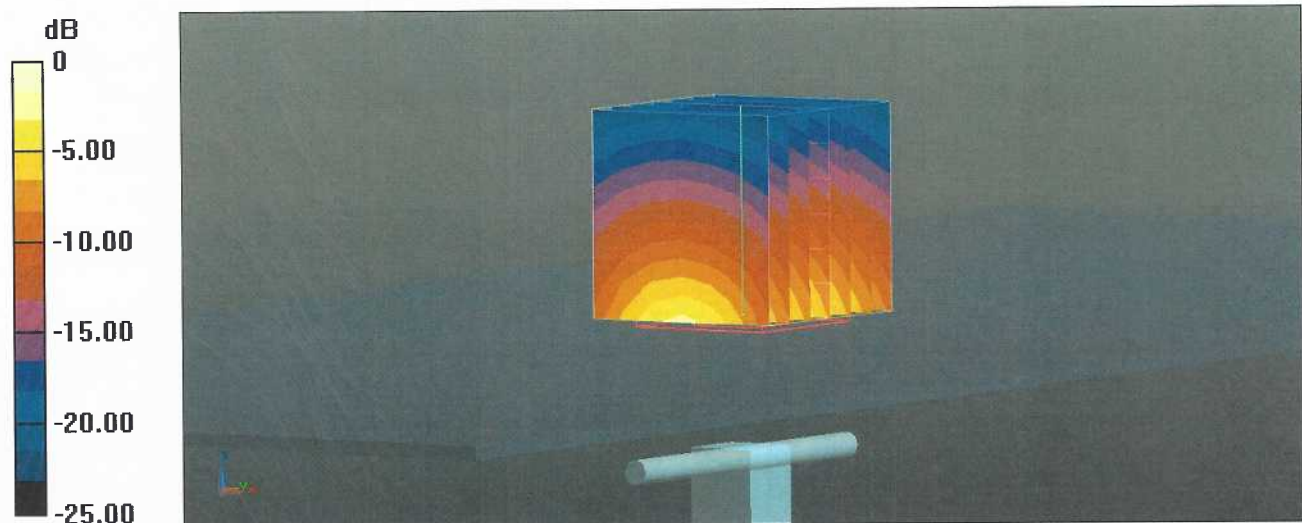
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 116.7 V/m; Power Drift = -0.07 dB

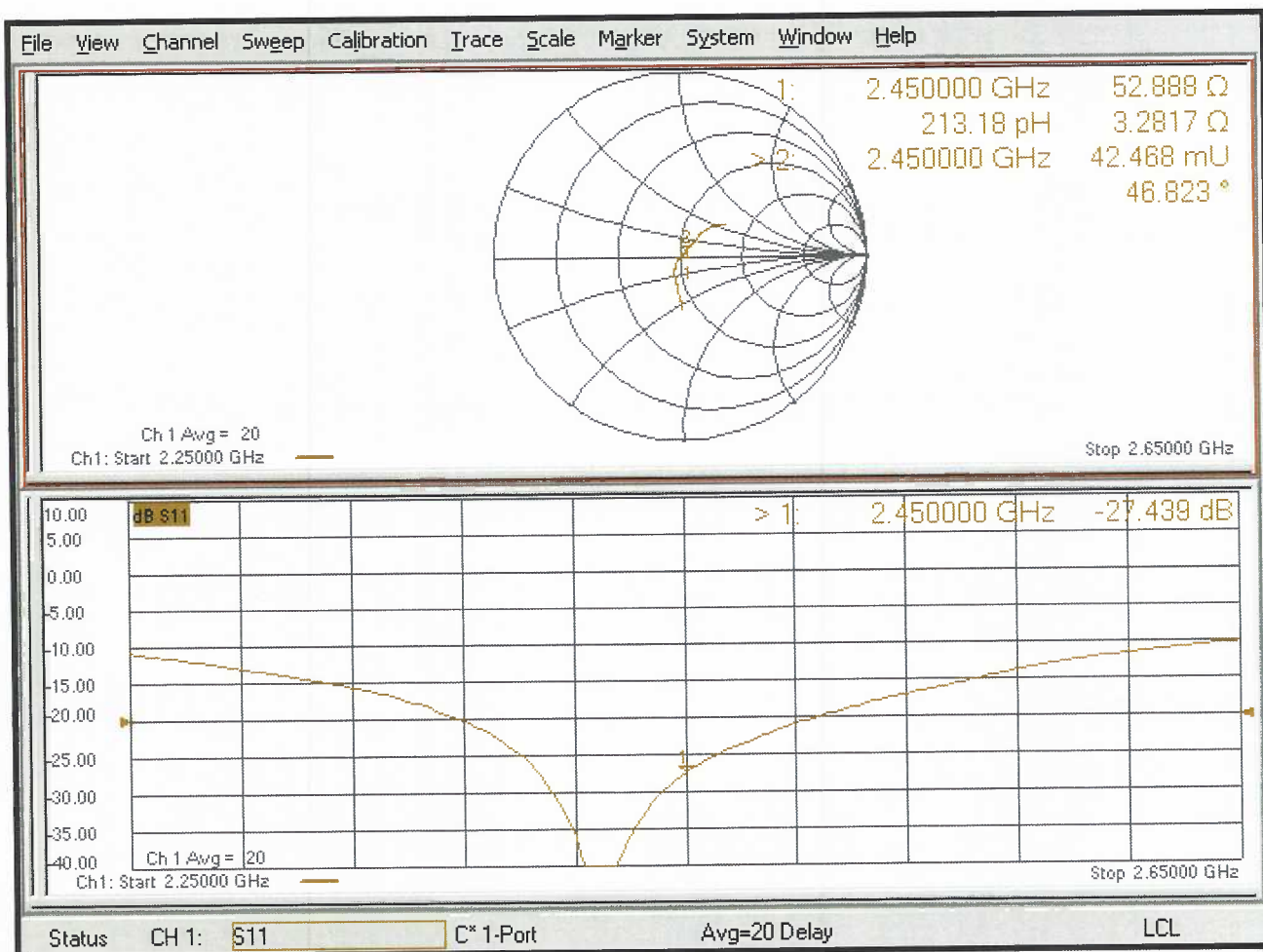
Peak SAR (extrapolated) = 26.4 W/kg

**SAR(1 g) = 13.2 W/kg; SAR(10 g) = 6.15 W/kg**

Maximum value of SAR (measured) = 21.9 W/kg



# Impedance Measurement Plot for Head TSL



# DASY5 Validation Report for Body TSL

Date: 12.07.2018

Test Laboratory: SPEAG, Zurich, Switzerland

**DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN:829**

Communication System: UID 0 - CW; Frequency: 2450 MHz

Medium parameters used:  $f = 2450$  MHz;  $\sigma = 2.02$  S/m;  $\epsilon_r = 51.9$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(8.01, 8.01, 8.01) @ 2450 MHz; Calibrated: 30.12.2017
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 26.10.2017
- Phantom: Flat Phantom 5.0 (back); Type: QD 000 P50 AA; Serial: 1002
- DASY52 52.10.1(1476); SEMCAD X 14.6.11(7439)

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

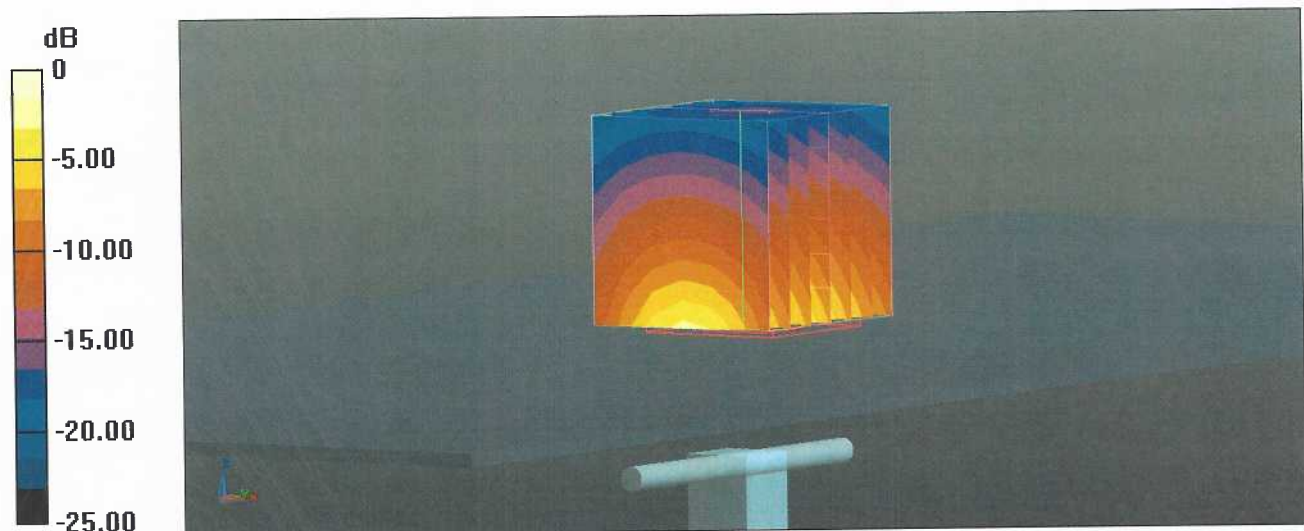
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 107.9 V/m; Power Drift = -0.09 dB

Peak SAR (extrapolated) = 25.6 W/kg

**SAR(1 g) = 13 W/kg; SAR(10 g) = 6.06 W/kg**

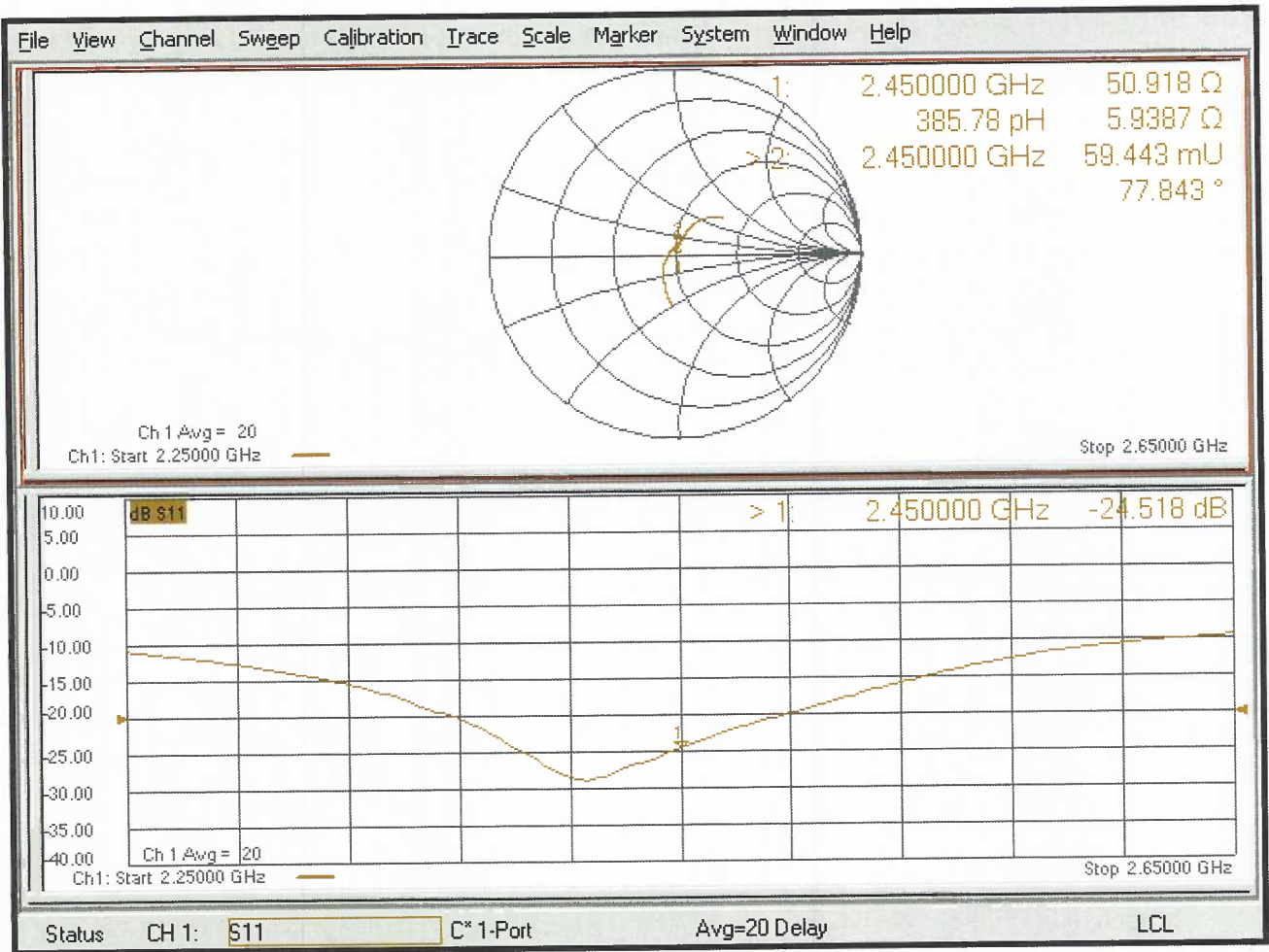
Maximum value of SAR (measured) = 21.1 W/kg



0 dB = 21.1 W/kg = 13.24 dBW/kg



# Impedance Measurement Plot for Body TSL



## **Appendix F – Phantom Calibration Data Sheets**

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 Phone +41 44 245 9700, Fax +41 44 245 9779  
 info@speag.com, http://www.speag.com

### Certificate of Conformity / First Article Inspection

Item	Oval Flat Phantom ELI 4.0
Type No	QD OVA 001 B
Series No	1003 and higher
Manufacturer	Untersee Composites Knebelstrasse 8 CH-8268 Mannenbach, Switzerland

#### Tests

Complete tests were made on the prototype units QD OVA 001 AA 1001, QD OVA 001 AB 1002, pre-series units QD OVA 001 BA 1003-1005 as well as on the series units QD OVA 001 BB, 1006 ff.

Test	Requirement	Details	Units tested
Material thickness	Compliant with the standard requirements	Bottom plate: 2.0mm +/- 0.2mm	all
Material parameters	Dielectric parameters for required frequencies	< 6 GHz: Rel. permittivity = 4 +/-1, Loss tangent ≤ 0.05	Material sample
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.	DGBE based simulating liquids. Observe Technical Note for material compatibility.	Equivalent phantoms, Material sample
Shape	Thickness of bottom material, Internal dimensions, Sagging compatible with standards from minimum frequency	Bottom elliptical 600 x 400 mm Depth 190 mm, Shape is within tolerance for filling height up to 155 mm, Eventual sagging is reduced or eliminated by support via DUT	Prototypes, Sample testing

#### Standards

- [1] CENELEC EN 50361-2001, « Basic standard for the measurement of the Specific Absorption Rate related to human exposure to electromagnetic fields from mobile phones (300 MHz – 3 GHz) », July 2001
- [2] IEEE 1528-2003, "Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques, December 2003
- [3] IEC 62209 – 1, "Specific Absorption Rate (SAR) in the frequency range of 300 MHz to 3 GHz – Measurement Procedure, Part 1: Hand-held mobile wireless communication devices", February 2005
- [4] IEC 62209 – 2, Draft, "Human Exposure to Radio Frequency Fields from Handheld and Body-Mounted Wireless Communication Devices – Human models, Instrumentation and Procedures – Part 2: Procedure to determine the Specific Absorption Rate (SAR) in the head and body for 30 MHz to 6 GHz Handheld and Body-Mounted Devices used in close proximity to the Body.", February 2005
- [5] OET Bulletin 65, Supplement C, "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields", Edition January 2001

Based on the tests above, we certify that this item is in compliance with the standards [1] to [5] if operated according to the specific requirements and considering the thickness. The dimensions are fully compliant with [4] from 30 MHz to 6 GHz. For the other standards, the minimum lower frequency limit is limited due to the dimensional requirements ([1]: 450 MHz, [2]: 300 MHz, [3]: 800 MHz, [5]: 375 MHz) and possibly further by the dimensions of the DUT.

Date 28.4.2008

Signature / Stamp

**s p e a g**  
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## Appendix G – Validation Summary

Per FCC KDB 865664 D02 v01r02, SAR system validation status should be documented to confirm measurement accuracy. The SAR systems (including SAR probes, system components and software versions) used for this device were validated against its performance specifications prior to the SAR measurements. Reference dipoles were used with the required tissue equivalent media for system validation according to the procedures outlined in FCC KDB 865664 D01 v01r04 and IEEE 1528-2013. Since SAR probe calibrations are frequency dependent, each probe calibration point was validated at a frequency within the valid frequency range of the probe calibration point using the system that normally operates with the probe for routine SAR measurements and according to the required tissue equivalent media.

A tabulated summary of the system validation status including the validation date(s), measurement frequencies, SAR probes and tissue dielectric parameters has been included.

**Table G-1  
SAR System Validation Summary**

SAR System #	Freq. (MHz)	Date	Probe S/N	Probe Type	Probe Cal. Point	Cond. ( $\sigma$ )	Perm. ( $\epsilon_r$ )	CW Validation			Modulation Validation			
								Sensitivity	Probe Linearity	Probe Isotropy	Modulation Type	Duty Factor	PAR	
2	750	5/10/2018	3662	EX3DV4	750	Body	0.97	55.29	Pass	Pass	Pass	QPSK	Pass	Pass
2	835	5/10/2018	3662	EX3DV4	900	Body	0.99	55.91	Pass	Pass	Pass	QPSK	Pass	Pass
2	835	5/10/2018	3662	EX3DV4	900	Body	0.99	55.91	Pass	Pass	Pass	WCDMA	Pass	Pass
2	1750	5/11/2018	3662	EX3DV4	1750	Body	1.51	53.05	Pass	Pass	Pass	QPSK	Pass	Pass
2	1750	5/11/2018	3662	EX3DV4	1750	Body	1.51	53.05	Pass	Pass	Pass	WCDMA	Pass	Pass
2	1900	5/9/2018	3662	EX3DV4	1900	Body	1.47	52.07	Pass	Pass	Pass	QPSK	Pass	Pass
2	1900	5/9/2018	3662	EX3DV4	1900	Body	1.47	52.07	Pass	Pass	Pass	WCDMA	Pass	Pass
1	2450	9/4/2018	3693	EX3DV4	2450	Body	1.97	52.28	Pass	Pass	Pass	OFDM/TDD	Pass	Pass