

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3820

Calibration Parameter Determined in Body Tissue Simulating Media

f (MHz) ^C	Relative Permittivity ^F	Conductivity (S/m) ^F	ConvF X	ConvF Y	ConvF Z	Alpha ^G	Depth ^G (mm)	Unc (k=2)
750	55.5	0.96	9.47	9.47	9.47	0.35	0.96	± 12.0 %
835	55.2	0.97	9.59	9.59	9.59	0.40	0.80	± 12.0 %
900	55.0	1.05	9.53	9.53	9.53	0.43	0.83	± 12.0 %
1450	54.0	1.30	8.12	8.12	8.12	0.33	0.80	± 12.0 %
1750	53.4	1.49	7.77	7.77	7.77	0.41	0.83	± 12.0 %
1900	53.3	1.52	7.62	7.62	7.62	0.41	0.80	± 12.0 %
2000	53.3	1.52	7.65	7.65	7.65	0.39	0.85	± 12.0 %
2450	52.7	1.95	7.10	7.10	7.10	0.45	0.80	± 12.0 %
2600	52.5	2.16	6.86	6.86	6.86	0.38	0.89	± 12.0 %
5200	49.0	5.30	4.59	4.59	4.59	0.40	1.90	± 13.1 %
5300	48.9	5.42	4.39	4.39	4.39	0.40	1.90	± 13.1 %
5500	48.6	5.65	3.94	3.94	3.94	0.50	1.90	± 13.1 %
5600	48.5	5.77	3.80	3.80	3.80	0.50	1.90	± 13.1 %
5800	48.2	6.00	4.04	4.04	4.04	0.50	1.90	± 13.1 %

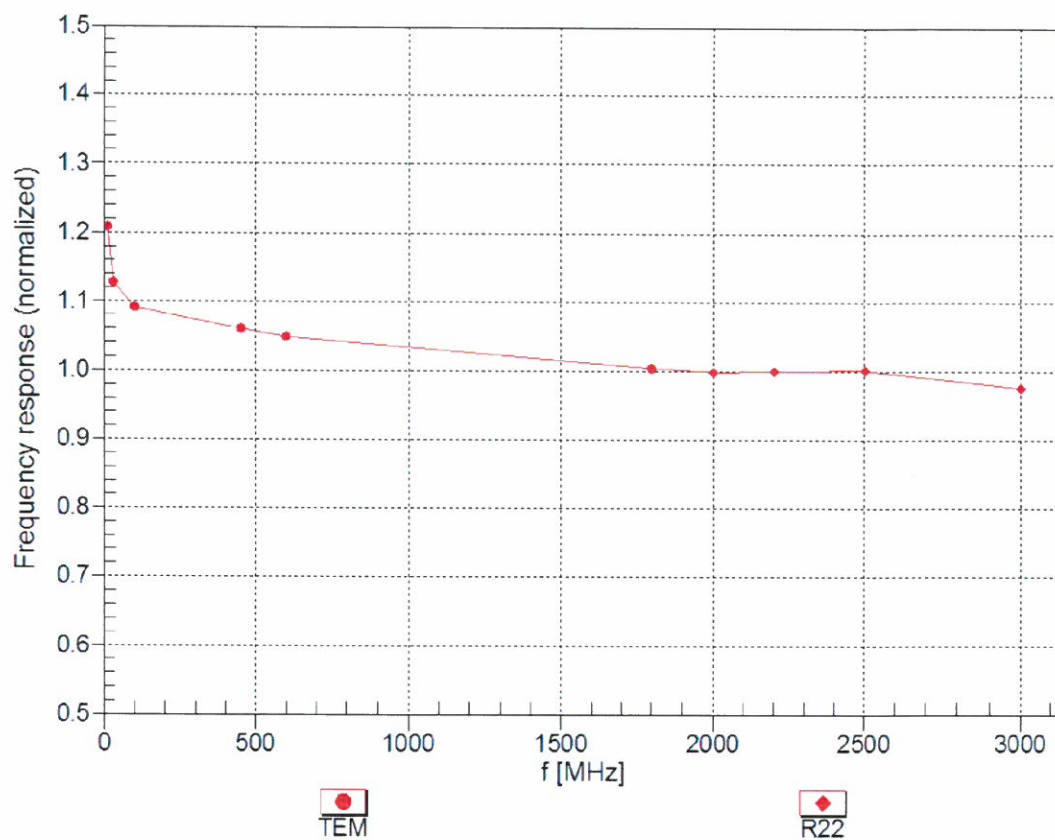
^C Frequency validity above 300 MHz of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is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

^F At frequencies below 3 GHz, the validity of tissue parameters (ϵ and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ϵ and σ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

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

Frequency Response of E-Field

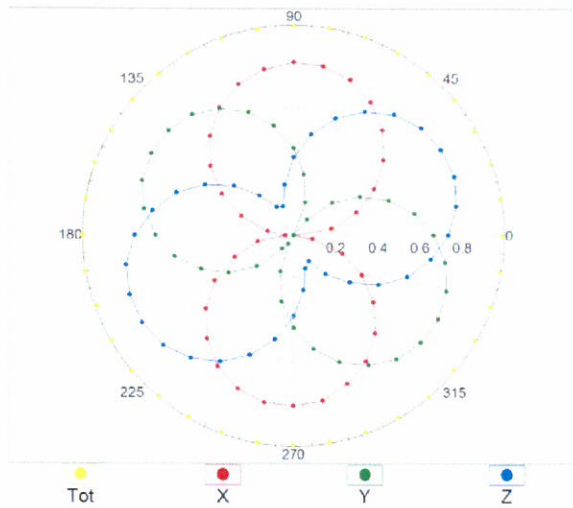
(TEM-Cell:ifi110 EXX, Waveguide: R22)



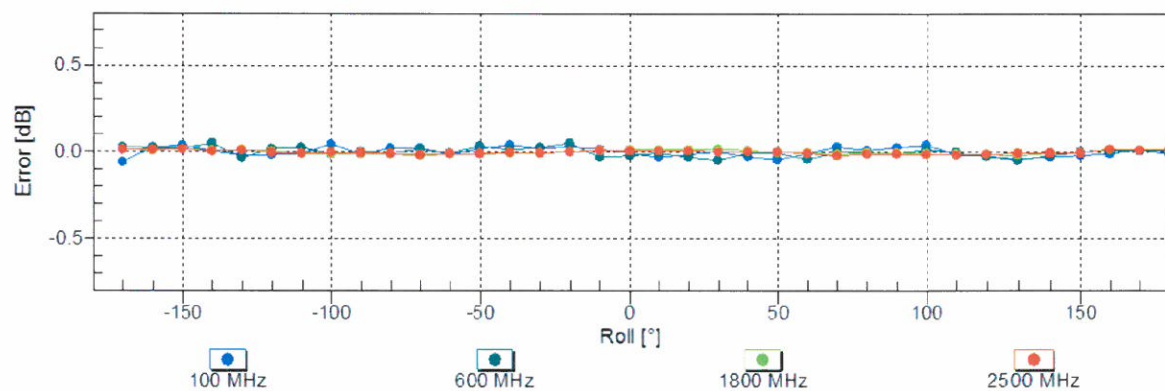
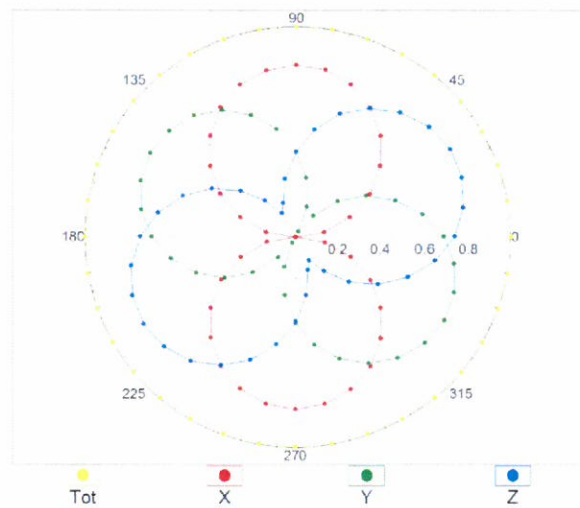
Uncertainty of Frequency Response of E-field: $\pm 6.3\%$ (k=2)

Receiving Pattern (ϕ), $\vartheta = 0^\circ$

f=600 MHz,TEM

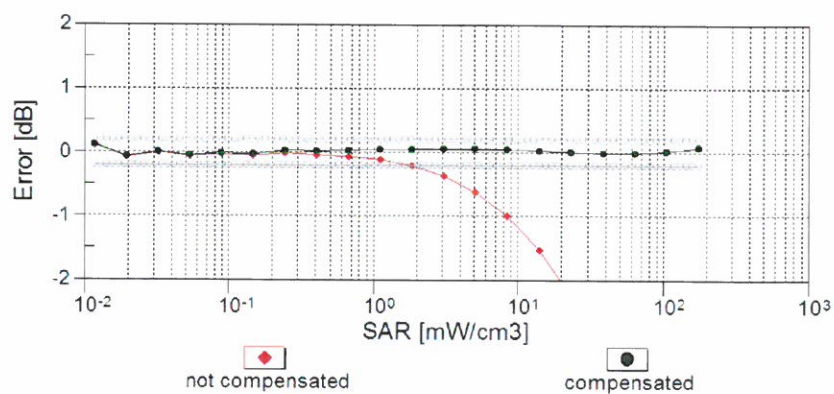
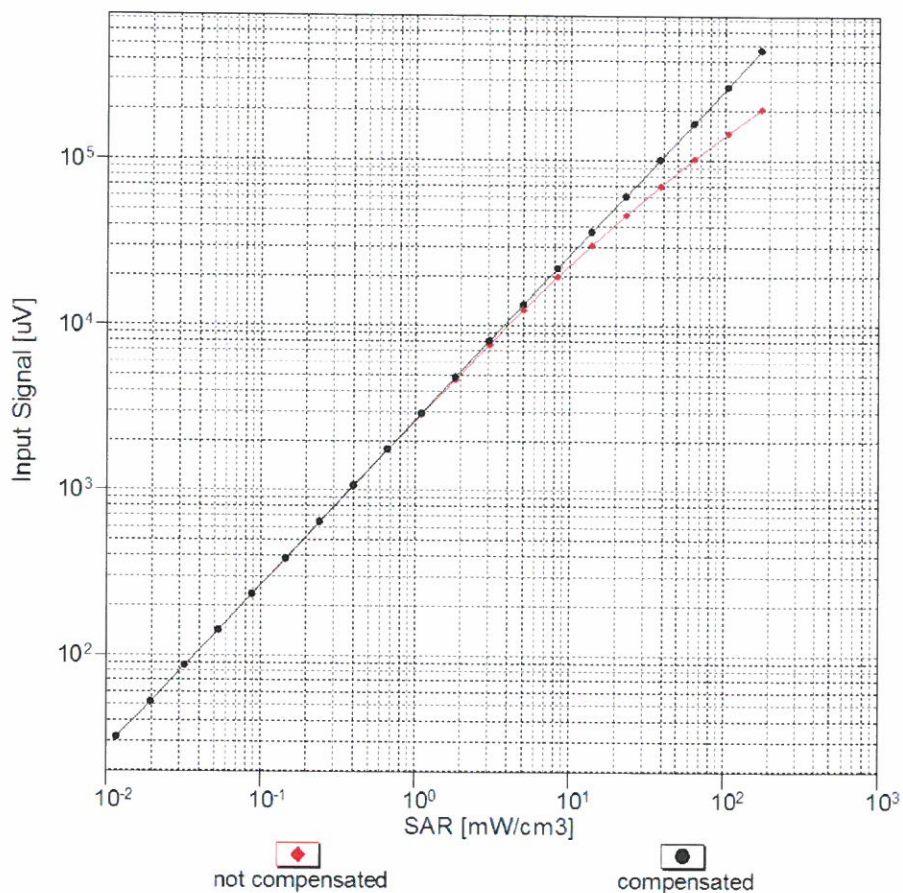


f=1800 MHz,R22



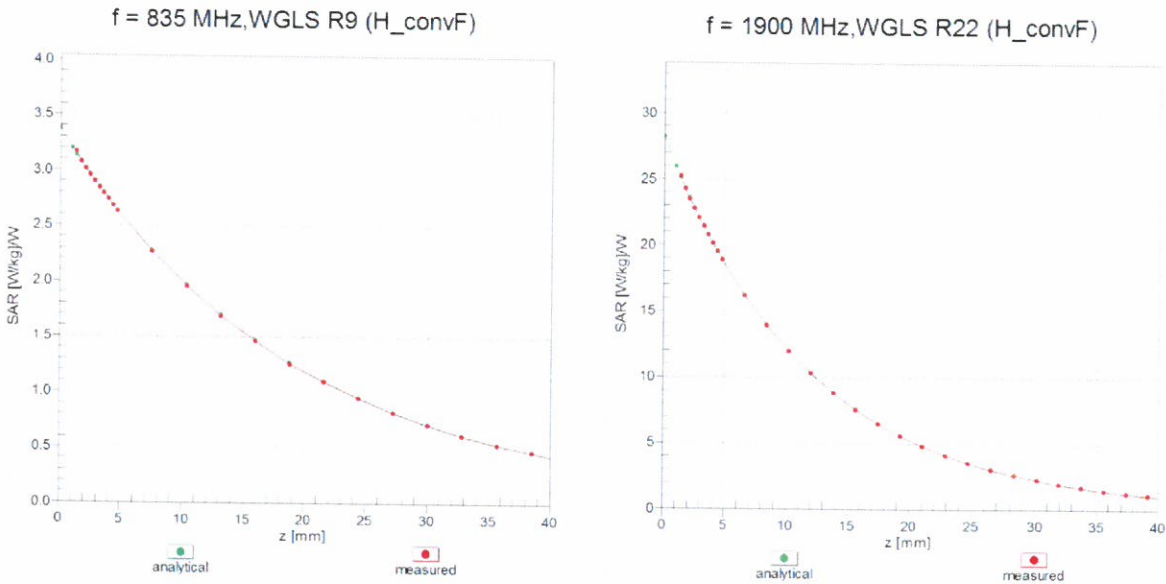
Uncertainty of Axial Isotropy Assessment: $\pm 0.5\%$ ($k=2$)

Dynamic Range $f(\text{SAR}_{\text{head}})$ (TEM cell , $f_{\text{eval}} = 1900 \text{ MHz}$)

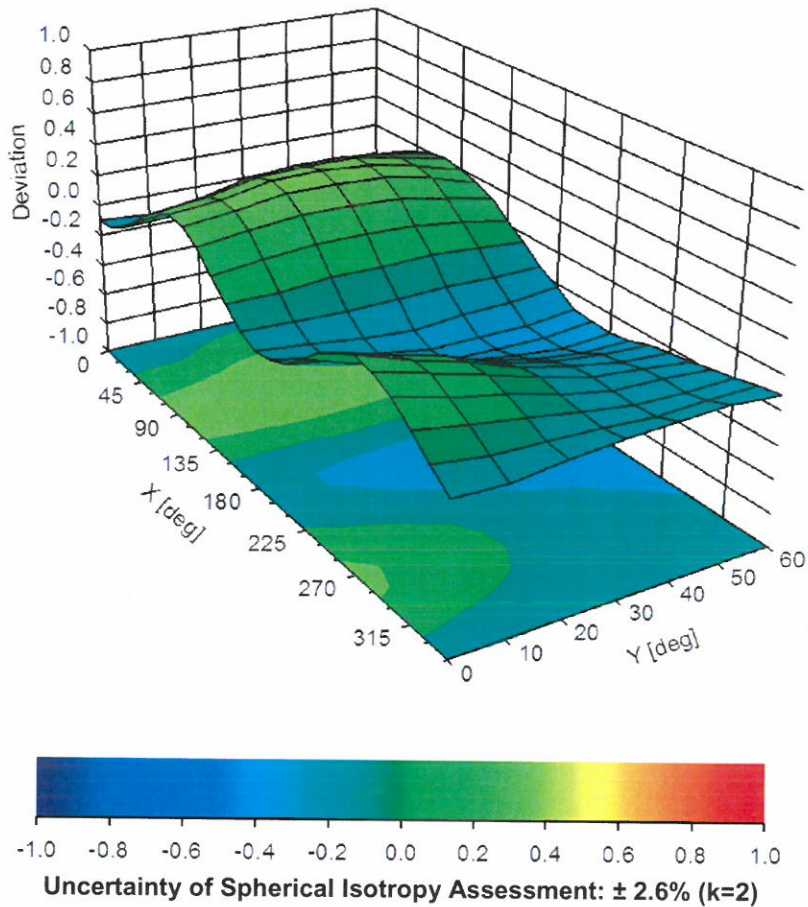


Uncertainty of Linearity Assessment: $\pm 0.6\%$ ($k=2$)

Conversion Factor Assessment



Deviation from Isotropy in Liquid Error (ϕ, ϑ), f = 900 MHz



DASY/EASY - Parameters of Probe: EX3DV4 - SN:3820

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	29.8
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disabled
Probe Overall Length	337 mm
Probe Body Diameter	10 mm
Tip Length	9 mm
Tip Diameter	2.5 mm
Probe Tip to Sensor X Calibration Point	1 mm
Probe Tip to Sensor Y Calibration Point	1 mm
Probe Tip to Sensor Z Calibration Point	1 mm
Recommended Measurement Distance from Surface	1.4 mm

Appendix: Modulation Calibration Parameters

UID	Communication System Name		A dB	B dB/μV	C	D dB	VR mV	Max Unc ^E (k=2)
0	CW	X	0.00	0.00	1.00	0.00	149.6	± 3.0 %
		Y	0.00	0.00	1.00		145.2	
		Z	0.00	0.00	1.00		143.1	
10010- CAA	SAR Validation (Square, 100ms, 10ms)	X	2.88	66.57	11.32	10.00	20.0	± 9.6 %
		Y	3.86	70.65	13.42		20.0	
		Z	1193.55	147.81	35.03		20.0	
10011- CAB	UMTS-FDD (WCDMA)	X	0.97	66.04	14.48	0.00	150.0	± 9.6 %
		Y	1.16	69.56	16.73		150.0	
		Z	100.00	313.05	111.76		150.0	
10012- CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps)	X	1.17	63.31	14.64	0.41	150.0	± 9.6 %
		Y	1.23	64.57	15.83		150.0	
		Z	100.00	230.78	80.09		150.0	
10013- CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps)	X	4.83	66.36	16.71	1.46	150.0	± 9.6 %
		Y	4.86	66.79	17.14		150.0	
		Z	5.63	72.75	22.55		150.0	
10021- DAC	GSM-FDD (TDMA, GMSK)	X	7.36	78.48	17.45	9.39	50.0	± 9.6 %
		Y	100.00	114.87	28.39		50.0	
		Z	2566.64	183.27	46.71		50.0	
10023- DAC	GPRS-FDD (TDMA, GMSK, TN 0)	X	6.74	77.15	16.99	9.57	50.0	± 9.6 %
		Y	58.04	107.41	26.61		50.0	
		Z	2373.79	180.35	45.93		50.0	
10024- DAC	GPRS-FDD (TDMA, GMSK, TN 0-1)	X	6.76	78.60	16.21	6.56	60.0	± 9.6 %
		Y	100.00	112.99	26.39		60.0	
		Z	5967.47	216.28	54.53		60.0	
10025- DAC	EDGE-FDD (TDMA, 8PSK, TN 0)	X	4.31	67.74	23.22	12.57	50.0	± 9.6 %
		Y	8.41	88.83	34.52		50.0	
		Z	8.35	91.02	37.55		50.0	
10026- DAC	EDGE-FDD (TDMA, 8PSK, TN 0-1)	X	8.93	87.26	29.38	9.56	60.0	± 9.6 %
		Y	11.32	95.47	33.58		60.0	
		Z	100.00	163.59	57.21		60.0	
10027- DAC	GPRS-FDD (TDMA, GMSK, TN 0-1-2)	X	9.02	82.59	16.69	4.80	80.0	± 9.6 %
		Y	100.00	113.24	25.70		80.0	
		Z	100.00	181.54	56.64		80.0	
10028- DAC	GPRS-FDD (TDMA, GMSK, TN 0-1-2-3)	X	20.64	91.39	18.49	3.55	100.0	± 9.6 %
		Y	100.00	115.01	25.77		100.0	
		Z	100.00	286.43	99.93		100.0	
10029- DAC	EDGE-FDD (TDMA, 8PSK, TN 0-1-2)	X	6.16	79.88	25.51	7.80	80.0	± 9.6 %
		Y	6.77	83.79	28.06		80.0	
		Z	100.00	165.68	57.31		80.0	
10030- CAA	IEEE 802.15.1 Bluetooth (GFSK, DH1)	X	5.00	75.67	14.58	5.30	70.0	± 9.6 %
		Y	100.00	111.41	25.17		70.0	
		Z	3976.61	228.52	59.38		70.0	
10031- CAA	IEEE 802.15.1 Bluetooth (GFSK, DH3)	X	8.08	84.00	15.34	1.88	100.0	± 9.6 %
		Y	100.00	117.05	25.27		100.0	
		Z	0.22	60.00	49064.27		100.0	

10032-CAA	IEEE 802.15.1 Bluetooth (GFSK, DH5)	X	64.84	103.61	19.65	1.17	100.0	± 9.6 %
		Y	100.00	128.13	28.81		100.0	
		Z	0.18	60.00	80681.08		100.0	
10033-CAA	IEEE 802.15.1 Bluetooth (PI/4-DQPSK, DH1)	X	4.49	75.87	17.87	5.30	70.0	± 9.6 %
		Y	9.51	88.78	23.11		70.0	
		Z	100.00	144.45	42.49		70.0	
10034-CAA	IEEE 802.15.1 Bluetooth (PI/4-DQPSK, DH3)	X	2.12	70.24	14.67	1.88	100.0	± 9.6 %
		Y	3.86	79.52	18.76		100.0	
		Z	100.00	188.07	59.40		100.0	
10035-CAA	IEEE 802.15.1 Bluetooth (PI/4-DQPSK, DH5)	X	1.66	68.69	13.94	1.17	100.0	± 9.6 %
		Y	2.69	76.18	17.40		100.0	
		Z	100.00	219.51	72.06		100.0	
10036-CAA	IEEE 802.15.1 Bluetooth (8-DPSK, DH1)	X	4.95	77.41	18.52	5.30	70.0	± 9.6 %
		Y	12.16	92.72	24.41		70.0	
		Z	100.00	145.24	42.86		70.0	
10037-CAA	IEEE 802.15.1 Bluetooth (8-DPSK, DH3)	X	2.03	69.82	14.47	1.88	100.0	± 9.6 %
		Y	3.52	78.39	18.33		100.0	
		Z	100.00	189.29	59.87		100.0	
10038-CAA	IEEE 802.15.1 Bluetooth (8-DPSK, DH5)	X	1.67	68.93	14.14	1.17	100.0	± 9.6 %
		Y	2.73	76.64	17.70		100.0	
		Z	100.00	222.41	73.34		100.0	
10039-CAB	CDMA2000 (1xRTT, RC1)	X	1.64	70.38	14.93	0.00	150.0	± 9.6 %
		Y	2.61	77.46	17.85		150.0	
		Z	100.00	315.11	110.60		150.0	
10042-CAB	IS-54 / IS-136 FDD (TDMA/FDM, PI/4-DQPSK, Halfrate)	X	5.45	75.18	15.09	7.78	50.0	± 9.6 %
		Y	100.00	111.18	25.84		50.0	
		Z	4142.80	186.82	45.79		50.0	
10044-CAA	IS-91/EIA/TIA-553 FDD (FDMA, FM)	X	0.00	97.23	5.49	0.00	150.0	± 9.6 %
		Y	0.01	97.62	2.20		150.0	
		Z	0.26	37.67	9.19		150.0	
10048-CAA	DECT (TDD, TDMA/FDM, GFSK, Full Slot, 24)	X	5.79	72.35	16.74	13.80	25.0	± 9.6 %
		Y	12.12	83.66	21.22		25.0	
		Z	100.00	122.10	34.23		25.0	
10049-CAA	DECT (TDD, TDMA/FDM, GFSK, Double Slot, 12)	X	6.09	74.92	16.45	10.79	40.0	± 9.6 %
		Y	15.78	89.14	21.85		40.0	
		Z	1217.14	165.06	42.62		40.0	
10056-CAA	UMTS-TDD (TD-SCDMA, 1.28 Mcps)	X	7.09	78.16	19.24	9.03	50.0	± 9.6 %
		Y	13.41	89.59	23.82		50.0	
		Z	100.00	129.73	37.14		50.0	
10058-DAC	EDGE-FDD (TDMA, 8PSK, TN 0-1-2-3)	X	4.84	75.76	23.17	6.55	100.0	± 9.6 %
		Y	5.07	78.15	25.04		100.0	
		Z	59.14	152.83	53.83		100.0	
10059-CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 2 Mbps)	X	1.21	64.22	15.02	0.61	110.0	± 9.6 %
		Y	1.29	65.81	16.44		110.0	
		Z	100.00	231.81	80.45		110.0	
10060-CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 5.5 Mbps)	X	2.67	79.98	19.07	1.30	110.0	± 9.6 %
		Y	48.94	126.50	33.28		110.0	
		Z	100.00	341.03	123.57		110.0	

10061-CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 11 Mbps)	X	2.31	73.67	18.33	2.04	110.0	± 9.6 %
		Y	3.49	82.37	22.76		110.0	
		Z	100.00	210.62	71.14		110.0	
10062-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps)	X	4.65	66.43	16.27	0.49	100.0	± 9.6 %
		Y	4.67	66.81	16.63		100.0	
		Z	5.64	73.86	22.61		100.0	
10063-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 9 Mbps)	X	4.66	66.48	16.33	0.72	100.0	± 9.6 %
		Y	4.68	66.90	16.71		100.0	
		Z	5.71	74.16	22.80		100.0	
10064-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 12 Mbps)	X	4.94	66.74	16.54	0.86	100.0	± 9.6 %
		Y	4.95	67.12	16.92		100.0	
		Z	5.86	73.67	22.55		100.0	
10065-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 18 Mbps)	X	4.81	66.60	16.59	1.21	100.0	± 9.6 %
		Y	4.82	67.01	16.99		100.0	
		Z	5.73	73.68	22.78		100.0	
10066-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 24 Mbps)	X	4.82	66.60	16.71	1.46	100.0	± 9.6 %
		Y	4.84	67.02	17.14		100.0	
		Z	5.71	73.54	22.86		100.0	
10067-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 36 Mbps)	X	5.11	66.74	17.11	2.04	100.0	± 9.6 %
		Y	5.13	67.21	17.57		100.0	
		Z	5.90	73.06	22.84		100.0	
10068-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 48 Mbps)	X	5.16	66.79	17.29	2.55	100.0	± 9.6 %
		Y	5.18	67.23	17.77		100.0	
		Z	5.88	72.68	22.83		100.0	
10069-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 54 Mbps)	X	5.24	66.79	17.47	2.67	100.0	± 9.6 %
		Y	5.26	67.25	17.96		100.0	
		Z	5.90	72.49	22.89		100.0	
10071-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 9 Mbps)	X	4.93	66.42	16.97	1.99	100.0	± 9.6 %
		Y	4.96	66.87	17.43		100.0	
		Z	5.68	72.50	22.64		100.0	
10072-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 12 Mbps)	X	4.91	66.71	17.13	2.30	100.0	± 9.6 %
		Y	4.94	67.19	17.63		100.0	
		Z	5.79	73.46	23.20		100.0	
10073-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 18 Mbps)	X	4.97	66.85	17.40	2.83	100.0	± 9.6 %
		Y	5.02	67.38	17.95		100.0	
		Z	5.89	73.72	23.53		100.0	
10074-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 24 Mbps)	X	4.97	66.77	17.53	3.30	100.0	± 9.6 %
		Y	5.02	67.31	18.10		100.0	
		Z	5.87	73.51	23.59		100.0	
10075-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 36 Mbps)	X	5.02	66.91	17.82	3.82	90.0	± 9.6 %
		Y	5.07	67.44	18.40		90.0	
		Z	5.90	73.47	23.78		90.0	
10076-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 48 Mbps)	X	5.04	66.73	17.93	4.15	90.0	± 9.6 %
		Y	5.09	67.29	18.54		90.0	
		Z	5.85	72.89	23.70		90.0	
10077-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 54 Mbps)	X	5.07	66.80	18.02	4.30	90.0	± 9.6 %
		Y	5.13	67.37	18.64		90.0	
		Z	5.90	73.00	23.80		90.0	

10081-CAB	CDMA2000 (1xRTT, RC3)	X	0.79	65.00	12.00	0.00	150.0	± 9.6 %
		Y	1.02	69.02	14.10		150.0	
		Z	99.96	1025.10	395.48		150.0	
10082-CAB	IS-54 / IS-136 FDD (TDMA/FDM, PI/4-DQPSK, Fullrate)	X	0.80	58.55	4.10	4.77	80.0	± 9.6 %
		Y	0.89	60.00	5.19		80.0	
		Z	1.09	61.66	6.54		80.0	
10090-DAC	GPRS-FDD (TDMA, GMSK, TN 0-4)	X	6.67	78.42	16.17	6.56	60.0	± 9.6 %
		Y	100.00	113.01	26.41		60.0	
		Z	3887.44	208.20	53.14		60.0	
10097-CAB	UMTS-FDD (HSDPA)	X	1.78	67.00	15.26	0.00	150.0	± 9.6 %
		Y	1.96	69.11	16.54		150.0	
		Z	100.00	185.48	60.02		150.0	
10098-CAB	UMTS-FDD (HSUPA, Subtest 2)	X	1.74	66.93	15.22	0.00	150.0	± 9.6 %
		Y	1.92	69.08	16.52		150.0	
		Z	100.00	187.58	60.87		150.0	
10099-DAC	EDGE-FDD (TDMA, 8PSK, TN 0-4)	X	8.96	87.29	29.38	9.56	60.0	± 9.6 %
		Y	11.38	95.54	33.59		60.0	
		Z	100.00	163.50	57.17		60.0	
10100-CAC	LTE-FDD (SC-FDMA, 100% RB, 20 MHz, QPSK)	X	3.04	69.67	16.35	0.00	150.0	± 9.6 %
		Y	3.25	71.21	17.34		150.0	
		Z	100.00	154.62	48.14		150.0	
10101-CAC	LTE-FDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM)	X	3.21	67.19	15.72	0.00	150.0	± 9.6 %
		Y	3.28	67.91	16.29		150.0	
		Z	23.98	117.34	38.48		150.0	
10102-CAC	LTE-FDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM)	X	3.32	67.20	15.84	0.00	150.0	± 9.6 %
		Y	3.38	67.86	16.37		150.0	
		Z	15.93	107.33	35.49		150.0	
10103-CAC	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, QPSK)	X	6.14	73.73	19.01	3.98	65.0	± 9.6 %
		Y	6.52	75.72	20.36		65.0	
		Z	100.00	138.35	43.09		65.0	
10104-CAC	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM)	X	6.37	72.73	19.42	3.98	65.0	± 9.6 %
		Y	6.53	74.02	20.44		65.0	
		Z	13.84	94.70	31.42		65.0	
10105-CAC	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM)	X	6.21	72.19	19.51	3.98	65.0	± 9.6 %
		Y	6.18	72.82	20.21		65.0	
		Z	11.95	91.00	30.24		65.0	
10108-CAD	LTE-FDD (SC-FDMA, 100% RB, 10 MHz, QPSK)	X	2.65	68.90	16.16	0.00	150.0	± 9.6 %
		Y	2.83	70.48	17.19		150.0	
		Z	100.00	162.44	51.29		150.0	
10109-CAD	LTE-FDD (SC-FDMA, 100% RB, 10 MHz, 16-QAM)	X	2.86	67.02	15.61	0.00	150.0	± 9.6 %
		Y	2.94	67.88	16.24		150.0	
		Z	100.00	154.01	48.37		150.0	
10110-CAD	LTE-FDD (SC-FDMA, 100% RB, 5 MHz, QPSK)	X	2.15	67.93	15.71	0.00	150.0	± 9.6 %
		Y	2.31	69.76	16.87		150.0	
		Z	100.00	175.69	56.33		150.0	
10111-CAD	LTE-FDD (SC-FDMA, 100% RB, 5 MHz, 16-QAM)	X	2.58	67.81	15.88	0.00	150.0	± 9.6 %
		Y	2.70	69.11	16.68		150.0	
		Z	100.00	160.83	50.51		150.0	