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Accreditation No.: **SCS 0108**

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Client **PC Test**

Certificate No: **EX3-3914_Feb17**

CALIBRATION CERTIFICATE

Object **EX3DV4 - SN:3914**

Calibration procedure(s) **QA CAL-01.v9, QA CAL-12.v9, QA CAL-14.v4, QA CAL-23.v5,
QA CAL-25.v6
Calibration procedure for dosimetric E-field probes**

*BN ✓
03-01-2017*

Calibration date: **February 13, 2017**

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NRP	SN: 104778	06-Apr-16 (No. 217-02288/02289)	Apr-17
Power sensor NRP-Z91	SN: 103244	06-Apr-16 (No. 217-02288)	Apr-17
Power sensor NRP-Z91	SN: 103245	06-Apr-16 (No. 217-02289)	Apr-17
Reference 20 dB Attenuator	SN: S5277 (20x)	05-Apr-16 (No. 217-02293)	Apr-17
Reference Probe ES3DV2	SN: 3013	31-Dec-16 (No. ES3-3013_Dec16)	Dec-17
DAE4	SN: 660	7-Dec-16 (No. DAE4-660_Dec16)	Dec-17
Secondary Standards	ID	Check Date (in house)	Scheduled Check
Power meter E4419B	SN: GB41293874	06-Apr-16 (in house check Jun-16)	In house check: Jun-18
Power sensor E4412A	SN: MY41498087	06-Apr-16 (in house check Jun-16)	In house check: Jun-18
Power sensor E4412A	SN: 000110210	06-Apr-16 (in house check Jun-16)	In house check: Jun-18
RF generator HP 8648C	SN: US3642U01700	04-Aug-99 (in house check Jun-16)	In house check: Jun-18
Network Analyzer HP 8753E	SN: US37390585	18-Oct-01 (in house check Oct-16)	In house check: Oct-17

Calibrated by:	Name Jeton Kastrati	Function Laboratory Technician	Signature
Approved by:	Name Katja Pokovic	Function Technical Manager	Signature
This calibration certificate shall not be reproduced except in full without written approval of the laboratory.			Issued: February 13, 2017



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Glossary:

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

Calibration is Performed According to the Following Standards:

- 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"

Methods Applied and Interpretation of Parameters:

- NORM_{x,y,z}**: Assessed for E-field polarization $\vartheta = 0$ ($f \leq 900$ MHz in TEM-cell; $f > 1800$ MHz: R22 waveguide). NORM_{x,y,z} are only intermediate values, i.e., the uncertainties of NORM_{x,y,z} does not affect the E²-field uncertainty inside TSL (see below ConvF).
- NORM(f)_{x,y,z} = NORM_{x,y,z} * frequency_response** (see Frequency Response Chart). This linearization is implemented in DASY4 software versions later than 4.2. The uncertainty of the frequency response is included in the stated uncertainty of ConvF.
- DCP_{x,y,z}**: DCP are numerical linearization parameters assessed based on the data of power sweep with CW signal (no uncertainty required). DCP does not depend on frequency nor media.
- PAR**: PAR is the Peak to Average Ratio that is not calibrated but determined based on the signal characteristics
- A_{x,y,z}; B_{x,y,z}; C_{x,y,z}; D_{x,y,z}; VR_{x,y,z}**: A, B, C, D are numerical linearization parameters assessed based on the data of power sweep for specific modulation signal. The parameters do not depend on frequency nor media. VR is the maximum calibration range expressed in RMS voltage across the diode.
- ConvF and Boundary Effect Parameters**: Assessed in flat phantom using E-field (or Temperature Transfer Standard for $f \leq 800$ MHz) and inside waveguide using analytical field distributions based on power measurements for $f > 800$ MHz. The same setups are used for assessment of the parameters applied for boundary compensation (alpha, depth) of which typical uncertainty values are given. These parameters are used in DASY4 software to improve probe accuracy close to the boundary. The sensitivity in TSL corresponds to NORM_{x,y,z} * ConvF whereby the uncertainty corresponds to that given for ConvF. A frequency dependent ConvF is used in DASY version 4.4 and higher which allows extending the validity from ± 50 MHz to ± 100 MHz.
- Spherical isotropy (3D deviation from isotropy)**: in a field of low gradients realized using a flat phantom exposed by a patch antenna.
- Sensor Offset**: The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.
- Connector Angle**: The angle is assessed using the information gained by determining the NORM_x (no uncertainty required).

Probe EX3DV4

SN:3914

Manufactured: December 18, 2012
Calibrated: February 13, 2017

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

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3914

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu\text{V}/(\text{V}/\text{m})^2$) ^A	0.46	0.41	0.44	$\pm 10.1 \%$
DCP (mV) ^B	98.6	102.5	103.7	

Modulation Calibration Parameters

UID	Communication System Name		A dB	B dB $\sqrt{\mu\text{V}}$	C	D dB	VR mV	Unc ^E (k=2)
0	CW	X	0.0	0.0	1.0	0.00	156.6	$\pm 3.3 \%$
		Y	0.0	0.0	1.0		139.0	
		Z	0.0	0.0	1.0		149.0	

Note: For details on UID parameters see Appendix.

Sensor Model Parameters

	C1 fF	C2 fF	α V^{-1}	T1 $\text{ms}\cdot\text{V}^{-2}$	T2 $\text{ms}\cdot\text{V}^{-1}$	T3 ms	T4 V^{-2}	T5 V^{-1}	T6
X	46.19	344.3	35.58	12.88	0.995	4.971	0.985	0.325	1.004
Y	48.34	356	34.87	12.19	1.102	4.961	0.683	0.315	1.003
Z	44.31	328.7	35.26	10.14	1.122	4.975	1.527	0.227	1.005

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor $k=2$, which for a normal distribution corresponds to a coverage probability of approximately 95%.

^A The uncertainties of Norm X,Y,Z do not affect the E^2 -field uncertainty inside TSL (see Pages 5 and 6).

^B Numerical linearization parameter: uncertainty not required.

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

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3914

Calibration Parameter Determined in Head Tissue Simulating Media

f (MHz) ^C	Relative Permittivity ^F	Conductivity (S/m) ^F	ConvF X	ConvF Y	ConvF Z	Alpha ^G	Depth ^G (mm)	Unc (k=2)
6	55.5	0.75	21.32	21.32	21.32	0.00	1.00	± 13.3 %
13	55.5	0.75	17.87	17.87	17.87	0.00	1.00	± 13.3 %
5250	35.9	4.71	5.49	5.49	5.49	0.30	1.80	± 13.1 %
5600	35.5	5.07	4.94	4.94	4.94	0.40	1.80	± 13.1 %
5750	35.4	5.22	4.91	4.91	4.91	0.40	1.80	± 13.1 %

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

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

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

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3914

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	9.98	9.98	9.98	0.45	0.88	± 12.0 %
835	55.2	0.97	9.73	9.73	9.73	0.40	0.88	± 12.0 %
1750	53.4	1.49	8.01	8.01	8.01	0.32	1.02	± 12.0 %
1900	53.3	1.52	7.75	7.75	7.75	0.34	0.95	± 12.0 %
2300	52.9	1.81	7.56	7.56	7.56	0.44	0.80	± 12.0 %
2450	52.7	1.95	7.45	7.45	7.45	0.35	0.90	± 12.0 %
2600	52.5	2.16	7.24	7.24	7.24	0.29	0.95	± 12.0 %
5250	48.9	5.36	4.78	4.78	4.78	0.40	1.90	± 13.1 %
5600	48.5	5.77	4.07	4.07	4.07	0.45	1.90	± 13.1 %
5750	48.3	5.94	4.15	4.15	4.15	0.50	1.90	± 13.1 %

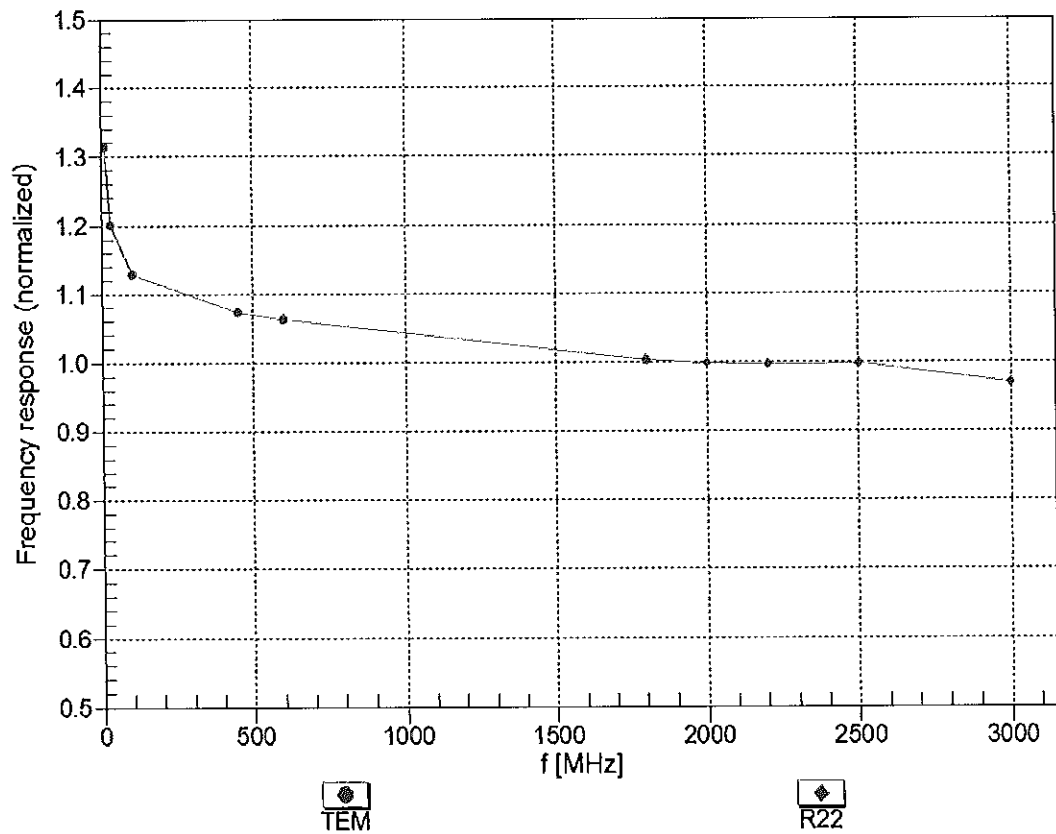
^C Frequency validity above 300 MHz of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ± 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

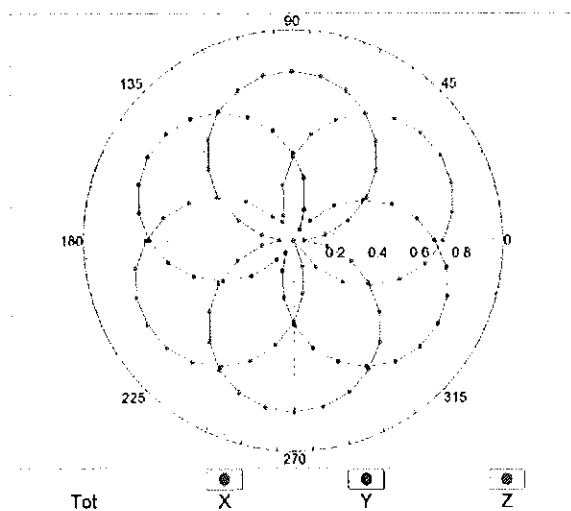
(TEM-Cell:ifi110 EXX, Waveguide: R22)



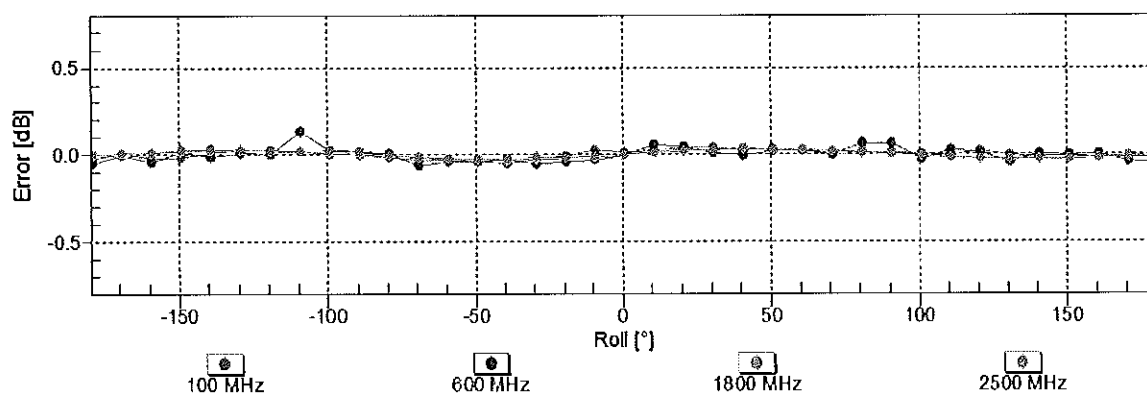
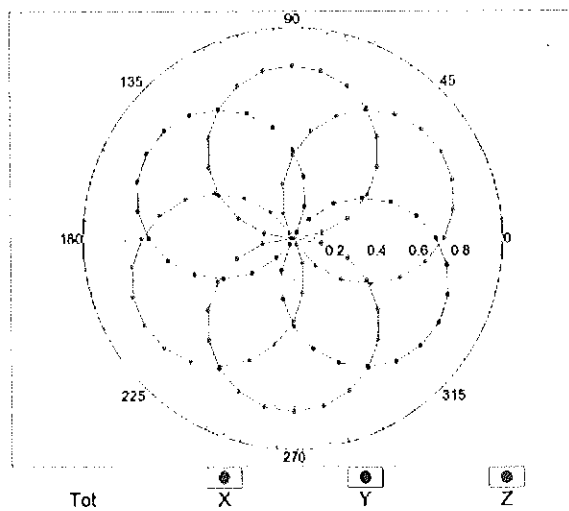
Uncertainty of Frequency Response of E-field: $\pm 6.3\%$ ($k=2$)

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

f=600 MHz, TEM

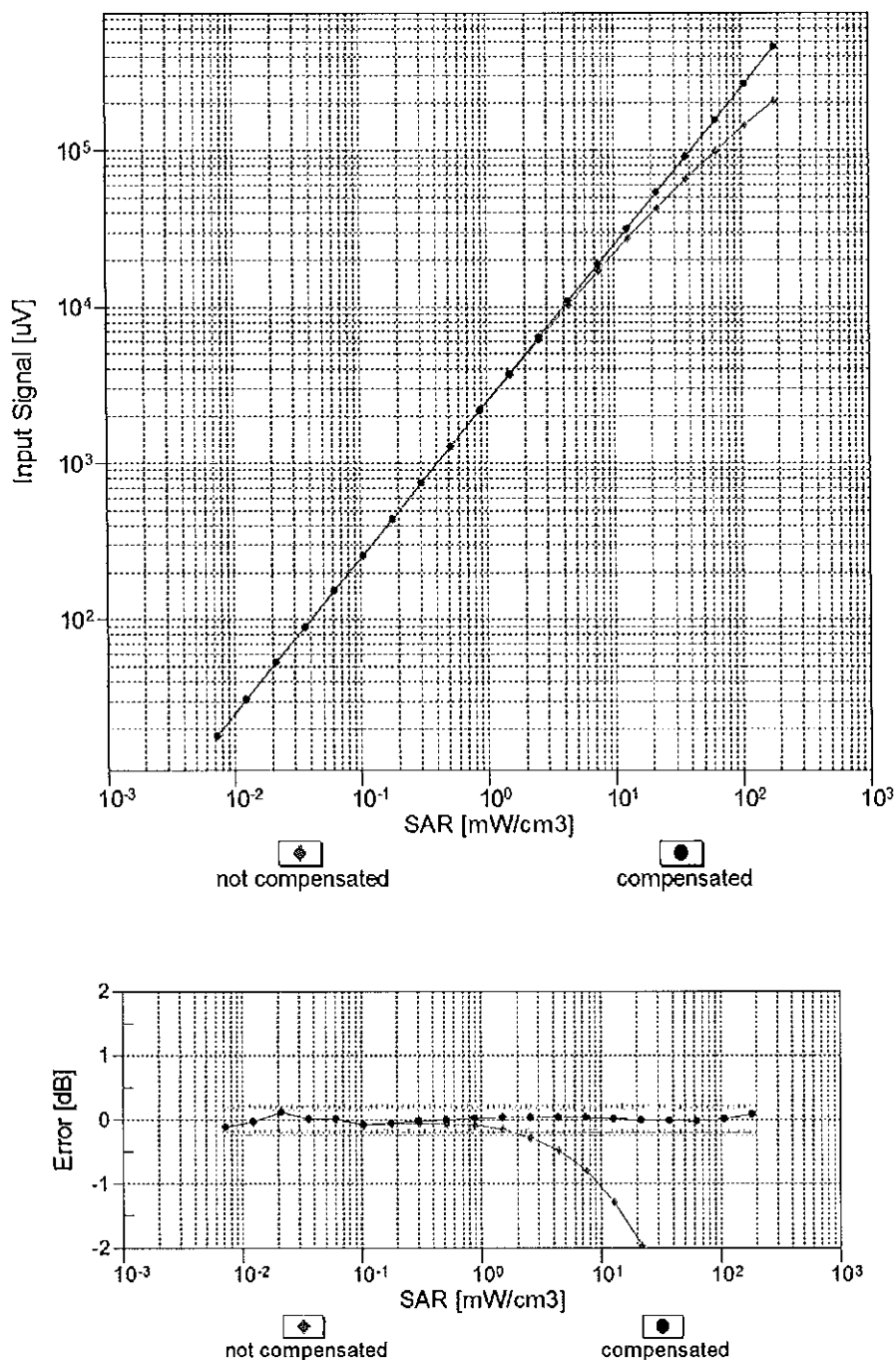


f=1800 MHz, R22



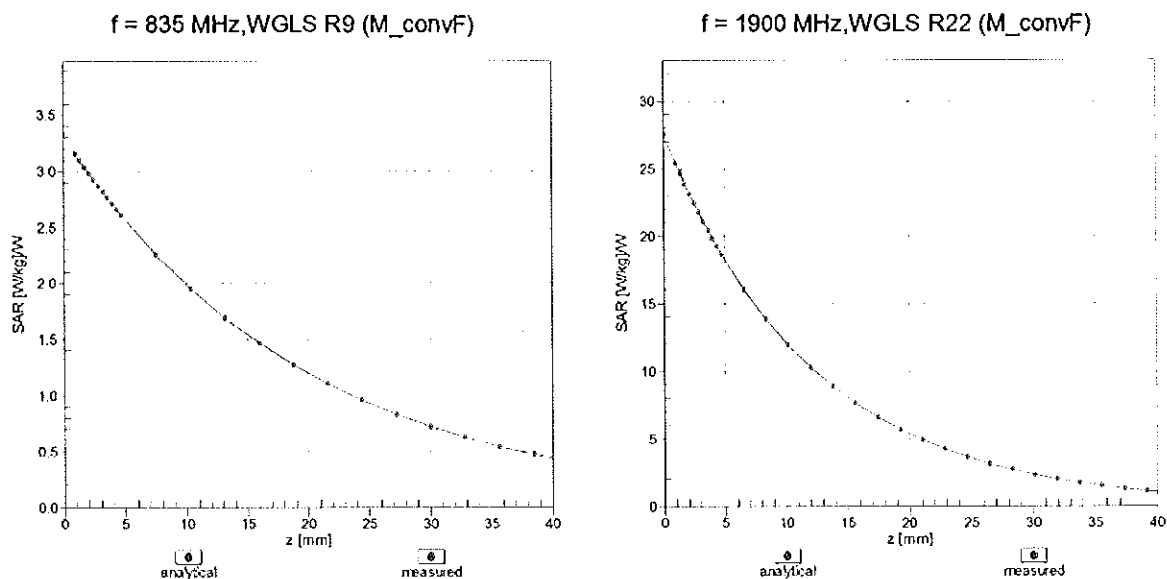
Uncertainty of Axial Isotropy Assessment: $\pm 0.5\%$ ($k=2$)

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



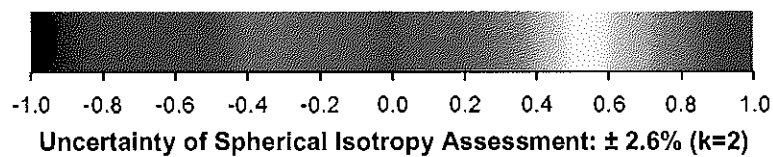
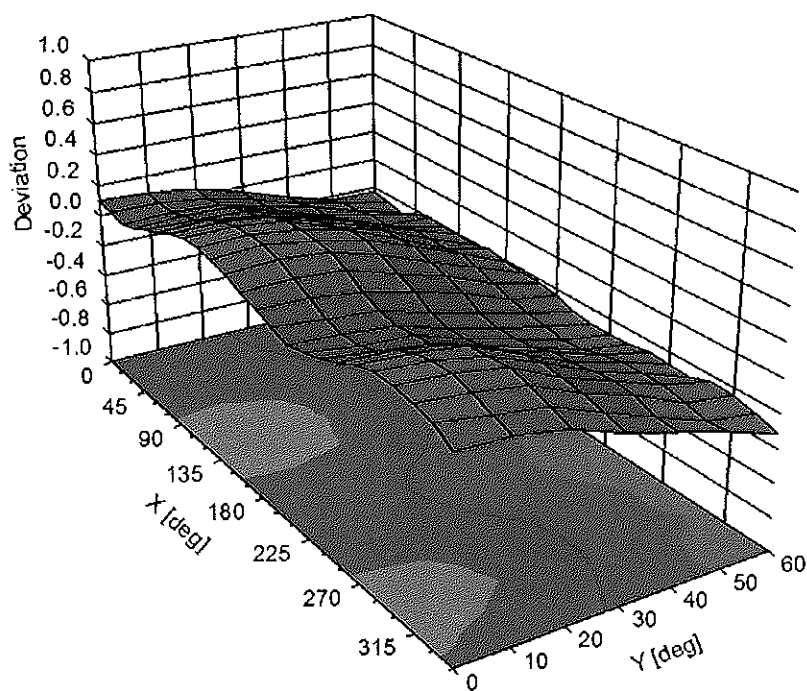
Uncertainty of Linearity Assessment: $\pm 0.6\%$ ($k=2$)

Conversion Factor Assessment



Deviation from Isotropy in Liquid

Error (ϕ , θ), $f = 900 \text{ MHz}$



DASY/EASY - Parameters of Probe: EX3DV4 - SN:3914

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	130.8
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 $\sqrt{\mu V}$	C	D dB	VR mV	Max Unc ^E (k=2)
0	CW	X	0.00	0.00	1.00	0.00	156.6	$\pm 3.3 \%$
		Y	0.00	0.00	1.00		139.0	
		Z	0.00	0.00	1.00		149.0	
10010- CAA	SAR Validation (Square, 100ms, 10ms)	X	2.67	66.07	10.73	10.00	20.0	$\pm 9.6 \%$
		Y	2.77	66.16	10.84		20.0	
		Z	3.01	67.22	11.52		20.0	
10011- CAB	UMTS-FDD (WCDMA)	X	1.07	68.17	15.86	0.00	150.0	$\pm 9.6 \%$
		Y	1.14	69.43	16.60		150.0	
		Z	1.05	67.81	15.63		150.0	
10012- CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps)	X	1.18	63.94	15.29	0.41	150.0	$\pm 9.6 \%$
		Y	1.19	64.27	15.54		150.0	
		Z	1.17	63.79	15.16		150.0	
10013- CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps)	X	4.82	66.52	16.88	1.46	150.0	$\pm 9.6 \%$
		Y	4.84	66.55	16.88		150.0	
		Z	4.80	66.54	16.86		150.0	
10021- DAC	GSM-FDD (TDMA, GMSK)	X	10.62	83.12	18.62	9.39	50.0	$\pm 9.6 \%$
		Y	8.33	79.79	17.55		50.0	
		Z	13.42	86.52	20.09		50.0	
10023- DAC	GPRS-FDD (TDMA, GMSK, TN 0)	X	8.76	80.53	17.78	9.57	50.0	$\pm 9.6 \%$
		Y	7.40	78.13	16.99		50.0	
		Z	10.55	83.20	19.04		50.0	
10024- DAC	GPRS-FDD (TDMA, GMSK, TN 0-1)	X	21.17	91.31	19.68	6.56	60.0	$\pm 9.6 \%$
		Y	12.07	85.13	17.96		60.0	
		Z	52.32	102.57	22.98		60.0	
10025- DAC	EDGE-FDD (TDMA, 8PSK, TN 0)	X	4.95	72.82	26.24	12.57	50.0	$\pm 9.6 \%$
		Y	7.53	84.57	31.77		50.0	
		Z	4.80	71.26	25.29		50.0	
10026- DAC	EDGE-FDD (TDMA, 8PSK, TN 0-1)	X	8.84	88.73	30.42	9.56	60.0	$\pm 9.6 \%$
		Y	10.05	91.59	31.44		60.0	
		Z	8.11	86.61	29.62		60.0	
10027- DAC	GPRS-FDD (TDMA, GMSK, TN 0-1-2)	X	100.00	106.86	22.53	4.80	80.0	$\pm 9.6 \%$
		Y	100.00	106.55	22.42		80.0	
		Z	100.00	109.38	23.65		80.0	
10028- DAC	GPRS-FDD (TDMA, GMSK, TN 0-1-2-3)	X	100.00	107.35	22.11	3.55	100.0	$\pm 9.6 \%$
		Y	100.00	107.02	21.99		100.0	
		Z	100.00	110.40	23.40		100.0	
10029- DAC	EDGE-FDD (TDMA, 8PSK, TN 0-1-2)	X	5.77	79.87	25.94	7.80	80.0	$\pm 9.6 \%$
		Y	6.21	81.41	26.54		80.0	
		Z	5.35	78.22	25.29		80.0	
10030- CAA	IEEE 802.15.1 Bluetooth (GFSK, DH1)	X	13.42	86.20	17.57	5.30	70.0	$\pm 9.6 \%$
		Y	9.31	82.44	16.50		70.0	
		Z	29.70	95.60	20.46		70.0	
10031- CAA	IEEE 802.15.1 Bluetooth (GFSK, DH3)	X	100.00	106.43	20.54	1.88	100.0	$\pm 9.6 \%$
		Y	100.00	106.56	20.60		100.0	
		Z	100.00	109.99	21.95		100.0	

10032-CAA	IEEE 802.15.1 Bluetooth (GFSK, DH5)	X	100.00	112.98	22.39	1.17	100.0	± 9.6 %
		Y	100.00	114.09	22.82		100.0	
		Z	100.00	117.75	24.22		100.0	
10033-CAA	IEEE 802.15.1 Bluetooth (PI/4-DQPSK, DH1)	X	5.28	79.65	19.49	5.30	70.0	± 9.6 %
		Y	5.39	79.85	19.61		70.0	
		Z	4.87	78.68	19.23		70.0	
10034-CAA	IEEE 802.15.1 Bluetooth (PI/4-DQPSK, DH3)	X	2.39	73.05	16.10	1.88	100.0	± 9.6 %
		Y	2.51	73.86	16.59		100.0	
		Z	2.22	72.28	15.77		100.0	
10035-CAA	IEEE 802.15.1 Bluetooth (PI/4-DQPSK, DH5)	X	1.86	71.23	15.30	1.17	100.0	± 9.6 %
		Y	1.97	72.22	15.90		100.0	
		Z	1.74	70.56	14.96		100.0	
10036-CAA	IEEE 802.15.1 Bluetooth (8-DPSK, DH1)	X	6.16	82.06	20.41	5.30	70.0	± 9.6 %
		Y	6.25	82.19	20.50		70.0	
		Z	5.60	80.92	20.11		70.0	
10037-CAA	IEEE 802.15.1 Bluetooth (8-DPSK, DH3)	X	2.26	72.39	15.80	1.88	100.0	± 9.6 %
		Y	2.37	73.21	16.30		100.0	
		Z	2.09	71.60	15.47		100.0	
10038-CAA	IEEE 802.15.1 Bluetooth (8-DPSK, DH5)	X	1.87	71.57	15.55	1.17	100.0	± 9.6 %
		Y	2.00	72.59	16.17		100.0	
		Z	1.75	70.84	15.19		100.0	
10039-CAB	CDMA2000 (1xRTT, RC1)	X	2.22	74.99	16.99	0.00	150.0	± 9.6 %
		Y	2.65	77.61	18.26		150.0	
		Z	2.08	74.23	16.52		150.0	
10042-CAB	IS-54 / IS-136 FDD (TDMA/FDM, PI/4-DQPSK, Halfrate)	X	7.56	79.14	16.13	7.78	50.0	± 9.6 %
		Y	6.34	77.01	15.44		50.0	
		Z	11.33	84.23	18.10		50.0	
10044-CAA	IS-91/EIA/TIA-553 FDD (FDMA, FM)	X	0.00	97.59	0.84	0.00	150.0	± 9.6 %
		Y	0.00	98.99	0.04		150.0	
		Z	0.00	96.10	0.72		150.0	
10048-CAA	DECT (TDD, TDMA/FDM, GFSK, Full Slot, 24)	X	6.44	73.35	16.60	13.80	25.0	± 9.6 %
		Y	6.16	72.26	16.24		25.0	
		Z	7.34	74.65	17.41		25.0	
10049-CAA	DECT (TDD, TDMA/FDM, GFSK, Double Slot, 12)	X	6.68	76.08	16.45	10.79	40.0	± 9.6 %
		Y	6.26	74.90	16.07		40.0	
		Z	7.59	77.73	17.40		40.0	
10056-CAA	UMTS-TDD (TD-SCDMA, 1.28 Mcps)	X	8.65	81.91	20.55	9.03	50.0	± 9.6 %
		Y	8.47	81.27	20.33		50.0	
		Z	8.59	81.70	20.58		50.0	
10058-DAC	EDGE-FDD (TDMA, 8PSK, TN 0-1-2-3)	X	4.50	75.41	23.42	6.55	100.0	± 9.6 %
		Y	4.71	76.39	23.81		100.0	
		Z	4.21	74.08	22.88		100.0	
10059-CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 2 Mbps)	X	1.22	64.88	15.72	0.61	110.0	± 9.6 %
		Y	1.23	65.26	15.98		110.0	
		Z	1.20	64.63	15.56		110.0	
10060-CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 5.5 Mbps)	X	5.20	91.89	23.64	1.30	110.0	± 9.6 %
		Y	8.22	98.67	25.63		110.0	
		Z	3.57	87.17	22.39		110.0	

10061-CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 11 Mbps)	X	2.42	76.11	19.87	2.04	110.0	± 9.6 %
		Y	2.58	77.18	20.29		110.0	
		Z	2.18	74.61	19.37		110.0	
10062-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps)	X	4.65	66.63	16.45	0.49	100.0	± 9.6 %
		Y	4.67	66.69	16.47		100.0	
		Z	4.63	66.64	16.42		100.0	
10063-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 9 Mbps)	X	4.66	66.68	16.51	0.72	100.0	± 9.6 %
		Y	4.68	66.74	16.53		100.0	
		Z	4.63	66.69	16.48		100.0	
10064-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 12 Mbps)	X	4.94	66.91	16.71	0.86	100.0	± 9.6 %
		Y	4.96	66.98	16.73		100.0	
		Z	4.91	66.92	16.68		100.0	
10065-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 18 Mbps)	X	4.80	66.77	16.76	1.21	100.0	± 9.6 %
		Y	4.82	66.84	16.78		100.0	
		Z	4.77	66.77	16.73		100.0	
10066-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 24 Mbps)	X	4.81	66.75	16.88	1.46	100.0	± 9.6 %
		Y	4.83	66.82	16.89		100.0	
		Z	4.78	66.75	16.85		100.0	
10067-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 36 Mbps)	X	5.09	66.88	17.26	2.04	100.0	± 9.6 %
		Y	5.11	66.92	17.27		100.0	
		Z	5.07	66.91	17.25		100.0	
10068-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 48 Mbps)	X	5.13	66.89	17.43	2.55	100.0	± 9.6 %
		Y	5.16	66.96	17.45		100.0	
		Z	5.10	66.89	17.41		100.0	
10069-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 54 Mbps)	X	5.21	66.88	17.61	2.67	100.0	± 9.6 %
		Y	5.23	66.94	17.62		100.0	
		Z	5.18	66.90	17.59		100.0	
10071-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 9 Mbps)	X	4.91	66.56	17.12	1.99	100.0	± 9.6 %
		Y	4.92	66.60	17.13		100.0	
		Z	4.89	66.58	17.10		100.0	
10072-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 12 Mbps)	X	4.88	66.83	17.29	2.30	100.0	± 9.6 %
		Y	4.90	66.89	17.30		100.0	
		Z	4.86	66.85	17.27		100.0	
10073-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 18 Mbps)	X	4.94	66.95	17.56	2.83	100.0	± 9.6 %
		Y	4.95	67.01	17.56		100.0	
		Z	4.92	66.98	17.54		100.0	
10074-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 24 Mbps)	X	4.92	66.84	17.68	3.30	100.0	± 9.6 %
		Y	4.94	66.89	17.68		100.0	
		Z	4.91	66.87	17.66		100.0	
10075-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 36 Mbps)	X	4.96	66.95	17.95	3.82	90.0	± 9.6 %
		Y	4.99	67.03	17.97		90.0	
		Z	4.95	66.97	17.93		90.0	
10076-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 48 Mbps)	X	4.98	66.76	18.06	4.15	90.0	± 9.6 %
		Y	5.00	66.82	18.07		90.0	
		Z	4.98	66.79	18.06		90.0	
10077-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 54 Mbps)	X	5.01	66.82	18.15	4.30	90.0	± 9.6 %
		Y	5.02	66.89	18.16		90.0	
		Z	5.01	66.87	18.15		90.0	

10081-CAB	CDMA2000 (1xRTT, RC3)	X	0.92	67.41	13.37	0.00	150.0	± 9.6 %
		Y	1.03	69.09	14.44		150.0	
		Z	0.88	66.94	12.99		150.0	
10082-CAB	IS-54 / IS-136 FDD (TDMA/FDM, PI/4-DQPSK, Fullrate)	X	0.63	57.80	3.24	4.77	80.0	± 9.6 %
		Y	0.66	58.21	3.60		80.0	
		Z	0.62	57.96	3.46		80.0	
10090-DAC	GPRS-FDD (TDMA, GMSK, TN 0-4)	X	20.08	90.74	19.54	6.56	60.0	± 9.6 %
		Y	11.65	84.73	17.86		60.0	
		Z	47.95	101.61	22.77		60.0	
10097-CAB	UMTS-FDD (HSDPA)	X	1.89	68.37	16.12	0.00	150.0	± 9.6 %
		Y	1.94	68.91	16.47		150.0	
		Z	1.87	68.28	16.00		150.0	
10098-CAB	UMTS-FDD (HSUPA, Subtest 2)	X	1.85	68.32	16.09	0.00	150.0	± 9.6 %
		Y	1.90	68.87	16.45		150.0	
		Z	1.83	68.22	15.96		150.0	
10099-DAC	EDGE-FDD (TDMA, 8PSK, TN 0-4)	X	8.88	88.80	30.43	9.56	60.0	± 9.6 %
		Y	10.09	91.64	31.45		60.0	
		Z	8.15	86.66	29.63		60.0	
10100-CAC	LTE-FDD (SC-FDMA, 100% RB, 20 MHz, QPSK)	X	3.20	70.80	17.02	0.00	150.0	± 9.6 %
		Y	3.31	71.44	17.31		150.0	
		Z	3.15	70.62	16.92		150.0	
10101-CAC	LTE-FDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM)	X	3.26	67.72	16.10	0.00	150.0	± 9.6 %
		Y	3.31	68.03	16.26		150.0	
		Z	3.23	67.65	16.04		150.0	
10102-CAC	LTE-FDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM)	X	3.37	67.70	16.20	0.00	150.0	± 9.6 %
		Y	3.41	67.97	16.34		150.0	
		Z	3.34	67.64	16.14		150.0	
10103-CAC	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, QPSK)	X	6.10	74.42	19.52	3.98	65.0	± 9.6 %
		Y	5.87	73.66	19.14		65.0	
		Z	5.74	73.57	19.22		65.0	
10104-CAC	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM)	X	6.15	72.80	19.65	3.98	65.0	± 9.6 %
		Y	6.23	72.96	19.68		65.0	
		Z	5.94	72.31	19.46		65.0	
10105-CAC	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM)	X	5.87	71.80	19.52	3.98	65.0	± 9.6 %
		Y	5.67	71.06	19.13		65.0	
		Z	5.56	70.91	19.13		65.0	
10108-CAD	LTE-FDD (SC-FDMA, 100% RB, 10 MHz, QPSK)	X	2.79	70.03	16.86	0.00	150.0	± 9.6 %
		Y	2.88	70.63	17.15		150.0	
		Z	2.74	69.86	16.75		150.0	
10109-CAD	LTE-FDD (SC-FDMA, 100% RB, 10 MHz, 16-QAM)	X	2.92	67.64	16.04	0.00	150.0	± 9.6 %
		Y	2.97	67.95	16.22		150.0	
		Z	2.89	67.57	15.96		150.0	
10110-CAD	LTE-FDD (SC-FDMA, 100% RB, 5 MHz, QPSK)	X	2.26	69.17	16.48	0.00	150.0	± 9.6 %
		Y	2.35	69.78	16.82		150.0	
		Z	2.22	68.99	16.35		150.0	
10111-CAD	LTE-FDD (SC-FDMA, 100% RB, 5 MHz, 16-QAM)	X	2.67	68.78	16.48	0.00	150.0	± 9.6 %
		Y	2.73	69.09	16.70		150.0	
		Z	2.65	68.73	16.39		150.0	

10112-CAD	LTE-FDD (SC-FDMA, 100% RB, 10 MHz, 64-QAM)	X	3.05	67.64	16.10	0.00	150.0	± 9.6 %
		Y	3.10	67.91	16.26		150.0	
		Z	3.02	67.58	16.03		150.0	
10113-CAD	LTE-FDD (SC-FDMA, 100% RB, 5 MHz, 64-QAM)	X	2.83	68.92	16.61	0.00	150.0	± 9.6 %
		Y	2.88	69.19	16.80		150.0	
		Z	2.80	68.89	16.53		150.0	
10114-CAB	IEEE 802.11n (HT Greenfield, 13.5 Mbps, BPSK)	X	5.14	67.30	16.52	0.00	150.0	± 9.6 %
		Y	5.15	67.37	16.54		150.0	
		Z	5.11	67.28	16.49		150.0	
10115-CAB	IEEE 802.11n (HT Greenfield, 81 Mbps, 16-QAM)	X	5.41	67.39	16.58	0.00	150.0	± 9.6 %
		Y	5.44	67.49	16.61		150.0	
		Z	5.37	67.35	16.53		150.0	
10116-CAB	IEEE 802.11n (HT Greenfield, 135 Mbps, 64-QAM)	X	5.23	67.48	16.54	0.00	150.0	± 9.6 %
		Y	5.25	67.56	16.57		150.0	
		Z	5.20	67.46	16.50		150.0	
10117-CAB	IEEE 802.11n (HT Mixed, 13.5 Mbps, BPSK)	X	5.10	67.15	16.47	0.00	150.0	± 9.6 %
		Y	5.12	67.24	16.50		150.0	
		Z	5.07	67.14	16.44		150.0	
10118-CAB	IEEE 802.11n (HT Mixed, 81 Mbps, 16-QAM)	X	5.49	67.59	16.68	0.00	150.0	± 9.6 %
		Y	5.52	67.68	16.71		150.0	
		Z	5.45	67.53	16.63		150.0	
10119-CAB	IEEE 802.11n (HT Mixed, 135 Mbps, 64-QAM)	X	5.21	67.43	16.53	0.00	150.0	± 9.6 %
		Y	5.22	67.50	16.55		150.0	
		Z	5.18	67.41	16.49		150.0	
10140-CAC	LTE-FDD (SC-FDMA, 100% RB, 15 MHz, 16-QAM)	X	3.40	67.70	16.11	0.00	150.0	± 9.6 %
		Y	3.45	67.97	16.25		150.0	
		Z	3.37	67.64	16.05		150.0	
10141-CAC	LTE-FDD (SC-FDMA, 100% RB, 15 MHz, 64-QAM)	X	3.53	67.82	16.29	0.00	150.0	± 9.6 %
		Y	3.57	68.05	16.41		150.0	
		Z	3.50	67.77	16.23		150.0	
10142-CAD	LTE-FDD (SC-FDMA, 100% RB, 3 MHz, QPSK)	X	2.05	69.36	16.22	0.00	150.0	± 9.6 %
		Y	2.15	70.07	16.65		150.0	
		Z	2.01	69.16	16.05		150.0	
10143-CAD	LTE-FDD (SC-FDMA, 100% RB, 3 MHz, 16-QAM)	X	2.58	69.85	16.32	0.00	150.0	± 9.6 %
		Y	2.67	70.31	16.66		150.0	
		Z	2.55	69.76	16.17		150.0	
10144-CAD	LTE-FDD (SC-FDMA, 100% RB, 3 MHz, 64-QAM)	X	2.27	67.04	14.44	0.00	150.0	± 9.6 %
		Y	2.35	67.51	14.81		150.0	
		Z	2.23	66.89	14.26		150.0	
10145-CAD	LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, QPSK)	X	1.27	65.89	12.21	0.00	150.0	± 9.6 %
		Y	1.42	67.33	13.21		150.0	
		Z	1.20	65.32	11.71		150.0	
10146-CAD	LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, 16-QAM)	X	1.76	65.12	10.79	0.00	150.0	± 9.6 %
		Y	1.85	65.98	11.50		150.0	
		Z	1.79	65.33	10.70		150.0	
10147-CAD	LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, 64-QAM)	X	2.02	66.77	11.72	0.00	150.0	± 9.6 %
		Y	2.20	68.07	12.63		150.0	
		Z	2.10	67.13	11.69		150.0	

10149-CAC	LTE-FDD (SC-FDMA, 50% RB, 20 MHz, 16-QAM)	X	2.93	67.71	16.09	0.00	150.0	± 9.6 %
		Y	2.98	68.02	16.27		150.0	
		Z	2.90	67.64	16.02		150.0	
10150-CAC	LTE-FDD (SC-FDMA, 50% RB, 20 MHz, 64-QAM)	X	3.06	67.71	16.14	0.00	150.0	± 9.6 %
		Y	3.10	67.97	16.30		150.0	
		Z	3.03	67.65	16.07		150.0	
10151-CAC	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, QPSK)	X	6.20	76.14	20.26	3.98	65.0	± 9.6 %
		Y	6.27	76.18	20.22		65.0	
		Z	5.93	75.60	20.10		65.0	
10152-CAC	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 16-QAM)	X	5.64	72.55	19.21	3.98	65.0	± 9.6 %
		Y	5.73	72.74	19.28		65.0	
		Z	5.43	72.04	19.00		65.0	
10153-CAC	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 64-QAM)	X	6.03	73.59	20.04	3.98	65.0	± 9.6 %
		Y	6.10	73.69	20.06		65.0	
		Z	5.81	73.08	19.84		65.0	
10154-CAD	LTE-FDD (SC-FDMA, 50% RB, 10 MHz, QPSK)	X	2.32	69.68	16.78	0.00	150.0	± 9.6 %
		Y	2.41	70.30	17.13		150.0	
		Z	2.28	69.49	16.65		150.0	
10155-CAD	LTE-FDD (SC-FDMA, 50% RB, 10 MHz, 16-QAM)	X	2.68	68.79	16.50	0.00	150.0	± 9.6 %
		Y	2.73	69.11	16.71		150.0	
		Z	2.65	68.75	16.41		150.0	
10156-CAD	LTE-FDD (SC-FDMA, 50% RB, 5 MHz, QPSK)	X	1.92	69.63	16.09	0.00	150.0	± 9.6 %
		Y	2.03	70.50	16.63		150.0	
		Z	1.87	69.37	15.88		150.0	
10157-CAD	LTE-FDD (SC-FDMA, 50% RB, 5 MHz, 16-QAM)	X	2.14	67.82	14.58	0.00	150.0	± 9.6 %
		Y	2.24	68.46	15.06		150.0	
		Z	2.09	67.62	14.35		150.0	
10158-CAD	LTE-FDD (SC-FDMA, 50% RB, 10 MHz, 64-QAM)	X	2.84	69.00	16.66	0.00	150.0	± 9.6 %
		Y	2.89	69.26	16.85		150.0	
		Z	2.81	68.97	16.58		150.0	
10159-CAD	LTE-FDD (SC-FDMA, 50% RB, 5 MHz, 64-QAM)	X	2.26	68.38	14.91	0.00	150.0	± 9.6 %
		Y	2.37	69.05	15.40		150.0	
		Z	2.21	68.17	14.68		150.0	
10160-CAC	LTE-FDD (SC-FDMA, 50% RB, 15 MHz, QPSK)	X	2.78	69.02	16.58	0.00	150.0	± 9.6 %
		Y	2.84	69.39	16.78		150.0	
		Z	2.74	68.91	16.49		150.0	
10161-CAC	LTE-FDD (SC-FDMA, 50% RB, 15 MHz, 16-QAM)	X	2.96	67.68	16.09	0.00	150.0	± 9.6 %
		Y	3.00	67.95	16.25		150.0	
		Z	2.93	67.62	16.01		150.0	
10162-CAC	LTE-FDD (SC-FDMA, 50% RB, 15 MHz, 64-QAM)	X	3.07	67.83	16.20	0.00	150.0	± 9.6 %
		Y	3.11	68.07	16.35		150.0	
		Z	3.04	67.79	16.13		150.0	
10166-CAD	LTE-FDD (SC-FDMA, 50% RB, 1.4 MHz, QPSK)	X	3.52	69.42	18.97	3.01	150.0	± 9.6 %
		Y	3.48	69.21	18.88		150.0	
		Z	3.58	69.99	19.29		150.0	
10167-CAD	LTE-FDD (SC-FDMA, 50% RB, 1.4 MHz, 16-QAM)	X	4.35	72.55	19.50	3.01	150.0	± 9.6 %
		Y	4.23	72.10	19.35		150.0	
		Z	4.57	73.71	20.03		150.0	

10168-CAD	LTE-FDD (SC-FDMA, 50% RB, 1.4 MHz, 64-QAM)	X	4.95	75.33	21.09	3.01	150.0	± 9.6 %
		Y	4.74	74.55	20.78		150.0	
		Z	5.31	76.94	21.79		150.0	
10169-CAC	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, QPSK)	X	2.92	68.92	18.76	3.01	150.0	± 9.6 %
		Y	2.83	68.61	18.65		150.0	
		Z	3.02	69.75	19.20		150.0	
10170-CAC	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM)	X	4.20	75.93	21.56	3.01	150.0	± 9.6 %
		Y	3.90	74.95	21.22		150.0	
		Z	4.73	78.44	22.61		150.0	
10171-AAC	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, 64-QAM)	X	3.29	70.86	18.34	3.01	150.0	± 9.6 %
		Y	3.14	70.43	18.23		150.0	
		Z	3.53	72.31	18.98		150.0	
10172-CAC	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK)	X	6.18	83.60	24.73	6.02	65.0	± 9.6 %
		Y	5.31	80.83	23.64		65.0	
		Z	5.59	82.35	24.48		65.0	
10173-CAC	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM)	X	9.66	88.05	24.34	6.02	65.0	± 9.6 %
		Y	9.20	87.15	23.96		65.0	
		Z	11.03	90.93	25.45		65.0	
10174-CAC	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 64-QAM)	X	7.49	83.02	22.12	6.02	65.0	± 9.6 %
		Y	6.16	79.95	20.98		65.0	
		Z	7.52	83.81	22.58		65.0	
10175-CAD	LTE-FDD (SC-FDMA, 1 RB, 10 MHz, QPSK)	X	2.88	68.56	18.48	3.01	150.0	± 9.6 %
		Y	2.79	68.29	18.39		150.0	
		Z	2.97	69.36	18.91		150.0	
10176-CAD	LTE-FDD (SC-FDMA, 1 RB, 10 MHz, 16-QAM)	X	4.20	75.96	21.58	3.01	150.0	± 9.6 %
		Y	3.90	74.98	21.23		150.0	
		Z	4.74	78.47	22.62		150.0	
10177-CAF	LTE-FDD (SC-FDMA, 1 RB, 5 MHz, QPSK)	X	2.90	68.74	18.59	3.01	150.0	± 9.6 %
		Y	2.82	68.45	18.49		150.0	
		Z	3.00	69.54	19.02		150.0	
10178-CAD	LTE-FDD (SC-FDMA, 1 RB, 5 MHz, 16-QAM)	X	4.15	75.68	21.43	3.01	150.0	± 9.6 %
		Y	3.86	74.72	21.10		150.0	
		Z	4.66	78.13	22.46		150.0	
10179-CAD	LTE-FDD (SC-FDMA, 1 RB, 10 MHz, 64-QAM)	X	3.69	73.16	19.77	3.01	150.0	± 9.6 %
		Y	3.48	72.54	19.57		150.0	
		Z	4.04	75.08	20.59		150.0	
10180-CAD	LTE-FDD (SC-FDMA, 1 RB, 5 MHz, 64-QAM)	X	3.28	70.77	18.28	3.01	150.0	± 9.6 %
		Y	3.13	70.35	18.17		150.0	
		Z	3.52	72.21	18.92		150.0	
10181-CAC	LTE-FDD (SC-FDMA, 1 RB, 15 MHz, QPSK)	X	2.90	68.71	18.58	3.01	150.0	± 9.6 %
		Y	2.81	68.43	18.49		150.0	
		Z	2.99	69.52	19.01		150.0	
10182-CAC	LTE-FDD (SC-FDMA, 1 RB, 15 MHz, 16-QAM)	X	4.14	75.65	21.42	3.01	150.0	± 9.6 %
		Y	3.85	74.70	21.08		150.0	
		Z	4.65	78.10	22.45		150.0	
10183-AAB	LTE-FDD (SC-FDMA, 1 RB, 15 MHz, 64-QAM)	X	3.28	70.75	18.27	3.01	150.0	± 9.6 %
		Y	3.12	70.33	18.16		150.0	
		Z	3.51	72.19	18.91		150.0	

10184-CAD	LTE-FDD (SC-FDMA, 1 RB, 3 MHz, QPSK)	X	2.91	68.76	18.61	3.01	150.0	± 9.6 %
		Y	2.82	68.48	18.51		150.0	
		Z	3.00	69.57	19.04		150.0	
10185-CAD	LTE-FDD (SC-FDMA, 1 RB, 3 MHz, 16-QAM)	X	4.16	75.74	21.46	3.01	150.0	± 9.6 %
		Y	3.87	74.78	21.12		150.0	
		Z	4.68	78.20	22.50		150.0	
10186-AAD	LTE-FDD (SC-FDMA, 1 RB, 3 MHz, 64-QAM)	X	3.29	70.82	18.30	3.01	150.0	± 9.6 %
		Y	3.14	70.40	18.20		150.0	
		Z	3.53	72.27	18.95		150.0	
10187-CAD	LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK)	X	2.92	68.82	18.67	3.01	150.0	± 9.6 %
		Y	2.83	68.53	18.57		150.0	
		Z	3.01	69.64	19.11		150.0	
10188-CAD	LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, 16-QAM)	X	4.34	76.58	21.92	3.01	150.0	± 9.6 %
		Y	4.01	75.52	21.54		150.0	
		Z	4.92	79.24	23.02		150.0	
10189-AAD	LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, 64-QAM)	X	3.38	71.31	18.62	3.01	150.0	± 9.6 %
		Y	3.21	70.86	18.50		150.0	
		Z	3.64	72.84	19.29		150.0	
10193-CAB	IEEE 802.11n (HT Greenfield, 6.5 Mbps, BPSK)	X	4.53	66.74	16.24	0.00	150.0	± 9.6 %
		Y	4.55	66.82	16.28		150.0	
		Z	4.50	66.75	16.20		150.0	
10194-CAB	IEEE 802.11n (HT Greenfield, 39 Mbps, 16-QAM)	X	4.70	67.04	16.36	0.00	150.0	± 9.6 %
		Y	4.73	67.14	16.40		150.0	
		Z	4.67	67.04	16.32		150.0	
10195-CAB	IEEE 802.11n (HT Greenfield, 65 Mbps, 64-QAM)	X	4.74	67.07	16.38	0.00	150.0	± 9.6 %
		Y	4.77	67.16	16.42		150.0	
		Z	4.71	67.07	16.34		150.0	
10196-CAB	IEEE 802.11n (HT Mixed, 6.5 Mbps, BPSK)	X	4.53	66.80	16.25	0.00	150.0	± 9.6 %
		Y	4.56	66.89	16.30		150.0	
		Z	4.50	66.80	16.21		150.0	
10197-CAB	IEEE 802.11n (HT Mixed, 39 Mbps, 16-QAM)	X	4.71	67.06	16.37	0.00	150.0	± 9.6 %
		Y	4.74	67.16	16.41		150.0	
		Z	4.68	67.06	16.33		150.0	
10198-CAB	IEEE 802.11n (HT Mixed, 65 Mbps, 64-QAM)	X	4.74	67.09	16.39	0.00	150.0	± 9.6 %
		Y	4.77	67.18	16.43		150.0	
		Z	4.71	67.09	16.35		150.0	
10219-CAB	IEEE 802.11n (HT Mixed, 7.2 Mbps, BPSK)	X	4.48	66.81	16.22	0.00	150.0	± 9.6 %
		Y	4.51	66.91	16.27		150.0	
		Z	4.45	66.82	16.18		150.0	
10220-CAB	IEEE 802.11n (HT Mixed, 43.3 Mbps, 16-QAM)	X	4.70	67.03	16.36	0.00	150.0	± 9.6 %
		Y	4.73	67.13	16.40		150.0	
		Z	4.67	67.03	16.32		150.0	
10221-CAB	IEEE 802.11n (HT Mixed, 72.2 Mbps, 64-QAM)	X	4.75	67.02	16.37	0.00	150.0	± 9.6 %
		Y	4.78	67.11	16.41		150.0	
		Z	4.72	67.01	16.33		150.0	
10222-CAB	IEEE 802.11n (HT Mixed, 15 Mbps, BPSK)	X	5.07	67.16	16.47	0.00	150.0	± 9.6 %
		Y	5.09	67.26	16.50		150.0	
		Z	5.05	67.15	16.43		150.0	

10223-CAB	IEEE 802.11n (HT Mixed, 90 Mbps, 16-QAM)	X	5.37	67.36	16.58	0.00	150.0	± 9.6 %
		Y	5.39	67.42	16.59		150.0	
		Z	5.35	67.37	16.56		150.0	
10224-CAB	IEEE 802.11n (HT Mixed, 150 Mbps, 64-QAM)	X	5.12	67.28	16.45	0.00	150.0	± 9.6 %
		Y	5.14	67.37	16.48		150.0	
		Z	5.09	67.26	16.42		150.0	
10225-CAB	UMTS-FDD (HSPA+)	X	2.82	66.40	15.48	0.00	150.0	± 9.6 %
		Y	2.86	66.59	15.66		150.0	
		Z	2.79	66.37	15.39		150.0	
10226-CAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 16-QAM)	X	10.34	89.28	24.84	6.02	65.0	± 9.6 %
		Y	9.78	88.26	24.43		65.0	
		Z	11.95	92.40	26.02		65.0	
10227-CAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 64-QAM)	X	9.45	86.56	23.34	6.02	65.0	± 9.6 %
		Y	8.84	85.37	22.86		65.0	
		Z	10.93	89.56	24.47		65.0	
10228-CAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK)	X	7.32	86.94	25.98	6.02	65.0	± 9.6 %
		Y	7.51	87.27	26.00		65.0	
		Z	7.20	87.24	26.30		65.0	
10229-CAB	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 16-QAM)	X	9.74	88.16	24.39	6.02	65.0	± 9.6 %
		Y	9.28	87.26	24.01		65.0	
		Z	11.13	91.06	25.50		65.0	
10230-CAB	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 64-QAM)	X	8.91	85.54	22.92	6.02	65.0	± 9.6 %
		Y	8.39	84.47	22.48		65.0	
		Z	10.18	88.33	24.00		65.0	
10231-CAB	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, QPSK)	X	7.00	86.05	25.58	6.02	65.0	± 9.6 %
		Y	7.21	86.43	25.62		65.0	
		Z	6.88	86.32	25.89		65.0	
10232-CAC	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 16-QAM)	X	9.72	88.14	24.38	6.02	65.0	± 9.6 %
		Y	9.26	87.24	24.00		65.0	
		Z	11.11	91.04	25.49		65.0	
10233-CAC	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 64-QAM)	X	8.89	85.52	22.92	6.02	65.0	± 9.6 %
		Y	8.37	84.45	22.47		65.0	
		Z	10.16	88.31	23.99		65.0	
10234-CAC	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, QPSK)	X	6.73	85.20	25.16	6.02	65.0	± 9.6 %
		Y	6.94	85.61	25.22		65.0	
		Z	6.62	85.46	25.47		65.0	
10235-CAC	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 16-QAM)	X	9.73	88.16	24.39	6.02	65.0	± 9.6 %
		Y	9.26	87.26	24.01		65.0	
		Z	11.12	91.07	25.50		65.0	
10236-CAC	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 64-QAM)	X	8.97	85.63	22.95	6.02	65.0	± 9.6 %
		Y	8.44	84.56	22.50		65.0	
		Z	10.26	88.43	24.03		65.0	
10237-CAC	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, QPSK)	X	7.00	86.09	25.59	6.02	65.0	± 9.6 %
		Y	7.21	86.48	25.64		65.0	
		Z	6.88	86.35	25.91		65.0	
10238-CAC	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 16-QAM)	X	9.70	88.11	24.37	6.02	65.0	± 9.6 %
		Y	9.24	87.21	23.99		65.0	
		Z	11.08	91.01	25.48		65.0	

10239-CAC	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 64-QAM)	X	8.86	85.49	22.91	6.02	65.0	± 9.6 %
		Y	8.34	84.42	22.46		65.0	
		Z	10.12	88.27	23.98		65.0	
10240-CAC	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, QPSK)	X	6.98	86.05	25.58	6.02	65.0	± 9.6 %
		Y	7.19	86.44	25.63		65.0	
		Z	6.87	86.32	25.89		65.0	
10241-CAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 16-QAM)	X	7.66	79.41	24.04	6.98	65.0	± 9.6 %
		Y	7.53	78.99	23.87		65.0	
		Z	7.72	79.98	24.35		65.0	
10242-CAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 64-QAM)	X	7.08	77.85	23.32	6.98	65.0	± 9.6 %
		Y	6.56	76.18	22.61		65.0	
		Z	6.82	77.47	23.23		65.0	
10243-CAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, QPSK)	X	5.72	74.40	22.72	6.98	65.0	± 9.6 %
		Y	5.45	73.28	22.19		65.0	
		Z	5.52	73.92	22.57		65.0	
10244-CAB	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 16-QAM)	X	4.75	71.39	15.87	3.98	65.0	± 9.6 %
		Y	4.77	71.48	16.03		65.0	
		Z	4.72	71.54	15.92		65.0	
10245-CAB	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 64-QAM)	X	4.68	70.96	15.63	3.98	65.0	± 9.6 %
		Y	4.72	71.09	15.82		65.0	
		Z	4.64	71.06	15.66		65.0	
10246-CAB	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, QPSK)	X	4.46	73.85	17.32	3.98	65.0	± 9.6 %
		Y	4.61	74.27	17.59		65.0	
		Z	4.17	73.10	17.00		65.0	
10247-CAC	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 16-QAM)	X	4.62	71.66	17.10	3.98	65.0	± 9.6 %
		Y	4.72	71.92	17.30		65.0	
		Z	4.41	71.11	16.82		65.0	
10248-CAC	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 64-QAM)	X	4.64	71.26	16.91	3.98	65.0	± 9.6 %
		Y	4.75	71.55	17.13		65.0	
		Z	4.42	70.71	16.63		65.0	
10249-CAC	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, QPSK)	X	5.55	77.29	19.64	3.98	65.0	± 9.6 %
		Y	5.67	77.48	19.75		65.0	
		Z	5.19	76.50	19.35		65.0	
10250-CAC	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 16-QAM)	X	5.62	74.57	20.02	3.98	65.0	± 9.6 %
		Y	5.69	74.63	20.05		65.0	
		Z	5.39	73.98	19.78		65.0	
10251-CAC	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 64-QAM)	X	5.39	72.65	18.85	3.98	65.0	± 9.6 %
		Y	5.48	72.84	18.95		65.0	
		Z	5.18	72.13	18.61		65.0	
10252-CAC	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, QPSK)	X	6.13	78.05	20.93	3.98	65.0	± 9.6 %
		Y	6.21	78.10	20.92		65.0	
		Z	5.78	77.32	20.70		65.0	
10253-CAC	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 16-QAM)	X	5.54	72.10	19.00	3.98	65.0	± 9.6 %
		Y	5.62	72.26	19.07		65.0	
		Z	5.35	71.63	18.79		65.0	
10254-CAC	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 64-QAM)	X	5.89	73.05	19.74	3.98	65.0	± 9.6 %
		Y	5.96	73.15	19.77		65.0	
		Z	5.69	72.56	19.53		65.0	

10255-CAC	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, QPSK)	X	5.96	75.63	20.26	3.98	65.0	± 9.6 %
		Y	6.03	75.68	20.24		65.0	
		Z	5.70	75.08	20.08		65.0	
10256-CAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 16-QAM)	X	3.65	67.68	13.12	3.98	65.0	± 9.6 %
		Y	3.72	67.99	13.43		65.0	
		Z	3.58	67.63	13.06		65.0	
10257-CAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 64-QAM)	X	3.61	67.24	12.83	3.98	65.0	± 9.6 %
		Y	3.69	67.57	13.15		65.0	
		Z	3.52	67.14	12.74		65.0	
10258-CAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, QPSK)	X	3.39	69.66	14.64	3.98	65.0	± 9.6 %
		Y	3.55	70.26	15.05		65.0	
		Z	3.18	68.99	14.30		65.0	
10259-CAB	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 16-QAM)	X	5.01	72.76	18.17	3.98	65.0	± 9.6 %
		Y	5.10	72.95	18.31		65.0	
		Z	4.79	72.21	17.91		65.0	
10260-CAB	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 64-QAM)	X	5.05	72.57	18.09	3.98	65.0	± 9.6 %
		Y	5.14	72.76	18.24		65.0	
		Z	4.83	72.02	17.83		65.0	
10261-CAB	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, QPSK)	X	5.55	76.95	19.93	3.98	65.0	± 9.6 %
		Y	5.66	77.10	20.01		65.0	
		Z	5.23	76.20	19.66		65.0	
10262-CAC	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 16-QAM)	X	5.61	74.51	19.98	3.98	65.0	± 9.6 %
		Y	5.68	74.58	20.01		65.0	
		Z	5.37	73.92	19.73		65.0	
10263-CAC	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 64-QAM)	X	5.38	72.63	18.84	3.98	65.0	± 9.6 %
		Y	5.47	72.82	18.95		65.0	
		Z	5.17	72.10	18.61		65.0	
10264-CAC	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, QPSK)	X	6.07	77.87	20.84	3.98	65.0	± 9.6 %
		Y	6.16	77.94	20.84		65.0	
		Z	5.73	77.15	20.61		65.0	
10265-CAC	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 16-QAM)	X	5.64	72.55	19.22	3.98	65.0	± 9.6 %
		Y	5.73	72.74	19.29		65.0	
		Z	5.43	72.04	19.01		65.0	
10266-CAC	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 64-QAM)	X	6.02	73.57	20.03	3.98	65.0	± 9.6 %
		Y	6.09	73.68	20.05		65.0	
		Z	5.81	73.06	19.83		65.0	
10267-CAC	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, QPSK)	X	6.19	76.11	20.24	3.98	65.0	± 9.6 %
		Y	6.26	76.15	20.20		65.0	
		Z	5.92	75.57	20.08		65.0	
10268-CAC	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 16-QAM)	X	6.31	72.74	19.74	3.98	65.0	± 9.6 %
		Y	6.38	72.86	19.76		65.0	
		Z	6.11	72.28	19.56		65.0	
10269-CAC	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 64-QAM)	X	6.31	72.40	19.66	3.98	65.0	± 9.6 %
		Y	6.37	72.52	19.68		65.0	
		Z	6.11	71.95	19.47		65.0	
10270-CAC	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, QPSK)	X	6.25	74.19	19.65	3.98	65.0	± 9.6 %
		Y	6.30	74.22	19.60		65.0	
		Z	6.03	73.76	19.52		65.0	

10274-CAB	UMTS-FDD (HSUPA, Subtest 5, 3GPP Rel8.10)	X	2.62	66.83	15.44	0.00	150.0	± 9.6 %
		Y	2.65	67.06	15.64		150.0	
		Z	2.60	66.81	15.36		150.0	
10275-CAB	UMTS-FDD (HSUPA, Subtest 5, 3GPP Rel8.4)	X	1.66	68.56	15.99	0.00	150.0	± 9.6 %
		Y	1.74	69.37	16.47		150.0	
		Z	1.63	68.35	15.83		150.0	
10277-CAA	PHS (QPSK)	X	2.45	61.81	7.48	9.03	50.0	± 9.6 %
		Y	2.59	62.16	7.82		50.0	
		Z	2.54	62.07	7.75		50.0	
10278-CAA	PHS (QPSK, BW 884MHz, Rolloff 0.5)	X	4.03	68.72	13.51	9.03	50.0	± 9.6 %
		Y	4.22	69.17	13.84		50.0	
		Z	4.10	68.73	13.58		50.0	
10279-CAA	PHS (QPSK, BW 884MHz, Rolloff 0.38)	X	4.13	68.96	13.67	9.03	50.0	± 9.6 %
		Y	4.33	69.41	14.00		50.0	
		Z	4.19	68.95	13.73		50.0	
10290-AAB	CDMA2000, RC1, SO55, Full Rate	X	1.59	70.25	14.71	0.00	150.0	± 9.6 %
		Y	1.82	72.15	15.78		150.0	
		Z	1.50	69.65	14.28		150.0	
10291-AAB	CDMA2000, RC3, SO55, Full Rate	X	0.90	67.12	13.22	0.00	150.0	± 9.6 %
		Y	1.00	68.73	14.25		150.0	
		Z	0.86	66.67	12.84		150.0	
10292-AAB	CDMA2000, RC3, SO32, Full Rate	X	1.36	73.82	16.65	0.00	150.0	± 9.6 %
		Y	1.71	77.26	18.32		150.0	
		Z	1.28	73.01	16.14		150.0	
10293-AAB	CDMA2000, RC3, SO3, Full Rate	X	3.29	86.77	21.89	0.00	150.0	± 9.6 %
		Y	4.71	92.66	24.11		150.0	
		Z	3.08	85.69	21.33		150.0	
10295-AAB	CDMA2000, RC1, SO3, 1/8th Rate 25 fr.	X	7.29	78.77	20.59	9.03	50.0	± 9.6 %
		Y	7.06	78.09	20.40		50.0	
		Z	7.48	78.90	20.60		50.0	
10297-AAB	LTE-FDD (SC-FDMA, 50% RB, 20 MHz, QPSK)	X	2.80	70.15	16.93	0.00	150.0	± 9.6 %
		Y	2.90	70.75	17.22		150.0	
		Z	2.76	69.98	16.83		150.0	
10298-AAC	LTE-FDD (SC-FDMA, 50% RB, 3 MHz, QPSK)	X	1.64	68.64	14.60	0.00	150.0	± 9.6 %
		Y	1.79	69.89	15.40		150.0	
		Z	1.57	68.20	14.24		150.0	
10299-AAC	LTE-FDD (SC-FDMA, 50% RB, 3 MHz, 16-QAM)	X	2.47	68.83	13.61	0.00	150.0	± 9.6 %
		Y	2.54	69.43	14.13		150.0	
		Z	2.67	69.79	13.88		150.0	
10300-AAC	LTE-FDD (SC-FDMA, 50% RB, 3 MHz, 64-QAM)	X	1.84	64.47	10.78	0.00	150.0	± 9.6 %
		Y	1.87	64.82	11.18		150.0	
		Z	1.87	64.71	10.75		150.0	
10301-AAA	IEEE 802.16e WiMAX (29:18, 5ms, 10MHz, QPSK, PUSC)	X	4.69	65.44	17.46	4.17	50.0	± 9.6 %
		Y	4.63	65.10	17.32		50.0	
		Z	4.65	65.38	17.36		50.0	
10302-AAA	IEEE 802.16e WiMAX (29:18, 5ms, 10MHz, QPSK, PUSC, 3 CTRL symbols)	X	5.12	65.81	18.03	4.96	50.0	± 9.6 %
		Y	5.16	65.97	18.16		50.0	
		Z	5.12	65.91	18.02		50.0	

10303-AAA	IEEE 802.16e WiMAX (31:15, 5ms, 10MHz, 64QAM, PUSC)	X	4.87	65.45	17.87	4.96	50.0	± 9.6 %
		Y	4.92	65.62	18.01		50.0	
		Z	4.87	65.57	17.85		50.0	
10304-AAA	IEEE 802.16e WiMAX (29:18, 5ms, 10MHz, 64QAM, PUSC)	X	4.68	65.35	17.39	4.17	50.0	± 9.6 %
		Y	4.72	65.48	17.50		50.0	
		Z	4.68	65.45	17.37		50.0	
10305-AAA	IEEE 802.16e WiMAX (31:15, 10ms, 10MHz, 64QAM, PUSC, 15 symbols)	X	4.39	67.43	19.46	6.02	35.0	± 9.6 %
		Y	4.48	67.81	19.80		35.0	
		Z	4.49	68.01	19.61		35.0	
10306-AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, 64QAM, PUSC, 18 symbols)	X	4.67	66.30	18.98	6.02	35.0	± 9.6 %
		Y	4.73	66.54	19.21		35.0	
		Z	4.72	66.69	19.08		35.0	
10307-AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, QPSK, PUSC, 18 symbols)	X	4.58	66.51	18.97	6.02	35.0	± 9.6 %
		Y	4.65	66.79	19.23		35.0	
		Z	4.64	66.91	19.08		35.0	
10308-AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, 16QAM, PUSC)	X	4.56	66.71	19.12	6.02	35.0	± 9.6 %
		Y	4.63	67.02	19.38		35.0	
		Z	4.62	67.14	19.23		35.0	
10309-AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, 16QAM, AMC 2x3, 18 symbols)	X	4.72	66.48	19.11	6.02	35.0	± 9.6 %
		Y	4.79	66.75	19.35		35.0	
		Z	4.77	66.86	19.21		35.0	
10310-AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, QPSK, AMC 2x3, 18 symbols)	X	4.62	66.39	18.97	6.02	35.0	± 9.6 %
		Y	4.69	66.63	19.20		35.0	
		Z	4.68	66.79	19.08		35.0	
10311-AAB	LTE-FDD (SC-FDMA, 100% RB, 15 MHz, QPSK)	X	3.17	69.43	16.56	0.00	150.0	± 9.6 %
		Y	3.28	70.00	16.83		150.0	
		Z	3.13	69.27	16.47		150.0	
10313-AAA	IDEN 1:3	X	3.04	69.90	14.46	6.99	70.0	± 9.6 %
		Y	3.00	69.58	14.26		70.0	
		Z	2.91	69.76	14.60		70.0	
10314-AAA	IDEN 1:6	X	4.05	75.03	19.23	10.00	30.0	± 9.6 %
		Y	3.94	74.12	18.73		30.0	
		Z	4.12	75.22	19.44		30.0	
10315-AAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps, 96pc duty cycle)	X	1.10	63.97	15.35	0.17	150.0	± 9.6 %
		Y	1.11	64.32	15.62		150.0	
		Z	1.09	63.83	15.22		150.0	
10316-AAB	IEEE 802.11g WiFi 2.4 GHz (ERP-OFDM, 6 Mbps, 96pc duty cycle)	X	4.56	66.66	16.26	0.17	150.0	± 9.6 %
		Y	4.58	66.74	16.29		150.0	
		Z	4.53	66.67	16.22		150.0	
10317-AAB	IEEE 802.11a WiFi 5 GHz (OFDM, 6 Mbps, 96pc duty cycle)	X	4.56	66.66	16.26	0.17	150.0	± 9.6 %
		Y	4.58	66.74	16.29		150.0	
		Z	4.53	66.67	16.22		150.0	
10400-AAC	IEEE 802.11ac WiFi (20MHz, 64-QAM, 99pc duty cycle)	X	4.68	67.08	16.34	0.00	150.0	± 9.6 %
		Y	4.72	67.18	16.39		150.0	
		Z	4.65	67.07	16.30		150.0	
10401-AAC	IEEE 802.11ac WiFi (40MHz, 64-QAM, 99pc duty cycle)	X	5.39	67.23	16.48	0.00	150.0	± 9.6 %
		Y	5.40	67.28	16.50		150.0	
		Z	5.35	67.18	16.43		150.0	

10402-AAC	IEEE 802.11ac WiFi (80MHz, 64-QAM, 99pc duty cycle)	X	5.64	67.54	16.50	0.00	150.0	± 9.6 %
		Y	5.66	67.64	16.53		150.0	
		Z	5.61	67.52	16.47		150.0	
10403-AAB	CDMA2000 (1xEV-DO, Rev. 0)	X	1.59	70.25	14.71	0.00	115.0	± 9.6 %
		Y	1.82	72.15	15.78		115.0	
		Z	1.50	69.65	14.28		115.0	
10404-AAB	CDMA2000 (1xEV-DO, Rev. A)	X	1.59	70.25	14.71	0.00	115.0	± 9.6 %
		Y	1.82	72.15	15.78		115.0	
		Z	1.50	69.65	14.28		115.0	
10406-AAB	CDMA2000, RC3, SO32, SCH0, Full Rate	X	100.00	119.40	29.12	0.00	100.0	± 9.6 %
		Y	100.00	122.00	30.20		100.0	
		Z	100.00	117.27	28.11		100.0	
10410-AAB	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	7.12	84.42	19.31	3.23	80.0	± 9.6 %
		Y	6.26	82.81	18.74		80.0	
		Z	11.96	91.59	21.64		80.0	
10415-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps, 99pc duty cycle)	X	1.03	63.32	14.96	0.00	150.0	± 9.6 %
		Y	1.04	63.68	15.26		150.0	
		Z	1.03	63.25	14.86		150.0	
10416-AAA	IEEE 802.11g WiFi 2.4 GHz (ERP-OFDM, 6 Mbps, 99pc duty cycle)	X	4.53	66.77	16.30	0.00	150.0	± 9.6 %
		Y	4.56	66.86	16.35		150.0	
		Z	4.51	66.78	16.27		150.0	
10417-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps, 99pc duty cycle)	X	4.53	66.77	16.30	0.00	150.0	± 9.6 %
		Y	4.56	66.86	16.35		150.0	
		Z	4.51	66.78	16.27		150.0	
10418-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps, 99pc duty cycle, Long preamble)	X	4.52	66.95	16.33	0.00	150.0	± 9.6 %
		Y	4.55	67.03	16.37		150.0	
		Z	4.50	66.95	16.30		150.0	
10419-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps, 99pc duty cycle, Short preamble)	X	4.54	66.89	16.33	0.00	150.0	± 9.6 %
		Y	4.57	66.97	16.37		150.0	
		Z	4.52	66.90	16.30		150.0	
10422-AAA	IEEE 802.11n (HT Greenfield, 7.2 Mbps, BPSK)	X	4.66	66.88	16.34	0.00	150.0	± 9.6 %
		Y	4.68	66.96	16.38		150.0	
		Z	4.63	66.88	16.30		150.0	
10423-AAA	IEEE 802.11n (HT Greenfield, 43.3 Mbps, 16-QAM)	X	4.82	67.18	16.45	0.00	150.0	± 9.6 %
		Y	4.85	67.27	16.49		150.0	
		Z	4.78	67.18	16.41		150.0	
10424-AAA	IEEE 802.11n (HT Greenfield, 72.2 Mbps, 64-QAM)	X	4.74	67.14	16.42	0.00	150.0	± 9.6 %
		Y	4.77	67.23	16.47		150.0	
		Z	4.71	67.13	16.39		150.0	
10425-AAA	IEEE 802.11n (HT Greenfield, 15 Mbps, BPSK)	X	5.34	67.39	16.57	0.00	150.0	± 9.6 %
		Y	5.35	67.47	16.59		150.0	
		Z	5.30	67.36	16.53		150.0	
10426-AAA	IEEE 802.11n (HT Greenfield, 90 Mbps, 16-QAM)	X	5.35	67.44	16.59	0.00	150.0	± 9.6 %
		Y	5.36	67.49	16.60		150.0	
		Z	5.32	67.42	16.56		150.0	

10427-AAA	IEEE 802.11n (HT Greenfield, 150 Mbps, 64-QAM)	X	5.36	67.40	16.57	0.00	150.0	± 9.6 %
		Y	5.37	67.48	16.59		150.0	
		Z	5.32	67.37	16.53		150.0	
10430-AAA	LTE-FDD (OFDMA, 5 MHz, E-TM 3.1)	X	4.43	71.93	18.75	0.00	150.0	± 9.6 %
		Y	4.42	71.71	18.69		150.0	
		Z	4.43	72.11	18.76		150.0	
10431-AAA	LTE-FDD (OFDMA, 10 MHz, E-TM 3.1)	X	4.21	67.37	16.31	0.00	150.0	± 9.6 %
		Y	4.25	67.48	16.39		150.0	
		Z	4.17	67.37	16.26		150.0	
10432-AAA	LTE-FDD (OFDMA, 15 MHz, E-TM 3.1)	X	4.51	67.21	16.38	0.00	150.0	± 9.6 %
		Y	4.54	67.31	16.43		150.0	
		Z	4.47	67.21	16.34		150.0	
10433-AAA	LTE-FDD (OFDMA, 20 MHz, E-TM 3.1)	X	4.75	67.17	16.44	0.00	150.0	± 9.6 %
		Y	4.79	67.27	16.49		150.0	
		Z	4.72	67.17	16.41		150.0	
10434-AAA	W-CDMA (BS Test Model 1, 64 DPCH)	X	4.61	73.06	18.81	0.00	150.0	± 9.6 %
		Y	4.59	72.83	18.78		150.0	
		Z	4.61	73.27	18.81		150.0	
10435-AAB	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	6.74	83.64	19.02	3.23	80.0	± 9.6 %
		Y	5.96	82.09	18.46		80.0	
		Z	10.99	90.40	21.25		80.0	
10447-AAA	LTE-FDD (OFDMA, 5 MHz, E-TM 3.1, Clipping 44%)	X	3.51	67.45	15.64	0.00	150.0	± 9.6 %
		Y	3.57	67.65	15.82		150.0	
		Z	3.46	67.42	15.53		150.0	
10448-AAA	LTE-FDD (OFDMA, 10 MHz, E-TM 3.1, Clipping 44%)	X	4.05	67.16	16.18	0.00	150.0	± 9.6 %
		Y	4.09	67.27	16.26		150.0	
		Z	4.02	67.16	16.13		150.0	
10449-AAA	LTE-FDD (OFDMA, 15 MHz, E-TM 3.1, Clipping 44%)	X	4.33	67.05	16.28	0.00	150.0	± 9.6 %
		Y	4.36	67.15	16.34		150.0	
		Z	4.30	67.04	16.24		150.0	
10450-AAA	LTE-FDD (OFDMA, 20 MHz, E-TM 3.1, Clipping 44%)	X	4.52	66.95	16.30	0.00	150.0	± 9.6 %
		Y	4.55	67.05	16.35		150.0	
		Z	4.50	66.95	16.27		150.0	
10451-AAA	W-CDMA (BS Test Model 1, 64 DPCH, Clipping 44%)	X	3.39	67.63	15.23	0.00	150.0	± 9.6 %
		Y	3.47	67.90	15.48		150.0	
		Z	3.34	67.55	15.09		150.0	
10456-AAA	IEEE 802.11ac WiFi (160MHz, 64-QAM, 99pc duty cycle)	X	6.21	67.93	16.72	0.00	150.0	± 9.6 %
		Y	6.21	67.99	16.72		150.0	
		Z	6.19	67.92	16.69		150.0	
10457-AAA	UMTS-FDD (DC-HSDPA)	X	3.80	65.42	16.01	0.00	150.0	± 9.6 %
		Y	3.81	65.50	16.06		150.0	
		Z	3.79	65.44	15.98		150.0	
10458-AAA	CDMA2000 (1xEV-DO, Rev. B, 2 carriers)	X	3.19	66.85	14.54	0.00	150.0	± 9.6 %
		Y	3.28	67.17	14.85		150.0	
		Z	3.13	66.73	14.35		150.0	
10459-AAA	CDMA2000 (1xEV-DO, Rev. B, 3 carriers)	X	4.26	65.09	15.50	0.00	150.0	± 9.6 %
		Y	4.45	65.72	15.90		150.0	
		Z	4.15	64.82	15.27		150.0	

10460-AAA	UMTS-FDD (WCDMA, AMR)	X	0.95	69.24	16.88	0.00	150.0	± 9.6 %
		Y	1.02	70.79	17.77		150.0	
		Z	0.93	68.79	16.59		150.0	
10461-AAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	3.16	76.40	17.59	3.29	80.0	± 9.6 %
		Y	3.00	75.64	17.23		80.0	
		Z	4.60	82.00	19.74		80.0	
10462-AAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	0.95	60.00	7.73	3.23	80.0	± 9.6 %
		Y	0.93	60.00	7.68		80.0	
		Z	0.93	60.16	7.81		80.0	
10463-AAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	0.96	60.00	7.25	3.23	80.0	± 9.6 %
		Y	0.96	60.00	7.20		80.0	
		Z	0.93	60.00	7.22		80.0	
10464-AAA	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	2.40	72.59	15.64	3.23	80.0	± 9.6 %
		Y	2.28	71.93	15.30		80.0	
		Z	3.30	77.16	17.51		80.0	
10465-AAA	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	0.94	60.00	7.67	3.23	80.0	± 9.6 %
		Y	0.93	60.00	7.61		80.0	
		Z	0.91	60.00	7.66		80.0	
10466-AAA	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	0.97	60.00	7.21	3.23	80.0	± 9.6 %
		Y	0.96	60.00	7.15		80.0	
		Z	0.93	60.00	7.18		80.0	
10467-AAB	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	2.51	73.23	15.91	3.23	80.0	± 9.6 %
		Y	2.39	72.52	15.56		80.0	
		Z	3.54	78.13	17.88		80.0	
10468-AAB	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	0.94	60.00	7.68	3.23	80.0	± 9.6 %
		Y	0.93	60.00	7.62		80.0	
		Z	0.91	60.00	7.68		80.0	
10469-AAB	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	0.97	60.00	7.20	3.23	80.0	± 9.6 %
		Y	0.96	60.00	7.15		80.0	
		Z	0.93	60.00	7.18		80.0	
10470-AAB	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	2.50	73.21	15.89	3.23	80.0	± 9.6 %
		Y	2.37	72.50	15.54		80.0	
		Z	3.54	78.12	17.87		80.0	
10471-AAB	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	0.94	60.00	7.67	3.23	80.0	± 9.6 %
		Y	0.93	60.00	7.61		80.0	
		Z	0.91	60.00	7.66		80.0	
10472-AAB	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	0.96	60.00	7.19	3.23	80.0	± 9.6 %
		Y	0.96	60.00	7.14		80.0	
		Z	0.93	60.00	7.16		80.0	
10473-AAB	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	2.50	73.17	15.87	3.23	80.0	± 9.6 %
		Y	2.37	72.47	15.52		80.0	
		Z	3.52	78.07	17.84		80.0	
10474-AAB	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	0.94	60.00	7.67	3.23	80.0	± 9.6 %
		Y	0.93	60.00	7.61		80.0	
		Z	0.91	60.00	7.66		80.0	
10475-AAB	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	0.96	60.00	7.19	3.23	80.0	± 9.6 %
		Y	0.95	60.00	7.14		80.0	
		Z	0.93	60.00	7.16		80.0	

10477-AAB	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	0.94	60.00	7.65	3.23	80.0	± 9.6 %
		Y	0.93	60.00	7.59		80.0	
		Z	0.91	60.00	7.64		80.0	
10478-AAB	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	0.96	60.00	7.18	3.23	80.0	± 9.6 %
		Y	0.96	60.00	7.13		80.0	
		Z	0.93	60.00	7.15		80.0	
10479-AAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	3.82	75.02	18.32	3.23	80.0	± 9.6 %
		Y	3.62	74.21	18.05		80.0	
		Z	4.46	77.72	19.42		80.0	
10480-AAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	3.25	69.58	14.47	3.23	80.0	± 9.6 %
		Y	3.17	69.32	14.47		80.0	
		Z	3.70	71.50	15.22		80.0	
10481-AAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	2.76	67.27	13.16	3.23	80.0	± 9.6 %
		Y	2.74	67.18	13.23		80.0	
		Z	3.01	68.58	13.68		80.0	
10482-AAA	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	2.20	67.37	14.31	2.23	80.0	± 9.6 %
		Y	2.35	68.14	14.78		80.0	
		Z	2.08	66.84	14.02		80.0	
10483-AAA	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	2.64	66.33	13.17	2.23	80.0	± 9.6 %
		Y	2.72	66.71	13.49		80.0	
		Z	2.71	66.89	13.39		80.0	
10484-AAA	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	2.59	65.86	12.96	2.23	80.0	± 9.6 %
		Y	2.68	66.27	13.30		80.0	
		Z	2.63	66.32	13.14		80.0	
10485-AAB	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	2.65	69.52	16.23	2.23	80.0	± 9.6 %
		Y	2.77	70.09	16.54		80.0	
		Z	2.52	69.04	16.02		80.0	
10486-AAB	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	2.73	66.83	14.56	2.23	80.0	± 9.6 %
		Y	2.83	67.27	14.87		80.0	
		Z	2.62	66.49	14.35		80.0	
10487-AAB	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	2.75	66.57	14.44	2.23	80.0	± 9.6 %
		Y	2.85	67.00	14.75		80.0	
		Z	2.64	66.24	14.22		80.0	
10488-AAB	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	3.11	69.87	17.17	2.23	80.0	± 9.6 %
		Y	3.21	70.31	17.35		80.0	
		Z	2.98	69.45	17.00		80.0	
10489-AAB	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	3.21	67.51	16.20	2.23	80.0	± 9.6 %
		Y	3.27	67.74	16.32		80.0	
		Z	3.12	67.26	16.07		80.0	
10490-AAB	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	3.31	67.44	16.19	2.23	80.0	± 9.6 %
		Y	3.37	67.66	16.31		80.0	
		Z	3.22	67.20	16.06		80.0	
10491-AAB	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	3.45	69.12	17.04	2.23	80.0	± 9.6 %
		Y	3.54	69.47	17.16		80.0	
		Z	3.34	68.78	16.91		80.0	
10492-AAB	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	3.61	67.20	16.42	2.23	80.0	± 9.6 %
		Y	3.67	67.39	16.51		80.0	
		Z	3.53	66.97	16.31		80.0	

10493-AAB	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	3.68	67.13	16.41	2.23	80.0	± 9.6 %
		Y	3.74	67.31	16.49		80.0	
		Z	3.60	66.91	16.30		80.0	
10494-AAB	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	3.65	70.25	17.36	2.23	80.0	± 9.6 %
		Y	3.77	70.66	17.50		80.0	
		Z	3.52	69.86	17.23		80.0	
10495-AAB	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	3.63	67.51	16.59	2.23	80.0	± 9.6 %
		Y	3.69	67.72	16.68		80.0	
		Z	3.55	67.26	16.48		80.0	
10496-AAB	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	3.72	67.34	16.57	2.23	80.0	± 9.6 %
		Y	3.78	67.53	16.64		80.0	
		Z	3.64	67.11	16.46		80.0	
10497-AAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	1.59	63.52	11.51	2.23	80.0	± 9.6 %
		Y	1.71	64.33	12.09		80.0	
		Z	1.49	63.03	11.17		80.0	
10498-AAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	1.40	60.13	8.74	2.23	80.0	± 9.6 %
		Y	1.50	60.76	9.30		80.0	
		Z	1.35	60.00	8.54		80.0	
10499-AAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	1.40	60.00	8.54	2.23	80.0	± 9.6 %
		Y	1.47	60.38	8.96		80.0	
		Z	1.37	60.00	8.41		80.0	
10500-AAA	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	2.81	69.52	16.57	2.23	80.0	± 9.6 %
		Y	2.92	70.00	16.81		80.0	
		Z	2.69	69.09	16.38		80.0	
10501-AAA	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	2.95	67.23	15.25	2.23	80.0	± 9.6 %
		Y	3.03	67.55	15.48		80.0	
		Z	2.85	66.94	15.08		80.0	
10502-AAA	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	3.01	67.14	15.16	2.23	80.0	± 9.6 %
		Y	3.09	67.47	15.39		80.0	
		Z	2.91	66.86	14.98		80.0	
10503-AAB	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	3.07	69.70	17.08	2.23	80.0	± 9.6 %
		Y	3.18	70.14	17.26		80.0	
		Z	2.95	69.28	16.91		80.0	
10504-AAB	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	3.19	67.42	16.14	2.23	80.0	± 9.6 %
		Y	3.25	67.66	16.27		80.0	
		Z	3.11	67.17	16.01		80.0	
10505-AAB	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	3.29	67.35	16.13	2.23	80.0	± 9.6 %
		Y	3.35	67.57	16.26		80.0	
		Z	3.20	67.11	16.00		80.0	
10506-AAB	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	3.63	70.12	17.29	2.23	80.0	± 9.6 %
		Y	3.74	70.54	17.44		80.0	
		Z	3.50	69.73	17.16		80.0	
10507-AAB	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	3.62	67.45	16.55	2.23	80.0	± 9.6 %
		Y	3.67	67.66	16.64		80.0	
		Z	3.53	67.20	16.44		80.0	

10508-AAB	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	3.71	67.28	16.52	2.23	80.0	± 9.6 %
		Y	3.77	67.47	16.60		80.0	
		Z	3.63	67.04	16.41		80.0	
10509-AAB	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	4.06	69.48	17.08	2.23	80.0	± 9.6 %
		Y	4.15	69.80	17.17		80.0	
		Z	3.94	69.18	16.98		80.0	
10510-AAB	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	4.13	67.43	16.69	2.23	80.0	± 9.6 %
		Y	4.18	67.63	16.75		80.0	
		Z	4.04	67.20	16.59		80.0	
10511-AAB	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	4.20	67.25	16.66	2.23	80.0	± 9.6 %
		Y	4.25	67.43	16.72		80.0	
		Z	4.11	67.04	16.57		80.0	
10512-AAB	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	4.13	70.56	17.37	2.23	80.0	± 9.6 %
		Y	4.25	70.98	17.50		80.0	
		Z	4.00	70.21	17.25		80.0	
10513-AAB	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	4.00	67.59	16.74	2.23	80.0	± 9.6 %
		Y	4.06	67.82	16.82		80.0	
		Z	3.91	67.34	16.64		80.0	
10514-AAB	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	4.05	67.28	16.67	2.23	80.0	± 9.6 %
		Y	4.10	67.48	16.74		80.0	
		Z	3.96	67.05	16.57		80.0	
10515-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 2 Mbps, 99pc duty cycle)	X	0.99	63.52	15.04	0.00	150.0	± 9.6 %
		Y	1.00	63.92	15.36		150.0	
		Z	0.99	63.44	14.93		150.0	
10516-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 5.5 Mbps, 99pc duty cycle)	X	0.65	71.87	18.40	0.00	150.0	± 9.6 %
		Y	0.77	75.38	20.23		150.0	
		Z	0.62	70.84	17.85		150.0	
10517-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 11 Mbps, 99pc duty cycle)	X	0.85	65.63	15.82	0.00	150.0	± 9.6 %
		Y	0.87	66.42	16.38		150.0	
		Z	0.84	65.40	15.63		150.0	
10518-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 9 Mbps, 99pc duty cycle)	X	4.52	66.86	16.29	0.00	150.0	± 9.6 %
		Y	4.55	66.94	16.33		150.0	
		Z	4.50	66.86	16.25		150.0	
10519-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 12 Mbps, 99pc duty cycle)	X	4.70	67.07	16.39	0.00	150.0	± 9.6 %
		Y	4.73	67.16	16.44		150.0	
		Z	4.67	67.07	16.35		150.0	
10520-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 18 Mbps, 99pc duty cycle)	X	4.55	67.03	16.32	0.00	150.0	± 9.6 %
		Y	4.59	67.14	16.37		150.0	
		Z	4.52	67.02	16.28		150.0	
10521-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 24 Mbps, 99pc duty cycle)	X	4.49	67.03	16.31	0.00	150.0	± 9.6 %
		Y	4.52	67.14	16.36		150.0	
		Z	4.46	67.02	16.27		150.0	
10522-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 36 Mbps, 99pc duty cycle)	X	4.55	67.14	16.40	0.00	150.0	± 9.6 %
		Y	4.58	67.23	16.45		150.0	
		Z	4.52	67.13	16.36		150.0	

10523-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 48 Mbps, 99pc duty cycle)	X	4.44	67.02	16.26	0.00	150.0	± 9.6 %
		Y	4.47	67.12	16.31		150.0	
		Z	4.41	67.03	16.23		150.0	
10524-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 54 Mbps, 99pc duty cycle)	X	4.49	67.05	16.37	0.00	150.0	± 9.6 %
		Y	4.52	67.14	16.41		150.0	
		Z	4.46	67.05	16.33		150.0	
10525-AAA	IEEE 802.11ac WiFi (20MHz, MCS0, 99pc duty cycle)	X	4.49	66.12	15.97	0.00	150.0	± 9.6 %
		Y	4.51	66.21	16.02		150.0	
		Z	4.46	66.13	15.94		150.0	
10526-AAA	IEEE 802.11ac WiFi (20MHz, MCS1, 99pc duty cycle)	X	4.65	66.47	16.11	0.00	150.0	± 9.6 %
		Y	4.68	66.57	16.15		150.0	
		Z	4.62	66.46	16.07		150.0	
10527-AAA	IEEE 802.11ac WiFi (20MHz, MCS2, 99pc duty cycle)	X	4.57	66.44	16.05	0.00	150.0	± 9.6 %
		Y	4.61	66.54	16.10		150.0	
		Z	4.54	66.43	16.01		150.0	
10528-AAA	IEEE 802.11ac WiFi (20MHz, MCS3, 99pc duty cycle)	X	4.59	66.45	16.08	0.00	150.0	± 9.6 %
		Y	4.62	66.56	16.13		150.0	
		Z	4.56	66.44	16.04		150.0	
10529-AAA	IEEE 802.11ac WiFi (20MHz, MCS4, 99pc duty cycle)	X	4.59	66.45	16.08	0.00	150.0	± 9.6 %
		Y	4.62	66.56	16.13		150.0	
		Z	4.56	66.44	16.04		150.0	
10531-AAA	IEEE 802.11ac WiFi (20MHz, MCS6, 99pc duty cycle)	X	4.57	66.54	16.09	0.00	150.0	± 9.6 %
		Y	4.61	66.66	16.15		150.0	
		Z	4.54	66.52	16.05		150.0	
10532-AAA	IEEE 802.11ac WiFi (20MHz, MCS7, 99pc duty cycle)	X	4.44	66.40	16.03	0.00	150.0	± 9.6 %
		Y	4.47	66.53	16.09		150.0	
		Z	4.41	66.38	15.98		150.0	
10533-AAA	IEEE 802.11ac WiFi (20MHz, MCS8, 99pc duty cycle)	X	4.60	66.51	16.08	0.00	150.0	± 9.6 %
		Y	4.63	66.61	16.13		150.0	
		Z	4.57	66.51	16.04		150.0	
10534-AAA	IEEE 802.11ac WiFi (40MHz, MCS0, 99pc duty cycle)	X	5.12	66.51	16.12	0.00	150.0	± 9.6 %
		Y	5.14	66.61	16.16		150.0	
		Z	5.10	66.50	16.09		150.0	
10535-AAA	IEEE 802.11ac WiFi (40MHz, MCS1, 99pc duty cycle)	X	5.19	66.69	16.20	0.00	150.0	± 9.6 %
		Y	5.21	66.78	16.23		150.0	
		Z	5.16	66.67	16.17		150.0	
10536-AAA	IEEE 802.11ac WiFi (40MHz, MCS2, 99pc duty cycle)	X	5.06	66.65	16.16	0.00	150.0	± 9.6 %
		Y	5.08	66.75	16.20		150.0	
		Z	5.03	66.64	16.13		150.0	
10537-AAA	IEEE 802.11ac WiFi (40MHz, MCS3, 99pc duty cycle)	X	5.12	66.61	16.15	0.00	150.0	± 9.6 %
		Y	5.14	66.71	16.18		150.0	
		Z	5.09	66.59	16.11		150.0	
10538-AAA	IEEE 802.11ac WiFi (40MHz, MCS4, 99pc duty cycle)	X	5.20	66.61	16.19	0.00	150.0	± 9.6 %
		Y	5.23	66.72	16.22		150.0	
		Z	5.17	66.59	16.15		150.0	
10540-AAA	IEEE 802.11ac WiFi (40MHz, MCS6, 99pc duty cycle)	X	5.13	66.62	16.21	0.00	150.0	± 9.6 %
		Y	5.16	66.73	16.24		150.0	
		Z	5.10	66.59	16.16		150.0	

10541-AAA	IEEE 802.11ac WiFi (40MHz, MCS7, 99pc duty cycle)	X	5.11	66.51	16.14	0.00	150.0	± 9.6 %
		Y	5.13	66.61	16.18		150.0	
		Z	5.08	66.49	16.10		150.0	
10542-AAA	IEEE 802.11ac WiFi (40MHz, MCS8, 99pc duty cycle)	X	5.26	66.57	16.19	0.00	150.0	± 9.6 %
		Y	5.29	66.67	16.22		150.0	
		Z	5.23	66.56	16.15		150.0	
10543-AAA	IEEE 802.11ac WiFi (40MHz, MCS9, 99pc duty cycle)	X	5.33	66.59	16.22	0.00	150.0	± 9.6 %
		Y	5.36	66.69	16.25		150.0	
		Z	5.30	66.57	16.18		150.0	
10544-AAA	IEEE 802.11ac WiFi (80MHz, MCS0, 99pc duty cycle)	X	5.44	66.62	16.11	0.00	150.0	± 9.6 %
		Y	5.45	66.72	16.14		150.0	
		Z	5.42	66.60	16.08		150.0	
10545-AAA	IEEE 802.11ac WiFi (80MHz, MCS1, 99pc duty cycle)	X	5.62	67.02	16.26	0.00	150.0	± 9.6 %
		Y	5.64	67.09	16.28		150.0	
		Z	5.59	66.99	16.23		150.0	
10546-AAA	IEEE 802.11ac WiFi (80MHz, MCS2, 99pc duty cycle)	X	5.50	66.80	16.17	0.00	150.0	± 9.6 %
		Y	5.52	66.92	16.21		150.0	
		Z	5.47	66.77	16.13		150.0	
10547-AAA	IEEE 802.11ac WiFi (80MHz, MCS3, 99pc duty cycle)	X	5.57	66.85	16.18	0.00	150.0	± 9.6 %
		Y	5.59	66.95	16.21		150.0	
		Z	5.54	66.82	16.15		150.0	
10548-AAA	IEEE 802.11ac WiFi (80MHz, MCS4, 99pc duty cycle)	X	5.78	67.66	16.56	0.00	150.0	± 9.6 %
		Y	5.79	67.74	16.58		150.0	
		Z	5.73	67.57	16.50		150.0	
10550-AAA	IEEE 802.11ac WiFi (80MHz, MCS6, 99pc duty cycle)	X	5.53	66.84	16.20	0.00	150.0	± 9.6 %
		Y	5.54	66.93	16.22		150.0	
		Z	5.50	66.82	16.17		150.0	
10551-AAA	IEEE 802.11ac WiFi (80MHz, MCS7, 99pc duty cycle)	X	5.53	66.87	16.18	0.00	150.0	± 9.6 %
		Y	5.55	66.98	16.21		150.0	
		Z	5.50	66.83	16.13		150.0	
10552-AAA	IEEE 802.11ac WiFi (80MHz, MCS8, 99pc duty cycle)	X	5.45	66.69	16.10	0.00	150.0	± 9.6 %
		Y	5.47	66.80	16.13		150.0	
		Z	5.43	66.69	16.07		150.0	
10553-AAA	IEEE 802.11ac WiFi (80MHz, MCS9, 99pc duty cycle)	X	5.53	66.71	16.13	0.00	150.0	± 9.6 %
		Y	5.55	66.82	16.17		150.0	
		Z	5.50	66.69	16.10		150.0	
10554-AAA	IEEE 1602.11ac WiFi (160MHz, MCS0, 99pc duty cycle)	X	5.85	66.97	16.19	0.00	150.0	± 9.6 %
		Y	5.86	67.06	16.22		150.0	
		Z	5.83	66.95	16.16		150.0	
10555-AAA	IEEE 1602.11ac WiFi (160MHz, MCS1, 99pc duty cycle)	X	5.97	67.25	16.31	0.00	150.0	± 9.6 %
		Y	5.98	67.34	16.33		150.0	
		Z	5.94	67.22	16.27		150.0	
10556-AAA	IEEE 1602.11ac WiFi (160MHz, MCS2, 99pc duty cycle)	X	5.99	67.30	16.33	0.00	150.0	± 9.6 %
		Y	6.00	67.39	16.35		150.0	
		Z	5.96	67.27	16.29		150.0	
10557-AAA	IEEE 1602.11ac WiFi (160MHz, MCS3, 99pc duty cycle)	X	5.95	67.20	16.30	0.00	150.0	± 9.6 %
		Y	5.97	67.30	16.33		150.0	
		Z	5.93	67.17	16.26		150.0	

10558-AAA	IEEE 1602.11ac WiFi (160MHz, MCS4, 99pc duty cycle)	X	6.00	67.35	16.39	0.00	150.0	± 9.6 %
		Y	6.01	67.46	16.42		150.0	
		Z	5.97	67.32	16.35		150.0	
10560-AAA	IEEE 1602.11ac WiFi (160MHz, MCS6, 99pc duty cycle)	X	6.00	67.21	16.36	0.00	150.0	± 9.6 %
		Y	6.01	67.32	16.39		150.0	
		Z	5.97	67.18	16.32		150.0	
10561-AAA	IEEE 1602.11ac WiFi (160MHz, MCS7, 99pc duty cycle)	X	5.92	67.18	16.38	0.00	150.0	± 9.6 %
		Y	5.93	67.28	16.40		150.0	
		Z	5.89	67.15	16.34		150.0	
10562-AAA	IEEE 1602.11ac WiFi (160MHz, MCS8, 99pc duty cycle)	X	6.03	67.51	16.54	0.00	150.0	± 9.6 %
		Y	6.05	67.63	16.58		150.0	
		Z	5.99	67.45	16.49		150.0	
10563-AAA	IEEE 1602.11ac WiFi (160MHz, MCS9, 99pc duty cycle)	X	6.16	67.54	16.51	0.00	150.0	± 9.6 %
		Y	6.24	67.80	16.62		150.0	
		Z	6.09	67.38	16.42		150.0	
10564-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 9 Mbps, 99pc duty cycle)	X	4.84	66.87	16.39	0.46	150.0	± 9.6 %
		Y	4.86	66.95	16.43		150.0	
		Z	4.81	66.87	16.35		150.0	
10565-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 12 Mbps, 99pc duty cycle)	X	5.06	67.32	16.72	0.46	150.0	± 9.6 %
		Y	5.09	67.40	16.76		150.0	
		Z	5.03	67.32	16.69		150.0	
10566-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 18 Mbps, 99pc duty cycle)	X	4.90	67.15	16.53	0.46	150.0	± 9.6 %
		Y	4.93	67.25	16.57		150.0	
		Z	4.86	67.14	16.49		150.0	
10567-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 24 Mbps, 99pc duty cycle)	X	4.93	67.58	16.91	0.46	150.0	± 9.6 %
		Y	4.96	67.66	16.94		150.0	
		Z	4.90	67.58	16.88		150.0	
10568-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 36 Mbps, 99pc duty cycle)	X	4.80	66.88	16.26	0.46	150.0	± 9.6 %
		Y	4.83	66.98	16.31		150.0	
		Z	4.77	66.87	16.22		150.0	
10569-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 48 Mbps, 99pc duty cycle)	X	4.89	67.70	16.99	0.46	150.0	± 9.6 %
		Y	4.92	67.76	17.00		150.0	
		Z	4.87	67.71	16.96		150.0	
10570-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 54 Mbps, 99pc duty cycle)	X	4.92	67.54	16.91	0.46	150.0	± 9.6 %
		Y	4.95	67.61	16.94		150.0	
		Z	4.89	67.54	16.89		150.0	
10571-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps, 90pc duty cycle)	X	1.16	64.28	15.41	0.46	130.0	± 9.6 %
		Y	1.17	64.64	15.67		130.0	
		Z	1.15	64.08	15.27		130.0	
10572-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 2 Mbps, 90pc duty cycle)	X	1.18	64.84	15.77	0.46	130.0	± 9.6 %
		Y	1.19	65.22	16.04		130.0	
		Z	1.16	64.62	15.61		130.0	
10573-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 5.5 Mbps, 90pc duty cycle)	X	1.62	81.69	21.81	0.46	130.0	± 9.6 %
		Y	2.21	87.31	23.95		130.0	
		Z	1.35	78.93	20.83		130.0	
10574-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 11 Mbps, 90pc duty cycle)	X	1.28	70.51	18.69	0.46	130.0	± 9.6 %
		Y	1.33	71.36	19.17		130.0	
		Z	1.24	69.92	18.40		130.0	

10575-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps, 90pc duty cycle)	X	4.60	66.56	16.34	0.46	130.0	± 9.6 %
		Y	4.63	66.64	16.38		130.0	
		Z	4.58	66.57	16.31		130.0	
10576-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 9 Mbps, 90pc duty cycle)	X	4.63	66.74	16.42	0.46	130.0	± 9.6 %
		Y	4.65	66.81	16.45		130.0	
		Z	4.61	66.75	16.39		130.0	
10577-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 12 Mbps, 90pc duty cycle)	X	4.82	67.02	16.59	0.46	130.0	± 9.6 %
		Y	4.85	67.10	16.62		130.0	
		Z	4.79	67.02	16.55		130.0	
10578-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 18 Mbps, 90pc duty cycle)	X	4.73	67.20	16.71	0.46	130.0	± 9.6 %
		Y	4.75	67.27	16.73		130.0	
		Z	4.70	67.20	16.68		130.0	
10579-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 24 Mbps, 90pc duty cycle)	X	4.48	66.39	15.95	0.46	130.0	± 9.6 %
		Y	4.51	66.51	16.01		130.0	
		Z	4.45	66.37	15.90		130.0	
10580-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 36 Mbps, 90pc duty cycle)	X	4.52	66.43	15.97	0.46	130.0	± 9.6 %
		Y	4.55	66.54	16.03		130.0	
		Z	4.49	66.42	15.93		130.0	
10581-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 48 Mbps, 90pc duty cycle)	X	4.62	67.23	16.64	0.46	130.0	± 9.6 %
		Y	4.65	67.31	16.67		130.0	
		Z	4.60	67.23	16.61		130.0	
10582-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 54 Mbps, 90pc duty cycle)	X	4.41	66.13	15.72	0.46	130.0	± 9.6 %
		Y	4.45	66.25	15.79		130.0	
		Z	4.38	66.11	15.67		130.0	
10583-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps, 90pc duty cycle)	X	4.60	66.56	16.34	0.46	130.0	± 9.6 %
		Y	4.63	66.64	16.38		130.0	
		Z	4.58	66.57	16.31		130.0	
10584-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 9 Mbps, 90pc duty cycle)	X	4.63	66.74	16.42	0.46	130.0	± 9.6 %
		Y	4.65	66.81	16.45		130.0	
		Z	4.61	66.75	16.39		130.0	
10585-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 12 Mbps, 90pc duty cycle)	X	4.82	67.02	16.59	0.46	130.0	± 9.6 %
		Y	4.85	67.10	16.62		130.0	
		Z	4.79	67.02	16.55		130.0	
10586-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 18 Mbps, 90pc duty cycle)	X	4.73	67.20	16.71	0.46	130.0	± 9.6 %
		Y	4.75	67.27	16.73		130.0	
		Z	4.70	67.20	16.68		130.0	
10587-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 24 Mbps, 90pc duty cycle)	X	4.48	66.39	15.95	0.46	130.0	± 9.6 %
		Y	4.51	66.51	16.01		130.0	
		Z	4.45	66.37	15.90		130.0	
10588-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 36 Mbps, 90pc duty cycle)	X	4.52	66.43	15.97	0.46	130.0	± 9.6 %
		Y	4.55	66.54	16.03		130.0	
		Z	4.49	66.42	15.93		130.0	
10589-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 48 Mbps, 90pc duty cycle)	X	4.62	67.23	16.64	0.46	130.0	± 9.6 %
		Y	4.65	67.31	16.67		130.0	
		Z	4.60	67.23	16.61		130.0	
10590-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 54 Mbps, 90pc duty cycle)	X	4.41	66.13	15.72	0.46	130.0	± 9.6 %
		Y	4.45	66.25	15.79		130.0	
		Z	4.38	66.11	15.67		130.0	

10591-AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS0, 90pc duty cycle)	X	4.76	66.64	16.46	0.46	130.0	± 9.6 %
		Y	4.78	66.70	16.48		130.0	
		Z	4.73	66.65	16.43		130.0	
10592-AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS1, 90pc duty cycle)	X	4.90	66.97	16.59	0.46	130.0	± 9.6 %
		Y	4.93	67.04	16.61		130.0	
		Z	4.87	66.97	16.56		130.0	
10593-AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS2, 90pc duty cycle)	X	4.82	66.86	16.45	0.46	130.0	± 9.6 %
		Y	4.85	66.94	16.49		130.0	
		Z	4.79	66.85	16.42		130.0	
10594-AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS3, 90pc duty cycle)	X	4.88	67.04	16.62	0.46	130.0	± 9.6 %
		Y	4.90	67.11	16.65		130.0	
		Z	4.85	67.04	16.59		130.0	
10595-AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS4, 90pc duty cycle)	X	4.84	66.98	16.51	0.46	130.0	± 9.6 %
		Y	4.87	67.06	16.54		130.0	
		Z	4.81	66.98	16.48		130.0	
10596-AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS5, 90pc duty cycle)	X	4.78	66.97	16.51	0.46	130.0	± 9.6 %
		Y	4.81	67.05	16.54		130.0	
		Z	4.75	66.96	16.47		130.0	
10597-AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS6, 90pc duty cycle)	X	4.73	66.86	16.38	0.46	130.0	± 9.6 %
		Y	4.76	66.95	16.42		130.0	
		Z	4.69	66.85	16.34		130.0	
10598-AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS7, 90pc duty cycle)	X	4.71	67.12	16.66	0.46	130.0	± 9.6 %
		Y	4.74	67.20	16.70		130.0	
		Z	4.69	67.11	16.63		130.0	
10599-AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS0, 90pc duty cycle)	X	5.42	67.13	16.65	0.46	130.0	± 9.6 %
		Y	5.44	67.22	16.67		130.0	
		Z	5.39	67.11	16.62		130.0	
10600-AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS1, 90pc duty cycle)	X	5.54	67.51	16.81	0.46	130.0	± 9.6 %
		Y	5.55	67.54	16.80		130.0	
		Z	5.50	67.46	16.76		130.0	
10601-AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS2, 90pc duty cycle)	X	5.44	67.29	16.72	0.46	130.0	± 9.6 %
		Y	5.45	67.35	16.73		130.0	
		Z	5.40	67.27	16.68		130.0	
10602-AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS3, 90pc duty cycle)	X	5.54	67.36	16.67	0.46	130.0	± 9.6 %
		Y	5.55	67.38	16.66		130.0	
		Z	5.52	67.38	16.65		130.0	
10603-AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS4, 90pc duty cycle)	X	5.61	67.63	16.94	0.46	130.0	± 9.6 %
		Y	5.62	67.67	16.94		130.0	
		Z	5.58	67.64	16.92		130.0	
10604-AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS5, 90pc duty cycle)	X	5.46	67.22	16.72	0.46	130.0	± 9.6 %
		Y	5.45	67.21	16.69		130.0	
		Z	5.45	67.27	16.72		130.0	
10605-AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS6, 90pc duty cycle)	X	5.53	67.42	16.82	0.46	130.0	± 9.6 %
		Y	5.54	67.45	16.81		130.0	
		Z	5.50	67.41	16.78		130.0	
10606-AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS7, 90pc duty cycle)	X	5.27	66.74	16.33	0.46	130.0	± 9.6 %
		Y	5.30	66.85	16.37		130.0	
		Z	5.24	66.71	16.29		130.0	

10607-AAA	IEEE 802.11ac WiFi (20MHz, MCS0, 90pc duty cycle)	X	4.60	65.96	16.09	0.46	130.0	± 9.6 %
		Y	4.62	66.04	16.12		130.0	
		Z	4.57	65.98	16.06		130.0	
10608-AAA	IEEE 802.11ac WiFi (20MHz, MCS1, 90pc duty cycle)	X	4.77	66.35	16.25	0.46	130.0	± 9.6 %
		Y	4.80	66.43	16.28		130.0	
		Z	4.74	66.36	16.22		130.0	
10609-AAA	IEEE 802.11ac WiFi (20MHz, MCS2, 90pc duty cycle)	X	4.66	66.18	16.07	0.46	130.0	± 9.6 %
		Y	4.69	66.28	16.12		130.0	
		Z	4.63	66.18	16.04		130.0	
10610-AAA	IEEE 802.11ac WiFi (20MHz, MCS3, 90pc duty cycle)	X	4.71	66.35	16.24	0.46	130.0	± 9.6 %
		Y	4.74	66.44	16.28		130.0	
		Z	4.68	66.36	16.21		130.0	
10611-AAA	IEEE 802.11ac WiFi (20MHz, MCS4, 90pc duty cycle)	X	4.63	66.15	16.08	0.46	130.0	± 9.6 %
		Y	4.66	66.24	16.12		130.0	
		Z	4.60	66.15	16.05		130.0	
10612-AAA	IEEE 802.11ac WiFi (20MHz, MCS5, 90pc duty cycle)	X	4.63	66.27	16.11	0.46	130.0	± 9.6 %
		Y	4.66	66.38	16.15		130.0	
		Z	4.59	66.27	16.08		130.0	
10613-AAA	IEEE 802.11ac WiFi (20MHz, MCS6, 90pc duty cycle)	X	4.63	66.15	15.99	0.46	130.0	± 9.6 %
		Y	4.66	66.26	16.04		130.0	
		Z	4.59	66.13	15.95		130.0	
10614-AAA	IEEE 802.11ac WiFi (20MHz, MCS7, 90pc duty cycle)	X	4.58	66.38	16.25	0.46	130.0	± 9.6 %
		Y	4.61	66.48	16.29		130.0	
		Z	4.56	66.37	16.22		130.0	
10615-AAA	IEEE 802.11ac WiFi (20MHz, MCS8, 90pc duty cycle)	X	4.62	65.95	15.84	0.46	130.0	± 9.6 %
		Y	4.65	66.05	15.89		130.0	
		Z	4.59	65.95	15.80		130.0	
10616-AAA	IEEE 802.11ac WiFi (40MHz, MCS0, 90pc duty cycle)	X	5.24	66.41	16.28	0.46	130.0	± 9.6 %
		Y	5.26	66.49	16.30		130.0	
		Z	5.21	66.40	16.25		130.0	
10617-AAA	IEEE 802.11ac WiFi (40MHz, MCS1, 90pc duty cycle)	X	5.31	66.58	16.34	0.46	130.0	± 9.6 %
		Y	5.32	66.64	16.34		130.0	
		Z	5.28	66.57	16.31		130.0	
10618-AAA	IEEE 802.11ac WiFi (40MHz, MCS2, 90pc duty cycle)	X	5.20	66.60	16.36	0.46	130.0	± 9.6 %
		Y	5.21	66.67	16.38		130.0	
		Z	5.17	66.60	16.34		130.0	
10619-AAA	IEEE 802.11ac WiFi (40MHz, MCS3, 90pc duty cycle)	X	5.20	66.38	16.18	0.46	130.0	± 9.6 %
		Y	5.22	66.46	16.20		130.0	
		Z	5.18	66.37	16.15		130.0	
10620-AAA	IEEE 802.11ac WiFi (40MHz, MCS4, 90pc duty cycle)	X	5.29	66.42	16.25	0.46	130.0	± 9.6 %
		Y	5.31	66.50	16.28		130.0	
		Z	5.26	66.40	16.22		130.0	
10621-AAA	IEEE 802.11ac WiFi (40MHz, MCS5, 90pc duty cycle)	X	5.31	66.59	16.47	0.46	130.0	± 9.6 %
		Y	5.32	66.66	16.47		130.0	
		Z	5.28	66.59	16.44		130.0	
10622-AAA	IEEE 802.11ac WiFi (40MHz, MCS6, 90pc duty cycle)	X	5.31	66.74	16.53	0.46	130.0	± 9.6 %
		Y	5.33	66.80	16.54		130.0	
		Z	5.29	66.75	16.51		130.0	

10623-AAA	IEEE 802.11ac WiFi (40MHz, MCS7, 90pc duty cycle)	X	5.19	66.24	16.15	0.46	130.0	± 9.6 %
		Y	5.21	66.33	16.17		130.0	
		Z	5.16	66.23	16.11		130.0	
10624-AAA	IEEE 802.11ac WiFi (40MHz, MCS8, 90pc duty cycle)	X	5.38	66.45	16.32	0.46	130.0	± 9.6 %
		Y	5.40	66.52	16.33		130.0	
		Z	5.35	66.44	16.29		130.0	
10625-AAA	IEEE 802.11ac WiFi (40MHz, MCS9, 90pc duty cycle)	X	5.69	67.26	16.78	0.46	130.0	± 9.6 %
		Y	5.73	67.39	16.82		130.0	
		Z	5.62	67.15	16.69		130.0	
10626-AAA	IEEE 802.11ac WiFi (80MHz, MCS0, 90pc duty cycle)	X	5.54	66.47	16.24	0.46	130.0	± 9.6 %
		Y	5.55	66.55	16.25		130.0	
		Z	5.52	66.47	16.21		130.0	
10627-AAA	IEEE 802.11ac WiFi (80MHz, MCS1, 90pc duty cycle)	X	5.77	67.01	16.47	0.46	130.0	± 9.6 %
		Y	5.77	67.06	16.46		130.0	
		Z	5.74	66.99	16.44		130.0	
10628-AAA	IEEE 802.11ac WiFi (80MHz, MCS2, 90pc duty cycle)	X	5.56	66.51	16.15	0.46	130.0	± 9.6 %
		Y	5.58	66.61	16.18		130.0	
		Z	5.53	66.48	16.12		130.0	
10629-AAA	IEEE 802.11ac WiFi (80MHz, MCS3, 90pc duty cycle)	X	5.63	66.57	16.17	0.46	130.0	± 9.6 %
		Y	5.65	66.66	16.19		130.0	
		Z	5.61	66.55	16.14		130.0	
10630-AAA	IEEE 802.11ac WiFi (80MHz, MCS4, 90pc duty cycle)	X	6.00	67.86	16.82	0.46	130.0	± 9.6 %
		Y	6.01	67.93	16.83		130.0	
		Z	5.94	67.73	16.73		130.0	
10631-AAA	IEEE 802.11ac WiFi (80MHz, MCS5, 90pc duty cycle)	X	5.95	67.83	17.01	0.46	130.0	± 9.6 %
		Y	5.97	67.92	17.02		130.0	
		Z	5.91	67.77	16.96		130.0	
10632-AAA	IEEE 802.11ac WiFi (80MHz, MCS6, 90pc duty cycle)	X	5.75	67.12	16.67	0.46	130.0	± 9.6 %
		Y	5.75	67.15	16.65		130.0	
		Z	5.73	67.12	16.65		130.0	
10633-AAA	IEEE 802.11ac WiFi (80MHz, MCS7, 90pc duty cycle)	X	5.63	66.72	16.29	0.46	130.0	± 9.6 %
		Y	5.65	66.81	16.31		130.0	
		Z	5.61	66.70	16.26		130.0	
10634-AAA	IEEE 802.11ac WiFi (80MHz, MCS8, 90pc duty cycle)	X	5.62	66.75	16.37	0.46	130.0	± 9.6 %
		Y	5.64	66.85	16.39		130.0	
		Z	5.59	66.74	16.34		130.0	
10635-AAA	IEEE 802.11ac WiFi (80MHz, MCS9, 90pc duty cycle)	X	5.48	66.01	15.71	0.46	130.0	± 9.6 %
		Y	5.51	66.14	15.76		130.0	
		Z	5.45	65.98	15.67		130.0	
10636-AAA	IEEE 1602.11ac WiFi (160MHz, MCS0, 90pc duty cycle)	X	5.96	66.83	16.32	0.46	130.0	± 9.6 %
		Y	5.96	66.90	16.33		130.0	
		Z	5.94	66.82	16.30		130.0	
10637-AAA	IEEE 1602.11ac WiFi (160MHz, MCS1, 90pc duty cycle)	X	6.11	67.19	16.49	0.46	130.0	± 9.6 %
		Y	6.11	67.25	16.49		130.0	
		Z	6.08	67.17	16.46		130.0	
10638-AAA	IEEE 1602.11ac WiFi (160MHz, MCS2, 90pc duty cycle)	X	6.11	67.17	16.45	0.46	130.0	± 9.6 %
		Y	6.11	67.25	16.46		130.0	
		Z	6.08	67.16	16.42		130.0	

10639-AAA	IEEE 1602.11ac WiFi (160MHz, MCS3, 90pc duty cycle)	X	6.08	67.12	16.47	0.46	130.0	± 9.6 %
		Y	6.09	67.20	16.48		130.0	
		Z	6.06	67.10	16.44		130.0	
10640-AAA	IEEE 1602.11ac WiFi (160MHz, MCS4, 90pc duty cycle)	X	6.08	67.10	16.40	0.46	130.0	± 9.6 %
		Y	6.09	67.19	16.42		130.0	
		Z	6.05	67.07	16.36		130.0	
10641-AAA	IEEE 1602.11ac WiFi (160MHz, MCS5, 90pc duty cycle)	X	6.13	67.03	16.39	0.46	130.0	± 9.6 %
		Y	6.13	67.10	16.39		130.0	
		Z	6.11	67.02	16.36		130.0	
10642-AAA	IEEE 1602.11ac WiFi (160MHz, MCS6, 90pc duty cycle)	X	6.18	67.31	16.70	0.46	130.0	± 9.6 %
		Y	6.19	67.39	16.71		130.0	
		Z	6.15	67.29	16.67		130.0	
10643-AAA	IEEE 1602.11ac WiFi (160MHz, MCS7, 90pc duty cycle)	X	6.01	66.96	16.42	0.46	130.0	± 9.6 %
		Y	6.01	67.04	16.43		130.0	
		Z	5.98	66.94	16.38		130.0	
10644-AAA	IEEE 1602.11ac WiFi (160MHz, MCS8, 90pc duty cycle)	X	6.14	67.38	16.65	0.46	130.0	± 9.6 %
		Y	6.16	67.50	16.68		130.0	
		Z	6.11	67.32	16.59		130.0	
10645-AAA	IEEE 1602.11ac WiFi (160MHz, MCS9, 90pc duty cycle)	X	6.34	67.58	16.70	0.46	130.0	± 9.6 %
		Y	6.43	67.90	16.84		130.0	
		Z	6.25	67.39	16.59		130.0	
10646-AAC	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, QPSK, UL Subframe=2,7)	X	12.03	96.53	31.61	9.30	60.0	± 9.6 %
		Y	13.68	98.80	32.22		60.0	
		Z	11.35	95.67	31.51		60.0	
10647-AAB	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK, UL Subframe=2,7)	X	10.87	95.02	31.23	9.30	60.0	± 9.6 %
		Y	12.42	97.44	31.90		60.0	
		Z	10.19	94.02	31.08		60.0	
10648-AAA	CDMA2000 (1x Advanced)	X	0.71	64.17	11.16	0.00	150.0	± 9.6 %
		Y	0.76	65.11	11.91		150.0	
		Z	0.68	63.86	10.84		150.0	

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



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Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 0108**

Client **PC Test**

Certificate No: **ES3-3318_Feb17**

CALIBRATION CERTIFICATE

Object **ES3DV3 - SN:3318**

Calibration procedure(s) **QA CAL-01.v9, QA CAL-23.v5, QA CAL-25.v6**
Calibration procedure for dosimetric E-field probes

Calibration date: **February 10, 2017**

BNV
03-01-2017

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature $(22 \pm 3)^\circ\text{C}$ 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	06-Apr-16 (No. 217-02288/02289)	Apr-17
Power sensor NRP-Z91	SN: 103244	06-Apr-16 (No. 217-02288)	Apr-17
Power sensor NRP-Z91	SN: 103245	06-Apr-16 (No. 217-02289)	Apr-17
Reference 20 dB Attenuator	SN: S5277 (20x)	05-Apr-16 (No. 217-02293)	Apr-17
Reference Probe ES3DV2	SN: 3013	31-Dec-16 (No. ES3-3013_Dec16)	Dec-17
DAE4	SN: 660	7-Dec-16 (No. DAE4-660_Dec16)	Dec-17
Secondary Standards	ID	Check Date (in house)	Scheduled Check
Power meter E4419B	SN: GB41293874	06-Apr-16 (in house check Jun-16)	In house check: Jun-18
Power sensor E4412A	SN: MY41498087	06-Apr-16 (in house check Jun-16)	In house check: Jun-18
Power sensor E4412A	SN: 000110210	06-Apr-16 (in house check Jun-16)	In house check: Jun-18
RF generator HP 8648C	SN: US3642U01700	04-Aug-99 (in house check Jun-16)	In house check: Jun-18
Network Analyzer HP 8753E	SN: US37390585	18-Oct-01 (in house check Oct-16)	In house check: Oct-17

Calibrated by:	Name Claudio Leubler	Function Laboratory Technician	Signature
Approved by:	Name Katja Pokovic	Function Technical Manager	Signature
			Issued: February 13, 2017
This calibration certificate shall not be reproduced except in full without written approval of the laboratory.			



Accredited by the Swiss Accreditation Service (SAS)

Accreditation No.: **SCS 0108**

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Glossary:

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

Calibration is Performed According to the Following Standards:

- 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"

Methods Applied and Interpretation of Parameters:

- NORM_{x,y,z}**: Assessed for E-field polarization $\vartheta = 0$ ($f \leq 900$ MHz in TEM-cell; $f > 1800$ MHz: R22 waveguide). NORM_{x,y,z} are only intermediate values, i.e., the uncertainties of NORM_{x,y,z} does not affect the E²-field uncertainty inside TSL (see below ConvF).
- NORM(f)_{x,y,z}** = NORM_{x,y,z} * frequency_response (see Frequency Response Chart). This linearization is implemented in DASY4 software versions later than 4.2. The uncertainty of the frequency response is included in the stated uncertainty of ConvF.
- DCP_{x,y,z}**: DCP are numerical linearization parameters assessed based on the data of power sweep with CW signal (no uncertainty required). DCP does not depend on frequency nor media.
- PAR**: PAR is the Peak to Average Ratio that is not calibrated but determined based on the signal characteristics
- A_{x,y,z}; B_{x,y,z}; C_{x,y,z}; D_{x,y,z}; VR_{x,y,z}**: A, B, C, D are numerical linearization parameters assessed based on the data of power sweep for specific modulation signal. The parameters do not depend on frequency nor media. VR is the maximum calibration range expressed in RMS voltage across the diode.
- ConvF and Boundary Effect Parameters**: Assessed in flat phantom using E-field (or Temperature Transfer Standard for $f \leq 800$ MHz) and inside waveguide using analytical field distributions based on power measurements for $f > 800$ MHz. The same setups are used for assessment of the parameters applied for boundary compensation (alpha, depth) of which typical uncertainty values are given. These parameters are used in DASY4 software to improve probe accuracy close to the boundary. The sensitivity in TSL corresponds to NORM_{x,y,z} * ConvF whereby the uncertainty corresponds to that given for ConvF. A frequency dependent ConvF is used in DASY version 4.4 and higher which allows extending the validity from ± 50 MHz to ± 100 MHz.
- Spherical isotropy (3D deviation from isotropy)**: in a field of low gradients realized using a flat phantom exposed by a patch antenna.
- Sensor Offset**: The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.
- Connector Angle**: The angle is assessed using the information gained by determining the NORM_x (no uncertainty required).

Probe ES3DV3

SN:3318

Manufactured: January 10, 2012
Calibrated: February 10, 2017

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

DASY/EASY - Parameters of Probe: ES3DV3 - SN:3318

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu\text{V}/(\text{V}/\text{m})^2$) ^A	1.11	0.89	1.24	$\pm 10.1 \%$
DCP (mV) ^B	104.2	104.2	103.5	

Modulation Calibration Parameters

UID	Communication System Name		A dB	B dB $\sqrt{\mu\text{V}}$	C	D dB	VR mV	Unc ^E (k=2)
0	CW	X	0.0	0.0	1.0	0.00	207.9	$\pm 3.3 \%$
		Y	0.0	0.0	1.0		188.2	
		Z	0.0	0.0	1.0		201.5	

Note: For details on UID parameters see Appendix.

Sensor Model Parameters

	C1 fF	C2 fF	α V^{-1}	T1 $\text{ms}\cdot\text{V}^{-2}$	T2 $\text{ms}\cdot\text{V}^{-1}$	T3 ms	T4 V^{-2}	T5 V^{-1}	T6
X	63.42	453.7	35.34	29.18	2.667	5.1	0.885	0.445	1.01
Y	50.41	352.5	33.95	25.81	1.921	5.062	1.77	0.176	1.007
Z	62.08	445.4	35.38	29.73	3.23	5.1	0.803	0.494	1.012

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor $k=2$, which for a normal distribution corresponds to a coverage probability of approximately 95%.

^A The uncertainties of Norm X,Y,Z do not affect the E^2 -field uncertainty inside TSL (see Pages 5 and 6).

^B Numerical linearization parameter; uncertainty not required.

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

DASY/EASY - Parameters of Probe: ES3DV3 - SN:3318

Calibration Parameter Determined in Head Tissue Simulating Media

f (MHz) ^C	Relative Permittivity ^F	Conductivity (S/m) ^F	ConvF X	ConvF Y	ConvF Z	Alpha ^G	Depth ^G (mm)	Unc (k=2)
750	41.9	0.89	6.73	6.73	6.73	0.43	1.53	± 12.0 %
835	41.5	0.90	6.47	6.47	6.47	0.57	1.36	± 12.0 %
1750	40.1	1.37	5.49	5.49	5.49	0.74	1.19	± 12.0 %
1900	40.0	1.40	5.31	5.31	5.31	0.60	1.33	± 12.0 %
2300	39.5	1.67	4.95	4.95	4.95	0.60	1.42	± 12.0 %
2450	39.2	1.80	4.74	4.74	4.74	0.71	1.28	± 12.0 %
2600	39.0	1.96	4.53	4.53	4.53	0.75	1.35	± 12.0 %

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

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

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

DASY/EASY - Parameters of Probe: ES3DV3 - SN:3318

Calibration Parameter Determined in Body Tissue Simulating Media

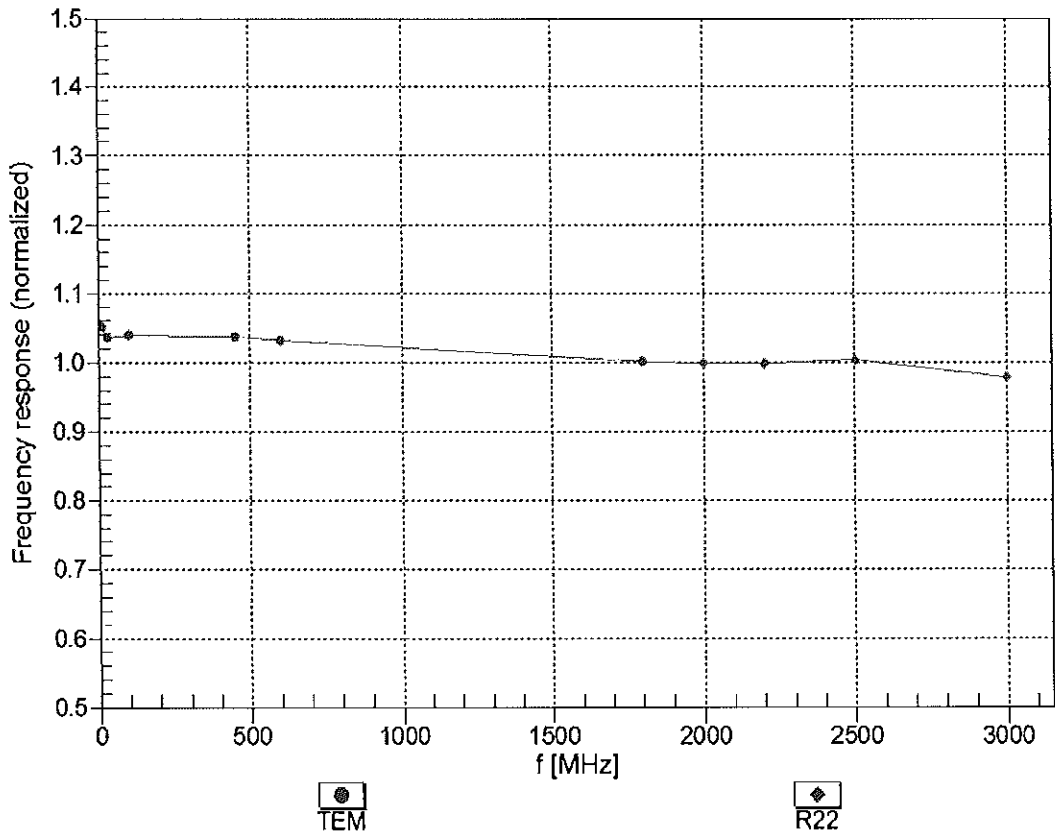
f (MHz) ^c	Relative Permittivity ^F	Conductivity (S/m) ^F	ConvF X	ConvF Y	ConvF Z	Alpha ^G	Depth ^G (mm)	Unc (k=2)
750	55.5	0.96	6.50	6.50	6.50	0.62	1.33	± 12.0 %
835	55.2	0.97	6.37	6.37	6.37	0.66	1.31	± 12.0 %
1750	53.4	1.49	5.12	5.12	5.12	0.42	1.72	± 12.0 %
1900	53.3	1.52	4.96	4.96	4.96	0.67	1.38	± 12.0 %
2300	52.9	1.81	4.70	4.70	4.70	0.77	1.22	± 12.0 %
2450	52.7	1.95	4.55	4.55	4.55	0.75	1.17	± 12.0 %
2600	52.5	2.16	4.34	4.34	4.34	0.80	1.05	± 12.0 %

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

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

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

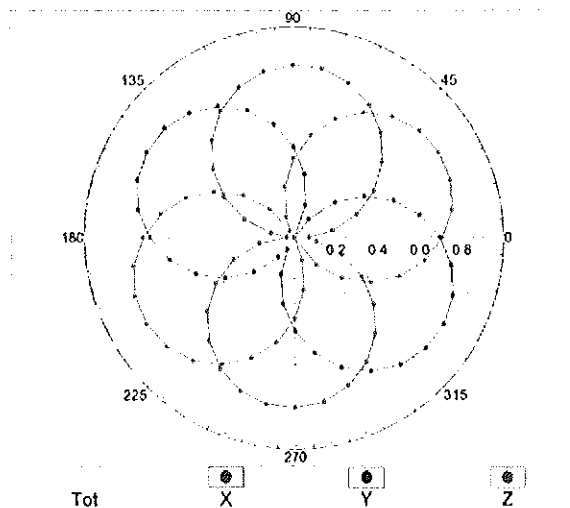
Frequency Response of E-Field
(TEM-Cell:ifi110 EXX, Waveguide: R22)



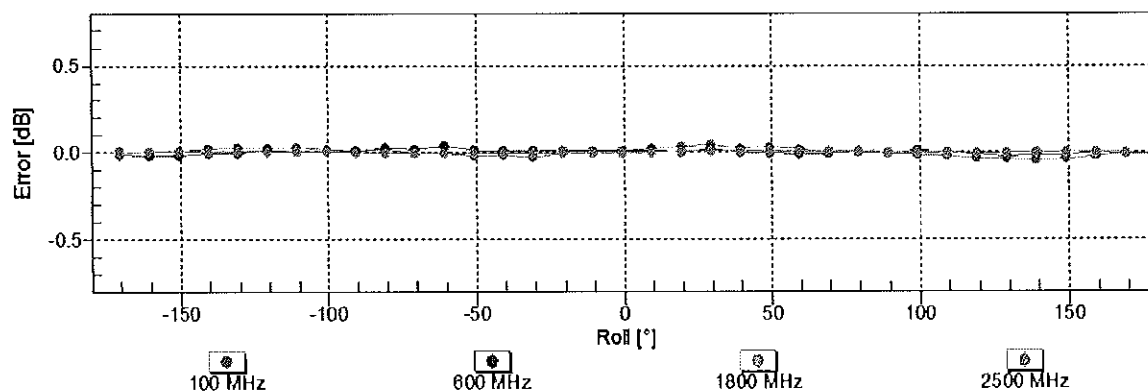
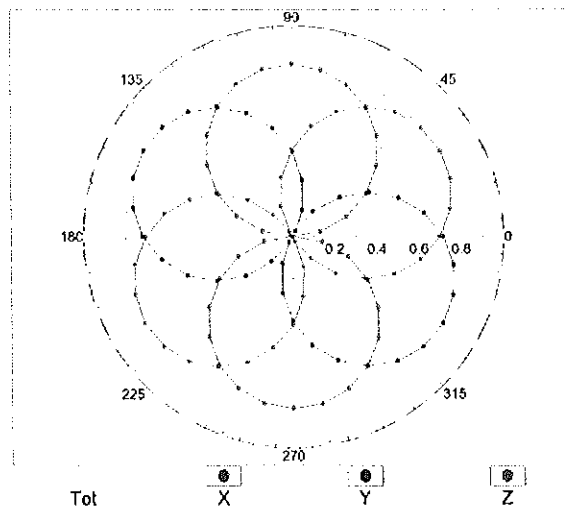
Uncertainty of Frequency Response of E-field: $\pm 6.3\%$ ($k=2$)

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

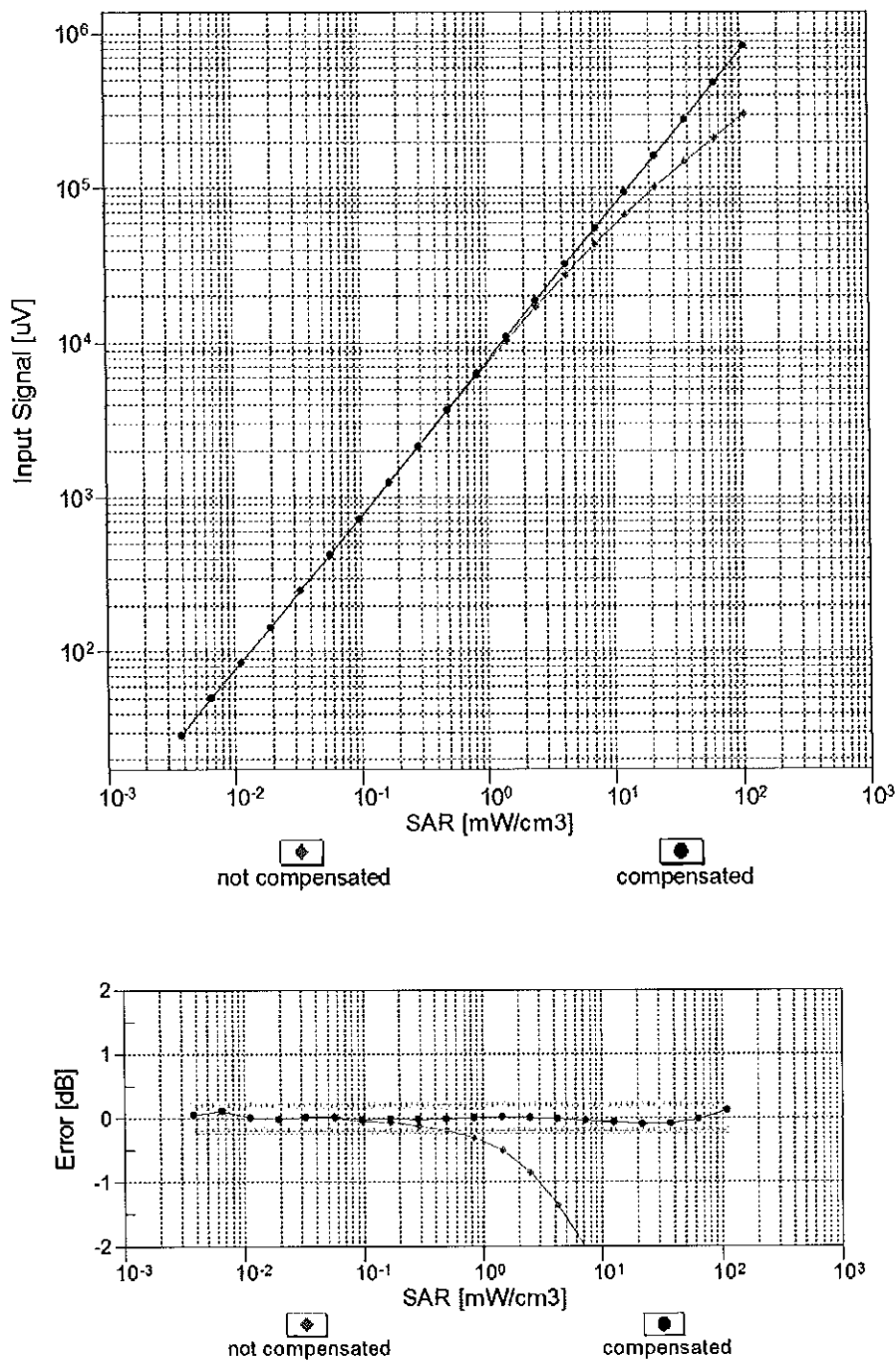
f=600 MHz,TEM



f=1800 MHz,R22

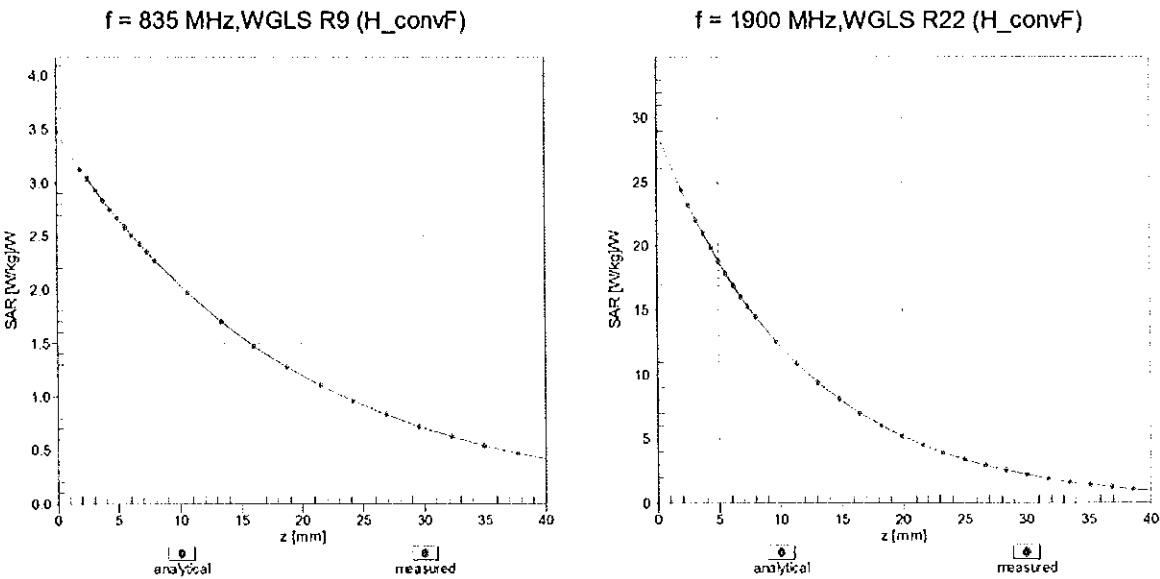
Uncertainty of Axial Isotropy Assessment: $\pm 0.5\%$ (k=2)

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

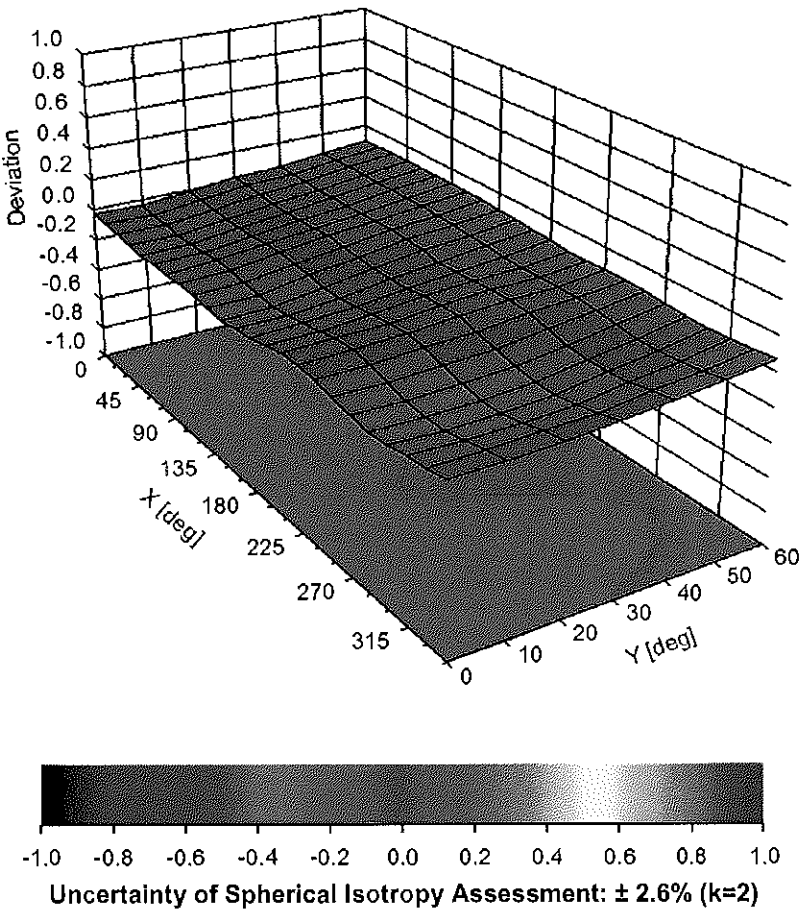


Uncertainty of Linearity Assessment: ± 0.6% (k=2)

Conversion Factor Assessment



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



DASY/EASY - Parameters of Probe: ES3DV3 - SN:3318

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	79.3
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disabled
Probe Overall Length	337 mm
Probe Body Diameter	10 mm
Tip Length	10 mm
Tip Diameter	4 mm
Probe Tip to Sensor X Calibration Point	2 mm
Probe Tip to Sensor Y Calibration Point	2 mm
Probe Tip to Sensor Z Calibration Point	2 mm
Recommended Measurement Distance from Surface	3 mm

Appendix: Modulation Calibration Parameters

UID	Communication System Name		A dB	B dB $\sqrt{\mu V}$	C	D dB	VR mV	Max Unc ^E (k=2)
0	CW	X	0.00	0.00	1.00	0.00	207.9	$\pm 3.3 \%$
		Y	0.00	0.00	1.00		188.2	
		Z	0.00	0.00	1.00		201.5	
10010- CAA	SAR Validation (Square, 100ms, 10ms)	X	10.65	83.39	20.62	10.00	25.0	$\pm 9.6 \%$
		Y	8.27	79.56	18.19		25.0	
		Z	9.41	81.26	20.29		25.0	
10011- CAB	UMTS-FDD (WCDMA)	X	1.26	70.62	17.25	0.00	150.0	$\pm 9.6 \%$
		Y	1.14	69.56	16.54		150.0	
		Z	1.10	67.80	15.49		150.0	
10012- CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps)	X	1.36	66.00	16.64	0.41	150.0	$\pm 9.6 \%$
		Y	1.31	65.69	16.25		150.0	
		Z	1.33	65.14	15.84		150.0	
10013- CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps)	X	5.21	67.34	17.59	1.46	150.0	$\pm 9.6 \%$
		Y	5.03	67.33	17.37		150.0	
		Z	5.21	67.28	17.47		150.0	
10021- DAC	GSM-FDD (TDMA, GMSK)	X	30.30	102.62	28.60	9.39	50.0	$\pm 9.6 \%$
		Y	85.74	117.41	31.25		50.0	
		Z	16.72	92.33	25.82		50.0	
10023- DAC	GPRS-FDD (TDMA, GMSK, TN 0)	X	25.90	99.89	27.85	9.57	50.0	$\pm 9.6 \%$
		Y	53.57	110.04	29.42		50.0	
		Z	15.58	90.96	25.42		50.0	
10024- DAC	GPRS-FDD (TDMA, GMSK, TN 0-1)	X	100.00	119.72	31.24	6.56	60.0	$\pm 9.6 \%$
		Y	100.00	116.42	29.08		60.0	
		Z	69.15	114.71	30.44		60.0	
10025- DAC	EDGE-FDD (TDMA, 8PSK, TN 0)	X	21.22	110.03	42.06	12.57	50.0	$\pm 9.6 \%$
		Y	14.02	98.31	37.05		50.0	
		Z	20.65	107.68	41.04		50.0	
10026- DAC	EDGE-FDD (TDMA, 8PSK, TN 0-1)	X	22.74	107.18	37.14	9.56	60.0	$\pm 9.6 \%$
		Y	17.09	100.87	34.58		60.0	
		Z	19.56	102.47	35.45		60.0	
10027- DAC	GPRS-FDD (TDMA, GMSK, TN 0-1-2)	X	100.00	118.87	29.89	4.80	80.0	$\pm 9.6 \%$
		Y	100.00	115.45	27.78		80.0	
		Z	100.00	119.07	30.22		80.0	
10028- DAC	GPRS-FDD (TDMA, GMSK, TN 0-1-2-3)	X	100.00	119.42	29.31	3.55	100.0	$\pm 9.6 \%$
		Y	100.00	115.85	27.21		100.0	
		Z	100.00	119.09	29.37		100.0	
10029- DAC	EDGE-FDD (TDMA, 8PSK, TN 0-1-2)	X	14.97	97.57	32.79	7.80	80.0	$\pm 9.6 \%$
		Y	11.33	91.85	30.38		80.0	
		Z	13.70	94.63	31.63		80.0	
10030- CAA	IEEE 802.15.1 Bluetooth (GFSK, DH1)	X	100.00	118.36	30.01	5.30	70.0	$\pm 9.6 \%$
		Y	100.00	114.74	27.76		70.0	
		Z	100.00	118.80	30.46		70.0	
10031- CAA	IEEE 802.15.1 Bluetooth (GFSK, DH3)	X	100.00	121.98	28.84	1.88	100.0	$\pm 9.6 \%$
		Y	100.00	117.00	26.24		100.0	
		Z	100.00	120.23	28.25		100.0	

10032-CAA	IEEE 802.15.1 Bluetooth (GFSK, DH5)	X	100.00	128.67	30.50	1.17	100.0	± 9.6 %
		Y	100.00	122.90	27.66		100.0	
		Z	100.00	124.38	28.87		100.0	
10033-CAA	IEEE 802.15.1 Bluetooth (PI/4-DQPSK, DH1)	X	24.23	102.94	29.00	5.30	70.0	± 9.6 %
		Y	23.03	100.70	27.25		70.0	
		Z	13.78	92.43	25.72		70.0	
10034-CAA	IEEE 802.15.1 Bluetooth (PI/4-DQPSK, DH3)	X	11.07	94.32	25.04	1.88	100.0	± 9.6 %
		Y	10.51	92.09	23.22		100.0	
		Z	6.22	84.45	21.59		100.0	
10035-CAA	IEEE 802.15.1 Bluetooth (PI/4-DQPSK, DH5)	X	5.82	86.43	22.33	1.17	100.0	± 9.6 %
		Y	5.46	84.67	20.69		100.0	
		Z	3.82	79.09	19.43		100.0	
10036-CAA	IEEE 802.15.1 Bluetooth (8-DPSK, DH1)	X	30.87	107.24	30.28	5.30	70.0	± 9.6 %
		Y	31.94	106.09	28.82		70.0	
		Z	15.75	94.83	26.54		70.0	
10037-CAA	IEEE 802.15.1 Bluetooth (8-DPSK, DH3)	X	10.70	93.84	24.85	1.88	100.0	± 9.6 %
		Y	9.44	90.62	22.74		100.0	
		Z	6.06	84.12	21.44		100.0	
10038-CAA	IEEE 802.15.1 Bluetooth (8-DPSK, DH5)	X	6.09	87.40	22.75	1.17	100.0	± 9.6 %
		Y	5.73	85.66	21.12		100.0	
		Z	3.92	79.69	19.73		100.0	
10039-CAB	CDMA2000 (1xRTT, RC1)	X	2.51	76.10	18.44	0.00	150.0	± 9.6 %
		Y	2.58	77.34	18.13		150.0	
		Z	1.93	71.68	16.25		150.0	
10042-CAB	IS-54 / IS-136 FDD (TDMA/FDM, PI/4-DQPSK, Halfrate)	X	100.00	118.55	30.95	7.78	50.0	± 9.6 %
		Y	100.00	115.26	28.77		50.0	
		Z	30.52	101.01	26.83		50.0	
10044-CAA	IS-91/EIA/TIA-553 FDD (FDMA, FM)	X	0.01	122.84	6.61	0.00	150.0	± 9.6 %
		Y	0.00	101.52	0.76		150.0	
		Z	0.01	121.65	1.51		150.0	
10048-CAA	DECT (TDD, TDMA/FDM, GFSK, Full Slot, 24)	X	12.97	86.24	25.23	13.80	25.0	± 9.6 %
		Y	16.21	90.42	25.53		25.0	
		Z	11.00	82.40	24.22		25.0	
10049-CAA	DECT (TDD, TDMA/FDM, GFSK, Double Slot, 12)	X	16.11	91.33	25.58	10.79	40.0	± 9.6 %
		Y	21.17	95.34	25.70		40.0	
		Z	12.51	86.41	24.27		40.0	
10056-CAA	UMTS-TDD (TD-SCDMA, 1.28 Mcps)	X	14.93	90.68	26.04	9.03	50.0	± 9.6 %
		Y	15.30	90.91	25.15		50.0	
		Z	12.28	86.39	24.64		50.0	
10058-DAC	EDGE-FDD (TDMA, 8PSK, TN 0-1-2-3)	X	10.77	90.92	29.72	6.55	100.0	± 9.6 %
		Y	8.37	86.08	27.58		100.0	
		Z	10.19	88.91	28.83		100.0	
10059-CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 2 Mbps)	X	1.56	68.48	17.84	0.61	110.0	± 9.6 %
		Y	1.47	67.87	17.29		110.0	
		Z	1.52	67.28	16.88		110.0	
10060-CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 5.5 Mbps)	X	100.00	133.74	34.89	1.30	110.0	± 9.6 %
		Y	100.00	132.17	33.87		110.0	
		Z	100.00	130.92	33.73		110.0	

10061-CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 11 Mbps)	X	16.46	105.21	30.01	2.04	110.0	± 9.6 %
		Y	11.67	99.37	27.84		110.0	
		Z	8.39	92.33	25.80		110.0	
10062-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps)	X	4.94	67.14	16.89	0.49	100.0	± 9.6 %
		Y	4.78	67.19	16.74		100.0	
		Z	4.92	67.01	16.73		100.0	
10063-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 9 Mbps)	X	4.98	67.31	17.04	0.72	100.0	± 9.6 %
		Y	4.81	67.33	16.86		100.0	
		Z	4.96	67.18	16.88		100.0	
10064-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 12 Mbps)	X	5.32	67.65	17.30	0.86	100.0	± 9.6 %
		Y	5.11	67.60	17.09		100.0	
		Z	5.31	67.54	17.16		100.0	
10065-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 18 Mbps)	X	5.22	67.69	17.47	1.21	100.0	± 9.6 %
		Y	5.01	67.59	17.23		100.0	
		Z	5.22	67.59	17.34		100.0	
10066-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 24 Mbps)	X	5.28	67.82	17.71	1.46	100.0	± 9.6 %
		Y	5.05	67.68	17.43		100.0	
		Z	5.28	67.74	17.58		100.0	
10067-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 36 Mbps)	X	5.59	67.95	18.15	2.04	100.0	± 9.6 %
		Y	5.36	67.86	17.87		100.0	
		Z	5.61	67.93	18.06		100.0	
10068-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 48 Mbps)	X	5.74	68.35	18.54	2.55	100.0	± 9.6 %
		Y	5.47	68.07	18.17		100.0	
		Z	5.77	68.35	18.47		100.0	
10069-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 54 Mbps)	X	5.82	68.26	18.71	2.67	100.0	± 9.6 %
		Y	5.55	68.05	18.34		100.0	
		Z	5.85	68.30	18.66		100.0	
10071-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 9 Mbps)	X	5.35	67.58	17.97	1.99	100.0	± 9.6 %
		Y	5.16	67.52	17.72		100.0	
		Z	5.37	67.56	17.88		100.0	
10072-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 12 Mbps)	X	5.42	68.17	18.31	2.30	100.0	± 9.6 %
		Y	5.20	68.01	18.01		100.0	
		Z	5.45	68.15	18.22		100.0	
10073-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 18 Mbps)	X	5.56	68.52	18.74	2.83	100.0	± 9.6 %
		Y	5.32	68.31	18.39		100.0	
		Z	5.60	68.54	18.67		100.0	
10074-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 24 Mbps)	X	5.59	68.60	19.01	3.30	100.0	± 9.6 %
		Y	5.35	68.34	18.61		100.0	
		Z	5.65	68.66	18.95		100.0	
10075-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 36 Mbps)	X	5.76	69.14	19.54	3.82	90.0	± 9.6 %
		Y	5.46	68.68	19.02		90.0	
		Z	5.83	69.24	19.50		90.0	
10076-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 48 Mbps)	X	5.75	68.91	19.64	4.15	90.0	± 9.6 %
		Y	5.48	68.50	19.14		90.0	
		Z	5.84	69.05	19.63		90.0	
10077-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 54 Mbps)	X	5.79	69.00	19.75	4.30	90.0	± 9.6 %
		Y	5.52	68.61	19.25		90.0	
		Z	5.89	69.15	19.74		90.0	

10081-CAB	CDMA2000 (1xRTT, RC3)	X	1.18	70.18	15.67	0.00	150.0	± 9.6 %
		Y	1.02	69.06	14.35		150.0	
		Z	0.97	66.70	13.60		150.0	
10082-CAB	IS-54 / IS-136 FDD (TDMA/FDM, PI/4-DQPSK, Fullrate)	X	2.27	64.65	9.36	4.77	80.0	± 9.6 %
		Y	1.70	62.49	7.53		80.0	
		Z	2.45	65.05	9.86		80.0	
10090-DAC	GPRS-FDD (TDMA, GMSK, TN 0-4)	X	100.00	119.81	31.30	6.56	60.0	± 9.6 %
		Y	100.00	116.49	29.13		60.0	
		Z	65.88	114.04	30.31		60.0	
10097-CAB	UMTS-FDD (HSDPA)	X	1.98	68.72	16.60	0.00	150.0	± 9.6 %
		Y	1.94	68.99	16.45		150.0	
		Z	1.87	67.43	15.70		150.0	
10098-CAB	UMTS-FDD (HSUPA, Subtest 2)	X	1.94	68.72	16.59	0.00	150.0	± 9.6 %
		Y	1.90	68.95	16.42		150.0	
		Z	1.83	67.41	15.68		150.0	
10099-DAC	EDGE-FDD (TDMA, 8PSK, TN 0-4)	X	22.60	106.99	37.08	9.56	60.0	± 9.6 %
		Y	17.07	100.80	34.55		60.0	
		Z	19.45	102.29	35.39		60.0	
10100-CAC	LTE-FDD (SC-FDMA, 100% RB, 20 MHz, QPSK)	X	3.50	71.91	17.47	0.00	150.0	± 9.6 %
		Y	3.32	71.58	17.29		150.0	
		Z	3.29	70.63	16.73		150.0	
10101-CAC	LTE-FDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM)	X	3.47	68.41	16.46	0.00	150.0	± 9.6 %
		Y	3.33	68.22	16.28		150.0	
		Z	3.39	67.84	16.04		150.0	
10102-CAC	LTE-FDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM)	X	3.56	68.27	16.50	0.00	150.0	± 9.6 %
		Y	3.43	68.17	16.36		150.0	
		Z	3.49	67.75	16.11		150.0	
10103-CAC	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, QPSK)	X	8.90	78.76	21.58	3.98	65.0	± 9.6 %
		Y	8.47	78.68	21.35		65.0	
		Z	8.34	77.15	20.86		65.0	
10104-CAC	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM)	X	8.80	77.42	21.93	3.98	65.0	± 9.6 %
		Y	8.21	76.81	21.41		65.0	
		Z	8.69	76.77	21.58		65.0	
10105-CAC	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM)	X	7.68	74.71	21.04	3.98	65.0	± 9.6 %
		Y	7.62	75.33	21.07		65.0	
		Z	7.87	74.75	20.97		65.0	
10108-CAD	LTE-FDD (SC-FDMA, 100% RB, 10 MHz, QPSK)	X	3.09	71.08	17.31	0.00	150.0	± 9.6 %
		Y	2.90	70.80	17.14		150.0	
		Z	2.90	69.83	16.56		150.0	
10109-CAD	LTE-FDD (SC-FDMA, 100% RB, 10 MHz, 16-QAM)	X	3.14	68.25	16.42	0.00	150.0	± 9.6 %
		Y	2.99	68.15	16.24		150.0	
		Z	3.05	67.61	15.95		150.0	
10110-CAD	LTE-FDD (SC-FDMA, 100% RB, 5 MHz, QPSK)	X	2.54	70.21	17.07	0.00	150.0	± 9.6 %
		Y	2.36	69.95	16.81		150.0	
		Z	2.39	68.91	16.24		150.0	
10111-CAD	LTE-FDD (SC-FDMA, 100% RB, 5 MHz, 16-QAM)	X	2.84	68.87	16.76	0.00	150.0	± 9.6 %
		Y	2.74	69.25	16.71		150.0	
		Z	2.73	68.00	16.14		150.0	

10112-CAD	LTE-FDD (SC-FDMA, 100% RB, 10 MHz, 64-QAM)	X	3.25	68.12	16.42	0.00	150.0	± 9.6 %
		Y	3.11	68.10	16.28		150.0	
		Z	3.17	67.53	15.98		150.0	
10113-CAD	LTE-FDD (SC-FDMA, 100% RB, 5 MHz, 64-QAM)	X	2.99	68.87	16.82	0.00	150.0	± 9.6 %
		Y	2.90	69.34	16.82		150.0	
		Z	2.88	68.07	16.24		150.0	
10114-CAB	IEEE 802.11n (HT Greenfield, 13.5 Mbps, BPSK)	X	5.29	67.49	16.64	0.00	150.0	± 9.6 %
		Y	5.18	67.60	16.59		150.0	
		Z	5.26	67.32	16.47		150.0	
10115-CAB	IEEE 802.11n (HT Greenfield, 81 Mbps, 16-QAM)	X	5.67	67.81	16.80	0.00	150.0	± 9.6 %
		Y	5.49	67.77	16.68		150.0	
		Z	5.63	67.65	16.65		150.0	
10116-CAB	IEEE 802.11n (HT Greenfield, 135 Mbps, 64-QAM)	X	5.43	67.78	16.70	0.00	150.0	± 9.6 %
		Y	5.29	67.82	16.63		150.0	
		Z	5.39	67.60	16.54		150.0	
10117-CAB	IEEE 802.11n (HT Mixed, 13.5 Mbps, BPSK)	X	5.30	67.53	16.68	0.00	150.0	± 9.6 %
		Y	5.15	67.48	16.55		150.0	
		Z	5.27	67.35	16.51		150.0	
10118-CAB	IEEE 802.11n (HT Mixed, 81 Mbps, 16-QAM)	X	5.73	67.95	16.88	0.00	150.0	± 9.6 %
		Y	5.58	67.98	16.80		150.0	
		Z	5.71	67.82	16.74		150.0	
10119-CAB	IEEE 802.11n (HT Mixed, 135 Mbps, 64-QAM)	X	5.40	67.74	16.70	0.00	150.0	± 9.6 %
		Y	5.26	67.75	16.61		150.0	
		Z	5.37	67.56	16.53		150.0	
10140-CAC	LTE-FDD (SC-FDMA, 100% RB, 15 MHz, 16-QAM)	X	3.61	68.27	16.43	0.00	150.0	± 9.6 %
		Y	3.47	68.16	16.27		150.0	
		Z	3.54	67.76	16.04		150.0	
10141-CAC	LTE-FDD (SC-FDMA, 100% RB, 15 MHz, 64-QAM)	X	3.73	68.28	16.55	0.00	150.0	± 9.6 %
		Y	3.59	68.25	16.43		150.0	
		Z	3.65	67.79	16.17		150.0	
10142-CAD	LTE-FDD (SC-FDMA, 100% RB, 3 MHz, QPSK)	X	2.33	70.29	16.97	0.00	150.0	± 9.6 %
		Y	2.16	70.21	16.65		150.0	
		Z	2.16	68.78	16.01		150.0	
10143-CAD	LTE-FDD (SC-FDMA, 100% RB, 3 MHz, 16-QAM)	X	2.74	69.72	16.76	0.00	150.0	± 9.6 %
		Y	2.67	70.41	16.67		150.0	
		Z	2.59	68.55	15.97		150.0	
10144-CAD	LTE-FDD (SC-FDMA, 100% RB, 3 MHz, 64-QAM)	X	2.56	67.80	15.39	0.00	150.0	± 9.6 %
		Y	2.37	67.67	14.84		150.0	
		Z	2.45	66.93	14.76		150.0	
10145-CAD	LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, QPSK)	X	1.73	69.15	15.06	0.00	150.0	± 9.6 %
		Y	1.44	67.55	13.30		150.0	
		Z	1.51	66.84	13.63		150.0	
10146-CAD	LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, 16-QAM)	X	4.00	75.69	17.38	0.00	150.0	± 9.6 %
		Y	2.68	70.09	13.45		150.0	
		Z	3.36	72.93	16.09		150.0	
10147-CAD	LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, 64-QAM)	X	5.35	79.98	19.20	0.00	150.0	± 9.6 %
		Y	3.76	74.33	15.35		150.0	
		Z	4.15	75.99	17.51		150.0	

10149-CAC	LTE-FDD (SC-FDMA, 50% RB, 20 MHz, 16-QAM)	X	3.15	68.30	16.47	0.00	150.0	± 9.6 %
		Y	3.00	68.22	16.29		150.0	
		Z	3.06	67.66	15.99		150.0	
10150-CAC	LTE-FDD (SC-FDMA, 50% RB, 20 MHz, 64-QAM)	X	3.26	68.16	16.46	0.00	150.0	± 9.6 %
		Y	3.12	68.16	16.32		150.0	
		Z	3.18	67.57	16.02		150.0	
10151-CAC	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, QPSK)	X	9.51	81.17	22.64	3.98	65.0	± 9.6 %
		Y	9.26	81.54	22.52		65.0	
		Z	9.00	79.66	21.96		65.0	
10152-CAC	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 16-QAM)	X	8.48	77.76	21.88	3.98	65.0	± 9.6 %
		Y	7.81	76.97	21.19		65.0	
		Z	8.33	76.97	21.46		65.0	
10153-CAC	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 64-QAM)	X	8.81	78.38	22.46	3.98	65.0	± 9.6 %
		Y	8.28	78.00	21.97		65.0	
		Z	8.64	77.56	22.02		65.0	
10154-CAD	LTE-FDD (SC-FDMA, 50% RB, 10 MHz, QPSK)	X	2.61	70.67	17.35	0.00	150.0	± 9.6 %
		Y	2.43	70.50	17.14		150.0	
		Z	2.44	69.28	16.48		150.0	
10155-CAD	LTE-FDD (SC-FDMA, 50% RB, 10 MHz, 16-QAM)	X	2.84	68.87	16.77	0.00	150.0	± 9.6 %
		Y	2.74	69.26	16.73		150.0	
		Z	2.73	68.00	16.15		150.0	
10156-CAD	LTE-FDD (SC-FDMA, 50% RB, 5 MHz, QPSK)	X	2.21	70.73	17.05	0.00	150.0	± 9.6 %
		Y	2.04	70.63	16.63		150.0	
		Z	2.02	68.93	15.94		150.0	
10157-CAD	LTE-FDD (SC-FDMA, 50% RB, 5 MHz, 16-QAM)	X	2.42	68.64	15.67	0.00	150.0	± 9.6 %
		Y	2.25	68.58	15.08		150.0	
		Z	2.28	67.47	14.87		150.0	
10158-CAD	LTE-FDD (SC-FDMA, 50% RB, 10 MHz, 64-QAM)	X	2.99	68.92	16.86	0.00	150.0	± 9.6 %
		Y	2.90	69.42	16.87		150.0	
		Z	2.89	68.11	16.28		150.0	
10159-CAD	LTE-FDD (SC-FDMA, 50% RB, 5 MHz, 64-QAM)	X	2.54	69.05	15.93	0.00	150.0	± 9.6 %
		Y	2.38	69.17	15.42		150.0	
		Z	2.38	67.83	15.11		150.0	
10160-CAC	LTE-FDD (SC-FDMA, 50% RB, 15 MHz, QPSK)	X	3.02	69.72	16.97	0.00	150.0	± 9.6 %
		Y	2.87	69.64	16.82		150.0	
		Z	2.89	68.80	16.35		150.0	
10161-CAC	LTE-FDD (SC-FDMA, 50% RB, 15 MHz, 16-QAM)	X	3.15	68.06	16.41	0.00	150.0	± 9.6 %
		Y	3.02	68.13	16.28		150.0	
		Z	3.07	67.45	15.95		150.0	
10162-CAC	LTE-FDD (SC-FDMA, 50% RB, 15 MHz, 64-QAM)	X	3.25	68.09	16.46	0.00	150.0	± 9.6 %
		Y	3.13	68.25	16.37		150.0	
		Z	3.18	67.52	16.02		150.0	
10166-CAD	LTE-FDD (SC-FDMA, 50% RB, 1.4 MHz, QPSK)	X	4.03	70.84	19.96	3.01	150.0	± 9.6 %
		Y	3.83	71.14	19.84		150.0	
		Z	4.01	70.55	19.74		150.0	
10167-CAD	LTE-FDD (SC-FDMA, 50% RB, 1.4 MHz, 16-QAM)	X	5.25	74.55	20.76	3.01	150.0	± 9.6 %
		Y	5.14	75.60	20.85		150.0	
		Z	5.18	74.06	20.47		150.0	

10168-CAD	LTE-FDD (SC-FDMA, 50% RB, 1.4 MHz, 64-QAM)	X	5.75	76.52	21.89	3.01	150.0	± 9.6 %
		Y	6.00	78.90	22.58		150.0	
		Z	5.63	75.85	21.52		150.0	
10169-CAC	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, QPSK)	X	3.71	72.74	20.84	3.01	150.0	± 9.6 %
		Y	3.37	72.07	20.29		150.0	
		Z	3.67	72.12	20.45		150.0	
10170-CAC	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM)	X	5.90	81.03	23.83	3.01	150.0	± 9.6 %
		Y	6.20	83.55	24.55		150.0	
		Z	5.54	79.34	23.04		150.0	
10171-AAC	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, 64-QAM)	X	4.69	76.04	20.92	3.01	150.0	± 9.6 %
		Y	4.32	75.87	20.46		150.0	
		Z	4.54	75.03	20.42		150.0	
10172-CAC	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK)	X	39.66	116.21	35.79	6.02	65.0	± 9.6 %
		Y	26.05	109.12	33.27		65.0	
		Z	30.93	110.22	33.96		65.0	
10173-CAC	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM)	X	52.84	115.80	33.80	6.02	65.0	± 9.6 %
		Y	100.00	126.65	35.61		65.0	
		Z	32.54	106.36	31.18		65.0	
10174-CAC	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 64-QAM)	X	36.42	107.54	31.02	6.02	65.0	± 9.6 %
		Y	52.24	113.81	31.84		65.0	
		Z	25.50	100.70	29.05		65.0	
10175-CAD	LTE-FDD (SC-FDMA, 1 RB, 10 MHz, QPSK)	X	3.66	72.37	20.58	3.01	150.0	± 9.6 %
		Y	3.31	71.62	19.97		150.0	
		Z	3.62	71.80	20.21		150.0	
10176-CAD	LTE-FDD (SC-FDMA, 1 RB, 10 MHz, 16-QAM)	X	5.91	81.06	23.84	3.01	150.0	± 9.6 %
		Y	6.22	83.59	24.56		150.0	
		Z	5.55	79.36	23.05		150.0	
10177-CAF	LTE-FDD (SC-FDMA, 1 RB, 5 MHz, QPSK)	X	3.70	72.55	20.68	3.01	150.0	± 9.6 %
		Y	3.35	71.84	20.10		150.0	
		Z	3.65	71.95	20.31		150.0	
10178-CAD	LTE-FDD (SC-FDMA, 1 RB, 5 MHz, 16-QAM)	X	5.81	80.70	23.67	3.01	150.0	± 9.6 %
		Y	6.07	83.11	24.35		150.0	
		Z	5.47	79.07	22.91		150.0	
10179-CAD	LTE-FDD (SC-FDMA, 1 RB, 10 MHz, 64-QAM)	X	5.24	78.36	22.22	3.01	150.0	± 9.6 %
		Y	5.11	79.33	22.28		150.0	
		Z	5.00	77.05	21.59		150.0	
10180-CAD	LTE-FDD (SC-FDMA, 1 RB, 5 MHz, 64-QAM)	X	4.67	75.92	20.85	3.01	150.0	± 9.6 %
		Y	4.29	75.73	20.38		150.0	
		Z	4.52	74.94	20.36		150.0	
10181-CAC	LTE-FDD (SC-FDMA, 1 RB, 15 MHz, QPSK)	X	3.69	72.54	20.68	3.01	150.0	± 9.6 %
		Y	3.34	71.81	20.09		150.0	
		Z	3.65	71.94	20.30		150.0	
10182-CAC	LTE-FDD (SC-FDMA, 1 RB, 15 MHz, 16-QAM)	X	5.80	80.67	23.66	3.01	150.0	± 9.6 %
		Y	6.06	83.07	24.33		150.0	
		Z	5.46	79.04	22.90		150.0	
10183-AAB	LTE-FDD (SC-FDMA, 1 RB, 15 MHz, 64-QAM)	X	4.66	75.89	20.84	3.01	150.0	± 9.6 %
		Y	4.28	75.70	20.36		150.0	
		Z	4.51	74.92	20.35		150.0	

10184-CAD	LTE-FDD (SC-FDMA, 1 RB, 3 MHz, QPSK)	X	3.70	72.58	20.70	3.01	150.0	± 9.6 %
		Y	3.35	71.87	20.12		150.0	
		Z	3.66	71.98	20.32		150.0	
10185-CAD	LTE-FDD (SC-FDMA, 1 RB, 3 MHz, 16-QAM)	X	5.83	80.75	23.70	3.01	150.0	± 9.6 %
		Y	6.11	83.20	24.39		150.0	
		Z	5.49	79.12	22.93		150.0	
10186-AAD	LTE-FDD (SC-FDMA, 1 RB, 3 MHz, 64-QAM)	X	4.69	75.98	20.88	3.01	150.0	± 9.6 %
		Y	4.31	75.80	20.41		150.0	
		Z	4.54	74.99	20.38		150.0	
10187-CAD	LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK)	X	3.71	72.62	20.75	3.01	150.0	± 9.6 %
		Y	3.36	71.93	20.19		150.0	
		Z	3.67	72.03	20.37		150.0	
10188-CAD	LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, 16-QAM)	X	6.08	81.63	24.13	3.01	150.0	± 9.6 %
		Y	6.51	84.55	25.01		150.0	
		Z	5.69	79.85	23.31		150.0	
10189-AAD	LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, 64-QAM)	X	4.82	76.52	21.19	3.01	150.0	± 9.6 %
		Y	4.47	76.53	20.81		150.0	
		Z	4.65	75.46	20.66		150.0	
10193-CAB	IEEE 802.11n (HT Greenfield, 6.5 Mbps, BPSK)	X	4.72	66.91	16.43	0.00	150.0	± 9.6 %
		Y	4.58	67.02	16.33		150.0	
		Z	4.68	66.73	16.24		150.0	
10194-CAB	IEEE 802.11n (HT Greenfield, 39 Mbps, 16-QAM)	X	4.92	67.29	16.55	0.00	150.0	± 9.6 %
		Y	4.76	67.35	16.45		150.0	
		Z	4.88	67.10	16.36		150.0	
10195-CAB	IEEE 802.11n (HT Greenfield, 65 Mbps, 64-QAM)	X	4.96	67.30	16.55	0.00	150.0	± 9.6 %
		Y	4.80	67.37	16.46		150.0	
		Z	4.92	67.11	16.37		150.0	
10196-CAB	IEEE 802.11n (HT Mixed, 6.5 Mbps, BPSK)	X	4.74	67.02	16.47	0.00	150.0	± 9.6 %
		Y	4.59	67.09	16.35		150.0	
		Z	4.70	66.83	16.28		150.0	
10197-CAB	IEEE 802.11n (HT Mixed, 39 Mbps, 16-QAM)	X	4.93	67.31	16.56	0.00	150.0	± 9.6 %
		Y	4.77	67.37	16.46		150.0	
		Z	4.90	67.12	16.37		150.0	
10198-CAB	IEEE 802.11n (HT Mixed, 65 Mbps, 64-QAM)	X	4.96	67.32	16.56	0.00	150.0	± 9.6 %
		Y	4.80	67.39	16.47		150.0	
		Z	4.93	67.13	16.38		150.0	
10219-CAB	IEEE 802.11n (HT Mixed, 7.2 Mbps, BPSK)	X	4.69	67.04	16.44	0.00	150.0	± 9.6 %
		Y	4.54	67.11	16.31		150.0	
		Z	4.65	66.84	16.24		150.0	
10220-CAB	IEEE 802.11n (HT Mixed, 43.3 Mbps, 16-QAM)	X	4.93	67.31	16.56	0.00	150.0	± 9.6 %
		Y	4.77	67.34	16.45		150.0	
		Z	4.90	67.11	16.37		150.0	
10221-CAB	IEEE 802.11n (HT Mixed, 72.2 Mbps, 64-QAM)	X	4.97	67.25	16.55	0.00	150.0	± 9.6 %
		Y	4.81	67.32	16.45		150.0	
		Z	4.93	67.06	16.37		150.0	
10222-CAB	IEEE 802.11n (HT Mixed, 15 Mbps, BPSK)	X	5.28	67.55	16.68	0.00	150.0	± 9.6 %
		Y	5.13	67.49	16.55		150.0	
		Z	5.25	67.37	16.50		150.0	

10223-CAB	IEEE 802.11n (HT Mixed, 90 Mbps, 16-QAM)	X	5.67	67.92	16.89	0.00	150.0	± 9.6 %
		Y	5.43	67.67	16.66		150.0	
		Z	5.63	67.75	16.72		150.0	
10224-CAB	IEEE 802.11n (HT Mixed, 150 Mbps, 64-QAM)	X	5.33	67.64	16.65	0.00	150.0	± 9.6 %
		Y	5.17	67.60	16.53		150.0	
		Z	5.29	67.46	16.47		150.0	
10225-CAB	UMTS-FDD (HSPA+)	X	2.99	66.62	15.92	0.00	150.0	± 9.6 %
		Y	2.87	66.77	15.69		150.0	
		Z	2.94	66.17	15.53		150.0	
10226-CAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 16-QAM)	X	56.85	117.30	34.28	6.02	65.0	± 9.6 %
		Y	100.00	126.89	35.76		65.0	
		Z	34.18	107.38	31.54		65.0	
10227-CAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 64-QAM)	X	39.67	109.19	31.57	6.02	65.0	± 9.6 %
		Y	88.35	122.59	34.09		65.0	
		Z	26.95	101.76	29.43		65.0	
10228-CAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK)	X	48.41	120.61	37.08	6.02	65.0	± 9.6 %
		Y	45.84	120.16	36.35		65.0	
		Z	31.93	111.39	34.43		65.0	
10229-CAB	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 16-QAM)	X	52.77	115.76	33.79	6.02	65.0	± 9.6 %
		Y	100.00	126.65	35.62		65.0	
		Z	32.55	106.35	31.18		65.0	
10230-CAB	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 64-QAM)	X	37.48	108.07	31.19	6.02	65.0	± 9.6 %
		Y	75.87	119.84	33.34		65.0	
		Z	25.90	100.97	29.14		65.0	
10231-CAB	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, QPSK)	X	45.44	119.21	36.63	6.02	65.0	± 9.6 %
		Y	41.18	117.91	35.67		65.0	
		Z	30.52	110.38	34.07		65.0	
10232-CAC	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 16-QAM)	X	52.80	115.78	33.80	6.02	65.0	± 9.6 %
		Y	100.00	126.66	35.62		65.0	
		Z	32.54	106.35	31.18		65.0	
10233-CAC	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 64-QAM)	X	37.54	108.11	31.20	6.02	65.0	± 9.6 %
		Y	75.89	119.86	33.34		65.0	
		Z	25.92	100.99	29.14		65.0	
10234-CAC	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, QPSK)	X	42.47	117.63	36.10	6.02	65.0	± 9.6 %
		Y	37.31	115.74	34.97		65.0	
		Z	29.08	109.25	33.65		65.0	
10235-CAC	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 16-QAM)	X	53.08	115.89	33.83	6.02	65.0	± 9.6 %
		Y	100.00	126.67	35.62		65.0	
		Z	32.64	106.42	31.20		65.0	
10236-CAC	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 64-QAM)	X	37.96	108.28	31.24	6.02	65.0	± 9.6 %
		Y	77.12	120.09	33.39		65.0	
		Z	26.14	101.12	29.18		65.0	
10237-CAC	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, QPSK)	X	46.10	119.52	36.72	6.02	65.0	± 9.6 %
		Y	41.64	118.15	35.73		65.0	
		Z	30.82	110.60	34.14		65.0	
10238-CAC	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 16-QAM)	X	52.89	115.82	33.81	6.02	65.0	± 9.6 %
		Y	100.00	126.66	35.62		65.0	
		Z	32.55	106.37	31.18		65.0	

10239-CAC	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 64-QAM)	X	37.59	108.15	31.21	6.02	65.0	± 9.6 %
		Y	75.87	119.87	33.34		65.0	
		Z	25.93	101.02	29.15		65.0	
10240-CAC	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, QPSK)	X	45.90	119.44	36.69	6.02	65.0	± 9.6 %
		Y	41.47	118.08	35.71		65.0	
		Z	30.71	110.54	34.12		65.0	
10241-CAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 16-QAM)	X	13.10	88.25	28.31	6.98	65.0	± 9.6 %
		Y	12.64	88.66	27.87		65.0	
		Z	13.02	87.59	27.99		65.0	
10242-CAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 64-QAM)	X	11.52	85.34	27.10	6.98	65.0	± 9.6 %
		Y	10.36	84.46	26.20		65.0	
		Z	12.32	86.33	27.43		65.0	
10243-CAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, QPSK)	X	9.39	82.67	26.96	6.98	65.0	± 9.6 %
		Y	7.89	80.01	25.32		65.0	
		Z	10.15	83.98	27.43		65.0	
10244-CAB	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 16-QAM)	X	10.37	82.39	22.15	3.98	65.0	± 9.6 %
		Y	9.21	80.31	20.18		65.0	
		Z	9.60	80.54	21.38		65.0	
10245-CAB	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 64-QAM)	X	10.20	81.86	21.90	3.98	65.0	± 9.6 %
		Y	8.91	79.56	19.85		65.0	
		Z	9.50	80.13	21.18		65.0	
10246-CAB	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, QPSK)	X	10.29	85.01	23.02	3.98	65.0	± 9.6 %
		Y	9.28	83.44	21.56		65.0	
		Z	8.83	81.79	21.72		65.0	
10247-CAC	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 16-QAM)	X	8.11	78.82	21.25	3.98	65.0	± 9.6 %
		Y	7.33	77.58	19.99		65.0	
		Z	7.71	77.37	20.55		65.0	
10248-CAC	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 64-QAM)	X	8.09	78.31	21.04	3.98	65.0	± 9.6 %
		Y	7.21	76.86	19.68		65.0	
		Z	7.75	77.03	20.41		65.0	
10249-CAC	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, QPSK)	X	11.01	86.29	24.03	3.98	65.0	± 9.6 %
		Y	10.81	86.39	23.39		65.0	
		Z	9.54	83.16	22.78		65.0	
10250-CAC	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 16-QAM)	X	8.83	80.24	22.94	3.98	65.0	± 9.6 %
		Y	8.38	80.07	22.43		65.0	
		Z	8.48	78.94	22.29		65.0	
10251-CAC	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 64-QAM)	X	8.37	78.15	21.84	3.98	65.0	± 9.6 %
		Y	7.73	77.46	21.06		65.0	
		Z	8.17	77.24	21.36		65.0	
10252-CAC	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, QPSK)	X	10.43	84.63	24.00	3.98	65.0	± 9.6 %
		Y	10.38	85.34	23.87		65.0	
		Z	9.48	82.30	23.02		65.0	
10253-CAC	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 16-QAM)	X	8.24	77.12	21.67	3.98	65.0	± 9.6 %
		Y	7.62	76.41	20.97		65.0	
		Z	8.12	76.42	21.28		65.0	
10254-CAC	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 64-QAM)	X	8.59	77.78	22.22	3.98	65.0	± 9.6 %
		Y	8.06	77.36	21.67		65.0	
		Z	8.46	77.05	21.81		65.0	

10255-CAC	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, QPSK)	X	9.19	80.79	22.74	3.98	65.0	± 9.6 %
		Y	8.89	81.04	22.54		65.0	
		Z	8.75	79.38	22.09		65.0	
10256-CAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 16-QAM)	X	9.46	80.54	20.72	3.98	65.0	± 9.6 %
		Y	7.26	76.12	17.61		65.0	
		Z	8.73	78.73	19.97		65.0	
10257-CAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 64-QAM)	X	9.23	79.78	20.35	3.98	65.0	± 9.6 %
		Y	6.96	75.17	17.14		65.0	
		Z	8.59	78.13	19.66		65.0	
10258-CAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, QPSK)	X	9.10	82.63	21.62	3.98	65.0	± 9.6 %
		Y	7.16	78.79	19.11		65.0	
		Z	7.85	79.60	20.38		65.0	
10259-CAB	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 16-QAM)	X	8.39	79.27	21.82	3.98	65.0	± 9.6 %
		Y	7.73	78.47	20.85		65.0	
		Z	8.02	77.92	21.16		65.0	
10260-CAB	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 64-QAM)	X	8.39	78.99	21.73	3.98	65.0	± 9.6 %
		Y	7.70	78.11	20.72		65.0	
		Z	8.05	77.71	21.09		65.0	
10261-CAB	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, QPSK)	X	10.34	84.95	23.83	3.98	65.0	± 9.6 %
		Y	10.04	85.03	23.28		65.0	
		Z	9.23	82.32	22.74		65.0	
10262-CAC	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 16-QAM)	X	8.82	80.21	22.91	3.98	65.0	± 9.6 %
		Y	8.36	80.01	22.38		65.0	
		Z	8.47	78.91	22.26		65.0	
10263-CAC	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 64-QAM)	X	8.36	78.15	21.85	3.98	65.0	± 9.6 %
		Y	7.72	77.44	21.06		65.0	
		Z	8.17	77.23	21.37		65.0	
10264-CAC	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, QPSK)	X	10.37	84.50	23.93	3.98	65.0	± 9.6 %
		Y	10.27	85.13	23.77		65.0	
		Z	9.43	82.19	22.96		65.0	
10265-CAC	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 16-QAM)	X	8.48	77.76	21.88	3.98	65.0	± 9.6 %
		Y	7.81	76.97	21.20		65.0	
		Z	8.32	76.97	21.47		65.0	
10266-CAC	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 64-QAM)	X	8.81	78.38	22.45	3.98	65.0	± 9.6 %
		Y	8.27	77.98	21.97		65.0	
		Z	8.64	77.56	22.02		65.0	
10267-CAC	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, QPSK)	X	9.50	81.14	22.63	3.98	65.0	± 9.6 %
		Y	9.25	81.50	22.50		65.0	
		Z	8.99	79.63	21.95		65.0	
10268-CAC	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 16-QAM)	X	8.86	77.06	21.92	3.98	65.0	± 9.6 %
		Y	8.31	76.56	21.43		65.0	
		Z	8.78	76.48	21.59		65.0	
10269-CAC	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 64-QAM)	X	8.77	76.63	21.82	3.98	65.0	± 9.6 %
		Y	8.23	76.12	21.32		65.0	
		Z	8.71	76.12	21.52		65.0	
10270-CAC	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, QPSK)	X	8.91	78.30	21.65	3.98	65.0	± 9.6 %
		Y	8.57	78.39	21.47		65.0	
		Z	8.67	77.36	21.19		65.0	

10274-CAB	UMTS-FDD (HSUPA, Subtest 5, 3GPP Rel8.10)	X	2.73	66.93	15.81	0.00	150.0	± 9.6 %
		Y	2.66	67.19	15.64		150.0	
		Z	2.67	66.38	15.35		150.0	
10275-CAB	UMTS-FDD (HSUPA, Subtest 5, 3GPP Rel8.4)	X	1.85	69.82	16.81	0.00	150.0	± 9.6 %
		Y	1.73	69.48	16.43		150.0	
		Z	1.70	68.07	15.69		150.0	
10277-CAA	PHS (QPSK)	X	5.86	70.53	14.71	9.03	50.0	± 9.6 %
		Y	4.40	66.90	11.75		50.0	
		Z	6.19	70.94	15.24		50.0	
10278-CAA	PHS (QPSK, BW 884MHz, Rolloff 0.5)	X	10.27	82.27	21.99	9.03	50.0	± 9.6 %
		Y	7.88	77.57	18.90		50.0	
		Z	9.35	79.97	21.25		50.0	
10279-CAA	PHS (QPSK, BW 884MHz, Rolloff 0.38)	X	10.47	82.49	22.08	9.03	50.0	± 9.6 %
		Y	8.00	77.73	18.99		50.0	
		Z	9.52	80.18	21.35		50.0	
10290-AAB	CDMA2000, RC1, SO55, Full Rate	X	2.00	72.56	16.71	0.00	150.0	± 9.6 %
		Y	1.81	72.10	15.72		150.0	
		Z	1.64	69.27	14.92		150.0	
10291-AAB	CDMA2000, RC3, SO55, Full Rate	X	1.15	69.82	15.49	0.00	150.0	± 9.6 %
		Y	0.99	68.71	14.17		150.0	
		Z	0.95	66.46	13.46		150.0	
10292-AAB	CDMA2000, RC3, SO32, Full Rate	X	1.59	75.79	18.53	0.00	150.0	± 9.6 %
		Y	1.63	76.74	18.06		150.0	
		Z	1.13	69.78	15.46		150.0	
10293-AAB	CDMA2000, RC3, SO3, Full Rate	X	2.45	82.81	21.72	0.00	150.0	± 9.6 %
		Y	4.29	91.48	23.73		150.0	
		Z	1.46	73.68	17.64		150.0	
10295-AAB	CDMA2000, RC1, SO3, 1/8th Rate 25 fr.	X	11.26	85.50	25.18	9.03	50.0	± 9.6 %
		Y	11.00	85.02	23.98		50.0	
		Z	10.64	83.52	24.39		50.0	
10297-AAB	LTE-FDD (SC-FDMA, 50% RB, 20 MHz, QPSK)	X	3.10	71.18	17.38	0.00	150.0	± 9.6 %
		Y	2.91	70.92	17.21		150.0	
		Z	2.91	69.91	16.61		150.0	
10298-AAC	LTE-FDD (SC-FDMA, 50% RB, 3 MHz, QPSK)	X	2.01	70.53	16.33	0.00	150.0	± 9.6 %
		Y	1.80	70.02	15.42		150.0	
		Z	1.78	68.34	15.01		150.0	
10299-AAC	LTE-FDD (SC-FDMA, 50% RB, 3 MHz, 16-QAM)	X	4.29	76.33	18.36	0.00	150.0	± 9.6 %
		Y	3.82	74.61	16.37		150.0	
		Z	3.76	74.04	17.28		150.0	
10300-AAC	LTE-FDD (SC-FDMA, 50% RB, 3 MHz, 64-QAM)	X	3.03	70.18	15.03	0.00	150.0	± 9.6 %
		Y	2.35	67.31	12.44		150.0	
		Z	2.84	69.06	14.39		150.0	
10301-AAA	IEEE 802.16e WiMAX (29:18, 5ms, 10MHz, QPSK, PUSC)	X	5.75	68.04	18.85	4.17	80.0	± 9.6 %
		Y	5.34	67.59	18.38		80.0	
		Z	6.02	68.99	19.26		80.0	
10302-AAA	IEEE 802.16e WiMAX (29:18, 5ms, 10MHz, QPSK, PUSC, 3 CTRL symbols)	X	6.35	69.28	19.97	4.96	80.0	± 9.6 %
		Y	5.77	67.89	18.92		80.0	
		Z	6.57	69.95	20.23		80.0	

10303-AAA	IEEE 802.16e WiMAX (31:15, 5ms, 10MHz, 64QAM, PUSC)	X	6.22	69.45	20.09	4.96	80.0	± 9.6 %
		Y	5.58	67.78	18.88		80.0	
		Z	6.47	70.23	20.40		80.0	
10304-AAA	IEEE 802.16e WiMAX (29:18, 5ms, 10MHz, 64QAM, PUSC)	X	5.82	68.59	19.17	4.17	80.0	± 9.6 %
		Y	5.30	67.36	18.23		80.0	
		Z	6.00	69.14	19.36		80.0	
10305-AAA	IEEE 802.16e WiMAX (31:15, 10ms, 10MHz, 64QAM, PUSC, 15 symbols)	X	7.58	77.08	24.20	6.02	50.0	± 9.6 %
		Y	6.71	75.99	23.36		50.0	
		Z	8.94	80.39	25.44		50.0	
10306-AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, 64QAM, PUSC, 18 symbols)	X	6.74	72.69	22.39	6.02	50.0	± 9.6 %
		Y	6.02	71.61	21.57		50.0	
		Z	7.38	74.60	23.18		50.0	
10307-AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, QPSK, PUSC, 18 symbols)	X	6.88	73.57	22.61	6.02	50.0	± 9.6 %
		Y	6.12	72.48	21.82		50.0	
		Z	7.63	75.68	23.46		50.0	
10308-AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, 16QAM, PUSC)	X	6.95	74.06	22.85	6.02	50.0	± 9.6 %
		Y	6.19	73.01	22.10		50.0	
		Z	7.77	76.32	23.75		50.0	
10309-AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, 16QAM, AMC 2x3, 18 symbols)	X	6.88	73.08	22.59	6.02	50.0	± 9.6 %
		Y	5.75	69.67	20.38		50.0	
		Z	7.54	75.02	23.39		50.0	
10310-AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, QPSK, AMC 2x3, 18 symbols)	X	6.76	72.98	22.43	6.02	50.0	± 9.6 %
		Y	6.05	71.97	21.66		50.0	
		Z	7.45	74.97	23.24		50.0	
10311-AAB	LTE-FDD (SC-FDMA, 100% RB, 15 MHz, QPSK)	X	3.46	70.38	16.96	0.00	150.0	± 9.6 %
		Y	3.29	70.15	16.82		150.0	
		Z	3.26	69.20	16.26		150.0	
10313-AAA	IDEN 1:3	X	8.57	80.77	19.81	6.99	70.0	± 9.6 %
		Y	7.42	78.97	18.59		70.0	
		Z	7.51	78.37	19.04		70.0	
10314-AAA	IDEN 1:6	X	11.07	87.09	24.45	10.00	30.0	± 9.6 %
		Y	12.16	89.30	24.68		30.0	
		Z	8.76	82.33	22.85		30.0	
10315-AAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps, 96pc duty cycle)	X	1.21	65.47	16.38	0.17	150.0	± 9.6 %
		Y	1.17	65.32	16.10		150.0	
		Z	1.18	64.56	15.52		150.0	
10316-AAB	IEEE 802.11g WiFi 2.4 GHz (ERP-OFDM, 6 Mbps, 96pc duty cycle)	X	4.82	67.11	16.64	0.17	150.0	± 9.6 %
		Y	4.66	67.15	16.49		150.0	
		Z	4.80	66.95	16.46		150.0	
10317-AAB	IEEE 802.11a WiFi 5 GHz (OFDM, 6 Mbps, 96pc duty cycle)	X	4.82	67.11	16.64	0.17	150.0	± 9.6 %
		Y	4.66	67.15	16.49		150.0	
		Z	4.80	66.95	16.46		150.0	
10400-AAC	IEEE 802.11ac WiFi (20MHz, 64-QAM, 99pc duty cycle)	X	4.93	67.37	16.55	0.00	150.0	± 9.6 %
		Y	4.75	67.39	16.43		150.0	
		Z	4.90	67.18	16.37		150.0	
10401-AAC	IEEE 802.11ac WiFi (40MHz, 64-QAM, 99pc duty cycle)	X	5.56	67.43	16.63	0.00	150.0	± 9.6 %
		Y	5.44	67.54	16.57		150.0	
		Z	5.53	67.31	16.49		150.0	

10402-AAC	IEEE 802.11ac WiFi (80MHz, 64-QAM, 99pc duty cycle)	X	5.86	67.95	16.72	0.00	150.0	± 9.6 %
		Y	5.70	67.88	16.59		150.0	
		Z	5.83	67.79	16.56		150.0	
10403-AAB	CDMA2000 (1xEV-DO, Rev. 0)	X	2.00	72.56	16.71	0.00	115.0	± 9.6 %
		Y	1.81	72.10	15.72		115.0	
		Z	1.64	69.27	14.92		115.0	
10404-AAB	CDMA2000 (1xEV-DO, Rev. A)	X	2.00	72.56	16.71	0.00	115.0	± 9.6 %
		Y	1.81	72.10	15.72		115.0	
		Z	1.64	69.27	14.92		115.0	
10406-AAB	CDMA2000, RC3, SO32, SCH0, Full Rate	X	100.00	125.12	32.45	0.00	100.0	± 9.6 %
		Y	100.00	117.90	28.49		100.0	
		Z	100.00	124.11	32.05		100.0	
10410-AAB	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	100.00	121.42	31.29	3.23	80.0	± 9.6 %
		Y	100.00	118.14	29.02		80.0	
		Z	100.00	121.09	31.26		80.0	
10415-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps, 99pc duty cycle)	X	1.05	63.84	15.45	0.00	150.0	± 9.6 %
		Y	1.03	63.83	15.26		150.0	
		Z	1.03	63.06	14.64		150.0	
10416-AAA	IEEE 802.11g WiFi 2.4 GHz (ERP-OFDM, 6 Mbps, 99pc duty cycle)	X	4.72	66.95	16.47	0.00	150.0	± 9.6 %
		Y	4.58	67.06	16.39		150.0	
		Z	4.69	66.77	16.29		150.0	
10417-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps, 99pc duty cycle)	X	4.72	66.95	16.47	0.00	150.0	± 9.6 %
		Y	4.58	67.06	16.39		150.0	
		Z	4.69	66.77	16.29		150.0	
10418-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps, 99pc duty cycle, Long preamble)	X	4.71	67.09	16.48	0.00	150.0	± 9.6 %
		Y	4.57	67.23	16.41		150.0	
		Z	4.67	66.90	16.28		150.0	
10419-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps, 99pc duty cycle, Short preamble)	X	4.73	67.05	16.49	0.00	150.0	± 9.6 %
		Y	4.59	67.17	16.41		150.0	
		Z	4.70	66.86	16.30		150.0	
10422-AAA	IEEE 802.11n (HT Greenfield, 7.2 Mbps, BPSK)	X	4.86	67.05	16.50	0.00	150.0	± 9.6 %
		Y	4.71	67.16	16.42		150.0	
		Z	4.82	66.88	16.32		150.0	
10423-AAA	IEEE 802.11n (HT Greenfield, 43.3 Mbps, 16-QAM)	X	5.07	67.45	16.64	0.00	150.0	± 9.6 %
		Y	4.88	67.49	16.53		150.0	
		Z	5.03	67.26	16.46		150.0	
10424-AAA	IEEE 802.11n (HT Greenfield, 72.2 Mbps, 64-QAM)	X	4.97	67.38	16.61	0.00	150.0	± 9.6 %
		Y	4.80	67.44	16.51		150.0	
		Z	4.94	67.19	16.42		150.0	
10425-AAA	IEEE 802.11n (HT Greenfield, 15 Mbps, BPSK)	X	5.55	67.72	16.76	0.00	150.0	± 9.6 %
		Y	5.40	67.74	16.67		150.0	
		Z	5.52	67.56	16.60		150.0	
10426-AAA	IEEE 802.11n (HT Greenfield, 90 Mbps, 16-QAM)	X	5.56	67.76	16.77	0.00	150.0	± 9.6 %
		Y	5.41	67.76	16.67		150.0	
		Z	5.53	67.59	16.61		150.0	

10427-AAA	IEEE 802.11n (HT Greenfield, 150 Mbps, 64-QAM)	X	5.58	67.76	16.77	0.00	150.0	± 9.6 %
		Y	5.42	67.74	16.66		150.0	
		Z	5.55	67.59	16.61		150.0	
10430-AAA	LTE-FDD (OFDMA, 5 MHz, E-TM 3.1)	X	4.39	70.34	18.26	0.00	150.0	± 9.6 %
		Y	4.45	71.92	18.77		150.0	
		Z	4.28	69.73	17.80		150.0	
10431-AAA	LTE-FDD (OFDMA, 10 MHz, E-TM 3.1)	X	4.47	67.55	16.57	0.00	150.0	± 9.6 %
		Y	4.28	67.68	16.44		150.0	
		Z	4.42	67.30	16.33		150.0	
10432-AAA	LTE-FDD (OFDMA, 15 MHz, E-TM 3.1)	X	4.75	67.43	16.59	0.00	150.0	± 9.6 %
		Y	4.57	67.51	16.47		150.0	
		Z	4.71	67.22	16.38		150.0	
10433-AAA	LTE-FDD (OFDMA, 20 MHz, E-TM 3.1)	X	4.99	67.43	16.63	0.00	150.0	± 9.6 %
		Y	4.82	67.48	16.53		150.0	
		Z	4.95	67.24	16.45		150.0	
10434-AAA	W-CDMA (BS Test Model 1, 64 DPCH)	X	4.48	71.07	18.26	0.00	150.0	± 9.6 %
		Y	4.62	73.01	18.85		150.0	
		Z	4.34	70.35	17.75		150.0	
10435-AAB	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	100.00	121.26	31.21	3.23	80.0	± 9.6 %
		Y	100.00	117.94	28.93		80.0	
		Z	100.00	120.94	31.19		80.0	
10447-AAA	LTE-FDD (OFDMA, 5 MHz, E-TM 3.1, Clipping 44%)	X	3.79	67.68	16.16	0.00	150.0	± 9.6 %
		Y	3.59	67.83	15.87		150.0	
		Z	3.72	67.28	15.81		150.0	
10448-AAA	LTE-FDD (OFDMA, 10 MHz, E-TM 3.1, Clipping 44%)	X	4.28	67.32	16.43	0.00	150.0	± 9.6 %
		Y	4.12	67.46	16.30		150.0	
		Z	4.23	67.06	16.18		150.0	
10449-AAA	LTE-FDD (OFDMA, 15 MHz, E-TM 3.1, Clipping 44%)	X	4.53	67.25	16.49	0.00	150.0	± 9.6 %
		Y	4.38	67.35	16.38		150.0	
		Z	4.49	67.03	16.27		150.0	
10450-AAA	LTE-FDD (OFDMA, 20 MHz, E-TM 3.1, Clipping 44%)	X	4.71	67.18	16.49	0.00	150.0	± 9.6 %
		Y	4.57	67.25	16.39		150.0	
		Z	4.68	66.98	16.29		150.0	
10451-AAA	W-CDMA (BS Test Model 1, 64 DPCH, Clipping 44%)	X	3.73	68.01	15.94	0.00	150.0	± 9.6 %
		Y	3.50	68.08	15.53		150.0	
		Z	3.65	67.53	15.55		150.0	
10456-AAA	IEEE 802.11ac WiFi (160MHz, 64-QAM, 99pc duty cycle)	X	6.41	68.33	16.92	0.00	150.0	± 9.6 %
		Y	6.26	68.26	16.79		150.0	
		Z	6.38	68.19	16.79		150.0	
10457-AAA	UMTS-FDD (DC-HSDPA)	X	3.89	65.58	16.22	0.00	150.0	± 9.6 %
		Y	3.82	65.69	16.10		150.0	
		Z	3.87	65.41	16.01		150.0	
10458-AAA	CDMA2000 (1xEV-DO, Rev. B, 2 carriers)	X	3.54	67.26	15.47	0.00	150.0	± 9.6 %
		Y	3.31	67.35	14.92		150.0	
		Z	3.47	66.87	15.11		150.0	
10459-AAA	CDMA2000 (1xEV-DO, Rev. B, 3 carriers)	X	4.64	65.34	16.09	0.00	150.0	± 9.6 %
		Y	4.30	65.17	15.60		150.0	
		Z	4.52	64.85	15.72		150.0	

10460-AAA	UMTS-FDD (WCDMA, AMR)	X	1.11	71.80	18.35	0.00	150.0	± 9.6 %
		Y	1.02	70.94	17.72		150.0	
		Z	0.94	68.21	16.13		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	125.25	33.13	3.29	80.0	± 9.6 %
		Y	100.00	123.29	31.43		80.0	
		Z	100.00	123.80	32.59		80.0	
10462-AAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	100.00	111.09	26.31	3.23	80.0	± 9.6 %
		Y	100.00	103.84	22.21		80.0	
		Z	100.00	110.71	26.28		80.0	
10463-AAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	100.00	108.22	24.94	3.23	80.0	± 9.6 %
		Y	4.72	73.15	13.51		80.0	
		Z	72.14	104.46	24.20		80.0	
10464-AAA	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	100.00	123.51	32.16	3.23	80.0	± 9.6 %
		Y	100.00	120.82	30.14		80.0	
		Z	100.00	122.14	31.67		80.0	
10465-AAA	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	100.00	110.62	26.08	3.23	80.0	± 9.6 %
		Y	27.97	91.21	19.17		80.0	
		Z	100.00	110.30	26.07		80.0	
10466-AAA	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	100.00	107.77	24.72	3.23	80.0	± 9.6 %
		Y	3.48	70.24	12.45		80.0	
		Z	39.27	97.36	22.41		80.0	
10467-AAB	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	100.00	123.71	32.25	3.23	80.0	± 9.6 %
		Y	100.00	121.09	30.25		80.0	
		Z	100.00	122.32	31.75		80.0	
10468-AAB	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	100.00	110.77	26.14	3.23	80.0	± 9.6 %
		Y	40.47	94.85	20.08		80.0	
		Z	100.00	110.43	26.13		80.0	
10469-AAB	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	100.00	107.78	24.72	3.23	80.0	± 9.6 %
		Y	3.50	70.33	12.47		80.0	
		Z	40.62	97.74	22.51		80.0	
10470-AAB	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	100.00	123.74	32.26	3.23	80.0	± 9.6 %
		Y	100.00	121.11	30.26		80.0	
		Z	100.00	122.35	31.76		80.0	
10471-AAB	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	100.00	110.72	26.12	3.23	80.0	± 9.6 %
		Y	38.79	94.39	19.96		80.0	
		Z	100.00	110.39	26.11		80.0	
10472-AAB	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	100.00	107.74	24.69	3.23	80.0	± 9.6 %
		Y	3.46	70.20	12.41		80.0	
		Z	40.93	97.80	22.51		80.0	
10473-AAB	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	100.00	123.71	32.25	3.23	80.0	± 9.6 %
		Y	100.00	121.07	30.24		80.0	
		Z	100.00	122.32	31.75		80.0	
10474-AAB	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	100.00	110.73	26.12	3.23	80.0	± 9.6 %
		Y	37.59	94.10	19.89		80.0	
		Z	100.00	110.40	26.11		80.0	
10475-AAB	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	100.00	107.75	24.70	3.23	80.0	± 9.6 %
		Y	3.43	70.14	12.40		80.0	
		Z	40.21	97.61	22.46		80.0	

10477-AAB	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	100.00	110.58	26.05	3.23	80.0	± 9.6 %
		Y	28.26	91.26	19.16		80.0	
		Z	100.00	110.26	26.05		80.0	
10478-AAB	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	100.00	107.71	24.68	3.23	80.0	± 9.6 %
		Y	3.38	69.99	12.33		80.0	
		Z	39.53	97.39	22.40		80.0	
10479-AAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	16.61	96.96	27.34	3.23	80.0	± 9.6 %
		Y	32.48	106.45	28.76		80.0	
		Z	11.40	90.02	25.04		80.0	
10480-AAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	20.13	94.40	24.94	3.23	80.0	± 9.6 %
		Y	34.21	99.63	24.79		80.0	
		Z	12.99	87.40	22.71		80.0	
10481-AAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	17.26	91.33	23.70	3.23	80.0	± 9.6 %
		Y	20.52	91.89	22.28		80.0	
		Z	11.58	85.08	21.67		80.0	
10482-AAA	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	7.19	82.36	21.43	2.23	80.0	± 9.6 %
		Y	6.22	80.40	19.88		80.0	
		Z	5.41	77.39	19.43		80.0	
10483-AAA	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	10.36	84.69	22.14	2.23	80.0	± 9.6 %
		Y	9.30	82.35	20.02		80.0	
		Z	8.11	80.45	20.55		80.0	
10484-AAA	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	9.50	83.16	21.63	2.23	80.0	± 9.6 %
		Y	8.10	80.30	19.34		80.0	
		Z	7.64	79.37	20.17		80.0	
10485-AAB	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	7.05	82.24	22.03	2.23	80.0	± 9.6 %
		Y	6.34	81.22	21.08		80.0	
		Z	5.64	78.03	20.28		80.0	
10486-AAB	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	5.27	74.77	19.00	2.23	80.0	± 9.6 %
		Y	4.82	74.06	18.02		80.0	
		Z	4.76	72.67	17.96		80.0	
10487-AAB	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	5.20	74.21	18.78	2.23	80.0	± 9.6 %
		Y	4.72	73.41	17.75		80.0	
		Z	4.74	72.26	17.79		80.0	
10488-AAB	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	6.49	79.45	21.44	2.23	80.0	± 9.6 %
		Y	5.74	78.36	20.74		80.0	
		Z	5.67	76.65	20.18		80.0	
10489-AAB	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	5.12	73.18	19.22	2.23	80.0	± 9.6 %
		Y	4.72	72.73	18.67		80.0	
		Z	4.87	71.89	18.50		80.0	
10490-AAB	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	5.15	72.75	19.07	2.23	80.0	± 9.6 %
		Y	4.76	72.36	18.54		80.0	
		Z	4.93	71.59	18.41		80.0	
10491-AAB	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	5.99	76.19	20.30	2.23	80.0	± 9.6 %
		Y	5.39	75.34	19.75		80.0	
		Z	5.53	74.37	19.41		80.0	
10492-AAB	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	5.26	71.76	18.85	2.23	80.0	± 9.6 %
		Y	4.86	71.30	18.38		80.0	
		Z	5.11	70.90	18.33		80.0	

10493-AAB	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	5.30	71.51	18.76	2.23	80.0	± 9.6 %
		Y	4.91	71.07	18.30		80.0	
		Z	5.17	70.71	18.27		80.0	
10494-AAB	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	6.84	78.43	20.95	2.23	80.0	± 9.6 %
		Y	6.08	77.35	20.35		80.0	
		Z	6.10	76.07	19.88		80.0	
10495-AAB	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	5.38	72.41	19.10	2.23	80.0	± 9.6 %
		Y	4.95	71.82	18.61		80.0	
		Z	5.20	71.44	18.53		80.0	
10496-AAB	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	5.39	71.89	18.93	2.23	80.0	± 9.6 %
		Y	4.98	71.37	18.47		80.0	
		Z	5.24	71.04	18.41		80.0	
10497-AAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	5.97	79.48	19.78	2.23	80.0	± 9.6 %
		Y	4.38	75.06	17.02		80.0	
		Z	4.42	74.52	17.73		80.0	
10498-AAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	4.17	71.56	15.92	2.23	80.0	± 9.6 %
		Y	2.60	65.94	12.29		80.0	
		Z	3.55	68.95	14.65		80.0	
10499-AAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	4.06	70.87	15.52	2.23	80.0	± 9.6 %
		Y	2.47	65.10	11.77		80.0	
		Z	3.49	68.43	14.31		80.0	
10500-AAA	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	6.49	80.29	21.53	2.23	80.0	± 9.6 %
		Y	5.83	79.38	20.74		80.0	
		Z	5.49	76.96	20.08		80.0	
10501-AAA	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	5.17	73.94	19.00	2.23	80.0	± 9.6 %
		Y	4.77	73.47	18.24		80.0	
		Z	4.79	72.25	18.12		80.0	
10502-AAA	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	5.19	73.61	18.84	2.23	80.0	± 9.6 %
		Y	4.79	73.16	18.07		80.0	
		Z	4.83	72.02	17.99		80.0	
10503-AAB	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	6.41	79.23	21.35	2.23	80.0	± 9.6 %
		Y	5.64	78.08	20.63		80.0	
		Z	5.60	76.47	20.11		80.0	
10504-AAB	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	5.09	73.10	19.17	2.23	80.0	± 9.6 %
		Y	4.69	72.61	18.60		80.0	
		Z	4.85	71.82	18.46		80.0	
10505-AAB	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	5.13	72.66	19.02	2.23	80.0	± 9.6 %
		Y	4.73	72.25	18.47		80.0	
		Z	4.91	71.52	18.36		80.0	
10506-AAB	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	6.78	78.28	20.88	2.23	80.0	± 9.6 %
		Y	6.01	77.16	20.27		80.0	
		Z	6.06	75.95	19.82		80.0	
10507-AAB	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	5.36	72.35	19.07	2.23	80.0	± 9.6 %
		Y	4.93	71.74	18.57		80.0	
		Z	5.18	71.38	18.50		80.0	

10508-AAB	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	5.37	71.83	18.89	2.23	80.0	± 9.6 %
		Y	4.96	71.29	18.42		80.0	
		Z	5.23	70.98	18.38		80.0	
10509-AAB	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	6.48	75.49	19.83	2.23	80.0	± 9.6 %
		Y	5.91	74.73	19.37		80.0	
		Z	6.04	73.93	19.06		80.0	
10510-AAB	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	5.74	71.59	18.80	2.23	80.0	± 9.6 %
		Y	5.32	71.00	18.37		80.0	
		Z	5.62	70.87	18.36		80.0	
10511-AAB	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	5.74	71.18	18.68	2.23	80.0	± 9.6 %
		Y	5.33	70.64	18.26		80.0	
		Z	5.63	70.53	18.27		80.0	
10512-AAB	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	7.25	77.99	20.61	2.23	80.0	± 9.6 %
		Y	6.50	76.91	20.04		80.0	
		Z	6.53	75.84	19.64		80.0	
10513-AAB	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	5.72	72.19	19.03	2.23	80.0	± 9.6 %
		Y	5.25	71.45	18.54		80.0	
		Z	5.56	71.34	18.53		80.0	
10514-AAB	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	5.63	71.53	18.83	2.23	80.0	± 9.6 %
		Y	5.21	70.89	18.37		80.0	
		Z	5.51	70.80	18.38		80.0	
10515-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 2 Mbps, 99pc duty cycle)	X	1.02	64.11	15.57	0.00	150.0	± 9.6 %
		Y	1.00	64.07	15.36		150.0	
		Z	0.99	63.25	14.70		150.0	
10516-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 5.5 Mbps, 99pc duty cycle)	X	0.98	79.68	22.01	0.00	150.0	± 9.6 %
		Y	0.77	75.78	20.20		150.0	
		Z	0.64	70.56	17.22		150.0	
10517-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 11 Mbps, 99pc duty cycle)	X	0.91	67.05	16.78	0.00	150.0	± 9.6 %
		Y	0.87	66.61	16.37		150.0	
		Z	0.85	65.23	15.33		150.0	
10518-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 9 Mbps, 99pc duty cycle)	X	4.72	67.03	16.46	0.00	150.0	± 9.6 %
		Y	4.58	67.14	16.37		150.0	
		Z	4.68	66.84	16.27		150.0	
10519-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 12 Mbps, 99pc duty cycle)	X	4.94	67.33	16.60	0.00	150.0	± 9.6 %
		Y	4.77	67.38	16.49		150.0	
		Z	4.90	67.14	16.41		150.0	
10520-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 18 Mbps, 99pc duty cycle)	X	4.79	67.32	16.53	0.00	150.0	± 9.6 %
		Y	4.62	67.35	16.42		150.0	
		Z	4.75	67.11	16.33		150.0	
10521-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 24 Mbps, 99pc duty cycle)	X	4.72	67.33	16.52	0.00	150.0	± 9.6 %
		Y	4.55	67.35	16.41		150.0	
		Z	4.68	67.11	16.32		150.0	
10522-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 36 Mbps, 99pc duty cycle)	X	4.76	67.29	16.55	0.00	150.0	± 9.6 %
		Y	4.61	67.43	16.49		150.0	
		Z	4.73	67.10	16.35		150.0	

10523-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 48 Mbps, 99pc duty cycle)	X	4.64	67.20	16.41	0.00	150.0	± 9.6 %
		Y	4.49	67.31	16.34		150.0	
		Z	4.60	66.98	16.20		150.0	
10524-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 54 Mbps, 99pc duty cycle)	X	4.72	67.26	16.54	0.00	150.0	± 9.6 %
		Y	4.55	67.35	16.45		150.0	
		Z	4.68	67.06	16.34		150.0	
10525-AAA	IEEE 802.11ac WiFi (20MHz, MCS0, 99pc duty cycle)	X	4.67	66.28	16.12	0.00	150.0	± 9.6 %
		Y	4.54	66.41	16.05		150.0	
		Z	4.64	66.07	15.92		150.0	
10526-AAA	IEEE 802.11ac WiFi (20MHz, MCS1, 99pc duty cycle)	X	4.88	66.69	16.27	0.00	150.0	± 9.6 %
		Y	4.71	66.78	16.19		150.0	
		Z	4.84	66.48	16.07		150.0	
10527-AAA	IEEE 802.11ac WiFi (20MHz, MCS2, 99pc duty cycle)	X	4.79	66.67	16.23	0.00	150.0	± 9.6 %
		Y	4.64	66.75	16.14		150.0	
		Z	4.75	66.45	16.02		150.0	
10528-AAA	IEEE 802.11ac WiFi (20MHz, MCS3, 99pc duty cycle)	X	4.81	66.69	16.26	0.00	150.0	± 9.6 %
		Y	4.65	66.76	16.17		150.0	
		Z	4.77	66.47	16.05		150.0	
10529-AAA	IEEE 802.11ac WiFi (20MHz, MCS4, 99pc duty cycle)	X	4.81	66.69	16.26	0.00	150.0	± 9.6 %
		Y	4.65	66.76	16.17		150.0	
		Z	4.77	66.47	16.05		150.0	
10531-AAA	IEEE 802.11ac WiFi (20MHz, MCS6, 99pc duty cycle)	X	4.83	66.85	16.29	0.00	150.0	± 9.6 %
		Y	4.65	66.88	16.19		150.0	
		Z	4.78	66.62	16.08		150.0	
10532-AAA	IEEE 802.11ac WiFi (20MHz, MCS7, 99pc duty cycle)	X	4.68	66.72	16.24	0.00	150.0	± 9.6 %
		Y	4.51	66.74	16.13		150.0	
		Z	4.63	66.47	16.02		150.0	
10533-AAA	IEEE 802.11ac WiFi (20MHz, MCS8, 99pc duty cycle)	X	4.83	66.71	16.24	0.00	150.0	± 9.6 %
		Y	4.66	66.81	16.16		150.0	
		Z	4.78	66.49	16.03		150.0	
10534-AAA	IEEE 802.11ac WiFi (40MHz, MCS0, 99pc duty cycle)	X	5.33	66.83	16.29	0.00	150.0	± 9.6 %
		Y	5.18	66.84	16.20		150.0	
		Z	5.29	66.64	16.12		150.0	
10535-AAA	IEEE 802.11ac WiFi (40MHz, MCS1, 99pc duty cycle)	X	5.40	66.97	16.35	0.00	150.0	± 9.6 %
		Y	5.25	67.01	16.28		150.0	
		Z	5.36	66.78	16.17		150.0	
10536-AAA	IEEE 802.11ac WiFi (40MHz, MCS2, 99pc duty cycle)	X	5.27	66.97	16.34	0.00	150.0	± 9.6 %
		Y	5.12	66.97	16.25		150.0	
		Z	5.23	66.76	16.15		150.0	
10537-AAA	IEEE 802.11ac WiFi (40MHz, MCS3, 99pc duty cycle)	X	5.33	66.94	16.32	0.00	150.0	± 9.6 %
		Y	5.18	66.94	16.23		150.0	
		Z	5.29	66.75	16.14		150.0	
10538-AAA	IEEE 802.11ac WiFi (40MHz, MCS4, 99pc duty cycle)	X	5.45	67.02	16.40	0.00	150.0	± 9.6 %
		Y	5.27	66.95	16.28		150.0	
		Z	5.41	66.83	16.23		150.0	
10540-AAA	IEEE 802.11ac WiFi (40MHz, MCS6, 99pc duty cycle)	X	5.35	66.96	16.39	0.00	150.0	± 9.6 %
		Y	5.20	66.97	16.30		150.0	
		Z	5.31	66.77	16.21		150.0	

10541-AAA	IEEE 802.11ac WiFi (40MHz, MCS7, 99pc duty cycle)	X	5.33	66.87	16.34	0.00	150.0	± 9.6 %
		Y	5.17	66.84	16.23		150.0	
		Z	5.29	66.67	16.16		150.0	
10542-AAA	IEEE 802.11ac WiFi (40MHz, MCS8, 99pc duty cycle)	X	5.48	66.90	16.37	0.00	150.0	± 9.6 %
		Y	5.32	66.90	16.27		150.0	
		Z	5.44	66.72	16.20		150.0	
10543-AAA	IEEE 802.11ac WiFi (40MHz, MCS9, 99pc duty cycle)	X	5.56	66.90	16.38	0.00	150.0	± 9.6 %
		Y	5.40	66.93	16.30		150.0	
		Z	5.52	66.73	16.22		150.0	
10544-AAA	IEEE 802.11ac WiFi (80MHz, MCS0, 99pc duty cycle)	X	5.60	66.92	16.27	0.00	150.0	± 9.6 %
		Y	5.49	66.94	16.19		150.0	
		Z	5.57	66.75	16.10		150.0	
10545-AAA	IEEE 802.11ac WiFi (80MHz, MCS1, 99pc duty cycle)	X	5.82	67.35	16.42	0.00	150.0	± 9.6 %
		Y	5.68	67.35	16.34		150.0	
		Z	5.79	67.18	16.26		150.0	
10546-AAA	IEEE 802.11ac WiFi (80MHz, MCS2, 99pc duty cycle)	X	5.71	67.23	16.38	0.00	150.0	± 9.6 %
		Y	5.56	67.16	16.26		150.0	
		Z	5.67	67.04	16.21		150.0	
10547-AAA	IEEE 802.11ac WiFi (80MHz, MCS3, 99pc duty cycle)	X	5.79	67.29	16.40	0.00	150.0	± 9.6 %
		Y	5.63	67.19	16.27		150.0	
		Z	5.75	67.11	16.24		150.0	
10548-AAA	IEEE 802.11ac WiFi (80MHz, MCS4, 99pc duty cycle)	X	6.16	68.54	17.00	0.00	150.0	± 9.6 %
		Y	5.89	68.14	16.71		150.0	
		Z	6.10	68.32	16.82		150.0	
10550-AAA	IEEE 802.11ac WiFi (80MHz, MCS6, 99pc duty cycle)	X	5.72	67.17	16.36	0.00	150.0	± 9.6 %
		Y	5.58	67.16	16.27		150.0	
		Z	5.68	66.99	16.19		150.0	
10551-AAA	IEEE 802.11ac WiFi (80MHz, MCS7, 99pc duty cycle)	X	5.74	67.28	16.37	0.00	150.0	± 9.6 %
		Y	5.59	67.21	16.26		150.0	
		Z	5.70	67.08	16.20		150.0	
10552-AAA	IEEE 802.11ac WiFi (80MHz, MCS8, 99pc duty cycle)	X	5.64	67.02	16.26	0.00	150.0	± 9.6 %
		Y	5.50	67.01	16.17		150.0	
		Z	5.60	66.83	16.09		150.0	
10553-AAA	IEEE 802.11ac WiFi (80MHz, MCS9, 99pc duty cycle)	X	5.73	67.06	16.31	0.00	150.0	± 9.6 %
		Y	5.58	67.04	16.21		150.0	
		Z	5.69	66.89	16.15		150.0	
10554-AAA	IEEE 1602.11ac WiFi (160MHz, MCS0, 99pc duty cycle)	X	6.01	67.31	16.36	0.00	150.0	± 9.6 %
		Y	5.89	67.29	16.27		150.0	
		Z	5.97	67.14	16.21		150.0	
10555-AAA	IEEE 1602.11ac WiFi (160MHz, MCS1, 99pc duty cycle)	X	6.16	67.66	16.51	0.00	150.0	± 9.6 %
		Y	6.02	67.59	16.39		150.0	
		Z	6.12	67.49	16.35		150.0	
10556-AAA	IEEE 1602.11ac WiFi (160MHz, MCS2, 99pc duty cycle)	X	6.17	67.67	16.51	0.00	150.0	± 9.6 %
		Y	6.04	67.64	16.41		150.0	
		Z	6.14	67.50	16.35		150.0	
10557-AAA	IEEE 1602.11ac WiFi (160MHz, MCS3, 99pc duty cycle)	X	6.16	67.64	16.52	0.00	150.0	± 9.6 %
		Y	6.01	67.55	16.38		150.0	
		Z	6.12	67.46	16.36		150.0	

10558-AAA	IEEE 1602.11ac WiFi (160MHz, MCS4, 99pc duty cycle)	X	6.23	67.85	16.64	0.00	150.0	± 9.6 %
		Y	6.06	67.71	16.48		150.0	
		Z	6.19	67.66	16.47		150.0	
10560-AAA	IEEE 1602.11ac WiFi (160MHz, MCS6, 99pc duty cycle)	X	6.21	67.65	16.58	0.00	150.0	± 9.6 %
		Y	6.05	67.56	16.44		150.0	
		Z	6.17	67.48	16.42		150.0	
10561-AAA	IEEE 1602.11ac WiFi (160MHz, MCS7, 99pc duty cycle)	X	6.12	67.61	16.60	0.00	150.0	± 9.6 %
		Y	5.97	67.52	16.46		150.0	
		Z	6.09	67.44	16.44		150.0	
10562-AAA	IEEE 1602.11ac WiFi (160MHz, MCS8, 99pc duty cycle)	X	6.30	68.15	16.87	0.00	150.0	± 9.6 %
		Y	6.10	67.92	16.66		150.0	
		Z	6.26	67.96	16.71		150.0	
10563-AAA	IEEE 1602.11ac WiFi (160MHz, MCS9, 99pc duty cycle)	X	6.62	68.62	17.05	0.00	150.0	± 9.6 %
		Y	6.35	68.25	16.78		150.0	
		Z	6.58	68.47	16.91		150.0	
10564-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 9 Mbps, 99pc duty cycle)	X	5.06	67.17	16.65	0.46	150.0	± 9.6 %
		Y	4.90	67.19	16.50		150.0	
		Z	5.03	67.02	16.49		150.0	
10565-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 12 Mbps, 99pc duty cycle)	X	5.32	67.64	16.96	0.46	150.0	± 9.6 %
		Y	5.14	67.66	16.84		150.0	
		Z	5.29	67.48	16.80		150.0	
10566-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 18 Mbps, 99pc duty cycle)	X	5.16	67.53	16.80	0.46	150.0	± 9.6 %
		Y	4.97	67.52	16.66		150.0	
		Z	5.12	67.36	16.63		150.0	
10567-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 24 Mbps, 99pc duty cycle)	X	5.18	67.87	17.11	0.46	150.0	± 9.6 %
		Y	5.01	67.94	17.03		150.0	
		Z	5.14	67.68	16.93		150.0	
10568-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 36 Mbps, 99pc duty cycle)	X	5.07	67.28	16.58	0.46	150.0	± 9.6 %
		Y	4.89	67.27	16.41		150.0	
		Z	5.04	67.14	16.42		150.0	
10569-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 48 Mbps, 99pc duty cycle)	X	5.11	67.89	17.13	0.46	150.0	± 9.6 %
		Y	4.97	68.06	17.11		150.0	
		Z	5.08	67.69	16.94		150.0	
10570-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 54 Mbps, 99pc duty cycle)	X	5.16	67.75	17.08	0.46	150.0	± 9.6 %
		Y	5.00	67.87	17.02		150.0	
		Z	5.13	67.56	16.90		150.0	
10571-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps, 90pc duty cycle)	X	1.41	67.04	17.13	0.46	130.0	± 9.6 %
		Y	1.34	66.60	16.67		130.0	
		Z	1.38	66.01	16.24		130.0	
10572-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 2 Mbps, 90pc duty cycle)	X	1.44	67.79	17.55	0.46	130.0	± 9.6 %
		Y	1.37	67.37	17.11		130.0	
		Z	1.40	66.61	16.58		130.0	
10573-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 5.5 Mbps, 90pc duty cycle)	X	48.76	135.45	36.87	0.46	130.0	± 9.6 %
		Y	13.63	114.31	31.46		130.0	
		Z	3.91	91.83	24.74		130.0	
10574-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 11 Mbps, 90pc duty cycle)	X	1.88	76.30	21.44	0.46	130.0	± 9.6 %
		Y	1.78	75.95	21.10		130.0	
		Z	1.63	72.68	19.39		130.0	

10575-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps, 90pc duty cycle)	X	4.87	67.03	16.75	0.46	130.0	± 9.6 %
		Y	4.71	67.06	16.59		130.0	
		Z	4.85	66.89	16.59		130.0	
10576-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 9 Mbps, 90pc duty cycle)	X	4.90	67.18	16.80	0.46	130.0	± 9.6 %
		Y	4.74	67.24	16.66		130.0	
		Z	4.88	67.03	16.63		130.0	
10577-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 12 Mbps, 90pc duty cycle)	X	5.14	67.51	16.98	0.46	130.0	± 9.6 %
		Y	4.95	67.52	16.83		130.0	
		Z	5.11	67.36	16.82		130.0	
10578-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 18 Mbps, 90pc duty cycle)	X	5.03	67.68	17.07	0.46	130.0	± 9.6 %
		Y	4.85	67.72	16.95		130.0	
		Z	5.00	67.50	16.89		130.0	
10579-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 24 Mbps, 90pc duty cycle)	X	4.82	67.12	16.49	0.46	130.0	± 9.6 %
		Y	4.61	66.97	16.24		130.0	
		Z	4.79	66.96	16.33		130.0	
10580-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 36 Mbps, 90pc duty cycle)	X	4.86	67.08	16.49	0.46	130.0	± 9.6 %
		Y	4.65	66.99	16.25		130.0	
		Z	4.84	66.94	16.33		130.0	
10581-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 48 Mbps, 90pc duty cycle)	X	4.94	67.77	17.04	0.46	130.0	± 9.6 %
		Y	4.75	67.79	16.91		130.0	
		Z	4.91	67.57	16.84		130.0	
10582-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 54 Mbps, 90pc duty cycle)	X	4.77	66.89	16.31	0.46	130.0	± 9.6 %
		Y	4.55	66.70	16.01		130.0	
		Z	4.75	66.75	16.15		130.0	
10583-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps, 90pc duty cycle)	X	4.87	67.03	16.75	0.46	130.0	± 9.6 %
		Y	4.71	67.06	16.59		130.0	
		Z	4.85	66.89	16.59		130.0	
10584-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 9 Mbps, 90pc duty cycle)	X	4.90	67.18	16.80	0.46	130.0	± 9.6 %
		Y	4.74	67.24	16.66		130.0	
		Z	4.88	67.03	16.63		130.0	
10585-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 12 Mbps, 90pc duty cycle)	X	5.14	67.51	16.98	0.46	130.0	± 9.6 %
		Y	4.95	67.52	16.83		130.0	
		Z	5.11	67.36	16.82		130.0	
10586-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 18 Mbps, 90pc duty cycle)	X	5.03	67.68	17.07	0.46	130.0	± 9.6 %
		Y	4.85	67.72	16.95		130.0	
		Z	5.00	67.50	16.89		130.0	
10587-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 24 Mbps, 90pc duty cycle)	X	4.82	67.12	16.49	0.46	130.0	± 9.6 %
		Y	4.61	66.97	16.24		130.0	
		Z	4.79	66.96	16.33		130.0	
10588-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 36 Mbps, 90pc duty cycle)	X	4.86	67.08	16.49	0.46	130.0	± 9.6 %
		Y	4.65	66.99	16.25		130.0	
		Z	4.84	66.94	16.33		130.0	
10589-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 48 Mbps, 90pc duty cycle)	X	4.94	67.77	17.04	0.46	130.0	± 9.6 %
		Y	4.75	67.79	16.91		130.0	
		Z	4.91	67.57	16.84		130.0	
10590-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 54 Mbps, 90pc duty cycle)	X	4.77	66.89	16.31	0.46	130.0	± 9.6 %
		Y	4.55	66.70	16.01		130.0	
		Z	4.75	66.75	16.15		130.0	

10591-AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS0, 90pc duty cycle)	X	5.02	67.07	16.83	0.46	130.0	± 9.6 %
		Y	4.86	67.11	16.68		130.0	
		Z	5.00	66.93	16.67		130.0	
10592-AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS1, 90pc duty cycle)	X	5.20	67.42	16.95	0.46	130.0	± 9.6 %
		Y	5.02	67.45	16.81		130.0	
		Z	5.17	67.28	16.79		130.0	
10593-AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS2, 90pc duty cycle)	X	5.13	67.39	16.87	0.46	130.0	± 9.6 %
		Y	4.94	67.36	16.70		130.0	
		Z	5.11	67.24	16.71		130.0	
10594-AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS3, 90pc duty cycle)	X	5.18	67.52	17.00	0.46	130.0	± 9.6 %
		Y	5.00	67.54	16.86		130.0	
		Z	5.15	67.37	16.84		130.0	
10595-AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS4, 90pc duty cycle)	X	5.16	67.51	16.92	0.46	130.0	± 9.6 %
		Y	4.97	67.49	16.75		130.0	
		Z	5.13	67.35	16.75		130.0	
10596-AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS5, 90pc duty cycle)	X	5.10	67.51	16.92	0.46	130.0	± 9.6 %
		Y	4.90	67.49	16.76		130.0	
		Z	5.07	67.36	16.76		130.0	
10597-AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS6, 90pc duty cycle)	X	5.05	67.46	16.83	0.46	130.0	± 9.6 %
		Y	4.85	67.39	16.64		130.0	
		Z	5.02	67.30	16.67		130.0	
10598-AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS7, 90pc duty cycle)	X	5.03	67.69	17.08	0.46	130.0	± 9.6 %
		Y	4.84	67.66	16.92		130.0	
		Z	5.00	67.51	16.90		130.0	
10599-AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS0, 90pc duty cycle)	X	5.70	67.69	17.03	0.46	130.0	± 9.6 %
		Y	5.52	67.61	16.86		130.0	
		Z	5.67	67.57	16.89		130.0	
10600-AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS1, 90pc duty cycle)	X	5.93	68.39	17.35	0.46	130.0	± 9.6 %
		Y	5.66	68.03	17.04		130.0	
		Z	5.89	68.22	17.20		130.0	
10601-AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS2, 90pc duty cycle)	X	5.76	67.96	17.15	0.46	130.0	± 9.6 %
		Y	5.55	67.79	16.94		130.0	
		Z	5.73	67.82	17.01		130.0	
10602-AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS3, 90pc duty cycle)	X	5.85	67.98	17.08	0.46	130.0	± 9.6 %
		Y	5.64	67.79	16.85		130.0	
		Z	5.82	67.84	16.94		130.0	
10603-AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS4, 90pc duty cycle)	X	5.95	68.31	17.37	0.46	130.0	± 9.6 %
		Y	5.73	68.12	17.15		130.0	
		Z	5.91	68.13	17.20		130.0	
10604-AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS5, 90pc duty cycle)	X	5.70	67.66	17.03	0.46	130.0	± 9.6 %
		Y	5.53	67.58	16.87		130.0	
		Z	5.68	67.53	16.89		130.0	
10605-AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS6, 90pc duty cycle)	X	5.82	67.98	17.20	0.46	130.0	± 9.6 %
		Y	5.64	67.90	17.03		130.0	
		Z	5.79	67.85	17.07		130.0	
10606-AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS7, 90pc duty cycle)	X	5.59	67.45	16.81	0.46	130.0	± 9.6 %
		Y	5.39	67.26	16.56		130.0	
		Z	5.56	67.33	16.68		130.0	

10607-AAA	IEEE 802.11ac WiFi (20MHz, MCS0, 90pc duty cycle)	X	4.85	66.37	16.44	0.46	130.0	± 9.6 %
		Y	4.70	66.44	16.32		130.0	
		Z	4.82	66.20	16.26		130.0	
10608-AAA	IEEE 802.11ac WiFi (20MHz, MCS1, 90pc duty cycle)	X	5.07	66.80	16.60	0.46	130.0	± 9.6 %
		Y	4.89	66.85	16.48		130.0	
		Z	5.04	66.63	16.42		130.0	
10609-AAA	IEEE 802.11ac WiFi (20MHz, MCS2, 90pc duty cycle)	X	4.96	66.70	16.47	0.46	130.0	± 9.6 %
		Y	4.78	66.70	16.32		130.0	
		Z	4.93	66.52	16.29		130.0	
10610-AAA	IEEE 802.11ac WiFi (20MHz, MCS3, 90pc duty cycle)	X	5.01	66.84	16.62	0.46	130.0	± 9.6 %
		Y	4.83	66.87	16.49		130.0	
		Z	4.98	66.66	16.44		130.0	
10611-AAA	IEEE 802.11ac WiFi (20MHz, MCS4, 90pc duty cycle)	X	4.94	66.69	16.49	0.46	130.0	± 9.6 %
		Y	4.75	66.67	16.34		130.0	
		Z	4.91	66.51	16.31		130.0	
10612-AAA	IEEE 802.11ac WiFi (20MHz, MCS5, 90pc duty cycle)	X	4.96	66.85	16.54	0.46	130.0	± 9.6 %
		Y	4.76	66.83	16.38		130.0	
		Z	4.92	66.67	16.36		130.0	
10613-AAA	IEEE 802.11ac WiFi (20MHz, MCS6, 90pc duty cycle)	X	4.97	66.79	16.45	0.46	130.0	± 9.6 %
		Y	4.76	66.71	16.26		130.0	
		Z	4.94	66.60	16.27		130.0	
10614-AAA	IEEE 802.11ac WiFi (20MHz, MCS7, 90pc duty cycle)	X	4.90	66.94	16.66	0.46	130.0	± 9.6 %
		Y	4.71	66.92	16.51		130.0	
		Z	4.86	66.73	16.46		130.0	
10615-AAA	IEEE 802.11ac WiFi (20MHz, MCS8, 90pc duty cycle)	X	4.94	66.52	16.29	0.46	130.0	± 9.6 %
		Y	4.74	66.48	16.10		130.0	
		Z	4.91	66.36	16.12		130.0	
10616-AAA	IEEE 802.11ac WiFi (40MHz, MCS0, 90pc duty cycle)	X	5.51	66.93	16.62	0.46	130.0	± 9.6 %
		Y	5.34	66.89	16.49		130.0	
		Z	5.48	66.77	16.47		130.0	
10617-AAA	IEEE 802.11ac WiFi (40MHz, MCS1, 90pc duty cycle)	X	5.57	67.04	16.64	0.46	130.0	± 9.6 %
		Y	5.41	67.05	16.54		130.0	
		Z	5.54	66.88	16.49		130.0	
10618-AAA	IEEE 802.11ac WiFi (40MHz, MCS2, 90pc duty cycle)	X	5.46	67.12	16.70	0.46	130.0	± 9.6 %
		Y	5.30	67.08	16.57		130.0	
		Z	5.43	66.94	16.53		130.0	
10619-AAA	IEEE 802.11ac WiFi (40MHz, MCS3, 90pc duty cycle)	X	5.49	66.94	16.55	0.46	130.0	± 9.6 %
		Y	5.31	66.88	16.40		130.0	
		Z	5.46	66.78	16.40		130.0	
10620-AAA	IEEE 802.11ac WiFi (40MHz, MCS4, 90pc duty cycle)	X	5.61	67.07	16.67	0.46	130.0	± 9.6 %
		Y	5.41	66.92	16.47		130.0	
		Z	5.58	66.91	16.51		130.0	
10621-AAA	IEEE 802.11ac WiFi (40MHz, MCS5, 90pc duty cycle)	X	5.57	67.08	16.78	0.46	130.0	± 9.6 %
		Y	5.41	67.05	16.66		130.0	
		Z	5.54	66.91	16.62		130.0	
10622-AAA	IEEE 802.11ac WiFi (40MHz, MCS6, 90pc duty cycle)	X	5.58	67.21	16.84	0.46	130.0	± 9.6 %
		Y	5.42	67.22	16.74		130.0	
		Z	5.54	67.04	16.67		130.0	

10623-AAA	IEEE 802.11ac WiFi (40MHz, MCS7, 90pc duty cycle)	X	5.47	66.83	16.54	0.46	130.0	± 9.6 %
		Y	5.29	66.72	16.36		130.0	
		Z	5.44	66.67	16.38		130.0	
10624-AAA	IEEE 802.11ac WiFi (40MHz, MCS8, 90pc duty cycle)	X	5.65	66.97	16.67	0.46	130.0	± 9.6 %
		Y	5.48	66.92	16.52		130.0	
		Z	5.63	66.83	16.52		130.0	
10625-AAA	IEEE 802.11ac WiFi (40MHz, MCS9, 90pc duty cycle)	X	6.08	68.09	17.28	0.46	130.0	± 9.6 %
		Y	5.86	67.92	17.07		130.0	
		Z	6.05	67.95	17.14		130.0	
10626-AAA	IEEE 802.11ac WiFi (80MHz, MCS0, 90pc duty cycle)	X	5.76	66.94	16.55	0.46	130.0	± 9.6 %
		Y	5.63	66.92	16.43		130.0	
		Z	5.73	66.80	16.40		130.0	
10627-AAA	IEEE 802.11ac WiFi (80MHz, MCS1, 90pc duty cycle)	X	6.03	67.53	16.79	0.46	130.0	± 9.6 %
		Y	5.87	67.49	16.67		130.0	
		Z	6.00	67.38	16.65		130.0	
10628-AAA	IEEE 802.11ac WiFi (80MHz, MCS2, 90pc duty cycle)	X	5.84	67.16	16.55	0.46	130.0	± 9.6 %
		Y	5.67	67.02	16.37		130.0	
		Z	5.81	67.01	16.41		130.0	
10629-AAA	IEEE 802.11ac WiFi (80MHz, MCS3, 90pc duty cycle)	X	5.93	67.23	16.58	0.46	130.0	± 9.6 %
		Y	5.75	67.09	16.40		130.0	
		Z	5.90	67.08	16.43		130.0	
10630-AAA	IEEE 802.11ac WiFi (80MHz, MCS4, 90pc duty cycle)	X	6.57	69.29	17.61	0.46	130.0	± 9.6 %
		Y	6.20	68.62	17.15		130.0	
		Z	6.52	69.09	17.44		130.0	
10631-AAA	IEEE 802.11ac WiFi (80MHz, MCS5, 90pc duty cycle)	X	6.37	68.79	17.53	0.46	130.0	± 9.6 %
		Y	6.10	68.43	17.26		130.0	
		Z	6.32	68.57	17.35		130.0	
10632-AAA	IEEE 802.11ac WiFi (80MHz, MCS6, 90pc duty cycle)	X	6.00	67.56	16.93	0.46	130.0	± 9.6 %
		Y	5.85	67.56	16.85		130.0	
		Z	5.96	67.39	16.77		130.0	
10633-AAA	IEEE 802.11ac WiFi (80MHz, MCS7, 90pc duty cycle)	X	5.94	67.43	16.71	0.46	130.0	± 9.6 %
		Y	5.73	67.19	16.48		130.0	
		Z	5.91	67.25	16.55		130.0	
10634-AAA	IEEE 802.11ac WiFi (80MHz, MCS8, 90pc duty cycle)	X	5.91	67.37	16.74	0.46	130.0	± 9.6 %
		Y	5.72	67.22	16.56		130.0	
		Z	5.87	67.19	16.57		130.0	
10635-AAA	IEEE 802.11ac WiFi (80MHz, MCS9, 90pc duty cycle)	X	5.80	66.77	16.19	0.46	130.0	± 9.6 %
		Y	5.59	66.52	15.94		130.0	
		Z	5.77	66.64	16.07		130.0	
10636-AAA	IEEE 1602.11ac WiFi (160MHz, MCS0, 90pc duty cycle)	X	6.17	67.34	16.65	0.46	130.0	± 9.6 %
		Y	6.04	67.28	16.50		130.0	
		Z	6.15	67.20	16.51		130.0	
10637-AAA	IEEE 1602.11ac WiFi (160MHz, MCS1, 90pc duty cycle)	X	6.35	67.76	16.83	0.46	130.0	± 9.6 %
		Y	6.20	67.66	16.68		130.0	
		Z	6.32	67.61	16.69		130.0	
10638-AAA	IEEE 1602.11ac WiFi (160MHz, MCS2, 90pc duty cycle)	X	6.35	67.72	16.79	0.46	130.0	± 9.6 %
		Y	6.20	67.63	16.64		130.0	
		Z	6.32	67.58	16.65		130.0	

10639-AAA	IEEE 1602.11ac WiFi (160MHz, MCS3, 90pc duty cycle)	X	6.35	67.74	16.85	0.46	130.0	± 9.6 %
		Y	6.18	67.59	16.66		130.0	
		Z	6.32	67.59	16.70		130.0	
10640-AAA	IEEE 1602.11ac WiFi (160MHz, MCS4, 90pc duty cycle)	X	6.39	67.87	16.86	0.46	130.0	± 9.6 %
		Y	6.18	67.60	16.61		130.0	
		Z	6.36	67.71	16.72		130.0	
10641-AAA	IEEE 1602.11ac WiFi (160MHz, MCS5, 90pc duty cycle)	X	6.37	67.56	16.72	0.46	130.0	± 9.6 %
		Y	6.22	67.48	16.57		130.0	
		Z	6.34	67.42	16.59		130.0	
10642-AAA	IEEE 1602.11ac WiFi (160MHz, MCS6, 90pc duty cycle)	X	6.43	67.86	17.02	0.46	130.0	± 9.6 %
		Y	6.27	67.76	16.88		130.0	
		Z	6.40	67.70	16.88		130.0	
10643-AAA	IEEE 1602.11ac WiFi (160MHz, MCS7, 90pc duty cycle)	X	6.27	67.59	16.80	0.46	130.0	± 9.6 %
		Y	6.10	67.43	16.61		130.0	
		Z	6.24	67.44	16.67		130.0	
10644-AAA	IEEE 1602.11ac WiFi (160MHz, MCS8, 90pc duty cycle)	X	6.52	68.35	17.21	0.46	130.0	± 9.6 %
		Y	6.27	67.95	16.89		130.0	
		Z	6.48	68.18	17.06		130.0	
10645-AAA	IEEE 1602.11ac WiFi (160MHz, MCS9, 90pc duty cycle)	X	6.86	68.85	17.40	0.46	130.0	± 9.6 %
		Y	6.65	68.64	17.18		130.0	
		Z	6.84	68.75	17.29		130.0	
10646-AAC	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, QPSK, UL Subframe=2,7)	X	42.01	120.68	39.91	9.30	60.0	± 9.6 %
		Y	39.04	120.15	39.21		60.0	
		Z	32.57	113.89	37.85		60.0	
10647-AAB	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK, UL Subframe=2,7)	X	44.40	122.83	40.67	9.30	60.0	± 9.6 %
		Y	37.67	120.23	39.39		60.0	
		Z	34.51	116.06	38.63		60.0	
10648-AAA	CDMA2000 (1x Advanced)	X	0.92	66.62	13.41	0.00	150.0	± 9.6 %
		Y	0.77	65.29	11.91		150.0	
		Z	0.81	64.38	11.88		150.0	

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



Accredited by the Swiss Accreditation Service (SAS)

Accreditation No.: **SCS 0108**

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

Client **PC Test**

Certificate No: **ES3-3287_Sep16**

CALIBRATION CERTIFICATE

Object **ES3DV3 - SN:3287**

Calibration procedure(s) **QA CAL-01.v9, QA CAL-23.v5, QA CAL-25.v6**
Calibration procedure for dosimetric E-field probes

Calibration date: **September 19, 2016**

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 $(22 \pm 3)^\circ\text{C}$ 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	06-Apr-16 (No. 217-02288/02289)	Apr-17
Power sensor NRP-Z91	SN: 103244	06-Apr-16 (No. 217-02288)	Apr-17
Power sensor NRP-Z91	SN: 103245	06-Apr-16 (No. 217-02289)	Apr-17
Reference 20 dB Attenuator	SN: S5277 (20x)	05-Apr-16 (No. 217-02293)	Apr-17
Reference Probe ES3DV2	SN: 3013	31-Dec-15 (No. ES3-3013_Dec15)	Dec-16
DAE4	SN: 660	23-Dec-15 (No. DAE4-660_Dec15)	Dec-16
Secondary Standards	ID	Check Date (in house)	Scheduled Check
Power meter E4419B	SN: GB41293874	06-Apr-16 (in house check Jun-16)	In house check: Jun-18
Power sensor E4412A	SN: MY41498087	06-Apr-16 (in house check Jun-16)	In house check: Jun-18
Power sensor E4412A	SN: 000110210	06-Apr-16 (in house check Jun-16)	In house check: Jun-18
RF generator HP 8648C	SN: US3642U01700	04-Aug-99 (in house check Jun-16)	In house check: Jun-18
Network Analyzer HP 8753E	SN: US37390585	18-Oct-01 (in house check Oct-15)	In house check: Oct-16

Calibrated by:	Name Leif Klysner	Function Laboratory Technician	Signature
Approved by:	Name Katja Pokovic	Function Technical Manager	Signature
This calibration certificate shall not be reproduced except in full without written approval of the laboratory.			Issued: September 20, 2016



Accredited by the Swiss Accreditation Service (SAS)

Accreditation No.: **SCS 0108**

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Glossary:

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

Calibration is Performed According to the Following Standards:

- 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"

Methods Applied and Interpretation of Parameters:

- NORM_{x,y,z}**: Assessed for E-field polarization $\vartheta = 0$ ($f \leq 900$ MHz in TEM-cell; $f > 1800$ MHz: R22 waveguide). NORM_{x,y,z} are only intermediate values, i.e., the uncertainties of NORM_{x,y,z} does not affect the E^2 -field uncertainty inside TSL (see below ConvF).
- NORM(f)_{x,y,z}** = NORM_{x,y,z} * frequency_response (see Frequency Response Chart). This linearization is implemented in DASY4 software versions later than 4.2. The uncertainty of the frequency response is included in the stated uncertainty of ConvF.
- DCP_{x,y,z}**: DCP are numerical linearization parameters assessed based on the data of power sweep with CW signal (no uncertainty required). DCP does not depend on frequency nor media.
- PAR**: PAR is the Peak to Average Ratio that is not calibrated but determined based on the signal characteristics
- A_{x,y,z}; B_{x,y,z}; C_{x,y,z}; D_{x,y,z}; VR_{x,y,z}**: A, B, C, D are numerical linearization parameters assessed based on the data of power sweep for specific modulation signal. The parameters do not depend on frequency nor media. VR is the maximum calibration range expressed in RMS voltage across the diode.
- ConvF and Boundary Effect Parameters**: Assessed in flat phantom using E-field (or Temperature Transfer Standard for $f \leq 800$ MHz) and inside waveguide using analytical field distributions based on power measurements for $f > 800$ MHz. The same setups are used for assessment of the parameters applied for boundary compensation (alpha, depth) of which typical uncertainty values are given. These parameters are used in DASY4 software to improve probe accuracy close to the boundary. The sensitivity in TSL corresponds to NORM_{x,y,z} * ConvF whereby the uncertainty corresponds to that given for ConvF. A frequency dependent ConvF is used in DASY version 4.4 and higher which allows extending the validity from ± 50 MHz to ± 100 MHz.
- Spherical isotropy (3D deviation from isotropy)**: in a field of low gradients realized using a flat phantom exposed by a patch antenna.
- Sensor Offset**: The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.
- Connector Angle**: The angle is assessed using the information gained by determining the NORM_x (no uncertainty required).

Probe ES3DV3

SN:3287

Manufactured: June 7, 2010
Calibrated: September 19, 2016

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

DASY/EASY - Parameters of Probe: ES3DV3 - SN:3287

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu\text{V}/(\text{V}/\text{m})^2$) ^A	0.87	0.98	1.00	$\pm 10.1 \%$
DCP (mV) ^B	101.9	101.4	106.1	

Modulation Calibration Parameters

UID	Communication System Name		A dB	B dB $\sqrt{\mu\text{V}}$	C	D dB	VR mV	Unc ^E (k=2)
0	CW	X	0.0	0.0	1.0	0.00	198.4	$\pm 3.5 \%$
		Y	0.0	0.0	1.0		189.6	
		Z	0.0	0.0	1.0		184.8	

Note: For details on UID parameters see Appendix.

Sensor Model Parameters

	C1 fF	C2 fF	α V^{-1}	T1 $\text{ms} \cdot \text{V}^{-2}$	T2 $\text{ms} \cdot \text{V}^{-1}$	T3 ms	T4 V^{-2}	T5 V^{-1}	T6
X	65.67	459.4	34.07	29.08	2.68	5.077	2	0.308	1.009
Y	71.46	511.8	35.31	29.86	3.707	5.1	0.748	0.607	1.009
Z	50.48	357.3	34.55	27.84	2.262	5.1	1.583	0.279	1.01

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor $k=2$, which for a normal distribution corresponds to a coverage probability of approximately 95%.

^A The uncertainties of Norm X,Y,Z do not affect the E^2 -field uncertainty inside TSL (see Pages 5 and 6).

^B Numerical linearization parameter: uncertainty not required.

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

DASY/EASY - Parameters of Probe: ES3DV3 - SN:3287

Calibration Parameter Determined in Head Tissue Simulating Media

f (MHz) ^C	Relative Permittivity ^F	Conductivity (S/m) ^F	ConvF X	ConvF Y	ConvF Z	Alpha ^G	Depth ^G (mm)	Unc (k=2)
750	41.9	0.89	6.96	6.96	6.96	0.44	1.36	± 12.0 %
835	41.5	0.90	6.67	6.67	6.67	0.29	1.69	± 12.0 %
1750	40.1	1.37	5.49	5.49	5.49	0.43	1.42	± 12.0 %
1900	40.0	1.40	5.27	5.27	5.27	0.41	1.45	± 12.0 %
2300	39.5	1.67	4.86	4.86	4.86	0.61	1.28	± 12.0 %
2450	39.2	1.80	4.54	4.54	4.54	0.47	1.51	± 12.0 %
2600	39.0	1.96	4.41	4.41	4.41	0.77	1.18	± 12.0 %

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

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

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

DASY/EASY - Parameters of Probe: ES3DV3 - SN:3287

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	6.64	6.64	6.64	0.27	1.86	± 12.0 %
835	55.2	0.97	6.55	6.55	6.55	0.50	1.37	± 12.0 %
1750	53.4	1.49	5.11	5.11	5.11	0.33	1.85	± 12.0 %
1900	53.3	1.52	4.94	4.94	4.94	0.42	1.59	± 12.0 %
2300	52.9	1.81	4.55	4.55	4.55	0.55	1.42	± 12.0 %
2450	52.7	1.95	4.35	4.35	4.35	0.80	1.09	± 12.0 %
2600	52.5	2.16	4.12	4.12	4.12	0.80	1.10	± 12.0 %

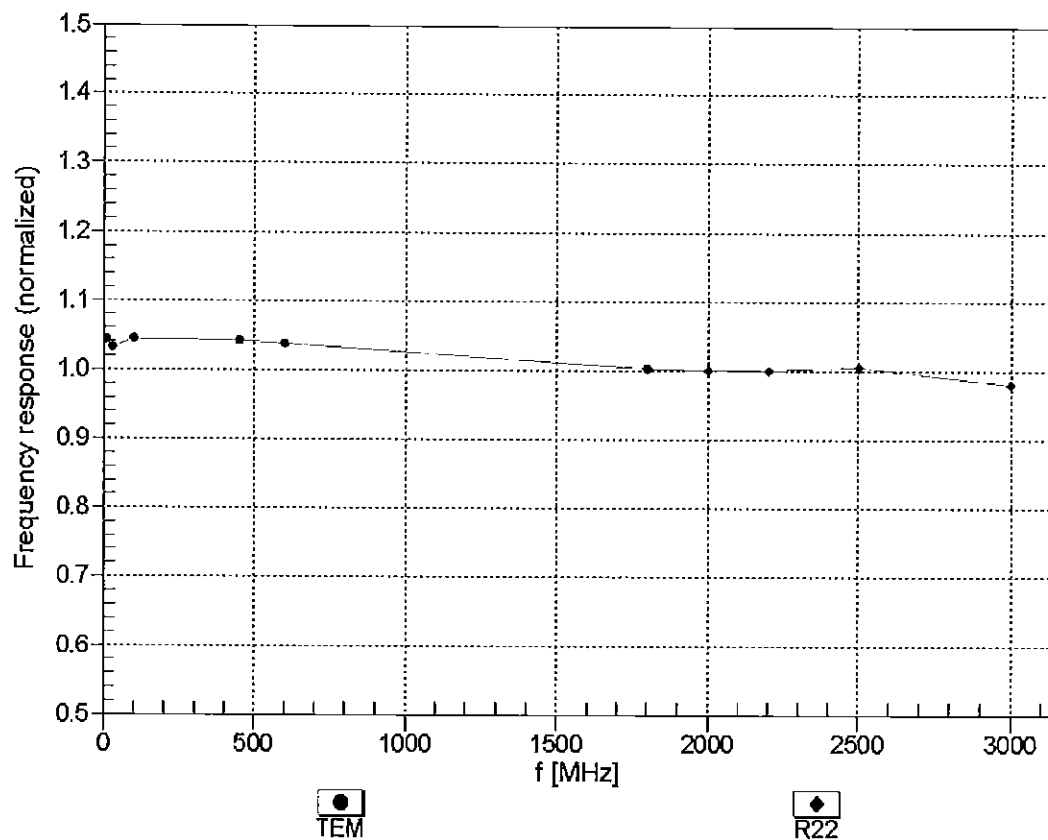
^C Frequency validity above 300 MHz of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is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

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

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

Frequency Response of E-Field

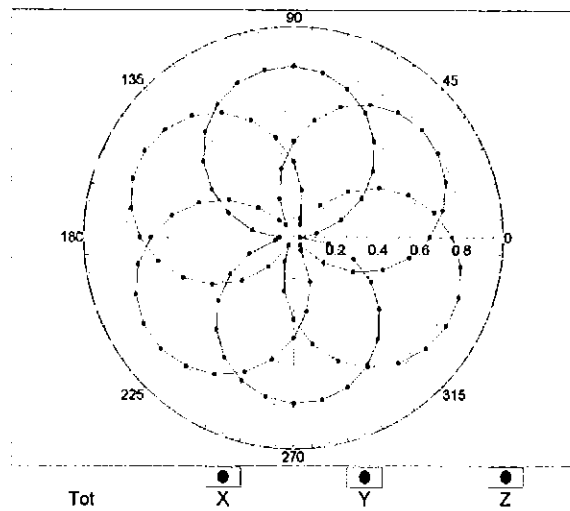
(TEM-Cell:ifi110 EXX, Waveguide: R22)



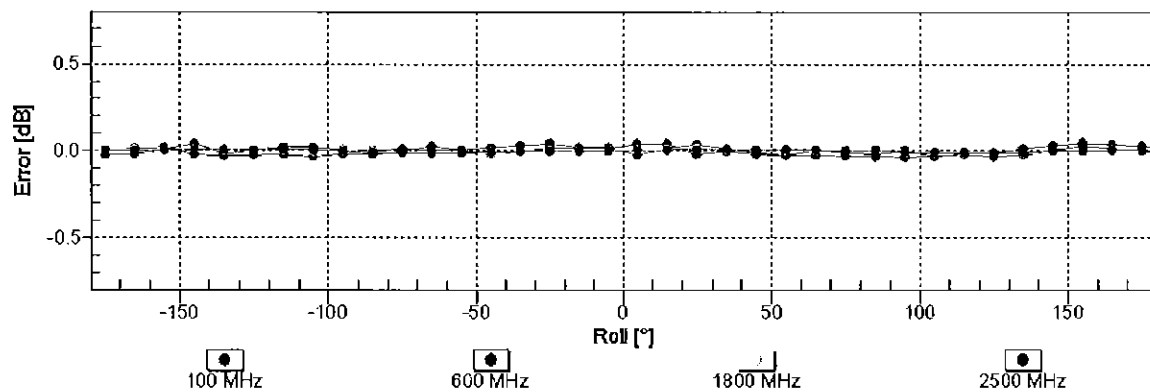
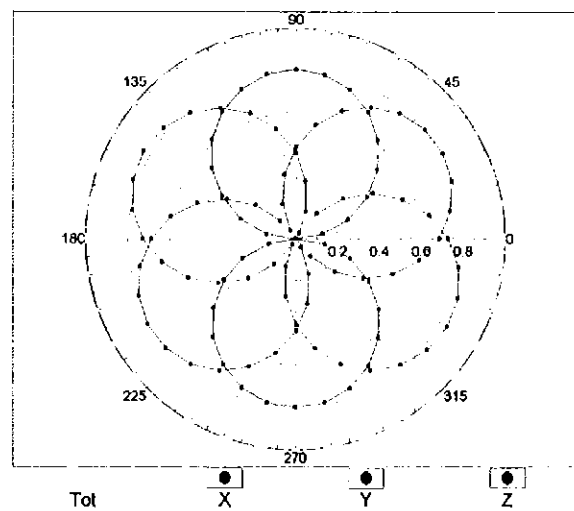
Uncertainty of Frequency Response of E-field: $\pm 6.3\%$ ($k=2$)

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

f=600 MHz,TEM

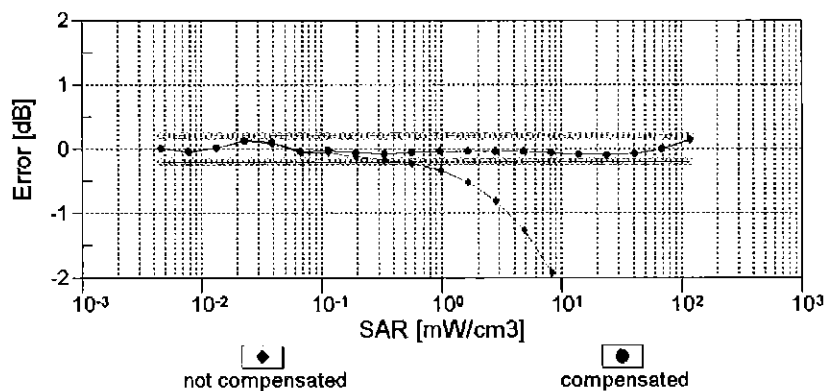
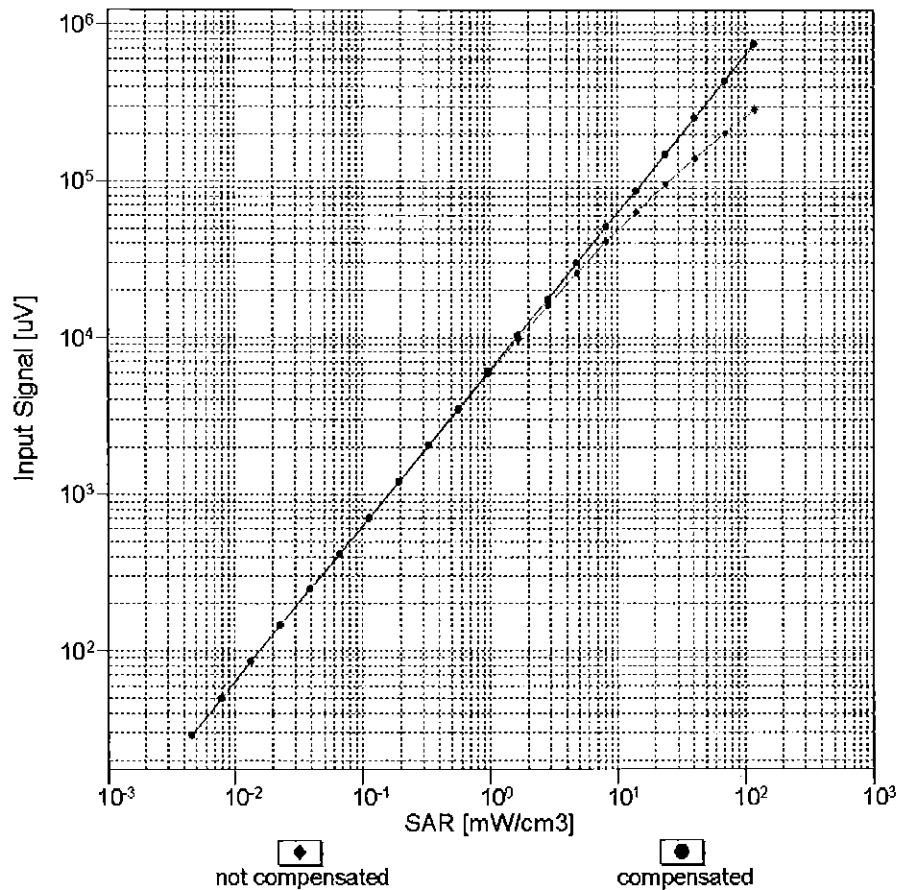


f=1800 MHz,R22



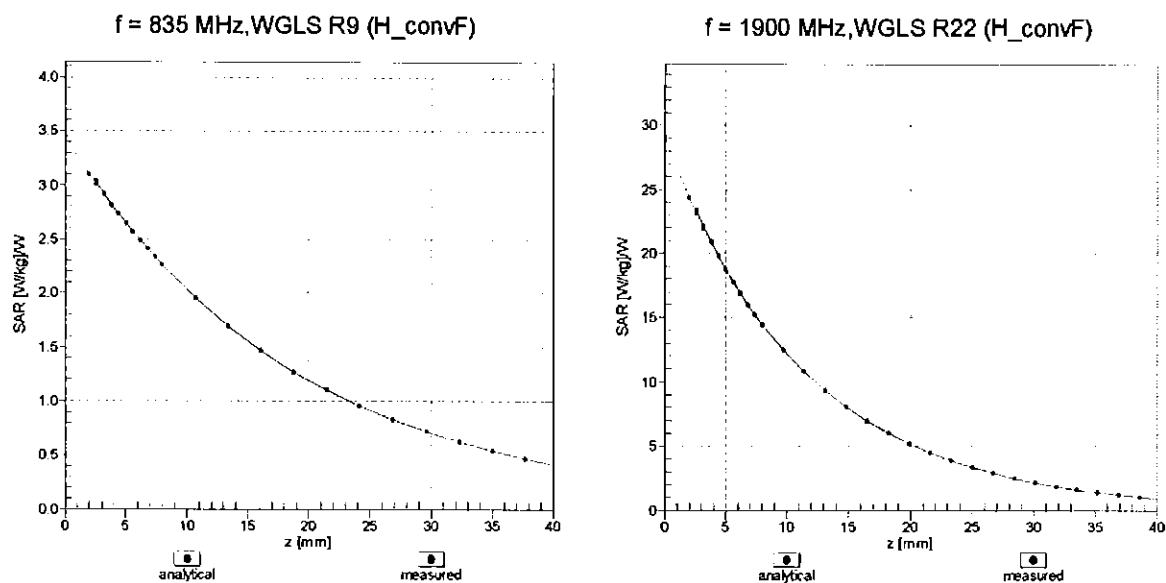
Uncertainty of Axial Isotropy Assessment: $\pm 0.5\%$ ($k=2$)

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



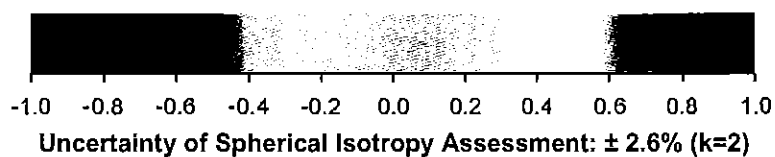
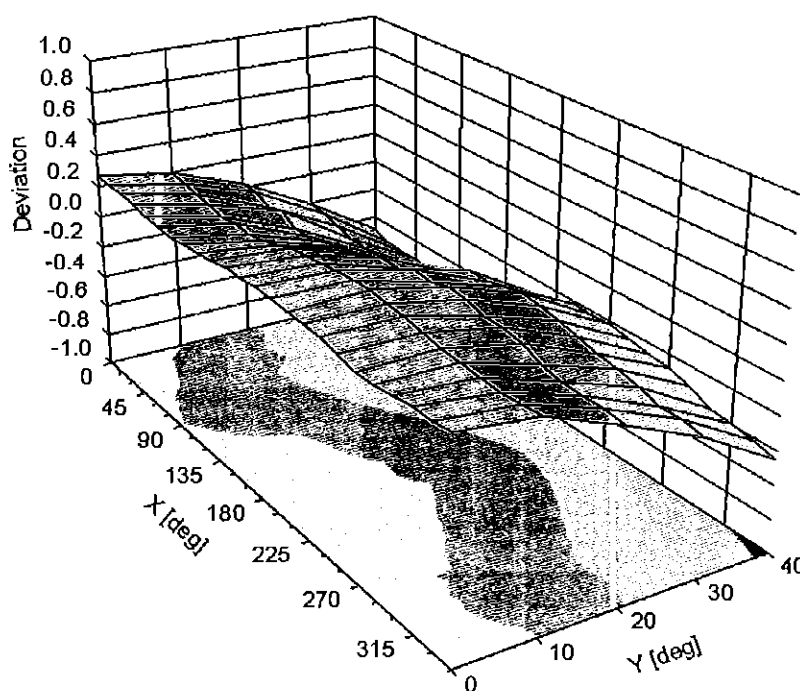
Uncertainty of Linearity Assessment: $\pm 0.6\%$ ($k=2$)

Conversion Factor Assessment



Deviation from Isotropy in Liquid

Error (ϕ, ϑ), $f = 900 \text{ MHz}$



DASY/EASY - Parameters of Probe: ES3DV3 - SN:3287**Other Probe Parameters**

Sensor Arrangement	Triangular
Connector Angle (°)	84.9
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disabled
Probe Overall Length	337 mm
Probe Body Diameter	10 mm
Tip Length	10 mm
Tip Diameter	4 mm
Probe Tip to Sensor X Calibration Point	2 mm
Probe Tip to Sensor Y Calibration Point	2 mm
Probe Tip to Sensor Z Calibration Point	2 mm
Recommended Measurement Distance from Surface	3 mm

Appendix: Modulation Calibration Parameters

UID	Communication System Name		A dB	B dB μ V	C	D dB	VR mV	Max Unc ^E (k=2)
0	CW	X	0.00	0.00	1.00	0.00	198.4	$\pm 3.5\%$
		Y	0.00	0.00	1.00		189.6	
		Z	0.00	0.00	1.00		184.8	
10010- CAA	SAR Validation (Square, 100ms, 10ms)	X	9.57	81.27	19.66	10.00	25.0	$\pm 9.6\%$
		Y	9.48	81.17	20.59		25.0	
		Z	11.44	84.72	20.81		25.0	
10011- CAB	UMTS-FDD (WCDMA)	X	1.41	73.12	18.60	0.00	150.0	$\pm 9.6\%$
		Y	1.09	67.36	15.29		150.0	
		Z	1.04	67.24	15.12		150.0	
10012- CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps)	X	1.39	66.79	17.15	0.41	150.0	$\pm 9.6\%$
		Y	1.33	64.98	15.75		150.0	
		Z	1.31	64.97	15.66		150.0	
10013- CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps)	X	5.20	67.40	17.54	1.46	150.0	$\pm 9.6\%$
		Y	5.27	67.18	17.41		150.0	
		Z	5.09	67.33	17.40		150.0	
10021- DAB	GSM-FDD (TDMA, GMSK)	X	25.12	98.64	27.15	9.39	50.0	$\pm 9.6\%$
		Y	16.05	91.61	25.96		50.0	
		Z	54.58	112.47	31.02		50.0	
10023- DAB	GPRS-FDD (TDMA, GMSK, TN 0)	X	21.90	96.28	26.48	9.57	50.0	$\pm 9.6\%$
		Y	15.04	90.31	25.57		50.0	
		Z	40.95	107.64	29.77		50.0	
10024- DAB	GPRS-FDD (TDMA, GMSK, TN 0-1)	X	100.00	118.44	30.60	6.56	60.0	$\pm 9.6\%$
		Y	56.85	112.42	30.28		60.0	
		Z	100.00	119.26	30.80		60.0	
10025- DAB	EDGE-FDD (TDMA, 8PSK, TN 0)	X	15.98	100.03	37.68	12.57	50.0	$\pm 9.6\%$
		Y	12.36	89.89	33.32		50.0	
		Z	14.92	100.13	38.33		50.0	
10026- DAB	EDGE-FDD (TDMA, 8PSK, TN 0-1)	X	19.89	102.72	35.15	9.56	60.0	$\pm 9.6\%$
		Y	15.11	94.49	32.22		60.0	
		Z	21.16	106.39	36.94		60.0	
10027- DAB	GPRS-FDD (TDMA, GMSK, TN 0-1-2)	X	100.00	117.46	29.21	4.80	80.0	$\pm 9.6\%$
		Y	100.00	119.97	30.83		80.0	
		Z	100.00	118.35	29.47		80.0	
10028- DAB	GPRS-FDD (TDMA, GMSK, TN 0-1-2-3)	X	100.00	117.97	28.63	3.55	100.0	$\pm 9.6\%$
		Y	100.00	119.91	29.91		100.0	
		Z	100.00	118.74	28.84		100.0	
10029- DAB	EDGE-FDD (TDMA, 8PSK, TN 0-1-2)	X	14.03	95.19	31.54	7.80	80.0	$\pm 9.6\%$
		Y	11.54	89.32	29.33		80.0	
		Z	13.09	95.17	31.96		80.0	
10030- CAA	IEEE 802.15.1 Bluetooth (GFSK, DH1)	X	100.00	117.04	29.36	5.30	70.0	$\pm 9.6\%$
		Y	100.00	119.78	31.12		70.0	
		Z	100.00	117.69	29.49		70.0	
10031- CAA	IEEE 802.15.1 Bluetooth (GFSK, DH3)	X	100.00	120.90	28.34	1.88	100.0	$\pm 9.6\%$
		Y	100.00	121.14	28.78		100.0	
		Z	100.00	119.84	27.78		100.0	

10032-CAA	IEEE 802.15.1 Bluetooth (GFSK, DH5)	X	100.00	128.75	30.50	1.17	100.0	± 9.6 %
		Y	100.00	125.19	29.33		100.0	
		Z	100.00	124.54	28.68		100.0	
10033-CAA	IEEE 802.15.1 Bluetooth (PI/4-DQPSK, DH1)	X	24.47	102.44	28.62	5.30	70.0	± 9.6 %
		Y	12.93	91.34	25.64		70.0	
		Z	20.22	99.06	27.27		70.0	
10034-CAA	IEEE 802.15.1 Bluetooth (PI/4-DQPSK, DH3)	X	15.75	99.73	26.60	1.88	100.0	± 9.6 %
		Y	6.06	84.29	21.90		100.0	
		Z	7.41	86.87	21.79		100.0	
10035-CAA	IEEE 802.15.1 Bluetooth (PI/4-DQPSK, DH5)	X	8.06	91.60	24.06	1.17	100.0	± 9.6 %
		Y	3.71	78.74	19.66		100.0	
		Z	4.06	80.00	19.16		100.0	
10036-CAA	IEEE 802.15.1 Bluetooth (8-DPSK, DH1)	X	31.59	106.91	29.95	5.30	70.0	± 9.6 %
		Y	14.71	93.73	26.48		70.0	
		Z	25.49	103.04	28.49		70.0	
10037-CAA	IEEE 802.15.1 Bluetooth (8-DPSK, DH3)	X	15.02	99.00	26.34	1.88	100.0	± 9.6 %
		Y	5.91	83.93	21.74		100.0	
		Z	6.95	86.01	21.48		100.0	
10038-CAA	IEEE 802.15.1 Bluetooth (8-DPSK, DH5)	X	8.64	92.97	24.58	1.17	100.0	± 9.6 %
		Y	3.82	79.37	19.97		100.0	
		Z	4.16	80.58	19.47		100.0	
10039-CAB	CDMA2000 (1xRTT, RC1)	X	3.32	80.83	20.52	0.00	150.0	± 9.6 %
		Y	1.99	71.59	16.56		150.0	
		Z	1.78	71.38	15.53		150.0	
10042-CAB	IS-54 / IS-136 FDD (TDMA/FDM, PI/4-DQPSK, Halfrate)	X	93.96	116.51	30.17	7.78	50.0	± 9.6 %
		Y	28.36	100.31	27.04		50.0	
		Z	100.00	118.01	30.46		50.0	
10044-CAA	IS-91/EIA/TIA-553 FDD (FDMA, FM)	X	0.00	110.81	0.68	0.00	150.0	± 9.6 %
		Y	0.00	94.68	0.92		150.0	
		Z	0.01	95.27	0.89		150.0	
10048-CAA	DECT (TDD, TDMA/FDM, GFSK, Full Slot, 24)	X	12.13	84.40	24.33	13.80	25.0	± 9.6 %
		Y	11.03	81.88	24.36		25.0	
		Z	15.47	90.17	26.32		25.0	
10049-CAA	DECT (TDD, TDMA/FDM, GFSK, Double Slot, 12)	X	14.56	88.92	24.53	10.79	40.0	± 9.6 %
		Y	12.34	85.94	24.48		40.0	
		Z	20.46	95.78	26.73		40.0	
10056-CAA	UMTS-TDD (TD-SCDMA, 1.28 Mcps)	X	13.90	88.80	25.15	9.03	50.0	± 9.6 %
		Y	11.60	84.93	24.34		50.0	
		Z	15.96	92.01	26.12		50.0	
10058-DAB	EDGE-FDD (TDMA, 8PSK, TN 0-1-2-3)	X	10.54	89.79	28.95	6.55	100.0	± 9.6 %
		Y	9.17	85.43	27.21		100.0	
		Z	9.28	88.15	28.66		100.0	
10059-CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 2 Mbps)	X	1.62	69.54	18.42	0.61	110.0	± 9.6 %
		Y	1.52	67.09	16.78		110.0	
		Z	1.47	67.00	16.67		110.0	
10060-CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 5.5 Mbps)	X	100.00	133.57	34.76	1.30	110.0	± 9.6 %
		Y	47.37	119.92	31.34		110.0	
		Z	100.00	131.70	33.88		110.0	

10061-CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 11 Mbps)	X	24.29	111.37	31.49	2.04	110.0	± 9.6 %
		Y	7.57	90.21	25.12		110.0	
		Z	8.96	94.42	26.47		110.0	
10062-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps)	X	4.94	67.26	16.92	0.49	100.0	± 9.6 %
		Y	4.99	66.94	16.70		100.0	
		Z	4.80	67.06	16.67		100.0	
10063-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 9 Mbps)	X	4.98	67.42	17.05	0.72	100.0	± 9.6 %
		Y	5.03	67.12	16.85		100.0	
		Z	4.84	67.22	16.80		100.0	
10064-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 12 Mbps)	X	5.33	67.75	17.30	0.86	100.0	± 9.6 %
		Y	5.40	67.50	17.13		100.0	
		Z	5.14	67.52	17.06		100.0	
10065-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 18 Mbps)	X	5.22	67.77	17.45	1.21	100.0	± 9.6 %
		Y	5.30	67.55	17.30		100.0	
		Z	5.05	67.55	17.23		100.0	
10066-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 24 Mbps)	X	5.28	67.89	17.67	1.46	100.0	± 9.6 %
		Y	5.37	67.69	17.54		100.0	
		Z	5.11	67.69	17.47		100.0	
10067-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 36 Mbps)	X	5.58	67.96	18.07	2.04	100.0	± 9.6 %
		Y	5.70	67.83	17.99		100.0	
		Z	5.44	67.94	17.97		100.0	
10068-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 48 Mbps)	X	5.73	68.36	18.44	2.55	100.0	± 9.6 %
		Y	5.86	68.26	18.38		100.0	
		Z	5.56	68.20	18.31		100.0	
10069-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 54 Mbps)	X	5.80	68.22	18.58	2.67	100.0	± 9.6 %
		Y	5.93	68.12	18.53		100.0	
		Z	5.64	68.21	18.51		100.0	
10071-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 9 Mbps)	X	5.34	67.61	17.91	1.99	100.0	± 9.6 %
		Y	5.43	67.44	17.80		100.0	
		Z	5.23	67.57	17.79		100.0	
10072-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 12 Mbps)	X	5.41	68.20	18.23	2.30	100.0	± 9.6 %
		Y	5.52	68.04	18.13		100.0	
		Z	5.28	68.10	18.11		100.0	
10073-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 18 Mbps)	X	5.54	68.52	18.63	2.83	100.0	± 9.6 %
		Y	5.67	68.41	18.56		100.0	
		Z	5.42	68.46	18.55		100.0	
10074-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 24 Mbps)	X	5.57	68.60	18.89	3.30	100.0	± 9.6 %
		Y	5.71	68.53	18.84		100.0	
		Z	5.46	68.55	18.80		100.0	
10075-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 36 Mbps)	X	5.74	69.13	19.40	3.82	90.0	± 9.6 %
		Y	5.91	69.12	19.39		90.0	
		Z	5.60	68.97	19.28		90.0	
10076-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 48 Mbps)	X	5.73	68.87	19.48	4.15	90.0	± 9.6 %
		Y	5.91	68.89	19.48		90.0	
		Z	5.64	68.84	19.44		90.0	
10077-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 54 Mbps)	X	5.76	68.96	19.58	4.30	90.0	± 9.6 %
		Y	5.95	68.98	19.59		90.0	
		Z	5.68	68.95	19.55		90.0	

10081-CAB	CDMA2000 (1xRTT, RC3)	X	1.45	73.74	17.54	0.00	150.0	± 9.6 %
		Y	1.01	66.70	13.93		150.0	
		Z	0.86	65.95	12.65		150.0	
10082-CAB	IS-54 / IS-136 FDD (TDMA/FDM, PI/4-DQPSK, Fullrate)	X	2.22	64.23	9.03	4.77	80.0	± 9.6 %
		Y	2.60	65.39	10.25		80.0	
		Z	2.07	64.06	8.86		80.0	
10090-DAB	GPRS-FDD (TDMA, GMSK, TN 0-4)	X	100.00	118.52	30.65	6.56	60.0	± 9.6 %
		Y	54.54	111.83	30.17		60.0	
		Z	100.00	119.33	30.85		60.0	
10097-CAB	UMTS-FDD (HSDPA)	X	2.07	69.87	17.29	0.00	150.0	± 9.6 %
		Y	1.87	67.25	15.70		150.0	
		Z	1.83	67.53	15.55		150.0	
10098-CAB	UMTS-FDD (HSUPA, Subtest 2)	X	2.03	69.88	17.28	0.00	150.0	± 9.6 %
		Y	1.83	67.20	15.65		150.0	
		Z	1.80	67.49	15.52		150.0	
10099-DAB	EDGE-FDD (TDMA, 8PSK, TN 0-4)	X	19.79	102.55	35.10	9.56	60.0	± 9.6 %
		Y	15.06	94.38	32.19		60.0	
		Z	21.07	106.24	36.89		60.0	
10100-CAB	LTE-FDD (SC-FDMA, 100% RB, 20 MHz, QPSK)	X	3.71	73.15	18.05	0.00	150.0	± 9.6 %
		Y	3.34	70.68	16.71		150.0	
		Z	3.15	70.31	16.60		150.0	
10101-CAB	LTE-FDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM)	X	3.53	68.94	16.73	0.00	150.0	± 9.6 %
		Y	3.44	67.88	16.03		150.0	
		Z	3.28	67.66	15.91		150.0	
10102-CAB	LTE-FDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM)	X	3.62	68.78	16.77	0.00	150.0	± 9.6 %
		Y	3.55	67.81	16.12		150.0	
		Z	3.38	67.61	16.00		150.0	
10103-CAB	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, QPSK)	X	9.03	78.84	21.45	3.98	65.0	± 9.6 %
		Y	8.52	77.08	20.81		65.0	
		Z	8.79	79.04	21.64		65.0	
10104-CAB	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM)	X	8.83	77.31	21.70	3.98	65.0	± 9.6 %
		Y	8.68	76.21	21.28		65.0	
		Z	8.45	77.10	21.68		65.0	
10105-CAB	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM)	X	8.12	75.63	21.27	3.98	65.0	± 9.6 %
		Y	7.58	73.53	20.37		65.0	
		Z	7.68	75.16	21.11		65.0	
10108-CAC	LTE-FDD (SC-FDMA, 100% RB, 10 MHz, QPSK)	X	3.26	72.24	17.88	0.00	150.0	± 9.6 %
		Y	2.97	69.86	16.52		150.0	
		Z	2.76	69.54	16.43		150.0	
10109-CAC	LTE-FDD (SC-FDMA, 100% RB, 10 MHz, 16-QAM)	X	3.21	68.83	16.74	0.00	150.0	± 9.6 %
		Y	3.12	67.65	15.97		150.0	
		Z	2.93	67.47	15.80		150.0	
10110-CAC	LTE-FDD (SC-FDMA, 100% RB, 5 MHz, QPSK)	X	2.68	71.31	17.65	0.00	150.0	± 9.6 %
		Y	2.45	68.82	16.19		150.0	
		Z	2.25	68.65	16.05		150.0	
10111-CAC	LTE-FDD (SC-FDMA, 100% RB, 5 MHz, 16-QAM)	X	2.94	69.70	17.25	0.00	150.0	± 9.6 %
		Y	2.81	68.04	16.25		150.0	
		Z	2.63	68.09	16.01		150.0	

10112-CAC	LTE-FDD (SC-FDMA, 100% RB, 10 MHz, 64-QAM)	X	3.32	68.66	16.72	0.00	150.0	± 9.6 %
		Y	3.24	67.56	16.01		150.0	
		Z	3.06	67.45	15.85		150.0	
10113-CAC	LTE-FDD (SC-FDMA, 100% RB, 5 MHz, 64-QAM)	X	3.09	69.65	17.28	0.00	150.0	± 9.6 %
		Y	2.97	68.11	16.35		150.0	
		Z	2.78	68.22	16.13		150.0	
10114-CAB	IEEE 802.11n (HT Greenfield, 13.5 Mbps, BPSK)	X	5.30	67.67	16.69	0.00	150.0	± 9.6 %
		Y	5.32	67.34	16.45		150.0	
		Z	5.18	67.41	16.46		150.0	
10115-CAB	IEEE 802.11n (HT Greenfield, 81 Mbps, 16-QAM)	X	5.68	67.95	16.83	0.00	150.0	± 9.6 %
		Y	5.74	67.75	16.66		150.0	
		Z	5.49	67.60	16.57		150.0	
10116-CAB	IEEE 802.11n (HT Greenfield, 135 Mbps, 64-QAM)	X	5.43	67.93	16.74	0.00	150.0	± 9.6 %
		Y	5.45	67.58	16.50		150.0	
		Z	5.29	67.63	16.50		150.0	
10117-CAB	IEEE 802.11n (HT Mixed, 13.5 Mbps, BPSK)	X	5.31	67.69	16.73	0.00	150.0	± 9.6 %
		Y	5.33	67.35	16.48		150.0	
		Z	5.15	67.28	16.42		150.0	
10118-CAB	IEEE 802.11n (HT Mixed, 81 Mbps, 16-QAM)	X	5.73	68.05	16.89	0.00	150.0	± 9.6 %
		Y	5.76	67.71	16.65		150.0	
		Z	5.58	67.82	16.69		150.0	
10119-CAB	IEEE 802.11n (HT Mixed, 135 Mbps, 64-QAM)	X	5.40	67.88	16.73	0.00	150.0	± 9.6 %
		Y	5.42	67.54	16.49		150.0	
		Z	5.26	67.56	16.48		150.0	
10140-CAB	LTE-FDD (SC-FDMA, 100% RB, 15 MHz, 16-QAM)	X	3.67	68.77	16.68	0.00	150.0	± 9.6 %
		Y	3.60	67.81	16.05		150.0	
		Z	3.42	67.62	15.92		150.0	
10141-CAB	LTE-FDD (SC-FDMA, 100% RB, 15 MHz, 64-QAM)	X	3.79	68.75	16.79	0.00	150.0	± 9.6 %
		Y	3.72	67.84	16.19		150.0	
		Z	3.54	67.70	16.08		150.0	
10142-CAC	LTE-FDD (SC-FDMA, 100% RB, 3 MHz, QPSK)	X	2.48	71.58	17.67	0.00	150.0	± 9.6 %
		Y	2.22	68.66	16.03		150.0	
		Z	2.02	68.57	15.71		150.0	
10143-CAC	LTE-FDD (SC-FDMA, 100% RB, 3 MHz, 16-QAM)	X	2.90	70.86	17.43	0.00	150.0	± 9.6 %
		Y	2.68	68.61	16.20		150.0	
		Z	2.48	68.71	15.71		150.0	
10144-CAC	LTE-FDD (SC-FDMA, 100% RB, 3 MHz, 64-QAM)	X	2.65	68.53	15.87	0.00	150.0	± 9.6 %
		Y	2.53	66.90	14.94		150.0	
		Z	2.29	66.75	14.27		150.0	
10145-CAC	LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, QPSK)	X	2.00	71.65	16.48	0.00	150.0	± 9.6 %
		Y	1.64	67.49	14.42		150.0	
		Z	1.28	65.53	12.17		150.0	
10146-CAC	LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, 16-QAM)	X	6.65	82.42	19.81	0.00	150.0	± 9.6 %
		Y	3.51	73.00	16.51		150.0	
		Z	2.73	70.16	13.72		150.0	
10147-CAC	LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, 64-QAM)	X	11.62	90.60	22.70	0.00	150.0	± 9.6 %
		Y	4.34	76.22	18.03		150.0	
		Z	3.53	73.44	15.25		150.0	

10149-CAB	LTE-FDD (SC-FDMA, 50% RB, 20 MHz, 16-QAM)	X	3.22	68.90	16.79	0.00	150.0	± 9.6 %
		Y	3.13	67.70	16.01		150.0	
		Z	2.94	67.52	15.84		150.0	
10150-CAB	LTE-FDD (SC-FDMA, 50% RB, 20 MHz, 64-QAM)	X	3.33	68.71	16.76	0.00	150.0	± 9.6 %
		Y	3.25	67.61	16.05		150.0	
		Z	3.06	67.50	15.89		150.0	
10151-CAB	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, QPSK)	X	9.59	81.08	22.43	3.98	65.0	± 9.6 %
		Y	8.87	78.87	21.64		65.0	
		Z	9.33	81.38	22.62		65.0	
10152-CAB	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 16-QAM)	X	8.50	77.58	21.63	3.98	65.0	± 9.6 %
		Y	8.30	76.31	21.16		65.0	
		Z	8.08	77.33	21.50		65.0	
10153-CAB	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 64-QAM)	X	8.85	78.28	22.25	3.98	65.0	± 9.6 %
		Y	8.62	76.95	21.75		65.0	
		Z	8.48	78.15	22.17		65.0	
10154-CAC	LTE-FDD (SC-FDMA, 50% RB, 10 MHz, QPSK)	X	2.77	71.95	18.01	0.00	150.0	± 9.6 %
		Y	2.51	69.32	16.50		150.0	
		Z	2.29	69.01	16.28		150.0	
10155-CAC	LTE-FDD (SC-FDMA, 50% RB, 10 MHz, 16-QAM)	X	2.94	69.69	17.25	0.00	150.0	± 9.6 %
		Y	2.80	68.03	16.25		150.0	
		Z	2.63	68.10	16.02		150.0	
10156-CAC	LTE-FDD (SC-FDMA, 50% RB, 5 MHz, QPSK)	X	2.40	72.31	17.91	0.00	150.0	± 9.6 %
		Y	2.09	68.89	16.05		150.0	
		Z	1.86	68.62	15.51		150.0	
10157-CAC	LTE-FDD (SC-FDMA, 50% RB, 5 MHz, 16-QAM)	X	2.55	69.65	16.30	0.00	150.0	± 9.6 %
		Y	2.36	67.46	15.11		150.0	
		Z	2.12	67.25	14.30		150.0	
10158-CAC	LTE-FDD (SC-FDMA, 50% RB, 10 MHz, 64-QAM)	X	3.10	69.70	17.32	0.00	150.0	± 9.6 %
		Y	2.97	68.15	16.39		150.0	
		Z	2.78	68.27	16.17		150.0	
10159-CAC	LTE-FDD (SC-FDMA, 50% RB, 5 MHz, 64-QAM)	X	2.69	70.18	16.62	0.00	150.0	± 9.6 %
		Y	2.48	67.89	15.40		150.0	
		Z	2.22	67.66	14.56		150.0	
10160-CAB	LTE-FDD (SC-FDMA, 50% RB, 15 MHz, QPSK)	X	3.10	70.43	17.35	0.00	150.0	± 9.6 %
		Y	2.94	68.69	16.29		150.0	
		Z	2.78	68.69	16.25		150.0	
10161-CAB	LTE-FDD (SC-FDMA, 50% RB, 15 MHz, 16-QAM)	X	3.22	68.62	16.74	0.00	150.0	± 9.6 %
		Y	3.14	67.48	16.00		150.0	
		Z	2.96	67.42	15.82		150.0	
10162-CAB	LTE-FDD (SC-FDMA, 50% RB, 15 MHz, 64-QAM)	X	3.32	68.61	16.76	0.00	150.0	± 9.6 %
		Y	3.24	67.49	16.04		150.0	
		Z	3.07	67.56	15.92		150.0	
10166-CAC	LTE-FDD (SC-FDMA, 50% RB, 1.4 MHz, QPSK)	X	4.32	72.20	20.50	3.01	150.0	± 9.6 %
		Y	4.09	70.13	19.37		150.0	
		Z	3.89	71.03	19.86		150.0	
10167-CAC	LTE-FDD (SC-FDMA, 50% RB, 1.4 MHz, 16-QAM)	X	6.13	77.20	21.71	3.01	150.0	± 9.6 %
		Y	5.31	73.40	20.02		150.0	
		Z	5.17	75.28	20.82		150.0	

10168-CAC	LTE-FDD (SC-FDMA, 50% RB, 1.4 MHz, 64-QAM)	X	6.94	79.87	23.11	3.01	150.0	± 9.6 %
		Y	5.79	75.28	21.14		150.0	
		Z	5.82	77.80	22.20		150.0	
10169-CAB	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, QPSK)	X	4.47	76.31	22.20	3.01	150.0	± 9.6 %
		Y	3.93	72.42	20.26		150.0	
		Z	3.45	71.87	20.27		150.0	
10170-CAB	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM)	X	9.97	90.37	26.89	3.01	150.0	± 9.6 %
		Y	6.08	79.64	22.84		150.0	
		Z	5.69	81.07	23.66		150.0	
10171-AAB	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, 64-QAM)	X	6.58	81.51	22.72	3.01	150.0	± 9.6 %
		Y	4.82	74.69	19.94		150.0	
		Z	4.39	75.54	20.48		150.0	
10172-CAB	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK)	X	73.64	126.23	37.77	6.02	65.0	± 9.6 %
		Y	18.65	98.22	29.94		65.0	
		Z	50.70	122.38	37.42		65.0	
10173-CAB	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM)	X	94.74	123.96	35.21	6.02	65.0	± 9.6 %
		Y	22.61	98.04	28.47		65.0	
		Z	96.90	127.66	36.64		65.0	
10174-CAB	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 64-QAM)	X	56.11	113.11	31.91	6.02	65.0	± 9.6 %
		Y	18.59	93.53	26.66		65.0	
		Z	65.46	118.77	33.84		65.0	
10175-CAC	LTE-FDD (SC-FDMA, 1 RB, 10 MHz, QPSK)	X	4.37	75.74	21.85	3.01	150.0	± 9.6 %
		Y	3.86	71.99	19.97		150.0	
		Z	3.41	71.52	20.02		150.0	
10176-CAC	LTE-FDD (SC-FDMA, 1 RB, 10 MHz, 16-QAM)	X	9.99	90.41	26.90	3.01	150.0	± 9.6 %
		Y	6.09	79.66	22.85		150.0	
		Z	5.70	81.10	23.67		150.0	
10177-CAE	LTE-FDD (SC-FDMA, 1 RB, 5 MHz, QPSK)	X	4.43	76.02	22.00	3.01	150.0	± 9.6 %
		Y	3.90	72.21	20.10		150.0	
		Z	3.44	71.69	20.11		150.0	
10178-CAC	LTE-FDD (SC-FDMA, 1 RB, 5 MHz, 16-QAM)	X	9.65	89.71	26.63	3.01	150.0	± 9.6 %
		Y	5.97	79.26	22.66		150.0	
		Z	5.62	80.80	23.53		150.0	
10179-CAC	LTE-FDD (SC-FDMA, 1 RB, 10 MHz, 64-QAM)	X	7.97	85.43	24.54	3.01	150.0	± 9.6 %
		Y	5.36	76.88	21.19		150.0	
		Z	4.98	78.13	21.92		150.0	
10180-CAC	LTE-FDD (SC-FDMA, 1 RB, 5 MHz, 64-QAM)	X	6.51	81.29	22.61	3.01	150.0	± 9.6 %
		Y	4.79	74.55	19.86		150.0	
		Z	4.38	75.44	20.42		150.0	
10181-CAB	LTE-FDD (SC-FDMA, 1 RB, 15 MHz, QPSK)	X	4.42	75.99	21.99	3.01	150.0	± 9.6 %
		Y	3.90	72.19	20.09		150.0	
		Z	3.43	71.67	20.11		150.0	
10182-CAB	LTE-FDD (SC-FDMA, 1 RB, 15 MHz, 16-QAM)	X	9.63	89.67	26.62	3.01	150.0	± 9.6 %
		Y	5.96	79.23	22.65		150.0	
		Z	5.61	80.77	23.51		150.0	
10183-AAA	LTE-FDD (SC-FDMA, 1 RB, 15 MHz, 64-QAM)	X	6.50	81.25	22.60	3.01	150.0	± 9.6 %
		Y	4.78	74.53	19.85		150.0	
		Z	4.37	75.41	20.41		150.0	

10184-CAC	LTE-FDD (SC-FDMA, 1 RB, 3 MHz, QPSK)	X	4.44	76.05	22.02	3.01	150.0	± 9.6 %
		Y	3.91	72.24	20.12		150.0	
		Z	3.45	71.72	20.13		150.0	
10185-CAC	LTE-FDD (SC-FDMA, 1 RB, 3 MHz, 16-QAM)	X	9.70	89.80	26.67	3.01	150.0	± 9.6 %
		Y	5.99	79.32	22.68		150.0	
		Z	5.64	80.86	23.56		150.0	
10186-AAC	LTE-FDD (SC-FDMA, 1 RB, 3 MHz, 64-QAM)	X	6.54	81.37	22.64	3.01	150.0	± 9.6 %
		Y	4.81	74.60	19.88		150.0	
		Z	4.39	75.50	20.45		150.0	
10187-CAC	LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK)	X	4.45	76.10	22.07	3.01	150.0	± 9.6 %
		Y	3.92	72.26	20.15		150.0	
		Z	3.46	71.78	20.19		150.0	
10188-CAC	LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, 16-QAM)	X	10.51	91.45	27.34	3.01	150.0	± 9.6 %
		Y	6.26	80.23	23.14		150.0	
		Z	5.89	81.76	24.00		150.0	
10189-AAC	LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, 64-QAM)	X	6.85	82.27	23.07	3.01	150.0	± 9.6 %
		Y	4.94	75.14	20.19		150.0	
		Z	4.52	76.06	20.77		150.0	
10193-CAB	IEEE 802.11n (HT Greenfield, 6.5 Mbps, BPSK)	X	4.73	67.10	16.51	0.00	150.0	± 9.6 %
		Y	4.75	66.68	16.23		150.0	
		Z	4.57	66.79	16.16		150.0	
10194-CAB	IEEE 802.11n (HT Greenfield, 39 Mbps, 16-QAM)	X	4.94	67.48	16.62	0.00	150.0	± 9.6 %
		Y	4.96	67.08	16.34		150.0	
		Z	4.75	67.11	16.28		150.0	
10195-CAB	IEEE 802.11n (HT Greenfield, 65 Mbps, 64-QAM)	X	4.98	67.48	16.62	0.00	150.0	± 9.6 %
		Y	5.00	67.07	16.34		150.0	
		Z	4.79	67.14	16.30		150.0	
10196-CAB	IEEE 802.11n (HT Mixed, 6.5 Mbps, BPSK)	X	4.76	67.21	16.55	0.00	150.0	± 9.6 %
		Y	4.78	66.80	16.27		150.0	
		Z	4.58	66.86	16.18		150.0	
10197-CAB	IEEE 802.11n (HT Mixed, 39 Mbps, 16-QAM)	X	4.96	67.50	16.63	0.00	150.0	± 9.6 %
		Y	4.98	67.09	16.35		150.0	
		Z	4.76	67.14	16.30		150.0	
10198-CAB	IEEE 802.11n (HT Mixed, 65 Mbps, 64-QAM)	X	4.99	67.50	16.63	0.00	150.0	± 9.6 %
		Y	5.01	67.09	16.35		150.0	
		Z	4.79	67.16	16.31		150.0	
10219-CAB	IEEE 802.11n (HT Mixed, 7.2 Mbps, BPSK)	X	4.71	67.23	16.53	0.00	150.0	± 9.6 %
		Y	4.73	66.82	16.24		150.0	
		Z	4.53	66.87	16.14		150.0	
10220-CAB	IEEE 802.11n (HT Mixed, 43.3 Mbps, 16-QAM)	X	4.96	67.50	16.63	0.00	150.0	± 9.6 %
		Y	4.98	67.10	16.35		150.0	
		Z	4.76	67.11	16.29		150.0	
10221-CAB	IEEE 802.11n (HT Mixed, 72.2 Mbps, 64-QAM)	X	4.99	67.43	16.62	0.00	150.0	± 9.6 %
		Y	5.01	67.03	16.34		150.0	
		Z	4.80	67.09	16.30		150.0	
10222-CAB	IEEE 802.11n (HT Mixed, 15 Mbps, BPSK)	X	5.29	67.72	16.73	0.00	150.0	± 9.6 %
		Y	5.31	67.38	16.49		150.0	
		Z	5.12	67.29	16.41		150.0	

10223-CAB	IEEE 802.11n (HT Mixed, 90 Mbps, 16-QAM)	X	5.67	68.03	16.90	0.00	150.0	± 9.6 %
		Y	5.70	67.71	16.67		150.0	
		Z	5.43	67.50	16.54		150.0	
10224-CAB	IEEE 802.11n (HT Mixed, 150 Mbps, 64-QAM)	X	5.35	67.84	16.72	0.00	150.0	± 9.6 %
		Y	5.37	67.51	16.48		150.0	
		Z	5.17	67.40	16.39		150.0	
10225-CAB	UMTS-FDD (HSPA+)	X	3.03	67.01	16.18	0.00	150.0	± 9.6 %
		Y	3.00	66.12	15.59		150.0	
		Z	2.84	66.23	15.31		150.0	
10226-CAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 16-QAM)	X	100.00	125.13	35.58	6.02	65.0	± 9.6 %
		Y	23.60	98.91	28.82		65.0	
		Z	100.00	128.43	36.91		65.0	
10227-CAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 64-QAM)	X	61.16	114.83	32.47	6.02	65.0	± 9.6 %
		Y	19.96	94.87	27.16		65.0	
		Z	73.77	120.96	34.46		65.0	
10228-CAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK)	X	72.18	126.53	38.01	6.02	65.0	± 9.6 %
		Y	21.44	101.40	31.05		65.0	
		Z	53.16	123.89	37.96		65.0	
10229-CAB	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 16-QAM)	X	94.57	123.93	35.21	6.02	65.0	± 9.6 %
		Y	22.66	98.06	28.49		65.0	
		Z	96.87	127.65	36.65		65.0	
10230-CAB	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 64-QAM)	X	56.39	113.28	31.99	6.02	65.0	± 9.6 %
		Y	19.26	94.16	26.88		65.0	
		Z	66.99	119.13	33.93		65.0	
10231-CAB	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, QPSK)	X	66.18	124.67	37.45	6.02	65.0	± 9.6 %
		Y	20.62	100.55	30.72		65.0	
		Z	48.89	122.07	37.41		65.0	
10232-CAB	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 16-QAM)	X	94.69	123.96	35.21	6.02	65.0	± 9.6 %
		Y	22.64	98.05	28.48		65.0	
		Z	97.00	127.68	36.66		65.0	
10233-CAB	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 64-QAM)	X	56.52	113.33	32.00	6.02	65.0	± 9.6 %
		Y	19.26	94.17	26.88		65.0	
		Z	67.07	119.16	33.94		65.0	
10234-CAB	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, QPSK)	X	60.26	122.59	36.81	6.02	65.0	± 9.6 %
		Y	19.81	99.63	30.34		65.0	
		Z	45.11	120.21	36.81		65.0	
10235-CAB	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 16-QAM)	X	95.38	124.09	35.25	6.02	65.0	± 9.6 %
		Y	22.67	98.09	28.50		65.0	
		Z	97.77	127.84	36.70		65.0	
10236-CAB	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 64-QAM)	X	57.18	113.50	32.04	6.02	65.0	± 9.6 %
		Y	19.38	94.26	26.90		65.0	
		Z	68.10	119.39	33.99		65.0	
10237-CAB	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, QPSK)	X	67.28	125.01	37.54	6.02	65.0	± 9.6 %
		Y	20.74	100.68	30.76		65.0	
		Z	49.59	122.38	37.49		65.0	
10238-CAB	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 16-QAM)	X	95.00	124.02	35.23	6.02	65.0	± 9.6 %
		Y	22.64	98.06	28.49		65.0	
		Z	97.19	127.73	36.66		65.0	

10239-CAB	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 64-QAM)	X	56.67	113.39	32.01	6.02	65.0	± 9.6 %
		Y	19.26	94.19	26.88		65.0	
		Z	67.13	119.19	33.94		65.0	
10240-CAB	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, QPSK)	X	67.00	124.93	37.52	6.02	65.0	± 9.6 %
		Y	20.68	100.63	30.74		65.0	
		Z	49.37	122.30	37.47		65.0	
10241-CAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 16-QAM)	X	14.43	89.77	28.56	6.98	65.0	± 9.6 %
		Y	12.31	85.00	26.80		65.0	
		Z	13.89	90.56	28.94		65.0	
10242-CAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 64-QAM)	X	13.70	88.57	28.03	6.98	65.0	± 9.6 %
		Y	10.82	82.08	25.53		65.0	
		Z	13.16	89.30	28.37		65.0	
10243-CAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, QPSK)	X	10.55	84.90	27.56	6.98	65.0	± 9.6 %
		Y	8.88	79.49	25.25		65.0	
		Z	9.99	85.03	27.70		65.0	
10244-CAB	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 16-QAM)	X	11.43	83.67	22.47	3.98	65.0	± 9.6 %
		Y	9.78	80.48	21.64		65.0	
		Z	9.76	81.22	20.90		65.0	
10245-CAB	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 64-QAM)	X	11.21	83.09	22.22	3.98	65.0	± 9.6 %
		Y	9.71	80.13	21.47		65.0	
		Z	9.48	80.50	20.58		65.0	
10246-CAB	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, QPSK)	X	10.58	85.22	23.00	3.98	65.0	± 9.6 %
		Y	8.86	81.57	21.94		65.0	
		Z	9.16	83.05	21.67		65.0	
10247-CAB	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 16-QAM)	X	8.25	78.94	21.22	3.98	65.0	± 9.6 %
		Y	7.85	77.32	20.79		65.0	
		Z	7.47	77.61	20.18		65.0	
10248-CAB	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 64-QAM)	X	8.20	78.37	20.99	3.98	65.0	± 9.6 %
		Y	7.89	76.93	20.61		65.0	
		Z	7.41	77.03	19.93		65.0	
10249-CAB	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, QPSK)	X	11.20	86.28	23.89	3.98	65.0	± 9.6 %
		Y	9.29	82.26	22.62		65.0	
		Z	10.48	85.66	23.36		65.0	
10250-CAB	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 16-QAM)	X	8.93	80.25	22.81	3.98	65.0	± 9.6 %
		Y	8.46	78.37	22.14		65.0	
		Z	8.46	79.88	22.48		65.0	
10251-CAB	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 64-QAM)	X	8.39	77.98	21.64	3.98	65.0	± 9.6 %
		Y	8.12	76.54	21.14		65.0	
		Z	7.98	77.74	21.34		65.0	
10252-CAB	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, QPSK)	X	10.53	84.51	23.78	3.98	65.0	± 9.6 %
		Y	9.19	81.18	22.63		65.0	
		Z	10.24	84.82	23.86		65.0	
10253-CAB	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 16-QAM)	X	8.25	76.95	21.44	3.98	65.0	± 9.6 %
		Y	8.10	75.77	21.00		65.0	
		Z	7.89	76.78	21.28		65.0	
10254-CAB	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 64-QAM)	X	8.62	77.66	22.02	3.98	65.0	± 9.6 %
		Y	8.44	76.43	21.56		65.0	
		Z	8.28	77.57	21.89		65.0	

10255-CAB	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, QPSK)	X	9.25	80.67	22.52	3.98	65.0	± 9.6 %
		Y	8.61	78.53	21.74		65.0	
		Z	9.00	80.97	22.67		65.0	
10256-CAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 16-QAM)	X	10.45	81.80	21.06	3.98	65.0	± 9.6 %
		Y	9.25	79.43	20.63		65.0	
		Z	8.10	77.76	18.69		65.0	
10257-CAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 64-QAM)	X	10.14	80.97	20.68	3.98	65.0	± 9.6 %
		Y	9.17	78.95	20.38		65.0	
		Z	7.78	76.81	18.23		65.0	
10258-CAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, QPSK)	X	9.51	83.16	21.76	3.98	65.0	± 9.6 %
		Y	8.34	80.46	21.12		65.0	
		Z	7.35	79.00	19.46		65.0	
10259-CAB	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 16-QAM)	X	8.50	79.32	21.74	3.98	65.0	± 9.6 %
		Y	8.08	77.61	21.22		65.0	
		Z	7.86	78.44	21.00		65.0	
10260-CAB	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 64-QAM)	X	8.50	79.04	21.65	3.98	65.0	± 9.6 %
		Y	8.14	77.44	21.18		65.0	
		Z	7.85	78.11	20.87		65.0	
10261-CAB	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, QPSK)	X	10.46	84.88	23.66	3.98	65.0	± 9.6 %
		Y	8.99	81.35	22.49		65.0	
		Z	9.90	84.54	23.31		65.0	
10262-CAB	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 16-QAM)	X	8.92	80.22	22.77	3.98	65.0	± 9.6 %
		Y	8.45	78.35	22.11		65.0	
		Z	8.45	79.83	22.45		65.0	
10263-CAB	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 64-QAM)	X	8.39	77.98	21.64	3.98	65.0	± 9.6 %
		Y	8.12	76.54	21.14		65.0	
		Z	7.97	77.72	21.33		65.0	
10264-CAB	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, QPSK)	X	10.46	84.37	23.71	3.98	65.0	± 9.6 %
		Y	9.15	81.08	22.57		65.0	
		Z	10.16	84.65	23.78		65.0	
10265-CAB	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 16-QAM)	X	8.50	77.59	21.64	3.98	65.0	± 9.6 %
		Y	8.29	76.32	21.16		65.0	
		Z	8.08	77.33	21.51		65.0	
10266-CAB	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 64-QAM)	X	8.85	78.27	22.25	3.98	65.0	± 9.6 %
		Y	8.62	76.95	21.75		65.0	
		Z	8.48	78.14	22.17		65.0	
10267-CAB	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, QPSK)	X	9.58	81.04	22.42	3.98	65.0	± 9.6 %
		Y	8.86	78.85	21.63		65.0	
		Z	9.31	81.34	22.60		65.0	
10268-CAB	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 16-QAM)	X	8.89	76.95	21.70	3.98	65.0	± 9.6 %
		Y	8.78	75.95	21.31		65.0	
		Z	8.54	76.83	21.69		65.0	
10269-CAB	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 64-QAM)	X	8.79	76.51	21.59	3.98	65.0	± 9.6 %
		Y	8.71	75.58	21.23		65.0	
		Z	8.47	76.42	21.58		65.0	
10270-CAB	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, QPSK)	X	8.98	78.26	21.47	3.98	65.0	± 9.6 %
		Y	8.66	76.86	20.96		65.0	
		Z	8.70	78.39	21.61		65.0	

10274-CAB	UMTS-FDD (HSUPA, Subtest 5, 3GPP Rel8.10)	X	2.76	67.40	16.12	0.00	150.0	± 9.6 %
		Y	2.68	66.20	15.35		150.0	
		Z	2.61	66.55	15.21		150.0	
10275-CAB	UMTS-FDD (HSUPA, Subtest 5, 3GPP Rel8.4)	X	1.97	71.33	17.64	0.00	150.0	± 9.6 %
		Y	1.71	67.84	15.61		150.0	
		Z	1.63	67.82	15.44		150.0	
10277-CAA	PHS (QPSK)	X	5.79	70.12	14.44	9.03	50.0	± 9.6 %
		Y	6.71	72.04	16.24		50.0	
		Z	5.20	69.01	13.39		50.0	
10278-CAA	PHS (QPSK, BW 884MHz, Rolloff 0.5)	X	10.14	81.72	21.64	9.03	50.0	± 9.6 %
		Y	10.00	81.13	22.16		50.0	
		Z	8.80	79.36	20.19		50.0	
10279-CAA	PHS (QPSK, BW 884MHz, Rolloff 0.38)	X	10.33	81.92	21.72	9.03	50.0	± 9.6 %
		Y	10.19	81.33	22.24		50.0	
		Z	8.92	79.53	20.27		50.0	
10290-AAB	CDMA2000, RC1, SO55, Full Rate	X	2.41	75.76	18.30	0.00	150.0	± 9.6 %
		Y	1.70	69.18	15.23		150.0	
		Z	1.46	68.58	14.00		150.0	
10291-AAB	CDMA2000, RC3, SO55, Full Rate	X	1.39	73.22	17.31	0.00	150.0	± 9.6 %
		Y	0.98	66.45	13.79		150.0	
		Z	0.85	65.74	12.53		150.0	
10292-AAB	CDMA2000, RC3, SO32, Full Rate	X	2.43	83.14	21.70	0.00	150.0	± 9.6 %
		Y	1.15	69.63	15.75		150.0	
		Z	1.04	69.40	14.71		150.0	
10293-AAB	CDMA2000, RC3, SO3, Full Rate	X	5.22	96.14	26.57	0.00	150.0	± 9.6 %
		Y	1.48	73.58	17.97		150.0	
		Z	1.47	74.43	17.37		150.0	
10295-AAB	CDMA2000, RC1, SO3, 1/8th Rate 25 fr.	X	10.48	83.75	24.32	9.03	50.0	± 9.6 %
		Y	9.84	81.54	23.85		50.0	
		Z	11.88	86.37	24.91		50.0	
10297-AAA	LTE-FDD (SC-FDMA, 50% RB, 20 MHz, QPSK)	X	3.28	72.37	17.95	0.00	150.0	± 9.6 %
		Y	2.98	69.95	16.59		150.0	
		Z	2.77	69.63	16.49		150.0	
10298-AAB	LTE-FDD (SC-FDMA, 50% RB, 3 MHz, QPSK)	X	2.26	72.62	17.48	0.00	150.0	± 9.6 %
		Y	1.88	68.51	15.39		150.0	
		Z	1.59	67.65	14.14		150.0	
10299-AAB	LTE-FDD (SC-FDMA, 50% RB, 3 MHz, 16-QAM)	X	6.40	81.89	20.37	0.00	150.0	± 9.6 %
		Y	3.78	73.44	17.26		150.0	
		Z	3.62	73.66	16.18		150.0	
10300-AAB	LTE-FDD (SC-FDMA, 50% RB, 3 MHz, 64-QAM)	X	3.72	72.73	16.07	0.00	150.0	± 9.6 %
		Y	2.96	68.88	14.55		150.0	
		Z	2.44	67.52	12.75		150.0	
10301-AAA	IEEE 802.16e WiMAX (29:18, 5ms, 10MHz, QPSK, PUSC)	X	5.70	68.03	18.84	4.17	80.0	± 9.6 %
		Y	5.77	67.36	18.35		80.0	
		Z	5.64	68.37	18.74		80.0	
10302-AAA	IEEE 802.16e WiMAX (29:18, 5ms, 10MHz, QPSK, PUSC, 3 CTRL symbols)	X	6.21	68.72	19.60	4.96	80.0	± 9.6 %
		Y	6.41	68.65	19.47		80.0	
		Z	6.13	69.05	19.54		80.0	

10303-AAA	IEEE 802.16e WiMAX (31:15, 5ms, 10MHz, 64QAM, PUSC)	X	6.07	68.83	19.70	4.96	80.0	± 9.6 %
		Y	6.30	68.82	19.58		80.0	
		Z	5.97	69.08	19.56		80.0	
10304-AAA	IEEE 802.16e WiMAX (29:18, 5ms, 10MHz, 64QAM, PUSC)	X	5.71	68.13	18.89	4.17	80.0	± 9.6 %
		Y	5.89	68.01	18.73		80.0	
		Z	5.61	68.35	18.73		80.0	
10305-AAA	IEEE 802.16e WiMAX (31:15, 10ms, 10MHz, 64QAM, PUSC, 15 symbols)	X	6.90	74.81	23.11	6.02	50.0	± 9.6 %
		Y	9.48	82.28	26.60		50.0	
		Z	9.03	82.45	26.20		50.0	
10306-AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, 64QAM, PUSC, 18 symbols)	X	6.40	71.34	21.64	6.02	50.0	± 9.6 %
		Y	6.75	71.50	21.57		50.0	
		Z	6.43	72.04	21.56		50.0	
10307-AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, QPSK, PUSC, 18 symbols)	X	6.49	72.10	21.82	6.02	50.0	± 9.6 %
		Y	6.85	72.21	21.70		50.0	
		Z	6.50	72.67	21.67		50.0	
10308-AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, 16QAM, PUSC)	X	6.53	72.49	22.02	6.02	50.0	± 9.6 %
		Y	6.89	72.58	21.88		50.0	
		Z	6.59	73.18	21.92		50.0	
10309-AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, 16QAM, AMC 2x3, 18 symbols)	X	6.52	71.66	21.81	6.02	50.0	± 9.6 %
		Y	6.86	71.77	21.70		50.0	
		Z	6.53	72.35	21.74		50.0	
10310-AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, QPSK, AMC 2x3, 18 symbols)	X	6.41	71.57	21.66	6.02	50.0	± 9.6 %
		Y	6.75	71.71	21.56		50.0	
		Z	6.45	72.29	21.59		50.0	
10311-AAA	LTE-FDD (SC-FDMA, 100% RB, 15 MHz, QPSK)	X	3.66	71.55	17.51	0.00	150.0	± 9.6 %
		Y	3.33	69.32	16.27		150.0	
		Z	3.12	68.94	16.14		150.0	
10313-AAA	IDEN 1:3	X	8.19	79.62	19.16	6.99	70.0	± 9.6 %
		Y	7.35	77.72	18.90		70.0	
		Z	8.21	80.46	19.57		70.0	
10314-AAA	IDEN 1:6	X	11.35	86.83	24.06	10.00	30.0	± 9.6 %
		Y	8.72	81.68	22.69		30.0	
		Z	10.81	87.34	24.49		30.0	
10315-AAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps, 96pc duty cycle)	X	1.24	66.34	16.99	0.17	150.0	± 9.6 %
		Y	1.18	64.44	15.46		150.0	
		Z	1.17	64.45	15.36		150.0	
10316-AAB	IEEE 802.11g WiFi 2.4 GHz (ERP-OFDM, 6 Mbps, 96pc duty cycle)	X	4.83	67.25	16.68	0.17	150.0	± 9.6 %
		Y	4.86	66.88	16.43		150.0	
		Z	4.68	66.99	16.39		150.0	
10317-AAB	IEEE 802.11a WiFi 5 GHz (OFDM, 6 Mbps, 96pc duty cycle)	X	4.83	67.25	16.68	0.17	150.0	± 9.6 %
		Y	4.86	66.88	16.43		150.0	
		Z	4.68	66.99	16.39		150.0	
10400-AAC	IEEE 802.11ac WiFi (20MHz, 64-QAM, 99pc duty cycle)	X	4.96	67.54	16.61	0.00	150.0	± 9.6 %
		Y	4.98	67.13	16.32		150.0	
		Z	4.75	67.19	16.29		150.0	
10401-AAC	IEEE 802.11ac WiFi (40MHz, 64-QAM, 99pc duty cycle)	X	5.54	67.49	16.61	0.00	150.0	± 9.6 %
		Y	5.56	67.14	16.37		150.0	
		Z	5.45	67.43	16.49		150.0	

10402-AAC	IEEE 802.11ac WiFi (80MHz, 64-QAM, 99pc duty cycle)	X	5.87	68.11	16.75	0.00	150.0	± 9.6 %
		Y	5.89	67.80	16.54		150.0	
		Z	5.70	67.70	16.47		150.0	
10403-AAB	CDMA2000 (1xEV-DO, Rev. 0)	X	2.41	75.76	18.30	0.00	115.0	± 9.6 %
		Y	1.70	69.18	15.23		115.0	
		Z	1.46	68.58	14.00		115.0	
10404-AAB	CDMA2000 (1xEV-DO, Rev. A)	X	2.41	75.76	18.30	0.00	115.0	± 9.6 %
		Y	1.70	69.18	15.23		115.0	
		Z	1.46	68.58	14.00		115.0	
10406-AAB	CDMA2000, RC3, SO32, SCH0, Full Rate	X	100.00	120.32	30.30	0.00	100.0	± 9.6 %
		Y	37.67	108.93	28.46		100.0	
		Z	100.00	119.28	29.39		100.0	
10410-AAA	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	100.00	118.51	29.90	3.23	80.0	± 9.6 %
		Y	100.00	119.74	30.88		80.0	
		Z	100.00	120.99	30.71		80.0	
10415-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps, 99pc duty cycle)	X	1.06	64.54	16.02	0.00	150.0	± 9.6 %
		Y	1.03	62.90	14.57		150.0	
		Z	1.03	63.04	14.51		150.0	
10416-AAA	IEEE 802.11g WiFi 2.4 GHz (ERP-OFDM, 6 Mbps, 99pc duty cycle)	X	4.73	67.12	16.55	0.00	150.0	± 9.6 %
		Y	4.75	66.70	16.25		150.0	
		Z	4.58	66.83	16.23		150.0	
10417-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps, 99pc duty cycle)	X	4.73	67.12	16.55	0.00	150.0	± 9.6 %
		Y	4.75	66.70	16.25		150.0	
		Z	4.58	66.83	16.23		150.0	
10418-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps, 99pc duty cycle, Long preamble)	X	4.72	67.27	16.56	0.00	150.0	± 9.6 %
		Y	4.73	66.83	16.25		150.0	
		Z	4.56	66.98	16.24		150.0	
10419-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps, 99pc duty cycle, Short preamble)	X	4.75	67.23	16.56	0.00	150.0	± 9.6 %
		Y	4.76	66.80	16.26		150.0	
		Z	4.59	66.94	16.24		150.0	
10422-AAA	IEEE 802.11n (HT Greenfield, 7.2 Mbps, BPSK)	X	4.87	67.22	16.56	0.00	150.0	± 9.6 %
		Y	4.89	66.82	16.28		150.0	
		Z	4.71	66.94	16.26		150.0	
10423-AAA	IEEE 802.11n (HT Greenfield, 43.3 Mbps, 16-QAM)	X	5.09	67.62	16.71	0.00	150.0	± 9.6 %
		Y	5.12	67.23	16.44		150.0	
		Z	4.88	67.27	16.38		150.0	
10424-AAA	IEEE 802.11n (HT Greenfield, 72.2 Mbps, 64-QAM)	X	5.00	67.56	16.68	0.00	150.0	± 9.6 %
		Y	5.02	67.15	16.39		150.0	
		Z	4.80	67.22	16.35		150.0	
10425-AAA	IEEE 802.11n (HT Greenfield, 15 Mbps, BPSK)	X	5.55	67.83	16.78	0.00	150.0	± 9.6 %
		Y	5.59	67.55	16.57		150.0	
		Z	5.40	67.57	16.55		150.0	
10426-AAA	IEEE 802.11n (HT Greenfield, 90 Mbps, 16-QAM)	X	5.56	67.88	16.79	0.00	150.0	± 9.6 %
		Y	5.60	67.58	16.58		150.0	
		Z	5.41	67.59	16.56		150.0	

10427-AAA	IEEE 802.11n (HT Greenfield, 150 Mbps, 64-QAM)	X	5.59	67.91	16.80	0.00	150.0	± 9.6 %
		Y	5.63	67.61	16.59		150.0	
		Z	5.42	67.56	16.54		150.0	
10430-AAA	LTE-FDD (OFDMA, 5 MHz, E-TM 3.1)	X	4.54	71.07	18.70	0.00	150.0	± 9.6 %
		Y	4.46	69.99	18.11		150.0	
		Z	4.20	70.41	17.89		150.0	
10431-AAA	LTE-FDD (OFDMA, 10 MHz, E-TM 3.1)	X	4.50	67.77	16.69	0.00	150.0	± 9.6 %
		Y	4.51	67.23	16.34		150.0	
		Z	4.26	67.36	16.21		150.0	
10432-AAA	LTE-FDD (OFDMA, 15 MHz, E-TM 3.1)	X	4.78	67.63	16.67	0.00	150.0	± 9.6 %
		Y	4.80	67.18	16.37		150.0	
		Z	4.56	67.25	16.29		150.0	
10433-AAA	LTE-FDD (OFDMA, 20 MHz, E-TM 3.1)	X	5.01	67.62	16.71	0.00	150.0	± 9.6 %
		Y	5.04	67.21	16.43		150.0	
		Z	4.81	67.25	16.37		150.0	
10434-AAA	W-CDMA (BS Test Model 1, 64 DPCH)	X	4.66	71.93	18.79	0.00	150.0	± 9.6 %
		Y	4.53	70.61	18.11		150.0	
		Z	4.27	71.15	17.82		150.0	
10435-AAA	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	100.00	118.35	29.82	3.23	80.0	± 9.6 %
		Y	100.00	119.61	30.82		80.0	
		Z	100.00	120.81	30.62		80.0	
10447-AAA	LTE-FDD (OFDMA, 5 MHz, E-TM 3.1, Clipping 44%)	X	3.85	68.02	16.38	0.00	150.0	± 9.6 %
		Y	3.83	67.22	15.92		150.0	
		Z	3.54	67.32	15.53		150.0	
10448-AAA	LTE-FDD (OFDMA, 10 MHz, E-TM 3.1, Clipping 44%)	X	4.31	67.56	16.56	0.00	150.0	± 9.6 %
		Y	4.32	66.99	16.19		150.0	
		Z	4.10	67.13	16.07		150.0	
10449-AAA	LTE-FDD (OFDMA, 15 MHz, E-TM 3.1, Clipping 44%)	X	4.56	67.47	16.59	0.00	150.0	± 9.6 %
		Y	4.57	66.98	16.26		150.0	
		Z	4.37	67.07	16.19		150.0	
10450-AAA	LTE-FDD (OFDMA, 20 MHz, E-TM 3.1, Clipping 44%)	X	4.73	67.38	16.58	0.00	150.0	± 9.6 %
		Y	4.74	66.94	16.27		150.0	
		Z	4.56	67.01	16.22		150.0	
10451-AAA	W-CDMA (BS Test Model 1, 64 DPCH, Clipping 44%)	X	3.81	68.42	16.23	0.00	150.0	± 9.6 %
		Y	3.77	67.50	15.73		150.0	
		Z	3.44	67.49	15.16		150.0	
10456-AAA	IEEE 802.11ac WiFi (160MHz, 64-QAM, 99pc duty cycle)	X	6.40	68.45	16.93	0.00	150.0	± 9.6 %
		Y	6.44	68.23	16.77		150.0	
		Z	6.27	68.12	16.71		150.0	
10457-AAA	UMTS-FDD (DC-HSDPA)	X	3.89	65.77	16.30	0.00	150.0	± 9.6 %
		Y	3.90	65.36	15.99		150.0	
		Z	3.82	65.47	15.93		150.0	
10458-AAA	CDMA2000 (1xEV-DO, Rev. B, 2 carriers)	X	3.60	67.53	15.71	0.00	150.0	± 9.6 %
		Y	3.56	66.59	15.22		150.0	
		Z	3.27	66.88	14.62		150.0	
10459-AAA	CDMA2000 (1xEV-DO, Rev. B, 3 carriers)	X	4.70	65.53	16.21	0.00	150.0	± 9.6 %
		Y	4.63	64.60	15.71		150.0	
		Z	4.27	64.85	15.38		150.0	

10460-AAA	UMTS-FDD (WCDMA, AMR)	X	1.28	75.29	20.20	0.00	150.0	± 9.6 %
		Y	0.92	67.71	15.91		150.0	
		Z	0.90	67.71	15.78		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	122.97	32.01	3.29	80.0	± 9.6 %
		Y	100.00	121.34	31.70		80.0	
		Z	100.00	125.58	32.88		80.0	
10462-AAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	100.00	108.03	24.84	3.23	80.0	± 9.6 %
		Y	100.00	109.86	26.18		80.0	
		Z	100.00	108.99	24.93		80.0	
10463-AAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	100.00	105.21	23.49	3.23	80.0	± 9.6 %
		Y	47.92	99.26	23.13		80.0	
		Z	100.00	105.71	23.36		80.0	
10464-AAA	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	100.00	121.12	31.00	3.23	80.0	± 9.6 %
		Y	100.00	119.76	30.82		80.0	
		Z	100.00	123.61	31.80		80.0	
10465-AAA	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	100.00	107.54	24.59	3.23	80.0	± 9.6 %
		Y	92.10	108.50	25.75		80.0	
		Z	100.00	108.47	24.68		80.0	
10466-AAA	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	100.00	104.76	23.28	3.23	80.0	± 9.6 %
		Y	27.79	92.79	21.40		80.0	
		Z	53.71	98.96	21.73		80.0	
10467-AAA	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	100.00	121.32	31.10	3.23	80.0	± 9.6 %
		Y	100.00	119.93	30.90		80.0	
		Z	100.00	123.83	31.91		80.0	
10468-AAA	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	100.00	107.68	24.66	3.23	80.0	± 9.6 %
		Y	100.00	109.58	26.02		80.0	
		Z	100.00	108.64	24.75		80.0	
10469-AAA	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	100.00	104.76	23.27	3.23	80.0	± 9.6 %
		Y	28.45	93.06	21.47		80.0	
		Z	57.15	99.60	21.88		80.0	
10470-AAA	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	100.00	121.35	31.10	3.23	80.0	± 9.6 %
		Y	100.00	119.95	30.90		80.0	
		Z	100.00	123.86	31.91		80.0	
10471-AAA	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	100.00	107.63	24.63	3.23	80.0	± 9.6 %
		Y	100.00	109.54	26.00		80.0	
		Z	100.00	108.59	24.73		80.0	
10472-AAA	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	100.00	104.72	23.24	3.23	80.0	± 9.6 %
		Y	28.52	93.08	21.46		80.0	
		Z	57.07	99.54	21.85		80.0	
10473-AAA	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	100.00	121.32	31.09	3.23	80.0	± 9.6 %
		Y	100.00	119.92	30.89		80.0	
		Z	100.00	123.84	31.90		80.0	
10474-AAA	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	100.00	107.64	24.63	3.23	80.0	± 9.6 %
		Y	100.00	109.55	26.00		80.0	
		Z	100.00	108.60	24.73		80.0	
10475-AAA	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	100.00	104.73	23.25	3.23	80.0	± 9.6 %
		Y	28.13	92.93	21.42		80.0	
		Z	55.36	99.25	21.78		80.0	

10477-AAA	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	100.00	107.49	24.56	3.23	80.0	± 9.6 %
		Y	96.57	109.01	25.85		80.0	
		Z	100.00	108.42	24.64		80.0	
10478-AAA	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	100.00	104.68	23.23	3.23	80.0	± 9.6 %
		Y	27.68	92.72	21.36		80.0	
		Z	53.23	98.81	21.67		80.0	
10479-AAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	26.63	104.01	29.13	3.23	80.0	± 9.6 %
		Y	9.63	86.48	23.96		80.0	
		Z	24.30	102.59	28.22		80.0	
10480-AAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	38.31	102.90	27.02	3.23	80.0	± 9.6 %
		Y	11.50	85.06	22.20		80.0	
		Z	29.11	98.49	25.10		80.0	
10481-AAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	30.40	98.59	25.52	3.23	80.0	± 9.6 %
		Y	10.74	83.47	21.41		80.0	
		Z	20.94	92.98	23.18		80.0	
10482-AAA	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	8.51	84.82	22.25	2.23	80.0	± 9.6 %
		Y	5.60	77.58	19.80		80.0	
		Z	5.41	78.09	19.19		80.0	
10483-AAA	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	14.01	88.92	23.41	2.23	80.0	± 9.6 %
		Y	8.14	80.18	20.73		80.0	
		Z	9.32	82.50	20.44		80.0	
10484-AAA	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	12.47	87.00	22.82	2.23	80.0	± 9.6 %
		Y	7.81	79.33	20.43		80.0	
		Z	8.26	80.64	19.81		80.0	
10485-AAA	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	8.06	84.25	22.66	2.23	80.0	± 9.6 %
		Y	5.75	77.87	20.37		80.0	
		Z	5.68	79.10	20.42		80.0	
10486-AAA	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	5.66	75.87	19.43	2.23	80.0	± 9.6 %
		Y	4.94	72.86	18.29		80.0	
		Z	4.62	73.05	17.69		80.0	
10487-AAA	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	5.56	75.25	19.19	2.23	80.0	± 9.6 %
		Y	4.94	72.51	18.16		80.0	
		Z	4.56	72.51	17.46		80.0	
10488-AAA	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	7.10	80.82	21.84	2.23	80.0	± 9.6 %
		Y	5.79	76.47	20.13		80.0	
		Z	5.49	77.19	20.36		80.0	
10489-AAA	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	5.34	73.87	19.44	2.23	80.0	± 9.6 %
		Y	5.00	71.87	18.57		80.0	
		Z	4.68	72.17	18.47		80.0	
10490-AAA	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	5.35	73.36	19.26	2.23	80.0	± 9.6 %
		Y	5.06	71.53	18.46		80.0	
		Z	4.74	71.87	18.36		80.0	
10491-AAA	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	6.36	77.12	20.56	2.23	80.0	± 9.6 %
		Y	5.66	74.28	19.36		80.0	
		Z	5.31	74.67	19.54		80.0	
10492-AAA	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	5.41	72.24	18.98	2.23	80.0	± 9.6 %
		Y	5.23	70.84	18.33		80.0	
		Z	4.89	71.01	18.29		80.0	

10493-AAA	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	5.44	71.94	18.88	2.23	80.0	± 9.6 %
		Y	5.28	70.63	18.27		80.0	
		Z	4.94	70.81	18.22		80.0	
10494-AAA	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	7.43	79.70	21.31	2.23	80.0	± 9.6 %
		Y	6.30	76.13	19.88		80.0	
		Z	5.88	76.40	20.05		80.0	
10495-AAA	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	5.56	72.97	19.25	2.23	80.0	± 9.6 %
		Y	5.33	71.45	18.55		80.0	
		Z	4.97	71.48	18.50		80.0	
10496-AAA	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	5.54	72.39	19.06	2.23	80.0	± 9.6 %
		Y	5.37	71.03	18.42		80.0	
		Z	5.01	71.08	18.38		80.0	
10497-AAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	7.31	82.38	20.82	2.23	80.0	± 9.6 %
		Y	4.87	75.75	18.64		80.0	
		Z	4.03	73.68	16.68		80.0	
10498-AAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	4.73	73.29	16.69	2.23	80.0	± 9.6 %
		Y	4.12	70.77	15.97		80.0	
		Z	2.73	66.24	12.60		80.0	
10499-AAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	4.59	72.54	16.27	2.23	80.0	± 9.6 %
		Y	4.10	70.38	15.70		80.0	
		Z	2.62	65.47	12.11		80.0	
10500-AAA	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	7.19	81.83	22.01	2.23	80.0	± 9.6 %
		Y	5.57	76.69	20.07		80.0	
		Z	5.44	77.85	20.24		80.0	
10501-AAA	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	5.46	74.81	19.33	2.23	80.0	± 9.6 %
		Y	4.94	72.30	18.33		80.0	
		Z	4.65	72.67	17.97		80.0	
10502-AAA	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	5.46	74.43	19.15	2.23	80.0	± 9.6 %
		Y	4.98	72.05	18.20		80.0	
		Z	4.68	72.41	17.81		80.0	
10503-AAA	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	6.99	80.56	21.73	2.23	80.0	± 9.6 %
		Y	5.72	76.28	20.04		80.0	
		Z	5.42	76.98	20.27		80.0	
10504-AAA	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	5.31	73.78	19.39	2.23	80.0	± 9.6 %
		Y	4.98	71.79	18.52		80.0	
		Z	4.66	72.08	18.42		80.0	
10505-AAA	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	5.32	73.26	19.21	2.23	80.0	± 9.6 %
		Y	5.03	71.44	18.41		80.0	
		Z	4.72	71.78	18.31		80.0	
10506-AAA	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	7.35	79.52	21.23	2.23	80.0	± 9.6 %
		Y	6.24	75.99	19.82		80.0	
		Z	5.83	76.25	19.98		80.0	
10507-AAA	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	5.53	72.90	19.22	2.23	80.0	± 9.6 %
		Y	5.31	71.39	18.51		80.0	
		Z	4.95	71.42	18.47		80.0	

10508-AAA	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	5.52	72.31	19.02	2.23	80.0	± 9.6 %
		Y	5.35	70.96	18.38		80.0	
		Z	4.99	71.02	18.34		80.0	
10509-AAA	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	6.86	76.40	20.08	2.23	80.0	± 9.6 %
		Y	6.23	74.05	19.09		80.0	
		Z	5.83	74.13	19.18		80.0	
10510-AAA	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	5.89	72.04	18.91	2.23	80.0	± 9.6 %
		Y	5.75	70.91	18.36		80.0	
		Z	5.36	70.80	18.32		80.0	
10511-AAA	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	5.86	71.58	18.77	2.23	80.0	± 9.6 %
		Y	5.75	70.55	18.27		80.0	
		Z	5.39	70.48	18.23		80.0	
10512-AAA	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	7.85	79.24	20.97	2.23	80.0	± 9.6 %
		Y	6.75	76.04	19.69		80.0	
		Z	6.30	76.05	19.77		80.0	
10513-AAA	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	5.88	72.72	19.16	2.23	80.0	± 9.6 %
		Y	5.70	71.43	18.55		80.0	
		Z	5.29	71.21	18.47		80.0	
10514-AAA	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	5.77	72.00	18.94	2.23	80.0	± 9.6 %
		Y	5.64	70.86	18.38		80.0	
		Z	5.26	70.69	18.32		80.0	
10515-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 2 Mbps, 99pc duty cycle)	X	1.03	64.88	16.19	0.00	150.0	± 9.6 %
		Y	0.99	63.07	14.62		150.0	
		Z	0.99	63.20	14.56		150.0	
10516-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 5.5 Mbps, 99pc duty cycle)	X	1.64	91.04	26.85	0.00	150.0	± 9.6 %
		Y	0.59	69.22	16.60		150.0	
		Z	0.59	69.23	16.57		150.0	
10517-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 11 Mbps, 99pc duty cycle)	X	0.96	68.68	17.89	0.00	150.0	± 9.6 %
		Y	0.84	64.94	15.18		150.0	
		Z	0.84	64.94	15.09		150.0	
10518-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 9 Mbps, 99pc duty cycle)	X	4.73	67.22	16.54	0.00	150.0	± 9.6 %
		Y	4.75	66.79	16.24		150.0	
		Z	4.57	66.91	16.20		150.0	
10519-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 12 Mbps, 99pc duty cycle)	X	4.96	67.51	16.67	0.00	150.0	± 9.6 %
		Y	4.99	67.12	16.39		150.0	
		Z	4.76	67.15	16.33		150.0	
10520-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 18 Mbps, 99pc duty cycle)	X	4.82	67.52	16.62	0.00	150.0	± 9.6 %
		Y	4.84	67.09	16.32		150.0	
		Z	4.61	67.11	16.25		150.0	
10521-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 24 Mbps, 99pc duty cycle)	X	4.75	67.54	16.61	0.00	150.0	± 9.6 %
		Y	4.77	67.10	16.31		150.0	
		Z	4.54	67.10	16.23		150.0	
10522-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 36 Mbps, 99pc duty cycle)	X	4.79	67.47	16.62	0.00	150.0	± 9.6 %
		Y	4.80	67.00	16.30		150.0	
		Z	4.60	67.19	16.31		150.0	

10523-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 48 Mbps, 99pc duty cycle)	X	4.66	67.41	16.50	0.00	150.0	± 9.6 %
		Y	4.67	66.95	16.18		150.0	
		Z	4.48	67.04	16.16		150.0	
10524-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 54 Mbps, 99pc duty cycle)	X	4.74	67.44	16.62	0.00	150.0	± 9.6 %
		Y	4.76	66.99	16.31		150.0	
		Z	4.54	67.10	16.28		150.0	
10525-AAA	IEEE 802.11ac WiFi (20MHz, MCS0, 99pc duty cycle)	X	4.69	66.48	16.21	0.00	150.0	± 9.6 %
		Y	4.70	66.02	15.89		150.0	
		Z	4.53	66.15	15.87		150.0	
10526-AAA	IEEE 802.11ac WiFi (20MHz, MCS1, 99pc duty cycle)	X	4.91	66.90	16.35	0.00	150.0	± 9.6 %
		Y	4.91	66.43	16.04		150.0	
		Z	4.70	66.52	16.01		150.0	
10527-AAA	IEEE 802.11ac WiFi (20MHz, MCS2, 99pc duty cycle)	X	4.82	66.89	16.32	0.00	150.0	± 9.6 %
		Y	4.83	66.42	16.00		150.0	
		Z	4.62	66.47	15.95		150.0	
10528-AAA	IEEE 802.11ac WiFi (20MHz, MCS3, 99pc duty cycle)	X	4.84	66.91	16.35	0.00	150.0	± 9.6 %
		Y	4.85	66.44	16.03		150.0	
		Z	4.63	66.49	15.99		150.0	
10529-AAA	IEEE 802.11ac WiFi (20MHz, MCS4, 99pc duty cycle)	X	4.84	66.91	16.35	0.00	150.0	± 9.6 %
		Y	4.85	66.44	16.03		150.0	
		Z	4.63	66.49	15.99		150.0	
10531-AAA	IEEE 802.11ac WiFi (20MHz, MCS6, 99pc duty cycle)	X	4.86	67.08	16.39	0.00	150.0	± 9.6 %
		Y	4.87	66.60	16.06		150.0	
		Z	4.63	66.60	16.00		150.0	
10532-AAA	IEEE 802.11ac WiFi (20MHz, MCS7, 99pc duty cycle)	X	4.71	66.97	16.35	0.00	150.0	± 9.6 %
		Y	4.72	66.49	16.02		150.0	
		Z	4.49	66.45	15.93		150.0	
10533-AAA	IEEE 802.11ac WiFi (20MHz, MCS8, 99pc duty cycle)	X	4.86	66.93	16.33	0.00	150.0	± 9.6 %
		Y	4.87	66.45	16.01		150.0	
		Z	4.64	66.54	15.97		150.0	
10534-AAA	IEEE 802.11ac WiFi (40MHz, MCS0, 99pc duty cycle)	X	5.34	67.03	16.36	0.00	150.0	± 9.6 %
		Y	5.36	66.66	16.11		150.0	
		Z	5.17	66.62	16.06		150.0	
10535-AAA	IEEE 802.11ac WiFi (40MHz, MCS1, 99pc duty cycle)	X	5.42	67.17	16.42	0.00	150.0	± 9.6 %
		Y	5.43	66.80	16.16		150.0	
		Z	5.24	66.80	16.14		150.0	
10536-AAA	IEEE 802.11ac WiFi (40MHz, MCS2, 99pc duty cycle)	X	5.29	67.18	16.41	0.00	150.0	± 9.6 %
		Y	5.30	66.78	16.13		150.0	
		Z	5.11	66.74	16.09		150.0	
10537-AAA	IEEE 802.11ac WiFi (40MHz, MCS3, 99pc duty cycle)	X	5.35	67.14	16.39	0.00	150.0	± 9.6 %
		Y	5.36	66.75	16.12		150.0	
		Z	5.16	66.71	16.08		150.0	
10538-AAA	IEEE 802.11ac WiFi (40MHz, MCS4, 99pc duty cycle)	X	5.47	67.20	16.46	0.00	150.0	± 9.6 %
		Y	5.49	66.85	16.21		150.0	
		Z	5.26	66.74	16.13		150.0	
10540-AAA	IEEE 802.11ac WiFi (40MHz, MCS6, 99pc duty cycle)	X	5.36	67.15	16.45	0.00	150.0	± 9.6 %
		Y	5.38	66.77	16.18		150.0	
		Z	5.19	66.76	16.16		150.0	

10541-AAA	IEEE 802.11ac WiFi (40MHz, MCS7, 99pc duty cycle)	X	5.35	67.08	16.42	0.00	150.0	± 9.6 %
		Y	5.38	66.75	16.17		150.0	
		Z	5.16	66.62	16.08		150.0	
10542-AAA	IEEE 802.11ac WiFi (40MHz, MCS8, 99pc duty cycle)	X	5.49	67.08	16.42	0.00	150.0	± 9.6 %
		Y	5.51	66.73	16.18		150.0	
		Z	5.31	66.69	16.13		150.0	
10543-AAA	IEEE 802.11ac WiFi (40MHz, MCS9, 99pc duty cycle)	X	5.58	67.09	16.44	0.00	150.0	± 9.6 %
		Y	5.61	66.77	16.21		150.0	
		Z	5.39	66.74	16.17		150.0	
10544-AAA	IEEE 802.11ac WiFi (80MHz, MCS0, 99pc duty cycle)	X	5.61	67.12	16.33	0.00	150.0	± 9.6 %
		Y	5.62	66.77	16.09		150.0	
		Z	5.48	66.74	16.05		150.0	
10545-AAA	IEEE 802.11ac WiFi (80MHz, MCS1, 99pc duty cycle)	X	5.83	67.51	16.46	0.00	150.0	± 9.6 %
		Y	5.84	67.15	16.22		150.0	
		Z	5.68	67.16	16.22		150.0	
10546-AAA	IEEE 802.11ac WiFi (80MHz, MCS2, 99pc duty cycle)	X	5.72	67.42	16.44	0.00	150.0	± 9.6 %
		Y	5.73	67.08	16.20		150.0	
		Z	5.55	66.95	16.13		150.0	
10547-AAA	IEEE 802.11ac WiFi (80MHz, MCS3, 99pc duty cycle)	X	5.81	67.48	16.46	0.00	150.0	± 9.6 %
		Y	5.83	67.17	16.24		150.0	
		Z	5.62	66.99	16.14		150.0	
10548-AAA	IEEE 802.11ac WiFi (80MHz, MCS4, 99pc duty cycle)	X	6.10	68.50	16.94	0.00	150.0	± 9.6 %
		Y	6.15	68.24	16.74		150.0	
		Z	5.89	67.98	16.61		150.0	
10550-AAA	IEEE 802.11ac WiFi (80MHz, MCS6, 99pc duty cycle)	X	5.74	67.36	16.42	0.00	150.0	± 9.6 %
		Y	5.75	67.01	16.18		150.0	
		Z	5.57	66.96	16.14		150.0	
10551-AAA	IEEE 802.11ac WiFi (80MHz, MCS7, 99pc duty cycle)	X	5.76	67.47	16.43	0.00	150.0	± 9.6 %
		Y	5.78	67.14	16.20		150.0	
		Z	5.58	67.00	16.12		150.0	
10552-AAA	IEEE 802.11ac WiFi (80MHz, MCS8, 99pc duty cycle)	X	5.66	67.23	16.33	0.00	150.0	± 9.6 %
		Y	5.67	66.89	16.10		150.0	
		Z	5.49	66.80	16.03		150.0	
10553-AAA	IEEE 802.11ac WiFi (80MHz, MCS9, 99pc duty cycle)	X	5.75	67.26	16.37	0.00	150.0	± 9.6 %
		Y	5.76	66.93	16.14		150.0	
		Z	5.58	66.84	16.08		150.0	
10554-AAA	IEEE 1602.11ac WiFi (160MHz, MCS0, 99pc duty cycle)	X	6.01	67.49	16.42	0.00	150.0	± 9.6 %
		Y	6.02	67.17	16.20		150.0	
		Z	5.89	67.10	16.15		150.0	
10555-AAA	IEEE 1602.11ac WiFi (160MHz, MCS1, 99pc duty cycle)	X	6.17	67.85	16.56	0.00	150.0	± 9.6 %
		Y	6.20	67.56	16.36		150.0	
		Z	6.02	67.41	16.28		150.0	
10556-AAA	IEEE 1602.11ac WiFi (160MHz, MCS2, 99pc duty cycle)	X	6.18	67.83	16.55	0.00	150.0	± 9.6 %
		Y	6.19	67.51	16.33		150.0	
		Z	6.04	67.46	16.30		150.0	
10557-AAA	IEEE 1602.11ac WiFi (160MHz, MCS3, 99pc duty cycle)	X	6.17	67.82	16.57	0.00	150.0	± 9.6 %
		Y	6.19	67.52	16.36		150.0	
		Z	6.00	67.36	16.27		150.0	

10558-AAA	IEEE 1602.11ac WiFi (160MHz, MCS4, 99pc duty cycle)	X	6.23	68.01	16.68	0.00	150.0	± 9.6 %
		Y	6.25	67.72	16.47		150.0	
		Z	6.05	67.53	16.37		150.0	
10560-AAA	IEEE 1602.11ac WiFi (160MHz, MCS6, 99pc duty cycle)	X	6.22	67.85	16.63	0.00	150.0	± 9.6 %
		Y	6.25	67.56	16.43		150.0	
		Z	6.05	67.37	16.33		150.0	
10561-AAA	IEEE 1602.11ac WiFi (160MHz, MCS7, 99pc duty cycle)	X	6.13	67.79	16.64	0.00	150.0	± 9.6 %
		Y	6.15	67.49	16.43		150.0	
		Z	5.97	67.35	16.35		150.0	
10562-AAA	IEEE 1602.11ac WiFi (160MHz, MCS8, 99pc duty cycle)	X	6.29	68.28	16.89	0.00	150.0	± 9.6 %
		Y	6.33	68.01	16.70		150.0	
		Z	6.10	67.74	16.55		150.0	
10563-AAA	IEEE 1602.11ac WiFi (160MHz, MCS9, 99pc duty cycle)	X	6.57	68.63	17.00	0.00	150.0	± 9.6 %
		Y	6.57	68.27	16.77		150.0	
		Z	6.35	68.10	16.68		150.0	
10564-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 9 Mbps, 99pc duty cycle)	X	5.07	67.31	16.69	0.46	150.0	± 9.6 %
		Y	5.10	66.95	16.44		150.0	
		Z	4.91	67.04	16.40		150.0	
10565-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 12 Mbps, 99pc duty cycle)	X	5.34	67.80	17.01	0.46	150.0	± 9.6 %
		Y	5.38	67.46	16.78		150.0	
		Z	5.14	67.47	16.71		150.0	
10566-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 18 Mbps, 99pc duty cycle)	X	5.17	67.69	16.85	0.46	150.0	± 9.6 %
		Y	5.21	67.33	16.61		150.0	
		Z	4.97	67.33	16.54		150.0	
10567-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 24 Mbps, 99pc duty cycle)	X	5.20	68.09	17.20	0.46	150.0	± 9.6 %
		Y	5.23	67.71	16.94		150.0	
		Z	5.00	67.68	16.86		150.0	
10568-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 36 Mbps, 99pc duty cycle)	X	5.08	67.38	16.59	0.46	150.0	± 9.6 %
		Y	5.11	67.01	16.33		150.0	
		Z	4.90	67.16	16.34		150.0	
10569-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 48 Mbps, 99pc duty cycle)	X	5.14	68.11	17.22	0.46	150.0	± 9.6 %
		Y	5.16	67.71	16.95		150.0	
		Z	4.96	67.77	16.91		150.0	
10570-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 54 Mbps, 99pc duty cycle)	X	5.18	67.92	17.15	0.46	150.0	± 9.6 %
		Y	5.21	67.52	16.88		150.0	
		Z	4.99	67.63	16.86		150.0	
10571-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps, 90pc duty cycle)	X	1.45	67.97	17.69	0.46	130.0	± 9.6 %
		Y	1.38	65.84	16.15		130.0	
		Z	1.34	65.80	16.05		130.0	
10572-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 2 Mbps, 90pc duty cycle)	X	1.49	68.86	18.18	0.46	130.0	± 9.6 %
		Y	1.40	66.47	16.51		130.0	
		Z	1.36	66.39	16.40		130.0	
10573-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 5.5 Mbps, 90pc duty cycle)	X	100.00	149.30	40.22	0.46	130.0	± 9.6 %
		Y	3.11	88.03	23.54		130.0	
		Z	3.23	89.37	24.00		130.0	
10574-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 11 Mbps, 90pc duty cycle)	X	2.21	80.01	23.13	0.46	130.0	± 9.6 %
		Y	1.65	72.75	19.44		130.0	
		Z	1.56	72.33	19.21		130.0	

10575-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps, 90pc duty cycle)	X	4.88	67.15	16.77	0.46	130.0	± 9.6 %
		Y	4.92	66.81	16.54		130.0	
		Z	4.73	66.93	16.51		130.0	
10576-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 9 Mbps, 90pc duty cycle)	X	4.91	67.32	16.84	0.46	130.0	± 9.6 %
		Y	4.94	66.97	16.61		130.0	
		Z	4.75	67.08	16.56		130.0	
10577-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 12 Mbps, 90pc duty cycle)	X	5.15	67.65	17.01	0.46	130.0	± 9.6 %
		Y	5.20	67.33	16.79		130.0	
		Z	4.96	67.36	16.73		130.0	
10578-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 18 Mbps, 90pc duty cycle)	X	5.05	67.86	17.13	0.46	130.0	± 9.6 %
		Y	5.09	67.50	16.89		130.0	
		Z	4.85	67.51	16.82		130.0	
10579-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 24 Mbps, 90pc duty cycle)	X	4.82	67.24	16.51	0.46	130.0	± 9.6 %
		Y	4.87	66.90	16.27		130.0	
		Z	4.63	66.89	16.19		130.0	
10580-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 36 Mbps, 90pc duty cycle)	X	4.86	67.17	16.48	0.46	130.0	± 9.6 %
		Y	4.91	66.83	16.25		130.0	
		Z	4.68	66.92	16.22		130.0	
10581-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 48 Mbps, 90pc duty cycle)	X	4.96	67.97	17.11	0.46	130.0	± 9.6 %
		Y	5.00	67.61	16.86		130.0	
		Z	4.76	67.57	16.77		130.0	
10582-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 54 Mbps, 90pc duty cycle)	X	4.78	66.97	16.29	0.46	130.0	± 9.6 %
		Y	4.83	66.64	16.06		130.0	
		Z	4.58	66.67	16.00		130.0	
10583-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps, 90pc duty cycle)	X	4.88	67.15	16.77	0.46	130.0	± 9.6 %
		Y	4.92	66.81	16.54		130.0	
		Z	4.73	66.93	16.51		130.0	
10584-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 9 Mbps, 90pc duty cycle)	X	4.91	67.32	16.84	0.46	130.0	± 9.6 %
		Y	4.94	66.97	16.61		130.0	
		Z	4.75	67.08	16.56		130.0	
10585-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 12 Mbps, 90pc duty cycle)	X	5.15	67.65	17.01	0.46	130.0	± 9.6 %
		Y	5.20	67.33	16.79		130.0	
		Z	4.96	67.36	16.73		130.0	
10586-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 18 Mbps, 90pc duty cycle)	X	5.05	67.86	17.13	0.46	130.0	± 9.6 %
		Y	5.09	67.50	16.89		130.0	
		Z	4.85	67.51	16.82		130.0	
10587-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 24 Mbps, 90pc duty cycle)	X	4.82	67.24	16.51	0.46	130.0	± 9.6 %
		Y	4.87	66.90	16.27		130.0	
		Z	4.63	66.89	16.19		130.0	
10588-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 36 Mbps, 90pc duty cycle)	X	4.86	67.17	16.48	0.46	130.0	± 9.6 %
		Y	4.91	66.83	16.25		130.0	
		Z	4.68	66.92	16.22		130.0	
10589-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 48 Mbps, 90pc duty cycle)	X	4.96	67.97	17.11	0.46	130.0	± 9.6 %
		Y	5.00	67.61	16.86		130.0	
		Z	4.76	67.57	16.77		130.0	
10590-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 54 Mbps, 90pc duty cycle)	X	4.78	66.97	16.29	0.46	130.0	± 9.6 %
		Y	4.83	66.64	16.06		130.0	
		Z	4.58	66.67	16.00		130.0	

10591-AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS0, 90pc duty cycle)	X	5.03	67.20	16.86	0.46	130.0	± 9.6 %
		Y	5.07	66.88	16.64		130.0	
		Z	4.88	66.97	16.60		130.0	
10592-AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS1, 90pc duty cycle)	X	5.21	67.55	16.98	0.46	130.0	± 9.6 %
		Y	5.26	67.23	16.76		130.0	
		Z	5.03	67.30	16.73		130.0	
10593-AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS2, 90pc duty cycle)	X	5.14	67.52	16.89	0.46	130.0	± 9.6 %
		Y	5.19	67.20	16.68		130.0	
		Z	4.96	67.23	16.62		130.0	
10594-AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS3, 90pc duty cycle)	X	5.19	67.66	17.03	0.46	130.0	± 9.6 %
		Y	5.24	67.33	16.81		130.0	
		Z	5.01	67.38	16.76		130.0	
10595-AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS4, 90pc duty cycle)	X	5.17	67.65	16.95	0.46	130.0	± 9.6 %
		Y	5.23	67.33	16.73		130.0	
		Z	4.98	67.35	16.67		130.0	
10596-AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS5, 90pc duty cycle)	X	5.11	67.64	16.94	0.46	130.0	± 9.6 %
		Y	5.16	67.30	16.71		130.0	
		Z	4.92	67.35	16.67		130.0	
10597-AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS6, 90pc duty cycle)	X	5.06	67.59	16.86	0.46	130.0	± 9.6 %
		Y	5.11	67.26	16.64		130.0	
		Z	4.87	67.26	16.56		130.0	
10598-AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS7, 90pc duty cycle)	X	5.05	67.87	17.14	0.46	130.0	± 9.6 %
		Y	5.09	67.53	16.91		130.0	
		Z	4.85	67.47	16.80		130.0	
10599-AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS0, 90pc duty cycle)	X	5.68	67.76	17.01	0.46	130.0	± 9.6 %
		Y	5.74	67.54	16.84		130.0	
		Z	5.54	67.51	16.80		130.0	
10600-AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS1, 90pc duty cycle)	X	5.91	68.42	17.31	0.46	130.0	± 9.6 %
		Y	6.00	68.29	17.19		130.0	
		Z	5.69	67.96	17.01		130.0	
10601-AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS2, 90pc duty cycle)	X	5.75	68.03	17.13	0.46	130.0	± 9.6 %
		Y	5.81	67.81	16.96		130.0	
		Z	5.57	67.70	16.89		130.0	
10602-AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS3, 90pc duty cycle)	X	5.85	68.05	17.05	0.46	130.0	± 9.6 %
		Y	5.93	67.91	16.93		130.0	
		Z	5.67	67.73	16.83		130.0	
10603-AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS4, 90pc duty cycle)	X	5.97	68.46	17.38	0.46	130.0	± 9.6 %
		Y	6.05	68.29	17.25		130.0	
		Z	5.74	68.01	17.09		130.0	
10604-AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS5, 90pc duty cycle)	X	5.70	67.75	17.03	0.46	130.0	± 9.6 %
		Y	5.76	67.53	16.86		130.0	
		Z	5.55	67.48	16.81		130.0	
10605-AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS6, 90pc duty cycle)	X	5.80	68.03	17.16	0.46	130.0	± 9.6 %
		Y	5.86	67.81	17.00		130.0	
		Z	5.67	67.84	17.00		130.0	
10606-AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS7, 90pc duty cycle)	X	5.58	67.53	16.79	0.46	130.0	± 9.6 %
		Y	5.62	67.26	16.60		130.0	
		Z	5.41	67.19	16.54		130.0	

10607-AAA	IEEE 802.11ac WiFi (20MHz, MCS0, 90pc duty cycle)	X	4.86	66.52	16.48	0.46	130.0	± 9.6 %
		Y	4.89	66.14	16.23		130.0	
		Z	4.71	66.27	16.21		130.0	
10608-AAA	IEEE 802.11ac WiFi (20MHz, MCS1, 90pc duty cycle)	X	5.09	66.96	16.64	0.46	130.0	± 9.6 %
		Y	5.12	66.58	16.39		130.0	
		Z	4.90	66.67	16.37		130.0	
10609-AAA	IEEE 802.11ac WiFi (20MHz, MCS2, 90pc duty cycle)	X	4.98	66.85	16.52	0.46	130.0	± 9.6 %
		Y	5.01	66.47	16.26		130.0	
		Z	4.79	66.53	16.22		130.0	
10610-AAA	IEEE 802.11ac WiFi (20MHz, MCS3, 90pc duty cycle)	X	5.03	67.01	16.67	0.46	130.0	± 9.6 %
		Y	5.06	66.63	16.42		130.0	
		Z	4.84	66.68	16.37		130.0	
10611-AAA	IEEE 802.11ac WiFi (20MHz, MCS4, 90pc duty cycle)	X	4.96	66.86	16.54	0.46	130.0	± 9.6 %
		Y	4.99	66.50	16.29		130.0	
		Z	4.76	66.50	16.23		130.0	
10612-AAA	IEEE 802.11ac WiFi (20MHz, MCS5, 90pc duty cycle)	X	4.97	67.00	16.58	0.46	130.0	± 9.6 %
		Y	5.01	66.61	16.31		130.0	
		Z	4.77	66.66	16.28		130.0	
10613-AAA	IEEE 802.11ac WiFi (20MHz, MCS6, 90pc duty cycle)	X	4.99	66.94	16.49	0.46	130.0	± 9.6 %
		Y	5.03	66.55	16.23		130.0	
		Z	4.77	66.56	16.17		130.0	
10614-AAA	IEEE 802.11ac WiFi (20MHz, MCS7, 90pc duty cycle)	X	4.92	67.15	16.73	0.46	130.0	± 9.6 %
		Y	4.95	66.76	16.47		130.0	
		Z	4.71	66.71	16.38		130.0	
10615-AAA	IEEE 802.11ac WiFi (20MHz, MCS8, 90pc duty cycle)	X	4.95	66.65	16.31	0.46	130.0	± 9.6 %
		Y	4.99	66.28	16.06		130.0	
		Z	4.76	66.36	16.03		130.0	
10616-AAA	IEEE 802.11ac WiFi (40MHz, MCS0, 90pc duty cycle)	X	5.51	67.07	16.65	0.46	130.0	± 9.6 %
		Y	5.55	66.78	16.45		130.0	
		Z	5.35	66.74	16.40		130.0	
10617-AAA	IEEE 802.11ac WiFi (40MHz, MCS1, 90pc duty cycle)	X	5.58	67.18	16.67	0.46	130.0	± 9.6 %
		Y	5.62	66.89	16.46		130.0	
		Z	5.43	66.92	16.46		130.0	
10618-AAA	IEEE 802.11ac WiFi (40MHz, MCS2, 90pc duty cycle)	X	5.47	67.27	16.74	0.46	130.0	± 9.6 %
		Y	5.50	66.95	16.52		130.0	
		Z	5.31	66.92	16.47		130.0	
10619-AAA	IEEE 802.11ac WiFi (40MHz, MCS3, 90pc duty cycle)	X	5.49	67.07	16.57	0.46	130.0	± 9.6 %
		Y	5.52	66.76	16.36		130.0	
		Z	5.33	66.76	16.33		130.0	
10620-AAA	IEEE 802.11ac WiFi (40MHz, MCS4, 90pc duty cycle)	X	5.62	67.19	16.68	0.46	130.0	± 9.6 %
		Y	5.67	66.93	16.49		130.0	
		Z	5.42	66.79	16.40		130.0	
10621-AAA	IEEE 802.11ac WiFi (40MHz, MCS5, 90pc duty cycle)	X	5.59	67.25	16.82	0.46	130.0	± 9.6 %
		Y	5.63	66.98	16.62		130.0	
		Z	5.41	66.88	16.56		130.0	
10622-AAA	IEEE 802.11ac WiFi (40MHz, MCS6, 90pc duty cycle)	X	5.58	67.35	16.86	0.46	130.0	± 9.6 %
		Y	5.62	67.06	16.66		130.0	
		Z	5.43	67.06	16.64		130.0	

10623-AAA	IEEE 802.11ac WiFi (40MHz, MCS7, 90pc duty cycle)	X	5.48	66.99	16.57	0.46	130.0	± 9.6 %
		Y	5.54	66.75	16.40		130.0	
		Z	5.31	66.61	16.29		130.0	
10624-AAA	IEEE 802.11ac WiFi (40MHz, MCS8, 90pc duty cycle)	X	5.65	67.09	16.68	0.46	130.0	± 9.6 %
		Y	5.69	66.81	16.49		130.0	
		Z	5.50	66.79	16.45		130.0	
10625-AAA	IEEE 802.11ac WiFi (40MHz, MCS9, 90pc duty cycle)	X	6.03	68.01	17.18	0.46	130.0	± 9.6 %
		Y	6.05	67.65	16.95		130.0	
		Z	5.88	67.81	17.01		130.0	
10626-AAA	IEEE 802.11ac WiFi (80MHz, MCS0, 90pc duty cycle)	X	5.76	67.09	16.57	0.46	130.0	± 9.6 %
		Y	5.79	66.81	16.38		130.0	
		Z	5.64	66.79	16.35		130.0	
10627-AAA	IEEE 802.11ac WiFi (80MHz, MCS1, 90pc duty cycle)	X	6.01	67.60	16.77	0.46	130.0	± 9.6 %
		Y	6.04	67.32	16.58		130.0	
		Z	5.89	67.37	16.60		130.0	
10628-AAA	IEEE 802.11ac WiFi (80MHz, MCS2, 90pc duty cycle)	X	5.83	67.28	16.56	0.46	130.0	± 9.6 %
		Y	5.87	67.01	16.37		130.0	
		Z	5.69	66.92	16.32		130.0	
10629-AAA	IEEE 802.11ac WiFi (80MHz, MCS3, 90pc duty cycle)	X	5.93	67.36	16.58	0.46	130.0	± 9.6 %
		Y	5.99	67.16	16.43		130.0	
		Z	5.77	67.00	16.35		130.0	
10630-AAA	IEEE 802.11ac WiFi (80MHz, MCS4, 90pc duty cycle)	X	6.47	69.11	17.45	0.46	130.0	± 9.6 %
		Y	6.56	68.99	17.34		130.0	
		Z	6.24	68.58	17.14		130.0	
10631-AAA	IEEE 802.11ac WiFi (80MHz, MCS5, 90pc duty cycle)	X	6.36	68.89	17.53	0.46	130.0	± 9.6 %
		Y	6.44	68.71	17.39		130.0	
		Z	6.09	68.24	17.15		130.0	
10632-AAA	IEEE 802.11ac WiFi (80MHz, MCS6, 90pc duty cycle)	X	6.00	67.73	16.97	0.46	130.0	± 9.6 %
		Y	6.05	67.48	16.79		130.0	
		Z	5.85	67.39	16.74		130.0	
10633-AAA	IEEE 802.11ac WiFi (80MHz, MCS7, 90pc duty cycle)	X	5.95	67.59	16.73	0.46	130.0	± 9.6 %
		Y	6.01	67.38	16.58		130.0	
		Z	5.74	67.05	16.41		130.0	
10634-AAA	IEEE 802.11ac WiFi (80MHz, MCS8, 90pc duty cycle)	X	5.92	67.56	16.78	0.46	130.0	± 9.6 %
		Y	5.98	67.34	16.62		130.0	
		Z	5.72	67.07	16.47		130.0	
10635-AAA	IEEE 802.11ac WiFi (80MHz, MCS9, 90pc duty cycle)	X	5.80	66.87	16.18	0.46	130.0	± 9.6 %
		Y	5.85	66.64	16.01		130.0	
		Z	5.62	66.48	15.93		130.0	
10636-AAA	IEEE 1602.11ac WiFi (160MHz, MCS0, 90pc duty cycle)	X	6.16	67.47	16.65	0.46	130.0	± 9.6 %
		Y	6.19	67.22	16.49		130.0	
		Z	6.06	67.16	16.44		130.0	
10637-AAA	IEEE 1602.11ac WiFi (160MHz, MCS1, 90pc duty cycle)	X	6.34	67.89	16.84	0.46	130.0	± 9.6 %
		Y	6.39	67.69	16.69		130.0	
		Z	6.22	67.55	16.62		130.0	
10638-AAA	IEEE 1602.11ac WiFi (160MHz, MCS2, 90pc duty cycle)	X	6.33	67.82	16.78	0.46	130.0	± 9.6 %
		Y	6.36	67.57	16.61		130.0	
		Z	6.21	67.52	16.58		130.0	

10639-AAA	IEEE 1602.11ac WiFi (160MHz, MCS3, 90pc duty cycle)	X	6.34	67.88	16.86	0.46	130.0	± 9.6 %
		Y	6.38	67.64	16.70		130.0	
		Z	6.19	67.47	16.60		130.0	
10640-AAA	IEEE 1602.11ac WiFi (160MHz, MCS4, 90pc duty cycle)	X	6.37	67.96	16.84	0.46	130.0	± 9.6 %
		Y	6.42	67.75	16.69		130.0	
		Z	6.20	67.51	16.57		130.0	
10641-AAA	IEEE 1602.11ac WiFi (160MHz, MCS5, 90pc duty cycle)	X	6.36	67.66	16.71	0.46	130.0	± 9.6 %
		Y	6.40	67.44	16.56		130.0	
		Z	6.24	67.40	16.53		130.0	
10642-AAA	IEEE 1602.11ac WiFi (160MHz, MCS6, 90pc duty cycle)	X	6.44	68.03	17.05	0.46	130.0	± 9.6 %
		Y	6.49	67.81	16.91		130.0	
		Z	6.28	67.62	16.80		130.0	
10643-AAA	IEEE 1602.11ac WiFi (160MHz, MCS7, 90pc duty cycle)	X	6.26	67.70	16.80	0.46	130.0	± 9.6 %
		Y	6.31	67.48	16.64		130.0	
		Z	6.12	67.34	16.57		130.0	
10644-AAA	IEEE 1602.11ac WiFi (160MHz, MCS8, 90pc duty cycle)	X	6.50	68.41	17.18	0.46	130.0	± 9.6 %
		Y	6.57	68.25	17.05		130.0	
		Z	6.29	67.86	16.85		130.0	
10645-AAA	IEEE 1602.11ac WiFi (160MHz, MCS9, 90pc duty cycle)	X	6.78	68.77	17.29	0.46	130.0	± 9.6 %
		Y	6.81	68.48	17.11		130.0	
		Z	6.68	68.60	17.18		130.0	
10646-AAB	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, QPSK, UL Subframe=2,7)	X	37.14	116.21	38.03	9.30	60.0	± 9.6 %
		Y	19.95	100.33	33.06		60.0	
		Z	62.05	131.91	43.22		60.0	
10647-AAA	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK, UL Subframe=2,7)	X	38.52	117.84	38.64	9.30	60.0	± 9.6 %
		Y	20.25	101.35	33.50		60.0	
		Z	63.43	133.45	43.81		60.0	
10648-AAA	CDMA2000 (1x Advanced)	X	1.03	68.68	14.68	0.00	150.0	± 9.6 %
		Y	0.85	64.54	12.30		150.0	
		Z	0.71	63.65	10.90		150.0	

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



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Accreditation No.: **SCS 0108**

Client **PC Test**

Certificate No: **EX3-3589_Jan17**

CALIBRATION CERTIFICATE

Object **EX3DV4 - SN:3589**

Calibration procedure(s) **QA CAL-01.v9, QA CAL-14.v4, QA CAL-23.v5, QA CAL-25.v6
Calibration procedure for dosimetric E-field probes**

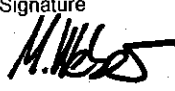
Calibration date: **January 13, 2017**

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature $(22 \pm 3)^\circ\text{C}$ 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	06-Apr-16 (No. 217-02288/02289)	Apr-17
Power sensor NRP-Z91	SN: 103244	06-Apr-16 (No. 217-02288)	Apr-17
Power sensor NRP-Z91	SN: 103245	06-Apr-16 (No. 217-02289)	Apr-17
Reference 20 dB Attenuator	SN: S5277 (20x)	05-Apr-16 (No. 217-02293)	Apr-17
Reference Probe ES3DV2	SN: 3013	31-Dec-16 (No. ES3-3013_Dec16)	Dec-17
DAE4	SN: 660	7-Dec-16 (No. DAE4-660_Dec16)	Dec-17
Secondary Standards	ID	Check Date (in house)	Scheduled Check
Power meter E4419B	SN: GB41293874	06-Apr-16 (in house check Jun-16)	In house check: Jun-18
Power sensor E4412A	SN: MY41498087	06-Apr-16 (in house check Jun-16)	In house check: Jun-18
Power sensor E4412A	SN: 000110210	06-Apr-16 (in house check Jun-16)	In house check: Jun-18
RF generator HP 8648C	SN: US3642U01700	04-Aug-99 (in house check Jun-16)	In house check: Jun-18
Network Analyzer HP 8753E	SN: US37390585	18-Oct-01 (in house check Oct-16)	In house check: Oct-17

Calibrated by:	Name Michael Weber	Function Laboratory Technician	Signature 
Approved by:	Name Katja Pokovic	Technical Manager	
			Issued: January 16, 2017
This calibration certificate shall not be reproduced except in full without written approval of the laboratory.			



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Glossary:

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

Calibration is Performed According to the Following Standards:

- 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"

Methods Applied and Interpretation of Parameters:

- NORM_{x,y,z}**: Assessed for E-field polarization $\vartheta = 0$ ($f \leq 900$ MHz in TEM-cell; $f > 1800$ MHz: R22 waveguide). NORM_{x,y,z} are only intermediate values, i.e., the uncertainties of NORM_{x,y,z} does not affect the E^2 -field uncertainty inside TSL (see below ConvF).
- NORM(f)_{x,y,z}** = NORM_{x,y,z} * frequency_response (see Frequency Response Chart). This linearization is implemented in DASY4 software versions later than 4.2. The uncertainty of the frequency response is included in the stated uncertainty of ConvF.
- DCP_{x,y,z}**: DCP are numerical linearization parameters assessed based on the data of power sweep with CW signal (no uncertainty required). DCP does not depend on frequency nor media.
- PAR**: PAR is the Peak to Average Ratio that is not calibrated but determined based on the signal characteristics
- A_{x,y,z}; B_{x,y,z}; C_{x,y,z}; D_{x,y,z}; VR_{x,y,z}**: A, B, C, D are numerical linearization parameters assessed based on the data of power sweep for specific modulation signal. The parameters do not depend on frequency nor media. VR is the maximum calibration range expressed in RMS voltage across the diode.
- ConvF and Boundary Effect Parameters**: Assessed in flat phantom using E-field (or Temperature Transfer Standard for $f \leq 800$ MHz) and inside waveguide using analytical field distributions based on power measurements for $f > 800$ MHz. The same setups are used for assessment of the parameters applied for boundary compensation (alpha, depth) of which typical uncertainty values are given. These parameters are used in DASY4 software to improve probe accuracy close to the boundary. The sensitivity in TSL corresponds to NORM_{x,y,z} * ConvF whereby the uncertainty corresponds to that given for ConvF. A frequency dependent ConvF is used in DASY version 4.4 and higher which allows extending the validity from ± 50 MHz to ± 100 MHz.
- Spherical isotropy (3D deviation from isotropy)**: in a field of low gradients realized using a flat phantom exposed by a patch antenna.
- Sensor Offset**: The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.
- Connector Angle**: The angle is assessed using the information gained by determining the NORM_x (no uncertainty required).

Probe EX3DV4

SN:3589

Manufactured: March 30, 2006
Calibrated: January 13, 2017

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

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3589

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu\text{V}/(\text{V}/\text{m})^2$) ^A	0.45	0.39	0.39	$\pm 10.1 \%$
DCP (mV) ^B	103.1	103.4	99.2	

Modulation Calibration Parameters

UID	Communication System Name		A dB	B dB $\sqrt{\mu\text{V}}$	C	D dB	VR mV	Unc ^E (k=2)
0	CW	X	0.0	0.0	1.0	0.00	161.2	$\pm 3.3 \%$
		Y	0.0	0.0	1.0		173.7	
		Z	0.0	0.0	1.0		135.7	
10010- CAA	SAR Validation (Square, 100ms, 10ms)	X	4.33	68.3	14.2	10.00	44.8	$\pm 1.9 \%$
		Y	3.03	64.9	12.6		44.0	
		Z	1.75	59.1	10.5		48.9	
10062- CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps)	X	10.36	69.2	21.9	8.68	126.5	$\pm 2.7 \%$
		Y	10.35	68.8	21.4		136.4	
		Z	10.74	70.2	22.3		149.4	
10117- CAB	IEEE 802.11n (HT Mixed, 13.5 Mbps, BPSK)	X	10.30	69.0	21.3	8.07	131.3	$\pm 1.9 \%$
		Y	10.24	68.6	20.9		140.6	
		Z	9.68	67.3	20.2		105.8	
10196- CAB	IEEE 802.11n (HT Mixed, 6.5 Mbps, BPSK)	X	9.88	68.6	21.2	8.10	125.0	$\pm 2.2 \%$
		Y	9.95	68.5	20.9		134.8	
		Z	9.28	67.0	20.1		100.7	
10400- AAC	IEEE 802.11ac WiFi (20MHz, 64-QAM, 99pc duty cycle)	X	10.17	68.9	21.6	8.37	125.5	$\pm 2.2 \%$
		Y	10.21	68.7	21.1		134.8	
		Z	9.53	67.2	20.4		100.7	
10401- AAC	IEEE 802.11ac WiFi (40MHz, 64-QAM, 99pc duty cycle)	X	10.95	69.6	21.9	8.60	134.0	$\pm 2.5 \%$
		Y	10.86	69.1	21.4		143.2	
		Z	10.34	67.9	20.8		107.9	
10402- AAC	IEEE 802.11ac WiFi (80MHz, 64-QAM, 99pc duty cycle)	X	11.11	70.0	21.9	8.53	134.7	$\pm 2.5 \%$
		Y	10.77	68.9	21.1		141.7	
		Z	10.46	68.2	20.7		107.7	

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

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

^B Numerical linearization parameter: uncertainty not required.

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

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3589

Calibration Parameter Determined in Head Tissue Simulating Media

f (MHz) ^C	Relative Permittivity ^F	Conductivity (S/m) ^F	ConvF X	ConvF Y	ConvF Z	Alpha ^G	Depth ^G (mm)	Unc (k=2)
5250	35.9	4.71	4.78	4.78	4.78	0.30	1.80	± 13.1 %
5600	35.5	5.07	4.24	4.24	4.24	0.40	1.80	± 13.1 %
5750	35.4	5.22	4.44	4.44	4.44	0.40	1.80	± 13.1 %

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

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

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

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3589

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)
5250	48.9	5.36	4.19	4.19	4.19	0.40	1.90	± 13.1 %
5600	48.5	5.77	3.82	3.82	3.82	0.40	1.90	± 13.1 %
5750	48.3	5.94	3.83	3.83	3.83	0.50	1.90	± 13.1 %

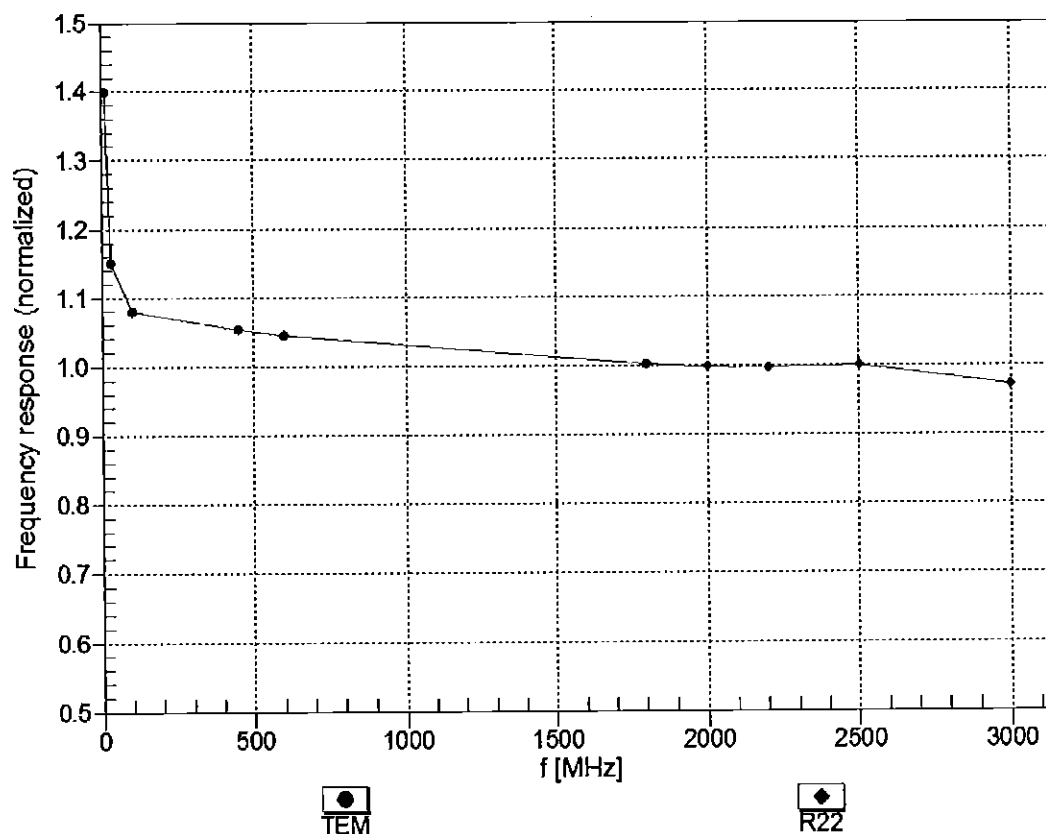
^C Frequency validity above 300 MHz of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ± 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

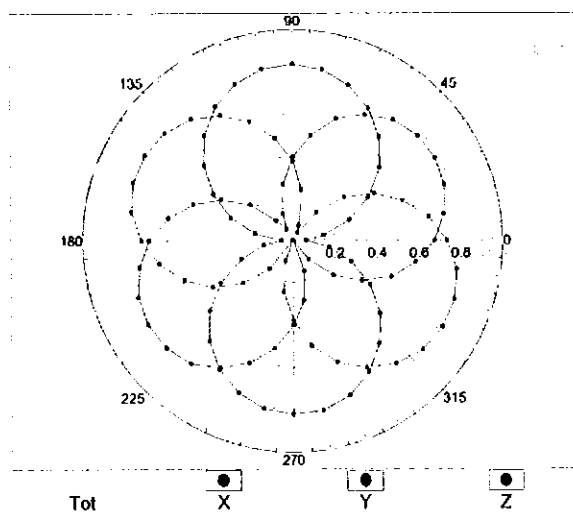
(TEM-Cell: ifi110 EXX, Waveguide: R22)



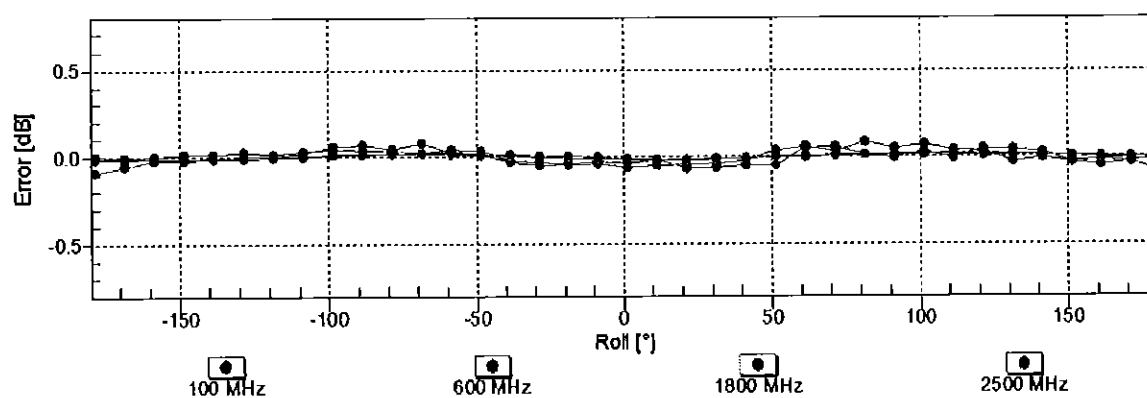
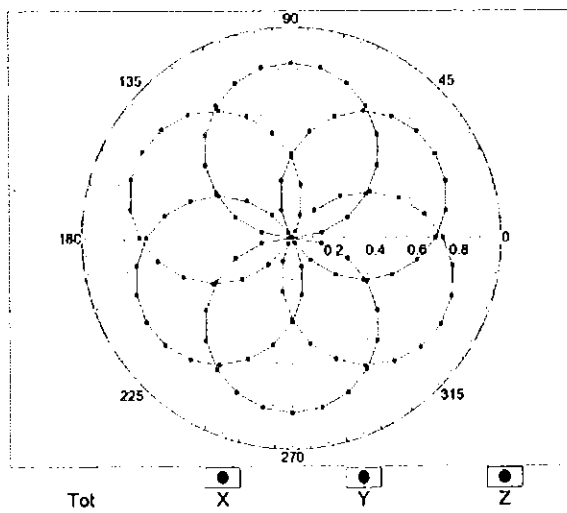
Uncertainty of Frequency Response of E-field: $\pm 6.3\%$ ($k=2$)

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

f=600 MHz, TEM

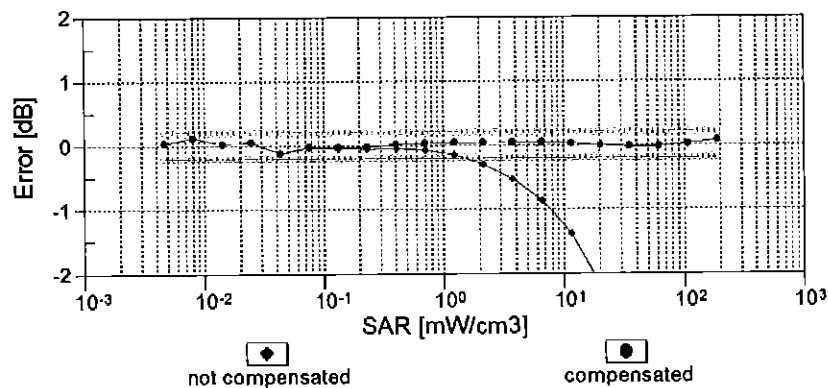
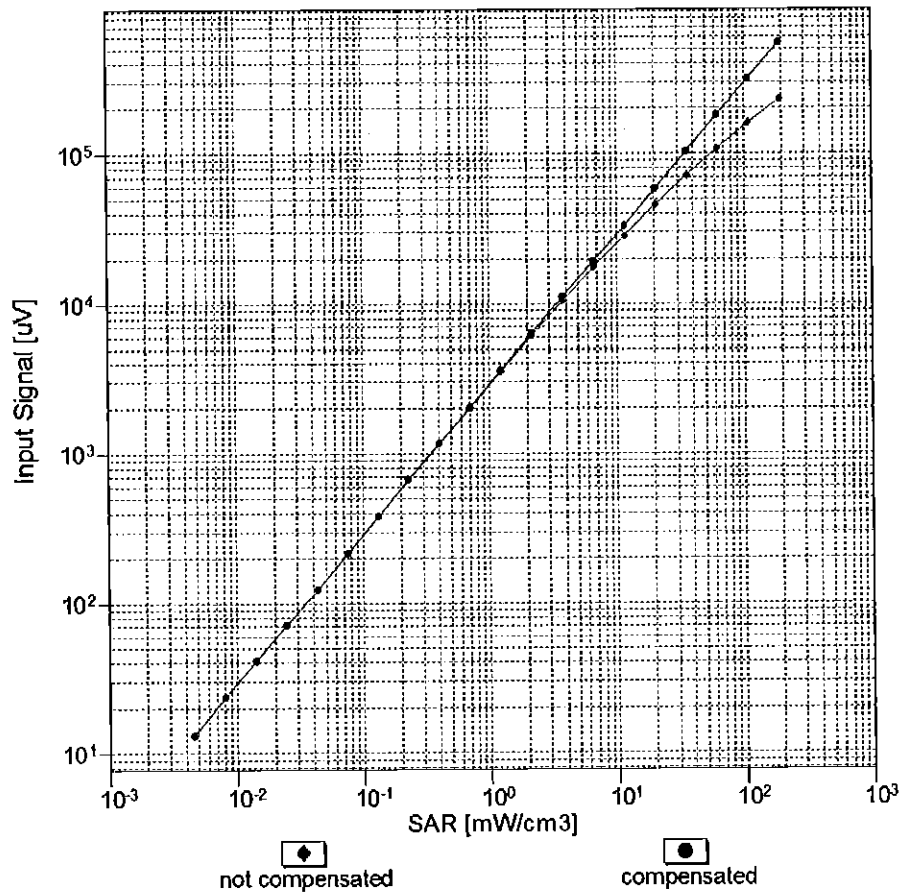


f=1800 MHz, R22



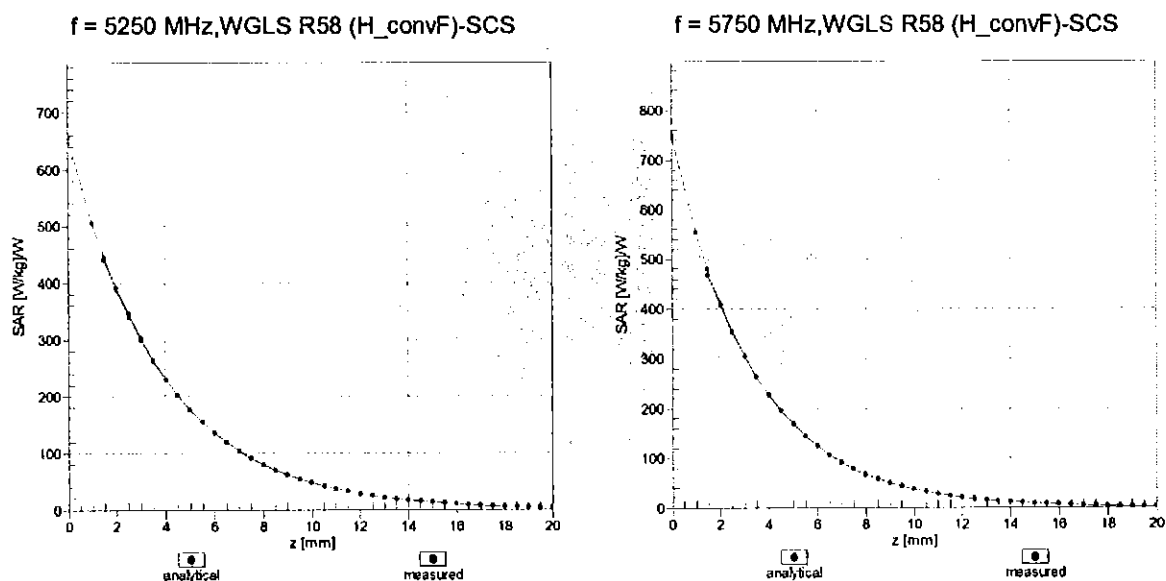
Uncertainty of Axial Isotropy Assessment: $\pm 0.5\%$ ($k=2$)

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



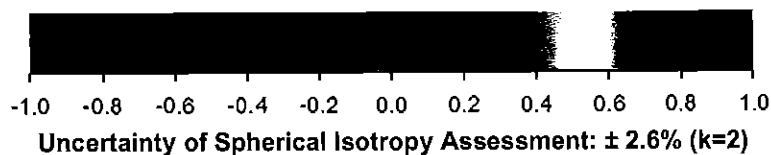
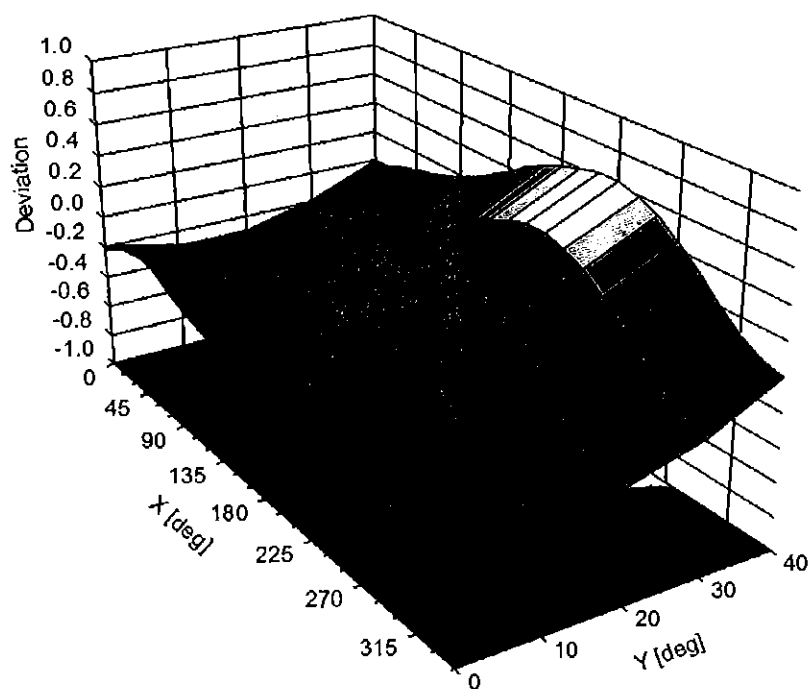
Uncertainty of Linearity Assessment: $\pm 0.6\%$ (k=2)

Conversion Factor Assessment



Deviation from Isotropy in Liquid

Error (ϕ, θ), $f = 900 \text{ MHz}$



DASY/EASY - Parameters of Probe: EX3DV4 - SN:3589

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	141.4
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disabled
Probe Overall Length	337 mm
Probe Body Diameter	10 mm
Tip Length	9 mm
Tip Diameter	2.5 mm
Probe Tip to Sensor X Calibration Point	1 mm
Probe Tip to Sensor Y Calibration Point	1 mm
Probe Tip to Sensor Z Calibration Point	1 mm
Recommended Measurement Distance from Surface	1.4 mm



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Accreditation No.: **SCS 0108**

Client **PC Test**

Certificate No: **D750V3-1054_Mar17**

CALIBRATION CERTIFICATE

Object **D750V3 - SN:1054**

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

BNV

03-27-2017

Calibration date: **March 07, 2017**

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NRP	SN: 104778	06-Apr-16 (No. 217-02288/02289)	Apr-17
Power sensor NRP-Z91	SN: 103244	06-Apr-16 (No. 217-02288)	Apr-17
Power sensor NRP-Z91	SN: 103245	06-Apr-16 (No. 217-02289)	Apr-17
Reference 20 dB Attenuator	SN: 5058 (20k)	05-Apr-16 (No. 217-02292)	Apr-17
Type-N mismatch combination	SN: 5047.2 / 06327	05-Apr-16 (No. 217-02295)	Apr-17
Reference Probe EX3DV4	SN: 7349	31-Dec-16 (No. EX3-7349_Dec16)	Dec-17
DAE4	SN: 601	04-Jan-17 (No. DAE4-601_Jan17)	Jan-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 HP 8753E	SN: US37390585	18-Oct-01 (in house check Oct-16)	In house check: Oct-17

Calibrated by: **Johannes Kurikka** Function: **Laboratory Technician**

Approved by: **Katja Pokovic** Technical Manager

Signature

[Signature]

[Signature]

Issued: March 14, 2017

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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, "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.

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

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	41.9	0.89 mho/m
Measured Head TSL parameters	(22.0 $\pm$ 0.2) °C	40.9 $\pm$ 6 %	0.91 mho/m $\pm$ 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm ³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	2.14 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	8.37 W/kg $\pm$ 17.0 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	1.40 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	5.50 W/kg $\pm$ 16.5 % (k=2)

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	55.5	0.96 mho/m
Measured Body TSL parameters	(22.0 $\pm$ 0.2) °C	54.6 $\pm$ 6 %	0.99 mho/m $\pm$ 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm ³ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	2.21 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	8.61 W/kg $\pm$ 17.0 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	1.45 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	5.68 W/kg $\pm$ 16.5 % (k=2)

Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	54.7 Ω - 0.7 j Ω
Return Loss	- 26.8 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	50.7 Ω - 3.6 j Ω
Return Loss	- 28.7 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.033 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

DASY5 Validation Report for Head TSL

Date: 07.03.2017

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 750 MHz; Type: D750V3; Serial: D750V3 - SN:1054

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

Medium parameters used: $f = 750 \text{ MHz}$; $\sigma = 0.91 \text{ S/m}$; $\epsilon_r = 40.9$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

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

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(10.17, 10.17, 10.17); Calibrated: 31.12.2016;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 04.01.2017
- Phantom: Flat Phantom 4.9 (front); Type: QD 00L P49 AA; 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:

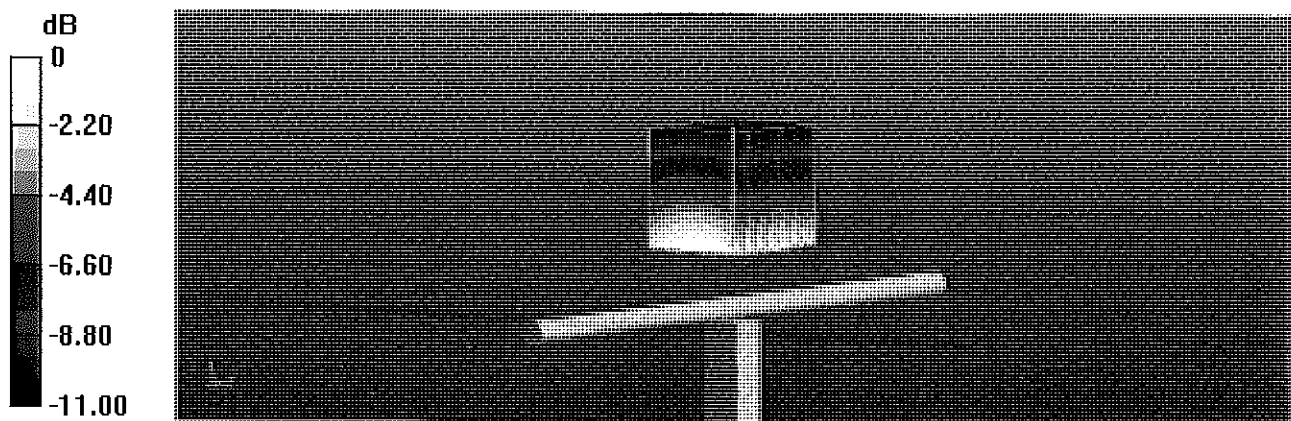
Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 59.71 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 3.21 W/kg

SAR(1 g) = 2.14 W/kg; SAR(10 g) = 1.4 W/kg

Maximum value of SAR (measured) = 2.85 W/kg

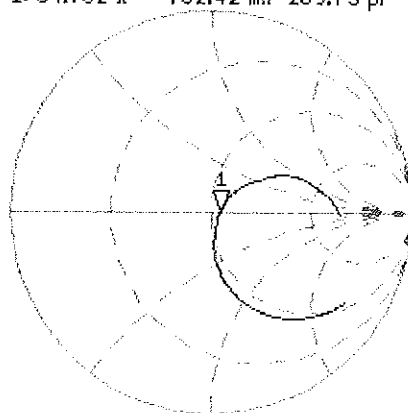


0 dB = 2.85 W/kg = 4.55 dBW/kg

Impedance Measurement Plot for Head TSL

7 Mar 2017 12:25:14
CH1 S11 1 U FS 1: 54.732 Ω -732.42 m Ω 289.73 pF 750.000 000 MHz

*
Del
CA



Avg
16

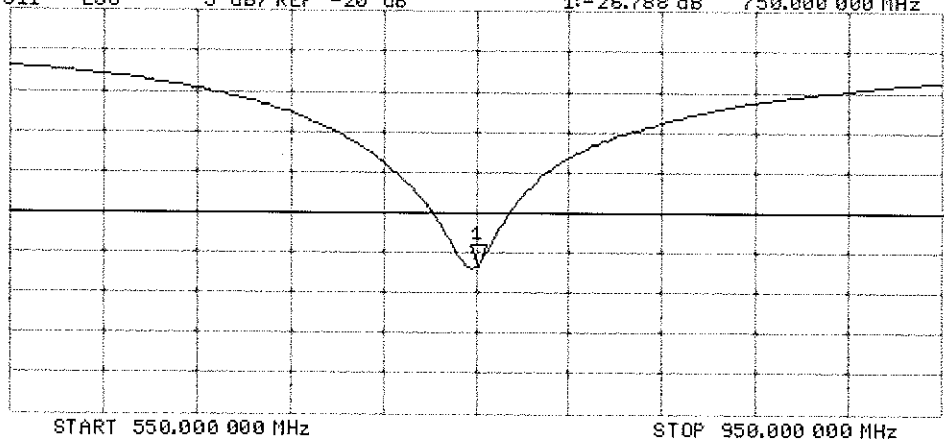
H1d

CH2 S11 LOG 5 dB/REF -20 dB 1:-26.788 dB 750.000 000 MHz

CA

Avg
16

H1d



DASY5 Validation Report for Body TSL

Date: 07.03.2017

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 750 MHz; Type: D750V3; Serial: D750V3 - SN:1054

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

Medium parameters used: $f = 750$ MHz; $\sigma = 0.99$ S/m; $\epsilon_r = 54.6$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

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

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(9.99, 9.99, 9.99); Calibrated: 31.12.2016;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 04.01.2017
- Phantom: Flat Phantom 4.9 (Back); Type: QD 00R P49 AA; Serial: 1005
- 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:

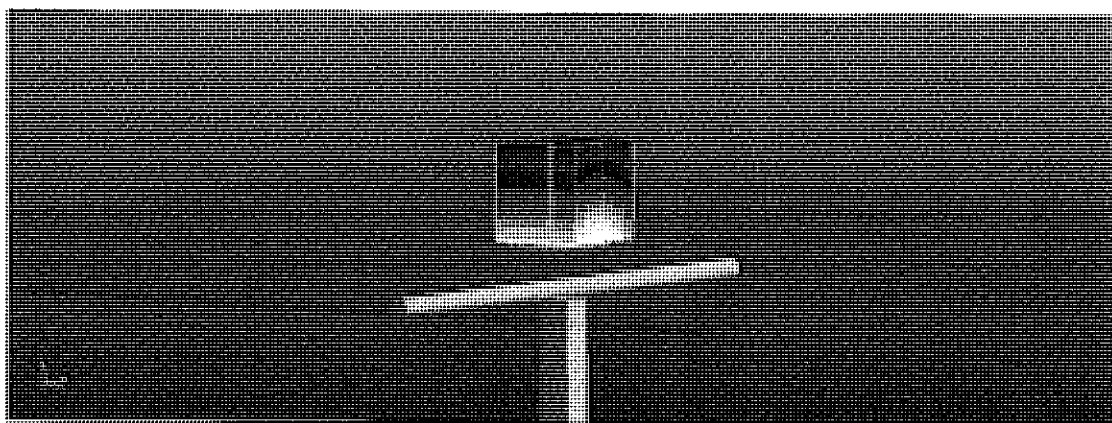
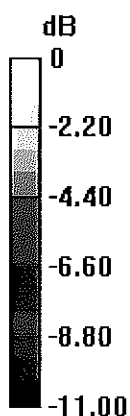
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 57.88 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 3.31 W/kg

SAR(1 g) = 2.21 W/kg; SAR(10 g) = 1.45 W/kg

Maximum value of SAR (measured) = 2.94 W/kg

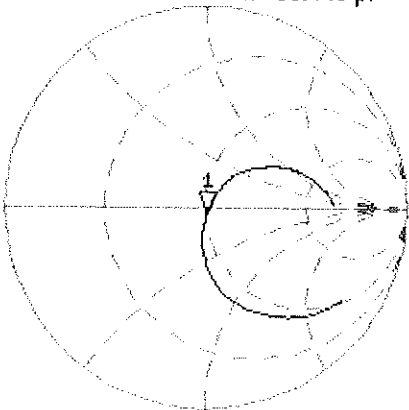


0 dB = 2.94 W/kg = 4.68 dBW/kg

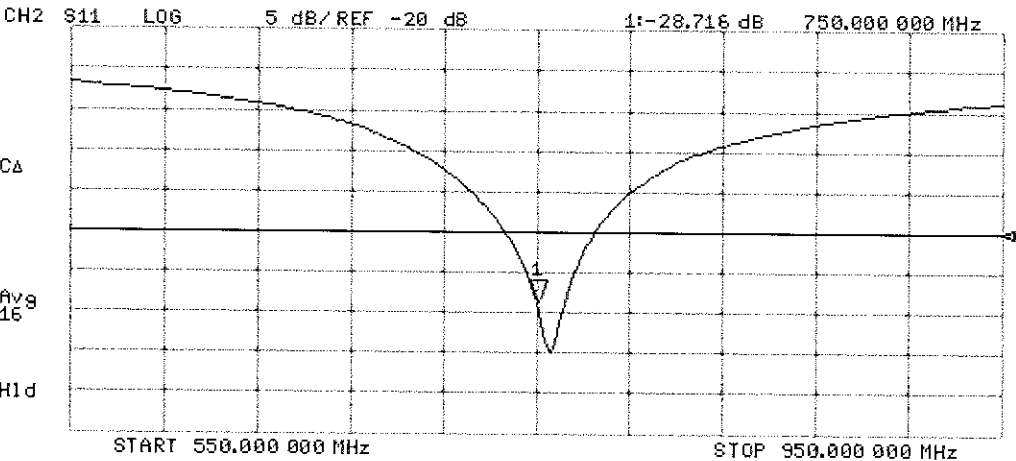
Impedance Measurement Plot for Body TSL

7 Mar 2017 11:51:37
CH1 S11 1 U FS 1: 50.666 Ω -3.6309 Ω 58.445 pF 750.000 000 MHz

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De1
CA



Avg
16
H1d





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Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 0108**

Client **PC Test**

Certificate No: **D835V2-4d180_May17**

CALIBRATION CERTIFICATE

Object **D835V2 - SN:4d180**

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

Calibration date: **May 11, 2017**

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NRP	SN: 104778	04-Apr-17 (No. 217-02521/02522)	Apr-18
Power sensor NRP-Z91	SN: 103244	04-Apr-17 (No. 217-02521)	Apr-18
Power sensor NRP-Z91	SN: 103245	04-Apr-17 (No. 217-02522)	Apr-18
Reference 20 dB Attenuator	SN: 5058 (20k)	07-Apr-17 (No. 217-02528)	Apr-18
Type-N mismatch combination	SN: 5047.2 / 06327	07-Apr-17 (No. 217-02529)	Apr-18
Reference Probe EX3DV4	SN: 7349	31-Dec-16 (No. EX3-7349_Dec16)	Dec-17
DAE4	SN: 601	28-Mar-17 (No. DAE4-601_Mar17)	Mar-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 HP 8753E	SN: US37390585	18-Oct-01 (in house check Oct-16)	In house check: Oct-17

Calibrated by: **Johannes Kurikka** Function: **Laboratory Technician**

Approved by: **Katja Pokovic** Technical Manager

Signature

[Handwritten signatures]

Issued: May 11, 2017

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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.

DASY Version	DASY5	V52.10.0
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	15 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	835 MHz $\pm$ 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	41.5	0.90 mho/m
Measured Head TSL parameters	(22.0 $\pm$ 0.2) °C	40.8 $\pm$ 6 %	0.94 mho/m $\pm$ 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm ³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	2.40 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	9.26 W/kg $\pm$ 17.0 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	1.56 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	6.07 W/kg $\pm$ 16.5 % (k=2)

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	55.2	0.97 mho/m
Measured Body TSL parameters	(22.0 $\pm$ 0.2) °C	55.2 $\pm$ 6 %	0.99 mho/m $\pm$ 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm ³ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	2.44 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	9.61 W/kg $\pm$ 17.0 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	1.60 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	6.32 W/kg $\pm$ 16.5 % (k=2)

Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	51.9 Ω - 5.0 j Ω
Return Loss	- 25.6 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	46.7 Ω - 8.6 j Ω
Return Loss	- 20.5 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.393 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	September 24, 2014

DASY5 Validation Report for Head TSL

Date: 11.05.2017

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN:4d180

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

Medium parameters used: $f = 835$ MHz; $\sigma = 0.94$ S/m; $\epsilon_r = 40.8$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

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

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(9.72, 9.72, 9.72); Calibrated: 31.12.2016;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 28.03.2017
- Phantom: Flat Phantom 4.9 (front); Type: QD 00L P49 AA; Serial: 1001
- DASY52 52.10.0(1444); SEMCAD X 14.6.10(7416)

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

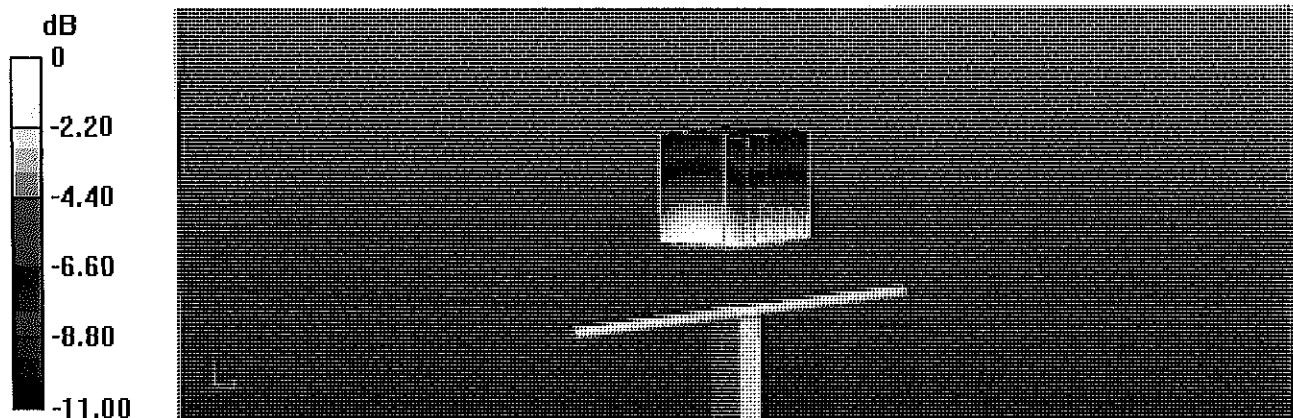
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 62.02 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 3.58 W/kg

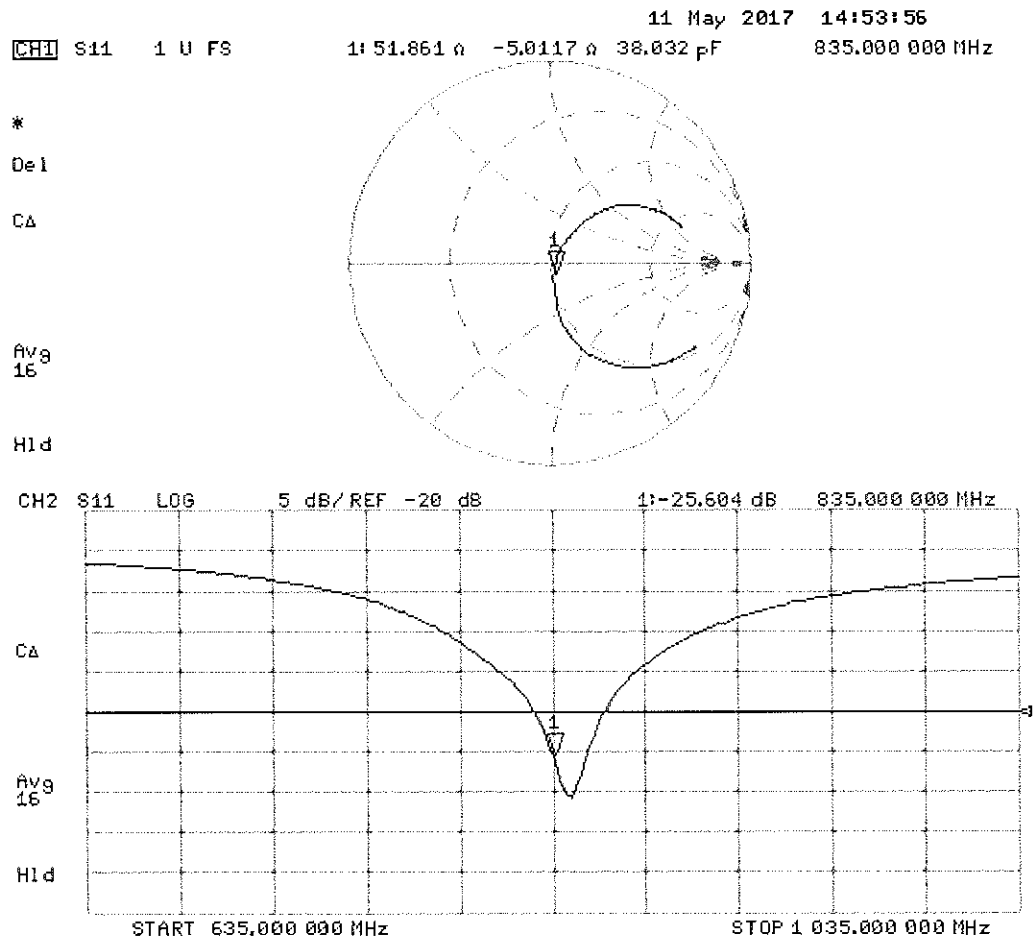
SAR(1 g) = 2.4 W/kg; SAR(10 g) = 1.56 W/kg

Maximum value of SAR (measured) = 3.21 W/kg



0 dB = 3.21 W/kg = 5.07 dBW/kg

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 11.05.2017

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN:4d180

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

Medium parameters used: $f = 835$ MHz; $\sigma = 0.99$ S/m; $\epsilon_r = 55.2$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

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

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(9.73, 9.73, 9.73); Calibrated: 31.12.2016;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 28.03.2017
- Phantom: Flat Phantom 4.9 (Back); Type: QD 00R P49 AA; Serial: 1005
- DASY52 52.10.0(1444); SEMCAD X 14.6.10(7416)

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

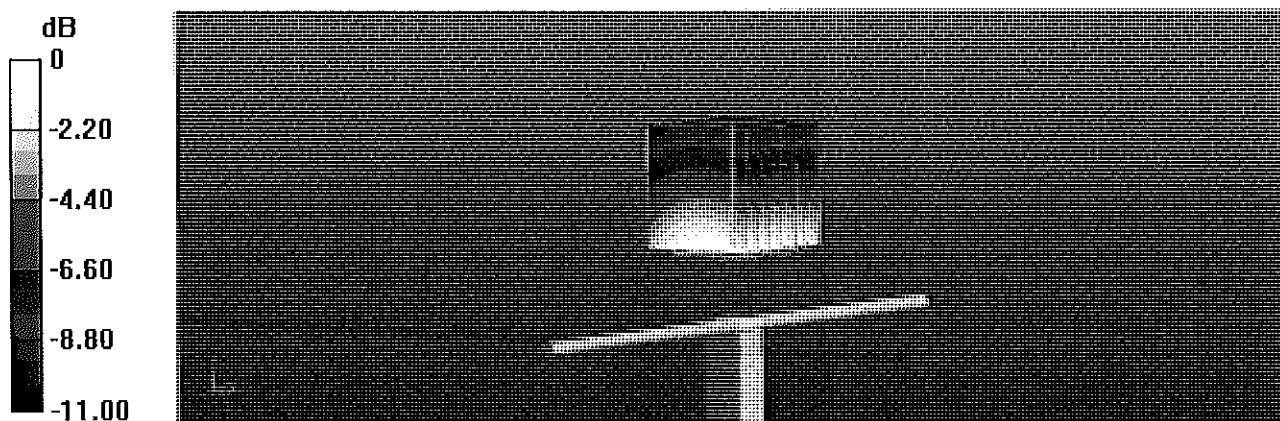
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 60.10 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 3.58 W/kg

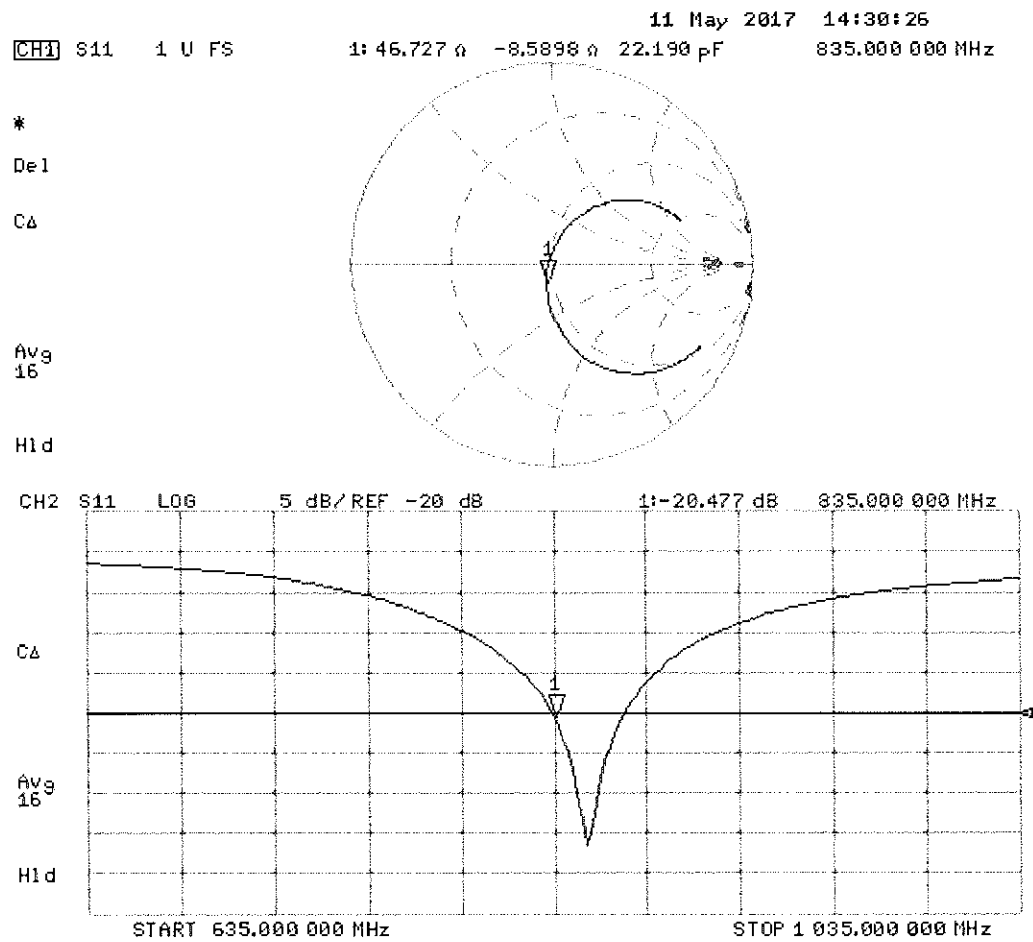
SAR(1 g) = 2.44 W/kg; SAR(10 g) = 1.6 W/kg

Maximum value of SAR (measured) = 3.19 W/kg



0 dB = 3.19 W/kg = 5.04 dBW/kg

Impedance Measurement Plot for Body TSL





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Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 0108**

Client **PC Test**

Certificate No: **D1900V2-5d026_May17**

CALIBRATION CERTIFICATE

Object **D1900V2 - SN:5d026**

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

Calibration date: **May 10, 2017**

BNV
05-23-2017

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NRP	SN: 104778	04-Apr-17 (No. 217-02521/02522)	Apr-18
Power sensor NRP-Z91	SN: 103244	04-Apr-17 (No. 217-02521)	Apr-18
Power sensor NRP-Z91	SN: 103245	04-Apr-17 (No. 217-02522)	Apr-18
Reference 20 dB Attenuator	SN: 5058 (20k)	07-Apr-17 (No. 217-02528)	Apr-18
Type-N mismatch combination	SN: 5047.2 / 06327	07-Apr-17 (No. 217-02529)	Apr-18
Reference Probe EX3DV4	SN: 7349	31-Dec-16 (No. EX3-7349_Dec16)	Dec-17
DAE4	SN: 601	28-Mar-17 (No. DAE4-601_Mar17)	Mar-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 HP 8753E	SN: US37390585	18-Oct-01 (in house check Oct-16)	In house check: Oct-17

Calibrated by: **Leif Klysner** Function: **Laboratory Technician**

Signature

Leif Klysner

Approved by: **Katja Pokovic** Technical Manager

Katja Pokovic

Issued: May 12, 2017

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Accredited by the Swiss Accreditation Service (SAS)

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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.

DASY Version	DASY5	V52.10.0
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	1900 MHz $\pm$ 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	40.0	1.40 mho/m
Measured Head TSL parameters	(22.0 $\pm$ 0.2) °C	41.3 $\pm$ 6 %	1.40 mho/m $\pm$ 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm ³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	9.75 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	39.3 W/kg $\pm$ 17.0 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	5.14 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	20.7 W/kg $\pm$ 16.5 % (k=2)

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	53.3	1.52 mho/m
Measured Body TSL parameters	(22.0 $\pm$ 0.2) °C	54.2 $\pm$ 6 %	1.51 mho/m $\pm$ 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm ³ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	10.0 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	40.3 W/kg $\pm$ 17.0 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	5.34 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	21.5 W/kg $\pm$ 16.5 % (k=2)

Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	$52.7 \Omega + 8.4 j\Omega$
Return Loss	- 21.3 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	$47.3 \Omega + 8.8 j\Omega$
Return Loss	- 20.5 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.199 ns
----------------------------------	----------

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.

No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	December 17, 2002

DASY5 Validation Report for Head TSL

Date: 10.05.2017

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:5d026

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

Medium parameters used: $f = 1900$ MHz; $\sigma = 1.4$ S/m; $\epsilon_r = 41.3$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

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

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(8.12, 8.12, 8.12); Calibrated: 31.12.2016;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 28.03.2017
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.10.0(1444); SEMCAD X 14.6.10(7416)

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

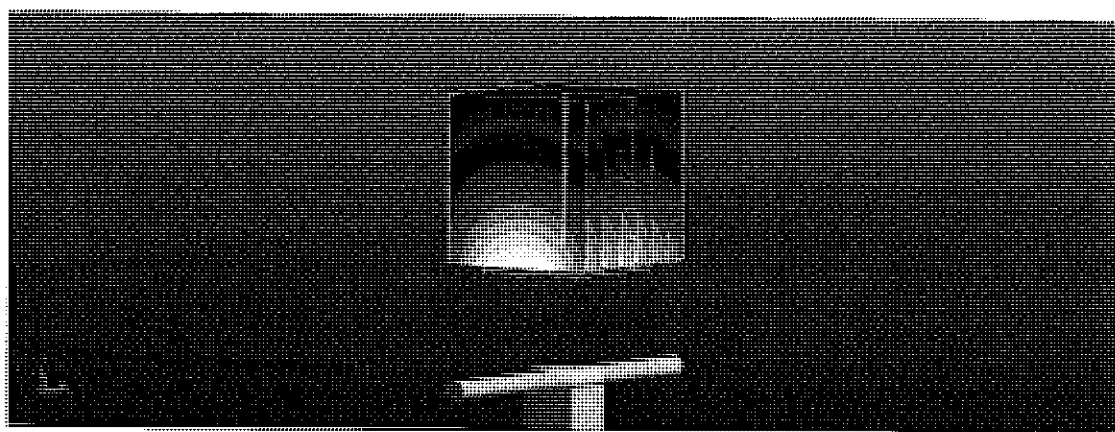
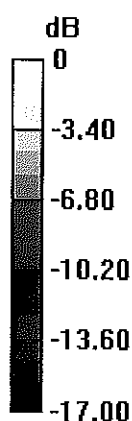
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 107.4 V/m; Power Drift = -0.04 dB

Peak SAR (extrapolated) = 17.9 W/kg

SAR(1 g) = 9.75 W/kg; SAR(10 g) = 5.14 W/kg

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

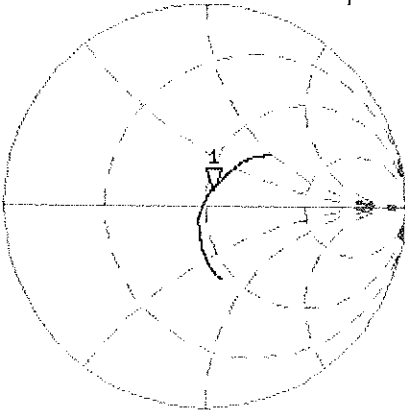


0 dB = 14.9 W/kg = 11.73 dBW/kg

Impedance Measurement Plot for Head TSL

10 May 2017 10:16:29
[CH1] S11 1 U FS 1: 52.662 Ω 8.4414 Ω 707.10 pF 1 900.000 000 MHz

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De1
CA

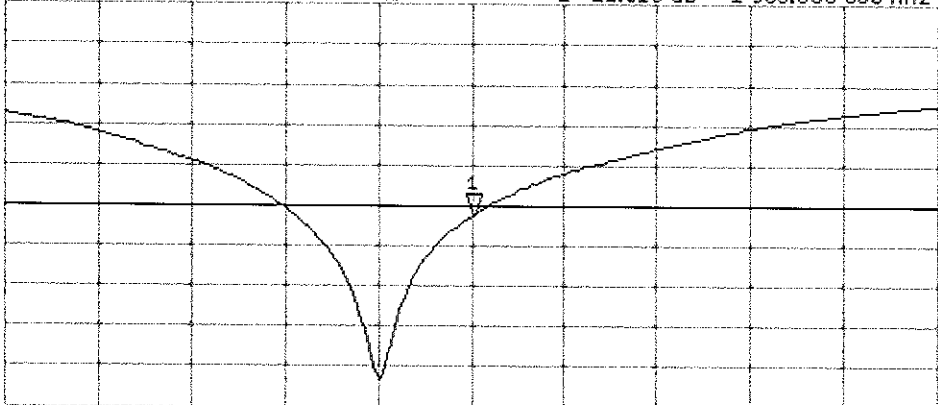


Avg
16
H1d

CH2 S11 LOG 5 dB/REF -20 dB 1:-21.315 dB 1 900.000 000 MHz

CA

Avg
16
H1d



START 1 700.000 000 MHz STOP 2 100.000 000 MHz

DASY5 Validation Report for Body TSL

Date: 10.05.2017

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:5d026

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

Medium parameters used: $f = 1900$ MHz; $\sigma = 1.51$ S/m; $\epsilon_r = 54.2$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

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

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(8.03, 8.03, 8.03); Calibrated: 31.12.2016;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 28.03.2017
- Phantom: Flat Phantom 5.0 (back); Type: QD 000 P50 AA; Serial: 1002
- DASY52 52.10.0(1444); SEMCAD X 14.6.10(7416)

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

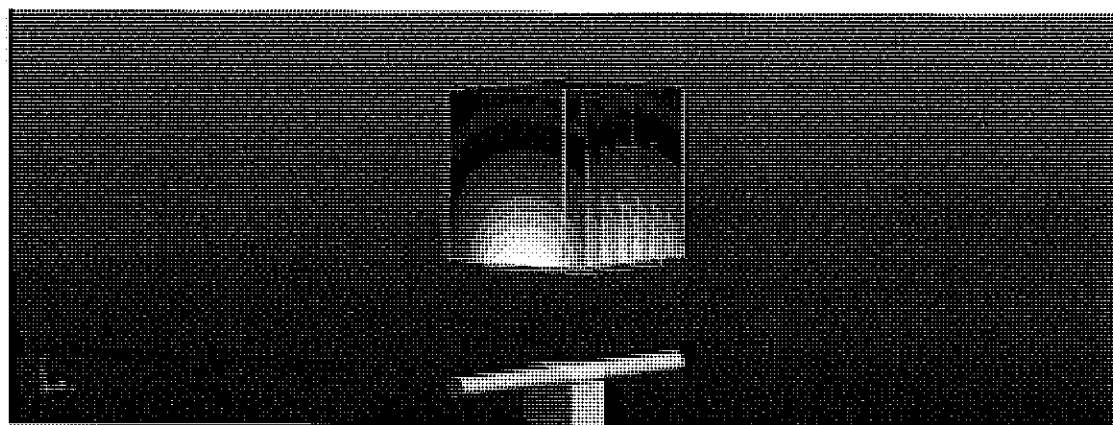
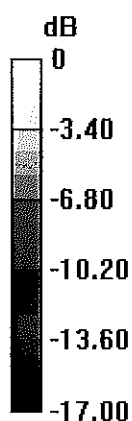
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 102.9 V/m; Power Drift = -0.06 dB

Peak SAR (extrapolated) = 17.7 W/kg

SAR(1 g) = 10 W/kg; SAR(10 g) = 5.34 W/kg

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

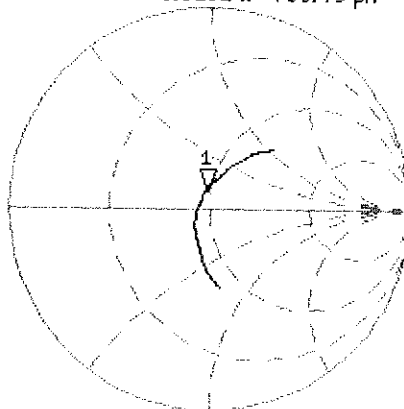


0 dB = 14.5 W/kg = 11.61 dBW/kg

Impedance Measurement Plot for Body TSL

10 May 2017 10:15:44
[CH1] S11 1 U FS 1: 47.309 Ω 3.8281 Ω 739.49 μH 1 900.000 000 MHz

*
De1
CA



Avg
16

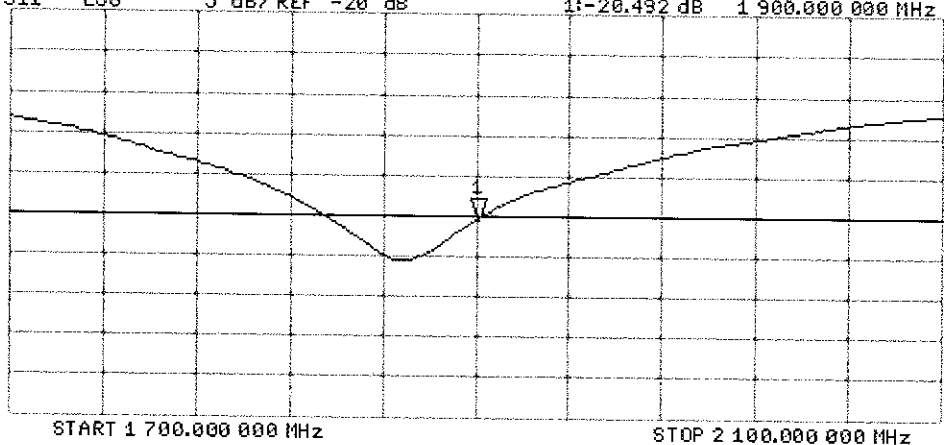
H1d

CH2 S11 LOG 5 dB/REF -20 dB 1: -20.492 dB 1 900.000 000 MHz

CA

Avg
16

H1d





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Accreditation No.: **SCS 0108**

Client **PC Test**

Certificate No: **D2450V2-797_Sep16**

CALIBRATION CERTIFICATE

Object **D2450V2 - SN:797**

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

BNV
09-28-2016

Calibration date: **September 13, 2016**

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	06-Apr-16 (No. 217-02288/02289)	Apr-17
Power sensor NRP-Z91	SN: 103244	06-Apr-16 (No. 217-02288)	Apr-17
Power sensor NRP-Z91	SN: 103245	06-Apr-16 (No. 217-02289)	Apr-17
Reference 20 dB Attenuator	SN: 5058 (20k)	05-Apr-16 (No. 217-02292)	Apr-17
Type-N mismatch combination	SN: 5047.2 / 06327	05-Apr-16 (No. 217-02295)	Apr-17
Reference Probe EX3DV4	SN: 7349	15-Jun-16 (No. EX3-7349_Jun16)	Jun-17
DAE4	SN: 601	30-Dec-15 (No. DAE4-601_Dec15)	Dec-16

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power meter EPM-442A	SN: GB37480704	07-Oct-15 (No. 217-02222)	In house check: Oct-16
Power sensor HP 8481A	SN: US37292783	07-Oct-15 (No. 217-02222)	In house check: Oct-16
Power sensor HP 8481A	SN: MY41092317	07-Oct-15 (No. 217-02223)	In house check: Oct-16
RF generator R&S SMT-06	SN: 100972	15-Jun-15 (in house check Jun-15)	In house check: Oct-16
Network Analyzer HP 8753E	SN: US37390585	18-Oct-01 (in house check Oct-15)	In house check: Oct-16

Calibrated by: **Jeton Kastrati** Function: **Laboratory Technician**

Approved by: **Katja Pokovic** Technical Manager

Signature
[Handwritten signature]
[Handwritten signature]

Issued: September 13, 2016

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Accreditation No.: **SCS 0108**

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Multilateral Agreement for the recognition of calibration certificates

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.

DASY Version	DASY5	V52.8.8
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	2450 MHz $\pm$ 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	39.2	1.80 mho/m
Measured Head TSL parameters	(22.0 $\pm$ 0.2) °C	37.9 $\pm$ 6 %	1.88 mho/m $\pm$ 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm ³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	13.4 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	52.1 W/kg $\pm$ 17.0 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	6.26 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	24.6 W/kg $\pm$ 16.5 % (k=2)

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	52.7	1.95 mho/m
Measured Body TSL parameters	(22.0 $\pm$ 0.2) °C	51.6 $\pm$ 6 %	2.04 mho/m $\pm$ 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm ³ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	13.0 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	50.7 W/kg $\pm$ 17.0 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	6.13 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	24.2 W/kg $\pm$ 16.5 % (k=2)

Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	$53.8 \Omega + 6.0 j\Omega$
Return Loss	- 23.3 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	$50.8 \Omega + 8.0 j\Omega$
Return Loss	- 22.0 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.160 ns
----------------------------------	----------

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.

No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	January 24, 2006

DASY5 Validation Report for Head TSL

Date: 13.09.2016

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN:797

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

Medium parameters used: $f = 2450$ MHz; $\sigma = 1.88$ S/m; $\epsilon_r = 37.9$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

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

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(7.72, 7.72, 7.72); Calibrated: 15.06.2016;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.12.2015
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7372)

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

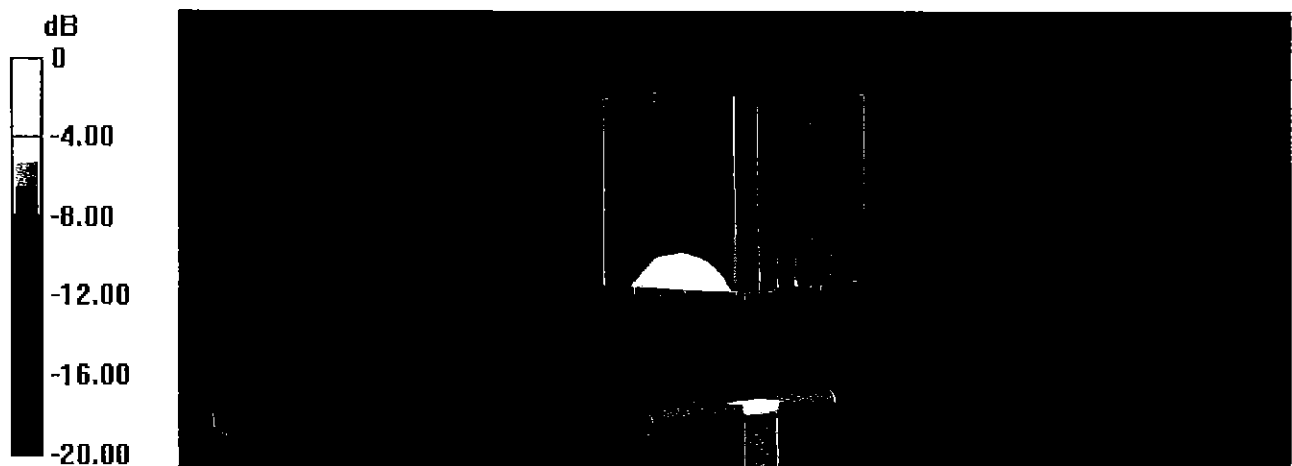
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 113.4 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 26.9 W/kg

SAR(1 g) = 13.4 W/kg; SAR(10 g) = 6.26 W/kg

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

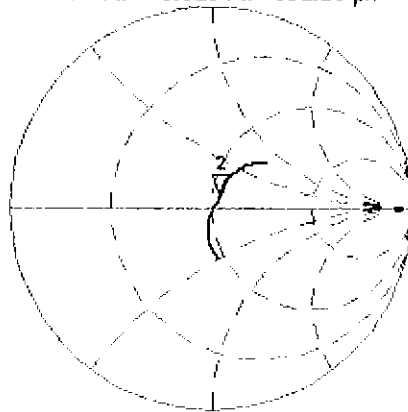


0 dB = 21.9 W/kg = 13.40 dBW/kg

Impedance Measurement Plot for Head TSL

12 Sep 2016 12:42:03
 CH1 S11 1 U FS 2: 53.771 Ω 6.0234 Ω 391.29 μH 2 450.000 000 MHz

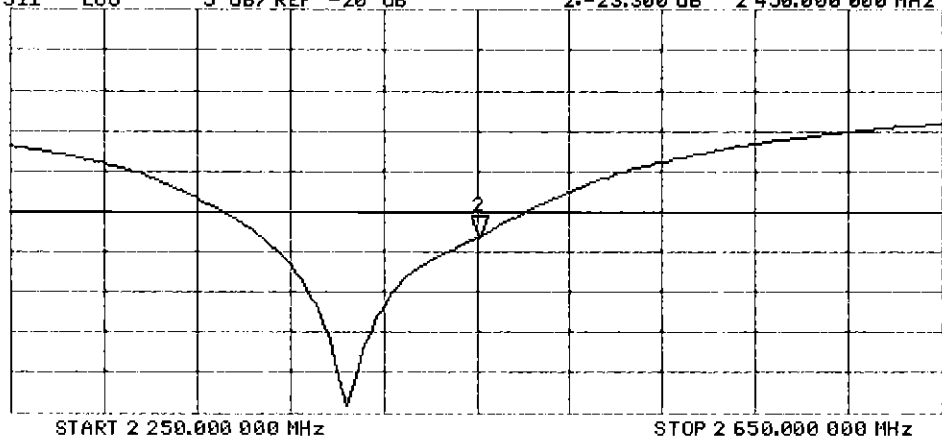
*
 De1
 CA



Avg
 16
 H1d

CH2 S11 LOG 5 dB/REF -20 dB 2:-23.300 dB 2 450.000 000 MHz

CA
 Avg
 16
 H1d



DASY5 Validation Report for Body TSL

Date: 13.09.2016

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN:797

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

Medium parameters used: $f = 2450$ MHz; $\sigma = 2.04$ S/m; $\epsilon_r = 51.6$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

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

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(7.79, 7.79, 7.79); Calibrated: 15.06.2016;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.12.2015
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7372)

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

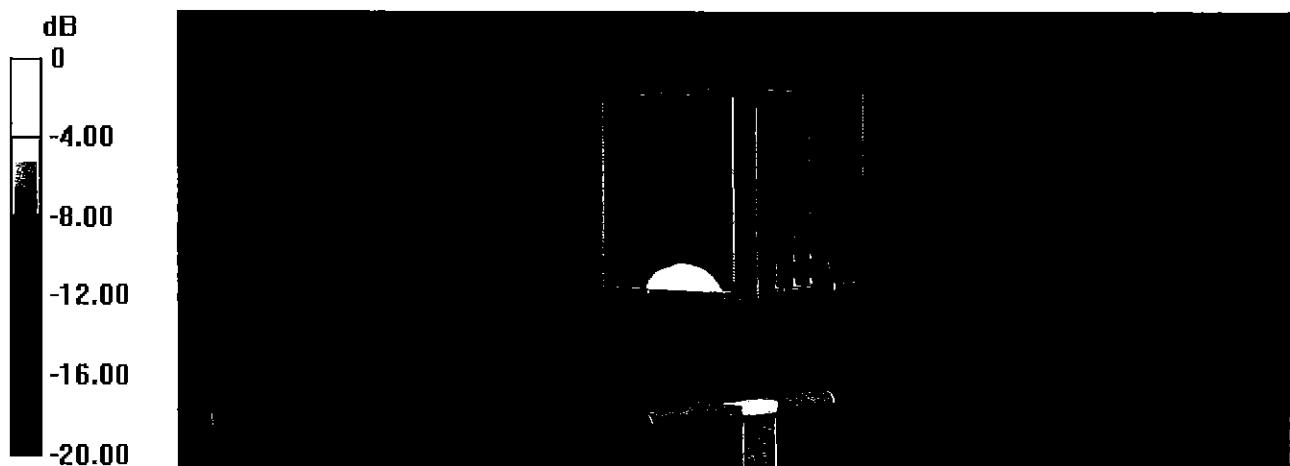
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 106.5 V/m; Power Drift = -0.04 dB

Peak SAR (extrapolated) = 25.6 W/kg

SAR(1 g) = 13 W/kg; SAR(10 g) = 6.13 W/kg

Maximum value of SAR (measured) = 21.2 W/kg

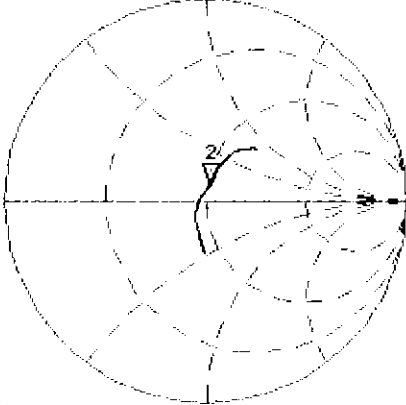


0 dB = 21.2 W/kg = 13.26 dBW/kg

Impedance Measurement Plot for Body TSL

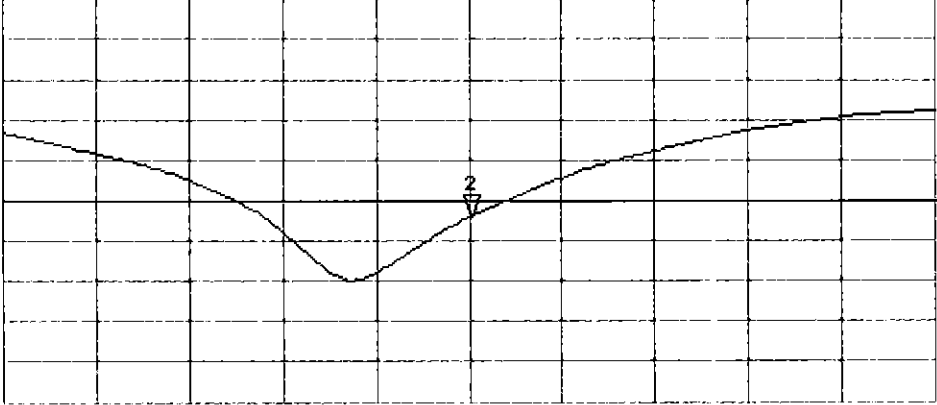
12 Sep 2016 12:40:39
[CH1] S11 1 U FS 2: 50.842 Ω 7.9531 Ω 516.64 μ H 2 450.000 000 MHz

*
De1
CA
Avg
16
H1d



CH2 S11 LOG 5 dB/REF -20 dB 2:-22.037 dB 2 450.000 000 MHz

CA
Avg
16
H1d



START 2 250.000 000 MHz STOP 2 650.000 000 MHz



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Accreditation No.: **SCS 0108**

Client **PC Test**

Certificate No: **D5GHzV2-1237_Aug16**

CALIBRATION CERTIFICATE

Object **D5GHzV2 - SN:1237**

Calibration procedure(s) **QA CAL-22.v2**
Calibration procedure for dipole validation kits between 3-6 GHz

✓PN
8/9/16

Calibration date: **August 02, 2016**

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	06-Apr-16 (No. 217-02288/02289)	Apr-17
Power sensor NRP-Z91	SN: 103244	06-Apr-16 (No. 217-02288)	Apr-17
Power sensor NRP-Z91	SN: 103245	06-Apr-16 (No. 217-02289)	Apr-17
Reference 20 dB Attenuator	SN: 5058 (20k)	05-Apr-16 (No. 217-02292)	Apr-17
Type-N mismatch combination	SN: 5047.2 / 06327	05-Apr-16 (No. 217-02295)	Apr-17
Reference Probe EX3DV4	SN: 3503	30-Jun-16 (No. EX3-3503_Jun16)	Jun-17
DAE4	SN: 601	30-Dec-15 (No. DAE4-601_Dec15)	Dec-16

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power meter EPM-442A	SN: GB37480704	07-Oct-15 (No. 217-02222)	In house check: Oct-16
Power sensor HP 8481A	SN: US37292783	07-Oct-15 (No. 217-02222)	In house check: Oct-16
Power sensor HP 8481A	SN: MY41092317	07-Oct-15 (No. 217-02223)	In house check: Oct-16
RF generator R&S SMT-06	SN: 100972	15-Jun-15 (in house check Jun-15)	In house check: Oct-16
Network Analyzer HP 8753E	SN: US37390585	18-Oct-01 (in house check Oct-15)	In house check: Oct-16

Calibrated by: **Claudio Leubler** Name: **Claudio Leubler** Function: **Laboratory Technician**

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

Signature

Issued: August 4, 2016

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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 62209-2, "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.

DASY Version	DASY5	V52.8.8
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom V5.0	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy = 4.0 mm, dz = 1.4 mm	Graded Ratio = 1.4 (Z direction)
Frequency	5250 MHz $\pm$ 1 MHz 5600 MHz $\pm$ 1 MHz 5750 MHz $\pm$ 1 MHz	

Head TSL parameters at 5250 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	35.9	4.71 mho/m
Measured Head TSL parameters	(22.0 $\pm$ 0.2) °C	34.4 $\pm$ 6 %	4.52 mho/m $\pm$ 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL at 5250 MHz

SAR averaged over 1 cm ³ (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	8.00 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	79.2 W/kg $\pm$ 19.9 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Head TSL	condition	
SAR measured	100 mW input power	2.30 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	22.7 W/kg $\pm$ 19.5 % (k=2)

Head TSL parameters at 5600 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	35.5	5.07 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	33.9 ± 6 %	4.86 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL at 5600 MHz

SAR averaged over 1 cm ³ (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	8.43 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	83.3 W / kg ± 19.9 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Head TSL	condition	
SAR measured	100 mW input power	2.42 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	23.9 W/kg ± 19.5 % (k=2)

Head TSL parameters at 5750 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	35.4	5.22 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	33.7 ± 6 %	5.02 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL at 5750 MHz

SAR averaged over 1 cm ³ (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	8.25 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	81.5 W/kg ± 19.9 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Head TSL	condition	
SAR measured	100 mW input power	2.35 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	23.2 W/kg ± 19.5 % (k=2)

Body TSL parameters at 5250 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	48.9	5.36 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	47.1 ± 6 %	5.42 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL at 5250 MHz

SAR averaged over 1 cm ³ (1 g) of Body TSL	Condition	
SAR measured	100 mW input power	7.54 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	74.8 W/kg ± 19.9 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Body TSL	condition	
SAR measured	100 mW input power	2.12 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	21.0 W/kg ± 19.5 % (k=2)

Body TSL parameters at 5600 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	48.5	5.77 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	46.5 ± 6 %	5.88 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL at 5600 MHz

SAR averaged over 1 cm ³ (1 g) of Body TSL	Condition	
SAR measured	100 mW input power	7.76 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	77.0 W/kg ± 19.9 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Body TSL	condition	
SAR measured	100 mW input power	2.17 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	21.5 W/kg ± 19.5 % (k=2)

Body TSL parameters at 5750 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	48.3	5.94 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	46.2 ± 6 %	6.11 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL at 5750 MHz

SAR averaged over 1 cm³ (1 g) of Body TSL	Condition	
SAR measured	100 mW input power	7.60 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	75.4 W/kg ± 19.9 % (k=2)

SAR averaged over 10 cm³ (10 g) of Body TSL	condition	
SAR measured	100 mW input power	2.11 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	20.9 W/kg ± 19.5 % (k=2)

Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL at 5250 MHz

Impedance, transformed to feed point	48.6 Ω - 2.5 j Ω
Return Loss	- 30.7 dB

Antenna Parameters with Head TSL at 5600 MHz

Impedance, transformed to feed point	50.9 Ω + 1.5 j Ω
Return Loss	- 35.3 dB

Antenna Parameters with Head TSL at 5750 MHz

Impedance, transformed to feed point	53.8 Ω + 5.8 j Ω
Return Loss	- 23.5 dB

Antenna Parameters with Body TSL at 5250 MHz

Impedance, transformed to feed point	47.0 Ω - 3.9 j Ω
Return Loss	- 25.9 dB

Antenna Parameters with Body TSL at 5600 MHz

Impedance, transformed to feed point	51.5 Ω + 3.9 j Ω
Return Loss	- 27.7 dB

Antenna Parameters with Body TSL at 5750 MHz

Impedance, transformed to feed point	53.8 Ω + 0.3 j Ω
Return Loss	- 28.6 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	May 04, 2015

DASY5 Validation Report for Head TSL

Date: 02.08.2016

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole D5GHzV2; Type: D5GHzV2; Serial: D5GHzV2 - SN:1237

Communication System: UID 0 - CW; Frequency: 5250 MHz, Frequency: 5600 MHz, Frequency: 5750 MHz

Medium parameters used: $f = 5250$ MHz; $\sigma = 4.52$ S/m; $\epsilon_r = 34.4$; $\rho = 1000$ kg/m³

Medium parameters used: $f = 5600$ MHz; $\sigma = 4.86$ S/m; $\epsilon_r = 33.9$; $\rho = 1000$ kg/m³

Medium parameters used: $f = 5750$ MHz; $\sigma = 5.02$ S/m; $\epsilon_r = 33.7$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

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

DASY52 Configuration:

- Probe: EX3DV4 - SN3503; ConvF(5.42, 5.42, 5.42); Calibrated: 30.06.2016; ConvF(4.89, 4.89, 4.89); Calibrated: 30.06.2016, ConvF(4.85, 4.85, 4.85); Calibrated: 30.06.2016,
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.12.2015
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7372)

Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5250 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 74.10 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 29.5 W/kg

SAR(1 g) = 8 W/kg; SAR(10 g) = 2.3 W/kg

Maximum value of SAR (measured) = 18.3 W/kg

Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5600 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 73.55 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 32.9 W/kg

SAR(1 g) = 8.43 W/kg; SAR(10 g) = 2.42 W/kg

Maximum value of SAR (measured) = 19.7 W/kg

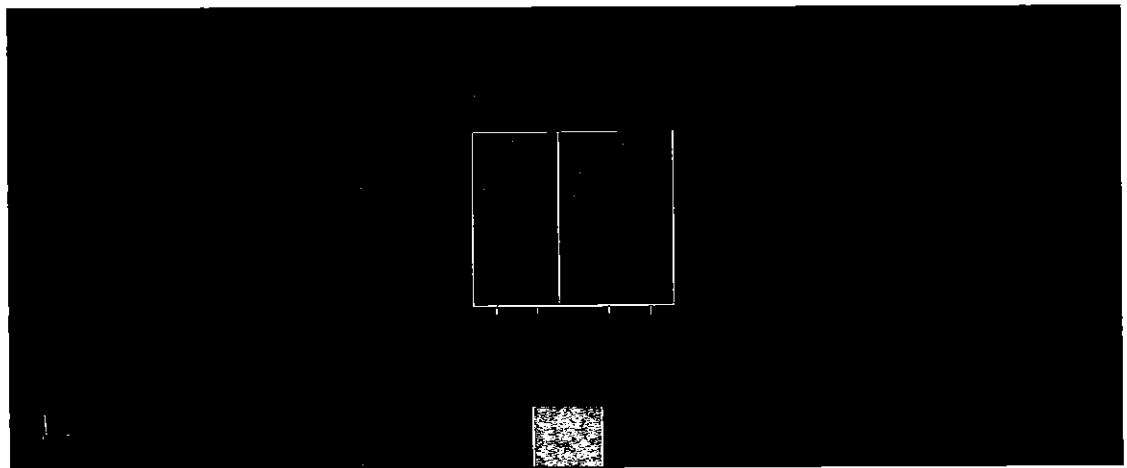
Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5750 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 72.23 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 33.6 W/kg

SAR(1 g) = 8.25 W/kg; SAR(10 g) = 2.35 W/kg

Maximum value of SAR (measured) = 18.3 W/kg



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

Impedance Measurement Plot for Head TSL

2 Aug 2016 08:52:20
 [CH1] S11 1 U FS 1: 48.623 Ω -2.5332 Ω 11.967 pF 5 250.000 000 MHz

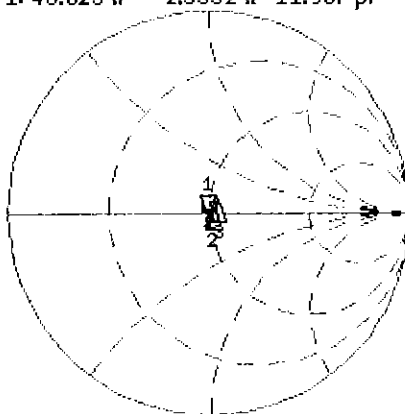
*

Del

Cor

Avg
16

H1d



CH1 Markers

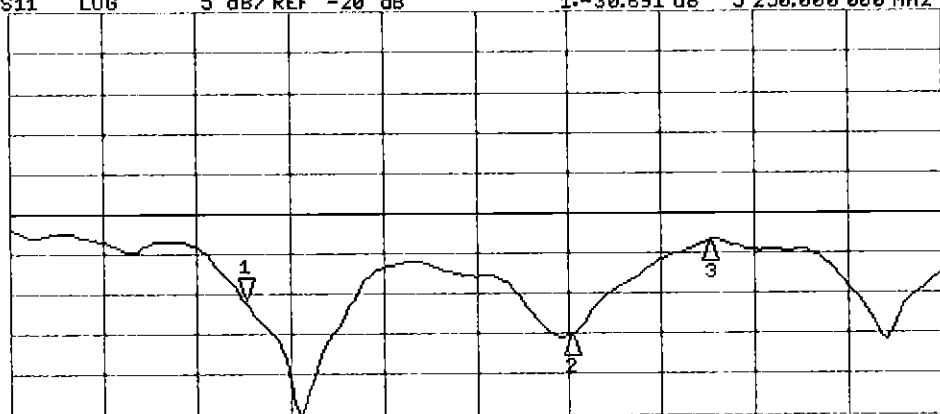
2: 50.867 Ω
 1.4961 Ω
 5.60000 GHz
 3: 53.785 Ω
 5.8164 Ω
 5.75000 GHz

CH2 S11 LOG 5 dB/REF -20 dB 1: -30.691 dB 5 250.000 000 MHz

Cor

Avg
16

H1d



CH2 Markers

2: -35.297 dB
 5.60000 GHz
 3: -23.501 dB
 5.75000 GHz

START 5 000.000 000 MHz

STOP 6 000.000 000 MHz

DASY5 Validation Report for Body TSL

Date: 02.08.2016

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole D5GHzV2; Type: D5GHzV2; Serial: D5GHzV2 - SN:1237

Communication System: UID 0 - CW; Frequency: 5250 MHz, Frequency: 5600 MHz, Frequency: 5750 MHz

Medium parameters used: $f = 5250$ MHz; $\sigma = 5.42$ S/m; $\epsilon_r = 47.1$; $\rho = 1000$ kg/m³

Medium parameters used: $f = 5600$ MHz; $\sigma = 5.88$ S/m; $\epsilon_r = 46.5$; $\rho = 1000$ kg/m³

Medium parameters used: $f = 5750$ MHz; $\sigma = 6.11$ S/m; $\epsilon_r = 46.2$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

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

DASY52 Configuration:

- Probe: EX3DV4 - SN3503; ConvF(4.85, 4.85, 4.85); Calibrated: 30.06.2016, ConvF(4.35, 4.35, 4.35); Calibrated: 30.06.2016, ConvF(4.3, 4.3, 4.3); Calibrated: 30.06.2016;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAB4 Sn601; Calibrated: 30.12.2015
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7372)

Dipole Calibration for Body Tissue/Pin=100mW, dist=10mm, f=5250 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 67.19 V/m; Power Drift = -0.04 dB

Peak SAR (extrapolated) = 28.4 W/kg

SAR(1 g) = 7.54 W/kg; SAR(10 g) = 2.12 W/kg

Maximum value of SAR (measured) = 17.3 W/kg

Dipole Calibration for Body Tissue/Pin=100mW, dist=10mm, f=5600 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 66.80 V/m; Power Drift = -0.06 dB

Peak SAR (extrapolated) = 31.9 W/kg

SAR(1 g) = 7.76 W/kg; SAR(10 g) = 2.17 W/kg

Maximum value of SAR (measured) = 18.3 W/kg

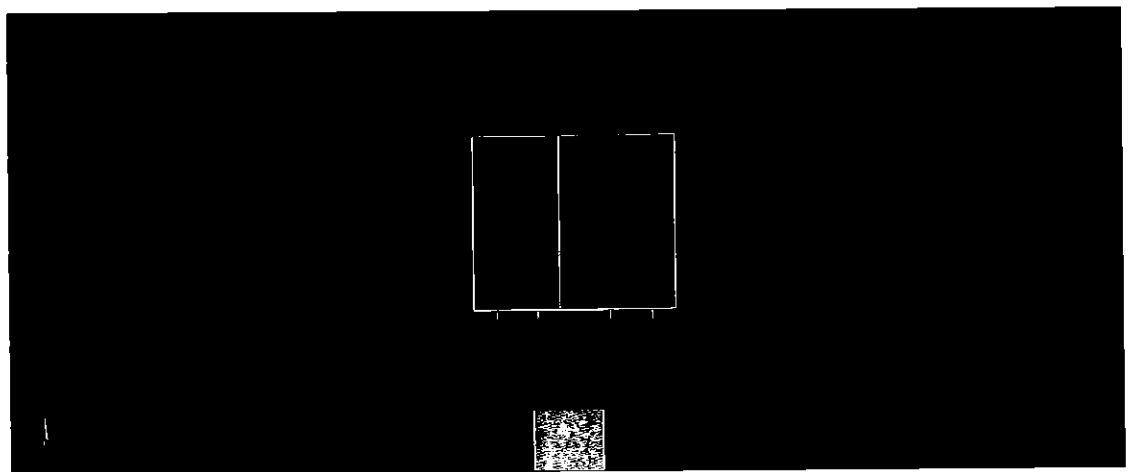
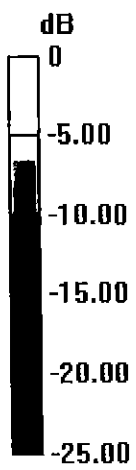
Dipole Calibration for Body Tissue/Pin=100mW, dist=10mm, f=5750 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 65.31 V/m; Power Drift = -0.09 dB

Peak SAR (extrapolated) = 32.6 W/kg

SAR(1 g) = 7.6 W/kg; SAR(10 g) = 2.11 W/kg

Maximum value of SAR (measured) = 18.4 W/kg

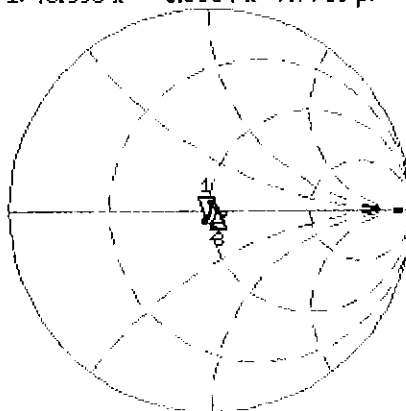


0 dB = 17.3 W/kg = 12.38 dBW/kg

Impedance Measurement Plot for Body TSL

2 Aug 2016 08:49:13
 CH1 S11 1 U FS 1: 46.998 Ω -3.8984 Ω 7.7763 pF 5 250.000 000 MHz

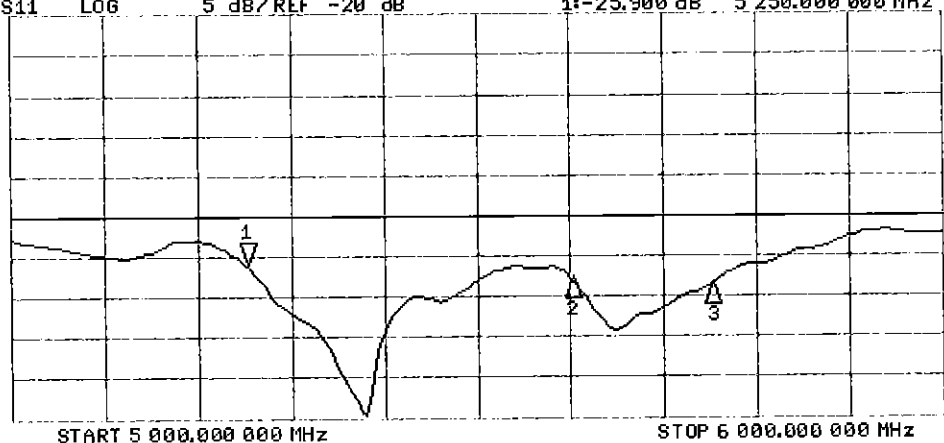
*
 Del
 Cor
 Avg
 16
 H1d



CH1 Markers
 2: 51.525 Ω
 3.8945 Ω
 5.60000 GHz
 3: 53.848 Ω
 0.2930 Ω
 5.75000 GHz

CH2 S11 LOG 5 dB/REF -20 dB 1: -25.900 dB 5 250.000 000 MHz

Cor
 Avg
 16
 H1d



CH2 Markers
 2: -27.699 dB
 5.60000 GHz
 3: -28.596 dB
 5.75000 GHz



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Accreditation No.: **SCS 0108**

Client **PC Test**

Certificate No: **D750V3-1034_May17**

CALIBRATION CERTIFICATE

Object **D750V3 - SN:1034**

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

BN✓
 05-23-2017

Calibration date: **May 11, 2017**

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
 The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature $(22 \pm 3)^{\circ}\text{C}$ 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-17 (No. 217-02521/02522)	Apr-18
Power sensor NRP-Z91	SN: 103244	04-Apr-17 (No. 217-02521)	Apr-18
Power sensor NRP-Z91	SN: 103245	04-Apr-17 (No. 217-02522)	Apr-18
Reference 20 dB Attenuator	SN: 5058 (20k)	07-Apr-17 (No. 217-02528)	Apr-18
Type-N mismatch combination	SN: 5047.2 / 06327	07-Apr-17 (No. 217-02529)	Apr-18
Reference Probe EX3DV4	SN: 7349	31-Dec-16 (No. EX3-7349_Dec16)	Dec-17
DAE4	SN: 601	28-Mar-17 (No. DAE4-601_Mar17)	Mar-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 HP 8753E	SN: US37390585	18-Oct-01 (in house check Oct-16)	In house check: Oct-17

Calibrated by: **Johannes Kurikka** Function: **Laboratory Technician**

Approved by: **Katja Pokovic** Technical Manager

Signature

Issued: May 11, 2017

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



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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.

DASY Version	DASY5	V52.10.0
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	15 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	750 MHz $\pm$ 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	41.9	0.89 mho/m
Measured Head TSL parameters	(22.0 $\pm$ 0.2) °C	41.0 $\pm$ 6 %	0.91 mho/m $\pm$ 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm ³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	2.10 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	8.22 W/kg $\pm$ 17.0 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	1.37 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	5.39 W/kg $\pm$ 16.5 % (k=2)

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	55.5	0.96 mho/m
Measured Body TSL parameters	(22.0 $\pm$ 0.2) °C	55.3 $\pm$ 6 %	0.96 mho/m $\pm$ 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm ³ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	2.18 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	8.71 W/kg $\pm$ 17.0 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	1.44 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	5.76 W/kg $\pm$ 16.5 % (k=2)

Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	55.6 Ω + 0.9 j Ω
Return Loss	- 25.4 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	50.4 Ω - 2.5 j Ω
Return Loss	- 32.0 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.033 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 06, 2011

DASY5 Validation Report for Head TSL

Date: 11.05.2017

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 750 MHz; Type: D750V3; Serial: D750V3 - SN:1034

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

Medium parameters used: $f = 750 \text{ MHz}$; $\sigma = 0.91 \text{ S/m}$; $\epsilon_r = 41$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

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

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(10.17, 10.17, 10.17); Calibrated: 31.12.2016;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 28.03.2017
- Phantom: Flat Phantom 4.9 (front); Type: QD 00L P49 AA; Serial: 1001
- DASY52 52.10.0(1444); SEMCAD X 14.6.10(7416)

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

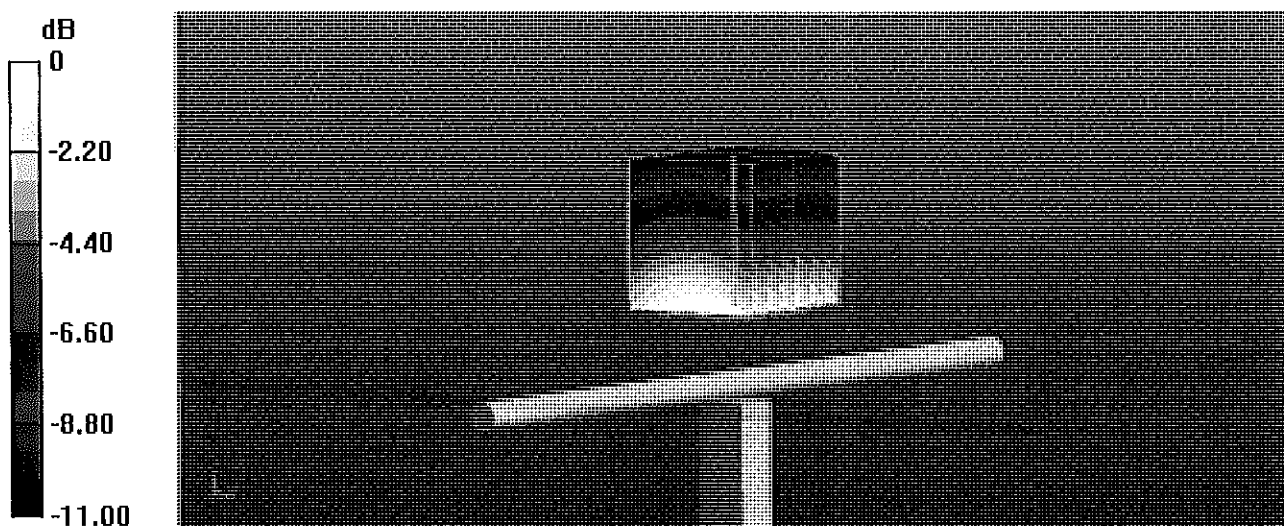
Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 58.89 V/m; Power Drift = -0.04 dB

Peak SAR (extrapolated) = 3.13 W/kg

SAR(1 g) = 2.1 W/kg; SAR(10 g) = 1.37 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 Head TSL

11 May 2017 15:00:37
[CH1] S11 1 U FS 1: 55.604 Ω 0.8887 Ω 188.58 pF 750.000 000 MHz

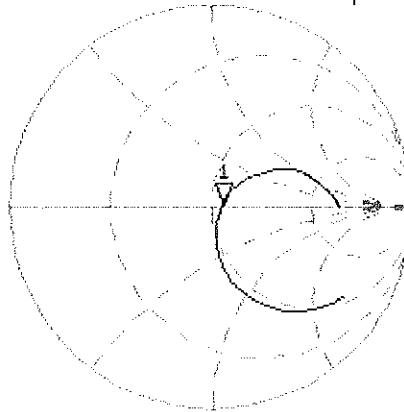
*

Del

CA

Avg
16

H1d

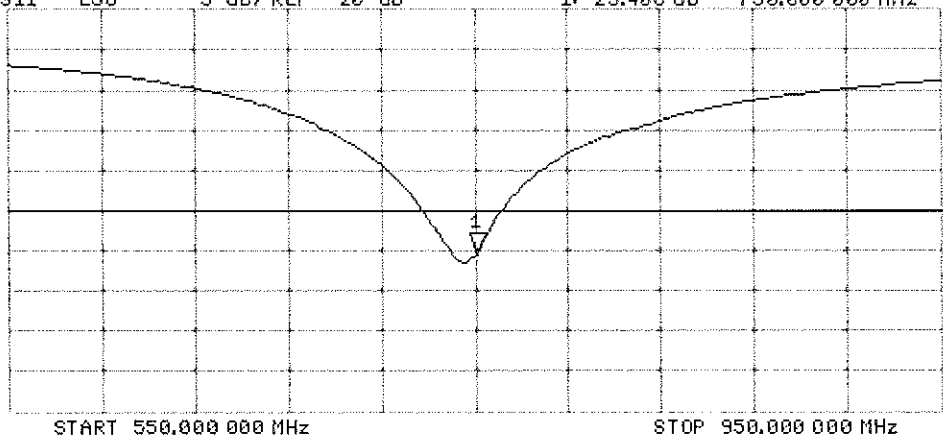


CH2 S11 LOG 5 dB/REF -20 dB 1:-25.408 dB 750.000 000 MHz

CA

Avg
16

H1d



DASY5 Validation Report for Body TSL

Date: 11.05.2017

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 750 MHz; Type: D750V3; Serial: D750V3 - SN:1034

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

Medium parameters used: $f = 750 \text{ MHz}$; $\sigma = 0.96 \text{ S/m}$; $\epsilon_r = 55.3$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

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

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(9.99, 9.99, 9.99); Calibrated: 31.12.2016;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 28.03.2017
- Phantom: Flat Phantom 4.9 (Back); Type: QD 00R P49 AA; Serial: 1005
- DASY52 52.10.0(1444); SEMCAD X 14.6.10(7416)

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

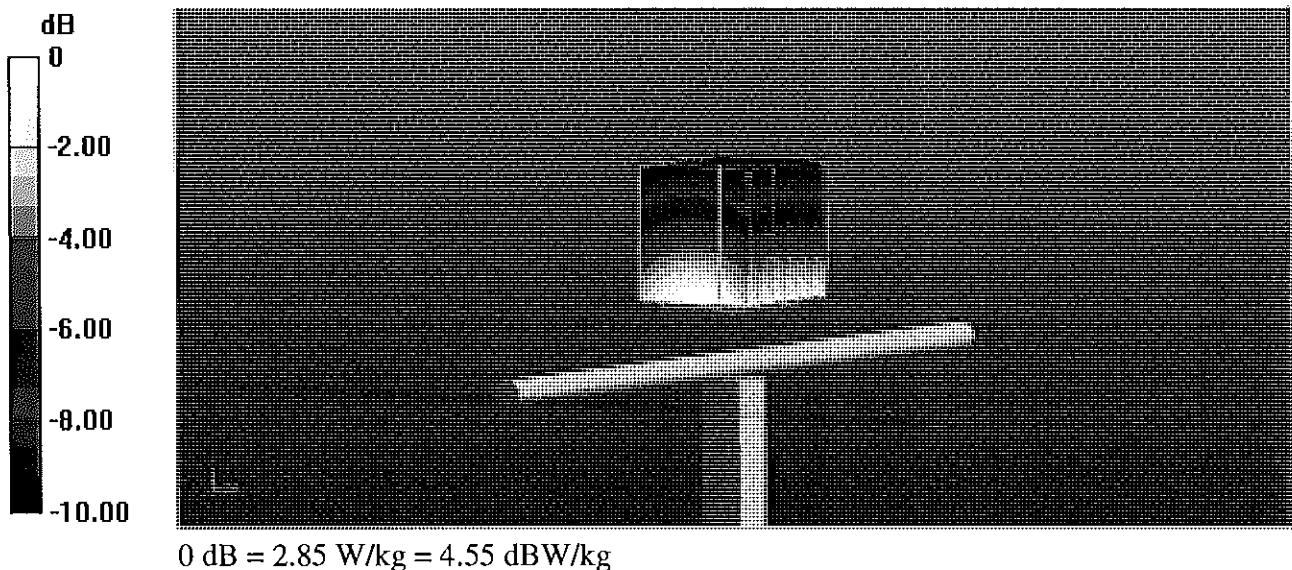
Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 57.84 V/m; Power Drift = -0.02 dB

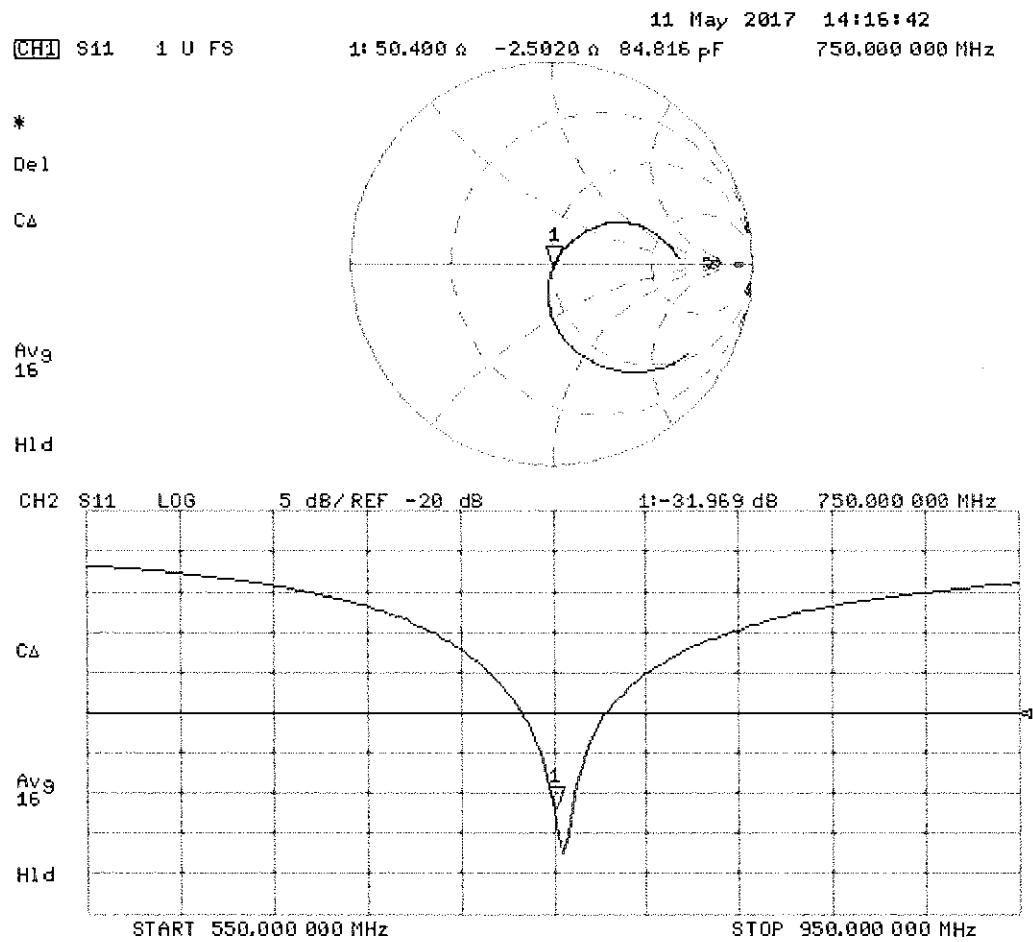
Peak SAR (extrapolated) = 3.17 W/kg

SAR(1 g) = 2.18 W/kg; SAR(10 g) = 1.44 W/kg

Maximum value of SAR (measured) = 2.85 W/kg



Impedance Measurement Plot for Body TSL





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Accreditation No.: **SCS 0108**

Client **PC Test**

Certificate No: **D2450V2-945_May17**

CALIBRATION CERTIFICATE

Object **D2450V2 - SN:945**

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

Calibration date: **May 09, 2017**

BNV
05-23-2017

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature $(22 \pm 3)^{\circ}\text{C}$ 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-17 (No. 217-02521/02522)	Apr-18
Power sensor NRP-Z91	SN: 103244	04-Apr-17 (No. 217-02521)	Apr-18
Power sensor NRP-Z91	SN: 103245	04-Apr-17 (No. 217-02522)	Apr-18
Reference 20 dB Attenuator	SN: 5058 (20k)	07-Apr-17 (No. 217-02528)	Apr-18
Type-N mismatch combination	SN: 5047.2 / 06327	07-Apr-17 (No. 217-02529)	Apr-18
Reference Probe EX3DV4	SN: 7349	31-Dec-16 (No. EX3-7349_Dec16)	Dec-17
DAE4	SN: 601	28-Mar-17 (No. DAE4-601_Mar17)	Mar-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 HP 8753E	SN: US37390585	18-Oct-01 (in house check Oct-16)	In house check: Oct-17

Calibrated by: **Claudio Leubler** **Laboratory Technician**

Signature *[Signature]*

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

[Signature]

Issued: May 11, 2017

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Accredited by the Swiss Accreditation Service (SAS)

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.

DASY Version	DASY5	V52.10.0
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	2450 MHz $\pm$ 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	39.2	1.80 mho/m
Measured Head TSL parameters	(22.0 $\pm$ 0.2) °C	37.9 $\pm$ 6 %	1.88 mho/m $\pm$ 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm ³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	13.2 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	51.3 W/kg $\pm$ 17.0 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	6.08 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	23.9 W/kg $\pm$ 16.5 % (k=2)

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	52.7	1.95 mho/m
Measured Body TSL parameters	(22.0 $\pm$ 0.2) °C	52.4 $\pm$ 6 %	2.03 mho/m $\pm$ 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm ³ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	12.8 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	50.2 W/kg $\pm$ 17.0 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	5.98 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	23.7 W/kg $\pm$ 16.5 % (k=2)

Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	55.3 Ω + 1.8 j Ω
Return Loss	- 25.4 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	50.6 Ω + 3.6 j Ω
Return Loss	- 28.8 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.157 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 15, 2014

DASY5 Validation Report for Head TSL

Date: 09.05.2017

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN:945

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

Medium parameters used: $f = 2450$ MHz; $\sigma = 1.88$ S/m; $\epsilon_r = 37.9$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

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

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(7.72, 7.72, 7.72); Calibrated: 31.12.2016;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 28.03.2017
- Phantom: Flat Phantom 5.0 (front); Type: QD 000 P50 AA; Serial: 1001
- DASY52 52.10.0(1442); SEMCAD X 14.6.10(7413)

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

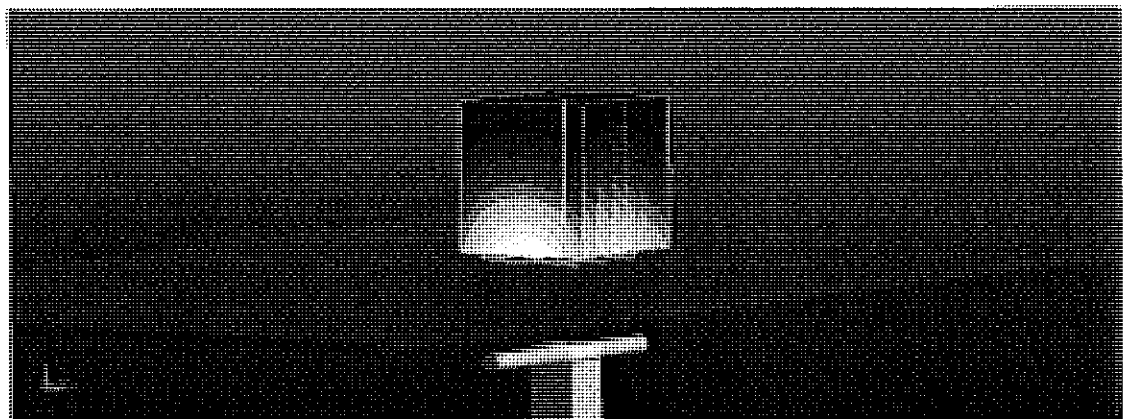
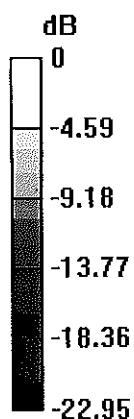
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 114.4 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 27.3 W/kg

SAR(1 g) = 13.2 W/kg; SAR(10 g) = 6.08 W/kg

Maximum value of SAR (measured) = 22.0 W/kg



0 dB = 22.0 W/kg = 13.42 dBW/kg

Impedance Measurement Plot for Head TSL

9 May 2017 12:55:53
[CH1] S11 1 U FS 1: 55.334 Ω 1.8242 Ω 118.50 μ H 2 450.000 000 MHz

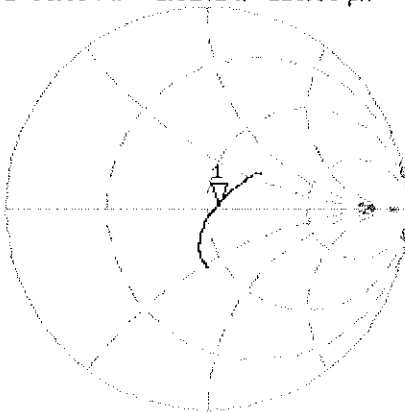
*

De1

CA

Avg
16

H1d

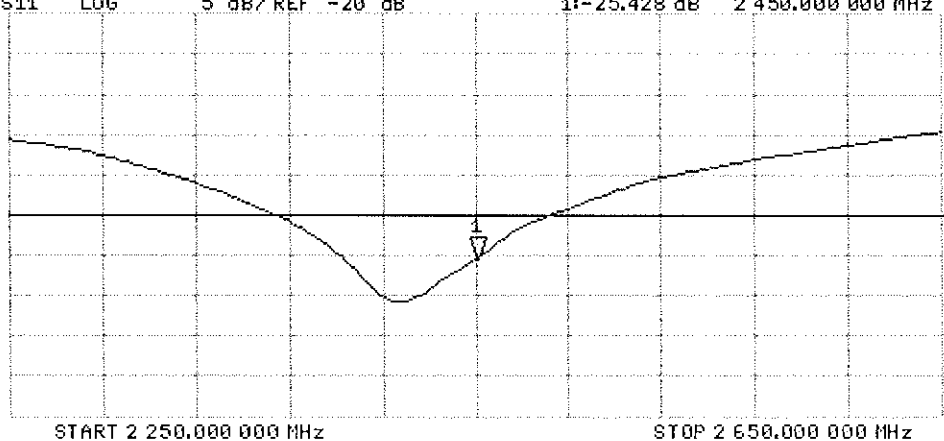


CH2 S11 LOG 5 dB/REF -20 dB 1:-25.428 dB 2 450.000 000 MHz

CA

Avg
16

H1d



DASY5 Validation Report for Body TSL

Date: 09.05.2017

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN:945

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

Medium parameters used: $f = 2450$ MHz; $\sigma = 2.03$ S/m; $\epsilon_r = 52.4$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

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

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(7.79, 7.79, 7.79); Calibrated: 31.12.2016;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 28.03.2017
- Phantom: Flat Phantom 5.0 (back); Type: QD 000 P50 AA; Serial: 1002
- DASY52 52.10.0(1442); SEMCAD X 14.6.10(7413)

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

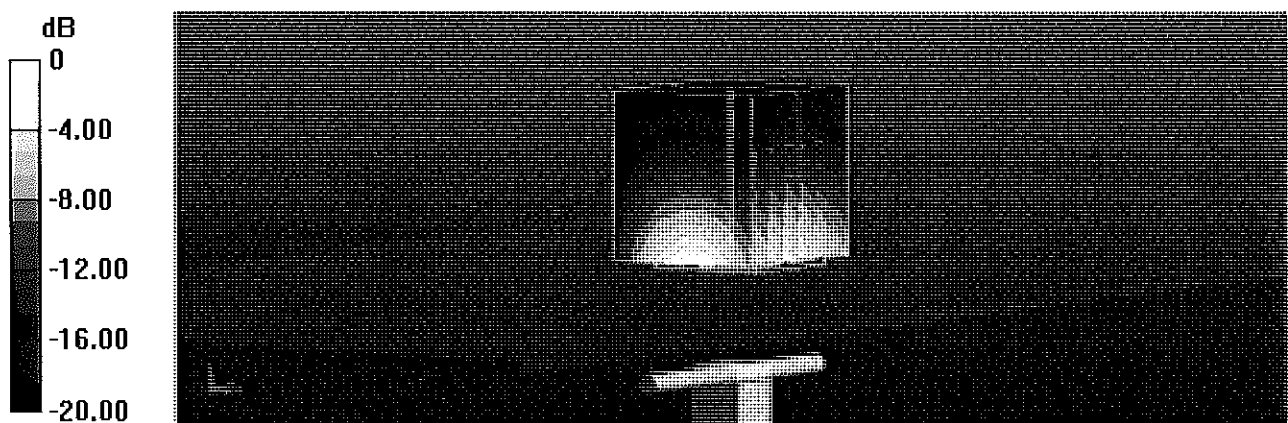
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 104.8 V/m; Power Drift = -0.08 dB

Peak SAR (extrapolated) = 25.3 W/kg

SAR(1 g) = 12.8 W/kg; SAR(10 g) = 5.98 W/kg

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

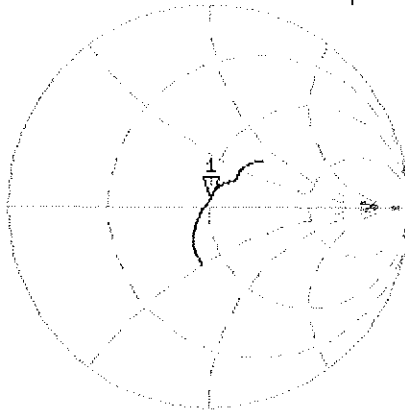


0 dB = 19.9 W/kg = 12.99 dBW/kg

Impedance Measurement Plot for Body TSL

9 May 2017 12:55:22
CH1 S11 1 U FS 1: 50.646 Ω 3.6074 Ω 234.34 pF 2 450.000 000 MHz

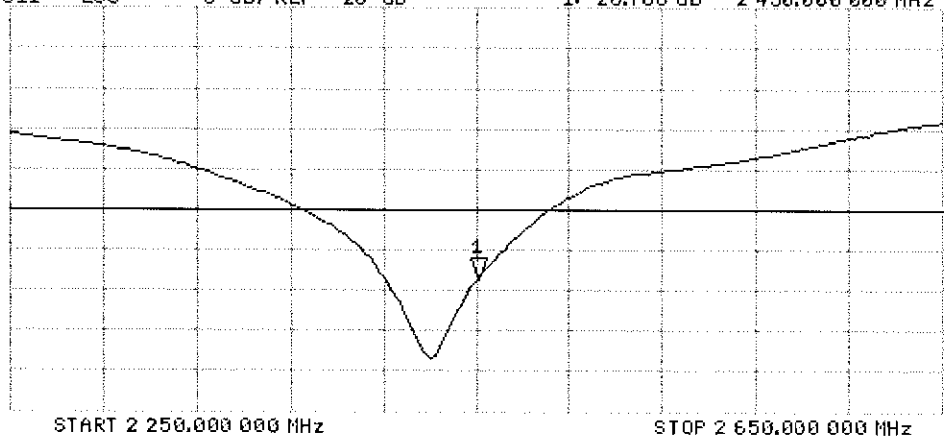
*
Del
CA



Avg
16
H1d

CH2 S11 LOG 5 dB/REF -20 dB 1: -28.766 dB 2 450.000 000 MHz

CA
Avg
16
H1d





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Accreditation No.: **SCS 0108**

Client **PC Test**

Certificate No: **D2600V2-1004_Apr17**

CALIBRATION CERTIFICATE

Object **D2600V2 - SN:1004**

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

Calibration date: **April 13, 2017**

*BNV
5-3-2017*

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NRP	SN: 104778	04-Apr-17 (No. 217-02521/02522)	Apr-18
Power sensor NRP-Z91	SN: 103244	04-Apr-17 (No. 217-02521)	Apr-18
Power sensor NRP-Z91	SN: 103245	04-Apr-17 (No. 217-02522)	Apr-18
Reference 20 dB Attenuator	SN: 5058 (20k)	07-Apr-17 (No. 217-02528)	Apr-18
Type-N mismatch combination	SN: 5047.2 / 06327	07-Apr-17 (No. 217-02529)	Apr-18
Reference Probe EX3DV4	SN: 7349	31-Dec-16 (No. EX3-7349_Dec16)	Dec-17
DAE4	SN: 601	28-Mar-17 (No. DAE4-601_Mar17)	Mar-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 HP 8753E	SN: US37390585	18-Oct-01 (in house check Oct-16)	In house check: Oct-17

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

Signature

[Signature]

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

[Signature]

Issued: April 18, 2017

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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, "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.

DASY Version	DASY5	V52.10.0
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	2600 MHz $\pm$ 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	39.0	1.96 mho/m
Measured Head TSL parameters	(22.0 $\pm$ 0.2) °C	37.1 $\pm$ 6 %	2.03 mho/m $\pm$ 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm ³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	14.8 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	57.6 W/kg $\pm$ 17.0 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	6.54 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	25.7 W/kg $\pm$ 16.5 % (k=2)

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	52.5	2.16 mho/m
Measured Body TSL parameters	(22.0 $\pm$ 0.2) °C	52.1 $\pm$ 6 %	2.21 mho/m $\pm$ 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm ³ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	14.0 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	55.3 W/kg $\pm$ 17.0 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	6.26 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	24.9 W/kg $\pm$ 16.5 % (k=2)

Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	48.5 Ω - 5.9 j Ω
Return Loss	- 24.2 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	44.7 Ω - 4.9 j Ω
Return Loss	- 22.4 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.149 ns
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After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.

No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	December 23, 2006

DASY5 Validation Report for Head TSL

Date: 13.04.2017

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 2600 MHz; Type: D2600V2; Serial: D2600V2 - SN: 1004

Communication System: UID 0 - CW; Frequency: 2600 MHz

Medium parameters used: $f = 2600$ MHz; $\sigma = 2.03$ S/m; $\epsilon_r = 37.1$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

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

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(7.56, 7.56, 7.56); Calibrated: 31.12.2016;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 28.03.2017
- Phantom: Flat Phantom 5.0 (front); Type: QD 000 P50 AA; Serial: 1001
- DASY52 52.10.0(1442); SEMCAD X 14.6.10(7413)

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

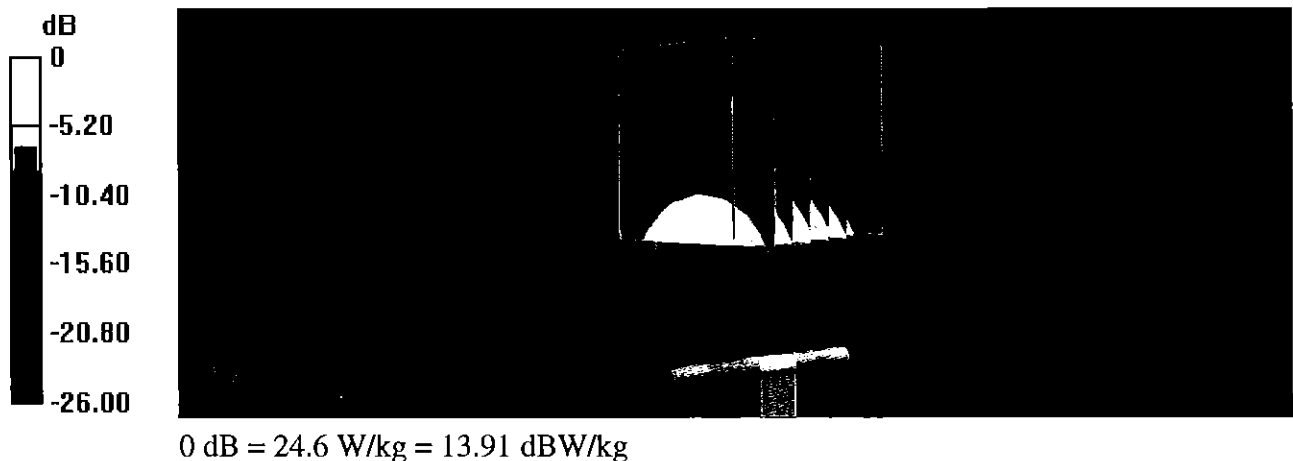
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 115.4 V/m; Power Drift = -0.08 dB

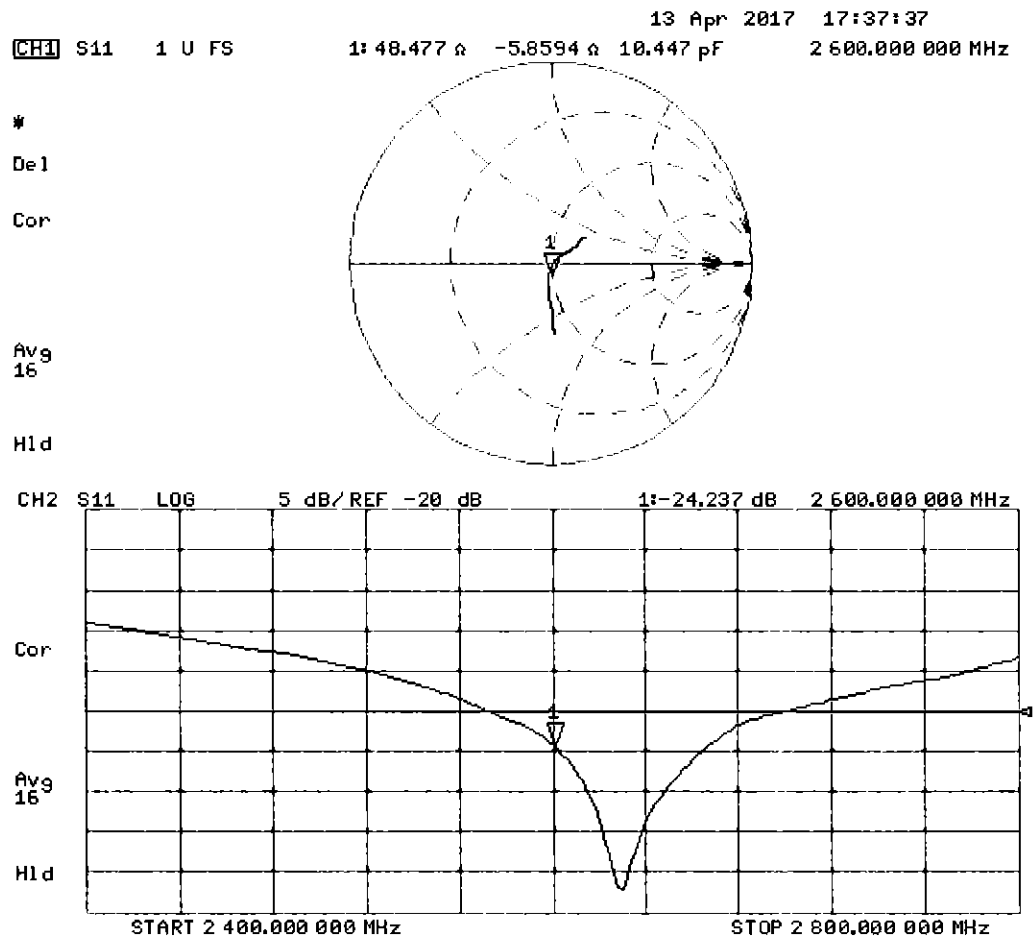
Peak SAR (extrapolated) = 31.2 W/kg

SAR(1 g) = 14.8 W/kg; SAR(10 g) = 6.54 W/kg

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



Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 10.04.2017

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 2600 MHz; Type: D2600V2; Serial: D2600V2 - SN: 1004

Communication System: UID 0 - CW; Frequency: 2600 MHz

Medium parameters used: $f = 2600$ MHz; $\sigma = 2.21$ S/m; $\epsilon_r = 52.1$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

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

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(7.48, 7.48, 7.48); Calibrated: 31.12.2016;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 28.03.2017
- Phantom: Flat Phantom 5.0 (back); Type: QD 000 P50 AA; Serial: 1002
- DASY52 52.10.0(1442); SEMCAD X 14.6.10(7413)

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

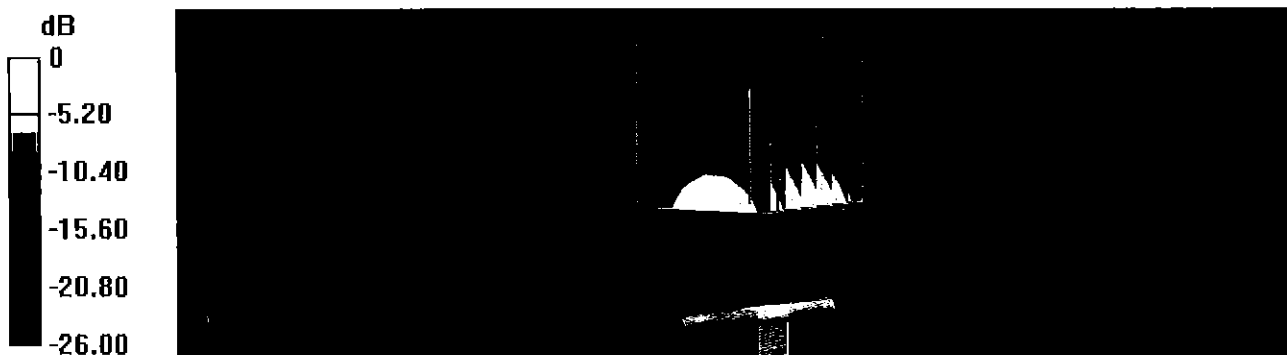
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 107.3 V/m; Power Drift = -0.05 dB

Peak SAR (extrapolated) = 28.2 W/kg

SAR(1 g) = 14 W/kg; SAR(10 g) = 6.26 W/kg

Maximum value of SAR (measured) = 22.0 W/kg

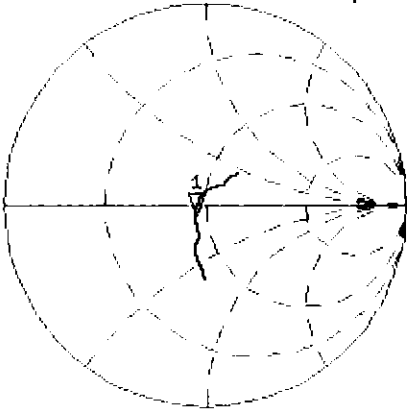


0 dB = 22.0 W/kg = 13.42 dBW/kg

Impedance Measurement Plot for Body TSL

10 Apr 2017 14:58:52
CH1 S11 1 U FS 1: 44.701 Ω -4.8926 Ω 12.511 pF 2 600.000 000 MHz

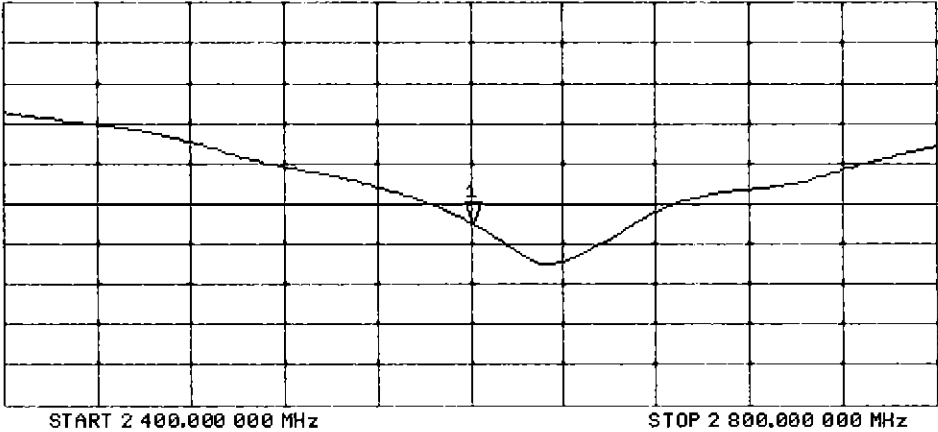
*
De1
CA



Avg
16
H1d

CH2 S11 LOG 5 dB/REF -20 dB 1:-22.378 dB 2 600.000 000 MHz

CA
Avg
16
H1d





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Accreditation No.: **SCS 0108**

Client **PC Test**

Certificate No: **D5GHzV2-1123_Mar17**

CALIBRATION CERTIFICATE

Object **D5GHzV2 - SN:1123**

Calibration procedure(s) **QA CAL-22.v2**
Calibration procedure for dipole validation kits between 3-6 GHz

BNV
03-27-2017

Calibration date: **March 09, 2017**

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
 The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NRP	SN: 104778	06-Apr-16 (No. 217-02288/02289)	Apr-17
Power sensor NRP-Z91	SN: 103244	06-Apr-16 (No. 217-02288)	Apr-17
Power sensor NRP-Z91	SN: 103245	06-Apr-16 (No. 217-02289)	Apr-17
Reference 20 dB Attenuator	SN: 5058 (20k)	05-Apr-16 (No. 217-02292)	Apr-17
Type-N mismatch combination	SN: 5047.2 / 06327	05-Apr-16 (No. 217-02295)	Apr-17
Reference Probe EX3DV4	SN: 3503	31-Dec-16 (No. EX3-3503_Dec16)	Dec-17
DAE4	SN: 601	04-Jan-17 (No. DAE4-601_Jan17)	Jan-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 HP 8753E	SN: US37390585	18-Oct-01 (in house check Oct-16)	In house check: Oct-17

Calibrated by: **Johannes Kurikka** Function: **Laboratory Technician**

Approved by: **Katja Pokovic** Technical Manager

Signature

[Signature]
[Signature]

Issued: March 10, 2017

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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 62209-2, "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.

DASY Version	DASY5	V52.8.8
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom V5.0	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy = 4.0 mm, dz = 1.4 mm	Graded Ratio = 1.4 (Z direction)
Frequency	5250 MHz $\pm$ 1 MHz 5600 MHz $\pm$ 1 MHz 5750 MHz $\pm$ 1 MHz	

Head TSL parameters at 5250 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	35.9	4.71 mho/m
Measured Head TSL parameters	(22.0 $\pm$ 0.2) °C	34.9 $\pm$ 6 %	4.57 mho/m $\pm$ 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL at 5250 MHz

SAR averaged over 1 cm ³ (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	7.98 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	79.3 W/kg $\pm$ 19.9 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Head TSL	condition	
SAR measured	100 mW input power	2.29 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	22.7 W/kg $\pm$ 19.5 % (k=2)

Head TSL parameters at 5600 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	35.5	5.07 mho/m
Measured Head TSL parameters	(22.0 $\pm$ 0.2) °C	34.4 $\pm$ 6 %	4.92 mho/m $\pm$ 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL at 5600 MHz

SAR averaged over 1 cm ³ (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	8.49 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	84.2 W / kg $\pm$ 19.9 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Head TSL	condition	
SAR measured	100 mW input power	2.42 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	24.0 W/kg $\pm$ 19.5 % (k=2)

Head TSL parameters at 5750 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	35.4	5.22 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	34.2 ± 6 %	5.07 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL at 5750 MHz

SAR averaged over 1 cm³ (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	8.30 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	82.3 W/kg ± 19.9 % (k=2)

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	100 mW input power	2.35 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	23.3 W/kg ± 19.5 % (k=2)

Body TSL parameters at 5250 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	48.9	5.36 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	48.1 ± 6 %	5.52 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL at 5250 MHz

SAR averaged over 1 cm ³ (1 g) of Body TSL	Condition	
SAR measured	100 mW input power	7.61 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	75.9 W/kg ± 19.9 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Body TSL	condition	
SAR measured	100 mW input power	2.14 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	21.3 W/kg ± 19.5 % (k=2)

Body TSL parameters at 5600 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	48.5	5.77 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	47.5 ± 6 %	5.99 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL at 5600 MHz

SAR averaged over 1 cm ³ (1 g) of Body TSL	Condition	
SAR measured	100 mW input power	7.91 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	78.9 W/kg ± 19.9 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Body TSL	condition	
SAR measured	100 mW input power	2.22 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	22.1 W/kg ± 19.5 % (k=2)

Body TSL parameters at 5750 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	48.3	5.94 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	47.2 ± 6 %	6.21 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL at 5750 MHz

SAR averaged over 1 cm ³ (1 g) of Body TSL	Condition	
SAR measured	100 mW input power	7.65 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	76.3 W/kg ± 19.9 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Body TSL	condition	
SAR measured	100 mW input power	2.14 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	21.3 W/kg ± 19.5 % (k=2)

Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL at 5250 MHz

Impedance, transformed to feed point	51.6 Ω - 5.7 j Ω
Return Loss	- 24.7 dB

Antenna Parameters with Head TSL at 5600 MHz

Impedance, transformed to feed point	55.9 Ω - 0.7 j Ω
Return Loss	- 25.1 dB

Antenna Parameters with Head TSL at 5750 MHz

Impedance, transformed to feed point	56.7 Ω + 1.2 j Ω
Return Loss	- 23.9 dB

Antenna Parameters with Body TSL at 5250 MHz

Impedance, transformed to feed point	51.8 Ω - 3.8 j Ω
Return Loss	- 27.7 dB

Antenna Parameters with Body TSL at 5600 MHz

Impedance, transformed to feed point	58.2 Ω + 1.4 j Ω
Return Loss	- 22.3 dB

Antenna Parameters with Body TSL at 5750 MHz

Impedance, transformed to feed point	57.3 Ω + 3.7 j Ω
Return Loss	- 22.4 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.205 ns
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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	September 08, 2011

DASY5 Validation Report for Head TSL

Date: 08.03.2017

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole D5GHzV2; Type: D5GHzV2; Serial: D5GHzV2 - SN:1123

Communication System: UID 0 - CW; Frequency: 5250 MHz, Frequency: 5600 MHz, Frequency: 5750 MHz
Medium parameters used: $f = 5250$ MHz; $\sigma = 4.57$ S/m; $\epsilon_r = 34.9$; $\rho = 1000$ kg/m³, Medium parameters used: $f = 5600$ MHz; $\sigma = 4.92$ S/m; $\epsilon_r = 34.4$; $\rho = 1000$ kg/m³, Medium parameters used: $f = 5750$ MHz; $\sigma = 5.07$ S/m; $\epsilon_r = 34.2$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

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

DASY52 Configuration:

- Probe: EX3DV4 - SN3503; ConvF(5.58, 5.58, 5.58); Calibrated: 31.12.2016, ConvF(5.09, 5.09, 5.09); Calibrated: 31.12.2016, ConvF(5.02, 5.02, 5.02); Calibrated: 31.12.2016;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 04.01.2017
- Phantom: Flat Phantom 5.0 (front); Type: QD 000 P50 AA; Serial: 1001
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7372)

Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5250 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 71.62 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 29.9 W/kg

SAR(1 g) = 7.98 W/kg; SAR(10 g) = 2.29 W/kg

Maximum value of SAR (measured) = 18.3 W/kg

Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5600 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 71.47 V/m; Power Drift = -0.08 dB

Peak SAR (extrapolated) = 34.1 W/kg

SAR(1 g) = 8.49 W/kg; SAR(10 g) = 2.42 W/kg

Maximum value of SAR (measured) = 19.8 W/kg

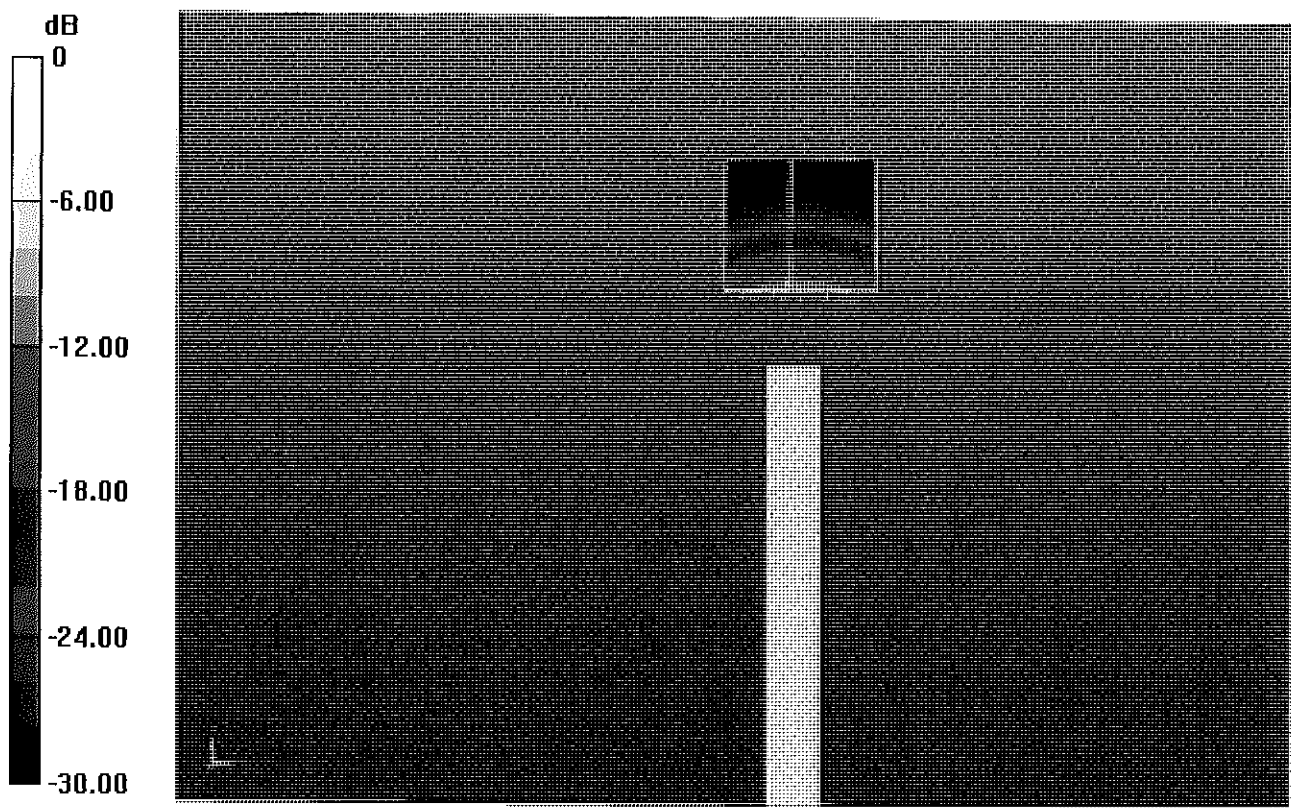
Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5750 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 70.34 V/m; Power Drift = -0.05 dB

Peak SAR (extrapolated) = 34.6 W/kg

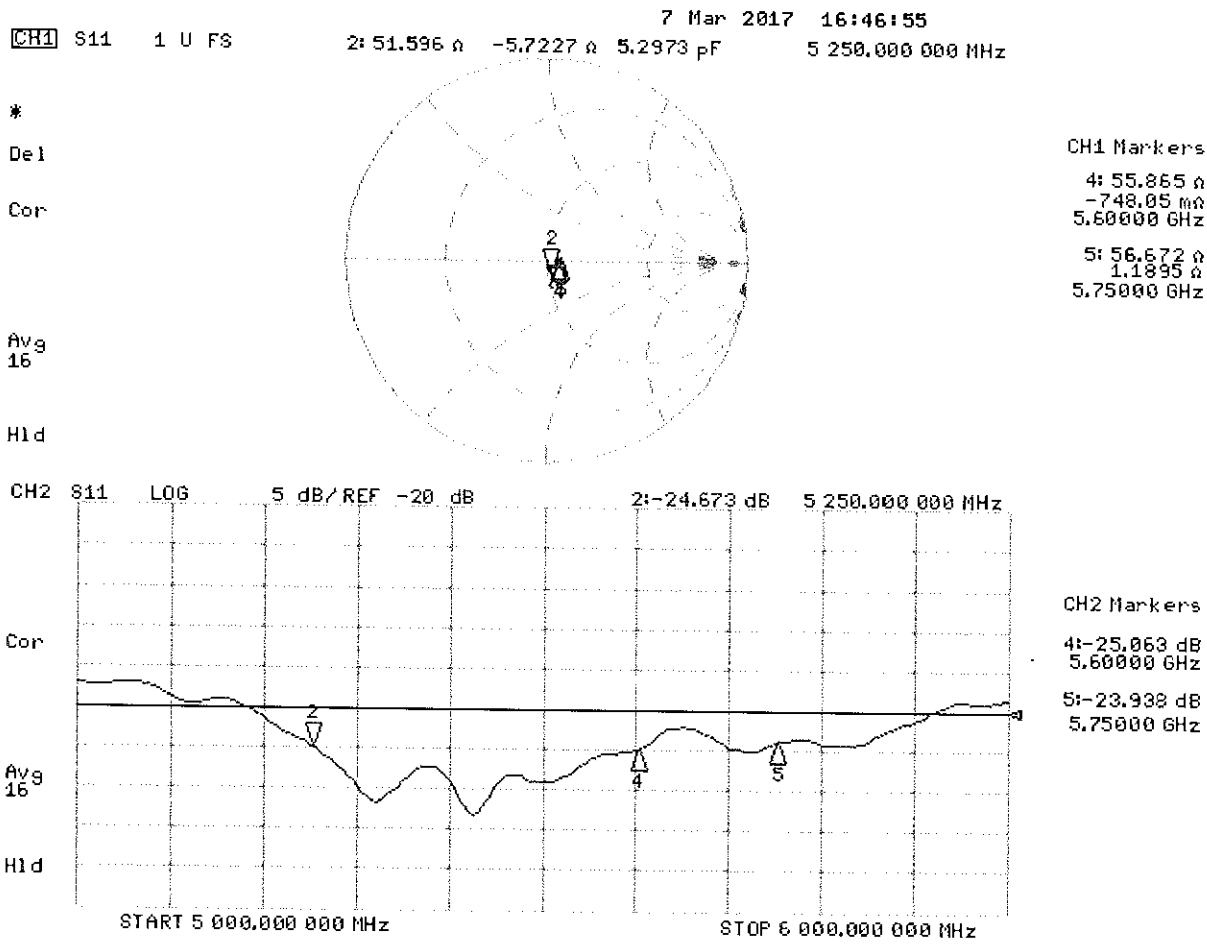
SAR(1 g) = 8.3 W/kg; SAR(10 g) = 2.35 W/kg

Maximum value of SAR (measured) = 19.6 W/kg



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

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 09.03.2017

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole D5GHzV2; Type: D5GHzV2; Serial: D5GHzV2 - SN:1123

Communication System: UID 0 - CW; Frequency: 5250 MHz, Frequency: 5600 MHz, Frequency: 5750 MHz
Medium parameters used: $f = 5250$ MHz; $\sigma = 5.52$ S/m; $\epsilon_r = 48.1$; $\rho = 1000$ kg/m³, Medium parameters used: $f = 5600$ MHz; $\sigma = 5.99$ S/m; $\epsilon_r = 47.5$; $\rho = 1000$ kg/m³, Medium parameters used: $f = 5750$ MHz; $\sigma = 6.21$ S/m; $\epsilon_r = 47.2$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

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

DASY52 Configuration:

- Probe: EX3DV4 - SN3503; ConvF(5.14, 5.14, 5.14); Calibrated: 31.12.2016, ConvF(4.57, 4.57, 4.57); Calibrated: 31.12.2016, ConvF(4.52, 4.52, 4.52); Calibrated: 31.12.2016;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 04.01.2017
- Phantom: Flat Phantom 5.0 (back); Type: QD 000 P50 AA; Serial: 1002
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7372)

Dipole Calibration for Body Tissue/Pin=100mW, dist=10mm, f=5250MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 64.40 V/m; Power Drift = -0.06 dB

Peak SAR (extrapolated) = 29.1 W/kg

SAR(1 g) = 7.61 W/kg; SAR(10 g) = 2.14 W/kg

Maximum value of SAR (measured) = 17.5 W/kg

Dipole Calibration for Body Tissue/Pin=100mW, dist=10mm, f=5600 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 63.91 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 33.2 W/kg

SAR(1 g) = 7.91 W/kg; SAR(10 g) = 2.22 W/kg

Maximum value of SAR (measured) = 18.7 W/kg

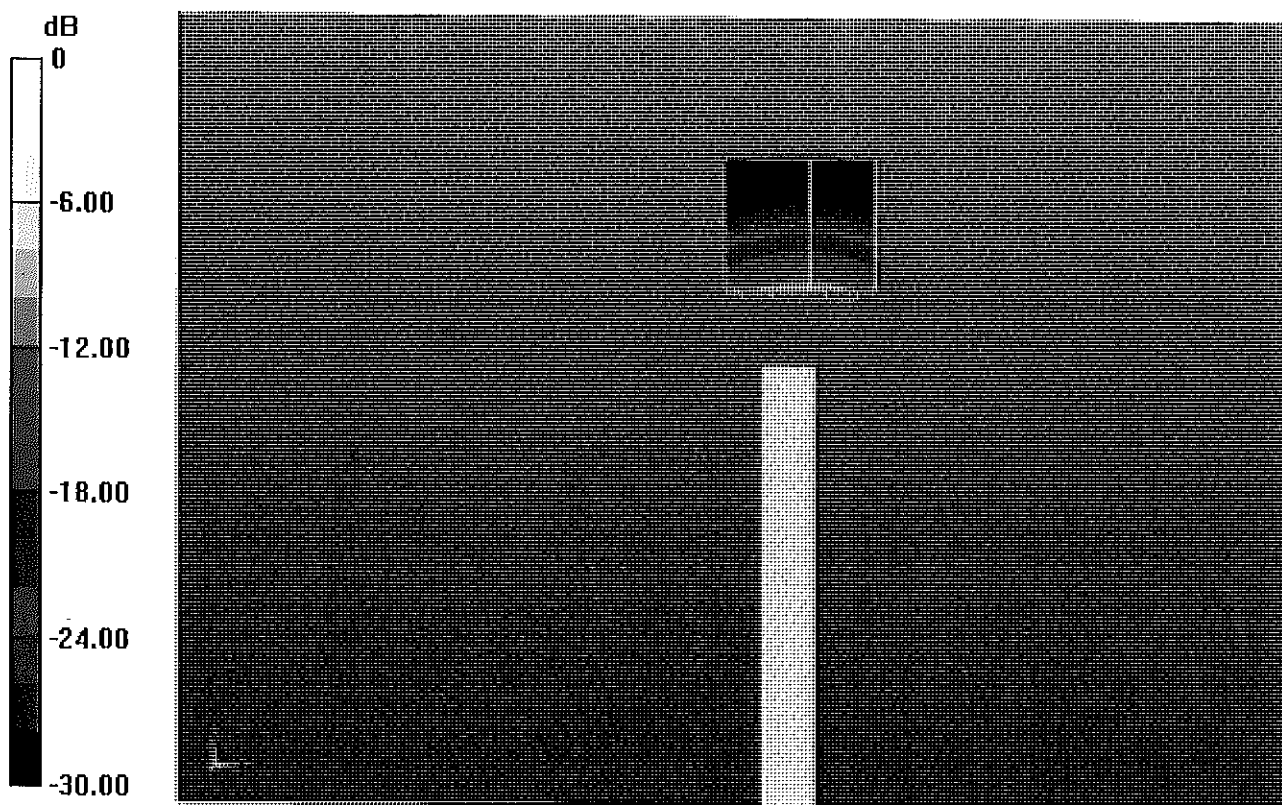
Dipole Calibration for Body Tissue/Pin=100mW, dist=10mm, f=5750 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 63.25 V/m; Power Drift = -0.07 dB

Peak SAR (extrapolated) = 33.4 W/kg

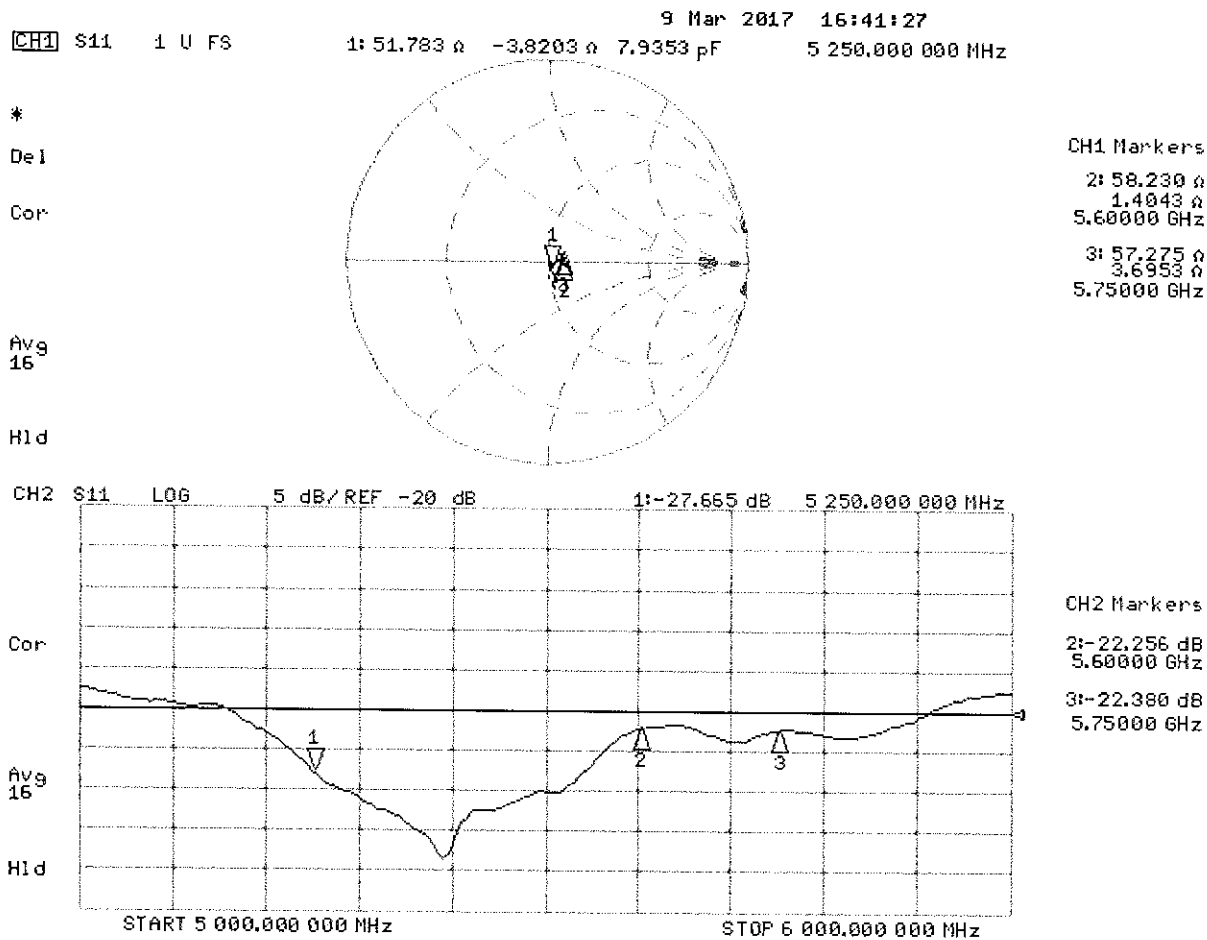
SAR(1 g) = 7.65 W/kg; SAR(10 g) = 2.14 W/kg

Maximum value of SAR (measured) = 18.3 W/kg



0 dB = 17.5 W/kg = 12.43 dBW/kg

Impedance Measurement Plot for Body TSL





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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 **PC Test**

Certificate No: **D2600V2-1071_Sep16**

CALIBRATION CERTIFICATE

Object **D2600V2 - SN:1071**

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

BNV
09-28-2016

Calibration date: **September 13, 2016**

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	06-Apr-16 (No. 217-02288/02289)	Apr-17
Power sensor NRP-Z91	SN: 103244	06-Apr-16 (No. 217-02288)	Apr-17
Power sensor NRP-Z91	SN: 103245	06-Apr-16 (No. 217-02289)	Apr-17
Reference 20 dB Attenuator	SN: 5058 (20k)	05-Apr-16 (No. 217-02292)	Apr-17
Type-N mismatch combination	SN: 5047.2 / 06327	05-Apr-16 (No. 217-02295)	Apr-17
Reference Probe EX3DV4	SN: 7349	15-Jun-16 (No. EX3-7349_Jun16)	Jun-17
DAE4	SN: 601	30-Dec-15 (No. DAE4-601_Dec15)	Dec-16

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power meter EPM-442A	SN: GB37480704	07-Oct-15 (No. 217-02222)	In house check: Oct-16
Power sensor HP 8481A	SN: US37292783	07-Oct-15 (No. 217-02222)	In house check: Oct-16
Power sensor HP 8481A	SN: MY41092317	07-Oct-15 (No. 217-02223)	In house check: Oct-16
RF generator R&S SMT-06	SN: 100972	15-Jun-15 (in house check Jun-15)	In house check: Oct-16
Network Analyzer HP 8753E	SN: US37390585	18-Oct-01 (in house check Oct-15)	In house check: Oct-16

Calibrated by: **Jeton Kastrati** Function: **Laboratory Technician**

Approved by: **Katja Pokovic** Technical Manager

Signature

Issued: September 13, 2016

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



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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.

DASY Version	DASY5	V52.8.8
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	2600 MHz $\pm$ 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	39.0	1.96 mho/m
Measured Head TSL parameters	(22.0 $\pm$ 0.2) °C	37.3 $\pm$ 6 %	2.05 mho/m $\pm$ 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm ³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	14.5 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	56.3 W/kg $\pm$ 17.0 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	6.45 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	25.3 W/kg $\pm$ 16.5 % (k=2)

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	52.5	2.16 mho/m
Measured Body TSL parameters	(22.0 $\pm$ 0.2) °C	51.1 $\pm$ 6 %	2.22 mho/m $\pm$ 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm ³ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	13.8 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	54.2 W/kg $\pm$ 17.0 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	6.20 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	24.5 W/kg $\pm$ 16.5 % (k=2)

Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	49.9 Ω - 6.7 j Ω
Return Loss	- 23.5 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	46.1 Ω - 2.1 j Ω
Return Loss	- 26.7 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.153 ns
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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 17, 2013

DASY5 Validation Report for Head TSL

Date: 13.09.2016

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 2600 MHz; Type: D2600V2; Serial: D2600V2 - SN:1071

Communication System: UID 0 - CW; Frequency: 2600 MHz

Medium parameters used: $f = 2600$ MHz; $\sigma = 2.05$ S/m; $\epsilon_r = 37.3$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

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

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(7.56, 7.56, 7.56); Calibrated: 15.06.2016;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.12.2015
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7372)

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

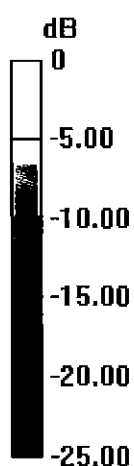
Measurement grid: $dx=5$ mm, $dy=5$ mm, $dz=5$ mm

Reference Value = 115.1 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 30.4 W/kg

SAR(1 g) = 14.5 W/kg; SAR(10 g) = 6.45 W/kg

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

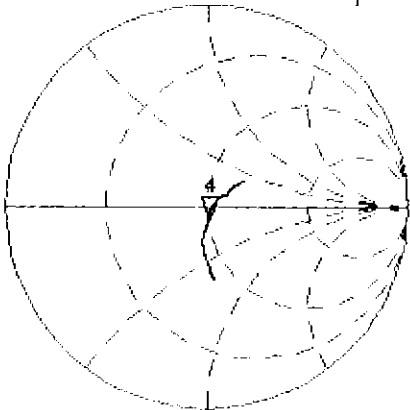


0 dB = 24.6 W/kg = 13.91 dBW/kg

Impedance Measurement Plot for Head TSL

12 Sep 2016 13:13:44
CH1 S11 1 U FS 4: 43.902 Ω -6.6523 Ω 9.2018 pF 2 600.000 000 MHz

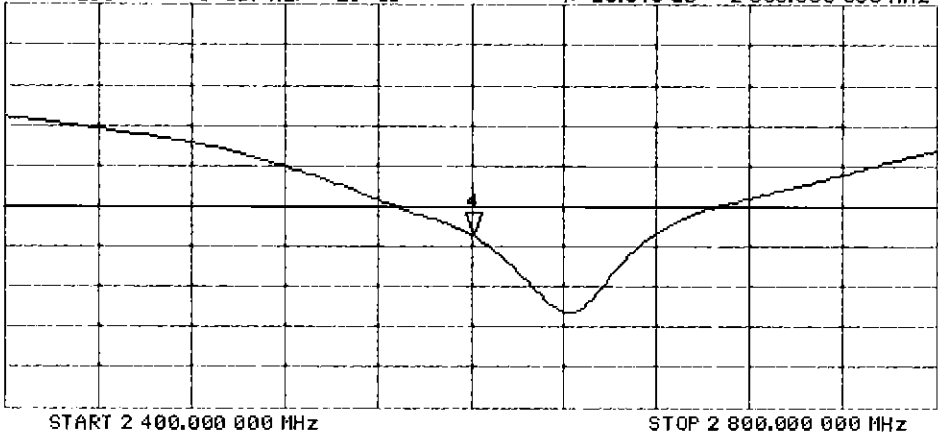
*
De l
CA



Avg
16
H1 d

CH2 S11 LOG 5 dB/ REF -20 dB 4:-23.548 dB 2 600.000 000 MHz

CA
Avg
16
H1 d



DASY5 Validation Report for Body TSL

Date: 13.09.2016

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 2600 MHz; Type: D2600V2; Serial: D2600V2 - SN:1071

Communication System: UID 0 - CW; Frequency: 2600 MHz

Medium parameters used: $f = 2600$ MHz; $\sigma = 2.22$ S/m; $\epsilon_r = 51.1$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

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

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(7.48, 7.48, 7.48); Calibrated: 15.06.2016;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.12.2015
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7372)

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

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

Reference Value = 107.7 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 28.3 W/kg

SAR(1 g) = 13.8 W/kg; SAR(10 g) = 6.2 W/kg

Maximum value of SAR (measured) = 23.3 W/kg

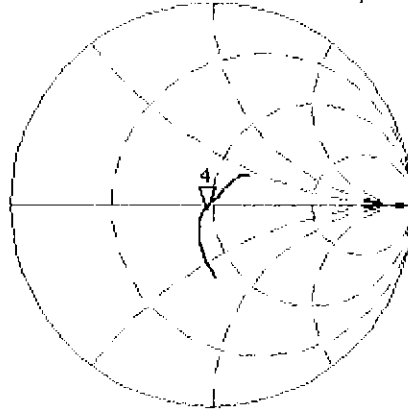


0 dB = 23.3 W/kg = 13.67 dBW/kg

Impedance Measurement Plot for Body TSL

12 Sep 2016 13:13:09
 [CH1] S11 1 U FS 4: 46.078 Ω -2.0762 Ω 29.484 pF 2 600.000 000 MHz

*
 De l
 Ca



Avg
 16

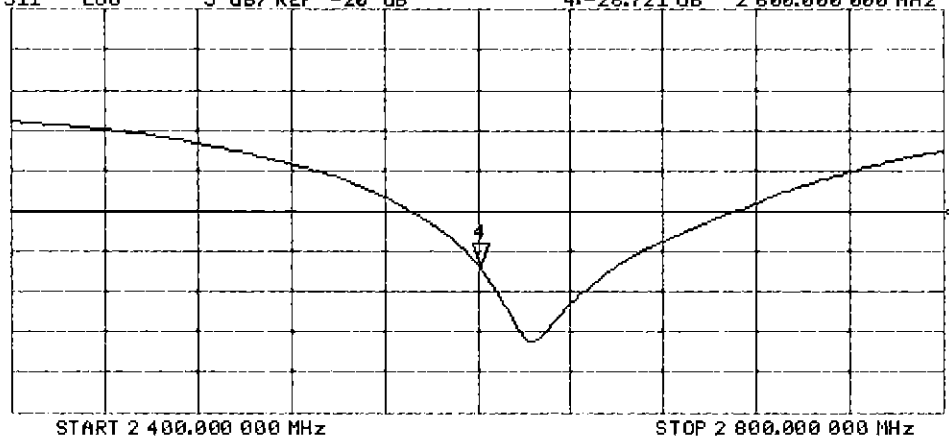
H1 d

CH2 S11 LOG 5 dB/REF -20 dB 4:-26.721 dB 2 600.000 000 MHz

Ca

Avg
 16

H1 d





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Accreditation No.: **SCS 0108**

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Client **PC Test**

Certificate No: **D750V3-1003_Jan17**

CALIBRATION CERTIFICATE

Object **D750V3 - SN:1003**

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

BNV
01/26/2017

Calibration date: **January 11, 2017**

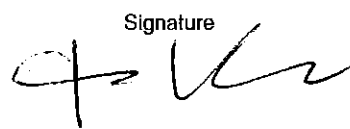
This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
 The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature $(22 \pm 3)^{\circ}\text{C}$ 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	06-Apr-16 (No. 217-02288/02289)	Apr-17
Power sensor NRP-Z91	SN: 103244	06-Apr-16 (No. 217-02288)	Apr-17
Power sensor NRP-Z91	SN: 103245	06-Apr-16 (No. 217-02289)	Apr-17
Reference 20 dB Attenuator	SN: 5058 (20k)	05-Apr-16 (No. 217-02292)	Apr-17
Type-N mismatch combination	SN: 5047.2 / 06327	05-Apr-16 (No. 217-02295)	Apr-17
Reference Probe EX3DV4	SN: 7349	31-Dec-16 (No. EX3-7349_Dec16)	Dec-17
DAE4	SN: 601	04-Jan-17 (No. DAE4-601_Jan17)	Jan-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 HP 8753E	SN: US37390585	18-Oct-01 (in house check Oct-16)	In house check: Oct-17

Calibrated by: **Jeton Kastrati** Name Function
 Laboratory Technician

Signature



Approved by: **Katja Pokovic** Technical Manager

Issued: January 11, 2017

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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, "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.

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

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	41.9	0.89 mho/m
Measured Head TSL parameters	(22.0 $\pm$ 0.2) °C	41.6 $\pm$ 6 %	0.89 mho/m $\pm$ 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm ³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	2.10 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	8.39 W/kg $\pm$ 17.0 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	1.36 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	5.43 W/kg $\pm$ 16.5 % (k=2)

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	55.5	0.96 mho/m
Measured Body TSL parameters	(22.0 $\pm$ 0.2) °C	54.2 $\pm$ 6 %	0.96 mho/m $\pm$ 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm ³ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	2.21 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	8.79 W/kg $\pm$ 17.0 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	1.45 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	5.78 W/kg $\pm$ 16.5 % (k=2)

Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	54.3 Ω - 1.4 j Ω
Return Loss	- 27.3 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	49.4 Ω - 6.0 j Ω
Return Loss	- 24.4 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.034 ns
----------------------------------	----------

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.

No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	January 21, 2009

DASY5 Validation Report for Head TSL

Date: 11.01.2017

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 750 MHz; Type: D750V3; Serial: D750V3 - SN:1003

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

Medium parameters used: $f = 750 \text{ MHz}$; $\sigma = 0.89 \text{ S/m}$; $\epsilon_r = 41.6$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

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

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(10.17, 10.17, 10.17); Calibrated: 31.12.2016;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 04.01.2017
- Phantom: Flat Phantom 4.9 (front); Type: QD 00L P49 AA; Serial: 1001
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7372)

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

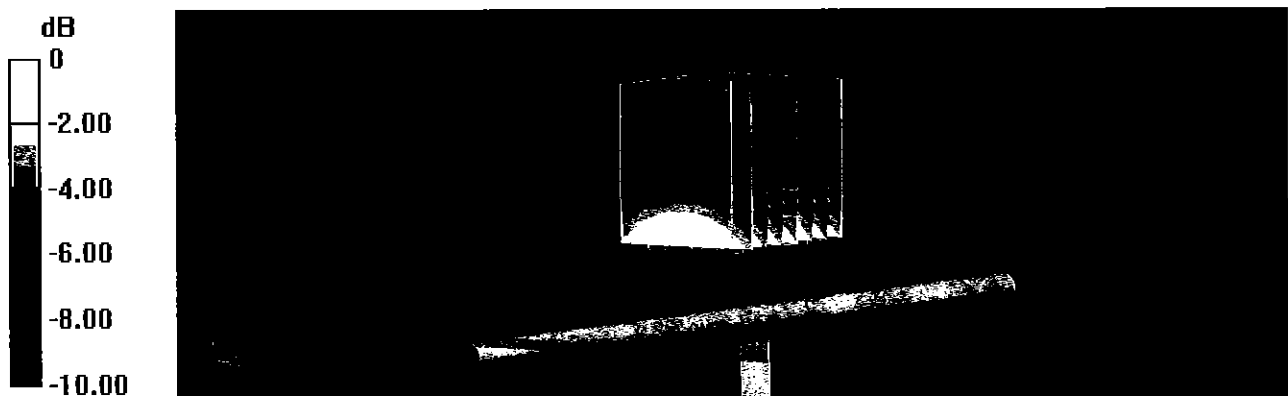
Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 59.38 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 3.20 W/kg

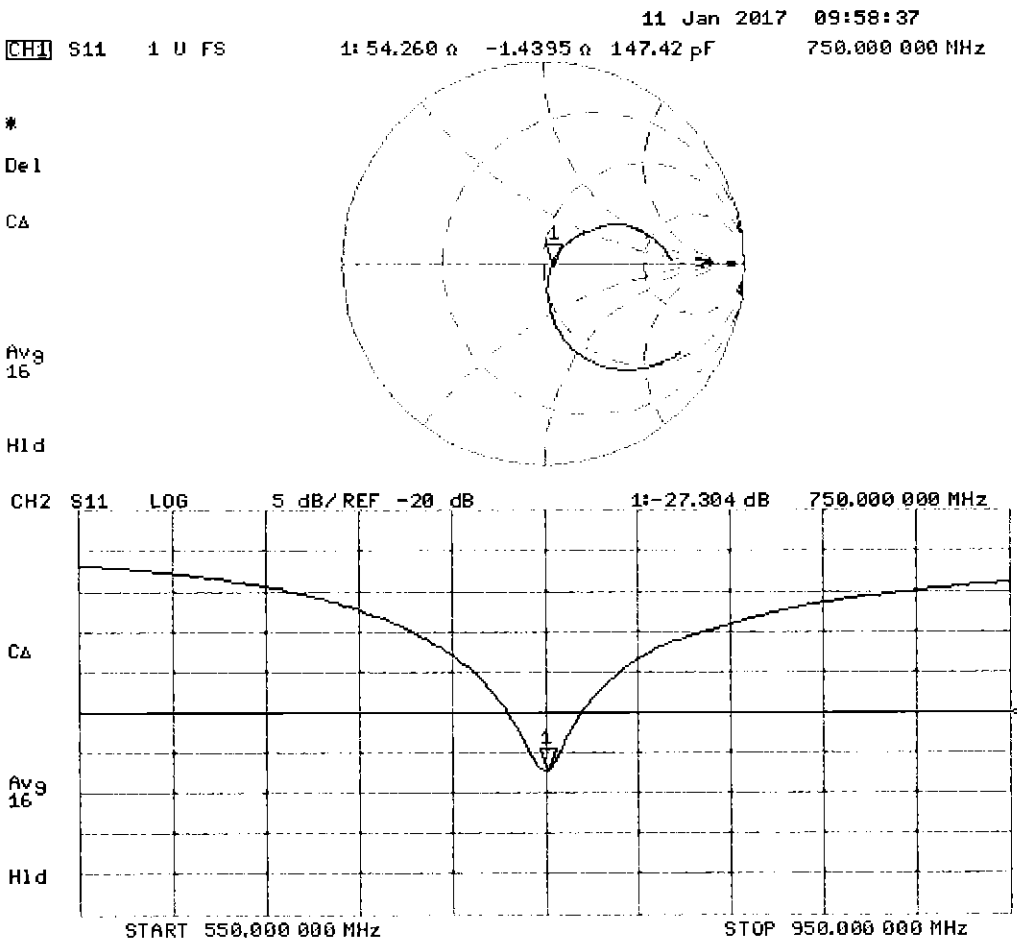
SAR(1 g) = 2.1 W/kg; SAR(10 g) = 1.36 W/kg

Maximum value of SAR (measured) = 2.82 W/kg



0 dB = 2.82 W/kg = 4.50 dBW/kg

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 10.01.2017

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 750 MHz; Type: D750V3; Serial: D750V3 - SN:1003

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

Medium parameters used: $f = 750 \text{ MHz}$; $\sigma = 0.96 \text{ S/m}$; $\epsilon_r = 54.2$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

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

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(9.99, 9.99, 9.99); Calibrated: 31.12.2016;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 04.01.2017
- Phantom: Flat Phantom 4.9 (Back); Type: QD 00R P49 AA; Serial: 1005
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7372)

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

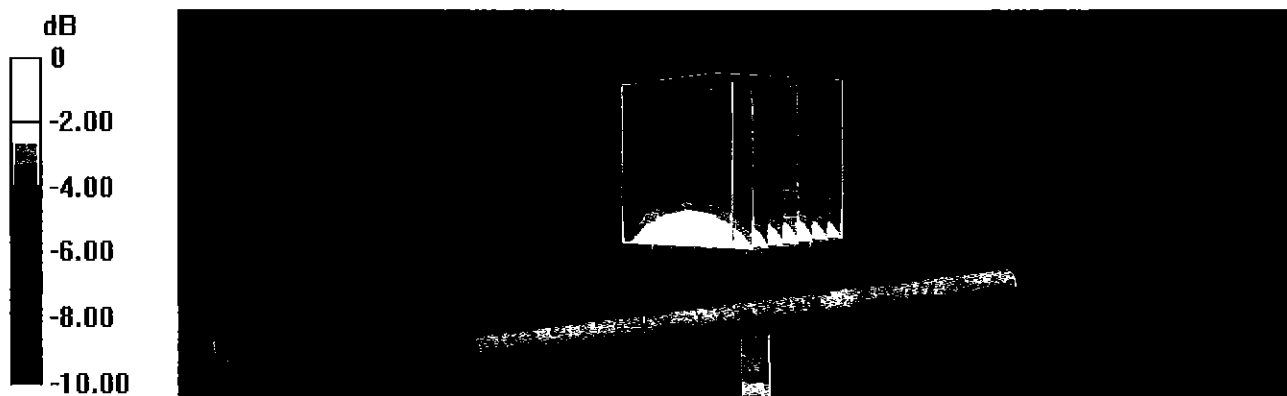
Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 58.22 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 3.40 W/kg

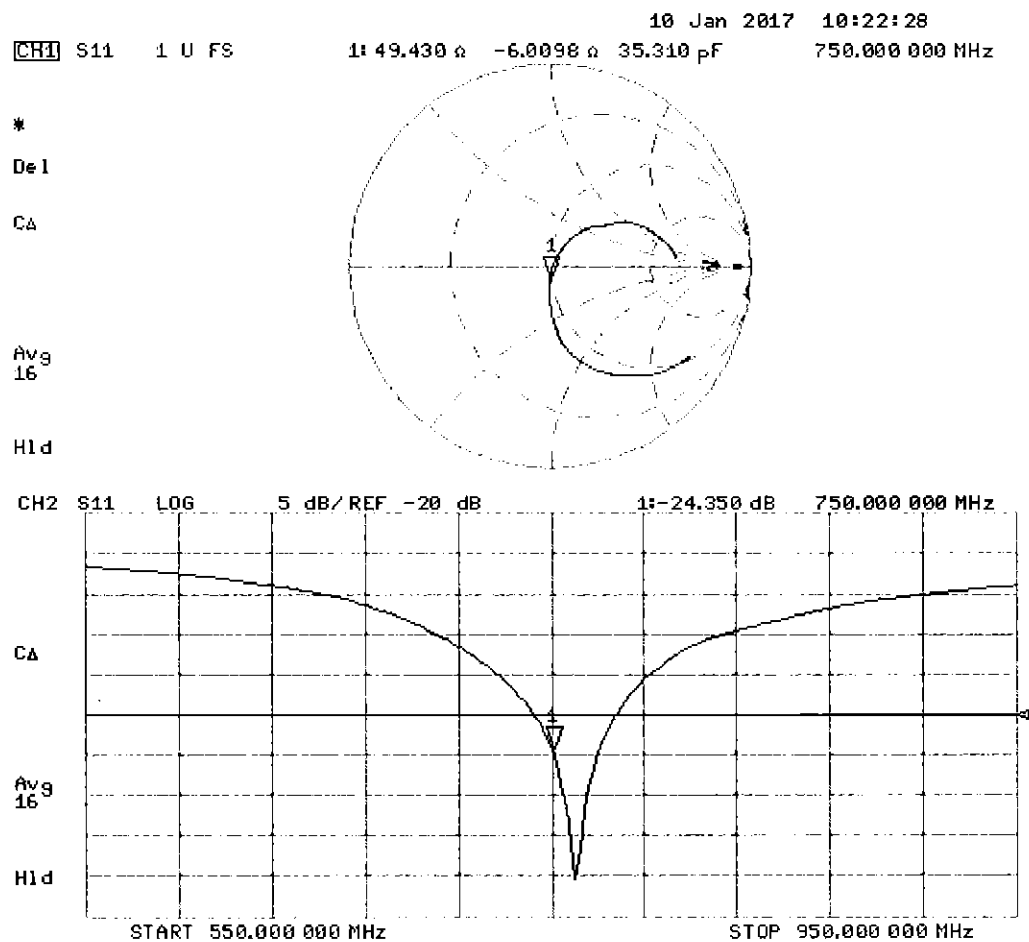
SAR(1 g) = 2.21 W/kg; SAR(10 g) = 1.45 W/kg

Maximum value of SAR (measured) = 2.98 W/kg



0 dB = 2.98 W/kg = 4.74 dBW/kg

Impedance Measurement Plot for Body TSL





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Accreditation No.: **SCS 0108**

Client **PC Test**

Certificate No: **ES3-3319_Mar17**

CALIBRATION CERTIFICATE

Object **ES3DV3 - SN:3319**

Calibration procedure(s) **QA CAL-01.v9, QA CAL-23.v5, QA CAL-25.v6
Calibration procedure for dosimetric E-field probes**

Calibration date: **March 14, 2017**

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature $(22 \pm 3)^\circ\text{C}$ and humidity $< 70\%$.

Calibration Equipment used (M&TE critical for calibration)

BNY
03-27-2017

Primary Standards	ID	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NRP	SN: 104778	06-Apr-16 (No. 217-02288/02289)	Apr-17
Power sensor NRP-Z91	SN: 103244	06-Apr-16 (No. 217-02288)	Apr-17
Power sensor NRP-Z91	SN: 103245	06-Apr-16 (No. 217-02289)	Apr-17
Reference 20 dB Attenuator	SN: S5277 (20x)	05-Apr-16 (No. 217-02293)	Apr-17
Reference Probe ES3DV2	SN: 3013	31-Dec-16 (No. ES3-3013_Dec16)	Dec-17
DAE4	SN: 660	7-Dec-16 (No. DAE4-660_Dec16)	Dec-17
Secondary Standards	ID	Check Date (in house)	Scheduled Check
Power meter E4419B	SN: GB41293874	06-Apr-16 (in house check Jun-16)	In house check: Jun-18
Power sensor E4412A	SN: MY41498087	06-Apr-16 (in house check Jun-16)	In house check: Jun-18
Power sensor E4412A	SN: 000110210	06-Apr-16 (in house check Jun-16)	In house check: Jun-18
RF generator HP 8648C	SN: US3642U01700	04-Aug-99 (in house check Jun-16)	In house check: Jun-18
Network Analyzer HP 8753E	SN: US37390585	18-Oct-01 (in house check Oct-16)	In house check: Oct-17

Calibrated by:	Name Jeton Kasrati	Function Laboratory Technician	Signature
Approved by:	Name Katja Pokovic	Function Technical Manager	Signature
			Issued: March 16, 2017

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Accreditation No.: **SCS 0108**

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Glossary:

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

Calibration is Performed According to the Following Standards:

- 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"

Methods Applied and Interpretation of Parameters:

- NORM_{x,y,z}**: Assessed for E-field polarization $\vartheta = 0$ ($f \leq 900$ MHz in TEM-cell; $f > 1800$ MHz: R22 waveguide). NORM_{x,y,z} are only intermediate values, i.e., the uncertainties of NORM_{x,y,z} does not affect the E²-field uncertainty inside TSL (see below ConvF).
- NORM(f)_{x,y,z}** = NORM_{x,y,z} * frequency_response (see Frequency Response Chart). This linearization is implemented in DASY4 software versions later than 4.2. The uncertainty of the frequency response is included in the stated uncertainty of ConvF.
- DCP_{x,y,z}**: DCP are numerical linearization parameters assessed based on the data of power sweep with CW signal (no uncertainty required). DCP does not depend on frequency nor media.
- PAR**: PAR is the Peak to Average Ratio that is not calibrated but determined based on the signal characteristics
- A_{x,y,z}; B_{x,y,z}; C_{x,y,z}; D_{x,y,z}; VR_{x,y,z}**: A, B, C, D are numerical linearization parameters assessed based on the data of power sweep for specific modulation signal. The parameters do not depend on frequency nor media. VR is the maximum calibration range expressed in RMS voltage across the diode.
- ConvF and Boundary Effect Parameters**: Assessed in flat phantom using E-field (or Temperature Transfer Standard for $f \leq 800$ MHz) and inside waveguide using analytical field distributions based on power measurements for $f > 800$ MHz. The same setups are used for assessment of the parameters applied for boundary compensation (alpha, depth) of which typical uncertainty values are given. These parameters are used in DASY4 software to improve probe accuracy close to the boundary. The sensitivity in TSL corresponds to NORM_{x,y,z} * ConvF whereby the uncertainty corresponds to that given for ConvF. A frequency dependent ConvF is used in DASY version 4.4 and higher which allows extending the validity from ± 50 MHz to ± 100 MHz.
- Spherical isotropy (3D deviation from isotropy)**: in a field of low gradients realized using a flat phantom exposed by a patch antenna.
- Sensor Offset**: The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.
- Connector Angle**: The angle is assessed using the information gained by determining the NORM_x (no uncertainty required).

Probe ES3DV3

SN:3319

Manufactured: January 10, 2012
Calibrated: March 14, 2017

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

DASY/EASY - Parameters of Probe: ES3DV3 - SN:3319

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu\text{V}/(\text{V}/\text{m})^2$) ^A	1.07	1.07	1.12	$\pm 10.1 \%$
DCP (mV) ^B	102.5	101.2	103.5	

Modulation Calibration Parameters

UID	Communication System Name		A dB	B dB $\sqrt{\mu\text{V}}$	C	D dB	VR mV	Unc ^E (k=2)
0	CW	X	0.0	0.0	1.0	0.00	199.3	$\pm 3.5 \%$
		Y	0.0	0.0	1.0		195.9	
		Z	0.0	0.0	1.0		195.7	

Note: For details on UID parameters see Appendix.

Sensor Model Parameters

	C1 fF	C2 fF	α V^{-1}	T1 $\text{ms} \cdot \text{V}^{-2}$	T2 $\text{ms} \cdot \text{V}^{-1}$	T3 ms	T4 V^{-2}	T5 V^{-1}	T6
X	70.81	508.1	35.61	29.87	3.768	5.1	0.566	0.571	1.012
Y	67.78	484.5	35.24	29.79	3.269	5.1	1.181	0.458	1.009
Z	70.95	506.9	35.21	30.32	4.051	5.1	1.117	0.534	1.012

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor $k=2$, which for a normal distribution corresponds to a coverage probability of approximately 95%.

^A The uncertainties of Norm X,Y,Z do not affect the E^2 -field uncertainty inside TSL (see Pages 5 and 6).

^B Numerical linearization parameter: uncertainty not required.

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

DASY/EASY - Parameters of Probe: ES3DV3 - SN:3319

Calibration Parameter Determined in Head Tissue Simulating Media

f (MHz) ^C	Relative Permittivity ^F	Conductivity (S/m) ^F	ConvF X	ConvF Y	ConvF Z	Alpha ^G	Depth ^G (mm)	Unc (k=2)
750	41.9	0.89	6.76	6.76	6.76	0.52	1.48	± 12.0 %
835	41.5	0.90	6.46	6.46	6.46	0.59	1.35	± 12.0 %
1750	40.1	1.37	5.38	5.38	5.38	0.57	1.39	± 12.0 %
1900	40.0	1.40	5.20	5.20	5.20	0.80	1.13	± 12.0 %
2300	39.5	1.67	4.86	4.86	4.86	0.48	1.60	± 12.0 %
2450	39.2	1.80	4.60	4.60	4.60	0.76	1.23	± 12.0 %
2600	39.0	1.96	4.41	4.41	4.41	0.80	1.27	± 12.0 %

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

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

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

DASY/EASY - Parameters of Probe: ES3DV3 - SN:3319

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	6.37	6.37	6.37	0.80	1.19	± 12.0 %
835	55.2	0.97	6.29	6.29	6.29	0.80	1.17	± 12.0 %
1750	53.4	1.49	5.07	5.07	5.07	0.57	1.50	± 12.0 %
1900	53.3	1.52	4.88	4.88	4.88	0.80	1.24	± 12.0 %
2300	52.9	1.81	4.62	4.62	4.62	0.80	1.21	± 12.0 %
2450	52.7	1.95	4.42	4.42	4.42	0.80	1.25	± 12.0 %
2600	52.5	2.16	4.18	4.18	4.18	0.80	1.25	± 12.0 %

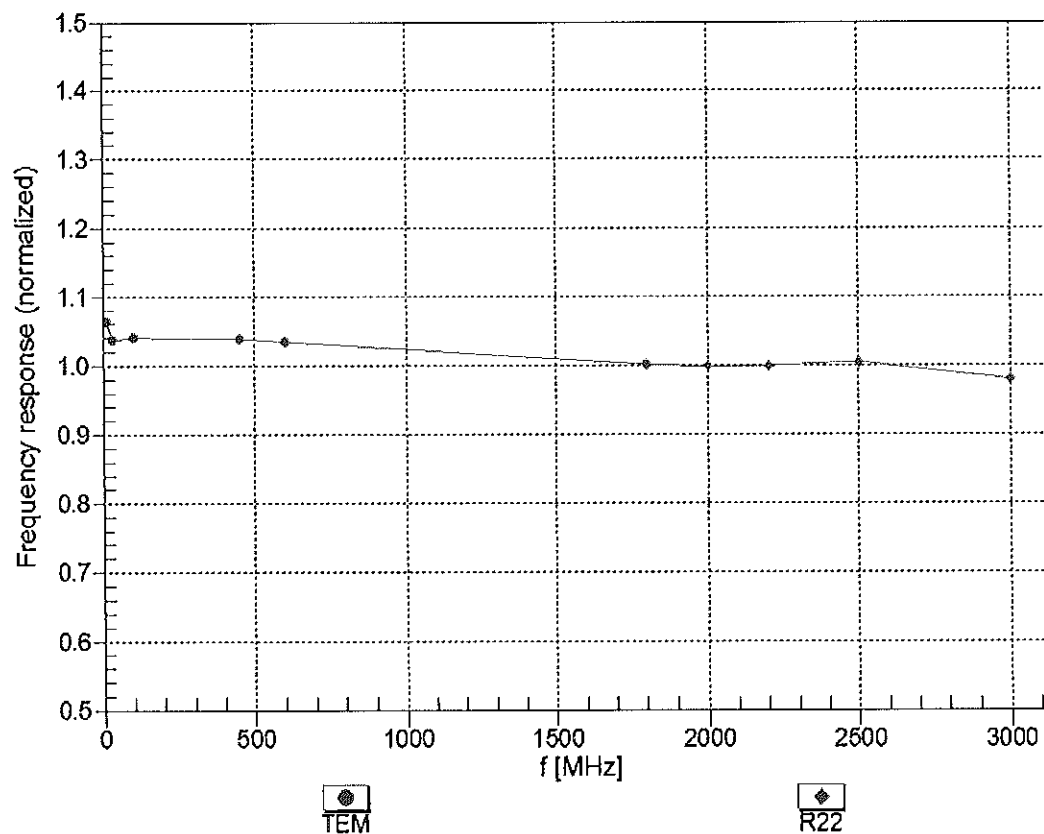
^C Frequency validity above 300 MHz of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is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

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

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

Frequency Response of E-Field

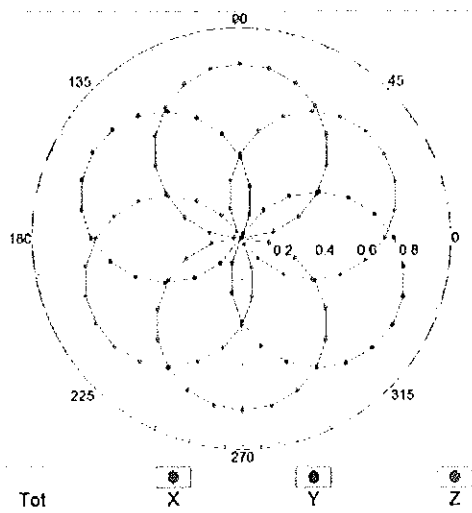
(TEM-Cell:ifi110 EXX, Waveguide: R22)



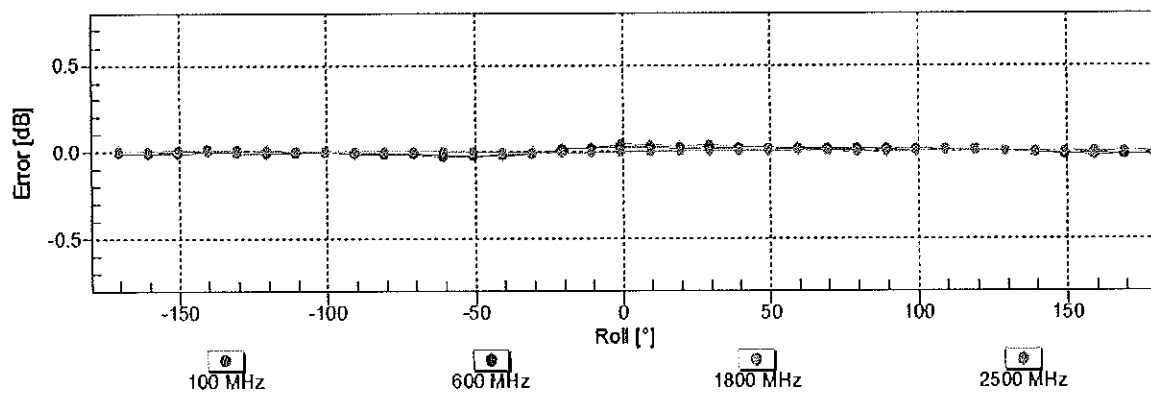
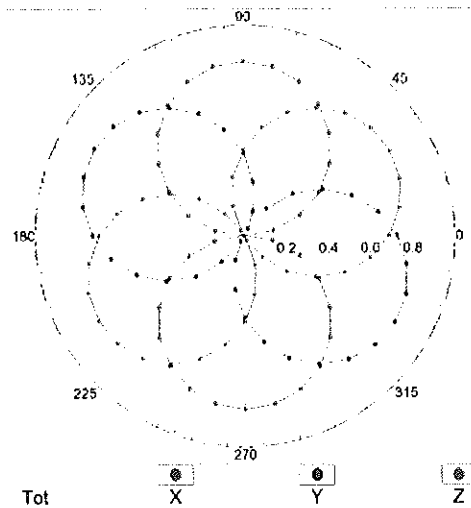
Uncertainty of Frequency Response of E-field: $\pm 6.3\%$ ($k=2$)

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

f=600 MHz, TEM



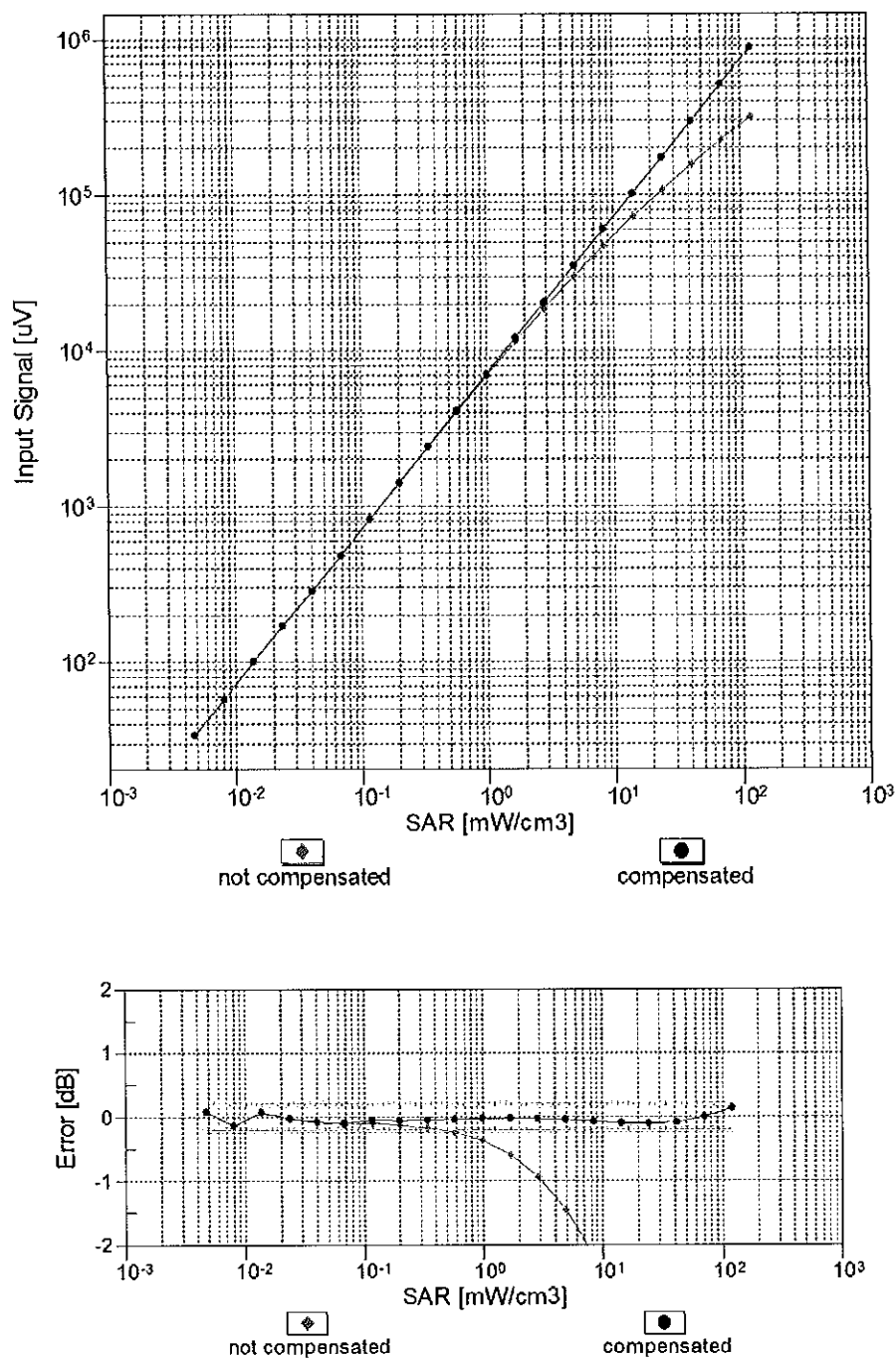
f=1800 MHz, R22



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

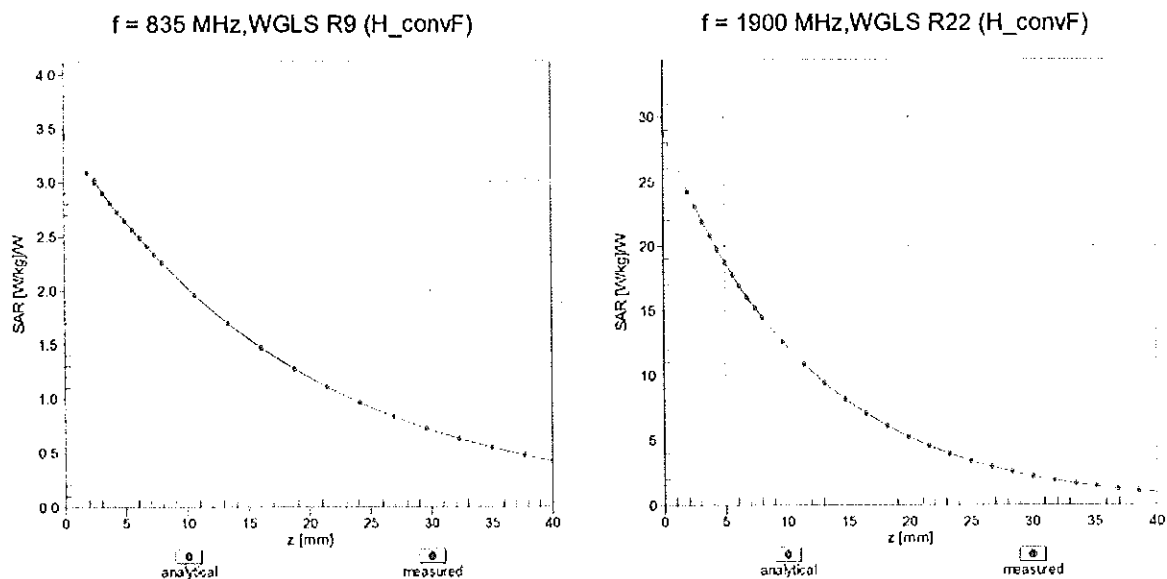
Dynamic Range f(SAR_{head})

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



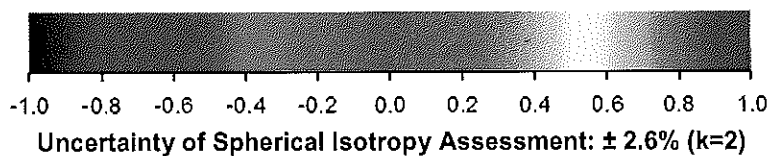
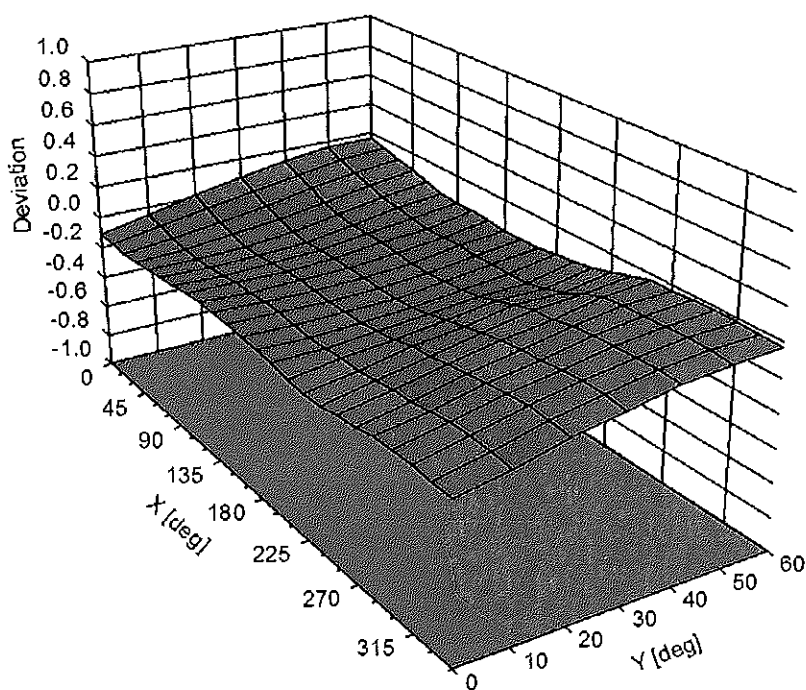
Uncertainty of Linearity Assessment: $\pm 0.6\%$ (k=2)

Conversion Factor Assessment



Deviation from Isotropy in Liquid

Error (ϕ, θ), $f = 900 \text{ MHz}$



DASY/EASY - Parameters of Probe: ES3DV3 - SN:3319

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	59.3
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disabled
Probe Overall Length	337 mm
Probe Body Diameter	10 mm
Tip Length	10 mm
Tip Diameter	4 mm
Probe Tip to Sensor X Calibration Point	2 mm
Probe Tip to Sensor Y Calibration Point	2 mm
Probe Tip to Sensor Z Calibration Point	2 mm
Recommended Measurement Distance from Surface	3 mm

Appendix: Modulation Calibration Parameters

UID	Communication System Name		A dB	B dB $\sqrt{\mu V}$	C	D dB	VR mV	Max Unc ^E (k=2)
0	CW	X	0.00	0.00	1.00	0.00	199.3	$\pm 3.5 \%$
		Y	0.00	0.00	1.00		195.9	
		Z	0.00	0.00	1.00		195.7	
10010- CAA	SAR Validation (Square, 100ms, 10ms)	X	9.85	81.84	20.91	10.00	25.0	$\pm 9.6 \%$
		Y	10.35	82.84	20.96		25.0	
		Z	9.24	80.45	20.49		25.0	
10011- CAB	UMTS-FDD (WCDMA)	X	1.42	72.72	18.48	0.00	150.0	$\pm 9.6 \%$
		Y	1.15	68.46	16.03		150.0	
		Z	1.19	69.33	16.47		150.0	
10012- CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps)	X	1.41	66.60	17.14	0.41	150.0	$\pm 9.6 \%$
		Y	1.35	65.41	16.14		150.0	
		Z	1.37	65.70	16.31		150.0	
10013- CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps)	X	5.30	67.44	17.71	1.46	150.0	$\pm 9.6 \%$
		Y	5.25	67.26	17.48		150.0	
		Z	5.29	67.34	17.54		150.0	
10021- DAC	GSM-FDD (TDMA, GMSK)	X	15.55	91.05	25.81	9.39	50.0	$\pm 9.6 \%$
		Y	21.52	97.05	27.50		50.0	
		Z	13.40	88.00	24.84		50.0	
10023- DAC	GPRS-FDD (TDMA, GMSK, TN 0)	X	14.67	89.87	25.47	9.57	50.0	$\pm 9.6 \%$
		Y	19.36	95.07	26.93		50.0	
		Z	12.87	87.11	24.58		50.0	
10024- DAC	GPRS-FDD (TDMA, GMSK, TN 0-1)	X	72.67	116.69	31.50	6.56	60.0	$\pm 9.6 \%$
		Y	100.00	120.97	32.15		60.0	
		Z	31.96	103.34	28.02		60.0	
10025- DAC	EDGE-FDD (TDMA, 8PSK, TN 0)	X	17.81	101.87	38.70	12.57	50.0	$\pm 9.6 \%$
		Y	13.13	92.90	34.83		50.0	
		Z	14.72	95.03	35.71		50.0	
10026- DAC	EDGE-FDD (TDMA, 8PSK, TN 0-1)	X	18.31	99.96	34.53	9.56	60.0	$\pm 9.6 \%$
		Y	16.31	97.17	33.33		60.0	
		Z	16.55	96.65	33.14		60.0	
10027- DAC	GPRS-FDD (TDMA, GMSK, TN 0-1-2)	X	100.00	120.78	31.24	4.80	80.0	$\pm 9.6 \%$
		Y	100.00	119.86	30.63		80.0	
		Z	100.00	120.27	31.10		80.0	
10028- DAC	GPRS-FDD (TDMA, GMSK, TN 0-1-2-3)	X	100.00	121.31	30.58	3.55	100.0	$\pm 9.6 \%$
		Y	100.00	120.10	29.87		100.0	
		Z	100.00	120.31	30.21		100.0	
10029- DAC	EDGE-FDD (TDMA, 8PSK, TN 0-1-2)	X	13.74	94.06	31.43	7.80	80.0	$\pm 9.6 \%$
		Y	12.10	91.11	30.13		80.0	
		Z	12.69	91.48	30.26		80.0	
10030- CAA	IEEE 802.15.1 Bluetooth (GFSK, DH1)	X	100.00	120.44	31.46	5.30	70.0	$\pm 9.6 \%$
		Y	100.00	119.51	30.84		70.0	
		Z	86.39	117.92	30.89		70.0	
10031- CAA	IEEE 802.15.1 Bluetooth (GFSK, DH3)	X	100.00	124.75	30.39	1.88	100.0	$\pm 9.6 \%$
		Y	100.00	122.04	29.08		100.0	
		Z	100.00	122.19	29.33		100.0	

10032-CAA	IEEE 802.15.1 Bluetooth (GFSK, DH5)	X	100.00	132.42	32.41	1.17	100.0	± 9.6 %
		Y	100.00	127.37	30.18		100.0	
		Z	100.00	127.22	30.26		100.0	
10033-CAA	IEEE 802.15.1 Bluetooth (PI/4-DQPSK, DH1)	X	16.06	95.52	27.18	5.30	70.0	± 9.6 %
		Y	16.39	95.85	27.05		70.0	
		Z	12.53	90.50	25.41		70.0	
10034-CAA	IEEE 802.15.1 Bluetooth (PI/4-DQPSK, DH3)	X	10.70	94.04	25.42	1.88	100.0	± 9.6 %
		Y	7.71	88.38	23.29		100.0	
		Z	7.05	86.60	22.76		100.0	
10035-CAA	IEEE 802.15.1 Bluetooth (PI/4-DQPSK, DH5)	X	6.38	88.03	23.33	1.17	100.0	± 9.6 %
		Y	4.42	81.78	20.80		100.0	
		Z	4.44	81.54	20.78		100.0	
10036-CAA	IEEE 802.15.1 Bluetooth (8-DPSK, DH1)	X	18.54	98.19	28.07	5.30	70.0	± 9.6 %
		Y	19.46	98.99	28.08		70.0	
		Z	13.96	92.52	26.13		70.0	
10037-CAA	IEEE 802.15.1 Bluetooth (8-DPSK, DH3)	X	10.52	93.81	25.31	1.88	100.0	± 9.6 %
		Y	7.46	87.90	23.09		100.0	
		Z	6.91	86.34	22.63		100.0	
10038-CAA	IEEE 802.15.1 Bluetooth (8-DPSK, DH5)	X	6.72	89.10	23.77	1.17	100.0	± 9.6 %
		Y	4.58	82.55	21.16		100.0	
		Z	4.59	82.28	21.12		100.0	
10039-CAB	CDMA2000 (1xRTT, RC1)	X	2.88	78.08	19.66	0.00	150.0	± 9.6 %
		Y	2.19	73.41	17.38		150.0	
		Z	2.24	73.69	17.58		150.0	
10042-CAB	IS-54 / IS-136 FDD (TDMA/FDM, PI/4-DQPSK, Halfrate)	X	29.89	101.32	27.42	7.78	50.0	± 9.6 %
		Y	57.75	111.39	29.82		50.0	
		Z	20.04	94.63	25.49		50.0	
10044-CAA	IS-91/EIA/TIA-553 FDD (FDMA, FM)	X	0.01	60.00	29147.00	0.00	150.0	± 9.6 %
		Y	0.01	96.41	0.53		150.0	
		Z	0.00	108.36	0.61		150.0	
10048-CAA	DECT (TDD, TDMA/FDM, GFSK, Full Slot, 24)	X	10.82	81.42	24.20	13.80	25.0	± 9.6 %
		Y	12.01	84.16	25.00		25.0	
		Z	10.45	80.25	23.85		25.0	
10049-CAA	DECT (TDD, TDMA/FDM, GFSK, Double Slot, 12)	X	12.11	85.56	24.37	10.79	40.0	± 9.6 %
		Y	14.10	88.79	25.27		40.0	
		Z	11.33	83.90	23.85		40.0	
10056-CAA	UMTS-TDD (TD-SCDMA, 1.28 Mcps)	X	12.14	85.93	24.81	9.03	50.0	± 9.6 %
		Y	12.75	87.19	25.07		50.0	
		Z	11.32	84.12	24.10		50.0	
10058-DAC	EDGE-FDD (TDMA, 8PSK, TN 0-1-2-3)	X	10.68	89.49	29.10	6.55	100.0	± 9.6 %
		Y	9.42	86.65	27.81		100.0	
		Z	10.05	87.45	28.09		100.0	
10059-CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 2 Mbps)	X	1.65	69.30	18.41	0.61	110.0	± 9.6 %
		Y	1.54	67.66	17.23		110.0	
		Z	1.58	68.07	17.43		110.0	
10060-CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 5.5 Mbps)	X	100.00	134.53	35.47	1.30	110.0	± 9.6 %
		Y	100.00	132.25	34.36		110.0	
		Z	100.00	131.68	34.21		110.0	

10061-CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 11 Mbps)	X	15.72	103.92	29.80	2.04	110.0	± 9.6 %
		Y	9.78	95.24	26.89		110.0	
		Z	9.50	94.05	26.46		110.0	
10062-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps)	X	5.02	67.22	17.01	0.49	100.0	± 9.6 %
		Y	4.97	67.04	16.79		100.0	
		Z	5.00	67.08	16.82		100.0	
10063-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 9 Mbps)	X	5.07	67.40	17.16	0.72	100.0	± 9.6 %
		Y	5.02	67.21	16.94		100.0	
		Z	5.04	67.26	16.97		100.0	
10064-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 12 Mbps)	X	5.43	67.77	17.43	0.86	100.0	± 9.6 %
		Y	5.38	67.58	17.21		100.0	
		Z	5.41	67.64	17.25		100.0	
10065-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 18 Mbps)	X	5.34	67.82	17.61	1.21	100.0	± 9.6 %
		Y	5.28	67.62	17.38		100.0	
		Z	5.32	67.69	17.43		100.0	
10066-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 24 Mbps)	X	5.40	67.98	17.85	1.46	100.0	± 9.6 %
		Y	5.34	67.76	17.61		100.0	
		Z	5.39	67.85	17.67		100.0	
10067-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 36 Mbps)	X	5.73	68.10	18.30	2.04	100.0	± 9.6 %
		Y	5.66	67.87	18.05		100.0	
		Z	5.72	68.01	18.13		100.0	
10068-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 48 Mbps)	X	5.90	68.56	18.70	2.55	100.0	± 9.6 %
		Y	5.82	68.29	18.44		100.0	
		Z	5.90	68.48	18.54		100.0	
10069-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 54 Mbps)	X	5.97	68.43	18.86	2.67	100.0	± 9.6 %
		Y	5.89	68.17	18.59		100.0	
		Z	5.97	68.35	18.70		100.0	
10071-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 9 Mbps)	X	5.46	67.71	18.10	1.99	100.0	± 9.6 %
		Y	5.40	67.50	17.87		100.0	
		Z	5.45	67.61	17.94		100.0	
10072-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 12 Mbps)	X	5.55	68.34	18.45	2.30	100.0	± 9.6 %
		Y	5.48	68.10	18.20		100.0	
		Z	5.55	68.24	18.28		100.0	
10073-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 18 Mbps)	X	5.71	68.73	18.89	2.83	100.0	± 9.6 %
		Y	5.63	68.45	18.63		100.0	
		Z	5.71	68.65	18.73		100.0	
10074-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 24 Mbps)	X	5.76	68.86	19.19	3.30	100.0	± 9.6 %
		Y	5.67	68.55	18.90		100.0	
		Z	5.77	68.80	19.03		100.0	
10075-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 36 Mbps)	X	5.97	69.51	19.77	3.82	90.0	± 9.6 %
		Y	5.85	69.11	19.43		90.0	
		Z	5.99	69.45	19.61		90.0	
10076-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 48 Mbps)	X	5.96	69.27	19.86	4.15	90.0	± 9.6 %
		Y	5.85	68.87	19.52		90.0	
		Z	5.99	69.24	19.72		90.0	
10077-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 54 Mbps)	X	6.00	69.37	19.97	4.30	90.0	± 9.6 %
		Y	5.89	68.96	19.62		90.0	
		Z	6.03	69.34	19.83		90.0	

10081-CAB	CDMA2000 (1xRTT, RC3)	X	1.41	72.76	17.31	0.00	150.0	± 9.6 %
		Y	1.06	67.92	14.61		150.0	
		Z	1.11	68.62	15.03		150.0	
10082-CAB	IS-54 / IS-136 FDD (TDMA/FDM, PI/4-DQPSK, Fullrate)	X	2.74	66.09	10.68	4.77	80.0	± 9.6 %
		Y	2.51	65.26	10.02		80.0	
		Z	2.76	65.88	10.66		80.0	
10090-DAC	GPRS-FDD (TDMA, GMSK, TN 0-4)	X	68.83	115.90	31.34	6.56	60.0	± 9.6 %
		Y	100.00	121.06	32.22		60.0	
		Z	31.05	102.92	27.93		60.0	
10097-CAB	UMTS-FDD (HSDPA)	X	2.05	69.35	17.13	0.00	150.0	± 9.6 %
		Y	1.92	67.86	16.10		150.0	
		Z	1.93	68.06	16.23		150.0	
10098-CAB	UMTS-FDD (HSUPA, Subtest 2)	X	2.02	69.37	17.13	0.00	150.0	± 9.6 %
		Y	1.88	67.83	16.06		150.0	
		Z	1.90	68.05	16.21		150.0	
10099-DAC	EDGE-FDD (TDMA, 8PSK, TN 0-4)	X	18.22	99.79	34.47	9.56	60.0	± 9.6 %
		Y	16.25	97.06	33.29		60.0	
		Z	16.47	96.50	33.09		60.0	
10100-CAC	LTE-FDD (SC-FDMA, 100% RB, 20 MHz, QPSK)	X	3.71	72.76	17.93	0.00	150.0	± 9.6 %
		Y	3.41	71.21	17.05		150.0	
		Z	3.48	71.52	17.17		150.0	
10101-CAC	LTE-FDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM)	X	3.57	68.80	16.73	0.00	150.0	± 9.6 %
		Y	3.46	68.11	16.22		150.0	
		Z	3.49	68.27	16.30		150.0	
10102-CAC	LTE-FDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM)	X	3.66	68.61	16.75	0.00	150.0	± 9.6 %
		Y	3.56	68.02	16.30		150.0	
		Z	3.58	68.13	16.36		150.0	
10103-CAC	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, QPSK)	X	8.88	78.01	21.33	3.98	65.0	± 9.6 %
		Y	8.67	77.74	21.13		65.0	
		Z	8.55	77.02	20.81		65.0	
10104-CAC	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM)	X	8.93	77.00	21.79	3.98	65.0	± 9.6 %
		Y	8.73	76.65	21.51		65.0	
		Z	8.82	76.47	21.44		65.0	
10105-CAC	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM)	X	7.98	74.72	21.06	3.98	65.0	± 9.6 %
		Y	8.03	74.96	21.06		65.0	
		Z	7.61	73.51	20.40		65.0	
10108-CAD	LTE-FDD (SC-FDMA, 100% RB, 10 MHz, QPSK)	X	3.27	71.88	17.76	0.00	150.0	± 9.6 %
		Y	3.02	70.38	16.87		150.0	
		Z	3.08	70.66	16.99		150.0	
10109-CAD	LTE-FDD (SC-FDMA, 100% RB, 10 MHz, 16-QAM)	X	3.25	68.64	16.73	0.00	150.0	± 9.6 %
		Y	3.13	67.91	16.18		150.0	
		Z	3.16	68.05	16.25		150.0	
10110-CAD	LTE-FDD (SC-FDMA, 100% RB, 5 MHz, QPSK)	X	2.71	70.99	17.56	0.00	150.0	± 9.6 %
		Y	2.49	69.37	16.56		150.0	
		Z	2.54	69.69	16.72		150.0	
10111-CAD	LTE-FDD (SC-FDMA, 100% RB, 5 MHz, 16-QAM)	X	2.94	69.24	17.11	0.00	150.0	± 9.6 %
		Y	2.83	68.45	16.51		150.0	
		Z	2.85	68.47	16.54		150.0	

10112-CAD	LTE-FDD (SC-FDMA, 100% RB, 10 MHz, 64-QAM)	X	3.35	68.45	16.70	0.00	150.0	± 9.6 %
		Y	3.25	67.82	16.20		150.0	
		Z	3.28	67.92	16.26		150.0	
10113-CAD	LTE-FDD (SC-FDMA, 100% RB, 5 MHz, 64-QAM)	X	3.09	69.18	17.14	0.00	150.0	± 9.6 %
		Y	2.99	68.50	16.60		150.0	
		Z	3.00	68.49	16.61		150.0	
10114-CAB	IEEE 802.11n (HT Greenfield, 13.5 Mbps, BPSK)	X	5.36	67.61	16.76	0.00	150.0	± 9.6 %
		Y	5.31	67.41	16.53		150.0	
		Z	5.33	67.45	16.56		150.0	
10115-CAB	IEEE 802.11n (HT Greenfield, 81 Mbps, 16-QAM)	X	5.78	68.00	16.95	0.00	150.0	± 9.6 %
		Y	5.71	67.76	16.71		150.0	
		Z	5.74	67.85	16.76		150.0	
10116-CAB	IEEE 802.11n (HT Greenfield, 135 Mbps, 64-QAM)	X	5.50	67.87	16.80	0.00	150.0	± 9.6 %
		Y	5.45	67.67	16.59		150.0	
		Z	5.46	67.70	16.60		150.0	
10117-CAB	IEEE 802.11n (HT Mixed, 13.5 Mbps, BPSK)	X	5.37	67.63	16.79	0.00	150.0	± 9.6 %
		Y	5.32	67.44	16.57		150.0	
		Z	5.33	67.46	16.59		150.0	
10118-CAB	IEEE 802.11n (HT Mixed, 81 Mbps, 16-QAM)	X	5.80	67.97	16.94	0.00	150.0	± 9.6 %
		Y	5.75	67.80	16.74		150.0	
		Z	5.76	67.82	16.75		150.0	
10119-CAB	IEEE 802.11n (HT Mixed, 135 Mbps, 64-QAM)	X	5.47	67.83	16.80	0.00	150.0	± 9.6 %
		Y	5.42	67.63	16.58		150.0	
		Z	5.43	67.65	16.60		150.0	
10140-CAC	LTE-FDD (SC-FDMA, 100% RB, 15 MHz, 16-QAM)	X	3.71	68.61	16.68	0.00	150.0	± 9.6 %
		Y	3.61	68.02	16.22		150.0	
		Z	3.64	68.14	16.28		150.0	
10141-CAC	LTE-FDD (SC-FDMA, 100% RB, 15 MHz, 64-QAM)	X	3.82	68.57	16.77	0.00	150.0	± 9.6 %
		Y	3.73	68.05	16.36		150.0	
		Z	3.75	68.13	16.40		150.0	
10142-CAD	LTE-FDD (SC-FDMA, 100% RB, 3 MHz, QPSK)	X	2.49	71.10	17.54	0.00	150.0	± 9.6 %
		Y	2.27	69.32	16.43		150.0	
		Z	2.31	69.61	16.60		150.0	
10143-CAD	LTE-FDD (SC-FDMA, 100% RB, 3 MHz, 16-QAM)	X	2.87	70.15	17.21	0.00	150.0	± 9.6 %
		Y	2.72	69.17	16.50		150.0	
		Z	2.73	69.14	16.52		150.0	
10144-CAD	LTE-FDD (SC-FDMA, 100% RB, 3 MHz, 64-QAM)	X	2.68	68.25	15.88	0.00	150.0	± 9.6 %
		Y	2.54	67.28	15.14		150.0	
		Z	2.58	67.43	15.28		150.0	
10145-CAD	LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, QPSK)	X	1.97	70.87	16.37	0.00	150.0	± 9.6 %
		Y	1.68	68.25	14.76		150.0	
		Z	1.73	68.59	15.05		150.0	
10146-CAD	LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, 16-QAM)	X	4.75	78.42	19.14	0.00	150.0	± 9.6 %
		Y	3.83	74.52	16.97		150.0	
		Z	4.41	76.61	18.14		150.0	
10147-CAD	LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, 64-QAM)	X	6.27	82.79	20.95	0.00	150.0	± 9.6 %
		Y	5.05	78.64	18.78		150.0	
		Z	5.67	80.46	19.79		150.0	

10149-CAC	LTE-FDD (SC-FDMA, 50% RB, 20 MHz, 16-QAM)	X	3.26	68.70	16.77	0.00	150.0	± 9.6 %
		Y	3.14	67.97	16.22		150.0	
		Z	3.17	68.10	16.29		150.0	
10150-CAC	LTE-FDD (SC-FDMA, 50% RB, 20 MHz, 64-QAM)	X	3.36	68.50	16.73	0.00	150.0	± 9.6 %
		Y	3.26	67.87	16.24		150.0	
		Z	3.28	67.96	16.30		150.0	
10151-CAC	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, QPSK)	X	9.26	79.92	22.22	3.98	65.0	± 9.6 %
		Y	9.15	79.84	22.08		65.0	
		Z	8.96	78.94	21.70		65.0	
10152-CAC	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 16-QAM)	X	8.60	77.27	21.75	3.98	65.0	± 9.6 %
		Y	8.35	76.82	21.41		65.0	
		Z	8.46	76.64	21.35		65.0	
10153-CAC	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 64-QAM)	X	8.88	77.79	22.28	3.98	65.0	± 9.6 %
		Y	8.70	77.50	22.02		65.0	
		Z	8.75	77.18	21.89		65.0	
10154-CAD	LTE-FDD (SC-FDMA, 50% RB, 10 MHz, QPSK)	X	2.78	71.52	17.87	0.00	150.0	± 9.6 %
		Y	2.56	69.90	16.88		150.0	
		Z	2.60	70.17	17.01		150.0	
10155-CAD	LTE-FDD (SC-FDMA, 50% RB, 10 MHz, 16-QAM)	X	2.94	69.23	17.11	0.00	150.0	± 9.6 %
		Y	2.83	68.44	16.51		150.0	
		Z	2.85	68.47	16.54		150.0	
10156-CAD	LTE-FDD (SC-FDMA, 50% RB, 5 MHz, QPSK)	X	2.40	71.71	17.74	0.00	150.0	± 9.6 %
		Y	2.14	69.64	16.49		150.0	
		Z	2.19	69.95	16.67		150.0	
10157-CAD	LTE-FDD (SC-FDMA, 50% RB, 5 MHz, 16-QAM)	X	2.56	69.20	16.24	0.00	150.0	± 9.6 %
		Y	2.39	67.98	15.37		150.0	
		Z	2.42	68.11	15.51		150.0	
10158-CAD	LTE-FDD (SC-FDMA, 50% RB, 10 MHz, 64-QAM)	X	3.10	69.22	17.17	0.00	150.0	± 9.6 %
		Y	2.99	68.55	16.64		150.0	
		Z	3.00	68.53	16.65		150.0	
10159-CAD	LTE-FDD (SC-FDMA, 50% RB, 5 MHz, 64-QAM)	X	2.68	69.58	16.50	0.00	150.0	± 9.6 %
		Y	2.51	68.44	15.68		150.0	
		Z	2.54	68.50	15.78		150.0	
10160-CAC	LTE-FDD (SC-FDMA, 50% RB, 15 MHz, QPSK)	X	3.14	70.23	17.31	0.00	150.0	± 9.6 %
		Y	2.97	69.12	16.58		150.0	
		Z	3.01	69.30	16.67		150.0	
10161-CAC	LTE-FDD (SC-FDMA, 50% RB, 15 MHz, 16-QAM)	X	3.25	68.37	16.69	0.00	150.0	± 9.6 %
		Y	3.15	67.75	16.20		150.0	
		Z	3.17	67.82	16.25		150.0	
10162-CAC	LTE-FDD (SC-FDMA, 50% RB, 15 MHz, 64-QAM)	X	3.35	68.34	16.71	0.00	150.0	± 9.6 %
		Y	3.25	67.77	16.24		150.0	
		Z	3.27	67.82	16.29		150.0	
10166-CAD	LTE-FDD (SC-FDMA, 50% RB, 1.4 MHz, QPSK)	X	4.16	70.95	20.14	3.01	150.0	± 9.6 %
		Y	4.09	70.57	19.65		150.0	
		Z	4.23	71.07	20.00		150.0	
10167-CAD	LTE-FDD (SC-FDMA, 50% RB, 1.4 MHz, 16-QAM)	X	5.42	74.49	20.88	3.01	150.0	± 9.6 %
		Y	5.38	74.26	20.45		150.0	
		Z	5.66	74.92	20.85		150.0	

10168-CAD	LTE-FDD (SC-FDMA, 50% RB, 1.4 MHz, 64-QAM)	X	5.88	76.24	21.91	3.01	150.0	± 9.6 %
		Y	5.94	76.40	21.68		150.0	
		Z	6.16	76.77	21.92		150.0	
10169-CAC	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, QPSK)	X	4.00	73.62	21.32	3.01	150.0	± 9.6 %
		Y	3.90	72.96	20.64		150.0	
		Z	4.22	74.22	21.31		150.0	
10170-CAC	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM)	X	6.31	81.51	24.09	3.01	150.0	± 9.6 %
		Y	6.48	81.75	23.78		150.0	
		Z	7.05	82.86	24.27		150.0	
10171-AAC	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, 64-QAM)	X	5.08	76.75	21.32	3.01	150.0	± 9.6 %
		Y	4.94	75.94	20.54		150.0	
		Z	5.51	77.53	21.31		150.0	
10172-CAC	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK)	X	28.35	107.78	33.34	6.02	65.0	± 9.6 %
		Y	28.59	107.61	32.92		65.0	
		Z	27.19	105.85	32.47		65.0	
10173-CAC	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM)	X	29.50	104.02	30.66	6.02	65.0	± 9.6 %
		Y	34.69	106.60	31.03		65.0	
		Z	27.86	101.98	29.79		65.0	
10174-CAC	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 64-QAM)	X	23.87	98.93	28.69	6.02	65.0	± 9.6 %
		Y	26.66	100.64	28.84		65.0	
		Z	22.60	97.09	27.89		65.0	
10175-CAD	LTE-FDD (SC-FDMA, 1 RB, 10 MHz, QPSK)	X	3.94	73.23	21.05	3.01	150.0	± 9.6 %
		Y	3.83	72.52	20.34		150.0	
		Z	4.15	73.80	21.02		150.0	
10176-CAD	LTE-FDD (SC-FDMA, 1 RB, 10 MHz, 16-QAM)	X	6.32	81.53	24.10	3.01	150.0	± 9.6 %
		Y	6.49	81.78	23.79		150.0	
		Z	7.06	82.89	24.28		150.0	
10177-CAF	LTE-FDD (SC-FDMA, 1 RB, 5 MHz, QPSK)	X	3.98	73.42	21.16	3.01	150.0	± 9.6 %
		Y	3.88	72.74	20.47		150.0	
		Z	4.19	74.00	21.14		150.0	
10178-CAD	LTE-FDD (SC-FDMA, 1 RB, 5 MHz, 16-QAM)	X	6.20	81.16	23.93	3.01	150.0	± 9.6 %
		Y	6.35	81.32	23.59		150.0	
		Z	6.91	82.48	24.09		150.0	
10179-CAD	LTE-FDD (SC-FDMA, 1 RB, 10 MHz, 64-QAM)	X	5.64	78.94	22.55	3.01	150.0	± 9.6 %
		Y	5.60	78.53	21.96		150.0	
		Z	6.18	79.93	22.60		150.0	
10180-CAD	LTE-FDD (SC-FDMA, 1 RB, 5 MHz, 64-QAM)	X	5.06	76.62	21.25	3.01	150.0	± 9.6 %
		Y	4.91	75.79	20.46		150.0	
		Z	5.47	77.39	21.24		150.0	
10181-CAC	LTE-FDD (SC-FDMA, 1 RB, 15 MHz, QPSK)	X	3.98	73.40	21.15	3.01	150.0	± 9.6 %
		Y	3.87	72.72	20.46		150.0	
		Z	4.18	73.98	21.13		150.0	
10182-CAC	LTE-FDD (SC-FDMA, 1 RB, 15 MHz, 16-QAM)	X	6.19	81.13	23.92	3.01	150.0	± 9.6 %
		Y	6.34	81.29	23.57		150.0	
		Z	6.90	82.45	24.08		150.0	
10183-AAB	LTE-FDD (SC-FDMA, 1 RB, 15 MHz, 64-QAM)	X	5.05	76.59	21.24	3.01	150.0	± 9.6 %
		Y	4.90	75.76	20.45		150.0	
		Z	5.46	77.36	21.23		150.0	

10184-CAD	LTE-FDD (SC-FDMA, 1 RB, 3 MHz, QPSK)	X	3.99	73.45	21.17	3.01	150.0	± 9.6 %
		Y	3.89	72.78	20.49		150.0	
		Z	4.20	74.03	21.16		150.0	
10185-CAD	LTE-FDD (SC-FDMA, 1 RB, 3 MHz, 16-QAM)	X	6.23	81.21	23.95	3.01	150.0	± 9.6 %
		Y	6.37	81.39	23.62		150.0	
		Z	6.94	82.53	24.12		150.0	
10186-AAD	LTE-FDD (SC-FDMA, 1 RB, 3 MHz, 64-QAM)	X	5.08	76.67	21.27	3.01	150.0	± 9.6 %
		Y	4.93	75.84	20.48		150.0	
		Z	5.49	77.44	21.26		150.0	
10187-CAD	LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK)	X	4.00	73.48	21.22	3.01	150.0	± 9.6 %
		Y	3.89	72.80	20.53		150.0	
		Z	4.21	74.07	21.20		150.0	
10188-CAD	LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, 16-QAM)	X	6.48	82.07	24.38	3.01	150.0	± 9.6 %
		Y	6.71	82.45	24.13		150.0	
		Z	7.27	83.49	24.57		150.0	
10189-AAD	LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, 64-QAM)	X	5.21	77.21	21.58	3.01	150.0	± 9.6 %
		Y	5.09	76.46	20.83		150.0	
		Z	5.66	78.03	21.58		150.0	
10193-CAB	IEEE 802.11n (HT Greenfield, 6.5 Mbps, BPSK)	X	4.79	66.98	16.56	0.00	150.0	± 9.6 %
		Y	4.74	66.79	16.32		150.0	
		Z	4.76	66.81	16.35		150.0	
10194-CAB	IEEE 802.11n (HT Greenfield, 39 Mbps, 16-QAM)	X	5.00	67.38	16.67	0.00	150.0	± 9.6 %
		Y	4.95	67.18	16.43		150.0	
		Z	4.97	67.21	16.46		150.0	
10195-CAB	IEEE 802.11n (HT Greenfield, 65 Mbps, 64-QAM)	X	5.04	67.38	16.66	0.00	150.0	± 9.6 %
		Y	4.99	67.18	16.43		150.0	
		Z	5.00	67.20	16.45		150.0	
10196-CAB	IEEE 802.11n (HT Mixed, 6.5 Mbps, BPSK)	X	4.82	67.11	16.60	0.00	150.0	± 9.6 %
		Y	4.77	66.91	16.36		150.0	
		Z	4.78	66.93	16.39		150.0	
10197-CAB	IEEE 802.11n (HT Mixed, 39 Mbps, 16-QAM)	X	5.02	67.40	16.67	0.00	150.0	± 9.6 %
		Y	4.97	67.20	16.44		150.0	
		Z	4.98	67.22	16.46		150.0	
10198-CAB	IEEE 802.11n (HT Mixed, 65 Mbps, 64-QAM)	X	5.05	67.39	16.67	0.00	150.0	± 9.6 %
		Y	5.00	67.20	16.44		150.0	
		Z	5.01	67.21	16.46		150.0	
10219-CAB	IEEE 802.11n (HT Mixed, 7.2 Mbps, BPSK)	X	4.77	67.13	16.58	0.00	150.0	± 9.6 %
		Y	4.72	66.92	16.33		150.0	
		Z	4.73	66.95	16.36		150.0	
10220-CAB	IEEE 802.11n (HT Mixed, 43.3 Mbps, 16-QAM)	X	5.02	67.40	16.68	0.00	150.0	± 9.6 %
		Y	4.97	67.20	16.44		150.0	
		Z	4.99	67.23	16.47		150.0	
10221-CAB	IEEE 802.11n (HT Mixed, 72.2 Mbps, 64-QAM)	X	5.05	67.33	16.66	0.00	150.0	± 9.6 %
		Y	5.00	67.13	16.44		150.0	
		Z	5.02	67.15	16.46		150.0	
10222-CAB	IEEE 802.11n (HT Mixed, 15 Mbps, BPSK)	X	5.36	67.67	16.80	0.00	150.0	± 9.6 %
		Y	5.31	67.46	16.57		150.0	
		Z	5.32	67.50	16.60		150.0	

10223-CAB	IEEE 802.11n (HT Mixed, 90 Mbps, 16-QAM)	X	5.75	68.00	16.98	0.00	150.0	± 9.6 %
		Y	5.70	67.82	16.77		150.0	
		Z	5.71	67.82	16.78		150.0	
10224-CAB	IEEE 802.11n (HT Mixed, 150 Mbps, 64-QAM)	X	5.42	67.80	16.78	0.00	150.0	± 9.6 %
		Y	5.36	67.58	16.55		150.0	
		Z	5.38	67.63	16.58		150.0	
10225-CAB	UMTS-FDD (HSPA+)	X	3.07	66.80	16.19	0.00	150.0	± 9.6 %
		Y	3.00	66.35	15.75		150.0	
		Z	3.01	66.39	15.81		150.0	
10226-CAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 16-QAM)	X	30.74	104.89	30.99	6.02	65.0	± 9.6 %
		Y	36.94	107.88	31.47		65.0	
		Z	29.00	102.81	30.11		65.0	
10227-CAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 64-QAM)	X	24.57	99.58	28.97	6.02	65.0	± 9.6 %
		Y	28.65	102.05	29.35		65.0	
		Z	23.52	97.91	28.22		65.0	
10228-CAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK)	X	30.31	109.61	33.99	6.02	65.0	± 9.6 %
		Y	29.44	108.70	33.37		65.0	
		Z	27.38	106.50	32.79		65.0	
10229-CAB	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 16-QAM)	X	29.49	104.00	30.66	6.02	65.0	± 9.6 %
		Y	34.74	106.61	31.04		65.0	
		Z	27.87	101.97	29.80		65.0	
10230-CAB	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 64-QAM)	X	23.73	98.88	28.69	6.02	65.0	± 9.6 %
		Y	27.25	101.06	28.99		65.0	
		Z	22.75	97.24	27.95		65.0	
10231-CAB	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, QPSK)	X	29.15	108.72	33.67	6.02	65.0	± 9.6 %
		Y	27.96	107.57	32.97		65.0	
		Z	26.38	105.67	32.48		65.0	
10232-CAC	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 16-QAM)	X	29.48	104.00	30.66	6.02	65.0	± 9.6 %
		Y	34.72	106.61	31.04		65.0	
		Z	27.86	101.97	29.80		65.0	
10233-CAC	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 64-QAM)	X	23.75	98.91	28.70	6.02	65.0	± 9.6 %
		Y	27.26	101.08	28.99		65.0	
		Z	22.77	97.26	27.96		65.0	
10234-CAC	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, QPSK)	X	27.90	107.69	33.28	6.02	65.0	± 9.6 %
		Y	26.50	106.35	32.52		65.0	
		Z	25.32	104.71	32.10		65.0	
10235-CAC	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 16-QAM)	X	29.56	104.06	30.68	6.02	65.0	± 9.6 %
		Y	34.83	106.68	31.06		65.0	
		Z	27.92	102.02	29.81		65.0	
10236-CAC	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 64-QAM)	X	23.93	99.02	28.74	6.02	65.0	± 9.6 %
		Y	27.48	101.20	29.02		65.0	
		Z	22.92	97.36	27.99		65.0	
10237-CAC	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, QPSK)	X	29.43	108.94	33.73	6.02	65.0	± 9.6 %
		Y	28.18	107.75	33.02		65.0	
		Z	26.59	105.85	32.53		65.0	
10238-CAC	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 16-QAM)	X	29.51	104.02	30.67	6.02	65.0	± 9.6 %
		Y	34.75	106.63	31.04		65.0	
		Z	27.87	101.98	29.80		65.0	

10239-CAC	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 64-QAM)	X	23.77	98.93	28.71	6.02	65.0	± 9.6 %
		Y	27.27	101.10	29.00		65.0	
		Z	22.78	97.29	27.97		65.0	
10240-CAC	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, QPSK)	X	29.33	108.88	33.71	6.02	65.0	± 9.6 %
		Y	28.09	107.69	33.00		65.0	
		Z	26.51	105.80	32.51		65.0	
10241-CAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 16-QAM)	X	12.97	86.83	27.84	6.98	65.0	± 9.6 %
		Y	12.74	86.49	27.42		65.0	
		Z	13.39	87.03	27.74		65.0	
10242-CAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 64-QAM)	X	11.77	84.58	26.87	6.98	65.0	± 9.6 %
		Y	12.19	85.46	26.94		65.0	
		Z	12.90	86.14	27.32		65.0	
10243-CAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, QPSK)	X	9.86	82.57	26.93	6.98	65.0	± 9.6 %
		Y	9.88	82.69	26.70		65.0	
		Z	10.64	83.89	27.31		65.0	
10244-CAB	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 16-QAM)	X	10.27	81.73	22.33	3.98	65.0	± 9.6 %
		Y	10.27	81.67	21.99		65.0	
		Z	10.19	81.13	21.98		65.0	
10245-CAB	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 64-QAM)	X	10.17	81.33	22.14	3.98	65.0	± 9.6 %
		Y	10.15	81.24	21.78		65.0	
		Z	10.11	80.77	21.80		65.0	
10246-CAB	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, QPSK)	X	9.71	83.45	22.80	3.98	65.0	± 9.6 %
		Y	9.49	83.12	22.47		65.0	
		Z	8.94	81.57	21.97		65.0	
10247-CAC	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 16-QAM)	X	8.20	78.33	21.34	3.98	65.0	± 9.6 %
		Y	8.00	78.01	21.02		65.0	
		Z	7.96	77.44	20.86		65.0	
10248-CAC	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 64-QAM)	X	8.23	77.94	21.17	3.98	65.0	± 9.6 %
		Y	8.00	77.54	20.82		65.0	
		Z	8.02	77.11	20.72		65.0	
10249-CAC	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, QPSK)	X	10.15	84.14	23.49	3.98	65.0	± 9.6 %
		Y	9.98	83.94	23.24		65.0	
		Z	9.39	82.30	22.67		65.0	
10250-CAC	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 16-QAM)	X	8.79	79.35	22.70	3.98	65.0	± 9.6 %
		Y	8.63	79.16	22.48		65.0	
		Z	8.57	78.51	22.22		65.0	
10251-CAC	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 64-QAM)	X	8.44	77.55	21.73	3.98	65.0	± 9.6 %
		Y	8.21	77.13	21.40		65.0	
		Z	8.29	76.85	21.32		65.0	
10252-CAC	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, QPSK)	X	9.81	82.69	23.38	3.98	65.0	± 9.6 %
		Y	9.69	82.59	23.21		65.0	
		Z	9.29	81.25	22.69		65.0	
10253-CAC	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 16-QAM)	X	8.37	76.69	21.57	3.98	65.0	± 9.6 %
		Y	8.14	76.24	21.23		65.0	
		Z	8.26	76.10	21.20		65.0	
10254-CAC	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 64-QAM)	X	8.69	77.25	22.08	3.98	65.0	± 9.6 %
		Y	8.50	76.93	21.80		65.0	
		Z	8.58	76.68	21.71		65.0	

10255-CAC	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, QPSK)	X	9.00	79.61	22.34	3.98	65.0	± 9.6 %
		Y	8.85	79.45	22.16		65.0	
		Z	8.73	78.67	21.83		65.0	
10256-CAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 16-QAM)	X	9.74	80.69	21.31	3.98	65.0	± 9.6 %
		Y	9.59	80.32	20.81		65.0	
		Z	9.63	80.04	20.95		65.0	
10257-CAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 64-QAM)	X	9.62	80.13	21.03	3.98	65.0	± 9.6 %
		Y	9.43	79.69	20.50		65.0	
		Z	9.55	79.55	20.70		65.0	
10258-CAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, QPSK)	X	9.09	82.16	21.89	3.98	65.0	± 9.6 %
		Y	8.77	81.62	21.46		65.0	
		Z	8.39	80.38	21.12		65.0	
10259-CAB	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 16-QAM)	X	8.43	78.63	21.79	3.98	65.0	± 9.6 %
		Y	8.23	78.33	21.49		65.0	
		Z	8.20	77.76	21.31		65.0	
10260-CAB	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 64-QAM)	X	8.46	78.42	21.72	3.98	65.0	± 9.6 %
		Y	8.27	78.12	21.43		65.0	
		Z	8.26	77.59	21.26		65.0	
10261-CAB	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, QPSK)	X	9.72	83.07	23.32	3.98	65.0	± 9.6 %
		Y	9.52	82.82	23.06		65.0	
		Z	9.11	81.46	22.57		65.0	
10262-CAC	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 16-QAM)	X	8.78	79.33	22.68	3.98	65.0	± 9.6 %
		Y	8.62	79.12	22.45		65.0	
		Z	8.57	78.49	22.19		65.0	
10263-CAC	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 64-QAM)	X	8.44	77.55	21.74	3.98	65.0	± 9.6 %
		Y	8.21	77.13	21.40		65.0	
		Z	8.29	76.86	21.32		65.0	
10264-CAC	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, QPSK)	X	9.77	82.59	23.33	3.98	65.0	± 9.6 %
		Y	9.63	82.47	23.15		65.0	
		Z	9.25	81.16	22.64		65.0	
10265-CAC	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 16-QAM)	X	8.59	77.27	21.75	3.98	65.0	± 9.6 %
		Y	8.35	76.82	21.41		65.0	
		Z	8.46	76.64	21.35		65.0	
10266-CAC	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 64-QAM)	X	8.88	77.79	22.27	3.98	65.0	± 9.6 %
		Y	8.70	77.49	22.01		65.0	
		Z	8.76	77.18	21.88		65.0	
10267-CAC	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, QPSK)	X	9.25	79.89	22.21	3.98	65.0	± 9.6 %
		Y	9.14	79.81	22.06		65.0	
		Z	8.95	78.92	21.69		65.0	
10268-CAC	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 16-QAM)	X	8.99	76.65	21.78	3.98	65.0	± 9.6 %
		Y	8.81	76.35	21.53		65.0	
		Z	8.91	76.18	21.46		65.0	
10269-CAC	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 64-QAM)	X	8.91	76.26	21.70	3.98	65.0	± 9.6 %
		Y	8.73	75.96	21.44		65.0	
		Z	8.84	75.83	21.39		65.0	
10270-CAC	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, QPSK)	X	8.90	77.57	21.40	3.98	65.0	± 9.6 %
		Y	8.79	77.49	21.27		65.0	
		Z	8.75	76.94	21.02		65.0	

10274-CAB	UMTS-FDD (HSUPA, Subtest 5, 3GPP Rel8.10)	X	2.78	67.12	16.09	0.00	150.0	± 9.6 %
		Y	2.71	66.52	15.56		150.0	
		Z	2.72	66.59	15.63		150.0	
10275-CAB	UMTS-FDD (HSUPA, Subtest 5, 3GPP Rel8.4)	X	1.98	70.91	17.52	0.00	150.0	± 9.6 %
		Y	1.76	68.59	16.10		150.0	
		Z	1.80	69.04	16.33		150.0	
10277-CAA	PHS (QPSK)	X	6.79	72.27	16.39	9.03	50.0	± 9.6 %
		Y	6.45	71.67	15.76		50.0	
		Z	6.90	72.24	16.49		50.0	
10278-CAA	PHS (QPSK, BW 884MHz, Rolloff 0.5)	X	10.13	81.40	22.32	9.03	50.0	± 9.6 %
		Y	10.29	81.97	22.29		50.0	
		Z	9.77	80.32	21.92		50.0	
10279-CAA	PHS (QPSK, BW 884MHz, Rolloff 0.38)	X	10.33	81.63	22.41	9.03	50.0	± 9.6 %
		Y	10.47	82.16	22.36		50.0	
		Z	9.96	80.55	22.00		50.0	
10290-AAB	CDMA2000, RC1, SO55, Full Rate	X	2.27	74.32	17.90	0.00	150.0	± 9.6 %
		Y	1.81	70.49	15.86		150.0	
		Z	1.87	70.91	16.13		150.0	
10291-AAB	CDMA2000, RC3, SO55, Full Rate	X	1.36	72.30	17.10	0.00	150.0	± 9.6 %
		Y	1.04	67.63	14.46		150.0	
		Z	1.08	68.31	14.87		150.0	
10292-AAB	CDMA2000, RC3, SO32, Full Rate	X	1.99	79.46	20.52	0.00	150.0	± 9.6 %
		Y	1.29	71.82	16.85		150.0	
		Z	1.35	72.59	17.26		150.0	
10293-AAB	CDMA2000, RC3, SO3, Full Rate	X	3.14	87.23	23.85	0.00	150.0	± 9.6 %
		Y	1.79	77.07	19.53		150.0	
		Z	1.82	77.43	19.74		150.0	
10295-AAB	CDMA2000, RC1, SO3, 1/8th Rate 25 fr.	X	10.44	82.93	24.52	9.03	50.0	± 9.6 %
		Y	10.27	82.91	24.32		50.0	
		Z	10.06	81.64	23.93		50.0	
10297-AAB	LTE-FDD (SC-FDMA, 50% RB, 20 MHz, QPSK)	X	3.29	71.99	17.83	0.00	150.0	± 9.6 %
		Y	3.04	70.48	16.94		150.0	
		Z	3.09	70.76	17.06		150.0	
10298-AAC	LTE-FDD (SC-FDMA, 50% RB, 3 MHz, QPSK)	X	2.22	71.79	17.28	0.00	150.0	± 9.6 %
		Y	1.94	69.36	15.82		150.0	
		Z	1.98	69.66	16.04		150.0	
10299-AAC	LTE-FDD (SC-FDMA, 50% RB, 3 MHz, 16-QAM)	X	4.69	77.67	19.45	0.00	150.0	± 9.6 %
		Y	4.12	75.07	17.83		150.0	
		Z	4.54	76.51	18.69		150.0	
10300-AAC	LTE-FDD (SC-FDMA, 50% RB, 3 MHz, 64-QAM)	X	3.41	71.70	16.24	0.00	150.0	± 9.6 %
		Y	3.02	69.50	14.72		150.0	
		Z	3.36	70.96	15.66		150.0	
10301-AAA	IEEE 802.16e WiMAX (29:18, 5ms, 10MHz, QPSK, PUSC)	X	6.06	68.71	19.27	4.17	80.0	± 9.6 %
		Y	5.82	67.97	18.75		80.0	
		Z	6.19	69.17	19.41		80.0	
10302-AAA	IEEE 802.16e WiMAX (29:18, 5ms, 10MHz, QPSK, PUSC, 3 CTRL symbols)	X	6.72	70.11	20.48	4.96	80.0	± 9.6 %
		Y	6.33	68.61	19.48		80.0	
		Z	6.73	69.98	20.27		80.0	

10303-AAA	IEEE 802.16e WiMAX (31:15, 5ms, 10MHz, 64QAM, PUSC)	X	6.65	70.48	20.70	4.96	80.0	± 9.6 %
		Y	6.20	68.74	19.57		80.0	
		Z	6.66	70.35	20.48		80.0	
10304-AAA	IEEE 802.16e WiMAX (29:18, 5ms, 10MHz, 64QAM, PUSC)	X	6.16	69.37	19.66	4.17	80.0	± 9.6 %
		Y	5.81	67.99	18.75		80.0	
		Z	6.16	69.23	19.45		80.0	
10305-AAA	IEEE 802.16e WiMAX (31:15, 10ms, 10MHz, 64QAM, PUSC, 15 symbols)	X	9.30	81.07	26.04	6.02	50.0	± 9.6 %
		Y	8.89	81.17	26.15		50.0	
		Z	9.30	80.60	25.61		50.0	
10306-AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, 64QAM, PUSC, 18 symbols)	X	7.60	74.94	23.58	6.02	50.0	± 9.6 %
		Y	6.58	71.27	21.48		50.0	
		Z	7.65	74.77	23.31		50.0	
10307-AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, QPSK, PUSC, 18 symbols)	X	7.89	76.12	23.89	6.02	50.0	± 9.6 %
		Y	6.67	71.96	21.62		50.0	
		Z	7.93	75.88	23.59		50.0	
10308-AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, 16QAM, PUSC)	X	8.03	76.77	24.18	6.02	50.0	± 9.6 %
		Y	6.71	72.32	21.80		50.0	
		Z	8.07	76.51	23.87		50.0	
10309-AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, 16QAM, AMC 2x3, 18 symbols)	X	7.75	75.30	23.75	6.02	50.0	± 9.6 %
		Y	6.70	71.56	21.63		50.0	
		Z	7.79	75.10	23.47		50.0	
10310-AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, QPSK, AMC 2x3, 18 symbols)	X	7.67	75.32	23.64	6.02	50.0	± 9.6 %
		Y	6.59	71.48	21.48		50.0	
		Z	7.72	75.12	23.36		50.0	
10311-AAB	LTE-FDD (SC-FDMA, 100% RB, 15 MHz, QPSK)	X	3.65	71.15	17.38	0.00	150.0	± 9.6 %
		Y	3.40	69.80	16.59		150.0	
		Z	3.45	70.04	16.69		150.0	
10313-AAA	iDEN 1:3	X	8.19	79.62	19.75	6.99	70.0	± 9.6 %
		Y	7.93	79.22	19.41		70.0	
		Z	7.49	77.80	19.02		70.0	
10314-AAA	iDEN 1:6	X	9.48	83.29	23.38	10.00	30.0	± 9.6 %
		Y	9.95	84.52	23.69		30.0	
		Z	8.48	80.77	22.38		30.0	
10315-AAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps, 96pc duty cycle)	X	1.25	66.08	16.91	0.17	150.0	± 9.6 %
		Y	1.20	64.89	15.87		150.0	
		Z	1.21	65.13	16.03		150.0	
10316-AAB	IEEE 802.11g WiFi 2.4 GHz (ERP-OFDM, 6 Mbps, 96pc duty cycle)	X	4.90	67.19	16.76	0.17	150.0	± 9.6 %
		Y	4.85	66.99	16.52		150.0	
		Z	4.87	67.02	16.55		150.0	
10317-AAB	IEEE 802.11a WiFi 5 GHz (OFDM, 6 Mbps, 96pc duty cycle)	X	4.90	67.19	16.76	0.17	150.0	± 9.6 %
		Y	4.85	66.99	16.52		150.0	
		Z	4.87	67.02	16.55		150.0	
10400-AAC	IEEE 802.11ac WiFi (20MHz, 64-QAM, 99pc duty cycle)	X	5.03	67.46	16.67	0.00	150.0	± 9.6 %
		Y	4.97	67.23	16.42		150.0	
		Z	4.99	67.27	16.45		150.0	
10401-AAC	IEEE 802.11ac WiFi (40MHz, 64-QAM, 99pc duty cycle)	X	5.60	67.40	16.67	0.00	150.0	± 9.6 %
		Y	5.56	67.25	16.46		150.0	
		Z	5.57	67.25	16.48		150.0	

10402-AAC	IEEE 802.11ac WiFi (80MHz, 64-QAM, 99pc duty cycle)	X	5.93	68.04	16.82	0.00	150.0	± 9.6 %
		Y	5.88	67.87	16.62		150.0	
		Z	5.89	67.90	16.63		150.0	
10403-AAB	CDMA2000 (1xEV-DO, Rev. 0)	X	2.27	74.32	17.90	0.00	115.0	± 9.6 %
		Y	1.81	70.49	15.86		115.0	
		Z	1.87	70.91	16.13		115.0	
10404-AAB	CDMA2000 (1xEV-DO, Rev. A)	X	2.27	74.32	17.90	0.00	115.0	± 9.6 %
		Y	1.81	70.49	15.86		115.0	
		Z	1.87	70.91	16.13		115.0	
10406-AAB	CDMA2000, RC3, SO32, SCH0, Full Rate	X	100.00	127.40	33.82	0.00	100.0	± 9.6 %
		Y	100.00	122.61	31.43		100.0	
		Z	100.00	123.45	32.03		100.0	
10410-AAB	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	100.00	121.97	31.96	3.23	80.0	± 9.6 %
		Y	100.00	119.93	30.78		80.0	
		Z	100.00	120.31	31.22		80.0	
10415-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps, 99pc duty cycle)	X	1.07	64.27	15.93	0.00	150.0	± 9.6 %
		Y	1.04	63.30	14.96		150.0	
		Z	1.04	63.46	15.09		150.0	
10416-AAA	IEEE 802.11g WiFi 2.4 GHz (ERP-OFDM, 6 Mbps, 99pc duty cycle)	X	4.79	67.01	16.59	0.00	150.0	± 9.6 %
		Y	4.74	66.82	16.35		150.0	
		Z	4.76	66.83	16.37		150.0	
10417-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps, 99pc duty cycle)	X	4.79	67.01	16.59	0.00	150.0	± 9.6 %
		Y	4.74	66.82	16.35		150.0	
		Z	4.76	66.83	16.37		150.0	
10418-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps, 99pc duty cycle, Long preamble)	X	4.77	67.15	16.59	0.00	150.0	± 9.6 %
		Y	4.73	66.95	16.35		150.0	
		Z	4.74	66.96	16.37		150.0	
10419-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps, 99pc duty cycle, Short preamble)	X	4.80	67.11	16.60	0.00	150.0	± 9.6 %
		Y	4.75	66.92	16.36		150.0	
		Z	4.76	66.93	16.38		150.0	
10422-AAA	IEEE 802.11n (HT Greenfield, 7.2 Mbps, BPSK)	X	4.93	67.11	16.61	0.00	150.0	± 9.6 %
		Y	4.88	66.93	16.38		150.0	
		Z	4.90	66.94	16.40		150.0	
10423-AAA	IEEE 802.11n (HT Greenfield, 43.3 Mbps, 16-QAM)	X	5.16	67.53	16.76	0.00	150.0	± 9.6 %
		Y	5.10	67.33	16.53		150.0	
		Z	5.12	67.36	16.55		150.0	
10424-AAA	IEEE 802.11n (HT Greenfield, 72.2 Mbps, 64-QAM)	X	5.06	67.46	16.72	0.00	150.0	± 9.6 %
		Y	5.01	67.26	16.49		150.0	
		Z	5.02	67.28	16.51		150.0	
10425-AAA	IEEE 802.11n (HT Greenfield, 15 Mbps, BPSK)	X	5.63	67.84	16.88	0.00	150.0	± 9.6 %
		Y	5.58	67.63	16.65		150.0	
		Z	5.59	67.66	16.67		150.0	
10426-AAA	IEEE 802.11n (HT Greenfield, 90 Mbps, 16-QAM)	X	5.65	67.87	16.88	0.00	150.0	± 9.6 %
		Y	5.59	67.67	16.66		150.0	
		Z	5.60	67.69	16.68		150.0	

10427-AAA	IEEE 802.11n (HT Greenfield, 150 Mbps, 64-QAM)	X	5.67	67.88	16.88	0.00	150.0	± 9.6 %
		Y	5.61	67.68	16.67		150.0	
		Z	5.63	67.72	16.69		150.0	
10430-AAA	LTE-FDD (OFDMA, 5 MHz, E-TM 3.1)	X	4.49	70.32	18.41	0.00	150.0	± 9.6 %
		Y	4.47	70.35	18.30		150.0	
		Z	4.43	69.94	18.10		150.0	
10431-AAA	LTE-FDD (OFDMA, 10 MHz, E-TM 3.1)	X	4.57	67.64	16.73	0.00	150.0	± 9.6 %
		Y	4.50	67.37	16.44		150.0	
		Z	4.52	67.40	16.48		150.0	
10432-AAA	LTE-FDD (OFDMA, 15 MHz, E-TM 3.1)	X	4.84	67.52	16.72	0.00	150.0	± 9.6 %
		Y	4.78	67.30	16.46		150.0	
		Z	4.81	67.32	16.49		150.0	
10433-AAA	LTE-FDD (OFDMA, 20 MHz, E-TM 3.1)	X	5.08	67.52	16.75	0.00	150.0	± 9.6 %
		Y	5.02	67.32	16.52		150.0	
		Z	5.04	67.34	16.54		150.0	
10434-AAA	W-CDMA (BS Test Model 1, 64 DPCH)	X	4.58	71.00	18.44	0.00	150.0	± 9.6 %
		Y	4.56	71.04	18.32		150.0	
		Z	4.50	70.55	18.09		150.0	
10435-AAB	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	100.00	121.83	31.89	3.23	80.0	± 9.6 %
		Y	100.00	119.78	30.72		80.0	
		Z	100.00	120.18	31.16		80.0	
10447-AAA	LTE-FDD (OFDMA, 5 MHz, E-TM 3.1, Clipping 44%)	X	3.91	67.81	16.42	0.00	150.0	± 9.6 %
		Y	3.82	67.43	16.03		150.0	
		Z	3.85	67.45	16.10		150.0	
10448-AAA	LTE-FDD (OFDMA, 10 MHz, E-TM 3.1, Clipping 44%)	X	4.37	67.41	16.59	0.00	150.0	± 9.6 %
		Y	4.31	67.14	16.30		150.0	
		Z	4.33	67.16	16.33		150.0	
10449-AAA	LTE-FDD (OFDMA, 15 MHz, E-TM 3.1, Clipping 44%)	X	4.61	67.35	16.62	0.00	150.0	± 9.6 %
		Y	4.56	67.11	16.36		150.0	
		Z	4.57	67.13	16.39		150.0	
10450-AAA	LTE-FDD (OFDMA, 20 MHz, E-TM 3.1, Clipping 44%)	X	4.78	67.27	16.62	0.00	150.0	± 9.6 %
		Y	4.73	67.06	16.37		150.0	
		Z	4.75	67.08	16.40		150.0	
10451-AAA	W-CDMA (BS Test Model 1, 64 DPCH, Clipping 44%)	X	3.87	68.19	16.26	0.00	150.0	± 9.6 %
		Y	3.76	67.74	15.84		150.0	
		Z	3.80	67.77	15.91		150.0	
10456-AAA	IEEE 802.11ac WiFi (160MHz, 64-QAM, 99pc duty cycle)	X	6.48	68.45	17.03	0.00	150.0	± 9.6 %
		Y	6.43	68.27	16.83		150.0	
		Z	6.44	68.31	16.86		150.0	
10457-AAA	UMTS-FDD (DC-HSDPA)	X	3.93	65.66	16.35	0.00	150.0	± 9.6 %
		Y	3.90	65.46	16.09		150.0	
		Z	3.90	65.49	16.13		150.0	
10458-AAA	CDMA2000 (1xEV-DO, Rev. B, 2 carriers)	X	3.65	67.27	15.76	0.00	150.0	± 9.6 %
		Y	3.56	66.88	15.33		150.0	
		Z	3.59	66.88	15.43		150.0	
10459-AAA	CDMA2000 (1xEV-DO, Rev. B, 3 carriers)	X	4.75	65.30	16.25	0.00	150.0	± 9.6 %
		Y	4.56	64.61	15.72		150.0	
		Z	4.62	64.74	15.85		150.0	

10460-AAA	UMTS-FDD (WCDMA, AMR)	X	1.26	74.40	19.85	0.00	150.0	± 9.6 %
		Y	0.98	69.11	16.84		150.0	
		Z	1.02	70.09	17.34		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	124.67	33.28	3.29	80.0	± 9.6 %
		Y	100.00	122.71	32.15		80.0	
		Z	100.00	122.52	32.32		80.0	
10462-AAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	100.00	112.53	27.42	3.23	80.0	± 9.6 %
		Y	100.00	109.84	25.94		80.0	
		Z	100.00	110.74	26.63		80.0	
10463-AAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	100.00	110.09	26.24	3.23	80.0	± 9.6 %
		Y	100.00	107.30	24.71		80.0	
		Z	100.00	108.46	25.52		80.0	
10464-AAA	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	100.00	123.17	32.44	3.23	80.0	± 9.6 %
		Y	100.00	121.02	31.22		80.0	
		Z	100.00	121.02	31.48		80.0	
10465-AAA	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	100.00	112.13	27.22	3.23	80.0	± 9.6 %
		Y	100.00	109.39	25.71		80.0	
		Z	100.00	110.36	26.43		80.0	
10466-AAA	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	100.00	109.70	26.05	3.23	80.0	± 9.6 %
		Y	100.00	106.88	24.51		80.0	
		Z	100.00	108.09	25.34		80.0	
10467-AAB	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	100.00	123.35	32.52	3.23	80.0	± 9.6 %
		Y	100.00	121.21	31.30		80.0	
		Z	100.00	121.18	31.55		80.0	
10468-AAB	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	100.00	112.26	27.27	3.23	80.0	± 9.6 %
		Y	100.00	109.52	25.77		80.0	
		Z	100.00	110.48	26.49		80.0	
10469-AAB	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	100.00	109.71	26.05	3.23	80.0	± 9.6 %
		Y	100.00	106.88	24.50		80.0	
		Z	100.00	108.10	25.34		80.0	
10470-AAB	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	100.00	123.38	32.53	3.23	80.0	± 9.6 %
		Y	100.00	121.23	31.30		80.0	
		Z	100.00	121.21	31.55		80.0	
10471-AAB	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	100.00	112.22	27.25	3.23	80.0	± 9.6 %
		Y	100.00	109.48	25.75		80.0	
		Z	100.00	110.44	26.46		80.0	
10472-AAB	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	100.00	109.68	26.03	3.23	80.0	± 9.6 %
		Y	100.00	106.84	24.48		80.0	
		Z	100.00	108.06	25.32		80.0	
10473-AAB	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	100.00	123.36	32.52	3.23	80.0	± 9.6 %
		Y	100.00	121.21	31.29		80.0	
		Z	100.00	121.18	31.54		80.0	
10474-AAB	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	100.00	112.23	27.26	3.23	80.0	± 9.6 %
		Y	100.00	109.49	25.75		80.0	
		Z	100.00	110.45	26.47		80.0	
10475-AAB	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	100.00	109.69	26.03	3.23	80.0	± 9.6 %
		Y	100.00	106.85	24.48		80.0	
		Z	100.00	108.07	25.32		80.0	

10477-AAB	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	100.00	112.10	27.19	3.23	80.0	± 9.6 %
		Y	100.00	109.35	25.68		80.0	
		Z	100.00	110.33	26.40		80.0	
10478-AAB	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	100.00	109.65	26.01	3.23	80.0	± 9.6 %
		Y	100.00	106.81	24.47		80.0	
		Z	100.00	108.04	25.30		80.0	
10479-AAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	14.38	94.20	26.88	3.23	80.0	± 9.6 %
		Y	12.62	91.51	25.59		80.0	
		Z	11.98	90.33	25.40		80.0	
10480-AAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	16.92	91.85	24.70	3.23	80.0	± 9.6 %
		Y	16.07	90.43	23.78		80.0	
		Z	14.43	88.66	23.48		80.0	
10481-AAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	15.52	89.82	23.79	3.23	80.0	± 9.6 %
		Y	14.42	88.14	22.78		80.0	
		Z	13.29	86.80	22.62		80.0	
10482-AAA	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	7.56	82.70	21.88	2.23	80.0	± 9.6 %
		Y	6.34	79.89	20.64		80.0	
		Z	6.13	78.95	20.35		80.0	
10483-AAA	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	10.42	84.68	22.62	2.23	80.0	± 9.6 %
		Y	9.52	82.90	21.60		80.0	
		Z	9.24	82.26	21.60		80.0	
10484-AAA	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	9.76	83.43	22.21	2.23	80.0	± 9.6 %
		Y	8.92	81.70	21.20		80.0	
		Z	8.78	81.26	21.26		80.0	
10485-AAB	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	7.43	82.48	22.31	2.23	80.0	± 9.6 %
		Y	6.34	79.89	21.17		80.0	
		Z	6.26	79.21	20.92		80.0	
10486-AAB	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	5.54	75.02	19.37	2.23	80.0	± 9.6 %
		Y	5.16	73.91	18.72		80.0	
		Z	5.15	73.47	18.58		80.0	
10487-AAB	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	5.49	74.50	19.17	2.23	80.0	± 9.6 %
		Y	5.13	73.46	18.54		80.0	
		Z	5.13	73.07	18.42		80.0	
10488-AAB	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	6.90	79.78	21.64	2.23	80.0	± 9.6 %
		Y	6.14	77.86	20.75		80.0	
		Z	6.18	77.51	20.58		80.0	
10489-AAB	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	5.38	73.43	19.44	2.23	80.0	± 9.6 %
		Y	5.09	72.55	18.91		80.0	
		Z	5.16	72.40	18.83		80.0	
10490-AAB	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	5.41	72.95	19.27	2.23	80.0	± 9.6 %
		Y	5.14	72.16	18.78		80.0	
		Z	5.21	72.02	18.71		80.0	
10491-AAB	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	6.32	76.48	20.47	2.23	80.0	± 9.6 %
		Y	5.85	75.21	19.82		80.0	
		Z	5.92	75.01	19.70		80.0	
10492-AAB	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	5.50	72.00	19.03	2.23	80.0	± 9.6 %
		Y	5.27	71.31	18.59		80.0	
		Z	5.36	71.28	18.56		80.0	

10493-AAB	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	5.54	71.72	18.94	2.23	80.0	± 9.6 %
		Y	5.32	71.08	18.52		80.0	
		Z	5.41	71.05	18.49		80.0	
10494-AAB	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	7.25	78.81	21.14	2.23	80.0	± 9.6 %
		Y	6.59	77.27	20.41		80.0	
		Z	6.62	76.95	20.25		80.0	
10495-AAB	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	5.65	72.70	19.29	2.23	80.0	± 9.6 %
		Y	5.39	71.95	18.83		80.0	
		Z	5.48	71.90	18.78		80.0	
10496-AAB	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	5.64	72.15	19.11	2.23	80.0	± 9.6 %
		Y	5.41	71.48	18.68		80.0	
		Z	5.50	71.45	18.64		80.0	
10497-AAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	6.62	80.74	20.69	2.23	80.0	± 9.6 %
		Y	5.48	77.81	19.35		80.0	
		Z	5.31	76.98	19.14		80.0	
10498-AAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	4.90	73.48	17.22	2.23	80.0	± 9.6 %
		Y	4.27	71.53	16.16		80.0	
		Z	4.35	71.46	16.28		80.0	
10499-AAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	4.83	72.93	16.89	2.23	80.0	± 9.6 %
		Y	4.21	71.00	15.82		80.0	
		Z	4.31	71.03	15.99		80.0	
10500-AAA	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	6.85	80.51	21.77	2.23	80.0	± 9.6 %
		Y	6.00	78.35	20.77		80.0	
		Z	6.00	77.87	20.57		80.0	
10501-AAA	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	5.43	74.16	19.30	2.23	80.0	± 9.6 %
		Y	5.10	73.18	18.71		80.0	
		Z	5.13	72.87	18.60		80.0	
10502-AAA	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	5.44	73.80	19.13	2.23	80.0	± 9.6 %
		Y	5.13	72.89	18.57		80.0	
		Z	5.15	72.59	18.46		80.0	
10503-AAB	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	6.81	79.57	21.56	2.23	80.0	± 9.6 %
		Y	6.06	77.64	20.66		80.0	
		Z	6.11	77.33	20.51		80.0	
10504-AAB	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	5.36	73.36	19.40	2.23	80.0	± 9.6 %
		Y	5.07	72.47	18.86		80.0	
		Z	5.14	72.33	18.79		80.0	
10505-AAB	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	5.38	72.87	19.23	2.23	80.0	± 9.6 %
		Y	5.11	72.07	18.73		80.0	
		Z	5.19	71.95	18.67		80.0	
10506-AAB	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	7.19	78.66	21.07	2.23	80.0	± 9.6 %
		Y	6.54	77.11	20.34		80.0	
		Z	6.57	76.81	20.18		80.0	
10507-AAB	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	5.63	72.64	19.26	2.23	80.0	± 9.6 %
		Y	5.37	71.89	18.79		80.0	
		Z	5.46	71.85	18.75		80.0	

10508-AAB	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	5.63	72.09	19.07	2.23	80.0	± 9.6 %
		Y	5.39	71.41	18.64		80.0	
		Z	5.49	71.39	18.61		80.0	
10509-AAB	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	6.80	75.80	19.99	2.23	80.0	± 9.6 %
		Y	6.40	74.81	19.47		80.0	
		Z	6.44	74.60	19.35		80.0	
10510-AAB	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	6.00	71.87	18.97	2.23	80.0	± 9.6 %
		Y	5.78	71.27	18.59		80.0	
		Z	5.87	71.27	18.56		80.0	
10511-AAB	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	5.98	71.43	18.84	2.23	80.0	± 9.6 %
		Y	5.78	70.88	18.48		80.0	
		Z	5.87	70.89	18.46		80.0	
10512-AAB	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	7.65	78.39	20.81	2.23	80.0	± 9.6 %
		Y	7.04	77.04	20.17		80.0	
		Z	7.05	76.73	20.01		80.0	
10513-AAB	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	5.99	72.54	19.22	2.23	80.0	± 9.6 %
		Y	5.74	71.83	18.79		80.0	
		Z	5.84	71.84	18.77		80.0	
10514-AAB	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	5.89	71.84	19.00	2.23	80.0	± 9.6 %
		Y	5.67	71.22	18.61		80.0	
		Z	5.77	71.23	18.59		80.0	
10515-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 2 Mbps, 99pc duty cycle)	X	1.04	64.60	16.09	0.00	150.0	± 9.6 %
		Y	1.01	63.51	15.03		150.0	
		Z	1.00	63.69	15.18		150.0	
10516-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 5.5 Mbps, 99pc duty cycle)	X	1.58	89.32	26.18	0.00	150.0	± 9.6 %
		Y	0.68	71.98	18.30		150.0	
		Z	0.78	74.89	19.62		150.0	
10517-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 11 Mbps, 99pc duty cycle)	X	0.96	68.28	17.72	0.00	150.0	± 9.6 %
		Y	0.87	65.73	15.83		150.0	
		Z	0.88	66.23	16.14		150.0	
10518-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 9 Mbps, 99pc duty cycle)	X	4.79	67.10	16.58	0.00	150.0	± 9.6 %
		Y	4.74	66.90	16.34		150.0	
		Z	4.76	66.92	16.36		150.0	
10519-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 12 Mbps, 99pc duty cycle)	X	5.03	67.42	16.72	0.00	150.0	± 9.6 %
		Y	4.98	67.22	16.49		150.0	
		Z	5.00	67.24	16.51		150.0	
10520-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 18 Mbps, 99pc duty cycle)	X	4.88	67.42	16.66	0.00	150.0	± 9.6 %
		Y	4.82	67.20	16.42		150.0	
		Z	4.84	67.23	16.44		150.0	
10521-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 24 Mbps, 99pc duty cycle)	X	4.81	67.44	16.66	0.00	150.0	± 9.6 %
		Y	4.75	67.21	16.40		150.0	
		Z	4.77	67.24	16.43		150.0	
10522-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 36 Mbps, 99pc duty cycle)	X	4.84	67.34	16.65	0.00	150.0	± 9.6 %
		Y	4.79	67.14	16.41		150.0	
		Z	4.81	67.14	16.43		150.0	

10523-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 48 Mbps, 99pc duty cycle)	X	4.72	67.29	16.53	0.00	150.0	± 9.6 %
		Y	4.66	67.07	16.29		150.0	
		Z	4.68	67.09	16.31		150.0	
10524-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 54 Mbps, 99pc duty cycle)	X	4.80	67.32	16.65	0.00	150.0	± 9.6 %
		Y	4.75	67.12	16.41		150.0	
		Z	4.77	67.13	16.43		150.0	
10525-AAA	IEEE 802.11ac WiFi (20MHz, MCS0, 99pc duty cycle)	X	4.74	66.35	16.23	0.00	150.0	± 9.6 %
		Y	4.69	66.14	16.00		150.0	
		Z	4.71	66.16	16.01		150.0	
10526-AAA	IEEE 802.11ac WiFi (20MHz, MCS1, 99pc duty cycle)	X	4.97	66.77	16.38	0.00	150.0	± 9.6 %
		Y	4.91	66.56	16.14		150.0	
		Z	4.92	66.58	16.16		150.0	
10527-AAA	IEEE 802.11ac WiFi (20MHz, MCS2, 99pc duty cycle)	X	4.88	66.77	16.35	0.00	150.0	± 9.6 %
		Y	4.82	66.54	16.10		150.0	
		Z	4.84	66.57	16.13		150.0	
10528-AAA	IEEE 802.11ac WiFi (20MHz, MCS3, 99pc duty cycle)	X	4.90	66.79	16.38	0.00	150.0	± 9.6 %
		Y	4.84	66.56	16.14		150.0	
		Z	4.86	66.59	16.16		150.0	
10529-AAA	IEEE 802.11ac WiFi (20MHz, MCS4, 99pc duty cycle)	X	4.90	66.79	16.38	0.00	150.0	± 9.6 %
		Y	4.84	66.56	16.14		150.0	
		Z	4.86	66.59	16.16		150.0	
10531-AAA	IEEE 802.11ac WiFi (20MHz, MCS6, 99pc duty cycle)	X	4.93	66.97	16.42	0.00	150.0	± 9.6 %
		Y	4.86	66.72	16.17		150.0	
		Z	4.88	66.75	16.19		150.0	
10532-AAA	IEEE 802.11ac WiFi (20MHz, MCS7, 99pc duty cycle)	X	4.77	66.86	16.39	0.00	150.0	± 9.6 %
		Y	4.71	66.60	16.12		150.0	
		Z	4.73	66.64	16.15		150.0	
10533-AAA	IEEE 802.11ac WiFi (20MHz, MCS8, 99pc duty cycle)	X	4.92	66.80	16.36	0.00	150.0	± 9.6 %
		Y	4.86	66.58	16.11		150.0	
		Z	4.87	66.60	16.13		150.0	
10534-AAA	IEEE 802.11ac WiFi (40MHz, MCS0, 99pc duty cycle)	X	5.41	66.95	16.41	0.00	150.0	± 9.6 %
		Y	5.35	66.75	16.19		150.0	
		Z	5.37	66.78	16.21		150.0	
10535-AAA	IEEE 802.11ac WiFi (40MHz, MCS1, 99pc duty cycle)	X	5.48	67.09	16.46	0.00	150.0	± 9.6 %
		Y	5.43	66.89	16.25		150.0	
		Z	5.44	66.92	16.26		150.0	
10536-AAA	IEEE 802.11ac WiFi (40MHz, MCS2, 99pc duty cycle)	X	5.35	67.09	16.45	0.00	150.0	± 9.6 %
		Y	5.29	66.87	16.23		150.0	
		Z	5.30	66.90	16.24		150.0	
10537-AAA	IEEE 802.11ac WiFi (40MHz, MCS3, 99pc duty cycle)	X	5.41	67.05	16.43	0.00	150.0	± 9.6 %
		Y	5.36	66.85	16.22		150.0	
		Z	5.37	66.87	16.23		150.0	
10538-AAA	IEEE 802.11ac WiFi (40MHz, MCS4, 99pc duty cycle)	X	5.54	67.15	16.52	0.00	150.0	± 9.6 %
		Y	5.48	66.94	16.30		150.0	
		Z	5.50	66.97	16.32		150.0	
10540-AAA	IEEE 802.11ac WiFi (40MHz, MCS6, 99pc duty cycle)	X	5.43	67.07	16.50	0.00	150.0	± 9.6 %
		Y	5.37	66.86	16.28		150.0	
		Z	5.38	66.89	16.29		150.0	

10541-AAA	IEEE 802.11ac WiFi (40MHz, MCS7, 99pc duty cycle)	X	5.42	67.03	16.48	0.00	150.0	± 9.6 %
		Y	5.36	66.81	16.25		150.0	
		Z	5.38	66.86	16.28		150.0	
10542-AAA	IEEE 802.11ac WiFi (40MHz, MCS8, 99pc duty cycle)	X	5.56	67.00	16.48	0.00	150.0	± 9.6 %
		Y	5.50	66.81	16.26		150.0	
		Z	5.52	66.84	16.28		150.0	
10543-AAA	IEEE 802.11ac WiFi (40MHz, MCS9, 99pc duty cycle)	X	5.65	67.02	16.49	0.00	150.0	± 9.6 %
		Y	5.60	66.83	16.28		150.0	
		Z	5.62	66.87	16.31		150.0	
10544-AAA	IEEE 802.11ac WiFi (80MHz, MCS0, 99pc duty cycle)	X	5.67	67.03	16.38	0.00	150.0	± 9.6 %
		Y	5.62	66.85	16.18		150.0	
		Z	5.63	66.88	16.19		150.0	
10545-AAA	IEEE 802.11ac WiFi (80MHz, MCS1, 99pc duty cycle)	X	5.89	67.44	16.51	0.00	150.0	± 9.6 %
		Y	5.84	67.25	16.31		150.0	
		Z	5.84	67.26	16.32		150.0	
10546-AAA	IEEE 802.11ac WiFi (80MHz, MCS2, 99pc duty cycle)	X	5.78	67.35	16.50	0.00	150.0	± 9.6 %
		Y	5.73	67.16	16.29		150.0	
		Z	5.74	67.19	16.30		150.0	
10547-AAA	IEEE 802.11ac WiFi (80MHz, MCS3, 99pc duty cycle)	X	5.88	67.44	16.53	0.00	150.0	± 9.6 %
		Y	5.82	67.23	16.31		150.0	
		Z	5.84	67.28	16.34		150.0	
10548-AAA	IEEE 802.11ac WiFi (80MHz, MCS4, 99pc duty cycle)	X	6.24	68.68	17.12	0.00	150.0	± 9.6 %
		Y	6.15	68.36	16.84		150.0	
		Z	6.16	68.38	16.86		150.0	
10550-AAA	IEEE 802.11ac WiFi (80MHz, MCS6, 99pc duty cycle)	X	5.80	67.28	16.46	0.00	150.0	± 9.6 %
		Y	5.75	67.09	16.26		150.0	
		Z	5.76	67.12	16.27		150.0	
10551-AAA	IEEE 802.11ac WiFi (80MHz, MCS7, 99pc duty cycle)	X	5.83	67.43	16.50	0.00	150.0	± 9.6 %
		Y	5.77	67.22	16.29		150.0	
		Z	5.78	67.25	16.30		150.0	
10552-AAA	IEEE 802.11ac WiFi (80MHz, MCS8, 99pc duty cycle)	X	5.72	67.16	16.39	0.00	150.0	± 9.6 %
		Y	5.67	66.97	16.18		150.0	
		Z	5.68	67.00	16.20		150.0	
10553-AAA	IEEE 802.11ac WiFi (80MHz, MCS9, 99pc duty cycle)	X	5.81	67.18	16.42	0.00	150.0	± 9.6 %
		Y	5.76	67.00	16.22		150.0	
		Z	5.77	67.03	16.23		150.0	
10554-AAA	IEEE 1602.11ac WiFi (160MHz, MCS0, 99pc duty cycle)	X	6.07	67.41	16.47	0.00	150.0	± 9.6 %
		Y	6.02	67.24	16.28		150.0	
		Z	6.02	67.27	16.29		150.0	
10555-AAA	IEEE 1602.11ac WiFi (160MHz, MCS1, 99pc duty cycle)	X	6.25	67.82	16.64	0.00	150.0	± 9.6 %
		Y	6.19	67.62	16.43		150.0	
		Z	6.20	67.66	16.46		150.0	
10556-AAA	IEEE 1602.11ac WiFi (160MHz, MCS2, 99pc duty cycle)	X	6.24	67.77	16.61	0.00	150.0	± 9.6 %
		Y	6.19	67.59	16.41		150.0	
		Z	6.19	67.61	16.43		150.0	
10557-AAA	IEEE 1602.11ac WiFi (160MHz, MCS3, 99pc duty cycle)	X	6.24	67.78	16.64	0.00	150.0	± 9.6 %
		Y	6.18	67.59	16.43		150.0	
		Z	6.19	67.62	16.45		150.0	

10558-AAA	IEEE 1602.11ac WiFi (160MHz, MCS4, 99pc duty cycle)	X	6.31	68.00	16.76	0.00	150.0	± 9.6 %
		Y	6.25	67.79	16.55		150.0	
		Z	6.26	67.82	16.57		150.0	
10560-AAA	IEEE 1602.11ac WiFi (160MHz, MCS6, 99pc duty cycle)	X	6.30	67.81	16.70	0.00	150.0	± 9.6 %
		Y	6.24	67.61	16.50		150.0	
		Z	6.26	67.66	16.52		150.0	
10561-AAA	IEEE 1602.11ac WiFi (160MHz, MCS7, 99pc duty cycle)	X	6.20	67.76	16.72	0.00	150.0	± 9.6 %
		Y	6.15	67.55	16.51		150.0	
		Z	6.16	67.60	16.53		150.0	
10562-AAA	IEEE 1602.11ac WiFi (160MHz, MCS8, 99pc duty cycle)	X	6.39	68.33	17.01	0.00	150.0	± 9.6 %
		Y	6.32	68.08	16.77		150.0	
		Z	6.34	68.13	16.81		150.0	
10563-AAA	IEEE 1602.11ac WiFi (160MHz, MCS9, 99pc duty cycle)	X	6.65	68.60	17.09	0.00	150.0	± 9.6 %
		Y	6.59	68.41	16.88		150.0	
		Z	6.58	68.40	16.88		150.0	
10564-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 9 Mbps, 99pc duty cycle)	X	5.14	67.24	16.77	0.46	150.0	± 9.6 %
		Y	5.09	67.04	16.53		150.0	
		Z	5.10	67.08	16.57		150.0	
10565-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 12 Mbps, 99pc duty cycle)	X	5.42	67.73	17.08	0.46	150.0	± 9.6 %
		Y	5.36	67.55	16.86		150.0	
		Z	5.38	67.58	16.89		150.0	
10566-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 18 Mbps, 99pc duty cycle)	X	5.25	67.63	16.93	0.46	150.0	± 9.6 %
		Y	5.19	67.42	16.69		150.0	
		Z	5.21	67.47	16.73		150.0	
10567-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 24 Mbps, 99pc duty cycle)	X	5.27	67.98	17.24	0.46	150.0	± 9.6 %
		Y	5.22	67.81	17.03		150.0	
		Z	5.23	67.81	17.03		150.0	
10568-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 36 Mbps, 99pc duty cycle)	X	5.15	67.34	16.68	0.46	150.0	± 9.6 %
		Y	5.09	67.11	16.43		150.0	
		Z	5.12	67.17	16.48		150.0	
10569-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 48 Mbps, 99pc duty cycle)	X	5.20	67.97	17.24	0.46	150.0	± 9.6 %
		Y	5.15	67.81	17.04		150.0	
		Z	5.16	67.80	17.04		150.0	
10570-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 54 Mbps, 99pc duty cycle)	X	5.25	67.80	17.18	0.46	150.0	± 9.6 %
		Y	5.20	67.64	16.98		150.0	
		Z	5.21	67.63	16.98		150.0	
10571-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps, 90pc duty cycle)	X	1.47	67.75	17.68	0.46	130.0	± 9.6 %
		Y	1.40	66.34	16.57		130.0	
		Z	1.42	66.69	16.76		130.0	
10572-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 2 Mbps, 90pc duty cycle)	X	1.51	68.57	18.12	0.46	130.0	± 9.6 %
		Y	1.43	67.03	16.96		130.0	
		Z	1.45	67.37	17.14		130.0	
10573-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 5.5 Mbps, 90pc duty cycle)	X	100.00	149.09	40.35	0.46	130.0	± 9.6 %
		Y	5.48	98.07	27.02		130.0	
		Z	8.77	105.39	29.04		130.0	
10574-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 11 Mbps, 90pc duty cycle)	X	2.10	78.38	22.53	0.46	130.0	± 9.6 %
		Y	1.75	74.27	20.33		130.0	
		Z	1.81	74.78	20.52		130.0	

10575-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps, 90pc duty cycle)	X	4.95	67.11	16.87	0.46	130.0	± 9.6 %
		Y	4.91	66.91	16.63		130.0	
		Z	4.93	66.95	16.67		130.0	
10576-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 9 Mbps, 90pc duty cycle)	X	4.98	67.26	16.93	0.46	130.0	± 9.6 %
		Y	4.93	67.07	16.70		130.0	
		Z	4.95	67.11	16.73		130.0	
10577-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 12 Mbps, 90pc duty cycle)	X	5.23	67.61	17.11	0.46	130.0	± 9.6 %
		Y	5.18	67.42	16.88		130.0	
		Z	5.21	67.46	16.91		130.0	
10578-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 18 Mbps, 90pc duty cycle)	X	5.13	67.79	17.20	0.46	130.0	± 9.6 %
		Y	5.07	67.60	16.98		130.0	
		Z	5.10	67.62	17.00		130.0	
10579-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 24 Mbps, 90pc duty cycle)	X	4.92	67.26	16.64	0.46	130.0	± 9.6 %
		Y	4.85	66.98	16.35		130.0	
		Z	4.89	67.08	16.43		130.0	
10580-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 36 Mbps, 90pc duty cycle)	X	4.96	67.18	16.62	0.46	130.0	± 9.6 %
		Y	4.89	66.92	16.33		130.0	
		Z	4.93	67.01	16.41		130.0	
10581-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 48 Mbps, 90pc duty cycle)	X	5.04	67.92	17.18	0.46	130.0	± 9.6 %
		Y	4.98	67.70	16.95		130.0	
		Z	5.01	67.74	16.97		130.0	
10582-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 54 Mbps, 90pc duty cycle)	X	4.88	67.01	16.45	0.46	130.0	± 9.6 %
		Y	4.81	66.72	16.14		130.0	
		Z	4.85	66.84	16.24		130.0	
10583-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps, 90pc duty cycle)	X	4.95	67.11	16.87	0.46	130.0	± 9.6 %
		Y	4.91	66.91	16.63		130.0	
		Z	4.93	66.95	16.67		130.0	
10584-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 9 Mbps, 90pc duty cycle)	X	4.98	67.26	16.93	0.46	130.0	± 9.6 %
		Y	4.93	67.07	16.70		130.0	
		Z	4.95	67.11	16.73		130.0	
10585-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 12 Mbps, 90pc duty cycle)	X	5.23	67.61	17.11	0.46	130.0	± 9.6 %
		Y	5.18	67.42	16.88		130.0	
		Z	5.21	67.46	16.91		130.0	
10586-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 18 Mbps, 90pc duty cycle)	X	5.13	67.79	17.20	0.46	130.0	± 9.6 %
		Y	5.07	67.60	16.98		130.0	
		Z	5.10	67.62	17.00		130.0	
10587-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 24 Mbps, 90pc duty cycle)	X	4.92	67.26	16.64	0.46	130.0	± 9.6 %
		Y	4.85	66.98	16.35		130.0	
		Z	4.89	67.08	16.43		130.0	
10588-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 36 Mbps, 90pc duty cycle)	X	4.96	67.18	16.62	0.46	130.0	± 9.6 %
		Y	4.89	66.92	16.33		130.0	
		Z	4.93	67.01	16.41		130.0	
10589-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 48 Mbps, 90pc duty cycle)	X	5.04	67.92	17.18	0.46	130.0	± 9.6 %
		Y	4.98	67.70	16.95		130.0	
		Z	5.01	67.74	16.97		130.0	
10590-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 54 Mbps, 90pc duty cycle)	X	4.88	67.01	16.45	0.46	130.0	± 9.6 %
		Y	4.81	66.72	16.14		130.0	
		Z	4.85	66.84	16.24		130.0	

10591-AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS0, 90pc duty cycle)	X	5.10	67.15	16.94	0.46	130.0	± 9.6 %
		Y	5.06	66.97	16.72		130.0	
		Z	5.07	67.00	16.75		130.0	
10592-AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS1, 90pc duty cycle)	X	5.29	67.50	17.06	0.46	130.0	± 9.6 %
		Y	5.24	67.32	16.84		130.0	
		Z	5.26	67.35	16.87		130.0	
10593-AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS2, 90pc duty cycle)	X	5.23	67.49	16.99	0.46	130.0	± 9.6 %
		Y	5.17	67.29	16.76		130.0	
		Z	5.20	67.34	16.80		130.0	
10594-AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS3, 90pc duty cycle)	X	5.27	67.61	17.11	0.46	130.0	± 9.6 %
		Y	5.22	67.43	16.89		130.0	
		Z	5.25	67.46	16.92		130.0	
10595-AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS4, 90pc duty cycle)	X	5.26	67.62	17.04	0.46	130.0	± 9.6 %
		Y	5.20	67.41	16.81		130.0	
		Z	5.23	67.46	16.84		130.0	
10596-AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS5, 90pc duty cycle)	X	5.19	67.61	17.04	0.46	130.0	± 9.6 %
		Y	5.14	67.40	16.80		130.0	
		Z	5.17	67.44	16.84		130.0	
10597-AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS6, 90pc duty cycle)	X	5.15	67.57	16.97	0.46	130.0	± 9.6 %
		Y	5.09	67.35	16.72		130.0	
		Z	5.12	67.41	16.76		130.0	
10598-AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS7, 90pc duty cycle)	X	5.13	67.83	17.22	0.46	130.0	± 9.6 %
		Y	5.07	67.62	16.99		130.0	
		Z	5.10	67.66	17.02		130.0	
10599-AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS0, 90pc duty cycle)	X	5.77	67.78	17.12	0.46	130.0	± 9.6 %
		Y	5.72	67.60	16.91		130.0	
		Z	5.74	67.64	16.94		130.0	
10600-AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS1, 90pc duty cycle)	X	6.05	68.62	17.52	0.46	130.0	± 9.6 %
		Y	5.98	68.34	17.26		130.0	
		Z	6.00	68.41	17.31		130.0	
10601-AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS2, 90pc duty cycle)	X	5.86	68.09	17.27	0.46	130.0	± 9.6 %
		Y	5.80	67.88	17.04		130.0	
		Z	5.82	67.93	17.07		130.0	
10602-AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS3, 90pc duty cycle)	X	5.98	68.19	17.24	0.46	130.0	± 9.6 %
		Y	5.90	67.93	16.99		130.0	
		Z	5.94	68.03	17.05		130.0	
10603-AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS4, 90pc duty cycle)	X	6.09	68.56	17.54	0.46	130.0	± 9.6 %
		Y	6.02	68.33	17.31		130.0	
		Z	6.05	68.40	17.35		130.0	
10604-AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS5, 90pc duty cycle)	X	5.79	67.78	17.15	0.46	130.0	± 9.6 %
		Y	5.74	67.59	16.93		130.0	
		Z	5.76	67.64	16.97		130.0	
10605-AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS6, 90pc duty cycle)	X	5.91	68.09	17.31	0.46	130.0	± 9.6 %
		Y	5.85	67.88	17.08		130.0	
		Z	5.87	67.94	17.12		130.0	
10606-AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS7, 90pc duty cycle)	X	5.67	67.56	16.92	0.46	130.0	± 9.6 %
		Y	5.62	67.36	16.69		130.0	
		Z	5.63	67.40	16.73		130.0	

10607-AAA	IEEE 802.11ac WiFi (20MHz, MCS0, 90pc duty cycle)	X	4.93	66.44	16.55	0.46	130.0	± 9.6 %
		Y	4.88	66.25	16.33		130.0	
		Z	4.90	66.28	16.35		130.0	
10608-AAA	IEEE 802.11ac WiFi (20MHz, MCS1, 90pc duty cycle)	X	5.16	66.88	16.71	0.46	130.0	± 9.6 %
		Y	5.11	66.69	16.49		130.0	
		Z	5.13	66.71	16.51		130.0	
10609-AAA	IEEE 802.11ac WiFi (20MHz, MCS2, 90pc duty cycle)	X	5.05	66.80	16.60	0.46	130.0	± 9.6 %
		Y	4.99	66.58	16.36		130.0	
		Z	5.02	66.62	16.39		130.0	
10610-AAA	IEEE 802.11ac WiFi (20MHz, MCS3, 90pc duty cycle)	X	5.11	66.94	16.74	0.46	130.0	± 9.6 %
		Y	5.05	66.74	16.51		130.0	
		Z	5.07	66.77	16.54		130.0	
10611-AAA	IEEE 802.11ac WiFi (20MHz, MCS4, 90pc duty cycle)	X	5.04	66.82	16.63	0.46	130.0	± 9.6 %
		Y	4.98	66.59	16.39		130.0	
		Z	5.01	66.64	16.42		130.0	
10612-AAA	IEEE 802.11ac WiFi (20MHz, MCS5, 90pc duty cycle)	X	5.06	66.96	16.66	0.46	130.0	± 9.6 %
		Y	4.99	66.72	16.41		130.0	
		Z	5.02	66.77	16.45		130.0	
10613-AAA	IEEE 802.11ac WiFi (20MHz, MCS6, 90pc duty cycle)	X	5.08	66.91	16.58	0.46	130.0	± 9.6 %
		Y	5.01	66.66	16.32		130.0	
		Z	5.04	66.72	16.37		130.0	
10614-AAA	IEEE 802.11ac WiFi (20MHz, MCS7, 90pc duty cycle)	X	5.00	67.09	16.80	0.46	130.0	± 9.6 %
		Y	4.94	66.86	16.56		130.0	
		Z	4.96	66.90	16.59		130.0	
10615-AAA	IEEE 802.11ac WiFi (20MHz, MCS8, 90pc duty cycle)	X	5.04	66.62	16.41	0.46	130.0	± 9.6 %
		Y	4.98	66.38	16.15		130.0	
		Z	5.01	66.45	16.20		130.0	
10616-AAA	IEEE 802.11ac WiFi (40MHz, MCS0, 90pc duty cycle)	X	5.59	67.05	16.74	0.46	130.0	± 9.6 %
		Y	5.54	66.86	16.53		130.0	
		Z	5.56	66.89	16.55		130.0	
10617-AAA	IEEE 802.11ac WiFi (40MHz, MCS1, 90pc duty cycle)	X	5.66	67.16	16.76	0.46	130.0	± 9.6 %
		Y	5.60	66.97	16.55		130.0	
		Z	5.62	67.01	16.57		130.0	
10618-AAA	IEEE 802.11ac WiFi (40MHz, MCS2, 90pc duty cycle)	X	5.55	67.23	16.82	0.46	130.0	± 9.6 %
		Y	5.50	67.04	16.61		130.0	
		Z	5.51	67.07	16.62		130.0	
10619-AAA	IEEE 802.11ac WiFi (40MHz, MCS3, 90pc duty cycle)	X	5.57	67.04	16.66	0.46	130.0	± 9.6 %
		Y	5.51	66.84	16.44		130.0	
		Z	5.53	66.88	16.47		130.0	
10620-AAA	IEEE 802.11ac WiFi (40MHz, MCS4, 90pc duty cycle)	X	5.71	67.21	16.79	0.46	130.0	± 9.6 %
		Y	5.65	66.99	16.56		130.0	
		Z	5.67	67.05	16.60		130.0	
10621-AAA	IEEE 802.11ac WiFi (40MHz, MCS5, 90pc duty cycle)	X	5.67	67.21	16.90	0.46	130.0	± 9.6 %
		Y	5.61	67.05	16.70		130.0	
		Z	5.63	67.07	16.71		130.0	
10622-AAA	IEEE 802.11ac WiFi (40MHz, MCS6, 90pc duty cycle)	X	5.66	67.33	16.95	0.46	130.0	± 9.6 %
		Y	5.61	67.14	16.74		130.0	
		Z	5.63	67.17	16.76		130.0	

10623-AAA	IEEE 802.11ac WiFi (40MHz, MCS7, 90pc duty cycle)	X	5.58	67.03	16.70	0.46	130.0	± 9.6 %
		Y	5.51	66.79	16.46		130.0	
		Z	5.54	66.88	16.51		130.0	
10624-AAA	IEEE 802.11ac WiFi (40MHz, MCS8, 90pc duty cycle)	X	5.74	67.07	16.77	0.46	130.0	± 9.6 %
		Y	5.68	66.89	16.57		130.0	
		Z	5.70	66.92	16.59		130.0	
10625-AAA	IEEE 802.11ac WiFi (40MHz, MCS9, 90pc duty cycle)	X	6.12	68.00	17.28	0.46	130.0	± 9.6 %
		Y	6.07	67.85	17.09		130.0	
		Z	6.06	67.78	17.06		130.0	
10626-AAA	IEEE 802.11ac WiFi (80MHz, MCS0, 90pc duty cycle)	X	5.83	67.05	16.65	0.46	130.0	± 9.6 %
		Y	5.78	66.88	16.46		130.0	
		Z	5.79	66.91	16.47		130.0	
10627-AAA	IEEE 802.11ac WiFi (80MHz, MCS1, 90pc duty cycle)	X	6.10	67.59	16.86	0.46	130.0	± 9.6 %
		Y	6.05	67.42	16.67		130.0	
		Z	6.05	67.42	16.67		130.0	
10628-AAA	IEEE 802.11ac WiFi (80MHz, MCS2, 90pc duty cycle)	X	5.92	67.28	16.66	0.46	130.0	± 9.6 %
		Y	5.86	67.08	16.45		130.0	
		Z	5.88	67.13	16.48		130.0	
10629-AAA	IEEE 802.11ac WiFi (80MHz, MCS3, 90pc duty cycle)	X	6.03	67.42	16.72	0.46	130.0	± 9.6 %
		Y	5.97	67.19	16.49		130.0	
		Z	5.99	67.27	16.54		130.0	
10630-AAA	IEEE 802.11ac WiFi (80MHz, MCS4, 90pc duty cycle)	X	6.68	69.49	17.76	0.46	130.0	± 9.6 %
		Y	6.56	69.10	17.44		130.0	
		Z	6.58	69.15	17.48		130.0	
10631-AAA	IEEE 802.11ac WiFi (80MHz, MCS5, 90pc duty cycle)	X	6.50	69.03	17.69	0.46	130.0	± 9.6 %
		Y	6.41	68.76	17.46		130.0	
		Z	6.44	68.80	17.47		130.0	
10632-AAA	IEEE 802.11ac WiFi (80MHz, MCS6, 90pc duty cycle)	X	6.08	67.69	17.04	0.46	130.0	± 9.6 %
		Y	6.03	67.54	16.87		130.0	
		Z	6.05	67.55	16.87		130.0	
10633-AAA	IEEE 802.11ac WiFi (80MHz, MCS7, 90pc duty cycle)	X	6.06	67.65	16.87	0.46	130.0	± 9.6 %
		Y	5.99	67.42	16.64		130.0	
		Z	6.01	67.48	16.68		130.0	
10634-AAA	IEEE 802.11ac WiFi (80MHz, MCS8, 90pc duty cycle)	X	6.02	67.58	16.89	0.46	130.0	± 9.6 %
		Y	5.96	67.38	16.68		130.0	
		Z	5.98	67.43	16.71		130.0	
10635-AAA	IEEE 802.11ac WiFi (80MHz, MCS9, 90pc duty cycle)	X	5.89	66.92	16.32	0.46	130.0	± 9.6 %
		Y	5.83	66.68	16.08		130.0	
		Z	5.86	66.78	16.14		130.0	
10636-AAA	IEEE 1602.11ac WiFi (160MHz, MCS0, 90pc duty cycle)	X	6.23	67.45	16.75	0.46	130.0	± 9.6 %
		Y	6.19	67.29	16.56		130.0	
		Z	6.20	67.31	16.57		130.0	
10637-AAA	IEEE 1602.11ac WiFi (160MHz, MCS1, 90pc duty cycle)	X	6.44	67.93	16.96	0.46	130.0	± 9.6 %
		Y	6.38	67.73	16.75		130.0	
		Z	6.40	67.78	16.78		130.0	
10638-AAA	IEEE 1602.11ac WiFi (160MHz, MCS2, 90pc duty cycle)	X	6.41	67.82	16.88	0.46	130.0	± 9.6 %
		Y	6.36	67.64	16.69		130.0	
		Z	6.37	67.67	16.71		130.0	

10639-AAA	IEEE 1602.11ac WiFi (160MHz, MCS3, 90pc duty cycle)	X	6.43	67.88	16.96	0.46	130.0	± 9.6 %
		Y	6.38	67.70	16.77		130.0	
		Z	6.39	67.74	16.79		130.0	
10640-AAA	IEEE 1602.11ac WiFi (160MHz, MCS4, 90pc duty cycle)	X	6.48	68.03	16.99	0.46	130.0	± 9.6 %
		Y	6.42	67.80	16.76		130.0	
		Z	6.43	67.86	16.80		130.0	
10641-AAA	IEEE 1602.11ac WiFi (160MHz, MCS5, 90pc duty cycle)	X	6.45	67.69	16.83	0.46	130.0	± 9.6 %
		Y	6.39	67.49	16.62		130.0	
		Z	6.41	67.55	16.66		130.0	
10642-AAA	IEEE 1602.11ac WiFi (160MHz, MCS6, 90pc duty cycle)	X	6.53	68.02	17.15	0.46	130.0	± 9.6 %
		Y	6.47	67.85	16.96		130.0	
		Z	6.49	67.89	16.98		130.0	
10643-AAA	IEEE 1602.11ac WiFi (160MHz, MCS7, 90pc duty cycle)	X	6.36	67.74	16.93	0.46	130.0	± 9.6 %
		Y	6.30	67.53	16.71		130.0	
		Z	6.31	67.59	16.75		130.0	
10644-AAA	IEEE 1602.11ac WiFi (160MHz, MCS8, 90pc duty cycle)	X	6.64	68.58	17.37	0.46	130.0	± 9.6 %
		Y	6.55	68.29	17.12		130.0	
		Z	6.58	68.38	17.17		130.0	
10645-AAA	IEEE 1602.11ac WiFi (160MHz, MCS9, 90pc duty cycle)	X	6.88	68.81	17.43	0.46	130.0	± 9.6 %
		Y	6.82	68.61	17.21		130.0	
		Z	6.82	68.61	17.22		130.0	
10646-AAC	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, QPSK, UL Subframe=2,7)	X	25.26	106.71	35.56	9.30	60.0	± 9.6 %
		Y	24.21	105.83	35.01		60.0	
		Z	22.77	103.47	34.30		60.0	
10647-AAB	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK, UL Subframe=2,7)	X	26.48	108.55	36.25	9.30	60.0	± 9.6 %
		Y	24.67	107.00	35.49		60.0	
		Z	23.62	105.03	34.91		60.0	
10648-AAA	CDMA2000 (1x Advanced)	X	1.07	68.58	14.85	0.00	150.0	± 9.6 %
		Y	0.88	65.28	12.75		150.0	
		Z	0.91	65.79	13.10		150.0	

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

APPENDIX D: SAR TISSUE SPECIFICATIONS

Measurement Procedure for Tissue verification:

- 1) The network analyzer and probe system was configured and calibrated.
- 2) The probe was immersed in the tissue. The tissue was placed in a nonmetallic container. Trapped air bubbles beneath the flange were minimized by placing the probe at a slight angle.
- 3) The complex admittance with respect to the probe aperture was measured
- 4) The complex relative permittivity ϵ' can be calculated from the below equation (Pournaropoulos and Misra):

$$Y = \frac{j2\omega\epsilon_r\epsilon_0}{[\ln(b/a)]^2} \int_a^b \int_a^b \int_0^\pi \cos\phi' \frac{\exp[-j\omega r(\mu_0\epsilon_r'\epsilon_0)^{1/2}]}{r} d\phi' d\rho' d\rho$$

where Y is the admittance of the probe in contact with the sample, the primed and unprimed coordinates refer to source and observation points, respectively, $r^2 = \rho^2 + \rho'^2 - 2\rho\rho'\cos\phi'$, ω is the angular frequency, and $j = \sqrt{-1}$.

Table D-I
Composition of the Tissue Equivalent Matter

Frequency (MHz)	750	750	835	835	1900	1900	2450-2600	2450-2600	5200-5800	5200-5800
Tissue	Head	Body	Head	Body	Head	Body	Head	Body	Head	Body
Ingredients (% by weight)										
Bactericide	See page 2-3	See page 2	0.1	0.1			See page 4		See page 5	
DGBE					44.92	29.44		26.7		
HEC			1	1						
NaCl			1.45	0.94	0.18	0.39		0.1		
Sucrose			57	44.9						
Polysorbate (Tween) 80										20
Water			40.45	53.06	54.9	70.17		73.2		80

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2 Composition / Information on ingredients

The Item is composed of the following ingredients:

H ₂ O	Water, 35 – 58%
Sucrose	Sugar, white, refined, 40 – 60%
NaCl	Sodium Chloride, 0 – 6%
Hydroxyethyl-cellulose	Medium Viscosity (CAS# 9004-62-0), <0.3%
Preventol-D7	Preservative: aqueous preparation, (CAS# 55965-84-9), containing 5-chloro-2-methyl-3(2H)-isothiazolone and 2-methyl-3(2H)-isothiazolone, 0.1 – 0.7%
Relevant for safety; Refer to the respective Safety Data Sheet*.	

Figure D-1
Composition of 750 MHz Head and Body Tissue Equivalent Matter

Note: 750MHz liquid recipes are proprietary SPEAG. Since the composition is approximate to the actual liquids utilized, the manufacturer tissue-equivalent liquid data sheets are provided below.

Measurement Certificate / Material Test

Item Name	Body Tissue Simulating Liquid (MSL750V2)
Product No.	SL AAM 075 AA (Batch: 150518-2)
Manufacturer	SPEAG

Measurement Method

TSL dielectric parameters measured using calibrated DAK probe.

Setup Validation

Validation results were within $\pm 2.5\%$ towards the target values of Methanol.

Target Parameters

Target parameters as defined in the IEEE 1528 and IEC 62209 compliance standards.

Test Condition

Ambient	Environment temperatur (22 ± 3)°C and humidity < 70%.
TSL Temperature	22°C
Test Date	20-Apr-16
Operator	WM

Additional Information

TSL Density	1.212 g/cm ³
TSL Heat-capacity	3.006 kJ/(kg*K)

f [MHz]	Measured			Target			Diff. to Target [%]	
	e'	e''	sigma	eps	sigma	Δ-eps	Δ-sigma	
600	57.2	24.76	0.83	56.1	0.95	2.0	-13.2	
625	57.0	24.43	0.85	56.0	0.95	1.7	-11.0	
650	56.7	24.11	0.87	55.9	0.96	1.4	-8.8	
675	56.4	23.82	0.89	55.8	0.96	1.1	-6.6	
700	56.1	23.53	0.92	55.7	0.96	0.7	-4.5	
725	55.9	23.32	0.94	55.6	0.96	0.5	-2.2	
750	55.7	23.12	0.96	55.5	0.96	0.2	0.1	
775	55.4	22.93	0.99	55.4	0.97	-0.1	2.4	
800	55.1	22.73	1.01	55.3	0.97	-0.4	4.6	
825	54.9	22.59	1.04	55.2	0.98	-0.7	6.0	
838	54.8	22.52	1.05	55.2	0.98	-0.8	6.7	
850	54.6	22.45	1.06	55.2	0.99	-0.9	7.4	
875	54.4	22.32	1.09	55.1	1.02	-1.2	6.6	
900	54.1	22.19	1.11	55.0	1.05	-1.6	5.8	
925	53.9	22.09	1.14	55.0	1.06	-1.9	6.9	
950	53.7	21.98	1.16	54.9	1.08	-2.2	8.0	
975	53.5	21.91	1.19	54.9	1.09	-2.6	9.3	
1000	53.2	21.83	1.21	54.8	1.10	-2.9	10.6	

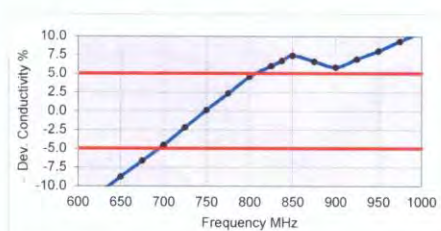
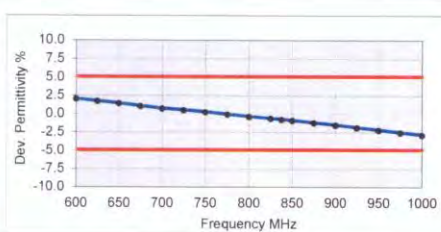


Figure D-2
750MHz Body Tissue Equivalent Matter

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Test Dates: 07/24/17 - 08/08/17	DUT Type: Portable Handset			APPENDIX D: Page 2 of 5

Measurement Certificate / Material Test

Item Name	Head Tissue Simulating Liquid (HSL750V2)
Product No.	SL AAH 075 AB (Batch: 160322-2)
Manufacturer	SPEAG

Measurement Method

TSL dielectric parameters measured using calibrated DAK probe.

Setup Validation

Validation results were within $\pm 2.5\%$ towards the target values of Methanol.

Target Parameters

Target parameters as defined in the IEEE 1528 and IEC 62209 compliance standards.

Test Condition

Ambient Environment temperatur (22 ± 3)°C and humidity < 70%.
 TSL Temperature 22°C
 Test Date 23-Mar-16
 Operator WM

Additional Information

TSL Density 1.284 g/cm³
 TSL Heat-capacity 2.701 kJ/(kg*K)

f [MHz]	Measured			Target		Diff.to Target [%]	
	e'	e''	sigma	eps	sigma	Δ-eps	Δ-sigma
600	44.9	22.60	0.75	42.7	0.88	5.1	-14.4
625	44.5	22.37	0.78	42.6	0.88	4.5	-12.0
650	44.2	22.13	0.80	42.5	0.89	4.0	-9.6
675	43.8	21.90	0.82	42.3	0.89	3.4	-7.4
700	43.4	21.67	0.84	42.2	0.89	2.8	-5.1
725	43.1	21.52	0.87	42.1	0.89	2.4	-2.6
750	42.8	21.37	0.89	41.9	0.89	2.0	-0.2
775	42.4	21.21	0.91	41.8	0.90	1.5	2.1
800	42.1	21.04	0.94	41.7	0.90	0.9	4.4
825	41.8	20.92	0.96	41.6	0.91	0.5	5.9
838	41.6	20.86	0.97	41.5	0.91	0.2	6.6
850	41.5	20.79	0.98	41.5	0.92	0.0	7.3
875	41.2	20.68	1.01	41.5	0.94	-0.7	6.7
900	40.9	20.56	1.03	41.5	0.97	-1.5	6.1
925	40.6	20.48	1.05	41.5	0.98	-2.0	7.3
950	40.3	20.39	1.08	41.4	0.99	-2.6	8.3
975	40.1	20.29	1.10	41.4	1.00	-3.2	9.5
1000	39.8	20.20	1.12	41.3	1.01	-3.7	10.7

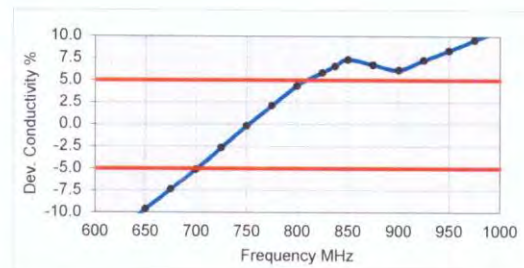
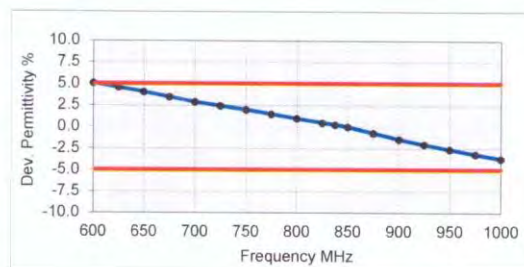


Figure D-3
750MHz Head Tissue Equivalent Matter

FCC ID: A3LSCV37		SAR EVALUATION REPORT		Approved by: Quality Manager
Test Dates: 07/24/17 - 08/08/17	DUT Type: Portable Handset			APPENDIX D: Page 3 of 5

3 Composition / Information on ingredients

The item is composed of the following ingredients:

Water	50 – 73 %	
Non-ionic detergents	25 – 50 %	polyoxyethylenesorbitan monolaurate
NaCl	0 – 2 %	
Preservative	0.05 – 0.1 %	Preventol-D7

Safety relevant ingredients:

CAS-No. 55965-84-9	< 0.1 %	aqueous preparation, containing 5-chloro-2-methyl-3(2H)-isothiazolone and 2-methyl-3(2H)-isothiazolone
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CAS-No. 9005-64-5	< 50 %	polyoxyethylenesorbitan monolaurate
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According to international guidelines, the product is not a dangerous mixture and therefore not required to be marked by symbols.

Figure D-4
Composition of 2.4 GHz Head Tissue Equivalent Matter

Note: 2.4-2.6 GHz head liquid recipes are proprietary SPEAG. Since the composition is approximate to the actual liquids utilized, the manufacturer tissue-equivalent liquid data sheets are provided below.

Measurement Certificate / Material Test

Item Name	Head Tissue Simulating Liquid (HBBL1900-3800V3)
Product No.	SL AAH 196 AB (Batch: 160330-1)
Manufacturer	SPEAG

Measurement Method

TSL dielectric parameters measured using calibrated DAK probe.

Setup Validation

Validation results were within $\pm 2.5\%$ towards the target values of Methanol.

Target Parameters

Target parameters as defined in the IEEE 1528 and IEC 62209 compliance standards.

Test Condition

Ambient	Environment temperatur (22 ± 3)°C and humidity < 70%.
TSL Temperature	22°C
Test Date	30-Mar-16
Operator	WM

Additional Information

TSL Density 1.054 g/cm³

TSL Heat-capacity 3.389 kJ/(kg·K)

f (MHz)	Measured	Target	Diff to Target (%)
	ϵ'	ϵ''	$\Delta\epsilon'$
1900	40.7	12.3	1.3
2000	40.3	12.6	1.4
2100	39.9	12.9	1.5
2200	39.6	13.1	1.6
2300	39.4	13.2	1.7
2400	38.9	13.6	1.8
2500	38.5	13.8	1.9
2600	38.3	13.9	2.0
2700	37.9	14.2	2.1
2800	37.8	14.3	2.2
2900	37.5	14.4	2.2
3000	37.4	14.5	2.3
3100	37.2	14.6	2.3
3200	37.0	14.7	2.4
3300	36.8	14.8	2.4
3400	36.6	14.9	2.5
3500	36.4	15.0	2.5
3600	36.2	15.1	2.6
3700	36.1	15.2	2.7
3800	35.9	15.3	2.8
3900	35.7	15.3	2.8
4000	35.5	15.3	2.9
4100	35.4	15.4	2.9
4200	35.2	15.5	2.9
4300	35.0	15.5	3.0
4400	34.9	15.6	3.0
4500	34.7	15.6	3.1
4600	34.5	15.7	3.1
4700	34.4	15.8	3.2
4800	34.2	15.8	3.3
4900	34.1	15.9	3.3
5000	33.9	15.9	3.4
5100	33.7	16.0	3.4

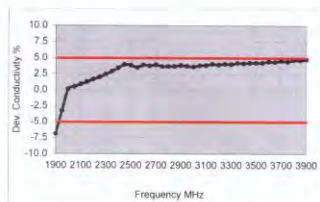
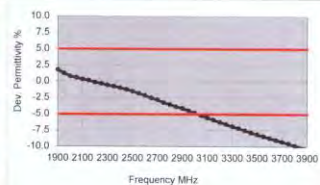


Figure D-5
2.4 GHz Head Tissue Equivalent Matter

FCC ID: A3LSCV37		SAR EVALUATION REPORT		Approved by: Quality Manager
Test Dates: 07/24/17 - 08/08/17	DUT Type: Portable Handset			APPENDIX D: Page 4 of 5

2 Composition / Information on ingredients

The Item is composed of the following ingredients:

Water	50 – 65%
Mineral oil	10 – 30%
Emulsifiers	8 – 25%
Sodium salt	0 – 1.5%

Figure D-6

Composition of 5 GHz Head Tissue Equivalent Matter

Note: 5GHz head liquid recipes are proprietary SPEAG. Since the composition is approximate to the actual liquids utilized, the manufacturer tissue-equivalent liquid data sheets are provided below.

Measurement Certificate / Material Test

Item Name	Head Tissue Simulating Liquid (HBL3500-5800V5)
Product No.	SL AAH 502 AG (Batch: 160331-2)
Manufacturer	SPEAG
Measurement Method	
TSL dielectric parameters measured using calibrated DAK probe.	
Setup Validation	
Validation results were within $\pm 2.5\%$ towards the target values of Methanol.	
Target Parameters	
Target parameters as defined in the IEEE 1528 and IEC 62209 compliance standards.	
Test Condition	
Ambient	Environment temperatur (22 ± 3)°C and humidity < 70%.
TSL Temperature	22°C
Test Date	4-Apr-16
Operator	WM
Additional Information	
TSL Density	0.985 g/cm ³
TSL Heat-capacity	3.383 kJ/(kg*K)

	Measured			Target		Diff.to Target [%]	
f (MHz)	e'	e''	sigma	eps	sigma	Δ-eps	Δ-sigma
3400	39.0	15.12	2.86	38.0	2.81	2.5	1.8
3500	38.8	15.09	2.94	37.9	2.91	2.3	0.9
3600	38.7	15.08	3.02	37.8	3.02	2.3	0.2
3700	38.6	15.08	3.10	37.7	3.12	2.4	-0.6
3800	38.4	15.07	3.19	37.6	3.22	2.2	-0.9
3900	38.3	15.09	3.27	37.5	3.32	2.2	-1.6
4000	38.2	15.10	3.36	37.4	3.43	2.3	-1.9
4100	38.1	15.13	3.45	37.2	3.53	2.3	-2.2
4200	38.0	15.18	3.55	37.1	3.63	2.3	-2.2
4300	37.8	15.22	3.64	37.0	3.73	2.1	-2.5
4400	37.7	15.29	3.74	36.9	3.84	2.2	-2.5
4500	37.6	15.34	3.84	36.8	3.94	2.2	-2.5
4600	37.4	15.41	3.94	36.7	4.04	2.0	-2.5
4700	37.3	15.47	4.05	36.6	4.14	2.0	-2.2
4800	37.1	15.53	4.15	36.4	4.25	1.8	-2.2
4850	37.1	15.57	4.20	36.4	4.30	2.0	-2.2
4900	37.0	15.60	4.25	36.3	4.35	1.8	-2.2
4950	36.9	15.62	4.30	36.3	4.40	1.7	-2.2
5000	36.8	15.66	4.35	36.2	4.45	1.6	-2.2
5050	36.8	15.68	4.40	36.2	4.50	1.8	-2.2
5100	36.7	15.73	4.46	36.1	4.55	1.7	-2.0
5150	36.8	15.75	4.51	36.0	4.60	1.5	-2.0
5200	36.5	15.78	4.57	36.0	4.66	1.4	-1.8
5250	36.4	15.80	4.62	35.9	4.71	1.3	-1.8
5300	36.4	15.84	4.67	35.9	4.76	1.5	-1.8
5350	36.3	15.85	4.72	35.8	4.81	1.4	-1.8
5400	36.2	15.88	4.77	35.8	4.86	1.2	-1.9
5450	36.2	15.90	4.82	35.7	4.91	1.4	-1.9
5500	36.1	15.91	4.87	35.6	4.96	1.3	-1.9
5550	36.0	15.95	4.93	35.6	5.01	1.2	-1.7
5600	35.9	15.99	4.98	35.5	5.07	1.0	-1.7
5650	35.9	16.02	5.04	35.5	5.12	1.2	-1.5
5700	35.8	16.05	5.09	35.4	5.17	1.1	-1.5
5750	35.7	16.09	5.15	35.4	5.22	1.0	-1.3
5800	35.7	16.10	5.20	35.3	5.27	1.1	-1.3
5850	35.6	16.14	5.25	35.3	5.34	0.8	-1.6
5900	35.5	16.15	5.30	35.3	5.40	0.6	-1.9

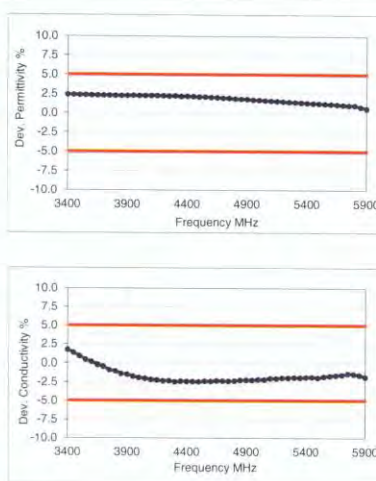


Figure D-7

5GHz Head Tissue Equivalent Matter

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APPENDIX E: SAR SYSTEM VALIDATION

Per FCC KDB Publication 865664 D02v01r02, 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 Publication 865664 D01v01r04 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 E-I
SAR System Validation Summary- 1g

SAR SYSTEM #	FREQ. [MHz]	DATE	PROBE SN	PROBE TYPE	PROBE CAL. POINT		COND.	PERM.	CW VALIDATION			MOD. VALIDATION		
							(σ)	(ε)	SENSITIVITY	PROBE LINEARITY	PROBE ISOTROPY	MOD. TYPE	DUTY FACTOR	PAR
J	750	6/21/2017	3209	ES3DV3	750	Head	0.868	39.874	PASS	PASS	PASS	N/A	N/A	N/A
E	750	4/17/2017	3319	ES3DV3	750	Head	0.902	42.781	PASS	PASS	PASS	N/A	N/A	N/A
K	835	5/2/2017	7406	EX3DV4	835	Head	0.896	40.478	PASS	PASS	PASS	GMSK	PASS	N/A
J	1900	6/5/2017	3209	ES3DV3	1900	Head	1.456	39.187	PASS	PASS	PASS	GMSK	PASS	N/A
I	2450	6/1/2017	3213	ES3DV3	2450	Head	1.876	40.253	PASS	PASS	PASS	OFDM/TDD	PASS	PASS
K	2450	5/2/2017	7406	EX3DV4	2450	Head	1.873	39.496	PASS	PASS	PASS	OFDM/TDD	PASS	PASS
I	2600	6/1/2017	3213	ES3DV3	2600	Head	2.059	39.650	PASS	PASS	PASS	TDD	PASS	N/A
H	5250	6/10/2017	3914	EX3DV4	5250	Head	4.580	35.029	PASS	PASS	PASS	OFDM	N/A	PASS
H	5600	6/10/2017	3914	EX3DV4	5600	Head	4.940	34.501	PASS	PASS	PASS	OFDM	N/A	PASS
H	5750	6/10/2017	3914	EX3DV4	5750	Head	5.103	34.300	PASS	PASS	PASS	OFDM	N/A	PASS
J	750	6/14/2017	3209	ES3DV3	750	Body	0.963	56.405	PASS	PASS	PASS	N/A	N/A	N/A
K	750	5/3/2017	7406	EX3DV4	750	Body	0.952	53.745	PASS	PASS	PASS	N/A	N/A	N/A
I	835	4/24/2017	3213	ES3DV3	835	Body	0.991	53.903	PASS	PASS	PASS	GMSK	PASS	N/A
J	1900	6/15/2017	3209	ES3DV3	1900	Body	1.552	52.203	PASS	PASS	PASS	GMSK	PASS	N/A
H	2450	5/10/2017	3318	ES3DV3	2450	Body	2.024	51.968	PASS	PASS	PASS	OFDM/TDD	PASS	PASS
G	2450	9/28/2016	3287	ES3DV3	2450	Body	2.030	50.891	PASS	PASS	PASS	OFDM/TDD	PASS	PASS
G	2600	9/27/2016	3287	ES3DV3	2600	Body	2.236	50.316	PASS	PASS	PASS	TDD	PASS	N/A
D	5250	2/2/2017	3589	EX3DV4	5250	Body	5.422	47.823	PASS	PASS	PASS	OFDM	N/A	PASS
D	5600	2/2/2017	3589	EX3DV4	5600	Body	5.882	47.193	PASS	PASS	PASS	OFDM	N/A	PASS
D	5750	2/2/2017	3589	EX3DV4	5750	Body	6.117	46.985	PASS	PASS	PASS	OFDM	N/A	PASS

Table E-II
SAR System Validation Summary- 10g

SAR SYSTEM #	FREQ. [MHz]	DATE	PROBE SN	PROBE TYPE	PROBE CAL. POINT		COND.	PERM.	CW VALIDATION			MOD. VALIDATION		
							(σ)	(ε)	SENSITIVITY	PROBE LINEARITY	PROBE ISOTROPY	MOD. TYPE	DUTY FACTOR	PAR
J	1900	6/15/2017	3209	ES3DV3	1900	Body	1.552	52.203	PASS	PASS	PASS	GMSK	PASS	N/A
D	5250	2/2/2017	3589	EX3DV4	5250	Body	5.422	47.823	PASS	PASS	PASS	OFDM	N/A	PASS
D	5600	2/2/2017	3589	EX3DV4	5600	Body	5.882	47.193	PASS	PASS	PASS	OFDM	N/A	PASS

NOTE: While the probes have been calibrated for both CW and modulated signals, all measurements were performed using communication systems calibrated for CW signals only. Modulations in the table above represent test configurations for which the measurement system has been validated per FCC KDB Publication 865664 D01v01r04 for scenarios when CW probe calibrations are used with other signal types. SAR systems were validated for modulated signals with a periodic duty cycle, such as GMSK, or with a high peak to average ratio (>5 dB), such as OFDM according to FCC KDB Publication 865664 D01v01r04.

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APPENDIX G: CONDUCTED POWERS FOR 4X4 DL MIMO

This device supports downlink 4x4 MIMO operations for LTE Band 41 only. Uplink transmission is limited to a single output stream. Power measurements were performed with downlink 4x4 MIMO active for the configuration with highest measured maximum conducted power with 4x4 downlink MIMO inactive measured among the channel bandwidth, modulation, and RB combinations in each frequency band.

Per May 2017 TCB Workshop Notes, SAR for downlink 4x4 MIMO was not needed since the maximum average output power in 4x4 downlink MIMO mode was not > 0.25 dB higher than the maximum output power with downlink 4x4 MIMO inactive. When carrier aggregation is applicable, power measurements were performed with the downlink carrier aggregation and 4x4 DL MIMO active for the configuration with highest measured maximum conducted power with downlink carrier aggregation inactive measured among the channel bandwidth, modulation, and RB combinations in each frequency band.

G.1 Single Carrier 4x4 Downlink MIMO

Table G-1
Additional Maximum Output Powers

LTE Band	Bandwidth [MHz]	Channel	Frequency [MHz]	Modulation	RB Size	RB Offset	4x4 DL MIMO Tx. Power [dBm]	Single Antenna Tx. Power [dBm]	Target Power [dBm]
41	20	41490	2680	QPSK	1	0	22.44	22.55	23.0

Table G-2
Additional Hotspot Reduced Output Powers

LTE Band	Bandwidth [MHz]	Channel	Frequency [MHz]	Modulation	RB Size	RB Offset	4x4 DL MIMO Tx. Power [dBm]	Single Antenna Tx. Power [dBm]	Target Power [dBm]
41	20	39750	2506	QPSK	1	0	21.33	21.39	22.0

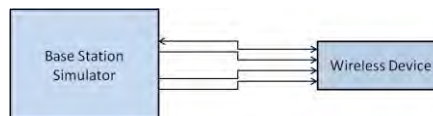


Figure G-1
Power Measurement Setup

FCC ID: A3LSCV37	 PCTEST ENGINEERING LABORATORY, INC.	SAR EVALUATION REPORT		Approved by: Quality Manager
Test Dates: 07/24/17 – 08/08/17	DUT Type: Portable Handset	APPENDIX G: Page 1 of 3		

G.2 Carrier Aggregation Scenarios with 2 Component Carriers with 4x4 Downlink MIMO

Table G-4
Additional Maximum Output Powers – 2 Component Carriers

	PCC										SCC					Power	
Combination	PCC Band	PCC Bandwidth [MHz]	PCC (UL) Channel	PCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	PCC (DL) Channel	PCC (DL) Frequency [MHz]	DL Antenna Configuration	SCC Band	SCC Bandwidth [MHz]	SCC (DL) Channel	SCC (DL) Frequency [MHz]	DL Antenna Configuration	LTE Tx Power with DL CA Enabled (dBm)	LTE Single Carrier Tx Power (dBm)
CA_41C (1)	LTE B41	20	41490	2680	QPSK	1	0	41490	2680	4x4 MIMO	LTE B41	20	41292	2660.2	2x2 MIMO	22.52	22.55
CA_41C (1)	LTE B41	20	41490	2680	QPSK	1	0	41490	2680	2x2 MIMO	LTE B41	20	41292	2660.2	4x4 MIMO	22.51	22.55
CA_41C (1)	LTE B41	20	41490	2680	QPSK	1	0	41490	2680	4x4 MIMO	LTE B41	20	41292	2660.2	4x4 MIMO	22.50	22.55

Table G-5
Additional Hotspot Reduced Output Powers – 2 Component Carriers

	PCC										SCC					Power		LTE Single Carrier Tx Power (dBm)
Combination	PCC Band	PCC Bandwidth [MHz]	PCC (UL) Channel	PCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	PCC (DL) Channel	PCC (DL) Frequency [MHz]	DL Antenna Configuration	SCC Band	SCC Bandwidth [MHz]	SCC (DL) Channel	SCC (DL) Frequency [MHz]	DL Antenna Configuration	LTE Tx Power with DL CA Enabled (dBm)		
CA_41C (1)	LTE B41	20	39750	2506	QPSK	1	0	39750	2506	4x4 MIMO	LTE B41	20	39948	2525.8	2x2 MIMO	21.37	21.39	
CA_41C (1)	LTE B41	20	39750	2506	QPSK	1	0	39750	2506	2x2 MIMO	LTE B41	20	39948	2525.8	4x4 MIMO	21.38	21.39	
CA_41C (1)	LTE B41	20	39750	2506	QPSK	1	0	39750	2506	4x4 MIMO	LTE B41	20	39948	2525.8	4x4 MIMO	21.38	21.39	

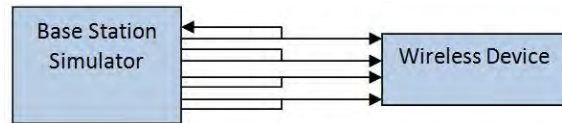


Figure G-2
Power Measurement Setup

FCC ID: A3LSCV37	 PCTEST ENGINEERING LABORATORY, INC.	SAR EVALUATION REPORT		Approved by: Quality Manager
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G.3 Uplink Carrier Aggregation Scenarios with 4x4 Downlink MIMO Enabled

Table G-6
Additional Maximum Output Powers

Combination	PCC								SCC								Power		
	PCC Band	PCC Bandwidth [MHz]	PCC (UL/DL) Channel	PCC (UL/DL) Frequency [MHz]	Modulation	DL Antenna Configuration	PCC UL# RB	PCC UL RB Offset	SCC Band	SCC Bandwidth [MHz]	SCC (UL/DL) Channel	SCC (UL/DL) Frequency [MHz]	Modulation	DL Antenna Configuration	SCC UL# RB	SCC UL RB Offset	LTE Tx. Power with UL CA & 4x4 DL MIMO Enabled (dBm)	LTE Tx. Power with UL CA Enabled (dBm)	Single Carrier Target Power (dBm) [Tolerance: +0.5/-1.5 dB]
CA_41C (1)	LTE B41	20	41490	2680.0	QPSK	4x4 MIMO	1	0	LTE B41	20	41292	2660.2	QPSK	2x2 MIMO	1	99	22.85	22.91	23.0
CA_41C (1)	LTE B41	20	41490	2680.0	QPSK	2x2 MIMO	1	0	LTE B41	20	41292	2660.2	QPSK	4x4 MIMO	1	99	22.87	22.91	23.0
CA_41C (1)	LTE B41	20	41490	2680.0	QPSK	4x4 MIMO	1	0	LTE B41	20	41292	2660.2	QPSK	4x4 MIMO	1	99	22.88	22.91	23.0

Table G-7
Additional Hotspot Reduced Output Powers

Combination	PCC								SCC								Power		
	PCC Band	PCC Bandwidth [MHz]	PCC (UL/DL) Channel	PCC (UL/DL) Frequency [MHz]	Modulation	DL Antenna Configuration	PCC UL# RB	PCC UL RB Offset	SCC Band	SCC Bandwidth [MHz]	SCC (UL/DL) Channel	SCC (UL/DL) Frequency [MHz]	Modulation	DL Antenna Configuration	SCC UL# RB	SCC UL RB Offset	LTE Tx. Power with UL CA & 4x4 MIMO DL Enabled (dBm)	LTE Tx. Power with UL CA Enabled (dBm)	Single Carrier Target Power (dBm) [Tolerance: +0.5/-1.5 dB]
CA_41C (1)	LTE B41	20	39750	2506.0	QPSK	4x4 MIMO	1	99	LTE B41	20	39948	2525.8	QPSK	2x2 MIMO	1	0	22.17	22.15	22.00
CA_41C (1)	LTE B41	20	39750	2506.0	QPSK	2x2 MIMO	1	99	LTE B41	20	39948	2525.8	QPSK	4x4 MIMO	1	0	22.16	22.15	22.00
CA_41C (1)	LTE B41	20	39750	2506.0	QPSK	4x4 MIMO	1	99	LTE B41	20	39948	2525.8	QPSK	4x4 MIMO	1	0	22.13	22.15	22.00

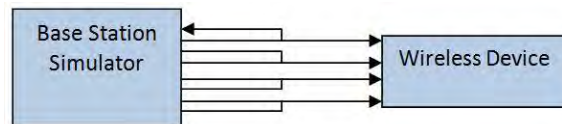


Figure G-3
Power Measurement Setup

FCC ID: A3LSCV37	 PCTEST ENGINEERING LABORATORY, INC.	SAR EVALUATION REPORT		Approved by: Quality Manager
Test Dates: 07/24/17 – 08/08/17	DUT Type: Portable Handset			APPENDIX G: Page 3 of 3