KDB 865664 D01 SAR Measurement 100MHz to 6GHz
FCC 47 CFR part 2 (2.1093)

SAR EVALUATION REPORT

For

Braster In-Home Breast Examination System
Model: BRA-1.0

FCC ID: 2ALTBRA-V10

REPORT NUMBER UL-SAR-RP11631392JD03A V2.0
ISSUE DATE: 22 MAY 2017

Prepared for

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REVISION HISTORY

Ver.	Issue Date	Revisions	Revised By
1.0	19 May 2017	Initial Issue	--
2.0	22 May 2017	The following amendments were made in the report: 1. Typo corrected in front page	Naseer Mirza

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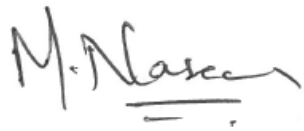
1. Attestation of Test Results

Applicant Name:	Braster Spolka Akcyjna					
Model:	BRA-1.0					
Test Device is	A final product with special customize firmware					
Device category	Medical Device					
Date Tested	03 April to 04 April 2017					
ICNIRP Guidelines Limits for SAR Exposure Characteristics	General Population/Localised SAR (Body) – SAR limit 1.6 W/kg					
The highest reported SAR values for Localized SAR	RF Exposure Conditions		Equipment Class			
			Licensed	DTS	U-NII	DSS
	Standalone	Body	N/A	0.022 W/kg	N/A	N/A
	Simultaneous Transmission	Body	N/A	N/A	N/A	N/A
Applicable Standards	FCC 47 CFR part 2 (2.1093) KDB publications IEEE Std 1528-2013					
Test Results	Pass					

UL VS Ltd. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by UL VS Ltd. based on interpretations and/or observations of test results. Measurement Uncertainties are in accordance with the above standard and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Note: The results documented in this report apply only to the tested sample(s), under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL VS Ltd. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL VS Ltd. will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by UKAS. This report is written to support regulatory compliance of the applicable standards stated above.

Approved & Released By:	Prepared By:
	
Naseer Mirza Project Lead UL VS Ltd.	James Lingham Laboratory Engineer UL VS Ltd.

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2. Test Specification, Methods and Procedures

2.1. Test Specification

Reference:	KDB Publication Number: 865664 D01 SAR Measurement 100 MHz to 6 GHz v01r04
Title:	SAR Measurement Requirements for 100 MHz to 6 GHz
Introduction:	The SAR Measurement procedures for 100MHz to 6GHz are described in this document. Field probes, tissue dielectric properties, SAR scans, measurement accuracy and variability of the measured results are discussed. The field probe and SAR scan requirements are derived from criteria considered in standard IEEE 1528-2013. The wireless product and technology specific procedures in applicable KDB publications are required to be used unless further guidance has been approved by the FCC.
Purpose of Test:	To determine if the Equipment Under Test complies with the Specific Absorption Rate for general population/uncontrolled exposure limit of 1.6 W/kg as specified in FCC 47 CFR part 2 (2.1093).

2.2.Methods and Procedures Reference Documentation

The methods and procedures used were as detailed in:

IEEE 1528:2013

IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communication Devices: Measurement Techniques.

FCC KDB Publication:

KDB 248227 D01 802 11 Wi-Fi SAR v02r02
KDB 447498 D01 General RF Exposure Guidance v06
KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz v01r04
KDB 865664 D02 SAR Reporting v01r02

2.3.Definition of Measurement Equipment

The measurement equipment used complied with the requirements of the standards referenced in the methods & procedures section above. Section 4.3 contains a list of the test equipment used.

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3. Facilities and Accreditation

The measurement facilities used to collect data are located at

Pavilion A, Ashwood Park, Ashwood Way, Basingstoke, Hampshire, RG23 8BG UK	Facility Type
SAR Lab 59	Controlled Environment Chamber

UL VS Limited is accredited by UKAS (United Kingdom Accreditation Service, Accredited to ISO/IEC 17025: 2005), Laboratory UKAS Code 0644.

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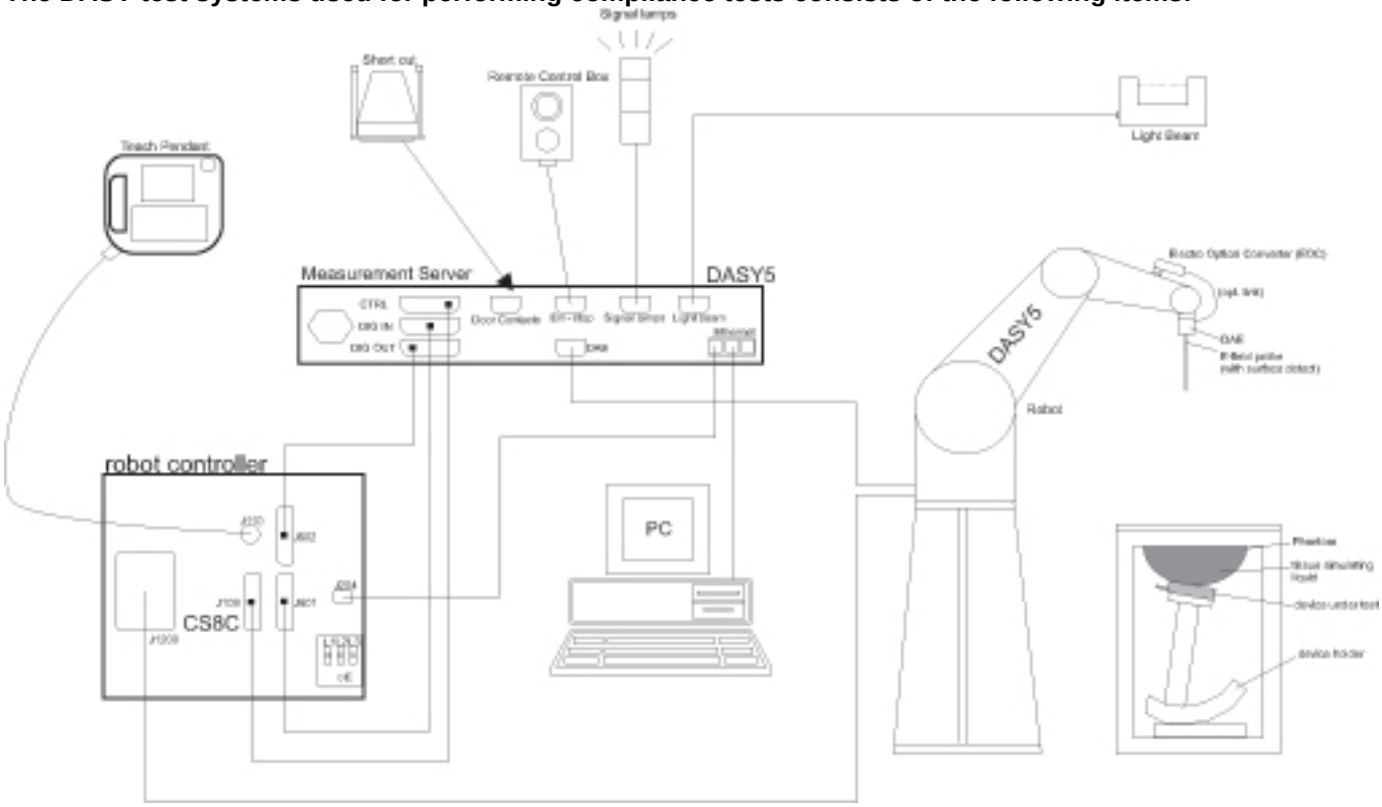
4. SAR Measurement System & Test Equipment

4.1. SAR Measurement System

The DASY test systems used for performing compliance tests consists of the following items:



- A standard high precision 6-axis robot with controller, teach pendant and software. An arm extension for accommodating the data acquisition electronics (DAE).
- An isotropic Field probe optimized and calibrated for the targeted measurement.
- A data acquisition electronics (DAE) which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.
- The Electro-optical converter (EOC) performs the conversion from optical to electrical signals for the digital communication to the DAE. To use optical surface detection, a special version of the EOC is required. The EOC signal is transmitted to the measurement server.
- The function of the measurement server is to perform the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
- The Light Beam used is for probe alignment. This improves the (absolute) accuracy of the probe positioning.
- A computer running WinXP and Win8 with DASY software installed.
- Remote control and teach pendant as well as additional circuitry for robot safety such as warning lamps, etc.
- The phantom, the device holder and other accessories according to the targeted measurement.

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4.2. SAR Measurement Procedure

4.2.1. Normal SAR Measurement Procedure

The following procedure shall be performed for each of the test conditions Measure the local SAR at a test point within 8 mm of the phantom inner surface that is closest to the DUT.

a) Measure the two-dimensional SAR distribution within the phantom (area scan procedure).
b) The boundary of the measurement area shall not be closer than 20 mm from the phantom side walls. The distance between the measurement points should enable the detection of the location of local maximum with an accuracy of better than half the linear dimension of the tissue cube after interpolation. A maximum grid spacing of 20 mm for frequencies below 3 GHz and (60/f [GHz]) mm for frequencies of 3 GHz and greater is recommended. The maximum distance between the geometrical centre of the probe detectors and the inner surface of the phantom shall be 5 mm for frequencies below 3 GHz and δ ln(2)/2 mm for frequencies of 3 GHz and greater, where δ is the plane wave skin depth and ln(x) is the natural logarithm. The maximum variation of the sensor-phantom surface distance shall be ± 1 mm for frequencies below 3 GHz and ± 0,5 mm for frequencies of 3 GHz and greater. At all measurement points the angle of the probe with respect to the line normal to the surface should be less than 5°. If this cannot be achieved for a measurement distance to the phantom inner surface shorter than the probe diameter, additional uncertainty evaluation is needed.
c) From the scanned SAR distribution, identify the position of the maximum SAR value, in addition identify the positions of any local maxima with SAR values within 2 dB of the maximum value that will not be within the zoom scan of other peaks; additional peaks shall be measured only when the primary peak is within 2 dB 6 of the SAR compliance limit (e.g., 1 W/kg for 1,6 W /kg 1 g limit, or 1,26 W/kg for 2 W /kg, 10 g limit).
d) Measure the three-dimensional SAR distribution at the local maxima locations identified in step c) (zoom scan procedure). The horizontal grid step shall be (24 / f [GHz]) mm or less but not more than 8 mm. The minimum zoom scan size is 30 mm by 30 mm by 30 mm for frequencies below 3 GHz. For higher frequencies, the minimum zoom scan size can be reduced to 22 mm by 22 mm by 22 mm. The grid step in the vertical direction shall be (8-f [GHz]) mm or less but not more than 5 mm, if uniform spacing is used. If variable spacing is used in the vertical direction, the maximum spacing between the two closest measured points to the phantom shell shall be (12/f [GHz]) mm or less but not more than 4 mm, and the spacing between farther points shall increase by an incremental factor not exceeding 1,5. When variable spacing is used, extrapolation routines shall be tested with the same spacing as used in measurements. The maximum distance between the geometrical centre of the probe detectors and the inner surface of the phantom shall be 5 mm for frequencies below 3 GHz and δ ln(2)/2 mm for frequencies of 3 GHz and greater, where δ is the plane wave skin depth and ln(x) is the natural logarithm. Separate grids shall be centred on each of the local SAR maxima found in step c). Uncertainties due to field distortion between the media boundary and the dielectric enclosure of the probe should also be minimized, which is achieved if the distance between the phantom surface and physical tip of the probe is larger than probe tip diameter. Other methods may utilize correction procedures for these boundary effects that enable high precision measurements closer than half the probe diameter. For all measurement points, the angle of the probe with respect to the flat phantom surface shall be less than 5º.
e) Use post processing (e.g. interpolation and extrapolation) procedures to determine the local SAR values at the spatial resolution needed for mass averaging.
f) The local SAR should be measured at the same location as in Step a). SAR drift is assessed and reported in the uncertainty budget.
In the event that the evaluation of measurement drift exceeds the 5 % tolerance, it is required that SAR be reassessed following guidelines contained within this standard.
If the drift is larger than 5 %, then the measurement drift shall be considered a bias, not an uncertainty. A correction shall be applied to the measured SAR value. It is not necessary to record the drift in the uncertainty budget (i.e. ui = 0 %). The uncertainty budget reported in a measurement report should correspond to the highest SAR value reported (after correction, if applicable). Alternatively, the uncertainty budget reported should cover all measurements, i.e., it should report a conservative value.

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Area Scan Parameters:

	≤ 3 GHz	> 3 GHz
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface	5 mm ± 1 mm	½·δ·ln(2) mm ± 0.5 mm
Maximum probe angle from probe axis to phantom surface normal at the measurement location	30° ± 1°	20° ± 1°
Maximum area scan spatial resolution: Δx_{Area}, Δy_{Area}	≤ 2 GHz: ≤ 15 mm 2 – 3 GHz: ≤ 12 mm	3 – 4 GHz: ≤ 12 mm 4 – 6 GHz: ≤ 10 mm
	When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be ≤ the corresponding x or y dimension of the test device with at least one measurement point on the test device.	

Zoom Scan Parameters:

			≤ 3 GHz	> 3 GHz
Maximum zoom scan spatial resolution: Δx_{Zoom}, Δy_{Zoom}			≤ 2 GHz: ≤ 8 mm 2 – 3 GHz: ≤ 5 mm*	3 – 4 GHz: ≤ 5 mm* 4 – 6 GHz: ≤ 4 mm*
Maximum zoom scan spatial resolution, normal to phantom surface	uniform grid: $\Delta z_{Zoom}(n)$		≤ 5 mm	3 – 4 GHz: ≤ 4 mm 4 – 5 GHz: ≤ 3 mm 5 – 6 GHz: ≤ 2 mm
	graded grid	$\Delta z_{Zoom}(1)$: between 1st two points closest to phantom surface	≤ 4 mm	3 – 4 GHz: ≤ 3 mm 4 – 5 GHz: ≤ 2.5 mm 5 – 6 GHz: ≤ 2 mm
		$\Delta z_{Zoom}(n>1)$: between subsequent points	≤ 1.5·$\Delta z_{Zoom}(n-1)$	
Minimum zoom scan volume	x, y, z		≥ 30 mm	3 – 4 GHz: ≥ 28 mm 4 – 5 GHz: ≥ 25 mm 5 – 6 GHz: ≥ 22 mm

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4.3. Test Equipment

Measuring equipment used to perform the tests is documented in this report and has been calibrated in accordance with UKAS' recommendations, and is traceable to recognized national standards.

UL No.	Instrument	Manufacturer	Type No.	Serial No.	Date Last Calibrated	Cal. Interval (Months)
A1234	Data Acquisition Electronics	SPEAG	DAE4	450	23 Sep 2016	12
A2077	Probe	SPEAG	EX3 DV4	3814	30 Sep 2016	12
A1322	2450 MHz Dipole	SPEAG	D2450V2	725	29 Sep 2016	12
G0610	Robot Power Supply	SPEAG	DASY52	F13/5SC6F1/C/01	Calibrated as part of system	-
M1875	Robot Arm	Staubli	TX60 L	F13/5SC6F1/A/01	Calibrated as part of system	-
A2811	Body Handset Positioner	SPEAG	MD4HACV5	None	Calibrated before use	-
M1755	DAK Fluid Probe	SPEAG	SM DAK 040 CA	1089	Calibrated before use	-
M1015	Network Analyser	Agilent Technologies	8753ES	US39172406	26 Sept 2016	12
M1855	Power Sensor	R & S	NRP-Z51	103246	08 Nov 2016	12
A2621	Digital Camera	Nikon	S3600	41010357	N/A	-
M1647	Signal Generator	HP	8648C	3537A01598	16 Sep 2016	12
M1023	Dual Channel Power Meter	R & S	NRVD	863715/030	13 Apr 2016	12
M1635	Power Sensor	R & S	NRV-Z1	826515/015	13 Apr 2016	12
M1634	Power Sensor	R & S	NRV-Z1	860462/016	13 Apr 2016	12
A2100	Directional Coupler	RF-Lambda	11101300748	None	Calibrated before use	-
A2689	Amplifier	Mini-Circuits	ZVE-8G	910401427	Calibrated before use	-
A2550	Phantom	SPEAG	Eli Phantom	1252	Calibrated as part of system	-
PRE0141347	Phantom Support Structure	SPEAG	DASY6 Phantom Table	-	Calibrated as part of system	-
M1853	RS Hygrometer	RS Components	#2410WC	D10Q69	18 April 2016	12
PRE0140104	RF Coax Cable	RM Coax	FB311A1020003030	-	Calibrated before use	-

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4.3.1. SAR System Specifications

Robot System	
Positioner:	Stäubli Unimation Corp. Robot Model: TX60L
Repeatability:	±0.030 mm
No. of Axis:	6
Serial Number:	F13/5SC6F1/A/01
Reach:	920 mm
Payload:	2.0 kg
Control Unit:	CS8C
Programming Language:	V+
Data Acquisition Electronic (DAE) System	
Serial Number:	DAE4 SN: 450
PC Controller	
PC:	Dell Precision 340
Operating System:	Windows 2000
Data Card:	DASY5 Measurement Servers
Serial Number:	1423
Data Converter	
Features:	Signal Amplifier, multiplexer, A/D converted and control logic.
Software:	DASY5 PRO Software
Connecting Lines:	Optical downlink for data and status info. Optical uplink for commands and clock.
PC Interface Card	
Function:	24 bit (64 MHz) DSP for real time processing Link to DAE3 and DAE4 16 bit A/D converter for surface detection system serial link to robot direct emergency stop output for robot.
Phantom	
Phantom:	Eli Phantom
Shell Material:	Fibreglass
Thickness:	2.0 ±0.1 mm
E-Field Probe	
Model:	EX3DV4
Serial No:	3814
Construction:	Triangular core
Frequency:	10 MHz to >6 GHz
Linearity:	±0.2 dB (30 MHz to 6 GHz)
Probe Length (mm):	337
Probe Diameter (mm):	10
Tip Length (mm):	9
Tip Diameter (mm):	2.5
Sensor X Offset (mm):	1
Sensor Y Offset (mm):	1
Sensor Z Offset (mm):	1

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5. Measurement Uncertainty

No measurement or test can ever be perfect and the imperfections give rise to error of measurement in the results. Consequently, the result of a measurement is only an approximation to the value of the measurand (the specific quantity subject to measurement) and is only complete when accompanied by a statement of the uncertainty of the approximation.

The expression of uncertainty of a measurement result allows realistic comparison of results with reference values and limits given in specifications and standards.

The uncertainty of the result may need to be taken into account when interpreting the measurement results.

The reported expanded uncertainties below are based on a standard uncertainty multiplied by an appropriate coverage factor, such that a confidence level of approximately 95% is maintained. For the purposes of this document “approximately” is interpreted as meaning “effectively” or “for most practical purposes”.

Test Name	Confidence Level	Calculated Uncertainty
Uncertainty- Freq. < 3 GHz Body Configuration 1 g	95%	±21.66%
Uncertainty- Freq. > 3 GHz Body Configuration 1 g	95%	±18.71%

The methods used to calculate the above uncertainties are in line with those recommended within the various measurement specifications. Where measurement specifications do not include guidelines for the evaluation of measurement uncertainty, the published guidance of the appropriate accreditation body is followed.

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5.1. Uncertainty – Freq. < 3 GHz Body Configuration 1 g

Type	Source of uncertainty	+ Value	- Value	Probability Distribution	Divisor	$c_{i\ (10g)}$	Standard Uncertainty		υ_i or υ_{eff}
							+ u (%)	- u (%)	
B	Probe calibration	5.050	5.050	normal (k=1)	1.0000	1.0000	5.050	5.050	∞
B	Axial Isotropy	0.250	0.250	normal (k=1)	1.0000	1.0000	0.250	0.250	∞
B	Hemispherical Isotropy	1.300	1.300	normal (k=1)	1.0000	1.0000	1.300	1.300	∞
B	Spatial Resolution	0.500	0.500	Rectangular	1.7321	1.0000	0.289	0.289	∞
B	Boundary Effect	0.769	0.769	Rectangular	1.7321	1.0000	0.444	0.444	∞
B	Linearity	0.300	0.300	Rectangular	1.7321	1.0000	0.173	0.173	∞
B	Detection Limits	0.200	0.200	Rectangular	1.7321	1.0000	0.115	0.115	∞
B	Readout Electronics	0.160	0.160	normal (k=1)	1.0000	1.0000	0.160	0.160	∞
B	Response Time	0.000	0.000	Rectangular	1.7321	1.0000	0.000	0.000	∞
B	Integration Time	8.520	8.520	Rectangular	1.7321	1.0000	4.919	4.919	∞
B	RF Ambient conditions	3.000	3.000	Rectangular	1.7321	1.0000	1.732	1.732	∞
B	Probe Positioner Mechanical Restrictions	4.000	4.000	Rectangular	1.7321	1.0000	2.309	2.309	∞
B	Probe Positioning with regard to Phantom Shell	2.850	2.850	Rectangular	1.7321	1.0000	1.645	1.645	∞
B	Extrapolation and integration / Maximum SAR evaluation	5.080	5.080	Rectangular	1.7321	1.0000	2.933	2.933	∞
A	Test Sample Positioning	2.580	2.580	normal (k=1)	1.0000	1.0000	2.580	2.580	10
A	Device Holder uncertainty	0.154	0.154	normal (k=1)	1.0000	1.0000	0.154	0.154	10
B	Phantom Uncertainty	4.000	4.000	Rectangular	1.7321	1.0000	2.309	2.309	∞
B	Drift of output power	5.000	5.000	Rectangular	1.7321	1.0000	2.887	2.887	∞
B	Liquid Conductivity (target value)	10.000	10.000	Rectangular	1.7321	0.6400	3.695	3.695	∞
A	Liquid Conductivity (measured value)	2.470	2.470	normal (k=1)	1.0000	0.6400	1.581	1.581	5
B	Liquid Permittivity (target value)	10.000	10.000	Rectangular	1.7321	0.6000	3.464	3.464	∞
A	Liquid Permittivity (measured value)	2.430	2.430	normal (k=1)	1.0000	0.6000	1.458	1.458	5
	Combined standard uncertainty			t-distribution			11.05	11.05	>500
	Expanded uncertainty			k = 1.96			21.66	21.66	>500

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5.2. Uncertainty – Freq. > 3 GHz Body Configuration 1 g

Type	Source of uncertainty	+ Value	- Value	Probability Distribution	Divisor	$c_{i\ (10g)}$	Standard Uncertainty		υ_i or υ_{eff}
							+ u (%)	- u (%)	
B	Probe calibration	5.050	5.050	normal (k=1)	1.0000	5.050	5.050	5.050	∞
B	Axial Isotropy	0.250	0.250	normal (k=1)	1.0000	0.250	0.250	0.250	∞
B	Hemispherical Isotropy	1.300	1.300	normal (k=1)	1.0000	1.300	1.300	1.300	∞
B	Spatial Resolution	0.500	0.500	Rectangular	1.0000	0.289	0.289	0.500	∞
B	Boundary Effect	0.769	0.769	Rectangular	1.0000	0.444	0.444	0.769	∞
B	Linearity	0.300	0.300	Rectangular	1.0000	0.173	0.173	0.300	∞
B	Detection Limits	0.200	0.200	Rectangular	1.0000	0.115	0.115	0.200	∞
B	Readout Electronics	0.160	0.160	normal (k=1)	1.0000	0.160	0.160	0.160	∞
B	Response Time	0.000	0.000	Rectangular	1.0000	0.000	0.000	0.000	∞
B	Integration Time	0.000	0.000	Rectangular	1.0000	0.000	0.000	0.000	∞
B	RF Ambient conditions	3.000	3.000	Rectangular	1.0000	1.732	1.732	3.000	∞
B	Probe Positioner Mechanical Restrictions	4.000	4.000	Rectangular	1.0000	2.309	2.309	4.000	∞
B	Probe Positioning with regard to Phantom Shell	2.850	2.850	Rectangular	1.0000	1.645	1.645	2.850	∞
B	Extrapolation and integration / Maximum SAR evaluation	5.080	5.080	Rectangular	1.0000	2.933	2.933	5.080	∞
A	Test Sample Positioning	1.960	1.960	normal (k=1)	1.0000	1.960	1.960	1.960	10
A	Device Holder uncertainty	0.154	0.154	normal (k=1)	1.0000	0.154	0.154	0.154	10
B	Phantom Uncertainty	4.000	4.000	Rectangular	1.0000	2.309	2.309	4.000	∞
B	Drift of output power	5.000	5.000	Rectangular	1.0000	2.887	2.887	5.000	∞
B	Liquid Conductivity (target value)	10.000	10.000	Rectangular	0.6400	3.695	3.695	10.000	∞
A	Liquid Conductivity (measured value)	0.800	0.800	normal (k=1)	0.6400	0.512	0.512	0.800	5
B	Liquid Permittivity (target value)	10.000	10.000	Rectangular	0.6000	3.464	3.464	10.000	∞
A	Liquid Permittivity (measured value)	1.100	1.100	normal (k=1)	0.6000	0.660	0.660	1.100	5
	Combined standard uncertainty			t-distribution			9.55	9.55	>500
	Expanded uncertainty			k = 1.96			18.71	18.71	>500

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6. Device Under Test (DUT)

6.1. DUT Description

DUT Description:	The DUT is a part of Braster in-home breast examination system. It supports Wi-Fi 2,4GHz (802.11 b/g) in normal operation mode (hotspot mode).	
Serial Number:	The following sample was used to perform SAR measurements: BRA-0030D5 The following sample was used to perform conducted power measurements: BRA-002AD7	
Hardware Version Number:	v.4.3	
Software Version Number:	Custom Test Firmware	
Country of Manufacture:	Poland	
Device dimension	Overall (Diameter x Height): 172 mm x 140 mm	
Date of Receipt:	29 March 2017	
Back Cover	☒ Normal Battery Cover ☐ Normal Battery Cover with NFC ☐ Wireless Charger Battery Cover ☐ Wireless Charger Battery Cover with NFC	
Accessory	☐ None	
Battery Options	☒ Standard – Lithium-ion battery ☐ Extended (large capacity)	
Antenna Type:	Internal integral	
Antenna Length:	None Stated	
Number of Antenna Positions:	WLAN ~ Wi-Fi 2.4 GHz	1 fixed

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6.2. Wireless Technologies

Wireless technologies	Frequency bands	Operating mode	Duty Cycle
Wi-Fi	2.4 GHz	802.11b 802.11g	100%

Additional Information Related to Testing:

Wi-Fi						
Description						
Band	20 MHz BW Ch.#	Frq. (MHz)	40 MHz BW Ch.#	Frq. (MHz)	80 MHz BW Ch.#	Frq. (MHz)
Wi-Fi 2.4GHz (802.11b/g/n)	1	2412.0	N/A			
	2	2417.0				
	3	2422.0				
	4	2427.0				
	5	2432.0				
	6	2437.0				
	7	2442.0				
	8	2447.0				
	9	2452.0				
	10	2457.0				
	11	2462.0				
	12	2467.0				
	13	2472.0				

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6.3.Nominal and Maximum Output Power

(From customer)

Target (dBm)							
Band	Channel	802.11b		802.11g		802.11n HT20	
		(1Mbps)	(11Mbps)	(6Mbps)	(54Mbps)	(MCS0)	(MCS0)
Wi-Fi 2.4 GHz	All	11.80	11.70	12.50	11.80	Not Supported	Not Supported
WiFi 2.4 GHz - Tolerance (dB)		+/-1.50	+/-1.50	+/-1.50	+/-1.50	Not Supported	Not Supported

Note:

1. The nominal and maximum average source based rated powers declared and supplied by manufacturer are shown in the above table.

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7. RF Exposure Conditions (Test Configurations)

7.1. RF Exposure Conditions (Test Configurations)

Technology Antenna	Configuration	Antenna-to-User Separation	Position	Antenna-to-Edge Separation (mm)	Evaluation Considered
Antenna ~ WLAN	Body	0mm	Position 1	= 5.73	Yes
			Position 2	= 25.17	Yes
			Position 3	> 5.73	Yes
			Position 4	> 5.73	Yes

Note:

1. The most conservative configurations are addressed in the above table for SAR evaluation, other configurations are not most conservative so have not been considered.
2. Please refer section 12.1) PHT/009: DUT Test Positions - for details.

7.2. SAR Test Exclusion Consideration

Frequency Band	Configuration(s)
	Body
	2.4 GHz (WLAN)
WLAN 2.4GHz	No

Note:

1. As per KDB publication 447498 D01, The Frequency Bands with Rated Power including Upper tolerance, which qualify for **Standalone SAR Test Exclusion**, are as per the above table.
2. The details for the Maximum Rated Power and tolerance(s) can be found in section 6.3

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8. Conducted output power measurements

8.1. RF Output Average Power Measurement: Bluetooth 2.4 GHz

8.1.1. Wi-Fi 802.11g (2.4 GHz)

Channel Number	**Frequency (MHz)**	**Upper Antenna**	**Operating Mode**
1	2412.0	13.27	**802.11g 6Mbps**
6	2437.0	13.15	
11	2462.0	13.00	
12	2467.0	12.68	
13	2472.0	12.81	

Note:
Conducted power measurements were not performed for mode 802.11b due to max. rated power being equal or lower to mode 802.11g.

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9.Dielectric Property Measurements & System Check

9.1.Tissue Dielectric Parameters

The temperature of the tissue-equivalent medium used during measurement must also be within 18°C to 25°C and within ± 2°C of the temperature when the tissue parameters are characterized.
The dielectric parameters must be measured before the tissue-equivalent medium is used in a series of SAR measurements. The parameters should be re-measured after each 3 – 4 days of use; or earlier if the dielectric parameters can become out of tolerance; for example, when the parameters are marginal at the beginning of the measurement series.
Tissue dielectric parameters were measured at the low, middle and high frequency of each operating frequency range of the test device.

IEEE 1528:2013

Target Frequency (MHz)	Body	
	ε_r	σ (S/m)
150	61.9	0.80
300	58.2	0.92
450	56.7	0.94
750	-	-
835	55.2	0.97
900	55.0	1.05
915	55.0	1.06
1450	54.0	1.30
1500	-	-
1610	53.8	1.40
1640	-	-
1750	-	-
1800	53.3	1.52
1900	53.3	1.52
2000	53.3	1.52
2100	-	-
2300	-	-
2450	52.7	1.95
2600	-	-
3000	52.0	2.73
3500	-	-
4000	-	-
4500	-	-
5000	49.3	5.07
5100	49.1	5.18
5200	49.0	5.30
5250	48.9	5.36
5300	48.9	5.42
5400	48.7	5.53
5500	48.6	5.65
5600	48.5	5.77
5700	48.3	5.88
5750	48.3	5.94
5800	48.2	6.00
6000	-	-

NOTE: For convenience, permittivity and conductivity values at some frequencies that are not part of the original data from Drossos et al. [B60] or the extension to 5800 MHz are provided (i.e., the values shown in italics). These values were linearly interpolated between the values in this table that are immediately above and below these values, except the values at 6000 MHz that were linearly extrapolated from the values at 3000 MHz and 5800 MHz.

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9.2. System Check

SAR system verification is required to confirm measurement accuracy, according to the tissue dielectric media, probe calibration points and other system operating parameters required for measuring the SAR of a test device. The system verification must be performed for each frequency band and within the valid range of each probe calibration point required for testing the device. The same SAR probe(s) and tissue-equivalent media combinations used with each specific SAR system for system verification must be used for device testing. When multiple probe calibration points are required to cover substantially large transmission bands, independent system verifications are required for each probe calibration point. A system verification must be performed before each series of SAR measurements using the same probe calibration point and tissue-equivalent medium. Additional system verification should be considered according to the conditions of the tissue-equivalent medium and measured tissue dielectric parameters, typically every three to four days when the liquid parameters are re-measured or sooner when marginal liquid parameters are used at the beginning of a series of measurements.

9.3. Reference Target SAR Values

The reference SAR values are obtained from the calibration certificate of system validation dipoles. The measured values are normalised to 1.00 Watt.

System Dipole	Serial No.	Cal. Date	Freq. (MHz)	Target SAR Values (mW/g)	
				1g/10g	Head
D2450V2	725	29 Sep 2016	2450	1g	50.30
				10g	23.80

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9.4. Dielectric Property Measurements & System Check Results

The 1-g SAR and 10-g SAR measured with a reference dipole, using the required tissue-equivalent medium at the test frequency, must be within ±5% of the manufacturer calibrated dipole SAR target. The internal limit is set to ±5%.

Site 59
System check 2450 Body
Date: 03/04/2017
Validation dipole and Serial Number: D2450V2 / SN: 725

Simulant	Frequency (MHz)	Room Temp (℃)	Liquid Temp (℃)	Parameters	Target Value	Measured Value	Deviation (%)	Limit (%)
Body	2450	23.0	23.0	**εr**	52.70	52.16	-1.03	5.00
				Σ	1.95	2.01	2.98	5.00
				1g (W/kg)	50.30	51.60	2.58	5.00
				10g (W/kg)	23.80	23.32	-2.01	5.00

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10. Measurements, Examinations and Derived Result

10.1. Specific Absorption Rate - Test Results

For All SAR measurement in this report the 1g-SAR limit tested to is 1.6 W/Kg

10.1.1. Wi-Fi 2.4 GHz – Body 1g

Max Reported SAR = 0.022 (W/kg)

					Power (dBm)		1g: SAR Results (W/kg)		
Mod.	Dist (mm)	EUT Position	CH #	Freq (MHz)	Tune up Limit	Meas. Power	Meas.	Reported	Scan No.
OFDM (802.11g 6Mbps)	0.0	Position 1	1	2412.0	14.00	13.27	0.017	0.020	1
	0.0	Position 2	1	2412.0	14.00	13.27	0.000	0.000	2
	0.0	Position 3	1	2412.0	14.00	13.27	0.019	0.022	3
	0.0	Position 4	1	2412.0	14.00	13.27	0.011	0.013	4
	0.0	Position 3	6	2437.0	14.00	13.15	0.016	0.019	5
	0.0	Position 3	11	2462.0	14.00	13.00	0.009	0.011	6

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11. Highest Standalone SAR and Simultaneous Transmission

11.1. Highest Standalone Reported SAR

Individual Transmitter Evaluation per Band:

Exposure Configuration	Technology Band	Max. Reported 1g - SAR (W/Kg)	Equipment Class	Max Rated Source base Avg. Power + Max Tolerance [dBm]	Highest Reported 1g - SAR (W/Kg)
Body (Separation Distance 0 mm)	WLAN 2.4 GHz	0.022	DTS	14.0	0.022

11.2. Simultaneous Transmission analysis

Simultaneous transmission SAR test exclusion is determined for each operating configuration and exposure condition according to the reported standalone SAR of each applicable simultaneous transmitting antenna.

Note: Simultaneous Transmission is not applicable as the device only supports one antenna (WLAN 2.4 GHz)

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12. Appendixes

12.1. Photographs and Antenna Schematics

Photo Reference Number	Title
PHT/001	Test configuration for the measurement of Specific Absorption Rate (SAR)
PHT/002	Position 1 of DUT Facing Phantom at 0mm
PHT/003	Position 2 of DUT Facing Phantom at 0mm
PHT/004	Position 3 of DUT Facing Phantom at 0mm
PHT/005	Position 4 of DUT Facing Phantom at 0mm
PHT/006	Front View of Radiated DUT
PHT/007	Side View of Radiated DUT
PHT/008	Front View of Conducted DUT
PHT/009	DUT Test Positions
PHT/010	DUT Schematics Distance From Antenna To Front
PHT/011	DUT Schematics Distance From Antenna To Bottom
PHT/012	DUT Schematics Other Distances

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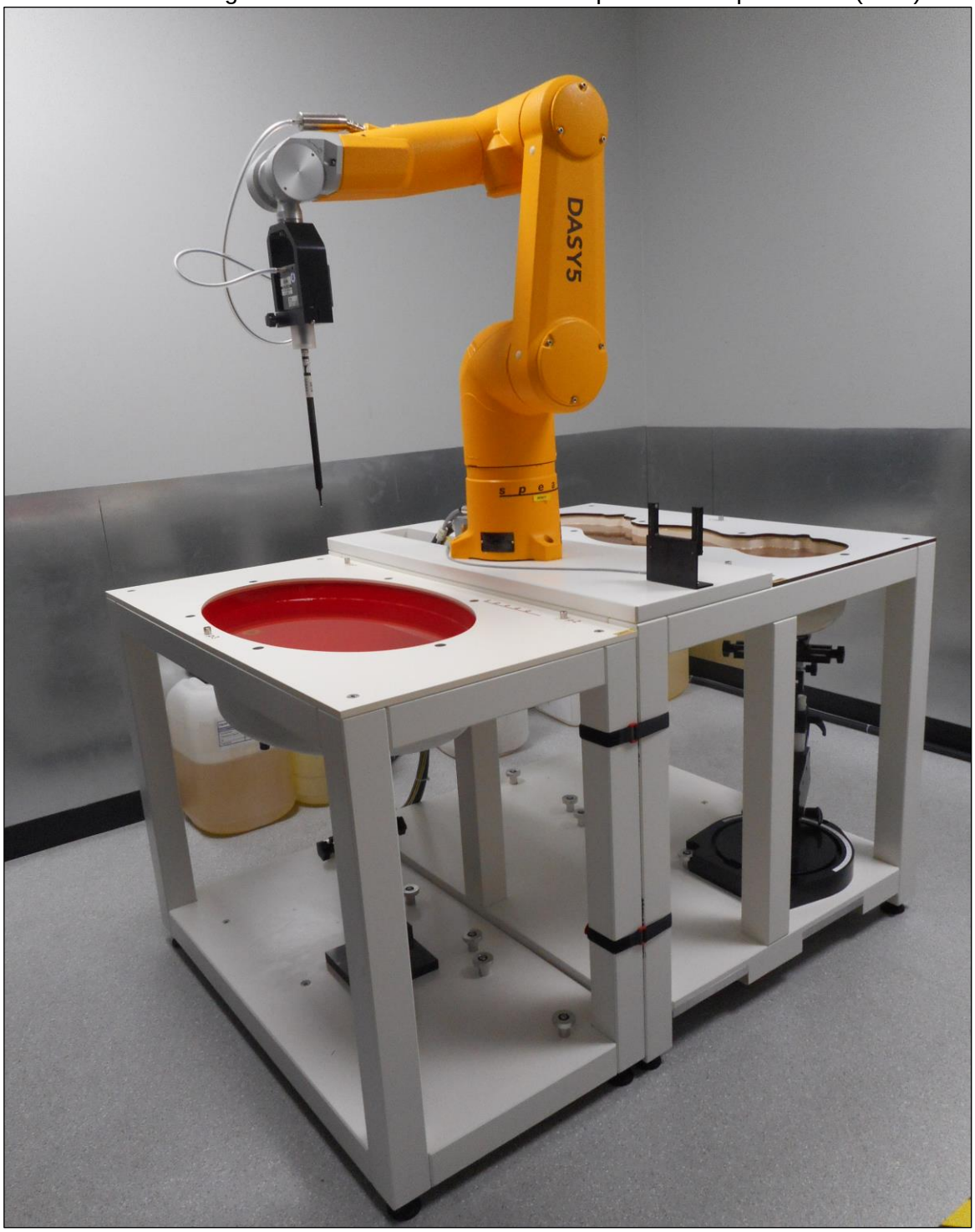
PHT/001: Test configuration for the measurement of Specific Absorption Rate (SAR)



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PHT/002: Position 1 of DUT Facing Phantom at 0mm

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PHT/003: Position 2 of DUT Facing Phantom at 0mm

This report shall not be reproduced except in full, without the written approval of UL VS Ltd.

PHT/004: Position 3 of DUT Facing Phantom at 0mm

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PHT/005: Position 4 of DUT Facing Phantom at 0mm

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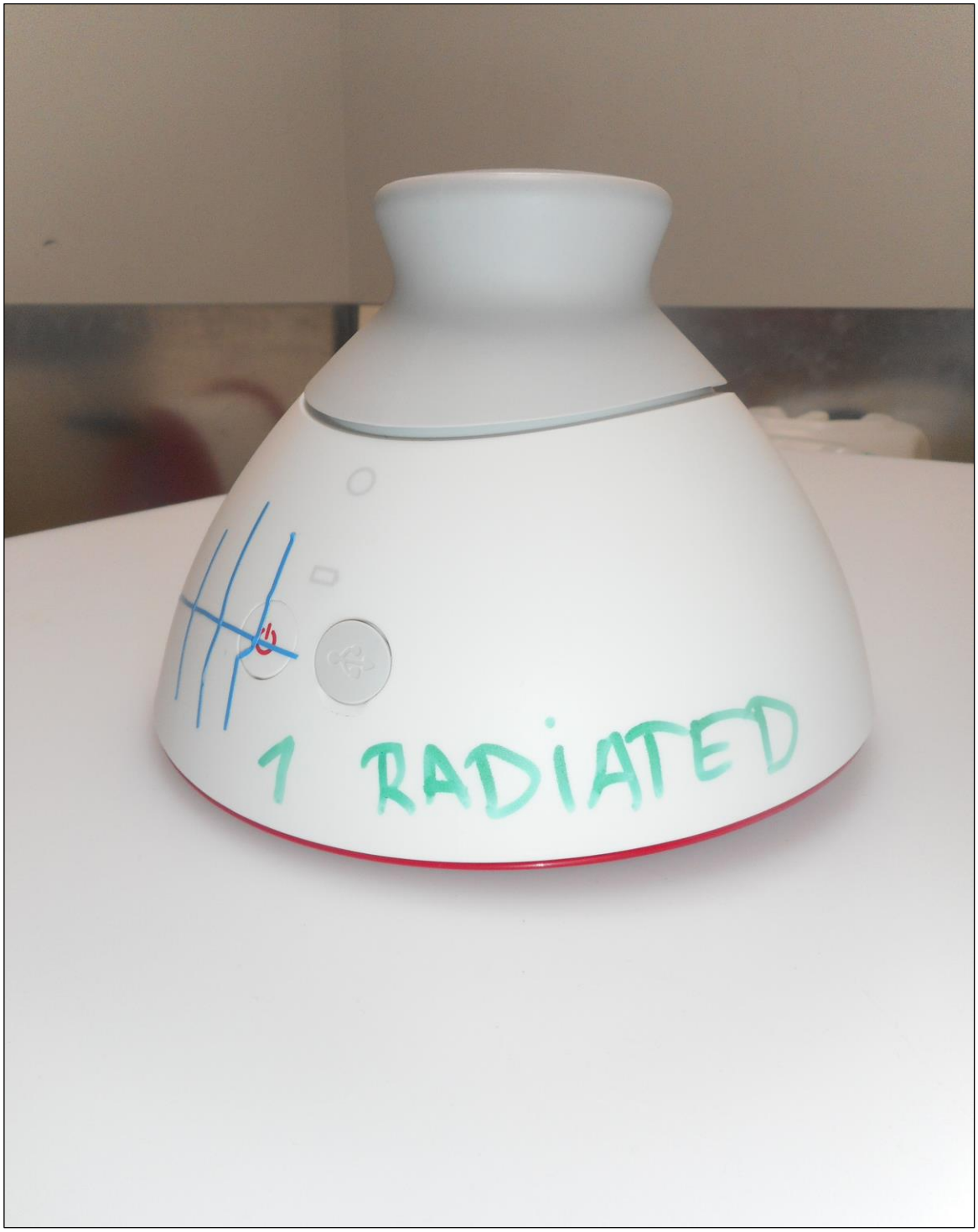
PHT/006: Front View of Radiated DUT



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PHT/007: Side View of Radiated DUT

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PHT/008: Front View of Conducted DUT

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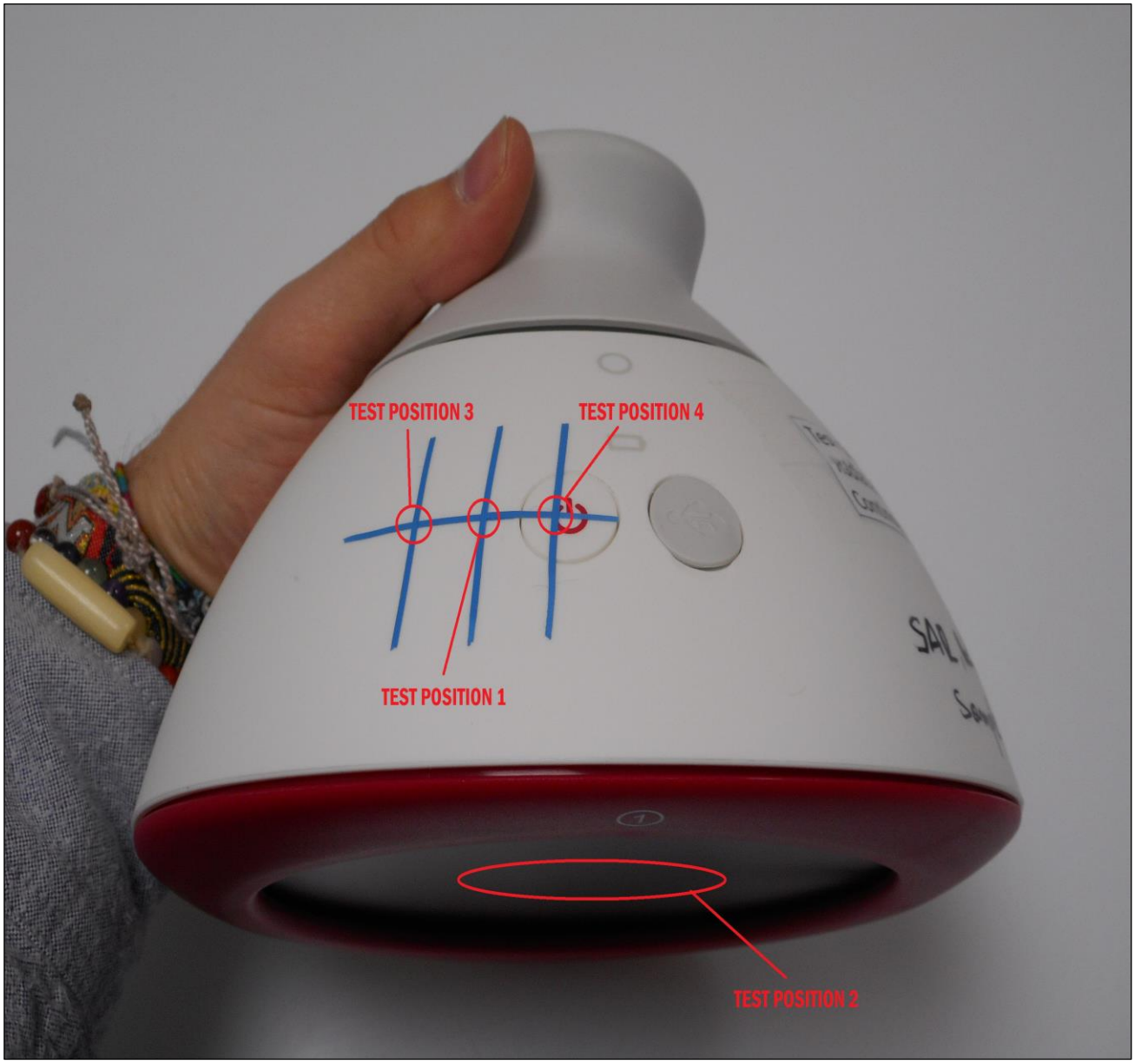
PHT/009: DUT Test Positions



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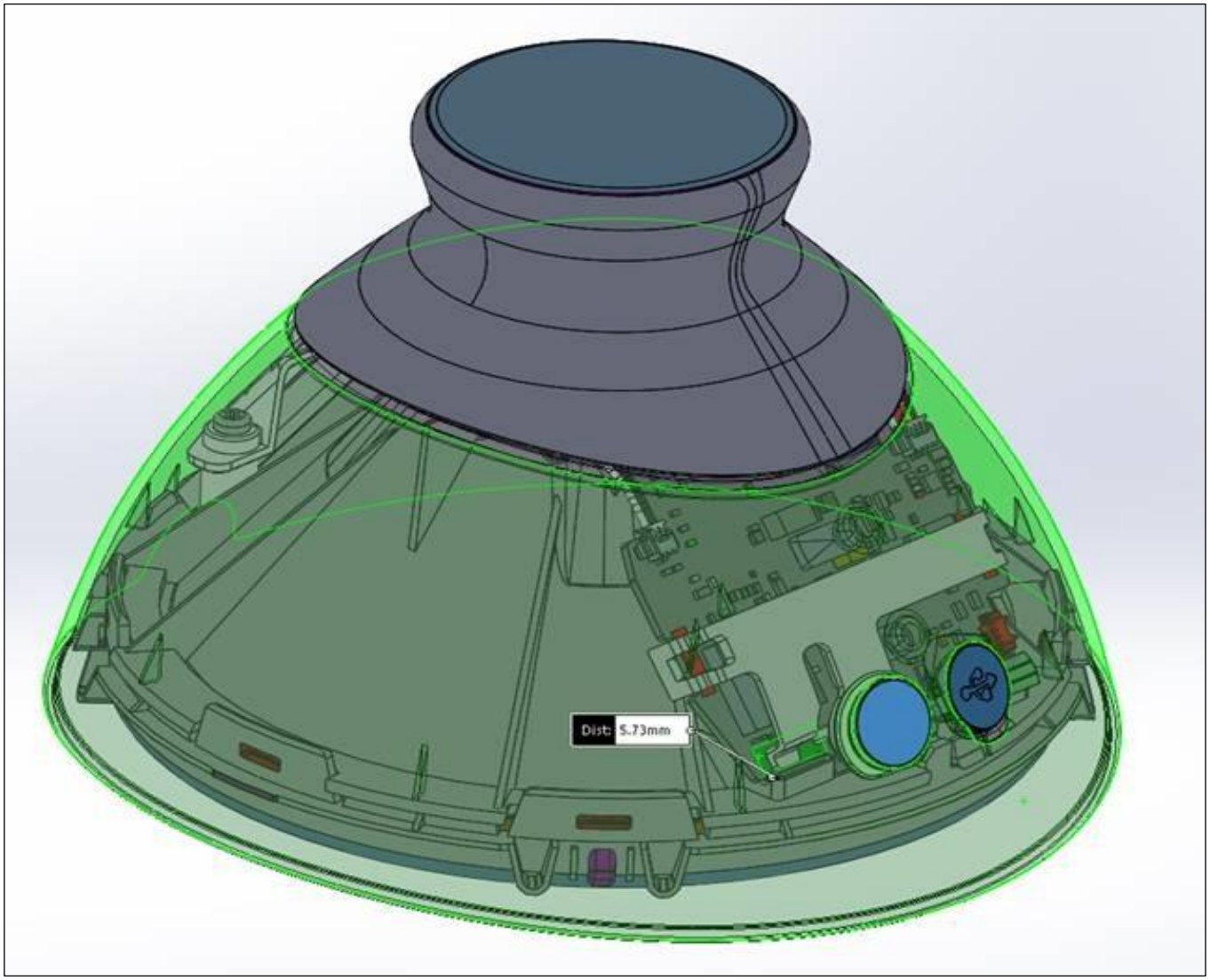
PHT/010: DUT Schematics Distance From Antenna To Front



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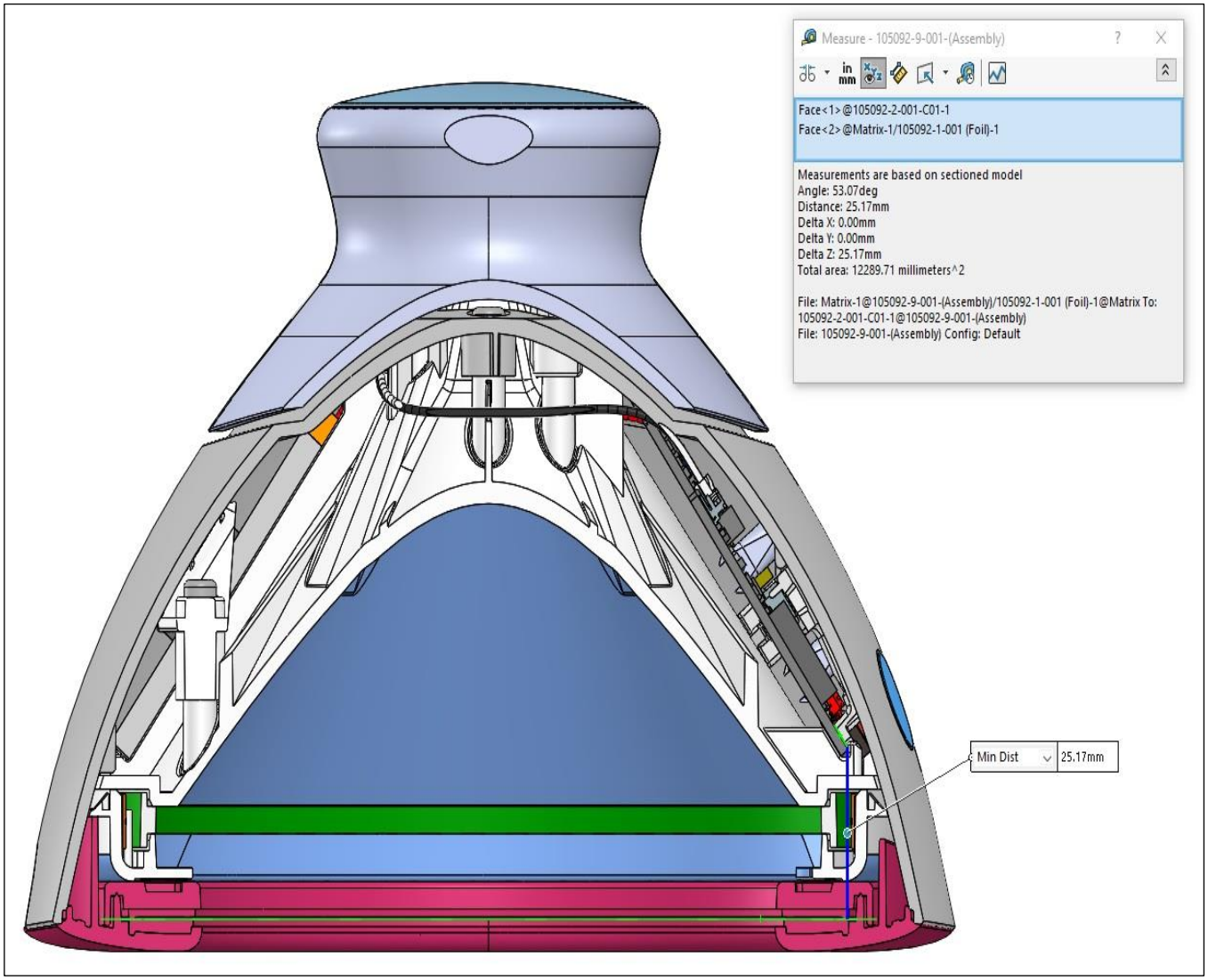
PHT/011: DUT Schematics Distance From Antenna To Bottom



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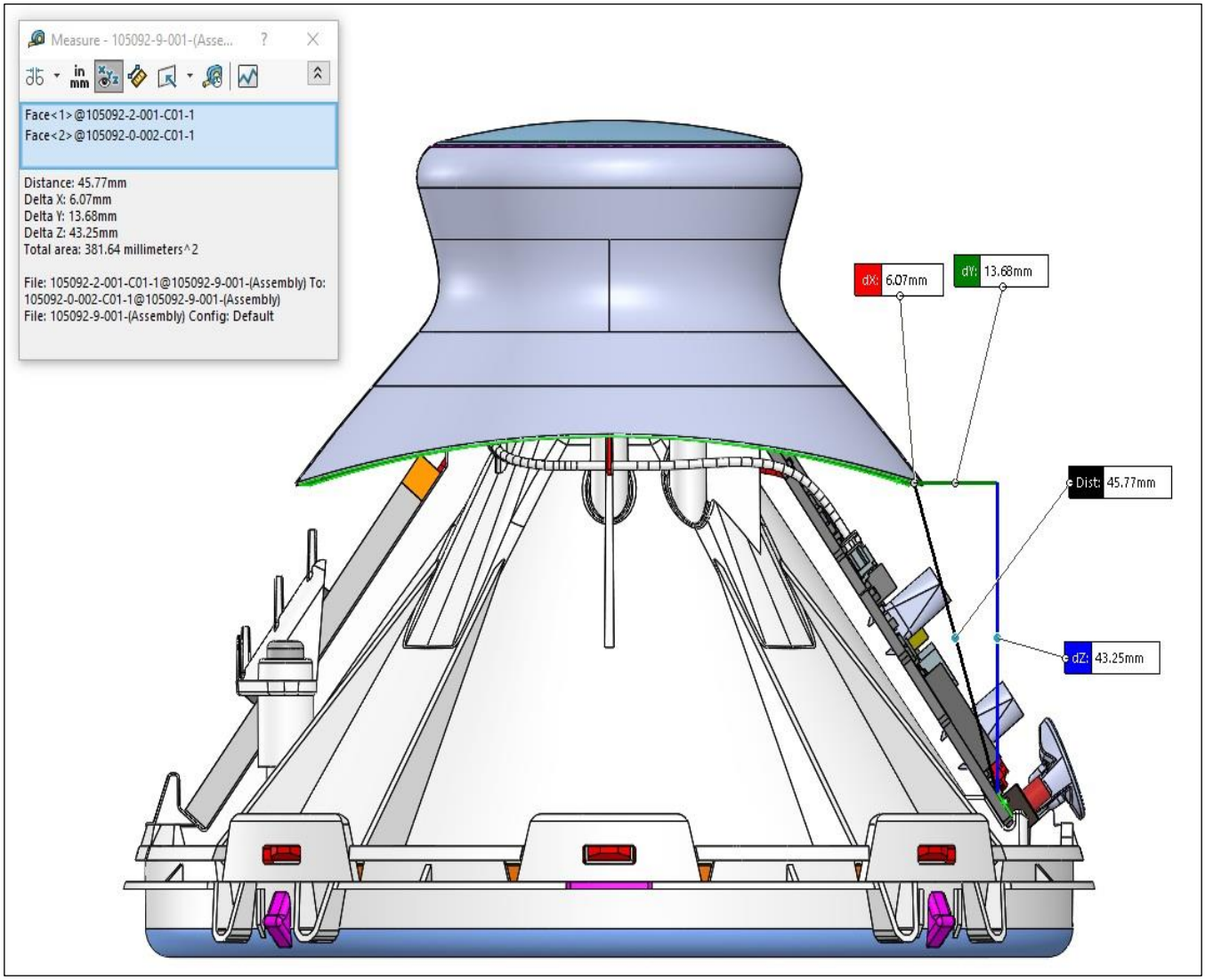
PHT/012: DUT Schematics Other Distances



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12.2. System Check Plots

This appendix contains the following system validation distribution scans.

Scan Reference Number	Title
SYS/001	System Performance Check 2450MHz Body 03 04 2017

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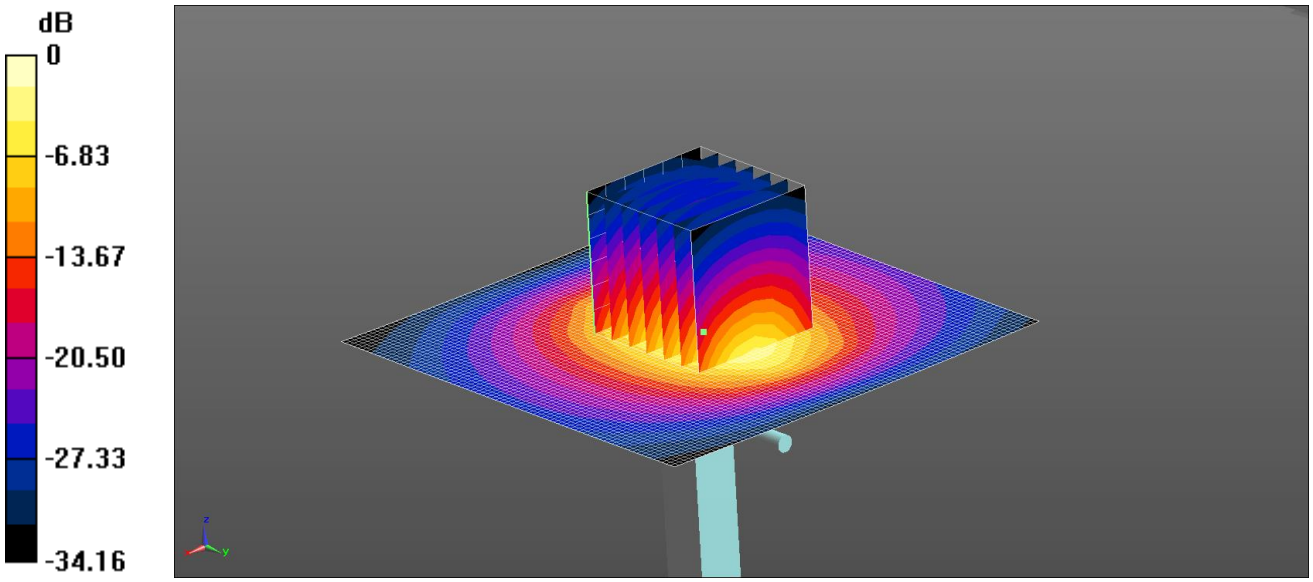
SYS/001: System Performance Check 2450MHz Body 03 04 2017

Date: 03/04/2017
DUT: Dipole 2450 MHz; SN725; Type: D2450V2; Serial: D2450V2 - SN:725



0 dB = 20.0 W/kg = 13.00 dBW/kg

Communication System: UID 0, CW (0); Frequency: 2450 MHz;Duty Cycle: 1:1
Medium: 2450 MHz MSL Medium parameters used: f = 2450 MHz; σ = 2.011 S/m; ε_r = 52.159; ρ = 1000 kg/m^3
Phantom section: Flat Section
DASY4 Configuration:
- Probe: EX3DV4 - SN3814; ConvF(7.19, 7.19, 7.19); Calibrated: 30/09/2016;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn450; Calibrated: 23/09/2016
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx
- ; SEMCAD X Version 14.6.10 (7372)

Configuration/d=10mm, Pin=250mW/Area Scan (81x81x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 20.0 W/kg
Configuration/d=10mm, Pin=250mW/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 84.09 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 27.6 W/kg
SAR(1 g) = 12.9 W/kg; SAR(10 g) = 5.83 W/kg
Maximum value of SAR (measured) = 20.2 W/kg

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12.3. SAR Distribution Plots

This appendix contains the following SAR distribution scans.

Scan Reference Number	Title
SAR/001	Position 1 0mm WLAN 2.4GHz 802.11g 6Mbps CH1
SAR/002	Position 2 0mm WLAN 2.4GHz 802.11g 6Mbps CH1
SAR/003	Position 3 0mm WLAN 2.4GHz 802.11g 6Mbps CH1
SAR/004	Position 4 0mm WLAN 2.4GHz 802.11g 6Mbps CH1
SAR/005	Position 3 0mm WLAN 2.4GHz 802.11g 6Mbps CH6
SAR/006	Position 3 0mm WLAN 2.4GHz 802.11g 6Mbps CH11

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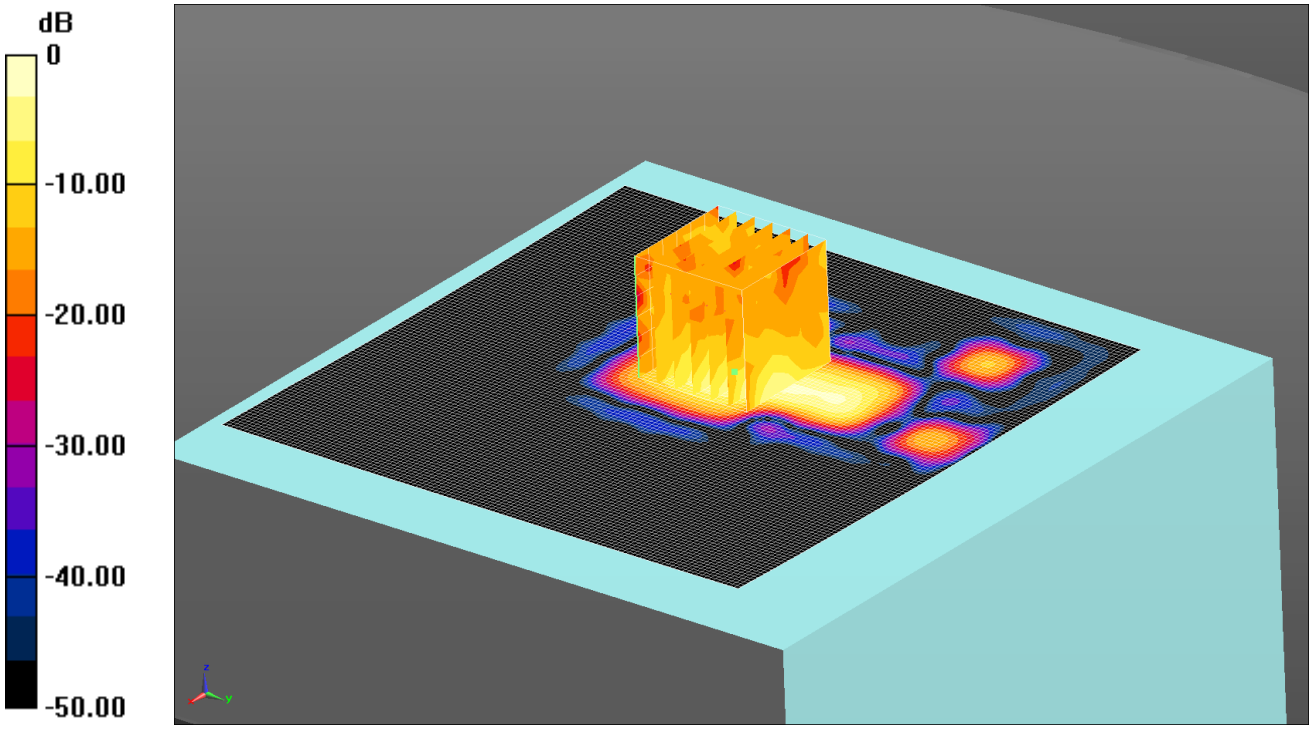
SAR/001: Position 1 0mm WLAN 2.4GHz 802.11g 6Mbps CH1

Date: 03/04/2017
DUT: Braster; Type: Braster; Serial: BRA-0030D5



0 dB = 0.0326 W/kg = -14.86 dBW/kg

Communication System: UID 0, WLAN 802.11 (0); Frequency: 2412 MHz;Duty Cycle: 1:1
Medium: 2450 MHz MSL Medium parameters used (interpolated): f = 2412 MHz; σ = 1.967 S/m; ε_r = 52.265; ρ = 1000 kg/m^3
Phantom section: Flat Section
DASY4 Configuration:
- Probe: EX3DV4 - SN3814; ConvF(7.19, 7.19, 7.19); Calibrated: 30/09/2016;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn450; Calibrated: 23/09/2016
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx
- ; SEMCAD X Version 14.6.10 (7372)

Configuration/Position 1/Area Scan 2 (121x121x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 0.0326 W/kg
Configuration/Position 1/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 2.230 V/m; Power Drift = 1.71 dB
Peak SAR (extrapolated) = 0.0430 W/kg
SAR(1 g) = 0.017 W/kg; SAR(10 g) = 0.00539 W/kg
Maximum value of SAR (measured) = 0.0318 W/kg

Note: SAR level measured is very low as equivilant to noise floor

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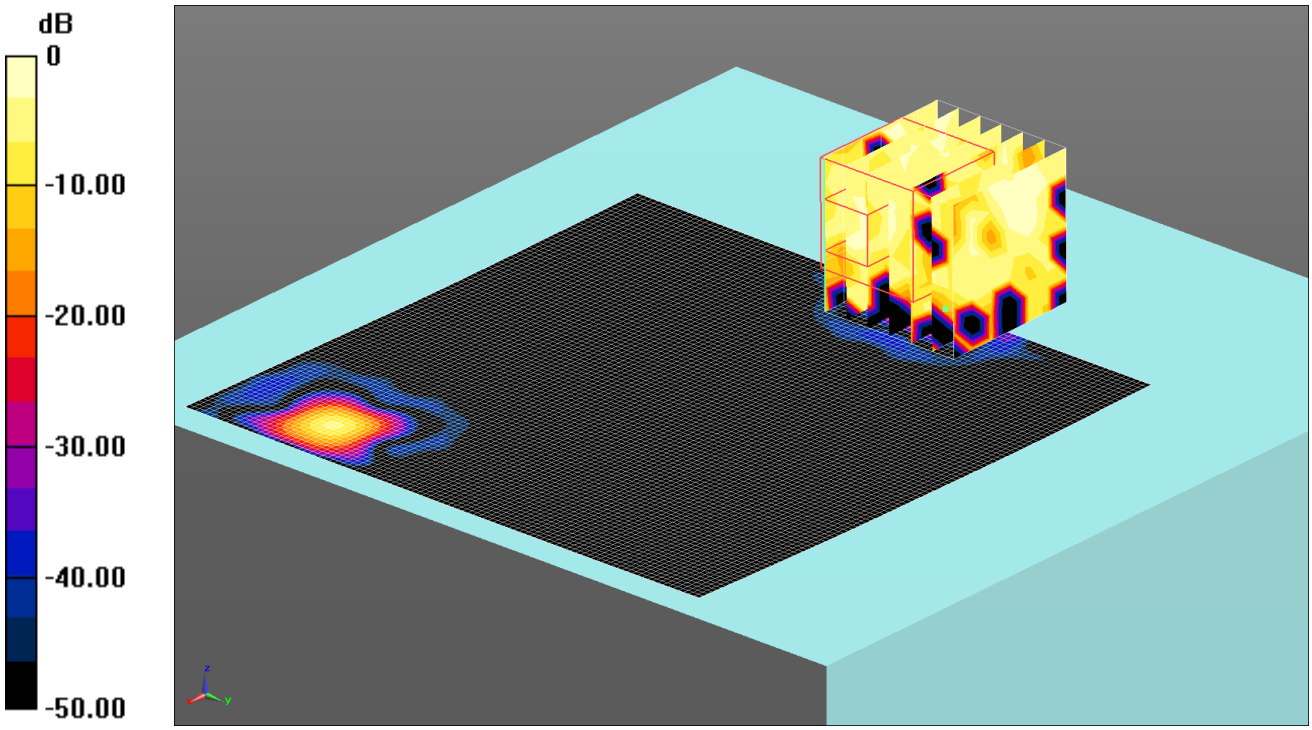
SAR/002: Position 2 0mm WLAN 2.4GHz 802.11g 6Mbps CH1

Date: 03/04/2017
DUT: Braster; Type: Braster; Serial: BRA-0030D5



0 dB = 0.00135 W/kg = -28.71 dBW/kg

Communication System: UID 0, WLAN 802.11 (0); Frequency: 2412 MHz;Duty Cycle: 1:1
Medium: 2450 MHz MSL Medium parameters used (interpolated): f = 2412 MHz; σ = 1.967 S/m; ε_r = 52.265; ρ = 1000 kg/m^3
Phantom section: Flat Section
DASY4 Configuration:
- Probe: EX3DV4 - SN3814; ConvF(7.19, 7.19, 7.19); Calibrated: 30/09/2016;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn450; Calibrated: 23/09/2016
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx
- ; SEMCAD X Version 14.6.10 (7372)

Configuration/Position 2/Area Scan 2 (101x101x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 0.00135 W/kg
Configuration/Position 2/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 0.1550 V/m; Power Drift = 13.18 dB
Peak SAR (extrapolated) = 0.00297 W/kg
SAR(1 g) = 0.000127 W/kg; SAR(10 g) = 3.19e-005 W/kg
Maximum value of SAR (measured) = 0.00255 W/kg

Note: SAR level measured is very low as equivilant to noise floor

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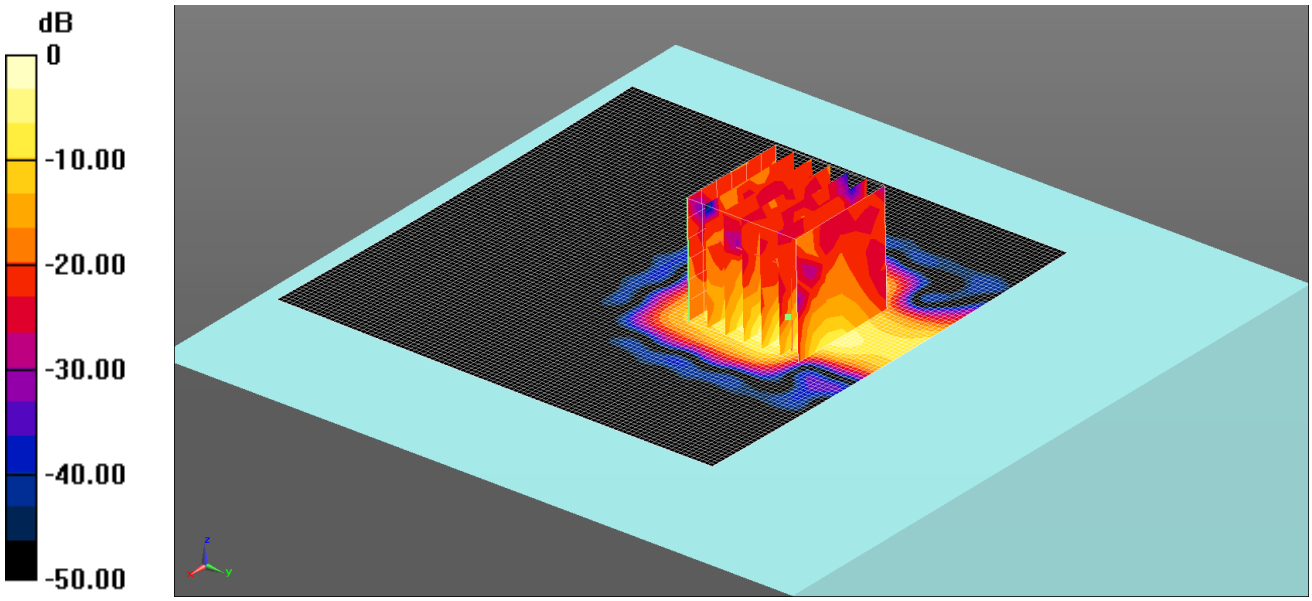
SAR/003: Position 3 0mm WLAN 2.4GHz 802.11g 6Mbps CH1

Date: 03/04/2017
DUT: Braster; Type: Braster; Serial: BRA-0030D5



0 dB = 0.0343 W/kg = -14.65 dBW/kg

Communication System: UID 0, WLAN 802.11 (0); Frequency: 2412 MHz;Duty Cycle: 1:1
Medium: 2450 MHz MSL Medium parameters used (interpolated): f = 2412 MHz; σ = 1.967 S/m; ε_r = 52.265; ρ = 1000 kg/m^3
Phantom section: Flat Section
DASY4 Configuration:
- Probe: EX3DV4 - SN3814; ConvF(7.19, 7.19, 7.19); Calibrated: 30/09/2016;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn450; Calibrated: 23/09/2016
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx
- ; SEMCAD X Version 14.6.10 (7372)

Configuration/Position 1/Area Scan 2 (101x101x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 0.0343 W/kg
Configuration/Position 1/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 1.731 V/m; Power Drift = 1.60 dB
Peak SAR (extrapolated) = 0.0410 W/kg
SAR(1 g) = 0.019 W/kg; SAR(10 g) = 0.00599 W/kg
Maximum value of SAR (measured) = 0.0345 W/kg

Note: SAR level measured is very low as equivilant to noise floor

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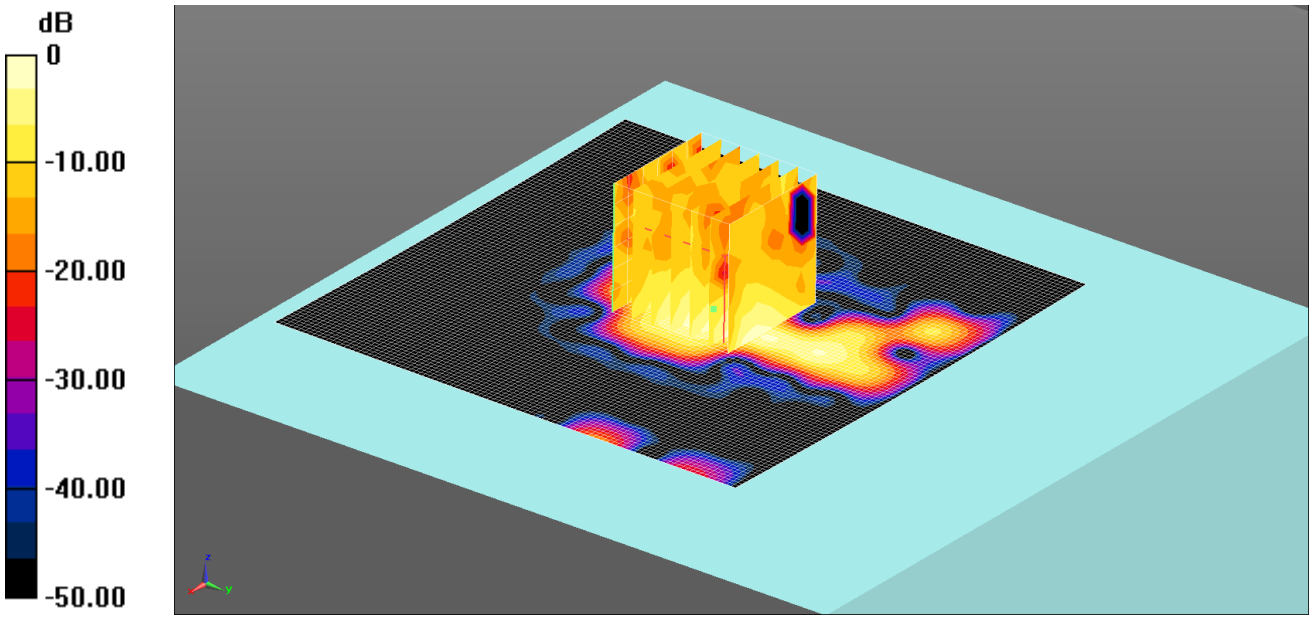
SAR/004: Position 4 0mm WLAN 2.4GHz 802.11g 6Mbps CH1

Date: 03/04/2017
DUT: Braster; Type: Braster; Serial: BRA-0030D5



0 dB = 0.0281 W/kg = -15.51 dBW/kg

Communication System: UID 0, WLAN 802.11 (0); Frequency: 2412 MHz;Duty Cycle: 1:1
Medium: 2450 MHz MSL Medium parameters used (interpolated): f = 2412 MHz; σ = 1.967 S/m; ε_r = 52.265; ρ = 1000 kg/m^3
Phantom section: Flat Section
DASY4 Configuration:
- Probe: EX3DV4 - SN3814; ConvF(7.19, 7.19, 7.19); Calibrated: 30/09/2016;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn450; Calibrated: 23/09/2016
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx
- ; SEMCAD X Version 14.6.10 (7372)

Configuration/Position 4/Area Scan 2 (101x101x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 0.0281 W/kg
Configuration/Position 4/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 2.716 V/m; Power Drift = -0.81 dB
Peak SAR (extrapolated) = 0.0240 W/kg
SAR(1 g) = 0.011 W/kg; SAR(10 g) = 0.00375 W/kg
Maximum value of SAR (measured) = 0.0177 W/kg

Note: SAR level measured is very low as equivilant to noise floor

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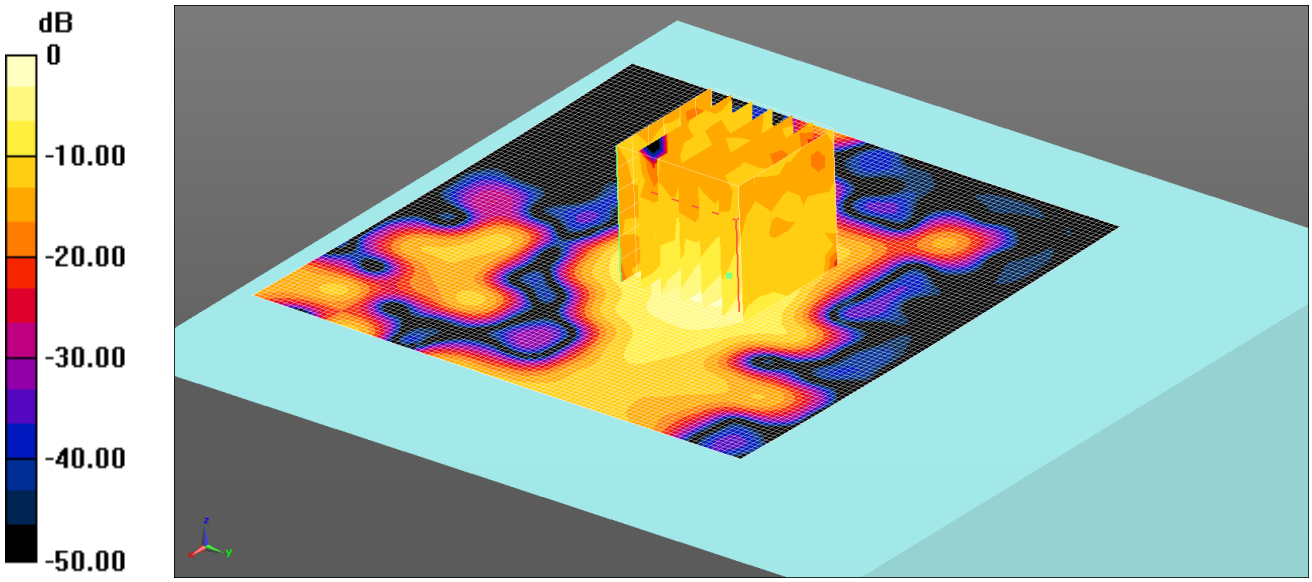
SAR/005: Position 3 0mm WLAN 2.4GHz 802.11g 6Mbps CH6

Date: 04/04/2017
DUT: Braster; Type: Braster; Serial: BRA-0030D5



0 dB = 0.0255 W/kg = -15.94 dBW/kg

Communication System: UID 0, WLAN 802.11 (0); Frequency: 2437 MHz;Duty Cycle: 1:1
Medium: 2450 MHz MSL Medium parameters used (interpolated): f = 2437 MHz; σ = 1.996 S/m; ε_r = 52.195; ρ = 1000 kg/m^3
Phantom section: Flat Section
DASY4 Configuration:
- Probe: EX3DV4 - SN3814; ConvF(7.19, 7.19, 7.19); Calibrated: 30/09/2016;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn450; Calibrated: 23/09/2016
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx
- ; SEMCAD X Version 14.6.10 (7372)

Configuration/Position 3/Area Scan 2 (101x101x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 0.0255 W/kg
Configuration/Position 3/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 2.665 V/m; Power Drift = -1.22 dB
Peak SAR (extrapolated) = 0.0470 W/kg
SAR(1 g) = 0.016 W/kg; SAR(10 g) = 0.0061 W/kg
Maximum value of SAR (measured) = 0.0270 W/k

Note: SAR level measured is very low as equivilant to noise floor

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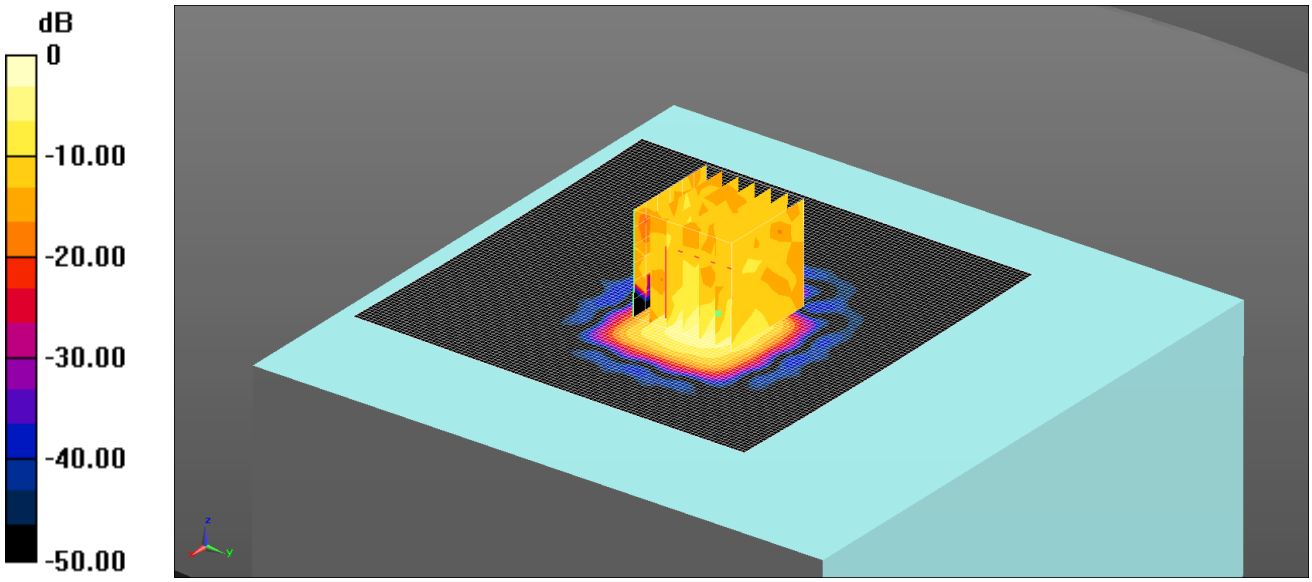
SAR/006: Position 3 0mm WLAN 2.4GHz 802.11g 6Mbps CH11

Date: 04/04/2017
DUT: Braster; Type: Braster; Serial: BRA-0030D5



0 dB = 0.0160 W/kg = -17.97 dBW/kg

Communication System: UID 0, WLAN 802.11 (0); Frequency: 2462 MHz;Duty Cycle: 1:1
Medium: 2450 MHz MSL Medium parameters used (interpolated): f = 2462 MHz; σ = 2.025 S/m; ε_r = 52.125; ρ = 1000 kg/m^3
Phantom section: Flat Section
DASY4 Configuration:
- Probe: EX3DV4 - SN3814; ConvF(7.19, 7.19, 7.19); Calibrated: 30/09/2016;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn450; Calibrated: 23/09/2016
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx
- ; SEMCAD X Version 14.6.10 (7372)

Configuration/Position 3/Area Scan 2 (101x101x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 0.0160 W/kg
Configuration/Position 3/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 1.969 V/m; Power Drift = 0.65 dB
Peak SAR (extrapolated) = 0.0290 W/kg
SAR(1 g) = 0.00894 W/kg; SAR(10 g) = 0.00313 W/kg
Maximum value of SAR (measured) = 0.0176 W/kg

Note: SAR level measured is very low as equivilant to noise floor

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12.4. Calibration Certificate for E-Field Probe

This sub-section contains Cal Certificates for E-Field Probes, and is not included in the total number of pages for this report.

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A2077

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

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

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 0108

Client **UL RFI UK**

Certificate No: EX3-3814_Sep16

CALIBRATION CERTIFICATE

Object EX3DV4 - SN:3814

Checked. M-N Cave 07/10/2016

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: September 30, 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: 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

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

Issued: October 3, 2016

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

Glossary:

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

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
b) IEC 62209-1, "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
c) IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
d) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Methods Applied and Interpretation of Parameters:

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

Probe EX3DV4

SN:3814

Manufactured:	September 2, 2011
Repaired:	September 27, 2016
Calibrated:	September 30, 2016

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

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3814

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu V/(V/m)^2$)[A]	0.47	0.51	0.51	± 10.1 %
DCP (mV)[B]	100.1	99.2	100.5	

Modulation Calibration Parameters

UID	Communication System Name		A dB	B dB√μV	C	D dB	VR mV	Unc[E] (k=2)
0	CW	X	0.0	0.0	1.0	0.00	189.5	±3.0 %
		Y	0.0	0.0	1.0		162.4	
		Z	0.0	0.0	1.0		186.6	

Note: For details on UID parameters see Appendix.

Sensor Model Parameters

	C1 fF	C2 fF	α V^{-1}	T1 $ms.V^{-2}$	T2 $ms.V^{-1}$	T3 ms	T4 V^{-2}	T5 V^{-1}	T6
X	46.28	349.7	36.44	13.95	0.951	4.992	0.582	0.404	1.006
Y	45.1	343	36.85	11.56	0.754	5.026	0.111	0.415	1.006
Z	42.92	328.6	37.39	7.804	0.802	5.034	0.147	0.47	1.007

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:3814

Calibration Parameter Determined in Head Tissue Simulating Media

f (MHz) [C]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha [G]	Depth [G] (mm)	Unc (k=2)
750	41.9	0.89	9.53	9.53	9.53	0.44	0.90	± 12.0 %
835	41.5	0.90	9.34	9.34	9.34	0.49	0.80	± 12.0 %
900	41.5	0.97	9.19	9.19	9.19	0.45	0.80	± 12.0 %
1450	40.5	1.20	7.99	7.99	7.99	0.35	0.80	± 12.0 %
1750	40.1	1.37	8.09	8.09	8.09	0.30	0.80	± 12.0 %
1900	40.0	1.40	7.81	7.81	7.81	0.33	0.80	± 12.0 %
2100	39.8	1.49	8.06	8.06	8.06	0.36	0.82	± 12.0 %
2300	39.5	1.67	7.49	7.49	7.49	0.35	0.80	± 12.0 %
2450	39.2	1.80	7.12	7.12	7.12	0.39	0.80	± 12.0 %
2600	39.0	1.96	6.95	6.95	6.95	0.30	0.94	± 12.0 %
3700	37.7	3.12	6.77	6.77	6.77	0.27	1.20	± 13.1 %
5250	35.9	4.71	5.09	5.09	5.09	0.35	1.80	± 13.1 %
5600	35.5	5.07	4.74	4.74	4.74	0.40	1.80	± 13.1 %
5750	35.4	5.22	4.77	4.77	4.77	0.45	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:3814

Calibration Parameter Determined in Body Tissue Simulating Media

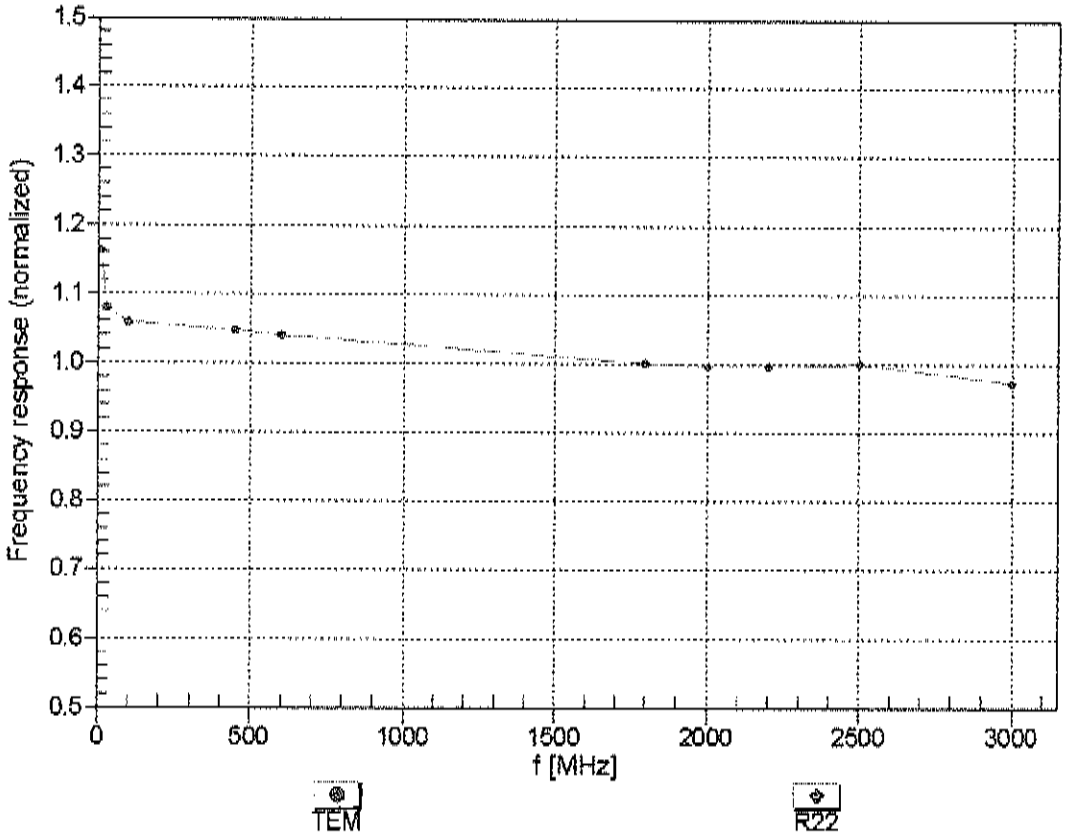
f (MHz) [C]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha [G]	Depth [G] (mm)	Unc (k=2)
750	55.5	0.96	9.27	9.27	9.27	0.30	1.03	± 12.0 %
835	55.2	0.97	9.14	9.14	9.14	0.46	0.87	± 12.0 %
900	55.0	1.05	9.17	9.17	9.17	0.48	0.80	± 12.0 %
1450	54.0	1.30	8.10	8.10	8.10	0.27	0.80	± 12.0 %
1750	53.4	1.49	7.80	7.80	7.80	0.43	0.80	± 12.0 %
1900	53.3	1.52	7.53	7.53	7.53	0.29	1.01	± 12.0 %
2100	53.2	1.62	8.01	8.01	8.01	0.41	0.80	± 12.0 %
2300	52.9	1.81	7.43	7.43	7.43	0.42	0.80	± 12.0 %
2450	52.7	1.95	7.19	7.19	7.19	0.34	0.90	± 12.0 %
2600	52.5	2.16	7.00	7.00	7.00	0.36	0.90	± 12.0 %
3700	51.0	3.55	6.61	6.61	6.61	0.30	1.20	± 13.1 %
5250	48.9	5.36	4.36	4.36	4.36	0.50	1.90	± 13.1 %
5600	48.5	5.77	3.80	3.80	3.80	0.60	1.90	± 13.1 %
5750	48.3	5.94	4.03	4.03	4.03	0.60	1.90	± 13.1 %

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

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

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

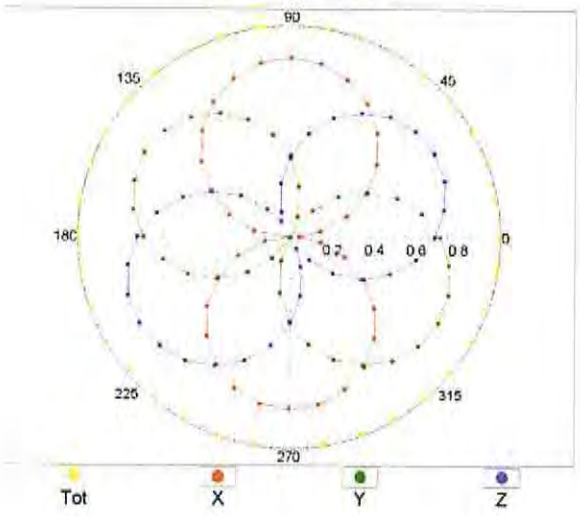
Frequency Response of E-Field
(TEM-Cell:ifi110 EXX, Waveguide: R22)



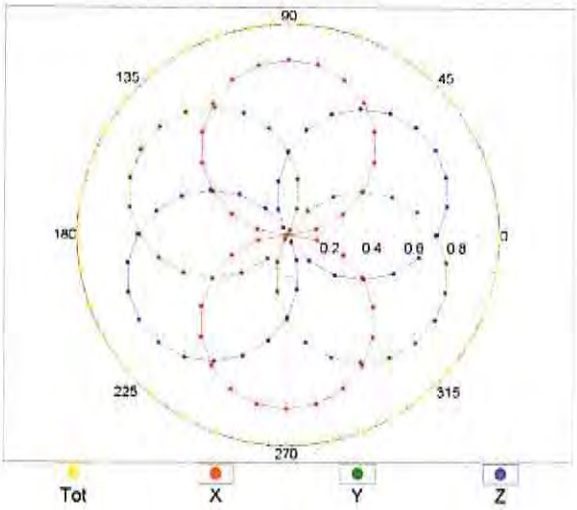
Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

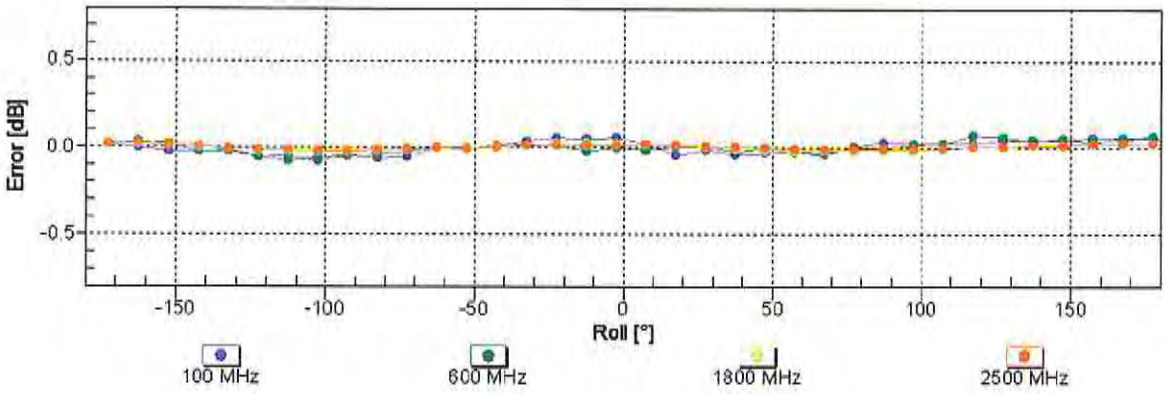
Receiving Pattern (ϕ), ϑ = 0°

f=600 MHz,TEM



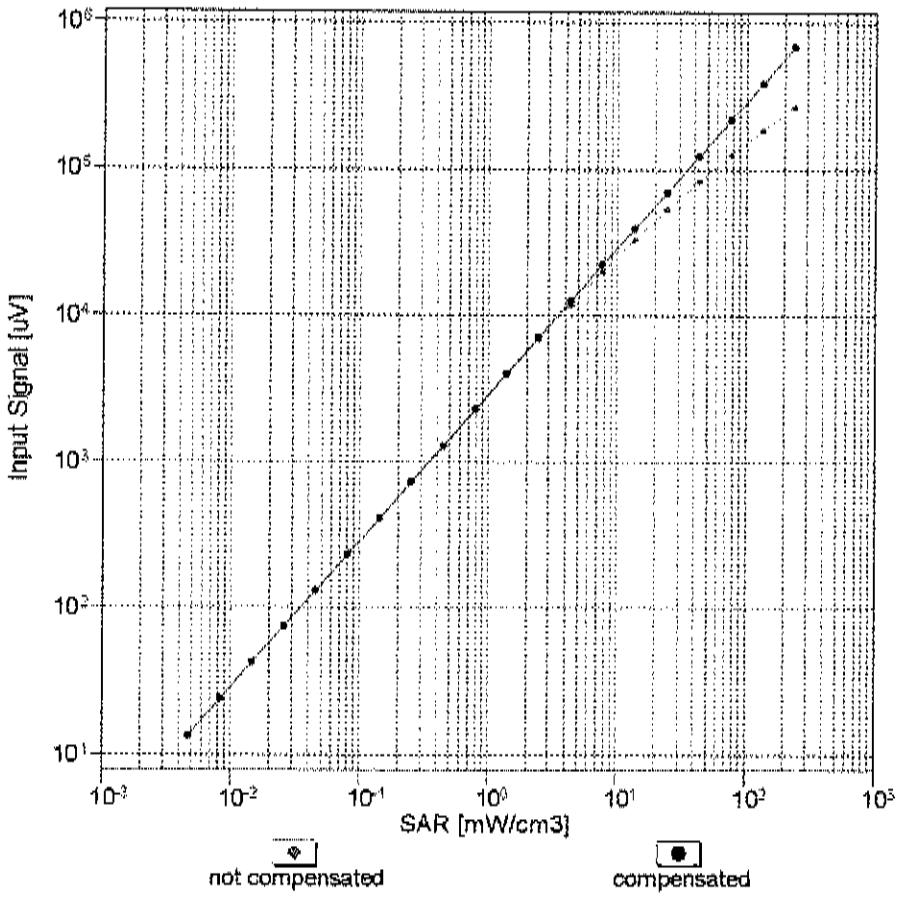
f=1800 MHz,R22

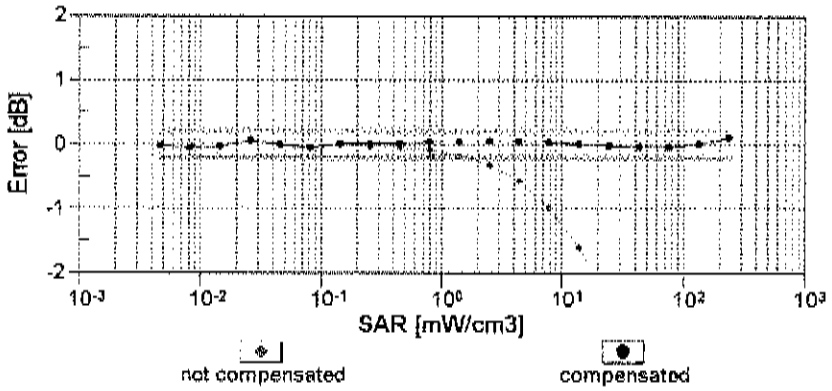




Uncertainty of Axial Isotropy Assessment: ± 0.5% (k=2)

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

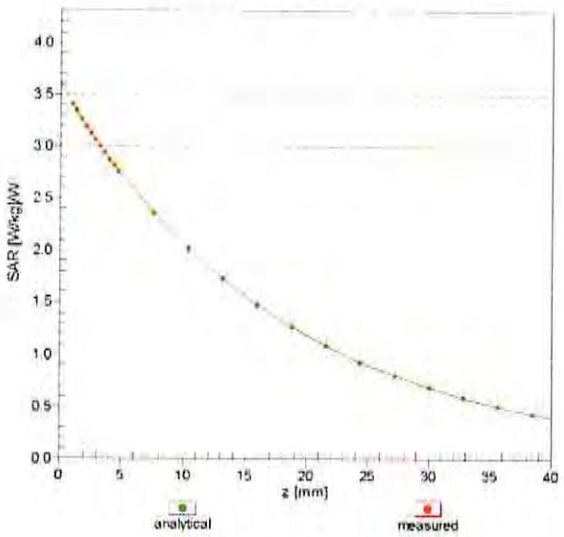




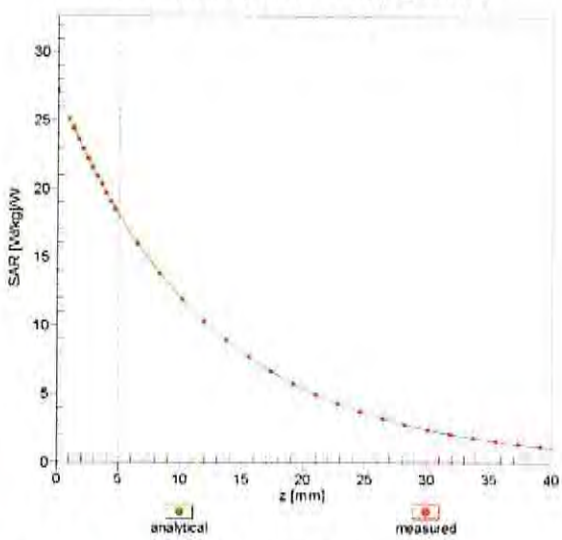
Uncertainty of Linearity Assessment: ± 0.6% (k=2)

Conversion Factor Assessment

f = 900 MHz,WGLS R9 (H_convF)

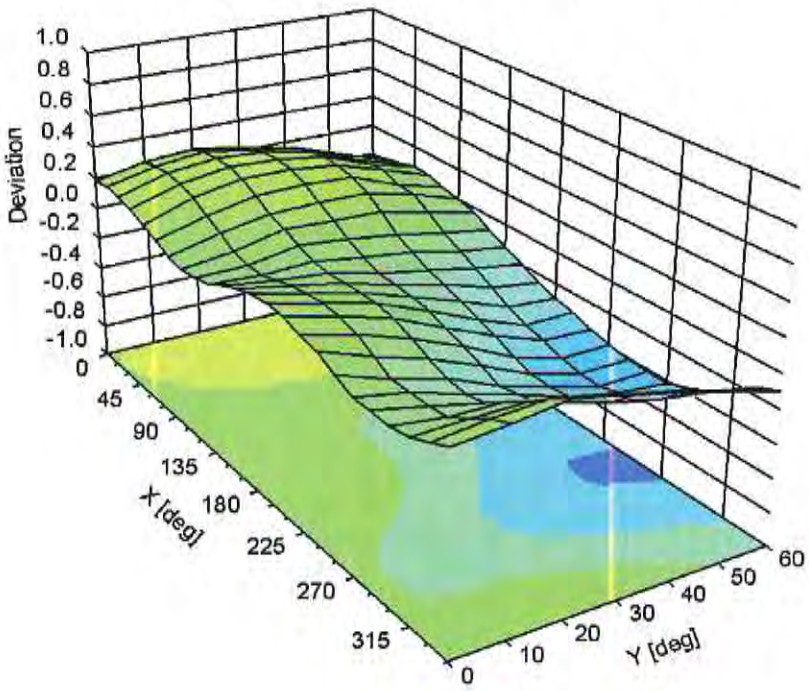


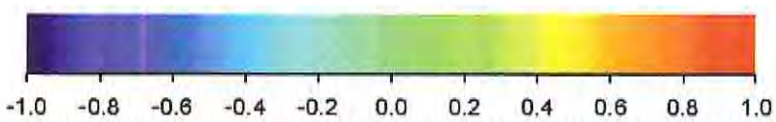
f = 1750 MHz,WGLS R22 (H_convF)



Deviation from Isotropy in Liquid

Error (ϕ, ϑ), f = 900 MHz





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

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3814

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	27.4
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

Appendix: Modulation Calibration Parameters

UID	Communication System Name		A dB	B dB√μV	C	D dB	VR mV	Max Unc[E] (k=2)
0	CW	X	0.00	0.00	1.00	0.00	189.5	± 3.0 %
		Y	0.00	0.00	1.00		182.4	
		Z	0.00	0.00	1.00		186.6	
10010-CAA	SAR Validation (Square, 100ms, 10ms)	X	2.78	66.85	11.18	10.00	20.0	± 9.6 %
		Y	3.24	69.14	12.27		20.0	
		Z	3.32	69.29	12.35		20.0	
10011-CAB	UMTS-FDD (WCDMA)	X	1.09	68.48	16.06	0.00	150.0	± 9.6 %
		Y	1.13	69.00	16.37		150.0	
		Z	1.24	71.20	17.59		150.0	
10012-CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps)	X	1.19	64.09	15.48	0.41	150.0	± 9.6 %
		Y	1.20	64.18	15.65		150.0	
		Z	1.19	64.63	16.15		150.0	
10013-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps)	X	4.85	66.58	17.01	1.46	150.0	± 9.6 %
		Y	4.86	66.69	17.17		150.0	
		Z	4.84	66.81	17.30		150.0	
10021-DAB	GSM-FDD (TDMA, GMSK)	X	32.02	97.62	23.12	9.39	50.0	± 9.6 %
		Y	100.00	113.74	27.46		50.0	
		Z	100.00	114.51	27.84		50.0	
10023-DAB	GPRS-FDD (TDMA, GMSK, TN 0)	X	19.30	91.13	21.33	9.57	50.0	± 9.6 %
		Y	100.00	113.41	27.36		50.0	
		Z	100.00	114.04	27.69		50.0	
10024-DAB	GPRS-FDD (TDMA, GMSK, TN 0-1)	X	100.00	109.30	24.41	6.56	60.0	± 9.6 %
		Y	100.00	113.34	26.12		60.0	
		Z	100.00	115.58	27.01		60.0	
10025-DAB	EDGE-FDD (TDMA, 8PSK, TN 0)	X	5.30	75.19	27.81	12.57	50.0	± 9.6 %
		Y	11.86	102.27	40.78		50.0	
		Z	5.09	74.93	28.33		50.0	
10026-DAB	EDGE-FDD (TDMA, 8PSK, TN 0-1)	X	9.44	90.87	31.58	9.56	60.0	± 9.6 %
		Y	10.56	96.01	34.45		60.0	
		Z	7.93	88.91	31.78		60.0	
10027-DAB	GPRS-FDD (TDMA, GMSK, TN 0-1-2)	X	100.00	108.84	23.46	4.80	80.0	± 9.6 %
		Y	100.00	114.74	25.92		80.0	
		Z	100.00	118.80	27.49		80.0	
10028-DAB	GPRS-FDD (TDMA, GMSK, TN 0-1-2-3)	X	100.00	109.66	23.17	3.55	100.0	± 9.6 %
		Y	100.00	117.62	26.45		100.0	
		Z	100.00	124.24	28.98		100.0	
10029-DAB	EDGE-FDD (TDMA, 8PSK, TN 0-1-2)	X	6.04	81.21	26.78	7.80	80.0	± 9.6 %
		Y	5.98	82.48	28.06		80.0	
		Z	4.98	78.57	26.52		80.0	
10030-CAA	IEEE 802.15.1 Bluetooth (GFSK, DH1)	X	100.00	107.49	23.14	5.30	70.0	± 9.6 %
		Y	100.00	112.16	25.09		70.0	
		Z	100.00	114.87	26.11		70.0	
10031-CAA	IEEE 802.15.1 Bluetooth (GFSK, DH3)	X	100.00	108.95	21.64	1.88	100.0	± 9.6 %
		Y	100.00	119.63	25.86		100.0	
		Z	100.00	129.93	29.60		100.0	

10032-CAA	IEEE 802.15.1 Bluetooth (GFSK, DH5)	X	100.00	115.94	23.62	1.17	100.0	± 9.6 %
		Y	100.00	132.47	29.99		100.0	
		Z	100.00	156.26	38.59		100.0	
10033-CAA	IEEE 802.15.1 Bluetooth (PI/4-DQPSK, DH1)	X	7.05	84.43	21.46	5.30	70.0	± 9.6 %
		Y	12.51	95.35	25.61		70.0	
		Z	15.91	100.27	27.24		70.0	
10034-CAA	IEEE 802.15.1 Bluetooth (PI/4-DQPSK, DH3)	X	2.85	75.59	17.26	1.88	100.0	± 9.6 %
		Y	3.55	79.70	19.17		100.0	
		Z	5.03	85.68	21.30		100.0	
10035-CAA	IEEE 802.15.1 Bluetooth (PI/4-DQPSK, DH5)	X	2.10	72.94	16.12	1.17	100.0	± 9.6 %
		Y	2.38	75.43	17.38		100.0	
		Z	3.13	80.11	19.15		100.0	
10036-CAA	IEEE 802.15.1 Bluetooth (8-DPSK, DH1)	X	8.75	87.84	22.66	5.30	70.0	± 9.6 %
		Y	18.16	101.40	27.45		70.0	
		Z	27.30	109.10	29.75		70.0	
10037-CAA	IEEE 802.15.1 Bluetooth (8-DPSK, DH3)	X	2.66	74.77	16.91	1.88	100.0	± 9.6 %
		Y	3.24	78.58	18.74		100.0	
		Z	4.28	83.55	20.58		100.0	
10038-CAA	IEEE 802.15.1 Bluetooth (8-DPSK, DH5)	X	2.13	73.35	16.40	1.17	100.0	± 9.6 %
		Y	2.41	75.86	17.67		100.0	
		Z	3.20	80.81	19.54		100.0	
10039-CAB	CDMA2000 (1xRTT, RC1)	X	2.26	75.24	17.07	0.00	150.0	± 9.6 %
		Y	2.26	75.23	17.00		150.0	
		Z	3.66	82.12	19.33		150.0	
10042-CAB	IS-54 / IS-136 FDD (TDMA/FDM, PI/4-DQPSK, Halfrate)	X	25.57	93.07	20.45	7.78	50.0	± 9.6 %
		Y	100.00	110.50	25.14		50.0	
		Z	100.00	111.56	25.56		50.0	
10044-CAA	IS-91/EIA/TIA-553 FDD (FDMA, FM)	X	0.00	99.48	1.05	0.00	150.0	± 9.6 %
		Y	0.00	99.07	0.64		150.0	
		Z	0.00	107.26	0.38		150.0	
10048-CAA	DECT (TDD, TDMA/FDM, GFSK, Full Slot, 24)	X	8.40	77.72	18.41	13.80	25.0	± 9.6 %
		Y	19.08	89.08	22.17		25.0	
		Z	22.60	90.77	22.74		25.0	
10049-CAA	DECT (TDD, TDMA/FDM, GFSK, Double Slot, 12)	X	9.33	81.06	18.43	10.79	40.0	± 9.6 %
		Y	34.50	98.88	23.97		40.0	
		Z	63.49	106.94	26.17		40.0	
10056-CAA	UMTS-TDD (TD-SCDMA, 1.28 Mcps)	X	10.98	86.24	22.33	9.03	50.0	± 9.6 %
		Y	23.97	100.07	27.09		50.0	
		Z	28.09	102.68	27.83		50.0	
10058-DAB	EDGE-FDD (TDMA, 8PSK, TN 0-1-2-3)	X	4.67	76.39	24.09	6.55	100.0	± 9.6 %
		Y	4.50	76.65	24.82		100.0	
		Z	3.92	74.06	23.83		100.0	
10059-CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 2 Mbps)	X	1.23	65.16	16.00	0.61	110.0	± 9.6 %
		Y	1.23	65.26	16.25		110.0	
		Z	1.22	65.72	16.77		110.0	
10060-CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 5.5 Mbps)	X	11.17	103.56	27.20	1.30	110.0	± 9.6 %
		Y	38.07	125.79	33.67		110.0	
		Z	100.00	146.05	39.06		110.0	

10061-CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 11 Mbps)	X	2.80	78.81	21.19	2.04	110.0	± 9.6 %
		Y	2.93	81.01	22.71		110.0	
		Z	2.84	82.05	23.60		110.0	
10062-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps)	X	4.67	66.65	16.54	0.49	100.0	± 9.6 %
		Y	4.67	66.72	16.64		100.0	
		Z	4.66	66.86	16.78		100.0	
10063-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 9 Mbps)	X	4.68	66.72	16.61	0.72	100.0	± 9.6 %
		Y	4.68	66.80	16.72		100.0	
		Z	4.67	66.94	16.87		100.0	
10064-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 12 Mbps)	X	4.96	66.96	16.82	0.86	100.0	± 9.6 %
		Y	4.96	67.05	16.94		100.0	
		Z	4.94	67.17	17.08		100.0	
10065-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 18 Mbps)	X	4.82	66.83	16.88	1.21	100.0	± 9.6 %
		Y	4.83	66.92	17.02		100.0	
		Z	4.80	67.03	17.16		100.0	
10066-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 24 Mbps)	X	4.83	66.83	17.02	1.46	100.0	± 9.6 %
		Y	4.84	66.94	17.18		100.0	
		Z	4.81	67.03	17.31		100.0	
10067-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 36 Mbps)	X	5.12	66.97	17.42	2.04	100.0	± 9.6 %
		Y	5.13	67.11	17.61		100.0	
		Z	5.10	67.20	17.73		100.0	
10068-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 48 Mbps)	X	5.16	66.99	17.60	2.55	100.0	± 9.6 %
		Y	5.17	67.13	17.82		100.0	
		Z	5.13	67.18	17.91		100.0	
10069-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 54 Mbps)	X	5.24	67.00	17.79	2.67	100.0	± 9.6 %
		Y	5.25	67.15	18.02		100.0	
		Z	5.21	67.19	18.10		100.0	
10071-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 9 Mbps)	X	4.94	66.63	17.27	1.99	100.0	± 9.6 %
		Y	4.95	66.76	17.46		100.0	
		Z	4.93	66.86	17.58		100.0	
10072-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 12 Mbps)	X	4.91	66.93	17.46	2.30	100.0	± 9.6 %
		Y	4.93	67.07	17.66		100.0	
		Z	4.90	67.15	17.78		100.0	
10073-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 18 Mbps)	X	4.97	67.07	17.74	2.83	100.0	± 9.6 %
		Y	4.99	67.23	17.98		100.0	
		Z	4.96	67.29	18.09		100.0	
10074-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 24 Mbps)	X	4.96	66.96	17.87	3.30	100.0	± 9.6 %
		Y	4.97	67.12	18.12		100.0	
		Z	4.94	67.17	18.22		100.0	
10075-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 36 Mbps)	X	5.00	67.08	18.16	3.82	90.0	± 9.6 %
		Y	5.01	67.23	18.42		90.0	
		Z	4.97	67.24	18.49		90.0	
10076-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 48 Mbps)	X	5.02	66.88	18.27	4.15	90.0	± 9.6 %
		Y	5.03	67.03	18.55		90.0	
		Z	4.99	67.05	18.62		90.0	
10077-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 54 Mbps)	X	5.04	66.95	18.36	4.30	90.0	± 9.6 %
		Y	5.05	67.11	18.65		90.0	
		Z	5.02	67.12	18.72		90.0	

10081-CAB	CDMA2000 (1xRTT, RC3)	X	0.93	67.59	13.44	0.00	150.0	± 9.6 %
		Y	0.95	67.87	13.53		150.0	
		Z	1.13	70.73	14.65		150.0	
10082-CAB	IS-54 / IS-136 FDD (TDMA/FDM, PI/4-DQPSK, Fullrate)	X	0.82	60.00	4.81	4.77	80.0	± 9.6 %
		Y	0.75	60.00	4.75		80.0	
		Z	0.67	60.00	4.59		80.0	
10090-DAB	GPRS-FDD (TDMA, GMSK, TN 0-4)	X	100.00	109.32	24.44	6.56	60.0	± 9.6 %
		Y	100.00	113.35	26.14		60.0	
		Z	100.00	115.59	27.04		60.0	
10097-CAB	UMTS-FDD (HSDPA)	X	1.90	68.46	16.20	0.00	150.0	± 9.6 %
		Y	1.92	68.62	16.29		150.0	
		Z	2.03	69.99	17.04		150.0	
10098-CAB	UMTS-FDD (HSUPA, Subtest 2)	X	1.86	68.42	16.18	0.00	150.0	± 9.6 %
		Y	1.88	68.59	16.27		150.0	
		Z	1.99	69.97	17.03		150.0	
10099-DAB	EDGE-FDD (TDMA, 8PSK, TN 0-4)	X	9.49	90.95	31.59	9.56	60.0	± 9.6 %
		Y	10.64	96.15	34.49		60.0	
		Z	7.98	89.03	31.82		60.0	
10100-CAB	LTE-FDD (SC-FDMA, 100% RB, 20 MHz, QPSK)	X	3.21	70.83	17.09	0.00	150.0	± 9.6 %
		Y	3.22	70.88	17.16		150.0	
		Z	3.32	71.70	17.67		150.0	
10101-CAB	LTE-FDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM)	X	3.27	67.73	16.16	0.00	150.0	± 9.6 %
		Y	3.28	67.75	16.22		150.0	
		Z	3.30	68.09	16.49		150.0	
10102-CAB	LTE-FDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM)	X	3.38	67.70	16.25	0.00	150.0	± 9.6 %
		Y	3.38	67.69	16.29		150.0	
		Z	3.40	68.04	16.57		150.0	
10103-CAB	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, QPSK)	X	6.00	74.28	19.64	3.98	65.0	± 9.6 %
		Y	5.98	74.91	20.25		65.0	
		Z	5.75	74.82	20.42		65.0	
10104-CAB	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM)	X	6.28	73.29	20.03	3.98	65.0	± 9.6 %
		Y	6.15	73.51	20.45		65.0	
		Z	5.78	72.77	20.27		65.0	
10105-CAB	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM)	X	5.72	71.37	19.47	3.98	65.0	± 9.6 %
		Y	5.58	71.42	19.79		65.0	
		Z	5.32	70.89	19.69		65.0	
10108-CAC	LTE-FDD (SC-FDMA, 100% RB, 10 MHz, QPSK)	X	2.80	70.09	16.94	0.00	150.0	± 9.6 %
		Y	2.81	70.17	17.02		150.0	
		Z	2.89	71.06	17.57		150.0	
10109-CAC	LTE-FDD (SC-FDMA, 100% RB, 10 MHz, 16-QAM)	X	2.93	67.66	16.10	0.00	150.0	± 9.6 %
		Y	2.93	67.68	16.15		150.0	
		Z	2.96	68.16	16.48		150.0	
10110-CAC	LTE-FDD (SC-FDMA, 100% RB, 5 MHz, QPSK)	X	2.28	69.28	16.58	0.00	150.0	± 9.6 %
		Y	2.29	69.42	16.69		150.0	
		Z	2.37	70.49	17.31		150.0	
10111-CAC	LTE-FDD (SC-FDMA, 100% RB, 5 MHz, 16-QAM)	X	2.68	68.78	16.53	0.00	150.0	± 9.6 %
		Y	2.67	68.73	16.50		150.0	
		Z	2.75	69.72	17.06		150.0	

10112-CAC	LTE-FDD (SC-FDMA, 100% RB, 10 MHz, 64-QAM)	X	3.06	67.65	16.15	0.00	150.0	± 9.6 %
		Y	3.05	67.66	16.19		150.0	
		Z	3.08	68.12	16.52		150.0	
10113-CAC	LTE-FDD (SC-FDMA, 100% RB, 5 MHz, 64-QAM)	X	2.83	68.92	16.65	0.00	150.0	± 9.6 %
		Y	2.82	68.85	16.61		150.0	
		Z	2.90	69.81	17.16		150.0	
10114-CAB	IEEE 802.11n (HT Greenfield, 13.5 Mbps, BPSK)	X	5.15	67.30	16.58	0.00	150.0	± 9.6 %
		Y	5.15	67.30	16.63		150.0	
		Z	5.14	67.42	16.77		150.0	
10115-CAB	IEEE 802.11n (HT Greenfield, 81 Mbps, 16-QAM)	X	5.43	67.39	16.64	0.00	150.0	± 9.6 %
		Y	5.42	67.38	16.67		150.0	
		Z	5.40	67.47	16.80		150.0	
10116-CAB	IEEE 802.11n (HT Greenfield, 135 Mbps, 64-QAM)	X	5.24	67.48	16.60	0.00	150.0	± 9.6 %
		Y	5.24	67.48	16.64		150.0	
		Z	5.23	67.61	16.79		150.0	
10117-CAB	IEEE 802.11n (HT Mixed, 13.5 Mbps, BPSK)	X	5.11	67.13	16.52	0.00	150.0	± 9.6 %
		Y	5.11	67.14	16.56		150.0	
		Z	5.10	67.27	16.71		150.0	
10118-CAB	IEEE 802.11n (HT Mixed, 81 Mbps, 16-QAM)	X	5.51	67.61	16.75	0.00	150.0	± 9.6 %
		Y	5.50	67.59	16.78		150.0	
		Z	5.49	67.70	16.92		150.0	
10119-CAB	IEEE 802.11n (HT Mixed, 135 Mbps, 64-QAM)	X	5.22	67.43	16.59	0.00	150.0	± 9.6 %
		Y	5.22	67.44	16.64		150.0	
		Z	5.22	67.58	16.79		150.0	
10140-CAB	LTE-FDD (SC-FDMA, 100% RB, 15 MHz, 16-QAM)	X	3.41	67.69	16.16	0.00	150.0	± 9.6 %
		Y	3.41	67.71	16.21		150.0	
		Z	3.43	68.04	16.48		150.0	
10141-CAB	LTE-FDD (SC-FDMA, 100% RB, 15 MHz, 64-QAM)	X	3.54	67.80	16.34	0.00	150.0	± 9.6 %
		Y	3.53	67.79	16.37		150.0	
		Z	3.55	68.14	16.65		150.0	
10142-CAC	LTE-FDD (SC-FDMA, 100% RB, 3 MHz, QPSK)	X	2.07	69.48	16.32	0.00	150.0	± 9.6 %
		Y	2.08	69.63	16.40		150.0	
		Z	2.19	71.09	17.14		150.0	
10143-CAC	LTE-FDD (SC-FDMA, 100% RB, 3 MHz, 16-QAM)	X	2.59	69.85	16.34	0.00	150.0	± 9.6 %
		Y	2.56	69.73	16.26		150.0	
		Z	2.72	71.22	16.95		150.0	
10144-CAC	LTE-FDD (SC-FDMA, 100% RB, 3 MHz, 64-QAM)	X	2.28	67.06	14.48	0.00	150.0	± 9.6 %
		Y	2.28	67.11	14.48		150.0	
		Z	2.30	67.71	14.73		150.0	
10145-CAC	LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, QPSK)	X	1.27	65.80	12.14	0.00	150.0	± 9.6 %
		Y	1.24	65.55	11.92		150.0	
		Z	1.23	65.86	11.82		150.0	
10146-CAC	LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, 16-QAM)	X	1.88	66.06	11.48	0.00	150.0	± 9.6 %
		Y	1.67	64.97	10.86		150.0	
		Z	1.67	65.12	10.74		150.0	
10147-CAC	LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, 64-QAM)	X	2.26	68.28	12.67	0.00	150.0	± 9.6 %
		Y	1.93	66.66	11.83		150.0	
		Z	1.99	67.15	11.85		150.0	

10149-CAB	LTE-FDD (SC-FDMA, 50% RB, 20 MHz, 16-QAM)	X	2.94	67.72	16.15	0.00	150.0	± 9.6 %
		Y	2.94	67.74	16.19		150.0	
		Z	2.97	68.23	16.54		150.0	
10150-CAB	LTE-FDD (SC-FDMA, 50% RB, 20 MHz, 64-QAM)	X	3.06	67.71	16.20	0.00	150.0	± 9.6 %
		Y	3.06	67.71	16.23		150.0	
		Z	3.09	68.19	16.57		150.0	
10151-CAB	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, QPSK)	X	6.50	77.16	20.86	3.98	65.0	± 9.6 %
		Y	6.55	78.17	21.66		65.0	
		Z	6.19	77.92	21.79		65.0	
10152-CAB	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 16-QAM)	X	5.79	73.13	19.64	3.98	65.0	± 9.6 %
		Y	5.69	73.50	20.13		65.0	
		Z	5.32	72.77	19.95		65.0	
10153-CAB	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 64-QAM)	X	6.18	74.17	20.46	3.98	65.0	± 9.6 %
		Y	6.05	74.42	20.89		65.0	
		Z	5.69	73.80	20.77		65.0	
10154-CAC	LTE-FDD (SC-FDMA, 50% RB, 10 MHz, QPSK)	X	2.34	69.77	16.87	0.00	150.0	± 9.6 %
		Y	2.34	69.84	16.94		150.0	
		Z	2.43	71.03	17.62		150.0	
10155-CAC	LTE-FDD (SC-FDMA, 50% RB, 10 MHz, 16-QAM)	X	2.68	68.80	16.54	0.00	150.0	± 9.6 %
		Y	2.67	68.76	16.52		150.0	
		Z	2.75	69.75	17.08		150.0	
10156-CAC	LTE-FDD (SC-FDMA, 50% RB, 5 MHz, QPSK)	X	1.93	69.76	16.18	0.00	150.0	± 9.6 %
		Y	1.94	69.87	16.23		150.0	
		Z	2.09	71.66	17.07		150.0	
10157-CAC	LTE-FDD (SC-FDMA, 50% RB, 5 MHz, 16-QAM)	X	2.14	67.84	14.60	0.00	150.0	± 9.6 %
		Y	2.14	67.85	14.57		150.0	
		Z	2.20	68.75	14.93		150.0	
10158-CAC	LTE-FDD (SC-FDMA, 50% RB, 10 MHz, 64-QAM)	X	2.84	68.99	16.70	0.00	150.0	± 9.6 %
		Y	2.82	68.92	16.66		150.0	
		Z	2.91	69.91	17.22		150.0	
10159-CAC	LTE-FDD (SC-FDMA, 50% RB, 5 MHz, 64-QAM)	X	2.27	68.38	14.92	0.00	150.0	± 9.6 %
		Y	2.25	68.31	14.84		150.0	
		Z	2.33	69.32	15.25		150.0	
10160-CAB	LTE-FDD (SC-FDMA, 50% RB, 15 MHz, QPSK)	X	2.81	69.14	16.68	0.00	150.0	± 9.6 %
		Y	2.82	69.26	16.78		150.0	
		Z	2.90	70.09	17.29		150.0	
10161-CAB	LTE-FDD (SC-FDMA, 50% RB, 15 MHz, 16-QAM)	X	2.96	67.68	16.14	0.00	150.0	± 9.6 %
		Y	2.96	67.69	16.16		150.0	
		Z	2.99	68.21	16.51		150.0	
10162-CAB	LTE-FDD (SC-FDMA, 50% RB, 15 MHz, 64-QAM)	X	3.07	67.84	16.25	0.00	150.0	± 9.6 %
		Y	3.07	67.84	16.27		150.0	
		Z	3.10	68.38	16.63		150.0	
10166-CAC	LTE-FDD (SC-FDMA, 50% RB, 1.4 MHz, QPSK)	X	3.55	69.57	19.24	3.01	150.0	± 9.6 %
		Y	3.42	69.08	19.08		150.0	
		Z	3.49	69.78	19.56		150.0	
10167-CAC	LTE-FDD (SC-FDMA, 50% RB, 1.4 MHz, 16-QAM)	X	4.35	72.56	19.73	3.01	150.0	± 9.6 %
		Y	4.05	71.65	19.43		150.0	
		Z	4.22	72.68	20.00		150.0	

10168-CAC	LTE-FDD (SC-FDMA, 50% RB, 1.4 MHz, 64-QAM)	X	4.91	75.25	21.27	3.01	150.0	± 9.6 %
		Y	4.47	73.83	20.75		150.0	
		Z	4.79	75.48	21.61		150.0	
10169-CAB	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, QPSK)	X	2.92	68.85	18.96	3.01	150.0	± 9.6 %
		Y	2.73	67.79	18.55		150.0	
		Z	2.83	68.54	19.06		150.0	
10170-CAB	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM)	X	4.06	75.33	21.58	3.01	150.0	± 9.6 %
		Y	3.46	72.72	20.60		150.0	
		Z	3.80	74.50	21.53		150.0	
10171-AAB	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, 64-QAM)	X	3.26	70.67	18.53	3.01	150.0	± 9.6 %
		Y	2.94	69.29	18.08		150.0	
		Z	3.11	70.17	18.59		150.0	
10172-CAB	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK)	X	5.95	83.50	25.23	6.02	65.0	± 9.6 %
		Y	5.65	84.20	26.22		65.0	
		Z	5.12	82.81	25.98		65.0	
10173-CAB	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM)	X	11.62	92.06	26.25	6.02	65.0	± 9.6 %
		Y	11.01	93.45	27.47		65.0	
		Z	11.06	94.39	28.11		65.0	
10174-CAB	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 64-QAM)	X	7.57	84.01	23.07	6.02	65.0	± 9.6 %
		Y	7.52	85.77	24.36		65.0	
		Z	7.91	87.38	25.23		65.0	
10175-CAC	LTE-FDD (SC-FDMA, 1 RB, 10 MHz, QPSK)	X	2.88	68.52	18.69	3.01	150.0	± 9.6 %
		Y	2.70	67.54	18.33		150.0	
		Z	2.80	68.23	18.80		150.0	
10176-CAC	LTE-FDD (SC-FDMA, 1 RB, 10 MHz, 16-QAM)	X	4.07	75.35	21.59	3.01	150.0	± 9.6 %
		Y	3.47	72.75	20.61		150.0	
		Z	3.80	74.52	21.55		150.0	
10177-CAE	LTE-FDD (SC-FDMA, 1 RB, 5 MHz, QPSK)	X	2.91	68.68	18.79	3.01	150.0	± 9.6 %
		Y	2.72	67.66	18.41		150.0	
		Z	2.82	68.37	18.90		150.0	
10178-CAC	LTE-FDD (SC-FDMA, 1 RB, 5 MHz, 16-QAM)	X	4.02	75.10	21.46	3.01	150.0	± 9.6 %
		Y	3.44	72.58	20.52		150.0	
		Z	3.77	74.31	21.43		150.0	
10179-CAC	LTE-FDD (SC-FDMA, 1 RB, 10 MHz, 64-QAM)	X	3.62	72.84	19.91	3.01	150.0	± 9.6 %
		Y	3.18	70.96	19.24		150.0	
		Z	3.42	72.23	19.93		150.0	
10180-CAC	LTE-FDD (SC-FDMA, 1 RB, 5 MHz, 64-QAM)	X	3.25	70.60	18.48	3.01	150.0	± 9.6 %
		Y	2.93	69.24	18.05		150.0	
		Z	3.10	70.11	18.54		150.0	
10181-CAB	LTE-FDD (SC-FDMA, 1 RB, 15 MHz, QPSK)	X	2.90	68.66	18.78	3.01	150.0	± 9.6 %
		Y	2.72	67.65	18.41		150.0	
		Z	2.82	68.36	18.89		150.0	
10182-CAB	LTE-FDD (SC-FDMA, 1 RB, 15 MHz, 16-QAM)	X	4.01	75.07	21.45	3.01	150.0	± 9.6 %
		Y	3.44	72.56	20.51		150.0	
		Z	3.76	74.29	21.42		150.0	
10183-AAA	LTE-FDD (SC-FDMA, 1 RB, 15 MHz, 64-QAM)	X	3.25	70.57	18.47	3.01	150.0	± 9.6 %
		Y	2.93	69.22	18.04		150.0	
		Z	3.10	70.09	18.53		150.0	

10184-CAC	LTE-FDD (SC-FDMA, 1 RB, 3 MHz, QPSK)	X	2.91	68.71	18.81	3.01	150.0	± 9.6 %
		Y	2.73	67.69	18.43		150.0	
		Z	2.83	68.40	18.91		150.0	
10185-CAC	LTE-FDD (SC-FDMA, 1 RB, 3 MHz, 16-QAM)	X	4.03	75.16	21.49	3.01	150.0	± 9.6 %
		Y	3.45	72.63	20.54		150.0	
		Z	3.78	74.36	21.46		150.0	
10186-AAC	LTE-FDD (SC-FDMA, 1 RB, 3 MHz, 64-QAM)	X	3.26	70.64	18.50	3.01	150.0	± 9.6 %
		Y	2.94	69.28	18.07		150.0	
		Z	3.11	70.16	18.56		150.0	
10187-CAC	LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK)	X	2.92	68.76	18.87	3.01	150.0	± 9.6 %
		Y	2.74	67.73	18.49		150.0	
		Z	2.84	68.46	18.98		150.0	
10188-CAC	LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, 16-QAM)	X	4.18	75.92	21.92	3.01	150.0	± 9.6 %
		Y	3.54	73.16	20.87		150.0	
		Z	3.90	75.05	21.85		150.0	
10189-AAC	LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, 64-QAM)	X	3.34	71.10	18.80	3.01	150.0	± 9.6 %
		Y	3.00	69.64	18.32		150.0	
		Z	3.18	70.58	18.85		150.0	
10193-CAB	IEEE 802.11n (HT Greenfield, 6.5 Mbps, BPSK)	X	4.54	66.72	16.28	0.00	150.0	± 9.6 %
		Y	4.53	66.73	16.31		150.0	
		Z	4.52	66.90	16.47		150.0	
10194-CAB	IEEE 802.11n (HT Greenfield, 39 Mbps, 16-QAM)	X	4.70	67.02	16.41	0.00	150.0	± 9.6 %
		Y	4.70	67.03	16.44		150.0	
		Z	4.68	67.19	16.60		150.0	
10195-CAB	IEEE 802.11n (HT Greenfield, 65 Mbps, 64-QAM)	X	4.75	67.05	16.42	0.00	150.0	± 9.6 %
		Y	4.74	67.06	16.46		150.0	
		Z	4.72	67.21	16.61		150.0	
10196-CAB	IEEE 802.11n (HT Mixed, 6.5 Mbps, BPSK)	X	4.54	66.78	16.30	0.00	150.0	± 9.6 %
		Y	4.53	66.78	16.33		150.0	
		Z	4.52	66.94	16.48		150.0	
10197-CAB	IEEE 802.11n (HT Mixed, 39 Mbps, 16-QAM)	X	4.72	67.04	16.42	0.00	150.0	± 9.6 %
		Y	4.71	67.05	16.45		150.0	
		Z	4.69	67.20	16.61		150.0	
10198-CAB	IEEE 802.11n (HT Mixed, 65 Mbps, 64-QAM)	X	4.75	67.07	16.43	0.00	150.0	± 9.6 %
		Y	4.74	67.08	16.47		150.0	
		Z	4.72	67.23	16.62		150.0	
10219-CAB	IEEE 802.11n (HT Mixed, 7.2 Mbps, BPSK)	X	4.49	66.80	16.26	0.00	150.0	± 9.6 %
		Y	4.48	66.80	16.29		150.0	
		Z	4.47	66.97	16.45		150.0	
10220-CAB	IEEE 802.11n (HT Mixed, 43.3 Mbps, 16-QAM)	X	4.71	67.01	16.41	0.00	150.0	± 9.6 %
		Y	4.70	67.01	16.44		150.0	
		Z	4.69	67.17	16.59		150.0	
10221-CAB	IEEE 802.11n (HT Mixed, 72.2 Mbps, 64-QAM)	X	4.75	67.00	16.42	0.00	150.0	± 9.6 %
		Y	4.75	67.00	16.45		150.0	
		Z	4.73	67.15	16.60		150.0	
10222-CAB	IEEE 802.11n (HT Mixed, 15 Mbps, BPSK)	X	5.09	67.14	16.52	0.00	150.0	± 9.6 %
		Y	5.08	67.14	16.56		150.0	
		Z	5.08	67.27	16.70		150.0	

10223-CAB	IEEE 802.11n (HT Mixed, 90 Mbps, 16-QAM)	X	5.39	67.38	16.65	0.00	150.0	± 9.6 %
		Y	5.40	67.41	16.71		150.0	
		Z	5.38	67.51	16.84		150.0	
10224-CAB	IEEE 802.11n (HT Mixed, 150 Mbps, 64-QAM)	X	5.13	67.26	16.50	0.00	150.0	± 9.6 %
		Y	5.13	67.26	16.54		150.0	
		Z	5.12	67.38	16.69		150.0	
10225-CAB	UMTS-FDD (HSPA+)	X	2.82	66.39	15.53	0.00	150.0	± 9.6 %
		Y	2.82	66.41	15.53		150.0	
		Z	2.83	66.83	15.79		150.0	
10226-CAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 16-QAM)	X	12.49	93.43	26.78	6.02	65.0	± 9.6 %
		Y	11.71	94.68	27.95		65.0	
		Z	11.90	95.87	28.68		65.0	
10227-CAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 64-QAM)	X	11.53	90.72	25.29	6.02	65.0	± 9.6 %
		Y	11.27	92.54	26.61		65.0	
		Z	11.90	94.43	27.56		65.0	
10228-CAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK)	X	8.42	90.34	27.70	6.02	65.0	± 9.6 %
		Y	7.81	90.91	28.68		65.0	
		Z	6.96	89.44	28.50		65.0	
10229-CAB	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 16-QAM)	X	11.71	92.18	26.29	6.02	65.0	± 9.6 %
		Y	11.09	93.54	27.50		65.0	
		Z	11.14	94.50	28.15		65.0	
10230-CAB	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 64-QAM)	X	10.81	89.56	24.84	6.02	65.0	± 9.6 %
		Y	10.61	91.43	26.18		65.0	
		Z	11.06	93.05	27.04		65.0	
10231-CAB	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, QPSK)	X	8.03	89.35	27.28	6.02	65.0	± 9.6 %
		Y	7.50	90.03	28.30		65.0	
		Z	6.67	88.48	28.08		65.0	
10232-CAB	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 16-QAM)	X	11.69	92.16	26.29	6.02	65.0	± 9.6 %
		Y	11.07	93.53	27.50		65.0	
		Z	11.12	94.48	28.15		65.0	
10233-CAB	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 64-QAM)	X	10.78	89.54	24.84	6.02	65.0	± 9.6 %
		Y	10.59	91.41	26.17		65.0	
		Z	11.02	93.02	27.03		65.0	
10234-CAB	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, QPSK)	X	7.71	88.43	26.85	6.02	65.0	± 9.6 %
		Y	7.25	89.24	27.91		65.0	
		Z	6.44	87.67	27.67		65.0	
10235-CAB	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 16-QAM)	X	11.70	92.19	26.30	6.02	65.0	± 9.6 %
		Y	11.08	93.57	27.51		65.0	
		Z	11.13	94.52	28.16		65.0	
10236-CAB	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 64-QAM)	X	10.89	89.67	24.87	6.02	65.0	± 9.6 %
		Y	10.72	91.59	26.22		65.0	
		Z	11.17	93.20	27.09		65.0	
10237-CAB	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, QPSK)	X	8.04	89.41	27.30	6.02	65.0	± 9.6 %
		Y	7.51	90.10	28.33		65.0	
		Z	6.67	88.54	28.10		65.0	
10238-CAB	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 16-QAM)	X	11.66	92.13	26.28	6.02	65.0	± 9.6 %
		Y	11.04	93.51	27.49		65.0	
		Z	11.09	94.46	28.14		65.0	

10239-CAB	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 64-QAM)	X	10.75	89.50	24.83	6.02	65.0	± 9.6 %
		Y	10.55	91.38	26.16		65.0	
		Z	10.98	92.98	27.02		65.0	
10240-CAB	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, QPSK)	X	8.01	89.36	27.28	6.02	65.0	± 9.6 %
		Y	7.49	90.05	28.31		65.0	
		Z	6.65	88.49	28.09		65.0	
10241-CAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 16-QAM)	X	7.90	80.25	24.70	6.98	65.0	± 9.6 %
		Y	7.54	80.27	25.14		65.0	
		Z	7.32	80.00	25.13		65.0	
10242-CAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 64-QAM)	X	6.79	77.13	23.31	6.98	65.0	± 9.6 %
		Y	6.61	77.45	23.86		65.0	
		Z	6.47	77.37	23.92		65.0	
10243-CAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, QPSK)	X	5.57	73.90	22.78	6.98	65.0	± 9.6 %
		Y	5.47	74.26	23.34		65.0	
		Z	5.29	73.86	23.25		65.0	
10244-CAB	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 16-QAM)	X	5.21	73.03	16.87	3.98	65.0	± 9.6 %
		Y	5.09	73.51	17.30		65.0	
		Z	5.03	73.92	17.50		65.0	
10245-CAB	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 64-QAM)	X	5.11	72.49	16.59	3.98	65.0	± 9.6 %
		Y	4.96	72.88	16.98		65.0	
		Z	4.87	73.13	17.10		65.0	
10246-CAB	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, QPSK)	X	4.91	75.48	18.15	3.98	65.0	± 9.6 %
		Y	5.27	77.64	19.36		65.0	
		Z	5.10	77.97	19.55		65.0	
10247-CAB	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 16-QAM)	X	4.83	72.50	17.62	3.98	65.0	± 9.6 %
		Y	4.81	73.23	18.21		65.0	
		Z	4.54	72.95	18.13		65.0	
10248-CAB	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 64-QAM)	X	4.83	72.02	17.40	3.98	65.0	± 9.6 %
		Y	4.80	72.67	17.95		65.0	
		Z	4.50	72.24	17.79		65.0	
10249-CAB	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, QPSK)	X	6.13	79.13	20.55	3.98	65.0	± 9.6 %
		Y	6.59	81.48	21.84		65.0	
		Z	6.42	82.04	22.21		65.0	
10250-CAB	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 16-QAM)	X	5.84	75.38	20.54	3.98	65.0	± 9.6 %
		Y	5.73	75.80	21.05		65.0	
		Z	5.41	75.46	21.07		65.0	
10251-CAB	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 64-QAM)	X	5.56	73.33	19.31	3.98	65.0	± 9.6 %
		Y	5.48	73.81	19.83		65.0	
		Z	5.13	73.20	19.67		65.0	
10252-CAB	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, QPSK)	X	6.58	79.52	21.71	3.98	65.0	± 9.6 %
		Y	6.77	81.11	22.75		65.0	
		Z	6.42	81.09	22.98		65.0	
10253-CAB	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 16-QAM)	X	5.68	72.66	19.41	3.98	65.0	± 9.6 %
		Y	5.58	72.99	19.88		65.0	
		Z	5.23	72.31	19.69		65.0	
10254-CAB	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 64-QAM)	X	6.04	73.60	20.14	3.98	65.0	± 9.6 %
		Y	5.91	73.85	20.56		65.0	
		Z	5.56	73.24	20.42		65.0	

10255-CAB	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, QPSK)	X	6.23	76.59	20.84	3.98	65.0	± 9.6 %
		Y	6.24	77.48	21.59		65.0	
		Z	5.87	77.13	21.66		65.0	
10256-CAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 16-QAM)	X	3.95	68.92	13.98	3.98	65.0	± 9.6 %
		Y	3.82	69.23	14.29		65.0	
		Z	3.62	68.96	14.12		65.0	
10257-CAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 64-QAM)	X	3.87	68.34	13.61	3.98	65.0	± 9.6 %
		Y	3.72	68.54	13.87		65.0	
		Z	3.50	68.15	13.62		65.0	
10258-CAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, QPSK)	X	3.64	70.79	15.29	3.98	65.0	± 9.6 %
		Y	3.77	72.19	16.18		65.0	
		Z	3.49	71.75	15.95		65.0	
10259-CAB	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 16-QAM)	X	5.23	73.61	18.69	3.98	65.0	± 9.6 %
		Y	5.19	74.27	19.27		65.0	
		Z	4.91	74.00	19.24		65.0	
10260-CAB	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 64-QAM)	X	5.26	73.37	18.60	3.98	65.0	± 9.6 %
		Y	5.21	73.96	19.14		65.0	
		Z	4.92	73.65	19.08		65.0	
10261-CAB	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, QPSK)	X	6.03	78.54	20.75	3.98	65.0	± 9.6 %
		Y	6.30	80.40	21.88		65.0	
		Z	6.03	80.58	22.14		65.0	
10262-CAB	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 16-QAM)	X	5.82	75.32	20.49	3.98	65.0	± 9.6 %
		Y	5.71	75.75	21.01		65.0	
		Z	5.40	75.40	21.02		65.0	
10263-CAB	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 64-QAM)	X	5.55	73.31	19.30	3.98	65.0	± 9.6 %
		Y	5.47	73.78	19.82		65.0	
		Z	5.12	73.17	19.66		65.0	
10264-CAB	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, QPSK)	X	6.52	79.33	21.61	3.98	65.0	± 9.6 %
		Y	6.71	80.91	22.65		65.0	
		Z	6.35	80.86	22.87		65.0	
10265-CAB	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 16-QAM)	X	5.79	73.14	19.64	3.98	65.0	± 9.6 %
		Y	5.69	73.51	20.14		65.0	
		Z	5.32	72.78	19.95		65.0	
10266-CAB	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 64-QAM)	X	6.18	74.15	20.45	3.98	65.0	± 9.6 %
		Y	6.05	74.41	20.88		65.0	
		Z	5.69	73.79	20.76		65.0	
10267-CAB	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, QPSK)	X	6.49	77.12	20.84	3.98	65.0	± 9.6 %
		Y	6.54	78.13	21.64		65.0	
		Z	6.18	77.88	21.77		65.0	
10268-CAB	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 16-QAM)	X	6.44	73.19	20.11	3.98	65.0	± 9.6 %
		Y	6.30	73.36	20.48		65.0	
		Z	5.93	72.66	20.31		65.0	
10269-CAB	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 64-QAM)	X	6.42	72.82	20.00	3.98	65.0	± 9.6 %
		Y	6.28	72.95	20.36		65.0	
		Z	5.92	72.25	20.17		65.0	
10270-CAB	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, QPSK)	X	6.44	74.85	20.10	3.98	65.0	± 9.6 %
		Y	6.37	75.35	20.65		65.0	
		Z	6.04	74.97	20.69		65.0	

10274-CAB	UMTS-FDD (HSUPA, Subtest 5, 3GPP Rel8.10)	X	2.62	66.84	15.50	0.00	150.0	± 9.6 %
		Y	2.63	66.93	15.55		150.0	
		Z	2.67	67.49	15.87		150.0	
10275-CAB	UMTS-FDD (HSUPA, Subtest 5, 3GPP Rel8.4)	X	1.68	68.72	16.12	0.00	150.0	± 9.6 %
		Y	1.71	69.00	16.29		150.0	
		Z	1.81	70.46	17.10		150.0	
10277-CAA	PHS (QPSK)	X	2.43	61.92	7.59	9.03	50.0	± 9.6 %
		Y	2.33	61.95	7.56		50.0	
		Z	2.26	61.71	7.35		50.0	
10278-CAA	PHS (QPSK, BW 884MHz, Rolloff 0.5)	X	4.24	69.71	14.12	9.03	50.0	± 9.6 %
		Y	4.66	71.76	15.19		50.0	
		Z	4.46	71.07	14.77		50.0	
10279-CAA	PHS (QPSK, BW 884MHz, Rolloff 0.38)	X	4.35	69.97	14.29	9.03	50.0	± 9.6 %
		Y	4.80	72.06	15.37		50.0	
		Z	4.58	71.36	14.95		50.0	
10290-AAB	CDMA2000, RC1, SO55, Full Rate	X	1.60	70.39	14.75	0.00	150.0	± 9.6 %
		Y	1.61	70.49	14.74		150.0	
		Z	1.93	73.32	15.74		150.0	
10291-AAB	CDMA2000, RC3, SO55, Full Rate	X	0.91	67.29	13.28	0.00	150.0	± 9.6 %
		Y	0.92	67.56	13.36		150.0	
		Z	1.08	70.23	14.41		150.0	
10292-AAB	CDMA2000, RC3, SO32, Full Rate	X	1.42	74.36	16.84	0.00	150.0	± 9.6 %
		Y	1.48	74.91	17.00		150.0	
		Z	3.55	87.27	21.16		150.0	
10293-AAB	CDMA2000, RC3, SO3, Full Rate	X	3.62	88.12	22.29	0.00	150.0	± 9.6 %
		Y	3.58	87.83	22.13		150.0	
		Z	100.00	135.26	33.90		150.0	
10295-AAB	CDMA2000, RC1, SO3, 1/8th Rate 25 fr.	X	8.20	81.18	21.75	9.03	50.0	± 9.6 %
		Y	10.64	86.73	24.13		50.0	
		Z	12.84	89.68	24.96		50.0	
10297-AAA	LTE-FDD (SC-FDMA, 50% RB, 20 MHz, QPSK)	X	2.82	70.21	17.01	0.00	150.0	± 9.6 %
		Y	2.82	70.27	17.09		150.0	
		Z	2.91	71.19	17.66		150.0	
10298-AAB	LTE-FDD (SC-FDMA, 50% RB, 3 MHz, QPSK)	X	1.65	68.70	14.63	0.00	150.0	± 9.6 %
		Y	1.64	68.66	14.56		150.0	
		Z	1.76	70.23	15.17		150.0	
10299-AAB	LTE-FDD (SC-FDMA, 50% RB, 3 MHz, 16-QAM)	X	2.68	70.13	14.45	0.00	150.0	± 9.6 %
		Y	2.37	68.79	13.81		150.0	
		Z	2.65	70.42	14.42		150.0	
10300-AAB	LTE-FDD (SC-FDMA, 50% RB, 3 MHz, 64-QAM)	X	1.90	64.95	11.24	0.00	150.0	± 9.6 %
		Y	1.75	64.29	10.86		150.0	
		Z	1.76	64.50	10.83		150.0	
10301-AAA	IEEE 802.16e WiMAX (29:18, 5ms, 10MHz, QPSK, PUSC)	X	4.64	65.14	17.34	4.17	50.0	± 9.6 %
		Y	4.73	65.58	17.60		50.0	
		Z	4.69	65.68	17.65		50.0	
10302-AAA	IEEE 802.16e WiMAX (29:18, 5ms, 10MHz, QPSK, PUSC, 3 CTRL symbols)	X	5.17	65.96	18.16	4.96	50.0	± 9.6 %
		Y	5.23	66.31	18.39		50.0	
		Z	5.17	66.24	18.33		50.0	

10303-AAA	IEEE 802.16e WiMAX (31:15, 5ms, 10MHz, 64QAM, PUSC)	X	4.92	65.61	17.99	4.96	50.0	± 9.6 %
		Y	4.98	65.95	18.22		50.0	
		Z	4.92	65.88	18.15		50.0	
10304-AAA	IEEE 802.16e WiMAX (29:18, 5ms, 10MHz, 64QAM, PUSC)	X	4.73	65.49	17.50	4.17	50.0	± 9.6 %
		Y	4.78	65.79	17.69		50.0	
		Z	4.73	65.79	17.68		50.0	
10305-AAA	IEEE 802.16e WiMAX (31:15, 10ms, 10MHz, 64QAM, PUSC, 15 symbols)	X	4.47	67.82	19.70	6.02	35.0	± 9.6 %
		Y	4.53	68.38	20.07		35.0	
		Z	4.52	68.50	19.97		35.0	
10306-AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, 64QAM, PUSC, 18 symbols)	X	4.73	66.58	19.19	6.02	35.0	± 9.6 %
		Y	4.78	67.05	19.51		35.0	
		Z	4.76	67.13	19.45		35.0	
10307-AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, QPSK, PUSC, 18 symbols)	X	4.64	66.81	19.18	6.02	35.0	± 9.6 %
		Y	4.69	67.25	19.50		35.0	
		Z	4.66	67.32	19.43		35.0	
10308-AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, 16QAM, PUSC)	X	4.62	67.03	19.33	6.02	35.0	± 9.6 %
		Y	4.67	67.50	19.67		35.0	
		Z	4.65	67.57	19.60		35.0	
10309-AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, 16QAM, AMC 2x3, 18 symbols)	X	4.78	66.78	19.32	6.02	35.0	± 9.6 %
		Y	4.83	67.26	19.66		35.0	
		Z	4.80	67.31	19.58		35.0	
10310-AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, QPSK, AMC 2x3, 18 symbols)	X	4.68	66.68	19.18	6.02	35.0	± 9.6 %
		Y	4.73	67.14	19.51		35.0	
		Z	4.71	67.23	19.45		35.0	
10311-AAA	LTE-FDD (SC-FDMA, 100% RB, 15 MHz, QPSK)	X	3.19	69.45	16.63	0.00	150.0	± 9.6 %
		Y	3.19	69.47	16.68		150.0	
		Z	3.28	70.27	17.19		150.0	
10313-AAA	iDEN 1:3	X	3.39	71.53	15.33	6.99	70.0	± 9.6 %
		Y	3.84	74.67	17.07		70.0	
		Z	3.68	75.32	17.59		70.0	
10314-AAA	iDEN 1:6	X	4.74	77.93	20.58	10.00	30.0	± 9.6 %
		Y	5.68	82.49	22.80		30.0	
		Z	7.59	87.95	24.84		30.0	
10315-AAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps, 96pc duty cycle)	X	1.10	64.08	15.50	0.17	150.0	± 9.6 %
		Y	1.11	64.14	15.63		150.0	
		Z	1.11	64.76	16.23		150.0	
10316-AAB	IEEE 802.11g WiFi 2.4 GHz (ERP-OFDM, 6 Mbps, 96pc duty cycle)	X	4.57	66.68	16.34	0.17	150.0	± 9.6 %
		Y	4.58	66.73	16.42		150.0	
		Z	4.56	66.88	16.57		150.0	
10317-AAB	IEEE 802.11a WiFi 5 GHz (OFDM, 6 Mbps, 96pc duty cycle)	X	4.57	66.68	16.34	0.17	150.0	± 9.6 %
		Y	4.58	66.73	16.42		150.0	
		Z	4.56	66.88	16.57		150.0	
10400-AAC	IEEE 802.11ac WiFi (20MHz, 64-QAM, 99pc duty cycle)	X	4.69	67.07	16.39	0.00	150.0	± 9.6 %
		Y	4.69	67.09	16.44		150.0	
		Z	4.66	67.23	16.59		150.0	
10401-AAC	IEEE 802.11ac WiFi (40MHz, 64-QAM, 99pc duty cycle)	X	5.41	67.27	16.57	0.00	150.0	± 9.6 %
		Y	5.42	67.32	16.64		150.0	
		Z	5.42	67.46	16.78		150.0	

10402-AAC	IEEE 802.11ac WiFi (80MHz, 64-QAM, 99pc duty cycle)	X	5.65	67.51	16.55	0.00	150.0	± 9.6 %
		Y	5.65	67.50	16.58		150.0	
		Z	5.64	67.58	16.71		150.0	
10403-AAB	CDMA2000 (1xEV-DO, Rev. 0)	X	1.60	70.39	14.75	0.00	115.0	± 9.6 %
		Y	1.61	70.49	14.74		115.0	
		Z	1.93	73.32	15.74		115.0	
10404-AAB	CDMA2000 (1xEV-DO, Rev. A)	X	1.60	70.39	14.75	0.00	115.0	± 9.6 %
		Y	1.61	70.49	14.74		115.0	
		Z	1.93	73.32	15.74		115.0	
10406-AAB	CDMA2000, RC3, SO32, SCH0, Full Rate	X	100.00	123.00	30.86	0.00	100.0	± 9.6 %
		Y	77.31	122.16	31.13		100.0	
		Z	100.00	125.97	32.12		100.0	
10410-AAA	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	26.89	103.16	25.36	3.23	80.0	± 9.6 %
		Y	65.26	118.95	30.06		80.0	
		Z	100.00	128.22	32.85		80.0	
10415-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps, 99pc duty cycle)	X	1.03	63.36	15.05	0.00	150.0	± 9.6 %
		Y	1.04	63.45	15.15		150.0	
		Z	1.05	64.09	15.75		150.0	
10416-AAA	IEEE 802.11g WiFi 2.4 GHz (ERP-OFDM, 6 Mbps, 99pc duty cycle)	X	4.54	66.76	16.35	0.00	150.0	± 9.6 %
		Y	4.53	66.77	16.39		150.0	
		Z	4.52	66.93	16.54		150.0	
10417-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps, 99pc duty cycle)	X	4.54	66.76	16.35	0.00	150.0	± 9.6 %
		Y	4.53	66.77	16.39		150.0	
		Z	4.52	66.93	16.54		150.0	
10418-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps, 99pc duty cycle, Long preambule)	X	4.53	66.93	16.38	0.00	150.0	± 9.6 %
		Y	4.53	66.94	16.42		150.0	
		Z	4.52	67.12	16.59		150.0	
10419-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps, 99pc duty cycle, Short preambule)	X	4.55	66.87	16.38	0.00	150.0	± 9.6 %
		Y	4.55	66.88	16.41		150.0	
		Z	4.53	67.06	16.58		150.0	
10422-AAA	IEEE 802.11n (HT Greenfield, 7.2 Mbps, BPSK)	X	4.66	66.86	16.38	0.00	150.0	± 9.6 %
		Y	4.66	66.87	16.42		150.0	
		Z	4.64	67.03	16.58		150.0	
10423-AAA	IEEE 802.11n (HT Greenfield, 43.3 Mbps, 16-QAM)	X	4.82	67.16	16.49	0.00	150.0	± 9.6 %
		Y	4.81	67.17	16.53		150.0	
		Z	4.79	67.32	16.68		150.0	
10424-AAA	IEEE 802.11n (HT Greenfield, 72.2 Mbps, 64-QAM)	X	4.75	67.12	16.47	0.00	150.0	± 9.6 %
		Y	4.74	67.13	16.51		150.0	
		Z	4.72	67.28	16.66		150.0	
10425-AAA	IEEE 802.11n (HT Greenfield, 15 Mbps, BPSK)	X	5.35	67.40	16.64	0.00	150.0	± 9.6 %
		Y	5.35	67.39	16.67		150.0	
		Z	5.34	67.51	16.82		150.0	
10426-AAA	IEEE 802.11n (HT Greenfield, 90 Mbps, 16-QAM)	X	5.37	67.46	16.66	0.00	150.0	± 9.6 %
		Y	5.37	67.48	16.72		150.0	
		Z	5.37	67.63	16.87		150.0	

10427-AAA	IEEE 802.11n (HT Greenfield, 150 Mbps, 64-QAM)	X	5.37	67.41	16.64	0.00	150.0	± 9.6 %
		Y	5.37	67.41	16.68		150.0	
		Z	5.36	67.51	16.81		150.0	
10430-AAA	LTE-FDD (OFDMA, 5 MHz, E-TM 3.1)	X	4.40	71.78	18.71	0.00	150.0	± 9.6 %
		Y	4.28	71.24	18.39		150.0	
		Z	4.51	72.71	19.15		150.0	
10431-AAA	LTE-FDD (OFDMA, 10 MHz, E-TM 3.1)	X	4.21	67.36	16.36	0.00	150.0	± 9.6 %
		Y	4.20	67.38	16.38		150.0	
		Z	4.19	67.63	16.57		150.0	
10432-AAA	LTE-FDD (OFDMA, 15 MHz, E-TM 3.1)	X	4.51	67.19	16.42	0.00	150.0	± 9.6 %
		Y	4.51	67.21	16.46		150.0	
		Z	4.49	67.40	16.63		150.0	
10433-AAA	LTE-FDD (OFDMA, 20 MHz, E-TM 3.1)	X	4.76	67.15	16.49	0.00	150.0	± 9.6 %
		Y	4.75	67.16	16.53		150.0	
		Z	4.74	67.31	16.68		150.0	
10434-AAA	W-CDMA (BS Test Model 1, 64 DPCH)	X	4.57	72.88	18.75	0.00	150.0	± 9.6 %
		Y	4.41	72.21	18.37		150.0	
		Z	4.74	74.03	19.23		150.0	
10435-AAA	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	23.98	101.49	24.88	3.23	80.0	± 9.6 %
		Y	57.01	116.87	29.52		80.0	
		Z	100.00	127.95	32.72		80.0	
10447-AAA	LTE-FDD (OFDMA, 5 MHz, E-TM 3.1, Clipping 44%)	X	3.51	67.45	15.67	0.00	150.0	± 9.6 %
		Y	3.50	67.46	15.66		150.0	
		Z	3.50	67.83	15.84		150.0	
10448-AAA	LTE-FDD (OFDMA, 10 MHz, E-TM 3.1, Clippin 44%)	X	4.06	67.15	16.22	0.00	150.0	± 9.6 %
		Y	4.05	67.16	16.25		150.0	
		Z	4.04	67.42	16.44		150.0	
10449-AAA	LTE-FDD (OFDMA, 15 MHz, E-TM 3.1, Cliping 44%)	X	4.33	67.03	16.33	0.00	150.0	± 9.6 %
		Y	4.33	67.04	16.36		150.0	
		Z	4.32	67.24	16.54		150.0	
10450-AAA	LTE-FDD (OFDMA, 20 MHz, E-TM 3.1, Clipping 44%)	X	4.53	66.93	16.35	0.00	150.0	± 9.6 %
		Y	4.53	66.93	16.39		150.0	
		Z	4.51	67.10	16.55		150.0	
10451-AAA	W-CDMA (BS Test Model 1, 64 DPCH, Clipping 44%)	X	3.40	67.62	15.26	0.00	150.0	± 9.6 %
		Y	3.38	67.60	15.22		150.0	
		Z	3.37	67.97	15.37		150.0	
10456-AAA	IEEE 802.11ac WiFi (160MHz, 64-QAM, 99pc duty cycle)	X	6.23	67.93	16.78	0.00	150.0	± 9.6 %
		Y	6.24	67.95	16.83		150.0	
		Z	6.26	68.10	16.98		150.0	
10457-AAA	UMTS-FDD (DC-HSDPA)	X	3.80	65.40	16.06	0.00	150.0	± 9.6 %
		Y	3.81	65.41	16.10		150.0	
		Z	3.81	65.58	16.26		150.0	
10458-AAA	CDMA2000 (1xEV-DO, Rev. B, 2 carriers)	X	3.20	66.84	14.56	0.00	150.0	± 9.6 %
		Y	3.18	66.85	14.53		150.0	
		Z	3.14	67.02	14.51		150.0	
10459-AAA	CDMA2000 (1xEV-DO, Rev. B, 3 carriers)	X	4.34	65.37	15.67	0.00	150.0	± 9.6 %
		Y	4.35	65.51	15.73		150.0	
		Z	4.29	65.59	15.73		150.0	

10460-AAA	UMTS-FDD (WCDMA, AMR)	X	0.97	69.65	17.12	0.00	150.0	± 9.6 %
		Y	1.01	70.19	17.44		150.0	
		Z	1.16	73.58	19.25		150.0	
10461-AAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	13.01	96.24	24.46	3.29	80.0	± 9.6 %
		Y	25.30	108.79	28.60		80.0	
		Z	100.00	132.41	34.87		80.0	
10462-AAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	1.27	62.76	9.64	3.23	80.0	± 9.6 %
		Y	1.56	65.80	11.40		80.0	
		Z	3.78	75.24	15.16		80.0	
10463-AAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	0.98	60.10	7.84	3.23	80.0	± 9.6 %
		Y	1.03	61.37	8.81		80.0	
		Z	1.26	63.57	10.06		80.0	
10464-AAA	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	8.77	89.81	21.97	3.23	80.0	± 9.6 %
		Y	21.26	104.54	26.77		80.0	
		Z	100.00	129.51	33.34		80.0	
10465-AAA	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	1.19	62.09	9.26	3.23	80.0	± 9.6 %
		Y	1.37	64.51	10.77		80.0	
		Z	2.42	70.65	13.49		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	7.74	3.23	80.0	± 9.6 %
		Y	0.98	60.87	8.50		80.0	
		Z	1.14	62.59	9.55		80.0	
10467-AAA	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	10.05	91.68	22.54	3.23	80.0	± 9.6 %
		Y	25.94	107.42	27.53		80.0	
		Z	100.00	129.89	33.51		80.0	
10468-AAA	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	1.20	62.26	9.36	3.23	80.0	± 9.6 %
		Y	1.42	64.84	10.94		80.0	
		Z	2.69	71.75	13.91		80.0	
10469-AAA	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	0.97	60.00	7.74	3.23	80.0	± 9.6 %
		Y	0.98	60.88	8.51		80.0	
		Z	1.14	62.63	9.57		80.0	
10470-AAA	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	10.09	91.74	22.55	3.23	80.0	± 9.6 %
		Y	26.36	107.67	27.59		80.0	
		Z	100.00	129.94	33.52		80.0	
10471-AAA	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	1.20	62.21	9.33	3.23	80.0	± 9.6 %
		Y	1.41	64.78	10.89		80.0	
		Z	2.65	71.59	13.84		80.0	
10472-AAA	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	0.97	60.00	7.72	3.23	80.0	± 9.6 %
		Y	0.97	60.85	8.48		80.0	
		Z	1.13	62.57	9.53		80.0	
10473-AAA	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	10.03	91.65	22.52	3.23	80.0	± 9.6 %
		Y	26.26	107.59	27.56		80.0	
		Z	100.00	129.89	33.50		80.0	
10474-AAA	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	1.19	62.19	9.31	3.23	80.0	± 9.6 %
		Y	1.40	64.74	10.88		80.0	
		Z	2.62	71.49	13.80		80.0	
10475-AAA	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	0.97	60.00	7.72	3.23	80.0	± 9.6 %
		Y	0.97	60.83	8.47		80.0	
		Z	1.13	62.55	9.52		80.0	

10477-AAA	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	1.18	62.04	9.22	3.23	80.0	± 9.6 %
		Y	1.36	64.46	10.73		80.0	
		Z	2.42	70.64	13.46		80.0	
10478-AAA	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	0.97	60.00	7.71	3.23	80.0	± 9.6 %
		Y	0.97	60.79	8.44		80.0	
		Z	1.12	62.48	9.47		80.0	
10479-AAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	5.79	81.61	21.14	3.23	80.0	± 9.6 %
		Y	6.43	84.35	22.44		80.0	
		Z	16.50	99.91	27.42		80.0	
10480-AAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	4.79	74.80	16.89	3.23	80.0	± 9.6 %
		Y	5.51	77.56	18.15		80.0	
		Z	13.07	89.27	21.96		80.0	
10481-AAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	3.83	71.49	15.26	3.23	80.0	± 9.6 %
		Y	4.32	73.83	16.40		80.0	
		Z	7.99	81.95	19.25		80.0	
10482-AAA	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	2.47	69.00	15.16	2.23	80.0	± 9.6 %
		Y	2.80	71.35	16.40		80.0	
		Z	3.21	74.01	17.48		80.0	
10483-AAA	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	3.29	69.29	14.76	2.23	80.0	± 9.6 %
		Y	3.39	70.23	15.29		80.0	
		Z	4.28	73.73	16.66		80.0	
10484-AAA	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	3.15	68.51	14.43	2.23	80.0	± 9.6 %
		Y	3.21	69.27	14.89		80.0	
		Z	3.83	72.02	15.99		80.0	
10485-AAA	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	2.94	71.17	17.10	2.23	80.0	± 9.6 %
		Y	3.21	73.22	18.25		80.0	
		Z	3.59	75.77	19.41		80.0	
10486-AAA	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	2.90	67.79	15.13	2.23	80.0	± 9.6 %
		Y	3.04	68.91	15.82		80.0	
		Z	3.16	70.10	16.36		80.0	
10487-AAA	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	2.91	67.46	14.97	2.23	80.0	± 9.6 %
		Y	3.03	68.48	15.61		80.0	
		Z	3.12	69.51	16.08		80.0	
10488-AAA	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	3.33	71.07	17.85	2.23	80.0	± 9.6 %
		Y	3.47	72.31	18.69		80.0	
		Z	3.56	73.52	19.42		80.0	
10489-AAA	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	3.34	68.19	16.65	2.23	80.0	± 9.6 %
		Y	3.37	68.78	17.15		80.0	
		Z	3.38	69.44	17.59		80.0	
10490-AAA	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	3.43	68.08	16.62	2.23	80.0	± 9.6 %
		Y	3.46	68.63	17.09		80.0	
		Z	3.46	69.22	17.49		80.0	
10491-AAA	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	3.62	69.97	17.57	2.23	80.0	± 9.6 %
		Y	3.69	70.77	18.19		80.0	
		Z	3.69	71.42	18.69		80.0	
10492-AAA	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	3.72	67.69	16.79	2.23	80.0	± 9.6 %
		Y	3.72	68.05	17.17		80.0	
		Z	3.67	68.35	17.46		80.0	

10493-AAA	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	3.78	67.60	16.76	2.23	80.0	± 9.6 %
		Y	3.78	67.93	17.12		80.0	
		Z	3.73	68.20	17.39		80.0	
10494-AAA	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	3.87	71.24	17.95	2.23	80.0	± 9.6 %
		Y	3.99	72.22	18.65		80.0	
		Z	4.03	73.07	19.24		80.0	
10495-AAA	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	3.74	68.03	16.97	2.23	80.0	± 9.6 %
		Y	3.74	68.39	17.36		80.0	
		Z	3.70	68.69	17.67		80.0	
10496-AAA	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	3.83	67.82	16.92	2.23	80.0	± 9.6 %
		Y	3.82	68.14	17.28		80.0	
		Z	3.77	68.40	17.57		80.0	
10497-AAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	1.73	64.57	12.13	2.23	80.0	± 9.6 %
		Y	1.89	66.21	13.07		80.0	
		Z	1.94	67.06	13.33		80.0	
10498-AAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	1.45	60.47	9.01	2.23	80.0	± 9.6 %
		Y	1.44	60.77	9.25		80.0	
		Z	1.30	60.18	8.72		80.0	
10499-AAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	1.42	60.06	8.65	2.23	80.0	± 9.6 %
		Y	1.40	60.27	8.83		80.0	
		Z	1.30	60.00	8.46		80.0	
10500-AAA	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	3.07	70.94	17.34	2.23	80.0	± 9.6 %
		Y	3.27	72.59	18.34		80.0	
		Z	3.49	74.45	19.27		80.0	
10501-AAA	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	3.11	68.08	15.77	2.23	80.0	± 9.6 %
		Y	3.21	69.00	16.39		80.0	
		Z	3.29	70.01	16.91		80.0	
10502-AAA	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	3.17	67.96	15.66	2.23	80.0	± 9.6 %
		Y	3.26	68.84	16.25		80.0	
		Z	3.33	69.79	16.73		80.0	
10503-AAA	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	3.29	70.88	17.75	2.23	80.0	± 9.6 %
		Y	3.43	72.12	18.59		80.0	
		Z	3.51	73.29	19.30		80.0	
10504-AAA	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	3.32	68.10	16.59	2.23	80.0	± 9.6 %
		Y	3.36	68.70	17.09		80.0	
		Z	3.36	69.33	17.52		80.0	
10505-AAA	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	3.41	67.99	16.56	2.23	80.0	± 9.6 %
		Y	3.44	68.54	17.03		80.0	
		Z	3.44	69.11	17.43		80.0	
10506-AAA	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	3.84	71.10	17.88	2.23	80.0	± 9.6 %
		Y	3.96	72.09	18.58		80.0	
		Z	4.00	72.91	19.15		80.0	
10507-AAA	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	3.73	67.96	16.93	2.23	80.0	± 9.6 %
		Y	3.73	68.33	17.33		80.0	
		Z	3.69	68.63	17.63		80.0	

10508-AAA	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	3.81	67.75	16.88	2.23	80.0	± 9.6 %
		Y	3.81	68.07	17.24		80.0	
		Z	3.76	68.32	17.52		80.0	
10509-AAA	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	4.23	70.18	17.53	2.23	80.0	± 9.6 %
		Y	4.29	70.82	18.06		80.0	
		Z	4.28	71.32	18.48		80.0	
10510-AAA	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	4.22	67.83	17.01	2.23	80.0	± 9.6 %
		Y	4.21	68.06	17.32		80.0	
		Z	4.14	68.17	17.53		80.0	
10511-AAA	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	4.29	67.62	16.96	2.23	80.0	± 9.6 %
		Y	4.27	67.83	17.26		80.0	
		Z	4.19	67.92	17.45		80.0	
10512-AAA	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	4.35	71.44	17.89	2.23	80.0	± 9.6 %
		Y	4.47	72.32	18.53		80.0	
		Z	4.51	73.01	19.04		80.0	
10513-AAA	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	4.10	68.03	17.08	2.23	80.0	± 9.6 %
		Y	4.10	68.29	17.42		80.0	
		Z	4.03	68.42	17.65		80.0	
10514-AAA	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	4.14	67.68	16.99	2.23	80.0	± 9.6 %
		Y	4.12	67.89	17.30		80.0	
		Z	4.05	67.99	17.51		80.0	
10515-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 2 Mbps, 99pc duty cycle)	X	0.99	63.57	15.14	0.00	150.0	± 9.6 %
		Y	1.00	63.68	15.25		150.0	
		Z	1.01	64.39	15.89		150.0	
10516-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 5.5 Mbps, 99pc duty cycle)	X	0.69	73.01	18.96	0.00	150.0	± 9.6 %
		Y	0.76	74.60	19.76		150.0	
		Z	1.14	83.38	23.78		150.0	
10517-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 11 Mbps, 99pc duty cycle)	X	0.85	65.81	15.99	0.00	150.0	± 9.6 %
		Y	0.87	66.06	16.18		150.0	
		Z	0.91	67.57	17.27		150.0	
10518-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 9 Mbps, 99pc duty cycle)	X	4.53	66.84	16.33	0.00	150.0	± 9.6 %
		Y	4.53	66.85	16.37		150.0	
		Z	4.51	67.02	16.53		150.0	
10519-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 12 Mbps, 99pc duty cycle)	X	4.71	67.05	16.44	0.00	150.0	± 9.6 %
		Y	4.70	67.06	16.48		150.0	
		Z	4.68	67.22	16.63		150.0	
10520-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 18 Mbps, 99pc duty cycle)	X	4.56	67.02	16.37	0.00	150.0	± 9.6 %
		Y	4.55	67.02	16.40		150.0	
		Z	4.54	67.18	16.56		150.0	
10521-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 24 Mbps, 99pc duty cycle)	X	4.50	67.01	16.36	0.00	150.0	± 9.6 %
		Y	4.49	67.01	16.39		150.0	
		Z	4.47	67.17	16.55		150.0	
10522-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 36 Mbps, 99pc duty cycle)	X	4.56	67.12	16.45	0.00	150.0	± 9.6 %
		Y	4.55	67.13	16.49		150.0	
		Z	4.53	67.31	16.65		150.0	

10523-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 48 Mbps, 99pc duty cycle)	X	4.44	67.00	16.31	0.00	150.0	± 9.6 %
		Y	4.44	67.02	16.35		150.0	
		Z	4.43	67.22	16.53		150.0	
10524-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 54 Mbps, 99pc duty cycle)	X	4.50	67.04	16.42	0.00	150.0	± 9.6 %
		Y	4.49	67.05	16.45		150.0	
		Z	4.48	67.23	16.62		150.0	
10525-AAA	IEEE 802.11ac WiFi (20MHz, MCS0, 99pc duty cycle)	X	4.50	66.10	16.02	0.00	150.0	± 9.6 %
		Y	4.49	66.11	16.05		150.0	
		Z	4.49	66.30	16.23		150.0	
10526-AAA	IEEE 802.11ac WiFi (20MHz, MCS1, 99pc duty cycle)	X	4.66	66.45	16.15	0.00	150.0	± 9.6 %
		Y	4.65	66.46	16.19		150.0	
		Z	4.64	66.63	16.36		150.0	
10527-AAA	IEEE 802.11ac WiFi (20MHz, MCS2, 99pc duty cycle)	X	4.58	66.42	16.10	0.00	150.0	± 9.6 %
		Y	4.57	66.42	16.13		150.0	
		Z	4.56	66.61	16.30		150.0	
10528-AAA	IEEE 802.11ac WiFi (20MHz, MCS3, 99pc duty cycle)	X	4.60	66.43	16.13	0.00	150.0	± 9.6 %
		Y	4.59	66.43	16.16		150.0	
		Z	4.58	66.62	16.33		150.0	
10529-AAA	IEEE 802.11ac WiFi (20MHz, MCS4, 99pc duty cycle)	X	4.60	66.43	16.13	0.00	150.0	± 9.6 %
		Y	4.59	66.43	16.16		150.0	
		Z	4.58	66.62	16.33		150.0	
10531-AAA	IEEE 802.11ac WiFi (20MHz, MCS6, 99pc duty cycle)	X	4.58	66.52	16.14	0.00	150.0	± 9.6 %
		Y	4.57	66.52	16.17		150.0	
		Z	4.56	66.70	16.34		150.0	
10532-AAA	IEEE 802.11ac WiFi (20MHz, MCS7, 99pc duty cycle)	X	4.45	66.38	16.07	0.00	150.0	± 9.6 %
		Y	4.44	66.38	16.10		150.0	
		Z	4.43	66.56	16.28		150.0	
10533-AAA	IEEE 802.11ac WiFi (20MHz, MCS8, 99pc duty cycle)	X	4.61	66.49	16.12	0.00	150.0	± 9.6 %
		Y	4.60	66.50	16.16		150.0	
		Z	4.59	66.69	16.34		150.0	
10534-AAA	IEEE 802.11ac WiFi (40MHz, MCS0, 99pc duty cycle)	X	5.13	66.49	16.17	0.00	150.0	± 9.6 %
		Y	5.13	66.48	16.20		150.0	
		Z	5.12	66.61	16.35		150.0	
10535-AAA	IEEE 802.11ac WiFi (40MHz, MCS1, 99pc duty cycle)	X	5.20	66.68	16.26	0.00	150.0	± 9.6 %
		Y	5.20	66.68	16.30		150.0	
		Z	5.19	66.81	16.45		150.0	
10536-AAA	IEEE 802.11ac WiFi (40MHz, MCS2, 99pc duty cycle)	X	5.07	66.63	16.21	0.00	150.0	± 9.6 %
		Y	5.07	66.63	16.25		150.0	
		Z	5.07	66.78	16.41		150.0	
10537-AAA	IEEE 802.11ac WiFi (40MHz, MCS3, 99pc duty cycle)	X	5.13	66.59	16.20	0.00	150.0	± 9.6 %
		Y	5.12	66.59	16.23		150.0	
		Z	5.12	66.73	16.39		150.0	
10538-AAA	IEEE 802.11ac WiFi (40MHz, MCS4, 99pc duty cycle)	X	5.21	66.60	16.24	0.00	150.0	± 9.6 %
		Y	5.21	66.59	16.27		150.0	
		Z	5.20	66.72	16.42		150.0	
10540-AAA	IEEE 802.11ac WiFi (40MHz, MCS6, 99pc duty cycle)	X	5.15	66.62	16.26	0.00	150.0	± 9.6 %
		Y	5.14	66.60	16.29		150.0	
		Z	5.13	66.71	16.44		150.0	

10541-AAA	IEEE 802.11ac WiFi (40MHz, MCS7, 99pc duty cycle)	X	5.12	66.49	16.19	0.00	150.0	± 9.6 %
		Y	5.12	66.48	16.22		150.0	
		Z	5.11	66.59	16.36		150.0	
10542-AAA	IEEE 802.11ac WiFi (40MHz, MCS8, 99pc duty cycle)	X	5.27	66.56	16.24	0.00	150.0	± 9.6 %
		Y	5.27	66.55	16.27		150.0	
		Z	5.26	66.67	16.42		150.0	
10543-AAA	IEEE 802.11ac WiFi (40MHz, MCS9, 99pc duty cycle)	X	5.34	66.58	16.27	0.00	150.0	± 9.6 %
		Y	5.34	66.57	16.30		150.0	
		Z	5.32	66.68	16.44		150.0	
10544-AAA	IEEE 802.11ac WiFi (80MHz, MCS0, 99pc duty cycle)	X	5.45	66.59	16.16	0.00	150.0	± 9.6 %
		Y	5.45	66.58	16.19		150.0	
		Z	5.45	66.68	16.33		150.0	
10545-AAA	IEEE 802.11ac WiFi (80MHz, MCS1, 99pc duty cycle)	X	5.65	67.02	16.32	0.00	150.0	± 9.6 %
		Y	5.65	67.03	16.37		150.0	
		Z	5.65	67.16	16.52		150.0	
10546-AAA	IEEE 802.11ac WiFi (80MHz, MCS2, 99pc duty cycle)	X	5.51	66.78	16.22	0.00	150.0	± 9.6 %
		Y	5.51	66.76	16.25		150.0	
		Z	5.50	66.85	16.38		150.0	
10547-AAA	IEEE 802.11ac WiFi (80MHz, MCS3, 99pc duty cycle)	X	5.58	66.83	16.23	0.00	150.0	± 9.6 %
		Y	5.58	66.82	16.27		150.0	
		Z	5.58	66.92	16.41		150.0	
10548-AAA	IEEE 802.11ac WiFi (80MHz, MCS4, 99pc duty cycle)	X	5.82	67.72	16.65	0.00	150.0	± 9.6 %
		Y	5.82	67.73	16.70		150.0	
		Z	5.82	67.86	16.84		150.0	
10550-AAA	IEEE 802.11ac WiFi (80MHz, MCS6, 99pc duty cycle)	X	5.54	66.83	16.25	0.00	150.0	± 9.6 %
		Y	5.55	66.84	16.30		150.0	
		Z	5.55	66.98	16.45		150.0	
10551-AAA	IEEE 802.11ac WiFi (80MHz, MCS7, 99pc duty cycle)	X	5.54	66.85	16.23	0.00	150.0	± 9.6 %
		Y	5.54	66.83	16.26		150.0	
		Z	5.53	66.91	16.38		150.0	
10552-AAA	IEEE 802.11ac WiFi (80MHz, MCS8, 99pc duty cycle)	X	5.46	66.66	16.14	0.00	150.0	± 9.6 %
		Y	5.46	66.65	16.17		150.0	
		Z	5.46	66.76	16.31		150.0	
10553-AAA	IEEE 802.11ac WiFi (80MHz, MCS9, 99pc duty cycle)	X	5.54	66.68	16.18	0.00	150.0	± 9.6 %
		Y	5.54	66.66	16.21		150.0	
		Z	5.53	66.75	16.33		150.0	
10554-AAA	IEEE 1602.11ac WiFi (160MHz, MCS0, 99pc duty cycle)	X	5.86	66.95	16.24	0.00	150.0	± 9.6 %
		Y	5.87	66.94	16.27		150.0	
		Z	5.87	67.02	16.40		150.0	
10555-AAA	IEEE 1602.11ac WiFi (160MHz, MCS1, 99pc duty cycle)	X	5.99	67.24	16.37	0.00	150.0	± 9.6 %
		Y	5.99	67.24	16.41		150.0	
		Z	6.00	67.33	16.53		150.0	
10556-AAA	IEEE 1602.11ac WiFi (160MHz, MCS2, 99pc duty cycle)	X	6.01	67.30	16.39	0.00	150.0	± 9.6 %
		Y	6.02	67.29	16.43		150.0	
		Z	6.02	67.39	16.56		150.0	
10557-AAA	IEEE 1602.11ac WiFi (160MHz, MCS3, 99pc duty cycle)	X	5.97	67.18	16.35	0.00	150.0	± 9.6 %
		Y	5.97	67.17	16.38		150.0	
		Z	5.97	67.25	16.50		150.0	

10558-AAA	IEEE 1602.11ac WiFi (160MHz, MCS4, 99pc duty cycle)	X	6.02	67.34	16.44	0.00	150.0	± 9.6 %
		Y	6.02	67.33	16.48		150.0	
		Z	6.02	67.41	16.60		150.0	
10560-AAA	IEEE 1602.11ac WiFi (160MHz, MCS6, 99pc duty cycle)	X	6.01	67.19	16.40	0.00	150.0	± 9.6 %
		Y	6.01	67.17	16.44		150.0	
		Z	6.01	67.25	16.56		150.0	
10561-AAA	IEEE 1602.11ac WiFi (160MHz, MCS7, 99pc duty cycle)	X	5.94	67.17	16.43	0.00	150.0	± 9.6 %
		Y	5.94	67.16	16.47		150.0	
		Z	5.94	67.25	16.59		150.0	
10562-AAA	IEEE 1602.11ac WiFi (160MHz, MCS8, 99pc duty cycle)	X	6.05	67.50	16.60	0.00	150.0	± 9.6 %
		Y	6.04	67.48	16.63		150.0	
		Z	6.03	67.53	16.73		150.0	
10563-AAA	IEEE 1602.11ac WiFi (160MHz, MCS9, 99pc duty cycle)	X	6.18	67.54	16.57	0.00	150.0	± 9.6 %
		Y	6.16	67.46	16.58		150.0	
		Z	6.13	67.46	16.66		150.0	
10564-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 9 Mbps, 99pc duty cycle)	X	4.85	66.86	16.45	0.46	150.0	± 9.6 %
		Y	4.85	66.90	16.51		150.0	
		Z	4.83	67.01	16.63		150.0	
10565-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 12 Mbps, 99pc duty cycle)	X	5.07	67.31	16.78	0.46	150.0	± 9.6 %
		Y	5.07	67.32	16.82		150.0	
		Z	5.04	67.46	16.96		150.0	
10566-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 18 Mbps, 99pc duty cycle)	X	4.91	67.14	16.58	0.46	150.0	± 9.6 %
		Y	4.90	67.16	16.63		150.0	
		Z	4.88	67.28	16.77		150.0	
10567-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 24 Mbps, 99pc duty cycle)	X	4.94	67.56	16.96	0.46	150.0	± 9.6 %
		Y	4.93	67.55	16.99		150.0	
		Z	4.92	67.73	17.17		150.0	
10568-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 36 Mbps, 99pc duty cycle)	X	4.81	66.90	16.33	0.46	150.0	± 9.6 %
		Y	4.81	66.96	16.42		150.0	
		Z	4.78	67.05	16.52		150.0	
10569-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 48 Mbps, 99pc duty cycle)	X	4.90	67.67	17.03	0.46	150.0	± 9.6 %
		Y	4.89	67.66	17.06		150.0	
		Z	4.89	67.89	17.27		150.0	
10570-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 54 Mbps, 99pc duty cycle)	X	4.93	67.52	16.97	0.46	150.0	± 9.6 %
		Y	4.92	67.51	16.99		150.0	
		Z	4.91	67.69	17.17		150.0	
10571-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps, 90pc duty cycle)	X	1.18	64.49	15.64	0.46	130.0	± 9.6 %
		Y	1.18	64.58	15.85		130.0	
		Z	1.17	65.05	16.37		130.0	
10572-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 2 Mbps, 90pc duty cycle)	X	1.19	65.08	16.01	0.46	130.0	± 9.6 %
		Y	1.19	65.16	16.21		130.0	
		Z	1.19	65.73	16.80		130.0	
10573-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 5.5 Mbps, 90pc duty cycle)	X	2.04	85.68	23.36	0.46	130.0	± 9.6 %
		Y	2.40	89.44	25.12		130.0	
		Z	5.21	105.54	30.78		130.0	
10574-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 11 Mbps, 90pc duty cycle)	X	1.32	71.14	19.11	0.46	130.0	± 9.6 %
		Y	1.31	71.08	19.29		130.0	
		Z	1.39	73.35	20.74		130.0	

10575-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps, 90pc duty cycle)	X	4.62	66.58	16.43	0.46	130.0	± 9.6 %
		Y	4.62	66.64	16.52		130.0	
		Z	4.60	66.77	16.65		130.0	
10576-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 9 Mbps, 90pc duty cycle)	X	4.65	66.76	16.50	0.46	130.0	± 9.6 %
		Y	4.65	66.82	16.59		130.0	
		Z	4.63	66.97	16.74		130.0	
10577-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 12 Mbps, 90pc duty cycle)	X	4.84	67.04	16.67	0.46	130.0	± 9.6 %
		Y	4.84	67.09	16.75		130.0	
		Z	4.82	67.24	16.90		130.0	
10578-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 18 Mbps, 90pc duty cycle)	X	4.74	67.21	16.78	0.46	130.0	± 9.6 %
		Y	4.74	67.23	16.84		130.0	
		Z	4.72	67.41	17.02		130.0	
10579-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 24 Mbps, 90pc duty cycle)	X	4.49	66.42	16.04	0.46	130.0	± 9.6 %
		Y	4.50	66.52	16.16		130.0	
		Z	4.47	66.59	16.26		130.0	
10580-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 36 Mbps, 90pc duty cycle)	X	4.54	66.47	16.06	0.46	130.0	± 9.6 %
		Y	4.55	66.58	16.19		130.0	
		Z	4.52	66.65	16.29		130.0	
10581-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 48 Mbps, 90pc duty cycle)	X	4.64	67.25	16.72	0.46	130.0	± 9.6 %
		Y	4.64	67.27	16.79		130.0	
		Z	4.62	67.46	16.97		130.0	
10582-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 54 Mbps, 90pc duty cycle)	X	4.43	66.17	15.82	0.46	130.0	± 9.6 %
		Y	4.44	66.30	15.96		130.0	
		Z	4.40	66.34	16.03		130.0	
10583-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps, 90pc duty cycle)	X	4.62	66.58	16.43	0.46	130.0	± 9.6 %
		Y	4.62	66.64	16.52		130.0	
		Z	4.60	66.77	16.65		130.0	
10584-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 9 Mbps, 90pc duty cycle)	X	4.65	66.76	16.50	0.46	130.0	± 9.6 %
		Y	4.65	66.82	16.59		130.0	
		Z	4.63	66.97	16.74		130.0	
10585-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 12 Mbps, 90pc duty cycle)	X	4.84	67.04	16.67	0.46	130.0	± 9.6 %
		Y	4.84	67.09	16.75		130.0	
		Z	4.82	67.24	16.90		130.0	
10586-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 18 Mbps, 90pc duty cycle)	X	4.74	67.21	16.78	0.46	130.0	± 9.6 %
		Y	4.74	67.23	16.84		130.0	
		Z	4.72	67.41	17.02		130.0	
10587-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 24 Mbps, 90pc duty cycle)	X	4.49	66.42	16.04	0.46	130.0	± 9.6 %
		Y	4.50	66.52	16.16		130.0	
		Z	4.47	66.59	16.26		130.0	
10588-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 36 Mbps, 90pc duty cycle)	X	4.54	66.47	16.06	0.46	130.0	± 9.6 %
		Y	4.55	66.58	16.19		130.0	
		Z	4.52	66.65	16.29		130.0	
10589-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 48 Mbps, 90pc duty cycle)	X	4.64	67.25	16.72	0.46	130.0	± 9.6 %
		Y	4.64	67.27	16.79		130.0	
		Z	4.62	67.46	16.97		130.0	
10590-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 54 Mbps, 90pc duty cycle)	X	4.43	66.17	15.82	0.46	130.0	± 9.6 %
		Y	4.44	66.30	15.96		130.0	
		Z	4.40	66.34	16.03		130.0	

10591-AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS0, 90pc duty cycle)	X	4.77	66.65	16.54	0.46	130.0	± 9.6 %
		Y	4.77	66.70	16.62		130.0	
		Z	4.76	66.84	16.76		130.0	
10592-AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS1, 90pc duty cycle)	X	4.92	66.98	16.67	0.46	130.0	± 9.6 %
		Y	4.92	67.03	16.75		130.0	
		Z	4.90	67.16	16.89		130.0	
10593-AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS2, 90pc duty cycle)	X	4.84	66.87	16.54	0.46	130.0	± 9.6 %
		Y	4.84	66.93	16.62		130.0	
		Z	4.81	67.05	16.76		130.0	
10594-AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS3, 90pc duty cycle)	X	4.89	67.05	16.70	0.46	130.0	± 9.6 %
		Y	4.89	67.09	16.78		130.0	
		Z	4.87	67.23	16.93		130.0	
10595-AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS4, 90pc duty cycle)	X	4.86	67.00	16.59	0.46	130.0	± 9.6 %
		Y	4.86	67.06	16.68		130.0	
		Z	4.84	67.19	16.82		130.0	
10596-AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS5, 90pc duty cycle)	X	4.79	66.99	16.59	0.46	130.0	± 9.6 %
		Y	4.79	67.05	16.68		130.0	
		Z	4.77	67.18	16.82		130.0	
10597-AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS6, 90pc duty cycle)	X	4.74	66.88	16.46	0.46	130.0	± 9.6 %
		Y	4.74	66.94	16.56		130.0	
		Z	4.72	67.06	16.69		130.0	
10598-AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS7, 90pc duty cycle)	X	4.73	67.13	16.74	0.46	130.0	± 9.6 %
		Y	4.73	67.16	16.81		130.0	
		Z	4.71	67.31	16.97		130.0	
10599-AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS0, 90pc duty cycle)	X	5.44	67.16	16.74	0.46	130.0	± 9.6 %
		Y	5.45	67.22	16.84		130.0	
		Z	5.44	67.34	16.97		130.0	
10600-AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS1, 90pc duty cycle)	X	5.58	67.60	16.93	0.46	130.0	± 9.6 %
		Y	5.59	67.67	17.03		130.0	
		Z	5.59	67.82	17.19		130.0	
10601-AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS2, 90pc duty cycle)	X	5.46	67.34	16.82	0.46	130.0	± 9.6 %
		Y	5.47	67.40	16.91		130.0	
		Z	5.46	67.52	17.06		130.0	
10602-AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS3, 90pc duty cycle)	X	5.57	67.41	16.77	0.46	130.0	± 9.6 %
		Y	5.59	67.51	16.89		130.0	
		Z	5.59	67.66	17.04		130.0	
10603-AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS4, 90pc duty cycle)	X	5.64	67.69	17.04	0.46	130.0	± 9.6 %
		Y	5.65	67.76	17.15		130.0	
		Z	5.66	67.94	17.32		130.0	
10604-AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS5, 90pc duty cycle)	X	5.48	67.25	16.81	0.46	130.0	± 9.6 %
		Y	5.51	67.36	16.93		130.0	
		Z	5.53	67.59	17.13		130.0	
10605-AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS6, 90pc duty cycle)	X	5.57	67.50	16.93	0.46	130.0	± 9.6 %
		Y	5.58	67.59	17.04		130.0	
		Z	5.58	67.71	17.18		130.0	
10606-AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS7, 90pc duty cycle)	X	5.29	66.76	16.41	0.46	130.0	± 9.6 %
		Y	5.30	66.83	16.52		130.0	
		Z	5.29	66.93	16.65		130.0	

10607-AAA	IEEE 802.11ac WiFi (20MHz, MCS0, 90pc duty cycle)	X	4.61	65.98	16.17	0.46	130.0	± 9.6 %
		Y	4.62	66.04	16.25		130.0	
		Z	4.61	66.21	16.42		130.0	
10608-AAA	IEEE 802.11ac WiFi (20MHz, MCS1, 90pc duty cycle)	X	4.79	66.37	16.33	0.46	130.0	± 9.6 %
		Y	4.79	66.43	16.41		130.0	
		Z	4.78	66.59	16.58		130.0	
10609-AAA	IEEE 802.11ac WiFi (20MHz, MCS2, 90pc duty cycle)	X	4.68	66.21	16.16	0.46	130.0	± 9.6 %
		Y	4.68	66.27	16.25		130.0	
		Z	4.67	66.43	16.40		130.0	
10610-AAA	IEEE 802.11ac WiFi (20MHz, MCS3, 90pc duty cycle)	X	4.73	66.37	16.33	0.46	130.0	± 9.6 %
		Y	4.73	66.43	16.41		130.0	
		Z	4.72	66.60	16.58		130.0	
10611-AAA	IEEE 802.11ac WiFi (20MHz, MCS4, 90pc duty cycle)	X	4.64	66.17	16.17	0.46	130.0	± 9.6 %
		Y	4.65	66.23	16.26		130.0	
		Z	4.63	66.39	16.42		130.0	
10612-AAA	IEEE 802.11ac WiFi (20MHz, MCS5, 90pc duty cycle)	X	4.65	66.32	16.21	0.46	130.0	± 9.6 %
		Y	4.65	66.39	16.31		130.0	
		Z	4.63	66.55	16.46		130.0	
10613-AAA	IEEE 802.11ac WiFi (20MHz, MCS6, 90pc duty cycle)	X	4.65	66.18	16.08	0.46	130.0	± 9.6 %
		Y	4.65	66.25	16.18		130.0	
		Z	4.63	66.38	16.32		130.0	
10614-AAA	IEEE 802.11ac WiFi (20MHz, MCS7, 90pc duty cycle)	X	4.60	66.40	16.33	0.46	130.0	± 9.6 %
		Y	4.60	66.44	16.41		130.0	
		Z	4.59	66.62	16.59		130.0	
10615-AAA	IEEE 802.11ac WiFi (20MHz, MCS8, 90pc duty cycle)	X	4.64	65.98	15.93	0.46	130.0	± 9.6 %
		Y	4.65	66.08	16.04		130.0	
		Z	4.62	66.20	16.17		130.0	
10616-AAA	IEEE 802.11ac WiFi (40MHz, MCS0, 90pc duty cycle)	X	5.26	66.43	16.36	0.46	130.0	± 9.6 %
		Y	5.27	66.47	16.44		130.0	
		Z	5.26	66.58	16.58		130.0	
10617-AAA	IEEE 802.11ac WiFi (40MHz, MCS1, 90pc duty cycle)	X	5.33	66.62	16.43	0.46	130.0	± 9.6 %
		Y	5.34	66.68	16.52		130.0	
		Z	5.34	66.82	16.67		130.0	
10618-AAA	IEEE 802.11ac WiFi (40MHz, MCS2, 90pc duty cycle)	X	5.22	66.63	16.45	0.46	130.0	± 9.6 %
		Y	5.23	66.68	16.53		130.0	
		Z	5.23	66.84	16.70		130.0	
10619-AAA	IEEE 802.11ac WiFi (40MHz, MCS3, 90pc duty cycle)	X	5.23	66.41	16.27	0.46	130.0	± 9.6 %
		Y	5.24	66.47	16.37		130.0	
		Z	5.23	66.59	16.51		130.0	
10620-AAA	IEEE 802.11ac WiFi (40MHz, MCS4, 90pc duty cycle)	X	5.32	66.44	16.34	0.46	130.0	± 9.6 %
		Y	5.32	66.50	16.43		130.0	
		Z	5.31	66.61	16.57		130.0	
10621-AAA	IEEE 802.11ac WiFi (40MHz, MCS5, 90pc duty cycle)	X	5.33	66.61	16.54	0.46	130.0	± 9.6 %
		Y	5.33	66.63	16.61		130.0	
		Z	5.33	66.77	16.77		130.0	
10622-AAA	IEEE 802.11ac WiFi (40MHz, MCS6, 90pc duty cycle)	X	5.34	66.76	16.61	0.46	130.0	± 9.6 %
		Y	5.34	66.80	16.69		130.0	
		Z	5.35	66.98	16.87		130.0	

10623-AAA	IEEE 802.11ac WiFi (40MHz, MCS7, 90pc duty cycle)	X	5.21	66.27	16.23	0.46	130.0	± 9.6 %
		Y	5.22	66.33	16.33		130.0	
		Z	5.20	66.41	16.45		130.0	
10624-AAA	IEEE 802.11ac WiFi (40MHz, MCS8, 90pc duty cycle)	X	5.40	66.47	16.40	0.46	130.0	± 9.6 %
		Y	5.41	66.52	16.49		130.0	
		Z	5.40	66.63	16.62		130.0	
10625-AAA	IEEE 802.11ac WiFi (40MHz, MCS9, 90pc duty cycle)	X	5.72	67.33	16.88	0.46	130.0	± 9.6 %
		Y	5.71	67.32	16.94		130.0	
		Z	5.65	67.29	17.01		130.0	
10626-AAA	IEEE 802.11ac WiFi (80MHz, MCS0, 90pc duty cycle)	X	5.57	66.48	16.32	0.46	130.0	± 9.6 %
		Y	5.58	66.52	16.39		130.0	
		Z	5.58	66.62	16.53		130.0	
10627-AAA	IEEE 802.11ac WiFi (80MHz, MCS1, 90pc duty cycle)	X	5.81	67.07	16.57	0.46	130.0	± 9.6 %
		Y	5.83	67.14	16.67		130.0	
		Z	5.84	67.29	16.83		130.0	
10628-AAA	IEEE 802.11ac WiFi (80MHz, MCS2, 90pc duty cycle)	X	5.59	66.54	16.24	0.46	130.0	± 9.6 %
		Y	5.60	66.58	16.33		130.0	
		Z	5.59	66.64	16.44		130.0	
10629-AAA	IEEE 802.11ac WiFi (80MHz, MCS3, 90pc duty cycle)	X	5.66	66.59	16.26	0.46	130.0	± 9.6 %
		Y	5.68	66.66	16.36		130.0	
		Z	5.68	66.76	16.49		130.0	
10630-AAA	IEEE 802.11ac WiFi (80MHz, MCS4, 90pc duty cycle)	X	6.07	68.02	16.97	0.46	130.0	± 9.6 %
		Y	6.09	68.11	17.08		130.0	
		Z	6.09	68.21	17.21		130.0	
10631-AAA	IEEE 802.11ac WiFi (80MHz, MCS5, 90pc duty cycle)	X	5.98	67.87	17.10	0.46	130.0	± 9.6 %
		Y	5.98	67.86	17.14		130.0	
		Z	5.98	67.98	17.30		130.0	
10632-AAA	IEEE 802.11ac WiFi (80MHz, MCS6, 90pc duty cycle)	X	5.78	67.15	16.76	0.46	130.0	± 9.6 %
		Y	5.79	67.19	16.83		130.0	
		Z	5.81	67.39	17.02		130.0	
10633-AAA	IEEE 802.11ac WiFi (80MHz, MCS7, 90pc duty cycle)	X	5.65	66.72	16.36	0.46	130.0	± 9.6 %
		Y	5.66	66.75	16.44		130.0	
		Z	5.66	66.85	16.58		130.0	
10634-AAA	IEEE 802.11ac WiFi (80MHz, MCS8, 90pc duty cycle)	X	5.64	66.75	16.44	0.46	130.0	± 9.6 %
		Y	5.64	66.77	16.50		130.0	
		Z	5.64	66.87	16.64		130.0	
10635-AAA	IEEE 802.11ac WiFi (80MHz, MCS9, 90pc duty cycle)	X	5.51	66.04	15.80	0.46	130.0	± 9.6 %
		Y	5.52	66.11	15.92		130.0	
		Z	5.50	66.12	15.99		130.0	
10636-AAA	IEEE 1602.11ac WiFi (160MHz, MCS0, 90pc duty cycle)	X	5.98	66.84	16.40	0.46	130.0	± 9.6 %
		Y	6.00	66.88	16.48		130.0	
		Z	6.01	66.98	16.61		130.0	
10637-AAA	IEEE 1602.11ac WiFi (160MHz, MCS1, 90pc duty cycle)	X	6.14	67.23	16.58	0.46	130.0	± 9.6 %
		Y	6.16	67.29	16.67		130.0	
		Z	6.17	67.39	16.80		130.0	
10638-AAA	IEEE 1602.11ac WiFi (160MHz, MCS2, 90pc duty cycle)	X	6.14	67.19	16.53	0.46	130.0	± 9.6 %
		Y	6.15	67.25	16.62		130.0	
		Z	6.16	67.35	16.75		130.0	

10639-AAA	IEEE 1602.11ac WiFi (160MHz, MCS3, 90pc duty cycle)	X	6.11	67.13	16.55	0.46	130.0	± 9.6 %
		Y	6.12	67.17	16.63		130.0	
		Z	6.12	67.25	16.75		130.0	
10640-AAA	IEEE 1602.11ac WiFi (160MHz, MCS4, 90pc duty cycle)	X	6.11	67.13	16.49	0.46	130.0	± 9.6 %
		Y	6.13	67.18	16.58		130.0	
		Z	6.12	67.25	16.69		130.0	
10641-AAA	IEEE 1602.11ac WiFi (160MHz, MCS5, 90pc duty cycle)	X	6.17	67.07	16.48	0.46	130.0	± 9.6 %
		Y	6.19	67.15	16.58		130.0	
		Z	6.20	67.24	16.70		130.0	
10642-AAA	IEEE 1602.11ac WiFi (160MHz, MCS6, 90pc duty cycle)	X	6.20	67.32	16.77	0.46	130.0	± 9.6 %
		Y	6.21	67.33	16.84		130.0	
		Z	6.22	67.44	16.97		130.0	
10643-AAA	IEEE 1602.11ac WiFi (160MHz, MCS7, 90pc duty cycle)	X	6.04	66.99	16.50	0.46	130.0	± 9.6 %
		Y	6.06	67.06	16.60		130.0	
		Z	6.06	67.15	16.72		130.0	
10644-AAA	IEEE 1602.11ac WiFi (160MHz, MCS8, 90pc duty cycle)	X	6.18	67.41	16.73	0.46	130.0	± 9.6 %
		Y	6.18	67.45	16.81		130.0	
		Z	6.17	67.47	16.90		130.0	
10645-AAA	IEEE 1602.11ac WiFi (160MHz, MCS9, 90pc duty cycle)	X	6.37	67.64	16.81	0.46	130.0	± 9.6 %
		Y	6.35	67.59	16.85		130.0	
		Z	6.32	67.58	16.92		130.0	
10646-AAB	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, QPSK, UL Subframe=2,7)	X	14.22	101.24	33.75	9.30	60.0	± 9.6 %
		Y	18.00	109.63	37.45		60.0	
		Z	12.76	102.15	35.22		60.0	
10647-AAA	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK, UL Subframe=2,7)	X	12.74	99.52	33.33	9.30	60.0	± 9.6 %
		Y	15.51	106.93	36.77		60.0	
		Z	11.10	99.62	34.55		60.0	
10648-AAA	CDMA2000 (1x Advanced)	X	0.71	64.23	11.16	0.00	150.0	± 9.6 %
		Y	0.71	64.30	11.16		150.0	
		Z	0.73	65.24	11.45		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.

12.5. Calibration Certificate for Dipole

This sub-section contains Cal Certificates for Dipoles, and is not included in the total number of pages for this report.

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A1322

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

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

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 0108

Client UL RFI UK

Certificate No: D2450V2-725_Sep16

CALIBRATION CERTIFICATE

Object	D2450V2 - SN:725
Calibration procedure(s)	QA CAL-05.v9 Calibration procedure for dipole validation kits above 700 MHz
Calibration date:	September 29, 2016

Checked. M. Nance 07/10/2016.

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

	Name	Function	Signature
Calibrated by:	Johannes Kurikka	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: September 29, 2016

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

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:

a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
b) IEC 62209-1, "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
c) IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
d) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

e) 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 ± 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 ± 0.2) °C	37.9 ± 6 %	1.88 mho/m ± 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 ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	250 mW input power	6.21 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**24.4 W/kg ± 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 ± 0.2) °C	51.6 ± 6 %	2.04 mho/m ± 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	12.9 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**50.3 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	250 mW input power	6.03 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**23.8 W/kg ± 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 + 9.8 jΩ
Return Loss	- 20.2 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	48.8 Ω + 11.4 jΩ
Return Loss	- 18.8 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.126 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	October 16, 2002

DASY5 Validation Report for Head TSL

Date: 29.09.2016

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN:725

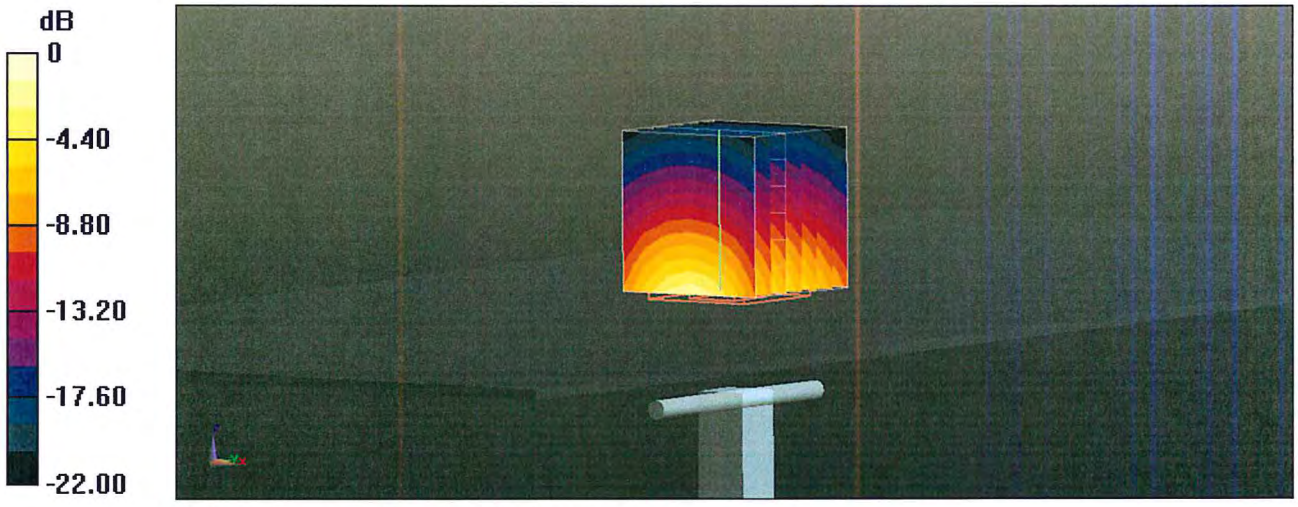
Communication System: UID 0 - CW; Frequency: 2450 MHz
Medium parameters used: f = 2450 MHz; σ = 1.88 S/m; ε_r = 37.9; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

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)

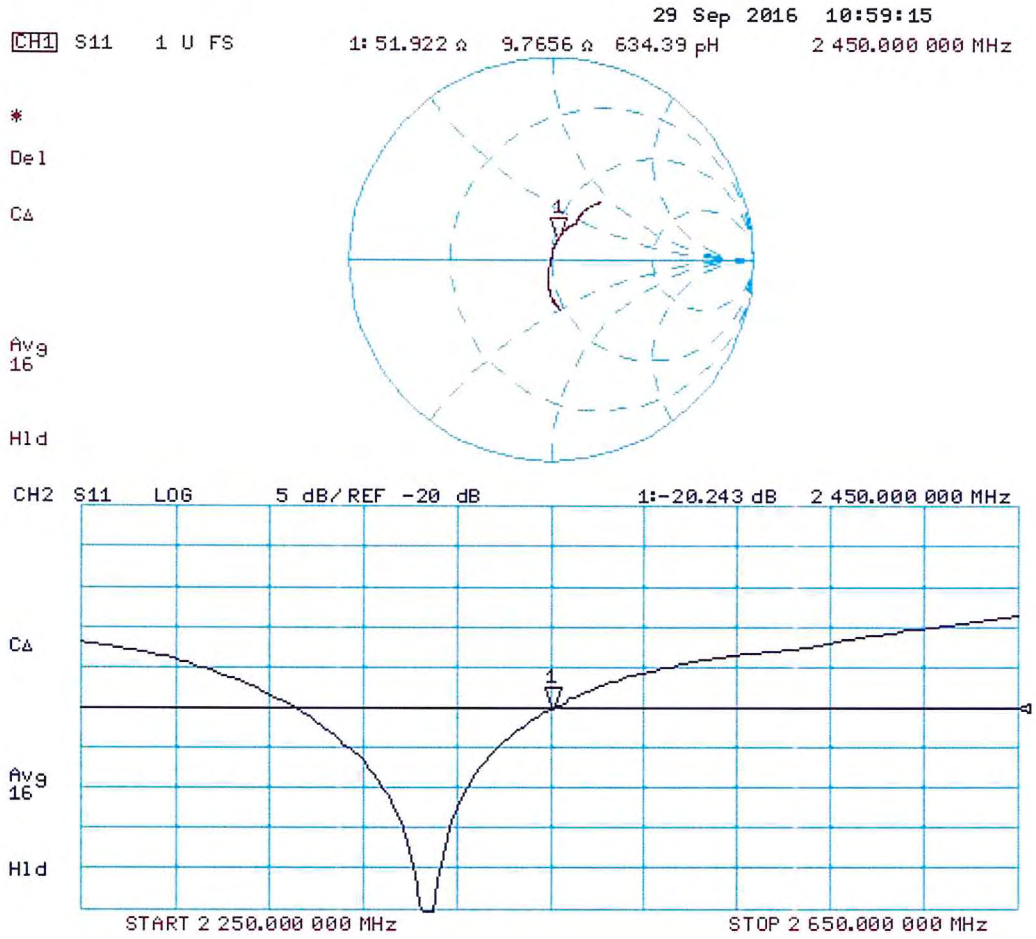
Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 113.7 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 27.2 W/kg
SAR(1 g) = 13.4 W/kg; SAR(10 g) = 6.21 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



DASY5 Validation Report for Body TSL

Date: 29.09.2016

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN:725

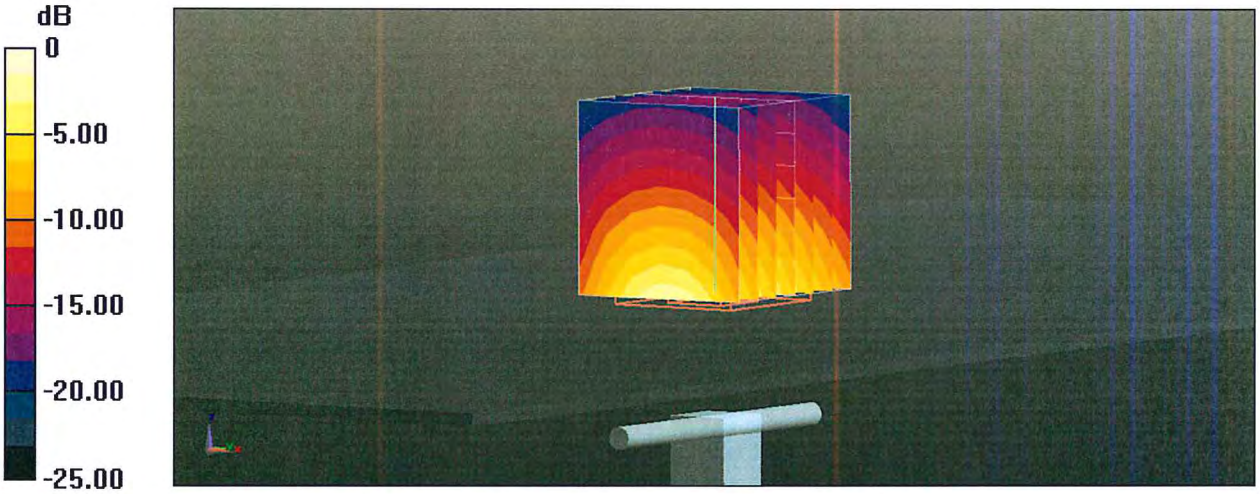
Communication System: UID 0 - CW; Frequency: 2450 MHz
Medium parameters used: f = 2450 MHz; σ = 2.04 S/m; ε_r = 51.6; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

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)

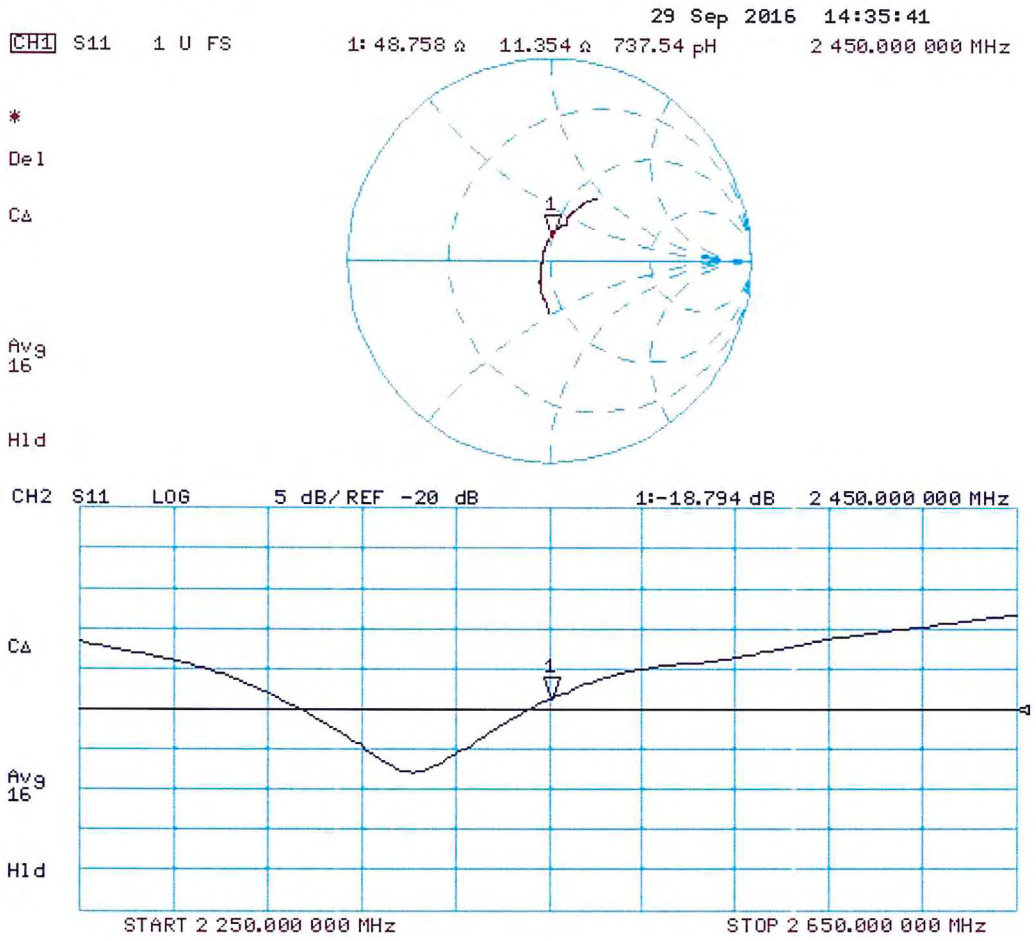
Dipole Calibration for Body Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 105.2 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 25.7 W/kg
SAR(1 g) = 12.9 W/kg; SAR(10 g) = 6.03 W/kg
Maximum value of SAR (measured) = 20.7 W/kg



0 dB = 20.7 W/kg = 13.16 dBW/kg

Impedance Measurement Plot for Body TSL



12.6. Tissues-Equivalent Media Recipes

The SPEAG Broadband Tissue Simulation Liquid HBBL600-6000V6 has been used for Head and Body testing. The composition of this fluid is undisclosed and proprietary to SPEAG.

Visual inspection is made to ensure air bubbles are not trapped during the mixing process. The mixture is calibrated to obtain proper dielectric constant (permittivity) and conductivity of the tissue.

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