SAR TEST REPORT

Test Report No. : 12022019H-F-R2

Applicant	:	**Sony Corporation**
Type of Equipment	:	**DIGITAL WIRELESS TRANSMITTER**
Model No.	:	**DWT-B03R**
FCC ID	:	**AK8DWTB03R**
Test regulation	:	**FCC47CFR 2.1093**
Test Result	:	**Complied**
Reported SAR(1g) Value		**The highest reported SAR(1g)** Body : 0.19 W/kg Simultaneous transmission : 0.59 W/kg

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2. The results in this report apply only to the sample tested.
3. This sample tested is in compliance with the limits of the above regulation.
4. The test results in this report are traceable to the national or international standards.
5. This test report must not be used by the customer to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.
6. This test report covers SAR technical requirements. It does not cover administrative issues such as Manual or non-SAR test related Requirements. (if applicable)
7. This report is a revised version of 12022019H-F-R1. 12022019H-F-R1 is replaced with this report.

Date of test: December 15, 2017

Representative test engineer:

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Consumer Technology Division

Approved by :

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NVLAP TESTING
NVLAP LAB CODE: 200572-0

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REVISION HISTORY

Original Test Report No.: 12022019H-F

Revision	Test report No.	Date	Page revised	Contents
- (Original)	12022019H-F	January 30, 2018	-	-
1	12022019H-F-R1	April 4, 2018	P 4	Correction of company Name; from Sony Corporation to Sony Global Manufacturing & Operations Corporation.
1	12022019H-F-R1	April 4, 2018	P 10	Addition of comments about test configuration consideration.
1	12022019H-F-R1	April 4, 2018	P 13	Addition of Unit (dBm) for Section 8.
2	12022019H-F-R2	April 6, 2018	P 9-12	Correction of Maximum tune-up Limit of RF Remote.

CONTENTS PAGE

SECTION1: Customer information **4**
SECTION2: Equipment under test (E.U.T.) **4**
2.1 Identification of E.U.T. 4
2.2 Product description 4
SECTION3: Test standard information **6**
3.1 Test Specification 6
3.2 Procedure 6
3.3 Exposure limit 7
3.4 SAR 7
3.5 Test Location 7
SECTION4: Test result **8**
4.1 Stand-alone SAR result 8
4.1 Simultaneous transmission SAR result 8
SECTION5: Tune-up tolerance information and software information **9**
SECTION6: RF Exposure Conditions (Test Configurations) **10**
6.1 Summary of the distance between antenna and surface of EUT 10
6.2 SAR test exclusion considerations according to KDB447498 D01 10
6.3 Estimated SAR for Simultaneous Transmission SAR Analysis 12
SECTION7: Description of the Body setup **13**
7.1 Procedure for SAR test position determination 13
7.2 Test position for Body setup 13
SECTION8: Description of the operating mode **13**
8.1 Output Power and SAR test required 13
SECTION9: Test surrounding **14**
9.1 Measurement uncertainty 14
SECTION10: Parameter Check **15**
10.1 For SAR system check 16
10.2 For SAR measurement 17
SECTION11: System Check confirmation **18**
SECTION12: Measured and Reported (Scaled) SAR Results **19**
12.1 Radio microphone 19
SECTION13: Simultaneous Transmission SAR Analysis **20**
SECTION14: Test instruments **21**
APPENDIX 1 : System Check **22**
APPENDIX 2 : SAR Measurement data **26**
APPENDIX 3 : System specifications **32**
APPENDIX 4 : Photographs of test setup **96**

SECTION1: Customer information

Company Name	:	Sony Global Manufacturing & Operations Corporation
Address	:	8-4 Shiomi Kisarazu-shi, Chiba, 292-0834 Japan
Telephone Number	:	+81-438-37-4704
Contact Person	:	Youhei Hisano

*Remarks
Sony Global Manufacturing & Operations Corporation (Subsidiary Company Name) is on behalf of the applicant: Sony Corporation.

SECTION2: Equipment under test (E.U.T.)

2.1 Identification of E.U.T.

<Information of the EUT>

Type of Equipment	:	DIGITAL WIRELESS TRANSMITTER
Model No.	:	DWT-B03R
Serial No.	:	16
Rating	:	Li-ion battery M/N: NP-BX1 DC 3.6 V 1240 mAh / 4.5 Wh
Receipt Date of Sample	:	November 9, 2017
Country of Mass-production	:	Japan
Condition of EUT	:	Engineering prototype (Not for Sale: This sample is equivalent to mass-produced items.)
Modification of EUT	:	No Modification by the test lab

2.2 Product description

Model: DWT-B03R (referred to as the EUT in this report) is a DIGITAL WIRELESS TRANSMITTER.

General Specification

Clock frequency(ies) in the system	:	X400	8 MHz
		X202	12.288 MHz
		X900	16 MHz
		X800 (TCXO)	19.2 MHz
		IC620, 630, 730, 740	1250 kHz - 1500 kHz
		IC720	1300 kHz
		IC202	600 kHz - 1000 kHz
		IC690	250 kHz
		VCO820 (VCO: change by a transmission frequency)	
			470.125 MHz - 607.875 MHz
			614.125 MHz - 615.875 MHz

Radio Specification (Radio microphone part)

Radio type	:	Transmitter
Modulation type	:	π/4 shift QPSK
Emission designator	:	192KG1D, 192KG1E
Channel spacing	:	25 kHz
Frequency of operation	:	470.125 MHz - 607.875 MHz 614.125 MHz - 615.875 MHz
RF power	:	25 mW / 10 mW / 2 mW (470.125 MHz - 607.875 MHz) 10 mW / 2 mW (614.125 MHz - 615.875 MHz)
Antenna type	:	λ/4 flexible wire
Antenna gain	:	2.14 dBi max
Power Supply (radio part input)	:	DC 2.8 V, DC 3.1 V, DC 5.2 V
AF Specification	:	20 Hz - 22000 Hz, Maximum input: -22 dBu (MIC level, ATT 0 dB)
Operating temperature	:	0 deg. C to 50 deg. C

Radio Specification (RF remote part)

Radio Type	:	Transceiver
Modulation type	:	DSSS
Frequency of Operation	:	2405 MHz to 2480 MHz
Channel spacing	:	5 MHz
Method of frequency generation	:	Synthesizer
Power Supply (radio part input)	:	DC 2.8 V
Antenna Type	:	Chip antenna
Antenna Gain	:	-1.0 dBi max
Operating temperature	:	0 deg. C to 50 deg. C

SECTION3: Test standard information

3.1 Test Specification

Title : **FCC47CFR 2.1093**
Radiofrequency radiation exposure evaluation: portable devices.

: **IEEE Std 1528-2013:**
IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques.

: **Published RF exposure KDB procedures**

☑	**KDB447498D01(v06)**	RF Exposure Procedures and Equipment Authorization Policies for Mobile and Portable Devices
☐	**KDB447498D02(v02r01)**	SAR Measurement Procedures for USB Dongle Transmitters
☐	**KDB648474D04(v01r03)**	SAR Evaluation Considerations for Wireless Handsets
☐	**KDB941225D01(v03r01)**	3G SAR Measurement Procedures
☐	**KDB941225D05(v02r05)**	SAR Evaluation Considerations for LTE Devices
☐	**KDB941225D06(v02r01)**	SAR Evaluation Procedures for Portable Devices with Wireless Router Capabilities (Hot Spot SAR)
☐	**KDB941225D07(v01r02)**	SAR Evaluation Procedures for UMPC Mini-Tablet Devices
☐	**KDB616217D04(v01r02)**	SAR Evaluation Considerations for Laptop, Notebook, Netbook and Tablet Computers
☑	**KDB865664D01(v01r04)**	SAR Measurement Requirements for 100MHz to 6 GHz
☐	**KDB248227D01(v02r02)**	SAR Guidance for 802.11(Wi-Fi) Transmitters
☑	**KDB206256D01(v02)**	Basic Certification Requirements For Wireless Microphones

Reference
[1]SPEAG uncertainty document (AN 15-7/AN19-17) for DASY 5 System from SPEAG (Schmid & Partner Engineering AG).

3.2 Procedure

Transmitter	**WLAN and Bluetooth**
Test Procedure	Published RF exposure KDB procedures
Category	FCC47CFR 2.1093
Note: UL Japan, Inc. 's SAR Work Procedures 13-EM-W0429 and 13-EM-W0430	

3.3 Exposure limit

(A) Limits for Occupational/Controlled Exposure (W/kg)

Spatial Average (averaged over the whole body)	Spatial Peak (averaged over any 1g of tissue)	Spatial Peak (hands/wrists/feet/ankles averaged over 10g)
0.4	8.0	20.0

(B) Limits for General population/Uncontrolled Exposure (W/kg)

Spatial Average (averaged over the whole body	Spatial Peak (averaged over any 1g of tissue)	Spatial Peak (hands/wrists/feet/ankles averaged over 10g)
0.08	1.6	4.0

Occupational/Controlled Environments: are defined as locations where there is exposure that may be incurred by people who are aware of the potential for exposure, (i.e. as a result of employment or occupation).

General Population/Uncontrolled Environments: are defined as locations where there is the exposure of individuals who have no knowledge or control of their exposure.

NOTE:GENERAL POPULATION/UNCONTROLLED EXPOSURE
SPATIAL PEAK(averaged over any 1g of tissue) LIMIT
1.6 W/kg

3.4 SAR

Specific Absorption Rate (SAR): The time derivative (rate) of the incremental energy (dW) absorbed by (dissipated in) an incremental mass (dm) contained in a volume element (dV) of a given density (ρ), as shown in the following equation:

$$\mathrm{SAR} = \frac{\mathrm{d}}{\mathrm{dt}}\left(\frac{\mathrm{dW}}{\mathrm{dm}}\right) = \frac{\mathrm{d}}{\mathrm{dt}}\left(\frac{\mathrm{dW}}{\rho \mathrm{dV}}\right)$$

SAR is expressed in units of watts per kilogram (W/kg) or equivalently milliwatts per gram (mW/g).

SAR is related to the E-field at a point by the following equation:

$$\mathrm{SAR} = \frac{\sigma |\mathrm{E}|^2}{\rho}$$

where
σ = conductivity of the tissue (S/m)
ρ = mass density of the tissue (kg/m3)
E = rms E-field strength (V/m)

3.5 Test Location

*Shielded room for SAR testings
UL Japan, Inc. Ise EMC Lab.
*NVLAP Lab. code: 200572-0 / FCC Test Firm Registration Number: 199967
4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN
Telephone : +81 596 24 8999 Facsimile : +81 596 24 8124

SECTION4: Test result

4.1 Stand-alone SAR result

Reported SAR

Measured SAR is scaled to the maximum tune-up tolerance limit by the following formulas.
Reported SAR= Measured SAR [W/kg] · Scaled factor
Maximum tune-up tolerance limit is by the specification from a customer.

* Scaled factor = Maximum tune-up tolerance limit [mW] / Measured power [mW]

Body SAR

Mode	Frequency [MHz]	Measured average Power [dBm]	Tune-up upper Power [dBm]	Measured power [mW]	Maximum tune-up tolerance limit [mW]	Measured SAR [W/kg]	Scaled factor	Reported SAR [W/kg]
Radio Microphone	470.125	13.89	13.98	24.49	25.00	0.184	1.021	0.188

Note(s):

The sample used by the SAR test is not more than 2 dB lower than the maximum tune-up tolerance limit. That is, measured power is included the tune-up tolerance range.

Maximum tune-up tolerance limit is defined as maximum timed-average value. (Considering to maximum duty cycle)

4.1 Simultaneous transmission SAR result

Body SAR: 0.588 W/kg

Refer to Section “Simultaneous Transmission SAR Analysis”.

SECTION5: Tune-up tolerance information and software information

Maximum tune-up tolerance limit

Mode	Band	Maximum tune-up tolerance limit [dBm]	Maximum tune-up tolerance limit [mW]
Radio microphone	470.125 - 607.875 MHz	13.98	25.00
Radio microphone	614.125 - 615.875 MHz	10.00	10.00
RF Remote	2.4GHz	0.80	1.20

Maximum tune-up tolerance limit is defined as maximum timed-average value. (Considering to maximum duty cycle)

Software setting
*The power value of the EUT was set for testing as follows (setting value might be different from product specification value); Power settings: 25mW(470.125 MHz - 607.875 MHz Band), 10mW(614.125 MHz - 615.875 MHz Band) 0 dBm (RF Remote) Software / version: 0.01 *This setting of software is the worst case. The test was performed with condition that obtained the maximum average power in pre-check. Any conditions under the normal use do not exceed the condition of setting. In addition, end users cannot change the settings of the output power of the product.

SECTION6: RF Exposure Conditions (Test Configurations)

6.1 Summary of the distance between antenna and surface of EUT

Test position	Distance
Front	6.8 mm
Rear	7.0 mm
Left	6.6 mm
Right	50.2 mm
Top	0 mm
Bottom	69.1 mm

* Details are shown in appendix 4
* Actual SAR test was performed with touching the antenna to the SAR phantom as more conservative testing
* Top position was excluded from SAR test consideration because of typical usage of EUT and SAR peak was not appeared at Top position in the pre-check and also as a result of SAR peak positon at Front, Rear and Left

6.2 SAR test exclusion considerations according to KDB447498 D01

The following is based on KDB447498D01.
1) The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:
[(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)] ·[√f(GHz)] ≤ 3.0 for 1-g SAR and ≤ 7.5 for 10-g extremity SAR

1. The upper frequency of the frequency band was used in order to calculate standalone SAR test exclusion considerations.
2. Power and distance are rounded to the nearest mW and mm before calculation
3. The result is rounded to one decimal place for comparison
4. The test exclusions are applicable only when the minimum test separation distance is ≤ 50 mm and for transmission frequencies between 100 MHz and 6 GHz. When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion. When the separation of antenna to EUT's surfaces and edges are ≤ 50 mm, the separation distance used for the SAR exclusion calculations is 5 mm.
5. "N/A" displayed on below exclusion calculation means not applicable this formula since distance between antenna and surface is > 50 mm.

When the calculated threshold value by a numerical formula above-mentioned in the following table is 3.0 or less, SAR test is excluded.

SAR exclusion calculations for antenna <50mm from the user

Antenna	Tx Interface	Frequency (MHz)	Output Power		Calculated Threshold Value				
			dBm	mW	Front	Rear	Left	Right	Bottom
Fixed	Radio microphone	607.875	13.98	25	3.9 -MEASURE-	3.9 -MEASURE-	3.9 -MEASURE-	N/A	N/A
Fixed	Radio microphone	615.875	10.00	10	1.6 -EXEMPT-	1.6 -EXEMPT-	1.6 -EXEMPT-	N/A	N/A
Fixed	RF Remote	2480	0.80	1.20	0.4 -EXEMPT-	0.4 -EXEMPT-	0.4 -EXEMPT-	N/A	N/A

2) At 100 MHz to 6 GHz and for test separation distances > 50 mm, the SAR test exclusion threshold is determined according to the following.
a) [(3·50)/(√f(GHz))) + (test separation distance - 50 mm)·(f(MHz)/150)] mW at > 100 MHz and ≤ 1500 MHz
b) [(3·50)/(√f(GHz))) + (test separation distance - 50 mm)·10] mW at > 1500 MHz and ≤ 6 GHz

1. The upper frequency of the frequency band was used in order to calculate standalone SAR test exclusion considerations.
2. Power and distance are rounded to the nearest mW and mm before calculation
3. "N/A" displayed on below exclusion calculation means not applicable this formula since distance between antenna and surface is < 50 mm.

When output power is less than the calculated threshold value by a numerical formula above-mentioned in the following table, SAR test is excluded.

SAR exclusion calculations for antenna >50mm from the user

Antenna	Tx Interface	Frequency (MHz)	Output Power		Calculated Threshold Value				
			dBm	mW	Front	Rear	Left	Right	Bottom
Fixed	Radio microphone	607.875	13.98	25	N/A	N/A	N/A	193.2 mW -EXEMPT-	269.8 mW -EXEMPT-
Fixed	Radio microphone	615.875	10.00	10	N/A	N/A	N/A	192 mW -EXEMPT-	269.6 mW -EXEMPT-
Fixed	RF Remote	2480	0.80	1.20	N/A	N/A	N/A	97.3 mW -EXEMPT-	286.3 mW -EXEMPT-

6.3 Estimated SAR for Simultaneous Transmission SAR Analysis

The following is based on KDB447498D01.

When standalone SAR test exclusion applies to an antenna that transmits simultaneously with other antennas, the standalone SAR must be estimated according to following to determine simultaneous transmission SAR test exclusion:

(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)]·[√f(GHz)/x] W/kg for test separation distances ≤ 50 mm; where x = 7.5 for 1-g SAR, and x = 18.75 for 10-g SAR.

0.4 W/kg for 1-g SAR and 1.0 W/kg for 10-g SAR, when the test separation distances is > 50 mm.

1. The upper frequency of the frequency band was used in order to calculate standalone SAR test exclusion considerations.
2. Power and distance are rounded to the nearest mW and mm before calculation
3. The result is rounded to one decimal place for comparison
4. When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied. For antennas ≤50 mm from the bottom side or edge the separation distance used for the SAR exclusion calculations is 5 mm.

Estimated SAR

Antenna	Tx Interface	Frequency (MHz)	Output Power		Estimated 1-g SAR Value (W/kg)				
			dBm	mW	Front	Rear	Left	Right	Bottom
Fixed	RF Remote	2480	0.80	1.20	0.050	0.050	0.050	0.400	0.400

Considering above table, 0.4 W/kg is adapted for all position estimated SAR for RF Remote as more conservative.

SECTION7: Description of the Body setup

7.1 Procedure for SAR test position determination

-The tested procedure was performed according to the KDB 447498 D01 (Mobile and Portable Device RF Exposure Procedures and Equipment Authorization Policies).

7.2 Test position for Body setup

No.	Position	Test distance	Radio microphone (470.125 - 607.875 MHz)	Radio microphone (614.125 - 615.875 MHz)	RF Remote
			Tested	Tested	Tested
1	Front	0mm	☑	☐	☐
2	Rear	0mm	☑	☐	☐
3	Left	0mm	☑	☐	☐
4	Right	0mm	☐	☐	☐
5	Top	0mm	☐	☐	☐
6	Bottom	0mm	☐	☐	☐

SECTION8: Description of the operating mode

8.1 Output Power and SAR test required

Radio microphone

Mode	Freq. (MHz)	Tune-up upper Power (dBm)	Measured average Power (dBm)	Initial test configuration	Note(s)
Radio microphone	470.125	13.98	13.89		
	539.000	13.98	13.96	Yes	
	607.875	13.98	13.80		

SECTION9: Test surrounding

9.1 Measurement uncertainty

This measurement uncertainty budget is suggested by IEEE Std 1528(2013) and IEC62209-2:2010, and determined by Schmid & Partner Engineering AG (DASY5 Uncertainty Budget). Per KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz Section 2.8.1., when the highest measured SAR(1g) within a frequency band is < 1.5W/kg, the extensive SAR measurement uncertainty analysis described in IEEE Std.1528 (2013) is not required in SAR reports submitted for equipment approval.

<0.3 – 3GHz range Body>

Error Description	Uncertai value ±	Probability distribution	divisor	(ci) 1g	Standard (1g)
Measurement System					
Probe calibration	± 6.00	Normal	1	1	± 6.00
Axial isotropy of the probe	± 4.7	Rectangular	√3	0.7	± 1.9
Spherical isotropy of the probe	± 9.6	Rectangular	√3	0.7	± 3.9
Boundary effects	± 1.0	Rectangular	√3	1	± 0.6
Probe linearity	± 4.7	Rectangular	√3	1	± 2.7
Detection limit	± 1.0	Rectangular	√3	1	± 0.6
Modulation response	± 2.4	Rectangular	√3	1	± 1.4
Readout electronics	± 0.3	Normal	1	1	± 0.3
Response time	± 0.8	Rectangular	√3	1	± 0.5
Integration time	± 2.6	Rectangular	√3	1	± 1.5
RF ambient Noise	± 3.0	Rectangular	√3	1	± 1.7
RF ambient Reflections	± 3.0	Rectangular	√3	1	± 1.7
Probe Positioner	± 0.4	Rectangular	√3	1	± 0.2
Probe positioning	± 2.9	Rectangular	√3	1	± 1.7
Max.SAR Eval.	± 2.0	Rectangular	√3	1	± 1.2
Test Sample Related					
Device positioning	± 2.9	Normal	1	1	± 2.9
Device holder uncertainty	± 3.6	Normal	1	1	± 3.6
Power drift	± 5.0	Rectangular	√3	1	± 2.9
Power Scaling	+ 0.0	Rectangular	√3	1	± 0.0
Phantom and Setup					
Phantom uncertainty	± 6.1	Rectangular	√3	1	± 3.5
Algorithm for correcting SAR for deviations in permittivity and conductivity	± 1.9	Rectangular	√3	1	± 1.1
Liquid conductivity (meas.)	- 4.3	Rectangular	√3	0.78	+ 1.9
Liquid permittivity (meas.)	- 3.0	Rectangular	√3	0.26	- 0.5
Liquid conductivity - temp.unc (below 2deg.C.)	± 5.2	Rectangular	√3	0.78	± 2.3
Liquid permittivity - temp.unc (below 2deg.C.)	± 0.8	Rectangular	√3	0.23	± 0.1
Combined Standard Uncertainty					± **11.330**
Expanded Uncertainty (k=2)					± **22.7**

*. Table of uncertainties are listed for ISO/IEC 17025.

SECTION10: Parameter Check

The dielectric parameters were checked prior to assessment using the DAK dielectric probe kit.
The dielectric parameters measurement is reported in each correspondent section.

According to KDB865664 D01, +/- 5% tolerances are required for εr and σ and then below table which is the target value of the simulated tissue liquid is quoted from KDB865664 D01.

Target Frequency	Head		Body	
(MHz)	ε_r	σ (S/m)	ε_r	σ (S/m)
150	52.3	0.76	61.9	0.80
300	45.3	0.87	58.2	0.92
450	43.5	0.87	56.7	0.94
835	41.5	0.90	55.2	0.97
900	41.5	0.97	55.0	1.05
915	41.5	0.98	55.0	1.06
1450	40.5	1.20	54.0	1.30
1610	40.3	1.29	53.8	1.40
1800 – 2000	40.0	1.40	53.3	1.52
2450	39.2	1.80	52.7	1.95
3000	38.5	2.40	52.0	2.73
5800	35.3	5.27	48.2	6.00

(ε_r = relative permittivity, σ = conductivity and ρ = 1000 kg/m^3)

10.1 For SAR system check

DIELECTRIC PARAMETERS MEASUREMENT RESULTS											
Date	Ambient Temp. [deg.c]	Relative Humidity [%]	Liquid type	Liquid Temp. [deg.c]	Measured Frequency [MHz]	Parameters	Target Value	Measured	Deviation [%]	Limit [%]	Remark
2017/12/15	24.0	45	MSL 450	23.5	450	σ [mho/m]	0.94	0.92	**-2.3**	+/-5	*1
						εr	56.7	55.2	**-2.6**	+/-5	
2017/12/15	24.0	45	MSL 650	23.5	600	σ [mho/m]	0.95	0.94	-0.9	+/-5	*2
						εr	56.1	56.0	-0.3	+/-5	

σ : Conductivity / εr: Relative Permittivity
*1 The Target value is a parameter defined in KDB 865664D01.
*2 The dielectric parameters should be linearly interpolated between the closest pair of target frequencies to determine the applicable dielectric parameters corresponding to the device test frequency.

Correlation confirmation with measured TSL parameters of the calibration certificate of system check dipoles (Refer to Appendix 3)

+/- 6% limit for deviation provided by manufacture tolerances are required for εr and σ and then below table which is the target value of the simulated tissue liquid is quoted from data measured TSL parameters of dipole calibration.

Freq [MHz]	Model,S/N	Body	
		σ	ε
450	D450,1051	0.98	58.4
600	D600,1003	0.91	55.8

DIELECTRIC PARAMETERS MEASUREMENT RESULTS											
Date	Ambient Temp. [deg.c]	Relative Humidity [%]	Liquid type	Liquid Temp. [deg.c]	Measured Frequency [MHz]	Parameters	Target Value*1	Measured	Deviation [%]	Limit [%]	Remark
2017/12/15	24.0	45	MSL 450	23.5	450	σ [mho/m]	0.92	0.92	-0.2	+/-6	
						εr	54.4	55.2	**1.5**	+/-6	
2017/12/15	24.0	45	MSL 650	23.5	650	σ [mho/m]	0.91	0.94	**3.6**	+/-6	
						εr	55.8	56.0	0.3	+/-6	

εr: Relative Permittivity / σ : Conductivity
*1 The Target value is a parameter defined in each Dipole.

10.2 For SAR measurement

DIELECTRIC PARAMETERS MEASUREMENT RESULTS											
Date	Ambient Temp. [deg.c]	Relative Humidity [%]	Liquid type	Liquid Temp. [deg.c]	Measured Frequency [MHz]	Parameters	Target Value	Measured	Deviation [%]	Limit [%]	Remark
2017/12/15	24.0	45	MSL 450	23.5	470.125	σ [mho/m]	0.94	0.93	-0.8	+/-5	*1
						εr	56.6	54.9	**-3.0**	+/-5	
2017/12/15	24.0	45	MSL 450	23.5	539	σ [mho/m]	0.95	0.91	**-4.3**	+/-5	*1
						εr	56.4	56.3	0.0	+/-5	
2017/12/15	24.0	45	MSL 650	23.5	607.875	σ [mho/m]	0.95	0.95	0.0	+/-5	*1
						εr	56.1	55.9	-0.3	+/-5	

σ : Conductivity / εr: Relative Permittivity
*1 The dielectric parameters should be linearly interpolated between the closest pair of target frequencies to determine the applicable dielectric parameters corresponding to the device test frequency.

SECTION11: System Check confirmation

The measurements were performed in the flat section of the TWIN SAM or ELI phantom, shell thickness: 2.0 ±0.2 mm (bottom plate) filled with Body or Head simulating liquid of the following parameters.
The depth of tissue-equivalent liquid in a phantom must be ≥ 15.0 cm ± 0.5 cm for SAR measurements ≤ 3 GHz and ≥ 10.0 cm ± 0.5 cm for measurements > 3 GHz.
The DASY system with an E-Field Probe was used for the measurements.
The dipole was mounted on the small tripod so that the dipole feed point was positioned below the center marking of the flat phantom section and the dipole was oriented parallel to the body axis (the long side of the phantom).
The standard measuring distance was 10 mm (above 1GHz to 6GHz) and 15 mm (below 1GHz) from dipole center to the simulating liquid surface.
The coarse grid with a grid spacing of 12 mm (1GHz to 3GHz) and15 mm (below 1GHz) was aligned with the dipole.
For 5 GHz band - The coarse grid with a grid spacing of 10 mm was aligned with the dipole.
Special 7x7x7 (below 3 GHz) and/or 8x8x7 (above 3 GHz) fine cube was chosen for the cube.
Distance between probe sensors and phantom surface was set to 3 mm.
For 5 GHz band - Distance between probe sensors and phantom surface was set to 2.5 mm
The dipole input power (forward power) was 100 mW(For 5GHz band) or 250 mW(For other band).
The results are normalized to 1 W input power.

Target Value

Freq [MHz]	Model,S/N	Body	
		(SPEAG) 1g [W/kg]	(SPEAG) 10g[W/kg]
450	D450,1051	4.56	3.00
600	D600,1003	6.48	4.28

Date Tested	Test Freq	Model,S/N	T.S. Liquid		Measured Results		Target (Ref. Value)	Delta ±10 %
					Zoom Scan	Normalize to 1 W		
2017/12/15	450	D450,1051	Body	1g	1.10	4.40	4.56	-3.5
				10g	0.75	3.00	3.00	0.0
2017/12/15	600	D600,1003	Body	1g	1.64	6.56	6.48	1.2
				10g	1.11	4.44	4.28	3.7

* The target(reference) SAR values can be obtained from the calibration certificate of system validation dipoles(Refer to Appendix 2). The target SAR values are SAR measured value in the calibration certificate scaled to 1W.

SECTION12: Measured and Reported (Scaled) SAR Results

SAR Test Reduction criteria are as follows

- **KDB 447498 D01 (General RF Exposure Guidance):**

Testing of other required channels within the operating mode of a frequency band is not required when the reported 1-g or 10-g SAR for the mid-band or highest output power channel is:

- ✧ ≤ 0.8 W/kg or 2.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≤ 100 MHz
- ✧ ≤ 0.6 W/kg or 1.5 W/kg, for 1-g or 10-g respectively, when the transmission band is between 100 MHz and 200 MHz
- ✧ ≤ 0.4 W/kg or 1.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≥ 200 MHz

- According to Notice 2016-DRS001 based on the IEEE1528 and IEC 62209 requirements, the low, mid and high frequency channels for the configuration with the highest SAR value must be tested regardless of the SAR value measured.
- When reported SAR value is exceed 1.2W/kg(if any), device holder perturbation verification is required; however, since distance between device holder and antenna of EUT is enough, it was not conducted.
- Reported SAR= Measured SAR [W/kg] · Scaled factor
  * Scaled factor = Maximum tune-up tolerance limit [mW] / Measured power [mW]
- Maximum tune-up tolerance limit is by the specification from a customer.

12.1 Radio microphone

Test Position	Dist. (mm)	Freq. (MHz)	Power (dBm)		Scaled factor	1-g SAR (W/kg)	
			Tune-up upper Power	Measured average Power		Meas.	Reported
Front	0	470.125	13.98	13.89	1.021		
		539.000	13.98	13.96	1.005	0.098	0.098
		607.875	13.98	13.80	1.042		
Rear	0	470.125	13.98	13.89	1.021		
		539.000	13.98	13.96	1.005	0.099	0.099
		607.875	13.98	13.80	1.042		
Left	0	470.125	13.98	13.89	1.021	0.184	0.188
		539.000	13.98	13.96	1.005	0.109	0.110
		607.875	13.98	13.80	1.042	0.099	0.103

SECTION13: Simultaneous Transmission SAR Analysis

Test Position			∑ 1-g SAR (mW/g)
	Radio Microphone	RF Remote	
Front	0.098	0.400	0.498
Rear	0.099	0.400	0.499
Left	0.188	0.400	0.588

Note(s):

1. Values shaded green are estimated SAR.
2. Right, Top and Bottom are not considered because stand-alone SAR test for each side is not required.

Conclusion:

Simultaneous transmission SAR measurement(Volume Scan) is not required because sum of the 1-g SAR is < 1.6 W/kg.

SECTION14: Test instruments

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
MNA-03	Vector Reflectometer	Copper Mountain Technologies	PLANAR R140	0030913	SAR	2017/04/22 * 12
MDPK-03	Dielectric assessment kit	Schmid&Partner Engineering AG	DAK-3.5	0008	SAR	2017/04/18 * 12
MOS-37	Digital thermometer	LKM electronic	DTM3000	-	SAR	2017/07/26 * 12
COTS-MSAR-04	Dielectric assessment software	Schmid&Partner Engineering AG	DAK		SAR	-
MPM-11	Dual Power Meter	Agilent	E4419B	MY45102060	SAR	2017/08/25 * 12
MPSE-15	Power sensor	Agilent	E9301A	MY41498311	SAR	2017/08/25 * 12
MPSE-16	Power sensor	Agilent	E9301A	MY41498313	SAR	2017/08/25 * 12
MRFA-24	Pre Amplifier	R&K	R&K CGA020M602-2633R	B30550	SAR	2017/06/12 * 12
MSG-10	Signal Generator	Agilent	N5181A	MY47421098	SAR	2017/11/29 * 12
MAT-78	Attenuator	Telegrartner	J01156A0011	0042294119	SAR	Pre Check
MPM-15	Power Meter	Agilent	N1914A	MY53060017	SAR	2017/06/21 * 12
MPSE-21	Power sensor	Agilent	N8482H	MY52460010	SAR	2017/06/21 * 12
MHDC-21	Dual Directional Coupler	Agilent	778D	MY52180243	SAR	Pre Check
MDA-09	Dipole Antenna	Schmid&Partner Engineering AG	D450V3	1051	SAR	2015/09/21 * 36
MMSL0450	Tissue simulation liqud (Body)	Schmid&Partner Engineering AG	MSL450V2	SL AAM 045BC	SAR*Daily Check Target Value ±5%	Pre Check
MDA-21	Dipole Antenna	Schmid&Partner Engineering AG	D600V3	1003	SAR	2016/09/19 * 24
MMSL0650	Tissue simulation liquid (Body)	Schmid&Partner Engineering AG	MSL650	20090914	SAR*Daily Check Target Value ±5%	Pre Check
MDAE-02	Data Acquisition Electronics	Schmid&Partner Engineering AG	DAE4	1369	SAR	2017/05/17 * 12
MPB-08	Dosimetric E-Field Probe	Schmid&Partner Engineering AG	EX3DV4	3917	SAR	2017/05/16 * 12
MPF-03	2mm Oval Flat Phantom	Schmid&Partner Engineering AG	QDOVA001BB	1203	SAR	2017/05/29 * 12
MDH-04	Device holder	Schmid&Partner Engineering AG	Mounting device for transmitter	-	SAR	Pre Check
MOS-35	Digital thermometer	HANNA	Checktemp 4	-	SAR	2017/07/26 * 12
COTS-MSAR-03	Dasy5	Schmid&Partner Engineering AG	DASY5	-	SAR	-
MRBT-03	SAR robot	Schmid&Partner Engineering AG	TX60 Lspeag	F13/5PPLD1/A/01	SAR	2017/06/30 * 12

***1) This test equipment was used for the tests before the expiration date of the calibration.**
The expiration date of the calibration is the end of the expired month.
All equipment is calibrated with valid calibrations. Each measurement data is traceable to the national or international standards.
As for some calibrations performed after the tested dates, those test equipment have been controlled by means of an unbroken chains of calibrations.

SAR room is checked before every testing and ambient noise is <0.012W/kg

APPENDIX 1 : System Check

System check result Body 450MHz

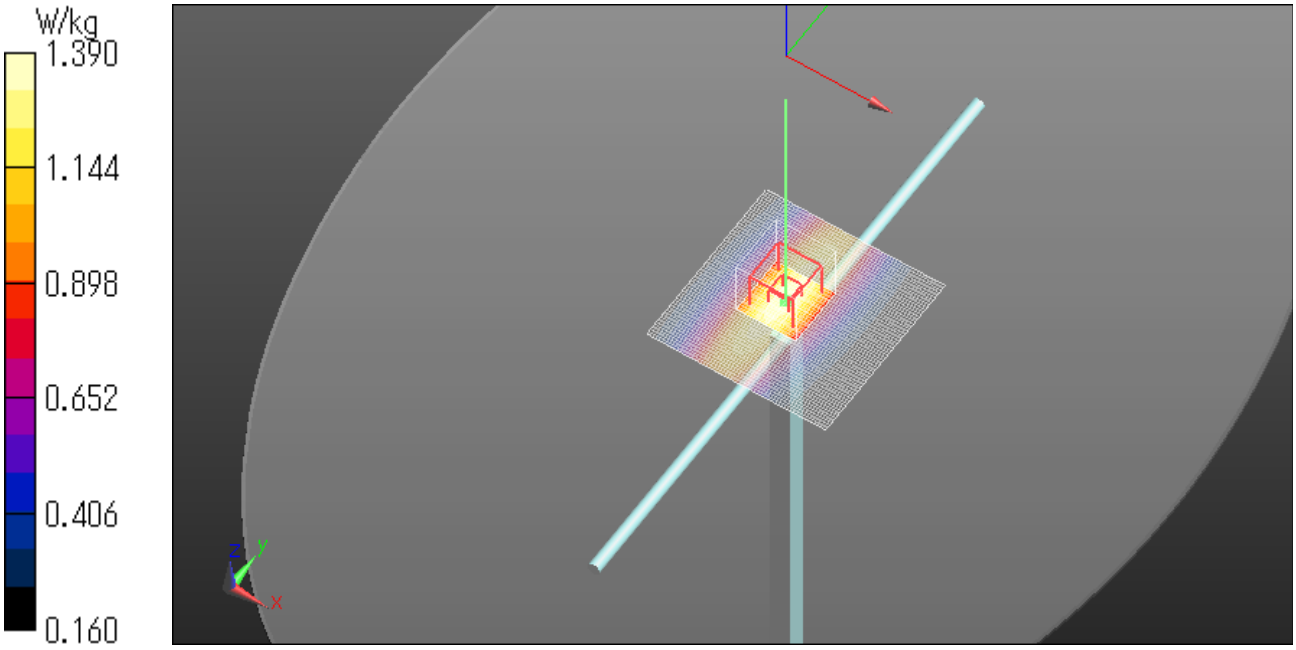
20171215 Body 450MHz System Check Power 250mW
Communication System: UID 0, CW (0); Communication System Band: D450 (450.0 MHz); Frequency: 450 MHz; Duty Cycle: 1:1
Medium parameters used: f = 450 MHz; σ = 0.918 S/m; ε_r = 55.217; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration
Probe: EX3DV4 - SN3917; ConvF(11.47, 11.47, 11.47); Calibrated: 2017/05/16;
Sensor-Surface: 2mm (Mechanical Surface Detection), Sensor-Surface: 0mm (Fix Surface)
Electronics: DAE4 Sn1369; Calibrated: 2017/05/12
Phantom: ELI v5.0 (20deg probe tilt); Type: QDOVA001BB; Serial: TP:1203
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

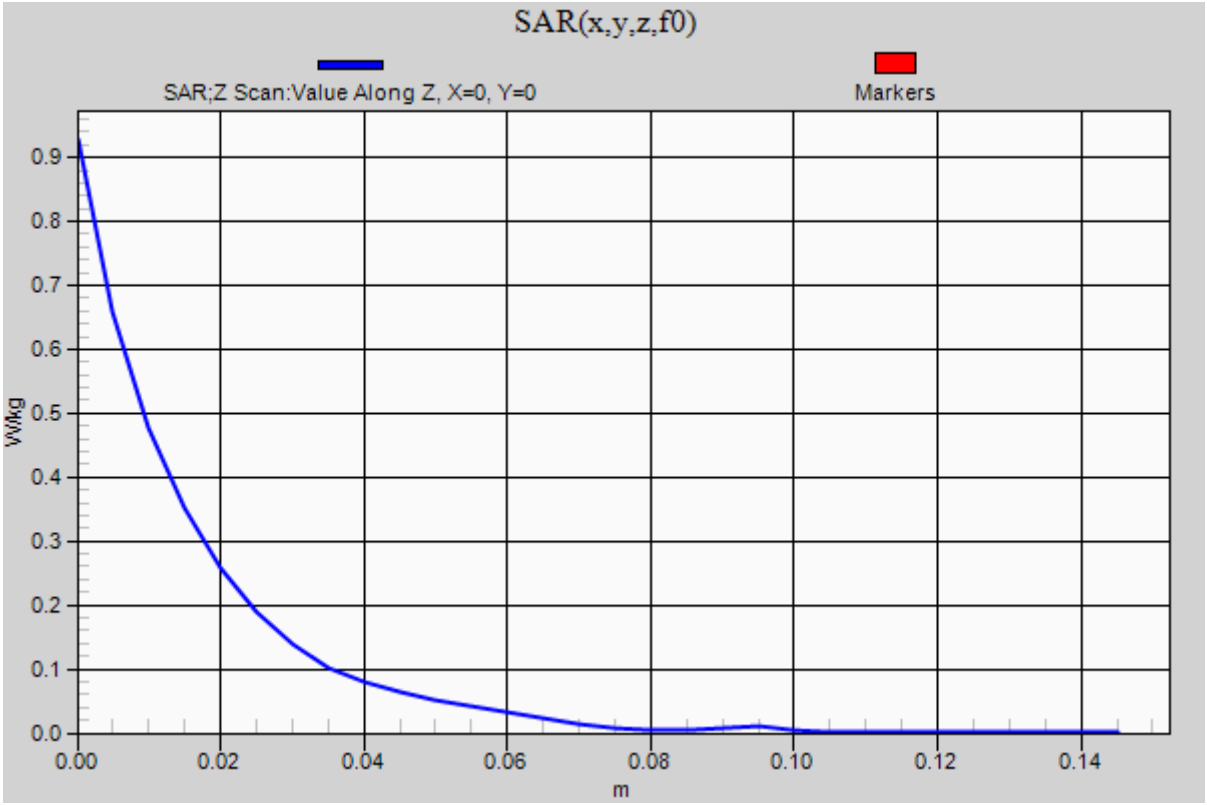
Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 1.36 W/kg

Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 39.14 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 1.68 W/kg
SAR(1 g) = 1.1 W/kg; SAR(10 g) = 0.750 W/kg
Maximum value of SAR (measured) = 1.39 W/kg

Z Scan (1x1x31): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of SAR (measured) = 0.928 W/kg

Date: 2017/12/15
Ambient Temp. : 24.0 degree.C. Liquid Temp.; 23.5 degree.C.


W/kg
1.390
1.144
0.898
0.652
0.406
0.160


SAR(x,y,z,f0)
SAR;Z Scan:Value Along Z, X=0, Y=0
Markers
W/kg
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
0.00
0.02
0.04
0.06
0.08
0.10
0.12
0.14
m

System check result Body 600MHz

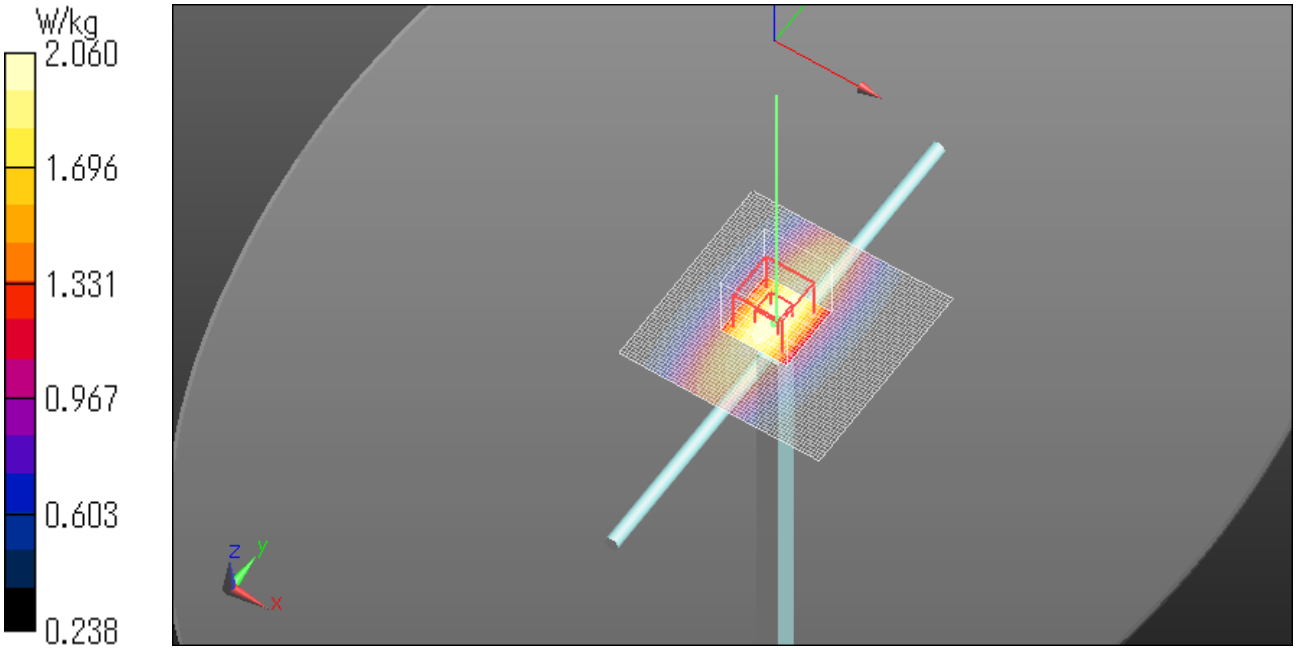
20171215 Body 600MHz System Check Power 250mW
Communication System: UID 0, CW (0); Communication System Band: D600 (600.0 MHz); Frequency: 600 MHz; Duty Cycle: 1:1
Medium parameters used: f = 600 MHz; σ = 0.943 S/m; ε_r = 55.965; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration
Probe: EX3DV4 - SN3917; ConvF(10.37, 10.37, 10.37); Calibrated: 2017/05/16;
Sensor-Surface: 2mm (Mechanical Surface Detection), Sensor-Surface: 0mm (Fix Surface)
Electronics: DAE4 Sn1369; Calibrated: 2017/05/12
Phantom: ELI v5.0 (20deg probe tilt); Type: QDOVA001BB; Serial: TP:1203
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

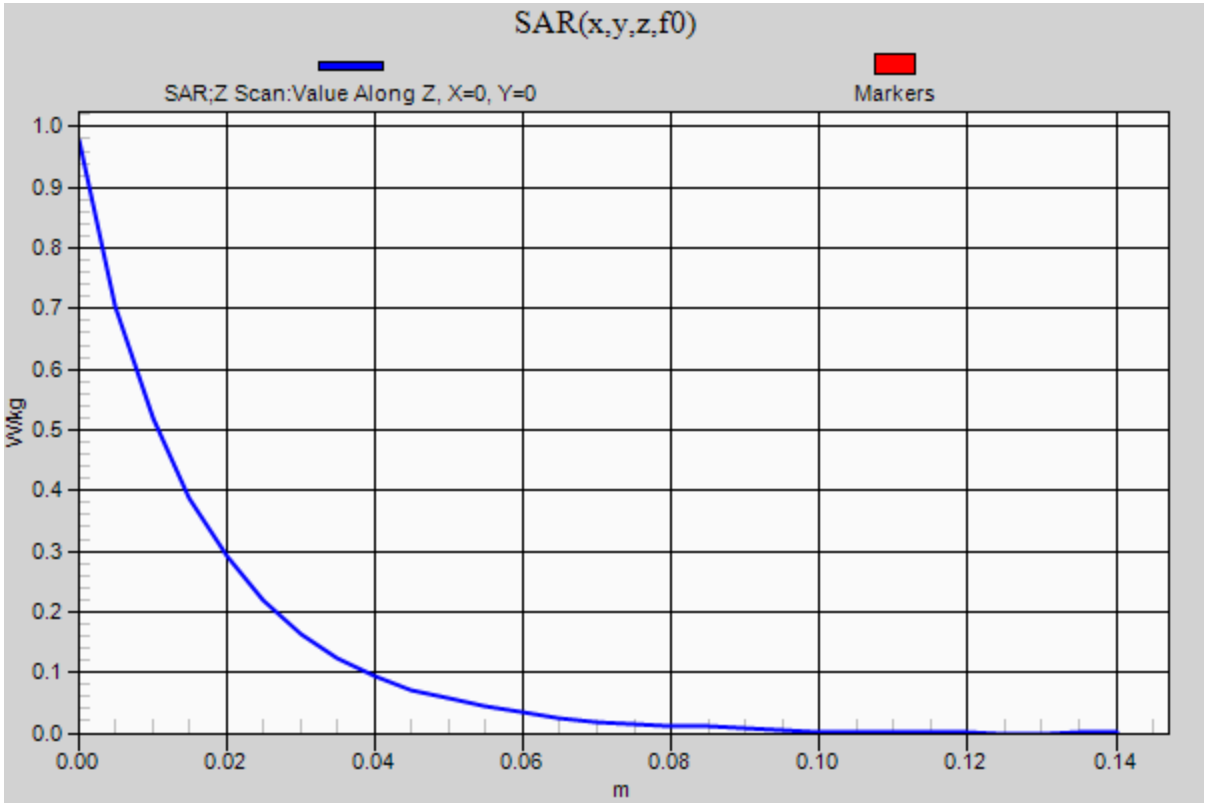
Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 2.03 W/kg

Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 46.94 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 2.46 W/kg
SAR(1 g) = 1.64 W/kg; SAR(10 g) = 1.11 W/kg
Maximum value of SAR (measured) = 2.06 W/kg

Z Scan (1x1x31): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of SAR (measured) = 0.977 W/kg

Date: 2017/12/15
Ambient Temp. : 24.0 degree.C. Liquid Temp.; 23.5 degree.C.


W/kg
2.060
1.696
1.331
0.967
0.603
0.238


SAR(x,y,z,f0)
SAR;Z Scan:Value Along Z, X=0, Y=0
Markers
W/kg
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
0.00
0.02
0.04
0.06
0.08
0.10
0.12
0.14
m

APPENDIX 2 : SAR Measurement data

Evaluation procedure

The evaluation was performed with the following procedure:

Step 1: Measurement of the E-field at a fixed location above the ear point or central position of flat phantom was used as a reference value for assessing the power drop.

Step 2: The SAR distribution at the exposed side of head or body position was measured at a distance of each device from the inner surface of the shell. The area covered the entire dimension of the antenna of EUT and the horizontal grid spacing was 15 mm x 15 mm, 12 mm x 12 mm or 10mm x 10mm. Based on these data, the area of the maximum absorption was determined by spline interpolation.

Step 3: Around this point found in the Step 2 (area scan), a volume of 30mm x 30mm x 30mm or more was assessed by measuring 7 x 7 x 7 points at least for below 3GHz and a volume of 28 mm x 28mm x 22.5mm or more was assessed by measuring 8 x 8 x 6(ratio step method (*1)) points at least for 5GHz band.

And for any secondary peaks found in the Step2 which are within 2dB of maximum peak and not with this Step3 (Zoom scan) is repeated. On the basis of this data set, the spatial peak SAR value was evaluated under the following procedure:

(1). The data at the surface were extrapolated, since the center of the dipoles is 1mm(EX3DV4) away from the tip of the probe and the distance between the surface and the lowest measuring point is 1.3 mm. The extrapolation was based on a least square algorithm [4]. A polynomial of the fourth order was calculated through the points in z-axes.
This polynomial was then used to evaluate the points between the surface and the probe tip.

(2). The maximum interpolated value was searched with a straightforward algorithm. Around this maximum the SAR values averaged over the spatial volumes (1 g or 10 g) were computed by the 3D-Spline interpolation algorithm. The 3D-Spline is composed of three one-dimensional splines with the “Not a knot"-condition (in x, y and z-directions) [4], [5]. The volume was integrated with the trapezoidal-algorithm. One thousand points (10 x 10 x 10) were interpolated to calculate the average.

(3). All neighboring volumes were evaluated until no neighboring volume with a higher average value was found.

***1. Ratio step method parameters used;**
The first measurement point: 2mm from the phantom surface, the initial grid separation: 2mm, subsequent graded grid ratio: 1.5
These parameters comply with the requirement of the KDB 865664D01.

Step 4: Re-measurement of the E-field at the same location as in Step 1.
Confirmation after SAR testing
It was checked that the power drift [W] is within +/-5%.The verification of power drift during the SAR test is that DASY5 system calculates the power drift by measuring the e-filed at the same location at beginning and the end of the scan measurement for each test position.

DASY5 system calculation Power drift value[dB] =20log(Ea)/(Eb)
Before SAR testing : Eb[V/m]
After SAR testing : Ea[V/m]

Limit of power drift[W] =+/-5%
X[dB]=10log[P]=10log(1.05/1)=10log(1.05)-10log(1)=0.212dB

from E-filed relations with power.
p=E^2/η=E^2/
Therefore, The correlation of power and the E-filed
XdB=10log(P)=10log(E)^2=20log(E)

Therefore,
The calculated power drift of DASY5 System must be the less than +/-0.212dB.

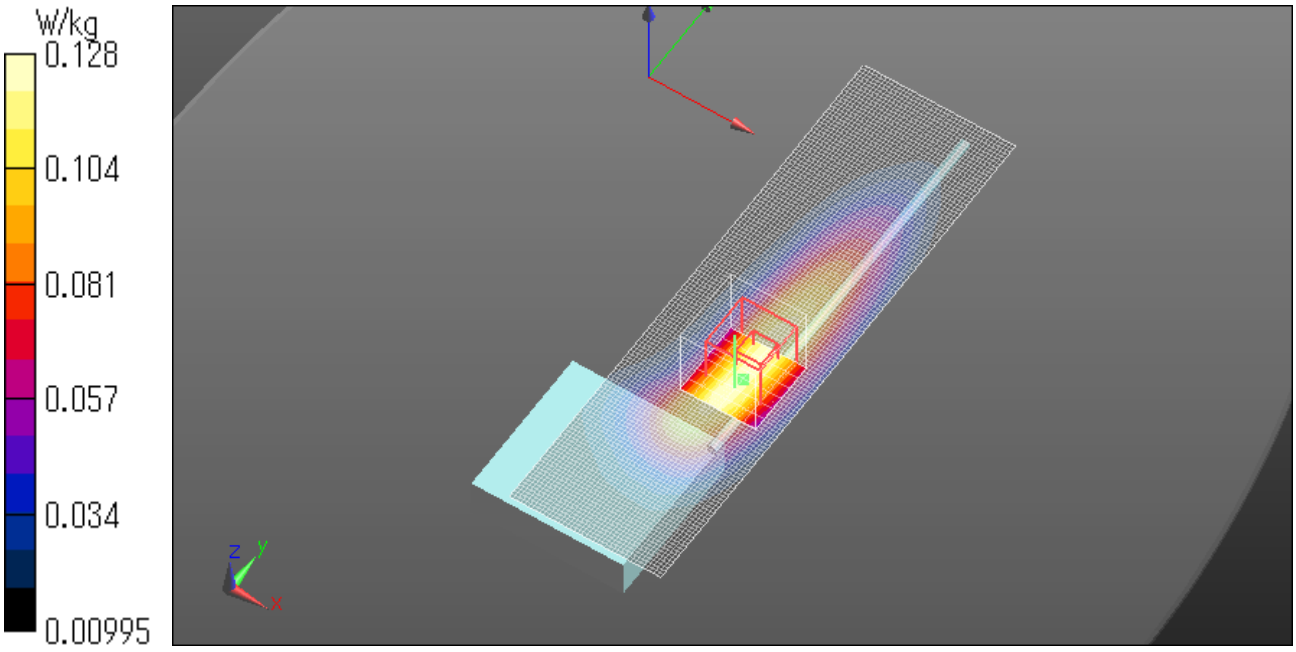
Measurement data

Radio microphone Front 0mm 539.000MHz
Communication System: UID 0, Radio microphone (0); Communication System Band: UC; Frequency: 539 MHz; Duty Cycle: 1:1
Medium parameters used (interpolated): f = 539 MHz; σ = 0.906 S/m; ε_r = 56.327; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration
Probe: EX3DV4 - SN3917; ConvF(11.47, 11.47, 11.47); Calibrated: 2017/05/16;
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1369; Calibrated: 2017/05/12
Phantom: ELI v5.0 (20deg probe tilt); Type: QDOVA001BB; Serial: TP:1203
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Area Scan (41x141x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.121 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 11.95 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 0.161 W/kg
SAR(1 g) = 0.098 W/kg; SAR(10 g) = 0.064 W/kg
Maximum value of SAR (measured) = 0.128 W/kg

Date: 2017/12/15
Ambient Temp. : 24.0 degree.C. Liquid Temp.; 23.5 degree.C.

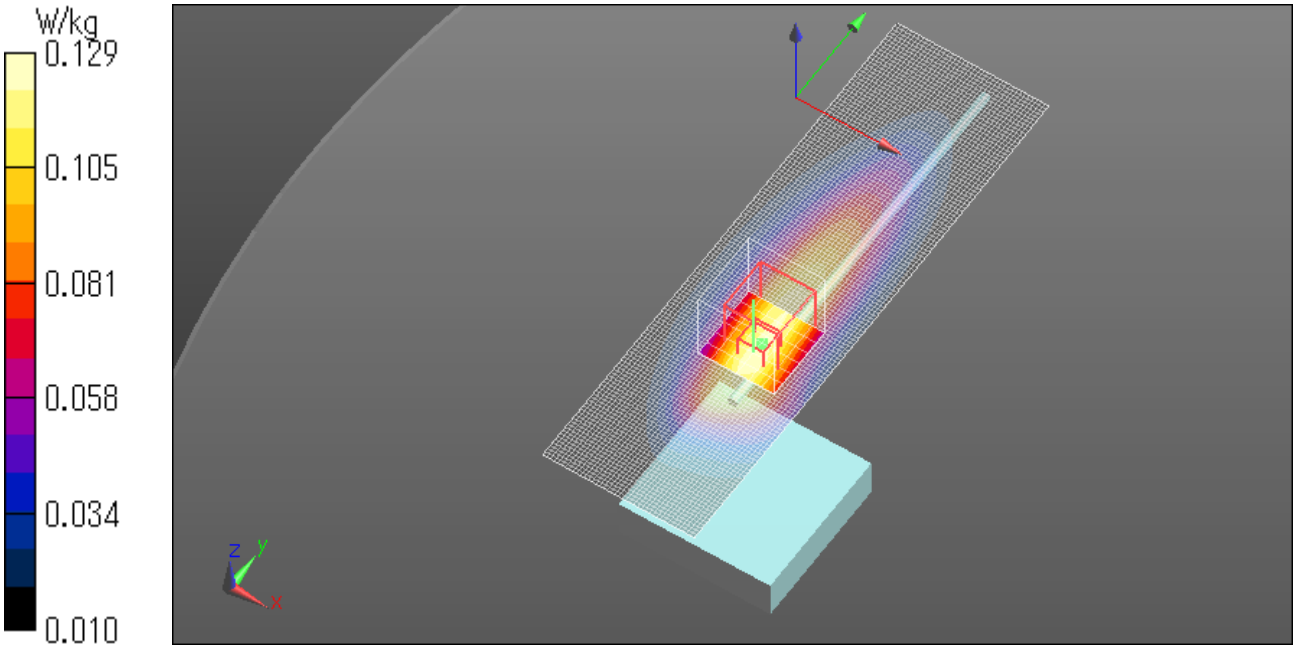


Radio microphone Rear 0mm 539.000MHz
Communication System: UID 0, Radio microphone (0); Communication System Band: UC; Frequency: 539 MHz; Duty Cycle: 1:1
Medium parameters used (interpolated): f = 539 MHz; σ = 0.906 S/m; ε_r = 56.327; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration
Probe: EX3DV4 - SN3917; ConvF(11.47, 11.47, 11.47); Calibrated: 2017/05/16;
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1369; Calibrated: 2017/05/12
Phantom: ELI v5.0 (20deg probe tilt); Type: QDOVA001BB; Serial: TP:1203
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Area Scan (41x141x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.125 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 11.99 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 0.161 W/kg
SAR(1 g) = 0.099 W/kg; SAR(10 g) = 0.065 W/kg
Maximum value of SAR (measured) = 0.129 W/kg

Date: 2017/12/15
Ambient Temp. : 24.0 degree.C. Liquid Temp.; 23.5 degree.C.

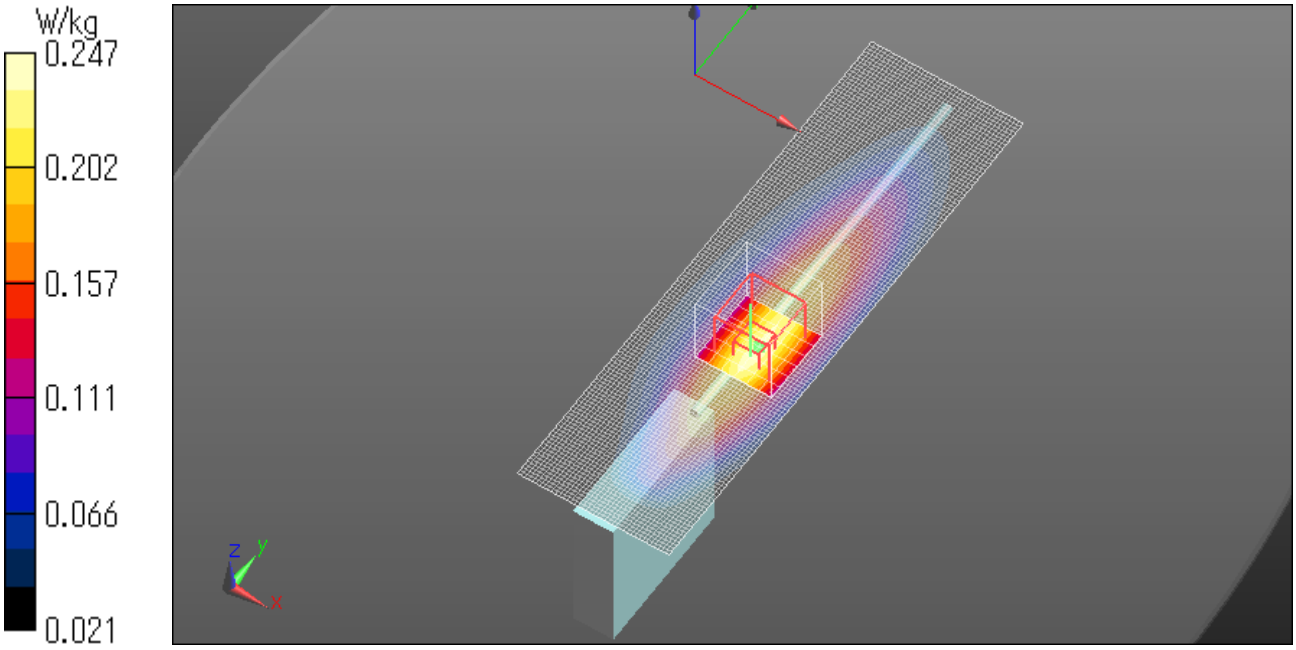


Radio microphone Left 0mm 470.125MHz
Communication System: UID 0, Radio microphone (0); Communication System Band: UC; Frequency: 470.125 MHz;
Duty Cycle: 1:1
Medium parameters used (interpolated): f = 470.125 MHz; σ = 0.934 S/m; ε_r = 54.912; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration
Probe: EX3DV4 - SN3917; ConvF(11.47, 11.47, 11.47); Calibrated: 2017/05/16;
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1369; Calibrated: 2017/05/12
Phantom: ELI v5.0 (20deg probe tilt); Type: QDOVA001BB; Serial: TP:1203
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Area Scan (41x141x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.222 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 16.23 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 0.314 W/kg
SAR(1 g) = 0.184 W/kg; SAR(10 g) = 0.117 W/kg
Maximum value of SAR (measured) = 0.247 W/kg

Date: 2017/12/15
Ambient Temp. : 24.0 degree.C. Liquid Temp.; 23.5 degree.C.

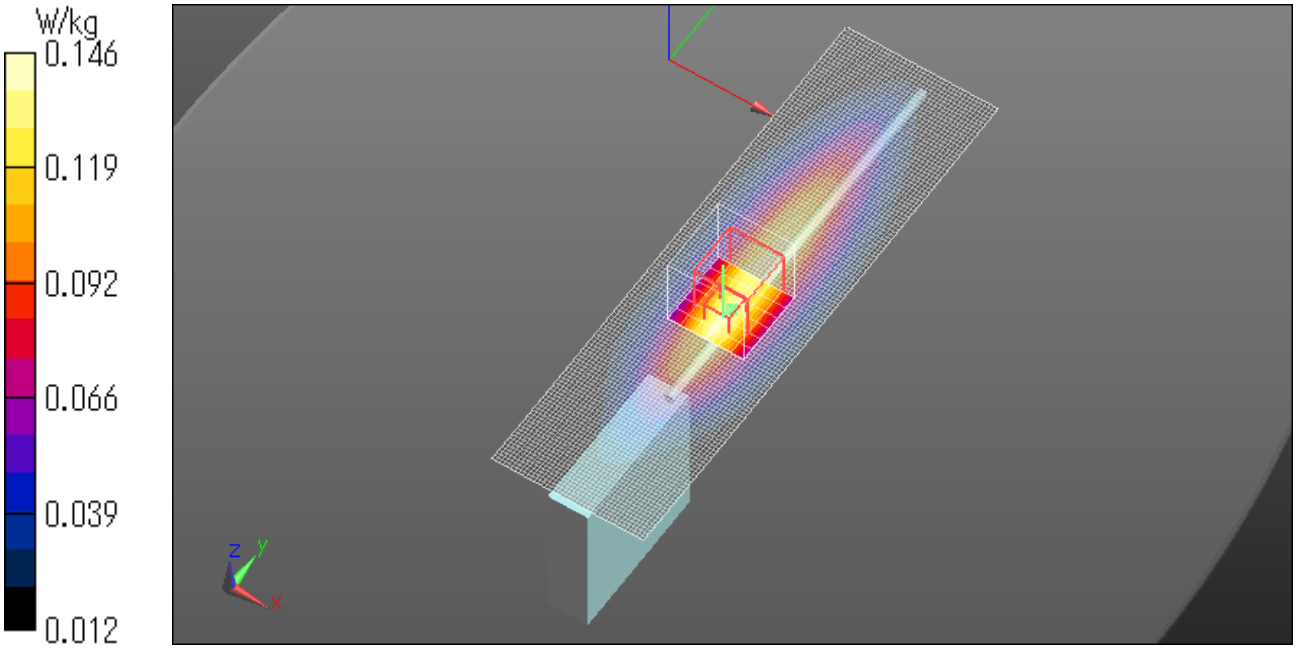


Radio microphone Left 0mm 539.000MHz
Communication System: UID 0, Radio microphone (0); Communication System Band: UC; Frequency: 539 MHz; Duty Cycle: 1:1
Medium parameters used (interpolated): f = 539 MHz; σ = 0.906 S/m; ε_r = 56.327; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration
Probe: EX3DV4 - SN3917; ConvF(11.47, 11.47, 11.47); Calibrated: 2017/05/16;
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1369; Calibrated: 2017/05/12
Phantom: ELI v5.0 (20deg probe tilt); Type: QDOVA001BB; Serial: TP:1203
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Area Scan (41x141x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.134 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 12.24 V/m; Power Drift = 0.13 dB
Peak SAR (extrapolated) = 0.183 W/kg
SAR(1 g) = 0.109 W/kg; SAR(10 g) = 0.069 W/kg
Maximum value of SAR (measured) = 0.146 W/kg

Date: 2017/12/15
Ambient Temp. : 24.0 degree.C. Liquid Temp.; 23.5 degree.C.

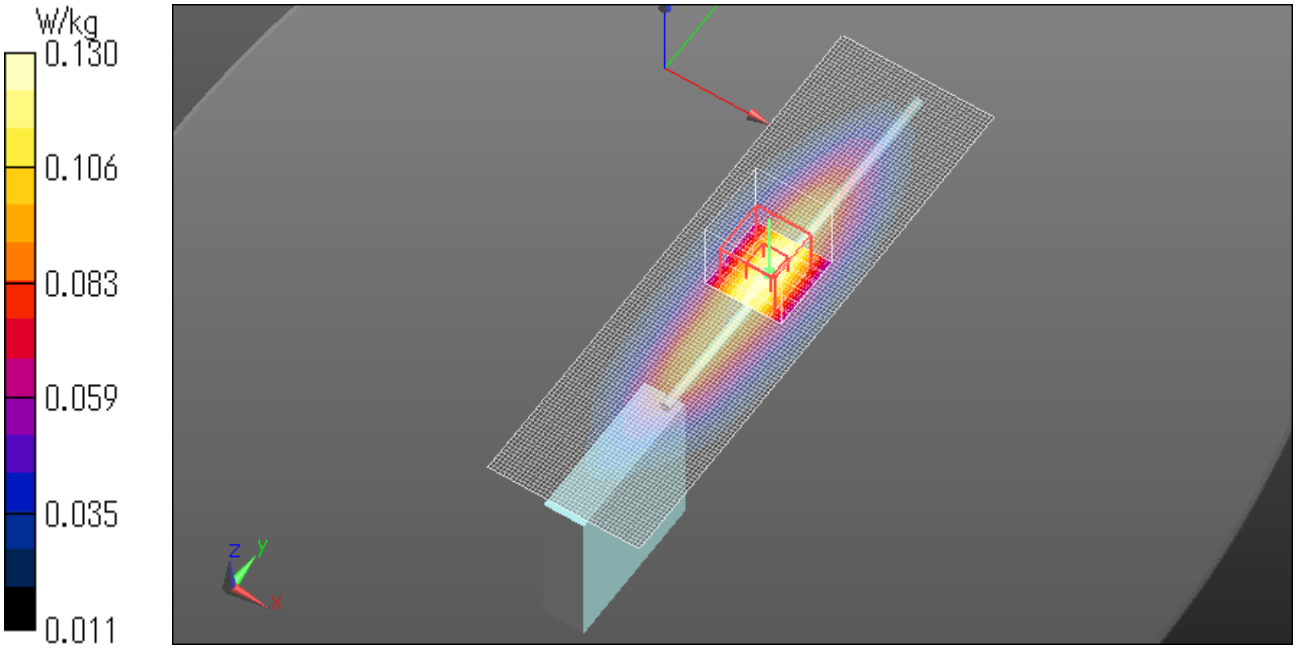


Radio microphone Left 0mm 607.875MHz
Communication System: UID 0, Radio microphone (0); Communication System Band: UC; Frequency: 607.875 MHz;
Duty Cycle: 1:1
Medium parameters used (interpolated): f = 607.875 MHz; σ = 0.952 S/m; ε_r = 55.942; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration
Probe: EX3DV4 - SN3917; ConvF(10.37, 10.37, 10.37); Calibrated: 2017/05/16;
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1369; Calibrated: 2017/05/12
Phantom: ELI v5.0 (20deg probe tilt); Type: QDOVA001BB; Serial: TP:1203
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Area Scan (41x141x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.127 W/kg

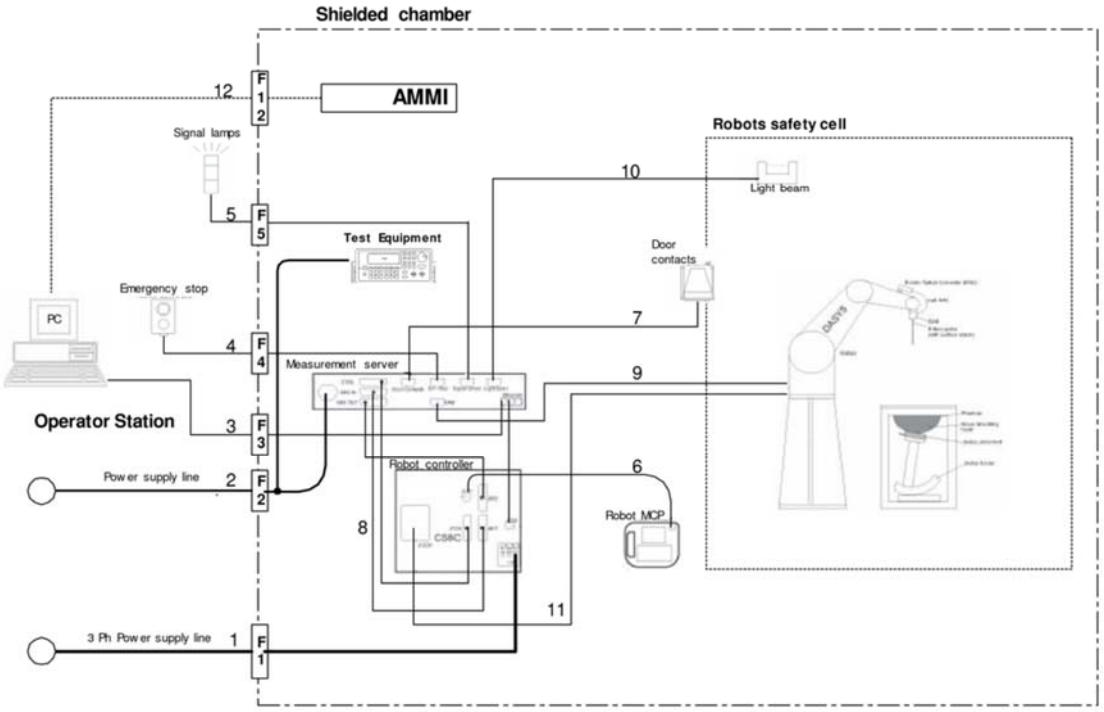
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 11.72 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 0.161 W/kg
SAR(1 g) = 0.099 W/kg; SAR(10 g) = 0.063 W/kg
Maximum value of SAR (measured) = 0.130 W/kg

Date: 2017/12/15
Ambient Temp. : 24.0 degree.C. Liquid Temp.; 23.5 degree.C.



APPENDIX 3 : System specifications

Configuration and peripherals



The DASY5 system for performing compliance tests consist of the following items:

a) A standard high precision 6-axis robot (Stäubli RX family) with controller and software.
An arm extension for accommodating the data acquisition electronics (DAE).

b) An isotropic field probe optimized and calibrated for the targeted measurement.

c) A data acquisition electronic (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.

d) The Electro-optical converter (EOC) performs the conversion between optical and electrical of the signals for the digital communication to the DAE and for the analog signal from the optical surface detection. The EOC is connected to the measurement server.

e) 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.

f) The Light Beam used is for probe alignment. This improves the (absolute) accuracy of the probe positioning.

g) A computer running WinXP and the DASY5 software.

h) Remote control with teaches pendant and additional circuitry for robot safety such as warning lamps, etc.

i) The phantom, the device holder and other accessories according to the targeted measurement.

Specifications

a)Robot TX60L

Number of Axes	:	6
Nominal Load	:	2 kg
Maximum Load	:	5kg
Reach	:	920mm
Repeatability	:	+/-0.03mm
Control Unit	:	CS8c
Programming Language	:	VAL3
Weight	:	52.2kg
Manufacture	:	Stäubli Robotics

b)E-Field Probe

Model	:	EX3DV4
Construction	:	Symmetrical design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., glycol ether)
Frequency	:	10 MHz to > 6 GHz Linearity: ± 0.2 dB (30 MHz to 6 GHz)
Directivity	:	+/-0.3 dB in HSL (rotation around probe axis) +/-0.5 dB in tissue material (rotation normal probe axis)
Dynamic Range	:	10uW/g to > 100 mW/g;Linearity +/-0.2 dB(noise: typically < 1uW/g)
Dimensions	:	Overall length: 337 mm (Tip: 20 mm) Tip diameter: 2.5mm (Body: 12 mm) Typical distance from probe tip to dipole centers: 1 mm
Application	:	Highprecision dosimetric measurement in any exposure scenario (e.g., very strong gradient fields).Only probe which enables compliance testing for frequencies up to 6GHz with precision of better 30%.
Manufacture	:	Schmid & Partner Engineering AG

EX3DV4 E-field Probe

c)Data Acquisition Electronic (DAE4)

Features	:	Signal amplifier, multiplexer, A/D converter and control logic Serial optical link for communication with DASY5 embedded system (fully remote controlled) Two step probe touch detector for mechanical surface detection and emergency robot stop
Measurement Range	:	-100 to +300 mV (16 bit resolution and two range settings: 4mV, 400mV)
Input Offset voltage	:	< 5 µV (with auto zero)
Input Resistance	:	200 MΩ
Input Bias Current	:	< 50 fA
Battery Power	:	> 10 h of operation (with two 9.6 V NiMH accus)
Dimension	:	60 x 60 x 68 mm
Manufacture	:	Schmid & Partner Engineering AG

d)Electro-Optic Converter (EOC)

Version	:	EOC 61
Description	:	for TX60 robot arm, including proximity sensor
Manufacture	:	Schmid & Partner Engineering AG

e)DASY5 Measurement server

Features	:	Intel ULV Celeron 400MHz 128MB chip disk and 128MB RAM 16 Bit A/D converter for surface detection system Vacuum Fluorescent Display Robot Interface Serial link to DAE (with watchdog supervision) Door contact port (Possibility to connect a light curtain) Emergency stop port (to connect the remote control) Signal lamps port Light beam port Three Ethernet connection ports Two USB 2.0 Ports Two serial links Expansion port for future applications
Dimensions (L x W x H)	:	440 x 241 x 89 mm
Manufacture	:	Schmid & Partner Engineering AG

f) Light Beam Switches

Version	:	LB5
Dimensions (L x H)	:	110 x 80 mm
Thickness	:	12 mm
Beam-length	:	80 mm
Manufacture	:	Schmid & Partner Engineering AG

g)Software

Item	:	Dosimetric Assessment System DASY5
Type No.	:	SD 000 401A, SD 000 402A
Software version No.	:	DASY52, Version 52.6 (1)
Manufacture / Origin	:	Schmid & Partner Engineering AG

h)Robot Control Unit

Weight	:	70 Kg
AC Input Voltage	:	selectable
Manufacturer	:	Stäubli Robotics

i)Phantom and Device Holder

Phantom

Type	:	SAM Twin Phantom V4.0
Description	:	The shell corresponds to the specifications of the Specific Anthropomorphic Mannequin (SAM) phantom defined in IEEE 1528 and IEC 62209-1. It enables the dosimetric evaluation of left and right hand phone usage as well as body mounted usage at the flat phantom region. A cover prevents evaporation of the liquid. Reference markings on the phantom allow the complete setup of all predefined phantom positions and measurement grids by teaching three points with the robot.
Material	:	Vinylester, glass fiber reinforced (VE-GF)
Shell Material	:	Fiberglass
Thickness	:	2.0 +/-0.2 mm
Dimensions	:	Length: 1000 mm Width: 500 mm Height: adjustable feet
Volume	:	Approx. 25 liters
Manufacture	:	Schmid & Partner Engineering AG

Type	:	2mm Flat phantom ERI4.0
Description	:	Phantom for compliance testing of handheld and body-mounted wireless devices in the frequency range of 30 MHz to 6 GHz. ELI4 is fully compatible with the latest draft of the standard IEC 62209 Part II and all known tissue simulating liquids. ELI4 has been optimized regarding its performance and can be integrated into our standard phantom tables. A cover prevents evaporation of the liquid. Reference markings on the phantom allow installation of the complete setup, including all predefined phantom positions and measurement grids, by teaching three points. The phantom is supported by software version DASY4.5 and higher and is compatible with all SPEAG dosimetric probes and dipoles.
Material	:	Vinylester, glass fiber reinforced (VE-GF)
Shell Thickness	:	2.0 ± 0.2 mm (sagging: <1%)
Filling Volume	:	approx. 30 liters
Dimensions	:	Major ellipse axis: 600 mm Minor axis: 400 mm
Manufacture	:	Schmid & Partner Engineering AG

Device Holder

In combination with the Twin SAM Phantom V4.0/V4.0c or ELI4, the Mounting Device enables the rotation of the mounted transmitter device in spherical coordinates. Rotation point is the ear opening point. Transmitter devices can be easily and accurately positioned according to IEC, IEEE, FCC or other specifications. The device holder can be locked for positioning at different phantom sections (left head, right head, flat).

Material : POM

Laptio Extensions kit

Simple but effective and easy-to-use extension for Mounting Device that facilitates the testing of larger devices according to IEC 62209-2 (e.g., laptops, cameras, etc.). It is lightweight and fits easily on the upper part of the Mounting Device in place of the phone positioner. The extension is fully compatible with the Twin-SAM, ELI4 Phantoms.

Material : POM, Acrylic glass, Foam

Urethane

For this measurement, the urethane foam was used as device holder.

j)Simulated Tissues (Liquid)

The following tissue formulations are provided for reference only as some of the parameters have not been thoroughly verified. The composition of ingredients may be modified accordingly to achieve the desired target tissue parameters required for required for routine SAR evaluation.

Mixture (%)	Frequency (MHz)									
	450		900		1800		1950		2450	
Tissue Type	Head	Body	Head	Body	Head	Body	Head	Body	Head	Body
Water	38.91	46.21	40.29	50.75	55.24	70.17	55.41	69.79	55.0	68.64
Sugar	56.93	51.17	57.90	48.21	-	-	-	-	-	-
Cellulose	0.25	0.18	0.24	0.00	-	-		-	-	-
Salt (NaCl)	3.79	2.34	1.38	0.94	0.31	0.39	0.08	0.2	-	-
Preventol	0.12	0.08	0.18	0.10	-				-	-
DGMBE	-	-	-	-	44.45	29.44	44.51	30.0	45.0	31.37
Dielectric Constant	43.42	58.0	42.54	56.1	42.0	56.8	39.9	54.0	39.8	52.5
Conductivity (S/m)	0.85	0.83	0.91	0.95	1.0	1.07	1.42	1.45	1.88	1.78

Note:DGMBE(Diethylenglycol-monobuthyl ether)

The simulated tissue (liquid) of 1800MHz was used for the test frequency of 1700MHz to 1800MHz.

Mixture (%)	Frequency(MHz)	
	650&750	1450
Tissue Type	Head and Body	Head and Body
Water	35-58%	52-75%
Sugar	40-60%	-
Cellulose	<0.3%	-
Salt (NaCl)	0-6%	<1%
Preventol	0.1-0.7%	-
DGMBE	-	25-48%

Mixture (%)	Frequency(MHz)	
	5800	
Tissue Type	Head	Body
Water	64.0	78.0
Mineral Oil	18.0	11.0
Emulsifiers	15.0	9.0
Additives and salt	3.0	2.0

System Check Dipole SAR Calibration Certificate -Dipole 450MHz(D450V3,S/N:1051)

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

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
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The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 0108

Client UL Japan (Vitec) Certificate No: D450V3-1051_Sep15

CALIBRATION CERTIFICATE

Object D450V3 - SN: 1051

Calibration procedure(s) QA CAL-15.v8
Calibration procedure for dipole validation kits below 700 MHz

Calibration date: September 21, 2015

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter E4419B	GB41293874	01-Apr-15 (No. 217-02128)	Mar-16
Power sensor E4412A	MY41498087	01-Apr-15 (No. 217-02128)	Mar-16
Reference 3 dB Attenuator	SN: S5054 (3c)	01-Apr-15 (No. 217-02129)	Mar-16
Reference 20 dB Attenuator	SN: S5058 (20k)	01-Apr-15 (No. 217-02131)	Mar-16
Type-N mismatch combination	SN: 5047.2 / 06327	01-Apr-15 (No. 217-02134)	Mar-16
Reference Probe ET3DV6	SN: 1507	30-Dec-14 (No. ET3-1507_Dec14)	Dec-15
DAE4	SN: 654	08-Jul-15 (No. DAE4-654_Jul15)	Jul-16

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
RF generator HP 8648C	US3642U01700	04-Aug-99 (in house check Apr-13)	In house check: Apr-16
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-14)	In house check: Oct-15

	Name	Function	Signature
Calibrated by:	Israe Elnaouq	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: September 23, 2015

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

Certificate No: D450V3-1051_Sep15 Page 1 of 8

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Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

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Accreditation No.: SCS 0108

Glossary:

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

Calibration is Performed According to the Following Standards:

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	ELI4 Flat Phantom	Shell thickness: 2 ± 0.2 mm
Distance Dipole Center - TSL	15 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	450 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	43.5	0.87 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	44.3 ± 6 %	0.90 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	1.15 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**4.50 W/kg ± 18.1 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	250 mW input power	0.768 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**3.01 W/kg ± 17.6 % (k=2)**

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Body TSL parameters	22.0 °C	56.7	0.94 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	58.4 ± 6 %	0.98 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	1.14 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**4.44 W/kg ± 18.1 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	250 mW input power	0.750 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**2.93 W/kg ± 17.6 % (k=2)**

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Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	60.3 Ω - 1.4 jΩ
Return Loss	- 20.5 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	57.1 Ω - 4.5 jΩ
Return Loss	- 22.1 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.150 ns

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

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	July 29, 2005

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DASY5 Validation Report for Head TSL

Date: 21.09.2015

Test Laboratory: SPEAG, Zurich, Switzerland

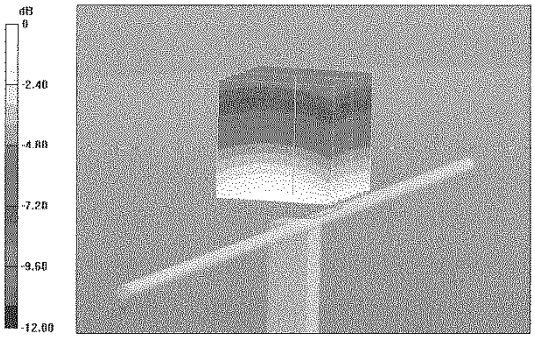
DUT: Dipole 450 MHz; Type: D450V3; Serial: D450V3 - SN: 1051

Communication System: UID 0 - CW; Frequency: 450 MHz
Medium parameters used: f = 450 MHz; σ = 0.9 S/m; ε_r = 44.3; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: ET3DV6 - SN1507; ConvF(6.58, 6.58, 6.58); Calibrated: 30.12.2014;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn654; Calibrated: 08.07.2015
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1003
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Dipole Calibration for Head Tissue/d=15mm, Pin=250mW/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 38.75 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 1.66 W/kg
SAR(1 g) = 1.15 W/kg; SAR(10 g) = 0.768 W/kg
Maximum value of SAR (measured) = 1.23 W/kg



0 dB = 1.23 W/kg = 0.90 dBW/kg

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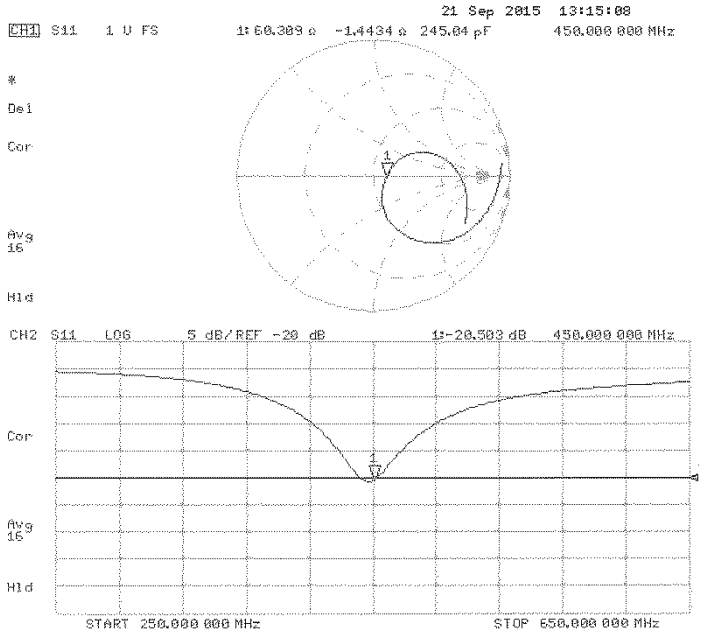
Impedance Measurement Plot for Head TSL



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DASY5 Validation Report for Body TSL

Date: 21.09.2015

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 450 MHz; Type: D450V3; Serial: D450V3 - SN: 1051

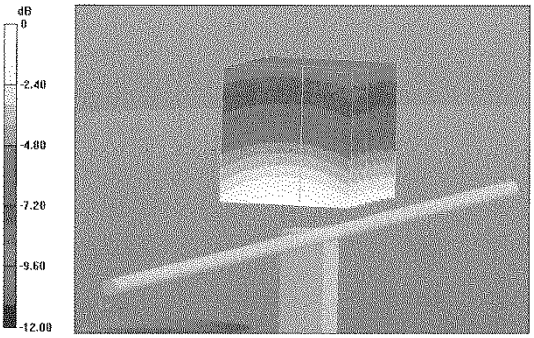
Communication System: UID 0 - CW; Frequency: 450 MHz
Medium parameters used: f = 450 MHz; σ = 0.98 S/m; ε_r = 58.4; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: ET3DV6 - SN1507; ConvF(7.05, 7.05, 7.05); Calibrated: 30.12.2014;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn654; Calibrated: 08.07.2015
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1003
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

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

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 36.28 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 1.83 W/kg
SAR(1 g) = 1.14 W/kg; SAR(10 g) = 0.750 W/kg
Maximum value of SAR (measured) = 1.22 W/kg



0 dB = 1.22 W/kg = 0.86 dBW/kg

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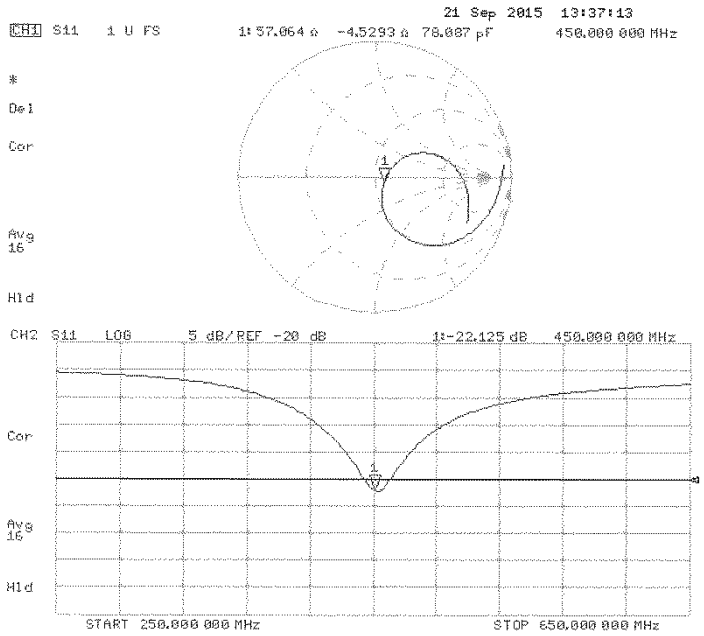
Impedance Measurement Plot for Body TSL



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D450V3 Calibration for Impedance and Return-loss

1. Test environment

Date	September 28, 2017		
Ambient Temperature	24.0 deg.C	Relative humidity	48 %RH

2. Equipment used

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * interval(month)
EST-30	Network Analyzer	Agilent	N5230A	MY46400314	SAR	2017/08/17 * 12
MOS-30	Thermo-Hygrometer	Custom	CTH-201	3001	SAR	2017/07/26 * 12
MHSL0450	Tissue simulation liquid (Head)	Schmid&Partner Engineering AG	HSL450V2	SL AAH 045 AA	SAR	Pre Check
MMSL0450	Tissue simulation liquid (Body)	Schmid&Partner Engineering AG	MSL450V2	SL AAM 045 BC	SAR	Pre Check
MOS-35	Digital thermometer	HANNA	Checktemp 4	-	SAR	2017/07/26 * 12
MNA-03	Vector Reflectometer	Copper Mountain Technologies	PLANAR R140	0030913	SAR	2017/04/22 * 12
MPF-03	2mm Oval Flat Phantom	Schmid&Partner Engineering AG	QDOVA001BB	1203	SAR	2017/05/29 * 12

3. Test Result

Head

Impeadance,Transformed to feed point	cal day	Head (real part) [Ω]	Head (img part) [jΩ]	Deviation (real part) [Ω]	Deviation (img part) [jΩ]	Tolerance	Result
Calibration (SPEAG)	2015/9/21	60.30	-1.40	-	-	-	-
Calibration(ULJ)	2016/9/30	58.72	-4.34	-1.58	-2.94	+/-5Ω+/-5jΩ	Complied
Calibration(ULJ)	2017/9/28	62.71	-5.53	2.41	-4.13	+/-5Ω+/-5jΩ	Complied

Return loss	cal day	Head [dB]	Deviation [dB]	Tolerance [+/-dB]	Result
Calibration (SPEAG)	2015/9/21	-20.50	-	-	-
Calibration(ULJ)	2016/9/30	-20.96	-0.46	4.10	Complied
Calibration(ULJ)	2017/9/28	-21.17	-0.67	4.10	Complied

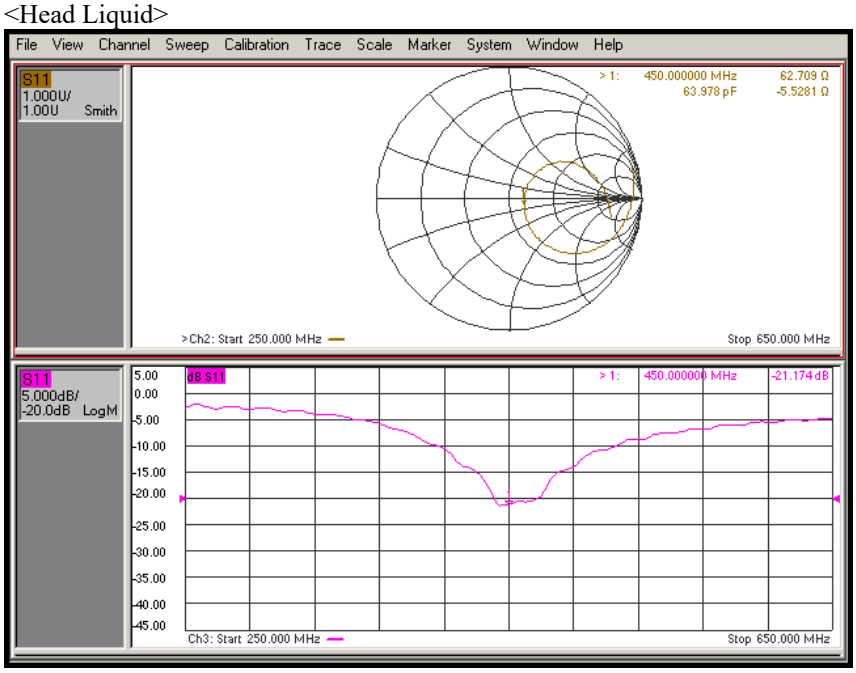
Body

Impeadance,Transformed to feed point	cal day	Body (real part) [Ω]	Body (img part) [jΩ]	Deviation (real part) [Ω]	Deviation (img part) [jΩ]	Tolerance	Result
Calibration (SPEAG)	2015/9/21	57.10	-4.50	-	-	-	-
Calibration(ULJ)	2016/9/30	60.36	-8.26	3.26	-3.76	+/-5Ω+/-5jΩ	Complied
Calibration(ULJ)	2017/9/28	61.42	-9.22	4.32	-4.72	+/-5Ω+/-5jΩ	Complied

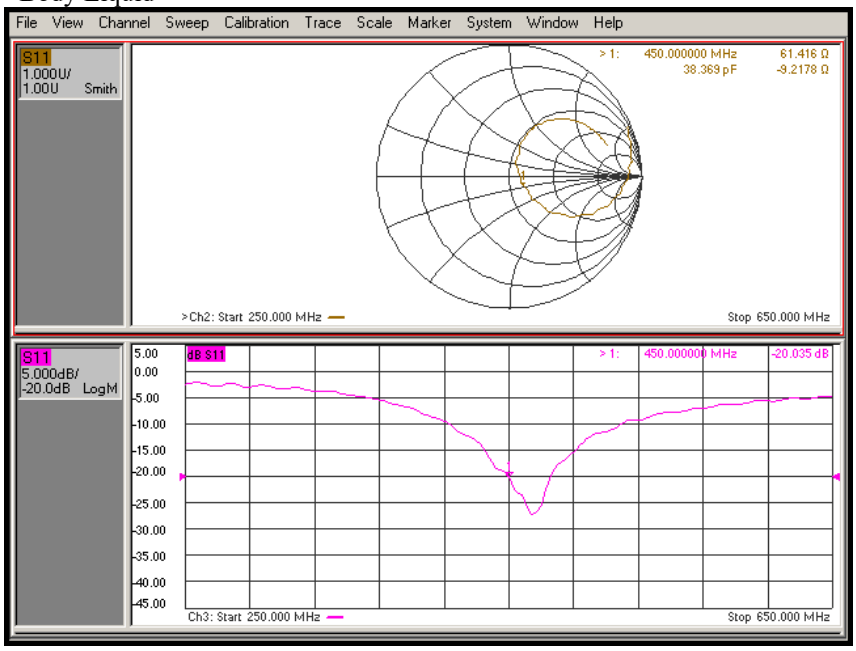
Return loss	cal day	Body [dB]	Deviation [dB]	Tolerance [+/-dB]	Result
Calibration (SPEAG)	2015/9/21	-22.10	-	-	-
Calibration(ULJ)	2016/9/30	-21.04	1.06	4.42	Complied
Calibration(ULJ)	2017/9/28	-20.04	2.07	4.42	Complied

*Tolerance: According to the KDB865664 D01.

Measurement Plots
<Head Liquid>



<Body Liquid>



System Check Dipole SAR Calibration Certificate -Dipole 600MHz(D600V3,S/N:1003)

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

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Accreditation No.: SCS 0108

Client UL Japan (Vitec) **Certificate No: D600V3-1003_Sep16**

CALIBRATION CERTIFICATE

Object: D600V3 - SN: 1003

Calibration procedure(s): QA CAL-15.v8
Calibration procedure for dipole validation kits below 700 MHz

Calibration date: September 19, 2016

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

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 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: 5277 (20x)	05-Apr-16 (No. 217-02293)	Apr-17
Type-N mismatch combination	SN: 5047.2 / 06327	05-Apr-16 (No. 217-02295)	Apr-17
Reference Probe ET3DV6	SN: 1507	31-Dec-15 (No. ET3-1507_Dec15)	Dec-16
DAE4	SN: 654	12-Aug-16 (No. DAE4-654_Aug16)	Aug-17

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power meter E4419B	SN: GB41293874	06-Apr-16 (No. 217-02285/02284)	In house check: Jun-18
Power sensor E4412A	SN: MY41498087	06-Apr-16 (No. 217-02285)	In house check: Jun-18
Power sensor E4412A	SN: 000110210	06-Apr-16 (No. 217-02284	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:	Michael Weber	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: September 19, 2016

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Accreditation No.: SCS 0108

Glossary:

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

Calibration is Performed According to the Following Standards:

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	ELI4 Flat Phantom	Shell thickness: 2 ± 0.2 mm
Distance Dipole Center - TSL	15 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	600 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	42.7	0.88 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	41.5 ± 6 %	0.87 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	1.61 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**6.46 W/kg ± 18.1 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	250 mW input power	1.05 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**4.21 W/kg ± 17.6 % (k=2)**

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Body TSL parameters	22.0 °C	56.1	0.95 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	55.8 ± 6 %	0.91 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	1.62 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**6.69 W/kg ± 18.1 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	250 mW input power	1.07 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**4.40 W/kg ± 17.6 % (k=2)**

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Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	60.2 Ω + 2.3 jΩ
Return Loss	- 20.5 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	53.0 Ω - 4.8 jΩ
Return Loss	- 25.2 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.153 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	February 08, 2013

DASY5 Validation Report for Head TSL

Date: 19.09.2016

Test Laboratory: SPEAG, Zurich, Switzerland

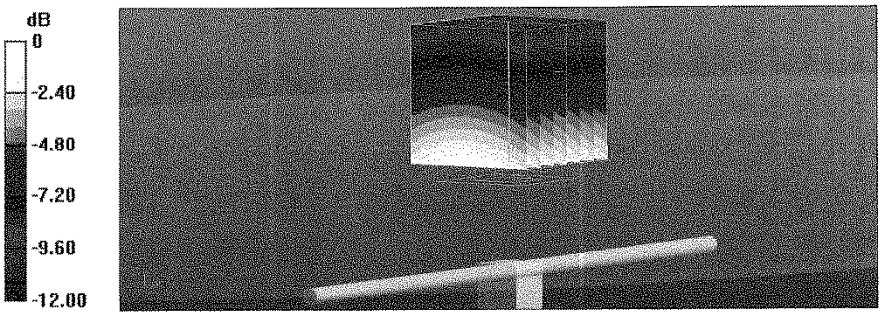
DUT: Dipole 600 MHz; Type: D600V3; Serial: D600V3 - SN: 1003

Communication System: UID 0 - CW; Frequency: 600 MHz
Medium parameters used: f = 600 MHz; σ = 0.87 S/m; ε_r = 41.5; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: ET3DV6 - SN1507; ConvF(6.54, 6.54, 6.54); Calibrated: 31.12.2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn654; Calibrated: 12.08.2016
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1003
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7372)

Dipole Calibration for Head Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 45.72 V/m; Power Drift = -0.00 dB
Peak SAR (extrapolated) = 2.57 W/kg
SAR(1 g) = 1.61 W/kg; SAR(10 g) = 1.05 W/kg
Maximum value of SAR (measured) = 1.72 W/kg



0 dB = 1.72 W/kg = 2.36 dBW/kg

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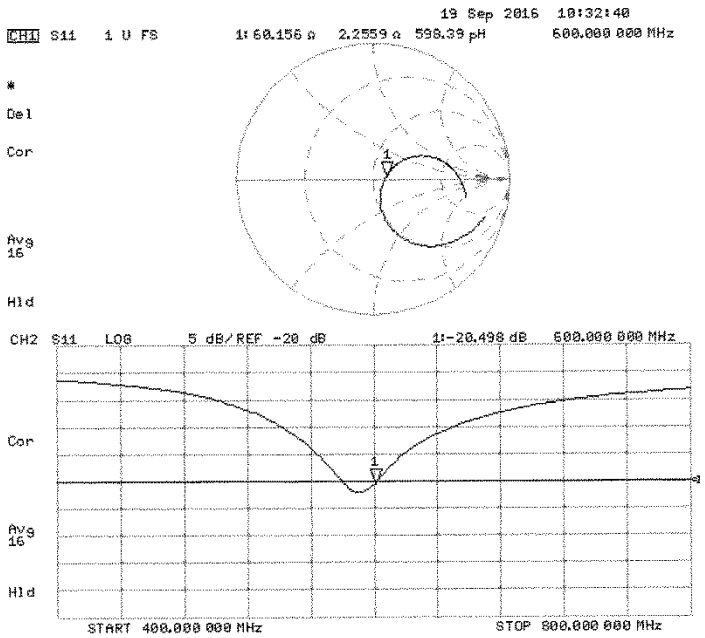
Impedance Measurement Plot for Head TSL



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DASY5 Validation Report for Body TSL

Date: 19.09.2016

Test Laboratory: SPEAG, Zurich, Switzerland

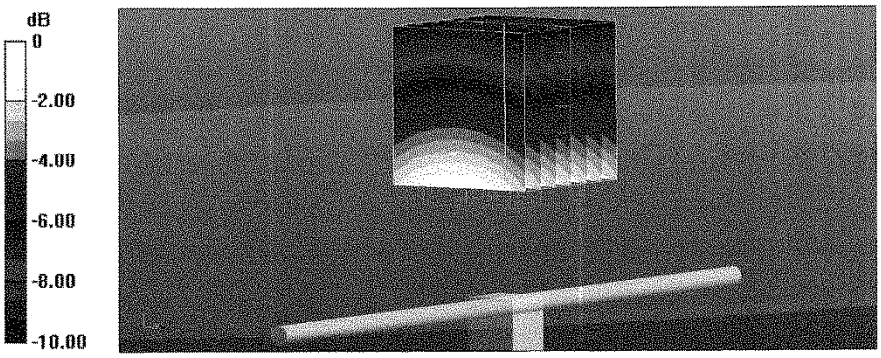
DUT: Dipole 600 MHz; Type: D600V3; Serial: D600V3 - SN: 1003

Communication System: UID 0 - CW; Frequency: 600 MHz
Medium parameters used: f = 600 MHz; σ = 0.91 S/m; ε_r = 55.8; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: ET3DV6 - SN1507; ConvF(6.5, 6.5, 6.5); Calibrated: 31.12.2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn654; Calibrated: 12.08.2016
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1003
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7372)

Dipole Calibration for Body Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 44.64 V/m; Power Drift = -0.00 dB
Peak SAR (extrapolated) = 2.58 W/kg
SAR(1 g) = 1.62 W/kg; SAR(10 g) = 1.07 W/kg
Maximum value of SAR (measured) = 1.74 W/kg



0 dB = 1.74 W/kg = 2.41 dBW/kg

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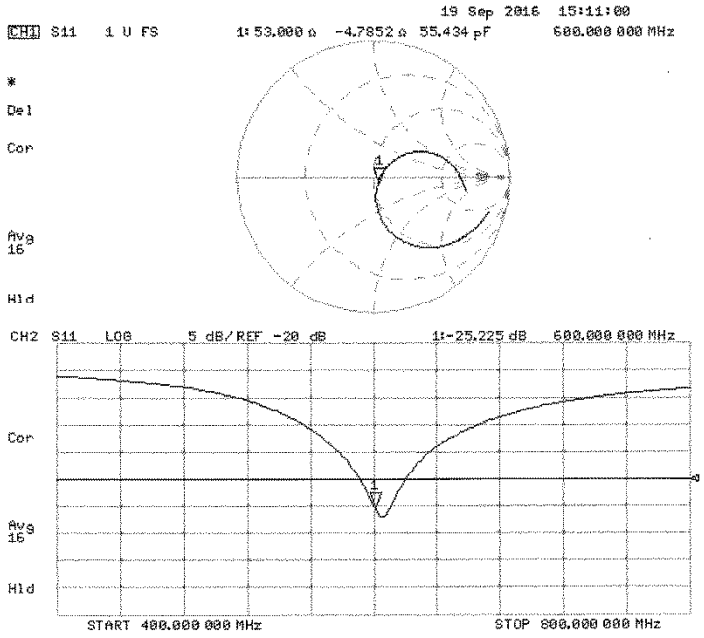
Impedance Measurement Plot for Body TSL



D600V3 Calibration for Impedance and Return-loss

1. Test environment

Date	September13, 2017		
Ambient Temperature	23.0 deg.C	Relative humidity	68%RH

2. Equipment used

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
MOS-37	Digital thermometer	LKM electronic	DTM3000	-	SAR	2017/07/26 * 12
MPF-03	2mm Oval Flat Phantom	Schmid&Partner Engineering AG	QDOVA001BB	1203	SAR	2017/05/29 * 12
MMSL0650	Tissue simulation liquid (Body)	Schmid&Partner Engineering AG	MSL650	20090914		Pre Check
MHSL0650	Tissue simulation liquid (Head)	Schmid&Partner Engineering AG	HSL650	20090911		Pre Check
EST-63	Network Analyzer	KEYSIGHT	E5071C	MY46523746	SAR	2017/02/03 * 12
EST-64	Calibration Kit	KEYSIGHT	85032F	MY53200995	SAR	2017/02/02 * 12
MDA-21	Dipole Antenna	Schmid&Partner Engineering AG	D600V3	1003	SAR	2016/09/19 * 12

3. Test Result

Impeadance,Transformed to feed point	cal day	Head (real part) [Ω]	Head (img part) [jΩ]	Deviation (real part) [Ω]	Deviation (img part) [jΩ]	Tolerance	Result
Calibration (SPEAG)	2016/9/19	60.20	2.30	-	-	-	-
Calibration(ULJ)	2017/9/13	61.12	-1.06	0.92	-3.36	+/-5Ω+/-5jΩ	Complied

Return loss	cal day	Head [dB]	Deviation [dB]	Tolerance [+/-dB]	Result
Calibration (SPEAG)	2016/9/19	-20.50	-	-	-
Calibration(ULJ)	2017/9/13	-22.75	-2.25	4.10	Complied

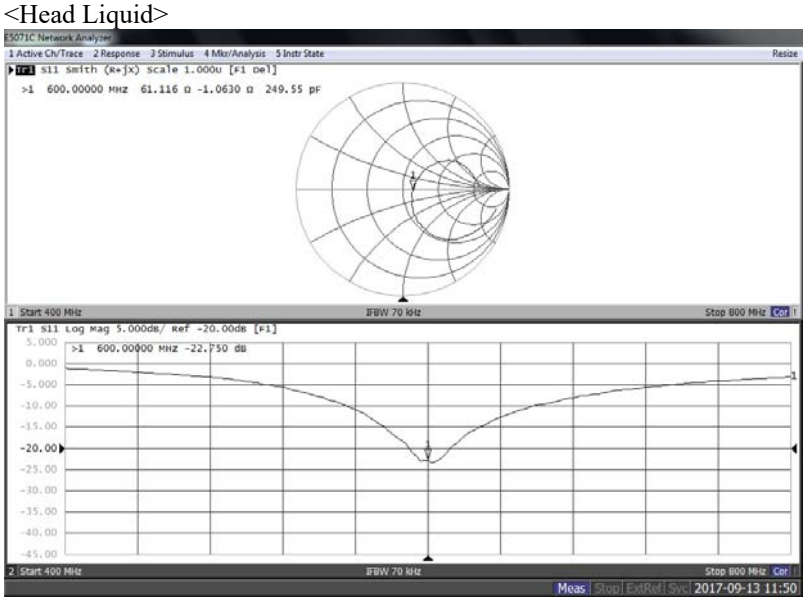
Impeadance,Transformed to feed point	cal day	Body (real part) [Ω]	Body (img part) [jΩ]	Deviation (real part) [Ω]	Deviation (img part) [jΩ]	Tolerance	Result
Calibration (SPEAG)	2016/9/19	53.00	-4.80	-	-	-	-
Calibration(ULJ)	2017/9/13	56.186	-5.7777	3.19	-0.98	+/-5Ω+/-5jΩ	Complied

Return loss	cal day	Body [dB]	Deviation [dB]	Tolerance [+/-dB]	Result
Calibration (SPEAG)	2016/9/19	-25.20	-	-	-
Calibration(ULJ)	2017/9/13	-22.665	2.54	5.04	Complied

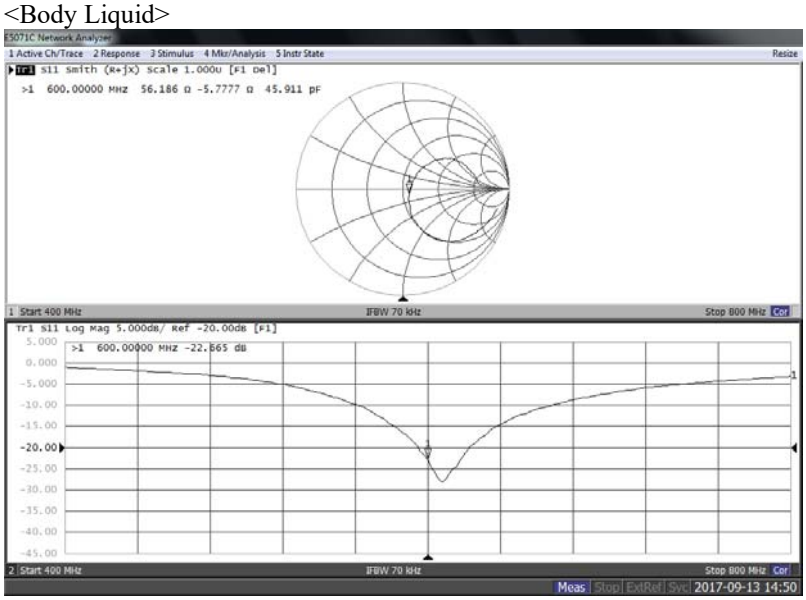
*Tolerance : According to the KDB865664D01

Measurement Plots

<Head Liquid>



<Body Liquid>



Dosimetric E-Field Probe Calibration Certificate (EX3DV4, S/N: 3917)

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Accreditation No.: SCS 0108

Client UL Japan (Vitec) **Certificate No:** EX3-3917_May17

CALIBRATION CERTIFICATE

Object: EX3DV4 - SN:3917

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

Calibration date: May 16, 2017

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NRP	SN: 104778	04-Apr-17 (No. 217-02521/02522)	Apr-18
Power sensor NRP-Z91	SN: 103244	04-Apr-17 (No. 217-02521)	Apr-18
Power sensor NRP-Z91	SN: 103245	04-Apr-17 (No. 217-02525)	Apr-18
Reference 20 dB Attenuator	SN: S5277 (20x)	07-Apr-17 (No. 217-02528)	Apr-18
Reference Probe ES3DV2	SN: 3013	31-Dec-16 (No. ES3-3013_Dec16)	Dec-17
DAE4	SN: 660	7-Dec-16 (No. DAE4-660_Dec16)	Dec-17
Secondary Standards	ID	Check Date (in house)	Scheduled Check
Power meter E4419B	SN: GB41293874	06-Apr-16 (in house check Jun-16)	In house check: Jun-18
Power sensor E4412A	SN: MY41498087	06-Apr-16 (in house check Jun-16)	In house check: Jun-18
Power sensor E4412A	SN: 000110210	06-Apr-16 (in house check Jun-16)	In house check: Jun-18
RF generator HP 8648C	SN: US3642U01700	04-Aug-99 (in house check Jun-16)	In house check: Jun-18
Network Analyzer HP 8753E	SN: US37390585	18-Oct-01 (in house check Oct-16)	In house check: Oct-17

	Name	Function	Signature
Calibrated by:	Michael Weber	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: May 16, 2017

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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:3917

Manufactured: December 18, 2012
Calibrated: May 16, 2017

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

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3917

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu V/(V/m)^2$)[A]	0.52	0.42	0.43	± 10.1 %
DCP (mV)[B]	99.8	103.3	98.7	

Modulation Calibration Parameters

UID	Communication System Name		A dB	B dB$\sqrt{\mu V}$	C	D dB	VR mV	Unc[E] (k=2)
0	CW	X	0.0	0.0	1.0	0.00	144.9	±3.3 %
		Y	0.0	0.0	1.0		148.9	
		Z	0.0	0.0	1.0		129.4	

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	53.73	401.7	35.71	22.95	1.609	4.996	0.804	0.450	1.006
Y	52.92	389.5	34.85	18.18	1.342	4.979	1.366	0.263	1.004
Z	56.57	419.6	35.21	18.63	1.485	4.998	1.200	0.389	1.006

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.

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DASY/EASY - Parameters of Probe: EX3DV4 - SN:3917

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)
300	45.3	0.87	12.23	12.23	12.23	0.09	1.20	± 13.3 %
450	43.5	0.87	11.12	11.12	11.12	0.13	1.25	± 13.3 %
650	42.5	0.89	10.44	10.44	10.44	0.10	1.20	± 13.3 %
750	41.9	0.89	10.65	10.65	10.65	0.45	0.82	± 12.0 %
835	41.5	0.90	10.09	10.09	10.09	0.36	0.94	± 12.0 %
900	41.5	0.97	9.94	9.94	9.94	0.41	0.80	± 12.0 %
1450	40.5	1.20	8.95	8.95	8.95	0.39	0.80	± 12.0 %
1640	40.2	1.31	8.71	8.71	8.71	0.36	0.82	± 12.0 %
1750	40.1	1.37	8.63	8.63	8.63	0.31	0.84	± 12.0 %
1900	40.0	1.40	8.33	8.33	8.33	0.31	0.84	± 12.0 %
1950	40.0	1.40	8.09	8.09	8.09	0.33	0.85	± 12.0 %
2300	39.5	1.67	7.88	7.88	7.88	0.32	0.83	± 12.0 %
2450	39.2	1.80	7.52	7.52	7.52	0.36	0.83	± 12.0 %
2600	39.0	1.96	7.28	7.28	7.28	0.41	0.86	± 12.0 %
3500	37.9	2.91	7.00	7.00	7.00	0.32	1.15	± 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:3917

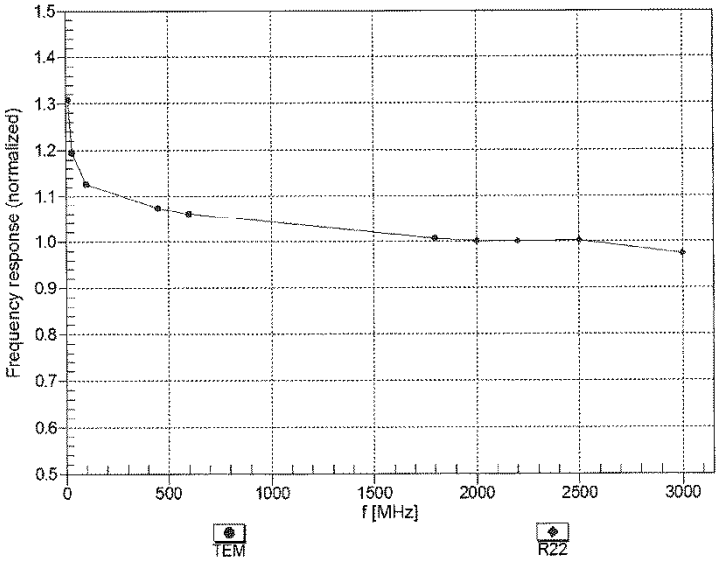
Calibration Parameter Determined in Body Tissue Simulating Media

f (MHz) [C]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha [G]	Depth [G] (mm)	Unc (k=2)
300	58.2	0.92	11.58	11.58	11.58	0.04	1.15	± 13.3 %
450	56.7	0.94	11.47	11.47	11.47	0.08	1.15	± 13.3 %
650	55.9	0.96	10.37	10.37	10.37	0.08	1.15	± 13.3 %
750	55.5	0.96	10.29	10.29	10.29	0.44	0.80	± 12.0 %
835	55.2	0.97	9.93	9.93	9.93	0.41	0.89	± 12.0 %
900	55.0	1.05	9.89	9.89	9.89	0.39	0.85	± 12.0 %
1450	54.0	1.30	8.77	8.77	8.77	0.31	0.80	± 12.0 %
1640	53.7	1.42	8.73	8.73	8.73	0.39	0.80	± 12.0 %
1750	53.4	1.49	8.30	8.30	8.30	0.30	0.98	± 12.0 %
1900	53.3	1.52	8.04	8.04	8.04	0.38	0.80	± 12.0 %
1950	53.3	1.52	8.28	8.28	8.28	0.40	0.83	± 12.0 %
2300	52.9	1.81	7.81	7.81	7.81	0.39	0.84	± 12.0 %
2450	52.7	1.95	7.68	7.68	7.68	0.37	0.88	± 12.0 %
2600	52.5	2.16	7.41	7.41	7.41	0.28	0.95	± 12.0 %
3500	51.3	3.31	6.66	6.66	6.66	0.30	1.25	± 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.

EX3DV4– SN:3917 May 16, 2017

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



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

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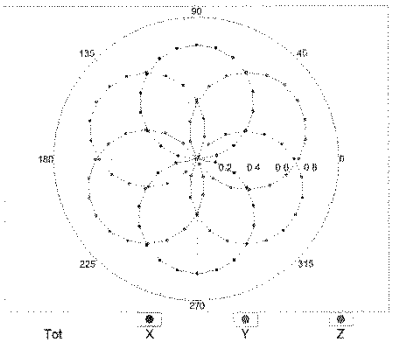
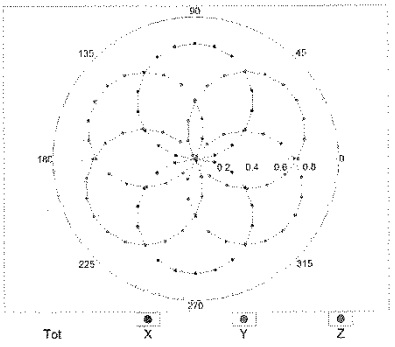
EX3DV4– SN:3917 May 16, 2017

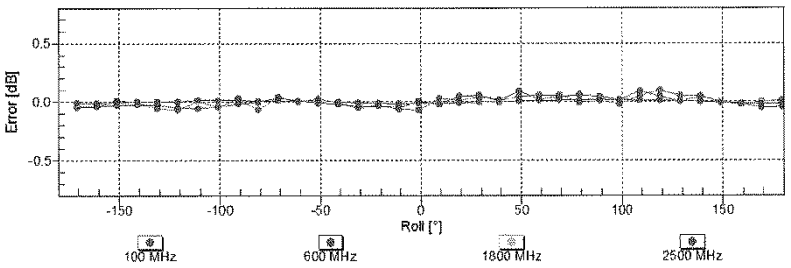
Receiving Pattern (ϕ), ϑ = 0°

f=600 MHz,TEM



f=1800 MHz,R22





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

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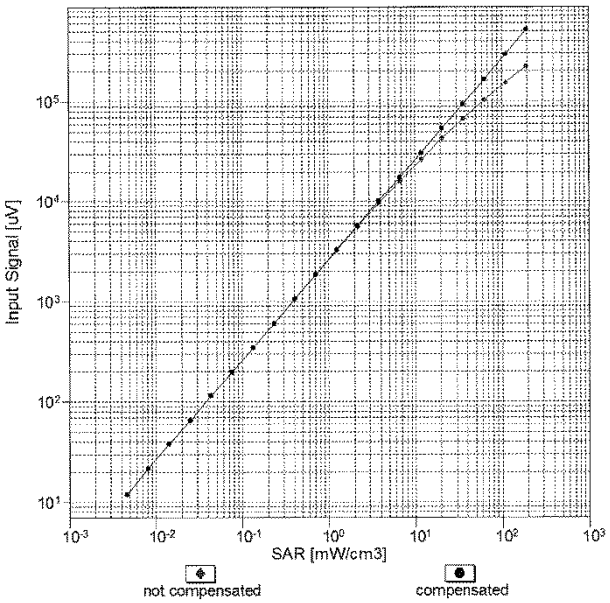
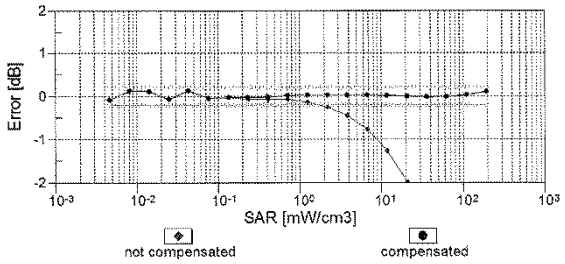
Dynamic Range f(SAR_{head})
(TEM cell , f_{eval}= 1900 MHz)

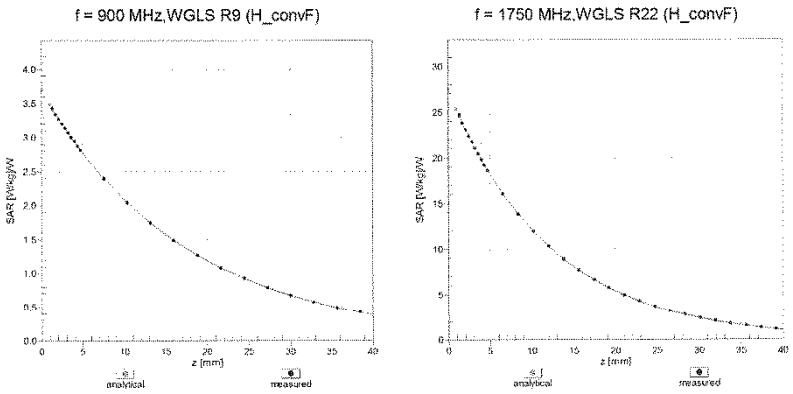




Uncertainty of Linearity Assessment: ± 0.6% (k=2)

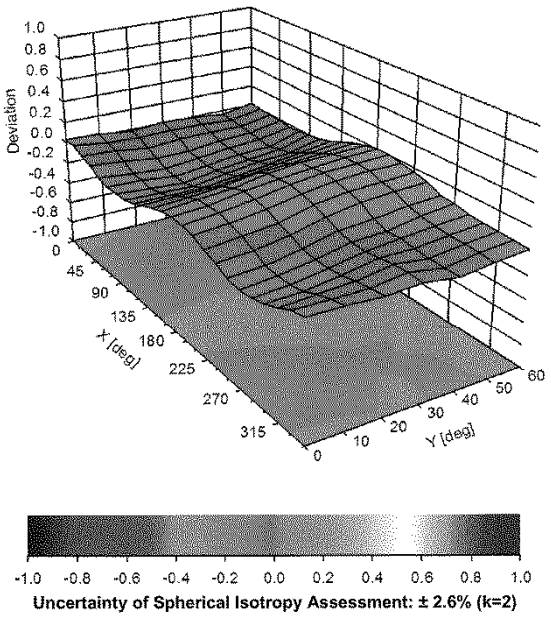
EX3DV4– SN:3917 May 16, 2017

Conversion Factor Assessment



Deviation from Isotropy in Liquid

Error (ϕ, ϑ), f = 900 MHz



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

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DASY/EASY - Parameters of Probe: EX3DV4 - SN:3917

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	69
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	144.9	± 3.3 %
		Y	0.00	0.00	1.00		148.9	
		Z	0.00	0.00	1.00		129.4	
10010-CAA	SAR Validation (Square, 100ms, 10ms)	X	4.13	70.71	13.89	10.00	20.0	± 9.6 %
		Y	3.35	68.19	12.23		20.0	
		Z	3.65	69.18	12.93		20.0	
10011-CAB	UMTS-FDD (WCDMA)	X	1.06	67.34	15.41	0.00	150.0	± 9.6 %
		Y	1.18	69.82	16.84		150.0	
		Z	1.03	67.05	15.14		150.0	
10012-CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps)	X	1.24	64.16	15.33	0.41	150.0	± 9.6 %
		Y	1.23	64.73	15.83		150.0	
		Z	1.20	63.89	15.12		150.0	
10013-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps)	X	4.96	66.59	16.97	1.46	150.0	± 9.6 %
		Y	4.92	66.65	16.98		150.0	
		Z	4.94	66.50	16.86		150.0	
10021-DAC	GSM-FDD (TDMA, GMSK)	X	18.14	91.71	22.84	9.39	50.0	± 9.6 %
		Y	13.10	86.24	20.37		50.0	
		Z	16.84	90.26	22.07		50.0	
10023-DAC	GPRS-FDD (TDMA, GMSK, TN 0)	X	14.95	88.89	22.02	9.57	50.0	± 9.6 %
		Y	11.15	83.97	19.67		50.0	
		Z	13.86	87.49	21.24		50.0	
10024-DAC	GPRS-FDD (TDMA, GMSK, TN 0-1)	X	56.96	104.97	24.76	6.56	60.0	± 9.6 %
		Y	38.82	98.80	22.41		60.0	
		Z	56.84	104.39	24.24		60.0	
10025-DAC	EDGE-FDD (TDMA, 8PSK, TN 0)	X	6.61	78.50	28.78	12.57	50.0	± 9.6 %
		Y	9.16	89.22	33.72		50.0	
		Z	5.44	73.34	26.13		50.0	
10026-DAC	EDGE-FDD (TDMA, 8PSK, TN 0-1)	X	12.34	93.72	31.91	9.56	60.0	± 9.6 %
		Y	12.72	95.73	32.76		60.0	
		Z	10.94	91.22	30.93		60.0	
10027-DAC	GPRS-FDD (TDMA, GMSK, TN 0-1-2)	X	100.00	110.40	24.97	4.80	80.0	± 9.6 %
		Y	100.00	108.41	23.71		80.0	
		Z	100.00	109.69	24.41		80.0	
10028-DAC	GPRS-FDD (TDMA, GMSK, TN 0-1-2-3)	X	100.00	110.34	24.29	3.55	100.0	± 9.6 %
		Y	100.00	108.67	23.18		100.0	
		Z	100.00	109.54	23.67		100.0	
10029-DAC	EDGE-FDD (TDMA, 8PSK, TN 0-1-2)	X	8.35	85.49	27.83	7.80	80.0	± 9.6 %
		Y	7.99	85.72	28.06		80.0	
		Z	7.47	83.46	27.02		80.0	
10030-CAA	IEEE 802.15.1 Bluetooth (GFSK, DH1)	X	52.52	102.58	23.32	5.30	70.0	± 9.6 %
		Y	40.55	98.20	21.47		70.0	
		Z	50.78	101.74	22.76		70.0	
10031-CAA	IEEE 802.15.1 Bluetooth (GFSK, DH3)	X	100.00	110.26	22.99	1.88	100.0	± 9.6 %
		Y	100.00	108.91	22.05		100.0	
		Z	100.00	108.53	21.97		100.0	

10032-CAA	IEEE 802.15.1 Bluetooth (GFSK, DH5)	X	100.00	115.10	24.13	1.17	100.0	± 9.6 %
		Y	100.00	115.62	23.94		100.0	
		Z	100.00	112.15	22.59		100.0	
10033-CAA	IEEE 802.15.1 Bluetooth (PI/4-DQPSK, DH1)	X	8.14	84.47	21.71	5.30	70.0	± 9.6 %
		Y	8.04	85.00	21.71		70.0	
		Z	7.51	84.05	21.64		70.0	
10034-CAA	IEEE 802.15.1 Bluetooth (PI/4-DQPSK, DH3)	X	3.43	76.43	17.85	1.88	100.0	± 9.6 %
		Y	3.58	78.01	18.45		100.0	
		Z	3.01	75.38	17.57		100.0	
10035-CAA	IEEE 802.15.1 Bluetooth (PI/4-DQPSK, DH5)	X	2.42	73.39	16.59	1.17	100.0	± 9.6 %
		Y	2.59	75.32	17.43		100.0	
		Z	2.15	72.35	16.28		100.0	
10036-CAA	IEEE 802.15.1 Bluetooth (8-DPSK, DH1)	X	9.59	87.12	22.66	5.30	70.0	± 9.6 %
		Y	9.69	87.97	22.75		70.0	
		Z	8.92	86.85	22.65		70.0	
10037-CAA	IEEE 802.15.1 Bluetooth (8-DPSK, DH3)	X	3.27	75.87	17.60	1.88	100.0	± 9.6 %
		Y	3.38	77.32	18.16		100.0	
		Z	2.88	74.86	17.33		100.0	
10038-CAA	IEEE 802.15.1 Bluetooth (8-DPSK, DH5)	X	2.46	73.81	16.85	1.17	100.0	± 9.6 %
		Y	2.64	75.83	17.73		100.0	
		Z	2.18	72.74	16.54		100.0	
10039-CAB	CDMA2000 (1xRTT, RC1)	X	2.03	72.99	16.65	0.00	150.0	± 9.6 %
		Y	2.75	77.97	18.74		150.0	
		Z	1.97	72.50	16.47		150.0	
10042-CAB	IS-54 / IS-136 FDD (TDMA/FDM, PI/4-DQPSK, Halfrate)	X	21.02	92.04	21.44	7.78	50.0	± 9.6 %
		Y	13.00	85.37	18.76		50.0	
		Z	17.13	89.24	20.30		50.0	
10044-CAA	IS-91/EIA/TIA-553 FDD (FDMA, FM)	X	0.00	94.06	0.59	0.00	150.0	± 9.6 %
		Y	0.00	100.19	0.07		150.0	
		Z	0.00	102.36	6.19		150.0	
10048-CAA	DECT (TDD, TDMA/FDM, GFSK, Full Slot, 24)	X	8.58	79.58	20.64	13.80	25.0	± 9.6 %
		Y	7.36	76.09	18.49		25.0	
		Z	8.47	78.49	19.82		25.0	
10049-CAA	DECT (TDD, TDMA/FDM, GFSK, Double Slot, 12)	X	10.20	83.04	20.46	10.79	40.0	± 9.6 %
		Y	8.15	79.07	18.31		40.0	
		Z	9.44	81.55	19.61		40.0	
10056-CAA	UMTS-TDD (TD-SCDMA, 1.28 Mcps)	X	9.81	83.45	21.98	9.03	50.0	± 9.6 %
		Y	9.74	83.44	21.58		50.0	
		Z	9.54	83.21	21.80		50.0	
10058-DAC	EDGE-FDD (TDMA, 8PSK, TN 0-1-2-3)	X	6.36	80.51	25.24	6.55	100.0	± 9.6 %
		Y	5.94	80.19	25.24		100.0	
		Z	5.75	78.85	24.54		100.0	
10059-CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 2 Mbps)	X	1.33	65.55	15.95	0.61	110.0	± 9.6 %
		Y	1.31	66.09	16.43		110.0	
		Z	1.26	65.12	15.69		110.0	
10060-CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 5.5 Mbps)	X	10.72	98.73	25.22	1.30	110.0	± 9.6 %
		Y	46.76	121.42	31.10		110.0	
		Z	7.60	94.69	24.03		110.0	

10061-CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 11 Mbps)	X	3.85	81.02	21.47	2.04	110.0	± 9.6 %
		Y	3.91	82.69	22.25		110.0	
		Z	3.27	79.20	20.83		110.0	
10062-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps)	X	4.76	66.60	16.46	0.49	100.0	± 9.6 %
		Y	4.73	66.73	16.53		100.0	
		Z	4.75	66.54	16.39		100.0	
10063-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 9 Mbps)	X	4.78	66.69	16.55	0.72	100.0	± 9.6 %
		Y	4.75	66.81	16.61		100.0	
		Z	4.77	66.63	16.48		100.0	
10064-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 12 Mbps)	X	5.09	66.97	16.77	0.86	100.0	± 9.6 %
		Y	5.05	67.07	16.82		100.0	
		Z	5.08	66.92	16.71		100.0	
10065-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 18 Mbps)	X	4.96	66.89	16.86	1.21	100.0	± 9.6 %
		Y	4.92	66.96	16.88		100.0	
		Z	4.95	66.82	16.78		100.0	
10066-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 24 Mbps)	X	4.98	66.92	17.01	1.46	100.0	± 9.6 %
		Y	4.93	66.97	17.02		100.0	
		Z	4.97	66.85	16.93		100.0	
10067-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 36 Mbps)	X	5.27	67.02	17.39	2.04	100.0	± 9.6 %
		Y	5.21	67.04	17.39		100.0	
		Z	5.25	66.91	17.30		100.0	
10068-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 48 Mbps)	X	5.36	67.19	17.65	2.55	100.0	± 9.6 %
		Y	5.28	67.18	17.62		100.0	
		Z	5.34	67.09	17.55		100.0	
10069-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 54 Mbps)	X	5.43	67.15	17.82	2.67	100.0	± 9.6 %
		Y	5.36	67.13	17.78		100.0	
		Z	5.41	67.02	17.71		100.0	
10071-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 9 Mbps)	X	5.07	66.70	17.25	1.99	100.0	± 9.6 %
		Y	5.01	66.72	17.24		100.0	
		Z	5.04	66.59	17.16		100.0	
10072-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 12 Mbps)	X	5.08	67.08	17.47	2.30	100.0	± 9.6 %
		Y	5.01	67.08	17.45		100.0	
		Z	5.05	66.96	17.36		100.0	
10073-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 18 Mbps)	X	5.16	67.28	17.78	2.83	100.0	± 9.6 %
		Y	5.08	67.24	17.74		100.0	
		Z	5.12	67.12	17.66		100.0	
10074-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 24 Mbps)	X	5.16	67.22	17.94	3.30	100.0	± 9.6 %
		Y	5.07	67.16	17.88		100.0	
		Z	5.11	67.04	17.81		100.0	
10075-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 36 Mbps)	X	5.24	67.48	18.30	3.82	90.0	± 9.6 %
		Y	5.13	67.37	18.21		90.0	
		Z	5.18	67.28	18.16		90.0	
10076-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 48 Mbps)	X	5.25	67.25	18.39	4.15	90.0	± 9.6 %
		Y	5.14	67.13	18.30		90.0	
		Z	5.18	67.03	18.23		90.0	
10077-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 54 Mbps)	X	5.27	67.32	18.48	4.30	90.0	± 9.6 %
		Y	5.16	67.20	18.39		90.0	
		Z	5.20	67.08	18.32		90.0	

10081-CAB	CDMA2000 (1xRTT, RC3)	X	0.93	66.70	13.48	0.00	150.0	± 9.6 %
		Y	1.10	69.72	15.06		150.0	
		Z	0.91	66.36	13.30		150.0	
10082-CAB	IS-54 / IS-136 FDD (TDMA/FDM, PI/4-DQPSK, Fullrate)	X	1.17	60.21	5.75	4.77	80.0	± 9.6 %
		Y	1.00	60.00	5.22		80.0	
		Z	0.98	59.47	5.04		80.0	
10090-DAC	GPRS-FDD (TDMA, GMSK, TN 0-4)	X	53.20	104.16	24.59	6.56	60.0	± 9.6 %
		Y	36.30	98.05	22.24		60.0	
		Z	53.33	103.67	24.10		60.0	
10097-CAB	UMTS-FDD (HSDPA)	X	1.86	67.60	15.82	0.00	150.0	± 9.6 %
		Y	1.96	68.90	16.58		150.0	
		Z	1.83	67.41	15.67		150.0	
10098-CAB	UMTS-FDD (HSUPA, Subtest 2)	X	1.82	67.55	15.78	0.00	150.0	± 9.6 %
		Y	1.92	68.88	16.56		150.0	
		Z	1.79	67.34	15.63		150.0	
10099-DAC	EDGE-FDD (TDMA, 8PSK, TN 0-4)	X	12.36	93.71	31.89	9.56	60.0	± 9.6 %
		Y	12.75	95.73	32.75		60.0	
		Z	10.97	91.23	30.93		60.0	
10100-CAC	LTE-FDD (SC-FDMA, 100% RB, 20 MHz, QPSK)	X	3.23	70.52	16.80	0.00	150.0	± 9.6 %
		Y	3.39	71.72	17.42		150.0	
		Z	3.21	70.48	16.68		150.0	
10101-CAC	LTE-FDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM)	X	3.32	67.62	16.01	0.00	150.0	± 9.6 %
		Y	3.36	68.16	16.33		150.0	
		Z	3.31	67.60	15.92		150.0	
10102-CAC	LTE-FDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM)	X	3.42	67.58	16.10	0.00	150.0	± 9.6 %
		Y	3.46	68.08	16.40		150.0	
		Z	3.42	67.58	16.03		150.0	
10103-CAC	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, QPSK)	X	7.01	75.30	19.79	3.98	65.0	± 9.6 %
		Y	6.78	75.35	19.80		65.0	
		Z	6.76	74.99	19.64		65.0	
10104-CAC	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM)	X	7.28	74.54	20.32	3.98	65.0	± 9.6 %
		Y	6.95	74.29	20.23		65.0	
		Z	6.94	73.93	20.05		65.0	
10105-CAC	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM)	X	6.70	72.90	19.92	3.98	65.0	± 9.6 %
		Y	6.52	73.00	19.98		65.0	
		Z	6.58	72.88	19.91		65.0	
10108-CAD	LTE-FDD (SC-FDMA, 100% RB, 10 MHz, QPSK)	X	2.83	69.70	16.62	0.00	150.0	± 9.6 %
		Y	2.96	70.87	17.24		150.0	
		Z	2.82	69.64	16.49		150.0	
10109-CAD	LTE-FDD (SC-FDMA, 100% RB, 10 MHz, 16-QAM)	X	2.98	67.45	15.94	0.00	150.0	± 9.6 %
		Y	3.03	68.06	16.30		150.0	
		Z	2.98	67.42	15.86		150.0	
10110-CAD	LTE-FDD (SC-FDMA, 100% RB, 5 MHz, QPSK)	X	2.31	68.73	16.24	0.00	150.0	± 9.6 %
		Y	2.42	69.96	16.93		150.0	
		Z	2.30	68.61	16.10		150.0	
10111-CAD	LTE-FDD (SC-FDMA, 100% RB, 5 MHz, 16-QAM)	X	2.70	68.25	16.30	0.00	150.0	± 9.6 %
		Y	2.78	69.10	16.78		150.0	
		Z	2.70	68.17	16.23		150.0	

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10112-CAD	LTE-FDD (SC-FDMA, 100% RB, 10 MHz, 64-QAM)	X	3.11	67.43	15.99	0.00	150.0	± 9.6 %
		Y	3.15	67.99	16.33		150.0	
		Z	3.10	67.39	15.91		150.0	
10113-CAD	LTE-FDD (SC-FDMA, 100% RB, 5 MHz, 64-QAM)	X	2.86	68.37	16.42	0.00	150.0	± 9.6 %
		Y	2.93	69.16	16.87		150.0	
		Z	2.86	68.29	16.35		150.0	
10114-CAB	IEEE 802.11n (HT Greenfield, 13.5 Mbps, BPSK)	X	5.19	67.18	16.44	0.00	150.0	± 9.6 %
		Y	5.18	67.36	16.54		150.0	
		Z	5.18	67.13	16.36		150.0	
10115-CAB	IEEE 802.11n (HT Greenfield, 81 Mbps, 16-QAM)	X	5.53	67.45	16.58	0.00	150.0	± 9.6 %
		Y	5.51	67.58	16.65		150.0	
		Z	5.53	67.41	16.50		150.0	
10116-CAB	IEEE 802.11n (HT Greenfield, 135 Mbps, 64-QAM)	X	5.31	67.42	16.48	0.00	150.0	± 9.6 %
		Y	5.29	67.58	16.58		150.0	
		Z	5.29	67.38	16.40		150.0	
10117-CAB	IEEE 802.11n (HT Mixed, 13.5 Mbps, BPSK)	X	5.18	67.11	16.42	0.00	150.0	± 9.6 %
		Y	5.17	67.29	16.52		150.0	
		Z	5.17	67.11	16.36		150.0	
10118-CAB	IEEE 802.11n (HT Mixed, 81 Mbps, 16-QAM)	X	5.61	67.61	16.67	0.00	150.0	± 9.6 %
		Y	5.58	67.74	16.74		150.0	
		Z	5.60	67.57	16.59		150.0	
10119-CAB	IEEE 802.11n (HT Mixed, 135 Mbps, 64-QAM)	X	5.28	67.35	16.46	0.00	150.0	± 9.6 %
		Y	5.26	67.52	16.56		150.0	
		Z	5.26	67.31	16.39		150.0	
10140-CAC	LTE-FDD (SC-FDMA, 100% RB, 15 MHz, 16-QAM)	X	3.46	67.58	16.02	0.00	150.0	± 9.6 %
		Y	3.50	68.08	16.31		150.0	
		Z	3.46	67.57	15.95		150.0	
10141-CAC	LTE-FDD (SC-FDMA, 100% RB, 15 MHz, 64-QAM)	X	3.59	67.67	16.19	0.00	150.0	± 9.6 %
		Y	3.62	68.14	16.46		150.0	
		Z	3.58	67.66	16.11		150.0	
10142-CAD	LTE-FDD (SC-FDMA, 100% RB, 3 MHz, QPSK)	X	2.09	68.75	16.02	0.00	150.0	± 9.6 %
		Y	2.22	70.22	16.83		150.0	
		Z	2.08	68.58	15.89		150.0	
10143-CAD	LTE-FDD (SC-FDMA, 100% RB, 3 MHz, 16-QAM)	X	2.59	69.09	16.18	0.00	150.0	± 9.6 %
		Y	2.72	70.29	16.82		150.0	
		Z	2.58	68.97	16.13		150.0	
10144-CAD	LTE-FDD (SC-FDMA, 100% RB, 3 MHz, 64-QAM)	X	2.36	66.83	14.60	0.00	150.0	± 9.6 %
		Y	2.43	67.67	15.08		150.0	
		Z	2.36	66.73	14.57		150.0	
10145-CAD	LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, QPSK)	X	1.43	66.61	13.22	0.00	150.0	± 9.6 %
		Y	1.58	68.47	14.18		150.0	
		Z	1.44	66.67	13.35		150.0	
10146-CAD	LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, 16-QAM)	X	2.38	68.32	13.23	0.00	150.0	± 9.6 %
		Y	2.51	69.25	13.45		150.0	
		Z	2.56	69.04	13.63		150.0	
10147-CAD	LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, 64-QAM)	X	2.94	71.08	14.62	0.00	150.0	± 9.6 %
		Y	3.29	72.72	15.09		150.0	
		Z	3.21	72.07	15.12		150.0	

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10149-CAC	LTE-FDD (SC-FDMA, 50% RB, 20 MHz, 16-QAM)	X	2.99	67.52	15.98	0.00	150.0	± 9.6 %
		Y	3.04	68.13	16.35		150.0	
		Z	2.99	67.48	15.90		150.0	
10150-CAC	LTE-FDD (SC-FDMA, 50% RB, 20 MHz, 64-QAM)	X	3.11	67.49	16.03	0.00	150.0	± 9.6 %
		Y	3.16	68.05	16.37		150.0	
		Z	3.11	67.45	15.96		150.0	
10151-CAC	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, QPSK)	X	7.49	77.67	20.79	3.98	65.0	± 9.6 %
		Y	7.21	77.68	20.79		65.0	
		Z	7.06	76.98	20.51		65.0	
10152-CAC	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 16-QAM)	X	6.80	74.41	20.00	3.98	65.0	± 9.6 %
		Y	6.47	74.17	19.91		65.0	
		Z	6.45	73.76	19.73		65.0	
10153-CAC	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 64-QAM)	X	7.21	75.36	20.77	3.98	65.0	± 9.6 %
		Y	6.87	75.11	20.67		65.0	
		Z	6.84	74.70	20.50		65.0	
10154-CAD	LTE-FDD (SC-FDMA, 50% RB, 10 MHz, QPSK)	X	2.37	69.22	16.55	0.00	150.0	± 9.6 %
		Y	2.49	70.52	17.26		150.0	
		Z	2.36	69.15	16.43		150.0	
10155-CAD	LTE-FDD (SC-FDMA, 50% RB, 10 MHz, 16-QAM)	X	2.70	68.25	16.31	0.00	150.0	± 9.6 %
		Y	2.78	69.11	16.79		150.0	
		Z	2.70	68.17	16.23		150.0	
10156-CAD	LTE-FDD (SC-FDMA, 50% RB, 5 MHz, QPSK)	X	1.95	68.97	15.95	0.00	150.0	± 9.6 %
		Y	2.11	70.71	16.88		150.0	
		Z	1.94	68.81	15.84		150.0	
10157-CAD	LTE-FDD (SC-FDMA, 50% RB, 5 MHz, 16-QAM)	X	2.21	67.52	14.76	0.00	150.0	± 9.6 %
		Y	2.32	68.66	15.38		150.0	
		Z	2.21	67.40	14.73		150.0	
10158-CAD	LTE-FDD (SC-FDMA, 50% RB, 10 MHz, 64-QAM)	X	2.87	68.43	16.47	0.00	150.0	± 9.6 %
		Y	2.94	69.23	16.92		150.0	
		Z	2.86	68.35	16.40		150.0	
10159-CAD	LTE-FDD (SC-FDMA, 50% RB, 5 MHz, 64-QAM)	X	2.33	68.06	15.09	0.00	150.0	± 9.6 %
		Y	2.46	69.26	15.73		150.0	
		Z	2.34	67.96	15.08		150.0	
10160-CAC	LTE-FDD (SC-FDMA, 50% RB, 15 MHz, QPSK)	X	2.81	68.62	16.35	0.00	150.0	± 9.6 %
		Y	2.89	69.47	16.84		150.0	
		Z	2.79	68.50	16.22		150.0	
10161-CAC	LTE-FDD (SC-FDMA, 50% RB, 15 MHz, 16-QAM)	X	3.01	67.42	15.98	0.00	150.0	± 9.6 %
		Y	3.06	68.00	16.33		150.0	
		Z	3.01	67.37	15.91		150.0	
10162-CAC	LTE-FDD (SC-FDMA, 50% RB, 15 MHz, 64-QAM)	X	3.12	67.52	16.07	0.00	150.0	± 9.6 %
		Y	3.16	68.10	16.41		150.0	
		Z	3.11	67.46	15.99		150.0	
10166-CAD	LTE-FDD (SC-FDMA, 50% RB, 1.4 MHz, QPSK)	X	3.71	69.47	19.01	3.01	150.0	± 9.6 %
		Y	3.71	70.02	19.29		150.0	
		Z	3.76	69.65	19.00		150.0	
10167-CAD	LTE-FDD (SC-FDMA, 50% RB, 1.4 MHz, 16-QAM)	X	4.64	72.53	19.54	3.01	150.0	± 9.6 %
		Y	4.77	73.67	20.03		150.0	
		Z	4.81	72.96	19.62		150.0	

EX3DV4– SN:3917 May 16, 2017

10168-CAD	LTE-FDD (SC-FDMA, 50% RB, 1.4 MHz, 64-QAM)	X	5.19	74.93	20.93	3.01	150.0	± 9.6 %
		Y	5.40	76.31	21.51		150.0	
		Z	5.42	75.53	21.08		150.0	
10169-CAC	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, QPSK)	X	3.19	69.73	19.11	3.01	150.0	± 9.6 %
		Y	3.19	70.62	19.58		150.0	
		Z	3.32	70.49	19.33		150.0	
10170-CAC	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM)	X	4.66	76.59	21.76	3.01	150.0	± 9.6 %
		Y	5.11	79.41	22.92		150.0	
		Z	5.22	78.54	22.37		150.0	
10171-AAC	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, 64-QAM)	X	3.69	71.69	18.70	3.01	150.0	± 9.6 %
		Y	3.85	73.47	19.47		150.0	
		Z	3.94	72.70	18.95		150.0	
10172-CAC	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK)	X	9.61	88.92	26.46	6.02	65.0	± 9.6 %
		Y	10.71	92.27	27.57		65.0	
		Z	9.94	89.73	26.64		65.0	
10173-CAC	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM)	X	15.35	93.23	26.10	6.02	65.0	± 9.6 %
		Y	18.78	97.40	27.12		65.0	
		Z	16.08	94.03	26.21		65.0	
10174-CAC	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 64-QAM)	X	10.62	86.27	23.40	6.02	65.0	± 9.6 %
		Y	12.13	89.21	24.09		65.0	
		Z	11.57	87.63	23.70		65.0	
10175-CAD	LTE-FDD (SC-FDMA, 1 RB, 10 MHz, QPSK)	X	3.15	69.37	18.83	3.01	150.0	± 9.6 %
		Y	3.14	70.23	19.29		150.0	
		Z	3.26	70.07	19.02		150.0	
10176-CAD	LTE-FDD (SC-FDMA, 1 RB, 10 MHz, 16-QAM)	X	4.67	76.62	21.77	3.01	150.0	± 9.6 %
		Y	5.12	79.44	22.93		150.0	
		Z	5.23	78.57	22.38		150.0	
10177-CAF	LTE-FDD (SC-FDMA, 1 RB, 5 MHz, QPSK)	X	3.18	69.55	18.95	3.01	150.0	± 9.6 %
		Y	3.18	70.43	19.41		150.0	
		Z	3.30	70.29	19.15		150.0	
10178-CAD	LTE-FDD (SC-FDMA, 1 RB, 5 MHz, 16-QAM)	X	4.60	76.30	21.61	3.01	150.0	± 9.6 %
		Y	5.03	79.06	22.76		150.0	
		Z	5.12	78.15	22.18		150.0	
10179-CAD	LTE-FDD (SC-FDMA, 1 RB, 10 MHz, 64-QAM)	X	4.12	73.92	20.06	3.01	150.0	± 9.6 %
		Y	4.40	76.18	21.01		150.0	
		Z	4.48	75.28	20.44		150.0	
10180-CAD	LTE-FDD (SC-FDMA, 1 RB, 5 MHz, 64-QAM)	X	3.68	71.59	18.64	3.01	150.0	± 9.6 %
		Y	3.83	73.35	19.39		150.0	
		Z	3.92	72.57	18.87		150.0	
10181-CAC	LTE-FDD (SC-FDMA, 1 RB, 15 MHz, QPSK)	X	3.17	69.53	18.94	3.01	150.0	± 9.6 %
		Y	3.17	70.40	19.40		150.0	
		Z	3.29	70.26	19.14		150.0	
10182-CAC	LTE-FDD (SC-FDMA, 1 RB, 15 MHz, 16-QAM)	X	4.59	76.27	21.60	3.01	150.0	± 9.6 %
		Y	5.02	79.03	22.74		150.0	
		Z	5.11	78.12	22.17		150.0	
10183-AAB	LTE-FDD (SC-FDMA, 1 RB, 15 MHz, 64-QAM)	X	3.67	71.57	18.63	3.01	150.0	± 9.6 %
		Y	3.82	73.32	19.38		150.0	
		Z	3.91	72.55	18.86		150.0	

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10184-CAD	LTE-FDD (SC-FDMA, 1 RB, 3 MHz, QPSK)	X	3.18	69.58	18.96	3.01	150.0	± 9.6 %
		Y	3.18	70.46	19.43		150.0	
		Z	3.31	70.32	19.17		150.0	
10185-CAD	LTE-FDD (SC-FDMA, 1 RB, 3 MHz, 16-QAM)	X	4.62	76.36	21.64	3.01	150.0	± 9.6 %
		Y	5.05	79.13	22.79		150.0	
		Z	5.14	78.22	22.22		150.0	
10186-AAD	LTE-FDD (SC-FDMA, 1 RB, 3 MHz, 64-QAM)	X	3.69	71.64	18.66	3.01	150.0	± 9.6 %
		Y	3.85	73.40	19.42		150.0	
		Z	3.93	72.62	18.90		150.0	
10187-CAD	LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK)	X	3.19	69.62	19.02	3.01	150.0	± 9.6 %
		Y	3.19	70.51	19.49		150.0	
		Z	3.31	70.35	19.22		150.0	
10188-CAD	LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, 16-QAM)	X	4.81	77.20	22.09	3.01	150.0	± 9.6 %
		Y	5.31	80.16	23.30		150.0	
		Z	5.42	79.29	22.75		150.0	
10189-AAD	LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, 64-QAM)	X	3.79	72.13	18.97	3.01	150.0	± 9.6 %
		Y	3.97	74.00	19.77		150.0	
		Z	4.05	73.20	19.24		150.0	
10193-CAB	IEEE 802.11n (HT Greenfield, 6.5 Mbps, BPSK)	X	4.60	66.60	16.18	0.00	150.0	± 9.6 %
		Y	4.60	66.81	16.31		150.0	
		Z	4.60	66.57	16.13		150.0	
10194-CAB	IEEE 802.11n (HT Greenfield, 39 Mbps, 16-QAM)	X	4.79	66.94	16.30	0.00	150.0	± 9.6 %
		Y	4.78	67.14	16.42		150.0	
		Z	4.79	66.91	16.24		150.0	
10195-CAB	IEEE 802.11n (HT Greenfield, 65 Mbps, 64-QAM)	X	4.83	66.96	16.31	0.00	150.0	± 9.6 %
		Y	4.82	67.17	16.43		150.0	
		Z	4.83	66.93	16.25		150.0	
10196-CAB	IEEE 802.11n (HT Mixed, 6.5 Mbps, BPSK)	X	4.61	66.68	16.21	0.00	150.0	± 9.6 %
		Y	4.61	66.89	16.34		150.0	
		Z	4.62	66.65	16.16		150.0	
10197-CAB	IEEE 802.11n (HT Mixed, 39 Mbps, 16-QAM)	X	4.80	66.96	16.31	0.00	150.0	± 9.6 %
		Y	4.80	67.17	16.44		150.0	
		Z	4.81	66.94	16.25		150.0	
10198-CAB	IEEE 802.11n (HT Mixed, 65 Mbps, 64-QAM)	X	4.83	66.98	16.33	0.00	150.0	± 9.6 %
		Y	4.83	67.18	16.45		150.0	
		Z	4.84	66.95	16.26		150.0	
10219-CAB	IEEE 802.11n (HT Mixed, 7.2 Mbps, BPSK)	X	4.56	66.69	16.17	0.00	150.0	± 9.6 %
		Y	4.56	66.91	16.30		150.0	
		Z	4.57	66.66	16.12		150.0	
10220-CAB	IEEE 802.11n (HT Mixed, 43.3 Mbps, 16-QAM)	X	4.80	66.94	16.31	0.00	150.0	± 9.6 %
		Y	4.79	67.14	16.43		150.0	
		Z	4.80	66.92	16.25		150.0	
10221-CAB	IEEE 802.11n (HT Mixed, 72.2 Mbps, 64-QAM)	X	4.84	66.91	16.31	0.00	150.0	± 9.6 %
		Y	4.83	67.11	16.43		150.0	
		Z	4.84	66.88	16.25		150.0	
10222-CAB	IEEE 802.11n (HT Mixed, 15 Mbps, BPSK)	X	5.15	67.13	16.42	0.00	150.0	± 9.6 %
		Y	5.14	67.31	16.52		150.0	
		Z	5.15	67.13	16.36		150.0	

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10223-CAB	IEEE 802.11n (HT Mixed, 90 Mbps, 16-QAM)	X	5.47	67.31	16.53	0.00	150.0	± 9.6 %
		Y	5.45	67.46	16.61		150.0	
		Z	5.48	67.36	16.50		150.0	
10224-CAB	IEEE 802.11n (HT Mixed, 150 Mbps, 64-QAM)	X	5.20	67.23	16.40	0.00	150.0	± 9.6 %
		Y	5.19	67.42	16.50		150.0	
		Z	5.20	67.23	16.34		150.0	
10225-CAB	UMTS-FDD (HSPA+)	X	2.88	66.13	15.48	0.00	150.0	± 9.6 %
		Y	2.90	66.59	15.77		150.0	
		Z	2.87	66.07	15.43		150.0	
10226-CAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 16-QAM)	X	16.42	94.49	26.58	6.02	65.0	± 9.6 %
		Y	20.54	99.03	27.70		65.0	
		Z	17.37	95.46	26.74		65.0	
10227-CAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 64-QAM)	X	14.14	90.76	24.89	6.02	65.0	± 9.6 %
		Y	16.36	93.80	25.54		65.0	
		Z	14.56	91.24	24.90		65.0	
10228-CAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK)	X	12.98	94.68	28.41	6.02	65.0	± 9.6 %
		Y	13.75	97.04	29.14		65.0	
		Z	12.36	94.00	28.12		65.0	
10229-CAB	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 16-QAM)	X	15.45	93.33	26.14	6.02	65.0	± 9.6 %
		Y	18.94	97.52	27.17		65.0	
		Z	16.20	94.14	26.25		65.0	
10230-CAB	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 64-QAM)	X	13.38	89.78	24.50	6.02	65.0	± 9.6 %
		Y	15.24	92.57	25.09		65.0	
		Z	13.68	90.15	24.48		65.0	
10231-CAB	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, QPSK)	X	12.33	93.63	28.00	6.02	65.0	± 9.6 %
		Y	12.98	95.86	28.68		65.0	
		Z	11.71	92.91	27.68		65.0	
10232-CAC	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 16-QAM)	X	15.43	93.31	26.14	6.02	65.0	± 9.6 %
		Y	18.91	97.51	27.16		65.0	
		Z	16.17	94.12	26.24		65.0	
10233-CAC	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 64-QAM)	X	13.36	89.77	24.50	6.02	65.0	± 9.6 %
		Y	15.22	92.57	25.08		65.0	
		Z	13.66	90.13	24.47		65.0	
10234-CAC	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, QPSK)	X	11.75	92.59	27.55	6.02	65.0	± 9.6 %
		Y	12.28	94.67	28.19		65.0	
		Z	11.14	91.82	27.22		65.0	
10235-CAC	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 16-QAM)	X	15.45	93.34	26.15	6.02	65.0	± 9.6 %
		Y	18.94	97.55	27.17		65.0	
		Z	16.19	94.15	26.25		65.0	
10236-CAC	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 64-QAM)	X	13.47	89.87	24.53	6.02	65.0	± 9.6 %
		Y	15.37	92.69	25.12		65.0	
		Z	13.77	90.24	24.50		65.0	
10237-CAC	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, QPSK)	X	12.37	93.71	28.02	6.02	65.0	± 9.6 %
		Y	13.02	95.95	28.71		65.0	
		Z	11.74	92.98	27.70		65.0	
10238-CAC	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 16-QAM)	X	15.40	93.29	26.13	6.02	65.0	± 9.6 %
		Y	18.87	97.49	27.15		65.0	
		Z	16.14	94.10	26.24		65.0	

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10239-CAC	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 64-QAM)	X	13.34	89.76	24.49	6.02	65.0	± 9.6 %
		Y	15.19	92.54	25.08		65.0	
		Z	13.63	90.12	24.47		65.0	
10240-CAC	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, QPSK)	X	12.33	93.66	28.00	6.02	65.0	± 9.6 %
		Y	12.98	95.90	28.70		65.0	
		Z	11.70	92.93	27.69		65.0	
10241-CAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 16-QAM)	X	9.43	81.75	25.03	6.98	65.0	± 9.6 %
		Y	9.11	81.99	25.12		65.0	
		Z	9.05	81.01	24.73		65.0	
10242-CAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 64-QAM)	X	8.18	78.80	23.76	6.98	65.0	± 9.6 %
		Y	8.12	79.61	24.08		65.0	
		Z	8.16	78.86	23.77		65.0	
10243-CAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, QPSK)	X	6.71	75.97	23.41	6.98	65.0	± 9.6 %
		Y	6.54	76.37	23.62		65.0	
		Z	6.57	75.68	23.27		65.0	
10244-CAB	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 16-QAM)	X	6.63	75.12	18.11	3.98	65.0	± 9.6 %
		Y	6.18	74.64	17.73		65.0	
		Z	6.52	75.30	18.31		65.0	
10245-CAB	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 64-QAM)	X	6.55	74.71	17.90	3.98	65.0	± 9.6 %
		Y	6.09	74.20	17.50		65.0	
		Z	6.45	74.90	18.11		65.0	
10246-CAB	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, QPSK)	X	6.25	77.27	19.11	3.98	65.0	± 9.6 %
		Y	5.93	77.21	19.02		65.0	
		Z	5.90	76.94	19.11		65.0	
10247-CAC	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 16-QAM)	X	5.93	74.15	18.52	3.98	65.0	± 9.6 %
		Y	5.59	73.87	18.36		65.0	
		Z	5.64	73.75	18.48		65.0	
10248-CAC	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 64-QAM)	X	5.95	73.74	18.34	3.98	65.0	± 9.6 %
		Y	5.61	73.44	18.18		65.0	
		Z	5.67	73.35	18.30		65.0	
10249-CAC	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, QPSK)	X	7.30	79.82	20.82	3.98	65.0	± 9.6 %
		Y	7.05	80.03	20.87		65.0	
		Z	6.80	79.16	20.66		65.0	
10250-CAC	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 16-QAM)	X	6.92	76.58	20.91	3.98	65.0	± 9.6 %
		Y	6.57	76.35	20.82		65.0	
		Z	6.53	75.90	20.69		65.0	
10251-CAC	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 64-QAM)	X	6.59	74.59	19.78	3.98	65.0	± 9.6 %
		Y	6.27	74.36	19.69		65.0	
		Z	6.24	73.93	19.55		65.0	
10252-CAC	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, QPSK)	X	7.67	79.93	21.63	3.98	65.0	± 9.6 %
		Y	7.40	80.09	21.70		65.0	
		Z	7.14	79.09	21.35		65.0	
10253-CAC	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 16-QAM)	X	6.65	73.89	19.80	3.98	65.0	± 9.6 %
		Y	6.32	73.63	19.70		65.0	
		Z	6.30	73.22	19.53		65.0	
10254-CAC	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 64-QAM)	X	7.04	74.79	20.50	3.98	65.0	± 9.6 %
		Y	6.70	74.51	20.39		65.0	
		Z	6.68	74.11	20.24		65.0	

10255-CAC	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, QPSK)	X	7.22	77.24	20.85	3.98	65.0	± 9.6 %
		Y	6.92	77.20	20.84		65.0	
		Z	6.78	76.49	20.55		65.0	
10256-CAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 16-QAM)	X	5.42	71.93	15.87	3.98	65.0	± 9.6 %
		Y	4.91	71.11	15.28		65.0	
		Z	5.38	72.27	16.17		65.0	
10257-CAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 64-QAM)	X	5.35	71.41	15.57	3.98	65.0	± 9.6 %
		Y	4.84	70.58	14.98		65.0	
		Z	5.31	71.77	15.87		65.0	
10258-CAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, QPSK)	X	5.07	73.82	17.04	3.98	65.0	± 9.6 %
		Y	4.68	73.39	16.76		65.0	
		Z	4.87	73.85	17.22		65.0	
10259-CAB	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 16-QAM)	X	6.32	75.02	19.37	3.98	65.0	± 9.6 %
		Y	5.97	74.77	19.25		65.0	
		Z	5.98	74.50	19.26		65.0	
10260-CAB	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 64-QAM)	X	6.36	74.83	19.31	3.98	65.0	± 9.6 %
		Y	6.01	74.57	19.18		65.0	
		Z	6.03	74.34	19.21		65.0	
10261-CAB	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, QPSK)	X	7.17	79.24	20.95	3.98	65.0	± 9.6 %
		Y	6.89	79.38	20.99		65.0	
		Z	6.66	78.49	20.73		65.0	
10262-CAC	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 16-QAM)	X	6.91	76.52	20.87	3.98	65.0	± 9.6 %
		Y	6.56	76.29	20.78		65.0	
		Z	6.51	75.85	20.65		65.0	
10263-CAC	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 64-QAM)	X	6.59	74.57	19.78	3.98	65.0	± 9.6 %
		Y	6.26	74.34	19.68		65.0	
		Z	6.23	73.92	19.55		65.0	
10264-CAC	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, QPSK)	X	7.61	79.76	21.55	3.98	65.0	± 9.6 %
		Y	7.34	79.92	21.61		65.0	
		Z	7.08	78.93	21.26		65.0	
10265-CAC	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 16-QAM)	X	6.80	74.41	20.00	3.98	65.0	± 9.6 %
		Y	6.47	74.17	19.91		65.0	
		Z	6.45	73.76	19.73		65.0	
10266-CAC	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 64-QAM)	X	7.20	75.35	20.76	3.98	65.0	± 9.6 %
		Y	6.86	75.09	20.66		65.0	
		Z	6.84	74.69	20.49		65.0	
10267-CAC	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, QPSK)	X	7.48	77.63	20.77	3.98	65.0	± 9.6 %
		Y	7.19	77.65	20.78		65.0	
		Z	7.05	76.94	20.49		65.0	
10268-CAC	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 16-QAM)	X	7.42	74.39	20.40	3.98	65.0	± 9.6 %
		Y	7.09	74.12	20.29		65.0	
		Z	7.09	73.79	20.13		65.0	
10269-CAC	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 64-QAM)	X	7.39	74.03	20.32	3.98	65.0	± 9.6 %
		Y	7.05	73.74	20.20		65.0	
		Z	7.05	73.42	20.05		65.0	
10270-CAC	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, QPSK)	X	7.37	75.59	20.15	3.98	65.0	± 9.6 %
		Y	7.06	75.45	20.08		65.0	
		Z	7.01	75.00	19.88		65.0	

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10274-CAB	UMTS-FDD (HSUPA, Subtest 5, 3GPP Rel8.10)	X	2.64	66.41	15.34	0.00	150.0	± 9.6 %
		Y	2.68	67.01	15.72		150.0	
		Z	2.62	66.28	15.26		150.0	
10275-CAB	UMTS-FDD (HSUPA, Subtest 5, 3GPP Rel8.4)	X	1.66	67.91	15.69	0.00	150.0	± 9.6 %
		Y	1.77	69.56	16.63		150.0	
		Z	1.63	67.71	15.50		150.0	
10277-CAA	PHS (QPSK)	X	3.36	64.18	9.83	9.03	50.0	± 9.6 %
		Y	2.99	63.25	8.93		50.0	
		Z	3.20	63.87	9.58		50.0	
10278-CAA	PHS (QPSK, BW 884MHz, Rolloff 0.5)	X	5.72	73.10	16.58	9.03	50.0	± 9.6 %
		Y	5.16	71.85	15.62		50.0	
		Z	5.69	73.40	16.68		50.0	
10279-CAA	PHS (QPSK, BW 884MHz, Rolloff 0.38)	X	5.84	73.33	16.71	9.03	50.0	± 9.6 %
		Y	5.29	72.10	15.77		50.0	
		Z	5.83	73.64	16.82		50.0	
10290-AAB	CDMA2000, RC1, SO55, Full Rate	X	1.61	69.58	14.89	0.00	150.0	± 9.6 %
		Y	1.94	72.81	16.39		150.0	
		Z	1.58	69.26	14.77		150.0	
10291-AAB	CDMA2000, RC3, SO55, Full Rate	X	0.91	66.45	13.34	0.00	150.0	± 9.6 %
		Y	1.07	69.34	14.87		150.0	
		Z	0.89	66.12	13.16		150.0	
10292-AAB	CDMA2000, RC3, SO32, Full Rate	X	1.17	70.94	15.89	0.00	150.0	± 9.6 %
		Y	1.75	77.59	18.81		150.0	
		Z	1.12	70.27	15.57		150.0	
10293-AAB	CDMA2000, RC3, SO3, Full Rate	X	1.83	77.69	19.18	0.00	150.0	± 9.6 %
		Y	4.08	90.90	23.99		150.0	
		Z	1.70	76.60	18.74		150.0	
10295-AAB	CDMA2000, RC1, SO3, 1/8th Rate 25 fr.	X	7.74	79.15	21.51	9.03	50.0	± 9.6 %
		Y	7.45	78.90	21.18		50.0	
		Z	7.23	78.31	21.22		50.0	
10297-AAB	LTE-FDD (SC-FDMA, 50% RB, 20 MHz, QPSK)	X	2.84	69.81	16.69	0.00	150.0	± 9.6 %
		Y	2.98	70.99	17.32		150.0	
		Z	2.84	69.75	16.57		150.0	
10298-AAC	LTE-FDD (SC-FDMA, 50% RB, 3 MHz, QPSK)	X	1.72	68.40	14.89	0.00	150.0	± 9.6 %
		Y	1.90	70.45	15.94		150.0	
		Z	1.72	68.28	14.87		150.0	
10299-AAC	LTE-FDD (SC-FDMA, 50% RB, 3 MHz, 16-QAM)	X	2.98	70.80	15.21	0.00	150.0	± 9.6 %
		Y	3.27	72.39	15.74		150.0	
		Z	3.14	71.32	15.45		150.0	
10300-AAC	LTE-FDD (SC-FDMA, 50% RB, 3 MHz, 64-QAM)	X	2.23	66.08	12.30	0.00	150.0	± 9.6 %
		Y	2.25	66.58	12.39		150.0	
		Z	2.33	66.46	12.52		150.0	
10301-AAA	IEEE 802.16e WiMAX (29:18, 5ms, 10MHz, QPSK, PUSC)	X	4.98	65.84	17.70	4.17	50.0	± 9.6 %
		Y	4.92	65.92	17.79		50.0	
		Z	4.96	65.71	17.62		50.0	
10302-AAA	IEEE 802.16e WiMAX (29:18, 5ms, 10MHz, QPSK, PUSC, 3 CTRL symbols)	X	5.46	66.39	18.37	4.96	50.0	± 9.6 %
		Y	5.35	66.33	18.38		50.0	
		Z	5.40	66.07	18.17		50.0	

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10303-AAA	IEEE 802.16e WiMAX (31:15, 5ms, 10MHz, 64QAM, PUSC)	X	5.24	66.16	18.28	4.96	50.0	± 9.6 %
		Y	5.12	66.06	18.28		50.0	
		Z	5.17	65.82	18.08		50.0	
10304-AAA	IEEE 802.16e WiMAX (29:18, 5ms, 10MHz, 64QAM, PUSC)	X	5.00	65.88	17.70	4.17	50.0	± 9.6 %
		Y	4.90	65.83	17.72		50.0	
		Z	4.94	65.58	17.52		50.0	
10305-AAA	IEEE 802.16e WiMAX (31:15, 10ms, 10MHz, 64QAM, PUSC, 15 symbols)	X	5.12	69.87	20.87	6.02	35.0	± 9.6 %
		Y	4.83	69.05	20.56		35.0	
		Z	4.90	68.79	20.36		35.0	
10306-AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, 64QAM, PUSC, 18 symbols)	X	5.19	67.85	19.94	6.02	35.0	± 9.6 %
		Y	4.99	67.33	19.73		35.0	
		Z	5.06	67.17	19.58		35.0	
10307-AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, QPSK, PUSC, 18 symbols)	X	5.16	68.32	20.06	6.02	35.0	± 9.6 %
		Y	4.94	67.73	19.82		35.0	
		Z	5.02	67.59	19.67		35.0	
10308-AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, 16QAM, PUSC)	X	5.15	68.59	20.22	6.02	35.0	± 9.6 %
		Y	4.92	67.98	19.98		35.0	
		Z	5.00	67.80	19.81		35.0	
10309-AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, 16QAM, AMC 2x3, 18 symbols)	X	5.26	68.11	20.10	6.02	35.0	± 9.6 %
		Y	5.06	67.59	19.89		35.0	
		Z	5.14	67.43	19.73		35.0	
10310-AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, QPSK, AMC 2x3, 18 symbols)	X	5.16	68.02	19.97	6.02	35.0	± 9.6 %
		Y	4.95	67.47	19.75		35.0	
		Z	5.03	67.31	19.59		35.0	
10311-AAB	LTE-FDD (SC-FDMA, 100% RB, 15 MHz, QPSK)	X	3.21	69.15	16.35	0.00	150.0	± 9.6 %
		Y	3.36	70.25	16.93		150.0	
		Z	3.20	69.12	16.25		150.0	
10313-AAA	iDEN 1:3	X	4.44	72.51	15.74	6.99	70.0	± 9.6 %
		Y	3.90	71.59	15.17		70.0	
		Z	3.87	71.32	15.14		70.0	
10314-AAA	iDEN 1:6	X	5.38	77.23	20.23	10.00	30.0	± 9.6 %
		Y	4.94	76.56	19.75		30.0	
		Z	4.88	76.14	19.68		30.0	
10315-AAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps, 96pc duty cycle)	X	1.13	63.95	15.25	0.17	150.0	± 9.6 %
		Y	1.13	64.65	15.85		150.0	
		Z	1.09	63.72	15.06		150.0	
10316-AAB	IEEE 802.11g WiFi 2.4 GHz (ERP-OFDM, 6 Mbps, 96pc duty cycle)	X	4.66	66.61	16.25	0.17	150.0	± 9.6 %
		Y	4.64	66.77	16.35		150.0	
		Z	4.65	66.56	16.18		150.0	
10317-AAB	IEEE 802.11a WiFi 5 GHz (OFDM, 6 Mbps, 96pc duty cycle)	X	4.66	66.61	16.25	0.17	150.0	± 9.6 %
		Y	4.64	66.77	16.35		150.0	
		Z	4.65	66.56	16.18		150.0	
10400-AAC	IEEE 802.11ac WiFi (20MHz, 64-QAM, 99pc duty cycle)	X	4.79	66.98	16.29	0.00	150.0	± 9.6 %
		Y	4.78	67.19	16.41		150.0	
		Z	4.79	66.95	16.22		150.0	
10401-AAC	IEEE 802.11ac WiFi (40MHz, 64-QAM, 99pc duty cycle)	X	5.45	67.10	16.40	0.00	150.0	± 9.6 %
		Y	5.43	67.24	16.48		150.0	
		Z	5.43	67.03	16.31		150.0	

10402-AAC	IEEE 802.11ac WiFi (80MHz, 64-QAM, 99pc duty cycle)	X	5.73	67.55	16.48	0.00	150.0	± 9.6 %
		Y	5.71	67.70	16.56		150.0	
		Z	5.72	67.55	16.42		150.0	
10403-AAB	CDMA2000 (1xEV-DO, Rev. 0)	X	1.61	69.58	14.89	0.00	115.0	± 9.6 %
		Y	1.94	72.81	16.39		115.0	
		Z	1.58	69.26	14.77		115.0	
10404-AAB	CDMA2000 (1xEV-DO, Rev. A)	X	1.61	69.58	14.89	0.00	115.0	± 9.6 %
		Y	1.94	72.81	16.39		115.0	
		Z	1.58	69.26	14.77		115.0	
10406-AAB	CDMA2000, RC3, SO32, SCH0, Full Rate	X	86.54	119.56	30.11	0.00	100.0	± 9.6 %
		Y	100.00	119.76	29.44		100.0	
		Z	100.00	119.65	29.68		100.0	
10410-AAB	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	19.45	95.55	23.08	3.23	80.0	± 9.6 %
		Y	26.95	99.22	23.50		80.0	
		Z	19.54	95.28	22.77		80.0	
10415-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps, 99pc duty cycle)	X	1.03	62.96	14.69	0.00	150.0	± 9.6 %
		Y	1.04	63.74	15.35		150.0	
		Z	1.00	62.83	14.54		150.0	
10416-AAA	IEEE 802.11g WiFi 2.4 GHz (ERP-OFDM, 6 Mbps, 99pc duty cycle)	X	4.61	66.64	16.24	0.00	150.0	± 9.6 %
		Y	4.60	66.85	16.36		150.0	
		Z	4.61	66.60	16.17		150.0	
10417-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps, 99pc duty cycle)	X	4.61	66.64	16.24	0.00	150.0	± 9.6 %
		Y	4.60	66.85	16.36		150.0	
		Z	4.61	66.60	16.17		150.0	
10418-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps, 99pc duty cycle, Long preambule)	X	4.59	66.78	16.25	0.00	150.0	± 9.6 %
		Y	4.59	67.01	16.38		150.0	
		Z	4.59	66.74	16.18		150.0	
10419-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps, 99pc duty cycle, Short preambule)	X	4.62	66.74	16.26	0.00	150.0	± 9.6 %
		Y	4.61	66.95	16.38		150.0	
		Z	4.61	66.70	16.19		150.0	
10422-AAA	IEEE 802.11n (HT Greenfield, 7.2 Mbps, BPSK)	X	4.74	66.74	16.27	0.00	150.0	± 9.6 %
		Y	4.73	66.95	16.39		150.0	
		Z	4.74	66.71	16.20		150.0	
10423-AAA	IEEE 802.11n (HT Greenfield, 43.3 Mbps, 16-QAM)	X	4.92	67.08	16.39	0.00	150.0	± 9.6 %
		Y	4.91	67.28	16.51		150.0	
		Z	4.93	67.06	16.33		150.0	
10424-AAA	IEEE 802.11n (HT Greenfield, 72.2 Mbps, 64-QAM)	X	4.84	67.03	16.36	0.00	150.0	± 9.6 %
		Y	4.83	67.24	16.49		150.0	
		Z	4.84	67.00	16.30		150.0	
10425-AAA	IEEE 802.11n (HT Greenfield, 15 Mbps, BPSK)	X	5.42	67.34	16.52	0.00	150.0	± 9.6 %
		Y	5.40	67.49	16.61		150.0	
		Z	5.41	67.29	16.44		150.0	
10426-AAA	IEEE 802.11n (HT Greenfield, 90 Mbps, 16-QAM)	X	5.42	67.34	16.52	0.00	150.0	± 9.6 %
		Y	5.41	67.49	16.60		150.0	
		Z	5.41	67.30	16.44		150.0	

10427-AAA	IEEE 802.11n (HT Greenfield, 150 Mbps, 64-QAM)	X	5.44	67.34	16.52	0.00	150.0	± 9.6 %
		Y	5.42	67.49	16.60		150.0	
		Z	5.43	67.32	16.45		150.0	
10430-AAA	LTE-FDD (OFDMA, 5 MHz, E-TM 3.1)	X	4.40	70.93	18.42	0.00	150.0	± 9.6 %
		Y	4.45	71.41	18.67		150.0	
		Z	4.42	70.92	18.44		150.0	
10431-AAA	LTE-FDD (OFDMA, 10 MHz, E-TM 3.1)	X	4.31	67.18	16.27	0.00	150.0	± 9.6 %
		Y	4.32	67.46	16.44		150.0	
		Z	4.32	67.14	16.22		150.0	
10432-AAA	LTE-FDD (OFDMA, 15 MHz, E-TM 3.1)	X	4.61	67.07	16.32	0.00	150.0	± 9.6 %
		Y	4.61	67.30	16.46		150.0	
		Z	4.61	67.04	16.26		150.0	
10433-AAA	LTE-FDD (OFDMA, 20 MHz, E-TM 3.1)	X	4.85	67.07	16.39	0.00	150.0	± 9.6 %
		Y	4.85	67.28	16.51		150.0	
		Z	4.86	67.05	16.33		150.0	
10434-AAA	W-CDMA (BS Test Model 1, 64 DPCH)	X	4.52	71.85	18.46	0.00	150.0	± 9.6 %
		Y	4.61	72.46	18.77		150.0	
		Z	4.55	71.83	18.49		150.0	
10435-AAB	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	18.17	94.55	22.76	3.23	80.0	± 9.6 %
		Y	24.23	97.76	23.07		80.0	
		Z	18.13	94.20	22.43		80.0	
10447-AAA	LTE-FDD (OFDMA, 5 MHz, E-TM 3.1, Clipping 44%)	X	3.62	67.23	15.71	0.00	150.0	± 9.6 %
		Y	3.64	67.65	15.95		150.0	
		Z	3.63	67.16	15.69		150.0	
10448-AAA	LTE-FDD (OFDMA, 10 MHz, E-TM 3.1, Clippin 44%)	X	4.14	66.96	16.13	0.00	150.0	± 9.6 %
		Y	4.15	67.25	16.31		150.0	
		Z	4.15	66.91	16.07		150.0	
10449-AAA	LTE-FDD (OFDMA, 15 MHz, E-TM 3.1, Cliping 44%)	X	4.41	66.90	16.22	0.00	150.0	± 9.6 %
		Y	4.41	67.15	16.37		150.0	
		Z	4.41	66.87	16.16		150.0	
10450-AAA	LTE-FDD (OFDMA, 20 MHz, E-TM 3.1, Clipping 44%)	X	4.60	66.83	16.24	0.00	150.0	± 9.6 %
		Y	4.60	67.06	16.38		150.0	
		Z	4.59	66.81	16.18		150.0	
10451-AAA	W-CDMA (BS Test Model 1, 64 DPCH, Clipping 44%)	X	3.53	67.47	15.41	0.00	150.0	± 9.6 %
		Y	3.57	67.96	15.68		150.0	
		Z	3.55	67.42	15.41		150.0	
10456-AAA	IEEE 802.11ac WiFi (160MHz, 64-QAM, 99pc duty cycle)	X	6.28	67.92	16.68	0.00	150.0	± 9.6 %
		Y	6.26	68.04	16.74		150.0	
		Z	6.26	67.91	16.62		150.0	
10457-AAA	UMTS-FDD (DC-HSDPA)	X	3.83	65.27	15.95	0.00	150.0	± 9.6 %
		Y	3.83	65.48	16.09		150.0	
		Z	3.82	65.24	15.89		150.0	
10458-AAA	CDMA2000 (1xEV-DO, Rev. B, 2 carriers)	X	3.35	66.78	14.86	0.00	150.0	± 9.6 %
		Y	3.38	67.25	15.12		150.0	
		Z	3.37	66.69	14.88		150.0	
10459-AAA	CDMA2000 (1xEV-DO, Rev. B, 3 carriers)	X	4.54	65.40	15.87	0.00	150.0	± 9.6 %
		Y	4.43	65.23	15.81		150.0	
		Z	4.44	64.84	15.61		150.0	

10460-AAA	UMTS-FDD (WCDMA, AMR)	X	0.92	67.97	16.19	0.00	150.0	± 9.6 %
		Y	1.05	71.21	18.05		150.0	
		Z	0.88	67.64	15.89		150.0	
10461-AAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	11.66	91.01	22.55	3.29	80.0	± 9.6 %
		Y	14.43	94.05	23.00		80.0	
		Z	11.58	90.79	22.29		80.0	
10462-AAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	1.99	65.16	10.98	3.23	80.0	± 9.6 %
		Y	1.34	62.16	8.99		80.0	
		Z	1.79	64.19	10.34		80.0	
10463-AAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	1.55	62.34	9.28	3.23	80.0	± 9.6 %
		Y	1.08	60.00	7.50		80.0	
		Z	1.41	61.60	8.73		80.0	
10464-AAA	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	8.35	85.81	20.47	3.23	80.0	± 9.6 %
		Y	8.91	86.90	20.34		80.0	
		Z	7.88	84.98	20.02		80.0	
10465-AAA	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	1.84	64.35	10.56	3.23	80.0	± 9.6 %
		Y	1.26	61.61	8.67		80.0	
		Z	1.66	63.46	9.95		80.0	
10466-AAA	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	1.48	61.89	9.02	3.23	80.0	± 9.6 %
		Y	1.08	60.00	7.46		80.0	
		Z	1.36	61.21	8.49		80.0	
10467-AAB	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	9.11	86.99	20.85	3.23	80.0	± 9.6 %
		Y	10.03	88.41	20.81		80.0	
		Z	8.64	86.20	20.41		80.0	
10468-AAB	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	1.87	64.54	10.66	3.23	80.0	± 9.6 %
		Y	1.28	61.73	8.74		80.0	
		Z	1.68	63.62	10.03		80.0	
10469-AAB	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	1.48	61.90	9.03	3.23	80.0	± 9.6 %
		Y	1.08	60.00	7.45		80.0	
		Z	1.35	61.21	8.49		80.0	
10470-AAB	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	9.11	87.00	20.85	3.23	80.0	± 9.6 %
		Y	10.02	88.42	20.81		80.0	
		Z	8.62	86.20	20.40		80.0	
10471-AAB	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	1.86	64.49	10.63	3.23	80.0	± 9.6 %
		Y	1.27	61.69	8.71		80.0	
		Z	1.68	63.57	10.00		80.0	
10472-AAB	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	1.47	61.87	9.00	3.23	80.0	± 9.6 %
		Y	1.08	60.00	7.44		80.0	
		Z	1.35	61.18	8.46		80.0	
10473-AAB	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	9.07	86.94	20.82	3.23	80.0	± 9.6 %
		Y	9.98	88.35	20.78		80.0	
		Z	8.59	86.13	20.38		80.0	
10474-AAB	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	1.85	64.47	10.62	3.23	80.0	± 9.6 %
		Y	1.27	61.67	8.70		80.0	
		Z	1.67	63.55	9.99		80.0	
10475-AAB	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	1.47	61.86	9.00	3.23	80.0	± 9.6 %
		Y	1.08	60.00	7.44		80.0	
		Z	1.34	61.17	8.46		80.0	

10477-AAB	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	1.83	64.30	10.53	3.23	80.0	± 9.6 %
		Y	1.25	61.55	8.62		80.0	
		Z	1.65	63.40	9.90		80.0	
10478-AAB	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	1.47	61.82	8.97	3.23	80.0	± 9.6 %
		Y	1.08	60.00	7.43		80.0	
		Z	1.34	61.13	8.43		80.0	
10479-AAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	5.34	78.36	19.99	3.23	80.0	± 9.6 %
		Y	5.28	78.93	20.07		80.0	
		Z	4.89	77.30	19.65		80.0	
10480-AAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	5.22	74.42	17.05	3.23	80.0	± 9.6 %
		Y	4.97	74.32	16.74		80.0	
		Z	5.08	74.21	17.00		80.0	
10481-AAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	4.54	72.16	15.87	3.23	80.0	± 9.6 %
		Y	4.18	71.65	15.40		80.0	
		Z	4.45	72.03	15.86		80.0	
10482-AAA	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	3.10	70.43	16.03	2.23	80.0	± 9.6 %
		Y	3.09	71.11	16.31		80.0	
		Z	2.90	69.88	15.91		80.0	
10483-AAA	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	4.12	71.01	15.87	2.23	80.0	± 9.6 %
		Y	3.85	70.66	15.58		80.0	
		Z	4.05	71.04	16.01		80.0	
10484-AAA	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	4.00	70.39	15.63	2.23	80.0	± 9.6 %
		Y	3.73	70.02	15.34		80.0	
		Z	3.94	70.47	15.80		80.0	
10485-AAB	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	3.49	71.92	17.41	2.23	80.0	± 9.6 %
		Y	3.47	72.62	17.73		80.0	
		Z	3.24	71.13	17.15		80.0	
10486-AAB	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	3.43	68.79	15.78	2.23	80.0	± 9.6 %
		Y	3.35	69.05	15.90		80.0	
		Z	3.28	68.35	15.69		80.0	
10487-AAB	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	3.45	68.51	15.66	2.23	80.0	± 9.6 %
		Y	3.36	68.74	15.76		80.0	
		Z	3.30	68.12	15.59		80.0	
10488-AAB	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	3.89	71.84	17.96	2.23	80.0	± 9.6 %
		Y	3.83	72.31	18.21		80.0	
		Z	3.66	71.13	17.66		80.0	
10489-AAB	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	3.80	68.90	16.89	2.23	80.0	± 9.6 %
		Y	3.68	69.01	16.98		80.0	
		Z	3.63	68.38	16.69		80.0	
10490-AAB	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	3.90	68.77	16.87	2.23	80.0	± 9.6 %
		Y	3.78	68.86	16.94		80.0	
		Z	3.73	68.27	16.68		80.0	
10491-AAB	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	4.15	70.73	17.66	2.23	80.0	± 9.6 %
		Y	4.06	71.01	17.83		80.0	
		Z	3.94	70.16	17.40		80.0	
10492-AAB	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	4.17	68.41	16.99	2.23	80.0	± 9.6 %
		Y	4.04	68.44	17.03		80.0	
		Z	4.01	67.96	16.79		80.0	

10493-AAB	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	4.24	68.31	16.97	2.23	80.0	± 9.6 %
		Y	4.11	68.32	17.00		80.0	
		Z	4.09	67.87	16.77		80.0	
10494-AAB	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	4.45	72.02	18.01	2.23	80.0	± 9.6 %
		Y	4.39	72.44	18.23		80.0	
		Z	4.23	71.46	17.75		80.0	
10495-AAB	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	4.21	68.81	17.16	2.23	80.0	± 9.6 %
		Y	4.08	68.85	17.21		80.0	
		Z	4.05	68.36	16.96		80.0	
10496-AAB	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	4.29	68.57	17.11	2.23	80.0	± 9.6 %
		Y	4.16	68.59	17.15		80.0	
		Z	4.13	68.14	16.91		80.0	
10497-AAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	2.37	67.06	13.80	2.23	80.0	± 9.6 %
		Y	2.30	67.35	13.88		80.0	
		Z	2.27	66.90	13.88		80.0	
10498-AAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	2.06	63.10	11.06	2.23	80.0	± 9.6 %
		Y	1.93	62.88	10.87		80.0	
		Z	2.06	63.32	11.35		80.0	
10499-AAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	2.03	62.68	10.73	2.23	80.0	± 9.6 %
		Y	1.89	62.42	10.51		80.0	
		Z	2.03	62.93	11.04		80.0	
10500-AAA	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	3.60	71.62	17.54	2.23	80.0	± 9.6 %
		Y	3.56	72.19	17.83		80.0	
		Z	3.36	70.85	17.26		80.0	
10501-AAA	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	3.60	68.85	16.22	2.23	80.0	± 9.6 %
		Y	3.51	69.06	16.33		80.0	
		Z	3.43	68.36	16.08		80.0	
10502-AAA	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	3.66	68.74	16.13	2.23	80.0	± 9.6 %
		Y	3.56	68.93	16.23		80.0	
		Z	3.50	68.27	16.00		80.0	
10503-AAB	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	3.85	71.66	17.87	2.23	80.0	± 9.6 %
		Y	3.79	72.12	18.12		80.0	
		Z	3.62	70.95	17.57		80.0	
10504-AAB	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	3.78	68.81	16.84	2.23	80.0	± 9.6 %
		Y	3.67	68.93	16.93		80.0	
		Z	3.61	68.30	16.64		80.0	
10505-AAB	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	3.88	68.68	16.82	2.23	80.0	± 9.6 %
		Y	3.76	68.77	16.89		80.0	
		Z	3.71	68.18	16.62		80.0	
10506-AAB	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	4.42	71.88	17.95	2.23	80.0	± 9.6 %
		Y	4.36	72.29	18.16		80.0	
		Z	4.20	71.32	17.69		80.0	
10507-AAB	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	4.19	68.74	17.12	2.23	80.0	± 9.6 %
		Y	4.07	68.78	17.17		80.0	
		Z	4.03	68.30	16.92		80.0	

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10508-AAB	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	4.28	68.51	17.07	2.23	80.0	± 9.6 %
		Y	4.15	66.52	17.11		80.0	
		Z	4.12	68.08	16.87		80.0	
10509-AAB	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	4.76	70.91	17.61	2.23	80.0	± 9.6 %
		Y	4.68	71.17	17.74		80.0	
		Z	4.57	70.48	17.39		80.0	
10510-AAB	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	4.70	68.61	17.18	2.23	80.0	± 9.6 %
		Y	4.56	68.61	17.21		80.0	
		Z	4.54	68.25	17.00		80.0	
10511-AAB	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	4.75	68.39	17.14	2.23	80.0	± 9.6 %
		Y	4.61	68.36	17.15		80.0	
		Z	4.60	68.02	16.96		80.0	
10512-AAB	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	4.94	72.21	17.96	2.23	80.0	± 9.6 %
		Y	4.89	72.63	18.17		80.0	
		Z	4.72	71.76	17.74		80.0	
10513-AAB	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	4.58	68.88	17.27	2.23	80.0	± 9.6 %
		Y	4.45	68.90	17.30		80.0	
		Z	4.42	68.50	17.08		80.0	
10514-AAB	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	4.60	68.50	17.18	2.23	80.0	± 9.6 %
		Y	4.46	68.48	17.20		80.0	
		Z	4.44	68.13	16.99		80.0	
10515-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 2 Mbps, 99pc duty cycle)	X	0.99	63.14	14.75	0.00	150.0	± 9.6 %
		Y	1.00	63.99	15.46		150.0	
		Z	0.97	63.00	14.59		150.0	
10516-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 5.5 Mbps, 99pc duty cycle)	X	0.59	69.54	17.09	0.00	150.0	± 9.6 %
		Y	0.81	76.60	20.83		150.0	
		Z	0.56	69.00	16.60		150.0	
10517-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 11 Mbps, 99pc duty cycle)	X	0.84	64.98	15.36	0.00	150.0	± 9.6 %
		Y	0.88	66.66	16.56		150.0	
		Z	0.81	64.77	15.13		150.0	
10518-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 9 Mbps, 99pc duty cycle)	X	4.60	66.71	16.22	0.00	150.0	± 9.6 %
		Y	4.60	66.93	16.35		150.0	
		Z	4.60	66.68	16.16		150.0	
10519-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 12 Mbps, 99pc duty cycle)	X	4.80	66.97	16.34	0.00	150.0	± 9.6 %
		Y	4.79	67.17	16.46		150.0	
		Z	4.81	66.94	16.29		150.0	
10520-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 18 Mbps, 99pc duty cycle)	X	4.65	66.94	16.27	0.00	150.0	± 9.6 %
		Y	4.65	67.16	16.40		150.0	
		Z	4.66	66.92	16.21		150.0	
10521-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 24 Mbps, 99pc duty cycle)	X	4.58	66.94	16.26	0.00	150.0	± 9.6 %
		Y	4.58	67.16	16.39		150.0	
		Z	4.59	66.92	16.20		150.0	
10522-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 36 Mbps, 99pc duty cycle)	X	4.64	66.98	16.32	0.00	150.0	± 9.6 %
		Y	4.64	67.21	16.46		150.0	
		Z	4.64	66.94	16.25		150.0	

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10523-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 48 Mbps, 99pc duty cycle)	X	4.51	66.86	16.18	0.00	150.0	± 9.6 %
		Y	4.52	67.10	16.32		150.0	
		Z	4.51	66.83	16.11		150.0	
10524-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 54 Mbps, 99pc duty cycle)	X	4.58	66.91	16.30	0.00	150.0	± 9.6 %
		Y	4.58	67.14	16.43		150.0	
		Z	4.59	66.88	16.23		150.0	
10525-AAA	IEEE 802.11ac WiFi (20MHz, MCS0, 99pc duty cycle)	X	4.56	65.96	15.89	0.00	150.0	± 9.6 %
		Y	4.56	66.20	16.03		150.0	
		Z	4.56	65.92	15.82		150.0	
10526-AAA	IEEE 802.11ac WiFi (20MHz, MCS1, 99pc duty cycle)	X	4.74	66.34	16.03	0.00	150.0	± 9.6 %
		Y	4.74	66.58	16.17		150.0	
		Z	4.74	66.31	15.97		150.0	
10527-AAA	IEEE 802.11ac WiFi (20MHz, MCS2, 99pc duty cycle)	X	4.66	66.31	15.98	0.00	150.0	± 9.6 %
		Y	4.66	66.55	16.12		150.0	
		Z	4.66	66.28	15.92		150.0	
10528-AAA	IEEE 802.11ac WiFi (20MHz, MCS3, 99pc duty cycle)	X	4.68	66.33	16.01	0.00	150.0	± 9.6 %
		Y	4.68	66.57	16.15		150.0	
		Z	4.68	66.30	15.95		150.0	
10529-AAA	IEEE 802.11ac WiFi (20MHz, MCS4, 99pc duty cycle)	X	4.68	66.33	16.01	0.00	150.0	± 9.6 %
		Y	4.68	66.57	16.15		150.0	
		Z	4.68	66.30	15.95		150.0	
10531-AAA	IEEE 802.11ac WiFi (20MHz, MCS6, 99pc duty cycle)	X	4.67	66.45	16.03	0.00	150.0	± 9.6 %
		Y	4.68	66.69	16.18		150.0	
		Z	4.68	66.43	15.97		150.0	
10532-AAA	IEEE 802.11ac WiFi (20MHz, MCS7, 99pc duty cycle)	X	4.53	66.30	15.97	0.00	150.0	± 9.6 %
		Y	4.54	66.56	16.12		150.0	
		Z	4.53	66.29	15.91		150.0	
10533-AAA	IEEE 802.11ac WiFi (20MHz, MCS8, 99pc duty cycle)	X	4.69	66.36	16.00	0.00	150.0	± 9.6 %
		Y	4.69	66.61	16.14		150.0	
		Z	4.69	66.33	15.93		150.0	
10534-AAA	IEEE 802.11ac WiFi (40MHz, MCS0, 99pc duty cycle)	X	5.20	66.45	16.07	0.00	150.0	± 9.6 %
		Y	5.20	66.65	16.17		150.0	
		Z	5.20	66.44	16.01		150.0	
10535-AAA	IEEE 802.11ac WiFi (40MHz, MCS1, 99pc duty cycle)	X	5.26	66.60	16.13	0.00	150.0	± 9.6 %
		Y	5.26	66.80	16.24		150.0	
		Z	5.26	66.58	16.06		150.0	
10536-AAA	IEEE 802.11ac WiFi (40MHz, MCS2, 99pc duty cycle)	X	5.13	66.58	16.10	0.00	150.0	± 9.6 %
		Y	5.13	66.78	16.22		150.0	
		Z	5.13	66.56	16.04		150.0	
10537-AAA	IEEE 802.11ac WiFi (40MHz, MCS3, 99pc duty cycle)	X	5.19	66.54	16.09	0.00	150.0	± 9.6 %
		Y	5.19	66.74	16.20		150.0	
		Z	5.19	66.53	16.02		150.0	
10538-AAA	IEEE 802.11ac WiFi (40MHz, MCS4, 99pc duty cycle)	X	5.29	66.58	16.15	0.00	150.0	± 9.6 %
		Y	5.29	66.77	16.25		150.0	
		Z	5.30	66.58	16.09		150.0	
10540-AAA	IEEE 802.11ac WiFi (40MHz, MCS6, 99pc duty cycle)	X	5.21	66.57	16.15	0.00	150.0	± 9.6 %
		Y	5.21	66.76	16.26		150.0	
		Z	5.21	66.55	16.08		150.0	

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10541-AAA	IEEE 802.11ac WiFi (40MHz, MCS7, 99pc duty cycle)	X	5.19	66.46	16.09	0.00	150.0	± 9.6 %
		Y	5.19	66.65	16.20		150.0	
		Z	5.19	66.46	16.04		150.0	
10542-AAA	IEEE 802.11ac WiFi (40MHz, MCS8, 99pc duty cycle)	X	5.34	66.52	16.14	0.00	150.0	± 9.6 %
		Y	5.34	66.70	16.24		150.0	
		Z	5.34	66.51	16.07		150.0	
10543-AAA	IEEE 802.11ac WiFi (40MHz, MCS9, 99pc duty cycle)	X	5.42	66.55	16.17	0.00	150.0	± 9.6 %
		Y	5.42	66.72	16.26		150.0	
		Z	5.42	66.53	16.10		150.0	
10544-AAA	IEEE 802.11ac WiFi (80MHz, MCS0, 99pc duty cycle)	X	5.50	66.57	16.06	0.00	150.0	± 9.6 %
		Y	5.49	66.75	16.16		150.0	
		Z	5.49	66.57	16.00		150.0	
10545-AAA	IEEE 802.11ac WiFi (80MHz, MCS1, 99pc duty cycle)	X	5.69	66.96	16.20	0.00	150.0	± 9.6 %
		Y	5.68	67.12	16.29		150.0	
		Z	5.68	66.93	16.13		150.0	
10546-AAA	IEEE 802.11ac WiFi (80MHz, MCS2, 99pc duty cycle)	X	5.57	66.81	16.14	0.00	150.0	± 9.6 %
		Y	5.57	66.99	16.24		150.0	
		Z	5.57	66.81	16.09		150.0	
10547-AAA	IEEE 802.11ac WiFi (80MHz, MCS3, 99pc duty cycle)	X	5.65	66.85	16.15	0.00	150.0	± 9.6 %
		Y	5.64	67.02	16.24		150.0	
		Z	5.65	66.88	16.11		150.0	
10548-AAA	IEEE 802.11ac WiFi (80MHz, MCS4, 99pc duty cycle)	X	5.89	67.74	16.57	0.00	150.0	± 9.6 %
		Y	5.86	67.84	16.63		150.0	
		Z	5.87	67.69	16.48		150.0	
10550-AAA	IEEE 802.11ac WiFi (80MHz, MCS6, 99pc duty cycle)	X	5.59	66.79	16.14	0.00	150.0	± 9.6 %
		Y	5.59	66.97	16.24		150.0	
		Z	5.59	66.79	16.08		150.0	
10551-AAA	IEEE 802.11ac WiFi (80MHz, MCS7, 99pc duty cycle)	X	5.61	66.85	16.13	0.00	150.0	± 9.6 %
		Y	5.60	67.03	16.23		150.0	
		Z	5.60	66.85	16.07		150.0	
10552-AAA	IEEE 802.11ac WiFi (80MHz, MCS8, 99pc duty cycle)	X	5.52	66.65	16.04	0.00	150.0	± 9.6 %
		Y	5.51	66.83	16.14		150.0	
		Z	5.51	66.64	15.99		150.0	
10553-AAA	IEEE 802.11ac WiFi (80MHz, MCS9, 99pc duty cycle)	X	5.61	66.69	16.09	0.00	150.0	± 9.6 %
		Y	5.60	66.87	16.19		150.0	
		Z	5.60	66.70	16.04		150.0	
10554-AAA	IEEE 1602.11ac WiFi (160MHz, MCS0, 99pc duty cycle)	X	5.90	66.94	16.15	0.00	150.0	± 9.6 %
		Y	5.89	67.10	16.23		150.0	
		Z	5.88	66.93	16.09		150.0	
10555-AAA	IEEE 1602.11ac WiFi (160MHz, MCS1, 99pc duty cycle)	X	6.03	67.23	16.27	0.00	150.0	± 9.6 %
		Y	6.02	67.39	16.35		150.0	
		Z	6.02	67.23	16.21		150.0	
10556-AAA	IEEE 1602.11ac WiFi (160MHz, MCS2, 99pc duty cycle)	X	6.05	67.27	16.29	0.00	150.0	± 9.6 %
		Y	6.04	67.43	16.37		150.0	
		Z	6.03	67.26	16.22		150.0	
10557-AAA	IEEE 1602.11ac WiFi (160MHz, MCS3, 99pc duty cycle)	X	6.02	67.20	16.27	0.00	150.0	± 9.6 %
		Y	6.01	67.36	16.36		150.0	
		Z	6.01	67.21	16.22		150.0	

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10558-AAA	IEEE 1602.11ac WiFi (160MHz, MCS4, 99pc duty cycle)	X	6.07	67.36	16.37	0.00	150.0	± 9.6 %
		Y	6.06	67.52	16.45		150.0	
		Z	6.06	67.37	16.31		150.0	
10560-AAA	IEEE 1602.11ac WiFi (160MHz, MCS6, 99pc duty cycle)	X	6.07	67.22	16.33	0.00	150.0	± 9.6 %
		Y	6.06	67.39	16.42		150.0	
		Z	6.07	67.24	16.28		150.0	
10561-AAA	IEEE 1602.11ac WiFi (160MHz, MCS7, 99pc duty cycle)	X	5.99	67.18	16.35	0.00	150.0	± 9.6 %
		Y	5.98	67.34	16.43		150.0	
		Z	5.98	67.18	16.29		150.0	
10562-AAA	IEEE 1602.11ac WiFi (160MHz, MCS8, 99pc duty cycle)	X	6.12	67.58	16.55	0.00	150.0	± 9.6 %
		Y	6.10	67.72	16.62		150.0	
		Z	6.11	67.58	16.49		150.0	
10563-AAA	IEEE 1602.11ac WiFi (160MHz, MCS9, 99pc duty cycle)	X	6.43	68.08	16.75	0.00	150.0	± 9.6 %
		Y	6.39	68.16	16.79		150.0	
		Z	6.43	68.08	16.68		150.0	
10564-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 9 Mbps, 99pc duty cycle)	X	4.93	66.77	16.35	0.46	150.0	± 9.6 %
		Y	4.92	66.96	16.46		150.0	
		Z	4.92	66.73	16.29		150.0	
10565-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 12 Mbps, 99pc duty cycle)	X	5.17	67.25	16.69	0.46	150.0	± 9.6 %
		Y	5.16	67.42	16.79		150.0	
		Z	5.18	67.23	16.63		150.0	
10566-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 18 Mbps, 99pc duty cycle)	X	5.00	67.09	16.50	0.46	150.0	± 9.6 %
		Y	4.99	67.28	16.61		150.0	
		Z	5.00	67.07	16.44		150.0	
10567-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 24 Mbps, 99pc duty cycle)	X	5.03	67.51	16.87	0.46	150.0	± 9.6 %
		Y	5.02	67.70	16.98		150.0	
		Z	5.04	67.51	16.82		150.0	
10568-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 36 Mbps, 99pc duty cycle)	X	4.91	66.82	16.24	0.46	150.0	± 9.6 %
		Y	4.90	67.01	16.35		150.0	
		Z	4.91	66.77	16.16		150.0	
10569-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 48 Mbps, 99pc duty cycle)	X	4.98	67.56	16.91	0.46	150.0	± 9.6 %
		Y	4.97	67.75	17.01		150.0	
		Z	4.98	67.54	16.85		150.0	
10570-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 54 Mbps, 99pc duty cycle)	X	5.02	67.41	16.85	0.46	150.0	± 9.6 %
		Y	5.01	67.61	16.95		150.0	
		Z	5.03	67.38	16.78		150.0	
10571-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps, 90pc duty cycle)	X	1.24	64.71	15.54	0.46	130.0	± 9.6 %
		Y	1.23	65.27	16.04		130.0	
		Z	1.19	64.35	15.30		130.0	
10572-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 2 Mbps, 90pc duty cycle)	X	1.26	65.28	15.89	0.46	130.0	± 9.6 %
		Y	1.25	65.91	16.43		130.0	
		Z	1.21	64.92	15.65		130.0	
10573-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 5.5 Mbps, 90pc duty cycle)	X	1.97	82.44	21.65	0.46	130.0	± 9.6 %
		Y	4.10	96.36	26.70		130.0	
		Z	1.66	80.43	20.82		130.0	
10574-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 11 Mbps, 90pc duty cycle)	X	1.41	70.98	18.69	0.46	130.0	± 9.6 %
		Y	1.48	72.96	19.89		130.0	
		Z	1.33	70.50	18.43		130.0	

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10575-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps, 90pc duty cycle)	X	4.71	66.52	16.35	0.46	130.0	± 9.6 %
		Y	4.69	66.67	16.43		130.0	
		Z	4.70	66.47	16.28		130.0	
10576-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 9 Mbps, 90pc duty cycle)	X	4.73	66.69	16.42	0.46	130.0	± 9.6 %
		Y	4.72	66.84	16.50		130.0	
		Z	4.73	66.64	16.35		130.0	
10577-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 12 Mbps, 90pc duty cycle)	X	4.95	67.01	16.60	0.46	130.0	± 9.6 %
		Y	4.93	67.15	16.68		130.0	
		Z	4.95	66.97	16.54		130.0	
10578-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 18 Mbps, 90pc duty cycle)	X	4.85	67.17	16.71	0.46	130.0	± 9.6 %
		Y	4.83	67.33	16.79		130.0	
		Z	4.85	67.15	16.65		130.0	
10579-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 24 Mbps, 90pc duty cycle)	X	4.61	66.44	15.99	0.46	130.0	± 9.6 %
		Y	4.59	66.59	16.08		130.0	
		Z	4.60	66.39	15.92		130.0	
10580-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 36 Mbps, 90pc duty cycle)	X	4.65	66.45	16.01	0.46	130.0	± 9.6 %
		Y	4.63	66.60	16.09		130.0	
		Z	4.65	66.38	15.92		130.0	
10581-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 48 Mbps, 90pc duty cycle)	X	4.74	67.20	16.63	0.46	130.0	± 9.6 %
		Y	4.73	67.37	16.73		130.0	
		Z	4.74	67.17	16.57		130.0	
10582-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 54 Mbps, 90pc duty cycle)	X	4.55	66.18	15.78	0.46	130.0	± 9.6 %
		Y	4.53	66.33	15.87		130.0	
		Z	4.55	66.12	15.70		130.0	
10583-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps, 90pc duty cycle)	X	4.71	66.52	16.35	0.46	130.0	± 9.6 %
		Y	4.69	66.67	16.43		130.0	
		Z	4.70	66.47	16.28		130.0	
10584-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 9 Mbps, 90pc duty cycle)	X	4.73	66.69	16.42	0.46	130.0	± 9.6 %
		Y	4.72	66.84	16.50		130.0	
		Z	4.73	66.64	16.35		130.0	
10585-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 12 Mbps, 90pc duty cycle)	X	4.95	67.01	16.60	0.46	130.0	± 9.6 %
		Y	4.93	67.15	16.68		130.0	
		Z	4.95	66.97	16.54		130.0	
10586-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 18 Mbps, 90pc duty cycle)	X	4.85	67.17	16.71	0.46	130.0	± 9.6 %
		Y	4.83	67.33	16.79		130.0	
		Z	4.85	67.15	16.65		130.0	
10587-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 24 Mbps, 90pc duty cycle)	X	4.61	66.44	15.99	0.46	130.0	± 9.6 %
		Y	4.59	66.59	16.08		130.0	
		Z	4.60	66.39	15.92		130.0	
10588-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 36 Mbps, 90pc duty cycle)	X	4.65	66.45	16.01	0.46	130.0	± 9.6 %
		Y	4.63	66.60	16.09		130.0	
		Z	4.65	66.38	15.92		130.0	
10589-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 48 Mbps, 90pc duty cycle)	X	4.74	67.20	16.63	0.46	130.0	± 9.6 %
		Y	4.73	67.37	16.73		130.0	
		Z	4.74	67.17	16.57		130.0	
10590-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 54 Mbps, 90pc duty cycle)	X	4.55	66.18	15.78	0.46	130.0	± 9.6 %
		Y	4.53	66.33	15.87		130.0	
		Z	4.55	66.12	15.70		130.0	

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10591-AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS0, 90pc duty cycle)	X	4.86	66.59	16.46	0.46	130.0	± 9.6 %
		Y	4.84	66.74	16.53		130.0	
		Z	4.85	66.55	16.39		130.0	
10592-AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS1, 90pc duty cycle)	X	5.02	66.93	16.58	0.46	130.0	± 9.6 %
		Y	5.00	67.08	16.66		130.0	
		Z	5.02	66.89	16.52		130.0	
10593-AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS2, 90pc duty cycle)	X	4.94	66.85	16.47	0.46	130.0	± 9.6 %
		Y	4.92	67.00	16.55		130.0	
		Z	4.94	66.81	16.40		130.0	
10594-AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS3, 90pc duty cycle)	X	5.00	67.01	16.62	0.46	130.0	± 9.6 %
		Y	4.98	67.16	16.70		130.0	
		Z	5.00	66.98	16.56		130.0	
10595-AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS4, 90pc duty cycle)	X	4.96	66.96	16.51	0.46	130.0	± 9.6 %
		Y	4.94	67.11	16.59		130.0	
		Z	4.97	66.93	16.45		130.0	
10596-AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS5, 90pc duty cycle)	X	4.90	66.96	16.51	0.46	130.0	± 9.6 %
		Y	4.88	67.11	16.59		130.0	
		Z	4.90	66.91	16.44		130.0	
10597-AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS6, 90pc duty cycle)	X	4.85	66.87	16.40	0.46	130.0	± 9.6 %
		Y	4.83	67.02	16.49		130.0	
		Z	4.85	66.83	16.34		130.0	
10598-AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS7, 90pc duty cycle)	X	4.84	67.13	16.68	0.46	130.0	± 9.6 %
		Y	4.82	67.28	16.76		130.0	
		Z	4.84	67.11	16.62		130.0	
10599-AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS0, 90pc duty cycle)	X	5.52	67.14	16.65	0.46	130.0	± 9.6 %
		Y	5.49	67.25	16.70		130.0	
		Z	5.52	67.13	16.59		130.0	
10600-AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS1, 90pc duty cycle)	X	5.66	67.56	16.83	0.46	130.0	± 9.6 %
		Y	5.62	67.63	16.86		130.0	
		Z	5.66	67.53	16.75		130.0	
10601-AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS2, 90pc duty cycle)	X	5.55	67.31	16.72	0.46	130.0	± 9.6 %
		Y	5.52	67.41	16.77		130.0	
		Z	5.54	67.28	16.65		130.0	
10602-AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS3, 90pc duty cycle)	X	5.63	67.29	16.62	0.46	130.0	± 9.6 %
		Y	5.60	67.39	16.67		130.0	
		Z	5.62	67.25	16.55		130.0	
10603-AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS4, 90pc duty cycle)	X	5.73	67.66	16.94	0.46	130.0	± 9.6 %
		Y	5.70	67.75	16.99		130.0	
		Z	5.72	67.62	16.86		130.0	
10604-AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS5, 90pc duty cycle)	X	5.52	67.10	16.65	0.46	130.0	± 9.6 %
		Y	5.49	67.21	16.70		130.0	
		Z	5.51	67.08	16.58		130.0	
10605-AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS6, 90pc duty cycle)	X	5.62	67.39	16.79	0.46	130.0	± 9.6 %
		Y	5.59	67.49	16.84		130.0	
		Z	5.61	67.33	16.70		130.0	
10606-AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS7, 90pc duty cycle)	X	5.40	66.85	16.39	0.46	130.0	± 9.6 %
		Y	5.37	66.95	16.44		130.0	
		Z	5.39	66.83	16.32		130.0	

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10607-AAA	IEEE 802.11ac WiFi (20MHz, MCS0, 90pc duty cycle)	X	4.69	65.89	16.07	0.46	130.0	± 9.6 %
		Y	4.68	66.06	16.16		130.0	
		Z	4.68	65.84	16.00		130.0	
10608-AAA	IEEE 802.11ac WiFi (20MHz, MCS1, 90pc duty cycle)	X	4.89	66.30	16.23	0.46	130.0	± 9.6 %
		Y	4.87	66.48	16.33		130.0	
		Z	4.89	66.26	16.16		130.0	
10609-AAA	IEEE 802.11ac WiFi (20MHz, MCS2, 90pc duty cycle)	X	4.77	66.15	16.07	0.46	130.0	± 9.6 %
		Y	4.76	66.33	16.17		130.0	
		Z	4.77	66.11	16.00		130.0	
10610-AAA	IEEE 802.11ac WiFi (20MHz, MCS3, 90pc duty cycle)	X	4.83	66.31	16.24	0.46	130.0	± 9.6 %
		Y	4.81	66.49	16.33		130.0	
		Z	4.83	66.28	16.17		130.0	
10611-AAA	IEEE 802.11ac WiFi (20MHz, MCS4, 90pc duty cycle)	X	4.74	66.12	16.08	0.46	130.0	± 9.6 %
		Y	4.73	66.30	16.18		130.0	
		Z	4.74	66.08	16.02		130.0	
10612-AAA	IEEE 802.11ac WiFi (20MHz, MCS5, 90pc duty cycle)	X	4.75	66.26	16.12	0.46	130.0	± 9.6 %
		Y	4.74	66.44	16.21		130.0	
		Z	4.75	66.22	16.04		130.0	
10613-AAA	IEEE 802.11ac WiFi (20MHz, MCS6, 90pc duty cycle)	X	4.76	66.16	16.01	0.46	130.0	± 9.6 %
		Y	4.74	66.34	16.11		130.0	
		Z	4.76	66.12	15.94		130.0	
10614-AAA	IEEE 802.11ac WiFi (20MHz, MCS7, 90pc duty cycle)	X	4.70	66.36	16.25	0.46	130.0	± 9.6 %
		Y	4.69	66.55	16.36		130.0	
		Z	4.70	66.34	16.19		130.0	
10615-AAA	IEEE 802.11ac WiFi (20MHz, MCS8, 90pc duty cycle)	X	4.74	65.93	15.85	0.46	130.0	± 9.6 %
		Y	4.72	66.11	15.95		130.0	
		Z	4.74	65.88	15.77		130.0	
10616-AAA	IEEE 802.11ac WiFi (40MHz, MCS0, 90pc duty cycle)	X	5.34	66.41	16.27	0.46	130.0	± 9.6 %
		Y	5.32	66.55	16.34		130.0	
		Z	5.33	66.39	16.20		130.0	
10617-AAA	IEEE 802.11ac WiFi (40MHz, MCS1, 90pc duty cycle)	X	5.40	66.53	16.30	0.46	130.0	± 9.6 %
		Y	5.38	66.67	16.37		130.0	
		Z	5.38	66.48	16.22		130.0	
10618-AAA	IEEE 802.11ac WiFi (40MHz, MCS2, 90pc duty cycle)	X	5.29	66.58	16.34	0.46	130.0	± 9.6 %
		Y	5.27	66.73	16.42		130.0	
		Z	5.28	66.56	16.28		130.0	
10619-AAA	IEEE 802.11ac WiFi (40MHz, MCS3, 90pc duty cycle)	X	5.31	66.40	16.18	0.46	130.0	± 9.6 %
		Y	5.29	66.53	16.25		130.0	
		Z	5.30	66.37	16.11		130.0	
10620-AAA	IEEE 802.11ac WiFi (40MHz, MCS4, 90pc duty cycle)	X	5.41	66.46	16.26	0.46	130.0	± 9.6 %
		Y	5.39	66.59	16.33		130.0	
		Z	5.41	66.45	16.20		130.0	
10621-AAA	IEEE 802.11ac WiFi (40MHz, MCS5, 90pc duty cycle)	X	5.40	66.58	16.44	0.46	130.0	± 9.6 %
		Y	5.38	66.71	16.51		130.0	
		Z	5.40	66.57	16.39		130.0	
10622-AAA	IEEE 802.11ac WiFi (40MHz, MCS6, 90pc duty cycle)	X	5.40	66.70	16.50	0.46	130.0	± 9.6 %
		Y	5.38	66.84	16.57		130.0	
		Z	5.39	66.67	16.43		130.0	

10623-AAA	IEEE 802.11ac WiFi (40MHz, MCS7, 90pc duty cycle)	X	5.28	66.24	16.14	0.46	130.0	± 9.6 %
		Y	5.27	66.39	16.22		130.0	
		Z	5.28	66.23	16.08		130.0	
10624-AAA	IEEE 802.11ac WiFi (40MHz, MCS8, 90pc duty cycle)	X	5.48	66.45	16.31	0.46	130.0	± 9.6 %
		Y	5.46	66.58	16.37		130.0	
		Z	5.47	66.42	16.24		130.0	
10625-AAA	IEEE 802.11ac WiFi (40MHz, MCS9, 90pc duty cycle)	X	5.86	67.44	16.85	0.46	130.0	± 9.6 %
		Y	5.82	67.52	16.89		130.0	
		Z	5.84	67.37	16.76		130.0	
10626-AAA	IEEE 802.11ac WiFi (80MHz, MCS0, 90pc duty cycle)	X	5.62	66.47	16.22	0.46	130.0	± 9.6 %
		Y	5.60	66.60	16.29		130.0	
		Z	5.60	66.45	16.16		130.0	
10627-AAA	IEEE 802.11ac WiFi (80MHz, MCS1, 90pc duty cycle)	X	5.85	66.99	16.44	0.46	130.0	± 9.6 %
		Y	5.82	67.10	16.49		130.0	
		Z	5.83	66.95	16.36		130.0	
10628-AAA	IEEE 802.11ac WiFi (80MHz, MCS2, 90pc duty cycle)	X	5.66	66.58	16.17	0.46	130.0	± 9.6 %
		Y	5.64	66.71	16.23		130.0	
		Z	5.65	66.57	16.11		130.0	
10629-AAA	IEEE 802.11ac WiFi (80MHz, MCS3, 90pc duty cycle)	X	5.75	66.67	16.21	0.46	130.0	± 9.6 %
		Y	5.73	66.79	16.27		130.0	
		Z	5.74	66.65	16.14		130.0	
10630-AAA	IEEE 802.11ac WiFi (80MHz, MCS4, 90pc duty cycle)	X	6.18	68.12	16.93	0.46	130.0	± 9.6 %
		Y	6.11	68.13	16.94		130.0	
		Z	6.16	68.06	16.84		130.0	
10631-AAA	IEEE 802.11ac WiFi (80MHz, MCS5, 90pc duty cycle)	X	6.10	68.00	17.07	0.46	130.0	± 9.6 %
		Y	6.06	68.09	17.11		130.0	
		Z	6.10	68.02	17.02		130.0	
10632-AAA	IEEE 802.11ac WiFi (80MHz, MCS6, 90pc duty cycle)	X	5.83	67.08	16.62	0.46	130.0	± 9.6 %
		Y	5.81	67.20	16.68		130.0	
		Z	5.82	67.07	16.57		130.0	
10633-AAA	IEEE 802.11ac WiFi (80MHz, MCS7, 90pc duty cycle)	X	5.73	66.76	16.29	0.46	130.0	± 9.6 %
		Y	5.71	66.89	16.35		130.0	
		Z	5.73	66.78	16.24		130.0	
10634-AAA	IEEE 802.11ac WiFi (80MHz, MCS8, 90pc duty cycle)	X	5.72	66.80	16.37	0.46	130.0	± 9.6 %
		Y	5.70	66.93	16.44		130.0	
		Z	5.72	66.81	16.33		130.0	
10635-AAA	IEEE 802.11ac WiFi (80MHz, MCS9, 90pc duty cycle)	X	5.60	66.11	15.75	0.46	130.0	± 9.6 %
		Y	5.58	66.24	15.82		130.0	
		Z	5.59	66.10	15.69		130.0	
10636-AAA	IEEE 1602.11ac WiFi (160MHz, MCS0, 90pc duty cycle)	X	6.03	66.85	16.32	0.46	130.0	± 9.6 %
		Y	6.00	66.97	16.37		130.0	
		Z	6.01	66.83	16.25		130.0	
10637-AAA	IEEE 1602.11ac WiFi (160MHz, MCS1, 90pc duty cycle)	X	6.18	67.21	16.47	0.46	130.0	± 9.6 %
		Y	6.15	67.31	16.52		130.0	
		Z	6.16	67.19	16.41		130.0	
10638-AAA	IEEE 1602.11ac WiFi (160MHz, MCS2, 90pc duty cycle)	X	6.18	67.18	16.44	0.46	130.0	± 9.6 %
		Y	6.16	67.30	16.49		130.0	
		Z	6.16	67.16	16.37		130.0	

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10639-AAA	IEEE 1602.11ac WiFi (160MHz, MCS3, 90pc duty cycle)	X	6.17	67.17	16.48	0.46	130.0	± 9.6 %
		Y	6.15	67.29	16.53		130.0	
		Z	6.16	67.17	16.42		130.0	
10640-AAA	IEEE 1602.11ac WiFi (160MHz, MCS4, 90pc duty cycle)	X	6.18	67.18	16.43	0.46	130.0	± 9.6 %
		Y	6.15	67.29	16.48		130.0	
		Z	6.17	67.18	16.37		130.0	
10641-AAA	IEEE 1602.11ac WiFi (160MHz, MCS5, 90pc duty cycle)	X	6.20	67.03	16.37	0.46	130.0	± 9.6 %
		Y	6.18	67.14	16.42		130.0	
		Z	6.18	67.00	16.30		130.0	
10642-AAA	IEEE 1602.11ac WiFi (160MHz, MCS6, 90pc duty cycle)	X	6.26	67.35	16.70	0.46	130.0	± 9.6 %
		Y	6.24	67.47	16.75		130.0	
		Z	6.26	67.37	16.65		130.0	
10643-AAA	IEEE 1602.11ac WiFi (160MHz, MCS7, 90pc duty cycle)	X	6.09	66.99	16.42	0.46	130.0	± 9.6 %
		Y	6.06	67.11	16.47		130.0	
		Z	6.07	66.98	16.35		130.0	
10644-AAA	IEEE 1602.11ac WiFi (160MHz, MCS8, 90pc duty cycle)	X	6.27	67.55	16.72	0.46	130.0	± 9.6 %
		Y	6.24	67.65	16.76		130.0	
		Z	6.26	67.56	16.66		130.0	
10645-AAA	IEEE 1602.11ac WiFi (160MHz, MCS9, 90pc duty cycle)	X	6.69	68.36	17.07	0.46	130.0	± 9.6 %
		Y	6.63	68.37	17.07		130.0	
		Z	6.65	68.24	16.95		130.0	
10646-AAC	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, QPSK, UL Subframe=2,7)	X	17.87	101.86	33.16	9.30	60.0	± 9.6 %
		Y	19.57	105.04	34.15		60.0	
		Z	15.58	98.99	32.13		60.0	
10647-AAB	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK, UL Subframe=2,7)	X	16.94	101.40	33.13	9.30	60.0	± 9.6 %
		Y	18.15	104.14	34.01		60.0	
		Z	14.62	98.29	32.01		60.0	
10648-AAA	CDMA2000 (1x Advanced)	X	0.76	64.11	11.60	0.00	150.0	± 9.6 %
		Y	0.82	65.67	12.52		150.0	
		Z	0.75	63.93	11.49		150.0	

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

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System check uncertainty

The uncertainty budget has been determined for the DASY5 measurement system according to the SPEAG documents and is given in the following Table.

Repeatability Budget for System Check

<0.3 – 3GHz range Body>

Error Description	Uncertainty value ± %	Probability distribution	divisor	(ci) 1g	Standard (1g)	vi or veff
Measurement System						
Probe calibration	± 1.8	Normal	1	1	± 1.8	∞
Axial isotropy of the probe	± 0.0	Rectangular	√3	1	± 0.0	∞
Spherical isotropy of the probe	± 0.0	Rectangular	√3	1	± 0.0	∞
Boundary effects	± 0.0	Rectangular	√3	1	± 0.0	∞
Probe linearity	± 0.0	Rectangular	√3	1	± 0.0	∞
Detection limit	± 0.0	Rectangular	√3	1	± 0.0	∞
Modulation response	± 0.0	Rectangular	√3	1	± 0.0	∞
Readout electronics	± 0.0	Normal	1	1	± 0.0	∞
Response time	± 0.0	Rectangular	√3	1	± 0.0	∞
Integration time	± 0.0	Rectangular	√3	1	± 0.0	∞
RF ambient Noise	± 0.0	Rectangular	√3	1	± 0.0	∞
RF ambient Reflections	± 0.0	Rectangular	√3	1	± 0.0	∞
Probe Positioner	± 0.4	Rectangular	√3	1	± 0.2	∞
Probe positioning	± 2.9	Rectangular	√3	1	± 1.7	∞
Max.SAR Eval.	± 0.0	Rectangular	√3	1	± 0.0	∞
Test Sample Related						
Deviation of wxp.dipole	± 0.0	Rectangular	√3	1	± 0.0	∞
Dipole Axis to Liquid Distance	± 2.0	Rectangular	√3	1	± 1.2	∞
Input power and SAR drift meas.	± 3.4	Rectangular	√3	1	± 2.0	∞
Phantom and Setup						
Phantom uncertainty	± 4.0	Rectangular	√3	1	± 2.3	∞
Algorithm for correcting SAR for deviations in permittivity and conductivity	± 1.9	Rectangular	√3	1	± 1.1	∞
Liquid conductivity (meas.)	± 5.0	Normal	1	0.78	+ 3.9	∞
Liquid permittivity (meas.)	± 5.0	Normal	1	0.26	- 1.3	∞
Liquid conductivity - temp.unc (below 2deg.C.)	± 1.7	Rectangular	√3	0.78	± 0.8	∞
Liquid permittivity - temp.unc (below 2deg.C.)	± 0.3	Rectangular	√3	0.23	± 0.0	∞
Combined Standard Uncertainty					± **5.945**	
Expanded Uncertainty (k=2)					± **11.9**	