PCTEST ENGINEERING LABORATORY, INC.
18855 Adams Ct, Morgan Hill, CA 95037 USA
Tel. +1.410.290.6652 / Fax +1.410.290.6654
http://www.pctest.com

SAR EVALUATION REPORT

Applicant Name:
Apple, Inc.
One Infinite Loop
Cupertino, CA 95014

Date of Testing:
12/24/18 – 01/02/19
Test Site/Location:
PCTEST Lab, Morgan Hill, CA, USA
Document Serial No.:
1C1811080025-01-R1.BCG

FCC ID:	**BCGA2152**
APPLICANT:	**APPLE, INC.**

DUT Type:	Tablet Device
Application Type:	Certification
FCC Rule Part(s):	CFR §2.1093
Model:	A2152

Equipment Class	Band & Mode	Tx Frequency	SAR
			1g Body (W/kg)
DTS	2.4 GHz WLAN	2412 - 2472 MHz	1.19
NII	U-NII-1	5180 - 5240 MHz	1.11
NII	U-NII-2A	5260 - 5320 MHz	1.17
NII	U-NII-2C	5500 - 5720 MHz	1.04
NII	U-NII-3	5745 - 5825 MHz	1.14
DSS/DTS	Bluetooth	2402 - 2480 MHz	1.14
Simultaneous SAR per KDB 690783 D01v01r03:			1.37

Note: This revised Test Report (S/N: 1C1811080025-01-R1.BCG) supersedes and replaces the previously issued test report on the same subject device for the same type of testing as indicated. Please discard or destroy the previously issued test report(s) and dispose of it accordingly.

This wireless portable device has been shown to be capable of compliance for localized specific absorption rate (SAR) for uncontrolled environment/general population exposure limits specified in ANSI/IEEE C95.1-1992 and has been tested in accordance with the measurement procedures specified in Section 1.7 of this report; for North American frequency bands only.

I attest to the accuracy of data. All measurements reported herein were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them. Test results reported herein relate only to the item(s) tested.

Randy Ortanez
President

The SAR Tick is an initiative of the Mobile & Wireless Forum (MWF). While a product may be considered eligible, use of the SAR Tick logo requires an agreement with the MWF. Further details can be obtained by emailing: sartick@mwfai.info.

TABLE OF CONTENTS

1 DEVICE UNDER TEST

1.1 Device Overview

Band & Mode	Operating Modes	Tx Frequency
2.4 GHz WLAN	Voice/Data	2412 - 2472 MHz
U-NII-1	Voice/Data	5180 - 5240 MHz
U-NII-2A	Voice/Data	5260 - 5320 MHz
U-NII-2C	Voice/Data	5500 - 5720 MHz
U-NII-3	Voice/Data	5745 - 5825 MHz
Bluetooth	Data	2402 - 2480 MHz

1.2 Power Reduction for SAR

This device utilizes an independent single step power reduction mechanism for Bluetooth operations. When Bluetooth is operating simultaneously with 5 GHz WLAN, the output power of Bluetooth is reduced for the duration of simultaneous operation. SAR evaluation was additionally performed at the maximum allowed output power for Bluetooth which is applicable for all other use cases.

Detailed description of the mechanism and the verification procedures are included in the operational description document. Section 7.2.1 contain a summary of the verification results.

1.3 Nominal and Maximum Output Power Specifications

This device operates using the following maximum and nominal output power specifications. SAR values were scaled to the maximum allowed power to determine compliance per KDB Publication 447498 D01v06.

1.3.1 Maximum Output Power

Mode / Band		Modulated Average - Single Tx Chain (dBm) - Antenna WF1					
		Ch. 1	Ch. 2-9	Ch. 10	Ch. 11	Ch. 12	Ch. 13
IEEE 802.11b (2.4 GHz)	Maximum		**19.5**		**18.5**	**16.5**	**14.5**
IEEE 802.11g (2.4 GHz)	Maximum	**15.0**	**19.5**	**18.0**	**14.5**	**12.0**	**2.5**
IEEE 802.11n (2.4 GHz)	Maximum	**15.0**	**19.5**	**18.0**	**14.5**	**12.0**	**2.5**

Mode / Band		Modulated Average - Single Tx Chain (dBm) - Antenna WF2					
		Ch. 1	Ch. 2-9	Ch. 10	Ch. 11	Ch. 12	Ch. 13
IEEE 802.11b (2.4 GHz)	Maximum		**19.75**		**19**	**17**	**14.5**
IEEE 802.11g (2.4 GHz)	Maximum	**15.5**	**19.75**	**18**	**15**	**12.5**	**3**
IEEE 802.11n (2.4 GHz)	Maximum	**15.5**	**19.75**	**18**	**15**	**12.5**	**3**

Mode / Band			Modulated Average - MIMO (dBm)				
			Ch. 1	Ch. 2-10	Ch. 11	Ch. 12	Ch. 13
IEEE 802.11g/n (2.4 GHz)	Ant: WF1	Maximum	**14.0**	**17.0**	**13.0**	**11.0**	**0.0**
	Ant: WF2		**14.5**	**17.0**	**13.0**	**11.0**	**0.5**

Note: In MIMO operations, each antenna transmits at maximum allowed powers as indicated above.

Mode / Band		Modulated Average - Single Tx Chain (dBm) - Antenna WF1/WF2
Bluetooth BDR	Maximum	**20.0**
Bluetooth LE	Maximum	**20.0**
Bluetooth EDR	Maximum	**14.5**
Bluetooth HDR	Maximum	**11.5**

Mode / Band		Modulated Average - Single Tx Chain (dBm) - Antenna WF1															
		20 MHz Bandwidth						40 MHz Bandwidth						80 MHz Bandwidth			
		Ch. 36, 64	Ch. 40-48	Ch. 52-60	Ch. 100-136, 144	Ch. 140	Ch. 149-165	Ch. 38, 102	Ch. 46	Ch. 54	Ch. 62	Ch.110-142	Ch. 151-159	Ch. 42, 58	Ch. 106	Ch. 122-138	Ch. 155
IEEE 802.11a (5 GHz)	Maximum	**16**	**15.75**	**16.5**	**15.25**	**15**	**14.75**										
IEEE 802.11n (5 GHz)	Maximum	**16**	**15.75**	**16.5**	**15.25**	**15**	**14.75**	**14.5**	**15.75**	**16.5**	**14**	**15.25**	**14.75**				
IEEE 802.11ac (5 GHz)	Maximum	**16**	**15.75**	**16.5**	**15.25**	**15**	**14.75**	**14.5**	**15.75**	**16.5**	**14**	**15.25**	**14.75**	**13**	**13.5**	**15.25**	**14.75**

Mode / Band		Modulated Average - Single Tx Chain (dBm) - Antenna WF2														
		20 MHz Bandwidth					40 MHz Bandwidth						80 MHz Bandwidth			
		Ch. 36, 52-64	Ch. 40-48	Ch. 100-136, 144	Ch. 140	Ch. 149-165	Ch. 38, 102	Ch. 46	Ch. 54	Ch. 62	Ch.110-142	Ch. 151-159	Ch. 42-58	Ch. 106	Ch. 122-138	Ch. 155
IEEE 802.11a (5 GHz)	Maximum	**16**	**17.25**	**15.5**	**15**	**15.75**										
IEEE 802.11n (5 GHz)	Maximum	**16**	**17.25**	**15.5**	**15**	**15.75**	**14.5**	**17.25**	**16**	**14**	**15.5**	**15.75**				
IEEE 802.11ac (5 GHz)	Maximum	**16**	**17.25**	**15.5**	**15**	**15.75**	**14.5**	**17.25**	**16**	**14**	**15.5**	**15.75**	**13**	**13.5**	**15.5**	**15.75**

Mode / Band			Modulated Average - MIMO (dBm) 2Tx CDD																	
			20 MHz Bandwidth						40 MHz Bandwidth							80 MHz Bandwidth				
			Ch. 36	Ch. 40-48	Ch. 52-60	Ch. 64	Ch. 100-136, 144	Ch. 140	Ch. 149-165	Ch. 38, 102	Ch. 46	Ch. 54	Ch. 62	Ch. 110-126, 142	Ch. 134	Ch. 151-159	Ch. 42	Ch. 58	Ch. 106	Ch. 122-138	Ch. 155
IEEE 802.11a (5 GHz)	Ant: WF1	Maximum	**15**	**15.75**	**16.5**	**14.5**	**15**	**13.5**	**14.75**											
	Ant: WF2		**15**	**16.5**	**16**	**14.5**	**15**	**13.5**	**15.75**											
IEEE 802.11n (5 GHz)	Ant: WF1	Maximum	**15**	**15.75**	**16.5**	**14.5**	**15**	**13.5**	**14.75**	**13**	**15.75**	**16.5**	**12.5**	**15.25**	**14.5**	**14.75**					
	Ant: WF2		**15**	**16.5**	**16**	**14.5**	**15**	**13.5**	**15.75**	**13**	**17.25**	**16**	**12.5**	**15.5**	**14.5**	**15.75**					
IEEE 802.11ac (5 GHz)	Ant: WF1	Maximum	**15**	**15.75**	**16.5**	**14.5**	**15**	**13.5**	**14.75**	**13**	**15.75**	**16.5**	**12.5**	**15.25**	**14.5**	**14.75**	**12**	**11**	**12**	**15.25**	**14.75**
	Ant: WF2		**15**	**16.5**	**16**	**14.5**	**15**	**13.5**	**15.75**	**13**	**17.25**	**16**	**12.5**	**15.5**	**14.5**	**15.75**	**12**	**11**	**12**	**15.5**	**15.75**

Note: In MIMO operations, each antenna transmits at maximum allowed powers as indicated above.

Mode / Band			Modulated Average - MIMO (dBm) 2Tx SDM																	
			20 MHz Bandwidth							40 MHz Bandwidth							80 MHz Bandwidth				
			Ch. 36	Ch. 40-48	Ch. 52-60	Ch. 64	Ch. 100	Ch. 104-136, 144	Ch. 140	Ch. 149-165	Ch. 38, 102	Ch. 46	Ch. 54	Ch. 62	Ch. 110-126, 142	Ch. 134	Ch. 151-159	Ch. 42	Ch. 58	Ch. 106	Ch. 122-138	Ch. 155
IEEE 802.11n (5 GHz)	Ant: WF1	Maximum	**15**	**15.75**	**16.5**	**14.5**	**15**	**15.25**	**13.5**	**14.75**	**13**	**15.75**	**16.5**	**12.5**	**15.25**	**14.5**	**14.75**					
	Ant: WF2		**15**	**17**	**16**	**14.5**	**15**	**15.5**	**13.5**	**15.75**	**13**	**17.25**	**16**	**12.5**	**15.5**	**14.5**	**15.75**					
IEEE 802.11ac (5 GHz)	Ant: WF1	Maximum	**15**	**15.75**	**16.5**	**14.5**	**15**	**15.25**	**13.5**	**14.75**	**13**	**15.75**	**16.5**	**12.5**	**15.25**	**14.5**	**14.75**	**12**	**11**	**12**	**15.25**	**14.75**
	Ant: WF2		**15**	**17**	**16**	**14.5**	**15**	**15.5**	**13.5**	**15.75**	**13**	**17.25**	**16**	**12.5**	**15.5**	**14.5**	**15.75**	**12**	**11**	**12**	**15.5**	**15.75**

Note: In MIMO operations, each antenna transmits at maximum allowed powers as indicated above.

1.3.2 Reduced Output Power

Mode / Band		Modulated Average - Single Tx Chain (dBm) - Antenna WF1/WF2
Bluetooth BDR	Maximum	**13.0**
Bluetooth LE	Maximum	**13.0**
Bluetooth EDR	Maximum	**13.0**
Bluetooth HDR	Maximum	**11.5**

Note: Bluetooth operations on Antenna WF1 and WF2 are reduced in output power when it is operating simultaneously with 5 GHz WLAN. Detailed description of the power reduction mechanism is included in the operational description.

1.4 DUT Antenna Locations

The overall diagonal dimension of the device is > 200 mm. A diagram showing the location of the device antennas can be found in Appendix F. Exact antenna dimensions and separation distances are shown in the Technical Descriptions in the FCC filings.

Table 1-1
Device Edges/Sides for SAR Testing

Mode	Back	Top	Bottom	Right	Left
2.4 GHz WLAN Ant WF1	Yes	No	Yes	No	Yes
2.4 GHz WLAN Ant WF2	Yes	No	Yes	Yes	No
5 GHz WLAN Ant WF1	Yes	No	Yes	No	Yes
5 GHz WLAN Ant WF2	Yes	No	Yes	Yes	No
Bluetooth Ant WF1	Yes	No	Yes	No	Yes
Bluetooth Ant WF2	Yes	No	Yes	Yes	No

Note:

1) Per FCC KDB Publication 616217 D04v01r01, particular edges were not required to be evaluated for SAR based on the SAR exclusion threshold in KDB 447498 D01V06

1.5 Simultaneous Transmission Capabilities

According to FCC KDB Publication 447498 D01v06, transmitters are considered to be transmitting simultaneously when there is overlapping transmission, with the exception of transmissions during network hand-offs with maximum hand-off duration less than 30 seconds.

This device contains multiple transmitters that may operate simultaneously, and therefore requires a simultaneous transmission analysis according to FCC KDB Publication 447498 D01v06 4.3.2 procedures.

Table 1-2
Simultaneous Transmission Scenarios

No.	Capable Transmit Configuration	Body
1	2.4 GHz Wi-Fi MIMO	Yes
2	5 GHz Wi-Fi MIMO	Yes
3	2.4 GHz Bluetooth + 5 GHz Wi-Fi	Yes
4	2.4 GHz Bluetooth + 5 GHz Wi-Fi MIMO	Yes

1. 2.4 GHz WLAN and 2.4 GHz Bluetooth share the same antenna path and cannot transmit simultaneously.
2. This device supports 2x2 MIMO Tx for WLAN. 802.11a/g/n/ac supports CDD and 802.11 n/ac additionally supports SDM. Each WLAN antenna can transmit independently or together when operating with MIMO.
3. This device support VoWIFI.

1.6 Miscellaneous SAR Test Considerations

(A) WIFI/BT

Based on the maximum allowed power for the respective antennas, U-NII-1 was evaluated for Antenna WF2 SAR, and U-NII-2A was evaluated for Antenna WF1 SAR. Additional testing for U-NII-2A Antenna WF2, or U-NII-1 Antenna WF1 SAR was not required since all reported SAR was less than 1.2 W/kg per FCC KDB Publication 248227 D01v02r02.

The WLAN/Bluetooth chipset in this device is produced by two different suppliers. The electrically identical modules are manufactured with the identical mechanical structure to meet the same specifications and functions. Two device variants are referenced as Variant 1 and Variant 2 in this report. WLAN/Bluetooth SAR worst case configuration was spotchecked on Variant 1 and Variant 2. The Variant with the highest reported SAR value was evaluated for the remaining WLAN/Bluetooth configurations.

This device supports channel 1-13 for 2.4 GHz WLAN. However, since channels 11, 12, and 13 have equal or less maximum output power, channels 1, 6, and 10 were considered for SAR testing per KDB 248227 D01v02r02.

This device supports IEEE 802.11ac with the following features:

a) Up to 80 MHz Bandwidth only
b) No aggregate channel configurations
c) 2 Tx antenna output
d) 256 QAM is supported
e) TDWR and Band gap channels are supported

1.7 Guidance Applied

- FCC KDB Publication 248227 D01v02r02 (SAR Considerations for 802.11 Devices)
- FCC KDB Publication 447498 D01v06 (General SAR Guidance)
- FCC KDB Publication 865664 D01v01r04, D02v01r02 (SAR Measurements up to 6 GHz)
- FCC KDB Publication 616217 D04v01r02 (Tablet)

1.8 Device Serial Numbers

Several samples with identical hardware were used to support SAR testing. The manufacturer has confirmed that the device(s) tested have the same physical, mechanical and thermal characteristics and are within operational tolerances expected for production units. The serial numbers used for each test are indicated alongside the results in Section 9.

2 INTRODUCTION

The FCC and Innovation, Science, and Economic Development Canada have adopted the guidelines for evaluating the environmental effects of radio frequency (RF) radiation in ET Docket 93-62 on Aug. 6, 1996 and Health Canada Safety Code 6 to protect the public and workers from the potential hazards of RF emissions due to FCC-regulated portable devices. [1]

The safety limits used for the environmental evaluation measurements are based on the criteria published by the American National Standards Institute (ANSI) for localized specific absorption rate (SAR) in IEEE/ANSI C95.1-1992 Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz [3] and Health Canada RF Exposure Guidelines Safety Code 6 [22]. The measurement procedure described in IEEE/ANSI C95.3-2002 Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields - RF and Microwave [4] is used for guidance in measuring the Specific Absorption Rate (SAR) due to the RF radiation exposure from the Equipment Under Test (EUT). These criteria for SAR evaluation are similar to those recommended by the International Committee for Non-Ionizing Radiation Protection (ICNIRP) in Biological Effects and Exposure Criteria for Radiofrequency Electromagnetic Fields," Report No. Vol 74. SAR is a measure of the rate of energy absorption due to exposure to an RF transmitting source. SAR values have been related to threshold levels for potential biological hazards.

2.1 SAR Definition

Specific Absorption Rate is defined as the time derivative (rate) of the incremental energy (dU) absorbed by (dissipated in) an incremental mass (dm) contained in a volume element (dV) of a given density (ρ). It is also defined as the rate of RF energy absorption per unit mass at a point in an absorbing body (see Equation 2-1).

Equation 2-1
SAR Mathematical Equation

$$SAR = \frac{d}{dt}\left(\frac{dU}{dm}\right) = \frac{d}{dt}\left(\frac{dU}{\rho dv}\right)$$

SAR is expressed in units of Watts per Kilogram (W/kg).

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

where:

σ = conductivity of the tissue-simulating material (S/m)
ρ = mass density of the tissue-simulating material (kg/m^3)
E = Total RMS electric field strength (V/m)

NOTE: The primary factors that control rate of energy absorption were found to be the wavelength of the incident field in relation to the dimensions and geometry of the irradiated organism, the orientation of the organism in relation to the polarity of field vectors, the presence of reflecting surfaces, and whether conductive contact is made by the organism with a ground plane.[6]

3 DOSIMETRIC ASSESSMENT

3.1 Measurement Procedure

The evaluation was performed using the following procedure compliant to FCC KDB Publication 865664 D01v01r04 and IEEE 1528-2013:

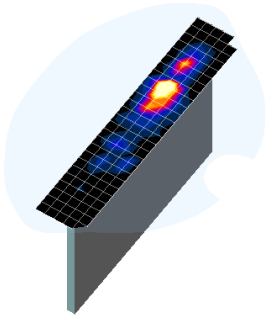


Figure 3-1
Sample SAR Area Scan

1. The SAR distribution at the exposed side of the head or body was measured at a distance no greater than 5.0 mm from the inner surface of the shell. The area covered the entire dimension of the device-head and body interface and the horizontal grid resolution was determined per FCC KDB Publication 865664 D01v01r04 (See Table 3-1) and IEEE 1528-2013.
2. The point SAR measurement was taken at the maximum SAR region determined from Step 1 to enable the monitoring of SAR fluctuations/drifts during the 1g/10g cube evaluation. SAR at this fixed point was measured and used as a reference value.
3. Based on the area scan data, the peak of the region with maximum SAR was determined by spline interpolation. Around this point, a volume was assessed according to the measurement resolution and volume size requirements of FCC KDB Publication 865664 D01v01r04 (See Table 3-1) and IEEE 1528-2013. On the basis of this data set, the spatial peak SAR value was evaluated with the following procedure (see references or the DASY manual online for more details):

   a. SAR values at the inner surface of the phantom are extrapolated from the measured values along the line away from the surface with spacing no greater than that in Table 3-1. The extrapolation was based on a least-squares algorithm. A polynomial of the fourth order was calculated through the points in the z-axis (normal to the phantom shell).

   b. After the maximum interpolated values were calculated between the points in the cube, the SAR was averaged over the spatial volume (1g or 10g) using a 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). The volume was then integrated with the trapezoidal algorithm. One thousand points (10 x 10 x 10) were obtained through interpolation, in order to calculate the averaged SAR.

   c. All neighboring volumes were evaluated until no neighboring volume with a higher average value was found.
4. The SAR reference value, at the same location as step 2, was re-measured after the zoom scan was complete to calculate the SAR drift. If the drift deviated by more than 5%, the SAR test and drift measurements were repeated.

Table 3-1
Area and Zoom Scan Resolutions per FCC KDB Publication 865664 D01v01r04*

Frequency	Maximum Area Scan Resolution (mm) (Δx_{area}, Δy_{area})	Maximum Zoom Scan Resolution (mm) (Δx_{zoom}, Δy_{zoom})	Maximum Zoom Scan Spatial Resolution (mm)			Minimum Zoom Scan Volume (mm) (x,y,z)
			Uniform Grid	Graded Grid		
			$\Delta z_{zoom}(n)$	$\Delta z_{zoom}(1)$*	$\Delta z_{zoom}(n>1)$*	
≤ 2 GHz	≤ 15	≤ 8	≤ 5	≤ 4	≤ 1.5*$\Delta z_{zoom}(n-1)$	≥ 30
2-3 GHz	≤ 12	≤ 5	≤ 5	≤ 4	≤ 1.5*$\Delta z_{zoom}(n-1)$	≥ 30
3-4 GHz	≤ 12	≤ 5	≤ 4	≤ 3	≤ 1.5*$\Delta z_{zoom}(n-1)$	≥ 28
4-5 GHz	≤ 10	≤ 4	≤ 3	≤ 2.5	≤ 1.5*$\Delta z_{zoom}(n-1)$	≥ 25
5-6 GHz	≤ 10	≤ 4	≤ 2	≤ 2	≤ 1.5*$\Delta z_{zoom}(n-1)$	≥ 22

*Also compliant to IEEE 1528-2013 Table 6

4 TEST CONFIGURATION POSITIONS

4.1 Device Holder

The device holder is made out of low-loss POM material having the following dielectric parameters: relative permittivity ε = 3 and loss tangent δ = 0.02.

4.2 SAR Testing for Tablet per KDB Publication 616217 D04v01r02

Per FCC KDB Publication 616217 D04v01r02, the back surface and edges of the tablet should be tested for SAR compliance with the tablet touching the phantom. The SAR Exclusion Threshold in KDB 447498 D01v06 can be applied to determine SAR test exclusion for adjacent edge configurations. The closest distance from the antenna to an adjacent tablet edge is used to determine if SAR testing is required for the adjacent edges, with the adjacent edge positioned against the phantom and the edge containing the antenna positioned perpendicular to the phantom.

5 RF EXPOSURE LIMITS

5.1 Uncontrolled Environment

UNCONTROLLED ENVIRONMENTS are defined as locations where there is the exposure of individuals who have no knowledge or control of their exposure. The general population/uncontrolled exposure limits are applicable to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Members of the general public would come under this category when exposure is not employment-related; for example, in the case of a wireless transmitter that exposes persons in its vicinity.

5.2 Controlled Environment

CONTROLLED ENVIRONMENTS are defined as locations where there is exposure that may be incurred by persons who are aware of the potential for exposure, (i.e. as a result of employment or occupation). In general, occupational/controlled exposure limits are applicable to situations in which persons are exposed as a consequence of their employment, who have been made fully aware of the potential for exposure and can exercise control over their exposure. This exposure category is also applicable when the exposure is of a transient nature due to incidental passage through a location where the exposure levels may be higher than the general population/uncontrolled limits, but the exposed person is fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

Table 5-1
SAR Human Exposure Specified in ANSI/IEEE C95.1-1992 and Health Canada Safety Code 6

HUMAN EXPOSURE LIMITS		
	UNCONTROLLED ENVIRONMENT *General Population* (W/kg) or (mW/g)	CONTROLLED ENVIRONMENT *Occupational* (W/kg) or (mW/g)
Peak Spatial Average SAR Head	1.6	8.0
Whole Body SAR	0.08	0.4
Peak Spatial Average SAR Hands, Feet, Ankle, Wrists, etc.	4.0	20

1. The Spatial Peak value of the SAR averaged over any 1 gram of tissue (defined as a tissue volume in the shape of a cube) and over the appropriate averaging time.
2. The Spatial Average value of the SAR averaged over the whole body.
3. The Spatial Peak value of the SAR averaged over any 10 grams of tissue (defined as a tissue volume in the shape of a cube) and over the appropriate averaging time.

6 FCC MEASUREMENT PROCEDURES

6.1 Measured and Reported SAR

Per FCC KDB Publication 447498 D01v06, when SAR is not measured at the maximum power level allowed for production units, the results must be scaled to the maximum tune-up tolerance limit according to the power applied to the individual channels tested to determine compliance. For simultaneous transmission, the measured aggregate SAR must be scaled according to the sum of the differences between the maximum tune-up tolerance and actual power used to test each transmitter. When SAR is measured at or scaled to the maximum tune-up tolerance limit, the results are referred to as *reported* SAR. The highest *reported* SAR results are identified on the grant of equipment authorization according to procedures in KDB 690783 D01v01r03.

6.2 SAR Testing with 802.11 Transmitters

The normal network operating configurations of 802.11 transmitters are not suitable for SAR measurements. Unpredictable fluctuations in network traffic and antenna diversity conditions can introduce undesirable variations in SAR results. The SAR for these devices should be measured using chipset based test mode software to ensure the results are consistent and reliable. See KDB Publication 248227 D01v02r02 for more details.

6.2.1 General Device Setup

Chipset based test mode software is hardware dependent and generally varies among manufacturers. The device operating parameters established in test mode for SAR measurements must be identical to those programmed in production units, including output power levels, amplifier gain settings and other RF performance tuning parameters.

A periodic duty factor is required for current generation SAR systems to measure SAR. When 802.11 frame gaps are accounted for in the transmission, a maximum transmission duty factor of 92 - 96% is typically achievable in most test mode configurations. A minimum transmission duty factor of 85% is required to avoid certain hardware and device implementation issues related to wide range SAR scaling. The reported SAR is scaled to 100% transmission duty factor to determine compliance at the maximum tune-up tolerance limit.

6.2.2 U-NII-1 and U-NII-2A

For devices that operate in both U-NII-1 and U-NII-2A bands, when the same maximum output power is specified for both bands, SAR measurement using OFDM SAR test procedures is not required for U-NII-1 unless the highest reported SAR for U-NII-2A is > 1.2 W/kg. When different maximum output powers are specified for the bands, SAR measurement for the U-NII band with the lower maximum output power is not required unless the highest reported SAR for the U-NII band with the higher maximum output power, adjusted by the ratio of lower to higher specified maximum output power for the two bands, is > 1.2 W/kg.

6.2.3 U-NII-2C and U-NII-3

The frequency range covered by U-NII-2C and U-NII-3 is 380 MHz (5.47 – 5.85 GHz), which requires a minimum of at least two SAR probe calibration frequency points to support SAR measurements. When Terminal Doppler Weather Radar (TDWR) restriction applies, the channels at 5.60 – 5.65 GHz in U-NII-2C band must be disabled with acceptable mechanisms and documented in the equipment certification. Unless band gap channels are permanently disabled, SAR must be considered for these channels. Each band is tested independently according to the normally required OFDM SAR measurement and probe calibration frequency points requirements.

6.2.4 2.4 GHz SAR Test Requirements

SAR is measured for 2.4 GHz 802.11b DSSS using either the fixed test position or, when applicable, the initial test position procedure. SAR test reduction is determined according to the following:

1) When the reported SAR of the highest measured maximum output power channel for the exposure configuration is ≤ 0.8 W/kg, no further SAR testing is required for 802.11b DSSS in that exposure configuration.

2) When the reported SAR is > 0.8 W/kg, SAR is required for that position using the next highest measured output power channel. When any reported SAR is > 1.2 W/kg, SAR is required for the third channel; i.e., all channels require testing.

2.4 GHz 802.11 g/n OFDM are additionally evaluated for SAR if the highest reported SAR for 802.11b, adjusted by the ratio of the OFDM to DSSS specified maximum output power, is › 1.2 W/kg. When SAR is required for OFDM modes in 2.4 GHz band, the Initial Test Configuration Procedures should be followed.

6.2.5 OFDM Transmission Mode and SAR Test Channel Selection

When the same maximum output power was specified for multiple OFDM transmission mode configurations in a frequency band or aggregated band, SAR is measured using the configuration with the largest channel bandwidth, lowest order modulation and lowest data rate. When the maximum output power of a channel is the same for equivalent OFDM configurations; for example, 802.11a, 802.11n and 802.11ac or 802.11g and 802.11n with the same channel bandwidth, modulation and data rate etc., the lower order 802.11 mode i.e., 802.11a, then 802.11n and 802.11ac or 802.11g then 802.11n, is used for SAR measurement. When the maximum output power are the same for multiple test channels, either according to the default or additional power measurement requirements, SAR is measured using the channel closest to the middle of the frequency band or aggregated band. When there are multiple channels with the same maximum output power, SAR is measured using the higher number channel.

6.2.6 Initial Test Configuration Procedure

For OFDM, an initial test configuration is determined for each frequency band and aggregated band, according to the transmission mode with the highest maximum output power specified for SAR measurements. When the same maximum output power is specified for multiple OFDM transmission mode configurations in a frequency band or aggregated band, SAR is measured using the configuration(s) with the largest channel bandwidth, lowest order modulation, lowest data rate and lowest order IEEE 802.11 mode. The channel of the transmission mode with the highest average RF output conducted power will be the initial test configuration.

When the reported SAR is ≤ 0.8 W/kg, no additional measurements on other test channels are required. Otherwise, SAR is evaluated using the subsequent highest average RF output channel until the reported SAR result is ≤ 1.2 W/kg or all channels are measured. When there are multiple untested channels having the same subsequent highest average RF output power, the channel with higher frequency from the lowest 802.11 mode is considered for SAR measurements (See Section 6.2.5).

6.2.7 Subsequent Test Configuration Procedures

For OFDM configurations in each frequency band and aggregated band, SAR is evaluated for initial test configuration using the fixed test position or the initial test position procedure. When the highest reported SAR (for the initial test configuration), adjusted by the ratio of the specified maximum output power of the subsequent test configuration to initial test configuration, is ≤ 1.2 W/kg, no additional SAR tests for the subsequent test configurations are required.

6.2.8 MIMO SAR considerations

Per KDB Publication 248227 D01v02r02, the simultaneous SAR provisions in KDB Publication 447498 D01v06 should be applied to determine simultaneous transmission SAR test exclusion for WIFI MIMO. If the sum of 1g single transmission chain SAR measurements is <1.6 W/kg, no additional SAR measurements for MIMO are required. Alternatively, SAR for MIMO can be measured with all antennas transmitting simultaneously at the specified maximum output power of MIMO operation.

7 RF CONDUCTED POWERS

7.1 WLAN Conducted Powers

7.1.1 Variant 1

Table 7-1
2.4 GHz WLAN Average RF Power – Ant WF1

2.4GHz Conducted Power [dBm]				
Freq [MHz]	Channel	IEEE Transmission Mode		
		802.11b	802.11g	802.11n
		Average	Average	Average
2412	1	**19.50**	14.90	15.00
2417	2	N/A	19.50	19.50
2437	6	19.49	19.50	19.40
2452	9	N/A	19.50	19.50
2457	10	19.32	18.00	18.00
2462	11	18.50	14.40	14.50

Table 7-2
2.4 GHz WLAN Average RF Power – Ant WF2

2.4GHz Conducted Power [dBm]				
Freq [MHz]	Channel	IEEE Transmission Mode		
		802.11b	802.11g	802.11n
		Average	Average	Average
2412	1	19.36	14.90	15.00
2417	2	N/A	19.75	19.75
2437	6	19.41	19.60	19.75
2452	9	N/A	19.75	19.75
2457	10	**19.73**	18.00	18.00
2462	11	18.36	14.50	14.50

Table 7-3
5 GHz WLAN Average RF Power – Ant WF1

5GHz (40MHz) Conducted Power [dBm]		
Freq [MHz]	Channel	IEEE Transmission Mode
		802.11n
		Average
5190	38	14.00
5230	46	15.68
5270	54	**16.50**
5310	62	13.89

5GHz (80MHz) Conducted Power [dBm]		
Freq [MHz]	Channel	IEEE Transmission Mode
		802.11ac
		Average
5530	106	13.50
5610	122	**15.00**
5690	138	14.93
5775	155	**14.25**

Table 7-4
5 GHz WLAN Average RF Power – Ant WF2

5GHz (40MHz) Conducted Power [dBm]		
Freq [MHz]	Channel	IEEE Transmission Mode
		802.11n
		Average
5190	38	13.86
5230	46	**17.24**
5270	54	16.00
5310	62	14.00

5GHz (80MHz) Conducted Power [dBm]		
Freq [MHz]	Channel	IEEE Transmission Mode
		802.11ac
		Average
5530	106	13.44
5610	122	15.45
5690	138	**15.50**
5775	155	**15.75**

7.1.2 Variant 2

Table 7-6
2.4 GHz WLAN Average RF Power – Ant WF1

2.4GHz Conducted Power [dBm]				
Freq [MHz]	Channel	IEEE Transmission Mode		
		802.11b	802.11g	802.11n
		Average	Average	Average
2412	1	**19.50**	14.92	15.00
2417	2	N/A	19.48	19.47
2437	6	19.36	19.50	19.41
2452	9	N/A	19.50	19.50
2457	10	19.48	17.95	18.00
2462	11	18.45	14.45	14.43

Table 7-7
2.4 GHz WLAN Average RF Power – Ant WF2

2.4GHz Conducted Power [dBm]				
Freq [MHz]	Channel	IEEE Transmission Mode		
		802.11b	802.11g	802.11n
		Average	Average	Average
2412	1	19.74	14.92	15.00
2417	2	N/A	19.66	19.70
2437	6	19.74	19.65	19.73
2452	9	N/A	19.75	19.71
2457	10	**19.75**	17.98	18.00
2462	11	18.50	14.30	14.50

Table 7-8
5 GHz WLAN Average RF Power – Ant WF1

5GHz (40MHz) Conducted Power [dBm]		
Freq [MHz]	Channel	IEEE Transmission Mode
		802.11n
		Average
5190	38	13.95
5230	46	15.70
5270	54	**16.50**
5310	62	14.00

5GHz (80MHz) Conducted Power [dBm]		
Freq [MHz]	Channel	IEEE Transmission Mode
		802.11ac
		Average
5530	106	13.41
5610	122	14.93
5690	138	**15.00**
5775	155	**14.25**

Table 7-9
5 GHz WLAN Average RF Power – Ant WF2

5GHz (40MHz) Conducted Power [dBm]		
Freq [MHz]	Channel	IEEE Transmission Mode
		802.11n
		Average
5190	38	13.93
5230	46	**17.22**
5270	54	15.93
5310	62	14.00

5GHz (80MHz) Conducted Power [dBm]		
Freq [MHz]	Channel	IEEE Transmission Mode
		802.11ac
		Average
5530	106	13.34
5610	122	**15.50**
5690	138	15.37
5775	155	**15.74**

7.1.3 Notes for WLAN

Justification for test configurations for WLAN per KDB Publication 248227 D01v02r02:

- Power measurements were performed for the transmission mode configuration with the highest maximum output power specified for production units.
- For transmission modes with the same maximum output power specification, powers were measured for the largest channel bandwidth, lowest order modulation and lowest data rate.

- For transmission modes with identical maximum specified output power, channel bandwidth, modulation and data rates, power measurements were required for all identical configurations.
- For each transmission mode configuration, powers were measured for the highest and lowest channels; and at the mid-band channel(s) when there were at least 3 channels supported. For configurations with multiple mid-band channels, due to an even number of channels, both channels were measured.
- The WLAN chipset in this device is produced by two different suppliers. The electrically identical modules are manufactured with the identical mechanical structure to meet the same specifications and functions. Two device variants are referenced as Variant 1 and Variant 2 in this report.
- WLAN SAR worst case configuration was spotchecked on Variant 1 and Variant 2. The Variant with the highest reported SAR value was evaluated for the remaining WLAN configurations.
- Full power measurements were performed for variant 1 per FCC KDB Procedures 248227. Additional power measurements for variant 2 were additionally performed to support the SAR test configurations.

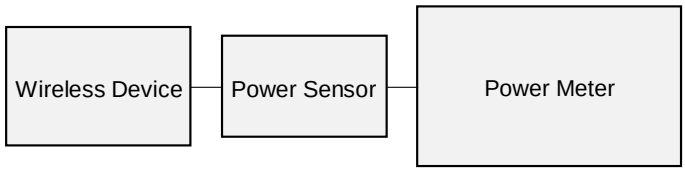


Figure 7-1
WLAN Power Measurement Setup

7.2 Bluetooth Conducted Powers

Table 7-11
Maximum Bluetooth Average RF Power – Ant WF1 – Variant 1

Frequency [MHz]	Modulation	Data Rate [Mbps]	Channel No.	Avg Conducted Power	
				[dBm]	[mW]
2402	GFSK	1.0	0	**19.68**	92.897
2441	GFSK	1.0	39	19.10	81.283
2480	GFSK	1.0	78	19.65	92.257

Table 7-11
Maximum Bluetooth Average RF Power – Ant WF2 – Variant 1

Frequency [MHz]	Modulation	Data Rate [Mbps]	Channel No.	Avg Conducted Power	
				[dBm]	[mW]
2402	GFSK	1.0	0	19.58	90.782
2441	GFSK	1.0	39	**19.70**	93.325
2480	GFSK	1.0	78	19.40	87.096

Table 7-11
Maximum Bluetooth Average RF Power – Ant WF1 – Variant 2

Frequency [MHz]	Modulation	Data Rate [Mbps]	Channel No.	Avg Conducted Power	
				[dBm]	[mW]
2402	GFSK	1.0	0	**19.75**	94.406
2441	GFSK	1.0	39	19.67	92.683
2480	GFSK	1.0	78	19.22	83.560

Table 7-11
Maximum Bluetooth Average RF Power – Ant WF2 – Variant 2

Frequency [MHz]	Modulation	Data Rate [Mbps]	Channel No.	Avg Conducted Power	
				[dBm]	[mW]
2402	GFSK	1.0	0	19.79	95.280
2441	GFSK	1.0	39	**19.82**	95.940
2480	GFSK	1.0	78	19.80	95.499

Table 7-11
Reduced Bluetooth Average RF Power – Ant WF1 – Variant 2

Frequency [MHz]	Modulation	Data Rate [Mbps]	Channel No.	Avg Conducted Power	
				[dBm]	[mW]
2402	GFSK	1.0	0	12.70	18.621
2441	GFSK	1.0	39	**12.89**	19.454
2480	GFSK	1.0	78	12.56	18.030

Table 7-11
Reduced Bluetooth Average RF Power – Ant WF2 – Variant 2

Frequency [MHz]	Modulation	Data Rate [Mbps]	Channel No.	Avg Conducted Power	
				[dBm]	[mW]
2402	GFSK	1.0	0	**12.88**	19.409
2441	GFSK	1.0	39	12.10	16.218
2480	GFSK	1.0	78	12.78	18.967

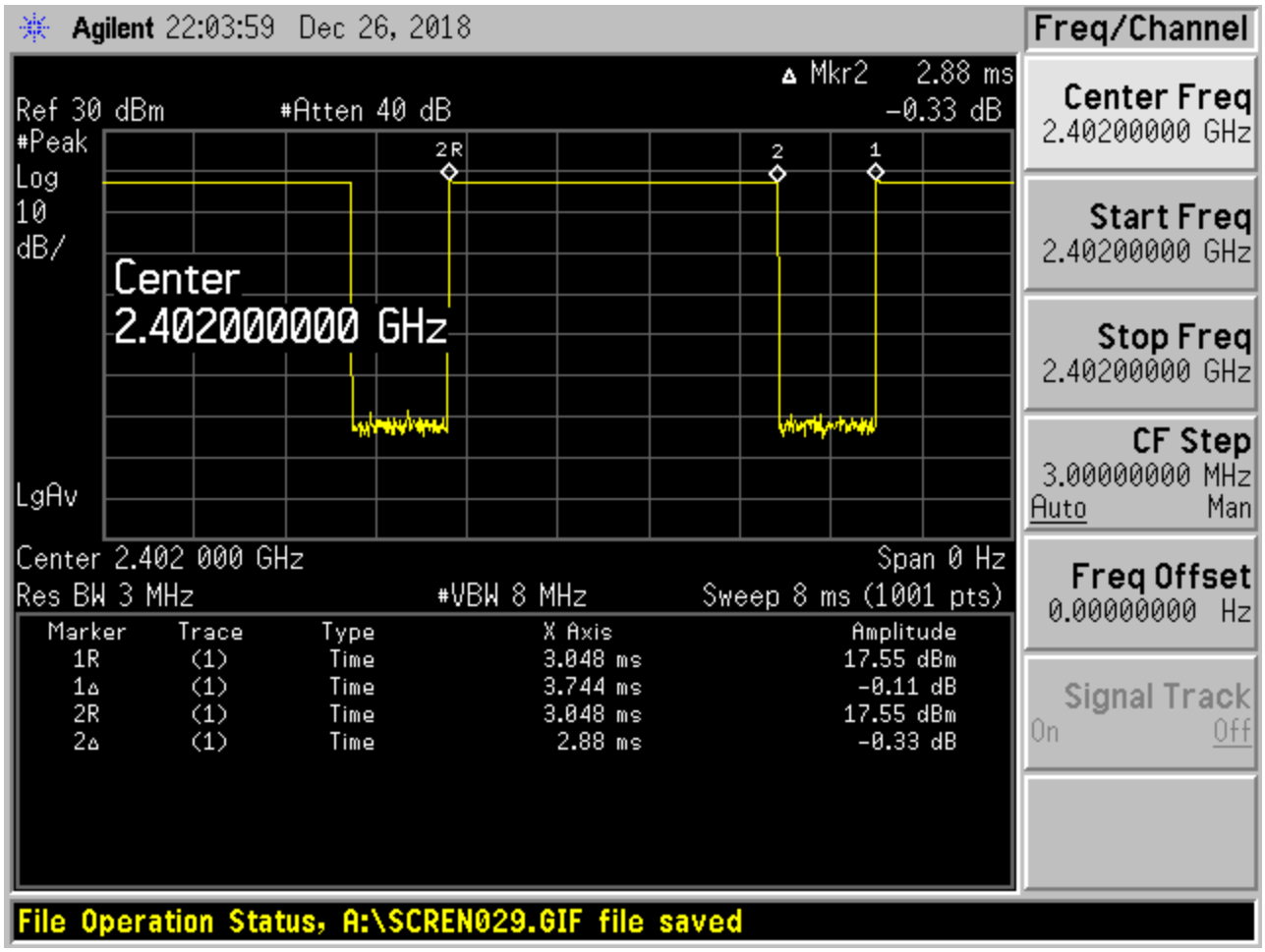


Figure 7-2
Bluetooth Transmission Plot & Duty Cycle Calculation – Ant WF1 Variant 1

$$Duty\ Cycle = \frac{Pulse\ Width}{Period} * 100\% = \frac{2.880ms}{3.744ms} * 100\% = 76.9\%$$

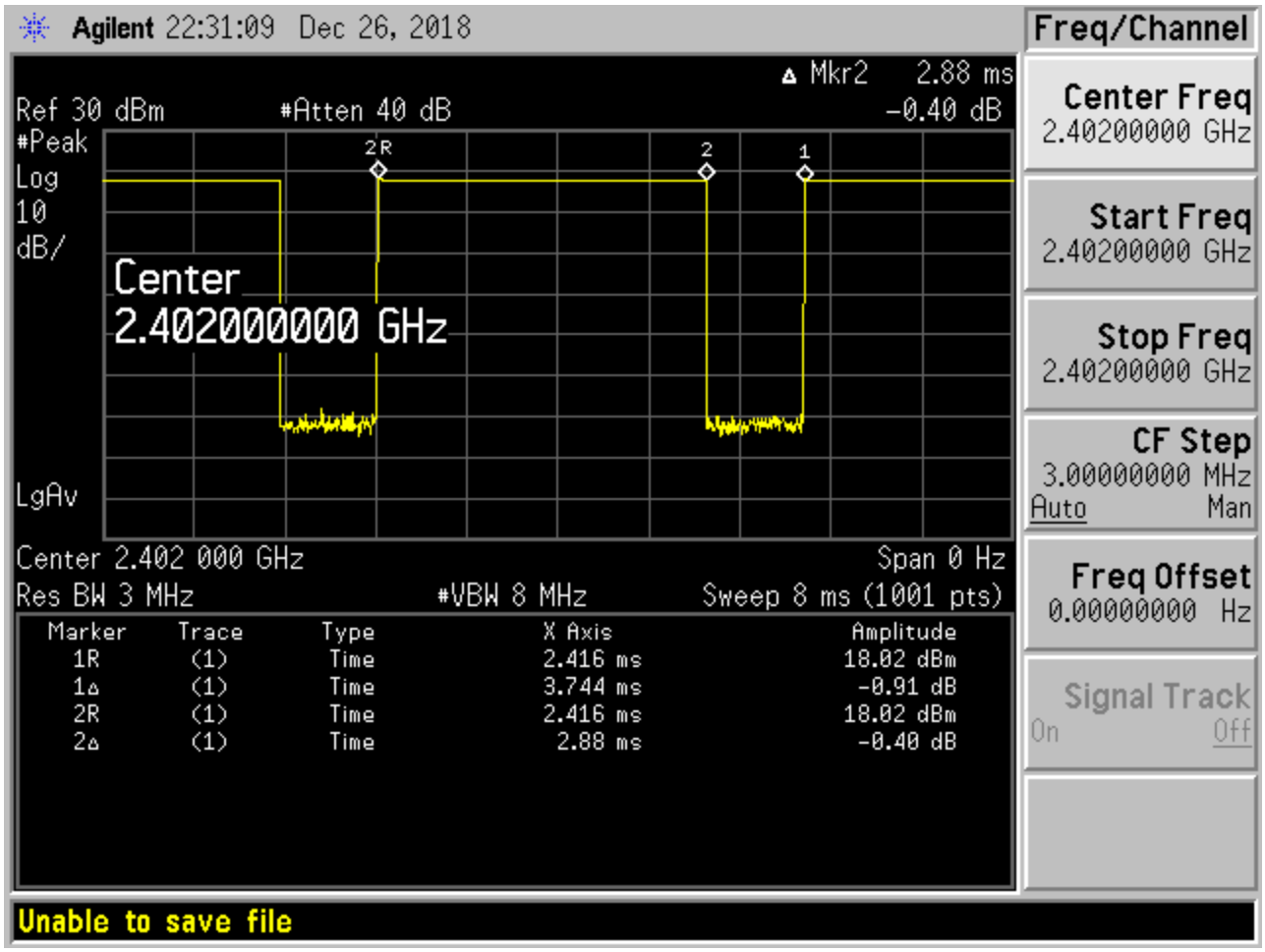


Figure 7-3
Bluetooth Transmission Plot & Duty Cycle Calculation – Ant WF1 Variant 2

$$Duty\ Cycle = \frac{Pulse\ Width}{Period} * 100\% = \frac{2.880ms}{3.744ms} * 100\% = 76.9\%$$

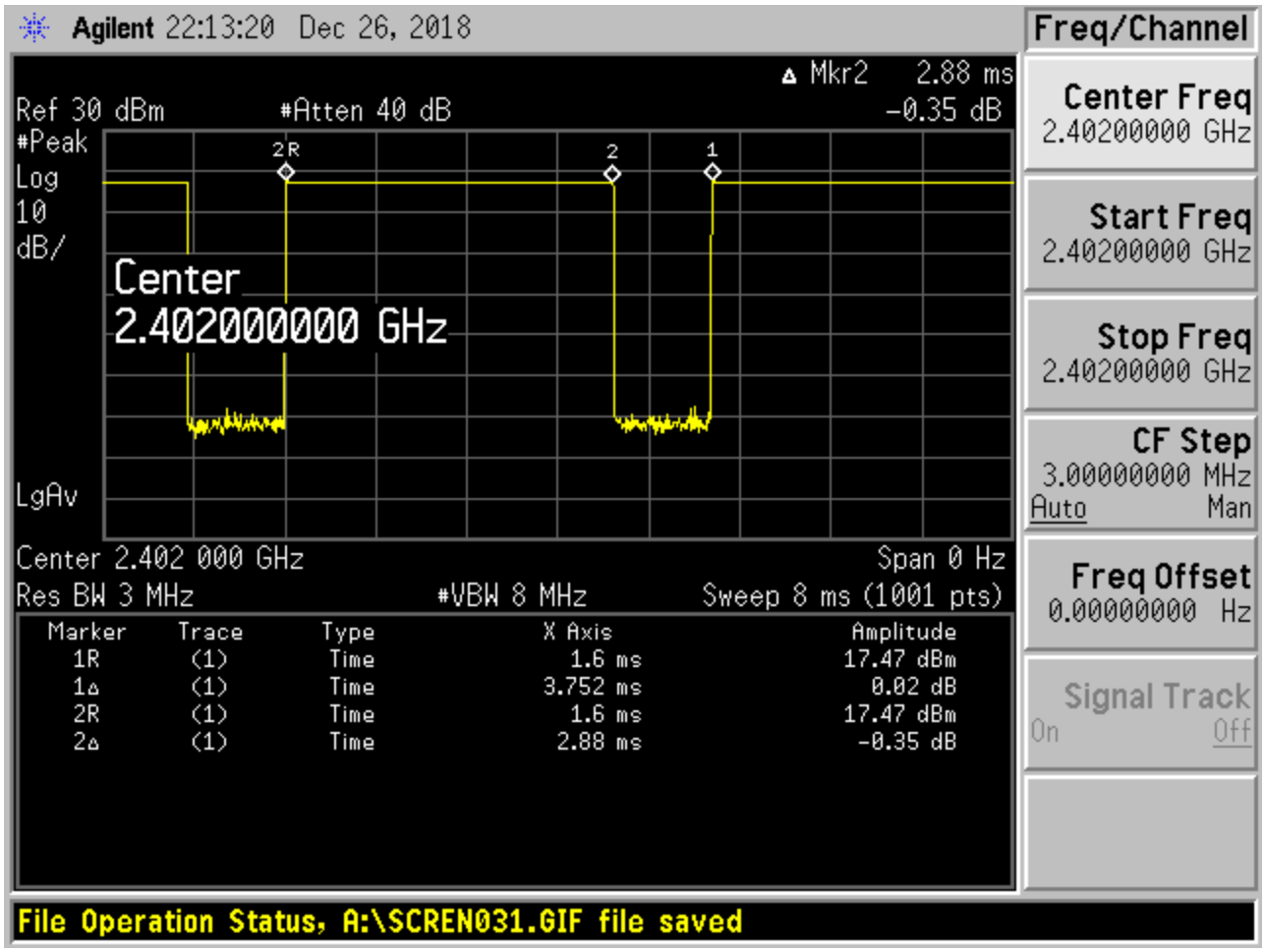


Figure 7-4
Bluetooth Transmission Plot & Duty Cycle Calculation – Ant WF2 Variant 1

$$Duty\ Cycle = \frac{Pulse\ Width}{Period} * 100\% = \frac{2.880ms}{3.752ms} * 100\% = 76.8\%$$

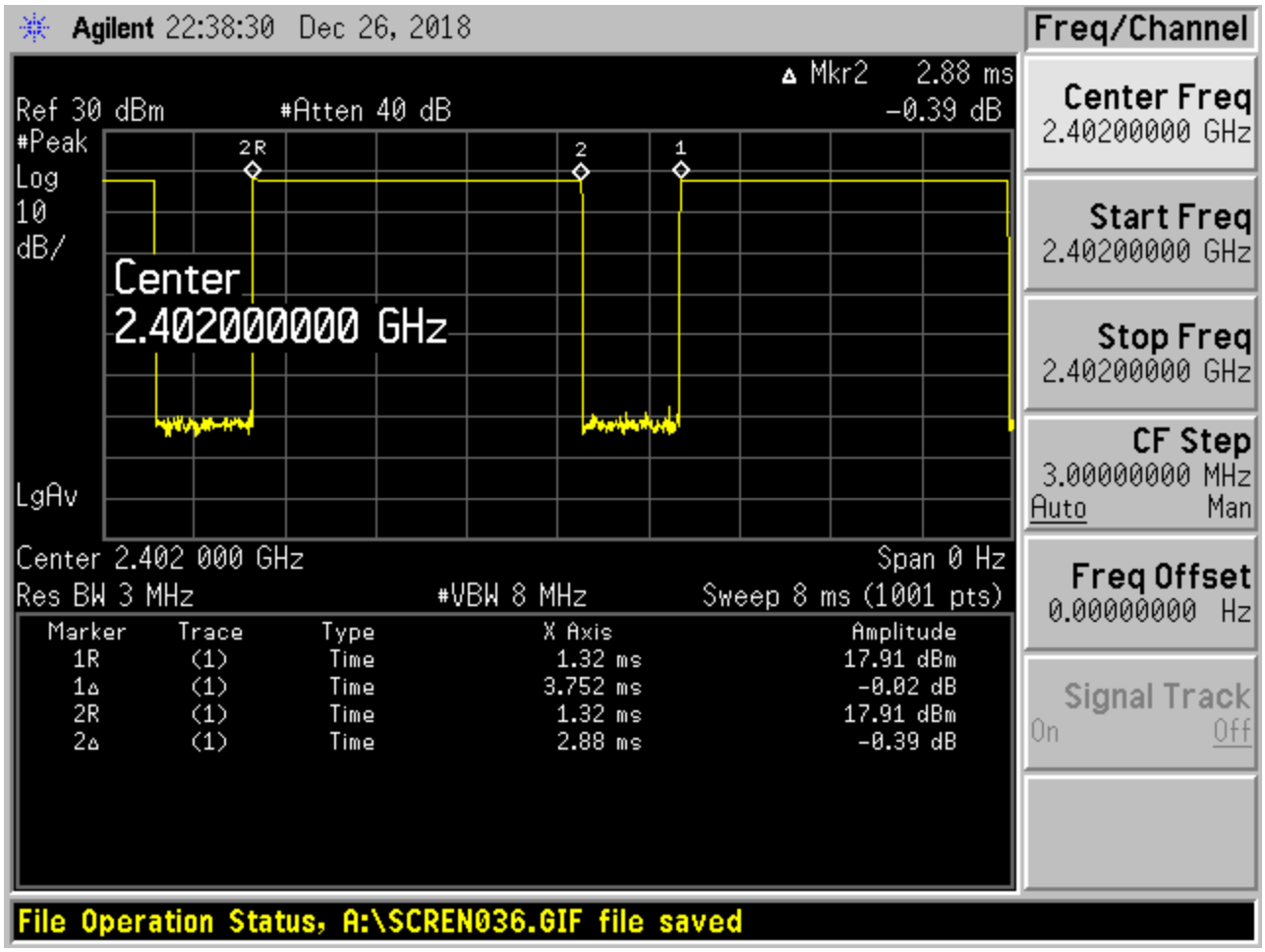


Figure 7-5
Bluetooth Transmission Plot & Duty Cycle Calculation – Ant WF2 Variant 2

$$Duty\ Cycle = \frac{Pulse\ Width}{Period} * 100\% = \frac{2.880ms}{3.752ms} * 100\% = 76.8\%$$

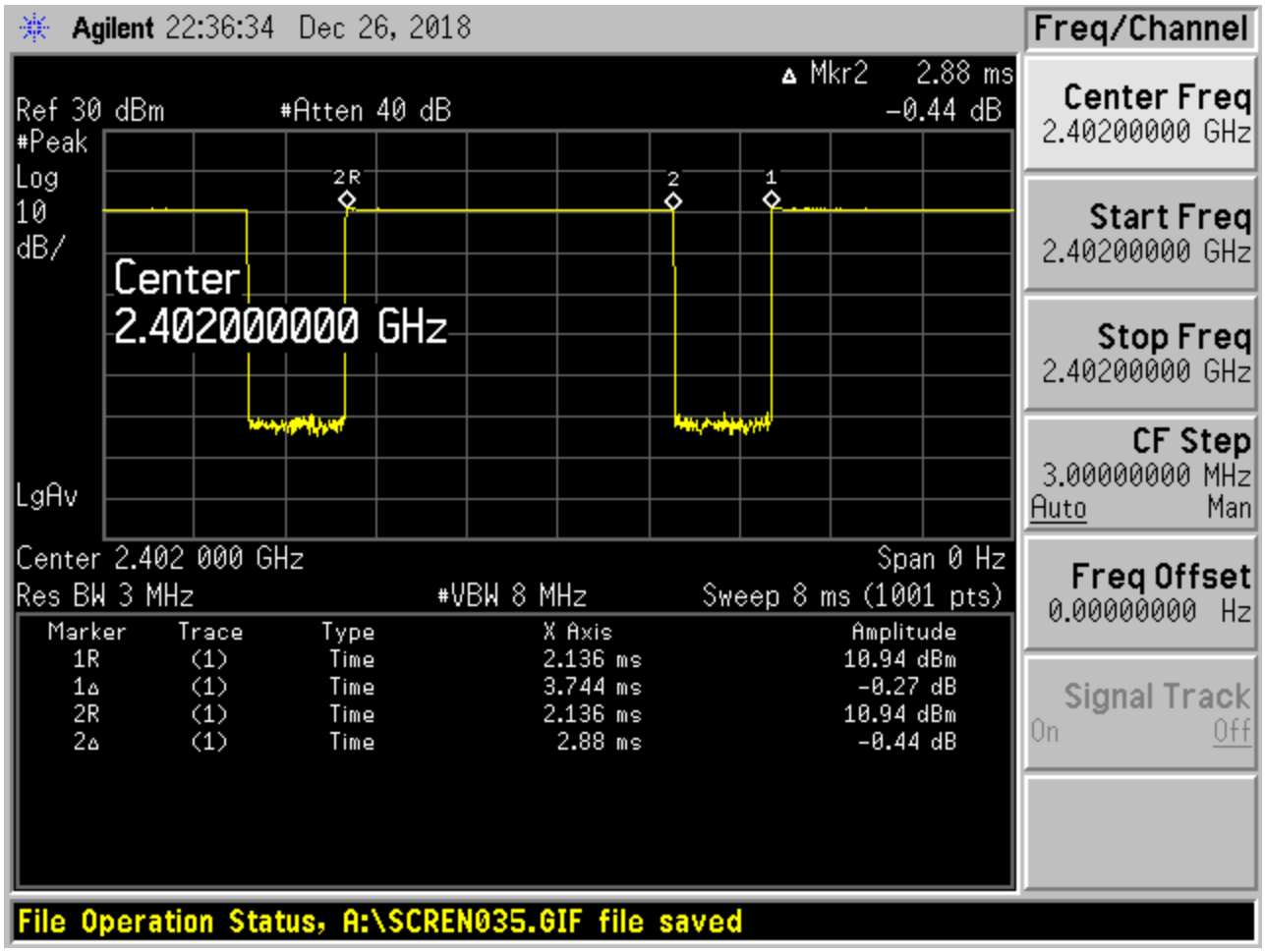


Figure 7-6
Reduced Bluetooth Transmission Plot & Duty Cycle Calculation – Ant WF1 Variant 2

$$Duty\ Cycle = \frac{Pulse\ Width}{Period} * 100\% = \frac{2.880ms}{3.744ms} * 100\% = 76.9\%$$

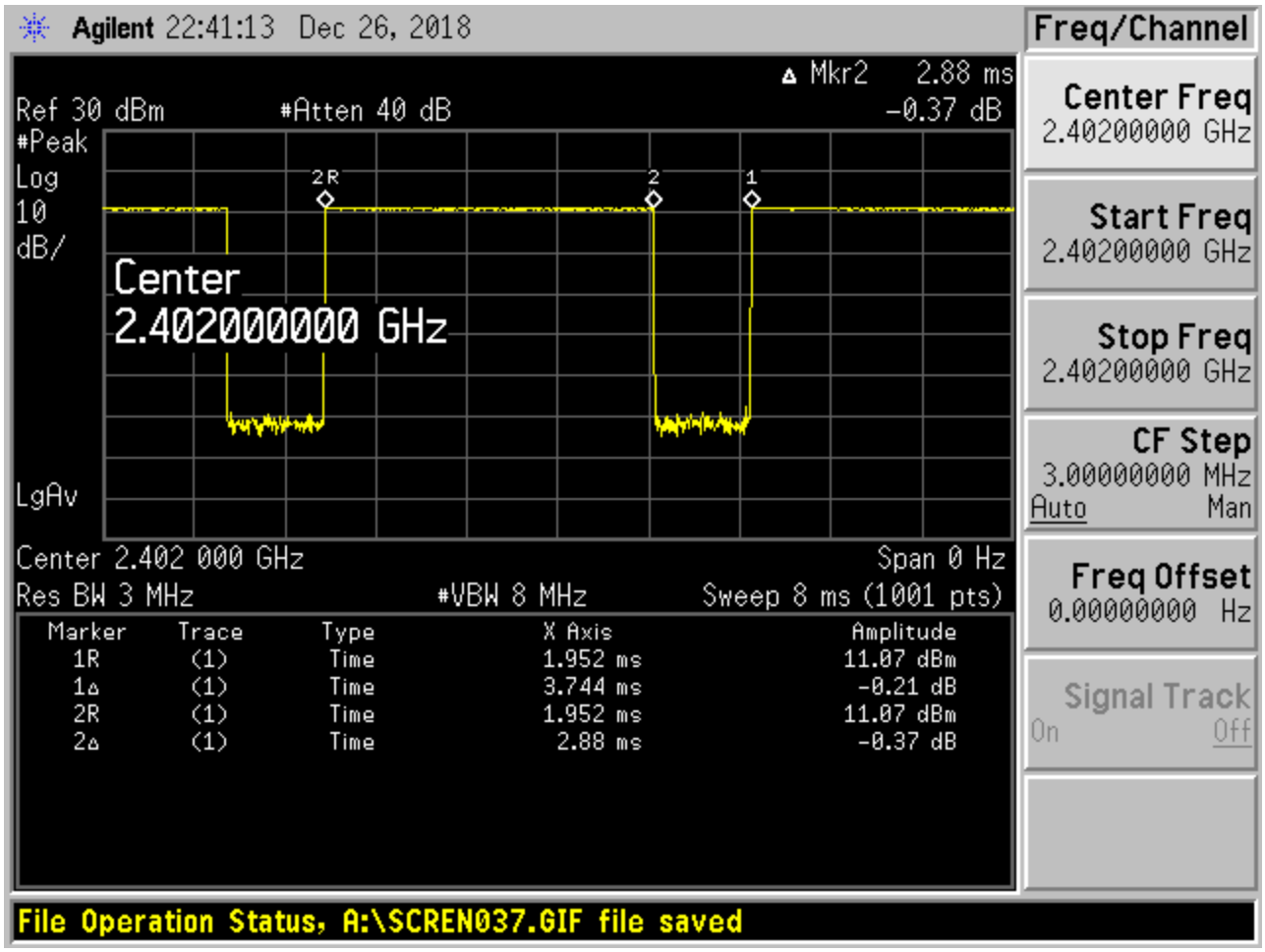


Figure 7-7
Reduced Bluetooth Transmission Plot & Duty Cycle Calculation – Ant WF2 Variant 2

$$Duty\ Cycle = \frac{Pulse\ Width}{Period} * 100\% = \frac{2.880ms}{3.744ms} * 100\% = 76.9\%$$

7.2.1 Bluetooth Power Reduction Verification Summary

Antenna	Mode/Band	Condition (s)	Maximum Target Power [dBm] (Tolerance [dB])	Reduced Target Power [dBm] (Tolerance [dB])	Maximum Measured Power [dBm]	Reduced Measured Power [dBm]	Verdict
WF1	2.4 GHz Bluetooth	5 GHz WLAN ON ANT WF1	18.5 (+1.5/-2.0)	11.5 (+1.5/-2.0)	19.27	12.9	PASS
	2.4 GHz Bluetooth	5 GHz WLAN ON ANT WF2	18.5 (+1.5/-2.0)	11.5 (+1.5/-2.0)	19.24	12.94	PASS
	2.4 GHz Bluetooth	5 GHz WLAN ON ANT WF1 & WF2	18.5 (+1.5/-2.0)	11.5 (+1.5/-2.0)	19.32	12.96	PASS
WF2	2.4 GHz Bluetooth	5 GHz WLAN ON ANT WF1	18.5 (+1.5/-2.0)	11.5 (+1.5/-2.0)	19.1	12.83	PASS
	2.4 GHz Bluetooth	5 GHz WLAN ON ANT WF2	18.5 (+1.5/-2.0)	11.5 (+1.5/-2.0)	19.08	12.8	PASS
	2.4 GHz Bluetooth	5 GHz WLAN ON ANT WF1 & WF2	18.5 (+1.5/-2.0)	11.5 (+1.5/-2.0)	19.13	12.77	PASS

Conducted powers were measured for each Mode/Band and applied condition. All conducted power measurements were verified to be within tolerance.

7.2.2 Notes for Bluetooth

- The Bluetooth chipset in this device is produced by two different suppliers. The electrically identical modules are manufactured with the identical mechanical structure to meet the same specifications and functions. Two device variants are referenced as Variant 1 and Variant 2 in this report.
- Bluetooth SAR worst case configuration was spotchecked on Variant 1 and Variant 2. The Variant with the highest reported SAR value was evaluated for the remaining Bluetooth configurations.
- Full power measurements were performed for Variant 1 and Variant 2 per FCC KDB Procedures 248227.

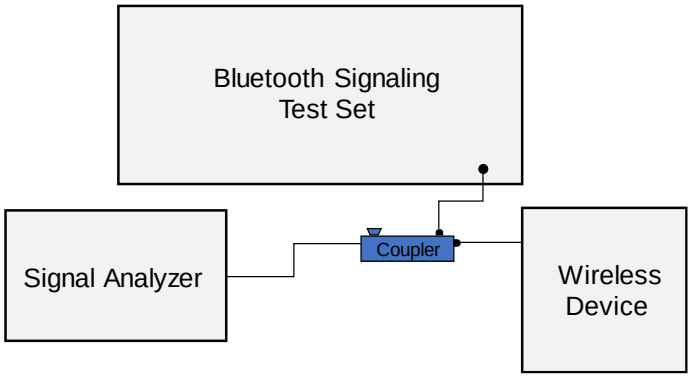


Figure 7-8
Bluetooth Power Measurement Setup

8 SYSTEM VERIFICATION

8.1 Tissue Verification

Table 8-1
Measured Tissue Properties

Calibrated for Tests Performed on:	Tissue Type	Tissue Temp During Calibration (˚C)	Measured Frequency (MHz)	Measured Conductivity, σ (S/m)	Measured Dielectric Constant, ε	TARGET Conductivity, σ (S/m)	TARGET Dielectric Constant, ε	% dev σ	% dev ε
12/26/2018	2450B	23.0	2400	1.985	50.907	1.902	52.767	*4.36%*	*-3.52%*
			2450	2.044	50.766	1.950	52.700	*4.82%*	*-3.67%*
			2500	2.105	50.624	2.021	52.636	*4.16%*	*-3.82%*
1/2/2019	2450B	21.8	2400	1.960	51.101	1.902	52.767	*3.05%*	*-3.16%*
			2450	2.004	51.017	1.950	52.700	*2.77%*	*-3.19%*
			2500	2.050	50.940	2.021	52.636	*1.43%*	*-3.22%*
12/24/2018	5200B-5800B	21.0	5180	5.361	47.407	5.276	49.041	*1.61%*	*-3.33%*
			5200	5.388	47.351	5.299	49.014	*1.68%*	*-3.39%*
			5220	5.419	47.325	5.323	48.987	*1.80%*	*-3.39%*
			5240	5.452	47.294	5.346	48.960	*1.98%*	*-3.40%*
			5260	5.489	47.252	5.369	48.933	*2.24%*	*-3.44%*
			5280	5.511	47.199	5.393	48.906	*2.19%*	*-3.49%*
			5300	5.530	47.125	5.416	48.879	*2.10%*	*-3.59%*
			5320	5.564	47.123	5.439	48.851	*2.30%*	*-3.54%*
			5520	5.855	46.720	5.673	48.580	*3.21%*	*-3.83%*
			5540	5.880	46.670	5.696	48.553	*3.23%*	*-3.88%*
			5600	5.969	46.548	5.766	48.471	*3.52%*	*-3.97%*
			5620	5.995	46.533	5.790	48.444	*3.54%*	*-3.94%*
			5680	6.089	46.378	5.860	48.363	*3.91%*	*-4.10%*
			5700	6.131	46.364	5.883	48.336	*4.22%*	*-4.08%*
			5745	6.199	46.236	5.936	48.275	*4.43%*	*-4.22%*
			5765	6.206	46.206	5.959	48.248	*4.14%*	*-4.23%*
			5785	6.247	46.193	5.982	48.220	*4.43%*	*-4.20%*

The above measured tissue parameters were used in the DASY software. The DASY software was used to perform interpolation to determine the dielectric parameters at the SAR test device frequencies (per KDB Publication 865664 D01v01r04 and IEEE 1528-2013 6.6.1.2). The tissue parameters listed in the SAR test plots may slightly differ from the table above due to significant digit rounding in the software.

8.2 Test System Verification

Prior to SAR assessment, the system is verified to ±10% of the SAR measurement on the reference dipole at the time of calibration by the calibration facility. Full system validation status and result summary can be found in Appendix E.

Table 8-2
System Verification Results – 1g

SAR System #	Tissue Frequency (MHz)	Tissue Type	Date:	Amb. Temp (°C)	Liquid Temp (°C)	Input Power (W)	Source SN	Probe SN	Measured SAR_{1g} (W/kg)	1 W Target SAR_{1g} (W/kg)	1 W Normalized SAR_{1g} (W/kg)	$Deviation_{1g}$ (%)
AM4	2450	BODY	12/26/2018	22.3	21.4	0.100	750	3119	5.220	51.200	52.200	1.95%
AM2	2450	BODY	01/02/2019	20.1	20.3	0.100	945	7416	4.840	49.400	48.400	-2.02%
AM3	5250	BODY	12/24/2018	22.3	20.8	0.050	1163	7420	3.710	77.700	74.200	-4.50%
AM3	5600	BODY	12/24/2018	22.3	20.8	0.050	1123	7420	3.620	77.600	72.400	-6.70%
AM3	5750	BODY	12/24/2018	22.3	20.8	0.050	1123	7420	3.670	74.700	73.400	-1.74%

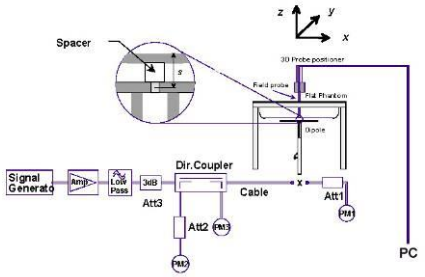


Figure 8-1
System Verification Setup Diagram

Figure 8-2
System Verification Setup Photo

9 SAR DATA SUMMARY

9.1 Standalone Body SAR Data

Table 9-1
2.4 GHz WLAN Body SAR Data

MEASUREMENT RESULTS																					
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Variant	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	SAR (1g) (W/kg)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g) (W/kg)	SAR (10g) (W/kg)	Reported SAR (10g) (W/kg)	Plot #
MHz	Ch.																				
2412	1	802.11b	DSSS	22	19.50	19.50	0.08	0 mm	WF1	1	DLXXT01BLT5H	1	back	100.0	0.122	1.000	1.000	0.122	0.057	0.057	
2412	1	802.11b	DSSS	22	19.50	19.50	-0.10	0 mm	WF1	1	DLXXT01BLT5H	1	bottom	100.0	1.190	1.000	1.000	1.190	0.433	0.433	A1
2412	1	802.11b	DSSS	22	19.50	19.50	-0.07	0 mm	WF1	2	DLXXT01HLT5H	1	bottom	100.0	1.100	1.000	1.000	1.100	0.402	0.402	
2437	6	802.11b	DSSS	22	19.50	19.49	-0.14	0 mm	WF1	1	DLXXT01BLT5H	1	bottom	100.0	1.150	1.002	1.000	1.152	0.427	0.428	
2457	10	802.11b	DSSS	22	19.50	19.32	-0.13	0 mm	WF1	1	DLXXT01BLT5H	1	bottom	100.0	1.140	1.042	1.000	1.188	0.422	0.440	
2412	1	802.11b	DSSS	22	19.50	19.50	0.04	0 mm	WF1	1	DLXXT01BLT5H	1	left	100.0	0.188	1.000	1.000	0.188	0.078	0.078	
2457	10	802.11b	DSSS	22	19.75	19.73	-0.04	0 mm	WF2	1	DLXXT01BLT5H	1	back	100.0	0.148	1.005	1.000	0.149	0.070	0.070	
2412	1	802.11b	DSSS	22	19.75	19.36	0.01	0 mm	WF2	1	DLXXT01BLT5H	1	bottom	100.0	1.010	1.094	1.000	1.105	0.373	0.408	
2437	6	802.11b	DSSS	22	19.75	19.41	-0.03	0 mm	WF2	1	DLXXT01BLT5H	1	bottom	100.0	1.090	1.081	1.000	1.178	0.404	0.437	
2437	6	802.11b	DSSS	22	19.75	19.74	-0.01	0 mm	WF2	2	DLXXT01HLT5H	1	bottom	100.0	1.170	1.002	1.000	1.172	0.432	0.433	
2457	10	802.11b	DSSS	22	19.75	19.73	-0.04	0 mm	WF2	1	DLXXT01BLT5H	1	bottom	100.0	1.010	1.005	1.000	1.015	0.381	0.383	
2457	10	802.11b	DSSS	22	19.75	19.73	0.01	0 mm	WF2	1	DLXXT01BLT5H	1	right	100.0	0.213	1.005	1.000	0.214	0.087	0.087	
2412	1	802.11b	DSSS	22	19.50	19.50	-0.05	0 mm	WF1	1	DLXXT01BLT5H	1	bottom	100.0	1.140	1.000	1.000	1.140	0.414	0.414	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population															Body 1.6 W/kg (mW/g) averaged over 1 gram						

Note: Blue entry indicates variability measurement.

Table 9-2
U-NII-1 WLAN Body SAR Data

MEASUREMENT RESULTS																					
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Variant	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	SAR (1g) (W/kg)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g) (W/kg)	SAR (10g) (W/kg)	Reported SAR (10g) (W/kg)	Plot #
MHz	Ch.																				
5230	46	802.11n	OFDM	40	17.25	17.24	-0.16	0 mm	WF2	1	DLXXT019LT5H	13.5	back	97.3	0.217	1.002	1.028	0.224	0.084	0.087	
5190	38	802.11n	OFDM	40	14.50	13.86	0.14	0 mm	WF2	1	DLXXT019LT5H	13.5	bottom	97.3	0.419	1.159	1.028	0.499	0.140	0.167	
5230	46	802.11n	OFDM	40	17.25	17.24	-0.02	0 mm	WF2	1	DLXXT019LT5H	13.5	bottom	97.3	1.080	1.002	1.028	1.112	0.365	0.376	
5230	46	802.11n	OFDM	40	17.25	17.22	-0.01	0 mm	WF2	2	DLXXT01JLT5H	13.5	bottom	97.3	1.060	1.007	1.028	1.097	0.357	0.370	
5230	46	802.11n	OFDM	40	17.25	17.24	-0.18	0 mm	WF2	1	DLXXT019LT5H	13.5	right	97.3	0.330	1.002	1.028	0.340	0.124	0.128	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population															Body 1.6 W/kg (mW/g) averaged over 1 gram						

Table 9-2
U-NII-2A WLAN Body SAR Data

MEASUREMENT RESULTS																						
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Variant	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	SAR (10g)	Reported SAR (10g)	Plot #
MHz	Ch.														(W/kg)			(W/kg)	(W/kg)	(W/kg)	
5270	54	802.11n	OFDM	40	16.50	16.50	-0.01	0 mm	WF1	1	DLXXT019LT5H	13.5	back	97.5	0.192	1.000	1.026	0.197	0.073	0.075	
5270	54	802.11n	OFDM	40	16.50	16.50	0.18	0 mm	WF1	1	DLXXT019LT5H	13.5	bottom	97.5	1.140	1.000	1.026	**1.170**	0.386	0.396	A2
5270	54	802.11n	OFDM	40	16.50	16.50	-0.04	0 mm	WF1	2	DLXXT01JLT5H	13.5	bottom	97.5	1.020	1.000	1.026	1.047	0.344	0.353	
5310	62	802.11n	OFDM	40	14.00	13.89	-0.01	0 mm	WF1	1	DLXXT019LT5H	13.5	bottom	97.5	0.640	1.026	1.026	0.674	0.212	0.223	
5270	54	802.11n	OFDM	40	16.50	16.50	-0.05	0 mm	WF1	1	DLXXT019LT5H	13.5	left	97.5	0.300	1.000	1.026	0.308	0.110	0.113	
5270	54	802.11n	OFDM	40	16.50	16.50	-0.04	0 mm	WF1	1	DLXXT019LT5H	13.5	bottom	97.5	1.140	1.000	1.026	**1.170**	0.374	0.384	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population															Body 1.6 W/kg (mW/g) averaged over 1 gram						

Note: Blue entry indicates variability measurement.

Table 9-3
U-NII-2C WLAN Body SAR Data

MEASUREMENT RESULTS																						
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Variant	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	SAR (10g)	Reported SAR (10g)	Plot #
MHz	Ch.														(W/kg)			(W/kg)	(W/kg)	(W/kg)	
5610	122	802.11ac	OFDM	80	15.25	15.00	-0.08	0 mm	WF1	1	DLXXT01BLT5H	29.3	back	95.0	0.137	1.059	1.053	0.153	0.052	0.058	
5610	122	802.11ac	OFDM	80	15.25	15.00	-0.03	0 mm	WF1	1	DLXXT01BLT5H	29.3	bottom	95.0	0.936	1.059	1.053	1.044	0.301	0.336	
5610	122	802.11ac	OFDM	80	15.25	14.93	0.05	0 mm	WF1	2	DLXXT01JLT5H	29.3	bottom	95.0	0.852	1.076	1.053	0.965	0.281	0.318	
5690	138	802.11ac	OFDM	80	15.25	14.93	0.14	0 mm	WF1	1	DLXXT01BLT5H	29.3	bottom	95.0	0.857	1.076	1.053	0.971	0.275	0.312	
5610	122	802.11ac	OFDM	80	15.25	15.00	0.10	0 mm	WF1	1	DLXXT01BLT5H	29.3	left	95.0	0.192	1.059	1.053	0.214	0.065	0.072	
5610	122	802.11ac	OFDM	80	15.50	15.50	0.18	0 mm	WF2	2	DLXXT01JLT5H	29.3	back	95.4	0.153	1.000	1.048	0.160	0.058	0.061	
5610	122	802.11ac	OFDM	80	15.50	15.50	0.10	0 mm	WF2	2	DLXXT01JLT5H	29.3	bottom	95.4	0.986	1.000	1.048	1.033	0.326	0.342	
5610	122	802.11ac	OFDM	80	15.50	15.45	0.14	0 mm	WF2	1	DLXXT01BLT5H	29.3	bottom	95.4	0.866	1.012	1.048	0.918	0.283	0.300	
5690	138	802.11ac	OFDM	80	15.50	15.37	-0.16	0 mm	WF2	2	DLXXT01JLT5H	29.3	bottom	95.4	0.899	1.030	1.048	0.970	0.299	0.323	
5610	122	802.11ac	OFDM	80	15.50	15.50	-0.01	0 mm	WF2	2	DLXXT01JLT5H	29.3	right	95.4	0.179	1.000	1.048	0.188	0.065	0.068	
5610	122	802.11ac	OFDM	80	15.50	15.50	-0.13	0 mm	WF2	2	DLXXT01JLT5H	29.3	bottom	95.4	0.956	1.000	1.048	1.002	0.313	0.328	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population															Body 1.6 W/kg (mW/g) averaged over 1 gram						

Note: Blue entry indicates variability measurement.

Table 9-4
U-NII-3 WLAN Body SAR Data

MEASUREMENT RESULTS																						
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Variant	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	SAR (10g)	Reported SAR (10g)	Plot #
MHz	Ch.														(W/kg)			(W/kg)	(W/kg)	(W/kg)	
5775	155	802.11ac	OFDM	80	14.75	14.25	0.04	0 mm	WF1	2	DLXXT01HLT5H	29.3	back	95.0	0.132	1.122	1.053	0.156	0.051	0.060	
5775	155	802.11ac	OFDM	80	14.75	14.25	-0.09	0 mm	WF1	2	DLXXT01HLT5H	29.3	bottom	95.0	0.963	1.122	1.053	1.138	0.314	0.371	
5775	155	802.11ac	OFDM	80	14.75	14.25	0.12	0 mm	WF1	1	DLXXT019LT5H	29.3	bottom	95.0	0.901	1.122	1.053	1.065	0.293	0.346	
5775	155	802.11ac	OFDM	80	14.75	14.25	0.15	0 mm	WF1	2	DLXXT01HLT5H	29.3	left	95.0	0.163	1.122	1.053	0.193	0.056	0.066	
5775	155	802.11ac	OFDM	80	15.75	15.74	-0.15	0 mm	WF2	2	DLXXT01HLT5H	29.3	back	95.4	0.134	1.002	1.048	0.141	0.000	0.054	
5775	155	802.11ac	OFDM	80	15.75	15.74	0.17	0 mm	WF2	2	DLXXT01HLT5H	29.3	bottom	95.4	1.080	1.002	1.048	1.134	0.355	0.373	
5775	155	802.11ac	OFDM	80	15.75	15.75	-0.04	0 mm	WF2	1	DLXXT019LT5H	29.3	bottom	95.4	1.030	1.000	1.048	1.079	0.341	0.357	
5775	155	802.11ac	OFDM	80	15.75	15.74	0.05	0 mm	WF2	2	DLXXT01HLT5H	29.3	right	95.4	0.169	1.002	1.048	0.177	0.060	0.063	
5775	155	802.11ac	OFDM	80	15.75	15.74	0.05	0 mm	WF2	2	DLXXT01HLT5H	29.3	bottom	95.4	0.996	1.002	1.048	1.046	0.326	0.342	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population															Body 1.6 W/kg (mW/g) averaged over 1 gram						

Note: Blue entry indicates variability measurement.

Table 9-6
Bluetooth Maximum Body SAR Data

MEASUREMENT RESULTS																				
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Variant	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	SAR (1g)	Scaling Factor (Cond Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	SAR (10g)	Reported SAR (10g)	Plot #
MHz	Ch.													(W/kg)			(W/kg)	(W/kg)	(W/kg)	
2402	0	Bluetooth	FHSS	20.0	19.75	-0.09	0 mm	WF1	2	DLXXT01HLT5H	1	back	76.9	0.143	1.059	1.008	0.153	0.064	0.068	
2402	0	Bluetooth	FHSS	20.0	19.75	-0.15	0 mm	WF1	2	DLXXT01HLT5H	1	bottom	76.9	1.070	1.059	1.008	1.142	0.380	0.406	A3
2402	0	Bluetooth	FHSS	20.0	19.68	0.06	0 mm	WF1	1	DLXXT01BLT5H	1	bottom	76.9	0.884	1.076	1.008	0.959	0.318	0.345	
2441	39	Bluetooth	FHSS	20.0	19.67	0.00	0 mm	WF1	2	DLXXT01HLT5H	1	bottom	76.9	1.030	1.079	1.008	1.120	0.367	0.400	
2480	78	Bluetooth	FHSS	20.0	19.22	0.00	0 mm	WF1	2	DLXXT01HLT5H	1	bottom	76.9	0.798	1.197	1.008	0.963	0.289	0.349	
2402	0	Bluetooth	FHSS	20.0	19.75	0.07	0 mm	WF1	2	DLXXT01HLT5H	1	left	76.9	0.158	1.059	1.008	0.169	0.064	0.068	
2441	39	Bluetooth	FHSS	20.0	19.82	0.12	0 mm	WF2	2	DLXXT01HLT5H	1	back	76.8	0.160	1.042	1.009	0.168	0.073	0.077	
2402	0	Bluetooth	FHSS	20.0	19.79	-0.13	0 mm	WF2	2	DLXXT01HLT5H	1	bottom	76.8	0.798	1.050	1.009	0.845	0.286	0.303	
2441	39	Bluetooth	FHSS	20.0	19.82	-0.13	0 mm	WF2	2	DLXXT01HLT5H	1	bottom	76.8	1.010	1.042	1.009	1.062	0.365	0.384	
2441	39	Bluetooth	FHSS	20.0	19.70	0.06	0 mm	WF2	1	DLXXT01BLT5H	1	bottom	76.8	0.909	1.072	1.009	0.983	0.338	0.366	
2480	78	Bluetooth	FHSS	20.0	19.80	-0.13	0 mm	WF2	2	DLXXT01HLT5H	1	bottom	76.8	0.840	1.047	1.009	0.887	0.312	0.330	
2441	39	Bluetooth	FHSS	20.0	19.82	0.07	0 mm	WF2	2	DLXXT01HLT5H	1	right	76.8	0.224	1.042	1.009	0.236	0.087	0.091	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Body 1.6 W/kg (mW/g) averaged over 1 gram													

Note: The reported SAR was scaled to the 77.5% transmission duty factor to determine compliance since the duty factor of the device is permanently limited to 77.5% per the manufacturer.

Table 9-7
Bluetooth Reduced Body SAR Data

MEASUREMENT RESULTS																				
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Variant	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	SAR (1g)	Scaling Factor (Cond Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	SAR (10g)	Reported SAR (10g)	Plot #
MHz	Ch.													(W/kg)			(W/kg)	(W/kg)	(W/kg)	
2441	39	Bluetooth	FHSS	13.00	12.89	0.20	0 mm	WF1	2	DLXXT01HLT5H	1	back	76.9	0.018	1.026	1.008	0.018	0.005	0.006	
2441	39	Bluetooth	FHSS	13.00	12.89	-0.12	0 mm	WF1	2	DLXXT01HLT5H	1	bottom	76.9	0.194	1.026	1.008	0.201	0.067	0.069	
2441	39	Bluetooth	FHSS	13.00	12.89	0.16	0 mm	WF1	2	DLXXT01HLT5H	1	left	76.9	0.025	1.026	1.008	0.026	0.009	0.009	
2402	0	Bluetooth	FHSS	13.00	12.88	0.17	0 mm	WF2	2	DLXXT00ALT5J	1	back	76.9	0.010	1.028	1.008	0.010	0.003	0.003	
2402	0	Bluetooth	FHSS	13.00	12.88	0.02	0 mm	WF2	2	DLXXT00ALT5J	1	bottom	76.9	0.120	1.028	1.008	0.124	0.041	0.043	
2402	0	Bluetooth	FHSS	13.00	12.88	0.09	0 mm	WF2	2	DLXXT00ALT5J	1	right	76.9	0.017	1.028	1.008	0.018	0.005	0.005	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Body 1.6 W/kg (mW/g) averaged over 1 gram													

Note: The reported SAR was scaled to the 77.5% transmission duty factor to determine compliance since the duty factor of the device is permanently limited to 77.5% per the manufacturer.

9.2 SAR Test Notes

General Notes:

1. The test data reported are the worst-case SAR values according to test procedures specified in FCC KDB Publication 616217 D04v01r02 and FCC KDB Publication 447498 D01v06.
2. Batteries are fully charged at the beginning of the SAR measurements.
3. Liquid tissue depth was at least 15.0 cm for all frequencies.
4. The manufacturer has confirmed that the device(s) tested have the same physical, mechanical and thermal characteristics and are within operational tolerances expected for production units.
5. SAR results were scaled to the maximum allowed power to demonstrate compliance per FCC KDB Publication 447498 D01v06.
6. Per FCC KDB 865664 D01v01r04, variability SAR tests were performed when the measured SAR results for a frequency band were greater than or equal to 0.8 W/kg. Repeated SAR measurements are highlighted in the tables above for clarity. Please see Section 11 for variability analysis.
7. FCC KDB Publication 616217 D04v01r02 Section 4.3, SAR tests are required for the back surface and edges of the tablet with the tablet touching the phantom. The SAR Exclusion Threshold in FCC KDB 447498 D01v06 was applied to determine SAR test exclusion for adjacent edge configurations.

WLAN/Bluetooth Notes:

1. Justification for test configurations for WLAN per KDB Publication 248227 D01v02r02 for 2.4 GHz WIFI single transmission chain operations, the highest measured maximum output power channel for DSSS was selected for SAR measurement. SAR for OFDM modes (2.4 GHz 802.11g/n) was not required due to the maximum allowed powers and the highest reported DSSS SAR. See Section 6.2.4 for more information.
2. Justification for test configurations for WLAN per KDB Publication 248227 D01v02r02 for 5 GHz WIFI single transmission chain operations, the initial test configuration was selected according to the transmission mode with the highest maximum allowed powers. Other transmission modes were not investigated since the highest reported SAR for initial test configuration adjusted by the ratio of maximum output powers is less than 1.2 W/kg for 1g evaluations. See Section 6.2.5 for more information.
3. Per KDB Publication 248227 D01v02r02, SAR for MIMO was evaluated by following the simultaneous SAR provisions from KDB Publication 447498 D01v06 by either evaluating the sum of the 1g SAR values of each antenna transmitting independently or making a SAR measurement with both antennas transmitting simultaneously. Please see Section 10 for complete analysis.
4. When the maximum reported 1g averaged SAR is ≤0.8 W/kg, SAR testing on additional channels was not required. Otherwise, SAR for the next highest output power channel was required until the reported SAR result was ≤ 1.20 W/kg for 1g evaluations or all test channels were measured.
5. The device was configured to transmit continuously at the required data rate, channel bandwidth and signal modulation, using the highest transmission duty factor supported by the test mode tools. The reported SAR was scaled to the 100% transmission duty factor to determine compliance. Procedures used to measure the duty factor are identical to that in the associated EMC test reports.
6. Bluetooth SAR was measured with a test mode with hopping disabled with DH5 operation. The reported SAR was scaled to the 77.5% transmission duty factor to determine compliance since the duty factor of the device is limited to 77.5% per the manufacturer. See Section 7.2 for the time domain plot and calculation for the duty factor of the device.

10 FCC MULTI-TX AND ANTENNA SAR CONSIDERATIONS

10.1 Introduction

The following procedures adopted from FCC KDB Publication 447498 D01v06 are applicable to devices with built-in unlicensed transmitters such as 802.11 and Bluetooth devices which may simultaneously transmit with the licensed transmitter.

10.2 Simultaneous Transmission Procedures

This device contains transmitters that may operate simultaneously. Therefore, simultaneous transmission analysis is required. Per FCC KDB Publication 447498 D01v06 4.3.2 and IEEE 1528-2013 Section 6.3.4.1.2, simultaneous transmission SAR test exclusion may be applied when the sum of the 1g SAR for all the simultaneous transmitting antennas in a specific a physical test configuration is ≤1.6 W/kg. The different test positions in an exposure condition may be considered collectively to determine SAR test exclusion according to the sum of 1g or 10g SAR.

Note:
** The SAR distributions for at least one of the antennas are spatially separated from the other antennas per FCC KDB Publication 248227 Section 6.1 procedures. Therefore, the simultaneous transmissions were treated independently for this configuration. See Section 10.4 for more information about the Spatial Separation Analysis.

10.3 Body SAR Simultaneous Transmission Analysis

Table 10-1
Simultaneous Transmission Scenario with 2.4 GHz WLAN

Simult Tx	Configuration	2.4 GHz WLAN Ant WF1 SAR (W/kg)	2.4 GHz WLAN Ant WF2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Body SAR	Back	0.122	0.149	0.271
	Top	0.400*	0.400*	0.800
	Bottom	1.190	1.178	1.190**
	Right	0.400*	0.214	0.614
	Left	0.188	0.400*	0.588

Table 10-2
Simultaneous Transmission Scenario with 5 GHz WLAN

Simult Tx	Configuration	5 GHz WLAN Ant WF1 SAR (W/kg)	5 GHz WLAN Ant WF2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Body SAR	Back	0.197	0.224	0.421
	Top	0.400*	0.400*	0.800
	Bottom	1.170	1.134	1.170**
	Right	0.400*	0.340	0.740
	Left	0.308	0.400*	0.708

Table 10-3
Simultaneous Transmission Scenario with 2.4 GHz Bluetooth and 5 GHz WLAN MIMO

Simult Tx	Configuration	Bluetooth Ant WF1 SAR at 13 dBm (W/kg)	5 GHz WLAN Ant WF1 SAR (W/kg)	5 GHz WLAN Ant WF2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Body SAR	Back	0.018	0.197	0.224	0.215	0.242	0.439
	Top	0.400*	0.400*	0.400*	0.800	0.800	1.200
	Bottom	0.201	1.170	1.134	**1.371**	1.335	1.371**
	Right	0.400*	0.400*	0.340	0.800	0.740	1.140
	Left	0.026	0.308	0.400*	0.334	0.426	0.734
Simult Tx	Configuration	Bluetooth Ant WF2 SAR at 13 dBm (W/kg)	5 GHz WLAN Ant WF1 SAR (W/kg)	5 GHz WLAN Ant WF2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Body SAR	Back	0.010	0.197	0.224	0.207	0.234	0.431
	Top	0.400*	0.400*	0.400*	0.800	0.800	1.200
	Bottom	0.124	1.170	1.134	**1.294**	1.258	1.258**
	Right	0.018	0.400*	0.340	0.418	0.358	0.758
	Left	0.400*	0.308	0.400*	0.708	0.800	1.108

Notes:

1. (*) When the antenna separation distance was > 50 mm, an estimated SAR of 0.4 W/kg was used to determine the simultaneous transmission SAR exclusion for test positions excluded per FCC KDB Publication 447498D01v06. The simultaneous SAR sum using this estimation are highlighted in gray.

10.4 Spatial Separation Analysis

Per FCC KDB Publication 248227, antennas may be considered spatially separated when the aggregate SAR from multiple antennas at any location in the combined SAR distribution is either ≤ 1.2 W/kg where at least 90% of the SAR is attributed to a single SAR distribution or ≤ 0.4 W/kg where no more than one SAR distribution is contributing > 0.1 W/kg.

Spatial separation was determined by inspection of the area scan SAR distributions to confirm that at all locations, SAR was < 1.2 W/kg, where at least 90% of the SAR is attributed to a single SAR distribution. See below for illustrations of the spatial separated antennas considered.

10.4.1 Bottom Edge Spatial Separation Analysis

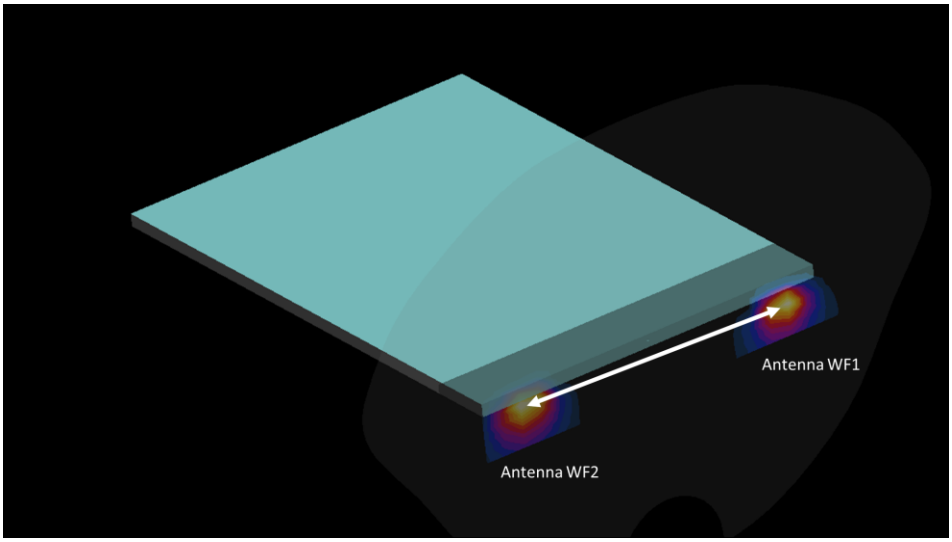


Figure 10-1
Bottom Edge Spatial Separation for Antenna WF1 and Antenna WF2

10.5 Simultaneous Transmission Conclusion

The above numerical summed SAR results and spatial separation analysis for all the worst-case simultaneous transmission conditions were below the SAR limit. Therefore, the above analysis is sufficient to determine that simultaneous transmission cases will not exceed the SAR limit and therefore no measured volumetric simultaneous SAR summation is required per FCC KDB Publication 447498 D01v06 and IEEE 1528-2013 Section 6.3.4.1.2.

11 SAR MEASUREMENT VARIABILITY

11.1 Measurement Variability

Per FCC KDB Publication 865664 D01v01r04, SAR measurement variability was assessed for each frequency band, which was determined by the SAR probe calibration point and tissue-equivalent medium used for the device measurements. When both head and body tissue-equivalent media were required for SAR measurements in a frequency band, the variability measurement procedures were applied to the tissue medium with the highest measured SAR, using the highest measured SAR configuration for that tissue-equivalent medium. These additional measurements were repeated after the completion of all measurements requiring the same head or body tissue-equivalent medium in a frequency band. The test device was returned to ambient conditions (normal room temperature) with the battery fully charged before it was re-mounted on the device holder for the repeated measurement(s) to minimize any unexpected variations in the repeated results.

SAR Measurement Variability was assessed using the following procedures for each frequency band:

1) When the original highest measured SAR is ≥ 0.80 W/kg, the measurement was repeated once.
2) A second repeated measurement was performed only if the ratio of largest to smallest SAR for the original and first repeated measurements was > 1.20 or when the original or repeated measurement was ≥ 1.45 W/kg (~ 10% from the 1g SAR limit).
3) A third repeated measurement was performed only if the original, first or second repeated measurement was ≥ 1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20.
4) Repeated measurements are not required when the original highest measured SAR is < 0.80 W/kg

Table 11-1
Body SAR Measurement Variability Results

BODY VARIABILITY RESULTS																
Band	FREQUENCY		Mode	Variant	Antenna Config-	Service	Data Rate (Mbps)	Side	Spacing	Measured SAR (1g)	1st Repeated SAR (1g)	Ratio	2nd Repeated SAR (1g)	Ratio	3rd Repeated SAR (1g)	Ratio
	MHz	Ch.								(W/kg)	(W/kg)		(W/kg)		(W/kg)	
2450	2412.00	1	802.11b, 22 MHz Bandwidth	1	WF1	DSSS	1	bottom	0 mm	1.190	1.140	1.04	N/A	N/A	N/A	N/A
5250	5270.00	54	802.11n, 40 MHz Bandwidth	1	WF1	OFDM	13.5	bottom	0 mm	1.140	1.140	1.00	N/A	N/A	N/A	N/A
5600	5610.00	122	802.11ac, 80 MHz Bandwidth	2	WF2	OFDM	29.3	bottom	0 mm	0.986	0.956	1.03	N/A	N/A	N/A	N/A
5750	5775.00	155	802.11ac, 80 MHz Bandwidth	2	WF2	OFDM	29.3	bottom	0 mm	1.080	0.996	1.08	N/A	N/A	N/A	N/A
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population										Body 1.6 W/kg (mW/g) averaged over 1 gram						

11.2 Measurement Uncertainty

The measured SAR was <1.5 W/kg for all frequency bands. Therefore, per KDB Publication 865664 D01v01r04, the extended measurement uncertainty analysis per IEEE 1528-2013 was not required.

12 EQUIPMENT LIST

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
Agilent	E4440A	PSA Series Spectrum Analyzer	11/14/2018	Annual	11/14/2019	MY46186272
Agilent	8753ES	Network Analyzer	2/21/2018	Annual	2/21/2019	MY40001472
Agilent	8753ES	S-Parameter Network Analyzer	10/2/2018	Annual	10/2/2019	US39170118
Agilent	E4438C	ESG Vector Signal Generator	6/22/2018	Annual	6/22/2019	MY53401181
Agilent	N4010A	Wireless Connectivity Test Set	N/A	N/A	N/A	GB46170464
Agilent	N5182A	MXG Vector Signal Generator	6/15/2018	Annual	6/15/2019	MY47420837
Agilent	N9020A	MXA Signal Analyzer	1/24/2018	Annual	1/24/2019	US46470561
Amplifier Research	150A100C	Amplifier	CBT	N/A	CBT	350132
Amplifier Research	15S1G6	Amplifier	CBT	N/A	CBT	343972
Anritsu	MA24106A	USB Power Sensor	7/16/2018	Annual	7/16/2019	1520505
Anritsu	MA24106A	USB Power Sensor	8/20/2018	Annual	8/20/2019	1349503
Anritsu	MA24106A	USB Power Sensor	7/18/2018	Annual	7/18/2019	1827532
Anritsu	MA24106A	USB Power Sensor	7/17/2018	Annual	7/17/2019	1827526
Anritsu	ML2495A	Power Meter	11/20/2018	Annual	11/20/2019	1039008
Anritsu	MT8862A	Wireless Connectivity Test Set	7/3/2018	Annual	7/3/2019	6261782395
Control Company	4040	Digital Thermometer	2/28/2018	Biennial	2/28/2020	130448366
Control Company	4040	Temperature / Humidity Monitor	2/28/2018	Biennial	2/28/2020	150761911
Control Company	4352	Ultra Long Stem Thermometer	2/14/2017	Biennial	2/14/2019	170112507
Control Company	4352	Ultra Long Stem Thermometer	1/8/2018	Annual	1/8/2019	160508097
Keysight	772D	Dual Directional Coupler	CBT	N/A	CBT	MY52180215
Keysight Technologies	85033E	Standard Mechanical Calibration Kit (DC to 9GHz, 3.5mm)	6/4/2018	Annual	6/4/2019	MY53401181
MCL	BW-N6W5+	6dB Attenuator	CBT	N/A	CBT	1139
MiniCircuits	VLF-6000+	Low Pass Filter	CBT	N/A	CBT	N/A
Mini-Circuits	NLP-2950+	Low Pass Filter DC to 2700 MHz	CBT	N/A	CBT	N/A
Mitutoyo	CD-6"CSX	Digital Caliper	4/18/2018	Biennial	4/18/2020	13264165
Narda	4772-3	Attenuator (3dB)	CBT	N/A	CBT	9406
Pasternack	PE2209-10	Bidirectional Coupler	CBT	N/A	CBT	N/A
Pasternack	NC-100	Torque Wrench	4/18/2018	Annual	4/18/2019	1445
Rohde & Schwarz	FSP-7	Spectrum Analyzer	2/7/2018	Annual	2/7/2019	100288
SPEAG	D2450V2	2450 MHz SAR Dipole	6/7/2017	Biennial	6/7/2019	750
SPEAG	D2450V2	2450 MHz SAR Dipole	5/16/2018	Annual	5/16/2019	945
SPEAG	D5GHzV2	5 GHz SAR Dipole	9/13/2018	Annual	9/13/2019	1163
SPEAG	D5GHzV2	5 GHz SAR Dipole	3/13/2018	Annual	3/13/2019	1123
SPEAG	ES3DV3	SAR Probe	5/18/2018	Annual	5/18/2019	3119
SPEAG	EX3DV4	SAR Probe	7/20/2018	Annual	7/20/2019	7416
SPEAG	EX3DV4	SAR Probe	9/18/2018	Annual	9/18/2019	7420
SPEAG	DAE4	Dasy Data Acquisition Electronics	5/17/2018	Annual	5/17/2019	728
SPEAG	DAE4	Dasy Data Acquisition Electronics	7/10/2018	Annual	7/10/2019	1402
SPEAG	DAE4	Dasy Data Acquisition Electronics	11/12/2018	Annual	11/12/2019	1449
SPEAG	DAK-3.5	Dielectric Assessment Kit	5/15/2018	Annual	5/15/2019	1070

Note: CBT (Calibrated Before Testing). Prior to testing, the measurement paths containing a cable, amplifier, attenuator, coupler or filter were connected to a calibrated source (i.e. a signal generator) to determine the losses of the measurement path. The power meter offset was then adjusted to compensate for the measurement system losses. This level offset is stored within the power meter before measurements are made. This calibration verification procedure applies to the system verification and output power measurements. The calibrated reading is then taken directly from the power meter after compensation of the losses for all final power measurements.

13 MEASUREMENT UNCERTAINTIES

a	c	d	e= f(d,k)	f	g	h = c x f/e	i = c x g/e	k
Uncertainty Component	**Tol. (± %)**	**Prob. Dist.**	**Div.**	**c_i 1gm**	**c_i 10 gms**	**1gm u_i (± %)**	**10gms u_i (± %)**	**v_i**
Measurement System								
Probe Calibration	6.55	N	1	1.0	1.0	6.6	6.6	∞
Axial Isotropy	0.25	N	1	0.7	0.7	0.2	0.2	∞
Hemishperical Isotropy	1.3	N	1	0.7	0.7	0.9	0.9	∞
Boundary Effect	2.0	R	1.73	1.0	1.0	1.2	1.2	∞
Linearity	0.3	N	1	1.0	1.0	0.3	0.3	∞
System Detection Limits	0.25	R	1.73	1.0	1.0	0.1	0.1	∞
Readout Electronics	0.3	N	1	1.0	1.0	0.3	0.3	∞
Response Time	0.8	R	1.73	1.0	1.0	0.5	0.5	∞
Integration Time	2.6	R	1.73	1.0	1.0	1.5	1.5	∞
RF Ambient Conditions - Noise	3.0	R	1.73	1.0	1.0	1.7	1.7	∞
RF Ambient Conditions - Reflections	3.0	R	1.73	1.0	1.0	1.7	1.7	∞
Probe Positioner Mechanical Tolerance	0.4	R	1.73	1.0	1.0	0.2	0.2	∞
Probe Positioning w/ respect to Phantom	6.7	R	1.73	1.0	1.0	3.9	3.9	∞
Extrapolation, Interpolation & Integration algorithms for Max. SAR Evaluation	4.0	R	1.73	1.0	1.0	2.3	2.3	∞
Test Sample Related								
Test Sample Positioning	2.7	N	1	1.0	1.0	2.7	2.7	35
Device Holder Uncertainty	1.67	N	1	1.0	1.0	1.7	1.7	5
Output Power Variation - SAR drift measurement	5.0	R	1.73	1.0	1.0	2.9	2.9	∞
SAR Scaling	0.0	R	1.73	1.0	1.0	0.0	0.0	∞
Phantom & Tissue Parameters								
Phantom Uncertainty (Shape & Thickness tolerances)	7.6	R	1.73	1.0	1.0	4.4	4.4	∞
Liquid Conductivity - measurement uncertainty	4.2	N	1	0.78	0.71	3.3	3.0	10
Liquid Permittivity - measurement uncertainty	4.1	N	1	0.23	0.26	1.0	1.1	10
Liquid Conductivity - Temperature Uncertainty	3.4	R	1.73	0.78	0.71	1.5	1.4	∞
Liquid Permittivity - Temperature Unceritainty	0.6	R	1.73	0.23	0.26	0.1	0.1	∞
Liquid Conductivity - deviation from target values	5.0	R	1.73	0.64	0.43	1.8	1.2	∞
Liquid Permittivity - deviation from target values	5.0	R	1.73	0.60	0.49	1.7	1.4	∞
Combined Standard Uncertainty (k=1)		RSS				11.5	11.3	60
Expanded Uncertainty (95% CONFIDENCE LEVEL)		k=2				23.0	22.6	

14 CONCLUSION

14.1 Measurement Conclusion

The SAR evaluation indicates that the EUT complies with the RF radiation exposure limits of the FCC and Innovation, Science, and Economic Development Canada, with respect to all parameters subject to this test. These measurements were taken to simulate the RF effects of RF exposure under worst-case conditions. Precise laboratory measures were taken to assure repeatability of the tests. The results and statements relate only to the item(s) tested.

Please note that the absorption and distribution of electromagnetic energy in the body are very complex phenomena that depend on the mass, shape, and size of the body, the orientation of the body with respect to the field vectors, and the electrical properties of both the body and the environment. Other variables that may play a substantial role in possible biological effects are those that characterize the environment (e.g. ambient temperature, air velocity, relative humidity, and body insulation) and those that characterize the individual (e.g. age, gender, activity level, debilitation, or disease). Because various factors may interact with one another to vary the specific biological outcome of an exposure to electromagnetic fields, any protection guide should consider maximal amplification of biological effects as a result of field-body interactions, environmental conditions, and physiological variables. [3]

15 REFERENCES

[1] Federal Communications Commission, ET Docket 93-62, Guidelines for Evaluating the Environmental Effects of Radiofrequency Radiation, Aug. 1996.

[2] ANSI/IEEE C95.1-2005, American National Standard safety levels with respect to human exposure to radio frequency electromagnetic fields, 3kHz to 300GHz, New York: IEEE, 2006.

[3] ANSI/IEEE C95.1-1992, American National Standard safety levels with respect to human exposure to radio frequency electromagnetic fields, 3kHz to 300GHz, New York: IEEE, Sept. 1992.

[4] ANSI/IEEE C95.3-2002, IEEE Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields - RF and Microwave, New York: IEEE, December 2002.

[5] IEEE Standards Coordinating Committee 39 –Standards Coordinating Committee 34 – 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.

[6] NCRP, National Council on Radiation Protection and Measurements, Biological Effects and Exposure Criteria for RadioFrequency Electromagnetic Fields, NCRP Report No. 86, 1986. Reprinted Feb. 1995.

[7] T. Schmid, O. Egger, N. Kuster, Automated E-field scanning system for dosimetric assessments, IEEE Transaction on Microwave Theory and Techniques, vol. 44, Jan. 1996, pp. 105-113.

[8] K. Pokovic, T. Schmid, N. Kuster, Robust setup for precise calibration of E-field probes in tissue simulating liquids at mobile communications frequencies, ICECOM97, Oct. 1997, pp. 1 -124.

[9] K. Pokovic, T. Schmid, and N. Kuster, E-field Probe with improved isotropy in brain simulating liquids, Proceedings of the ELMAR, Zadar, Croatia, June 23-25, 1996, pp. 172-175.

[10] Schmid & Partner Engineering AG, Application Note: Data Storage and Evaluation, June 1998, p2.

[11] V. Hombach, K. Meier, M. Burkhardt, E. Kuhn, N. Kuster, The Dependence of EM Energy Absorption upon Human Modeling at 900 MHz, IEEE Transaction on Microwave Theory and Techniques, vol. 44 no. 10, Oct. 1996, pp. 1865-1873.

[12] N. Kuster and Q. Balzano, Energy absorption mechanism by biological bodies in the near field of dipole antennas above 300MHz, IEEE Transaction on Vehicular Technology, vol. 41, no. 1, Feb. 1992, pp. 17-23.

[13] G. Hartsgrove, A. Kraszewski, A. Surowiec, Simulated Biological Materials for Electromagnetic Radiation Absorption Studies, University of Ottawa, Bioelectromagnetics, Canada: 1987, pp. 29-36.

[14] Q. Balzano, O. Garay, T. Manning Jr., Electromagnetic Energy Exposure of Simulated Users of Portable Cellular Telephones, IEEE Transactions on Vehicular Technology, vol. 44, no.3, Aug. 1995.

[15] W. Gander, Computermathematick, Birkhaeuser, Basel, 1992.

[16] W.H. Press, S.A. Teukolsky, W.T. Vetterling, and B.P. Flannery, Numerical Recipes in C, The Art of Scientific Computing, Second edition, Cambridge University Press, 1992.

[17] N. Kuster, R. Kastle, T. Schmid, Dosimetric evaluation of mobile communications equipment with known precision, IEEE Transaction on Communications, vol. E80-B, no. 5, May 1997, pp. 645-652.

[18] CENELEC CLC/SC111B, European Prestandard (prENV 50166-2), Human Exposure to Electromagnetic Fields High-frequency: 10kHz-300GHz, Jan. 1995.

[19] Prof. Dr. Niels Kuster, ETH, Eidgenössische Technische Hoschschule Zürich, Dosimetric Evaluation of the Cellular Phone.

[20] IEC 62209-1, Measurement procedure for the assessment of specific absorption rate of human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices - Part 1: Devices used next to the ear (Frequency range of 300 MHz to 6 GHz), July 2016.

[21] Innovation, Science, Economic Development Canada RSS-102 Radio Frequency Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands) Issue 5, March 2015.

[22] Health Canada Safety Code 6 Limits of Human Exposure to Radio Frequency Electromagnetic Fields in the Frequency Range from 3 kHz – 300 GHz, 2015

[23] FCC SAR Test Procedures for 2G-3G Devices, Mobile Hotspot and UMPC Devices KDB Publications 941225, D01-D07

[24] SAR Measurement Guidance for IEEE 802.11 Transmitters, KDB Publication 248227 D01

[25] FCC SAR Considerations for Handsets with Multiple Transmitters and Antennas, KDB Publications 648474 D03-D04

[26] FCC SAR Evaluation Considerations for Laptop, Notebook, Netbook and Tablet Computers, FCC KDB Publication 616217 D04

[27] FCC SAR Measurement and Reporting Requirements for 100MHz – 6 GHz, KDB Publications 865664 D01-D02

[28] FCC General RF Exposure Guidance and SAR Procedures for Dongles, KDB Publication 447498, D01-D02

[29] Anexo à Resolução No. 533, de 10 de Septembro de 2009.

[30] IEC 62209-2, Human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices - Human models, instrumentation, and procedures - Part 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), Mar. 2010.

APPENDIX A: SAR TEST DATA

PCTEST ENGINEERING LABORATORY, INC.

DUT: BCGA2152; Type: Tablet; Serial: DLXXT01BLT5H

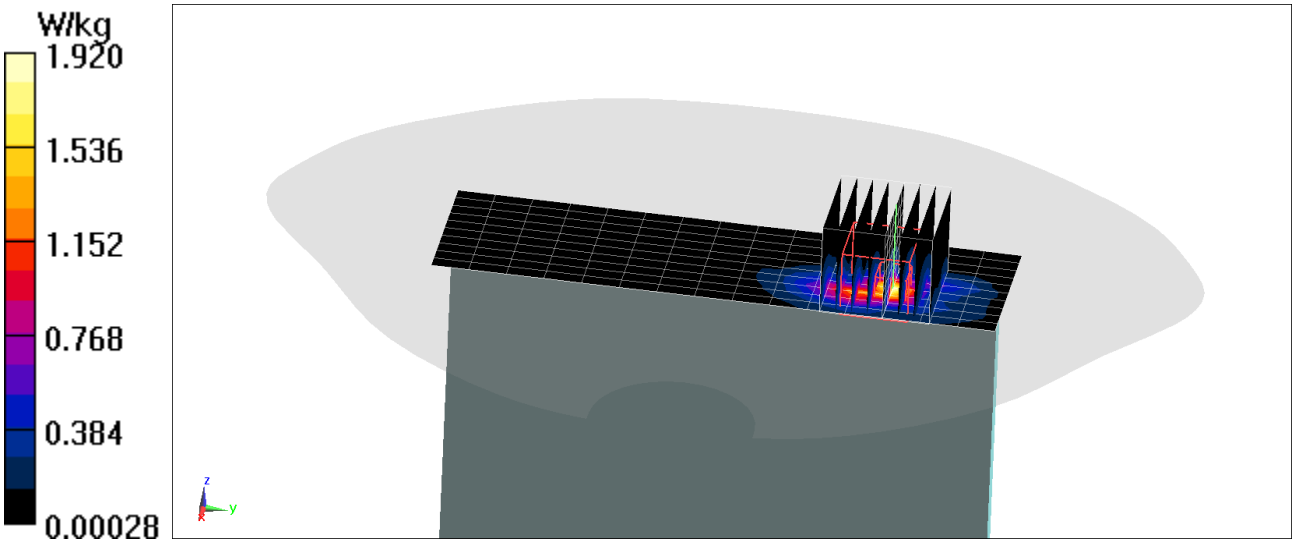
Communication System: UID 0, IEEE 802.11b; Frequency: 2412 MHz; Duty Cycle: 1:1
Medium: 2450 Body; Medium parameters used (interpolated):
f = 2412 MHz; σ = 1.999 S/m; ε_r = 50.873; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 0.0 cm

Test Date: 12-26-2018; Ambient Temp: 22.3°C; Tissue Temp: 21.4°C

Probe: ES3DV3 - SN3119; ConvF(4.42, 4.42, 4.42) @ 2412 MHz; Calibrated: 5/18/2018
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn728; Calibrated: 5/17/2018
Phantom: Twin-SAM V4.0; Type: QD 000 P40 CC; Serial: 1179
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: IEEE 802.11b, 22 MHz Bandwidth, Body SAR, Ch 1, 1 Mbps, Bottom Edge, Variant 1, Antenna WF1

Area Scan (11x16x1): Measurement grid: dx=5mm, dy=12mm
Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 28.70 V/m; Power Drift = -0.10 dB
Peak SAR (extrapolated) = 3.91 W/kg
SAR(1 g) = 1.19 W/kg; SAR(10 g) = 0.433 W/kg



DUT: BCGA2152; Type: Tablet; Serial: DLXXT019LT5H

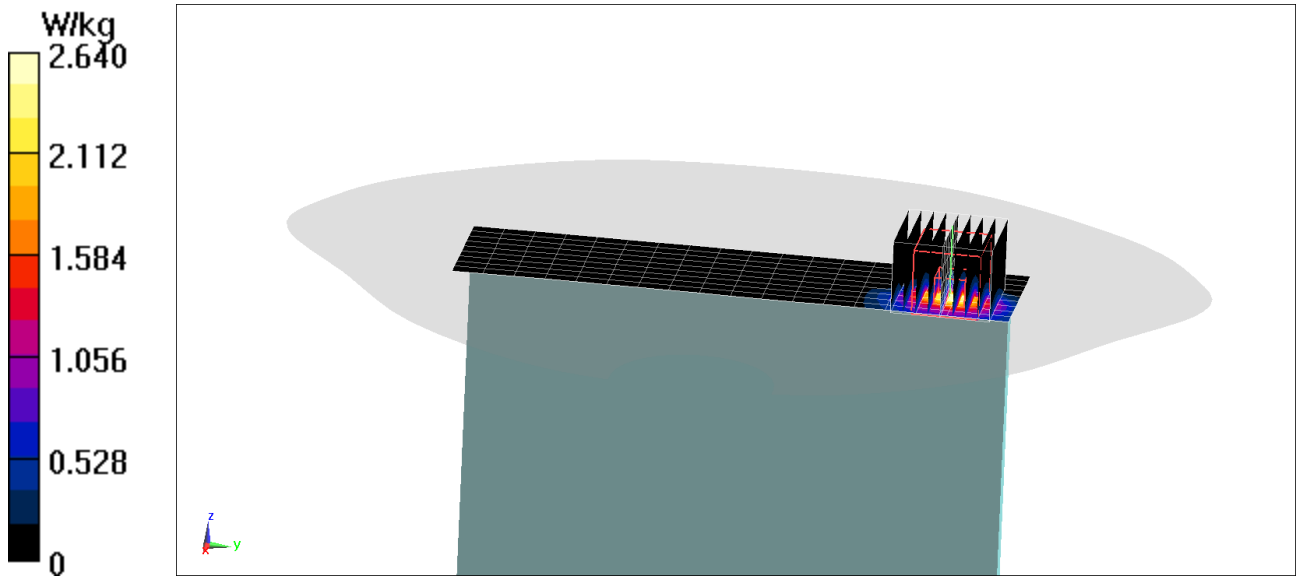
Communication System: UID 0, 802.11n 5.2-5.8 GHz Band; Frequency: 5270 MHz; Duty Cycle: 1:1
Medium: 5GHz Body; Medium parameters used (interpolated):
f = 5270 MHz; σ = 5.5 S/m; ε_r = 47.225; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 0.0 cm

Test Date: 12-24-2018; Ambient Temp: 22.3°C; Tissue Temp: 20.8°C

Probe: EX3DV4 - SN7420; ConvF(4.79, 4.79, 4.79) @ 5270 MHz; Calibrated: 9/18/2018
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1449; Calibrated: 11/12/2018
Phantom: Twin-SAM V4.0; Type: QD 000 P40 CC; Serial: 1596
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: IEEE 802.11n, U-NII-2A, 40 MHz Bandwidth, Body SAR, Ch 54, 13.5 Mbps, Bottom Edge, Variant 1, Antenna WF1

Area Scan (10x19x1): Measurement grid: dx=5mm, dy=10mm
Zoom Scan (9x9x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4
Reference Value = 15.11 V/m; Power Drift = 0.18 dB
Peak SAR (extrapolated) = 4.29 W/kg
SAR(1 g) = 1.14 W/kg; SAR(10 g) = 0.386 W/kg



DUT: BCGA2152; Type: Tablet; Serial: DLXXT01HLT5H

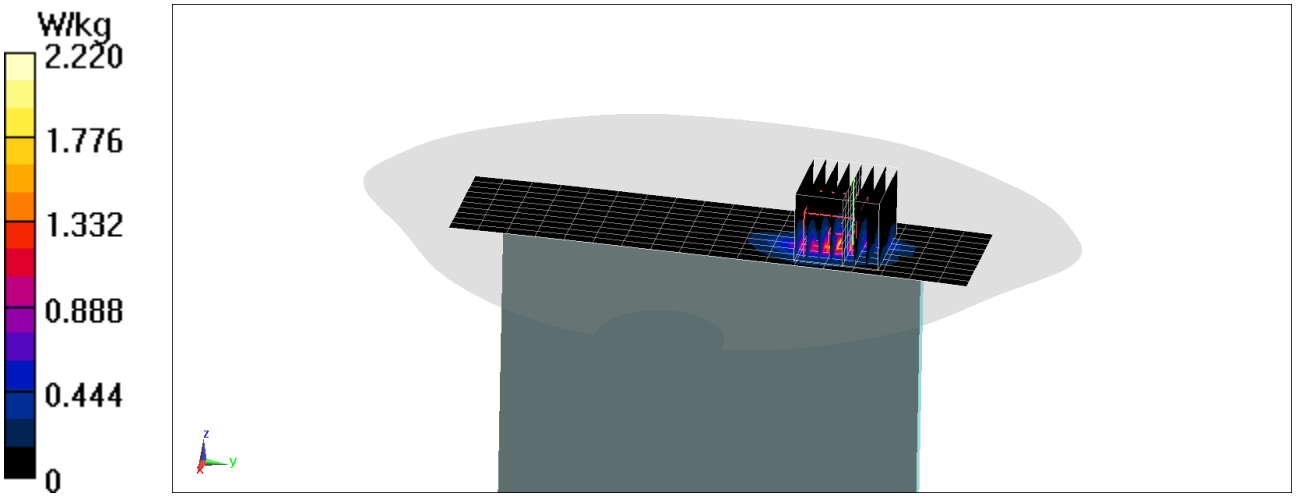
Communication System: UID 0, Bluetooth; 2402 MHz; Duty Cycle: 1:1.300
Medium: 2450 Body; Medium parameters used (interpolated):
f = 2402 MHz; σ = 1.962 S/m; ε_r = 51.098; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 0.0 cm

Test Date: 01-02-2019; Ambient Temp: 20.1°C; Tissue Temp:20.3°C

Probe: EX3DV4 - SN7416; ConvF(7.31, 7.31, 7.31) @ 2402 MHz; Calibrated: 7/20/2018
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1402; Calibrated: 7/10/2018
Phantom: Twin-SAM V4.0; Type: QD 000 P40 CA; Serial: 1275
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: Bluetooth, Body SAR, Ch 0, 1 Mbps, Bottom Edge, Variant 2, Antenna WF1

Area Scan (11x19x1): Measurement grid: dx=5mm, dy=12mm
Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 24.22 V/m; Power Drift = -0.15 dB
Peak SAR (extrapolated) = 3.49 W/kg
SAR(1 g) = 1.07 W/kg; SAR(10 g) = 0.380 W/kg



APPENDIX B: SYSTEM VERIFICATION

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: 750

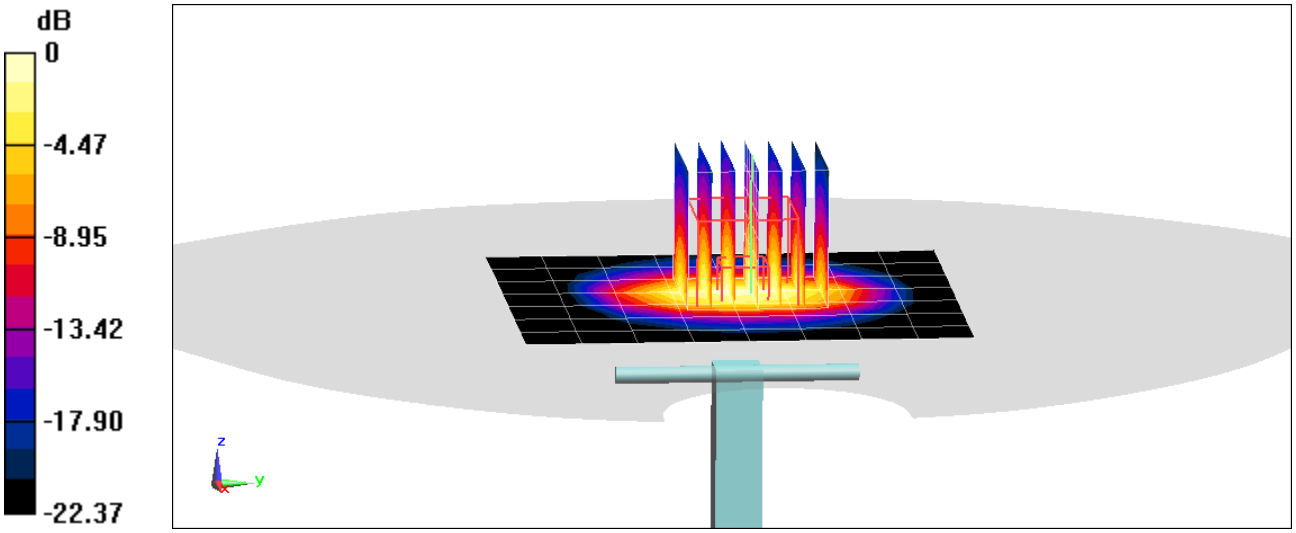
Communication System: UID 0, CW; Frequency: 2450 MHz; Duty Cycle: 1:1
Medium: 2450 Body Medium parameters used:
f = 2450 MHz; σ = 2.044 S/m; ε_r = 50.766; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-26-2018; Ambient Temp: 22.3°C; Tissue Temp: 21.4°C

Probe: ES3DV3 - SN3119; ConvF(4.42, 4.42, 4.42) @ 2450 MHz; Calibrated: 5/18/2018
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn728; Calibrated: 5/17/2018
Phantom: Twin-SAM V4.0; Type: QD 000 P40 CC; Serial: 1179
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

2450 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 10.7 W/kg
SAR(1 g) = 5.22 W/kg; SAR(10 g) = 2.41 W/kg
Deviation(1 g) = 1.95%



0 dB = 6.83 W/kg = 8.34 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

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

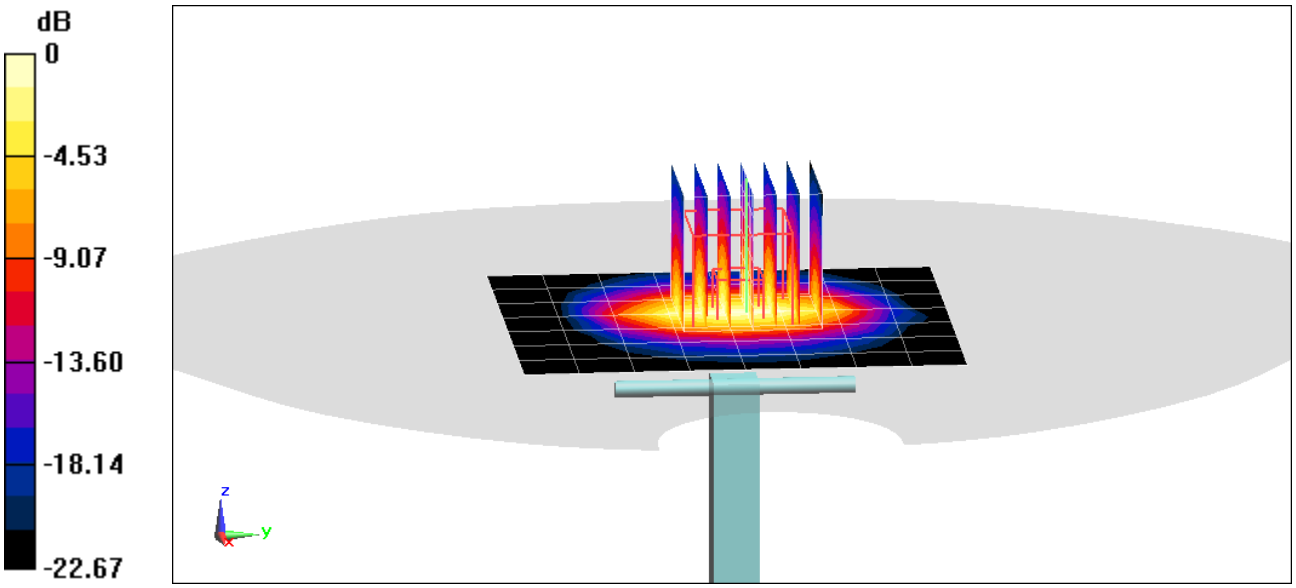
Communication System: UID 0, CW; Frequency: 2450 MHz; Duty Cycle: 1:1
Medium: 2450 Body Medium parameters used:
f = 2450 MHz; σ = 2.004 S/m; ε_r = 51.017; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 01-02-2019; Ambient Temp: 20.1°C; Tissue Temp: 20.3°C

Probe: EX3DV4 - SN7416; ConvF(7.31, 7.31, 7.31) @ 2450 MHz; Calibrated: 7/20/2018
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1402; Calibrated: 7/10/2018
Phantom: Twin-SAM V4.0; Type: QD 000 P40 CA; Serial: 1275
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

2450 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 10.5 W/kg
SAR(1 g) = 4.84 W/kg; SAR(10 g) = 2.22 W/kg
Deviation(1 g) = -2.02%



0 dB = 8.22 W/kg = 9.15 dBW/kg

DUT: Dipole 5 GHz; Type: D5GHzV2; Serial: 1163

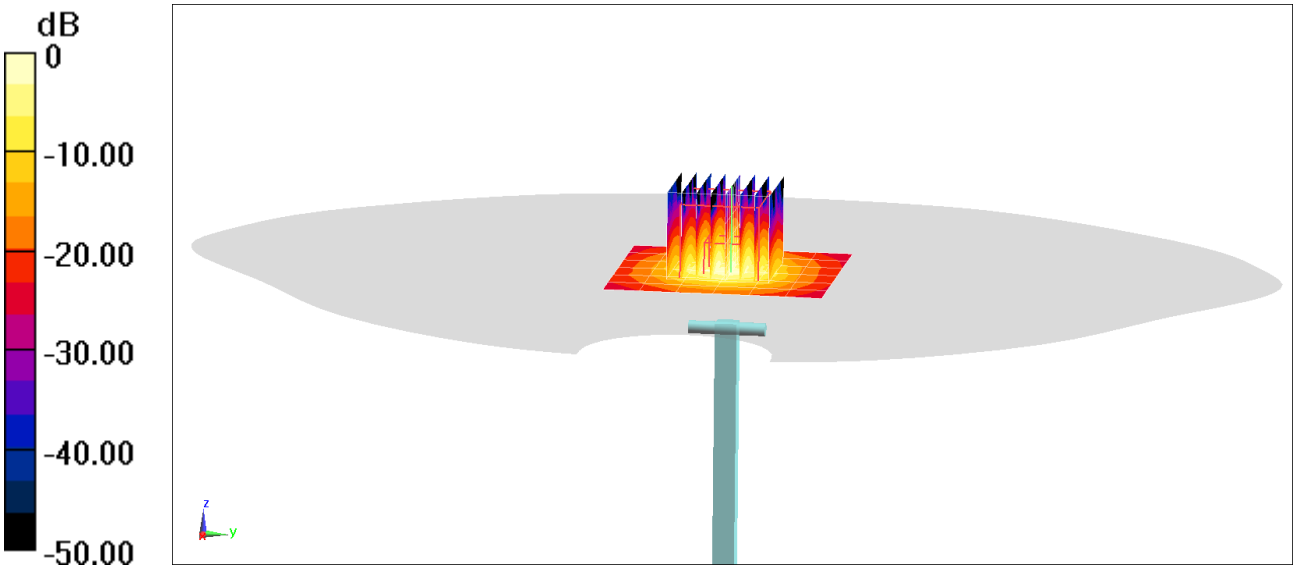
Communication System: UID 0, CW; Frequency: 5250 MHz; Duty Cycle: 1:1
Medium: 5GHz BBB02 Medium parameters used (interpolated):
f = 5250 MHz; σ = 5.471 S/m; ε_r = 47.273; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-24-2018; Ambient Temp: 22.3°C; Tissue Temp: 20.8°C

Probe: EX3DV4 - SN7420; ConvF(4.79, 4.79, 4.79) @ 5250 MHz; Calibrated: 9/18/2018
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1449; Calibrated: 11/12/2018
Phantom: Twin-SAM V4.0; Type: QD 000 P40 CC; Serial: 1596
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

5250 MHz System Verification at 17.0 dBm (50 mW)

Area Scan (7x7x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4
Peak SAR (extrapolated) = 14.7 W/kg
SAR(1 g) = 3.71 W/kg; SAR(10 g) = 1.03 W/kg
Deviation(1 g) = -4.50%



0 dB = 8.70 W/kg = 9.40 dBW/kg

DUT: Dipole 5 GHz; Type: D5GHzV2; Serial: 1123

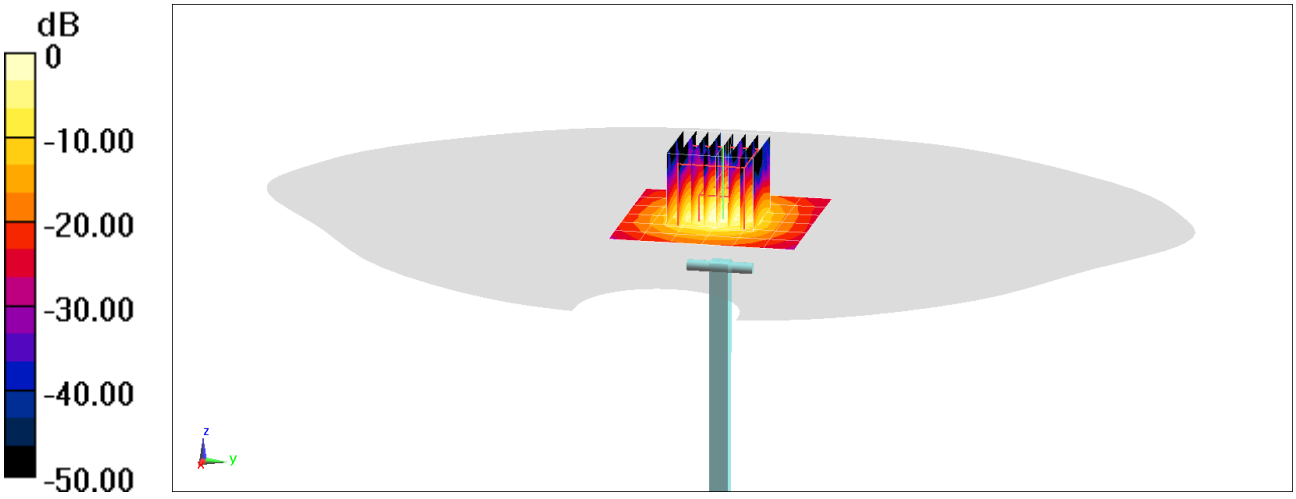
Communication System: UID 0, CW; Frequency: 5600 MHz; Duty Cycle: 1:1
Medium: 5GHz BBB02 Medium parameters used:
f = 5600 MHz; σ = 5.969 S/m; ε_r = 46.548; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-24-2018; Ambient Temp: 22.3°C; Tissue Temp: 20.8°C

Probe: EX3DV4 - SN7420; ConvF(4.08, 4.08, 4.08) @ 5600 MHz; Calibrated: 9/18/2018
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1449; Calibrated: 11/12/2018
Phantom: Twin-SAM V4.0; Type: QD 000 P40 CC; Serial: 1596
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

5600 MHz System Verification at 17.0 dBm (50 mW)

Area Scan (7x7x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4
Peak SAR (extrapolated) = 15.6 W/kg
SAR(1 g) = 3.62 W/kg; SAR(10 g) = 1.01 W/kg
Deviation(1 g) = -6.70%



0 dB = 8.89 W/kg = 9.49 dBW/kg

DUT: Dipole 5 GHz; Type: D5GHzV2; Serial: 1123

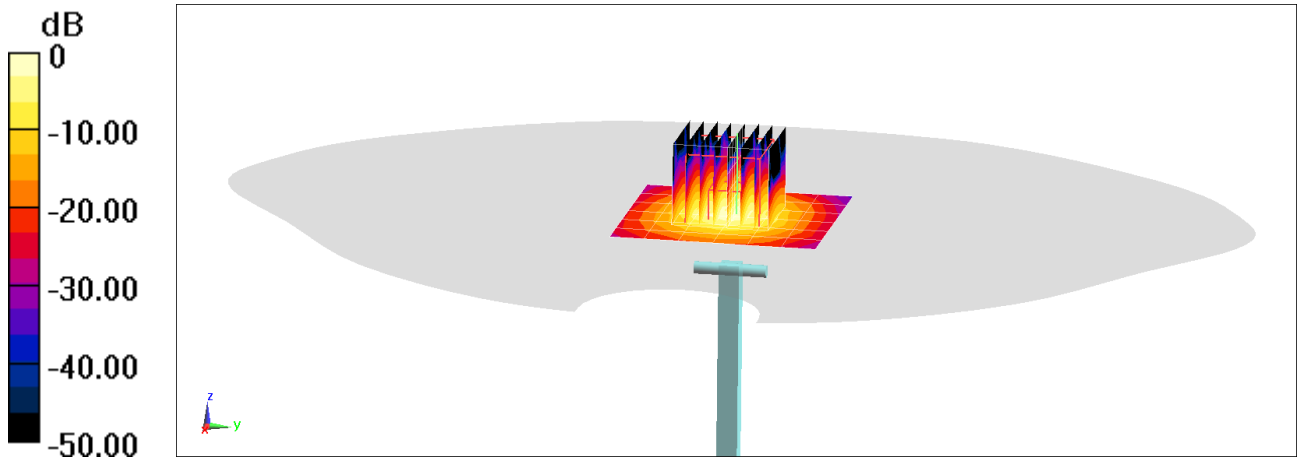
Communication System: UID 0, CW; Frequency: 5750 MHz; Duty Cycle: 1:1
Medium: 5GHz BBB02 Medium parameters used (interpolated):
f = 5750 MHz; σ = 6.201 S/m; ε_r = 46.228; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-24-2018; Ambient Temp: 22.3°C; Tissue Temp: 20.8°C

Probe: EX3DV4 - SN7420; ConvF(4.36, 4.36, 4.36) @ 5750 MHz; Calibrated: 9/18/2018
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1449; Calibrated: 11/12/2018
Phantom: Twin-SAM V4.0; Type: QD 000 P40 CC; Serial: 1596
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

5750 MHz System Verification at 17.0 dBm (50 mW)

Area Scan (7x7x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4
Peak SAR (extrapolated) = 16.4 W/kg
SAR(1 g) = 3.67 W/kg; SAR(10 g) = 1.03 W/kg
Deviation(1 g) = -1.74%



0 dB = 9.06 W/kg = 9.57 dBW/kg

APPENDIX C: PROBE CALIBRATION

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

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

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

Accreditation No.: **SCS 0108**

Client **PC Test**

Certificate No: **D2450V2-750_Jun17**

CALIBRATION CERTIFICATE

Object D2450V2 - SN:750

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

BN ✓ 8/3/2017
SC ✓ 6/1/2018

Calibration date: June 07, 2017

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

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

Calibration Equipment used (M&TE critical for calibration)

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

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power meter EPM-442A	SN: GB37480704	07-Oct-15 (in house check Oct-16)	In house check: Oct-18
Power sensor HP 8481A	SN: US37292783	07-Oct-15 (in house check Oct-16)	In house check: Oct-18
Power sensor HP 8481A	SN: MY41092317	07-Oct-15 (in house check Oct-16)	In house check: Oct-18
RF generator R&S SMT-06	SN: 100972	15-Jun-15 (in house check Oct-16)	In house check: Oct-18
Network Analyzer HP 8753E	SN: US37390585	18-Oct-01 (in house check Oct-16)	In house check: Oct-17

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

Issued: June 9, 2017

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

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

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

Accreditation No.: SCS 0108

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, "Measurement procedure for the assessment of Specific Absorption Rate (SAR) from hand-held and body-mounted devices used next to the ear (frequency range of 300 MHz to 6 GHz)", July 2016
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	V52.10.0
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	2450 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	39.2	1.80 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	37.9 ± 6 %	1.85 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	13.6 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**53.3 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	6.29 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**24.8 W/kg ± 16.5 % (k=2)**

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Body TSL parameters	22.0 °C	52.7	1.95 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	52.2 ± 6 %	2.04 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm³ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	13.1 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**51.2 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	6.13 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**24.2 W/kg ± 16.5 % (k=2)**

Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	53.7 Ω + 5.8 jΩ
Return Loss	- 23.5 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	49.7 Ω + 6.7 jΩ
Return Loss	- 23.5 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.155 ns

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

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

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	December 01, 2003

DASY5 Validation Report for Head TSL

Date: 07.06.2017

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN:750

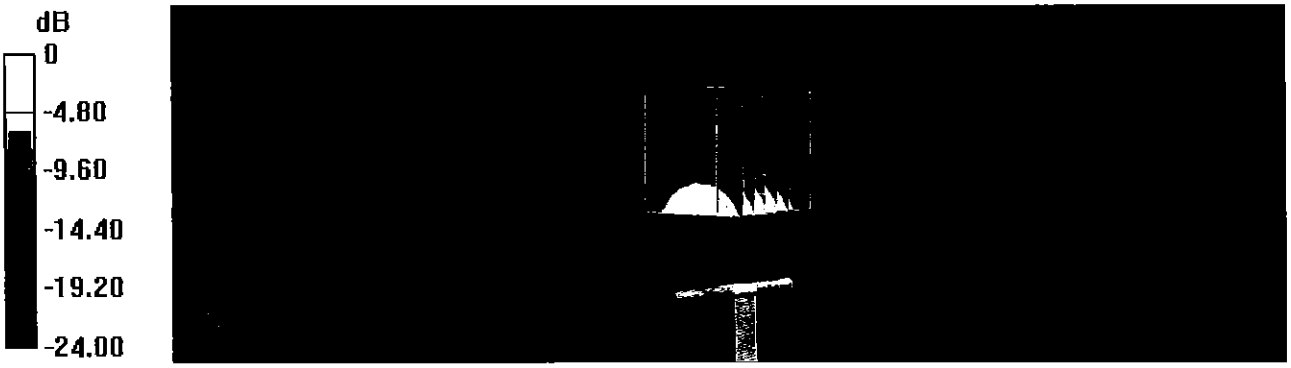
Communication System: UID 0 - CW; Frequency: 2450 MHz
Medium parameters used: f = 2450 MHz; σ = 1.85 S/m; ε_r = 37.9; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(8.12, 8.12, 8.12); Calibrated: 31.05.2017;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 28.03.2017
- Phantom: Flat Phantom 5.0 (front); Type: QD 000 P50 AA; Serial: 1001
- DASY52 52.10.0(1446); SEMCAD X 14.6.10(7417)

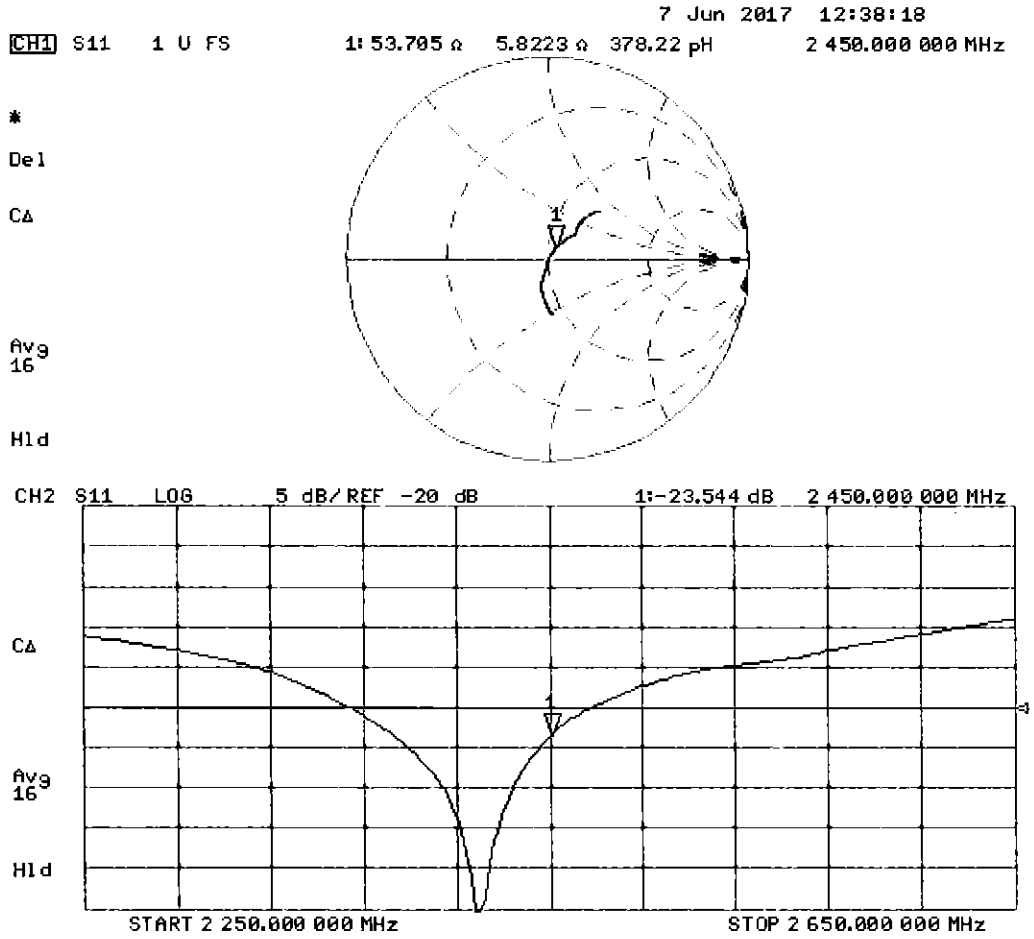
Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 113.7 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 27.9 W/kg
SAR(1 g) = 13.6 W/kg; SAR(10 g) = 6.29 W/kg
Maximum value of SAR (measured) = 22.0 W/kg



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

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 07.06.2017

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN:750

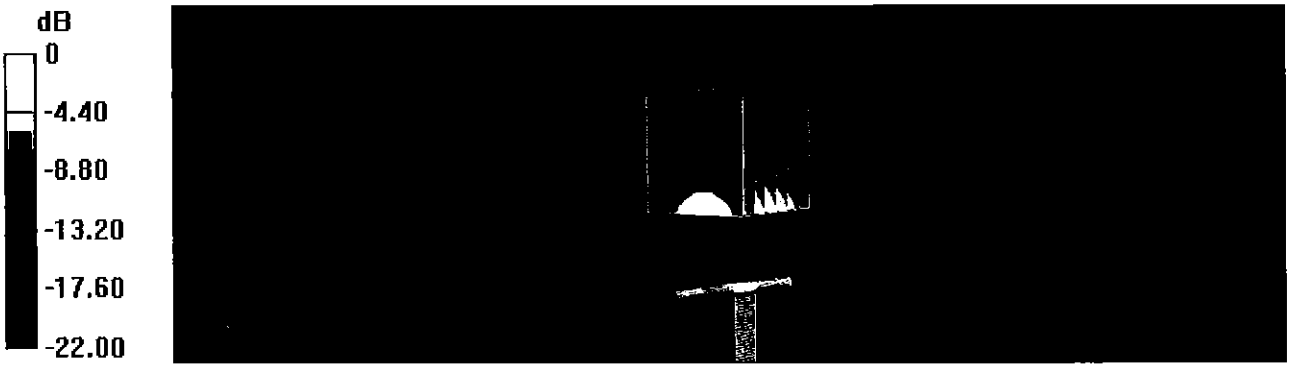
Communication System: UID 0 - CW; Frequency: 2450 MHz
Medium parameters used: f = 2450 MHz; σ = 2.04 S/m; ε_r = 52.2; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(8.1, 8.1, 8.1); Calibrated: 31.05.2017;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 28.03.2017
- Phantom: Flat Phantom 5.0 (back); Type: QD 000 P50 AA; Serial: 1002
- DASY52 52.10.0(1446); SEMCAD X 14.6.10(7417)

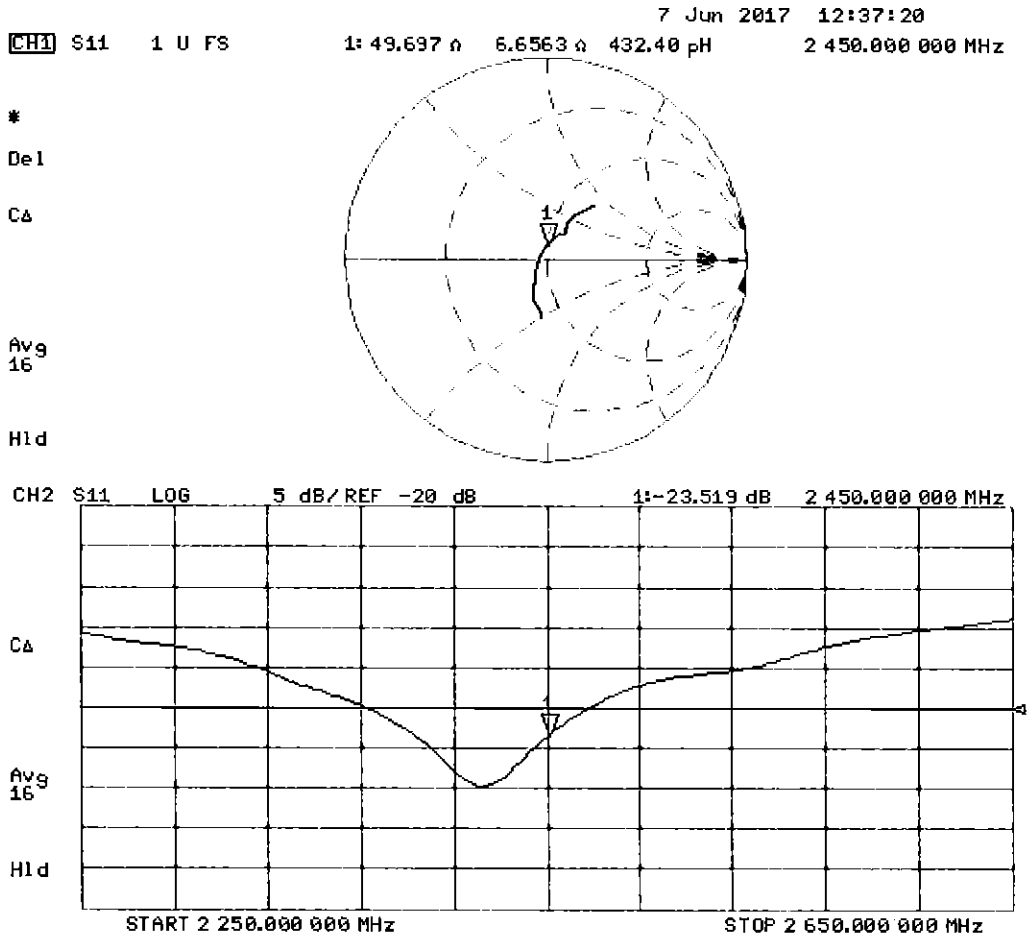
Dipole Calibration for Body Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 103.3 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 26.0 W/kg
SAR(1 g) = 13.1 W/kg; SAR(10 g) = 6.13 W/kg
Maximum value of SAR (measured) = 20.5 W/kg



0 dB = 20.5 W/kg = 13.12 dBW/kg

Impedance Measurement Plot for Body TSL



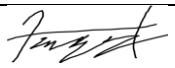
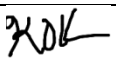
Certification of Calibration

Object	D2450V2 – SN: 750
Calibration procedure(s)	Procedure for Calibration Extension for SAR Dipoles.
Extended Calibration date:	June 01, 2018
Description:	SAR Validation Dipole at 2450 MHz.

Calibration Equipment used:

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
Agilent	8753ES	S-Parameter Network Analyzer	9/14/2017	Annual	9/14/2018	US39170118
Agilent	N5182A	MXG Vector Signal Generator	3/19/2018	Annual	3/19/2019	US46240505
Amplifier Research	15S1G6	Amplifier	CBT	N/A	CBT	343972
Anritsu	ML2496A	Power Meter	10/9/2017	Annual	10/9/2018	1138001
Anritsu	MA2411B	Pulse Power Sensor	11/15/2017	Annual	11/15/2018	1339007
Anritsu	MA2411B	Pulse Power Sensor	11/22/2017	Annual	11/22/2018	1339008
Control Company	4040	Temperature / Humidity Monitor	2/28/2018	Biennial	2/28/2020	150761911
Control Company	4352	Ultra Long Stem Thermometer	2/14/2017	Biennial	2/14/2019	170112507
Keysight	772D	Dual Directional Coupler	CBT	N/A	CBT	MY52180215
Keysight Technologies	85033E	Standard Mechanical Calibration Kit (DC to 9GHz, 3.5mm)	6/1/2017	Annual	6/1/2018	MY53401181
Mini-Circuits	BW-N20W5+	DC to 18 GHz Precision Fixed 20 dB Attenuator	CBT	N/A	CBT	N/A
Mini-Circuits	NLP-2950+	Low Pass Filter DC to 2700 MHz	CBT	N/A	CBT	N/A
Narda	4772-3	Attenuator (3dB)	CBT	N/A	CBT	9406
Pasternack	PE2209-10	Bidirectional Coupler	CBT	N/A	CBT	N/A
Pasternack	PE5011-1	Torque Wrench	7/19/2017	Biennial	7/19/2019	N/A
SPEAG	DAKS-3.5	Portable DAK	9/5/2017	Annual	9/5/2018	1045
SPEAG	ES3DV3	SAR Probe	3/13/2018	Annual	3/13/2019	3131
SPEAG	EX3DV4	SAR Probe	1/26/2018	Annual	1/26/2019	7490
SPEAG	DAE4	Dasy Data Acquisition Electronics	3/7/2018	Annual	3/7/2019	604
SPEAG	DAE4	Dasy Data Acquisition Electronics	1/26/2018	Annual	1/26/2019	1532

Measurement Uncertainty = ±23% (k=2)

	Name	Function	Signature
Calibrated By:	Sangmin Cha	Biomedical Engineer II	
Approved By:	Kaitlin O'Keefe	Senior Technical Manager	

DIPOLE CALIBRATION EXTENSION

Per KDB 865664 D01, calibration intervals of up to three years may be considered for reference dipoles when it is demonstrated that the SAR target, impedance and return loss of a dipole have remained stable according to the following requirements:

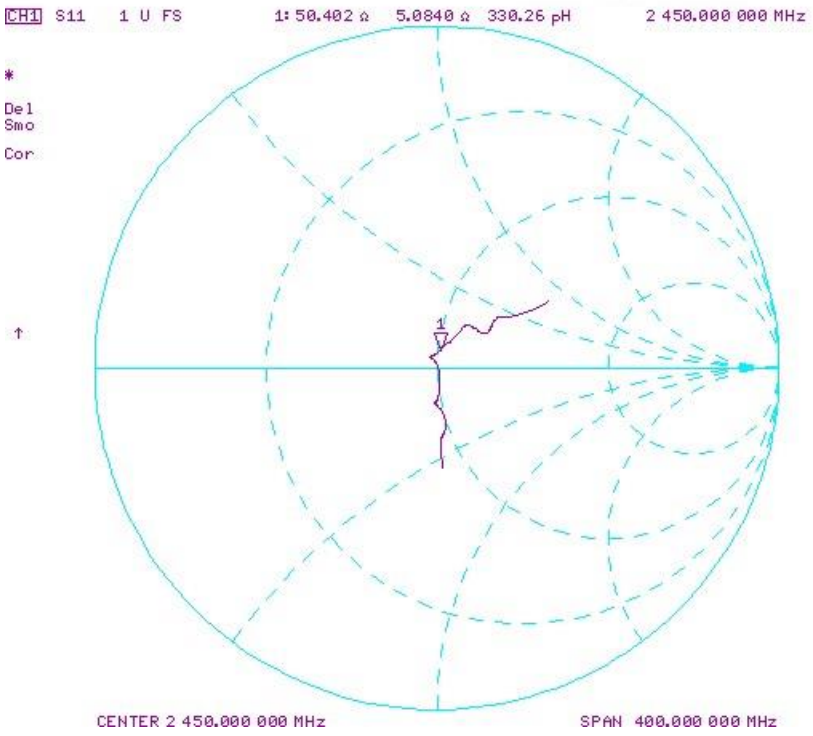
1. The measured SAR does not deviate more than 10% from the target on the calibration certificate.
2. The return-loss does not deviate more than 20% from the previous measurement and meets the required 20dB minimum return-loss requirement.
3. The measurement of real or imaginary parts of impedance does not deviate more than 5Ω from the previous measurement.

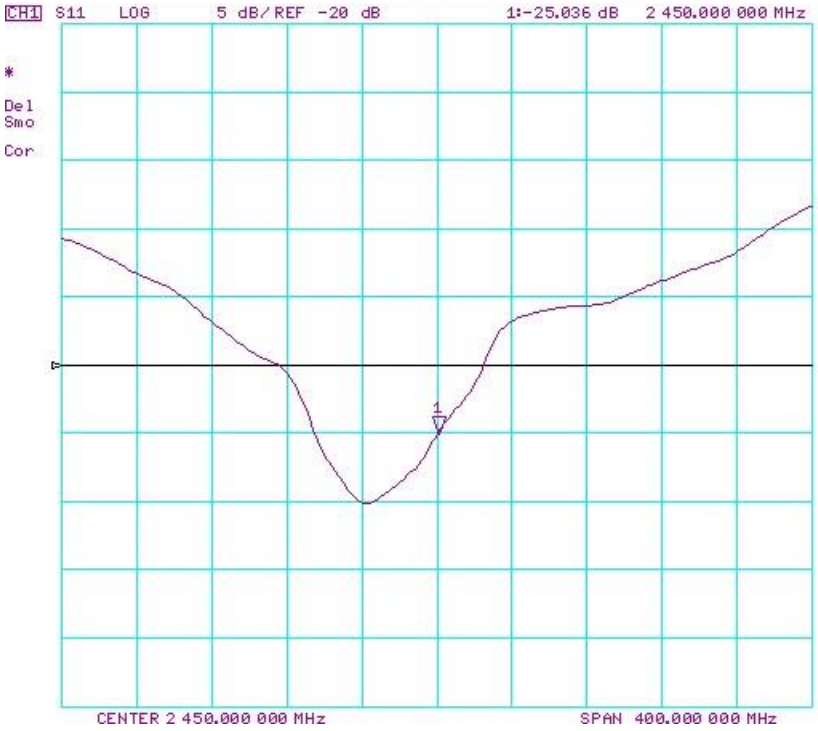
The following dipole was checked to pass the above 3 requirements to have 2-year calibration period from the calibration date:

Calibration Date	Extension Date	Certificate Electrical Delay (ns)	Certificate SAR Target Head (1g) W/kg @ 20.0 dBm	Measured Head SAR (1g) W/kg @ 20.0 dBm	Deviation 1g (%)	Certificate SAR Target Head (10g) W/kg @ 20.0 dBm	Measured Head SAR (10g) W/kg @ 20.0 dBm	Deviation 10g (%)	Certificate Impedance Head (Ohm) Real	Measured Impedance Head (Ohm) Real	Difference (Ohm) Real	Certificate Impedance Head (Ohm) Imaginary	Measured Impedance Head (Ohm) Imaginary	Difference (Ohm) Imaginary	Certificate Return Loss Head (dB)	Measured Return Loss Head (dB)	Deviation (%)	PASS/FAIL
6/7/2017	6/1/2018	1.155	5.33	5.54	3.94%	2.48	2.51	1.21%	53.7	50.4	3.3	5.8	5.1	0.7	-23.5	-25	-6.40%	PASS

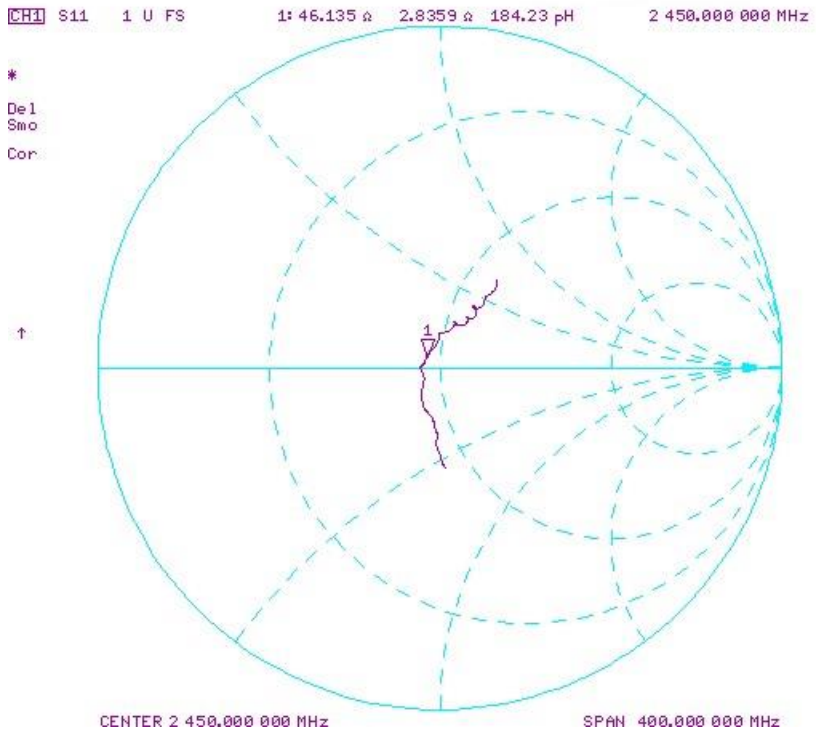
Calibration Date	Extension Date	Certificate Electrical Delay (ns)	Certificate SAR Target Body (1g) W/kg @ 20.0 dBm	Measured Body SAR (1g) W/kg @ 20.0 dBm	Deviation 1g (%)	Certificate SAR Target Body (10g) W/kg @ 20.0 dBm	Measured Body SAR (10g) W/kg @ 20.0 dBm	Deviation 10g (%)	Certificate Impedance Body (Ohm) Real	Measured Impedance Body (Ohm) Real	Difference (Ohm) Real	Certificate Impedance Body (Ohm) Imaginary	Measured Impedance Body (Ohm) Imaginary	Difference (Ohm) Imaginary	Certificate Return Loss Body (dB)	Measured Return Loss Body (dB)	Deviation (%)	PASS/FAIL
6/7/2017	6/1/2018	1.155	5.12	4.9	-4.30%	2.42	2.23	-7.85%	49.7	46.1	3.6	6.7	2.8	3.9	-23.5	-24.5	-4.30%	PASS

Impedance & Return-Loss Measurement Plot for Head TSL





Impedance & Return-Loss Measurement Plot for Body TSL



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

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

Accredited by the Swiss Accreditation Service (SAS) **Accreditation No.: SCS 0108**
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Client **PC Test** **Certificate No: D2450V2-945_May18**

CALIBRATION CERTIFICATE

Object D2450V2 - SN:945

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

SCV 5/31/2018

Calibration date: May 16, 2018

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NRP	SN: 104778	04-Apr-18 (No. 217-02672/02673)	Apr-19
Power sensor NRP-Z91	SN: 103244	04-Apr-18 (No. 217-02672)	Apr-19
Power sensor NRP-Z91	SN: 103245	04-Apr-18 (No. 217-02673)	Apr-19
Reference 20 dB Attenuator	SN: 5058 (20k)	04-Apr-18 (No. 217-02682)	Apr-19
Type-N mismatch combination	SN: 5047.2 / 06327	04-Apr-18 (No. 217-02683)	Apr-19
Reference Probe EX3DV4	SN: 7349	30-Dec-17 (No. EX3-7349_Dec17)	Dec-18
DAE4	SN: 601	26-Oct-17 (No. DAE4-601_Oct17)	Oct-18

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power meter EPM-442A	SN: GB37480704	07-Oct-15 (in house check Oct-16)	In house check: Oct-18
Power sensor HP 8481A	SN: US37292783	07-Oct-15 (in house check Oct-16)	In house check: Oct-18
Power sensor HP 8481A	SN: MY41092317	07-Oct-15 (in house check Oct-16)	In house check: Oct-18
RF generator R&S SMT-06	SN: 100972	15-Jun-15 (in house check Oct-16)	In house check: Oct-18
Network Analyzer HP 8753E	SN: US37390585	18-Oct-01 (in house check Oct-17)	In house check: Oct-18

	Name	Function	Signature
Calibrated by:	Manu Seitz	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: May 17, 2018

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

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

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

Accreditation No.: SCS 0108

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, "Measurement procedure for the assessment of Specific Absorption Rate (SAR) from hand-held and body-mounted devices used next to the ear (frequency range of 300 MHz to 6 GHz)", July 2016
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	V52.10.1
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	2450 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	39.2	1.80 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	38.2 ± 6 %	1.85 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	13.0 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**51.0 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	6.02 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**23.8 W/kg ± 16.5 % (k=2)**

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Body TSL parameters	22.0 °C	52.7	1.95 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	52.3 ± 6 %	1.99 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm³ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	12.5 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**49.4 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	5.83 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**23.2 W/kg ± 16.5 % (k=2)**

Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	56.1 Ω + 3.7 jΩ
Return Loss	- 23.5 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	51.9 Ω + 5.0 jΩ
Return Loss	- 25.7 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.157 ns

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

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

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	March 15, 2014

DASY5 Validation Report for Head TSL

Date: 16.05.2018

Test Laboratory: SPEAG, Zurich, Switzerland

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

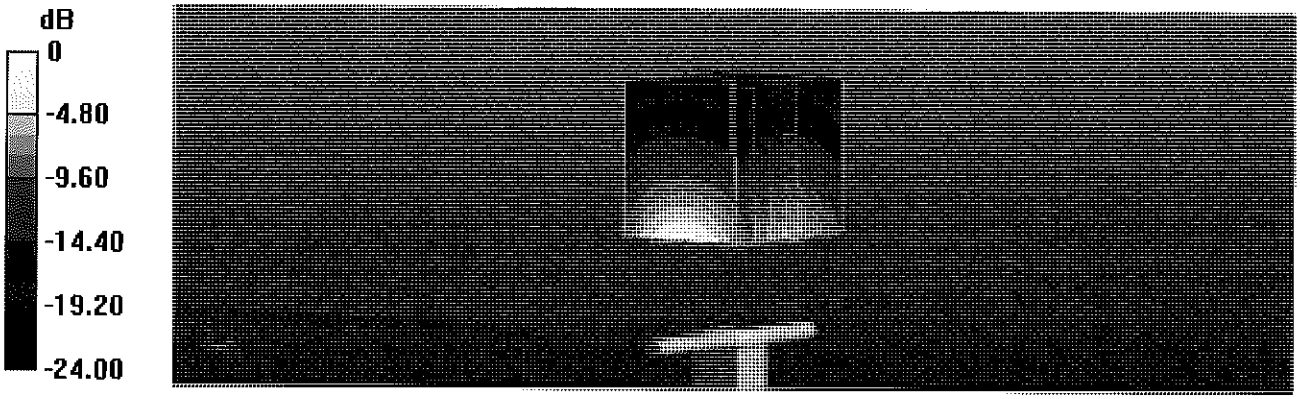
Communication System: UID 0 - CW; Frequency: 2450 MHz
Medium parameters used: f = 2450 MHz; σ = 1.85 S/m; ε_r = 38.2; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

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

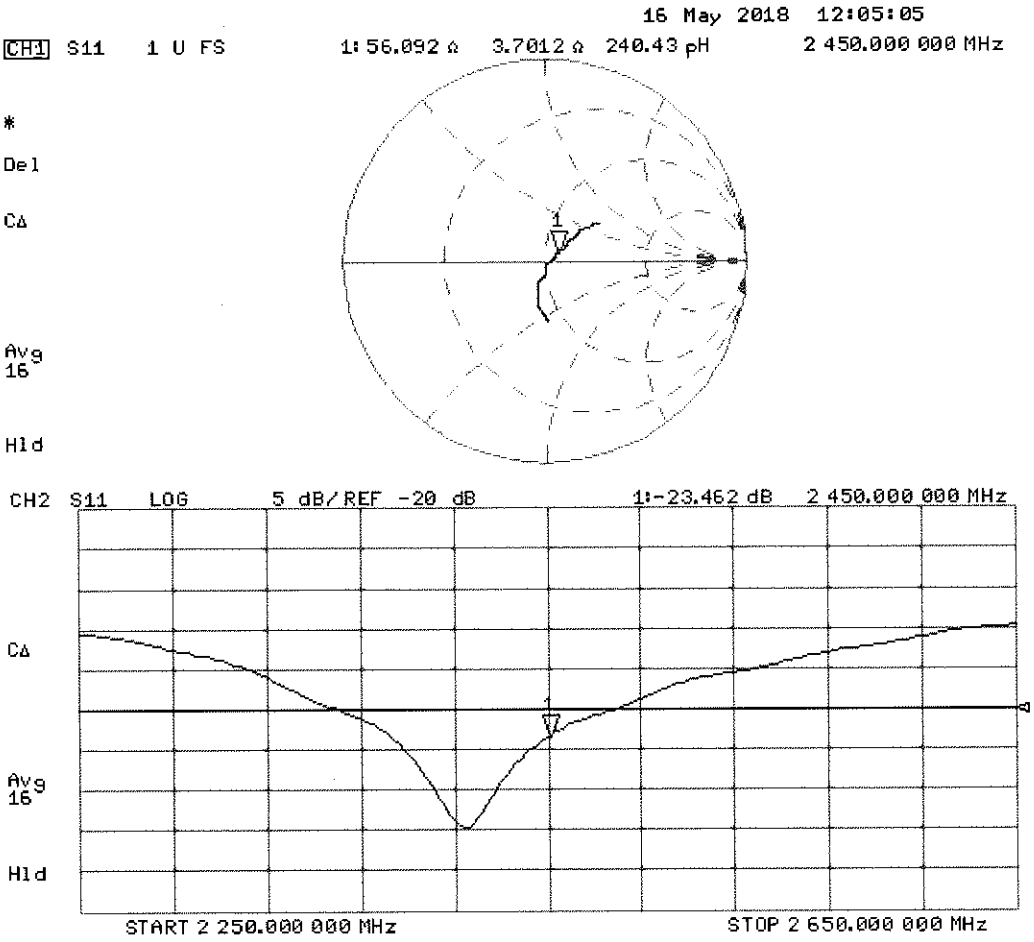
Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 114.8 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 25.9 W/kg
SAR(1 g) = 13 W/kg; SAR(10 g) = 6.02 W/kg
Maximum value of SAR (measured) = 21.4 W/kg



0 dB = 21.4 W/kg = 13.30 dBW/kg

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 16.05.2018

Test Laboratory: SPEAG, Zurich, Switzerland

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

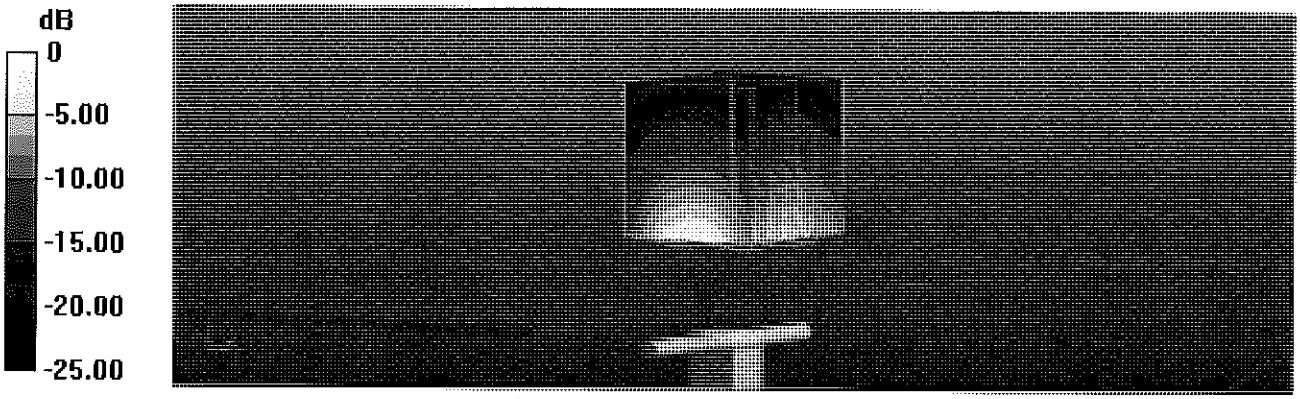
Communication System: UID 0 - CW; Frequency: 2450 MHz
Medium parameters used: f = 2450 MHz; σ = 1.99 S/m; ε_r = 52.3; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

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

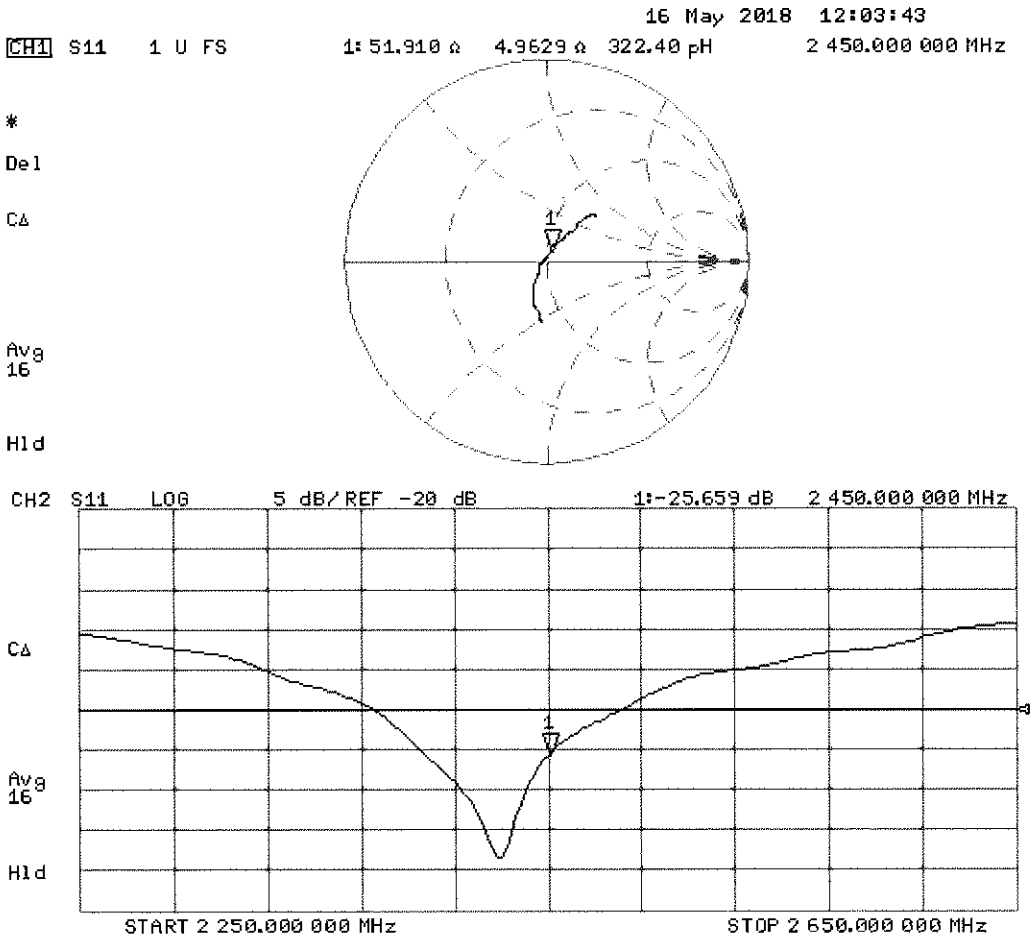
Dipole Calibration for Body Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 106.8 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 25.0 W/kg
SAR(1 g) = 12.5 W/kg; SAR(10 g) = 5.83 W/kg
Maximum value of SAR (measured) = 20.2 W/kg



0 dB = 20.2 W/kg = 13.05 dBW/kg

Impedance Measurement Plot for Body TSL



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

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

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

Accreditation No.: SCS 0108

Client PC Test **Certificate No: D5GHzV2-1163_Sep18**

CALIBRATION CERTIFICATE

Object D5GHzV2 - SN:1163

Calibration procedure(s) QA CAL-22.v3
Calibration procedure for dipole validation kits between 3-6 GHz

SC ✓ 9/24/2018

Calibration date: September 13, 2018

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NRP	SN: 104778	04-Apr-18 (No. 217-02672/02673)	Apr-19
Power sensor NRP-Z91	SN: 103244	04-Apr-18 (No. 217-02672)	Apr-19
Power sensor NRP-Z91	SN: 103245	04-Apr-18 (No. 217-02673)	Apr-19
Reference 20 dB Attenuator	SN: 5058 (20k)	04-Apr-18 (No. 217-02682)	Apr-19
Type-N mismatch combination	SN: 5047.2 / 06327	04-Apr-18 (No. 217-02683)	Apr-19
Reference Probe EX3DV4	SN: 3503	30-Dec-17 (No. EX3-3503_Dec17)	Dec-18
DAE4	SN: 601	26-Oct-17 (No. DAE4-601_Oct17)	Oct-18

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power meter EPM-442A	SN: GB37480704	07-Oct-15 (in house check Oct-16)	In house check: Oct-18
Power sensor HP 8481A	SN: US37292783	07-Oct-15 (in house check Oct-16)	In house check: Oct-18
Power sensor HP 8481A	SN: MY41092317	07-Oct-15 (in house check Oct-16)	In house check: Oct-18
RF generator R&S SMT-06	SN: 100972	15-Jun-15 (in house check Oct-16)	In house check: Oct-18
Network Analyzer Agilent E8358A	SN: US41080477	31-Mar-14 (in house check Oct-17)	In house check: Oct-18

	Name	Function	Signature
Calibrated by:	Manu Seitz	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: September 19, 2018

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, "Measurement procedure for the assessment of Specific Absorption Rate (SAR) from hand-held and body-mounted devices used next to the ear (frequency range of 300 MHz to 6 GHz)", July 2016
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	V52.10.1
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom V5.0	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy = 4.0 mm, dz = 1.4 mm	Graded Ratio = 1.4 (Z direction)
Frequency	5250 MHz ± 1 MHz 5600 MHz ± 1 MHz 5750 MHz ± 1 MHz	

Head TSL parameters at 5250 MHz

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	35.9	4.71 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	35.3 ± 6 %	4.52 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL at 5250 MHz

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	8.10 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**80.6 W/kg ± 19.9 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	100 mW input power	2.33 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**23.1 W/kg ± 19.5 % (k=2)**

Head TSL parameters at 5600 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	35.5	5.07 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	34.8 ± 6 %	4.87 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL at 5600 MHz

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	8.43 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**83.8 W / kg ± 19.9 % (k=2)**

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

Head TSL parameters at 5750 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	35.4	5.22 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	34.6 ± 6 %	5.03 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL at 5750 MHz

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	8.16 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**81.1 W/kg ± 19.9 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	100 mW input power	2.32 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**23.0 W/kg ± 19.5 % (k=2)**

Body TSL parameters at 5250 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	48.9	5.36 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	46.9 ± 6 %	5.46 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL at 5250 MHz

SAR averaged over 1 cm^3 (1 g) of Body TSL	Condition	
SAR measured	100 mW input power	7.83 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**77.7 W/kg ± 19.9 % (k=2)**

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

Body TSL parameters at 5600 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	48.5	5.77 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	46.3 ± 6 %	5.93 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL at 5600 MHz

SAR averaged over 1 cm^3 (1 g) of Body TSL	Condition	
SAR measured	100 mW input power	8.08 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**80.1 W/kg ± 19.9 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	100 mW input power	2.25 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**22.3 W/kg ± 19.5 % (k=2)**

Body TSL parameters at 5750 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	48.3	5.94 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	46.0 ± 6 %	6.14 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL at 5750 MHz

SAR averaged over 1 cm^3 (1 g) of Body TSL	Condition	
SAR measured	100 mW input power	7.85 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**77.8 W/kg ± 19.9 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	100 mW input power	2.18 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**21.5 W/kg ± 19.5 % (k=2)**

Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL at 5250 MHz

Impedance, transformed to feed point	48.0 Ω - 2.0 jΩ
Return Loss	- 30.9 dB

Antenna Parameters with Head TSL at 5600 MHz

Impedance, transformed to feed point	49.0 Ω + 4.4 jΩ
Return Loss	- 26.8 dB

Antenna Parameters with Head TSL at 5750 MHz

Impedance, transformed to feed point	50.9 Ω + 4.3 jΩ
Return Loss	- 27.2 dB

Antenna Parameters with Body TSL at 5250 MHz

Impedance, transformed to feed point	46.4 Ω - 0.4 jΩ
Return Loss	- 28.5 dB

Antenna Parameters with Body TSL at 5600 MHz

Impedance, transformed to feed point	50.2 Ω + 4.1 jΩ
Return Loss	- 27.8 dB

Antenna Parameters with Body TSL at 5750 MHz

Impedance, transformed to feed point	51.8 Ω + 5.9 jΩ
Return Loss	- 24.3 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.202 ns

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

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

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	June 06, 2013

DASY5 Validation Report for Head TSL

Date: 13.09.2018

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole D5GHzV2; Type: D5GHzV2; Serial: D5GHzV2 - SN:1163

Communication System: UID 0 - CW; Frequency: 5250 MHz, Frequency: 5600 MHz, Frequency: 5750 MHz
Medium parameters used: f = 5250 MHz; σ = 4.52 S/m; ε_r = 35.3; ρ = 1000 kg/m^3 ,
Medium parameters used: f = 5600 MHz; σ = 4.87 S/m; ε_r = 34.8; ρ = 1000 kg/m^3 ,
Medium parameters used: f = 5750 MHz; σ = 5.03 S/m; ε_r = 34.6; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN3503; ConvF(5.51, 5.51, 5.51) @ 5250 MHz,
  ConvF(5.05, 5.05, 5.05) @ 5600 MHz, ConvF(4.98, 4.98, 4.98) @ 5750 MHz; Calibrated: 30.12.2017
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601 (5GHz); Calibrated: 26.10.2017
- Phantom: Flat Phantom 5.0 (front); Type: QD 000 P50 AA; Serial: 1001
- DASY52 52.10.1(1476); SEMCAD X 14.6.11(7439)

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

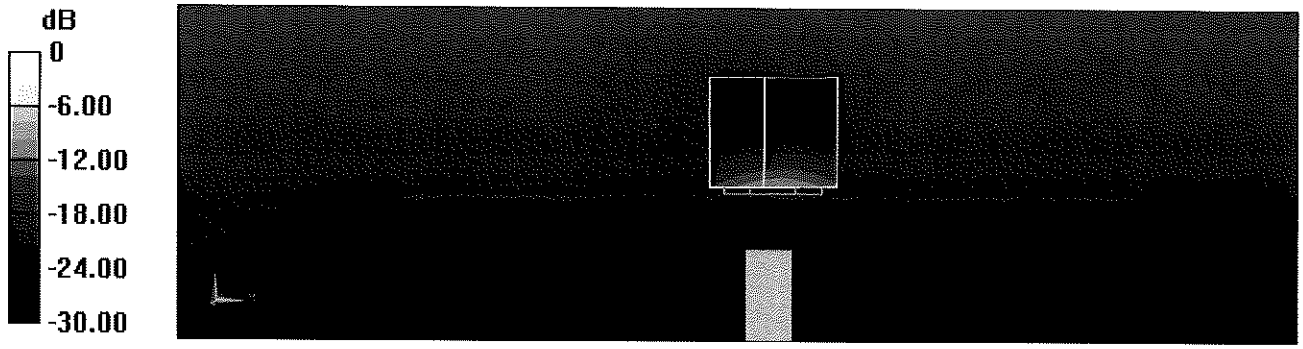
Reference Value = 77.54 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 26.6 W/kg
SAR(1 g) = 8.1 W/kg; SAR(10 g) = 2.33 W/kg
Maximum value of SAR (measured) = 17.9 W/kg

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

Reference Value = 77.29 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 30.6 W/kg
SAR(1 g) = 8.43 W/kg; SAR(10 g) = 2.42 W/kg
Maximum value of SAR (measured) = 19.3 W/kg

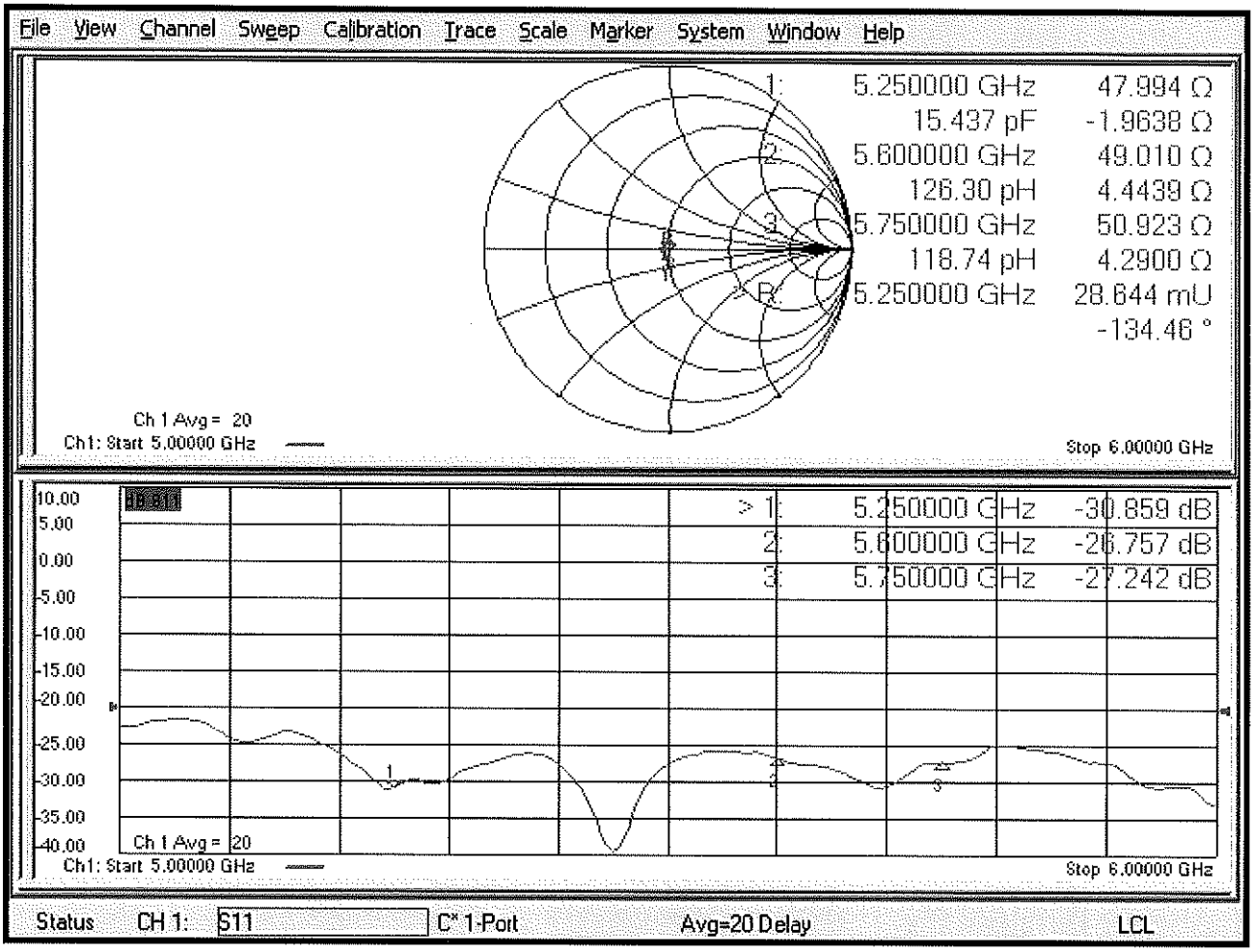
Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5750 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 75.35 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 30.3 W/kg
SAR(1 g) = 8.16 W/kg; SAR(10 g) = 2.32 W/kg
Maximum value of SAR (measured) = 18.9 W/kg



0 dB = 17.9 W/kg = 12.53 dBW/kg

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 12.09.2018

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole D5GHzV2; Type: D5GHzV2; Serial: D5GHzV2 - SN:1163

Communication System: UID 0 - CW; Frequency: 5250 MHz, Frequency: 5600 MHz, Frequency: 5750 MHz
Medium parameters used: f = 5250 MHz; σ = 5.46 S/m; ε_r = 46.9; ρ = 1000 kg/m^3 ,
Medium parameters used: f = 5600 MHz; σ = 5.93 S/m; ε_r = 46.3; ρ = 1000 kg/m^3 ,
Medium parameters used: f = 5750 MHz; σ = 6.14 S/m; ε_r = 46; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN3503; ConvF(5.26, 5.26, 5.26) @ 5250 MHz,
  ConvF(4.65, 4.65, 4.65) @ 5600 MHz, ConvF(4.57, 4.57, 4.57) @ 5750 MHz; Calibrated: 30.12.2017
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601 (5GHz); Calibrated: 26.10.2017
- Phantom: Flat Phantom 5.0 (back); Type: QD 000 P50 AA; Serial: 1002
- DASY52 52.10.1(1476); SEMCAD X 14.6.11(7439)

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

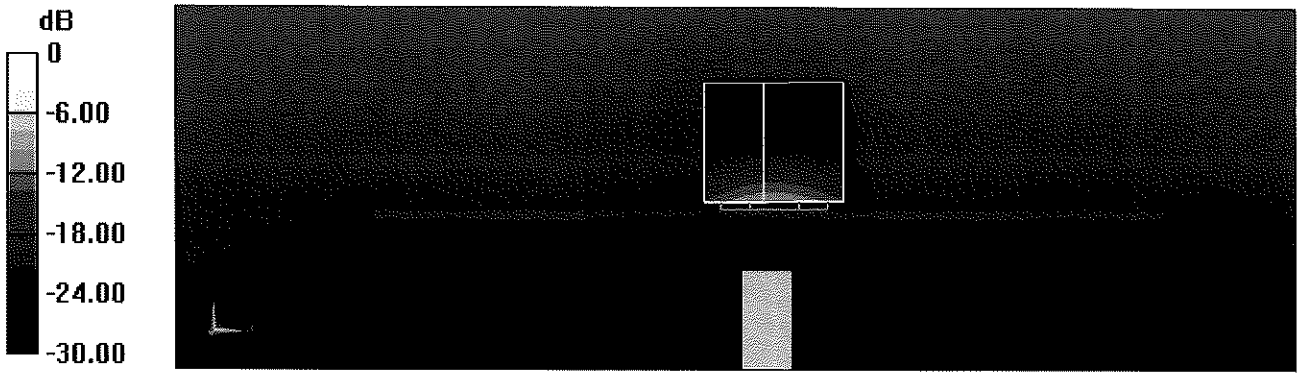
Reference Value = 69.57 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 29.9 W/kg
SAR(1 g) = 7.83 W/kg; SAR(10 g) = 2.17 W/kg
Maximum value of SAR (measured) = 17.8 W/kg

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

Reference Value = 68.75 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 33.7 W/kg
SAR(1 g) = 8.08 W/kg; SAR(10 g) = 2.25 W/kg
Maximum value of SAR (measured) = 19.2 W/kg

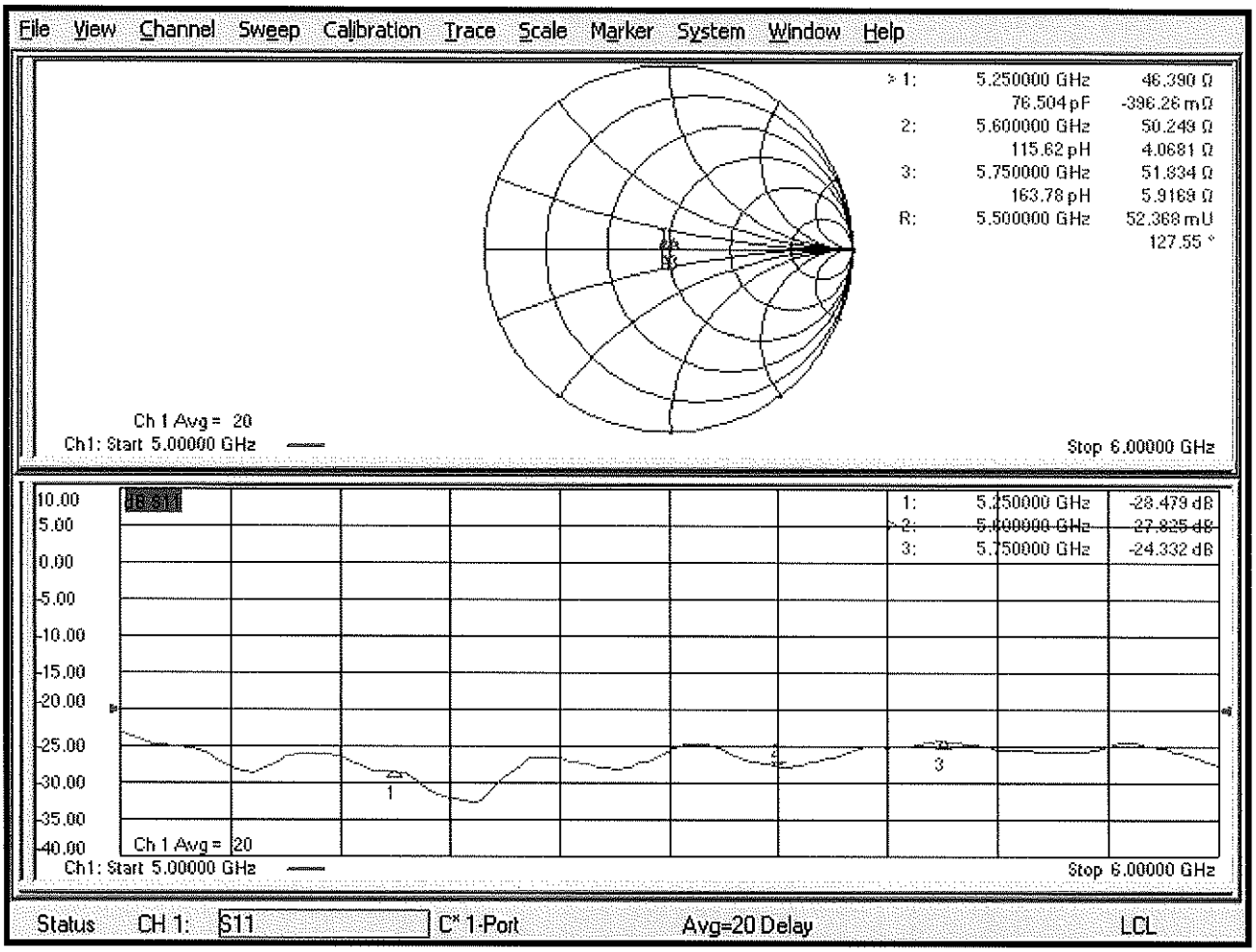
Dipole Calibration for Body Tissue/Pin=100mW, dist=10mm, f=5750 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 67.61 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 33.2 W/kg
SAR(1 g) = 7.85 W/kg; SAR(10 g) = 2.18 W/kg
Maximum value of SAR (measured) = 18.6 W/kg



0 dB = 17.8 W/kg = 12.50 dBW/kg

Impedance Measurement Plot for Body TSL



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

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

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

Accreditation No.: SCS 0108

Client PC Test

Certificate No: D5GHzV2-1123_Mar18

CALIBRATION CERTIFICATE

Object: D5GHzV2 - SN:1123

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

SC ✓ 3/21/18

Calibration date: March 13, 2018

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NRP	SN: 104778	04-Apr-17 (No. 217-02521/02522)	Apr-18
Power sensor NRP-Z91	SN: 103244	04-Apr-17 (No. 217-02521)	Apr-18
Power sensor NRP-Z91	SN: 103245	04-Apr-17 (No. 217-02522)	Apr-18
Reference 20 dB Attenuator	SN: 5058 (20k)	07-Apr-17 (No. 217-02528)	Apr-18
Type-N mismatch combination	SN: 5047.2 / 06327	07-Apr-17 (No. 217-02529)	Apr-18
Reference Probe EX3DV4	SN: 3503	30-Dec-17 (No. EX3-3503_Dec17)	Dec-18
DAE4	SN: 601	26-Oct-17 (No. DAE4-601_Oct17)	Oct-18

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power meter EPM-442A	SN: GB37480704	07-Oct-16 (No. 217-02222)	In house check: Oct-18
Power sensor HP 8481A	SN: US37292783	07-Oct-16 (No. 217-02222)	In house check: Oct-18
Power sensor HP 8481A	SN: MY41092317	07-Oct-16 (No. 217-02223)	In house check: Oct-18
RF generator R&S SMT-06	SN: 100972	15-Jun-15 (in house check Oct-16)	In house check: Oct-18
Network Analyzer HP 8753E	SN: US37390585	18-Oct-01 (in house check Oct-17)	In house check: Oct-18

	Name	Function	Signature
Calibrated by:	Leif Klysner	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: March 14, 2018

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, "Measurement procedure for the assessment of Specific Absorption Rate (SAR) from hand-held and body-mounted devices used next to the ear (frequency range of 300 MHz to 6 GHz)", July 2016
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	V52.10.0
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom V5.0	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy = 4.0 mm, dz = 1.4 mm	Graded Ratio = 1.4 (Z direction)
Frequency	5250 MHz ± 1 MHz 5600 MHz ± 1 MHz 5750 MHz ± 1 MHz	

Head TSL parameters at 5250 MHz

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	35.9	4.71 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	36.2 ± 6 %	4.58 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL at 5250 MHz

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	8.15 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**81.6 W/kg ± 19.9 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	100 mW input power	2.35 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**23.5 W/kg ± 19.5 % (k=2)**

Head TSL parameters at 5600 MHz

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	35.5	5.07 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	35.7 ± 6 %	4.94 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL at 5600 MHz

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	8.51 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**85.1 W/kg ± 19.9 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	100 mW input power	2.43 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**24.3 W/kg ± 19.5 % (k=2)**

Head TSL parameters at 5750 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	35.4	5.22 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	35.5 ± 6 %	5.10 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL at 5750 MHz

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	8.06 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**80.6 W/kg ± 19.9 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	100 mW input power	2.29 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**22.9 W/kg ± 19.5 % (k=2)**

Body TSL parameters at 5250 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	48.9	5.36 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	47.1 ± 6 %	5.49 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL at 5250 MHz

SAR averaged over 1 cm^3 (1 g) of Body TSL	Condition	
SAR measured	100 mW input power	7.45 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**74.0 W/kg ± 19.9 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	100 mW input power	2.08 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**20.6 W/kg ± 19.5 % (k=2)**

Body TSL parameters at 5600 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	48.5	5.77 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	46.4 ± 6 %	5.97 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL at 5600 MHz

SAR averaged over 1 cm^3 (1 g) of Body TSL	Condition	
SAR measured	100 mW input power	7.82 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**77.6 W/kg ± 19.9 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	100 mW input power	2.19 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**21.7 W/kg ± 19.5 % (k=2)**

Body TSL parameters at 5750 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	48.3	5.94 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	46.2 ± 6 %	6.18 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL at 5750 MHz

SAR averaged over 1 cm^3 (1 g) of Body TSL	Condition	
SAR measured	100 mW input power	7.52 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**74.7 W/kg ± 19.9 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	100 mW input power	2.10 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**20.8 W/kg ± 19.5 % (k=2)**

Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL at 5250 MHz

Impedance, transformed to feed point	53.2 Ω - 5.2 jΩ
Return Loss	- 24.6 dB

Antenna Parameters with Head TSL at 5600 MHz

Impedance, transformed to feed point	57.2 Ω - 0.4 jΩ
Return Loss	- 23.4 dB

Antenna Parameters with Head TSL at 5750 MHz

Impedance, transformed to feed point	56.7 Ω + 0.9 jΩ
Return Loss	- 23.9 dB

Antenna Parameters with Body TSL at 5250 MHz

Impedance, transformed to feed point	51.6 Ω - 4.3 jΩ
Return Loss	- 26.9 dB

Antenna Parameters with Body TSL at 5600 MHz

Impedance, transformed to feed point	59.0 Ω - 0.3 jΩ
Return Loss	- 21.7 dB

Antenna Parameters with Body TSL at 5750 MHz

Impedance, transformed to feed point	57.8 Ω + 1.0 jΩ
Return Loss	- 22.7 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.205 ns

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

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

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	September 08, 2011

DASY5 Validation Report for Head TSL

Date: 13.03.2018

Test Laboratory: SPEAG, Zurich, Switzerland

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

Communication System: UID 0 - CW; Frequency: 5250 MHz, Frequency: 5600 MHz, Frequency: 5750 MHz
Medium parameters used: f = 5250 MHz; σ = 4.58 S/m; ε_r = 36.2; ρ = 1000 kg/m^3 ,
Medium parameters used: f = 5600 MHz; σ = 4.94 S/m; ε_r = 35.7; ρ = 1000 kg/m^3 ,
Medium parameters used: f = 5750 MHz; σ = 5.1 S/m; ε_r = 35.5; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

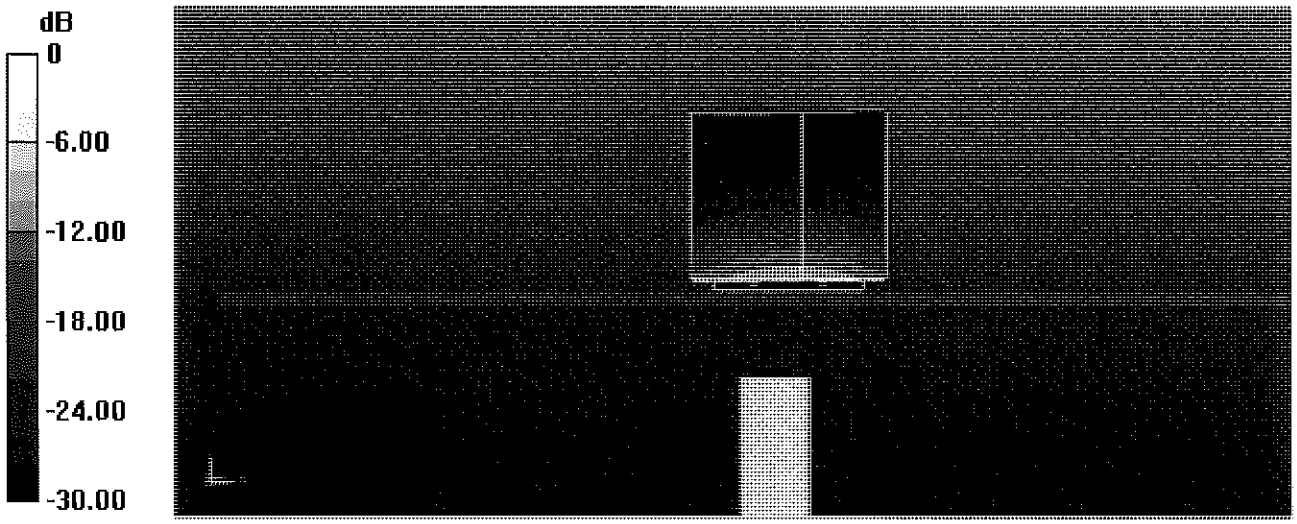
DASY52 Configuration:

- Probe: EX3DV4 - SN3503; ConvF(5.51, 5.51, 5.51); Calibrated: 30.12.2017, ConvF(5.05, 5.05, 5.05); Calibrated: 30.12.2017, ConvF(4.98, 4.98, 4.98); Calibrated: 30.12.2017;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 26.10.2017
- Phantom: Flat Phantom 5.0 (front); Type: QD 000 P50 AA; Serial: 1001
- DASY52 52.10.0(1446); SEMCAD X 14.6.10(7417)

Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5250 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 73.12 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 28.1 W/kg
SAR(1 g) = 8.15 W/kg; SAR(10 g) = 2.35 W/kg
Maximum value of SAR (measured) = 18.4 W/kg

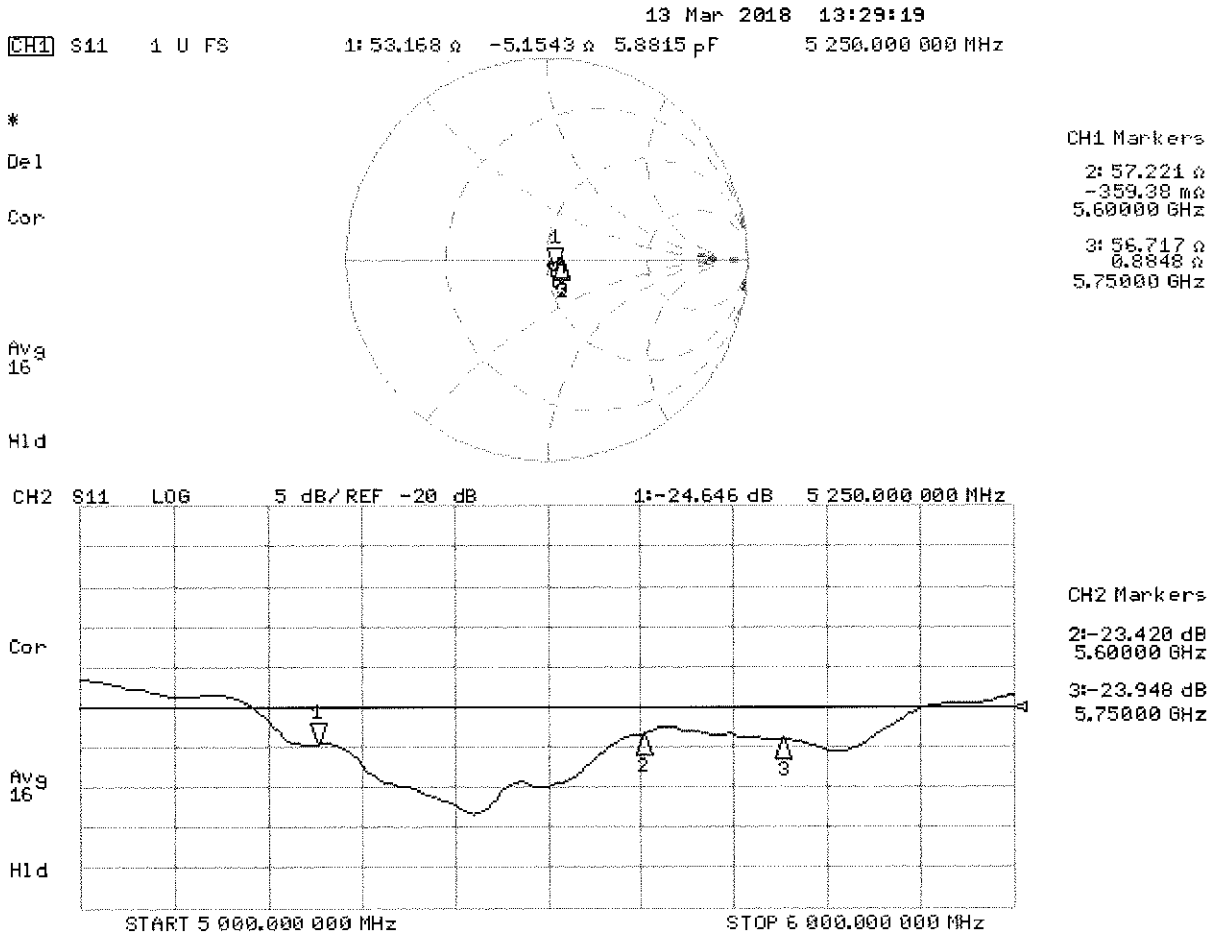
Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5600 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 72.34 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 32.4 W/kg
SAR(1 g) = 8.51 W/kg; SAR(10 g) = 2.43 W/kg
Maximum value of SAR (measured) = 19.8 W/kg

Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5750 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 70.38 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 31.4 W/kg
SAR(1 g) = 8.06 W/kg; SAR(10 g) = 2.29 W/kg
Maximum value of SAR (measured) = 19.1 W/kg



0 dB = 19.1 W/kg = 12.81 dBW/kg

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 12.03.2018

Test Laboratory: SPEAG, Zurich, Switzerland

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

Communication System: UID 0 - CW; Frequency: 5250 MHz, Frequency: 5600 MHz, Frequency: 5750 MHz
Medium parameters used: f = 5250 MHz; σ = 5.49 S/m; ε_r = 47.1; ρ = 1000 kg/m^3 ,
Medium parameters used: f = 5600 MHz; σ = 5.97 S/m; ε_r = 46.4; ρ = 1000 kg/m^3 ,
Medium parameters used: f = 5750 MHz; σ = 6.18 S/m; ε_r = 46.2; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

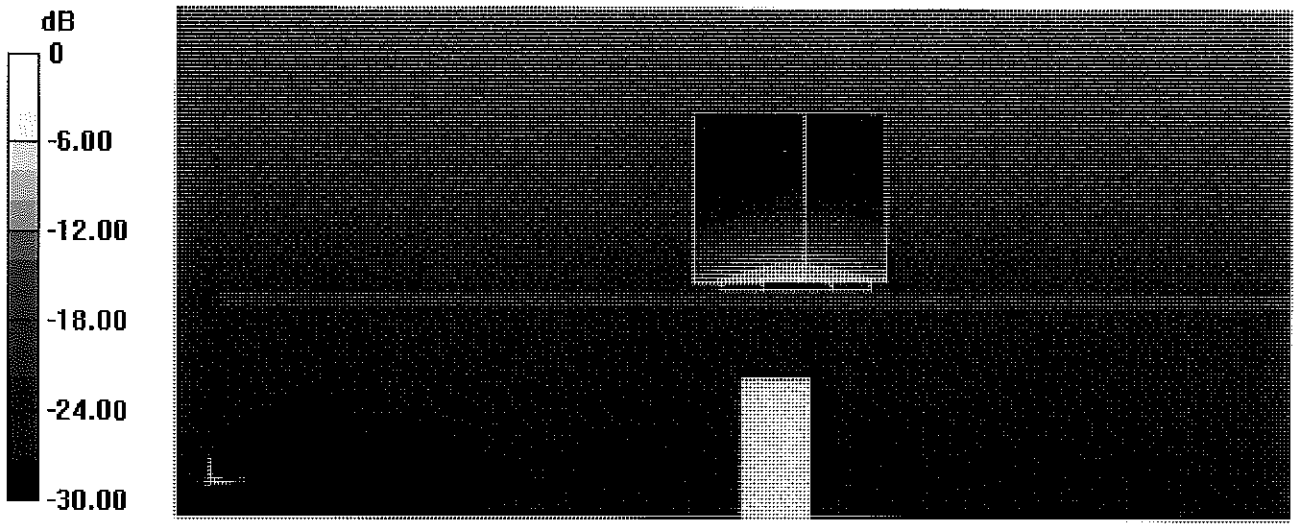
DASY52 Configuration:

- Probe: EX3DV4 - SN3503; ConvF(5.26, 5.26, 5.26); Calibrated: 30.12.2017, ConvF(4.65, 4.65, 4.65); Calibrated: 30.12.2017, ConvF(4.57, 4.57, 4.57); Calibrated: 30.12.2017;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 26.10.2017
- Phantom: Flat Phantom 5.0 (back); Type: QD 000 P50 AA; Serial: 1002
- DASY52 52.10.0(1446); SEMCAD X 14.6.10(7417)

Dipole Calibration for Body Tissue/Pin=100mW, dist=10mm, f=5250 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 63.35 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 28.3 W/kg
SAR(1 g) = 7.45 W/kg; SAR(10 g) = 2.08 W/kg
Maximum value of SAR (measured) = 17.6 W/kg

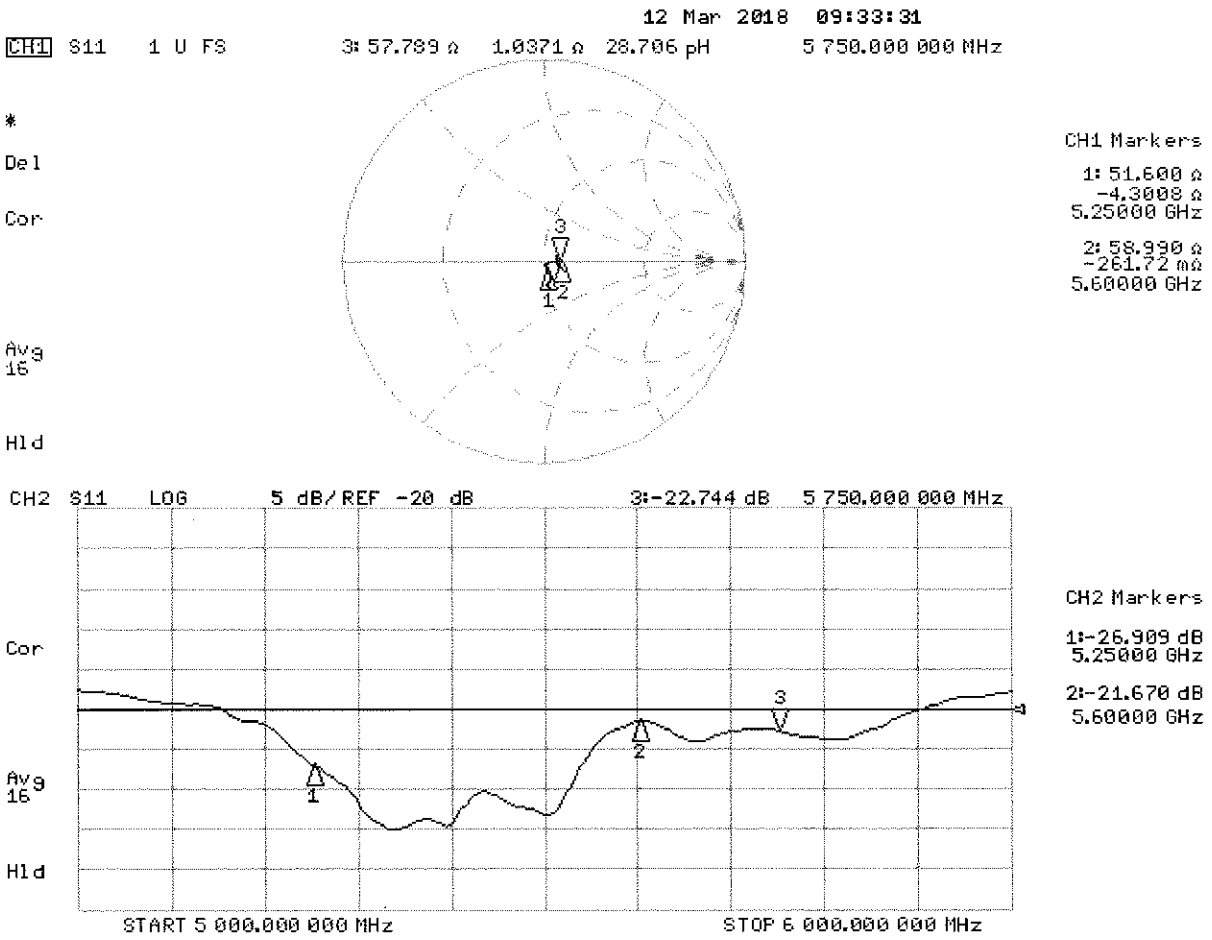
Dipole Calibration for Body Tissue/Pin=100mW, dist=10mm, f=5600 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 63.20 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 32.5 W/kg
SAR(1 g) = 7.82 W/kg; SAR(10 g) = 2.19 W/kg
Maximum value of SAR (measured) = 19.0 W/kg

Dipole Calibration for Body Tissue/Pin=100mW, dist=10mm, f=5750 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 61.74 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 31.8 W/kg
SAR(1 g) = 7.52 W/kg; SAR(10 g) = 2.1 W/kg
Maximum value of SAR (measured) = 18.5 W/kg



0 dB = 18.5 W/kg = 12.67 dBW/kg

Impedance Measurement Plot for Body TSL



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

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

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

Accreditation No.: SCS 0108

Client **PC Test** **Certificate No: ES3-3119_May18**

CALIBRATION CERTIFICATE

Object ES3DV3 - SN:3119

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

SC ✓ 5/31/2018

Calibration date: May 18, 2018

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NRP	SN: 104778	04-Apr-18 (No. 217-02672/02673)	Apr-19
Power sensor NRP-Z91	SN: 103244	04-Apr-18 (No. 217-02672)	Apr-19
Power sensor NRP-Z91	SN: 103245	04-Apr-18 (No. 217-02673)	Apr-19
Reference 20 dB Attenuator	SN: S5277 (20x)	04-Apr-18 (No. 217-02682)	Apr-19
Reference Probe ES3DV2	SN: 3013	30-Dec-17 (No. ES3-3013_Dec17)	Dec-18
DAE4	SN: 660	21-Dec-17 (No. DAE4-660_Dec17)	Dec-18
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-17)	In house check: Oct-18

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

Issued: May 21, 2018

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, ", "Measurement procedure for the assessment of Specific Absorption Rate (SAR) from hand-held and body-mounted devices used next to the ear (frequency range of 300 MHz to 6 GHz)", July 2016
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 ES3DV3

SN:3119

Manufactured: March 6, 2006
Calibrated: May 18, 2018

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

DASY/EASY - Parameters of Probe: ES3DV3 - SN:3119

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu V/(V/m)^2$)[A]	1.29	1.24	1.46	± 10.1 %
DCP (mV)[B]	103.8	100.9	104.2	

Modulation Calibration Parameters

UID	Communication System Name		A dB	B dB√μV	C	D dB	VR mV	Unc[E] (k=2)
0	CW	X	0.0	0.0	1.0	0.00	216.1	±3.5 %
		Y	0.0	0.0	1.0		211.8	
		Z	0.0	0.0	1.0		224.3	

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	72.42	520.3	35.53	32.26	3.723	5.10	0.546	0.664	1.013
Y	69.42	504.6	36.16	29.8	3.581	5.10	0.322	0.714	1.012
Z	62.37	447.3	35.30	29.91	3.519	5.10	0.726	0.593	1.014

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

[A] The uncertainties of Norm X,Y,Z do not affect the E^2-field uncertainty inside TSL (see Pages 5 and 6).
[B] Numerical linearization parameter: uncertainty not required.
[E] Uncertainty is determined using the max. deviation from linear response applying rectangular distribution and is expressed for the square of the field value.

DASY/EASY - Parameters of Probe: ES3DV3 - SN:3119

Calibration Parameter Determined in Head Tissue Simulating Media

f (MHz) [C]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha [G]	Depth [G] (mm)	Unc (k=2)
750	41.9	0.89	6.18	6.18	6.18	0.80	1.17	± 12.0 %
835	41.5	0.90	5.96	5.96	5.96	0.80	1.12	± 12.0 %
1750	40.1	1.37	5.22	5.22	5.22	0.55	1.37	± 12.0 %
1900	40.0	1.40	4.97	4.97	4.97	0.71	1.21	± 12.0 %
2300	39.5	1.67	4.78	4.78	4.78	0.79	1.28	± 12.0 %
2450	39.2	1.80	4.58	4.58	4.58	0.60	1.44	± 12.0 %
2600	39.0	1.96	4.47	4.47	4.47	0.78	1.30	± 12.0 %

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

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

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

DASY/EASY - Parameters of Probe: ES3DV3 - SN:3119

Calibration Parameter Determined in Body Tissue Simulating Media

f (MHz) [C]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha [G]	Depth [G] (mm)	Unc (k=2)
750	55.5	0.96	6.01	6.01	6.01	0.80	1.16	± 12.0 %
835	55.2	0.97	5.84	5.84	5.84	0.68	1.25	± 12.0 %
1750	53.4	1.49	4.87	4.87	4.87	0.52	1.51	± 12.0 %
1900	53.3	1.52	4.65	4.65	4.65	0.60	1.45	± 12.0 %
2300	52.9	1.81	4.52	4.52	4.52	0.80	1.30	± 12.0 %
2450	52.7	1.95	4.42	4.42	4.42	0.72	1.30	± 12.0 %
2600	52.5	2.16	4.24	4.24	4.24	0.80	1.25	± 12.0 %

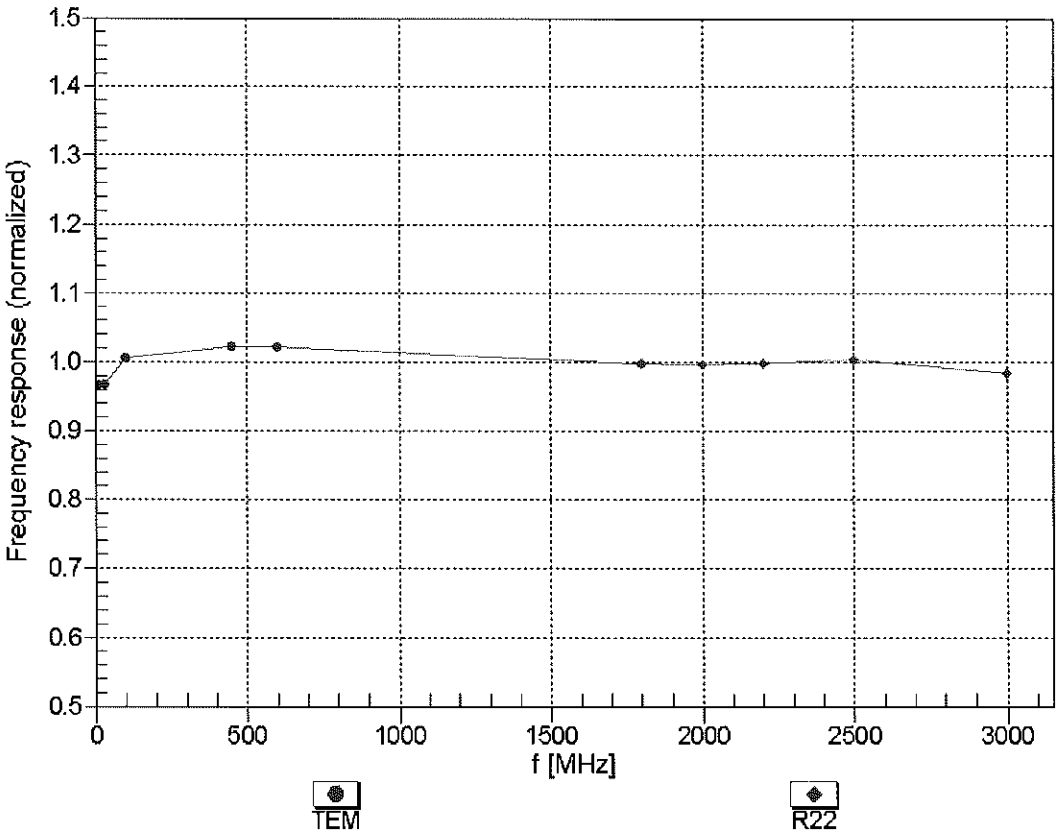
[C] Frequency validity above 300 MHz of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz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

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

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

Frequency Response of E-Field

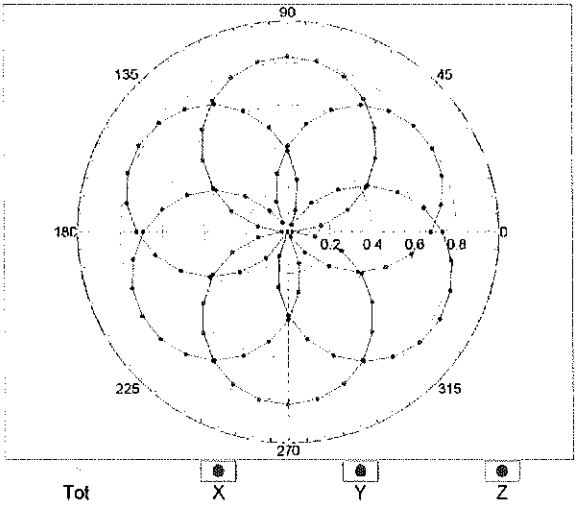
(TEM-Cell:ifi110 EXX, Waveguide: R22)



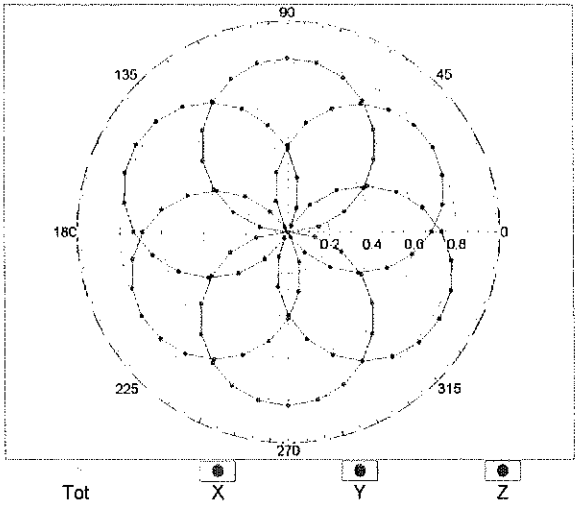
Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

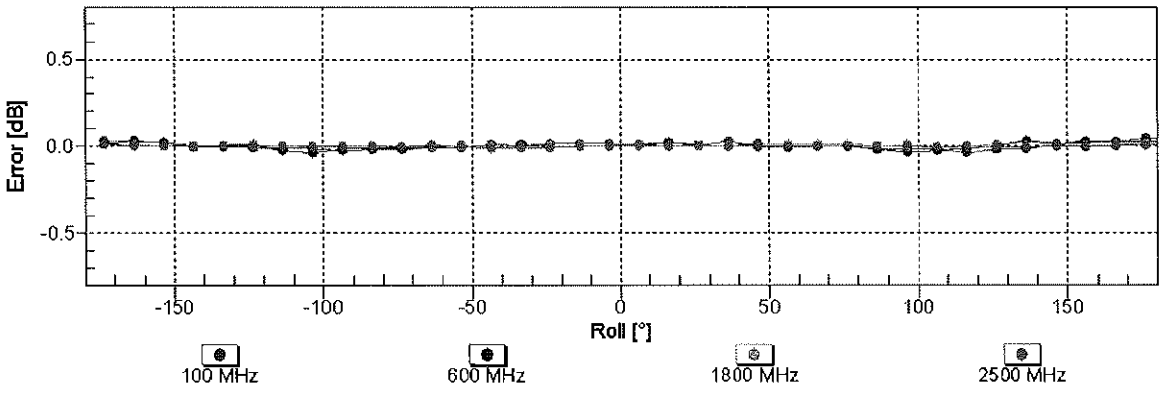
Receiving Pattern (ϕ), ϑ = 0°

f=600 MHz,TEM



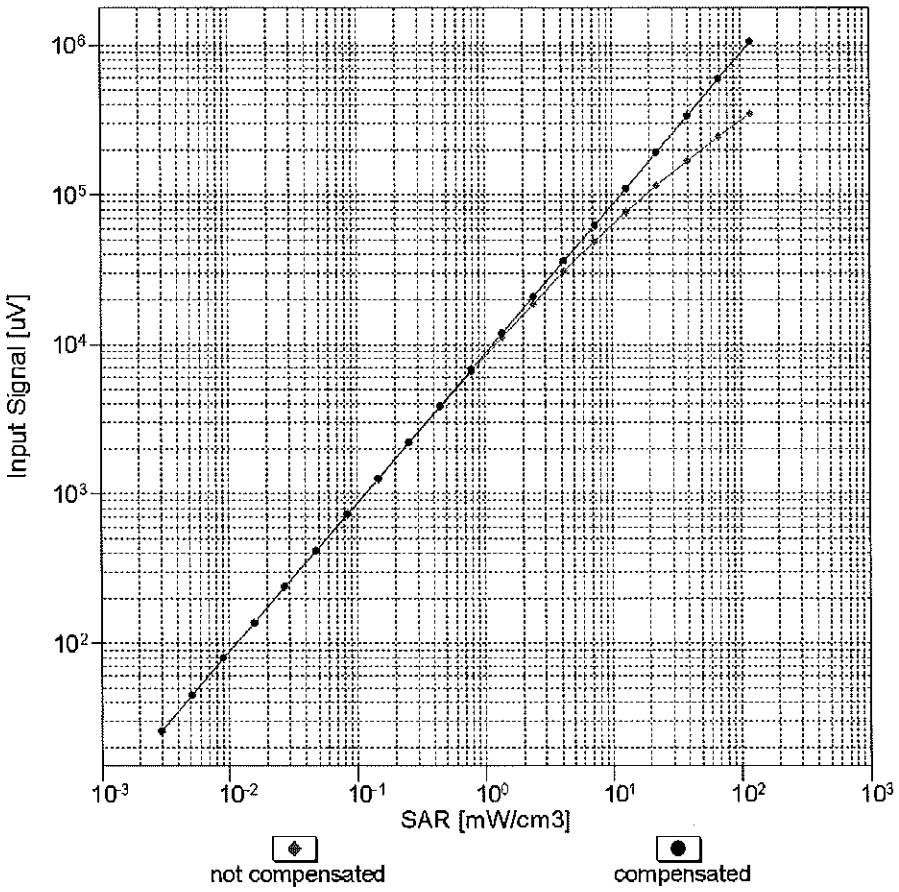
f=1800 MHz,R22

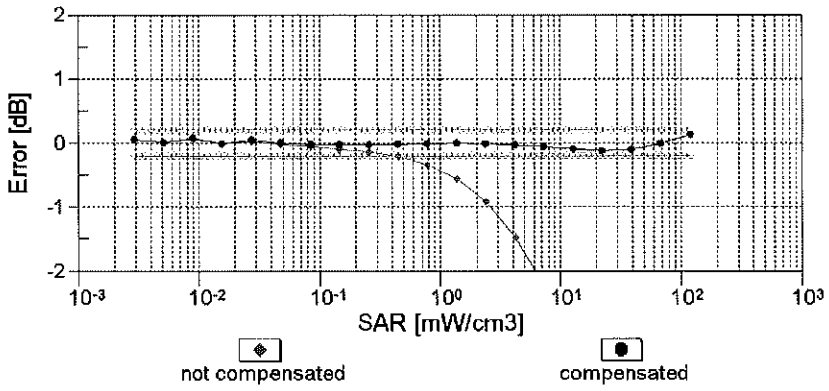




Uncertainty of Axial Isotropy Assessment: ± 0.5% (k=2)

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

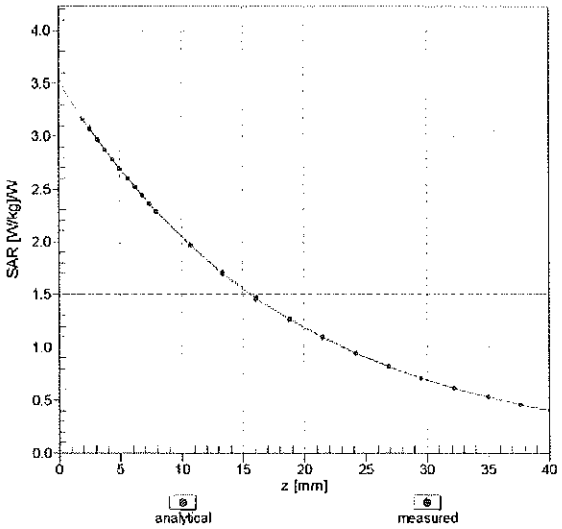




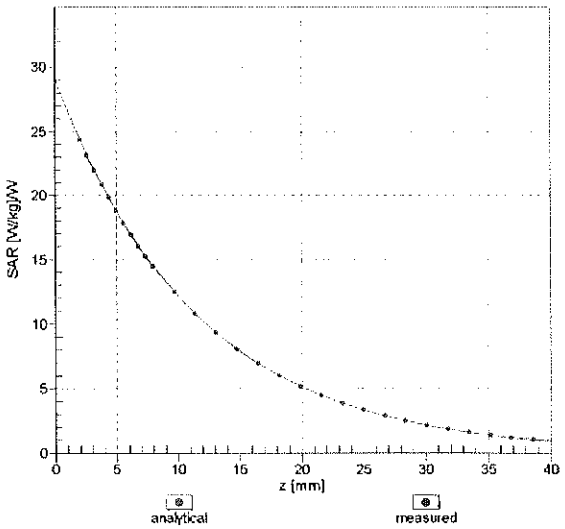
Uncertainty of Linearity Assessment: ± 0.6% (k=2)

Conversion Factor Assessment

f = 835 MHz,WGLS R9 (H_convF)

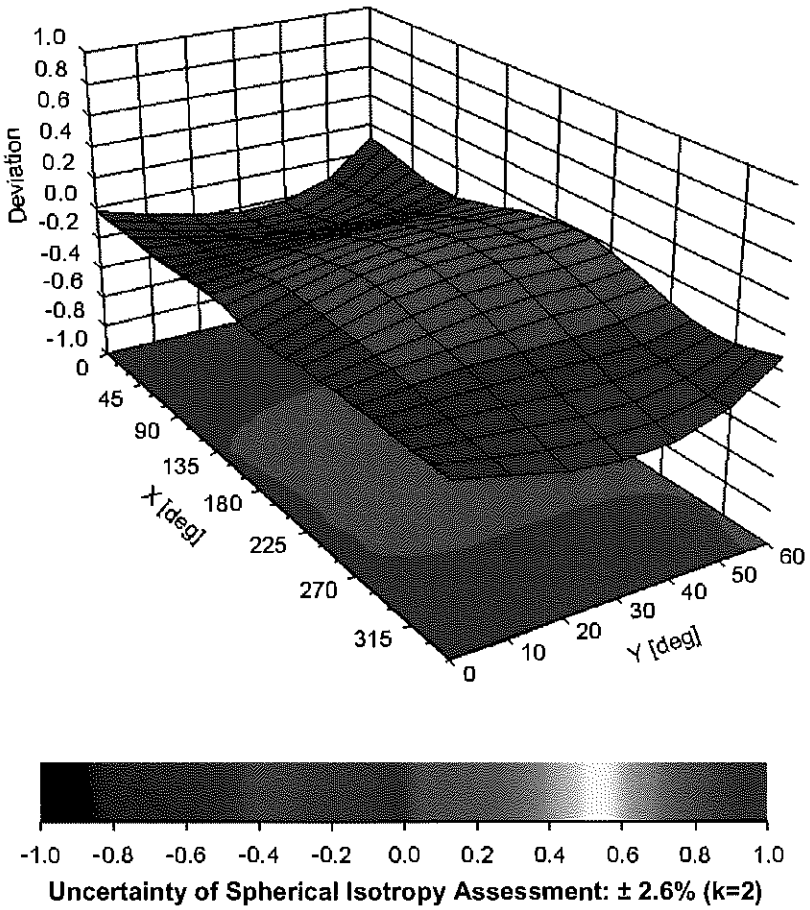


f = 1900 MHz,WGLS R22 (H_convF)



Deviation from Isotropy in Liquid

Error (ϕ, ϑ), f = 900 MHz



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

DASY/EASY - Parameters of Probe: ES3DV3 - SN:3119

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	116.5
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disabled
Probe Overall Length	337 mm
Probe Body Diameter	10 mm
Tip Length	10 mm
Tip Diameter	4 mm
Probe Tip to Sensor X Calibration Point	2 mm
Probe Tip to Sensor Y Calibration Point	2 mm
Probe Tip to Sensor Z Calibration Point	2 mm
Recommended Measurement Distance from Surface	3 mm

Appendix: Modulation Calibration Parameters

UID	Communication System Name		A dB	B dB√μV	C	D dB	VR mV	Max Unc^E (k=2)
0	CW	X	0.00	0.00	1.00	0.00	216.1	± 3.5 %
		Y	0.00	0.00	1.00		211.8	
		Z	0.00	0.00	1.00		224.3	
10010-CAA	SAR Validation (Square, 100ms, 10ms)	X	8.73	79.24	19.64	10.00	25.0	± 9.6 %
		Y	8.22	78.60	19.24		25.0	
		Z	8.30	78.73	19.30		25.0	
10011-CAB	UMTS-FDD (WCDMA)	X	1.18	69.40	16.37	0.00	150.0	± 9.6 %
		Y	1.00	66.42	14.47		150.0	
		Z	1.02	66.81	14.65		150.0	
10012-CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps)	X	1.35	65.74	16.29	0.41	150.0	± 9.6 %
		Y	1.27	64.54	15.34		150.0	
		Z	1.29	64.83	15.46		150.0	
10013-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps)	X	5.27	67.30	17.53	1.46	150.0	± 9.6 %
		Y	5.21	67.06	17.33		150.0	
		Z	5.19	67.24	17.38		150.0	
10021-DAC	GSM-FDD (TDMA, GMSK)	X	13.20	87.31	24.20	9.39	50.0	± 9.6 %
		Y	14.24	89.06	24.72		50.0	
		Z	13.07	87.41	24.10		50.0	
10023-DAC	GPRS-FDD (TDMA, GMSK, TN 0)	X	12.71	86.51	23.97	9.57	50.0	± 9.6 %
		Y	13.48	87.95	24.39		50.0	
		Z	12.52	86.52	23.84		50.0	
10024-DAC	GPRS-FDD (TDMA, GMSK, TN 0-1)	X	29.44	100.96	26.87	6.56	60.0	± 9.6 %
		Y	36.27	104.28	27.64		60.0	
		Z	27.08	99.64	26.30		60.0	
10025-DAC	EDGE-FDD (TDMA, 8PSK, TN 0)	X	19.40	104.04	39.34	12.57	50.0	± 9.6 %
		Y	15.24	96.91	36.40		50.0	
		Z	19.47	104.97	39.82		50.0	
10026-DAC	EDGE-FDD (TDMA, 8PSK, TN 0-1)	X	19.15	100.47	34.47	9.56	60.0	± 9.6 %
		Y	16.00	96.21	32.83		60.0	
		Z	18.67	100.57	34.57		60.0	
10027-DAC	GPRS-FDD (TDMA, GMSK, TN 0-1-2)	X	100.00	118.39	30.10	4.80	80.0	± 9.6 %
		Y	100.00	118.07	29.78		80.0	
		Z	100.00	117.92	29.73		80.0	
10028-DAC	GPRS-FDD (TDMA, GMSK, TN 0-1-2-3)	X	100.00	118.11	29.09	3.55	100.0	± 9.6 %
		Y	100.00	117.47	28.62		100.0	
		Z	100.00	117.40	28.61		100.0	
10029-DAC	EDGE-FDD (TDMA, 8PSK, TN 0-1-2)	X	14.41	94.58	31.36	7.80	80.0	± 9.6 %
		Y	11.98	90.47	29.74		80.0	
		Z	13.55	93.77	31.11		80.0	
10030-CAA	IEEE 802.15.1 Bluetooth (GFSK, DH1)	X	71.37	113.48	29.28	5.30	70.0	± 9.6 %
		Y	80.38	114.95	29.42		70.0	
		Z	51.73	108.49	27.78		70.0	
10031-CAA	IEEE 802.15.1 Bluetooth (GFSK, DH3)	X	100.00	119.05	27.84	1.88	100.0	± 9.6 %
		Y	100.00	116.75	26.65		100.0	
		Z	100.00	116.98	26.79		100.0	

10032-CAA	IEEE 802.15.1 Bluetooth (GFSK, DH5)	X	100.00	122.71	28.21	1.17	100.0	± 9.6 %
		Y	100.00	117.99	26.02		100.0	
		Z	100.00	118.71	26.38		100.0	
10033-CAA	IEEE 802.15.1 Bluetooth (PI/4-DQPSK, DH1)	X	13.57	91.65	25.57	5.30	70.0	± 9.6 %
		Y	11.95	89.62	24.76		70.0	
		Z	11.45	88.56	24.23		70.0	
10034-CAA	IEEE 802.15.1 Bluetooth (PI/4-DQPSK, DH3)	X	7.28	86.87	22.66	1.88	100.0	± 9.6 %
		Y	5.23	81.63	20.57		100.0	
		Z	5.28	81.38	20.22		100.0	
10035-CAA	IEEE 802.15.1 Bluetooth (PI/4-DQPSK, DH5)	X	4.50	81.61	20.64	1.17	100.0	± 9.6 %
		Y	3.25	76.50	18.39		100.0	
		Z	3.35	76.72	18.21		100.0	
10036-CAA	IEEE 802.15.1 Bluetooth (8-DPSK, DH1)	X	15.24	93.77	26.32	5.30	70.0	± 9.6 %
		Y	13.48	91.82	25.54		70.0	
		Z	12.71	90.45	24.91		70.0	
10037-CAA	IEEE 802.15.1 Bluetooth (8-DPSK, DH3)	X	7.19	86.72	22.57	1.88	100.0	± 9.6 %
		Y	5.11	81.33	20.42		100.0	
		Z	5.15	81.11	20.08		100.0	
10038-CAA	IEEE 802.15.1 Bluetooth (8-DPSK, DH5)	X	4.68	82.42	21.00	1.17	100.0	± 9.6 %
		Y	3.33	77.08	18.69		100.0	
		Z	3.43	77.26	18.50		100.0	
10039-CAB	CDMA2000 (1xRTT, RC1)	X	2.16	73.15	17.25	0.00	150.0	± 9.6 %
		Y	1.77	69.93	15.42		150.0	
		Z	1.72	70.01	15.21		150.0	
10042-CAB	IS-54 / IS-136 FDD (TDMA/FDM, PI/4-DQPSK, Halfrate)	X	18.43	92.51	24.39	7.78	50.0	± 9.6 %
		Y	20.51	94.38	24.83		50.0	
		Z	17.67	91.92	24.02		50.0	
10044-CAA	IS-91/EIA/TIA-553 FDD (FDMA, FM)	X	0.00	122.09	1.31	0.00	150.0	± 9.6 %
		Y	0.04	110.13	12.38		150.0	
		Z	0.00	105.54	4.08		150.0	
10048-CAA	DECT (TDD, TDMA/FDM, GFSK, Full Slot, 24)	X	10.37	80.17	23.48	13.80	25.0	± 9.6 %
		Y	10.36	80.56	23.53		25.0	
		Z	10.13	80.12	23.33		25.0	
10049-CAA	DECT (TDD, TDMA/FDM, GFSK, Double Slot, 12)	X	11.21	83.49	23.32	10.79	40.0	± 9.6 %
		Y	11.43	84.26	23.51		40.0	
		Z	11.02	83.48	23.17		40.0	
10056-CAA	UMTS-TDD (TD-SCDMA, 1.28 Mcps)	X	11.59	84.51	24.03	9.03	50.0	± 9.6 %
		Y	11.18	84.11	23.78		50.0	
		Z	11.20	84.06	23.67		50.0	
10058-DAC	EDGE-FDD (TDMA, 8PSK, TN 0-1-2-3)	X	11.19	89.96	29.01	6.55	100.0	± 9.6 %
		Y	9.36	86.15	27.45		100.0	
		Z	10.26	88.57	28.50		100.0	
10059-CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 2 Mbps)	X	1.57	68.22	17.45	0.61	110.0	± 9.6 %
		Y	1.45	66.58	16.33		110.0	
		Z	1.47	66.93	16.46		110.0	
10060-CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 5.5 Mbps)	X	100.00	130.04	33.38	1.30	110.0	± 9.6 %
		Y	26.92	109.88	28.23		110.0	
		Z	34.27	113.21	29.05		110.0	

10061-CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 11 Mbps)	X	11.36	96.78	27.09	2.04	110.0	± 9.6 %
		Y	7.01	88.67	24.31		110.0	
		Z	7.44	89.54	24.54		110.0	
10062-CAC	IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps)	X	4.98	67.03	16.80	0.49	100.0	± 9.6 %
		Y	4.93	66.80	16.61		100.0	
		Z	4.88	66.93	16.62		100.0	
10063-CAC	IEEE 802.11a/h WiFi 5 GHz (OFDM, 9 Mbps)	X	5.03	67.22	16.96	0.72	100.0	± 9.6 %
		Y	4.97	66.97	16.76		100.0	
		Z	4.93	67.10	16.77		100.0	
10064-CAC	IEEE 802.11a/h WiFi 5 GHz (OFDM, 12 Mbps)	X	5.40	67.60	17.24	0.86	100.0	± 9.6 %
		Y	5.33	67.36	17.04		100.0	
		Z	5.27	67.47	17.06		100.0	
10065-CAC	IEEE 802.11a/h WiFi 5 GHz (OFDM, 18 Mbps)	X	5.30	67.66	17.42	1.21	100.0	± 9.6 %
		Y	5.24	67.40	17.21		100.0	
		Z	5.19	67.53	17.24		100.0	
10066-CAC	IEEE 802.11a/h WiFi 5 GHz (OFDM, 24 Mbps)	X	5.37	67.83	17.66	1.46	100.0	± 9.6 %
		Y	5.30	67.55	17.45		100.0	
		Z	5.25	67.70	17.49		100.0	
10067-CAC	IEEE 802.11a/h WiFi 5 GHz (OFDM, 36 Mbps)	X	5.70	67.99	18.14	2.04	100.0	± 9.6 %
		Y	5.63	67.72	17.92		100.0	
		Z	5.59	67.91	17.99		100.0	
10068-CAC	IEEE 802.11a/h WiFi 5 GHz (OFDM, 48 Mbps)	X	5.88	68.47	18.56	2.55	100.0	± 9.6 %
		Y	5.80	68.16	18.32		100.0	
		Z	5.76	68.35	18.40		100.0	
10069-CAC	IEEE 802.11a/h WiFi 5 GHz (OFDM, 54 Mbps)	X	5.95	68.35	18.73	2.67	100.0	± 9.6 %
		Y	5.87	68.05	18.49		100.0	
		Z	5.84	68.31	18.61		100.0	
10071-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 9 Mbps)	X	5.43	67.58	17.94	1.99	100.0	± 9.6 %
		Y	5.37	67.33	17.73		100.0	
		Z	5.35	67.53	17.80		100.0	
10072-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 12 Mbps)	X	5.53	68.22	18.29	2.30	100.0	± 9.6 %
		Y	5.45	67.92	18.06		100.0	
		Z	5.43	68.14	18.14		100.0	
10073-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 18 Mbps)	X	5.69	68.63	18.74	2.83	100.0	± 9.6 %
		Y	5.60	68.30	18.49		100.0	
		Z	5.60	68.56	18.60		100.0	
10074-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 24 Mbps)	X	5.74	68.79	19.06	3.30	100.0	± 9.6 %
		Y	5.65	68.42	18.78		100.0	
		Z	5.65	68.70	18.90		100.0	
10075-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 36 Mbps)	X	5.96	69.48	19.66	3.82	90.0	± 9.6 %
		Y	5.85	69.02	19.33		90.0	
		Z	5.85	69.31	19.47		90.0	
10076-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 48 Mbps)	X	5.96	69.26	19.77	4.15	90.0	± 9.6 %
		Y	5.85	68.80	19.43		90.0	
		Z	5.87	69.15	19.61		90.0	
10077-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 54 Mbps)	X	6.00	69.36	19.88	4.30	90.0	± 9.6 %
		Y	5.89	68.89	19.54		90.0	
		Z	5.91	69.25	19.72		90.0	

10081-CAB	CDMA2000 (1xRTT, RC3)	X	1.08	68.35	14.76	0.00	150.0	± 9.6 %
		Y	0.89	65.35	12.75		150.0	
		Z	0.86	65.31	12.50		150.0	
10082-CAB	IS-54 / IS-136 FDD (TDMA/FDM, PI/4-DQPSK, Fullrate)	X	2.63	65.24	10.07	4.77	80.0	± 9.6 %
		Y	2.38	64.43	9.48		80.0	
		Z	2.42	64.64	9.62		80.0	
10090-DAC	GPRS-FDD (TDMA, GMSK, TN 0-4)	X	28.70	100.61	26.81	6.56	60.0	± 9.6 %
		Y	35.30	103.92	27.58		60.0	
		Z	26.48	99.34	26.25		60.0	
10097-CAB	UMTS-FDD (HSDPA)	X	1.91	67.94	16.12	0.00	150.0	± 9.6 %
		Y	1.79	66.66	15.20		150.0	
		Z	1.79	66.89	15.24		150.0	
10098-CAB	UMTS-FDD (HSUPA, Subtest 2)	X	1.87	67.94	16.10	0.00	150.0	± 9.6 %
		Y	1.75	66.61	15.16		150.0	
		Z	1.75	66.86	15.20		150.0	
10099-DAC	EDGE-FDD (TDMA, 8PSK, TN 0-4)	X	19.04	100.29	34.41	9.56	60.0	± 9.6 %
		Y	15.94	96.08	32.79		60.0	
		Z	18.56	100.39	34.51		60.0	
10100-CAD	LTE-FDD (SC-FDMA, 100% RB, 20 MHz, QPSK)	X	3.45	71.42	17.07	0.00	150.0	± 9.6 %
		Y	3.20	70.01	16.28		150.0	
		Z	3.18	70.12	16.33		150.0	
10101-CAD	LTE-FDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM)	X	3.47	68.22	16.25	0.00	150.0	± 9.6 %
		Y	3.36	67.53	15.79		150.0	
		Z	3.32	67.60	15.80		150.0	
10102-CAD	LTE-FDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM)	X	3.56	68.08	16.30	0.00	150.0	± 9.6 %
		Y	3.46	67.47	15.88		150.0	
		Z	3.42	67.51	15.88		150.0	
10103-CAD	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, QPSK)	X	8.64	77.20	20.80	3.98	65.0	± 9.6 %
		Y	8.38	76.89	20.66		65.0	
		Z	8.29	76.81	20.60		65.0	
10104-CAD	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM)	X	8.95	76.81	21.55	3.98	65.0	± 9.6 %
		Y	8.55	76.08	21.19		65.0	
		Z	8.63	76.46	21.35		65.0	
10105-CAD	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM)	X	8.33	75.39	21.22	3.98	65.0	± 9.6 %
		Y	7.70	74.02	20.57		65.0	
		Z	8.09	75.17	21.07		65.0	
10108-CAE	LTE-FDD (SC-FDMA, 100% RB, 10 MHz, QPSK)	X	3.06	70.58	16.90	0.00	150.0	± 9.6 %
		Y	2.84	69.23	16.10		150.0	
		Z	2.81	69.34	16.16		150.0	
10109-CAE	LTE-FDD (SC-FDMA, 100% RB, 10 MHz, 16-QAM)	X	3.15	67.99	16.20	0.00	150.0	± 9.6 %
		Y	3.03	67.27	15.70		150.0	
		Z	2.99	67.33	15.69		150.0	
10110-CAE	LTE-FDD (SC-FDMA, 100% RB, 5 MHz, QPSK)	X	2.53	69.63	16.63	0.00	150.0	± 9.6 %
		Y	2.34	68.24	15.76		150.0	
		Z	2.30	68.40	15.82		150.0	
10111-CAE	LTE-FDD (SC-FDMA, 100% RB, 5 MHz, 16-QAM)	X	2.82	68.33	16.43	0.00	150.0	± 9.6 %
		Y	2.70	67.57	15.88		150.0	
		Z	2.66	67.62	15.81		150.0	

10112-CAE	LTE-FDD (SC-FDMA, 100% RB, 10 MHz, 64-QAM)	X	3.26	67.85	16.20	0.00	150.0	± 9.6 %
		Y	3.15	67.21	15.75		150.0	
		Z	3.11	67.27	15.73		150.0	
10113-CAE	LTE-FDD (SC-FDMA, 100% RB, 5 MHz, 64-QAM)	X	2.97	68.34	16.51	0.00	150.0	± 9.6 %
		Y	2.86	67.66	16.01		150.0	
		Z	2.81	67.71	15.93		150.0	
10114-CAC	IEEE 802.11n (HT Greenfield, 13.5 Mbps, BPSK)	X	5.32	67.42	16.55	0.00	150.0	± 9.6 %
		Y	5.26	67.16	16.36		150.0	
		Z	5.21	67.21	16.35		150.0	
10115-CAC	IEEE 802.11n (HT Greenfield, 81 Mbps, 16-QAM)	X	5.74	67.85	16.77	0.00	150.0	± 9.6 %
		Y	5.67	67.57	16.57		150.0	
		Z	5.59	67.55	16.53		150.0	
10116-CAC	IEEE 802.11n (HT Greenfield, 135 Mbps, 64-QAM)	X	5.45	67.66	16.59	0.00	150.0	± 9.6 %
		Y	5.39	67.42	16.41		150.0	
		Z	5.34	67.49	16.41		150.0	
10117-CAC	IEEE 802.11n (HT Mixed, 13.5 Mbps, BPSK)	X	5.32	67.43	16.58	0.00	150.0	± 9.6 %
		Y	5.27	67.20	16.39		150.0	
		Z	5.22	67.24	16.39		150.0	
10118-CAC	IEEE 802.11n (HT Mixed, 81 Mbps, 16-QAM)	X	5.75	67.79	16.74	0.00	150.0	± 9.6 %
		Y	5.70	67.57	16.57		150.0	
		Z	5.66	67.71	16.62		150.0	
10119-CAC	IEEE 802.11n (HT Mixed, 135 Mbps, 64-QAM)	X	5.42	67.62	16.58	0.00	150.0	± 9.6 %
		Y	5.37	67.40	16.41		150.0	
		Z	5.32	67.45	16.41		150.0	
10140-CAD	LTE-FDD (SC-FDMA, 100% RB, 15 MHz, 16-QAM)	X	3.62	68.08	16.23	0.00	150.0	± 9.6 %
		Y	3.52	67.48	15.81		150.0	
		Z	3.47	67.53	15.81		150.0	
10141-CAD	LTE-FDD (SC-FDMA, 100% RB, 15 MHz, 64-QAM)	X	3.73	68.07	16.35	0.00	150.0	± 9.6 %
		Y	3.63	67.52	15.97		150.0	
		Z	3.59	67.57	15.96		150.0	
10142-CAD	LTE-FDD (SC-FDMA, 100% RB, 3 MHz, QPSK)	X	2.30	69.51	16.49	0.00	150.0	± 9.6 %
		Y	2.11	68.01	15.52		150.0	
		Z	2.07	68.17	15.52		150.0	
10143-CAD	LTE-FDD (SC-FDMA, 100% RB, 3 MHz, 16-QAM)	X	2.70	68.91	16.38	0.00	150.0	± 9.6 %
		Y	2.56	68.00	15.71		150.0	
		Z	2.50	68.03	15.56		150.0	
10144-CAD	LTE-FDD (SC-FDMA, 100% RB, 3 MHz, 64-QAM)	X	2.56	67.32	15.21	0.00	150.0	± 9.6 %
		Y	2.43	66.43	14.52		150.0	
		Z	2.37	66.52	14.40		150.0	
10145-CAE	LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, QPSK)	X	1.69	68.28	14.84	0.00	150.0	± 9.6 %
		Y	1.48	66.23	13.42		150.0	
		Z	1.39	65.84	12.87		150.0	
10146-CAE	LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, 16-QAM)	X	3.98	75.21	17.70	0.00	150.0	± 9.6 %
		Y	3.30	72.27	16.12		150.0	
		Z	3.38	72.80	16.00		150.0	
10147-CAE	LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, 64-QAM)	X	4.85	78.25	19.08	0.00	150.0	± 9.6 %
		Y	4.01	75.19	17.53		150.0	
		Z	4.13	75.68	17.34		150.0	

10149-CAD	LTE-FDD (SC-FDMA, 50% RB, 20 MHz, 16-QAM)	X	3.15	68.04	16.24	0.00	150.0	± 9.6 %
		Y	3.04	67.32	15.74		150.0	
		Z	3.00	67.38	15.73		150.0	
10150-CAD	LTE-FDD (SC-FDMA, 50% RB, 20 MHz, 64-QAM)	X	3.27	67.89	16.24	0.00	150.0	± 9.6 %
		Y	3.16	67.26	15.78		150.0	
		Z	3.12	67.31	15.77		150.0	
10151-CAD	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, QPSK)	X	9.08	79.17	21.71	3.98	65.0	± 9.6 %
		Y	8.66	78.57	21.43		65.0	
		Z	8.76	78.93	21.54		65.0	
10152-CAD	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 16-QAM)	X	8.61	77.04	21.49	3.98	65.0	± 9.6 %
		Y	8.16	76.19	21.06		65.0	
		Z	8.25	76.62	21.21		65.0	
10153-CAD	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 64-QAM)	X	8.89	77.55	22.01	3.98	65.0	± 9.6 %
		Y	8.48	76.82	21.65		65.0	
		Z	8.56	77.20	21.77		65.0	
10154-CAE	LTE-FDD (SC-FDMA, 50% RB, 10 MHz, QPSK)	X	2.58	70.07	16.91	0.00	150.0	± 9.6 %
		Y	2.39	68.67	16.03		150.0	
		Z	2.35	68.75	16.04		150.0	
10155-CAE	LTE-FDD (SC-FDMA, 50% RB, 10 MHz, 16-QAM)	X	2.82	68.33	16.44	0.00	150.0	± 9.6 %
		Y	2.70	67.56	15.88		150.0	
		Z	2.66	67.62	15.82		150.0	
10156-CAE	LTE-FDD (SC-FDMA, 50% RB, 5 MHz, QPSK)	X	2.17	69.82	16.55	0.00	150.0	± 9.6 %
		Y	1.97	68.12	15.45		150.0	
		Z	1.92	68.22	15.38		150.0	
10157-CAE	LTE-FDD (SC-FDMA, 50% RB, 5 MHz, 16-QAM)	X	2.40	67.95	15.40	0.00	150.0	± 9.6 %
		Y	2.25	66.86	14.60		150.0	
		Z	2.19	66.92	14.43		150.0	
10158-CAE	LTE-FDD (SC-FDMA, 50% RB, 10 MHz, 64-QAM)	X	2.98	68.37	16.54	0.00	150.0	± 9.6 %
		Y	2.87	67.70	16.04		150.0	
		Z	2.81	67.75	15.96		150.0	
10159-CAE	LTE-FDD (SC-FDMA, 50% RB, 5 MHz, 64-QAM)	X	2.51	68.29	15.64	0.00	150.0	± 9.6 %
		Y	2.35	67.25	14.87		150.0	
		Z	2.29	67.27	14.67		150.0	
10160-CAD	LTE-FDD (SC-FDMA, 50% RB, 15 MHz, QPSK)	X	2.99	69.24	16.61	0.00	150.0	± 9.6 %
		Y	2.85	68.29	15.98		150.0	
		Z	2.81	68.40	16.01		150.0	
10161-CAD	LTE-FDD (SC-FDMA, 50% RB, 15 MHz, 16-QAM)	X	3.15	67.74	16.18	0.00	150.0	± 9.6 %
		Y	3.05	67.11	15.72		150.0	
		Z	3.01	67.18	15.69		150.0	
10162-CAD	LTE-FDD (SC-FDMA, 50% RB, 15 MHz, 64-QAM)	X	3.25	67.73	16.22	0.00	150.0	± 9.6 %
		Y	3.15	67.15	15.79		150.0	
		Z	3.11	67.26	15.78		150.0	
10166-CAE	LTE-FDD (SC-FDMA, 50% RB, 1.4 MHz, QPSK)	X	4.19	70.80	19.90	3.01	150.0	± 9.6 %
		Y	4.05	70.08	19.40		150.0	
		Z	4.07	70.78	19.80		150.0	
10167-CAE	LTE-FDD (SC-FDMA, 50% RB, 1.4 MHz, 16-QAM)	X	5.48	74.21	20.58	3.01	150.0	± 9.6 %
		Y	5.19	73.13	19.95		150.0	
		Z	5.31	74.28	20.49		150.0	

10168-CAE	LTE-FDD (SC-FDMA, 50% RB, 1.4 MHz, 64-QAM)	X	5.90	75.78	21.52	3.01	150.0	± 9.6 %
		Y	5.63	74.88	21.00		150.0	
		Z	5.76	76.02	21.51		150.0	
10169-CAD	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, QPSK)	X	4.12	73.63	21.07	3.01	150.0	± 9.6 %
		Y	3.82	71.98	20.15		150.0	
		Z	3.81	72.59	20.57		150.0	
10170-CAD	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM)	X	6.34	80.63	23.44	3.01	150.0	± 9.6 %
		Y	5.64	78.30	22.38		150.0	
		Z	5.78	79.52	22.98		150.0	
10171-AAD	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, 64-QAM)	X	5.20	76.32	20.89	3.01	150.0	± 9.6 %
		Y	4.62	73.99	19.74		150.0	
		Z	4.75	75.32	20.43		150.0	
10172-CAD	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK)	X	28.12	106.47	32.64	6.02	65.0	± 9.6 %
		Y	20.29	100.26	30.66		65.0	
		Z	30.84	109.43	33.61		65.0	
10173-CAD	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM)	X	24.51	99.51	29.04	6.02	65.0	± 9.6 %
		Y	21.06	97.01	28.21		65.0	
		Z	27.06	102.23	29.86		65.0	
10174-CAD	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 64-QAM)	X	20.30	95.06	27.24	6.02	65.0	± 9.6 %
		Y	17.61	92.80	26.46		65.0	
		Z	22.39	97.69	28.04		65.0	
10175-CAE	LTE-FDD (SC-FDMA, 1 RB, 10 MHz, QPSK)	X	4.06	73.26	20.82	3.01	150.0	± 9.6 %
		Y	3.77	71.61	19.88		150.0	
		Z	3.77	72.26	20.34		150.0	
10176-CAE	LTE-FDD (SC-FDMA, 1 RB, 10 MHz, 16-QAM)	X	6.35	80.66	23.45	3.01	150.0	± 9.6 %
		Y	5.65	78.32	22.39		150.0	
		Z	5.79	79.55	22.99		150.0	
10177-CAG	LTE-FDD (SC-FDMA, 1 RB, 5 MHz, QPSK)	X	4.10	73.44	20.92	3.01	150.0	± 9.6 %
		Y	3.80	71.80	20.00		150.0	
		Z	3.80	72.42	20.43		150.0	
10178-CAE	LTE-FDD (SC-FDMA, 1 RB, 5 MHz, 16-QAM)	X	6.25	80.32	23.30	3.01	150.0	± 9.6 %
		Y	5.56	77.99	22.23		150.0	
		Z	5.71	79.26	22.86		150.0	
10179-CAE	LTE-FDD (SC-FDMA, 1 RB, 10 MHz, 64-QAM)	X	5.71	78.27	22.00	3.01	150.0	± 9.6 %
		Y	5.07	75.93	20.89		150.0	
		Z	5.22	77.27	21.56		150.0	
10180-CAE	LTE-FDD (SC-FDMA, 1 RB, 5 MHz, 64-QAM)	X	5.17	76.20	20.82	3.01	150.0	± 9.6 %
		Y	4.59	73.88	19.67		150.0	
		Z	4.74	75.23	20.38		150.0	
10181-CAD	LTE-FDD (SC-FDMA, 1 RB, 15 MHz, QPSK)	X	4.09	73.42	20.91	3.01	150.0	± 9.6 %
		Y	3.80	71.78	19.99		150.0	
		Z	3.79	72.40	20.42		150.0	
10182-CAD	LTE-FDD (SC-FDMA, 1 RB, 15 MHz, 16-QAM)	X	6.24	80.30	23.29	3.01	150.0	± 9.6 %
		Y	5.55	77.97	22.22		150.0	
		Z	5.70	79.24	22.84		150.0	
10183-AAC	LTE-FDD (SC-FDMA, 1 RB, 15 MHz, 64-QAM)	X	5.16	76.18	20.81	3.01	150.0	± 9.6 %
		Y	4.59	73.86	19.66		150.0	
		Z	4.73	75.21	20.37		150.0	

10184-CAD	LTE-FDD (SC-FDMA, 1 RB, 3 MHz, QPSK)	X	4.11	73.46	20.93	3.01	150.0	± 9.6 %
		Y	3.81	71.82	20.01		150.0	
		Z	3.81	72.44	20.44		150.0	
10185-CAD	LTE-FDD (SC-FDMA, 1 RB, 3 MHz, 16-QAM)	X	6.27	80.37	23.32	3.01	150.0	± 9.6 %
		Y	5.58	78.04	22.26		150.0	
		Z	5.73	79.31	22.88		150.0	
10186-AAD	LTE-FDD (SC-FDMA, 1 RB, 3 MHz, 64-QAM)	X	5.19	76.25	20.85	3.01	150.0	± 9.6 %
		Y	4.61	73.93	19.70		150.0	
		Z	4.75	75.28	20.40		150.0	
10187-CAE	LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK)	X	4.12	73.50	20.98	3.01	150.0	± 9.6 %
		Y	3.82	71.85	20.05		150.0	
		Z	3.81	72.49	20.49		150.0	
10188-CAE	LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, 16-QAM)	X	6.50	81.13	23.70	3.01	150.0	± 9.6 %
		Y	5.79	78.80	22.66		150.0	
		Z	5.93	80.01	23.24		150.0	
10189-AAE	LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, 64-QAM)	X	5.32	76.74	21.12	3.01	150.0	± 9.6 %
		Y	4.72	74.40	19.98		150.0	
		Z	4.87	75.74	20.67		150.0	
10193-CAC	IEEE 802.11n (HT Greenfield, 6.5 Mbps, BPSK)	X	4.74	66.77	16.33	0.00	150.0	± 9.6 %
		Y	4.69	66.52	16.12		150.0	
		Z	4.64	66.62	16.12		150.0	
10194-CAC	IEEE 802.11n (HT Greenfield, 39 Mbps, 16-QAM)	X	4.96	67.16	16.44	0.00	150.0	± 9.6 %
		Y	4.89	66.91	16.23		150.0	
		Z	4.84	66.99	16.23		150.0	
10195-CAC	IEEE 802.11n (HT Greenfield, 65 Mbps, 64-QAM)	X	4.99	67.16	16.43	0.00	150.0	± 9.6 %
		Y	4.93	66.91	16.24		150.0	
		Z	4.88	67.00	16.24		150.0	
10196-CAC	IEEE 802.11n (HT Mixed, 6.5 Mbps, BPSK)	X	4.77	66.89	16.37	0.00	150.0	± 9.6 %
		Y	4.71	66.63	16.16		150.0	
		Z	4.66	66.72	16.15		150.0	
10197-CAC	IEEE 802.11n (HT Mixed, 39 Mbps, 16-QAM)	X	4.97	67.18	16.44	0.00	150.0	± 9.6 %
		Y	4.91	66.93	16.24		150.0	
		Z	4.85	67.01	16.24		150.0	
10198-CAC	IEEE 802.11n (HT Mixed, 65 Mbps, 64-QAM)	X	5.00	67.17	16.44	0.00	150.0	± 9.6 %
		Y	4.94	66.92	16.24		150.0	
		Z	4.88	67.02	16.25		150.0	
10219-CAC	IEEE 802.11n (HT Mixed, 7.2 Mbps, BPSK)	X	4.72	66.90	16.34	0.00	150.0	± 9.6 %
		Y	4.66	66.64	16.12		150.0	
		Z	4.61	66.72	16.11		150.0	
10220-CAC	IEEE 802.11n (HT Mixed, 43.3 Mbps, 16-QAM)	X	4.98	67.19	16.45	0.00	150.0	± 9.6 %
		Y	4.91	66.93	16.24		150.0	
		Z	4.85	67.00	16.24		150.0	
10221-CAC	IEEE 802.11n (HT Mixed, 72.2 Mbps, 64-QAM)	X	5.01	67.11	16.44	0.00	150.0	± 9.6 %
		Y	4.95	66.87	16.24		150.0	
		Z	4.89	66.96	16.24		150.0	
10222-CAC	IEEE 802.11n (HT Mixed, 15 Mbps, BPSK)	X	5.30	67.47	16.58	0.00	150.0	± 9.6 %
		Y	5.25	67.22	16.39		150.0	
		Z	5.20	67.26	16.38		150.0	

10223-CAC	IEEE 802.11n (HT Mixed, 90 Mbps, 16-QAM)	X	5.69	67.78	16.76	0.00	150.0	± 9.6 %
		Y	5.65	67.60	16.61		150.0	
		Z	5.58	67.65	16.61		150.0	
10224-CAC	IEEE 802.11n (HT Mixed, 150 Mbps, 64-QAM)	X	5.37	67.60	16.57	0.00	150.0	± 9.6 %
		Y	5.31	67.33	16.37		150.0	
		Z	5.24	67.35	16.35		150.0	
10225-CAB	UMTS-FDD (HSPA+)	X	3.00	66.32	15.76	0.00	150.0	± 9.6 %
		Y	2.92	65.84	15.36		150.0	
		Z	2.88	65.96	15.31		150.0	
10226-CAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 16-QAM)	X	25.34	100.21	29.32	6.02	65.0	± 9.6 %
		Y	21.88	97.80	28.53		65.0	
		Z	28.16	103.05	30.17		65.0	
10227-CAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 64-QAM)	X	20.89	95.65	27.50	6.02	65.0	± 9.6 %
		Y	18.66	93.90	26.89		65.0	
		Z	23.03	98.25	28.28		65.0	
10228-CAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK)	X	27.90	106.81	32.85	6.02	65.0	± 9.6 %
		Y	21.79	102.13	31.35		65.0	
		Z	29.50	109.02	33.59		65.0	
10229-CAB	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 16-QAM)	X	24.51	99.50	29.04	6.02	65.0	± 9.6 %
		Y	21.09	97.02	28.22		65.0	
		Z	27.07	102.22	29.86		65.0	
10230-CAB	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 64-QAM)	X	20.30	95.08	27.26	6.02	65.0	± 9.6 %
		Y	18.06	93.26	26.62		65.0	
		Z	22.29	97.60	28.02		65.0	
10231-CAB	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, QPSK)	X	26.95	106.05	32.56	6.02	65.0	± 9.6 %
		Y	20.98	101.31	31.03		65.0	
		Z	28.34	108.14	33.27		65.0	
10232-CAD	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 16-QAM)	X	24.50	99.50	29.04	6.02	65.0	± 9.6 %
		Y	21.08	97.02	28.21		65.0	
		Z	27.06	102.22	29.86		65.0	
10233-CAD	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 64-QAM)	X	20.31	95.10	27.27	6.02	65.0	± 9.6 %
		Y	18.06	93.27	26.63		65.0	
		Z	22.30	97.62	28.03		65.0	
10234-CAD	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, QPSK)	X	25.91	105.12	32.20	6.02	65.0	± 9.6 %
		Y	20.17	100.39	30.66		65.0	
		Z	27.13	107.11	32.88		65.0	
10235-CAD	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 16-QAM)	X	24.55	99.55	29.05	6.02	65.0	± 9.6 %
		Y	21.11	97.06	28.23		65.0	
		Z	27.13	102.28	29.88		65.0	
10236-CAD	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 64-QAM)	X	20.44	95.20	27.30	6.02	65.0	± 9.6 %
		Y	18.18	93.36	26.65		65.0	
		Z	22.46	97.73	28.06		65.0	
10237-CAD	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, QPSK)	X	27.19	106.24	32.62	6.02	65.0	± 9.6 %
		Y	21.11	101.45	31.07		65.0	
		Z	28.60	108.34	33.33		65.0	
10238-CAD	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 16-QAM)	X	24.51	99.52	29.04	6.02	65.0	± 9.6 %
		Y	21.08	97.02	28.22		65.0	
		Z	27.06	102.23	29.86		65.0	

10239-CAD	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 64-QAM)	X	20.32	95.12	27.28	6.02	65.0	± 9.6 %
		Y	18.06	93.28	26.63		65.0	
		Z	22.31	97.64	28.04		65.0	
10240-CAD	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, QPSK)	X	27.11	106.18	32.60	6.02	65.0	± 9.6 %
		Y	21.05	101.40	31.05		65.0	
		Z	28.51	108.28	33.31		65.0	
10241-CAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 16-QAM)	X	13.32	86.96	27.76	6.98	65.0	± 9.6 %
		Y	12.14	84.93	26.82		65.0	
		Z	13.21	87.48	27.86		65.0	
10242-CAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 64-QAM)	X	13.08	86.53	27.54	6.98	65.0	± 9.6 %
		Y	11.36	83.43	26.15		65.0	
		Z	13.18	87.43	27.79		65.0	
10243-CAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, QPSK)	X	11.12	85.13	27.92	6.98	65.0	± 9.6 %
		Y	9.55	81.58	26.25		65.0	
		Z	9.75	82.70	26.82		65.0	
10244-CAB	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 16-QAM)	X	10.08	80.93	21.89	3.98	65.0	± 9.6 %
		Y	9.48	80.06	21.41		65.0	
		Z	9.49	80.06	21.16		65.0	
10245-CAB	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 64-QAM)	X	10.01	80.58	21.71	3.98	65.0	± 9.6 %
		Y	9.41	79.71	21.23		65.0	
		Z	9.41	79.68	20.97		65.0	
10246-CAB	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, QPSK)	X	9.15	81.91	21.99	3.98	65.0	± 9.6 %
		Y	8.42	80.72	21.40		65.0	
		Z	8.30	80.41	21.06		65.0	
10247-CAD	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 16-QAM)	X	8.09	77.75	20.93	3.98	65.0	± 9.6 %
		Y	7.59	76.84	20.43		65.0	
		Z	7.53	76.72	20.17		65.0	
10248-CAD	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 64-QAM)	X	8.15	77.44	20.80	3.98	65.0	± 9.6 %
		Y	7.65	76.49	20.28		65.0	
		Z	7.59	76.44	20.05		65.0	
10249-CAD	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, QPSK)	X	9.64	82.72	22.72	3.98	65.0	± 9.6 %
		Y	8.97	81.70	22.24		65.0	
		Z	9.02	81.83	22.13		65.0	
10250-CAD	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 16-QAM)	X	8.73	78.92	22.34	3.98	65.0	± 9.6 %
		Y	8.28	78.14	21.95		65.0	
		Z	8.33	78.38	21.94		65.0	
10251-CAD	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 64-QAM)	X	8.43	77.25	21.45	3.98	65.0	± 9.6 %
		Y	7.98	76.39	21.00		65.0	
		Z	8.08	76.82	21.08		65.0	
10252-CAD	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, QPSK)	X	9.50	81.63	22.75	3.98	65.0	± 9.6 %
		Y	8.96	80.86	22.39		65.0	
		Z	9.11	81.29	22.49		65.0	
10253-CAD	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 16-QAM)	X	8.39	76.50	21.34	3.98	65.0	± 9.6 %
		Y	7.96	75.65	20.90		65.0	
		Z	8.06	76.10	21.04		65.0	
10254-CAD	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 64-QAM)	X	8.71	77.06	21.85	3.98	65.0	± 9.6 %
		Y	8.30	76.30	21.46		65.0	
		Z	8.39	76.71	21.57		65.0	

10255-CAD	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, QPSK)	X	8.87	78.97	21.88	3.98	65.0	± 9.6 %
		Y	8.43	78.29	21.57		65.0	
		Z	8.56	78.72	21.69		65.0	
10256-CAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 16-QAM)	X	9.52	79.84	20.86	3.98	65.0	± 9.6 %
		Y	8.85	78.79	20.27		65.0	
		Z	8.64	78.29	19.78		65.0	
10257-CAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 64-QAM)	X	9.44	79.37	20.61	3.98	65.0	± 9.6 %
		Y	8.77	78.30	20.01		65.0	
		Z	8.53	77.74	19.49		65.0	
10258-CAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, QPSK)	X	8.57	80.68	21.12	3.98	65.0	± 9.6 %
		Y	7.76	79.24	20.40		65.0	
		Z	7.40	78.31	19.75		65.0	
10259-CAB	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 16-QAM)	X	8.34	78.11	21.40	3.98	65.0	± 9.6 %
		Y	7.86	77.25	20.94		65.0	
		Z	7.86	77.31	20.79		65.0	
10260-CAB	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 64-QAM)	X	8.39	77.94	21.36	3.98	65.0	± 9.6 %
		Y	7.92	77.09	20.90		65.0	
		Z	7.90	77.14	20.75		65.0	
10261-CAB	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, QPSK)	X	9.35	81.91	22.65	3.98	65.0	± 9.6 %
		Y	8.73	80.93	22.19		65.0	
		Z	8.82	81.21	22.17		65.0	
10262-CAD	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 16-QAM)	X	8.73	78.90	22.31	3.98	65.0	± 9.6 %
		Y	8.27	78.11	21.92		65.0	
		Z	8.33	78.35	21.92		65.0	
10263-CAD	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 64-QAM)	X	8.43	77.25	21.45	3.98	65.0	± 9.6 %
		Y	7.97	76.39	21.00		65.0	
		Z	8.07	76.81	21.08		65.0	
10264-CAD	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, QPSK)	X	9.46	81.55	22.70	3.98	65.0	± 9.6 %
		Y	8.92	80.75	22.34		65.0	
		Z	9.07	81.19	22.44		65.0	
10265-CAD	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 16-QAM)	X	8.60	77.04	21.49	3.98	65.0	± 9.6 %
		Y	8.16	76.19	21.06		65.0	
		Z	8.25	76.62	21.21		65.0	
10266-CAD	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 64-QAM)	X	8.89	77.55	22.01	3.98	65.0	± 9.6 %
		Y	8.48	76.82	21.65		65.0	
		Z	8.57	77.20	21.76		65.0	
10267-CAD	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, QPSK)	X	9.07	79.14	21.70	3.98	65.0	± 9.6 %
		Y	8.65	78.54	21.42		65.0	
		Z	8.76	78.90	21.53		65.0	
10268-CAD	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 16-QAM)	X	9.02	76.50	21.57	3.98	65.0	± 9.6 %
		Y	8.65	75.83	21.23		65.0	
		Z	8.72	76.21	21.38		65.0	
10269-CAD	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 64-QAM)	X	8.95	76.15	21.51	3.98	65.0	± 9.6 %
		Y	8.58	75.47	21.16		65.0	
		Z	8.67	75.86	21.32		65.0	
10270-CAD	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, QPSK)	X	8.82	77.11	21.02	3.98	65.0	± 9.6 %
		Y	8.48	76.60	20.79		65.0	
		Z	8.54	76.88	20.88		65.0	

10274-CAB	UMTS-FDD (HSUPA, Subtest 5, 3GPP Rel8.10)	X	2.69	66.50	15.57	0.00	150.0	± 9.6 %
		Y	2.62	65.90	15.08		150.0	
		Z	2.61	66.11	15.09		150.0	
10275-CAB	UMTS-FDD (HSUPA, Subtest 5, 3GPP Rel8.4)	X	1.78	68.98	16.23	0.00	150.0	± 9.6 %
		Y	1.61	67.12	15.02		150.0	
		Z	1.61	67.39	15.12		150.0	
10277-CAA	PHS (QPSK)	X	6.69	71.68	15.98	9.03	50.0	± 9.6 %
		Y	6.28	70.89	15.40		50.0	
		Z	6.22	70.67	15.16		50.0	
10278-CAA	PHS (QPSK, BW 884MHz, Rolloff 0.5)	X	9.84	80.42	21.73	9.03	50.0	± 9.6 %
		Y	9.33	79.68	21.28		50.0	
		Z	8.91	78.62	20.66		50.0	
10279-CAA	PHS (QPSK, BW 884MHz, Rolloff 0.38)	X	10.04	80.66	21.83	9.03	50.0	± 9.6 %
		Y	9.51	79.89	21.37		50.0	
		Z	9.07	78.83	20.75		50.0	
10290-AAB	CDMA2000, RC1, SO55, Full Rate	X	1.82	70.55	15.88	0.00	150.0	± 9.6 %
		Y	1.53	67.85	14.22		150.0	
		Z	1.49	67.91	13.99		150.0	
10291-AAB	CDMA2000, RC3, SO55, Full Rate	X	1.05	68.04	14.60	0.00	150.0	± 9.6 %
		Y	0.87	65.14	12.63		150.0	
		Z	0.85	65.11	12.38		150.0	
10292-AAB	CDMA2000, RC3, SO32, Full Rate	X	1.30	72.10	16.88	0.00	150.0	± 9.6 %
		Y	0.99	67.69	14.29		150.0	
		Z	0.97	67.76	14.08		150.0	
10293-AAB	CDMA2000, RC3, SO3, Full Rate	X	1.73	76.59	19.23	0.00	150.0	± 9.6 %
		Y	1.24	70.97	16.28		150.0	
		Z	1.22	71.03	16.05		150.0	
10295-AAB	CDMA2000, RC1, SO3, 1/8th Rate 25 fr.	X	10.30	82.33	24.11	9.03	50.0	± 9.6 %
		Y	9.86	81.57	23.65		50.0	
		Z	10.26	82.24	23.75		50.0	
10297-AAC	LTE-FDD (SC-FDMA, 50% RB, 20 MHz, QPSK)	X	3.07	70.67	16.96	0.00	150.0	± 9.6 %
		Y	2.85	69.32	16.16		150.0	
		Z	2.82	69.42	16.21		150.0	
10298-AAC	LTE-FDD (SC-FDMA, 50% RB, 3 MHz, QPSK)	X	1.95	69.42	15.87	0.00	150.0	± 9.6 %
		Y	1.73	67.49	14.59		150.0	
		Z	1.67	67.42	14.33		150.0	
10299-AAC	LTE-FDD (SC-FDMA, 50% RB, 3 MHz, 16-QAM)	X	4.16	75.23	18.27	0.00	150.0	± 9.6 %
		Y	3.62	72.95	17.02		150.0	
		Z	3.79	73.98	17.20		150.0	
10300-AAC	LTE-FDD (SC-FDMA, 50% RB, 3 MHz, 64-QAM)	X	3.24	70.49	15.56	0.00	150.0	± 9.6 %
		Y	2.85	68.54	14.36		150.0	
		Z	2.88	69.12	14.38		150.0	
10301-AAA	IEEE 802.16e WiMAX (29:18, 5ms, 10MHz, QPSK, PUSC)	X	6.29	69.71	19.78	4.17	80.0	± 9.6 %
		Y	5.94	68.34	18.90		80.0	
		Z	6.29	70.13	19.82		80.0	
10302-AAA	IEEE 802.16e WiMAX (29:18, 5ms, 10MHz, QPSK, PUSC, 3 CTRL symbols)	X	6.76	70.27	20.51	4.96	80.0	± 9.6 %
		Y	6.41	68.86	19.59		80.0	
		Z	6.69	70.41	20.40		80.0	

10303-AAA	IEEE 802.16e WiMAX (31:15, 5ms, 10MHz, 64QAM, PUSC)	X	6.71	70.71	20.76	4.96	80.0	± 9.6 %
		Y	6.29	69.07	19.72		80.0	
		Z	6.62	70.79	20.61		80.0	
10304-AAA	IEEE 802.16e WiMAX (29:18, 5ms, 10MHz, 64QAM, PUSC)	X	6.19	69.47	19.65	4.17	80.0	± 9.6 %
		Y	5.87	68.17	18.80		80.0	
		Z	6.10	69.53	19.49		80.0	
10305-AAA	IEEE 802.16e WiMAX (31:15, 10ms, 10MHz, 64QAM, PUSC, 15 symbols)	X	9.95	82.67	26.69	6.02	50.0	± 9.6 %
		Y	10.15	84.21	27.39		50.0	
		Z	10.19	83.14	26.44		50.0	
10306-AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, 64QAM, PUSC, 18 symbols)	X	7.82	75.69	23.92	6.02	50.0	± 9.6 %
		Y	6.85	72.18	21.91		50.0	
		Z	7.86	76.03	23.76		50.0	
10307-AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, QPSK, PUSC, 18 symbols)	X	8.17	76.98	24.26	6.02	50.0	± 9.6 %
		Y	6.98	72.96	22.07		50.0	
		Z	8.22	77.31	24.10		50.0	
10308-AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, 16QAM, PUSC)	X	8.34	77.70	24.59	6.02	50.0	± 9.6 %
		Y	7.04	73.38	22.27		50.0	
		Z	8.42	78.07	24.43		50.0	
10309-AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, 16QAM, AMC 2x3, 18 symbols)	X	7.98	76.05	24.09	6.02	50.0	± 9.6 %
		Y	6.97	72.49	22.06		50.0	
		Z	8.04	76.48	23.98		50.0	
10310-AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, QPSK, AMC 2x3, 18 symbols)	X	7.91	76.10	23.99	6.02	50.0	± 9.6 %
		Y	6.87	72.41	21.91		50.0	
		Z	7.97	76.48	23.85		50.0	
10311-AAC	LTE-FDD (SC-FDMA, 100% RB, 15 MHz, QPSK)	X	3.42	69.92	16.58	0.00	150.0	± 9.6 %
		Y	3.19	68.66	15.86		150.0	
		Z	3.16	68.73	15.89		150.0	
10313-AAA	iDEN 1:3	X	7.40	77.32	18.57	6.99	70.0	± 9.6 %
		Y	6.67	76.09	18.00		70.0	
		Z	6.86	76.47	18.15		70.0	
10314-AAA	iDEN 1:6	X	8.58	80.83	22.15	10.00	30.0	± 9.6 %
		Y	7.73	79.50	21.60		30.0	
		Z	7.82	79.66	21.66		30.0	
10315-AAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps, 96pc duty cycle)	X	1.19	65.11	15.97	0.17	150.0	± 9.6 %
		Y	1.12	63.96	15.01		150.0	
		Z	1.14	64.21	15.10		150.0	
10316-AAB	IEEE 802.11g WiFi 2.4 GHz (ERP-OFDM, 6 Mbps, 96pc duty cycle)	X	4.86	66.98	16.54	0.17	150.0	± 9.6 %
		Y	4.80	66.73	16.33		150.0	
		Z	4.76	66.85	16.34		150.0	
10317-AAC	IEEE 802.11a WiFi 5 GHz (OFDM, 6 Mbps, 96pc duty cycle)	X	4.86	66.98	16.54	0.17	150.0	± 9.6 %
		Y	4.80	66.73	16.33		150.0	
		Z	4.76	66.85	16.34		150.0	
10400-AAD	IEEE 802.11ac WiFi (20MHz, 64-QAM, 99pc duty cycle)	X	4.98	67.24	16.44	0.00	150.0	± 9.6 %
		Y	4.91	66.97	16.23		150.0	
		Z	4.85	67.07	16.24		150.0	
10401-AAD	IEEE 802.11ac WiFi (40MHz, 64-QAM, 99pc duty cycle)	X	5.56	67.23	16.48	0.00	150.0	± 9.6 %
		Y	5.51	67.02	16.31		150.0	
		Z	5.49	67.21	16.38		150.0	

10402-AAD	IEEE 802.11ac WiFi (80MHz, 64-QAM, 99pc duty cycle)	X	5.88	67.86	16.62	0.00	150.0	± 9.6 %
		Y	5.83	67.64	16.45		150.0	
		Z	5.78	67.69	16.45		150.0	
10403-AAB	CDMA2000 (1xEV-DO, Rev. 0)	X	1.82	70.55	15.88	0.00	115.0	± 9.6 %
		Y	1.53	67.85	14.22		115.0	
		Z	1.49	67.91	13.99		115.0	
10404-AAB	CDMA2000 (1xEV-DO, Rev. A)	X	1.82	70.55	15.88	0.00	115.0	± 9.6 %
		Y	1.53	67.85	14.22		115.0	
		Z	1.49	67.91	13.99		115.0	
10406-AAB	CDMA2000, RC3, SO32, SCH0, Full Rate	X	54.89	116.02	30.72	0.00	100.0	± 9.6 %
		Y	19.65	100.06	26.33		100.0	
		Z	53.88	114.30	29.69		100.0	
10410-AAD	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9, Subframe Conf=4)	X	100.00	120.18	31.16	3.23	80.0	± 9.6 %
		Y	100.00	120.00	30.94		80.0	
		Z	100.00	120.41	31.02		80.0	
10415-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps, 99pc duty cycle)	X	1.01	63.38	15.00	0.00	150.0	± 9.6 %
		Y	0.97	62.46	14.12		150.0	
		Z	0.99	62.70	14.21		150.0	
10416-AAA	IEEE 802.11g WiFi 2.4 GHz (ERP-OFDM, 6 Mbps, 99pc duty cycle)	X	4.74	66.79	16.35	0.00	150.0	± 9.6 %
		Y	4.69	66.54	16.15		150.0	
		Z	4.64	66.66	16.16		150.0	
10417-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps, 99pc duty cycle)	X	4.74	66.79	16.35	0.00	150.0	± 9.6 %
		Y	4.69	66.54	16.15		150.0	
		Z	4.64	66.66	16.16		150.0	
10418-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps, 99pc duty cycle, Long preambule)	X	4.72	66.91	16.35	0.00	150.0	± 9.6 %
		Y	4.67	66.66	16.14		150.0	
		Z	4.62	66.78	16.15		150.0	
10419-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps, 99pc duty cycle, Short preambule)	X	4.75	66.88	16.36	0.00	150.0	± 9.6 %
		Y	4.70	66.63	16.16		150.0	
		Z	4.65	66.75	16.17		150.0	
10422-AAB	IEEE 802.11n (HT Greenfield, 7.2 Mbps, BPSK)	X	4.88	66.90	16.38	0.00	150.0	± 9.6 %
		Y	4.83	66.66	16.18		150.0	
		Z	4.78	66.77	16.19		150.0	
10423-AAB	IEEE 802.11n (HT Greenfield, 43.3 Mbps, 16-QAM)	X	5.11	67.32	16.54	0.00	150.0	± 9.6 %
		Y	5.05	67.07	16.34		150.0	
		Z	4.98	67.15	16.34		150.0	
10424-AAB	IEEE 802.11n (HT Greenfield, 72.2 Mbps, 64-QAM)	X	5.01	67.24	16.49	0.00	150.0	± 9.6 %
		Y	4.95	66.99	16.29		150.0	
		Z	4.89	67.08	16.30		150.0	
10425-AAB	IEEE 802.11n (HT Greenfield, 15 Mbps, BPSK)	X	5.58	67.64	16.67	0.00	150.0	± 9.6 %
		Y	5.54	67.43	16.50		150.0	
		Z	5.47	67.45	16.48		150.0	
10426-AAB	IEEE 802.11n (HT Greenfield, 90 Mbps, 16-QAM)	X	5.60	67.67	16.67	0.00	150.0	± 9.6 %
		Y	5.55	67.46	16.51		150.0	
		Z	5.48	67.49	16.50		150.0	

10427-AAB	IEEE 802.11n (HT Greenfield, 150 Mbps, 64-QAM)	X	5.62	67.70	16.68	0.00	150.0	± 9.6 %
		Y	5.57	67.46	16.51		150.0	
		Z	5.50	67.49	16.49		150.0	
10430-AAB	LTE-FDD (OFDMA, 5 MHz, E-TM 3.1)	X	4.38	69.67	17.94	0.00	150.0	± 9.6 %
		Y	4.33	69.58	17.80		150.0	
		Z	4.20	69.45	17.56		150.0	
10431-AAB	LTE-FDD (OFDMA, 10 MHz, E-TM 3.1)	X	4.52	67.35	16.46	0.00	150.0	± 9.6 %
		Y	4.44	67.04	16.20		150.0	
		Z	4.37	67.16	16.19		150.0	
10432-AAB	LTE-FDD (OFDMA, 15 MHz, E-TM 3.1)	X	4.80	67.28	16.47	0.00	150.0	± 9.6 %
		Y	4.73	67.00	16.25		150.0	
		Z	4.66	67.10	16.25		150.0	
10433-AAB	LTE-FDD (OFDMA, 20 MHz, E-TM 3.1)	X	5.03	67.30	16.53	0.00	150.0	± 9.6 %
		Y	4.97	67.05	16.32		150.0	
		Z	4.90	67.13	16.32		150.0	
10434-AAA	W-CDMA (BS Test Model 1, 64 DPCH)	X	4.44	70.22	17.90	0.00	150.0	± 9.6 %
		Y	4.39	70.14	17.76		150.0	
		Z	4.25	70.00	17.47		150.0	
10435-AAC	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	100.00	120.04	31.10	3.23	80.0	± 9.6 %
		Y	100.00	119.86	30.88		80.0	
		Z	100.00	120.26	30.96		80.0	
10447-AAB	LTE-FDD (OFDMA, 5 MHz, E-TM 3.1, Clipping 44%)	X	3.84	67.38	16.06	0.00	150.0	± 9.6 %
		Y	3.74	66.97	15.70		150.0	
		Z	3.66	67.07	15.61		150.0	
10448-AAB	LTE-FDD (OFDMA, 10 MHz, E-TM 3.1, Clippin 44%)	X	4.32	67.11	16.31	0.00	150.0	± 9.6 %
		Y	4.24	66.80	16.05		150.0	
		Z	4.18	66.92	16.03		150.0	
10449-AAB	LTE-FDD (OFDMA, 15 MHz, E-TM 3.1, Cliping 44%)	X	4.56	67.09	16.36	0.00	150.0	± 9.6 %
		Y	4.50	66.80	16.13		150.0	
		Z	4.44	66.90	16.13		150.0	
10450-AAB	LTE-FDD (OFDMA, 20 MHz, E-TM 3.1, Clipping 44%)	X	4.73	67.04	16.37	0.00	150.0	± 9.6 %
		Y	4.68	66.77	16.16		150.0	
		Z	4.63	66.86	16.16		150.0	
10451-AAA	W-CDMA (BS Test Model 1, 64 DPCH, Clipping 44%)	X	3.78	67.68	15.87	0.00	150.0	± 9.6 %
		Y	3.67	67.21	15.46		150.0	
		Z	3.58	67.29	15.33		150.0	
10456-AAB	IEEE 802.11ac WiFi (160MHz, 64-QAM, 99pc duty cycle)	X	6.44	68.30	16.85	0.00	150.0	± 9.6 %
		Y	6.39	68.08	16.70		150.0	
		Z	6.33	68.10	16.68		150.0	
10457-AAA	UMTS-FDD (DC-HSDPA)	X	3.88	65.45	16.12	0.00	150.0	± 9.6 %
		Y	3.85	65.19	15.88		150.0	
		Z	3.83	65.30	15.89		150.0	
10458-AAA	CDMA2000 (1xEV-DO, Rev. B, 2 carriers)	X	3.99	69.06	17.30	0.00	150.0	± 9.6 %
		Y	3.94	68.99	17.12		150.0	
		Z	3.88	69.16	16.95		150.0	
10459-AAA	CDMA2000 (1xEV-DO, Rev. B, 3 carriers)	X	5.14	66.79	17.69	0.00	150.0	± 9.6 %
		Y	5.17	67.07	17.77		150.0	
		Z	5.03	67.03	17.57		150.0	

10460-AAA	UMTS-FDD (WCDMA, AMR)	X	1.01	70.18	17.23	0.00	150.0	± 9.6 %
		Y	0.84	66.63	14.95		150.0	
		Z	0.86	67.07	15.16		150.0	
10461-AAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	100.00	122.05	32.10	3.29	80.0	± 9.6 %
		Y	100.00	121.55	31.74		80.0	
		Z	100.00	122.65	32.14		80.0	
10462-AAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	100.00	110.61	26.61	3.23	80.0	± 9.6 %
		Y	94.23	109.23	26.02		80.0	
		Z	100.00	110.18	26.15		80.0	
10463-AAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	78.75	105.62	24.90	3.23	80.0	± 9.6 %
		Y	29.03	93.62	21.69		80.0	
		Z	35.25	96.07	22.21		80.0	
10464-AAA	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	100.00	120.54	31.26	3.23	80.0	± 9.6 %
		Y	100.00	119.94	30.85		80.0	
		Z	100.00	121.04	31.24		80.0	
10465-AAA	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	100.00	110.25	26.42	3.23	80.0	± 9.6 %
		Y	50.78	101.60	24.13		80.0	
		Z	70.19	105.68	25.02		80.0	
10466-AAA	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	47.84	99.56	23.37	3.23	80.0	± 9.6 %
		Y	19.27	88.73	20.29		80.0	
		Z	23.58	91.30	20.90		80.0	
10467-AAC	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	100.00	120.70	31.33	3.23	80.0	± 9.6 %
		Y	100.00	120.11	30.92		80.0	
		Z	100.00	121.21	31.32		80.0	
10468-AAC	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	100.00	110.36	26.47	3.23	80.0	± 9.6 %
		Y	58.61	103.38	24.58		80.0	
		Z	81.66	107.55	25.48		80.0	
10469-AAC	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	49.33	99.92	23.45	3.23	80.0	± 9.6 %
		Y	19.62	88.94	20.35		80.0	
		Z	24.11	91.56	20.96		80.0	
10470-AAC	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	100.00	120.72	31.34	3.23	80.0	± 9.6 %
		Y	100.00	120.13	30.93		80.0	
		Z	100.00	121.23	31.32		80.0	
10471-AAC	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	100.00	110.32	26.45	3.23	80.0	± 9.6 %
		Y	58.86	103.40	24.58		80.0	
		Z	82.23	107.60	25.48		80.0	
10472-AAC	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	49.97	100.04	23.47	3.23	80.0	± 9.6 %
		Y	19.65	88.94	20.34		80.0	
		Z	24.22	91.59	20.96		80.0	
10473-AAC	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	100.00	120.70	31.33	3.23	80.0	± 9.6 %
		Y	100.00	120.11	30.91		80.0	
		Z	100.00	121.21	31.31		80.0	
10474-AAC	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	100.00	110.33	26.46	3.23	80.0	± 9.6 %
		Y	57.97	103.23	24.54		80.0	
		Z	80.96	107.43	25.44		80.0	
10475-AAC	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	49.03	99.83	23.42	3.23	80.0	± 9.6 %
		Y	19.43	88.82	20.31		80.0	
		Z	23.91	91.46	20.92		80.0	

10477-AAC	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	100.00	110.21	26.40	3.23	80.0	± 9.6 %
		Y	52.60	101.98	24.20		80.0	
		Z	73.44	106.17	25.12		80.0	
10478-AAC	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	48.33	99.64	23.36	3.23	80.0	± 9.6 %
		Y	19.20	88.67	20.26		80.0	
		Z	23.64	91.30	20.88		80.0	
10479-AAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	11.17	89.11	24.99	3.23	80.0	± 9.6 %
		Y	9.72	86.78	24.01		80.0	
		Z	11.19	89.29	24.70		80.0	
10480-AAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	12.30	86.18	22.71	3.23	80.0	± 9.6 %
		Y	10.82	84.18	21.84		80.0	
		Z	12.05	85.88	22.16		80.0	
10481-AAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	11.45	84.51	21.90	3.23	80.0	± 9.6 %
		Y	10.02	82.49	21.00		80.0	
		Z	10.82	83.70	21.17		80.0	
10482-AAA	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	6.11	78.83	20.21	2.23	80.0	± 9.6 %
		Y	4.96	75.77	18.86		80.0	
		Z	4.90	75.64	18.57		80.0	
10483-AAA	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	8.68	81.26	21.25	2.23	80.0	± 9.6 %
		Y	7.88	79.76	20.50		80.0	
		Z	7.94	79.89	20.29		80.0	
10484-AAA	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	8.31	80.37	20.94	2.23	80.0	± 9.6 %
		Y	7.54	78.89	20.20		80.0	
		Z	7.52	78.88	19.94		80.0	
10485-AAC	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	6.32	79.32	20.87	2.23	80.0	± 9.6 %
		Y	5.23	76.46	19.63		80.0	
		Z	5.24	76.63	19.55		80.0	
10486-AAC	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	5.11	73.35	18.47	2.23	80.0	± 9.6 %
		Y	4.61	71.85	17.68		80.0	
		Z	4.56	71.81	17.45		80.0	
10487-AAC	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	5.09	72.96	18.32	2.23	80.0	± 9.6 %
		Y	4.61	71.53	17.56		80.0	
		Z	4.55	71.46	17.31		80.0	
10488-AAC	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	6.25	77.69	20.57	2.23	80.0	± 9.6 %
		Y	5.40	75.44	19.60		80.0	
		Z	5.42	75.71	19.64		80.0	
10489-AAC	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	5.17	72.45	18.81	2.23	80.0	± 9.6 %
		Y	4.77	71.23	18.18		80.0	
		Z	4.76	71.40	18.15		80.0	
10490-AAC	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	5.22	72.07	18.69	2.23	80.0	± 9.6 %
		Y	4.84	70.95	18.11		80.0	
		Z	4.84	71.14	18.08		80.0	
10491-AAC	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	5.95	75.11	19.68	2.23	80.0	± 9.6 %
		Y	5.36	73.49	18.94		80.0	
		Z	5.37	73.72	18.99		80.0	
10492-AAC	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	5.37	71.35	18.56	2.23	80.0	± 9.6 %
		Y	5.04	70.36	18.04		80.0	
		Z	5.04	70.57	18.06		80.0	

10493-AAC	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	5.42	71.12	18.49	2.23	80.0	± 9.6 %
		Y	5.10	70.19	18.00		80.0	
		Z	5.10	70.40	18.02		80.0	
10494-AAC	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	6.67	77.03	20.20	2.23	80.0	± 9.6 %
		Y	5.89	75.13	19.38		80.0	
		Z	5.87	75.25	19.40		80.0	
10495-AAC	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	5.50	71.99	18.78	2.23	80.0	± 9.6 %
		Y	5.13	70.92	18.24		80.0	
		Z	5.12	71.07	18.25		80.0	
10496-AAC	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	5.52	71.52	18.64	2.23	80.0	± 9.6 %
		Y	5.18	70.54	18.14		80.0	
		Z	5.17	70.71	18.15		80.0	
10497-AAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	5.20	76.63	18.92	2.23	80.0	± 9.6 %
		Y	4.16	73.44	17.44		80.0	
		Z	3.95	72.68	16.81		80.0	
10498-AAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	4.23	71.07	16.05	2.23	80.0	± 9.6 %
		Y	3.57	68.80	14.82		80.0	
		Z	3.29	67.79	14.00		80.0	
10499-AAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	4.21	70.66	15.78	2.23	80.0	± 9.6 %
		Y	3.55	68.42	14.55		80.0	
		Z	3.25	67.34	13.69		80.0	
10500-AAA	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	6.06	78.01	20.54	2.23	80.0	± 9.6 %
		Y	5.15	75.54	19.46		80.0	
		Z	5.19	75.83	19.46		80.0	
10501-AAA	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	5.11	72.83	18.54	2.23	80.0	± 9.6 %
		Y	4.66	71.48	17.83		80.0	
		Z	4.64	71.57	17.69		80.0	
10502-AAA	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	5.13	72.53	18.39	2.23	80.0	± 9.6 %
		Y	4.71	71.27	17.72		80.0	
		Z	4.68	71.36	17.57		80.0	
10503-AAC	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	6.18	77.51	20.49	2.23	80.0	± 9.6 %
		Y	5.34	75.27	19.52		80.0	
		Z	5.37	75.55	19.57		80.0	
10504-AAC	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	5.15	72.39	18.77	2.23	80.0	± 9.6 %
		Y	4.75	71.16	18.14		80.0	
		Z	4.75	71.34	18.11		80.0	
10505-AAC	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	5.19	72.00	18.65	2.23	80.0	± 9.6 %
		Y	4.82	70.87	18.06		80.0	
		Z	4.82	71.07	18.04		80.0	
10506-AAC	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	6.62	76.90	20.14	2.23	80.0	± 9.6 %
		Y	5.85	75.00	19.32		80.0	
		Z	5.83	75.14	19.34		80.0	
10507-AAC	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	5.48	71.94	18.75	2.23	80.0	± 9.6 %
		Y	5.11	70.86	18.21		80.0	
		Z	5.11	71.02	18.22		80.0	

10508-AAC	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	5.50	71.47	18.61	2.23	80.0	± 9.6 %
		Y	5.17	70.49	18.10		80.0	
		Z	5.16	70.66	18.12		80.0	
10509-AAC	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	6.45	74.61	19.28	2.23	80.0	± 9.6 %
		Y	5.91	73.26	18.67		80.0	
		Z	5.88	73.34	18.68		80.0	
10510-AAC	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	5.89	71.35	18.56	2.23	80.0	± 9.6 %
		Y	5.57	70.45	18.11		80.0	
		Z	5.55	70.59	18.13		80.0	
10511-AAC	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	5.88	70.97	18.46	2.23	80.0	± 9.6 %
		Y	5.58	70.13	18.03		80.0	
		Z	5.57	70.28	18.06		80.0	
10512-AAC	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	7.08	76.75	19.94	2.23	80.0	± 9.6 %
		Y	6.33	75.02	19.19		80.0	
		Z	6.29	75.06	19.18		80.0	
10513-AAC	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	5.86	71.94	18.77	2.23	80.0	± 9.6 %
		Y	5.50	70.93	18.27		80.0	
		Z	5.49	71.03	18.28		80.0	
10514-AAC	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	5.78	71.32	18.59	2.23	80.0	± 9.6 %
		Y	5.46	70.40	18.13		80.0	
		Z	5.45	70.53	18.14		80.0	
10515-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 2 Mbps, 99pc duty cycle)	X	0.98	63.62	15.09	0.00	150.0	± 9.6 %
		Y	0.94	62.61	14.14		150.0	
		Z	0.95	62.86	14.24		150.0	
10516-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 5.5 Mbps, 99pc duty cycle)	X	0.81	76.11	19.82	0.00	150.0	± 9.6 %
		Y	0.51	67.70	15.09		150.0	
		Z	0.54	68.52	15.55		150.0	
10517-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 11 Mbps, 99pc duty cycle)	X	0.86	66.23	16.05	0.00	150.0	± 9.6 %
		Y	0.78	64.24	14.48		150.0	
		Z	0.80	64.56	14.64		150.0	
10518-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 9 Mbps, 99pc duty cycle)	X	4.74	66.88	16.34	0.00	150.0	± 9.6 %
		Y	4.69	66.63	16.14		150.0	
		Z	4.64	66.73	16.14		150.0	
10519-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 12 Mbps, 99pc duty cycle)	X	4.99	67.21	16.50	0.00	150.0	± 9.6 %
		Y	4.92	66.95	16.29		150.0	
		Z	4.86	67.03	16.29		150.0	
10520-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 18 Mbps, 99pc duty cycle)	X	4.83	67.19	16.42	0.00	150.0	± 9.6 %
		Y	4.77	66.92	16.21		150.0	
		Z	4.70	66.99	16.20		150.0	
10521-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 24 Mbps, 99pc duty cycle)	X	4.76	67.20	16.41	0.00	150.0	± 9.6 %
		Y	4.70	66.92	16.19		150.0	
		Z	4.63	66.99	16.18		150.0	
10522-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 36 Mbps, 99pc duty cycle)	X	4.79	67.09	16.40	0.00	150.0	± 9.6 %
		Y	4.73	66.84	16.20		150.0	
		Z	4.68	66.98	16.22		150.0	

10523-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 48 Mbps, 99pc duty cycle)	X	4.67	67.04	16.28	0.00	150.0	± 9.6 %
		Y	4.60	66.76	16.06		150.0	
		Z	4.55	66.86	16.07		150.0	
10524-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 54 Mbps, 99pc duty cycle)	X	4.75	67.08	16.41	0.00	150.0	± 9.6 %
		Y	4.69	66.83	16.20		150.0	
		Z	4.63	66.94	16.21		150.0	
10525-AAB	IEEE 802.11ac WiFi (20MHz, MCS0, 99pc duty cycle)	X	4.69	66.11	15.99	0.00	150.0	± 9.6 %
		Y	4.63	65.84	15.78		150.0	
		Z	4.59	65.95	15.79		150.0	
10526-AAB	IEEE 802.11ac WiFi (20MHz, MCS1, 99pc duty cycle)	X	4.91	66.53	16.14	0.00	150.0	± 9.6 %
		Y	4.85	66.26	15.93		150.0	
		Z	4.79	66.36	15.94		150.0	
10527-AAB	IEEE 802.11ac WiFi (20MHz, MCS2, 99pc duty cycle)	X	4.83	66.52	16.10	0.00	150.0	± 9.6 %
		Y	4.76	66.23	15.88		150.0	
		Z	4.70	66.32	15.88		150.0	
10528-AAB	IEEE 802.11ac WiFi (20MHz, MCS3, 99pc duty cycle)	X	4.85	66.54	16.14	0.00	150.0	± 9.6 %
		Y	4.78	66.26	15.92		150.0	
		Z	4.72	66.35	15.92		150.0	
10529-AAB	IEEE 802.11ac WiFi (20MHz, MCS4, 99pc duty cycle)	X	4.85	66.54	16.14	0.00	150.0	± 9.6 %
		Y	4.78	66.26	15.92		150.0	
		Z	4.72	66.35	15.92		150.0	
10531-AAB	IEEE 802.11ac WiFi (20MHz, MCS6, 99pc duty cycle)	X	4.87	66.71	16.17	0.00	150.0	± 9.6 %
		Y	4.80	66.41	15.94		150.0	
		Z	4.73	66.49	15.94		150.0	
10532-AAB	IEEE 802.11ac WiFi (20MHz, MCS7, 99pc duty cycle)	X	4.72	66.60	16.13	0.00	150.0	± 9.6 %
		Y	4.64	66.28	15.89		150.0	
		Z	4.58	66.34	15.88		150.0	
10533-AAB	IEEE 802.11ac WiFi (20MHz, MCS8, 99pc duty cycle)	X	4.86	66.55	16.11	0.00	150.0	± 9.6 %
		Y	4.79	66.27	15.89		150.0	
		Z	4.73	66.36	15.90		150.0	
10534-AAB	IEEE 802.11ac WiFi (40MHz, MCS0, 99pc duty cycle)	X	5.35	66.74	16.19	0.00	150.0	± 9.6 %
		Y	5.30	66.49	16.01		150.0	
		Z	5.24	66.53	16.00		150.0	
10535-AAB	IEEE 802.11ac WiFi (40MHz, MCS1, 99pc duty cycle)	X	5.43	66.88	16.24	0.00	150.0	± 9.6 %
		Y	5.37	66.63	16.06		150.0	
		Z	5.31	66.67	16.05		150.0	
10536-AAB	IEEE 802.11ac WiFi (40MHz, MCS2, 99pc duty cycle)	X	5.29	66.86	16.22	0.00	150.0	± 9.6 %
		Y	5.23	66.60	16.03		150.0	
		Z	5.18	66.65	16.02		150.0	
10537-AAB	IEEE 802.11ac WiFi (40MHz, MCS3, 99pc duty cycle)	X	5.36	66.83	16.21	0.00	150.0	± 9.6 %
		Y	5.30	66.58	16.02		150.0	
		Z	5.24	66.64	16.02		150.0	
10538-AAB	IEEE 802.11ac WiFi (40MHz, MCS4, 99pc duty cycle)	X	5.49	66.94	16.31	0.00	150.0	± 9.6 %
		Y	5.43	66.69	16.12		150.0	
		Z	5.36	66.72	16.11		150.0	
10540-AAB	IEEE 802.11ac WiFi (40MHz, MCS6, 99pc duty cycle)	X	5.37	66.86	16.28	0.00	150.0	± 9.6 %
		Y	5.31	66.60	16.09		150.0	
		Z	5.26	66.66	16.09		150.0	

10541-AAB	IEEE 802.11ac WiFi (40MHz, MCS7, 99pc duty cycle)	X	5.37	66.83	16.27	0.00	150.0	± 9.6 %
		Y	5.31	66.55	16.07		150.0	
		Z	5.24	66.56	16.04		150.0	
10542-AAB	IEEE 802.11ac WiFi (40MHz, MCS8, 99pc duty cycle)	X	5.51	66.80	16.27	0.00	150.0	± 9.6 %
		Y	5.45	66.56	16.09		150.0	
		Z	5.39	66.62	16.08		150.0	
10543-AAB	IEEE 802.11ac WiFi (40MHz, MCS9, 99pc duty cycle)	X	5.61	66.84	16.30	0.00	150.0	± 9.6 %
		Y	5.54	66.58	16.11		150.0	
		Z	5.48	66.63	16.11		150.0	
10544-AAB	IEEE 802.11ac WiFi (80MHz, MCS0, 99pc duty cycle)	X	5.61	66.83	16.17	0.00	150.0	± 9.6 %
		Y	5.56	66.59	15.99		150.0	
		Z	5.52	66.64	15.99		150.0	
10545-AAB	IEEE 802.11ac WiFi (80MHz, MCS1, 99pc duty cycle)	X	5.83	67.22	16.29	0.00	150.0	± 9.6 %
		Y	5.78	67.01	16.14		150.0	
		Z	5.73	67.07	16.14		150.0	
10546-AAB	IEEE 802.11ac WiFi (80MHz, MCS2, 99pc duty cycle)	X	5.73	67.15	16.28	0.00	150.0	± 9.6 %
		Y	5.67	66.90	16.11		150.0	
		Z	5.62	66.93	16.09		150.0	
10547-AAB	IEEE 802.11ac WiFi (80MHz, MCS3, 99pc duty cycle)	X	5.83	67.25	16.32	0.00	150.0	± 9.6 %
		Y	5.77	66.99	16.14		150.0	
		Z	5.70	67.00	16.12		150.0	
10548-AAB	IEEE 802.11ac WiFi (80MHz, MCS4, 99pc duty cycle)	X	6.16	68.40	16.87	0.00	150.0	± 9.6 %
		Y	6.13	68.23	16.73		150.0	
		Z	6.04	68.18	16.69		150.0	
10550-AAB	IEEE 802.11ac WiFi (80MHz, MCS6, 99pc duty cycle)	X	5.74	67.08	16.25	0.00	150.0	± 9.6 %
		Y	5.69	66.84	16.08		150.0	
		Z	5.63	66.88	16.07		150.0	
10551-AAB	IEEE 802.11ac WiFi (80MHz, MCS7, 99pc duty cycle)	X	5.77	67.22	16.28	0.00	150.0	± 9.6 %
		Y	5.72	66.98	16.11		150.0	
		Z	5.65	66.98	16.08		150.0	
10552-AAB	IEEE 802.11ac WiFi (80MHz, MCS8, 99pc duty cycle)	X	5.66	66.96	16.18	0.00	150.0	± 9.6 %
		Y	5.61	66.71	16.00		150.0	
		Z	5.55	66.73	15.97		150.0	
10553-AAB	IEEE 802.11ac WiFi (80MHz, MCS9, 99pc duty cycle)	X	5.76	66.99	16.21	0.00	150.0	± 9.6 %
		Y	5.70	66.75	16.04		150.0	
		Z	5.65	66.79	16.03		150.0	
10554-AAC	IEEE 802.11ac WiFi (160MHz, MCS0, 99pc duty cycle)	X	6.01	67.22	16.27	0.00	150.0	± 9.6 %
		Y	5.96	67.00	16.11		150.0	
		Z	5.92	67.04	16.09		150.0	
10555-AAC	IEEE 802.11ac WiFi (160MHz, MCS1, 99pc duty cycle)	X	6.19	67.64	16.44	0.00	150.0	± 9.6 %
		Y	6.14	67.39	16.27		150.0	
		Z	6.07	67.38	16.24		150.0	
10556-AAC	IEEE 802.11ac WiFi (160MHz, MCS2, 99pc duty cycle)	X	6.18	67.58	16.41	0.00	150.0	± 9.6 %
		Y	6.13	67.35	16.25		150.0	
		Z	6.08	67.39	16.24		150.0	
10557-AAC	IEEE 802.11ac WiFi (160MHz, MCS3, 99pc duty cycle)	X	6.18	67.59	16.44	0.00	150.0	± 9.6 %
		Y	6.13	67.35	16.27		150.0	
		Z	6.07	67.36	16.25		150.0	

10558-AAC	IEEE 802.11ac WiFi (160MHz, MCS4, 99pc duty cycle)	X	6.25	67.80	16.56	0.00	150.0	± 9.6 %
		Y	6.20	67.56	16.39		150.0	
		Z	6.13	67.56	16.36		150.0	
10560-AAC	IEEE 802.11ac WiFi (160MHz, MCS6, 99pc duty cycle)	X	6.25	67.63	16.51	0.00	150.0	± 9.6 %
		Y	6.19	67.37	16.33		150.0	
		Z	6.12	67.38	16.31		150.0	
10561-AAC	IEEE 802.11ac WiFi (160MHz, MCS7, 99pc duty cycle)	X	6.15	67.57	16.52	0.00	150.0	± 9.6 %
		Y	6.09	67.32	16.35		150.0	
		Z	6.04	67.34	16.33		150.0	
10562-AAC	IEEE 802.11ac WiFi (160MHz, MCS8, 99pc duty cycle)	X	6.33	68.13	16.81	0.00	150.0	± 9.6 %
		Y	6.28	67.89	16.63		150.0	
		Z	6.20	67.86	16.59		150.0	
10563-AAC	IEEE 802.11ac WiFi (160MHz, MCS9, 99pc duty cycle)	X	6.57	68.37	16.87	0.00	150.0	± 9.6 %
		Y	6.55	68.21	16.74		150.0	
		Z	6.52	68.35	16.79		150.0	
10564-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 9 Mbps, 99pc duty cycle)	X	5.09	67.05	16.56	0.46	150.0	± 9.6 %
		Y	5.04	66.80	16.35		150.0	
		Z	4.99	66.92	16.37		150.0	
10565-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 12 Mbps, 99pc duty cycle)	X	5.37	67.55	16.88	0.46	150.0	± 9.6 %
		Y	5.31	67.30	16.68		150.0	
		Z	5.24	67.38	16.68		150.0	
10566-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 18 Mbps, 99pc duty cycle)	X	5.20	67.44	16.72	0.46	150.0	± 9.6 %
		Y	5.14	67.17	16.51		150.0	
		Z	5.08	67.26	16.52		150.0	
10567-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 24 Mbps, 99pc duty cycle)	X	5.22	67.76	17.01	0.46	150.0	± 9.6 %
		Y	5.16	67.53	16.82		150.0	
		Z	5.09	67.58	16.80		150.0	
10568-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 36 Mbps, 99pc duty cycle)	X	5.11	67.15	16.48	0.46	150.0	± 9.6 %
		Y	5.05	66.88	16.25		150.0	
		Z	5.00	67.04	16.31		150.0	
10569-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 48 Mbps, 99pc duty cycle)	X	5.15	67.74	17.00	0.46	150.0	± 9.6 %
		Y	5.09	67.52	16.83		150.0	
		Z	5.03	67.57	16.81		150.0	
10570-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 54 Mbps, 99pc duty cycle)	X	5.20	67.58	16.95	0.46	150.0	± 9.6 %
		Y	5.14	67.36	16.77		150.0	
		Z	5.08	67.46	16.78		150.0	
10571-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps, 90pc duty cycle)	X	1.41	66.77	16.75	0.46	130.0	± 9.6 %
		Y	1.31	65.36	15.71		130.0	
		Z	1.33	65.68	15.83		130.0	
10572-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 2 Mbps, 90pc duty cycle)	X	1.44	67.46	17.13	0.46	130.0	± 9.6 %
		Y	1.33	65.94	16.04		130.0	
		Z	1.35	66.24	16.15		130.0	
10573-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 5.5 Mbps, 90pc duty cycle)	X	14.90	112.90	30.59	0.46	130.0	± 9.6 %
		Y	2.52	84.17	21.53		130.0	
		Z	2.93	86.36	22.30		130.0	
10574-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 11 Mbps, 90pc duty cycle)	X	1.82	75.10	20.54	0.46	130.0	± 9.6 %
		Y	1.52	71.65	18.64		130.0	
		Z	1.54	71.84	18.68		130.0	

10575-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps, 90pc duty cycle)	X	4.91	66.92	16.66	0.46	130.0	± 9.6 %
		Y	4.86	66.67	16.45		130.0	
		Z	4.81	66.80	16.47		130.0	
10576-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 9 Mbps, 90pc duty cycle)	X	4.94	67.06	16.71	0.46	130.0	± 9.6 %
		Y	4.88	66.82	16.51		130.0	
		Z	4.84	66.94	16.52		130.0	
10577-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 12 Mbps, 90pc duty cycle)	X	5.19	67.42	16.90	0.46	130.0	± 9.6 %
		Y	5.13	67.18	16.70		130.0	
		Z	5.07	67.27	16.70		130.0	
10578-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 18 Mbps, 90pc duty cycle)	X	5.08	67.57	16.97	0.46	130.0	± 9.6 %
		Y	5.02	67.33	16.78		130.0	
		Z	4.96	67.40	16.77		130.0	
10579-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 24 Mbps, 90pc duty cycle)	X	4.88	67.07	16.43	0.46	130.0	± 9.6 %
		Y	4.81	66.76	16.18		130.0	
		Z	4.75	66.88	16.21		130.0	
10580-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 36 Mbps, 90pc duty cycle)	X	4.92	67.00	16.41	0.46	130.0	± 9.6 %
		Y	4.85	66.70	16.17		130.0	
		Z	4.80	66.86	16.22		130.0	
10581-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 48 Mbps, 90pc duty cycle)	X	5.00	67.69	16.94	0.46	130.0	± 9.6 %
		Y	4.93	67.42	16.74		130.0	
		Z	4.86	67.47	16.72		130.0	
10582-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 54 Mbps, 90pc duty cycle)	X	4.84	66.84	16.26	0.46	130.0	± 9.6 %
		Y	4.77	66.51	15.99		130.0	
		Z	4.71	66.67	16.04		130.0	
10583-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps, 90pc duty cycle)	X	4.91	66.92	16.66	0.46	130.0	± 9.6 %
		Y	4.86	66.67	16.45		130.0	
		Z	4.81	66.80	16.47		130.0	
10584-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 9 Mbps, 90pc duty cycle)	X	4.94	67.06	16.71	0.46	130.0	± 9.6 %
		Y	4.88	66.82	16.51		130.0	
		Z	4.84	66.94	16.52		130.0	
10585-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 12 Mbps, 90pc duty cycle)	X	5.19	67.42	16.90	0.46	130.0	± 9.6 %
		Y	5.13	67.18	16.70		130.0	
		Z	5.07	67.27	16.70		130.0	
10586-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 18 Mbps, 90pc duty cycle)	X	5.08	67.57	16.97	0.46	130.0	± 9.6 %
		Y	5.02	67.33	16.78		130.0	
		Z	4.96	67.40	16.77		130.0	
10587-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 24 Mbps, 90pc duty cycle)	X	4.88	67.07	16.43	0.46	130.0	± 9.6 %
		Y	4.81	66.76	16.18		130.0	
		Z	4.75	66.88	16.21		130.0	
10588-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 36 Mbps, 90pc duty cycle)	X	4.92	67.00	16.41	0.46	130.0	± 9.6 %
		Y	4.85	66.70	16.17		130.0	
		Z	4.80	66.86	16.22		130.0	
10589-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 48 Mbps, 90pc duty cycle)	X	5.00	67.69	16.94	0.46	130.0	± 9.6 %
		Y	4.93	67.42	16.74		130.0	
		Z	4.86	67.47	16.72		130.0	
10590-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 54 Mbps, 90pc duty cycle)	X	4.84	66.84	16.26	0.46	130.0	± 9.6 %
		Y	4.77	66.51	15.99		130.0	
		Z	4.71	66.67	16.04		130.0	

10591-AAB	IEEE 802.11n (HT Mixed, 20MHz, MCS0, 90pc duty cycle)	X	5.06	66.96	16.74	0.46	130.0	± 9.6 %
		Y	5.01	66.74	16.55		130.0	
		Z	4.96	66.85	16.56		130.0	
10592-AAB	IEEE 802.11n (HT Mixed, 20MHz, MCS1, 90pc duty cycle)	X	5.25	67.31	16.85	0.46	130.0	± 9.6 %
		Y	5.19	67.08	16.67		130.0	
		Z	5.13	67.19	16.68		130.0	
10593-AAB	IEEE 802.11n (HT Mixed, 20MHz, MCS2, 90pc duty cycle)	X	5.19	67.30	16.79	0.46	130.0	± 9.6 %
		Y	5.13	67.05	16.59		130.0	
		Z	5.07	67.15	16.60		130.0	
10594-AAB	IEEE 802.11n (HT Mixed, 20MHz, MCS3, 90pc duty cycle)	X	5.23	67.42	16.90	0.46	130.0	± 9.6 %
		Y	5.17	67.18	16.71		130.0	
		Z	5.11	67.28	16.72		130.0	
10595-AAB	IEEE 802.11n (HT Mixed, 20MHz, MCS4, 90pc duty cycle)	X	5.22	67.43	16.83	0.46	130.0	± 9.6 %
		Y	5.16	67.17	16.63		130.0	
		Z	5.09	67.26	16.64		130.0	
10596-AAB	IEEE 802.11n (HT Mixed, 20MHz, MCS5, 90pc duty cycle)	X	5.15	67.41	16.83	0.46	130.0	± 9.6 %
		Y	5.09	67.15	16.62		130.0	
		Z	5.03	67.27	16.64		130.0	
10597-AAB	IEEE 802.11n (HT Mixed, 20MHz, MCS6, 90pc duty cycle)	X	5.11	67.38	16.76	0.46	130.0	± 9.6 %
		Y	5.04	67.11	16.54		130.0	
		Z	4.98	67.21	16.55		130.0	
10598-AAB	IEEE 802.11n (HT Mixed, 20MHz, MCS7, 90pc duty cycle)	X	5.09	67.62	17.00	0.46	130.0	± 9.6 %
		Y	5.02	67.35	16.79		130.0	
		Z	4.96	67.41	16.78		130.0	
10599-AAB	IEEE 802.11n (HT Mixed, 40MHz, MCS0, 90pc duty cycle)	X	5.73	67.62	16.94	0.46	130.0	± 9.6 %
		Y	5.68	67.40	16.77		130.0	
		Z	5.63	67.48	16.78		130.0	
10600-AAB	IEEE 802.11n (HT Mixed, 40MHz, MCS1, 90pc duty cycle)	X	6.00	68.43	17.33	0.46	130.0	± 9.6 %
		Y	5.96	68.23	17.16		130.0	
		Z	5.85	68.13	17.09		130.0	
10601-AAB	IEEE 802.11n (HT Mixed, 40MHz, MCS2, 90pc duty cycle)	X	5.81	67.92	17.08	0.46	130.0	± 9.6 %
		Y	5.76	67.71	16.91		130.0	
		Z	5.69	67.73	16.90		130.0	
10602-AAB	IEEE 802.11n (HT Mixed, 40MHz, MCS3, 90pc duty cycle)	X	5.94	68.04	17.07	0.46	130.0	± 9.6 %
		Y	5.88	67.79	16.88		130.0	
		Z	5.78	67.75	16.84		130.0	
10603-AAB	IEEE 802.11n (HT Mixed, 40MHz, MCS4, 90pc duty cycle)	X	6.05	68.39	17.36	0.46	130.0	± 9.6 %
		Y	5.99	68.16	17.18		130.0	
		Z	5.87	68.05	17.10		130.0	
10604-AAB	IEEE 802.11n (HT Mixed, 40MHz, MCS5, 90pc duty cycle)	X	5.75	67.62	16.96	0.46	130.0	± 9.6 %
		Y	5.70	67.40	16.79		130.0	
		Z	5.64	67.44	16.79		130.0	
10605-AAB	IEEE 802.11n (HT Mixed, 40MHz, MCS6, 90pc duty cycle)	X	5.86	67.93	17.13	0.46	130.0	± 9.6 %
		Y	5.81	67.71	16.95		130.0	
		Z	5.75	67.77	16.96		130.0	
10606-AAB	IEEE 802.11n (HT Mixed, 40MHz, MCS7, 90pc duty cycle)	X	5.62	67.39	16.73	0.46	130.0	± 9.6 %
		Y	5.58	67.18	16.56		130.0	
		Z	5.52	67.25	16.58		130.0	

10607-AAB	IEEE 802.11ac WiFi (20MHz, MCS0, 90pc duty cycle)	X	4.88	66.23	16.33	0.46	130.0	± 9.6 %
		Y	4.82	65.98	16.13		130.0	
		Z	4.78	66.10	16.14		130.0	
10608-AAB	IEEE 802.11ac WiFi (20MHz, MCS1, 90pc duty cycle)	X	5.11	66.66	16.48	0.46	130.0	± 9.6 %
		Y	5.05	66.41	16.29		130.0	
		Z	4.99	66.52	16.30		130.0	
10609-AAB	IEEE 802.11ac WiFi (20MHz, MCS2, 90pc duty cycle)	X	5.01	66.58	16.37	0.46	130.0	± 9.6 %
		Y	4.94	66.31	16.16		130.0	
		Z	4.89	66.41	16.17		130.0	
10610-AAB	IEEE 802.11ac WiFi (20MHz, MCS3, 90pc duty cycle)	X	5.06	66.72	16.51	0.46	130.0	± 9.6 %
		Y	4.99	66.46	16.31		130.0	
		Z	4.94	66.55	16.32		130.0	
10611-AAB	IEEE 802.11ac WiFi (20MHz, MCS4, 90pc duty cycle)	X	4.99	66.60	16.40	0.46	130.0	± 9.6 %
		Y	4.92	66.32	16.19		130.0	
		Z	4.86	66.40	16.19		130.0	
10612-AAB	IEEE 802.11ac WiFi (20MHz, MCS5, 90pc duty cycle)	X	5.01	66.73	16.43	0.46	130.0	± 9.6 %
		Y	4.94	66.45	16.21		130.0	
		Z	4.88	66.56	16.23		130.0	
10613-AAB	IEEE 802.11ac WiFi (20MHz, MCS6, 90pc duty cycle)	X	5.03	66.69	16.36	0.46	130.0	± 9.6 %
		Y	4.96	66.39	16.13		130.0	
		Z	4.90	66.50	16.15		130.0	
10614-AAB	IEEE 802.11ac WiFi (20MHz, MCS7, 90pc duty cycle)	X	4.95	66.85	16.56	0.46	130.0	± 9.6 %
		Y	4.88	66.56	16.35		130.0	
		Z	4.82	66.62	16.33		130.0	
10615-AAB	IEEE 802.11ac WiFi (20MHz, MCS8, 90pc duty cycle)	X	5.00	66.42	16.20	0.46	130.0	± 9.6 %
		Y	4.93	66.13	15.97		130.0	
		Z	4.87	66.26	16.00		130.0	
10616-AAB	IEEE 802.11ac WiFi (40MHz, MCS0, 90pc duty cycle)	X	5.54	66.86	16.53	0.46	130.0	± 9.6 %
		Y	5.49	66.62	16.36		130.0	
		Z	5.43	66.68	16.35		130.0	
10617-AAB	IEEE 802.11ac WiFi (40MHz, MCS1, 90pc duty cycle)	X	5.61	66.97	16.56	0.46	130.0	± 9.6 %
		Y	5.56	66.74	16.38		130.0	
		Z	5.49	66.78	16.38		130.0	
10618-AAB	IEEE 802.11ac WiFi (40MHz, MCS2, 90pc duty cycle)	X	5.50	67.03	16.60	0.46	130.0	± 9.6 %
		Y	5.44	66.79	16.42		130.0	
		Z	5.39	66.84	16.42		130.0	
10619-AAB	IEEE 802.11ac WiFi (40MHz, MCS3, 90pc duty cycle)	X	5.52	66.85	16.45	0.46	130.0	± 9.6 %
		Y	5.47	66.61	16.27		130.0	
		Z	5.41	66.69	16.29		130.0	
10620-AAB	IEEE 802.11ac WiFi (40MHz, MCS4, 90pc duty cycle)	X	5.67	67.04	16.60	0.46	130.0	± 9.6 %
		Y	5.61	66.78	16.41		130.0	
		Z	5.54	66.82	16.40		130.0	
10621-AAB	IEEE 802.11ac WiFi (40MHz, MCS5, 90pc duty cycle)	X	5.62	67.03	16.69	0.46	130.0	± 9.6 %
		Y	5.56	66.80	16.53		130.0	
		Z	5.50	66.82	16.50		130.0	
10622-AAB	IEEE 802.11ac WiFi (40MHz, MCS6, 90pc duty cycle)	X	5.61	67.13	16.74	0.46	130.0	± 9.6 %
		Y	5.56	66.90	16.57		130.0	
		Z	5.50	66.94	16.56		130.0	

10623-AAB	IEEE 802.11ac WiFi (40MHz, MCS7, 90pc duty cycle)	X	5.54	66.86	16.51	0.46	130.0	± 9.6 %
		Y	5.47	66.57	16.30		130.0	
		Z	5.40	66.58	16.27		130.0	
10624-AAB	IEEE 802.11ac WiFi (40MHz, MCS8, 90pc duty cycle)	X	5.69	66.89	16.58	0.46	130.0	± 9.6 %
		Y	5.64	66.67	16.41		130.0	
		Z	5.58	66.74	16.41		130.0	
10625-AAB	IEEE 802.11ac WiFi (40MHz, MCS9, 90pc duty cycle)	X	6.04	67.74	17.05	0.46	130.0	± 9.6 %
		Y	6.03	67.66	16.95		130.0	
		Z	6.00	67.84	17.02		130.0	
10626-AAB	IEEE 802.11ac WiFi (80MHz, MCS0, 90pc duty cycle)	X	5.78	66.87	16.46	0.46	130.0	± 9.6 %
		Y	5.73	66.65	16.29		130.0	
		Z	5.69	66.71	16.29		130.0	
10627-AAB	IEEE 802.11ac WiFi (80MHz, MCS1, 90pc duty cycle)	X	6.04	67.38	16.65	0.46	130.0	± 9.6 %
		Y	6.00	67.21	16.52		130.0	
		Z	5.95	67.28	16.53		130.0	
10628-AAB	IEEE 802.11ac WiFi (80MHz, MCS2, 90pc duty cycle)	X	5.87	67.10	16.47	0.46	130.0	± 9.6 %
		Y	5.81	66.87	16.29		130.0	
		Z	5.76	66.92	16.30		130.0	
10629-AAB	IEEE 802.11ac WiFi (80MHz, MCS3, 90pc duty cycle)	X	5.98	67.25	16.53	0.46	130.0	± 9.6 %
		Y	5.92	67.00	16.35		130.0	
		Z	5.85	66.99	16.32		130.0	
10630-AAB	IEEE 802.11ac WiFi (80MHz, MCS4, 90pc duty cycle)	X	6.60	69.22	17.52	0.46	130.0	± 9.6 %
		Y	6.58	69.06	17.38		130.0	
		Z	6.45	68.96	17.32		130.0	
10631-AAB	IEEE 802.11ac WiFi (80MHz, MCS5, 90pc duty cycle)	X	6.44	68.80	17.48	0.46	130.0	± 9.6 %
		Y	6.38	68.59	17.32		130.0	
		Z	6.26	68.46	17.23		130.0	
10632-AAB	IEEE 802.11ac WiFi (80MHz, MCS6, 90pc duty cycle)	X	6.03	67.50	16.84	0.46	130.0	± 9.6 %
		Y	5.98	67.30	16.70		130.0	
		Z	5.91	67.29	16.66		130.0	
10633-AAB	IEEE 802.11ac WiFi (80MHz, MCS7, 90pc duty cycle)	X	6.01	67.47	16.67	0.46	130.0	± 9.6 %
		Y	5.95	67.22	16.50		130.0	
		Z	5.86	67.16	16.44		130.0	
10634-AAB	IEEE 802.11ac WiFi (80MHz, MCS8, 90pc duty cycle)	X	5.97	67.40	16.69	0.46	130.0	± 9.6 %
		Y	5.91	67.16	16.53		130.0	
		Z	5.82	67.10	16.46		130.0	
10635-AAB	IEEE 802.11ac WiFi (80MHz, MCS9, 90pc duty cycle)	X	5.85	66.78	16.15	0.46	130.0	± 9.6 %
		Y	5.79	66.49	15.94		130.0	
		Z	5.73	66.56	15.97		130.0	
10636-AAC	IEEE 802.11ac WiFi (160MHz, MCS0, 90pc duty cycle)	X	6.18	67.27	16.56	0.46	130.0	± 9.6 %
		Y	6.14	67.07	16.41		130.0	
		Z	6.10	67.11	16.40		130.0	
10637-AAC	IEEE 802.11ac WiFi (160MHz, MCS1, 90pc duty cycle)	X	6.39	67.76	16.78	0.46	130.0	± 9.6 %
		Y	6.34	67.53	16.61		130.0	
		Z	6.27	67.52	16.58		130.0	
10638-AAC	IEEE 802.11ac WiFi (160MHz, MCS2, 90pc duty cycle)	X	6.36	67.63	16.69	0.46	130.0	± 9.6 %
		Y	6.32	67.44	16.54		130.0	
		Z	6.27	67.48	16.55		130.0	

10639-AAC	IEEE 802.11ac WiFi (160MHz, MCS3, 90pc duty cycle)	X	6.38	67.71	16.77	0.46	130.0	± 9.6 %
		Y	6.33	67.49	16.62		130.0	
		Z	6.27	67.50	16.60		130.0	
10640-AAC	IEEE 802.11ac WiFi (160MHz, MCS4, 90pc duty cycle)	X	6.43	67.85	16.80	0.46	130.0	± 9.6 %
		Y	6.38	67.63	16.63		130.0	
		Z	6.31	67.62	16.61		130.0	
10641-AAC	IEEE 802.11ac WiFi (160MHz, MCS5, 90pc duty cycle)	X	6.40	67.53	16.65	0.46	130.0	± 9.6 %
		Y	6.35	67.30	16.49		130.0	
		Z	6.29	67.34	16.48		130.0	
10642-AAC	IEEE 802.11ac WiFi (160MHz, MCS6, 90pc duty cycle)	X	6.48	67.86	16.97	0.46	130.0	± 9.6 %
		Y	6.42	67.63	16.81		130.0	
		Z	6.35	67.61	16.77		130.0	
10643-AAC	IEEE 802.11ac WiFi (160MHz, MCS7, 90pc duty cycle)	X	6.31	67.58	16.75	0.46	130.0	± 9.6 %
		Y	6.25	67.34	16.57		130.0	
		Z	6.19	67.36	16.56		130.0	
10644-AAC	IEEE 802.11ac WiFi (160MHz, MCS8, 90pc duty cycle)	X	6.58	68.40	17.19	0.46	130.0	± 9.6 %
		Y	6.53	68.15	17.01		130.0	
		Z	6.43	68.09	16.96		130.0	
10645-AAC	IEEE 802.11ac WiFi (160MHz, MCS9, 90pc duty cycle)	X	6.81	68.60	17.23	0.46	130.0	± 9.6 %
		Y	6.79	68.43	17.09		130.0	
		Z	6.78	68.63	17.18		130.0	
10646-AAD	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, QPSK, UL Subframe=2,7)	X	25.15	105.85	35.05	9.30	60.0	± 9.6 %
		Y	21.75	102.80	33.96		60.0	
		Z	30.08	111.30	36.91		60.0	
10647-AAC	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK, UL Subframe=2,7)	X	26.44	107.75	35.76	9.30	60.0	± 9.6 %
		Y	22.30	104.09	34.48		60.0	
		Z	32.07	113.59	37.73		60.0	
10648-AAA	CDMA2000 (1x Advanced)	X	0.88	65.58	12.85	0.00	150.0	± 9.6 %
		Y	0.76	63.51	11.26		150.0	
		Z	0.73	63.36	10.94		150.0	
10652-AAB	LTE-TDD (OFDMA, 5 MHz, E-TM 3.1, Clipping 44%)	X	4.67	68.94	17.67	2.23	80.0	± 9.6 %
		Y	4.45	68.16	17.20		80.0	
		Z	4.45	68.41	17.21		80.0	
10653-AAB	LTE-TDD (OFDMA, 10 MHz, E-TM 3.1, Clipping 44%)	X	5.13	68.26	17.69	2.23	80.0	± 9.6 %
		Y	4.94	67.62	17.31		80.0	
		Z	4.95	67.85	17.35		80.0	
10654-AAB	LTE-TDD (OFDMA, 15 MHz, E-TM 3.1, Clipping 44%)	X	5.04	67.95	17.68	2.23	80.0	± 9.6 %
		Y	4.86	67.32	17.30		80.0	
		Z	4.89	67.55	17.36		80.0	
10655-AAB	LTE-TDD (OFDMA, 20 MHz, E-TM 3.1, Clipping 44%)	X	5.09	68.03	17.74	2.23	80.0	± 9.6 %
		Y	4.92	67.39	17.35		80.0	
		Z	4.94	67.61	17.41		80.0	
10658-AAA	Pulse Waveform (200Hz, 10%)	X	11.06	82.99	22.61	10.00	50.0	± 9.6 %
		Y	11.23	83.63	22.75		50.0	
		Z	10.79	82.81	22.39		50.0	
10659-AAA	Pulse Waveform (200Hz, 20%)	X	18.52	92.74	24.40	6.99	60.0	± 9.6 %
		Y	20.18	94.23	24.71		60.0	
		Z	17.35	91.74	23.89		60.0	

10660-AAA	Pulse Waveform (200Hz, 40%)	X	100.00	116.44	28.66	3.98	80.0	± 9.6 %
		Y	100.00	115.80	28.20		80.0	
		Z	100.00	115.68	28.17		80.0	
10661-AAA	Pulse Waveform (200Hz, 60%)	X	100.00	117.14	27.43	2.22	100.0	± 9.6 %
		Y	100.00	115.35	26.46		100.0	
		Z	100.00	115.50	26.56		100.0	
10662-AAA	Pulse Waveform (200Hz, 80%)	X	100.00	121.39	27.21	0.97	120.0	± 9.6 %
		Y	100.00	115.32	24.49		120.0	
		Z	100.00	116.43	25.01		120.0	

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

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

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

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

Accreditation No.: SCS 0108

Client **PC Test**

Certificate No: EX3-7416_Jul18

CALIBRATION CERTIFICATE

SC ✓ 8/2/2018

Object EX3DV4 - SN:7416

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

Calibration date: July 20, 2018

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NRP	SN: 104778	04-Apr-18 (No. 217-02672/02673)	Apr-19
Power sensor NRP-Z91	SN: 103244	04-Apr-18 (No. 217-02672)	Apr-19
Power sensor NRP-Z91	SN: 103245	04-Apr-18 (No. 217-02673)	Apr-19
Reference 20 dB Attenuator	SN: S5277 (20x)	04-Apr-18 (No. 217-02682)	Apr-19
Reference Probe ES3DV2	SN: 3013	30-Dec-17 (No. ES3-3013_Dec17)	Dec-18
DAE4	SN: 660	21-Dec-17 (No. DAE4-660_Dec17)	Dec-18
Secondary Standards	ID	Check Date (in house)	Scheduled Check
Power meter E4419B	SN: GB41293874	06-Apr-16 (in house check Jun-18)	In house check: Jun-20
Power sensor E4412A	SN: MY41498087	06-Apr-16 (in house check Jun-18)	In house check: Jun-20
Power sensor E4412A	SN: 000110210	06-Apr-16 (in house check Jun-18)	In house check: Jun-20
RF generator HP 8648C	SN: US3642U01700	04-Aug-99 (in house check Jun-18)	In house check: Jun-20
Network Analyzer E8358A	SN: US41080477	31-Mar-14 (in house check Oct-17)	In house check: Oct-18

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

Issued: July 21, 2018

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

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

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

Accreditation No.: SCS 0108

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, ", "Measurement procedure for the assessment of Specific Absorption Rate (SAR) from hand-held and body-mounted devices used next to the ear (frequency range of 300 MHz to 6 GHz)", July 2016
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:7416

Manufactured: March 10, 2016
Calibrated: July 20, 2018

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

DASY/EASY - Parameters of Probe: EX3DV4 - SN:7416

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu V/(V/m)^2$)[A]	0.59	0.52	0.53	± 10.1 %
DCP (mV)[B]	97.2	93.5	96.5	

Modulation Calibration Parameters

UID	Communication System Name		A dB	B dB√μV	C	D dB	VR mV	Unc[E] (k=2)
0	CW	X	0.0	0.0	1.0	0.00	149.4	±3.3 %
		Y	0.0	0.0	1.0		140.2	
		Z	0.0	0.0	1.0		147.9	

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	29.94	230.8	37.81	8.573	0.020	5.100	0.000	0.329	1.005
Y	35.08	270.5	37.53	5.275	0.109	5.067	0.000	0.317	1.010
Z	37.25	278.1	35.59	8.445	0.000	5.071	1.581	0.146	1.007

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

[A] The uncertainties of Norm X,Y,Z do not affect the E^2-field uncertainty inside TSL (see Pages 5 and 6).
[B] Numerical linearization parameter: uncertainty not required.
[E] Uncertainty is determined using the max. deviation from linear response applying rectangular distribution and is expressed for the square of the field value.

DASY/EASY - Parameters of Probe: EX3DV4 - SN:7416

Calibration Parameter Determined in Head Tissue Simulating Media

f (MHz) [C]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha [G]	Depth [G] (mm)	Unc (k=2)
750	41.9	0.89	9.95	9.95	9.95	0.38	1.03	± 12.0 %
835	41.5	0.90	9.45	9.45	9.45	0.35	0.96	± 12.0 %
1750	40.1	1.37	8.37	8.37	8.37	0.40	0.84	± 12.0 %
1900	40.0	1.40	8.04	8.04	8.04	0.42	0.90	± 12.0 %
2300	39.5	1.67	7.70	7.70	7.70	0.41	0.84	± 12.0 %
2450	39.2	1.80	7.25	7.25	7.25	0.45	0.81	± 12.0 %
2600	39.0	1.96	7.04	7.04	7.04	0.43	0.84	± 12.0 %
5250	35.9	4.71	5.21	5.21	5.21	0.40	1.80	± 13.1 %
5600	35.5	5.07	4.75	4.75	4.75	0.40	1.80	± 13.1 %
5750	35.4	5.22	4.98	4.98	4.98	0.40	1.80	± 13.1 %

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

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

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

DASY/EASY - Parameters of Probe: EX3DV4 - SN:7416

Calibration Parameter Determined in Body Tissue Simulating Media

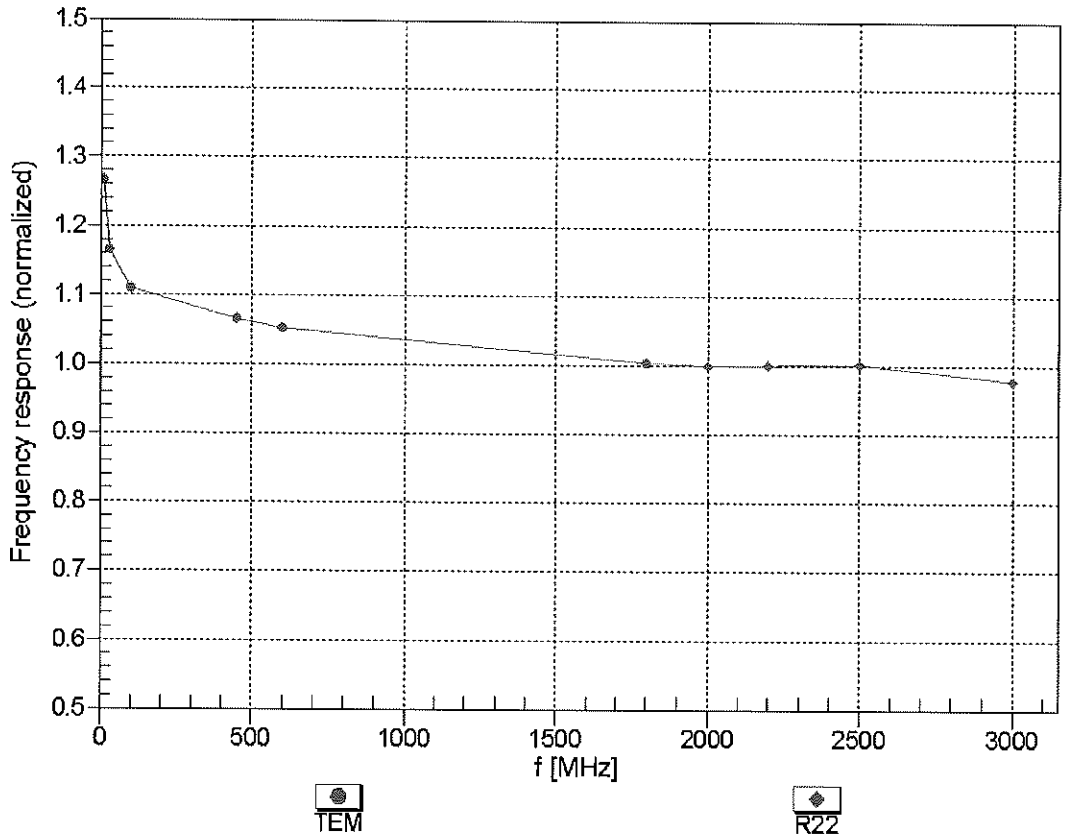
f (MHz) [C]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha [G]	Depth [G] (mm)	Unc (k=2)
750	55.5	0.96	9.60	9.60	9.60	0.47	0.80	± 12.0 %
835	55.2	0.97	9.40	9.40	9.40	0.46	0.85	± 12.0 %
1750	53.4	1.49	7.99	7.99	7.99	0.41	0.85	± 12.0 %
1900	53.3	1.52	7.69	7.69	7.69	0.40	0.84	± 12.0 %
2300	52.9	1.81	7.49	7.49	7.49	0.39	0.84	± 12.0 %
2450	52.7	1.95	7.31	7.31	7.31	0.32	0.96	± 12.0 %
2600	52.5	2.16	7.23	7.23	7.23	0.32	0.97	± 12.0 %
5250	48.9	5.36	4.61	4.61	4.61	0.50	1.90	± 13.1 %
5600	48.5	5.77	4.02	4.02	4.02	0.50	1.90	± 13.1 %
5750	48.3	5.94	4.21	4.21	4.21	0.50	1.90	± 13.1 %

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

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

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

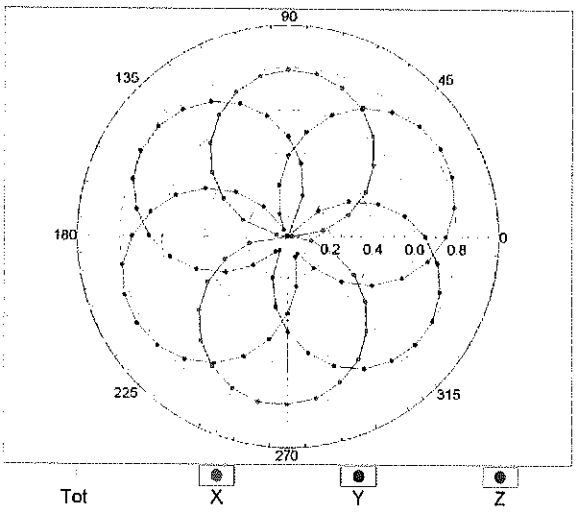
Frequency Response of E-Field
(TEM-Cell:ifi110 EXX, Waveguide: R22)



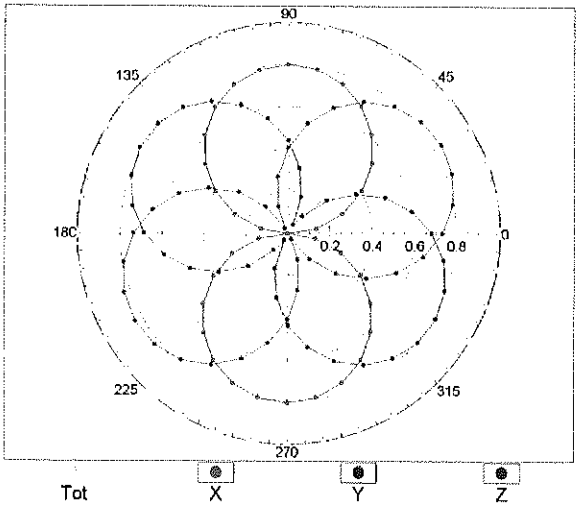
Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

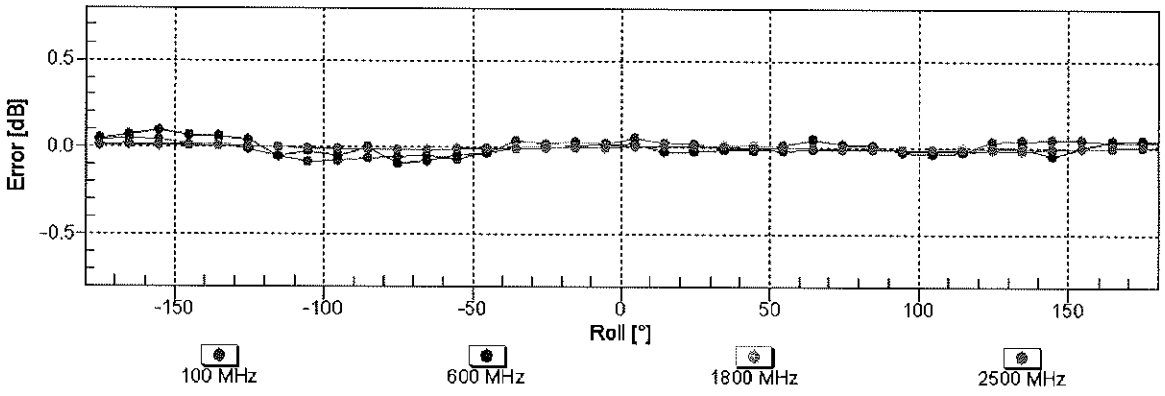
Receiving Pattern (ϕ), ϑ = 0°

f=600 MHz,TEM



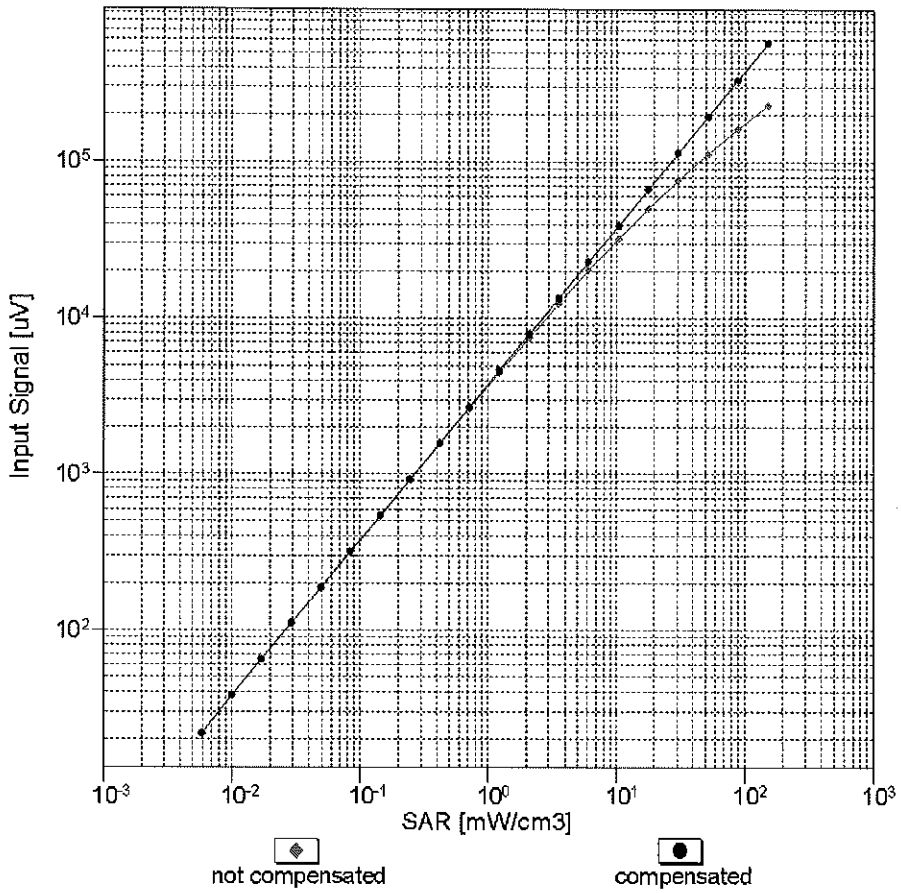
f=1800 MHz,R22

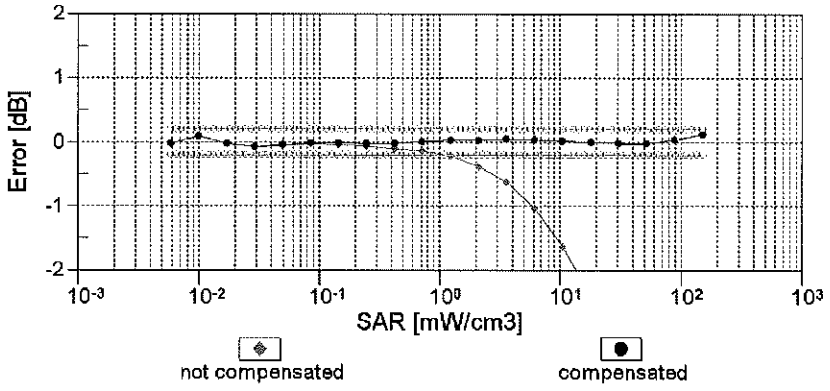




Uncertainty of Axial Isotropy Assessment: ± 0.5% (k=2)

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

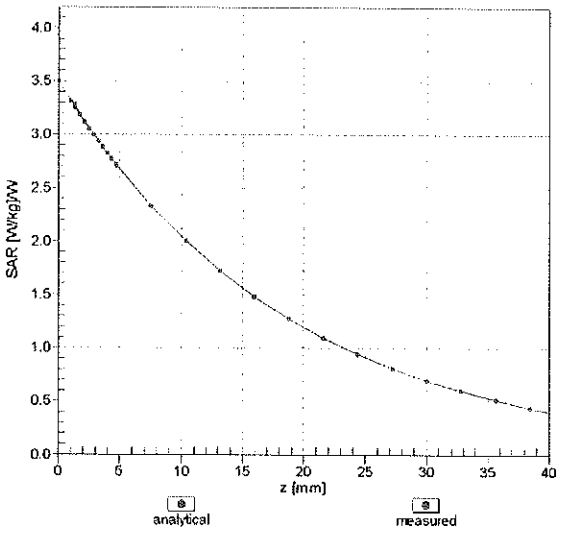




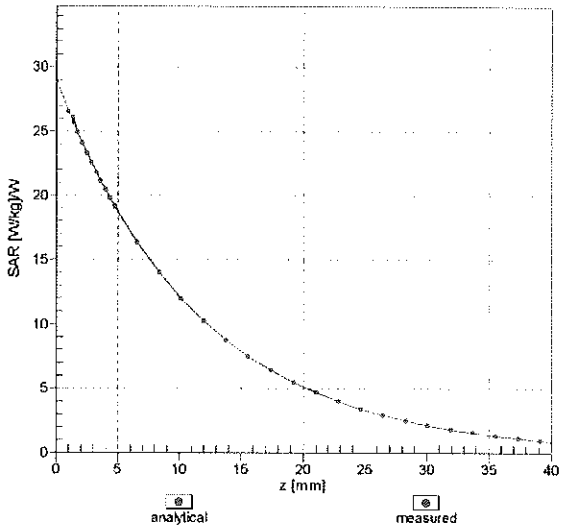
Uncertainty of Linearity Assessment: ± 0.6% (k=2)

Conversion Factor Assessment

f = 835 MHz,WGLS R9 (H_convF)

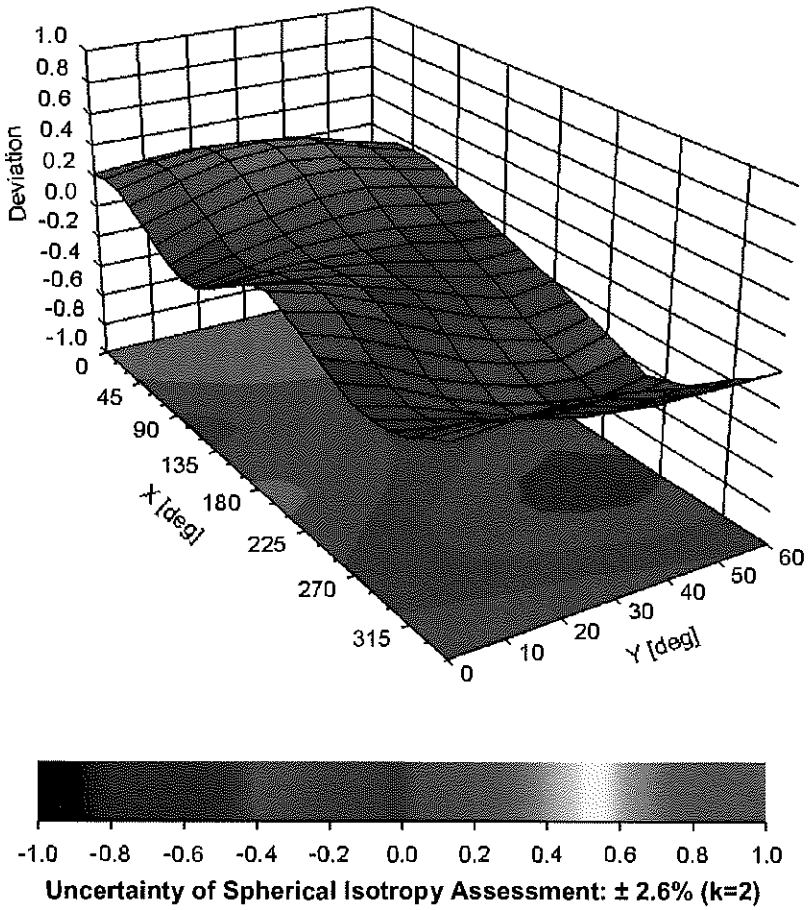


f = 1900 MHz,WGLS R22 (H_convF)



Deviation from Isotropy in Liquid

Error (ϕ, ϑ), f = 900 MHz



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

DASY/EASY - Parameters of Probe: EX3DV4 - SN:7416

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	-25.3
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disabled
Probe Overall Length	337 mm
Probe Body Diameter	10 mm
Tip Length	9 mm
Tip Diameter	2.5 mm
Probe Tip to Sensor X Calibration Point	1 mm
Probe Tip to Sensor Y Calibration Point	1 mm
Probe Tip to Sensor Z Calibration Point	1 mm
Recommended Measurement Distance from Surface	1.4 mm

Appendix: Modulation Calibration Parameters

UID	Communication System Name		A dB	B dB√μV	C	D dB	VR mV	Max Unc[E] (k=2)
0	CW	X	0.00	0.00	1.00	0.00	149.4	± 3.3 %
		Y	0.00	0.00	1.00		140.2	
		Z	0.00	0.00	1.00		147.9	
10010-CAA	SAR Validation (Square, 100ms, 10ms)	X	1.77	64.87	9.11	10.00	20.0	± 9.6 %
		Y	1.63	63.41	8.37		20.0	
		Z	1.76	64.55	8.94		20.0	
10011-CAB	UMTS-FDD (WCDMA)	X	1.21	72.37	17.53	0.00	150.0	± 9.6 %
		Y	0.82	64.46	12.98		150.0	
		Z	0.96	66.91	14.78		150.0	
10012-CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps)	X	1.14	65.01	16.27	0.41	150.0	± 9.6 %
		Y	1.05	62.41	14.04		150.0	
		Z	1.12	63.56	15.01		150.0	
10013-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps)	X	4.63	67.24	17.52	1.46	150.0	± 9.6 %
		Y	4.63	66.45	16.87		150.0	
		Z	4.71	66.75	17.07		150.0	
10021-DAC	GSM-FDD (TDMA, GMSK)	X	100.00	114.11	26.55	9.39	50.0	± 9.6 %
		Y	100.00	109.62	24.58		50.0	
		Z	100.00	111.08	25.19		50.0	
10023-DAC	GPRS-FDD (TDMA, GMSK, TN 0)	X	100.00	112.70	25.96	9.57	50.0	± 9.6 %
		Y	100.00	108.79	24.27		50.0	
		Z	100.00	110.19	24.84		50.0	
10024-DAC	GPRS-FDD (TDMA, GMSK, TN 0-1)	X	100.00	120.02	28.01	6.56	60.0	± 9.6 %
		Y	100.00	111.41	24.12		60.0	
		Z	100.00	114.41	25.59		60.0	
10025-DAC	EDGE-FDD (TDMA, 8PSK, TN 0)	X	8.40	100.18	43.08	12.57	50.0	± 9.6 %
		Y	3.56	67.47	25.23		50.0	
		Z	6.34	88.37	36.90		50.0	
10026-DAC	EDGE-FDD (TDMA, 8PSK, TN 0-1)	X	6.98	91.66	34.92	9.56	60.0	± 9.6 %
		Y	5.10	80.82	29.16		60.0	
		Z	6.93	89.58	33.16		60.0	
10027-DAC	GPRS-FDD (TDMA, GMSK, TN 0-1-2)	X	100.00	130.74	31.67	4.80	80.0	± 9.6 %
		Y	100.00	114.42	24.52		80.0	
		Z	100.00	119.79	27.11		80.0	
10028-DAC	GPRS-FDD (TDMA, GMSK, TN 0-1-2-3)	X	100.00	148.32	37.98	3.55	100.0	± 9.6 %
		Y	100.00	117.49	25.01		100.0	
		Z	100.00	127.11	29.41		100.0	
10029-DAC	EDGE-FDD (TDMA, 8PSK, TN 0-1-2)	X	4.35	78.88	28.05	7.80	80.0	± 9.6 %
		Y	3.59	72.82	24.31		80.0	
		Z	4.33	77.60	26.71		80.0	
10030-CAA	IEEE 802.15.1 Bluetooth (GFSK, DH1)	X	100.00	119.14	27.08	5.30	70.0	± 9.6 %
		Y	100.00	109.23	22.63		70.0	
		Z	100.00	113.47	24.71		70.0	
10031-CAA	IEEE 802.15.1 Bluetooth (GFSK, DH3)	X	100.00	161.91	40.82	1.88	100.0	± 9.6 %
		Y	100.00	96.93	15.49		100.0	
		Z	100.00	123.29	26.32		100.0	

10032-CAA	IEEE 802.15.1 Bluetooth (GFSK, DH5)	X	100.00	280.92	82.03	1.17	100.0	± 9.6 %
		Y	0.12	60.00	4.04		100.0	
		Z	100.00	135.50	29.96		100.0	
10033-CAA	IEEE 802.15.1 Bluetooth (PI/4-DQPSK, DH1)	X	100.00	128.03	33.18	5.30	70.0	± 9.6 %
		Y	7.89	90.52	23.51		70.0	
		Z	61.16	122.77	32.75		70.0	
10034-CAA	IEEE 802.15.1 Bluetooth (PI/4-DQPSK, DH3)	X	100.00	117.76	27.00	1.88	100.0	± 9.6 %
		Y	1.49	69.12	13.56		100.0	
		Z	3.50	80.40	18.67		100.0	
10035-CAA	IEEE 802.15.1 Bluetooth (PI/4-DQPSK, DH5)	X	6.88	86.78	18.70	1.17	100.0	± 9.6 %
		Y	1.08	66.04	11.73		100.0	
		Z	1.93	73.40	15.69		100.0	
10036-CAA	IEEE 802.15.1 Bluetooth (8-DPSK, DH1)	X	100.00	128.79	33.51	5.30	70.0	± 9.6 %
		Y	12.46	97.66	25.74		70.0	
		Z	100.00	130.93	34.74		70.0	
10037-CAA	IEEE 802.15.1 Bluetooth (8-DPSK, DH3)	X	62.76	112.55	25.87	1.88	100.0	± 9.6 %
		Y	1.37	68.27	13.18		100.0	
		Z	2.98	78.43	17.97		100.0	
10038-CAA	IEEE 802.15.1 Bluetooth (8-DPSK, DH5)	X	8.30	89.45	19.68	1.17	100.0	± 9.6 %
		Y	1.08	66.20	11.94		100.0	
		Z	1.95	73.76	15.98		100.0	
10039-CAB	CDMA2000 (1xRTT, RC1)	X	0.88	65.39	10.07	0.00	150.0	± 9.6 %
		Y	0.87	63.82	9.91		150.0	
		Z	1.31	68.61	13.02		150.0	
10042-CAB	IS-54 / IS-136 FDD (TDMA/FDM, PI/4-DQPSK, Halfrate)	X	100.00	110.34	24.10	7.78	50.0	± 9.6 %
		Y	100.00	105.89	22.09		50.0	
		Z	100.00	108.02	23.10		50.0	
10044-CAA	IS-91/EIA/TIA-553 FDD (FDMA, FM)	X	0.01	123.11	1.52	0.00	150.0	± 9.6 %
		Y	0.01	119.53	3.43		150.0	
		Z	0.00	101.85	5.28		150.0	
10048-CAA	DECT (TDD, TDMA/FDM, GFSK, Full Slot, 24)	X	100.00	106.52	24.67	13.80	25.0	± 9.6 %
		Y	32.57	91.78	20.89		25.0	
		Z	100.00	105.11	24.06		25.0	
10049-CAA	DECT (TDD, TDMA/FDM, GFSK, Double Slot, 12)	X	1149.99	136.06	30.09	10.79	40.0	± 9.6 %
		Y	85.21	104.98	23.36		40.0	
		Z	420.34	123.09	27.26		40.0	
10056-CAA	UMTS-TDD (TD-SCDMA, 1.28 Mcps)	X	100.00	123.43	32.32	9.03	50.0	± 9.6 %
		Y	100.00	121.65	31.62		50.0	
		Z	100.00	123.95	32.75		50.0	
10058-DAC	EDGE-FDD (TDMA, 8PSK, TN 0-1-2-3)	X	3.53	74.19	24.94	6.55	100.0	± 9.6 %
		Y	3.03	69.69	21.96		100.0	
		Z	3.51	73.08	23.72		100.0	
10059-CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 2 Mbps)	X	1.18	66.36	17.11	0.61	110.0	± 9.6 %
		Y	1.05	63.01	14.46		110.0	
		Z	1.13	64.45	15.58		110.0	
10060-CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 5.5 Mbps)	X	100.00	153.23	41.70	1.30	110.0	± 9.6 %
		Y	1.65	79.63	20.25		110.0	
		Z	14.24	114.10	31.29		110.0	

10061-CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 11 Mbps)	X	4.44	94.01	28.61	2.04	110.0	± 9.6 %
		Y	1.48	71.54	18.86		110.0	
		Z	2.17	78.36	22.10		110.0	
10062-CAC	IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps)	X	4.41	67.11	16.83	0.49	100.0	± 9.6 %
		Y	4.42	66.37	16.23		100.0	
		Z	4.51	66.70	16.45		100.0	
10063-CAC	IEEE 802.11a/h WiFi 5 GHz (OFDM, 9 Mbps)	X	4.44	67.26	16.97	0.72	100.0	± 9.6 %
		Y	4.44	66.46	16.33		100.0	
		Z	4.52	66.80	16.56		100.0	
10064-CAC	IEEE 802.11a/h WiFi 5 GHz (OFDM, 12 Mbps)	X	4.66	67.43	17.15	0.86	100.0	± 9.6 %
		Y	4.68	66.69	16.56		100.0	
		Z	4.77	67.02	16.77		100.0	
10065-CAC	IEEE 802.11a/h WiFi 5 GHz (OFDM, 18 Mbps)	X	4.54	67.28	17.27	1.21	100.0	± 9.6 %
		Y	4.55	66.53	16.64		100.0	
		Z	4.64	66.88	16.86		100.0	
10066-CAC	IEEE 802.11a/h WiFi 5 GHz (OFDM, 24 Mbps)	X	4.54	67.27	17.43	1.46	100.0	± 9.6 %
		Y	4.56	66.53	16.81		100.0	
		Z	4.65	66.89	17.03		100.0	
10067-CAC	IEEE 802.11a/h WiFi 5 GHz (OFDM, 36 Mbps)	X	4.83	67.58	17.95	2.04	100.0	± 9.6 %
		Y	4.85	66.84	17.32		100.0	
		Z	4.94	67.15	17.53		100.0	
10068-CAC	IEEE 802.11a/h WiFi 5 GHz (OFDM, 48 Mbps)	X	4.87	67.55	18.17	2.55	100.0	± 9.6 %
		Y	4.87	66.73	17.49		100.0	
		Z	4.96	67.06	17.70		100.0	
10069-CAC	IEEE 802.11a/h WiFi 5 GHz (OFDM, 54 Mbps)	X	4.92	67.54	18.34	2.67	100.0	± 9.6 %
		Y	4.94	66.78	17.69		100.0	
		Z	5.03	67.10	17.91		100.0	
10071-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 9 Mbps)	X	4.73	67.33	17.85	1.99	100.0	± 9.6 %
		Y	4.72	66.52	17.18		100.0	
		Z	4.80	66.81	17.37		100.0	
10072-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 12 Mbps)	X	4.68	67.58	18.08	2.30	100.0	± 9.6 %
		Y	4.66	66.72	17.36		100.0	
		Z	4.75	67.06	17.58		100.0	
10073-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 18 Mbps)	X	4.75	67.85	18.49	2.83	100.0	± 9.6 %
		Y	4.71	66.88	17.70		100.0	
		Z	4.80	67.22	17.92		100.0	
10074-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 24 Mbps)	X	4.77	67.84	18.69	3.30	100.0	± 9.6 %
		Y	4.71	66.81	17.86		100.0	
		Z	4.79	67.13	18.08		100.0	
10075-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 36 Mbps)	X	4.79	67.83	18.96	3.82	90.0	± 9.6 %
		Y	4.72	66.78	18.11		90.0	
		Z	4.80	67.13	18.34		90.0	
10076-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 48 Mbps)	X	4.82	67.68	19.13	4.15	90.0	± 9.6 %
		Y	4.76	66.65	18.28		90.0	
		Z	4.83	66.97	18.50		90.0	
10077-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 54 Mbps)	X	4.86	67.80	19.27	4.30	90.0	± 9.6 %
		Y	4.78	66.73	18.39		90.0	
		Z	4.86	67.05	18.61		90.0	

10081-CAB	CDMA2000 (1xRTT, RC3)	X	0.44	61.65	7.56	0.00	150.0	± 9.6 %
		Y	0.49	61.12	7.86		150.0	
		Z	0.64	63.85	10.26		150.0	
10082-CAB	IS-54 / IS-136 FDD (TDMA/FDM, PI/4-DQPSK, Fullrate)	X	0.89	61.48	3.95	4.77	80.0	± 9.6 %
		Y	0.59	60.00	2.93		80.0	
		Z	0.55	60.00	3.58		80.0	
10090-DAC	GPRS-FDD (TDMA, GMSK, TN 0-4)	X	100.00	120.10	28.07	6.56	60.0	± 9.6 %
		Y	100.00	111.49	24.17		60.0	
		Z	100.00	114.44	25.62		60.0	
10097-CAB	UMTS-FDD (HSDPA)	X	2.01	71.24	16.81	0.00	150.0	± 9.6 %
		Y	1.59	66.13	14.13		150.0	
		Z	1.77	67.84	15.37		150.0	
10098-CAB	UMTS-FDD (HSUPA, Subtest 2)	X	1.98	71.24	16.82	0.00	150.0	± 9.6 %
		Y	1.56	66.06	14.09		150.0	
		Z	1.73	67.79	15.34		150.0	
10099-DAC	EDGE-FDD (TDMA, 8PSK, TN 0-4)	X	7.05	91.92	35.02	9.56	60.0	± 9.6 %
		Y	5.13	80.96	29.22		60.0	
		Z	7.00	89.81	33.25		60.0	
10100-CAE	LTE-FDD (SC-FDMA, 100% RB, 20 MHz, QPSK)	X	3.04	71.26	17.51	0.00	150.0	± 9.6 %
		Y	2.71	68.34	15.65		150.0	
		Z	2.94	69.85	16.50		150.0	
10101-CAE	LTE-FDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM)	X	3.07	67.87	16.34	0.00	150.0	± 9.6 %
		Y	2.97	66.45	15.26		150.0	
		Z	3.10	67.26	15.77		150.0	
10102-CAE	LTE-FDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM)	X	3.17	67.84	16.41	0.00	150.0	± 9.6 %
		Y	3.08	66.51	15.39		150.0	
		Z	3.20	67.26	15.86		150.0	
10103-CAF	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, QPSK)	X	5.93	77.85	22.25	3.98	65.0	± 9.6 %
		Y	4.91	73.42	19.90		65.0	
		Z	5.48	75.26	20.69		65.0	
10104-CAF	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM)	X	5.36	73.42	20.98	3.98	65.0	± 9.6 %
		Y	4.85	70.69	19.33		65.0	
		Z	5.38	72.53	20.20		65.0	
10105-CAF	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM)	X	5.20	72.50	20.84	3.98	65.0	± 9.6 %
		Y	4.80	70.17	19.39		65.0	
		Z	5.06	71.08	19.82		65.0	
10108-CAF	LTE-FDD (SC-FDMA, 100% RB, 10 MHz, QPSK)	X	2.62	70.93	17.46	0.00	150.0	± 9.6 %
		Y	2.33	67.66	15.42		150.0	
		Z	2.54	69.16	16.32		150.0	
10109-CAF	LTE-FDD (SC-FDMA, 100% RB, 10 MHz, 16-QAM)	X	2.72	68.12	16.25	0.00	150.0	± 9.6 %
		Y	2.60	66.27	15.00		150.0	
		Z	2.74	67.17	15.61		150.0	
10110-CAF	LTE-FDD (SC-FDMA, 100% RB, 5 MHz, QPSK)	X	2.13	70.69	17.04	0.00	150.0	± 9.6 %
		Y	1.84	66.69	14.71		150.0	
		Z	2.04	68.34	15.81		150.0	
10111-CAF	LTE-FDD (SC-FDMA, 100% RB, 5 MHz, 16-QAM)	X	2.53	70.01	16.54	0.00	150.0	± 9.6 %
		Y	2.27	66.91	14.87		150.0	
		Z	2.46	68.17	15.78		150.0	

10112-CAF	LTE-FDD (SC-FDMA, 100% RB, 10 MHz, 64-QAM)	X	2.85	68.17	16.30	0.00	150.0	± 9.6 %
		Y	2.73	66.39	15.11		150.0	
		Z	2.87	67.23	15.69		150.0	
10113-CAF	LTE-FDD (SC-FDMA, 100% RB, 5 MHz, 64-QAM)	X	2.66	70.08	16.61	0.00	150.0	± 9.6 %
		Y	2.41	67.16	15.06		150.0	
		Z	2.61	68.36	15.92		150.0	
10114-CAC	IEEE 802.11n (HT Greenfield, 13.5 Mbps, BPSK)	X	4.89	67.34	16.74	0.00	150.0	± 9.6 %
		Y	4.90	66.78	16.20		150.0	
		Z	4.96	67.07	16.36		150.0	
10115-CAC	IEEE 802.11n (HT Greenfield, 81 Mbps, 16-QAM)	X	5.12	67.41	16.76	0.00	150.0	± 9.6 %
		Y	5.15	66.88	16.26		150.0	
		Z	5.21	67.15	16.40		150.0	
10116-CAC	IEEE 802.11n (HT Greenfield, 135 Mbps, 64-QAM)	X	4.96	67.51	16.75	0.00	150.0	± 9.6 %
		Y	4.98	66.95	16.22		150.0	
		Z	5.04	67.27	16.38		150.0	
10117-CAC	IEEE 802.11n (HT Mixed, 13.5 Mbps, BPSK)	X	4.85	67.18	16.68	0.00	150.0	± 9.6 %
		Y	4.89	66.71	16.19		150.0	
		Z	4.95	67.03	16.35		150.0	
10118-CAC	IEEE 802.11n (HT Mixed, 81 Mbps, 16-QAM)	X	5.21	67.66	16.89	0.00	150.0	± 9.6 %
		Y	5.23	67.11	16.39		150.0	
		Z	5.28	67.32	16.50		150.0	
10119-CAC	IEEE 802.11n (HT Mixed, 135 Mbps, 64-QAM)	X	4.97	67.54	16.77	0.00	150.0	± 9.6 %
		Y	4.98	66.97	16.24		150.0	
		Z	5.04	67.25	16.39		150.0	
10140-CAE	LTE-FDD (SC-FDMA, 100% RB, 15 MHz, 16-QAM)	X	3.18	67.90	16.33	0.00	150.0	± 9.6 %
		Y	3.10	66.53	15.31		150.0	
		Z	3.22	67.28	15.78		150.0	
10141-CAE	LTE-FDD (SC-FDMA, 100% RB, 15 MHz, 64-QAM)	X	3.31	68.06	16.51	0.00	150.0	± 9.6 %
		Y	3.23	66.72	15.52		150.0	
		Z	3.35	67.43	15.97		150.0	
10142-CAE	LTE-FDD (SC-FDMA, 100% RB, 3 MHz, QPSK)	X	1.90	70.81	16.08	0.00	150.0	± 9.6 %
		Y	1.56	66.13	13.71		150.0	
		Z	1.79	68.21	15.15		150.0	
10143-CAE	LTE-FDD (SC-FDMA, 100% RB, 3 MHz, 16-QAM)	X	2.27	69.87	15.01	0.00	150.0	± 9.6 %
		Y	1.97	66.56	13.59		150.0	
		Z	2.26	68.57	15.01		150.0	
10144-CAE	LTE-FDD (SC-FDMA, 100% RB, 3 MHz, 64-QAM)	X	1.77	65.70	12.39	0.00	150.0	± 9.6 %
		Y	1.77	64.41	11.96		150.0	
		Z	1.97	65.88	13.14		150.0	
10145-CAF	LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, QPSK)	X	0.57	60.00	6.01	0.00	150.0	± 9.6 %
		Y	0.69	60.18	6.93		150.0	
		Z	0.84	61.95	8.70		150.0	
10146-CAF	LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, 16-QAM)	X	0.77	60.00	5.45	0.00	150.0	± 9.6 %
		Y	0.96	60.51	6.88		150.0	
		Z	1.21	61.91	7.88		150.0	
10147-CAF	LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, 64-QAM)	X	0.78	60.00	5.51	0.00	150.0	± 9.6 %
		Y	1.01	60.88	7.17		150.0	
		Z	1.29	62.52	8.30		150.0	

10149-CAE	LTE-FDD (SC-FDMA, 50% RB, 20 MHz, 16-QAM)	X	2.73	68.20	16.30	0.00	150.0	± 9.6 %
		Y	2.61	66.33	15.05		150.0	
		Z	2.75	67.23	15.66		150.0	
10150-CAE	LTE-FDD (SC-FDMA, 50% RB, 20 MHz, 64-QAM)	X	2.86	68.24	16.35	0.00	150.0	± 9.6 %
		Y	2.74	66.44	15.16		150.0	
		Z	2.87	67.28	15.73		150.0	
10151-CAF	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, QPSK)	X	6.63	82.27	24.05	3.98	65.0	± 9.6 %
		Y	4.86	75.26	20.73		65.0	
		Z	5.85	78.40	22.06		65.0	
10152-CAF	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 16-QAM)	X	4.98	73.89	20.68	3.98	65.0	± 9.6 %
		Y	4.38	70.57	18.85		65.0	
		Z	4.92	72.60	19.86		65.0	
10153-CAF	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 64-QAM)	X	5.37	75.09	21.57	3.98	65.0	± 9.6 %
		Y	4.71	71.64	19.72		65.0	
		Z	5.27	73.62	20.68		65.0	
10154-CAF	LTE-FDD (SC-FDMA, 50% RB, 10 MHz, QPSK)	X	2.18	71.12	17.28	0.00	150.0	± 9.6 %
		Y	1.86	66.97	14.90		150.0	
		Z	2.07	68.69	16.03		150.0	
10155-CAF	LTE-FDD (SC-FDMA, 50% RB, 10 MHz, 16-QAM)	X	2.54	70.08	16.58	0.00	150.0	± 9.6 %
		Y	2.28	66.95	14.90		150.0	
		Z	2.46	68.21	15.81		150.0	
10156-CAF	LTE-FDD (SC-FDMA, 50% RB, 5 MHz, QPSK)	X	1.67	70.04	15.04	0.00	150.0	± 9.6 %
		Y	1.35	65.50	12.88		150.0	
		Z	1.61	67.93	14.60		150.0	
10157-CAF	LTE-FDD (SC-FDMA, 50% RB, 5 MHz, 16-QAM)	X	1.52	65.24	11.56	0.00	150.0	± 9.6 %
		Y	1.54	64.16	11.37		150.0	
		Z	1.78	66.05	12.85		150.0	
10158-CAF	LTE-FDD (SC-FDMA, 50% RB, 10 MHz, 64-QAM)	X	2.68	70.20	16.68	0.00	150.0	± 9.6 %
		Y	2.42	67.23	15.11		150.0	
		Z	2.61	68.43	15.98		150.0	
10159-CAF	LTE-FDD (SC-FDMA, 50% RB, 5 MHz, 64-QAM)	X	1.57	65.38	11.65	0.00	150.0	± 9.6 %
		Y	1.59	64.37	11.51		150.0	
		Z	1.86	66.39	13.06		150.0	
10160-CAE	LTE-FDD (SC-FDMA, 50% RB, 15 MHz, QPSK)	X	2.66	70.27	17.17	0.00	150.0	± 9.6 %
		Y	2.43	67.39	15.40		150.0	
		Z	2.59	68.51	16.14		150.0	
10161-CAE	LTE-FDD (SC-FDMA, 50% RB, 15 MHz, 16-QAM)	X	2.74	68.27	16.19	0.00	150.0	± 9.6 %
		Y	2.62	66.35	14.98		150.0	
		Z	2.76	67.24	15.61		150.0	
10162-CAE	LTE-FDD (SC-FDMA, 50% RB, 15 MHz, 64-QAM)	X	2.85	68.52	16.34	0.00	150.0	± 9.6 %
		Y	2.73	66.59	15.14		150.0	
		Z	2.87	67.46	15.76		150.0	
10166-CAF	LTE-FDD (SC-FDMA, 50% RB, 1.4 MHz, QPSK)	X	2.92	68.58	19.12	3.01	150.0	± 9.6 %
		Y	3.05	68.19	18.71		150.0	
		Z	3.38	69.92	19.37		150.0	
10167-CAF	LTE-FDD (SC-FDMA, 50% RB, 1.4 MHz, 16-QAM)	X	3.31	71.11	19.43	3.01	150.0	± 9.6 %
		Y	3.43	70.35	18.91		150.0	
		Z	4.27	73.87	20.20		150.0	

10168-CAF	LTE-FDD (SC-FDMA, 50% RB, 1.4 MHz, 64-QAM)	X	3.69	73.59	20.95	3.01	150.0	± 9.6 %
		Y	3.83	72.88	20.47		150.0	
		Z	4.91	76.88	21.85		150.0	
10169-CAE	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, QPSK)	X	2.36	66.51	18.14	3.01	150.0	± 9.6 %
		Y	2.40	66.07	17.76		150.0	
		Z	2.80	69.10	19.04		150.0	
10170-CAE	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM)	X	2.79	70.74	19.99	3.01	150.0	± 9.6 %
		Y	2.81	70.18	19.64		150.0	
		Z	4.13	77.05	22.20		150.0	
10171-AAE	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, 64-QAM)	X	2.40	67.71	17.55	3.01	150.0	± 9.6 %
		Y	2.40	66.93	17.03		150.0	
		Z	3.24	71.98	19.00		150.0	
10172-CAF	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK)	X	4.00	83.17	27.59	6.02	65.0	± 9.6 %
		Y	3.32	77.43	24.67		65.0	
		Z	4.82	85.38	27.66		65.0	
10173-CAF	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM)	X	7.95	95.13	29.81	6.02	65.0	± 9.6 %
		Y	5.14	85.14	25.95		65.0	
		Z	22.01	111.28	33.56		65.0	
10174-CAF	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 64-QAM)	X	6.44	90.03	27.42	6.02	65.0	± 9.6 %
		Y	4.72	82.84	24.49		65.0	
		Z	11.40	97.81	28.98		65.0	
10175-CAF	LTE-FDD (SC-FDMA, 1 RB, 10 MHz, QPSK)	X	2.34	66.31	17.94	3.01	150.0	± 9.6 %
		Y	2.38	65.84	17.53		150.0	
		Z	2.77	68.80	18.79		150.0	
10176-CAF	LTE-FDD (SC-FDMA, 1 RB, 10 MHz, 16-QAM)	X	2.79	70.75	20.00	3.01	150.0	± 9.6 %
		Y	2.81	70.20	19.65		150.0	
		Z	4.14	77.08	22.21		150.0	
10177-CAH	LTE-FDD (SC-FDMA, 1 RB, 5 MHz, QPSK)	X	2.35	66.39	17.99	3.01	150.0	± 9.6 %
		Y	2.39	65.94	17.60		150.0	
		Z	2.79	68.93	18.87		150.0	
10178-CAF	LTE-FDD (SC-FDMA, 1 RB, 5 MHz, 16-QAM)	X	2.78	70.67	19.95	3.01	150.0	± 9.6 %
		Y	2.80	70.08	19.57		150.0	
		Z	4.10	76.88	22.11		150.0	
10179-CAF	LTE-FDD (SC-FDMA, 1 RB, 10 MHz, 64-QAM)	X	2.58	69.20	18.68	3.01	150.0	± 9.6 %
		Y	2.58	68.48	18.22		150.0	
		Z	3.64	74.38	20.46		150.0	
10180-CAF	LTE-FDD (SC-FDMA, 1 RB, 5 MHz, 64-QAM)	X	2.40	67.70	17.53	3.01	150.0	± 9.6 %
		Y	2.40	66.90	17.01		150.0	
		Z	3.24	71.93	18.96		150.0	
10181-CAE	LTE-FDD (SC-FDMA, 1 RB, 15 MHz, QPSK)	X	2.35	66.38	17.99	3.01	150.0	± 9.6 %
		Y	2.39	65.93	17.60		150.0	
		Z	2.78	68.92	18.87		150.0	
10182-CAE	LTE-FDD (SC-FDMA, 1 RB, 15 MHz, 16-QAM)	X	2.78	70.65	19.94	3.01	150.0	± 9.6 %
		Y	2.80	70.06	19.56		150.0	
		Z	4.09	76.85	22.10		150.0	
10183-AAD	LTE-FDD (SC-FDMA, 1 RB, 15 MHz, 64-QAM)	X	2.40	67.68	17.52	3.01	150.0	± 9.6 %
		Y	2.40	66.89	16.99		150.0	
		Z	3.23	71.90	18.95		150.0	

10184-CAE	LTE-FDD (SC-FDMA, 1 RB, 3 MHz, QPSK)	X	2.36	66.41	18.00	3.01	150.0	± 9.6 %
		Y	2.40	65.96	17.62		150.0	
		Z	2.79	68.96	18.89		150.0	
10185-CAE	LTE-FDD (SC-FDMA, 1 RB, 3 MHz, 16-QAM)	X	2.79	70.71	19.97	3.01	150.0	± 9.6 %
		Y	2.81	70.12	19.59		150.0	
		Z	4.12	76.94	22.14		150.0	
10186-AAE	LTE-FDD (SC-FDMA, 1 RB, 3 MHz, 64-QAM)	X	2.41	67.73	17.55	3.01	150.0	± 9.6 %
		Y	2.41	66.94	17.03		150.0	
		Z	3.25	71.97	18.99		150.0	
10187-CAF	LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK)	X	2.37	66.48	18.09	3.01	150.0	± 9.6 %
		Y	2.40	66.03	17.69		150.0	
		Z	2.80	69.04	18.97		150.0	
10188-CAF	LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, 16-QAM)	X	2.84	71.12	20.25	3.01	150.0	± 9.6 %
		Y	2.87	70.60	19.92		150.0	
		Z	4.27	77.69	22.54		150.0	
10189-AAF	LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, 64-QAM)	X	2.45	68.02	17.78	3.01	150.0	± 9.6 %
		Y	2.44	67.25	17.27		150.0	
		Z	3.33	72.45	19.29		150.0	
10193-CAC	IEEE 802.11n (HT Greenfield, 6.5 Mbps, BPSK)	X	4.28	67.12	16.40	0.00	150.0	± 9.6 %
		Y	4.28	66.34	15.82		150.0	
		Z	4.37	66.69	16.05		150.0	
10194-CAC	IEEE 802.11n (HT Greenfield, 39 Mbps, 16-QAM)	X	4.40	67.30	16.54	0.00	150.0	± 9.6 %
		Y	4.42	66.58	15.96		150.0	
		Z	4.51	66.94	16.19		150.0	
10195-CAC	IEEE 802.11n (HT Greenfield, 65 Mbps, 64-QAM)	X	4.43	67.29	16.54	0.00	150.0	± 9.6 %
		Y	4.46	66.60	15.98		150.0	
		Z	4.55	66.96	16.21		150.0	
10196-CAC	IEEE 802.11n (HT Mixed, 6.5 Mbps, BPSK)	X	4.25	67.08	16.37	0.00	150.0	± 9.6 %
		Y	4.27	66.33	15.80		150.0	
		Z	4.36	66.69	16.05		150.0	
10197-CAC	IEEE 802.11n (HT Mixed, 39 Mbps, 16-QAM)	X	4.41	67.30	16.54	0.00	150.0	± 9.6 %
		Y	4.43	66.58	15.97		150.0	
		Z	4.52	66.95	16.20		150.0	
10198-CAC	IEEE 802.11n (HT Mixed, 65 Mbps, 64-QAM)	X	4.42	67.28	16.54	0.00	150.0	± 9.6 %
		Y	4.45	66.60	15.98		150.0	
		Z	4.54	66.96	16.21		150.0	
10219-CAC	IEEE 802.11n (HT Mixed, 7.2 Mbps, BPSK)	X	4.21	67.15	16.36	0.00	150.0	± 9.6 %
		Y	4.22	66.36	15.77		150.0	
		Z	4.31	66.72	16.02		150.0	
10220-CAC	IEEE 802.11n (HT Mixed, 43.3 Mbps, 16-QAM)	X	4.40	67.25	16.53	0.00	150.0	± 9.6 %
		Y	4.42	66.55	15.96		150.0	
		Z	4.51	66.91	16.18		150.0	
10221-CAC	IEEE 802.11n (HT Mixed, 72.2 Mbps, 64-QAM)	X	4.44	67.23	16.53	0.00	150.0	± 9.6 %
		Y	4.47	66.55	15.98		150.0	
		Z	4.56	66.90	16.20		150.0	
10222-CAC	IEEE 802.11n (HT Mixed, 15 Mbps, BPSK)	X	4.84	67.21	16.68	0.00	150.0	± 9.6 %
		Y	4.86	66.70	16.17		150.0	
		Z	4.92	67.00	16.33		150.0	

10223-CAC	IEEE 802.11n (HT Mixed, 90 Mbps, 16-QAM)	X	5.05	67.28	16.71	0.00	150.0	± 9.6 %
		Y	5.13	66.92	16.30		150.0	
		Z	5.19	67.21	16.45		150.0	
10224-CAC	IEEE 802.11n (HT Mixed, 150 Mbps, 64-QAM)	X	4.88	67.36	16.68	0.00	150.0	± 9.6 %
		Y	4.89	66.80	16.15		150.0	
		Z	4.96	67.11	16.31		150.0	
10225-CAB	UMTS-FDD (HSPA+)	X	2.56	66.77	14.96	0.00	150.0	± 9.6 %
		Y	2.51	65.29	14.20		150.0	
		Z	2.64	66.08	14.88		150.0	
10226-CAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 16-QAM)	X	8.58	96.74	30.43	6.02	65.0	± 9.6 %
		Y	5.44	86.30	26.47		65.0	
		Z	25.25	114.07	34.44		65.0	
10227-CAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 64-QAM)	X	8.97	96.28	29.51	6.02	65.0	± 9.6 %
		Y	5.82	86.62	25.89		65.0	
		Z	26.62	112.59	33.14		65.0	
10228-CAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK)	X	4.46	85.84	28.72	6.02	65.0	± 9.6 %
		Y	3.52	78.94	25.38		65.0	
		Z	6.28	91.07	29.77		65.0	
10229-CAC	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 16-QAM)	X	8.00	95.21	29.84	6.02	65.0	± 9.6 %
		Y	5.18	85.25	25.99		65.0	
		Z	22.25	111.44	33.61		65.0	
10230-CAC	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 64-QAM)	X	8.20	94.53	28.89	6.02	65.0	± 9.6 %
		Y	5.45	85.38	25.38		65.0	
		Z	22.92	109.78	32.30		65.0	
10231-CAC	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, QPSK)	X	4.29	84.95	28.30	6.02	65.0	± 9.6 %
		Y	3.42	78.29	25.03		65.0	
		Z	6.00	90.04	29.32		65.0	
10232-CAE	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 16-QAM)	X	7.99	95.19	29.84	6.02	65.0	± 9.6 %
		Y	5.17	85.23	25.98		65.0	
		Z	22.20	111.42	33.61		65.0	
10233-CAE	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 64-QAM)	X	8.17	94.46	28.87	6.02	65.0	± 9.6 %
		Y	5.43	85.32	25.36		65.0	
		Z	22.79	109.69	32.28		65.0	
10234-CAE	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, QPSK)	X	4.20	84.39	27.96	6.02	65.0	± 9.6 %
		Y	3.35	77.81	24.72		65.0	
		Z	5.81	89.24	28.92		65.0	
10235-CAE	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 16-QAM)	X	8.00	95.25	29.86	6.02	65.0	± 9.6 %
		Y	5.17	85.25	25.99		65.0	
		Z	22.28	111.52	33.64		65.0	
10236-CAE	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 64-QAM)	X	8.32	94.76	28.95	6.02	65.0	± 9.6 %
		Y	5.50	85.52	25.42		65.0	
		Z	23.43	110.13	32.39		65.0	
10237-CAE	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, QPSK)	X	4.29	84.99	28.32	6.02	65.0	± 9.6 %
		Y	3.42	78.29	25.04		65.0	
		Z	6.00	90.09	29.35		65.0	
10238-CAE	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 16-QAM)	X	7.97	95.17	29.84	6.02	65.0	± 9.6 %
		Y	5.16	85.19	25.97		65.0	
		Z	22.13	111.39	33.60		65.0	

10239-CAE	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 64-QAM)	X	8.13	94.40	28.85	6.02	65.0	± 9.6 %
		Y	5.41	85.27	25.34		65.0	
		Z	22.65	109.61	32.26		65.0	
10240-CAE	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, QPSK)	X	4.29	84.98	28.32	6.02	65.0	± 9.6 %
		Y	3.41	78.27	25.03		65.0	
		Z	5.99	90.06	29.34		65.0	
10241-CAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 16-QAM)	X	6.78	83.01	27.19	6.98	65.0	± 9.6 %
		Y	5.79	77.77	24.62		65.0	
		Z	7.46	82.96	26.61		65.0	
10242-CAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 64-QAM)	X	6.48	82.12	26.76	6.98	65.0	± 9.6 %
		Y	5.59	77.10	24.26		65.0	
		Z	6.60	80.40	25.51		65.0	
10243-CAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, QPSK)	X	5.17	77.50	25.78	6.98	65.0	± 9.6 %
		Y	4.73	73.67	23.57		65.0	
		Z	5.15	75.48	24.33		65.0	
10244-CAC	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 16-QAM)	X	3.16	68.74	13.63	3.98	65.0	± 9.6 %
		Y	3.46	70.01	15.08		65.0	
		Z	4.53	73.34	16.60		65.0	
10245-CAC	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 64-QAM)	X	3.03	67.91	13.16	3.98	65.0	± 9.6 %
		Y	3.34	69.23	14.64		65.0	
		Z	4.31	72.35	16.12		65.0	
10246-CAC	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, QPSK)	X	4.58	77.82	18.26	3.98	65.0	± 9.6 %
		Y	2.94	71.18	15.91		65.0	
		Z	4.43	77.10	18.78		65.0	
10247-CAE	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 16-QAM)	X	3.93	72.44	16.86	3.98	65.0	± 9.6 %
		Y	3.31	69.30	15.75		65.0	
		Z	4.04	72.29	17.45		65.0	
10248-CAE	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 64-QAM)	X	3.71	71.10	16.24	3.98	65.0	± 9.6 %
		Y	3.28	68.68	15.43		65.0	
		Z	3.97	71.47	17.06		65.0	
10249-CAE	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, QPSK)	X	8.97	89.85	24.39	3.98	65.0	± 9.6 %
		Y	4.14	76.51	19.58		65.0	
		Z	6.04	82.54	22.20		65.0	
10250-CAE	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 16-QAM)	X	5.29	77.58	21.84	3.98	65.0	± 9.6 %
		Y	4.28	72.75	19.64		65.0	
		Z	4.96	75.21	20.85		65.0	
10251-CAE	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 64-QAM)	X	4.75	74.27	19.93	3.98	65.0	± 9.6 %
		Y	4.08	70.67	18.23		65.0	
		Z	4.69	72.94	19.43		65.0	
10252-CAE	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, QPSK)	X	8.00	88.54	26.02	3.98	65.0	± 9.6 %
		Y	4.67	77.36	21.42		65.0	
		Z	6.06	81.76	23.28		65.0	
10253-CAE	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 16-QAM)	X	4.92	73.55	20.33	3.98	65.0	± 9.6 %
		Y	4.33	70.27	18.60		65.0	
		Z	4.85	72.20	19.59		65.0	
10254-CAE	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 64-QAM)	X	5.24	74.52	21.06	3.98	65.0	± 9.6 %
		Y	4.62	71.19	19.34		65.0	
		Z	5.16	73.09	20.30		65.0	

10255-CAE	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, QPSK)	X	6.21	81.24	23.74	3.98	65.0	± 9.6 %
		Y	4.64	74.55	20.56		65.0	
		Z	5.52	77.51	21.87		65.0	
10256-CAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 16-QAM)	X	2.00	63.20	9.38	3.98	65.0	± 9.6 %
		Y	2.33	64.83	11.17		65.0	
		Z	2.92	67.15	12.48		65.0	
10257-CAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 64-QAM)	X	1.96	62.72	8.99	3.98	65.0	± 9.6 %
		Y	2.28	64.22	10.72		65.0	
		Z	2.80	66.30	11.94		65.0	
10258-CAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, QPSK)	X	2.08	66.35	11.80	3.98	65.0	± 9.6 %
		Y	1.98	65.50	11.93		65.0	
		Z	2.75	69.63	14.40		65.0	
10259-CAC	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 16-QAM)	X	4.58	74.93	18.91	3.98	65.0	± 9.6 %
		Y	3.71	70.81	17.27		65.0	
		Z	4.44	73.61	18.79		65.0	
10260-CAC	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 64-QAM)	X	4.52	74.29	18.60	3.98	65.0	± 9.6 %
		Y	3.74	70.54	17.12		65.0	
		Z	4.45	73.22	18.60		65.0	
10261-CAC	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, QPSK)	X	7.88	87.94	24.55	3.98	65.0	± 9.6 %
		Y	4.19	76.19	20.04		65.0	
		Z	5.68	81.15	22.23		65.0	
10262-CAE	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 16-QAM)	X	5.27	77.47	21.77	3.98	65.0	± 9.6 %
		Y	4.26	72.68	19.58		65.0	
		Z	4.94	75.14	20.80		65.0	
10263-CAE	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 64-QAM)	X	4.75	74.24	19.92	3.98	65.0	± 9.6 %
		Y	4.08	70.65	18.22		65.0	
		Z	4.68	72.91	19.42		65.0	
10264-CAE	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, QPSK)	X	7.86	88.17	25.86	3.98	65.0	± 9.6 %
		Y	4.62	77.15	21.31		65.0	
		Z	5.99	81.52	23.16		65.0	
10265-CAE	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 16-QAM)	X	4.98	73.90	20.68	3.98	65.0	± 9.6 %
		Y	4.38	70.57	18.86		65.0	
		Z	4.92	72.60	19.87		65.0	
10266-CAE	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 64-QAM)	X	5.37	75.08	21.56	3.98	65.0	± 9.6 %
		Y	4.71	71.63	19.71		65.0	
		Z	5.27	73.60	20.67		65.0	
10267-CAE	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, QPSK)	X	6.61	82.19	24.01	3.98	65.0	± 9.6 %
		Y	4.85	75.21	20.70		65.0	
		Z	5.84	78.34	22.04		65.0	
10268-CAE	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 16-QAM)	X	5.53	73.44	21.03	3.98	65.0	± 9.6 %
		Y	5.03	70.75	19.43		65.0	
		Z	5.54	72.47	20.25		65.0	
10269-CAE	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 64-QAM)	X	5.54	73.02	20.85	3.98	65.0	± 9.6 %
		Y	5.06	70.44	19.31		65.0	
		Z	5.54	72.08	20.10		65.0	
10270-CAE	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, QPSK)	X	5.98	77.31	22.21	3.98	65.0	± 9.6 %
		Y	5.00	72.98	19.88		65.0	
		Z	5.69	75.16	20.83		65.0	

10274-CAB	UMTS-FDD (HSUPA, Subtest 5, 3GPP Rel8.10)	X	2.47	67.82	15.27	0.00	150.0	± 9.6 %
		Y	2.33	65.69	14.15		150.0	
		Z	2.48	66.63	14.91		150.0	
10275-CAB	UMTS-FDD (HSUPA, Subtest 5, 3GPP Rel8.4)	X	1.71	71.16	16.82	0.00	150.0	± 9.6 %
		Y	1.33	65.66	13.76		150.0	
		Z	1.51	67.66	15.15		150.0	
10277-CAA	PHS (QPSK)	X	1.23	59.02	4.21	9.03	50.0	± 9.6 %
		Y	1.36	59.15	4.53		50.0	
		Z	1.40	59.60	4.92		50.0	
10278-CAA	PHS (QPSK, BW 884MHz, Rolloff 0.5)	X	2.49	65.17	10.30	9.03	50.0	± 9.6 %
		Y	2.68	65.81	11.00		50.0	
		Z	3.26	68.70	12.71		50.0	
10279-CAA	PHS (QPSK, BW 884MHz, Rolloff 0.38)	X	2.55	65.39	10.49	9.03	50.0	± 9.6 %
		Y	2.76	66.08	11.22		50.0	
		Z	3.39	69.09	12.97		50.0	
10290-AAB	CDMA2000, RC1, SO55, Full Rate	X	0.66	62.54	8.32	0.00	150.0	± 9.6 %
		Y	0.76	62.40	8.87		150.0	
		Z	1.02	65.60	11.30		150.0	
10291-AAB	CDMA2000, RC3, SO55, Full Rate	X	0.43	61.50	7.46	0.00	150.0	± 9.6 %
		Y	0.48	61.03	7.79		150.0	
		Z	0.63	63.68	10.15		150.0	
10292-AAB	CDMA2000, RC3, SO32, Full Rate	X	0.68	66.33	10.22	0.00	150.0	± 9.6 %
		Y	0.54	62.59	8.99		150.0	
		Z	0.84	67.69	12.53		150.0	
10293-AAB	CDMA2000, RC3, SO3, Full Rate	X	100.00	115.49	24.39	0.00	150.0	± 9.6 %
		Y	0.69	65.22	10.79		150.0	
		Z	1.61	75.87	16.40		150.0	
10295-AAB	CDMA2000, RC1, SO3, 1/8th Rate 25 fr.	X	100.00	119.39	31.37	9.03	50.0	± 9.6 %
		Y	30.54	103.12	27.89		50.0	
		Z	25.86	103.05	28.71		50.0	
10297-AAD	LTE-FDD (SC-FDMA, 50% RB, 20 MHz, QPSK)	X	2.64	71.06	17.54	0.00	150.0	± 9.6 %
		Y	2.34	67.75	15.49		150.0	
		Z	2.55	69.26	16.39		150.0	
10298-AAD	LTE-FDD (SC-FDMA, 50% RB, 3 MHz, QPSK)	X	0.90	63.34	9.68	0.00	150.0	± 9.6 %
		Y	0.97	62.80	9.90		150.0	
		Z	1.20	65.31	11.89		150.0	
10299-AAD	LTE-FDD (SC-FDMA, 50% RB, 3 MHz, 16-QAM)	X	1.04	61.35	7.67	0.00	150.0	± 9.6 %
		Y	1.45	63.85	10.09		150.0	
		Z	1.91	66.23	11.37		150.0	
10300-AAD	LTE-FDD (SC-FDMA, 50% RB, 3 MHz, 64-QAM)	X	0.88	59.77	6.06	0.00	150.0	± 9.6 %
		Y	1.18	61.29	7.96		150.0	
		Z	1.43	62.58	8.80		150.0	
10301-AAA	IEEE 802.16e WiMAX (29:18, 5ms, 10MHz, QPSK, PUSC)	X	4.48	66.53	17.71	4.17	50.0	± 9.6 %
		Y	4.32	64.81	16.78		50.0	
		Z	4.53	65.70	17.38		50.0	
10302-AAA	IEEE 802.16e WiMAX (29:18, 5ms, 10MHz, QPSK, PUSC, 3 CTRL symbols)	X	4.90	66.77	18.24	4.96	50.0	± 9.6 %
		Y	4.79	65.40	17.49		50.0	
		Z	4.93	65.95	17.91		50.0	

10303-AAA	IEEE 802.16e WiMAX (31:15, 5ms, 10MHz, 64QAM, PUSC)	X	4.67	66.48	18.03	4.96	50.0	± 9.6 %
		Y	4.54	65.00	17.25		50.0	
		Z	4.68	65.54	17.69		50.0	
10304-AAA	IEEE 802.16e WiMAX (29:18, 5ms, 10MHz, 64QAM, PUSC)	X	4.50	66.44	17.58	4.17	50.0	± 9.6 %
		Y	4.37	64.94	16.79		50.0	
		Z	4.51	65.50	17.22		50.0	
10305-AAA	IEEE 802.16e WiMAX (31:15, 10ms, 10MHz, 64QAM, PUSC, 15 symbols)	X	4.12	68.45	18.95	6.02	35.0	± 9.6 %
		Y	3.86	66.02	17.96		35.0	
		Z	3.97	66.57	18.59		35.0	
10306-AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, 64QAM, PUSC, 18 symbols)	X	4.42	67.53	18.97	6.02	35.0	± 9.6 %
		Y	4.25	65.60	18.06		35.0	
		Z	4.36	66.03	18.53		35.0	
10307-AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, QPSK, PUSC, 18 symbols)	X	4.30	67.51	18.83	6.02	35.0	± 9.6 %
		Y	4.12	65.54	17.91		35.0	
		Z	4.23	66.00	18.40		35.0	
10308-AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, 16QAM, PUSC)	X	4.29	67.78	19.02	6.02	35.0	± 9.6 %
		Y	4.09	65.70	18.03		35.0	
		Z	4.20	66.19	18.54		35.0	
10309-AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, 16QAM, AMC 2x3, 18 symbols)	X	4.43	67.59	19.06	6.02	35.0	± 9.6 %
		Y	4.27	65.68	18.15		35.0	
		Z	4.39	66.15	18.64		35.0	
10310-AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, QPSK, AMC 2x3, 18 symbols)	X	4.38	67.63	18.98	6.02	35.0	± 9.6 %
		Y	4.20	65.62	18.03		35.0	
		Z	4.31	66.06	18.50		35.0	
10311-AAD	LTE-FDD (SC-FDMA, 100% RB, 15 MHz, QPSK)	X	2.99	69.90	17.05	0.00	150.0	± 9.6 %
		Y	2.69	67.10	15.26		150.0	
		Z	2.91	68.52	16.06		150.0	
10313-AAA	iDEN 1:3	X	8.87	90.94	23.28	6.99	70.0	± 9.6 %
		Y	2.18	70.62	15.55		70.0	
		Z	3.65	77.10	18.17		70.0	
10314-AAA	iDEN 1:6	X	23.31	113.29	33.24	10.00	30.0	± 9.6 %
		Y	4.07	81.07	22.63		30.0	
		Z	6.41	89.12	25.62		30.0	
10315-AAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps, 96pc duty cycle)	X	1.06	65.07	16.25	0.17	150.0	± 9.6 %
		Y	0.98	62.35	13.91		150.0	
		Z	1.04	63.52	14.91		150.0	
10316-AAB	IEEE 802.11g WiFi 2.4 GHz (ERP-OFDM, 6 Mbps, 96pc duty cycle)	X	4.31	67.08	16.57	0.17	150.0	± 9.6 %
		Y	4.32	66.32	15.96		150.0	
		Z	4.41	66.68	16.20		150.0	
10317-AAC	IEEE 802.11a WiFi 5 GHz (OFDM, 6 Mbps, 96pc duty cycle)	X	4.31	67.08	16.57	0.17	150.0	± 9.6 %
		Y	4.32	66.32	15.96		150.0	
		Z	4.41	66.68	16.20		150.0	
10400-AAD	IEEE 802.11ac WiFi (20MHz, 64-QAM, 99pc duty cycle)	X	4.34	67.26	16.50	0.00	150.0	± 9.6 %
		Y	4.38	66.57	15.93		150.0	
		Z	4.48	66.96	16.18		150.0	
10401-AAD	IEEE 802.11ac WiFi (40MHz, 64-QAM, 99pc duty cycle)	X	5.02	66.93	16.50	0.00	150.0	± 9.6 %
		Y	5.07	66.49	16.04		150.0	
		Z	5.15	66.85	16.24		150.0	

10402-AAD	IEEE 802.11ac WiFi (80MHz, 64-QAM, 99pc duty cycle)	X	5.40	67.50	16.69	0.00	150.0	± 9.6 %
		Y	5.42	67.05	16.22		150.0	
		Z	5.48	67.35	16.37		150.0	
10403-AAB	CDMA2000 (1xEV-DO, Rev. 0)	X	0.66	62.54	8.32	0.00	115.0	± 9.6 %
		Y	0.76	62.40	8.87		115.0	
		Z	1.02	65.60	11.30		115.0	
10404-AAB	CDMA2000 (1xEV-DO, Rev. A)	X	0.66	62.54	8.32	0.00	115.0	± 9.6 %
		Y	0.76	62.40	8.87		115.0	
		Z	1.02	65.60	11.30		115.0	
10406-AAB	CDMA2000, RC3, SO32, SCH0, Full Rate	X	100.00	120.66	28.47	0.00	100.0	± 9.6 %
		Y	100.00	124.32	30.49		100.0	
		Z	100.00	114.36	26.36		100.0	
10410-AAE	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9, Subframe Conf=4)	X	100.00	137.18	35.87	3.23	80.0	± 9.6 %
		Y	89.20	133.87	34.99		80.0	
		Z	100.00	128.26	32.27		80.0	
10415-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps, 99pc duty cycle)	X	1.00	64.27	15.62	0.00	150.0	± 9.6 %
		Y	0.93	61.90	13.47		150.0	
		Z	0.99	62.92	14.41		150.0	
10416-AAA	IEEE 802.11g WiFi 2.4 GHz (ERP-OFDM, 6 Mbps, 99pc duty cycle)	X	4.26	67.05	16.46	0.00	150.0	± 9.6 %
		Y	4.28	66.33	15.89		150.0	
		Z	4.36	66.69	16.13		150.0	
10417-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps, 99pc duty cycle)	X	4.26	67.05	16.46	0.00	150.0	± 9.6 %
		Y	4.28	66.33	15.89		150.0	
		Z	4.36	66.69	16.13		150.0	
10418-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps, 99pc duty cycle, Long preambule)	X	4.26	67.30	16.55	0.00	150.0	± 9.6 %
		Y	4.27	66.52	15.94		150.0	
		Z	4.36	66.88	16.18		150.0	
10419-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps, 99pc duty cycle, Short preambule)	X	4.27	67.21	16.52	0.00	150.0	± 9.6 %
		Y	4.29	66.46	15.93		150.0	
		Z	4.38	66.82	16.17		150.0	
10422-AAB	IEEE 802.11n (HT Greenfield, 7.2 Mbps, BPSK)	X	4.37	67.16	16.52	0.00	150.0	± 9.6 %
		Y	4.40	66.45	15.96		150.0	
		Z	4.48	66.80	16.18		150.0	
10423-AAB	IEEE 802.11n (HT Greenfield, 43.3 Mbps, 16-QAM)	X	4.48	67.40	16.60	0.00	150.0	± 9.6 %
		Y	4.52	66.70	16.04		150.0	
		Z	4.61	67.06	16.27		150.0	
10424-AAB	IEEE 802.11n (HT Greenfield, 72.2 Mbps, 64-QAM)	X	4.42	67.34	16.58	0.00	150.0	± 9.6 %
		Y	4.45	66.65	16.02		150.0	
		Z	4.54	67.01	16.25		150.0	
10425-AAB	IEEE 802.11n (HT Greenfield, 15 Mbps, BPSK)	X	5.06	67.40	16.76	0.00	150.0	± 9.6 %
		Y	5.10	66.94	16.29		150.0	
		Z	5.16	67.23	16.44		150.0	
10426-AAB	IEEE 802.11n (HT Greenfield, 90 Mbps, 16-QAM)	X	5.11	67.63	16.87	0.00	150.0	± 9.6 %
		Y	5.13	67.07	16.35		150.0	
		Z	5.18	67.30	16.47		150.0	

10427-AAB	IEEE 802.11n (HT Greenfield, 150 Mbps, 64-QAM)	X	5.05	67.32	16.71	0.00	150.0	± 9.6 %
		Y	5.08	66.82	16.22		150.0	
		Z	5.15	67.12	16.38		150.0	
10430-AAC	LTE-FDD (OFDMA, 5 MHz, E-TM 3.1)	X	4.23	73.22	18.45	0.00	150.0	± 9.6 %
		Y	3.93	70.77	17.45		150.0	
		Z	4.10	71.37	17.95		150.0	
10431-AAC	LTE-FDD (OFDMA, 10 MHz, E-TM 3.1)	X	3.86	67.78	16.28	0.00	150.0	± 9.6 %
		Y	3.86	66.76	15.64		150.0	
		Z	3.98	67.24	16.01		150.0	
10432-AAC	LTE-FDD (OFDMA, 15 MHz, E-TM 3.1)	X	4.18	67.53	16.50	0.00	150.0	± 9.6 %
		Y	4.20	66.69	15.89		150.0	
		Z	4.31	67.10	16.17		150.0	
10433-AAC	LTE-FDD (OFDMA, 20 MHz, E-TM 3.1)	X	4.44	67.38	16.60	0.00	150.0	± 9.6 %
		Y	4.47	66.68	16.04		150.0	
		Z	4.56	67.05	16.27		150.0	
10434-AAA	W-CDMA (BS Test Model 1, 64 DPCH)	X	4.26	73.70	17.91	0.00	150.0	± 9.6 %
		Y	3.90	71.13	16.99		150.0	
		Z	4.17	72.14	17.74		150.0	
10435-AAE	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	100.00	136.85	35.71	3.23	80.0	± 9.6 %
		Y	73.85	130.75	34.24		80.0	
		Z	100.00	127.97	32.14		80.0	
10447-AAC	LTE-FDD (OFDMA, 5 MHz, E-TM 3.1, Clipping 44%)	X	3.04	67.36	14.69	0.00	150.0	± 9.6 %
		Y	3.04	66.19	14.22		150.0	
		Z	3.23	67.03	14.92		150.0	
10448-AAC	LTE-FDD (OFDMA, 10 MHz, E-TM 3.1, Clippin 44%)	X	3.74	67.60	16.17	0.00	150.0	± 9.6 %
		Y	3.73	66.55	15.51		150.0	
		Z	3.85	67.04	15.88		150.0	
10449-AAC	LTE-FDD (OFDMA, 15 MHz, E-TM 3.1, Cliping 44%)	X	4.04	67.36	16.41	0.00	150.0	± 9.6 %
		Y	4.04	66.51	15.78		150.0	
		Z	4.14	66.92	16.07		150.0	
10450-AAC	LTE-FDD (OFDMA, 20 MHz, E-TM 3.1, Clipping 44%)	X	4.25	67.17	16.47	0.00	150.0	± 9.6 %
		Y	4.27	66.44	15.88		150.0	
		Z	4.35	66.83	16.12		150.0	
10451-AAA	W-CDMA (BS Test Model 1, 64 DPCH, Clipping 44%)	X	2.75	66.59	13.54	0.00	150.0	± 9.6 %
		Y	2.81	65.78	13.36		150.0	
		Z	3.04	66.85	14.23		150.0	
10456-AAB	IEEE 802.11ac WiFi (160MHz, 64-QAM, 99pc duty cycle)	X	6.15	68.30	17.13	0.00	150.0	± 9.6 %
		Y	6.05	67.54	16.50		150.0	
		Z	6.09	67.83	16.64		150.0	
10457-AAA	UMTS-FDD (DC-HSDPA)	X	3.66	65.89	16.23	0.00	150.0	± 9.6 %
		Y	3.65	65.10	15.61		150.0	
		Z	3.71	65.42	15.85		150.0	
10458-AAA	CDMA2000 (1xEV-DO, Rev. B, 2 carriers)	X	3.20	69.58	15.19	0.00	150.0	± 9.6 %
		Y	3.29	69.02	15.37		150.0	
		Z	3.67	70.71	16.58		150.0	
10459-AAA	CDMA2000 (1xEV-DO, Rev. B, 3 carriers)	X	4.50	68.59	17.11	0.00	150.0	± 9.6 %
		Y	4.66	68.32	17.33		150.0	
		Z	4.81	68.67	17.71		150.0	

10460-AAA	UMTS-FDD (WCDMA, AMR)	X	1.26	76.31	19.76	0.00	150.0	± 9.6 %
		Y	0.71	64.73	13.42		150.0	
		Z	0.85	67.74	15.61		150.0	
10461-AAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	100.00	143.66	38.88	3.29	80.0	± 9.6 %
		Y	34.56	122.60	33.52		80.0	
		Z	100.00	134.99	35.38		80.0	
10462-AAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	3.61	76.64	14.82	3.23	80.0	± 9.6 %
		Y	1.01	64.66	10.84		80.0	
		Z	1.31	65.68	10.55		80.0	
10463-AAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	0.60	60.00	7.56	3.23	80.0	± 9.6 %
		Y	0.63	60.00	7.83		80.0	
		Z	0.70	60.00	7.29		80.0	
10464-AAB	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	100.00	140.29	37.09	3.23	80.0	± 9.6 %
		Y	41.01	122.69	32.58		80.0	
		Z	100.00	131.53	33.60		80.0	
10465-AAB	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	1.51	68.56	12.04	3.23	80.0	± 9.6 %
		Y	0.85	62.97	9.99		80.0	
		Z	1.06	63.78	9.68		80.0	
10466-AAB	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	0.61	60.00	7.50	3.23	80.0	± 9.6 %
		Y	0.64	60.00	7.76		80.0	
		Z	0.71	60.00	7.23		80.0	
10467-AAD	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	100.00	140.88	37.35	3.23	80.0	± 9.6 %
		Y	59.18	128.48	33.95		80.0	
		Z	100.00	131.99	33.80		80.0	
10468-AAD	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	1.90	70.77	12.88	3.23	80.0	± 9.6 %
		Y	0.89	63.46	10.25		80.0	
		Z	1.12	64.32	9.94		80.0	
10469-AAD	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	0.60	60.00	7.50	3.23	80.0	± 9.6 %
		Y	0.63	60.00	7.77		80.0	
		Z	0.70	60.00	7.23		80.0	
10470-AAD	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	100.00	140.97	37.38	3.23	80.0	± 9.6 %
		Y	62.06	129.24	34.12		80.0	
		Z	100.00	132.05	33.81		80.0	
10471-AAD	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	1.84	70.47	12.75	3.23	80.0	± 9.6 %
		Y	0.88	63.38	10.20		80.0	
		Z	1.11	64.20	9.87		80.0	
10472-AAD	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	0.60	60.00	7.48	3.23	80.0	± 9.6 %
		Y	0.63	60.00	7.75		80.0	
		Z	0.70	60.00	7.21		80.0	
10473-AAD	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	100.00	140.94	37.36	3.23	80.0	± 9.6 %
		Y	61.16	128.99	34.05		80.0	
		Z	100.00	132.00	33.79		80.0	
10474-AAD	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	1.81	70.32	12.70	3.23	80.0	± 9.6 %
		Y	0.88	63.33	10.17		80.0	
		Z	1.10	64.15	9.85		80.0	
10475-AAD	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	0.60	60.00	7.48	3.23	80.0	± 9.6 %
		Y	0.63	60.00	7.75		80.0	
		Z	0.70	60.00	7.21		80.0	

10477-AAE	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	1.53	68.71	12.08	3.23	80.0	± 9.6 %
		Y	0.84	62.95	9.96		80.0	
		Z	1.05	63.70	9.62		80.0	
10478-AAE	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	0.60	60.00	7.47	3.23	80.0	± 9.6 %
		Y	0.63	60.00	7.74		80.0	
		Z	0.70	60.00	7.20		80.0	
10479-AAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	100.00	131.86	35.15	3.23	80.0	± 9.6 %
		Y	12.94	98.67	26.98		80.0	
		Z	22.21	105.39	28.53		80.0	
10480-AAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	100.00	113.57	26.62	3.23	80.0	± 9.6 %
		Y	8.74	85.47	20.23		80.0	
		Z	17.38	92.40	21.93		80.0	
10481-AAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	18.06	91.55	20.55	3.23	80.0	± 9.6 %
		Y	4.37	76.08	16.65		80.0	
		Z	7.35	80.99	18.05		80.0	
10482-AAB	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	3.29	74.82	16.10	2.23	80.0	± 9.6 %
		Y	1.38	63.83	11.93		80.0	
		Z	2.24	69.89	15.23		80.0	
10483-AAB	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	1.50	62.45	9.85	2.23	80.0	± 9.6 %
		Y	2.04	65.44	12.22		80.0	
		Z	2.87	69.16	14.04		80.0	
10484-AAB	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	1.43	61.71	9.45	2.23	80.0	± 9.6 %
		Y	1.92	64.48	11.76		80.0	
		Z	2.62	67.82	13.47		80.0	
10485-AAD	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	6.78	86.86	22.48	2.23	80.0	± 9.6 %
		Y	1.98	67.95	15.36		80.0	
		Z	2.84	73.18	18.01		80.0	
10486-AAD	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	2.84	70.05	15.08	2.23	80.0	± 9.6 %
		Y	1.97	64.49	12.85		80.0	
		Z	2.60	68.12	14.98		80.0	
10487-AAD	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	2.67	68.87	14.53	2.23	80.0	± 9.6 %
		Y	1.98	64.19	12.66		80.0	
		Z	2.57	67.61	14.72		80.0	
10488-AAD	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	4.07	78.46	21.52	2.23	80.0	± 9.6 %
		Y	2.46	68.67	16.96		80.0	
		Z	3.04	71.93	18.60		80.0	
10489-AAD	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	3.48	71.99	18.44	2.23	80.0	± 9.6 %
		Y	2.66	66.56	15.77		80.0	
		Z	3.05	68.58	16.94		80.0	
10490-AAD	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	3.50	71.49	18.20	2.23	80.0	± 9.6 %
		Y	2.75	66.49	15.73		80.0	
		Z	3.12	68.41	16.86		80.0	
10491-AAD	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	3.72	73.90	20.02	2.23	80.0	± 9.6 %
		Y	2.82	67.95	16.90		80.0	
		Z	3.28	70.32	18.09		80.0	
10492-AAD	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	3.56	69.77	18.10	2.23	80.0	± 9.6 %
		Y	3.07	66.24	16.14		80.0	
		Z	3.38	67.73	16.98		80.0	

10493-AAD	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	3.59	69.52	17.96	2.23	80.0	± 9.6 %
		Y	3.13	66.17	16.10		80.0	
		Z	3.43	67.60	16.92		80.0	
10494-AAE	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	4.13	75.78	20.74	2.23	80.0	± 9.6 %
		Y	2.97	68.99	17.27		80.0	
		Z	3.53	71.74	18.59		80.0	
10495-AAE	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	3.57	69.95	18.36	2.23	80.0	± 9.6 %
		Y	3.08	66.44	16.34		80.0	
		Z	3.39	67.98	17.18		80.0	
10496-AAE	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	3.63	69.58	18.20	2.23	80.0	± 9.6 %
		Y	3.18	66.32	16.31		80.0	
		Z	3.48	67.76	17.10		80.0	
10497-AAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	0.86	60.00	7.83	2.23	80.0	± 9.6 %
		Y	0.94	60.00	8.43		80.0	
		Z	1.26	62.86	10.60		80.0	
10498-AAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	1.06	60.00	6.32	2.23	80.0	± 9.6 %
		Y	1.11	60.00	7.15		80.0	
		Z	1.15	60.00	7.79		80.0	
10499-AAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	1.09	60.00	6.13	2.23	80.0	± 9.6 %
		Y	1.13	60.00	6.98		80.0	
		Z	1.16	60.00	7.62		80.0	
10500-AAB	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	5.11	82.69	21.91	2.23	80.0	± 9.6 %
		Y	2.18	68.30	16.03		80.0	
		Z	2.89	72.51	18.19		80.0	
10501-AAB	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	3.38	72.12	16.89	2.23	80.0	± 9.6 %
		Y	2.30	65.71	14.16		80.0	
		Z	2.84	68.67	15.89		80.0	
10502-AAB	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	3.32	71.47	16.50	2.23	80.0	± 9.6 %
		Y	2.34	65.56	14.00		80.0	
		Z	2.88	68.46	15.71		80.0	
10503-AAD	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	4.00	78.15	21.38	2.23	80.0	± 9.6 %
		Y	2.43	68.50	16.86		80.0	
		Z	3.00	71.73	18.50		80.0	
10504-AAD	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	3.45	71.84	18.36	2.23	80.0	± 9.6 %
		Y	2.65	66.46	15.71		80.0	
		Z	3.03	68.49	16.88		80.0	
10505-AAD	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	3.47	71.37	18.13	2.23	80.0	± 9.6 %
		Y	2.73	66.40	15.67		80.0	
		Z	3.11	68.32	16.80		80.0	
10506-AAD	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	4.09	75.59	20.65	2.23	80.0	± 9.6 %
		Y	2.95	68.87	17.20		80.0	
		Z	3.51	71.60	18.52		80.0	
10507-AAD	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	3.56	69.88	18.32	2.23	80.0	± 9.6 %
		Y	3.07	66.39	16.30		80.0	
		Z	3.38	67.92	17.15		80.0	

10508-AAD	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	3.61	69.50	18.15	2.23	80.0	± 9.6 %
		Y	3.17	66.26	16.27		80.0	
		Z	3.46	67.69	17.06		80.0	
10509-AAD	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	4.20	72.86	19.53	2.23	80.0	± 9.6 %
		Y	3.42	68.34	17.01		80.0	
		Z	3.88	70.43	18.01		80.0	
10510-AAD	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	3.92	68.81	18.05	2.23	80.0	± 9.6 %
		Y	3.56	66.32	16.47		80.0	
		Z	3.85	67.60	17.14		80.0	
10511-AAD	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	3.98	68.57	17.95	2.23	80.0	± 9.6 %
		Y	3.64	66.21	16.45		80.0	
		Z	3.92	67.41	17.08		80.0	
10512-AAE	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	4.48	74.72	20.17	2.23	80.0	± 9.6 %
		Y	3.43	69.26	17.28		80.0	
		Z	4.02	71.84	18.48		80.0	
10513-AAE	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	3.82	68.98	18.16	2.23	80.0	± 9.6 %
		Y	3.45	66.38	16.51		80.0	
		Z	3.74	67.76	17.23		80.0	
10514-AAE	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	3.85	68.52	17.99	2.23	80.0	± 9.6 %
		Y	3.51	66.13	16.44		80.0	
		Z	3.78	67.40	17.11		80.0	
10515-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 2 Mbps, 99pc duty cycle)	X	0.96	64.60	15.77	0.00	150.0	± 9.6 %
		Y	0.89	61.99	13.45		150.0	
		Z	0.95	63.08	14.46		150.0	
10516-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 5.5 Mbps, 99pc duty cycle)	X	2.33	97.00	27.78	0.00	150.0	± 9.6 %
		Y	0.43	64.91	13.28		150.0	
		Z	0.56	69.50	16.60		150.0	
10517-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 11 Mbps, 99pc duty cycle)	X	0.86	68.07	17.27	0.00	150.0	± 9.6 %
		Y	0.71	62.96	13.44		150.0	
		Z	0.79	64.75	14.96		150.0	
10518-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 9 Mbps, 99pc duty cycle)	X	4.25	67.19	16.47	0.00	150.0	± 9.6 %
		Y	4.27	66.42	15.88		150.0	
		Z	4.35	66.78	16.12		150.0	
10519-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 12 Mbps, 99pc duty cycle)	X	4.38	67.33	16.55	0.00	150.0	± 9.6 %
		Y	4.41	66.60	15.98		150.0	
		Z	4.50	66.96	16.21		150.0	
10520-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 18 Mbps, 99pc duty cycle)	X	4.25	67.26	16.47	0.00	150.0	± 9.6 %
		Y	4.27	66.51	15.88		150.0	
		Z	4.36	66.89	16.12		150.0	
10521-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 24 Mbps, 99pc duty cycle)	X	4.18	67.20	16.44	0.00	150.0	± 9.6 %
		Y	4.20	66.46	15.85		150.0	
		Z	4.29	66.86	16.10		150.0	
10522-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 36 Mbps, 99pc duty cycle)	X	4.21	67.26	16.50	0.00	150.0	± 9.6 %
		Y	4.24	66.58	15.94		150.0	
		Z	4.35	66.98	16.20		150.0	

10523-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 48 Mbps, 99pc duty cycle)	X	4.18	67.45	16.52	0.00	150.0	± 9.6 %
		Y	4.18	66.58	15.86		150.0	
		Z	4.27	66.96	16.11		150.0	
10524-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 54 Mbps, 99pc duty cycle)	X	4.18	67.33	16.55	0.00	150.0	± 9.6 %
		Y	4.20	66.55	15.94		150.0	
		Z	4.30	66.94	16.19		150.0	
10525-AAB	IEEE 802.11ac WiFi (20MHz, MCS0, 99pc duty cycle)	X	4.24	66.47	16.19	0.00	150.0	± 9.6 %
		Y	4.23	65.66	15.56		150.0	
		Z	4.32	66.04	15.81		150.0	
10526-AAB	IEEE 802.11ac WiFi (20MHz, MCS1, 99pc duty cycle)	X	4.34	66.70	16.29	0.00	150.0	± 9.6 %
		Y	4.35	65.92	15.67		150.0	
		Z	4.45	66.33	15.93		150.0	
10527-AAB	IEEE 802.11ac WiFi (20MHz, MCS2, 99pc duty cycle)	X	4.28	66.69	16.24	0.00	150.0	± 9.6 %
		Y	4.28	65.87	15.61		150.0	
		Z	4.38	66.29	15.86		150.0	
10528-AAB	IEEE 802.11ac WiFi (20MHz, MCS3, 99pc duty cycle)	X	4.29	66.70	16.27	0.00	150.0	± 9.6 %
		Y	4.29	65.89	15.64		150.0	
		Z	4.39	66.31	15.90		150.0	
10529-AAB	IEEE 802.11ac WiFi (20MHz, MCS4, 99pc duty cycle)	X	4.29	66.70	16.27	0.00	150.0	± 9.6 %
		Y	4.29	65.89	15.64		150.0	
		Z	4.39	66.31	15.90		150.0	
10531-AAB	IEEE 802.11ac WiFi (20MHz, MCS6, 99pc duty cycle)	X	4.24	66.68	16.22	0.00	150.0	± 9.6 %
		Y	4.25	65.90	15.61		150.0	
		Z	4.36	66.34	15.88		150.0	
10532-AAB	IEEE 802.11ac WiFi (20MHz, MCS7, 99pc duty cycle)	X	4.14	66.55	16.16	0.00	150.0	± 9.6 %
		Y	4.14	65.75	15.53		150.0	
		Z	4.24	66.20	15.81		150.0	
10533-AAB	IEEE 802.11ac WiFi (20MHz, MCS8, 99pc duty cycle)	X	4.29	66.80	16.28	0.00	150.0	± 9.6 %
		Y	4.29	65.97	15.64		150.0	
		Z	4.40	66.39	15.90		150.0	
10534-AAB	IEEE 802.11ac WiFi (40MHz, MCS0, 99pc duty cycle)	X	4.86	66.53	16.31	0.00	150.0	± 9.6 %
		Y	4.88	65.98	15.79		150.0	
		Z	4.95	66.32	15.97		150.0	
10535-AAB	IEEE 802.11ac WiFi (40MHz, MCS1, 99pc duty cycle)	X	4.89	66.65	16.37	0.00	150.0	± 9.6 %
		Y	4.91	66.10	15.85		150.0	
		Z	5.00	66.46	16.03		150.0	
10536-AAB	IEEE 802.11ac WiFi (40MHz, MCS2, 99pc duty cycle)	X	4.79	66.64	16.34	0.00	150.0	± 9.6 %
		Y	4.80	66.08	15.81		150.0	
		Z	4.89	66.46	16.01		150.0	
10537-AAB	IEEE 802.11ac WiFi (40MHz, MCS3, 99pc duty cycle)	X	4.88	66.74	16.39	0.00	150.0	± 9.6 %
		Y	4.88	66.12	15.83		150.0	
		Z	4.95	66.44	16.00		150.0	
10538-AAB	IEEE 802.11ac WiFi (40MHz, MCS4, 99pc duty cycle)	X	4.91	66.59	16.35	0.00	150.0	± 9.6 %
		Y	4.94	66.07	15.85		150.0	
		Z	5.01	66.41	16.03		150.0	
10540-AAB	IEEE 802.11ac WiFi (40MHz, MCS6, 99pc duty cycle)	X	4.85	66.55	16.35	0.00	150.0	± 9.6 %
		Y	4.86	66.01	15.84		150.0	
		Z	4.94	66.38	16.03		150.0	

10541-AAB	IEEE 802.11ac WiFi (40MHz, MCS7, 99pc duty cycle)	X	4.84	66.50	16.30	0.00	150.0	± 9.6 %
		Y	4.85	65.93	15.78		150.0	
		Z	4.93	66.29	15.97		150.0	
10542-AAB	IEEE 802.11ac WiFi (40MHz, MCS8, 99pc duty cycle)	X	4.98	66.58	16.36	0.00	150.0	± 9.6 %
		Y	5.01	66.06	15.86		150.0	
		Z	5.08	66.39	16.04		150.0	
10543-AAB	IEEE 802.11ac WiFi (40MHz, MCS9, 99pc duty cycle)	X	5.07	66.72	16.46	0.00	150.0	± 9.6 %
		Y	5.09	66.19	15.96		150.0	
		Z	5.15	66.45	16.09		150.0	
10544-AAB	IEEE 802.11ac WiFi (80MHz, MCS0, 99pc duty cycle)	X	5.23	66.52	16.26	0.00	150.0	± 9.6 %
		Y	5.23	66.08	15.80		150.0	
		Z	5.29	66.42	15.97		150.0	
10545-AAB	IEEE 802.11ac WiFi (80MHz, MCS1, 99pc duty cycle)	X	5.42	67.07	16.51	0.00	150.0	± 9.6 %
		Y	5.42	66.57	16.01		150.0	
		Z	5.47	66.84	16.14		150.0	
10546-AAB	IEEE 802.11ac WiFi (80MHz, MCS2, 99pc duty cycle)	X	5.25	66.63	16.29	0.00	150.0	± 9.6 %
		Y	5.26	66.19	15.83		150.0	
		Z	5.33	66.54	16.00		150.0	
10547-AAB	IEEE 802.11ac WiFi (80MHz, MCS3, 99pc duty cycle)	X	5.40	66.98	16.47	0.00	150.0	± 9.6 %
		Y	5.36	66.37	15.91		150.0	
		Z	5.40	66.64	16.04		150.0	
10548-AAB	IEEE 802.11ac WiFi (80MHz, MCS4, 99pc duty cycle)	X	5.46	67.37	16.64	0.00	150.0	± 9.6 %
		Y	5.49	66.97	16.19		150.0	
		Z	5.55	67.26	16.33		150.0	
10550-AAB	IEEE 802.11ac WiFi (80MHz, MCS6, 99pc duty cycle)	X	5.39	67.12	16.55	0.00	150.0	± 9.6 %
		Y	5.34	66.47	15.98		150.0	
		Z	5.38	66.70	16.09		150.0	
10551-AAB	IEEE 802.11ac WiFi (80MHz, MCS7, 99pc duty cycle)	X	5.22	66.55	16.23	0.00	150.0	± 9.6 %
		Y	5.25	66.14	15.78		150.0	
		Z	5.32	66.52	15.96		150.0	
10552-AAB	IEEE 802.11ac WiFi (80MHz, MCS8, 99pc duty cycle)	X	5.23	66.67	16.28	0.00	150.0	± 9.6 %
		Y	5.24	66.18	15.80		150.0	
		Z	5.30	66.53	15.97		150.0	
10553-AAB	IEEE 802.11ac WiFi (80MHz, MCS9, 99pc duty cycle)	X	5.27	66.57	16.26	0.00	150.0	± 9.6 %
		Y	5.29	66.14	15.81		150.0	
		Z	5.36	66.48	15.98		150.0	
10554-AAC	IEEE 802.11ac WiFi (160MHz, MCS0, 99pc duty cycle)	X	5.67	66.83	16.33	0.00	150.0	± 9.6 %
		Y	5.66	66.44	15.91		150.0	
		Z	5.71	66.75	16.05		150.0	
10555-AAC	IEEE 802.11ac WiFi (160MHz, MCS1, 99pc duty cycle)	X	5.75	67.04	16.43	0.00	150.0	± 9.6 %
		Y	5.76	66.67	16.01		150.0	
		Z	5.81	66.99	16.15		150.0	
10556-AAC	IEEE 802.11ac WiFi (160MHz, MCS2, 99pc duty cycle)	X	5.82	67.26	16.53	0.00	150.0	± 9.6 %
		Y	5.80	66.81	16.07		150.0	
		Z	5.84	67.08	16.19		150.0	
10557-AAC	IEEE 802.11ac WiFi (160MHz, MCS3, 99pc duty cycle)	X	5.74	67.02	16.42	0.00	150.0	± 9.6 %
		Y	5.74	66.64	16.00		150.0	
		Z	5.80	66.96	16.15		150.0	

10558-AAC	IEEE 802.11ac WiFi (160MHz, MCS4, 99pc duty cycle)	X	5.72	66.97	16.42	0.00	150.0	± 9.6 %
		Y	5.74	66.66	16.03		150.0	
		Z	5.82	67.04	16.20		150.0	
10560-AAC	IEEE 802.11ac WiFi (160MHz, MCS6, 99pc duty cycle)	X	5.75	66.95	16.44	0.00	150.0	± 9.6 %
		Y	5.77	66.62	16.04		150.0	
		Z	5.83	66.96	16.20		150.0	
10561-AAC	IEEE 802.11ac WiFi (160MHz, MCS7, 99pc duty cycle)	X	5.69	66.96	16.48	0.00	150.0	± 9.6 %
		Y	5.71	66.62	16.07		150.0	
		Z	5.76	66.94	16.22		150.0	
10562-AAC	IEEE 802.11ac WiFi (160MHz, MCS8, 99pc duty cycle)	X	5.73	67.07	16.54	0.00	150.0	± 9.6 %
		Y	5.75	66.74	16.14		150.0	
		Z	5.82	67.12	16.31		150.0	
10563-AAC	IEEE 802.11ac WiFi (160MHz, MCS9, 99pc duty cycle)	X	5.85	67.14	16.54	0.00	150.0	± 9.6 %
		Y	5.87	66.79	16.13		150.0	
		Z	5.91	67.06	16.25		150.0	
10564-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 9 Mbps, 99pc duty cycle)	X	4.57	67.17	16.61	0.46	150.0	± 9.6 %
		Y	4.59	66.49	16.05		150.0	
		Z	4.67	66.83	16.27		150.0	
10565-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 12 Mbps, 99pc duty cycle)	X	4.74	67.55	16.90	0.46	150.0	± 9.6 %
		Y	4.78	66.90	16.38		150.0	
		Z	4.87	67.23	16.58		150.0	
10566-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 18 Mbps, 99pc duty cycle)	X	4.59	67.37	16.72	0.46	150.0	± 9.6 %
		Y	4.62	66.70	16.17		150.0	
		Z	4.71	67.05	16.39		150.0	
10567-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 24 Mbps, 99pc duty cycle)	X	4.62	67.76	17.09	0.46	150.0	± 9.6 %
		Y	4.65	67.09	16.54		150.0	
		Z	4.74	67.43	16.75		150.0	
10568-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 36 Mbps, 99pc duty cycle)	X	4.46	67.03	16.42	0.46	150.0	± 9.6 %
		Y	4.51	66.42	15.90		150.0	
		Z	4.61	66.81	16.14		150.0	
10569-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 48 Mbps, 99pc duty cycle)	X	4.63	68.10	17.29	0.46	150.0	± 9.6 %
		Y	4.63	67.31	16.68		150.0	
		Z	4.72	67.64	16.87		150.0	
10570-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 54 Mbps, 99pc duty cycle)	X	4.60	67.79	17.13	0.46	150.0	± 9.6 %
		Y	4.64	67.10	16.57		150.0	
		Z	4.73	67.44	16.77		150.0	
10571-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps, 90pc duty cycle)	X	1.13	65.55	16.59	0.46	130.0	± 9.6 %
		Y	1.02	62.57	14.13		130.0	
		Z	1.09	63.87	15.18		130.0	
10572-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 2 Mbps, 90pc duty cycle)	X	1.14	66.28	17.05	0.46	130.0	± 9.6 %
		Y	1.02	62.97	14.40		130.0	
		Z	1.10	64.37	15.52		130.0	
10573-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 5.5 Mbps, 90pc duty cycle)	X	100.00	160.36	43.84	0.46	130.0	± 9.6 %
		Y	0.72	69.89	16.37		130.0	
		Z	1.32	80.40	21.60		130.0	
10574-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 11 Mbps, 90pc duty cycle)	X	1.39	74.93	21.47	0.46	130.0	± 9.6 %
		Y	0.97	66.41	16.28		130.0	
		Z	1.14	69.27	18.15		130.0	

10575-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps, 90pc duty cycle)	X	4.35	66.98	16.66	0.46	130.0	± 9.6 %
		Y	4.37	66.25	16.07		130.0	
		Z	4.45	66.60	16.31		130.0	
10576-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 9 Mbps, 90pc duty cycle)	X	4.39	67.23	16.77	0.46	130.0	± 9.6 %
		Y	4.40	66.45	16.16		130.0	
		Z	4.48	66.79	16.39		130.0	
10577-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 12 Mbps, 90pc duty cycle)	X	4.53	67.43	16.90	0.46	130.0	± 9.6 %
		Y	4.55	66.69	16.31		130.0	
		Z	4.65	67.03	16.53		130.0	
10578-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 18 Mbps, 90pc duty cycle)	X	4.44	67.57	17.01	0.46	130.0	± 9.6 %
		Y	4.46	66.81	16.41		130.0	
		Z	4.55	67.16	16.63		130.0	
10579-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 24 Mbps, 90pc duty cycle)	X	4.19	66.71	16.24	0.46	130.0	± 9.6 %
		Y	4.21	65.98	15.64		130.0	
		Z	4.31	66.39	15.91		130.0	
10580-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 36 Mbps, 90pc duty cycle)	X	4.21	66.71	16.23	0.46	130.0	± 9.6 %
		Y	4.24	66.03	15.66		130.0	
		Z	4.35	66.45	15.94		130.0	
10581-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 48 Mbps, 90pc duty cycle)	X	4.37	67.75	17.05	0.46	130.0	± 9.6 %
		Y	4.37	66.88	16.38		130.0	
		Z	4.46	67.24	16.60		130.0	
10582-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 54 Mbps, 90pc duty cycle)	X	4.11	66.49	16.03	0.46	130.0	± 9.6 %
		Y	4.14	65.75	15.42		130.0	
		Z	4.24	66.16	15.70		130.0	
10583-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps, 90pc duty cycle)	X	4.35	66.98	16.66	0.46	130.0	± 9.6 %
		Y	4.37	66.25	16.07		130.0	
		Z	4.45	66.60	16.31		130.0	
10584-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 9 Mbps, 90pc duty cycle)	X	4.39	67.23	16.77	0.46	130.0	± 9.6 %
		Y	4.40	66.45	16.16		130.0	
		Z	4.48	66.79	16.39		130.0	
10585-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 12 Mbps, 90pc duty cycle)	X	4.53	67.43	16.90	0.46	130.0	± 9.6 %
		Y	4.55	66.69	16.31		130.0	
		Z	4.65	67.03	16.53		130.0	
10586-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 18 Mbps, 90pc duty cycle)	X	4.44	67.57	17.01	0.46	130.0	± 9.6 %
		Y	4.46	66.81	16.41		130.0	
		Z	4.55	67.16	16.63		130.0	
10587-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 24 Mbps, 90pc duty cycle)	X	4.19	66.71	16.24	0.46	130.0	± 9.6 %
		Y	4.21	65.98	15.64		130.0	
		Z	4.31	66.39	15.91		130.0	
10588-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 36 Mbps, 90pc duty cycle)	X	4.21	66.71	16.23	0.46	130.0	± 9.6 %
		Y	4.24	66.03	15.66		130.0	
		Z	4.35	66.45	15.94		130.0	
10589-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 48 Mbps, 90pc duty cycle)	X	4.37	67.75	17.05	0.46	130.0	± 9.6 %
		Y	4.37	66.88	16.38		130.0	
		Z	4.46	67.24	16.60		130.0	
10590-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 54 Mbps, 90pc duty cycle)	X	4.11	66.49	16.03	0.46	130.0	± 9.6 %
		Y	4.14	65.75	15.42		130.0	
		Z	4.24	66.16	15.70		130.0	

10591-AAB	IEEE 802.11n (HT Mixed, 20MHz, MCS0, 90pc duty cycle)	X	4.51	67.07	16.79	0.46	130.0	± 9.6 %
		Y	4.53	66.37	16.22		130.0	
		Z	4.61	66.68	16.43		130.0	
10592-AAB	IEEE 802.11n (HT Mixed, 20MHz, MCS1, 90pc duty cycle)	X	4.61	67.33	16.91	0.46	130.0	± 9.6 %
		Y	4.64	66.64	16.34		130.0	
		Z	4.73	66.98	16.55		130.0	
10593-AAB	IEEE 802.11n (HT Mixed, 20MHz, MCS2, 90pc duty cycle)	X	4.53	67.22	16.77	0.46	130.0	± 9.6 %
		Y	4.56	66.51	16.19		130.0	
		Z	4.65	66.86	16.41		130.0	
10594-AAB	IEEE 802.11n (HT Mixed, 20MHz, MCS3, 90pc duty cycle)	X	4.59	67.39	16.94	0.46	130.0	± 9.6 %
		Y	4.61	66.69	16.36		130.0	
		Z	4.70	67.03	16.57		130.0	
10595-AAB	IEEE 802.11n (HT Mixed, 20MHz, MCS4, 90pc duty cycle)	X	4.55	67.39	16.86	0.46	130.0	± 9.6 %
		Y	4.58	66.66	16.27		130.0	
		Z	4.67	67.01	16.48		130.0	
10596-AAB	IEEE 802.11n (HT Mixed, 20MHz, MCS5, 90pc duty cycle)	X	4.48	67.33	16.84	0.46	130.0	± 9.6 %
		Y	4.51	66.61	16.25		130.0	
		Z	4.60	66.98	16.48		130.0	
10597-AAB	IEEE 802.11n (HT Mixed, 20MHz, MCS6, 90pc duty cycle)	X	4.44	67.19	16.68	0.46	130.0	± 9.6 %
		Y	4.46	66.47	16.09		130.0	
		Z	4.55	66.85	16.33		130.0	
10598-AAB	IEEE 802.11n (HT Mixed, 20MHz, MCS7, 90pc duty cycle)	X	4.44	67.44	16.96	0.46	130.0	± 9.6 %
		Y	4.45	66.70	16.36		130.0	
		Z	4.54	67.07	16.59		130.0	
10599-AAB	IEEE 802.11n (HT Mixed, 40MHz, MCS0, 90pc duty cycle)	X	5.25	67.58	17.13	0.46	130.0	± 9.6 %
		Y	5.24	66.95	16.56		130.0	
		Z	5.29	67.14	16.66		130.0	
10600-AAB	IEEE 802.11n (HT Mixed, 40MHz, MCS1, 90pc duty cycle)	X	5.34	67.95	17.30	0.46	130.0	± 9.6 %
		Y	5.36	67.36	16.74		130.0	
		Z	5.38	67.49	16.81		130.0	
10601-AAB	IEEE 802.11n (HT Mixed, 40MHz, MCS2, 90pc duty cycle)	X	5.27	67.81	17.24	0.46	130.0	± 9.6 %
		Y	5.25	67.09	16.62		130.0	
		Z	5.29	67.28	16.72		130.0	
10602-AAB	IEEE 802.11n (HT Mixed, 40MHz, MCS3, 90pc duty cycle)	X	5.32	67.68	17.09	0.46	130.0	± 9.6 %
		Y	5.35	67.17	16.58		130.0	
		Z	5.40	67.38	16.69		130.0	
10603-AAB	IEEE 802.11n (HT Mixed, 40MHz, MCS4, 90pc duty cycle)	X	5.33	67.78	17.28	0.46	130.0	± 9.6 %
		Y	5.40	67.40	16.84		130.0	
		Z	5.46	67.65	16.96		130.0	
10604-AAB	IEEE 802.11n (HT Mixed, 40MHz, MCS5, 90pc duty cycle)	X	5.20	67.32	17.02	0.46	130.0	± 9.6 %
		Y	5.27	66.98	16.60		130.0	
		Z	5.35	67.32	16.78		130.0	
10605-AAB	IEEE 802.11n (HT Mixed, 40MHz, MCS6, 90pc duty cycle)	X	5.29	67.63	17.19	0.46	130.0	± 9.6 %
		Y	5.33	67.16	16.69		130.0	
		Z	5.38	67.39	16.82		130.0	
10606-AAB	IEEE 802.11n (HT Mixed, 40MHz, MCS7, 90pc duty cycle)	X	5.14	67.30	16.87	0.46	130.0	± 9.6 %
		Y	5.12	66.62	16.27		130.0	
		Z	5.16	66.82	16.38		130.0	

10607-AAB	IEEE 802.11ac WiFi (20MHz, MCS0, 90pc duty cycle)	X	4.38	66.48	16.48	0.46	130.0	± 9.6 %
		Y	4.37	65.68	15.84		130.0	
		Z	4.46	66.03	16.07		130.0	
10608-AAB	IEEE 802.11ac WiFi (20MHz, MCS1, 90pc duty cycle)	X	4.49	66.76	16.61	0.46	130.0	± 9.6 %
		Y	4.50	65.99	15.98		130.0	
		Z	4.60	66.37	16.22		130.0	
10609-AAB	IEEE 802.11ac WiFi (20MHz, MCS2, 90pc duty cycle)	X	4.40	66.61	16.43	0.46	130.0	± 9.6 %
		Y	4.40	65.81	15.80		130.0	
		Z	4.50	66.21	16.04		130.0	
10610-AAB	IEEE 802.11ac WiFi (20MHz, MCS3, 90pc duty cycle)	X	4.45	66.79	16.61	0.46	130.0	± 9.6 %
		Y	4.45	65.98	15.97		130.0	
		Z	4.55	66.37	16.21		130.0	
10611-AAB	IEEE 802.11ac WiFi (20MHz, MCS4, 90pc duty cycle)	X	4.36	66.56	16.44	0.46	130.0	± 9.6 %
		Y	4.36	65.77	15.81		130.0	
		Z	4.46	66.17	16.06		130.0	
10612-AAB	IEEE 802.11ac WiFi (20MHz, MCS5, 90pc duty cycle)	X	4.33	66.68	16.48	0.46	130.0	± 9.6 %
		Y	4.35	65.88	15.84		130.0	
		Z	4.45	66.30	16.10		130.0	
10613-AAB	IEEE 802.11ac WiFi (20MHz, MCS6, 90pc duty cycle)	X	4.33	66.47	16.31	0.46	130.0	± 9.6 %
		Y	4.34	65.70	15.68		130.0	
		Z	4.45	66.12	15.94		130.0	
10614-AAB	IEEE 802.11ac WiFi (20MHz, MCS7, 90pc duty cycle)	X	4.31	66.72	16.57	0.46	130.0	± 9.6 %
		Y	4.31	65.92	15.93		130.0	
		Z	4.41	66.33	16.19		130.0	
10615-AAB	IEEE 802.11ac WiFi (20MHz, MCS8, 90pc duty cycle)	X	4.35	66.43	16.22	0.46	130.0	± 9.6 %
		Y	4.35	65.61	15.57		130.0	
		Z	4.46	66.02	15.84		130.0	
10616-AAB	IEEE 802.11ac WiFi (40MHz, MCS0, 90pc duty cycle)	X	5.02	66.60	16.62	0.46	130.0	± 9.6 %
		Y	5.03	66.05	16.09		130.0	
		Z	5.10	66.36	16.25		130.0	
10617-AAB	IEEE 802.11ac WiFi (40MHz, MCS1, 90pc duty cycle)	X	5.05	66.72	16.67	0.46	130.0	± 9.6 %
		Y	5.07	66.17	16.13		130.0	
		Z	5.14	66.50	16.30		130.0	
10618-AAB	IEEE 802.11ac WiFi (40MHz, MCS2, 90pc duty cycle)	X	4.96	66.75	16.69	0.46	130.0	± 9.6 %
		Y	4.97	66.21	16.16		130.0	
		Z	5.05	66.56	16.35		130.0	
10619-AAB	IEEE 802.11ac WiFi (40MHz, MCS3, 90pc duty cycle)	X	5.03	66.77	16.64	0.46	130.0	± 9.6 %
		Y	5.01	66.10	16.04		130.0	
		Z	5.07	66.37	16.19		130.0	
10620-AAB	IEEE 802.11ac WiFi (40MHz, MCS4, 90pc duty cycle)	X	5.04	66.57	16.58	0.46	130.0	± 9.6 %
		Y	5.07	66.08	16.08		130.0	
		Z	5.14	66.38	16.24		130.0	
10621-AAB	IEEE 802.11ac WiFi (40MHz, MCS5, 90pc duty cycle)	X	5.05	66.67	16.75	0.46	130.0	± 9.6 %
		Y	5.07	66.16	16.24		130.0	
		Z	5.15	66.49	16.41		130.0	
10622-AAB	IEEE 802.11ac WiFi (40MHz, MCS6, 90pc duty cycle)	X	5.05	66.78	16.81	0.46	130.0	± 9.6 %
		Y	5.06	66.25	16.29		130.0	
		Z	5.14	66.58	16.45		130.0	

10623-AAB	IEEE 802.11ac WiFi (40MHz, MCS7, 90pc duty cycle)	X	4.96	66.41	16.48	0.46	130.0	± 9.6 %
		Y	4.96	65.81	15.92		130.0	
		Z	5.03	66.14	16.10		130.0	
10624-AAB	IEEE 802.11ac WiFi (40MHz, MCS8, 90pc duty cycle)	X	5.14	66.62	16.65	0.46	130.0	± 9.6 %
		Y	5.16	66.09	16.13		130.0	
		Z	5.23	66.40	16.29		130.0	
10625-AAB	IEEE 802.11ac WiFi (40MHz, MCS9, 90pc duty cycle)	X	5.23	66.81	16.81	0.46	130.0	± 9.6 %
		Y	5.24	66.23	16.27		130.0	
		Z	5.33	66.59	16.45		130.0	
10626-AAB	IEEE 802.11ac WiFi (80MHz, MCS0, 90pc duty cycle)	X	5.37	66.54	16.54	0.46	130.0	± 9.6 %
		Y	5.37	66.08	16.06		130.0	
		Z	5.43	66.40	16.21		130.0	
10627-AAB	IEEE 802.11ac WiFi (80MHz, MCS1, 90pc duty cycle)	X	5.62	67.27	16.89	0.46	130.0	± 9.6 %
		Y	5.62	66.78	16.39		130.0	
		Z	5.65	66.98	16.48		130.0	
10628-AAB	IEEE 802.11ac WiFi (80MHz, MCS2, 90pc duty cycle)	X	5.36	66.51	16.44	0.46	130.0	± 9.6 %
		Y	5.36	66.07	15.95		130.0	
		Z	5.42	66.39	16.11		130.0	
10629-AAB	IEEE 802.11ac WiFi (80MHz, MCS3, 90pc duty cycle)	X	5.56	67.07	16.72	0.46	130.0	± 9.6 %
		Y	5.49	66.34	16.09		130.0	
		Z	5.52	66.54	16.19		130.0	
10630-AAB	IEEE 802.11ac WiFi (80MHz, MCS4, 90pc duty cycle)	X	5.66	67.55	16.97	0.46	130.0	± 9.6 %
		Y	5.72	67.24	16.55		130.0	
		Z	5.76	67.49	16.67		130.0	
10631-AAB	IEEE 802.11ac WiFi (80MHz, MCS5, 90pc duty cycle)	X	5.63	67.57	17.15	0.46	130.0	± 9.6 %
		Y	5.67	67.19	16.71		130.0	
		Z	5.73	67.50	16.85		130.0	
10632-AAB	IEEE 802.11ac WiFi (80MHz, MCS6, 90pc duty cycle)	X	5.69	67.71	17.24	0.46	130.0	± 9.6 %
		Y	5.63	66.98	16.63		130.0	
		Z	5.64	67.12	16.68		130.0	
10633-AAB	IEEE 802.11ac WiFi (80MHz, MCS7, 90pc duty cycle)	X	5.36	66.53	16.48	0.46	130.0	± 9.6 %
		Y	5.38	66.12	16.02		130.0	
		Z	5.47	66.52	16.21		130.0	
10634-AAB	IEEE 802.11ac WiFi (80MHz, MCS8, 90pc duty cycle)	X	5.40	66.78	16.65	0.46	130.0	± 9.6 %
		Y	5.41	66.32	16.17		130.0	
		Z	5.48	66.65	16.33		130.0	
10635-AAB	IEEE 802.11ac WiFi (80MHz, MCS9, 90pc duty cycle)	X	5.26	66.02	16.01	0.46	130.0	± 9.6 %
		Y	5.27	65.59	15.53		130.0	
		Z	5.34	65.94	15.71		130.0	
10636-AAC	IEEE 802.11ac WiFi (160MHz, MCS0, 90pc duty cycle)	X	5.83	66.88	16.62	0.46	130.0	± 9.6 %
		Y	5.82	66.47	16.18		130.0	
		Z	5.86	66.75	16.30		130.0	
10637-AAC	IEEE 802.11ac WiFi (160MHz, MCS1, 90pc duty cycle)	X	5.94	67.19	16.77	0.46	130.0	± 9.6 %
		Y	5.94	66.79	16.33		130.0	
		Z	5.98	67.06	16.44		130.0	
10638-AAC	IEEE 802.11ac WiFi (160MHz, MCS2, 90pc duty cycle)	X	6.01	67.39	16.85	0.46	130.0	± 9.6 %
		Y	5.96	66.85	16.33		130.0	
		Z	6.00	67.11	16.45		130.0	

10639-AAC	IEEE 802.11ac WiFi (160MHz, MCS3, 90pc duty cycle)	X	5.91	67.09	16.74	0.46	130.0	± 9.6 %
		Y	5.91	66.70	16.30		130.0	
		Z	5.96	67.00	16.43		130.0	
10640-AAC	IEEE 802.11ac WiFi (160MHz, MCS4, 90pc duty cycle)	X	5.83	66.88	16.58	0.46	130.0	± 9.6 %
		Y	5.86	66.56	16.17		130.0	
		Z	5.93	66.93	16.34		130.0	
10641-AAC	IEEE 802.11ac WiFi (160MHz, MCS5, 90pc duty cycle)	X	5.99	67.15	16.74	0.46	130.0	± 9.6 %
		Y	5.98	66.73	16.28		130.0	
		Z	6.02	66.98	16.39		130.0	
10642-AAC	IEEE 802.11ac WiFi (160MHz, MCS6, 90pc duty cycle)	X	5.96	67.18	16.91	0.46	130.0	± 9.6 %
		Y	5.99	66.86	16.51		130.0	
		Z	6.04	67.17	16.64		130.0	
10643-AAC	IEEE 802.11ac WiFi (160MHz, MCS7, 90pc duty cycle)	X	5.82	66.90	16.67	0.46	130.0	± 9.6 %
		Y	5.84	66.57	16.25		130.0	
		Z	5.89	66.88	16.40		130.0	
10644-AAC	IEEE 802.11ac WiFi (160MHz, MCS8, 90pc duty cycle)	X	5.87	67.05	16.76	0.46	130.0	± 9.6 %
		Y	5.88	66.71	16.35		130.0	
		Z	5.96	67.09	16.52		130.0	
10645-AAC	IEEE 802.11ac WiFi (160MHz, MCS9, 90pc duty cycle)	X	6.02	67.22	16.81	0.46	130.0	± 9.6 %
		Y	6.06	66.92	16.42		130.0	
		Z	6.08	67.13	16.51		130.0	
10646-AAE	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, QPSK, UL Subframe=2,7)	X	7.45	98.05	36.37	9.30	60.0	± 9.6 %
		Y	5.70	87.94	31.48		60.0	
		Z	10.68	104.19	37.43		60.0	
10647-AAE	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK, UL Subframe=2,7)	X	6.28	94.10	35.07	9.30	60.0	± 9.6 %
		Y	5.09	85.56	30.67		60.0	
		Z	8.75	99.75	36.06		60.0	
10648-AAA	CDMA2000 (1x Advanced)	X	0.35	60.00	5.99	0.00	150.0	± 9.6 %
		Y	0.42	60.00	6.66		150.0	
		Z	0.51	61.64	8.47		150.0	
10652-AAC	LTE-TDD (OFDMA, 5 MHz, E-TM 3.1, Clipping 44%)	X	3.43	68.40	17.05	2.23	80.0	± 9.6 %
		Y	3.04	65.40	15.46		80.0	
		Z	3.29	66.60	16.23		80.0	
10653-AAC	LTE-TDD (OFDMA, 10 MHz, E-TM 3.1, Clipping 44%)	X	3.85	66.81	17.07	2.23	80.0	± 9.6 %
		Y	3.63	65.00	15.94		80.0	
		Z	3.82	65.84	16.44		80.0	
10654-AAC	LTE-TDD (OFDMA, 15 MHz, E-TM 3.1, Clipping 44%)	X	3.86	66.20	17.05	2.23	80.0	± 9.6 %
		Y	3.67	64.66	16.00		80.0	
		Z	3.83	65.44	16.46		80.0	
10655-AAD	LTE-TDD (OFDMA, 20 MHz, E-TM 3.1, Clipping 44%)	X	3.94	66.00	17.05	2.23	80.0	± 9.6 %
		Y	3.75	64.59	16.05		80.0	
		Z	3.91	65.37	16.49		80.0	
10658-AAA	Pulse Waveform (200Hz, 10%)	X	100.00	108.27	24.21	10.00	50.0	± 9.6 %
		Y	20.54	89.19	19.09		50.0	
		Z	100.00	106.85	23.58		50.0	
10659-AAA	Pulse Waveform (200Hz, 20%)	X	100.00	109.79	23.79	6.99	60.0	± 9.6 %
		Y	100.00	105.04	21.61		60.0	
		Z	100.00	107.25	22.69		60.0	

10660-AAA	Pulse Waveform (200Hz, 40%)	X	100.00	116.02	25.06	3.98	80.0	± 9.6 %
		Y	100.00	103.57	19.60		80.0	
		Z	100.00	110.44	22.79		80.0	
10661-AAA	Pulse Waveform (200Hz, 60%)	X	100.00	127.15	28.10	2.22	100.0	± 9.6 %
		Y	100.00	96.83	15.82		100.0	
		Z	100.00	114.65	23.34		100.0	
10662-AAA	Pulse Waveform (200Hz, 80%)	X	99.99	357.35	106.97	0.97	120.0	± 9.6 %
		Y	0.15	60.00	2.92		120.0	
		Z	100.00	114.05	21.55		120.0	

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

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

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

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

Accreditation No.: SCS 0108

Client PC Test

Certificate No: EX3-7420_Sep18/2

CALIBRATION CERTIFICATE (Replacement of No: EX3-7420_Sep18)

Object: EX3DV4 - SN:7420

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

SCJ
9/21/2018

Calibration date: September 18, 2018

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NRP	SN: 104778	04-Apr-18 (No. 217-02672/02673)	Apr-19
Power sensor NRP-Z91	SN: 103244	04-Apr-18 (No. 217-02672)	Apr-19
Power sensor NRP-Z91	SN: 103245	04-Apr-18 (No. 217-02673)	Apr-19
Reference 20 dB Attenuator	SN: S5277 (20x)	04-Apr-18 (No. 217-02682)	Apr-19
Reference Probe ES3DV2	SN: 3013	30-Dec-17 (No. ES3-3013_Dec17)	Dec-18
DAE4	SN: 660	21-Dec-17 (No. DAE4-660_Dec17)	Dec-18
Secondary Standards	ID	Check Date (in house)	Scheduled Check
Power meter E4419B	SN: GB41293874	06-Apr-16 (in house check Jun-18)	In house check: Jun-20
Power sensor E4412A	SN: MY41498087	06-Apr-16 (in house check Jun-18)	In house check: Jun-20
Power sensor E4412A	SN: 000110210	06-Apr-16 (in house check Jun-18)	In house check: Jun-20
RF generator HP 8648C	SN: US3642U01700	04-Aug-99 (in house check Jun-18)	In house check: Jun-20
Network Analyzer E8358A	SN: US41080477	31-Mar-14 (in house check Oct-17)	In house check: Oct-18

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

Issued: November 1, 2018

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

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

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

Accreditation No.: SCS 0108

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, ", "Measurement procedure for the assessment of Specific Absorption Rate (SAR) from hand-held and body-mounted devices used next to the ear (frequency range of 300 MHz to 6 GHz)", July 2016
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:7420

Manufactured: March 10, 2016
Calibrated: September 18, 2018

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

DASY/EASY - Parameters of Probe: EX3DV4 - SN:7420

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu V/(V/m)^2$)[A]	0.49	0.54	0.60	± 10.1 %
DCP (mV)[B]	100.0	95.0	92.8	

Modulation Calibration Parameters

UID	Communication System Name		A dB	B dB√μV	C	D dB	VR mV	Unc[E] (k=2)
0	CW	X	0.0	0.0	1.0	0.00	142.4	±3.0 %
		Y	0.0	0.0	1.0		149.4	
		Z	0.0	0.0	1.0		150.8	

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	43.36	323.2	35.50	10.05	0.115	5.063	1.86	0.167	1.006
Y	39.77	309.9	38.23	6.054	0.047	5.084	0.00	0.466	1.008
Z	27.72	219.5	39.73	8.921	0.303	5.100	0.00	0.261	1.008

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

[A] The uncertainties of Norm X,Y,Z do not affect the E^2-field uncertainty inside TSL (see Pages 5 and 6).
[B] Numerical linearization parameter: uncertainty not required.
[E] Uncertainty is determined using the max. deviation from linear response applying rectangular distribution and is expressed for the square of the field value.

DASY/EASY - Parameters of Probe: EX3DV4 - SN:7420

Calibration Parameter Determined in Head Tissue Simulating Media

f (MHz) [C]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha [G]	Depth [G] (mm)	Unc (k=2)
750	41.9	0.89	10.01	10.01	10.01	0.34	1.05	± 12.0 %
835	41.5	0.90	9.68	9.68	9.68	0.27	1.10	± 12.0 %
1750	40.1	1.37	8.43	8.43	8.43	0.37	0.84	± 12.0 %
1900	40.0	1.40	8.16	8.16	8.16	0.32	0.84	± 12.0 %
2300	39.5	1.67	7.67	7.67	7.67	0.33	0.84	± 12.0 %
2450	39.2	1.80	7.19	7.19	7.19	0.30	0.92	± 12.0 %
2600	39.0	1.96	7.11	7.11	7.11	0.35	0.86	± 12.0 %
5250	35.9	4.71	5.19	5.19	5.19	0.40	1.80	± 13.1 %
5600	35.5	5.07	4.70	4.70	4.70	0.40	1.80	± 13.1 %
5750	35.4	5.22	4.80	4.80	4.80	0.40	1.80	± 13.1 %

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

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

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

DASY/EASY - Parameters of Probe: EX3DV4 - SN:7420

Calibration Parameter Determined in Body Tissue Simulating Media

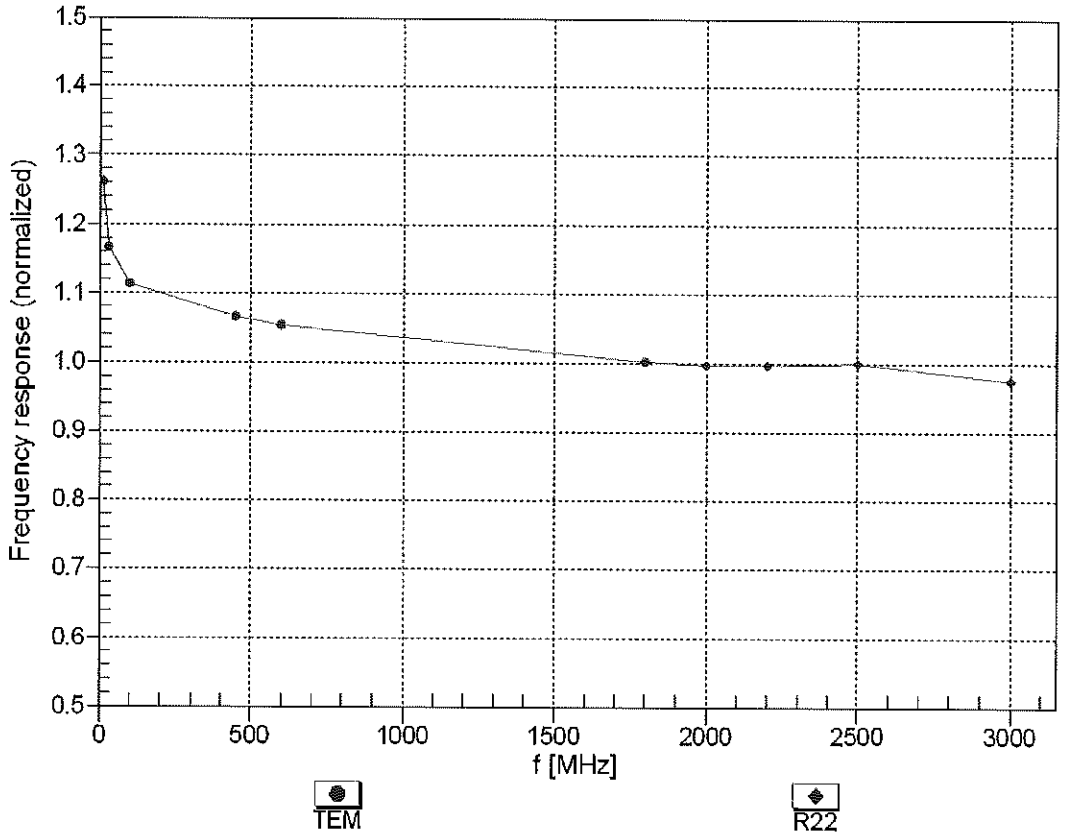
f (MHz) [C]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha [G]	Depth [G] (mm)	Unc (k=2)
750	55.5	0.96	9.71	9.71	9.71	0.35	0.95	± 12.0 %
835	55.2	0.97	9.61	9.61	9.61	0.51	0.81	± 12.0 %
1750	53.4	1.49	8.03	8.03	8.03	0.37	0.85	± 12.0 %
1900	53.3	1.52	7.70	7.70	7.70	0.39	0.84	± 12.0 %
2300	52.9	1.81	7.48	7.48	7.48	0.38	0.84	± 12.0 %
2450	52.7	1.95	7.34	7.34	7.34	0.32	0.88	± 12.0 %
2600	52.5	2.16	7.22	7.22	7.22	0.30	0.88	± 12.0 %
5250	48.9	5.36	4.79	4.79	4.79	0.50	1.90	± 13.1 %
5600	48.5	5.77	4.08	4.08	4.08	0.50	1.90	± 13.1 %
5750	48.3	5.94	4.36	4.36	4.36	0.50	1.90	± 13.1 %

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

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

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

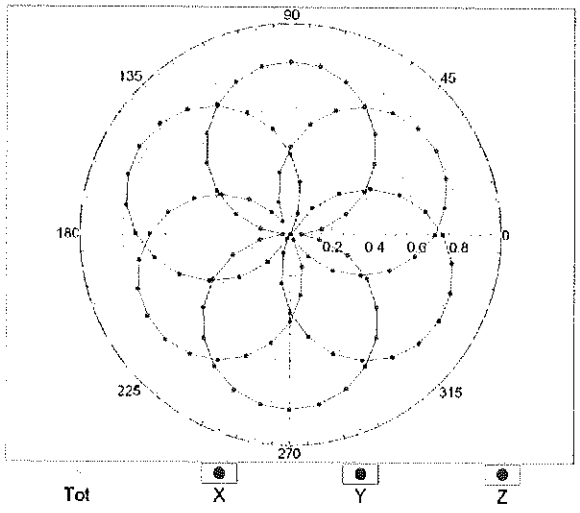
Frequency Response of E-Field
(TEM-Cell:ifi110 EXX, Waveguide: R22)



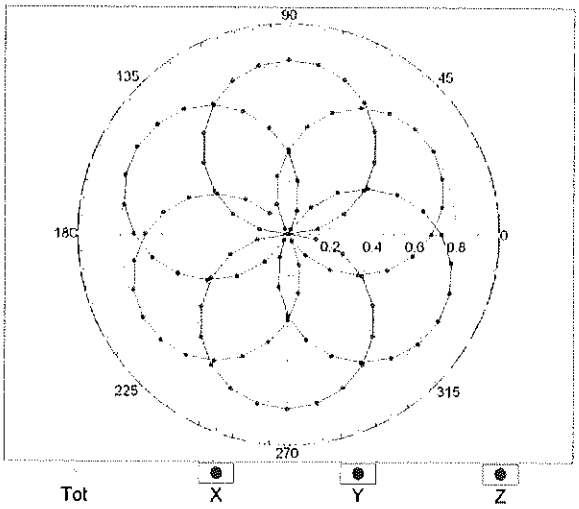
Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

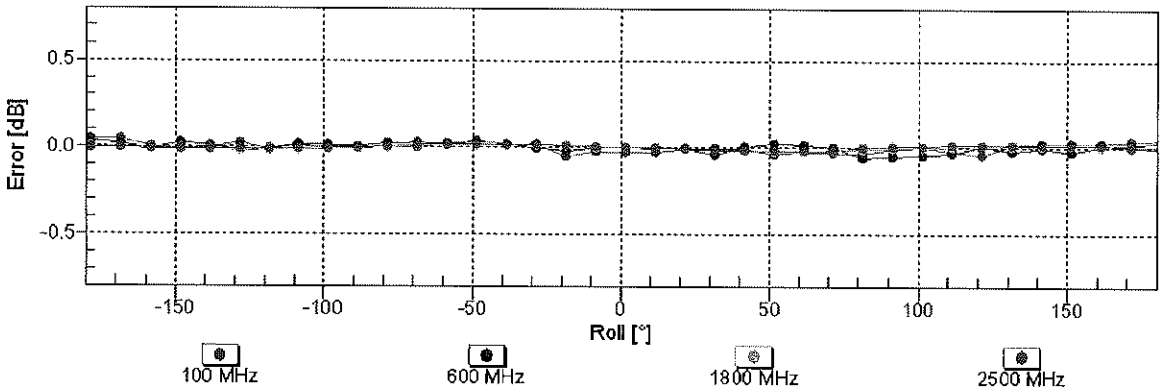
Receiving Pattern (ϕ), ϑ = 0°

f=600 MHz,TEM



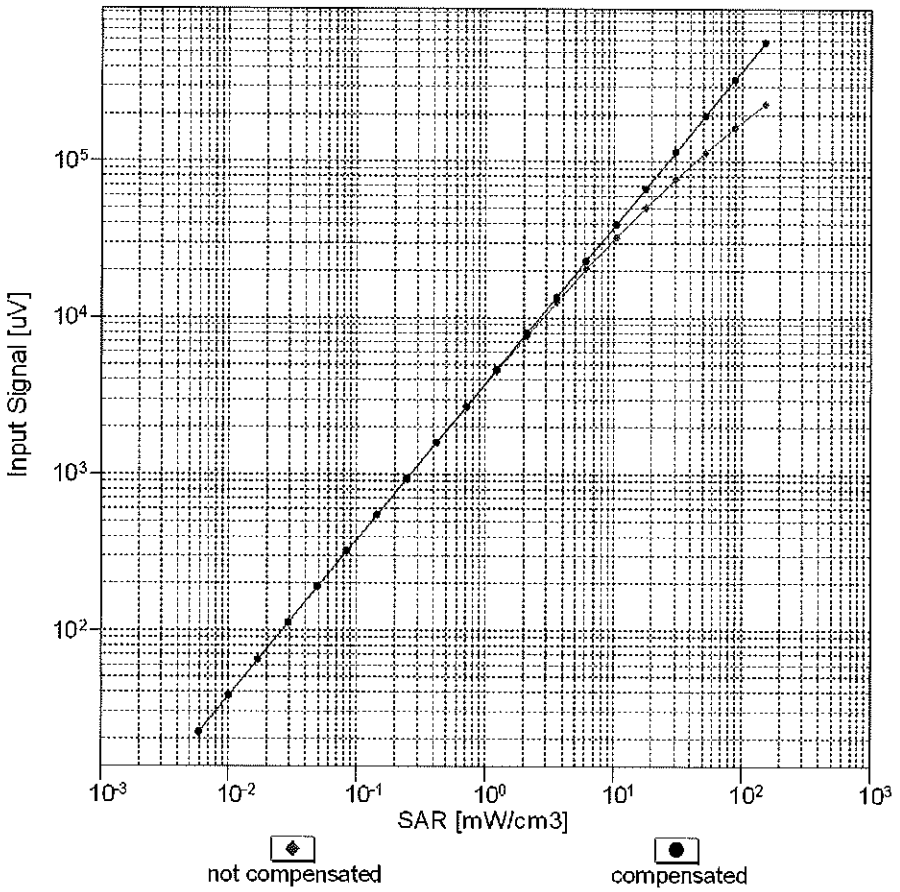
f=1800 MHz,R22

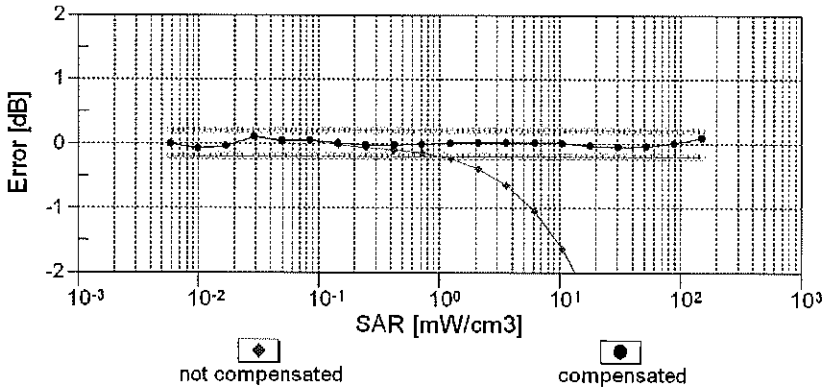




Uncertainty of Axial Isotropy Assessment: ± 0.5% (k=2)

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

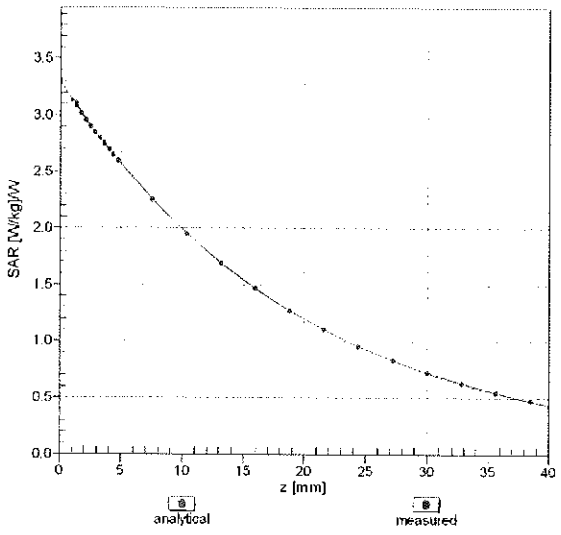




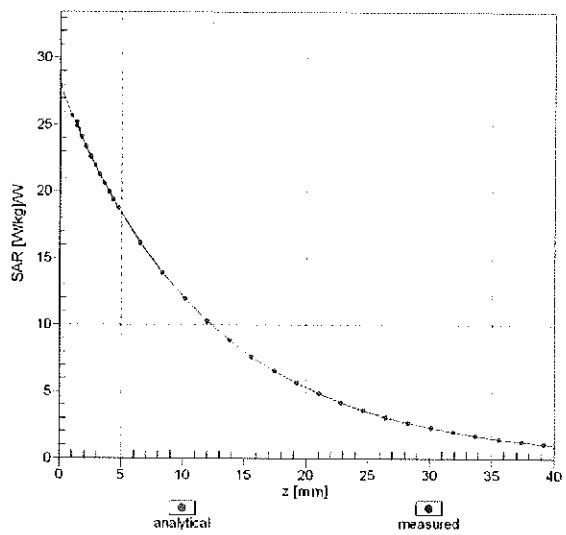
Uncertainty of Linearity Assessment: ± 0.6% (k=2)

Conversion Factor Assessment

f = 835 MHz,WGLS R9 (H_convF)

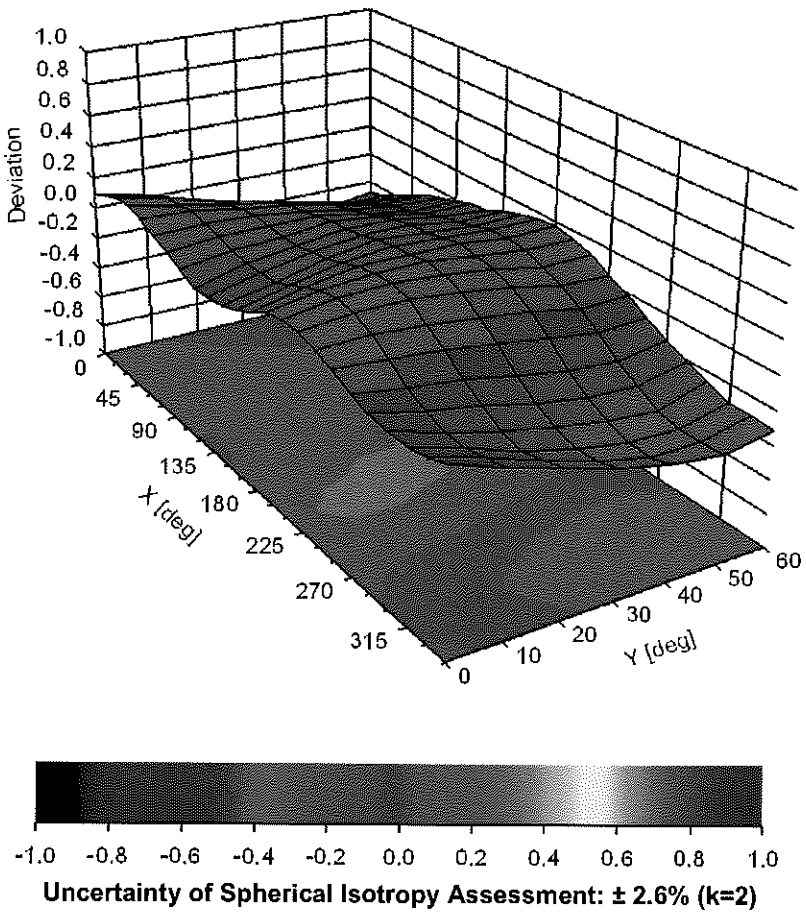


f = 1900 MHz,WGLS R22 (H_convF)



Deviation from Isotropy in Liquid

Error (ϕ, ϑ), f = 900 MHz



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

DASY/EASY - Parameters of Probe: EX3DV4 - SN:7420

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	41.5
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	142.4	± 3.0 %
		Y	0.00	0.00	1.00		149.4	
		Z	0.00	0.00	1.00		150.8	
10010-CAA	SAR Validation (Square, 100ms, 10ms)	X	1.98	65.48	9.62	10.00	20.0	± 9.6 %
		Y	1.47	62.68	7.81		20.0	
		Z	2.00	65.57	9.72		20.0	
10011-CAB	UMTS-FDD (WCDMA)	X	1.00	67.02	14.98	0.00	150.0	± 9.6 %
		Y	0.83	64.45	12.97		150.0	
		Z	1.96	81.22	21.14		150.0	
10012-CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps)	X	1.14	63.59	15.07	0.41	150.0	± 9.6 %
		Y	1.04	62.37	14.08		150.0	
		Z	1.16	66.22	17.23		150.0	
10013-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps)	X	4.79	66.65	17.04	1.46	150.0	± 9.6 %
		Y	4.69	66.38	16.93		150.0	
		Z	4.61	67.51	17.78		150.0	
10021-DAC	GSM-FDD (TDMA, GMSK)	X	100.00	111.76	25.68	9.39	50.0	± 9.6 %
		Y	100.00	109.09	24.23		50.0	
		Z	100.00	114.78	27.14		50.0	
10023-DAC	GPRS-FDD (TDMA, GMSK, TN 0)	X	100.00	111.11	25.44	9.57	50.0	± 9.6 %
		Y	100.00	127.89	27.94		50.0	
		Z	100.00	113.52	26.62		50.0	
10024-DAC	GPRS-FDD (TDMA, GMSK, TN 0-1)	X	100.00	113.65	25.51	6.56	60.0	± 9.6 %
		Y	100.00	110.68	23.73		60.0	
		Z	100.00	118.22	27.47		60.0	
10025-DAC	EDGE-FDD (TDMA, 8PSK, TN 0)	X	6.23	86.55	35.63	12.57	50.0	± 9.6 %
		Y	3.75	69.80	26.94		50.0	
		Z	11.42	109.88	46.67		50.0	
10026-DAC	EDGE-FDD (TDMA, 8PSK, TN 0-1)	X	8.22	92.71	33.98	9.56	60.0	± 9.6 %
		Y	5.56	83.39	30.47		60.0	
		Z	8.02	95.21	36.32		60.0	
10027-DAC	GPRS-FDD (TDMA, GMSK, TN 0-1-2)	X	100.00	117.09	26.25	4.80	80.0	± 9.6 %
		Y	100.00	112.75	23.76		80.0	
		Z	100.00	126.04	29.89		80.0	
10028-DAC	GPRS-FDD (TDMA, GMSK, TN 0-1-2-3)	X	100.00	121.88	27.58	3.55	100.0	± 9.6 %
		Y	100.00	113.78	23.43		100.0	
		Z	100.00	141.34	35.26		100.0	
10029-DAC	EDGE-FDD (TDMA, 8PSK, TN 0-1-2)	X	4.93	79.80	27.39	7.80	80.0	± 9.6 %
		Y	3.78	74.20	25.10		80.0	
		Z	4.76	81.21	29.20		80.0	
10030-CAA	IEEE 802.15.1 Bluetooth (GFSK, DH1)	X	100.00	112.75	24.67	5.30	70.0	± 9.6 %
		Y	100.00	108.52	22.29		70.0	
		Z	100.00	116.38	26.08		70.0	
10031-CAA	IEEE 802.15.1 Bluetooth (GFSK, DH3)	X	100.00	120.79	25.70	1.88	100.0	± 9.6 %
		Y	99.68	90.03	12.76		100.0	
		Z	100.00	148.21	35.39		100.0	

10032-CAA	IEEE 802.15.1 Bluetooth (GFSK, DH5)	X	100.00	131.66	28.96	1.17	100.0	± 9.6 %
		Y	0.14	60.00	3.20		100.0	
		Z	0.30	60.00	5.00		100.0	
10033-CAA	IEEE 802.15.1 Bluetooth (PI/4-DQPSK, DH1)	X	34.10	114.43	31.26	5.30	70.0	± 9.6 %
		Y	12.31	98.88	26.70		70.0	
		Z	100.00	124.15	31.42		70.0	
10034-CAA	IEEE 802.15.1 Bluetooth (PI/4-DQPSK, DH3)	X	3.37	80.11	19.28	1.88	100.0	± 9.6 %
		Y	1.69	70.98	14.93		100.0	
		Z	100.00	112.59	24.56		100.0	
10035-CAA	IEEE 802.15.1 Bluetooth (PI/4-DQPSK, DH5)	X	2.03	73.99	16.65	1.17	100.0	± 9.6 %
		Y	1.18	67.07	12.74		100.0	
		Z	4.60	80.36	15.68		100.0	
10036-CAA	IEEE 802.15.1 Bluetooth (8-DPSK, DH1)	X	87.17	129.81	35.04	5.30	70.0	± 9.6 %
		Y	23.49	109.32	29.66		70.0	
		Z	100.00	124.84	31.72		70.0	
10037-CAA	IEEE 802.15.1 Bluetooth (8-DPSK, DH3)	X	3.02	78.74	18.77	1.88	100.0	± 9.6 %
		Y	1.56	70.11	14.55		100.0	
		Z	100.00	112.67	24.56		100.0	
10038-CAA	IEEE 802.15.1 Bluetooth (8-DPSK, DH5)	X	2.04	74.33	16.91	1.17	100.0	± 9.6 %
		Y	1.18	67.29	12.96		100.0	
		Z	7.48	85.69	17.45		100.0	
10039-CAB	CDMA2000 (1xRTT, RC1)	X	1.64	70.84	14.77	0.00	150.0	± 9.6 %
		Y	0.99	64.73	10.80		150.0	
		Z	0.55	61.60	7.23		150.0	
10042-CAB	IS-54 / IS-136 FDD (TDMA/FDM, PI/4-DQPSK, Halfrate)	X	100.00	108.63	23.57	7.78	50.0	± 9.6 %
		Y	100.00	104.99	21.61		50.0	
		Z	100.00	110.10	24.21		50.0	
10044-CAA	IS-91/EIA/TIA-553 FDD (FDMA, FM)	X	0.00	98.66	3.53	0.00	150.0	± 9.6 %
		Y	0.03	121.19	2.53		150.0	
		Z	0.03	138.40	2.04		150.0	
10048-CAA	DECT (TDD, TDMA/FDM, GFSK, Full Slot, 24)	X	100.00	107.10	25.09	13.80	25.0	± 9.6 %
		Y	61.80	98.59	22.38		25.0	
		Z	100.00	108.47	25.89		25.0	
10049-CAA	DECT (TDD, TDMA/FDM, GFSK, Double Slot, 12)	X	100.00	108.99	24.81	10.79	40.0	± 9.6 %
		Y	195.67	113.34	24.95		40.0	
		Z	100.00	110.63	25.67		40.0	
10056-CAA	UMTS-TDD (TD-SCDMA, 1.28 Mcps)	X	100.00	124.93	33.47	9.03	50.0	± 9.6 %
		Y	100.00	123.65	32.61		50.0	
		Z	100.00	121.51	31.54		50.0	
10058-DAC	EDGE-FDD (TDMA, 8PSK, TN 0-1-2-3)	X	3.87	74.66	24.22	6.55	100.0	± 9.6 %
		Y	3.14	70.61	22.52		100.0	
		Z	3.77	75.92	25.92		100.0	
10059-CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 2 Mbps)	X	1.16	64.53	15.65	0.61	110.0	± 9.6 %
		Y	1.04	63.03	14.55		110.0	
		Z	1.23	68.05	18.30		110.0	
10060-CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 5.5 Mbps)	X	15.10	113.48	30.90	1.30	110.0	± 9.6 %
		Y	2.20	84.00	21.73		110.0	
		Z	100.00	155.34	42.50		110.0	

10061-CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 11 Mbps)	X	2.40	79.17	22.27	2.04	110.0	± 9.6 %
		Y	1.58	72.97	19.64		110.0	
		Z	16.21	119.48	36.23		110.0	
10062-CAC	IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps)	X	4.60	66.65	16.46	0.49	100.0	± 9.6 %
		Y	4.49	66.31	16.28		100.0	
		Z	4.38	67.35	17.07		100.0	
10063-CAC	IEEE 802.11a/h WiFi 5 GHz (OFDM, 9 Mbps)	X	4.62	66.73	16.56	0.72	100.0	± 9.6 %
		Y	4.50	66.40	16.39		100.0	
		Z	4.41	67.52	17.22		100.0	
10064-CAC	IEEE 802.11a/h WiFi 5 GHz (OFDM, 12 Mbps)	X	4.89	66.98	16.79	0.86	100.0	± 9.6 %
		Y	4.77	66.66	16.63		100.0	
		Z	4.62	67.67	17.39		100.0	
10065-CAC	IEEE 802.11a/h WiFi 5 GHz (OFDM, 18 Mbps)	X	4.75	66.86	16.88	1.21	100.0	± 9.6 %
		Y	4.63	66.51	16.72		100.0	
		Z	4.51	67.52	17.51		100.0	
10066-CAC	IEEE 802.11a/h WiFi 5 GHz (OFDM, 24 Mbps)	X	4.77	66.87	17.05	1.46	100.0	± 9.6 %
		Y	4.64	66.53	16.90		100.0	
		Z	4.51	67.50	17.67		100.0	
10067-CAC	IEEE 802.11a/h WiFi 5 GHz (OFDM, 36 Mbps)	X	5.05	67.07	17.51	2.04	100.0	± 9.6 %
		Y	4.94	66.81	17.41		100.0	
		Z	4.79	67.81	18.17		100.0	
10068-CAC	IEEE 802.11a/h WiFi 5 GHz (OFDM, 48 Mbps)	X	5.08	67.04	17.71	2.55	100.0	± 9.6 %
		Y	4.96	66.73	17.60		100.0	
		Z	4.85	67.85	18.44		100.0	
10069-CAC	IEEE 802.11a/h WiFi 5 GHz (OFDM, 54 Mbps)	X	5.16	67.06	17.91	2.67	100.0	± 9.6 %
		Y	5.04	66.79	17.81		100.0	
		Z	4.89	67.81	18.59		100.0	
10071-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 9 Mbps)	X	4.88	66.71	17.35	1.99	100.0	± 9.6 %
		Y	4.78	66.45	17.24		100.0	
		Z	4.72	67.62	18.12		100.0	
10072-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 12 Mbps)	X	4.84	66.99	17.55	2.30	100.0	± 9.6 %
		Y	4.73	66.69	17.44		100.0	
		Z	4.67	67.87	18.35		100.0	
10073-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 18 Mbps)	X	4.89	67.13	17.88	2.83	100.0	± 9.6 %
		Y	4.78	66.83	17.78		100.0	
		Z	4.76	68.20	18.80		100.0	
10074-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 24 Mbps)	X	4.87	67.00	18.02	3.30	100.0	± 9.6 %
		Y	4.76	66.71	17.92		100.0	
		Z	4.79	68.25	19.02		100.0	
10075-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 36 Mbps)	X	4.89	67.05	18.31	3.82	90.0	± 9.6 %
		Y	4.77	66.72	18.20		90.0	
		Z	4.82	68.28	19.30		90.0	
10076-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 48 Mbps)	X	4.90	66.85	18.44	4.15	90.0	± 9.6 %
		Y	4.80	66.54	18.35		90.0	
		Z	4.86	68.13	19.48		90.0	
10077-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 54 Mbps)	X	4.92	66.91	18.54	4.30	90.0	± 9.6 %
		Y	4.82	66.61	18.45		90.0	
		Z	4.90	68.27	19.62		90.0	

10081-CAB	CDMA2000 (1xRTT, RC3)	X	0.76	65.14	11.71	0.00	150.0	± 9.6 %
		Y	0.53	61.53	8.49		150.0	
		Z	0.32	60.00	5.58		150.0	
10082-CAB	IS-54 / IS-136 FDD (TDMA/FDM, PI/4-DQPSK, Fullrate)	X	3.07	65.96	5.95	4.77	80.0	± 9.6 %
		Y	0.68	60.01	2.69		80.0	
		Z	3.72	65.73	5.41		80.0	
10090-DAC	GPRS-FDD (TDMA, GMSK, TN 0-4)	X	100.00	113.67	25.53	6.56	60.0	± 9.6 %
		Y	100.00	110.80	23.80		60.0	
		Z	100.00	118.34	27.54		60.0	
10097-CAB	UMTS-FDD (HSDPA)	X	1.80	67.64	15.50	0.00	150.0	± 9.6 %
		Y	1.60	65.93	14.18		150.0	
		Z	2.40	74.76	18.23		150.0	
10098-CAB	UMTS-FDD (HSUPA, Subtest 2)	X	1.76	67.59	15.48	0.00	150.0	± 9.6 %
		Y	1.57	65.86	14.13		150.0	
		Z	2.37	74.85	18.29		150.0	
10099-DAC	EDGE-FDD (TDMA, 8PSK, TN 0-4)	X	8.30	92.94	34.06	9.56	60.0	± 9.6 %
		Y	5.60	83.56	30.54		60.0	
		Z	8.11	95.47	36.42		60.0	
10100-CAE	LTE-FDD (SC-FDMA, 100% RB, 20 MHz, QPSK)	X	3.05	70.07	16.57	0.00	150.0	± 9.6 %
		Y	2.76	68.39	15.63		150.0	
		Z	3.16	72.48	18.28		150.0	
10101-CAE	LTE-FDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM)	X	3.18	67.38	15.83	0.00	150.0	± 9.6 %
		Y	3.02	66.47	15.28		150.0	
		Z	3.08	68.35	16.76		150.0	
10102-CAE	LTE-FDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM)	X	3.28	67.36	15.93	0.00	150.0	± 9.6 %
		Y	3.13	66.51	15.41		150.0	
		Z	3.18	68.30	16.82		150.0	
10103-CAF	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, QPSK)	X	5.68	75.14	20.49	3.98	65.0	± 9.6 %
		Y	4.89	73.15	19.84		65.0	
		Z	6.24	78.98	22.83		65.0	
10104-CAF	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM)	X	5.70	73.02	20.33	3.98	65.0	± 9.6 %
		Y	4.99	71.04	19.60		65.0	
		Z	5.49	74.02	21.36		65.0	
10105-CAF	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM)	X	5.24	71.14	19.77	3.98	65.0	± 9.6 %
		Y	4.74	69.73	19.27		65.0	
		Z	5.36	73.24	21.27		65.0	
10108-CAF	LTE-FDD (SC-FDMA, 100% RB, 10 MHz, QPSK)	X	2.65	69.31	16.39	0.00	150.0	± 9.6 %
		Y	2.39	67.70	15.42		150.0	
		Z	2.77	72.57	18.40		150.0	
10109-CAF	LTE-FDD (SC-FDMA, 100% RB, 10 MHz, 16-QAM)	X	2.83	67.24	15.71	0.00	150.0	± 9.6 %
		Y	2.65	66.25	15.04		150.0	
		Z	2.75	68.90	16.75		150.0	
10110-CAF	LTE-FDD (SC-FDMA, 100% RB, 5 MHz, QPSK)	X	2.14	68.44	15.95	0.00	150.0	± 9.6 %
		Y	1.89	66.73	14.78		150.0	
		Z	2.33	73.09	18.18		150.0	
10111-CAF	LTE-FDD (SC-FDMA, 100% RB, 5 MHz, 16-QAM)	X	2.55	68.11	15.95	0.00	150.0	± 9.6 %
		Y	2.32	66.80	14.97		150.0	
		Z	2.67	71.57	17.20		150.0	

10112-CAF	LTE-FDD (SC-FDMA, 100% RB, 10 MHz, 64-QAM)	X	2.96	67.26	15.78	0.00	150.0	± 9.6 %
		Y	2.78	66.34	15.15		150.0	
		Z	2.87	68.92	16.78		150.0	
10113-CAF	LTE-FDD (SC-FDMA, 100% RB, 5 MHz, 64-QAM)	X	2.70	68.27	16.09	0.00	150.0	± 9.6 %
		Y	2.47	67.04	15.16		150.0	
		Z	2.78	71.49	17.20		150.0	
10114-CAC	IEEE 802.11n (HT Greenfield, 13.5 Mbps, BPSK)	X	5.07	67.16	16.40	0.00	150.0	± 9.6 %
		Y	4.96	66.77	16.22		150.0	
		Z	4.86	67.49	16.99		150.0	
10115-CAC	IEEE 802.11n (HT Greenfield, 81 Mbps, 16-QAM)	X	5.33	67.22	16.44	0.00	150.0	± 9.6 %
		Y	5.22	66.88	16.29		150.0	
		Z	5.13	67.68	17.06		150.0	
10116-CAC	IEEE 802.11n (HT Greenfield, 135 Mbps, 64-QAM)	X	5.15	67.33	16.41	0.00	150.0	± 9.6 %
		Y	5.05	66.96	16.25		150.0	
		Z	4.95	67.74	17.04		150.0	
10117-CAC	IEEE 802.11n (HT Mixed, 13.5 Mbps, BPSK)	X	5.03	67.02	16.34	0.00	150.0	± 9.6 %
		Y	4.95	66.69	16.20		150.0	
		Z	4.83	67.33	16.93		150.0	
10118-CAC	IEEE 802.11n (HT Mixed, 81 Mbps, 16-QAM)	X	5.40	67.41	16.54	0.00	150.0	± 9.6 %
		Y	5.31	67.12	16.42		150.0	
		Z	5.15	67.71	17.09		150.0	
10119-CAC	IEEE 802.11n (HT Mixed, 135 Mbps, 64-QAM)	X	5.13	67.29	16.40	0.00	150.0	± 9.6 %
		Y	5.05	66.96	16.26		150.0	
		Z	4.95	67.72	17.04		150.0	
10140-CAE	LTE-FDD (SC-FDMA, 100% RB, 15 MHz, 16-QAM)	X	3.31	67.37	15.85	0.00	150.0	± 9.6 %
		Y	3.15	66.52	15.32		150.0	
		Z	3.19	68.39	16.74		150.0	
10141-CAE	LTE-FDD (SC-FDMA, 100% RB, 15 MHz, 64-QAM)	X	3.44	67.49	16.02	0.00	150.0	± 9.6 %
		Y	3.28	66.69	15.53		150.0	
		Z	3.31	68.55	16.92		150.0	
10142-CAE	LTE-FDD (SC-FDMA, 100% RB, 3 MHz, QPSK)	X	1.91	68.40	15.51	0.00	150.0	± 9.6 %
		Y	1.63	66.25	13.94		150.0	
		Z	2.18	73.58	17.08		150.0	
10143-CAE	LTE-FDD (SC-FDMA, 100% RB, 3 MHz, 16-QAM)	X	2.39	68.76	15.51	0.00	150.0	± 9.6 %
		Y	2.06	66.68	13.95		150.0	
		Z	2.31	70.61	14.98		150.0	
10144-CAE	LTE-FDD (SC-FDMA, 100% RB, 3 MHz, 64-QAM)	X	2.14	66.35	13.82	0.00	150.0	± 9.6 %
		Y	1.88	64.69	12.43		150.0	
		Z	1.66	65.35	11.84		150.0	
10145-CAF	LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, QPSK)	X	1.07	63.92	10.68	0.00	150.0	± 9.6 %
		Y	0.79	60.96	7.96		150.0	
		Z	0.51	60.00	5.19		150.0	
10146-CAF	LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, 16-QAM)	X	1.64	64.29	9.90	0.00	150.0	± 9.6 %
		Y	1.16	61.35	7.84		150.0	
		Z	0.53	58.05	3.61		150.0	
10147-CAF	LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, 64-QAM)	X	1.84	65.54	10.64	0.00	150.0	± 9.6 %
		Y	1.22	61.82	8.20		150.0	
		Z	0.54	58.15	3.73		150.0	

10149-CAE	LTE-FDD (SC-FDMA, 50% RB, 20 MHz, 16-QAM)	X	2.84	67.30	15.76	0.00	150.0	± 9.6 %
		Y	2.66	66.31	15.09		150.0	
		Z	2.77	68.99	16.81		150.0	
10150-CAE	LTE-FDD (SC-FDMA, 50% RB, 20 MHz, 64-QAM)	X	2.96	67.31	15.82	0.00	150.0	± 9.6 %
		Y	2.79	66.39	15.19		150.0	
		Z	2.88	69.00	16.84		150.0	
10151-CAF	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, QPSK)	X	6.17	78.39	21.92	3.98	65.0	± 9.6 %
		Y	5.05	75.73	21.02		65.0	
		Z	7.31	84.36	24.91		65.0	
10152-CAF	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 16-QAM)	X	5.24	73.02	20.03	3.98	65.0	± 9.6 %
		Y	4.52	70.96	19.20		65.0	
		Z	5.14	74.66	21.03		65.0	
10153-CAF	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 64-QAM)	X	5.59	73.97	20.81	3.98	65.0	± 9.6 %
		Y	4.84	71.94	20.02		65.0	
		Z	5.56	75.95	21.96		65.0	
10154-CAF	LTE-FDD (SC-FDMA, 50% RB, 10 MHz, QPSK)	X	2.18	68.82	16.19	0.00	150.0	± 9.6 %
		Y	1.93	67.03	14.98		150.0	
		Z	2.40	73.64	18.47		150.0	
10155-CAF	LTE-FDD (SC-FDMA, 50% RB, 10 MHz, 16-QAM)	X	2.55	68.13	15.97	0.00	150.0	± 9.6 %
		Y	2.32	66.82	14.99		150.0	
		Z	2.68	71.67	17.26		150.0	
10156-CAF	LTE-FDD (SC-FDMA, 50% RB, 5 MHz, QPSK)	X	1.74	68.36	15.19	0.00	150.0	± 9.6 %
		Y	1.43	65.76	13.26		150.0	
		Z	1.84	72.05	15.53		150.0	
10157-CAF	LTE-FDD (SC-FDMA, 50% RB, 5 MHz, 16-QAM)	X	1.97	66.80	13.75	0.00	150.0	± 9.6 %
		Y	1.65	64.60	11.97		150.0	
		Z	1.34	64.28	10.56		150.0	
10158-CAF	LTE-FDD (SC-FDMA, 50% RB, 10 MHz, 64-QAM)	X	2.70	68.34	16.13	0.00	150.0	± 9.6 %
		Y	2.47	67.10	15.21		150.0	
		Z	2.80	71.64	17.29		150.0	
10159-CAF	LTE-FDD (SC-FDMA, 50% RB, 5 MHz, 64-QAM)	X	2.07	67.22	14.01	0.00	150.0	± 9.6 %
		Y	1.72	64.86	12.16		150.0	
		Z	1.37	64.28	10.59		150.0	
10160-CAE	LTE-FDD (SC-FDMA, 50% RB, 15 MHz, QPSK)	X	2.67	68.50	16.19	0.00	150.0	± 9.6 %
		Y	2.49	67.41	15.44		150.0	
		Z	2.77	71.65	17.94		150.0	
10161-CAE	LTE-FDD (SC-FDMA, 50% RB, 15 MHz, 16-QAM)	X	2.86	67.26	15.73	0.00	150.0	± 9.6 %
		Y	2.67	66.30	15.05		150.0	
		Z	2.77	69.10	16.65		150.0	
10162-CAE	LTE-FDD (SC-FDMA, 50% RB, 15 MHz, 64-QAM)	X	2.97	67.44	15.86	0.00	150.0	± 9.6 %
		Y	2.78	66.52	15.20		150.0	
		Z	2.89	69.36	16.80		150.0	
10166-CAF	LTE-FDD (SC-FDMA, 50% RB, 1.4 MHz, QPSK)	X	3.58	70.16	19.34	3.01	150.0	± 9.6 %
		Y	3.21	68.35	18.55		150.0	
		Z	2.85	69.02	19.82		150.0	
10167-CAF	LTE-FDD (SC-FDMA, 50% RB, 1.4 MHz, 16-QAM)	X	4.66	74.24	20.21	3.01	150.0	± 9.6 %
		Y	3.73	70.62	18.73		150.0	
		Z	3.22	71.92	20.31		150.0	

10168-CAF	LTE-FDD (SC-FDMA, 50% RB, 1.4 MHz, 64-QAM)	X	5.33	77.12	21.77	3.01	150.0	± 9.6 %
		Y	4.14	72.91	20.14		150.0	
		Z	3.62	74.71	22.00		150.0	
10169-CAE	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, QPSK)	X	3.04	70.09	19.33	3.01	150.0	± 9.6 %
		Y	2.57	66.72	17.79		150.0	
		Z	2.29	66.69	18.75		150.0	
10170-CAE	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM)	X	4.85	78.99	22.71	3.01	150.0	± 9.6 %
		Y	3.18	71.08	19.61		150.0	
		Z	2.66	71.22	20.84		150.0	
10171-AAE	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, 64-QAM)	X	3.69	73.30	19.35	3.01	150.0	± 9.6 %
		Y	2.71	67.78	17.08		150.0	
		Z	2.29	68.11	18.30		150.0	
10172-CAF	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK)	X	6.13	88.39	28.20	6.02	65.0	± 9.6 %
		Y	3.72	78.66	24.84		65.0	
		Z	4.52	87.17	29.75		65.0	
10173-CAF	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM)	X	38.00	117.73	34.53	6.02	65.0	± 9.6 %
		Y	6.79	88.15	26.52		65.0	
		Z	10.83	103.55	33.16		65.0	
10174-CAF	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 64-QAM)	X	29.68	111.18	32.05	6.02	65.0	± 9.6 %
		Y	5.46	83.31	24.22		65.0	
		Z	8.53	97.38	30.44		65.0	
10175-CAF	LTE-FDD (SC-FDMA, 1 RB, 10 MHz, QPSK)	X	3.00	69.75	19.07	3.01	150.0	± 9.6 %
		Y	2.55	66.48	17.57		150.0	
		Z	2.27	66.49	18.55		150.0	
10176-CAF	LTE-FDD (SC-FDMA, 1 RB, 10 MHz, 16-QAM)	X	4.86	79.02	22.73	3.01	150.0	± 9.6 %
		Y	3.19	71.10	19.62		150.0	
		Z	2.67	71.24	20.85		150.0	
10177-CAH	LTE-FDD (SC-FDMA, 1 RB, 5 MHz, QPSK)	X	3.02	69.91	19.16	3.01	150.0	± 9.6 %
		Y	2.57	66.59	17.64		150.0	
		Z	2.28	66.57	18.60		150.0	
10178-CAF	LTE-FDD (SC-FDMA, 1 RB, 5 MHz, 16-QAM)	X	4.80	78.76	22.60	3.01	150.0	± 9.6 %
		Y	3.17	70.97	19.54		150.0	
		Z	2.66	71.16	20.79		150.0	
10179-CAF	LTE-FDD (SC-FDMA, 1 RB, 10 MHz, 64-QAM)	X	4.20	75.94	20.87	3.01	150.0	± 9.6 %
		Y	2.92	69.33	18.22		150.0	
		Z	2.47	69.69	19.50		150.0	
10180-CAF	LTE-FDD (SC-FDMA, 1 RB, 5 MHz, 64-QAM)	X	3.68	73.22	19.30	3.01	150.0	± 9.6 %
		Y	2.70	67.74	17.05		150.0	
		Z	2.29	68.11	18.28		150.0	
10181-CAE	LTE-FDD (SC-FDMA, 1 RB, 15 MHz, QPSK)	X	3.02	69.89	19.16	3.01	150.0	± 9.6 %
		Y	2.56	66.58	17.64		150.0	
		Z	2.28	66.56	18.60		150.0	
10182-CAE	LTE-FDD (SC-FDMA, 1 RB, 15 MHz, 16-QAM)	X	4.79	78.73	22.59	3.01	150.0	± 9.6 %
		Y	3.16	70.95	19.52		150.0	
		Z	2.65	71.14	20.78		150.0	
10183-AAD	LTE-FDD (SC-FDMA, 1 RB, 15 MHz, 64-QAM)	X	3.67	73.19	19.29	3.01	150.0	± 9.6 %
		Y	2.70	67.72	17.04		150.0	
		Z	2.29	68.09	18.27		150.0	

10184-CAE	LTE-FDD (SC-FDMA, 1 RB, 3 MHz, QPSK)	X	3.03	69.94	19.18	3.01	150.0	± 9.6 %
		Y	2.57	66.61	17.66		150.0	
		Z	2.28	66.59	18.61		150.0	
10185-CAE	LTE-FDD (SC-FDMA, 1 RB, 3 MHz, 16-QAM)	X	4.81	78.82	22.63	3.01	150.0	± 9.6 %
		Y	3.18	71.01	19.56		150.0	
		Z	2.67	71.20	20.82		150.0	
10186-AAE	LTE-FDD (SC-FDMA, 1 RB, 3 MHz, 64-QAM)	X	3.69	73.27	19.33	3.01	150.0	± 9.6 %
		Y	2.71	67.78	17.07		150.0	
		Z	2.30	68.14	18.30		150.0	
10187-CAF	LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK)	X	3.04	70.01	19.26	3.01	150.0	± 9.6 %
		Y	2.58	66.67	17.73		150.0	
		Z	2.29	66.66	18.70		150.0	
10188-CAF	LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, 16-QAM)	X	5.03	79.71	23.08	3.01	150.0	± 9.6 %
		Y	3.25	71.50	19.88		150.0	
		Z	2.72	71.61	21.11		150.0	
10189-AAF	LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, 64-QAM)	X	3.80	73.82	19.65	3.01	150.0	± 9.6 %
		Y	2.76	68.10	17.31		150.0	
		Z	2.34	68.44	18.54		150.0	
10193-CAC	IEEE 802.11n (HT Greenfield, 6.5 Mbps, BPSK)	X	4.46	66.62	16.08	0.00	150.0	± 9.6 %
		Y	4.34	66.23	15.84		150.0	
		Z	4.25	67.38	16.66		150.0	
10194-CAC	IEEE 802.11n (HT Greenfield, 39 Mbps, 16-QAM)	X	4.62	66.91	16.21	0.00	150.0	± 9.6 %
		Y	4.49	66.50	15.98		150.0	
		Z	4.36	67.53	16.79		150.0	
10195-CAC	IEEE 802.11n (HT Greenfield, 65 Mbps, 64-QAM)	X	4.66	66.94	16.23	0.00	150.0	± 9.6 %
		Y	4.53	66.53	16.00		150.0	
		Z	4.38	67.50	16.78		150.0	
10196-CAC	IEEE 802.11n (HT Mixed, 6.5 Mbps, BPSK)	X	4.46	66.66	16.09	0.00	150.0	± 9.6 %
		Y	4.33	66.25	15.84		150.0	
		Z	4.22	67.32	16.61		150.0	
10197-CAC	IEEE 802.11n (HT Mixed, 39 Mbps, 16-QAM)	X	4.63	66.93	16.22	0.00	150.0	± 9.6 %
		Y	4.50	66.51	15.99		150.0	
		Z	4.37	67.52	16.79		150.0	
10198-CAC	IEEE 802.11n (HT Mixed, 65 Mbps, 64-QAM)	X	4.66	66.95	16.24	0.00	150.0	± 9.6 %
		Y	4.53	66.54	16.01		150.0	
		Z	4.37	67.48	16.77		150.0	
10219-CAC	IEEE 802.11n (HT Mixed, 7.2 Mbps, BPSK)	X	4.41	66.68	16.06	0.00	150.0	± 9.6 %
		Y	4.28	66.26	15.80		150.0	
		Z	4.18	67.42	16.62		150.0	
10220-CAC	IEEE 802.11n (HT Mixed, 43.3 Mbps, 16-QAM)	X	4.62	66.89	16.21	0.00	150.0	± 9.6 %
		Y	4.50	66.48	15.98		150.0	
		Z	4.36	67.48	16.77		150.0	
10221-CAC	IEEE 802.11n (HT Mixed, 72.2 Mbps, 64-QAM)	X	4.67	66.88	16.23	0.00	150.0	± 9.6 %
		Y	4.54	66.48	16.00		150.0	
		Z	4.39	67.44	16.77		150.0	
10222-CAC	IEEE 802.11n (HT Mixed, 15 Mbps, BPSK)	X	5.01	67.03	16.34	0.00	150.0	± 9.6 %
		Y	4.91	66.67	16.18		150.0	
		Z	4.82	67.37	16.94		150.0	

10223-CAC	IEEE 802.11n (HT Mixed, 90 Mbps, 16-QAM)	X	5.31	67.27	16.48	0.00	150.0	± 9.6 %
		Y	5.21	66.94	16.35		150.0	
		Z	5.01	67.37	16.93		150.0	
10224-CAC	IEEE 802.11n (HT Mixed, 150 Mbps, 64-QAM)	X	5.05	67.14	16.32	0.00	150.0	± 9.6 %
		Y	4.95	66.76	16.15		150.0	
		Z	4.86	67.52	16.93		150.0	
10225-CAB	UMTS-FDD (HSPA+)	X	2.74	66.08	15.13	0.00	150.0	± 9.6 %
		Y	2.57	65.25	14.40		150.0	
		Z	2.55	67.23	15.07		150.0	
10226-CAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 16-QAM)	X	44.72	120.94	35.47	6.02	65.0	± 9.6 %
		Y	7.20	89.32	27.02		65.0	
		Z	12.04	105.88	33.97		65.0	
10227-CAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 64-QAM)	X	40.29	116.33	33.42	6.02	65.0	± 9.6 %
		Y	7.53	88.97	26.21		65.0	
		Z	12.85	105.50	33.01		65.0	
10228-CAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK)	X	9.31	97.05	31.18	6.02	65.0	± 9.6 %
		Y	4.36	82.33	26.40		65.0	
		Z	5.06	90.04	30.91		65.0	
10229-CAC	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 16-QAM)	X	38.44	117.91	34.59	6.02	65.0	± 9.6 %
		Y	6.84	88.25	26.56		65.0	
		Z	10.89	103.62	33.19		65.0	
10230-CAC	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 64-QAM)	X	34.51	113.48	32.59	6.02	65.0	± 9.6 %
		Y	7.07	87.78	25.73		65.0	
		Z	11.31	102.92	32.16		65.0	
10231-CAC	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, QPSK)	X	8.81	95.82	30.69	6.02	65.0	± 9.6 %
		Y	4.22	81.61	26.04		65.0	
		Z	4.83	88.89	30.41		65.0	
10232-CAE	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 16-QAM)	X	38.37	117.90	34.59	6.02	65.0	± 9.6 %
		Y	6.83	88.23	26.55		65.0	
		Z	10.87	103.59	33.18		65.0	
10233-CAE	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 64-QAM)	X	34.36	113.43	32.58	6.02	65.0	± 9.6 %
		Y	7.05	87.74	25.72		65.0	
		Z	11.23	102.80	32.14		65.0	
10234-CAE	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, QPSK)	X	8.43	94.76	30.22	6.02	65.0	± 9.6 %
		Y	4.12	81.05	25.70		65.0	
		Z	4.71	88.25	30.04		65.0	
10235-CAE	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 16-QAM)	X	38.57	118.01	34.62	6.02	65.0	± 9.6 %
		Y	6.83	88.26	26.57		65.0	
		Z	10.91	103.70	33.22		65.0	
10236-CAE	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 64-QAM)	X	35.32	113.85	32.67	6.02	65.0	± 9.6 %
		Y	7.14	87.93	25.78		65.0	
		Z	11.53	103.24	32.26		65.0	
10237-CAE	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, QPSK)	X	8.83	95.91	30.73	6.02	65.0	± 9.6 %
		Y	4.22	81.64	26.06		65.0	
		Z	4.83	88.94	30.44		65.0	
10238-CAE	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 16-QAM)	X	38.28	117.88	34.58	6.02	65.0	± 9.6 %
		Y	6.81	88.20	26.54		65.0	
		Z	10.85	103.59	33.18		65.0	

10239-CAE	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 64-QAM)	X	34.18	113.37	32.56	6.02	65.0	± 9.6 %
		Y	7.02	87.69	25.71		65.0	
		Z	11.18	102.74	32.12		65.0	
10240-CAE	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, QPSK)	X	8.80	95.85	30.71	6.02	65.0	± 9.6 %
		Y	4.21	81.60	26.04		65.0	
		Z	4.82	88.95	30.44		65.0	
10241-CAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 16-QAM)	X	7.98	82.84	26.32	6.98	65.0	± 9.6 %
		Y	6.25	78.17	24.62		65.0	
		Z	7.24	85.75	28.71		65.0	
10242-CAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 64-QAM)	X	7.84	82.54	26.13	6.98	65.0	± 9.6 %
		Y	5.75	76.43	23.79		65.0	
		Z	6.95	84.97	28.32		65.0	
10243-CAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, QPSK)	X	5.30	74.80	23.78	6.98	65.0	± 9.6 %
		Y	4.77	72.98	23.12		65.0	
		Z	5.45	79.70	27.16		65.0	
10244-CAC	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 16-QAM)	X	5.35	75.26	17.91	3.98	65.0	± 9.6 %
		Y	3.85	71.20	16.04		65.0	
		Z	2.94	67.75	12.82		65.0	
10245-CAC	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 64-QAM)	X	5.14	74.37	17.48	3.98	65.0	± 9.6 %
		Y	3.74	70.47	15.64		65.0	
		Z	2.81	66.92	12.35		65.0	
10246-CAC	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, QPSK)	X	5.18	78.96	19.98	3.98	65.0	± 9.6 %
		Y	3.49	73.78	17.58		65.0	
		Z	3.87	74.84	16.54		65.0	
10247-CAE	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 16-QAM)	X	4.48	73.32	18.33	3.98	65.0	± 9.6 %
		Y	3.59	70.48	16.81		65.0	
		Z	3.73	71.37	15.94		65.0	
10248-CAE	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 64-QAM)	X	4.44	72.62	17.99	3.98	65.0	± 9.6 %
		Y	3.58	69.88	16.50		65.0	
		Z	3.51	70.04	15.32		65.0	
10249-CAE	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, QPSK)	X	6.46	82.83	22.54	3.98	65.0	± 9.6 %
		Y	4.62	78.31	20.71		65.0	
		Z	10.31	91.36	24.44		65.0	
10250-CAE	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 16-QAM)	X	5.28	75.55	21.09	3.98	65.0	± 9.6 %
		Y	4.43	73.18	20.10		65.0	
		Z	5.62	78.69	22.14		65.0	
10251-CAE	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 64-QAM)	X	5.05	73.44	19.78	3.98	65.0	± 9.6 %
		Y	4.27	71.23	18.78		65.0	
		Z	4.89	74.82	20.00		65.0	
10252-CAE	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, QPSK)	X	6.38	81.60	23.17	3.98	65.0	± 9.6 %
		Y	4.94	78.15	21.94		65.0	
		Z	9.80	92.32	27.22		65.0	
10253-CAE	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 16-QAM)	X	5.15	72.52	19.77	3.98	65.0	± 9.6 %
		Y	4.46	70.58	18.95		65.0	
		Z	5.07	74.27	20.61		65.0	
10254-CAE	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 64-QAM)	X	5.46	73.39	20.46	3.98	65.0	± 9.6 %
		Y	4.75	71.45	19.67		65.0	
		Z	5.41	75.29	21.36		65.0	

10255-CAE	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, QPSK)	X	5.81	77.49	21.77	3.98	65.0	± 9.6 %
		Y	4.80	74.95	20.87		65.0	
		Z	6.84	83.29	24.55		65.0	
10256-CAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 16-QAM)	X	3.73	69.85	14.38	3.98	65.0	± 9.6 %
		Y	2.70	66.29	12.42		65.0	
		Z	1.84	62.37	8.56		65.0	
10257-CAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 64-QAM)	X	3.58	68.93	13.85	3.98	65.0	± 9.6 %
		Y	2.63	65.62	11.96		65.0	
		Z	1.81	61.98	8.21		65.0	
10258-CAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, QPSK)	X	3.55	72.74	16.44	3.98	65.0	± 9.6 %
		Y	2.36	67.80	13.71		65.0	
		Z	1.76	64.10	10.09		65.0	
10259-CAC	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 16-QAM)	X	4.82	74.25	19.37	3.98	65.0	± 9.6 %
		Y	3.94	71.68	18.09		65.0	
		Z	4.59	74.76	18.48		65.0	
10260-CAC	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 64-QAM)	X	4.83	73.91	19.22	3.98	65.0	± 9.6 %
		Y	3.97	71.40	17.95		65.0	
		Z	4.50	74.04	18.14		65.0	
10261-CAC	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, QPSK)	X	6.01	81.19	22.39	3.98	65.0	± 9.6 %
		Y	4.52	77.38	20.87		65.0	
		Z	9.39	90.51	25.09		65.0	
10262-CAE	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 16-QAM)	X	5.27	75.49	21.05	3.98	65.0	± 9.6 %
		Y	4.41	73.12	20.05		65.0	
		Z	5.58	78.56	22.06		65.0	
10263-CAE	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 64-QAM)	X	5.04	73.41	19.77	3.98	65.0	± 9.6 %
		Y	4.26	71.21	18.77		65.0	
		Z	4.88	74.80	20.00		65.0	
10264-CAE	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, QPSK)	X	6.31	81.38	23.06	3.98	65.0	± 9.6 %
		Y	4.89	77.95	21.83		65.0	
		Z	9.59	91.86	27.03		65.0	
10265-CAE	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 16-QAM)	X	5.24	73.02	20.04	3.98	65.0	± 9.6 %
		Y	4.52	70.96	19.21		65.0	
		Z	5.14	74.67	21.03		65.0	
10266-CAE	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 64-QAM)	X	5.59	73.95	20.80	3.98	65.0	± 9.6 %
		Y	4.84	71.93	20.01		65.0	
		Z	5.56	75.94	21.95		65.0	
10267-CAE	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, QPSK)	X	6.16	78.34	21.90	3.98	65.0	± 9.6 %
		Y	5.05	75.68	21.00		65.0	
		Z	7.28	84.25	24.86		65.0	
10268-CAE	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 16-QAM)	X	5.85	72.87	20.36	3.98	65.0	± 9.6 %
		Y	5.16	71.02	19.67		65.0	
		Z	5.66	74.08	21.40		65.0	
10269-CAE	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 64-QAM)	X	5.84	72.44	20.21	3.98	65.0	± 9.6 %
		Y	5.17	70.67	19.54		65.0	
		Z	5.67	73.65	21.21		65.0	
10270-CAE	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, QPSK)	X	5.98	75.28	20.75	3.98	65.0	± 9.6 %
		Y	5.14	73.22	20.06		65.0	
		Z	6.27	78.45	22.79		65.0	

10274-CAB	UMTS-FDD (HSUPA, Subtest 5, 3GPP Rel8.10)	X	2.54	66.52	15.09	0.00	150.0	± 9.6 %
		Y	2.38	65.58	14.29		150.0	
		Z	2.51	68.66	15.57		150.0	
10275-CAB	UMTS-FDD (HSUPA, Subtest 5, 3GPP Rel8.4)	X	1.56	67.69	15.33	0.00	150.0	± 9.6 %
		Y	1.35	65.62	13.81		150.0	
		Z	2.09	75.23	18.57		150.0	
10277-CAA	PHS (QPSK)	X	1.64	60.38	5.85	9.03	50.0	± 9.6 %
		Y	1.38	59.39	4.80		50.0	
		Z	1.36	59.36	4.61		50.0	
10278-CAA	PHS (QPSK, BW 884MHz, Rolloff 0.5)	X	4.49	73.00	15.27	9.03	50.0	± 9.6 %
		Y	3.09	68.07	12.50		50.0	
		Z	2.42	64.14	9.65		50.0	
10279-CAA	PHS (QPSK, BW 884MHz, Rolloff 0.38)	X	4.67	73.44	15.53	9.03	50.0	± 9.6 %
		Y	3.21	68.46	12.76		50.0	
		Z	2.46	64.27	9.79		50.0	
10290-AAB	CDMA2000, RC1, SO55, Full Rate	X	1.28	67.55	13.00	0.00	150.0	± 9.6 %
		Y	0.87	63.20	9.74		150.0	
		Z	0.46	60.16	6.10		150.0	
10291-AAB	CDMA2000, RC3, SO55, Full Rate	X	0.75	64.94	11.58	0.00	150.0	± 9.6 %
		Y	0.53	61.44	8.41		150.0	
		Z	0.32	60.00	5.56		150.0	
10292-AAB	CDMA2000, RC3, SO32, Full Rate	X	0.98	69.24	14.07	0.00	150.0	± 9.6 %
		Y	0.58	63.01	9.60		150.0	
		Z	0.33	60.54	6.17		150.0	
10293-AAB	CDMA2000, RC3, SO3, Full Rate	X	1.68	76.56	17.59	0.00	150.0	± 9.6 %
		Y	0.74	65.59	11.37		150.0	
		Z	0.97	69.23	10.62		150.0	
10295-AAB	CDMA2000, RC1, SO3, 1/8th Rate 25 fr.	X	12.77	92.35	26.24	9.03	50.0	± 9.6 %
		Y	22.20	100.28	27.92		50.0	
		Z	100.00	115.37	29.46		50.0	
10297-AAD	LTE-FDD (SC-FDMA, 50% RB, 20 MHz, QPSK)	X	2.66	69.41	16.46	0.00	150.0	± 9.6 %
		Y	2.40	67.79	15.48		150.0	
		Z	2.79	72.73	18.49		150.0	
10298-AAD	LTE-FDD (SC-FDMA, 50% RB, 3 MHz, QPSK)	X	1.42	66.77	13.28	0.00	150.0	± 9.6 %
		Y	1.08	63.49	10.70		150.0	
		Z	0.71	61.60	8.01		150.0	
10299-AAD	LTE-FDD (SC-FDMA, 50% RB, 3 MHz, 16-QAM)	X	2.44	68.55	13.06	0.00	150.0	± 9.6 %
		Y	1.65	64.37	10.69		150.0	
		Z	0.87	60.44	6.67		150.0	
10300-AAD	LTE-FDD (SC-FDMA, 50% RB, 3 MHz, 64-QAM)	X	1.78	64.18	10.26	0.00	150.0	± 9.6 %
		Y	1.37	61.93	8.69		150.0	
		Z	0.81	60.00	5.75		150.0	
10301-AAA	IEEE 802.16e WiMAX (29:18, 5ms, 10MHz, QPSK, PUSC)	X	4.62	65.42	17.37	4.17	50.0	± 9.6 %
		Y	4.51	65.22	17.15		50.0	
		Z	4.62	67.58	18.20		50.0	
10302-AAA	IEEE 802.16e WiMAX (29:18, 5ms, 10MHz, QPSK, PUSC, 3 CTRL symbols)	X	5.06	65.89	18.01	4.96	50.0	± 9.6 %
		Y	4.91	65.43	17.65		50.0	
		Z	4.97	67.46	18.56		50.0	

10303-AAA	IEEE 802.16e WiMAX (31:15, 5ms, 10MHz, 64QAM, PUSC)	X	4.80	65.47	17.81	4.96	50.0	± 9.6 %
		Y	4.65	65.01	17.42		50.0	
		Z	4.76	67.28	18.38		50.0	
10304-AAA	IEEE 802.16e WiMAX (29:18, 5ms, 10MHz, 64QAM, PUSC)	X	4.63	65.40	17.32	4.17	50.0	± 9.6 %
		Y	4.47	64.93	16.94		50.0	
		Z	4.59	67.18	17.91		50.0	
10305-AAA	IEEE 802.16e WiMAX (31:15, 10ms, 10MHz, 64QAM, PUSC, 15 symbols)	X	4.10	66.51	18.92	6.02	35.0	± 9.6 %
		Y	3.93	66.00	18.30		35.0	
		Z	4.59	70.79	19.72		35.0	
10306-AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, 64QAM, PUSC, 18 symbols)	X	4.49	65.91	18.73	6.02	35.0	± 9.6 %
		Y	4.34	65.55	18.29		35.0	
		Z	4.69	69.17	19.61		35.0	
10307-AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, QPSK, PUSC, 18 symbols)	X	4.36	65.95	18.64	6.02	35.0	± 9.6 %
		Y	4.21	65.52	18.16		35.0	
		Z	4.59	69.24	19.50		35.0	
10308-AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, 16QAM, PUSC)	X	4.34	66.13	18.77	6.02	35.0	± 9.6 %
		Y	4.18	65.69	18.28		35.0	
		Z	4.61	69.65	19.75		35.0	
10309-AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, 16QAM, AMC 2x3, 18 symbols)	X	4.53	66.09	18.86	6.02	35.0	± 9.6 %
		Y	4.37	65.69	18.41		35.0	
		Z	4.70	69.25	19.72		35.0	
10310-AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, QPSK, AMC 2x3, 18 symbols)	X	4.43	65.94	18.69	6.02	35.0	± 9.6 %
		Y	4.28	65.57	18.25		35.0	
		Z	4.67	69.37	19.68		35.0	
10311-AAD	LTE-FDD (SC-FDMA, 100% RB, 15 MHz, QPSK)	X	3.02	68.71	16.12	0.00	150.0	± 9.6 %
		Y	2.74	67.13	15.24		150.0	
		Z	3.10	71.08	17.81		150.0	
10313-AAA	iDEN 1:3	X	3.73	76.32	17.72	6.99	70.0	± 9.6 %
		Y	2.24	71.02	15.63		70.0	
		Z	11.13	93.46	23.95		70.0	
10314-AAA	iDEN 1:6	X	5.96	86.74	24.63	10.00	30.0	± 9.6 %
		Y	4.04	81.26	22.67		30.0	
		Z	34.68	118.42	34.23		30.0	
10315-AAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps, 96pc duty cycle)	X	1.06	63.52	14.98	0.17	150.0	± 9.6 %
		Y	0.97	62.27	13.91		150.0	
		Z	1.08	66.42	17.31		150.0	
10316-AAB	IEEE 802.11g WiFi 2.4 GHz (ERP-OFDM, 6 Mbps, 96pc duty cycle)	X	4.50	66.64	16.23	0.17	150.0	± 9.6 %
		Y	4.39	66.27	16.01		150.0	
		Z	4.28	67.32	16.81		150.0	
10317-AAC	IEEE 802.11a WiFi 5 GHz (OFDM, 6 Mbps, 96pc duty cycle)	X	4.50	66.64	16.23	0.17	150.0	± 9.6 %
		Y	4.39	66.27	16.01		150.0	
		Z	4.28	67.32	16.81		150.0	
10400-AAD	IEEE 802.11ac WiFi (20MHz, 64-QAM, 99pc duty cycle)	X	4.60	66.96	16.21	0.00	150.0	± 9.6 %
		Y	4.47	66.53	15.97		150.0	
		Z	4.29	67.46	16.74		150.0	
10401-AAD	IEEE 802.11ac WiFi (40MHz, 64-QAM, 99pc duty cycle)	X	5.31	67.10	16.37	0.00	150.0	± 9.6 %
		Y	5.22	66.80	16.24		150.0	
		Z	5.09	67.45	16.93		150.0	

10402-AAD	IEEE 802.11ac WiFi (80MHz, 64-QAM, 99pc duty cycle)	X	5.57	67.40	16.38	0.00	150.0	± 9.6 %
		Y	5.47	67.02	16.23		150.0	
		Z	5.38	67.62	16.93		150.0	
10403-AAB	CDMA2000 (1xEV-DO, Rev. 0)	X	1.28	67.55	13.00	0.00	115.0	± 9.6 %
		Y	0.87	63.20	9.74		115.0	
		Z	0.46	60.16	6.10		115.0	
10404-AAB	CDMA2000 (1xEV-DO, Rev. A)	X	1.28	67.55	13.00	0.00	115.0	± 9.6 %
		Y	0.87	63.20	9.74		115.0	
		Z	0.46	60.16	6.10		115.0	
10406-AAB	CDMA2000, RC3, SO32, SCH0, Full Rate	X	100.00	114.35	26.69	0.00	100.0	± 9.6 %
		Y	8.61	89.18	21.46		100.0	
		Z	100.00	124.12	29.49		100.0	
10410-AAE	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9, Subframe Conf=4)	X	100.00	123.47	30.44	3.23	80.0	± 9.6 %
		Y	29.88	112.60	29.12		80.0	
		Z	100.00	143.39	38.45		80.0	
10415-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps, 99pc duty cycle)	X	1.00	62.89	14.47	0.00	150.0	± 9.6 %
		Y	0.92	61.78	13.44		150.0	
		Z	1.00	65.42	16.60		150.0	
10416-AAA	IEEE 802.11g WiFi 2.4 GHz (ERP-OFDM, 6 Mbps, 99pc duty cycle)	X	4.46	66.65	16.16	0.00	150.0	± 9.6 %
		Y	4.34	66.25	15.92		150.0	
		Z	4.22	67.28	16.71		150.0	
10417-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps, 99pc duty cycle)	X	4.46	66.65	16.16	0.00	150.0	± 9.6 %
		Y	4.34	66.25	15.92		150.0	
		Z	4.22	67.28	16.71		150.0	
10418-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps, 99pc duty cycle, Long preambule)	X	4.45	66.82	16.19	0.00	150.0	± 9.6 %
		Y	4.33	66.42	15.95		150.0	
		Z	4.23	67.56	16.82		150.0	
10419-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps, 99pc duty cycle, Short preambule)	X	4.47	66.77	16.18	0.00	150.0	± 9.6 %
		Y	4.35	66.37	15.95		150.0	
		Z	4.24	67.46	16.78		150.0	
10422-AAB	IEEE 802.11n (HT Greenfield, 7.2 Mbps, BPSK)	X	4.58	66.76	16.20	0.00	150.0	± 9.6 %
		Y	4.46	66.37	15.98		150.0	
		Z	4.33	67.38	16.77		150.0	
10423-AAB	IEEE 802.11n (HT Greenfield, 43.3 Mbps, 16-QAM)	X	4.73	67.05	16.30	0.00	150.0	± 9.6 %
		Y	4.60	66.64	16.07		150.0	
		Z	4.44	67.62	16.84		150.0	
10424-AAB	IEEE 802.11n (HT Greenfield, 72.2 Mbps, 64-QAM)	X	4.66	67.00	16.28	0.00	150.0	± 9.6 %
		Y	4.53	66.59	16.05		150.0	
		Z	4.37	67.55	16.82		150.0	
10425-AAB	IEEE 802.11n (HT Greenfield, 15 Mbps, BPSK)	X	5.26	67.24	16.44	0.00	150.0	± 9.6 %
		Y	5.17	66.94	16.32		150.0	
		Z	5.05	67.64	17.05		150.0	
10426-AAB	IEEE 802.11n (HT Greenfield, 90 Mbps, 16-QAM)	X	5.28	67.31	16.47	0.00	150.0	± 9.6 %
		Y	5.20	67.06	16.38		150.0	
		Z	5.11	67.90	17.18		150.0	

10427-AAB	IEEE 802.11n (HT Greenfield, 150 Mbps, 64-QAM)	X	5.28	67.25	16.44	0.00	150.0	± 9.6 %
		Y	5.17	66.88	16.28		150.0	
		Z	5.03	67.51	16.98		150.0	
10430-AAC	LTE-FDD (OFDMA, 5 MHz, E-TM 3.1)	X	4.17	70.94	18.03	0.00	150.0	± 9.6 %
		Y	3.94	70.25	17.43		150.0	
		Z	4.39	74.44	18.83		150.0	
10431-AAC	LTE-FDD (OFDMA, 10 MHz, E-TM 3.1)	X	4.11	67.19	16.11	0.00	150.0	± 9.6 %
		Y	3.95	66.68	15.73		150.0	
		Z	3.82	68.15	16.50		150.0	
10432-AAC	LTE-FDD (OFDMA, 15 MHz, E-TM 3.1)	X	4.42	67.06	16.21	0.00	150.0	± 9.6 %
		Y	4.28	66.62	15.93		150.0	
		Z	4.14	67.81	16.75		150.0	
10433-AAC	LTE-FDD (OFDMA, 20 MHz, E-TM 3.1)	X	4.67	67.03	16.30	0.00	150.0	± 9.6 %
		Y	4.54	66.62	16.06		150.0	
		Z	4.39	67.60	16.85		150.0	
10434-AAA	W-CDMA (BS Test Model 1, 64 DPCH)	X	4.27	71.80	17.95	0.00	150.0	± 9.6 %
		Y	3.95	70.75	17.10		150.0	
		Z	4.37	74.54	18.01		150.0	
10435-AAE	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	100.00	123.21	30.32	3.23	80.0	± 9.6 %
		Y	26.80	110.87	28.64		80.0	
		Z	100.00	143.00	38.28		80.0	
10447-AAC	LTE-FDD (OFDMA, 5 MHz, E-TM 3.1, Clipping 44%)	X	3.39	67.13	15.27	0.00	150.0	± 9.6 %
		Y	3.16	66.26	14.52		150.0	
		Z	2.97	67.52	14.59		150.0	
10448-AAC	LTE-FDD (OFDMA, 10 MHz, E-TM 3.1, Clippin 44%)	X	3.97	66.98	15.97	0.00	150.0	± 9.6 %
		Y	3.81	66.46	15.58		150.0	
		Z	3.71	67.98	16.41		150.0	
10449-AAC	LTE-FDD (OFDMA, 15 MHz, E-TM 3.1, Cliping 44%)	X	4.25	66.89	16.11	0.00	150.0	± 9.6 %
		Y	4.11	66.43	15.82		150.0	
		Z	4.00	67.65	16.67		150.0	
10450-AAC	LTE-FDD (OFDMA, 20 MHz, E-TM 3.1, Clipping 44%)	X	4.45	66.81	16.15	0.00	150.0	± 9.6 %
		Y	4.33	66.37	15.90		150.0	
		Z	4.22	67.38	16.71		150.0	
10451-AAA	W-CDMA (BS Test Model 1, 64 DPCH, Clipping 44%)	X	3.25	67.18	14.78	0.00	150.0	± 9.6 %
		Y	2.97	66.04	13.81		150.0	
		Z	2.60	66.32	13.13		150.0	
10456-AAB	IEEE 802.11ac WiFi (160MHz, 64-QAM, 99pc duty cycle)	X	6.15	67.84	16.63	0.00	150.0	± 9.6 %
		Y	6.15	67.72	16.63		150.0	
		Z	6.64	69.94	18.14		150.0	
10457-AAA	UMTS-FDD (DC-HSDPA)	X	3.75	65.32	15.86	0.00	150.0	± 9.6 %
		Y	3.67	64.95	15.62		150.0	
		Z	3.64	66.17	16.50		150.0	
10458-AAA	CDMA2000 (1xEV-DO, Rev. B, 2 carriers)	X	3.89	70.96	17.20	0.00	150.0	± 9.6 %
		Y	3.49	69.40	15.97		150.0	
		Z	2.86	68.25	14.10		150.0	
10459-AAA	CDMA2000 (1xEV-DO, Rev. B, 3 carriers)	X	4.98	68.55	17.98	0.00	150.0	± 9.6 %
		Y	4.81	68.28	17.63		150.0	
		Z	4.33	68.29	16.68		150.0	

10460-AAA	UMTS-FDD (WCDMA, AMR)	X	0.87	67.71	15.76	0.00	150.0	± 9.6 %
		Y	0.70	64.66	13.36		150.0	
		Z	3.66	95.75	26.74		150.0	
10461-AAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	100.00	129.54	33.26	3.29	80.0	± 9.6 %
		Y	14.50	104.88	28.18		80.0	
		Z	100.00	153.17	42.85		80.0	
10462-AAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	1.39	65.03	10.31	3.23	80.0	± 9.6 %
		Y	1.03	63.23	10.14		80.0	
		Z	100.00	109.05	22.95		80.0	
10463-AAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	0.81	60.05	7.43	3.23	80.0	± 9.6 %
		Y	0.75	60.00	7.90		80.0	
		Z	0.57	60.30	7.62		80.0	
10464-AAB	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	100.00	126.14	31.52	3.23	80.0	± 9.6 %
		Y	12.10	100.62	26.22		80.0	
		Z	100.00	150.19	41.19		80.0	
10465-AAB	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	1.19	63.61	9.62	3.23	80.0	± 9.6 %
		Y	0.93	62.22	9.59		80.0	
		Z	100.00	107.75	22.39		80.0	
10466-AAB	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	0.81	60.00	7.35	3.23	80.0	± 9.6 %
		Y	0.75	60.00	7.84		80.0	
		Z	0.55	60.00	7.41		80.0	
10467-AAD	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	100.00	126.52	31.69	3.23	80.0	± 9.6 %
		Y	14.79	103.62	27.06		80.0	
		Z	100.00	150.92	41.50		80.0	
10468-AAD	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	1.24	63.98	9.81	3.23	80.0	± 9.6 %
		Y	0.95	62.51	9.76		80.0	
		Z	100.00	108.41	22.67		80.0	
10469-AAD	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	0.81	60.00	7.35	3.23	80.0	± 9.6 %
		Y	0.75	60.00	7.84		80.0	
		Z	0.55	60.00	7.42		80.0	
10470-AAD	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	100.00	126.55	31.69	3.23	80.0	± 9.6 %
		Y	15.04	103.89	27.13		80.0	
		Z	100.00	151.07	41.55		80.0	
10471-AAD	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	1.22	63.88	9.75	3.23	80.0	± 9.6 %
		Y	0.95	62.45	9.71		80.0	
		Z	100.00	108.26	22.60		80.0	
10472-AAD	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	0.81	60.00	7.33	3.23	80.0	± 9.6 %
		Y	0.75	60.00	7.83		80.0	
		Z	0.55	60.00	7.40		80.0	
10473-AAD	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	100.00	126.51	31.67	3.23	80.0	± 9.6 %
		Y	14.94	103.77	27.09		80.0	
		Z	100.00	151.03	41.53		80.0	
10474-AAD	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	1.22	63.84	9.73	3.23	80.0	± 9.6 %
		Y	0.94	62.42	9.70		80.0	
		Z	100.00	108.25	22.59		80.0	
10475-AAD	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	0.81	60.00	7.33	3.23	80.0	± 9.6 %
		Y	0.75	60.00	7.83		80.0	
		Z	0.55	60.00	7.40		80.0	

10477-AAE	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	1.17	63.52	9.56	3.23	80.0	± 9.6 %
		Y	0.92	62.18	9.55		80.0	
		Z	100.00	107.73	22.37		80.0	
10478-AAE	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	0.81	60.00	7.32	3.23	80.0	± 9.6 %
		Y	0.75	60.00	7.82		80.0	
		Z	0.55	60.00	7.38		80.0	
10479-AAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	9.04	90.33	24.26	3.23	80.0	± 9.6 %
		Y	6.61	86.66	23.14		80.0	
		Z	100.00	137.19	37.34		80.0	
10480-AAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	8.84	83.63	19.75	3.23	80.0	± 9.6 %
		Y	4.76	76.73	17.50		80.0	
		Z	100.00	115.92	27.42		80.0	
10481-AAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	5.75	77.50	17.30	3.23	80.0	± 9.6 %
		Y	3.37	71.81	15.25		80.0	
		Z	100.00	111.07	25.15		80.0	
10482-AAB	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	2.60	71.30	16.37	2.23	80.0	± 9.6 %
		Y	1.67	65.92	13.44		80.0	
		Z	2.83	72.35	14.46		80.0	
10483-AAB	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	3.50	71.18	15.46	2.23	80.0	± 9.6 %
		Y	2.31	66.36	13.05		80.0	
		Z	1.29	61.22	8.83		80.0	
10484-AAB	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	3.25	69.98	14.98	2.23	80.0	± 9.6 %
		Y	2.20	65.52	12.66		80.0	
		Z	1.23	60.55	8.44		80.0	
10485-AAD	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	2.97	73.01	18.21	2.23	80.0	± 9.6 %
		Y	2.20	69.19	16.27		80.0	
		Z	22.67	102.89	26.50		80.0	
10486-AAD	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	2.86	68.82	15.74	2.23	80.0	± 9.6 %
		Y	2.22	65.76	13.92		80.0	
		Z	2.70	69.32	14.28		80.0	
10487-AAD	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	2.85	68.38	15.52	2.23	80.0	± 9.6 %
		Y	2.23	65.43	13.74		80.0	
		Z	2.47	67.87	13.61		80.0	
10488-AAD	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	3.20	71.90	18.58	2.23	80.0	± 9.6 %
		Y	2.62	69.33	17.40		80.0	
		Z	5.59	84.24	23.63		80.0	
10489-AAD	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	3.18	68.52	17.04	2.23	80.0	± 9.6 %
		Y	2.77	66.86	16.15		80.0	
		Z	3.92	74.27	19.29		80.0	
10490-AAD	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	3.27	68.37	16.97	2.23	80.0	± 9.6 %
		Y	2.86	66.79	16.11		80.0	
		Z	3.87	73.48	18.93		80.0	
10491-AAD	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	3.45	70.42	18.08	2.23	80.0	± 9.6 %
		Y	2.96	68.43	17.20		80.0	
		Z	4.22	76.57	21.22		80.0	
10492-AAD	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	3.52	67.77	17.04	2.23	80.0	± 9.6 %
		Y	3.17	66.45	16.39		80.0	
		Z	3.76	71.09	18.73		80.0	

10493-AAD	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	3.59	67.65	16.99	2.23	80.0	± 9.6 %
		Y	3.24	66.37	16.35		80.0	
		Z	3.77	70.74	18.54		80.0	
10494-AAE	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	3.73	71.91	18.57	2.23	80.0	± 9.6 %
		Y	3.14	69.59	17.59		80.0	
		Z	4.78	78.78	22.06		80.0	
10495-AAE	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	3.54	68.08	17.23	2.23	80.0	± 9.6 %
		Y	3.18	66.69	16.58		80.0	
		Z	3.77	71.24	19.01		80.0	
10496-AAE	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	3.62	67.84	17.15	2.23	80.0	± 9.6 %
		Y	3.27	66.53	16.54		80.0	
		Z	3.80	70.76	18.81		80.0	
10497-AAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	1.73	65.94	12.85	2.23	80.0	± 9.6 %
		Y	1.06	60.88	9.56		80.0	
		Z	0.85	60.00	7.05		80.0	
10498-AAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	1.28	60.26	8.80	2.23	80.0	± 9.6 %
		Y	1.16	60.00	7.85		80.0	
		Z	1.10	60.00	5.59		80.0	
10499-AAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	1.27	60.00	8.50	2.23	80.0	± 9.6 %
		Y	1.18	60.00	7.69		80.0	
		Z	1.14	60.00	5.40		80.0	
10500-AAB	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	3.02	72.29	18.27	2.23	80.0	± 9.6 %
		Y	2.36	69.20	16.71		80.0	
		Z	10.28	93.15	24.95		80.0	
10501-AAB	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	3.02	68.86	16.31	2.23	80.0	± 9.6 %
		Y	2.49	66.51	14.92		80.0	
		Z	3.75	73.54	17.07		80.0	
10502-AAB	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	3.08	68.71	16.17	2.23	80.0	± 9.6 %
		Y	2.54	66.38	14.78		80.0	
		Z	3.58	72.48	16.52		80.0	
10503-AAD	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	3.16	71.71	18.48	2.23	80.0	± 9.6 %
		Y	2.59	69.16	17.30		80.0	
		Z	5.44	83.79	23.45		80.0	
10504-AAD	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	3.16	68.43	16.98	2.23	80.0	± 9.6 %
		Y	2.76	66.77	16.09		80.0	
		Z	3.88	74.08	19.19		80.0	
10505-AAD	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	3.25	68.28	16.92	2.23	80.0	± 9.6 %
		Y	2.85	66.70	16.06		80.0	
		Z	3.84	73.33	18.85		80.0	
10506-AAD	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	3.70	71.78	18.50	2.23	80.0	± 9.6 %
		Y	3.12	69.46	17.52		80.0	
		Z	4.72	78.55	21.96		80.0	
10507-AAD	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	3.53	68.03	17.19	2.23	80.0	± 9.6 %
		Y	3.17	66.63	16.54		80.0	
		Z	3.75	71.16	18.97		80.0	

10508-AAD	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	3.61	67.78	17.11	2.23	80.0	± 9.6 %
		Y	3.26	66.47	16.49		80.0	
		Z	3.78	70.66	18.75		80.0	
10509-AAD	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	4.07	70.61	17.99	2.23	80.0	± 9.6 %
		Y	3.56	68.75	17.23		80.0	
		Z	4.50	74.42	20.36		80.0	
10510-AAD	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	4.01	67.79	17.19	2.23	80.0	± 9.6 %
		Y	3.67	66.54	16.66		80.0	
		Z	4.03	69.58	18.54		80.0	
10511-AAD	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	4.07	67.56	17.12	2.23	80.0	± 9.6 %
		Y	3.74	66.39	16.62		80.0	
		Z	4.08	69.30	18.42		80.0	
10512-AAE	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	4.24	72.14	18.49	2.23	80.0	± 9.6 %
		Y	3.60	69.85	17.56		80.0	
		Z	4.88	76.57	21.10		80.0	
10513-AAE	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	3.89	68.00	17.28	2.23	80.0	± 9.6 %
		Y	3.54	66.65	16.71		80.0	
		Z	3.93	69.75	18.67		80.0	
10514-AAE	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	3.93	67.61	17.16	2.23	80.0	± 9.6 %
		Y	3.60	66.36	16.63		80.0	
		Z	3.95	69.22	18.46		80.0	
10515-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 2 Mbps, 99pc duty cycle)	X	0.96	63.06	14.52	0.00	150.0	± 9.6 %
		Y	0.88	61.87	13.42		150.0	
		Z	0.97	65.95	16.87		150.0	
10516-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 5.5 Mbps, 99pc duty cycle)	X	0.57	69.38	16.67	0.00	150.0	± 9.6 %
		Y	0.42	64.94	13.06		150.0	
		Z	100.00	169.97	46.35		150.0	
10517-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 11 Mbps, 99pc duty cycle)	X	0.80	64.78	15.05	0.00	150.0	± 9.6 %
		Y	0.70	62.90	13.39		150.0	
		Z	0.98	72.03	19.62		150.0	
10518-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 9 Mbps, 99pc duty cycle)	X	4.45	66.73	16.14	0.00	150.0	± 9.6 %
		Y	4.33	66.33	15.90		150.0	
		Z	4.22	67.44	16.73		150.0	
10519-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 12 Mbps, 99pc duty cycle)	X	4.62	66.93	16.24	0.00	150.0	± 9.6 %
		Y	4.49	66.53	16.01		150.0	
		Z	4.34	67.57	16.79		150.0	
10520-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 18 Mbps, 99pc duty cycle)	X	4.47	66.88	16.16	0.00	150.0	± 9.6 %
		Y	4.34	66.44	15.91		150.0	
		Z	4.21	67.50	16.72		150.0	
10521-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 24 Mbps, 99pc duty cycle)	X	4.41	66.87	16.15	0.00	150.0	± 9.6 %
		Y	4.27	66.41	15.88		150.0	
		Z	4.14	67.42	16.68		150.0	
10522-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 36 Mbps, 99pc duty cycle)	X	4.47	66.99	16.25	0.00	150.0	± 9.6 %
		Y	4.33	66.55	15.99		150.0	
		Z	4.16	67.47	16.72		150.0	

10523-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 48 Mbps, 99pc duty cycle)	X	4.36	66.89	16.11	0.00	150.0	± 9.6 %
		Y	4.24	66.47	15.86		150.0	
		Z	4.15	67.74	16.81		150.0	
10524-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 54 Mbps, 99pc duty cycle)	X	4.41	66.91	16.21	0.00	150.0	± 9.6 %
		Y	4.27	66.48	15.96		150.0	
		Z	4.13	67.58	16.81		150.0	
10525-AAB	IEEE 802.11ac WiFi (20MHz, MCS0, 99pc duty cycle)	X	4.42	65.98	15.82	0.00	150.0	± 9.6 %
		Y	4.29	65.56	15.57		150.0	
		Z	4.21	66.73	16.46		150.0	
10526-AAB	IEEE 802.11ac WiFi (20MHz, MCS1, 99pc duty cycle)	X	4.56	66.31	15.95	0.00	150.0	± 9.6 %
		Y	4.42	65.86	15.70		150.0	
		Z	4.30	66.94	16.55		150.0	
10527-AAB	IEEE 802.11ac WiFi (20MHz, MCS2, 99pc duty cycle)	X	4.49	66.27	15.89	0.00	150.0	± 9.6 %
		Y	4.35	65.81	15.63		150.0	
		Z	4.25	66.95	16.50		150.0	
10528-AAB	IEEE 802.11ac WiFi (20MHz, MCS3, 99pc duty cycle)	X	4.50	66.29	15.92	0.00	150.0	± 9.6 %
		Y	4.37	65.82	15.66		150.0	
		Z	4.26	66.95	16.53		150.0	
10529-AAB	IEEE 802.11ac WiFi (20MHz, MCS4, 99pc duty cycle)	X	4.50	66.29	15.92	0.00	150.0	± 9.6 %
		Y	4.37	65.82	15.66		150.0	
		Z	4.26	66.95	16.53		150.0	
10531-AAB	IEEE 802.11ac WiFi (20MHz, MCS6, 99pc duty cycle)	X	4.48	66.36	15.92	0.00	150.0	± 9.6 %
		Y	4.33	65.86	15.64		150.0	
		Z	4.21	66.92	16.48		150.0	
10532-AAB	IEEE 802.11ac WiFi (20MHz, MCS7, 99pc duty cycle)	X	4.35	66.22	15.85	0.00	150.0	± 9.6 %
		Y	4.21	65.71	15.56		150.0	
		Z	4.11	66.80	16.43		150.0	
10533-AAB	IEEE 802.11ac WiFi (20MHz, MCS8, 99pc duty cycle)	X	4.51	66.35	15.92	0.00	150.0	± 9.6 %
		Y	4.37	65.89	15.66		150.0	
		Z	4.26	67.08	16.55		150.0	
10534-AAB	IEEE 802.11ac WiFi (40MHz, MCS0, 99pc duty cycle)	X	5.05	66.37	15.99	0.00	150.0	± 9.6 %
		Y	4.94	65.96	15.81		150.0	
		Z	4.84	66.67	16.54		150.0	
10535-AAB	IEEE 802.11ac WiFi (40MHz, MCS1, 99pc duty cycle)	X	5.11	66.53	16.07	0.00	150.0	± 9.6 %
		Y	5.00	66.13	15.88		150.0	
		Z	4.87	66.81	16.62		150.0	
10536-AAB	IEEE 802.11ac WiFi (40MHz, MCS2, 99pc duty cycle)	X	4.99	66.50	16.03	0.00	150.0	± 9.6 %
		Y	4.88	66.09	15.84		150.0	
		Z	4.76	66.80	16.58		150.0	
10537-AAB	IEEE 802.11ac WiFi (40MHz, MCS3, 99pc duty cycle)	X	5.04	66.45	16.01	0.00	150.0	± 9.6 %
		Y	4.93	66.06	15.83		150.0	
		Z	4.87	66.94	16.66		150.0	
10538-AAB	IEEE 802.11ac WiFi (40MHz, MCS4, 99pc duty cycle)	X	5.12	66.46	16.05	0.00	150.0	± 9.6 %
		Y	5.01	66.06	15.88		150.0	
		Z	4.87	66.70	16.57		150.0	
10540-AAB	IEEE 802.11ac WiFi (40MHz, MCS6, 99pc duty cycle)	X	5.05	66.45	16.06	0.00	150.0	± 9.6 %
		Y	4.94	66.03	15.87		150.0	
		Z	4.81	66.67	16.58		150.0	

10541-AAB	IEEE 802.11ac WiFi (40MHz, MCS7, 99pc duty cycle)	X	5.03	66.35	16.00	0.00	150.0	± 9.6 %
		Y	4.91	65.91	15.79		150.0	
		Z	4.81	66.64	16.54		150.0	
10542-AAB	IEEE 802.11ac WiFi (40MHz, MCS8, 99pc duty cycle)	X	5.19	66.43	16.06	0.00	150.0	± 9.6 %
		Y	5.08	66.04	15.88		150.0	
		Z	4.95	66.69	16.58		150.0	
10543-AAB	IEEE 802.11ac WiFi (40MHz, MCS9, 99pc duty cycle)	X	5.25	66.44	16.09	0.00	150.0	± 9.6 %
		Y	5.15	66.10	15.94		150.0	
		Z	5.03	66.83	16.69		150.0	
10544-AAB	IEEE 802.11ac WiFi (80MHz, MCS0, 99pc duty cycle)	X	5.37	66.47	15.99	0.00	150.0	± 9.6 %
		Y	5.28	66.07	15.82		150.0	
		Z	5.21	66.60	16.48		150.0	
10545-AAB	IEEE 802.11ac WiFi (80MHz, MCS1, 99pc duty cycle)	X	5.55	66.87	16.14	0.00	150.0	± 9.6 %
		Y	5.48	66.56	16.03		150.0	
		Z	5.42	67.24	16.77		150.0	
10546-AAB	IEEE 802.11ac WiFi (80MHz, MCS2, 99pc duty cycle)	X	5.42	66.63	16.03	0.00	150.0	± 9.6 %
		Y	5.32	66.20	15.86		150.0	
		Z	5.23	66.72	16.51		150.0	
10547-AAB	IEEE 802.11ac WiFi (80MHz, MCS3, 99pc duty cycle)	X	5.49	66.69	16.05	0.00	150.0	± 9.6 %
		Y	5.40	66.32	15.91		150.0	
		Z	5.44	67.30	16.80		150.0	
10548-AAB	IEEE 802.11ac WiFi (80MHz, MCS4, 99pc duty cycle)	X	5.68	67.44	16.41	0.00	150.0	± 9.6 %
		Y	5.61	67.14	16.29		150.0	
		Z	5.44	67.46	16.86		150.0	
10550-AAB	IEEE 802.11ac WiFi (80MHz, MCS6, 99pc duty cycle)	X	5.46	66.70	16.08	0.00	150.0	± 9.6 %
		Y	5.39	66.41	15.97		150.0	
		Z	5.44	67.48	16.91		150.0	
10551-AAB	IEEE 802.11ac WiFi (80MHz, MCS7, 99pc duty cycle)	X	5.45	66.69	16.03	0.00	150.0	± 9.6 %
		Y	5.33	66.22	15.84		150.0	
		Z	5.21	66.64	16.46		150.0	
10552-AAB	IEEE 802.11ac WiFi (80MHz, MCS8, 99pc duty cycle)	X	5.38	66.56	15.97	0.00	150.0	± 9.6 %
		Y	5.29	66.14	15.80		150.0	
		Z	5.21	66.76	16.51		150.0	
10553-AAB	IEEE 802.11ac WiFi (80MHz, MCS9, 99pc duty cycle)	X	5.45	66.56	16.00	0.00	150.0	± 9.6 %
		Y	5.35	66.13	15.83		150.0	
		Z	5.25	66.64	16.47		150.0	
10554-AAC	IEEE 802.11ac WiFi (160MHz, MCS0, 99pc duty cycle)	X	5.78	66.82	16.07	0.00	150.0	± 9.6 %
		Y	5.71	66.44	15.93		150.0	
		Z	5.67	66.90	16.54		150.0	
10555-AAC	IEEE 802.11ac WiFi (160MHz, MCS1, 99pc duty cycle)	X	5.90	67.09	16.19	0.00	150.0	± 9.6 %
		Y	5.82	66.72	16.05		150.0	
		Z	5.76	67.16	16.66		150.0	
10556-AAC	IEEE 802.11ac WiFi (160MHz, MCS2, 99pc duty cycle)	X	5.92	67.15	16.21	0.00	150.0	± 9.6 %
		Y	5.85	66.81	16.09		150.0	
		Z	5.85	67.43	16.79		150.0	
10557-AAC	IEEE 802.11ac WiFi (160MHz, MCS3, 99pc duty cycle)	X	5.88	67.05	16.18	0.00	150.0	± 9.6 %
		Y	5.80	66.65	16.03		150.0	
		Z	5.73	67.07	16.62		150.0	

10558-AAC	IEEE 802.11ac WiFi (160MHz, MCS4, 99pc duty cycle)	X	5.93	67.20	16.27	0.00	150.0	± 9.6 %
		Y	5.83	66.77	16.10		150.0	
		Z	5.70	67.00	16.61		150.0	
10560-AAC	IEEE 802.11ac WiFi (160MHz, MCS6, 99pc duty cycle)	X	5.92	67.06	16.23	0.00	150.0	± 9.6 %
		Y	5.83	66.66	16.08		150.0	
		Z	5.73	66.98	16.63		150.0	
10561-AAC	IEEE 802.11ac WiFi (160MHz, MCS7, 99pc duty cycle)	X	5.85	67.03	16.26	0.00	150.0	± 9.6 %
		Y	5.77	66.66	16.12		150.0	
		Z	5.67	66.99	16.67		150.0	
10562-AAC	IEEE 802.11ac WiFi (160MHz, MCS8, 99pc duty cycle)	X	5.94	67.32	16.40	0.00	150.0	± 9.6 %
		Y	5.83	66.85	16.21		150.0	
		Z	5.72	67.13	16.74		150.0	
10563-AAC	IEEE 802.11ac WiFi (160MHz, MCS9, 99pc duty cycle)	X	6.03	67.22	16.31	0.00	150.0	± 9.6 %
		Y	5.94	66.85	16.18		150.0	
		Z	5.87	67.29	16.79		150.0	
10564-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 9 Mbps, 99pc duty cycle)	X	4.77	66.79	16.29	0.46	150.0	± 9.6 %
		Y	4.66	66.43	16.09		150.0	
		Z	4.53	67.38	16.84		150.0	
10565-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 12 Mbps, 99pc duty cycle)	X	4.99	67.21	16.61	0.46	150.0	± 9.6 %
		Y	4.86	66.84	16.41		150.0	
		Z	4.70	67.76	17.13		150.0	
10566-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 18 Mbps, 99pc duty cycle)	X	4.82	67.05	16.42	0.46	150.0	± 9.6 %
		Y	4.69	66.65	16.20		150.0	
		Z	4.55	67.57	16.95		150.0	
10567-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 24 Mbps, 99pc duty cycle)	X	4.85	67.43	16.77	0.46	150.0	± 9.6 %
		Y	4.72	67.02	16.56		150.0	
		Z	4.58	67.97	17.33		150.0	
10568-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 36 Mbps, 99pc duty cycle)	X	4.73	66.84	16.20	0.46	150.0	± 9.6 %
		Y	4.60	66.42	15.96		150.0	
		Z	4.41	67.18	16.62		150.0	
10569-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 48 Mbps, 99pc duty cycle)	X	4.82	67.57	16.86	0.46	150.0	± 9.6 %
		Y	4.69	67.19	16.66		150.0	
		Z	4.60	68.35	17.57		150.0	
10570-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 54 Mbps, 99pc duty cycle)	X	4.84	67.40	16.78	0.46	150.0	± 9.6 %
		Y	4.71	67.03	16.58		150.0	
		Z	4.56	68.01	17.38		150.0	
10571-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps, 90pc duty cycle)	X	1.12	63.92	15.25	0.46	130.0	± 9.6 %
		Y	1.01	62.56	14.19		130.0	
		Z	1.16	67.01	17.67		130.0	
10572-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 2 Mbps, 90pc duty cycle)	X	1.12	64.43	15.58	0.46	130.0	± 9.6 %
		Y	1.01	62.96	14.46		130.0	
		Z	1.19	67.98	18.26		130.0	
10573-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 5.5 Mbps, 90pc duty cycle)	X	1.38	80.48	21.60	0.46	130.0	± 9.6 %
		Y	0.74	70.76	16.62		130.0	
		Z	100.00	166.51	46.17		130.0	
10574-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 11 Mbps, 90pc duty cycle)	X	1.17	69.37	18.21	0.46	130.0	± 9.6 %
		Y	0.97	66.56	16.37		130.0	
		Z	1.84	82.04	24.87		130.0	

10575-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps, 90pc duty cycle)	X	4.55	66.56	16.33	0.46	130.0	± 9.6 %
		Y	4.44	66.20	16.13		130.0	
		Z	4.32	67.20	16.89		130.0	
10576-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 9 Mbps, 90pc duty cycle)	X	4.58	66.73	16.40	0.46	130.0	± 9.6 %
		Y	4.46	66.38	16.20		130.0	
		Z	4.35	67.48	17.02		130.0	
10577-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 12 Mbps, 90pc duty cycle)	X	4.76	67.00	16.56	0.46	130.0	± 9.6 %
		Y	4.64	66.64	16.36		130.0	
		Z	4.49	67.66	17.14		130.0	
10578-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 18 Mbps, 90pc duty cycle)	X	4.66	67.14	16.65	0.46	130.0	± 9.6 %
		Y	4.53	66.75	16.45		130.0	
		Z	4.41	67.83	17.27		130.0	
10579-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 24 Mbps, 90pc duty cycle)	X	4.42	66.41	15.96	0.46	130.0	± 9.6 %
		Y	4.29	65.99	15.72		130.0	
		Z	4.15	66.91	16.47		130.0	
10580-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 36 Mbps, 90pc duty cycle)	X	4.47	66.47	15.99	0.46	130.0	± 9.6 %
		Y	4.34	66.06	15.76		130.0	
		Z	4.16	66.89	16.44		130.0	
10581-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 48 Mbps, 90pc duty cycle)	X	4.56	67.18	16.60	0.46	130.0	± 9.6 %
		Y	4.43	66.79	16.40		130.0	
		Z	4.35	68.05	17.33		130.0	
10582-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 54 Mbps, 90pc duty cycle)	X	4.36	66.18	15.75	0.46	130.0	± 9.6 %
		Y	4.23	65.77	15.51		130.0	
		Z	4.07	66.70	16.26		130.0	
10583-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps, 90pc duty cycle)	X	4.55	66.56	16.33	0.46	130.0	± 9.6 %
		Y	4.44	66.20	16.13		130.0	
		Z	4.32	67.20	16.89		130.0	
10584-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 9 Mbps, 90pc duty cycle)	X	4.58	66.73	16.40	0.46	130.0	± 9.6 %
		Y	4.46	66.38	16.20		130.0	
		Z	4.35	67.48	17.02		130.0	
10585-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 12 Mbps, 90pc duty cycle)	X	4.76	67.00	16.56	0.46	130.0	± 9.6 %
		Y	4.64	66.64	16.36		130.0	
		Z	4.49	67.66	17.14		130.0	
10586-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 18 Mbps, 90pc duty cycle)	X	4.66	67.14	16.65	0.46	130.0	± 9.6 %
		Y	4.53	66.75	16.45		130.0	
		Z	4.41	67.83	17.27		130.0	
10587-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 24 Mbps, 90pc duty cycle)	X	4.42	66.41	15.96	0.46	130.0	± 9.6 %
		Y	4.29	65.99	15.72		130.0	
		Z	4.15	66.91	16.47		130.0	
10588-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 36 Mbps, 90pc duty cycle)	X	4.47	66.47	15.99	0.46	130.0	± 9.6 %
		Y	4.34	66.06	15.76		130.0	
		Z	4.16	66.89	16.44		130.0	
10589-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 48 Mbps, 90pc duty cycle)	X	4.56	67.18	16.60	0.46	130.0	± 9.6 %
		Y	4.43	66.79	16.40		130.0	
		Z	4.35	68.05	17.33		130.0	
10590-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 54 Mbps, 90pc duty cycle)	X	4.36	66.18	15.75	0.46	130.0	± 9.6 %
		Y	4.23	65.77	15.51		130.0	
		Z	4.07	66.70	16.26		130.0	

10591-AAB	IEEE 802.11n (HT Mixed, 20MHz, MCS0, 90pc duty cycle)	X	4.71	66.63	16.44	0.46	130.0	± 9.6 %
		Y	4.60	66.29	16.26		130.0	
		Z	4.48	67.29	17.03		130.0	
10592-AAB	IEEE 802.11n (HT Mixed, 20MHz, MCS1, 90pc duty cycle)	X	4.84	66.95	16.57	0.46	130.0	± 9.6 %
		Y	4.72	66.60	16.39		130.0	
		Z	4.57	67.53	17.14		130.0	
10593-AAB	IEEE 802.11n (HT Mixed, 20MHz, MCS2, 90pc duty cycle)	X	4.76	66.84	16.44	0.46	130.0	± 9.6 %
		Y	4.64	66.47	16.24		130.0	
		Z	4.49	67.44	17.01		130.0	
10594-AAB	IEEE 802.11n (HT Mixed, 20MHz, MCS3, 90pc duty cycle)	X	4.82	67.01	16.59	0.46	130.0	± 9.6 %
		Y	4.69	66.64	16.41		130.0	
		Z	4.55	67.60	17.18		130.0	
10595-AAB	IEEE 802.11n (HT Mixed, 20MHz, MCS4, 90pc duty cycle)	X	4.78	66.97	16.49	0.46	130.0	± 9.6 %
		Y	4.66	66.61	16.31		130.0	
		Z	4.51	67.61	17.10		130.0	
10596-AAB	IEEE 802.11n (HT Mixed, 20MHz, MCS5, 90pc duty cycle)	X	4.72	66.96	16.50	0.46	130.0	± 9.6 %
		Y	4.59	66.58	16.30		130.0	
		Z	4.43	67.54	17.08		130.0	
10597-AAB	IEEE 802.11n (HT Mixed, 20MHz, MCS6, 90pc duty cycle)	X	4.67	66.84	16.37	0.46	130.0	± 9.6 %
		Y	4.54	66.45	16.16		130.0	
		Z	4.40	67.40	16.91		130.0	
10598-AAB	IEEE 802.11n (HT Mixed, 20MHz, MCS7, 90pc duty cycle)	X	4.65	67.06	16.62	0.46	130.0	± 9.6 %
		Y	4.52	66.66	16.41		130.0	
		Z	4.41	67.68	17.21		130.0	
10599-AAB	IEEE 802.11n (HT Mixed, 40MHz, MCS0, 90pc duty cycle)	X	5.37	67.11	16.64	0.46	130.0	± 9.6 %
		Y	5.30	66.90	16.58		130.0	
		Z	5.43	68.49	17.76		130.0	
10600-AAB	IEEE 802.11n (HT Mixed, 40MHz, MCS1, 90pc duty cycle)	X	5.48	67.47	16.80	0.46	130.0	± 9.6 %
		Y	5.44	67.38	16.80		130.0	
		Z	5.37	68.31	17.64		130.0	
10601-AAB	IEEE 802.11n (HT Mixed, 40MHz, MCS2, 90pc duty cycle)	X	5.38	67.27	16.71	0.46	130.0	± 9.6 %
		Y	5.32	67.07	16.65		130.0	
		Z	5.29	68.14	17.57		130.0	
10602-AAB	IEEE 802.11n (HT Mixed, 40MHz, MCS3, 90pc duty cycle)	X	5.51	67.42	16.71	0.46	130.0	± 9.6 %
		Y	5.45	67.23	16.66		130.0	
		Z	5.33	67.99	17.42		130.0	
10603-AAB	IEEE 802.11n (HT Mixed, 40MHz, MCS4, 90pc duty cycle)	X	5.56	67.64	16.95	0.46	130.0	± 9.6 %
		Y	5.53	67.58	16.97		130.0	
		Z	5.29	67.90	17.51		130.0	
10604-AAB	IEEE 802.11n (HT Mixed, 40MHz, MCS5, 90pc duty cycle)	X	5.44	67.30	16.76	0.46	130.0	± 9.6 %
		Y	5.41	67.23	16.78		130.0	
		Z	5.21	67.60	17.33		130.0	
10605-AAB	IEEE 802.11n (HT Mixed, 40MHz, MCS6, 90pc duty cycle)	X	5.49	67.43	16.83	0.46	130.0	± 9.6 %
		Y	5.43	67.25	16.78		130.0	
		Z	5.25	67.78	17.43		130.0	
10606-AAB	IEEE 802.11n (HT Mixed, 40MHz, MCS7, 90pc duty cycle)	X	5.23	66.74	16.34	0.46	130.0	± 9.6 %
		Y	5.17	66.56	16.29		130.0	
		Z	5.19	67.74	17.26		130.0	

10607-AAB	IEEE 802.11ac WiFi (20MHz, MCS0, 90pc duty cycle)	X	4.55	65.96	16.07	0.46	130.0	± 9.6 %
		Y	4.43	65.59	15.87		130.0	
		Z	4.35	66.73	16.73		130.0	
10608-AAB	IEEE 802.11ac WiFi (20MHz, MCS1, 90pc duty cycle)	X	4.71	66.34	16.23	0.46	130.0	± 9.6 %
		Y	4.58	65.94	16.03		130.0	
		Z	4.45	67.00	16.86		130.0	
10609-AAB	IEEE 802.11ac WiFi (20MHz, MCS2, 90pc duty cycle)	X	4.61	66.18	16.06	0.46	130.0	± 9.6 %
		Y	4.48	65.77	15.84		130.0	
		Z	4.36	66.86	16.69		130.0	
10610-AAB	IEEE 802.11ac WiFi (20MHz, MCS3, 90pc duty cycle)	X	4.66	66.33	16.22	0.46	130.0	± 9.6 %
		Y	4.53	65.93	16.01		130.0	
		Z	4.41	67.03	16.87		130.0	
10611-AAB	IEEE 802.11ac WiFi (20MHz, MCS4, 90pc duty cycle)	X	4.57	66.14	16.07	0.46	130.0	± 9.6 %
		Y	4.44	65.73	15.86		130.0	
		Z	4.32	66.80	16.69		130.0	
10612-AAB	IEEE 802.11ac WiFi (20MHz, MCS5, 90pc duty cycle)	X	4.57	66.29	16.12	0.46	130.0	± 9.6 %
		Y	4.44	65.87	15.89		130.0	
		Z	4.29	66.90	16.73		130.0	
10613-AAB	IEEE 802.11ac WiFi (20MHz, MCS6, 90pc duty cycle)	X	4.57	66.14	15.98	0.46	130.0	± 9.6 %
		Y	4.43	65.70	15.75		130.0	
		Z	4.29	66.69	16.55		130.0	
10614-AAB	IEEE 802.11ac WiFi (20MHz, MCS7, 90pc duty cycle)	X	4.52	66.33	16.21	0.46	130.0	± 9.6 %
		Y	4.39	65.89	15.98		130.0	
		Z	4.28	66.96	16.83		130.0	
10615-AAB	IEEE 802.11ac WiFi (20MHz, MCS8, 90pc duty cycle)	X	4.57	65.99	15.86	0.46	130.0	± 9.6 %
		Y	4.44	65.58	15.63		130.0	
		Z	4.31	66.67	16.47		130.0	
10616-AAB	IEEE 802.11ac WiFi (40MHz, MCS0, 90pc duty cycle)	X	5.19	66.38	16.26	0.46	130.0	± 9.6 %
		Y	5.10	66.03	16.12		130.0	
		Z	4.99	66.75	16.86		130.0	
10617-AAB	IEEE 802.11ac WiFi (40MHz, MCS1, 90pc duty cycle)	X	5.26	66.56	16.33	0.46	130.0	± 9.6 %
		Y	5.17	66.25	16.21		130.0	
		Z	5.03	66.90	16.92		130.0	
10618-AAB	IEEE 802.11ac WiFi (40MHz, MCS2, 90pc duty cycle)	X	5.15	66.58	16.35	0.46	130.0	± 9.6 %
		Y	5.06	66.26	16.22		130.0	
		Z	4.94	66.92	16.95		130.0	
10619-AAB	IEEE 802.11ac WiFi (40MHz, MCS3, 90pc duty cycle)	X	5.16	66.37	16.18	0.46	130.0	± 9.6 %
		Y	5.07	66.06	16.06		130.0	
		Z	5.03	67.03	16.93		130.0	
10620-AAB	IEEE 802.11ac WiFi (40MHz, MCS4, 90pc duty cycle)	X	5.24	66.40	16.24	0.46	130.0	± 9.6 %
		Y	5.15	66.09	16.13		130.0	
		Z	5.01	66.69	16.81		130.0	
10621-AAB	IEEE 802.11ac WiFi (40MHz, MCS5, 90pc duty cycle)	X	5.25	66.54	16.43	0.46	130.0	± 9.6 %
		Y	5.15	66.19	16.30		130.0	
		Z	5.02	66.78	16.97		130.0	
10622-AAB	IEEE 802.11ac WiFi (40MHz, MCS6, 90pc duty cycle)	X	5.26	66.70	16.51	0.46	130.0	± 9.6 %
		Y	5.15	66.29	16.34		130.0	
		Z	5.02	66.91	17.04		130.0	

10623-AAB	IEEE 802.11ac WiFi (40MHz, MCS7, 90pc duty cycle)	X	5.14	66.22	16.14	0.46	130.0	± 9.6 %
		Y	5.03	65.82	15.97		130.0	
		Z	4.94	66.57	16.72		130.0	
10624-AAB	IEEE 802.11ac WiFi (40MHz, MCS8, 90pc duty cycle)	X	5.33	66.43	16.30	0.46	130.0	± 9.6 %
		Y	5.24	66.10	16.18		130.0	
		Z	5.10	66.74	16.87		130.0	
10625-AAB	IEEE 802.11ac WiFi (40MHz, MCS9, 90pc duty cycle)	X	5.58	67.07	16.68	0.46	130.0	± 9.6 %
		Y	5.39	66.45	16.42		130.0	
		Z	5.23	67.07	17.11		130.0	
10626-AAB	IEEE 802.11ac WiFi (80MHz, MCS0, 90pc duty cycle)	X	5.51	66.45	16.23	0.46	130.0	± 9.6 %
		Y	5.43	66.10	16.10		130.0	
		Z	5.35	66.63	16.76		130.0	
10627-AAB	IEEE 802.11ac WiFi (80MHz, MCS1, 90pc duty cycle)	X	5.73	66.99	16.46	0.46	130.0	± 9.6 %
		Y	5.69	66.81	16.43		130.0	
		Z	5.63	67.47	17.17		130.0	
10628-AAB	IEEE 802.11ac WiFi (80MHz, MCS2, 90pc duty cycle)	X	5.52	66.48	16.14	0.46	130.0	± 9.6 %
		Y	5.43	66.11	16.01		130.0	
		Z	5.34	66.61	16.66		130.0	
10629-AAB	IEEE 802.11ac WiFi (80MHz, MCS3, 90pc duty cycle)	X	5.60	66.56	16.18	0.46	130.0	± 9.6 %
		Y	5.54	66.30	16.10		130.0	
		Z	5.64	67.50	17.11		130.0	
10630-AAB	IEEE 802.11ac WiFi (80MHz, MCS4, 90pc duty cycle)	X	5.92	67.73	16.77	0.46	130.0	± 9.6 %
		Y	5.89	67.56	16.73		130.0	
		Z	5.64	67.67	17.20		130.0	
10631-AAB	IEEE 802.11ac WiFi (80MHz, MCS5, 90pc duty cycle)	X	5.87	67.68	16.92	0.46	130.0	± 9.6 %
		Y	5.78	67.32	16.80		130.0	
		Z	5.62	67.70	17.39		130.0	
10632-AAB	IEEE 802.11ac WiFi (80MHz, MCS6, 90pc duty cycle)	X	5.70	67.07	16.64	0.46	130.0	± 9.6 %
		Y	5.67	66.92	16.62		130.0	
		Z	5.80	68.22	17.68		130.0	
10633-AAB	IEEE 802.11ac WiFi (80MHz, MCS7, 90pc duty cycle)	X	5.59	66.68	16.27	0.46	130.0	± 9.6 %
		Y	5.49	66.30	16.14		130.0	
		Z	5.36	66.70	16.74		130.0	
10634-AAB	IEEE 802.11ac WiFi (80MHz, MCS8, 90pc duty cycle)	X	5.57	66.70	16.34	0.46	130.0	± 9.6 %
		Y	5.48	66.32	16.20		130.0	
		Z	5.40	66.93	16.91		130.0	
10635-AAB	IEEE 802.11ac WiFi (80MHz, MCS9, 90pc duty cycle)	X	5.45	66.03	15.75	0.46	130.0	± 9.6 %
		Y	5.35	65.64	15.59		130.0	
		Z	5.23	66.11	16.22		130.0	
10636-AAC	IEEE 802.11ac WiFi (160MHz, MCS0, 90pc duty cycle)	X	5.93	66.81	16.31	0.46	130.0	± 9.6 %
		Y	5.87	66.50	16.22		130.0	
		Z	5.83	66.96	16.84		130.0	
10637-AAC	IEEE 802.11ac WiFi (160MHz, MCS1, 90pc duty cycle)	X	6.07	67.17	16.48	0.46	130.0	± 9.6 %
		Y	6.02	66.88	16.40		130.0	
		Z	5.97	67.37	17.04		130.0	
10638-AAC	IEEE 802.11ac WiFi (160MHz, MCS2, 90pc duty cycle)	X	6.07	67.15	16.45	0.46	130.0	± 9.6 %
		Y	6.02	66.88	16.37		130.0	
		Z	6.05	67.63	17.15		130.0	

10639-AAC	IEEE 802.11ac WiFi (160MHz, MCS3, 90pc duty cycle)	X	6.04	67.08	16.45	0.46	130.0	± 9.6 %
		Y	5.98	66.75	16.35		130.0	
		Z	5.91	67.17	16.95		130.0	
10640-AAC	IEEE 802.11ac WiFi (160MHz, MCS4, 90pc duty cycle)	X	6.04	67.08	16.40	0.46	130.0	± 9.6 %
		Y	5.96	66.72	16.28		130.0	
		Z	5.82	66.93	16.78		130.0	
10641-AAC	IEEE 802.11ac WiFi (160MHz, MCS5, 90pc duty cycle)	X	6.10	67.04	16.40	0.46	130.0	± 9.6 %
		Y	6.06	66.80	16.34		130.0	
		Z	6.00	67.28	16.98		130.0	
10642-AAC	IEEE 802.11ac WiFi (160MHz, MCS6, 90pc duty cycle)	X	6.13	67.25	16.67	0.46	130.0	± 9.6 %
		Y	6.06	66.93	16.57		130.0	
		Z	5.95	67.22	17.11		130.0	
10643-AAC	IEEE 802.11ac WiFi (160MHz, MCS7, 90pc duty cycle)	X	5.98	66.96	16.42	0.46	130.0	± 9.6 %
		Y	5.92	66.68	16.34		130.0	
		Z	5.80	66.93	16.86		130.0	
10644-AAC	IEEE 802.11ac WiFi (160MHz, MCS8, 90pc duty cycle)	X	6.09	67.31	16.62	0.46	130.0	± 9.6 %
		Y	5.99	66.89	16.46		130.0	
		Z	5.86	67.11	16.97		130.0	
10645-AAC	IEEE 802.11ac WiFi (160MHz, MCS9, 90pc duty cycle)	X	6.21	67.33	16.59	0.46	130.0	± 9.6 %
		Y	6.21	67.22	16.60		130.0	
		Z	6.00	67.25	17.00		130.0	
10646-AAE	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, QPSK, UL Subframe=2,7)	X	16.42	111.83	39.08	9.30	60.0	± 9.6 %
		Y	7.48	93.91	33.51		60.0	
		Z	8.24	101.48	38.03		60.0	
10647-AAE	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK, UL Subframe=2,7)	X	13.25	107.26	37.80	9.30	60.0	± 9.6 %
		Y	6.56	91.19	32.64		60.0	
		Z	6.86	97.18	36.65		60.0	
10648-AAA	CDMA2000 (1x Advanced)	X	0.61	62.72	9.85	0.00	150.0	± 9.6 %
		Y	0.45	60.26	7.20		150.0	
		Z	0.31	60.00	4.97		150.0	
10652-AAC	LTE-TDD (OFDMA, 5 MHz, E-TM 3.1, Clipping 44%)	X	3.40	66.50	16.32	2.23	80.0	± 9.6 %
		Y	3.12	65.43	15.68		80.0	
		Z	3.58	69.50	17.50		80.0	
10653-AAC	LTE-TDD (OFDMA, 10 MHz, E-TM 3.1, Clipping 44%)	X	3.93	65.85	16.50	2.23	80.0	± 9.6 %
		Y	3.70	65.00	16.06		80.0	
		Z	3.91	67.39	17.42		80.0	
10654-AAC	LTE-TDD (OFDMA, 15 MHz, E-TM 3.1, Clipping 44%)	X	3.92	65.48	16.50	2.23	80.0	± 9.6 %
		Y	3.72	64.66	16.11		80.0	
		Z	3.91	66.66	17.39		80.0	
10655-AAD	LTE-TDD (OFDMA, 20 MHz, E-TM 3.1, Clipping 44%)	X	3.99	65.45	16.54	2.23	80.0	± 9.6 %
		Y	3.79	64.62	16.15		80.0	
		Z	3.98	66.38	17.37		80.0	
10658-AAA	Pulse Waveform (200Hz, 10%)	X	100.00	108.15	24.34	10.00	50.0	± 9.6 %
		Y	42.87	96.86	20.96		50.0	
		Z	100.00	109.52	25.04		50.0	
10659-AAA	Pulse Waveform (200Hz, 20%)	X	100.00	107.90	23.20	6.99	60.0	± 9.6 %
		Y	100.00	104.59	21.35		60.0	
		Z	100.00	109.57	23.91		60.0	

10660-AAA	Pulse Waveform (200Hz, 40%)	X	100.00	110.08	22.90	3.98	80.0	± 9.6 %
		Y	100.00	101.87	18.86		80.0	
		Z	100.00	111.81	23.42		80.0	
10661-AAA	Pulse Waveform (200Hz, 60%)	X	100.00	114.06	23.41	2.22	100.0	± 9.6 %
		Y	100.00	92.16	13.92		100.0	
		Z	100.00	107.18	20.20		100.0	
10662-AAA	Pulse Waveform (200Hz, 80%)	X	100.00	119.59	23.99	0.97	120.0	± 9.6 %
		Y	13.69	60.41	1.41		120.0	
		Z	0.02	60.01	20.0		120.0	

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

APPENDIX D: SAR TISSUE SPECIFICATIONS

Measurement Procedure for Tissue verification:

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

$$Y = \frac{j2\omega\varepsilon_r\varepsilon_0}{\left[\ln(b/a)\right]^2}\int_a^b\int_a^b\int_0^\pi \cos\phi' \frac{\exp\left[-j\omega r(\mu_0\varepsilon_r'\varepsilon_0)^{1/2}\right]}{r} d\phi' d\rho' d\rho$$

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

Table D-I
Composition of the Tissue Equivalent Matter

Frequency (MHz)	2450	5200-5800
Tissue	Body	Body
DGBE	26.7	
NaCl	0.1	
Polysorbate (Tween) 80		20
Water	73.2	80

APPENDIX E: SAR SYSTEM VALIDATION

Per FCC KDB Publication 865664 D02v01r02, SAR system validation status should be documented to confirm measurement accuracy. The SAR systems (including SAR probes, system components and software versions) used for this device were validated against its performance specifications prior to the SAR measurements. Reference dipoles were used with the required tissue- equivalent media for system validation, according to the procedures outlined in FCC KDB Publication 865664 D01v01r04 and IEEE 1528-2013. Since SAR probe calibrations are frequency dependent, each probe calibration point was validated at a frequency within the valid frequency range of the probe calibration point, using the system that normally operates with the probe for routine SAR measurements and according to the required tissue-equivalent media.

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

Table E-1
SAR System Validation Summary – 1g

SAR SYSTEM #	FREQ. [MHz]	DATE	PROBE SN	PROBE TYPE	PROBE CAL. POINT		COND. (σ)	PERM. (εr)	CW VALIDATION			MOD. VALIDATION		
									SENSITIVITY	PROBE LINEARITY	PROBE ISOTROPY	MOD. TYPE	DUTY FACTOR	PAR
AM4	2450	6/20/2018	3119	ES3DV3	2450	Body	1.983	52.621	PASS	PASS	PASS	OFDM/TDD	PASS	PASS
AM2	2450	11/9/2018	7416	EX3DV4	2450	Body	2.020	51.408	PASS	PASS	PASS	OFDM/TDD	PASS	PASS
AM3	5250	12/10/2018	7420	EX3DV4	5250	Body	5.492	48.046	PASS	PASS	PASS	OFDM	N/A	PASS
AM3	5600	12/11/2018	7420	EX3DV4	5600	Body	5.969	47.433	PASS	PASS	PASS	OFDM	N/A	PASS
AM3	5750	12/11/2018	7420	EX3DV4	5750	Body	6.111	45.914	PASS	PASS	PASS	OFDM	N/A	PASS

NOTE: While the probes have been calibrated for both CW and modulated signals, all measurements were performed using communication systems calibrated for CW signals only. Modulations in the table above represent test configurations for which the measurement system has been validated per FCC KDB Publication 865664 D01v01r04 for scenarios when CW probe calibrations are used with other signal types. SAR systems were validated for modulated signals with a periodic duty cycle, such as GMSK, or with a high peak to average ratio (>5 dB), such as OFDM according to FCC KDB Publication 865664 D01v01r04.