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TEL: +82-31-645-6300 FAX: +82-31-645-6401

SAR TEST REPORT

Applicant Name: **Franklin Technology Inc.** 906, gasan-Dong,JEI Platz 186,Gasan digital 1-ro, Geumcheon-gu, Seoul, Korea (08502)	**Date of Issue:** 07. 26, 2018 **Test Report No.:** HCT-SR-1807-FC006 **Test Site: HCT CO.,LTD.**

FCC ID: XHG-RA700

Equipment Type:	**AI Boombox Device**
Application Type	**Certification**
FCC Rule Part(s):	**CFR §2.1093**
Model Name:	**RA700**
Date of Test:	**07/18/2018**

This device has been shown to be capable of compliance for localized specific absorption rate (SAR) for uncontrolled environment/general population exposure limits specified in FCC KDB procedures and had been tested in accordance with the measurement procedures specified in FCC KDB procedures.

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.

Tested By	**Reviewed By**
Kyung-mo Kim **Test Engineer** **SAR Team** **Certification Division**	**Yun-jang, Heo** **Technical Manager** **SAR Team** **Certification Division**

DOCUMENT HISTORY

Rev.	DATE	DESCRIPTION
HCT-SR-1807-FC006	07. 26, 2018	First Approval Report

Table of Contents

1. ATTESTATION OF TEST RESULT OF DEVICE UNDER TEST

Test Laboratory	
Company Name:	HCT Co., LTD
Address:	74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, 17383, Rep. of Korea
Telephone:	+82 31 645 6300
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<table>
<tr><th colspan="4">Attestation of SAR test result</th></tr>
<tr><td>Applicant Name:</td><td colspan="3">Franklin Technology Inc.</td></tr>
<tr><td>FCC ID:</td><td colspan="3">XHG-RA700</td></tr>
<tr><td>Model:</td><td colspan="3">RA700</td></tr>
<tr><td>EUT Type:</td><td colspan="3">AI Boombox Device</td></tr>
<tr><td>Application Type:</td><td colspan="3">Certification</td></tr>
<tr><th colspan="4">The Highest Reported SAR</th></tr>
<tr><th rowspan="2">Band</th><th>Tx. Frequency</th><th rowspan="2">Equipment Class</th><th>Reported 1g SAR (W/kg)</th></tr>
<tr><th>(MHz)</th><th>Hotspot SAR</th></tr>
<tr><td>LTE Band 13</td><td>779.5 - 784.5</td><td>TNB</td><td>0.54</td></tr>
<tr><td colspan="3">Simultaneous SAR per KDB 690783 D01v01r03</td><td>0.91</td></tr>
<tr><td>Date(s) of Tests:</td><td colspan="3">07/18/2018</td></tr>
</table>

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2. DEVICE UNDER TEST DESCRIPTION

2.1 DUT specification

Device Wireless specification overview		
Band & Mode	**Operating Mode**	**Tx Frequency**
LTE Band 13	Data	779.5 – 784.5 MHz
2.4GHz WLAN	Data	2 412 ~ 2 462 MHz
Bluetooth/ LE 4.0	Data	2 402 ~ 2 480 MHz
Device Description		
Device Dimension	Overall (Length x Width) : 162 mm x 67 mm	
Battery Options	Standard (Li-ION Battery)	
	Battery Model Name: Franklin Boom Box 1S1P	
	Manufacturer: ITM Semiconductor	
Device Serial Numbers	Mode	Serial Number
	LTE Band 13	20170530

2.2 Nominal and Maximum Output Power Specifications

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

Mode / Band		Modulated Average (dBm)	
LTE Band 13		Maximum	23.7
		Nominal	22.7
IEEE 802.11b (2.4 GHz)	CH1	Maximum	8.0
		Nominal	7.0
	CH2 ~ CH10	Maximum	5.0
		Nominal	4.0
	CH11	Maximum	6.0
		Nominal	5.0
IEEE 802.11g (2.4 GHz)	CH1	Maximum	12.5
		Nominal	11.5
	CH2 ~ CH10	Maximum	10.0
		Nominal	9.0
	CH11	Maximum	10.0
		Nominal	9.0
IEEE 802.11n (2.4 GHz)	CH1	Maximum	12.0
		Nominal	11.0
	CH2 ~ CH10	Maximum	10.0
		Nominal	9.0
	CH11	Maximum	10.0
		Nominal	9.0

Mode / Band			Modulated Average (dBm)
Bluetooth	DH5	Maximum	10.0
		Nominal	9.0
	2-DH5	Maximum	8.0
		Nominal	7.0
	3-DH5	Maximum	8.0
		Nominal	7.0
Bluetooth LE		Maximum	0.0
		Nominal	-1.0

2.3 LTE information

Item.		Description		
Frequency Rang	LTE Band 13	779.5 MHz – 784.5 MHz		
Channel Bandwidths	LTE Band 13	5 MHz, 10 MHz		
Channel Numbers & Freq.(MHz)		Low	Mid	High
LTE Band 13	5 MHz	779.5(23205)	782(23230)	784.5(23255)
	10 MHz		782(23230)	
UE Category	LTE Rel. 10, Category 4			
Modulations Supported in UL	QPSK, 16QAM			
LTE MPR Permanently implemented per 3GPP TS 36.101 section 6.2.3	Yes			
A-MPR disabled for SAR Testing.	Yes			
LTE Carrier Aggregation	This device does not support downlink and uplink Carrier Aggregation for US region.			
LTE Release 10 information	This device does not support full CA features on 3GPP Release 10. The following LTE Release 10 features are not supported. Uplink and Downlink Carrier aggregations, Relay, HetNet, Enhanced MIMO, eICI, WiFi offloading, MDH, eMBMA, Cross-Carrier Scheduling, Enhanced SC-FDMA.			

2.4 Test Methodology and Procedures

The tests documented in this report were performed in accordance with IEEE Standard 1528-2013 and the following published KDB procedures.

- FCC KDB Publication 941225 D05 SAR for LTE Devices v02r05
- FCC KDB Publication 941225 D05A LTE Rel.10 KDB Inquiry sheet v01r02
- FCC KDB Publication 248227 D01 802.11 Wi-Fi SAR v02r02
- FCC KDB Publication 447498 D01 General SAR Guidance v06
- FCC KDB Publication 648474 D04 Handset SAR v01r03
- FCC KDB Publication 865664 D01 SAR measurement 100 MHz to 6 GHz v01r04
- FCC KDB Publication 865664 D02 SAR Reporting v01r02

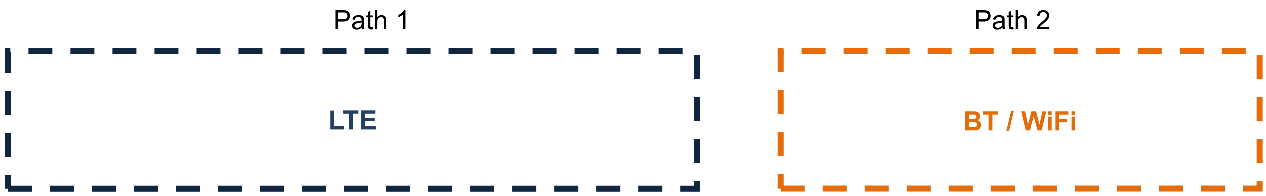
2.5 DUT Antenna Locations

Device Edges / Sides for SAR Testing						
Mode	**Rear**	**Front**	**Left**	**Right**	**Bottom**	**Top**
LTE Band 13	Yes	Yes	No	Yes	Yes	No
2.4 GHz WLAN/BT	Yes	Yes	Yes	No	No	Yes

* Note: All test configurations are based on front view position.

2.6 SAR Summation Scenario

According to FCC KDB 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. Possible transmission paths for the EUT are shown below paths and are mode in same rectangle to indicate communication modes which share the same path. Modes which share the same transmission path cannot transmit simultaneously with one another.



Simultaneous transmission paths

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

Simultaneous Transmission Scenarios	
Applicable Combination	Hotspot SAR
LTE + 2.4 GHz WiFi	Yes
LTE + 2.4 GHz Bluetooth	Yes

1. All licensed modes share the same antenna path and cannot transmit simultaneously.
2. The highest reported SAR for each exposure condition is used for SAR summation purpose.

2.7 SAR Test Considerations

2.7.1 Bluetooth LE / 2.4GHz WLAN

Per FCC KDB 447498 D01v06, The SAR exclusion threshold for distance < 50mm is defined by the following equation:

$$\frac{MaxPowerofChannel(mW)}{TestSeparationDistance(mm)} * \sqrt{Frequency(GHz)} \leq 3.0(1g\ \ SAR)$$

Mode		Frequency	Maximum Allowed Power	Separation Distance	≤ 3.0
		[MHz]	[mW]	[mm]	1-g SAR
2.4GHz WLAN	Hotspot SAR	2 462	18.0	10	2.8
Bluetooth	Tethering SAR	2 480	10.0	10	1.6
Bluetooth LE	Tethering SAR	2 480	1.0	10	0.2

Based on the maximum conducted power of 2.4GHz WLAN and antenna to use separation distance, 2.4GHz WLAN SAR was not required [(18/10)*√2.462] = 2.8 ≤ 3.0, for 1-g SAR.

Based on the maximum conducted power of Bluetooth and antenna to use separation distance, Bluetooth SAR was not required[(10/10)*√2.480] = 1.6, Bluetooth LE [(1/10)*√2.480] = 0.2 ≤ 3.0, for 1-g SAR.

This device contains transmitters that may operate simultaneously. Therefore simultaneous transmission analysis is required. Per FCC KDB 447498 D01v06 IV.C.1iii, simultaneous transmission SAR test exclusion may be applied when the sum of the 1-g SAR for all the simultaneous transmitting antennas in a specific a physical test configuration is ≤ 1.6 W/kg. When standalone SAR is not required to be measured per FCC KDB 447498 D01v06 4.3.22, the following equation must be used to estimate the standalone 1-g SAR for simultaneous transmission assessment involving that transmitter.

$$Estimated\ \ SAR = \frac{\sqrt{f(GHZ)}}{x} * \frac{(Max\ \ Power\ \ of\ \ channel\ \ mW)}{Min\ \ Seperation\ \ Distance}.$$

where x = 7.5 for 1-g SAR .

Mode		Frequency	Maximum Allowed Power	Separation Distance	Estimated SAR (1-g SAR)
		[MHz]	[mW]	[mm]	[W/kg]
2.4GHz WLAN	Hotspot SAR	2 462	18.0	10	0.378
Bluetooth	Tethering SAR	2 480	10.0	10	0.210
Bluetooth LE	Tethering SAR	2 480	1.0	10	0.021

Note:
1) The Estimated SAR results were determined according to FCC KDB447498 D01v06.
2) The frequency of 2.4GHz WLAN, Bluetooth and Bluetooth LE using for estimated SAR was selected highest channel of 2.4GHz WLAN, Bluetooth and Bluetooth LE for highest estimated SAR.

2.7.2 Licensed Transmitter(s)

LTE SAR for the higher modulations and lower bandwidths were not tested since the maximum average output power of all required channels and configurations was not more than 0.5 dB higher than the highest bandwidth; and the reported LTE SAR for the highest bandwidth was less than 1.45 W/kg for all configurations according to FCC KDB 941225 D05v02r05.

3. INTRODUCTION

The FCC has adopted the guidelines for evaluating the environmental effects of radio frequency radiation in ET Docket 93-62 on Aug. 6, 1996 to protect the public and workers from the potential hazards of RF emissions due to FCC-regulated portable devices.

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. 1992 by the Institute of Electrical and Electronics Engineers, Inc., New York 10017. The measurement procedure described in IEEE/ANSI C95.3-1992 Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields - RF and Microwave is used for guidance in measuring 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 National Council on Radiation Protection and Measurements (NCRP) in Biological Effects and Exposure Criteria for Radio Frequency Electromagnetic Fields," NCRP Report No. 86 NCRP, 1986, Bethesda, MD 20814. 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.

SAR Definition

Specific Absorption Rate (SAR) is defined as the time derivative of the incremental electromagnetic energy (d*W*) absorbed by (dissipated in) an incremental mass (d*m*) contained in a volume element (d*V*) of a given density (*r*). It is also defined as the rate of RF energy absorption per unit mass at a point in an absorbing body.

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

Figure 1. SAR Mathematical Equation

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

$$SAR = \sigma E^2 / \rho$$

Where:
σ = conductivity of the tissue-simulant material (S/m)
ρ = mass density of the tissue-simulant material (kg/㎥)
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 relations 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.

4. DESCRIPTION OF TEST EQUIPMENT

4.1 SAR MEASUREMENT SETUP

These measurements are performed using the DASY4 automated dosimetric assessment system. It is made by Schmid & Partner Engineering AG (SPEAG) in Zurich, Switzerland. It consists of high precision robotics system (Staubli), robot controller, Pentium III computer, near-field probe, probe alignment sensor, and the generic twin phantom containing the brain equivalent material. The robot is a six-axis industrial robot performing precise movements to position the probe to the location (points) of maximum electromagnetic field (EMF) (see Figure.2).

A cell controller system contains the power supply, robot controller, teach pendant (Joystick), and remote control, is used to drive the robot motors. The PC with Windows XP or Windows 7 is working with SAR Measurement system DASY4 & DASY5, A/D interface card, monitor, mouse, and keyboard. The Staubli Robot is connected to the cell controller to allow software manipulation of the robot. A data acquisition electronic (DAE) circuit performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. is connected to the Electro-optical coupler (EOC). The EOC performs the conversion from the optical into digital electric signal of the DAE and transfers data to the PC plug-in card.

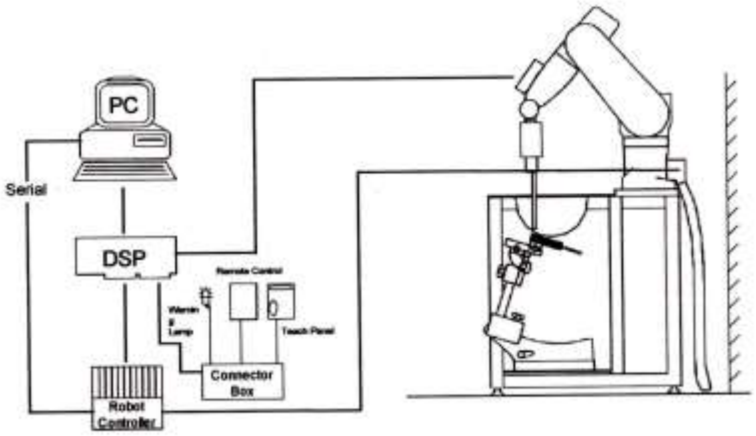


Figure 2. HCT SAR Lab. Test Measurement Set-up

The DAE consists of a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain-switching multiplexer, a fast 16 bit AD-converter and a command decoder and control logic unit. Transmission to the PC-card is accomplished through an optical downlink for data and status information and an optical uplink for commands and clock lines. The mechanical probe mounting device includes two different sensor systems for frontal and sidewise probe contacts. They are also used for mechanical surface detection and probe collision detection. The robot uses its own controller with a built in VME-bus computer. The system is described in detail in.

4.2 Phantom

<table>
<tr><th colspan="4">SAR PHANTOMS</th></tr>
<tr><td rowspan="7">MFP</td><td>Name</td><td>MFP – Triple Modular Phantom</td><td rowspan="7">Triple Modular Phantom consists of three identical modules which can be installed and removed separately without emptying the liquid. It includes three reference points for phantom installation. Covers prevent evaporation of the liquid. Phantom material is resistant to DGBE-based tissue simulating liquids.

Applicable for system performance check from 700 MHz – 6 GHz as well as dosimetric evaluations of body-worn devices.</td></tr>
<tr><td>Appearance</td><td></td></tr>
<tr><td>Material</td><td>Vinyl ester, Fiberglass reinforced (VE-GF)</td></tr>
<tr><td>Liquid Compatibility</td><td>Compatible with all DGBE Type liquid</td></tr>
<tr><td>Shell Thickness</td><td>2±0.2 mm</td></tr>
<tr><td>Dimensions</td><td>Length : 292 mm
Width : 178 mm
Height : 178 mm
Useable area : 280 x 175 mm</td></tr>
<tr><td>Filling Volume</td><td>Approx. 8.1 liters
(filing height 155 mm)</td></tr>
</table>

4.3 Device Holder for Transmitters

<table>
<tr><th colspan="2">Device Holder – Mounting Device</th></tr>
<tr><td>In combination with the SAM Phantom, the Mounting Device enables the rotation of the mounted transmitter in spherical coordinates whereby the rotation points is the ear opening.. The device holder can be locked at different phantom locations (left head, right head, flat phantom).

Note: A simulating human hand is not used due to the complex anatomical and geometrical structure of the hand that may produced infinite number of configurations. To produce the Worst-case condition (the hand absorbs antenna output power), the hand is omitted during the tests.</td><td></td></tr>
</table>

5. SAR MEASUREMENT PROCEDURE

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

1. The SAR distribution at the exposed side of the head or body was measured at a distance no more than 5.0 mm from the inner surface of the shell. The area covered the entire dimension of the DUT's head and body area and the horizontal grid resolution was depending on the FCC KDB 865664 D01v01r04 table 4-1 & IEEE 1528-2013.

2. Based on step, the area of the maximum absorption was determined by sophisticated interpolations routines implemented in DASY software. When an Area Scan has measured all reachable point. DASY system computes the field maximal found in the scanned are, within a range of the maximum. SAR at this fixed point was measured and used as a reference value.

3. Around this point, a volume was assessed according to the measurement resolution and volume size requirements of FCC KDB 865664 D01v01r04 table 4-1 and IEEE 1528-2013. On the basis of this data set, the spatial peak SAR value was evaluated with the following procedure (reference from the DASY manual.)

   a. The data at the surface were extrapolated, since the center of the dipoles is no more than 2.7 mm away from the tip of the probe (it is different from the probe type) and the distance between the surface and the lowest measuring point is 1.2 mm. The extrapolation was based on a least square algorithm. A polynomial of the fourth order was calculated through the points in z-axes. This polynomial was then used to evaluate the points between the surface and the probe tip.

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

   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. If the value changed by more than 5 %, the SAR evaluation and drift measurements were repeated.

Area scan and zoom scan resolution setting follow KDB 865664 D01v01r04 quoted below.

<table>
<tr><td colspan="3"></td><td>≤ 3 GHz</td><td>> 3 GHz</td></tr>
<tr><td colspan="3">Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface</td><td>5±1 mm</td><td>$\frac{1}{2}\cdot\delta\cdot\ln(2)\pm0.5$ mm</td></tr>
<tr><td colspan="3">Maximum probe angle from probe axis to phantom surface normal at the measurement location</td><td>30°±1°</td><td>20°±1°</td></tr>
<tr><td colspan="3" rowspan="2">Maximum area scan Spatial resolution: Δx_{Area}, Δy_{Area}</td><td>≤ 2 GHz: ≤15 mm
2-3 GHz: ≤12 mm</td><td>3-4 GHz: ≤12 mm
4-6 GHz: ≤10 mm</td></tr>
<tr><td colspan="2">When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be ≤ the corresponding x or y dimension of the test device with at least one measurement point on the test device.</td></tr>
<tr><td colspan="3">Maximum zoom scan Spatial resolution: Δx_{zoom}, Δy_{zoom}</td><td>≤ 2 GHz: ≤8mm
2-3 GHz: ≤5mm*</td><td>3-4 GHz: ≤5 mm*
4-6 GHz: ≤4 mm*</td></tr>
<tr><td rowspan="3">Maximum zoom scan Spatial resolution normal to phantom surface</td><td colspan="2">uniform grid: $\Delta z_{zoom}(n)$</td><td>≤ 5 mm</td><td>3-4 GHz: ≤4 mm
4-5 GHz: ≤3 mm
5-6 GHz: ≤2 mm</td></tr>
<tr><td rowspan="2">graded grid</td><td>$\Delta z_{zoom}(1)$: between 1st two Points closest to phantom surface</td><td>≤ 4 mm</td><td>3-4 GHz: ≤3 mm
4-5 GHz: ≤2.5 mm
5-6 GHz: ≤2 mm</td></tr>
<tr><td>$\Delta z_{zoom}(n>1)$: between subsequent Points</td><td colspan="2">$\leq 1.5\cdot\Delta z_{zoom}(n-1)$</td></tr>
<tr><td>Minimum zoom scan volume</td><td colspan="2">x, y, z</td><td>≥ 30 mm</td><td>3-4 GHz: ≥28 mm
4-5 GHz: ≥25 mm
5-6 GHz: ≥22 mm</td></tr>
<tr><td colspan="5">Note: δ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see draft standard IEEE P1528-2011 for details.
* When zoom scan is required and the reported SAR from the area scan based 1-g SAR estimation procedures of KDB 447498 is ≤ 1.4 W/kg, ≤ 8 mm, ≤ 7 mm and ≤ 5 mm zoom scan resolution may be applied, respectively, for 2 GHz to 3 GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.</td></tr>
</table>

6. DESCRIPTION OF TEST POSITION

6.1 Wireless Router Configurations

Some battery-operated handsets have the capability to transmit and receive user data through simultaneous transmission of WIFI simultaneously with a separate licensed transmitter. The FCC has provided guidance in FCC KDB Publication 941225 D06v02r01 where SAR test considerations for handsets (L x W≥9cmx5 cm) are based on *a* composite test separation distance of 10 mm from the front back and edges of the device containing transmitting antennas within 2.5 cm of their edges, determined from general mixed use conditions for this type of devices. Since the hotspot SAR results may overlap with the Body-worn accessory SAR requirements, the more conservative configurations can be considered, thus excluding some Body-worn accessory SAR tests.

When the user enables the personal wireless router functions for the handset actual operations include simultaneous transmission of both the WIFI transmitter and another licensed transmitter. Both transmitters often do not transmit at the same transmitting frequency and thus cannot be evaluated for SAR under actual use conditions due to the limitations of the SAR assessment probes. Therefore, SAR must be evaluated for each frequency transmission and mode separately and spatially summed with the WIFI transmitter according to FCC KDB Publication 447498 D01v06 publication procedures. The "Portable Hotspot* feature on the handset was NOT activated during SAR assessments, to ensure the SAR measurements were evaluated for a single transmission frequency RF signal at a time.

6.2 Bluetooth tethering Configurations

Per May 2017 TCBC Workshop documents When Bluetooth tethering applies ,simultaneous transmission SAR needs consideration

This model allows users to exchange data or media files with other Bluetooth enabled devices using Bluetooth, which means they can connect to other Bluetooth enabled devices via Bluetooth tethering.
Therefore, SAR test was performed for additional simultaneous transmissions.
Bluetooth tethering SAR were evaluated for BT BR tethering applications
.

7. RF EXPOSURE LIMITS

HUMAN EXPOSURE	UNCONTROLLED ENVIRONMENT General Population	CONTROLLED ENVIRONMENT Occupational
	(W/kg) or (mW/g)	(W/kg) or (mW/g)
SPATIAL PEAK SAR * (Head)	1.60	8.00
SPATIAL AVERAGE SAR ** (Whole Body)	0.08	0.40
SPATIAL PEAK SAR *** (Hands / Feet / Ankle / Wrist)	4.00	20.00

NOTES:

* The Spatial Peak value of the SAR averaged over any 1 g of tissue (defined as a tissue volume in the shape of a cube) and over the appropriate averaging time.

** The Spatial Average value of the SAR averaged over the whole-body.

******* The Spatial Peak value of the SAR averaged over any 10 g of tissue (defined as a tissue volume in the shape of a cube) and over the appropriate averaging time.

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 mad 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.

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.

8. FCC SAR GENERAL MEASUREMENT PROCEDURES

8.1 SAR Measurement Conditions for LTE

LTE modes are tested according to FCC KDB 941225 D05v02r05 publication. Establishing connections with base station simulators ensure a consistent means for testing SAR and are recommended for evaluation SAR [4]. The R&S CMW500 or Anritsu MT8820C simulators are used for LTE output power measurements and SAR testing. Closed loop power control was used so the UE transmits with maximum output power during SAR testing. SAR tests were performed with the same number of RB and RB offsets transmitting on all TTI frames (maximum TTI).

8.1.1 Spectrum Plots for RB Configurations

A properly configured base station simulator was used for SAR tests and power measurements. Therefore, spectrum plots for RB configurations were not required to be included in this report.

8.1.2 MPR

MPR is permanently implemented for this device by the manufacturer. The specific manufacturer target MPR is indicated alongside the SAR results. MPR is enabled for this device, according to 3GPP TS36. 101 Section 6.2.3 – 6.2.5 under Table 6.2.3-1.

8.1.3 A-MPR

A-MPR (Additional MPR) has been disabled for all SAR tests by setting NS=01 on the base station simulator.

8.1.4 Required RB Size and RB offsets for SAR testing

According to FCC KDB 941225 D05v02r05

a. Per sec 4.2.1, SAR is required for QPSK 1 RB Allocation for the largest bandwidth
   i. The required channel and offset combination with the highest maximum output power is required for SAR.
   ii. When the reported SAR is ≤ 0.8 W/Kg, testing of the remaining RB offset configurations and required test channels is not required. Otherwise, SAR is required for the remaining required test channels using the RB offset configuration with highest output power for that channel.
   iii. When the reported SAR for a required test channel is > 1.45 W/kg, SAR is required for all RB offset configurations for that channel.
b. Per Sec 4.2.2, SAR is required for 50% RB allocation using the largest bandwidth following the same procedures outlined in Sec 4.2.1.

c. Per Sec. 4.2.3, QPSK SAR is not required for the 100% all0cation when the highest maximum output power for the 100% allocation is less than the highest maximum output power of the 1 RB and 50% RB allocations and the reported SAR for the 1 RB and 50% RB allocations is < 0.8 W/kg.
d. Per Sec. 4.2.4 and 4.3, SAR test for higher order modulations and lower bandwidths configurations are not required when the conducted power of the required test configurations determined by Sec. 4.2.1 through 4.2.3 is less than or equal to 1/2 dB higher than the equivalent configuration using QPSK modulation and when the QPSK SAR for those configurations is < 1.45 W/Kg.

9. OUTPUT POWER SPECIFICATIONS

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

9.1 LTE Band 13 Maximum Conducted Output Power

Bandwidth	Modulation	RB Size	RB Offset	Max. Average Power (dBm)	MPR Allowed Per 3GPP	MPR
				23230	[dB]	[dB]
				782 MHz		
5 MHz	QPSK	1	0	22.67	0	0
		1	12	22.28	0	0
		1	24	22.81	0	0
		12	0	21.58	0-1	1
		12	6	21.39	0-1	1
		12	11	21.41	0-1	1
		25	0	21.52	0-1	1
	16QAM	1	0	21.46	0-1	1
		1	12	21.56	0-1	1
		1	24	21.64	0-1	1
		12	0	20.59	0-2	2
		12	6	20.40	0-2	2
		12	11	20.43	0-2	2
		25	0	20.52	0-2	2

Bandwidth	Modulation	RB Size	RB Offset	Max. Average Power (dBm)	MPR Allowed Per 3GPP	MPR
				23230	[dB]	[dB]
				782 MHz		
10 MHz	QPSK	1	0	22.58	0	0
		1	24	22.74	0	0
		1	49	22.56	0	0
		25	0	21.36	0-1	1
		25	12	21.36	0-1	1
		25	24	21.43	0-1	1
		50	0	21.34	0-1	1
	16QAM	1	0	21.50	0-1	1
		1	24	21.57	0-1	1
		1	49	21.36	0-1	1
		25	0	20.38	0-2	2
		25	12	20.35	0-2	2
		25	24	20.44	0-2	2
		50	0	20.35	0-2	2

Note: LTE Band 13 at 5MHz/10MHz Bandwidth does not support three non-overlapping channels. Per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the mid channel of the group of overlapping channels should be selected for testing.

The EUT enables maximum power reduction in accordance with 3GPP 36.101. The MPR settings are configured during the manufacture process and are not configurable by the network, carrier, or end user.

9.2 WiFi Maximum conducted Power

IEEE 802.11 Average RF Power (Maximum Conducted Power)

Mode	Freq. [MHz]	Channel	IEEE 802.11 (2.4 GHz) Conducted Power [dBm]
802.11b	2412	1	7.64
	2437	6	3.90
	2462	11	5.38
802.11g	2412	1	12.50
	2437	6	8.89
	2462	11	9.49
802.11n (HT20)	2412	1	11.56
	2437	6	8.94
	2462	11	9.58

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 mode 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.
-

Test Configuration

9.3 Bluetooth/ LE

The Burst averaged-conducted Power

Mode	Channel	Bluetooth Power [dBm]
DH5	0	9.26
	39	9.11
	78	8.12
2-DH5	0	7.71
	39	6.32
	78	6.59
3-DH5	0	7.72
	39	6.33
	78	6.60
Bluetooth LE	0	-0.38
	19	-0.72
	38	-1.59

10. SYSTEM VERIFICATION

10.1 Tissue Verification

The Head /body simulating material is calibrated by HCT using the DAKS 3.5 to determine the conductivity and permittivity.

Table for Body Tissue Verification									
Date of Tests	Tissue Temp. (°C)	Tissue Type	Freq. (MHz)	Measured Conductivity σ (S/m)	Measured Dielectric Constant, ε	Target Conductivity σ (S/m)	Target Dielectric Constant, ε	% dev σ	% dev ε
07/18/2018	21.1	750B	740	0.919	56.379	0.962	55.570	-4.47%	1.46%
			750	0.922	56.329	0.963	55.530	-4.26%	1.44%
			770	0.939	56.092	0.965	55.454	-2.69%	1.15%
			785	0.954	55.950	0.966	55.397	-1.24%	1.00%

10.2 System Verification

Prior to assessment, the system is verified to the ± 10 % of the specifications at 750 MHz using the system Verification kit. (Graphic Plots Attached)

System Verification Results *** Input Power: 100 mW**

Freq.	Date	Probe (S/N)	Dipole (S/N)	Liquid	Amb. Temp.	Liquid Temp.	1 W Target SAR_{1g} (SPEAG)	Measured SAR_{1g}	1 W Normalized SAR_{1g}	Deviation	Limit [%]
[MHz]					[°C]	[°C]	[W/kg]	[W/kg]	[W/kg]	[%]	[%]
750	07/18/2018	3968	1014	Body	21.3	21.1	8.66	0.891	8.91	+ 2.89	± 10

10.3 System Verification Procedure

SAR measurement was prior to assessment, the system is verified to the ± 10 % of the specifications at each frequency band by using the system Verification kit. (Graphic Plots Attached)

- Cabling the system, using the Verification kit equipments.
- Generate about 100 mW Input Level from the Signal generator to the Dipole Antenna.
- Dipole Antenna was placed below the Flat phantom.
- The measured one-gram SAR at the surface of the phantom above the dipole feed-point should be within 10 % of the target reference value.
- The results are normalized to 1 W input power.

NOTE;
SAR Verification was performed according to the FCC KDB 865664 D01v01r04.

11. SAR TEST DATA SUMMARY

11.1 Hotspot SAR Measurement Results

LTE Band 13 Hotspot SAR																
Frequency		Mode	Band width	Tune-Up Limit	Meas. Power	Power Drift	Test Position	MPR	RB Size	RB offset	Duty Cycle	Distance	Meas. SAR	Scaling Factor	Scaled SAR	Plot No.
MHz	Ch.		(MHz)	(dBm)	(dBm)	(dB)		(dB)				(mm)	(W/kg)		(W/kg)	
782	23230	QPSK	10	23.7	22.74	-0.08	Rear	0	1	24	1:1	10	0.157	1.247	0.196	-
782	23230	QPSK	10	22.7	21.43	-0.03	Rear	1	25	24	1:1	10	0.125	1.340	0.168	-
782	23230	QPSK	10	23.7	22.74	-0.08	Front	0	1	24	1:1	10	0.231	1.247	0.288	-
782	23230	QPSK	10	22.7	21.43	0.05	Front	1	25	24	1:1	10	0.164	1.340	0.220	-
782	23230	QPSK	10	23.7	22.74	-0.08	Right	0	1	24	1:1	10	0.430	1.247	**0.536**	1
782	23230	QPSK	10	22.7	21.43	-0.13	Right	1	25	24	1:1	10	0.320	1.340	0.429	-
782	23230	QPSK	10	23.7	22.74	-0.08	Bottom	0	1	24	1:1	10	0.237	1.247	0.296	-
782	23230	QPSK	10	22.7	21.43	0.01	Bottom	1	25	24	1:1	10	0.181	1.340	0.243	-
ANSI/ IEEE C95.1 - 2005 – Safety Limit Spatial Peak Uncontrolled Exposure/ General Population							Body 1.6 W/kg Averaged over 1 gram									

11.2 SAR Test Notes

General Notes:

1. The test data reported are the worst-case SAR values according to test procedures specified in IEEE 1528-2013, FCC KDB Procedure.
2. Batteries are fully charged at the beginning of the SAR measurements. A standard battery was used for all 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 447498 D01v06.
6. Device was tested using a fixed spacing for hotspot testing. A separation distance of 10 mm was considered because FCC KDB Publication 941225 D06v02r01 where SAR test consideration for devices(Lx W >9cm x 5cm) are based on a composite test separation distance of 10 mm from the front, back and edges of the device containing transmitting antennas within 2.5 cm of their edges.

LTE Notes:

1. LTE Considerations: LTE test configurations are determined according to SAR Evaluation Consideration for LTE Devices in FCC KDB 941225 D05v02r05.
2. According to FCC KDB 941225 D05v02r05:
   When the reported SAR is ≤ 0.8 W/kg, testing of the 100% RB allocation and required test channels is not required. Otherwise, SAR is required for the remaining required test channels using the 1RB, 50%RB and 100%RB allocation with highest output power for that channel.
   Only one channel, and as reported SAR values for 1RB allocation and 50%RB allocation were less than 1.45W/Kg only the highest power RB offset for each allocation was required.
3. MPR is permanently implemented for this device by the manufacturer. The specific manufacturer target MPR is indicated alongside the SAR results. MPR is enabled for this device, according to target MPR is indicated alongside the SAR results.
4. A-MPR was disabled for all SAR tests by setting NS=01 on the base station simulator.
5. SAR test reduction is applied using the following criteria:
   Start with the largest channel bandwidth and measure SAR for QPSK with 1 RB, and 50% RB allocation, using the RB offset and required test channel combination with the highest maximum output power among RB offsets at the upper edge, middle and lower edge of each required test channel. When the reported SAR is >0.8 W/kg, testing for other Channels is performed at the highest output power level for 1RB, and 50% RB configuration for that channel. Testing for 100% RB configuration is performed at the highest output power level for 100% RB configuration across the Low, Mid and High Channel when the highest reported SAR for 1 RB and 50% RB are >0.8 W/kg, testing for the remaining required channels is not needed because the reported SAR for 100% RB Allocation <1.45 W/kg. Testing for 16-QAM modulation is not required because the reported SAR for QPSK is <1.45 W/kg and its output power is not more than 0.5 dB higher than that a QPSK. Testing for the other channel bandwidths is not required because the reported SAR for the highest channel bandwidth is <1.45 W/kg and its output power is not more than 0.5 dB higher than that of the highest channel bandwidth.

12. SIMULTANEOUS SAR ANALYSIS

12.1 Simultaneous Transmission Summation for Hotspot

Simultaneous Transmission Summation Scenario with 2.4 GHz WLAN					
Exposure condition	Distance (mm)	Band	WWAN SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	∑ 1-g SAR (W/kg)
Hotspot	10	LTE Band 13	0.536	0.378	**0.914**

Simultaneous Transmission Summation Scenario with Bluetooth					
Exposure condition	Distance (mm)	Band	WWAN SAR (W/kg)	Bluetooth SAR (W/kg)	∑ 1-g SAR (W/kg)
Bluetooth Tethering	10	LTE Band 13	0.536	0.210	0.746

12.2 Simultaneous Transmission Conclusion

The above numerical summed SAR Results and SPLSR analysis are 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 IEEE1528-2013.

13. MEASUREMENT UNCERTAINTY

The measured SAR was <1.5 W/Kg for 1g SAR and <3.75 W/KgFor 10g SAR for all frequency bands. Therefore,per KDB Publication 865664 D01v01r04,the extended measurement uncertainty analysis per IEEE1528-2013 was not required.

14. SAR TEST EQUIPMENT

Manufacturer	Type / Model	S/N	Calib. Date	Calib.Interval	Calib.Due
SPEAG	Triple Modular Phantom	-	N/A	N/A	N/A
HP	SAR System Control PC	-	N/A	N/A	N/A
Staubli	TX90 XLspeag	F12/5K9GA1/C/01	N/A	N/A	N/A
Staubli	CS8Cspeag-TX90	F12/5K9GA1/A/01	N/A	N/A	N/A
Staubli	Teach Pendant (Joystick)	S-1206 0513	N/A	N/A	N/A
Staubli	Light Alignment Sensor	SE UKS 030 AA	N/A	N/A	N/A
SPEAG	DAE4	648	05/25/2018	Annual	05/25/2019
SPEAG	E-Field Probe EX3DV4	3968	05/31/2018	Annual	05/31/2019
SPEAG	Dipole D750V3	1014	07/19/2017	Annual	07/19/2018
Agilent	Power Meter E4419B	MY41291386	10/11/2017	Annual	10/11/2018
HP	Power Sensor 8481A	MY41090675	10/12/2017	Annual	10/12/2018
HP	Power Sensor 8481A	MY41090873	10/12/2017	Annual	10/12/2018
SPEAG	DAKS 3.5	1038	05/29/2018	Annual	05/29/2019
SPEAG	VNA-R140	0141013	05/29/2018	Annual	05/29/2019
Agilent	Directional Bridge 86205A	3140A03878	06/11/2018	Annual	06/11/2019
HP	Signal Generator E4433B	US40052109	03/06/2018	Annual	03/06/2019
Agilent	Base Station E5515C	GB44400269	02/02/2018	Annual	02/02/2019
HP	11636B/Power Divider	58698	03/06/2018	Annual	03/06/2019
TESTO	175-H1/Thermometer	40331939309	02/06/2018	Annual	02/06/2019
EMPOWER	RF Power Amplifier	1084	06/11/2018	Annual	06/11/2019
MICRO LAB	LP Filter / LA-15N	10453	10/12/2017	Annual	10/12/2018
MICRO LAB	LP Filter / LA-30N	-	10/12/2017	Annual	10/12/2018
Apitech	Attenuator (3dB) 18B-03	1	06/07/2018	Annual	06/07/2019
Agilent	Attenuator (20dB) 33340C	13311	05/10/2018	Annual	05/10/2019
HP	Dual Directional Coupler	16072	10/12/2017	Annual	10/12/2018
R&S	Wideband Radio Communication Tester CMW500	100990	11/16/2017	Annual	11/16/2018
Anritsu	Radio Communication Tester MT8821C	6201502997	08/10/2017	Annual	08/10/2018

1. The E-field probe was calibrated by SPEAG, by the waveguide technique procedure. Dipole Verification measurement is performed by HCT Lab. before each test. The brain/body simulating material is calibrated by HCT using the DAKS 3.5 to determine the conductivity and permittivity (dielectric constant) of the brain/body-equivalent material.

15. CONCLUSION

The SAR measurement indicates that the EUT complies with the RF radiation exposure limits of the ANSI/ IEEE C95.1 - 2005.

These measurements were taken to simulate the RF effects 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 abortion and distribution of electromagnetic energy in the body are very complex phenomena the 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.

16. REFERENCES

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Attachment 1. – SAR Test Plots

Test Laboratory:	HCT CO., LTD
EUT Type:	AI Boombox Device
Liquid Temperature:	21.1 ℃
Ambient Temperature:	21.3 ℃
Test Date:	07/18/2018
Plot No.:	1

DUT: RA700;

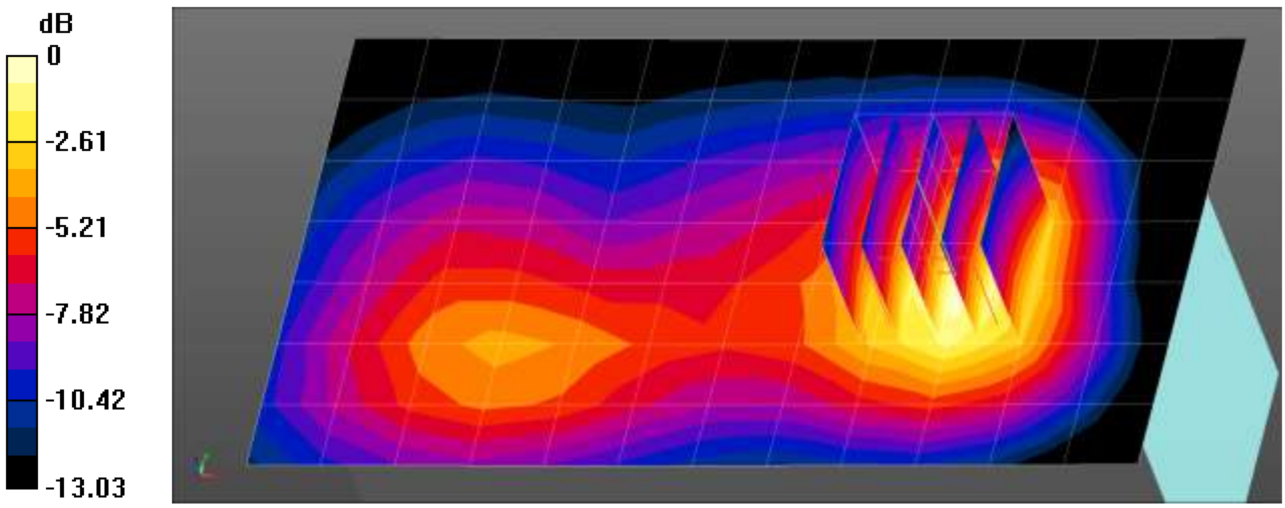
Communication System: UID 0, LTE Band 13 (0); Frequency: 782 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 782 MHz; σ = 0.952 S/m; ε_r = 55.984; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:

- Probe: EX3DV4 - SN3968; ConvF(10.26, 10.26, 10.26); Calibrated: 2018-05-31;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn648; Calibrated: 2018-05-25
- Phantom: Triple Flat Phantom 5.1C
- Measurement SW: DASY52, Version 52.8 (8);

LTE band 13 Body Right QPSK 10MHz 1RB 24offset 23230ch/Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.584 W/kg

LTEband 13 Body Right QPSK 10MHz 1RB 24offset 23230ch/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 12.21 V/m; Power Drift = 0.18 dB
Peak SAR (extrapolated) = 0.668 W/kg
SAR(1 g) = 0.430 W/kg; SAR(10 g) = 0.273 W/kg
Maximum value of SAR (measured) = 0.580 W/kg



0 dB = 0.580 W/kg = −2.37 dBW/kg

Attachment 2. – Dipole Verification Plots

■ Verification Data (750 MHz Body)

Test Laboratory:	HCT CO., LTD
Input Power	100 mW (20 dBm)
Liquid Temp:	21.1 ℃
Test Date:	07/18/2018

DUT: Dipole 750 MHz; Type: D750V3

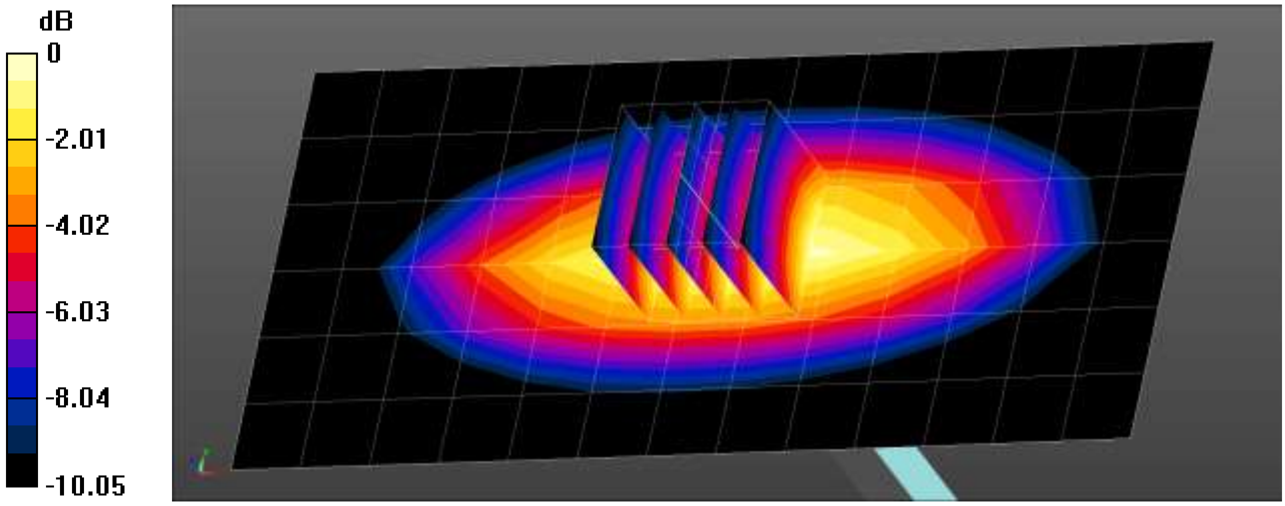
Communication System: UID 0, CW (0); Frequency: 750 MHz;Duty Cycle: 1:1
Medium parameters used: f = 750 MHz; σ = 0.922 S/m; ε_r = 56.329; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:

- Probe: EX3DV4 - SN3968; ConvF(10.26, 10.26, 10.26); Calibrated: 2018-05-31;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn648; Calibrated: 2018-05-25
- Phantom: Triple Flat Phantom 5.1C
- Measurement SW: DASY52, Version 52.8 (8);

Dipole/750MHz Body Verification/Area Scan (7x14x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 1.11 W/kg

Dipole/750MHz Body Verification/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 31.92 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 1.33 W/kg
SAR(1 g) = 0.891 W/kg; SAR(10 g) = 0.588 W/kg
Maximum value of SAR (measured) = 1.13 W/kg



0 dB = 1.13 W/kg = 0.53 dBW/kg

Attachment 3. – SAR Tissue Characterization

The brain and muscle mixtures consist of a viscous gel using hydrox-ethyl cellulose (HEC) gelling agent and saline solution (see Table 3.1). Preservation with a bacteriacide is added and visual inspection is made to make sure air bubbles are not trapped during the mixing process. The mixture is calibrated to obtain proper dielectric constant (permittivity) and conductivity of the desired tissue. The mixture characterizations used for the brain and muscle tissue simulating liquids are according to the data by C. Gabriel and G. Harts grove.

Ingredients (% by weight)	Frequency (MHz)	
	750	
Tissue Type	Head	Body
Water	41.1	51.7
Salt (NaCl)	1.4	0.9
Sugar	57.0	47.2
HEC	0.2	0
Bactericide	0.2	0.1
Triton X-100	0.0	0.0
DGBE	0.0	0.0
Diethylene glycol hexyl ether	-	-

Salt: 99 % Pure Sodium Chloride Sugar: 98 % Pure Sucrose

Water: De-ionized, 16M resistivity HEC: Hydroxyethyl Cellulose

DGBE: 99 % Di(ethylene glycol) butyl ether,[2-(2-butoxyethoxy) ethanol]

Triton X-100(ultra-pure): Polyethylene glycol mono[4-(1,1,3,3-tetramethylbutyl)phenyl] ether

Composition of the Tissue Equivalent Matter

Attachment 4. – SAR SYSTEM VALIDATION

Per FCC KCB 865664 D02v01r02, SAR system validation status should be document 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 IEEE 1528-2013 and FCC KDB 865664 D01v01r04. 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.

SAR System No.	Probe	Probe Type	Probe Calibration Point		Dipole	Date	Dielectric Parameters		CW Validation			Modulation Validation		
							Measured Permittivity	Measured Conductivity	Sensitivity	Probe Linearity	Probe Isotropy	MOD. Type	Duty Factor	PAR
9	3968	EX3DV4	Body	750	1014	2018-06-11	55.7	0.97	PASS	PASS	PASS	N/A	N/A	N/A

SAR System Validation Summary 1g

Note;

All measurement were performed using probes calibrated for CW signal only. Modulations in the table above represent test configurations for which the measurement system has been validated per FCC KDB Publication 865664 D01v01r04. SAR system 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 KDB 865664 D01v01r04.

Attachment 5. – Probe Calibration Data

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 **HCT (Dymetc)**

Certificate No: **EX3-3968_May18**

CALIBRATION CERTIFICATE

Object	EX3DV4 - SN:3968
Calibration procedure(s)	QA CAL-01.v9, QA CAL-12.v9, QA CAL-14.v4, QA CAL-23.v5, QA CAL-25.v6 Calibration procedure for dosimetric E-field probes
Calibration date:	May 31, 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:	Jeton Kastrati	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: May 31, 2018

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

결재	담 당 자	확 인 자
	SW/ 가재호 2018. 06. 11	GJ/ 최동석 2018. 06. 11

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

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

Accreditation No.: **SCS 0108**

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).

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Probe EX3DV4

SN:3968

Manufactured: September 30, 2013
Calibrated: May 31, 2018

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

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3968

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm (μV/(V/m)²)[A]	0.35	0.34	0.41	± 10.1 %
DCP (mV)[B]	106.0	96.9	98.1	

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	134.0	±3.0 %
		Y	0.0	0.0	1.0		132.2	
		Z	0.0	0.0	1.0		128.7	

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	31.43	226.1	33.60	8.481	0.664	4.974	1.578	0.076	1.004
Y	29.25	218.6	35.77	5.660	0.753	4.991	0.872	0.247	1.007
Z	27.12	202.5	35.83	9.580	0.415	5.077	0.852	0.189	1.003

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:3968

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)
600	42.7	0.88	10.44	10.44	10.44	0.11	1.20	± 13.3 %
750	41.9	0.89	10.41	10.41	10.41	0.38	0.80	± 12.0 %
835	41.5	0.90	10.15	10.15	10.15	0.46	0.80	± 12.0 %
900	41.5	0.97	9.91	9.91	9.91	0.42	0.84	± 12.0 %
1450	40.5	1.20	8.91	8.91	8.91	0.37	0.80	± 12.0 %
1750	40.1	1.37	8.74	8.74	8.74	0.37	0.80	± 12.0 %
1900	40.0	1.40	8.32	8.32	8.32	0.29	0.80	± 12.0 %
2450	39.2	1.80	7.69	7.69	7.69	0.28	0.98	± 12.0 %
2600	39.0	1.96	7.49	7.49	7.49	0.32	0.95	± 12.0 %
3500	37.9	2.91	7.15	7.15	7.15	0.23	1.25	± 13.1 %
5250	35.9	4.71	5.14	5.14	5.14	0.40	1.80	± 13.1 %
5600	35.5	5.07	4.77	4.77	4.77	0.40	1.80	± 13.1 %
5750	35.4	5.22	4.86	4.86	4.86	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:3968

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)
600	56.1	0.95	10.80	10.80	10.80	0.10	1.20	± 13.3 %
750	55.5	0.96	10.26	10.26	10.26	0.51	0.80	± 12.0 %
835	55.2	0.97	9.99	9.99	9.99	0.41	0.90	± 12.0 %
1750	53.4	1.49	8.34	8.34	8.34	0.41	0.86	± 12.0 %
1900	53.3	1.52	8.06	8.06	8.06	0.38	0.80	± 12.0 %
2450	52.7	1.95	7.65	7.65	7.65	0.35	1.02	± 12.0 %
2600	52.5	2.16	7.58	7.58	7.58	0.25	1.05	± 12.0 %
3500	51.3	3.31	6.96	6.96	6.96	0.25	1.25	± 13.1 %
5250	48.9	5.36	4.52	4.52	4.52	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	4.18	4.18	4.18	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.

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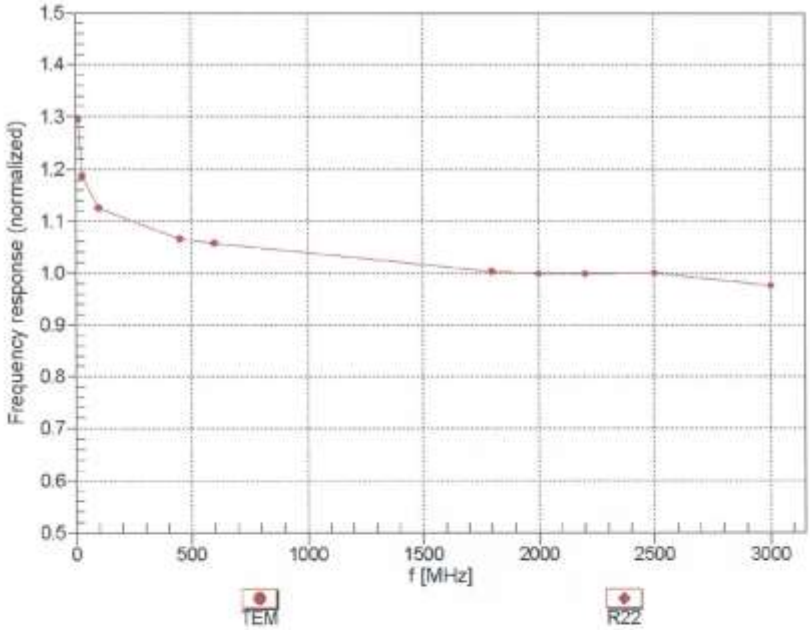
Frequency Response of E-Field

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



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

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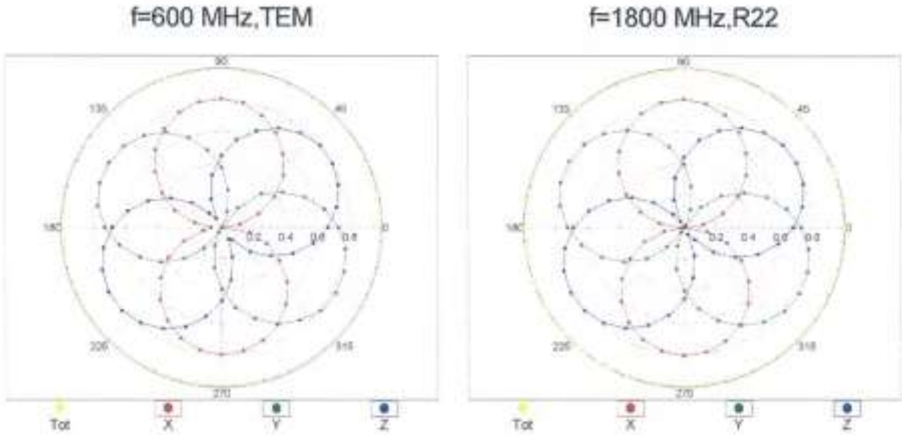
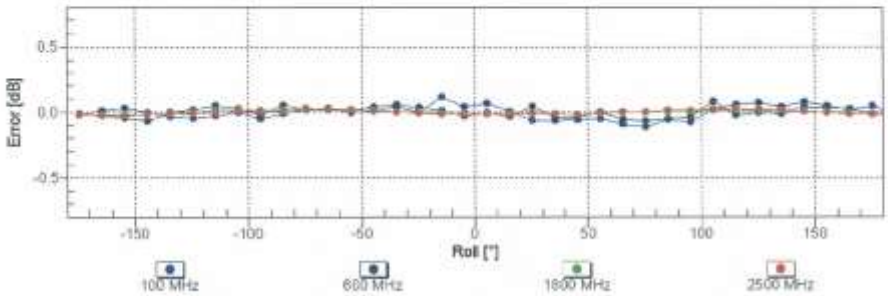
Receiving Pattern (ϕ), ϑ = 0°





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

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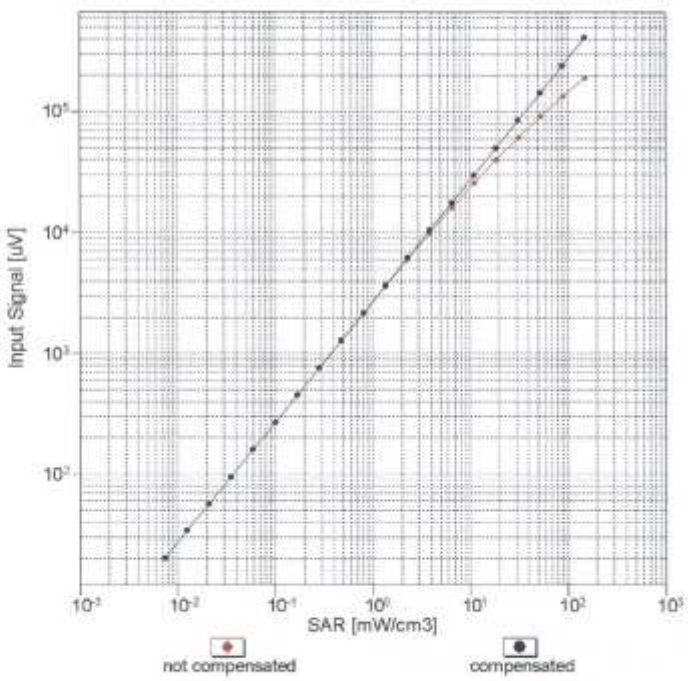
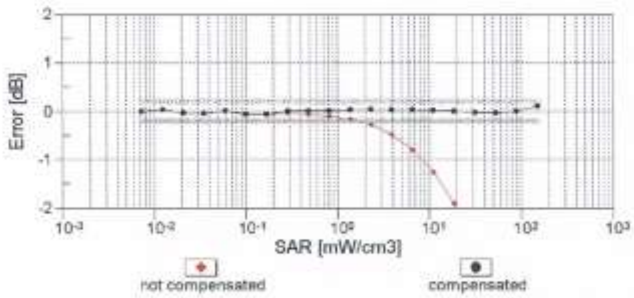
Dynamic Range f(SAR_{head})
(TEM cell , f_{eval}= 1900 MHz)





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

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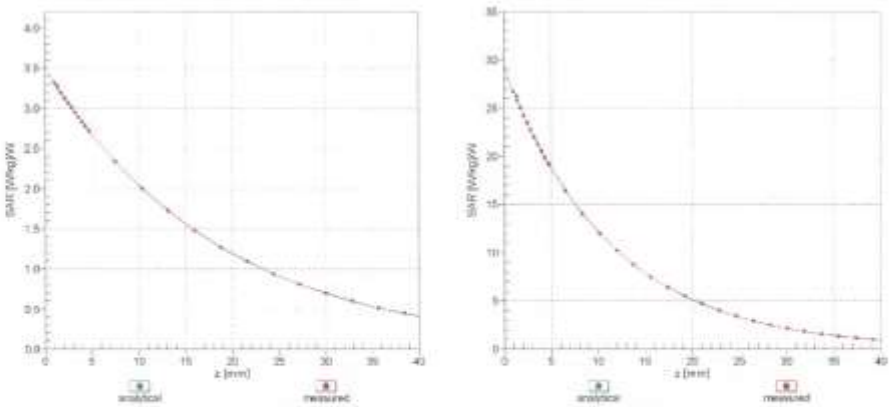
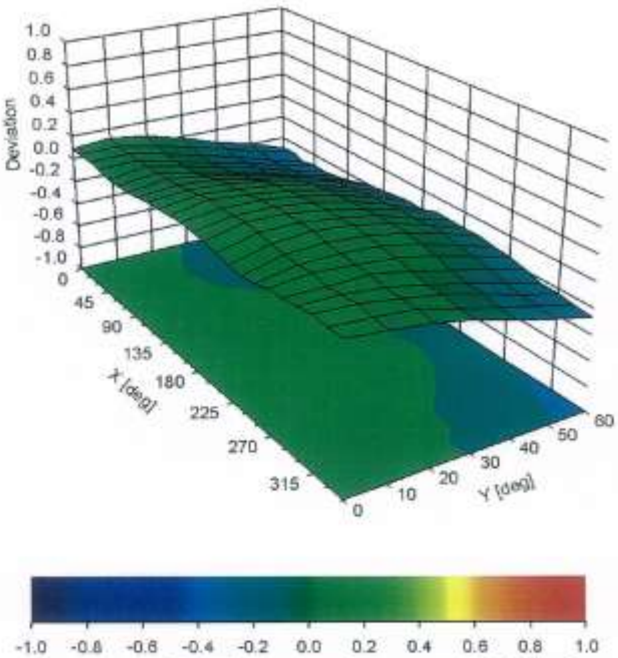
Conversion Factor Assessment



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:3968

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	65.4
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disabled
Probe Overall Length	337 mm
Probe Body Diameter	10 mm
Tip Length	9 mm
Tip Diameter	2.5 mm
Probe Tip to Sensor X Calibration Point	1 mm
Probe Tip to Sensor Y Calibration Point	1 mm
Probe Tip to Sensor Z Calibration Point	1 mm
Recommended Measurement Distance from Surface	1.4 mm

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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	134.0	± 3.0 %
		Y	0.00	0.00	1.00		132.2	
		Z	0.00	0.00	1.00		128.7	
10010-CAA	SAR Validation (Square, 100ms, 10ms)	X	2.24	65.00	9.72	10.00	20.0	± 9.6 %
		Y	1.80	62.31	7.84		20.0	
		Z	2.37	66.23	9.91		20.0	
10011-CAB	UMTS-FDD (WCDMA)	X	1.67	78.01	20.64	0.00	150.0	± 9.6 %
		Y	1.02	70.57	16.15		150.0	
		Z	1.99	82.00	21.39		150.0	
10012-CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps)	X	1.23	66.09	16.84	0.41	150.0	± 9.6 %
		Y	1.05	64.38	15.42		150.0	
		Z	1.18	66.73	17.26		150.0	
10013-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps)	X	4.63	67.19	17.16	1.46	150.0	± 9.6 %
		Y	4.48	66.87	16.92		150.0	
		Z	4.57	67.64	17.58		150.0	
10021-DAC	GSM-FDD (TDMA, GMSK)	X	49.57	100.80	22.90	9.39	50.0	± 9.6 %
		Y	4.42	71.96	13.44		50.0	
		Z	100.00	112.29	26.20		50.0	
10023-DAC	GPRS-FDD (TDMA, GMSK, TN 0)	X	16.57	87.94	19.43	9.57	50.0	± 9.6 %
		Y	3.93	70.35	12.79		50.0	
		Z	100.00	111.33	25.81		50.0	
10024-DAC	GPRS-FDD (TDMA, GMSK, TN 0-1)	X	100.00	107.30	22.98	6.56	60.0	± 9.6 %
		Y	2.47	68.89	10.97		60.0	
		Z	100.00	113.23	25.47		60.0	
10025-DAC	EDGE-FDD (TDMA, 8PSK, TN 0)	X	4.87	74.61	27.74	12.57	50.0	± 9.6 %
		Y	3.41	64.33	21.79		50.0	
		Z	6.36	85.90	34.83		50.0	
10026-DAC	EDGE-FDD (TDMA, 8PSK, TN 0-1)	X	7.28	87.11	30.50	9.56	60.0	± 9.6 %
		Y	6.13	83.03	28.60		60.0	
		Z	8.59	94.60	34.86		60.0	
10027-DAC	GPRS-FDD (TDMA, GMSK, TN 0-1-2)	X	100.00	108.49	22.73	4.80	80.0	± 9.6 %
		Y	1.58	67.14	9.44		80.0	
		Z	100.00	117.31	26.38		80.0	
10028-DAC	GPRS-FDD (TDMA, GMSK, TN 0-1-2-3)	X	100.00	112.20	23.64	3.55	100.0	± 9.6 %
		Y	0.76	63.60	7.23		100.0	
		Z	100.00	125.52	29.00		100.0	
10029-DAC	EDGE-FDD (TDMA, 8PSK, TN 0-1-2)	X	4.76	77.95	25.74	7.80	80.0	± 9.6 %
		Y	4.15	75.32	24.44		80.0	
		Z	5.19	82.11	28.68		80.0	
10030-CAA	IEEE 802.15.1 Bluetooth (GFSK, DH1)	X	100.00	105.35	21.61	5.30	70.0	± 9.6 %
		Y	1.27	64.30	8.33		70.0	
		Z	100.00	111.01	23.95		70.0	
10031-CAA	IEEE 802.15.1 Bluetooth (GFSK, DH3)	X	100.00	115.66	23.69	1.88	100.0	± 9.6 %
		Y	0.25	60.00	3.46		100.0	
		Z	100.00	110.09	21.04		100.0	

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10032-CAA	IEEE 802.15.1 Bluetooth (GFSK, DH5)	X	100.00	154.43	37.66	1.17	100.0	± 9.6 %
		Y	4.45	338.48	43.95		100.0	
		Z	100.00	348.32	105.36		100.0	
10033-CAA	IEEE 802.15.1 Bluetooth (PI/4-DQPSK, DH1)	X	6.84	83.53	19.85	5.30	70.0	± 9.6 %
		Y	2.93	71.63	14.46		70.0	
		Z	100.00	120.51	29.81		70.0	
10034-CAA	IEEE 802.15.1 Bluetooth (PI/4-DQPSK, DH3)	X	5.05	82.43	18.04	1.88	100.0	± 9.6 %
		Y	1.02	64.06	9.38		100.0	
		Z	100.00	111.13	23.92		100.0	
10035-CAA	IEEE 802.15.1 Bluetooth (PI/4-DQPSK, DH5)	X	4.89	83.36	18.20	1.17	100.0	± 9.6 %
		Y	0.79	62.89	8.49		100.0	
		Z	7.87	85.10	16.91		100.0	
10036-CAA	IEEE 802.15.1 Bluetooth (8-DPSK, DH1)	X	9.15	87.66	21.24	5.30	70.0	± 9.6 %
		Y	3.28	73.19	15.14		70.0	
		Z	100.00	121.15	30.09		70.0	
10037-CAA	IEEE 802.15.1 Bluetooth (8-DPSK, DH3)	X	3.78	79.20	16.99	1.88	100.0	± 9.6 %
		Y	0.96	63.61	9.15		100.0	
		Z	100.00	111.14	23.90		100.0	
10038-CAA	IEEE 802.15.1 Bluetooth (8-DPSK, DH5)	X	5.37	84.91	18.86	1.17	100.0	± 9.6 %
		Y	0.80	63.16	8.75		100.0	
		Z	17.15	93.23	19.26		100.0	
10039-CAB	CDMA2000 (1xRTT, RC1)	X	100.00	120.55	27.61	0.00	150.0	± 9.6 %
		Y	0.58	61.89	7.59		150.0	
		Z	0.60	62.75	7.92		150.0	
10042-CAB	IS-54 / IS-136 FDD (TDMA/FDM, PI/4-DQPSK, Halfrate)	X	50.23	98.40	20.81	7.78	50.0	± 9.6 %
		Y	2.02	65.46	9.57		50.0	
		Z	100.00	107.61	23.27		50.0	
10044-CAA	IS-91/EIA/TIA-553 FDD (FDMA, FM)	X	0.00	108.85	1.31	0.00	150.0	± 9.6 %
		Y	0.22	136.12	8.85		150.0	
		Z	0.08	135.16	11.29		150.0	
10048-CAA	DECT (TDD, TDMA/FDM, GFSK, Full Slot, 24)	X	6.29	72.78	15.64	13.80	25.0	± 9.6 %
		Y	4.29	66.75	12.75		25.0	
		Z	100.00	107.54	25.64		25.0	
10049-CAA	DECT (TDD, TDMA/FDM, GFSK, Double Slot, 12)	X	6.97	76.63	15.98	10.79	40.0	± 9.6 %
		Y	3.99	68.96	12.43		40.0	
		Z	100.00	109.47	25.32		40.0	
10056-CAA	UMTS-TDD (TD-SCDMA, 1.28 Mcps)	X	10.22	84.48	20.58	9.03	50.0	± 9.6 %
		Y	5.77	75.37	16.56		50.0	
		Z	100.00	118.62	30.26		50.0	
10058-DAC	EDGE-FDD (TDMA, 8PSK, TN 0-1-2-3)	X	3.81	73.95	23.33	6.55	100.0	± 9.6 %
		Y	3.37	71.89	22.28		100.0	
		Z	4.06	76.96	25.65		100.0	
10059-CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 2 Mbps)	X	1.26	67.22	17.39	0.61	110.0	± 9.6 %
		Y	1.06	65.28	15.86		110.0	
		Z	1.26	68.71	18.34		110.0	
10060-CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 5.5 Mbps)	X	100.00	144.38	38.10	1.30	110.0	± 9.6 %
		Y	85.80	133.17	33.10		110.0	
		Z	100.00	151.02	40.61		110.0	

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10061-CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 11 Mbps)	X	3.17	83.82	23.54	2.04	110.0	± 9.6 %
		Y	2.13	77.69	20.53		110.0	
		Z	26.10	125.29	36.75		110.0	
10062-CAC	IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps)	X	4.46	67.33	16.75	0.49	100.0	± 9.6 %
		Y	4.28	66.90	16.43		100.0	
		Z	4.35	67.52	16.93		100.0	
10063-CAC	IEEE 802.11a/h WiFi 5 GHz (OFDM, 9 Mbps)	X	4.47	67.40	16.82	0.72	100.0	± 9.6 %
		Y	4.30	66.99	16.50		100.0	
		Z	4.38	67.68	17.07		100.0	
10064-CAC	IEEE 802.11a/h WiFi 5 GHz (OFDM, 12 Mbps)	X	4.69	67.51	16.95	0.86	100.0	± 9.6 %
		Y	4.51	67.12	16.66		100.0	
		Z	4.58	67.81	17.23		100.0	
10065-CAC	IEEE 802.11a/h WiFi 5 GHz (OFDM, 18 Mbps)	X	4.56	67.31	16.98	1.21	100.0	± 9.6 %
		Y	4.38	66.93	16.70		100.0	
		Z	4.47	67.65	17.32		100.0	
10066-CAC	IEEE 802.11a/h WiFi 5 GHz (OFDM, 24 Mbps)	X	4.55	67.24	17.08	1.46	100.0	± 9.6 %
		Y	4.38	66.87	16.80		100.0	
		Z	4.48	67.64	17.48		100.0	
10067-CAC	IEEE 802.11a/h WiFi 5 GHz (OFDM, 36 Mbps)	X	4.82	67.44	17.46	2.04	100.0	± 9.6 %
		Y	4.65	67.11	17.23		100.0	
		Z	4.74	67.89	17.94		100.0	
10068-CAC	IEEE 802.11a/h WiFi 5 GHz (OFDM, 48 Mbps)	X	4.85	67.32	17.60	2.55	100.0	± 9.6 %
		Y	4.69	67.03	17.38		100.0	
		Z	4.81	67.94	18.20		100.0	
10069-CAC	IEEE 802.11a/h WiFi 5 GHz (OFDM, 54 Mbps)	X	4.90	67.30	17.74	2.67	100.0	± 9.6 %
		Y	4.74	67.03	17.54		100.0	
		Z	4.85	67.87	18.33		100.0	
10071-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 9 Mbps)	X	4.72	67.20	17.39	1.99	100.0	± 9.6 %
		Y	4.57	66.91	17.17		100.0	
		Z	4.68	67.73	17.90		100.0	
10072-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 12 Mbps)	X	4.67	67.41	17.55	2.30	100.0	± 9.6 %
		Y	4.51	67.09	17.32		100.0	
		Z	4.63	67.99	18.13		100.0	
10073-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 18 Mbps)	X	4.73	67.57	17.84	2.83	100.0	± 9.6 %
		Y	4.58	67.29	17.63		100.0	
		Z	4.73	68.31	18.55		100.0	
10074-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 24 Mbps)	X	4.74	67.54	17.98	3.30	100.0	± 9.6 %
		Y	4.60	67.29	17.79		100.0	
		Z	4.77	68.39	18.77		100.0	
10075-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 36 Mbps)	X	4.77	67.53	18.19	3.82	90.0	± 9.6 %
		Y	4.63	67.29	18.00		90.0	
		Z	4.80	68.43	19.04		90.0	
10076-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 48 Mbps)	X	4.81	67.40	18.34	4.15	90.0	± 9.6 %
		Y	4.68	67.17	18.17		90.0	
		Z	4.84	68.26	19.20		90.0	
10077-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 54 Mbps)	X	4.84	67.50	18.46	4.30	90.0	± 9.6 %
		Y	4.72	67.29	18.29		90.0	
		Z	4.89	68.41	19.35		90.0	

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10081-CAB	CDMA2000 (1xRTT, RC3)	X	4.88	87.98	19.14	0.00	150.0	± 9.6 %
		Y	0.32	60.00	5.71		150.0	
		Z	0.31	60.00	5.65		150.0	
10082-CAB	IS-54 / IS-136 FDD (TDMA/FDM, PI/4-DQPSK, Fullrate)	X	1.62	63.57	5.40	4.77	80.0	± 9.6 %
		Y	0.68	60.00	3.13		80.0	
		Z	0.62	60.00	3.83		80.0	
10090-DAC	GPRS-FDD (TDMA, GMSK, TN 0-4)	X	100.00	107.30	22.99	6.56	60.0	± 9.6 %
		Y	2.51	69.03	11.04		60.0	
		Z	100.00	113.33	25.54		60.0	
10097-CAB	UMTS-FDD (HSDPA)	X	2.50	75.01	18.94	0.00	150.0	± 9.6 %
		Y	1.89	70.81	16.25		150.0	
		Z	2.56	76.14	18.72		150.0	
10098-CAB	UMTS-FDD (HSUPA, Subtest 2)	X	2.45	75.01	18.96	0.00	150.0	± 9.6 %
		Y	1.85	70.77	16.24		150.0	
		Z	2.52	76.21	18.77		150.0	
10099-DAC	EDGE-FDD (TDMA, 8PSK, TN 0-4)	X	7.32	87.22	30.53	9.56	60.0	± 9.6 %
		Y	6.17	83.12	28.62		60.0	
		Z	8.68	94.82	34.93		60.0	
10100-CAD	LTE-FDD (SC-FDMA, 100% RB, 20 MHz, QPSK)	X	3.42	73.55	18.59	0.00	150.0	± 9.6 %
		Y	2.93	71.12	17.19		150.0	
		Z	3.22	73.14	18.39		150.0	
10101-CAD	LTE-FDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM)	X	3.24	68.97	16.88	0.00	150.0	± 9.6 %
		Y	2.97	67.78	16.07		150.0	
		Z	3.08	68.69	16.74		150.0	
10102-CAD	LTE-FDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM)	X	3.34	68.93	16.94	0.00	150.0	± 9.6 %
		Y	3.08	67.82	16.19		150.0	
		Z	3.17	68.66	16.80		150.0	
10103-CAD	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, QPSK)	X	5.77	75.56	20.30	3.98	65.0	± 9.6 %
		Y	4.88	73.14	19.21		65.0	
		Z	6.69	79.77	22.67		65.0	
10104-CAD	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM)	X	5.56	72.74	19.77	3.98	65.0	± 9.6 %
		Y	5.01	71.26	19.05		65.0	
		Z	5.72	74.52	21.12		65.0	
10105-CAD	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM)	X	5.33	71.76	19.63	3.98	65.0	± 9.6 %
		Y	4.69	69.82	18.70		65.0	
		Z	5.53	73.61	21.00		65.0	
10108-CAE	LTE-FDD (SC-FDMA, 100% RB, 10 MHz, QPSK)	X	2.97	73.18	18.60	0.00	150.0	± 9.6 %
		Y	2.51	70.74	17.10		150.0	
		Z	2.80	73.15	18.50		150.0	
10109-CAE	LTE-FDD (SC-FDMA, 100% RB, 10 MHz, 16-QAM)	X	2.93	69.47	17.00	0.00	150.0	± 9.6 %
		Y	2.63	68.04	15.97		150.0	
		Z	2.76	69.33	16.79		150.0	
10110-CAE	LTE-FDD (SC-FDMA, 100% RB, 5 MHz, QPSK)	X	2.50	73.41	18.56	0.00	150.0	± 9.6 %
		Y	2.00	70.27	16.52		150.0	
		Z	2.38	73.78	18.36		150.0	
10111-CAE	LTE-FDD (SC-FDMA, 100% RB, 5 MHz, 16-QAM)	X	2.98	72.83	18.15	0.00	150.0	± 9.6 %
		Y	2.48	70.24	16.38		150.0	
		Z	2.81	72.77	17.64		150.0	

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10112-CAE	LTE-FDD (SC-FDMA, 100% RB, 10 MHz, 64-QAM)	X	3.05	69.47	17.03	0.00	150.0	± 9.6 %
		Y	2.76	68.15	16.06		150.0	
		Z	2.89	69.37	16.83		150.0	
10113-CAE	LTE-FDD (SC-FDMA, 100% RB, 5 MHz, 64-QAM)	X	3.12	72.84	18.19	0.00	150.0	± 9.6 %
		Y	2.63	70.41	16.51		150.0	
		Z	2.93	72.71	17.65		150.0	
10114-CAC	IEEE 802.11n (HT Greenfield, 13.5 Mbps, BPSK)	X	4.94	67.73	16.80	0.00	150.0	± 9.6 %
		Y	4.78	67.29	16.53		150.0	
		Z	4.79	67.56	16.80		150.0	
10115-CAC	IEEE 802.11n (HT Greenfield, 81 Mbps, 16-QAM)	X	5.16	67.70	16.77	0.00	150.0	± 9.6 %
		Y	5.01	67.33	16.53		150.0	
		Z	5.02	67.62	16.80		150.0	
10116-CAC	IEEE 802.11n (HT Greenfield, 135 Mbps, 64-QAM)	X	5.01	67.89	16.81	0.00	150.0	± 9.6 %
		Y	4.85	67.44	16.53		150.0	
		Z	4.86	67.75	16.82		150.0	
10117-CAC	IEEE 802.11n (HT Mixed, 13.5 Mbps, BPSK)	X	4.93	67.64	16.77	0.00	150.0	± 9.6 %
		Y	4.75	67.16	16.48		150.0	
		Z	4.77	67.45	16.76		150.0	
10118-CAC	IEEE 802.11n (HT Mixed, 81 Mbps, 16-QAM)	X	5.23	67.87	16.86	0.00	150.0	± 9.6 %
		Y	5.07	67.51	16.63		150.0	
		Z	5.08	67.76	16.88		150.0	
10119-CAC	IEEE 802.11n (HT Mixed, 135 Mbps, 64-QAM)	X	5.02	67.91	16.82	0.00	150.0	± 9.6 %
		Y	4.86	67.48	16.55		150.0	
		Z	4.87	67.78	16.84		150.0	
10140-CAD	LTE-FDD (SC-FDMA, 100% RB, 15 MHz, 16-QAM)	X	3.35	68.96	16.85	0.00	150.0	± 9.6 %
		Y	3.09	67.84	16.08		150.0	
		Z	3.18	68.72	16.71		150.0	
10141-CAD	LTE-FDD (SC-FDMA, 100% RB, 15 MHz, 64-QAM)	X	3.49	69.13	17.04	0.00	150.0	± 9.6 %
		Y	3.22	68.09	16.32		150.0	
		Z	3.32	68.92	16.92		150.0	
10142-CAD	LTE-FDD (SC-FDMA, 100% RB, 3 MHz, QPSK)	X	2.58	75.74	18.77	0.00	150.0	± 9.6 %
		Y	1.74	70.02	15.33		150.0	
		Z	2.36	75.16	17.68		150.0	
10143-CAD	LTE-FDD (SC-FDMA, 100% RB, 3 MHz, 16-QAM)	X	3.39	76.21	18.32	0.00	150.0	± 9.6 %
		Y	2.14	69.49	14.48		150.0	
		Z	2.63	72.79	15.89		150.0	
10144-CAD	LTE-FDD (SC-FDMA, 100% RB, 3 MHz, 64-QAM)	X	2.22	68.97	14.54	0.00	150.0	± 9.6 %
		Y	1.62	64.98	11.67		150.0	
		Z	1.69	65.98	12.12		150.0	
10145-CAE	LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, QPSK)	X	0.78	62.49	8.47	0.00	150.0	± 9.6 %
		Y	0.52	60.00	5.47		150.0	
		Z	0.49	60.00	5.19		150.0	
10146-CAE	LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, 16-QAM)	X	0.87	60.11	5.94	0.00	150.0	± 9.6 %
		Y	0.75	60.00	5.12		150.0	
		Z	0.68	60.00	4.56		150.0	
10147-CAE	LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, 64-QAM)	X	0.91	60.44	6.21	0.00	150.0	± 9.6 %
		Y	0.76	60.00	5.18		150.0	
		Z	0.51	57.56	2.95		150.0	

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10149-CAD	LTE-FDD (SC-FDMA, 50% RB, 20 MHz, 16-QAM)	X	2.94	69.57	17.06	0.00	150.0	± 9.6 %
		Y	2.64	68.13	16.03		150.0	
		Z	2.78	69.43	16.86		150.0	
10150-CAD	LTE-FDD (SC-FDMA, 50% RB, 20 MHz, 64-QAM)	X	3.06	69.57	17.09	0.00	150.0	± 9.6 %
		Y	2.77	68.24	16.12		150.0	
		Z	2.90	69.46	16.90		150.0	
10151-CAD	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, QPSK)	X	6.12	78.36	21.40	3.98	65.0	± 9.6 %
		Y	5.19	76.08	20.33		65.0	
		Z	7.94	85.08	24.65		65.0	
10152-CAD	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 16-QAM)	X	5.08	72.66	19.24	3.98	65.0	± 9.6 %
		Y	4.50	71.00	18.34		65.0	
		Z	5.37	75.06	20.75		65.0	
10153-CAD	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 64-QAM)	X	5.52	73.99	20.21	3.98	65.0	± 9.6 %
		Y	4.91	72.42	19.39		65.0	
		Z	5.87	76.60	21.80		65.0	
10154-CAE	LTE-FDD (SC-FDMA, 50% RB, 10 MHz, QPSK)	X	2.60	74.14	18.93	0.00	150.0	± 9.6 %
		Y	2.07	70.87	16.85		150.0	
		Z	2.48	74.48	18.72		150.0	
10155-CAE	LTE-FDD (SC-FDMA, 50% RB, 10 MHz, 16-QAM)	X	2.99	72.91	18.20	0.00	150.0	± 9.6 %
		Y	2.49	70.33	16.44		150.0	
		Z	2.83	72.89	17.71		150.0	
10156-CAE	LTE-FDD (SC-FDMA, 50% RB, 5 MHz, QPSK)	X	2.72	77.61	18.96	0.00	150.0	± 9.6 %
		Y	1.47	68.82	14.03		150.0	
		Z	2.12	74.39	16.48		150.0	
10157-CAE	LTE-FDD (SC-FDMA, 50% RB, 5 MHz, 16-QAM)	X	2.20	70.37	14.71	0.00	150.0	± 9.6 %
		Y	1.34	64.22	10.64		150.0	
		Z	1.38	65.02	10.93		150.0	
10158-CAE	LTE-FDD (SC-FDMA, 50% RB, 10 MHz, 64-QAM)	X	3.14	73.01	18.28	0.00	150.0	± 9.6 %
		Y	2.65	70.58	16.61		150.0	
		Z	2.96	72.90	17.75		150.0	
10159-CAE	LTE-FDD (SC-FDMA, 50% RB, 5 MHz, 64-QAM)	X	2.37	71.11	15.06	0.00	150.0	± 9.6 %
		Y	1.39	64.39	10.75		150.0	
		Z	1.43	65.14	11.02		150.0	
10160-CAD	LTE-FDD (SC-FDMA, 50% RB, 15 MHz, QPSK)	X	2.91	71.86	18.06	0.00	150.0	± 9.6 %
		Y	2.53	69.97	16.77		150.0	
		Z	2.77	72.00	17.95		150.0	
10161-CAD	LTE-FDD (SC-FDMA, 50% RB, 15 MHz, 16-QAM)	X	2.97	69.74	17.05	0.00	150.0	± 9.6 %
		Y	2.65	68.25	15.94		150.0	
		Z	2.80	69.61	16.76		150.0	
10162-CAD	LTE-FDD (SC-FDMA, 50% RB, 15 MHz, 64-QAM)	X	3.09	69.99	17.19	0.00	150.0	± 9.6 %
		Y	2.77	68.56	16.12		150.0	
		Z	2.92	69.91	16.92		150.0	
10166-CAE	LTE-FDD (SC-FDMA, 50% RB, 1.4 MHz, QPSK)	X	3.27	70.65	19.91	3.01	150.0	± 9.6 %
		Y	3.04	69.80	19.51		150.0	
		Z	2.88	69.38	19.40		150.0	
10167-CAE	LTE-FDD (SC-FDMA, 50% RB, 1.4 MHz, 16-QAM)	X	4.24	75.37	21.03	3.01	150.0	± 9.6 %
		Y	3.72	73.42	20.15		150.0	
		Z	3.47	73.03	20.10		150.0	

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10168-CAE	LTE-FDD (SC-FDMA, 50% RB, 1.4 MHz, 64-QAM)	X	5.20	79.86	23.33	3.01	150.0	± 9.6 %
		Y	4.57	77.96	22.57		150.0	
		Z	4.10	76.71	22.14		150.0	
10169-CAD	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, QPSK)	X	2.75	69.83	19.58	3.01	150.0	± 9.6 %
		Y	2.55	68.50	18.89		150.0	
		Z	2.43	68.04	18.76		150.0	
10170-CAD	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM)	X	4.51	80.30	23.81	3.01	150.0	± 9.6 %
		Y	3.73	76.65	22.31		150.0	
		Z	3.32	75.13	21.75		150.0	
10171-AAD	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, 64-QAM)	X	3.24	73.20	19.71	3.01	150.0	± 9.6 %
		Y	2.78	70.34	18.34		150.0	
		Z	2.62	70.15	18.40		150.0	
10172-CAD	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK)	X	4.70	83.21	25.51	6.02	65.0	± 9.6 %
		Y	3.42	77.39	23.24		65.0	
		Z	5.44	89.17	29.03		65.0	
10173-CAD	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM)	X	11.83	96.50	27.66	6.02	65.0	± 9.6 %
		Y	6.68	86.95	24.62		65.0	
		Z	21.26	111.74	33.61		65.0	
10174-CAD	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 64-QAM)	X	7.29	87.43	24.17	6.02	65.0	± 9.6 %
		Y	3.60	76.36	20.29		65.0	
		Z	12.56	100.49	29.62		65.0	
10175-CAE	LTE-FDD (SC-FDMA, 1 RB, 10 MHz, QPSK)	X	2.71	69.45	19.29	3.01	150.0	± 9.6 %
		Y	2.52	68.11	18.58		150.0	
		Z	2.40	67.74	18.50		150.0	
10176-CAE	LTE-FDD (SC-FDMA, 1 RB, 10 MHz, 16-QAM)	X	4.52	80.34	23.83	3.01	150.0	± 9.6 %
		Y	3.74	76.68	22.32		150.0	
		Z	3.32	75.16	21.77		150.0	
10177-CAG	LTE-FDD (SC-FDMA, 1 RB, 5 MHz, QPSK)	X	2.73	69.60	19.38	3.01	150.0	± 9.6 %
		Y	2.53	68.26	18.67		150.0	
		Z	2.41	67.84	18.57		150.0	
10178-CAE	LTE-FDD (SC-FDMA, 1 RB, 5 MHz, 16-QAM)	X	4.46	80.07	23.70	3.01	150.0	± 9.6 %
		Y	3.70	76.45	22.20		150.0	
		Z	3.31	75.02	21.69		150.0	
10179-CAE	LTE-FDD (SC-FDMA, 1 RB, 10 MHz, 64-QAM)	X	3.79	76.52	21.60	3.01	150.0	± 9.6 %
		Y	3.18	73.18	20.12		150.0	
		Z	2.93	72.52	19.94		150.0	
10180-CAE	LTE-FDD (SC-FDMA, 1 RB, 5 MHz, 64-QAM)	X	3.23	73.13	19.66	3.01	150.0	± 9.6 %
		Y	2.77	70.29	18.31		150.0	
		Z	2.62	70.12	18.37		150.0	
10181-CAD	LTE-FDD (SC-FDMA, 1 RB, 15 MHz, QPSK)	X	2.73	69.58	19.37	3.01	150.0	± 9.6 %
		Y	2.53	68.24	18.66		150.0	
		Z	2.41	67.83	18.56		150.0	
10182-CAD	LTE-FDD (SC-FDMA, 1 RB, 15 MHz, 16-QAM)	X	4.45	80.03	23.68	3.01	150.0	± 9.6 %
		Y	3.70	76.42	22.19		150.0	
		Z	3.30	74.99	21.68		150.0	
10183-AAC	LTE-FDD (SC-FDMA, 1 RB, 15 MHz, 64-QAM)	X	3.22	73.10	19.65	3.01	150.0	± 9.6 %
		Y	2.77	70.26	18.29		150.0	
		Z	2.61	70.10	18.36		150.0	

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10184-CAD	LTE-FDD (SC-FDMA, 1 RB, 3 MHz, QPSK)	X	2.74	69.63	19.39	3.01	150.0	± 9.6 %
		Y	2.54	68.28	18.69		150.0	
		Z	2.42	67.87	18.58		150.0	
10185-CAD	LTE-FDD (SC-FDMA, 1 RB, 3 MHz, 16-QAM)	X	4.48	80.15	23.74	3.01	150.0	± 9.6 %
		Y	3.72	76.53	22.24		150.0	
		Z	3.32	75.08	21.72		150.0	
10186-AAD	LTE-FDD (SC-FDMA, 1 RB, 3 MHz, 64-QAM)	X	3.24	73.19	19.69	3.01	150.0	± 9.6 %
		Y	2.78	70.33	18.33		150.0	
		Z	2.63	70.16	18.40		150.0	
10187-CAE	LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK)	X	2.75	69.74	19.50	3.01	150.0	± 9.6 %
		Y	2.55	68.40	18.80		150.0	
		Z	2.43	67.97	18.69		150.0	
10188-CAE	LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, 16-QAM)	X	4.71	81.24	24.28	3.01	150.0	± 9.6 %
		Y	3.89	77.50	22.76		150.0	
		Z	3.42	75.77	22.12		150.0	
10189-AAE	LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, 64-QAM)	X	3.34	73.81	20.06	3.01	150.0	± 9.6 %
		Y	2.86	70.86	18.67		150.0	
		Z	2.69	70.60	18.69		150.0	
10193-CAC	IEEE 802.11n (HT Greenfield, 6.5 Mbps, BPSK)	X	4.38	67.64	16.61	0.00	150.0	± 9.6 %
		Y	4.19	67.13	16.22		150.0	
		Z	4.22	67.61	16.57		150.0	
10194-CAC	IEEE 802.11n (HT Greenfield, 39 Mbps, 16-QAM)	X	4.51	67.82	16.73	0.00	150.0	± 9.6 %
		Y	4.31	67.31	16.35		150.0	
		Z	4.34	67.74	16.69		150.0	
10195-CAC	IEEE 802.11n (HT Greenfield, 65 Mbps, 64-QAM)	X	4.54	67.81	16.73	0.00	150.0	± 9.6 %
		Y	4.34	67.29	16.35		150.0	
		Z	4.35	67.70	16.68		150.0	
10196-CAC	IEEE 802.11n (HT Mixed, 6.5 Mbps, BPSK)	X	4.36	67.61	16.59	0.00	150.0	± 9.6 %
		Y	4.17	67.09	16.19		150.0	
		Z	4.19	67.55	16.53		150.0	
10197-CAC	IEEE 802.11n (HT Mixed, 39 Mbps, 16-QAM)	X	4.52	67.82	16.73	0.00	150.0	± 9.6 %
		Y	4.32	67.30	16.36		150.0	
		Z	4.34	67.73	16.69		150.0	
10198-CAC	IEEE 802.11n (HT Mixed, 65 Mbps, 64-QAM)	X	4.53	67.80	16.73	0.00	150.0	± 9.6 %
		Y	4.33	67.28	16.35		150.0	
		Z	4.34	67.69	16.67		150.0	
10219-CAC	IEEE 802.11n (HT Mixed, 7.2 Mbps, BPSK)	X	4.32	67.70	16.59	0.00	150.0	± 9.6 %
		Y	4.12	67.17	16.18		150.0	
		Z	4.16	67.65	16.54		150.0	
10220-CAC	IEEE 802.11n (HT Mixed, 43.3 Mbps, 16-QAM)	X	4.51	67.77	16.72	0.00	150.0	± 9.6 %
		Y	4.31	67.26	16.34		150.0	
		Z	4.33	67.68	16.67		150.0	
10221-CAC	IEEE 802.11n (HT Mixed, 72.2 Mbps, 64-QAM)	X	4.54	67.74	16.71	0.00	150.0	± 9.6 %
		Y	4.35	67.23	16.34		150.0	
		Z	4.36	67.65	16.66		150.0	
10222-CAC	IEEE 802.11n (HT Mixed, 15 Mbps, BPSK)	X	4.90	67.64	16.76	0.00	150.0	± 9.6 %
		Y	4.74	67.17	16.48		150.0	
		Z	4.75	67.46	16.76		150.0	

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10223-CAC	IEEE 802.11n (HT Mixed, 90 Mbps, 16-QAM)	X	5.13	67.72	16.80	0.00	150.0	± 9.6 %
		Y	4.95	67.24	16.51		150.0	
		Z	4.95	67.47	16.75		150.0	
10224-CAC	IEEE 802.11n (HT Mixed, 150 Mbps, 64-QAM)	X	4.95	67.79	16.76	0.00	150.0	± 9.6 %
		Y	4.78	67.32	16.47		150.0	
		Z	4.80	67.62	16.76		150.0	
10225-CAB	UMTS-FDD (HSPA+)	X	2.79	68.21	15.97	0.00	150.0	± 9.6 %
		Y	2.47	66.68	14.68		150.0	
		Z	2.57	67.76	15.24		150.0	
10226-CAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 16-QAM)	X	13.40	98.81	28.46	6.02	65.0	± 9.6 %
		Y	7.34	88.71	25.32		65.0	
		Z	25.75	115.57	34.76		65.0	
10227-CAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 64-QAM)	X	11.99	95.24	26.60	6.02	65.0	± 9.6 %
		Y	6.72	86.04	23.69		65.0	
		Z	23.45	111.54	32.77		65.0	
10228-CAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK)	X	5.71	87.04	26.96	6.02	65.0	± 9.6 %
		Y	4.37	82.38	25.25		65.0	
		Z	6.64	93.67	30.70		65.0	
10229-CAB	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 16-QAM)	X	11.96	96.66	27.71	6.02	65.0	± 9.6 %
		Y	6.74	87.08	24.67		65.0	
		Z	21.48	111.91	33.66		65.0	
10230-CAB	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 64-QAM)	X	10.65	93.21	25.90	6.02	65.0	± 9.6 %
		Y	6.14	84.50	23.09		65.0	
		Z	19.34	107.98	31.72		65.0	
10231-CAB	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, QPSK)	X	5.42	85.95	26.48	6.02	65.0	± 9.6 %
		Y	4.17	81.35	24.77		65.0	
		Z	6.21	92.15	30.08		65.0	
10232-CAD	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 16-QAM)	X	11.93	96.64	27.71	6.02	65.0	± 9.6 %
		Y	6.72	87.06	24.66		65.0	
		Z	21.43	111.88	33.66		65.0	
10233-CAD	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 64-QAM)	X	10.61	93.17	25.89	6.02	65.0	± 9.6 %
		Y	6.13	84.47	23.08		65.0	
		Z	19.19	107.87	31.70		65.0	
10234-CAD	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, QPSK)	X	5.21	85.07	26.03	6.02	65.0	± 9.6 %
		Y	4.02	80.54	24.33		65.0	
		Z	5.96	91.15	29.60		65.0	
10235-CAD	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 16-QAM)	X	11.96	96.69	27.73	6.02	65.0	± 9.6 %
		Y	6.73	87.09	24.68		65.0	
		Z	21.53	111.99	33.69		65.0	
10236-CAD	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 64-QAM)	X	10.77	93.36	25.94	6.02	65.0	± 9.6 %
		Y	6.19	84.60	23.12		65.0	
		Z	19.69	108.25	31.79		65.0	
10237-CAD	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, QPSK)	X	5.42	85.98	26.49	6.02	65.0	± 9.6 %
		Y	4.16	81.36	24.78		65.0	
		Z	6.21	92.20	30.11		65.0	
10238-CAD	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 16-QAM)	X	11.90	96.61	27.70	6.02	65.0	± 9.6 %
		Y	6.71	87.03	24.65		65.0	
		Z	21.40	111.88	33.66		65.0	

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10239-CAD	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 64-QAM)	X	10.56	93.11	25.88	6.02	65.0	± 9.6 %
		Y	6.10	84.42	23.06		65.0	
		Z	19.09	107.79	31.68		65.0	
10240-CAD	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, QPSK)	X	5.41	85.96	26.49	6.02	65.0	± 9.6 %
		Y	4.16	81.35	24.77		65.0	
		Z	6.21	92.21	30.11		65.0	
10241-CAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 16-QAM)	X	7.46	82.73	25.67	6.98	65.0	± 9.6 %
		Y	6.54	80.49	24.79		65.0	
		Z	8.00	86.69	28.07		65.0	
10242-CAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 64-QAM)	X	6.62	80.40	24.68	6.98	65.0	± 9.6 %
		Y	5.53	77.22	23.38		65.0	
		Z	7.26	84.73	27.24		65.0	
10243-CAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, QPSK)	X	5.27	76.09	23.83	6.98	65.0	± 9.6 %
		Y	4.60	73.69	22.78		65.0	
		Z	5.52	79.22	26.03		65.0	
10244-CAB	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 16-QAM)	X	3.20	67.38	12.56	3.98	65.0	± 9.6 %
		Y	2.49	64.65	10.71		65.0	
		Z	2.69	66.01	11.39		65.0	
10245-CAB	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 64-QAM)	X	3.13	66.89	12.26	3.98	65.0	± 9.6 %
		Y	2.47	64.34	10.49		65.0	
		Z	2.62	65.48	11.07		65.0	
10246-CAB	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, QPSK)	X	3.33	71.26	15.09	3.98	65.0	± 9.6 %
		Y	2.19	66.09	11.92		65.0	
		Z	3.97	74.47	16.08		65.0	
10247-CAD	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 16-QAM)	X	3.74	70.05	15.32	3.98	65.0	± 9.6 %
		Y	2.92	66.86	13.18		65.0	
		Z	3.91	71.61	15.74		65.0	
10248-CAD	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 64-QAM)	X	3.66	69.31	14.97	3.98	65.0	± 9.6 %
		Y	2.90	66.40	12.96		65.0	
		Z	3.64	70.21	15.10		65.0	
10249-CAD	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, QPSK)	X	5.38	78.77	19.59	3.98	65.0	± 9.6 %
		Y	3.63	73.15	16.70		65.0	
		Z	11.68	92.02	24.17		65.0	
10250-CAD	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 16-QAM)	X	5.23	75.39	20.08	3.98	65.0	± 9.6 %
		Y	4.49	73.25	18.86		65.0	
		Z	6.16	79.80	22.17		65.0	
10251-CAD	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 64-QAM)	X	4.76	72.54	18.41	3.98	65.0	± 9.6 %
		Y	4.08	70.48	17.16		65.0	
		Z	5.15	75.26	19.79		65.0	
10252-CAD	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, QPSK)	X	6.35	81.28	22.20	3.98	65.0	± 9.6 %
		Y	5.08	78.02	20.63		65.0	
		Z	11.14	93.41	27.01		65.0	
10253-CAD	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 16-QAM)	X	5.02	72.30	18.95	3.98	65.0	± 9.6 %
		Y	4.44	70.67	18.01		65.0	
		Z	5.30	74.66	20.36		65.0	
10254-CAD	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 64-QAM)	X	5.38	73.41	19.76	3.98	65.0	± 9.6 %
		Y	4.78	71.83	18.87		65.0	
		Z	5.70	75.89	21.20		65.0	

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10255-CAD	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, QPSK)	X	5.82	77.66	21.24	3.98	65.0	± 9.6 %
		Y	4.96	75.47	20.16		65.0	
		Z	7.39	83.95	24.29		65.0	
10256-CAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 16-QAM)	X	2.22	63.18	9.15	3.98	65.0	± 9.6 %
		Y	1.80	61.46	7.69		65.0	
		Z	1.80	61.81	7.81		65.0	
10257-CAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 64-QAM)	X	2.19	62.82	8.86	3.98	65.0	± 9.6 %
		Y	1.79	61.23	7.46		65.0	
		Z	1.78	61.52	7.54		65.0	
10258-CAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, QPSK)	X	2.12	65.04	10.93	3.98	65.0	± 9.6 %
		Y	1.53	61.94	8.45		65.0	
		Z	1.81	64.06	9.87		65.0	
10259-CAB	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 16-QAM)	X	4.34	72.23	17.14	3.98	65.0	± 9.6 %
		Y	3.48	69.24	15.25		65.0	
		Z	4.90	75.28	18.35		65.0	
10260-CAB	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 64-QAM)	X	4.33	71.88	16.97	3.98	65.0	± 9.6 %
		Y	3.51	69.00	15.13		65.0	
		Z	4.78	74.53	18.00		65.0	
10261-CAB	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, QPSK)	X	5.55	79.13	20.37	3.98	65.0	± 9.6 %
		Y	4.10	74.71	18.08		65.0	
		Z	10.62	91.33	24.85		65.0	
10262-CAD	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 16-QAM)	X	5.21	75.28	20.01	3.98	65.0	± 9.6 %
		Y	4.46	73.14	18.78		65.0	
		Z	6.11	79.64	22.08		65.0	
10263-CAD	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 64-QAM)	X	4.75	72.52	18.41	3.98	65.0	± 9.6 %
		Y	4.08	70.46	17.15		65.0	
		Z	5.14	75.24	19.78		65.0	
10264-CAD	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, QPSK)	X	6.26	81.00	22.07	3.98	65.0	± 9.6 %
		Y	5.00	77.75	20.49		65.0	
		Z	10.85	92.88	26.80		65.0	
10265-CAD	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 16-QAM)	X	5.08	72.66	19.25	3.98	65.0	± 9.6 %
		Y	4.50	71.01	18.34		65.0	
		Z	5.37	75.07	20.76		65.0	
10266-CAD	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 64-QAM)	X	5.51	73.97	20.20	3.98	65.0	± 9.6 %
		Y	4.91	72.41	19.38		65.0	
		Z	5.87	76.58	21.79		65.0	
10267-CAD	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, QPSK)	X	6.10	78.30	21.38	3.98	65.0	± 9.6 %
		Y	5.18	76.02	20.31		65.0	
		Z	7.90	84.97	24.60		65.0	
10268-CAD	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 16-QAM)	X	5.74	72.80	19.87	3.98	65.0	± 9.6 %
		Y	5.19	71.42	19.19		65.0	
		Z	5.90	74.57	21.18		65.0	
10269-CAD	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 64-QAM)	X	5.75	72.46	19.75	3.98	65.0	± 9.6 %
		Y	5.22	71.14	19.09		65.0	
		Z	5.89	74.14	21.00		65.0	
10270-CAD	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, QPSK)	X	5.95	75.44	20.43	3.98	65.0	± 9.6 %
		Y	5.26	73.77	19.66		65.0	
		Z	6.67	79.14	22.60		65.0	

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10274-CAB	UMTS-FDD (HSUPA, Subtest 5, 3GPP Rel8.10)	X	2.72	69.46	16.37	0.00	150.0	± 9.6 %
		Y	2.36	67.57	14.87		150.0	
		Z	2.54	69.20	15.73		150.0	
10275-CAB	UMTS-FDD (HSUPA, Subtest 5, 3GPP Rel8.4)	X	2.15	75.10	19.03	0.00	150.0	± 9.6 %
		Y	1.54	70.22	15.99		150.0	
		Z	2.17	76.19	18.88		150.0	
10277-CAA	PHS (QPSK)	X	1.81	60.16	5.58	9.03	50.0	± 9.6 %
		Y	1.67	59.34	4.75		50.0	
		Z	1.52	59.62	4.90		50.0	
10278-CAA	PHS (QPSK, BW 884MHz, Rolloff 0.5)	X	2.83	64.56	10.15	9.03	50.0	± 9.6 %
		Y	2.52	62.90	8.74		50.0	
		Z	2.56	64.10	9.56		50.0	
10279-CAA	PHS (QPSK, BW 884MHz, Rolloff 0.38)	X	2.88	64.70	10.28	9.03	50.0	± 9.6 %
		Y	2.56	63.01	8.86		50.0	
		Z	2.60	64.21	9.68		50.0	
10290-AAB	CDMA2000, RC1, SO55, Full Rate	X	3.54	81.10	17.08	0.00	150.0	± 9.6 %
		Y	0.48	60.37	6.42		150.0	
		Z	0.47	60.62	6.43		150.0	
10291-AAB	CDMA2000, RC3, SO55, Full Rate	X	3.68	84.83	18.19	0.00	150.0	± 9.6 %
		Y	0.32	60.00	5.69		150.0	
		Z	0.31	60.00	5.63		150.0	
10292-AAB	CDMA2000, RC3, SO32, Full Rate	X	100.00	127.94	29.82	0.00	150.0	± 9.6 %
		Y	0.32	60.36	6.19		150.0	
		Z	0.38	62.00	7.07		150.0	
10293-AAB	CDMA2000, RC3, SO3, Full Rate	X	100.00	134.98	32.94	0.00	150.0	± 9.6 %
		Y	0.57	64.98	9.05		150.0	
		Z	100.00	108.64	21.08		150.0	
10295-AAB	CDMA2000, RC1, SO3, 1/8th Rate 25 fr.	X	11.18	84.53	21.23	9.03	50.0	± 9.6 %
		Y	10.45	81.54	19.19		50.0	
		Z	100.00	115.60	29.54		50.0	
10297-AAC	LTE-FDD (SC-FDMA, 50% RB, 20 MHz, QPSK)	X	3.00	73.36	18.71	0.00	150.0	± 9.6 %
		Y	2.53	70.91	17.20		150.0	
		Z	2.83	73.34	18.60		150.0	
10298-AAC	LTE-FDD (SC-FDMA, 50% RB, 3 MHz, QPSK)	X	1.89	72.53	14.96	0.00	150.0	± 9.6 %
		Y	0.73	61.82	8.30		150.0	
		Z	0.73	62.24	8.40		150.0	
10299-AAC	LTE-FDD (SC-FDMA, 50% RB, 3 MHz, 16-QAM)	X	1.57	65.03	10.03	0.00	150.0	± 9.6 %
		Y	1.01	61.04	7.11		150.0	
		Z	0.83	60.00	5.98		150.0	
10300-AAC	LTE-FDD (SC-FDMA, 50% RB, 3 MHz, 64-QAM)	X	1.12	61.29	7.32	0.00	150.0	± 9.6 %
		Y	0.84	59.39	5.47		150.0	
		Z	0.81	60.00	5.40		150.0	
10301-AAA	IEEE 802.16e WiMAX (29:18, 5ms, 10MHz, QPSK, PUSC)	X	4.45	66.36	17.65	4.17	50.0	± 9.6 %
		Y	4.23	65.79	17.10		50.0	
		Z	4.55	67.46	17.93		50.0	
10302-AAA	IEEE 802.16e WiMAX (29:18, 5ms, 10MHz, QPSK, PUSC, 3 CTRL symbols)	X	4.83	66.49	18.10	4.96	50.0	± 9.6 %
		Y	4.67	66.15	17.68		50.0	
		Z	4.91	67.37	18.29		50.0	

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10303-AAA	IEEE 802.16e WiMAX (31:15, 5ms, 10MHz, 64QAM, PUSC)	X	4.61	66.21	17.93	4.96	50.0	± 9.6 %
		Y	4.52	66.44	17.83		50.0	
		Z	4.71	67.23	18.13		50.0	
10304-AAA	IEEE 802.16e WiMAX (29:18, 5ms, 10MHz, 64QAM, PUSC)	X	4.45	66.25	17.55	4.17	50.0	± 9.6 %
		Y	4.28	65.87	17.08		50.0	
		Z	4.54	67.19	17.71		50.0	
10305-AAA	IEEE 802.16e WiMAX (31:15, 10ms, 10MHz, 64QAM, PUSC, 15 symbols)	X	4.21	68.57	19.19	6.02	35.0	± 9.6 %
		Y	4.20	68.77	18.65		35.0	
		Z	4.70	71.24	19.70		35.0	
10306-AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, 64QAM, PUSC, 18 symbols)	X	4.43	67.26	18.88	6.02	35.0	± 9.6 %
		Y	4.38	67.42	18.53		35.0	
		Z	4.71	69.33	19.45		35.0	
10307-AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, QPSK, PUSC, 18 symbols)	X	4.33	67.36	18.81	6.02	35.0	± 9.6 %
		Y	4.28	67.51	18.44		35.0	
		Z	4.63	69.46	19.37		35.0	
10308-AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, 16QAM, PUSC)	X	4.32	67.61	18.99	6.02	35.0	± 9.6 %
		Y	4.28	67.78	18.62		35.0	
		Z	4.65	69.87	19.62		35.0	
10309-AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, 16QAM, AMC 2x3, 18 symbols)	X	4.44	67.28	18.95	6.02	35.0	± 9.6 %
		Y	4.38	67.44	18.61		35.0	
		Z	4.72	69.38	19.55		35.0	
10310-AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, QPSK, AMC 2x3, 18 symbols)	X	4.40	67.37	18.90	6.02	35.0	± 9.6 %
		Y	4.35	67.56	18.56		35.0	
		Z	4.70	69.55	19.52		35.0	
10311-AAC	LTE-FDD (SC-FDMA, 100% RB, 15 MHz, QPSK)	X	3.37	72.11	18.09	0.00	150.0	± 9.6 %
		Y	2.89	69.81	16.76		150.0	
		Z	3.15	71.71	17.91		150.0	
10313-AAA	iDEN 1:3	X	3.23	72.81	15.85	6.99	70.0	± 9.6 %
		Y	2.06	67.24	12.84		70.0	
		Z	9.70	88.91	21.82		70.0	
10314-AAA	iDEN 1:6	X	6.67	84.94	23.03	10.00	30.0	± 9.6 %
		Y	4.02	76.25	19.11		30.0	
		Z	78.74	127.25	35.18		30.0	
10315-AAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps, 96pc duty cycle)	X	1.16	66.55	17.17	0.17	150.0	± 9.6 %
		Y	0.98	64.66	15.60		150.0	
		Z	1.10	67.00	17.41		150.0	
10316-AAB	IEEE 802.11g WiFi 2.4 GHz (ERP-OFDM, 6 Mbps, 96pc duty cycle)	X	4.37	67.38	16.57	0.17	150.0	± 9.6 %
		Y	4.19	66.90	16.21		150.0	
		Z	4.24	67.49	16.68		150.0	
10317-AAC	IEEE 802.11a WiFi 5 GHz (OFDM, 6 Mbps, 96pc duty cycle)	X	4.37	67.38	16.57	0.17	150.0	± 9.6 %
		Y	4.19	66.90	16.21		150.0	
		Z	4.24	67.49	16.68		150.0	
10400-AAD	IEEE 802.11ac WiFi (20MHz, 64-QAM, 99pc duty cycle)	X	4.45	67.76	16.67	0.00	150.0	± 9.6 %
		Y	4.24	67.20	16.28		150.0	
		Z	4.25	67.62	16.61		150.0	
10401-AAD	IEEE 802.11ac WiFi (40MHz, 64-QAM, 99pc duty cycle)	X	5.08	67.28	16.53	0.00	150.0	± 9.6 %
		Y	4.91	66.85	16.26		150.0	
		Z	4.99	67.38	16.65		150.0	

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10402-AAD	IEEE 802.11ac WiFi (80MHz, 64-QAM, 99pc duty cycle)	X	5.46	67.92	16.74	0.00	150.0	± 9.6 %
		Y	5.29	67.47	16.48		150.0	
		Z	5.31	67.72	16.74		150.0	
10403-AAB	CDMA2000 (1xEV-DO, Rev. 0)	X	3.54	81.10	17.08	0.00	115.0	± 9.6 %
		Y	0.48	60.37	6.42		115.0	
		Z	0.47	60.62	6.43		115.0	
10404-AAB	CDMA2000 (1xEV-DO, Rev. A)	X	3.54	81.10	17.08	0.00	115.0	± 9.6 %
		Y	0.48	60.37	6.42		115.0	
		Z	0.47	60.62	6.43		115.0	
10406-AAB	CDMA2000, RC3, SO32, SCH0, Full Rate	X	100.00	113.71	25.67	0.00	100.0	± 9.6 %
		Y	100.00	112.48	24.91		100.0	
		Z	100.00	109.36	23.18		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	120.56	28.57	3.23	80.0	± 9.6 %
		Y	18.57	99.71	23.29		80.0	
		Z	100.00	127.39	31.32		80.0	
10415-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps, 99pc duty cycle)	X	1.10	65.92	16.81	0.00	150.0	± 9.6 %
		Y	0.92	64.07	15.21		150.0	
		Z	1.01	65.87	16.68		150.0	
10416-AAA	IEEE 802.11g WiFi 2.4 GHz (ERP-OFDM, 6 Mbps, 99pc duty cycle)	X	4.36	67.57	16.66	0.00	150.0	± 9.6 %
		Y	4.17	67.06	16.28		150.0	
		Z	4.20	67.49	16.61		150.0	
10417-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps, 99pc duty cycle)	X	4.36	67.57	16.66	0.00	150.0	± 9.6 %
		Y	4.17	67.06	16.28		150.0	
		Z	4.20	67.49	16.61		150.0	
10418-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps, 99pc duty cycle, Long preambule)	X	4.37	67.83	16.76	0.00	150.0	± 9.6 %
		Y	4.17	67.30	16.37		150.0	
		Z	4.20	67.77	16.72		150.0	
10419-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps, 99pc duty cycle, Short preambule)	X	4.38	67.74	16.72	0.00	150.0	± 9.6 %
		Y	4.18	67.22	16.34		150.0	
		Z	4.21	67.67	16.68		150.0	
10422-AAB	IEEE 802.11n (HT Greenfield, 7.2 Mbps, BPSK)	X	4.48	67.66	16.70	0.00	150.0	± 9.6 %
		Y	4.28	67.16	16.34		150.0	
		Z	4.30	67.58	16.67		150.0	
10423-AAB	IEEE 802.11n (HT Greenfield, 43.3 Mbps, 16-QAM)	X	4.60	67.91	16.79	0.00	150.0	± 9.6 %
		Y	4.39	67.40	16.41		150.0	
		Z	4.41	67.81	16.74		150.0	
10424-AAB	IEEE 802.11n (HT Greenfield, 72.2 Mbps, 64-QAM)	X	4.53	67.87	16.77	0.00	150.0	± 9.6 %
		Y	4.32	67.34	16.39		150.0	
		Z	4.34	67.75	16.72		150.0	
10425-AAB	IEEE 802.11n (HT Greenfield, 15 Mbps, BPSK)	X	5.11	67.76	16.80	0.00	150.0	± 9.6 %
		Y	4.94	67.32	16.53		150.0	
		Z	4.95	67.60	16.80		150.0	
10426-AAB	IEEE 802.11n (HT Greenfield, 90 Mbps, 16-QAM)	X	5.13	67.86	16.85	0.00	150.0	± 9.6 %
		Y	4.98	67.50	16.61		150.0	
		Z	5.00	67.82	16.90		150.0	

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10427-AAB	IEEE 802.11n (HT Greenfield, 150 Mbps, 64-QAM)	X	5.10	67.68	16.75	0.00	150.0	± 9.6 %
		Y	4.94	67.27	16.50		150.0	
		Z	4.96	67.56	16.77		150.0	
10430-AAB	LTE-FDD (OFDMA, 5 MHz, E-TM 3.1)	X	5.24	77.27	20.58	0.00	150.0	± 9.6 %
		Y	4.88	76.30	19.67		150.0	
		Z	5.03	77.13	19.92		150.0	
10431-AAB	LTE-FDD (OFDMA, 10 MHz, E-TM 3.1)	X	4.02	68.52	16.70	0.00	150.0	± 9.6 %
		Y	3.77	67.78	16.08		150.0	
		Z	3.81	68.44	16.49		150.0	
10432-AAB	LTE-FDD (OFDMA, 15 MHz, E-TM 3.1)	X	4.31	68.11	16.76	0.00	150.0	± 9.6 %
		Y	4.09	67.53	16.31		150.0	
		Z	4.12	68.04	16.68		150.0	
10433-AAB	LTE-FDD (OFDMA, 20 MHz, E-TM 3.1)	X	4.55	67.91	16.80	0.00	150.0	± 9.6 %
		Y	4.35	67.39	16.42		150.0	
		Z	4.36	67.80	16.75		150.0	
10434-AAA	W-CDMA (BS Test Model 1, 64 DPCH)	X	5.99	79.73	20.87	0.00	150.0	± 9.6 %
		Y	5.11	77.12	19.18		150.0	
		Z	5.32	78.04	19.41		150.0	
10435-AAC	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	100.00	120.17	28.39	3.23	80.0	± 9.6 %
		Y	14.30	96.40	22.36		80.0	
		Z	100.00	127.00	31.14		80.0	
10447-AAB	LTE-FDD (OFDMA, 5 MHz, E-TM 3.1, Clipping 44%)	X	3.34	68.91	15.75	0.00	150.0	± 9.6 %
		Y	2.93	67.20	14.38		150.0	
		Z	3.00	68.02	14.75		150.0	
10448-AAB	LTE-FDD (OFDMA, 10 MHz, E-TM 3.1, Clippin 44%)	X	3.90	68.35	16.60	0.00	150.0	± 9.6 %
		Y	3.65	67.60	15.97		150.0	
		Z	3.70	68.27	16.39		150.0	
10449-AAB	LTE-FDD (OFDMA, 15 MHz, E-TM 3.1, Cliping 44%)	X	4.16	67.98	16.70	0.00	150.0	± 9.6 %
		Y	3.95	67.37	16.23		150.0	
		Z	3.98	67.89	16.60		150.0	
10450-AAB	LTE-FDD (OFDMA, 20 MHz, E-TM 3.1, Clipping 44%)	X	4.36	67.73	16.68	0.00	150.0	± 9.6 %
		Y	4.16	67.17	16.28		150.0	
		Z	4.19	67.61	16.62		150.0	
10451-AAA	W-CDMA (BS Test Model 1, 64 DPCH, Clipping 44%)	X	3.13	68.62	14.93	0.00	150.0	± 9.6 %
		Y	2.61	66.27	13.12		150.0	
		Z	2.63	66.82	13.31		150.0	
10456-AAB	IEEE 802.11ac WiFi (160MHz, 64-QAM, 99pc duty cycle)	X	6.03	68.16	16.87	0.00	150.0	± 9.6 %
		Y	6.04	68.26	16.91		150.0	
		Z	6.36	69.42	17.62		150.0	
10457-AAA	UMTS-FDD (DC-HSDPA)	X	3.74	66.36	16.43	0.00	150.0	± 9.6 %
		Y	3.58	65.91	16.05		150.0	
		Z	3.62	66.39	16.41		150.0	
10458-AAA	CDMA2000 (1xEV-DO, Rev. B, 2 carriers)	X	4.62	75.71	18.51	0.00	150.0	± 9.6 %
		Y	3.27	70.36	15.33		150.0	
		Z	3.15	70.10	14.97		150.0	
10459-AAA	CDMA2000 (1xEV-DO, Rev. B, 3 carriers)	X	5.10	71.02	18.64	0.00	150.0	± 9.6 %
		Y	4.91	70.72	18.08		150.0	
		Z	4.55	69.59	17.29		150.0	

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10460-AAA	UMTS-FDD (WCDMA, AMR)	X	1.97	84.87	24.03	0.00	150.0	± 9.6 %
		Y	1.08	74.84	18.51		150.0	
		Z	4.10	98.20	27.50		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	126.30	31.23	3.29	80.0	± 9.6 %
		Y	100.00	123.65	29.82		80.0	
		Z	100.00	136.87	35.54		80.0	
10462-AAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	0.69	60.00	6.71	3.23	80.0	± 9.6 %
		Y	0.68	60.00	6.44		80.0	
		Z	0.61	60.00	6.95		80.0	
10463-AAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	0.38	56.14	4.05	3.23	80.0	± 9.6 %
		Y	0.32	55.14	3.13		80.0	
		Z	0.65	60.00	6.15		80.0	
10464-AAA	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	100.00	121.79	29.03	3.23	80.0	± 9.6 %
		Y	12.22	95.06	22.08		80.0	
		Z	100.00	132.13	33.20		80.0	
10465-AAA	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	0.69	60.00	6.64	3.23	80.0	± 9.6 %
		Y	0.68	60.00	6.38		80.0	
		Z	0.62	60.00	6.88		80.0	
10466-AAA	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	0.38	56.06	3.96	3.23	80.0	± 9.6 %
		Y	0.32	55.07	3.05		80.0	
		Z	0.65	60.00	6.11		80.0	
10467-AAC	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	100.00	122.31	29.25	3.23	80.0	± 9.6 %
		Y	21.19	101.56	23.76		80.0	
		Z	100.00	132.83	33.50		80.0	
10468-AAC	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	0.69	60.00	6.66	3.23	80.0	± 9.6 %
		Y	0.68	60.00	6.40		80.0	
		Z	0.61	60.00	6.91		80.0	
10469-AAC	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	0.38	56.06	3.96	3.23	80.0	± 9.6 %
		Y	0.32	55.06	3.04		80.0	
		Z	0.65	60.00	6.11		80.0	
10470-AAC	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	100.00	122.32	29.25	3.23	80.0	± 9.6 %
		Y	21.85	101.90	23.82		80.0	
		Z	100.00	132.88	33.51		80.0	
10471-AAC	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	0.69	60.00	6.65	3.23	80.0	± 9.6 %
		Y	0.68	60.00	6.39		80.0	
		Z	0.61	60.00	6.90		80.0	
10472-AAC	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	0.38	56.03	3.93	3.23	80.0	± 9.6 %
		Y	0.31	55.03	3.00		80.0	
		Z	0.65	60.00	6.09		80.0	
10473-AAC	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	100.00	122.27	29.22	3.23	80.0	± 9.6 %
		Y	20.97	101.40	23.70		80.0	
		Z	100.00	132.84	33.49		80.0	
10474-AAC	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	0.69	60.00	6.64	3.23	80.0	± 9.6 %
		Y	0.68	60.00	6.38		80.0	
		Z	0.61	60.00	6.89		80.0	
10475-AAC	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	0.37	56.03	3.93	3.23	80.0	± 9.6 %
		Y	0.31	55.02	3.00		80.0	
		Z	0.65	60.00	6.10		80.0	

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10477-AAC	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	0.69	60.00	6.62	3.23	80.0	± 9.6 %
		Y	0.68	60.00	6.35		80.0	
		Z	0.61	60.00	6.86		80.0	
10478-AAC	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	0.37	56.01	3.91	3.23	80.0	± 9.6 %
		Y	0.31	55.00	2.97		80.0	
		Z	0.65	60.00	6.08		80.0	
10479-AAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	54.42	115.01	29.47	3.23	80.0	± 9.6 %
		Y	76.45	118.14	29.48		80.0	
		Z	100.00	128.52	33.24		80.0	
10480-AAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	4.74	75.65	15.49	3.23	80.0	± 9.6 %
		Y	1.90	66.26	11.49		80.0	
		Z	100.00	106.99	23.30		80.0	
10481-AAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	2.25	67.34	11.96	3.23	80.0	± 9.6 %
		Y	1.26	62.01	9.13		80.0	
		Z	3.57	72.65	13.59		80.0	
10482-AAA	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	1.94	67.72	13.27	2.23	80.0	± 9.6 %
		Y	0.93	60.15	8.55		80.0	
		Z	2.99	72.67	14.36		80.0	
10483-AAA	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	1.51	61.91	9.49	2.23	80.0	± 9.6 %
		Y	1.19	60.00	7.77		80.0	
		Z	1.14	60.00	7.65		80.0	
10484-AAA	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	1.48	61.45	9.24	2.23	80.0	± 9.6 %
		Y	1.22	60.00	7.77		80.0	
		Z	1.17	60.00	7.63		80.0	
10485-AAC	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	3.41	75.45	18.08	2.23	80.0	± 9.6 %
		Y	1.88	67.66	14.05		80.0	
		Z	38.23	108.74	27.54		80.0	
10486-AAC	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	2.45	67.39	13.80	2.23	80.0	± 9.6 %
		Y	1.56	62.21	10.51		80.0	
		Z	2.90	70.07	14.37		80.0	
10487-AAC	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	2.40	66.74	13.47	2.23	80.0	± 9.6 %
		Y	1.56	61.93	10.33		80.0	
		Z	2.60	68.46	13.66		80.0	
10488-AAC	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	3.43	74.06	19.06	2.23	80.0	± 9.6 %
		Y	2.65	70.67	17.24		80.0	
		Z	6.26	85.60	23.69		80.0	
10489-AAC	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	3.27	70.02	17.11	2.23	80.0	± 9.6 %
		Y	2.70	67.59	15.60		80.0	
		Z	4.25	75.40	19.45		80.0	
10490-AAC	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	3.32	69.72	16.97	2.23	80.0	± 9.6 %
		Y	2.76	67.39	15.50		80.0	
		Z	4.16	74.52	19.06		80.0	
10491-AAC	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	3.50	71.71	18.41	2.23	80.0	± 9.6 %
		Y	2.93	69.42	17.16		80.0	
		Z	4.47	77.37	21.17		80.0	
10492-AAC	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	3.51	68.80	17.14	2.23	80.0	± 9.6 %
		Y	3.09	67.23	16.17		80.0	
		Z	3.91	71.80	18.73		80.0	

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10493-AAC	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	3.56	68.62	17.05	2.23	80.0	± 9.6 %
		Y	3.14	67.10	16.10		80.0	
		Z	3.92	71.42	18.54		80.0	
10494-AAC	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	3.81	73.22	18.96	2.23	80.0	± 9.6 %
		Y	3.14	70.62	17.63		80.0	
		Z	5.13	79.74	22.04		80.0	
10495-AAC	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	3.54	69.05	17.38	2.23	80.0	± 9.6 %
		Y	3.13	67.49	16.46		80.0	
		Z	3.93	71.96	19.01		80.0	
10496-AAC	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	3.61	68.78	17.29	2.23	80.0	± 9.6 %
		Y	3.21	67.33	16.42		80.0	
		Z	3.95	71.44	18.80		80.0	
10497-AAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	0.93	60.00	8.00	2.23	80.0	± 9.6 %
		Y	0.88	60.00	6.69		80.0	
		Z	0.85	60.00	6.95		80.0	
10498-AAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	1.11	60.00	6.67	2.23	80.0	± 9.6 %
		Y	1.12	60.00	5.48		80.0	
		Z	1.10	60.00	5.50		80.0	
10499-AAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	1.13	60.00	6.49	2.23	80.0	± 9.6 %
		Y	1.16	60.00	5.30		80.0	
		Z	1.14	60.00	5.31		80.0	
10500-AAA	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	3.40	74.88	18.48	2.23	80.0	± 9.6 %
		Y	2.24	69.33	15.53		80.0	
		Z	13.24	96.02	25.38		80.0	
10501-AAA	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	2.93	69.20	15.40	2.23	80.0	± 9.6 %
		Y	2.05	64.80	12.70		80.0	
		Z	4.16	74.77	17.29		80.0	
10502-AAA	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	2.92	68.82	15.14	2.23	80.0	± 9.6 %
		Y	2.06	64.51	12.47		80.0	
		Z	3.93	73.57	16.71		80.0	
10503-AAC	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	3.37	73.78	18.93	2.23	80.0	± 9.6 %
		Y	2.61	70.41	17.11		80.0	
		Z	6.06	85.05	23.48		80.0	
10504-AAC	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	3.24	69.87	17.02	2.23	80.0	± 9.6 %
		Y	2.68	67.44	15.52		80.0	
		Z	4.19	75.16	19.33		80.0	
10505-AAC	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	3.29	69.59	16.89	2.23	80.0	± 9.6 %
		Y	2.74	67.26	15.42		80.0	
		Z	4.12	74.33	18.96		80.0	
10506-AAC	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	3.77	73.04	18.87	2.23	80.0	± 9.6 %
		Y	3.11	70.44	17.54		80.0	
		Z	5.05	79.46	21.92		80.0	
10507-AAC	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	3.52	68.97	17.34	2.23	80.0	± 9.6 %
		Y	3.11	67.41	16.42		80.0	
		Z	3.90	71.86	18.96		80.0	

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10508-AAC	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	3.59	68.69	17.23	2.23	80.0	± 9.6 %
		Y	3.19	67.24	16.36		80.0	
		Z	3.92	71.32	18.74		80.0	
10509-AAC	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	4.08	71.49	18.28	2.23	80.0	± 9.6 %
		Y	3.52	69.51	17.27		80.0	
		Z	4.73	75.21	20.33		80.0	
10510-AAC	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	3.95	68.37	17.28	2.23	80.0	± 9.6 %
		Y	3.57	67.11	16.59		80.0	
		Z	4.13	70.13	18.48		80.0	
10511-AAC	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	4.01	68.17	17.22	2.23	80.0	± 9.6 %
		Y	3.65	66.99	16.56		80.0	
		Z	4.18	69.83	18.36		80.0	
10512-AAC	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	4.26	72.96	18.75	2.23	80.0	± 9.6 %
		Y	3.57	70.51	17.55		80.0	
		Z	5.22	77.57	21.13		80.0	
10513-AAC	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	3.84	68.53	17.37	2.23	80.0	± 9.6 %
		Y	3.47	67.18	16.64		80.0	
		Z	4.05	70.35	18.62		80.0	
10514-AAC	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	3.88	68.15	17.25	2.23	80.0	± 9.6 %
		Y	3.52	66.91	16.56		80.0	
		Z	4.05	69.79	18.40		80.0	
10515-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 2 Mbps, 99pc duty cycle)	X	1.07	66.38	17.05	0.00	150.0	± 9.6 %
		Y	0.89	64.36	15.33		150.0	
		Z	0.98	66.40	16.95		150.0	
10516-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 5.5 Mbps, 99pc duty cycle)	X	5.06	115.35	35.16	0.00	150.0	± 9.6 %
		Y	1.65	91.67	24.92		150.0	
		Z	100.00	172.51	47.23		150.0	
10517-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 11 Mbps, 99pc duty cycle)	X	1.03	71.27	19.38	0.00	150.0	± 9.6 %
		Y	0.77	67.47	16.55		150.0	
		Z	0.98	72.55	19.75		150.0	
10518-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 9 Mbps, 99pc duty cycle)	X	4.36	67.72	16.68	0.00	150.0	± 9.6 %
		Y	4.16	67.20	16.29		150.0	
		Z	4.19	67.66	16.64		150.0	
10519-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 12 Mbps, 99pc duty cycle)	X	4.49	67.84	16.74	0.00	150.0	± 9.6 %
		Y	4.29	67.33	16.36		150.0	
		Z	4.31	67.77	16.69		150.0	
10520-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 18 Mbps, 99pc duty cycle)	X	4.36	67.81	16.69	0.00	150.0	± 9.6 %
		Y	4.15	67.26	16.28		150.0	
		Z	4.18	67.72	16.63		150.0	
10521-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 24 Mbps, 99pc duty cycle)	X	4.29	67.77	16.67	0.00	150.0	± 9.6 %
		Y	4.09	67.20	16.25		150.0	
		Z	4.11	67.65	16.60		150.0	
10522-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 36 Mbps, 99pc duty cycle)	X	4.33	67.84	16.73	0.00	150.0	± 9.6 %
		Y	4.11	67.25	16.30		150.0	
		Z	4.13	67.67	16.63		150.0	

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10523-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 48 Mbps, 99pc duty cycle)	X	4.29	68.01	16.75	0.00	150.0	± 9.6 %
		Y	4.09	67.45	16.33		150.0	
		Z	4.13	67.96	16.72		150.0	
10524-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 54 Mbps, 99pc duty cycle)	X	4.29	67.88	16.77	0.00	150.0	± 9.6 %
		Y	4.08	67.32	16.36		150.0	
		Z	4.11	67.78	16.72		150.0	
10525-AAB	IEEE 802.11ac WiFi (20MHz, MCS0, 99pc duty cycle)	X	4.35	67.05	16.42	0.00	150.0	± 9.6 %
		Y	4.15	66.49	16.02		150.0	
		Z	4.19	66.97	16.38		150.0	
10526-AAB	IEEE 802.11ac WiFi (20MHz, MCS1, 99pc duty cycle)	X	4.46	67.30	16.52	0.00	150.0	± 9.6 %
		Y	4.25	66.71	16.11		150.0	
		Z	4.28	67.17	16.47		150.0	
10527-AAB	IEEE 802.11ac WiFi (20MHz, MCS2, 99pc duty cycle)	X	4.40	67.30	16.48	0.00	150.0	± 9.6 %
		Y	4.19	66.70	16.06		150.0	
		Z	4.22	67.20	16.43		150.0	
10528-AAB	IEEE 802.11ac WiFi (20MHz, MCS3, 99pc duty cycle)	X	4.42	67.31	16.51	0.00	150.0	± 9.6 %
		Y	4.20	66.71	16.09		150.0	
		Z	4.23	67.19	16.45		150.0	
10529-AAB	IEEE 802.11ac WiFi (20MHz, MCS4, 99pc duty cycle)	X	4.42	67.31	16.51	0.00	150.0	± 9.6 %
		Y	4.20	66.71	16.09		150.0	
		Z	4.23	67.19	16.45		150.0	
10531-AAB	IEEE 802.11ac WiFi (20MHz, MCS6, 99pc duty cycle)	X	4.37	67.32	16.48	0.00	150.0	± 9.6 %
		Y	4.15	66.69	16.05		150.0	
		Z	4.18	67.17	16.41		150.0	
10532-AAB	IEEE 802.11ac WiFi (20MHz, MCS7, 99pc duty cycle)	X	4.27	67.21	16.44	0.00	150.0	± 9.6 %
		Y	4.05	66.57	15.99		150.0	
		Z	4.09	67.06	16.36		150.0	
10533-AAB	IEEE 802.11ac WiFi (20MHz, MCS8, 99pc duty cycle)	X	4.42	67.42	16.52	0.00	150.0	± 9.6 %
		Y	4.20	66.81	16.10		150.0	
		Z	4.24	67.32	16.47		150.0	
10534-AAB	IEEE 802.11ac WiFi (40MHz, MCS0, 99pc duty cycle)	X	4.95	67.04	16.43	0.00	150.0	± 9.6 %
		Y	4.76	66.53	16.12		150.0	
		Z	4.78	66.84	16.41		150.0	
10535-AAB	IEEE 802.11ac WiFi (40MHz, MCS1, 99pc duty cycle)	X	4.97	67.13	16.48	0.00	150.0	± 9.6 %
		Y	4.79	66.62	16.17		150.0	
		Z	4.81	66.94	16.46		150.0	
10536-AAB	IEEE 802.11ac WiFi (40MHz, MCS2, 99pc duty cycle)	X	4.88	67.18	16.49	0.00	150.0	± 9.6 %
		Y	4.69	66.64	16.16		150.0	
		Z	4.72	66.97	16.45		150.0	
10537-AAB	IEEE 802.11ac WiFi (40MHz, MCS3, 99pc duty cycle)	X	4.95	67.19	16.49	0.00	150.0	± 9.6 %
		Y	4.78	66.71	16.19		150.0	
		Z	4.80	67.05	16.50		150.0	
10538-AAB	IEEE 802.11ac WiFi (40MHz, MCS4, 99pc duty cycle)	X	4.99	67.08	16.47	0.00	150.0	± 9.6 %
		Y	4.81	66.57	16.16		150.0	
		Z	4.82	66.86	16.44		150.0	
10540-AAB	IEEE 802.11ac WiFi (40MHz, MCS6, 99pc duty cycle)	X	4.93	67.06	16.48	0.00	150.0	± 9.6 %
		Y	4.75	66.54	16.17		150.0	
		Z	4.76	66.84	16.45		150.0	

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10541-AAB	IEEE 802.11ac WiFi (40MHz, MCS7, 99pc duty cycle)	X	4.93	67.02	16.44	0.00	150.0	± 9.6 %
		Y	4.74	66.50	16.12		150.0	
		Z	4.77	66.81	16.41		150.0	
10542-AAB	IEEE 802.11ac WiFi (40MHz, MCS8, 99pc duty cycle)	X	5.07	67.07	16.48	0.00	150.0	± 9.6 %
		Y	4.88	66.57	16.18		150.0	
		Z	4.90	66.86	16.45		150.0	
10543-AAB	IEEE 802.11ac WiFi (40MHz, MCS9, 99pc duty cycle)	X	5.14	67.14	16.54	0.00	150.0	± 9.6 %
		Y	4.96	66.68	16.26		150.0	
		Z	4.96	66.94	16.52		150.0	
10544-AAB	IEEE 802.11ac WiFi (80MHz, MCS0, 99pc duty cycle)	X	5.29	67.02	16.37	0.00	150.0	± 9.6 %
		Y	5.13	66.51	16.08		150.0	
		Z	5.15	66.77	16.34		150.0	
10545-AAB	IEEE 802.11ac WiFi (80MHz, MCS1, 99pc duty cycle)	X	5.44	67.39	16.51	0.00	150.0	± 9.6 %
		Y	5.29	66.96	16.27		150.0	
		Z	5.31	67.23	16.53		150.0	
10546-AAB	IEEE 802.11ac WiFi (80MHz, MCS2, 99pc duty cycle)	X	5.32	67.13	16.39	0.00	150.0	± 9.6 %
		Y	5.15	66.61	16.10		150.0	
		Z	5.17	66.87	16.36		150.0	
10547-AAB	IEEE 802.11ac WiFi (80MHz, MCS3, 99pc duty cycle)	X	5.40	67.26	16.45	0.00	150.0	± 9.6 %
		Y	5.27	66.87	16.23		150.0	
		Z	5.31	67.20	16.52		150.0	
10548-AAB	IEEE 802.11ac WiFi (80MHz, MCS4, 99pc duty cycle)	X	5.50	67.73	16.67	0.00	150.0	± 9.6 %
		Y	5.33	67.24	16.39		150.0	
		Z	5.33	67.45	16.63		150.0	
10550-AAB	IEEE 802.11ac WiFi (80MHz, MCS6, 99pc duty cycle)	X	5.38	67.33	16.51	0.00	150.0	± 9.6 %
		Y	5.25	66.98	16.30		150.0	
		Z	5.30	67.33	16.61		150.0	
10551-AAB	IEEE 802.11ac WiFi (80MHz, MCS7, 99pc duty cycle)	X	5.31	67.08	16.35	0.00	150.0	± 9.6 %
		Y	5.13	66.54	16.05		150.0	
		Z	5.14	66.79	16.30		150.0	
10552-AAB	IEEE 802.11ac WiFi (80MHz, MCS8, 99pc duty cycle)	X	5.31	67.19	16.40	0.00	150.0	± 9.6 %
		Y	5.13	66.67	16.11		150.0	
		Z	5.16	66.94	16.37		150.0	
10553-AAB	IEEE 802.11ac WiFi (80MHz, MCS9, 99pc duty cycle)	X	5.35	67.08	16.37	0.00	150.0	± 9.6 %
		Y	5.17	66.57	16.08		150.0	
		Z	5.19	66.82	16.33		150.0	
10554-AAC	IEEE 802.11ac WiFi (160MHz, MCS0, 99pc duty cycle)	X	5.71	67.28	16.40	0.00	150.0	± 9.6 %
		Y	5.56	66.80	16.14		150.0	
		Z	5.59	67.02	16.37		150.0	
10555-AAC	IEEE 802.11ac WiFi (160MHz, MCS1, 99pc duty cycle)	X	5.78	67.46	16.47	0.00	150.0	± 9.6 %
		Y	5.63	66.98	16.21		150.0	
		Z	5.66	67.20	16.45		150.0	
10556-AAC	IEEE 802.11ac WiFi (160MHz, MCS2, 99pc duty cycle)	X	5.83	67.58	16.53	0.00	150.0	± 9.6 %
		Y	5.69	67.16	16.29		150.0	
		Z	5.72	67.40	16.54		150.0	
10557-AAC	IEEE 802.11ac WiFi (160MHz, MCS3, 99pc duty cycle)	X	5.79	67.48	16.49	0.00	150.0	± 9.6 %
		Y	5.63	66.99	16.22		150.0	
		Z	5.65	67.20	16.46		150.0	

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10558-AAC	IEEE 802.11ac WiFi (160MHz, MCS4, 99pc duty cycle)	X	5.78	67.47	16.51	0.00	150.0	± 9.6 %
		Y	5.61	66.94	16.22		150.0	
		Z	5.62	67.14	16.44		150.0	
10560-AAC	IEEE 802.11ac WiFi (160MHz, MCS6, 99pc duty cycle)	X	5.81	67.44	16.52	0.00	150.0	± 9.6 %
		Y	5.64	66.93	16.25		150.0	
		Z	5.66	67.13	16.47		150.0	
10561-AAC	IEEE 802.11ac WiFi (160MHz, MCS7, 99pc duty cycle)	X	5.74	67.41	16.54	0.00	150.0	± 9.6 %
		Y	5.58	66.92	16.27		150.0	
		Z	5.60	67.12	16.50		150.0	
10562-AAC	IEEE 802.11ac WiFi (160MHz, MCS8, 99pc duty cycle)	X	5.78	67.55	16.61	0.00	150.0	± 9.6 %
		Y	5.62	67.04	16.33		150.0	
		Z	5.64	67.25	16.56		150.0	
10563-AAC	IEEE 802.11ac WiFi (160MHz, MCS9, 99pc duty cycle)	X	5.88	67.52	16.56	0.00	150.0	± 9.6 %
		Y	5.74	67.09	16.33		150.0	
		Z	5.79	67.40	16.61		150.0	
10564-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 9 Mbps, 99pc duty cycle)	X	4.64	67.55	16.69	0.46	150.0	± 9.6 %
		Y	4.46	67.08	16.34		150.0	
		Z	4.49	67.53	16.70		150.0	
10565-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 12 Mbps, 99pc duty cycle)	X	4.84	67.98	17.02	0.46	150.0	± 9.6 %
		Y	4.65	67.53	16.69		150.0	
		Z	4.66	67.94	17.02		150.0	
10566-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 18 Mbps, 99pc duty cycle)	X	4.68	67.79	16.82	0.46	150.0	± 9.6 %
		Y	4.48	67.30	16.47		150.0	
		Z	4.51	67.74	16.82		150.0	
10567-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 24 Mbps, 99pc duty cycle)	X	4.73	68.29	17.27	0.46	150.0	± 9.6 %
		Y	4.54	67.82	16.93		150.0	
		Z	4.56	68.22	17.25		150.0	
10568-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 36 Mbps, 99pc duty cycle)	X	4.54	67.37	16.47	0.46	150.0	± 9.6 %
		Y	4.34	66.83	16.07		150.0	
		Z	4.36	67.27	16.44		150.0	
10569-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 48 Mbps, 99pc duty cycle)	X	4.74	68.63	17.46	0.46	150.0	± 9.6 %
		Y	4.55	68.17	17.14		150.0	
		Z	4.58	68.63	17.50		150.0	
10570-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 54 Mbps, 99pc duty cycle)	X	4.72	68.31	17.30	0.46	150.0	± 9.6 %
		Y	4.52	67.84	16.96		150.0	
		Z	4.54	68.23	17.29		150.0	
10571-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps, 90pc duty cycle)	X	1.21	66.57	17.05	0.46	130.0	± 9.6 %
		Y	1.02	64.70	15.54		130.0	
		Z	1.18	67.60	17.72		130.0	
10572-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 2 Mbps, 90pc duty cycle)	X	1.24	67.42	17.58	0.46	130.0	± 9.6 %
		Y	1.04	65.44	16.00		130.0	
		Z	1.22	68.68	18.35		130.0	
10573-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 5.5 Mbps, 90pc duty cycle)	X	100.00	161.26	44.51	0.46	130.0	± 9.6 %
		Y	13.20	118.55	32.00		130.0	
		Z	100.00	165.33	45.58		130.0	
10574-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 11 Mbps, 90pc duty cycle)	X	1.67	78.07	22.83	0.46	130.0	± 9.6 %
		Y	1.28	74.26	20.45		130.0	
		Z	2.11	84.72	25.64		130.0	

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10575-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps, 90pc duty cycle)	X	4.41	67.24	16.63	0.46	130.0	± 9.6 %
		Y	4.23	66.78	16.28		130.0	
		Z	4.28	67.36	16.75		130.0	
10576-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 9 Mbps, 90pc duty cycle)	X	4.45	67.51	16.76	0.46	130.0	± 9.6 %
		Y	4.27	67.06	16.42		130.0	
		Z	4.32	67.66	16.89		130.0	
10577-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 12 Mbps, 90pc duty cycle)	X	4.60	67.71	16.89	0.46	130.0	± 9.6 %
		Y	4.41	67.27	16.56		130.0	
		Z	4.46	67.84	17.01		130.0	
10578-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 18 Mbps, 90pc duty cycle)	X	4.52	67.94	17.05	0.46	130.0	± 9.6 %
		Y	4.33	67.49	16.72		130.0	
		Z	4.38	68.06	17.17		130.0	
10579-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 24 Mbps, 90pc duty cycle)	X	4.24	66.91	16.17	0.46	130.0	± 9.6 %
		Y	4.05	66.39	15.77		130.0	
		Z	4.10	67.01	16.28		130.0	
10580-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 36 Mbps, 90pc duty cycle)	X	4.26	66.90	16.15	0.46	130.0	± 9.6 %
		Y	4.06	66.36	15.74		130.0	
		Z	4.11	66.95	16.23		130.0	
10581-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 48 Mbps, 90pc duty cycle)	X	4.45	68.09	17.07	0.46	130.0	± 9.6 %
		Y	4.26	67.62	16.72		130.0	
		Z	4.33	68.28	17.23		130.0	
10582-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 54 Mbps, 90pc duty cycle)	X	4.15	66.62	15.91	0.46	130.0	± 9.6 %
		Y	3.96	66.09	15.50		130.0	
		Z	4.01	66.73	16.03		130.0	
10583-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps, 90pc duty cycle)	X	4.41	67.24	16.63	0.46	130.0	± 9.6 %
		Y	4.23	66.78	16.28		130.0	
		Z	4.28	67.36	16.75		130.0	
10584-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 9 Mbps, 90pc duty cycle)	X	4.45	67.51	16.76	0.46	130.0	± 9.6 %
		Y	4.27	67.06	16.42		130.0	
		Z	4.32	67.66	16.89		130.0	
10585-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 12 Mbps, 90pc duty cycle)	X	4.60	67.71	16.89	0.46	130.0	± 9.6 %
		Y	4.41	67.27	16.56		130.0	
		Z	4.46	67.84	17.01		130.0	
10586-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 18 Mbps, 90pc duty cycle)	X	4.52	67.94	17.05	0.46	130.0	± 9.6 %
		Y	4.33	67.49	16.72		130.0	
		Z	4.38	68.06	17.17		130.0	
10587-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 24 Mbps, 90pc duty cycle)	X	4.24	66.91	16.17	0.46	130.0	± 9.6 %
		Y	4.05	66.39	15.77		130.0	
		Z	4.10	67.01	16.28		130.0	
10588-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 36 Mbps, 90pc duty cycle)	X	4.26	66.90	16.15	0.46	130.0	± 9.6 %
		Y	4.06	66.36	15.74		130.0	
		Z	4.11	66.95	16.23		130.0	
10589-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 48 Mbps, 90pc duty cycle)	X	4.45	68.09	17.07	0.46	130.0	± 9.6 %
		Y	4.26	67.62	16.72		130.0	
		Z	4.33	68.28	17.23		130.0	
10590-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 54 Mbps, 90pc duty cycle)	X	4.15	66.62	15.91	0.46	130.0	± 9.6 %
		Y	3.96	66.09	15.50		130.0	
		Z	4.01	66.73	16.03		130.0	

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10591-AAB	IEEE 802.11n (HT Mixed, 20MHz, MCS0, 90pc duty cycle)	X	4.57	67.34	16.76	0.46	130.0	± 9.6 %
		Y	4.39	66.92	16.45		130.0	
		Z	4.44	67.46	16.89		130.0	
10592-AAB	IEEE 802.11n (HT Mixed, 20MHz, MCS1, 90pc duty cycle)	X	4.67	67.61	16.88	0.46	130.0	± 9.6 %
		Y	4.49	67.17	16.57		130.0	
		Z	4.53	67.70	17.00		130.0	
10593-AAB	IEEE 802.11n (HT Mixed, 20MHz, MCS2, 90pc duty cycle)	X	4.59	67.48	16.73	0.46	130.0	± 9.6 %
		Y	4.41	67.03	16.40		130.0	
		Z	4.46	67.59	16.86		130.0	
10594-AAB	IEEE 802.11n (HT Mixed, 20MHz, MCS3, 90pc duty cycle)	X	4.65	67.68	16.92	0.46	130.0	± 9.6 %
		Y	4.47	67.24	16.60		130.0	
		Z	4.51	67.78	17.04		130.0	
10595-AAB	IEEE 802.11n (HT Mixed, 20MHz, MCS4, 90pc duty cycle)	X	4.62	67.66	16.83	0.46	130.0	± 9.6 %
		Y	4.43	67.21	16.50		130.0	
		Z	4.48	67.77	16.96		130.0	
10596-AAB	IEEE 802.11n (HT Mixed, 20MHz, MCS5, 90pc duty cycle)	X	4.54	67.59	16.80	0.46	130.0	± 9.6 %
		Y	4.35	67.12	16.46		130.0	
		Z	4.40	67.68	16.93		130.0	
10597-AAB	IEEE 802.11n (HT Mixed, 20MHz, MCS6, 90pc duty cycle)	X	4.50	67.46	16.65	0.46	130.0	± 9.6 %
		Y	4.30	66.97	16.29		130.0	
		Z	4.36	67.55	16.76		130.0	
10598-AAB	IEEE 802.11n (HT Mixed, 20MHz, MCS7, 90pc duty cycle)	X	4.51	67.79	16.98	0.46	130.0	± 9.6 %
		Y	4.33	67.33	16.65		130.0	
		Z	4.38	67.90	17.11		130.0	
10599-AAB	IEEE 802.11n (HT Mixed, 40MHz, MCS0, 90pc duty cycle)	X	5.23	67.60	16.92	0.46	130.0	± 9.6 %
		Y	5.11	67.37	16.76		130.0	
		Z	5.22	68.04	17.28		130.0	
10600-AAB	IEEE 802.11n (HT Mixed, 40MHz, MCS1, 90pc duty cycle)	X	5.28	67.82	17.00	0.46	130.0	± 9.6 %
		Y	5.16	67.56	16.83		130.0	
		Z	5.20	67.98	17.22		130.0	
10601-AAB	IEEE 802.11n (HT Mixed, 40MHz, MCS2, 90pc duty cycle)	X	5.24	67.80	17.01	0.46	130.0	± 9.6 %
		Y	5.13	67.58	16.86		130.0	
		Z	5.17	68.00	17.25		130.0	
10602-AAB	IEEE 802.11n (HT Mixed, 40MHz, MCS3, 90pc duty cycle)	X	5.27	67.62	16.82	0.46	130.0	± 9.6 %
		Y	5.14	67.32	16.63		130.0	
		Z	5.18	67.74	17.03		130.0	
10603-AAB	IEEE 802.11n (HT Mixed, 40MHz, MCS4, 90pc duty cycle)	X	5.34	67.92	17.13	0.46	130.0	± 9.6 %
		Y	5.18	67.54	16.91		130.0	
		Z	5.19	67.86	17.24		130.0	
10604-AAB	IEEE 802.11n (HT Mixed, 40MHz, MCS5, 90pc duty cycle)	X	5.21	67.47	16.87	0.46	130.0	± 9.6 %
		Y	5.06	67.10	16.65		130.0	
		Z	5.10	67.50	17.03		130.0	
10605-AAB	IEEE 802.11n (HT Mixed, 40MHz, MCS6, 90pc duty cycle)	X	5.27	67.68	16.98	0.46	130.0	± 9.6 %
		Y	5.12	67.33	16.76		130.0	
		Z	5.15	67.69	17.13		130.0	
10606-AAB	IEEE 802.11n (HT Mixed, 40MHz, MCS7, 90pc duty cycle)	X	5.09	67.22	16.59	0.46	130.0	± 9.6 %
		Y	4.97	66.94	16.40		130.0	
		Z	5.03	67.46	16.86		130.0	

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10607-AAB	IEEE 802.11ac WiFi (20MHz, MCS0, 90pc duty cycle)	X	4.44	66.79	16.48	0.46	130.0	± 9.6 %
		Y	4.25	66.32	16.13		130.0	
		Z	4.32	66.93	16.62		130.0	
10608-AAB	IEEE 802.11ac WiFi (20MHz, MCS1, 90pc duty cycle)	X	4.56	67.09	16.61	0.46	130.0	± 9.6 %
		Y	4.36	66.59	16.26		130.0	
		Z	4.42	67.19	16.74		130.0	
10609-AAB	IEEE 802.11ac WiFi (20MHz, MCS2, 90pc duty cycle)	X	4.46	66.92	16.42	0.46	130.0	± 9.6 %
		Y	4.26	66.40	16.06		130.0	
		Z	4.33	67.04	16.56		130.0	
10610-AAB	IEEE 802.11ac WiFi (20MHz, MCS3, 90pc duty cycle)	X	4.52	67.12	16.62	0.46	130.0	± 9.6 %
		Y	4.32	66.62	16.26		130.0	
		Z	4.38	67.24	16.75		130.0	
10611-AAB	IEEE 802.11ac WiFi (20MHz, MCS4, 90pc duty cycle)	X	4.42	66.88	16.44	0.46	130.0	± 9.6 %
		Y	4.22	66.36	16.07		130.0	
		Z	4.29	66.99	16.57		130.0	
10612-AAB	IEEE 802.11ac WiFi (20MHz, MCS5, 90pc duty cycle)	X	4.40	66.96	16.45	0.46	130.0	± 9.6 %
		Y	4.19	66.42	16.08		130.0	
		Z	4.26	67.06	16.59		130.0	
10613-AAB	IEEE 802.11ac WiFi (20MHz, MCS6, 90pc duty cycle)	X	4.39	66.76	16.28	0.46	130.0	± 9.6 %
		Y	4.19	66.21	15.89		130.0	
		Z	4.25	66.85	16.40		130.0	
10614-AAB	IEEE 802.11ac WiFi (20MHz, MCS7, 90pc duty cycle)	X	4.39	67.11	16.62	0.46	130.0	± 9.6 %
		Y	4.19	66.58	16.24		130.0	
		Z	4.26	67.20	16.74		130.0	
10615-AAB	IEEE 802.11ac WiFi (20MHz, MCS8, 90pc duty cycle)	X	4.40	66.65	16.16	0.46	130.0	± 9.6 %
		Y	4.20	66.12	15.77		130.0	
		Z	4.27	66.80	16.31		130.0	
10616-AAB	IEEE 802.11ac WiFi (40MHz, MCS0, 90pc duty cycle)	X	5.05	66.86	16.55	0.46	130.0	± 9.6 %
		Y	4.88	66.43	16.29		130.0	
		Z	4.93	66.85	16.68		130.0	
10617-AAB	IEEE 802.11ac WiFi (40MHz, MCS1, 90pc duty cycle)	X	5.07	66.92	16.55	0.46	130.0	± 9.6 %
		Y	4.90	66.50	16.30		130.0	
		Z	4.95	66.93	16.70		130.0	
10618-AAB	IEEE 802.11ac WiFi (40MHz, MCS2, 90pc duty cycle)	X	4.99	67.05	16.64	0.46	130.0	± 9.6 %
		Y	4.82	66.59	16.37		130.0	
		Z	4.87	67.03	16.76		130.0	
10619-AAB	IEEE 802.11ac WiFi (40MHz, MCS3, 90pc duty cycle)	X	5.02	66.88	16.48	0.46	130.0	± 9.6 %
		Y	4.87	66.50	16.24		130.0	
		Z	4.92	66.97	16.66		130.0	
10620-AAB	IEEE 802.11ac WiFi (40MHz, MCS4, 90pc duty cycle)	X	5.06	66.80	16.48	0.46	130.0	± 9.6 %
		Y	4.90	66.36	16.22		130.0	
		Z	4.93	66.75	16.60		130.0	
10621-AAB	IEEE 802.11ac WiFi (40MHz, MCS5, 90pc duty cycle)	X	5.10	67.01	16.72	0.46	130.0	± 9.6 %
		Y	4.93	66.58	16.47		130.0	
		Z	4.97	66.94	16.82		130.0	
10622-AAB	IEEE 802.11ac WiFi (40MHz, MCS6, 90pc duty cycle)	X	5.08	67.08	16.75	0.46	130.0	± 9.6 %
		Y	4.92	66.65	16.50		130.0	
		Z	4.96	67.04	16.87		130.0	

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10623-AAB	IEEE 802.11ac WiFi (40MHz, MCS7, 90pc duty cycle)	X	4.98	66.63	16.37	0.46	130.0	± 9.6 %
		Y	4.81	66.19	16.11		130.0	
		Z	4.86	66.63	16.51		130.0	
10624-AAB	IEEE 802.11ac WiFi (40MHz, MCS8, 90pc duty cycle)	X	5.16	66.85	16.55	0.46	130.0	± 9.6 %
		Y	5.00	66.44	16.30		130.0	
		Z	5.03	66.82	16.67		130.0	
10625-AAB	IEEE 802.11ac WiFi (40MHz, MCS9, 90pc duty cycle)	X	5.26	67.04	16.71	0.46	130.0	± 9.6 %
		Y	5.09	66.63	16.47		130.0	
		Z	5.13	67.03	16.85		130.0	
10626-AAB	IEEE 802.11ac WiFi (80MHz, MCS0, 90pc duty cycle)	X	5.38	66.81	16.45	0.46	130.0	± 9.6 %
		Y	5.23	66.38	16.22		130.0	
		Z	5.28	66.73	16.57		130.0	
10627-AAB	IEEE 802.11ac WiFi (80MHz, MCS1, 90pc duty cycle)	X	5.58	67.36	16.70	0.46	130.0	± 9.6 %
		Y	5.45	67.00	16.50		130.0	
		Z	5.50	67.38	16.87		130.0	
10628-AAB	IEEE 802.11ac WiFi (80MHz, MCS2, 90pc duty cycle)	X	5.36	66.74	16.32	0.46	130.0	± 9.6 %
		Y	5.21	66.30	16.07		130.0	
		Z	5.26	66.67	16.44		130.0	
10629-AAB	IEEE 802.11ac WiFi (80MHz, MCS3, 90pc duty cycle)	X	5.47	66.96	16.42	0.46	130.0	± 9.6 %
		Y	5.37	66.71	16.28		130.0	
		Z	5.45	67.20	16.70		130.0	
10630-AAB	IEEE 802.11ac WiFi (80MHz, MCS4, 90pc duty cycle)	X	5.61	67.60	16.75	0.46	130.0	± 9.6 %
		Y	5.47	67.20	16.53		130.0	
		Z	5.49	67.51	16.87		130.0	
10631-AAB	IEEE 802.11ac WiFi (80MHz, MCS5, 90pc duty cycle)	X	5.66	67.88	17.10	0.46	130.0	± 9.6 %
		Y	5.50	67.46	16.87		130.0	
		Z	5.52	67.74	17.18		130.0	
10632-AAB	IEEE 802.11ac WiFi (80MHz, MCS6, 90pc duty cycle)	X	5.61	67.64	16.99	0.46	130.0	± 9.6 %
		Y	5.52	67.45	16.88		130.0	
		Z	5.60	67.90	17.27		130.0	
10633-AAB	IEEE 802.11ac WiFi (80MHz, MCS7, 90pc duty cycle)	X	5.39	66.85	16.41	0.46	130.0	± 9.6 %
		Y	5.22	66.38	16.16		130.0	
		Z	5.27	66.75	16.52		130.0	
10634-AAB	IEEE 802.11ac WiFi (80MHz, MCS8, 90pc duty cycle)	X	5.43	67.11	16.60	0.46	130.0	± 9.6 %
		Y	5.27	66.66	16.36		130.0	
		Z	5.32	67.02	16.71		130.0	
10635-AAB	IEEE 802.11ac WiFi (80MHz, MCS9, 90pc duty cycle)	X	5.25	66.19	15.84	0.46	130.0	± 9.6 %
		Y	5.10	65.73	15.57		130.0	
		Z	5.15	66.13	15.97		130.0	
10636-AAC	IEEE 802.11ac WiFi (160MHz, MCS0, 90pc duty cycle)	X	5.81	67.10	16.50	0.46	130.0	± 9.6 %
		Y	5.68	66.70	16.29		130.0	
		Z	5.73	67.01	16.61		130.0	
10637-AAC	IEEE 802.11ac WiFi (160MHz, MCS1, 90pc duty cycle)	X	5.90	67.33	16.60	0.46	130.0	± 9.6 %
		Y	5.77	66.95	16.40		130.0	
		Z	5.82	67.27	16.74		130.0	
10638-AAC	IEEE 802.11ac WiFi (160MHz, MCS2, 90pc duty cycle)	X	5.95	67.46	16.64	0.46	130.0	± 9.6 %
		Y	5.84	67.14	16.47		130.0	
		Z	5.90	67.49	16.82		130.0	

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10639-AAC	IEEE 802.11ac WiFi (160MHz, MCS3, 90pc duty cycle)	X	5.90	67.33	16.62	0.46	130.0	± 9.6 %
		Y	5.76	66.92	16.41		130.0	
		Z	5.81	67.22	16.73		130.0	
10640-AAC	IEEE 802.11ac WiFi (160MHz, MCS4, 90pc duty cycle)	X	5.83	67.12	16.46	0.46	130.0	± 9.6 %
		Y	5.68	66.66	16.21		130.0	
		Z	5.72	66.97	16.55		130.0	
10641-AAC	IEEE 802.11ac WiFi (160MHz, MCS5, 90pc duty cycle)	X	5.93	67.22	16.53	0.46	130.0	± 9.6 %
		Y	5.81	66.86	16.34		130.0	
		Z	5.85	67.17	16.67		130.0	
10642-AAC	IEEE 802.11ac WiFi (160MHz, MCS6, 90pc duty cycle)	X	5.98	67.50	16.84	0.46	130.0	± 9.6 %
		Y	5.83	67.06	16.62		130.0	
		Z	5.86	67.32	16.91		130.0	
10643-AAC	IEEE 802.11ac WiFi (160MHz, MCS7, 90pc duty cycle)	X	5.81	67.12	16.53	0.46	130.0	± 9.6 %
		Y	5.66	66.68	16.30		130.0	
		Z	5.71	66.98	16.63		130.0	
10644-AAC	IEEE 802.11ac WiFi (160MHz, MCS8, 90pc duty cycle)	X	5.86	67.29	16.64	0.46	130.0	± 9.6 %
		Y	5.71	66.85	16.41		130.0	
		Z	5.76	67.16	16.74		130.0	
10645-AAC	IEEE 802.11ac WiFi (160MHz, MCS9, 90pc duty cycle)	X	5.98	67.34	16.63	0.46	130.0	± 9.6 %
		Y	5.84	66.93	16.42		130.0	
		Z	5.90	67.28	16.76		130.0	
10646-AAD	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, QPSK, UL Subframe=2,7)	X	8.30	93.85	31.82	9.30	60.0	± 9.6 %
		Y	6.18	87.50	29.41		60.0	
		Z	8.79	99.98	35.78		60.0	
10647-AAC	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK, UL Subframe=2,7)	X	7.17	91.19	31.03	9.30	60.0	± 9.6 %
		Y	5.46	85.37	28.75		60.0	
		Z	7.30	96.07	34.59		60.0	
10648-AAA	CDMA2000 (1x Advanced)	X	0.66	65.77	10.47	0.00	150.0	± 9.6 %
		Y	0.30	60.00	5.10		150.0	
		Z	0.29	60.00	5.00		150.0	
10652-AAB	LTE-TDD (OFDMA, 5 MHz, E-TM 3.1, Clipping 44%)	X	3.47	68.07	16.61	2.23	80.0	± 9.6 %
		Y	3.07	66.57	15.57		80.0	
		Z	3.72	70.21	17.58		80.0	
10653-AAB	LTE-TDD (OFDMA, 10 MHz, E-TM 3.1, Clipping 44%)	X	3.92	66.81	16.72	2.23	80.0	± 9.6 %
		Y	3.63	65.90	16.11		80.0	
		Z	3.97	67.84	17.38		80.0	
10654-AAB	LTE-TDD (OFDMA, 15 MHz, E-TM 3.1, Clipping 44%)	X	3.93	66.32	16.73	2.23	80.0	± 9.6 %
		Y	3.68	65.48	16.20		80.0	
		Z	3.95	67.09	17.32		80.0	
10655-AAB	LTE-TDD (OFDMA, 20 MHz, E-TM 3.1, Clipping 44%)	X	4.00	66.16	16.74	2.23	80.0	± 9.6 %
		Y	3.76	65.33	16.24		80.0	
		Z	4.02	66.79	17.30		80.0	
10658-AAA	Pulse Waveform (200Hz, 10%)	X	4.94	72.47	14.06	10.00	50.0	± 9.6 %
		Y	3.25	66.87	11.18		50.0	
		Z	100.00	108.12	24.56		50.0	
10659-AAA	Pulse Waveform (200Hz, 20%)	X	8.53	80.15	15.56	6.99	60.0	± 9.6 %
		Y	1.77	64.43	8.89		60.0	
		Z	100.00	106.87	22.87		60.0	

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10660-AAA	Pulse Waveform (200Hz, 40%)	X	100.00	103.03	20.00	3.98	80.0	± 9.6 %
		Y	0.60	60.44	5.54		80.0	
		Z	100.00	107.01	21.56		80.0	
10661-AAA	Pulse Waveform (200Hz, 60%)	X	100.00	107.83	20.92	2.22	100.0	± 9.6 %
		Y	0.30	60.00	3.98		100.0	
		Z	100.00	104.52	19.29		100.0	
10662-AAA	Pulse Waveform (200Hz, 80%)	X	100.00	164.77	41.00	0.97	120.0	± 9.6 %
		Y	0.87	247.94	5.08		120.0	
		Z	0.02	60.11	20.00		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.

Attachment 6. – Dipole Calibration Data

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

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
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 **HCT (Dymstec)**

Certificate No: **D750V3-1014_Jul17**

CALIBRATION CERTIFICATE

Object	D750V3 - SN:1014
Calibration procedure(s)	QA CAL-05.v9 Calibration procedure for dipole validation kits above 700 MHz
Calibration date:	July 19, 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-May-17 (No. EX3-7349_May17)	May-18
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: July 20, 2017

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

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
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	15 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	750 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

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

SAR result with Head TSL

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	2.08 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**8.28 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	250 mW input power	1.35 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**5.38 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	55.5	0.96 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	55.0 ± 6 %	0.99 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm^3 (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	2.22 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**8.66 W/kg ± 17.0 % (k=2)**

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

Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	55.6 Ω + 3.5 jΩ
Return Loss	- 24.1 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	50.3 Ω - 0.5 jΩ
Return Loss	- 45.1 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.036 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 22, 2010

DASY5 Validation Report for Head TSL

Date: 19.07.2017

Test Laboratory: SPEAG, Zurich, Switzerland

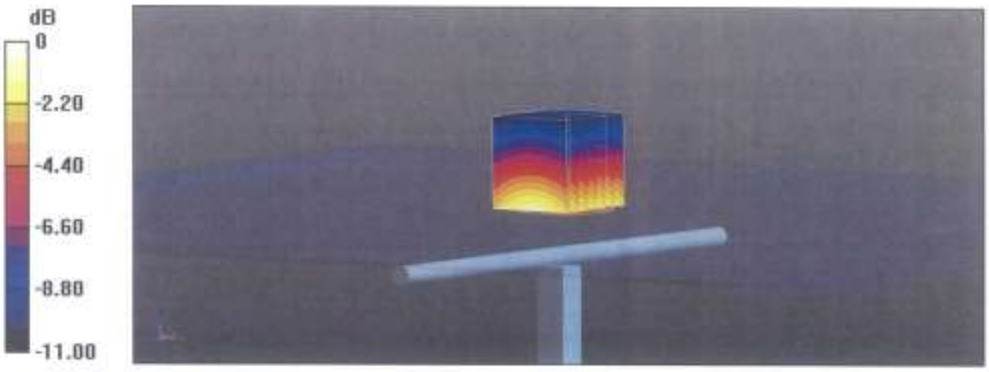
DUT: Dipole 750 MHz; Type: D750V3; Serial: D750V3 - SN:1014

Communication System: UID 0 - CW; Frequency: 750 MHz
Medium parameters used: f = 750 MHz; σ = 0.89 S/m; ε_r = 41; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(10.49, 10.49, 10.49); Calibrated: 31.05.2017;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 28.03.2017
- Phantom: Flat Phantom 4.9 (front); Type: QD 00L P49 AA; Serial: 1001
- DASY52 52.10.0(1446); SEMCAD X 14.6.10(7417)

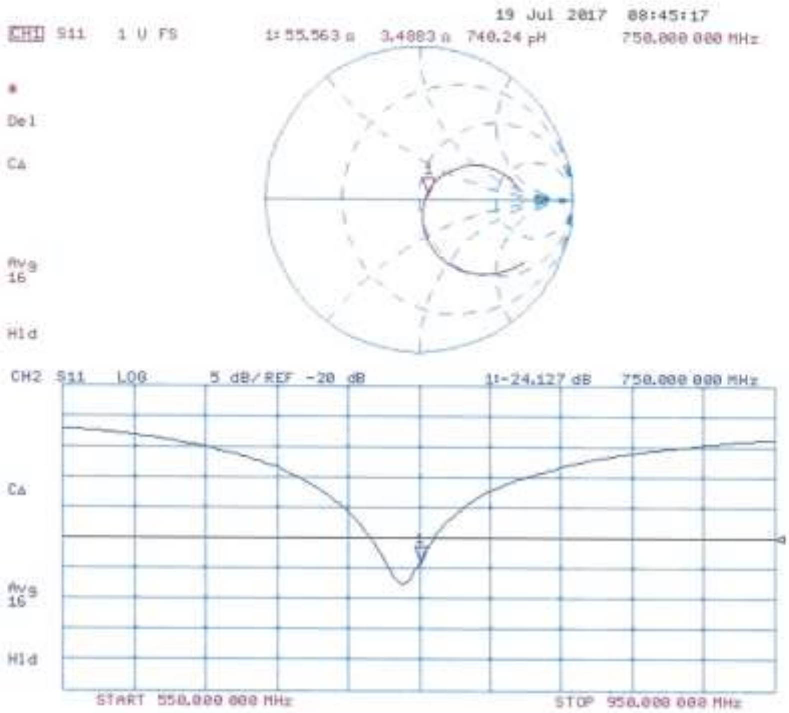
Dipole Calibration for Head Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 58.57 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 3.20 W/kg
SAR(1 g) = 2.08 W/kg; SAR(10 g) = 1.35 W/kg
Maximum value of SAR (measured) = 2.81 W/kg



0 dB = 2.81 W/kg = 4.49 dBW/kg

Certificate No: D750V3-1014_Jul17 Page 5 of 8

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 19.07.2017

Test Laboratory: SPEAG, Zurich, Switzerland

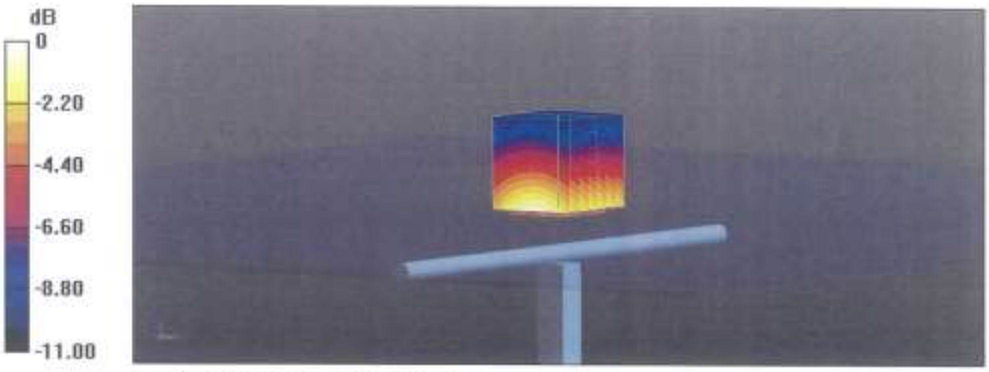
DUT: Dipole 750 MHz; Type: D750V3; Serial: D750V3 - SN:1014

Communication System: UID 0 - CW; Frequency: 750 MHz
Medium parameters used: f = 750 MHz; σ = 0.99 S/m; ε_r = 55; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(10.35, 10.35, 10.35); Calibrated: 31.05.2017;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 28.03.2017
- Phantom: Flat Phantom 4.9 (Back); Type: QD 00R P49 AA; Serial: 1005
- DASY52 52.10.0(1446); SEMCAD X 14.6.10(7417)

Dipole Calibration for Body Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 57.61 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 3.32 W/kg
SAR(1 g) = 2.22 W/kg; SAR(10 g) = 1.45 W/kg
Maximum value of SAR (measured) = 2.94 W/kg



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

Impedance Measurement Plot for Body TSL