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Report On

Specific Absorption Rate Testing of the
Axnes AS, PNG MP30 Transceiver

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Specific Absorption Rate Testing of the
Axnes AS, PNG MP30 Transceiver

Document 75946122 Report 03 Issue 1

October 2019

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DATED

14 October 2019

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SECTION 1

REPORT SUMMARY

Specific Absorption Rate Testing of the
Axnes Aviation MP30

1.1 REPORT MODIFICATION RECORD

Alterations and additions to this report will be issued to the holders of each copy in the form of a complete document.

Issue	Description of Change	Date of Issue
1	First Issue	14 October 2019

1.2 INTRODUCTION

The information contained in this report is intended to show verification of the Specific Absorption Rate Testing of the Axnes AS, MP30 to the requirements of KDB 447498 D01 v06 General RF Exposure Guidance.

Objective	To perform Specific Absorption Rate Testing to determine the Equipment Under Test's (EUT's) compliance with the requirements specified of KDB 447498 D01 v06 General RF Exposure Guidance, for the series of tests carried out.
Applicant	Axnes AS
Manufacturer	Axnes AS
Model Number	MP30
Serial/IMEI Number(s)	010 300 R10
Number of Samples Tested	1
Hardware Version	R10
Software Version	AXS-SW-0511
Test Specification/Issue/Date	KDB 447498 D01 v06 General RF Exposure Guidance
Order Number	802298
Date of Receipt of EUT	30 May 2019
Start of Test	31 May 2019
Finish of Test	19 August 2019
Related Document(s)	FCC 47 CFR 2.1093: 2018 KDB 865664 – D01 v01r04 KDB 865664 – D02 v01r02 KDB 648474 – D04 v01r03 KDB 447498 – D01 v06 IEEE 1528: 2013
Name of Engineer(s)	Aasim Butt Stephen Dodd

1.3 BRIEF SUMMARY OF RESULTS

The measurements shown in this report were made in accordance with the procedures specified KDB 447498 D01 v06 General RF Exposure Guidance.

The maximum 1g volume averaged stand-alone SAR found during this Assessment:

Max 1g SAR (W/kg) Body	**0.18** (Measured)	**0.69** (Scaled)
The maximum 1g volume averaged SAR level measured for all the tests performed did not exceed the limits for General Population/Uncontrolled Exposure (W/kg) Partial Body of 1.6 W/kg.		

1.4 TEST RESULTS SUMMARY

1.4.1 System Performance / Validation Check Results

Prior to formal testing being performed a System Check was performed in accordance with KDB 865664 and the results were compared against published data in Standard IEEE 1528-2013. The following results were obtained: -

System performance / Validation results

Date	Frequency (MHz)	Max 1g SAR (W/kg)*	Max 1g SAR (W/kg) Target	Percentage Drift on Reference
31/05/2019	450 MHz	4.54	4.69	-3.20
20/06/2019	450 MHz	4.54	4.69	-3.20
21/06/2019	450 MHz	4.70	4.69	0.21
19/08/2019	450MHz	4.38	4.69	-6.61

*Normalised to a forward power of 1W

1.4.2 Results Summary Tables

UHF 16QAM Body (AXS-ANT-0300): 450 MHz Voice Body Specific Absorption Rate (Maximum SAR) 1g Results

Test Position	Channel Number	Frequency (MHz)	Measured Average Power (dBm)	Tune Up (dBm)	Measured 1g SAR (W/kg)	Scaled 1g SAR (W/kg)	75 % Duty Factor Scaled 1g SAR (W/kg)	Scan Figure Number
5mm Front Facing	Q2	418	26.81	27.00	0.08	0.08	0.31	Figure 5
5mm Rear Facing	Q2	418	26.81	27.00	0.08	0.08	0.29	Figure 6
5mm Left Edge	Q2	418	26.81	27.00	0.08	0.08	0.30	Figure 7
Limit for General Population (Uncontrolled Exposure) 1.6 W/kg (1g) KDB 447498 D01 - Testing of other required channels within the operation mode of a frequency band is not required when the reported 1g SAR for mid-band or highest output power channel is: ≤ 0.8W/kg when the transmission band is ≤ 100MHz ≤ 0.6W/kg when the transmission band is between 100MHz and 200MHz ≤ 0.4W/kg when the transmission band is ≥ 200MHz KDB 447498 D01 Section 6.1 A duty factor of 75% may be applied for PTT radios with voice activated transmission capabilities to avoid the justification required for using a lower duty factor than what is supported by certain features built-in within the radio.								

UHF 16QAM Body (AXS-ANT-0310): 450 MHz Voice Body Specific Absorption Rate (Maximum SAR) 1g Results

Test Position	Channel Number	Frequency (MHz)	Measured Average Power (dBm)	Tune Up (dBm)	Measured 1g SAR (W/kg)	Scaled 1g SAR (W/kg)	75 % Duty Factor Scaled 1g SAR (W/kg)	Scan Figure Number
5mm Front Facing	Q4	450	26.97	27.00	0.09	0.09	0.34	Figure 8
5mm Rear Facing	Q4	450	26.97	27.00	0.07	0.07	0.28	Figure 9
5mm Left Edge	Q4	450	26.97	27.00	0.08	0.08	0.31	Figure 10
Limit for General Population (Uncontrolled Exposure) 1.6 W/kg (1g) KDB 447498 D01 - Testing of other required channels within the operation mode of a frequency band is not required when the reported 1g SAR for mid-band or highest output power channel is: ≤ 0.8W/kg when the transmission band is ≤ 100MHz ≤ 0.6W/kg when the transmission band is between 100MHz and 200MHz ≤ 0.4W/kg when the transmission band is ≥ 200MHz KDB 447498 D01 Section 6.1 A duty factor of 75% may be applied for PTT radios with voice activated transmission capabilities to avoid the justification required for using a lower duty factor than what is supported by certain features built-in within the radio.								

UHF 16QAM Body (AXS-ANT-0320): 450 MHz Voice Body Specific Absorption Rate (Maximum SAR) 1g Results

Test Position	Channel Number	Frequency (MHz)	Measured Average Power (dBm)	Tune Up (dBm)	Measured 1g SAR (W/kg)	Scaled 1g SAR (W/kg)	75 % Duty Factor Scaled 1g SAR (W/kg)	Scan Figure Number
5mm Front Facing	Q4	450	26.97	27.00	0.18	0.18	**0.69**	Figure 11
5mm Rear Facing	Q4	450	26.97	27.00	0.15	0.15	0.58	Figure 12
5mm Left Edge	Q4	450	26.97	27.00	0.17	0.17	0.65	Figure 13
5mm Front Facing*	Q4	450	26.97	27.00	0.17	0.17	**0.64**	Figure 11
Limit for General Population (Uncontrolled Exposure) 1.6 W/kg (1g) KDB 447498 D01 - Testing of other required channels within the operation mode of a frequency band is not required when the reported 1g SAR for mid-band or highest output power channel is: ≤ 0.8W/kg when the transmission band is ≤ 100MHz ≤ 0.6W/kg when the transmission band is between 100MHz and 200MHz ≤ 0.4W/kg when the transmission band is ≥ 200MHz KDB 447498 D01 Section 6.1 A duty factor of 75% may be applied for PTT radios with voice activated transmission capabilities to avoid the justification required for using a lower duty factor than what is supported by certain features built-in within the radio. *Repeated test with audio cable, coiled and positioned at a 0mm separation distace to phantom.								

1.4.3 Standalone SAR Test Exclusion Considerations (KDB 447498 D01)

The 1g SAR Test exclusion thresholds for 100 MHz to 6 GHz *test separation distances* ≤ 50 mm are determined by:

[(*max power of channel, including tune-up tolerance, mW) / (min. test separation distance, mm)] [√f (GHz)]* ≤ 3.0, where

- f (GHz) is the RF channel transmit frequency in GHz.
- Power and distance are rounded to the nearest mW and mm before calculation.
- The result is rounded to one decimal place for comparison.
- When the maximum test separation distance is < 5 mm, a distance of 5 mm is applied.

Band	Frequency (MHz)	Power (dBm)	Power (mW)	Distance (mm)	Threshold	Test Exclusion
UHF 450 MHz	450	27	501.19	5	67.2	No

1.4.4 Technical Description

The equipment under test (EUT) was an Axnes AS, PNG MP30 Transceiver, a component used in the PNG wireless intercom system. The MP30 Transceiver operates in the UHF frequency band (406.118 - 469.99 MHz). The transceiver supports GPS. The radio is used via a headset or helmet. The radio is also capable of operating as an AIS alerting device. A full technical description can be found in the manufacturer's documentation.

1.4.5 Test Configuration and Modes of Operation

The testing was performed with an integral battery supplied and manufactured by Axnes AS. The battery was fully charged before each measurement. A non-terminated cable which would normally be connected to a helmet or headset was connected to the device. For the test configuration which yielded the highest SAR a repeated scan was performed with the cable positioned at a 0mm separation distance from the SAR phantom.

For body SAR assessment of the 406.118 - 469.99 MHz frequency band, which was tested over three different ranges (dictated by the three supplied antennas), as no body worn accessories are supplied with the EUT, testing was performed on the front, rear and left-hand surface of the device, as these surfaces were within 25 mm proximity of the antenna, as per KDB 447498 D01. The device was placed at a distance of 5 mm from the bottom of the Elliptical Flat Phantom for all body testing. The Elliptical Flat Phantom dimensions are 600 mm major axis and 400 mm minor axis with a shell thickness of 2.00 mm. The phantom was filled to a minimum depth of 150 mm with the appropriate body simulant liquid. The dielectric properties were in accordance with the requirements specified in KDB 865665.

The MP30 cannot transmit without the BST50 base station present as timing and timeslot allocations are handled by the BST50 so the CP50 control panel and base station were positioned outside the test chamber with its antenna in the chamber. In order for the handset to transmit at full power a step attenuator was used between the base station main unit and the base station antenna to simulate a virtual distance. The attenuaton level was increased until the MP30 transciever was transmitting at full power with the basestation still receiving a stable signal. The received signal was monitored on the CP50 control panel display. Prior to SAR evaluations the power levels were measured to ensure the EUT was transmitting at the maximum level.

The three antenna variants and corresponding usable frequency ranges are tabulated below.

Antenna	Frequency Range	Part Number
Low Range Antenna	390 - 430 MHz	AXS-ANT-0300
Mid Range Antenna	410 - 450 MHz	AXS-ANT-0310
High Range Antenna	430 - 470 MHz	AXS-ANT-0320

Testing was performed in each position on the channel that gave the highest output power for each antenna frequency range.

As the EUT has voice activated transmission capabilities a 75 % duty factor scaling was applied as per KDB 447498 D01 section 6.1

Included in this report are descriptions of the test method; the equipment used and an analysis of the test uncertainties applicable and diagrams indicating the locations of maximum SAR for each test position.

1.5 FCC POWER MEASUREMENTS

1.5.1 Method

Conducted power measurements were made using a Spectrum Analyser

1.5.2 Conducted Power Measurements

Channel	Frequency (MHz)	Modulation	Measured Power (dBm)	Tune Up (dBm)
Q1	406.118	16 QAM	26.70	27.00
Q2	418.000	16 QAM	26.81	27.00
Q3	429.975	16 QAM	26.60	27.00
Q4	450.000	16 QAM	26.97	27.00
Q5	460.000	16 QAM	26.90	27.00
Q6	469.990	16 QAM	26.66	27.00
P1	406.118	8 PSK	26.35	27.00
P2	418.000	8 PSK	26.49	27.00
P3	429.975	8 PSK	26.30	27.00
P4	450.000	8 PSK	26.68	27.00
P5	460.000	8 PSK	26.56	27.00
P6	469.990	8 PSK	26.39	27.00

SECTION 2

TEST DETAILS

Specific Absorption Rate Testing of the
Axnes Aviation MP30

2.1 DASY5 MEASUREMENT SYSTEM

2.1.1 System Description

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

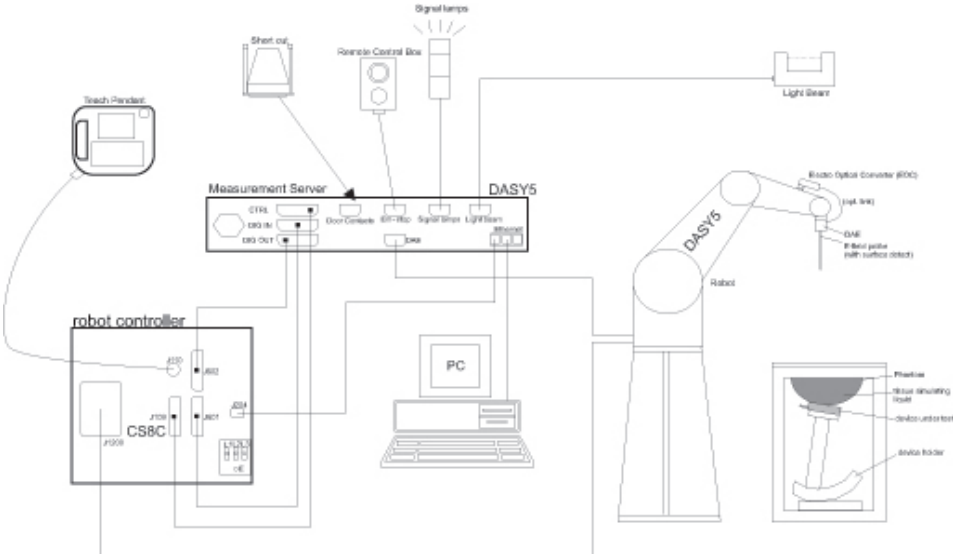

Figure 1 System Description Diagram

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

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

A data acquisition electronics (DAE) which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.

The Electro-optical converter (EOC) performs the conversion from optical to electrical signals for the digital communication to the DAE. To use optical surface detection, a special version of the EOC is required. The EOC signal is transmitted to the measurement server.

The function of the measurement server is to perform the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.

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

A computer running Win7 professional operating system and the DASY5 software.

Remote control and teach pendant as well as additional circuitry for robot safety such as warning lamps, etc.

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

2.1.2 Probe Specification

The probes used by the DASY system are isotropic E-field probes, constructed with a symmetric design and a triangular core. The probes have built-in shielding against static charges and are contained within a PEEK enclosure material. These probes are specially designed and calibrated for use in liquids with high permittivities. The frequency range of the probes are from 6 MHz to 6 GHz.

2.1.3 Data Acquisition Electronics

The data acquisition electronics (DAE4 or DAE3) consist 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 with a control logic unit. Transmission to the measurement server is accomplished through an optical downlink for data and status information, as well as an optical uplink for commands and the clock.

The mechanical probe mounting device includes two different sensor systems for frontal and sideways probe contacts. They are used for mechanical surface detection and probe collision detection. The input impedance of both the DAE4 as well as of the DAE3 box is 200MOhm; the inputs are symmetrical and floating. Common mode rejection is above 80 dB.

2.1.4 SAR Evaluation Description

The DASY5 software includes all numerical procedures necessary to evaluate the spatial peak SAR values.

Based on the IEEE 1528 standard, a new algorithm has been implemented. The spatial-peak SAR can be computed over any required mass.

The base for the evaluation is a "cube" measurement in a volume of 30mm3 (7x7x7 points). The measured volume must include the 1 g and 10 g cubes with the highest averaged SAR values. For that purpose, the centre of the measured volume is aligned to the interpolated peak SAR value of a previously performed area scan. If the 10g cube or both cubes are not entirely inside the measured volumes, the system issues a warning regarding the evaluated spatial peak values within the Post processing engine (SEMCAD X). This means that if the measured volume is shifted, higher values might be possible. To get the correct values you can use a finer measurement grid for the area scan. In complicated field distributions, a large grid spacing for the area scan might miss some details and give an incorrectly interpolated peak location.

The entire evaluation of the spatial peak values is performed within the Post-processing engine (SEMCAD X). The system always gives the maximum values for the 1 g and 10 g cubes. The algorithm to find the cube with highest averaged SAR is divided into the following stages:

1. extraction of the measured data (grid and values) from the Zoom Scan
2. calculation of the SAR value at every measurement point based on all stored data (A/D values and measurement parameters)
3. generation of a high-resolution mesh within the measured volume
4. interpolation of all measured values from the measurement grid to the high-resolution grid
5. extrapolation of the entire 3-D field distribution to the phantom surface over the distance from sensor to surface
6. calculation of the averaged SAR within masses of 1 g and 10 g

2.1.5 Interpolation, Extrapolation and Detection of Maxima

The probe is calibrated at the centre of the dipole sensors which is located 1 to 2.7mm away from the probe tip. During measurements, the probe stops shortly above the phantom surface, depending on the probe and the surface detecting system. Both distances are included as parameters in the probe configuration file. The software always knows exactly how far away the measured point is from the surface. As the probe cannot directly measure at the surface, the values between the deepest measured point and the surface must be extrapolated.

In DASY5, the choice of the coordinate system defining the location of the measurement points has no influence on the uncertainty of the interpolation, Maxima Search and extrapolation routines. The interpolation, extrapolation and maximum search routines are all based on the modified Quadratic Shepard's method. Thereby, the interpolation scheme combines a least-square fitted function method and a weighted average method which are the two basic types of computational interpolation and approximation. The DASY5 routines construct a once-continuously differentiable function that interpolates the measurement values as follows:

For each measurement point a trivariate (3-D) / bivariate (2-D) quadratic is computed.
It interpolates the measurement values at the data point and forms a least-square fit to neighbouring measurement values. The spatial location of the quadratic with respect to the measurement values is attenuated by an inverse distance weighting. This is performed since the calculated quadratic will fit measurement values at nearby points more accurate than at points located further away.

After the quadratics are calculated for at all measurement points, the interpolating function is calculated as a weighted average of the quadratics.

There are two control parameters that govern the behaviour of the interpolation method. One specifies the number of measurement points to be used in computing the least-square fits for the local quadratics. These measurement points are the ones nearest the input point for which the quadratic is being computed. The second parameter specifies the number of measurement points that will be used in calculating the weights for the quadratics to produce the final function. The input data points used there are the ones nearest the point at which the interpolation is desired. Appropriate defaults are chosen for each of the control parameters

The trivariate quadratics that have been previously computed for the 3-D interpolation and whose input data are at the closest distance from the phantom surface, are used in order to extrapolate the fields to the surface of the phantom.

In order to determine all the field maxima in 2-D (Area Scan) and 3-D (Zoom Scan), the measurement grid is refined by a default factor of 10 and the interpolation function is used to evaluate all field values between corresponding measurement points. Subsequently, a linear search is applied to find all the candidate maxima. In a last step, non-physical maxima are removed and only those maxima which are within 2 dB of the global maximum value are retained.

In the Area Scan, the gradient of the interpolation function is evaluated to find all the extrema of the SAR distribution. The uncertainty on the locations of the extrema is less than 1/20 of the grid size. Only local maxima within 2 dB of the global maximum are searched and passed for the Zoom Scan measurement.

In the Zoom Scan, the interpolation function is used to extrapolate the Peak SAR from the lowest measurement points to the inner phantom surface (the extrapolation distance). The uncertainty increases with the extrapolation distance. To keep the uncertainty within 1% for the 1 g and 10 g cubes, the extrapolation distance should not be larger than 5mm.

2.1.6 Averaging and Determination of Spatial Peak SAR

The interpolated data is used to average the SAR over the 1g and 10g cubes by spatially discretising the entire measured volume. The resolution of this spatial grid used to calculate the averaged SAR is 1mm or about 42875 interpolated points. The resulting volumes are defined as cubical volumes containing the appropriate tissue parameters that are cantered at the location. The location is defined as the centre of the incremental volume (voxel).

The spatial-peak SAR must be evaluated in cubical volumes containing a mass that is within 5%of the required mass. The cubical volume centred at each location, as defined above, should be expanded in all directions until the desired value for the mass is reached, with no surface boundaries of the averaging volume extending beyond the outermost surface of the considered region. In addition, the cubical volume should not consist of more than 10% of air. If these conditions are not satisfied, then the centre of the averaging volume is moved to the next location. Otherwise, the exact size of the final sampling cube is found using an inverse polynomial approximation algorithm, leading to results with improved accuracy. If one boundary of the averaging volume reaches the boundary of the measured volume during its expansion, it will not be evaluated at all. Reference is kept of all locations used and those not used for averaging the SAR. All average SAR values are finally assigned to the centred location in each valid averaging volume.

All locations included in an averaging volume are marked to indicate that they have been used at least once. If a location has been marked as used but has never been assigned to the centre of a cube, the highest averaged SAR value of all other cubical volumes which have used this location for averaging is assigned to this location. Only those locations that are not part of any valid averaging volume should be marked as unused. For the case of an unused location, a new averaging volume must be constructed which will have the unused location centred at one surface of the cube. The remaining five surfaces are expanded evenly in all directions until the required mass is enclosed, regardless of the amount of included air. Of the six possible cubes with one surface centred on the unused location, the smallest cube is used, which still contains the required mass.

If the final cube containing the highest averaged SAR touches the surface of the measured volume, an appropriate warning is issued within the Post-processing engine.
The Cheek Position is where the mobile is in the reference plane and the line between the mobile and the line connecting both auditory canal openings is reduced until any part of the mobile touches any part of the generic twin phantom head.

<u>The 15° Position</u>
The 15° Position is where the mobile is in the reference Cheek position and the phone is kept in contact with the auditory canal at the earpiece; the bottom of the phone is then tilted away from the phantom mouth by 15°.

2.2 UHF 16QAM 450 MHz BODY SAR TEST RESULTS

SOFTWARE VERSION:	52.10.2(1495)	**AMBIENT TEMPERATURE:**	20.9 °C
DATE:	31/05/2019	**RELATIVE HUMIDITY:**	43 %
PHANTOM:	QDOVA003-FB	**CONDUCTIVITY:**	0.901 S/m
DUT CONFIGURATION:	UHF 16QAM Body (AXS-ANT-0300)	**RELATIVE PERMITTIVITY**	55.347
DUT POSITION:	5mm - Front Facing	**LIQUID TEMPERATURE:**	21.5 °C
RAT:	N/A	**SCAN TYPE:**	Full
FREQUENCY:	418 MHz	**DRIFT:**	-0.18 dB
MODULATION:	16 QAM	**PEAK SAR:**	0.121 W/kg
DUTY CYCLE:	20 %	**SAR (1g):**	0.31 W/kg

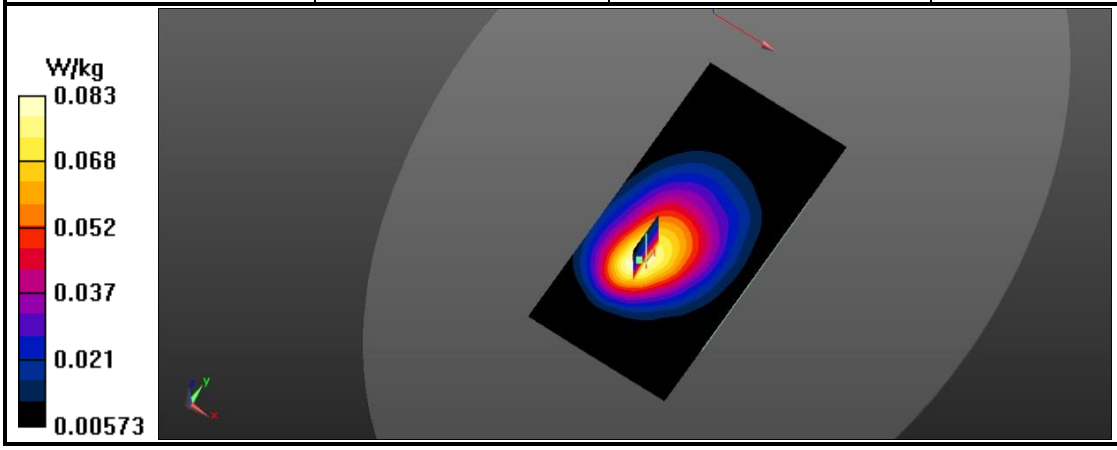

Figure 5: SAR Body Testing Results for the MP30 at 418 MHz.

SOFTWARE VERSION:	52.10.2(1495)	**AMBIENT TEMPERATURE:**	20.9 °C
DATE:	31/05/2019	**RELATIVE HUMIDITY:**	43.4 %
PHANTOM:	QDOVA003-FB	**CONDUCTIVITY:**	0.901 S/m
DUT CONFIGURATION:	UHF 16QAM Body (AXS-ANT-0300)	**RELATIVE PERMITTIVITY:**	55.347
DUT POSITION:	5mm - Rear Facing	**LIQUID TEMPERATURE:**	21.5 °C
RAT:	N/A	**SCAN TYPE:**	Full
FREQUENCY:	418 MHz	**DRIFT:**	-0.19 dB
MODULATION:	16 QAM	**PEAK SAR:**	0.105 W/kg
DUTY CYCLE:	20 %	**SAR (1g):**	0.29 W/kg

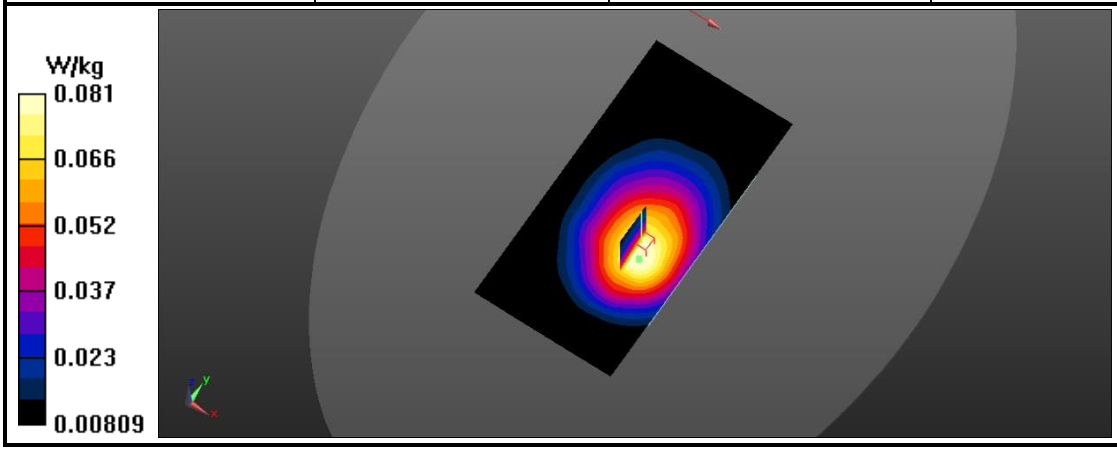

Figure 6: SAR Body Testing Results for the MP30 at 418 MHz.

SOFTWARE VERSION:	52.10.2(1495)	**AMBIENT TEMPERATURE:**	20.9 °C
DATE:	21/06/2019	**RELATIVE HUMIDITY:**	43.4 %
PHANTOM:	QDOVA003-FB	**CONDUCTIVITY:**	0.931 S/m
DUT CONFIGURATION:	UHF 16QAM Body (AXS-ANT-0300)	**RELATIVE PERMITTIVITY:**	55.622
DUT POSITION:	5mm - Left Edge	**LIQUID TEMPERATURE:**	21.5 °C
RAT:	N/A	**SCAN TYPE:**	Full
FREQUENCY:	418 MHz	**DRIFT:**	-0.19 dB
MODULATION:	16 QAM	**PEAK SAR:**	0.118 W/kg
DUTY CYCLE:	20 %	**SAR (1g):**	0.30 W/kg

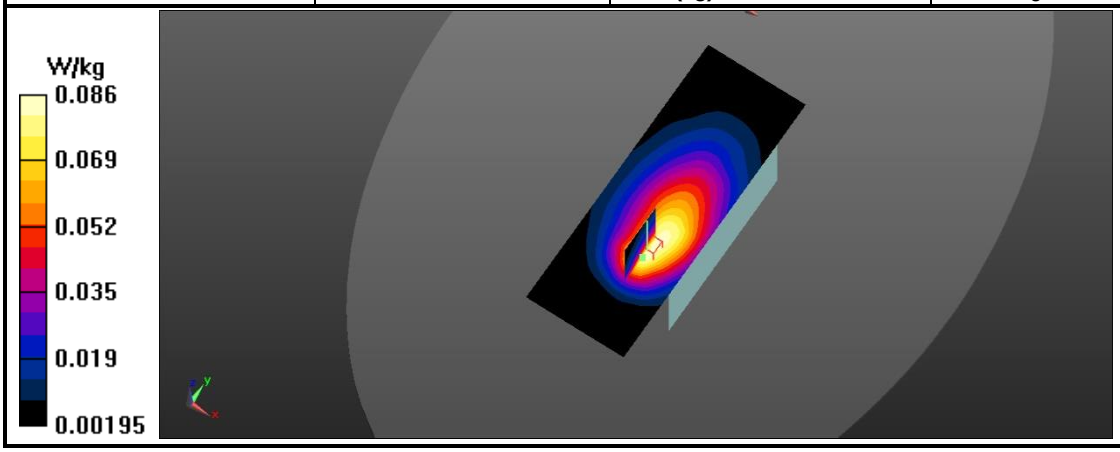

Figure 7: SAR Body Testing Results for the MP30 at 418 MHz.

SOFTWARE VERSION:	52.10.2(1495)	**AMBIENT TEMPERATURE:**	22.4 °C
DATE:	20/06/2019	**RELATIVE HUMIDITY:**	42.7 %
PHANTOM:	QDOVA003-FB	**CONDUCTIVITY:**	0.957 S/m
DUT CONFIGURATION:	UHF 16QAM Body (AXS-ANT-0310)	**RELATIVE PERMITTIVITY:**	55.187
DUT POSITION:	5mm - Front Facing	**LIQUID TEMPERATURE:**	21.5 °C
RAT:	N/A	**SCAN TYPE:**	Full
FREQUENCY:	450 MHz	**DRIFT:**	-0.08 dB
MODULATION:	16 QAM	**PEAK SAR:**	0.132 W/kg
DUTY CYCLE:	20 %	**SAR (1g):**	0.34 W/kg

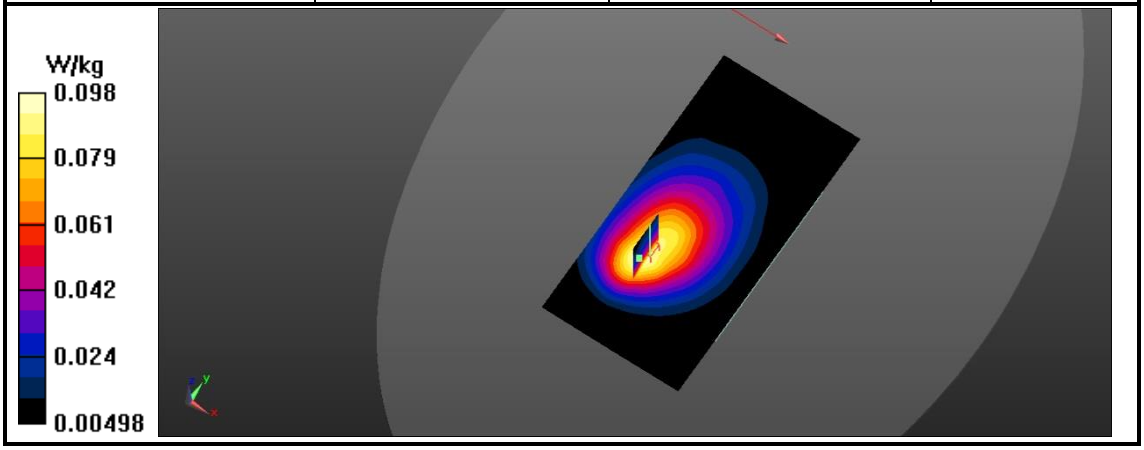

Figure 8: SAR Body Testing Results for the MP30 at 450 MHz

SOFTWARE VERSION:	52.10.2(1495)	**AMBIENT TEMPERATURE:**	22.4 °C
DATE:	21/06/2019	**RELATIVE HUMIDITY:**	42.7 %
PHANTOM:	QDOVA003-FB	**: CONDUCTIVITY:**	0.957 S/m
DUT CONFIGURATION:	UHF 16QAM Body (AXS-ANT-0310)	**RELATIVE PERMITTIVITY:**	55.187
DUT POSITION:	5mm - Rear Facing	**LIQUID TEMPERATURE:**	21.5 °C
RAT:	N/A	**SCAN TYPE:**	Full
FREQUENCY:	450 MHz	**DRIFT:**	0.05 dB
MODULATION:	16 QAM	**PEAK SAR:**	0.104 W/kg
DUTY CYCLE:	20 %	**SAR (1g):**	0.28 W/kg

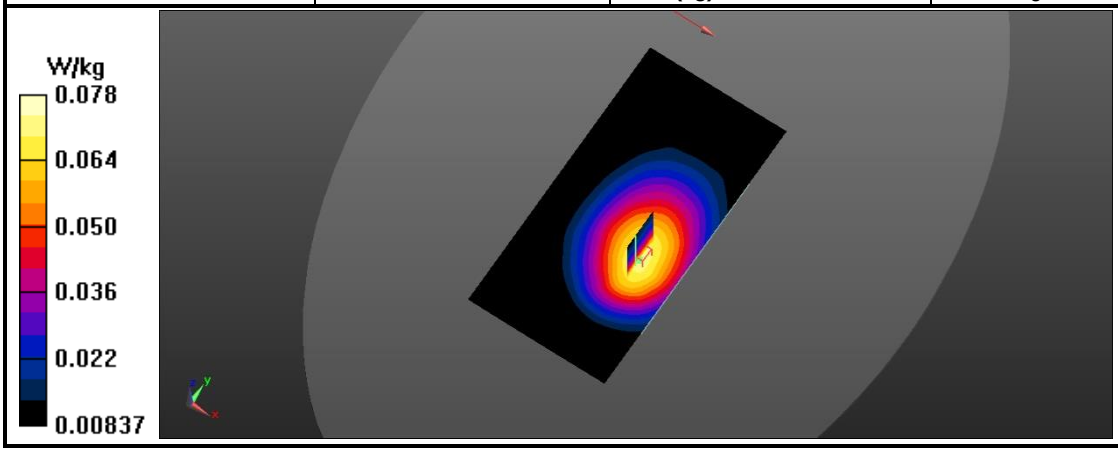

Figure 9: SAR Body Testing Results for the MP30 at 450 MHz.

SOFTWARE VERSION:	52.10.2(1495)	**AMBIENT TEMPERATURE:**	22.4 °C
DATE:	21/06/2019	**RELATIVE HUMIDITY:**	42.7 %
PHANTOM:	QDOVA003-FB	**CONDUCTIVITY:**	0.957 S/m
DUT CONFIGURATION:	UHF 16QAM Body (AXS-ANT-0310)	**RELATIVE PERMITTIVITY:**	55.187
DUT POSITION:	5mm - Left Edge	**LIQUID TEMPERATURE:**	21.5 °C
RAT:	N/A	**SCAN TYPE:**	Full
FREQUENCY:	450 MHz	**DRIFT:**	0.20 dB
MODULATION:	16 QAM	**PEAK SAR:**	0.125 W/kg
DUTY CYCLE:	20 %	**SAR (1g):**	0.31 W/kg

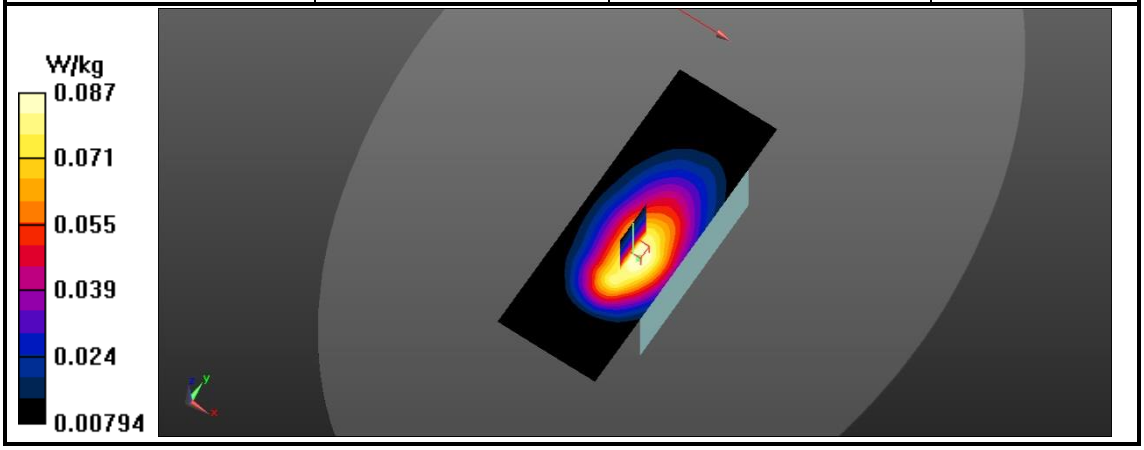

Figure 10: SAR Body Testing Results for the MP30 at 450 MHz.

SOFTWARE VERSION:	52.10.2(1495)	**AMBIENT TEMPERATURE:**	22.4 °C
DATE:	21/06/2019	**RELATIVE HUMIDITY:**	42.7 %
PHANTOM:	QDOVA003-FB	**CONDUCTIVITY:**	0.957 S/m
DUT CONFIGURATION:	UHF 16QAM Body (AXS-ANT-0320)	**RELATIVE PERMITTIVITY:**	55.187
DUT POSITION:	5mm - Front Facing	**LIQUID TEMPERATURE:**	21.5 °C
RAT:	N/A	**SCAN TYPE:**	Full
FREQUENCY:	450 MHz	**DRIFT:**	-0.05 dB
MODULATION:	16 QAM	**PEAK SAR:**	0.266 W/kg
DUTY CYCLE:	20 %	**SAR (1g):**	0.69 W/kg

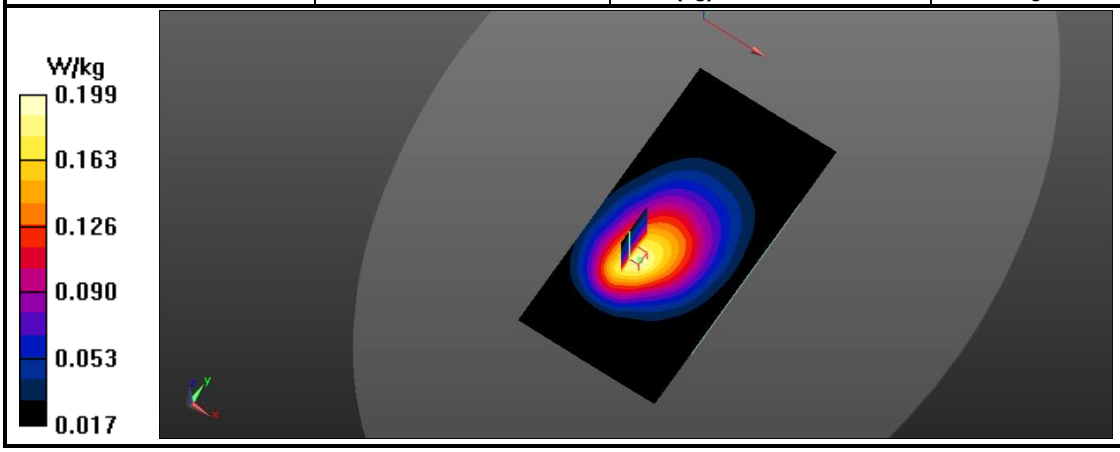

Figure 11: SAR Body Testing Results for the MP30 at 450 MHz.

SOFTWARE VERSION:	52.10.2(1495)	**AMBIENT TEMPERATURE:**	22.4 °C
DATE:	21/06/2019	**RELATIVE HUMIDITY:**	42.7 %
PHANTOM:	QDOVA003-FB	**CONDUCTIVITY:**	0.957 S/m
DUT CONFIGURATION:	UHF 16QAM Body (AXS-ANT-0320)	**RELATIVE PERMITTIVITY**	55.187
DUT POSITION:	5mm - Rear Facing	**LIQUID TEMPERATURE:**	21.5 °C
RAT:	N/A	**SCAN TYPE:**	Full
FREQUENCY:	450 MHz	**DRIFT:**	-0.01 dB
MODULATION:	16 QAM	**PEAK SAR:**	0.219 W/kg
DUTY CYCLE:	20 %	**SAR (1g):**	0.58 W/kg

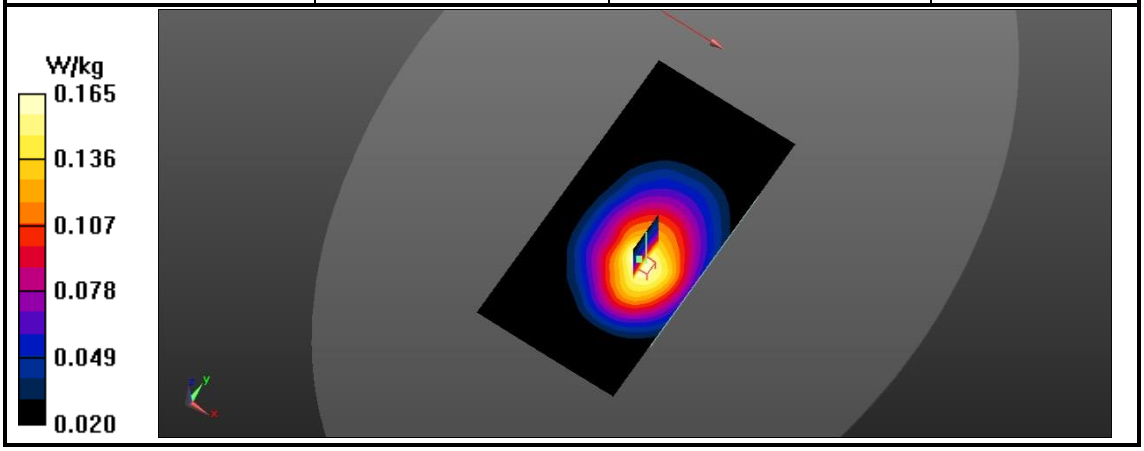

Figure 12: SAR Body Testing Results for the MP30 at 450 MHz.

SOFTWARE VERSION:	52.10.2(1495)	**AMBIENT TEMPERATURE:**	22.4 °C
DATE:	21/06/2019	**RELATIVE HUMIDITY:**	42.7 %
PHANTOM:	QDOVA003-FB	**CONDUCTIVITY:**	0.957 S/m
DUT CONFIGURATION:	UHF 16QAM Body (AXS-ANT-0320)	**RELATIVE PERMITTIVITY:**	55.187
DUT POSITION:	5mm - Left Edge	**LIQUID TEMPERATURE:**	21.5 °C
RAT:	N/A	**SCAN TYPE:**	Full
FREQUENCY:	450 MHz	**DRIFT:**	0.01 dB
MODULATION:	16 QAM	**PEAK SAR:**	0.270 W/kg
DUTY CYCLE:	20 %	**SAR (1g):**	0.65 W/kg

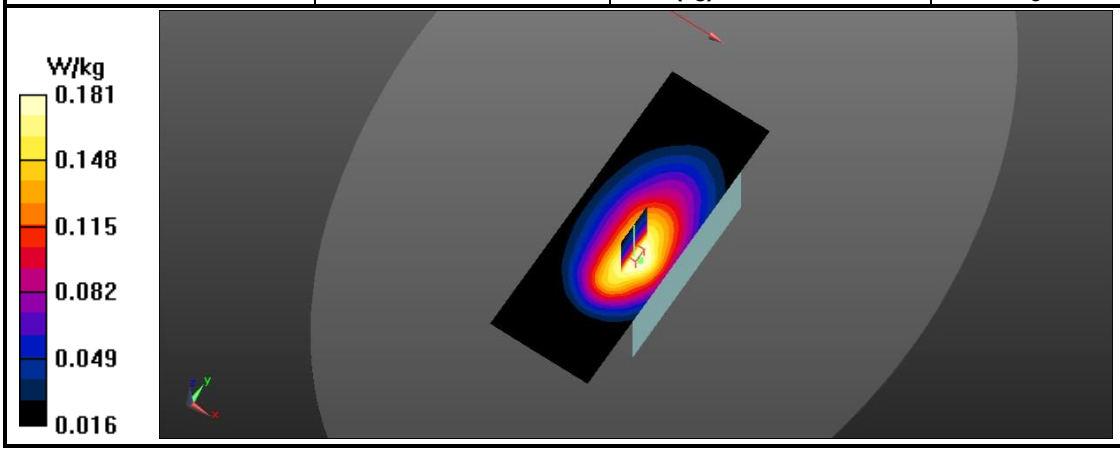

Figure 13: SAR Body Testing Results for the MP30 at 450 MHz.

SOFTWARE VERSION:	52.10.2(1495)	**AMBIENT TEMPERATURE:**	22.8 °C
DATE:	19/08/2019	**RELATIVE HUMIDITY:**	56.0 %
PHANTOM:	QDOVA003-FB	**CONDUCTIVITY:**	0.905 S/m
DUT CONFIGURATION:	UHF 16QAM Body (AXS-ANT-0320)	**RELATIVE PERMITTIVITY:**	53.560
DUT POSITION:	5mm - Front Facing. (Audio Cable 0mm)	**LIQUID TEMPERATURE:**	21.8 °C
RAT:	N/A	**SCAN TYPE:**	Full
FREQUENCY:	450 MHz	**DRIFT:**	0.01 dB
MODULATION:	16 QAM	**PEAK SAR:**	0.326 W/kg
DUTY CYCLE:	20 %	**SAR (1g):**	0.64 W/kg

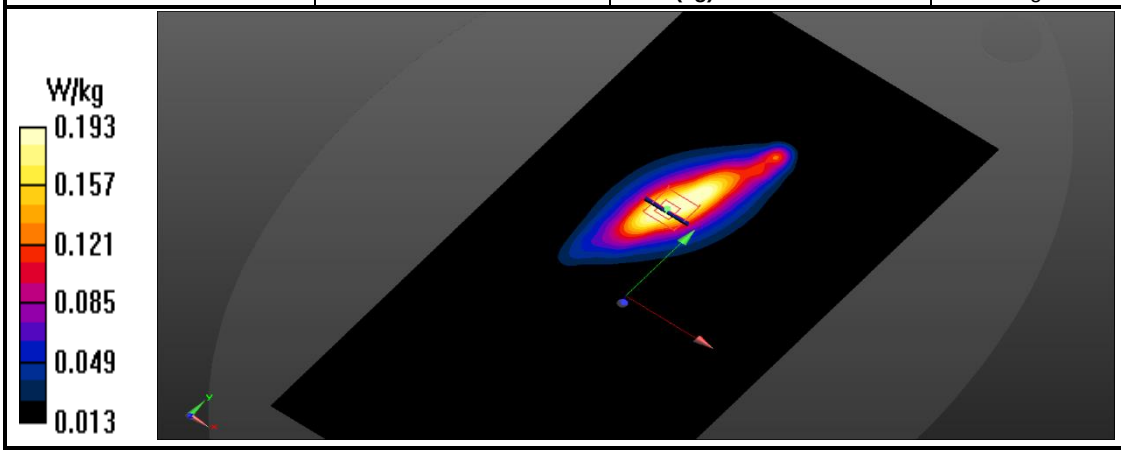

Figure 14: SAR Body Testing Results for the MP30 at 450 MHz.

SECTION 3

TEST EQUIPMENT USED

3.1 TEST EQUIPMENT USED

The following test equipment was used at TÜV SÜD:

Instrument Description	Manufacturer	Model Type	TE Number	Cal Period (months)	Calibration Due Date
10MHz - 2.5GHz, 3W, Amplifier	Vectawave Technology	VTL5400	51	-	TU
Signal Generator	Hewlett Packard	ESG4000A	61	12	17-Jul-2020
Thermometer	Digitron	T208	64	12	12-Jun-2020
Power Sensor	Rohde & Schwarz	NRV-Z1	178	12	07-Jun-2020
Bi-directional Coupler	IndexSar Ltd	7401 (VDC0830-20)	2414	-	TU
Attenuator (30dB, 25W)	Weinschel	46-30-34	2776	12	23-Jul-2020
Hygromer	Rotronic	I-1000	2784	12	13-Jun-2020
Power Meter	Rohde & Schwarz	NRVD	2979	12	07-Jun-2020
Power Sensor	Rohde & Schwarz	NRV-Z1	3563	12	07-Jun-2020
SAR phone holder	Speag	n/a	3870	-	TU
Data Acquisition Electronics	Speag	DAE 4 - SD 000 D04 BM	4689	12	25-Mar-2020
Measurement Server	Speag	DASY 5 Measurement Server	4692	-	TU
Validation Dipole 450MHz	Speag	D450V3	4695	12	07-Dec-2019
Body Phantom	Speag	ELI Phantom	4699	-	TU
Dosimetric SAR Probe	Speag	EX3DV4	4700	12	13-Dec-2019
Robot	Stäubli	TX90 XL Robot	4704	-	TU
MSL 450 Fluid	Speag	Batch 1	N/A	Weekly	26-Aug-2019

TU - Traceability Unscheduled

3.2 TEST SOFTWARE

The following software was used to control the TÜV SÜD DASY System.

Instrument	Version Number
DASY system	52.10.2(1495)

3.3 DIELECTRIC PROPERTIES OF SIMULANT LIQUIDS

The fluid properties of the simulant fluids used during routine SAR evaluation meet the dielectric properties required KDB 865665.

The dielectric properties of the tissue simulant liquids used for the SAR testing at TÜV SÜD are as follows: -

Fluid Type and Frequency	Relative Permittivity Target	Relative Permittivity Measured	Conductivity Target	Conductivity Measured	Date	Fluid Temperature °C
MSL450 @ 450 MHz	56.70	55.19	0.94	0.96	20/06/2019	20.9
MSL450 @ 450 MHz	56.70	53.56	0.94	0.90	19/08/2019	21.6

3.4 TEST CONDITIONS

3.4.1 Test Laboratory Conditions

Ambient temperature: Within +15°C to +35°C.
The actual temperature during the testing ranged from 20.9°C to 22.8°C.
The actual humidity during the testing ranged from 42.7% to 56.0% RH.

3.4.2 Test Fluid Temperature Range

Frequency	Body / Head Fluid	Min Temperature °C	Max Temperature °C
450 MHz	Body	21.5	21.5

3.4.3 SAR Drift

The SAR Drift was within acceptable limits during scans. The maximum SAR Drift was recorded as 0.200 dB for body. The measurement uncertainty budget for this assessment includes the maximum SAR Drift figures.

3.5 MEASUREMENT UNCERTAINTY

Body, Full SAR Measurements, 300 MHz to 3 GHz Using Probe EX3DV4 - SN3759

Source of Uncertainty	Uncertainty ± %	Probability distribution	Div	c_i (1g)	Standard Uncertainty ± % (1g)	v_i (v_{eff})
Measurement System						
Probe calibration	6.0	N	1.00	1.00	6.0	Infinity
Axial Isotropy	4.7	R	1.73	0.70	1.9	Infinity
Hemispherical Isotropy	9.6	R	1.73	0.70	3.9	Infinity
Boundary effect	1.0	R	1.73	1.00	0.6	Infinity
Linearity	4.7	R	1.73	1.00	2.7	Infinity
System Detection limits	1.0	R	1.73	1.00	0.6	Infinity
Modulation response	2.4	R	1.73	1.00	1.4	Infinity
Readout electronics	0.3	N	1.00	1.00	0.3	Infinity
Response time	0.8	R	1.73	1.00	0.5	Infinity
Integration time	2.6	R	1.73	1.00	1.5	Infinity
RF ambient noise	3.0	R	1.73	1.00	1.7	Infinity
RF ambient reflections	3.0	R	1.73	1.00	1.7	Infinity
Probe positioner	0.4	R	1.73	1.00	0.2	Infinity
Probe positioning	2.9	R	1.73	1.00	1.7	Infinity
Max SAR Evaluation	2.0	R	1.73	1.00	1.2	Infinity
Test sample related						
Device Positioning	2.9	N	1.00	1.00	2.9	145
Device Holder	3.6	N	1.00	1.00	3.6	5
Input Power and SAR Drift	5.0	R	1.73	1.00	0.1	Infinity
Phantom and Setup						
Phantom uncertainty	6.1	R	1.73	1.00	3.5	Infinity
SAR Correction	1.9	R	1.73	1.00	1.1	Infinity
Liquid conductivity Meas.	2.5	R	1.73	0.78	1.1	Infinity
Liquid Permittivity Meas.	2.5	R	1.73	0.23	0.3	Infinity
Temp. Unc. Conductivity	3.4	R	1.73	0.78	1.5	Infinity
Temp. Unc. Permittivity	0.4	R	1.73	0.23	0.1	Infinity
Combined Standard Uncertainty		**RSS**			10.8	361
Expanded Standard Uncertainty		**K=2**			21.5	

SECTION 4

PHOTOGRAPHS

4.1 TEST POSITIONAL PHOTOGRAPHS

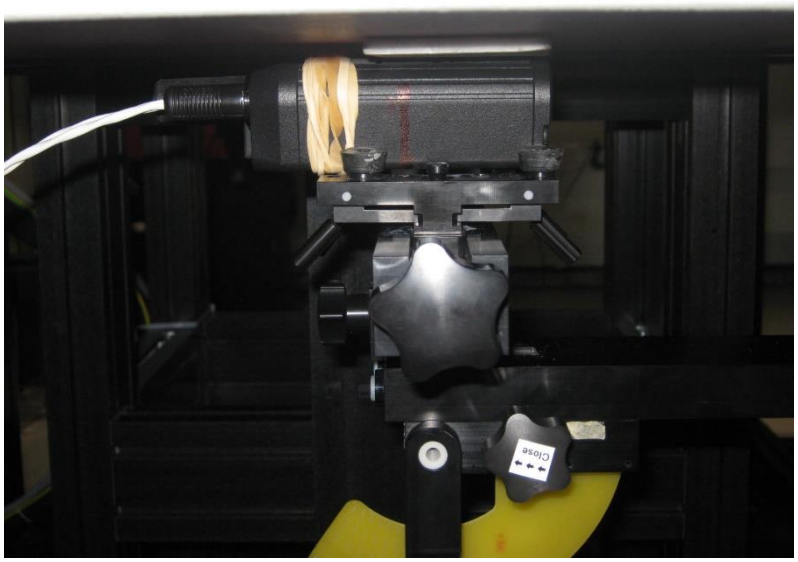

Figure 15 Front Face - 5mm separation distance

Figure 16 Rear Face - 5mm separation distance

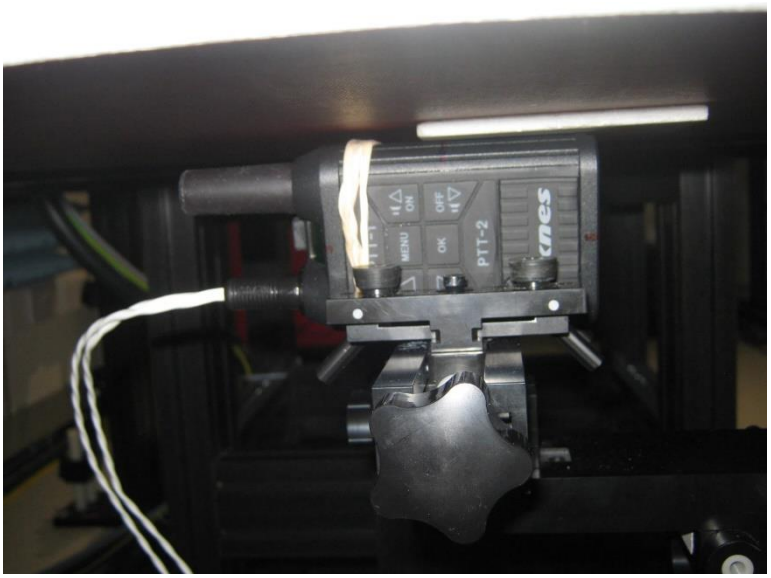

Figure 17 Left edge - 5mm separation distance

Figure 18 Front Face - 5mm separation distance (Audio cable - 0 mm separation distance)

4.2 PHOTOGRAPHS OF EQUIPMENT UNDER TEST (EUT)

Figure 19 Front

Figure 20 Rear

SECTION 5

ACCREDITATION, DISCLAIMERS AND COPYRIGHT

5.1 ACCREDITATION, DISCLAIMERS AND COPYRIGHT

This report relates only to the actual item/items tested.

Our UKAS Accreditation does not cover opinions and interpretations and any expressed are outside the scope of our UKAS Accreditation.

Results of tests not covered by our UKAS Accreditation Schedule are marked NUA (Not UKAS Accredited).

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ANNEX A

PROBE CALIBRATION REPORT

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

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

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

Accreditation No.: **SCS 0108**

Client TüV SÜD UK

Certificate No: **EX3-3759_Dec18**

CALIBRATION CERTIFICATE

Object: EX3DV4 - SN:3759

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: December 13, 2018

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

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

Calibration Equipment used (M&TE critical for calibration)

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

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

Issued: December 13, 2018

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

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

Glossary:

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

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
b) IEC 62209-1, "", "Measurement procedure for the assessment of Specific Absorption Rate (SAR) from hand-held and body-mounted devices used next to the ear (frequency range of 300 MHz to 6 GHz)", July 2016
c) IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
d) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Methods Applied and Interpretation of Parameters:

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

Probe EX3DV4

SN:3759

Manufactured: March 16, 2010
Calibrated: December 13, 2018

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

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3759

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu V/(V/m)^2$)[A]	0.47	0.43	0.43	± 10.1 %
DCP (mV)[B]	98.8	100.7	99.7	

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	196.6	±3.5 %
		Y	0.0	0.0	1.0		173.4	
		Z	0.0	0.0	1.0		184.7	

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	43.15	332.9	37.58	13.15	0.734	5.080	0.000	0.592	1.010
Y	49.34	366.8	35.30	18.32	0.514	5.094	0.953	0.401	1.007
Z	42.84	329.4	37.39	15.09	1.018	5.074	0.000	0.598	1.011

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:3759

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)
450	43.5	0.87	11.05	11.05	11.05	0.13	1.20	± 13.3 %
750	41.9	0.89	10.48	10.48	10.48	0.34	0.89	± 12.0 %
835	41.5	0.90	10.23	10.23	10.23	0.25	1.09	± 12.0 %
900	41.5	0.97	9.80	9.80	9.80	0.21	1.22	± 12.0 %
1640	40.2	1.31	8.57	8.57	8.57	0.20	0.93	± 12.0 %
1750	40.1	1.37	8.48	8.48	8.48	0.22	0.98	± 12.0 %
1900	40.0	1.40	8.14	8.14	8.14	0.30	0.85	± 12.0 %
2100	39.8	1.49	8.07	8.07	8.07	0.24	0.88	± 12.0 %
2300	39.5	1.67	7.69	7.69	7.69	0.23	0.90	± 12.0 %
2450	39.2	1.80	7.24	7.24	7.24	0.22	0.99	± 12.0 %
2600	39.0	1.96	6.98	6.98	6.98	0.26	0.99	± 12.0 %
5200	36.0	4.66	4.60	4.60	4.60	0.40	1.80	± 13.1 %
5300	35.9	4.76	4.38	4.38	4.38	0.40	1.80	± 13.1 %
5500	35.6	4.96	3.94	3.94	3.94	0.40	1.80	± 13.1 %
5600	35.5	5.07	3.91	3.91	3.91	0.40	1.80	± 13.1 %
5800	35.3	5.27	3.89	3.89	3.89	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:3759

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)
450	56.7	0.94	11.27	11.27	11.27	0.07	1.20	± 13.3 %
750	55.5	0.96	10.34	10.34	10.34	0.28	0.95	± 12.0 %
835	55.2	0.97	9.98	9.98	9.98	0.36	0.80	± 12.0 %
900	55.0	1.05	9.87	9.87	9.87	0.23	1.03	± 12.0 %
1640	53.7	1.42	8.59	8.59	8.59	0.29	0.83	± 12.0 %
1750	53.4	1.49	8.25	8.25	8.25	0.15	1.30	± 12.0 %
1900	53.3	1.52	7.93	7.93	7.93	0.19	0.99	± 12.0 %
2100	53.2	1.62	7.65	7.65	7.65	0.18	1.20	± 12.0 %
2300	52.9	1.81	7.52	7.52	7.52	0.29	0.90	± 12.0 %
2450	52.7	1.95	7.37	7.37	7.37	0.23	0.95	± 12.0 %
2600	52.5	2.16	7.15	7.15	7.15	0.13	1.20	± 12.0 %
5200	49.0	5.30	3.99	3.99	3.99	0.50	1.90	± 13.1 %
5300	48.9	5.42	3.81	3.81	3.81	0.50	1.90	± 13.1 %
5500	48.6	5.65	3.40	3.40	3.40	0.50	1.90	± 13.1 %
5600	48.5	5.77	3.26	3.26	3.26	0.50	1.90	± 13.1 %
5800	48.2	6.00	3.28	3.28	3.28	0.50	1.90	± 13.1 %

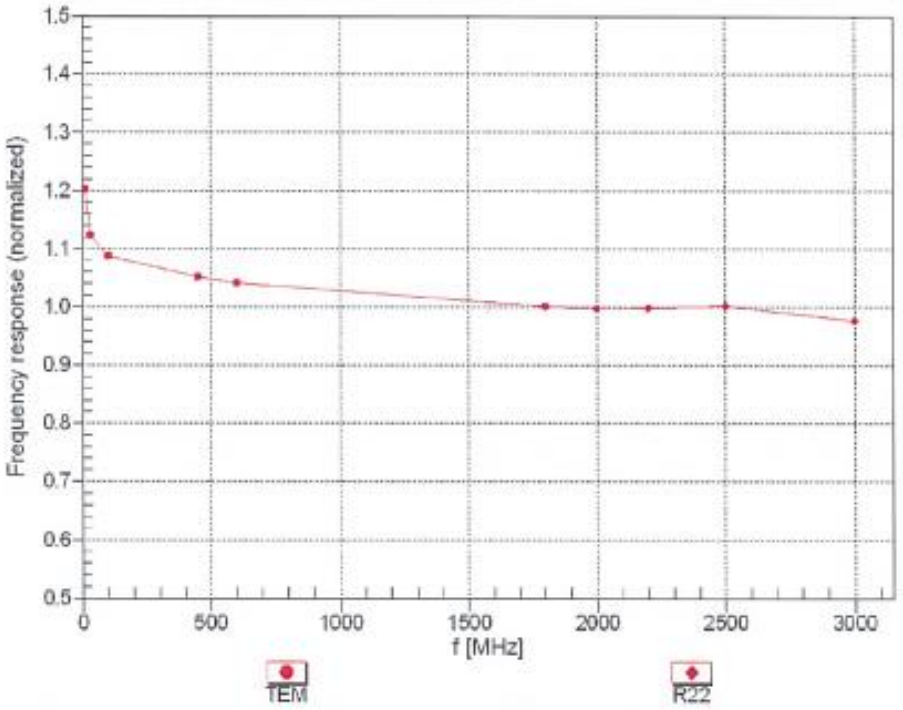
[C] Frequency validity above 300 MHz of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz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

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

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

Frequency Response of E-Field

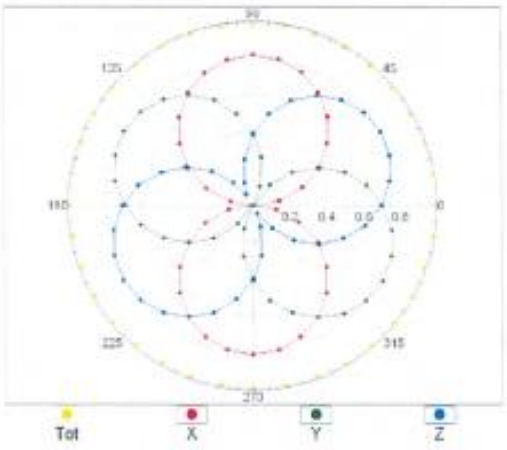
(TEM-Cell:ifi110 EXX, Waveguide: R22)



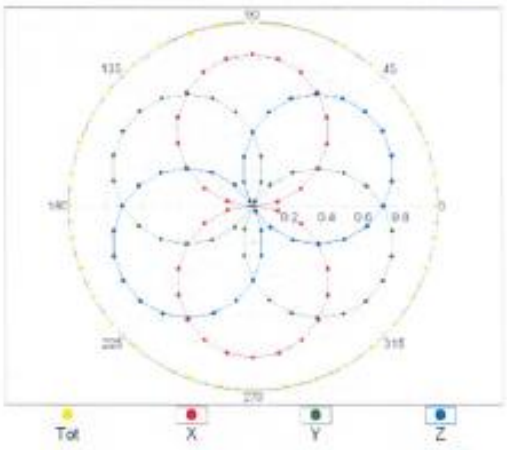
Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

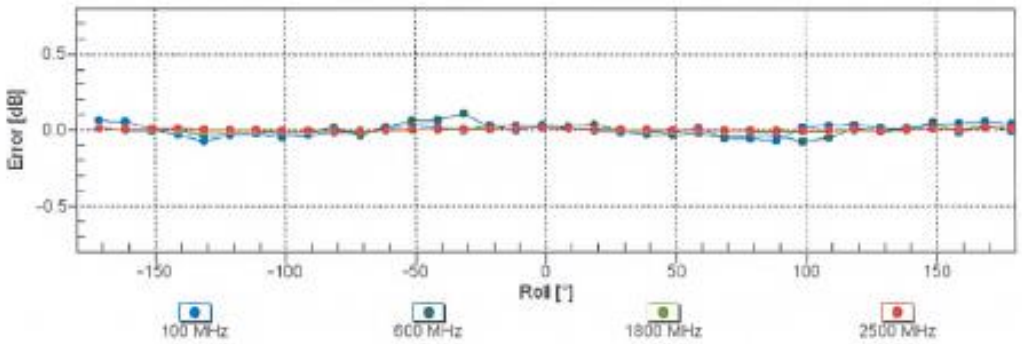
Receiving Pattern (ϕ), ϑ = 0°

f=600 MHz,TEM



f=1800 MHz,R22

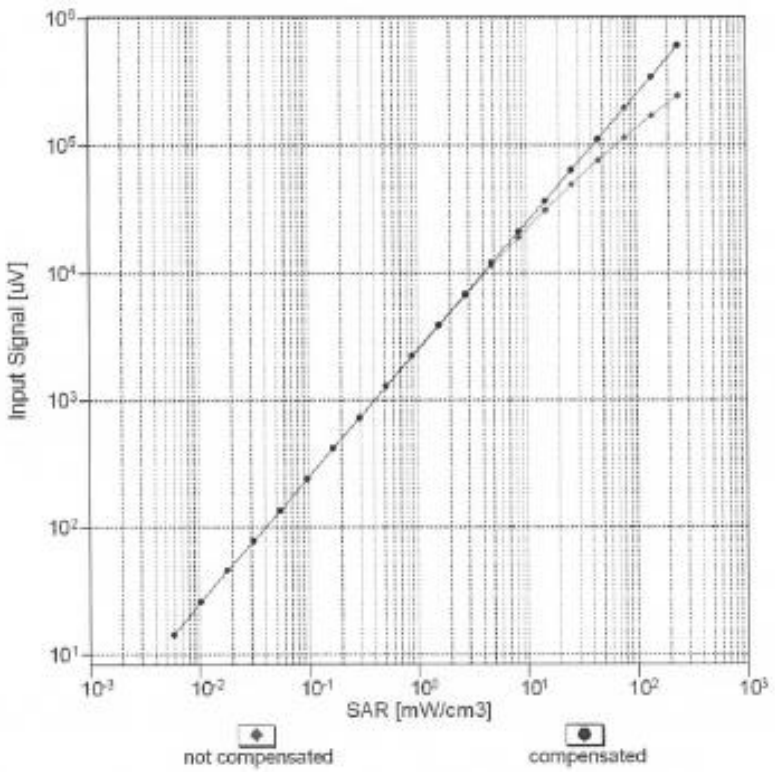


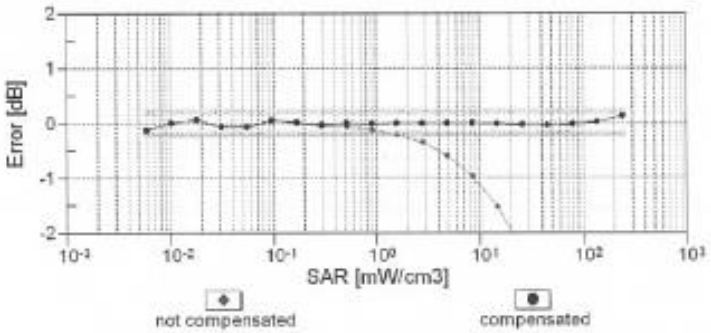


Uncertainty of Axial Isotropy Assessment: ± 0.5% (k=2)

Dynamic Range f(SAR$_{head}$)

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

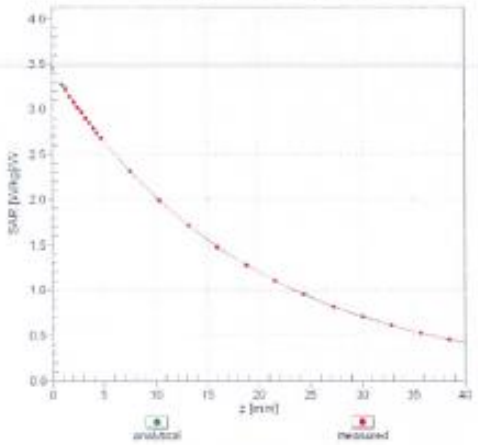




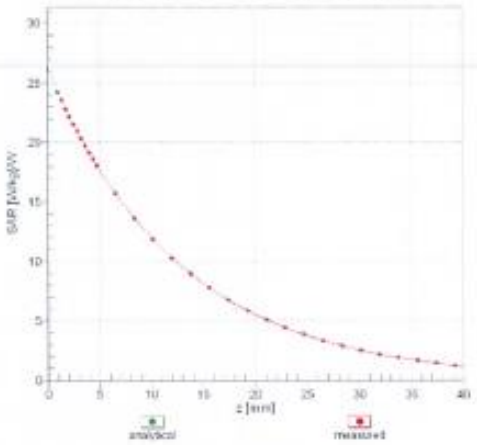
Uncertainty of Linearity Assessment: ± 0.6% (k=2)

Conversion Factor Assessment

f = 900 MHz,WGLS R9 (H_convF)

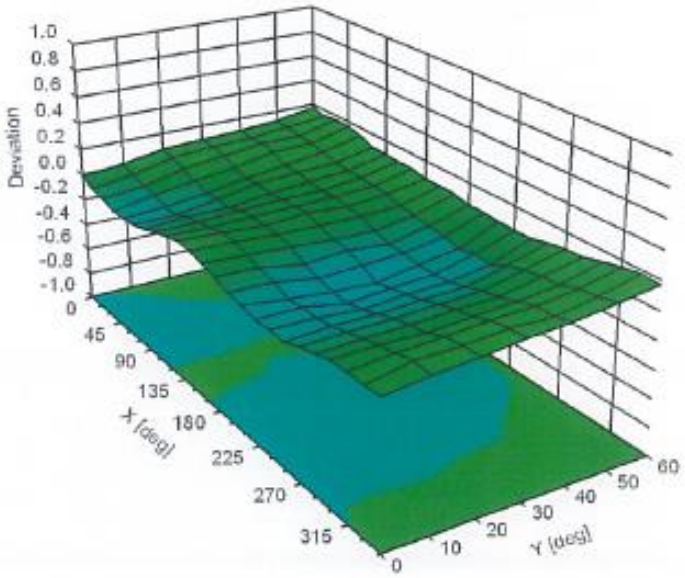


f = 1750 MHz,WGLS R22 (H_convF)



Deviation from Isotropy in Liquid

Error (ϕ, ϑ), f = 900 MHz



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

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3759

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	-1.3
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disabled
Probe Overall Length	337 mm
Probe Body Diameter	10 mm
Tip Length	9 mm
Tip Diameter	2.5 mm
Probe Tip to Sensor X Calibration Point	1 mm
Probe Tip to Sensor Y Calibration Point	1 mm
Probe Tip to Sensor Z Calibration Point	1 mm
Recommended Measurement Distance from Surface	1.4 mm

Appendix: Modulation Calibration Parameters

UID	Communication System Name		A dB	B dB√μV	C	D dB	VR mV	Max Unc[E] (k=2)
0	CW	X	0.00	0.00	1.00	0.00	196.6	± 3.5 %
		Y	0.00	0.00	1.00		173.4	
		Z	0.00	0.00	1.00		184.7	
10010-CAA	SAR Validation (Square, 100ms, 10ms)	X	2.33	65.72	10.32	10.00	20.0	± 9.6 %
		Y	4.70	74.09	14.23		20.0	
		Z	2.50	65.82	10.56		20.0	
10011-CAB	UMTS-FDD (WCDMA)	X	0.82	64.61	13.00	0.00	150.0	± 9.6 %
		Y	0.96	66.19	14.43		150.0	
		Z	0.81	65.02	13.15		150.0	
10012-CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps)	X	1.06	62.79	14.23	0.41	150.0	± 9.6 %
		Y	1.17	63.77	15.05		150.0	
		Z	1.05	63.09	14.40		150.0	
10013-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps)	X	4.75	66.48	16.94	1.46	150.0	± 9.6 %
		Y	4.90	66.71	17.09		150.0	
		Z	4.74	66.56	16.96		150.0	
10021-DAC	GSM-FDD (TDMA, GMSK)	X	100.00	113.54	27.20	9.39	50.0	± 9.6 %
		Y	100.00	117.10	28.93		50.0	
		Z	100.00	113.57	27.48		50.0	
10023-DAC	GPRS-FDD (TDMA, GMSK, TN 0)	X	100.00	113.18	27.08	9.57	50.0	± 9.6 %
		Y	100.00	116.77	28.82		50.0	
		Z	100.00	113.33	27.42		50.0	
10024-DAC	GPRS-FDD (TDMA, GMSK, TN 0-1)	X	100.00	111.17	25.03	6.56	60.0	± 9.6 %
		Y	100.00	115.70	27.38		60.0	
		Z	100.00	110.16	24.82		60.0	
10025-DAC	EDGE-FDD (TDMA, 8PSK, TN 0)	X	3.96	68.09	24.76	12.57	50.0	± 9.6 %
		Y	6.45	84.18	33.68		50.0	
		Z	3.95	66.98	23.71		50.0	
10026-DAC	EDGE-FDD (TDMA, 8PSK, TN 0-1)	X	8.81	91.01	32.27	9.56	60.0	± 9.6 %
		Y	14.33	103.33	36.99		60.0	
		Z	9.84	92.33	32.30		60.0	
10027-DAC	GPRS-FDD (TDMA, GMSK, TN 0-1-2)	X	100.00	109.91	23.68	4.80	80.0	± 9.6 %
		Y	100.00	116.12	26.85		80.0	
		Z	100.00	108.13	23.12		80.0	
10028-DAC	GPRS-FDD (TDMA, GMSK, TN 0-1-2-3)	X	100.00	108.60	22.41	3.55	100.0	± 9.6 %
		Y	100.00	117.50	26.78		100.0	
		Z	100.00	106.16	21.57		100.0	
10029-DAC	EDGE-FDD (TDMA, 8PSK, TN 0-1-2)	X	5.69	81.09	27.21	7.80	80.0	± 9.6 %
		Y	7.91	88.40	30.27		80.0	
		Z	6.40	82.89	27.60		80.0	
10030-CAA	IEEE 802.15.1 Bluetooth (GFSK, DH1)	X	100.00	108.69	23.44	5.30	70.0	± 9.6 %
		Y	100.00	114.15	26.27		70.0	
		Z	100.00	107.47	23.12		70.0	
10031-CAA	IEEE 802.15.1 Bluetooth (GFSK, DH3)	X	100.00	96.91	16.29	1.88	100.0	± 9.6 %
		Y	100.00	115.98	24.77		100.0	
		Z	1.42	68.65	9.07		100.0	

10032-CAA	IEEE 802.15.1 Bluetooth (GFSK, DH5)	X	0.21	60.00	4.41	1.17	100.0	± 9.6 %
		Y	100.00	119.38	25.17		100.0	
		Z	0.23	60.00	4.22		100.0	
10033-CAA	IEEE 802.15.1 Bluetooth (PI/4-DQPSK, DH1)	X	15.56	97.63	25.77	5.30	70.0	± 9.6 %
		Y	100.00	129.32	35.00		70.0	
		Z	14.06	94.36	24.43		70.0	
10034-CAA	IEEE 802.15.1 Bluetooth (PI/4-DQPSK, DH3)	X	2.47	73.76	15.94	1.88	100.0	± 9.6 %
		Y	5.68	85.89	21.48		100.0	
		Z	2.69	74.13	15.79		100.0	
10035-CAA	IEEE 802.15.1 Bluetooth (PI/4-DQPSK, DH5)	X	1.55	69.04	13.61	1.17	100.0	± 9.6 %
		Y	2.74	76.75	17.96		100.0	
		Z	1.65	69.41	13.52		100.0	
10036-CAA	IEEE 802.15.1 Bluetooth (8-DPSK, DH1)	X	26.25	105.76	28.09	5.30	70.0	± 9.6 %
		Y	100.00	129.75	35.21		70.0	
		Z	22.10	101.22	26.45		70.0	
10037-CAA	IEEE 802.15.1 Bluetooth (8-DPSK, DH3)	X	2.29	72.93	15.58	1.88	100.0	± 9.6 %
		Y	5.16	84.61	21.03		100.0	
		Z	2.49	73.27	15.43		100.0	
10038-CAA	IEEE 802.15.1 Bluetooth (8-DPSK, DH5)	X	1.57	69.38	13.87	1.17	100.0	± 9.6 %
		Y	2.79	77.26	18.27		100.0	
		Z	1.68	69.84	13.81		100.0	
10039-CAB	CDMA2000 (1xRTT, RC1)	X	1.08	65.59	11.46	0.00	150.0	± 9.6 %
		Y	1.61	70.06	14.76		150.0	
		Z	1.06	65.68	11.34		150.0	
10042-CAB	IS-54 / IS-136 FDD (TDMA/FDM, PI/4-DQPSK, Halfrate)	X	100.00	108.33	24.00	7.78	50.0	± 9.6 %
		Y	100.00	112.59	26.15		50.0	
		Z	100.00	108.01	24.09		50.0	
10044-CAA	IS-91/EIA/TIA-553 FDD (FDMA, FM)	X	0.13	122.60	6.71	0.00	150.0	± 9.6 %
		Y	0.00	105.21	9.60		150.0	
		Z	0.29	126.05	7.74		150.0	
10048-CAA	DECT (TDD, TDMA/FDM, GFSK, Full Slot, 24)	X	44.32	101.19	25.43	13.80	25.0	± 9.6 %
		Y	100.00	117.80	30.49		25.0	
		Z	16.55	88.46	22.34		25.0	
10049-CAA	DECT (TDD, TDMA/FDM, GFSK, Double Slot, 12)	X	96.20	112.09	27.05	10.79	40.0	± 9.6 %
		Y	100.00	116.04	28.74		40.0	
		Z	21.78	93.24	22.57		40.0	
10056-CAA	UMTS-TDD (TD-SCDMA, 1.28 Mcps)	X	25.89	101.25	27.24	9.03	50.0	± 9.6 %
		Y	100.00	126.03	34.65		50.0	
		Z	16.13	92.71	24.56		50.0	
10058-DAC	EDGE-FDD (TDMA, 8PSK, TN 0-1-2-3)	X	4.42	76.21	24.38	6.55	100.0	± 9.6 %
		Y	5.72	81.33	26.62		100.0	
		Z	4.91	77.90	24.83		100.0	
10059-CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 2 Mbps)	X	1.10	63.87	14.86	0.61	110.0	± 9.6 %
		Y	1.23	65.18	15.84		110.0	
		Z	1.11	64.36	15.09		110.0	
10060-CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 5.5 Mbps)	X	7.45	96.67	24.42	1.30	110.0	± 9.6 %
		Y	100.00	136.09	35.03		110.0	
		Z	20.40	109.23	26.87		110.0	

10061-CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 11 Mbps)	X	2.79	79.80	21.58	2.04	110.0	± 9.6 %
		Y	4.85	88.66	25.17		110.0	
		Z	3.59	83.15	22.48		110.0	
10062-CAC	IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps)	X	4.53	66.35	16.28	0.49	100.0	± 9.6 %
		Y	4.68	66.62	16.44		100.0	
		Z	4.51	66.42	16.30		100.0	
10063-CAC	IEEE 802.11a/h WiFi 5 GHz (OFDM, 9 Mbps)	X	4.55	66.46	16.39	0.72	100.0	± 9.6 %
		Y	4.70	66.73	16.56		100.0	
		Z	4.53	66.53	16.41		100.0	
10064-CAC	IEEE 802.11a/h WiFi 5 GHz (OFDM, 12 Mbps)	X	4.82	66.74	16.64	0.86	100.0	± 9.6 %
		Y	5.00	67.02	16.81		100.0	
		Z	4.81	66.80	16.66		100.0	
10065-CAC	IEEE 802.11a/h WiFi 5 GHz (OFDM, 18 Mbps)	X	4.70	66.64	16.75	1.21	100.0	± 9.6 %
		Y	4.87	66.96	16.94		100.0	
		Z	4.69	66.72	16.77		100.0	
10066-CAC	IEEE 802.11a/h WiFi 5 GHz (OFDM, 24 Mbps)	X	4.73	66.69	16.94	1.46	100.0	± 9.6 %
		Y	4.90	67.01	17.13		100.0	
		Z	4.72	66.78	16.96		100.0	
10067-CAC	IEEE 802.11a/h WiFi 5 GHz (OFDM, 36 Mbps)	X	5.03	66.95	17.44	2.04	100.0	± 9.6 %
		Y	5.19	67.17	17.59		100.0	
		Z	5.03	67.06	17.46		100.0	
10068-CAC	IEEE 802.11a/h WiFi 5 GHz (OFDM, 48 Mbps)	X	5.08	66.98	17.66	2.55	100.0	± 9.6 %
		Y	5.26	67.30	17.86		100.0	
		Z	5.08	67.09	17.68		100.0	
10069-CAC	IEEE 802.11a/h WiFi 5 GHz (OFDM, 54 Mbps)	X	5.16	67.01	17.86	2.67	100.0	± 9.6 %
		Y	5.34	67.27	18.04		100.0	
		Z	5.16	67.13	17.89		100.0	
10071-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 9 Mbps)	X	4.86	66.60	17.27	1.99	100.0	± 9.6 %
		Y	5.00	66.83	17.42		100.0	
		Z	4.85	66.69	17.29		100.0	
10072-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 12 Mbps)	X	4.84	66.92	17.49	2.30	100.0	± 9.6 %
		Y	4.99	67.21	17.68		100.0	
		Z	4.84	67.04	17.53		100.0	
10073-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 18 Mbps)	X	4.91	67.13	17.85	2.83	100.0	± 9.6 %
		Y	5.06	67.41	18.04		100.0	
		Z	4.92	67.28	17.89		100.0	
10074-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 24 Mbps)	X	4.91	67.06	18.02	3.30	100.0	± 9.6 %
		Y	5.05	67.33	18.22		100.0	
		Z	4.93	67.24	18.07		100.0	
10075-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 36 Mbps)	X	4.95	67.18	18.34	3.82	90.0	± 9.6 %
		Y	5.10	67.51	18.58		90.0	
		Z	4.98	67.38	18.39		90.0	
10076-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 48 Mbps)	X	4.97	67.01	18.48	4.15	90.0	± 9.6 %
		Y	5.10	67.27	18.69		90.0	
		Z	5.02	67.23	18.55		90.0	
10077-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 54 Mbps)	X	5.00	67.09	18.59	4.30	90.0	± 9.6 %
		Y	5.13	67.33	18.79		90.0	
		Z	5.05	67.32	18.65		90.0	

10081-CAB	CDMA2000 (1xRTT, RC3)	X	0.55	61.87	8.84	0.00	150.0	± 9.6 %
		Y	0.77	64.72	11.77		150.0	
		Z	0.52	61.69	8.50		150.0	
10082-CAB	IS-54 / IS-136 FDD (TDMA/FDM, PI/4-DQPSK, Fullrate)	X	0.74	60.00	4.43	4.77	80.0	± 9.6 %
		Y	0.85	60.00	4.95		80.0	
		Z	0.83	60.00	4.63		80.0	
10090-DAC	GPRS-FDD (TDMA, GMSK, TN 0-4)	X	100.00	111.28	25.10	6.56	60.0	± 9.6 %
		Y	100.00	115.76	27.43		60.0	
		Z	100.00	110.27	24.89		60.0	
10097-CAB	UMTS-FDD (HSDPA)	X	1.60	65.98	14.26	0.00	150.0	± 9.6 %
		Y	1.76	66.96	15.19		150.0	
		Z	1.59	66.29	14.39		150.0	
10098-CAB	UMTS-FDD (HSUPA, Subtest 2)	X	1.56	65.91	14.21	0.00	150.0	± 9.6 %
		Y	1.72	66.91	15.15		150.0	
		Z	1.56	66.22	14.34		150.0	
10099-DAC	EDGE-FDD (TDMA, 8PSK, TN 0-4)	X	8.87	91.15	32.31	9.56	60.0	± 9.6 %
		Y	14.47	103.54	37.06		60.0	
		Z	9.90	92.43	32.33		60.0	
10100-CAE	LTE-FDD (SC-FDMA, 100% RB, 20 MHz, QPSK)	X	2.79	68.59	15.64	0.00	150.0	± 9.6 %
		Y	3.04	69.80	16.31		150.0	
		Z	2.80	68.86	15.75		150.0	
10101-CAE	LTE-FDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM)	X	3.03	66.57	15.28	0.00	150.0	± 9.6 %
		Y	3.20	67.25	15.69		150.0	
		Z	3.01	66.69	15.34		150.0	
10102-CAE	LTE-FDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM)	X	3.14	66.60	15.41	0.00	150.0	± 9.6 %
		Y	3.31	67.24	15.79		150.0	
		Z	3.12	66.73	15.47		150.0	
10103-CAG	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, QPSK)	X	5.97	75.10	20.26	3.98	65.0	± 9.6 %
		Y	7.36	78.24	21.54		65.0	
		Z	6.43	76.00	20.48		65.0	
10104-CAG	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM)	X	6.02	73.24	20.24	3.98	65.0	± 9.6 %
		Y	6.93	75.40	21.20		65.0	
		Z	6.28	73.73	20.33		65.0	
10105-CAG	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM)	X	5.56	71.54	19.79	3.98	65.0	± 9.6 %
		Y	6.52	74.14	20.96		65.0	
		Z	5.94	72.54	20.12		65.0	
10108-CAG	LTE-FDD (SC-FDMA, 100% RB, 10 MHz, QPSK)	X	2.42	67.88	15.43	0.00	150.0	± 9.6 %
		Y	2.66	69.00	16.11		150.0	
		Z	2.42	68.16	15.56		150.0	
10109-CAG	LTE-FDD (SC-FDMA, 100% RB, 10 MHz, 16-QAM)	X	2.67	66.35	15.07	0.00	150.0	± 9.6 %
		Y	2.86	67.05	15.56		150.0	
		Z	2.66	66.50	15.15		150.0	
10110-CAG	LTE-FDD (SC-FDMA, 100% RB, 5 MHz, QPSK)	X	1.92	66.90	14.85	0.00	150.0	± 9.6 %
		Y	2.15	68.03	15.68		150.0	
		Z	1.92	67.19	14.98		150.0	
10111-CAG	LTE-FDD (SC-FDMA, 100% RB, 5 MHz, 16-QAM)	X	2.35	66.93	15.09	0.00	150.0	± 9.6 %
		Y	2.56	67.71	15.78		150.0	
		Z	2.35	67.19	15.21		150.0	

10112-CAG	LTE-FDD (SC-FDMA, 100% RB, 10 MHz, 64-QAM)	X	2.80	66.42	15.18	0.00	150.0	± 9.6 %
		Y	2.98	67.06	15.63		150.0	
		Z	2.79	66.57	15.25		150.0	
10113-CAG	LTE-FDD (SC-FDMA, 100% RB, 5 MHz, 64-QAM)	X	2.50	67.16	15.29	0.00	150.0	± 9.6 %
		Y	2.71	67.87	15.93		150.0	
		Z	2.50	67.43	15.41		150.0	
10114-CAC	IEEE 802.11n (HT Greenfield, 13.5 Mbps, BPSK)	X	4.98	66.83	16.20	0.00	150.0	± 9.6 %
		Y	5.10	67.07	16.29		150.0	
		Z	4.96	66.86	16.22		150.0	
10115-CAC	IEEE 802.11n (HT Greenfield, 81 Mbps, 16-QAM)	X	5.25	66.92	16.26	0.00	150.0	± 9.6 %
		Y	5.40	67.23	16.38		150.0	
		Z	5.22	66.94	16.27		150.0	
10116-CAC	IEEE 802.11n (HT Greenfield, 135 Mbps, 64-QAM)	X	5.07	67.00	16.22	0.00	150.0	± 9.6 %
		Y	5.20	67.27	16.32		150.0	
		Z	5.04	67.03	16.23		150.0	
10117-CAC	IEEE 802.11n (HT Mixed, 13.5 Mbps, BPSK)	X	4.95	66.68	16.15	0.00	150.0	± 9.6 %
		Y	5.07	66.96	16.25		150.0	
		Z	4.92	66.71	16.16		150.0	
10118-CAC	IEEE 802.11n (HT Mixed, 81 Mbps, 16-QAM)	X	5.33	67.14	16.38	0.00	150.0	± 9.6 %
		Y	5.48	67.43	16.49		150.0	
		Z	5.30	67.16	16.39		150.0	
10119-CAC	IEEE 802.11n (HT Mixed, 135 Mbps, 64-QAM)	X	5.06	66.97	16.22	0.00	150.0	± 9.6 %
		Y	5.17	67.21	16.30		150.0	
		Z	5.03	67.00	16.23		150.0	
10140-CAE	LTE-FDD (SC-FDMA, 100% RB, 15 MHz, 16-QAM)	X	3.16	66.61	15.33	0.00	150.0	± 9.6 %
		Y	3.34	67.24	15.71		150.0	
		Z	3.15	66.73	15.38		150.0	
10141-CAE	LTE-FDD (SC-FDMA, 100% RB, 15 MHz, 64-QAM)	X	3.29	66.77	15.54	0.00	150.0	± 9.6 %
		Y	3.47	67.35	15.89		150.0	
		Z	3.28	66.89	15.60		150.0	
10142-CAE	LTE-FDD (SC-FDMA, 100% RB, 3 MHz, QPSK)	X	1.67	66.50	14.13	0.00	150.0	± 9.6 %
		Y	1.92	67.89	15.30		150.0	
		Z	1.66	66.82	14.25		150.0	
10143-CAE	LTE-FDD (SC-FDMA, 100% RB, 3 MHz, 16-QAM)	X	2.12	67.00	14.26	0.00	150.0	± 9.6 %
		Y	2.40	68.29	15.45		150.0	
		Z	2.12	67.29	14.37		150.0	
10144-CAE	LTE-FDD (SC-FDMA, 100% RB, 3 MHz, 64-QAM)	X	1.93	64.97	12.74	0.00	150.0	± 9.6 %
		Y	2.20	66.19	13.93		150.0	
		Z	1.91	65.07	12.74		150.0	
10145-CAF	LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, QPSK)	X	0.85	61.55	8.62	0.00	150.0	± 9.6 %
		Y	1.18	64.59	11.53		150.0	
		Z	0.81	61.36	8.35		150.0	
10146-CAF	LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, 16-QAM)	X	1.43	63.03	9.30	0.00	150.0	± 9.6 %
		Y	2.05	66.66	11.93		150.0	
		Z	1.41	63.09	9.27		150.0	
10147-CAF	LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, 64-QAM)	X	1.55	63.93	9.89	0.00	150.0	± 9.6 %
		Y	2.44	68.79	13.06		150.0	
		Z	1.55	64.07	9.91		150.0	

10149-CAE	LTE-FDD (SC-FDMA, 50% RB, 20 MHz, 16-QAM)	X	2.68	66.41	15.12	0.00	150.0	± 9.6 %
		Y	2.86	67.11	15.61		150.0	
		Z	2.67	66.56	15.19		150.0	
10150-CAE	LTE-FDD (SC-FDMA, 50% RB, 20 MHz, 64-QAM)	X	2.81	66.48	15.22	0.00	150.0	± 9.6 %
		Y	2.99	67.11	15.67		150.0	
		Z	2.79	66.63	15.30		150.0	
10151-CAG	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, QPSK)	X	6.48	78.18	21.55	3.98	65.0	± 9.6 %
		Y	8.01	81.29	22.83		65.0	
		Z	6.88	78.76	21.62		65.0	
10152-CAG	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 16-QAM)	X	5.54	73.19	19.87	3.98	65.0	± 9.6 %
		Y	6.50	75.55	21.00		65.0	
		Z	5.81	73.69	19.94		65.0	
10153-CAG	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 64-QAM)	X	5.95	74.31	20.74	3.98	65.0	± 9.6 %
		Y	6.90	76.53	21.77		65.0	
		Z	6.25	74.69	20.85		65.0	
10154-CAG	LTE-FDD (SC-FDMA, 50% RB, 10 MHz, QPSK)	X	1.96	67.24	15.08	0.00	150.0	± 9.6 %
		Y	2.20	68.42	15.93		150.0	
		Z	1.96	67.57	15.22		150.0	
10155-CAG	LTE-FDD (SC-FDMA, 50% RB, 10 MHz, 16-QAM)	X	2.35	66.95	15.11	0.00	150.0	± 9.6 %
		Y	2.56	67.73	15.80		150.0	
		Z	2.35	67.21	15.23		150.0	
10156-CAG	LTE-FDD (SC-FDMA, 50% RB, 5 MHz, QPSK)	X	1.48	66.14	13.57	0.00	150.0	± 9.6 %
		Y	1.76	67.88	15.05		150.0	
		Z	1.48	66.45	13.67		150.0	
10157-CAG	LTE-FDD (SC-FDMA, 50% RB, 5 MHz, 16-QAM)	X	1.72	65.00	12.38	0.00	150.0	± 9.6 %
		Y	2.02	66.64	13.92		150.0	
		Z	1.70	65.11	12.37		150.0	
10158-CAG	LTE-FDD (SC-FDMA, 50% RB, 10 MHz, 64-QAM)	X	2.51	67.23	15.34	0.00	150.0	± 9.6 %
		Y	2.72	67.93	15.97		150.0	
		Z	2.51	67.50	15.46		150.0	
10159-CAG	LTE-FDD (SC-FDMA, 50% RB, 5 MHz, 64-QAM)	X	1.80	65.32	12.61	0.00	150.0	± 9.6 %
		Y	2.13	67.09	14.20		150.0	
		Z	1.78	65.46	12.61		150.0	
10160-CAE	LTE-FDD (SC-FDMA, 50% RB, 15 MHz, QPSK)	X	2.50	67.45	15.43	0.00	150.0	± 9.6 %
		Y	2.67	68.11	15.92		150.0	
		Z	2.49	67.68	15.53		150.0	
10161-CAE	LTE-FDD (SC-FDMA, 50% RB, 15 MHz, 16-QAM)	X	2.70	66.39	15.10	0.00	150.0	± 9.6 %
		Y	2.88	67.04	15.60		150.0	
		Z	2.69	66.55	15.18		150.0	
10162-CAE	LTE-FDD (SC-FDMA, 50% RB, 15 MHz, 64-QAM)	X	2.81	66.59	15.25	0.00	150.0	± 9.6 %
		Y	2.99	67.18	15.71		150.0	
		Z	2.80	66.76	15.32		150.0	
10166-CAF	LTE-FDD (SC-FDMA, 50% RB, 1.4 MHz, QPSK)	X	3.42	69.15	18.92	3.01	150.0	± 9.6 %
		Y	3.64	69.65	19.05		150.0	
		Z	3.44	69.55	19.16		150.0	
10167-CAF	LTE-FDD (SC-FDMA, 50% RB, 1.4 MHz, 16-QAM)	X	4.12	71.69	19.19	3.01	150.0	± 9.6 %
		Y	4.58	72.87	19.63		150.0	
		Z	4.19	72.21	19.45		150.0	

10168-CAF	LTE-FDD (SC-FDMA, 50% RB, 1.4 MHz, 64-QAM)	X	4.64	74.28	20.71	3.01	150.0	± 9.6 %
		Y	5.12	75.26	21.00		150.0	
		Z	4.78	75.11	21.12		150.0	
10169-CAE	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, QPSK)	X	2.82	68.04	18.40	3.01	150.0	± 9.6 %
		Y	3.10	69.64	19.05		150.0	
		Z	2.85	68.47	18.67		150.0	
10170-CAE	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM)	X	3.75	73.33	20.53	3.01	150.0	± 9.6 %
		Y	4.52	76.49	21.67		150.0	
		Z	3.89	74.29	21.01		150.0	
10171-AAE	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, 64-QAM)	X	3.09	69.27	17.71	3.01	150.0	± 9.6 %
		Y	3.61	71.81	18.72		150.0	
		Z	3.14	69.73	17.95		150.0	
10172-CAG	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK)	X	6.61	87.05	27.32	6.02	65.0	± 9.6 %
		Y	14.89	102.54	32.37		65.0	
		Z	8.81	92.01	28.81		65.0	
10173-CAG	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM)	X	13.85	97.13	28.75	6.02	65.0	± 9.6 %
		Y	48.27	118.57	34.60		65.0	
		Z	16.93	99.90	29.38		65.0	
10174-CAG	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 64-QAM)	X	9.88	90.07	25.94	6.02	65.0	± 9.6 %
		Y	27.82	107.05	30.90		65.0	
		Z	10.47	90.42	25.88		65.0	
10175-CAG	LTE-FDD (SC-FDMA, 1 RB, 10 MHz, QPSK)	X	2.79	67.73	18.15	3.01	150.0	± 9.6 %
		Y	3.06	69.31	18.79		150.0	
		Z	2.81	68.13	18.39		150.0	
10176-CAG	LTE-FDD (SC-FDMA, 1 RB, 10 MHz, 16-QAM)	X	3.76	73.36	20.54	3.01	150.0	± 9.6 %
		Y	4.52	76.52	21.68		150.0	
		Z	3.90	74.31	21.02		150.0	
10177-CAI	LTE-FDD (SC-FDMA, 1 RB, 5 MHz, QPSK)	X	2.81	67.88	18.24	3.01	150.0	± 9.6 %
		Y	3.09	69.47	18.89		150.0	
		Z	2.83	68.28	18.49		150.0	
10178-CAG	LTE-FDD (SC-FDMA, 1 RB, 5 MHz, 16-QAM)	X	3.73	73.16	20.43	3.01	150.0	± 9.6 %
		Y	4.47	76.26	21.55		150.0	
		Z	3.86	74.09	20.89		150.0	
10179-CAG	LTE-FDD (SC-FDMA, 1 RB, 10 MHz, 64-QAM)	X	3.38	71.14	18.97	3.01	150.0	± 9.6 %
		Y	4.01	73.98	20.04		150.0	
		Z	3.47	71.80	19.31		150.0	
10180-CAG	LTE-FDD (SC-FDMA, 1 RB, 5 MHz, 64-QAM)	X	3.09	69.21	17.67	3.01	150.0	± 9.6 %
		Y	3.59	71.73	18.66		150.0	
		Z	3.13	69.66	17.90		150.0	
10181-CAE	LTE-FDD (SC-FDMA, 1 RB, 15 MHz, QPSK)	X	2.80	67.86	18.23	3.01	150.0	± 9.6 %
		Y	3.08	69.45	18.88		150.0	
		Z	2.83	68.27	18.48		150.0	
10182-CAE	LTE-FDD (SC-FDMA, 1 RB, 15 MHz, 16-QAM)	X	3.72	73.14	20.42	3.01	150.0	± 9.6 %
		Y	4.46	76.24	21.54		150.0	
		Z	3.85	74.06	20.88		150.0	
10183-AAD	LTE-FDD (SC-FDMA, 1 RB, 15 MHz, 64-QAM)	X	3.08	69.19	17.66	3.01	150.0	± 9.6 %
		Y	3.59	71.70	18.65		150.0	
		Z	3.13	69.64	17.89		150.0	

10184-CAE	LTE-FDD (SC-FDMA, 1 RB, 3 MHz, QPSK)	X	2.81	67.90	18.25	3.01	150.0	± 9.6 %
		Y	3.09	69.50	18.90		150.0	
		Z	2.84	68.31	18.51		150.0	
10185-CAE	LTE-FDD (SC-FDMA, 1 RB, 3 MHz, 16-QAM)	X	3.74	73.21	20.46	3.01	150.0	± 9.6 %
		Y	4.48	76.32	21.58		150.0	
		Z	3.87	74.14	20.92		150.0	
10186-AAE	LTE-FDD (SC-FDMA, 1 RB, 3 MHz, 64-QAM)	X	3.10	69.25	17.69	3.01	150.0	± 9.6 %
		Y	3.61	71.77	18.69		150.0	
		Z	3.14	69.70	17.92		150.0	
10187-CAF	LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK)	X	2.82	67.96	18.33	3.01	150.0	± 9.6 %
		Y	3.10	69.55	18.97		150.0	
		Z	2.85	68.38	18.58		150.0	
10188-CAF	LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, 16-QAM)	X	3.85	73.85	20.84	3.01	150.0	± 9.6 %
		Y	4.65	77.08	21.99		150.0	
		Z	4.01	74.87	21.34		150.0	
10189-AAF	LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, 64-QAM)	X	3.16	69.64	17.96	3.01	150.0	± 9.6 %
		Y	3.70	72.24	18.98		150.0	
		Z	3.21	70.13	18.21		150.0	
10193-CAC	IEEE 802.11n (HT Greenfield, 6.5 Mbps, BPSK)	X	4.36	66.21	15.83	0.00	150.0	± 9.6 %
		Y	4.50	66.48	16.00		150.0	
		Z	4.33	66.27	15.85		150.0	
10194-CAC	IEEE 802.11n (HT Greenfield, 39 Mbps, 16-QAM)	X	4.52	66.50	15.96	0.00	150.0	± 9.6 %
		Y	4.67	66.80	16.12		150.0	
		Z	4.49	66.55	15.98		150.0	
10195-CAC	IEEE 802.11n (HT Greenfield, 65 Mbps, 64-QAM)	X	4.56	66.54	15.98	0.00	150.0	± 9.6 %
		Y	4.72	66.83	16.14		150.0	
		Z	4.53	66.59	16.01		150.0	
10196-CAC	IEEE 802.11n (HT Mixed, 6.5 Mbps, BPSK)	X	4.35	66.25	15.83	0.00	150.0	± 9.6 %
		Y	4.51	66.54	16.02		150.0	
		Z	4.33	66.30	15.86		150.0	
10197-CAC	IEEE 802.11n (HT Mixed, 39 Mbps, 16-QAM)	X	4.53	66.52	15.97	0.00	150.0	± 9.6 %
		Y	4.69	66.82	16.13		150.0	
		Z	4.50	66.57	16.00		150.0	
10198-CAC	IEEE 802.11n (HT Mixed, 65 Mbps, 64-QAM)	X	4.55	66.55	15.99	0.00	150.0	± 9.6 %
		Y	4.72	66.85	16.15		150.0	
		Z	4.53	66.60	16.02		150.0	
10219-CAC	IEEE 802.11n (HT Mixed, 7.2 Mbps, BPSK)	X	4.30	66.26	15.79	0.00	150.0	± 9.6 %
		Y	4.46	66.55	15.98		150.0	
		Z	4.28	66.31	15.81		150.0	
10220-CAC	IEEE 802.11n (HT Mixed, 43.3 Mbps, 16-QAM)	X	4.52	66.49	15.96	0.00	150.0	± 9.6 %
		Y	4.68	66.79	16.12		150.0	
		Z	4.50	66.54	15.98		150.0	
10221-CAC	IEEE 802.11n (HT Mixed, 72.2 Mbps, 64-QAM)	X	4.57	66.49	15.98	0.00	150.0	± 9.6 %
		Y	4.73	66.78	16.14		150.0	
		Z	4.54	66.54	16.01		150.0	
10222-CAC	IEEE 802.11n (HT Mixed, 15 Mbps, BPSK)	X	4.92	66.67	16.14	0.00	150.0	± 9.6 %
		Y	5.05	66.97	16.25		150.0	
		Z	4.90	66.71	16.15		150.0	

10223-CAC	IEEE 802.11n (HT Mixed, 90 Mbps, 16-QAM)	X	5.23	66.95	16.30	0.00	150.0	± 9.6 %
		Y	5.35	67.15	16.36		150.0	
		Z	5.20	66.98	16.32		150.0	
10224-CAC	IEEE 802.11n (HT Mixed, 150 Mbps, 64-QAM)	X	4.96	66.78	16.11	0.00	150.0	± 9.6 %
		Y	5.09	67.08	16.23		150.0	
		Z	4.94	66.81	16.13		150.0	
10225-CAB	UMTS-FDD (HSPA+)	X	2.59	65.32	14.53	0.00	150.0	± 9.6 %
		Y	2.77	65.86	15.10		150.0	
		Z	2.58	65.43	14.58		150.0	
10226-CAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 16-QAM)	X	15.04	98.77	29.35	6.02	65.0	± 9.6 %
		Y	55.58	121.36	35.42		65.0	
		Z	18.66	101.82	30.05		65.0	
10227-CAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 64-QAM)	X	14.65	96.82	28.11	6.02	65.0	± 9.6 %
		Y	44.89	115.25	33.13		65.0	
		Z	17.65	99.26	28.64		65.0	
10228-CAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK)	X	8.97	93.60	29.69	6.02	65.0	± 9.6 %
		Y	20.04	108.84	34.33		65.0	
		Z	11.30	97.46	30.72		65.0	
10229-CAC	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 16-QAM)	X	13.95	97.24	28.79	6.02	65.0	± 9.6 %
		Y	48.69	118.71	34.65		65.0	
		Z	17.07	100.03	29.42		65.0	
10230-CAC	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 64-QAM)	X	13.52	95.32	27.57	6.02	65.0	± 9.6 %
		Y	39.77	112.98	32.45		65.0	
		Z	16.11	97.57	28.06		65.0	
10231-CAC	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, QPSK)	X	8.50	92.43	29.21	6.02	65.0	± 9.6 %
		Y	18.60	107.20	33.76		65.0	
		Z	10.59	96.06	30.18		65.0	
10232-CAF	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 16-QAM)	X	13.93	97.22	28.78	6.02	65.0	± 9.6 %
		Y	48.65	118.71	34.65		65.0	
		Z	17.04	100.01	29.42		65.0	
10233-CAF	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 64-QAM)	X	13.48	95.29	27.56	6.02	65.0	± 9.6 %
		Y	39.68	112.96	32.45		65.0	
		Z	16.06	97.53	28.05		65.0	
10234-CAF	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, QPSK)	X	8.15	91.43	28.75	6.02	65.0	± 9.6 %
		Y	17.44	105.69	33.19		65.0	
		Z	10.04	94.83	29.66		65.0	
10235-CAF	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 16-QAM)	X	13.95	97.27	28.80	6.02	65.0	± 9.6 %
		Y	48.87	118.81	34.67		65.0	
		Z	17.08	100.06	29.44		65.0	
10236-CAF	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 64-QAM)	X	13.65	95.47	27.61	6.02	65.0	± 9.6 %
		Y	40.47	113.26	32.52		65.0	
		Z	16.26	97.71	28.09		65.0	
10237-CAF	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, QPSK)	X	8.52	92.50	29.23	6.02	65.0	± 9.6 %
		Y	18.71	107.36	33.81		65.0	
		Z	10.61	96.14	30.21		65.0	
10238-CAF	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 16-QAM)	X	13.90	97.20	28.78	6.02	65.0	± 9.6 %
		Y	48.60	118.71	34.64		65.0	
		Z	17.01	99.99	29.41		65.0	

10239-CAF	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 64-QAM)	X	13.44	95.25	27.55	6.02	65.0	± 9.6 %
		Y	39.57	112.94	32.44		65.0	
		Z	16.01	97.50	28.04		65.0	
10240-CAF	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, QPSK)	X	8.49	92.45	29.22	6.02	65.0	± 9.6 %
		Y	18.64	107.29	33.79		65.0	
		Z	10.58	96.09	30.20		65.0	
10241-CAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 16-QAM)	X	7.99	81.31	25.53	6.98	65.0	± 9.6 %
		Y	9.43	84.22	26.74		65.0	
		Z	8.52	82.35	25.81		65.0	
10242-CAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 64-QAM)	X	7.10	78.80	24.41	6.98	65.0	± 9.6 %
		Y	8.49	81.96	25.78		65.0	
		Z	7.78	80.41	24.94		65.0	
10243-CAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, QPSK)	X	5.74	75.35	23.83	6.98	65.0	± 9.6 %
		Y	6.67	78.08	25.09		65.0	
		Z	6.25	76.98	24.42		65.0	
10244-CAC	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 16-QAM)	X	5.58	74.97	17.83	3.98	65.0	± 9.6 %
		Y	7.87	80.04	20.37		65.0	
		Z	5.94	75.42	17.90		65.0	
10245-CAC	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 64-QAM)	X	5.38	74.13	17.42	3.98	65.0	± 9.6 %
		Y	7.56	79.13	19.97		65.0	
		Z	5.70	74.53	17.48		65.0	
10246-CAC	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, QPSK)	X	4.98	76.70	18.61	3.98	65.0	± 9.6 %
		Y	8.43	84.78	22.34		65.0	
		Z	5.20	76.66	18.37		65.0	
10247-CAF	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 16-QAM)	X	4.65	72.79	17.74	3.98	65.0	± 9.6 %
		Y	6.06	76.74	19.98		65.0	
		Z	4.87	73.04	17.67		65.0	
10248-CAF	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 64-QAM)	X	4.61	72.15	17.43	3.98	65.0	± 9.6 %
		Y	5.95	75.91	19.61		65.0	
		Z	4.82	72.39	17.37		65.0	
10249-CAF	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, QPSK)	X	6.54	81.39	21.52	3.98	65.0	± 9.6 %
		Y	9.88	87.89	24.33		65.0	
		Z	7.04	81.83	21.45		65.0	
10250-CAF	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 16-QAM)	X	5.68	75.92	20.95	3.98	65.0	± 9.6 %
		Y	6.85	78.71	22.33		65.0	
		Z	6.05	76.61	21.08		65.0	
10251-CAF	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 64-QAM)	X	5.34	73.52	19.53	3.98	65.0	± 9.6 %
		Y	6.39	76.13	20.91		65.0	
		Z	5.61	73.99	19.58		65.0	
10252-CAF	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, QPSK)	X	6.77	81.31	22.67	3.98	65.0	± 9.6 %
		Y	8.98	85.60	24.44		65.0	
		Z	7.34	82.11	22.76		65.0	
10253-CAF	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 16-QAM)	X	5.44	72.71	19.62	3.98	65.0	± 9.6 %
		Y	6.32	74.91	20.72		65.0	
		Z	5.70	73.20	19.69		65.0	
10254-CAF	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 64-QAM)	X	5.80	73.72	20.38	3.98	65.0	± 9.6 %
		Y	6.70	75.83	21.43		65.0	
		Z	6.09	74.28	20.49		65.0	

10255-CAF	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, QPSK)	X	6.16	77.48	21.47	3.98	65.0	± 9.6 %
		Y	7.52	80.38	22.72		65.0	
		Z	6.55	78.12	21.56		65.0	
10256-CAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 16-QAM)	X	3.97	69.74	14.41	3.98	65.0	± 9.6 %
		Y	6.06	75.59	17.59		65.0	
		Z	4.16	69.90	14.37		65.0	
10257-CAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 64-QAM)	X	3.82	68.88	13.90	3.98	65.0	± 9.6 %
		Y	5.74	74.42	17.02		65.0	
		Z	3.99	69.02	13.87		65.0	
10258-CAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, QPSK)	X	3.39	70.65	15.07	3.98	65.0	± 9.6 %
		Y	6.10	79.09	19.42		65.0	
		Z	3.50	70.44	14.78		65.0	
10259-CAC	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 16-QAM)	X	5.07	74.05	18.94	3.98	65.0	± 9.6 %
		Y	6.37	77.46	20.82		65.0	
		Z	5.35	74.45	18.94		65.0	
10260-CAC	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 64-QAM)	X	5.09	73.73	18.81	3.98	65.0	± 9.6 %
		Y	6.36	77.06	20.66		65.0	
		Z	5.35	74.12	18.80		65.0	
10261-CAC	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, QPSK)	X	6.26	80.39	21.64	3.98	65.0	± 9.6 %
		Y	8.74	85.57	23.93		65.0	
		Z	6.76	81.00	21.65		65.0	
10262-CAF	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 16-QAM)	X	5.67	75.84	20.90	3.98	65.0	± 9.6 %
		Y	6.84	78.65	22.29		65.0	
		Z	6.03	76.53	21.02		65.0	
10263-CAF	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 64-QAM)	X	5.33	73.49	19.52	3.98	65.0	± 9.6 %
		Y	6.38	76.11	20.90		65.0	
		Z	5.60	73.97	19.57		65.0	
10264-CAF	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, QPSK)	X	6.69	81.07	22.55	3.98	65.0	± 9.6 %
		Y	8.87	85.35	24.33		65.0	
		Z	7.25	81.85	22.64		65.0	
10265-CAF	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 16-QAM)	X	5.54	73.19	19.88	3.98	65.0	± 9.6 %
		Y	6.49	75.55	21.00		65.0	
		Z	5.81	73.69	19.95		65.0	
10266-CAF	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 64-QAM)	X	5.94	74.29	20.73	3.98	65.0	± 9.6 %
		Y	6.90	76.51	21.76		65.0	
		Z	6.24	74.87	20.84		65.0	
10267-CAF	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, QPSK)	X	6.46	78.13	21.53	3.98	65.0	± 9.6 %
		Y	7.99	81.24	22.81		65.0	
		Z	6.86	78.71	21.60		65.0	
10268-CAF	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 16-QAM)	X	6.17	73.14	20.30	3.98	65.0	± 9.6 %
		Y	7.04	75.12	21.19		65.0	
		Z	6.43	73.63	20.40		65.0	
10269-CAF	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 64-QAM)	X	6.16	72.73	20.18	3.98	65.0	± 9.6 %
		Y	6.97	74.62	21.04		65.0	
		Z	6.41	73.22	20.27		65.0	
10270-CAF	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, QPSK)	X	6.28	75.29	20.55	3.98	65.0	± 9.6 %
		Y	7.36	77.58	21.50		65.0	
		Z	6.58	75.77	20.61		65.0	

10274-CAB	UMTS-FDD (HSUPA, Subtest 5, 3GPP Rel8.10)	X	2.39	65.58	14.37	0.00	150.0	± 9.6 %
		Y	2.54	66.14	14.96		150.0	
		Z	2.37	65.73	14.43		150.0	
10275-CAB	UMTS-FDD (HSUPA, Subtest 5, 3GPP Rel8.4)	X	1.36	65.75	13.87	0.00	150.0	± 9.6 %
		Y	1.54	67.06	14.96		150.0	
		Z	1.35	66.07	14.00		150.0	
10277-CAA	PHS (QPSK)	X	2.12	61.32	6.97	9.03	50.0	± 9.6 %
		Y	2.40	62.62	8.13		50.0	
		Z	2.36	61.74	7.42		50.0	
10278-CAA	PHS (QPSK, BW 884MHz, Rolloff 0.5)	X	4.20	70.41	14.35	9.03	50.0	± 9.6 %
		Y	9.00	82.55	20.06		50.0	
		Z	4.22	69.72	14.05		50.0	
10279-CAA	PHS (QPSK, BW 884MHz, Rolloff 0.38)	X	4.32	70.71	14.54	9.03	50.0	± 9.6 %
		Y	9.21	82.81	20.21		50.0	
		Z	4.33	69.98	14.22		50.0	
10290-AAB	CDMA2000, RC1, SO55, Full Rate	X	0.93	63.86	10.31	0.00	150.0	± 9.6 %
		Y	1.32	67.34	13.23		150.0	
		Z	0.90	63.80	10.11		150.0	
10291-AAB	CDMA2000, RC3, SO55, Full Rate	X	0.54	61.76	8.75	0.00	150.0	± 9.6 %
		Y	0.76	64.54	11.66		150.0	
		Z	0.51	61.58	8.42		150.0	
10292-AAB	CDMA2000, RC3, SO32, Full Rate	X	0.60	63.50	10.03	0.00	150.0	± 9.6 %
		Y	0.91	67.80	13.68		150.0	
		Z	0.57	63.42	9.74		150.0	
10293-AAB	CDMA2000, RC3, SO3, Full Rate	X	0.78	66.43	11.98	0.00	150.0	± 9.6 %
		Y	1.31	72.81	16.39		150.0	
		Z	0.78	66.82	11.92		150.0	
10295-AAB	CDMA2000, RC1, SO3, 1/8th Rate 25 fr.	X	11.88	88.43	24.43	9.03	50.0	± 9.6 %
		Y	11.50	90.15	26.20		50.0	
		Z	10.98	86.07	23.41		50.0	
10297-AAD	LTE-FDD (SC-FDMA, 50% RB, 20 MHz, QPSK)	X	2.43	67.97	15.50	0.00	150.0	± 9.6 %
		Y	2.67	69.10	16.18		150.0	
		Z	2.43	68.26	15.63		150.0	
10298-AAD	LTE-FDD (SC-FDMA, 50% RB, 3 MHz, QPSK)	X	1.14	64.11	11.26	0.00	150.0	± 9.6 %
		Y	1.48	66.77	13.58		150.0	
		Z	1.12	64.18	11.18		150.0	
10299-AAD	LTE-FDD (SC-FDMA, 50% RB, 3 MHz, 16-QAM)	X	2.05	66.66	12.29	0.00	150.0	± 9.6 %
		Y	2.75	69.90	14.39		150.0	
		Z	2.12	67.25	12.55		150.0	
10300-AAD	LTE-FDD (SC-FDMA, 50% RB, 3 MHz, 64-QAM)	X	1.61	63.18	9.81	0.00	150.0	± 9.6 %
		Y	2.03	65.31	11.51		150.0	
		Z	1.60	63.28	9.82		150.0	
10301-AAA	IEEE 802.16e WiMAX (29:18, 5ms, 10MHz, QPSK, PUSC)	X	4.73	65.80	17.42	4.17	50.0	± 9.6 %
		Y	4.94	66.02	17.64		50.0	
		Z	4.79	66.07	17.49		50.0	
10302-AAA	IEEE 802.16e WiMAX (29:18, 5ms, 10MHz, QPSK, PUSC, 3 CTRL symbols)	X	5.13	65.96	17.87	4.96	50.0	± 9.6 %
		Y	5.34	66.38	18.24		50.0	
		Z	5.17	66.19	17.94		50.0	

10303-AAA	IEEE 802.16e WiMAX (31:15, 5ms, 10MHz, 64QAM, PUSC)	X	4.89	65.63	17.69	4.96	50.0	± 9.6 %
		Y	5.10	66.07	18.10		50.0	
		Z	4.94	65.90	17.78		50.0	
10304-AAA	IEEE 802.16e WiMAX (29:18, 5ms, 10MHz, 64QAM, PUSC)	X	4.68	65.44	17.16	4.17	50.0	± 9.6 %
		Y	4.89	65.86	17.54		50.0	
		Z	4.72	65.67	17.23		50.0	
10305-AAA	IEEE 802.16e WiMAX (31:15, 10ms, 10MHz, 64QAM, PUSC, 15 symbols)	X	4.58	68.65	19.65	6.02	35.0	± 9.6 %
		Y	4.67	68.59	20.11		35.0	
		Z	4.89	70.03	20.21		35.0	
10306-AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, 64QAM, PUSC, 18 symbols)	X	4.78	67.22	19.17	6.02	35.0	± 9.6 %
		Y	4.91	67.24	19.51		35.0	
		Z	4.95	68.05	19.51		35.0	
10307-AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, QPSK, PUSC, 18 symbols)	X	4.69	67.41	19.13	6.02	35.0	± 9.6 %
		Y	4.83	67.50	19.52		35.0	
		Z	4.89	68.35	19.52		35.0	
10308-AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, 16QAM, PUSC)	X	4.68	67.67	19.30	6.02	35.0	± 9.6 %
		Y	4.81	67.73	19.67		35.0	
		Z	4.89	68.67	19.70		35.0	
10309-AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, 16QAM, AMC 2x3, 18 symbols)	X	4.82	67.40	19.30	6.02	35.0	± 9.6 %
		Y	4.97	67.49	19.67		35.0	
		Z	5.00	68.23	19.64		35.0	
10310-AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, QPSK, AMC 2x3, 18 symbols)	X	4.74	67.32	19.16	6.02	35.0	± 9.6 %
		Y	4.86	67.33	19.50		35.0	
		Z	4.92	68.20	19.52		35.0	
10311-AAD	LTE-FDD (SC-FDMA, 100% RB, 15 MHz, QPSK)	X	2.77	67.31	15.25	0.00	150.0	± 9.6 %
		Y	3.02	68.45	15.87		150.0	
		Z	2.78	67.57	15.37		150.0	
10313-AAA	iDEN 1:3	X	3.38	72.32	15.61	6.99	70.0	± 9.6 %
		Y	6.56	80.70	19.09		70.0	
		Z	3.52	71.67	15.12		70.0	
10314-AAA	iDEN 1:6	X	5.50	81.58	21.98	10.00	30.0	± 9.6 %
		Y	11.01	93.51	26.47		30.0	
		Z	5.77	80.74	21.31		30.0	
10315-AAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps, 96pc duty cycle)	X	0.96	62.54	14.02	0.17	150.0	± 9.6 %
		Y	1.06	63.49	14.83		150.0	
		Z	0.95	62.82	14.19		150.0	
10316-AAB	IEEE 802.11g WiFi 2.4 GHz (ERP-OFDM, 6 Mbps, 96pc duty cycle)	X	4.42	66.30	16.01	0.17	150.0	± 9.6 %
		Y	4.57	66.59	16.18		150.0	
		Z	4.40	66.35	16.03		150.0	
10317-AAC	IEEE 802.11a WiFi 5 GHz (OFDM, 6 Mbps, 96pc duty cycle)	X	4.42	66.30	16.01	0.17	150.0	± 9.6 %
		Y	4.57	66.59	16.18		150.0	
		Z	4.40	66.35	16.03		150.0	
10400-AAD	IEEE 802.11ac WiFi (20MHz, 64-QAM, 99pc duty cycle)	X	4.50	66.54	15.95	0.00	150.0	± 9.6 %
		Y	4.67	66.85	16.11		150.0	
		Z	4.47	66.59	15.97		150.0	
10401-AAD	IEEE 802.11ac WiFi (40MHz, 64-QAM, 99pc duty cycle)	X	5.27	66.91	16.25	0.00	150.0	± 9.6 %
		Y	5.36	67.03	16.28		150.0	
		Z	5.24	66.92	16.25		150.0	

10402-AAD	IEEE 802.11ac WiFi (80MHz, 64-QAM, 99pc duty cycle)	X	5.48	67.05	16.19	0.00	150.0	± 9.6 %
		Y	5.61	67.38	16.31		150.0	
		Z	5.45	67.08	16.20		150.0	
10403-AAB	CDMA2000 (1xEV-DO, Rev. 0)	X	0.93	63.86	10.31	0.00	115.0	± 9.6 %
		Y	1.32	67.34	13.23		115.0	
		Z	0.90	63.80	10.11		115.0	
10404-AAB	CDMA2000 (1xEV-DO, Rev. A)	X	0.93	63.86	10.31	0.00	115.0	± 9.6 %
		Y	1.32	67.34	13.23		115.0	
		Z	0.90	63.80	10.11		115.0	
10406-AAB	CDMA2000, RC3, SO32, SCH0, Full Rate	X	23.71	102.36	25.63	0.00	100.0	± 9.6 %
		Y	100.00	119.74	29.53		100.0	
		Z	100.00	122.04	30.37		100.0	
10410-AAF	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9, Subframe Conf=4)	X	100.00	124.47	31.30	3.23	80.0	± 9.6 %
		Y	100.00	122.62	30.76		80.0	
		Z	100.00	123.15	30.75		80.0	
10415-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps, 99pc duty cycle)	X	0.90	61.77	13.43	0.00	150.0	± 9.6 %
		Y	0.98	62.53	14.15		150.0	
		Z	0.87	61.91	13.55		150.0	
10416-AAA	IEEE 802.11g WiFi 2.4 GHz (ERP-OFDM, 6 Mbps, 99pc duty cycle)	X	4.36	66.25	15.90	0.00	150.0	± 9.6 %
		Y	4.50	66.52	16.06		150.0	
		Z	4.33	66.30	15.93		150.0	
10417-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps, 99pc duty cycle)	X	4.36	66.25	15.90	0.00	150.0	± 9.6 %
		Y	4.50	66.52	16.06		150.0	
		Z	4.33	66.30	15.93		150.0	
10418-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps, 99pc duty cycle, Long preambule)	X	4.35	66.41	15.93	0.00	150.0	± 9.6 %
		Y	4.49	66.67	16.08		150.0	
		Z	4.33	66.46	15.95		150.0	
10419-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps, 99pc duty cycle, Short preambule)	X	4.37	66.36	15.93	0.00	150.0	± 9.6 %
		Y	4.51	66.62	16.08		150.0	
		Z	4.34	66.41	15.95		150.0	
10422-AAB	IEEE 802.11n (HT Greenfield, 7.2 Mbps, BPSK)	X	4.48	66.36	15.95	0.00	150.0	± 9.6 %
		Y	4.63	66.63	16.10		150.0	
		Z	4.46	66.41	15.98		150.0	
10423-AAB	IEEE 802.11n (HT Greenfield, 43.3 Mbps, 16-QAM)	X	4.63	66.65	16.06	0.00	150.0	± 9.6 %
		Y	4.80	66.95	16.22		150.0	
		Z	4.60	66.70	16.08		150.0	
10424-AAB	IEEE 802.11n (HT Greenfield, 72.2 Mbps, 64-QAM)	X	4.55	66.60	16.03	0.00	150.0	± 9.6 %
		Y	4.72	66.90	16.19		150.0	
		Z	4.53	66.65	16.05		150.0	
10425-AAB	IEEE 802.11n (HT Greenfield, 15 Mbps, BPSK)	X	5.18	66.94	16.27	0.00	150.0	± 9.6 %
		Y	5.31	67.20	16.36		150.0	
		Z	5.16	66.97	16.29		150.0	
10426-AAB	IEEE 802.11n (HT Greenfield, 90 Mbps, 16-QAM)	X	5.21	67.05	16.32	0.00	150.0	± 9.6 %
		Y	5.31	67.21	16.37		150.0	
		Z	5.18	67.08	16.34		150.0	

10427-AAB	IEEE 802.11n (HT Greenfield, 150 Mbps, 64-QAM)	X	5.20	66.95	16.27	0.00	150.0	± 9.6 %
		Y	5.33	67.21	16.36		150.0	
		Z	5.17	66.98	16.28		150.0	
10430-AAD	LTE-FDD (OFDMA, 5 MHz, E-TM 3.1)	X	4.03	70.50	17.69	0.00	150.0	± 9.6 %
		Y	4.20	70.46	17.93		150.0	
		Z	4.08	70.95	17.91		150.0	
10431-AAD	LTE-FDD (OFDMA, 10 MHz, E-TM 3.1)	X	3.99	66.70	15.76	0.00	150.0	± 9.6 %
		Y	4.18	67.03	16.04		150.0	
		Z	3.97	66.77	15.79		150.0	
10432-AAC	LTE-FDD (OFDMA, 15 MHz, E-TM 3.1)	X	4.31	66.62	15.93	0.00	150.0	± 9.6 %
		Y	4.49	66.93	16.13		150.0	
		Z	4.29	66.68	15.96		150.0	
10433-AAC	LTE-FDD (OFDMA, 20 MHz, E-TM 3.1)	X	4.57	66.63	16.05	0.00	150.0	± 9.6 %
		Y	4.73	66.93	16.21		150.0	
		Z	4.54	66.68	16.07		150.0	
10434-AAA	W-CDMA (BS Test Model 1, 64 DPCH)	X	4.08	71.14	17.46	0.00	150.0	± 9.6 %
		Y	4.29	71.27	17.88		150.0	
		Z	4.15	71.66	17.70		150.0	
10435-AAF	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	100.00	124.23	31.18	3.23	80.0	± 9.6 %
		Y	100.00	122.40	30.66		80.0	
		Z	100.00	122.90	30.63		80.0	
10447-AAD	LTE-FDD (OFDMA, 5 MHz, E-TM 3.1, Clipping 44%)	X	3.22	66.37	14.70	0.00	150.0	± 9.6 %
		Y	3.47	66.95	15.33		150.0	
		Z	3.21	66.48	14.73		150.0	
10448-AAD	LTE-FDD (OFDMA, 10 MHz, E-TM 3.1, Clippin 44%)	X	3.84	66.47	15.61	0.00	150.0	± 9.6 %
		Y	4.02	66.80	15.90		150.0	
		Z	3.82	66.55	15.65		150.0	
10449-AAC	LTE-FDD (OFDMA, 15 MHz, E-TM 3.1, Cliping 44%)	X	4.13	66.43	15.81	0.00	150.0	± 9.6 %
		Y	4.30	66.75	16.02		150.0	
		Z	4.11	66.50	15.84		150.0	
10450-AAC	LTE-FDD (OFDMA, 20 MHz, E-TM 3.1, Clipping 44%)	X	4.34	66.38	15.88	0.00	150.0	± 9.6 %
		Y	4.49	66.69	16.06		150.0	
		Z	4.32	66.44	15.91		150.0	
10451-AAA	W-CDMA (BS Test Model 1, 64 DPCH, Clipping 44%)	X	3.06	66.27	14.09	0.00	150.0	± 9.6 %
		Y	3.35	67.09	14.93		150.0	
		Z	3.04	66.36	14.10		150.0	
10456-AAB	IEEE 802.11ac WiFi (160MHz, 64-QAM, 99pc duty cycle)	X	6.11	67.61	16.51	0.00	150.0	± 9.6 %
		Y	6.17	67.77	16.53		150.0	
		Z	6.08	67.64	16.52		150.0	
10457-AAA	UMTS-FDD (DC-HSDPA)	X	3.66	64.92	15.60	0.00	150.0	± 9.6 %
		Y	3.76	65.17	15.77		150.0	
		Z	3.64	64.96	15.63		150.0	
10458-AAA	CDMA2000 (1xEV-DO, Rev. B, 2 carriers)	X	3.65	69.96	16.50	0.00	150.0	± 9.6 %
		Y	3.92	70.48	17.26		150.0	
		Z	3.69	70.37	16.67		150.0	
10459-AAA	CDMA2000 (1xEV-DO, Rev. B, 3 carriers)	X	4.93	68.53	17.94	0.00	150.0	± 9.6 %
		Y	5.04	68.13	17.95		150.0	
		Z	4.94	68.79	18.08		150.0	

10460-AAA	UMTS-FDD (WCDMA, AMR)	X	0.69	64.85	13.41	0.00	150.0	± 9.6 %
		Y	0.82	66.61	15.04		150.0	
		Z	0.68	65.44	13.67		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	128.32	33.15	3.29	80.0	± 9.6 %
		Y	100.00	127.78	33.19		80.0	
		Z	100.00	127.47	32.80		80.0	
10462-AAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	2.83	71.29	13.71	3.23	80.0	± 9.6 %
		Y	47.63	99.29	21.71		80.0	
		Z	3.49	72.89	14.14		80.0	
10463-AAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	1.34	63.29	9.90	3.23	80.0	± 9.6 %
		Y	3.65	72.27	13.56		80.0	
		Z	1.40	63.38	9.84		80.0	
10464-AAB	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	100.00	125.34	31.61	3.23	80.0	± 9.6 %
		Y	100.00	125.18	31.81		80.0	
		Z	100.00	124.45	31.24		80.0	
10465-AAB	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	2.15	68.45	12.57	3.23	80.0	± 9.6 %
		Y	13.95	86.70	18.48		80.0	
		Z	2.45	69.33	12.78		80.0	
10466-AAB	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	1.23	62.47	9.47	3.23	80.0	± 9.6 %
		Y	2.69	69.32	12.45		80.0	
		Z	1.28	62.54	9.41		80.0	
10467-AAE	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	100.00	125.68	31.76	3.23	80.0	± 9.6 %
		Y	100.00	125.47	31.94		80.0	
		Z	100.00	124.79	31.39		80.0	
10468-AAE	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	2.30	69.17	12.87	3.23	80.0	± 9.6 %
		Y	18.23	89.46	19.24		80.0	
		Z	2.67	70.20	13.13		80.0	
10469-AAE	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	1.23	62.50	9.48	3.23	80.0	± 9.6 %
		Y	2.71	69.39	12.47		80.0	
		Z	1.28	62.56	9.42		80.0	
10470-AAE	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	100.00	125.71	31.76	3.23	80.0	± 9.6 %
		Y	100.00	125.51	31.95		80.0	
		Z	100.00	124.82	31.39		80.0	
10471-AAE	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	2.28	69.06	12.82	3.23	80.0	± 9.6 %
		Y	17.83	89.19	19.15		80.0	
		Z	2.63	70.06	13.07		80.0	
10472-AAE	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	1.23	62.45	9.44	3.23	80.0	± 9.6 %
		Y	2.68	69.28	12.41		80.0	
		Z	1.27	62.51	9.38		80.0	
10473-AAE	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	100.00	125.67	31.74	3.23	80.0	± 9.6 %
		Y	100.00	125.47	31.93		80.0	
		Z	100.00	124.78	31.37		80.0	
10474-AAE	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	2.26	68.99	12.79	3.23	80.0	± 9.6 %
		Y	17.40	88.96	19.09		80.0	
		Z	2.61	69.98	13.04		80.0	
10475-AAE	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	1.22	62.42	9.43	3.23	80.0	± 9.6 %
		Y	2.66	69.22	12.39		80.0	
		Z	1.27	62.49	9.37		80.0	

10477-AAF	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	2.14	68.42	12.54	3.23	80.0	± 9.6 %
		Y	14.17	86.82	18.49		80.0	
		Z	2.44	69.28	12.75		80.0	
10478-AAF	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	1.22	62.38	9.40	3.23	80.0	± 9.6 %
		Y	2.63	69.09	12.34		80.0	
		Z	1.27	62.44	9.34		80.0	
10479-AAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	15.11	97.09	26.21	3.23	80.0	± 9.6 %
		Y	12.10	93.46	25.55		80.0	
		Z	38.37	110.42	29.58		80.0	
10480-AAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	9.61	84.26	20.21	3.23	80.0	± 9.6 %
		Y	14.04	89.42	22.30		80.0	
		Z	15.37	89.79	21.73		80.0	
10481-AAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	6.33	78.18	17.80	3.23	80.0	± 9.6 %
		Y	10.33	84.45	20.38		80.0	
		Z	8.49	81.43	18.75		80.0	
10482-AAB	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	2.20	68.13	14.46	2.23	80.0	± 9.6 %
		Y	3.86	75.47	18.31		80.0	
		Z	2.32	68.53	14.44		80.0	
10483-AAB	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	3.94	72.08	15.81	2.23	80.0	± 9.6 %
		Y	6.10	77.87	18.68		80.0	
		Z	4.69	74.04	16.46		80.0	
10484-AAB	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	3.59	70.66	15.24	2.23	80.0	± 9.6 %
		Y	5.50	76.23	18.09		80.0	
		Z	4.13	72.24	15.78		80.0	
10485-AAE	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	2.81	71.31	17.01	2.23	80.0	± 9.6 %
		Y	4.05	76.26	19.56		80.0	
		Z	3.07	72.32	17.25		80.0	
10486-AAE	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	2.69	67.30	14.67	2.23	80.0	± 9.6 %
		Y	3.62	71.13	17.00		80.0	
		Z	2.79	67.68	14.70		80.0	
10487-AAE	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	2.69	66.94	14.49	2.23	80.0	± 9.6 %
		Y	3.59	70.63	16.77		80.0	
		Z	2.79	67.28	14.51		80.0	
10488-AAE	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	3.20	71.23	17.95	2.23	80.0	± 9.6 %
		Y	4.09	74.48	19.52		80.0	
		Z	3.44	72.19	18.22		80.0	
10489-AAE	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	3.19	68.15	16.61	2.23	80.0	± 9.6 %
		Y	3.75	70.12	17.77		80.0	
		Z	3.33	68.73	16.77		80.0	
10490-AAE	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	3.28	68.03	16.57	2.23	80.0	± 9.6 %
		Y	3.83	69.89	17.68		80.0	
		Z	3.42	68.57	16.72		80.0	
10491-AAE	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	3.47	69.98	17.63	2.23	80.0	± 9.6 %
		Y	4.18	72.43	18.81		80.0	
		Z	3.65	70.68	17.84		80.0	
10492-AAE	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	3.56	67.59	16.77	2.23	80.0	± 9.6 %
		Y	4.04	69.12	17.62		80.0	
		Z	3.68	68.07	16.91		80.0	

10493-AAE	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	3.63	67.49	16.73	2.23	80.0	± 9.6 %
		Y	4.10	68.96	17.56		80.0	
		Z	3.75	67.94	16.87		80.0	
10494-AAF	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	3.72	71.28	18.04	2.23	80.0	± 9.6 %
		Y	4.63	74.24	19.37		80.0	
		Z	3.95	72.06	18.26		80.0	
10495-AAF	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	3.59	67.91	16.97	2.23	80.0	± 9.6 %
		Y	4.08	69.56	17.83		80.0	
		Z	3.72	68.41	17.12		80.0	
10496-AAF	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	3.67	67.69	16.91	2.23	80.0	± 9.6 %
		Y	4.15	69.22	17.72		80.0	
		Z	3.79	68.17	17.06		80.0	
10497-AAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	1.40	62.76	10.76	2.23	80.0	± 9.6 %
		Y	2.78	70.82	15.49		80.0	
		Z	1.41	62.63	10.52		80.0	
10498-AAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	1.30	60.00	8.24	2.23	80.0	± 9.6 %
		Y	1.93	63.62	11.21		80.0	
		Z	1.31	60.00	8.10		80.0	
10499-AAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	1.32	60.00	8.09	2.23	80.0	± 9.6 %
		Y	1.85	62.92	10.72		80.0	
		Z	1.33	60.00	7.96		80.0	
10500-AAB	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	2.94	71.14	17.35	2.23	80.0	± 9.6 %
		Y	3.96	75.06	19.38		80.0	
		Z	3.19	72.12	17.60		80.0	
10501-AAB	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	2.94	67.88	15.52	2.23	80.0	± 9.6 %
		Y	3.68	70.73	17.29		80.0	
		Z	3.07	68.36	15.62		80.0	
10502-AAB	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	2.98	67.72	15.39	2.23	80.0	± 9.6 %
		Y	3.73	70.54	17.15		80.0	
		Z	3.11	68.17	15.47		80.0	
10503-AAE	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	3.16	71.03	17.84	2.23	80.0	± 9.6 %
		Y	4.04	74.26	19.42		80.0	
		Z	3.39	71.96	18.11		80.0	
10504-AAE	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	3.18	68.05	16.55	2.23	80.0	± 9.6 %
		Y	3.73	70.03	17.71		80.0	
		Z	3.31	68.62	16.70		80.0	
10505-AAE	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	3.26	67.93	16.51	2.23	80.0	± 9.6 %
		Y	3.81	69.79	17.62		80.0	
		Z	3.40	68.47	16.66		80.0	
10506-AAE	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	3.69	71.13	17.96	2.23	80.0	± 9.6 %
		Y	4.59	74.08	19.29		80.0	
		Z	3.91	71.90	18.18		80.0	
10507-AAE	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	3.57	67.84	16.93	2.23	80.0	± 9.6 %
		Y	4.07	69.50	17.79		80.0	
		Z	3.70	68.34	17.08		80.0	

10508-AAE	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	3.66	67.62	16.87	2.23	80.0	± 9.6 %
		Y	4.13	69.15	17.68		80.0	
		Z	3.78	68.09	17.01		80.0	
10509-AAE	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	4.07	70.10	17.58	2.23	80.0	± 9.6 %
		Y	4.81	72.40	18.61		80.0	
		Z	4.24	70.66	17.74		80.0	
10510-AAE	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	4.06	67.64	16.99	2.23	80.0	± 9.6 %
		Y	4.53	69.10	17.70		80.0	
		Z	4.18	68.05	17.12		80.0	
10511-AAE	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	4.13	67.44	16.95	2.23	80.0	± 9.6 %
		Y	4.57	68.80	17.62		80.0	
		Z	4.24	67.84	17.07		80.0	
10512-AAF	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	4.19	71.38	17.95	2.23	80.0	± 9.6 %
		Y	5.15	74.31	19.22		80.0	
		Z	4.41	72.04	18.13		80.0	
10513-AAF	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	3.95	67.83	17.07	2.23	80.0	± 9.6 %
		Y	4.43	69.43	17.84		80.0	
		Z	4.06	68.27	17.20		80.0	
10514-AAF	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	3.98	67.48	16.97	2.23	80.0	± 9.6 %
		Y	4.43	68.95	17.69		80.0	
		Z	4.09	67.89	17.10		80.0	
10515-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 2 Mbps, 99pc duty cycle)	X	0.85	61.86	13.41	0.00	150.0	± 9.6 %
		Y	0.94	62.67	14.18		150.0	
		Z	0.83	62.02	13.54		150.0	
10516-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 5.5 Mbps, 99pc duty cycle)	X	0.40	65.39	13.06	0.00	150.0	± 9.6 %
		Y	0.51	67.47	15.37		150.0	
		Z	0.40	66.64	13.51		150.0	
10517-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 11 Mbps, 99pc duty cycle)	X	0.68	62.98	13.39	0.00	150.0	± 9.6 %
		Y	0.78	64.16	14.53		150.0	
		Z	0.66	63.30	13.59		150.0	
10518-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 9 Mbps, 99pc duty cycle)	X	4.35	66.32	15.88	0.00	150.0	± 9.6 %
		Y	4.50	66.59	16.04		150.0	
		Z	4.32	66.37	15.90		150.0	
10519-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 12 Mbps, 99pc duty cycle)	X	4.51	66.53	15.99	0.00	150.0	± 9.6 %
		Y	4.68	66.83	16.16		150.0	
		Z	4.49	66.58	16.02		150.0	
10520-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 18 Mbps, 99pc duty cycle)	X	4.37	66.46	15.90	0.00	150.0	± 9.6 %
		Y	4.53	66.78	16.08		150.0	
		Z	4.34	66.52	15.92		150.0	
10521-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 24 Mbps, 99pc duty cycle)	X	4.30	66.44	15.87	0.00	150.0	± 9.6 %
		Y	4.47	66.77	16.06		150.0	
		Z	4.28	66.49	15.90		150.0	
10522-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 36 Mbps, 99pc duty cycle)	X	4.36	66.57	15.98	0.00	150.0	± 9.6 %
		Y	4.53	66.86	16.15		150.0	
		Z	4.34	66.63	16.01		150.0	

10523-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 48 Mbps, 99pc duty cycle)	X	4.25	66.45	15.83	0.00	150.0	± 9.6 %
		Y	4.41	66.73	15.99		150.0	
		Z	4.23	66.51	15.86		150.0	
10524-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 54 Mbps, 99pc duty cycle)	X	4.30	66.49	15.94	0.00	150.0	± 9.6 %
		Y	4.47	66.78	16.11		150.0	
		Z	4.28	66.54	15.97		150.0	
10525-AAB	IEEE 802.11ac WiFi (20MHz, MCS0, 99pc duty cycle)	X	4.31	65.55	15.55	0.00	150.0	± 9.6 %
		Y	4.45	65.83	15.71		150.0	
		Z	4.29	65.60	15.58		150.0	
10526-AAB	IEEE 802.11ac WiFi (20MHz, MCS1, 99pc duty cycle)	X	4.45	65.87	15.68	0.00	150.0	± 9.6 %
		Y	4.62	66.20	15.85		150.0	
		Z	4.43	65.93	15.71		150.0	
10527-AAB	IEEE 802.11ac WiFi (20MHz, MCS2, 99pc duty cycle)	X	4.38	65.82	15.61	0.00	150.0	± 9.6 %
		Y	4.54	66.15	15.79		150.0	
		Z	4.36	65.88	15.64		150.0	
10528-AAB	IEEE 802.11ac WiFi (20MHz, MCS3, 99pc duty cycle)	X	4.39	65.84	15.64	0.00	150.0	± 9.6 %
		Y	4.56	66.17	15.82		150.0	
		Z	4.37	65.90	15.67		150.0	
10529-AAB	IEEE 802.11ac WiFi (20MHz, MCS4, 99pc duty cycle)	X	4.39	65.84	15.64	0.00	150.0	± 9.6 %
		Y	4.56	66.17	15.82		150.0	
		Z	4.37	65.90	15.67		150.0	
10531-AAB	IEEE 802.11ac WiFi (20MHz, MCS6, 99pc duty cycle)	X	4.37	65.90	15.64	0.00	150.0	± 9.6 %
		Y	4.55	66.27	15.83		150.0	
		Z	4.35	65.96	15.67		150.0	
10532-AAB	IEEE 802.11ac WiFi (20MHz, MCS7, 99pc duty cycle)	X	4.24	65.74	15.56	0.00	150.0	± 9.6 %
		Y	4.41	66.12	15.76		150.0	
		Z	4.22	65.81	15.59		150.0	
10533-AAB	IEEE 802.11ac WiFi (20MHz, MCS8, 99pc duty cycle)	X	4.40	65.90	15.64	0.00	150.0	± 9.6 %
		Y	4.57	66.22	15.81		150.0	
		Z	4.38	65.96	15.67		150.0	
10534-AAB	IEEE 802.11ac WiFi (40MHz, MCS0, 99pc duty cycle)	X	4.95	65.98	15.77	0.00	150.0	± 9.6 %
		Y	5.09	66.30	15.90		150.0	
		Z	4.93	66.02	15.79		150.0	
10535-AAB	IEEE 802.11ac WiFi (40MHz, MCS1, 99pc duty cycle)	X	5.02	66.17	15.86	0.00	150.0	± 9.6 %
		Y	5.15	66.46	15.97		150.0	
		Z	4.99	66.21	15.88		150.0	
10536-AAB	IEEE 802.11ac WiFi (40MHz, MCS2, 99pc duty cycle)	X	4.89	66.11	15.80	0.00	150.0	± 9.6 %
		Y	5.02	66.41	15.93		150.0	
		Z	4.87	66.16	15.83		150.0	
10537-AAB	IEEE 802.11ac WiFi (40MHz, MCS3, 99pc duty cycle)	X	4.95	66.07	15.79	0.00	150.0	± 9.6 %
		Y	5.08	66.38	15.92		150.0	
		Z	4.92	66.12	15.81		150.0	
10538-AAB	IEEE 802.11ac WiFi (40MHz, MCS4, 99pc duty cycle)	X	5.03	66.09	15.84	0.00	150.0	± 9.6 %
		Y	5.17	66.41	15.97		150.0	
		Z	5.00	66.13	15.86		150.0	
10540-AAB	IEEE 802.11ac WiFi (40MHz, MCS6, 99pc duty cycle)	X	4.96	66.07	15.85	0.00	150.0	± 9.6 %
		Y	5.10	66.42	15.99		150.0	
		Z	4.94	66.11	15.87		150.0	

10541-AAB	IEEE 802.11ac WiFi (40MHz, MCS7, 99pc duty cycle)	X	4.94	65.96	15.78	0.00	150.0	± 9.6 %
		Y	5.08	66.30	15.92		150.0	
		Z	4.91	66.00	15.80		150.0	
10542-AAB	IEEE 802.11ac WiFi (40MHz, MCS8, 99pc duty cycle)	X	5.09	66.06	15.85	0.00	150.0	± 9.6 %
		Y	5.23	66.37	15.97		150.0	
		Z	5.07	66.10	15.87		150.0	
10543-AAB	IEEE 802.11ac WiFi (40MHz, MCS9, 99pc duty cycle)	X	5.16	66.09	15.89	0.00	150.0	± 9.6 %
		Y	5.31	66.40	16.01		150.0	
		Z	5.13	66.12	15.91		150.0	
10544-AAB	IEEE 802.11ac WiFi (80MHz, MCS0, 99pc duty cycle)	X	5.29	66.10	15.79	0.00	150.0	± 9.6 %
		Y	5.40	66.43	15.90		150.0	
		Z	5.26	66.14	15.80		150.0	
10545-AAB	IEEE 802.11ac WiFi (80MHz, MCS1, 99pc duty cycle)	X	5.48	66.56	15.97	0.00	150.0	± 9.6 %
		Y	5.58	66.80	16.04		150.0	
		Z	5.46	66.60	15.98		150.0	
10546-AAB	IEEE 802.11ac WiFi (80MHz, MCS2, 99pc duty cycle)	X	5.33	66.26	15.83	0.00	150.0	± 9.6 %
		Y	5.46	66.63	15.97		150.0	
		Z	5.31	66.29	15.85		150.0	
10547-AAB	IEEE 802.11ac WiFi (80MHz, MCS3, 99pc duty cycle)	X	5.41	66.34	15.87	0.00	150.0	± 9.6 %
		Y	5.53	66.66	15.98		150.0	
		Z	5.38	66.37	15.88		150.0	
10548-AAB	IEEE 802.11ac WiFi (80MHz, MCS4, 99pc duty cycle)	X	5.63	67.21	16.27	0.00	150.0	± 9.6 %
		Y	5.74	67.47	16.35		150.0	
		Z	5.61	67.23	16.28		150.0	
10550-AAB	IEEE 802.11ac WiFi (80MHz, MCS6, 99pc duty cycle)	X	5.38	66.38	15.91	0.00	150.0	± 9.6 %
		Y	5.49	66.64	15.98		150.0	
		Z	5.36	66.42	15.92		150.0	
10551-AAB	IEEE 802.11ac WiFi (80MHz, MCS7, 99pc duty cycle)	X	5.36	66.32	15.84	0.00	150.0	± 9.6 %
		Y	5.50	66.68	15.97		150.0	
		Z	5.34	66.35	15.85		150.0	
10552-AAB	IEEE 802.11ac WiFi (80MHz, MCS8, 99pc duty cycle)	X	5.29	66.17	15.76	0.00	150.0	± 9.6 %
		Y	5.41	66.50	15.88		150.0	
		Z	5.27	66.20	15.78		150.0	
10553-AAB	IEEE 802.11ac WiFi (80MHz, MCS9, 99pc duty cycle)	X	5.36	66.18	15.80	0.00	150.0	± 9.6 %
		Y	5.50	66.54	15.93		150.0	
		Z	5.34	66.21	15.81		150.0	
10554-AAC	IEEE 802.11ac WiFi (160MHz, MCS0, 99pc duty cycle)	X	5.71	66.48	15.89	0.00	150.0	± 9.6 %
		Y	5.80	66.79	15.99		150.0	
		Z	5.68	66.51	15.90		150.0	
10555-AAC	IEEE 802.11ac WiFi (160MHz, MCS1, 99pc duty cycle)	X	5.83	66.77	16.02	0.00	150.0	± 9.6 %
		Y	5.92	67.07	16.11		150.0	
		Z	5.80	66.80	16.03		150.0	
10556-AAC	IEEE 802.11ac WiFi (160MHz, MCS2, 99pc duty cycle)	X	5.85	66.83	16.04	0.00	150.0	± 9.6 %
		Y	5.94	67.11	16.13		150.0	
		Z	5.83	66.86	16.05		150.0	
10557-AAC	IEEE 802.11ac WiFi (160MHz, MCS3, 99pc duty cycle)	X	5.80	66.70	15.99	0.00	150.0	± 9.6 %
		Y	5.91	67.03	16.11		150.0	
		Z	5.78	66.73	16.00		150.0	

10558-AAC	IEEE 802.11ac WiFi (160MHz, MCS4, 99pc duty cycle)	X	5.85	66.85	16.09	0.00	150.0	± 9.6 %
		Y	5.96	67.18	16.20		150.0	
		Z	5.82	66.88	16.09		150.0	
10560-AAC	IEEE 802.11ac WiFi (160MHz, MCS6, 99pc duty cycle)	X	5.84	66.71	16.05	0.00	150.0	± 9.6 %
		Y	5.96	67.05	16.17		150.0	
		Z	5.82	66.73	16.06		150.0	
10561-AAC	IEEE 802.11ac WiFi (160MHz, MCS7, 99pc duty cycle)	X	5.78	66.71	16.09	0.00	150.0	± 9.6 %
		Y	5.88	67.01	16.18		150.0	
		Z	5.75	66.73	16.09		150.0	
10562-AAC	IEEE 802.11ac WiFi (160MHz, MCS8, 99pc duty cycle)	X	5.86	66.97	16.22	0.00	150.0	± 9.6 %
		Y	5.99	67.36	16.36		150.0	
		Z	5.84	67.00	16.23		150.0	
10563-AAC	IEEE 802.11ac WiFi (160MHz, MCS9, 99pc duty cycle)	X	5.96	66.92	16.16	0.00	150.0	± 9.6 %
		Y	6.21	67.61	16.44		150.0	
		Z	5.93	66.93	16.16		150.0	
10564-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 9 Mbps, 99pc duty cycle)	X	4.68	66.42	16.06	0.46	150.0	± 9.6 %
		Y	4.83	66.69	16.22		150.0	
		Z	4.65	66.46	16.07		150.0	
10565-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 12 Mbps, 99pc duty cycle)	X	4.89	66.85	16.39	0.46	150.0	± 9.6 %
		Y	5.05	67.14	16.54		150.0	
		Z	4.86	66.90	16.41		150.0	
10566-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 18 Mbps, 99pc duty cycle)	X	4.72	66.67	16.19	0.46	150.0	± 9.6 %
		Y	4.89	66.98	16.35		150.0	
		Z	4.70	66.72	16.20		150.0	
10567-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 24 Mbps, 99pc duty cycle)	X	4.75	67.07	16.56	0.46	150.0	± 9.6 %
		Y	4.92	67.37	16.70		150.0	
		Z	4.73	67.14	16.59		150.0	
10568-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 36 Mbps, 99pc duty cycle)	X	4.63	66.44	15.94	0.46	150.0	± 9.6 %
		Y	4.80	66.76	16.13		150.0	
		Z	4.61	66.47	15.95		150.0	
10569-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 48 Mbps, 99pc duty cycle)	X	4.72	67.22	16.65	0.46	150.0	± 9.6 %
		Y	4.87	67.46	16.77		150.0	
		Z	4.71	67.30	16.69		150.0	
10570-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 54 Mbps, 99pc duty cycle)	X	4.74	67.05	16.56	0.46	150.0	± 9.6 %
		Y	4.91	67.30	16.69		150.0	
		Z	4.72	67.12	16.60		150.0	
10571-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps, 90pc duty cycle)	X	1.04	63.16	14.41	0.46	130.0	± 9.6 %
		Y	1.16	64.31	15.32		130.0	
		Z	1.04	63.55	14.61		130.0	
10572-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 2 Mbps, 90pc duty cycle)	X	1.05	63.64	14.72	0.46	130.0	± 9.6 %
		Y	1.18	64.86	15.66		130.0	
		Z	1.05	64.09	14.95		130.0	
10573-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 5.5 Mbps, 90pc duty cycle)	X	1.03	74.44	17.59	0.46	130.0	± 9.6 %
		Y	1.79	82.59	21.75		130.0	
		Z	1.38	78.61	18.89		130.0	
10574-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 11 Mbps, 90pc duty cycle)	X	1.07	68.05	16.92	0.46	130.0	± 9.6 %
		Y	1.27	70.18	18.34		130.0	
		Z	1.12	69.27	17.48		130.0	

10575-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps, 90pc duty cycle)	X	4.47	66.23	16.12	0.46	130.0	± 9.6 %
		Y	4.62	66.51	16.29		130.0	
		Z	4.45	66.28	16.14		130.0	
10576-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 9 Mbps, 90pc duty cycle)	X	4.50	66.41	16.19	0.46	130.0	± 9.6 %
		Y	4.65	66.67	16.36		130.0	
		Z	4.48	66.46	16.21		130.0	
10577-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 12 Mbps, 90pc duty cycle)	X	4.68	66.68	16.36	0.46	130.0	± 9.6 %
		Y	4.85	66.96	16.53		130.0	
		Z	4.66	66.74	16.38		130.0	
10578-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 18 Mbps, 90pc duty cycle)	X	4.58	66.82	16.46	0.46	130.0	± 9.6 %
		Y	4.75	67.12	16.62		130.0	
		Z	4.56	66.89	16.49		130.0	
10579-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 24 Mbps, 90pc duty cycle)	X	4.34	66.04	15.71	0.46	130.0	± 9.6 %
		Y	4.51	66.41	15.94		130.0	
		Z	4.32	66.08	15.72		130.0	
10580-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 36 Mbps, 90pc duty cycle)	X	4.38	66.11	15.75	0.46	130.0	± 9.6 %
		Y	4.56	66.45	15.97		130.0	
		Z	4.36	66.15	15.76		130.0	
10581-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 48 Mbps, 90pc duty cycle)	X	4.48	66.85	16.40	0.46	130.0	± 9.6 %
		Y	4.64	67.15	16.57		130.0	
		Z	4.46	66.93	16.43		130.0	
10582-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 54 Mbps, 90pc duty cycle)	X	4.27	65.80	15.49	0.46	130.0	± 9.6 %
		Y	4.45	66.17	15.73		130.0	
		Z	4.25	65.84	15.50		130.0	
10583-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps, 90pc duty cycle)	X	4.47	66.23	16.12	0.46	130.0	± 9.6 %
		Y	4.62	66.51	16.29		130.0	
		Z	4.45	66.28	16.14		130.0	
10584-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 9 Mbps, 90pc duty cycle)	X	4.50	66.41	16.19	0.46	130.0	± 9.6 %
		Y	4.65	66.67	16.36		130.0	
		Z	4.48	66.46	16.21		130.0	
10585-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 12 Mbps, 90pc duty cycle)	X	4.68	66.68	16.36	0.46	130.0	± 9.6 %
		Y	4.85	66.96	16.53		130.0	
		Z	4.66	66.74	16.38		130.0	
10586-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 18 Mbps, 90pc duty cycle)	X	4.58	66.82	16.46	0.46	130.0	± 9.6 %
		Y	4.75	67.12	16.62		130.0	
		Z	4.56	66.89	16.49		130.0	
10587-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 24 Mbps, 90pc duty cycle)	X	4.34	66.04	15.71	0.46	130.0	± 9.6 %
		Y	4.51	66.41	15.94		130.0	
		Z	4.32	66.08	15.72		130.0	
10588-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 36 Mbps, 90pc duty cycle)	X	4.38	66.11	15.75	0.46	130.0	± 9.6 %
		Y	4.56	66.45	15.97		130.0	
		Z	4.36	66.15	15.76		130.0	
10589-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 48 Mbps, 90pc duty cycle)	X	4.48	66.85	16.40	0.46	130.0	± 9.6 %
		Y	4.64	67.15	16.57		130.0	
		Z	4.46	66.93	16.43		130.0	
10590-AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 54 Mbps, 90pc duty cycle)	X	4.27	65.80	15.49	0.46	130.0	± 9.6 %
		Y	4.45	66.17	15.73		130.0	
		Z	4.25	65.84	15.50		130.0	

10591-AAB	IEEE 802.11n (HT Mixed, 20MHz, MCS0, 90pc duty cycle)	X	4.63	66.32	16.25	0.46	130.0	± 9.6 %
		Y	4.77	66.58	16.40		130.0	
		Z	4.60	66.37	16.26		130.0	
10592-AAB	IEEE 802.11n (HT Mixed, 20MHz, MCS1, 90pc duty cycle)	X	4.76	66.63	16.38	0.46	130.0	± 9.6 %
		Y	4.92	66.91	16.53		130.0	
		Z	4.74	66.69	16.39		130.0	
10593-AAB	IEEE 802.11n (HT Mixed, 20MHz, MCS2, 90pc duty cycle)	X	4.68	66.51	16.23	0.46	130.0	± 9.6 %
		Y	4.85	66.82	16.41		130.0	
		Z	4.66	66.56	16.25		130.0	
10594-AAB	IEEE 802.11n (HT Mixed, 20MHz, MCS3, 90pc duty cycle)	X	4.73	66.69	16.40	0.46	130.0	± 9.6 %
		Y	4.90	66.98	16.56		130.0	
		Z	4.71	66.75	16.42		130.0	
10595-AAB	IEEE 802.11n (HT Mixed, 20MHz, MCS4, 90pc duty cycle)	X	4.70	66.65	16.30	0.46	130.0	± 9.6 %
		Y	4.87	66.93	16.46		130.0	
		Z	4.68	66.71	16.32		130.0	
10596-AAB	IEEE 802.11n (HT Mixed, 20MHz, MCS5, 90pc duty cycle)	X	4.63	66.63	16.29	0.46	130.0	± 9.6 %
		Y	4.80	66.93	16.46		130.0	
		Z	4.61	66.68	16.31		130.0	
10597-AAB	IEEE 802.11n (HT Mixed, 20MHz, MCS6, 90pc duty cycle)	X	4.58	66.50	16.15	0.46	130.0	± 9.6 %
		Y	4.75	66.83	16.34		130.0	
		Z	4.56	66.55	16.17		130.0	
10598-AAB	IEEE 802.11n (HT Mixed, 20MHz, MCS7, 90pc duty cycle)	X	4.57	66.73	16.42	0.46	130.0	± 9.6 %
		Y	4.74	67.06	16.60		130.0	
		Z	4.55	66.80	16.45		130.0	
10599-AAB	IEEE 802.11n (HT Mixed, 40MHz, MCS0, 90pc duty cycle)	X	5.31	66.88	16.52	0.46	130.0	± 9.6 %
		Y	5.44	67.12	16.60		130.0	
		Z	5.29	66.91	16.52		130.0	
10600-AAB	IEEE 802.11n (HT Mixed, 40MHz, MCS1, 90pc duty cycle)	X	5.45	67.34	16.72	0.46	130.0	± 9.6 %
		Y	5.55	67.46	16.74		130.0	
		Z	5.42	67.36	16.72		130.0	
10601-AAB	IEEE 802.11n (HT Mixed, 40MHz, MCS2, 90pc duty cycle)	X	5.33	67.05	16.59	0.46	130.0	± 9.6 %
		Y	5.45	67.25	16.66		130.0	
		Z	5.30	67.08	16.60		130.0	
10602-AAB	IEEE 802.11n (HT Mixed, 40MHz, MCS3, 90pc duty cycle)	X	5.46	67.20	16.58	0.46	130.0	± 9.6 %
		Y	5.54	67.28	16.59		130.0	
		Z	5.43	67.22	16.58		130.0	
10603-AAB	IEEE 802.11n (HT Mixed, 40MHz, MCS4, 90pc duty cycle)	X	5.52	67.46	16.85	0.46	130.0	± 9.6 %
		Y	5.62	67.58	16.87		130.0	
		Z	5.50	67.50	16.86		130.0	
10604-AAB	IEEE 802.11n (HT Mixed, 40MHz, MCS5, 90pc duty cycle)	X	5.39	67.12	16.66	0.46	130.0	± 9.6 %
		Y	5.44	67.09	16.62		130.0	
		Z	5.37	67.16	16.68		130.0	
10605-AAB	IEEE 802.11n (HT Mixed, 40MHz, MCS6, 90pc duty cycle)	X	5.44	67.25	16.73	0.46	130.0	± 9.6 %
		Y	5.54	67.37	16.75		130.0	
		Z	5.42	67.27	16.73		130.0	
10606-AAB	IEEE 802.11n (HT Mixed, 40MHz, MCS7, 90pc duty cycle)	X	5.17	66.49	16.20	0.46	130.0	± 9.6 %
		Y	5.30	66.78	16.32		130.0	
		Z	5.14	66.51	16.20		130.0	

10607-AAB	IEEE 802.11ac WiFi (20MHz, MCS0, 90pc duty cycle)	X	4.46	65.61	15.85	0.46	130.0	± 9.6 %
		Y	4.61	65.89	16.02		130.0	
		Z	4.44	65.67	15.88		130.0	
10608-AAB	IEEE 802.11ac WiFi (20MHz, MCS1, 90pc duty cycle)	X	4.62	65.98	16.01	0.46	130.0	± 9.6 %
		Y	4.79	66.29	16.18		130.0	
		Z	4.60	66.04	16.04		130.0	
10609-AAB	IEEE 802.11ac WiFi (20MHz, MCS2, 90pc duty cycle)	X	4.51	65.80	15.83	0.46	130.0	± 9.6 %
		Y	4.68	66.13	16.02		130.0	
		Z	4.49	65.86	15.85		130.0	
10610-AAB	IEEE 802.11ac WiFi (20MHz, MCS3, 90pc duty cycle)	X	4.56	65.97	16.00	0.46	130.0	± 9.6 %
		Y	4.73	66.29	16.18		130.0	
		Z	4.55	66.03	16.03		130.0	
10611-AAB	IEEE 802.11ac WiFi (20MHz, MCS4, 90pc duty cycle)	X	4.48	65.77	15.84	0.46	130.0	± 9.6 %
		Y	4.65	66.10	16.03		130.0	
		Z	4.46	65.83	15.87		130.0	
10612-AAB	IEEE 802.11ac WiFi (20MHz, MCS5, 90pc duty cycle)	X	4.48	65.91	15.88	0.46	130.0	± 9.6 %
		Y	4.66	66.25	16.07		130.0	
		Z	4.46	65.96	15.90		130.0	
10613-AAB	IEEE 802.11ac WiFi (20MHz, MCS6, 90pc duty cycle)	X	4.48	65.76	15.74	0.46	130.0	± 9.6 %
		Y	4.66	66.13	15.96		130.0	
		Z	4.46	65.81	15.76		130.0	
10614-AAB	IEEE 802.11ac WiFi (20MHz, MCS7, 90pc duty cycle)	X	4.43	65.96	15.99	0.46	130.0	± 9.6 %
		Y	4.60	66.32	16.18		130.0	
		Z	4.42	66.03	16.02		130.0	
10615-AAB	IEEE 802.11ac WiFi (20MHz, MCS8, 90pc duty cycle)	X	4.48	65.60	15.61	0.46	130.0	± 9.6 %
		Y	4.65	65.94	15.81		130.0	
		Z	4.45	65.64	15.62		130.0	
10616-AAB	IEEE 802.11ac WiFi (40MHz, MCS0, 90pc duty cycle)	X	5.12	66.07	16.09	0.46	130.0	± 9.6 %
		Y	5.25	66.37	16.21		130.0	
		Z	5.09	66.11	16.11		130.0	
10617-AAB	IEEE 802.11ac WiFi (40MHz, MCS1, 90pc duty cycle)	X	5.19	66.29	16.18	0.46	130.0	± 9.6 %
		Y	5.32	66.52	16.26		130.0	
		Z	5.17	66.32	16.19		130.0	
10618-AAB	IEEE 802.11ac WiFi (40MHz, MCS2, 90pc duty cycle)	X	5.08	66.28	16.19	0.46	130.0	± 9.6 %
		Y	5.20	66.54	16.29		130.0	
		Z	5.06	66.33	16.20		130.0	
10619-AAB	IEEE 802.11ac WiFi (40MHz, MCS3, 90pc duty cycle)	X	5.09	66.06	16.01	0.46	130.0	± 9.6 %
		Y	5.22	66.35	16.13		130.0	
		Z	5.06	66.10	16.02		130.0	
10620-AAB	IEEE 802.11ac WiFi (40MHz, MCS4, 90pc duty cycle)	X	5.17	66.10	16.08	0.46	130.0	± 9.6 %
		Y	5.31	66.40	16.20		130.0	
		Z	5.15	66.14	16.09		130.0	
10621-AAB	IEEE 802.11ac WiFi (40MHz, MCS5, 90pc duty cycle)	X	5.18	66.25	16.28	0.46	130.0	± 9.6 %
		Y	5.31	66.53	16.38		130.0	
		Z	5.16	66.30	16.30		130.0	
10622-AAB	IEEE 802.11ac WiFi (40MHz, MCS6, 90pc duty cycle)	X	5.20	66.45	16.37	0.46	130.0	± 9.6 %
		Y	5.32	66.67	16.45		130.0	
		Z	5.18	66.49	16.39		130.0	

10623-AAB	IEEE 802.11ac WiFi (40MHz, MCS7, 90pc duty cycle)	X	5.06	65.90	15.96	0.46	130.0	± 9.6 %
		Y	5.20	66.22	16.10		130.0	
		Z	5.04	65.93	15.97		130.0	
10624-AAB	IEEE 802.11ac WiFi (40MHz, MCS8, 90pc duty cycle)	X	5.26	66.14	16.15	0.46	130.0	± 9.6 %
		Y	5.39	66.41	16.26		130.0	
		Z	5.23	66.17	16.16		130.0	
10625-AAB	IEEE 802.11ac WiFi (40MHz, MCS9, 90pc duty cycle)	X	5.51	66.80	16.54	0.46	130.0	± 9.6 %
		Y	5.73	67.31	16.76		130.0	
		Z	5.48	66.81	16.54		130.0	
10626-AAB	IEEE 802.11ac WiFi (80MHz, MCS0, 90pc duty cycle)	X	5.44	66.14	16.07	0.46	130.0	± 9.6 %
		Y	5.55	66.44	16.18		130.0	
		Z	5.41	66.17	16.06		130.0	
10627-AAB	IEEE 802.11ac WiFi (80MHz, MCS1, 90pc duty cycle)	X	5.69	66.79	16.36	0.46	130.0	± 9.6 %
		Y	5.77	66.95	16.39		130.0	
		Z	5.66	66.81	16.36		130.0	
10628-AAB	IEEE 802.11ac WiFi (80MHz, MCS2, 90pc duty cycle)	X	5.45	66.17	15.98	0.46	130.0	± 9.6 %
		Y	5.58	66.53	16.12		130.0	
		Z	5.42	66.19	15.98		130.0	
10629-AAB	IEEE 802.11ac WiFi (80MHz, MCS3, 90pc duty cycle)	X	5.54	66.28	16.03	0.46	130.0	± 9.6 %
		Y	5.65	66.57	16.13		130.0	
		Z	5.51	66.30	16.03		130.0	
10630-AAB	IEEE 802.11ac WiFi (80MHz, MCS4, 90pc duty cycle)	X	5.93	67.67	16.72	0.46	130.0	± 9.6 %
		Y	6.03	67.89	16.79		130.0	
		Z	5.89	67.66	16.71		130.0	
10631-AAB	IEEE 802.11ac WiFi (80MHz, MCS5, 90pc duty cycle)	X	5.82	67.45	16.81	0.46	130.0	± 9.6 %
		Y	5.97	67.81	16.94		130.0	
		Z	5.79	67.49	16.83		130.0	
10632-AAB	IEEE 802.11ac WiFi (80MHz, MCS6, 90pc duty cycle)	X	5.66	66.88	16.55	0.46	130.0	± 9.6 %
		Y	5.74	67.02	16.56		130.0	
		Z	5.64	66.92	16.56		130.0	
10633-AAB	IEEE 802.11ac WiFi (80MHz, MCS7, 90pc duty cycle)	X	5.51	66.37	16.11	0.46	130.0	± 9.6 %
		Y	5.64	66.70	16.23		130.0	
		Z	5.49	66.40	16.12		130.0	
10634-AAB	IEEE 802.11ac WiFi (80MHz, MCS8, 90pc duty cycle)	X	5.49	66.38	16.18	0.46	130.0	± 9.6 %
		Y	5.63	66.73	16.31		130.0	
		Z	5.47	66.41	16.19		130.0	
10635-AAB	IEEE 802.11ac WiFi (80MHz, MCS9, 90pc duty cycle)	X	5.37	65.68	15.55	0.46	130.0	± 9.6 %
		Y	5.51	66.08	15.72		130.0	
		Z	5.34	65.68	15.54		130.0	
10636-AAC	IEEE 802.11ac WiFi (160MHz, MCS0, 90pc duty cycle)	X	5.87	66.53	16.18	0.46	130.0	± 9.6 %
		Y	5.96	66.80	16.26		130.0	
		Z	5.84	66.55	16.18		130.0	
10637-AAC	IEEE 802.11ac WiFi (160MHz, MCS1, 90pc duty cycle)	X	6.02	66.93	16.36	0.46	130.0	± 9.6 %
		Y	6.10	67.16	16.42		130.0	
		Z	5.99	66.94	16.36		130.0	
10638-AAC	IEEE 802.11ac WiFi (160MHz, MCS2, 90pc duty cycle)	X	6.02	66.89	16.32	0.46	130.0	± 9.6 %
		Y	6.11	67.15	16.40		130.0	
		Z	5.99	66.90	16.32		130.0	

10639-AAC	IEEE 802.11ac WiFi (160MHz, MCS3, 90pc duty cycle)	X	5.98	66.80	16.32	0.46	130.0	± 9.6 %
		Y	6.09	67.11	16.42		130.0	
		Z	5.96	66.82	16.32		130.0	
10640-AAC	IEEE 802.11ac WiFi (160MHz, MCS4, 90pc duty cycle)	X	5.98	66.79	16.25	0.46	130.0	± 9.6 %
		Y	6.09	67.11	16.37		130.0	
		Z	5.95	66.81	16.25		130.0	
10641-AAC	IEEE 802.11ac WiFi (160MHz, MCS5, 90pc duty cycle)	X	6.05	66.80	16.28	0.46	130.0	± 9.6 %
		Y	6.13	67.01	16.33		130.0	
		Z	6.03	66.81	16.27		130.0	
10642-AAC	IEEE 802.11ac WiFi (160MHz, MCS6, 90pc duty cycle)	X	6.07	66.99	16.54	0.46	130.0	± 9.6 %
		Y	6.18	67.28	16.63		130.0	
		Z	6.05	67.01	16.55		130.0	
10643-AAC	IEEE 802.11ac WiFi (160MHz, MCS7, 90pc duty cycle)	X	5.92	66.69	16.29	0.46	130.0	± 9.6 %
		Y	6.01	66.95	16.37		130.0	
		Z	5.89	66.71	16.29		130.0	
10644-AAC	IEEE 802.11ac WiFi (160MHz, MCS8, 90pc duty cycle)	X	6.02	67.01	16.47	0.46	130.0	± 9.6 %
		Y	6.17	67.43	16.63		130.0	
		Z	6.00	67.03	16.46		130.0	
10645-AAC	IEEE 802.11ac WiFi (160MHz, MCS9, 90pc duty cycle)	X	6.18	67.13	16.49	0.46	130.0	± 9.6 %
		Y	6.48	67.96	16.85		130.0	
		Z	6.15	67.13	16.48		130.0	
10646-AAF	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, QPSK, UL Subframe=2,7)	X	14.66	105.10	36.14	9.30	60.0	± 9.6 %
		Y	34.83	124.98	42.17		60.0	
		Z	17.09	107.30	36.45		60.0	
10647-AAF	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK, UL Subframe=2,7)	X	12.88	102.80	35.56	9.30	60.0	± 9.6 %
		Y	28.98	121.44	41.35		60.0	
		Z	15.19	105.38	36.00		60.0	
10648-AAA	CDMA2000 (1x Advanced)	X	0.46	60.48	7.48	0.00	150.0	± 9.6 %
		Y	0.64	62.67	10.12		150.0	
		Z	0.43	60.23	7.08		150.0	
10652-AAD	LTE-TDD (OFDMA, 5 MHz, E-TM 3.1, Clipping 44%)	X	3.39	66.19	15.99	2.23	80.0	± 9.6 %
		Y	3.73	67.27	16.73		80.0	
		Z	3.47	66.55	16.10		80.0	
10653-AAD	LTE-TDD (OFDMA, 10 MHz, E-TM 3.1, Clipping 44%)	X	3.95	65.70	16.32	2.23	80.0	± 9.6 %
		Y	4.24	66.55	16.83		80.0	
		Z	4.01	65.99	16.41		80.0	
10654-AAD	LTE-TDD (OFDMA, 15 MHz, E-TM 3.1, Clipping 44%)	X	3.95	65.36	16.35	2.23	80.0	± 9.6 %
		Y	4.21	66.20	16.82		80.0	
		Z	4.01	65.65	16.45		80.0	
10655-AAE	LTE-TDD (OFDMA, 20 MHz, E-TM 3.1, Clipping 44%)	X	4.02	65.33	16.40	2.23	80.0	± 9.6 %
		Y	4.27	66.19	16.86		80.0	
		Z	4.08	65.61	16.49		80.0	
10658-AAA	Pulse Waveform (200Hz, 10%)	X	22.73	92.81	21.68	10.00	50.0	± 9.6 %
		Y	100.00	114.13	27.80		50.0	
		Z	11.47	84.03	19.31		50.0	
10659-AAA	Pulse Waveform (200Hz, 20%)	X	100.00	107.89	23.77	6.99	60.0	± 9.6 %
		Y	100.00	112.00	25.89		60.0	
		Z	100.00	107.59	23.87		60.0	

10660-AAA	Pulse Waveform (200Hz, 40%)	X	100.00	103.98	20.71	3.98	80.0	± 9.6 %
		Y	100.00	111.62	24.50		80.0	
		Z	100.00	102.80	20.39		80.0	
10661-AAA	Pulse Waveform (200Hz, 60%)	X	100.00	97.71	16.95	2.22	100.0	± 9.6 %
		Y	100.00	112.86	23.84		100.0	
		Z	12.87	82.54	13.42		100.0	
10662-AAA	Pulse Waveform (200Hz, 80%)	X	0.20	60.00	3.58	0.97	120.0	± 9.6 %
		Y	100.00	113.04	22.31		120.0	
		Z	0.23	60.00	3.32		120.0	
10670-AAA	Bluetooth Low Energy	X	100.00	103.45	19.60	2.19	100.0	± 9.6 %
		Y	100.00	115.24	25.21		100.0	
		Z	100.00	101.01	18.73		100.0	

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

ANNEX B

DIPOLE CALIBRATION REPORTS

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

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

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

Accreditation No.: **SCS 0108**

Client **TüV SÜD UK**

Certificate No: **D450V3-1094_Dec18**

CALIBRATION CERTIFICATE

Object	D450V3 - SN:1094
Calibration procedure(s)	QA CAL-15.v8 Calibration procedure for dipole validation kits below 700 MHz
Calibration date:	December 07, 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: 5277 (20x)	04-Apr-18 (No. 217-02682)	Apr-19
Type-N mismatch combination	SN: 5047.2 / 06327	04-Apr-18 (No. 217-02683)	Apr-19
Reference Probe EX3DV4	SN: 3877	30-Dec-17 (No. EX3-3877_Dec17)	Dec-18
DAE4	SN: 654	05-Jul-18 (No. DAE4-654_Jul18)	Jul-19

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power meter E4419B	SN: GB41293874	12-Jun-18 (No. 217-02285/02284)	In house check: Jun-20
Power sensor E4412A	SN: MY41498087	12-Jun-18 (No. 217-02285)	In house check: Jun-20
Power sensor E4412A	SN: 000110210	12-Jun-18 (No. 217-02284)	In house check: Jun-20
RF generator HP 8648C	SN: US3642U01700	04-Aug-99 (in house check Jun-18)	In house check: Jun-20
Network Analyzer Agilent E8358A	SN: US41080477	31-Mar-14 (in house check Oct-18)	In house check: Oct-19

	Name	Function	Signature
Calibrated by:	Jeton Kastrati	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: December 10, 2018

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

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

S Schweizerischer Kalibrierdienst
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Accreditation No.: **SCS 0108**

Glossary:

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

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
b) IEC 62209-1, "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	V52.10.2
Extrapolation	Advanced Extrapolation	
Phantom	ELI4 Flat Phantom	Shell thickness: 2 ± 0.2 mm
Distance Dipole Center - TSL	15 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	450 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	43.5	0.87 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	44.1 ± 6 %	0.87 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	1.12 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**4.49 W/kg ± 18.1 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	250 mW input power	0.749 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**3.00 W/kg ± 17.6 % (k=2)**

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	56.7	0.94 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	55.9 ± 6 %	0.92 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm^3 (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	1.10 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**4.46 W/kg ± 18.1 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	250 mW input power	0.738 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**2.99 W/kg ± 17.6 % (k=2)**

Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	59.5 Ω - 3.2 jΩ
Return Loss	- 20.8 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	57.3 Ω - 5.4 jΩ
Return Loss	- 21.5 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.352 ns

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

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

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	September 15, 2015

DASY5 Validation Report for Head TSL

Date: 07.12.2018

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 450 MHz D450V3; Type: D450V3; Serial: D450V3 - SN:1094

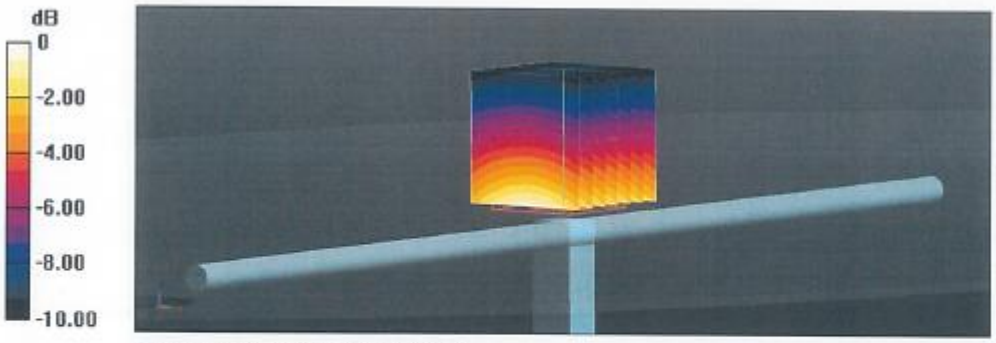
Communication System: UID 0 - CW; Frequency: 450 MHz
Medium parameters used: f = 450 MHz; σ = 0.87 S/m; ε_r = 44.1; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN3877; ConvF(10.5, 10.5, 10.5) @ 450 MHz; Calibrated: 30.12.2017
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn654; Calibrated: 05.07.2018
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1003
- DASY52 52.10.2(1495); SEMCAD X 14.6.12(7450)

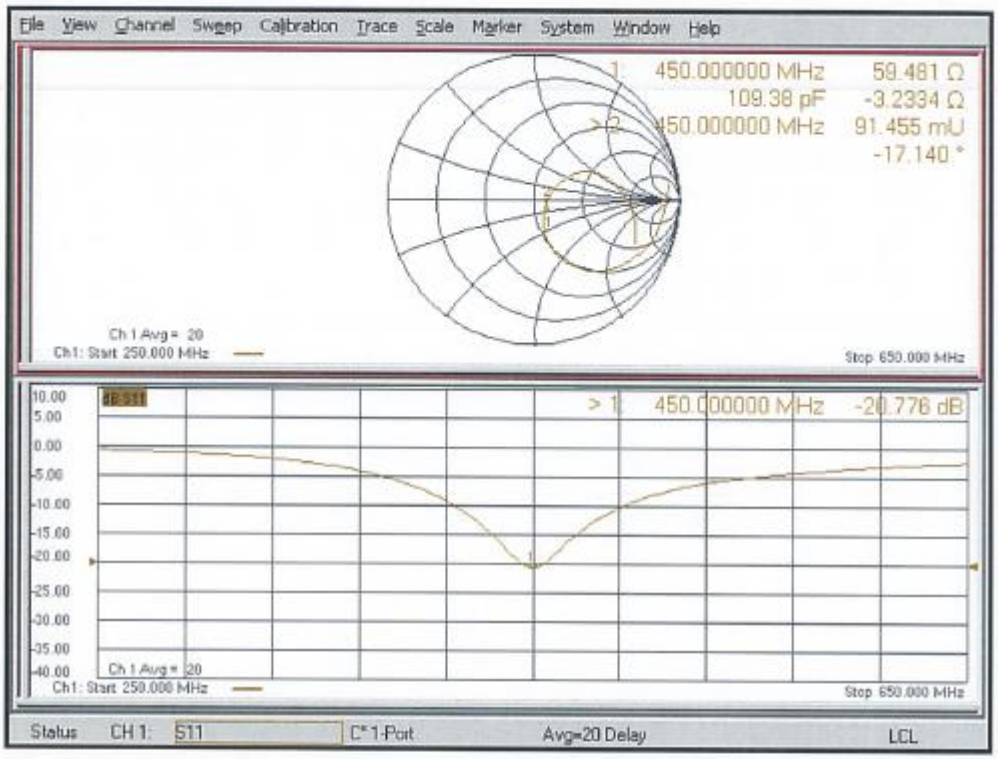
Dipole Calibration for Head Tissue/d=15mm, Pin=250mW/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 38.68 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 1.72 W/kg
SAR(1 g) = 1.12 W/kg; SAR(10 g) = 0.749 W/kg
Maximum value of SAR (measured) = 1.50 W/kg



0 dB = 1.50 W/kg = 1.76 dBW/kg

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 07.12.2018

Test Laboratory: The name of your organization

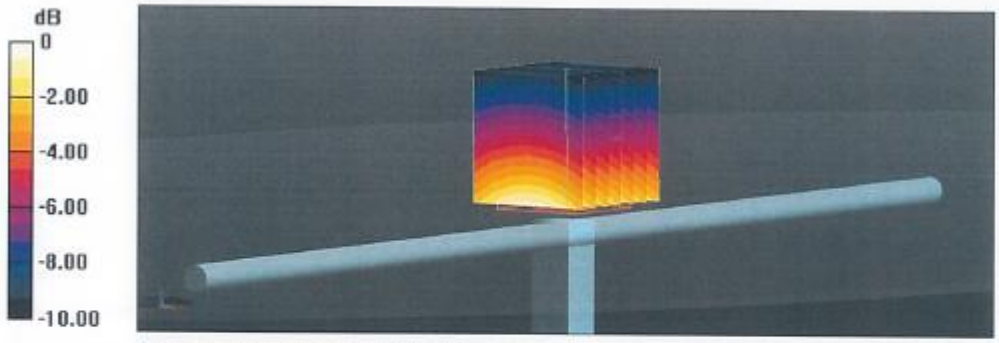
DUT: Dipole 450 MHz D450V3; Type: D450V3; Serial: D450V3 - SN:1094

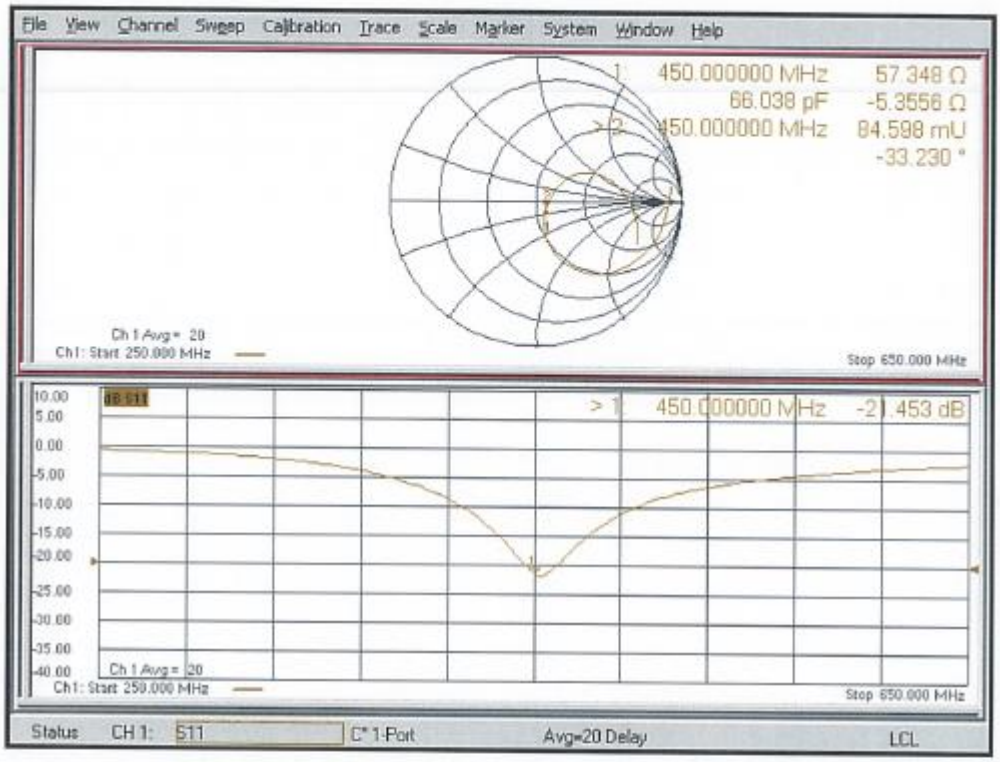
Communication System: UID 0 - CW; Frequency: 450 MHz
Medium parameters used: f = 450 MHz; σ = 0.92 S/m; ε_r = 55.9; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN3877; ConvF(10.8, 10.8, 10.8) @ 450 MHz; Calibrated: 30.12.2017
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn654; Calibrated: 05.07.2018
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1003
- DASY52 52.10.2(1495); SEMCAD X 14.6.12(7450)

Dipole Calibration for Body Tissue/d=15mm, Pin=250mW/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 41.27 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 1.70 W/kg
SAR(1 g) = 1.1 W/kg; SAR(10 g) = 0.738 W/kg
Maximum value of SAR (measured) = 1.48 W/kg



0 dB = 1.48 W/kg = 1.70 dBW/kg

Impedance Measurement Plot for Body TSL