

FCC SAR Test Report

Client Name : SHENZHEN ELECTRON TECHNOLOGY CO.,LTD.

Client Address : Bld.2,Yingfeng Industrial Zone,Tantou
Community, Songgang Street,Baoan,
Shenzhen, China

Product Name : Android Tablet

Report Date : Aug. 15, 2022

Shenzhen Anbotek Compliance Laboratory Limited



Shenzhen Anbotek Compliance Laboratory Limited

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TEST REPORT

Applicant : SHENZHEN ELECTRON TECHNOLOGY CO.,LTD.
Manufacturer : SHENZHEN ELECTRON TECHNOLOGY CO.,LTD.
Product Name : Android Tablet
Model No. : T30
Trade Mark : N.A.
Rating(s) : Input: 5V= 2A (with DC 3.8V, 6000mAh Battery inside)

Test Standard(s) : IEC 62209-2:2010; IEEE 1528:2013; FCC 47 CFR Part 2.1093;
ANSI/IEEE C95.1:2005; Reference FCC KDB 447498; KDB 248227;
KDB 616217; KDB 941225; KDB 865664

The device described above is tested by Shenzhen Anbotek Compliance Laboratory Limited to determine the maximum emission levels emanating from the device and the severe levels of the device can endure and its performance criterion. The measurement results are contained in this test report and Shenzhen Anbotek Compliance Laboratory Limited is assumed full of responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT (Equipment Under Test) is technically compliant with the IEC 62209-2:2010, IEEE 1528:2013, FCC 47 CFR Part 2.1093, ANSI/IEEE C95.1:2005 and Reference KDB 447498, KDB 248227, KDB 616217, KDB 941225, KDB 865664 requirements.

This report applies to above tested sample only and shall not be reproduced in part without written approval of Shenzhen Anbotek Compliance Laboratory Limited.

Date of Receipt

Jul. 22, 2022

Date of Test

Jul. 25~28, 2022

Prepared By

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Version

Version No.	Date	Description
R00	Aug. 15, 2022	Original Issue.

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1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing are as follows.

<Highest SAR Summary>

Frequency Band	Highest Reported 1g-SAR(W/Kg)	SAR Test Limit (W/Kg)
	Body-worn(0mm)	
WIFI 2.4G	0.327	1.6
WIFI 5.2G	0.386	1.6
WIFI 5.8G	0.186	1.6
LTE Band 2	0.783	1.6
LTE Band 4	0.796	1.6
LTE Band 5	0.798	1.6
LTE Band 7	0.685	1.6
LTE Band 41	0.671	1.6
Simultaneous SAR	1.184	1.6
Test Result	PASS	

Note: According to KDB 447498 D01 clause 4.3.2, sum 1-g SAR less than the SAR limit. That simultaneous transmission configuration test is exclusion.

This device is in compliance with Specific Absorption Rate (SAR) for general population/uncontrolled exposure limits (1.6 W/kg) specified in KDB 447498 D01 v06, 2015 and ANSI/IEEE C95.1:2005, and had been tested in accordance with the measurement methods and procedures specified in IEEE 1528-2013.



2. General Information

2.1 Client Information

Applicant	:	SHENZHEN ELECTRON TECHNOLOGY CO.,LTD.
Address	:	Bld.2,Yingfeng Industrial Zone,Tantou Community, Songgang Street,Baoan, Shenzhen, China
Manufacturer	:	SHENZHEN ELECTRON TECHNOLOGY CO.,LTD.
Address	:	Bld.2,Yingfeng Industrial Zone,Tantou Community, Songgang Street,Baoan, Shenzhen, China
Factory	:	SHENZHEN ELECTRON TECHNOLOGY CO.,LTD.
Address	:	Bld.2,Yingfeng Industrial Zone,Tantou Community, Songgang Street,Baoan, Shenzhen, China

2.2 Description of Equipment Under Test (EUT)

Product Name	:	Android Tablet
Model No.	:	T30
Trade Mark	:	N.A.
Test Power Supply	:	DC 3.8V Battery inside
Test Sample No.	:	1-2-1(Engineering Sample)
Product Description	Operation Frequency:	BLE: 2402~2480MHz WiFi 2.4G: 2412~2462MHz for 802.11b/g/n(HT20) WiFi 5.2G: 5180~5240MHz WiFi 5.8G: 5745~5825MHz LTE-FDD Band 2: TX: 1850.7 ~ 1909.3 MHz LTE-FDD Band 4: TX:1710.7 ~ 1754.3 MHz LTE-FDD Band 5: TX: 824.7 ~ 848.3 MHz LTE-FDD Band 7: TX: 2502.5MHz-2567.5MHz LTE-TDD Band 41: TX: 2557.5MHz-2652.5MHz
	Modulation Type:	BLE: GFSK WiFi 2.4G: CCK, DQPSK, DBPSK for DSSS; 64QAM, 16QAM, QPSK, BPSK for OFDM WiFi 5G: OFDM with BPSK, QPSK, 16QAM, 64QAM, 256QAM



		LTE:QPSK,16QAM
	Antenna Type:	FPC Antenna
	Antenna Gain(Peak):	BT BLE: 0dBi(Provided by customer) WiFi 2.4G: 0dBi(Provided by customer) WiFi 5.2G/5.8G: 0dBi(Provided by customer) LTE-FDD Band 2: 0 dBi (Provided by customer) LTE-FDD Band 4: 0 dBi (Provided by customer) LTE-FDD Band 5: 0 dBi (Provided by customer) LTE-FDD Band 7: 0 dBi (Provided by customer) LTE-TDD Band 41: 0 dBi (Provided by customer)
Remark: 1) For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.		



2.3 Device Category and SAR Limits

This device belongs to portable device category because its radiating structure is allowed to be used within 20 centimeters of the body of the user. Limit for General Population/Uncontrolled exposure should be applied for this device, it is 1.6 W/kg as averaged over any 1 gram of tissue.

2.4 Applied Standard

The Specific Absorption Rate (SAR) testing specification, method, and procedure for this device is in accordance with the following standards:

- IEC 62209-2:2010;
- IEEE 1528:2013;
- ANSI/IEEE C95.1:2005
- FCC 47 CFR Part 2.1093
- Reference FCC KDB 447498; KDB 248227; KDB 616217; KDB 941225; KDB 865664

2.5 Environment of Test Site

Items	Required	Actual
Temperature (°C)	18-25	22~23
Humidity (%RH)	30-70	55~65

2.6 Test Configuration

For WIFI and Bluetooth SAR testing, engineering testing software installed on the EUT can provide continuous transmitting RF signal.



2.7 Description of Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

FCC-Registration No.: 184111

Shenzhen Anbotek Compliance Laboratory Limited, EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration No. 184111, September 30, 2020.

ISED-Registration No.: 8058A

Shenzhen Anbotek Compliance Laboratory Limited, EMC Laboratory has been registered and fully described in a report filed with the (ISED) Innovation, Science and Economic Development Canada. The acceptance letter from the ISED is maintained in our files. Registration 8058A, September 30, 2020.

Test Location

Shenzhen Anbotek Compliance Laboratory Limited.

1/F, Building D, Sogood Science and Technology Park, Sanwei community, Hangcheng Street, Bao'an District, Shenzhen, Guangdong, China.518102



3. Specific Absorption Rate (SAR)

3.1 Introduction

SAR is related to the rate at which energy is absorbed per unit mass in an object exposed to a radio field. The SAR distribution in a biological body is complicated and is usually carried out by experimental techniques or numerical modeling. The standard recommends limits for two tiers of groups, occupational/controlled and general population/uncontrolled, based on a person's awareness and ability to exercise control over his or her exposure. In general, occupational/controlled exposure limits are higher than the limits for general population/uncontrolled.

3.2 SAR Definition

The SAR definition is the time derivative (rate) of the incremental energy (dW) absorbed by (dissipated in) an incremental mass (dm) contained in a volume element (dv) of a given density (ρ). The equation description is as below:

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

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

SAR measurement can be either related to the temperature elevation in tissue by

$$\text{SAR} = C \left(\frac{\delta T}{\delta t} \right)$$

Where: C is the specific heat capacity, δT is the temperature rise and δt is the exposure duration, or related to the electrical field in the tissue by

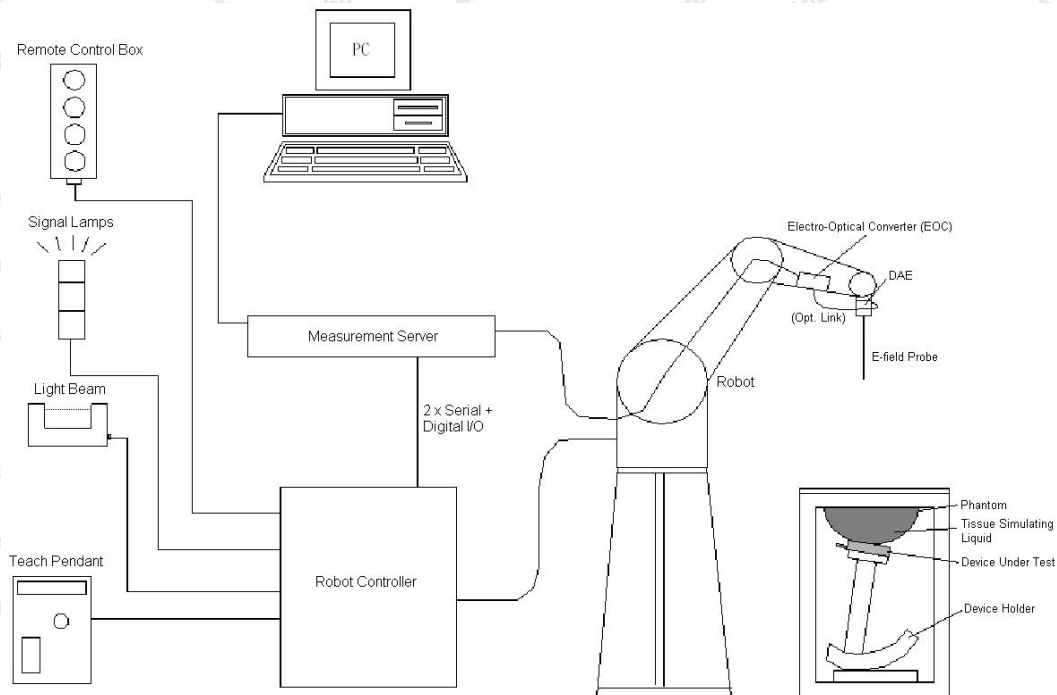
$$\text{SAR} = \frac{\sigma |E|^2}{\rho}$$

Where: σ is the conductivity of the tissue, ρ is the mass density of the tissue and E is the RMS electrical field strength.

However for evaluating SAR of low power transmitter, electrical field measurement is typically applied.



4. SAR Measurement System



DASY System Configurations

The DASY system for performance compliance tests is illustrated above graphically. This system consists of the following items:

- A standard high precision 6-axis robot with controller, a teach pendant and software
- A data acquisition electronic (DAE) attached to the robot arm extension
- A dosimetric probe equipped with an optical surface detector system
- The electro-optical converter (EOC) performs the conversion between optical and electrical signals
- A measurement server performs the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
- A probe alignment unit which improves the accuracy of the probe positioning
- A computer operating Windows XP
- DASY software
- Remote control with teach pendant and additional circuitry for robot safety such as warning lamps, etc.
- The SAM twin phantom
- A device holder
- Tissue simulating liquid



- Dipole for evaluating the proper functioning of the system

components are described in details in the following sub-sections.

4.1 E-Field Probe

The SAR measurement is conducted with the dosimetric probe (manufactured by SPEAG). The probe is specially designed and calibrated for use in liquid with high permittivity. The dosimetric probe has special calibration in liquid at different frequency. This probe has a built in optical surface detection system to prevent from collision with phantom.

➤ E-Field Probe Specification

<EX3DV4 Probe>

Construction	Symmetrical design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)	 Photo of EX3DV4
Frequency	10 MHz to 6 GHz; Linearity: ± 0.2 dB	
Directivity	± 0.3 dB in HSL (rotation around probe axis) ± 0.5 dB in tissue material (rotation normal to probe axis)	
Dynamic Range	10 μ W/g to 100 mW/g; Linearity: ± 0.2 dB (noise: typically < 1 μ W/g)	
Dimensions	Overall length: 330 mm (Tip: 20 mm) Tip diameter: 2.5 mm (Body: 12 mm) Typical distance from probe tip to dipole centers: 1 mm	

➤ E-Field Probe Calibration

Each probe needs to be calibrated according to a dosimetric assessment procedure with accuracy better than $\pm 10\%$. The spherical isotropy shall be evaluated and within ± 0.25 dB. The sensitivity parameters (NormX, NormY, and NormZ), the diode compression parameter (DCP) and the conversion factor (ConvF) of the probe are tested. The calibration data can be referred to appendix C of this report.

4.2 Data Acquisition Electronics (DAE)

The data acquisition electronics (DAE) consists of a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain-switching multiplexer, a fast 16 bit AD-converter and a command decoder and control logic unit. Transmission to the 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 input impedance of the DAE is 200MOhm; the inputs are symmetrical and floating. Common mode rejection is above 80dB.



Photo of DAE

4.3 Robot

The SPEAG DASY system uses the high precision robots (DASY5: TX60XL) type from Stäubli SA (France). For the 6-axis controller system, the robot controller version (DASY5: CS8c) from Stäubli is used. The Stäubli robot series have many features that are important for our application:

- High precision (repeatability ± 0.035 mm)
- High reliability (industrial design)
- Jerk-free straight movements
- Low ELF interference (the closed metallic construction shields against motor control fields)



Photo of DASY5



4. 4 Measurement Server

The measurement server is based on a PC/104 CPU board with CPU (DASY5: 400 MHz, Intel Celeron), chip disk (DASY5: 128 MB), RAM (DASY5: 128 MB). The necessary circuits for communication with the DAE electronic box, as well as the 16 bit AD converter system for optical detection and digital I/O interface are contained on the DASY I/O board, which is directly connected to the PC/104 bus of the CPU board.

The measurement server performs all the real-time data evaluation for field measurements and surface detection, controls robot movements and handles safety operations.



Photo of Server for DASY5

4. 5 Phantom

<SAM Twin Phantom>

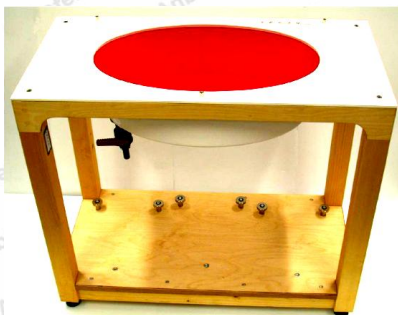
Shell Thickness	2 ± 0.2 mm; Center ear point: 6 ± 0.2 mm	
Filling Volume	Approx. 25 liters	
Dimensions	Length: 1000 mm; Width: 500 mm; Height: adjustable feet	
Measurement Areas	Left Hand, Right Hand, Flat Phantom	

Photo of SAM Phantom

The bottom plate contains three pair of bolts for locking the device holder. The device holder positions are adjusted to the standard measurement positions in the three sections. A white cover is provided to tap the phantom during off-periods to prevent water evaporation and changes in the liquid parameters. On the phantom top, three reference markers are provided to identify the phantom position with respect to the robot.



<ELI4 Phantom>

Shell Thickness	2 ± 0.2 mm (sagging: <1%)	 Photo of ELI4 Phantom
Filling Volume	Approx. 30 liters	
Dimensions	Major ellipse axis: 600 mm Minor axis: 400 mm	

The ELI4 phantom is intended for compliance testing of handheld and body-mounted wireless devices in the frequency range of 30 MHz to 6 GHz. ELI4 is fully compatible with standard and all known tissue simulating liquids.



4.6 Device Holder

The SAR in the phantom is approximately inversely proportional to the square of the distance between the source and the liquid surface. For a source at 5 mm distance, a positioning uncertainty of $\pm 0.5\text{mm}$ would produce a SAR uncertainty of $\pm 20\%$. Accurate device positioning is therefore crucial for accurate and repeatable measurements. The positions in which the devices must be measured are defined by the standards.

The DASY device holder is designed to cope with different positions given in the standard. It has two scales for the device rotation (with respect to the body axis) and the device inclination (with respect to the line between the ear reference points). The rotation center for both scales is the ear reference point (ERP). Thus the device needs no repositioning when changing the angles.

The DASY device holder is constructed of low-loss POM material having the following dielectric parameters: relative permittivity $\epsilon = 3$ and loss tangent $\delta = 0.02$. The amount of dielectric material has been reduced in the closest vicinity of the device, since measurements have suggested that the influence of the clamp on the test results could thus be lowered.



Device Holder



4. 7 Data Storage and Evaluation

➤ Data Storage

The DASY software stores the assessed data from the data acquisition electronics as raw data (in microvolt readings from the probe sensors), together with all the necessary software parameters for the data evaluation (probe calibration data, liquid parameters and device frequency and modulation data) in measurement files. The post-processing software evaluates the desired unit and format for output each time the data is visualized or exported. This allows verification of the complete software setup even after the measurement and allows correction of erroneous parameter settings. For example, if a measurement has been performed with an incorrect crest factor parameter in the device setup, the parameter can be corrected afterwards and the data can be reevaluated.

The measured data can be visualized or exported in different units or formats, depending on the selected probe type (e.g., [V/m], [A/m], [mW/g]). Some of these units are not available in certain situations or give meaningless results, e.g., a SAR-output in a non-loss media, will always be zero. Raw data can also be exported to perform the evaluation with other software packages.

➤ Data Evaluation

The DASY post-processing software (SEMCAD) automatically executes the following procedures to calculate the field units from the microvolt readings at the probe connector. The parameters used in the evaluation are stored in the configuration modules of the software:

Probe parameters:	- Sensitivity	$\text{Norm}_i, a_{i0}, a_{i1}, a_{i2}$
	- Conversion factor	ConvF_i
	- Diode compression point	dcp_i
Device parameters:	- Frequency	f
	- Crest factor	cf
Media parameters:	- Conductivity	σ
	- Density	ρ

These parameters must be set correctly in the software. They can be found in the component documents or they can be imported into the software from the configuration files issued for the DASY components. In the direct measuring mode of the multi-meter option, the parameters of the actual system setup are used. In the scan visualization and export modes, the parameters stored in the corresponding document files are used.

The first step of the evaluation is a linearization of the filtered input signal to account for the compression characteristics of the detector diode. The compensation depends on the input signal, the diode type and the DC-transmission factor from the diode to the evaluation electronics. If the exciting field is pulsed, the crest factor of the signal must be known to



correctly compensate for peak power.

The formula for each channel can be given as:

$$V_i = U_i + U_i^2 \cdot \frac{cf}{dcp_i}$$

with V_i = compensated signal of channel i, (i = x, y, z)

U_i = input signal of channel i, (i = x, y, z)

cf = crest factor of exciting field (DASY parameter)

dcp_i = diode compression point (DASY parameter)

From the compensated input signals, the primary field data for each channel can be evaluated:

$$\text{E-field Probes: } E_i = \sqrt{\frac{V_i}{\text{Norm}_i \cdot \text{ConvF}}}$$

$$\text{H-field Probes: } H_i = \sqrt{V_i \cdot \frac{a_{i0} + a_{i1}f + a_{i2}f^2}{f}}$$

with V_i = compensated signal of channel i, (i = x, y, z)

Norm_i = sensor sensitivity of channel i, (i = x, y, z), $\mu\text{V}/(\text{V/m})^2$ for E-field Probes

ConvF = sensitivity enhancement in solution

a_{ij} = sensor sensitivity factors for H-field probes

f = carrier frequency [GHz]

E_i = electric field strength of channel i in V/m

H_i = magnetic field strength of channel i in A/m

The RSS value of the field components gives the total field strength (Hermitian magnitude):

$$E_{\text{tot}} = \sqrt{E_x^2 + E_y^2 + E_z^2}$$

The primary field data are used to calculate the derived field units.

$$\text{SAR} = E_{\text{tot}}^2 \cdot \frac{\sigma}{\rho \cdot 1000}$$

with SAR = local specific absorption rate in mW/g

E_{tot} = total field strength in V/m

σ = conductivity in [mho/m] or [Siemens/m]

ρ = equivalent tissue density in g/cm³

Note that the density is set to 1, to account for actual head tissue density rather than the density of the tissue simulating liquid.



5. Test Equipment List

Manufacturer	Name of Equipment	Type/Model	Serial Number	Calibration	
				Last Cal.	Due Date
SPEAG	5GHz System Validation Kit	D5GHzV2	1160	Oct. 02, 2021	Oct. 01, 2024
SPEAG	2450MHz System Validation Kit	D2450V2	910	Jun. 15, 2021	Jun. 14, 2024
SPEAG	835MHz System Validation Kit	D835V2	4d154	Jun. 16, 2021	Jun. 15, 2024
SPEAG	1750MHz System Validation Kit	D1750V2	1021	Jul. 01, 2021	Jun. 30, 2024
SPEAG	1900MHz System Validation Kit	D1900V2	5d175	Jun. 15, 2019	Jun. 14, 2022
SPEAG	2600MHz System Validation Kit	D2600V2	1058	Jun. 19, 2021	Jun. 18, 2024
SPEAG	Data Acquisition Electronics	DAE4	387	Sept. 06, 2021	Sept. 05, 2022
SPEAG	Dosimetric E-Field Probe	EX3DV4	7396	May 06, 2022	May 05, 2023
Agilent	ENA Series Network Analyzer	E5071C	MY46317418	Oct. 26, 2021	Oct. 25, 2022
SPEAG	DAK	DAK-3.5	1226	NCR	NCR
SPEAG	ELI Phantom	QDOVA004AA	2058	NCR	NCR
AR	Amplifier	ZHL-42W	QA1118004	NCR	NCR
Agilent	Power Meter	N1914A	MY50001102	Oct. 26, 2021	Oct. 25, 2022
Agilent	Power Sensor	N8481H	MY51240001	Oct. 26, 2021	Oct. 25, 2022
R&S	Spectrum Analyzer	N9020A	MY51170037	Oct. 26, 2021	Oct. 25, 2022
Agilent	Signal Generation	N5182A	MY48180656	Oct. 26, 2021	Oct. 25, 2022
Worken	Directional Coupler	0110A05601O-10	COM5BNW1A2	Oct. 26, 2021	Oct. 25, 2022

Note:

1. The calibration certificate of DASY can be referred to appendix C of this report.
2. The dipole calibration interval can be extended to 3 years with justification. The dipoles are also not physically damaged, or repaired during the interval.
3. The Insertion Loss calibration of Dual Directional Coupler and Attenuator were characterized via the network analyzer and compensated during system check.
4. The dielectric probe kit was calibrated via the network analyzer, with the specified procedure (calibrated in pure water) and calibration kit (standard) short circuit, before the dielectric measurement. The specific procedure and calibration kit are provided by Agilent.
5. In system check we need to monitor the level on the power meter, and adjust the power amplifier level to have precise power level to the dipole; the measured SAR will be normalized to 1W input power according to the ratio of 1W to the input power to the dipole. For system check, the calibration of the power amplifier is deemed not critically required for correct measurement; the power meter is critical and we do have calibration for it

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6. Tissue Simulating Liquids

For the measurement of the field distribution inside the SAM phantom with DASY, the phantom must be filled with around 25 liters of homogeneous body tissue simulating liquid. For head SAR testing, the liquid height from the ear reference point (ERP) of the phantom to the liquid top surface is larger than 15 cm, which is shown in Fig. 6.1. For body SAR testing, the liquid height from the center of the flat phantom to the liquid top surface is larger than 15 cm, which is shown as followed:



Photo of Liquid Height for Body SAR

The following table gives the recipes for tissue simulating liquid.

Frequency (MHz)	Water (%)	Sugar (%)	Cellulose (%)	Salt (%)	Prevento I (%)	DGBE (%)	Conductivity (σ)	Permittivity (ϵ_r)
For Body								
835	50.8	48.2	0	0.9	0.1	0	0.97	55.2
1750	70.2	0	0	0.4	0	29.4	1.49	53.4
1800,1900,2000	70.2	0	0	0.4	0	29.4	1.52	53.3
2450	68.6	0	0	0	31.4	0	1.95	52.7
2600	65.5	0	0	0	0	31.5	2.16	52.5
5200	78.6	0	10.7	0	10.7	0	5.27	49.0
5800	78.5	0	10.8	0	10.7	0	6.00	48.2



The following table shows the measuring results for simulating liquid.

Tissue Type	Measured Frequency (MHz)	Target Tissue		Measured Tissue				Liquid Temp.(℃)	Test Date
		ϵ_r	σ	ϵ_r	Dev. (%)	σ	Dev. (%)		
835MSL	835	55.2	0.97	54.38	-1.49	0.93	-4.12	22.7	07/26/2022
1750MSL	1750	53.4	1.49	53.26	-0.26	1.43	-4.03	22.6	07/25/2022
1900MSL	1900	53.3	1.52	52.82	-0.90	1.45	-4.61	22.8	07/25/2022
2450MSL	2450	52.7	1.95	52.28	-0.80	1.86	-4.62	22.5	07/27/2022
2600MSL	2600	52.5	2.16	52.17	-0.63	2.07	-4.17	22.8	07/26/2022
5200MSL	5200	49.0	5.27	48.73	-0.55	5.37	1.90	22.6	07/28/2022
5800MSL	5800	48.2	6.0	49.12	1.91	5.87	-2.17	22.7	07/28/2022



7. System Verification Procedures

Each DASY system is equipped with one or more system validation kits. These units, together with the predefined measurement procedures within the DASY software, enable the user to conduct the system performance check and system validation. System validation kit includes a dipole, tripod holder to fix it underneath the flat phantom and a corresponding distance holder.

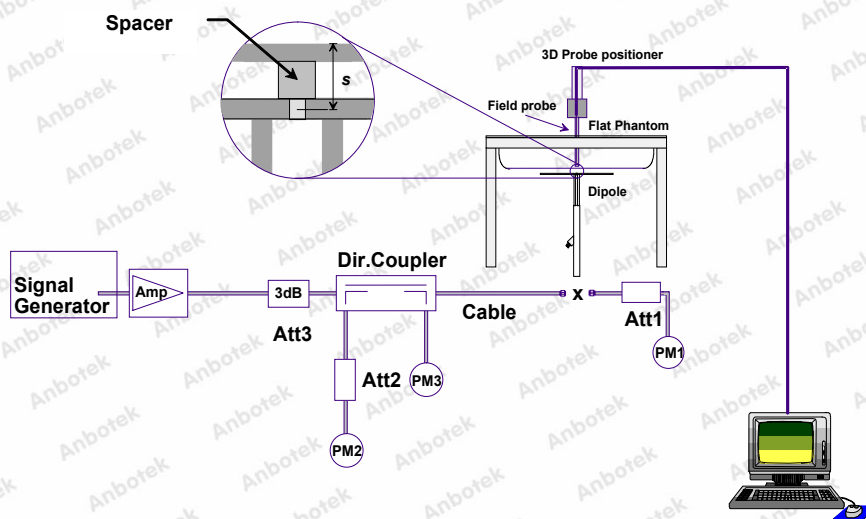
➤ Purpose of System Performance check

The system performance check verifies that the system operates within its specifications. System and operator errors can be detected and corrected. It is recommended that the system performance check be performed prior to any usage of the system in order to guarantee reproducible results. The system performance check uses normal SAR measurements in a simplified setup with a well characterized source. This setup was selected to give a high sensitivity to all parameters that might fail or vary over time. The system check does not intend to replace the calibration of the components, but indicates situations where the system uncertainty is exceeded due to drift or failure.

➤ System Setup

In the simplified setup for system evaluation, the EUT is replaced by a calibrated dipole and the power source is replaced by a continuous wave that comes from a signal generator. The calibrated dipole must be placed beneath the flat phantom section of the SAM twin phantom with the correct distance holder. The distance holder should touch the phantom surface with a light pressure at the reference marking and be oriented parallel to the long side of the phantom.

The equipment setup is shown below:



System Setup for System Evaluation

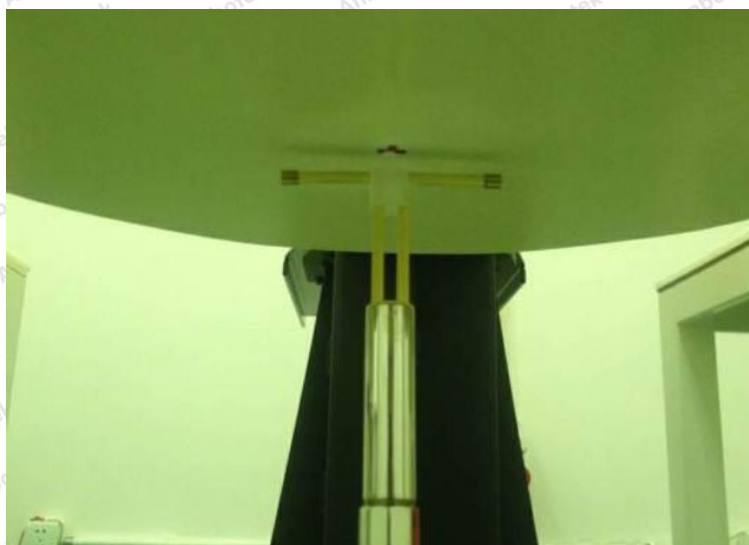


Photo of Dipole Setup

Validation Results

Comparing to the original SAR value provided by SPEAG, the verification data should be within its specification of 10%. The table below shows the target SAR and measured SAR after normalized to 1W input power. It indicates that the system performance check can meet the variation criterion and the plots can be referred to Appendix A of this report.

Frequency (MHz)	Liquid Type	Power fed onto reference dipole (mW)	Targeted SAR (W/kg)	Measured SAR (W/kg)	Normalized SAR (W/kg)	Deviation (%)	Test Date
835	Body	250	9.57	2.36	9.44	-1.36	07/26/2022
1750	Body	250	36.7	9.67	38.68	5.40	07/25/2022
1900	Body	250	40.1	10.16	40.64	1.35	07/25/2022
2450	Body	250	51.8	12.87	51.48	-0.62	07/27/2022
2600	Body	250	56.8	13.92	55.68	-1.97	07/26/2022
5200	Body	100	77.8	7.62	76.2	2.10	07/28/2022
5800	Body	100	78.3	7.85	78.5	0.25	07/28/2022

Target and Measurement SAR after Normalized

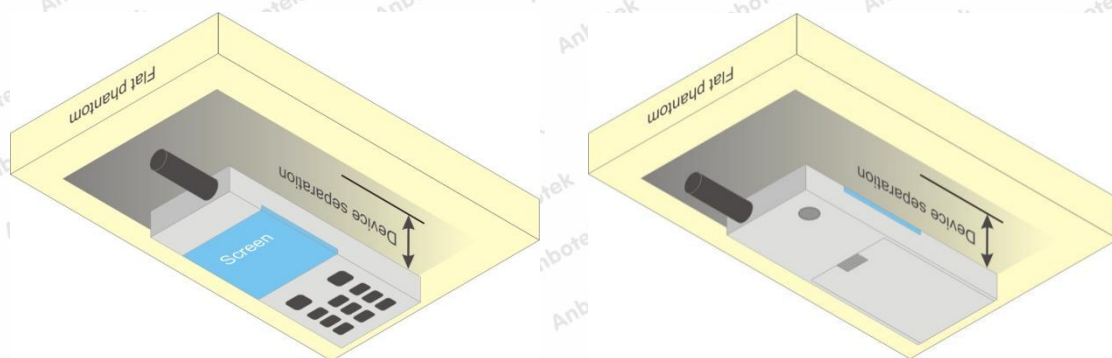


8. EUT Testing Position

8.1 Body Worn Position

Body-worn operating configurations are tested with the belt-clips and holsters attached to the device and positioned against a flat phantom in a normal use configuration. Per KDB 648474 D04, body-worn accessory exposure is typically related to voice mode operations when handsets are carried in body-worn accessories. The body-worn accessory procedures in FCC KDB 447498 D01 v06, 2015 should be used to test for body-worn accessory SAR compliance, without a headset connected to it. This enables the test results for such configuration to be compatible with that required for hotspot mode when the body-worn accessory test separation distance is greater than or equal to that required for hotspot mode, when applicable. When the reported SAR for body-worn accessory, measured without a headset connected to the handset is $< 1.2 \text{ W/kg}$, the highest reported SAR configuration for that wireless mode and frequency band should be repeated for that body-worn accessory with a headset attached to the handset.

Accessories for body-worn operation configurations are divided into two categories: those that do not contain metallic components and those that do contain metallic components and those that do contain metallic components. When multiple accessories that do not contain metallic components are supplied with the device, the device is tested with only the accessory that dictates the closest spacing to the body. Then multiple accessories that contain metallic components are test with the device with each accessory. If multiple accessories share an identical metallic component (i.e. the same metallic belt-chip used with different holsters with no other metallic components) only the accessory that dictates the closest spacing to the body is tested.



Body Worn Position



9. Measurement Procedures

The measurement procedures are as follows:

- (a) Use base station simulator (if applicable) or engineering software to transmit RF power continuously (continuous Tx) in the middle channel.
- (b) Keep EUT to radiate maximum output power or 100% duty factor (if applicable)
- (c) Measure output power through RF cable and power meter.
- (d) Place the EUT in the positions as setup photos demonstrates.
- (e) Set scan area, grid size and other setting on the DASY software.
- (f) Measure SAR transmitting at the middle channel for all applicable exposure positions.
- (g) Identify the exposure position and device configuration resulting the highest SAR
- (h) Measure SAR at the lowest and highest channels at the worst exposure position and device configuration if applicable.

According to the test standard, the recommended procedure for assessing the peak spatial-average SAR value consists of the following steps:

- (a) Power reference measurement
- (b) Area scan
- (c) Zoom scan
- (d) Power drift measurement

12.1 Spatial Peak SAR Evaluation

The procedure for spatial peak SAR evaluation has been implemented according to the test standard. It can be conducted for 1g and 10g, as well as for user-specific masses. The DASY software includes all numerical procedures necessary to evaluate the spatial peak SAR value.

The base for the evaluation is a "cube" measurement. The measured volume must include the 1g and 10g cubes with the highest averaged SAR values. For that purpose, the center of the measured volume is aligned to the interpolated peak SAR value of a previously performed area scan.

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

- (a) Extraction of the measured data (grid and values) from the Zoom Scan
- (b) Calculation of the SAR value at every measurement point based on all stored data (A/D values and measurement parameters)
- (c) Generation of a high-resolution mesh within the measured volume
- (d) Interpolation of all measured values from the measurement grid to the high-resolution grid



- (e) Extrapolation of the entire 3-D field distribution to the phantom surface over the distance from sensor to surface
- (f) Calculation of the averaged SAR within masses of 1g and 10g

12.2 Power Reference Measurement

The Power Reference Measurement and Power Drift Measurements are for monitoring the power drift of the device under test in the batch process. The minimum distance of probe sensors to surface determines the closest measurement point to phantom surface. This distance cannot be smaller than the distance of sensor calibration points to probe tip as defined in the probe properties.

12.3 Area Scan Procedures

The area scan is used as a fast scan in two dimensions to find the area of high field values, before doing a fine measurement around the hot spot. The sophisticated interpolation routines implemented in DASY software can find the maximum found in the scanned area, within a range of the global maximum. The range (in dB) is specified in the standards for compliance testing. For example, a 2 dB range is required in IEEE standard 1528 and IEC 62209 standards, whereby 3 dB is a requirement when compliance is assessed in accordance with the ARIB standard (Japan), if only one zoom scan follows the area scan, then only the absolute maximum will be taken as reference. For cases where multiple maximums are detected, the number of zoom scans has to be increased accordingly.

Area scan parameters extracted from FCC KDB 865664 D01 SAR measurement 100 MHz to 6 GHz.

	≤ 3 GHz	> 3 GHz
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface	$5 \pm 1 \text{ mm}$	$\frac{1}{2} \cdot \delta \cdot \ln(2) \pm 0.5 \text{ mm}$
Maximum probe angle from probe axis to phantom surface normal at the measurement location	$30^\circ \pm 1^\circ$	$20^\circ \pm 1^\circ$
Maximum area scan spatial resolution: $\Delta x_{\text{Area}}, \Delta y_{\text{Area}}$	$\leq 2 \text{ GHz: } \leq 15 \text{ mm}$ $2 - 3 \text{ GHz: } \leq 12 \text{ mm}$	$3 - 4 \text{ GHz: } \leq 12 \text{ mm}$ $4 - 6 \text{ GHz: } \leq 10 \text{ mm}$
	When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be ≤ the corresponding x or y dimension of the test device with at least one measurement point on the test device.	



12.4 Zoom Scan Procedures

Zoom scans are used to assess the peak spatial SAR values within a cubic averaging volume containing 1 gram and 10gram of simulated tissue. The zoom scan measures points (refer to table below) within a cube whose base faces are centered on the maxima found in a preceding area scan job within the same procedure. When the measurement is done, the zoom scan evaluates the averaged SAR for 1 gram and 10 gram and displays these values next to the job's label.

Zoom scan parameters extracted from FCC KDB 865664 D01 SAR measurement 100 MHz to 6 GHz.

			$\leq 3 \text{ GHz}$	$> 3 \text{ GHz}$
Maximum zoom scan spatial resolution: $\Delta x_{\text{Zoom}}, \Delta y_{\text{Zoom}}$			$\leq 2 \text{ GHz}: \leq 8 \text{ mm}$ $2 - 3 \text{ GHz}: \leq 5 \text{ mm}^*$	$3 - 4 \text{ GHz}: \leq 5 \text{ mm}^*$ $4 - 6 \text{ GHz}: \leq 4 \text{ mm}^*$
Maximum zoom scan spatial resolution, normal to phantom surface	uniform grid: $\Delta z_{\text{Zoom}}(n)$		$\leq 5 \text{ mm}$	$3 - 4 \text{ GHz}: \leq 4 \text{ mm}$ $4 - 5 \text{ GHz}: \leq 3 \text{ mm}$ $5 - 6 \text{ GHz}: \leq 2 \text{ mm}$
	graded grid	$\Delta z_{\text{Zoom}}(1)$: between 1 st two points closest to phantom surface	$\leq 4 \text{ mm}$	$3 - 4 \text{ GHz}: \leq 3 \text{ mm}$ $4 - 5 \text{ GHz}: \leq 2.5 \text{ mm}$ $5 - 6 \text{ GHz}: \leq 2 \text{ mm}$
		$\Delta z_{\text{Zoom}}(n>1)$: between subsequent points	$\leq 1.5 \cdot \Delta z_{\text{Zoom}}(n-1)$	
Minimum zoom scan volume	x, y, z		$\geq 30 \text{ mm}$	$3 - 4 \text{ GHz}: \geq 28 \text{ mm}$ $4 - 5 \text{ GHz}: \geq 25 \text{ mm}$ $5 - 6 \text{ GHz}: \geq 22 \text{ mm}$
Note: δ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see draft standard IEEE P1528-2011 for details.				
* When zoom scan is required and the <u>reported</u> SAR from the <u>area scan based 1-g SAR estimation</u> procedures of KDB 447498 is $\leq 1.4 \text{ W/kg}$, $\leq 8 \text{ mm}$, $\leq 7 \text{ mm}$ and $\leq 5 \text{ mm}$ zoom scan resolution may be applied, respectively, for 2 GHz to 3 GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.				



12.5 Volume Scan Procedures

The volume scan is used for assess overlapping SAR distributions for antennas transmitting in different frequency bands. It is equivalent to an oversized zoom scan used in standalone measurements. The measurement volume will be used to enclose all the simultaneous transmitting antennas. For antennas transmitting simultaneously in different frequency bands, the volume scan is measured separately in each frequency band. In order to sum correctly to compute the 1g aggregate SAR, the EUT remain in the same test position for all measurements and all volume scan use the same spatial resolution and grid spacing. When all volume scan were completed, the software, SEMCAD postprocessor can combine and subsequently superpose these measurement data to calculating the multiband SAR.

12.6 Power Drift Monitoring

All SAR testing is under the EUT install full charged battery and transmit maximum output power. In DASY measurement software, the power reference measurement and power drift measurement procedures are used for monitoring the power drift of EUT during SAR test. Both these procedures measure the field at a specified reference position before and after the SAR testing. The software will calculate the field difference in dB. If the power drift more than 5%, the SAR will be retested.



10. Conducted Power

<LTE Conducted Power>

Condition	Band	Channel Bandwidth	Channel	RB Configure	Result (dBm)		Tune-Up	
					QPSK	16QAM	QPSK	16QAM
NTNV	Band2	1.4MHz	18607	1RB#0	21.67	21.31	22.0±1.5	21.0±1.5
NTNV	Band2	1.4MHz	18607	1RB#2	21.63	21.28	22.0±1.5	21.0±1.5
NTNV	Band2	1.4MHz	18607	1RB#5	21.68	21.27	22.0±1.5	21.0±1.5
NTNV	Band2	1.4MHz	18607	3RB#0	21.67	20.41	22.0±1.5	21.0±1.5
NTNV	Band2	1.4MHz	18607	3RB#1	21.66	20.27	22.0±1.5	21.0±1.5
NTNV	Band2	1.4MHz	18607	3RB#3	21.64	20.34	22.0±1.5	21.0±1.5
NTNV	Band2	1.4MHz	18607	6RB#0	20.57	19.72	22.0±1.5	21.0±1.5
NTNV	Band2	1.4MHz	18900	1RB#0	22.92	22.18	22.0±1.5	21.0±1.5
NTNV	Band2	1.4MHz	18900	1RB#2	22.94	22.25	22.0±1.5	21.0±1.5
NTNV	Band2	1.4MHz	18900	1RB#5	23.03	22.08	22.0±1.5	21.0±1.5
NTNV	Band2	1.4MHz	18900	3RB#0	23.13	21.96	22.0±1.5	21.0±1.5
NTNV	Band2	1.4MHz	18900	3RB#1	23.02	21.92	22.0±1.5	21.0±1.5
NTNV	Band2	1.4MHz	18900	3RB#3	23.06	21.96	22.0±1.5	21.0±1.5
NTNV	Band2	1.4MHz	18900	6RB#0	21.95	21.02	22.0±1.5	21.0±1.5
NTNV	Band2	1.4MHz	19193	1RB#0	21.05	20.41	22.0±1.5	21.0±1.5
NTNV	Band2	1.4MHz	19193	1RB#2	21.02	20.33	22.0±1.5	21.0±1.5
NTNV	Band2	1.4MHz	19193	1RB#5	21.04	20.48	22.0±1.5	21.0±1.5
NTNV	Band2	1.4MHz	19193	3RB#0	20.95	20.03	22.0±1.5	21.0±1.5
NTNV	Band2	1.4MHz	19193	3RB#1	21.05	20.02	22.0±1.5	21.0±1.5
NTNV	Band2	1.4MHz	19193	3RB#3	20.97	20.09	22.0±1.5	21.0±1.5
NTNV	Band2	1.4MHz	19193	6RB#0	19.94	19.26	21.0±1.5	20.5±1.5
NTNV	Band2	3MHz	18615	1RB#0	21.46	20.46	22.0±1.5	20.5±1.5
NTNV	Band2	3MHz	18615	1RB#8	21.53	20.44	22.0±1.5	20.5±1.5
NTNV	Band2	3MHz	18615	1RB#14	21.49	20.35	22.0±1.5	20.5±1.5
NTNV	Band2	3MHz	18615	8RB#0	20.60	19.88	22.0±1.5	20.5±1.5
NTNV	Band2	3MHz	18615	8RB#4	20.63	19.78	22.0±1.5	20.5±1.5
NTNV	Band2	3MHz	18615	8RB#7	20.56	19.67	22.0±1.5	20.5±1.5
NTNV	Band2	3MHz	18615	15RB#0	20.55	19.75	22.0±1.5	20.5±1.5
NTNV	Band2	3MHz	18900	1RB#0	22.90	21.75	22.0±1.5	20.5±1.5
NTNV	Band2	3MHz	18900	1RB#8	23.00	21.78	22.0±1.5	20.5±1.5
NTNV	Band2	3MHz	18900	1RB#14	22.93	21.80	22.0±1.5	20.5±1.5



NTNV	Band2	3MHz	18900	8RB#0	21.95	21.33	22.0±1.5	20.5±1.5
NTNV	Band2	3MHz	18900	8RB#4	22.04	21.34	22.0±1.5	20.5±1.5
NTNV	Band2	3MHz	18900	8RB#7	22.03	21.18	22.0±1.5	20.5±1.5
NTNV	Band2	3MHz	18900	15RB#0	22.19	21.07	22.0±1.5	20.5±1.5
NTNV	Band2	3MHz	19185	1RB#0	21.22	20.05	22.0±1.5	20.5±1.5
NTNV	Band2	3MHz	19185	1RB#8	21.09	19.95	22.0±1.5	20.5±1.5
NTNV	Band2	3MHz	19185	1RB#14	21.05	19.91	22.0±1.5	20.5±1.5
NTNV	Band2	3MHz	19185	8RB#0	20.12	19.25	22.0±1.5	20.5±1.5
NTNV	Band2	3MHz	19185	8RB#4	20.11	19.38	22.0±1.5	20.5±1.5
NTNV	Band2	3MHz	19185	8RB#7	20.05	19.21	22.0±1.5	20.5±1.5
NTNV	Band2	3MHz	19185	15RB#0	19.94	19.16	21.0±1.5	20.5±1.5
NTNV	Band2	5MHz	18625	1RB#0	21.53	19.98	21.5±1.5	21.0±1.5
NTNV	Band2	5MHz	18625	1RB#12	21.46	20.05	22.0±1.5	20.5±1.5
NTNV	Band2	5MHz	18625	1RB#24	21.56	20.06	22.0±1.5	20.5±1.5
NTNV	Band2	5MHz	18625	12RB#0	20.68	19.72	22.0±1.5	20.5±1.5
NTNV	Band2	5MHz	18625	12RB#6	20.74	19.85	22.0±1.5	20.5±1.5
NTNV	Band2	5MHz	18625	12RB#13	20.54	19.73	22.0±1.5	20.5±1.5
NTNV	Band2	5MHz	18625	25RB#0	20.56	19.77	22.0±1.5	20.5±1.5
NTNV	Band2	5MHz	18900	1RB#0	22.88	22.18	22.0±1.5	21.5±1.5
NTNV	Band2	5MHz	18900	1RB#12	22.89	22.26	22.0±1.5	21.5±1.5
NTNV	Band2	5MHz	18900	1RB#24	22.98	22.26	22.0±1.5	21.5±1.5
NTNV	Band2	5MHz	18900	12RB#0	21.89	21.44	22.0±1.5	20.5±1.5
NTNV	Band2	5MHz	18900	12RB#6	22.13	21.43	22.0±1.5	20.5±1.5
NTNV	Band2	5MHz	18900	12RB#13	22.40	21.25	22.0±1.5	20.5±1.5
NTNV	Band2	5MHz	18900	25RB#0	21.97	21.14	22.0±1.5	20.5±1.5
NTNV	Band2	5MHz	19175	1RB#0	21.55	20.08	22.0±1.5	20.5±1.5
NTNV	Band2	5MHz	19175	1RB#12	21.32	19.83	22.0±1.5	20.5±1.5
NTNV	Band2	5MHz	19175	1RB#24	21.15	19.86	22.0±1.5	20.5±1.5
NTNV	Band2	5MHz	19175	12RB#0	20.37	19.07	22.0±1.5	20.5±1.5
NTNV	Band2	5MHz	19175	12RB#6	20.16	19.20	22.0±1.5	20.5±1.5
NTNV	Band2	5MHz	19175	12RB#13	19.84	19.04	21.0±1.5	20.5±1.5
NTNV	Band2	5MHz	19175	25RB#0	20.15	19.10	21.0±1.5	20.5±1.5
NTNV	Band2	10MHz	18650	1RB#0	21.44	20.61	21.0±1.5	20.5±1.5
NTNV	Band2	10MHz	18650	1RB#24	21.61	20.58	21.0±1.5	20.5±1.5
NTNV	Band2	10MHz	18650	1RB#49	21.86	20.86	21.0±1.5	20.5±1.5
NTNV	Band2	10MHz	18650	25RB#0	20.50	19.50	21.0±1.5	20.5±1.5
NTNV	Band2	10MHz	18650	25RB#12	20.65	19.76	21.0±1.5	20.5±1.5
NTNV	Band2	10MHz	18650	25RB#25	20.98	19.82	21.0±1.5	20.5±1.5



NTNV	Band2	10MHz	18650	50RB#0	20.89	19.72	21.0±1.5	20.5±1.5
NTNV	Band2	10MHz	18900	1RB#0	22.91	21.84	22.0±1.5	21.5±1.5
NTNV	Band2	10MHz	18900	1RB#24	22.98	22.00	22.0±1.5	21.5±1.5
NTNV	Band2	10MHz	18900	1RB#49	22.86	21.90	22.0±1.5	21.5±1.5
NTNV	Band2	10MHz	18900	25RB#0	22.01	21.18	22.0±1.5	21.5±1.5
NTNV	Band2	10MHz	18900	25RB#12	22.02	21.21	22.0±1.5	21.5±1.5
NTNV	Band2	10MHz	18900	25RB#25	22.06	21.19	22.0±1.5	21.5±1.5
NTNV	Band2	10MHz	18900	50RB#0	21.96	21.13	22.0±1.5	21.5±1.5
NTNV	Band2	10MHz	19150	1RB#0	21.73	21.30	22.0±1.5	21.5±1.5
NTNV	Band2	10MHz	19150	1RB#24	21.26	20.87	22.0±1.5	20.5±1.5
NTNV	Band2	10MHz	19150	1RB#49	21.03	20.56	22.0±1.5	20.5±1.5
NTNV	Band2	10MHz	19150	25RB#0	20.55	19.66	22.0±1.5	20.5±1.5
NTNV	Band2	10MHz	19150	25RB#12	20.78	19.75	22.0±1.5	20.5±1.5
NTNV	Band2	10MHz	19150	25RB#25	20.36	19.20	22.0±1.5	20.5±1.5
NTNV	Band2	10MHz	19150	50RB#0	20.49	19.55	22.0±1.5	20.5±1.5
NTNV	Band2	15MHz	18675	1RB#0	21.55	20.62	22.0±1.5	21.5±1.5
NTNV	Band2	15MHz	18675	1RB#38	21.74	20.73	22.0±1.5	21.5±1.5
NTNV	Band2	15MHz	18675	1RB#74	22.30	21.25	22.0±1.5	21.5±1.5
NTNV	Band2	15MHz	18675	38RB#0	20.85	20.82	22.0±1.5	21.5±1.5
NTNV	Band2	15MHz	18675	38RB#18	20.50	20.86	22.0±1.5	21.5±1.5
NTNV	Band2	15MHz	18675	38RB#37	20.55	21.00	22.0±1.5	21.5±1.5
NTNV	Band2	15MHz	18675	75RB#0	20.45	19.89	21.0±1.5	20.5±1.5
NTNV	Band2	15MHz	18900	1RB#0	22.75	21.91	21.5±1.5	21.0±1.5
NTNV	Band2	15MHz	18900	1RB#38	22.76	22.15	21.5±1.5	21.0±1.5
NTNV	Band2	15MHz	18900	1RB#74	22.82	22.11	21.5±1.5	21.0±1.5
NTNV	Band2	15MHz	18900	38RB#0	22.03	21.84	21.5±1.5	21.0±1.5
NTNV	Band2	15MHz	18900	38RB#18	22.02	22.00	21.5±1.5	21.0±1.5
NTNV	Band2	15MHz	18900	38RB#37	22.03	22.08	21.5±1.5	21.0±1.5
NTNV	Band2	15MHz	18900	75RB#0	22.06	21.22	21.5±1.5	21.0±1.5
NTNV	Band2	15MHz	19125	1RB#0	22.29	21.84	21.5±1.5	21.0±1.5
NTNV	Band2	15MHz	19125	1RB#38	21.65	21.16	21.5±1.5	21.0±1.5
NTNV	Band2	15MHz	19125	1RB#74	21.03	20.53	21.5±1.5	21.0±1.5
NTNV	Band2	15MHz	19125	38RB#0	20.87	20.60	21.5±1.5	21.0±1.5
NTNV	Band2	15MHz	19125	38RB#18	20.69	20.71	21.5±1.5	21.0±1.5
NTNV	Band2	15MHz	19125	38RB#37	20.65	20.59	21.5±1.5	21.0±1.5
NTNV	Band2	15MHz	19125	75RB#0	20.64	19.71	21.5±1.5	21.0±1.5
NTNV	Band2	20MHz	18700	1RB#0	21.77	20.63	21.5±1.5	21.0±1.5
NTNV	Band2	20MHz	18700	1RB#49	21.83	20.93	21.5±1.5	21.0±1.5



NTNV	Band2	20MHz	18700	1RB#99	22.68	21.65	21.5±1.5	21.0±1.5
NTNV	Band2	20MHz	18700	50RB#0	20.75	19.92	21.5±1.5	21.0±1.5
NTNV	Band2	20MHz	18700	50RB#25	20.50	19.92	21.5±1.5	21.0±1.5
NTNV	Band2	20MHz	18700	50RB#50	21.32	20.55	21.5±1.5	21.0±1.5
NTNV	Band2	20MHz	18700	100RB#0	20.94	19.92	21.5±1.5	21.0±1.5
NTNV	Band2	20MHz	18900	1RB#0	22.76	22.03	21.5±1.5	21.0±1.5
NTNV	Band2	20MHz	18900	1RB#49	23.03	22.40	22.0±1.5	21.0±1.5
NTNV	Band2	20MHz	18900	1RB#99	22.92	22.14	21.5±1.5	21.0±1.5
NTNV	Band2	20MHz	18900	50RB#0	21.86	21.02	21.5±1.5	21.0±1.5
NTNV	Band2	20MHz	18900	50RB#25	21.91	20.98	21.5±1.5	21.0±1.5
NTNV	Band2	20MHz	18900	50RB#50	21.96	21.18	21.5±1.5	21.0±1.5
NTNV	Band2	20MHz	18900	100RB#0	21.92	20.96	21.5±1.5	21.0±1.5
NTNV	Band2	20MHz	19100	1RB#0	22.68	21.50	21.5±1.5	21.0±1.5
NTNV	Band2	20MHz	19100	1RB#49	21.85	20.73	21.5±1.5	21.0±1.5
NTNV	Band2	20MHz	19100	1RB#99	21.12	19.98	21.5±1.5	21.0±1.5
NTNV	Band2	20MHz	19100	50RB#0	21.11	20.33	21.5±1.5	21.0±1.5
NTNV	Band2	20MHz	19100	50RB#25	21.31	20.57	21.5±1.5	21.0±1.5
NTNV	Band2	20MHz	19100	50RB#50	20.51	19.60	21.5±1.5	21.0±1.5
NTNV	Band2	20MHz	19100	100RB#0	20.84	19.86	21.5±1.5	21.0±1.5

Condition	Band	Channel Bandwidth	Channel	RB Configure	Result (dBm)		Tune-Up	
					QPSK	16QAM	QPSK	16QAM
NTNV	Band4	1.4MHz	19957	1RB#0	22.77	21.86	21.5±1.5	21.0±1.5
NTNV	Band4	1.4MHz	19957	1RB#2	22.73	21.87	21.5±1.5	21.0±1.5
NTNV	Band4	1.4MHz	19957	1RB#5	22.74	21.73	21.5±1.5	21.0±1.5
NTNV	Band4	1.4MHz	19957	3RB#0	22.74	21.73	21.5±1.5	21.0±1.5
NTNV	Band4	1.4MHz	19957	3RB#1	22.79	21.66	21.5±1.5	21.0±1.5
NTNV	Band4	1.4MHz	19957	3RB#3	22.67	21.62	21.5±1.5	21.0±1.5
NTNV	Band4	1.4MHz	19957	6RB#0	21.88	20.96	21.5±1.5	21.0±1.5
NTNV	Band4	1.4MHz	20175	1RB#0	22.51	21.52	21.5±1.5	21.0±1.5
NTNV	Band4	1.4MHz	20175	1RB#2	22.64	21.41	21.5±1.5	21.0±1.5
NTNV	Band4	1.4MHz	20175	1RB#5	22.67	21.53	21.5±1.5	21.0±1.5
NTNV	Band4	1.4MHz	20175	3RB#0	22.62	21.35	21.5±1.5	21.0±1.5
NTNV	Band4	1.4MHz	20175	3RB#1	22.68	21.36	21.5±1.5	21.0±1.5
NTNV	Band4	1.4MHz	20175	3RB#3	22.60	21.42	21.5±1.5	21.0±1.5
NTNV	Band4	1.4MHz	20175	6RB#0	21.61	20.74	21.5±1.5	21.0±1.5
NTNV	Band4	1.4MHz	20393	1RB#0	23.73	23.89	22.5±1.5	22.5±1.5
NTNV	Band4	1.4MHz	20393	1RB#2	23.80	23.93	22.5±1.5	22.5±1.5



NTNV	Band4	1.4MHz	20393	1RB#5	23.73	23.86	22.5±1.5	22.5±1.5
NTNV	Band4	1.4MHz	20393	3RB#0	23.69	22.12	22.5±1.5	22.5±1.5
NTNV	Band4	1.4MHz	20393	3RB#1	23.72	22.21	22.5±1.5	22.5±1.5
NTNV	Band4	1.4MHz	20393	3RB#3	23.72	22.04	22.5±1.5	22.5±1.5
NTNV	Band4	1.4MHz	20393	6RB#0	22.61	21.88	22.5±1.5	21.5±1.5
NTNV	Band4	3MHz	19965	1RB#0	22.68	21.81	22.5±1.5	21.5±1.5
NTNV	Band4	3MHz	19965	1RB#8	22.67	21.60	22.5±1.5	21.5±1.5
NTNV	Band4	3MHz	19965	1RB#14	22.53	21.48	22.5±1.5	21.5±1.5
NTNV	Band4	3MHz	19965	8RB#0	21.85	21.11	22.5±1.5	21.5±1.5
NTNV	Band4	3MHz	19965	8RB#4	21.81	20.92	22.5±1.5	21.5±1.5
NTNV	Band4	3MHz	19965	8RB#7	21.71	20.92	22.5±1.5	21.5±1.5
NTNV	Band4	3MHz	19965	15RB#0	21.80	20.86	22.5±1.5	21.5±1.5
NTNV	Band4	3MHz	20175	1RB#0	22.54	21.23	22.5±1.5	21.5±1.5
NTNV	Band4	3MHz	20175	1RB#8	22.71	21.29	22.5±1.5	21.5±1.5
NTNV	Band4	3MHz	20175	1RB#14	22.72	21.36	22.5±1.5	21.5±1.5
NTNV	Band4	3MHz	20175	8RB#0	21.67	20.84	22.5±1.5	21.5±1.5
NTNV	Band4	3MHz	20175	8RB#4	21.62	20.87	22.5±1.5	21.5±1.5
NTNV	Band4	3MHz	20175	8RB#7	21.69	21.08	22.5±1.5	21.5±1.5
NTNV	Band4	3MHz	20175	15RB#0	21.60	20.67	22.5±1.5	21.5±1.5
NTNV	Band4	3MHz	20385	1RB#0	23.81	22.75	22.5±1.5	21.5±1.5
NTNV	Band4	3MHz	20385	1RB#8	23.69	22.74	22.5±1.5	21.5±1.5
NTNV	Band4	3MHz	20385	1RB#14	23.69	22.68	22.5±1.5	21.5±1.5
NTNV	Band4	3MHz	20385	8RB#0	22.67	22.07	22.5±1.5	21.5±1.5
NTNV	Band4	3MHz	20385	8RB#4	22.65	21.95	22.5±1.5	21.5±1.5
NTNV	Band4	3MHz	20385	8RB#7	22.62	21.93	22.5±1.5	21.5±1.5
NTNV	Band4	3MHz	20385	15RB#0	22.74	21.88	22.5±1.5	21.5±1.5
NTNV	Band4	5MHz	19975	1RB#0	22.78	21.22	22.5±1.5	21.5±1.5
NTNV	Band4	5MHz	19975	1RB#12	22.60	21.11	22.5±1.5	21.5±1.5
NTNV	Band4	5MHz	19975	1RB#24	22.50	20.94	22.5±1.5	21.5±1.5
NTNV	Band4	5MHz	19975	12RB#0	22.03	20.82	22.5±1.5	21.5±1.5
NTNV	Band4	5MHz	19975	12RB#6	21.73	20.78	22.5±1.5	21.5±1.5
NTNV	Band4	5MHz	19975	12RB#13	21.40	20.57	22.5±1.5	21.5±1.5
NTNV	Band4	5MHz	19975	25RB#0	21.72	20.79	22.5±1.5	21.5±1.5
NTNV	Band4	5MHz	20175	1RB#0	22.46	21.74	22.5±1.5	21.5±1.5
NTNV	Band4	5MHz	20175	1RB#12	22.71	21.88	22.5±1.5	21.5±1.5
NTNV	Band4	5MHz	20175	1RB#24	22.75	21.95	22.5±1.5	21.5±1.5
NTNV	Band4	5MHz	20175	12RB#0	21.46	20.48	22.5±1.5	21.5±1.5
NTNV	Band4	5MHz	20175	12RB#6	21.54	21.06	22.5±1.5	21.5±1.5



NTNV	Band4	5MHz	20175	12RB#13	21.76	21.26	22.5±1.5	21.5±1.5
NTNV	Band4	5MHz	20175	25RB#0	21.65	20.72	22.5±1.5	21.5±1.5
NTNV	Band4	5MHz	20375	1RB#0	23.79	22.23	22.5±1.5	21.5±1.5
NTNV	Band4	5MHz	20375	1RB#12	23.86	22.26	22.5±1.5	21.5±1.5
NTNV	Band4	5MHz	20375	1RB#24	23.86	22.27	22.5±1.5	21.5±1.5
NTNV	Band4	5MHz	20375	12RB#0	22.57	21.57	22.5±1.5	21.5±1.5
NTNV	Band4	5MHz	20375	12RB#6	22.78	21.63	22.5±1.5	21.5±1.5
NTNV	Band4	5MHz	20375	12RB#13	22.61	21.67	22.5±1.5	21.5±1.5
NTNV	Band4	5MHz	20375	25RB#0	22.75	21.78	22.5±1.5	21.5±1.5
NTNV	Band4	10MHz	20000	1RB#0	22.78	21.91	22.5±1.5	21.5±1.5
NTNV	Band4	10MHz	20000	1RB#24	22.39	21.52	22.5±1.5	21.5±1.5
NTNV	Band4	10MHz	20000	1RB#49	22.27	21.37	22.5±1.5	21.5±1.5
NTNV	Band4	10MHz	20000	25RB#0	21.69	20.65	22.5±1.5	21.5±1.5
NTNV	Band4	10MHz	20000	25RB#12	21.72	20.74	22.5±1.5	21.5±1.5
NTNV	Band4	10MHz	20000	25RB#25	21.25	20.50	22.5±1.5	21.5±1.5
NTNV	Band4	10MHz	20000	50RB#0	21.38	20.55	22.5±1.5	21.5±1.5
NTNV	Band4	10MHz	20175	1RB#0	22.22	21.28	22.5±1.5	21.5±1.5
NTNV	Band4	10MHz	20175	1RB#24	22.56	21.64	22.5±1.5	21.5±1.5
NTNV	Band4	10MHz	20175	1RB#49	22.83	21.95	22.5±1.5	21.5±1.5
NTNV	Band4	10MHz	20175	25RB#0	21.29	20.74	22.5±1.5	21.5±1.5
NTNV	Band4	10MHz	20175	25RB#12	21.68	20.73	22.5±1.5	21.5±1.5
NTNV	Band4	10MHz	20175	25RB#25	21.85	21.08	22.5±1.5	21.5±1.5
NTNV	Band4	10MHz	20175	50RB#0	21.70	20.93	22.5±1.5	21.5±1.5
NTNV	Band4	10MHz	20350	1RB#0	23.55	23.16	22.5±1.5	21.5±1.5
NTNV	Band4	10MHz	20350	1RB#24	23.88	23.48	22.5±1.5	21.5±1.5
NTNV	Band4	10MHz	20350	1RB#49	23.79	23.32	22.5±1.5	21.5±1.5
NTNV	Band4	10MHz	20350	25RB#0	22.56	21.78	22.5±1.5	21.5±1.5
NTNV	Band4	10MHz	20350	25RB#12	22.59	21.71	22.5±1.5	21.5±1.5
NTNV	Band4	10MHz	20350	25RB#25	22.47	21.83	22.5±1.5	21.5±1.5
NTNV	Band4	10MHz	20350	50RB#0	22.64	21.79	22.5±1.5	21.5±1.5
NTNV	Band4	15MHz	20025	1RB#0	22.22	21.38	22.5±1.5	21.5±1.5
NTNV	Band4	15MHz	20025	1RB#38	21.68	20.70	22.5±1.5	21.5±1.5
NTNV	Band4	15MHz	20025	1RB#74	21.63	20.77	22.5±1.5	21.5±1.5
NTNV	Band4	15MHz	20025	38RB#0	21.22	20.89	22.5±1.5	21.5±1.5
NTNV	Band4	15MHz	20025	38RB#18	21.01	20.83	22.5±1.5	21.5±1.5
NTNV	Band4	15MHz	20025	38RB#37	20.93	20.92	21.5±1.5	21.0±1.5
NTNV	Band4	15MHz	20025	75RB#0	20.91	19.95	21.5±1.5	21.0±1.5
NTNV	Band4	15MHz	20175	1RB#0	21.64	20.79	21.5±1.5	21.0±1.5



NTNV	Band4	15MHz	20175	1RB#38	21.91	21.24	21.5±1.5	21.0±1.5
NTNV	Band4	15MHz	20175	1RB#74	22.41	21.74	21.5±1.5	21.0±1.5
NTNV	Band4	15MHz	20175	38RB#0	20.95	20.98	21.5±1.5	21.0±1.5
NTNV	Band4	15MHz	20175	38RB#18	21.17	21.28	21.5±1.5	21.0±1.5
NTNV	Band4	15MHz	20175	38RB#37	21.39	21.32	21.5±1.5	21.0±1.5
NTNV	Band4	15MHz	20175	75RB#0	21.11	20.04	21.5±1.5	21.0±1.5
NTNV	Band4	15MHz	20325	1RB#0	22.90	22.51	22.5±1.5	21.5±1.5
NTNV	Band4	15MHz	20325	1RB#38	22.96	22.73	22.5±1.5	21.5±1.5
NTNV	Band4	15MHz	20325	1RB#74	23.27	22.87	22.5±1.5	21.5±1.5
NTNV	Band4	15MHz	20325	38RB#0	22.11	22.01	22.5±1.5	21.5±1.5
NTNV	Band4	15MHz	20325	38RB#18	22.09	22.00	22.5±1.5	21.5±1.5
NTNV	Band4	15MHz	20325	38RB#37	21.99	22.04	22.5±1.5	21.5±1.5
NTNV	Band4	15MHz	20325	75RB#0	22.00	21.14	22.5±1.5	21.5±1.5
NTNV	Band4	20MHz	20050	1RB#0	22.41	21.21	21.5±1.5	20.5±1.5
NTNV	Band4	20MHz	20050	1RB#49	21.94	20.56	21.5±1.5	20.5±1.5
NTNV	Band4	20MHz	20050	1RB#99	22.30	20.89	21.5±1.5	20.5±1.5
NTNV	Band4	20MHz	20050	50RB#0	21.26	20.16	21.5±1.5	20.5±1.5
NTNV	Band4	20MHz	20050	50RB#25	21.06	20.09	21.5±1.5	20.5±1.5
NTNV	Band4	20MHz	20050	50RB#50	21.05	20.06	21.5±1.5	20.5±1.5
NTNV	Band4	20MHz	20050	100RB#0	20.84	20.13	21.5±1.5	20.5±1.5
NTNV	Band4	20MHz	20175	1RB#0	21.80	20.86	22.5±1.5	21.5±1.5
NTNV	Band4	20MHz	20175	1RB#49	22.22	21.30	22.5±1.5	21.5±1.5
NTNV	Band4	20MHz	20175	1RB#99	23.02	21.99	22.5±1.5	21.5±1.5
NTNV	Band4	20MHz	20175	50RB#0	20.92	20.09	22.5±1.5	21.5±1.5
NTNV	Band4	20MHz	20175	50RB#25	20.99	20.04	22.5±1.5	21.5±1.5
NTNV	Band4	20MHz	20175	50RB#50	21.60	20.82	22.5±1.5	21.5±1.5
NTNV	Band4	20MHz	20175	100RB#0	21.52	20.52	22.5±1.5	21.5±1.5
NTNV	Band4	20MHz	20300	1RB#0	22.64	21.83	22.5±1.5	21.5±1.5
NTNV	Band4	20MHz	20300	1RB#49	23.25	22.46	22.5±1.5	21.5±1.5
NTNV	Band4	20MHz	20300	1RB#99	23.45	22.75	22.5±1.5	21.5±1.5
NTNV	Band4	20MHz	20300	50RB#0	21.89	20.91	22.5±1.5	21.5±1.5
NTNV	Band4	20MHz	20300	50RB#25	21.90	21.13	22.5±1.5	21.5±1.5
NTNV	Band4	20MHz	20300	50RB#50	22.31	21.56	22.5±1.5	21.5±1.5
NTNV	Band4	20MHz	20300	100RB#0	22.00	21.16	22.5±1.5	21.5±1.5

Condition	Band	Channel Bandwidth	Channel	RB Configure	Result (dBm)		Tune-Up	
					QPSK	16QAM	QPSK	16QAM
NTNV	Band5	1.4MHz	20407	1RB#0	22.54	21.48	22.5±1.5	22.0±1.5

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NTNV	Band5	1.4MHz	20407	1RB#2	22.64	21.44	22.5±1.5	22.0±1.5
NTNV	Band5	1.4MHz	20407	1RB#5	22.69	21.48	22.5±1.5	22.0±1.5
NTNV	Band5	1.4MHz	20407	3RB#0	22.45	21.20	22.5±1.5	22.0±1.5
NTNV	Band5	1.4MHz	20407	3RB#1	22.50	21.25	22.5±1.5	22.0±1.5
NTNV	Band5	1.4MHz	20407	3RB#3	22.51	21.28	22.5±1.5	22.0±1.5
NTNV	Band5	1.4MHz	20407	6RB#0	21.56	20.55	22.5±1.5	22.0±1.5
NTNV	Band5	1.4MHz	20525	1RB#0	23.17	22.92	22.5±1.5	22.0±1.5
NTNV	Band5	1.4MHz	20525	1RB#2	23.24	22.84	22.5±1.5	22.0±1.5
NTNV	Band5	1.4MHz	20525	1RB#5	23.27	22.86	22.5±1.5	22.0±1.5
NTNV	Band5	1.4MHz	20525	3RB#0	23.32	22.23	22.5±1.5	22.0±1.5
NTNV	Band5	1.4MHz	20525	3RB#1	23.31	22.23	22.5±1.5	22.0±1.5
NTNV	Band5	1.4MHz	20525	3RB#3	23.31	22.21	22.5±1.5	22.0±1.5
NTNV	Band5	1.4MHz	20525	6RB#0	22.25	21.51	22.5±1.5	22.0±1.5
NTNV	Band5	1.4MHz	20643	1RB#0	23.55	23.00	22.5±1.5	22.0±1.5
NTNV	Band5	1.4MHz	20643	1RB#2	23.51	23.12	22.5±1.5	22.0±1.5
NTNV	Band5	1.4MHz	20643	1RB#5	23.57	23.11	22.5±1.5	22.0±1.5
NTNV	Band5	1.4MHz	20643	3RB#0	23.48	22.16	22.5±1.5	22.0±1.5
NTNV	Band5	1.4MHz	20643	3RB#1	23.46	22.15	22.5±1.5	22.0±1.5
NTNV	Band5	1.4MHz	20643	3RB#3	23.49	22.12	22.5±1.5	22.0±1.5
NTNV	Band5	1.4MHz	20643	6RB#0	22.43	21.54	22.5±1.5	22.0±1.5
NTNV	Band5	3MHz	20415	1RB#0	22.36	21.23	22.5±1.5	22.0±1.5
NTNV	Band5	3MHz	20415	1RB#8	22.59	21.22	22.5±1.5	22.0±1.5
NTNV	Band5	3MHz	20415	1RB#14	22.66	21.39	22.5±1.5	22.0±1.5
NTNV	Band5	3MHz	20415	8RB#0	21.47	20.64	22.5±1.5	22.0±1.5
NTNV	Band5	3MHz	20415	8RB#4	21.44	20.65	22.5±1.5	22.0±1.5
NTNV	Band5	3MHz	20415	8RB#7	21.60	21.12	22.5±1.5	22.0±1.5
NTNV	Band5	3MHz	20415	15RB#0	21.68	20.54	22.5±1.5	22.0±1.5
NTNV	Band5	3MHz	20525	1RB#0	23.41	21.93	22.5±1.5	22.0±1.5
NTNV	Band5	3MHz	20525	1RB#8	23.41	22.03	22.5±1.5	22.0±1.5
NTNV	Band5	3MHz	20525	1RB#14	23.45	22.08	22.5±1.5	22.0±1.5
NTNV	Band5	3MHz	20525	8RB#0	22.41	21.46	22.5±1.5	22.0±1.5
NTNV	Band5	3MHz	20525	8RB#4	22.22	21.43	22.5±1.5	22.0±1.5
NTNV	Band5	3MHz	20525	8RB#7	22.37	21.57	22.5±1.5	22.0±1.5
NTNV	Band5	3MHz	20525	15RB#0	22.15	21.29	22.5±1.5	22.0±1.5
NTNV	Band5	3MHz	20635	1RB#0	23.55	22.88	22.5±1.5	22.0±1.5
NTNV	Band5	3MHz	20635	1RB#8	23.45	22.75	22.5±1.5	22.0±1.5
NTNV	Band5	3MHz	20635	1RB#14	23.43	22.82	22.5±1.5	22.0±1.5
NTNV	Band5	3MHz	20635	8RB#0	22.48	21.60	22.5±1.5	22.0±1.5



NTNV	Band5	3MHz	20635	8RB#4	22.38	21.52	22.5±1.5	22.0±1.5
NTNV	Band5	3MHz	20635	8RB#7	22.41	21.54	22.5±1.5	22.0±1.5
NTNV	Band5	3MHz	20635	15RB#0	22.50	21.45	22.5±1.5	22.0±1.5
NTNV	Band5	5MHz	20425	1RB#0	22.51	21.00	22.5±1.5	22.0±1.5
NTNV	Band5	5MHz	20425	1RB#12	22.59	21.08	22.5±1.5	22.0±1.5
NTNV	Band5	5MHz	20425	1RB#24	22.79	21.26	22.5±1.5	22.0±1.5
NTNV	Band5	5MHz	20425	12RB#0	21.71	20.57	22.5±1.5	22.0±1.5
NTNV	Band5	5MHz	20425	12RB#6	21.49	20.57	22.5±1.5	22.0±1.5
NTNV	Band5	5MHz	20425	12RB#13	21.77	21.15	22.5±1.5	22.0±1.5
NTNV	Band5	5MHz	20425	25RB#0	21.74	21.20	22.5±1.5	22.0±1.5
NTNV	Band5	5MHz	20525	1RB#0	23.03	22.36	22.5±1.5	22.0±1.5
NTNV	Band5	5MHz	20525	1RB#12	23.25	22.46	22.5±1.5	22.0±1.5
NTNV	Band5	5MHz	20525	1RB#24	23.34	22.54	22.5±1.5	22.0±1.5
NTNV	Band5	5MHz	20525	12RB#0	22.52	21.43	22.5±1.5	22.0±1.5
NTNV	Band5	5MHz	20525	12RB#6	22.26	21.39	22.5±1.5	22.0±1.5
NTNV	Band5	5MHz	20525	12RB#13	22.46	21.59	22.5±1.5	22.0±1.5
NTNV	Band5	5MHz	20525	25RB#0	22.43	21.44	22.5±1.5	22.0±1.5
NTNV	Band5	5MHz	20625	1RB#0	23.65	22.31	22.5±1.5	22.0±1.5
NTNV	Band5	5MHz	20625	1RB#12	23.66	22.24	22.5±1.5	22.0±1.5
NTNV	Band5	5MHz	20625	1RB#24	23.66	22.15	22.5±1.5	22.0±1.5
NTNV	Band5	5MHz	20625	12RB#0	22.50	21.40	22.5±1.5	22.0±1.5
NTNV	Band5	5MHz	20625	12RB#6	22.46	21.40	22.5±1.5	22.0±1.5
NTNV	Band5	5MHz	20625	12RB#13	22.30	21.44	22.5±1.5	22.0±1.5
NTNV	Band5	5MHz	20625	25RB#0	22.36	21.56	22.5±1.5	22.0±1.5
NTNV	Band5	10MHz	20450	1RB#0	22.57	21.51	22.5±1.5	22.0±1.5
NTNV	Band5	10MHz	20450	1RB#24	22.84	21.81	22.5±1.5	22.0±1.5
NTNV	Band5	10MHz	20450	1RB#49	23.10	22.20	22.5±1.5	22.0±1.5
NTNV	Band5	10MHz	20450	25RB#0	21.71	21.02	22.5±1.5	22.0±1.5
NTNV	Band5	10MHz	20450	25RB#12	21.62	21.04	22.5±1.5	22.0±1.5
NTNV	Band5	10MHz	20450	25RB#25	22.13	21.53	22.5±1.5	22.0±1.5
NTNV	Band5	10MHz	20450	50RB#0	21.84	20.88	22.5±1.5	22.0±1.5
NTNV	Band5	10MHz	20525	1RB#0	23.01	21.99	22.5±1.5	22.0±1.5
NTNV	Band5	10MHz	20525	1RB#24	23.18	22.21	22.5±1.5	22.0±1.5
NTNV	Band5	10MHz	20525	1RB#49	23.27	22.72	22.5±1.5	22.0±1.5
NTNV	Band5	10MHz	20525	25RB#0	22.20	21.47	22.5±1.5	22.0±1.5
NTNV	Band5	10MHz	20525	25RB#12	22.42	21.46	22.5±1.5	22.0±1.5
NTNV	Band5	10MHz	20525	25RB#25	22.40	21.95	22.5±1.5	22.0±1.5
NTNV	Band5	10MHz	20525	50RB#0	22.35	21.48	22.5±1.5	22.0±1.5



NTNV	Band5	10MHz	20600	1RB#0	23.37	22.90	22.5±1.5	22.0±1.5
NTNV	Band5	10MHz	20600	1RB#24	23.53	22.95	22.5±1.5	22.0±1.5
NTNV	Band5	10MHz	20600	1RB#49	23.54	22.90	22.5±1.5	22.0±1.5
NTNV	Band5	10MHz	20600	25RB#0	22.89	21.97	22.5±1.5	22.0±1.5
NTNV	Band5	10MHz	20600	25RB#12	22.77	21.96	22.5±1.5	22.0±1.5
NTNV	Band5	10MHz	20600	25RB#25	22.55	21.59	22.5±1.5	22.0±1.5
NTNV	Band5	10MHz	20600	50RB#0	22.49	21.61	22.5±1.5	22.0±1.5

Condition	Band	Channel Bandwidth	Channel	RB Configure	Result (dBm)		Tune-Up	
					QPSK	16QAM	QPSK	16QAM
NTNV	Band7	5MHz	20775	1RB#0	19.87	19.16	21.0±1.5	20.5±1.5
NTNV	Band7	5MHz	20775	1RB#12	19.78	19.14	21.0±1.5	20.5±1.5
NTNV	Band7	5MHz	20775	1RB#24	19.74	19.22	21.0±1.5	20.5±1.5
NTNV	Band7	5MHz	20775	12RB#0	18.76	18.09	21.0±1.5	20.5±1.5
NTNV	Band7	5MHz	20775	12RB#6	19.12	18.09	21.0±1.5	20.5±1.5
NTNV	Band7	5MHz	20775	12RB#13	18.79	17.92	20.0±1.5	19.5±1.5
NTNV	Band7	5MHz	20775	25RB#0	18.89	18.11	20.0±1.5	19.5±1.5
NTNV	Band7	5MHz	21100	1RB#0	22.22	20.71	21.0±1.5	20.5±1.5
NTNV	Band7	5MHz	21100	1RB#12	22.30	20.77	21.0±1.5	20.5±1.5
NTNV	Band7	5MHz	21100	1RB#24	22.31	20.76	21.0±1.5	20.5±1.5
NTNV	Band7	5MHz	21100	12RB#0	21.11	20.15	21.0±1.5	20.5±1.5
NTNV	Band7	5MHz	21100	12RB#6	21.11	19.98	21.0±1.5	20.5±1.5
NTNV	Band7	5MHz	21100	12RB#13	21.13	20.21	21.0±1.5	20.5±1.5
NTNV	Band7	5MHz	21100	25RB#0	21.07	20.24	21.0±1.5	20.5±1.5
NTNV	Band7	5MHz	21425	1RB#0	20.68	19.13	20.0±1.5	19.5±1.5
NTNV	Band7	5MHz	21425	1RB#12	20.57	19.12	20.0±1.5	19.5±1.5
NTNV	Band7	5MHz	21425	1RB#24	20.69	19.13	20.0±1.5	19.5±1.5
NTNV	Band7	5MHz	21425	12RB#0	19.63	18.70	20.0±1.5	19.5±1.5
NTNV	Band7	5MHz	21425	12RB#6	19.39	18.70	20.0±1.5	19.5±1.5
NTNV	Band7	5MHz	21425	12RB#13	19.66	18.70	20.0±1.5	19.5±1.5
NTNV	Band7	5MHz	21425	25RB#0	19.50	18.77	20.0±1.5	19.5±1.5
NTNV	Band7	10MHz	20800	1RB#0	19.90	18.89	20.0±1.5	19.5±1.5
NTNV	Band7	10MHz	20800	1RB#24	19.98	18.85	20.0±1.5	19.5±1.5
NTNV	Band7	10MHz	20800	1RB#49	20.27	19.18	20.0±1.5	19.5±1.5
NTNV	Band7	10MHz	20800	25RB#0	18.95	18.05	20.0±1.5	19.5±1.5
NTNV	Band7	10MHz	20800	25RB#12	18.88	18.07	20.0±1.5	19.5±1.5
NTNV	Band7	10MHz	20800	25RB#25	19.17	18.26	20.0±1.5	19.5±1.5
NTNV	Band7	10MHz	20800	50RB#0	19.03	18.33	20.0±1.5	19.5±1.5

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NTNV	Band7	10MHz	21100	1RB#0	22.09	20.99	21.0±1.5	20.5±1.5
NTNV	Band7	10MHz	21100	1RB#24	22.17	21.10	21.0±1.5	20.5±1.5
NTNV	Band7	10MHz	21100	1RB#49	22.15	21.04	21.0±1.5	20.5±1.5
NTNV	Band7	10MHz	21100	25RB#0	21.09	20.39	21.0±1.5	20.5±1.5
NTNV	Band7	10MHz	21100	25RB#12	21.09	20.39	21.0±1.5	20.5±1.5
NTNV	Band7	10MHz	21100	25RB#25	21.36	20.43	21.0±1.5	20.5±1.5
NTNV	Band7	10MHz	21100	50RB#0	21.19	20.31	21.0±1.5	20.5±1.5
NTNV	Band7	10MHz	21400	1RB#0	20.75	20.35	20.0±1.5	19.5±1.5
NTNV	Band7	10MHz	21400	1RB#24	20.87	20.30	20.0±1.5	19.5±1.5
NTNV	Band7	10MHz	21400	1RB#49	20.73	20.30	20.0±1.5	19.5±1.5
NTNV	Band7	10MHz	21400	25RB#0	19.85	18.83	20.0±1.5	19.5±1.5
NTNV	Band7	10MHz	21400	25RB#12	19.61	18.93	20.0±1.5	19.5±1.5
NTNV	Band7	10MHz	21400	25RB#25	19.67	18.80	20.0±1.5	19.5±1.5
NTNV	Band7	10MHz	21400	50RB#0	19.91	18.96	20.0±1.5	19.5±1.5
NTNV	Band7	15MHz	20825	1RB#0	20.08	19.02	20.0±1.5	19.5±1.5
NTNV	Band7	15MHz	20825	1RB#38	20.16	19.22	20.0±1.5	19.5±1.5
NTNV	Band7	15MHz	20825	1RB#74	20.85	19.87	20.0±1.5	19.5±1.5
NTNV	Band7	15MHz	20825	38RB#0	19.38	19.38	20.0±1.5	19.5±1.5
NTNV	Band7	15MHz	20825	38RB#18	19.38	19.39	20.0±1.5	19.5±1.5
NTNV	Band7	15MHz	20825	38RB#37	19.40	19.40	20.0±1.5	19.5±1.5
NTNV	Band7	15MHz	20825	75RB#0	19.40	18.34	20.0±1.5	19.5±1.5
NTNV	Band7	15MHz	21100	1RB#0	22.01	21.15	21.0±1.5	20.5±1.5
NTNV	Band7	15MHz	21100	1RB#38	22.10	21.33	21.0±1.5	20.5±1.5
NTNV	Band7	15MHz	21100	1RB#74	22.07	21.27	21.0±1.5	20.5±1.5
NTNV	Band7	15MHz	21100	38RB#0	21.11	21.17	21.0±1.5	20.5±1.5
NTNV	Band7	15MHz	21100	38RB#18	21.11	21.09	21.0±1.5	20.5±1.5
NTNV	Band7	15MHz	21100	38RB#37	21.21	21.19	21.0±1.5	20.5±1.5
NTNV	Band7	15MHz	21100	75RB#0	21.11	20.24	21.0±1.5	20.5±1.5
NTNV	Band7	15MHz	21375	1RB#0	21.00	20.58	20.0±1.5	19.5±1.5
NTNV	Band7	15MHz	21375	1RB#38	20.57	20.19	20.0±1.5	19.5±1.5
NTNV	Band7	15MHz	21375	1RB#74	20.65	20.24	20.0±1.5	19.5±1.5
NTNV	Band7	15MHz	21375	38RB#0	19.80	19.76	20.0±1.5	19.5±1.5
NTNV	Band7	15MHz	21375	38RB#18	19.85	19.62	20.0±1.5	19.5±1.5
NTNV	Band7	15MHz	21375	38RB#37	19.64	19.79	20.0±1.5	19.5±1.5
NTNV	Band7	15MHz	21375	75RB#0	19.50	18.86	20.0±1.5	19.5±1.5
NTNV	Band7	20MHz	20850	1RB#0	20.01	18.74	20.0±1.5	19.5±1.5
NTNV	Band7	20MHz	20850	1RB#49	20.35	19.11	20.0±1.5	19.5±1.5
NTNV	Band7	20MHz	20850	1RB#99	21.38	20.16	20.0±1.5	19.5±1.5



NTNV	Band7	20MHz	20850	50RB#0	19.09	18.24	20.0±1.5	19.5±1.5
NTNV	Band7	20MHz	20850	50RB#25	18.98	18.26	20.0±1.5	19.5±1.5
NTNV	Band7	20MHz	20850	50RB#50	19.82	18.99	20.0±1.5	19.5±1.5
NTNV	Band7	20MHz	20850	100RB#0	19.27	18.46	20.0±1.5	19.5±1.5
NTNV	Band7	20MHz	21100	1RB#0	21.99	21.37	21.0±1.5	20.5±1.5
NTNV	Band7	20MHz	21100	1RB#49	22.28	21.67	21.0±1.5	20.5±1.5
NTNV	Band7	20MHz	21100	1RB#99	22.11	21.45	21.0±1.5	20.5±1.5
NTNV	Band7	20MHz	21100	50RB#0	21.18	20.28	21.0±1.5	20.5±1.5
NTNV	Band7	20MHz	21100	50RB#25	21.10	20.28	21.0±1.5	20.5±1.5
NTNV	Band7	20MHz	21100	50RB#50	21.10	20.21	21.0±1.5	20.5±1.5
NTNV	Band7	20MHz	21100	100RB#0	21.09	20.34	21.0±1.5	20.5±1.5
NTNV	Band7	20MHz	21350	1RB#0	21.61	20.50	21.0±1.5	20.0±1.5
NTNV	Band7	20MHz	21350	1RB#49	20.99	19.83	21.0±1.5	20.0±1.5
NTNV	Band7	20MHz	21350	1RB#99	20.76	19.87	21.0±1.5	20.0±1.5
NTNV	Band7	20MHz	21350	50RB#0	20.20	19.37	21.0±1.5	20.0±1.5
NTNV	Band7	20MHz	21350	50RB#25	20.28	19.51	21.0±1.5	20.0±1.5
NTNV	Band7	20MHz	21350	50RB#50	19.91	18.99	21.0±1.5	20.0±1.5
NTNV	Band7	20MHz	21350	100RB#0	19.90	18.98	21.0±1.5	20.0±1.5

Condition	Band	Channel Bandwidth	Channel	RB Configure	Result (dBm)		Tune-Up	
					QPSK	16QAM	QPSK	16QAM
NTNV	Band41	5MHz	40265	1RB#0	21.20	20.41	21.0±1.5	20.5±1.5
NTNV	Band41	5MHz	40265	1RB#12	21.02	20.23	21.0±1.5	20.5±1.5
NTNV	Band41	5MHz	40265	1RB#24	20.84	20.04	21.0±1.5	20.5±1.5
NTNV	Band41	5MHz	40265	12RB#0	20.15	19.15	21.0±1.5	20.5±1.5
NTNV	Band41	5MHz	40265	12RB#6	20.11	19.18	21.0±1.5	20.5±1.5
NTNV	Band41	5MHz	40265	12RB#13	19.90	19.04	21.0±1.5	20.5±1.5
NTNV	Band41	5MHz	40265	25RB#0	19.99	19.16	21.0±1.5	20.5±1.5
NTNV	Band41	5MHz	40690	1RB#0	22.32	22.06	21.5±1.5	21.0±1.5
NTNV	Band41	5MHz	40690	1RB#12	22.33	21.96	21.5±1.5	21.0±1.5
NTNV	Band41	5MHz	40690	1RB#24	22.31	21.97	21.5±1.5	21.0±1.5
NTNV	Band41	5MHz	40690	12RB#0	21.42	20.36	21.5±1.5	21.0±1.5
NTNV	Band41	5MHz	40690	12RB#6	21.43	20.44	21.5±1.5	21.0±1.5
NTNV	Band41	5MHz	40690	12RB#13	21.53	20.47	21.5±1.5	21.0±1.5
NTNV	Band41	5MHz	40690	25RB#0	21.50	20.51	21.5±1.5	21.0±1.5
NTNV	Band41	5MHz	41215	1RB#0	22.33	22.03	21.5±1.5	21.0±1.5
NTNV	Band41	5MHz	41215	1RB#12	22.45	22.18	21.5±1.5	21.0±1.5

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NTNV	Band41	5MHz	41215	1RB#24	22.58	22.30	21.5±1.5	21.0±1.5
NTNV	Band41	5MHz	41215	12RB#0	21.38	20.43	21.5±1.5	21.0±1.5
NTNV	Band41	5MHz	41215	12RB#6	21.43	20.53	21.5±1.5	21.0±1.5
NTNV	Band41	5MHz	41215	12RB#13	21.65	20.60	21.5±1.5	21.0±1.5
NTNV	Band41	5MHz	41215	25RB#0	21.52	20.52	21.5±1.5	21.0±1.5
NTNV	Band41	10MHz	40290	1RB#0	21.26	20.48	21.0±1.5	20.0±1.5
NTNV	Band41	10MHz	40290	1RB#24	21.02	20.07	21.0±1.5	20.0±1.5
NTNV	Band41	10MHz	40290	1RB#49	20.75	19.97	21.0±1.5	20.0±1.5
NTNV	Band41	10MHz	40290	25RB#0	20.02	19.11	21.0±1.5	20.0±1.5
NTNV	Band41	10MHz	40290	25RB#12	20.01	19.11	21.0±1.5	20.0±1.5
NTNV	Band41	10MHz	40290	25RB#25	19.80	18.89	21.0±1.5	20.0±1.5
NTNV	Band41	10MHz	40290	50RB#0	19.92	18.96	21.0±1.5	20.0±1.5
NTNV	Band41	10MHz	40690	1RB#0	22.35	21.13	21.5±1.5	21.0±1.5
NTNV	Band41	10MHz	40690	1RB#24	22.32	21.20	21.5±1.5	21.0±1.5
NTNV	Band41	10MHz	40690	1RB#49	22.29	21.05	21.5±1.5	21.0±1.5
NTNV	Band41	10MHz	40690	25RB#0	21.51	20.76	21.5±1.5	21.0±1.5
NTNV	Band41	10MHz	40690	25RB#12	21.52	20.76	21.5±1.5	21.0±1.5
NTNV	Band41	10MHz	40690	25RB#25	21.51	20.75	21.5±1.5	21.0±1.5
NTNV	Band41	10MHz	40690	50RB#0	21.52	20.55	21.5±1.5	21.0±1.5
NTNV	Band41	10MHz	41190	1RB#0	22.12	21.26	21.5±1.5	21.0±1.5
NTNV	Band41	10MHz	41190	1RB#24	22.42	21.73	21.5±1.5	21.0±1.5
NTNV	Band41	10MHz	41190	1RB#49	22.64	21.96	21.5±1.5	21.0±1.5
NTNV	Band41	10MHz	41190	25RB#0	21.17	20.51	21.5±1.5	21.0±1.5
NTNV	Band41	10MHz	41190	25RB#12	21.17	20.51	21.5±1.5	21.0±1.5
NTNV	Band41	10MHz	41190	25RB#25	21.52	20.75	21.5±1.5	21.0±1.5
NTNV	Band41	10MHz	41190	50RB#0	21.36	20.65	21.5±1.5	21.0±1.5
NTNV	Band41	15MHz	40315	1RB#0	21.20	20.41	21.5±1.5	21.0±1.5
NTNV	Band41	15MHz	40315	1RB#38	20.93	19.99	21.5±1.5	21.0±1.5
NTNV	Band41	15MHz	40315	1RB#74	20.90	20.11	21.5±1.5	21.0±1.5
NTNV	Band41	15MHz	40315	38RB#0	19.87	19.86	21.5±1.5	21.0±1.5
NTNV	Band41	15MHz	40315	38RB#18	19.86	19.86	21.5±1.5	21.0±1.5
NTNV	Band41	15MHz	40315	38RB#37	19.86	19.86	21.5±1.5	21.0±1.5
NTNV	Band41	15MHz	40315	75RB#0	19.86	19.01	21.5±1.5	21.0±1.5
NTNV	Band41	15MHz	40690	1RB#0	22.44	20.67	21.5±1.5	21.0±1.5
NTNV	Band41	15MHz	40690	1RB#38	22.56	20.62	21.5±1.5	21.0±1.5
NTNV	Band41	15MHz	40690	1RB#74	22.37	20.45	21.5±1.5	21.0±1.5
NTNV	Band41	15MHz	40690	38RB#0	21.49	21.49	21.5±1.5	21.0±1.5
NTNV	Band41	15MHz	40690	38RB#18	21.49	21.49	21.5±1.5	21.0±1.5



NTNV	Band41	15MHz	40690	38RB#37	21.50	21.50	21.5±1.5	21.0±1.5
NTNV	Band41	15MHz	40690	75RB#0	21.50	20.51	21.5±1.5	21.0±1.5
NTNV	Band41	15MHz	41165	1RB#0	21.69	20.69	21.5±1.5	21.0±1.5
NTNV	Band41	15MHz	41165	1RB#38	22.39	21.43	21.5±1.5	21.0±1.5
NTNV	Band41	15MHz	41165	1RB#74	22.77	21.82	21.5±1.5	21.0±1.5
NTNV	Band41	15MHz	41165	38RB#0	21.16	21.16	21.5±1.5	21.0±1.5
NTNV	Band41	15MHz	41165	38RB#18	21.16	21.16	21.5±1.5	21.0±1.5
NTNV	Band41	15MHz	41165	38RB#37	21.16	21.16	21.5±1.5	21.0±1.5
NTNV	Band41	15MHz	41165	75RB#0	21.16	20.31	21.5±1.5	21.0±1.5
NTNV	Band41	20MHz	40340	1RB#0	21.12	20.47	21.5±1.5	21.0±1.5
NTNV	Band41	20MHz	40340	1RB#49	20.72	19.99	21.5±1.5	21.0±1.5
NTNV	Band41	20MHz	40340	1RB#99	21.06	20.33	21.5±1.5	21.0±1.5
NTNV	Band41	20MHz	40340	50RB#0	19.83	19.09	21.5±1.5	21.0±1.5
NTNV	Band41	20MHz	40340	50RB#25	19.92	19.09	21.5±1.5	21.0±1.5
NTNV	Band41	20MHz	40340	50RB#50	19.90	19.19	21.5±1.5	21.0±1.5
NTNV	Band41	20MHz	40340	100RB#0	19.95	19.09	21.5±1.5	21.0±1.5
NTNV	Band41	20MHz	40690	1RB#0	22.37	21.39	21.5±1.5	21.0±1.5
NTNV	Band41	20MHz	40690	1RB#49	22.59	21.55	21.5±1.5	21.0±1.5
NTNV	Band41	20MHz	40690	1RB#99	22.24	21.18	21.5±1.5	21.0±1.5
NTNV	Band41	20MHz	40690	50RB#0	21.49	20.56	21.5±1.5	21.0±1.5
NTNV	Band41	20MHz	40690	50RB#25	21.50	20.56	21.5±1.5	21.0±1.5
NTNV	Band41	20MHz	40690	50RB#50	21.33	20.50	21.5±1.5	21.0±1.5
NTNV	Band41	20MHz	40690	100RB#0	21.52	20.54	21.5±1.5	21.0±1.5
NTNV	Band41	20MHz	41140	1RB#0	21.32	19.88	21.5±1.5	21.0±1.5
NTNV	Band41	20MHz	41140	1RB#49	22.03	20.77	21.5±1.5	21.0±1.5
NTNV	Band41	20MHz	41140	1RB#99	22.80	21.44	21.5±1.5	21.0±1.5
NTNV	Band41	20MHz	41140	50RB#0	20.55	19.65	21.5±1.5	21.0±1.5
NTNV	Band41	20MHz	41140	50RB#25	20.54	19.65	21.5±1.5	21.0±1.5
NTNV	Band41	20MHz	41140	50RB#50	21.44	20.45	21.5±1.5	21.0±1.5
NTNV	Band41	20MHz	41140	100RB#0	21.00	20.04	21.5±1.5	21.0±1.5



<WIFI 2.4GHz Conducted Power>

Mode	Channel	Frequen cy (MHz)	Peak Power (dBm)	Average Power(dBm)	Tune-Up Limit(dBm)	Test Rate Data
802.11 b	1	2412	15.64	13.87	14.00	1 Mbps
	6	2437	15.40	13.63	14.00	1 Mbps
	11	2462	15.63	13.88	14.00	1 Mbps
802.11 g	1	2412	15.12	12.12	12.50	6 Mbps
	6	2437	14.70	11.78	12.50	6 Mbps
	11	2462	15.39	12.41	12.50	6 Mbps
802.11 n(HT20)	1	2412	15.30	12.07	12.50	MCS0
	6	2437	14.76	11.59	12.50	MCS0
	11	2462	15.60	12.30	12.50	MCS0

Note:

1. Per KDB 447498 D01 v06, the test distance less than 5mm
2. Per KDB 248227 D01, choose the highest output power channel to test SAR and determine further SAR exclusion.
3. Per KDB 248227 D01, In the 2.4 GHz band, separate SAR procedures are applied to DSSS and OFDM configurations to simplify DSSS test requirements. SAR is not required for the following 2.4 GHz OFDM conditions:
 - 1) When KDB Publication 447498 SAR test exclusion applies to the OFDM configuration.
 - 2) When the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is $0.327 \text{ W/Kg} \times (17.42/24.43) \leq 1.2 \text{ W/kg}$.
4. According to chapter 12 of this report, the max report SAR of 802.11b mode is 0.327 W/Kg , and $0.327 \text{ W/Kg} \times (17.42/24.43) = 0.233 \text{ W/Kg}$ which is smaller than 1.2 W/Kg , so SAR evaluation of 802.11g mode is not required. And the same for 802.11n.



<WIFI 5GHz Conducted Power>

Band 1

TestMode	Channel	Average Power[dBm]	Tune-Up Limit(dBm)	Test Rate Data
11A	5180	15.32	15.50	6M
	5200	15.14	15.50	6M
	5240	14.40	15.50	6M
11N20	5180	15.28	15.50	MCS0
	5200	15.25	15.50	MCS0
	5240	14.50	15.50	MCS0
11N40	5190	15.31	15.50	MCS0
	5230	14.55	15.50	MCS0
11AC20	5180	15.35	15.50	MCS0
	5200	15.32	15.50	MCS0
	5240	14.56	15.50	MCS0
11AC40	5190	17.42	17.50	MCS0
	5230	14.54	17.50	MCS0
11AC80	5210	16.32	16.50	MCS0

Band 4

TestMode	Channel	Average Power[dBm]	Tune-Up Limit(dBm)	Test Rate Data
11A	5745	13.87	14.00	6M
	5785	12.58	14.00	6M
	5825	11.19	14.00	6M
11N20	5745	13.71	14.00	MCS0
	5785	12.54	14.00	MCS0
	5825	11.17	14.00	MCS0
11N40	5755	13.61	14.00	MCS0
	5795	12.23	14.00	MCS0
11AC20	5745	13.95	14.00	MCS0
	5785	12.55	14.00	MCS0
	5825	11.11	14.00	MCS0
11AC40	5755	15.47	14.00	MCS0
	5795	12.05	14.00	MCS0
11AC80	5775	13.75	14.00	MCS0



Note:

1. Per KDB 447498 D02 v02r01, the test distance less than 5mm
2. Per KDB 248227 D01, choose the highest output power channel to test SAR and determine further SAR exclusion.
3. Per KDB 248227 D01, In the 5 GHz band, the initial test position(s) is measured using the highest measured maximum output power channel in the required wireless mode test configuration(s). When the reported SAR for the initial test position is:
 - 1) ≤ 0.4 W/kg, further SAR measurement is not required for the other test positions in that exposure configuration and wireless mode combination within the frequency band or aggregated band.
 - 2) > 0.4 W/kg, SAR is repeated using the same wireless mode test configuration tested in the initial test position to measure the subsequent next closet/smallest test separation distance and maximum coupling test position, on the highest maximum output power channel, until the reported SAR is ≤ 0.8 W/kg or all required test positions are tested.
 - a. For subsequent test positions with equivalent test separation distance or when exposure is dominated by coupling conditions, the position for maximum coupling condition should be tested.
 - b. When it is unclear, all equivalent conditions must be tested.
 - 3) For all positions/configurations tested using the initial test position and subsequent test positions, when the reported SAR is > 0.8 W/kg, measure the SAR for these positions/configurations on the subsequent next highest measured output power channel(s) until the reported SAR is ≤ 1.2 W/kg or all required test channels are considered.
 - a. The additional power measurements required for this step should be limited to those necessary for identifying subsequent highest output power channels to apply the test reduction.



<Bluetooth Conducted Power>

TestMode	Channel	Result[dBm]	Maximum Tune-Up(dBm)
GFSK(BT BLE_1M)	2402	4.56	6.50
	2440	6.36	6.50
	2480	5.25	6.50
GFSK(BT BLE_2M)	2402	4.54	6.50
	2440	6.28	6.50
	2480	5.01	6.50

Note:

Per KDB 447498 D01v05r02, the 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:

$$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}]$$

≤ 3.0 for 1-g SAR and ≤ 7.5 for 10-g extremity SAR

$f(\text{GHz})$ 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

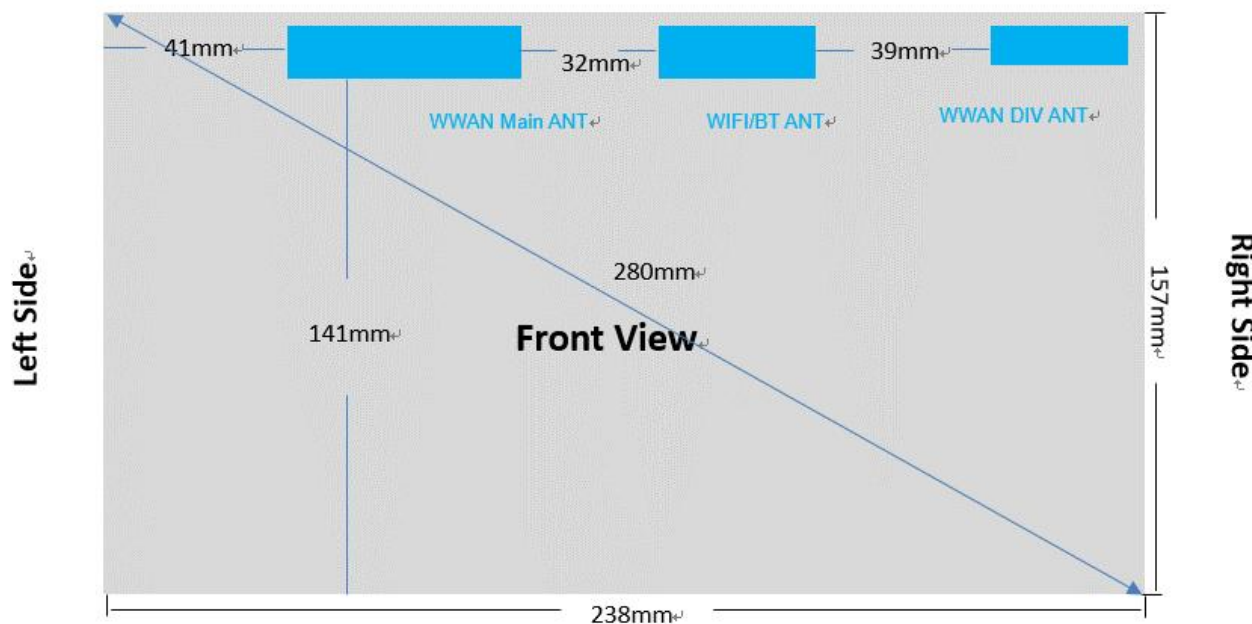
Bluetooth Max Turn-up Power (dBm)	Separation Distance (mm)	Frequency (GHz)	exclusion thresholds
6.50	5	2.480	1.407

Per KDB 447498 D01, when the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion. The test exclusion threshold is 1.407 which is ≤ 3 , SAR testing is not required.



11. Antenna Location

Top Side



Bottom Side

EUT BACK VIEW

Distance of The Antenna to the EUT surface and edge						
Antennas	Front	Back	Top Side	Bottom Side	Left Side	Right Side
WIFI/BT ANT	<25mm	<25mm	<25mm	>25mm	>25mm	>25mm
WWAN Main ANT	<25mm	<25mm	<25mm	>25mm	>25mm	>25mm



12. SAR Test Results Summary

General Note:

1. Per KDB 447498 D01v05r01, the reported SAR is the measured SAR value adjusted for maximum tune-up tolerance.

Scaling Factor = tune-up limit power (mW) / EUT RF power (mW), where tune-up limit is the maximum rated power among all production units.

*Reported SAR(W/kg) = Measured SAR(W/kg) * Scaling Factor*

2. Per KDB 447498 D01v05r01, for each exposure position, if the highest output channel reported SAR ≤ 0.8 W/kg, other channels SAR testing are not necessary

3. Per KDB 941225 D05, start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.

4. Per KDB 941225 D05, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.

5. Per KDB 941225 D05, For QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.

6. Per KDB 941225 D05, 16QAM output power for each RB allocation configuration is > not ½ dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is ≤ 1.45 W/kg; Per KDB 941225 D05, 16QAM SAR testing is not required.

7. Per KDB 941225 D05, Smaller bandwidth output power for each RB allocation configuration is > not ½ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ≤ 1.45 W/kg; Per KDB 941225 D05, smaller bandwidth SAR testing is not required.

8. Per KDB 865664 D01, for each frequency band, repeated SAR measurement is required only when the measured SAR is ≥ 0.8 W/Kg; if the deviation among the repeated measurement is ≤ 20%, and the measured SAR < 1.45 W/Kg, only one repeated measurement is required.

9. When the user enables the personal Wireless router functions for the handsets, actual operations include simultaneous transmission of both the Wi-Fi transmitting frequency and thus cannot be evaluated for SAR under actual use conditions. The "Portable Hotspot" feature on the handset was NOT activated, to ensure the SAR measurements were evaluated for a single transmission frequency RF signal.



12.1 Body-worn and Hotspot SAR Results

<LTE>

Plot No.	Band	Mode	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Scaling Factor	Power Drift (dB)	Measured SAR _{1g} (W/kg)	Reported SAR _{1g} (W/kg)
	LTE Band 2	20MHz/1RB	Front	0	18900	1880	23.03	23.5	1.114	0.06	0.457	0.509
	LTE Band 2	20MHz/50RB	Front	0	18900	1880	21.96	23.5	1.426	0.17	0.226	0.322
	LTE Band 2	20MHz/1RB	Back	0	18900	1880	23.03	23.5	1.114	0.12	0.533	0.594
	LTE Band 2	20MHz/50RB	Back	0	18900	1880	21.96	23.5	1.426	0.08	0.315	0.449
	LTE Band 2	20MHz/1RB	Left Side	0	18900	1880	23.03	23.5	1.114	N/A	N/A	N/A
	LTE Band 2	20MHz/50RB	Left Side	0	18900	1880	21.96	23.5	1.426	N/A	N/A	N/A
	LTE Band 2	20MHz/1RB	Right Side	0	18900	1880	23.03	23.5	1.114	N/A	N/A	N/A
	LTE Band 2	20MHz/50RB	Right Side	0	18900	1880	21.96	23.5	1.426	N/A	N/A	N/A
#1	LTE Band 2	20MHz/1RB	Top Side	0	18900	1880	23.03	23.5	1.114	0.03	0.703	0.783
	LTE Band 2	20MHz/50RB	Top Side	0	18900	1880	21.96	23.5	1.426	0.07	0.416	0.593
	LTE Band 2	20MHz/1RB	Bottom Side	0	18900	1880	23.03	23.5	1.114	N/A	N/A	N/A
	LTE Band 2	20MHz/50RB	Bottom Side	0	18900	1880	21.96	23.5	1.426	N/A	N/A	N/A
	LTE Band 4	20MHz/1RB	Front	0	20300	1745	23.45	24.0	1.135	0.10	0.462	0.524
	LTE Band 4	20MHz/50RB	Front	0	20300	1745	22.31	24.0	1.476	0.11	0.256	0.378
	LTE Band 4	20MHz/1RB	Back	0	20300	1745	23.45	24.0	1.135	-0.07	0.579	0.657
	LTE Band 4	20MHz/50RB	Back	0	20300	1745	22.31	24.0	1.476	0.06	0.317	0.468
	LTE Band 4	20MHz/1RB	Left Side	0	20300	1745	23.45	24.0	1.135	N/A	N/A	N/A
	LTE Band 4	20MHz/50RB	Left Side	0	20300	1745	22.31	24.0	1.476	N/A	N/A	N/A
	LTE Band 4	20MHz/1RB	Right Side	0	20300	1745	23.45	24.0	1.135	N/A	N/A	N/A
	LTE Band 4	20MHz/50RB	Right Side	0	20300	1745	22.31	24.0	1.476	N/A	N/A	N/A
#2	LTE Band 4	20MHz/1RB	Top Side	0	20300	1745	23.45	24.0	1.135	-0.11	0.701	0.796
	LTE Band 4	20MHz/50RB	Top Side	0	20300	1745	22.31	24.0	1.476	0.07	0.453	0.668
	LTE Band 4	20MHz/1RB	Bottom Side	0	20300	1745	23.45	24.0	1.135	N/A	N/A	N/A

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	LTE Band 4	20MHz/50RB	Bottom Side	0	20300	1745	22.31	24.0	1.476	N/A	N/A	N/A
	LTE Band 5	10MHz/1RB	Front	0	20600	844	23.54	24.0	1.112	0.10	0.677	0.753
	LTE Band 5	10MHz/25RB	Front	0	20600	844	22.89	24.0	1.291	0.11	0.335	0.433
	LTE Band 5	10MHz/1RB	Back	0	20600	844	23.54	24.0	1.112	-0.02	0.643	0.715
	LTE Band 5	10MHz/25RB	Back	0	20600	844	22.89	24.0	1.291	0.03	0.372	0.480
	LTE Band 5	10MHz/1RB	Left Side	0	20600	844	23.54	24.0	1.112	N/A	N/A	N/A
	LTE Band 5	10MHz/25RB	Left Side	0	20600	844	22.89	24.0	1.291	N/A	N/A	N/A
	LTE Band 5	10MHz/1RB	Right Side	0	20600	844	23.54	24.0	1.112	N/A	N/A	N/A
	LTE Band 5	10MHz/25RB	Right Side	0	20600	844	22.89	24.0	1.291	N/A	N/A	N/A
#3	LTE Band 5	10MHz/1RB	Top Side	0	20600	844	23.54	24.0	1.112	0.05	0.718	0.798
	LTE Band 5	10MHz/25RB	Top Side	0	20600	844	22.89	24.0	1.291	0.09	0.452	0.584
	LTE Band 5	10MHz/1RB	Bottom Side	0	20600	844	23.54	24.0	1.112	N/A	N/A	N/A
	LTE Band 5	10MHz/25RB	Bottom Side	0	20600	844	22.89	24.0	1.291	N/A	N/A	N/A
	LTE Band 7	20MHz/1RB	Front	0	21100	2535	22.28	22.5	1.052	0.13	0.389	0.409
	LTE Band 7	20MHz/50RB	Front	0	21100	2535	21.18	22.5	1.355	0.17	0.223	0.302
	LTE Band 7	20MHz/1RB	Back	0	21100	2535	22.28	22.5	1.052	0.03	0.457	0.481
	LTE Band 7	20MHz/50RB	Back	0	21100	2535	21.18	22.5	1.355	0.08	0.282	0.382
	LTE Band 7	20MHz/1RB	Left Side	0	21100	2535	22.28	22.5	1.052	N/A	N/A	N/A
	LTE Band 7	20MHz/50RB	Left Side	0	21100	2535	21.18	22.5	1.355	N/A	N/A	N/A
	LTE Band 7	20MHz/1RB	Right Side	0	21100	2535	22.28	22.5	1.052	N/A	N/A	N/A
	LTE Band 7	20MHz/50RB	Right Side	0	21100	2535	21.18	22.5	1.355	N/A	N/A	N/A
#4	LTE Band 7	20MHz/1RB	Top Side	0	21100	2535	22.28	22.5	1.052	-0.15	0.651	0.685
	LTE Band 7	20MHz/50RB	Top Side	0	21100	2535	21.18	22.5	1.355	-0.07	0.346	0.469
	LTE Band 7	20MHz/1RB	Bottom Side	0	21100	2535	22.28	22.5	1.052	N/A	N/A	N/A
	LTE Band 7	20MHz/50RB	Bottom Side	0	21100	2535	21.18	22.5	1.355	N/A	N/A	N/A
	LTE Band 41	20MHz/1RB	Front	0	41140	2645	22.80	23.0	1.047	0.12	0.472	0.494
	LTE Band 41	20MHz/50RB	Front	0	41140	2645	21.44	23.0	1.432	0.12	0.224	0.321
	LTE Band 41	20MHz/1RB	Back	0	41140	2645	22.80	23.0	1.047	-0.07	0.515	0.539
	LTE Band 41	20MHz/50RB	Back	0	41140	2645	21.44	23.0	1.432	-0.02	0.293	0.420
	LTE Band 41	20MHz/1RB	Left Side	0	41140	2645	22.80	23.0	1.047	N/A	N/A	N/A



	LTE Band 41	20MHz/50RB	Left Side	0	41140	2645	21.44	23.0	1.432	N/A	N/A	N/A
	LTE Band 41	20MHz/1RB	Right Side	0	41140	2645	22.80	23.0	1.047	N/A	N/A	N/A
	LTE Band 41	20MHz/50RB	Right Side	0	41140	2645	21.44	23.0	1.432	N/A	N/A	N/A
#5	LTE Band 41	20MHz/1RB	Top Side	0	41140	2645	22.80	23.0	1.047	0.13	0.641	0.671
	LTE Band 41	20MHz/50RB	Top Side	0	41140	2645	21.44	23.0	1.432	-0.04	0.387	0.554
	LTE Band 41	20MHz/1RB	Bottom Side	0	41140	2645	22.80	23.0	1.047	N/A	N/A	N/A
	LTE Band 41	20MHz/50RB	Bottom Side	0	41140	2645	21.44	23.0	1.432	N/A	N/A	N/A

<WIFI>

Plot No.	Band	Mode	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Scaling Factor	Power Drift (dB)	Measured SAR _{1g} (W/kg)	Reported SAR _{1g} (W/kg)
	WIFI2.4GHz	802.11b	Front	0	11	2462	13.88	14.0	1.028	0.07	0.261	0.268
	WIFI2.4GHz	802.11b	Back	0	11	2462	13.88	14.0	1.028	-0.13	0.207	0.213
	WIFI2.4GHz	802.11b	Left Side	0	11	2462	13.88	14.0	1.028	N/A	N/A	N/A
	WIFI2.4GHz	802.11b	Right Side	0	11	2462	13.88	14.0	1.028	N/A	N/A	N/A
#6	WIFI2.4GHz	802.11b	Top Side	0	11	2462	13.88	14.0	1.028	0.10	0.318	0.327
	WIFI2.4GHz	802.11b	Bottom Side	0	11	2462	13.88	14.0	1.028	N/A	N/A	N/A
	WIFI5.2GHz	802.11 ac(HT40)	Front	0	38	5190	17.42	17.5	1.019	0.07	0.317	0.323
	WIFI5.2GHz	802.11 ac(HT40)	Back	0	38	5190	17.42	17.5	1.019	-0.18	0.254	0.259
	WIFI5.2GHz	802.11 ac(HT40)	Left Side	0	38	5190	17.42	17.5	1.019	N/A	N/A	N/A
	WIFI5.2GHz	802.11 ac(HT40)	Right Side	0	38	5190	17.42	17.5	1.019	N/A	N/A	N/A
#7	WIFI5.2GHz	802.11 ac(HT40)	Top Side	0	38	5190	17.42	17.5	1.019	0.10	0.379	0.386
	WIFI5.2GHz	802.11 ac(HT40)	Bottom Side	0	38	5190	17.42	17.5	1.019	N/A	N/A	N/A
	WIFI5.8GHz	802.11 ac(HT20)	Front	0	149	5745	13.95	14.0	1.012	0.13	0.145	0.147



	WIFI5.8GHz	802.11 ac(HT20)	Back	0	149	5745	13.95	14.0	1.012	0.03	0.119	0.120
	WIFI5.8GHz	802.11 ac(HT20)	Left Side	0	149	5745	13.95	14.0	1.012	N/A	N/A	N/A
	WIFI5.8GHz	802.11 ac(HT20)	Right Side	0	149	5745	13.95	14.0	1.012	N/A	N/A	N/A
#8	WIFI5.8GHz	802.11 ac(HT20)	Top Side	0	149	5745	13.95	14.0	1.012	-0.13	0.184	0.186
	WIFI5.8GHz	802.11 ac(HT20)	Bottom Side	0	149	5745	13.95	14.0	1.012	N/A	N/A	N/A

Note:

1. Per KDB 865664 D01V01, for each frequency band, repeated SAR measurement is required only when the measured SAR is $\geq 0.8\text{W/Kg}$.
2. Per KDB 865664 D01V01, if the ratio of largest to smallest SAR for the original and first repeated measurement is ≤ 1.2 and the measured SAR $< 1.45\text{W/Kg}$, only one repeated measurement is required.
3. Perform a second repeated measurement only if the ratio of largest to smallest SAR for the original and first repeated measurements is > 1.20 or when the original or repeated measurement is $\geq 1.45\text{W/Kg}$.
4. The ratio is the difference in percentage between original and repeated measured SAR.



13. Simultaneous Transmission Analysis

Simultaneous TX SAR Considerations

No.	Applicable Simultaneous Transmission
1.	LTE+WIFI2.4G
2.	LTE+BT
3.	LTE+WIFI 5G

Note:

1. WIFI 2.4GHz, WIFI 5GHz and Bluetooth share the same antenna, and cannot transmit simultaneously.

Simultaneous Transmission Procedures

This device contains transmitters that may operate simultaneously. Therefore simultaneous transmission analysis is required. Per FCC KDB 447498 D01v05r02, simultaneous transmission SAR test exclusion may be applied when the sum of the 1-g SAR for all the simultaneous transmitting antennas in a specific a physical test configuration is ≤ 1.6 W/kg.



Evaluation of Simultaneous SAR

<LTE+2.4GWiFi >

Test Position	WiFi 2.4G SAR _{1-g} (W/Kg)	LTE BAND 2 _{1-g} (W/Kg)	LTE BAND 4 _{1-g} (W/Kg)	LTE BAND 5 _{1-g} (W/Kg)	LTE BAND 7 _{1-g} (W/Kg)	LTE BAND 41 _{1-g} (W/Kg)	MAX. ΣSAR _{1-g} (W/Kg)	SAR _{1-g} Limit (W/Kg)	Simut. Meas. Required
Front	0.268	0.509	0.524	0.753	0.409	0.494	1.021	1.6	N/A
Back	0.213	0.594	0.657	0.715	0.481	0.539	0.928	1.6	N/A
Left Side	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.6	N/A
Right Side	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.6	N/A
Top side	0.327	0.783	0.796	0.798	0.685	0.671	1.125	1.6	N/A
Bottom Side	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.6	N/A

<LTE+5.2GWiFi >

Test Position	WiFi 5.2G SAR _{1-g} (W/Kg)	LTE BAND 2 _{1-g} (W/Kg)	LTE BAND 4 _{1-g} (W/Kg)	LTE BAND 5 _{1-g} (W/Kg)	LTE BAND 7 _{1-g} (W/Kg)	LTE BAND 41 _{1-g} (W/Kg)	MAX. ΣSAR _{1-g} (W/Kg)	SAR _{1-g} Limit (W/Kg)	Simut. Meas. Required
Front	0.323	0.509	0.524	0.753	0.409	0.494	1.076	1.6	N/A
Back	0.259	0.594	0.657	0.715	0.481	0.539	0.974	1.6	N/A
Left Side	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.6	N/A
Right Side	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.6	N/A
Top side	0.386	0.783	0.796	0.798	0.685	0.671	1.184	1.6	N/A
Bottom Side	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.6	N/A



<LTE+5.8GWiFi>

Test Position	WiFi 5.8G SAR _{1-g} (W/Kg)	LTE BAND 2 _{1-g} (W/Kg)	LTE BAND 4 _{1-g} (W/Kg)	LTE BAND 5 _{1-g} (W/Kg)	LTE BAND 7 _{1-g} (W/Kg)	LTE BAND 41 _{1-g} (W/Kg)	MAX. Σ SAR _{1-g} (W/Kg)	SAR _{1-g} Limit (W/Kg)	Simut. Meas. Required
Front	0.147	0.509	0.524	0.753	0.409	0.494	0.900	1.6	N/A
Back	0.120	0.594	0.657	0.715	0.481	0.539	0.835	1.6	N/A
Left Side	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Right Side	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Top side	0.186	0.783	0.796	0.798	0.685	0.671	0.984	1.6	N/A
Bottom Side	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.6	N/A



14. Measurement Uncertainty

NO	Source	Uncert. ai (%)	Prob. Dist.	Div. k	ci (1g)	ci (10g)	Stand.U ncert. ui (1g)	Stand.U ncert. ui (10g)	Veff
1	Repeat	0.4	N	1	1	1	0.4	0.4	9
Instrument									
2	Probe calibration	7	N	2	1	1	3.5	3.5	∞
3	Axial isotropy	4.7	R	$\sqrt{3}$	0.7	0.7	1.9	1.9	∞
4	Hemispherical isotropy	9.4	R	$\sqrt{3}$	0.7	0.7	3.9	3.9	∞
5	Boundary effect	1.0	R	$\sqrt{3}$	1	1	0.6	0.6	∞
6	Linearity	4.7	R	$\sqrt{3}$	1	1	2.7	2.7	∞
7	Detection limits	1.0	R	$\sqrt{3}$	1	1	0.6	0.6	∞
8	Readout electronics	0.3	N	1	1	1	0.3	0.3	∞
9	Response time	0.8	R	$\sqrt{3}$	1	1	0.5	0.5	∞
10	Integration time	2.6	R	$\sqrt{3}$	1	1	1.5	1.5	∞
11	Ambient noise	3.0	R	$\sqrt{3}$	1	1	1.7	1.7	∞
12	Ambient reflections	3.0	R	$\sqrt{3}$	1	1	1.7	1.7	∞
13	Probe positioner mech. restrictions	0.4	R	$\sqrt{3}$	1	1	0.2	0.2	∞

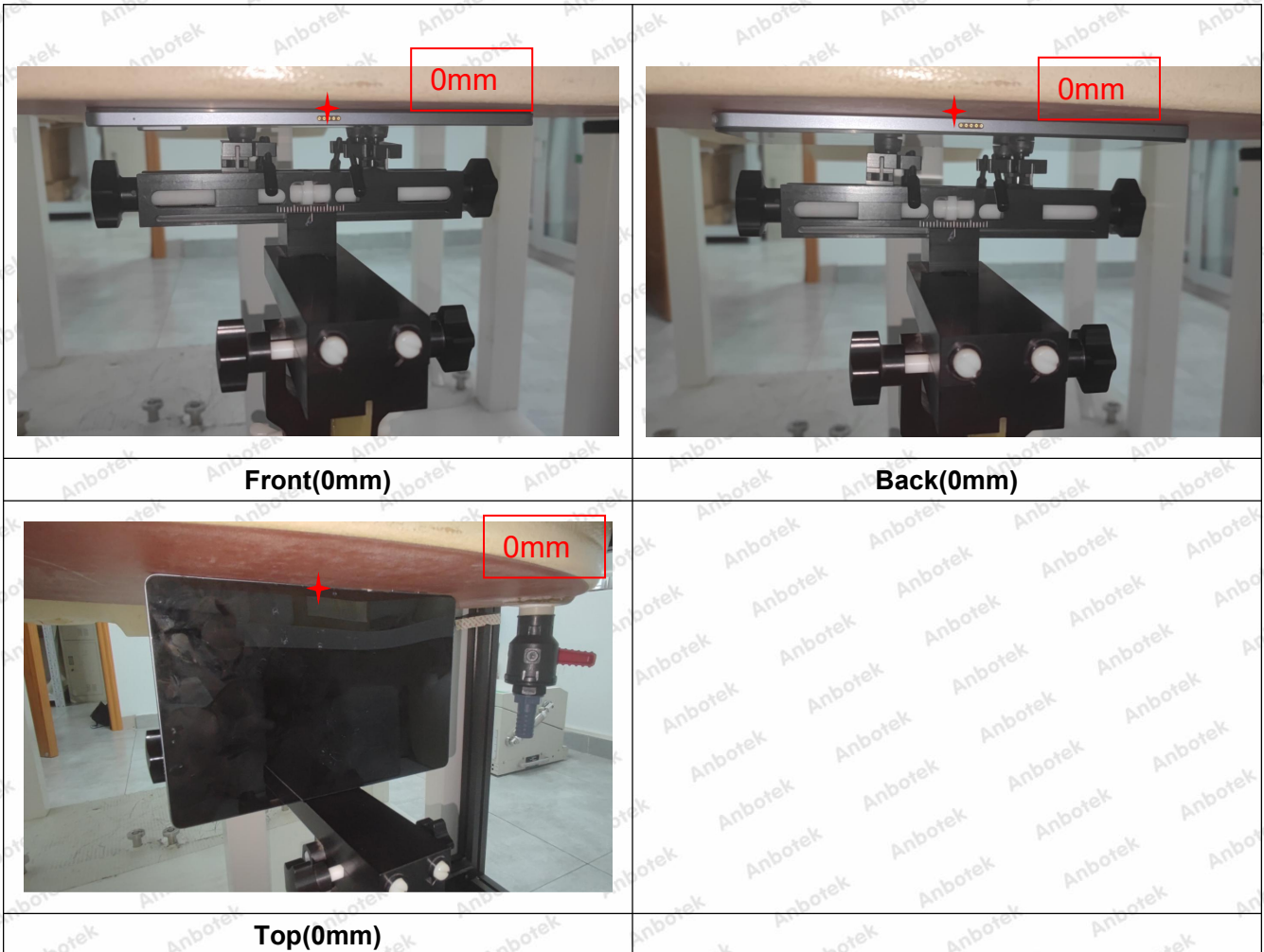


14	Probe positioning with respect to phantom shell	2.9	R	$\sqrt{3}$	1	1	1.7	1.7	∞
15	Max.SAR evaluation	1.0	R	$\sqrt{3}$	1	1	0.6	0.6	∞

Test sample related									
16	Device positioning	3.8	N	1	1	1	3.8	3.8	99
17	Device holder	5.1	N	1	1	1	5.1	5.1	5
18	Drift of output power	5.0	R	$\sqrt{3}$	1	1	2.9	2.9	∞
Phantom and set-up									
19	Phantom uncertainty	4.0	R	$\sqrt{3}$	1	1	2.3	2.3	∞
20	Liquid conductivity (target)	5.0	R	$\sqrt{3}$	0.64	0.43	1.8	1.2	∞
21	Liquid conductivity (meas)	2.5	N	1	0.64	0.43	1.6	1.2	∞
22	Liquid Permittivity (target)	5.0	R	$\sqrt{3}$	0.6	0.49	1.7	1.5	∞
23	Liquid Permittivity (meas)	2.5	N	1	0.6	0.49	1.5	1.2	∞
Combined standard			RSS	$U_c=\sum_{i=1}^n C_i U_{2_i}$			11.4%	11.3%	236
Expanded uncertainty(P=95%)		$U_c=k U$,k=2					22.8%	22.6%	



Appendix A. EUT Photos and Test Setup Photos



Appendix B. Plots of SAR System Check

835MHz Body System Check

Date:07/26/2022

DUT: Dipole 835 MHz; Type: D835V2; Serial: 4d154

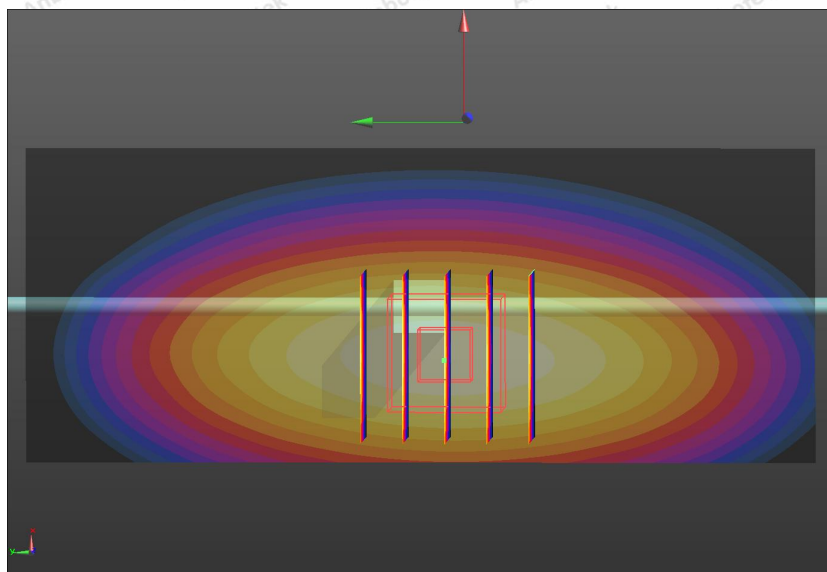
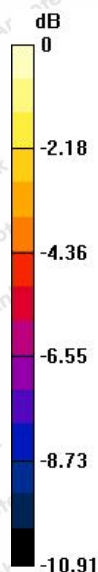
Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1

Medium parameters used (interpolated): $f = 835 \text{ MHz}$; $\sigma = 0.93 \text{ S/m}$; $\epsilon_r = 54.38$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7396; ConvF(9.88, 9.88, 9.88); Calibrated: 05.06.2022;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn387; Calibrated: Sep.06,2021;
- Phantom: SAM 1; Type: SAM;
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.10 (7164)

Area Scan (61x91x1): Measurement grid: $dx=15.00 \text{ mm}$, $dy=15.00 \text{ mm}$ Maximum value of SAR (interpolated) = 2.907 W/kg **Zoom Scan (5x5x7)/Cube 0:** Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$ Reference Value = 50.475 V/m ; Power Drift = -0.12 dB Peak SAR (extrapolated) = 3.257 W/kg **SAR(1 g) = 2.36 W/kg ; SAR(10 g) = 1.57 W/kg** Maximum value of SAR (measured) = 2.894 W/kg 

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1750MHz Body System Check

Date:07/25/2022

DUT: Dipole 1750 MHz; Type: D1750V2; Serial: D1750V2

Communication System: CW; Frequency: 1750 MHz; Duty Cycle: 1:1

Medium parameters used (interpolated): $f = 1750$ MHz; $\sigma = 1.43$ S/m; $\epsilon_r = 53.26$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASYS (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: EX3DV4 - SN7396; ConvF(8.24, 8.24, 8.24); Calibrated: May,06.2022;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn387; Calibrated: Sep.06.2021;
- Phantom: SAM 1 ; Type: QD 000 P40 CD; Serial: TP - 1802
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Configuration/Pin=250mW/Area Scan (71x71x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 12.112 W/kg

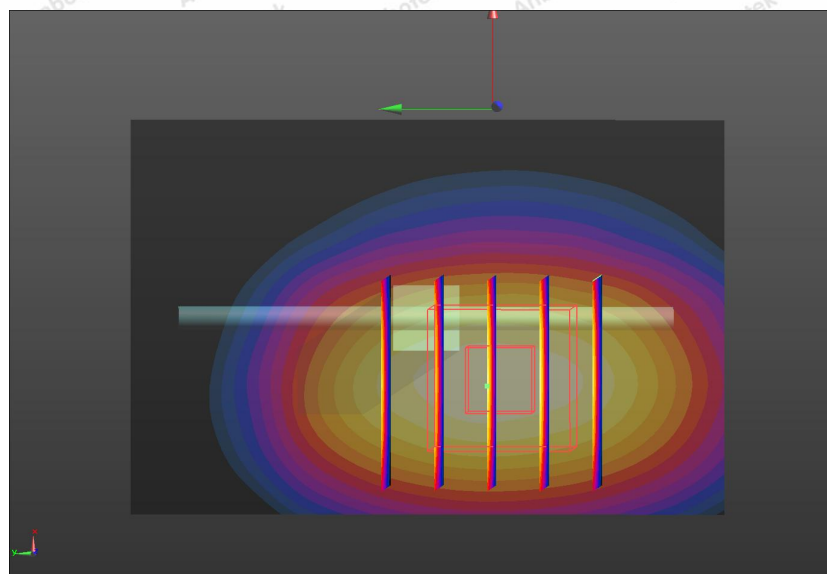
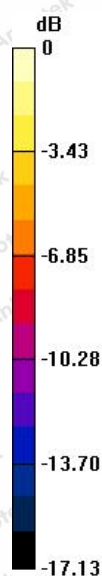
Configuration/Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 92.61 V/m; Power Drift = -0.08 dB

Peak SAR (extrapolated) = 16.833 W/kg

SAR(1 g) = 9.67 W/kg; SAR(10 g) = 5.02 W/kg

Maximum value of SAR (measured) = 12.034 W/kg

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1900MHz Body System Check

Date:07/25/2022

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: 5d175

Date:12/16/2021

Communication System: CW; Frequency: 1900 MHz;Duty Cycle: 1:1

Medium parameters used (interpolated): $f = 1900 \text{ MHz}$; $\sigma = 1.45 \text{ S/m}$; $\epsilon_r = 52.82$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY5 Configuration:

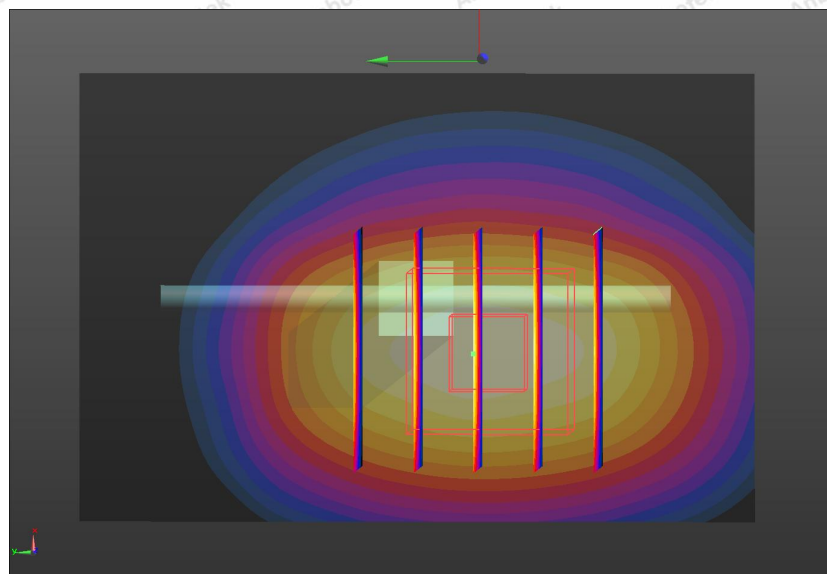
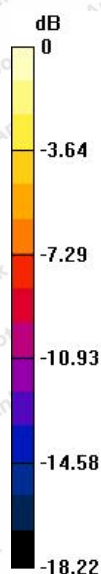
Probe: EX3DV4 - SN7396; ConvF(7.97, 7.97, 7.97); Calibrated: 05.06.2022;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn387; Calibrated: Sep.06,2021;

Phantom: SAM 1; Type: SAM;

Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Area Scan (61x91x1):Measurement grid: $dx=15.00 \text{ mm}$, $dy=15.00 \text{ mm}$ Maximum value of SAR (interpolated) = 16.765 W/kg **Zoom Scan (5x5x7)/Cube 0:** Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$ Reference Value = 87.461 V/m ; Power Drift = 0.07dB Peak SAR (extrapolated) = 19.657 W/kg **SAR(1 g) = 10.16 W/kg ; SAR(10 g) = 5.32 W/kg** Maximum value of SAR (measured) = 15.132 W/kg 

2450MHz Body System Check

Date:07/27/2022

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN:910

Communication System: UID 0, CW; Frequency: 2450 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 2450$ MHz; $\sigma = 1.86$ S/m; $\epsilon_r = 52.28$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 – SN7396; ConvF(7.53, 7.53, 7.53); Calibrated: May 06, 2022;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn387; Calibrated: Sep. 06, 2021
- Phantom: SAM; Type: QD000P40CD; Serial: TP:1670
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.10 (7164)

Configuration/Pin=250mW/Area Scan (81x81x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm

Maximum value of SAR (interpolated) = 20.6 W/kg

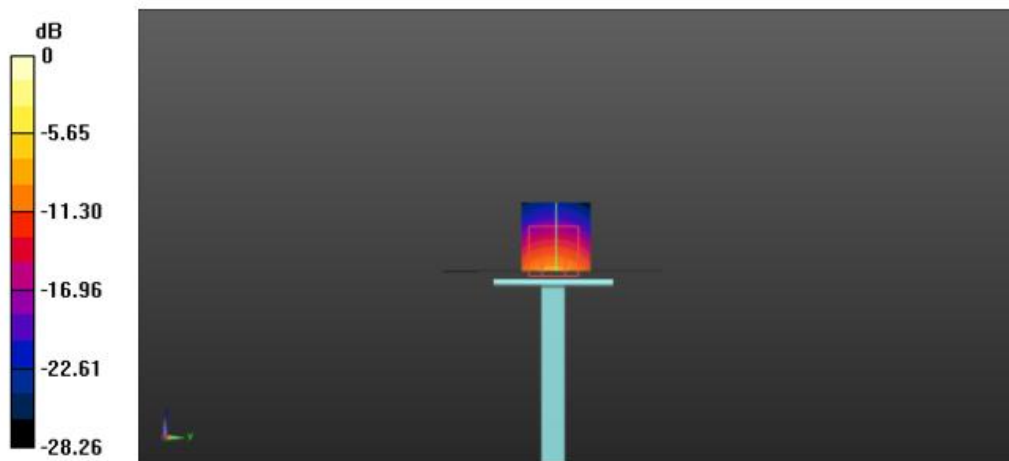
Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 88.387 V/m; Power Drift = 0.07 dB

Peak SAR (extrapolated) = 26.6 W/kg

SAR(1 g) = 12.87 W/kg; SAR(10 g) = 5.87W/kg

Maximum value of SAR (measured) = 20.1 W/kg



0 dB = 20.1 W/kg = 13.03 dBW/kg

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2600MHz Body System Check

Date:07/26/2022

DUT: Dipole 2600 MHz; Type: D2600V2;

Communication System: CW; Frequency: 2600 MHz;Duty Cycle: 1:1

Medium parameters used (interpolated): $f = 2600$ MHz; $\sigma = 2.07$ S/m; $\epsilon_r = 52.17$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 – SN7396; ConvF(7.38, 7.38, 7.38); Calibrated: 05.06.2022;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn387; Calibrated: Sep.06.2021
- Phantom: SAM; Type: QD000P40CD; Serial: TP:1670
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.10 (7164)

Configuration/Pin=250mW/Area Scan (81x81x1):Interpolated grid: dx=1.200 mm, dy=1.200 mm

Maximum value of SAR (interpolated) = 24.813 W/kg

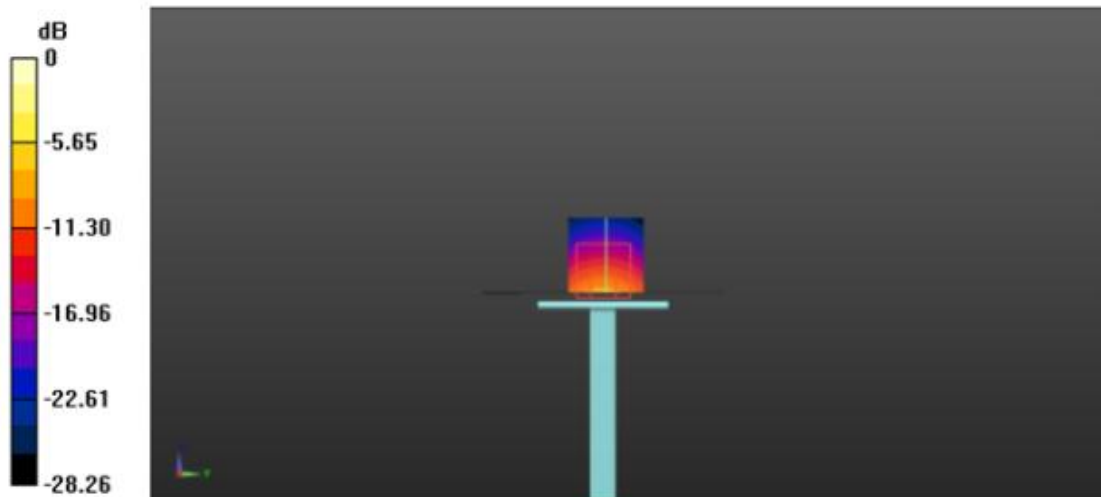
Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0:Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 110.217 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 33.145 W/kg

SAR(1 g) = 13.92 W/kg; SAR(10 g) = 6.45 W/kg

Maximum value of SAR (measured) = 25.672 W/kg



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FCC ID: 2ABC5-E0022

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5200MHz Body System Check

Date: 07/28/2022

DUT: Dipole 5GHz; Type: D5GHzV2; Serial: D5GHzV2 - SN:1160

Communication System: UID 0, CW; Frequency: 5200 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 5200 \text{ MHz}$; $\sigma = 5.37 \text{ S/m}$; $\epsilon_r = 48.73$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 – SN7396; ConvF(4.93, 4.93, 4.93); Calibrated: May 06, 2022;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn387; Calibrated: Sep. 06, 2021
- Phantom: SAM; Type: QD000P40CD; Serial: TP:1670
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.10 (7164)

Configuration/Pin=100mW/Area Scan (71x71x1): Interpolated grid: $dx=1.000 \text{ mm}$, $dy=1.000 \text{ mm}$

Maximum value of SAR (interpolated) = 20.2 W/kg

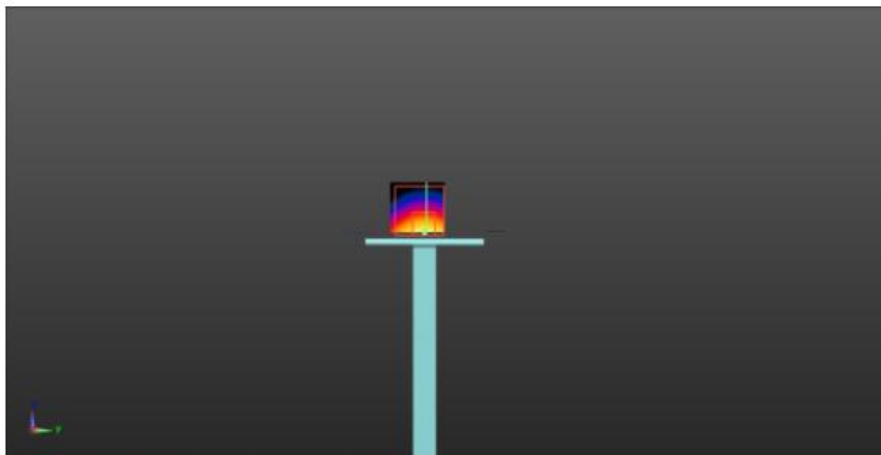
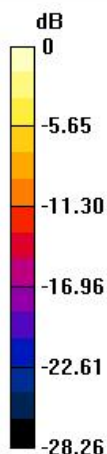
Configuration/Pin=100mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=4\text{mm}$, $dy=4\text{mm}$, $dz=1.4\text{mm}$

Reference Value = 58.761 V/m; Power Drift = -0.06 dB

Peak SAR (extrapolated) = 33.9 W/kg

SAR(1 g) = 7.62 W/kg; SAR(10 g) = 2.26 W/kg

Maximum value of SAR (measured) = 20.7 W/kg



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

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5800MHz Body System Check**DUT: Dipole 5800 MHz; Type: D5GHzV2; Serial: D5GHzV2 - SN:1160**

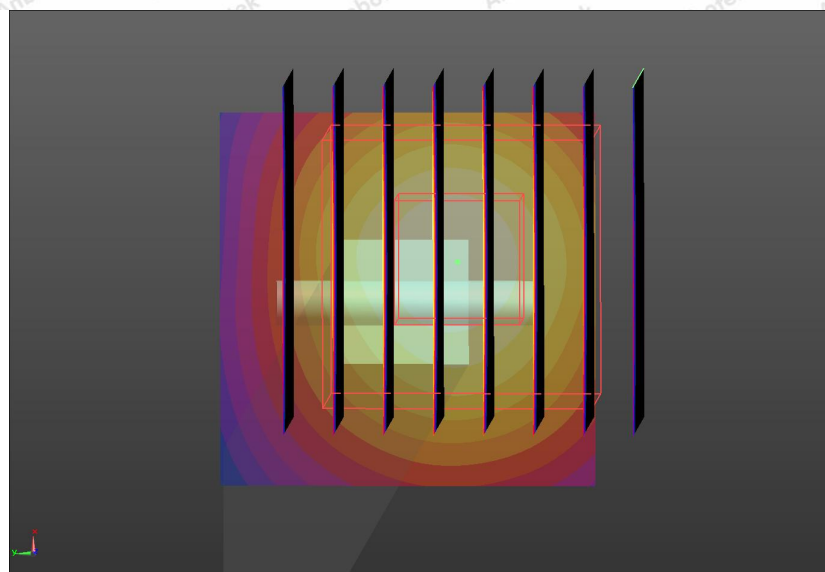
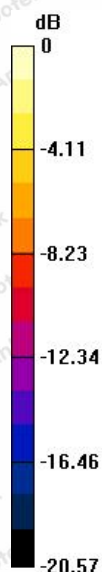
Communication System: UID 0, CW; Frequency: 5800 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 5800 \text{ MHz}$; $\sigma = 5.87 \text{ S/m}$; $\epsilon_r = 49.12$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 – SN7396; ConvF(4.52, 4.52, 4.52); Calibrated: May 06, 2022;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn387; Calibrated: Sep. 06, 2021
- Phantom: SAM; Type: QD000P40CD; Serial: TP:1670
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.10 (7164)

Configuration/Pin=100mW/Area Scan (71x71x1): Interpolated grid: $dx=1.000 \text{ mm}$, $dy=1.000 \text{ mm}$ Maximum value of SAR (interpolated) = 18.7 W/kg **Configuration/Pin=100mW/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: $dx=4\text{mm}$, $dy=4\text{mm}$, $dz=1.4\text{mm}$ Reference Value = 56.113 V/m ; Power Drift = 0.05 dB Peak SAR (extrapolated) = 31.8 W/kg **SAR(1 g) = 7.85 W/kg ; SAR(10 g) = 2.16 W/kg** Maximum value of SAR (measured) = 19.6 W/kg 

Appendix C. Plots of SAR Test Data

#1

Date: 07/25/2022

LTE Band 2_ Body Top_1RB_Ch18900

Communication System: UID 0, Generic LTE (0); Frequency: 1880.0 MHz; Duty Cycle: 1:1

Medium parameters used (interpolated): $f = 1880.0$ MHz; $\sigma = 1.45$ S/m; $\epsilon_r = 52.82$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 – SN7396; ConvF(7.97, 7.97, 7.97); Calibrated: May,06,2022;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn387; Calibrated: Sep,06,2021
- Phantom: SAM; Type: QD000P40CD; Serial: TP:1670
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.10 (7164)

BODY/TOP /Area Scan (51x101x1): Measurement grid: dx=1.000mm, dy=1.000mm

Maximum value of SAR (interpolated) = 1.124W/kg

BODY/TOP /Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

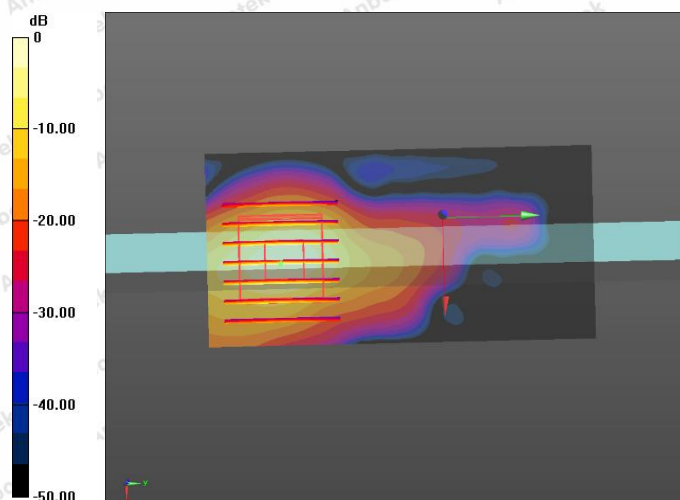
Reference Value = 12.311 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 1.171 W/kg

SAR(1 g) = 0.703 W/kg; SAR(10 g) = 0.375 W/kg

Maximum value of SAR (measured) = 1.153 W/kg





#2

Date: 07/25/2022

LTE Band 4_ Body Top_1RB_Ch20300

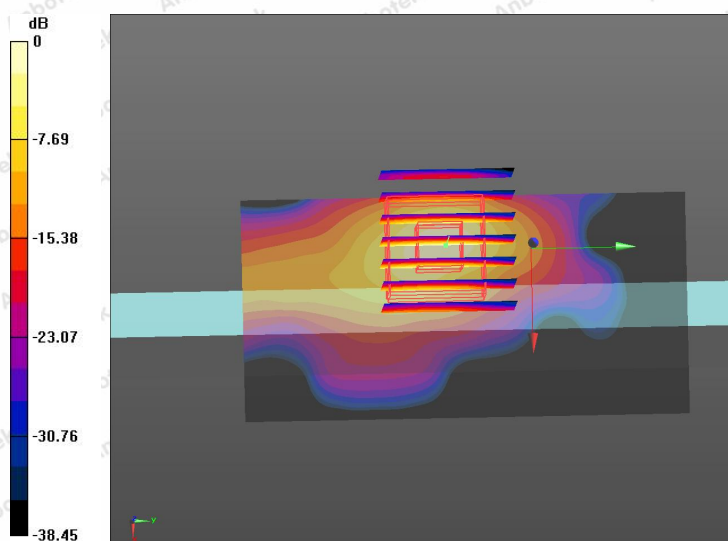
Communication System: UID 0, Generic LTE (0); Frequency: 1745 MHz; Duty Cycle: 1:1

Medium parameters used (interpolated): $f = 1745 \text{ MHz}$; $\sigma = 1.43 \text{ S/m}$; $\epsilon_r = 53.26$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 – SN7396; ConvF(8.24, 8.24, 8.24); Calibrated: May,06,2022;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn387; Calibrated: Sep.06,2021
- Phantom: SAM; Type: QD000P40CD; Serial: TP:1670
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.10 (7164)

BODY/TOP /Area Scan (51x101x1): Measurement grid: $dx=1.000\text{mm}$, $dy=1.000\text{mm}$ Maximum value of SAR (interpolated) = 1.062 W/kg **BODY/TOP /Zoom Scan (7x7x7)/Cube 0:** Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$ Reference Value = 12.645 V/m ; Power Drift = -0.11 dB Peak SAR (extrapolated) = 1.161 W/kg **SAR(1 g) = 0.701 W/kg ; SAR(10 g) = 0.383 W/kg** Maximum value of SAR (measured) = 1.165 W/kg 

LTE Band 5_ Body Top_1RB_Ch20600

Communication System: UID 0, Generic LTE (0); Frequency: 844 MHz; Duty Cycle: 1:1

Medium parameters used (interpolated): $f = 844$ MHz; $\sigma = 0.93$ S/m; $\epsilon_r = 54.38$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 – SN7396; ConvF(9.88, 9.88, 9.88); Calibrated: May 06, 2022;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn387; Calibrated: Sep.06,2021
- Phantom: SAM; Type: QD000P40CD; Serial: TP:1670
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.10 (7164)

BODY/TOP /Area Scan (51x101x1): Measurement grid: dx=1.000mm, dy=1.000mm

Maximum value of SAR (interpolated) = 0.949 W/kg

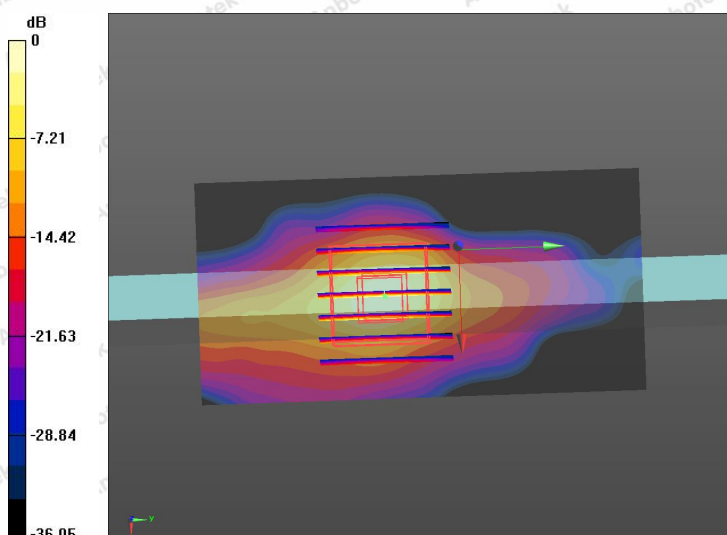
BODY/TOP /Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 10.304 V/m; Power Drift = 0.05 dB

Peak SAR (extrapolated) = 0.973 W/kg

SAR(1 g) = 0.718 W/kg; SAR(10 g) = 0.365 W/kg

Maximum value of SAR (measured) = 0.978 W/kg



#4

Date: 07/26/2022

LTE Band 7_ Body Top_1RB_Ch21100

Communication System: UID 0, Generic LTE (0); Frequency: 2535 MHz; Duty Cycle: 1:1

Medium parameters used (interpolated): $f = 2535$ MHz; $\sigma = 2.07$ S/m; $\epsilon_r = 52.17$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 – SN7396; ConvF(7.38, 7.38, 7.38); Calibrated: May,06,2022;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn387; Calibrated: Sep.06,2021
- Phantom: SAM; Type: QD000P40CD; Serial: TP:1670
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.10 (7164)

BODY/TOP/Area Scan (51x101x1): Measurement grid: dx=1.000mm, dy=1.000mm

Maximum value of SAR (interpolated) = 0.903 W/kg

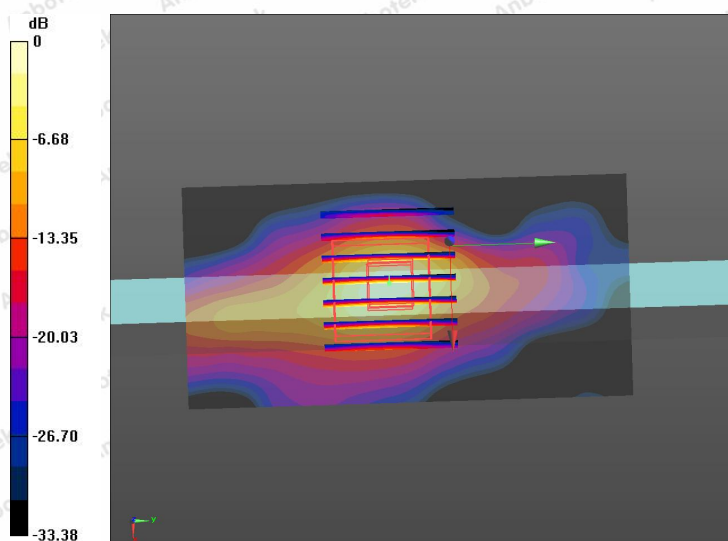
BODY/TOP/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 9.537 V/m; Power Drift = -0.15 dB

Peak SAR (extrapolated) = 0.921 W/kg

SAR(1 g) = 0.651 W/kg; SAR(10 g) = 0.356 W/kg

Maximum value of SAR (measured) = 0.932 W/kg



#5

Date: 07/26/2022

LTE Band 41_ Body Top_1RB_Ch41140

Communication System: UID 0, Generic LTE (0); Frequency: 2645 MHz; Duty Cycle: 1:1

Medium parameters used (interpolated): $f = 2645$ MHz; $\sigma = 2.07$ S/m; $\epsilon_r = 52.17$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 – SN7396; ConvF(7.38, 7.38, 7.38); Calibrated: May,06,2022;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn387; Calibrated: Sep.06,2021
- Phantom: SAM; Type: QD000P40CD; Serial: TP:1670
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.10 (7164)

BODY/TOP/Area Scan (51x101x1): Measurement grid: dx=1.000mm, dy=1.000mm

Maximum value of SAR (interpolated) = 0.848 W/kg

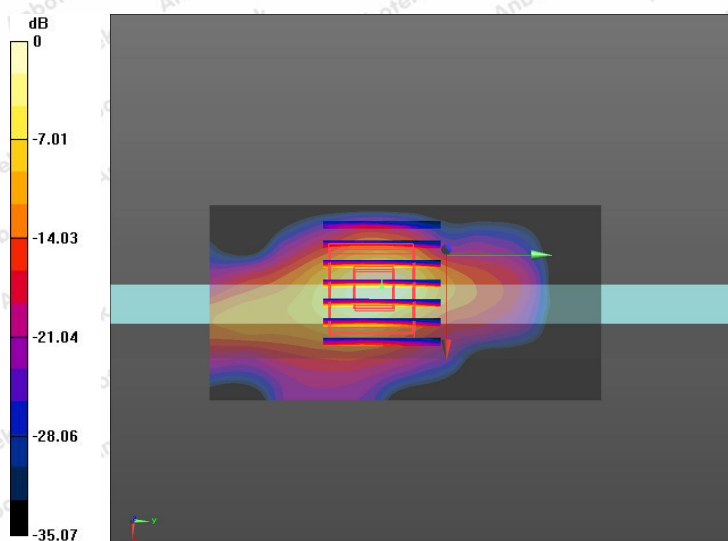
BODY/TOP/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=0mm, dy=0mm, dz=5mm

Reference Value = 9.57 V/m; Power Drift = 0.13 dB

Peak SAR (extrapolated) = 0.852 W/kg

SAR(1 g) = 0.641 W/kg; SAR(10 g) = 0.293 W/kg

Maximum value of SAR (measured) = 0.855 W/kg



#6

Date: 07/27/2022

2.4G WIFI_802.11g_CH11 BODY TOP

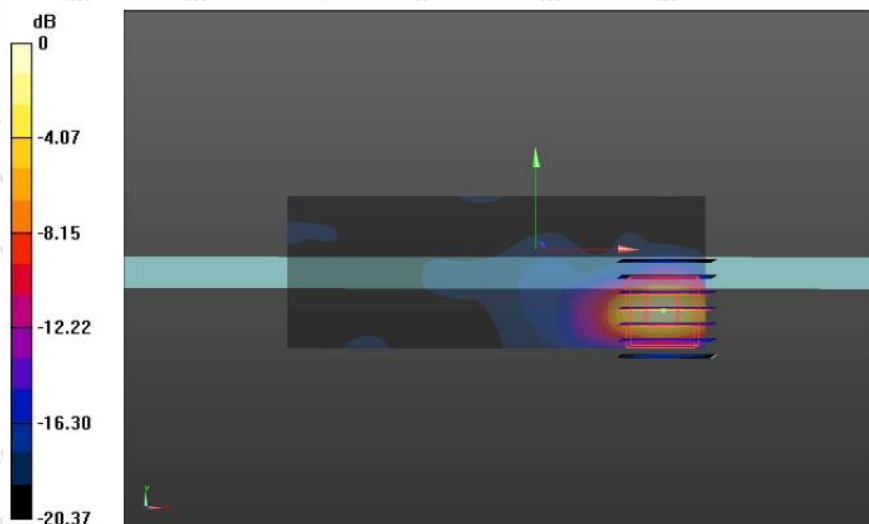
Communication System: UID 0, wifi (fcc) (0); Frequency: 2462 MHz; Duty Cycle: 1:1

Medium parameters used (interpolated): $f = 2462 \text{ MHz}$; $\sigma = 1.88 \text{ S/m}$; $\epsilon_r = 52.28$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7396; ConvF(7.53, 7.53, 7.53); Calibrated: May 06, 2022;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn387; Calibrated: Sep. 06, 2021
- Phantom: SAM; Type: QD000P40CD; Serial: TP:1670
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.10 (7164)

BODY TOP /Area Scan (41x111x1): Interpolated grid: $dx=1.000 \text{ mm}$, $dy=1.000 \text{ mm}$ Maximum value of SAR (interpolated) = 0.635 W/kg **BODY TOP /Zoom Scan (7x7x7)/Cube 0:** Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$ Reference Value = 3.445 V/m ; Power Drift = 0.10 dB Peak SAR (extrapolated) = 0.642 W/kg **SAR(1 g) = 0.318 W/kg ; SAR(10 g) = 0.104 W/kg** Maximum value of SAR (measured) = 0.639 W/kg 

WIFI 5.2G_802.11AC_CH40 BODY TOP

Communication System: UID 0, wifi (fcc) (0); Frequency: 5190 MHz; Duty Cycle: 1:1

Medium parameters used (interpolated): $f = 5190$ MHz; $\sigma = 5.37$ S/m; $\epsilon_r = 48.73$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7396; ConvF(4.93, 4.93, 4.93); Calibrated: May 06, 2022;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn387; Calibrated: Sep. 06, 2021
- Phantom: SAM; Type: QD000P40CD; Serial: TP:1670
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.10 (7164)

BODY TOP /Area Scan (41x111x1): Measurement grid: dx=1.000mm, dy=1.000mm

Maximum value of SAR (interpolated) = 0.738 W/kg

BODY TOP /Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 3.842 V/m; Power Drift = 0.10 dB

Peak SAR (extrapolated) = 0.752 W/kg

SAR(1 g) = 0.379 W/kg; SAR(10 g) = 0.236 W/kg

Maximum value of SAR (measured) = 0.743 W/kg

