



SAR MEASUREMENT REPORT

FCC ID: 2A82LSPOT-V1
Applicant: Nova Labs, Inc.
Product: Spot Mapper
Model No.: Spot-US
Brand Name: Helium
FCC Rule Part(s): FCC 47 CFR Part 2.1093
Result: Complies
Test Date: 2022-10-25 ~ 2022-11-14

Reviewed By:

Sunny Sun

Approved By:

Robin Wu



The test results relate only to the samples tested.

This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in IEEE1528, KDB 447498 and KDB 865664. Test results reported herein relate only to the item(s) tested.

The test report shall not be reproduced except in full without the written approval of MRT Technology (Suzhou) Co., Ltd.

Revision History

Report No.	Version	Description	Issue Date	Note
2209RSU059-U11	Rev. 01	Initial Report	2023-01-04	Invalid
2209RSU059-U12	Rev. 02	Modify the Product Name	2023-01-06	Valid

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1. General Information

1.1. Applicant

Nova Labs, Inc.

2202 South Figueroa #408, Los Angeles, California, United States

1.2. Manufacturer

Nova Labs, Inc.

2202 South Figueroa #408, Los Angeles, California, United States

1.3. Testing Facility

☒	Test Site – MRT Suzhou Laboratory
	Laboratory Location (Suzhou - Wuzhong) D8 Building, No.2 Tian'edang Rd., Wuzhong Economic Development Zone, Suzhou, China
	Laboratory Location (Suzhou - SIP) 4b Building, Liando U Valley, No.200 Xingpu Rd., Shengpu Town, Suzhou Industrial Park, China
	Laboratory Accreditations
	A2LA: 3628.01 FCC: CN1166 VCCI: ☐ R-20025 ☐ G-20034 ☐ C-20020 ☐ T-20020 ☐ R-20141 ☐ G-20134 ☐ C-20103 ☐ T-20104
	CNAS: L10551 ISED: CN0001
☐	Test Site – MRT Shenzhen Laboratory
	Laboratory Location (Shenzhen) 1G, Building A, Junxiangda Building, Zhongshanyuan Road West, Nanshan District, Shenzhen, China
	Laboratory Accreditations
	A2LA: 3628.02 FCC: CN1284
	CNAS: L10551 ISED: CN0105
☐	Test Site – MRT Taiwan Laboratory
	Laboratory Location (Taiwan) No. 38, Fuxing 2nd Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.)
	Laboratory Accreditations
	TAF: L3261-190725 FCC: 291082, TW3261
	ISED: TW3261

1.4. Product Information

Product Name	Spot Mapper
Model No.	Spot-US
Brand Name	Helium
Test Serial No.	20220926Sample#10
E-UTRA Band	FDD Band: 2, 4, 5, 66, 71 TDD Band: 48
NR Band	TDD Band: n41, n48
Wi-Fi Specification	802.11 b/g/n/ac/ax
Bluetooth Specification	V5.1 dual mode
Lora Specification	902 ~ 928 MHz
Operating Temperature	-20 ~ 55 °C
Antenna Specification	Refer to section 1.6
EUT Type	Portable Device
Exposure Category	General Population/Uncontrolled Exposure
Integrated WWAN Modular Information	
Model No.	RM505Q-AE
FCC ID	XMR2020RM505QAE
Brand Name	Quectel
Integrated BT & Wi-Fi Modular Information	
Model No.	FG50V
FCC ID	XMR202103FG50V
Brand Name	Quectel
Integrated Lora Modular Information	
Model No.	LoRa-E5-HF
FCC ID	Z4T-LORA-E5
Brand Name	Seeed
Accessories	
Rechargeable Li-ion Battery	Model No.: QDM044 Rated Voltage: 3.8V Rated Capacity: 4000mAh/15.2Wh Limited Charge Voltage: 4.35V
Remark:	
1. The information of EUT was provided by the manufacturer, and the accuracy of the information shall be the responsibility of the manufacturer.	

1.5. Radio Specification under test

3GPP Specification	
IMEI	868692050107710
Frequency Range	LTE Band 2: 1850 ~ 1910 MHz; LTE Band 4: 1710 ~ 1755 MHz LTE Band 5: 824 ~ 849 MHz; LTE Band 48: 3550 ~ 3700 MHz LTE Band 66: 1710 ~ 1780 MHz; LTE Band 71: 663 ~ 698 MHz NR n41: 2496 ~ 2690 MHz; NR n48: 3550 ~ 3700 MHz
LTE Uplink CA Combinations	CA_2C/CA_5B/CA_66C
EN-DC Band	DC_2A_n41A/DC_66A_n41A
Type of Modulation	LTE: QPSK, 16QAM, 64QAM, 256QAM NR: PI/2 BPSK, QPSK, 16QAM, 64QAM, 256QAM
Wi-Fi Specification	
Frequency Range	<u>For 2.4GHz Wi-Fi</u> 802.11b/g/n-HT20/ax-HE20: 2412 ~ 2462 MHz 802.11ax-HE40: 2422 ~ 2452 MHz <u>For 5GHz Wi-Fi</u> 802.11a/ac-VHT20/ax-HE20: 5180 ~ 5240 MHz, 5745 ~ 5825 MHz 802.11ac-VHT40/ax-HE40: 5190 ~ 5230 MHz, 5755 ~ 5795 MHz 802.11ac-VHT80/ax-HE80: 5210 MHz, 5775 MHz
Channel Number	<u>For 2.4GHz Wi-Fi</u> 802.11b/g/n-HT20/ax-HE20: 11 802.11ax-HE40: 7 <u>For 5GHz Wi-Fi</u> 802.11a/ac-VHT20/ax-HE20: 9 802.11ac-VHT40/ax-HE40: 4 802.11ac-VHT80/ax-HE80: 2
Type of Modulation	802.11b: DSSS 802.11a/g/n/ac: OFDM 802.11ax: OFDMA
Data Rate	802.11b: 1/2/5.5/11Mbps 802.11a/g: 6/9/12/18/24/36/48/54Mbps 802.11n: up to 300Mbps 802.11ac: up to 866.7Mbps 802.11ax: up to 1201Mbps

Bluetooth Specification	
Frequency Range	2402~ 2480MHz
Channel Number	For Bluetooth: 79 For BT-LE: 40
Channel Spacing	For Bluetooth: 1MHz For BT-LE: 2MHz
Type of Modulation	For Bluetooth: 1Mbps (GFSK), 2Mbps (Pi/4 DQPSK), 3Mbps (8DPSK) For BT-LE: 125kbps & 1Mbps & 2Mbps (GFSK)
Lora Specification	
Frequency Range	902 ~ 914MHz
Channel Number	8

1.6. Antennas Details

Operating Condition	MAIN ANT	LTE B5/71 (1Tx, 1Rx)
	AUX ANT	LTE B48, NR n41/48 (1Tx, 1Rx)
	MIMO1 ANT	LTE B2/4/66 (1Tx, 1Rx)
	AUX ANT + MIMO1 ANT	NR n41 MIMO (2Tx, 2Rx)
	WIFI1 + WIFI2&BT ANT	802.11b/g/n/ax for 2.4GHz Wi-Fi MIMO (2Tx, 2Rx) 802.11a/ac/ax for 5GHz Wi-Fi MIMO (2Tx, 2Rx)
	WIFI2&BT ANT	Bluetooth BR/EDR/LE (1Tx, 1Rx)
	LORA ANT	Lora (1Tx, 1Rx)
Antenna Type	PIFA Antenna	
Simultaneously Transmitting Scenarios	WWAN transmit simultaneously with Wi-Fi and Lora WWAN transmit simultaneously with Bluetooth and Lora 2.4G Wi-Fi and Bluetooth share the same antenna path and cannot transmit simultaneously	

2. Summary of Test Result

2.1. Test Standards

No.	Identity	Document Title
1	47 CFR Part 2.1093	Radiofrequency radiation exposure evaluation: portable devices
2	IEEE 1528-2013	IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques
3	IEEE C95.1-2005	IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz
4	KDB 447498 D01 v06	General RF Exposure Guidance
5	KDB 865664 D01 v01r04	SAR Measurement 100 MHz to 6 GHz
6	KDB 865664 D02 v01r02	RF Exposure Reporting
7	KDB 648474 D04v01r03	SAR Evaluation Considerations for Wireless Handsets
8	KDB 941225 D01 v03r01	3G SAR Measurement Procedures
9	KDB 941225 D05 v02r05	SAR Evaluation Considerations for LTE Devices
10	KDB 941225 D06 v02r01	SAR Evaluation Procedures for Portable Devices with Wireless Router Capabilities
11	KDB 248227 D01 v02r02	SAR Guidance for IEEE 802.11 (Wi-Fi) Transmitter

2.2. Environment Condition

Ambient Temperature	20.5 ~ 24.0°C
Temperature of Simulant	20.0 ~ 23.5°C
Relative Humidity	38.0 ~ 55.0%RH

2.3. RF Exposure Limits

Human Exposure	Basic restrictions for electric, magnetic and electromagnetic fields. (Unit in mW/g or W/kg)
Spatial Peak SAR ¹ (Head and Body)	1.60
Spatial Average SAR ² (Whole Body)	0.08
Spatial Peak SAR ³ (Arms and Legs)	4.00

Notes:

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

2.4. Test Result Summary

Worst SAR List

Highest Reported SAR	Body 1g SAR (W/kg)
LTE Band 2	1.04
LTE Band 5	0.16
LTE Band 48	0.25
LTE Band 4/66	1.05
LTE Band 71	0.93
NR n41 and n41 HPUE	0.52
NR n48	0.16
NR n41 MIMO	0.28
NR n41 MIMO HPUE	0.42
DTS Band Wi-Fi	0.28
U-NII-1 Band Wi-Fi	0.61
U-NII-3 Band Wi-Fi	0.55
Bluetooth	0.06
Lora	0.17

Highest Simultaneous SAR

Highest Simultaneous SAR	Body 1g SAR (W/kg)
LTE B5&71 + Wi-Fi/BT + Lora	1.16
LTE B48/NR n41&48 + Wi-Fi/BT + Lora	1.30
LTE B2/4/66 + Wi-Fi/BT + Lora	1.28
NR n41 MIMO + Wi-Fi/BT + Lora	1.20
EN-DC + Wi-Fi/BT + Lora	1.03

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. Definition

The SAR in the tissue-equivalent liquid can be determined by the rate of temperature increase or by E-field measurements, according to Formulas (1) or (2):

$$SAR = \frac{\sigma E^2}{\rho} \quad (1)$$

$$SAR = c_h \left. \frac{dT}{dt} \right|_{t=0} \quad (2)$$

where

SAR is the specific absorption rate in W/kg;

E is the rms value of the electric field strength in the tissue medium in V/m;

σ is the electrical conductivity of the tissue medium in S/m;

ρ is the mass density of the tissue medium in kg/m³;

c_h is the specific heat capacity of the tissue medium in J/(kg K);

$\left. \frac{dT}{dt} \right|_{t=0}$ is the initial time derivative of temperature in the tissue medium in K/s.

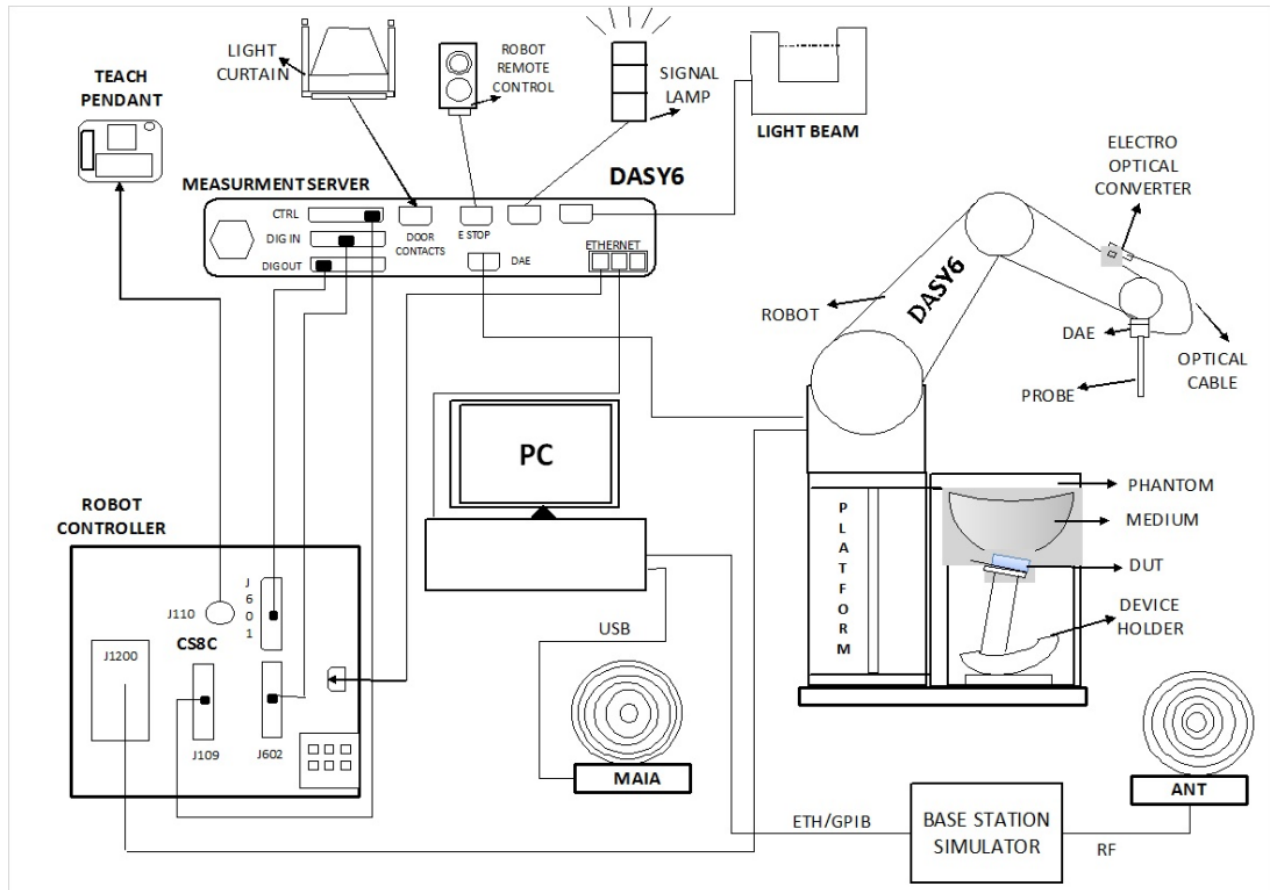
4. DASY6 Measurement System

4.1. Introduction

DASY6 is the latest generation of the Dosimetric Assessment System optimized for specific absorption rate (SAR) measurements, SAR compliance. DASY6 builds on the power of our industry - leading dosimetric and near-field evaluation system, DASY52. Running on a significantly more robust platform and a more powerful measurement server, DASY6 offers much faster scanning with no sacrifice of measurement precision. All hardware and software are fully compatible with DASY52. The new system seamlessly integrates two software solutions, the novel cDASY V6.6 - optimized for SAR compliance testing to significantly reduce SAR assessment costs - and the widely used DASY V5.2 for generalized near-field evaluations with maximized flexibility.

4.2. DASY6 Measurement System Diagram

The DASY6 system in cDASY6/DASY5 V5.2 SAR Configuration is shown below:



The System consist of the following components:

DASY6 Measurement Server, Data Acquisition Electronics (DAE), Probes, Light-Beam Unit, Phantoms, Media, Device Holder for SAM-Twin Phantom, Laptop Extension Kit to Mounting Device, Robot System Platform & Pedestal, Verification of the Parameters with the Dielectric Assessment Kit (DAK), Modulation and Interference Analyzer (MAIA), Omni-Directional Ultra-Wideband Antenna (ANT), cDASY6 software, DASY5 NEO software and SEMCAD data evaluation software.

4.3. System Components Details

DASY6 Platforms MP6E-TX60L

MP6E-TX60L platform is a compact cost-effective platform based on TX60L. It consists of:

- a stable non-metallic platform for the TX60L robot
- a frame for two standard-size phantoms (1.0×0.5 m)
- a frame for one half-size phantom (0.5×0.5 m)

It includes two easily moveable trolleys for the phone and tablet/computer positioner and two platforms for positioning dipoles and other antennas.



Material The beams consist of a composite of wood and epoxy (permittivity of 3.3 and loss tangent of <0.07)

Size The footprint of the platform is 1590 mm $\times$ 1060 mm.

Robots -TX60L

The MRT DASY6 system uses the high-precision industrial robots TX60L from Staubli SA (France). The TX robot family - the successor of the well-known RX robot family - continues to offer the features important for DASY6 applications:

- High precision (repeatability 0.02mm)
- High reliability (industrial design)
- Low maintenance costs (virtually maintenance-free as all gears are direct drive, no belt drives)
- Jerk-free straight movements (brushless synchron motors, no stepper motors)
- Low extremely low frequency (ELF) interference (motor control fields are shielded by the closed metallic construction)



The robots are controlled by the Staubli CS8c robot controllers. All information regarding the use and maintenance of the robot arm and the robot controller is provided on CDs delivered with the robot. Paper manuals are available directly from Staubli upon request.



DASY6 Measurement Server

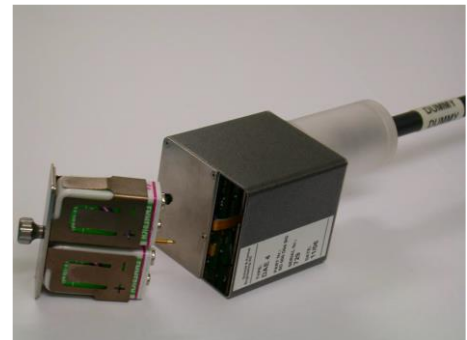
The DASY6 measurement server is based on a PC/104 CPU board with a 400MHz intel ULV Celeron, 128MB chip-disk and 128MB RAM. The necessary circuits for communication with the DAE4 electronics box, as well as the 16-bit AD converter system for optical detection and digital I/O interface are contained on the DASY6 I/O board, which is directly connected to the PC/104 bus of the CPU board.

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



Data Acquisition Electronics (DAE)

The data acquisition electronics (DAE4) consist of a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain-switching multiplexer, a fast 16-bit AD-converter, and a command decoder with a control logic unit. Transmission to the measurement server is accomplished through an optical downlink for data and status information, as well as an optical uplink for commands and the clock.



Probes

E-Field Probe(EX3DV4)

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. SPEAG conducts the probe calibration in compliance with international and national standards (e.g. IEEE 1528, EN 62209-1, IEC 62209, etc.) under ISO 17025.

Construction:

Symmetric design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)

Frequency: 4 MHz ~ 10 GHz

Linearity: ± 0.2 dB (30 MHz ~ 10 GHz)

Directivity:

± 0.1 dB in TSL (rotation around probe axis)

± 0.3 dB in TSL (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: 337 mm (Tip: 20 mm)

Tip diameter: 2.5 mm (Body: 12 mm)

Typical distance from probe tip to dipole centers: 1 mm

Applications:

High precision dosimetric measurements in any exposure scenario (e.g., very strong gradient fields); the only probe that enables compliance testing for frequencies up to 6 GHz with precision of better than 30%.



MSTV1 (Mother Scan Teaching V1) Electronics & TP6V2 (Teaching Probe 6V2) Probe

MSTV1 (Mother Scan Teaching V1) electronics together with the TP6V2 (Teaching Probe 6V2) probe is used for mother scan of DASY6 system. This probe uses a 3D Renishaw LP2 sensor which ensures accurate detection of any shape and a measurement repeatability of 8 μ m.



Light-Beam Unit

The light beam switch allows automatic "tooling" of the probe. During the process, the actual position of the probe tip with respect to the robot arm, as well as the probe length and the horizontal probe offset, are measured. The software then corrects all movements within the measurement jobs, such that the robot coordinates are valid for the probe tip.



The repeatability of this process is better than 0.1 mm. If a position has been taught with an aligned probe, the same position will be reached with another aligned probe within 0.1 mm, even if the other probe has different dimensions. During probe rotations, the probe tip will keep its actual position.

Phantoms

SAM-Twin Phantom

The shell corresponds to the specifications of the Specific Anthropomorphic Mannequin (SAM) phantom defined in IEEE 1528 and IEC 62209-1. It enables the dosimetric evaluation of left and right hand phone usage as well as body-mounted usage at the flat phantom region. A cover prevents evaporation of the liquid. Reference markings on the phantom allow the complete setup of all predefined phantom positions and measurement grids by teaching three points with the robot.

SAM-Twin V5.0 and higher has the same shell geometry and is manufactured from the same material as SAM-Twin V4.0, but with the top structure reinforced.

Material	Vinyl ester, fiberglass reinforced (VE-GF)
Liquid Compatibility	The phantom shell is compatible with SPEAG tissue simulating liquids (sugar and oil based). Use of other liquids may render the phantom warranty void (see note or consult SPEAG support).
Shell Thickness	2 ± 0.2 mm (6 ± 0.2 mm at ear point)
Dimensions (incl. Wooden Support)	Length: 1000 mm Width: 500 mm Height: adjustable feet
Filling Volume	approx. 25 liters
Support	DASY6: standard-size platform slot DASY52 stand-alone: SPEAG standard phantom table



ELI phantom

The ELI phantom is used for compliance testing of handheld and body-mounted wireless devices in the frequency range of 30 MHz to 6 GHz. ELI is fully compatible with the IEC 62209-2 standard and all known tissue simulating liquids. ELI has been optimized regarding its performance and can be integrated into our standard phantom tables. A cover prevents evaporation of the liquid. Reference markings on the phantom allow installation of the complete setup, including all predefined phantom positions and measurement grids, by teaching three points. The phantom is compatible with all SPEAG dosimetric probes and dipoles.

ELI V5.0 and higher has the same shell geometry and is manufactured from the same material as ELI V4.0, but has reinforced top structure. ELI V6.0, released in August 2014, has the same shell geometry as ELI V4.0 but offers increased longterm stability.

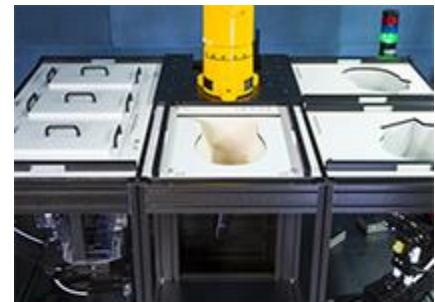
Material	Vinyl ester, fiberglass reinforced (VE-GF)
Liquid Compatibility	The phantom shell is compatible with SPEAG tissue simulating liquids (sugar and oil based). Use of other liquids may render the phantom warranty void (see note or consult SPEAG support).
Shell Thickness	2.0 ± 0.2 mm (bottom plate)
Dimensions	Major axis: 600 mm Minor axis: 400 mm
Filling Volume	approx. 30 liters
Support	DASY6: standard-size platform slot DASY52 stand-alone: SPEAG standard phantom table



SAM Face Down Phantom

The SAM Face Down Phantom V10 allows assessment of the exposure of the face and in particular the eyes for handheld devices operated in front of the face. e.g., video phones, cameras, organizers, etc. It is manufactured from high precision injection molded polypropylene. The Mounting Device for Transmitters including extensions kit can be used to position the device.

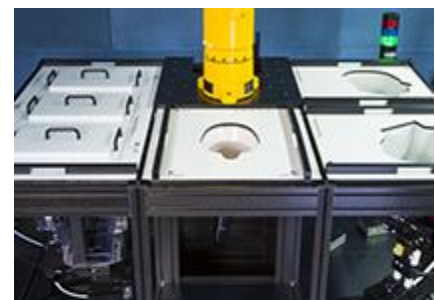
Material	Epoxy based
Liquid Compatibility	The phantom shell is compatible with SPEAG tissue simulating liquids (sugar and oil based). Use of other liquids may render the phantom warranty void (see note or consult SPEAG support).
Shell Thickness	2 ± 0.2 mm (6 mm at ear point)
Head Shape	Standard compatible SAM head.



SAM Head Stand Phantom

The SAM Head Stand Phantom V10 allows assessment of the exposure of the top-head or around-the-head wireless accessories, e.g., head-belts, etc. It is manufactured from high precision injection molded polypropylene. The Mounting Device for Transmitters including extensions kit can be used to position the device.

Material	Epoxy based
Liquid Compatibility	The phantom shell is compatible with SPEAG tissue simulating liquids (sugar and oil based). Use of other liquids may render the phantom warranty void (see note or consult SPEAG support).
Shell Thickness	2 ± 0.2 mm (6 mm at ear point)
Head Shape	Standard compatible SAM head.



Wrist Phantom

The Wrist Phantom V10 is shape-compatible with the CTIA approved OTA GFPC-V1 and optimized for SAR evaluation of watches and other wireless hand accessories.

Material	Epoxy based
Liquid Compatibility	The phantom shell is compatible with SPEAG tissue simulating liquids (sugar and oil based). Use of other liquids may render the phantom warranty void (see note or consult SPEAG support).
Shell Thickness	Shell Thickness
Wrist Shape	Design compatible with CTIA forearm.



Device Holder for SAM-Twin Phantom

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

MD4HHTV5 - Mounting Device for Hand-Held Transmitters

In combination with the Twin SAM V5.0/V5.0c or ELI phantoms, the Mounting Device for Hand-Held Transmitters enables rotation of the mounted transmitter device to specified spherical coordinates. At the heads, the rotation axis is at the ear opening. Transmitter devices can be easily and accurately positioned according to IEC 62209-1, IEEE 1528, FCC, or other specifications. The device holder can be locked for positioning at different phantom sections (left head, right head, flat).

Material: Polyoxymethylene (POM)



MDA4WTV5 - Mounting Device Adaptor for Ultra Wide Transmitters

An upgrade kit to Mounting Device to enable easy mounting of wider devices like big smart-phones, e-books, small tablets, etc. It holds devices with width up to 140 mm.

Material: Polyoxymethylene (POM)



MDA4SPV6 - Mounting Device Adaptor for Smart Phones

The solid low-density MDA4SPV6 adaptor assuring no impact on the DUT radiation performance and is conform with any DUT design and shape.

Material: ROHACELL



MD4LAPV5 - Mounting Device for Laptops and other Body-Worn Transmitters

In combination with the Twin SAM V5.0/V5.0c or ELI phantoms, the Mounting Device (Body-Worn) enables testing of transmitter devices according to IEC 62209-2 specifications. The device holder can be locked for positioning at a flat phantom section.

Material: Polyoxymethylene (POM), PET-G, Foam



MDA4LAP - Mounting Device Adaptor for Laptops

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

Material: Polyoxymethylene (POM), PET-G, Foam



Modulation and Interference Analyzer(MAIA)

MAIA is a hardware interface used to evaluate the modulation and audio interference characteristics of RF signals in the frequency range 698 - 6000 MHz. DASY6 evaluates the time-domain and frequency domain properties of the uplink signal transmitted by the DUT during SAR measurement with MAIA. MAIA uses USB powered active electronics to identify the modulation of the DUT. It can be operated over the air interface using the built-in ultra-broadband planar log spiral antenna (698 - 6000 MHz) or in conducted mode using the coaxial SMA 50 Ohm connector (300 - 6000 MHz).



To prevent damage in conducted mode due to high peak power, an external RF attenuator may be mounted. The LED on the MAIA hardware also indicates whether it is connected.

DAK-3.5 (200MHz – 20GHz)

This precision dielectric measurement system is designed to cover the 200MHz – 20GHz frequency range with a single open-ended coaxial dielectric probe. The system uses advanced algorithms and novel hardware to measure the dielectric properties of liquids, solids, and semi-solids over a broad range of parameters. The measurement method is fast and non-destructive to the material under test.



Evaluation of reference liquids over a broad frequency range for specific absorption rate (SAR) measurements, in accordance with IEC 62209, IEEE 1528, and several federal regulations.

Evaluating Software: DAK software version 2.0

MRT simulating liquid

Product	Test Frequency (MHz)	Main Ingredients
HSL450	400 – 500	Water, Sucrose, NaCl
MSL450	400 – 500	Water, Sucrose, NaCl

Speag Broad-Band simulating liquid

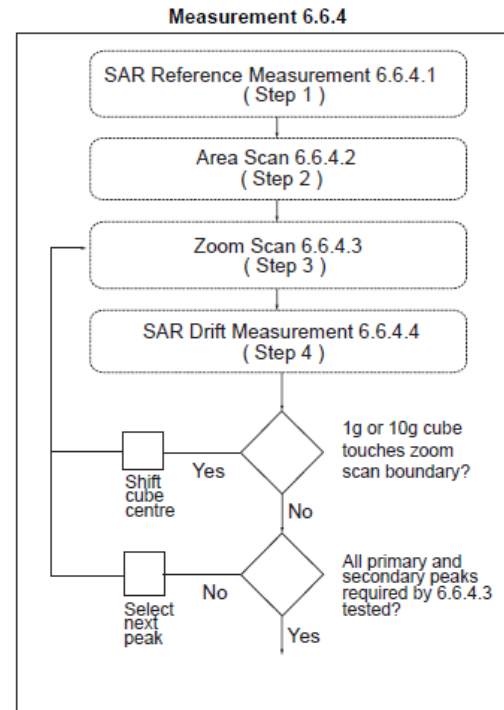
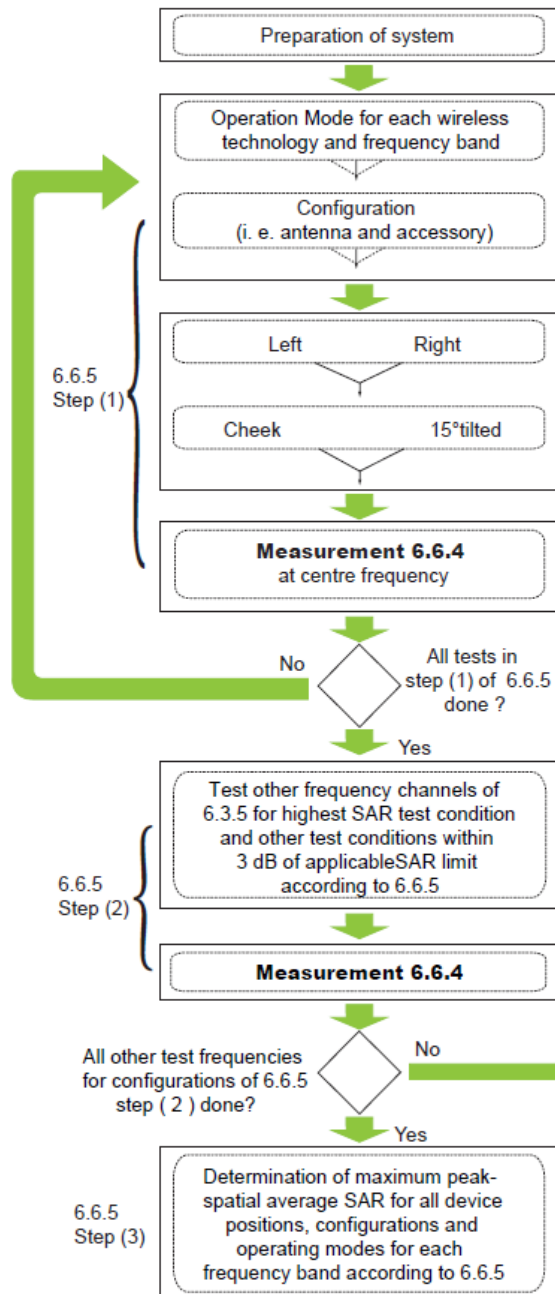
Product	Test Frequency (MHz)	Main Ingredients
HBBL600-10000V6	600 – 10000	Water, Oil
MBBL600-6000V6	600 – 6000	Water, Oil

5. The SAR Measurement Procedure

5.1. Measurement Process Diagram

General Procedure

For IEEE1528-2013 Head SAR



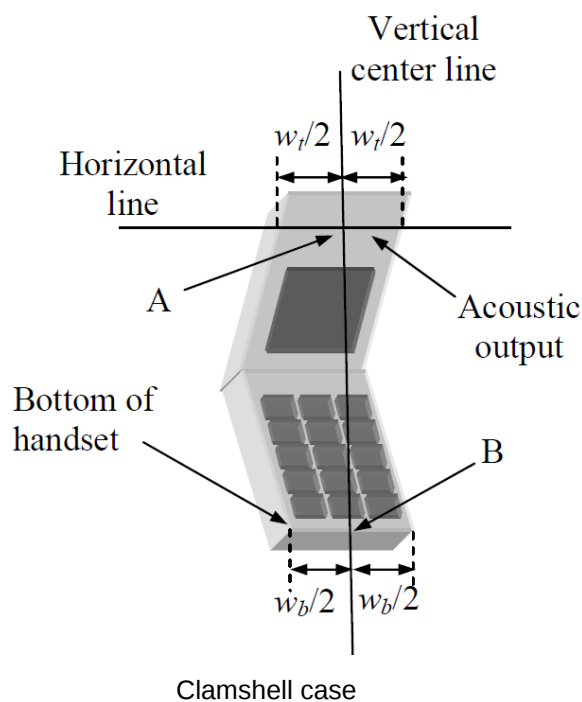
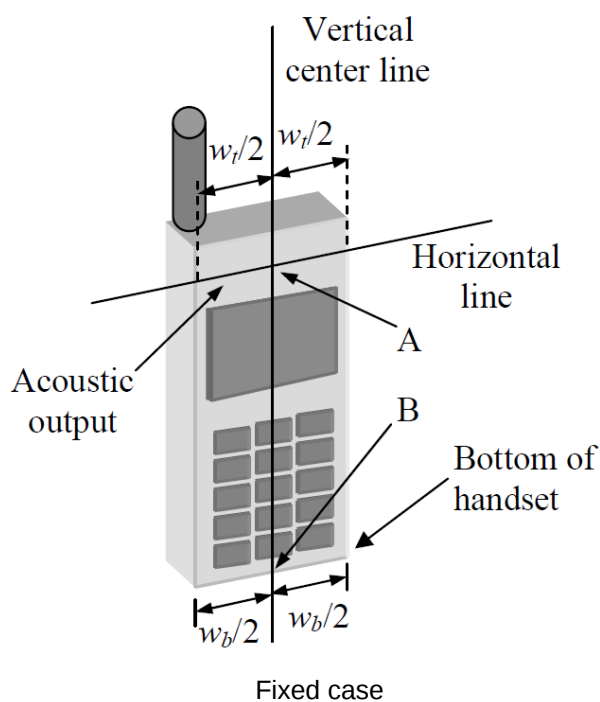
For Body SAR

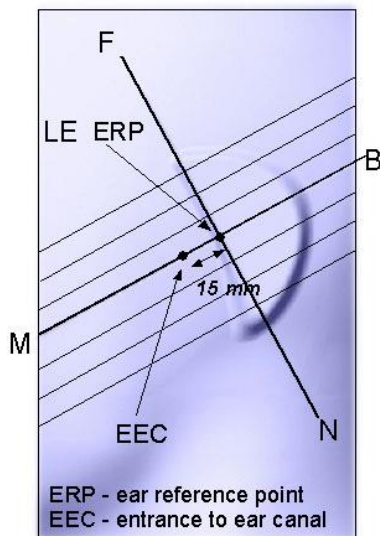
SAR scan procedures described in section 2.7 of KDB 865664 D01 v01r04 should be applied to body SAR test.

5.2. Test Position Definition

■ Head SAR Test Position

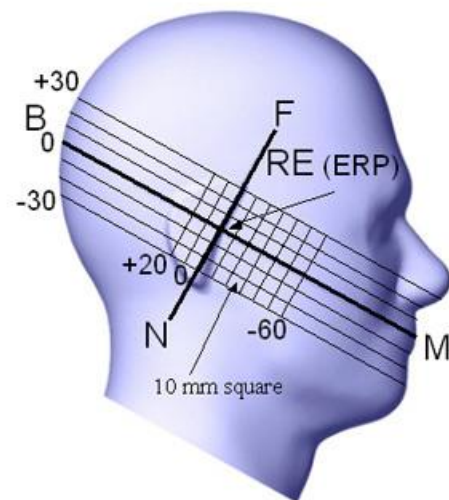
Define two imaginary lines on the handset—the vertical centerline and the horizontal line. The vertical centerline passes through two points on the front side of the handset—the midpoint of the width w_t of the handset at the level of the acoustic output [point A in Fixed case and Clamshell case], and the midpoint of the width w_b at the bottom of the handset (point B). The horizontal line is perpendicular to the vertical centerline and passes through the center of the acoustic output [see Fixed case]. The horizontal line is also tangential to the face of the handset at point A. The two lines intersect at point A. Note that for many handsets, point A coincides with the center of the acoustic output; however, the acoustic output may be located elsewhere on the horizontal line. Also note that the vertical centerline is not necessarily parallel to the front face of the handset [see Clamshell case], especially for clamshell handsets, handsets with flip covers, and other irregularly-shaped handsets, the vertical centerline passes through point A but not the tip edge of the phone.





Key

- B Direction of B-M line back endpoint
- F Direction of N-F line front endpoint
- N Direction of N-F line neck endpoint
- M Mouth reference point
- LE Left ear reference point (ERP)



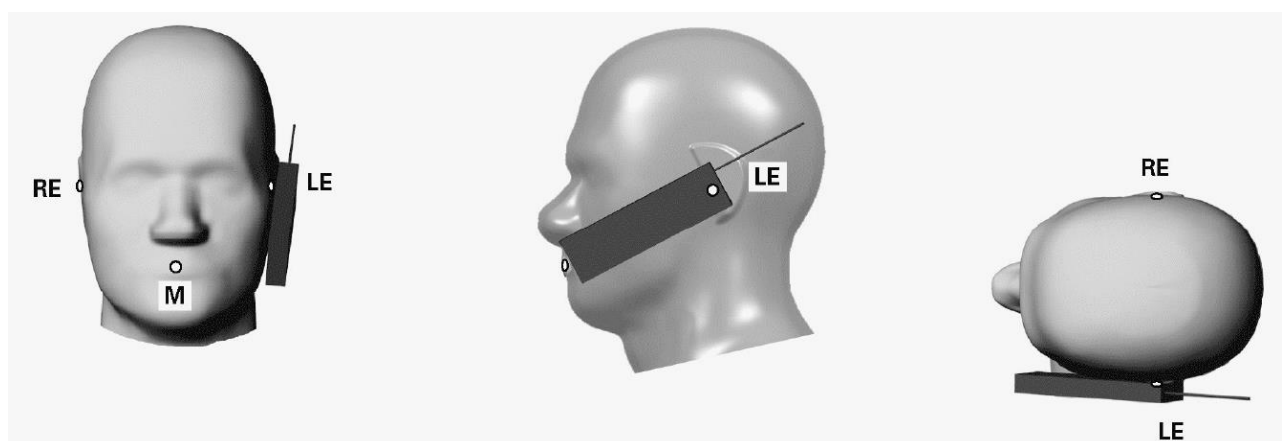
Key

- B Line B-M back endpoint
- M Line B-M front endpoint
- N Line N-F neck endpoint
- F Line N-F front endpoint
- RE Right ear reference point (ERP)

Cheek Position

The cheek position has the following characteristics, based on the geometrical lines described above:

- The N-F line (see above) is in the plane defined by the handset vertical centerline and horizontal line
- Handset touches the pinna
- The handset vertical centerline is aligned with the Reference Plane.



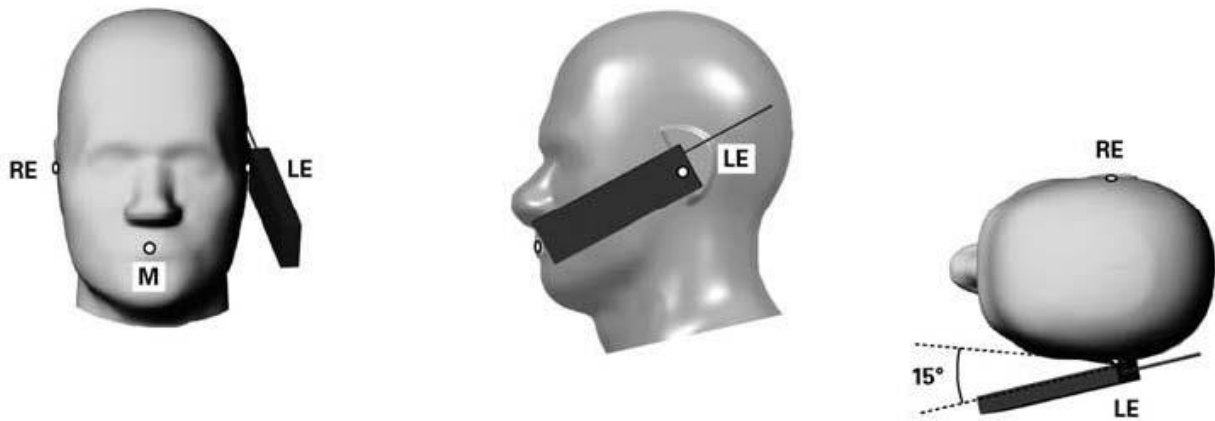
Key

- M Mouth reference point
- LE Left ear reference point
- RE Right ear reference point

Tilt Position

The tilt position is established as follows:

- Repeat the steps to place the device in the cheek position.
- While maintaining the orientation of the handset, move the handset away from the pinna along the line passing through RE and LE far enough to allow a rotation of the handset away from the cheek by 15° .
- Rotate the handset around the horizontal line by 15° .
- While maintaining the orientation of the handset, move the handset towards the phantom on the line passing through RE and LE until any part of the handset touches the ear. The tilt position is obtained when the contact point is on the pinna. If contact occurs at any location other than the pinna, e.g., the antenna at the back of the phantom head, the angle of the handset shall be reduced. In this case, the tilt position is obtained if any point on the handset is in contact with the pinna and a second point on the handset is in contact with the phantom, e.g., the antenna with the back of the head.



Key

- | | |
|----|---------------------------|
| M | Mouth reference point |
| LE | Left ear reference point |
| RE | Right ear reference point |

■ Body SAR Test Position

For body-worn accessory, hotspot mode and other exposure conditions to human body should be conducted pursuant to the test position requirements of SAR KDBs for certain product.

5.3. Test Procedure

Step 1 Setup a Connection

First, engineer should record the conducted power before the test. Then establish a call in handset at the maximum power level with a base station simulator via air interface, or make the EUT establish transmission by itself in testing band. Place the EUT to certain test position.

Step 2 Power Reference Measurements

To measure the local E-field value at a fixed location which value will be taken as a reference value for calculating a possible power drift.

Step 3 Area Scan

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 locations even in relatively coarse grids. When an Area Scan has measured all reachable points, it computes the field maximal 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 KDB 865664 D01v01r04

	≤ 3 GHz	> 3 GHz
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface	5 mm ± 1 mm	$\frac{1}{2} \cdot \delta \cdot \ln(2)$ mm ± 0.5 mm
Maximum probe angle from probe axis to phantom surface normal at the measurement location	30° ± 1°	20° ± 1°
Maximum area scan spatial resolution: Δx_{Area} , Δy_{Area}	≤ 2 GHz: ≤ 15 mm 2 - 3 GHz: ≤ 12 mm	3 - 4 GHz: ≤ 12 mm 4 - 6 GHz: ≤ 10 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.	
Note: δ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see IEEE Std 1528-2013 for details.		

Step 4 Zoom Scan

Zoom Scans are used to assess the peak spatial SAR values within a cubic averaging volume containing 1 g and 10 g 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 g and 10 g and displays these values next to the job's label.

Zoom Scan Parameters extracted from KDB 865664 D01 v01r04

			≤ 3 GHz	> 3 GHz
Maximum zoom scan spatial resolution: Δx _{Zoom} , Δy _{Zoom}			≤ 2 GHz: ≤ 8 mm 2 - 3 GHz: ≤ 5 mm*	3 - 4 GHz: ≤ 5 mm* 4 - 6 GHz: ≤ 4 mm*
Maximum zoom scan spatial resolution, normal to phantom surface	uniform grid: Δz _{Zoom} (n)		≤ 5 mm	3 - 4 GHz: ≤ 4 mm 4 - 5 GHz: ≤ 3 mm 5 - 6 GHz: ≤ 2 mm
	graded grid	Δz _{Zoom} (1): between 1 st two points closest to phantom surface	≤ 4 mm	3 - 4 GHz: ≤ 3 mm 4 - 5 GHz: ≤ 2.5 mm 5 - 6 GHz: ≤ 2 mm
		Δz _{Zoom} (n>1): between subsequent points	≤ 1.5·Δz _{Zoom} (n-1) mm	
Minimum zoom scan volume	x, y, z		≥ 30 mm	3-4 GHz: ≥ 28 mm 4-5 GHz: ≥ 25 mm 5-6 GHz: ≥ 22 mm
Note: * When zoom scan is required and the reported SAR from the area scan based 1-g SAR estimation procedures of KDB Publication 447498 is ≤ 1.4 W/kg, ≤ 8 mm, ≤ 7 mm and ≤ 5 mm zoom scan resolution may be applied, respectively, for 2 GHz to 3 GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.				

Step 5 Power Drift Measurements

Repetition of the E-field measurement at the fixed location mentioned in Step 1 to make sure the two results differ by less than $\pm 0.2 \text{ dB}$.

Step 6 Test Data

After the test, SAR test data should be exported by SEMCAD.

6. System Verificaiton

6.1. Tissue Check

- Refer to KDB 865664 D01 v01r04, the depth of tissue-equivalent liquid in a phantom must be ≥ 15.0 cm with $\leq \pm 0.5$ cm variation for SAR measurements ≤ 3 GHz and ≥ 10.0 cm with $\leq \pm 0.5$ cm variation for measurements > 3 GHz.

15cm Depth Head Tissue



■ Dielectric properties of the head tissue-equivalent liquid

Frequency MHz	Relative Permittivity ϵ_r	Conductivity (σ) S/m
300	45.3	0.87
450	43.5	0.87
750	41.9	0.89
835	41.5	0.90
900	41.5	0.97
<i>1 450</i>	<i>40.5</i>	<i>1.20</i>
<i>1 500</i>	<i>40.4</i>	<i>1.23</i>
<i>1 640</i>	<i>40.2</i>	<i>1.31</i>
<i>1 750</i>	<i>40.1</i>	<i>1.37</i>
1 800	40.0	1.40
1 900	40.0	1.40
2 000	40.0	1.40
<i>2 100</i>	<i>39.8</i>	<i>1.49</i>
<i>2 300</i>	<i>39.5</i>	<i>1.67</i>
2 450	39.2	1.80
<i>2 600</i>	<i>39.0</i>	<i>1.96</i>
3 000	38.5	2.40
<i>3 500</i>	<i>37.9</i>	<i>2.91</i>
<i>4 000</i>	<i>37.4</i>	<i>3.43</i>
<i>4 500</i>	<i>36.8</i>	<i>3.94</i>
<i>5 000</i>	<i>36.2</i>	<i>4.45</i>
<i>5 200</i>	<i>36.0</i>	<i>4.66</i>
<i>5 400</i>	<i>35.8</i>	<i>4.86</i>
<i>5 600</i>	<i>35.5</i>	<i>5.07</i>
<i>5 800</i>	<i>35.3</i>	<i>5.27</i>
<i>6 000</i>	<i>35.1</i>	<i>5.48</i>

Note: For convenience, permittivity and conductivity values at those frequencies which are not part of the original data provided by Drossos et al. [33] or the extension to 5800MHz are provided (i.e. the values shown in italics). These values were linearly interpolated between the values in this table that are immediately above and below these values, except the values at 6000MHz that were linearly extrapolated from the values at 3000MHz and 5800MHz.

■ Tissue Calibration Result

The dielectric parameters of the liquids were verified prior to the SAR evaluation using DASY6 Dielectric Assessment Kit and keysight PNA-L Network Analyzer N5234B.

Tissue parameter for Head								
Freq. (MHz)	Perm.	Cond.	Target Perm.	Target Cond.	Deviation Perm. %	Deviation Cond. %	Tissue Temperature	Test Date
750	43.67	0.87	41.94	0.89	4.12	-2.25	22.5°C	2022.11.09
850	43.36	0.91	41.50	0.92	4.48	-1.09	22.5°C	2022.11.09
1750	41.59	1.33	40.08	1.37	3.77	-2.92	22.5°C	2022.11.10
1900	41.33	1.41	40.00	1.40	3.33	0.71	22.5°C	2022.11.10
2450	40.59	1.79	39.20	1.80	3.55	-0.56	22.5°C	2022.10.25
2600	40.38	1.91	39.01	1.96	3.51	-2.55	22.5°C	2022.11.11
3500	38.83	2.78	37.93	2.91	2.37	-4.47	22.5°C	2022.11.14
3700	38.51	2.98	37.70	3.12	2.15	-4.49	22.5°C	2022.11.14
5250	35.95	4.54	35.93	4.71	0.06	-3.61	22.5°C	2022.10.26
5750	35.06	5.12	35.36	5.22	-0.85	-1.92	22.5°C	2022.10.26

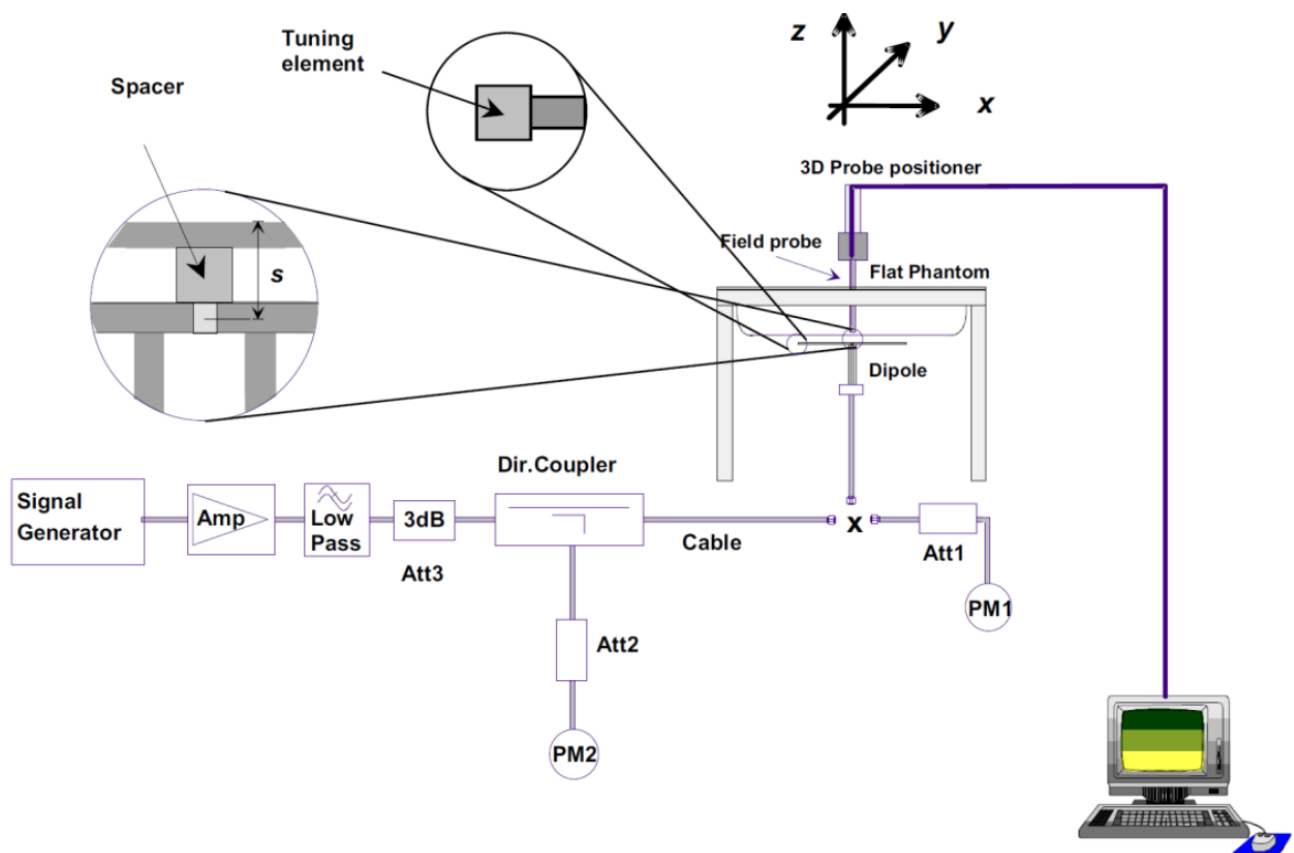
Note: The $\pm 5\%$ deviation of tissue parameter is recommended.

6.2. System Check

■ Purpose

The purpose of the system check is to verify that the system operates within its specifications at the device test frequencies. System check verifies the measurement repeatability of a SAR system before compliance testing and is not a validation of all system specifications. The latter is not required for testing a device but is mandatory before the system is deployed.

■ System Performance Check Setup Diagram



■ System Check Procedure

The system check procedure is a complete 1g and 10g peak spatial-average SAR measurement using a source having a previously determined system check target value. The measured 1g and 10g SAR are normalized to the target input power of the specific source and compared to their respective target values.

A description of the different measurement tasks to be performed is given below, together with the information that can be deduced from their results:

- The Power Reference Measurement and Power Drift Measurement are located at the beginning and end of the batch process. They measure the field drift at one single point in the liquid over the complete procedure. The indicated drift is mainly the variation of the amplifier output power. If it is too high (above ± 0.1 dB), the system check should be repeated; some amplifiers have very high drift during warm-up. A stable amplifier gives drift results in the DASY6 system below ± 0.02 dB.

- b. The second step is optional. For probes with integrated optical surface detection sensor this step must be conducted, otherwise the step can be skipped. The Surface Check tests the optical surface detection system of the DASY6 system by repeatedly detecting the surface with the optical and mechanical surface detector and comparing the results. The output gives the detecting heights of both systems, the difference between the two systems and the standard deviation of the detection repeatability. Air bubbles or refraction in the liquid due to separation of the sugar-water mixture gives poor repeatability (above ± 0.1 mm). In that case it is better to abort the system check and stir the liquid.
- c. The Area Scan measures the SAR above the dipole on a plane parallel to the surface. It is used to locate the approximate location of the peak SAR. The proposed scan uses large grid spacing for faster measurement; due to the symmetric field, the peak detection is reliable. If a finer graphic is desired, the grid spacing can be reduced. Grid spacing and orientation have no influence on the SAR result.
- d. The Zoom Scan measures the field in a volume around the peak SAR value assessed in the previous Area Scan.

If the system check gives reasonable results, the SAR peak, 1 g and 10 g spatial average SAR values normalized to 1 W dipole input power give reference data for comparisons. The next sections analyze the expected uncertainties of these values, as well as additional checks for further information or troubleshooting.

■ Result of System Performance Check

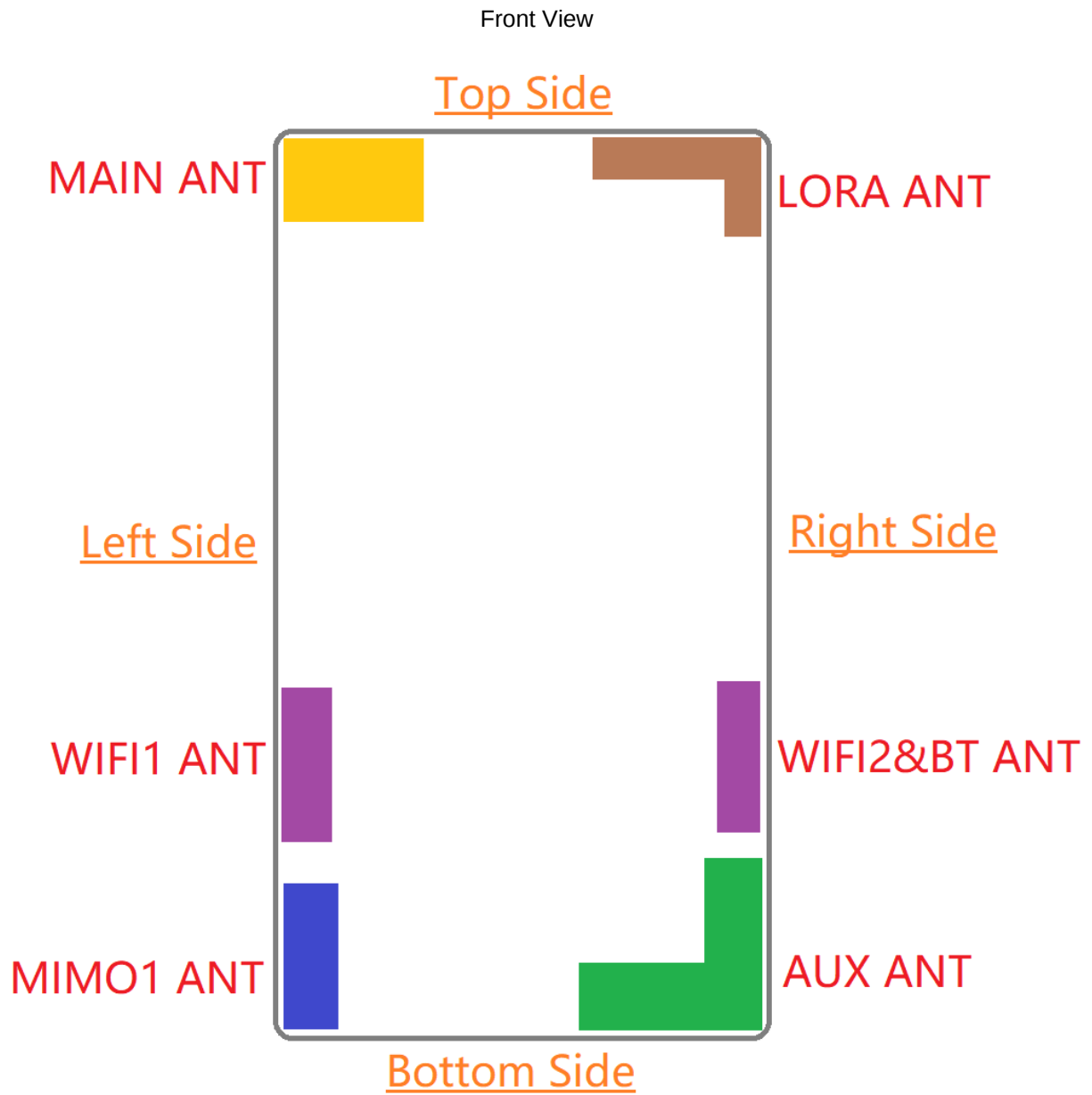
System check for Head								
Freq. (MHz)	1g SAR (W/kg)	10g SAR (W/kg)	Target 1g SAR (W/kg)	Target 10g SAR (W/kg)	Deviation 1g SAR (%)	Deviation 10g SAR (%)	Tissue Temp.	Test Date
750	8.32	5.48	8.56	5.58	-2.80	-1.79	22.5°C	2022.11.09
850	10.04	6.56	10.10	6.52	-0.59	0.61	22.5°C	2022.11.09
1750	37.64	20.12	37.10	19.30	1.46	4.25	22.5°C	2022.11.10
1900	40.40	20.96	39.80	20.20	1.51	3.76	22.5°C	2022.11.10
2450	52.40	24.36	53.40	24.20	-1.87	0.66	22.5°C	2022.10.25
2600	57.20	26.00	57.20	25.00	0.00	4.00	22.5°C	2022.11.11
3500	65.60	25.30	65.10	25.00	0.77	1.20	22.5°C	2022.11.14
3700	68.80	25.70	65.30	24.10	5.36	6.64	22.5°C	2022.11.14
5250	77.30	22.10	76.90	21.80	0.52	1.38	22.5°C	2022.10.26
5750	75.50	21.60	76.90	21.50	-1.82	0.47	22.5°C	2022.10.26

Note:

1. The $\pm 10\%$ deviation of system check result is required.
2. System check value listed above has been harmonized to 1W.

7. Analysis and Results

7.1. Antenna Location



7.2. Conducted Power

■ LTE Band 2 (MIMO1 ANT)

BW (MHz)	RB Size	RB Offset	CH.	Freq. (MHz)	QPSK		16-QAM		64-QAM		256-QAM	
					Average Power (dBm)	Max. Tune-up Power (dBm)	Average Power (dBm)	Max. Tune-up Power (dBm)	Average Power (dBm)	Max. Tune-up Power (dBm)	Average Power (dBm)	Max. Tune-up Power (dBm)
20	1	0	18700	1860	19.97	20.5	19.44	20.0	18.53	19.0	15.34	15.5
			18900	1880	20.18	20.5	19.42	20.0	18.57	19.0	15.13	15.5
			19100	1900	20.16	20.5	19.42	20.0	18.52	19.0	15.16	15.5
		49	18700	1860	19.76	20.0	19.43	20.0	18.55	19.0	15.25	15.5
			18900	1880	19.81	20.0	19.47	20.0	18.53	19.0	15.46	16.0
			19100	1900	19.81	20.0	19.28	19.5	18.35	18.5	15.08	15.5
		99	18700	1860	20.02	20.5	19.57	20.0	18.65	19.0	15.88	16.0
			18900	1880	20.07	20.5	19.52	20.0	18.49	19.0	15.43	16.0
			19100	1900	19.98	20.5	19.39	20.0	18.35	18.5	15.22	15.5
	50	0	18700	1860	19.09	19.5	18.15	18.5	17.27	17.5	15.29	15.5
			18900	1880	19.03	19.5	18.13	18.5	17.35	17.5	15.38	15.5
			19100	1900	18.99	19.5	18.18	18.5	17.41	18.0	15.38	15.5
		24	18700	1860	19.19	19.5	18.18	18.5	17.38	17.5	15.44	16.0
			18900	1880	19.13	19.5	18.18	18.5	17.38	17.5	15.41	16.0
			19100	1900	19.12	19.5	18.17	18.5	17.35	17.5	15.43	16.0
		50	18700	1860	19.21	19.5	18.30	18.5	17.43	18.0	15.43	16.0
			18900	1880	19.15	19.5	18.18	18.5	17.42	18.0	15.37	15.5
			19100	1900	19.02	19.5	18.15	18.5	17.38	17.5	15.32	15.5
	100	0	18700	1860	19.18	19.5	18.25	18.5	17.44	18.0	15.45	16.0
			18900	1880	19.03	19.5	18.16	18.5	17.34	17.5	15.46	16.0
			19100	1900	19.04	19.5	18.12	18.5	17.38	17.5	15.38	15.5

BW (MHz)	RB Size	RB Offset	CH.	Freq. (MHz)	QPSK		16-QAM		64-QAM		256-QAM	
					Average Power (dBm)	Max. Tune-up Power (dBm)	Average Power (dBm)	Max. Tune-up Power (dBm)	Average Power (dBm)	Max. Tune-up Power (dBm)	Average Power (dBm)	Max. Tune-up Power (dBm)
15	1	0	18675	1857.5	19.96	20.5	19.55	20.0	18.40	19.0	15.32	15.5
			18900	1880	20.17	20.5	19.38	19.5	18.69	19.0	15.36	15.5
			19125	1902.5	20.09	20.5	19.38	19.5	18.65	19.0	15.32	15.5
		37	18675	1857.5	19.82	20.0	19.43	20.0	18.66	19.0	15.37	15.5
			18900	1880	20.12	20.5	19.60	20.0	18.76	19.0	15.57	16.0
			19125	1902.5	19.81	20.0	19.39	20.0	18.66	19.0	15.35	15.5
		74	18675	1857.5	19.98	20.5	19.43	20.0	18.63	19.0	15.53	16.0
			18900	1880	20.15	20.5	19.38	19.5	18.52	19.0	15.37	15.5
			19125	1902.5	19.93	20.5	19.35	19.5	18.32	18.5	15.63	16.0
	36	0	18675	1857.5	19.06	19.5	18.17	18.5	17.27	17.5	15.38	15.5
			18900	1880	18.98	19.5	18.06	18.5	17.34	17.5	15.31	15.5
			19125	1902.5	19.05	19.5	18.01	18.5	17.37	17.5	15.33	15.5
		19	18675	1857.5	19.20	19.5	18.19	18.5	17.52	18.0	15.52	16.0
			18900	1880	19.06	19.5	18.17	18.5	17.45	18.0	15.32	15.5
			19125	1902.5	19.05	19.5	18.10	18.5	17.39	18.0	15.32	15.5
		39	18675	1857.5	19.20	19.5	18.24	18.5	17.62	18.0	15.43	16.0
			18900	1880	19.16	19.5	18.13	18.5	17.47	18.0	15.42	16.0
			19125	1902.5	19.13	19.5	18.13	18.5	17.40	18.0	15.33	15.5
	75	0	18675	1857.5	19.26	19.5	18.24	18.5	17.45	18.0	15.37	15.5
			18900	1880	19.19	19.5	18.12	18.5	17.40	18.0	15.44	16.0
			19125	1902.5	19.15	19.5	18.22	18.5	17.35	17.5	15.34	15.5

BW (MHz)	RB Size	RB Offset	CH.	Freq. (MHz)	QPSK		16-QAM		64-QAM		256-QAM	
					Average Power (dBm)	Max. Tune-up Power (dBm)	Average Power (dBm)	Max. Tune-up Power (dBm)	Average Power (dBm)	Max. Tune-up Power (dBm)	Average Power (dBm)	Max. Tune-up Power (dBm)
10	1	0	18650	1855	20.17	20.5	19.33	19.5	18.50	19.0	15.32	15.5
			18900	1880	19.87	20.0	19.55	20.0	18.53	19.0	15.35	15.5
			19150	1905	20.02	20.5	19.30	19.5	18.47	19.0	15.26	15.5
		24	18650	1855	20.15	20.5	19.31	19.5	18.66	19.0	15.36	15.5
			18900	1880	20.11	20.5	19.35	19.5	18.60	19.0	15.43	16.0
			19150	1905	19.95	20.5	19.36	19.5	18.46	19.0	15.33	15.5
		49	18650	1855	20.19	20.5	19.51	20.0	18.75	19.0	15.44	16.0
			18900	1880	20.02	20.5	19.44	20.0	18.71	19.0	15.55	16.0
			19150	1905	20.11	20.5	19.37	19.5	18.52	19.0	15.32	15.5
	25	0	18650	1855	19.22	19.5	18.17	18.5	17.44	18.0	15.42	16.0
			18900	1880	19.12	19.5	18.10	18.5	17.37	17.5	15.39	16.0
			19150	1905	19.06	19.5	18.12	18.5	17.34	17.5	15.29	15.5
		12	18650	1855	19.24	19.5	18.23	18.5	17.50	18.0	15.45	16.0
			18900	1880	19.18	19.5	18.15	18.5	17.45	18.0	15.41	16.0
			19150	1905	19.13	19.5	18.15	18.5	17.37	17.5	15.41	16.0
		25	18650	1855	19.28	19.5	18.16	18.5	17.51	18.0	15.49	16.0
			18900	1880	19.27	19.5	18.21	18.5	17.53	18.0	15.43	16.0
			19150	1905	19.17	19.5	18.07	18.5	17.41	18.0	15.40	16.0
	50	0	18650	1855	19.22	19.5	18.18	18.5	17.48	18.0	15.41	16.0
			18900	1880	19.10	19.5	18.03	18.5	17.36	17.5	15.39	16.0
			19150	1905	19.12	19.5	18.17	18.5	17.33	17.5	15.32	15.5

BW (MHz)	RB Size	RB Offset	CH.	Freq. (MHz)	QPSK		16-QAM		64-QAM		256-QAM	
					Average Power (dBm)	Max. Tune-up Power (dBm)	Average Power (dBm)	Max. Tune-up Power (dBm)	Average Power (dBm)	Max. Tune-up Power (dBm)	Average Power (dBm)	Max. Tune-up Power (dBm)
5	1	0	18625	1852.5	20.09	20.5	19.44	20.0	18.69	19.0	15.37	15.5
			18900	1880	20.00	20.5	19.25	19.5	18.67	19.0	15.35	15.5
			19175	1907.5	19.91	20.5	19.39	20.0	18.59	19.0	15.22	15.5
		12	18625	1852.5	20.21	20.5	19.48	20.0	18.64	19.0	15.39	16.0
			18900	1880	20.17	20.5	19.55	20.0	17.71	18.0	15.54	16.0
			19175	1907.5	20.01	20.5	19.46	20.0	18.41	19.0	15.35	15.5
		24	18625	1852.5	20.18	20.5	19.45	20.0	18.61	19.0	15.49	16.0
			18900	1880	20.19	20.5	19.44	20.0	18.39	19.0	15.53	16.0
			19175	1907.5	20.03	20.5	19.43	20.0	18.38	18.5	15.33	15.5
	12	0	18625	1852.5	19.13	19.5	18.15	18.5	17.54	18.0	15.42	16.0
			18900	1880	19.11	19.5	18.12	18.5	17.41	18.0	15.31	15.5
			19175	1907.5	19.08	19.5	18.11	18.5	17.34	17.5	15.33	15.5
		6	18625	1852.5	19.20	19.5	18.24	18.5	17.48	18.0	15.44	16.0
			18900	1880	19.10	19.5	18.21	18.5	17.48	18.0	15.33	15.5
			19175	1907.5	19.15	19.5	18.12	18.5	17.37	17.5	15.34	15.5
		13	18625	1852.5	19.22	19.5	18.24	18.5	17.57	18.0	15.47	16.0
			18900	1880	19.20	19.5	18.24	18.5	17.51	18.0	15.39	16.0
			19175	1907.5	19.09	19.5	18.12	18.5	17.42	18.0	15.28	15.5
	25	0	18625	1852.5	19.15	19.5	18.19	18.5	17.41	18.0	15.43	16.0
			18900	1880	19.14	19.5	18.14	18.5	17.41	18.0	15.38	15.5
			19175	1907.5	19.05	19.5	18.12	18.5	17.40	18.0	15.30	15.5

BW (MHz)	RB Size	RB Offset	CH.	Freq. (MHz)	QPSK		16-QAM		64-QAM		256-QAM	
					Average Power (dBm)	Max. Tune-up Power (dBm)	Average Power (dBm)	Max. Tune-up Power (dBm)	Average Power (dBm)	Max. Tune-up Power (dBm)	Average Power (dBm)	Max. Tune-up Power (dBm)
3	1	0	18615	1851.5	20.16	20.5	19.33	19.5	18.35	18.5	15.42	16.0
			18900	1880	19.95	20.5	19.37	19.5	18.19	18.5	15.33	15.5
			19185	1908.5	20.05	20.5	19.38	19.5	18.63	19.0	15.34	15.5
		7	18615	1851.5	20.16	20.5	19.45	20.0	18.63	19.0	15.43	16.0
			18900	1880	20.12	20.5	19.45	20.0	18.39	19.0	15.36	15.5
			19185	1908.5	19.99	20.5	19.30	19.5	18.53	19.0	15.46	16.0
		14	18615	1851.5	20.18	20.5	19.44	20.0	18.65	19.0	15.45	16.0
			18900	1880	20.15	20.5	19.31	19.5	18.63	19.0	15.39	16.0
			19185	1908.5	20.11	20.5	19.22	19.5	18.42	19.0	15.36	15.5
	8	0	18615	1851.5	19.22	19.5	18.30	18.5	17.46	18.0	15.47	16.0
			18900	1880	19.06	19.5	18.12	18.5	17.37	17.5	15.41	16.0
			19185	1908.5	19.05	19.5	18.07	18.5	17.34	17.5	15.35	15.5
		4	18615	1851.5	19.26	19.5	18.32	18.5	17.53	18.0	15.52	16.0
			18900	1880	19.23	19.5	18.23	18.5	17.47	18.0	15.46	16.0
			19185	1908.5	19.07	19.5	18.14	18.5	17.35	17.5	15.34	15.5
		7	18615	1851.5	19.22	19.5	18.24	18.5	17.47	18.0	15.46	16.0
			18900	1880	19.13	19.5	18.23	18.5	17.53	18.0	15.47	16.0
			19185	1908.5	19.07	19.5	18.16	18.5	17.33	17.5	15.35	15.5
	15	0	18615	1851.5	19.21	19.5	18.27	18.5	17.48	18.0	15.48	16.0
			18900	1880	19.15	19.5	18.14	18.5	17.36	17.5	15.43	16.0
			19185	1908.5	19.05	19.5	18.13	18.5	17.34	17.5	15.34	15.5

BW (MHz)	RB Size	RB Offset	CH.	Freq. (MHz)	QPSK		16-QAM		64-QAM		256-QAM	
					Average Power (dBm)	Max. Tune-up Power (dBm)	Average Power (dBm)	Max. Tune-up Power (dBm)	Average Power (dBm)	Max. Tune-up Power (dBm)	Average Power (dBm)	Max. Tune-up Power (dBm)
1.4	1	0	18607	1850.7	19.99	20.5	19.39	20.0	18.47	19.0	15.31	15.5
			18900	1880	19.94	20.5	19.55	20.0	18.54	19.0	15.49	16.0
			19193	1909.3	19.92	20.5	19.23	19.5	18.43	19.0	15.22	15.5
		2	18607	1850.7	20.09	20.5	19.54	20.0	18.64	19.0	15.66	16.0
			18900	1880	20.17	20.5	19.24	19.5	18.66	19.0	15.38	15.5
			19193	1909.3	19.90	20.5	19.38	19.5	18.59	19.0	15.40	16.0
		5	18607	1850.7	20.10	20.5	19.57	20.0	18.68	19.0	15.43	16.0
			18900	1880	19.91	20.5	19.22	19.5	18.31	18.5	15.42	16.0
			19193	1909.3	19.92	20.5	19.22	19.5	18.44	19.0	15.27	15.5
	3	0	18607	1850.7	20.08	20.5	19.14	19.5	18.51	19.0	15.58	16.0
			18900	1880	20.06	20.5	19.17	19.5	18.44	19.0	15.44	16.0
			19193	1909.3	19.91	20.5	19.02	19.5	18.28	18.5	15.28	15.5
		1	18607	1850.7	20.18	20.5	19.23	19.5	18.48	19.0	15.51	16.0
			18900	1880	20.08	20.5	19.14	19.5	18.51	19.0	15.50	16.0
			19193	1909.3	19.97	20.5	19.11	19.5	18.35	18.5	15.35	15.5
		3	18607	1850.7	20.15	20.5	19.22	19.5	18.46	19.0	15.42	16.0
			18900	1880	20.03	20.5	19.14	19.5	18.51	19.0	15.43	16.0
			19193	1909.3	19.95	20.5	19.11	19.5	18.37	18.5	15.30	15.5
	6	0	18607	1850.7	19.13	19.5	18.22	18.5	17.37	17.5	15.33	15.5
			18900	1880	19.06	19.5	18.14	18.5	17.33	17.5	15.39	16.0
			19193	1909.3	19.02	19.5	18.09	18.5	17.21	17.5	15.21	15.5

■ LTE Band 4 (MIMO1 ANT)

BW (MHz)	RB Size	RB Offset	CH.	Freq. (MHz)	QPSK		16-QAM		64-QAM		256-QAM	
					Average Power (dBm)	Max. Tune-up Power (dBm)	Average Power (dBm)	Max. Tune-up Power (dBm)	Average Power (dBm)	Max. Tune-up Power (dBm)	Average Power (dBm)	Max. Tune-up Power (dBm)
20	1	0	20050	1720	19.37	19.5	18.71	19.0	17.71	18.0	15.08	15.5
			20175	1732.5	19.49	20.0	18.97	19.5	17.64	18.0	14.78	15.0
			20300	1745	19.53	20.0	18.77	19.0	17.85	18.0	14.29	14.5
		49	20050	1720	19.36	19.5	18.76	19.0	17.25	17.5	14.57	15.0
			20175	1732.5	19.52	20.0	18.72	19.0	17.83	18.0	14.33	14.5
			20300	1745	19.24	19.5	18.84	19.0	17.78	18.0	14.95	15.5
		99	20050	1720	19.67	20.0	18.87	19.0	17.79	18.0	14.81	15.0
			20175	1732.5	19.74	20.0	18.89	19.5	17.64	18.0	14.22	14.5
			20300	1745	19.65	20.0	18.86	19.0	17.71	18.0	14.71	15.0
	50	0	20050	1720	18.63	19.0	17.58	18.0	16.52	17.0	14.47	15.0
			20175	1732.5	18.59	19.0	17.63	18.0	16.68	17.0	14.54	15.0
			20300	1745	18.56	19.0	17.65	18.0	16.58	17.0	14.51	15.0
		24	20050	1720	18.65	19.0	17.72	18.0	16.46	17.0	14.49	15.0
			20175	1732.5	18.65	19.0	17.55	18.0	16.55	17.0	14.59	15.0
			20300	1745	18.58	19.0	17.56	18.0	16.53	17.0	14.46	15.0
		50	20050	1720	18.52	19.0	17.63	18.0	16.59	17.0	14.51	15.0
			20175	1732.5	18.62	19.0	17.59	18.0	16.61	17.0	14.54	15.0
			20300	1745	18.62	19.0	17.63	18.0	16.58	17.0	14.44	15.0
	100	0	20050	1720	18.72	19.0	17.59	18.0	16.61	17.0	14.67	15.0
			20175	1732.5	18.66	19.0	17.66	18.0	16.65	17.0	14.51	15.0
			20300	1745	18.73	19.0	17.39	18.0	16.71	17.0	14.43	15.0

BW (MHz)	RB Size	RB Offset	CH.	Freq. (MHz)	QPSK		16-QAM		64-QAM		256-QAM	
					Average Power (dBm)	Max. Tune-up Power (dBm)	Average Power (dBm)	Max. Tune-up Power (dBm)	Average Power (dBm)	Max. Tune-up Power (dBm)	Average Power (dBm)	Max. Tune-up Power (dBm)
15	1	0	20025	1717.5	19.43	20.0	18.73	19.0	17.26	17.5	14.56	15.0
			20175	1732.5	19.54	20.0	18.96	19.5	17.77	18.0	14.62	15.0
			20325	1747.5	19.57	20.0	18.76	19.0	17.96	18.5	14.17	14.5
		37	20025	1717.5	19.37	19.5	18.61	19.0	17.63	18.0	14.26	14.5
			20175	1732.5	19.58	20.0	18.87	19.0	17.73	18.0	14.47	15.0
			20325	1747.5	19.48	20.0	18.86	19.0	17.82	18.0	14.27	14.5
		74	20025	1717.5	19.53	20.0	18.61	19.0	17.91	18.5	14.67	15.0
			20175	1732.5	19.53	20.0	18.87	19.0	17.91	18.5	14.98	15.5
			20325	1747.5	19.58	20.0	18.68	19.0	17.82	18.0	14.64	15.0
	36	0	20025	1717.5	18.46	19.0	17.46	18.0	16.44	17.0	14.52	15.0
			20175	1732.5	18.69	19.0	17.66	18.0	16.70	17.0	14.46	15.0
			20325	1747.5	18.51	19.0	17.55	18.0	16.61	17.0	14.55	15.0
		19	20025	1717.5	18.55	19.0	17.69	18.0	16.45	17.0	14.50	15.0
			20175	1732.5	18.59	19.0	17.55	18.0	16.55	17.0	14.56	15.0
			20325	1747.5	18.65	19.0	17.59	18.0	16.54	17.0	14.58	15.0
		39	20025	1717.5	18.67	19.0	17.62	18.0	16.58	17.0	14.42	15.0
			20175	1732.5	18.66	19.0	17.59	18.0	16.64	17.0	14.61	15.0
			20325	1747.5	18.66	19.0	17.66	18.0	16.67	17.0	14.52	15.0
	75	0	20025	1717.5	18.63	19.0	17.72	18.0	16.54	17.0	14.50	15.0
			20175	1732.5	18.66	19.0	17.54	18.0	16.66	17.0	14.44	15.0
			20325	1747.5	18.61	19.0	17.75	18.0	16.53	17.0	14.51	15.0

BW (MHz)	RB Size	RB Offset	CH.	Freq. (MHz)	QPSK		16-QAM		64-QAM		256-QAM	
					Average Power (dBm)	Max. Tune-up Power (dBm)	Average Power (dBm)	Max. Tune-up Power (dBm)	Average Power (dBm)	Max. Tune-up Power (dBm)	Average Power (dBm)	Max. Tune-up Power (dBm)
10	1	0	20000	1715	19.24	19.5	18.93	19.5	17.56	18.0	14.87	15.0
			20175	1732.5	19.48	20.0	18.93	19.5	17.65	18.0	14.87	15.0
			20350	1750	19.64	20.0	18.66	19.0	17.40	18.0	14.20	14.5
		24	20000	1715	19.52	20.0	18.79	19.0	17.34	17.5	14.10	14.5
			20175	1732.5	19.32	19.5	18.89	19.5	17.70	18.0	14.53	15.0
			20350	1750	19.44	20.0	18.78	19.0	17.77	18.0	14.44	15.0
		49	20000	1715	19.64	20.0	18.84	19.0	17.72	18.0	14.75	15.0
			20175	1732.5	19.74	20.0	18.86	19.0	17.86	18.0	14.33	14.5
			20350	1750	19.78	20.0	18.97	19.5	17.55	18.0	14.72	15.0
	25	0	20000	1715	18.56	19.0	17.56	18.0	16.46	17.0	14.41	15.0
			20175	1732.5	18.53	19.0	17.63	18.0	16.53	17.0	14.44	15.0
			20350	1750	18.61	19.0	17.54	18.0	16.39	17.0	14.23	14.5
		12	20000	1715	18.54	19.0	17.53	18.0	16.63	17.0	14.43	15.0
			20175	1732.5	18.63	19.0	17.66	18.0	16.63	17.0	14.49	15.0
			20350	1750	18.56	19.0	17.63	18.0	16.55	17.0	14.42	15.0
		25	20000	1715	18.60	19.0	17.70	18.0	16.49	17.0	14.52	15.0
			20175	1732.5	18.67	19.0	17.63	18.0	16.62	17.0	14.58	15.0
			20350	1750	18.64	19.0	17.74	18.0	16.58	17.0	14.67	15.0
	50	0	20000	1715	18.48	19.0	17.64	18.0	16.47	17.0	14.48	15.0
			20175	1732.5	18.55	19.0	17.63	18.0	16.54	17.0	14.55	15.0
			20350	1750	18.59	19.0	17.60	18.0	16.48	17.0	14.56	15.0

BW (MHz)	RB Size	RB Offset	CH.	Freq. (MHz)	QPSK		16-QAM		64-QAM		256-QAM	
					Average Power (dBm)	Max. Tune-up Power (dBm)	Average Power (dBm)	Max. Tune-up Power (dBm)	Average Power (dBm)	Max. Tune-up Power (dBm)	Average Power (dBm)	Max. Tune-up Power (dBm)
5	1	0	19975	1712.5	19.39	20.0	18.75	19.0	17.77	18.0	14.05	14.5
			20175	1732.5	19.46	20.0	18.85	19.0	17.64	18.0	14.65	15.0
			20375	1752.5	19.47	20.0	18.82	19.0	17.74	18.0	14.35	14.5
		12	19975	1712.5	19.52	20.0	18.77	19.0	17.59	18.0	14.36	14.5
			20175	1732.5	19.69	20.0	18.77	19.0	17.58	18.0	14.61	15.0
			20375	1752.5	19.57	20.0	18.63	19.0	17.62	18.0	14.74	15.0
		24	19975	1712.5	19.48	20.0	18.77	19.0	17.74	18.0	14.38	14.5
			20175	1732.5	19.64	20.0	18.89	19.5	17.64	18.0	14.33	14.5
			20375	1752.5	19.63	20.0	18.72	19.0	17.54	18.0	14.58	15.0
	12	0	19975	1712.5	18.46	19.0	17.56	18.0	16.48	17.0	14.42	15.0
			20175	1732.5	18.52	19.0	17.61	18.0	16.59	17.0	14.46	15.0
			20375	1752.5	18.59	19.0	17.52	18.0	16.53	17.0	14.47	15.0
		6	19975	1712.5	18.54	19.0	17.56	18.0	16.51	17.0	14.46	15.0
			20175	1732.5	18.62	19.0	17.62	18.0	16.62	17.0	14.54	15.0
			20375	1752.5	18.56	19.0	17.71	18.0	16.54	17.0	14.56	15.0
		13	19975	1712.5	18.50	19.0	17.70	18.0	16.45	17.0	14.45	15.0
			20175	1732.5	18.67	19.0	17.72	18.0	16.62	17.0	14.62	15.0
			20375	1752.5	18.59	19.0	17.68	18.0	16.53	17.0	14.47	15.0
	25	0	19975	1712.5	18.47	19.0	17.57	18.0	16.51	17.0	14.44	15.0
			20175	1732.5	18.60	19.0	17.70	18.0	16.57	17.0	14.50	15.0
			20375	1752.5	18.61	19.0	17.65	18.0	16.46	17.0	14.44	15.0

BW (MHz)	RB Size	RB Offset	CH.	Freq. (MHz)	QPSK		16-QAM		64-QAM		256-QAM	
					Average Power (dBm)	Max. Tune-up Power (dBm)	Average Power (dBm)	Max. Tune-up Power (dBm)	Average Power (dBm)	Max. Tune-up Power (dBm)	Average Power (dBm)	Max. Tune-up Power (dBm)
3	1	0	19965	1711.5	19.45	20.0	18.70	19.0	17.54	18.0	14.20	14.5
			20175	1732.5	19.45	20.0	18.96	19.5	17.85	18.0	14.38	14.5
			20385	1753.5	19.46	20.0	18.56	19.0	17.55	18.0	14.49	15.0
		7	19965	1711.5	19.69	20.0	18.86	19.0	17.69	18.0	14.34	14.5
			20175	1732.5	19.62	20.0	18.82	19.0	18.03	18.5	14.51	15.0
			20385	1753.5	19.38	19.5	18.68	19.0	17.89	18.5	14.64	15.0
		14	19965	1711.5	19.45	20.0	18.73	19.0	17.98	18.5	14.31	14.5
			20175	1732.5	19.66	20.0	18.92	19.5	17.82	18.0	14.49	15.0
			20385	1753.5	19.62	20.0	18.78	19.0	17.74	18.0	14.57	15.0
	8	0	19965	1711.5	18.39	19.0	17.59	18.0	16.53	17.0	14.44	15.0
			20175	1732.5	18.55	19.0	17.73	18.0	16.49	17.0	14.55	15.0
			20385	1753.5	18.52	19.0	17.58	18.0	16.42	17.0	14.52	15.0
		4	19965	1711.5	18.48	19.0	17.63	18.0	16.35	16.5	14.52	15.0
			20175	1732.5	18.59	19.0	17.67	18.0	16.66	17.0	14.56	15.0
			20385	1753.5	18.57	19.0	17.63	18.0	16.47	17.0	14.58	15.0
		7	19965	1711.5	18.47	19.0	17.55	18.0	16.49	17.0	14.44	15.0
			20175	1732.5	18.62	19.0	17.76	18.0	16.58	17.0	14.63	15.0
			20385	1753.5	18.57	19.0	17.67	18.0	16.56	17.0	14.51	15.0
	15	0	19965	1711.5	18.47	19.0	17.56	18.0	16.50	17.0	14.40	15.0
			20175	1732.5	18.56	19.0	17.69	18.0	16.60	17.0	14.62	15.0
			20385	1753.5	18.47	19.0	17.69	18.0	16.54	17.0	14.53	15.0

BW (MHz)	RB Size	RB Offset	CH.	Freq. (MHz)	QPSK		16-QAM		64-QAM		256-QAM	
					Average Power (dBm)	Max. Tune-up Power (dBm)	Average Power (dBm)	Max. Tune-up Power (dBm)	Average Power (dBm)	Max. Tune-up Power (dBm)	Average Power (dBm)	Max. Tune-up Power (dBm)
1.4	1	0	19957	1710.7	19.40	20.0	18.77	19.0	17.84	18.0	14.35	14.5
			20175	1732.5	19.44	20.0	19.17	19.5	17.75	18.0	14.45	15.0
			20393	1754.3	19.46	20.0	18.92	19.5	17.43	18.0	14.52	15.0
		2	19957	1710.7	19.46	20.0	18.88	19.0	17.83	18.0	14.53	15.0
			20175	1732.5	19.62	20.0	18.77	19.0	17.89	18.5	14.66	15.0
			20393	1754.3	19.54	20.0	18.79	19.0	17.62	18.0	14.44	15.0
		5	19957	1710.7	19.25	19.5	18.92	19.5	17.86	18.0	14.44	15.0
			20175	1732.5	19.49	20.0	18.41	19.0	17.88	18.0	14.49	15.0
			20393	1754.3	19.42	20.0	18.97	19.5	17.61	18.0	14.52	15.0
	3	0	19957	1710.7	19.32	19.5	18.49	19.0	17.43	18.0	14.55	15.0
			20175	1732.5	19.46	20.0	18.57	19.0	17.67	18.0	14.46	15.0
			20393	1754.3	19.36	19.5	18.46	19.0	17.61	18.0	14.64	15.0
		1	19957	1710.7	19.43	20.0	18.41	19.0	17.47	18.0	14.47	15.0
			20175	1732.5	19.58	20.0	18.70	19.0	17.65	18.0	14.58	15.0
			20393	1754.3	19.52	20.0	18.54	19.0	17.51	18.0	14.57	15.0
		3	19957	1710.7	19.39	20.0	18.43	19.0	17.48	18.0	14.65	15.0
			20175	1732.5	19.54	20.0	18.61	19.0	17.58	18.0	14.83	15.0
			20393	1754.3	19.47	20.0	18.44	19.0	17.56	18.0	14.52	15.0
	6	0	19957	1710.7	18.35	18.5	17.53	18.0	16.47	17.0	14.42	15.0
			20175	1732.5	18.48	19.0	17.49	18.0	16.44	17.0	14.35	14.5
			20393	1754.3	18.50	19.0	17.58	18.0	16.44	17.0	14.42	15.0

■ LTE Band 5 (MAIN ANT)

BW (MHz)	RB Size	RB Offset	CH.	Freq. (MHz)	QPSK		16-QAM		64-QAM		256-QAM	
					Average Power (dBm)	Max. Tune-up Power (dBm)	Average Power (dBm)	Max. Tune-up Power (dBm)	Average Power (dBm)	Max. Tune-up Power (dBm)	Average Power (dBm)	Max. Tune-up Power (dBm)
10	1	0	20450	829	22.98	23.5	22.14	22.5	20.95	21.5	17.89	18.5
			20525	836.5	23.13	23.5	22.28	22.5	21.04	21.5	17.99	18.5
			20600	844	23.10	23.5	22.09	22.5	21.43	22.0	18.68	19.0
		24	20450	829	22.96	23.5	22.05	22.5	21.30	21.5	17.94	18.5
			20525	836.5	23.07	23.5	22.48	23.0	21.23	21.5	18.03	18.5
			20600	844	22.99	23.5	22.58	23.0	21.31	21.5	18.66	19.0
		49	20450	829	22.95	23.5	22.07	22.5	20.89	21.5	18.13	18.5
			20525	836.5	23.05	23.5	22.22	22.5	21.05	21.5	18.01	18.5
			20600	844	22.98	23.5	21.97	22.5	21.22	21.5	18.64	19.0
	25	0	20450	829	22.05	22.5	21.15	21.5	20.16	20.5	18.20	18.5
			20525	836.5	22.11	22.5	21.19	21.5	20.24	20.5	18.18	18.5
			20600	844	22.09	22.5	21.17	21.5	20.20	20.5	18.14	18.5
		12	20450	829	22.14	22.5	21.17	21.5	20.23	20.5	18.24	18.5
			20525	836.5	22.10	22.5	21.17	21.5	20.23	20.5	18.15	18.5
			20600	844	22.08	22.5	21.11	21.5	20.16	20.5	18.13	18.5
		25	20450	829	22.06	22.5	21.19	21.5	20.20	20.5	18.15	18.5
			20525	836.5	22.13	22.5	21.22	21.5	20.28	20.5	18.15	18.5
			20600	844	22.09	22.5	21.16	21.5	20.22	20.5	18.16	18.5
	50	0	20450	829	22.11	22.5	21.15	21.5	20.13	20.5	18.15	18.5
			20525	836.5	22.12	22.5	21.13	21.5	20.16	20.5	18.09	18.5
			20600	844	22.09	22.5	21.08	21.5	20.11	20.5	18.18	18.5

BW (MHz)	RB Size	RB Offset	CH.	Freq. (MHz)	QPSK		16-QAM		64-QAM		256-QAM	
					Average Power (dBm)	Max. Tune-up Power (dBm)	Average Power (dBm)	Max. Tune-up Power (dBm)	Average Power (dBm)	Max. Tune-up Power (dBm)	Average Power (dBm)	Max. Tune-up Power (dBm)
5	1	0	20425	826.5	23.23	23.5	22.32	22.5	21.35	21.5	18.11	18.5
			20525	836.5	23.18	23.5	22.37	22.5	21.52	22.0	18.14	18.5
			20625	846.5	23.08	23.5	22.67	23.0	21.47	22.0	18.33	18.5
		12	20425	826.5	23.08	23.5	22.24	22.5	21.37	21.5	18.01	18.5
			20525	836.5	23.08	23.5	22.18	22.5	21.23	21.5	18.03	18.5
			20625	846.5	23.03	23.5	22.40	23.0	21.45	22.0	18.31	18.5
		24	20425	826.5	23.11	23.5	22.20	22.5	21.23	21.5	18.02	18.5
			20525	836.5	23.11	23.5	22.31	22.5	21.42	22.0	18.05	18.5
			20625	846.5	22.93	23.5	22.58	23.0	21.05	21.5	18.23	18.5
	12	0	20425	826.5	22.21	22.5	21.25	21.5	20.26	20.5	18.27	18.5
			20525	836.5	22.20	22.5	21.16	21.5	20.36	20.5	18.32	18.5
			20625	846.5	22.11	22.5	21.15	21.5	20.14	20.5	18.14	18.5
		6	20425	826.5	22.19	22.5	21.15	21.5	20.30	20.5	18.29	18.5
			20525	836.5	22.17	22.5	21.22	21.5	20.24	20.5	18.28	18.5
			20625	846.5	22.09	22.5	21.21	21.5	20.03	20.5	18.14	18.5
		13	20425	826.5	22.07	22.5	21.17	21.5	20.16	20.5	18.18	18.5
			20525	836.5	22.11	22.5	21.07	21.5	20.27	20.5	18.22	18.5
			20625	846.5	22.05	22.5	21.09	21.5	20.05	20.5	18.15	18.5
	25	0	20425	826.5	22.12	22.5	21.17	21.5	20.21	20.5	18.17	18.5
			20525	836.5	22.15	22.5	21.13	21.5	20.18	20.5	18.16	18.5
			20625	846.5	22.07	22.5	21.13	21.5	20.05	20.5	18.12	18.5

BW (MHz)	RB Size	RB Offset	CH.	Freq. (MHz)	QPSK		16-QAM		64-QAM		256-QAM	
					Average Power (dBm)	Max. Tune-up Power (dBm)	Average Power (dBm)	Max. Tune-up Power (dBm)	Average Power (dBm)	Max. Tune-up Power (dBm)	Average Power (dBm)	Max. Tune-up Power (dBm)
3	1	0	20415	825.5	23.10	23.5	22.25	22.5	21.46	22.0	18.08	18.5
			20525	836.5	23.11	23.5	22.24	22.5	21.13	21.5	18.05	18.5
			20635	847.5	23.05	23.5	22.64	23.0	21.38	21.5	18.69	19.0
		7	20415	825.5	22.99	23.5	22.10	22.5	20.96	21.5	17.99	18.5
			20525	836.5	23.10	23.5	22.48	23.0	21.23	21.5	18.12	18.5
			20635	847.5	22.96	23.5	21.95	22.5	21.35	21.5	18.59	19.0
		14	20415	825.5	22.96	23.5	22.08	22.5	21.25	21.5	17.98	18.5
			20525	836.5	23.06	23.5	22.20	22.5	21.11	21.5	17.96	18.5
			20635	847.5	22.93	23.5	22.49	23.0	21.23	21.5	18.54	19.0
	8	0	20415	825.5	22.11	22.5	21.22	21.5	20.24	20.5	18.25	18.5
			20525	836.5	22.11	22.5	21.22	21.5	20.16	20.5	18.08	18.5
			20635	847.5	22.06	22.5	21.23	21.5	20.22	20.5	18.16	18.5
		4	20415	825.5	22.13	22.5	21.20	21.5	20.17	20.5	18.20	18.5
			20525	836.5	22.18	22.5	21.18	21.5	20.25	20.5	18.12	18.5
			20635	847.5	22.13	22.5	21.26	21.5	20.26	20.5	18.21	18.5
		7	20415	825.5	22.10	22.5	21.16	21.5	20.19	20.5	18.17	18.5
			20525	836.5	22.09	22.5	21.22	21.5	20.19	20.5	18.08	18.5
			20635	847.5	22.02	22.5	21.19	21.5	20.10	20.5	18.14	18.5
	15	0	20415	825.5	22.13	22.5	21.08	21.5	20.21	20.5	18.18	18.5
			20525	836.5	22.06	22.5	21.09	21.5	20.24	20.5	18.13	18.5
			20635	847.5	22.11	22.5	21.10	21.5	20.09	20.5	18.14	18.5

BW (MHz)	RB Size	RB Offset	CH.	Freq. (MHz)	QPSK		16-QAM		64-QAM		256-QAM	
					Average Power (dBm)	Max. Tune-up Power (dBm)	Average Power (dBm)	Max. Tune-up Power (dBm)	Average Power (dBm)	Max. Tune-up Power (dBm)	Average Power (dBm)	Max. Tune-up Power (dBm)
1.4	1	0	20407	824.7	22.95	23.5	22.13	22.5	21.30	21.5	17.98	18.5
			20525	836.5	22.95	23.5	22.42	23.0	21.15	21.5	18.11	18.5
			20643	848.3	22.90	23.5	22.02	22.5	21.19	21.5	17.89	18.5
		2	20407	824.7	23.03	23.5	22.16	22.5	20.96	21.5	18.02	18.5
			20525	836.5	23.10	23.5	22.13	22.5	21.42	22.0	18.22	18.5
			20643	848.3	22.92	23.5	22.05	22.5	20.90	21.5	17.92	18.5
		5	20407	824.7	22.96	23.5	22.10	22.5	21.31	21.5	17.91	18.5
			20525	836.5	23.00	23.5	22.17	22.5	21.45	22.0	18.12	18.5
			20643	848.3	22.84	23.0	21.98	22.5	21.15	21.5	17.83	18.0
	3	0	20407	824.7	22.97	23.5	22.18	22.5	20.98	21.5	18.17	18.5
			20525	836.5	22.96	23.5	22.19	22.5	21.14	21.5	18.10	18.5
			20643	848.3	22.86	23.0	22.04	22.5	20.91	21.5	18.10	18.5
		1	20407	824.7	23.04	23.5	22.32	22.5	21.08	21.5	18.21	18.5
			20525	836.5	22.97	23.5	22.13	22.5	21.42	22.0	18.16	18.5
			20643	848.3	22.93	23.5	22.23	22.5	21.02	21.5	18.13	18.5
		3	20407	824.7	22.94	23.5	22.10	22.5	20.93	21.5	18.14	18.5
			20525	836.5	22.96	23.5	22.24	22.5	21.16	21.5	18.14	18.5
			20643	848.3	22.86	23.0	22.04	22.5	20.86	21.0	18.06	18.5
	6	0	20407	824.7	22.06	22.5	21.05	21.5	20.09	20.5	18.10	18.5
			20525	836.5	22.03	22.5	21.16	21.5	20.02	20.5	18.06	18.5
			20643	848.3	21.97	22.5	20.97	21.5	20.04	20.5	18.03	18.5

■ LTE Band 48 (AUX ANT)

BW (MHz)	RB Size	RB Offset	CH.	Freq. (MHz)	QPSK		16-QAM		64-QAM		256-QAM	
					Average Power (dBm)	Max. Tune-up Power (dBm)	Average Power (dBm)	Max. Tune-up Power (dBm)	Average Power (dBm)	Max. Tune-up Power (dBm)	Average Power (dBm)	Max. Tune-up Power (dBm)
20	1	0	55340	3560	18.16	18.5	17.46	18.0	16.05	16.5	12.82	13.0
			55665	3592.5	18.06	18.5	17.67	18.0	16.03	16.5	13.05	13.5
			55990	3625	18.24	18.5	17.47	18.0	15.99	16.5	13.02	13.5
			56315	3657.5	18.20	18.5	17.49	18.0	15.91	16.5	12.95	13.5
			56640	3690	18.27	18.5	17.33	17.5	16.06	16.5	13.11	13.5
		49	55340	3560	18.16	18.5	17.35	17.5	15.80	16.0	12.93	13.5
			55665	3592.5	18.01	18.5	17.40	18.0	15.89	16.5	13.00	13.5
			55990	3625	18.05	18.5	17.35	17.5	15.89	16.5	13.05	13.5
			56315	3657.5	18.23	18.5	17.62	18.0	15.91	16.5	13.02	13.5
			56640	3690	18.13	18.5	17.52	18.0	16.02	16.5	13.09	13.5
		99	55340	3560	18.27	18.5	17.68	18.0	15.89	16.5	12.79	13.0
			55665	3592.5	18.17	18.5	17.56	18.0	15.95	16.5	13.02	13.5
			55990	3625	18.12	18.5	17.53	18.0	15.89	16.5	12.83	13.0
			56315	3657.5	18.37	18.5	17.60	18.0	15.92	16.5	12.97	13.5
			56640	3690	18.29	18.5	17.66	18.0	16.11	16.5	13.22	13.5
	50	0	55340	3560	17.36	17.5	16.35	16.5	15.01	15.5	13.00	13.5
			55665	3592.5	17.30	17.5	16.38	16.5	15.06	15.5	13.06	13.5
			55990	3625	17.25	17.5	16.38	16.5	15.11	15.5	13.11	13.5
			56315	3657.5	17.35	17.5	16.38	16.5	15.05	15.5	13.05	13.5
			56640	3690	17.35	17.5	16.40	17.0	15.19	15.5	13.10	13.5
		24	55340	3560	17.35	17.5	16.36	16.5	14.82	15.0	12.96	13.5
			55665	3592.5	17.25	17.5	16.37	16.5	15.00	15.5	13.14	13.5
			55990	3625	17.28	17.5	16.43	17.0	15.08	15.5	13.16	13.5
			56315	3657.5	17.32	17.5	16.41	17.0	15.02	15.5	13.13	13.5
			56640	3690	17.38	17.5	16.50	17.0	15.21	15.5	13.27	13.5
		50	55340	3560	17.28	17.5	16.35	16.5	14.91	15.5	12.98	13.5
			55665	3592.5	17.26	17.5	16.35	16.5	14.92	15.5	13.04	13.5
			55990	3625	17.28	17.5	16.28	16.5	15.02	15.5	13.04	13.5
			56315	3657.5	17.36	17.5	16.34	16.5	15.00	15.5	12.99	13.5
			56640	3690	17.34	17.5	16.35	16.5	15.11	15.5	13.07	13.5
	100	0	55340	3560	17.30	17.5	16.36	16.5	14.92	15.5	12.95	13.5

			55665	3592.5	17.27	17.5	16.29	16.5	15.05	15.5	13.06	13.5
			55990	3625	17.30	17.5	16.25	16.5	15.03	15.5	12.99	13.5
			56315	3657.5	17.32	17.5	16.36	16.5	15.07	15.5	13.00	13.5
			56640	3690	17.39	18.0	16.34	16.5	15.15	15.5	13.17	13.5

BW (MHz)	RB Size	RB Offset	CH.	Freq. (MHz)	QPSK		16-QAM		64-QAM		256-QAM	
					Average Power (dBm)	Max. Tune-up Power (dBm)	Average Power (dBm)	Max. Tune-up Power (dBm)	Average Power (dBm)	Max. Tune-up Power (dBm)	Average Power (dBm)	Max. Tune-up Power (dBm)
15	1	0	55315	3557.5	18.19	18.5	18.25	18.5	15.80	16.0	12.96	13.5
			55653	3591.3	18.10	18.5	18.16	18.5	15.85	16.0	12.88	13.0
			55990	3625	18.02	18.5	18.08	18.5	15.99	16.5	13.11	13.5
			56327	3658.7	18.19	18.5	18.22	18.5	15.96	16.5	13.03	13.5
			56665	3692.5	18.20	18.5	18.23	18.5	16.00	16.5	13.12	13.5
		37	55315	3557.5	18.29	18.5	18.07	18.5	15.77	16.0	12.75	13.0
			55653	3591.3	17.99	18.5	18.19	18.5	15.83	16.0	12.95	13.5
			55990	3625	18.04	18.5	18.17	18.5	15.77	16.0	12.95	13.5
			56327	3658.7	18.24	18.5	18.20	18.5	15.87	16.0	12.98	13.5
			56665	3692.5	18.22	18.5	18.23	18.5	16.05	16.5	12.95	13.5
		74	55315	3557.5	18.23	18.5	18.11	18.5	15.86	16.0	12.95	13.5
			55653	3591.3	18.10	18.5	18.21	18.5	15.89	16.5	12.83	13.0
			55990	3625	18.23	18.5	18.23	18.5	15.96	16.5	13.10	13.5
			56327	3658.7	18.27	18.5	18.23	18.5	15.90	16.5	13.05	13.5
			56665	3692.5	18.29	18.5	18.27	18.5	16.01	16.5	13.25	13.5
	36	0	55315	3557.5	17.25	17.5	17.35	17.5	14.99	15.5	12.79	13.0
			55653	3591.3	17.30	17.5	17.35	17.5	14.96	15.5	12.90	13.5
			55990	3625	17.29	17.5	17.34	17.5	15.10	15.5	13.02	13.5
			56327	3658.7	17.28	17.5	17.28	17.5	15.03	15.5	13.03	13.5
			56665	3692.5	17.27	17.5	17.34	17.5	15.12	15.5	13.22	13.5
		19	55315	3557.5	17.19	17.5	17.29	17.5	14.89	15.5	12.88	13.0
			55653	3591.3	17.22	17.5	17.26	17.5	14.90	15.5	12.88	13.0
			55990	3625	17.15	17.5	17.28	17.5	15.10	15.5	12.98	13.5
			56327	3658.7	17.31	17.5	17.42	18.0	14.96	15.5	13.01	13.5
			56665	3692.5	17.41	18.0	17.34	17.5	15.16	15.5	13.09	13.5
		39	55315	3557.5	17.19	17.5	17.32	17.5	14.89	15.5	12.92	13.5
			55653	3591.3	17.21	17.5	17.24	17.5	14.82	15.0	12.87	13.0
			55990	3625	17.24	17.5	17.32	17.5	15.04	15.5	12.91	13.5
			56327	3658.7	17.31	17.5	17.29	17.5	14.90	15.5	12.85	13.0
			56665	3692.5	17.40	18.0	17.36	17.5	15.20	15.5	13.21	13.5
	75	0	55315	3557.5	17.27	17.5	17.23	17.5	14.87	15.0	12.86	13.0
			55653	3591.3	17.24	17.5	17.24	17.5	14.91	15.5	12.87	13.0

			55990	3625	17.21	17.5	17.24	17.5	15.01	15.5	12.90	13.5
			56327	3658.7	17.30	17.5	17.38	17.5	14.94	15.5	13.04	13.5
			56665	3692.5	17.35	17.5	17.40	18.0	15.23	15.5	13.22	13.5

BW (MHz)	RB Size	RB Offset	CH.	Freq. (MHz)	QPSK		16-QAM		64-QAM		256-QAM	
					Average Power (dBm)	Max. Tune-up Power (dBm)	Average Power (dBm)	Max. Tune-up Power (dBm)	Average Power (dBm)	Max. Tune-up Power (dBm)	Average Power (dBm)	Max. Tune-up Power (dBm)
10	1	0	55290	3555	18.32	18.5	17.24	17.5	15.86	16.0	12.98	13.5
			55640	3590	18.25	18.5	17.37	17.5	15.90	16.5	13.09	13.5
			55990	3625	18.30	18.5	17.47	18.0	15.94	16.5	13.20	13.5
			56340	3660	18.28	18.5	17.31	17.5	15.99	16.5	13.20	13.5
			56690	3695	18.37	18.5	17.96	18.5	16.07	16.5	12.84	13.0
		24	55290	3555	18.22	18.5	17.58	18.0	15.82	16.0	12.89	13.5
			55640	3590	18.22	18.5	17.72	18.0	15.91	16.5	12.79	13.0
			55990	3625	18.02	18.5	17.03	17.5	15.86	16.0	12.95	13.5
			56340	3660	18.25	18.5	17.56	18.0	15.91	16.5	12.75	13.0
			56690	3695	18.28	18.5	17.77	18.0	16.11	16.5	13.13	13.5
		49	55290	3555	18.29	18.5	17.58	18.0	15.94	16.5	12.89	13.5
			55640	3590	18.17	18.5	17.32	17.5	15.96	16.5	13.07	13.5
			55990	3625	18.32	18.5	17.69	18.0	15.97	16.5	12.93	13.5
			56340	3660	18.38	18.5	17.62	18.0	15.91	16.5	12.66	13.0
			56690	3695	18.29	18.5	17.63	18.0	16.13	16.5	13.32	13.5
	25	0	55290	3555	17.35	17.5	16.28	16.5	15.00	15.5	12.94	13.5
			55640	3590	17.35	17.5	16.34	16.5	15.07	15.5	13.02	13.5
			55990	3625	17.36	17.5	16.36	16.5	15.08	15.5	13.08	13.5
			56340	3660	17.38	17.5	16.38	16.5	15.03	15.5	13.06	13.5
			56690	3695	17.50	18.0	16.54	17.0	15.13	15.5	13.30	13.5
		12	55290	3555	17.34	17.5	16.55	17.0	14.96	15.5	12.89	13.5
			55640	3590	17.27	17.5	16.28	16.5	15.03	15.5	12.98	13.5
			55990	3625	17.35	17.5	16.39	17.0	15.12	15.5	13.17	13.5
			56340	3660	17.46	18.0	16.47	17.0	15.17	15.5	13.10	13.5
			56690	3695	17.51	18.0	16.51	17.0	15.23	15.5	13.26	13.5
		25	55290	3555	17.32	17.5	16.50	17.0	14.94	15.5	12.99	13.5
			55640	3590	17.25	17.5	16.38	16.5	14.88	15.0	12.96	13.5
			55990	3625	17.31	17.5	16.26	16.5	15.11	15.5	13.05	13.5
			56340	3660	17.45	18.0	16.54	17.0	15.15	15.5	13.10	13.5
			56690	3695	17.55	18.0	16.57	17.0	15.21	15.5	13.25	13.5
	50	0	55290	3555	17.25	17.5	16.26	16.5	14.88	15.0	12.83	13.0
			55640	3590	17.22	17.5	16.25	16.5	14.96	15.5	12.91	13.5

			55990	3625	17.24	17.5	16.32	16.5	14.96	15.5	12.97	13.5
			56340	3660	17.44	18.0	16.36	16.5	15.10	15.5	13.16	13.5
			56690	3695	17.53	18.0	16.58	17.0	15.15	15.5	13.27	13.5

BW (MHz)	RB Size	RB Offset	CH.	Freq. (MHz)	QPSK		16-QAM		64-QAM		256-QAM	
					Average Power (dBm)	Max. Tune-up Power (dBm)	Average Power (dBm)	Max. Tune-up Power (dBm)	Average Power (dBm)	Max. Tune-up Power (dBm)	Average Power (dBm)	Max. Tune-up Power (dBm)
5	1	0	55265	3552.5	18.32	18.5	17.62	18.0	15.79	16.0	12.77	13.0
			55628	3588.8	18.17	18.5	17.88	18.0	16.02	16.5	12.95	13.5
			55990	3625	18.25	18.5	17.57	18.0	15.93	16.5	13.12	13.5
			56352	3661.2	18.38	18.5	17.82	18.0	16.02	16.5	13.08	13.5
			56715	3697.5	18.33	18.5	18.07	18.5	16.05	16.5	13.03	13.5
		12	55265	3552.5	18.24	18.5	18.05	18.5	15.83	16.0	12.93	13.5
			55628	3588.8	18.21	18.5	17.54	18.0	15.92	16.5	12.78	13.0
			55990	3625	18.15	18.5	17.59	18.0	15.85	16.0	13.09	13.5
			56352	3661.2	18.17	18.5	17.87	18.0	15.93	16.5	12.81	13.0
			56715	3697.5	18.28	18.5	17.81	18.0	16.15	16.5	13.20	13.5
		24	55265	3552.5	18.29	18.5	17.71	18.0	15.88	16.0	12.74	13.0
			55628	3588.8	18.16	18.5	17.52	18.0	15.98	16.5	12.95	13.5
			55990	3625	18.20	18.5	17.84	18.0	15.96	16.5	12.94	13.5
			56352	3661.2	18.25	18.5	17.72	18.0	16.04	16.5	13.06	13.5
			56715	3697.5	18.31	18.5	17.87	18.0	16.08	16.5	13.17	13.5
	12	0	55265	3552.5	17.29	17.5	16.36	16.5	14.92	15.5	12.91	13.5
			55628	3588.8	17.25	17.5	16.25	16.5	14.97	15.5	13.09	13.5
			55990	3625	17.27	17.5	16.28	16.5	15.10	15.5	13.10	13.5
			56352	3661.2	17.46	18.0	16.44	17.0	15.03	15.5	13.11	13.5
			56715	3697.5	17.48	18.0	16.52	17.0	15.20	15.5	12.21	12.5
		6	55265	3552.5	17.30	17.5	16.28	16.5	14.96	15.5	12.99	13.5
			55628	3588.8	17.29	17.5	16.28	16.5	15.02	15.5	13.05	13.5
			55990	3625	17.35	17.5	16.40	17.0	15.14	15.5	13.05	13.5
			56352	3661.2	17.38	17.5	16.31	16.5	15.07	15.5	13.08	13.5
			56715	3697.5	17.45	18.0	16.45	17.0	15.18	15.5	13.27	13.5
		13	55265	3552.5	17.32	17.5	16.31	16.5	14.98	15.5	13.02	13.5
			55628	3588.8	17.25	17.5	16.26	16.5	14.96	15.5	12.98	13.5
			55990	3625	17.26	17.5	16.33	16.5	15.06	15.5	13.08	13.5
			56352	3661.2	17.38	17.5	16.39	17.0	15.10	15.5	13.09	13.5
			56715	3697.5	17.56	18.0	16.54	17.0	15.21	15.5	13.29	13.5
	25	0	55265	3552.5	17.29	17.5	16.32	16.5	14.91	15.5	12.90	13.5
			55628	3588.8	17.32	17.5	16.32	16.5	14.99	15.5	12.95	13.5

			55990	3625	17.29	17.5	16.32	16.5	15.00	15.5	13.05	13.5
			56352	3661.2	17.44	18.0	16.40	17.0	15.04	15.5	12.98	13.5
			56715	3697.5	17.52	18.0	16.51	17.0	15.23	15.5	13.16	13.5

■ LTE Band 66 (MIMO1 ANT)

BW (MHz)	RB Size	RB Offset	CH.	Freq. (MHz)	QPSK		16-QAM		64-QAM		256-QAM	
					Average Power (dBm)	Max. Tune-up Power (dBm)	Average Power (dBm)	Max. Tune-up Power (dBm)	Average Power (dBm)	Max. Tune-up Power (dBm)	Average Power (dBm)	Max. Tune-up Power (dBm)
20	1	0	132072	1720	19.65	20.0	19.03	19.5	17.92	18.5	14.85	15.0
			132322	1745	19.74	20.0	18.92	19.5	17.78	18.0	14.90	15.5
			132572	1770	19.73	20.0	18.88	19.0	17.79	18.0	14.73	15.0
		49	132072	1720	19.57	20.0	18.74	19.0	17.85	18.0	15.04	15.5
			132322	1745	19.71	20.0	18.90	19.5	17.82	18.0	14.93	15.5
			132572	1770	19.45	20.0	18.87	19.0	17.98	18.5	14.86	15.0
		99	132072	1720	19.87	20.0	18.87	19.0	18.04	18.5	14.92	15.5
			132322	1745	19.88	20.0	19.02	19.5	17.92	18.5	14.91	15.5
			132572	1770	19.70	20.0	18.89	19.5	17.95	18.5	14.91	15.5
	50	0	132072	1720	18.79	19.0	17.54	18.0	16.71	17.0	14.80	15.0
			132322	1745	18.77	19.0	17.63	18.0	16.71	17.0	14.75	15.0
			132572	1770	18.77	19.0	17.61	18.0	16.75	17.0	14.67	15.0
		24	132072	1720	18.86	19.0	17.75	18.0	16.82	17.0	14.84	15.0
			132322	1745	18.80	19.0	17.65	18.0	16.74	17.0	14.81	15.0
			132572	1770	18.74	19.0	17.70	18.0	16.80	17.0	14.81	15.0
		50	132072	1720	18.83	19.0	17.75	18.0	16.82	17.0	14.80	15.0
			132322	1745	18.83	19.0	17.72	18.0	16.83	17.0	14.88	15.0
			132572	1770	18.73	19.0	17.70	18.0	16.75	17.0	14.69	15.0
	100	0	132072	1720	18.80	19.0	17.62	18.0	16.82	17.0	14.88	15.0
			132322	1745	18.73	19.0	17.70	18.0	16.80	17.0	14.80	15.0
			132572	1770	18.78	19.0	17.65	18.0	16.78	17.0	14.84	15.0

BW (MHz)	RB Size	RB Offset	CH.	Freq. (MHz)	QPSK		16-QAM		64-QAM		256-QAM	
					Average Power (dBm)	Max. Tune-up Power (dBm)	Average Power (dBm)	Max. Tune-up Power (dBm)	Average Power (dBm)	Max. Tune-up Power (dBm)	Average Power (dBm)	Max. Tune-up Power (dBm)
15	1	0	132047	1717.5	19.74	20.0	18.92	19.5	17.81	18.0	14.82	15.0
			132322	1745	19.75	20.0	18.85	19.0	17.75	18.0	14.75	15.0
			132597	1772.5	19.63	20.0	18.91	19.5	17.82	18.0	14.63	15.0
		37	132047	1717.5	19.35	19.5	19.03	19.5	17.92	18.5	14.96	15.5
			132322	1745	16.62	17.0	18.96	19.5	17.95	18.5	14.96	15.5
			132597	1772.5	19.63	20.0	18.75	19.0	18.16	18.5	14.90	15.5
		74	132047	1717.5	19.75	20.0	18.99	19.5	17.87	18.0	14.89	15.5
			132322	1745	19.75	20.0	19.05	19.5	17.88	18.0	14.85	15.0
			132597	1772.5	19.73	20.0	18.96	19.5	17.71	18.0	14.92	15.5
	36	0	132047	1717.5	18.64	19.0	17.55	18.0	16.61	17.0	14.79	15.0
			132322	1745	18.76	19.0	17.72	18.0	16.71	17.0	14.75	15.0
			132597	1772.5	18.76	19.0	17.58	18.0	16.64	17.0	14.57	15.0
		19	132047	1717.5	18.90	19.5	17.80	18.0	16.77	17.0	14.88	15.0
			132322	1745	18.71	19.0	17.69	18.0	16.69	17.0	14.88	15.0
			132597	1772.5	18.66	19.0	17.54	18.0	16.58	17.0	14.72	15.0
		39	132047	1717.5	18.86	19.0	17.75	18.0	16.79	17.0	14.85	15.0
			132322	1745	18.85	19.0	17.71	18.0	16.78	17.0	14.83	15.0
			132597	1772.5	18.84	19.0	17.65	18.0	16.75	17.0	14.79	15.0
	75	0	132047	1717.5	18.84	19.0	17.74	18.0	16.62	17.0	14.82	15.0
			132322	1745	18.72	19.0	17.69	18.0	16.78	17.0	14.73	15.0
			132597	1772.5	18.76	19.0	17.66	18.0	16.65	17.0	14.58	15.0

BW (MHz)	RB Size	RB Offset	CH.	Freq. (MHz)	QPSK		16-QAM		64-QAM		256-QAM	
					Average Power (dBm)	Max. Tune-up Power (dBm)	Average Power (dBm)	Max. Tune-up Power (dBm)	Average Power (dBm)	Max. Tune-up Power (dBm)	Average Power (dBm)	Max. Tune-up Power (dBm)
10	1	0	132022	1715	19.57	20.0	18.88	19.0	17.97	18.5	14.92	15.5
			132322	1745	19.59	20.0	18.96	19.5	17.81	18.0	14.90	15.5
			132622	1775	19.42	20.0	19.02	19.5	17.58	18.0	14.63	15.0
		24	132022	1715	19.72	20.0	19.02	19.5	17.79	18.0	14.83	15.0
			132322	1745	19.80	20.0	19.05	19.5	17.92	18.5	14.79	15.0
			132622	1775	19.73	20.0	18.89	19.5	17.99	18.5	14.92	15.5
		49	132022	1715	19.77	20.0	18.88	19.0	17.92	18.5	14.75	15.0
			132322	1745	19.71	20.0	18.94	19.5	17.91	18.5	14.92	15.5
			132622	1775	19.46	20.0	18.98	19.5	17.85	18.0	14.68	15.0
	25	0	132022	1715	18.88	19.0	17.72	18.0	16.79	17.0	14.82	15.0
			132322	1745	18.84	19.0	17.72	18.0	16.72	17.0	14.79	15.0
			132622	1775	18.68	19.0	17.66	18.0	16.65	17.0	14.73	15.0
		12	132022	1715	18.85	19.0	17.80	18.0	16.70	17.0	14.83	15.0
			132322	1745	18.77	19.0	17.77	18.0	16.76	17.0	14.78	15.0
			132622	1775	18.79	19.0	17.66	18.0	16.67	17.0	14.79	15.0
		25	132022	1715	18.81	19.0	17.68	18.0	16.75	17.0	14.82	15.0
			132322	1745	18.84	19.0	17.74	18.0	16.82	17.0	14.80	15.0
			132622	1775	18.67	19.0	17.67	18.0	16.71	17.0	14.72	15.0
	50	0	132022	1715	18.85	19.0	17.83	18.0	16.77	17.0	14.79	15.0
			132322	1745	18.72	19.0	17.69	18.0	16.70	17.0	14.79	15.0
			132622	1775	18.69	19.0	17.55	18.0	16.60	17.0	14.71	15.0

BW (MHz)	RB Size	RB Offset	CH.	Freq. (MHz)	QPSK		16-QAM		64-QAM		256-QAM	
					Average Power (dBm)	Max. Tune-up Power (dBm)	Average Power (dBm)	Max. Tune-up Power (dBm)	Average Power (dBm)	Max. Tune-up Power (dBm)	Average Power (dBm)	Max. Tune-up Power (dBm)
5	1	0	131997	1712.5	19.68	20.0	18.90	19.5	17.81	18.0	14.96	15.5
			132322	1745	19.69	20.0	18.84	19.0	17.87	18.0	14.84	15.0
			132647	1777.5	19.68	20.0	18.73	19.0	18.01	18.5	14.64	15.0
		12	131997	1712.5	19.73	20.0	18.58	19.0	17.96	18.5	15.06	15.5
			132322	1745	19.77	20.0	19.01	19.5	17.99	18.5	15.17	15.5
			132647	1777.5	19.72	20.0	18.91	19.5	17.74	18.0	14.82	15.0
		24	131997	1712.5	19.64	20.0	18.79	19.0	17.93	18.5	14.72	15.0
			132322	1745	19.70	20.0	18.96	19.5	17.92	18.5	14.97	15.5
			132647	1777.5	19.59	20.0	18.85	19.0	17.77	18.0	14.76	15.0
	12	0	131997	1712.5	18.73	19.0	17.72	18.0	16.73	17.0	14.84	15.0
			132322	1745	18.79	19.0	17.67	18.0	16.76	17.0	14.81	15.0
			132647	1777.5	18.79	19.0	17.61	18.0	16.71	17.0	14.73	15.0
		6	131997	1712.5	18.81	19.0	17.73	18.0	16.77	17.0	14.80	15.0
			132322	1745	18.75	19.0	17.76	18.0	16.83	17.0	14.84	15.0
			132647	1777.5	18.79	19.0	17.69	18.0	16.77	17.0	14.72	15.0
		13	131997	1712.5	18.75	19.0	17.71	18.0	16.68	17.0	14.75	15.0
			132322	1745	18.86	19.0	17.71	18.0	16.83	17.0	14.83	15.0
			132647	1777.5	18.69	19.0	17.65	18.0	16.73	17.0	14.76	15.0
	25	0	131997	1712.5	18.78	19.0	17.75	18.0	16.76	17.0	14.85	15.0
			132322	1745	18.81	19.0	17.71	18.0	16.75	17.0	14.76	15.0
			132647	1777.5	18.72	19.0	17.68	18.0	16.64	17.0	14.64	15.0

BW (MHz)	RB Size	RB Offset	CH.	Freq. (MHz)	QPSK		16-QAM		64-QAM		256-QAM	
					Average Power (dBm)	Max. Tune-up Power (dBm)	Average Power (dBm)	Max. Tune-up Power (dBm)	Average Power (dBm)	Max. Tune-up Power (dBm)	Average Power (dBm)	Max. Tune-up Power (dBm)
3	1	0	131987	1711.5	19.70	20.0	18.97	19.5	17.98	18.5	14.84	15.0
			132322	1745	19.73	20.0	18.76	19.0	17.91	18.5	14.76	15.0
			132657	1778.5	19.70	20.0	18.77	19.0	17.78	18.0	14.68	15.0
		7	131987	1711.5	19.67	20.0	19.01	19.5	17.93	18.5	14.85	15.0
			132322	1745	19.72	20.0	19.01	19.5	17.97	18.5	14.82	15.0
			132657	1778.5	19.66	20.0	18.82	19.0	17.75	18.0	14.82	15.0
		14	131987	1711.5	19.71	20.0	18.80	19.0	17.95	18.5	14.81	15.0
			132322	1745	19.71	20.0	18.98	19.5	17.82	18.0	14.84	15.0
			132657	1778.5	19.66	20.0	18.89	19.5	17.82	18.0	14.73	15.0
	8	0	131987	1711.5	18.80	19.0	17.79	18.0	16.77	17.0	14.81	15.0
			132322	1745	18.73	19.0	17.77	18.0	16.74	17.0	14.76	15.0
			132657	1778.5	18.68	19.0	17.75	18.0	16.72	17.0	14.76	15.0
		4	131987	1711.5	18.84	19.0	17.83	18.0	16.80	17.0	14.83	15.0
			132322	1745	18.77	19.0	17.78	18.0	16.78	17.0	14.89	15.5
			132657	1778.5	18.69	19.0	17.69	18.0	16.73	17.0	14.79	15.0
		7	131987	1711.5	18.76	19.0	17.75	18.0	16.71	17.0	14.83	15.0
			132322	1745	18.83	19.0	17.79	18.0	16.82	17.0	14.84	15.0
			132657	1778.5	18.75	19.0	17.75	18.0	16.75	17.0	14.71	15.0
	15	0	131987	1711.5	18.81	19.0	17.75	18.0	16.77	17.0	14.80	15.0
			132322	1745	18.78	19.0	17.73	18.0	16.71	17.0	14.82	15.0
			132657	1778.5	18.75	19.0	17.67	18.0	16.68	17.0	14.75	15.0

BW (MHz)	RB Size	RB Offset	CH.	Freq. (MHz)	QPSK		16-QAM		64-QAM		256-QAM	
					Average Power (dBm)	Max. Tune-up Power (dBm)	Average Power (dBm)	Max. Tune-up Power (dBm)	Average Power (dBm)	Max. Tune-up Power (dBm)	Average Power (dBm)	Max. Tune-up Power (dBm)
1.4	1	0	131979	1710.7	19.65	20.0	18.85	19.0	17.87	18.0	14.79	15.0
			132322	1745	19.65	20.0	18.85	19.0	17.84	18.0	15.01	15.5
			132665	1779.3	19.61	20.0	18.82	19.0	17.89	18.5	14.74	15.0
		2	131979	1710.7	19.76	20.0	18.86	19.0	17.82	18.0	14.88	15.0
			132322	1745	19.77	20.0	18.98	19.5	17.96	18.5	14.96	15.5
			132665	1779.3	19.61	20.0	18.81	19.0	17.79	18.0	14.78	15.0
		5	131979	1710.7	19.61	20.0	18.80	19.0	17.82	18.0	14.94	15.5
			132322	1745	19.70	20.0	18.99	19.5	17.83	18.0	14.93	15.5
			132665	1779.3	19.55	20.0	18.77	19.0	17.74	18.0	14.72	15.0
	3	0	131979	1710.7	19.67	20.0	18.65	19.0	17.75	18.0	14.86	15.0
			132322	1745	19.74	20.0	18.65	19.0	17.87	18.0	14.94	15.5
			132665	1779.3	19.63	20.0	18.60	19.0	17.76	18.0	14.76	15.0
		1	131979	1710.7	19.74	20.0	18.66	19.0	17.83	18.0	14.88	15.0
			132322	1745	19.73	20.0	18.72	19.0	17.91	18.5	14.92	15.5
			132665	1779.3	19.63	20.0	18.54	19.0	17.75	18.0	14.77	15.0
		3	131979	1710.7	19.67	20.0	18.65	19.0	17.74	18.0	14.81	15.0
			132322	1745	19.71	20.0	18.72	19.0	17.80	18.0	14.89	15.5
			132665	1779.3	19.60	20.0	18.51	19.0	17.72	18.0	14.80	15.0
	6	0	131979	1710.7	18.75	19.0	17.70	18.0	16.73	17.0	14.81	15.0
			132322	1745	18.80	19.0	17.80	18.0	16.70	17.0	14.73	15.0
			132665	1779.3	18.66	19.0	17.67	18.0	16.56	17.0	14.63	15.0

■ LTE Band 71 (MAIN ANT)

BW (MHz)	RB Size	RB Offset	CH.	Freq. (MHz)	QPSK		16-QAM		64-QAM		256-QAM	
					Average Power (dBm)	Max. Tune-up Power (dBm)	Average Power (dBm)	Max. Tune-up Power (dBm)	Average Power (dBm)	Max. Tune-up Power (dBm)	Average Power (dBm)	Max. Tune-up Power (dBm)
20	1	0	133222	673	23.02	23.5	22.26	22.5	21.14	21.5	18.17	18.5
			133322	683	22.91	23.5	22.37	22.5	21.28	21.5	18.31	18.5
			133372	688	23.01	23.5	22.21	22.5	21.52	22.0	18.21	18.5
		49	133222	673	22.85	23.0	22.06	22.5	21.02	21.5	18.12	18.5
			133322	683	22.86	23.0	22.35	22.5	21.21	21.5	18.38	18.5
			133372	688	22.98	23.5	22.20	22.5	21.54	22.0	18.33	18.5
		99	133222	673	22.88	23.0	22.08	22.5	21.04	21.5	18.13	18.5
			133322	683	22.78	23.0	22.31	22.5	21.22	21.5	18.31	18.5
			133372	688	22.85	23.0	22.10	22.5	21.44	22.0	18.24	18.5
	50	0	133222	673	22.01	22.5	20.96	21.5	20.01	20.5	18.01	18.5
			133322	683	21.95	22.5	21.03	21.5	19.98	20.5	17.95	18.5
			133372	688	21.96	22.5	20.91	21.5	19.98	20.5	17.89	18.5
		24	133222	673	21.96	22.5	20.92	21.5	20.02	20.5	18.01	18.5
			133322	683	21.98	22.5	20.97	21.5	20.01	20.5	17.98	18.5
			133372	688	21.92	22.5	20.91	21.5	19.97	20.5	17.94	18.5
		50	133222	673	21.93	22.5	20.93	21.5	19.92	20.5	18.03	18.5
			133322	683	21.95	22.5	20.95	21.5	20.01	20.5	18.03	18.5
			133372	688	21.96	22.5	20.92	21.5	20.05	20.5	17.98	18.5
	100	0	133222	673	21.94	22.5	20.94	21.5	19.97	20.5	18.02	18.5
			133322	683	21.91	22.5	20.93	21.5	19.93	20.5	17.96	18.5
			133372	688	21.99	22.5	20.98	21.5	20.02	20.5	18.03	18.5

BW (MHz)	RB Size	RB Offset	CH.	Freq. (MHz)	QPSK		16-QAM		64-QAM		256-QAM	
					Average Power (dBm)	Max. Tune-up Power (dBm)	Average Power (dBm)	Max. Tune-up Power (dBm)	Average Power (dBm)	Max. Tune-up Power (dBm)	Average Power (dBm)	Max. Tune-up Power (dBm)
15	1	0	133197	670.5	22.92	23.5	22.31	22.5	21.53	22.0	17.91	18.5
			133297	680.5	22.93	23.5	22.23	22.5	21.05	21.5	18.39	19.0
			133397	690.5	22.87	23.0	22.32	22.5	20.81	21.0	17.93	18.5
		37	133197	670.5	22.72	23.0	22.13	22.5	21.38	21.5	17.79	18.0
			133297	680.5	22.84	23.0	22.13	22.5	21.03	21.5	18.40	19.0
			133397	690.5	22.79	23.0	22.19	22.5	20.76	21.0	17.97	18.5
		74	133197	670.5	22.72	23.0	22.12	22.5	21.36	21.5	17.80	18.0
			133297	680.5	22.87	23.0	22.14	22.5	21.11	21.5	18.43	19.0
			133397	690.5	22.77	23.0	22.07	22.5	20.77	21.0	17.91	18.5
	36	0	133197	670.5	21.98	22.5	20.96	21.5	20.03	20.5	18.01	18.5
			133297	680.5	21.97	22.5	21.05	21.5	19.95	20.5	17.96	18.5
			133397	690.5	21.96	22.5	20.91	21.5	20.02	20.5	18.02	18.5
		19	133197	670.5	22.01	22.5	20.92	21.5	20.06	20.5	17.98	18.5
			133297	680.5	21.95	22.5	20.98	21.5	19.92	20.5	17.90	18.5
			133397	690.5	21.88	22.0	20.97	21.5	19.96	20.5	17.96	18.5
		39	133197	670.5	21.89	22.5	20.88	21.0	20.07	20.5	17.96	18.5
			133297	680.5	21.92	22.5	20.87	21.0	19.91	20.5	17.90	18.5
			133397	690.5	21.89	22.5	20.89	21.5	19.98	20.5	17.94	18.5
	75	0	133197	670.5	21.93	22.5	20.96	21.5	20.04	20.5	17.97	18.5
			133297	680.5	21.91	22.5	20.97	21.5	19.92	20.5	17.94	18.5
			133397	690.5	21.97	22.5	20.98	21.5	19.96	20.5	17.98	18.5

BW (MHz)	RB Size	RB Offset	CH.	Freq. (MHz)	QPSK		16-QAM		64-QAM		256-QAM	
					Average Power (dBm)	Max. Tune-up Power (dBm)	Average Power (dBm)	Max. Tune-up Power (dBm)	Average Power (dBm)	Max. Tune-up Power (dBm)	Average Power (dBm)	Max. Tune-up Power (dBm)
10	1	0	133172	668	22.93	23.5	22.34	22.5	21.65	22.0	17.96	18.5
			133297	680.5	22.72	23.0	22.28	22.5	21.07	21.5	18.22	18.5
			133422	693	22.82	23.0	22.21	22.5	20.82	21.0	17.91	18.5
		24	133172	668	22.75	23.0	22.18	22.5	21.46	22.0	17.65	18.0
			133297	680.5	22.78	23.0	22.27	22.5	21.09	21.5	18.27	18.5
			133422	693	22.73	23.0	22.15	22.5	20.84	21.0	17.93	18.5
		49	133172	668	22.76	23.0	22.16	22.5	21.52	22.0	17.73	18.0
			133297	680.5	22.75	23.0	22.29	22.5	21.11	21.5	18.22	18.5
			133422	693	22.69	23.0	22.11	22.5	20.72	21.0	17.90	18.5
	25	0	133172	668	21.95	22.5	20.94	21.5	19.96	20.5	18.09	18.5
			133297	680.5	21.91	22.5	20.96	21.5	19.83	20.0	17.98	18.5
			133422	693	21.86	22.0	20.90	21.5	19.95	20.5	17.98	18.5
		12	133172	668	21.93	22.5	20.96	21.5	19.93	20.5	18.02	18.5
			133297	680.5	21.92	22.5	20.97	21.5	19.82	20.0	17.91	18.5
			133422	693	21.92	22.5	20.98	21.5	20.03	20.5	17.92	18.5
		25	133172	668	21.85	22.0	20.91	21.5	19.85	20.0	17.94	18.5
			133297	680.5	21.93	22.5	20.92	21.5	19.86	20.0	17.88	18.0
			133422	693	21.87	22.0	20.92	21.5	19.94	20.5	17.89	18.5
	50	0	133172	668	21.92	22.5	20.96	21.5	19.88	20.0	17.89	18.5
			133297	680.5	21.86	22.0	20.95	21.5	19.88	20.0	17.90	18.5
			133422	693	21.83	22.0	20.83	21.0	19.88	20.0	17.94	18.5

BW (MHz)	RB Size	RB Offset	CH.	Freq. (MHz)	QPSK		16-QAM		64-QAM		256-QAM	
					Average Power (dBm)	Max. Tune-up Power (dBm)	Average Power (dBm)	Max. Tune-up Power (dBm)	Average Power (dBm)	Max. Tune-up Power (dBm)	Average Power (dBm)	Max. Tune-up Power (dBm)
5	1	0	133147	665.5	23.02	23.5	22.31	22.5	21.61	22.0	18.44	19.0
			133297	680.5	22.88	23.0	22.27	22.5	21.28	21.5	18.32	18.5
			133447	695.5	22.85	23.0	22.27	22.5	21.02	21.5	18.40	19.0
		12	133147	665.5	22.99	23.5	22.15	22.5	21.51	22.0	18.26	18.5
			133297	680.5	22.79	23.0	22.18	22.5	21.26	21.5	18.20	18.5
			133447	695.5	22.75	23.0	22.19	22.5	21.05	21.5	18.33	18.5
		24	133147	665.5	22.84	23.0	22.15	22.5	21.45	22.0	18.19	18.5
			133297	680.5	22.81	23.0	22.23	22.5	21.25	21.5	18.23	18.5
			133447	695.5	22.69	23.0	22.15	22.5	20.93	21.5	18.31	18.5
	12	0	133147	665.5	22.04	22.5	21.03	21.5	20.14	20.5	17.95	18.5
			133297	680.5	21.90	22.5	21.03	21.5	19.92	20.5	17.90	18.5
			133447	695.5	21.93	22.5	20.96	21.5	19.99	20.5	17.97	18.5
		6	133147	665.5	21.96	22.5	20.94	21.5	20.07	20.5	17.92	18.5
			133297	680.5	21.84	22.0	20.95	21.5	19.83	20.0	17.94	18.5
			133447	695.5	21.87	22.0	20.94	21.5	19.88	20.0	17.94	18.5
		13	133147	665.5	21.88	22.0	20.90	21.5	19.97	20.5	17.83	18.0
			133297	680.5	21.86	22.0	20.93	21.5	19.91	20.5	17.87	18.0
			133447	695.5	21.89	22.5	20.89	21.5	19.94	20.5	17.91	18.5
	25	0	133147	665.5	21.96	22.5	20.97	21.5	19.93	20.5	17.98	18.5
			133297	680.5	21.86	22.0	20.89	21.5	19.76	20.0	17.88	18.0
			133447	695.5	21.88	22.0	20.88	21.0	19.83	20.0	17.89	18.5

LTE Uplink CA Power

CA config.	Mode	PCC					SCC					CA Power			
		BW (MHz)	RB Size	RB Offset	CH.	Freq. (MHz)	BW (MHz)	RB Size	RB Offset	CH.	Freq. (MHz)	PCC Average Power (dBm)	SCC Average Power (dBm)	Total Average Power (dBm)	Max. Tune-up Power (dBm)
CA_2C	QPSK	20	1	99	18700	1860	20	1	0	18898	1879.8	19.18	12.22	19.98	20.5
		20	1	99	18801	1870.1	20	1	0	18999	1889.9	19.33	12.30	20.12	20.5
		20	1	99	18902	1880.2	20	1	0	19100	1900	19.25	12.32	20.05	20.5
CA_5B	QPSK	10	1	49	20450	829	10	1	0	20549	838.9	22.15	15.43	22.99	23.5
		10	1	49	20476	831.6	10	1	0	20575	841.5	22.16	15.33	22.98	23.5
		10	1	49	20501	834.1	10	1	0	20600	844	22.08	15.32	22.91	23.5
CA_66C	QPSK	20	1	99	132072	1720	20	1	0	132270	1739.8	18.90	11.98	19.70	20.0
		20	1	99	132323	1745.1	20	1	0	132521	1764.9	18.99	12.21	19.82	20.0
		20	1	99	132374	1750.2	20	1	0	132572	1770	18.94	11.94	19.73	20.0

■ NR n41 and n41 HPUE (AUX ANT)

BW (MHz)	Mode	Modulation	RB Size	RB Offset	CH.	Freq. (MHz)	Average Power (dBm)	Max. Tune-up Power (dBm)
100	DFS-s OFDM	PI/2 BPSK	1	1	518598	2592.99	22.83	23.0
				137	518598	2592.99	23.24	23.5
				271	518598	2592.99	23.58	24.0
			135	69	518598	2592.99	23.38	23.5
			270	0	518598	2592.99	23.15	23.5
		QPSK	1	1	518598	2592.99	22.90	23.5
				137	518598	2592.99	23.26	23.5
				271	518598	2592.99	23.55	24.0
			135	69	518598	2592.99	23.22	23.5
			270	0	518598	2592.99	23.23	23.5
		16QAM	1	1	518598	2592.99	23.17	23.5
		64QAM	1	1	518598	2592.99	23.01	23.5
		256QAM	1	1	518598	2592.99	21.52	22.0
	CP-OFDM	QPSK	1	1	518598	2592.99	22.83	23.5
90	DFS-s OFDM	PI/2 BPSK	1	1	518598	2592.99	22.83	23.0
				122	518598	2592.99	23.08	23.5
				243	518598	2592.99	23.49	24.0
			120	60	518598	2592.99	23.30	23.5
			243	0	518598	2592.99	23.27	23.5
		QPSK	1	1	518598	2592.99	22.84	23.0
				122	518598	2592.99	23.06	23.5
				243	518598	2592.99	23.46	24.0
			120	60	518598	2592.99	23.30	23.5
			243	0	518598	2592.99	23.31	23.5
		16QAM	1	1	518598	2592.99	23.04	23.5
		64QAM	1	1	518598	2592.99	22.89	23.5
		256QAM	1	1	518598	2592.99	21.53	22.0
	CP-OFDM	QPSK	1	1	518598	2592.99	22.76	23.5

BW (MHz)	Mode	Modulation	RB Size	RB Offset	CH.	Freq. (MHz)	Average Power (dBm)	Max. Tune-up Power (dBm)
80	DFS-s OFDM	PI/2 BPSK	1	1	518598	2592.99	22.99	23.5
				108	518598	2592.99	23.19	23.5
				215	518598	2592.99	23.55	24.0
			108	54	518598	2592.99	23.31	23.5
			216	0	518598	2592.99	23.31	23.5
		QPSK	1	1	518598	2592.99	23.03	23.5
				108	518598	2592.99	23.31	23.5
				215	518598	2592.99	23.60	24.0
			108	54	518598	2592.99	23.33	23.5
			216	0	518598	2592.99	23.28	23.5
		16QAM	1	1	518598	2592.99	23.12	23.5
		64QAM	1	1	518598	2592.99	23.07	23.5
		256QAM	1	1	518598	2592.99	21.59	22.0
	CP-OFDM	QPSK	1	1	518598	2592.99	22.91	23.5
60	DFS-s OFDM	PI/2 BPSK	1	1	518598	2592.99	22.58	23.0
				80	518598	2592.99	22.89	23.0
				160	518598	2592.99	23.35	23.5
			81	40	518598	2592.99	23.12	23.5
			162	0	518598	2592.99	23.03	23.5
		QPSK	1	1	518598	2592.99	22.62	23.0
				80	518598	2592.99	22.99	23.5
				160	518598	2592.99	23.35	23.5
			81	40	518598	2592.99	23.00	23.5
			162	0	518598	2592.99	23.06	23.5
		16QAM	1	1	518598	2592.99	22.62	23.0
		64QAM	1	1	518598	2592.99	22.81	23.0
		256QAM	1	1	518598	2592.99	21.24	21.5
	CP-OFDM	QPSK	1	1	518598	2592.99	22.56	23.0

BW (MHz)	Mode	Modulation	RB Size	RB Offset	CH.	Freq. (MHz)	Average Power (dBm)	Max. Tune-up Power (dBm)
50	DFS-s OFDM	PI/2 BPSK	1	1	518598	2592.99	22.21	22.5
				66	518598	2592.99	22.99	23.5
				131	518598	2592.99	23.30	23.5
			64	32	518598	2592.99	23.09	23.5
			128	0	518598	2592.99	23.07	23.5
		QPSK	1	1	518598	2592.99	22.34	22.5
				66	518598	2592.99	22.93	23.5
				131	518598	2592.99	23.42	24.0
			64	32	518598	2592.99	23.02	23.5
			128	0	518598	2592.99	23.05	23.5
		16QAM	1	1	518598	2592.99	22.65	23.0
		64QAM	1	1	518598	2592.99	22.71	23.0
		256QAM	1	1	518598	2592.99	21.16	21.5
	CP-OFDM	QPSK	1	1	518598	2592.99	22.24	23.0

BW (MHz)	Mode	Modulation	RB Size	RB Offset	CH.	Freq. (MHz)	Average Power (dBm)	Max. Tune-up Power (dBm)
40	DFS-s OFDM	PI/2 BPSK	1	1	503202	2516.01	22.38	22.5
					510900	2554.5	22.43	23.0
					518598	2592.99	22.83	23.0
					526296	2631.48	23.34	23.5
					533994	2669.97	23.36	23.5
				52	503202	2516.01	22.24	22.5
					510900	2554.5	22.52	23.0
					518598	2592.99	23.08	23.5
					526296	2631.48	23.41	24.0
					533994	2669.97	23.01	23.5
				104	503202	2516.01	22.50	23.0
					510900	2554.5	22.69	23.0
					518598	2592.99	23.40	24.0
					526296	2631.48	23.42	24.0
					533994	2669.97	23.14	23.5
			50	25	503202	2516.01	22.41	23.0
					510900	2554.5	22.70	23.0
					518598	2592.99	23.34	23.5
					526296	2631.48	23.50	24.0
					533994	2669.97	23.22	23.5
			100	0	503202	2516.01	22.42	23.0
					510900	2554.5	22.67	23.0
					518598	2592.99	23.25	23.5
					526296	2631.48	23.52	24.0
					533994	2669.97	23.27	23.5
		QPSK	1	1	503202	2516.01	22.35	22.5
					510900	2554.5	22.48	23.0
					518598	2592.99	22.96	23.5
					526296	2631.48	23.33	23.5
					533994	2669.97	23.52	24.0
				52	503202	2516.01	22.32	22.5
					510900	2554.5	22.67	23.0
					518598	2592.99	23.10	23.5
					526296	2631.48	23.46	24.0

					533994	2669.97	23.17	23.5
					503202	2516.01	22.39	22.5
					510900	2554.5	22.70	23.0
					518598	2592.99	23.47	24.0
					526296	2631.48	23.53	24.0
					533994	2669.97	23.28	23.5
				50	503202	2516.01	22.36	22.5
					510900	2554.5	22.72	23.0
					518598	2592.99	23.24	23.5
					526296	2631.48	23.43	24.0
					533994	2669.97	23.24	23.5
				100	503202	2516.01	22.47	23.0
					510900	2554.5	22.73	23.0
					518598	2592.99	23.21	23.5
					526296	2631.48	23.46	24.0
					533994	2669.97	23.29	23.5
		16QAM	1	1	503202	2516.01	22.52	23.0
					510900	2554.5	22.82	23.0
					518598	2592.99	23.06	23.5
					526296	2631.48	23.41	24.0
					533994	2669.97	23.08	23.5
		64QAM	1	1	503202	2516.01	22.42	23.0
					510900	2554.5	22.63	23.0
					518598	2592.99	22.73	23.0
					526296	2631.48	23.49	24.0
					533994	2669.97	22.95	23.5
		256QAM	1	1	503202	2516.01	21.00	21.5
					510900	2554.5	21.23	21.5
					518598	2592.99	21.37	21.5
					526296	2631.48	21.81	22.0
					533994	2669.97	21.29	21.5
	CP-OFDM	QPSK	1	1	503202	2516.01	22.37	22.5
					510900	2554.5	22.47	23.0
					518598	2592.99	22.93	23.5
					526296	2631.48	23.31	24.0
					533994	2669.97	23.28	23.5

BW (MHz)	Mode	Modulation	RB Size	RB Offset	CH.	Freq. (MHz)	Average Power (dBm)	Max. Tune-up Power (dBm)
30	DFS-s OFDM	PI/2 BPSK	1	1	502200	2511	23.28	23.5
					510396	2551.98	21.96	22.5
					518598	2592.99	22.30	22.5
					526800	2634	23.20	23.5
					534996	2674.98	23.35	23.5
				38	502200	2511	22.38	22.5
					510396	2551.98	23.01	23.5
					518598	2592.99	22.94	23.5
					526800	2634	23.08	23.5
					534996	2674.98	23.11	23.5
				76	502200	2511	22.60	23.0
					510396	2551.98	23.21	23.5
					518598	2592.99	23.13	23.5
					526800	2634	23.30	23.5
					534996	2674.98	23.10	23.5
			36	18	502200	2511	22.45	23.0
					510396	2551.98	23.07	23.5
					518598	2592.99	23.01	23.5
					526800	2634	23.30	23.5
					534996	2674.98	23.26	23.5
			75	0	502200	2511	22.39	22.5
					510396	2551.98	23.09	23.5
					518598	2592.99	23.08	23.5
					526800	2634	23.37	23.5
					534996	2674.98	23.31	23.5
		QPSK	1	1	502200	2511	22.45	23.0
					510396	2551.98	22.93	23.5
					518598	2592.99	22.34	22.5
					526800	2634	23.39	23.5
					534996	2674.98	23.36	23.5
				38	502200	2511	22.28	22.5
					510396	2551.98	22.21	22.5
					518598	2592.99	22.34	22.5
					526800	2634	23.27	23.5

					534996	2674.98	23.18	23.5
					502200	2511	22.57	23.0
					510396	2551.98	23.01	23.5
					518598	2592.99	23.19	23.5
					526800	2634	23.52	24.0
					534996	2674.98	23.30	23.5
				36	502200	2511	22.52	23.0
					510396	2551.98	23.13	23.5
					518598	2592.99	23.06	23.5
					526800	2634	23.36	23.5
					534996	2674.98	23.27	23.5
			75	0	502200	2511	22.48	23.0
					510396	2551.98	23.13	23.5
					518598	2592.99	23.06	23.5
					526800	2634	23.29	23.5
					534996	2674.98	23.31	23.5
		16QAM	1	1	502200	2511	21.93	22.5
					510396	2551.98	23.02	23.5
					518598	2592.99	22.46	23.0
					526800	2634	23.25	23.5
					534996	2674.98	23.41	24.0
		64QAM	1	1	502200	2511	21.72	22.0
					510396	2551.98	22.62	23.0
					518598	2592.99	22.41	23.0
					526800	2634	22.96	23.5
					534996	2674.98	22.72	23.0
		256QAM	1	1	502200	2511	21.02	21.5
					510396	2551.98	21.51	22.0
					518598	2592.99	21.38	21.5
					526800	2634	21.10	21.5
					534996	2674.98	21.48	22.0
	CP-OFDM	QPSK	1	1	502200	2511	22.49	23.0
					510396	2551.98	22.93	23.5
					518598	2592.99	22.94	23.5
					526800	2634	23.24	23.5
					534996	2674.98	23.33	23.5

BW (MHz)	Mode	Modulation	RB Size	RB Offset	CH.	Freq. (MHz)	Average Power (dBm)	Max. Tune-up Power (dBm)
20	DFS-s OFDM	PI/2 BPSK	1	1	501204	2506.02	21.70	22.0
					509898	2549.49	22.21	22.5
					518598	2592.99	22.82	23.0
					527298	2636.49	23.01	23.5
					535998	2679.99	22.83	23.0
				25	501204	2506.02	21.97	22.5
					509898	2549.49	22.25	22.5
					518598	2592.99	22.84	23.0
					527298	2636.49	22.87	23.0
					535998	2679.99	22.66	23.0
				49	501204	2506.02	22.11	22.5
					509898	2549.49	22.44	23.0
					518598	2592.99	23.01	23.5
					527298	2636.49	22.92	23.5
					535998	2679.99	22.62	23.0
			25	12	501204	2506.02	22.13	22.5
					509898	2549.49	22.33	22.5
					518598	2592.99	22.97	23.5
					527298	2636.49	23.01	23.5
					535998	2679.99	22.88	23.0
			50	0	501204	2506.02	22.20	22.5
					509898	2549.49	22.35	22.5
					518598	2592.99	23.03	23.5
					527298	2636.49	22.98	23.5
					535998	2679.99	22.85	23.0
		QPSK	1	1	501204	2506.02	21.59	22.0
					509898	2549.49	21.65	22.0
					518598	2592.99	22.36	22.5
					527298	2636.49	22.54	23.0
					535998	2679.99	22.93	23.5
				25	501204	2506.02	21.94	22.5
					509898	2549.49	22.13	22.5
					518598	2592.99	22.84	23.0
					527298	2636.49	22.87	23.0

					535998	2679.99	22.74	23.0
				49	501204	2506.02	22.09	22.5
					509898	2549.49	22.33	22.5
					518598	2592.99	23.00	23.5
					527298	2636.49	22.91	23.5
					535998	2679.99	22.72	23.0
			25	12	501204	2506.02	22.07	22.5
					509898	2549.49	22.34	22.5
					518598	2592.99	22.98	23.5
					527298	2636.49	23.02	23.5
					535998	2679.99	22.85	23.0
			50	0	501204	2506.02	22.25	22.5
					509898	2549.49	22.36	22.5
					518598	2592.99	22.98	23.5
					527298	2636.49	23.01	23.5
					535998	2679.99	22.87	23.0
		16QAM	1	1	501204	2506.02	22.16	22.5
					509898	2549.49	22.20	22.5
					518598	2592.99	22.89	23.0
					527298	2636.49	22.57	23.0
					535998	2679.99	22.97	23.5
		64QAM	1	1	501204	2506.02	22.15	22.5
					509898	2549.49	22.41	23.0
					518598	2592.99	22.69	23.0
					527298	2636.49	22.34	22.5
					535998	2679.99	22.76	23.0
		256QAM	1	1	501204	2506.02	20.66	21.0
					509898	2549.49	20.83	21.0
					518598	2592.99	21.38	21.5
					527298	2636.49	21.63	22.0
					535998	2679.99	21.45	22.0
	CP-OFDM	QPSK	1	1	501204	2506.02	22.15	22.5
					509898	2549.49	22.29	22.5
					518598	2592.99	22.75	23.0
					527298	2636.49	23.01	23.5
					535998	2679.99	22.82	23.0

■ NR n41 MIMO (AUX ANT + MIMO1 ANT)

BW (MHz)	Mode	Modulation	RB Size	RB Offset	CH.	Freq. (MHz)	Average Power (dBm)		Total Average Power (dBm)	Max. Tune-up Power (dBm)
							AUX	MIMO1		
100	CP-OFDM	QPSK	1	1	518598	2592.99	19.95	19.84	22.91	23.5
				137	518598	2592.99	19.77	19.91	22.85	23.0
				271	518598	2592.99	19.61	20.32	22.99	23.5
			135	69	518598	2592.99	19.97	20.04	23.02	23.5
			270	0	518598	2592.99	19.96	20.08	23.03	23.5
		16QAM	1	1	518598	2592.99	20.38	20.03	23.22	23.5
		64QAM	1	1	518598	2592.99	19.64	19.69	22.68	23.0
		256QAM	1	1	518598	2592.99	16.57	16.40	19.50	20.0
90	CP-OFDM	QPSK	1	1	518598	2592.99	19.99	19.71	22.86	23.0
				122	518598	2592.99	19.89	19.82	22.87	23.0
				243	518598	2592.99	19.66	20.35	23.03	23.5
			120	60	518598	2592.99	19.73	19.88	22.82	23.0
			243	0	518598	2592.99	19.77	19.99	22.89	23.5
		16QAM	1	1	518598	2592.99	19.73	19.95	22.85	23.0
		64QAM	1	1	518598	2592.99	19.69	19.62	22.67	23.0
		256QAM	1	1	518598	2592.99	16.63	16.14	19.40	20.0
80	CP-OFDM	QPSK	1	1	518598	2592.99	19.67	19.88	22.79	23.0
				108	518598	2592.99	19.67	19.88	22.79	23.0
				215	518598	2592.99	19.53	20.33	22.96	23.5
			108	54	518598	2592.99	19.77	20.02	22.91	23.5
			216	0	518598	2592.99	19.72	20.04	22.89	23.5
		16QAM	1	1	518598	2592.99	19.72	20.06	22.90	23.5
		64QAM	1	1	518598	2592.99	19.40	19.28	22.35	22.5
		256QAM	1	1	518598	2592.99	16.43	16.35	19.40	20.0
60	CP-OFDM	QPSK	1	1	518598	2592.99	19.77	19.93	22.86	23.0
				80	518598	2592.99	19.88	19.75	22.83	23.0
				160	518598	2592.99	19.54	20.53	23.07	23.5
			81	40	518598	2592.99	19.82	20.04	22.94	23.5
			162	0	518598	2592.99	19.86	20.08	22.98	23.5
		16QAM	1	1	518598	2592.99	20.43	19.76	23.12	23.5
		64QAM	1	1	518598	2592.99	19.35	19.05	22.21	22.5
		256QAM	1	1	518598	2592.99	16.13	16.03	19.09	19.5

BW (MHz)	Mode	Modulation	RB Size	RB Offset	CH.	Freq. (MHz)	Average Power (dBm)		Total Average Power (dBm)	Max. Tune-up Power (dBm)
							AUX	MIMO1		
50	CP-OFDM	QPSK	1	1	518598	2592.99	19.82	19.61	22.73	23.0
				66	518598	2592.99	19.62	19.98	22.81	23.0
				131	518598	2592.99	19.62	20.37	23.02	23.5
			64	32	518598	2592.99	19.90	19.92	22.92	23.5
			128	0	518598	2592.99	19.88	19.97	22.94	23.5
		16QAM	1	1	518598	2592.99	20.55	19.70	23.16	23.5
		64QAM	1	1	518598	2592.99	19.46	19.25	22.37	22.5
		256QAM	1	1	518598	2592.99	16.30	16.29	19.31	19.5

BW (MHz)	Mode	Modulation	RB Size	RB Offset	CH.	Freq. (MHz)	Average Power (dBm)		Total Average Power (dBm)	Max. Tune-up Power (dBm)
							AUX	MIMO1		
40	CP-OFDM	QPSK	1	1	503202	2516.01	19.83	19.37	22.62	23.0
					510900	2554.5	18.83	18.90	21.88	22.0
					518598	2592.99	18.85	18.90	21.89	22.0
					526296	2631.48	18.86	19.38	22.14	22.5
					533994	2669.97	18.46	19.21	21.86	22.0
				52	503202	2516.01	18.88	18.70	21.80	22.0
					510900	2554.5	18.56	18.48	21.53	22.0
					518598	2592.99	18.75	18.95	21.86	22.0
					526296	2631.48	18.68	19.75	22.26	22.5
					533994	2669.97	18.33	19.03	21.70	22.0
				104	503202	2516.01	18.74	18.66	21.71	22.0
					510900	2554.5	18.95	18.72	21.85	22.0
					518598	2592.99	18.81	19.39	22.12	22.5
					526296	2631.48	18.82	19.46	22.16	22.5
					533994	2669.97	18.86	19.57	22.24	22.5
			50	25	503202	2516.01	19.88	19.57	22.74	23.0
					510900	2554.5	19.87	19.55	22.72	23.0
					518598	2592.99	20.00	19.99	23.01	23.5
					526296	2631.48	19.77	20.37	23.09	23.5
					533994	2669.97	19.48	20.15	22.84	23.0
			100	0	503202	2516.01	19.84	19.65	22.76	23.0
					510900	2554.5	19.87	19.70	22.80	23.0
					518598	2592.99	20.02	20.08	23.06	23.5
					526296	2631.48	19.82	20.45	23.16	23.5
					533994	2669.97	19.52	20.28	22.93	23.5
		16QAM	1	1	503202	2516.01	20.02	19.76	22.90	23.5
					510900	2554.5	20.20	19.87	23.05	23.5
					518598	2592.99	20.03	19.95	23.00	23.5
					526296	2631.48	19.82	20.45	23.16	23.5
					533994	2669.97	19.90	20.37	23.15	23.5
		64QAM	1	1	503202	2516.01	19.14	19.24	22.20	22.5
					510900	2554.5	19.31	19.43	22.38	22.5
					518598	2592.99	19.29	19.50	22.41	23.0

					526296	2631.48	18.82	20.04	22.48	23.0
					533994	2669.97	19.21	19.98	22.62	23.0
		256QAM	1	1	503202	2516.01	16.46	16.10	19.29	19.5
					510900	2554.5	16.48	16.20	19.35	19.5
					518598	2592.99	16.68	16.33	19.52	20.0
					526296	2631.48	16.36	16.66	19.52	20.0
					533994	2669.97	16.14	16.84	19.51	20.0

BW (MHz)	Mode	Modulation	RB Size	RB Offset	CH.	Freq. (MHz)	Average Power (dBm)		Total Average Power (dBm)	Max. Tune-up Power (dBm)
							AUX	MIMO1		
30	CP-OFDM	QPSK	1	1	502200	2511	19.83	19.55	22.70	23.0
					510396	2551.98	19.91	19.63	22.78	23.0
					518598	2592.99	19.84	19.93	22.90	23.5
					526800	2634	19.58	20.36	23.00	23.5
					534996	2674.98	19.42	20.30	22.89	23.5
				38	502200	2511	19.48	19.25	22.38	22.5
					510396	2551.98	19.58	19.57	22.59	23.0
					518598	2592.99	19.56	19.74	22.66	23.0
					526800	2634	19.33	20.13	22.76	23.0
					534996	2674.98	19.17	20.05	22.64	23.0
				76	502200	2511	19.78	19.57	22.69	23.0
					510396	2551.98	19.82	19.77	22.81	23.0
					518598	2592.99	19.76	20.52	23.17	23.5
					526800	2634	19.48	20.20	22.87	23.0
					534996	2674.98	19.45	20.13	22.81	23.0
			36	18	502200	2511	19.60	19.31	22.47	23.0
					510396	2551.98	19.77	19.49	22.64	23.0
					518598	2592.99	19.73	19.85	22.80	23.0
					526800	2634	19.51	20.20	22.88	23.0
					534996	2674.98	19.28	20.05	22.69	23.0
			75	0	502200	2511	19.61	19.51	22.57	23.0
					510396	2551.98	19.67	19.54	22.62	23.0
					518598	2592.99	19.84	19.87	22.87	23.0
					526800	2634	19.52	20.25	22.91	23.5
					534996	2674.98	19.30	20.15	22.76	23.0
		16QAM	1	1	502200	2511	19.71	19.54	22.64	23.0
					510396	2551.98	19.76	19.70	22.74	23.0
					518598	2592.99	19.81	19.93	22.88	23.0
					526800	2634	19.74	20.34	23.06	23.5
					534996	2674.98	19.36	20.21	22.82	23.0
		64QAM	1	1	502200	2511	19.28	18.84	22.08	22.5
					510396	2551.98	19.32	19.24	22.29	22.5
					518598	2592.99	19.49	19.36	22.44	23.0

					526800	2634	19.42	19.89	22.67	23.0
					534996	2674.98	19.06	19.60	22.35	22.5
		256QAM	1	1	502200	2511	15.63	15.52	18.59	19.0
					510396	2551.98	16.31	15.93	19.13	19.5
					518598	2592.99	16.35	16.33	19.35	19.5
					526800	2634	16.08	16.73	19.43	20.0
					534996	2674.98	15.83	16.53	19.20	19.5

BW (MHz)	Mode	Modulation	RB Size	RB Offset	CH.	Freq. (MHz)	Average Power (dBm)		Total Average Power (dBm)	Max. Tune-up Power (dBm)
							AUX	MIMO1		
20	CP-OFDM	QPSK	1	1	501204	2506.02	19.39	19.20	22.31	22.5
					509898	2549.49	19.53	19.09	22.33	22.5
					518598	2592.99	19.56	19.60	22.59	23.0
					527298	2636.49	19.36	19.93	22.66	23.0
					535998	2679.99	18.93	19.57	22.27	22.5
				25	501204	2506.02	19.19	19.06	22.14	22.5
					509898	2549.49	19.30	19.12	22.22	22.5
					518598	2592.99	19.37	19.32	22.36	22.5
					527298	2636.49	19.13	19.61	22.39	22.5
					535998	2679.99	18.72	19.58	22.18	22.5
				49	501204	2506.02	19.21	19.19	22.21	22.5
					509898	2549.49	19.37	18.96	22.18	22.5
					518598	2592.99	19.56	19.67	22.63	23.0
					527298	2636.49	19.14	19.83	22.51	23.0
					535998	2679.99	18.95	19.51	22.25	22.5
			25	12	501204	2506.02	19.35	19.03	22.20	22.5
					509898	2549.49	19.31	19.14	22.24	22.5
					518598	2592.99	19.48	19.50	22.50	23.0
					527298	2636.49	19.24	19.86	22.57	23.0
					535998	2679.99	18.94	19.64	22.31	22.5
			50	0	501204	2506.02	19.33	19.07	22.21	22.5
					509898	2549.49	19.41	19.20	22.32	22.5
					518598	2592.99	19.61	19.57	22.60	23.0
					527298	2636.49	19.21	20.03	22.65	23.0
					535998	2679.99	18.96	19.55	22.28	22.5
		16QAM	1	1	501204	2506.02	19.52	18.89	22.23	22.5
					509898	2549.49	19.62	19.18	22.42	23.0
					518598	2592.99	19.58	19.36	22.48	23.0
					527298	2636.49	19.43	19.98	22.72	23.0
					535998	2679.99	19.03	19.47	22.27	22.5
		64QAM	1	1	501204	2506.02	18.70	18.61	21.67	22.0
					509898	2549.49	18.86	18.55	21.72	22.0
					518598	2592.99	18.90	19.04	21.98	22.5

					527298	2636.49	18.82	19.49	22.18	22.5
					535998	2679.99	18.40	19.26	21.86	22.0
		256QAM	1	1	501204	2506.02	15.91	15.52	18.73	19.0
					509898	2549.49	15.98	15.53	18.77	19.0
					518598	2592.99	15.96	15.95	18.97	19.5
					527298	2636.49	15.90	16.19	19.06	19.5
					535998	2679.99	15.58	16.14	18.88	19.0

■ NR n41 MIMO HPUE (AUX ANT + MIMO1 ANT)

BW (MHz)	Mode	Modulation	RB Size	RB Offset	CH.	Freq. (MHz)	Average Power (dBm)		Total Average Power (dBm)	Max. Tune-up Power (dBm)
							AUX	MIMO1		
100	CP-OFDM	QPSK	1	1	518598	2592.99	21.34	21.45	24.41	25.0
				137	518598	2592.99	21.60	21.57	24.60	25.0
				271	518598	2592.99	21.49	22.07	24.80	25.0
			135	69	518598	2592.99	21.29	21.08	24.20	24.5
			270	0	518598	2592.99	19.76	19.65	22.72	23.0
		16QAM	1	1	518598	2592.99	21.01	20.66	23.85	24.0
		64QAM	1	1	518598	2592.99	19.45	19.24	22.36	22.5
		256QAM	1	1	518598	2592.99	16.40	16.09	19.26	19.5
90	CP-OFDM	QPSK	1	1	518598	2592.99	21.53	21.55	24.55	25.0
				122	518598	2592.99	21.29	21.88	24.61	25.0
				243	518598	2592.99	21.31	22.19	24.78	25.0
			120	60	518598	2592.99	21.42	21.56	24.50	25.0
			243	0	518598	2592.99	19.98	20.25	23.13	23.5
		16QAM	1	1	518598	2592.99	20.84	21.17	24.02	24.5
		64QAM	1	1	518598	2592.99	19.44	19.94	22.71	23.0
		256QAM	1	1	518598	2592.99	16.57	16.35	19.47	20.0
80	CP-OFDM	QPSK	1	1	518598	2592.99	21.47	21.75	24.62	25.0
				108	518598	2592.99	21.18	21.63	24.42	25.0
				215	518598	2592.99	21.27	22.33	24.84	25.0
			108	54	518598	2592.99	21.51	21.67	24.60	25.0
			216	0	518598	2592.99	20.03	20.13	23.09	23.5
		16QAM	1	1	518598	2592.99	20.56	21.04	23.82	24.0
		64QAM	1	1	518598	2592.99	19.66	19.78	22.73	23.0
		256QAM	1	1	518598	2592.99	16.65	16.33	19.50	20.0
60	CP-OFDM	QPSK	1	1	518598	2592.99	21.62	21.13	24.39	25.0
				80	518598	2592.99	21.78	21.65	24.73	25.0
				160	518598	2592.99	21.58	22.05	24.83	25.0
			81	40	518598	2592.99	21.59	21.73	24.67	25.0
			162	0	518598	2592.99	20.09	20.28	23.20	23.5
		16QAM	1	1	518598	2592.99	21.04	20.99	24.03	24.5
		64QAM	1	1	518598	2592.99	19.53	19.49	22.52	23.0
		256QAM	1	1	518598	2592.99	16.63	16.23	19.44	20.0

BW (MHz)	Mode	Modulation	RB Size	RB Offset	CH.	Freq. (MHz)	Average Power (dBm)		Total Average Power (dBm)	Max. Tune-up Power (dBm)
							AUX	MIMO1		
50	CP-OFDM	QPSK	1	1	518598	2592.99	21.62	21.57	24.61	25.0
				66	518598	2592.99	21.54	21.78	24.67	25.0
				131	518598	2592.99	21.67	22.06	24.88	25.0
			64	32	518598	2592.99	21.15	21.67	24.43	25.0
			128	0	518598	2592.99	19.60	19.38	22.50	23.0
		16QAM	1	1	518598	2592.99	20.77	20.28	23.54	24.0
		64QAM	1	1	518598	2592.99	19.35	18.98	22.18	22.5
		256QAM	1	1	518598	2592.99	16.27	15.90	19.10	19.5

BW (MHz)	Mode	Modulation	RB Size	RB Offset	CH.	Freq. (MHz)	Average Power (dBm)		Total Average Power (dBm)	Max. Tune-up Power (dBm)
							AUX	MIMO1		
40	CP-OFDM	QPSK	1	1	503202	2516.01	21.54	21.29	24.43	25.0
					510900	2554.5	21.61	21.45	24.54	25.0
					518598	2592.99	21.10	21.56	24.35	24.5
					526296	2631.48	21.53	22.13	24.85	25.0
					533994	2669.97	21.38	21.93	24.67	25.0
				52	503202	2516.01	21.17	21.08	24.14	24.5
					510900	2554.5	21.56	21.23	24.41	25.0
					518598	2592.99	21.23	21.42	24.34	24.5
					526296	2631.48	21.20	22.44	24.87	25.0
					533994	2669.97	21.03	21.83	24.46	25.0
			104		503202	2516.01	21.54	21.65	24.61	25.0
					510900	2554.5	21.48	21.14	24.32	24.5
					518598	2592.99	21.38	21.84	24.63	25.0
					526296	2631.48	21.27	22.15	24.74	25.0
					533994	2669.97	20.63	21.93	24.34	24.5
			50	25	503202	2516.01	21.44	21.15	24.31	24.5
					510900	2554.5	21.44	21.24	24.35	24.5
					518598	2592.99	21.60	21.57	24.60	25.0
					526296	2631.48	21.37	21.99	24.70	25.0
					533994	2669.97	21.12	21.79	24.48	25.0
			100	0	503202	2516.01	19.91	19.65	22.79	23.0
					510900	2554.5	20.00	19.77	22.90	23.5
					518598	2592.99	20.14	20.17	23.17	23.5
					526296	2631.48	19.81	20.56	23.21	23.5
					533994	2669.97	19.67	20.35	23.03	23.5
		16QAM	1	1	503202	2516.01	21.27	20.94	24.12	24.5
					510900	2554.5	21.54	20.96	24.27	24.5
					518598	2592.99	21.37	21.02	24.21	24.5
					526296	2631.48	21.38	21.39	24.40	25.0
					533994	2669.97	21.32	21.72	24.53	25.0
		64QAM	1	1	503202	2516.01	19.48	19.24	22.37	22.5
					510900	2554.5	19.54	19.20	22.38	22.5
					518598	2592.99	19.71	19.37	22.55	23.0

					526296	2631.48	19.49	19.88	22.70	23.0
					533994	2669.97	19.18	19.99	22.61	23.0
		256QAM	1	1	503202	2516.01	16.41	16.13	19.28	19.5
					510900	2554.5	16.57	16.28	19.44	20.0
					518598	2592.99	16.34	16.27	19.32	19.5
					526296	2631.48	16.60	16.88	19.75	20.0
					533994	2669.97	16.16	16.84	19.52	20.0

BW (MHz)	Mode	Modulation	RB Size	RB Offset	CH.	Freq. (MHz)	Average Power (dBm)		Total Average Power (dBm)	Max. Tune-up Power (dBm)
							AUX	MIMO1		
30	CP-OFDM	QPSK	1	1	502200	2511	21.32	21.14	24.24	24.5
					510396	2551.98	21.34	21.57	24.47	25.0
					518598	2592.99	21.50	21.30	24.41	25.0
					526800	2634	21.37	22.03	24.72	25.0
					534996	2674.98	21.00	21.84	24.45	25.0
				38	502200	2511	21.27	20.90	24.10	24.5
					510396	2551.98	21.35	21.25	24.31	24.5
					518598	2592.99	21.26	21.46	24.37	24.5
					526800	2634	21.12	21.73	24.45	25.0
					534996	2674.98	21.02	21.69	24.38	24.5
				76	502200	2511	21.44	21.31	24.39	24.5
					510396	2551.98	21.53	20.96	24.26	24.5
					518598	2592.99	21.61	21.88	24.76	25.0
					526800	2634	21.41	22.10	24.78	25.0
					534996	2674.98	21.11	21.80	24.48	25.0
			36	18	502200	2511	21.42	21.05	24.25	24.5
					510396	2551.98	21.50	21.25	24.39	24.5
					518598	2592.99	21.56	21.60	24.59	25.0
					526800	2634	21.43	21.94	24.70	25.0
					534996	2674.98	21.08	21.78	24.45	25.0
			75	0	502200	2511	19.94	19.80	22.88	23.0
					510396	2551.98	19.93	19.72	22.84	23.0
					518598	2592.99	19.97	20.18	23.09	23.5
					526800	2634	19.85	20.51	23.20	23.5
					534996	2674.98	19.58	20.38	23.01	23.5
		16QAM	1	1	502200	2511	21.12	20.93	24.04	24.5
					510396	2551.98	21.11	21.03	24.08	24.5
					518598	2592.99	21.19	20.94	24.08	24.5
					526800	2634	21.05	21.54	24.31	24.5
					534996	2674.98	20.90	21.46	24.20	24.5
		64QAM	1	1	502200	2511	19.43	19.38	22.42	23.0
					510396	2551.98	19.37	19.51	22.45	23.0
					518598	2592.99	19.91	19.62	22.78	23.0

					526800	2634	19.67	19.98	22.84	23.0
					534996	2674.98	19.26	19.86	22.58	23.0
		256QAM	1	1	502200	2511	16.49	16.13	19.32	19.5
					510396	2551.98	16.50	16.38	19.45	20.0
					518598	2592.99	16.52	16.46	19.50	20.0
					526800	2634	16.48	16.94	19.73	20.0
					534996	2674.98	16.14	16.85	19.52	20.0

BW (MHz)	Mode	Modulation	RB Size	RB Offset	CH.	Freq. (MHz)	Average Power (dBm)		Total Average Power (dBm)	Max. Tune-up Power (dBm)
							AUX	MIMO1		
20	CP-OFDM	QPSK	1	1	501204	2506.02	21.23	20.77	24.02	24.5
					509898	2549.49	21.13	21.05	24.10	24.5
					518598	2592.99	21.25	21.31	24.29	24.5
					527298	2636.49	20.99	21.66	24.35	24.5
					535998	2679.99	20.56	21.60	24.12	24.5
				25	501204	2506.02	21.07	20.89	23.99	24.5
					509898	2549.49	21.09	21.05	24.08	24.5
					518598	2592.99	21.31	21.32	24.33	24.5
					527298	2636.49	20.93	21.33	24.14	24.5
					535998	2679.99	20.43	21.25	23.87	24.0
				49	501204	2506.02	20.97	20.87	23.93	24.5
					509898	2549.49	21.23	20.81	24.04	24.5
					518598	2592.99	21.16	21.15	24.17	24.5
					527298	2636.49	20.78	21.60	24.22	24.5
					535998	2679.99	20.65	21.47	24.09	24.5
			25	12	501204	2506.02	21.14	20.85	24.01	24.5
					509898	2549.49	21.07	20.78	23.94	24.5
					518598	2592.99	21.18	21.25	24.23	24.5
					527298	2636.49	20.92	21.64	24.31	24.5
					535998	2679.99	20.75	21.30	24.04	24.5
			50	0	501204	2506.02	19.57	19.42	22.51	23.0
					509898	2549.49	19.62	19.31	22.48	23.0
					518598	2592.99	19.67	19.83	22.76	23.0
					527298	2636.49	19.51	20.16	22.86	23.0
					535998	2679.99	19.18	19.93	22.58	23.0
		16QAM	1	1	501204	2506.02	20.42	20.32	23.38	23.5
					509898	2549.49	20.55	20.35	23.46	24.0
					518598	2592.99	20.58	20.73	23.67	24.0
					527298	2636.49	20.43	21.22	23.85	24.0
					535998	2679.99	20.08	21.11	23.64	24.0
		64QAM	1	1	501204	2506.02	18.96	19.31	22.15	22.5
					509898	2549.49	19.37	19.06	22.23	22.5
					518598	2592.99	19.17	19.67	22.44	23.0

					527298	2636.49	19.10	20.07	22.62	23.0
					535998	2679.99	18.86	19.78	22.35	22.5
		256QAM	1	1	501204	2506.02	16.31	15.70	19.03	19.5
					509898	2549.49	16.34	15.67	19.03	19.5
					518598	2592.99	16.22	16.03	19.14	19.5
					527298	2636.49	16.33	16.40	19.38	19.5
					535998	2679.99	15.98	16.49	19.25	19.5

■ NR n48 (AUX ANT)

BW (MHz)	Mode	Modulation	RB Size	RB Offset	CH.	Freq. (MHz)	Average Power (dBm)	Max. Tune-up Power (dBm)
40	DFS-s OFDM	PI/2 BPSK	1	1	638000.00	3570	18.05	18.5
					639834.00	3597.51	18.15	18.5
					641666.00	3624.99	18.16	18.5
					643500.00	3652.5	18.22	18.5
					645332.00	3679.98	18.04	18.5
				52	638000.00	3570	17.93	18.5
					639834.00	3597.51	17.94	18.5
					641666.00	3624.99	18.07	18.5
					643500.00	3652.5	17.94	18.5
					645332.00	3679.98	17.99	18.5
				104	638000.00	3570	17.99	18.5
					639834.00	3597.51	18.06	18.5
					641666.00	3624.99	18.07	18.5
					643500.00	3652.5	17.99	18.5
					645332.00	3679.98	18.05	18.5
			50	25	638000.00	3570	17.96	18.5
					639834.00	3597.51	18.01	18.5
					641666.00	3624.99	18.08	18.5
					643500.00	3652.5	17.99	18.5
					645332.00	3679.98	17.99	18.5
			100	0	638000.00	3570	17.56	18.0
					639834.00	3597.51	17.63	18.0
					641666.00	3624.99	17.68	18.0
					643500.00	3652.5	17.63	18.0
					645332.00	3679.98	17.55	18.0
		QPSK	1	1	638000.00	3570	17.98	18.5
					639834.00	3597.51	18.11	18.5
					641666.00	3624.99	18.15	18.5
					643500.00	3652.5	18.13	18.5
					645332.00	3679.98	18.08	18.5
				52	638000.00	3570	17.83	18.0
					639834.00	3597.51	17.89	18.5
					641666.00	3624.99	17.92	18.5

					643500.00	3652.5	17.91	18.5
					645332.00	3679.98	17.79	18.0
				104	638000.00	3570	17.92	18.5
					639834.00	3597.51	18.03	18.5
					641666.00	3624.99	17.82	18.0
					643500.00	3652.5	17.97	18.5
					645332.00	3679.98	17.95	18.5
			50	25	638000.00	3570	17.95	18.5
					639834.00	3597.51	17.87	18.0
					641666.00	3624.99	18.02	18.5
					643500.00	3652.5	17.93	18.5
					645332.00	3679.98	18.00	18.5
			100	0	638000.00	3570	16.95	17.5
					639834.00	3597.51	16.99	17.5
					641666.00	3624.99	17.11	17.5
					643500.00	3652.5	17.02	17.5
					645332.00	3679.98	17.02	17.5
		16QAM	1	1	638000.00	3570	16.89	17.5
					639834.00	3597.51	16.82	17.0
					641666.00	3624.99	16.95	17.5
					643500.00	3652.5	17.33	17.5
					645332.00	3679.98	17.22	17.5
		64QAM	1	1	638000.00	3570	15.17	15.5
					639834.00	3597.51	15.18	15.5
					641666.00	3624.99	15.14	15.5
					643500.00	3652.5	15.21	15.5
					645332.00	3679.98	15.33	15.5
		256QAM	1	1	638000.00	3570	13.48	14.0
					639834.00	3597.51	13.42	14.0
					641666.00	3624.99	13.49	14.0
					643500.00	3652.5	13.50	14.0
					645332.00	3679.98	13.44	14.0
	CP-OFDM	QPSK	1	1	638000.00	3570	16.77	17.0
					639834.00	3597.51	16.85	17.0
					641666.00	3624.99	16.73	17.0
					643500.00	3652.5	16.79	17.0
					645332.00	3679.98	16.59	17.0

BW (MHz)	Mode	Modulation	RB Size	RB Offset	CH.	Freq. (MHz)	Average Power (dBm)	Max. Tune-up Power (dBm)
20	DFS-s OFDM	PI/2 BPSK	1	1	637334.00	3560.01	17.62	18.0
					639500.00	3592.5	17.30	17.5
					641666.00	3624.99	17.65	18.0
					643834.00	3657.51	17.69	18.0
					646000.00	3690	17.60	18.0
				25	637334.00	3560.01	17.56	18.0
					639500.00	3592.5	17.61	18.0
					641666.00	3624.99	17.59	18.0
					643834.00	3657.51	17.58	18.0
					646000.00	3690	17.63	18.0
				49	637334.00	3560.01	17.64	18.0
					639500.00	3592.5	17.61	18.0
					641666.00	3624.99	17.44	18.0
					643834.00	3657.51	17.57	18.0
					646000.00	3690	17.72	18.0
			25	12	637334.00	3560.01	17.63	18.0
					639500.00	3592.5	17.66	18.0
					641666.00	3624.99	17.68	18.0
					643834.00	3657.51	17.68	18.0
					646000.00	3690	17.70	18.0
			50	0	637334.00	3560.01	17.15	17.5
					639500.00	3592.5	17.18	17.5
					641666.00	3624.99	17.22	17.5
					643834.00	3657.51	17.16	17.5
					646000.00	3690	17.25	17.5
		QPSK	1	1	637334.00	3560.01	17.65	18.0
					639500.00	3592.5	17.69	18.0
					641666.00	3624.99	17.65	18.0
					643834.00	3657.51	17.57	18.0
					646000.00	3690	17.58	18.0
				25	637334.00	3560.01	17.52	18.0
					639500.00	3592.5	17.43	18.0
					641666.00	3624.99	17.59	18.0
					643834.00	3657.51	17.56	18.0

					646000.00	3690	17.61	18.0
					637334.00	3560.01	17.63	18.0
					639500.00	3592.5	17.54	18.0
					641666.00	3624.99	17.60	18.0
					643834.00	3657.51	17.51	18.0
					646000.00	3690	17.65	18.0
				25	12	637334.00	3560.01	17.69
						639500.00	3592.5	17.64
						641666.00	3624.99	17.74
						643834.00	3657.51	17.76
						646000.00	3690	17.68
				50	0	637334.00	3560.01	16.67
						639500.00	3592.5	16.62
						641666.00	3624.99	16.76
						643834.00	3657.51	16.69
						646000.00	3690	16.71
		16QAM	1	1	637334.00	3560.01	16.51	17.0
					639500.00	3592.5	16.67	17.0
					641666.00	3624.99	16.57	17.0
					643834.00	3657.51	16.70	17.0
					646000.00	3690	16.45	17.0
		64QAM	1	1	637334.00	3560.01	14.85	15.0
					639500.00	3592.5	14.89	15.5
					641666.00	3624.99	14.84	15.0
					643834.00	3657.51	14.90	15.5
					646000.00	3690	14.76	15.0
		256QAM	1	1	637334.00	3560.01	13.07	13.5
					639500.00	3592.5	13.01	13.5
					641666.00	3624.99	13.06	13.5
					643834.00	3657.51	13.05	13.5
					646000.00	3690	13.02	13.5
	CP-OFDM	QPSK	1	1	637334.00	3560.01	14.71	15.0
					639500.00	3592.5	14.62	15.0
					641666.00	3624.99	14.74	15.0
					643834.00	3657.51	14.66	15.0
					646000.00	3690	14.74	15.0

■ DTS Band Wi-Fi (WIFI1 ANT + WIFI2&BT ANT)

Mode	CH.	Freq. (MHz)	Average Power (dBm)		Total Average Power (dBm)	Max. Tune-up Power (dBm)	Duty Cycle %
			WIFI2&BT	WIFI1			
b	1	2412	11.35	11.20	14.29	14.4	97.92
	6	2437	12.04	11.05	14.58	14.7	
	11	2462	11.58	11.43	14.52	14.7	
g	1	2412	11.72	11.25	14.50	14.7	98.90
	6	2437	11.71	11.10	14.43	14.6	
	11	2462	11.18	11.17	14.19	14.3	
n-HT20	1	2412	11.98	11.46	14.74	14.9	99.63
	6	2437	11.89	11.25	14.59	14.7	
	11	2462	11.47	11.30	14.40	14.5	
n-HT40	3	2422	11.86	11.43	14.66	14.8	98.90
	6	2437	12.21	11.24	14.76	14.9	
	9	2452	11.08	11.04	14.07	14.2	
ax-HE20	1	2412	11.41	11.13	14.28	14.4	99.31
	6	2437	11.98	11.28	14.65	14.8	
	11	2462	11.21	11.12	14.18	14.3	
ax-HE40	3	2422	11.85	11.34	14.61	14.8	99.45
	6	2437	12.15	11.15	14.69	14.8	
	9	2452	11.58	11.40	14.50	14.7	

■ U-NII-1 Band Wi-Fi (WIFI1 ANT + WIFI2&BT ANT)

Mode	CH.	Freq. (MHz)	Average Power (dBm)		Total Average Power (dBm)	Max. Tune-up Power (dBm)	Duty Cycle %
			WIFI2&BT	WIFI1			
a	36	5180	11.65	9.03	13.54	13.7	99.55
	44	5220	12.29	9.29	14.05	14.2	
	48	5240	12.31	9.25	14.05	14.2	
ac-VHT20	36	5180	12.47	9.22	14.15	14.3	99.58
	44	5220	12.54	8.96	14.12	14.3	
	48	5240	13.19	9.28	14.67	14.8	
ac-VHT40	38	5190	12.27	8.96	13.93	14.1	98.63
	46	5230	12.86	9.13	14.39	14.5	
ac-VHT80	42	5210	12.06	8.90	13.77	13.9	99.63
ax-HE20	36	5180	11.97	8.93	13.72	13.9	99.63
	44	5220	12.71	9.12	14.29	14.4	
	48	5240	12.79	9.04	14.32	14.5	
ax-HE40	38	5190	12.61	9.32	14.28	14.4	99.63
	46	5230	12.75	9.07	14.30	14.4	
ax-HE80	42	5210	12.52	9.39	14.24	14.4	99.63

■ U-NII-3 Band Wi-Fi (WIFI1 ANT + WIFI2&BT ANT)

Mode	CH.	Freq. (MHz)	Average Power (dBm)		Total Average Power (dBm)	Max. Tune-up Power (dBm)	Duty Cycle %
			WIFI2&BT	WIFI1			
a	149	5745	10.90	9.13	13.11	13.3	99.55
	157	5785	10.26	9.08	12.72	12.9	
	165	5825	10.21	9.14	12.72	12.9	
ac-VHT20	149	5745	10.51	8.97	12.82	13.0	99.58
	157	5785	10.35	9.30	12.87	13.0	
	165	5825	10.22	9.01	12.67	12.8	
ac-VHT40	151	5755	10.87	9.17	13.11	13.3	98.63
	159	5795	10.22	9.15	12.73	12.9	
ac-VHT80	155	5775	10.58	9.16	12.94	13.1	99.63
ax-HE20	149	5745	10.85	9.11	13.08	13.2	99.63
	157	5785	10.37	9.08	12.78	12.9	
	165	5825	10.23	9.14	12.73	12.9	
ax-HE40	151	5755	10.97	9.39	13.26	13.4	99.63
	159	5795	10.31	9.17	12.79	12.9	
ax-HE80	155	5775	10.57	9.16	12.93	13.1	99.63

■ Bluetooth (WIFI2&BT ANT)

Mode	CH.	Freq. (MHz)	Average Power (dBm)	Max. Tune-up Power (dBm)	Duty Cycle %
DH5	0	2402	5.72	6.0	76.49
	39	2441	7.03	7.5	
	78	2480	5.38	5.5	
2DH5	0	2402	3.94	4.5	76.49
	39	2441	5.37	5.5	
	78	2480	3.42	4.0	
3DH5	0	2402	3.96	4.5	76.71
	39	2441	5.29	5.5	
	78	2480	3.42	4.0	
BLE-125k	0	2402	4.18	4.5	82.69
	19	2440	5.47	6.0	
	39	2480	3.98	4.5	
BLE-1M	0	2402	4.18	4.5	61.60
	19	2440	5.48	6.0	
	39	2480	4.01	4.5	
BLE-2M	0	2402	4.19	4.5	32.11
	19	2440	5.49	6.0	
	39	2480	4.03	4.5	

■ Lora (LORA ANT)

CH.	Freq. (MHz)	Average Power (dBm)	Max. Tune-up Power (dBm)	Duty Cycle %
0	903	15.40	16.0	100.00
3	907.8	15.35	15.5	
7	914.2	15.28	15.5	

7.3. SAR Test Results

General note:

1. NR n41 MIMO supports HPUE, HPUE power and SAR testing performed separately.
2. For NR EN-DC mode, standalone SAR performed for NR band with the maximum power, EN-DC SAR summed NR standalone SAR and LTE standalone SAR, the result of EN-DC SAR is more conservatively.
3. 5G NR supports CP-OFDM and DFT-s-OFDM modulation, DFT-s-OFDM power is higher than CP-OFDM, so chose DFT-s-OFDM to perform SAR testing.
4. NR test procedure was following step similar FCC KDB 941225 D05:
 - SAR testing start with the largest channel bandwidth and measure SAR for PI/2 BPSK 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.
 - 50% RB allocation for PI/2 BPSK SAR testing follows 1RB PI/2 BPSK allocation procedure
 - PI/2 BPSK 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.
 - QPSK/16QAM/64QAM/256QAM output powers according to 3GPP MPR will not $\frac{1}{2}$ dB higher than the same configuration in PI/2 BPSK, also reported SAR for the PI/2 BPSK configuration is less than 1.45 W/kg, QPSK/16QAM/64QAM/256QAM SAR testing are not required.
 - Smaller bandwidth output power for each RB allocation configuration for this device will not $\frac{1}{2}$ 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, smaller bandwidth SAR testing is not required for this device.
5. For LTE mode, start with the largest channel bandwidth then measure SAR for QPSK with 1 and 50% RB allocation, using the RB offset and required test channel combination with the highest maximum output power among RB offsets at the upper edge, middle, and lower edge of each required test channel.
6. 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 in 5.2.1 and 5.2.2 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.
7. For each modulation besides QPSK; e.g., 16-QAM, 64-QAM, SAR is required only when the highest maximum output power for the configuration in the higher order modulation is $> \frac{1}{2}$ dB higher than the same configuration in QPSK or when the reported SAR for the QPSK configuration is > 1.45 W/kg.

8. For the other channel bandwidths used by the device in a frequency band, SAR is required only when the highest maximum output power of a configuration requiring testing in the smaller channel bandwidth is $> \frac{1}{2}$ dB higher than the equivalent channel configurations in the largest channel bandwidth configuration, or the reported SAR of a configuration for the largest channel bandwidth is > 1.45 W/kg.
9. According to April 2015 TCB workshop, SAR test exclusion can be applied for testing overlapping LTE bands if:
 - a) The maximum output power, including tolerance, for the smaller band must be $\leq$ the larger band
 - b) The channel bandwidth and other operating parameters for the smaller band is fully supported by the larger band.
 - LTE Band 4 (1710-1755 MHz) is covered by LTE Band 66 (1710-1780 MHz)
10. 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 ≤ 1.2 W/kg, 802.11g/n OFDM SAR is not required, per KDB248227 D01 v02r02 section 5.2.2 b).
11. When multiple transmission modes (802.11a/g/n/ac) have the same specified maximum output power, largest channel bandwidth, lowest order modulation and lowest data rate, the lowest order 802.11 mode is selected; i.e., 802.11a is chosen over 802.11n then 802.11ac or 802.11g is chosen over 802.11n, per KDB248227 D01 v02r02 section 5.3.2.
12. When the highest reported SAR for the initial test configuration (when applicable, include subsequent highest output channels), according to the initial test position or fixed exposure position requirements, is adjusted by the ratio of the subsequent test configuration to initial test configuration specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg, SAR is not required for that subsequent test configuration, per KDB248227 D01 v02r02 section 5.3.4 b).
13. When SAR measurement is required for a subsequent test configuration, SAR should first be measured for the channel with highest measured output power in the subsequent test configuration; SAR for subsequent highest measured maximum output power channels in the subsequent test configuration is required only when the reported SAR of the preceding higher maximum output power channel(s) in the subsequent test configuration is > 1.2 W/kg or until all required channels are tested. For channels with the same measured maximum output power, SAR should be measured using the channel closest to the center frequency of the larger channel bandwidth channel in the initial test configuration, per KDB248227 D01 v02r02 section 5.3.4 c).
14. When the original highest measured SAR is ≥ 0.8 W/kg, only one repeated measurement is required, if the measured SAR value of the initial repeated measurement is < 1.45 W/kg with $\leq 20\%$ variation, per KDB 865664 D01 v01r04 section 2.8.1.
15. Per KDB 447498 D01 v06 section 4.4.3 a), testing of other required channels within the operating mode of a frequency band is not required when the reported 1-g or 10-g SAR for the mid-band or highest output power channel is ≤ 0.8 W/kg or 2.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≤ 100 MHz.

■ LTE

Band	BW (MHz)	Mode	RB Set	CH.	Freq. (MHz)	Test Position	Dist. (mm)	Cond. Power (dBm)	Max. Tune-up Power (dBm)	Scaling Factor	Meas. SAR-1g (W/kg)	Reported SAR-1g (W/kg)	SAR Plot #
Band 2	20	QPSK	1RB_ OS0	18700	1860	Front	5	19.97	20.5	1.13	0.85	0.96	
				18900	1880	Front	5	20.18	20.5	1.08	0.85	0.91	
						Back	5	20.18	20.5	1.08	0.40	0.43	
						Left	5	20.18	20.5	1.08	0.21	0.23	
						Right	5	20.18	20.5	1.08	0.10	0.11	
						Top	5	20.18	20.5	1.08	0.02	0.02	
						Bottom	5	20.18	20.5	1.08	0.27	0.29	
				19100	1900	Front	5	20.16	20.5	1.08	0.96	1.04	1
				19100	1900	Front *	5	20.16	20.5	1.08	0.93	1.01	
			50RB_ OS50	18700	1860	Front	5	19.21	19.5	1.07	0.71	0.76	
						Back	5	19.21	19.5	1.07	0.33	0.35	
						Left	5	19.21	19.5	1.07	0.19	0.20	
						Right	5	19.21	19.5	1.07	0.08	0.09	
						Top	5	19.21	19.5	1.07	0.02	0.02	
						Bottom	5	19.21	19.5	1.07	0.22	0.24	
			100RB_ OS0	18700	1860	Front	5	19.18	19.5	1.08	0.72	0.78	
CA_2C	20+20	QPSK	1RB_ OS99	18801+1 8999	1870.1+ 1889.9	Front	5	20.12	20.5	1.09	0.94	1.03	
Band 5	10	QPSK	1RB_ OS0	20525	836.5	Front	5	23.13	23.5	1.09	0.08	0.09	
						Back	5	23.13	23.5	1.09	0.15	0.16	2
						Left	5	23.13	23.5	1.09	0.07	0.08	
						Right	5	23.13	23.5	1.09	0.01	0.01	
						Top	5	23.13	23.5	1.09	0.10	0.11	
						Bottom	5	23.13	23.5	1.09	0.01	0.01	
			25RB_ OS12	20450	829	Front	5	22.14	22.5	1.09	0.09	0.10	
						Back	5	22.14	22.5	1.09	0.14	0.15	
						Left	5	22.14	22.5	1.09	0.06	0.07	
						Right	5	22.14	22.5	1.09	0.01	0.01	
						Top	5	22.14	22.5	1.09	0.10	0.11	
						Bottom	5	22.14	22.5	1.09	0.01	0.01	

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CA_5B	10+10	QPSK	1RB_ OS49	20450+2 0549	829+83 8.9	Back	5	23.49	24.0	1.12	0.12	0.13	
Band 48	20	QPSK	1RB_ OS99	56315	3657.5	Front	5	18.37	18.5	1.03	0.24	0.25	3
						Back	5	18.37	18.5	1.03	0.10	0.10	
						Left	5	18.37	18.5	1.03	0.01	0.01	
						Right	5	18.37	18.5	1.03	0.13	0.13	
						Top	5	18.37	18.5	1.03	0.01	0.01	
						Bottom	5	18.37	18.5	1.03	0.18	0.19	
			50RB_ OS24	56640	3690	Front	5	17.38	17.5	1.03	0.21	0.22	
						Back	5	17.38	17.5	1.03	0.08	0.08	
						Left	5	17.38	17.5	1.03	0.01	0.01	
						Right	5	17.38	17.5	1.03	0.11	0.11	
						Top	5	17.38	17.5	1.03	0.01	0.01	
						Bottom	5	17.38	17.5	1.03	0.15	0.15	
Band 66	20	QPSK	1RB_ OS99	132072	1720	Front	5	19.87	20.0	1.03	1.02	1.05	4
				132072	1720	Front *	5	19.87	20.0	1.03	1.00	1.03	
				132322	1745	Front	5	19.88	20.0	1.03	0.97	1.00	
						Back	5	19.88	20.0	1.03	0.40	0.41	
						Left	5	19.88	20.0	1.03	0.27	0.28	
						Right	5	19.88	20.0	1.03	0.07	0.07	
						Top	5	19.88	20.0	1.03	0.02	0.02	
						Bottom	5	19.88	20.0	1.03	0.35	0.36	
				132572	1770	Front	5	19.70	20.0	1.07	0.91	0.98	
			50RB_ OS24	132072	1720	Front	5	18.86	19.0	1.03	0.90	0.93	
						Back	5	18.86	19.0	1.03	0.36	0.37	
						Left	5	18.86	19.0	1.03	0.25	0.26	
						Right	5	18.86	19.0	1.03	0.06	0.06	
						Top	5	18.86	19.0	1.03	0.01	0.01	
						Bottom	5	18.86	19.0	1.03	0.32	0.33	
				132322	1745	Front	5	18.80	19.0	1.05	0.82	0.86	
				132572	1770	Front	5	18.74	19.0	1.06	0.78	0.83	
			100B_ OS0	132072	1720	Front	5	18.80	19.0	1.05	0.99	1.04	
CA_66C	20+20	QPSK	1RB_ OS99	132323+ 132521	1745.1+ 1764.9	Front	5	19.82	20.0	1.04	0.98	1.02	

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Band 71	20	QPSK	1RB_ OS0	133222	673	Front	5	23.02	23.5	1.12	0.80	0.89	
						Front *	5	23.02	23.5	1.12	0.83	0.93	5
						Back	5	23.02	23.5	1.12	0.72	0.80	
						Left	5	23.02	23.5	1.12	0.42	0.47	
						Right	5	23.02	23.5	1.12	0.08	0.09	
						Top	5	23.02	23.5	1.12	0.60	0.67	
						Bottom	5	23.02	23.5	1.12	0.03	0.03	
			50RB_ OS0	133222	673	Front	5	22.91	23.5	1.15	0.71	0.81	
						Front	5	23.01	23.5	1.12	0.68	0.76	
						Front	5	22.01	22.5	1.12	0.60	0.67	
						Back	5	22.01	22.5	1.12	0.55	0.62	
						Left	5	22.01	22.5	1.12	0.33	0.37	
						Right	5	22.01	22.5	1.12	0.12	0.13	
						Top	5	22.01	22.5	1.12	0.46	0.51	
						Bottom	5	22.01	22.5	1.12	0.02	0.02	
			100RB_ _OS0	133372	688	Front	5	21.99	22.5	1.12	0.50	0.56	
						Front	5	21.99	22.5	1.12	0.50	0.56	

Note: “ * ”, repeated SAR measurement.

■ NR

Band	BW (MHz)	Mode	RB Set	CH.	Freq. (MHz)	Test Position	Dist. (mm)	Cond. Power (dBm)	Max. Tune-up Power (dBm)	Scaling Factor	Meas. SAR-1g (W/kg)	Reported SAR-1g (W/kg)	SAR Plot #
n41	100	PI/2 BPSK	1RB_ OS271	518598	2592.99	Front	5	23.58	24.0	1.10	0.35	0.39	
						Back	5	23.58	24.0	1.10	0.20	0.22	
						Left	5	23.58	24.0	1.10	0.02	0.02	
						Right	5	23.58	24.0	1.10	0.26	0.29	
						Top	5	23.58	24.0	1.10	0.01	0.01	
						Bottom	5	23.58	24.0	1.10	0.16	0.18	
			135RB_ _OS69	518598	2592.99	Front	5	23.38	23.5	1.03	0.51	0.52	6
						Back	5	23.38	23.5	1.03	0.29	0.30	
						Left	5	23.38	23.5	1.03	0.02	0.02	
						Right	5	23.38	23.5	1.03	0.34	0.35	
						Top	5	23.38	23.5	1.03	0.01	0.01	
						Bottom	5	23.38	23.5	1.03	0.23	0.24	
n48	40	PI/2 BPSK	1RB_ OS1	643500	3652.5	Front	5	18.22	18.5	1.07	0.15	0.16	7
						Back	5	18.22	18.5	1.07	0.06	0.06	
						Left	5	18.22	18.5	1.07	0.01	0.01	
						Right	5	18.22	18.5	1.07	0.06	0.06	
						Top	5	18.22	18.5	1.07	0.01	0.01	
						Bottom	5	18.22	18.5	1.07	0.10	0.11	
			50RB_ OS25	641666	3624.99	Front	5	18.08	18.5	1.10	0.14	0.15	
						Back	5	18.08	18.5	1.10	0.05	0.06	
						Left	5	18.08	18.5	1.10	0.01	0.01	
						Right	5	18.08	18.5	1.10	0.06	0.07	
						Top	5	18.08	18.5	1.10	0.01	0.01	
						Bottom	5	18.08	18.5	1.10	0.10	0.11	

<Continue>

n41 MIMO	100	QPSK	1RB_ OS271	518598	2592.99	Front	5	22.79	23.0	1.05	0.18	0.19	
						Back	5	22.79	23.0	1.05	0.13	0.14	
						Left	5	22.79	23.0	1.05	0.06	0.06	
						Right	5	22.79	23.0	1.05	0.15	0.16	
						Top	5	22.79	23.0	1.05	0.01	0.01	
						Bottom	5	22.79	23.0	1.05	0.13	0.14	
			135RB _OS69	518598	2592.99	Front	5	22.82	23.0	1.04	0.27	0.28	8
						Back	5	22.82	23.0	1.04	0.18	0.19	
						Left	5	22.82	23.0	1.04	0.06	0.06	
						Right	5	22.82	23.0	1.04	0.22	0.23	
						Top	5	22.82	23.0	1.04	0.01	0.01	
						Bottom	5	22.82	23.0	1.04	0.17	0.18	
n41 HPUE MIMO	100	QPSK	1RB_ OS271	518598	2592.99	Front	5	24.80	25.0	1.05	0.26	0.27	
						Back	5	24.80	25.0	1.05	0.19	0.20	
						Left	5	24.80	25.0	1.05	0.09	0.09	
						Right	5	24.80	25.0	1.05	0.23	0.24	
						Top	5	24.80	25.0	1.05	0.01	0.01	
						Bottom	5	24.80	25.0	1.05	0.19	0.20	
			135RB _OS69	518598	2592.99	Front	5	24.20	24.5	1.07	0.39	0.42	9
						Back	5	24.20	24.5	1.07	0.26	0.28	
						Left	5	24.20	24.5	1.07	0.09	0.10	
						Right	5	24.20	24.5	1.07	0.32	0.34	
						Top	5	24.20	24.5	1.07	0.01	0.01	
						Bottom	5	24.20	24.5	1.07	0.25	0.27	

Note: “*”, repeated SAR measurement.

■ Wi-Fi

Band	Test Mode	CH.	Freq. (MHz)	Test Position	Dist. (mm)	Cond. Power (dBm)	Max Tune-up Power (dBm)	Scaling Factor	Duty Cycle (%)	Duty Cycle Factor	Meas. SAR-1g (W/kg)	Reported SAR-1g (W/kg)	SAR Plot #
DTS	b	6	2437	Front	5	14.58	14.7	1.03	97.92	1.02	0.27	0.28	10
				Back	5	14.58	14.7	1.03	97.92	1.02	0.13	0.14	
				Left	5	14.58	14.7	1.03	97.92	1.02	0.08	0.08	
				Right	5	14.58	14.7	1.03	97.92	1.02	0.10	0.10	
				Top	5	14.58	14.7	1.03	97.92	1.02	0.02	0.02	
				Bottom	5	14.58	14.7	1.03	97.92	1.02	0.04	0.04	
U-NII-1	ac-VHT20	48	5240	Front	5	14.67	14.8	1.03	99.58	1.00	0.59	0.61	11
				Back	5	14.67	14.8	1.03	99.58	1.00	0.08	0.08	
				Left	5	14.67	14.8	1.03	99.58	1.00	0.18	0.19	
				Right	5	14.67	14.8	1.03	99.58	1.00	0.31	0.32	
				Top	5	14.67	14.8	1.03	99.58	1.00	0.02	0.02	
				Bottom	5	14.67	14.8	1.03	99.58	1.00	0.03	0.03	
U-NII-3	ax-HE40	151	5755	Front	5	13.26	13.4	1.03	99.63	1.00	0.53	0.55	12
				Back	5	13.26	13.4	1.03	99.63	1.00	0.03	0.03	
				Left	5	13.26	13.4	1.03	99.63	1.00	0.08	0.08	
				Right	5	13.26	13.4	1.03	99.63	1.00	0.26	0.27	
				Top	5	13.26	13.4	1.03	99.63	1.00	0.01	0.01	
				Bottom	5	13.26	13.4	1.03	99.63	1.00	0.02	0.02	

■ Bluetooth

Band	Test Mode	CH.	Freq. (MHz)	Test Position	Dist. (mm)	Cond. Power (dBm)	Max Tune-up Power (dBm)	Scaling Factor	Duty Cycle (%)	Duty Cycle Factor	Meas. SAR-1g (W/kg)	Reported SAR-1g (W/kg)	SAR Plot #
DSS	DH5	39	2441	Front	5	7.03	7.5	1.11	76.49	1.31	0.04	0.06	13
				Back	5	7.03	7.5	1.11	76.49	1.31	0.02	0.03	
				Left	5	7.03	7.5	1.11	76.49	1.31	0.01	0.01	
				Right	5	7.03	7.5	1.11	76.49	1.31	0.04	0.06	
				Top	5	7.03	7.5	1.11	76.49	1.31	0.01	0.01	
				Bottom	5	7.03	7.5	1.11	76.49	1.31	0.01	0.01	

■ Lora

Band	Test Mode	CH.	Freq. (MHz)	Test Position	Dist. (mm)	Cond. Power (dBm)	Max Tune-up Power (dBm)	Scaling Factor	Duty Cycle (%)	Duty Cycle Factor	Meas. SAR-1g (W/kg)	Reported SAR-1g (W/kg)	SAR Plot #
DTS	Lora	0	903	Front	5	15.40	16.0	1.15	100.00	1.00	0.15	0.17	14
				Back	5	15.40	16.0	1.15	100.00	1.00	0.14	0.16	
				Left	5	15.40	16.0	1.15	100.00	1.00	0.02	0.02	
				Right	5	15.40	16.0	1.15	100.00	1.00	0.06	0.07	
				Top	5	15.40	16.0	1.15	100.00	1.00	0.04	0.05	
				Bottom	5	15.40	16.0	1.15	100.00	1.00	0.02	0.02	

7.4. Estimated SAR Calculation

Per FCC KDB 447498 D01v06 section 4.3.2 b) 1), when an antenna qualifies for the standalone SAR test exclusion of 4.3.1 and also transmits simultaneously with other antennas, the standalone SAR value was estimated according to the following formula to result in substantially conservative SAR values of $\leq 0.4\text{W/kg}$ for test separation distance $\leq 50\text{mm}$ to determine the simultaneous transmission SAR test exclusion criteria:

$$\text{Estimated SAR} = \frac{\sqrt{f(\text{GHz})}}{7.5} * \frac{(\text{Max Power of channel, mW})}{\text{Min. Separation, mm}}, \text{ for 1-g SAR}$$

$$\text{Estimated SAR} = \frac{\sqrt{f(\text{GHz})}}{18.75} * \frac{(\text{Max Power of channel, mW})}{\text{Min. Separation, mm}}, \text{ for 10-g SAR}$$

When the test separation distance is $> 50\text{ mm}$, estimated 1g-SAR 0.4W/kg /10g-SAR 1.0W/kg is used for simultaneous evaluation.

N/A

8. Simultaneous Transmission Analysis

■ LTE B5&71 + Wi-Fi/BT + Lora

Test Position	Standalone SAR(W/kg)				Summed SAR(W/kg)			
	1	2	3	4	1+2+4	Case No.	1+3+4	Case No.
	WWAN	Wi-Fi	BT	Lora				
Front	0.93	0.61	0.06	0.17	1.71	1	1.16	--
Back	0.80	0.14	0.03	0.16	1.10	--	0.99	--
Left	0.47	0.19	0.01	0.02	0.68	--	0.5	--
Right	0.13	0.32	0.06	0.07	0.52	--	0.26	--
Top	0.67	0.02	0.01	0.05	0.74	--	0.73	--
Bottom	0.03	0.04	0.01	0.02	0.09	--	0.06	--

Case 1	Combination	Summed SAR(W/kg)	Dist. (mm)	SPLSR
	1+2	1.54	92.68	0.02
	1+4	0.99	38.27	0.03
	2+4	0.78	69.58	0.01

■ LTE B48/NR n41&48 + Wi-Fi/BT + Lora

Test Position	Standalone SAR(W/kg)				Summed SAR(W/kg)			
	1	2	3	4	1+2+4	Case No.	1+3+4	Case No.
	WWAN	Wi-Fi	BT	Lora				
Front	0.52	0.61	0.06	0.17	1.30	--	0.75	--
Back	0.30	0.14	0.03	0.16	0.60	--	0.49	--
Left	0.02	0.19	0.01	0.02	0.23	--	0.05	--
Right	0.35	0.32	0.06	0.07	0.74	--	0.48	--
Top	0.01	0.02	0.01	0.05	0.08	--	0.07	--
Bottom	0.24	0.04	0.01	0.02	0.30	--	0.27	--

■ LTE B2/4/66 + Wi-Fi/BT + Lora

Test Position	Standalone SAR(W/kg)				Summed SAR(W/kg)			
	1	2	3	4	1+2+4	Case No.	1+3+4	Case No.
	WWAN	Wi-Fi	BT	Lora				
Front	1.05	0.61	0.06	0.17	1.83	1	1.28	--
Back	0.43	0.14	0.03	0.16	0.73	--	0.62	--
Left	0.26	0.19	0.01	0.02	0.47	--	0.29	--
Right	0.11	0.32	0.06	0.07	0.50	--	0.24	--
Top	0.02	0.02	0.01	0.05	0.09	--	0.08	--
Bottom	0.26	0.04	0.01	0.02	0.32	--	0.29	--

Case 1	Combination	Summed SAR(W/kg)	Dist. (mm)	SPLSR
	1+2	1.66	62.37	0.03
	1+4	1.22	104.22	0.01
	2+4	0.78	69.58	0.01

■ NR n41 MIMO + Wi-Fi/BT + Lora

Test Position	Standalone SAR(W/kg)				Summed SAR(W/kg)			
	1	2	3	4	1+2+4	Case No.	1+3+4	Case No.
	WWAN	Wi-Fi	BT	Lora				
Front	0.42	0.61	0.06	0.17	1.20	--	0.65	--
Back	0.28	0.14	0.03	0.16	0.58	--	0.47	--
Left	0.10	0.19	0.01	0.02	0.31	--	0.13	--
Right	0.34	0.32	0.06	0.07	0.73	--	0.47	--
Top	0.01	0.02	0.01	0.05	0.08	--	0.07	--
Bottom	0.27	0.04	0.01	0.02	0.33	--	0.30	--

■ EN-DC + Wi-Fi/BT + Lora

Test Position	Standalone SAR(W/kg)					Summed SAR(W/kg)			
	1	2	3	4	5	1+2+3+5	Case No.	1+2+4+5	Case No.
	LTE	NR	Wi-Fi	BT	Lora				
Front	1.05	0.52	0.61	0.06	0.17	2.35	1	1.80	2
Back	0.43	0.30	0.14	0.03	0.16	1.03	--	0.92	--
Left	0.26	0.02	0.19	0.01	0.02	0.49	--	0.31	--
Right	0.11	0.35	0.32	0.06	0.07	0.85	--	0.59	--
Top	0.02	0.01	0.02	0.01	0.05	0.10	--	0.09	--
Bottom	0.26	0.24	0.04	0.01	0.02	0.56	--	0.53	--

	Combination	Summed	Dist. (mm)	SPLSR
Case 1	1+2	1.57	50.64	0.04
	1+3	1.66	62.37	0.03
	1+5	1.22	104.22	0.01
	2+3	1.13	27.26	0.04
	2+5	0.69	95.19	0.01
	3+5	0.78	69.58	0.01
Case 2	1+2	1.57	50.64	0.04
	1+4	1.11	56.72	0.02
	1+5	1.22	104.22	0.01
	2+4	0.58	28.40	0.02
	2+5	0.69	95.19	0.01
	4+5	0.23	66.81	0.002

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

9. Test Equipment Used

WZ - SR3					
Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
Stäubli Robot TX60L	Stäubli	TX60L	MRTSUE06412	only once	only once
Robot Controller	Stäubli	CS8C	MRTSUE06412	only once	only once
SAM Twin Phantom	Speag	QD 000 P41 AA	MRTSUE06419	N/A	N/A
DAK	Speag	DAK-3.5	MRTSUE06435	N/A	N/A
Dipole Validation Kits	Speag	D750V3	MRTSUE06426	3 year	2024/05/16
Dipole Validation Kits	Speag	D850V2	MRTSUE06427	3 year	2024/06/14
Dipole Validation Kits	Speag	D1750V2	MRTSUE06428	3 year	2024/05/16
Dipole Validation Kits	Speag	D1900V2	MRTSUE06429	3 year	2024/05/19
Dipole Validation Kits	Speag	D2450V2	MRTSUE06430	3 year	2024/05/18
Dipole Validation Kits	Speag	D2600V2	MRTSUE06431	3 year	2024/05/18
Dipole Validation Kits	Speag	D3500V2	MRTSUE06432	3 year	2025/03/28
Dipole Validation Kits	Speag	D3700V2	MRTSUE06433	3 year	2025/03/27
Dipole Validation Kits	Speag	D5GHzV2	MRTSUE06434	3 year	2025/03/27
Data Acquisition Electronic	Speag	DAE4(SN 1552)	MRTSUE06414	1 year	2023/05/16
E-Field Probe	Speag	EX3DV4	MRTSUE06438	1 year	2023/07/21
Network Analyzer	Keysight	N5234B	MRTSUE06454	1 year	2023/06/04
Directional Coupler	Agilent	778D	MRTSUE06083	1 year	2023/03/17
Directional Coupler	Agilent	87301D OPT 292	MRTSUE06082	1 year	2023/03/07
Signal Generator	Keysight	N5183B	MRTSUE06197	1 year	2023/07/08
Power Sensor	Keysight	U2021XA	MRTSUE06447	1 year	2023/06/04
Thermohygrometer	Testo	622	MRTSUE06361	1 year	2023/05/09

Software	Version	Function
DASY NEO	52.10.4.1527	SAR Test Software

10. Measurement Uncertainty

DASY5 Uncertainty Budget, according to IEEE 1528 (0.3 - 3 GHz range)								
Error Description	Uncert. value	Prob. Dist.	Div.	(ci) 1g	(ci) 10g	Std. Unc. (1g)	Std. Unc. (10g)	(vi) v _{eff}
Measurement System								
Probe Calibration	±6.0 %	N	1	1	1	±6.0 %	±6.0 %	∞
Axial Isotropy	±4.7 %	R	$\sqrt{3}$	0.7	0.7	±1.9 %	±1.9 %	∞
Hemispherical Isotropy	±9.6 %	R	$\sqrt{3}$	0.7	0.7	±3.9 %	±3.9 %	∞
Boundary Effects	±1.0 %	R	$\sqrt{3}$	1	1	±0.6 %	±0.6 %	∞
Linearity	±4.7 %	R	$\sqrt{3}$	1	1	±2.7 %	±2.7 %	∞
System Detection Limits	±1.0 %	R	$\sqrt{3}$	1	1	±0.6 %	±0.6 %	∞
Modulation Response	±2.4 %	R	$\sqrt{3}$	1	1	±1.4 %	±1.4 %	∞
Readout Electronics	±0.3 %	N	1	1	1	±0.3 %	±0.3 %	∞
Response Time	±0.8 %	R	$\sqrt{3}$	1	1	±0.5 %	±0.5 %	∞
Integration Time	±2.6 %	R	$\sqrt{3}$	1	1	±1.5 %	±1.5 %	∞
RF Ambient Noise	±3.0 %	R	$\sqrt{3}$	1	1	±1.7 %	±1.7 %	∞
RF Ambient Reflections	±3.0 %	R	$\sqrt{3}$	1	1	±1.7 %	±1.7 %	∞
Probe Positioner	±0.02 %	R	$\sqrt{3}$	1	1	±0.0 %	±0.0 %	∞
Probe Positioning	±0.4 %	R	$\sqrt{3}$	1	1	±0.2 %	±0.2 %	∞
Max. SAR Eval.	±2.0 %	R	$\sqrt{3}$	1	1	±1.2 %	±1.2 %	∞
Test Sample Related								
Device Positioning	±2.9%	N	1	1	1	±2.9 %	±2.9 %	145
Device Holder	±3.6%	N	1	1	1	±3.6 %	±3.6 %	5
Power Drift	±5.0%	R	$\sqrt{3}$	1	1	±2.9 %	±2.9 %	∞
Power Scaling ^P	±0%	R	$\sqrt{3}$	1	1	±0.0 %	±0.0 %	∞
Phantom and Setup								
Phantom Uncertainty	±6.1%	R	$\sqrt{3}$	1	1	±3.5 %	±3.5 %	∞
SAR correction	±1.9%	N	1	1	0.84	±1.9 %	±1.6 %	∞
Liquid Cond. (mea.) ^{DAK}	±2.5%	N	1	0.78	0.71	±2.0 %	±1.8 %	∞
Liquid Perm. (mea.) ^{DAK}	±2.5%	N	1	0.23	0.26	±0.6 %	±0.7 %	∞
Temp. unc. – Conductivity ^{BB}	±3.4%	R	$\sqrt{3}$	0.78	0.71	±1.5 %	±1.4 %	∞
Temp. unc. – Permittivity ^{BB}	±0.4%	R	$\sqrt{3}$	0.23	0.26	±0.1 %	±0.1 %	∞
Combined Std. Uncertainty						±11.3%	±11.2%	459
Expanded STD Uncertainty						±22.6%	±22.4%	

DASY5 Uncertainty Budget, according to IEEE 1528 (3 - 6 GHz range)								
Error Description	Uncert. value	Prob. Dist.	Div.	(ci) 1g	(ci) 10g	Std. Unc. (1g)	Std. Unc. (10g)	(vi) v _{eff}
Measurement System								
Probe Calibration	±6.55 %	N	1	1	1	±6.55 %	±6.55 %	∞
Axial Isotropy	±4.7 %	R	$\sqrt{3}$	0.7	0.7	±1.9 %	±1.9 %	∞
Hemispherical Isotropy	±9.6 %	R	$\sqrt{3}$	0.7	0.7	±3.9 %	±3.9 %	∞
Boundary Effects	±2.0 %	R	$\sqrt{3}$	1	1	±1.2 %	±1.2 %	∞
Linearity	±4.7 %	R	$\sqrt{3}$	1	1	±2.7 %	±2.7 %	∞
System Detection Limits	±1.0 %	R	$\sqrt{3}$	1	1	±0.6 %	±0.6 %	∞
Modulation Response	±2.4 %	R	$\sqrt{3}$	1	1	±1.4 %	±1.4 %	∞
Readout Electronics	±0.3 %	N	1	1	1	±0.3 %	±0.3 %	∞
Response Time	±0.8 %	R	$\sqrt{3}$	1	1	±0.5 %	±0.5 %	∞
Integration Time	±2.6 %	R	$\sqrt{3}$	1	1	±1.5 %	±1.5 %	∞
RF Ambient Noise	±3.0 %	R	$\sqrt{3}$	1	1	±1.7 %	±1.7 %	∞
RF Ambient Reflections	±3.0 %	R	$\sqrt{3}$	1	1	±1.7 %	±1.7 %	∞
Probe Positioner	±0.04 %	R	$\sqrt{3}$	1	1	±0.0 %	±0.0 %	∞
Probe Positioning	±0.8 %	R	$\sqrt{3}$	1	1	±0.5 %	±0.5 %	∞
Max. SAR Eval.	±4.0 %	R	$\sqrt{3}$	1	1	±2.3 %	±2.3 %	∞
Test Sample Related								
Device Positioning	±2.9%	N	1	1	1	±2.9 %	±2.9 %	145
Device Holder	±3.6%	N	1	1	1	±3.6 %	±3.6 %	5
Power Drift	±5.0%	R	$\sqrt{3}$	1	1	±2.9 %	±2.9 %	∞
Power Scaling ^P	±0%	R	$\sqrt{3}$	1	1	±0.0 %	±0.0 %	∞
Phantom and Setup								
Phantom Uncertainty	±6.6%	R	$\sqrt{3}$	1	1	±3.8 %	±3.8 %	∞
SAR correction	±1.9%	N	1	1	0.84	±1.9 %	±1.6 %	∞
Liquid Cond. (mea.) ^{DAK}	±2.5%	N	1	0.78	0.71	±2.0 %	±1.8 %	∞
Liquid Perm. (mea.) ^{DAK}	±2.5%	N	1	0.23	0.26	±0.6 %	±0.7 %	∞
Temp. unc. – Conductivity ^{BB}	±3.4%	R	$\sqrt{3}$	0.78	0.71	±1.5 %	±1.4 %	∞
Temp. unc. – Permittivity ^{BB}	±0.4%	R	$\sqrt{3}$	0.23	0.26	±0.1 %	±0.1 %	∞
Combined Std. Uncertainty						±11.9%	±11.8%	569
Expanded STD Uncertainty						±23.8%	±23.6%	

Annex A - System Check Result

Test Date:2022/11/09

SystemPerformanceCheck-SAM1-D750HSL

DUT: Dipole 750 MHz D750V3; Type: D750V3

Communication System: CW; Frequency: 750 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 750 \text{ MHz}$; $\sigma = 0.87 \text{ S/m}$; $\epsilon_r = 43.67$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7524; ConvF(10.41, 10.41, 10.41) @ 750 MHz; Calibrated: 7/22/2022
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1552; Calibrated: 5/17/2022
- Phantom: Twin-SAM V8.0 (30deg probe tilt); Type: QD 000 P41 AA; Serial: 1967
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

configuration/d=15mm, Pin=250mW, dist=1.4mm (EX-Probe)/Area Scan (5x15x1): Measurement grid:

dx=15mm, dy=15mm; Maximum value of SAR (measured) = 2.83 W/kg

configuration/d=15mm, Pin=250mW, dist=1.4mm (EX-Probe)/Zoom Scan (5x5x7)/Cube 0: Measurement

grid: dx=8mm, dy=8mm, dz=5mm; Reference Value = 55.44 V/m; Power Drift = -0.00 dB

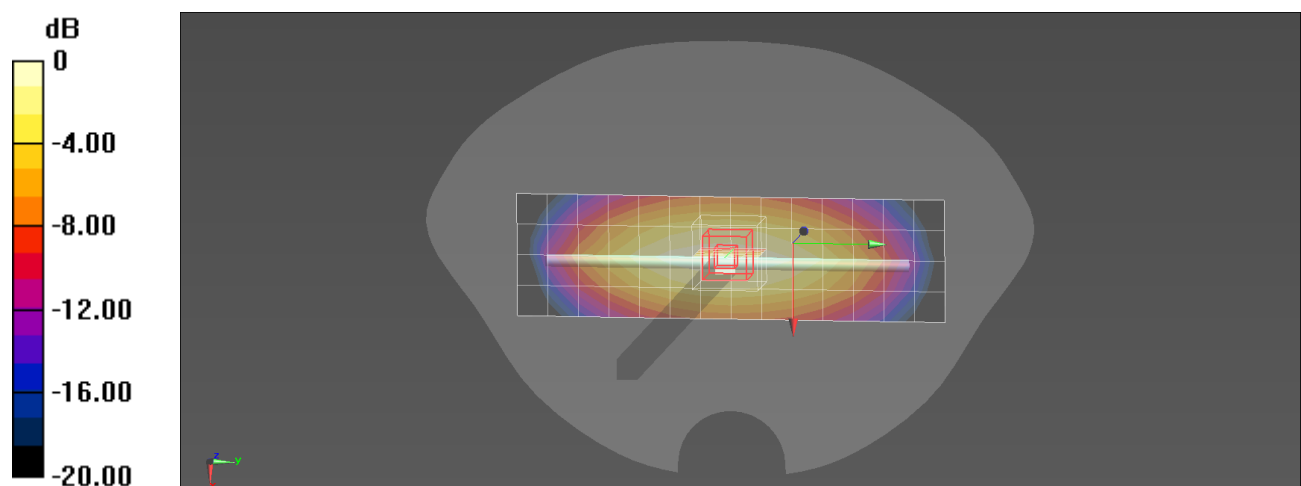
Peak SAR (extrapolated) = 3.27 W/kg

SAR(1 g) = 2.08 W/kg; SAR(10 g) = 1.37 W/kg

Smallest distance from peaks to all points 3 dB below = 19.5 mm

Ratio of SAR at M2 to SAR at M1 = 63.9%

Maximum value of SAR (measured) = 2.83 W/kg



0 dB = 2.83 W/kg = 4.52 dBW/kg

Test Date:2022/11/09

SystemPerformanceCheck-SAM1-D850HSL

DUT: Dipole 850 MHz D850V2; Type: D850V2

Communication System: CW; Frequency: 850 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 850 \text{ MHz}$; $\sigma = 0.91 \text{ S/m}$; $\epsilon_r = 43.36$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7524; ConvF(10.05, 10.05, 10.05) @ 850 MHz; Calibrated: 7/22/2022
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1552; Calibrated: 5/17/2022
- Phantom: Twin-SAM V8.0 (30deg probe tilt); Type: QD 000 P41 AA; Serial: 1967
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

configuration/d=15mm, Pin=250mW, dist=4mm (EX-Probe)/Area Scan (6x14x1): Measurement grid:

$dx=15\text{mm}$, $dy=15\text{mm}$; Maximum value of SAR (measured) = 3.11 W/kg

configuration/d=15mm, Pin=250mW, dist=4mm (EX-Probe)/Zoom Scan (5x5x7)/Cube 0: Measurement grid:

$dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$; Reference Value = 60.58 V/m; Power Drift = -0.06 dB

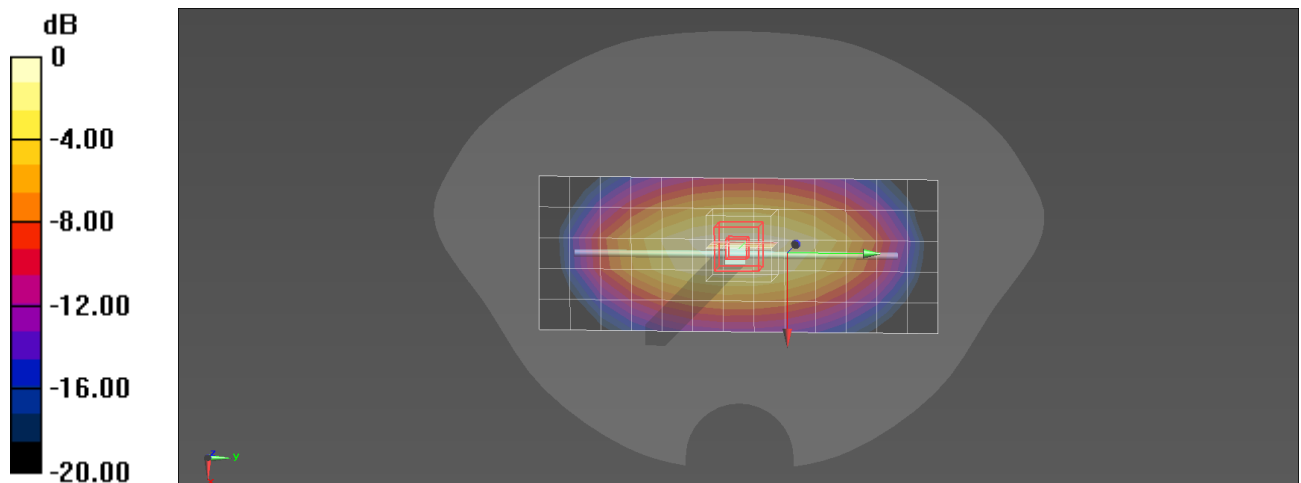
Peak SAR (extrapolated) = 3.95 W/kg

SAR(1 g) = 2.51 W/kg; SAR(10 g) = 1.64 W/kg

Smallest distance from peaks to all points 3 dB below = 16 mm

Ratio of SAR at M2 to SAR at M1 = 63.7%

Maximum value of SAR (measured) = 3.44 W/kg



0 dB = 3.44 W/kg = 5.37 dBW/kg

Test Date:2022/11/10

SystemPerformanceCheck-SAM1-D1750HSL

DUT: Dipole 1750 MHz D1750V2; Type: D1750V2

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

Medium parameters used: $f = 1750$ MHz; $\sigma = 1.33$ S/m; $\epsilon_r = 41.59$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7524; ConvF(8.43, 8.43, 8.43) @ 1750 MHz; Calibrated: 7/22/2022
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1552; Calibrated: 5/17/2022
- Phantom: Twin-SAM V8.0 (30deg probe tilt); Type: QD 000 P41 AA; Serial: 1967
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Configuration/d=10mm, Pin=250mW, dist=1.4mm (EX-Probe) 2/Area Scan (6x7x1): Measurement grid:

dx=15mm, dy=15mm; Maximum value of SAR (measured) = 10.9 W/kg

Configuration/d=10mm, Pin=250mW, dist=1.4mm (EX-Probe) 2/Zoom Scan (7x7x7) (5x5x7)/Cube 0:

Measurement grid: dx=8mm, dy=8mm, dz=5mm; Reference Value = 99.32 V/m; Power Drift = 0.04 dB

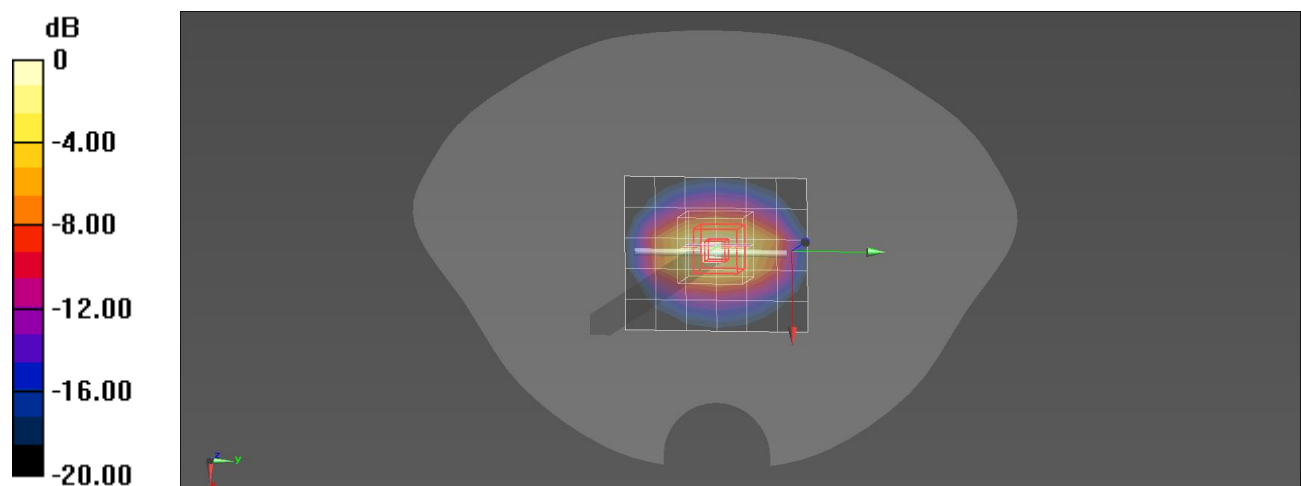
Peak SAR (extrapolated) = 17.4 W/kg

SAR(1 g) = 9.41 W/kg; SAR(10 g) = 5.03 W/kg

Smallest distance from peaks to all points 3 dB below = 10.1 mm

Ratio of SAR at M2 to SAR at M1 = 54.3%

Maximum value of SAR (measured) = 14.5 W/kg



0 dB = 14.5 W/kg = 11.61 dBW/kg

Test Date:2022/11/10

SystemPerformanceCheck-SAM1-D1900HSL

DUT: Dipole 1900 MHz D1900V2; Type: D1900V2

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

Medium parameters used: $f = 1900 \text{ MHz}$; $\sigma = 1.41 \text{ S/m}$; $\epsilon_r = 41.33$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7524; ConvF(8.05, 8.05, 8.05) @ 1900 MHz; Calibrated: 7/22/2022
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1552; Calibrated: 5/17/2022
- Phantom: Twin-SAM V8.0 (30deg probe tilt); Type: QD 000 P41 AA; Serial: 1967
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

configuration/d=15mm, Pin=250mW, dist=1.4mm (EX-Probe)/Area Scan (6x11x1): Measurement grid:

$dx=15\text{mm}$, $dy=15\text{mm}$; Maximum value of SAR (measured) = 12.6 W/kg

configuration/d=15mm, Pin=250mW, dist=1.4mm (EX-Probe)/Zoom Scan (5x5x7)/Cube 0: Measurement

grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$; Reference Value = 105.7 V/m; Power Drift = -0.09 dB

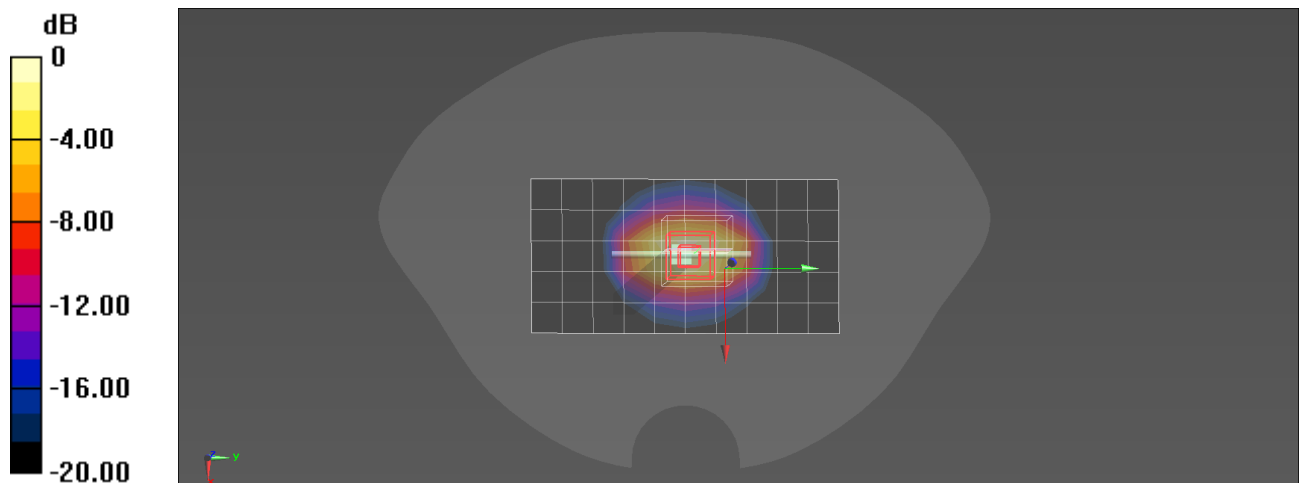
Peak SAR (extrapolated) = 19.0 W/kg

SAR(1 g) = 10.1 W/kg; SAR(10 g) = 5.24 W/kg

Smallest distance from peaks to all points 3 dB below = 9.6 mm

Ratio of SAR at M2 to SAR at M1 = 54%

Maximum value of SAR (measured) = 15.3 W/kg



0 dB = 15.3 W/kg = 11.85 dBW/kg

Test Date:2022/10/25

SystemPerformanceCheck-SAM1-D2450HSL

DUT: Dipole 2450 MHz D2450V2; Type: D2450V2

Communication System: CW; Frequency: 2450 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 2450$ MHz; $\sigma = 1.79$ S/m; $\epsilon_r = 40.59$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7524; ConvF(7.65, 7.65, 7.65) @ 2450 MHz; Calibrated: 7/22/2022
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1552; Calibrated: 5/17/2022
- Phantom: Twin-SAM V8.0 (30deg probe tilt); Type: QD 000 P41 AA; Serial: 1967
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

configuration/d=10mm, Pin=250mW, dist=1.4mm (EX-Probe)/Area Scan (7x9x1): Measurement grid:

dx=12mm, dy=12mm; Maximum value of SAR (measured) = 22.0 W/kg

configuration/d=10mm, Pin=250mW, dist=1.4mm (EX-Probe)/Zoom Scan (7x7x7)/Cube 0: Measurement

grid: dx=5mm, dy=5mm, dz=5mm; Reference Value = 107.9 V/m; Power Drift = -0.12 dB

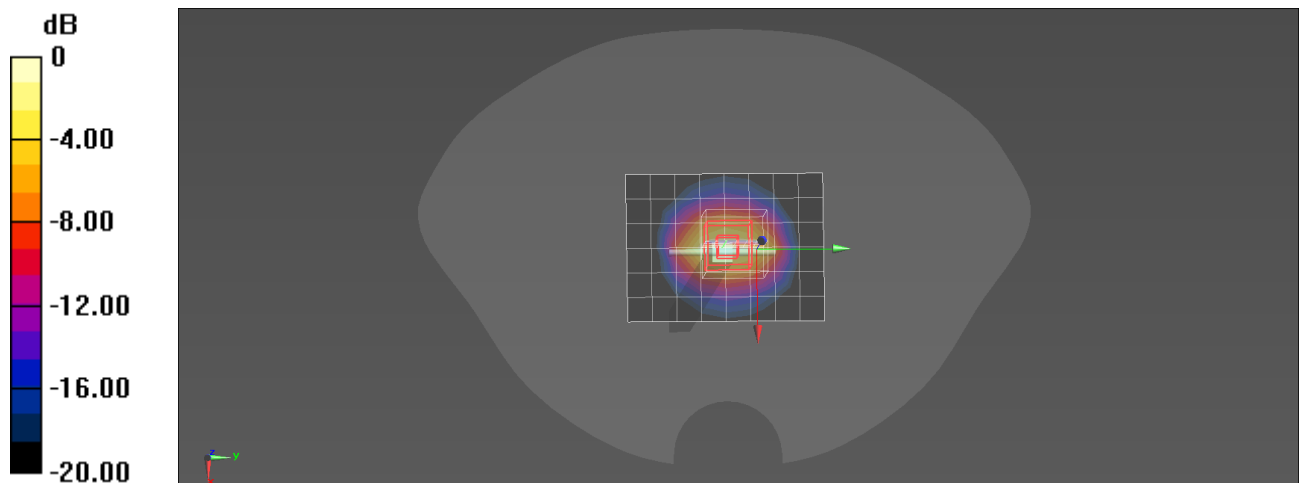
Peak SAR (extrapolated) = 27.0 W/kg

SAR(1 g) = 13.1 W/kg; SAR(10 g) = 6.09 W/kg

Smallest distance from peaks to all points 3 dB below = 9 mm

Ratio of SAR at M2 to SAR at M1 = 48.9%

Maximum value of SAR (measured) = 21.6 W/kg



0 dB = 21.6 W/kg = 13.34 dBW/kg

Test Date:2022/11/11

SystemPerformanceCheck-SAM1-D2600HSL

DUT: Dipole 2600 MHz D2600V2; Type: D2600V2

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

Medium parameters used: $f = 2600$ MHz; $\sigma = 1.91$ S/m; $\epsilon_r = 40.38$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7524; ConvF(7.45, 7.45, 7.45) @ 2600 MHz; Calibrated: 7/22/2022
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1552; Calibrated: 5/17/2022
- Phantom: Twin-SAM V8.0 (30deg probe tilt); Type: QD 000 P41 AA; Serial: 1967
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

configuration/d=10mm, Pin=250mW, dist=1.4mm (EX-Probe)/Area Scan (7x9x1): Measurement grid:

dx=12mm, dy=12mm; Maximum value of SAR (measured) = 23.8 W/kg

configuration/d=10mm, Pin=250mW, dist=1.4mm (EX-Probe)/Zoom Scan (7x7x7)/Cube 0: Measurement

grid: dx=5mm, dy=5mm, dz=5mm; Reference Value = 107.6 V/m; Power Drift = 0.09 dB

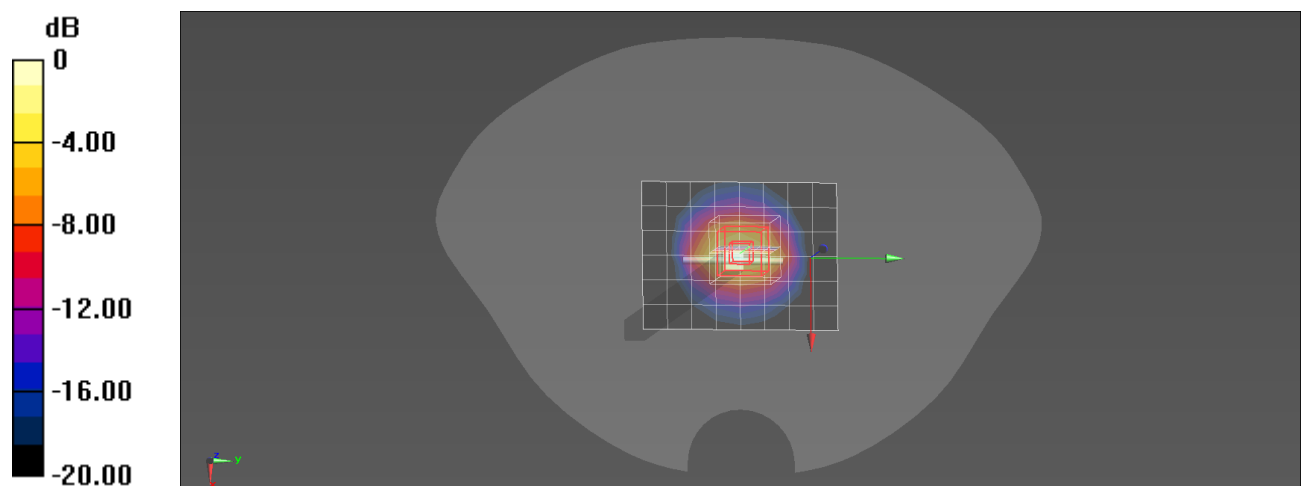
Peak SAR (extrapolated) = 30.2 W/kg

SAR(1 g) = 14.3 W/kg; SAR(10 g) = 6.5 W/kg

Smallest distance from peaks to all points 3 dB below = 9 mm

Ratio of SAR at M2 to SAR at M1 = 47.7%

Maximum value of SAR (measured) = 24.3 W/kg



0 dB = 24.3 W/kg = 13.86 dBW/kg

Test Date:2022/11/14

SystemPerformanceCheck-SAM1-D3500HSL

DUT: Dipole 3500 MHz D3500V2; Type: D3500V2

Communication System: CW; Frequency: 3500 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 3500$ MHz; $\sigma = 2.78$ S/m; $\epsilon_r = 38.83$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7524; ConvF(7.04, 7.04, 7.04) @ 3500 MHz; Calibrated: 7/22/2022
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1552; Calibrated: 5/17/2022
- Phantom: Twin-SAM V8.0 (20deg probe tilt); Type: QD 000 P41 AA; Serial: 1967
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Configuration/d=10mm, Pin=100mW, dist=1.4mm (EX-Probe)/Area Scan (6x7x1): Measurement grid:

dx=12mm, dy=12mm; Maximum value of SAR (measured) = 9.76 W/kg

Configuration/d=10mm, Pin=100mW, dist=1.4mm (EX-Probe)/Zoom Scan (8x8x8) (7x7x9)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=3.5mm; Reference Value = 64.27 V/m; Power Drift = 0.05 dB

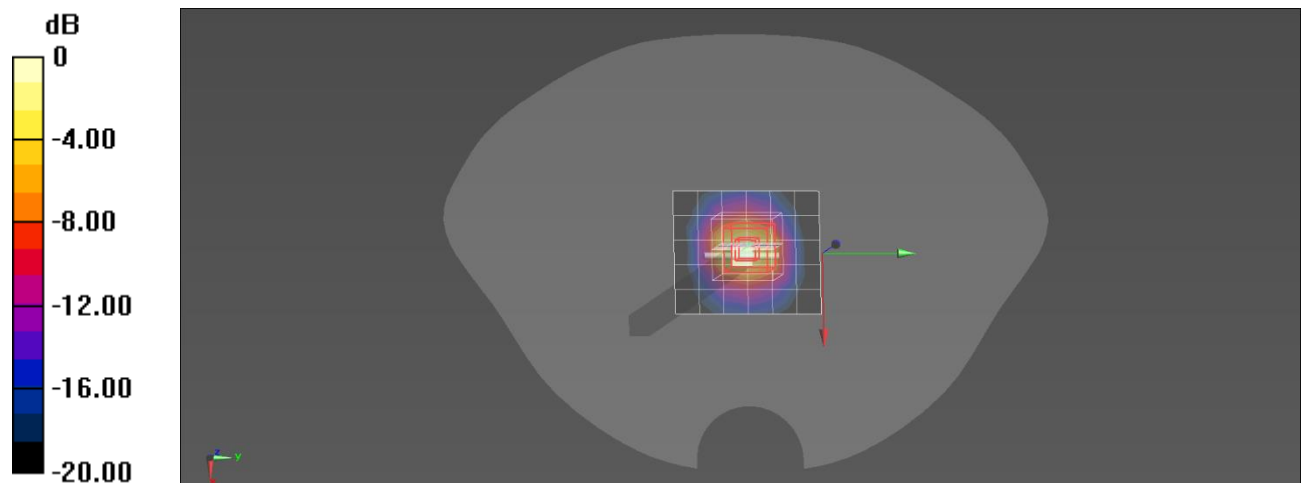
Peak SAR (extrapolated) = 16.8 W/kg

SAR(1 g) = 6.56 W/kg; SAR(10 g) = 2.53 W/kg

Smallest distance from peaks to all points 3 dB below = 8.2 mm

Ratio of SAR at M2 to SAR at M1 = 50.9%

Maximum value of SAR (measured) = 12.5 W/kg



0 dB = 12.5 W/kg = 10.97 dBW/kg

Test Date:2022/11/14

SystemPerformanceCheck-SAM1-D3700HSL

DUT: Dipole 3700 MHz D3700V2; Type: D3700V2

Communication System: CW; Frequency: 3700 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 3700 \text{ MHz}$; $\sigma = 2.98 \text{ S/m}$; $\epsilon_r = 38.51$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7524; ConvF(6.86, 6.86, 6.86) @ 3700 MHz; Calibrated: 7/22/2022
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1552; Calibrated: 5/17/2022
- Phantom: Twin-SAM V8.0 (20deg probe tilt); Type: QD 000 P41 AA; Serial: 1967
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Configuration/d=10mm, Pin=100mW, dist=1.4mm (EX-Probe)/Area Scan (6x7x1): Measurement grid:

dx=12mm, dy=12mm; Maximum value of SAR (measured) = 10.8 W/kg

Configuration/d=10mm, Pin=100mW, dist=1.4mm (EX-Probe)/Zoom Scan (8x8x8) (7x7x9)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=3.5mm; Reference Value = 63.73 V/m; Power Drift = 0.07 dB

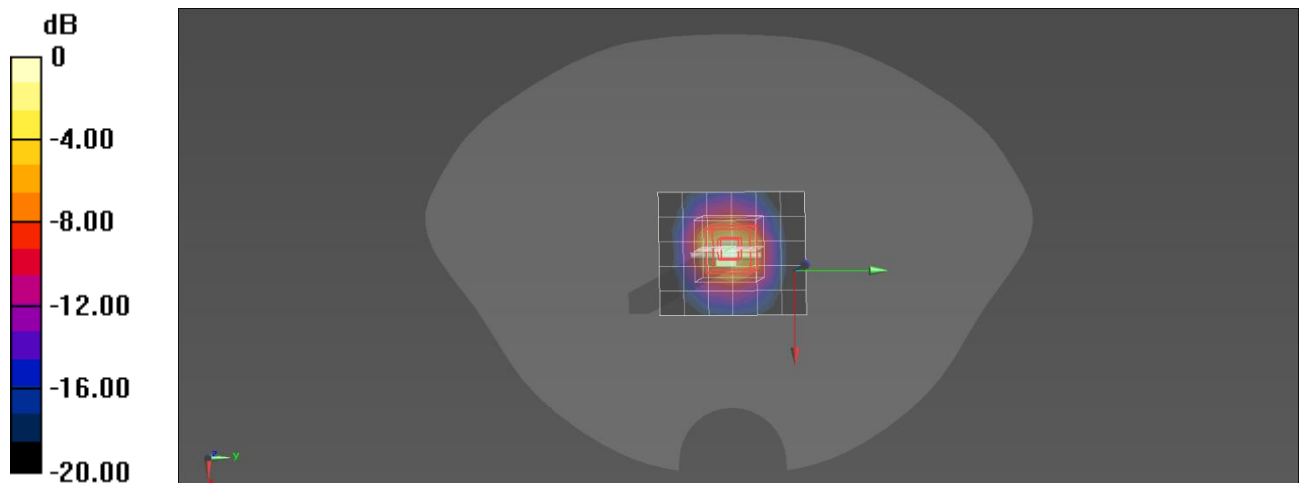
Peak SAR (extrapolated) = 18.4 W/kg

SAR(1 g) = 6.88 W/kg; SAR(10 g) = 2.57 W/kg

Smallest distance from peaks to all points 3 dB below = 8 mm

Ratio of SAR at M2 to SAR at M1 = 49.1%

Maximum value of SAR (measured) = 13.4 W/kg



0 dB = 13.4 W/kg = 11.27 dBW/kg

Test Date:2022/10/26

SystemPerformanceCheck-SAM1-D5250HSL

DUT: Dipole D5GHzV2; Type: D5GHzV2

Communication System: CW; Frequency: 5250 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 5250$ MHz; $\sigma = 4.54$ S/m; $\epsilon_r = 35.95$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7524; ConvF(5.38, 5.38, 5.38) @ 5250 MHz; Calibrated: 7/22/2022
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1552; Calibrated: 5/17/2022
- Phantom: Twin-SAM V8.0 (20deg probe tilt); Type: QD 000 P41 AA; Serial: 1967
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Configuration/d=10mm, Pin=100mW, dist=1.4mm (EX-Probe)/Area Scan (7x7x1): Measurement grid:

dx=10mm, dy=10mm; Maximum value of SAR (measured) = 19.1 W/kg

Configuration/d=10mm, Pin=100mW, dist=1.4mm (EX-Probe)/Zoom Scan (8x8x8) (7x7x7)/Cube 0:

Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Reference Value = 62.96 V/m; Power Drift = 0.07 dB

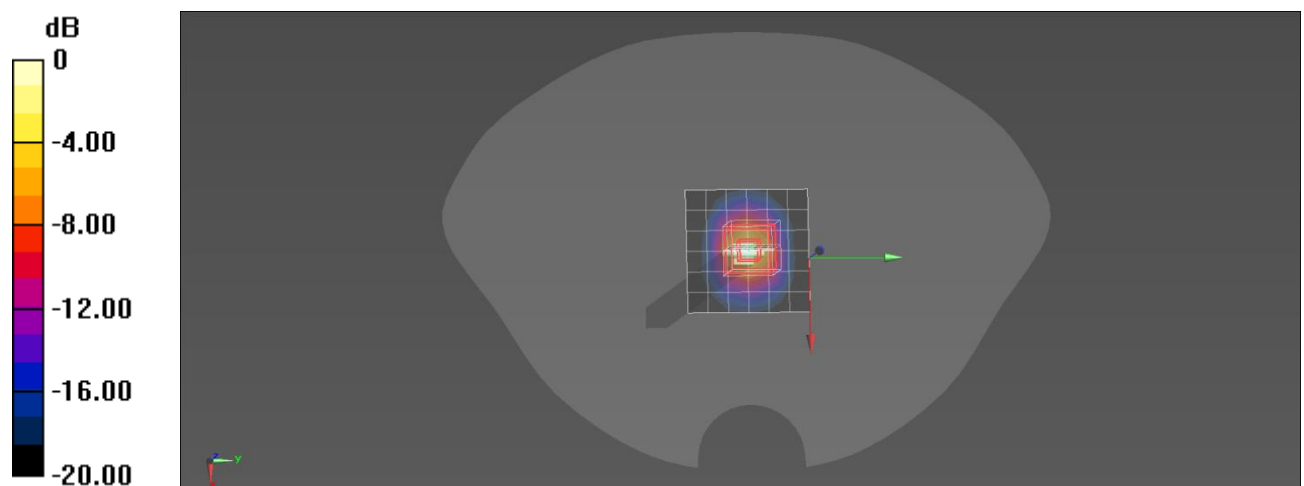
Peak SAR (extrapolated) = 29.7 W/kg

SAR(1 g) = 7.73 W/kg; SAR(10 g) = 2.21 W/kg

Smallest distance from peaks to all points 3 dB below = 6.8 mm

Ratio of SAR at M2 to SAR at M1 = 66.3%

Maximum value of SAR (measured) = 19.3 W/kg



0 dB = 19.3 W/kg = 12.86 dBW/kg

Test Date:2022/10/26

SystemPerformanceCheck-SAM1-D5750HSL

DUT: Dipole D5GHzV2; Type: D5GHzV2

Communication System: CW; Frequency: 5750 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 5750 \text{ MHz}$; $\sigma = 5.12 \text{ S/m}$; $\epsilon_r = 35.06$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7524; ConvF(4.87, 4.87, 4.87) @ 5750 MHz; Calibrated: 7/22/2022
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1552; Calibrated: 5/17/2022
- Phantom: Twin-SAM V8.0 (20deg probe tilt); Type: QD 000 P41 AA; Serial: 1967
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Configuration/d=10mm, Pin=100 mW, dist=1.4mm (EX-Probe)/Area Scan (7x9x1): Measurement grid:

dx=10mm, dy=10mm; Maximum value of SAR (measured) = 19.6 W/kg

Configuration/d=10mm, Pin=100 mW, dist=1.4mm (EX-Probe)/Zoom Scan (8x8x8) (7x7x7)/Cube 0:

Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Reference Value = 59.85 V/m; Power Drift = 0.01 dB

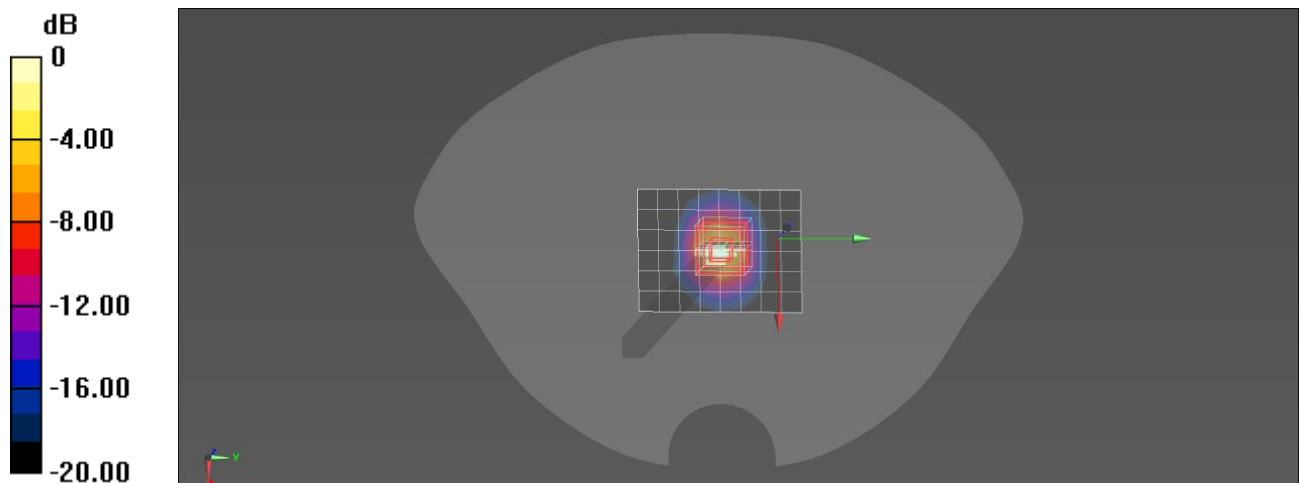
Peak SAR (extrapolated) = 32.2 W/kg

SAR(1 g) = 7.55 W/kg; SAR(10 g) = 2.16 W/kg

Smallest distance from peaks to all points 3 dB below = 7.2 mm

Ratio of SAR at M2 to SAR at M1 = 62.7%

Maximum value of SAR (measured) = 19.6 W/kg



0 dB = 19.6 W/kg = 12.92 dBW/kg

Annex B - Test Data Plots

Plot 1#

Test Date: 2022/11/10

DUT: Spot Mapper; Type: Spot
Procedure Name: LTE Band 2 High QPSK 20M_1RB_OS0 Body Front

Communication System: LTE; Frequency: 1900 MHz

Medium parameters used: $f = 1900$ MHz; $\sigma = 1.41$ S/m; $\epsilon_r = 41.33$; $\rho = 1000$ kg/m³; Tissue Temp (celsius)-22.5°C;

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7524; ConvF(8.05, 8.05, 8.05) @ 1900 MHz; Calibrated: 7/22/2022
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1552; Calibrated: 5/17/2022
- Phantom: Twin-SAM V8.0 (30deg probe tilt); Type: QD 000 P41 AA; Serial: 1967
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Configuration/LTE Band 2 High QPSK 20M_1RB_OS0 Body Front/Area Scan (9x13x1): Measurement grid:

dx=15mm, dy=15mm; Maximum value of SAR (measured) = 1.27 W/kg

Configuration/LTE Band 2 High QPSK 20M_1RB_OS0 Body Front/Zoom Scan (6x6x7)/Cube 0:

Measurement grid: dx=8mm, dy=8mm, dz=5mm; Reference Value = 10.73 V/m; Power Drift = 0.10 dB

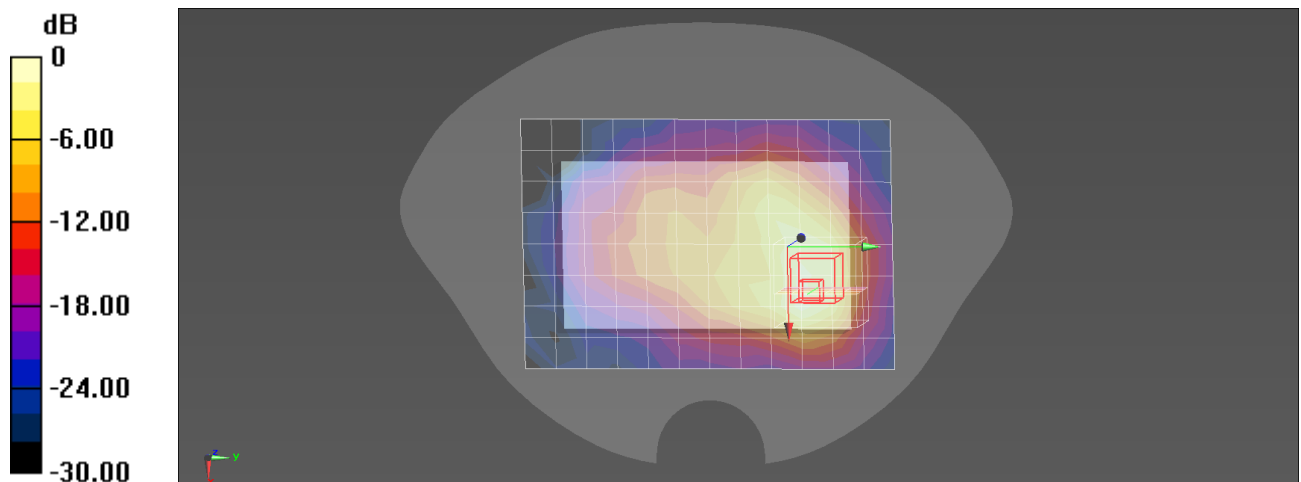
Peak SAR (extrapolated) = 1.97 W/kg

SAR(1 g) = 0.957 W/kg; SAR(10 g) = 0.487 W/kg

Smallest distance from peaks to all points 3 dB below = 9.7 mm

Ratio of SAR at M2 to SAR at M1 = 49.2%

Maximum value of SAR (measured) = 1.60 W/kg



0 dB = 1.60 W/kg = 2.04 dBW/kg

Plot 2#

Test Date: 2022/11/09

DUT: Spot Mapper; Type: Spot
Procedure Name: LTE Band 5 Mid QPSK 10M_1RB_OS0 Body Back

Communication System: LTE; Frequency: 836.5 MHz

Medium parameters used: $f = 836.5$ MHz; $\sigma = 0.91$ S/m; $\epsilon_r = 43.4$; $\rho = 1000$ kg/m³; Tissue Temp (celsius)-22.5°C;

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7524; ConvF(10.05, 10.05, 10.05) @ 836.5 MHz; Calibrated: 7/22/2022
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1552; Calibrated: 5/17/2022
- Phantom: Twin-SAM V8.0 (30deg probe tilt); Type: QD 000 P41 AA; Serial: 1967
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Configuration/LTE Band 5 Mid QPSK 10M_1RB_OS0 Body Back/Area Scan (9x13x1): Measurement grid:

dx=15mm, dy=15mm; Maximum value of SAR (measured) = 0.233 W/kg

Configuration/LTE Band 5 Mid QPSK 10M_1RB_OS0 Body Back/Zoom Scan (6x6x7)/Cube 0:

Measurement grid: dx=8mm, dy=8mm, dz=5mm; Reference Value = 1.739 V/m; Power Drift = -0.12 dB

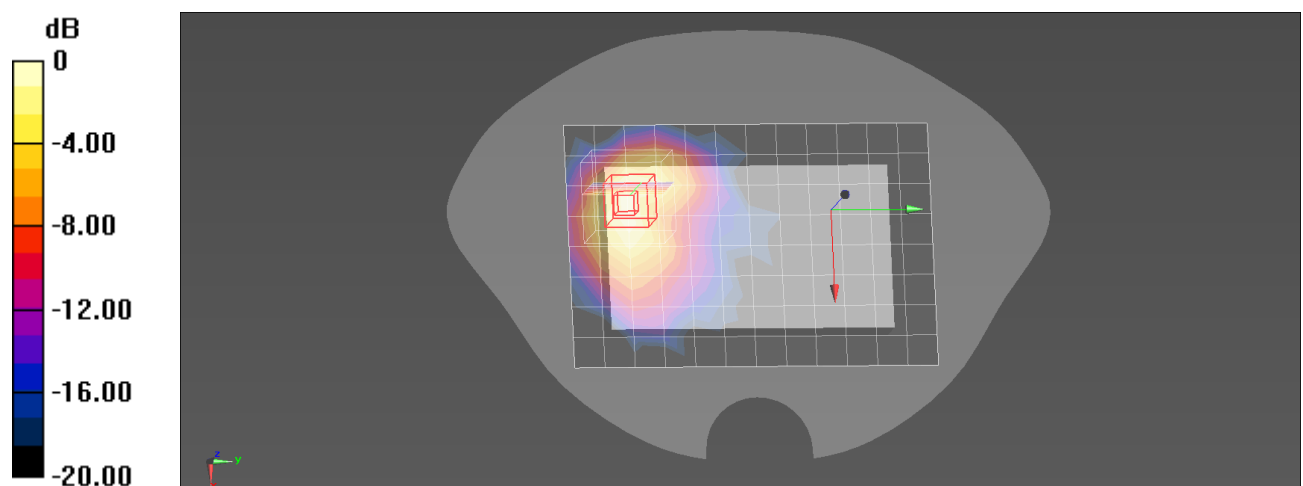
Peak SAR (extrapolated) = 0.309 W/kg

SAR(1 g) = 0.153 W/kg; SAR(10 g) = 0.083 W/kg

Smallest distance from peaks to all points 3 dB below = 10.1 mm

Ratio of SAR at M2 to SAR at M1 = 49.8%

Maximum value of SAR (measured) = 0.237 W/kg



0 dB = 0.237 W/kg = -6.25 dBW/kg

Plot 3#

Test Date: 2022/11/14

DUT: Spot Mapper; Type: Spot
Procedure Name: LTE Band 48 Mid-High QPSK 20M_1RB_OS99 Body Front

Communication System: LTE; Frequency: 3657.5 MHz

Medium parameters used: $f = 3657.5$ MHz; $\sigma = 2.94$ S/m; $\epsilon_r = 38.58$; $\rho = 1000$ kg/m³; Tissue Temp (celsius)-22.5°C; Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7524; ConvF(6.86, 6.86, 6.86) @ 3657.5 MHz; Calibrated: 7/22/2022
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1552; Calibrated: 5/17/2022
- Phantom: Twin-SAM V8.0 (30deg probe tilt); Type: QD 000 P41 AA; Serial: 1967
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Configuration/LTE Band 48 Mid-High QPSK 20M_1RB_OS99 Body Front/Area Scan (11x16x1):

Measurement grid: dx=12mm, dy=12mm; Maximum value of SAR (measured) = 0.377 W/kg

Configuration/LTE Band 48 Mid-High QPSK 20M_1RB_OS99 Body Front/Zoom Scan (7x7x9)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=3.5mm; Reference Value = 2.806 V/m; Power Drift = -0.10 dB

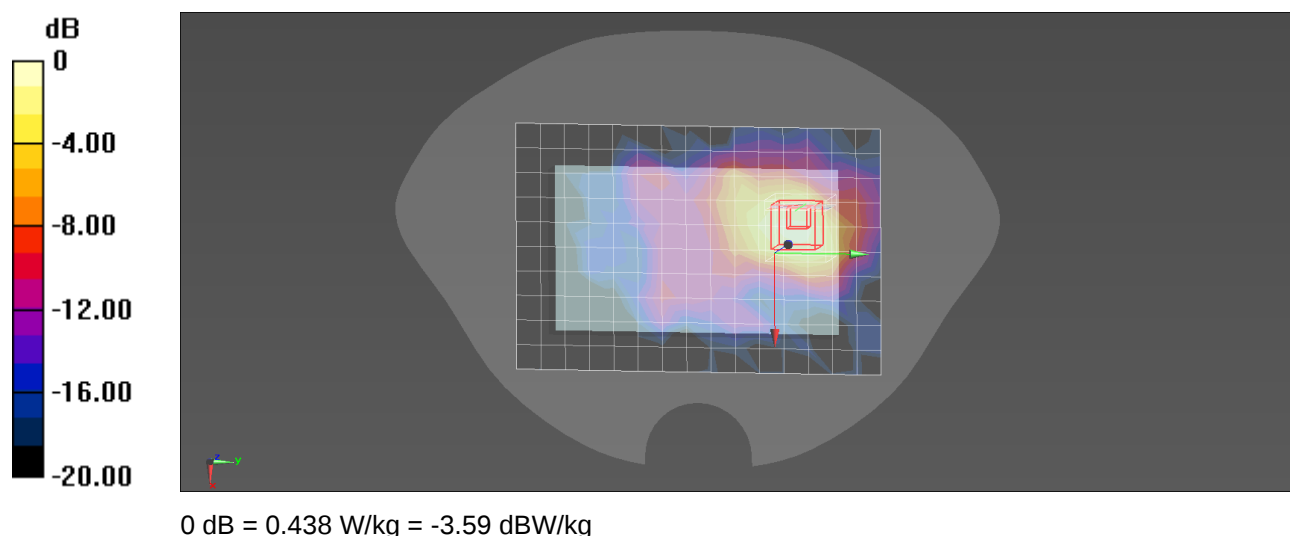
Peak SAR (extrapolated) = 0.663 W/kg

SAR(1 g) = 0.239 W/kg; SAR(10 g) = 0.105 W/kg

Smallest distance from peaks to all points 3 dB below = 7.8 mm

Ratio of SAR at M2 to SAR at M1 = 46.6%

Maximum value of SAR (measured) = 0.438 W/kg



Plot 4#

Test Date: 2022/11/10

DUT: Spot Mapper; Type: Spot
Procedure Name: LTE Band 66 Low QPSK 20M_1RB_OS99 Body Front

Communication System: LTE; Frequency: 1720 MHz

Medium parameters used: $f = 1720$ MHz; $\sigma = 1.32$ S/m; $\epsilon_r = 41.67$; $\rho = 1000$ kg/m³; Tissue Temp (celsius)-22.5°C;

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7524; ConvF(8.43, 8.43, 8.43) @ 1720 MHz; Calibrated: 7/22/2022
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1552; Calibrated: 5/17/2022
- Phantom: Twin-SAM V8.0 (30deg probe tilt); Type: QD 000 P41 AA; Serial: 1967
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Configuration/LTE Band 66 Low QPSK 20M_1RB_OS99 Body Front/Area Scan (9x13x1): Measurement grid: dx=15mm, dy=15mm; Maximum value of SAR (measured) = 1.30 W/kg

Configuration/LTE Band 66 Low QPSK 20M_1RB_OS99 Body Front/Zoom Scan (6x6x7)/Cube 0:

Measurement grid: dx=8mm, dy=8mm, dz=5mm; Reference Value = 15.21 V/m; Power Drift = 0.04 dB

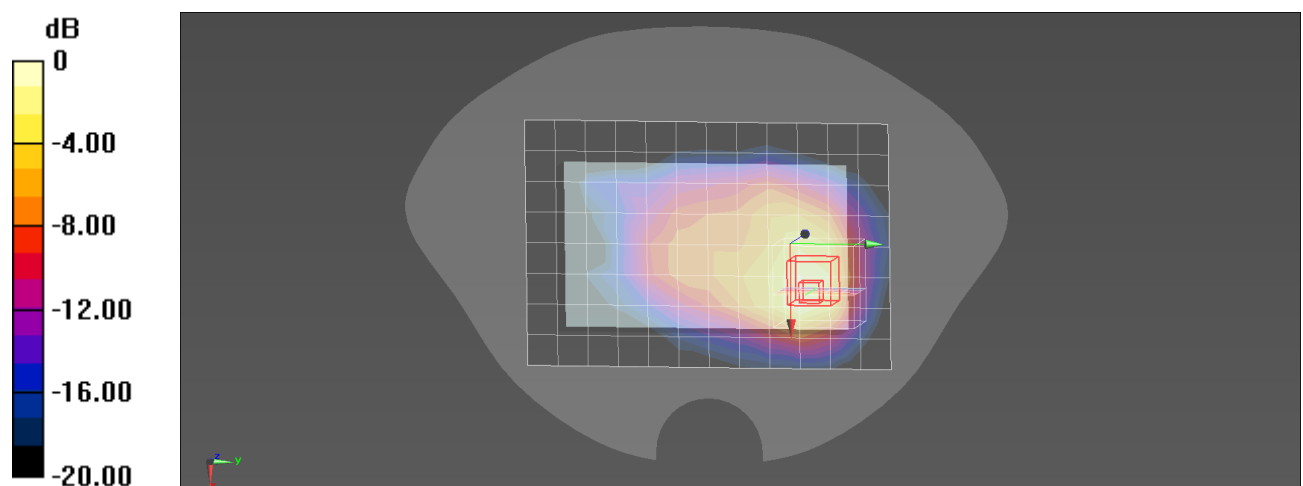
Peak SAR (extrapolated) = 2.06 W/kg

SAR(1 g) = 1.02 W/kg; SAR(10 g) = 0.540 W/kg

Smallest distance from peaks to all points 3 dB below = 11.3 mm

Ratio of SAR at M2 to SAR at M1 = 48.9%

Maximum value of SAR (measured) = 1.64 W/kg



0 dB = 1.64 W/kg = 2.15 dBW/kg

Plot 5#

Test Date: 2022/11/09

DUT: Spot Mapper; Type: Spot
Procedure Name: LTE Band 71 Low QPSK 20M_1RB_OS0 Body Front

Communication System: LTE; Frequency: 673 MHz

Medium parameters used: $f = 673$ MHz; $\sigma = 0.85$ S/m; $\epsilon_r = 43.95$; $\rho = 1000$ kg/m³; Tissue Temp (celsius)-22.5°C;

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7524; ConvF(10.41, 10.41, 10.41) @ 673 MHz; Calibrated: 7/22/2022
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1552; Calibrated: 5/17/2022
- Phantom: Twin-SAM V8.0 (30deg probe tilt); Type: QD 000 P41 AA; Serial: 1967
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Configuration/LTE Band 71 Low QPSK 20M_1RB_OS0 Body Front/Area Scan (9x13x1): Measurement grid:

dx=15mm, dy=15mm; Maximum value of SAR (measured) = 1.14 W/kg

Configuration/LTE Band 71 Low QPSK 20M_1RB_OS0 Body Front/Zoom Scan (6x6x7)/Cube 0:

Measurement grid: dx=8mm, dy=8mm, dz=5mm; Reference Value = 24.65 V/m; Power Drift = -0.02 dB

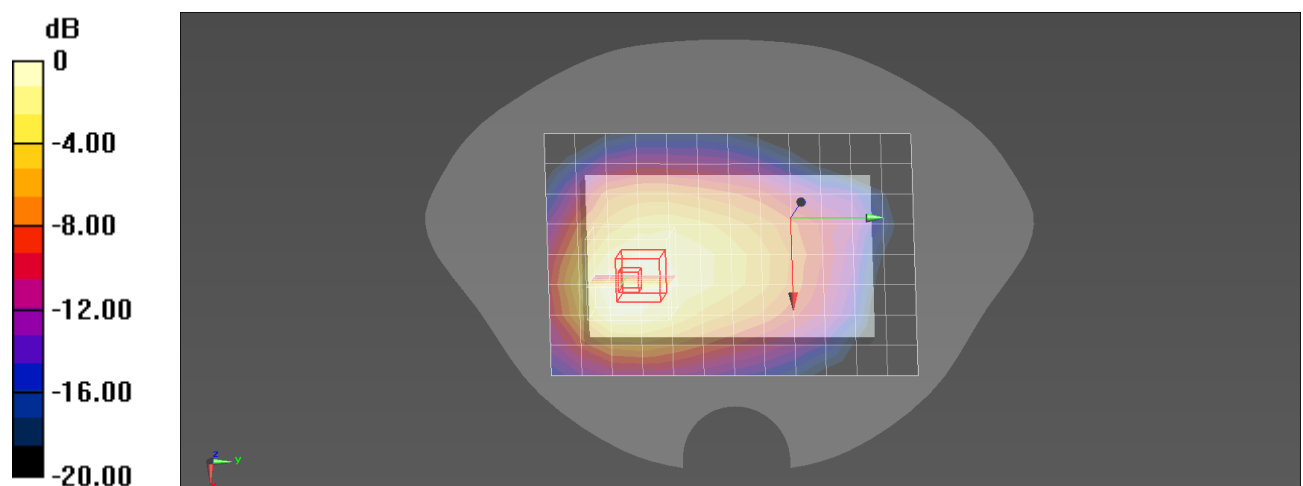
Peak SAR (extrapolated) = 1.39 W/kg

SAR(1 g) = 0.832 W/kg; SAR(10 g) = 0.546 W/kg

Smallest distance from peaks to all points 3 dB below = 18.1 mm

Ratio of SAR at M2 to SAR at M1 = 59.7%

Maximum value of SAR (measured) = 1.16 W/kg



0 dB = 1.16 W/kg = 0.64 dBW/kg

Plot 6#

Test Date: 2022/11/11

DUT: Spot Mapper; Type: Spot
Procedure Name: NR n41 Mid BPSK 100M_135RB_OS69 Body Front

Communication System: NR; Frequency: 2592.99 MHz

Medium parameters used: $f = 2592.99$ MHz; $\sigma = 1.91$ S/m; $\epsilon_r = 40.39$; $\rho = 1000$ kg/m³; Tissue Temp (celsius)-22.5°C; Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7524; ConvF(7.45, 7.45, 7.45) @ 2592.99 MHz; Calibrated: 7/22/2022
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1552; Calibrated: 5/17/2022
- Phantom: Twin-SAM V8.0 (30deg probe tilt); Type: QD 000 P41 AA; Serial: 1967
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Configuration/NR n41 Mid BPSK 100M_135RB_OS69 Body Front/Area Scan (11x16x1): Measurement grid:

dx=12mm, dy=12mm; Maximum value of SAR (measured) = 0.787 W/kg

Configuration/NR n41 Mid BPSK 100M_135RB_OS69 Body Front/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm; Reference Value = 4.006 V/m; Power Drift = -0.15 dB

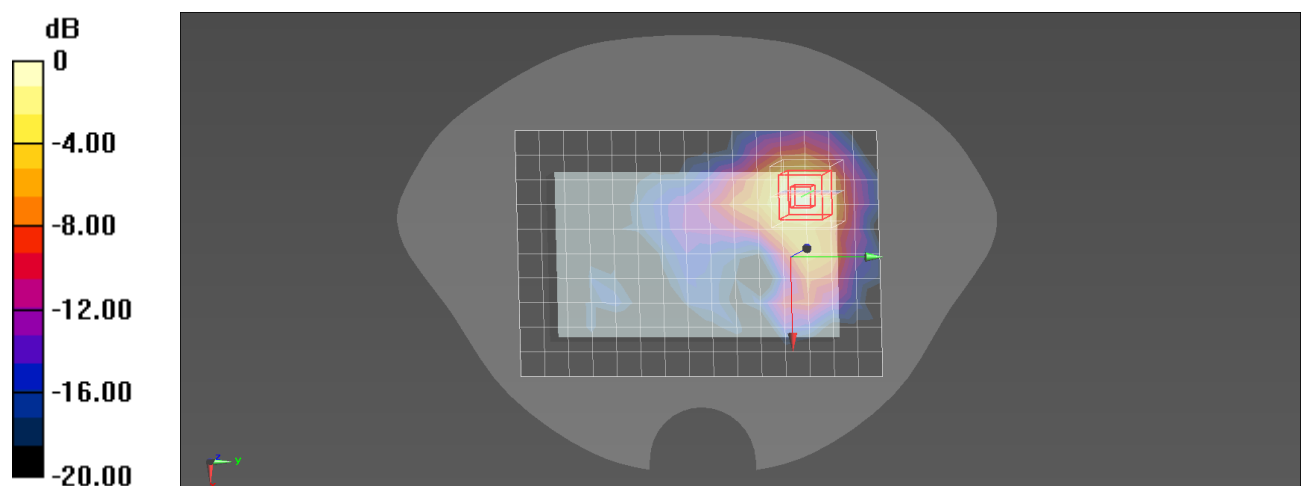
Peak SAR (extrapolated) = 0.999 W/kg

SAR(1 g) = 0.507 W/kg; SAR(10 g) = 0.239 W/kg

Smallest distance from peaks to all points 3 dB below = 11.4 mm

Ratio of SAR at M2 to SAR at M1 = 52.1%

Maximum value of SAR (measured) = 0.815 W/kg



0 dB = 0.815 W/kg = -0.89 dBW/kg

Plot 7#

Test Date: 2022/11/14

DUT: Spot Mapper; Type: Spot
Procedure Name: NR n48 Mid-High BPSK 40M_1RB_OS1 Body Front

Communication System: NR; Frequency: 3652.5 MHz

Medium parameters used: $f = 3652.5$ MHz; $\sigma = 2.93$ S/m; $\epsilon_r = 38.59$; $\rho = 1000$ kg/m³; Tissue Temp (celsius)-22.5°C; Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7524; ConvF(6.86, 6.86, 6.86) @ 3652.5 MHz; Calibrated: 7/22/2022
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1552; Calibrated: 5/17/2022
- Phantom: Twin-SAM V8.0 (20deg probe tilt); Type: QD 000 P41 AA; Serial: 1967
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Configuration/NR n48 Mid-High BPSK 40M_1RB_OS1 Body Front/Area Scan (11x16x1): Measurement grid: dx=12mm, dy=12mm; Maximum value of SAR (measured) = 0.239 W/kg

Configuration/NR n48 Mid-High BPSK 40M_1RB_OS1 Body Front/Zoom Scan (7x7x9)/Cube 0:

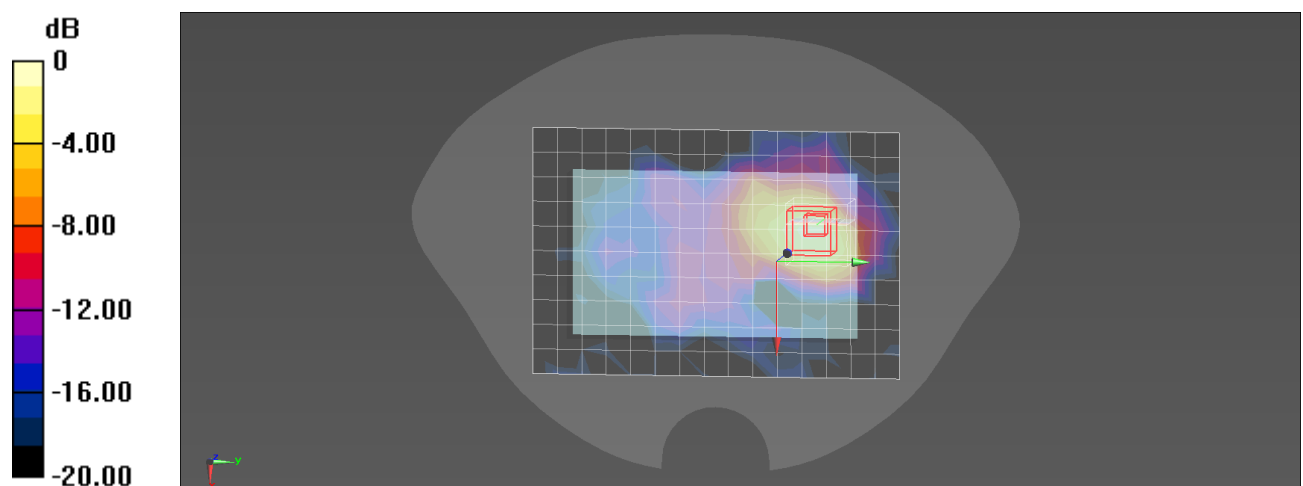
Measurement grid: dx=5mm, dy=5mm, dz=3.5mm; Reference Value = 2.253 V/m; Power Drift = 0.12 dB
Peak SAR (extrapolated) = 0.416 W/kg

SAR(1 g) = 0.152 W/kg; SAR(10 g) = 0.067 W/kg

Smallest distance from peaks to all points 3 dB below = 9.1 mm

Ratio of SAR at M2 to SAR at M1 = 46.7%

Maximum value of SAR (measured) = 0.292 W/kg



0 dB = 0.292 W/kg = -5.35 dBW/kg

Plot 8#

Test Date: 2022/11/11

DUT: Spot Mapper; Type: Spot
Procedure Name: NR n41 MIMO Mid QPSK 100M_135RB_OS69 Body Front

Communication System: NR; Frequency: 2592.99 MHz

Medium parameters used: $f = 2592.99$ MHz; $\sigma = 1.91$ S/m; $\epsilon_r = 40.39$; $\rho = 1000$ kg/m³; Tissue Temp (celsius)-22.5°C; Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7524; ConvF(7.45, 7.45, 7.45) @ 2592.99 MHz; Calibrated: 7/22/2022
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1552; Calibrated: 5/17/2022
- Phantom: Twin-SAM V8.0 (30deg probe tilt); Type: QD 000 P41 AA; Serial: 1967
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Configuration/NR n41 MIMO Mid QPSK 100M_135RB_OS69 Body Front/Area Scan (11x16x1):

Measurement grid: dx=12mm, dy=12mm; Maximum value of SAR (measured) = 0.398 W/kg

Configuration/NR n41 MIMO Mid QPSK 100M_135RB_OS69 Body Front/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm; Reference Value = 1.527 V/m; Power Drift = 0.17 dB

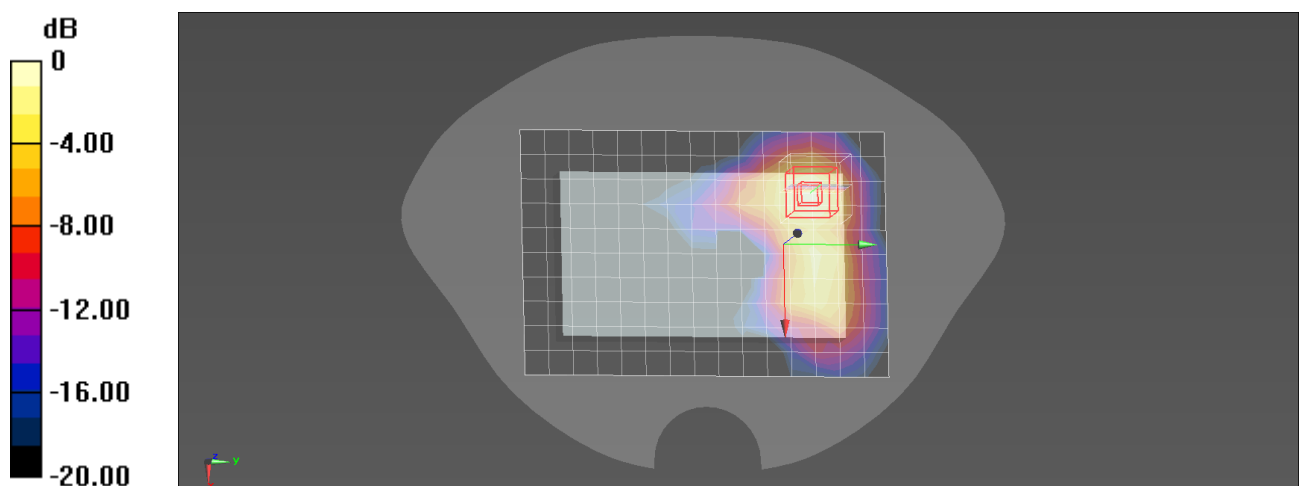
Peak SAR (extrapolated) = 0.544 W/kg

SAR(1 g) = 0.268 W/kg; SAR(10 g) = 0.126 W/kg

Smallest distance from peaks to all points 3 dB below = 11.7 mm

Ratio of SAR at M2 to SAR at M1 = 51.1%

Maximum value of SAR (measured) = 0.433 W/kg



0 dB = 0.433 W/kg = -3.64 dBW/kg

Plot 9#

Test Date: 2022/11/11

DUT: Spot Mapper; Type: Spot
Procedure Name: NR n41 HPUE MIMO Mid QPSK 100M_135RB_OS69 Body Front

Communication System: NR; Frequency: 2592.99 MHz

Medium parameters used: $f = 2592.99$ MHz; $\sigma = 1.91$ S/m; $\epsilon_r = 40.39$; $\rho = 1000$ kg/m³; Tissue Temp (celsius)-22.5°C; Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7524; ConvF(7.45, 7.45, 7.45) @ 2592.99 MHz; Calibrated: 7/22/2022
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1552; Calibrated: 5/17/2022
- Phantom: Twin-SAM V8.0 (30deg probe tilt); Type: QD 000 P41 AA; Serial: 1967
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Configuration/NR n41 HPUE MIMO Mid QPSK 100M_135RB_OS69 Body Front/Area Scan (11x16x1):

Measurement grid: dx=12mm, dy=12mm; Maximum value of SAR (measured) = 0.581 W/kg

Configuration/NR n41 HPUE MIMO Mid QPSK 100M_135RB_OS69 Body Front/Zoom Scan (7x7x7)/Cube
0: Measurement grid: dx=5mm, dy=5mm, dz=5mm; Reference Value = 2.986 V/m; Power Drift = -0.12 dB

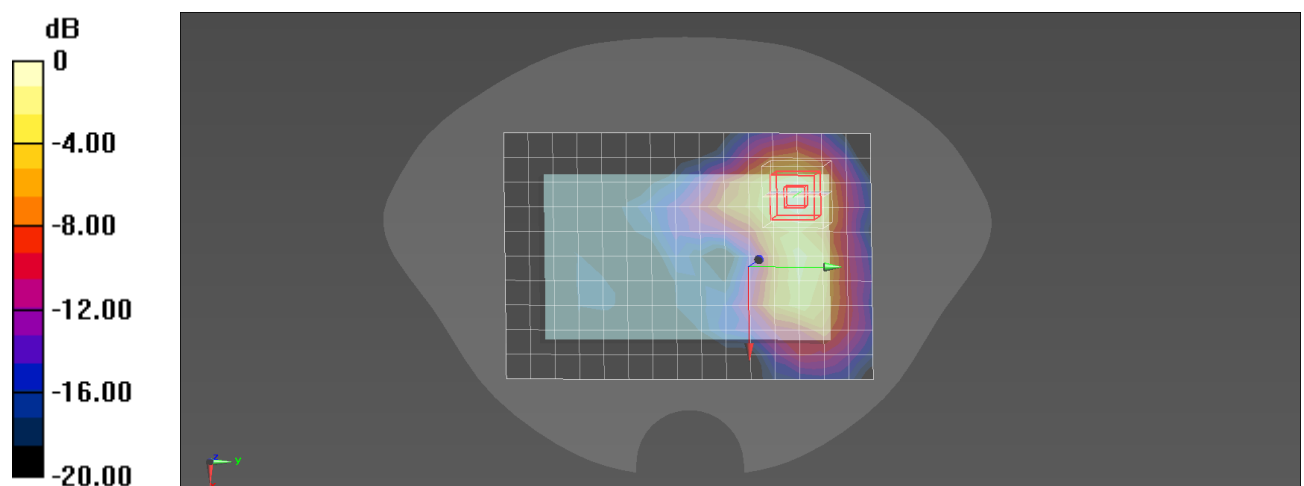
Peak SAR (extrapolated) = 0.780 W/kg

SAR(1 g) = 0.393 W/kg; SAR(10 g) = 0.186 W/kg

Smallest distance from peaks to all points 3 dB below = 12.1 mm

Ratio of SAR at M2 to SAR at M1 = 51.5%

Maximum value of SAR (measured) = 0.630 W/kg



0 dB = 0.630 W/kg = -2.01 dBW/kg

Plot 10#

Test Date: 2022/10/25

DUT: Spot Mapper; Type: Spot
Procedure Name: 802.11b 2437MHz Body Front

Communication System: 802.11b; Frequency: 2437 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 2437$ MHz; $\sigma = 1.79$ S/m; $\epsilon_r = 40.6$; $\rho = 1000$ kg/m³; Tissue Temp (celsius)-22.5°C;

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7524; ConvF(7.65, 7.65, 7.65) @ 2437 MHz; Calibrated: 7/22/2022
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1552; Calibrated: 5/17/2022
- Phantom: Twin-SAM V8.0 (30deg probe tilt); Type: QD 000 P41 AA; Serial: 1967
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Configuration/802.11b 2437MHz Body Front/Area Scan (11x16x1): Measurement grid: dx=12mm, dy=12mm;

Maximum value of SAR (measured) = 0.433 W/kg

Configuration/802.11b 2437MHz Body Front/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm,

dy=5mm, dz=5mm; Reference Value = 8.153 V/m; Power Drift = -0.17 dB

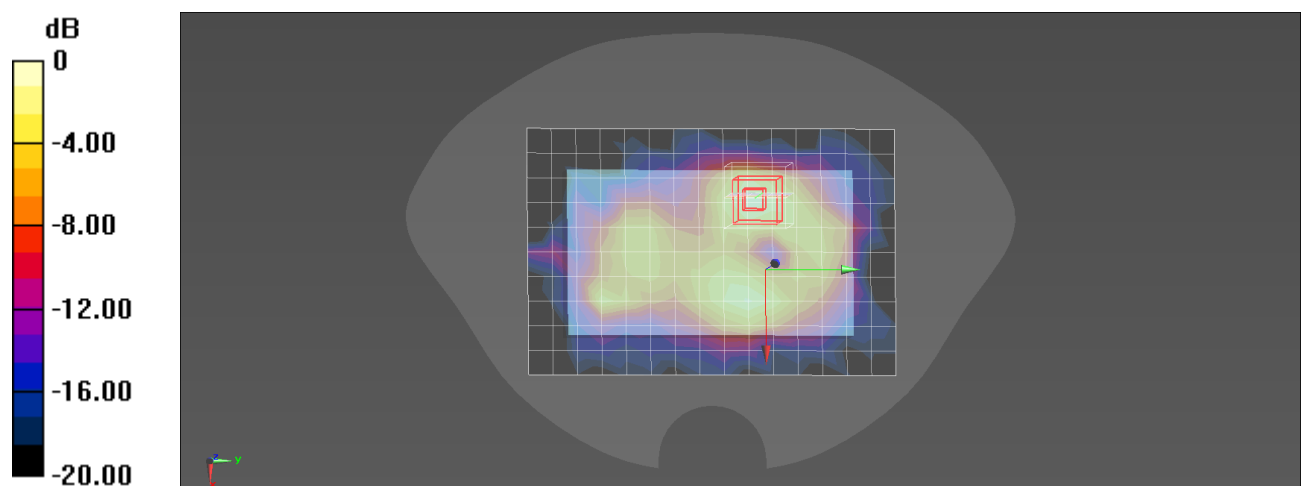
Peak SAR (extrapolated) = 0.601 W/kg

SAR(1 g) = 0.267 W/kg; SAR(10 g) = 0.125 W/kg

Smallest distance from peaks to all points 3 dB below = 10.6 mm

Ratio of SAR at M2 to SAR at M1 = 44.1%

Maximum value of SAR (measured) = 0.466 W/kg



0 dB = 0.466 W/kg = -3.32 dBW/kg

Plot 11#

Test Date: 2022/10/26

DUT: Spot Mapper; Type: Spot
Procedure Name: 802.11ac-VHT20 5240MHz Body Front

Communication System: 802.11ac; Frequency: 5240 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 5240$ MHz; $\sigma = 4.53$ S/m; $\epsilon_r = 35.96$; $\rho = 1000$ kg/m³; Tissue Temp (celsius)-22.5°C;

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7524; ConvF(5.38, 5.38, 5.38) @ 5240 MHz; Calibrated: 7/22/2022
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1552; Calibrated: 5/17/2022
- Phantom: Twin-SAM V8.0 (20deg probe tilt); Type: QD 000 P41 AA; Serial: 1967
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Configuration/802.11ac-VHT20 5240MHz Body Front/Area Scan (12x18x1): Measurement grid: dx=10mm, dy=10mm; Maximum value of SAR (measured) = 1.49 W/kg

Configuration/802.11ac-VHT20 5240MHz Body Front/Zoom Scan (8x8x7)/Cube 0: Measurement grid:

dx=4mm, dy=4mm, dz=1.4mm; Reference Value = 2.946 V/m; Power Drift = -0.12 dB

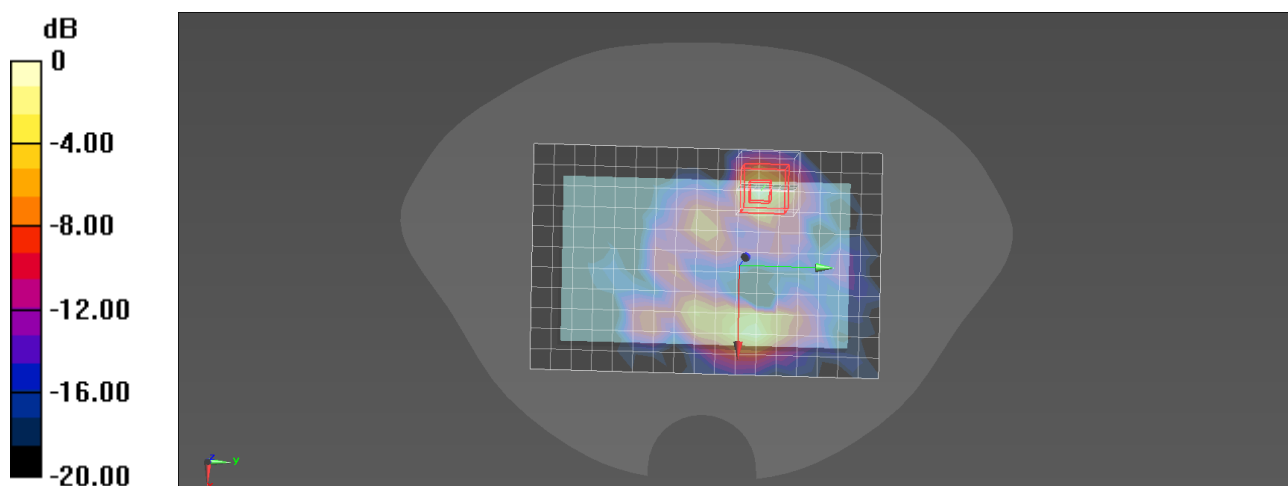
Peak SAR (extrapolated) = 2.39 W/kg

SAR(1 g) = 0.586 W/kg; SAR(10 g) = 0.155 W/kg

Smallest distance from peaks to all points 3 dB below = 6.2 mm

Ratio of SAR at M2 to SAR at M1 = 65.3%

Maximum value of SAR (measured) = 1.48 W/kg



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

Plot 12#

Test Date: 2022/10/26

DUT: Spot Mapper; Type: Spot
Procedure Name: 802.11ax-HE40 5755MHz Body Front

Communication System: 802.11ax; Frequency: 5755 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 5755$ MHz; $\sigma = 5.13$ S/m; $\epsilon_r = 35.05$; $\rho = 1000$ kg/m³; Tissue Temp (celsius)-22.5°C;

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7524; ConvF(4.87, 4.87, 4.87) @ 5755 MHz; Calibrated: 7/22/2022
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1552; Calibrated: 5/17/2022
- Phantom: Twin-SAM V8.0 (20deg probe tilt); Type: QD 000 P41 AA; Serial: 1967
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Configuration/802.11ax-HE40 5755MHz Body Front/Area Scan (12x18x1): Measurement grid: dx=10mm, dy=10mm; Maximum value of SAR (measured) = 1.80 W/kg

Configuration/802.11ax-HE40 5755MHz Body Front/Zoom Scan (9x9x7)/Cube 0: Measurement grid:

dx=4mm, dy=4mm, dz=1.4mm; Reference Value = 2.837 V/m; Power Drift = -0.15 dB

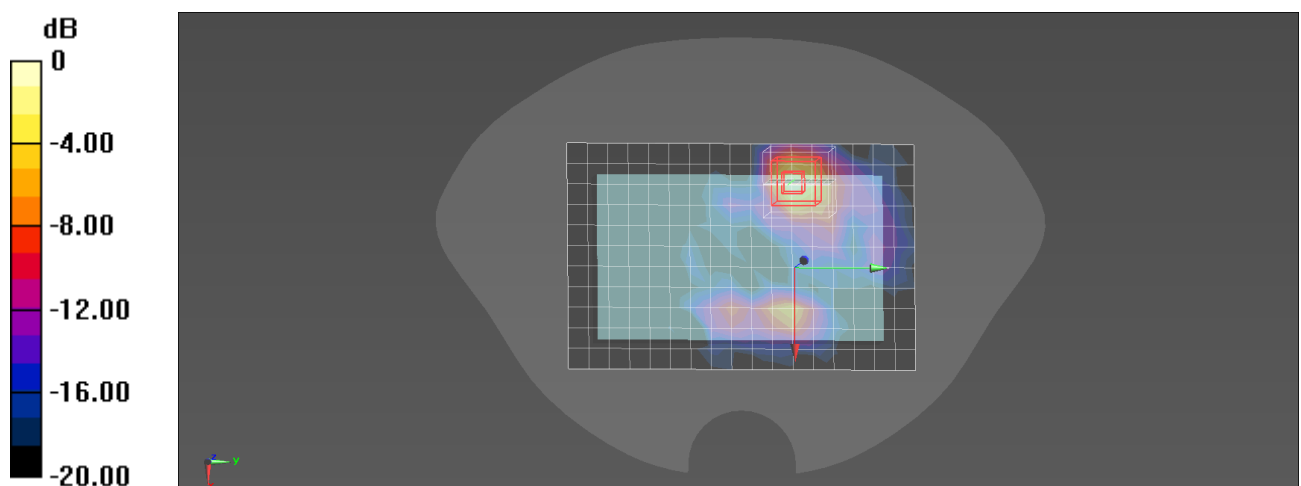
Peak SAR (extrapolated) = 2.84 W/kg

SAR(1 g) = 0.667 W/kg; SAR(10 g) = 0.193 W/kg

Smallest distance from peaks to all points 3 dB below = 7.4 mm

Ratio of SAR at M2 to SAR at M1 = 62.5%

Maximum value of SAR (measured) = 1.65 W/kg



0 dB = 1.65 W/kg = 2.17 dBW/kg

Plot 13#

Test Date: 2022/10/25

DUT: Spot Mapper; Type: Spot
Procedure Name: Bluetooth DH5 2441MHz Body Front

Communication System: Bluetooth; Frequency: 2441 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 2441$ MHz; $\sigma = 1.79$ S/m; $\epsilon_r = 40.6$; $\rho = 1000$ kg/m³; Tissue Temp (celsius)-22.5°C;

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7524; ConvF(7.65, 7.65, 7.65) @ 2441 MHz; Calibrated: 7/22/2022
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1552; Calibrated: 5/17/2022
- Phantom: Twin-SAM V8.0 (30deg probe tilt); Type: QD 000 P41 AA; Serial: 1967
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Configuration/Bluetooth DH5 2441MHz Body Front/Area Scan (11x16x1): Measurement grid: dx=12mm, dy=12mm; Maximum value of SAR (measured) = 0.0573 W/kg

Configuration/Bluetooth DH5 2441MHz Body Front/Zoom Scan (8x8x7)/Cube 0: Measurement grid:

dx=5mm, dy=5mm, dz=5mm; Reference Value = 2.155 V/m; Power Drift = -0.10 dB

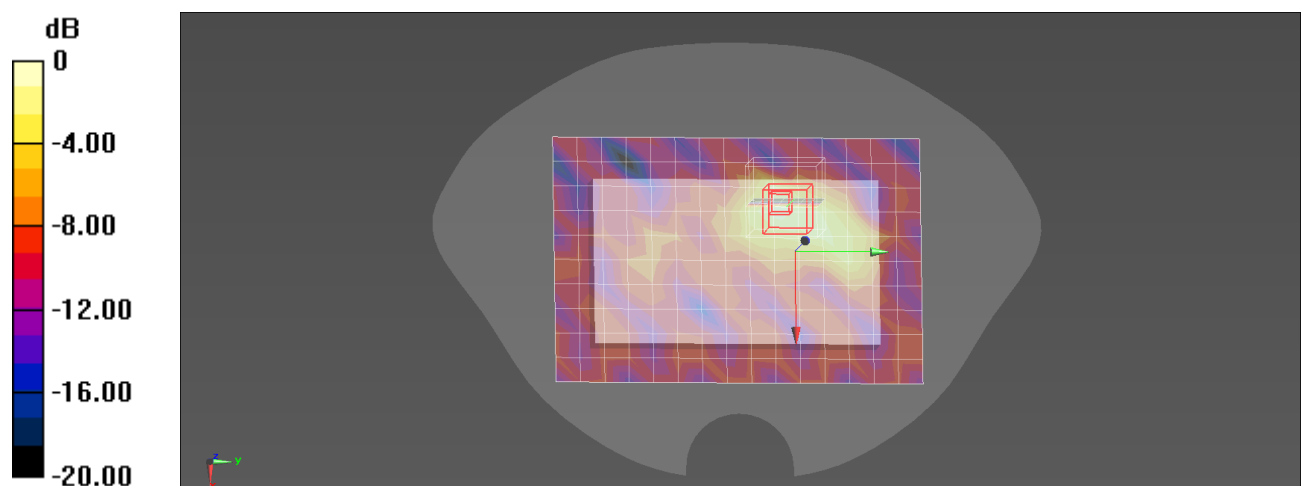
Peak SAR (extrapolated) = 0.0900 W/kg

SAR(1 g) = 0.036 W/kg; SAR(10 g) = 0.013 W/kg

Smallest distance from peaks to all points 3 dB below: Larger than measurement grid

Ratio of SAR at M2 to SAR at M1 = 37.2%

Maximum value of SAR (measured) = 0.0632 W/kg



0 dB = 0.0632 W/kg = -11.99 dBW/kg

Plot 14#

Test Date: 2022/11/09

DUT: Spot Mapper; Type: Spot
Procedure Name: Lora 903MHz Body Front

Communication System: Lora; Frequency: 903 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 903 \text{ MHz}$; $\sigma = 0.93 \text{ S/m}$; $\epsilon_r = 43.22$; $\rho = 1000 \text{ kg/m}^3$; Tissue Temp (celsius)-22.5°C;

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7524; ConvF(10.05, 10.05, 10.05) @ 903 MHz; Calibrated: 7/22/2022
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1552; Calibrated: 5/17/2022
- Phantom: Twin-SAM V8.0 (30deg probe tilt); Type: QD 000 P41 AA; Serial: 1967
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Configuration/Lora 903MHz Body Front/Area Scan (9x13x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$;

Maximum value of SAR (measured) = 0.215 W/kg

Configuration/Lora 903MHz Body Front/Zoom Scan (6x6x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$,

 $dz=5\text{mm}$; Reference Value = 11.04 V/m; Power Drift = -0.06 dB

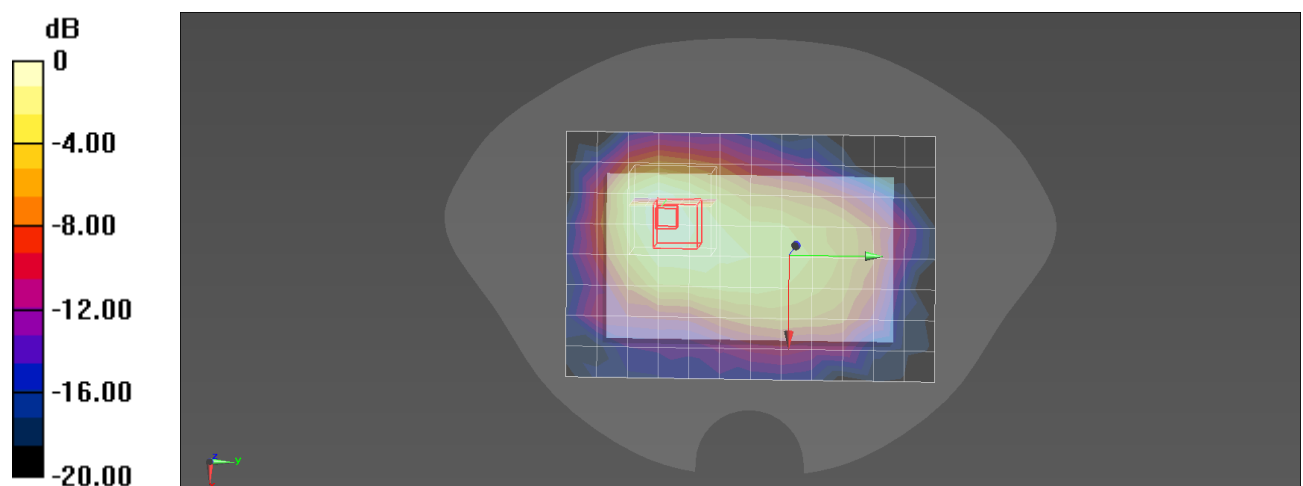
Peak SAR (extrapolated) = 0.272 W/kg

SAR(1 g) = 0.154 W/kg; SAR(10 g) = 0.101 W/kg

Smallest distance from peaks to all points 3 dB below = 15.2 mm

Ratio of SAR at M2 to SAR at M1 = 55.3%

Maximum value of SAR (measured) = 0.223 W/kg



0 dB = 0.223 W/kg = -6.52 dBW/kg

Annex C - SAR Test Setup Photos

Please refer to document “2209RSU059-UT”.

Annex D - EUT External Photos

Please refer to document “2209RSU059-UE”.

Annex E - Equipment Calibration Report

Please refer to document “Annex E - Equipment Calibration Report.pdf”.

The End