FCC SAR TEST REPORT

Application No.:	KSCR2210001982AT(SZCR2209003394AT)
Applicant:	Askey Computer Corporation
Address of Applicant:	10F, No. 119, JianKang RD., Zhonghe Dist., New Taipei City, Taiwan.
Manufacturer:	Askey Computer Corporation
Address of Manufacturer:	10F, No. 119, JianKang RD., Zhonghe Dist., New Taipei City, Taiwan.
Factory:	Askey Technology (Jiangsu) Ltd.
Address of Factory:	No. 1388, Jiao Tong Road, WuJiang Economic-Technological Development Area, Jiangsu Province, P.R.C.
Product Name:	5G USB Dongle
Model No.(EUT):	NDQ1300-SA
Trade Mark:	ASKEY, Dynalink
FCC ID:	H8NNDQ1300-1
Standard(s) :	FCC 47CFR §2.1093
Date of Receipt:	2023-01-17
Date of Test:	2023-01-18 to 2023-01-20; 2023-06-29
Date of Issue:	2023-06-29
Test Result:	**Pass***

* In the configuration tested, the EUT complied with the standards specified above.

Eric Lin
Laboratory Manager

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REVISION HISTORY

Revision Record			
Version	**Description**	**Date**	**Remark**
00	Original	2023-06-29	/

Authorized for issue by:				
		Richard.Kong		
		Richard.Kong/ Project Engineer		
		Eric Lin		
		Eric.Lin/Reviewer		

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TEST SUMMARY

Frequency Band	Maximum Reported SAR(W/kg)
	Body
FR1 N77	1.47
FR1 N78	1.47
FR1 N48	1.48
Sum SAR	1.35
SAR Limited(W/kg)	1.6

CONTENTS

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1 General Information

1.1 General Description of EUT

Product Phase:	Production unit		
Device Type:	Portable device		
Exposure Category:	Uncontrolled environment / general population		
SN:	41D9F004570		
Hardware Version:	NDQ1300_V3		
Software Version:	NDQ1300_V3.21		
Antenna Gain:	ANT2: n77/n78: 2.99 dBi; ANT5: n77/n78: 3.82 dBi ANT2: n48: 0.5dBi; ANT5: n48: 0.5dBi (Provided by Manufacturer)		
Antenna Type:	PIFA antenna		
Device Operating Configurations:			
Modulation Mode:	N77/N78: DFT-S-OFDM & CP-OFDM: QPSK/64QAM/256QAM N48: DFT-S-OFDM: PI/2 BPSK/QPSK/64QAM/256QAM CP-OFDM: QPSK/64QAM/256QAM		
Frequency Bands:	Band	Tx (MHz)	Rx (MHz)
	N77	3450-3550 3700-3980	3450-3550 3700-3980
	N78	3450-3550 3700-3800	3450-3550 3700-3800
	N48	3550-3700	3550-3700
Power Supply:	USB Power		

1.1.1 DUT Antenna Locations

Please see the Appendix D

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1.2 Test Specification

Identity	Document Title
FCC 47CFR §2.1093	Radio frequency Radiation Exposure Evaluation: Portable Devices
IEEE Std C95.1 – 1992	IEEE Standard for Safety Levels with Respect to Human Exposure to Electric, Magnetic, and Electromagnetic Fields, 0 Hz to 300 GHz
IEEE 1528-2013	Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques
KDB 447498 D04 v01	RF Exposure Procedures and Equipment Authorization Policies for Mobile and Portable Devices
KDB 865664 D01 v01r04	SAR Measurement Requirements for 100 MHz to 6 GHz
KDB 865664 D02 v01r02	RF Exposure Compliance Reporting and Documentation Considerations
KDB 447498 D02 v02r01	SAR MEASUREMENT PROCEDURES FOR USB DONGLE TRANSMITTERS
KDB 941225 D05 v02r05	SAR EVALUATION CONSIDERATIONS FOR LTE DEVICES

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1.3 RF exposure limits

Human Exposure	Uncontrolled Environment General Population	Controlled Environment Occupational
Spatial Peak SAR* (Brain*Trunk)	1.60 W/kg	8.00 W/kg
Spatial Average SAR** (Whole Body)	0.08 W/kg	0.40 W/kg
Spatial Peak SAR*** (Hands/Feet/Ankle/Wrist)	4.00 W/kg	20.00 W/kg

Notes:

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

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

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

Uncontrolled Environments are defined as locations where there is the exposure of individuals who have no knowledge or control of their exposure.

Controlled Environments are defined as locations where there is exposure that may be incurred by persons who are aware of the potential for exposure, (i.e. as a result of employment or occupation.)

1.4 Test Location

All tests were performed at:

Compliance Certification Services (Kunshan) Inc.

No.10 Weiye Rd, Innovation park, Eco&Tec, Development Zone, Kunshan City, Jiangsu, China.

Tel: +86 512 5735 5888 Fax: +86 512 5737 0818

No tests were sub-contracted.

Note:

1.SGS is not responsible for wrong test results due to incorrect information (e.g. max. clock frequency, highest internal frequency, antenna gain, cable loss, etc) is provided by the applicant. (if applicable).

2.SGS is not responsible for the authenticity, integrity and the validity of the conclusion based on results of the data provided by applicant. (if applicable).

1.5 Test Facility

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

• A2LA

Compliance Certification Services (Kunshan) Inc. is accredited by the American Association for Laboratory Accreditation (A2LA). Certificate No. 2541.01.

• FCC

Compliance Certification Services (Kunshan) Inc. has been recognized as an accredited testing laboratory. Designation Number: CN1172.

• ISED

Compliance Certification Services (Kunshan) Inc. has been recognized by Innovation, Science and Economic Development Canada (ISED) as an accredited testing laboratory. Company Number: 2324E

• VCCI

The 3m and 10m Semi-anechoic chamber and Shielded Room of Compliance Certification Services (Kunshan) Inc. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-20134, R-11600, C-11707, T-11499, G-10216 respectively.

2 Laboratory Environment

Temperature	Min. = 18°C, Max. = 25 °C
Relative humidity	Min. = 30%, Max. = 70%
Ground system resistance	< 0.5 Ω
Ambient noise is checked and found very low and in compliance with requirement of standards. Reflection of surrounding objects is minimized and in compliance with requirement of standards.	

3 SAR Measurements System Configuration

3.1 The SAR Measurement System

This SAR Measurement System uses a Computer-controlled 3-D stepper motor system (SPEAG DASY5 professional system). A E-field probe is used to determine the internal electric fields. The SAR can be obtained from the equation SAR= σ (|Ei|2)/ ρ where σ and ρ are the conductivity and mass density of the tissue-Simulate.

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

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

A dosimetric probe, i.e., an isotropic E-field probe optimized and calibrated for usage in tissue simulating liquid. The probe is equipped with an optical surface detector system.

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

The Electro-optical converter (EOC) performs the conversion between optical and electrical of the signals for the digital communication to DAE and for the analog signal from the optical surface detection. The EOC is connected to the measurement server.

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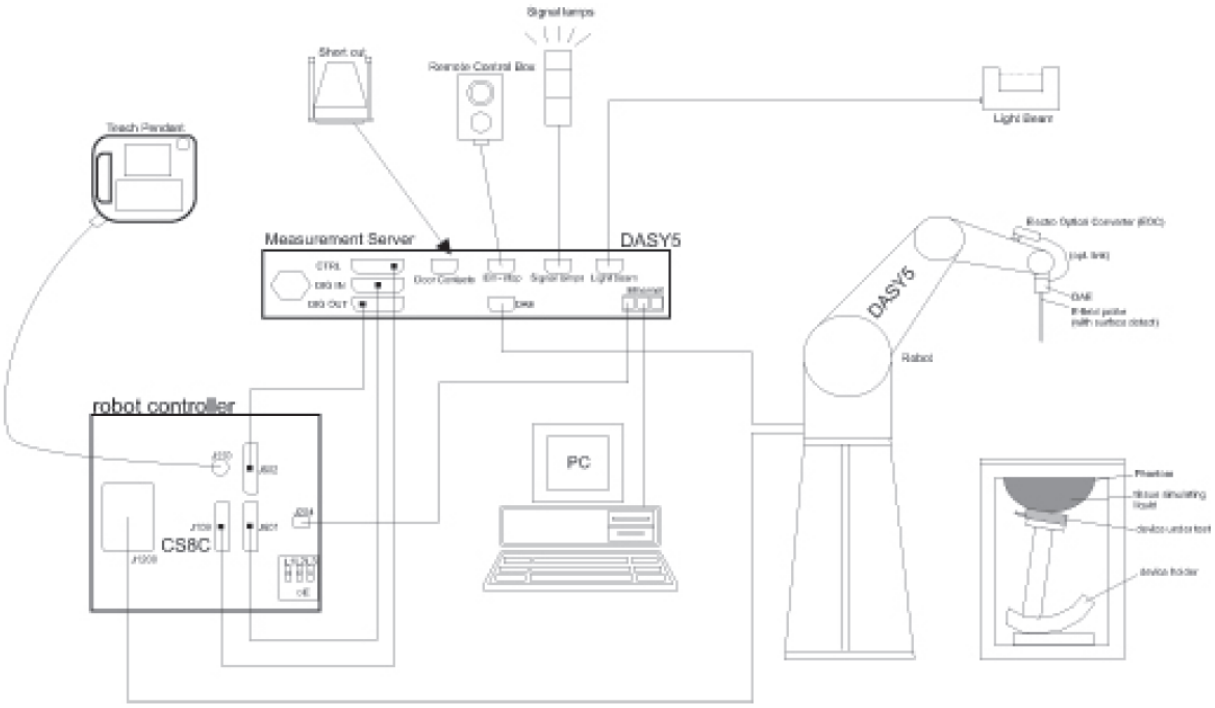


F-1. SAR Measurement System Configuration

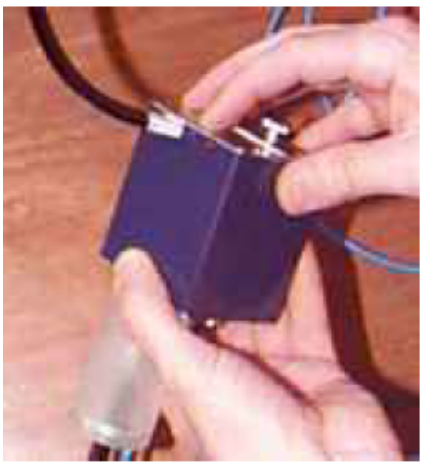
- The function of the measurement server is to perform the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
- A probe alignment unit which improves the (absolute) accuracy of the probe positioning.
- A computer operating Windows 7.
- DASY5 software.
- Remote control with teach pendant and additional circuitry for robot safety such as warning lamps, etc.
- The SAM twin phantom enabling testing left-hand, right-hand and Body Worn usage.
- The device holder for handheld mobile phones.
- Tissue simulating liquid mixed according to the given recipes.
- Validation dipole kits allowing to validat the proper functioning of the system.

3.2 Isotropic E-field Probe EX3DV4

	Symmetrical design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)
Calibration	ISO/IEC 17025 calibration service available.
Frequency	10 MHz to > 6 GHz Linearity: ± 0.2 dB (30 MHz to 6 GHz)
Directivity	± 0.3 dB in TSL (rotation around probe axis) ± 0.5 dB in TSL (rotation normal to probe axis)
Dynamic Range	10 µW/g to > 100 mW/g Linearity: ± 0.2 dB (noise: typically < 1 µW/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
Application	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 30%.
Compatibility	DASY3, DASY4, DASY52 SAR and higher, EASY4/MRI

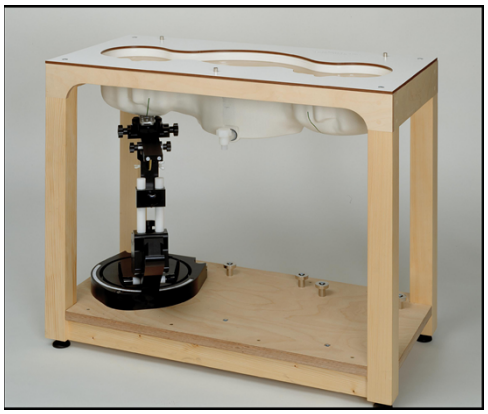
3.3 Data Acquisition Electronics (DAE)

Model	DAE4
Construction	Signal amplifier, multiplexer, A/D converter and control logic. Serial optical link for communication with DASY4/5 embedded system (fully remote controlled). Two step probe touch detector for mechanical surface detection and emergency robot stop.
Measurement Range	-100 to +300 mV (16 bit resolution and two range settings: 4mV,400mV)
Input Offset Voltage	< 5µV (with auto zero)
Input Bias Current	< 50 f A
Dimensions	60 x 60 x 68 mm



3.4 SAM Twin Phantom

Material	Vinylester, glass fiber reinforced (VE-GF)
Liquid Compatibility	Compatible with all SPEAG tissue simulating liquids (incl. DGBE type)
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
Wooden Support	SPEAG standard phantom table



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.

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

3.5 ELI Phantom

Material	Vinylester, glass fiber reinforced (VE-GF)
Liquid Compatibility	Compatible with all SPEAG tissue simulating liquids (incl. DGBE type)
Shell Thickness	2.0 ± 0.2 mm (bottom plate)
Dimensions	Major axis: 600 mm Minor axis: 400 mm
Filling Volume	approx. 30 liters
Wooden Support	SPEAG standard phantom table

Phantom 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 has the same shell geometry and is manufactured from the same material as ELI4, but has reinforced top structure.

3.6 Device Holder for Transmitters

F-2. **Device Holder for Transmitters**

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

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

3.7 Measurement procedure

3.7.1 Scanning procedure

Step 1: Power reference measurement

The “reference” and “drift” measurements 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.

Step 2: *Area scan*

The SAR distribution at the exposed side of the head was measured at a distance of 4mm from the inner surface of the shell. The area covered the entire dimension of the head and the horizontal grid spacing was 15mm*15mm or 12mm*12mm or 10mm*10mm.Based on the area scan data, the area of the maximum absorption was determined by spline interpolation.

Step 3: *Zoom scan*

Around this point, a volume of 30mm*30mm*30mm (fine resolution volume scan, zoom scan) was assessed by measuring 5x5x7 points (≤2GHz) and 7x7x7 points (≥2GHz). On this basis of this data set, the spatial peak SAR value was evaluated with the following procedure:

The data at the surface was extrapolated, since the centre of the dipoles is 2.0mm away from the tip of the probe and the distance between the surface and the lowest measuring point is 1.2mm. (This can be variable. Refer to the probe specification).The extrapolation was based on a least square algorithm. A polynomial of the fourth order was calculated through the points in z-axes. This polynomial was then used to evaluate the points between the surface and the probe tip. The maximum interpolated value was searched with a straight-forward algorithm. Around this maximum the SAR values averaged over the spatial volumes (1g or 10g) were computed using the 3D-Spline interpolation algorithm. The volume was integrated with the trapezoidal algorithm. One thousand points were interpolated to calculate the average. All neighbouring volumes were evaluated until no neighboring volume with a higher average value was found.

The area and zoom scan resolutions specified in the table below must be applied to the SAR measurements Probe boundary effect error compensation is required for measurements with the probe tip closer than half a probe tip diameter to the phantom surface. Both the probe tip diameter and sensor offset distance must satisfy measurement protocols; to ensure probe boundary effect errors are minimized and the higher fields closest to the phantom surface can be correctly measured and extrapolated to the phantom surface for computing 1-g SAR. Tolerances of the post-processing algorithms must be verified by the test laboratory for the scan resolutions used in the SAR measurements, according to the reference distribution functions specified in IEEE Std. 1528-2013.

			≤ 3 GHz	> 3 GHz
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface			5 ± 1 mm	½·δ·ln(2) ± 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.	
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: $\Delta z_{Zoom}(n)$		≤ 5 mm	3 – 4 GHz: ≤ 4 mm 4 – 5 GHz: ≤ 3 mm 5 – 6 GHz: ≤ 2 mm
	graded grid	$\Delta z_{Zoom}(1)$: between 1st two points closest to phantom surface	≤ 4 mm	3 – 4 GHz: ≤ 3 mm 4 – 5 GHz: ≤ 2.5 mm 5 – 6 GHz: ≤ 2 mm
		$\Delta z_{Zoom}(n>1)$: between subsequent points	≤ 1.5·$\Delta z_{Zoom}(n-1)$	
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: δ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see draft standard IEEE P1528-2011 for details.

* When zoom scan is required and the *reported* SAR from the *area scan based 1-g SAR estimation* procedures of KDB 447498 is ≤ 1.4 W/kg, ≤ 8 mm, ≤ 7 mm and ≤ 5 mm zoom scan resolution may be applied, respectively, for 2 GHz to 3 GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.

Step 4: Power reference measurement (drift)

The Power Drift Measurement job measures the field at the same location as the most recent power reference measurement job within the same procedure, and with the same settings. The indicated drift is mainly the variation of the DUT's output power and should vary max. ± 5 %

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3.7.2 Data Storage

The DASY software stores the acquired data from the data acquisition electronics as raw data (in microvolt readings from the probe sensors), together with all necessary software parameters for the data evaluation (probe calibration data, liquid parameters and device frequency and modulation data) in measurement files with the extension ".DAE3". The software evaluates the desired unit and format for output each time the data is visualized or exported. This allows verification of the complete software setup even after the measurement and allows correction of incorrect parameter settings. For example, if a measurement has been performed with a wrong crest factor parameter in the device setup, the parameter can be corrected afterwards and the data can be re-evaluated. The measured data can be visualized or exported in different units or formats, depending on the selected probe type ([V/m], [A/m], [°C], [m W/g], [m W/cm²], [dBrel], etc.). Some of these units are not available in certain situations or show meaningless results, e.g., a SAR output in a lossless media will always be zero. Raw data can also be exported to perform the evaluation with other software packages.

3.7.3 Data Evaluation by SEMCAD

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

Probe parameters:	- Sensitivity	Normi, ai0, ai1, ai2
	- Conversion factor	ConvFi
	- Diode compression point	Dcpi
Device parameters:	- Frequency	f
	- Crest factor	cf
Media parameters:	- Conductivity	ε
	- Density	ρ

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

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

If the exciting field is pulsed, the crest factor of the signal must be known to correctly compensate for peak power. The formula for each channel can be given as:

$$V_i = U_i + U_i^2 \cdot cf / dcp_i$$

With Vi = compensated signal of channel i (i = x, y, z)

Ui = input signal of channel i (i = x, y, z)
cf = crest factor of exciting field (DASY parameter)
dcp i = diode compression point (DASY parameter)

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

E-field probes:

$$E_i = (V_i / Norm_i \cdot ConvF)^{1/2}$$

H-field probes:

$$H_i = (V_i)^{1/2} \cdot (a_{i0} + a_{i1} f + a_{i2} f^2) / f$$

With Vi = compensated signal of channel i (i = x, y, z)
Normi = sensor sensitivity of channel I (i = x, y, z)
[mV/(V/m)2] for E-field Probes
ConvF = sensitivity enhancement in solution
aij = sensor sensitivity factors for H-field probes
f = carrier frequency [GHz]
Ei = electric field strength of channel i in V/m
Hi = magnetic field strength of channel i in A/m

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

$$E_{tot} = (E_x^2 + E_Y^2 + E_z^2)^{1/2}$$

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

$$SAR = (Etot^2 \cdot \sigma) / (\varepsilon \cdot 1000)$$

With SAR = local specific absorption rate in mW/g
Etot = total field strength in V/m
σ= conductivity in [mho/m] or [Siemens/m]
ε= equivalent tissue density in g/cm3

Note that the density is normally set to 1 (or 1.06), to account for actual brain density rather than the density of the simulation liquid. The power flow density is calculated assuming the excitation field to be a free space field.

$$P_{pwe} = E_{tot}{}^2{}_2 / 3770 \quad \text{or} \quad P_{pwe} = H_{tot}{}^2 \cdot 37.7$$

with Ppwe = equivalent power density of a plane wave in mW/cm2
Etot = total electric field strength in V/m
Htot = total magnetic field strength in A/m

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4 SAR measurement variability and uncertainty

4.1 SAR measurement variability

Per KDB865664 D01 SAR measurement 100 MHz to 6 GHz v01r04, SAR measurement variability must be assessed for each frequency band, which is determined by the SAR probe calibration point and tissue-equivalent medium used for the device measurements. The additional measurements are repeated after the completion of all measurements requiring the same head or body tissue-equivalent medium in a frequency band. The test device should be returned to ambient conditions (normal room temperature) with the battery fully charged before it is re-mounted on the device holder for the repeated measurement(s) to minimize any unexpected variations in the repeated results.

1) Repeated measurement is not required when the original highest measured SAR is < 0.80 W/kg; steps 2) through 4) do not apply.

2) When the original highest measured SAR is ≥ 0.80 W/kg, repeat that measurement once.

3) Perform a second repeated measurement only if the ratio of largest to smallest SAR for the original and first repeated measurements is > 1.20 or when the original or repeated measurement is ≥ 1.45 W/kg (~ 10% from the 1-g SAR limit).

4) Perform a third repeated measurement only if the original, first or second repeated measurement is ≥1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20.

The same procedures should be adapted for measurements according to extremity and occupational exposure limits by applying a factor of 2.5 for extremity exposure and a factor of 5 for occupational exposure to the corresponding SAR thresholds.

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4.2 SAR measurement uncertainty

Per KDB865664 D01 SAR Measurement 100 MHz to 6 GHz, when the highest measured 1-g SAR within a frequency band is < 1.5 W/kg, the extensive SAR measurement uncertainty analysis described in IEEE Std 1528-2013 is not required in SAR reports submitted for equipment approval. The equivalent ratio (1.5/1.6) is applied to extremity and occupational exposure conditions.

5 Description of Test Position

5.1 The Body Test Position

5.1.1 SIMPLE DONGLE PROCEDURES

Test all USB orientations [see figure below: (A) Horizontal-Up, (B) Horizontal-Down, (C) Vertical-Front, and (D) Vertical-Back] with a device-to-phantom separation distance of 5 mm or less, according to KDB Publication 447498 D01 requirements. These test orientations are intended for the exposure conditions found in typical laptop/notebook/netbook or tablet computers with either horizontal or vertical USB connector configurations at various locations in the keyboard section of the computer. Current generation portable host computers should be used to establish the required SAR measurement separation distance. The same test separation distance must be used to test all frequency bands and modes in each USB orientation. The typical Horizontal-Up USB connection (A), found in the majority of host computers, must be tested using an appropriate host computer. A host computer with either Vertical-Front (C) or Vertical-Back (D) USB connection should be used to test one of the vertical USB orientations. If a suitable host computer is not available for testing the Horizontal-Down (B) or the remaining Vertical USB orientation, a high quality USB cable, 12 inches or less, may be used for testing these other orientations. It must be documented that the USB cable does not influence the radiating characteristics and output power of the transmitter.

(A) Horizontal-Up **(B) Horizontal-Down** **(C) Vertical-Front** **(D) Vertical-Back**

6 SAR System Verification Procedure

6.1 Tissue Simulate Liquid

6.1.1 Recipes for Tissue Simulate Liquid

The bellowing tables give the recipes for tissue simulating liquids to be used in different frequency bands：

Ingredients (% by weight)	Frequency (MHz)									
	450		835		915		1900		2450	
Tissue Type	Head	Body	Head	Body	Head	Body	Head	Body	Head	Body
Water	38.56	51.16	41.45	52.4	41.05	56.0	54.9	40.4	62.7	73.2
Salt (NaCl)	3.95	1.49	1.45	1.4	1.35	0.76	0.18	0.5	0.5	0.04
Sugar	56.32	46.78	56.0	45.0	56.5	41.76	0.0	58.0	0.0	0.0
HEC	0.98	0.52	1.0	1.0	1.0	1.21	0.0	1.0	0.0	0.0
Bactericide	0.19	0.05	0.1	0.1	0.1	0.27	0.0	0.1	0.0	0.0
Triton X-100	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	36.8	0.0
DGBE	0.0	0.0	0.0	0.0	0.0	0.0	44.92	0.0	0.0	26.7
Dielectric Constant	43.42	58.0	42.54	56.1	42.0	56.8	39.9	54.0	39.8	52.5
Conductivity (S/m)	0.85	0.83	0.91	0.95	1.0	1.07	1.42	1.45	1.88	1.78

HSL5GHz is composed of the following ingredients：

Water：50-65%

Mineral oil：10-30%

Emulsifiers：8-25%

Sodium salt：0-1.5%

MSL5GHz is composed of the following ingredients：

Water：64-78%

Mineral oil：11-18%

Emulsifiers：9-15%

Sodium salt：2-3%

6.1.2 Test Liquids Confirmation

Simulated tissue liquid parameter confirmation

The dielectric parameters were checked prior to assessment using the SPEAG DAK3.5 dielectric probe kit. The dielectric parameters measured are reported in each correspondent section.

IEEE SCC-34/SC-2 P1528 recommended tissue dielectric parameters

The head tissue dielectric parameters recommended by the IEEE SCC-34/SC-2 in P1528 have been incorporated in the following table. These head parameters are derived from planar layer models simulating the highest expected SAR for the dielectric properties and tissue thickness variations in a human head. Other head and body tissue parameters that have not been specified in P1528 are derived from the tissue dielectric parameters computed from the 4-Cole-Cole equations and extrapolated according to the head parameters specified in P1528

Target Frequency (MHz)	Head		Body	
	ε_r	σ (S/m)	ε_r	σ (S/m)
150	52.3	0.76	61.9	0.80
300	45.3	0.87	58.2	0.92
450	43.5	0.87	56.7	0.94
835	41.5	0.90	55.2	0.97
900	41.5	0.97	55.0	1.05
915	41.5	0.98	55.0	1.06
1450	40.5	1.20	54.0	1.30
1610	40.3	1.29	53.8	1.40
1800-2000	40.0	1.40	53.3	1.52
2450	39.2	1.80	52.7	1.95
3000	38.5	2.40	52.0	2.73
5800	35.3	5.27	48.2	6.00

(ε_r = relative permittivity, σ = conductivity and ρ = 1000 kg/m^3)

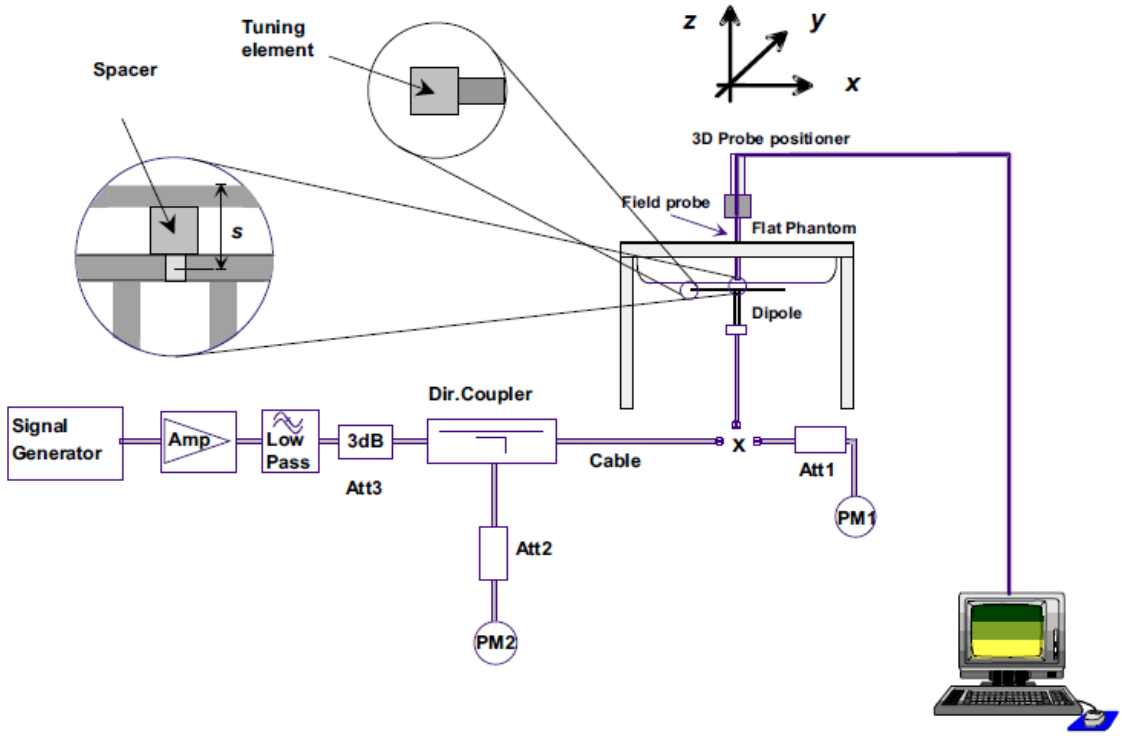
6.1.3 Measurement for Tissue Simulate Liquid

The dielectric properties for this Tissue Simulate Liquids were measured by using the SPEAG DAK3.5 dielectric probe kit in conjunction with Agilent Network Analyzer. The Conductivity (σ) and Permittivity (ρ) are listed in bellow table. For the SAR measurement given in this report. The temperature variation of the Tissue Simulate Liquids was 22±2°C.

Tissue Type	Measured Frequency （MHz）	Conductivity (σ)	Permittivity (ε_r)	Conductivity Target (σ)	Permittivity Target (ε_r)	Delta (σ) (%)	Delta (ε_r) (%)	Limit (%)	Liquid Temp. (℃)	Date
3500 Head	3500	2.99	38.22	2.91	37.93	2.85	0.78	±5	22.1	2023/1/18
3700 Head	3700	3.23	37.59	3.12	37.70	3.43	-0.29	±5	22.2	2023/1/19
3900 Head	3900	3.45	36.97	3.31	37.52	4.35	-1.46	±5	22.2	2023/1/20
3700 Head	3700	3.26	37.70	3.12	37.70	4.39	0.00	±5	22.2	2023/6/29

6.2 SAR System Check

The microwave circuit arrangement for system check is sketched in bellow figure. The daily system accuracy verification occurs within the flat section of the SAM phantom. A SAR measurement was performed to see if the measured SAR was within +/- 10% from the target SAR values. The tests were conducted on the same days as the measurement of the EUT. The obtained results from the system accuracy verification are displayed in the following table. During the tests, the ambient temperature of the laboratory was in the range 22±2°C, the relative humidity was in the range 60% and the liquid depth above the ear reference points was above 15 cm in all the cases. It is seen that the system is operating within its specification, as the results are within acceptable tolerance of the reference values.



F-3. the microwave circuit arrangement used for SAR system verification

6.2.1 Justification for Extended SAR Dipole Calibrations

1) Referring to KDB865664 D01 requirements for dipole calibration, instead of the typical annual calibration recommended by measurement standards, longer calibration intervals of up to three years may be considered when it is demonstrated that the SAR target, impedance and return loss of a dipole have remain stable according to the following requirements. Each measured dipole is expected to evaluate with the following criteria at least on annual interval in Appendix C.

a) There is no physical damage on the dipole;

b) System check with specific dipole is within 10% of calibrated value;

c) Return-loss is within 10% of calibrated measurement;

d) Impedance is within 5Ω from the previous measurement.

2) Network analyzer probe calibration against air, distilled water and a shorting block performed before measuring liquid parameters.

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6.2.2 Summary System Check Result(s)

Validation Kit		Measured SAR 100mW	Measured SAR 100mW	Measured SAR (normalized to 1w)	Measured SAR (normalized to 1w)	Target SAR (normalized to 1w) (±10%)	Target SAR (normalized to 1w) (±10%)	Liquid Temp. (°C)	Measured Date
		1g (W/kg)	10g (W/kg)	1g (W/kg)	10g (W/kg)	1-g(W/kg)	10-g(W/kg)		
D3500V2	Head	6.75	2.55	67.5	25.5	62.7 (56.43~68.97)	23.7 (21.33~26.07)	22.1	2023/1/18
D3700V2	Head	6.84	2.41	68.4	24.1	64.5 (58.05~70.95)	23.5 (21.15~25.85)	22.2	2023/1/19
D3900V2	Head	7.02	2.49	70.2	24.9	65.97 (59.37~72.57)	23.3 (20.97~25.63)	22.2	2023/1/20
D3700V2	Head	6.56	2.36	65.6	23.6	64.4 (57.96~70.84)	23.5 (21.15~25.85)	22.1	2023/6/29

6.2.3 Detailed System Check Results

Please see the Appendix A

7 Test Configuration

7.1 Operation Configurations

7.1.1 NR Band Test Configuration

1. NR Band n77/n78 only support SA mode.

2. The general information supported by the NR band is as following table:

Band			n77	n78	N48
NR mode		SA	Yes	Yes	Yes
		NSA	No	No	No
Modulation	DFT-s-OFDM	QPSK	Yes	Yes	Yes
		64QAM	Yes	Yes	Yes
		256QAM	Yes	Yes	Yes
	CP-OFDM	QPSK	Yes	Yes	Yes
		64QAM	Yes	Yes	Yes
		256QAM	Yes	Yes	Yes
Duty Cycle			100%	100%	100%

3. For 5G NR Power:

a. For power measurement reduction of DFT-s-OFDM and CP-OFDM, CP-OFDM will not higher than DFT-s-OFDM based on 3GPP MPR table, so power measurement on CP-OFDM QPSK/Max bandwidth/1RB/1RB offset is performed.

b. For power measurement reduction of DFT-s-OFDM, 64QAM/256QAM will not higher than QPSK based on 3GPP MPR table, so QPSK is measured fully, and 64QAM/256QAM is spot check 1RB allocation/1 RB offset configuration to ensure the output power will not ½ dB higher than QPSK. Smaller bandwidth output power will spot check QPSK/1RB allocation/1 RB offset configuration to ensure output power will not ½ dB higher than largest supported bandwidth.

4. Choose the largest SCS and channel bandwidth and highest output power channel among all configurations of bandwidths, RBs, modulations to test SAR and determine the worst configuration for further high/low channel test.

5. NR Band operation does not have the fixed UL/DL frame structure, but during the transmitting/receiving it can be operated in the slot structure of 100% UL duty cycle, we are proposing the conservative way to evaluate SAR at 100% duty cycle. For the purpose of test NR Band standalone SAR, and also test SAR level at 100% TX duty cycle.

8 Test Result

8.1 Measurement of RF Conducted Power

8.1.1 SAR Result Of 5G NR

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BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				/	633334	/	
Frequency (MHz)				/	3500.01	/	
100	QPSK	1	1	/	22.76	/	23.00
100	QPSK	1	137	/	22.58	/	23.00
100	QPSK	1	271	/	22.39	/	23.00
100	QPSK	135	0	/	21.93	/	22.00
100	QPSK	135	69	/	21.77	/	22.00
100	QPSK	135	138	/	21.57	/	22.00
100	QPSK	270	0	/	21.48	/	22.00
100	64QAM	1	1	/	20.91	/	21.00
100	256QAM	1	1	/	17.67	/	18.00
Channel				633000	633334	633668	Tune-up limit (dBm)
Frequency (MHz)				3495	3500.01	3505.02	
90	QPSK	1	123	22.46	22.23	22.37	23.00
Channel				632668	633334	634000	Tune-up limit (dBm)
Frequency (MHz)				3490.02	3500.01	3510	
80	QPSK	1	109	22.48	22.40	22.35	23.00
Channel				632334	633334	634334	Tune-up limit (dBm)
Frequency (MHz)				3485.01	3500.01	3515.01	
70	QPSK	1	95	22.45	22.32	22.53	23.00
Channel				632000	633334	634668	Tune-up limit (dBm)
Frequency (MHz)				3480	3500.01	3520.02	
60	QPSK	1	81	22.49	22.27	22.49	23.00
Channel				631668	633334	635000	Tune-up limit (dBm)
Frequency (MHz)				3475.02	3500.01	3525	
50	QPSK	1	67	22.51	22.26	22.48	23.00
Channel				631334	633334	635334	Tune-up limit (dBm)
Frequency (MHz)				3470.01	3500.01	3530.01	
40	QPSK	1	53	22.46	22.17	22.56	23.00
Channel				631000	633334	635668	Tune-up limit (dBm)
Frequency (MHz)				3465	3500.01	3535.02	
30	QPSK	1	39	22.54	22.34	22.47	23.00
Channel				630834	633334	635834	Tune-up limit (dBm)

Frequency (MHz)				3462.51	3500.01	3537.51	
25	QPSK	1	32	22.45	22.12	22.39	23.00
Channel				630668	633334	636000	Tune-up limit (dBm)
Frequency (MHz)				3460.02	3500.01	3540	
20	QPSK	1	26	22.47	22.17	22.31	23.00
Channel				630500	633334	636168	Tune-up limit (dBm)
Frequency (MHz)				3457.5	3500.01	3542.52	
15	QPSK	1	19	22.46	22.47	22.54	23.00
Channel				630334	633334	636334	Tune-up limit (dBm)
Frequency (MHz)				3455.01	3500.01	3545.01	
10	QPSK	1	12	22.47	22.39	22.43	23.00

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BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				/	633334	/	
Frequency (MHz)				/	3500.01	/	
100	QPSK	1	1	/	18.81	/	19.00
100	QPSK	1	137	/	18.61	/	19.00
100	QPSK	1	271	/	18.39	/	19.00
100	QPSK	135	0	/	17.95	/	18.50
100	QPSK	135	69	/	17.75	/	18.50
100	QPSK	135	138	/	17.58	/	18.50
100	QPSK	270	0	/	17.45	/	18.00
100	64QAM	1	1	/	16.89	/	17.00
100	256QAM	1	1	/	13.69	/	14.00
Channel				633000	633334	633668	Tune-up limit (dBm)
Frequency (MHz)				3495	3500.01	3505.02	
90	QPSK	1	123	18.64	18.47	18.62	19.00
Channel				632668	633334	634000	Tune-up limit (dBm)
Frequency (MHz)				3490.02	3500.01	3510	
80	QPSK	1	109	18.67	18.62	18.55	19.00
Channel				632334	633334	634334	Tune-up limit (dBm)
Frequency (MHz)				3485.01	3500.01	3515.01	
70	QPSK	1	95	18.68	18.52	18.69	19.00
Channel				632000	633334	634668	Tune-up limit (dBm)
Frequency (MHz)				3480	3500.01	3520.02	
60	QPSK	1	81	18.71	18.47	18.65	19.00
Channel				631668	633334	635000	Tune-up limit (dBm)
Frequency (MHz)				3475.02	3500.01	3525	

50	QPSK	1	67	18.66	18.40	18.70	19.00
Channel				631334	633334	635334	Tune-up limit (dBm)
Frequency (MHz)				3470.01	3500.01	3530.01	
40	QPSK	1	53	18.63	18.40	18.73	19.00
Channel				631000	633334	635668	Tune-up limit (dBm)
Frequency (MHz)				3465	3500.01	3535.02	
30	QPSK	1	39	18.72	18.51	18.74	19.00
Channel				630834	633334	635834	Tune-up limit (dBm)
Frequency (MHz)				3462.51	3500.01	3537.51	
25	QPSK	1	32	18.61	18.38	18.62	19.00
Channel				630668	633334	636000	Tune-up limit (dBm)
Frequency (MHz)				3460.02	3500.01	3540	
20	QPSK	1	26	18.61	18.37	18.51	19.00
Channel				630500	633334	636168	Tune-up limit (dBm)
Frequency (MHz)				3457.5	3500.01	3542.52	
15	QPSK	1	19	18.70	18.66	18.67	19.00
Channel				630334	633334	636334	Tune-up limit (dBm)
Frequency (MHz)				3455.01	3500.01	3545.01	
10	QPSK	1	12	18.55	18.64	18.61	19.00

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BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				/	633334	/	
Frequency (MHz)				/	3500.01	/	
100	QPSK	1	1	/	18.92	/	19.00
100	QPSK	1	137	/	18.76	/	19.00
100	QPSK	1	271	/	18.45	/	19.00
100	QPSK	135	0	/	18.08	/	18.50
100	QPSK	135	69	/	17.82	/	18.50
100	QPSK	135	138	/	17.71	/	18.50
100	QPSK	270	0	/	17.51	/	18.00
100	64QAM	1	1	/	17.03	/	18.00
100	256QAM	1	1	/	13.85	/	14.00
Channel				633000	633334	633668	Tune-up limit (dBm)
Frequency (MHz)				3495	3500.01	3505.02	
90	QPSK	1	123	18.59	18.39	18.51	19.00
Channel				632668	633334	634000	Tune-up limit (dBm)
Frequency (MHz)				3490.02	3500.01	3510	
80	QPSK	1	109	18.66	18.51	18.34	19.00

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Channel				632334	633334	634334	Tune-up limit (dBm)
Frequency (MHz)				3485.01	3500.01	3515.01	
70	QPSK	1	95	18.58	18.42	18.65	19.00
Channel				632000	633334	634668	Tune-up limit (dBm)
Frequency (MHz)				3480	3500.01	3520.02	
60	QPSK	1	81	18.64	18.39	18.62	19.00
Channel				631668	633334	635000	Tune-up limit (dBm)
Frequency (MHz)				3475.02	3500.01	3525	
50	QPSK	1	67	18.63	18.36	18.58	19.00
Channel				631334	633334	635334	Tune-up limit (dBm)
Frequency (MHz)				3470.01	3500.01	3530.01	
40	QPSK	1	53	18.59	18.36	18.66	19.00
Channel				631000	633334	635668	Tune-up limit (dBm)
Frequency (MHz)				3465	3500.01	3535.02	
30	QPSK	1	39	18.68	18.41	18.67	19.00
Channel				630834	633334	635834	Tune-up limit (dBm)
Frequency (MHz)				3462.51	3500.01	3537.51	
25	QPSK	1	32	18.54	18.26	18.52	19.00
Channel				630668	633334	636000	Tune-up limit (dBm)
Frequency (MHz)				3460.02	3500.01	3540	
20	QPSK	1	26	18.57	18.30	18.44	19.00
Channel				630500	633334	636168	Tune-up limit (dBm)
Frequency (MHz)				3457.5	3500.01	3542.52	
15	QPSK	1	19	18.60	18.56	18.64	19.00
Channel				630334	633334	636334	Tune-up limit (dBm)
Frequency (MHz)				3455.01	3500.01	3545.01	
10	QPSK	1	12	18.58	18.55	18.60	19.00

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BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				650000	656000	662000	
Frequency (MHz)				3750	3840	3930	
100	QPSK	1	1	23.25	23.46	23.35	24.00
100	QPSK	1	137	22.82	22.97	22.92	24.00
100	QPSK	1	271	22.75	22.74	22.56	24.00
100	QPSK	135	0	22.28	22.41	22.33	23.00
100	QPSK	135	69	21.69	21.90	21.90	23.00
100	QPSK	135	138	21.65	21.65	21.63	23.00
100	QPSK	270	0	21.54	21.55	21.53	22.00

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100	64QAM	1	1	21.36	21.41	21.18	22.00
100	256QAM	1	1	18.30	18.37	18.25	19.00
Channel				649668	656000	662334	Tune-up limit (dBm)
Frequency (MHz)				3745.02	3840	3935.01	
90	QPSK	1	123	22.95	22.76	22.88	23.00
Channel				649334	656000	662668	Tune-up limit (dBm)
Frequency (MHz)				3740.01	3840	3940.02	
80	QPSK	1	109	22.98	22.90	22.62	23.00
Channel				649000	656000	663000	Tune-up limit (dBm)
Frequency (MHz)				3735	3840	3945	
70	QPSK	1	95	22.96	22.75	23.05	23.00
Channel				648668	656000	663334	Tune-up limit (dBm)
Frequency (MHz)				3730.02	3840	3950.01	
60	QPSK	1	81	23.04	22.79	23.01	23.00
Channel				648334	656000	663668	Tune-up limit (dBm)
Frequency (MHz)				3725.01	3840	3955.02	
50	QPSK	1	67	22.95	22.69	22.99	23.00
Channel				648000	656000	664000	Tune-up limit (dBm)
Frequency (MHz)				3720	3840	3960	
40	QPSK	1	53	22.92	22.70	23.01	23.00
Channel				647668	656000	664334	Tune-up limit (dBm)
Frequency (MHz)				3715.02	3840	3965.01	
30	QPSK	1	39	23.01	22.77	23.03	23.00
Channel				647500	656000	664500	Tune-up limit (dBm)
Frequency (MHz)				3712.5	3840	3967.5	
25	QPSK	1	32	22.88	22.64	22.88	23.00
Channel				647334	656000	664668	Tune-up limit (dBm)
Frequency (MHz)				3710.01	3840	3970.02	
20	QPSK	1	26	22.93	22.66	22.84	23.00
Channel				647168	656000	664834	Tune-up limit (dBm)
Frequency (MHz)				3707.52	3840	3972.51	
15	QPSK	1	19	23.00	22.94	23.04	23.00
Channel				647000	656000	665000	Tune-up limit (dBm)
Frequency (MHz)				3705	3840	3975	
10	QPSK	1	12	22.93	22.95	22.97	23.00

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BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				650000	656000	662000	

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Frequency (MHz)				3750	3840	3930	
100	QPSK	1	1	18.90	19.15	19.10	20.00
100	QPSK	1	137	18.81	18.99	18.92	20.00
100	QPSK	1	271	18.69	18.74	18.53	20.00
100	QPSK	135	0	17.94	18.04	18.03	18.50
100	QPSK	135	69	17.76	17.91	17.90	18.50
100	QPSK	135	138	17.66	17.67	17.57	18.50
100	QPSK	270	0	17.50	17.59	17.52	18.00
100	64QAM	1	1	16.97	17.09	16.89	18.00
100	256QAM	1	1	13.99	14.05	13.86	14.50
Channel				649668	656000	662334	Tune-up limit (dBm)
Frequency (MHz)				3745.02	3840	3935.01	
90	QPSK	1	123	18.65	18.44	18.57	19.00
Channel				649334	656000	662668	Tune-up limit (dBm)
Frequency (MHz)				3740.01	3840	3940.02	
80	QPSK	1	109	18.65	18.55	18.44	19.00
Channel				649000	656000	663000	Tune-up limit (dBm)
Frequency (MHz)				3735	3840	3945	
70	QPSK	1	95	18.60	18.45	18.69	19.00
Channel				648668	656000	663334	Tune-up limit (dBm)
Frequency (MHz)				3730.02	3840	3950.01	
60	QPSK	1	81	18.68	18.40	18.68	19.00
Channel				648334	656000	663668	Tune-up limit (dBm)
Frequency (MHz)				3725.01	3840	3955.02	
50	QPSK	1	67	18.63	18.41	18.64	19.00
Channel				648000	656000	664000	Tune-up limit (dBm)
Frequency (MHz)				3720	3840	3960	
40	QPSK	1	53	18.57	18.34	18.69	19.00
Channel				647668	656000	664334	Tune-up limit (dBm)
Frequency (MHz)				3715.02	3840	3965.01	
30	QPSK	1	39	18.69	18.45	18.69	19.00
Channel				647500	656000	664500	Tune-up limit (dBm)
Frequency (MHz)				3712.5	3840	3967.5	
25	QPSK	1	32	18.58	18.29	18.53	19.00
Channel				647334	656000	664668	Tune-up limit (dBm)
Frequency (MHz)				3710.01	3840	3970.02	
20	QPSK	1	26	18.57	18.34	18.49	19.00
Channel				647168	656000	664834	Tune-up limit (dBm)
Frequency (MHz)				3707.52	3840	3972.51	
15	QPSK	1	19	18.66	18.60	18.66	19.00
Channel				647000	656000	665000	Tune-up limit (dBm)

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Frequency (MHz)				3705	3840	3975	
10	QPSK	1	12	18.58	18.59	18.60	19.00

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BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				650000	656000	662000	
Frequency (MHz)				3750	3840	3930	
100	QPSK	1	1	19.04	19.28	19.27	20.00
100	QPSK	1	137	18.96	19.04	18.97	20.00
100	QPSK	1	271	18.83	18.84	18.71	20.00
100	QPSK	135	0	18.07	18.19	18.11	18.50
100	QPSK	135	69	17.86	18.00	17.92	18.50
100	QPSK	135	138	17.72	17.73	17.70	18.50
100	QPSK	270	0	17.66	17.67	17.64	18.00
100	64QAM	1	1	17.15	17.21	17.03	18.00
100	256QAM	1	1	14.14	14.17	14.03	14.50
Channel				649668	656000	662334	Tune-up limit (dBm)
Frequency (MHz)				3745.02	3840	3935.01	
90	QPSK	1	123	18.81	18.56	18.73	19.00
Channel				649334	656000	662668	Tune-up limit (dBm)
Frequency (MHz)				3740.01	3840	3940.02	
80	QPSK	1	109	18.83	18.70	18.77	19.00
Channel				649000	656000	663000	Tune-up limit (dBm)
Frequency (MHz)				3735	3840	3945	
70	QPSK	1	95	18.74	18.59	18.84	19.00
Channel				648668	656000	663334	Tune-up limit (dBm)
Frequency (MHz)				3730.02	3840	3950.01	
60	QPSK	1	81	18.84	18.59	18.83	19.00
Channel				648334	656000	663668	Tune-up limit (dBm)
Frequency (MHz)				3725.01	3840	3955.02	
50	QPSK	1	67	18.78	18.55	18.80	19.00
Channel				648000	656000	664000	Tune-up limit (dBm)
Frequency (MHz)				3720	3840	3960	
40	QPSK	1	53	18.75	18.54	18.86	19.00
Channel				647668	656000	664334	Tune-up limit (dBm)
Frequency (MHz)				3715.02	3840	3965.01	
30	QPSK	1	39	18.84	18.60	18.81	19.00
Channel				647500	656000	664500	Tune-up limit (dBm)
Frequency (MHz)				3712.5	3840	3967.5	

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25	QPSK	1	32	18.70	18.43	18.72	19.00
Channel				647334	656000	664668	Tune-up limit (dBm)
Frequency (MHz)				3710.01	3840	3970.02	
20	QPSK	1	26	18.76	18.50	18.66	19.00
Channel				647168	656000	664834	Tune-up limit (dBm)
Frequency (MHz)				3707.52	3840	3972.51	
15	QPSK	1	19	18.83	18.75	18.79	19.00
Channel				647000	656000	665000	Tune-up limit (dBm)
Frequency (MHz)				3705	3840	3975	
10	QPSK	1	12	18.74	18.73	18.78	19.00

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BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				/	633334	/	
Frequency (MHz)				/	3500.01	/	
100	QPSK	1	1	/	22.87	/	23.00
100	QPSK	1	137	/	22.65	/	23.00
100	QPSK	1	271	/	22.42	/	23.00
100	QPSK	135	0	/	21.77	/	22.00
100	QPSK	135	69	/	21.70	/	22.00
100	QPSK	135	138	/	21.61	/	22.00
100	QPSK	270	0	/	21.41	/	22.00
100	64QAM	1	1	/	20.81	/	21.00
100	256QAM	1	1	/	17.74	/	18.00
Channel				633000	633334	633668	Tune-up limit (dBm)
Frequency (MHz)				3495	3500.01	3505.02	
90	QPSK	1	123	22.36	22.31	22.31	23.00
Channel				632668	633334	634000	Tune-up limit (dBm)
Frequency (MHz)				3490.02	3500.01	3510	
80	QPSK	1	109	22.42	22.40	22.19	23.00
Channel				632334	633334	634334	Tune-up limit (dBm)
Frequency (MHz)				3485.01	3500.01	3515.01	
70	QPSK	1	95	22.38	22.38	22.43	23.00
Channel				632000	633334	634668	Tune-up limit (dBm)
Frequency (MHz)				3480	3500.01	3520.02	
60	QPSK	1	81	22.42	22.39	22.39	23.00
Channel				631668	633334	635000	Tune-up limit (dBm)
Frequency (MHz)				3475.02	3500.01	3525	
50	QPSK	1	67	22.35	22.09	22.34	23.00

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Channel				631334	633334	635334	Tune-up limit (dBm)
Frequency (MHz)				3470.01	3500.01	3530.01	
40	QPSK	1	53	22.33	22.13	22.42	23.00
Channel				631000	633334	635668	Tune-up limit (dBm)
Frequency (MHz)				3465	3500.01	3535.02	
30	QPSK	1	39	22.44	22.16	22.45	23.00
Channel				630834	633334	635834	Tune-up limit (dBm)
Frequency (MHz)				3462.51	3500.01	3537.51	
25	QPSK	1	32	22.28	22.04	22.27	23.00
Channel				630668	633334	636000	Tune-up limit (dBm)
Frequency (MHz)				3460.02	3500.01	3540	
20	QPSK	1	26	22.35	22.09	22.20	23.00
Channel				630500	633334	636168	Tune-up limit (dBm)
Frequency (MHz)				3457.5	3500.01	3542.52	
15	QPSK	1	19	22.36	22.36	22.41	23.00
Channel				630334	633334	636334	Tune-up limit (dBm)
Frequency (MHz)				3455.01	3500.01	3545.01	
10	QPSK	1	12	22.37	22.31	22.36	23.00

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BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				/	633334	/	
Frequency (MHz)				/	3500.01	/	
100	QPSK	1	1	/	19.10	/	20.00
100	QPSK	1	137	/	18.91	/	20.00
100	QPSK	1	271	/	18.67	/	20.00
100	QPSK	135	0	/	17.94	/	18.50
100	QPSK	135	69	/	18.00	/	18.50
100	QPSK	135	138	/	17.85	/	18.50
100	QPSK	270	0	/	17.75	/	18.00
100	64QAM	1	1	/	17.01	/	18.00
100	256QAM	1	1	/	13.97	/	14.50
Channel				633000	633334	633668	Tune-up limit (dBm)
Frequency (MHz)				3495	3500.01	3505.02	
90	QPSK	1	123	18.54	18.49	18.52	19.00
Channel				632668	633334	634000	Tune-up limit (dBm)
Frequency (MHz)				3490.02	3500.01	3510	
80	QPSK	1	109	18.61	18.59	18.42	19.00
Channel				632334	633334	634334	Tune-up limit (dBm)

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Frequency (MHz)				3485.01	3500.01	3515.01	
70	QPSK	1	95	18.57	18.55	18.63	19.00
Channel				632000	633334	634668	Tune-up limit (dBm)
Frequency (MHz)				3480	3500.01	3520.02	
60	QPSK	1	81	18.59	18.60	18.59	19.00
Channel				631668	633334	635000	Tune-up limit (dBm)
Frequency (MHz)				3475.02	3500.01	3525	
50	QPSK	1	67	18.58	18.32	18.54	19.00
Channel				631334	633334	635334	Tune-up limit (dBm)
Frequency (MHz)				3470.01	3500.01	3530.01	
40	QPSK	1	53	18.52	18.30	18.64	19.00
Channel				631000	633334	635668	Tune-up limit (dBm)
Frequency (MHz)				3465	3500.01	3535.02	
30	QPSK	1	39	18.63	18.39	18.61	19.00
Channel				630834	633334	635834	Tune-up limit (dBm)
Frequency (MHz)				3462.51	3500.01	3537.51	
25	QPSK	1	32	18.48	18.24	18.46	19.00
Channel				630668	633334	636000	Tune-up limit (dBm)
Frequency (MHz)				3460.02	3500.01	3540	
20	QPSK	1	26	18.55	18.29	18.40	19.00
Channel				630500	633334	636168	Tune-up limit (dBm)
Frequency (MHz)				3457.5	3500.01	3542.52	
15	QPSK	1	19	18.56	18.52	18.62	19.00
Channel				630334	633334	636334	Tune-up limit (dBm)
Frequency (MHz)				3455.01	3500.01	3545.01	
10	QPSK	1	12	18.57	18.53	18.53	19.00

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BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				/	633334	/	
Frequency (MHz)				/	3500.01	/	
100	QPSK	1	1	/	18.86	/	19.00
100	QPSK	1	137	/	18.57	/	19.00
100	QPSK	1	271	/	18.41	/	19.00
100	QPSK	135	0	/	17.76	/	18.50
100	QPSK	135	69	/	17.72	/	18.50
100	QPSK	135	138	/	17.62	/	18.50
100	QPSK	270	0	/	17.43	/	18.00
100	64QAM	1	1	/	16.81	/	18.00

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100	256QAM	1	1	/	13.79	/	14.00
Channel				633000	633334	633668	Tune-up limit (dBm)
Frequency (MHz)				3495	3500.01	3505.02	
90	QPSK	1	123	18.35	18.27	18.31	19.00
Channel				632668	633334	634000	Tune-up limit (dBm)
Frequency (MHz)				3490.02	3500.01	3510	
80	QPSK	1	109	18.38	18.39	18.16	19.00
Channel				632334	633334	634334	Tune-up limit (dBm)
Frequency (MHz)				3485.01	3500.01	3515.01	
70	QPSK	1	95	18.34	18.38	18.41	19.00
Channel				632000	633334	634668	Tune-up limit (dBm)
Frequency (MHz)				3480	3500.01	3520.02	
60	QPSK	1	81	18.43	18.37	18.41	19.00
Channel				631668	633334	635000	Tune-up limit (dBm)
Frequency (MHz)				3475.02	3500.01	3525	
50	QPSK	1	67	18.40	18.14	18.38	19.00
Channel				631334	633334	635334	Tune-up limit (dBm)
Frequency (MHz)				3470.01	3500.01	3530.01	
40	QPSK	1	53	18.32	18.14	18.45	19.00
Channel				631000	633334	635668	Tune-up limit (dBm)
Frequency (MHz)				3465	3500.01	3535.02	
30	QPSK	1	39	18.45	18.21	18.41	19.00
Channel				630834	633334	635834	Tune-up limit (dBm)
Frequency (MHz)				3462.51	3500.01	3537.51	
25	QPSK	1	32	18.30	18.06	18.32	19.00
Channel				630668	633334	636000	Tune-up limit (dBm)
Frequency (MHz)				3460.02	3500.01	3540	
20	QPSK	1	26	18.33	18.06	18.25	19.00
Channel				630500	633334	636168	Tune-up limit (dBm)
Frequency (MHz)				3457.5	3500.01	3542.52	
15	QPSK	1	19	18.40	18.31	18.41	19.00
Channel				630334	633334	636334	Tune-up limit (dBm)
Frequency (MHz)				3455.01	3500.01	3545.01	
10	QPSK	1	12	18.33	18.35	18.38	19.00

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BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				/	650000	/	
Frequency (MHz)				/	3750	/	

100	QPSK	1	1	/	23.15	/	24.00
100	QPSK	1	137	/	22.99	/	24.00
100	QPSK	1	271	/	22.80	/	24.00
100	QPSK	135	0	/	22.05	/	23.00
100	QPSK	135	69	/	22.12	/	23.00
100	QPSK	135	138	/	21.96	/	23.00
100	QPSK	270	0	/	21.87	/	22.00
100	64QAM	1	1	/	21.15	/	22.00
100	256QAM	1	1	/	18.07	/	19.00
Channel				649668	650000	650334	Tune-up limit (dBm)
Frequency (MHz)				3745.02	3750	3755.01	
90	QPSK	1	123	22.66	22.60	22.60	23.00
Channel				649334	650000	650668	Tune-up limit (dBm)
Frequency (MHz)				3740.01	3750	3760.02	
80	QPSK	1	109	22.71	22.71	22.54	23.00
Channel				649000	650000	651000	Tune-up limit (dBm)
Frequency (MHz)				3735	3750	3765	
70	QPSK	1	95	22.63	22.69	22.73	23.00
Channel				648668	650000	651334	Tune-up limit (dBm)
Frequency (MHz)				3730.02	3750	3770.01	
60	QPSK	1	81	22.74	22.68	22.71	23.00
Channel				648334	650000	651668	Tune-up limit (dBm)
Frequency (MHz)				3725.01	3750	3775.02	
50	QPSK	1	67	22.66	22.40	22.69	23.00
Channel				648000	650000	652000	Tune-up limit (dBm)
Frequency (MHz)				3720	3750	3780	
40	QPSK	1	53	22.62	22.39	22.73	23.00
Channel				647668	650000	652334	Tune-up limit (dBm)
Frequency (MHz)				3715.02	3750	3785.01	
30	QPSK	1	39	22.72	22.51	22.70	23.00
Channel				647500	650000	652500	Tune-up limit (dBm)
Frequency (MHz)				3712.5	3750	3787.5	
25	QPSK	1	32	22.62	22.34	22.58	23.00
Channel				647334	650000	652668	Tune-up limit (dBm)
Frequency (MHz)				3710.01	3750	3790.02	
20	QPSK	1	26	22.64	22.38	22.54	23.00
Channel				647168	650000	652834	Tune-up limit (dBm)
Frequency (MHz)				3707.52	3750	3792.51	
15	QPSK	1	19	22.71	22.61	22.73	23.00
Channel				647000	650000	653000	Tune-up limit (dBm)
Frequency (MHz)				3705	3750	3795	

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10	QPSK	1	12	22.65	22.61	22.62	23.00

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BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				/	650000	/	
Frequency (MHz)				/	3750	/	
100	QPSK	1	1	/	19.08	/	20.00
100	QPSK	1	137	/	18.79	/	20.00
100	QPSK	1	271	/	18.62	/	20.00
100	QPSK	135	0	/	17.93	/	18.50
100	QPSK	135	69	/	17.94	/	18.50
100	QPSK	135	138	/	17.81	/	18.50
100	QPSK	270	0	/	17.63	/	18.00
100	64QAM	1	1	/	17.01	/	18.00
100	256QAM	1	1	/	14.00	/	14.50
Channel				649668	650000	650334	Tune-up limit (dBm)
Frequency (MHz)				3745.02	3750	3755.01	
90	QPSK	1	123	18.57	18.49	18.50	19.00
Channel				649334	650000	650668	Tune-up limit (dBm)
Frequency (MHz)				3740.01	3750	3760.02	
80	QPSK	1	109	18.61	18.63	18.38	19.00
Channel				649000	650000	651000	Tune-up limit (dBm)
Frequency (MHz)				3735	3750	3765	
70	QPSK	1	95	18.57	18.58	18.61	19.00
Channel				648668	650000	651334	Tune-up limit (dBm)
Frequency (MHz)				3730.02	3750	3770.01	
60	QPSK	1	81	18.64	18.59	18.58	19.00
Channel				648334	650000	651668	Tune-up limit (dBm)
Frequency (MHz)				3725.01	3750	3775.02	
50	QPSK	1	67	18.55	18.29	18.57	19.00
Channel				648000	650000	652000	Tune-up limit (dBm)
Frequency (MHz)				3720	3750	3780	
40	QPSK	1	53	18.55	18.28	18.63	19.00
Channel				647668	650000	652334	Tune-up limit (dBm)
Frequency (MHz)				3715.02	3750	3785.01	
30	QPSK	1	39	18.64	18.38	18.64	19.00
Channel				647500	650000	652500	Tune-up limit (dBm)
Frequency (MHz)				3712.5	3750	3787.5	
25	QPSK	1	32	18.52	18.26	18.49	19.00

Channel				647334	650000	652668	Tune-up limit (dBm)
Frequency (MHz)				3710.01	3750	3790.02	
20	QPSK	1	26	18.52	18.27	18.42	19.00
Channel				647168	650000	652834	Tune-up limit (dBm)
Frequency (MHz)				3707.52	3750	3792.51	
15	QPSK	1	19	18.61	18.52	18.63	19.00
Channel				647000	650000	653000	Tune-up limit (dBm)
Frequency (MHz)				3705	3750	3795	
10	QPSK	1	12	18.56	18.55	18.56	19.00

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BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				/	650000	/	
Frequency (MHz)				/	3750	/	
100	QPSK	1	1	/	19.04	/	20.00
100	QPSK	1	137	/	18.83	/	20.00
100	QPSK	1	271	/	18.59	/	20.00
100	QPSK	135	0	/	17.95	/	18.50
100	QPSK	135	69	/	17.93	/	18.50
100	QPSK	135	138	/	17.81	/	18.50
100	QPSK	270	0	/	17.67	/	18.00
100	64QAM	1	1	/	17.02	/	18.00
100	256QAM	1	1	/	13.97	/	14.50
Channel				649668	650000	650334	Tune-up limit (dBm)
Frequency (MHz)				3745.02	3750	3755.01	
90	QPSK	1	123	18.53	18.48	18.51	19.00
Channel				649334	650000	650668	Tune-up limit (dBm)
Frequency (MHz)				3740.01	3750	3760.02	
80	QPSK	1	109	18.60	18.62	18.54	19.00
Channel				649000	650000	651000	Tune-up limit (dBm)
Frequency (MHz)				3735	3750	3765	
70	QPSK	1	95	18.56	18.54	18.58	19.00
Channel				648668	650000	651334	Tune-up limit (dBm)
Frequency (MHz)				3730.02	3750	3770.01	
60	QPSK	1	81	18.60	18.52	18.58	19.00
Channel				648334	650000	651668	Tune-up limit (dBm)
Frequency (MHz)				3725.01	3750	3775.02	
50	QPSK	1	67	18.52	18.30	18.56	19.00
Channel				648000	650000	652000	Tune-up limit (dBm)

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Frequency (MHz)				3720	3750	3780	
40	QPSK	1	53	18.49	18.31	18.65	19.00
Channel				647668	650000	652334	Tune-up limit (dBm)
Frequency (MHz)				3715.02	3750	3785.01	
30	QPSK	1	39	18.62	18.39	18.57	19.00
Channel				647500	650000	652500	Tune-up limit (dBm)
Frequency (MHz)				3712.5	3750	3787.5	
25	QPSK	1	32	18.49	18.22	18.47	19.00
Channel				647334	650000	652668	Tune-up limit (dBm)
Frequency (MHz)				3710.01	3750	3790.02	
20	QPSK	1	26	18.49	18.23	18.39	19.00
Channel				647168	650000	652834	Tune-up limit (dBm)
Frequency (MHz)				3707.52	3750	3792.51	
15	QPSK	1	19	18.56	18.51	18.57	19.00
Channel				647000	650000	653000	Tune-up limit (dBm)
Frequency (MHz)				3705	3750	3795	
10	QPSK	1	12	18.51	18.51	18.51	19.00

SISO n48 Ant5					**Conducted Power(dBm)**			
Bandwidth	SCS	Modulation	RB size	RB offset	Channel 638000 3570	Channel 641666 3624.99	Channel 645332 3679.98	Tune up
40MHz	30kHz	DFT-s-OFDM PI/2 BPSK	1	0	18.66	18.54	18.14	19.00
			1	1	18.16	18.52	18.11	19.00
			1	105	18.14	18.21	18.8	19.00
			1	106	18.17	18.20	18.94	19.00
			2	0	18.12	18.19	18.32	19.00
			2	104	18.1	18.23	18.47	19.00
			53	26	18.32	18.92	18.65	19.00
			106	0	18.29	18.03	18.63	19.00
		DFT-s-OFDM QPSK	1	0	18.07	18.56	18.15	19.00
			1	1	18.05	18.47	18.22	19.00
			1	105	18.10	18.27	**18.75**	**19.00**
			1	106	18.12	18.21	18.72	19.00
			2	0	18.15	18.32	18.19	19.00
			2	104	18.21	18.33	18.13	19.00
			53	26	18.29	18.69	**18.71**	**19.00**
			106	0	18.26	18.02	18.55	19.00

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		DFT-s-OFDM 64QAM	1	1	17.93	18.58	17.93	19.00
		DFT-s-OFDM 256QAM	1	1	16.71	17.19	16.62	19.00
Bandwidth	SCS	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
					637334	641666	646000	
					3560.01	3624.99	3690	
20MHz	30kHz	CP-OFDM QPSK	1	1	17.75	18.25	18.37	19.00
Bandwidth	SCS	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
					637000	641666	646332	
					3555	3624.99	3694.98	
10MHz	30kHz	DFT-s-OFDM QPSK	1	1	18.44	18.58	18.41	19.00

MIMO 48 Antenna 2							
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune up
Channel				638000	641666	645332	
Frequency (MHz)				3570	3624.99	3679.98	
40	QPSK	1	0	15.52	15.49	15.46	16.00
40	QPSK	1	1	15.39	15.52	15.37	16.00
40	QPSK	1	105	15.23	15.69	**15.76**	**16.00**
40	QPSK	1	106	15.11	15.69	15.65	16.00
40	QPSK	2	0	15.23	15.21	15.19	16.00
40	QPSK	2	104	15.12	15.24	15.21	16.00
40	QPSK	53	26	15.24	15.63	15.53	16.00
40	QPSK	106	0	15.18	14.54	**15.75**	**16.00**
40	64QAM	1	1	15.11	15.23	15.16	16.00
Channel				637334	641666	646000	Tune up
Frequency (MHz)				3560.01	3624.99	3690	
20	QPSK	1	26	15.31	15.58	15.57	16.00
Channel				637000	641666	646332	Tune up
Frequency (MHz)				3555	3624.99	3694.98	
10	QPSK	1	12	15.43	15.64	15.71	16.00

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MIMO 48 Antenna 5							
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune up
Channel				638000	641666	645332	
Frequency (MHz)				3570	3624.99	3679.98	
40	QPSK	1	0	15.22	15.51	15.04	16.00
40	QPSK	1	1	15.12	15.53	15.08	16.00
40	QPSK	1	105	15.09	15.20	**15.77**	**16.00**
40	QPSK	1	106	15.17	15.15	15.67	16.00
40	QPSK	2	0	15.11	15.31	15.23	16.00
40	QPSK	2	104	15.10	15.21	15.23	16.00
40	QPSK	53	26	15.34	**15.65**	15.51	**16.00**
40	QPSK	106	0	15.17	14.51	15.59	16.00
40	64QAM	1	1	15.05	15.10	15.06	16.00
Channel				637334	641666	646000	Tune up
Frequency (MHz)				3560.01	3624.99	3690	
20	QPSK	1	26	15.31	15.65	15.59	16.00
Channel				637000	641666	646332	Tune up
Frequency (MHz)				3555	3624.99	3694.98	
10	QPSK	1	12	15.07	15.59	15.65	16.00

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8.2 Measurement of SAR Data

Note:

1) The maximum Scaled SAR value is marked in bold. Graph Results refer to Appendix B

2) Per FCC KDB Publication 447498 D04, if the reported (scaled) SAR measured at the middle channel or highest output power channel for each test configuration is ≤ 0.8 W/kg (2.0W/kg for 10g) then testing at the other channels is not required for such test configuration(s).

8.2.1 SAR Result Of FR1 N77A SCS 30KHz SISO Ant5

Test position	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	SAR (W/kg) 10-g	Power Drift (dB)	Conducted power (dBm)	Tune up Limit (dBm)	Scaled factor	Scaled SAR (W/kg) 1-g	Liquid Temp.	SAR limit (W/kg) 1-g
Body Test data (Separate 5mm)												
Horizontal - Down	100M_QPSK 1RB_1	633334/3500.01	1:1	0.852	0.401	0.07	22.76	23.00	1.057	0.900	22.2	1.6
Horizontal - Up	100M_QPSK 1RB_1	633334/3500.01	1:1	1.34	0.575	0.06	22.76	23.00	1.057	1.416	22.2	1.6
Vertical - Back	100M_QPSK 1RB_1	633334/3500.01	1:1	0.058	0.031	0.02	22.76	23.00	1.057	0.061	22.2	1.6
Vertical - Front	100M_QPSK 1RB_1	633334/3500.01	1:1	1.39	0.656	0.03	22.76	23.00	1.057	**1.469**	22.2	1.6
Top	100M_QPSK 1RB_1	633334/3500.01	1:1	0.241	0.089	0.08	22.76	23.00	1.057	0.255	22.2	1.6
Vertical – Front*	100M_QPSK 1RB_1	633334/3500.01	1:1	1.28	0.648	0.06	22.76	23.00	1.057	1.353	22.2	1.6
Horizontal - Down	100M_QPSK 135RB_0	633334/3500.01	1:1	0.768	0.362	-0.04	21.93	22.00	1.016	0.781	22.2	1.6
Horizontal - Up	100M_QPSK 135RB_0	633334/3500.01	1:1	1.21	0.523	0.07	21.93	22.00	1.016	1.228	22.2	1.6
Vertical - Back	100M_QPSK 135RB_0	633334/3500.01	1:1	0.053	0.033	0.11	21.93	22.00	1.016	0.054	22.2	1.6
Vertical - Front	100M_QPSK 135RB_0	633334/3500.01	1:1	1.25	0.574	0.03	21.93	22.00	1.016	1.275	22.2	1.6
Top	100M_QPSK 135RB_0	633334/3500.01	1:1	0.219	0.082	-0.16	21.93	22.00	1.016	0.222	22.2	1.6

8.2.2 SAR Result Of FR1 N77A SCS 30KHz MIMO Ant2

Test position	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	SAR (W/kg) 10-g	Power Drift (dB)	Conducted power (dBm)	Tune up Limit (dBm)	Scaled factor	Scaled SAR (W/kg) 1-g	Liquid Temp.	SAR limit (W/kg) 1-g
Body Test data (Separate 5mm)												
Horizontal - Down	100M_QPSK 1RB_1	633334/3500.01	1:1	0.657	0.276	-0.05	18.81	19.00	1.045	0.686	22.2	1.6
Horizontal - Up	100M_QPSK 1RB_1	633334/3500.01	1:1	0.411	0.181	0.06	18.81	19.00	1.045	0.429	22.2	1.6
Vertical - Back	100M_QPSK 1RB_1	633334/3500.01	1:1	0.211	0.087	-0.09	18.81	19.00	1.045	0.220	22.2	1.6
Vertical - Front	100M_QPSK 1RB_1	633334/3500.01	1:1	0.011	0.004	0.06	18.81	19.00	1.045	0.011	22.2	1.6
Top	100M_QPSK 1RB_1	633334/3500.01	1:1	0.813	0.315	-0.03	18.81	19.00	1.045	**0.849**	22.2	1.6
Top*	100M_QPSK 1RB_1	633334/3500.01	1:1	0.806	0.311	0.02	18.81	19.00	1.045	0.842	22.2	1.6
Horizontal - Down	100M_QPSK 135RB_0	633334/3500.01	1:1	0.593	0.251	0.14	17.95	18.50	1.135	0.673	22.2	1.6
Horizontal - Up	100M_QPSK 135RB_0	633334/3500.01	1:1	0.373	0.165	-0.16	17.95	18.50	1.135	0.423	22.2	1.6
Vertical - Back	100M_QPSK 135RB_0	633334/3500.01	1:1	0.193	0.079	0.10	17.95	18.50	1.135	0.219	22.2	1.6
Vertical - Front	100M_QPSK 135RB_0	633334/3500.01	1:1	0.013	0.007	-0.06	17.95	18.50	1.135	0.014	22.2	1.6
Top	100M_QPSK 135RB_0	633334/3500.01	1:1	0.733	0.286	-0.10	17.95	18.50	1.135	**0.832**	22.2	1.6

8.2.3 SAR Result Of FR1 N77A SCS 30KHz MIMO Ant5

Test position	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	SAR (W/kg) 10-g	Power Drift (dB)	Conducted power (dBm)	Tune up Limit (dBm)	Scaled factor	Scaled SAR (W/kg) 1-g	Liquid Temp.	SAR limit (W/kg) 1-g
Body Test data (Separate 5mm)												
Horizontal - Down	100M_QPSK 1RB_1	633334/3500.01	1:1	0.384	0.175	-0.11	18.92	19.00	1.019	0.392	22.2	1.6
Horizontal - Up	100M_QPSK 1RB_1	633334/3500.01	1:1	0.603	0.252	-0.18	18.92	19.00	1.019	0.614	22.2	1.6
Vertical - Back	100M_QPSK 1RB_1	633334/3500.01	1:1	0.027	0.014	-0.10	18.92	19.00	1.019	0.027	22.2	1.6
Vertical - Front	100M_QPSK 1RB_1	633334/3500.01	1:1	0.624	0.237	-0.05	18.92	19.00	1.019	**0.636**	22.2	1.6
Top	100M_QPSK 1RB_1	633334/3500.01	1:1	0.109	0.040	0.02	18.92	19.00	1.019	0.111	22.2	1.6
Horizontal - Down	100M_QPSK 135RB_0	633334/3500.01	1:1	0.352	0.159	-0.05	18.08	18.50	1.102	0.387	22.2	1.6
Horizontal - Up	100M_QPSK 135RB_0	633334/3500.01	1:1	0.544	0.229	0.08	18.08	18.50	1.102	0.599	22.2	1.6
Vertical - Back	100M_QPSK 135RB_0	633334/3500.01	1:1	0.026	0.014	-0.07	18.08	18.50	1.102	0.028	22.2	1.6
Vertical - Front	100M_QPSK 135RB_0	633334/3500.01	1:1	0.566	0.217	-0.14	18.08	18.50	1.102	0.624	22.2	1.6
Top	100M_QPSK 135RB_0	633334/3500.01	1:1	0.098	0.042	0.04	18.08	18.50	1.102	0.108	22.2	1.6

8.2.4 SAR Result Of FR1 N77B SCS 30KHz SISO Ant5

Test position	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	SAR (W/kg) 10-g	Power Drift (dB)	Conducted power (dBm)	Tune up Limit (dBm)	Scaled factor	Scaled SAR (W/kg) 1-g	Liquid Temp.	SAR limit (W/kg) 1-g
Body Test data (Separate 5mm)												
Horizontal - Down	100M_QPSK 1RB_1	656000/3840	1:1	0.808	0.356	-0.03	23.46	24.00	1.132	0.915	22.2	1.6
Horizontal - Up	100M_QPSK 1RB_1	656000/3840	1:1	1.11	0.502	-0.07	23.46	24.00	1.132	1.257	22.2	1.6
Vertical - Back	100M_QPSK 1RB_1	656000/3840	1:1	0.069	0.033	-0.10	23.46	24.00	1.132	0.078	22.2	1.6
Vertical - Front	100M_QPSK 1RB_1	656000/3840	1:1	1.23	0.514	0.08	23.46	24.00	1.132	**1.393**	22.2	1.6
Top	100M_QPSK 1RB_1	656000/3840	1:1	0.257	0.103	0.02	23.46	24.00	1.132	0.291	22.2	1.6
Vertical - Front	100M_QPSK 1RB_1	650000/3750	1:1	1.05	0.516	0.03	23.25	24.00	1.189	1.248	22.2	1.6
Vertical - Front	100M_QPSK 1RB_1	662000/3930	1:1	1.13	0.521	-0.17	23.35	24.00	1.161	1.312	22.2	1.6
Vertical – Front*	100M_QPSK 1RB_1	656000/3840	1:1	1.16	0.507	-0.12	23.46	24.00	1.132	1.314	22.2	1.6
Horizontal - Down	100M_QPSK 135RB_0	656000/3840	1:1	0.729	0.321	0.18	22.41	23.00	1.146	0.835	22.2	1.6
Horizontal - Up	100M_QPSK 135RB_0	656000/3840	1:1	1.01	0.495	-0.12	22.41	23.00	1.146	1.157	22.2	1.6
Vertical - Back	100M_QPSK 135RB_0	656000/3840	1:1	0.064	0.031	0.01	22.41	23.00	1.146	0.074	22.2	1.6
Vertical - Front	100M_QPSK 135RB_0	656000/3840	1:1	1.11	0.468	0.10	22.41	23.00	1.146	1.271	22.2	1.6
Top	100M_QPSK 135RB_0	656000/3840	1:1	0.233	0.093	0.06	22.41	23.00	1.146	0.267	22.2	1.6
Vertical - Front	100M_QPSK 135RB_0	650000/3750	1:1	1.03	0.451	0.17	22.28	23.00	1.180	1.216	22.2	1.6
Vertical - Front	100M_QPSK 135RB_0	662000/3930	1:1	1.04	0.465	-0.05	22.33	23.00	1.167	1.209	22.2	1.6

8.2.5 SAR Result Of FR1 N77B SCS 30KHz MIMO Ant2

Test position	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	SAR (W/kg) 10-g	Power Drift (dB)	Conducted power (dBm)	Tune up Limit (dBm)	Scaled factor	Scaled SAR (W/kg) 1-g	Liquid Temp.	SAR limit (W/kg) 1-g
Body Test data (Separate 5mm)												
Horizontal - Down	100M_QPSK 1RB_1	656000/3840	1:1	0.541	0.229	0.06	19.15	20.00	1.216	0.658	22.2	1.6
Horizontal - Up	100M_QPSK 1RB_1	656000/3840	1:1	0.459	0.201	-0.07	19.15	20.00	1.216	0.558	22.2	1.6
Vertical - Back	100M_QPSK 1RB_1	656000/3840	1:1	0.241	0.101	0.09	19.15	20.00	1.216	0.293	22.2	1.6
Vertical - Front	100M_QPSK 1RB_1	656000/3840	1:1	0.015	0.006	0.02	19.15	20.00	1.216	0.018	22.2	1.6
Top	100M_QPSK 1RB_1	656000/3840	1:1	0.723	0.292	-0.11	19.15	20.00	1.216	0.879	22.2	1.6
Top	100M_QPSK 1RB_1	650000/3750	1:1	0.911	0.368	0.03	18.90	20.00	1.288	**1.174**	22.2	1.6
Top	100M_QPSK 1RB_1	662000/3930	1:1	0.681	0.274	0.03	19.10	20.00	1.230	0.838	22.2	1.6
Top*	100M_QPSK 1RB_1	650000/3750	1:1	0.896	0.354	0.09	18.90	20.00	1.288	1.154	22.2	1.6
Horizontal - Down	100M_QPSK 135RB_0	656000/3840	1:1	0.488	0.207	0.06	18.04	18.50	1.112	0.543	22.2	1.6
Horizontal - Up	100M_QPSK 135RB_0	650000/3750	1:1	0.414	0.185	-0.02	18.04	18.50	1.112	0.460	22.2	1.6
Vertical - Back	100M_QPSK 135RB_0	650000/3750	1:1	0.223	0.095	-0.09	18.04	18.50	1.112	0.248	22.2	1.6
Vertical - Front	100M_QPSK 135RB_0	650000/3750	1:1	0.016	0.009	-0.13	18.04	18.50	1.112	0.018	22.2	1.6
Top	100M_QPSK 135RB_0	656000/3840	1:1	0.654	0.265	0.05	18.04	18.50	1.112	0.727	22.2	1.6
Top	100M_QPSK 135RB_0	650000/3750	1:1	0.823	0.337	0.08	17.94	18.50	1.138	**0.937**	22.2	1.6
Top	100M_QPSK 135RB_0	662000/3930	1:1	0.616	0.249	0.08	18.03	18.50	1.114	0.687	22.2	1.6

8.2.6 SAR Result Of FR1 N77B SCS 30KHz MIMO Ant5

Test position	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	SAR (W/kg) 10-g	Power Drift (dB)	Conducted power (dBm)	Tune up Limit (dBm)	Scaled factor	Scaled SAR (W/kg) 1-g	Liquid Temp.	SAR limit (W/kg) 1-g
Body Test data (Separate 5mm)												
Horizontal - Down	100M_QPSK 1RB_1	656000/3840	1:1	0.389	0.167	0.01	19.28	20.00	1.180	0.459	22.2	1.6
Horizontal - Up	100M_QPSK 1RB_1	656000/3840	1:1	0.626	0.266	-0.08	19.28	20.00	1.180	0.739	22.2	1.6
Vertical - Back	100M_QPSK 1RB_1	656000/3840	1:1	0.031	0.012	0.05	19.28	20.00	1.180	0.037	22.2	1.6
Vertical - Front	100M_QPSK 1RB_1	650000/3750	1:1	0.735	0.301	0.02	19.28	20.00	1.180	**0.868**	22.2	1.6
Top	100M_QPSK 1RB_1	656000/3840	1:1	0.122	0.047	0.03	19.28	20.00	1.180	0.144	22.2	1.6
Vertical - Front	100M_QPSK 1RB_1	650000/3750	1:1	0.684	0.271	0.02	19.04	20.00	1.247	0.853	22.2	1.6
Vertical - Front	100M_QPSK 1RB_1	650000/3750	1:1	0.722	0.296	-0.18	19.27	20.00	1.183	0.854	22.2	1.6
Horizontal - Down	100M_QPSK 135RB_0	656000/3840	1:1	0.355	0.154	-0.14	18.19	18.50	1.074	0.381	22.2	1.6
Horizontal - Up	100M_QPSK 135RB_0	656000/3840	1:1	0.564	0.245	0.13	18.19	18.50	1.074	0.605	22.2	1.6
Vertical - Back	100M_QPSK 135RB_0	656000/3840	1:1	0.034	0.012	-0.16	18.19	18.50	1.074	0.037	22.2	1.6
Vertical - Front	100M_QPSK 135RB_0	650000/3750	1:1	0.666	0.273	-0.02	18.19	18.50	1.074	0.715	22.2	1.6
Top	100M_QPSK 135RB_0	656000/3840	1:1	0.111	0.046	0.14	18.19	18.50	1.074	0.120	22.2	1.6
Vertical - Front	100M_QPSK 135RB_0	650000/3750	1:1	0.611	0.243	0.08	18.07	18.50	1.104	0.675	22.2	1.6
Vertical - Front	100M_QPSK 135RB_0	650000/3750	1:1	0.641	0.259	-0.02	18.11	18.50	1.094	0.701	22.2	1.6

8.2.7 SAR Result Of FR1 N78A SCS 30KHz SISO Ant5 SAR

Test position	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	SAR (W/kg) 10-g	Power Drift (dB)	Conducted power (dBm)	Tune up Limit (dBm)	Scaled factor	Scaled SAR (W/kg) 1-g	Liquid Temp.	SAR limit (W/kg) 1-g
Body Test data (Separate 5mm)												
Horizontal - Down	100M_QPSK 1RB_1	633334/3500.01	1:1	0.873	0.430	-0.17	22.87	23.00	1.030	0.899	22.2	1.6
Horizontal - Up	100M_QPSK 1RB_1	633334/3500.01	1:1	1.17	0.611	0.18	22.87	23.00	1.030	1.206	22.2	1.6
Vertical - Back	100M_QPSK 1RB_1	633334/3500.01	1:1	0.064	0.037	0.12	22.87	23.00	1.030	0.066	22.2	1.6
Vertical - Front	100M_QPSK 1RB_1	633334/3500.01	1:1	1.35	0.632	0.05	22.87	23.00	1.030	**1.391**	22.2	1.6
Top	100M_QPSK 1RB_1	633334/3500.01	1:1	0.247	0.097	-0.05	22.87	23.00	1.030	0.255	22.2	1.6
Vertical – Front*	100M_QPSK 1RB_1	633334/3500.01	1:1	1.29	0.617	-0.15	22.87	23.00	1.030	1.329	22.2	1.6
Horizontal - Down	100M_QPSK 135RB_0	633334/3500.01	1:1	0.786	0.392	0.05	21.77	22.00	1.054	0.828	22.2	1.6
Horizontal - Up	100M_QPSK 135RB_0	633334/3500.01	1:1	1.23	0.559	0.11	21.77	22.00	1.054	1.301	22.2	1.6
Vertical - Back	100M_QPSK 135RB_0	633334/3500.01	1:1	0.061	0.034	0.05	21.77	22.00	1.054	0.064	22.2	1.6
Vertical - Front	100M_QPSK 135RB_0	633334/3500.01	1:1	1.28	0.532	0.02	21.77	22.00	1.054	1.350	22.2	1.6
Top	100M_QPSK 135RB_0	633334/3500.01	1:1	0.223	0.091	-0.04	21.77	22.00	1.054	0.235	22.2	1.6

8.2.8 SAR Result Of FR1 N78A SCS 30KHz MIMO Ant2

Test position	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	SAR (W/kg) 10-g	Power Drift (dB)	Conducted power (dBm)	Tune up Limit (dBm)	Scaled factor	Scaled SAR (W/kg) 1-g	Liquid Temp.	SAR limit (W/kg) 1-g
Body Test data (Separate 5mm)												
Horizontal - Down	100M_QPSK 1RB_1	633334/3500.01	1:1	0.655	0.267	0.01	19.10	20.00	1.230	0.806	22.2	1.6
Horizontal - Up	100M_QPSK 1RB_1	633334/3500.01	1:1	0.413	0.176	-0.12	19.10	20.00	1.230	0.508	22.2	1.6
Vertical - Back	100M_QPSK 1RB_1	633334/3500.01	1:1	0.224	0.091	-0.13	19.10	20.00	1.230	0.276	22.2	1.6
Vertical - Front	100M_QPSK 1RB_1	633334/3500.01	1:1	0.009	0.003	0.01	19.10	20.00	1.230	0.011	22.2	1.6
Top	100M_QPSK 1RB_1	633334/3500.01	1:1	0.809	0.304	0.04	19.10	20.00	1.230	**0.995**	22.2	1.6
Top*	100M_QPSK 1RB_1	633334/3500.01	1:1	0.778	0.301	0.18	19.10	20.00	1.230	0.957	22.2	1.6
Horizontal - Down	100M_QPSK 135RB_69	633334/3500.01	1:1	0.597	0.249	0.12	18.00	18.50	1.122	0.669	22.2	1.6
Horizontal - Up	100M_QPSK 135RB_69	633334/3500.01	1:1	0.374	0.166	0.10	18.00	18.50	1.122	0.419	22.2	1.6
Vertical - Back	100M_QPSK 135RB_69	633334/3500.01	1:1	0.187	0.081	0.06	18.00	18.50	1.122	0.210	22.2	1.6
Vertical - Front	100M_QPSK 135RB_69	633334/3500.01	1:1	0.016	0.005	0.08	18.00	18.50	1.122	0.018	22.2	1.6
Top	100M_QPSK 135RB_69	633334/3500.01	1:1	0.714	0.274	0.05	18.00	18.50	1.122	0.801	22.2	1.6

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8.2.9 SAR Result Of FR1 N78A SCS 30KHz MIMO Ant5

Test position	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	SAR (W/kg) 10-g	Power Drift (dB)	Conducted power (dBm)	Tune up Limit (dBm)	Scaled factor	Scaled SAR (W/kg) 1-g	Liquid Temp.	SAR limit (W/kg) 1-g
Body Test data (Separate 5mm)												
Horizontal - Down	100M_QPSK 1RB_1	633334/3500.01	1:1	0.420	0.189	0.17	18.86	19.00	1.033	0.434	22.2	1.6
Horizontal - Up	100M_QPSK 1RB_1	633334/3500.01	1:1	0.656	0.273	0.04	18.86	19.00	1.033	0.677	22.2	1.6
Vertical - Back	100M_QPSK 1RB_1	633334/3500.01	1:1	0.031	0.016	0.07	18.86	19.00	1.033	0.032	22.2	1.6
Vertical - Front	100M_QPSK 1RB_1	633334/3500.01	1:1	0.682	0.259	-0.05	18.86	19.00	1.033	**0.704**	22.2	1.6
Top	100M_QPSK 1RB_1	633334/3500.01	1:1	0.121	0.043	0.10	18.86	19.00	1.033	0.125	22.2	1.6
Horizontal - Down	100M_QPSK 135RB_0	633334/3500.01	1:1	0.345	0.159	-0.04	17.76	18.50	1.186	0.409	22.2	1.6
Horizontal - Up	100M_QPSK 135RB_0	633334/3500.01	1:1	0.517	0.204	0.17	17.76	18.50	1.186	0.613	22.2	1.6
Vertical - Back	100M_QPSK 135RB_0	633334/3500.01	1:1	0.032	0.022	-0.17	17.76	18.50	1.186	0.038	22.2	1.6
Vertical - Front	100M_QPSK 135RB_0	633334/3500.01	1:1	0.528	0.209	0.13	17.76	18.50	1.186	0.626	22.2	1.6
Top	100M_QPSK 135RB_0	633334/3500.01	1:1	0.101	0.041	0.03	17.76	18.50	1.186	0.120	22.2	1.6

8.2.10 SAR Result Of FR1 N78B SCS 30KHz SISO Ant5 SAR

Test position	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	SAR (W/kg) 10-g	Power Drift (dB)	Conducted power (dBm)	Tune up Limit (dBm)	Scaled factor	Scaled SAR (W/kg) 1-g	Liquid Temp.	SAR limit (W/kg) 1-g
Body Test data (Separate 5mm)												
Horizontal - Down	100M_QPSK 1RB_1	650000/3750	1:1	1.01	0.441	-0.09	23.15	24.00	1.216	1.228	22.2	1.6
Horizontal - Up	100M_QPSK 1RB_1	650000/3750	1:1	1.15	0.534	-0.07	23.15	24.00	1.216	1.399	22.2	1.6
Vertical - Back	100M_QPSK 1RB_1	650000/3750	1:1	0.062	0.021	0.09	23.15	24.00	1.216	0.075	22.2	1.6
Vertical - Front	100M_QPSK 1RB_1	650000/3750	1:1	1.21	0.611	0.05	23.15	24.00	1.216	**1.472**	22.2	1.6
Top	100M_QPSK 1RB_1	650000/3750	1:1	0.312	0.115	0.08	23.15	24.00	1.216	0.379	22.2	1.6
Vertical – Front*	100M_QPSK 1RB_1	650000/3750	1:1	1.09	0.603	-0.16	23.15	24.00	1.216	1.326	22.2	1.6
Horizontal - Down	100M_QPSK 135RB_69	650000/3750	1:1	0.91	0.399	0.07	22.12	23.00	1.225	1.117	22.2	1.6
Horizontal - Up	100M_QPSK 135RB_69	650000/3750	1:1	1.03	0.529	-0.19	22.12	23.00	1.225	1.261	22.2	1.6
Vertical - Back	100M_QPSK 135RB_69	650000/3750	1:1	0.060	0.021	0.07	22.12	23.00	1.225	0.074	22.2	1.6
Vertical - Front	100M_QPSK 135RB_69	650000/3750	1:1	1.16	0.574	-0.03	22.12	23.00	1.225	1.421	22.2	1.6
Top	100M_QPSK 135RB_69	650000/3750	1:1	0.285	0.108	0.13	22.12	23.00	1.225	0.349	22.2	1.6

8.2.11 SAR Result Of FR1 N78B SCS 30KHz MIMO Ant2

Test position	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	SAR (W/kg) 10-g	Power Drift (dB)	Conducted power (dBm)	Tune up Limit (dBm)	Scaled factor	Scaled SAR (W/kg) 1-g	Liquid Temp.	SAR limit (W/kg) 1-g
Body Test data (Separate 5mm)												
Horizontal - Down	100M_QPSK 1RB_1	650000/3750	1:1	0.608	0.256	0.01	19.08	20.00	1.236	0.751	22.2	1.6
Horizontal - Up	100M_QPSK 1RB_1	650000/3750	1:1	0.411	0.187	0.10	19.08	20.00	1.236	0.508	22.2	1.6
Vertical - Back	100M_QPSK 1RB_1	650000/3750	1:1	0.189	0.085	0.03	19.08	20.00	1.236	0.234	22.2	1.6
Vertical - Front	100M_QPSK 1RB_1	650000/3750	1:1	0.012	0.005	-0.11	19.08	20.00	1.236	0.015	22.2	1.6
Top	100M_QPSK 1RB_1	650000/3750	1:1	0.717	0.303	-0.03	19.08	20.00	1.236	**0.886**	22.2	1.6
Horizontal - Down	100M_QPSK 135RB_69	650000/3750	1:1	0.551	0.234	-0.09	17.94	18.50	1.138	0.626	22.2	1.6
Horizontal - Up	100M_QPSK 135RB_69	650000/3750	1:1	0.374	0.170	-0.18	17.94	18.50	1.138	0.425	22.2	1.6
Vertical - Back	100M_QPSK 135RB_69	650000/3750	1:1	0.170	0.079	0.02	17.94	18.50	1.138	0.194	22.2	1.6
Vertical - Front	100M_QPSK 135RB_69	650000/3750	1:1	0.011	0.006	-0.15	17.94	18.50	1.138	0.012	22.2	1.6
Top	100M_QPSK 135RB_69	650000/3750	1:1	0.651	0.278	-0.08	17.94	18.50	1.138	0.740	22.2	1.6

8.2.12 SAR Result Of FR1 N78B SCS 30KHz MIMO Ant5

Test position	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	SAR (W/kg) 10-g	Power Drift (dB)	Conducted power (dBm)	Tune up Limit (dBm)	Scaled factor	Scaled SAR (W/kg) 1-g	Liquid Temp.	SAR limit (W/kg) 1-g
Body Test data (Separate 5mm)												
Horizontal - Down	100M_QPSK 1RB_1	650000/3750	1:1	0.430	0.183	0.06	19.04	20.00	1.247	0.536	22.3	1.6
Horizontal - Up	100M_QPSK 1RB_1	650000/3750	1:1	0.675	0.273	0.09	19.04	20.00	1.247	0.842	22.3	1.6
Vertical - Back	100M_QPSK 1RB_1	650000/3750	1:1	0.035	0.012	0.06	19.04	20.00	1.247	0.044	22.3	1.6
Vertical - Front	100M_QPSK 1RB_1	650000/3750	1:1	0.726	0.311	-0.02	19.04	20.00	1.247	**0.906**	22.3	1.6
Top	100M_QPSK 1RB_1	650000/3750	1:1	0.142	0.058	0.01	19.04	20.00	1.247	0.177	22.3	1.6
Horizontal - Down	100M_QPSK 135RB_0	650000/3750	1:1	0.390	0.169	0.12	17.95	18.50	1.135	0.442	22.3	1.6
Horizontal - Up	100M_QPSK 135RB_0	650000/3750	1:1	0.611	0.250	-0.06	17.95	18.50	1.135	0.694	22.3	1.6
Vertical - Back	100M_QPSK 135RB_0	650000/3750	1:1	0.035	0.015	-0.04	17.95	18.50	1.135	0.040	22.3	1.6
Vertical - Front	100M_QPSK 135RB_0	650000/3750	1:1	0.656	0.282	0.05	17.95	18.50	1.135	0.745	22.3	1.6
Top	100M_QPSK 135RB_0	650000/3750	1:1	0.131	0.053	-0.01	17.95	18.50	1.135	0.149	22.3	1.6

8.2.13 SAR Result Of FR1 N48 SCS 30KHz SISO Ant5

Test position	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	SAR (W/kg) 10-g	Power Drift (dB)	Conducted power (dBm)	Tune up Limit (dBm)	Scaled factor	Scaled SAR (W/kg) 1-g	Liquid Temp.	SAR limit (W/kg) 1-g
Body Test data (Separate 5mm)												
Horizontal - Down	40M_QPSK 1RB_105	645332/3679.98	1:1	0.732	0.356	0.02	18.75	19.00	1.059	0.775	22.2	1.6
Horizontal - Up	40M_QPSK 1RB_105	645332/3679.98	1:1	0.981	0.441	-0.05	18.75	19.00	1.059	1.039	22.2	1.6
Vertical - Back	40M_QPSK 1RB_105	645332/3679.98	1:1	0.008	0.003	0.01	18.75	19.00	1.059	0.008	22.2	1.6
Vertical - Front	40M_QPSK 1RB_105	645332/3679.98	1:1	1.46	0.661	-0.13	18.75	19.00	1.059	1.547	22.2	1.6
Top	40M_QPSK 1RB_105	645332/3679.98	1:1	0.653	0.291	0.02	18.75	19.00	1.059	0.692	22.2	1.6
Vertical - Front	40M_QPSK 1RB_105	638000/3570	1:1	1.22	0.642	0.10	18.10	19.00	1.230	1.501	22.2	1.6
Vertical - Front	40M_QPSK 1RB_105	641666/3624.99	1:1	1.25	0.655	-0.06	18.27	19.00	1.183	**1.479**	22.2	1.6
Vertical – Front*	40M_QPSK 1RB_105	641666/3624.99	1:1	1.22	0.633	0.05	18.27	19.00	1.183	1.443	22.2	1.6
Horizontal - Down	40M_QPSK 53RB_26	645332/3679.98	1:1	0.599	0.341	0.08	18.71	19.00	1.069	0.640	22.2	1.6
Horizontal - Up	40M_QPSK 53RB_26	645332/3679.98	1:1	0.926	0.435	0.06	18.71	19.00	1.069	0.990	22.2	1.6
Vertical - Back	40M_QPSK 53RB_26	645332/3679.98	1:1	0.006	0.003	-0.09	18.71	19.00	1.069	0.006	22.2	1.6
Vertical - Front	40M_QPSK 53RB_26	645332/3679.98	1:1	1.19	0.591	-0.01	18.71	19.00	1.069	1.272	22.2	1.6
Top	40M_QPSK 53RB_26	645332/3679.98	1:1	0.585	0.264	0.09	18.71	19.00	1.069	0.625	22.2	1.6
Vertical - Front	40M_QPSK 53RB_26	638000/3570	1:1	1.01	0.503	0.05	18.29	19.00	1.178	1.189	22.2	1.6
Vertical - Front	40M_QPSK 53RB_26	641666/3624.99	1:1	1.22	0.581	-0.19	18.69	19.00	1.074	1.310	22.2	1.6

8.2.14 SAR Result Of FR1 N48 SCS 30KHz MIMO Ant2

Test position	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	SAR (W/kg) 10-g	Power Drift (dB)	Conducted power (dBm)	Tune up Limit (dBm)	Scaled factor	Scaled SAR (W/kg) 1-g	Liquid Temp.	SAR limit (W/kg) 1-g
Body Test data (Separate 5mm)												
Horizontal - Down	40M_QPSK 1RB_105	645332/3679.98	1:1	0.475	0.200	-0.04	15.76	16.00	1.057	0.502	22.2	1.6
Horizontal - Up	40M_QPSK 1RB_105	645332/3679.98	1:1	0.248	0.104	-0.08	15.76	16.00	1.057	0.262	22.2	1.6
Vertical - Back	40M_QPSK 1RB_105	645332/3679.98	1:1	0.165	0.071	0.02	15.76	16.00	1.057	0.174	22.2	1.6
Vertical - Front	40M_QPSK 1RB_105	645332/3679.98	1:1	0.008	0.003	0.01	15.76	16.00	1.057	0.008	22.2	1.6
Top	40M_QPSK 1RB_105	645332/3679.98	1:1	0.559	0.225	-0.03	15.76	16.00	1.057	**0.591**	22.2	1.6
Horizontal - Down	40M_QPSK 106RB_0	645332/3679.98	1:1	0.466	0.186	0.05	15.75	16.00	1.059	0.494	22.2	1.6
Horizontal - Up	40M_QPSK 106RB_0	645332/3679.98	1:1	0.234	0.094	-0.11	15.75	16.00	1.059	0.248	22.2	1.6
Vertical - Back	40M_QPSK 106RB_0	645332/3679.98	1:1	0.139	0.065	0.04	15.75	16.00	1.059	0.147	22.2	1.6
Vertical - Front	40M_QPSK 106RB_0	645332/3679.98	1:1	0.006	0.020	-0.17	15.75	16.00	1.059	0.006	22.2	1.6
Top	40M_QPSK 106RB_0	645332/3679.98	1:1	0.534	0.215	0.03	15.75	16.00	1.059	0.566	22.2	1.6

8.2.15 SAR Result Of FR1 N48 SCS 30KHz MIMO Ant5

Test position	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	SAR (W/kg) 10-g	Power Drift (dB)	Conducted power (dBm)	Tune up Limit (dBm)	Scaled factor	Scaled SAR (W/kg) 1-g	Liquid Temp.	SAR limit (W/kg) 1-g
Body Test data(Separate 5mm)												
Horizontal - Down	40M_QPSK 1RB_105	645332/3679.98	1:1	0.414	0.200	0.17	15.77	16.00	1.054	0.436	22.2	1.6
Horizontal - Up	40M_QPSK 1RB_105	645332/3679.98	1:1	0.874	0.354	0.06	15.77	16.00	1.054	0.922	22.2	1.6
Vertical - Back	40M_QPSK 1RB_105	645332/3679.98	1:1	0.005	0.002	0.01	15.77	16.00	1.054	0.005	22.2	1.6
Vertical - Front	40M_QPSK 1RB_105	645332/3679.98	1:1	0.951	0.386	0.13	15.77	16.00	1.054	**1.003**	22.2	1.6
Top	40M_QPSK 1RB_105	645332/3679.98	1:1	0.368	0.165	0.11	15.77	16.00	1.054	0.388	22.2	1.6
Vertical - Front	40M_QPSK 1RB_105	638000/3570	1:1	0.811	0.338	0.05	15.09	16.00	1.233	1.000	22.2	1.6
Vertical - Front	40M_QPSK 1RB_105	641666/3624.99	1:1	0.826	0.321	-0.11	15.20	16.00	1.202	0.993	22.2	1.6
Horizontal - Down	40M_QPSK 53RB_26	641666/3624.99	1:1	0.401	0.194	0.04	15.65	16.00	1.084	0.435	22.2	1.6
Horizontal - Up	40M_QPSK 53RB_26	641666/3624.99	1:1	0.659	0.306	0.01	15.65	16.00	1.084	0.714	22.2	1.6
Vertical - Back	40M_QPSK 53RB_26	641666/3624.99	1:1	0.003	0.001	0.07	15.65	16.00	1.084	0.003	22.2	1.6
Vertical - Front	40M_QPSK 53RB_26	641666/3624.99	1:1	0.906	0.355	0.09	15.65	16.00	1.084	0.982	22.2	1.6
Top	40M_QPSK 53RB_26	641666/3624.99	1:1	0.332	0.144	0.03	15.65	16.00	1.084	0.360	22.2	1.6

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8.3 Multiple Transmitter Evaluation

8.3.1 Simultaneous SAR SAR test evaluation

Simultaneous Transmission

NO.	Simultaneous Transmission Configuration	Body
1	N77 MIMO	Yes
2	N78 MIMO	Yes
3	N48 MIMO	Yes

Simultaneous Transmission SAR Summation Scenario for Body

WWAN Band	Exposure position	①MAX. MIMO Ant2 SAR (W/kg)	②MAX. MIMO Ant5 SAR (W/kg)	Summed SAR ①+②	Volume scan
FR1 N77	Horizontal - Down	0.686	0.459	1.145	NO
	Horizontal - Up	0.558	0.739	1.297	NO
	Vertical - Back	0.293	0.037	0.330	NO
	Vertical - Front	0.018	0.868	0.886	NO
	Top	1.170	0.144	1.318	NO
FR1 N78	Horizontal - Down	0.806	0.536	1.342	NO
	Horizontal - Up	0.508	0.842	**1.350**	NO
	Vertical - Back	0.276	0.044	0.320	NO
	Vertical - Front	0.011	0.906	0.917	NO
	Top	1.000	0.177	1.172	NO
FR1 N48	Horizontal - Down	0.502	0.436	0.938	NO
	Horizontal - Up	0.262	0.922	1.184	NO
	Vertical - Back	0.174	0.005	0.179	NO
	Vertical - Front	0.008	1.003	1.011	NO
	Top	0.591	0.388	0.979	NO

9 Equipment list

Test Platform	SPEAG DASY5 Professional
Location	Compliance Certification Services (Kunshan) Inc.
Software Reference	DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Hardware Reference

	Equipment	Manufacturer	Model	Serial Number	Calibration Date	Due date of calibration
☒	P C	HP	Core(rm)3.16G	CZCO48171H	N/A	N/A
☒	Signal Generator	Agilent	E5182A	MY50142015	2022/08/22	2023/08/21
☒	S-Parameter Network Analyzer	Agilent	E5071B	MY42301382	2022/02/20	2023/02/19
☒	S-Parameter Network Analyzer	Agilent	E5071C	MY46417539	2023/03/31	2024/03/30
☒	DAK-3.5 probe	SPEAG	DAK-3.5	1102	N/A	N/A
☒	MXA Signal Analyzer	Keysight	N9020A	MY53420174	2022/08/22	2023/08/21
☒	DAE	SPEAG	DAE4	1245	2022/05/30	2023/05/29
☒	DAE	SPEAG	DAE4	1245	2023/04/25	2024/04/24
☒	E-field PROBE	SPEAG	EX3DV4	7767	2022/10/28	2023/10/27
☒	Dipole	SPEAG	D3500V2	1101	2021/09/09	2024/09/08
☒	Dipole	SPEAG	D3700V2	1103	2021/09/09	2024/09/08
☒	Dipole	SPEAG	D3900V2	1080	2021/09/13	2024/09/12
☒	Electro Thermometer	Renke	RS-WS-N01-6J	1032862	2022/04/01	2023/03/31
☒	Electro Thermometer	Renke	RS-WS-N01-6J	1032862	2023/03/22	2024/03/21
☒	Amplifier	Mini-circuits	ZVE-8G	110405	N/A	N/A
☒	Amplifier	Mini-circuits	ZHL-42	QA1331003	N/A	N/A
☒	3db ATTENUATOR	MINI	MCL BW-S3W5	0533	N/A	N/A
☒	DUMMY PROBE	SPEAG	DP_2	SPDP2001AA	N/A	N/A
☒	Dual Directional Coupler	Woken	20W couple	DOM2BHW1A1	N/A	N/A
☒	SAM PHANTOM (ELI4 v4.0)	SPEAG	QDOVA001BB	1102	N/A	N/A
☒	Twin SAM Phantom	SPEAG	QD000P40CD	1609	N/A	N/A

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☒	ROBOT	SPEAG	TX60	F10/5E6AA1/A101	N/A	N/A
☒	ROBOT KRC	SPEAG	CS8C	F10/5E6AA1/C101	N/A	N/A
☒	LIQUID CALIBRATION KIT	ANTENNESSA	41/05 OCP9	00425167	N/A	N/A

Note: All the equipments are within the valid period when the tests are performed.

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10 Calibration certificate

Please see the Appendix C

11 Photographs

Please see the Appendix D

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Appendix A: Detailed System Check Results

The plots are showing as followings.

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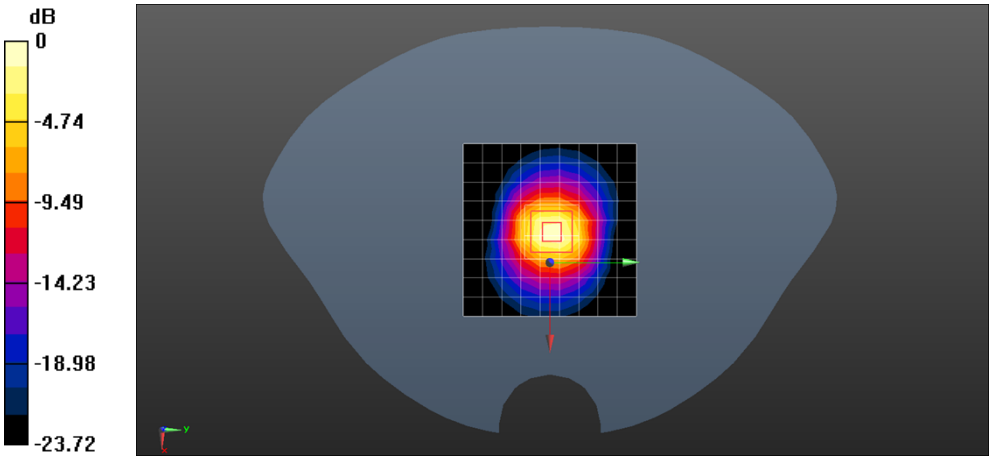
Test Laboratory: Compliance Certification Services (Kunshan) Inc.
System Performance Check-D3500
DUT: Dipole D3500HzV2; Type: 1101
Communication System: UID 0, CW (0); Frequency: 3500 MHz;Duty Cycle: 1:1
Medium parameters used: f = 3500 MHz; σ = 2.993 S/m; ε_r = 38.224; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN7767; ConvF(7.45, 7.45, 7.45); Calibrated: 2022/10/28;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1245; Calibrated: 2022/05/30
- Phantom: Twin SAM Phantom; Type: QD 000 P40 CD; Serial: 1609
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

System Performance Check with D3500HzV2 Dipole (graded grid)/d=10mm, Pin=100mW, f=3500 MHz/Area Scan (10x10x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 12.7 W/kg

System Performance Check with D3500HzV2 Dipole (graded grid)/d=10mm, Pin=100mW, f=3500 MHz/Zoom Scan (4x4x1.4mm, graded), dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 74.59 V/m; Power Drift = -0.15 dB
Peak SAR (extrapolated) = 18.8 W/kg
SAR(1 g) = 6.75 W/kg; SAR(10 g) = 2.55 W/kg
Maximum value of SAR (measured) = 14.3 W/kg



0 dB = 14.3 W/kg = 11.55 dBW/kg

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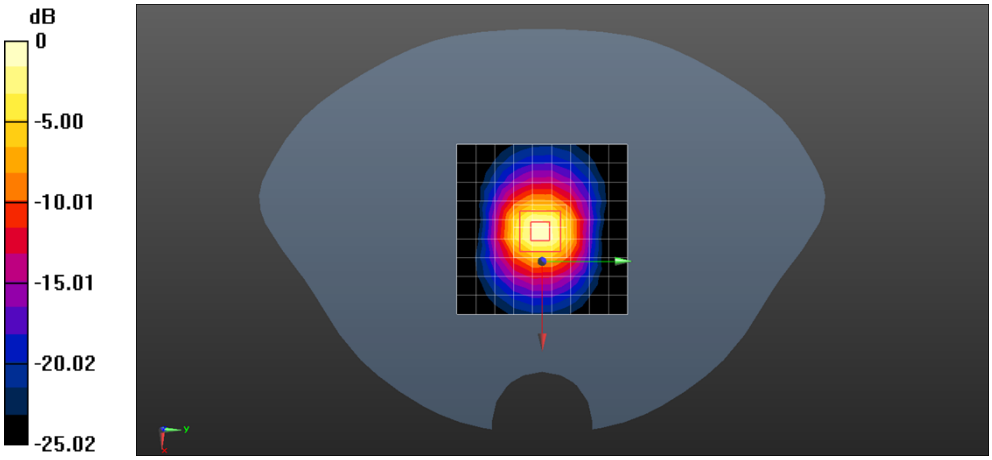
Test Laboratory: Compliance Certification Services (Kunshan) Inc.
System Performance Check-D3700
DUT: Dipole D3700HzV2; Type: 1103
Communication System: UID 0, CW (0); Frequency: 3700 MHz;Duty Cycle: 1:1
Medium parameters used: f = 3700 MHz; σ = 3.227 S/m; ε_r = 37.59; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN7767; ConvF(7.2, 7.2, 7.2); Calibrated: 2022/10/28;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1245; Calibrated: 2022/05/30
- Phantom: Twin SAM Phantom; Type: QD 000 P40 CD; Serial: 1609
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

System Performance Check with D3700HzV2 Dipole (graded grid)/d=10mm, Pin=100mW, f=3700 MHz/Area Scan (10x10x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 12.4 W/kg

System Performance Check with D3700HzV2 Dipole (graded grid)/d=10mm, Pin=100mW, f=3700 MHz/Zoom Scan (4x4x1.4mm, graded), dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 74.41 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 21.0 W/kg
SAR(1 g) = 6.84 W/kg; SAR(10 g) = 2.41 W/kg
Maximum value of SAR (measured) = 15.3 W/kg



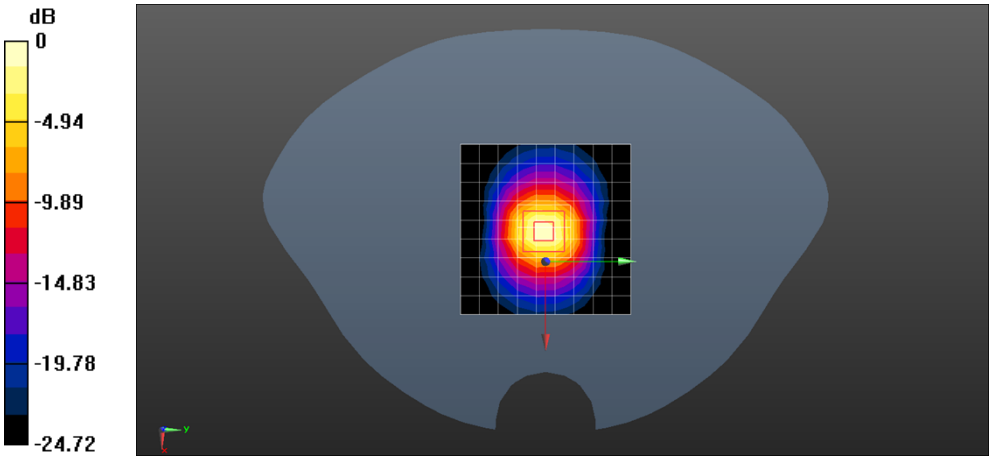
0 dB = 15.3 W/kg = 11.85 dBW/kg

Test Laboratory: Compliance Certification Services (Kunshan) Inc.
System Performance Check-D3900
DUT: Dipole D3900HzV2; Type: 1080
Communication System: UID 0, CW (0); Frequency: 3900 MHz;Duty Cycle: 1:1
Medium parameters used: f = 3900 MHz; σ = 3.454 S/m; ε_r = 36.972; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN7767; ConvF(6.84, 6.84, 6.84); Calibrated: 2022/10/28;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1245; Calibrated: 2022/05/30
- Phantom: Twin SAM Phantom; Type: QD 000 P40 CD; Serial: 1609
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

System Performance Check with D3700HzV2 Dipole (graded grid)/d=10mm, Pin=100mW, f=3900 MHz/Area Scan (10x10x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 13.0 W/kg

System Performance Check with D3700HzV2 Dipole (graded grid)/d=10mm, Pin=100mW, f=3900 MHz/Zoom Scan (4x4x1.4mm, graded), dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 76.34 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 20.9 W/kg
SAR(1 g) = 7.02 W/kg; SAR(10 g) = 2.49 W/kg
Maximum value of SAR (measured) = 16.1 W/kg



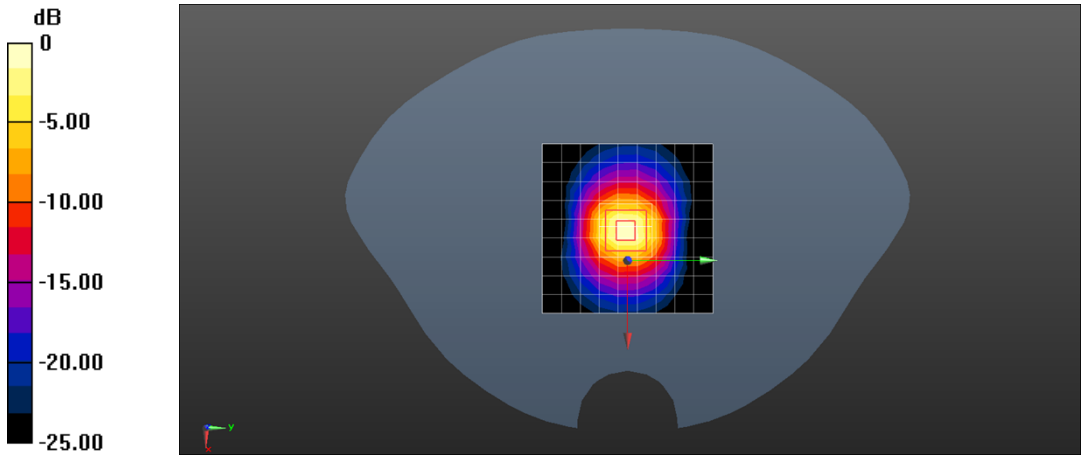
0 dB = 16.1 W/kg = 12.07 dBW/kg

Test Laboratory: Compliance Certification Services (Kunshan) Inc.
System Performance Check-D3700
DUT: Dipole D3700HzV2; Type: 1103
Communication System: UID 0, CW (0); Frequency: 3700 MHz;Duty Cycle: 1:1
Medium parameters used: f = 3700 MHz; σ = 3.257 S/m; ε_r = 37.7; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN7767; ConvF(7.2, 7.2, 7.2); Calibrated: 2022/10/28;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1245; Calibrated: 2023/04/25
- Phantom: Twin SAM Phantom; Type: QD 000 P40 CD; Serial: 1609
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

System Performance Check with D3700HzV2 Dipole (graded grid)/d=10mm, Pin=100mW, f=3700 MHz/Area Scan (10x10x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 10.5 W/kg

System Performance Check with D3700HzV2 Dipole (graded grid)/d=10mm, Pin=100mW, f=3700 MHz/Zoom Scan (4x4x1.4mm, graded), dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 54.41 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 17.2 W/kg
SAR(1 g) = 6.56 W/kg; SAR(10 g) = 2.36 W/kg
Maximum value of SAR (measured) = 15.4 W/kg



0 dB = 15.4 W/kg = 11.88 dBW/kg

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Appendix B: Detailed Test Results

The plots of worse case are showing as followings.

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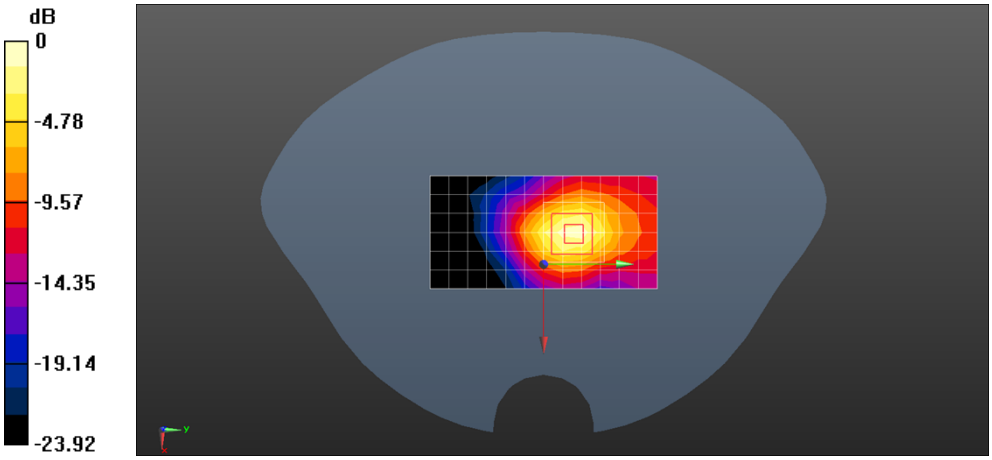
Test Laboratory: Compliance Certification Services (Kunshan) Inc.
FR1 N77 B 100M QPSK 1RB1 Top 5mm Ch650000 Ant2
DUT: 5G USB Dongle; Type: NDQ1300-SA
Communication System: UID 0, 5G NR (0); Frequency: 3750 MHz;Duty Cycle: 1:1
Medium parameters used: f = 3750 MHz; σ = 3.273 S/m; ε_r = 37.436; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN7767; ConvF(7.2, 7.2, 7.2); Calibrated: 2022/10/28;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1245; Calibrated: 2022/05/30
- Phantom: Twin SAM Phantom; Type: QD 000 P40 CD; Serial: 1609
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/Head/Area Scan (7x13x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 1.58 W/kg

Configuration/Head/Zoom Scan (9x9x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 16.83 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 2.37 W/kg
SAR(1 g) = 0.911 W/kg; SAR(10 g) = 0.368 W/kg
Maximum value of SAR (measured) = 1.76 W/kg



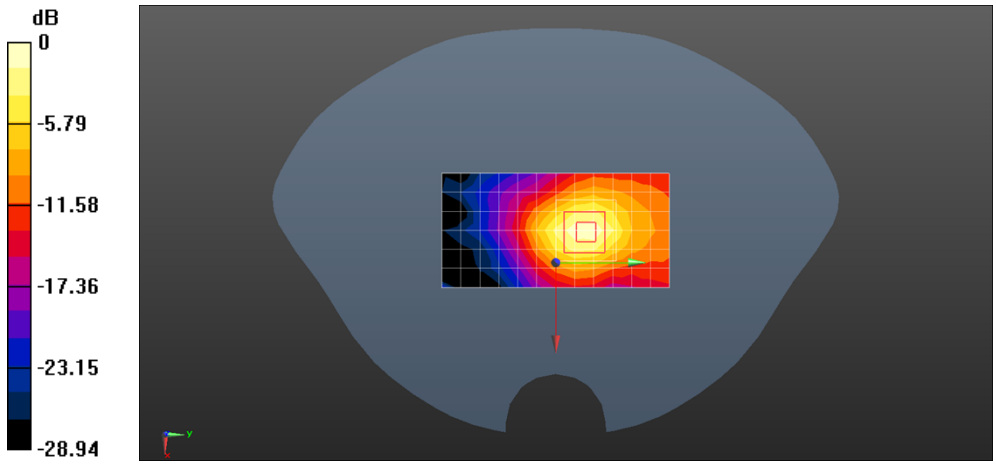
0 dB = 1.76 W/kg = 2.46 dBW/kg

Test Laboratory: Compliance Certification Services (Kunshan) Inc.
FR1 N78 100M QPSK 1RB1 Top 5mm Ch633334 Ant2
DUT: 5G USB Dongle; Type: NDQ1300-SA
Communication System: UID 0, 5G NR (0); Frequency: 3500.01 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 3500.01 MHz; σ = 2.993 S/m; ε_r = 38.224; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN7767; ConvF(7.45, 7.45, 7.45); Calibrated: 2022/10/28;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1245; Calibrated: 2022/05/30
- Phantom: Twin SAM Phantom; Type: QD 000 P40 CD; Serial: 1609
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/Head/Area Scan (7x13x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 1.70 W/kg

Configuration/Head/Zoom Scan (9x9x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 17.92 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 2.45 W/kg
SAR(1 g) = 0.809 W/kg; SAR(10 g) = 0.304 W/kg
Maximum value of SAR (measured) = 1.82 W/kg



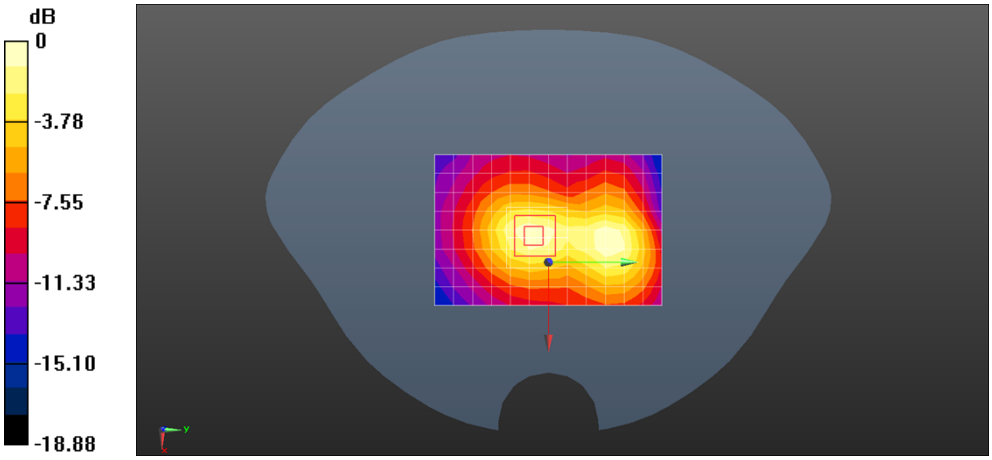
0 dB = 1.82 W/kg = 2.60 dBW/kg

Test Laboratory: Compliance Certification Services (Kunshan) Inc.
FR1 N77A 100M QPSK 1RB1 Vertical - Front 5mm Ch633334 Ant5
DUT: 5G USB Dongle; Type: NDQ1300-SA
Communication System: UID 0, 5G NR (0); Frequency: 3500.01 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 3500.01 MHz; σ = 2.993 S/m; ε_r = 38.224; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN7767; ConvF(7.45, 7.45, 7.45); Calibrated: 2022/10/28;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1245; Calibrated: 2022/05/30
- Phantom: Twin SAM Phantom; Type: QD 000 P40 CD; Serial: 1609
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/Head/Area Scan (9x13x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 2.39 W/kg

Configuration/Head/Zoom Scan (9x9x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 27.45 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 3.47 W/kg
SAR(1 g) = 1.39 W/kg; SAR(10 g) = 0.656 W/kg
Maximum value of SAR (measured) = 2.42 W/kg



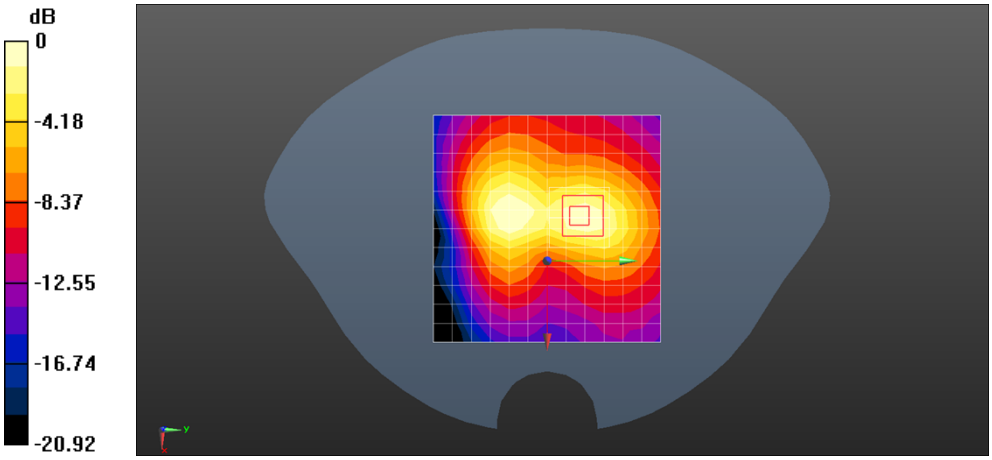
0 dB = 2.42 W/kg = 3.84 dBW/kg

Test Laboratory: Compliance Certification Services (Kunshan) Inc.
FR1 N78A 100M QPSK 1RB1 Vertical - Front 5mm Ch650000 Ant5
DUT: 5G USB Dongle; Type: NDQ1300-SA
Communication System: UID 0, 5G NR (0); Frequency: 3750 MHz;Duty Cycle: 1:1
Medium parameters used: f = 3750 MHz; σ = 3.273 S/m; ε_r = 37.436; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN7767; ConvF(7.2, 7.2, 7.2); Calibrated: 2022/10/28;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1245; Calibrated: 2022/05/30
- Phantom: Twin SAM Phantom; Type: QD 000 P40 CD; Serial: 1609
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/Head/Area Scan (13x13x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 2.83 W/kg

Configuration/Head/Zoom Scan (9x9x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 21.28 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 3.56 W/kg
SAR(1 g) = 1.21 W/kg; SAR(10 g) = 0.611 W/kg
Maximum value of SAR (measured) = 2.65 W/kg



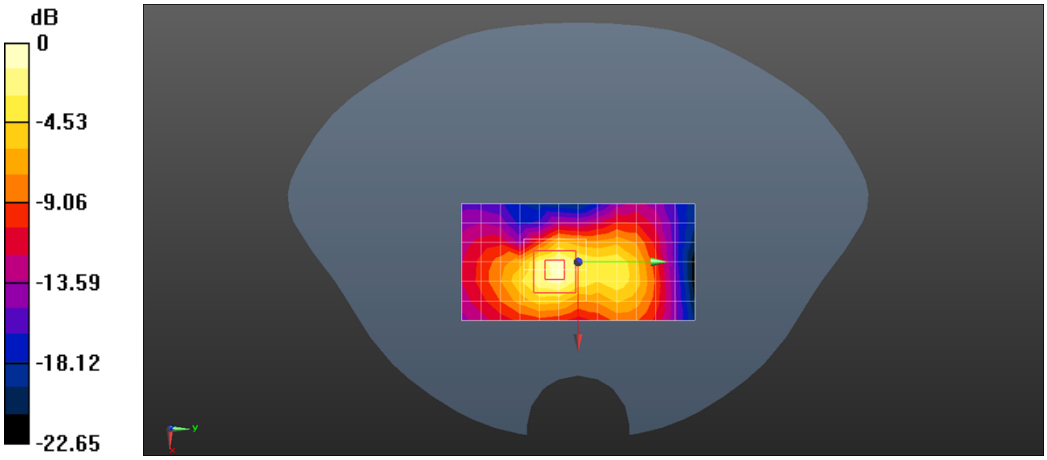
0 dB = 2.65 W/kg = 4.23 dBW/kg

Test Laboratory: Compliance Certification Services (Kunshan) Inc.
FR1 N48 40M QPSK 1RB105 Vertical - Front 5mm Ch641666 Antenna 5
DUT: 5G USB Dongle; Type: NDQ1300-SA
Communication System: UID 0, 5G NR (0); Frequency: 3624.96 MHz;Duty Cycle: 1:1
Medium parameters used: f = 3625 MHz; σ = 3.171 S/m; ε_r = 37.929; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN7767; ConvF(7.2, 7.2, 7.2); Calibrated: 2022/10/28;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1245; Calibrated: 2023/04/25
- Phantom: Twin SAM Phantom; Type: QD 000 P40 CD; Serial: 1609
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/Head/Area Scan (7x13x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 2.75 W/kg

Configuration/Head/Zoom Scan (9x9x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 25.08 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 4.22 W/kg
SAR(1 g) = 1.25 W/kg; SAR(10 g) = 0.655 W/kg
Maximum value of SAR (measured) = 3.15 W/kg



0 dB = 3.15 W/kg = 4.98 dBW/kg

Appendix C: Calibration certificate

Appendix D: Photographs

- End of the Report -

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