RF Exposure report

The following samples were submitted and identified on behalf of the client as:

Product Name	Clover Flex
Brand Name	Clover
Model No.	C405
Applicant	Quanta Computer Inc. No. 188, Wenhua 2nd Road, Guishan District, Taoyuan City 33377, Taiwan
Standards	IEEE/ANSI C95.1-1992, IEEE 1528-2013
FCC ID	HFS-C405
Date of EUT Receipt	Jun. 02, 2022
Date of Test(s)	Jul. 05, 2022 ~ Jul. 08, 2022
Date of Issue	Jul. 27, 2022

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

Remarks:

This report details the results of the testing carried out on one sample, the results contained in this test report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

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Signed on behalf of SGS

Clerk / Kimmy Chiou	PM / Tom Chiang	Approved By / John Yeh
Kimmy Chiou	Tom Chiang	John Yeh

Date: Jul. 27, 2022

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Revision History

Report Number	Revision	Description	Issue Date	Revised By	Remark
TESA2206000142E5	00	Initial creation of document	Jul. 15, 2022	Kimmy Chiou	*
TESA2206000142E5	01	Modify comment	Jul. 27, 2022	Kimmy Chiou	

Note:

1. The mark " * " is the revised version of the report due to comments submitted by the certification.

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Contents

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1 GENERAL INFORMATION

1.1 Test Methodology

The SAR testing method and procedure for this device is in accordance with the following standards:
IEEE/ANSI C95.1-1992
IEEE 1528-2013
KDB447498D01v06
KDB865664D01v01r04
KDB865664D02v01r02
KDB941225D05v02r05
KDB248227D01v02r01

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1.2 Description of EUT

Product Name	Clover Flex	
Brand Name	Clover	
Model No.	C405	
FCC ID	HFS-C405	
Mode	LTE: QPSK, 16QAM WLAN: 802.11a/b/g/n/ac Bluetooth BR/EDR/LE	
Duty Cycle	WLAN802.11	Refer to page 40~41
	Bluetooth	76.8%
	LTE FDD	1
TX Frequency Range (MHz)	LTE FDD Band 2	1850~1910
	LTE FDD Band 4	1710~1755
	LTE FDD Band 5	824~849
	LTE FDD Band 12	699~716
	LTE FDD Band 13	777~787
	LTE FDD Band 17	704~716
	LTE FDD Band 66	1710~1780
	802.11 b/g/n/ac	2.4GHz (2412 – 2452 MHz)
	802.11a/n/ac	5.2GHz (5180 –5210 MHz) 5.3GHz (5260 –5290 MHz) 5.6GHz (5500 – 5690 MHz) 5.8GHz (5745 – 5775 MHz)
	Bluetooth	2.4GHz (2402 – 2480 MHz)

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1.3 Maximum value

WWAN	
Mode	Highest SAR10g (W/kg)
LTE Band 4	3.88

WLAN	
Mode	Highest SAR10g (W/kg)
Bluetooth(GFSK)	0.13
2.4G WLAN	0.72
5G WLAN	0.76

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2 MEASUREMENT SYSTEM

2.1 Test Facility

Laboratory	Test Site Address	Test Site Name	FCC Designation number	IC CAB identifier
SGS Taiwan Ltd. Central RF Lab. (TAF code 3702)	1F, No. 8, Alley 15, Lane 120, Sec. 1, NeiHu Road, Neihu District, Taipei City, 11493, Taiwan.	SAR 2	TW0029	TW3702
		SAR 6		
	No. 2, Keji 1st Rd., Guishan Township, Taoyuan County, 33383, Taiwan	SAR 1	TW0028	
		SAR 4		
	No.134, Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan	SAR 3	TW0027	
		SAR 7		
Note: Test site name is remarked on the equipment list in each section of this report as an indication where measurements occurred in specific test site and address.				

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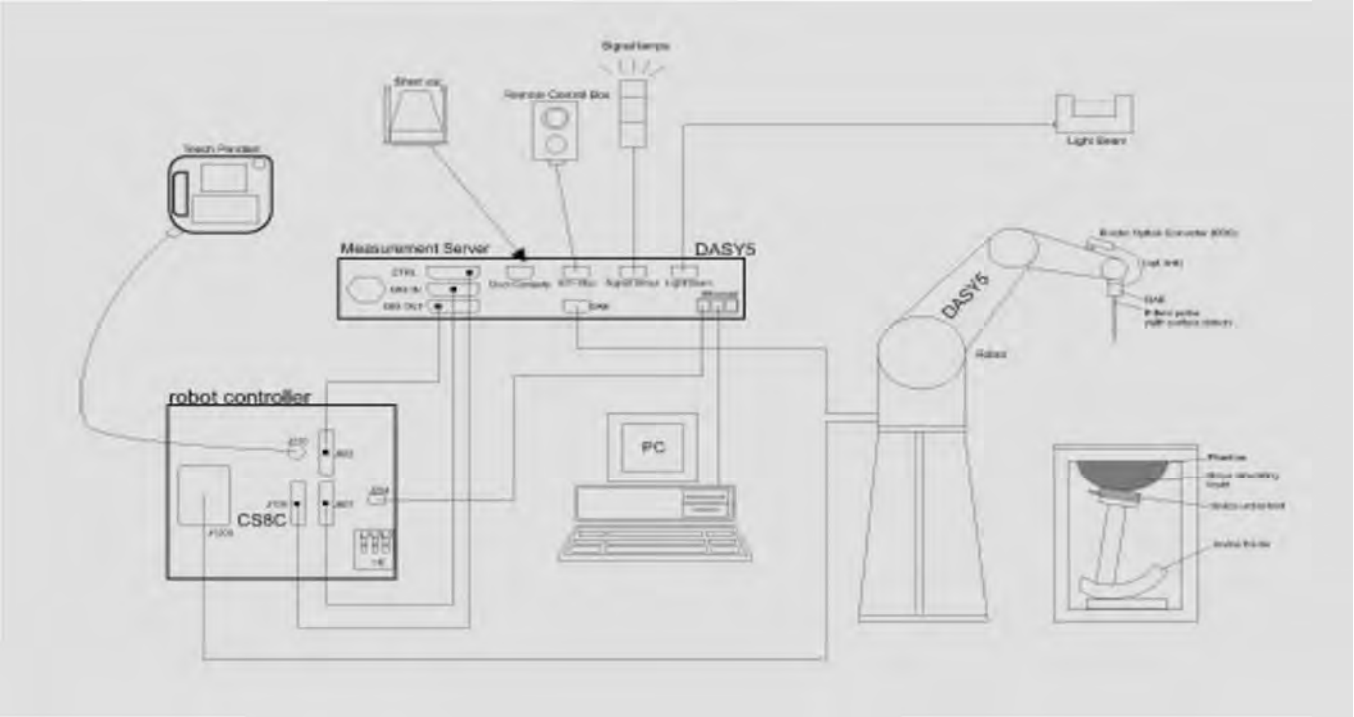
2.2 SAR System

Block Diagram (DASY5)

A block diagram of the SAR measurement System is given in below. This SAR measurement system uses a computer-controlled 3-D stepper motor system (SPEAG DASY 5 professional system). The model EX3DV4 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-simulant.



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EX3DV4 E-Field Probe

Construction	Symmetrical design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)	
Calibration	Basic Broad Band Calibration in air Conversion Factors (CF) for HSL 750/835/1750/1900/2450/5250/5600/5750 MHz Additional CF for other liquids and frequencies upon request	
Frequency	10 MHz to > 6 GHz	
Directivity	± 0.3 dB in HSL (rotation around probe axis) ± 0.5 dB in tissue material (rotation normal to probe axis)	
Dynamic Range	10 µW/g to > 100 mW/g Linearity: ± 0.2 dB (noise: typically < 1 µW/g)	
Dimensions	Tip diameter: 2.5 mm	
Application	High precision dosimetric measurements in any exposure scenario (e.g., very strong gradient fields). Only probe which enables compliance testing for frequencies up to 6 GHz with precision of better 30%.	

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PHANTOM (SAM)

Model	Twin SAM
Construction	The shell corresponds to the specifications of the Specific Anthropomorphic Mannequin (SAM) phantom defined in IEEE 1528 and IEC 62209. 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 manually teaching three points with the robot.
Shell Thickness	2 ± 0.2 mm
Filling Volume	Approx. 25 liters
Dimensions	Height: 850 mm; Length: 1000 mm; Width: 500 mm

PHANTOM (ELI)

Model	ELI
Construction	The ELI phantom is used for compliance testing of handheld and body-mounted wireless devices in the frequency range of 30 MHz to 6 GHz. ELI is fully compatible with the IEC 62209-2 standard and all known tissue simulating liquids. ELI has been optimized regarding its performance and can be integrated into our standard phantom tables. A cover prevents evaporation of the liquid. Reference markings on the phantom allow installation of the complete setup, including all predefined phantom positions and measurement grids, by teaching three points. The phantom is compatible with all SPEAG dosimetric probes and dipoles.
Shell Thickness	2 ± 0.2 mm
Filling Volume	Approx. 30 liters
Dimensions	Major axis: 600 mm Minor axis: 400 mm

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DEVICE HOLDER (ELI)

Construction	The device holder (Supporter) for Notebook is made by POM (polyoxymethylene resin) , which is non-metal and non-conductive. The height can be adjusted to fit varies kind of notebooks.	 Device Holder

DEVICE HOLDER (SAM)

Construction	In combination with the Twin SAM Phantom V4.0/V4.0C or Twin SAM, the Mounting Device (made from POM) enables the rotation of the mounted transmitter in spherical coordinates, whereby the rotation point is the ear opening. The devices can be easily and accurately positioned according to IEC, IEEE, CENELEC, FCC or other specifications. The device holder can be locked at different phantom locations (left head, right head, flat phantom).	 Device Holder

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3 SAR SYSTEM VERIFICATION

3.1 Tissue Simulating Liquid

For the measurement of the field distribution inside the SAM phantom with DASY, the phantom must be filled with homogeneous tissue simulating liquid. For head SAR testing, the liquid height from the ear reference point (ERP) of the phantom to the liquid top surface is larger than 15cm. For body SAR testing, the liquid height from the center of the flat phantom to the liquid top surface is larger than 15cm.

3.2 Tissue Simulant Liquid measurement

The dielectric properties for this Head-simulant fluid were measured by using the SPEAG Dielectric Assessment Kit (DAKS-3.5)
All dielectric parameters of tissue simulates were measured within 24 hours of SAR measurements. The measured conductivity and permittivity are all within ± 5% of the target values.

3.3 Measurement results of Tissue Simulant Liquid

WWAN

Tissue Type	Measurement Date	Measured Frequency (MHz)	Target Dielectric Constant, εr	Target Conductivity, σ (S/m)	Measured Dielectric Constant, εr	Measured Conductivity, σ (S/m)	% dev εr	% dev σ
Head	Jul, 05. 2022	704	42.145	0.887	42.031	0.887	-0.27%	0.00%
		707.5	42.127	0.887	42.010	0.887	-0.28%	0.03%
		709	42.119	0.887	42.005	0.888	-0.27%	0.03%
		710	42.113	0.887	41.999	0.888	-0.27%	0.04%
		711	42.108	0.887	41.994	0.888	-0.27%	0.05%
		750	41.900	0.890	41.792	0.890	-0.26%	0.00%
		782	41.749	0.894	41.625	0.893	-0.30%	-0.07%
		829	41.528	0.899	41.426	0.905	-0.25%	0.64%
		835	41.500	0.900	41.405	0.907	-0.23%	0.80%
		836.5	41.500	0.902	41.397	0.908	-0.25%	0.70%
		844	41.500	0.910	41.372	0.910	-0.31%	0.07%
	Jul, 06. 2022	1720	40.114	1.354	39.976	1.347	-0.34%	-0.54%
		1732.5	40.107	1.361	39.957	1.354	-0.37%	-0.51%
		1745	40.079	1.369	39.937	1.361	-0.35%	-0.52%
		1750	40.071	1.371	39.929	1.364	-0.36%	-0.52%
		1770	40.043	1.383	39.897	1.376	-0.36%	-0.51%
		1860	40.000	1.400	39.850	1.396	-0.37%	-0.30%
		1880	40.000	1.400	39.850	1.396	-0.37%	-0.27%
		1900	40.000	1.400	39.850	1.396	-0.37%	-0.26%

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WLAN

Tissue Type	Measurement Date	Measured Frequency (MHz)	Target Dielectric Constant, εr	Target Conductivity, σ (S/m)	Measured Dielectric Constant, εr	Measured Conductivity, σ (S/m)	% dev εr	% dev σ
Head	Jul, 07. 2022	2402	39.282	1.757	39.135	1.759	-0.37%	0.11%
		2412	39.265	1.766	39.118	1.768	-0.38%	0.09%
		2437	39.222	1.788	39.073	1.789	-0.38%	0.05%
		2441	39.215	1.792	39.066	1.793	-0.38%	0.04%
		2450	39.200	1.800	39.050	1.800	-0.38%	0.03%
		2462	39.184	1.813	39.035	1.811	-0.38%	-0.10%
		2480	39.160	1.832	39.012	1.827	-0.38%	-0.27%
	Jul, 08. 2022	5180	36.020	4.639	35.859	4.611	-0.45%	-0.60%
		5200	36.000	4.660	35.836	4.632	-0.46%	-0.61%
		5220	35.980	4.680	35.813	4.652	-0.46%	-0.60%
		5240	35.960	4.700	35.790	4.672	-0.47%	-0.59%
		5250	35.950	4.710	35.779	4.683	-0.48%	-0.58%
		5260	35.940	4.720	35.767	4.693	-0.48%	-0.58%
		5280	35.920	4.740	35.744	4.713	-0.49%	-0.56%
		5300	35.900	4.760	35.721	4.734	-0.50%	-0.55%
		5320	35.880	4.780	35.699	4.754	-0.51%	-0.54%
		5500	35.650	4.965	35.493	4.939	-0.44%	-0.52%
		5600	35.500	5.070	35.379	5.041	-0.34%	-0.58%
		5700	35.400	5.170	35.264	5.142	-0.38%	-0.54%
		5720	35.380	5.190	35.241	5.163	-0.39%	-0.53%
		5745	35.355	5.215	35.213	5.188	-0.40%	-0.51%
		5750	35.350	5.220	35.207	5.193	-0.40%	-0.51%
		5785	35.315	5.255	35.167	5.229	-0.42%	-0.49%
		5825	35.275	5.296	35.121	5.270	-0.44%	-0.50%

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3.4 The composition of the tissue simulating liquid:

Simulating Liquids for 600 MHz -10 GHz, Manufactured by SPEAG:

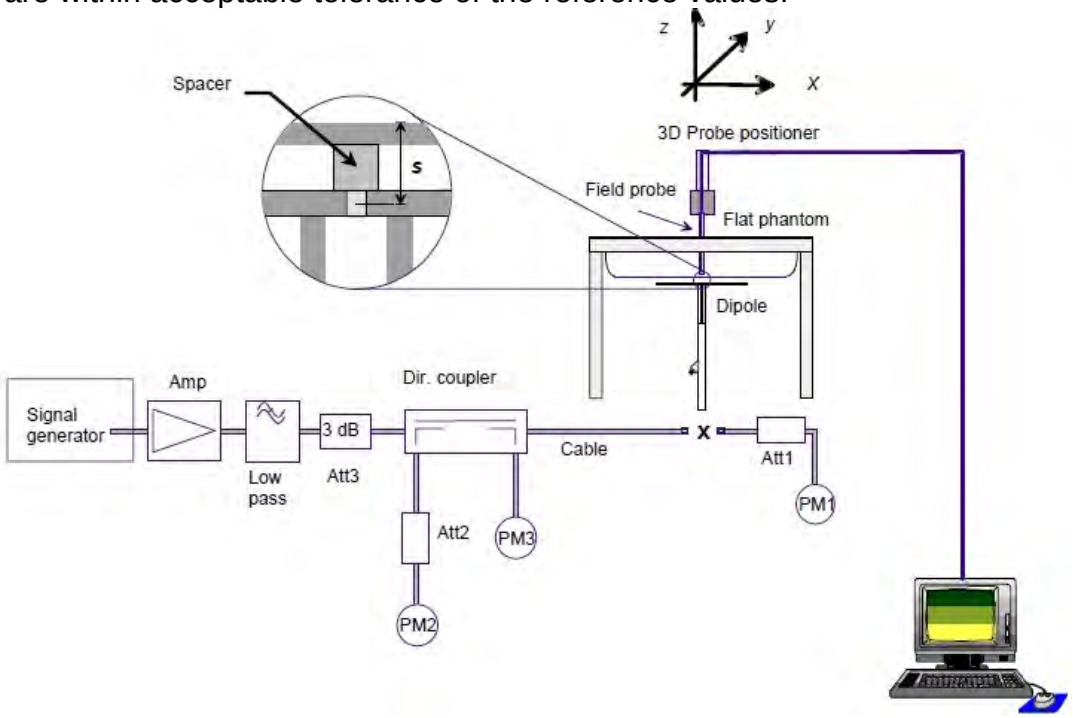
Broad-band head tissue simulating liquids	SPEAG Product	Frequency range (MHz)	Main Ingredients
	HBBL600-10000V6	600 - 10000	Water, Oil

3.5 System check

The microwave circuit arrangement for system check is sketched in below. The daily system accuracy verification occurs within the flat section of the SAM phantom and ELI 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 DUT. The obtained results from the system accuracy verification are displayed with SAR values normalized to 1W forward power delivered to the dipole.

During the tests, the liquid depth from the center of the flat phantom to the liquid top surface was 15 cm above 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.



The block diagram of system check

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3.6 System check results

Validation Kit	S/N	Frequency (MHz)	1W Target 10g-SAR (W/kg)	pin=250mW Measured 10g-SAR (W/kg)	Normalized to 1W 10g-SAR (W/kg)	Deviation (%)	Limit	Measurement Date
D750V3	1015	750	5.59	1.43	5.72	2.33	± 10%	Jul.05,2022
D835V2	4d063	835	6.29	1.54	6.16	-2.07	± 10%	Jul.05,2022
D1750V2	1008	1750	19.2	4.97	19.88	3.54	± 10%	Jul.06,2022
D1900V2	5d173	1900	20.5	5.39	21.56	5.17	± 10%	Jul.06,2022

Validation Kit	S/N	Frequency (MHz)	1W Target 10g-SAR (W/kg)	pin=250mW Measured 10g-SAR (W/kg)	Normalized to 1W 10g-SAR (W/kg)	Deviation (%)	Limit	Measurement Date
D2450V2	727	2450	25	6.54	26.16	4.64	± 10%	Jul.07,2022

Validation Kit	S/N	Frequency (MHz)	1W Target 10g-SAR (W/kg)	pin=100mW Measured 10g-SAR (W/kg)	Normalized to 1W 10g-SAR (W/kg)	Deviation (%)	Limit	Measurement Date
D5GHzV2	1023	5250	23.1	2.39	23.9	3.46	± 10%	Jul.08,2022
D5GHzV2	1023	5600	23.8	2.39	23.9	0.42	± 10%	Jul.08,2022
D5GHzV2	1023	5750	22.9	2.33	23.3	1.75	± 10%	Jul.08,2022

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4 TEST CONFIGURATIONS

4.1 Test Environment

Ambient Temperature: 22±2° C
Tissue Simulating Liquid: 22±2° C

4.2 Test Note

- **General:** Measurements are performed respectively on the lowest, middle and highest channels of the operating band(s).
- **General:** The EUT is set to maximum power level during all tests, and at the beginning of each test the battery is fully charged.
- **General:** During the SAR testing, the DASY system checks power drift by comparing the e-field strength of one specific location measured at the beginning with that measured at the end of the SAR testing.
- **General:** According to KDB447498D01v06, testing of other required channels is not required when the reported 1-g SAR for the highest output channel is ≤ 0.8 W/kg, when the transmission band is ≤ 100 MHz. According to KDB865664D01v01r04, SAR measurement variability must be assessed for each frequency band. When the original highest measured SAR is ≥ 0.8 W/kg, repeated that measurement once. 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).

- **LTE:** LTE modes test according to **KDB 941225D05v02r05.**

a. Per Section 5.2.1, the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation.

- Using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
- When the reported SAR is ≤ 0.8 W/kg, testing of the remaining RB offset configurations and required test channels is not required for 1 RB allocation; otherwise, SAR is required for the remaining required test channels and only for the RB offset configuration with the highest output power for that channel.
- When the reported SAR of a required test channel is > 1.45 W/kg, SAR is required for all three RB offset configurations for that required test channel.

b. Per Section 5.2.2, the largest channel bandwidth and measure SAR for QPSK with 50% RB allocation

- The procedures required for 1 RB allocation in 5.2.1 are applied to measure the SAR for QPSK with 50% RB allocation.

c. Per Section 5.2.3, the largest channel bandwidth and measure SAR for QPSK with 100% RB allocation

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- For QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation in 5.2.1 and 5.2.2 are ≤ 0.8 W/kg.
- Otherwise, SAR is measured for the highest output power channel and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.

d. Per Section 5.2.4, Higher order modulations

- For each modulation besides QPSK; e.g., 16-QAM, 64-QAM, apply the QPSK procedures in sections 5.2.1, 5.2.2 and 5.2.3 to determine the QAM configurations that may need SAR measurement. For each configuration identified as required for testing, SAR is required only when the highest maximum output power for the configuration in the higher order modulation is > ½ dB higher than the same configuration in QPSK or when the reported SAR for the QPSK configuration is > 1.45 W/kg.

e. Per Section 5.3, other channel bandwidth standalone SAR test requirements

- For the other channel bandwidths used by the device in a frequency band, apply all the procedures required for the largest channel bandwidth in section 5.2 to determine the channels and RB configurations that need SAR testing and only measure SAR when the highest maximum output power of a configuration requiring testing in the smaller channel bandwidth is > ½ dB higher than the equivalent channel configurations in the largest channel bandwidth configuration or the reported SAR of a configuration for the largest channel bandwidth is > 1.45 W/kg. The equivalent channel configuration for the RB allocation, RB offset and modulation etc. is determined for the smaller channel bandwidth according to the same number of RB allocated in the largest channel bandwidth.
- TDD LTE was tested at highest duty factor using UL-DL configuration 0 with 6 UL subframes and 2 special subframes using extended cyclic prefix only and special subframe configuration 6. SAR tests were performed at maximum output power and worst-case transmission duty factor in extended cyclic prefix. Per 3GPP 36.211 Section 4.2, the duty factor for UL-DL configuration 0/special subframe configuration 6 using extended cyclic prefix is 0.633.

According to KDB 941225 D05, SAR testing for TDD LTE must be tested using a fixed periodic duty factor according to the highest transmission duty factor implemented for the device and supported by the defined 3GPP TDD LTE configurations. The TDD-LTE of this device supports frame structure type 2 defined in 3GPP TS 36.211 section 4.2, and the frame structure configuration can be

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tabulated as below.

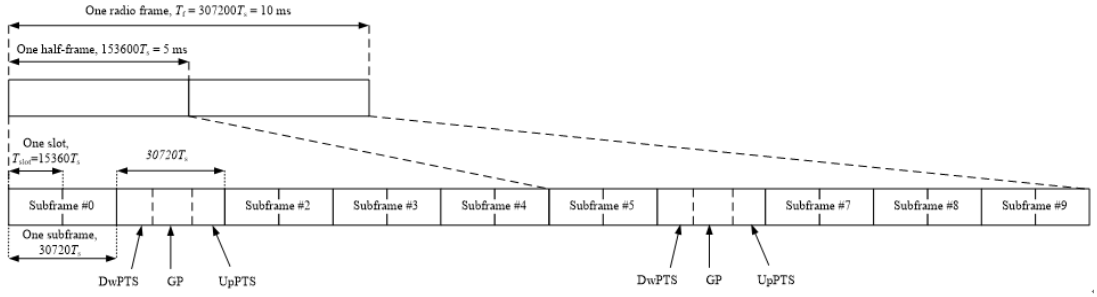

Figure 4.2-1: Frame structure type 2 (for 5 ms switch-point periodicity)

Table 4.2-1: Configuration of special subframe (lengths of DwPTS/GP/UpPTS)

Special subframe configuration	Normal cyclic prefix in downlink			Extended cyclic prefix in downlink		
	DwPTS	UpPTS		DwPTS	UpPTS	
		Normal cyclic prefix in uplink	Extended cyclic prefix in uplink		Normal cyclic prefix in uplink	Extended cyclic prefix in uplink
0	$6592 \cdot T_s$	$(1+X) \cdot 2192 \cdot T_s$	$(1+X) \cdot 2560 \cdot T_s$	$7680 \cdot T_s$	$(1+X) \cdot 2192 \cdot T_s$	$(1+X) \cdot 2560 \cdot T_s$
1	$19760 \cdot T_s$			$20480 \cdot T_s$		
2	$21952 \cdot T_s$			$23040 \cdot T_s$		
3	$24144 \cdot T_s$			$25600 \cdot T_s$		
4	$26336 \cdot T_s$			$7680 \cdot T_s$	$(2+X) \cdot 2192 \cdot T_s$	$(2+X) \cdot 2560 \cdot T_s$
5	$6592 \cdot T_s$	$(2+X) \cdot 2192 \cdot T_s$	$(2+X) \cdot 2560 \cdot T_s$	$20480 \cdot T_s$		
6	$19760 \cdot T_s$			$23040 \cdot T_s$		
7	$21952 \cdot T_s$			$12800 \cdot T_s$		
8	$24144 \cdot T_s$			-	-	-
9	$13168 \cdot T_s$			-	-	-

Table 4.2-2: Uplink-downlink configurations

Uplink-downlink configuration	Downlink-to-Uplink Switch-point periodicity	Subframe number									
		0	1	2	3	4	5	6	7	8	9
0	5 ms	D	S	U	U	U	D	S	U	U	U
1	5 ms	D	S	U	U	D	D	S	U	U	D
2	5 ms	D	S	U	D	D	D	S	U	D	D
3	10 ms	D	S	U	U	U	D	D	D	D	D
4	10 ms	D	S	U	U	D	D	D	D	D	D
5	10 ms	D	S	U	D	D	D	D	D	D	D
6	5 ms	D	S	U	U	U	D	S	U	U	D

Considering the highest transmission duty cycle, TDD LTE was tested using Uplink-Downlink configuration 0 with 6 uplink subframe and 2 special subframe. The special subframe was set to special subframe configuration 6 using extended cyclic prefix uplink. Therefore, SAR testing for TDD LTE was measured at the maximum output power with highest transmission duty cycle of 63.33%.

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- **WLAN 2.4GHz:** 802.11b DSSS SAR Test Requirements: SAR is measured for 2.4 GHz 802.11b DSSS mode using the highest measured maximum output power channel, when the reported SAR of the highest measured maximum output power channel for the exposure configuration is ≤ 0.8 W/kg, no further SAR testing is required for 802.11b DSSS in that exposure configuration. When the reported SAR is > 0.8 W/kg, SAR is required for that exposure configuration using the next highest measured output power channel. When any reported SAR is > 1.2 W/kg, SAR is required for the third channel; i.e., all channels require testing.
- **WLAN 2.4GHz:** 802.11g/n OFDM SAR Test Exclusion Requirements: SAR is not required for 802.11g/n since the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg.
- **WLAN 5GHz:** Initial Test Configuration: An initial test configuration is determined for OFDM transmission modes according to the channel bandwidth, modulation and data rate combination(s) with the highest maximum output power specified for production units in each standalone and aggregated frequency band. SAR is measured using the highest measured maximum output power channel. When the reported SAR of the initial test configuration is > 0.8 W/kg, SAR measurement is required for the subsequent next highest measured output power channel(s) in the initial test configuration until the reported SAR is ≤ 1.2 W/kg or all required channels are tested. Since the highest reported SAR for the initial test configuration is adjusted by the ratio of the subsequent test configuration to initial test configuration specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg, SAR is not required for subsequent test configuration.

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4.3 Test position

Specific SAR test position (0 mm)

Based on FCC guidance, extremity SAR is measured for specific surfaces.

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4.4 Test limit

§ 2.1093(d)(1)
Applications for equipment authorization of portable RF sources subject to routine environmental evaluation must contain a statement confirming compliance with the limits specified in § 1.1310 as part of their application. Technical information showing the basis for this statement must be submitted to the Commission upon request. The SAR limits specified in § 1.1310(a) through (c) of this chapter shall be used for evaluation of portable devices transmitting in the frequency range from 100 kHz to 6 GHz. Portable devices that transmit at frequencies above 6 GHz shall be evaluated in terms of the MPE limits specified in Table 1 to § 1.1310(e)(1). A minimum separation distance applicable to the operating configurations and exposure conditions of the device shall be used for the evaluation. In general, maximum time-averaged power levels must be used for evaluation. All unlicensed personal communications service (PCS) devices and unlicensed NII devices shall be subject to the limits for general population/uncontrolled exposure.
Radiofrequency radiation exposure limits.
§ 1.1310(a)
Specific absorption rate (SAR) shall be used to evaluate the environmental impact of human exposure to radiofrequency (RF) radiation as specified in § 1.1307(b) within the frequency range of 100 kHz to 6 GHz (inclusive).
§ 1.1310(b)
The SAR limits for occupational/controlled exposure are 0.4 W/kg, as averaged over the whole body, and a peak spatial-average SAR of 8 W/kg, averaged over any 1 gram of tissue (defined as a tissue volume in the shape of a cube). Exceptions are the parts of the human body treated as extremities, such as hands, wrists, feet, ankles, and pinnae, where the peak spatial-average SAR limit for occupational/controlled exposure is 20 W/kg, averaged over any 10 grams of tissue (defined as a tissue volume in the shape of a cube). Exposure may be averaged over a time period not to exceed 6 minutes to determine compliance with occupational/controlled SAR limits.
§ 1.1310(c)
The SAR limits for general population/uncontrolled exposure are 0.08 W/kg, as averaged over the whole body, and a peak spatial-average SAR of 1.6 W/kg, averaged over any 1 gram of tissue (defined as a tissue volume in the shape of a cube). Exceptions are the parts of the human body treated as extremities, such as hands, wrists, feet, ankles, and pinnae, where the peak spatial-average SAR limit is 4 W/kg, averaged over any 10 grams of tissue (defined as a tissue volume in the shape of a cube). Exposure may be averaged over a time period not to exceed 30 minutes to determine compliance with general population/uncontrolled SAR limits.

Note to paragraphs (a) through (c):
SAR is a measure of the rate of energy absorption due to exposure to RF electromagnetic energy. These SAR limits to be used for evaluation are based generally on criteria published by the American National Standards Institute (ANSI) for localized SAR in Section 4.2 of “IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz,” ANSI/IEEE Std C95.1-1992, copyright 1992 by the Institute of Electrical and Electronics Engineers, Inc., New York, New York 10017. These criteria for SAR evaluation are similar to those recommended by the National Council on Radiation Protection and Measurements (NCRP) in “Biological Effects and Exposure Criteria for Radiofrequency Electromagnetic Fields,” NCRP Report No. 86, Section 17.4.5, copyright 1986 by NCRP, Bethesda, Maryland 20814. Limits for whole body SAR and peak spatial-average

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SAR are based on recommendations made in both of these documents. The MPE limits in Table 1 are based generally on criteria published by the NCRP in “Biological Effects and Exposure Criteria for Radiofrequency Electromagnetic Fields,” NCRP Report No. 86, Sections 17.4.1, 17.4.1.1, 17.4.2 and 17.4.3, copyright 1986 by NCRP, Bethesda, Maryland 20814. In the frequency range from 100 MHz to 1500 MHz, these MPE exposure limits for field strength and power density are also generally based on criteria recommended by the ANSI in Section 4.1 of “IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz,” ANSI/IEEE Std C95.1-1992, copyright 1992 by the Institute of Electrical and Electronics Engineers, Inc., New York, New York 10017.

Portable devices that transmit at frequencies above 6 GHz shall be evaluated in terms of the MPE limits specified in Table 1 to § 1.1310(e)(1).
According to ANSI/IEEE C95.1-1992, the criteria listed in the following Table shall be used to evaluate the environmental impact of human exposure to radio frequency (RF) radiation as specified in §1.1310.
Peak Spatially Averaged Power Density was evaluated over a circular area of 4cm2 per interim FCC Guidance for near-field power density evaluations per October 2018 TCB Workshop notes

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Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm^2)	Averaging time (minutes)
(i) Limits for Occupational/Controlled Exposure				
0.3-3.0	614	1.63	*(100)	≤6
3.0-30	1842/f	4.89/f	*($900/f^2$)	<6
30-300	61.4	0.163	1.0	<6
300-1,500			f/300	<6
1,500-100,000			5	<6
(ii) Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*(100)	<30
1.34-30	824/f	2.19/f	*($180/f^2$)	<30
30-300	27.5	0.073	0.2	<30
300-1,500			f/1500	<30
1,500-100,000			1.0	<30

f = frequency in MHz. * = Plane-wave equivalent power density.
Table 1 to § 1.1310(e)(1) - Limits for Maximum Permissible Exposure (MPE)

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5 MAXIMUM OUTPUT POWER

5.1 FDD LTE

FD_LTE

LTE Band 2								
BW(MHz)	Modulation	RB Size	RB Offset	Conducted power (dBm)			Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
Frequency (MHz)				1860	1880	1900		
Channel				18700	18900	19100		
20	QPSK	1	0	21.73	21.61	21.54	22.00	0
		1	50	21.41	21.52	21.50	22.00	0
		1	99	21.49	21.49	21.45	22.00	0
		50	0	20.78	20.67	20.43	21.00	1
		50	25	20.64	20.58	20.54	21.00	1
		50	50	20.55	20.49	20.44	21.00	1
		100	0	20.48	20.41	20.35	21.00	1
20	16-QAM	1	0	20.63	20.59	20.51	21.00	1
		1	50	20.73	20.51	20.52	21.00	1
		1	99	20.67	20.53	20.53	21.00	1
		50	0	19.71	19.61	19.54	20.00	2
		50	25	19.72	19.54	19.50	20.00	2
		50	50	19.66	19.60	19.46	20.00	2
		100	0	19.72	19.58	19.53	20.00	2

LTE Band 2								
BW(MHz)	Modulation	RB Size	RB Offset	Conducted power (dBm)			Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
Frequency (MHz)				1857.5	1880	1902.5		
Channel				18675	18900	19125		
15	QPSK	1	0	21.66	21.55	21.51	22.00	0
		1	36	21.69	21.60	21.48	22.00	0
		1	74	21.65	21.57	21.53	22.00	0
		36	0	20.71	20.54	20.44	21.00	1
		36	18	20.68	20.61	20.46	21.00	1
		36	37	20.64	20.54	20.48	21.00	1
		75	0	20.72	20.52	20.49	21.00	1
15	16-QAM	1	0	20.71	20.51	20.52	21.00	1
		1	36	20.72	20.57	20.49	21.00	1
		1	74	20.70	20.61	20.46	21.00	1
		36	0	19.64	19.56	19.44	20.00	2
		36	18	19.65	19.57	19.48	20.00	2
		36	37	19.69	19.51	19.48	20.00	2
		75	0	19.63	19.59	19.50	20.00	2

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LTE Band 2								
BW(MHz)	Modulation	RB Size	RB Offset	Conducted power (dBm)			Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
Frequency (MHz)				1855	1880	1905		
Channel				18650	18900	19150		
10	QPSK	1	0	21.71	21.60	21.45	22.00	0
		1	25	21.69	21.53	21.52	22.00	0
		1	49	21.70	21.56	21.47	22.00	0
		25	0	20.69	20.57	20.51	21.00	1
		25	12	20.68	20.58	20.54	21.00	1
		25	25	20.69	20.51	20.45	21.00	1
		50	0	20.64	20.56	20.47	21.00	1
10	16-QAM	1	0	20.72	20.56	20.46	21.00	1
		1	13	20.73	20.52	20.52	21.00	1
		1	26	20.73	20.52	20.47	21.00	1
		12	0	19.69	19.52	19.53	20.00	2
		12	7	19.73	19.60	19.48	20.00	2
		12	15	19.65	19.52	19.53	20.00	2
		27	0	19.71	19.56	19.44	20.00	2

LTE Band 2								
BW(MHz)	Modulation	RB Size	RB Offset	Conducted power (dBm)			Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
Frequency (MHz)				1852.5	1880	1907.5		
Channel				18625	18900	19175		
5	QPSK	1	0	21.68	21.55	21.52	22.00	0
		1	12	21.71	21.52	21.54	22.00	0
		1	24	21.67	21.61	21.44	22.00	0
		12	0	20.69	20.60	20.47	21.00	1
		12	6	20.68	20.61	20.50	21.00	1
		12	13	20.67	20.59	20.54	21.00	1
		25	0	20.73	20.52	20.48	21.00	1
5	16-QAM	1	0	20.68	20.61	20.45	21.00	1
		1	12	20.69	20.55	20.49	21.00	1
		1	24	20.65	20.51	20.44	21.00	1
		12	0	19.67	19.60	19.49	20.00	2
		12	6	19.72	19.60	19.53	20.00	2
		12	13	19.63	19.59	19.51	20.00	2
		25	0	19.70	19.61	19.47	20.00	2

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LTE Band 2								
BW(MHz)	Modulation	RB Size	RB Offset	Conducted power (dBm)			Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
Frequency (MHz)				1851.5	1880	1908.5		
Channel				18615	18900	19185		
3	QPSK	1	0	21.71	21.56	21.50	22.00	0
		1	7	21.71	21.52	21.44	22.00	0
		1	14	21.64	21.53	21.53	22.00	0
		8	0	20.71	20.60	20.49	21.00	1
		8	4	20.72	20.58	20.54	21.00	1
		8	7	20.73	20.56	20.48	21.00	1
		15	0	20.65	20.52	20.48	21.00	1
3	16-QAM	1	0	20.67	20.53	20.52	21.00	1
		1	7	20.64	20.61	20.49	21.00	1
		1	14	20.67	20.60	20.51	21.00	1
		8	0	19.73	19.60	19.46	20.00	2
		8	4	19.63	19.55	19.49	20.00	2
		8	7	19.70	19.51	19.51	20.00	2
		15	0	19.66	19.59	19.52	20.00	2

LTE Band 2								
BW(MHz)	Modulation	RB Size	RB Offset	Conducted power (dBm)			Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
Frequency (MHz)				1850.7	1880	1909.3		
Channel				18607	18900	19193		
1.4	QPSK	1	0	21.70	21.58	21.48	22.00	0
		1	2	21.70	21.60	21.46	22.00	0
		1	5	21.66	21.57	21.49	22.00	0
		3	0	21.66	21.60	21.44	22.00	0
		3	2	21.71	21.51	21.52	22.00	0
		3	3	21.68	21.54	21.49	22.00	0
		6	0	20.72	20.55	20.46	21.00	1
1.4	16-QAM	1	0	20.66	20.51	20.44	21.00	1
		1	2	20.66	20.54	20.53	21.00	1
		1	5	20.63	20.55	20.52	21.00	1
		3	0	20.69	20.52	20.45	21.00	1
		3	2	20.73	20.51	20.53	21.00	1
		3	3	20.71	20.58	20.49	21.00	1
		6	0	19.72	19.61	19.48	20.00	2

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LTE Band 4								
BW(MHz)	Modulation	RB Size	RB Offset	Conducted power (dBm)			Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
Frequency (MHz)				1720	1732.5	1745		
Channel				20050	20175	20300		
20	QPSK	1	0	21.78	21.86	22.12	22.50	0
		1	50	21.48	21.69	21.93	22.50	0
		1	99	21.37	21.58	21.89	22.50	0
		50	0	20.34	20.55	20.79	21.50	1
		50	25	20.32	20.41	21.31	21.50	1
		50	50	20.38	20.39	20.91	21.50	1
		100	0	20.43	20.61	20.78	21.50	1
20	16-QAM	1	0	20.69	20.77	21.08	21.50	1
		1	50	20.77	20.80	21.05	21.50	1
		1	99	20.69	20.86	21.07	21.50	1
		50	0	19.70	19.80	20.02	20.50	2
		50	25	19.73	19.85	20.04	20.50	2
		50	50	19.72	19.80	20.09	20.50	2
		100	0	19.73	19.85	20.06	20.50	2

LTE Band 4								
BW(MHz)	Modulation	RB Size	RB Offset	Conducted power (dBm)			Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
Frequency (MHz)				1717.5	1732.5	1747.5		
Channel				20025	20175	20325		
15	QPSK	1	0	21.73	21.80	22.06	22.50	0
		1	36	21.72	21.76	22.06	22.50	0
		1	74	21.77	21.82	22.05	22.50	0
		36	0	20.73	20.79	21.12	21.50	1
		36	18	20.77	20.84	21.03	21.50	1
		36	37	20.75	20.77	21.08	21.50	1
		75	0	20.75	20.82	21.11	21.50	1
15	16-QAM	1	0	20.72	20.83	21.07	21.50	1
		1	36	20.74	20.78	21.11	21.50	1
		1	74	20.73	20.84	21.11	21.50	1
		36	0	19.78	19.84	20.03	20.50	2
		36	18	19.71	19.86	20.10	20.50	2
		36	37	19.72	19.78	20.04	20.50	2
		75	0	19.69	19.86	20.03	20.50	2

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LTE Band 4								
BW(MHz)	Modulation	RB Size	RB Offset	Conducted power (dBm)			Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
Frequency (MHz)				1715	1732.5	1750		
Channel				20000	20175	20350		
10	QPSK	1	0	21.68	21.76	22.05	22.50	0
		1	25	21.71	21.78	22.09	22.50	0
		1	49	21.70	21.81	22.04	22.50	0
		25	0	20.76	20.84	21.09	21.50	1
		25	12	20.71	20.77	21.11	21.50	1
		25	25	20.75	20.82	21.08	21.50	1
		50	0	20.74	20.80	21.11	21.50	1
10	16-QAM	1	0	20.77	20.81	21.08	21.50	1
		1	13	20.70	20.85	21.06	21.50	1
		1	26	20.76	20.83	21.08	21.50	1
		12	0	19.78	19.80	20.04	20.50	2
		12	7	19.70	19.83	20.08	20.50	2
		12	15	19.71	19.85	20.10	20.50	2
		27	0	19.71	19.80	20.10	20.50	2

LTE Band 4								
BW(MHz)	Modulation	RB Size	RB Offset	Conducted power (dBm)			Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
Frequency (MHz)				1712.5	1732.5	1752.5		
Channel				19975	20175	20375		
5	QPSK	1	0	21.75	21.84	22.07	22.50	0
		1	12	21.72	21.84	22.10	22.50	0
		1	24	21.76	21.79	22.05	22.50	0
		12	0	20.78	20.81	21.08	21.50	1
		12	6	20.72	20.81	21.07	21.50	1
		12	13	20.78	20.84	21.09	21.50	1
		25	0	20.68	20.85	21.11	21.50	1
5	16-QAM	1	0	20.74	20.86	21.07	21.50	1
		1	12	20.76	20.83	21.05	21.50	1
		1	24	20.70	20.80	21.03	21.50	1
		12	0	19.76	19.81	20.11	20.50	2
		12	6	19.76	19.86	20.03	20.50	2
		12	13	19.77	19.78	20.09	20.50	2
		25	0	19.76	19.85	20.11	20.50	2

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LTE Band 4								
BW(MHz)	Modulation	RB Size	RB Offset	Conducted power (dBm)			Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
Frequency (MHz)				1711.5	1732.5	1753.5		
Channel				19965	20175	20385		
3	QPSK	1	0	21.68	21.82	22.10	22.50	0
		1	7	21.74	21.77	22.11	22.50	0
		1	14	21.73	21.81	22.02	22.50	0
		8	0	20.78	20.84	21.11	21.50	1
		8	4	20.68	20.76	21.11	21.50	1
		8	7	20.73	20.85	21.11	21.50	1
		15	0	20.68	20.84	21.12	21.50	1
3	16-QAM	1	0	20.70	20.85	21.07	21.50	1
		1	7	20.76	20.84	21.05	21.50	1
		1	14	20.70	20.79	21.09	21.50	1
		8	0	19.71	19.85	20.11	20.50	2
		8	4	19.74	19.83	20.08	20.50	2
		8	7	19.73	19.82	20.12	20.50	2
		15	0	19.72	19.79	20.10	20.50	2

LTE Band 4								
BW(MHz)	Modulation	RB Size	RB Offset	Conducted power (dBm)			Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
Frequency (MHz)				1710.7	1732.5	1754.3		
Channel				19957	20175	20393		
1.4	QPSK	1	0	21.75	21.78	22.06	22.50	0
		1	2	21.74	21.76	22.07	22.50	0
		1	5	21.75	21.77	22.06	22.50	0
		3	0	21.78	21.84	22.03	22.50	0
		3	2	21.77	21.85	22.03	22.50	0
		3	3	21.72	21.76	22.07	22.50	0
		6	0	20.70	20.79	21.10	21.50	1
1.4	16-QAM	1	0	20.77	20.79	21.07	21.50	1
		1	2	20.70	20.80	21.03	21.50	1
		1	5	20.72	20.76	21.09	21.50	1
		3	0	20.68	20.77	21.04	21.50	1
		3	2	20.72	20.84	21.03	21.50	1
		3	3	20.68	20.86	21.11	21.50	1
		6	0	19.71	19.76	20.04	20.50	2

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LTE Band 5								
BW(MHz)	Modulation	RB Size	RB Offset	Conducted power (dBm)			Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
Frequency (MHz)				829	836.5	844		
Channel				20450	20525	20600		
10	QPSK	1	0	22.58	22.74	22.37	23.00	0
		1	25	22.41	22.54	22.43	23.00	0
		1	49	22.42	22.39	22.03	23.00	0
		25	0	21.44	21.31	21.62	22.00	1
		25	12	21.34	21.38	21.60	22.00	1
		25	25	21.35	21.43	21.67	22.00	1
		50	0	21.44	21.32	21.53	22.00	1
10	16-QAM	1	0	21.57	21.72	21.32	22.00	1
		1	13	21.57	21.66	21.37	22.00	1
		1	26	21.53	21.66	21.34	22.00	1
		12	0	20.55	20.64	20.27	21.00	2
		12	7	20.52	20.67	20.30	21.00	2
		12	15	20.54	20.66	20.35	21.00	2
		27	0	20.55	20.68	20.34	21.00	2

LTE Band 5								
BW(MHz)	Modulation	RB Size	RB Offset	Conducted power (dBm)			Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
Frequency (MHz)				826.5	836.5	846.5		
Channel				20425	20525	20625		
5	QPSK	1	0	22.56	22.71	22.35	23.00	0
		1	12	22.54	22.73	22.36	23.00	0
		1	24	22.52	22.69	22.36	23.00	0
		12	0	21.50	21.65	21.30	22.00	1
		12	6	21.58	21.74	21.27	22.00	1
		12	13	21.53	21.73	21.33	22.00	1
		25	0	21.56	21.69	21.27	22.00	1
5	16-QAM	1	0	21.50	21.70	21.30	22.00	1
		1	12	21.48	21.71	21.33	22.00	1
		1	24	21.57	21.71	21.31	22.00	1
		12	0	20.51	20.71	20.31	21.00	2
		12	6	20.55	20.70	20.34	21.00	2
		12	13	20.50	20.74	20.35	21.00	2
		25	0	20.57	20.73	20.30	21.00	2

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LTE Band 5								
BW(MHz)	Modulation	RB Size	RB Offset	Conducted power (dBm)			Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
Frequency (MHz)				825.5	836.5	847.5		
Channel				20415	20525	20635		
3	QPSK	1	0	22.51	22.65	22.34	23.00	0
		1	7	22.49	22.67	22.31	23.00	0
		1	14	22.52	22.65	22.36	23.00	0
		8	0	21.56	21.65	21.31	22.00	1
		8	4	21.54	21.65	21.31	22.00	1
		8	7	21.54	21.72	21.33	22.00	1
		15	0	21.50	21.74	21.34	22.00	1
3	16-QAM	1	0	21.48	21.73	21.33	22.00	1
		1	7	21.49	21.67	21.34	22.00	1
		1	14	21.55	21.68	21.37	22.00	1
		8	0	20.58	20.66	20.27	21.00	2
		8	4	20.50	20.70	20.30	21.00	2
		8	7	20.58	20.73	20.31	21.00	2
		15	0	20.49	20.72	20.31	21.00	2

LTE Band 5								
BW(MHz)	Modulation	RB Size	RB Offset	Conducted power (dBm)			Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
Frequency (MHz)				824.7	836.5	848.3		
Channel				20407	20525	20643		
1.4	QPSK	1	0	22.55	22.66	22.34	23.00	0
		1	2	22.54	22.71	22.34	23.00	0
		1	5	22.57	22.73	22.37	23.00	0
		3	0	22.57	22.68	22.32	23.00	0
		3	2	22.48	22.71	22.32	23.00	0
		3	3	22.48	22.70	22.36	23.00	0
		6	0	21.57	21.67	21.36	22.00	1
1.4	16-QAM	1	0	21.51	21.71	21.37	22.00	1
		1	2	21.56	21.64	21.29	22.00	1
		1	5	21.49	21.73	21.34	22.00	1
		3	0	21.52	21.74	21.37	22.00	1
		3	2	21.48	21.74	21.33	22.00	1
		3	3	21.58	21.70	21.29	22.00	1
		6	0	20.57	20.69	20.32	21.00	2

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LTE Band 12								
BW(MHz)	Modulation	RB Size	RB Offset	Conducted power (dBm)			Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
Frequency (MHz)				704	707.5	711		
Channel				23060	23095	23130		
10	QPSK	1	0	22.48	22.43	22.68	23.00	0
		1	25	22.46	22.51	22.56	23.00	0
		1	49	22.33	22.48	22.52	23.00	0
		25	0	21.41	21.42	21.47	22.00	1
		25	12	21.28	21.36	21.43	22.00	1
		25	25	21.22	21.35	21.40	22.00	1
		50	0	21.40	21.41	21.42	22.00	1
10	16-QAM	1	0	21.38	21.30	21.50	22.00	1
		1	13	21.38	21.30	21.49	22.00	1
		1	26	21.29	21.24	21.49	22.00	1
		12	0	20.38	20.28	20.50	21.00	2
		12	7	20.28	20.24	20.53	21.00	2
		12	15	20.32	20.26	20.54	21.00	2
		27	0	20.37	20.30	20.52	21.00	2

LTE Band 12								
BW(MHz)	Modulation	RB Size	RB Offset	Conducted power (dBm)			Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
Frequency (MHz)				701.5	707.5	713.5		
Channel				23035	23095	23155		
5	QPSK	1	0	22.36	22.32	22.53	23.00	0
		1	12	22.33	22.33	22.52	23.00	0
		1	24	22.29	22.27	22.54	23.00	0
		12	0	21.36	21.32	21.56	22.00	1
		12	6	21.32	21.31	21.49	22.00	1
		12	13	21.28	21.29	21.48	22.00	1
		25	0	21.29	21.24	21.51	22.00	1
5	16-QAM	1	0	21.30	21.25	21.58	22.00	1
		1	12	21.28	21.23	21.48	22.00	1
		1	24	21.34	21.24	21.51	22.00	1
		12	0	20.36	20.28	20.56	21.00	2
		12	6	20.30	20.32	20.58	21.00	2
		12	13	20.36	20.32	20.52	21.00	2
		25	0	20.32	20.31	20.51	21.00	2

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LTE Band 12								
BW(MHz)	Modulation	RB Size	RB Offset	Conducted power (dBm)			Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
Frequency (MHz)				700.5	707.5	714.5		
Channel				23025	23095	23165		
3	QPSK	1	0	22.32	22.30	22.52	23.00	0
		1	7	22.33	22.32	22.55	23.00	0
		1	14	22.34	22.27	22.49	23.00	0
		8	0	21.38	21.32	21.55	22.00	1
		8	4	21.30	21.25	21.52	22.00	1
		8	7	21.36	21.26	21.48	22.00	1
		15	0	21.38	21.31	21.48	22.00	1
3	16-QAM	1	0	21.37	21.26	21.48	22.00	1
		1	7	21.35	21.26	21.49	22.00	1
		1	14	21.29	21.24	21.49	22.00	1
		8	0	19.19	19.37	19.63	21.00	2
		8	4	19.22	19.38	19.68	21.00	2
		8	7	19.28	19.35	19.61	21.00	2
		15	0	19.19	19.41	19.61	21.00	2

LTE Band 12								
BW(MHz)	Modulation	RB Size	RB Offset	Conducted power (dBm)			Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
Frequency (MHz)				699.7	707.5	715.3		
Channel				23017	23095	23173		
1.4	QPSK	1	0	22.29	22.32	22.54	23.00	0
		1	2	22.34	22.23	22.53	23.00	0
		1	5	22.32	22.28	22.49	23.00	0
		3	0	21.38	21.25	21.58	23.00	0
		3	2	21.35	21.32	21.55	23.00	0
		3	3	21.33	21.29	21.49	23.00	0
		6	0	21.30	21.30	21.53	22.00	1
1.4	16-QAM	1	0	21.29	21.33	21.49	22.00	1
		1	2	21.35	21.29	21.52	22.00	1
		1	5	21.29	21.33	21.56	22.00	1
		3	0	21.32	21.25	21.48	22.00	1
		3	2	21.32	21.25	21.55	22.00	1
		3	3	21.36	21.30	21.58	22.00	1
		6	0	20.28	20.32	20.56	21.00	2

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LTE Band 13								
BW(MHz)	Modulation	RB Size	RB Offset	Conducted power (dBm)			Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
Frequency (MHz)				782	782	782		
Channel				23230	23230	23230		
10	QPSK	1	0		22.47		22.50	0
		1	25		22.38		22.50	0
		1	49		22.28		22.50	0
		25	0		21.34		21.50	1
		25	12		21.28		21.50	1
		25	25		21.35		21.50	1
		50	0		21.12		21.50	1
10	16-QAM	1	0		21.30		21.50	1
		1	13		21.30		21.50	1
		1	26		21.32		21.50	1
		12	0		20.31		20.50	2
		12	7		20.25		20.50	2
		12	15		20.18		20.50	2
		27	0		20.21		20.50	2

LTE Band 13								
BW(MHz)	Modulation	RB Size	RB Offset	Conducted power (dBm)			Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
Frequency (MHz)				779.5	782	784.5		
Channel				23205	23230	23255		
5	QPSK	1	0	22.29	22.30	22.30	22.50	0
		1	12	22.34	22.37	22.28	22.50	0
		1	24	22.19	22.29	22.23	22.50	0
		12	0	21.26	21.31	21.24	21.50	1
		12	6	21.29	21.30	21.30	21.50	1
		12	13	21.27	21.29	21.28	21.50	1
		25	0	21.21	21.31	21.26	21.50	1
5	16-QAM	1	0	21.20	21.30	21.24	21.50	1
		1	12	21.22	21.31	21.21	21.50	1
		1	24	20.18	20.21	20.15	21.50	1
		12	0	20.19	20.20	20.14	20.50	2
		12	6	20.22	20.27	20.26	20.50	2
		12	13	20.17	20.25	20.23	20.50	2
		25	0	20.19	20.20	20.17	20.50	2

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LTE Band 17								
BW(MHz)	Modulation	RB Size	RB Offset	Conducted power (dBm)			Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
Frequency (MHz)				709	710	711		
Channel				23780	23790	23800		
10	QPSK	1	0	22.45	22.44	22.49	22.50	0
		1	25	22.31	22.38	22.15	22.50	0
		1	49	22.36	21.34	22.39	22.50	0
		25	0	21.12	21.25	21.34	21.50	1
		25	12	21.14	21.26	21.28	21.50	1
		25	25	21.08	21.14	21.19	21.50	1
		50	0	20.98	21.04	21.09	21.50	1
10	16-QAM	1	0	21.33	21.30	21.31	21.50	1
		1	13	21.34	21.32	21.34	21.50	1
		1	26	21.30	21.33	21.33	21.50	1
		12	0	20.27	20.18	20.39	20.50	2
		12	7	20.32	20.18	20.37	20.50	2
		12	15	20.31	20.15	20.30	20.50	2
		27	0	20.31	20.22	20.37	20.50	2

LTE Band 17								
BW(MHz)	Modulation	RB Size	RB Offset	Conducted power (dBm)			Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
Frequency (MHz)				706.5	710	713.5		
Channel				23755	23790	23825		
5	QPSK	1	0	22.28	22.31	22.30	22.50	0
		1	12	22.25	22.24	22.33	22.50	0
		1	24	22.26	22.28	22.29	22.50	0
		12	0	21.35	21.25	21.30	21.50	1
		12	6	21.26	21.32	21.36	21.50	1
		12	13	21.27	21.24	21.34	21.50	1
		25	0	21.35	21.26	21.29	21.50	1
5	16-QAM	1	0	21.28	21.29	21.29	21.50	1
		1	12	21.32	21.32	21.37	21.50	1
		1	24	21.34	21.34	21.32	21.50	1
		12	0	20.26	20.17	20.30	20.50	2
		12	6	20.27	20.15	20.30	20.50	2
		12	13	20.25	20.22	20.33	20.50	2
		25	0	20.26	20.21	20.31	20.50	2

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LTE Band 66								
BW(MHz)	Modulation	RB Size	RB Offset	Conducted power (dBm)			Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
Frequency (MHz)				1720	1745	1770		
Channel				132072	132322	132572		
20	QPSK	1	0	21.31	21.62	21.31	22.00	0
		1	50	21.55	21.21	21.26	22.00	0
		1	99	21.40	21.56	21.46	22.00	0
		50	0	20.43	20.32	20.55	21.00	1
		50	25	20.38	20.05	20.48	21.00	1
		50	50	20.35	20.31	20.53	21.00	1
		100	0	20.18	20.21	20.24	21.00	1
20	16-QAM	1	0	20.20	20.42	20.16	21.00	1
		1	50	20.14	20.45	20.20	21.00	1
		1	99	20.21	20.43	20.14	21.00	1
		50	0	19.11	19.42	19.21	20.00	2
		50	25	19.21	19.32	19.21	20.00	2
		50	50	19.17	19.33	19.13	20.00	2
		100	0	19.21	19.40	19.19	20.00	2

LTE Band 66								
BW(MHz)	Modulation	RB Size	RB Offset	Conducted power (dBm)			Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
Frequency (MHz)				1717.5	1745	1772.5		
Channel				132047	132322	132597		
15	QPSK	1	0	21.18	21.51	21.18	22.00	0
		1	36	21.13	21.43	21.11	22.00	0
		1	74	21.17	21.47	21.19	22.00	0
		36	0	20.21	20.45	20.12	21.00	1
		36	18	20.16	20.42	20.12	21.00	1
		36	37	20.19	20.43	20.19	21.00	1
		75	0	20.15	20.47	20.20	21.00	1
15	16-QAM	1	0	20.16	20.50	20.13	21.00	1
		1	36	20.18	20.48	20.14	21.00	1
		1	74	20.11	20.43	20.18	21.00	1
		36	0	19.18	19.38	19.18	20.00	2
		36	18	19.14	19.33	19.20	20.00	2
		36	37	19.16	19.37	19.19	20.00	2
		75	0	19.16	19.41	19.14	20.00	2

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LTE Band 66								
BW(MHz)	Modulation	RB Size	RB Offset	Conducted power (dBm)			Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
Frequency (MHz)				1715	1745	1775		
Channel				132022	132322	132622		
10	QPSK	1	0	21.13	21.45	21.11	22.00	0
		1	25	21.20	21.44	21.17	22.00	0
		1	49	21.12	21.50	21.12	22.00	0
		25	0	20.15	20.48	20.13	21.00	1
		25	12	20.14	20.52	20.20	21.00	1
		25	25	20.18	20.42	20.15	21.00	1
		50	0	20.21	20.49	20.11	21.00	1
10	16-QAM	1	0	20.15	20.52	20.21	21.00	1
		1	13	20.13	20.43	20.15	21.00	1
		1	26	20.13	20.42	20.13	21.00	1
		12	0	19.13	19.40	19.11	20.00	2
		12	7	19.18	19.34	19.18	20.00	2
		12	15	19.20	19.41	19.16	20.00	2
		27	0	19.21	19.37	19.12	20.00	2

LTE Band 66								
BW(MHz)	Modulation	RB Size	RB Offset	Conducted power (dBm)			Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
Frequency (MHz)				1712.5	1745	1777.5		
Channel				131997	132322	132647		
5	QPSK	1	0	21.17	21.45	21.13	22.00	0
		1	12	21.13	21.49	21.16	22.00	0
		1	24	21.20	21.43	21.20	22.00	0
		12	0	20.11	20.46	20.15	21.00	1
		12	6	20.21	20.48	20.19	21.00	1
		12	13	20.20	20.51	20.14	21.00	1
		25	0	20.21	20.52	20.16	21.00	1
5	16-QAM	1	0	20.16	20.52	20.14	21.00	1
		1	12	20.12	20.49	20.16	21.00	1
		1	24	20.11	20.45	20.15	21.00	1
		12	0	19.15	19.42	19.18	20.00	2
		12	6	19.12	19.34	19.18	20.00	2
		12	13	19.14	19.37	19.12	20.00	2
		25	0	19.18	19.36	19.14	20.00	2

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LTE Band 66								
BW(MHz)	Modulation	RB Size	RB Offset	Conducted power (dBm)			Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
Frequency (MHz)				1711.5	1745	1778.5		
Channel				131987	132322	132657		
3	QPSK	1	0	21.13	21.43	21.18	22.00	0
		1	7	21.19	21.45	21.14	22.00	0
		1	14	21.14	21.46	21.12	22.00	0
		8	0	20.21	20.47	20.20	21.00	1
		8	4	20.21	20.47	20.13	21.00	1
		8	7	20.17	20.49	20.16	21.00	1
		15	0	20.19	20.43	20.20	21.00	1
3	16-QAM	1	0	20.13	20.44	20.21	21.00	1
		1	7	20.16	20.42	20.20	21.00	1
		1	14	20.15	20.45	20.13	21.00	1
		8	0	19.12	19.41	19.15	20.00	2
		8	4	19.14	19.36	19.14	20.00	2
		8	7	19.20	19.34	19.19	20.00	2
		15	0	19.11	19.37	19.12	20.00	2

LTE Band 66								
BW(MHz)	Modulation	RB Size	RB Offset	Conducted power (dBm)			Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
Frequency (MHz)				1710.7	1745	1779.3		
Channel				131979	132322	132665		
1.4	QPSK	1	0	21.13	21.44	21.16	22.00	0
		1	2	21.11	21.51	21.16	22.00	0
		1	5	21.13	21.43	21.20	22.00	0
		3	0	21.14	21.43	21.15	22.00	0
		3	2	21.21	21.44	21.19	22.00	0
		3	3	21.18	21.43	21.19	22.00	0
		6	0	20.17	20.42	20.18	21.00	1
1.4	16-QAM	1	0	20.21	20.46	20.21	21.00	1
		1	2	20.12	20.44	20.19	21.00	1
		1	5	20.13	20.45	20.16	21.00	1
		3	0	20.14	20.43	20.21	21.00	1
		3	2	20.16	20.42	20.11	21.00	1
		3	3	20.20	20.49	20.21	21.00	1
		6	0	19.14	19.40	19.20	20.00	2

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Note:

1) The channel spacing and aggregated channel bandwidth for CA are identical to the associated specification in 3GPP TS 36.521-1 V16.6.0.

2) The reference test frequencies for CA refers to 3GPP TS 36.508 V16.6.0

3) Testing is not required in bands or modes not intended/allowed for US operation

4) Based on TCB workshop April 2018, only indicate “No” in CA combination table need power measurement

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5.3 WLAN

Ant 1						
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
2.45GHz	802.11b	1	2412	1Mbps	17.50	17.47
		6	2437		17.50	17.36
		11	2462		17.50	17.46
	802.11g	1	2412	6Mbps	16.50	16.25
		6	2437		16.50	16.31
		11	2462		16.50	16.22
	802.11n20-HT0	1	2412	MCS0	16.50	16.23
		6	2437		16.50	16.30
		11	2462		16.50	16.17
	802.11ac20-VHT0	1	2412	MCS0	16.50	16.23
		6	2437		16.50	16.29
		11	2462		16.50	16.27
	802.11n40-HT0	3	2422	MCS0	15.50	15.16
		6	2437		15.50	15.34
		9	2452		15.50	15.32
	802.11ac40-VHT0	3	2422	MCS0	15.50	15.34
		6	2437		15.50	15.28
		9	2452		15.50	15.23

Ant 1						
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
5.15-5.25 GHz	802.11a	36	5180	6Mbps	16.50	16.30
		40	5200		16.50	16.20
		44	5220		16.50	16.27
		48	5240		16.50	16.16
	802.11n20-HT0	36	5180	MCS0	17.50	17.34
		40	5200		17.50	17.38
		44	5220		17.50	17.46
		48	5240		17.50	17.42
	802.11ac20-VHT0	36	5180	MCS0	17.50	17.18
		40	5200		17.50	17.30
		44	5220		17.50	17.17
		48	5240		17.50	17.30
	802.11n40-HT0	38	5190	MCS0	16.50	16.21
		46	5230		16.50	16.27
	802.11ac40-VHT0	38	5190	MCS0	16.50	16.26
		46	5230		16.50	16.25
	802.11ac80-VHT0	42	5210	MCS0	15.50	15.26

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Ant 1						
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
5.25-5.35 GHz	802.11a	52	5260	6Mbps	16.50	16.16
		56	5280		16.50	16.33
		60	5300		16.50	16.18
		64	5320		16.50	16.25
	802.11n20-HT0	52	5260	MCS0	17.50	17.14
		56	5280		17.50	17.18
		60	5300		17.50	17.32
		64	5320		17.50	17.25
	802.11ac20-VHT0	52	5260	MCS0	17.50	17.32
		56	5280		17.50	17.31
		60	5300		17.50	17.32
		64	5320		17.50	17.30
	802.11n40-HT0	54	5270	MCS0	16.50	16.15
		62	5310		16.50	16.17
	802.11ac40-VHT0	54	5270	MCS0	16.50	16.15
		62	5310		16.50	16.25
	802.11ac80-VHT0	58	5290	MCS0	15.50	15.20

Ant 1						
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
5.6GHz	802.11a	100	5500	6Mbps	16.50	16.22
		120	5600		16.50	16.16
		140	5700		16.50	16.21
		144	5720		16.50	16.27
	802.11n20-HT0	100	5500	MCS0	17.50	17.31
		120	5600		17.50	17.21
		140	5700		17.50	17.29
		144	5720		17.50	17.44
	802.11ac20-VHT0	100	5500	MCS0	17.50	17.29
		120	5600		17.50	17.26
		140	5700		17.50	17.30
		144	5720		17.50	17.32
	802.11n40-HT0	102	5510	MCS0	16.50	16.28
		118	5590		16.50	16.28
		134	5670		16.50	16.16
		142	5710		16.50	16.26
	802.11ac40-VHT0	102	5510	MCS0	16.50	16.17
		118	5590		16.50	16.30
		134	5670		16.50	16.20
		142	5710		16.50	16.29
	802.11ac80-VHT0	106	5530	MCS0	15.50	15.21
		122	5610		15.50	15.20
		138	5690		15.50	15.22

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Ant 1						
Mode	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
5.8GHz	802.11a	149	5745	6Mbps	16.50	16.28
		157	5785		16.50	16.16
		165	5825		16.50	16.17
	802.11n20-HT0	149	5745	MCS0	17.50	17.35
		157	5785		17.50	17.45
		165	5825		17.50	17.15
	802.11ac20-VHT0	149	5745	MCS0	17.50	17.30
		157	5785		17.50	17.17
		165	5825		17.50	17.21
	802.11n40-HT0	151	5755	MCS0	16.50	16.22
		159	5795		16.50	16.20
	802.11ac40-VHT0	151	5755	MCS0	16.50	16.29
		159	5795		16.50	16.28
	802.11ac80-VHT0	155	5775	MCS0	15.50	15.31

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5.4 Bluetooth

Mode	Channel	Frequency (MHz)	1Mbps		2Mbps		3Mbps	
			Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
BR/EDR	CH 00	2402	7.00	6.22	4.00	3.02	4.00	3.08
	CH 39	2441		6.35		3.13		3.16
	CH 78	2480		6.73		3.91		3.96

5.5 BLE

Mode	Channel	Frequency (MHz)	GFSK	
			Max. Rated Avg.Power + Max. Tolerance (dBm)	Average Output Power (dBm)
BLE_1M	CH 00	2402	1	-0.43
	CH 19	2440		0.29
	CH 39	2480		0.79

Mode	Channel	Frequency (MHz)	GFSK	
			Max. Rated Avg.Power + Max. Tolerance (dBm)	Average Output Power (dBm)
BLE_2M	CH 00	2402	1	-0.12
	CH 19	2440		0.39
	CH 39	2480		0.90

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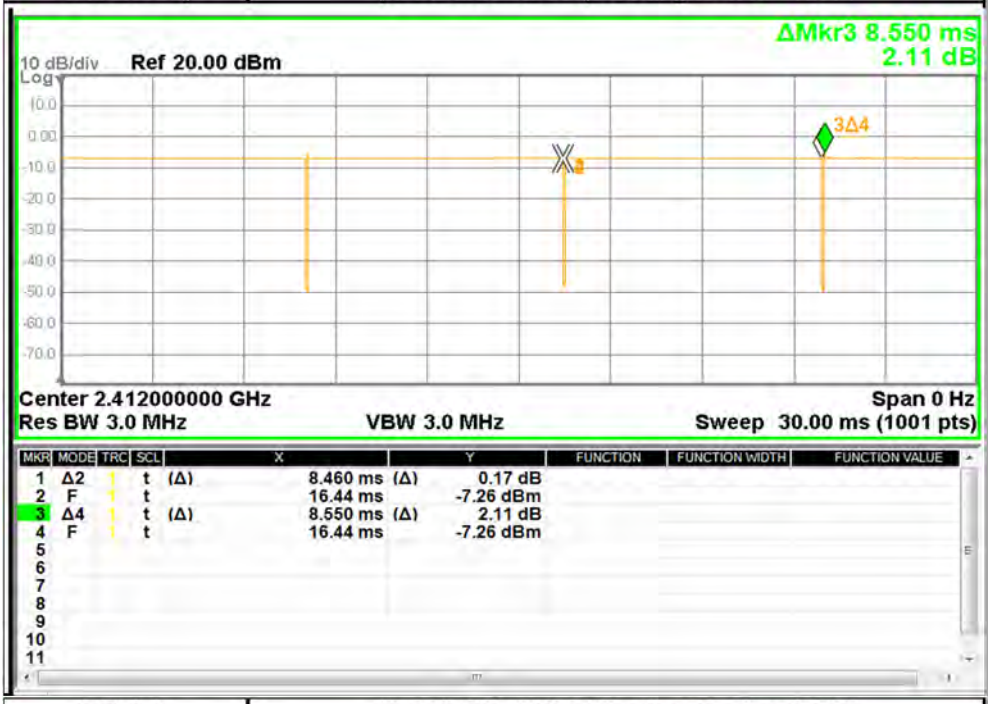
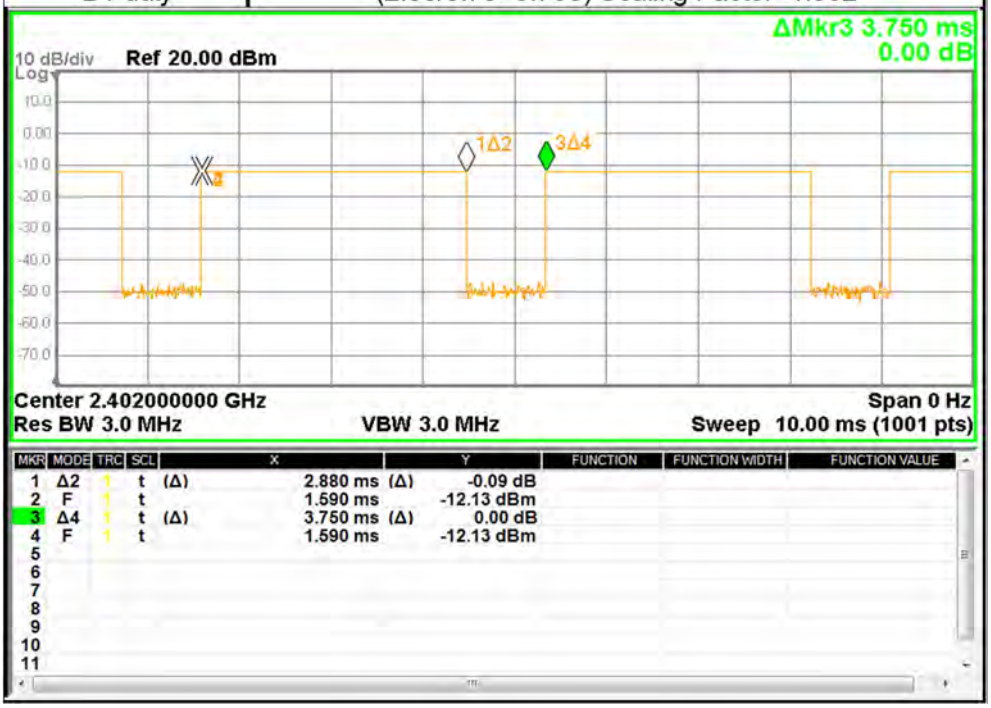
2.4G b duty	(8.46/8.55=0.989) Scaling Factor=1.011



MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	Δ2	1	t	(Δ) 8.460 ms	(Δ) 0.17 dB			
2	F	1	t	16.44 ms	-7.26 dBm			
3	Δ4	1	t	(Δ) 8.550 ms	(Δ) 2.11 dB			
4	F	1	t	16.44 ms	-7.26 dBm			
5								
6								
7								
8								
9								
10								
11								

BT duty	(2.88/3.75=0.768) Scaling Factor=1.302



MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	Δ2	1	t	(Δ) 2.880 ms	(Δ) -0.09 dB			
2	F	1	t	1.590 ms	-12.13 dBm			
3	Δ4	1	t	(Δ) 3.750 ms	(Δ) 0.00 dB			
4	F	1	t	1.590 ms	-12.13 dBm			
5								
6								
7								
8								
9								
10								
11								

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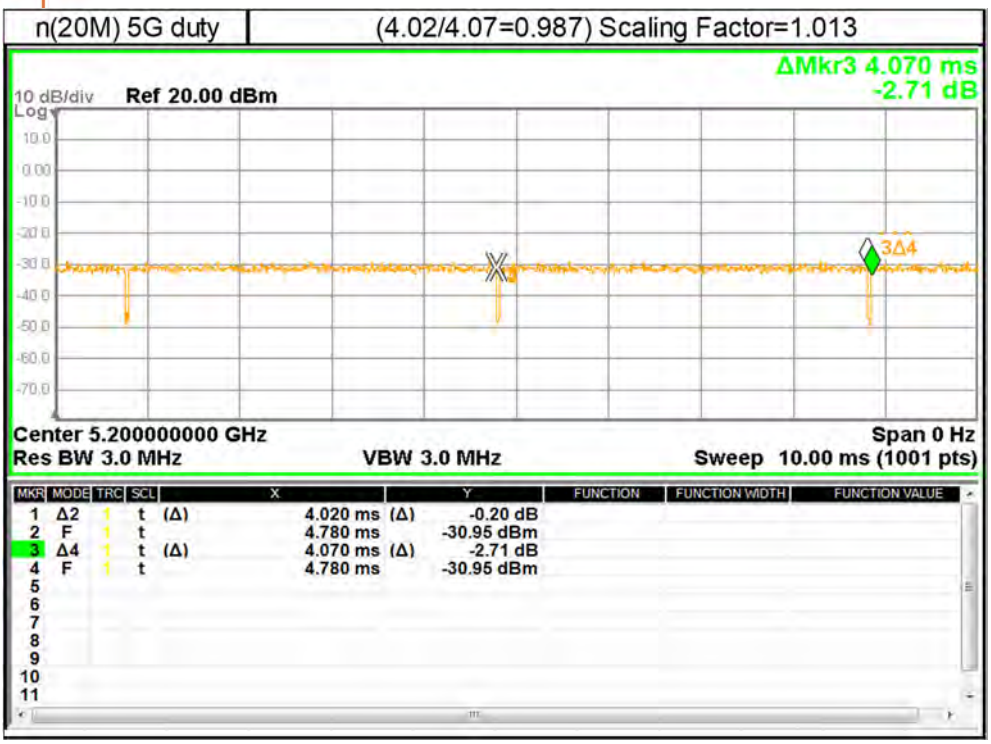

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6 SUMMARY OF RESULTS

6.1 Decision rules

Reported measurement data comply with Test Methodology in section 1.1.
Determining compliance shall be based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

6.2 Summary of SAR Results

WWAN

Mode	Bandwidth (MHz)	Modulation	RB Size	RB start	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged SAR over 10g (W/kg)		ID
												Measured	Reported	
LTE Band 2	20MHz	QPSK	1	0	Back Surface	0	18700	1860	22.00	21.73	106.41%	0.263	0.280	-
LTE Band 2			50	0	Back Surface	0	18700	1860	21.00	20.78	105.20%	0.252	0.265	-
LTE Band 2			100RB		Back Surface	0	18700	1860	21.00	20.48	112.72%	0.231	0.260	-
LTE Band 2			1	0	Curve of Back Surface	0	18700	1860	22.00	21.73	106.41%	0.127	0.135	-
LTE Band 2			1	0	Top Edge	0	18700	1860	22.00	21.73	106.41%	0.233	0.248	-
LTE Band 2			50	0	Top Edge	0	18700	1860	21.00	20.78	105.20%	0.176	0.185	-
LTE Band 2			100RB		Top Edge	0	18700	1860	21.00	20.48	112.72%	0.149	0.168	-
LTE Band 2			1	0	Right Edge	0	18700	1860	22.00	21.73	106.41%	3.140	3.341	001
LTE Band 2			1	0	Right Edge	0	18900	1880	22.00	21.61	109.40%	3.010	3.293	-
LTE Band 2			1	0	Right Edge	0	19100	1900	22.00	21.54	111.17%	2.780	3.091	-
LTE Band 2			50	0	Right Edge	0	18700	1860	21.00	20.78	105.20%	2.370	2.493	-
LTE Band 2			50	0	Right Edge	0	18900	1880	21.00	20.67	107.89%	2.410	2.600	-
LTE Band 2			50	25	Right Edge	0	19100	1900	21.00	20.54	111.17%	2.250	2.501	-
LTE Band 2			100RB		Right Edge	0	18700	1860	21.00	20.48	112.72%	2.110	2.378	-
LTE Band 4	20MHz	QPSK	1	0	Back Surface	0	20300	1745	22.50	22.12	109.14%	0.330	0.360	-
LTE Band 4			50	25	Back Surface	0	20300	1745	21.50	21.31	104.47%	0.246	0.257	-
LTE Band 4			100RB		Back Surface	0	20300	1745	21.50	20.78	118.03%	0.195	0.230	-
LTE Band 4			1	0	Curve of Back Surface	0	20300	1745	22.50	22.12	109.14%	0.067	0.073	-
LTE Band 4			1	0	Top Edge	0	20300	1745	22.50	22.12	109.14%	0.347	0.379	-
LTE Band 4			50	25	Top Edge	0	20300	1745	21.50	21.31	104.47%	0.338	0.353	-
LTE Band 4			100RB		Top Edge	0	20300	1745	21.50	20.78	118.03%	0.252	0.297	-
LTE Band 4			1	0	Right Edge	0	20050	1720	22.50	21.78	118.03%	3.070	3.624	-
LTE Band 4			1	0	Right Edge	0	20175	1732.5	22.50	21.86	115.88%	3.350	3.882	002
LTE Band 4			1	0	Right Edge	0	20300	1745	22.50	22.12	109.14%	3.310	3.613	-
LTE Band 4			50	50	Right Edge	0	20050	1720	21.50	20.38	129.42%	2.320	3.003	-
LTE Band 4			50	0	Right Edge	0	20175	1732.5	21.50	20.55	124.45%	2.350	2.925	-
LTE Band 4			50	25	Right Edge	0	20300	1745	21.50	21.31	104.47%	2.300	2.403	-
LTE Band 4			100RB		Right Edge	0	20300	1745	21.50	20.78	118.03%	2.220	2.620	-
LTE Band 5	10MHz	QPSK	1	0	Back Surface	0	20525	836.5	23.00	22.74	106.17%	0.135	0.143	-
LTE Band 5			25	25	Back Surface	0	20600	844	22.00	21.67	107.89%	0.112	0.121	-
LTE Band 5			50RB		Back Surface	0	20600	844	22.00	21.53	111.43%	0.092	0.103	-
LTE Band 5			1	0	Curve of Back Surface	0	20525	836.5	23.00	22.74	106.17%	0.124	0.132	-
LTE Band 5			1	0	Top Edge	0	20525	836.5	23.00	22.74	106.17%	0.218	0.231	-
LTE Band 5			25	25	Top Edge	0	20600	844	22.00	21.67	107.89%	0.293	0.316	-
LTE Band 5			50RB		Top Edge	0	20600	844	22.00	21.53	111.43%	0.264	0.294	-
LTE Band 5			1	0	Right Edge	0	20450	829	23.00	22.58	110.15%	0.832	0.916	-
LTE Band 5			1	0	Right Edge	0	20525	836.5	23.00	22.74	106.17%	0.845	0.897	-
LTE Band 5			1	25	Right Edge	0	20600	844	23.00	22.43	114.02%	0.885	1.009	003
LTE Band 5			25	0	Right Edge	0	20450	829	22.00	21.44	113.76%	0.567	0.645	-
LTE Band 5			25	25	Right Edge	0	20525	836.5	22.00	21.43	114.02%	0.559	0.637	-
LTE Band 5			25	25	Right Edge	0	20600	844	22.00	21.67	107.89%	0.620	0.689	-
LTE Band 5			50RB		Right Edge	0	20600	844	22.00	21.53	111.43%	0.567	0.632	-
LTE Band 12	10MHz	QPSK	1	0	Back Surface	0	23130	711	23.00	22.68	107.65%	0.124	0.133	-
LTE Band 12			25	0	Back Surface	0	23130	711	22.00	21.47	112.98%	0.110	0.124	-
LTE Band 12			50RB		Back Surface	0	23130	711	22.00	21.42	114.29%	0.089	0.102	-
LTE Band 12			1	0	Curve of Back Surface	0	23130	711	23.00	22.68	107.65%	0.154	0.166	-
LTE Band 12			1	0	Top Edge	0	23130	711	23.00	22.68	107.65%	0.523	0.563	-
LTE Band 12			25	0	Top Edge	0	23130	711	22.00	21.47	112.98%	0.425	0.480	-
LTE Band 12			50RB		Top Edge	0	23130	711	22.00	21.42	114.29%	0.378	0.432	-
LTE Band 12			1	0	Right Edge	0	23060	704	23.00	22.48	112.72%	0.672	0.757	-
LTE Band 12			1	25	Right Edge	0	23095	707.5	23.00	22.51	111.94%	0.728	0.815	004
LTE Band 12			1	0	Right Edge	0	23130	711	23.00	22.68	107.65%	0.710	0.764	-
LTE Band 12			25	0	Right Edge	0	23060	704	22.00	21.41	114.55%	0.506	0.580	-
LTE Band 12			25	0	Right Edge	0	23095	707.5	22.00	21.42	114.29%	0.508	0.581	-
LTE Band 12			25	0	Right Edge	0	23130	711	22.00	21.47	112.98%	0.522	0.590	-
LTE Band 12			50RB		Right Edge	0	23130	711	22.00	21.42	114.29%	0.516	0.590	-
LTE Band 13	10MHz	QPSK	1	0	Back Surface	0	23230	782	22.50	22.47	100.69%	0.135	0.136	-
LTE Band 13			25	25	Back Surface	0	23230	782	21.50	21.35	103.51%	0.132	0.137	-
LTE Band 13			50RB		Back Surface	0	23230	782	21.50	21.12	109.14%	0.117	0.128	-
LTE Band 13			1	0	Curve of Back Surface	0	23230	782	22.50	22.47	100.69%	0.017	0.017	-
LTE Band 13			1	0	Top Edge	0	23230	782	22.50	22.47	100.69%	0.357	0.359	-
LTE Band 13			25	25	Top Edge	0	23230	782	21.50	21.35	103.51%	0.146	0.151	-
LTE Band 13			50RB		Top Edge	0	23230	782	21.50	21.12	109.14%	0.109	0.119	-
LTE Band 13			1	0	Right Edge	0	23230	782	22.50	22.47	100.69%	0.831	0.837	005
LTE Band 13			25	25	Right Edge	0	23230	782	21.50	21.35	103.51%	0.686	0.710	-
LTE Band 13			50RB		Right Edge	0	23230	782	21.50	21.12	109.14%	0.466	0.509	-
LTE Band 17	10MHz	QPSK	1	0	Back Surface	0	23800	711	22.50	22.49	100.23%	0.109	0.109	-
LTE Band 17			25	0	Back Surface	0	23800	711	21.50	21.34	103.75%	0.106	0.110	-
LTE Band 17			50RB		Back Surface	0	23800	711	21.50	21.09	109.90%	0.082	0.090	-
LTE Band 17			1	0	Curve of Back Surface	0	23800	711	22.50	22.49	100.23%	0.149	0.149	-
LTE Band 17			1	0	Top Edge	0	23800	711	22.50	22.49	100.23%	0.523	0.524	-
LTE Band 17			25	0	Top Edge	0	23800	711	21.50	21.34	103.75%	0.418	0.434	-
LTE Band 17			50RB		Top Edge	0	23800	711	21.50	21.09	109.90%	0.362	0.398	-
LTE Band 17			1	0	Right Edge	0	23780	709	22.50	22.45	101.16%	0.720	0.728	006
LTE Band 17			1	0	Right Edge	0	23790	710	22.50	22.44	101.39%	0.698	0.708	-
LTE Band 17			1	0	Right Edge	0	23800	711	22.50	22.49	100.23%	0.714	0.716	-
LTE Band 17			25	12	Right Edge	0	23780	709	21.50	21.14	108.64%	0.515	0.560	-
LTE Band 17			25	12	Right Edge	0	23790	710	21.50	21.26	105.68%	0.510	0.539	-
LTE Band 17			25	0	Right Edge	0	23800	711	21.50	21.34	103.75%	0.517	0.536	-
LTE Band 17			50RB		Right Edge	0	23800	711	21.50	21.09	109.90%	0.526	0.578	-
LTE Band 66	20MHz	QPSK	1	0	Back Surface	0	132322	1745	22.00	21.62	109.14%	0.342	0.373	-
LTE Band 66			50	0	Back Surface	0	132572	1770	21.00	20.55	110.92%	0.259	0.287	-
LTE Band 66			100RB		Back Surface	0	132572	1770	21.00	20.24	119.12%	0.212	0.253	-
LTE Band 66			1	0	Curve of Back Surface	0	132322	1745	22.00	21.62	109.14%	0.112	0.122	-
LTE Band 66			1	0	Top Edge	0	132322	1745	22.00	21.62	109.14%	0.256	0.279	-
LTE Band 66			50	0	Top Edge	0	132572	1770	21.00	20.55	110.92%	0.297	0.329	-
LTE Band 66			100RB		Top Edge	0	132572	1770	21.00	20.24	119.12%	0.244	0.291	-
LTE Band 66			1	50	Right Edge	0	132072	1720	22.00	21.55	110.92%	3.040	3.372	-
LTE Band 66			1	0	Right Edge	0	132322	1745	22.00	21.62	109.14%	2.960	3.231	-
LTE Band 66			1	99	Right Edge	0	132572	1770	22.00	21.46	113.24%	3.300	3.737	007
LTE Band 66			50	0	Right Edge	0	132072	1720	21.00	20.43	114.02%	2.720	3.101	-
LTE Band 66			50	0	Right Edge	0	132322	1745	21.00	20.32	116.95%	2.970	3.473	-
LTE Band 66			50	0	Right Edge	0	132572	1770	21.00	20.55	110.92%	1.840	2.041	-
LTE Band 66			100RB		Right Edge	0	132572	1770	21.00	20.24	119.12%	1.690	2.013	-

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WLAN

Mode	Antenna	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Duty cycle scaling	Power scaling	Averaged SAR over 10g (W/kg)		ID
										Measured	Reported	
WLAN 802.11b	Ant1	Back Surface	0	1	2412	17.50	17.47	1.01	100.69%	0.165	0.168	-
WLAN 802.11b	Ant1	Curve of Back Surface	0	1	2412	17.50	17.47	1.01	100.69%	0.104	0.106	-
WLAN 802.11b	Ant1	Top Edge	0	1	2412	17.50	17.47	1.01	100.69%	0.141	0.144	-
WLAN 802.11b	Ant1	Right Edge	0	1	2412	17.50	17.47	1.01	100.69%	0.001	0.001	-
WLAN 802.11b	Ant1	Left Edge	0	1	2412	17.50	17.47	1.01	100.69%	0.704	0.717	008
WLAN 802.11b	Ant1	Left Edge	0	6	2437	17.50	17.36	1.01	103.28%	0.650	0.679	-
WLAN 802.11b	Ant1	Left Edge	0	11	2462	17.50	17.46	1.01	100.93%	0.648	0.661	-

Mode	Antenna	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Duty cycle scaling	Power scaling	Averaged SAR over 10g (W/kg)		ID
										Measured	Reported	
Bluetooth(GFSK)	Ant1	Back Surface	0	78	2480	7.00	6.73	1.30	106.41%	0.001	0.001	-
Bluetooth(GFSK)	Ant1	Curve of Back Surface	0	78	2480	7.00	6.73	1.30	106.41%	0.001	0.001	-
Bluetooth(GFSK)	Ant1	Top Edge	0	78	2480	7.00	6.73	1.30	106.41%	0.005	0.007	-
Bluetooth(GFSK)	Ant1	Right Edge	0	78	2480	7.00	6.73	1.30	106.41%	0.001	0.001	-
Bluetooth(GFSK)	Ant1	Left Edge	0	0	2402	7.00	6.22	1.30	119.67%	0.082	0.128	009
Bluetooth(GFSK)	Ant1	Left Edge	0	39	2441	7.00	6.35	1.30	116.14%	0.081	0.122	-
Bluetooth(GFSK)	Ant1	Left Edge	0	78	2480	7.00	6.73	1.30	106.41%	0.073	0.101	-

Mode	Antenna	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Duty cycle scaling	Power scaling	Averaged SAR over 10g (W/kg)		ID
										Measured	Reported	
WLAN 802.11n(20M) 5.2G	Ant1	Back Surface	0	44	5220	17.50	17.46	1.01	100.93%	0.086	0.088	-
WLAN 802.11n(20M) 5.2G	Ant1	Curve of Back Surface	0	44	5220	17.50	17.46	1.01	100.93%	0.016	0.017	-
WLAN 802.11n(20M) 5.2G	Ant1	Top Edge	0	36	5180	17.50	17.34	1.01	103.75%	0.491	0.516	-
WLAN 802.11n(20M) 5.2G	Ant1	Top Edge	0	40	5200	17.50	17.38	1.01	102.80%	0.555	0.578	-
WLAN 802.11n(20M) 5.2G	Ant1	Top Edge	0	44	5220	17.50	17.46	1.01	100.93%	0.568	0.581	010
WLAN 802.11n(20M) 5.2G	Ant1	Top Edge	0	48	5240	17.50	17.42	1.01	101.86%	0.512	0.528	-
WLAN 802.11n(20M) 5.2G	Ant1	Right Edge	0	44	5220	17.50	17.46	1.01	100.93%	0.001	0.001	-
WLAN 802.11n(20M) 5.2G	Ant1	Left Edge	0	44	5220	17.50	17.46	1.01	100.93%	0.372	0.380	-

Mode	Antenna	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Duty cycle scaling	Power scaling	Averaged SAR over 10g (W/kg)		ID
										Measured	Reported	
WLAN 802.11n(20M) 5.3G	Ant1	Back Surface	0	60	5300	17.50	17.32	1.01	104.23%	0.106	0.112	-
WLAN 802.11n(20M) 5.3G	Ant1	Curve of Back Surface	0	60	5300	17.50	17.32	1.01	104.23%	0.020	0.021	-
WLAN 802.11n(20M) 5.3G	Ant1	Top Edge	0	52	5260	17.50	17.14	1.01	108.64%	0.560	0.616	-
WLAN 802.11n(20M) 5.3G	Ant1	Top Edge	0	56	5280	17.50	17.18	1.01	107.65%	0.556	0.606	-
WLAN 802.11n(20M) 5.3G	Ant1	Top Edge	0	60	5300	17.50	17.32	1.01	104.23%	0.584	0.617	-
WLAN 802.11n(20M) 5.3G	Ant1	Top Edge	0	64	5320	17.50	17.25	1.01	105.91%	0.602	0.646	011
WLAN 802.11n(20M) 5.3G	Ant1	Right Edge	0	60	5300	17.50	17.32	1.01	104.23%	0.001	0.001	-
WLAN 802.11n(20M) 5.3G	Ant1	Left Edge	0	60	5300	17.50	17.32	1.01	104.23%	0.439	0.464	-

Mode	Antenna	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Duty cycle scaling	Power scaling	Averaged SAR over 10g (W/kg)		ID
										Measured	Reported	
WLAN 802.11n(20M) 5.6G	Ant1	Back Surface	0	144	5720	17.50	17.44	1.01	101.39%	0.148	0.152	-
WLAN 802.11n(20M) 5.6G	Ant1	Curve of Back Surface	0	144	5720	17.50	17.44	1.01	101.39%	0.039	0.040	-
WLAN 802.11n(20M) 5.6G	Ant1	Top Edge	0	100	5500	17.50	17.31	1.01	104.47%	0.722	0.764	012
WLAN 802.11n(20M) 5.6G	Ant1	Top Edge	0	120	5600	17.50	17.21	1.01	106.91%	0.673	0.729	-
WLAN 802.11n(20M) 5.6G	Ant1	Top Edge	0	140	5700	17.50	17.29	1.01	104.95%	0.567	0.603	-
WLAN 802.11n(20M) 5.6G	Ant1	Top Edge	0	144	5720	17.50	17.44	1.01	101.39%	0.588	0.604	-
WLAN 802.11n(20M) 5.6G	Ant1	Right Edge	0	144	5720	17.50	17.44	1.01	101.39%	0.015	0.015	-
WLAN 802.11n(20M) 5.6G	Ant1	Left Edge	0	144	5720	17.50	17.44	1.01	101.39%	0.559	0.574	-

Mode	Antenna	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Duty cycle scaling	Power scaling	Averaged SAR over 10g (W/kg)		ID
										Measured	Reported	
WLAN 802.11n(20M) 5.8G	Ant1	Back Surface	0	157	5785	17.50	17.45	1.01	101.16%	0.125	0.128	-
WLAN 802.11n(20M) 5.8G	Ant1	Curve of Back Surface	0	157	5785	17.50	17.45	1.01	101.16%	0.033	0.034	-
WLAN 802.11n(20M) 5.8G	Ant1	Top Edge	0	149	5745	17.50	17.35	1.01	103.51%	0.559	0.586	-
WLAN 802.11n(20M) 5.8G	Ant1	Top Edge	0	157	5785	17.50	17.45	1.01	101.16%	0.564	0.578	013
WLAN 802.11n(20M) 5.8G	Ant1	Top Edge	0	165	5825	17.50	17.15	1.01	108.39%	0.563	0.618	-
WLAN 802.11n(20M) 5.8G	Ant1	Right Edge	0	157	5785	17.50	17.45	1.01	101.16%	0.001	0.001	-
WLAN 802.11n(20M) 5.8G	Ant1	Left Edge	0	157	5785	17.50	17.45	1.01	101.16%	0.441	0.452	-

Note:
Reported SAR = measured SAR * Power scaling * Duty cycle scaling

6.3 Reporting statements of conformity

The conformity statement in this report is based solely on the test results, measurement uncertainty is excluded.

6.4 Conclusion

The device is compliant because all the standalone results are less than their corresponding criteria.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.
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7 SIMULTANEOUS TRANSMISSION ANALYSIS

7.1 Simultaneous Transmission Scenarios:

Simultaneous Transmit Configurations	Extremity
WWAN+BT	Yes
WLAN 2.4G+BT	Yes
WLAN 5G+BT	Yes

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7.2 Estimated SAR calculation

According to KDB447498 D01v06 – When standalone SAR test exclusion applies to an antenna that transmits simultaneously with other antennas, the standalone SAR must be estimated according to following to determine simultaneous transmission SAR test exclusion:

$$\text{Estimated SAR} = \frac{\text{Max. tune up power (mW)}}{\text{Min. test separation distance(mm)}} \times \frac{\sqrt{\text{f(GHz)}}}{7.5}$$

If the minimum test separation distance is < 5mm, a distance of 5mm is used for estimated SAR calculation. When the test separation distance is >50mm, the 0.4W/kg is used for SAR-1g.

7.3 SPLSR evaluation and analysis

Per KDB447498D01, when the sum of SAR is larger than the limit, SAR test exclusion is determined by the SAR sum to peak location separation ratio(SPLSR).

The simultaneous transmitting antennas in each operating mode and exposure condition combination must be considered one pair at a time to determine the SAR to peak location separation ratio to qualify for test exclusion.

The ratio is determined by **(SAR1 + SAR2)^1.5/Ri**, rounded to two decimal digits, and must be **≤ 0.04** for all antenna pairs in the configuration to qualify for 1-g SAR test exclusion.

SAR1 and SAR2 are the highest reported or estimated SAR for each antenna in the pair, and Ri is the separation distance between the peak SAR locations for the antenna pair in mm.

When standalone test exclusion applies, SAR is estimated; the peak location is assumed to be at the feed-point or geometric center of the antenna.

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Simultaneous Transmission Combination

			Reported SAR				Scenario1	Scenario2	Scenario3
	Exposure Position		1	2	4	6	1+6	2+6	4+6
			WWAN	2.4GHz WLAN Ant 1	5GHz WLAN Ant 1	Bluetooth Ant 1	Summed	Summed	Summed
			10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)
LTE Band 2	Back Surface	0	0.280	0.168	0.152	0.001	0.281	0.169	0.153
	Top Edge	0	0.248	0.144	0.764	0.007	0.255	0.151	0.771
	Curve of Back Surface	0	0.135	0.106	0.040	0.001	0.136	0.107	0.041
	Left Edge	0	-	0.717	0.574	0.128	-	0.845	0.702
	Right Edge	0	3.341	0.001	0.015	0.001	3.342	0.002	0.016
LTE Band 4	Back Surface	0	0.360	0.168	0.152	0.001	0.361	0.169	0.153
	Top Edge	0	0.379	0.144	0.764	0.007	0.386	0.151	0.771
	Curve of Back Surface	0	0.073	0.106	0.040	0.001	0.074	0.107	0.041
	Left Edge	0	-	0.717	0.574	0.128	-	0.845	0.702
	Right Edge	0	3.882	0.001	0.015	0.001	3.883	0.002	0.016
LTE Band 5	Back Surface	0	0.143	0.168	0.152	0.001	0.144	0.169	0.153
	Top Edge	0	0.316	0.144	0.764	0.007	0.323	0.151	0.771
	Curve of Back Surface	0	0.132	0.106	0.040	0.001	0.133	0.107	0.041
	Left Edge	0	-	0.717	0.574	0.128	-	0.845	0.702
	Right Edge	0	1.009	0.001	0.015	0.001	1.010	0.002	0.016
LTE Band 12	Back Surface	0	0.133	0.168	0.152	0.001	0.134	0.169	0.153
	Top Edge	0	0.563	0.144	0.764	0.007	0.570	0.151	0.771
	Curve of Back Surface	0	0.166	0.106	0.040	0.001	0.167	0.107	0.041
	Left Edge	0	-	0.717	0.574	0.128	-	0.845	0.702
	Right Edge	0	0.815	0.001	0.015	0.001	0.816	0.002	0.016
LTE Band 13	Back Surface	0	0.137	0.168	0.152	0.001	0.138	0.169	0.153
	Top Edge	0	0.359	0.144	0.764	0.007	0.366	0.151	0.771
	Curve of Back Surface	0	0.017	0.106	0.040	0.001	0.018	0.107	0.041
	Left Edge	0	-	0.717	0.574	0.128	-	0.845	0.702
	Right Edge	0	0.837	0.001	0.015	0.001	0.838	0.002	0.016
LTE Band 17	Back Surface	0	0.110	0.168	0.152	0.001	0.111	0.169	0.153
	Top Edge	0	0.524	0.144	0.764	0.007	0.531	0.151	0.771
	Curve of Back Surface	0	0.149	0.106	0.040	0.001	0.150	0.107	0.041
	Left Edge	0	-	0.717	0.574	0.128	-	0.845	0.702
	Right Edge	0	0.728	0.001	0.015	0.001	0.729	0.002	0.016
LTE Band 66	Back Surface	0	0.373	0.168	0.152	0.001	0.374	0.169	0.153
	Top Edge	0	0.329	0.144	0.764	0.007	0.336	0.151	0.771
	Curve of Back Surface	0	0.122	0.106	0.040	0.001	0.123	0.107	0.041
	Left Edge	0	-	0.717	0.574	0.128	-	0.845	0.702
	Right Edge	0	3.737	0.001	0.015	0.001	3.738	0.002	0.016

7.4 Conclusion

The simultaneous transmission is compliant because both SAR sum and/or SPLSR are less than their corresponding criteria.

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8 INSTRUMENTS LIST

SAR Test Site: SAR1					
Manufacturer	**Device**	**Type**	**Serial number**	**Date of last calibration**	**Date of next calibration**
SPEAG	Dosimetric E-Field Probe	EX3DV4	3938	Jan/25/2022	Jan/24/2023
SPEAG	System Validation Dipole	D750V3	1015	Oct/14/2021	Oct/13/2022
SPEAG	System Validation Dipole	D835V2	4d063	Oct/18/2021	Oct/17/2022
SPEAG	System Validation Dipole	D1750V2	1008	Oct/19/2021	Oct/18/2022
SPEAG	System Validation Dipole	D1900V2	5d173	Apr/28/2022	Apr/27/2023
SPEAG	System Validation Dipole	D2450V2	727	Apr/25/2022	Apr/24/2023
SPEAG	System Validation Dipole	D5GHzV2	1023	Jan/27/2022	Jan/26/2023
SPEAG	Data acquisition Electronics	DAE4	547	Mar/23/2022	Mar/22/2023
SPEAG	Software	DASY 52 V52.10.4	N/A	Calibration not required	Calibration not required
SPEAG	Phantom	ELI	N/A	Calibration not required	Calibration not required
SPEAG	Dielectric Assessment Kit	DAKS-3.5	1053	Feb/28/2022	Feb/27/2023
R&S	Radio Communication Test	CMW 500	165070	Oct/12/2021	Oct/11/2022
Keysight	UXM 5G Wireless Test Platform	E7515B	MY60101215	Jan/21/2022	Jan/20/2023
Agilent	Dual-directional coupler	778D	MY48220468	Aug/16/2021	Aug/15/2022
Agilent	Dual-directional coupler	772D	MY46151242	Aug/16/2021	Aug/15/2022
Agilent	MXG Analog Signal Generator	N5181A	MY50144143	May/19/2022	May/18/2023
R&S	MXG Analog Signal Generator	SMB100A03	182996	Dec/08/2021	Dec/07/2022
EMCI	Amplifier	ZHL-42	980189	Calibration not required	Calibration not required
EMCI	Amplifier	ZVE-8G	980190	Calibration not required	Calibration not required
Anritsu	Power Meter	ML2496A	1337004	Oct/08/2021	Oct/07/2022
Anritsu	Power Sensor	MA2411B	1306052	Oct/08/2021	Oct/07/2022
R&S	Power Sensor	NRP18S	101973	Jan/22/2022	Jan/21/2023
LKM	Digital thermometer	DTM3000	EC14010603	Nov/09/2021	Nov/08/2022
TECPEL	Digital thermometer	DTM-303A	TP130075	Oct/28/2021	Oct/27/2022

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9 UNCERTAINTY BUDGET

Measurement Uncertainty evaluation template for DUT SAR test (3-6G)

A	c	D	e		f	g	h=c * f / e	i=c * g / e	k
Source of Uncertainty	Tolerance/ Uncertainty	Probability Distributio	Div	Div Value	ci (1g)	ci (10g)	Standard uncertainty	Standard uncertainty	vi, or Veff
Measurement system									
Probe calibration	6.55%	N	1	1	1	1	6.55%	6.55%	∞
Isotropy , Axial	3.50%	R	√3	1.732	1	1	2.02%	2.02%	∞
Isotropy, Hemispherical	9.60%	R	√3	1.732	1	1	5.54%	5.54%	∞
Modulation Response	2.40%	R	√3	1.732	1	1	1.40%	1.40%	∞
Boundary Effect	1.00%	R	√3	1.732	1	1	0.58%	0.58%	∞
Linearity	4.70%	R	√3	1.732	1	1	2.71%	2.71%	∞
Detection Limits	1.00%	R	√3	1.732	1	1	0.58%	0.58%	∞
Readout Electronics	0.30%	N	1	1	1	1	0.30%	0.30%	∞
Response time	0.80%	R	√3	1.732	1	1	0.46%	0.46%	∞
Integration Time	2.60%	R	√3	1.732	1	1	1.50%	1.50%	∞
Measurement drift (class A evaluation)	1.75%	R	√3	1.732	1	1	1.01%	1.01%	∞
RF ambient condition - noise	3.00%	R	√3	1.732	1	1	1.73%	1.73%	∞
RF ambient conditions - reflections	3.00%	R	√3	1.732	1	1	1.73%	1.73%	∞
Probe positioner Mechanical restrictions	0.40%	R	√3	1.732	1	1	0.23%	0.23%	∞
Probe Positioning with respect to phantom shell	2.90%	R	√3	1.732	1	1	1.67%	1.67%	∞
Post-processing	1.00%	R	√3	1.732	1	1	0.58%	0.58%	∞
Max SAR Eval	1.00%	R	√3	1.732	1	1	0.58%	0.58%	∞
Test Sample related									
Test sample positioning	2.90%	N	1	1	1	1	2.90%	2.90%	M-1
Device Holder Uncertainty	3.60%	N	1	1	1	1	3.60%	3.60%	M-1
Drift of output power	5.00%	R	√3	1.732	1	1	2.89%	2.89%	∞
Phantom and Setup									
Phantom Uncertainty	4.00%	R	√3	1.732	1	1	2.31%	2.31%	∞
Liquid permittivity (mea.)	0.51%	N	1	1	0.64	0.43	0.33%	0.22%	M
Liquid Conductivity (mea.)	0.61%	N	1	1	0.6	0.49	0.37%	0.30%	M
Combined standard uncertainty		RSS					11.73%	11.71%	
Expant uncertainty (95% confidence interval), K=2							23.45%	23.43%	

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Measurement Uncertainty evaluation template for DUT SAR test (0.3-3G)

A	c	D	e		f	g	h=c * f / e	i=c * g / e	k
Source of Uncertainty	Tolerance/ Uncertainty	Probability Distributio	Div	Div Value	ci (1g)	ci (10g)	Standard uncertainty	Standard uncertainty	vi, or Veff
Measurement system									
Probe calibration	6.00%	N	1	1	1	1	6.00%	6.00%	∞
Isotropy , Axial	3.50%	R	√3	1.732	1	1	2.02%	2.02%	∞
Isotropy, Hemispherical	9.60%	R	√3	1.732	1	1	5.54%	5.54%	∞
Modulation Response	2.40%	R	√3	1.732	1	1	1.40%	1.40%	∞
Boundary Effect	1.00%	R	√3	1.732	1	1	0.58%	0.58%	∞
Linearity	4.70%	R	√3	1.732	1	1	2.71%	2.71%	∞
Detection Limits	1.00%	R	√3	1.732	1	1	0.58%	0.58%	∞
Readout Electronics	0.30%	N	1	1	1	1	0.30%	0.30%	∞
Response time	0.80%	R	√3	1.732	1	1	0.46%	0.46%	∞
Integration Time	2.60%	R	√3	1.732	1	1	1.50%	1.50%	∞
Measurement drift (class A evaluation)	1.75%	R	√3	1.732	1	1	1.01%	1.01%	∞
RF ambient condition - noise	3.00%	R	√3	1.732	1	1	1.73%	1.73%	∞
RF ambient conditions - reflections	3.00%	R	√3	1.732	1	1	1.73%	1.73%	∞
Probe positioner Mechanical restrictions	0.40%	R	√3	1.732	1	1	0.23%	0.23%	∞
Probe Positioning with respect to phantom shell	2.90%	R	√3	1.732	1	1	1.67%	1.67%	∞
Post-processing	1.00%	R	√3	1.732	1	1	0.58%	0.58%	∞
Max SAR Eval	1.00%	R	√3	1.732	1	1	0.58%	0.58%	∞
Test Sample related									
Test sample positioning	2.90%	N	1	1	1	1	2.90%	2.90%	M-1
Device Holder Uncertainty	3.60%	N	1	1	1	1	3.60%	3.60%	M-1
Drift of output power	5.00%	R	√3	1.732	1	1	2.89%	2.89%	∞
Phantom and Setup									
Phantom Uncertainty	4.00%	R	√3	1.732	1	1	2.31%	2.31%	∞
Liquid permittivity (mea.)	0.38%	N	1	1	0.64	0.43	0.24%	0.16%	M
Liquid Conductivity (mea.)	0.80%	N	1	1	0.6	0.49	0.48%	0.39%	M
Combined standard uncertainty		RSS					11.43%	11.42%	
Expant uncertainty (95% confidence interval), K=2							22.86%	22.83%	

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10 SAR MEASUREMENT RESULTS

Date: 2022/7/6

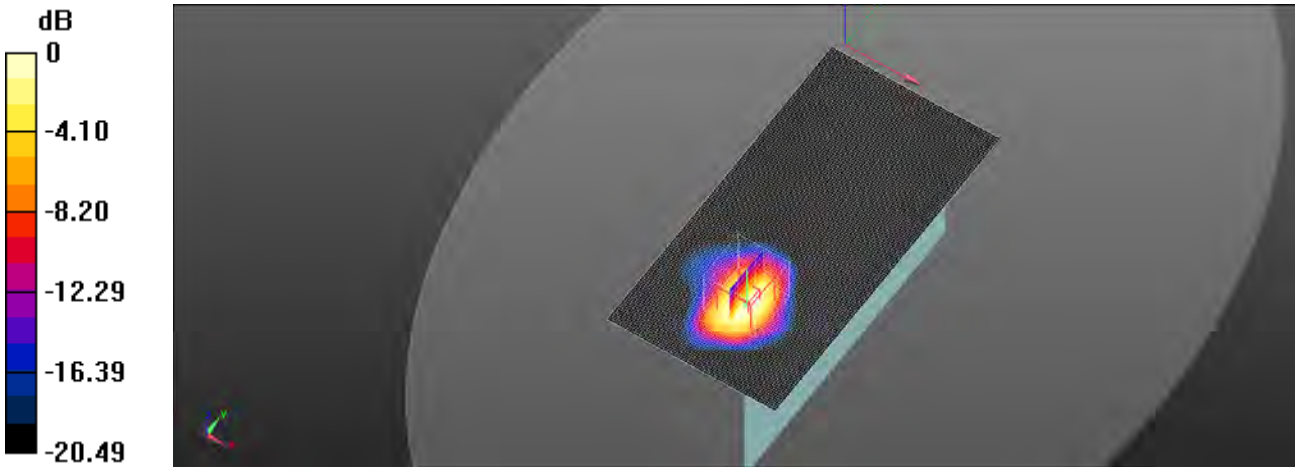
ID: 001
Report No. : TESA2206000142E5
LTE Band 2 (20MHz)_Product specific 10g-SAR_Right Edge_CH 18700_QPSK_1-0_0mm
Communication System: LTE; Frequency: 1860 MHz; Duty Cycle: 1:1
Medium parameters used: f = 1860 MHz; σ = 1.396 S/m; ε_r = 39.85; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.3°C; Liquid temperature: 21.6°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(7.92, 7.92, 7.92); Calibrated: 2022/1/25
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2022/3/23
- Phantom: ELI
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (71x141x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 9.76 W/kg

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.185 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 12.1 W/kg
SAR(1 g) = 6.41 W/kg; SAR(10 g) = 3.14 W/kg
Smallest distance from peaks to all points 3 dB below = 8.3 mm
Ratio of SAR at M2 to SAR at M1 = 55.9%
Maximum value of SAR (measured) = 9.00 W/kg



0 dB = 9.00 W/kg = 9.54 dBW/kg

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Date: 2022/7/6

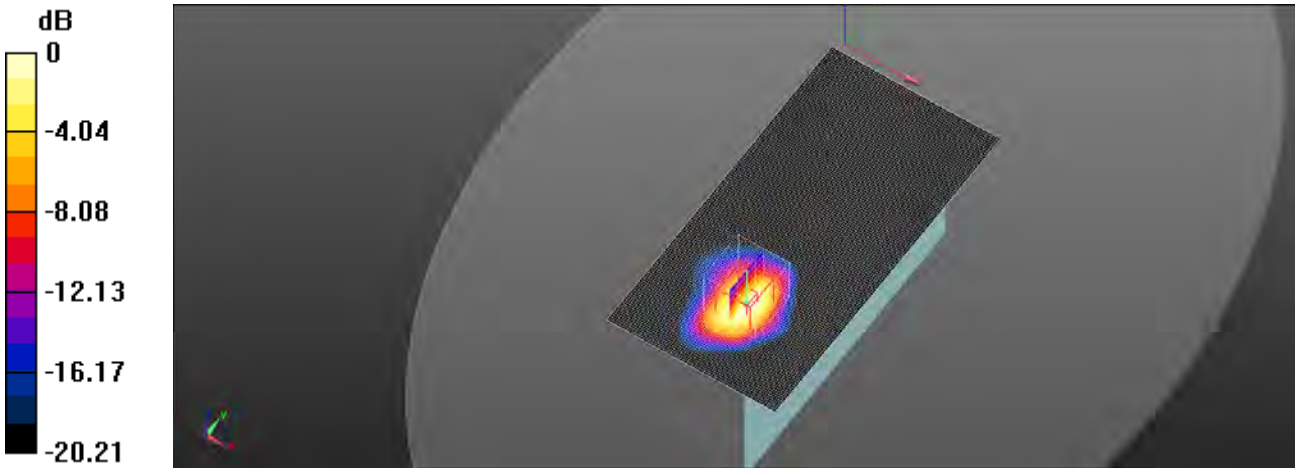
ID: 002
Report No. : TESA2206000142E5
LTE Band 4 (20MHz)_Product specific 10g-SAR_Right Edge_CH 20175_QPSK_1-0_0mm
Communication System: LTE; Frequency: 1732.5 MHz; Duty Cycle: 1:1
Medium parameters used: f = 1732.5 MHz; σ = 1.354 S/m; ε_r = 39.957; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.3°C; Liquid temperature: 21.6°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(8.33, 8.33, 8.33); Calibrated: 2022/1/25
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2022/3/23
- Phantom: ELI
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (71x141x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 9.88 W/kg

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.123 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 12.7 W/kg
SAR(1 g) = 6.83 W/kg; SAR(10 g) = 3.35 W/kg
Smallest distance from peaks to all points 3 dB below = 8.9 mm
Ratio of SAR at M2 to SAR at M1 = 56.3%
Maximum value of SAR (measured) = 9.56 W/kg



0 dB = 9.56 W/kg = 9.80 dBW/kg

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Date: 2022/7/5

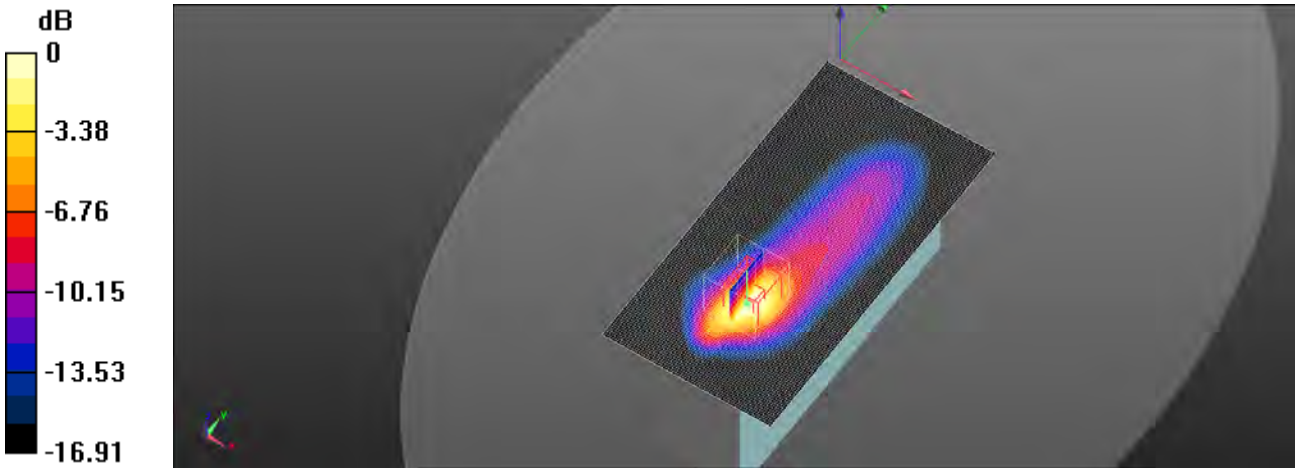
ID: 003
Report No. : TESA2206000142E5
LTE Band 5 (10MHz)_Product specific 10g-SAR_Right Edge_CH 20600_QPSK_1-25_0mm
Communication System: LTE; Frequency: 844 MHz; Duty Cycle: 1:1
Medium parameters used: f = 844 MHz; σ = 0.91 S/m; ε_r = 41.372; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.1°C; Liquid temperature: 21.8°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(9.29, 9.29, 9.29); Calibrated: 2022/1/25
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2022/3/23
- Phantom: ELI
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (71x141x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 2.54 W/kg

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 17.04 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 3.70 W/kg
SAR(1 g) = 1.77 W/kg; SAR(10 g) = 0.885 W/kg
Smallest distance from peaks to all points 3 dB below = 9.6 mm
Ratio of SAR at M2 to SAR at M1 = 51%
Maximum value of SAR (measured) = 2.52 W/kg



0 dB = 2.52 W/kg = 4.01 dBW/kg

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Date: 2022/7/5

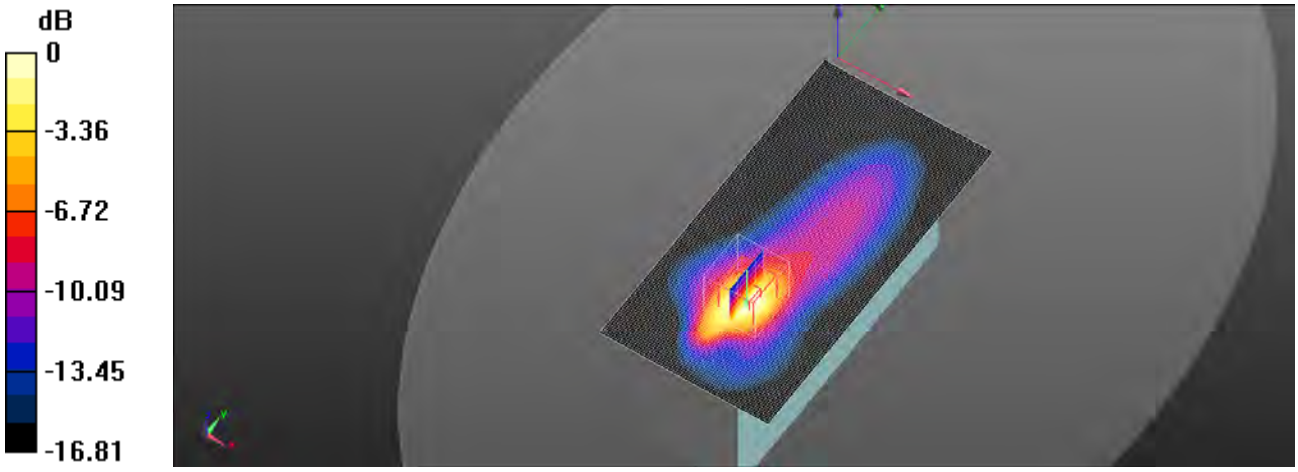
ID: 004
Report No. : TESA2206000142E5
LTE Band 12 (10MHz)_Product specific 10g-SAR_Right Edge_CH 23095_QPSK_1-25_0mm
Communication System: LTE; Frequency: 707.5 MHz; Duty Cycle: 1:1
Medium parameters used: f = 707.5 MHz; σ = 0.887 S/m; ε_r = 42.010; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.1°C; Liquid temperature: 21.8°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(9.6, 9.6, 9.6); Calibrated: 2022/1/25
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2022/3/23
- Phantom: ELI
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (71x141x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 2.18 W/kg

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 15.40 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 3.05 W/kg
SAR(1 g) = 1.44 W/kg; SAR(10 g) = 0.728 W/kg
Smallest distance from peaks to all points 3 dB below = 10.1 mm
Ratio of SAR at M2 to SAR at M1 = 50.2%
Maximum value of SAR (measured) = 2.15 W/kg



0 dB = 2.15 W/kg = 3.33 dBW/kg

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Date: 2022/7/5

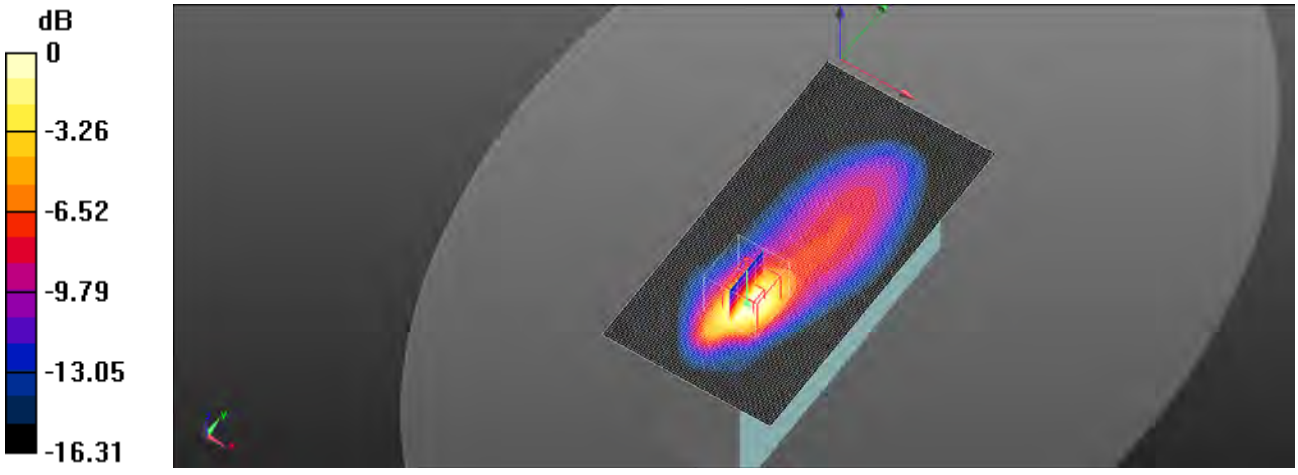
ID: 005
Report No. : TESA2206000142E5
LTE Band 13 (10MHz)_Product specific 10g-SAR_Right Edge_CH 23230_QPSK_1-0_0mm
Communication System: LTE; Frequency: 782 MHz; Duty Cycle: 1:1
Medium parameters used: f = 782 MHz; σ = 0.893 S/m; ε_r = 41.625; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.1°C; Liquid temperature: 21.8°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(9.6, 9.6, 9.6); Calibrated: 2022/1/25
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2022/3/23
- Phantom: ELI
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (71x141x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 2.60 W/kg

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 19.27 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 3.25 W/kg
SAR(1 g) = 1.62 W/kg; SAR(10 g) = 0.831 W/kg
Smallest distance from peaks to all points 3 dB below = 9.6 mm
Ratio of SAR at M2 to SAR at M1 = 55.2%
Maximum value of SAR (measured) = 2.22 W/kg



0 dB = 2.22 W/kg = 3.46 dBW/kg

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Date: 2022/7/5

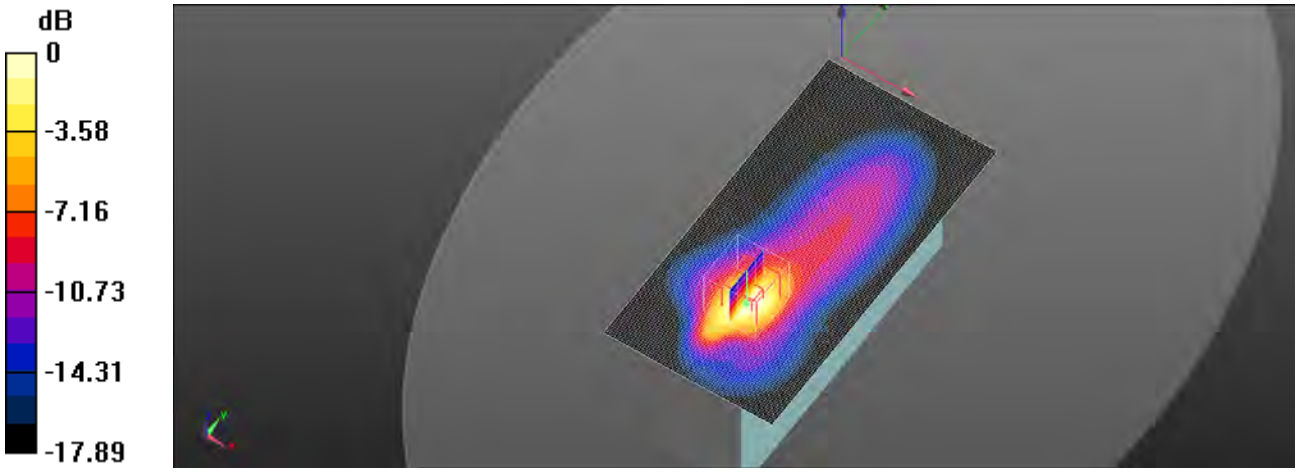
ID: 006
Report No. : TESA2206000142E5
LTE Band 17 (10MHz)_Product specific 10g-SAR_Right Edge_CH 23780_QPSK_1-0_0mm
Communication System: LTE; Frequency: 709 MHz; Duty Cycle: 1:1
Medium parameters used: f = 709 MHz; σ = 0.888 S/m; ε_r = 42.005; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.1°C; Liquid temperature: 21.8°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(9.6, 9.6, 9.6); Calibrated: 2022/1/25
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2022/3/23
- Phantom: ELI
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (71x141x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 2.24 W/kg

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 15.47 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 3.08 W/kg
SAR(1 g) = 1.44 W/kg; SAR(10 g) = 0.720 W/kg
Smallest distance from peaks to all points 3 dB below = 10.7 mm
Ratio of SAR at M2 to SAR at M1 = 52.1%
Maximum value of SAR (measured) = 2.14 W/kg



0 dB = 2.14 W/kg = 3.31 dBW/kg

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Date: 2022/7/6

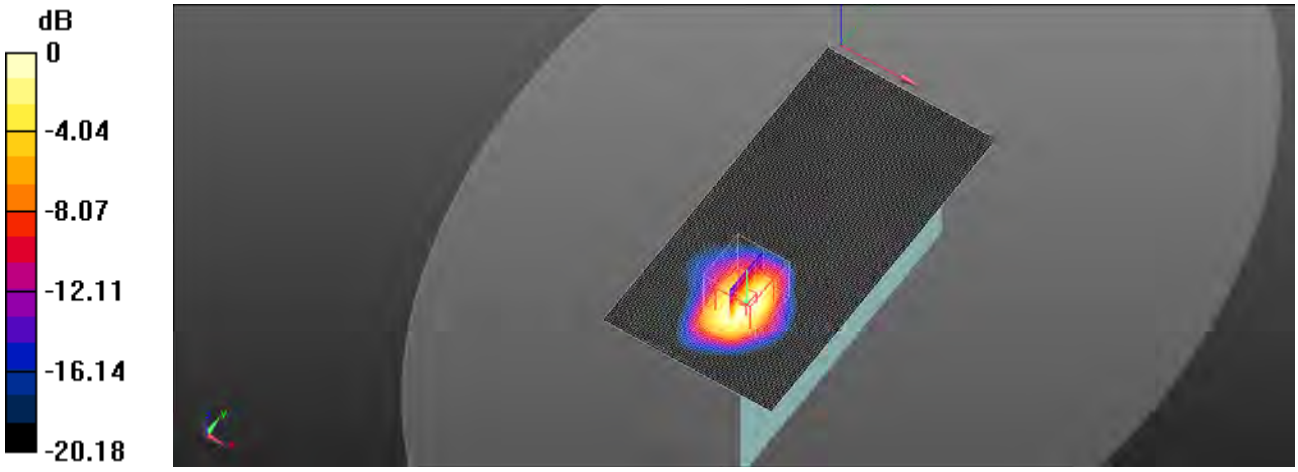
ID: 007
Report No. : TESA2206000142E5
LTE Band 66 (20MHz)_Product specific 10g-SAR_Right Edge_CH 132572_QPSK_1-99_0mm
Communication System: LTE; Frequency: 1770 MHz; Duty Cycle: 1:1
Medium parameters used: f = 1770 MHz; σ = 1.376 S/m; ε_r = 39.897; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.3°C; Liquid temperature: 21.6°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(8.33, 8.33, 8.33); Calibrated: 2022/1/25
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2022/3/23
- Phantom: ELI
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (71x141x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 9.86 W/kg

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.004 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 12.1 W/kg
SAR(1 g) = 6.65 W/kg; SAR(10 g) = 3.3 W/kg
Smallest distance from peaks to all points 3 dB below = 10.7 mm
Ratio of SAR at M2 to SAR at M1 = 60.2%
Maximum value of SAR (measured) = 8.96 W/kg



0 dB = 8.96 W/kg = 9.52 dBW/kg

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Date: 2022/7/7

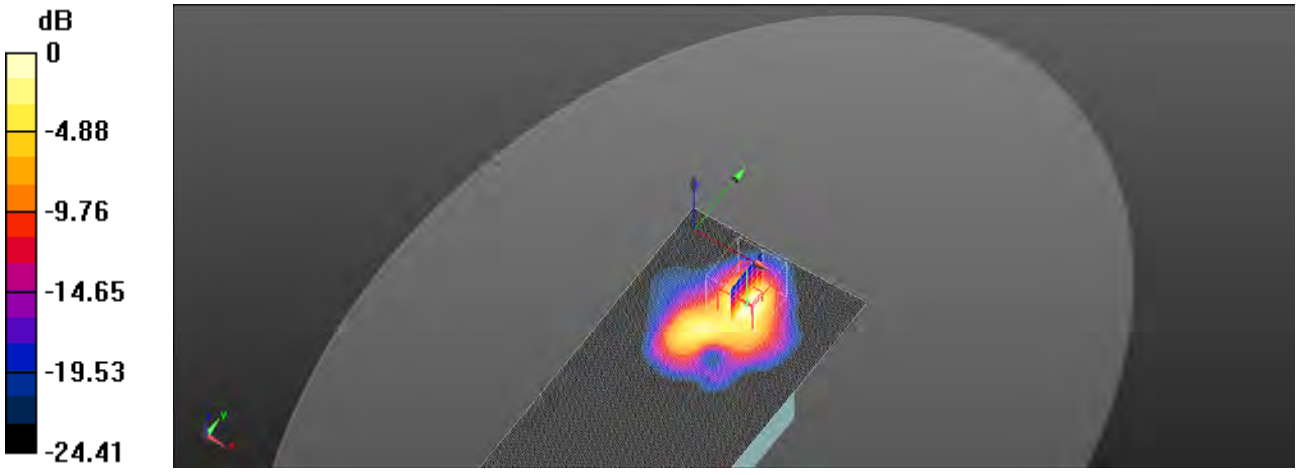
ID: 008
Report No. : TESA2206000142E5
WLAN 802.11b_Product specific 10g-SAR_Left Edge_CH 1_0mm_Ant1
Communication System: WLAN; Frequency: 2412 MHz; Duty Cycle: 1:1.011
Medium parameters used: f = 2412 MHz; σ = 1.768 S/m; ε_r = 39.118; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.5°C; Liquid temperature: 21.4°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(7.39, 7.39, 7.39); Calibrated: 2022/1/25
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2022/3/23
- Phantom: ELI
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (91x181x1): Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 3.02 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 0.9595 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 4.84 W/kg
SAR(1 g) = 1.75 W/kg; SAR(10 g) = 0.704 W/kg
Smallest distance from peaks to all points 3 dB below = 7.2 mm
Ratio of SAR at M2 to SAR at M1 = 58%
Maximum value of SAR (measured) = 3.02 W/kg



0 dB = 3.02 W/kg = 4.80 dBW/kg

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Date: 2022/7/7

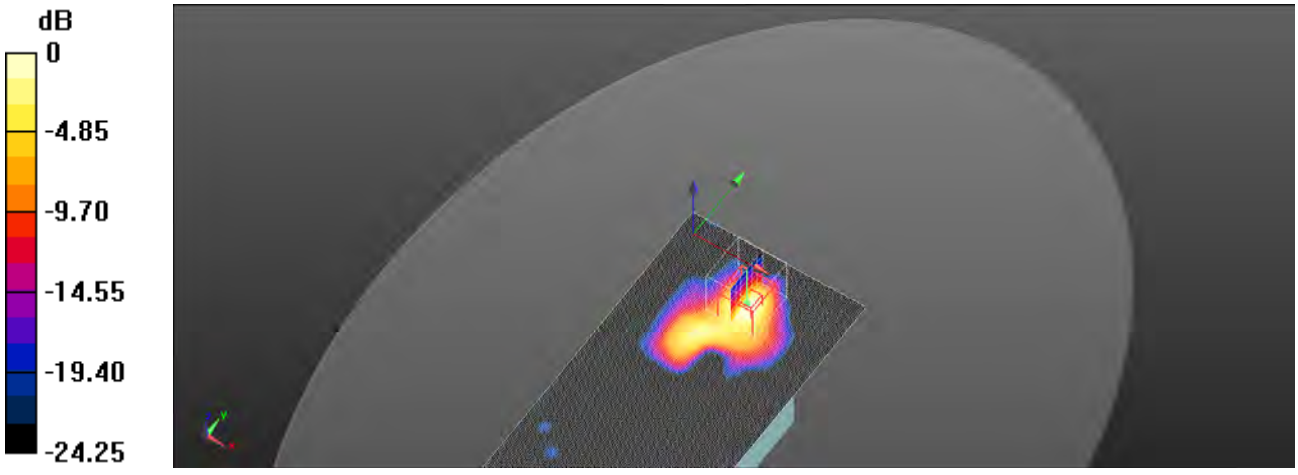
ID: 009
Report No. : TESA2206000142E5
Bluetooth(GFSK)_Product specific 10g-SAR_Left Edge_CH 0_0mm_Ant1
Communication System: Bluetooth; Frequency: 2402 MHz; Duty Cycle: 1:1.302
Medium parameters used: f = 2402 MHz; σ = 1.759 S/m; ε_r = 39.135; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.5°C; Liquid temperature: 21.4°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(7.39, 7.39, 7.39); Calibrated: 2022/1/25
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2022/3/23
- Phantom: ELI
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (91x181x1): Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 0.376 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 0.3700 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 0.572 W/kg
SAR(1 g) = 0.206 W/kg; SAR(10 g) = 0.082 W/kg
Smallest distance from peaks to all points 3 dB below = 7.2 mm
Ratio of SAR at M2 to SAR at M1 = 56%
Maximum value of SAR (measured) = 0.366 W/kg



0 dB = 0.366 W/kg = -4.37 dBW/kg

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Date: 2022/7/8

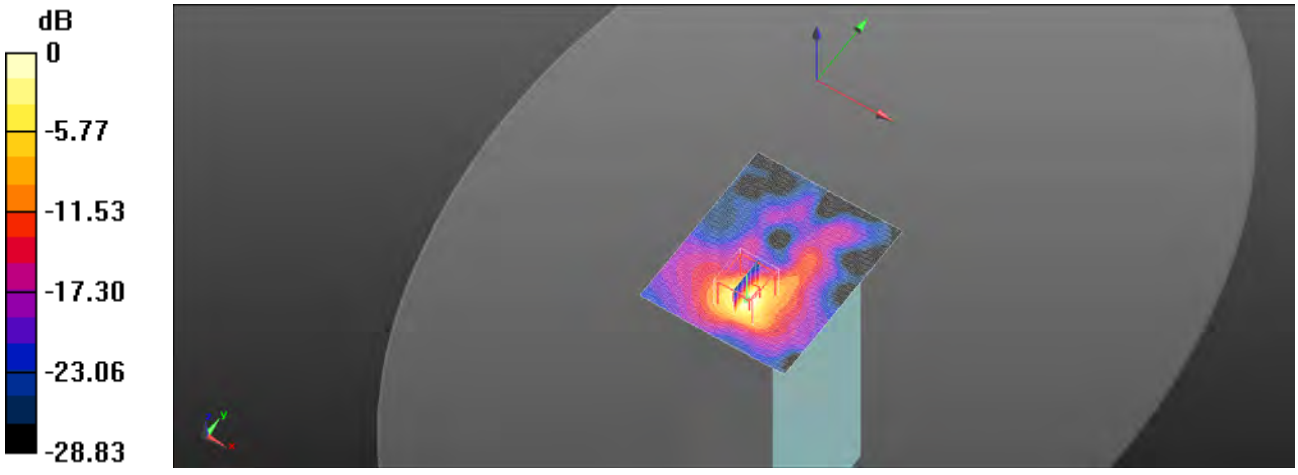
ID: 010
Report No. : TESA2206000142E5
WLAN 802.11n(20M) 5.2G_Product specific 10g-SAR_Top Edge_CH 44_0mm_Ant1
Communication System: WLAN; Frequency: 5220 MHz; Duty Cycle: 1:1.013
Medium parameters used: f = 5220 MHz; σ = 4.652 S/m; ε_r = 35.813; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.7°C; Liquid temperature: 21.9°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(5.05, 5.05, 5.05); Calibrated: 2022/1/25
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2022/3/23
- Phantom: ELI
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (91x111x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 3.87 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 4.908 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 7.52 W/kg
SAR(1 g) = 2 W/kg; SAR(10 g) = 0.568 W/kg
Smallest distance from peaks to all points 3 dB below = 6.9 mm
Ratio of SAR at M2 to SAR at M1 = 58.9%
Maximum value of SAR (measured) = 4.10 W/kg



0 dB = 4.10 W/kg = 6.13 dBW/kg

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Date: 2022/7/8

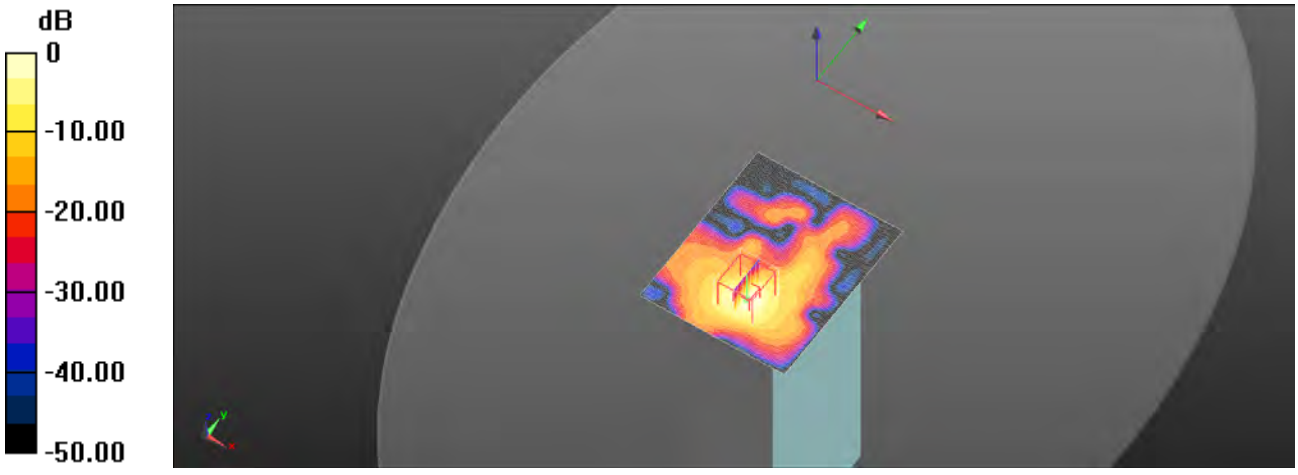
ID: 011
Report No. : TESA2206000142E5
WLAN 802.11n(20M) 5.3G_Product specific 10g-SAR_Top Edge_CH 64_0mm_Ant1
Communication System: WLAN; Frequency: 5320 MHz; Duty Cycle: 1:1.013
Medium parameters used: f = 5320 MHz; σ = 4.754 S/m; ε_r = 35.699; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.7°C; Liquid temperature: 21.9°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(5.05, 5.05, 5.05); Calibrated: 2022/1/25
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2022/3/23
- Phantom: ELI
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (91x111x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 4.35 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 4.545 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 8.26 W/kg
SAR(1 g) = 2.21 W/kg; SAR(10 g) = 0.602 W/kg
Smallest distance from peaks to all points 3 dB below = 6.9 mm
Ratio of SAR at M2 to SAR at M1 = 58.9%
Maximum value of SAR (measured) = 4.53 W/kg



0 dB = 4.53 W/kg = 6.56 dBW/kg

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Date: 2022/7/8

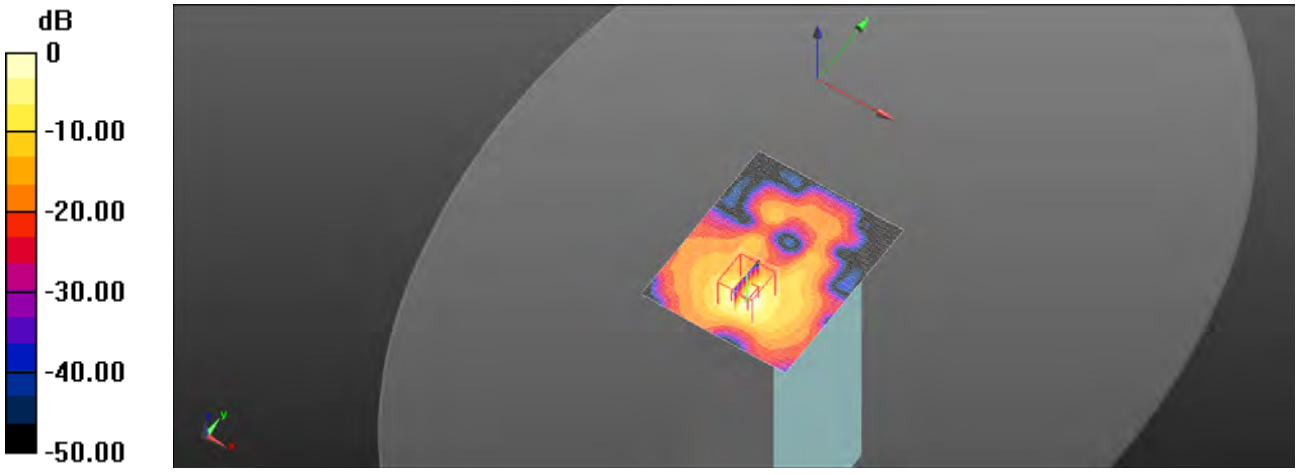
ID: 012
Report No. : TESA2206000142E5
WLAN 802.11n(20M) 5.6G_Product specific 10g-SAR_Top Edge_CH 100_0mm_Ant1
Communication System: WLAN; Frequency: 5500 MHz; Duty Cycle: 1:1.013
Medium parameters used: f = 5500 MHz; σ = 4.939 S/m; ε_r = 35.493; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.7°C; Liquid temperature: 21.9°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(4.6, 4.6, 4.6); Calibrated: 2022/1/25
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2022/3/23
- Phantom: ELI
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (91x111x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 5.79 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 4.622 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 11.8 W/kg
SAR(1 g) = 2.88 W/kg; SAR(10 g) = 0.722 W/kg
Smallest distance from peaks to all points 3 dB below = 6.1 mm
Ratio of SAR at M2 to SAR at M1 = 56.8%
Maximum value of SAR (measured) = 6.22 W/kg



0 dB = 6.22 W/kg = 7.94 dBW/kg

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Date: 2022/7/8

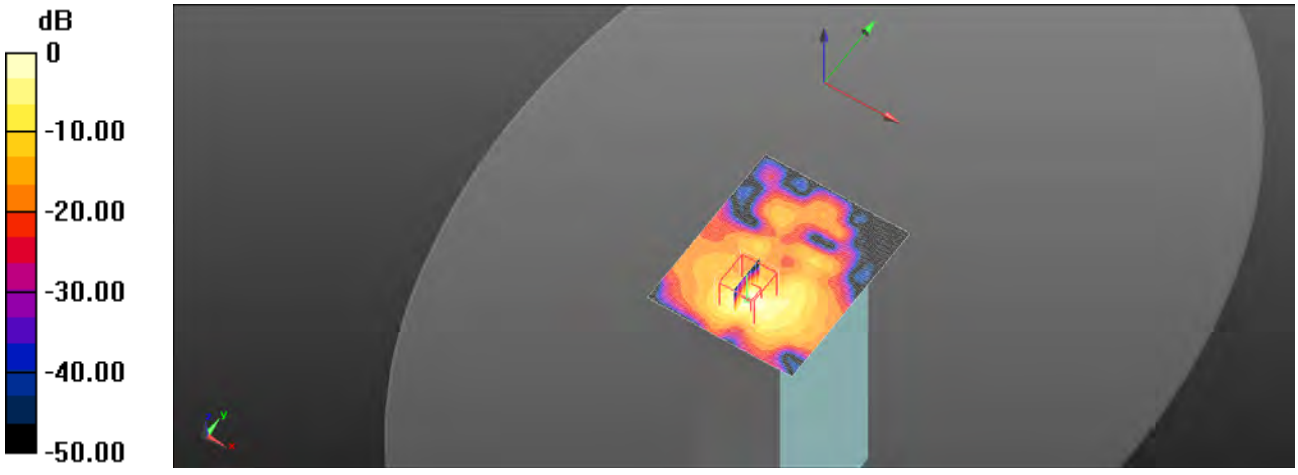
ID: 013
Report No. : TESA2206000142E5
WLAN 802.11n(20M) 5.8G_Product specific 10g-SAR_Top Edge_CH 157_0mm_Ant1
Communication System: WLAN; Frequency: 5785 MHz; Duty Cycle: 1:1.013
Medium parameters used: f = 5785 MHz; σ = 5.229 S/m; ε_r = 35.167; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.7°C; Liquid temperature: 21.9°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(4.65, 4.65, 4.65); Calibrated: 2022/1/25
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2022/3/23
- Phantom: ELI
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (91x111x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 4.90 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 3.771 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 11.2 W/kg
SAR(1 g) = 2.38 W/kg; SAR(10 g) = 0.564 W/kg
Smallest distance from peaks to all points 3 dB below = 5.1 mm
Ratio of SAR at M2 to SAR at M1 = 54.9%
Maximum value of SAR (measured) = 5.19 W/kg



0 dB = 5.19 W/kg = 7.15 dBW/kg

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11 SAR SYSTEM CHECK RESULTS

Date: 2022/7/5

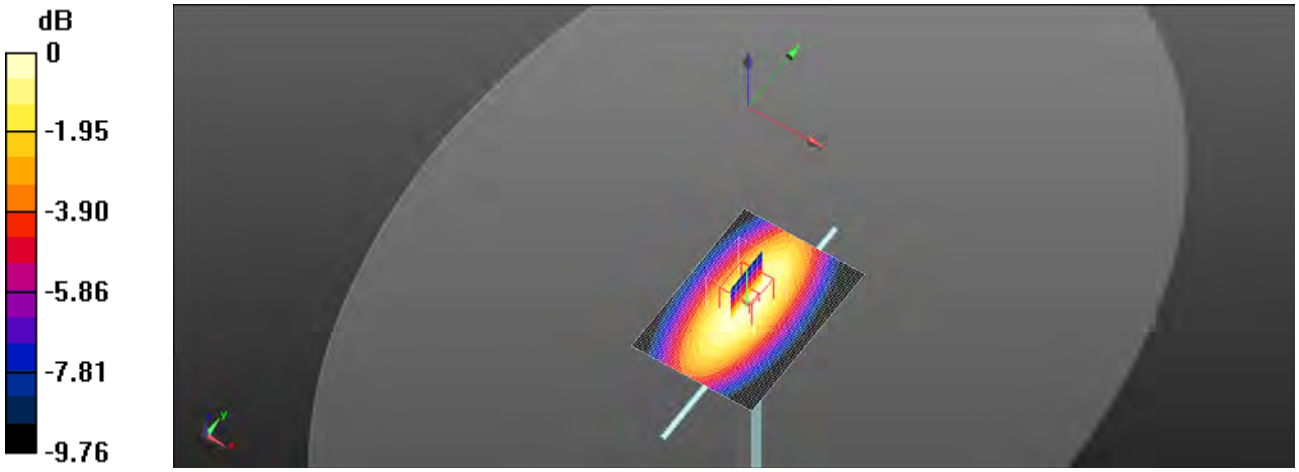
Report No. : TESA2206000142E5
Dipole 750 MHz_SN:1015
Communication System: CW; Frequency: 750 MHz; Duty Cycle: 1:1
Medium parameters used: f = 750 MHz; σ = 0.89 S/m; ε_r = 41.792; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.1°C; Liquid temperature: 21.8°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(9.6, 9.6, 9.6); Calibrated: 2022/1/25
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2022/3/23
- Phantom: ELI
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (51x71x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 2.48 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 60.02 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 2.93 W/kg
SAR(1 g) = 2.13 W/kg; SAR(10 g) = 1.43 W/kg
Smallest distance from peaks to all points 3 dB below = 11.4 mm
Ratio of SAR at M2 to SAR at M1 = 68.6%
Maximum value of SAR (measured) = 2.53 W/kg



0 dB = 2.53 W/kg = 4.02 dBW/kg

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Date: 2022/7/5

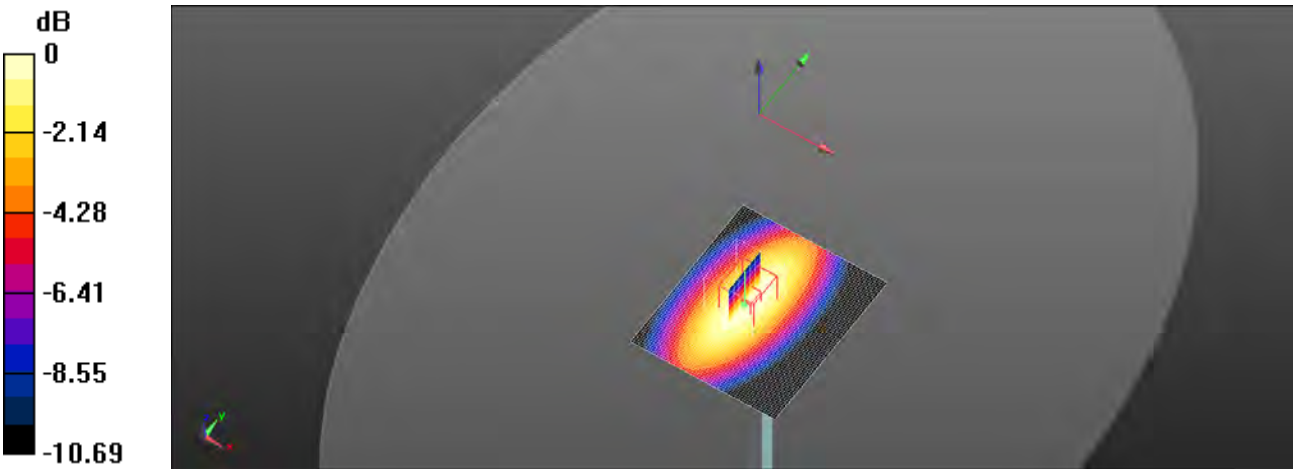
Report No. : TESA2206000142E5
Dipole 835 MHz_SN: 4d063
Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1
Medium parameters used: f = 835 MHz; σ = 0.907 S/m; ε_r = 41.404; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.1°C; Liquid temperature: 21.8°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(9.29, 9.29, 9.29); Calibrated: 2022/1/25
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2022/3/23
- Phantom: ELI
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (61x71x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 3.09 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 55.11 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 3.72 W/kg
SAR(1 g) = 2.38 W/kg; SAR(10 g) = 1.54 W/kg
Smallest distance from peaks to all points 3 dB below = 19.8 mm
Ratio of SAR at M2 to SAR at M1 = 66.3%
Maximum value of SAR (measured) = 3.15 W/kg



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

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Date: 2022/7/6

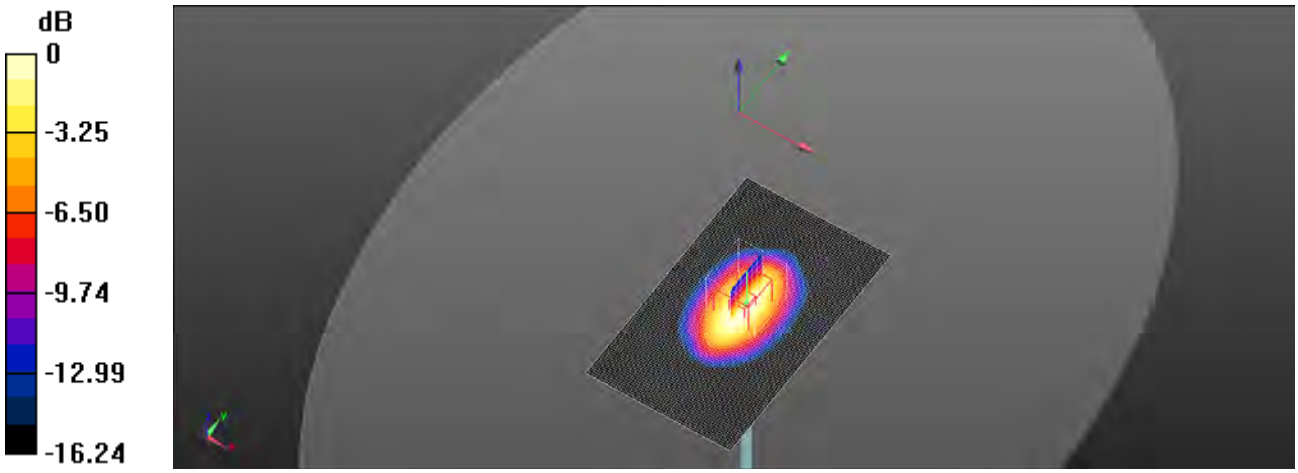
Report No. : TESA2206000142E5
Dipole 1750 MHz_SN:1008
Communication System: CW; Frequency: 1750 MHz; Duty Cycle: 1:1
Medium parameters used: f = 1750 MHz; σ = 1.364 S/m; ε_r = 39.929; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.3°C; Liquid temperature: 21.6°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(8.33, 8.33, 8.33); Calibrated: 2022/1/25
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2022/3/23
- Phantom: ELI
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (61x101x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 13.0 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 95.68 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 15.7 W/kg
SAR(1 g) = 9.31 W/kg; SAR(10 g) = 4.97 W/kg
Smallest distance from peaks to all points 3 dB below = 10 mm
Ratio of SAR at M2 to SAR at M1 = 57.6%
Maximum value of SAR (measured) = 12.4 W/kg



0 dB = 12.4 W/kg = 10.93 dBW/kg

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Date: 2022/7/6

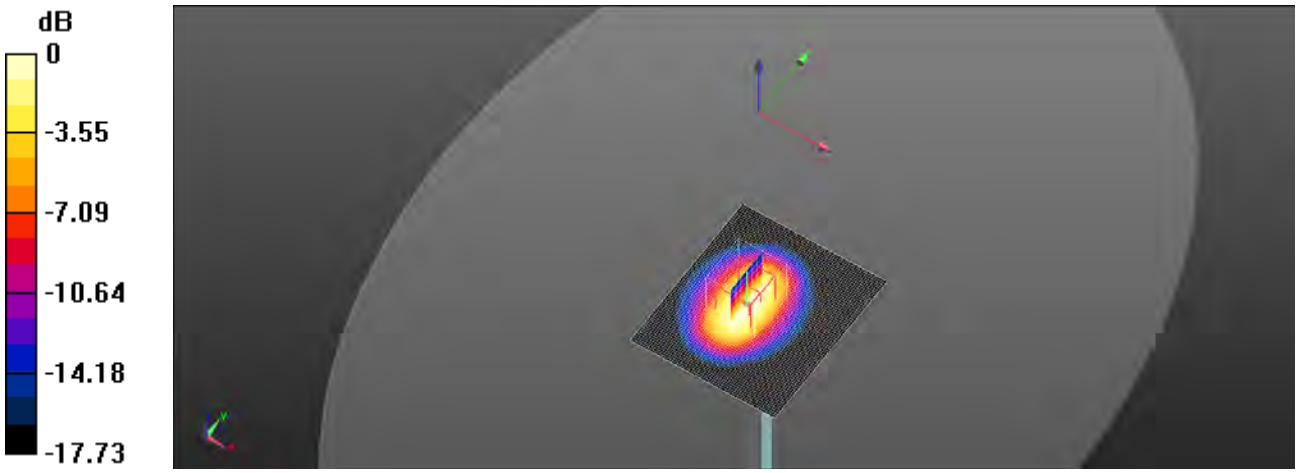
Report No. : TESA2206000142E5
Dipole 1900 MHz_SN: 5d173
Communication System: CW; Frequency: 1900 MHz; Duty Cycle: 1:1
Medium parameters used: f = 1900 MHz; σ = 1.396 S/m; ε_r = 39.85; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.3°C; Liquid temperature: 21.6°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(7.92, 7.92, 7.92); Calibrated: 2022/1/25
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2022/3/23
- Phantom: ELI
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (61x71x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 15.6 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 80.75 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 18.9 W/kg
SAR(1 g) = 10.27 W/kg; SAR(10 g) = 5.39 W/kg
Smallest distance from peaks to all points 3 dB below = 10.1 mm
Ratio of SAR at M2 to SAR at M1 = 53.6%
Maximum value of SAR (measured) = 14.7 W/kg



0 dB = 14.7 W/kg = 11.66 dBW/kg

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Date: 2022/7/7

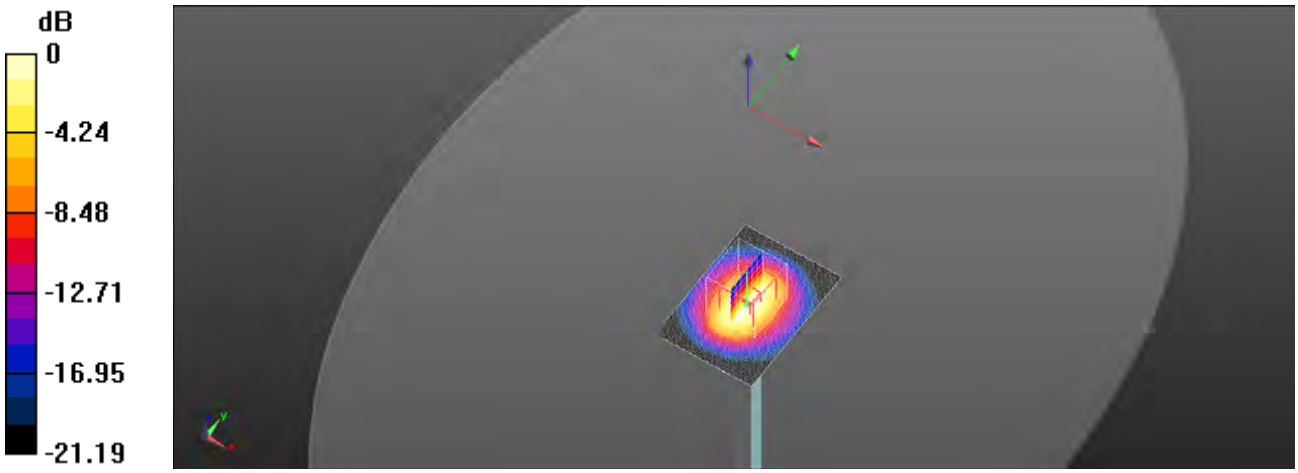
Report No. : TESA2206000142E5
Dipole 2450 MHz_SN:727
Communication System: CW; Frequency: 2450 MHz; Duty Cycle: 1:1
Medium parameters used: f = 2450 MHz; σ = 1.8 S/m; ε_r = 39.05; ρ = 1045 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.5°C; Liquid temperature: 21.4°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(7.39, 7.39, 7.39); Calibrated: 2022/1/25
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2022/3/23
- Phantom: ELI
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (51x71x1): Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 21.8 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 107.4 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 26.1 W/kg
SAR(1 g) = 13.54 W/kg; SAR(10 g) = 6.54 W/kg
Smallest distance from peaks to all points 3 dB below = 9.2 mm
Ratio of SAR at M2 to SAR at M1 = 50.1%
Maximum value of SAR (measured) = 19.6 W/kg



0 dB = 19.6 W/kg = 12.93 dBW/kg

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Date: 2022/7/8

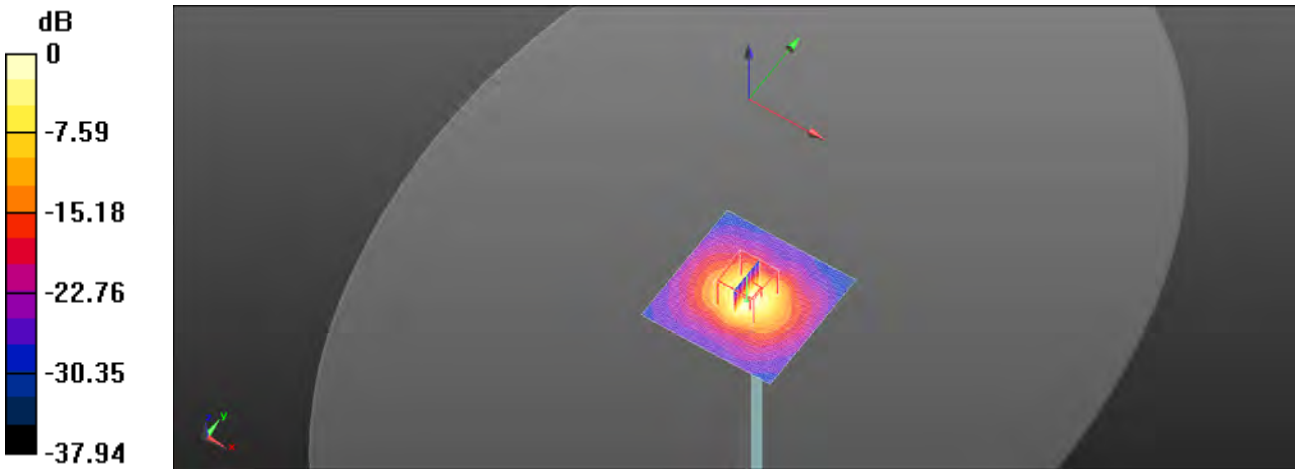
Report No. : TESA2206000142E5
Dipole 5250 MHz_SN:1023
Communication System: CW; Frequency: 5250 MHz; Duty Cycle: 1:1
Medium parameters used: f = 5250 MHz; σ = 4.683 S/m; ε_r = 35.779; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.7°C; Liquid temperature: 21.9°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(5.05, 5.05, 5.05); Calibrated: 2022/1/25
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2022/3/23
- Phantom: ELI
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (81x81x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 16.4 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 61.88 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 33.2 W/kg
SAR(1 g) = 8.33 W/kg; SAR(10 g) = 2.39 W/kg
Smallest distance from peaks to all points 3 dB below = 7.6 mm
Ratio of SAR at M2 to SAR at M1 = 56.1%
Maximum value of SAR (measured) = 17.4 W/kg



0 dB = 17.4 W/kg = 12.40 dBW/kg

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Date: 2022/7/8

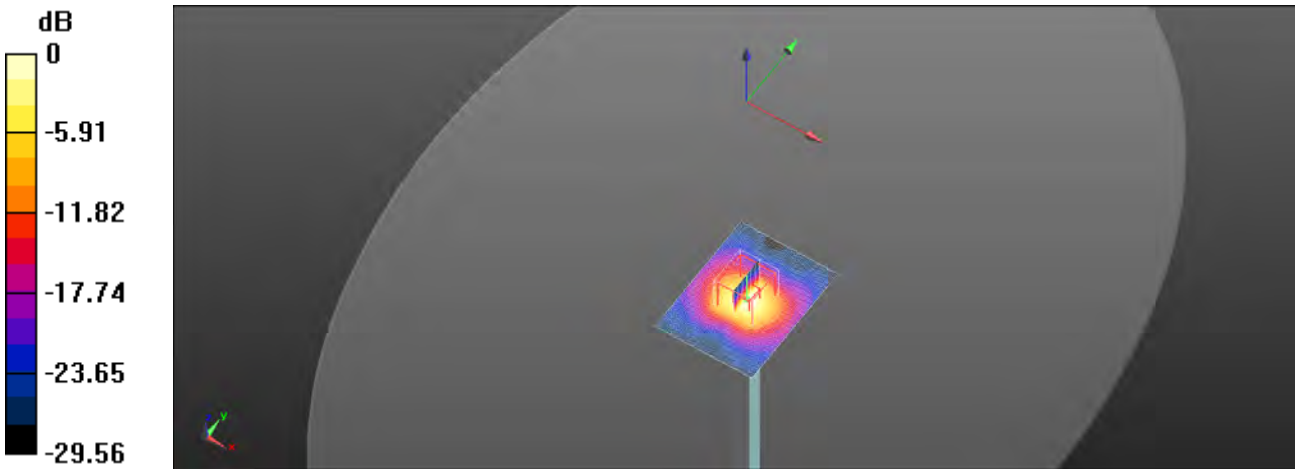
Report No. : TESA2206000142E5
Dipole 5600 MHz_SN:1023
Communication System: CW; Frequency: 5600 MHz; Duty Cycle: 1:1
Medium parameters used: f = 5600 MHz; σ = 5.041 S/m; ε_r = 35.379; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.7°C; Liquid temperature: 21.9°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(4.6, 4.6, 4.6); Calibrated: 2022/1/25
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2022/3/23
- Phantom: ELI
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (61x81x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 16.8 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 63.00 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 34.2 W/kg
SAR(1 g) = 8.59 W/kg; SAR(10 g) = 2.39 W/kg
Smallest distance from peaks to all points 3 dB below = 7.6 mm
Ratio of SAR at M2 to SAR at M1 = 53.4%
Maximum value of SAR (measured) = 17.0 W/kg



0 dB = 17.0 W/kg = 12.29 dBW/kg

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Date: 2022/7/8

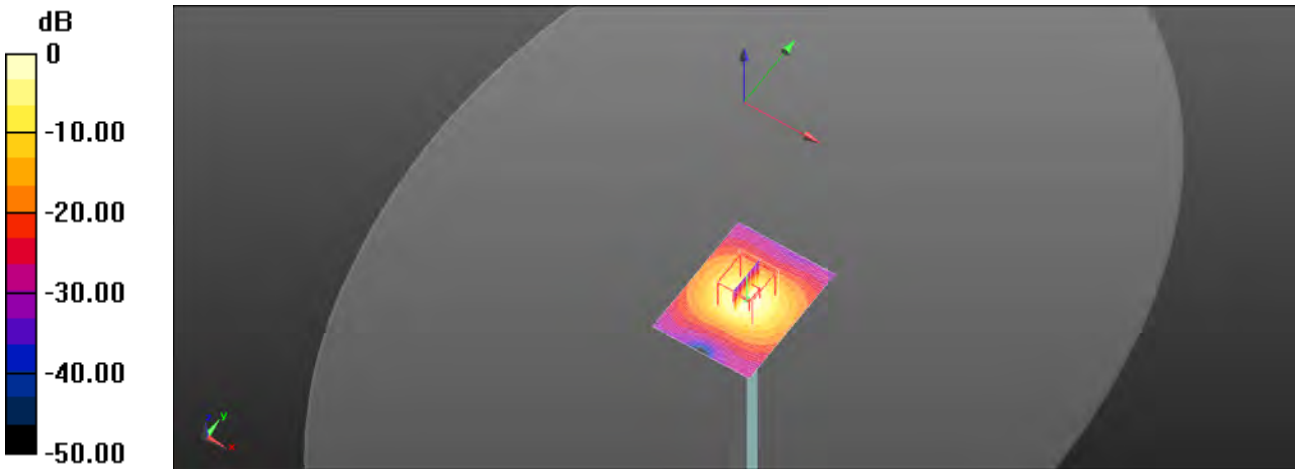
Report No. : TESA2206000142E5
Dipole 5750 MHz_SN:1023
Communication System: CW; Frequency: 5750 MHz; Duty Cycle: 1:1
Medium parameters used: f = 5750 MHz; σ = 5.193 S/m; ε_r = 35.207; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.7°C; Liquid temperature: 21.9°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(4.65, 4.65, 4.65); Calibrated: 2022/1/25
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2022/3/23
- Phantom: ELI
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (61x81x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 16.4 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 59.83 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 33.2 W/kg
SAR(1 g) = 8.26 W/kg; SAR(10 g) = 2.33 W/kg
Smallest distance from peaks to all points 3 dB below = 7.9 mm
Ratio of SAR at M2 to SAR at M1 = 53.3%
Maximum value of SAR (measured) = 16.5 W/kg



0 dB = 16.5 W/kg = 12.19 dBW/kg

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12 APPENDIXES

Refer to separated files for the following appendixes.

12.1 TESA2206000142E5 SAR_Appendix A Photographs

12.2 TESA2206000142E5 SAR_Appendix B DAE & Probe Cal. Certificate

12.3 TESA2206000142E5 SAR_Appendix C Phantom Description & Dipole Cal. Certificate

- End of report -

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