

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.	C406
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-C406
Date of EUT Receipt	Apr. 19, 2024
Date of Test(s)	May 12, 2024 ~ May 15, 2024
Date of Issue	Jul. 01, 2024

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 / Bond Tsai	Approved By / John Yeh

Date: Jul. 01, 2024

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Revision History

Report Number	Revision	Description	Issue Date	Revised By	Remark
TESA2404000217E5	00	Initial creation of document	May 22, 2024	Kimmy Chiou	
TESA2404000217E5	01	Modify comment	Jun. 12, 2024	Kimmy Chiou	*
TESA2404000217E5	02	Modify comment	Jun. 20, 2024	Kimmy Chiou	*
TESA2404000217E5	03	Modify comment	Jun. 28, 2024	Kimmy Chiou	*
TESA2404000217E5	04	Modify comment	Jul. 01, 2024	Kimmy Chiou	*
TESA2404000217E5	05	Modify curve co-sar	Jul. 01, 2024	Kimmy Chiou	*

Note:

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

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Contents

1	GENERAL INFORMATION	4
1.1	Test Methodology	4
1.2	Description of EUT.....	5
1.3	Maximum value	6
1.4	Antenna Information.....	6
2	MEASUREMENT SYSTEM	7
2.1	Test Facility	7
2.2	SAR System.....	8
3	SAR SYSTEM VERIFICATION.....	11
3.1	Tissue Simulating Liquid.....	11
3.2	Tissue Simulant Liquid measurement.....	11
3.3	Measurement results of Tissue Simulant Liquid.....	12
3.4	The composition of the tissue simulating liquid:.....	13
3.5	System check.....	13
3.6	System check results	14
4	TEST CONFIGURATIONS	15
4.1	Test Environment.....	15
4.2	Test Note.....	15
4.3	Test position.....	20
4.4	Test limit	21
5	MAXIMUM OUTPUT POWER	24
5.1	FDD LTE.....	24
5.2	WLAN	38
5.3	Bluetooth	41
5.4	BLE.....	41
6	DUTY CYCLE	42
7	SUMMARY OF RESULTS	45
7.1	Decision rules	45
7.2	Summary of SAR Results.....	45
7.3	Reporting statements of conformity	48
7.4	Conclusion	48
8	SIMULTANEOUS TRANSMISSION ANALYSIS.....	49
8.1	Simultaneous Transmission Scenarios:	49
8.2	Estimated SAR calculation.....	49
8.3	SPLSR evaluation and analysis.....	49
8.4	Conclusion	50
9	INSTRUMENTS LIST	51
10	UNCERTAINTY BUDGET.....	52
11	SAR MEASUREMENT RESULTS	54
12	SAR SYSTEM CHECK RESULTS.....	67
13	APPENDIXES	75
13.1	SAR_Appendix A Photographs.....	75
13.2	SAR_Appendix B DAE & Probe Cal. Certificate	75
13.3	SAR_Appendix C Phantom Description & Dipole Cal. Certificate	75

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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.	C406	
FCC ID	HFS-C406	
Integrated Module	Brand Name: Fibocom Model Name: SC126-NA	
Duty Cycle	LTE FDD	1
	WLAN802.11	Please refer to section 7
	Bluetooth	Please refer to section 7
Supported radios (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 66	1710-1780
	NFC	13.56
	802.11 b/g/n	2.4GHz (2400.0 – 2483.5 MHz)
	802.11a/n/ac	5.2GHz (5150.0 – 5350.0 MHz)
		5.6GHz (5470.0 – 5725.0 MHz) 5.8GHz (5725.0 – 5850.0 MHz)
Bluetooth	2.4GHz (2400.0 – 2483.5 MHz)	

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1.3 Maximum value

Limb

Summary of Maximum SAR Value	
Mode	Highest SAR 10g (W/kg)
LTE Band 66	3.27
Bluetooth(GFSK)	0.06
2.4G WLAN	0.31
5G WLAN	2.47

1.4 Antenna Information

WWAN

Vendor	AWA									
Antenna	Main									
Part Number	DQ60ALF0003									
Frequency(MHz)	12	17	13	14	26	5	4	66	2	25
	699~716	704~716	777~787	788~798	814~849	824~849	1710~1755	1710~1780	1850~1910	1850~1915
Gain (dBi)	-1.58	-1.58	-1.26	-1.26	-1.26	-1.26	1.06	1.06	1.88	1.88

WLAN

Vendor	AWA					
Antenna	WLAN					
Part Number	DQ60ALF0005					
Frequency(MHz)	2400~2500	5150~5250	5250~5350	5470~5725	5725~5850	5850~5895
Gain (dBi)	2.00	2.28	2.28	1.13	-0.91	-0.91

Note: Antenna information is provided by the applicant.

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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		
		SAR 8		
	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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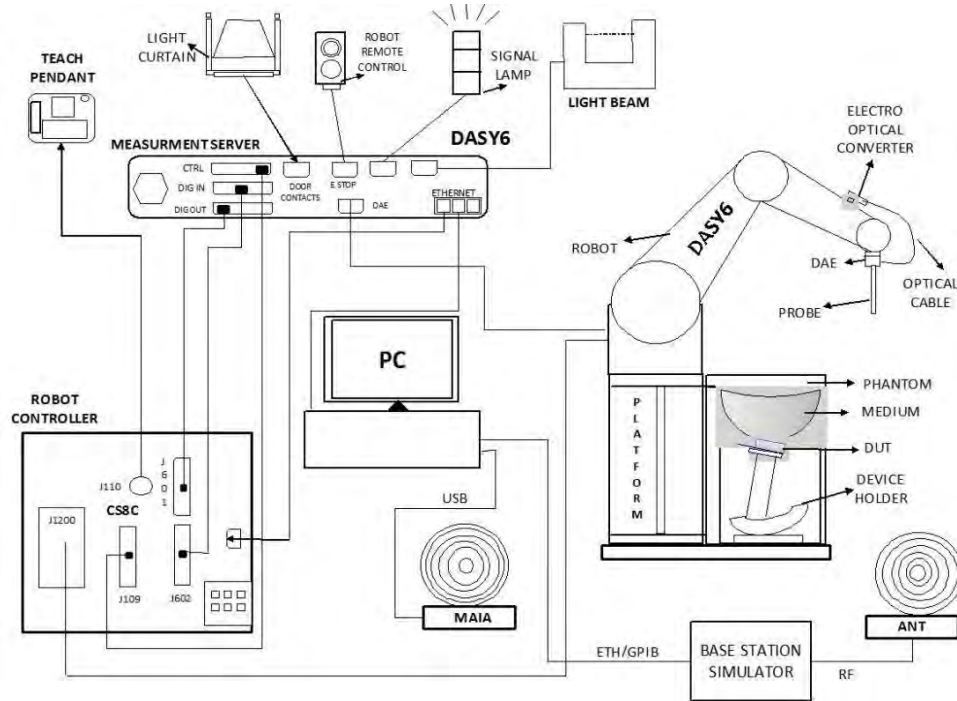
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2.2 SAR System

Block Diagram (DASY6)

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




- A standard high precision 6-axis robot with controller, teach pendant and software. An arm extension for accommodating the data acquisition electronics (DAE).
- An isotropic field probe optimized and calibrated for the targeted measurement.
- A data acquisition electronics (DAE) which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.
- The Electro-optical converter (EOC) performs the conversion from optical to electrical signals for the digital communication to the DAE. To use optical surface detection, a special version of the EOC is required. The EOC signal is transmitted to the measurement server.
- The function of the measurement server is to perform the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
- The Light Beam used is for probe alignment. This improves the (absolute) accuracy of the probe positioning.
- A computer running Windows 10 and the DASY6 software.
- Remote control and teach pendant as well as additional circuitry for robot safety such as warning lamps, etc.
- The phantom, the device holder and other accessories according to the targeted measurement.

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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 (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	

DEVICE HOLDER

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.	 <p style="text-align: center;">Device Holder</p>
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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 rint (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 $\pm 5\%$ of the target values.

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3.3 Measurement results of Tissue Simulant Liquid

Measured Frequency (MHz)	Target Dielectric Constant, ϵ_r	Target Conductivity, σ (S/m)	Measured Dielectric Constant, ϵ_r	Measured Conductivity, σ (S/m)	% dev ϵ_r	% dev σ	Limit	Measurement Date
704	42.145	0.887	41.898	0.884	-0.59%	-0.33%	± 5%	May. 12, 2024
711	42.108	0.887	41.861	0.885	-0.59%	-0.27%	± 5%	
750	41.900	0.890	41.659	0.887	-0.58%	-0.34%	± 5%	
782	41.749	0.894	41.492	0.890	-0.62%	-0.42%	± 5%	
829	41.528	0.899	41.293	0.902	-0.57%	0.30%	± 5%	
835	41.500	0.900	41.272	0.904	-0.55%	0.44%	± 5%	
836.5	41.500	0.902	41.264	0.905	-0.57%	0.38%	± 5%	
844	41.500	0.910	41.239	0.907	-0.63%	-0.30%	± 5%	
1720	40.114	1.354	39.843	1.362	-0.68%	0.57%	± 5%	May. 13, 2024
1732.5	40.075	1.361	39.823	1.370	-0.63%	0.63%	± 5%	
1745	40.093	1.369	39.804	1.377	-0.72%	0.62%	± 5%	
1750	40.100	1.370	39.796	1.380	-0.76%	0.73%	± 5%	
1770	40.043	1.383	39.764	1.391	-0.70%	0.59%	± 5%	
1860	40.000	1.400	39.717	1.412	-0.71%	0.86%	± 5%	
1880	40.000	1.400	39.717	1.413	-0.71%	0.93%	± 5%	
1900	40.000	1.400	39.717	1.413	-0.71%	0.93%	± 5%	
2402	39.282	1.757	39.002	1.783	-0.71%	1.45%	± 5%	May. 14, 2024
2412	39.265	1.766	38.985	1.791	-0.71%	1.40%	± 5%	
2422	39.248	1.775	38.967	1.800	-0.72%	1.40%	± 5%	
2437	39.222	1.788	38.940	1.813	-0.72%	1.37%	± 5%	
2441	39.215	1.792	38.933	1.816	-0.72%	1.34%	± 5%	
2450	39.200	1.800	38.917	1.824	-0.72%	1.33%	± 5%	
2452	39.197	1.802	38.915	1.826	-0.72%	1.32%	± 5%	
2462	39.184	1.813	38.902	1.835	-0.72%	1.22%	± 5%	
2480	39.160	1.832	38.879	1.851	-0.72%	1.04%	± 5%	
5180	36.020	4.639	35.726	4.624	-0.82%	-0.32%	± 5%	May. 15, 2024
5190	36.010	4.650	35.714	4.634	-0.82%	-0.33%	± 5%	
5230	35.970	4.690	35.668	4.675	-0.84%	-0.32%	± 5%	
5250	35.950	4.710	35.646	4.696	-0.85%	-0.30%	± 5%	
5260	35.940	4.720	35.634	4.706	-0.85%	-0.30%	± 5%	
5300	35.900	4.760	35.588	4.747	-0.87%	-0.27%	± 5%	
5320	35.880	4.780	35.566	4.767	-0.88%	-0.27%	± 5%	
5500	35.650	4.965	35.360	4.953	-0.81%	-0.24%	± 5%	
5600	35.500	5.070	35.246	5.055	-0.72%	-0.30%	± 5%	
5700	35.400	5.170	35.131	5.156	-0.76%	-0.27%	± 5%	
5720	35.380	5.190	35.108	5.177	-0.77%	-0.25%	± 5%	
5745	35.355	5.215	35.080	5.202	-0.78%	-0.25%	± 5%	
5750	35.350	5.220	35.074	5.208	-0.78%	-0.23%	± 5%	
5785	35.315	5.255	35.034	5.243	-0.80%	-0.23%	± 5%	
5825	35.275	5.296	34.988	5.284	-0.81%	-0.23%	± 5%	

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3.4 The composition of the tissue simulating liquid:

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

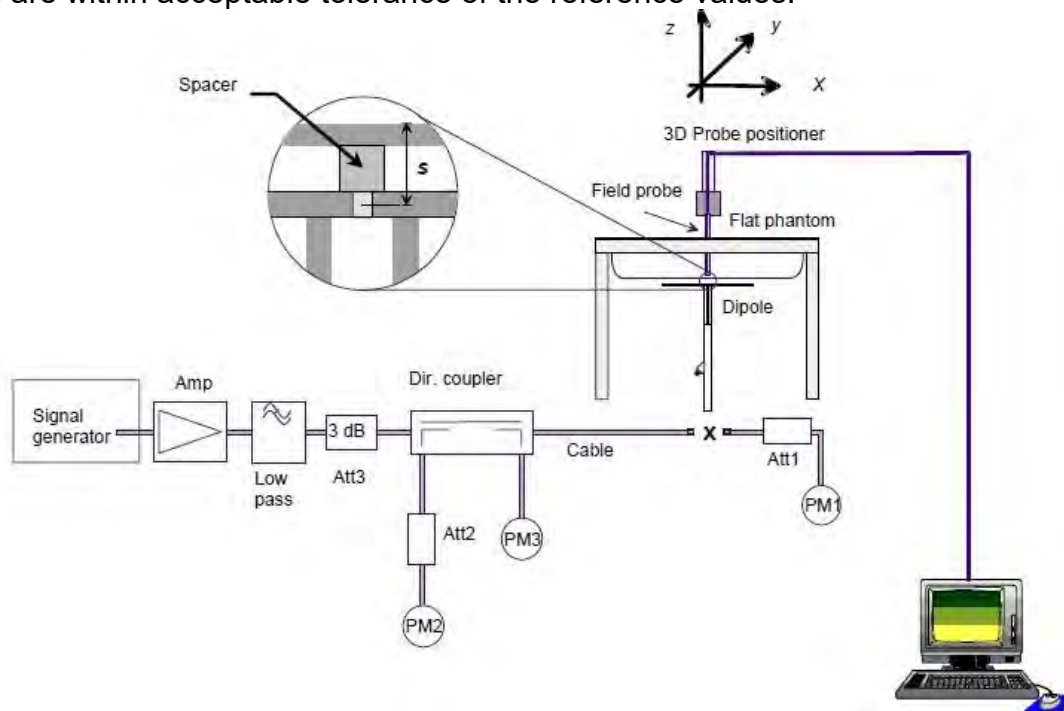
Broad-band head tissue simulating liquids	SPEAG Product	Frequency range (MHz)	Main Ingredients
	HBBL600-10000V6	600 - 10000	Water, Oil

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 1g-SAR (W/kg)	pin=250mW Measured 1g-SAR (W/kg)	Normalized to 1W 1g-SAR (W/kg)	Deviation (%)	Limit	Measurement Date
D750V3	1015	750	8.63	2.21	8.84	2.43	± 10%	May.12,2024
D835V2	4d063	835	9.53	2.4	9.6	0.73	± 10%	May.12,2024
D1750V2	1008	1750	36.4	8.92	35.68	-1.98	± 10%	May.13,2024
D1900V2	5d056	1900	40.5	10.1	40.4	-0.25	± 10%	May.13,2024
Validation Kit	S/N	Frequency (MHz)	1W Target 1g-SAR (W/kg)	pin=250mW Measured 1g-SAR (W/kg)	Normalized to 1W 1g-SAR (W/kg)	Deviation (%)	Limit	Measurement Date
D2450V2	727	2450	52.7	13.1	52.4	-0.57	± 10%	May.14,2024
Validation Kit	S/N	Frequency (MHz)	1W Target 1g-SAR (W/kg)	pin=100mW Measured 1g-SAR (W/kg)	Normalized to 1W 1g-SAR (W/kg)	Deviation (%)	Limit	Measurement Date
D5GHzV2	1023	5250	78.8	7.74	77.4	-1.78	± 10%	May.15,2024
D5GHzV2	1023	5600	81.3	8.57	85.7	5.41	± 10%	May.15,2024
D5GHzV2	1023	5750	78	7.47	74.7	-4.23	± 10%	May.15,2024

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4 TEST CONFIGURATIONS

4.1 Test Environment

Ambient Temperature: $22\pm 2^{\circ}\text{C}$

Tissue Simulating Liquid: $22\pm 2^{\circ}\text{C}$

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 $\leq 0.8\text{ W/kg}$, when the transmission band is $\leq 100\text{ MHz}$.
 - **General:** According to KDB865664D01v01r04, SAR measurement variability must be assessed for each frequency band. When the original highest measured SAR is $\geq 0.8\text{ W/kg}$, 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 $\geq 1.45\text{ W/kg}$ ($\sim 10\%$ 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 $\leq 0.8\text{ W/kg}$, 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 $> 1.45\text{ W/kg}$, 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
- For QPSK with 100% RB allocation, SAR is not required when the highest

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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 $> \frac{1}{2}$ dB higher than the same configuration in QPSK or when the reported SAR for the QPSK configuration is > 1.45 W/kg.

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 $> \frac{1}{2}$ dB higher than the equivalent channel configurations in the largest channel bandwidth configuration or the reported SAR of a configuration for the largest channel bandwidth is > 1.45 W/kg. 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 tabulated as below.

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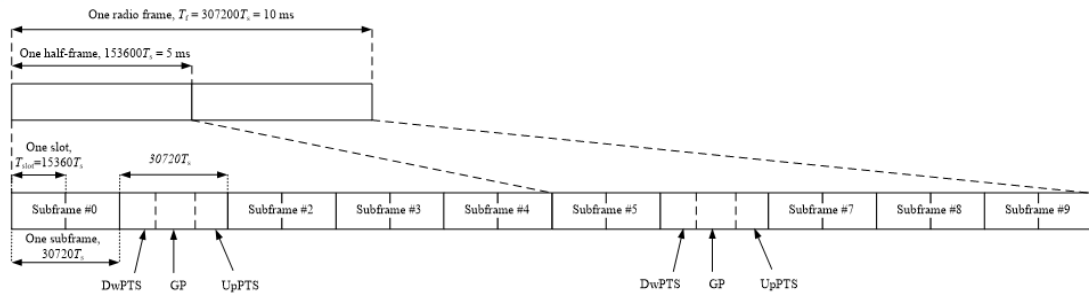


Figure 4.2-1: Frame structure type 2 (for 5 ms switch-point periodicity)

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

Special subframe configuration n	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	$26336 \cdot T_s$			$7680 \cdot T_s$		
5	$6592 \cdot T_s$	$(2+X) \cdot 2192 \cdot T_s$	$(2+X) \cdot 2560 \cdot T_s$	$20480 \cdot T_s$	$(2+X) \cdot 2192 \cdot T_s$	$(2+X) \cdot 2560 \cdot T_s$
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%.

- **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

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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.

- **NFC test exclusion:** Based on KDB447498D01v06 4.3.1 c), SAR test exclusion threshold for NFC (13.56MHz) shall be evaluated as below,

- For *test separation distances* ≤ 50 mm, the power threshold determined by the equation in 4.3.1 c) 1) for 50 mm and 100 MHz is multiplied by $\frac{1}{2}$
- The power threshold at 50mm/100 MHz in 4.3.1 b) is multiplied by $[1 + \log(100/f(\text{MHz}))]$ where f is 13.56MHz
- The power threshold in 4.3.1 b) is $[\text{Power allowed at numeric threshold for 50 mm in 4.3.1 a)} + [(\text{test separation distance} - 50 \text{ mm}) \cdot (f(\text{MHz})/150)] \text{ mW}$, for 100 MHz to 1500 MHz where test separation distance is 50mm, frequency is 100MHz.
- Power allowed at numeric threshold for 50 mm in 4.3.1 a) is $[3/\sqrt{f(\text{GHz})}] \cdot (\text{test separation distance})$

Hence, SAR test exclusion threshold is calculated in reverse sequence:

- $[3/\sqrt{0.1}] \cdot 50 = 474.3416\text{mW}$
- $474.3416 + (50-50) \cdot (100/150) = 474.3416\text{mW}$
- $474.3416 \cdot [1 + \log(100/13.56)] = 885.9470\text{mW}$
- $885.9470 \cdot 0.5 = 442.974\text{mW}$

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So the extremity SAR test exclusion power threshold for NFC(13.56MHz) is $442.974 \times 2.5 = 1107.435\text{mW}$ (equal to 30.443dBm).

Also, the maximum power of NFC is -38.77757 dBm (converted from 36.38 dBuV/m at 30m) and it is far below the exclusion threshold, so extremity SAR test for NFC can be excluded.

• **NFC estimated SAR:** Based on KDB447498D01v06 4.3.2 b), when an antenna qualifies for the standalone SAR test exclusion of 4.3.1 and also transmits simultaneously with other antennas, the standalone SAR value must be estimated according to the following to determine the simultaneous transmission SAR test exclusion criteria:

1) $[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})/x}] \text{ W/kg}$, for test separation distances $\leq 50 \text{ mm}$, where $x = 7.5$ for 1-g SAR and $x = 18.75$ for 10-g SAR.

Using the most conservative test separation distance 5mm, so the estimated 10g-SAR for NFC would be 0.00000016457901 W/Kg.

$[0.0001325/5] \cdot [\sqrt{0.01356/18.75}] = 0.00000016457901 \text{ W/Kg}$

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4.3 Test position

Limb SAR test position (0 mm)

A separation distance of 0mm shall be used for limb SAR test.

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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 SAR are based

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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

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	21.12	20.89	20.98	22.00	0
		1	50	20.97	20.90	20.87	22.00	0
		1	99	20.85	20.83	20.91	22.00	0
		50	0	19.94	19.83	19.87	21.00	1
		50	25	19.99	19.82	19.87	21.00	1
		50	50	19.81	19.96	19.91	21.00	1
		100	0	19.93	19.87	20.00	21.00	1
20	16-QAM	1	0	19.97	19.90	19.93	21.00	1
		1	50	19.95	19.90	19.89	21.00	1
		1	99	19.98	19.90	19.97	21.00	1
		50	0	18.94	18.82	18.94	20.00	2
		50	25	18.85	18.90	18.89	20.00	2
		50	50	18.89	18.84	18.97	20.00	2
		100	0	18.88	18.82	18.96	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	20.85	20.96	20.80	22.00	0
		1	36	20.84	20.86	20.87	22.00	0
		1	74	20.88	20.96	20.89	22.00	0
		36	0	19.93	19.82	19.92	21.00	1
		36	18	20.00	19.93	19.89	21.00	1
		36	37	19.98	19.99	19.99	21.00	1
		75	0	19.95	19.85	19.95	21.00	1
15	16-QAM	1	0	19.90	19.93	19.96	21.00	1
		1	36	19.89	19.94	19.92	21.00	1
		1	74	19.93	19.83	19.93	21.00	1
		36	0	18.90	18.97	18.84	20.00	2
		36	18	18.91	18.83	18.92	20.00	2
		36	37	18.95	18.95	18.93	20.00	2
		75	0	18.90	18.86	18.90	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	20.95	20.87	20.87	22.00	0
		1	25	20.92	20.89	20.82	22.00	0
		1	49	20.86	20.83	20.90	22.00	0
		25	0	19.90	19.93	19.98	21.00	1
		25	12	19.85	19.92	19.81	21.00	1
		25	25	19.94	19.86	19.92	21.00	1
		50	0	19.80	19.83	19.84	21.00	1
10	16-QAM	1	0	19.91	19.87	19.91	21.00	1
		1	25	19.83	19.93	19.87	21.00	1
		1	49	19.92	19.88	19.92	21.00	1
		25	0	18.95	18.98	18.99	20.00	2
		25	12	19.00	18.83	18.91	20.00	2
		25	25	18.88	18.91	19.00	20.00	2
		50	0	18.96	18.95	18.90	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	20.84	20.93	20.98	22.00	0
		1	12	20.84	20.94	20.97	22.00	0
		1	24	20.91	20.84	20.80	22.00	0
		12	0	19.92	19.98	19.97	21.00	1
		12	6	19.98	19.90	19.96	21.00	1
		12	13	19.96	19.81	19.90	21.00	1
		25	0	19.93	19.95	19.87	21.00	1
5	16-QAM	1	0	19.88	19.82	19.83	21.00	1
		1	12	19.90	19.89	19.82	21.00	1
		1	24	19.99	19.86	19.92	21.00	1
		12	0	19.00	18.89	18.89	20.00	2
		12	6	18.99	18.87	18.94	20.00	2
		12	13	18.99	18.97	18.85	20.00	2
		25	0	19.00	18.93	18.97	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	20.89	20.83	20.91	22.00	0
		1	7	20.96	20.89	20.99	22.00	0
		1	14	20.90	20.99	20.86	22.00	0
		8	0	19.93	19.83	19.89	21.00	1
		8	4	20.00	19.97	19.86	21.00	1
		8	7	19.97	19.86	19.99	21.00	1
		15	0	19.83	19.84	19.83	21.00	1
3	16-QAM	1	0	19.81	19.80	19.97	21.00	1
		1	7	19.96	19.98	19.94	21.00	1
		1	14	19.89	19.97	19.85	21.00	1
		8	0	18.81	18.85	18.82	20.00	2
		8	4	18.82	18.81	18.88	20.00	2
		8	7	18.80	18.85	18.94	20.00	2
		15	0	18.92	18.83	18.92	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	20.88	20.99	20.97	22.00	0
		1	2	20.91	20.91	20.89	22.00	0
		1	5	20.84	20.83	20.86	22.00	0
		3	0	20.91	20.94	20.88	22.00	0
		3	2	20.83	20.92	20.80	22.00	0
		3	3	20.86	20.85	20.84	22.00	0
		6	0	19.87	19.87	19.98	21.00	1
1.4	16-QAM	1	0	19.93	20.00	19.95	21.00	1
		1	2	19.98	19.93	19.82	21.00	1
		1	5	19.84	19.92	19.81	21.00	1
		3	0	19.96	19.86	19.85	21.00	1
		3	2	19.99	19.90	20.00	21.00	1
		3	3	19.94	19.90	19.84	21.00	1
		6	0	18.88	18.92	18.90	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	21.09	21.48	21.44	22.00	0
		1	50	20.87	20.88	20.91	22.00	0
		1	99	20.89	20.98	20.98	22.00	0
		50	0	19.86	19.86	19.87	21.00	1
		50	25	19.93	19.89	19.99	21.00	1
		50	50	19.97	19.96	19.90	21.00	1
		100	0	19.86	19.93	19.90	21.00	1
20	16-QAM	1	0	19.84	19.99	19.87	21.00	1
		1	50	19.96	19.88	19.98	21.00	1
		1	99	19.81	19.81	19.95	21.00	1
		50	0	18.85	18.84	18.97	20.00	2
		50	25	18.94	18.86	18.86	20.00	2
		50	50	18.99	18.98	18.92	20.00	2
		100	0	18.83	18.90	18.94	20.00	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	20.98	20.81	21.00	22.00	0
		1	36	21.00	20.82	20.89	22.00	0
		1	74	20.91	20.91	20.91	22.00	0
		36	0	19.86	19.86	19.83	21.00	1
		36	18	20.00	19.82	19.91	21.00	1
		36	37	19.83	19.84	19.96	21.00	1
		75	0	19.97	19.98	19.87	21.00	1
15	16-QAM	1	0	19.90	19.98	19.90	21.00	1
		1	36	19.82	19.84	19.86	21.00	1
		1	74	19.89	19.91	19.81	21.00	1
		36	0	18.95	18.97	18.98	20.00	2
		36	18	18.88	18.81	18.84	20.00	2
		36	37	18.87	18.94	18.87	20.00	2
		75	0	18.89	18.94	18.83	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)				1715	1732.5	1750		
Channel				20000	20175	20350		
10	QPSK	1	0	20.85	20.94	20.87	22.00	0
		1	25	20.83	20.94	20.96	22.00	0
		1	49	20.96	20.83	20.90	22.00	0
		25	0	19.82	19.82	19.83	21.00	1
		25	12	19.95	19.80	19.99	21.00	1
		25	25	19.82	19.98	19.82	21.00	1
		50	0	19.98	19.88	19.90	21.00	1
10	16-QAM	1	0	19.93	19.92	19.90	21.00	1
		1	25	19.96	19.99	19.84	21.00	1
		1	49	19.83	19.87	19.99	21.00	1
		25	0	18.94	18.94	18.91	20.00	2
		25	12	18.92	18.93	18.86	20.00	2
		25	25	18.89	18.88	18.88	20.00	2
		50	0	19.00	18.83	18.95	20.00	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	20.96	20.96	20.92	22.00	0
		1	12	20.99	20.85	20.91	22.00	0
		1	24	20.85	20.95	20.97	22.00	0
		12	0	19.97	19.99	19.92	21.00	1
		12	6	19.96	19.97	19.97	21.00	1
		12	13	19.98	19.90	19.89	21.00	1
		25	0	19.97	19.83	19.89	21.00	1
5	16-QAM	1	0	19.85	19.84	19.91	21.00	1
		1	12	19.81	19.93	19.95	21.00	1
		1	24	19.85	20.00	19.91	21.00	1
		12	0	18.90	18.88	18.88	20.00	2
		12	6	18.82	18.85	18.84	20.00	2
		12	13	19.00	18.82	18.96	20.00	2
		25	0	18.95	18.86	18.80	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)				1711.5	1732.5	1753.5		
Channel				19965	20175	20385		
3	QPSK	1	0	20.80	20.94	20.89	22.00	0
		1	7	20.99	21.00	21.00	22.00	0
		1	14	20.84	20.98	21.00	22.00	0
		8	0	19.85	19.94	19.90	21.00	1
		8	4	19.97	19.94	19.94	21.00	1
		8	7	19.97	19.97	19.86	21.00	1
		15	0	19.87	19.94	19.98	21.00	1
3	16-QAM	1	0	19.81	19.87	19.93	21.00	1
		1	7	19.82	19.86	19.95	21.00	1
		1	14	19.89	19.98	19.96	21.00	1
		8	0	18.91	18.96	19.00	20.00	2
		8	4	18.83	18.84	18.97	20.00	2
		8	7	18.99	18.90	18.91	20.00	2
		15	0	18.94	18.82	18.96	20.00	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	20.83	20.84	20.83	22.00	0
		1	2	20.93	20.82	20.91	22.00	0
		1	5	20.84	20.91	20.88	22.00	0
		3	0	20.81	20.84	20.91	22.00	0
		3	2	20.94	20.88	20.93	22.00	0
		3	3	20.95	20.90	20.87	22.00	0
		6	0	19.97	19.82	19.88	21.00	1
1.4	16-QAM	1	0	19.87	19.96	19.94	21.00	1
		1	2	19.99	19.81	19.96	21.00	1
		1	5	19.81	19.96	19.83	21.00	1
		3	0	19.97	19.88	19.94	21.00	1
		3	2	19.97	20.00	19.89	21.00	1
		3	3	19.85	19.81	19.98	21.00	1
		6	0	18.96	18.86	18.84	20.00	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)				829	836.5	844		
Channel				20450	20525	20600		
10	QPSK	1	0	22.81	22.63	22.68	23.00	0
		1	25	22.78	22.76	22.80	23.00	0
		1	49	22.79	22.80	22.69	23.00	0
		25	0	21.86	21.72	21.64	22.00	1
		25	12	21.87	21.61	21.67	22.00	1
		25	25	21.91	21.70	21.61	22.00	1
		50	0	21.83	21.74	21.73	22.00	1
10	16-QAM	1	0	21.60	21.62	21.79	22.00	1
		1	25	21.86	21.65	21.61	22.00	1
		1	49	21.61	21.65	21.63	22.00	1
		25	0	20.73	20.75	20.68	21.00	2
		25	12	20.75	20.78	20.76	21.00	2
		25	25	20.92	20.63	20.77	21.00	2
		50	0	20.89	20.65	20.71	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	22.72	22.61	22.75	23.00	0
		1	12	22.78	22.65	22.68	23.00	0
		1	24	22.69	22.73	22.74	23.00	0
		12	0	21.65	21.79	21.74	22.00	1
		12	6	21.68	21.74	21.78	22.00	1
		12	13	21.78	21.80	21.73	22.00	1
		25	0	21.75	21.70	21.69	22.00	1
5	16-QAM	1	0	21.61	21.79	21.62	22.00	1
		1	12	21.71	21.67	21.67	22.00	1
		1	24	21.73	21.73	21.67	22.00	1
		12	0	20.78	20.71	20.65	21.00	2
		12	6	20.63	20.69	20.75	21.00	2
		12	13	20.71	20.78	20.75	21.00	2
		25	0	20.68	20.76	20.73	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	22.62	22.67	22.79	23.00	0
		1	7	22.64	22.66	22.61	23.00	0
		1	14	22.72	22.62	22.69	23.00	0
		8	0	21.67	21.60	21.70	22.00	1
		8	4	21.70	21.63	21.80	22.00	1
		8	7	21.71	21.68	21.66	22.00	1
		15	0	21.72	21.70	21.74	22.00	1
3	16-QAM	1	0	21.76	21.70	21.66	22.00	1
		1	7	21.72	21.78	21.73	22.00	1
		1	14	21.63	21.72	21.68	22.00	1
		8	0	20.69	20.77	20.78	21.00	2
		8	4	20.71	20.60	20.64	21.00	2
		8	7	20.66	20.76	20.62	21.00	2
		15	0	20.63	20.74	20.69	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	22.68	22.78	22.76	23.00	0
		1	2	22.70	22.64	22.64	23.00	0
		1	5	22.71	22.62	22.60	23.00	0
		3	0	22.68	22.67	22.79	23.00	0
		3	2	22.77	22.78	22.66	23.00	0
		3	3	22.71	22.64	22.72	23.00	0
		6	0	21.80	21.67	21.78	22.00	1
1.4	16-QAM	1	0	21.69	21.64	21.69	22.00	1
		1	2	21.72	21.61	21.63	22.00	1
		1	5	21.66	21.75	21.75	22.00	1
		3	0	21.79	21.71	21.72	22.00	1
		3	2	21.63	21.62	21.60	22.00	1
		3	3	21.77	21.69	21.78	22.00	1
		6	0	20.62	20.74	20.72	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	22.46	22.29	22.56	23.00	0
		1	25	22.50	22.34	22.36	23.00	0
		1	49	22.48	22.42	22.47	23.00	0
		25	0	21.49	21.31	21.38	22.00	1
		25	12	21.47	21.46	21.43	22.00	1
		25	25	21.48	21.43	21.36	22.00	1
		50	0	21.38	21.36	21.47	22.00	1
10	16-QAM	1	0	21.33	21.38	21.43	22.00	1
		1	25	21.36	21.45	21.30	22.00	1
		1	49	21.31	21.44	21.47	22.00	1
		25	0	20.42	20.33	20.37	21.00	2
		25	12	20.33	20.34	20.43	21.00	2
		25	25	20.39	20.31	20.44	21.00	2
		50	0	20.48	20.43	20.38	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	22.47	22.32	22.37	23.00	0
		1	12	22.41	22.43	22.47	23.00	0
		1	24	22.46	22.44	22.33	23.00	0
		12	0	21.38	21.35	21.35	22.00	1
		12	6	21.43	21.46	21.49	22.00	1
		12	13	21.34	21.48	21.33	22.00	1
		25	0	21.39	21.42	21.33	22.00	1
5	16-QAM	1	0	21.33	21.37	21.40	22.00	1
		1	12	21.45	21.45	21.48	22.00	1
		1	24	21.30	21.37	21.32	22.00	1
		12	0	20.48	20.41	20.45	21.00	2
		12	6	20.33	20.33	20.45	21.00	2
		12	13	20.31	20.44	20.44	21.00	2
		25	0	20.43	20.43	20.45	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	22.36	22.48	22.49	23.00	0
		1	7	22.44	22.35	22.37	23.00	0
		1	14	22.39	22.48	22.35	23.00	0
		8	0	21.41	21.39	21.31	22.00	1
		8	4	21.33	21.40	21.43	22.00	1
		8	7	21.50	21.41	21.50	22.00	1
		15	0	21.47	21.42	21.48	22.00	1
3	16-QAM	1	0	21.41	21.36	21.47	22.00	1
		1	7	21.46	21.38	21.46	22.00	1
		1	14	21.37	21.50	21.39	22.00	1
		8	0	20.42	20.47	20.43	21.00	2
		8	4	20.39	20.33	20.30	21.00	2
		8	7	20.39	20.48	20.47	21.00	2
		15	0	20.46	20.39	20.34	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	22.37	22.39	22.39	23.00	0
		1	2	22.33	22.44	22.42	23.00	0
		1	5	22.36	22.45	22.40	23.00	0
		3	0	22.34	22.36	22.36	23.00	0
		3	2	22.49	22.39	22.40	23.00	0
		3	3	22.47	22.46	22.43	23.00	0
		6	0	21.37	21.33	21.33	22.00	1
1.4	16-QAM	1	0	21.37	21.49	21.32	22.00	1
		1	2	21.45	21.31	21.47	22.00	1
		1	5	21.33	21.45	21.32	22.00	1
		3	0	21.41	21.45	21.49	22.00	1
		3	2	21.35	21.39	21.46	22.00	1
		3	3	21.30	21.46	21.31	22.00	1
		6	0	20.37	20.41	20.40	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				
Channel					23230				
10	QPSK	1	0		22.74		23.00	0	
		1	25		22.60		23.00	0	
		1	49		22.68		23.00	0	
		25	0		21.53		22.00	1	
		25	12		21.55		22.00	1	
		25	25		21.56		22.00	1	
		50	0		21.60		22.00	1	
10	16-QAM	1	0		21.64		22.00	1	
		1	25		21.50		22.00	1	
		1	49		21.59		22.00	1	
		25	0		20.51		21.00	2	
		25	12		20.60		21.00	2	
		25	25		20.68		21.00	2	
		50	0		20.68		21.00	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		22.60	22.70	22.60	23.00	0
		1	12		22.54	22.52	22.64	23.00	0
		1	24		22.58	22.67	22.70	23.00	0
		12	0		21.51	21.64	21.52	22.00	1
		12	6		21.57	21.53	21.51	22.00	1
		12	13		21.61	21.67	21.58	22.00	1
		25	0		21.52	21.63	21.61	22.00	1
5	16-QAM	1	0		21.66	21.65	21.58	22.00	1
		1	12		21.69	21.66	21.53	22.00	1
		1	24		21.64	21.70	21.62	22.00	1
		12	0		20.57	20.64	20.55	21.00	2
		12	6		20.67	20.57	20.51	21.00	2
		12	13		20.53	20.54	20.60	21.00	2
		25	0		20.56	20.62	20.62	21.00	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)				1720	1745	1770		
Channel				132072	132322	132572		
20	QPSK	1	0	20.98	21.28	21.26	22.00	0
		1	50	21.09	21.04	21.13	22.00	0
		1	99	21.04	21.03	21.09	22.00	0
		50	0	20.01	20.04	20.10	21.00	1
		50	25	20.06	20.09	20.09	21.00	1
		50	50	20.07	20.15	20.06	21.00	1
		100	0	20.20	20.09	20.09	21.00	1
20	16-QAM	1	0	20.13	20.16	20.12	21.00	1
		1	50	20.19	20.11	20.17	21.00	1
		1	99	20.20	20.16	20.16	21.00	1
		50	0	19.03	19.13	19.07	20.00	2
		50	25	19.06	19.16	19.20	20.00	2
		50	50	19.17	19.07	19.15	20.00	2
		100	0	19.19	19.15	19.06	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	21.07	21.01	21.14	22.00	0
		1	36	21.05	21.13	21.10	22.00	0
		1	74	21.14	21.03	21.10	22.00	0
		36	0	20.05	20.17	20.15	21.00	1
		36	18	20.13	20.10	20.16	21.00	1
		36	37	20.18	20.04	20.06	21.00	1
		75	0	20.00	20.17	20.13	21.00	1
15	16-QAM	1	0	20.11	20.03	20.12	21.00	1
		1	36	20.20	20.20	20.05	21.00	1
		1	74	20.16	20.05	20.20	21.00	1
		36	0	19.13	19.05	19.18	20.00	2
		36	18	19.10	19.11	19.07	20.00	2
		36	37	19.12	19.11	19.14	20.00	2
		75	0	19.19	19.07	19.17	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	21.02	21.08	21.17	22.00	0
		1	25	21.20	21.01	21.09	22.00	0
		1	49	21.10	21.12	21.08	22.00	0
		25	0	20.16	20.12	20.15	21.00	1
		25	12	20.09	20.10	20.16	21.00	1
		25	25	20.17	20.12	20.12	21.00	1
		50	0	20.11	20.16	20.01	21.00	1
10	16-QAM	1	0	20.05	20.04	20.08	21.00	1
		1	25	20.12	20.05	20.12	21.00	1
		1	49	20.18	20.12	20.13	21.00	1
		25	0	19.05	19.15	19.16	20.00	2
		25	12	19.03	19.05	19.17	20.00	2
		25	25	19.13	19.10	19.09	20.00	2
		50	0	19.04	19.15	19.01	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	21.16	21.12	21.00	22.00	0
		1	12	21.18	21.04	21.12	22.00	0
		1	24	21.18	21.10	21.05	22.00	0
		12	0	20.09	20.11	20.12	21.00	1
		12	6	20.06	20.15	20.08	21.00	1
		12	13	20.14	20.14	20.09	21.00	1
		25	0	20.20	20.02	20.09	21.00	1
5	16-QAM	1	0	20.11	20.01	20.06	21.00	1
		1	12	20.05	20.11	20.09	21.00	1
		1	24	20.00	20.02	20.09	21.00	1
		12	0	19.11	19.10	19.03	20.00	2
		12	6	19.07	19.03	19.15	20.00	2
		12	13	19.08	19.10	19.01	20.00	2
		25	0	19.04	19.11	19.11	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	21.10	21.19	21.11	22.00	0
		1	7	21.01	21.10	21.18	22.00	0
		1	14	21.01	21.06	21.04	22.00	0
		8	0	20.10	20.16	20.08	21.00	1
		8	4	20.11	20.08	20.07	21.00	1
		8	7	20.02	20.08	20.09	21.00	1
		15	0	20.11	20.01	20.05	21.00	1
3	16-QAM	1	0	20.09	20.02	20.19	21.00	1
		1	7	20.04	20.20	20.08	21.00	1
		1	14	20.04	20.01	20.19	21.00	1
		8	0	19.20	19.16	19.11	20.00	2
		8	4	19.02	19.15	19.09	20.00	2
		8	7	19.05	19.18	19.19	20.00	2
		15	0	19.06	19.05	19.20	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	21.14	21.03	21.07	22.00	0
		1	2	21.19	21.01	21.07	22.00	0
		1	5	21.15	21.05	21.12	22.00	0
		3	0	21.01	21.01	21.02	22.00	0
		3	2	21.18	21.07	21.16	22.00	0
		3	3	21.20	21.14	21.04	22.00	0
		6	0	20.17	20.19	20.15	21.00	1
1.4	16-QAM	1	0	20.07	20.01	20.18	21.00	1
		1	2	20.13	20.06	20.18	21.00	1
		1	5	20.12	20.02	20.09	21.00	1
		3	0	20.08	20.04	20.01	21.00	1
		3	2	20.16	20.13	20.07	21.00	1
		3	3	20.19	20.08	20.01	21.00	1
		6	0	19.08	19.03	19.02	20.00	2

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5.2 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	8.00	7.55
		6	2437		6.50	5.89
		11	2462		9.50	9.15
	802.11g	1	2412	6Mbps	10.50	9.96
		6	2437		10.50	10.23
		11	2462		11.50	11.24
	802.11n20-HT0	1	2412	MCS0	11.00	10.35
		6	2437		10.50	10.15
		11	2462		11.50	11.18
	802.11n40-HT0	3	2422	MCS0	11.00	10.89
		6	2437		14.00	13.35
		9	2452		13.00	12.55

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	16.04
		40	5200		16.50	15.95
		48	5240		16.50	16.23
	802.11n20-HT0	36	5180	MCS0	17.00	16.44
		40	5200		17.00	15.76
		48	5240		16.50	15.94
	802.11ac20-VHT0	36	5180	MCS0	17.00	16.46
		40	5200		16.50	15.78
		48	5240		16.50	15.99
	802.11n40-HT0	38	5190	MCS0	15.50	15.27
		46	5230		17.00	16.42
	802.11ac40-VHT0	38	5190	MCS0	15.50	15.37
		46	5230		17.00	16.46
	802.11ac80-VHT0	42	5210	MCS0	14.00	13.71

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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	19.00	18.33
		60	5300		19.00	18.36
		64	5320		17.50	17.34
	802.11n20-HT0	52	5260	MCS0	18.00	17.33
		60	5300		18.00	17.38
		64	5320		17.00	16.46
	802.11ac20-VHT0	52	5260	MCS0	18.00	17.64
		60	5300		18.00	17.44
		64	5320		18.00	17.35
	802.11n40-HT0	54	5270	MCS0	16.50	16.37
		62	5310		15.00	14.86
	802.11ac40-VHT0	54	5270	MCS0	16.50	16.43
		62	5310		15.50	15.21
	802.11ac80-VHT0	58	5290	MCS0	12.50	12.04

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	19.00	18.70
		140	5700		17.00	16.89
		144	5720		19.00	18.35
	802.11n20-HT0	100	5500	MCS0	17.50	17.23
		140	5700		15.50	15.29
		144	5720		17.50	17.25
	802.11ac20-VHT0	100	5500	MCS0	17.50	17.28
		140	5700		15.50	15.35
		144	5720		18.00	17.33
	802.11n40-HT0	102	5510	MCS0	15.50	15.48
		134	5670		16.50	16.40
		142	5710		17.00	16.51
	802.11ac40-VHT0	102	5510	MCS0	16.00	15.56
		134	5670		16.50	16.42
		142	5710		17.00	16.53
	802.11ac80-VHT0	106	5530	MCS0	13.00	12.99
		122	5610		16.00	15.50
		138	5690		16.00	15.58

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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	19.00	18.54
		157	5785		19.00	18.34
		165	5825		19.00	18.31
	802.11n20-HT0	149	5745	MCS0	18.00	17.23
		157	5785		18.00	17.36
		165	5825		18.00	17.48
	802.11ac20-VHT0	149	5745	MCS0	18.00	17.26
		157	5785		18.00	17.44
		165	5825		18.00	17.51
	802.11n40-HT0	151	5755	MCS0	17.00	16.37
		159	5795		17.00	16.25
	802.11ac40-VHT0	151	5755	MCS0	17.00	16.38
		159	5795		16.50	16.41
	802.11ac80-VHT0	155	5775	MCS0	15.50	15.49

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5.3 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	6.00	5.84	5.00	4.34	5.00	4.67
	CH 39	2441	7.00	6.44	5.00	4.55	5.00	4.73
	CH 78	2480	7.00	6.46	5.00	4.88	5.00	4.94

5.4 BLE

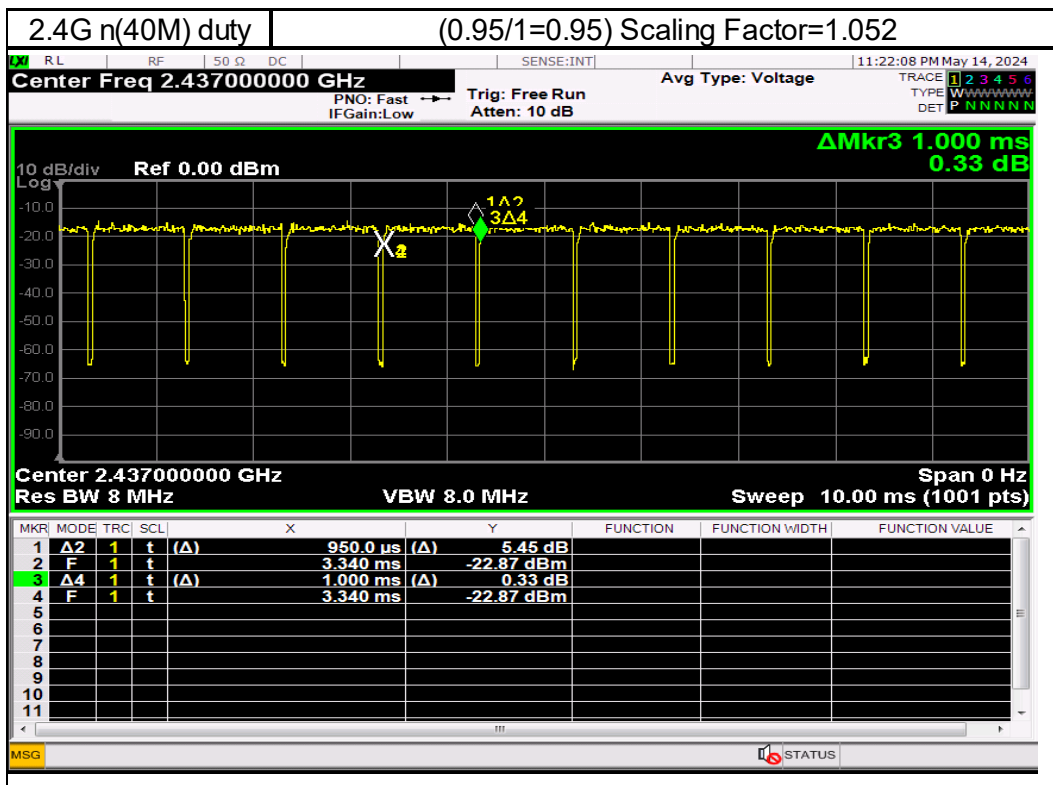
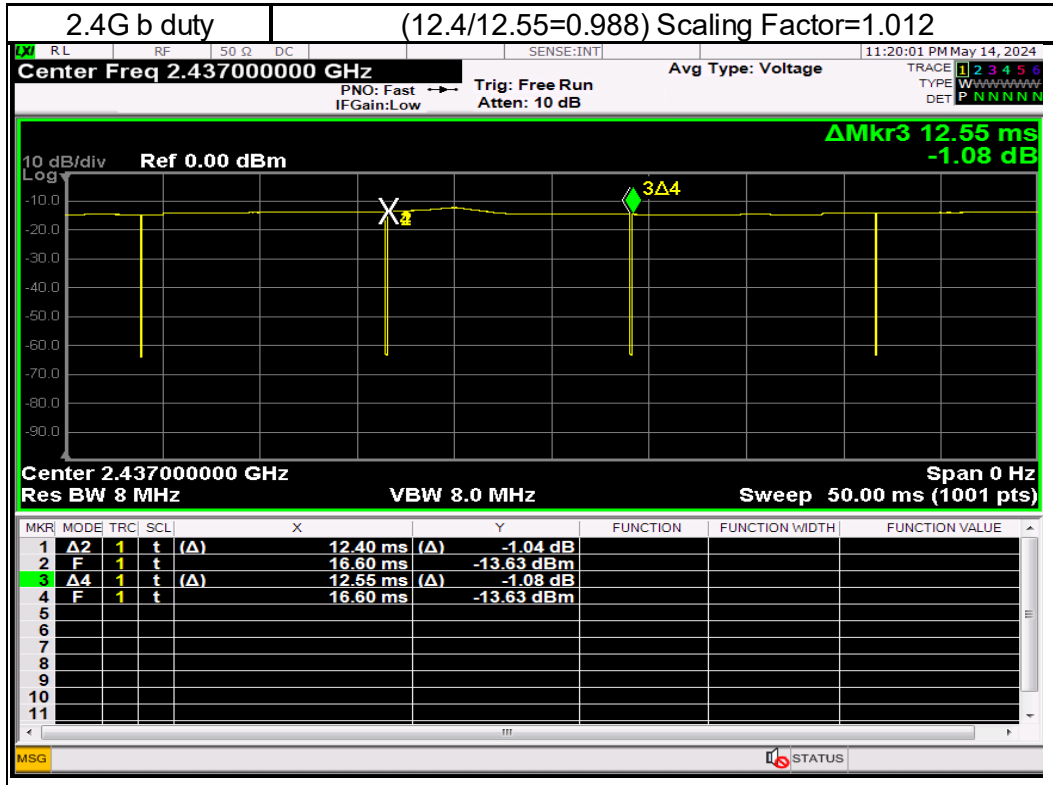
Mode	Channel	Frequency (MHz)	GFSK	
			Max. Rated Avg. Power + Max. Tolerance (dBm)	Average Output Power (dBm)
BLE_1M	CH 00	2402	0.5	0.32
	CH 19	2440	0.5	-0.05
	CH 39	2480	0.5	0.17

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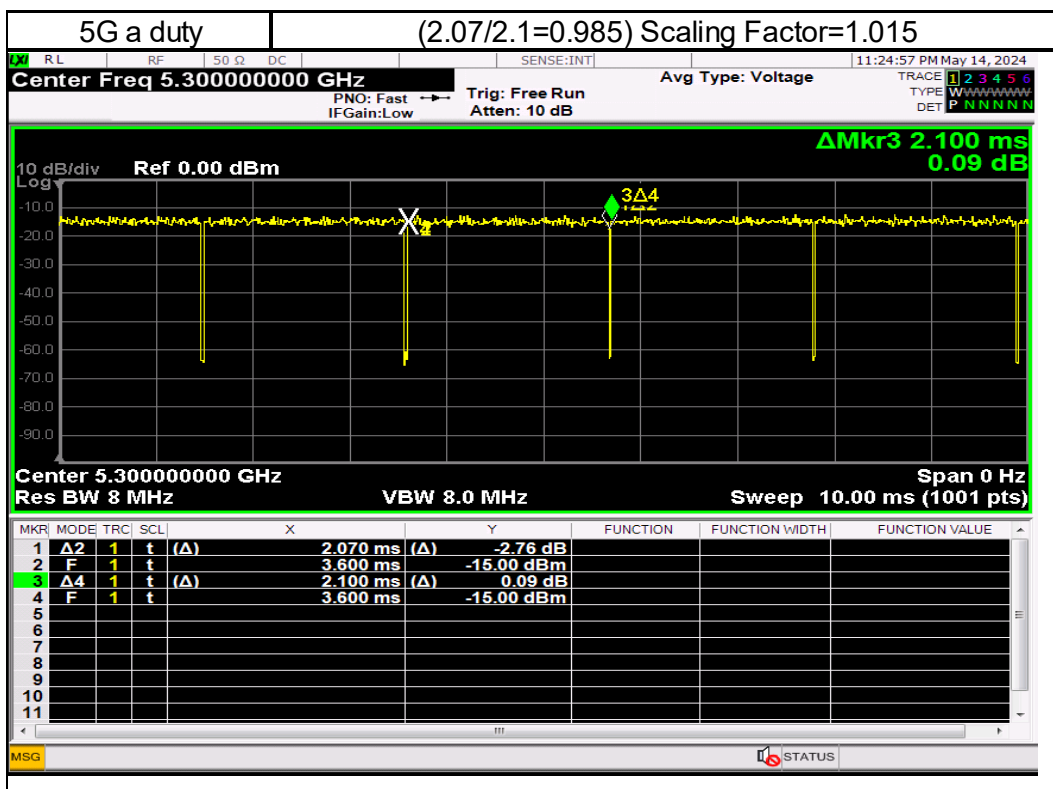
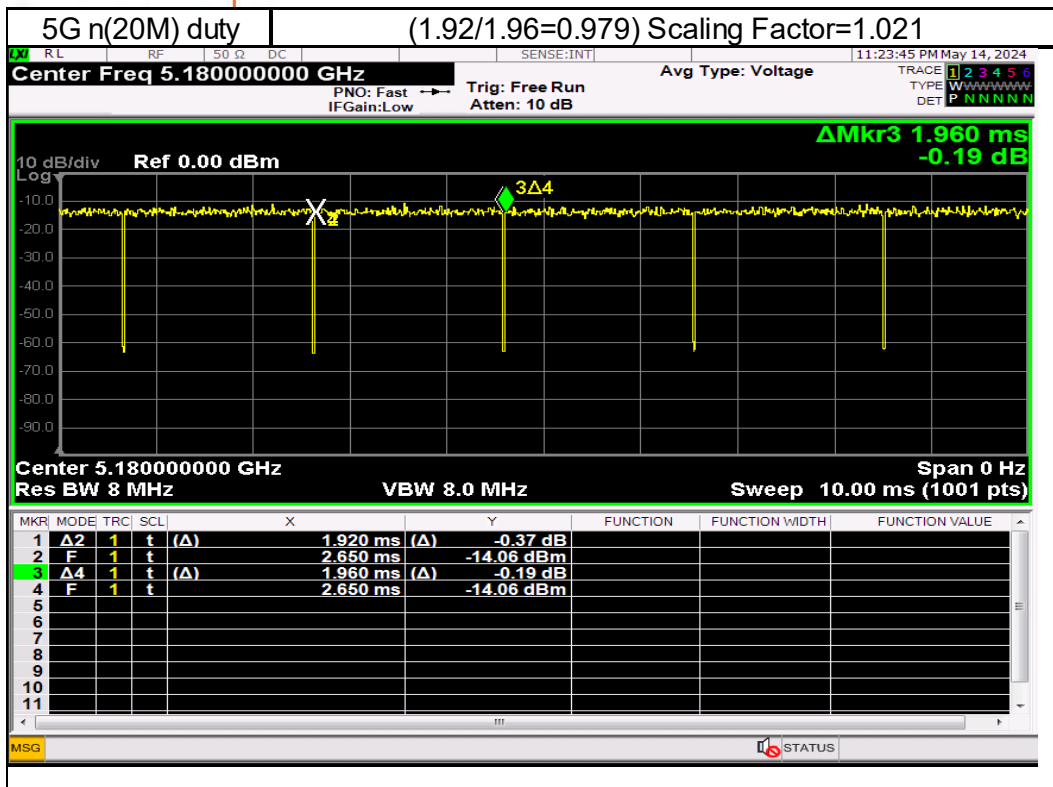
6 DUTY CYCLE



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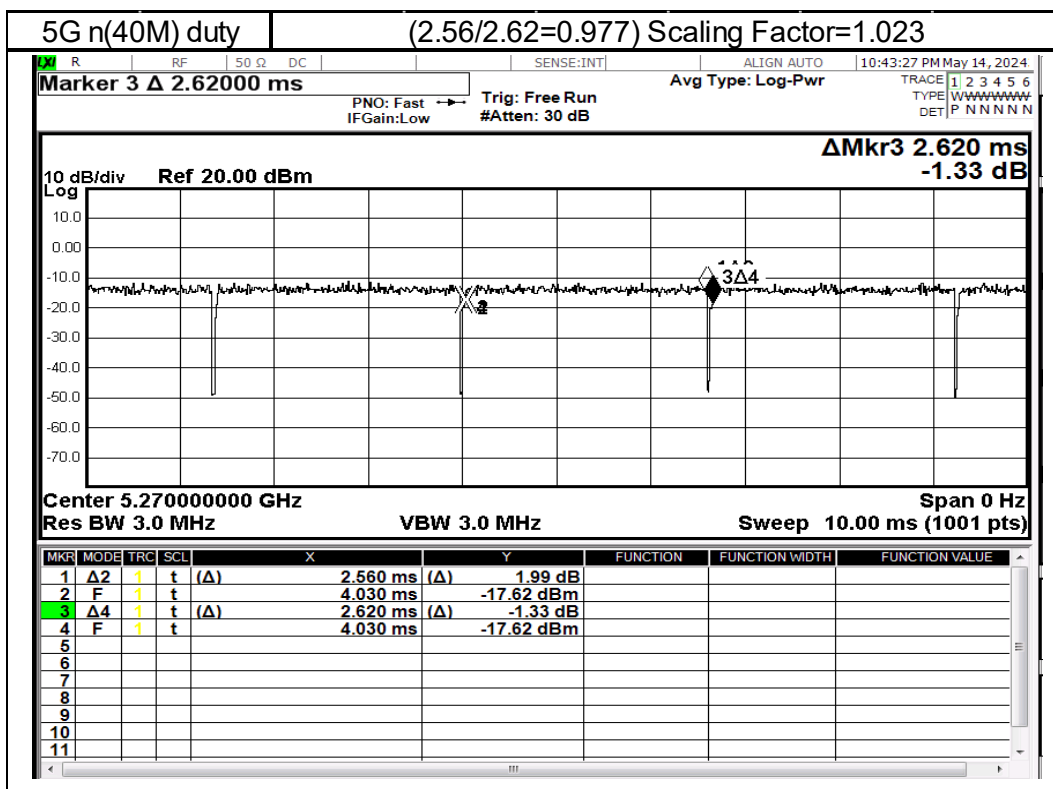
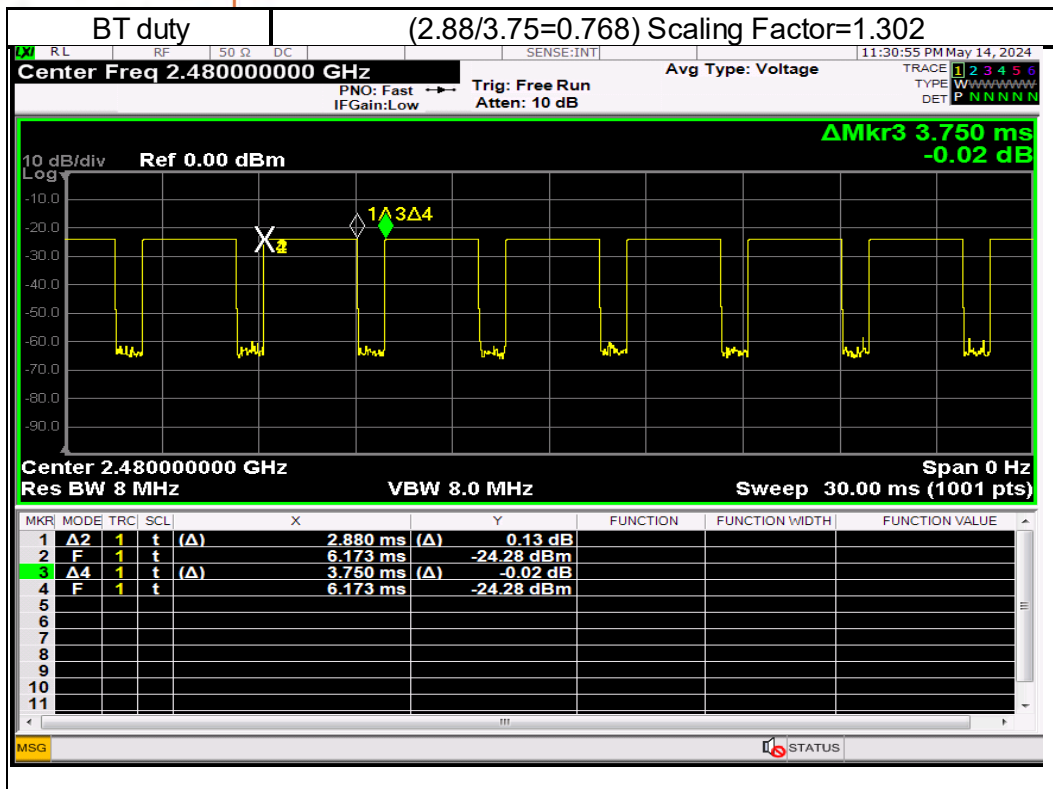
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Band	Bandwidth (MHz)	Modulation	RB Size	RB start	Position	Distance (mm)	Channel	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged SAR over 10g (W/kg)		ID
												Measured	Reported	
LTE Band 2	20MHz	QPSK	1	0	Back Cruve	0	18700	1860	22.00	21.12	122.46%	0.155	0.190	-
LTE Band 4	20MHz	QPSK	1	0	Back Cruve	0	20175	1732.5	22.00	21.48	112.72%	0.248	0.280	-
LTE Band 5	10MHz	QPSK	1	0	Back Cruve	0	20450	829	23.00	22.81	104.47%	0.081	0.085	-
LTE Band 12	10MHz	QPSK	1	0	Back Cruve	0	23130	711	23.00	22.56	110.66%	0.063	0.070	-
LTE Band 13	10MHz	QPSK	1	0	Back Cruve	0	23230	782	23.00	22.74	106.17%	0.084	0.089	-
LTE Band 66	20MHz	QPSK	1	0	Back Cruve	0	132322	1745	22.00	21.28	118.03%	0.225	0.266	-

* - repeated at the highest SAR measurement according to the KDB 865664 D01

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Note:

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

7.3 Reporting statements of conformity

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

7.4 Conclusion

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

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8 SIMULTANEOUS TRANSMISSION ANALYSIS

8.1 Simultaneous Transmission Scenarios:

Simultaneous Transmission configurations	Limb
WWAN+WLAN 2.4GHz+NFC	Yes
WWAN+WLAN 5GHz+NFC	Yes
WWAN+BT+NFC	Yes

8.2 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:

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

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.

8.3 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 $(\text{SAR1} + \text{SAR2})^{1.5}/R_i$, 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 R_i 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

Limb

	Exposure Position		FCC Reported SAR					Scenario 1	Scenario 2	Scenario 3
			1	2	4	6	7	1+2+7	1+4+7	1+6+7
			WWAN	2.4GHz WLAN Ant 1	5GHz WLAN Ant 1	Bluetooth Ant 1	NFC	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)	10g SAR (W/kg)	
LTE Band 2	Front Surface	0	0.174	0.021	0.354	0.006	0.000000165	0.195	0.528	0.180
	Back Surface	0	0.283	0.107	0.252	0.018	0.000000165	0.390	0.535	0.301
	Top Edge	0	0.315	0.121	2.469	0.016	0.000000165	0.436	2.784	0.331
	Bottom Edge	0	0.028	0.001	0.951	0.001	0.000000165	0.029	0.979	0.029
	Left Edge	0	0.084	0.308	0.994	0.058	0.000000165	0.392	1.078	0.142
	Right Edge	0	3.147	0.013	0.131	0.003	0.000000165	3.160	3.278	3.150
LTE Band 4	Front Surface	0	0.138	0.021	0.354	0.006	0.000000165	0.159	0.492	0.144
	Back Surface	0	0.227	0.107	0.252	0.018	0.000000165	0.334	0.479	0.245
	Top Edge	0	0.250	0.121	2.469	0.016	0.000000165	0.371	2.719	0.266
	Bottom Edge	0	0.020	0.001	0.951	0.001	0.000000165	0.021	0.971	0.021
	Left Edge	0	0.006	0.308	0.994	0.058	0.000000165	0.314	1.000	0.064
	Right Edge	0	3.201	0.013	0.131	0.003	0.000000165	3.214	3.332	3.204
LTE Band 5	Front Surface	0	0.183	0.021	0.354	0.006	0.000000165	0.204	0.537	0.189
	Back Surface	0	0.211	0.107	0.252	0.018	0.000000165	0.318	0.463	0.229
	Top Edge	0	0.413	0.121	2.469	0.016	0.000000165	0.534	2.882	0.429
	Bottom Edge	0	0.042	0.001	0.951	0.001	0.000000165	0.043	0.993	0.043
	Left Edge	0	0.117	0.308	0.994	0.058	0.000000165	0.425	1.111	0.175
	Right Edge	0	0.933	0.013	0.131	0.003	0.000000165	0.946	1.064	0.936
LTE Band 12	Front Surface	0	0.309	0.021	0.354	0.006	0.000000165	0.330	0.663	0.315
	Back Surface	0	0.346	0.107	0.252	0.018	0.000000165	0.453	0.598	0.364
	Top Edge	0	0.724	0.121	2.469	0.016	0.000000165	0.845	3.193	0.740
	Bottom Edge	0	0.018	0.001	0.951	0.001	0.000000165	0.019	0.969	0.019
	Left Edge	0	0.301	0.308	0.994	0.058	0.000000165	0.609	1.295	0.359
	Right Edge	0	0.762	0.013	0.131	0.003	0.000000165	0.775	0.893	0.765
LTE Band 13	Front Surface	0	0.253	0.021	0.354	0.006	0.000000165	0.274	0.607	0.259
	Back Surface	0	0.279	0.107	0.252	0.018	0.000000165	0.386	0.531	0.297
	Top Edge	0	0.543	0.121	2.469	0.016	0.000000165	0.664	3.012	0.559
	Bottom Edge	0	0.191	0.001	0.951	0.001	0.000000165	0.192	1.142	0.192
	Left Edge	0	0.228	0.308	0.994	0.058	0.000000165	0.536	1.222	0.286
	Right Edge	0	0.874	0.013	0.131	0.003	0.000000165	0.887	1.005	0.877
LTE Band 66	Front Surface	0	0.157	0.021	0.354	0.006	0.000000165	0.178	0.511	0.163
	Back Surface	0	0.253	0.107	0.252	0.018	0.000000165	0.360	0.505	0.271
	Top Edge	0	0.292	0.121	2.469	0.016	0.000000165	0.413	2.761	0.308
	Bottom Edge	0	0.027	0.001	0.951	0.001	0.000000165	0.028	0.978	0.028
	Left Edge	0	0.013	0.308	0.994	0.058	0.000000165	0.321	1.007	0.071
	Right Edge	0	3.269	0.013	0.131	0.003	0.000000165	3.282	3.400	3.272

Back curve

	Exposure Position		FCC Reported SAR					Scenario 1	Scenario 2	Scenario 3
			1	2	4	6	7	1+2+7	1+4+7	1+6+7
			WWAN	2.4GHz WLAN Ant 1	5GHz WLAN Ant 1	Bluetooth Ant 1	NFC	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)	10g SAR (W/kg)	
LTE Band 2	Back Curve	0	0.190	0.026	0.262	0.007	0.000000165	0.216	0.452	0.197
LTE Band 4	Back Curve	0	0.280	0.026	0.262	0.007	0.000000165	0.306	0.542	0.287
LTE Band 5	Back Curve	0	0.085	0.026	0.262	0.007	0.000000165	0.111	0.347	0.092
LTE Band 12	Back Curve	0	0.070	0.026	0.262	0.007	0.000000165	0.096	0.332	0.077
LTE Band 13	Back Curve	0	0.089	0.026	0.262	0.007	0.000000165	0.115	0.351	0.096
LTE Band 66	Back Curve	0	0.266	0.026	0.262	0.007	0.000000165	0.292	0.528	0.273

8.4 Conclusion

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

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9 INSTRUMENTS LIST

Equipment List					
Manufacturer	Device	Type	Serial number	Date of last calibration	Date of next calibration
SPEAG	Data acquisition Electronics	DAE4	856	Apr/22/2024	Apr/21/2025
SPEAG	Dosimetric E-Field Probe	EX3DV4	7509	Apr/23/2024	Apr/22/2025
SPEAG	System Validation Dipole	D750V3	1015	Sep/18/2023	Sep/17/2024
SPEAG	System Validation Dipole	D835V2	4d063	Sep/20/2023	Sep/19/2024
SPEAG	System Validation Dipole	D1750V2	1008	Sep/19/2023	Sep/18/2024
SPEAG	System Validation Dipole	D1900V2	5d056	Aug/25/2023	Aug/24/2024
SPEAG	System Validation Dipole	D2450V2	727	Apr/22/2024	Apr/21/2025
SPEAG	System Validation Dipole	D5GHzV2	1023	Jan/24/2024	Jan/23/2025
SPEAG	Dielectric Assessment Kit	DAKS-3.5	1053	Feb/21/2024	Feb/20/2025
Agilent	MXG Analog Signal Generator	N5181A	MY50141235	Jun/19/2023	Jun/18/2024
R&S	MXG Analog Signal Generator	SMB100A03	182012	May/23/2023	May/22/2024
Agilent	Dual-directional coupler	772D	MY46151258	Sep/26/2023	Sep/25/2024
Agilent	Dual-directional coupler	778D	MY46151242	Sep/26/2023	Sep/25/2024
EMCI	Amplifier	ZHL-42	980189	Calibration not required	Calibration not required
EMCI	Amplifier	ZVE-8G	980190	Calibration not required	Calibration not required
R&S	Power Sensor	NRP18S	109065	Oct/23/2023	Oct/22/2024
R&S	Power Meter	NRX	102034	Dec/13/2023	Dec/12/2024
R&S	Power Sensor	NRP18S	101974	Nov/21/2023	Nov/20/2024
SPEAG	Software	DASY 8 V16.0.2.83	N/A	Calibration not required	Calibration not required
SPEAG	Phantom	ELI	N/A	Calibration not required	Calibration not required
Anritsu	Radio Communication Test	MT8820C	6201061014	Sep/23/2023	Sep/22/2024
R&S	Spectrum Analyzer	FSV3044	101487	Apr/09/2024	Apr/08/2025
LKM	Digital thermometer	DTM3000	3896	Dec/26/2023	Dec/25/2024
TECEP	Digital thermometer	DTM-303A	TP130077	Sep/25/2023	Sep/24/2024

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10 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.)	0.87%	N	1	1	0.64	0.43	0.56%	0.37%	M
Liquid Conductivity (mea.)	0.32%	N	1	1	0.6	0.49	0.19%	0.16%	M
Combined standard uncertainty		RSS					11.73%	11.71%	
Expant uncertainty (95% confidence interval), K=2							23.46%	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%	∞
<i>Isotropy , Axial</i>	3.50%	R	√3	1.732	1	1	2.02%	2.02%	∞
<i>Isotropy, Hemispherical</i>	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)									
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.)	0.72%	N	1	1	0.64	0.43	0.46%	0.31%	M
Liquid Conductivity (mea.)	1.37%	N	1	1	0.6	0.49	0.82%	0.67%	M
Combined standard uncertainty		RSS					11.46%	11.43%	
Expant uncertainty (95% confidence interval), K=2							22.91%	22.86%	

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11 SAR MEASUREMENT RESULTS

ID: 001

Report No. : TESA2404000217E5

Measurement Report_LTE Band 2 (20MHz)_Limb_Right Edge_CH 18700_QPSK_1-0_0mm

Ambient temperature: 22.1°C; Liquid temperature: 21.1°C

Exposure Conditions

Phantom Section, TSL	Position, Test Distance [mm]	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat, HSL	Right Edge, 0.00	1860.0, 18700	8.1	1.412	39.717

Hardware Setup

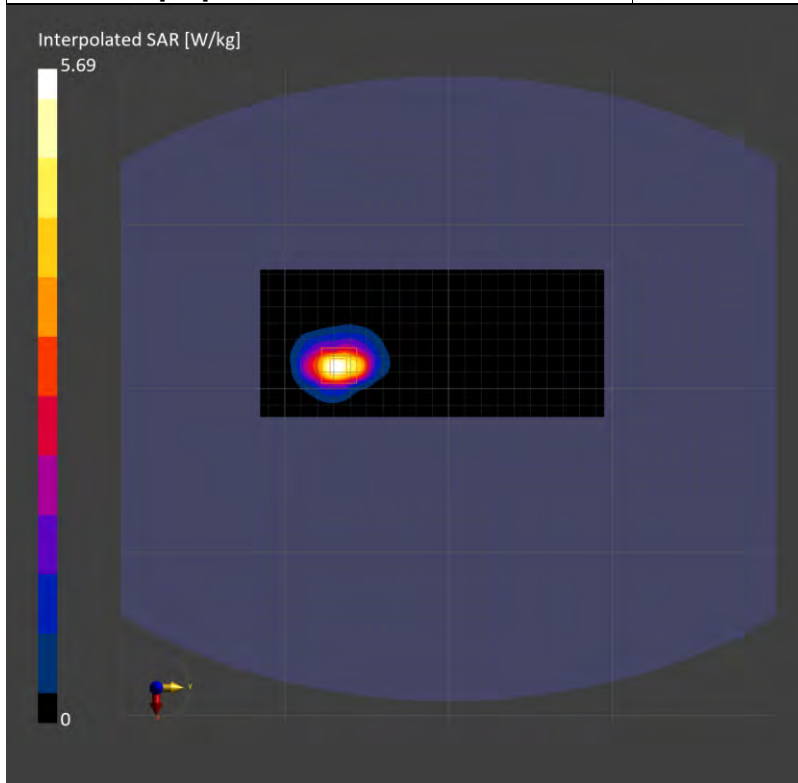
Phantom	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0	EX3DV4 - SN7509, 2024-04-23	DAE4 Sn856, 2024-04-22

Scans Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	90.0 x 210.0	32.0 x 32.0 x 30.0
Grid Steps [mm]	15.0 x 15.0	8.0 x 8.0 x 5.0
Sensor Surface [mm]	3.0	1.4

Measurement Results

	Area Scan	Zoom Scan
Date	2024-05-13	2024-05-13
psSAR1g [W/kg]	4.47	4.90
psSAR8g [W/kg]	2.46	2.80
psSAR10g [W/kg]	2.24	2.57
Power Drift [dB]	0.03	-0.02
M2/M1 [%]		62.6
Dist 3dB Peak [mm]		9.6



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ID: 002

Report No. : TESA2404000217E5

Measurement Report_LTE Band 4 (20MHz)_Limb_Right Edge_CH 20175_QPSK_1-0_0mm

Ambient temperature: 22.1°C; Liquid temperature: 21.1°C

Exposure Conditions

Phantom Section, TSL	Position, Test Distance [mm]	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat, HSL	Right Edge, 0.00	1732.5, 20175	8.37	1.37	39.823

Hardware Setup

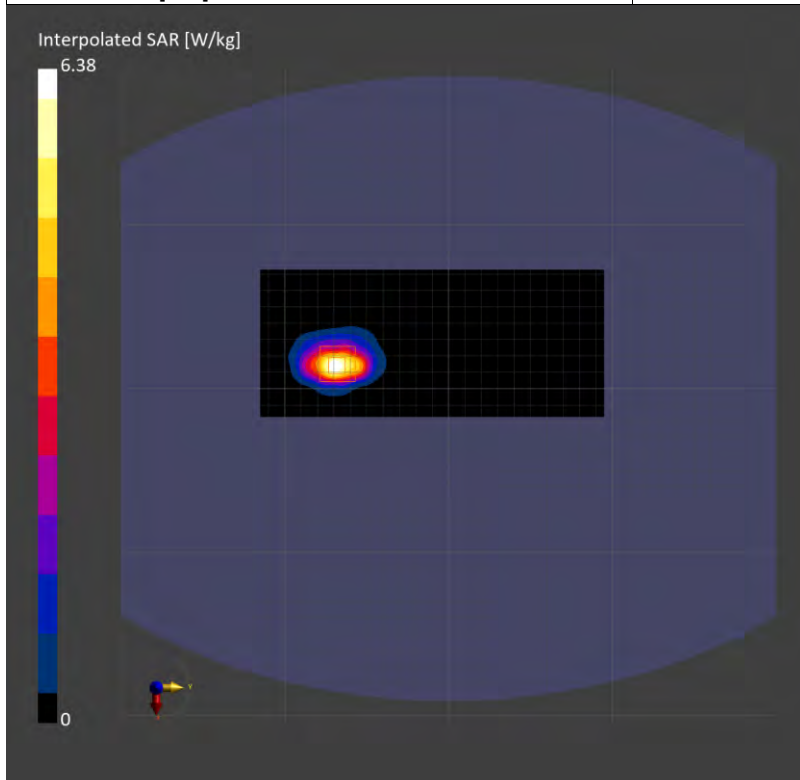
Phantom	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0	EX3DV4 - SN7509, 2024-04-23	DAE4 Sn856, 2024-04-22

Scans Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	90.0 x 210.0	32.0 x 32.0 x 30.0
Grid Steps [mm]	15.0 x 15.0	8.0 x 8.0 x 5.0
Sensor Surface [mm]	3.0	1.4

Measurement Results

	Area Scan	Zoom Scan
Date	2024-05-13	2024-05-13
psSAR1g [W/kg]	4.99	5.61
psSAR8g [W/kg]	2.73	3.11
psSAR10g [W/kg]	2.47	2.84
Power Drift [dB]	-0.01	-0.05
M2/M1 [%]		57.7
Dist 3dB Peak [mm]		9.4



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ID: 003

Report No. : TESA2404000217E5

Measurement Report_LTE Band 5 (10MHz)_Limb_Right Edge_CH 20450_QPSK_1-0_0mm

Ambient temperature: 22.2°C; Liquid temperature: 21.4°C

Exposure Conditions

Phantom Section, TSL	Position, Test Distance [mm]	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat, HSL	Right Edge, 0.00	829.0, 20450	9.28	0.902	41.293

Hardware Setup

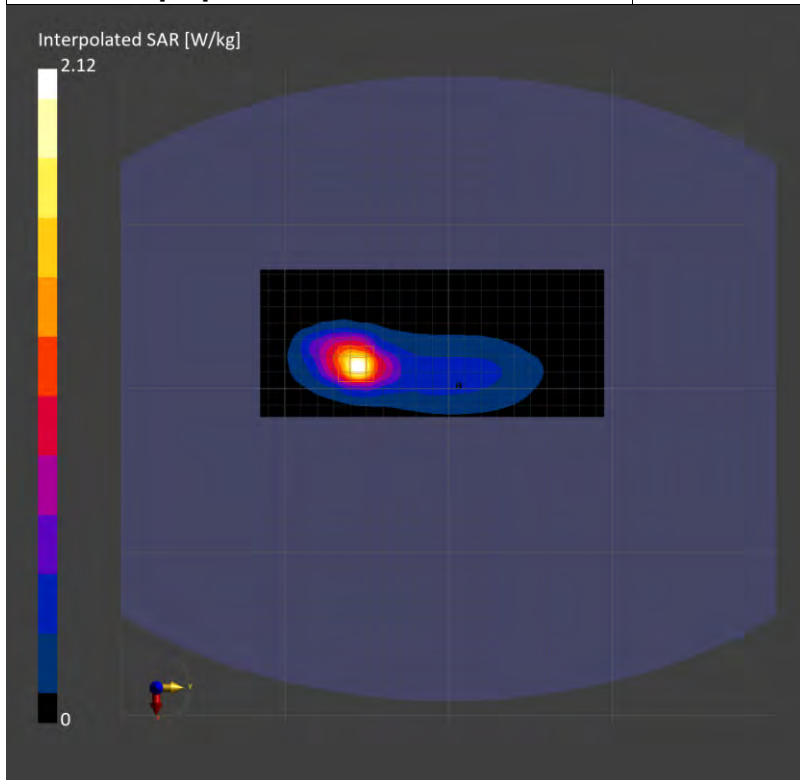
Phantom	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0	EX3DV4 - SN7509, 2024-04-23	DAE4 Sn856, 2024-04-22

Scans Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	90.0 x 210.0	32.0 x 32.0 x 30.0
Grid Steps [mm]	15.0 x 15.0	8.0 x 8.0 x 5.0
Sensor Surface [mm]	3.0	1.4

Measurement Results

	Area Scan	Zoom Scan
Date	2024-05-12	2024-05-12
psSAR1g [W/kg]	1.68	1.73
psSAR8g [W/kg]	1.01	0.969
psSAR10g [W/kg]	0.935	0.893
Power Drift [dB]	0.03	-0.02
M2/M1 [%]		51.1
Dist 3dB Peak [mm]		9.1



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ID: 004

Report No. : TESA2404000217E5

Measurement Report_LTE Band 12 (10MHz)_Limb_Right Edge_CH 23130_QPSK_1-0_0mm

Ambient temperature: 22.2°C; Liquid temperature: 21.4°C

Exposure Conditions

Phantom Section, TSL	Position, Test Distance [mm]	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat, HSL	Right Edge, 0.00	711.0, 23130	9.93	0.885	41.861

Hardware Setup

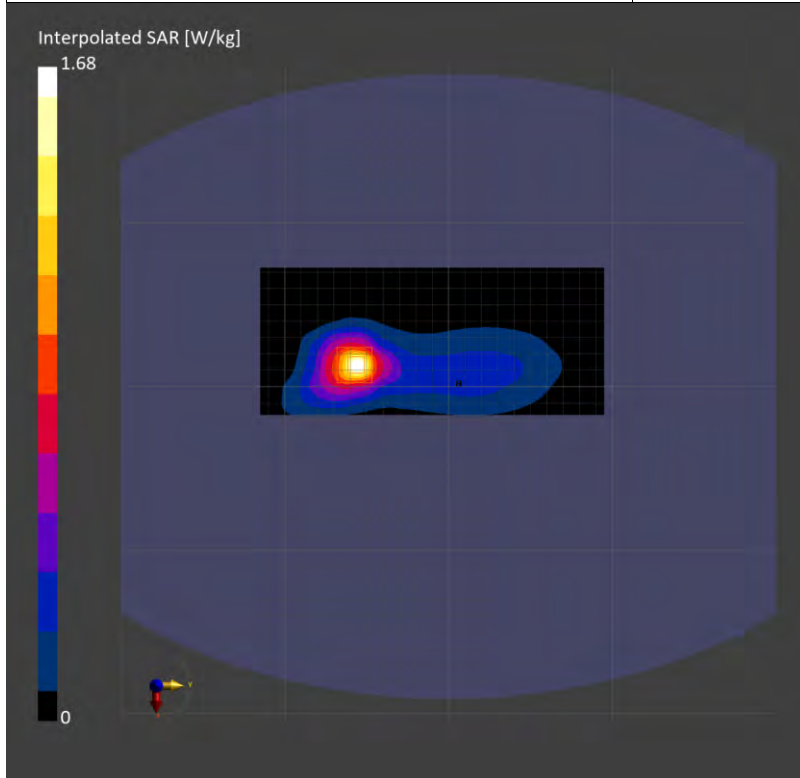
Phantom	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0	EX3DV4 - SN7509, 2024-04-23	DAE4 Sn856, 2024-04-22

Scans Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	90.0 x 210.0	32.0 x 32.0 x 30.0
Grid Steps [mm]	15.0 x 15.0	8.0 x 8.0 x 5.0
Sensor Surface [mm]	3.0	1.4

Measurement Results

	Area Scan	Zoom Scan
Date	2024-05-12	2024-05-12
psSAR1g [W/kg]	1.33	1.30
psSAR8g [W/kg]	0.820	0.744
psSAR10g [W/kg]	0.760	0.689
Power Drift [dB]	0.01	-0.03
M2/M1 [%]		59.2
Dist 3dB Peak [mm]		10.3



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ID: 005

Report No. : TESA2404000217E5

Measurement Report_LTE Band 13 (10MHz)_Limb_Right Edge_CH 23230_QPSK_1-0_0mm

Ambient temperature: 22.2°C; Liquid temperature: 21.4°C

Exposure Conditions

Phantom Section, TSL	Position, Test Distance [mm]	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat, HSL	Right Edge, 0.00	782.0, 23230	9.93	0.89	41.492

Hardware Setup

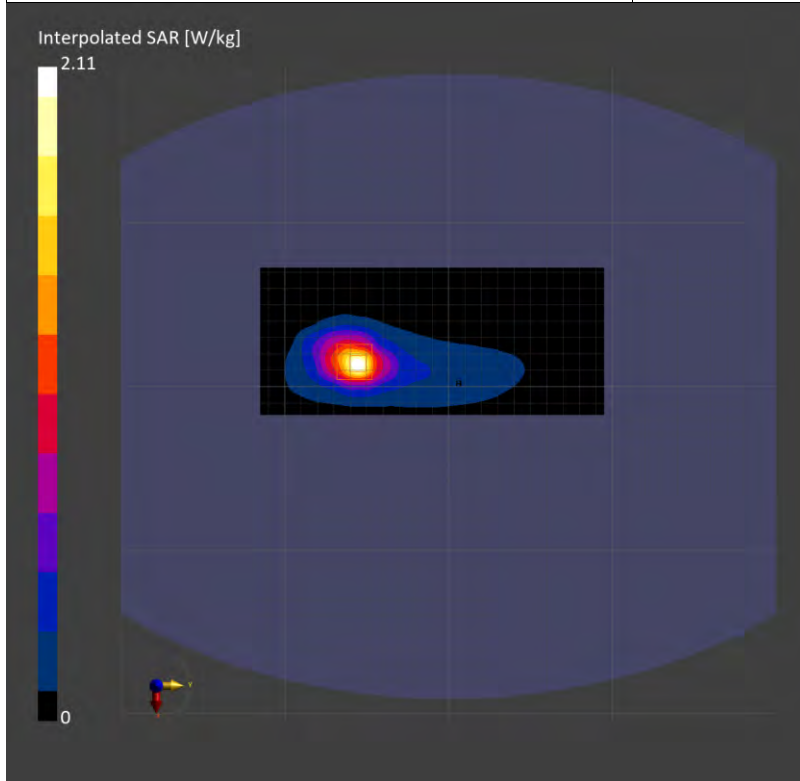
Phantom	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0	EX3DV4 - SN7509, 2024-04-23	DAE4 Sn856, 2024-04-22

Scans Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	90.0 x 210.0	32.0 x 32.0 x 30.0
Grid Steps [mm]	15.0 x 15.0	8.0 x 8.0 x 5.0
Sensor Surface [mm]	3.0	1.4

Measurement Results

	Area Scan	Zoom Scan
Date	2024-05-12	2024-05-12
psSAR1g [W/kg]	1.66	1.60
psSAR8g [W/kg]	1.01	0.893
psSAR10g [W/kg]	0.928	0.823
Power Drift [dB]	0.02	-0.05
M2/M1 [%]		50.0
Dist 3dB Peak [mm]		10.2



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ID: 006

Report No. : TESA2404000217E5

Measurement Report_LTE Band 66 (20MHz)_Limb_Right Edge_CH 132322_QPSK_1-0_0mm

Ambient temperature: 22.1°C; Liquid temperature: 21.1°C

Exposure Conditions

Phantom Section, TSL	Position, Test Distance [mm]	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat, HSL	Right Edge, 0.00	1745.0, 132322	8.37	1.377	39.804

Hardware Setup

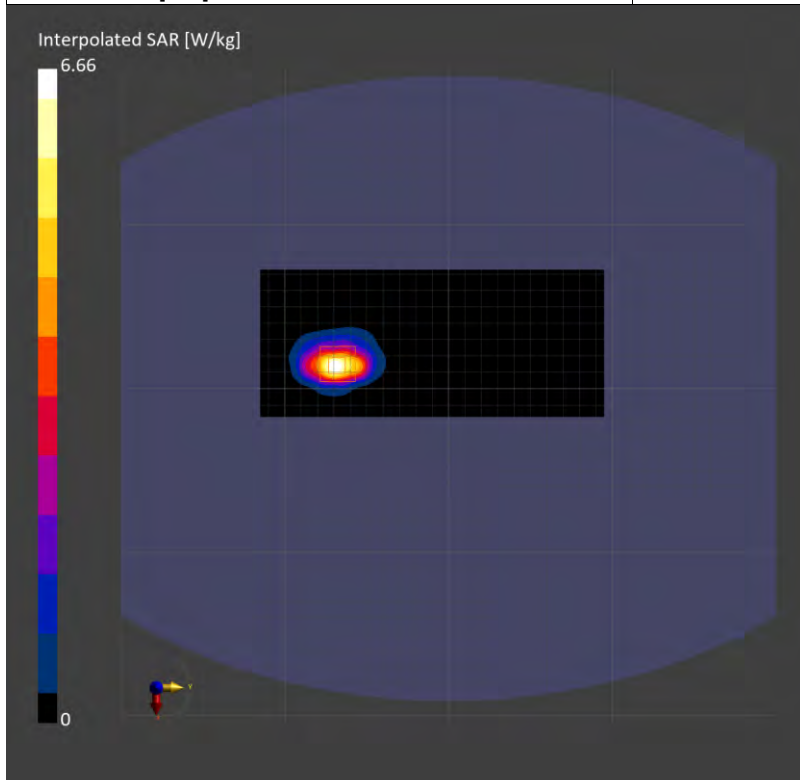
Phantom	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0	EX3DV4 - SN7509, 2024-04-23	DAE4 Sn856, 2024-04-22

Scans Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	90.0 x 210.0	32.0 x 32.0 x 30.0
Grid Steps [mm]	15.0 x 15.0	8.0 x 8.0 x 5.0
Sensor Surface [mm]	3.0	1.4

Measurement Results

	Area Scan	Zoom Scan
Date	2024-05-13	2024-05-13
psSAR1g [W/kg]	5.18	5.46
psSAR8g [W/kg]	2.81	3.04
psSAR10g [W/kg]	2.54	2.77
Power Drift [dB]	0.04	-0.03
M2/M1 [%]		58.0
Dist 3dB Peak [mm]		9.6



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ID: 007

Report No. : TESA2404000217E5

Measurement Report_WLAN 802.11b_Limb_Left Edge_CH 11_0mm_Ant 1

Ambient temperature: 22.3°C; Liquid temperature: 21.5°C

Exposure Conditions

Phantom Section, TSL	Position, Test Distance [mm]	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat, HSL	Left Edge, 0.00	2462.0, 11	7.56	1.835	38.902

Hardware Setup

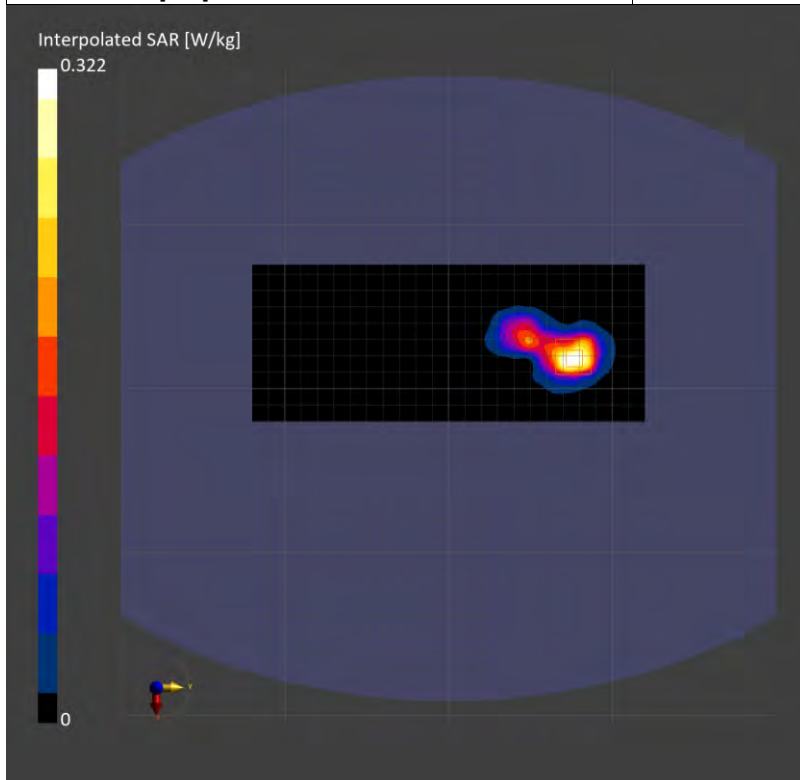
Phantom	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0	EX3DV4 - SN7509, 2024-04-23	DAE4 Sn856, 2024-04-22

Scans Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	96.0 x 240.0	30.0 x 30.0 x 30.0
Grid Steps [mm]	12.0 x 12.0	5.0 x 5.0 x 5.0
Sensor Surface [mm]	3.0	1.4

Measurement Results

	Area Scan	Zoom Scan
Date	2024-05-14	2024-05-14
psSAR1g [W/kg]	0.253	0.279
psSAR8g [W/kg]	0.132	0.135
psSAR10g [W/kg]	0.120	0.122
Power Drift [dB]	0.01	0.03
M2/M1 [%]		54.3
Dist 3dB Peak [mm]		8.5



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ID: 008

Report No. : TESA2404000217E5

Measurement Report_WLAN 802.11n(40M) 2.4G_Limb_Left Edge_CH 6_0mm_Ant 1

Ambient temperature: 22.3°C; Liquid temperature: 21.5°C

Exposure Conditions

Phantom Section, TSL	Position, Test Distance [mm]	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat, HSL	Left Edge, 0.00	2437.0, 6	7.56	1.813	38.94

Hardware Setup

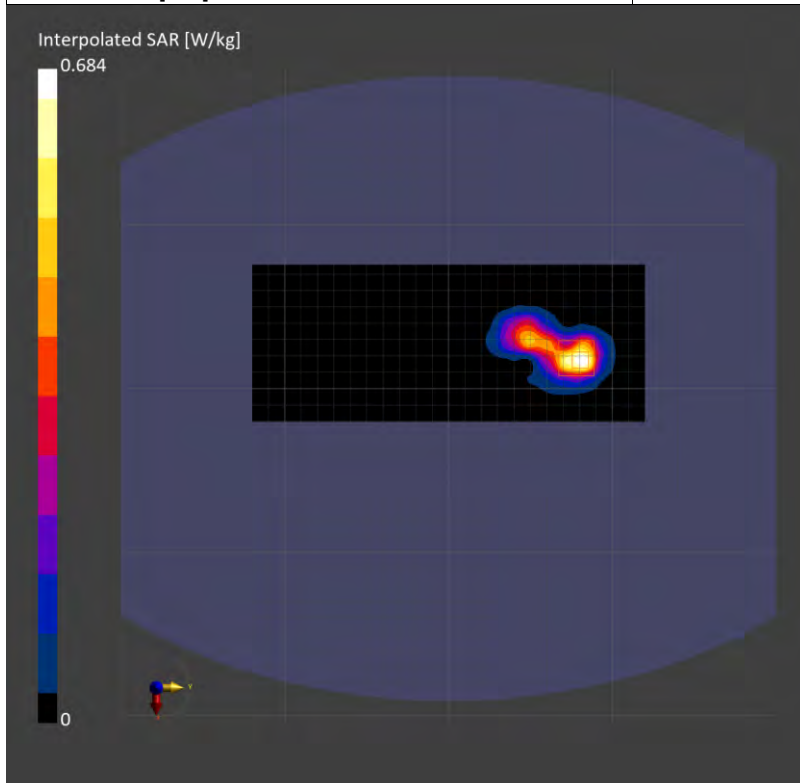
Phantom	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0	EX3DV4 - SN7509, 2024-04-23	DAE4 Sn856, 2024-04-22

Scans Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	96.0 x 240.0	30.0 x 30.0 x 30.0
Grid Steps [mm]	12.0 x 12.0	5.0 x 5.0 x 5.0
Sensor Surface [mm]	3.0	1.4

Measurement Results

	Area Scan	Zoom Scan
Date	2024-05-14	2024-05-14
psSAR1g [W/kg]	0.527	0.574
psSAR8g [W/kg]	0.270	0.279
psSAR10g [W/kg]	0.244	0.252
Power Drift [dB]	-0.01	-0.03
M2/M1 [%]		57.1
Dist 3dB Peak [mm]		8.5



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ID: 009

Report No. : TESA2404000217E5

Measurement Report_Bluetooth(GFSK)_Limb_Left Edge_CH 78_0mm_Ant 1

Ambient temperature: 22.3°C; Liquid temperature: 21.5°C

Exposure Conditions

Phantom Section, TSL	Position, Test Distance [mm]	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat, HSL	Left Edge, 0.00	2480.0, 78	7.56	1.851	38.879

Hardware Setup

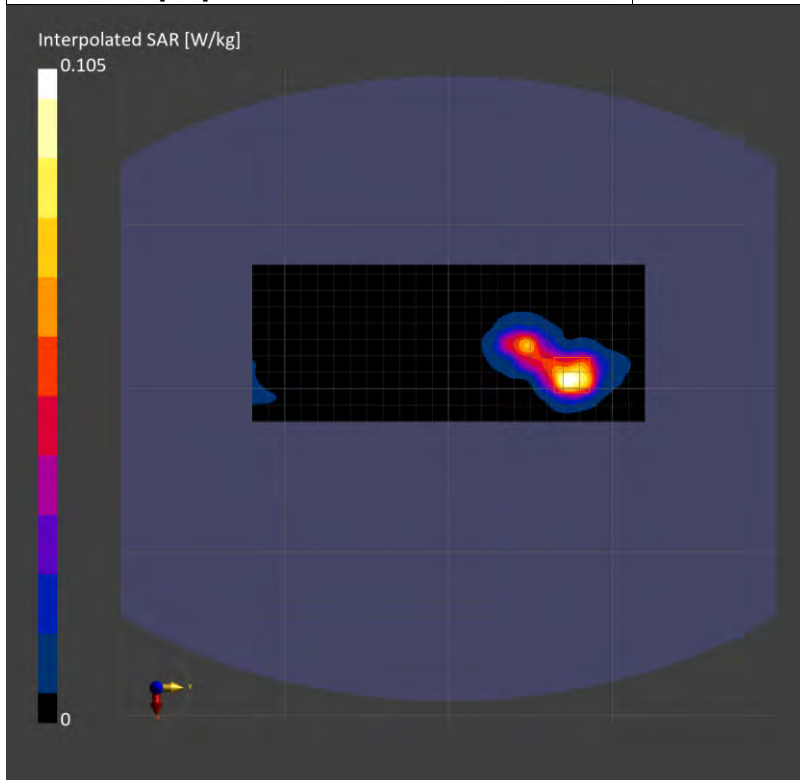
Phantom	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0	EX3DV4 - SN7509, 2024-04-23	DAE4 Sn856, 2024-04-22

Scans Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	96.0 x 240.0	30.0 x 30.0 x 30.0
Grid Steps [mm]	12.0 x 12.0	5.0 x 5.0 x 5.0
Sensor Surface [mm]	3.0	1.4

Measurement Results

	Area Scan	Zoom Scan
Date	2024-05-14	2024-05-14
psSAR1g [W/kg]	0.080	0.088
psSAR8g [W/kg]	0.041	0.043
psSAR10g [W/kg]	0.037	0.039
Power Drift [dB]	-0.01	0.03
M2/M1 [%]		54.6
Dist 3dB Peak [mm]		8.1



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ID: 010

Report No. : TESA2404000217E5

Measurement Report_WLAN 802.11n(40M) 5.2G_Limb_Top Edge_CH 46_0mm_Ant 1

Ambient temperature: 22.6°C; Liquid temperature: 21.7°C

Exposure Conditions

Phantom Section, TSL	Position, Test Distance [mm]	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat, HSL	Top Edge, 0.00	5230.0, 46	5.56	4.675	35.668

Hardware Setup

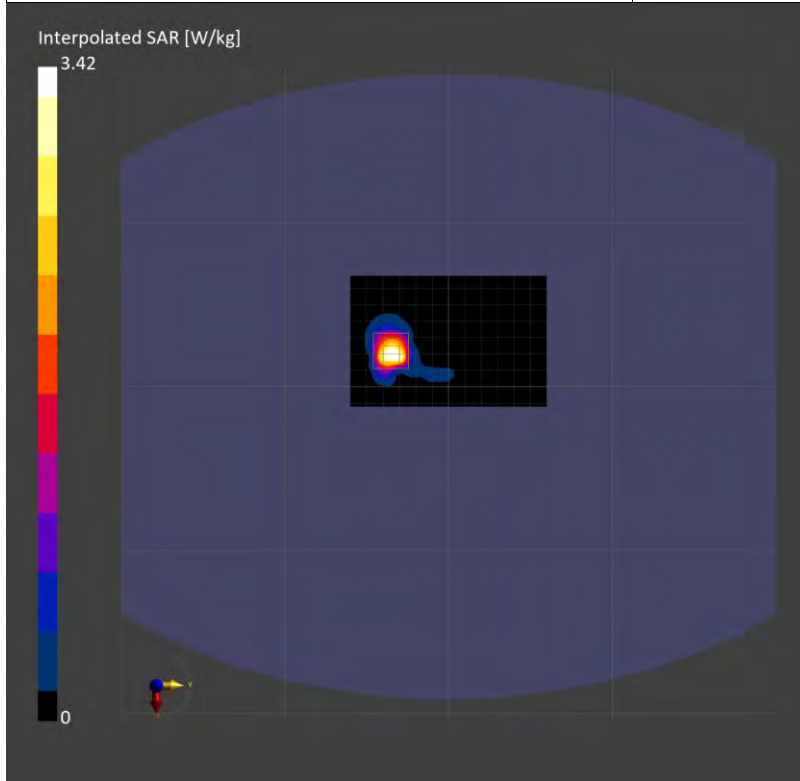
Phantom	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0	EX3DV4 - SN7509, 2024-04-23	DAE4 Sn856, 2024-04-22

Scans Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	80.0 x 120.0	24.0 x 24.0 x 22.0
Grid Steps [mm]	10.0 x 10.0	4.0 x 4.0 x 2.0
Sensor Surface [mm]	3.0	1.4

Measurement Results

	Area Scan	Zoom Scan
Date	2024-05-15	2024-05-15
psSAR1g [W/kg]	2.47	3.15
psSAR8g [W/kg]	0.896	1.01
psSAR10g [W/kg]	0.773	0.865
Power Drift [dB]	0.02	0.02
M2/M1 [%]		57.5
Dist 3dB Peak [mm]		6.4



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ID: 011

Report No. : TESA2404000217E5

Measurement Report_WLAN 802.11a 5.3G_Limb_Top Edge_CH 60_0mm_Ant 1

Ambient temperature: 22.6°C; Liquid temperature: 21.7°C

Exposure Conditions

Phantom Section, TSL	Position, Test Distance [mm]	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat, HSL	Top Edge, 0.00	5300.0, 60	5.56	4.747	35.588

Hardware Setup

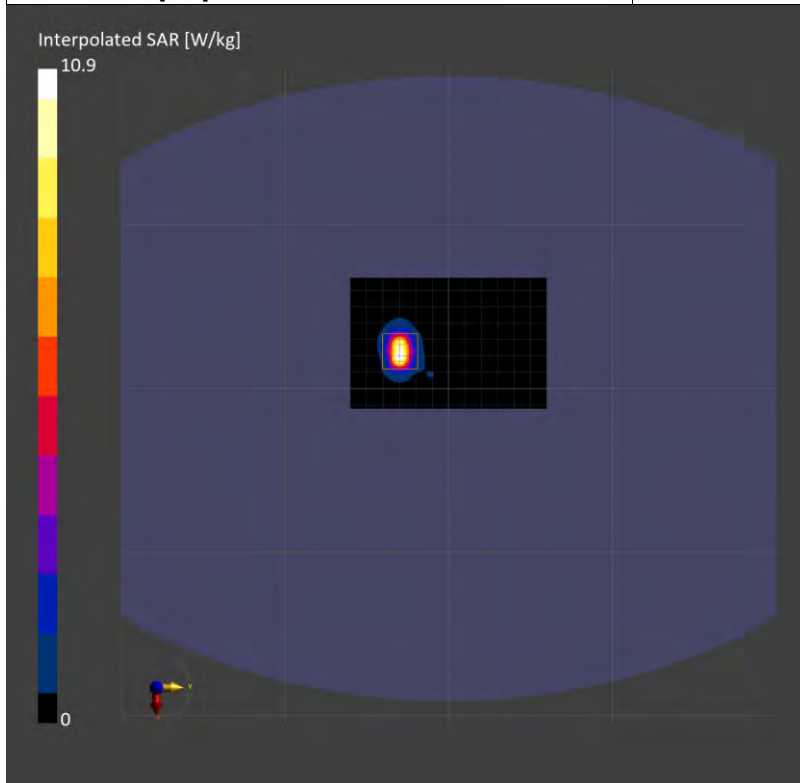
Phantom	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0	EX3DV4 - SN7509, 2024-04-23	DAE4 Sn856, 2024-04-22

Scans Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	80.0 x 120.0	24.0 x 24.0 x 22.0
Grid Steps [mm]	10.0 x 10.0	4.0 x 4.0 x 2.0
Sensor Surface [mm]	3.0	1.4

Measurement Results

	Area Scan	Zoom Scan
Date	2024-05-15	2024-05-15
psSAR1g [W/kg]	7.07	8.17
psSAR8g [W/kg]	2.28	2.48
psSAR10g [W/kg]	1.95	2.10
Power Drift [dB]	0.02	-0.02
M2/M1 [%]		58.7
Dist 3dB Peak [mm]		6.1



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ID: 012

Report No. : TESA2404000217E5

Measurement Report_WLAN 802.11a 5.6G_Limb_Top Edge_CH 144_0mm_Ant 1

Ambient temperature: 22.6°C; Liquid temperature: 21.7°C

Exposure Conditions

Phantom Section, TSL	Position, Test Distance [mm]	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat, HSL	Top Edge, 0.00	5720.0, 144	5.08	5.177	35.108

Hardware Setup

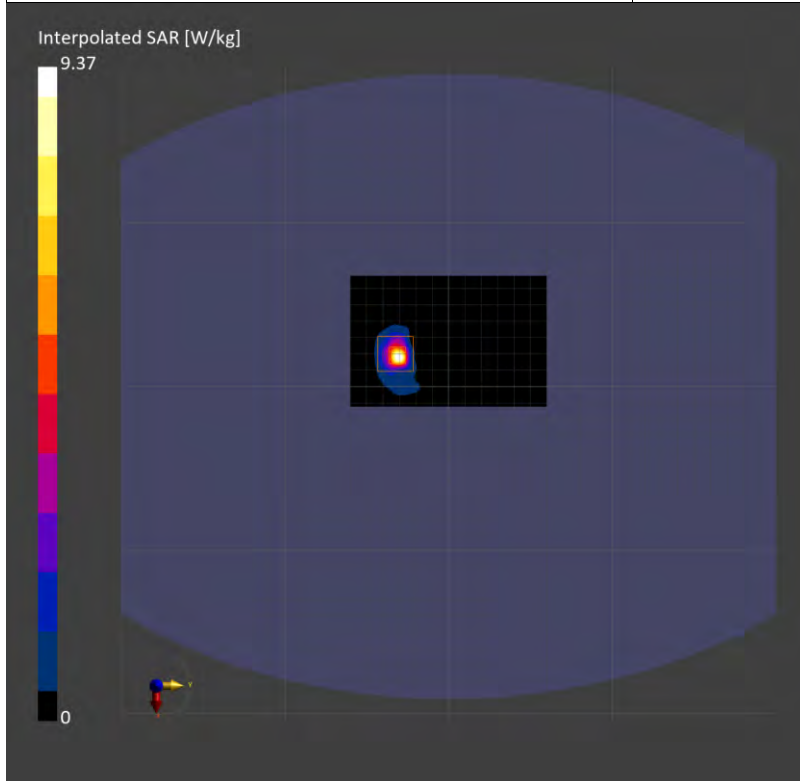
Phantom	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0	EX3DV4 - SN7509, 2024-04-23	DAE4 Sn856, 2024-04-22

Scans Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	80.0 x 120.0	24.0 x 24.0 x 22.0
Grid Steps [mm]	10.0 x 10.0	4.0 x 4.0 x 2.0
Sensor Surface [mm]	3.0	1.4

Measurement Results

	Area Scan	Zoom Scan
Date	2024-05-15	2024-05-15
psSAR1g [W/kg]	5.20	6.37
psSAR8g [W/kg]	1.53	1.80
psSAR10g [W/kg]	1.30	1.51
Power Drift [dB]	0.02	-0.05
M2/M1 [%]		58.6
Dist 3dB Peak [mm]		5.4



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ID: 013

Report No. : TESA2404000217E5

Measurement Report_WLAN 802.11a 5.8G_Limb_Top Edge_CH 149_0mm_Ant 1

Ambient temperature: 22.6°C; Liquid temperature: 21.7°C

Exposure Conditions

Phantom Section, TSL	Position, Test Distance [mm]	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat, HSL	Top Edge, 0.00	5745.0, 149	5.08	5.202	35.08

Hardware Setup

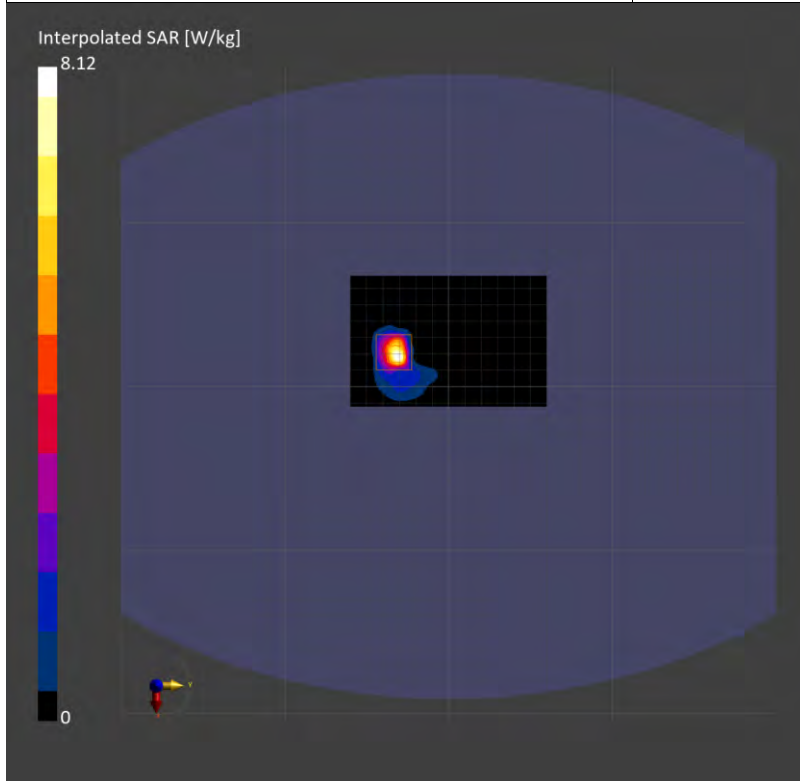
Phantom	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0	EX3DV4 - SN7509, 2024-04-23	DAE4 Sn856, 2024-04-22

Scans Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	80.0 x 120.0	24.0 x 24.0 x 22.0
Grid Steps [mm]	10.0 x 10.0	4.0 x 4.0 x 2.0
Sensor Surface [mm]	3.0	1.4

Measurement Results

	Area Scan	Zoom Scan
Date	2024-05-15	2024-05-15
psSAR1g [W/kg]	5.21	6.62
psSAR8g [W/kg]	1.72	1.85
psSAR10g [W/kg]	1.47	1.55
Power Drift [dB]	0.03	-0.02
M2/M1 [%]		55.2
Dist 3dB Peak [mm]		5.4



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12 SAR SYSTEM CHECK RESULTS

Report No. : TESA2404000217E5

Measurement Report

Dipole_D750-SN:1015

Ambient temperature: 22.2°C; Liquid temperature: 21.4°C

Exposure Conditions

Phantom Section, TSL	Position, Test Distance [mm]	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat, HSL	FRONT, 15.00	9.93	0.887	41.659

Hardware Setup

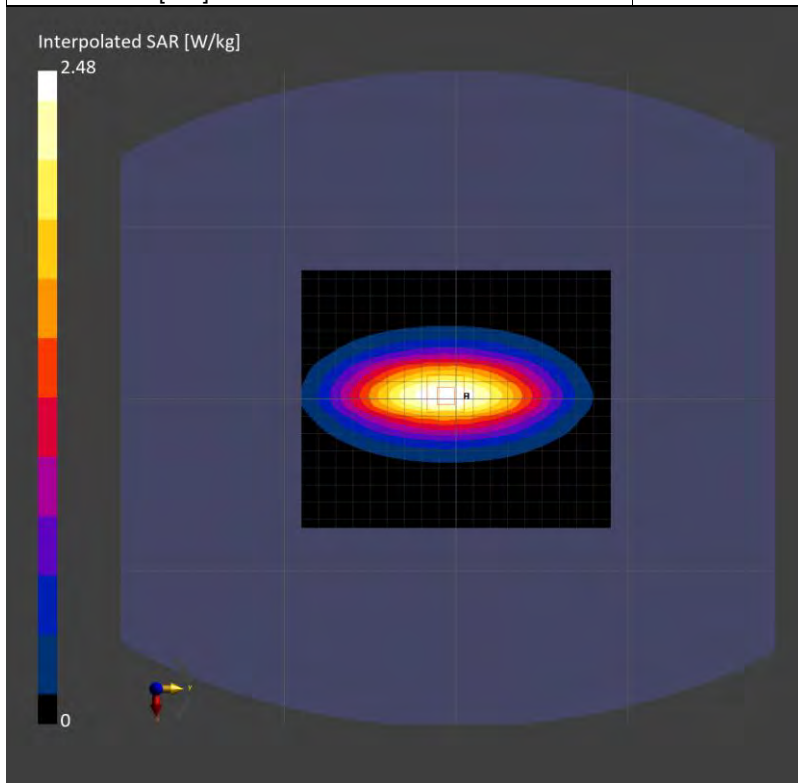
Phantom	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0	EX3DV4 - SN7509, 2024-04-23	DAE4 Sn856, 2024-04-22

Scans Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	150.0 x 180.0	30.0 x 30.0 x 30.0
Grid Steps [mm]	15.0 x 15.0	5.0 x 5.0 x 5.0
Sensor Surface [mm]	3.0	1.4

Measurement Results

	Area Scan	Zoom Scan
Date	2024-05-12	2024-05-12
psSAR1g [W/kg]	2.17	2.21
psSAR8g [W/kg]	1.54	1.51
psSAR10g [W/kg]	1.46	1.43
Power Drift [dB]	-0.01	-0.01
M2/M1 [%]		65.4
Dist 3dB Peak [mm]		18.4



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Report No. : TESA2404000217E5

Measurement Report

Dipole_D835-SN:4d063

Ambient temperature: 22.2°C; Liquid temperature: 21.4°C

Exposure Conditions

Phantom Section, TSL	Position, Test Distance [mm]	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat, HSL	FRONT, 15.00	9.28	0.904	41.272

Hardware Setup

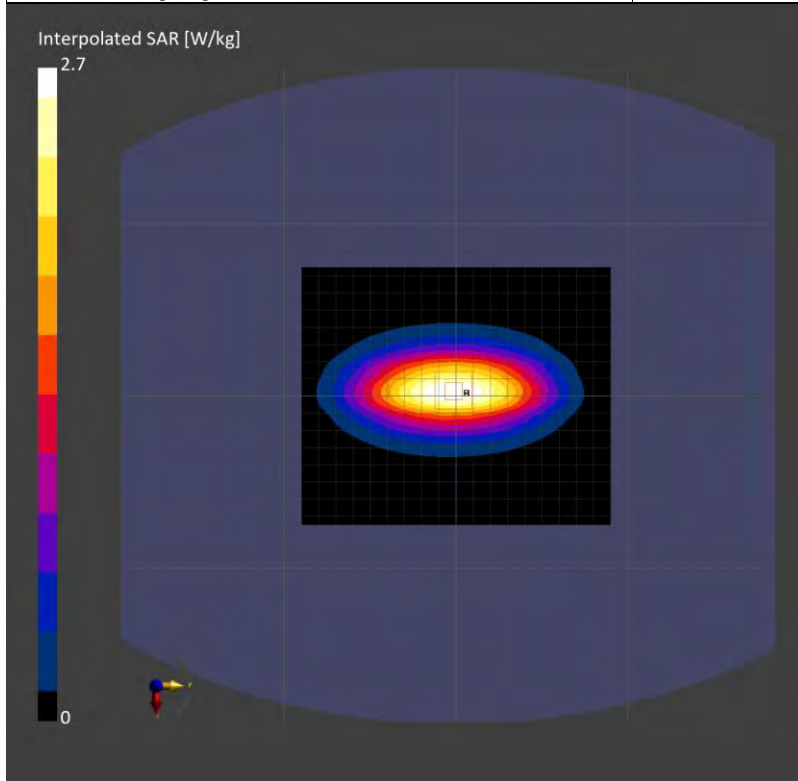
Phantom	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0	EX3DV4 - SN7509, 2024-04-23	DAE4 Sn856, 2024-04-22

Scans Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	150.0 x 180.0	30.0 x 30.0 x 30.0
Grid Steps [mm]	15.0 x 15.0	5.0 x 5.0 x 5.0
Sensor Surface [mm]	3.0	1.4

Measurement Results

	Area Scan	Zoom Scan
Date	2024-05-12	2024-05-12
psSAR1g [W/kg]	2.35	2.40
psSAR8g [W/kg]	1.65	1.65
psSAR10g [W/kg]	1.56	1.56
Power Drift [dB]	-0.01	0.03
M2/M1 [%]		65.1
Dist 3dB Peak [mm]		20.1



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Report No. : TESA2404000217E5

Measurement Report

Dipole_D1750-SN:1008

Ambient temperature: 22.1°C; Liquid temperature: 21.1°C

Exposure Conditions

Phantom Section, TSL	Position, Test Distance [mm]	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat, HSL	FRONT, 10.00	8.37	1.38	39.796

Hardware Setup

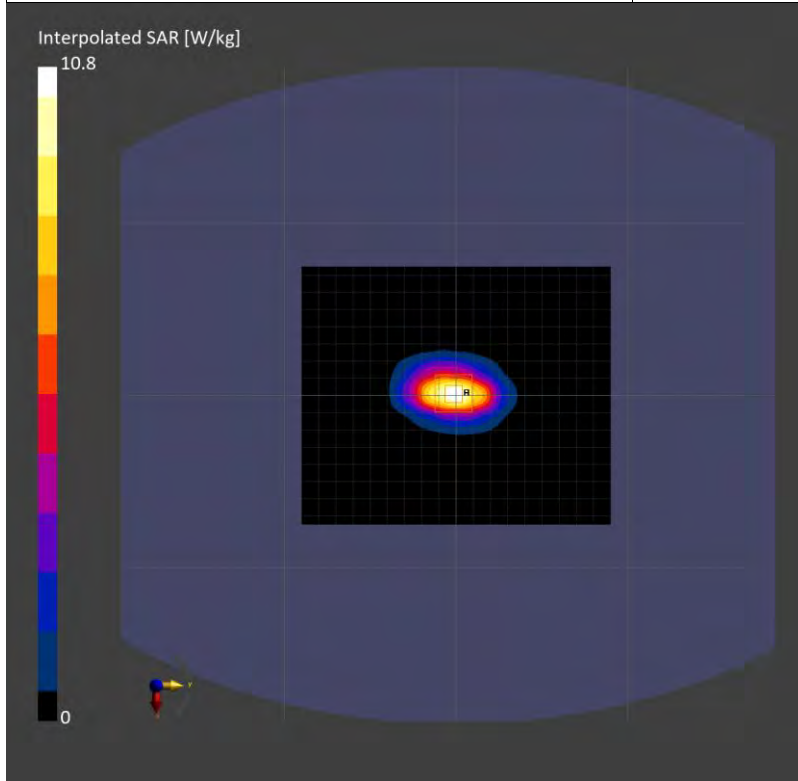
Phantom	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0	EX3DV4 - SN7509, 2024-04-23	DAE4 Sn856, 2024-04-22

Scans Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	150.0 x 180.0	30.0 x 30.0 x 30.0
Grid Steps [mm]	15.0 x 15.0	5.0 x 5.0 x 5.0
Sensor Surface [mm]	3.0	1.4

Measurement Results

	Area Scan	Zoom Scan
Date	2024-05-13	2024-05-13
psSAR1g [W/kg]	8.69	8.92
psSAR8g [W/kg]	5.05	5.13
psSAR10g [W/kg]	4.64	4.72
Power Drift [dB]	-0.04	-0.01
M2/M1 [%]		54.6
Dist 3dB Peak [mm]		10.0



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Report No. : TESA2404000217E5

Measurement Report

Dipole_D1900-SN:5d056

Ambient temperature: 22.1°C; Liquid temperature: 21.1°C

Exposure Conditions

Phantom Section, TSL	Position, Test Distance [mm]	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat, HSL	FRONT, 10.00	8.1	1.413	39.717

Hardware Setup

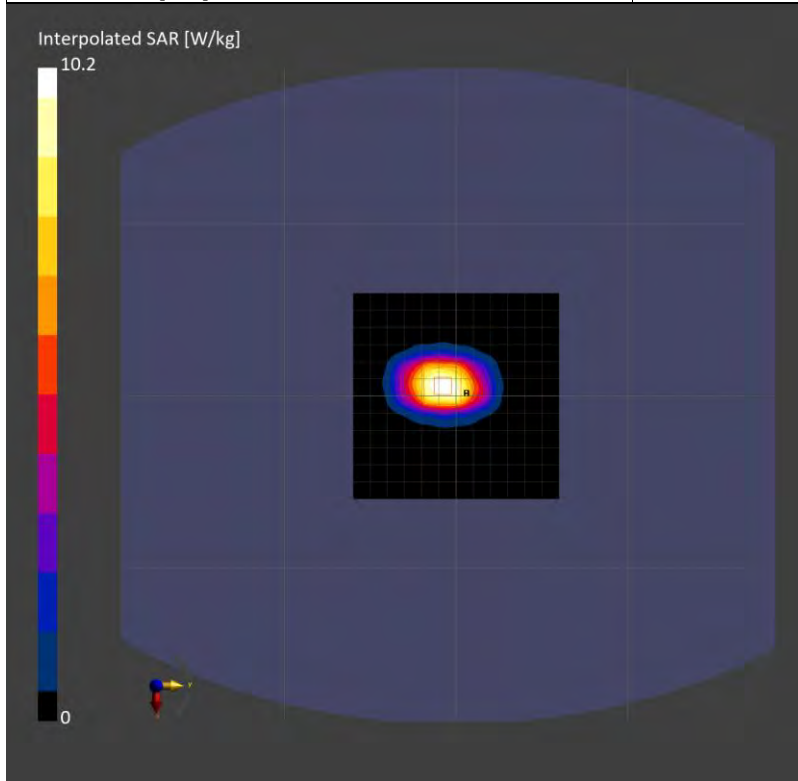
Phantom	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0	EX3DV4 - SN7509, 2024-04-23	DAE4 Sn856, 2024-04-22

Scans Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	120.0 x 120.0	30.0 x 30.0 x 30.0
Grid Steps [mm]	15.0 x 15.0	5.0 x 5.0 x 5.0
Sensor Surface [mm]	3.0	1.4

Measurement Results

	Area Scan	Zoom Scan
Date	2024-05-13	2024-05-13
psSAR1g [W/kg]	8.68	10.1
psSAR8g [W/kg]	5.26	5.70
psSAR10g [W/kg]	4.87	5.24
Power Drift [dB]	-0.03	-0.01
M2/M1 [%]		53.3
Dist 3dB Peak [mm]		10.1



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Report No. : TESA2404000217E5

Measurement Report

Dipole_D2450-SN:727

Ambient temperature: 22.3°C; Liquid temperature: 21.5°C

Exposure Conditions

Phantom Section, TSL	Position, Test Distance [mm]	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat, HSL	FRONT, 10.00	7.56	1.824	38.917

Hardware Setup

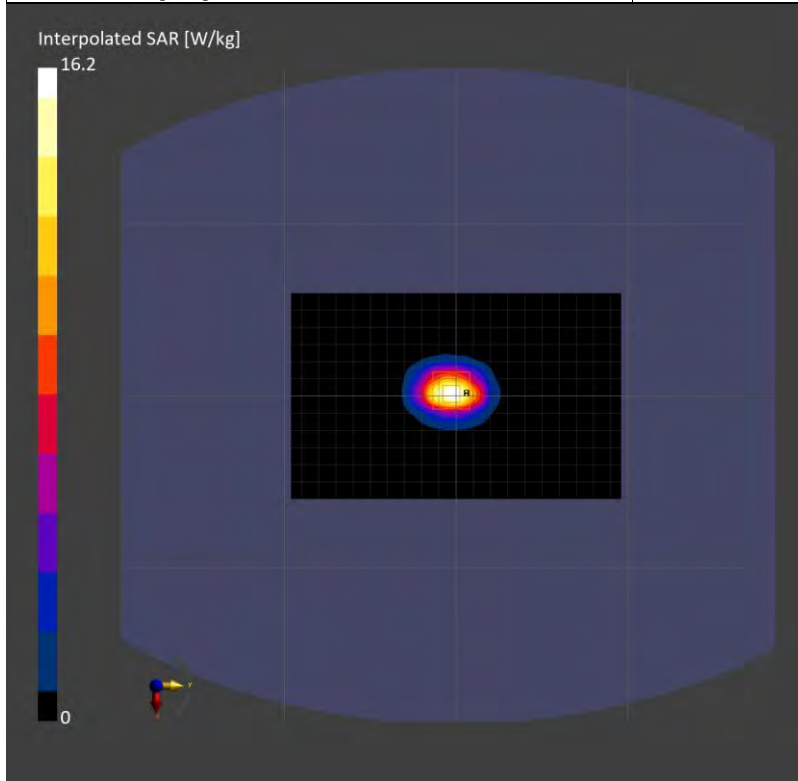
Phantom	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0	EX3DV4 - SN7509, 2024-04-23	DAE4 Sn856, 2024-04-22

Scans Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	120.0 x 192.0	30.0 x 30.0 x 30.0
Grid Steps [mm]	12.0 x 12.0	5.0 x 5.0 x 5.0
Sensor Surface [mm]	3.0	1.4

Measurement Results

	Area Scan	Zoom Scan
Date	2024-05-14	2024-05-14
psSAR1g [W/kg]	12.6	13.1
psSAR8g [W/kg]	6.66	6.96
psSAR10g [W/kg]	6.04	6.34
Power Drift [dB]	0.06	-0.01
M2/M1 [%]		59.6
Dist 3dB Peak [mm]		9.3



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Report No. : TESA2404000217E5

Measurement Report

Dipole_D5250-SN:1023

Ambient temperature: 22.6°C; Liquid temperature: 21.7°C

Exposure Conditions

Phantom Section, TSL	Position, Test Distance [mm]	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat, HSL	FRONT, 10.00	5.56	4.696	35.646

Hardware Setup

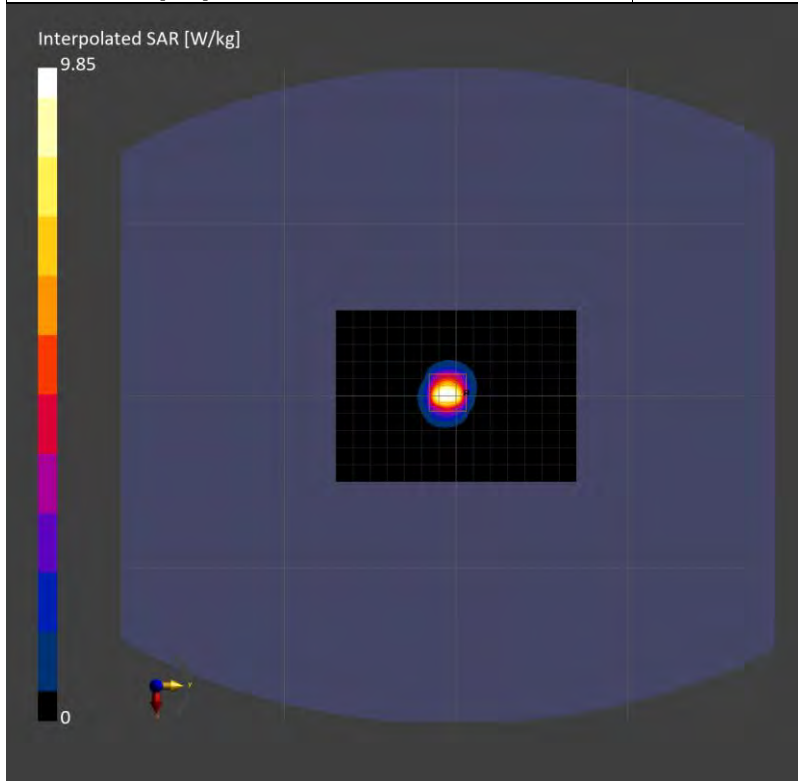
Phantom	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0	EX3DV4 - SN7509, 2024-04-23	DAE4 Sn856, 2024-04-22

Scans Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	100.0 x 140.0	24.0 x 24.0 x 22.0
Grid Steps [mm]	10.0 x 10.0	4.0 x 4.0 x 2.0
Sensor Surface [mm]	3.0	1.4

Measurement Results

	Area Scan	Zoom Scan
Date	2024-05-15	2024-05-15
psSAR1g [W/kg]	7.07	7.74
psSAR8g [W/kg]	2.56	2.68
psSAR10g [W/kg]	2.22	2.31
Power Drift [dB]	-0.00	-0.00
M2/M1 [%]		58.3
Dist 3dB Peak [mm]		7.3



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Report No. : TESA2404000217E5

Measurement Report

Dipole_D5600-SN:1023

Ambient temperature: 22.6°C; Liquid temperature: 21.7°C

Exposure Conditions

Phantom Section, TSL	Position, Test Distance [mm]	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat, HSL	FRONT, 10.00	4.79	5.055	35.246

Hardware Setup

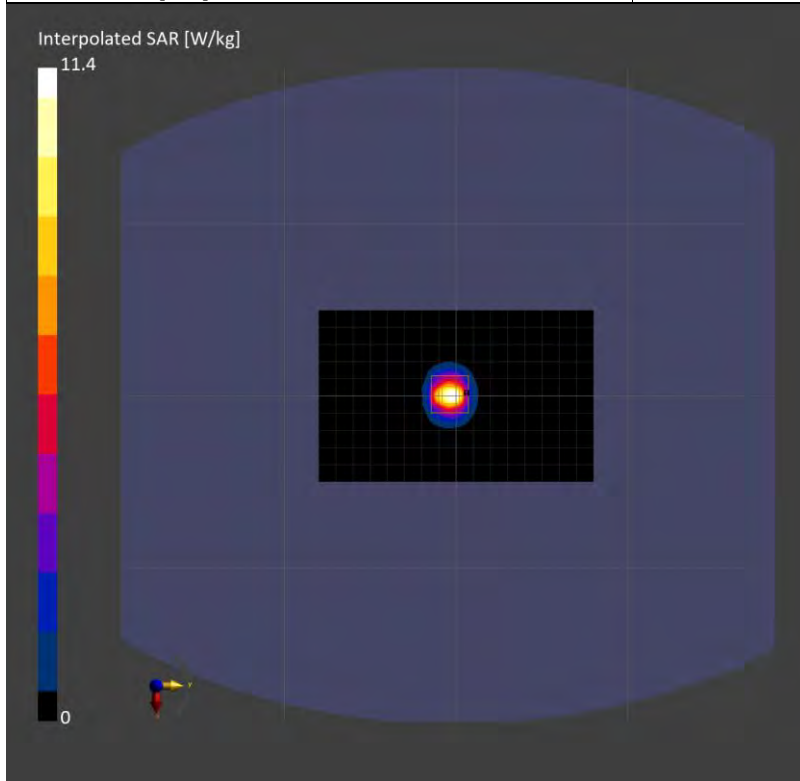
Phantom	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0	EX3DV4 - SN7509, 2024-04-23	DAE4 Sn856, 2024-04-22

Scans Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	100.0 x 160.0	24.0 x 24.0 x 22.0
Grid Steps [mm]	10.0 x 10.0	4.0 x 4.0 x 2.0
Sensor Surface [mm]	3.0	1.4

Measurement Results

	Area Scan	Zoom Scan
Date	2024-05-15	2024-05-15
psSAR1g [W/kg]	7.81	8.57
psSAR8g [W/kg]	2.73	2.87
psSAR10g [W/kg]	2.36	2.47
Power Drift [dB]	-0.01	0.06
M2/M1 [%]		69.9
Dist 3dB Peak [mm]		7.6



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Report No. : TESA2404000217E5

Measurement Report

Dipole_D5750-SN:1023

Ambient temperature: 22.6°C; Liquid temperature: 21.7°C

Exposure Conditions

Phantom Section, TSL	Position, Test Distance [mm]	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat, HSL	FRONT, 10.00	5.08	5.208	35.074

Hardware Setup

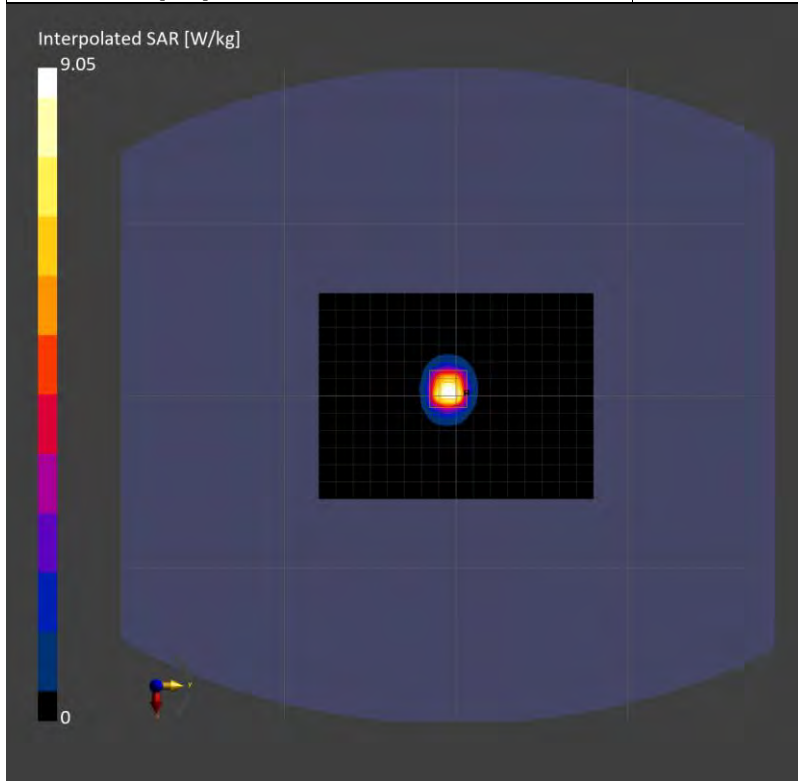
Phantom	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0	EX3DV4 - SN7509, 2024-04-23	DAE4 Sn856, 2024-04-22

Scans Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	120.0 x 160.0	24.0 x 24.0 x 22.0
Grid Steps [mm]	10.0 x 10.0	4.0 x 4.0 x 2.0
Sensor Surface [mm]	3.0	1.4

Measurement Results

	Area Scan	Zoom Scan
Date	2024-05-15	2024-05-15
psSAR1g [W/kg]	6.70	7.47
psSAR8g [W/kg]	2.48	2.50
psSAR10g [W/kg]	2.15	2.15
Power Drift [dB]	-0.06	-0.00
M2/M1 [%]		51.4
Dist 3dB Peak [mm]		7.4



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13 APPENDIXES

Refer to separated files for the following appendixes.

13.1 SAR_Appendix A Photographs

13.2 SAR_Appendix B DAE & Probe Cal. Certificate

13.3 SAR_Appendix C Phantom Description & Dipole Cal. Certificate

- End of report -

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