

## RF Exposure report



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

**Product Name** 11ax RTL8852BE Combo module  
**Brand Name** REALTEK  
**Model No.** RTL8852BE  
**Applicant** Realtek Semiconductor Corp.  
No. 2, Innovation Road II, Hsinchu Science Park, Hsinchu  
300, Taiwan  
**Standards** IEEE/ANSI C95.1-1992, IEEE 1528-2013  
**FCC ID** TX2-RTL8852BE  
**Date of EUT Receipt** Mar. 13, 2023  
**Date of Test(s)** Mar. 17, 2023  
**Date of Issue** Mar. 24, 2023

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: Mar. 24, 2023

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## Revision History

Report Number	Revision	Description	Issue Date	Revised By	Remark
TESA2303000123E5	00	Add 5.9G	Mar. 24, 2023	Kimmy Chiou	

**Note:**

1. The mark " \* " is the revised version of the report due to comments submitted by the certification.
2. Measurement results in the original test report ESA2208000309E5 are fully leveraged in this test report.
3. Add FCC UNII-4 WLAN 5.9G.

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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

KDB616217D04v01r02

KDB248227D01v02r01

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## 1.2 Description of EUT

### General Information of Host:

Product Name	Portable Computer	
Brand Name	DELL	
Model No.	P112F	
FCC ID	TX2-RTL8852BE	
Integrated WLAN Module	Brand Name: REALTEK Model Name: RTL8852BE	
Mode	WLAN: 802.11a/b/g/n/ac/ax HT20/HT40/VHT20/VHT40/VHT80/HE20/HE40/HE80 Bluetooth BR/EDR/LE	
Duty Cycle	WLAN802.11	Please refer to section 7
	BLE	Please refer to section 7
Supported radios (TX Frequency Range, MHz)	802.11 b/g/n/ax	2.4GHz (2400.0 – 2483.5 MHz)
	802.11a/n/ac/ax	5.2GHz (5150.0 – 5350.0 MHz)
		5.6GHz (5470.0 – 5725.0 MHz)
		5.8GHz (5725.0 – 5850.0 MHz)
	Bluetooth 5.2	5.9GHz (5850.0 – 5895.0 MHz)
		2.4GHz (2400.0 – 2483.5 MHz)

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## 1.3 Maximum value

Summary of Maximum SAR	
Mode	Highest SAR 1g Body (W/kg)
2.4G WLAN	0.96
5G WLAN	1.19
BLE	0.33

## 1.4 Antenna Information

Laptop mode\_WLAN

Vendor	AWAN											
Antenna	Main						Aux					
Part Number	AYP6Y-100258 (DC33002N00L)						AYP6Y-100259 (DC33002N01L)					
Frequency(MHz)	2400-2500	5150-5250	5250-5350	5470-5725	5725-5850	5850-5895	2400-2500	5150-5250	5250-5350	5470-5725	5725-5850	5850-5895
Gain (dBi)	1.59	2.95	2.36	2.75	2.63	2.87	0.48	2.53	2.57	2.59	2.84	2.82

Laptop mode\_WLAN

Vendor	Hong Bo Co., Ltd.											
Antenna	Main						Aux					
Part Number	260-24388 Compal P/N: DC33002N20L						260-24389 Compal P/N: DC33002N21L					
Frequency(MHz)	2400-2500	5150-5250	5250-5350	5470-5725	5725-5850	5850-5895	2400-2500	5150-5250	5250-5350	5470-5725	5725-5850	5850-5895
Gain (dBi)	2.983	2.618	2.526	2.901	2.925	2.425	2.489	2.441	2.441	2.492	1.899	1.949

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		
	<b>No. 2, Keji 1st Rd., Guishan Township, Taoyuan County, 33383, Taiwan</b>	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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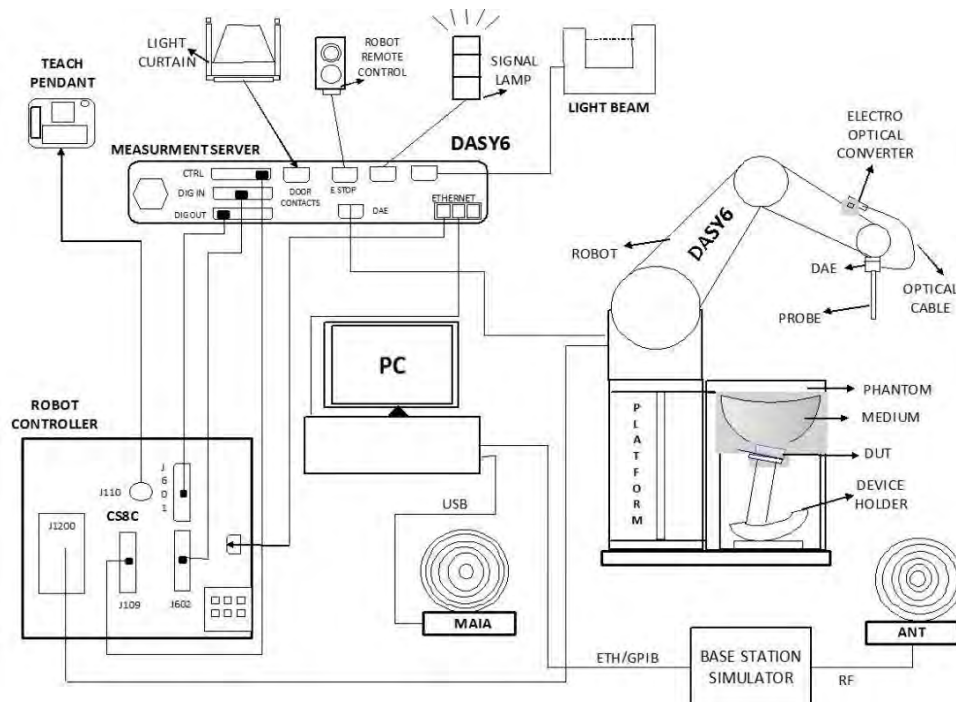
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## 2.2 SAR System

### 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 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 (ELI)

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

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### 3 SAR SYSTEM VERIFICATION

#### 3.1 Tissue Simulating Liquid

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

#### 3.2 Tissue Simulant Liquid measurement

The dielectric properties for this Head-simulant fluid were measured by using the SPEAG Dielectric Assessment Kit (DAKS-3.5)

All dielectric parameters of tissue simulates were measured within 24 hours of SAR measurements. The measured conductivity and permittivity are all within  $\pm 5\%$  of the target values.

#### 3.3 Measurement results of Tissue Simulant Liquid

Report No.: TESA2208000309E5

Measurement Date	Measured Frequency (MHz)	Target Dielectric Constant, $\epsilon_r$	Target Conductivity, $\sigma$ (S/m)	Measured Dielectric Constant, $\epsilon_r$	Measured Conductivity, $\sigma$ (S/m)	% dev $\epsilon_r$	% dev $\sigma$
Nov, 28. 2022	2412	39.265	1.766	40.248	1.818	2.50%	2.95%
	2437	39.222	1.788	40.203	1.840	2.50%	2.90%
	2440	39.223	1.789	40.198	1.843	2.49%	3.01%
	2450	39.200	1.800	40.180	1.852	2.50%	2.87%
	2462	39.184	1.813	40.165	1.863	2.50%	2.74%
Nov, 28. 2022	5180	36.020	4.639	36.989	4.753	2.69%	2.46%
	5190	36.010	4.650	36.977	4.764	2.69%	2.45%
	5200	36.000	4.660	36.966	4.774	2.68%	2.45%
	5210	35.990	4.670	36.954	4.784	2.68%	2.45%
	5220	35.980	4.680	36.943	4.795	2.68%	2.46%
	5230	35.970	4.690	36.931	4.805	2.67%	2.46%
	5240	35.960	4.700	36.920	4.816	2.67%	2.47%
	5250	35.950	4.710	36.909	4.826	2.67%	2.47%
	5270	35.930	4.730	36.886	4.847	2.66%	2.48%
	5290	35.910	4.750	36.863	4.868	2.65%	2.49%
	5310	35.890	4.770	36.840	4.889	2.65%	2.50%
	5320	35.880	4.780	36.829	4.900	2.64%	2.51%
Nov, 29. 2022	5600	35.500	5.070	36.509	5.194	2.84%	2.45%
	5610	35.490	5.080	36.497	5.204	2.84%	2.45%
	5670	35.430	5.140	36.429	5.267	2.82%	2.47%
Nov, 29. 2022	5690	35.410	5.160	36.406	5.288	2.81%	2.48%
	5710	35.390	5.180	36.383	5.309	2.81%	2.49%
	5750	35.350	5.220	36.337	5.351	2.79%	2.51%
	5755	35.345	5.225	36.331	5.356	2.79%	2.51%
	5775	35.325	5.245	36.309	5.377	2.78%	2.52%
	5795	35.305	5.265	36.286	5.398	2.78%	2.53%

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Measurement Date	Measured Frequency (MHz)	Target Dielectric Constant, $\epsilon_r$	Target Conductivity, $\sigma$ (S/m)	Measured Dielectric Constant, $\epsilon_r$	Measured Conductivity, $\sigma$ (S/m)	% dev $\epsilon_r$	% dev $\sigma$
Nov, 30. 2022	2412	39.265	1.766	39.770	1.797	1.28%	1.74%
	2437	39.222	1.788	39.725	1.819	1.28%	1.69%
	2440	39.223	1.789	39.720	1.821	1.27%	1.81%
	2450	39.200	1.800	39.702	1.830	1.28%	1.67%
	2462	39.184	1.813	39.687	1.841	1.28%	1.54%
Nov, 30. 2022	5180	36.020	4.639	36.511	4.693	1.36%	1.17%
	5190	36.010	4.650	36.499	4.703	1.36%	1.16%
	5200	36.000	4.660	36.488	4.714	1.35%	1.15%
	5210	35.990	4.670	36.476	4.724	1.35%	1.16%
	5220	35.980	4.680	36.465	4.734	1.35%	1.16%
	5230	35.970	4.690	36.453	4.745	1.34%	1.17%
	5240	35.960	4.700	36.442	4.755	1.34%	1.17%
	5250	35.950	4.710	36.431	4.745	1.34%	0.74%
	5270	35.930	4.730	36.408	4.786	1.33%	1.19%
	5290	35.910	4.750	36.385	4.807	1.32%	1.20%
	5310	35.890	4.770	36.362	4.828	1.32%	1.21%
	5320	35.880	4.780	36.351	4.838	1.31%	1.22%
Dec, 01. 2022	5600	35.500	5.070	36.031	5.129	1.49%	1.17%
	5610	35.490	5.080	36.019	5.139	1.49%	1.17%
	5670	35.430	5.140	35.951	5.201	1.47%	1.19%
Dec, 01. 2022	5690	35.410	5.160	35.928	5.222	1.46%	1.20%
	5710	35.390	5.180	35.905	5.243	1.45%	1.21%
	5750	35.350	5.220	35.859	5.284	1.44%	1.23%
	5755	35.345	5.225	35.853	5.289	1.44%	1.23%
	5775	35.325	5.245	35.831	5.310	1.43%	1.24%
	5795	35.305	5.265	35.808	5.331	1.42%	1.25%

## Report No.: TESA2303000123E5

Tissue Type	Measurement Date	Measured Frequency (MHz)	Target Dielectric Constant, $\epsilon_r$	Target Conductivity, $\sigma$ (S/m)	Measured Dielectric Constant, $\epsilon_r$	Measured Conductivity, $\sigma$ (S/m)	% dev $\epsilon_r$	% dev $\sigma$
Head	Mar, 17. 2023	5750	35.350	5.220	36.297	5.382	2.68%	3.11%
		5855	35.245	5.328	36.177	5.493	2.64%	3.10%

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### 3.4 The composition of the tissue simulating liquid:

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

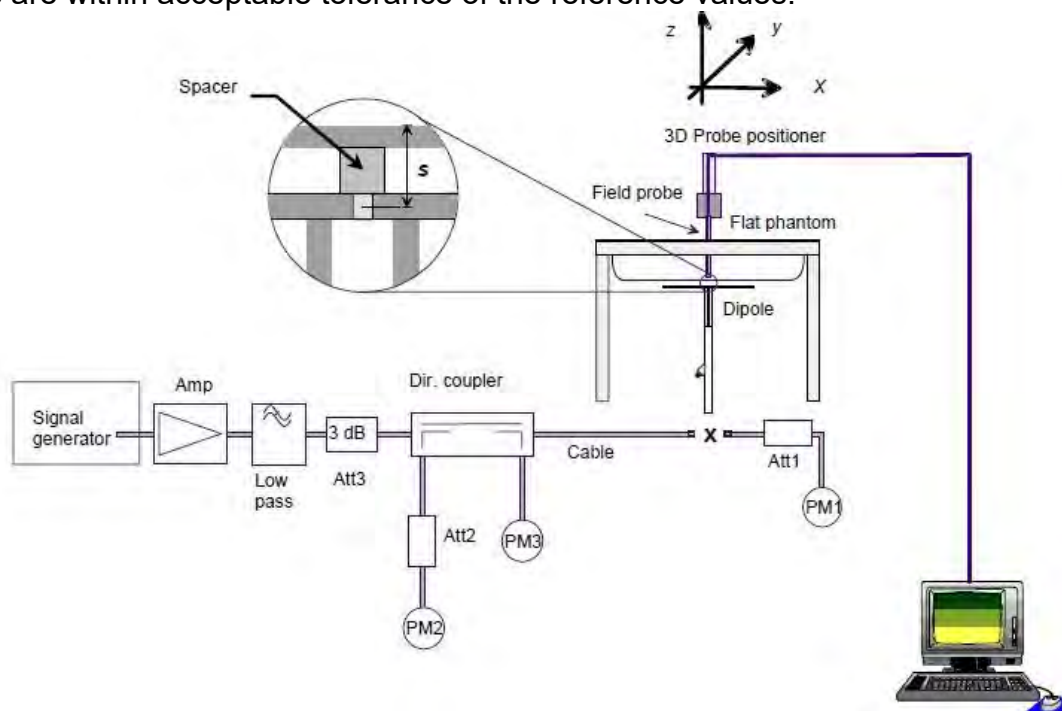
Broad-band head tissue simulating liquids	SPEAG Product	Frequency range (MHz)	Main Ingredients
	HBBL600-10000V6	600 - 10000	Water, Oil

### 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

#### Report No.: TESA2208000309E5

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	52.8	13.14	52.56	-0.45	± 10%	Nov.28,2022
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	81	8.18	81.8	0.99	± 10%	Nov.28,2022
D5GHzV2	1023	5600	84.4	8.07	80.7	-4.38	± 10%	Nov.29,2022
D5GHzV2	1023	5750	81	8.25	82.5	1.85	± 10%	Nov.29,2022
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	52.8	13.14	52.56	-0.45	± 10%	Nov.30,2022
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	81	7.98	79.8	-1.48	± 10%	Nov.30,2022
D5GHzV2	1023	5600	84.4	8.14	81.4	-3.55	± 10%	Dec.01,2022
D5GHzV2	1023	5750	81	8.1	81	0.00	± 10%	Dec.01,2022

#### Report No.: TESA2303000123E5

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	1349	5750	80.9	7.8	78	-3.58	± 10%	Mar.17,2023

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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).
- **WLAN 2.4GHz:** 802.11b DSSS SAR Test Requirements: SAR is measured for 2.4 GHz 802.11b DSSS mode using the highest measured maximum output power channel, when the reported SAR of the highest measured maximum output power channel for the exposure configuration is  $\leq 0.8\text{ W/kg}$ , no further SAR testing is required for 802.11b DSSS in that exposure configuration. When the reported SAR is  $> 0.8\text{ W/kg}$ , SAR is required for that exposure configuration using the next highest measured output power channel. When any reported SAR is  $> 1.2\text{ W/kg}$ , 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  $\leq 1.2\text{ W/kg}$ .
- **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  $> 0.8\text{ W/kg}$ , SAR measurement is required for the subsequent next highest measured output power channel(s) in the initial test configuration until the reported SAR is  $\leq 1.2\text{ W/kg}$  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

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specified maximum output power and the adjusted SAR is  $\leq 1.2$  W/kg, SAR is not required for subsequent test configuration.

- **WLAN 5GHz:** Based on FCC guidance, general principles of KDB248227D01 can be applied to 802.11ax to determine initial test configuration with 802.11ax being considered as the highest 802.11 mode for the appropriate frequency band.

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### 4.3 Test position

#### Laptop mode SAR test position (0mm)

For laptop PC, according to KDB 616217 D04, SAR evaluation is required for the bottom surface of the keyboard. This EUT was tested in the base of EUT directly against the flat phantom. The required minimum test separation distance for incorporating transmitters and antennas into laptop computer display is determined with the display screen opened at an angle of 90° to the keyboard compartment.

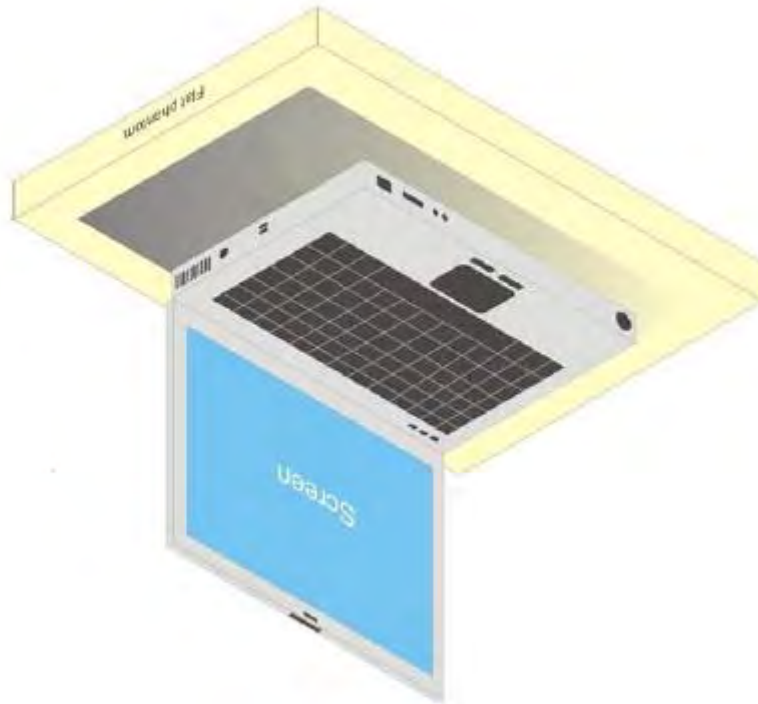


Illustration for Laptop Setup

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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

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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 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 4cm<sup>2</sup> 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 <sup>2</sup> )	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 <sup>2</sup> )	<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 <sup>2</sup> )	<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 WLAN

## AWAN

chain 0						
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
2.45GHz	802.11b	1	2412	1Mbps	17.50	17.15
		6	2437		17.50	17.11
		11	2462		17.50	17.27
		12	2467		15.08	14.95
		13	2472		11.81	11.66
	802.11g	1	2412	6Mbps	16.74	16.26
		6	2437		17.50	17.04
		11	2462		16.86	16.45
		12	2467		12.86	12.84
		13	2472		11.80	11.80
	802.11n20-HT0	1	2412	MCS0	15.62	15.17
		6	2437		17.50	16.97
		11	2462		15.71	15.18
		12	2467		12.69	12.65
		13	2472		11.61	11.49
	802.11ac20-VHT0	1	2412	MCS0	15.62	14.98
		6	2437		17.50	16.91
		11	2462		15.71	15.27
	802.11ax20-HE0	1	2412	MCS0	15.77	15.39
		6	2437		17.50	17.05
		11	2462		15.88	15.30
		12	2467		12.93	12.83
		13	2472		11.80	11.67
	802.11n40-HT0	3	2422	MCS0	14.44	13.97
		6	2437		17.50	17.09
		9	2452		14.63	14.03
	802.11ac40-VHT0	3	2422	MCS0	14.44	14.03
		6	2437		17.50	17.17
		9	2452		14.63	14.19
	802.11ax40-HE0	3	2422	MCS0	14.63	14.08
		6	2437		17.50	16.88
		9	2452		14.82	14.18

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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	17.00	16.88
		40	5200		17.00	16.84
		44	5220		17.00	16.92
		48	5240		17.00	16.85
	802.11n20-HT0	36	5180	MCS0	17.00	16.83
		40	5200		17.00	16.74
		44	5220		17.00	16.72
		48	5240		17.00	16.71
	802.11ac20-VHT0	36	5180	MCS0	17.00	15.78
		40	5200		17.00	15.89
		44	5220		17.00	15.87
		48	5240		17.00	15.82
	802.11ax20-HE0	36	5180	MCS0	17.00	15.85
		40	5200		17.00	16.05
		44	5220		17.00	15.99
		48	5240		17.00	15.98
	802.11n40-HT0	38	5190	MCS0	16.57	15.42
		46	5230		17.00	16.96
	802.11ac40-VHT0	38	5190	MCS0	16.57	15.55
		46	5230		17.00	16.01
	802.11ax40-HE0	38	5190	MCS0	16.84	15.87
		46	5230		17.00	16.00
	802.11ac80-VHT0	42	5210	MCS0	15.56	14.48
	802.11ax80-HE0	42	5210	MCS0	15.76	14.80

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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	17.00	16.53
		56	5280		17.00	16.70
		60	5300		17.00	16.44
		64	5320		17.00	16.65
	802.11n20-HT0	52	5260	MCS0	17.00	16.56
		56	5280		17.00	16.74
		60	5300		17.00	16.56
		64	5320		17.00	16.59
	802.11ac20-VHT0	52	5260	MCS0	17.00	16.52
		56	5280		17.00	16.63
		60	5300		17.00	16.52
		64	5320		17.00	16.61
	802.11ax20-HE0	52	5260	MCS0	17.00	16.71
		56	5280		17.00	16.55
		60	5300		17.00	16.63
		64	5320		17.00	16.63
	802.11n40-HT0	54	5270	MCS0	17.00	16.62
		62	5310		16.50	16.27
	802.11ac40-VHT0	54	5270	MCS0	17.00	16.61
		62	5310		16.50	16.20
	802.11ax40-HE0	54	5270	MCS0	17.00	16.83
		62	5310		16.79	16.33
	802.11ac80-VHT0	58	5290	MCS0	16.86	16.43
	802.11ax80-HE0	58	5290	MCS0	17.00	16.89

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Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
5.6GHz	802.11a	100	5500	6Mbps	18.00	17.64
		120	5600		18.00	17.61
		140	5700		17.98	17.71
		144	5720		17.32	16.70
	802.11n20-HT0	100	5500	MCS0	18.00	17.56
		120	5600		18.00	17.57
		140	5700		18.00	17.70
		144	5720		16.92	16.59
	802.11ac20-VHT0	100	5500	MCS0	18.00	17.52
		120	5600		18.00	17.60
		140	5700		18.00	17.57
		144	5720		16.92	16.40
	802.11ax20-HE0	100	5500	MCS0	18.00	17.41
		120	5600		18.00	17.60
		140	5700		18.00	17.57
		144	5720		17.46	17.05
	802.11n40-HT0	102	5510	MCS0	15.17	14.67
		118	5590		18.00	17.50
		134	5670		18.00	17.76
		142	5710		18.00	17.73
	802.11ac40-VHT0	102	5510	MCS0	15.17	14.65
		118	5590		18.00	17.40
		134	5670		18.00	17.46
		142	5710		18.00	17.50
	802.11ax40-HE0	102	5510	MCS0	15.41	14.95
		118	5590		18.00	17.43
		134	5670		18.00	17.68
		142	5710		18.00	17.71
	802.11ac80-VHT0	106	5530	MCS0	15.35	14.82
		122	5610		18.00	17.44
		138	5690		18.00	17.59
	802.11ax80-HE0	106	5530	MCS0	15.52	15.01
		122	5610		18.00	17.73
		138	5690		18.00	17.86

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Mode	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
5.8GHz	802.11a	149	5745	6Mbps	18.50	18.08
		157	5785		18.50	17.99
		165	5825		18.50	18.30
	802.11n20-HT0	149	5745	MCS0	18.50	18.18
		157	5785		18.50	18.27
		165	5825		18.50	18.23
	802.11ac20-VHT0	149	5745	MCS0	18.50	18.21
		157	5785		18.50	18.19
		165	5825		18.50	18.15
	802.11ax20-HE0	149	5745	MCS0	18.50	18.11
		157	5785		18.50	18.12
		165	5825		18.50	18.06
	802.11n40-HT0	151	5755	MCS0	18.50	18.16
		159	5795		18.50	18.28
	802.11ac40-VHT0	151	5755	MCS0	18.50	18.17
		159	5795		18.50	18.19
	802.11ax40-HE0	151	5755	MCS0	18.50	18.17
		159	5795		18.50	18.28
	802.11ac80-VHT0	155	5775	MCS0	18.50	18.24
	802.11ax80-HE0	155	5775	MCS0	18.50	18.10

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chain 0						
Mode	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
5.9GHz	802.11a	169	5845	6Mbps	14.14	13.92
		173	5865		13.97	13.82
		177	5885		13.99	13.86
	802.11n20-HT0	169	5845	MCS0	14.15	13.88
		173	5865		14.19	13.94
		177	5885		14.23	14.13
	802.11ac20-VHT0	169	5845	MCS0	14.15	14.05
		173	5865		14.19	14.06
		177	5885		14.23	14.05
	802.11ax20-HE0	169	5845	MCS0	14.38	14.28
		173	5865		14.42	14.20
		177	5885		14.46	14.29
	802.11n40-HT0	167	5835	MCS0	17.08	16.94
		175	5875		17.14	16.98
	802.11ac40-VHT0	167	5835	MCS0	17.08	16.93
		175	5875		17.14	16.90
	802.11ax40-HE0	167	5835	MCS0	17.36	17.27
		175	5875		17.39	17.25
	802.11ac80-VHT0	171	5855	MCS0	17.52	17.37
	802.11ax80-HE0	171	5855	MCS0	17.74	17.62

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chain 1						
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
2.45GHz	802.11b	1	2412	1Mbps	17.50	17.10
		6	2437		17.50	17.31
		11	2462		17.50	17.39
		12	2467		15.26	15.17
		13	2472		11.94	11.91
	802.11g	1	2412	6Mbps	16.93	16.47
		6	2437		17.50	16.93
		11	2462		17.10	16.76
		12	2467		13.05	12.91
		13	2472		12.15	11.98
	802.11n20-HT0	1	2412	MCS0	15.95	15.54
		6	2437		17.50	17.08
		11	2462		15.97	15.45
		12	2467		13.04	12.92
		13	2472		11.81	11.74
	802.11ac20-VHT0	1	2412	MCS0	15.95	15.54
		6	2437		17.50	17.11
		11	2462		15.97	15.62
	802.11ax20-HE0	1	2412	MCS0	16.14	15.68
		6	2437		17.50	17.15
		11	2462		16.16	15.76
		12	2467		13.19	13.19
		13	2472		12.04	11.98
	802.11n40-HT0	3	2422	MCS0	14.93	14.44
		6	2437		17.50	17.22
		9	2452		14.95	14.59
	802.11ac40-VHT0	3	2422	MCS0	14.93	14.63
		6	2437		17.50	16.99
		9	2452		14.95	14.50
	802.11ax40-HE0	3	2422	MCS0	15.10	14.80
		6	2437		17.50	17.07
		9	2452		15.12	14.71

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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	17.00	16.72
		40	5200		17.00	16.64
		44	5220		17.00	16.64
		48	5240		17.00	16.74
	802.11n20-HT0	36	5180	MCS0	17.00	16.66
		40	5200		17.00	16.75
		44	5220		17.00	16.68
		48	5240		17.00	16.72
	802.11ac20-VHT0	36	5180	MCS0	17.00	16.60
		40	5200		17.00	16.78
		44	5220		17.00	16.78
		48	5240		17.00	16.63
	802.11ax20-HE0	36	5180	MCS0	17.00	16.78
		40	5200		17.00	16.66
		44	5220		17.00	16.79
		48	5240		17.00	16.70
	802.11n40-HT0	38	5190	MCS0	16.55	16.31
		46	5230		17.00	16.69
	802.11ac40-VHT0	38	5190	MCS0	16.55	16.24
		46	5230		17.00	16.49
	802.11ax40-HE0	38	5190	MCS0	16.77	16.46
		46	5230		17.00	16.70
	802.11ac80-VHT0	42	5210	MCS0	15.43	15.02
	802.11ax80-HE0	42	5210	MCS0	15.67	15.35

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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	17.00	16.53
		56	5280		17.00	16.51
		60	5300		17.00	16.51
		64	5320		17.00	16.48
	802.11n20-HT0	52	5260	MCS0	17.00	16.41
		56	5280		17.00	16.57
		60	5300		17.00	16.63
		64	5320		17.00	16.48
	802.11ac20-VHT0	52	5260	MCS0	17.00	16.60
		56	5280		17.00	16.59
		60	5300		17.00	16.45
		64	5320		17.00	16.46
	802.11ax20-HE0	52	5260	MCS0	17.00	16.55
		56	5280		17.00	16.59
		60	5300		17.00	16.46
		64	5320		17.00	16.56
	802.11n40-HT0	54	5270	MCS0	17.00	16.87
		62	5310		17.00	16.77
	802.11ac40-VHT0	54	5270	MCS0	17.00	16.49
		62	5310		16.74	16.33
	802.11ax40-HE0	54	5270	MCS0	17.00	16.51
		62	5310		16.96	16.35
	802.11ac80-VHT0	58	5290	MCS0	16.62	16.05
	802.11ax80-HE0	58	5290	MCS0	16.89	16.34

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Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
5.6GHz	802.11a	100	5500	6Mbps	18.00	17.46
		120	5600		18.00	17.51
		140	5700		18.00	17.54
		144	5720		17.67	17.14
	802.11n20-HT0	100	5500	MCS0	18.00	17.43
		120	5600		18.00	17.32
		140	5700		18.00	17.40
		144	5720		17.60	17.09
	802.11ac20-VHT0	100	5500	MCS0	18.00	17.59
		120	5600		18.00	17.44
		140	5700		18.00	17.55
		144	5720		17.60	17.01
	802.11ax20-HE0	100	5500	MCS0	18.00	17.34
		120	5600		18.00	17.63
		140	5700		18.00	17.48
		144	5720		17.86	17.43
	802.11n40-HT0	102	5510	MCS0	15.27	14.68
		118	5590		18.00	17.50
		134	5670		18.00	17.48
		142	5710		18.00	17.55
	802.11ac40-VHT0	102	5510	MCS0	15.27	14.73
		118	5590		18.00	17.34
		134	5670		18.00	17.48
		142	5710		18.00	17.33
	802.11ax40-HE0	102	5510	MCS0	15.52	15.04
		118	5590		18.00	17.44
		134	5670		18.00	17.46
		142	5710		18.00	17.42
	802.11ac80-VHT0	106	5530	MCS0	15.29	14.66
		122	5610		18.00	17.43
		138	5690		18.00	17.62
	802.11ax80-HE0	106	5530	MCS0	15.46	14.95
		122	5610		18.00	17.74
		138	5690		18.00	17.81

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chain 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	18.50	18.02
		157	5785		18.50	18.08
		165	5825		18.50	18.03
	802.11n20-HT0	149	5745	MCS0	18.50	18.13
		157	5785		18.50	18.26
		165	5825		18.50	18.12
	802.11ac20-VHT0	149	5745	MCS0	18.50	18.25
		157	5785		18.50	18.05
		165	5825		18.50	18.05
	802.11ax20-HE0	149	5745	MCS0	18.50	18.15
		157	5785		18.50	18.18
		165	5825		18.50	18.13
	802.11n40-HT0	151	5755	MCS0	18.50	18.24
		159	5795		18.50	18.11
	802.11ac40-VHT0	151	5755	MCS0	18.50	18.17
		159	5795		18.50	18.10
	802.11ax40-HE0	151	5755	MCS0	18.50	18.13
		159	5795		18.50	18.08
	802.11ac80-VHT0	155	5775	MCS0	18.50	18.28
	802.11ax80-HE0	155	5775	MCS0	18.50	18.11

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chain 1						
Mode	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
5.9GHz	802.11a	169	5845	6Mbps	14.23	14.07
		173	5865		14.18	14.01
		177	5885		14.13	13.92
	802.11n20-HT0	169	5845	MCS0	14.27	14.03
		173	5865		14.30	14.14
		177	5885		14.29	14.15
	802.11ac20-VHT0	169	5845	MCS0	14.27	14.12
		173	5865		14.30	14.09
		177	5885		14.29	14.14
	802.11ax20-HE0	169	5845	MCS0	14.53	14.26
		173	5865		14.57	14.45
		177	5885		14.56	14.40
	802.11n40-HT0	167	5835	MCS0	17.20	17.02
		175	5875		17.31	17.15
	802.11ac40-VHT0	167	5835	MCS0	17.20	17.09
		175	5875		17.31	17.14
	802.11ax40-HE0	167	5835	MCS0	17.41	17.16
		175	5875		17.53	17.31
	802.11ac80-VHT0	171	5855	MCS0	17.65	17.52
	802.11ax80-HE0	171	5855	MCS0	17.87	17.83

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chain 0(Main)						
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
2.45GHz	802.11b	1	2412	1Mbps	17.50	17.21
		6	2437		17.50	17.32
		11	2462		17.50	17.29
		12	2467		15.08	14.98
		13	2472		11.81	11.70
	802.11g	1	2412	6Mbps	16.74	16.39
		6	2437		17.50	17.08
		11	2462		16.86	16.52
		12	2467		12.86	12.67
		13	2472		11.80	11.72
	802.11n20-HT0	1	2412	MCS0	15.62	15.30
		6	2437		17.50	17.07
		11	2462		15.71	15.23
		12	2467		12.69	12.60
		13	2472		11.61	11.48
	802.11ac20-VHT0	1	2412	MCS0	15.62	15.17
		6	2437		17.50	17.09
		11	2462		15.71	15.41
	802.11ax20-HE0	1	2412	MCS0	15.77	15.44
		6	2437		17.50	17.18
		11	2462		15.88	15.41
		12	2467		12.93	12.80
		13	2472		11.80	11.70
	802.11n40-HT0	3	2422	MCS0	14.44	14.13
		6	2437		17.50	17.19
		9	2452		14.63	14.16
	802.11ac40-VHT0	3	2422	MCS0	14.44	14.12
		6	2437		17.50	17.20
		9	2452		14.63	14.34
	802.11ax40-HE0	3	2422	MCS0	14.63	14.26
		6	2437		17.50	17.08
		9	2452		14.82	14.37

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chain 0(Main)						
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	17.00	16.72
		40	5200		17.00	16.84
		44	5220		17.00	16.78
		48	5240		17.00	16.70
	802.11n20-HT0	36	5180	MCS0	17.00	16.93
		40	5200		17.00	16.59
		44	5220		17.00	16.23
		48	5240		17.00	16.11
	802.11ac20-VHT0	36	5180	MCS0	17.00	15.94
		40	5200		17.00	16.09
		44	5220		17.00	16.07
		48	5240		17.00	15.99
	802.11ax20-HE0	36	5180	MCS0	17.00	15.98
		40	5200		17.00	16.07
		44	5220		17.00	16.00
		48	5240		17.00	16.09
	802.11n40-HT0	38	5190	MCS0	16.57	15.58
		46	5230		17.00	16.98
	802.11ac40-VHT0	38	5190	MCS0	16.57	15.57
		46	5230		17.00	16.04
	802.11ax40-HE0	38	5190	MCS0	16.84	15.94
		46	5230		17.00	16.08
	802.11ac80-VHT0	42	5210	MCS0	15.56	14.62
	802.11ax80-HE0	42	5210	MCS0	15.76	14.85

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chain 0(Main)						
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	17.00	16.63
		56	5280		17.00	16.75
		60	5300		17.00	16.63
		64	5320		17.00	16.68
	802.11n20-HT0	52	5260	MCS0	17.00	16.67
		56	5280		17.00	16.82
		60	5300		17.00	16.76
		64	5320		17.00	16.72
	802.11ac20-VHT0	52	5260	MCS0	17.00	16.69
		56	5280		17.00	16.64
		60	5300		17.00	16.62
		64	5320		17.00	16.66
	802.11ax20-HE0	52	5260	MCS0	17.00	16.82
		56	5280		17.00	16.64
		60	5300		17.00	16.76
		64	5320		17.00	16.65
	802.11n40-HT0	54	5270	MCS0	17.00	16.68
		62	5310		16.50	16.31
	802.11ac40-VHT0	54	5270	MCS0	17.00	16.73
		62	5310		16.50	16.21
	802.11ax40-HE0	54	5270	MCS0	17.00	16.82
		62	5310		16.79	16.50
	802.11ac80-VHT0	58	5290	MCS0	16.86	16.58
	802.11ax80-HE0	58	5290	MCS0	17.00	16.95

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Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
5.6GHz	802.11a	100	5500	6Mbps	18.00	17.67
		120	5600		18.00	17.76
		140	5700		17.98	17.74
		144	5720		17.32	16.91
	802.11n20-HT0	100	5500	MCS0	18.00	17.58
		120	5600		18.00	17.62
		140	5700		18.00	17.71
		144	5720		16.92	16.62
	802.11ac20-VHT0	100	5500	MCS0	18.00	17.72
		120	5600		18.00	17.73
		140	5700		18.00	17.71
		144	5720		16.92	16.50
	802.11ax20-HE0	100	5500	MCS0	18.00	17.61
		120	5600		18.00	17.64
		140	5700		18.00	17.62
		144	5720		17.46	17.20
	802.11n40-HT0	102	5510	MCS0	15.17	14.86
		118	5590		18.00	17.57
		134	5670		18.00	17.75
		142	5710		18.00	17.63
	802.11ac40-VHT0	102	5510	MCS0	15.17	14.82
		118	5590		18.00	17.56
		134	5670		18.00	17.65
		142	5710		18.00	17.64
	802.11ax40-HE0	102	5510	MCS0	15.41	15.00
		118	5590		18.00	17.57
		134	5670		18.00	17.73
		142	5710		18.00	17.72
	802.11ac80-VHT0	106	5530	MCS0	15.35	14.93
		122	5610		18.00	17.64
		138	5690		18.00	17.68
	802.11ax80-HE0	106	5530	MCS0	15.52	15.12
		122	5610		18.00	17.76
		138	5690		18.00	17.88

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Mode	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
5.8GHz	802.11a	149	5745	6Mbps	18.50	18.26
		157	5785		18.50	18.20
		165	5825		18.50	18.35
	802.11n20-HT0	149	5745	MCS0	18.50	18.27
		157	5785		18.50	18.30
		165	5825		18.50	18.29
	802.11ac20-VHT0	149	5745	MCS0	18.50	18.24
		157	5785		18.50	18.24
		165	5825		18.50	18.27
	802.11ax20-HE0	149	5745	MCS0	18.50	18.22
		157	5785		18.50	18.29
		165	5825		18.50	18.21
	802.11n40-HT0	151	5755	MCS0	18.50	18.33
		159	5795		18.50	18.35
	802.11ac40-VHT0	151	5755	MCS0	18.50	18.35
		159	5795		18.50	18.36
	802.11ax40-HE0	151	5755	MCS0	18.50	18.37
		159	5795		18.50	18.37
	802.11ac80-VHT0	155	5775	MCS0	18.50	18.37
	802.11ax80-HE0	155	5775	MCS0	18.50	18.27

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chain 0						
Mode	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
5.9GHz	802.11a	169	5845	6Mbps	14.14	14.04
		173	5865		13.97	13.71
		177	5885		13.99	13.86
	802.11n20-HT0	169	5845	MCS0	14.15	14.01
		173	5865		14.19	13.99
		177	5885		14.23	14.09
	802.11ac20-VHT0	169	5845	MCS0	14.15	13.90
		173	5865		14.19	14.09
		177	5885		14.23	13.98
	802.11ax20-HE0	169	5845	MCS0	14.38	14.23
		173	5865		14.42	14.23
		177	5885		14.46	14.18
	802.11n40-HT0	167	5835	MCS0	17.08	16.82
		175	5875		17.14	16.94
	802.11ac40-VHT0	167	5835	MCS0	17.08	16.80
		175	5875		17.14	16.99
	802.11ax40-HE0	167	5835	MCS0	17.36	17.12
		175	5875		17.39	17.15
	802.11ac80-VHT0	171	5855	MCS0	17.52	17.42
	802.11ax80-HE0	171	5855	MCS0	17.74	17.66

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Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
2.45GHz	802.11b	1	2412	1Mbps	17.50	17.26
		6	2437		17.50	17.43
		11	2462		17.50	17.38
		12	2467		15.26	15.26
		13	2472		11.94	11.74
	802.11g	1	2412	6Mbps	16.93	16.49
		6	2437		17.50	17.07
		11	2462		17.10	16.82
		12	2467		13.05	13.01
		13	2472		12.15	11.98
	802.11n20-HT0	1	2412	MCS0	15.95	15.66
		6	2437		17.50	17.25
		11	2462		15.97	15.63
		12	2467		13.04	12.92
		13	2472		11.81	11.79
	802.11ac20-VHT0	1	2412	MCS0	15.95	15.52
		6	2437		17.50	17.14
		11	2462		15.97	15.71
	802.11ax20-HE0	1	2412	MCS0	16.14	15.84
		6	2437		17.50	17.23
		11	2462		16.16	15.75
		12	2467		13.19	13.05
		13	2472		12.04	11.99
	802.11n40-HT0	3	2422	MCS0	14.93	14.57
		6	2437		17.50	17.21
		9	2452		14.95	14.70
	802.11ac40-VHT0	3	2422	MCS0	14.93	14.65
		6	2437		17.50	17.07
		9	2452		14.95	14.58
	802.11ax40-HE0	3	2422	MCS0	15.10	14.79
		6	2437		17.50	17.10
		9	2452		15.12	14.83

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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	17.00	16.72
		40	5200		17.00	16.71
		44	5220		17.00	16.67
		48	5240		17.00	16.80
	802.11n20-HT0	36	5180	MCS0	17.00	16.75
		40	5200		17.00	16.77
		44	5220		17.00	16.71
		48	5240		17.00	16.80
	802.11ac20-VHT0	36	5180	MCS0	17.00	16.67
		40	5200		17.00	16.84
		44	5220		17.00	16.84
		48	5240		17.00	16.66
	802.11ax20-HE0	36	5180	MCS0	17.00	16.79
		40	5200		17.00	16.83
		44	5220		17.00	16.83
		48	5240		17.00	16.69
	802.11n40-HT0	38	5190	MCS0	16.55	16.36
		46	5230		17.00	16.85
	802.11ac40-VHT0	38	5190	MCS0	16.55	16.32
		46	5230		17.00	16.66
	802.11ax40-HE0	38	5190	MCS0	16.77	16.60
		46	5230		17.00	16.84
	802.11ac80-VHT0	42	5210	MCS0	15.43	15.13
	802.11ax80-HE0	42	5210	MCS0	15.67	15.40

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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	17.00	16.54
		56	5280		17.00	16.50
		60	5300		17.00	16.53
		64	5320		17.00	16.64
	802.11n20-HT0	52	5260	MCS0	17.00	16.53
		56	5280		17.00	16.66
		60	5300		17.00	16.64
		64	5320		17.00	16.49
	802.11ac20-VHT0	52	5260	MCS0	17.00	16.61
		56	5280		17.00	16.59
		60	5300		17.00	16.57
		64	5320		17.00	16.62
	802.11ax20-HE0	52	5260	MCS0	17.00	16.56
		56	5280		17.00	16.58
		60	5300		17.00	16.56
		64	5320		17.00	16.69
	802.11n40-HT0	54	5270	MCS0	17.00	16.91
		62	5310		17.00	16.69
	802.11ac40-VHT0	54	5270	MCS0	17.00	16.52
		62	5310		16.74	16.39
	802.11ax40-HE0	54	5270	MCS0	17.00	16.51
		62	5310		16.96	16.51
	802.11ac80-VHT0	58	5290	MCS0	16.62	16.22
	802.11ax80-HE0	58	5290	MCS0	16.89	16.46

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chain 1(Aux)						
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
5.6GHz	802.11a	100	5500	6Mbps	18.00	17.53
		120	5600		18.00	17.59
		140	5700		18.00	17.53
		144	5720		17.67	17.25
	802.11n20-HT0	100	5500	MCS0	18.00	17.59
		120	5600		18.00	17.45
		140	5700		18.00	17.56
		144	5720		17.60	17.16
	802.11ac20-VHT0	100	5500	MCS0	18.00	17.59
		120	5600		18.00	17.61
		140	5700		18.00	17.53
		144	5720		17.60	17.13
	802.11ax20-HE0	100	5500	MCS0	18.00	17.48
		120	5600		18.00	17.61
		140	5700		18.00	17.53
		144	5720		17.86	17.47
	802.11n40-HT0	102	5510	MCS0	15.27	14.83
		118	5590		18.00	17.57
		134	5670		18.00	17.49
		142	5710		18.00	17.55
	802.11ac40-VHT0	102	5510	MCS0	15.27	14.90
		118	5590		18.00	17.50
		134	5670		18.00	17.64
		142	5710		18.00	17.47
	802.11ax40-HE0	102	5510	MCS0	15.52	15.10
		118	5590		18.00	17.54
		134	5670		18.00	17.51
		142	5710		18.00	17.49
	802.11ac80-VHT0	106	5530	MCS0	15.29	14.79
		122	5610		18.00	17.59
		138	5690		18.00	17.60
	802.11ax80-HE0	106	5530	MCS0	15.46	15.08
		122	5610		18.00	17.65
		138	5690		18.00	17.94

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chain 1(Aux)						
Mode	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
5.8GHz	802.11a	149	5745	6Mbps	18.50	18.17
		157	5785		18.50	18.11
		165	5825		18.50	18.18
	802.11n20-HT0	149	5745	MCS0	18.50	18.30
		157	5785		18.50	18.25
		165	5825		18.50	18.16
	802.11ac20-VHT0	149	5745	MCS0	18.50	18.27
		157	5785		18.50	18.19
		165	5825		18.50	18.21
	802.11ax20-HE0	149	5745	MCS0	18.50	18.18
		157	5785		18.50	18.16
		165	5825		18.50	18.17
	802.11n40-HT0	151	5755	MCS0	18.50	18.24
		159	5795		18.50	18.13
	802.11ac40-VHT0	151	5755	MCS0	18.50	18.15
		159	5795		18.50	18.17
	802.11ax40-HE0	151	5755	MCS0	18.50	18.18
		159	5795		18.50	18.12
	802.11ac80-VHT0	155	5775	MCS0	18.50	18.30
	802.11ax80-HE0	155	5775	MCS0	18.50	18.25

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chain 1						
Mode	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
5.9GHz	802.11a	169	5845	6Mbps	14.23	14.11
		173	5865		14.18	14.06
		177	5885		14.13	13.88
	802.11n20-HT0	169	5845	MCS0	14.27	14.10
		173	5865		14.30	14.19
		177	5885		14.29	14.12
	802.11ac20-VHT0	169	5845	MCS0	14.27	14.00
		173	5865		14.30	14.13
		177	5885		14.29	14.17
	802.11ax20-HE0	169	5845	MCS0	14.53	14.44
		173	5865		14.57	14.40
		177	5885		14.56	14.43
	802.11n40-HT0	167	5835	MCS0	17.20	16.98
		175	5875		17.31	17.22
	802.11ac40-VHT0	167	5835	MCS0	17.20	17.06
		175	5875		17.31	17.23
	802.11ax40-HE0	167	5835	MCS0	17.41	17.33
		175	5875		17.53	17.37
	802.11ac80-VHT0	171	5855	MCS0	17.65	17.46
	802.11ax80-HE0	171	5855	MCS0	17.87	17.86

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## 5.2 Bluetooth

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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	12.31	11.26	9.54	9.46	9.54	9.44
	CH 39	2441		10.99		9.35		9.21
	CH 78	2480		10.91		9.22		9.16

### Hong Bo

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	12.31	11.34	9.54	9.51	9.54	9.53
	CH 39	2441		11.14		9.41		9.42
	CH 78	2480		11.09		9.28		9.26

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**AWAN**

Mode	Channel	Frequency (MHz)	GFSK	
			Max. Rated Avg.Power + Max. Tolerance (dBm)	Average Output Power (dBm)
BLE_1M	CH 00	2402	12.37	12.31
	CH 19	2440		12.28
	CH 39	2480		12.24
Mode	Channel	Frequency (MHz)	GFSK	
			Max. Rated Avg.Power + Max. Tolerance (dBm)	Average Output Power (dBm)
BLE_2M	CH 00	2402	12.38	11.63
	CH 19	2440		11.69
	CH 39	2480		11.54

**Hong Bo**

Mode	Channel	Frequency (MHz)	GFSK	
			Max. Rated Avg.Power + Max. Tolerance (dBm)	Average Output Power (dBm)
BLE_1M	CH 00	2402	12.37	12.36
	CH 19	2440		12.35
	CH 39	2480		12.27
Mode	Channel	Frequency (MHz)	GFSK	
			Max. Rated Avg.Power + Max. Tolerance (dBm)	Average Output Power (dBm)
BLE_2M	CH 00	2402	12.38	11.67
	CH 19	2440		11.72
	CH 39	2480		11.62

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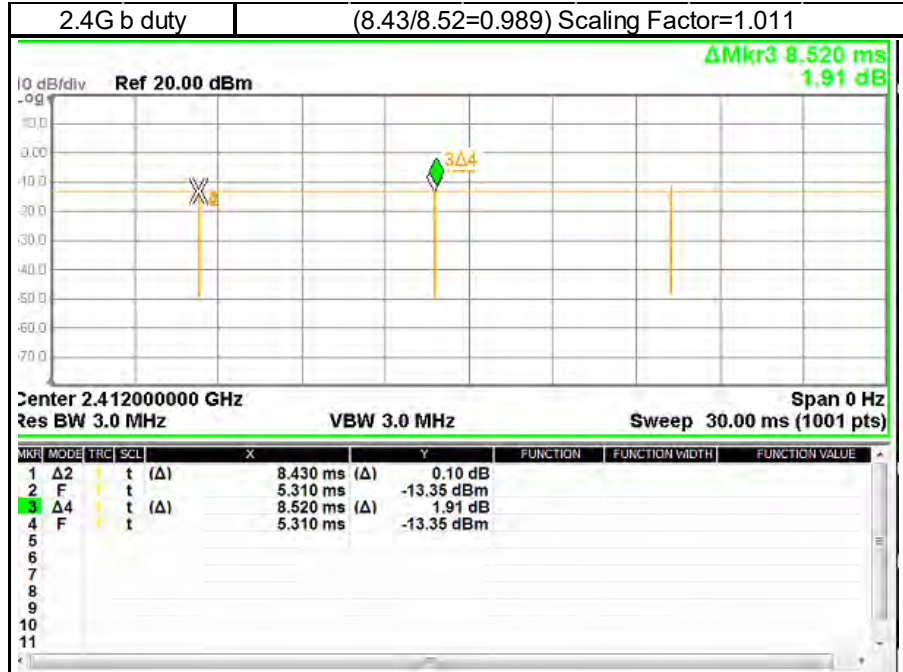
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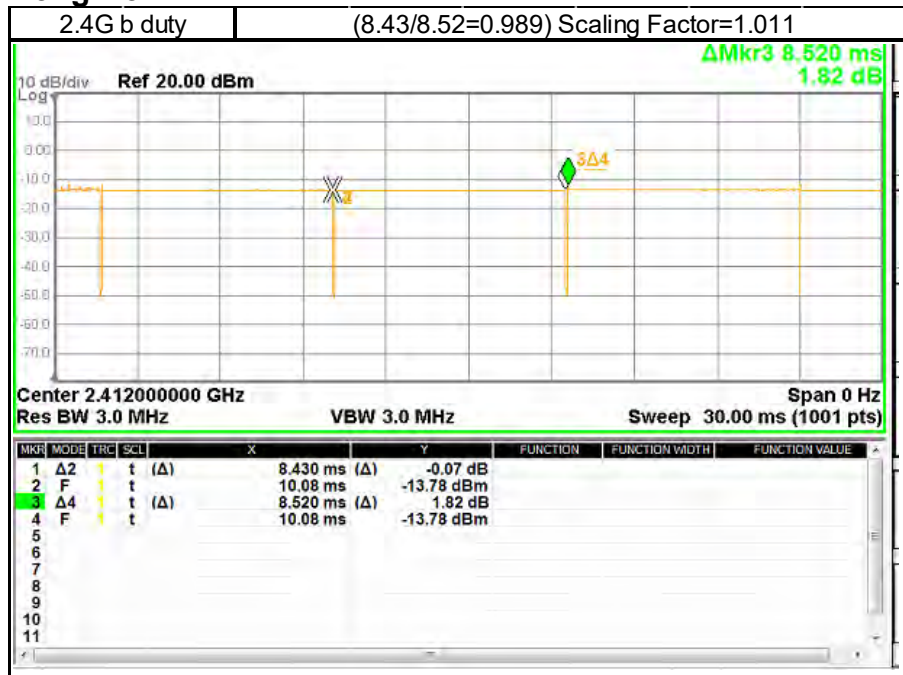
## 6 DUTY CYCLE

Report No.: TESA2208000309E5

AWAN



Hong Bo



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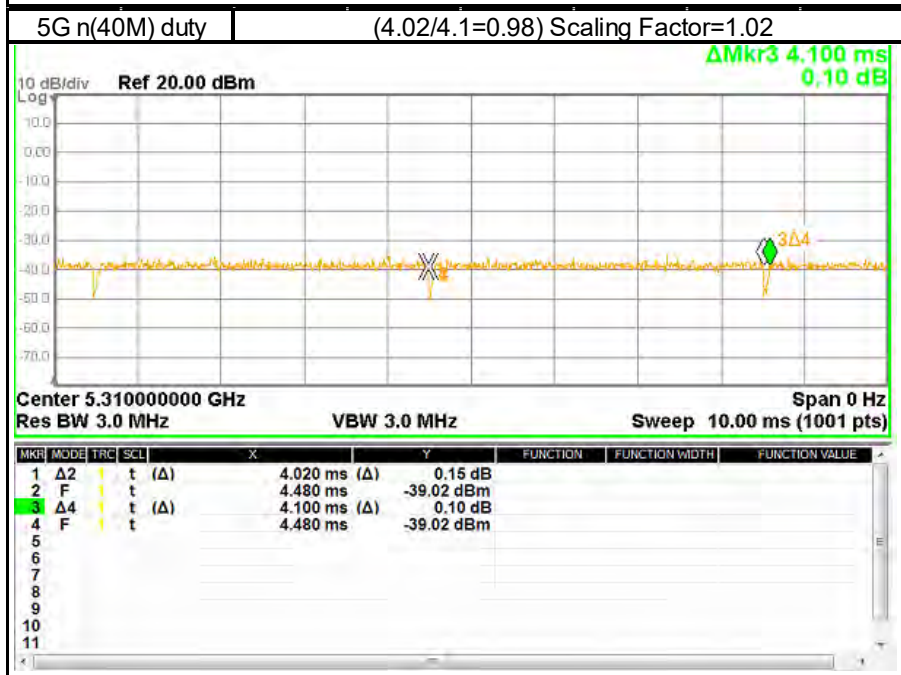
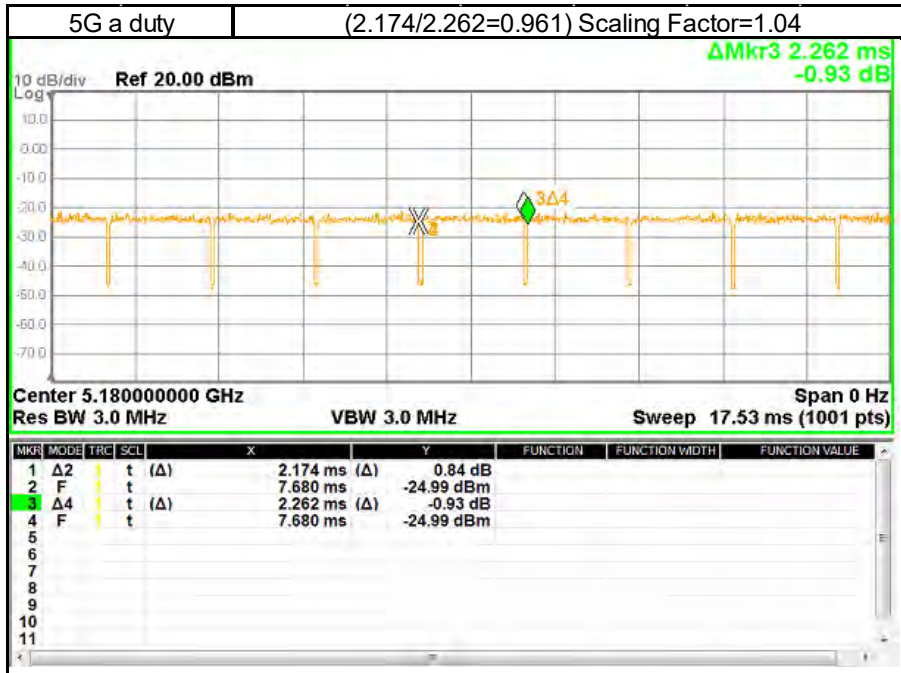
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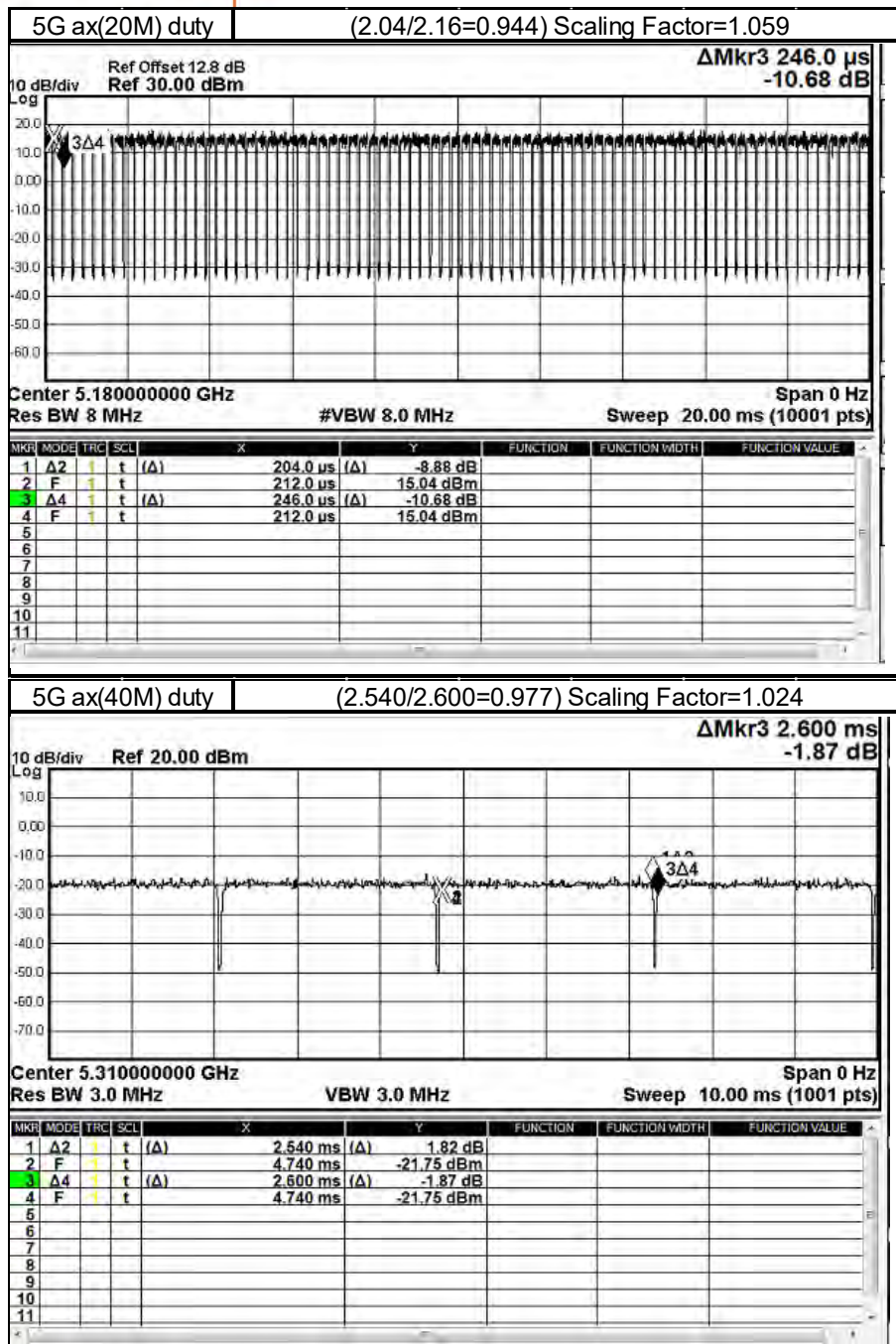


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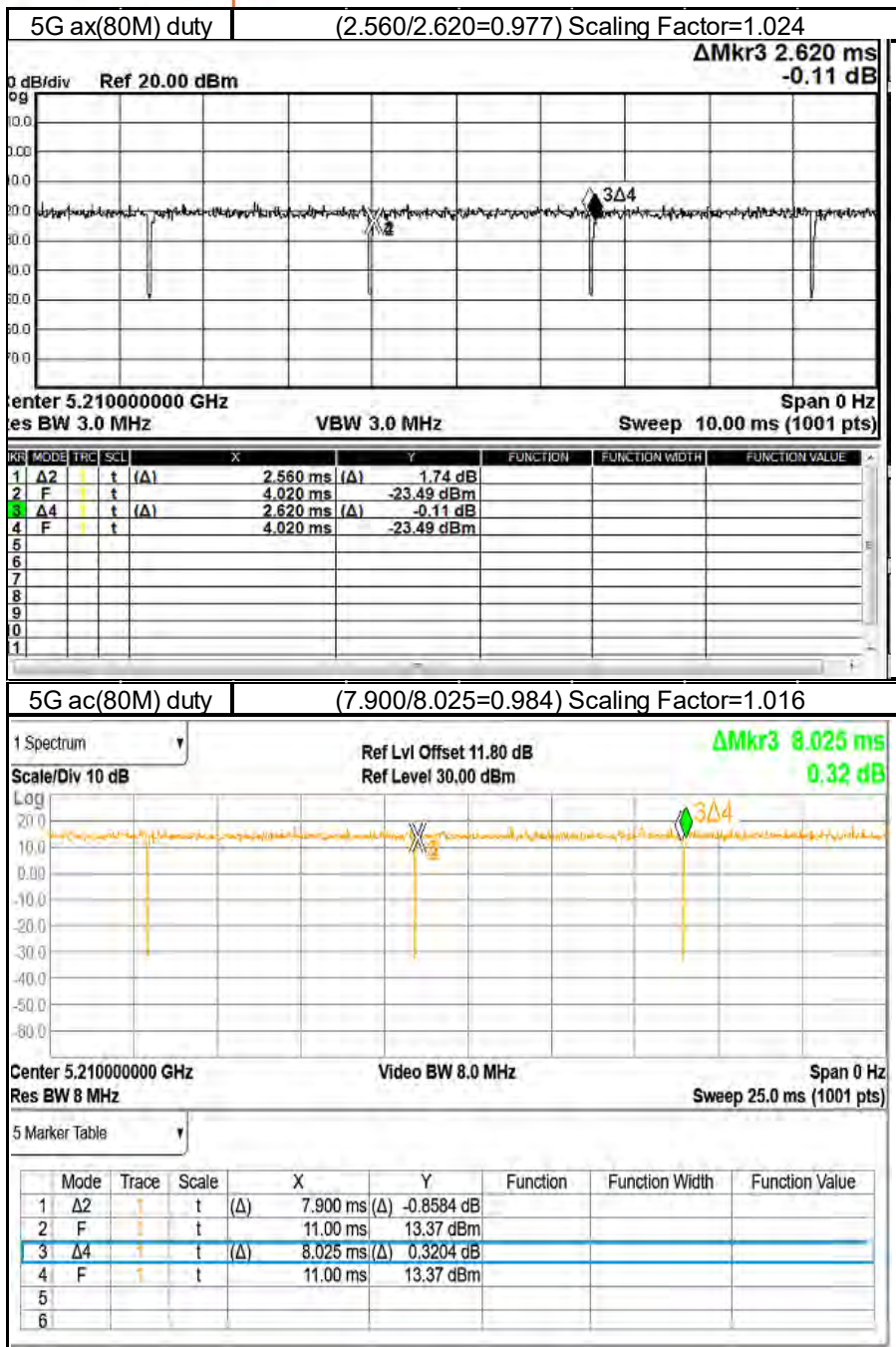




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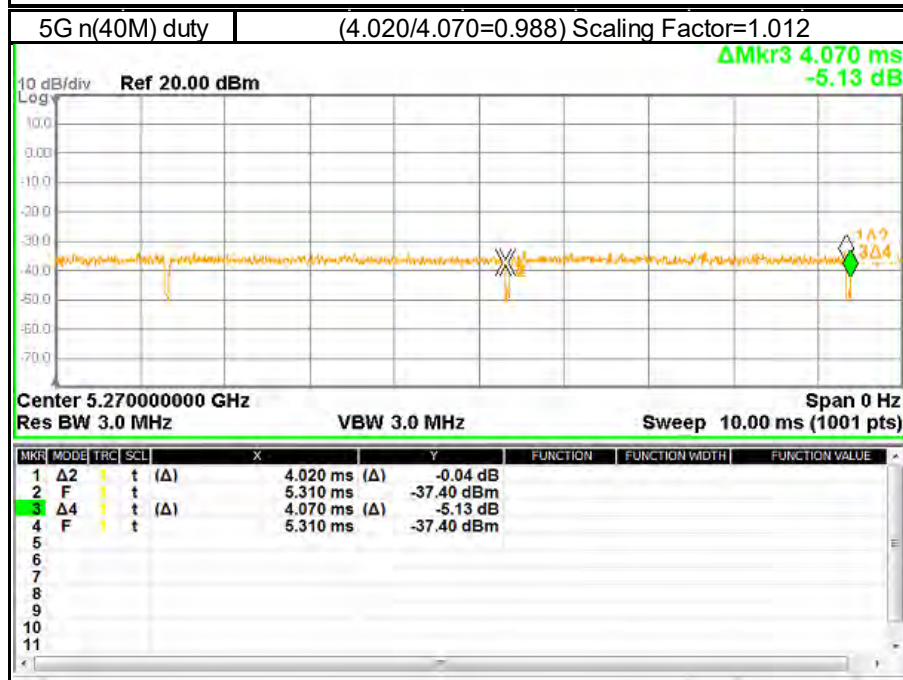
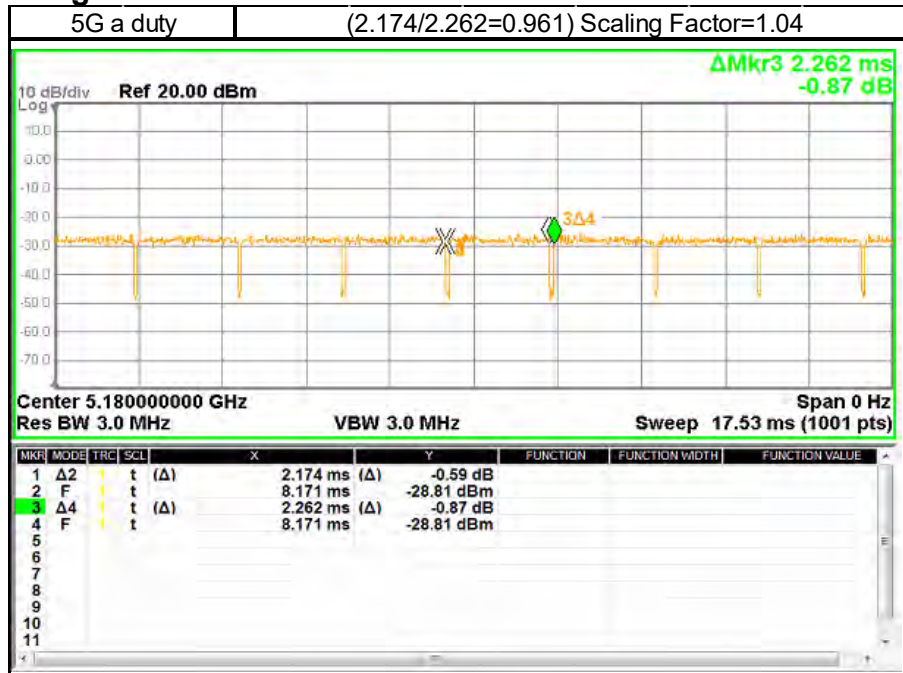


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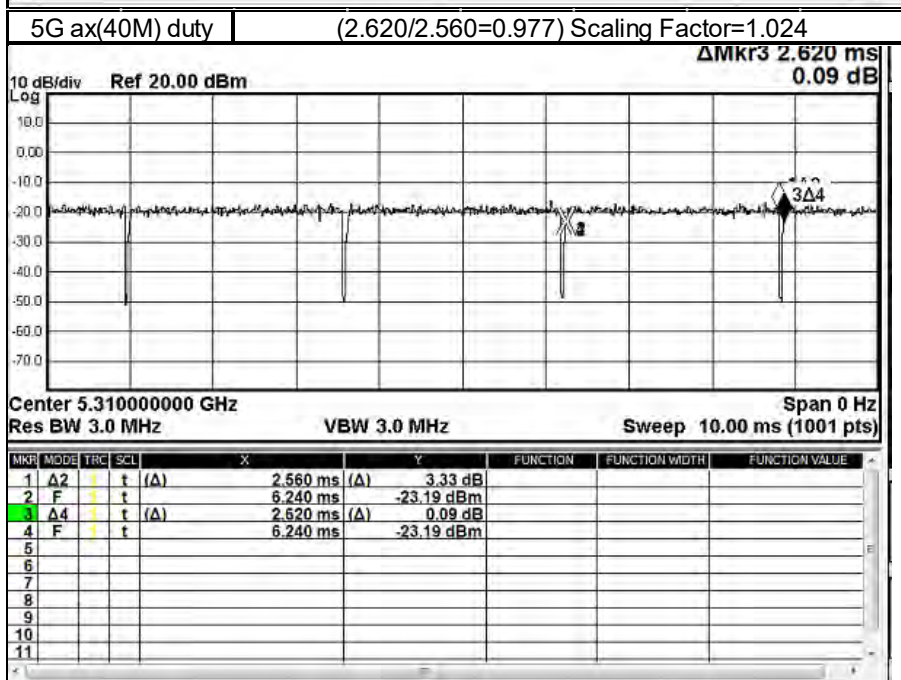
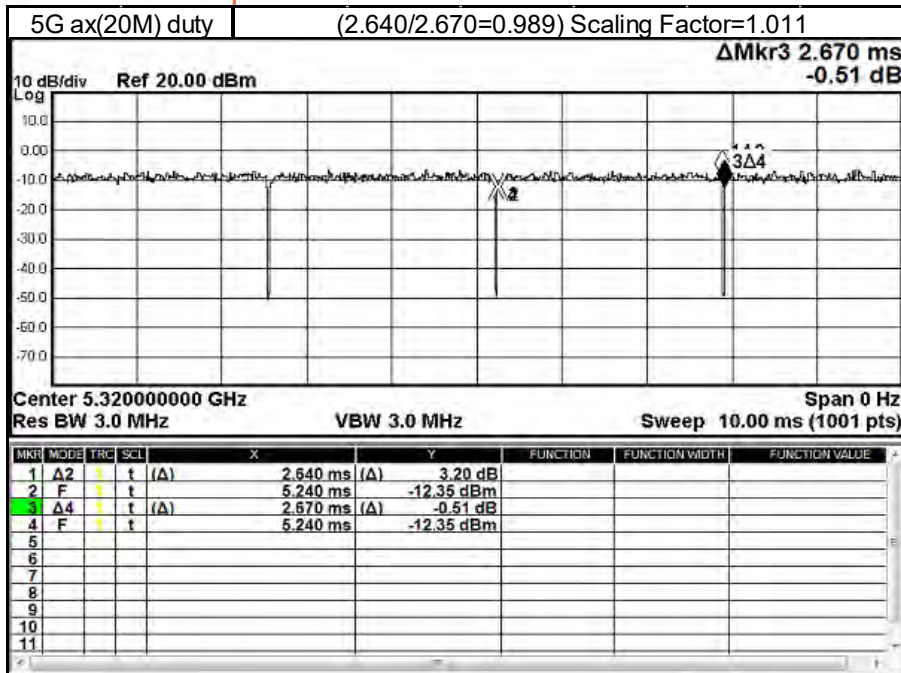


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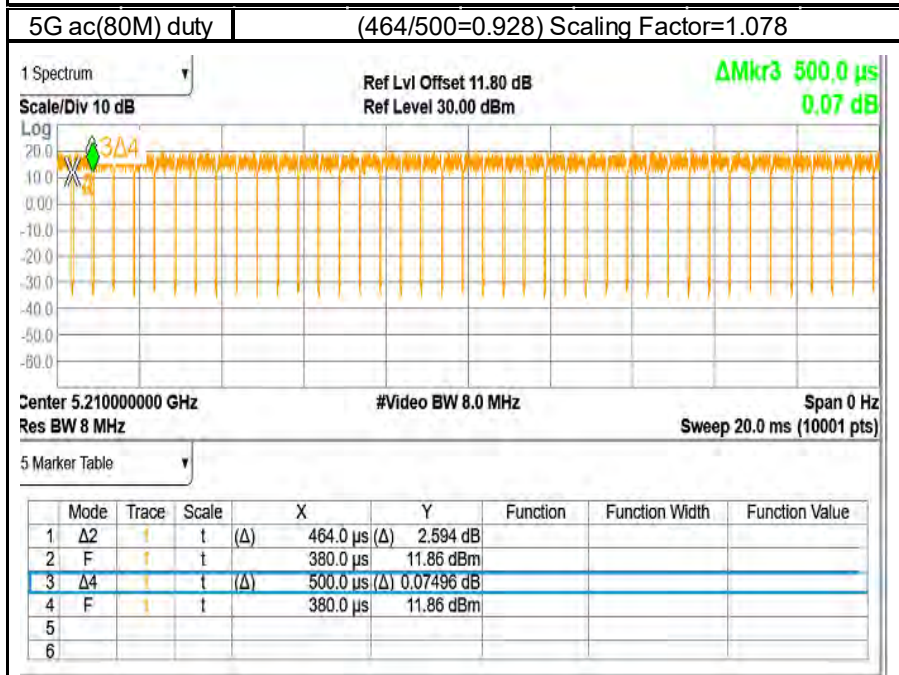
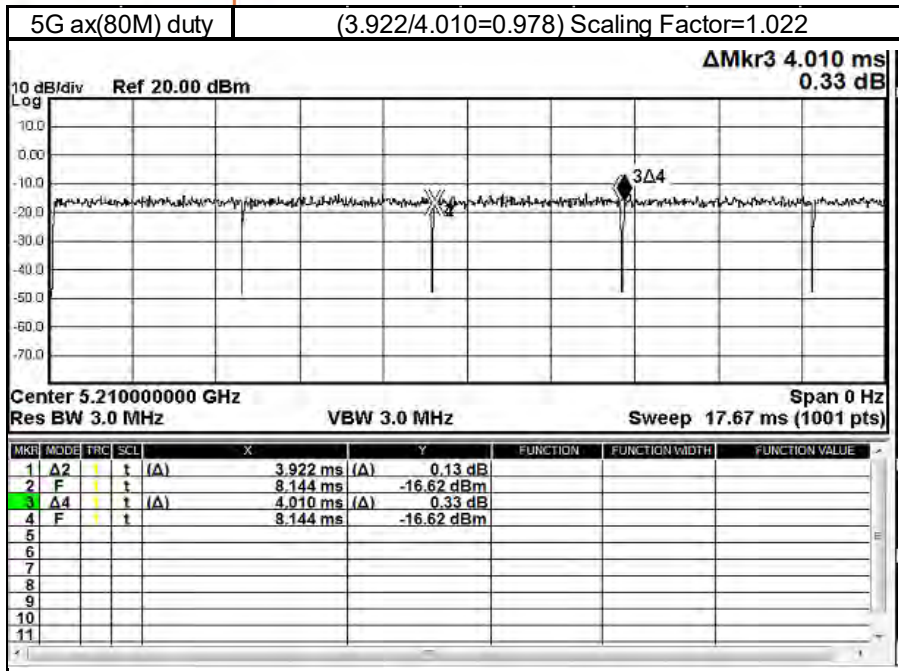




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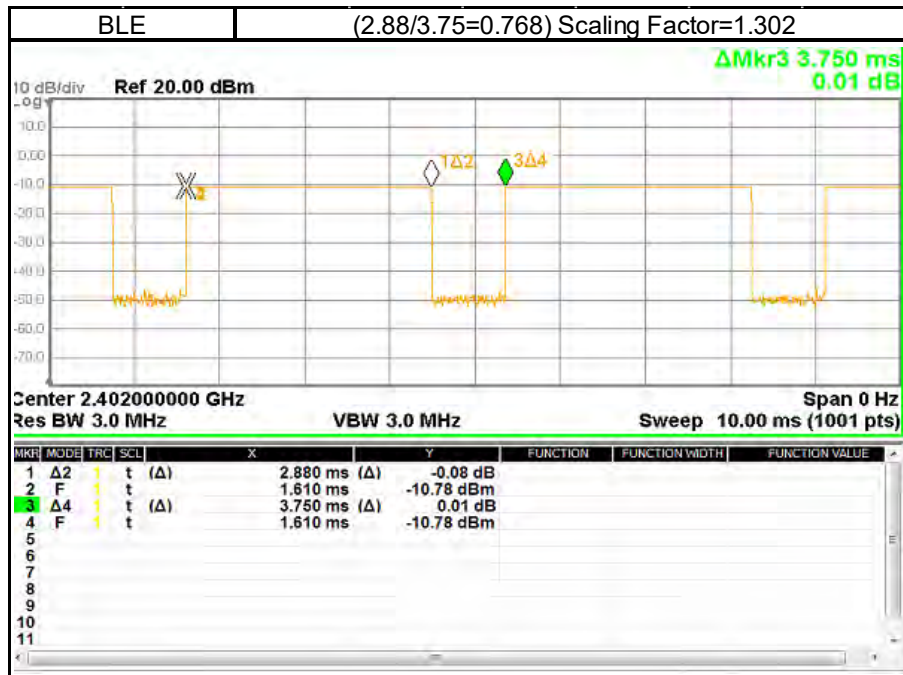


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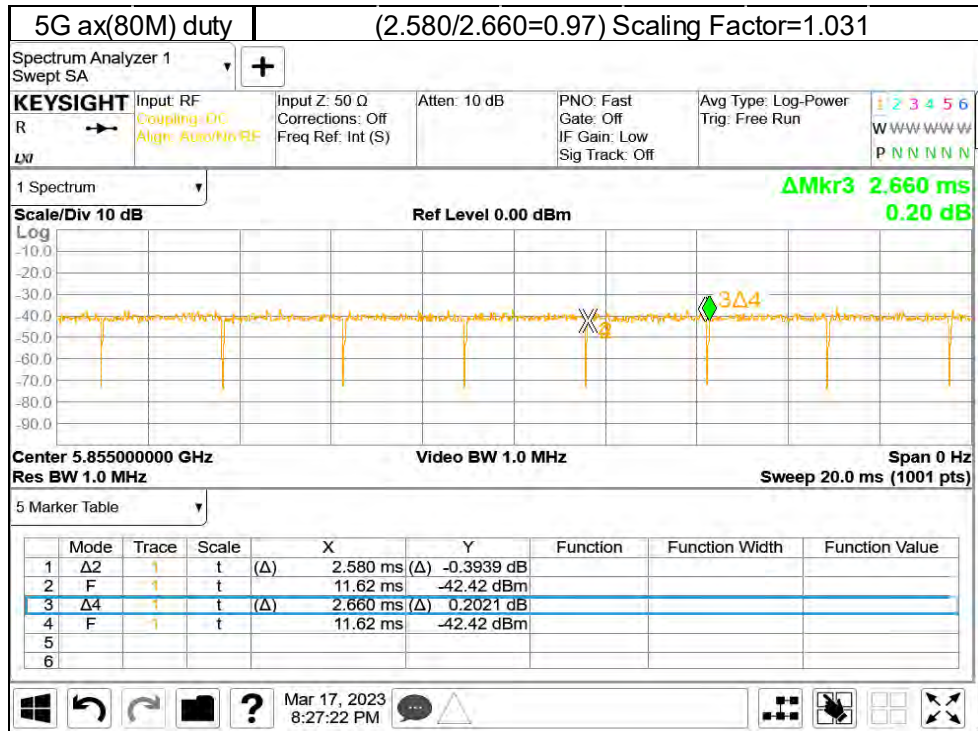
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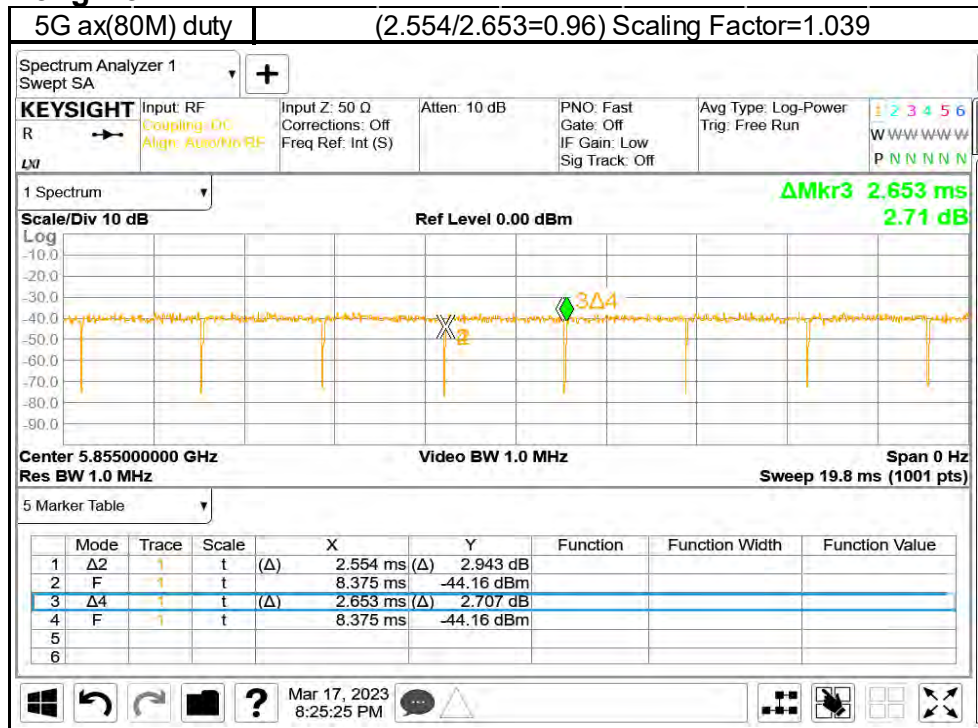


## Report No.: TESA2303000123E5

### AWAN



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## 7 SUMMARY OF RESULTS

### 7.1 Decision rules

Reported measurement data comply with Test Methodology in section 1.1.

Determining compliance shall be based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

### 7.2 Summary of SAR Results

#### Report No.: TESA2208000309E5 AWAN

Mode	Antenna	Position	Distance (mm)	Channel	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Duty cycle scaling	Power scaling	Averaged SAR over 1g (W/kg)		ID
										Measured	Reported	
WLAN 802.11b	Main	Bottom Surface	0	1	2412	17.50	17.15	1.011	108.39%	0.635	0.696	-
WLAN 802.11b	Main	Bottom Surface	0	6	2437	17.50	17.11	1.011	109.40%	0.761	0.842	001
WLAN 802.11b	Main	Bottom Surface	0	11	2462	17.50	17.27	1.011	105.44%	0.722	0.770	-
Mode	Antenna	Position	Distance (mm)	Channel	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Duty cycle scaling	Power scaling	Averaged SAR over 1g (W/kg)		ID
										Measured	Reported	
WLAN 802.11a 5.2G	Main	Bottom Surface	0	36	5180	17.00	16.88	1.040	102.80%	1.110	1.187	002
WLAN 802.11a 5.2G	Main	Bottom Surface	0	40	5200	17.00	16.84	1.040	103.75%	0.955	1.030	-
WLAN 802.11a 5.2G	Main	Bottom Surface	0	44	5220	17.00	16.92	1.040	101.86%	1.000	1.059	-
WLAN 802.11a 5.2G	Main	Bottom Surface	0	48	5240	17.00	16.85	1.040	103.51%	0.933	1.004	-
Repeated	Main	Bottom Surface	0	36	5180	17.00	16.88	1.040	102.80%	1.065	1.139	-
WLAN 802.11n(40M) 5.2G	Main	Bottom Surface	0	46	5230	17.00	16.96	1.020	100.93%	1.080	1.112	003
Repeated	Main	Bottom Surface	0	46	5230	17.00	16.96	1.020	100.93%	1.055	1.086	-
Mode	Antenna	Position	Distance (mm)	Channel	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Duty cycle scaling	Power scaling	Averaged SAR over 1g (W/kg)		ID
										Measured	Reported	
WLAN 802.11n(40M) 5.3G	Main	Bottom Surface	0	54	5270	17.00	16.62	1.020	109.14%	1.060	1.180	004
WLAN 802.11n(40M) 5.3G	Main	Bottom Surface	0	62	5310	16.50	16.27	1.020	105.44%	0.739	0.795	-
Repeated	Main	Bottom Surface	0	54	5270	17.00	16.62	1.020	109.14%	1.023	1.139	-
WLAN 802.11ax(80M) 5.3G	Main	Bottom Surface	0	58	5290	17.00	16.89	1.024	102.57%	1.010	1.061	005
Repeated	Main	Bottom Surface	0	58	5290	17.00	16.89	1.024	102.57%	0.978	1.027	-
Mode	Antenna	Position	Distance (mm)	Channel	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Duty cycle scaling	Power scaling	Averaged SAR over 1g (W/kg)		ID
										Measured	Reported	
WLAN 802.11n(40M) 5.6G	Main	Bottom Surface	0	134	5670	18.00	17.76	1.020	105.68%	0.923	0.995	-
WLAN 802.11n(40M) 5.6G	Main	Bottom Surface	0	142	5710	18.00	17.73	1.020	106.41%	1.060	1.151	006
Repeated	Main	Bottom Surface	0	142	5710	18.00	17.73	1.020	106.41%	1.024	1.111	-
WLAN 802.11ac(80M) 5.6G	Main	Bottom Surface	0	122	5610	18.00	17.44	1.016	113.76%	0.760	0.878	-
WLAN 802.11ac(80M) 5.6G	Main	Bottom Surface	0	138	5690	18.00	17.59	1.016	109.90%	0.994	1.110	007
Repeated	Main	Bottom Surface	0	138	5690	18.00	17.59	1.016	109.90%	0.961	1.073	-
Mode	Antenna	Position	Distance (mm)	Channel	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Duty cycle scaling	Power scaling	Averaged SAR over 1g (W/kg)		ID
										Measured	Reported	
WLAN 802.11n(40M) 5.8G	Main	Bottom Surface	0	151	5755	18.50	18.16	1.020	108.14%	0.845	0.932	-
WLAN 802.11n(40M) 5.8G	Main	Bottom Surface	0	159	5795	18.50	18.28	1.020	105.20%	1.020	1.094	008
Repeated	Main	Bottom Surface	0	159	5795	18.50	18.28	1.020	105.20%	0.960	1.030	-
WLAN 802.11ac(80M) 5.8G	Main	Bottom Surface	0	155	5775	18.50	18.24	1.016	106.17%	1.030	1.111	009
Repeated	Main	Bottom Surface	0	155	5775	18.50	18.24	1.016	106.17%	0.973	1.050	-

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

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Mode	Antenna	Position	Distance (mm)	Channel	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Duty cycle scaling	Power scaling	Averaged SAR over 1g (W/kg)		ID
										Measured	Reported	
WLAN 802.11b	Aux	Bottom Surface	0	11	2462	17.50	17.39	1.011	102.57%	0.553	0.573	010
Mode	Antenna	Position	Distance (mm)	Channel	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Duty cycle scaling	Power scaling	Averaged SAR over 1g (W/kg)		ID
										Measured	Reported	
BLE2M	Aux	Bottom Surface	0	19	2440	12.38	11.69	1.302	117.22%	0.198	0.302	011
Mode	Antenna	Position	Distance (mm)	Channel	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Duty cycle scaling	Power scaling	Averaged SAR over 1g (W/kg)		ID
										Measured	Reported	
WLAN 802.11a 5.2G	Aux	Bottom Surface	0	36	5180	17.00	16.72	1.040	106.66%	0.873	0.968	-
WLAN 802.11a 5.2G	Aux	Bottom Surface	0	48	5240	17.00	16.74	1.040	106.17%	0.954	1.053	012
Repeated	Aux	Bottom Surface	0	48	5240	17.00	16.74	1.040	106.17%	0.937	1.035	-
WLAN 802.11n(40M) 5.2G	Aux	Bottom Surface	0	46	5230	17.00	16.69	1.020	107.40%	0.988	1.082	013
Repeated	Aux	Bottom Surface	0	46	5230	17.00	16.69	1.020	107.40%	0.959	1.051	-
Mode	Antenna	Position	Distance (mm)	Channel	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Duty cycle scaling	Power scaling	Averaged SAR over 1g (W/kg)		ID
										Measured	Reported	
WLAN 802.11n(40M) 5.3G	Aux	Bottom Surface	0	54	5270	17.00	16.87	1.020	103.04%	0.985	1.035	014
WLAN 802.11n(40M) 5.3G	Aux	Bottom Surface	0	62	5310	17.00	16.77	1.020	105.44%	0.981	1.055	-
Repeated	Aux	Bottom Surface	0	54	5270	17.00	16.87	1.020	103.04%	0.966	1.015	-
Mode	Antenna	Position	Distance (mm)	Channel	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Duty cycle scaling	Power scaling	Averaged SAR over 1g (W/kg)		ID
										Measured	Reported	
WLAN 802.11n(40M) 5.6G	Aux	Bottom Surface	0	134	5670	18.00	17.48	1.020	112.72%	0.998	1.147	015
WLAN 802.11n(40M) 5.6G	Aux	Bottom Surface	0	142	5710	18.00	17.55	1.020	110.92%	0.966	1.093	-
Repeated	Aux	Bottom Surface	0	134	5670	18.00	17.48	1.020	112.72%	0.974	1.120	-
WLAN 802.11ac(80M) 5.6G	Aux	Bottom Surface	0	122	5610	18.00	17.43	1.016	114.02%	0.909	1.053	-
WLAN 802.11ac(80M) 5.6G	Aux	Bottom Surface	0	138	5690	18.00	17.62	1.016	109.14%	0.949	1.052	016
Repeated	Aux	Bottom Surface	0	138	5690	18.00	17.62	1.016	109.14%	0.921	1.021	-
Mode	Antenna	Position	Distance (mm)	Channel	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Duty cycle scaling	Power scaling	Averaged SAR over 1g (W/kg)		ID
										Measured	Reported	
WLAN 802.11n(40M) 5.8G	Aux	Bottom Surface	0	151	5755	18.50	18.24	1.020	106.17%	1.050	1.137	-
WLAN 802.11n(40M) 5.8G	Aux	Bottom Surface	0	159	5795	18.50	18.11	1.020	109.40%	1.060	1.183	017
Repeated	Aux	Bottom Surface	0	159	5795	18.50	18.11	1.020	109.40%	1.052	1.174	-
WLAN 802.11ac(80M) 5.8G	Aux	Bottom Surface	0	155	5775	18.50	18.28	1.016	105.20%	0.865	0.925	018
Repeated	Aux	Bottom Surface	0	155	5775	18.50	18.28	1.016	105.20%	0.848	0.906	-

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

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Mode	Antenna	Position	Distance (mm)	Channel	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Duty cycle scaling	Power scaling	Averaged SAR over 1g (W/kg)		ID
										Measured	Reported	
WLAN 802.11b	Main	Bottom Surface	0	1	2412	17.50	17.21	1.011	106.91%	0.884	0.955	019
WLAN 802.11b	Main	Bottom Surface	0	6	2437	17.50	17.32	1.011	104.23%	0.867	0.914	-
WLAN 802.11b	Main	Bottom Surface	0	11	2462	17.50	17.29	1.011	104.95%	0.748	0.794	-
Repeated	Main	Bottom Surface	0	1	2412	17.50	17.21	1.011	106.91%	0.871	0.941	-
Mode	Antenna	Position	Distance (mm)	Channel	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Duty cycle scaling	Power scaling	Averaged SAR over 1g (W/kg)		ID
										Measured	Reported	
WLAN 802.11a 5.2G	Main	Bottom Surface	0	40	5200	17.00	16.84	1.040	103.75%	0.867	0.936	020
WLAN 802.11a 5.2G	Main	Bottom Surface	0	44	5220	17.00	16.78	1.040	105.20%	0.784	0.858	-
Repeated	Main	Bottom Surface	0	40	5200	17.00	16.84	1.040	103.75%	0.844	0.911	-
WLAN 802.11n(40M) 5.2G	Main	Bottom Surface	0	46	5230	17.00	16.98	1.012	100.46%	0.917	0.932	021
Repeated	Main	Bottom Surface	0	46	5230	17.00	16.98	1.012	100.46%	0.902	0.917	-
Mode	Antenna	Position	Distance (mm)	Channel	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Duty cycle scaling	Power scaling	Averaged SAR over 1g (W/kg)		ID
										Measured	Reported	
WLAN 802.11ax(80M) 5.3G	Main	Bottom Surface	0	58	5290	17.00	16.95	1.022	101.16%	0.747	0.772	022
Mode	Antenna	Position	Distance (mm)	Channel	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Duty cycle scaling	Power scaling	Averaged SAR over 1g (W/kg)		ID
										Measured	Reported	
WLAN 802.11n(40M) 5.6G	Main	Bottom Surface	0	134	5670	18.00	17.75	1.012	105.93%	1.020	1.093	023
WLAN 802.11n(40M) 5.6G	Main	Bottom Surface	0	142	5710	18.00	17.63	1.012	108.89%	0.885	0.975	-
Repeated	Main	Bottom Surface	0	134	5670	18.00	17.75	1.012	105.93%	0.963	1.032	-
WLAN 802.11ac(80M) 5.6G	Main	Bottom Surface	0	122	5610	18.00	17.64	1.078	108.64%	0.895	1.048	-
WLAN 802.11ac(80M) 5.6G	Main	Bottom Surface	0	138	5690	18.00	17.68	1.078	107.65%	0.977	1.134	024
Repeated	Main	Bottom Surface	0	138	5690	18.00	17.68	1.078	107.65%	0.951	1.104	-
Mode	Antenna	Position	Distance (mm)	Channel	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Duty cycle scaling	Power scaling	Averaged SAR over 1g (W/kg)		ID
										Measured	Reported	
WLAN 802.11n(40M) 5.8G	Main	Bottom Surface	0	151	5755	18.50	18.33	1.012	103.99%	0.891	0.938	025
WLAN 802.11n(40M) 5.8G	Main	Bottom Surface	0	159	5795	18.50	18.35	1.012	103.51%	0.788	0.825	-
Repeated	Main	Bottom Surface	0	151	5755	18.50	18.33	1.012	103.99%	0.869	0.915	-
WLAN 802.11ac(80M) 5.8G	Main	Bottom Surface	0	155	5775	18.50	18.37	1.078	103.04%	0.894	0.993	026
Repeated	Main	Bottom Surface	0	155	5775	18.50	18.37	1.078	103.04%	0.870	0.966	-
Mode	Antenna	Position	Distance (mm)	Channel	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Duty cycle scaling	Power scaling	Averaged SAR over 1g (W/kg)		ID
										Measured	Reported	
WLAN 802.11b	Aux	Bottom Surface	0	6	2437	17.50	17.43	1.011	101.62%	0.440	0.452	027
Mode	Antenna	Position	Distance (mm)	Channel	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Duty cycle scaling	Power scaling	Averaged SAR over 1g (W/kg)		ID
										Measured	Reported	
BLE2M	Aux	Bottom Surface	0	19	2440	12.38	11.72	1.299	116.41%	0.215	0.325	028
Mode	Antenna	Position	Distance (mm)	Channel	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Duty cycle scaling	Power scaling	Averaged SAR over 1g (W/kg)		ID
										Measured	Reported	
WLAN 802.11a 5.2G	Aux	Bottom Surface	0	36	5180	17.00	16.72	1.040	106.66%	0.687	0.762	-
WLAN 802.11a 5.2G	Aux	Bottom Surface	0	48	5240	17.00	16.80	1.040	104.71%	0.865	0.942	029
Repeated	Aux	Bottom Surface	0	48	5240	17.00	16.80	1.040	104.71%	0.838	0.913	-
WLAN 802.11n(40M) 5.2G	Aux	Bottom Surface	0	46	5230	17.00	16.85	1.012	103.51%	0.837	0.877	030
Repeated	Aux	Bottom Surface	0	46	5230	17.00	16.85	1.012	103.51%	0.811	0.850	-
Mode	Antenna	Position	Distance (mm)	Channel	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Duty cycle scaling	Power scaling	Averaged SAR over 1g (W/kg)		ID
										Measured	Reported	
WLAN 802.11n(40M) 5.3G	Aux	Bottom Surface	0	54	5270	17.00	16.91	1.012	102.09%	0.979	1.011	-
WLAN 802.11n(40M) 5.3G	Aux	Bottom Surface	0	62	5310	17.00	16.69	1.012	107.40%	1.050	1.141	031
Repeated	Aux	Bottom Surface	0	62	5310	17.00	16.69	1.012	107.40%	1.010	1.098	-
Mode	Antenna	Position	Distance (mm)	Channel	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Duty cycle scaling	Power scaling	Averaged SAR over 1g (W/kg)		ID
										Measured	Reported	
WLAN 802.11n(40M) 5.6G	Aux	Bottom Surface	0	134	5670	18.00	17.49	1.012	112.46%	0.905	1.030	-
WLAN 802.11n(40M) 5.6G	Aux	Bottom Surface	0	142	5710	18.00	17.55	1.012	110.92%	0.918	1.030	032
Repeated	Aux	Bottom Surface	0	142	5710	18.00	17.55	1.012	110.92%	0.907	1.018	-
WLAN 802.11ac(80M) 5.6G	Aux	Bottom Surface	0	122	5610	18.00	17.59	1.078	109.90%	0.908	1.076	-
WLAN 802.11ac(80M) 5.6G	Aux	Bottom Surface	0	138	5690	18.00	17.60	1.078	109.65%	0.954	1.128	033
Repeated	Aux	Bottom Surface	0	138	5690	18.00	17.60	1.078	109.65%	0.929	1.098	-
Mode	Antenna	Position	Distance (mm)	Channel	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Duty cycle scaling	Power scaling	Averaged SAR over 1g (W/kg)		ID
										Measured	Reported	
WLAN 802.11n(40M) 5.8G	Aux	Bottom Surface	0	151	5755	18.50	18.24	1.012	106.17%	0.938	1.008	034
WLAN 802.11n(40M) 5.8G	Aux	Bottom Surface	0	159	5795	18.50	18.13	1.012	108.89%	0.883	0.973	-
Repeated	Aux	Bottom Surface	0	151	5755	18.50	18.24	1.012	106.17%	0.904	0.971	-
WLAN 802.11ac(80M) 5.8G	Aux	Bottom Surface	0	155	5775	18.50	18.30	1.078	104.71%	0.800	0.903	035
Repeated	Aux	Bottom Surface	0	155	5775	18.50	18.30	1.078	104.71%	0.776	0.876	-

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

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## Report No.: TESA2303000123E5 AWAN

Mode	Antenna	Position	Distance (mm)	Channel	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Duty cycle scaling	Power scaling	Averaged SAR over 1g (W/kg)		ID
										Measured	Reported	
WLAN 802.11ax(80M) 5.9G	Main	Bottom Surface	0	171	5855	17.74	17.62	1.031	102.80%	0.653	0.692	036
Repeated	Main	Bottom Surface	0	171	5855	17.74	17.62	1.031	102.80%	0.621	0.658	-

Mode	Antenna	Position	Distance (mm)	Channel	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Duty cycle scaling	Power scaling	Averaged SAR over 1g (W/kg)		ID
										Measured	Reported	
WLAN 802.11ax(80M) 5.9G	Aux	Bottom Surface	0	171	5855	17.87	17.83	1.031	100.93%	0.875	0.910	037
Repeated	Aux	Bottom Surface	0	171	5855	17.87	17.83	1.031	100.93%	0.390	0.406	-

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

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Mode	Antenna	Position	Distance (mm)	Channel	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Duty cycle scaling	Power scaling	Averaged SAR over 1g (W/kg)		ID
										Measured	Reported	
WLAN 802.11ax(80M) 5.9G	Main	Bottom Surface	0	171	5855	17.74	17.66	1.039	101.86%	0.527	0.558	038
Repeated	Main	Bottom Surface	0	171	5855	17.74	17.66	1.039	101.86%	0.464	0.491	-

Mode	Antenna	Position	Distance (mm)	Channel	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Duty cycle scaling	Power scaling	Averaged SAR over 1g (W/kg)		ID
										Measured	Reported	
WLAN 802.11ax(80M) 5.9G	Aux	Bottom Surface	0	171	5855	17.87	17.82	1.039	101.16%	1.010	1.062	039
Repeated	Aux	Bottom Surface	0	171	5855	17.87	17.82	1.039	101.16%	0.958	1.007	-

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

### 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 Transmit Configurations	Body
WLAN 2.4GHz Main + BT Aux	Yes
WLAN 2.4GHz Main + WLAN 2.4GHz Aux	Yes
WLAN 5GHz Main + BT Aux	Yes
WLAN 5GHz Main + WLAN 5GHz Aux	Yes
WLAN 5GHz Main + WLAN 5GHz Aux + BT Aux	Yes
<p>Note:</p> <ol style="list-style-type: none"> <li>1. Bluetooth and WLAN Aux share the same antenna path, and BT can transmit with WLAN Main simultaneously.</li> <li>2. For 2.4/5GHz WLAN Main and Aux antennas, the maximum output power of each antenna during simultaneous transmission is the same with or less than that used in standalone transmission, and we used the sum of 1-g SAR provision in KDB447498D01 to exclude the simultaneous transmitted SAR measurement.</li> </ol>	

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## 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  $\leq 0.04$  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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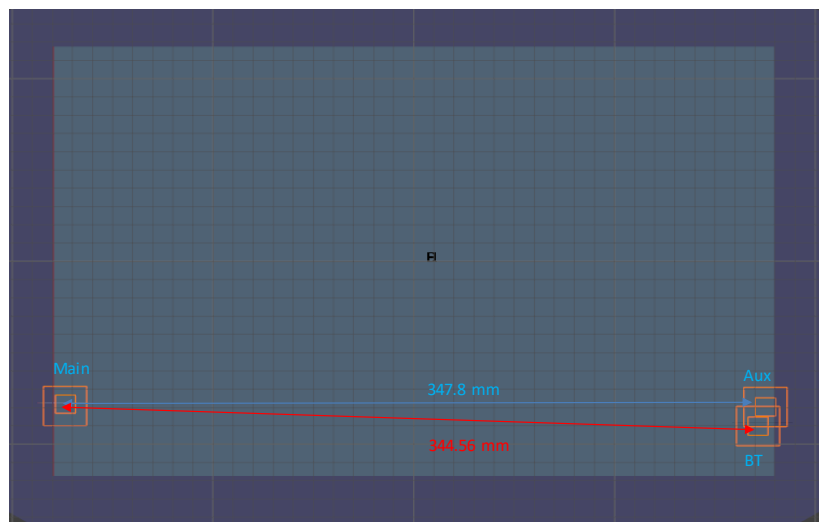
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## Simultaneous Transmission Combination AWAN

Exposure Position		FCC Reported SAR					Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5	SPLSR
		2	3	4	5	7	2+7	2+3	4+7	4+5	4+5+7	
		2.4GHz WLAN chain 0 1g SAR (W/kg)	2.4GHz WLAN chain 1 1g SAR (W/kg)	5GHz WLAN chain 0 1g SAR (W/kg)	5GHz WLAN chain 1 1g SAR (W/kg)	Bluetooth chain 1 1g SAR (W/kg)	Summed 1g SAR (W/kg)	Summed 1g SAR (W/kg)	Summed 1g SAR (W/kg)	Summed 1g SAR (W/kg)	Summed 1g SAR (W/kg)	
Bottom Surface	0	0.842	0.573	1.187	1.183	0.302	1.144	1.415	1.489	2.370	2.672	the sum of 1g-SAR>1.6, analysis as below

Scenario 1: 4+5+7									
Position	Conditions	SAR Value (W/kg)	Coordinates (cm)			ΣSAR (W/kg)	Peak Location Separation Distance (mm)	SPLSR	Simultaneous Transmission SAR Test
			x	y	z				
Bottom Surface	WLAN 5G Main	1.187	-78.40	172.80	-177.00	-	-	-	-
	WLAN 5G Aux+BT	1.485	-89.00	-171.60	-177.00	2.672	344.56	0.013	SPLSR ≤ 0.04, Not required



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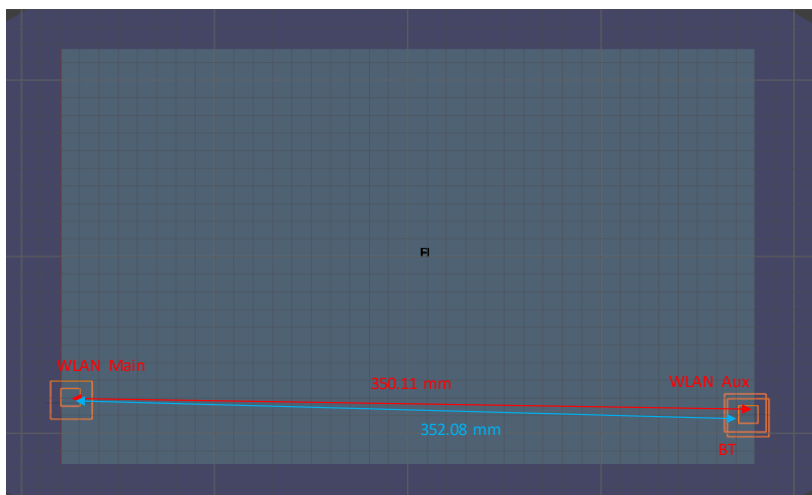
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## Hong Bo

		FCC Reported SAR					Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5
Exposure Position		2	3	4	5	7	2+7	2+3	4+7	4+5	4+5+7
		2.4GHz WLAN chain 0	2.4GHz WLAN chain 1	5GHz WLAN chain 0	5GHz WLAN chain 1	Bluetooth chain 1	Summed	Summed	Summed	Summed	Summed
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)
Bottom Surface	0	0.955	0.452	1.134	1.141	0.325	1.280	1.407	1.459	2.275	2.600

Scenario 1: 4+5+7									
Position	Conditions	SAR Value (W/kg)	Coordinates (cm)			ΣSAR (W/kg)	Peak Location Separation Distance (mm)	SPLSR	Simultaneous Transmission SAR Test
			x	y	z				
Bottom Surface	WLAN 5G Main	1.134	-79.40	174.20	-177.00	-	-	-	-
	WLAN 5G Aux+BT	1.466	-88.20	-175.80	-177.00	2.600	350.11	0.012	SPLSR ≤ 0.04, Not required



## 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	1719	Mar/25/2022	Mar/24/2023
SPEAG	Dosimetric E-Field Probe	EX3DV4	7712	Mar/21/2022	Mar/20/2023
SPEAG	System Validation Dipole	D2450V2	727	Apr/25/2022	Apr/24/2023
SPEAG	System Validation Dipole	D5GHzV2	1023	Jan/27/2022	Jan/26/2023
SPEAG	Dielectric Assessment Kit	DAKS-3.5	1053	Feb/28/2022	Feb/27/2023
R&S	MXG Analog Signal Generator	SMB100A03	182012	Jun/13/2022	Jun/12/2023
Agilent	Dual-directional coupler	772D	MY46151258	Oct/03/2022	Oct/02/2023
Agilent	Dual-directional coupler	778D	MY46151242	Aug/30/2022	Aug/29/2023
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	101973	Jan/22/2022	Jan/21/2023
R&S	Power Meter	NRX	102191	Jan/22/2022	Jan/21/2023
R&S	Power Sensor	NRP18S	101358	Jan/22/2022	Jan/21/2023
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
LKM	Digital thermometer	DTM3000	EC14010603	Sep/27/2022	Sep/26/2023
TECEP	Digital thermometer	DTM-303A	TP130077	Sep/29/2022	Sep/28/2023
<b>Note:</b> Instruments List of the original test report TESA2208000309E5.					

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Equipment List					
Manufacturer	Device	Type	Serial number	Date of last calibration	Date of next calibration
SPEAG	Data acquisition Electronics	DAE4	856	Apr/21/2022	Apr/20/2023
SPEAG	Dosimetric E-Field Probe	EX3DV4	7686	Sep/27/2022	Sep/26/2023
SPEAG	System Validation Dipole	D5GHzV2	1349	Mar/22/2022	Mar/21/2023
SPEAG	Dielectric Assessment Kit	DAKS-3.5	1053	Feb/27/2023	Feb/26/2024
Agilent	MXG Analog Signal Generator	N5181A	MY50144143	May/19/2022	May/18/2023
Agilent	Dual-directional coupler	772D	MY46151258	Oct/03/2022	Oct/02/2023
Agilent	Dual-directional coupler	778D	MY46151242	Aug/30/2022	Aug/29/2023
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 Meter	NRX	105651	Nov/25/2022	Nov/24/2023
R&S	Power Sensor	NRP6A	104246	Nov/22/2022	Nov/21/2023
R&S	Power Sensor	NRP6A	104247	Nov/22/2022	Nov/21/2023
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
LKM	Digital thermometer	DTM3000	EC14010603	Sep/27/2022	Sep/26/2023
TECPEL	Digital thermometer	DTM-303A	TP130075	Jan/11/2023	Jan/10/2024
<b>Note:</b> Instruments List of this test report TESA2303000123E5.					

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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
<b>Measurement system</b>									
Probe calibration	6.55%	N	1	1	1	1	6.55%	6.55%	∞
<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%	∞
<b>Measurement drift (class A evaluation)</b>	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 <i>Mechanical restrictions</i>	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%	∞
<b>Test Sample related</b>									
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%	∞
<b>Phantom and Setup</b>									
Phantom Uncertainty	4.00%	R	√3	1.732	1	1	2.31%	2.31%	∞
Liquid permittivity (mea.)	2.84%	N	1	1	0.64	0.43	1.82%	1.22%	M
Liquid Conductivity (mea.)	2.53%	N	1	1	0.6	0.49	1.52%	1.24%	M
Combined standard uncertainty		RSS					11.95%	11.84%	
Expant uncertainty (95% confidence interval), K=2							23.91%	23.67%	

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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
<b>Measurement system</b>									
Probe calibration	6.00%	N	1	1	1	1	6.00%	6.00%	∞
<b>Isotropy , Axial</b>	3.50%	R	$\sqrt{3}$	1.732	1	1	2.02%	2.02%	∞
<b>Isotropy, Hemispherical</b>	9.60%	R	$\sqrt{3}$	1.732	1	1	5.54%	5.54%	∞
Modulation Response	2.40%	R	$\sqrt{3}$	1.732	1	1	1.40%	1.40%	∞
Boundary Effect	1.00%	R	$\sqrt{3}$	1.732	1	1	0.58%	0.58%	∞
Linearity	4.70%	R	$\sqrt{3}$	1.732	1	1	2.71%	2.71%	∞
Detection Limits	1.00%	R	$\sqrt{3}$	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	$\sqrt{3}$	1.732	1	1	0.46%	0.46%	∞
Integration Time	2.60%	R	$\sqrt{3}$	1.732	1	1	1.50%	1.50%	∞
<b>Measurement drift (class A evaluation)</b>	1.75%	R	$\sqrt{3}$	1.732	1	1	1.01%	1.01%	∞
RF ambient condition - noise	3.00%	R	$\sqrt{3}$	1.732	1	1	1.73%	1.73%	∞
RF ambient conditions - reflections	3.00%	R	$\sqrt{3}$	1.732	1	1	1.73%	1.73%	∞
Probe positioner Mechanical restrictions	0.40%	R	$\sqrt{3}$	1.732	1	1	0.23%	0.23%	∞
Probe Positioning with respect to phantom shell	2.90%	R	$\sqrt{3}$	1.732	1	1	1.67%	1.67%	∞
Post-processing	1.00%	R	$\sqrt{3}$	1.732	1	1	0.58%	0.58%	∞
Max SAR Eval	1.00%	R	$\sqrt{3}$	1.732	1	1	0.58%	0.58%	∞
<b>Test Sample related</b>									
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	$\sqrt{3}$	1.732	1	1	2.89%	2.89%	∞
<b>Phantom and Setup</b>									
Phantom Uncertainty	4.00%	R	$\sqrt{3}$	1.732	1	1	2.31%	2.31%	∞
Liquid permittivity (mea.)	2.50%	N	1	1	0.64	0.43	1.60%	1.08%	M
Liquid Conductivity (mea.)	3.01%	N	1	1	0.6	0.49	1.81%	1.47%	M
Combined standard uncertainty		RSS					11.67%	11.55%	
Expart uncertainty (95% confidence interval), K=2							23.34%	23.11%	

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## 11 SAR MEASUREMENT RESULTS

ID: 001

Report No. : TESA2208000309E5

Measurement Report for AWAN, WLAN 802.11b\_Body\_Bottom Surface\_CH 6\_0mm\_Main

Ambient temperature: 23.5°C; Liquid temperature: 22.8°C

### Exposure Conditions

Phantom Section, TSL	Position, Test Distance [mm]	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat, HSL	Bottom Surface, 0.00	2437.0, 6	8.16	1.819	39.725

### Hardware Setup

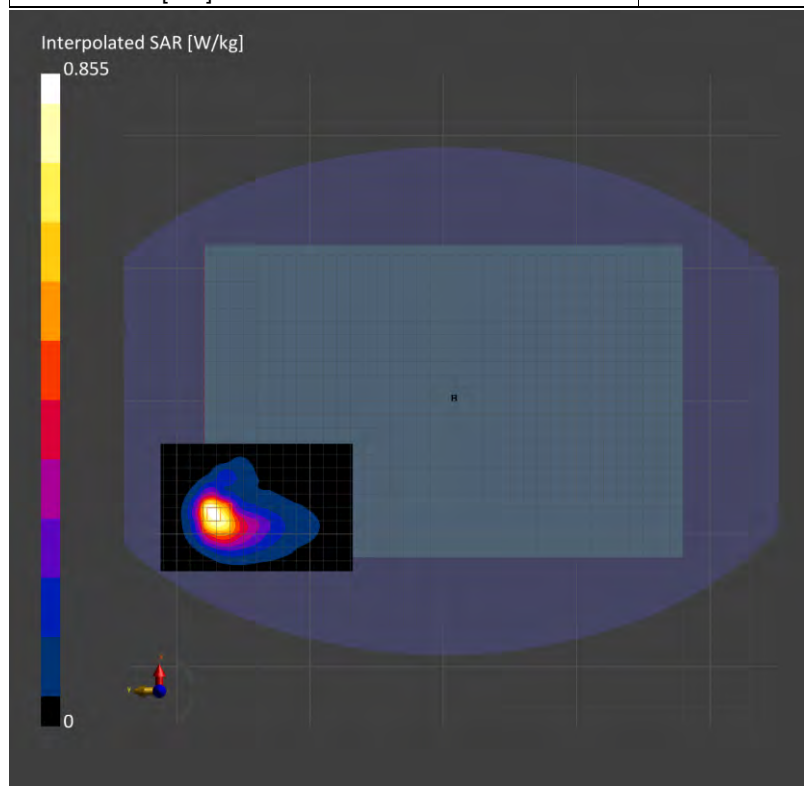
Phantom	Probe, Calibration Date	DAE, Calibration Date
ELI	EX3DV4 - SN7712, 2022-03-21	DAE4 Sn1719, 2022-03-25

### Scans Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	96.0 x 144.0	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	2022-11-30	2022-11-30
psSAR1g [W/kg]	0.680	0.761
psSAR8g [W/kg]	0.380	0.406
psSAR10g [W/kg]	0.348	0.371
Power Drift [dB]	0.06	0.01
M2/M1 [%]		52.7
Dist 3dB Peak [mm]		9.2



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ID: 002

Report No. : TESA2208000309E5

Measurement Report for AWAN, WLAN 802.11a 5.2G\_Body\_Bottom Surface\_CH 36\_0mm\_Main

Ambient temperature: 23.3°C; Liquid temperature: 22.6°C

**Exposure Conditions**

Phantom Section, TSL	Position, Test Distance [mm]	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat, HSL	Bottom Surface, 0.00	5180.0, 36	5.94	4.693	36.511

**Hardware Setup**

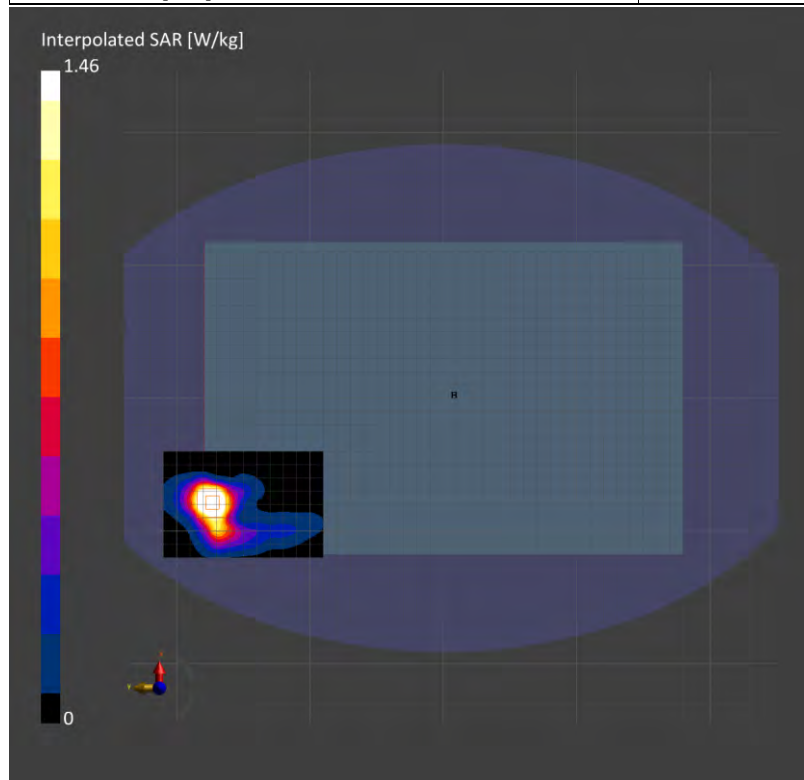
Phantom	Probe, Calibration Date	DAE, Calibration Date
ELI	EX3DV4 - SN7712, 2022-03-21	DAE4 Sn1719, 2022-03-25

**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	2022-11-30	2022-11-30
psSAR1g [W/kg]	1.04	1.11
psSAR8g [W/kg]	0.425	0.454
psSAR10g [W/kg]	0.376	0.401
Power Drift [dB]	0.04	0.03
M2/M1 [%]		63.3
Dist 3dB Peak [mm]		8.6



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ID: 003

Report No. : TESA2208000309E5

Measurement Report for AWAN, WLAN 802.11n(40M) 5.2G\_Body\_Bottom Surface\_CH 46\_0mm\_Main

Ambient temperature: 23.3°C; Liquid temperature: 22.6°C

**Exposure Conditions**

Phantom Section, TSL	Position, Test Distance [mm]	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat, HSL	Bottom Surface, 0.00	5230.0, 46	5.94	4.745	36.453

**Hardware Setup**

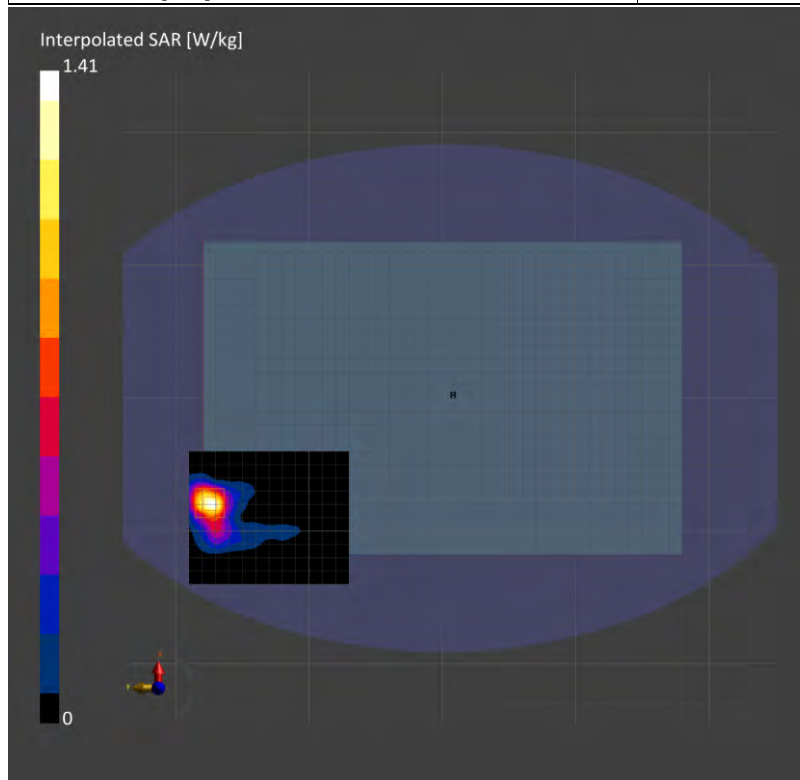
Phantom	Probe, Calibration Date	DAE, Calibration Date
ELI	EX3DV4 - SN7712, 2022-03-21	DAE4 Sn1719, 2022-03-25

**Scans Setup**

	Area Scan	Zoom Scan
Grid Extents [mm]	100.0 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	2022-11-30	2022-11-30
psSAR1g [W/kg]	1.01	1.08
psSAR8g [W/kg]	0.420	0.423
psSAR10g [W/kg]	0.373	0.371
Power Drift [dB]	0.05	0.03
M2/M1 [%]		62.4
Dist 3dB Peak [mm]		8.5



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ID: 004

Report No. : TESA2208000309E5

Measurement Report for AWAN, WLAN 802.11n(40M) 5.3G\_Body\_Bottom Surface\_CH 54\_0mm\_Main

Ambient temperature: 23.3°C; Liquid temperature: 22.6°C

**Exposure Conditions**

Phantom Section, TSL	Position, Test Distance [mm]	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat, HSL	Bottom Surface, 0.00	5270.0, 54	5.94	4.786	36.408

**Hardware Setup**

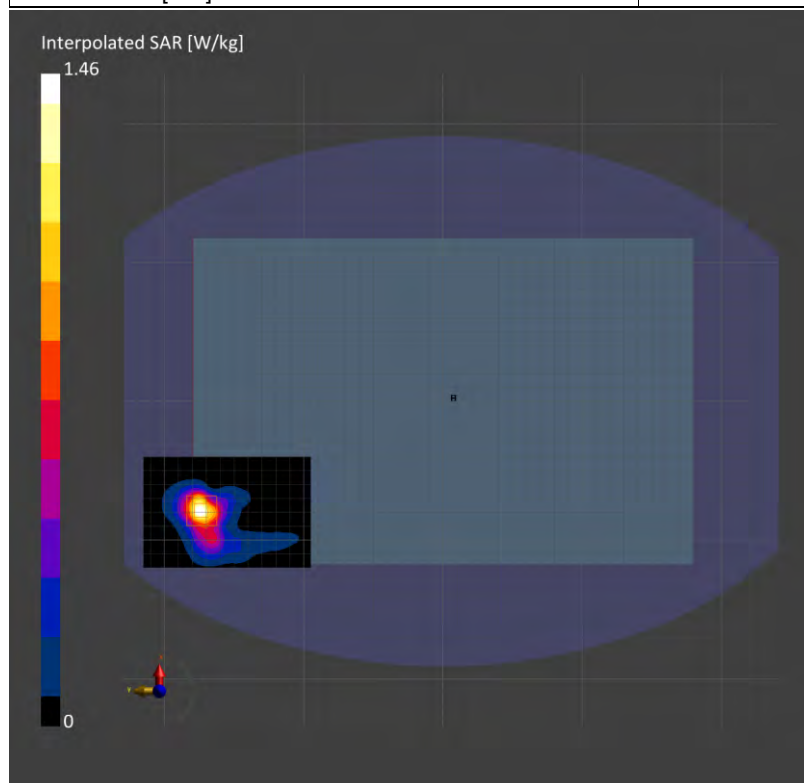
Phantom	Probe, Calibration Date	DAE, Calibration Date
ELI	EX3DV4 - SN7712, 2022-03-21	DAE4 Sn1719, 2022-03-25

**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	2022-11-30	2022-11-30
psSAR1g [W/kg]	1.02	1.06
psSAR8g [W/kg]	0.405	0.440
psSAR10g [W/kg]	0.359	0.390
Power Drift [dB]	0.06	0.02
M2/M1 [%]		63.6
Dist 3dB Peak [mm]		8.9



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ID: 005

Report No. : TESA2208000309E5

Measurement Report for AWAN, WLAN 802.11ax(80M) 5.3G\_Body\_Bottom Surface\_CH 58\_0mm\_Main

Ambient temperature: 23.3°C; Liquid temperature: 22.6°C

**Exposure Conditions**

Phantom Section, TSL	Position, Test Distance [mm]	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat, HSL	Bottom Surface, 0.00	5290.0, 58	5.94	4.807	36.385

**Hardware Setup**

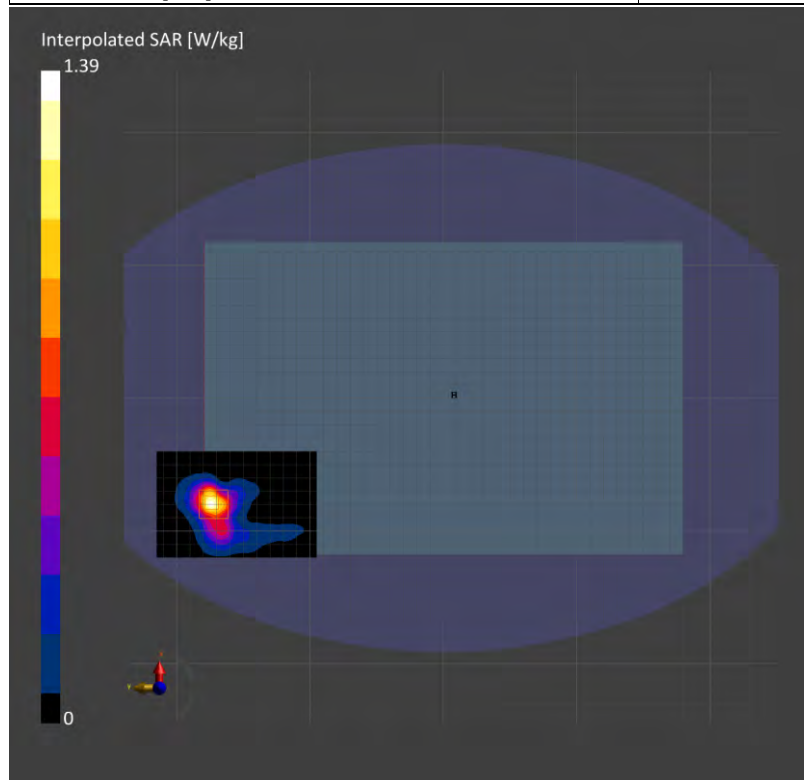
Phantom	Probe, Calibration Date	DAE, Calibration Date
ELI	EX3DV4 - SN7712, 2022-03-21	DAE4 Sn1719, 2022-03-25

**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	2022-11-30	2022-11-30
psSAR1g [W/kg]	0.969	1.01
psSAR8g [W/kg]	0.389	0.419
psSAR10g [W/kg]	0.345	0.371
Power Drift [dB]	-0.04	0.03
M2/M1 [%]		63.0
Dist 3dB Peak [mm]		9.1



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ID: 006

Report No. : TESA2208000309E5

Measurement Report for AWAN, WLAN 802.11n(40M) 5.6G\_Body\_Bottom Surface\_CH 142\_0mm\_Main

Ambient temperature: 23.1°C; Liquid temperature: 22.3°C

**Exposure Conditions**

Phantom Section, TSL	Position, Test Distance [mm]	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat, HSL	Bottom Surface, 0.00	5710.0, 142	5.45	5.243	35.905

**Hardware Setup**

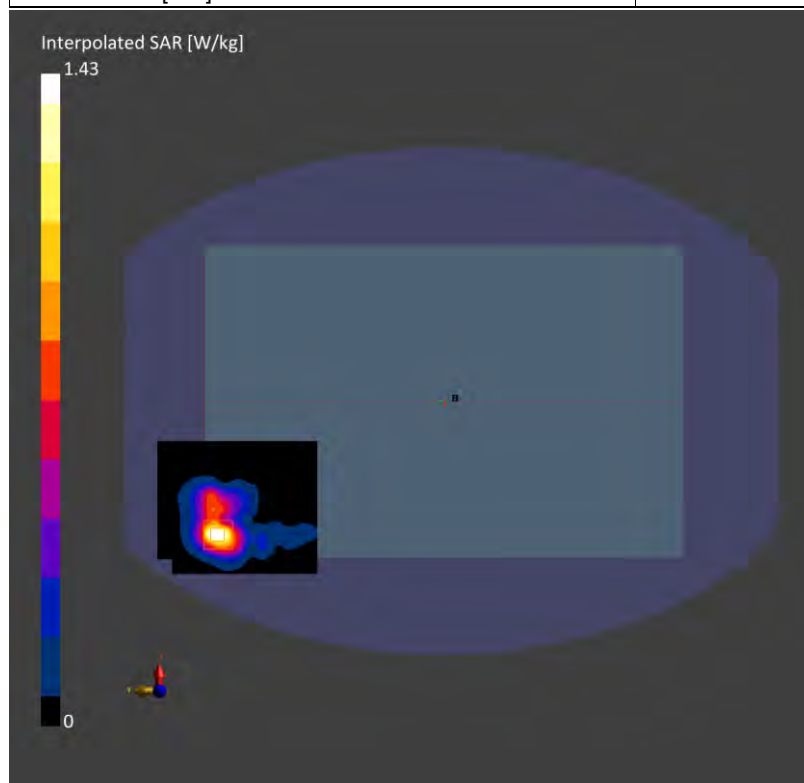
Phantom	Probe, Calibration Date	DAE, Calibration Date
ELI	EX3DV4 - SN7712, 2022-03-21	DAE4 Sn1719, 2022-03-25

**Scans Setup**

	Area Scan	Zoom Scan
Grid Extents [mm]	100.0 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	2022-12-01	2022-12-01
psSAR1g [W/kg]	1.05	1.06
psSAR8g [W/kg]	0.427	0.423
psSAR10g [W/kg]	0.380	0.375
Power Drift [dB]	0.04	-0.01
M2/M1 [%]		56.8
Dist 3dB Peak [mm]		8.9



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ID: 007

Report No. : TESA2208000309E5

Measurement Report for AWAN, WLAN 802.11ac(80M) 5.6G\_Body\_Bottom Surface\_CH 138\_0mm\_Main

Ambient temperature: 23.1°C; Liquid temperature: 22.3°C

**Exposure Conditions**

Phantom Section, TSL	Position, Test Distance [mm]	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat, HSL	Bottom Surface, 0.00	5690.0, 138	5.45	5.222	35.928

**Hardware Setup**

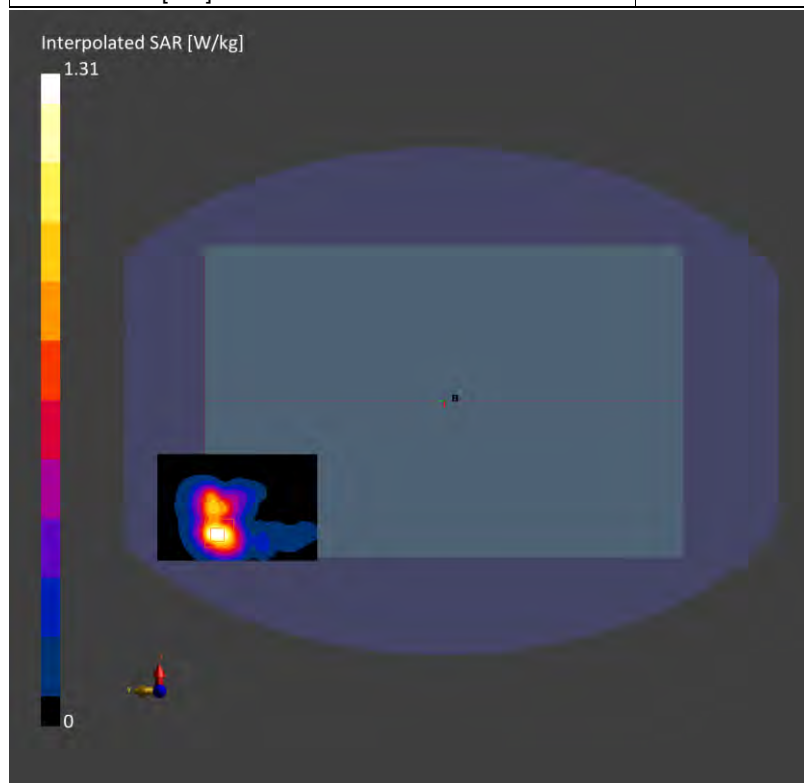
Phantom	Probe, Calibration Date	DAE, Calibration Date
ELI	EX3DV4 - SN7712, 2022-03-21	DAE4 Sn1719, 2022-03-25

**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	2022-12-01	2022-12-01
psSAR1g [W/kg]	0.966	0.994
psSAR8g [W/kg]	0.398	0.401
psSAR10g [W/kg]	0.356	0.364
Power Drift [dB]	0.03	0.02
M2/M1 [%]		56.9
Dist 3dB Peak [mm]		8.9



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ID: 008

Report No. : TESA2208000309E5

Measurement Report for AWAN, WLAN 802.11n(40M) 5.8G\_Body\_Bottom Surface\_CH 159\_0mm\_Main

Ambient temperature: 23.1°C; Liquid temperature: 22.3°C

**Exposure Conditions**

Phantom Section, TSL	Position, Test Distance [mm]	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat, HSL	Bottom Surface, 0.00	5795.0, 159	5.45	5.331	35.808

**Hardware Setup**

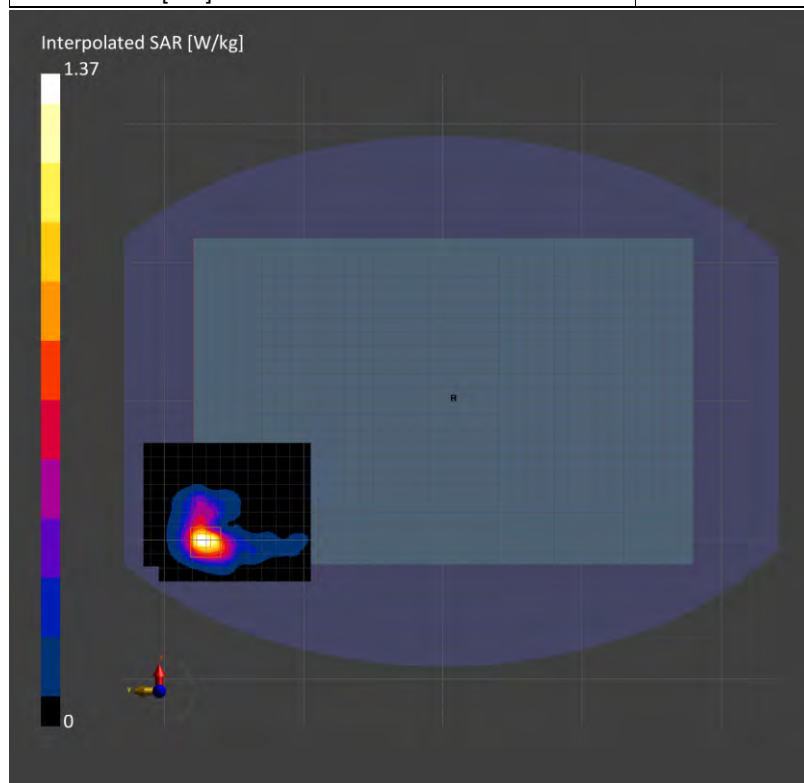
Phantom	Probe, Calibration Date	DAE, Calibration Date
ELI	EX3DV4 - SN7712, 2022-03-21	DAE4 Sn1719, 2022-03-25

**Scans Setup**

	Area Scan	Zoom Scan
Grid Extents [mm]	100.0 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	2022-12-01	2022-12-01
psSAR1g [W/kg]	0.985	1.02
psSAR8g [W/kg]	0.387	0.394
psSAR10g [W/kg]	0.343	0.344
Power Drift [dB]	0.04	0.05
M2/M1 [%]		55.9
Dist 3dB Peak [mm]		8.0



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ID: 009

Report No. : TESA2208000309E5

Measurement Report for AWAN, WLAN 802.11ac(80M) 5.8G\_Body\_Bottom Surface\_CH 155\_0mm\_Main

Ambient temperature: 23.1°C; Liquid temperature: 22.3°C

**Exposure Conditions**

Phantom Section, TSL	Position, Test Distance [mm]	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat, HSL	Bottom Surface, 0.00	5775.0, 155	5.45	5.31	35.831

**Hardware Setup**

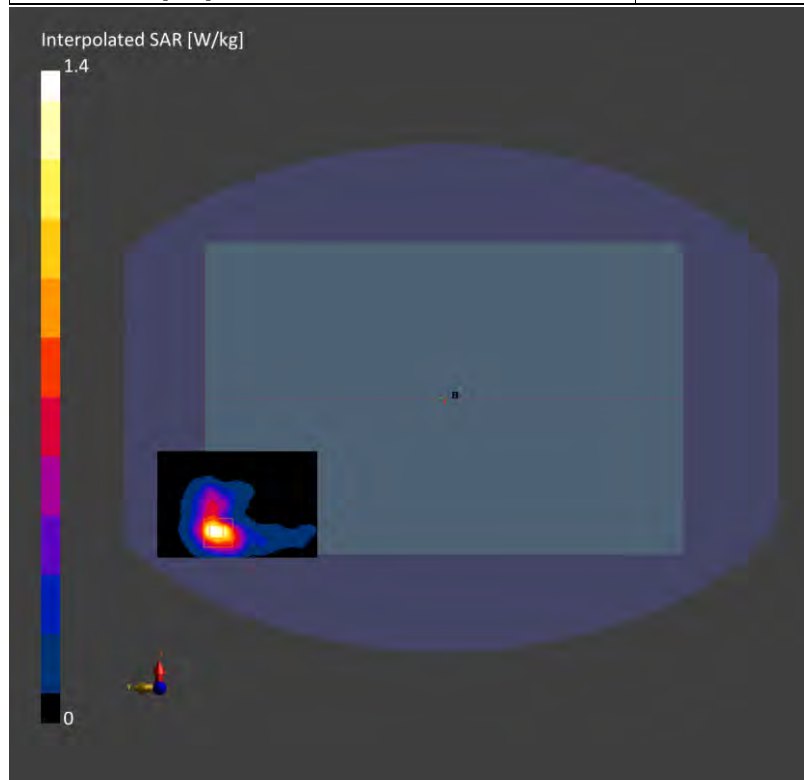
Phantom	Probe, Calibration Date	DAE, Calibration Date
ELI	EX3DV4 - SN7712, 2022-03-21	DAE4 Sn1719, 2022-03-25

**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	2022-12-01	2022-12-01
psSAR1g [W/kg]	0.997	1.03
psSAR8g [W/kg]	0.391	0.398
psSAR10g [W/kg]	0.347	0.348
Power Drift [dB]	0.05	-0.01
M2/M1 [%]		56.4
Dist 3dB Peak [mm]		8.0



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ID: 010

Report No. : TESA2208000309E5

Measurement Report for AWAN, WLAN 802.11b\_Body\_Bottom Surface\_CH 11\_0mm\_Aux

Ambient temperature: 23.5°C; Liquid temperature: 22.8°C

**Exposure Conditions**

Phantom Section, TSL	Position, Test Distance [mm]	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat, HSL	Bottom Surface, 0.00	2462.0, 11	8.16	1.841	39.687

**Hardware Setup**

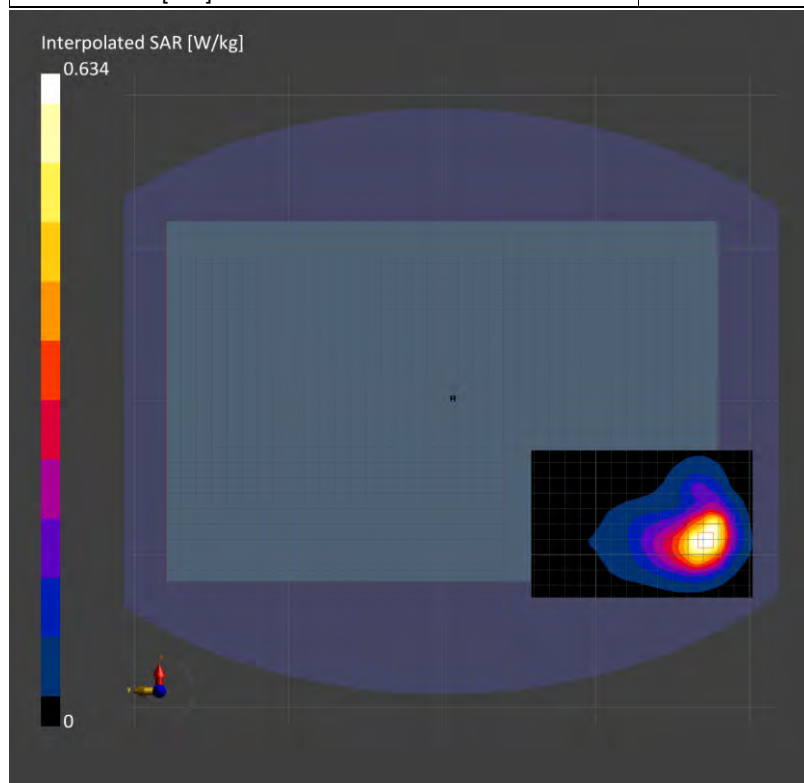
Phantom	Probe, Calibration Date	DAE, Calibration Date
ELI	EX3DV4 - SN7712, 2022-03-21	DAE4 Sn1719, 2022-03-25

**Scans Setup**

	Area Scan	Zoom Scan
Grid Extents [mm]	96.0 x 144.0	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	2022-11-30	2022-11-30
psSAR1g [W/kg]	0.515	0.553
psSAR8g [W/kg]	0.296	0.319
psSAR10g [W/kg]	0.272	0.294
Power Drift [dB]	0.04	0.02
M2/M1 [%]		56.6
Dist 3dB Peak [mm]		11.7



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ID: 011

Report No. : TESA2208000309E5

Measurement Report for AWAN, BLE2M\_Body\_Bottom Surface\_CH 19\_0mm\_Aux

Ambient temperature: 23.5°C; Liquid temperature: 22.8°C

**Exposure Conditions**

Phantom Section, TSL	Position, Test Distance [mm]	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat, HSL	Bottom Surface, 0.00	2440.0, 19	8.16	1.821	39.72

**Hardware Setup**

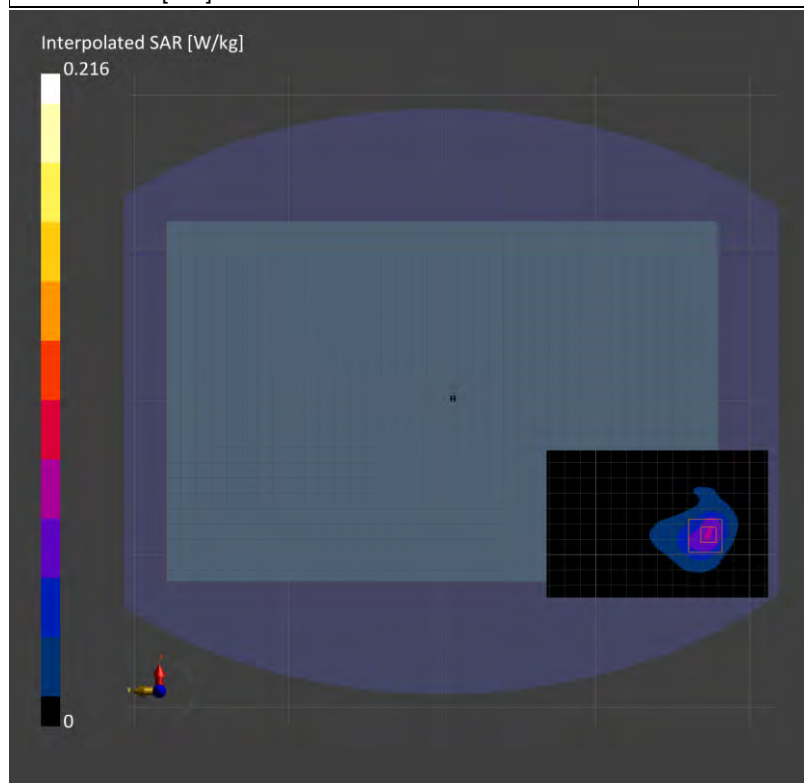
Phantom	Probe, Calibration Date	DAE, Calibration Date
ELI	EX3DV4 - SN7712, 2022-03-21	DAE4 Sn1719, 2022-03-25

**Scans Setup**

	Area Scan	Zoom Scan
Grid Extents [mm]	96.0 x 144.0	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	2022-11-30	2022-11-30
psSAR1g [W/kg]	0.175	0.198
psSAR8g [W/kg]	0.098	0.113
psSAR10g [W/kg]	0.090	0.104
Power Drift [dB]	-0.01	0.03
M2/M1 [%]		54.6
Dist 3dB Peak [mm]		11.7



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ID: 012

Report No. : TESA2208000309E5

Measurement Report for AWAN, WLAN 802.11a 5.2G\_Body\_Bottom Surface\_CH 48\_0mm\_Aux

Ambient temperature: 23.3°C; Liquid temperature: 22.6°C

**Exposure Conditions**

Phantom Section, TSL	Position, Test Distance [mm]	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat, HSL	Bottom Surface, 0.00	5240.0, 48	5.94	4.755	36.442

**Hardware Setup**

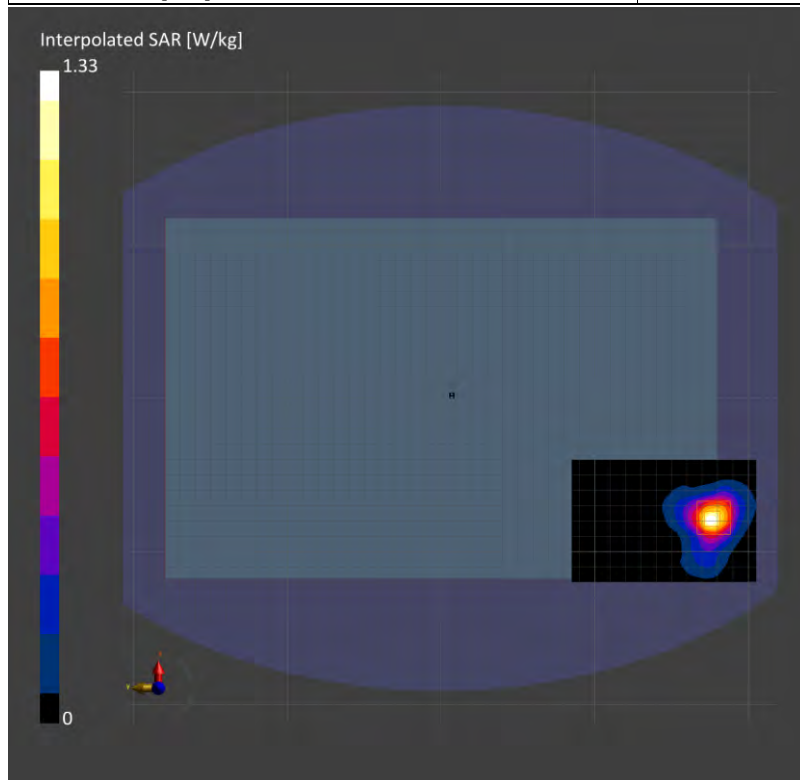
Phantom	Probe, Calibration Date	DAE, Calibration Date
ELI	EX3DV4 - SN7712, 2022-03-21	DAE4 Sn1719, 2022-03-25

**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	2022-11-30	2022-11-30
psSAR1g [W/kg]	0.907	0.954
psSAR8g [W/kg]	0.365	0.389
psSAR10g [W/kg]	0.323	0.343
Power Drift [dB]	0.04	0.02
M2/M1 [%]		60.8
Dist 3dB Peak [mm]		9.6



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ID: 013

Report No. : TESA2208000309E5

Measurement Report for AWAN, WLAN 802.11n(40M) 5.2G\_Body\_Bottom Surface\_CH 46\_0mm\_Aux

Ambient temperature: 23.3°C; Liquid temperature: 22.6°C

**Exposure Conditions**

Phantom Section, TSL	Position, Test Distance [mm]	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat, HSL	Bottom Surface, 0.00	5230.0, 46	5.94	4.745	36.453

**Hardware Setup**

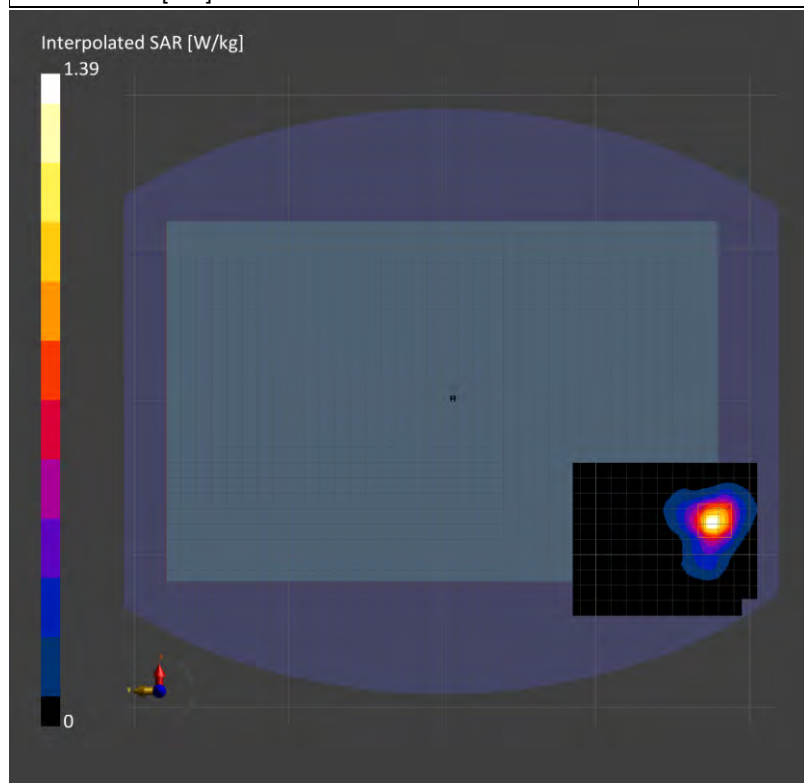
Phantom	Probe, Calibration Date	DAE, Calibration Date
ELI	EX3DV4 - SN7712, 2022-03-21	DAE4 Sn1719, 2022-03-25

**Scans Setup**

	Area Scan	Zoom Scan
Grid Extents [mm]	100.0 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	2022-11-30	2022-11-30
psSAR1g [W/kg]	0.945	0.988
psSAR8g [W/kg]	0.380	0.402
psSAR10g [W/kg]	0.337	0.355
Power Drift [dB]	0.01	0.03
M2/M1 [%]		60.6
Dist 3dB Peak [mm]		9.3



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Report No. : TESA2208000309E5

Measurement Report for AWAN, WLAN 802.11n(40M) 5.3G\_Body\_Bottom Surface\_CH 54\_0mm\_Aux

Ambient temperature: 23.3°C; Liquid temperature: 22.6°C

**Exposure Conditions**

Phantom Section, TSL	Position, Test Distance [mm]	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat, HSL	Bottom Surface, 0.00	5270.0, 54	5.94	4.786	36.408

**Hardware Setup**

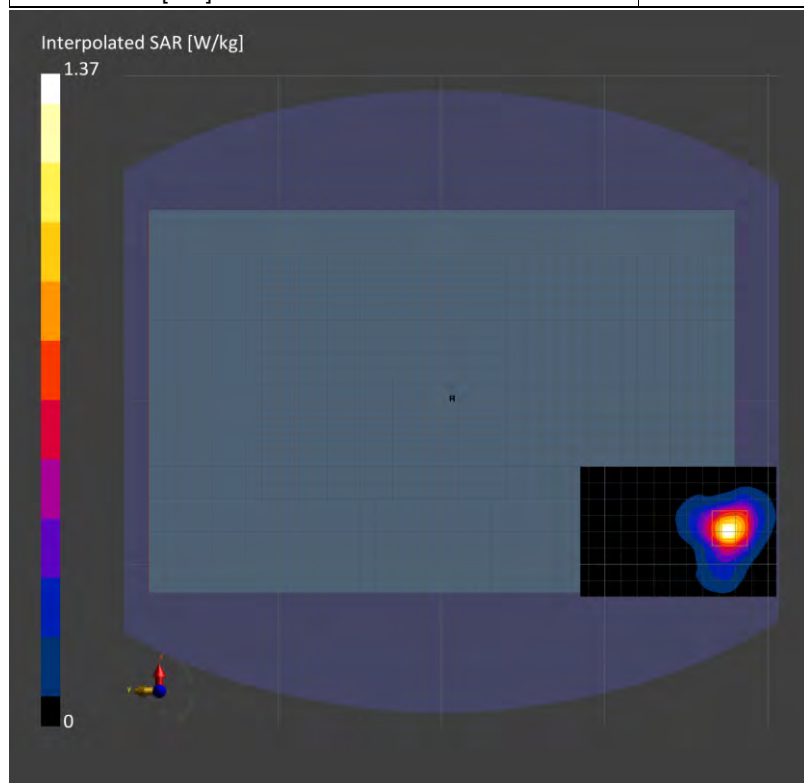
Phantom	Probe, Calibration Date	DAE, Calibration Date
ELI	EX3DV4 - SN7712, 2022-03-21	DAE4 Sn1719, 2022-03-25

**Scans Setup**

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

**Measurement Results**

	Area Scan	Zoom Scan
Date	2022-11-30	2022-11-30
psSAR1g [W/kg]	0.926	0.985
psSAR8g [W/kg]	0.372	0.404
psSAR10g [W/kg]	0.331	0.354
Power Drift [dB]	0.03	0.02
M2/M1 [%]		70.3
Dist 3dB Peak [mm]		9.3



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ID: 015

Report No. : TESA2208000309E5

Measurement Report for AWAN, WLAN 802.11n(40M) 5.6G\_Body\_Bottom Surface\_CH 134\_0mm\_Aux

Ambient temperature: 23.1°C; Liquid temperature: 22.4°C

**Exposure Conditions**

Phantom Section, TSL	Position, Test Distance [mm]	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat, HSL	Bottom Surface, 0.00	5670.0, 134	5.29	5.201	35.951

**Hardware Setup**

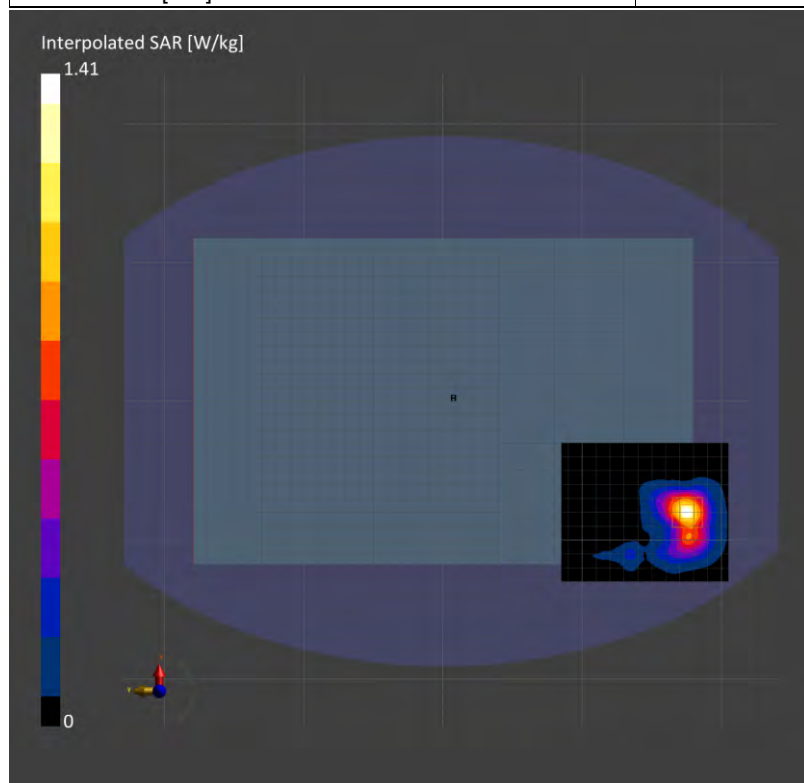
Phantom	Probe, Calibration Date	DAE, Calibration Date
ELI	EX3DV4 - SN7712, 2022-03-21	DAE4 Sn1719, 2022-03-25

**Scans Setup**

	Area Scan	Zoom Scan
Grid Extents [mm]	100.0 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	2022-12-01	2022-12-01
psSAR1g [W/kg]	0.979	0.998
psSAR8g [W/kg]	0.395	0.417
psSAR10g [W/kg]	0.353	0.371
Power Drift [dB]	0.04	-0.06
M2/M1 [%]		58.6
Dist 3dB Peak [mm]		10.2



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ID: 016

Report No. : TESA2208000309E5

Measurement Report for AWAN, WLAN 802.11ac(80M) 5.6G\_Body\_Bottom Surface\_CH 138\_0mm\_Aux

Ambient temperature: 23.1°C; Liquid temperature: 22.3°C

**Exposure Conditions**

Phantom Section, TSL	Position, Test Distance [mm]	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat, HSL	Bottom Surface, 0.00	5690.0, 138	5.45	5.222	35.928

**Hardware Setup**

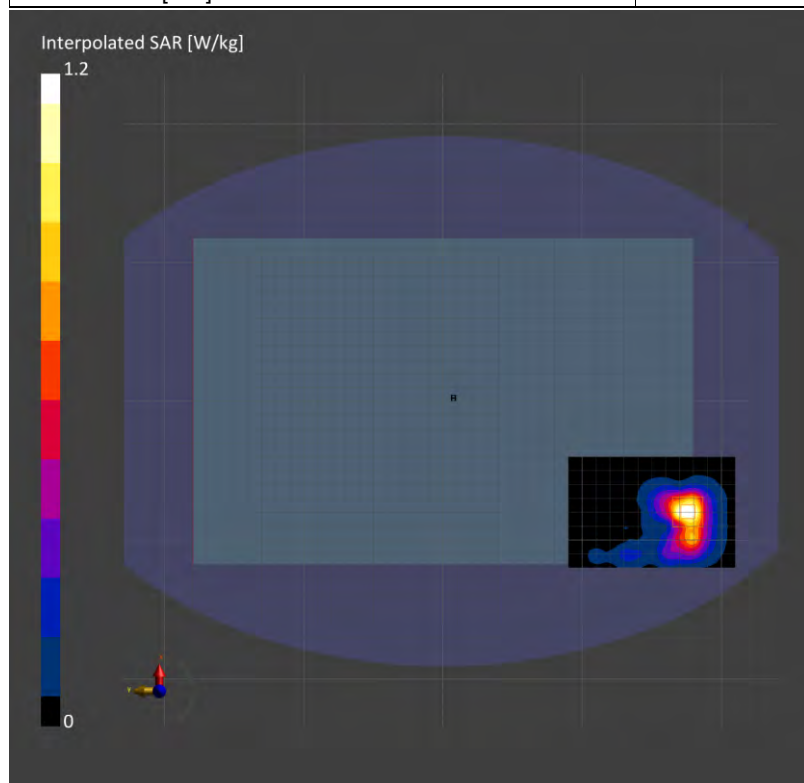
Phantom	Probe, Calibration Date	DAE, Calibration Date
ELI	EX3DV4 - SN7712, 2022-03-21	DAE4 Sn1719, 2022-03-25

**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	2022-12-01	2022-12-01
psSAR1g [W/kg]	0.900	0.949
psSAR8g [W/kg]	0.372	0.372
psSAR10g [W/kg]	0.332	0.329
Power Drift [dB]	0.05	0.01
M2/M1 [%]		57.8
Dist 3dB Peak [mm]		10.0



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ID: 017

Report No. : TESA2208000309E5

Measurement Report for AWAN, WLAN 802.11n(40M) 5.8G\_Body\_Bottom Surface\_CH 159\_0mm\_Aux

Ambient temperature: 23.1°C; Liquid temperature: 22.3°C

**Exposure Conditions**

Phantom Section, TSL	Position, Test Distance [mm]	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat, HSL	Bottom Surface, 0.00	5795.0, 159	5.45	5.331	35.808

**Hardware Setup**

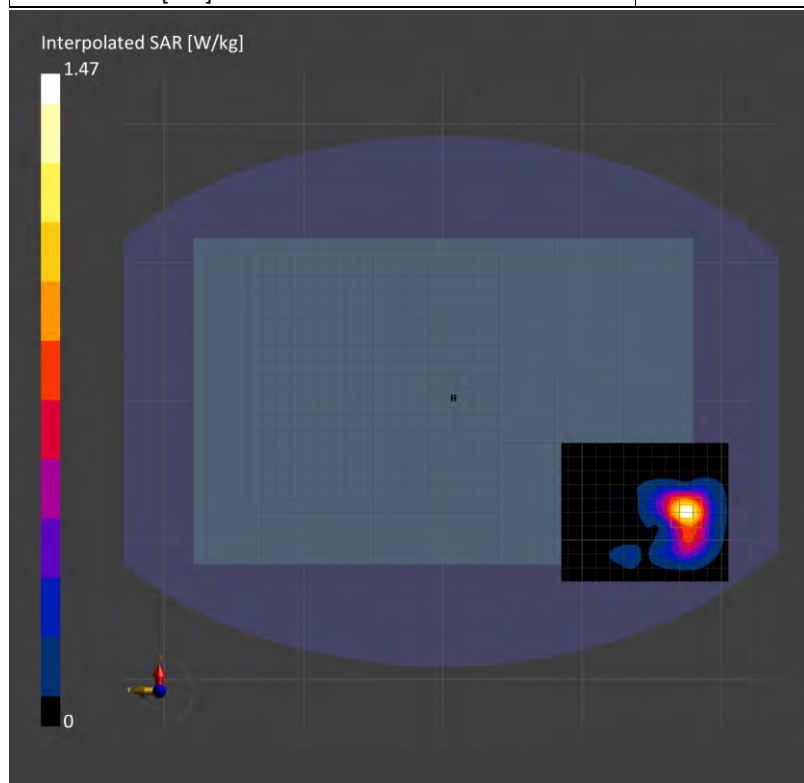
Phantom	Probe, Calibration Date	DAE, Calibration Date
ELI	EX3DV4 - SN7712, 2022-03-21	DAE4 Sn1719, 2022-03-25

**Scans Setup**

	Area Scan	Zoom Scan
Grid Extents [mm]	100.0 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	2022-12-01	2022-12-01
psSAR1g [W/kg]	1.03	1.06
psSAR8g [W/kg]	0.420	0.445
psSAR10g [W/kg]	0.375	0.396
Power Drift [dB]	0.03	-0.02
M2/M1 [%]		57.0
Dist 3dB Peak [mm]		10.7



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ID: 018

Report No. : TESA2208000309E5

Measurement Report for AWAN, WLAN 802.11ac(80M) 5.8G\_Body\_Bottom Surface\_CH 155\_0mm\_Aux

Ambient temperature: 23.1°C; Liquid temperature: 22.3°C

**Exposure Conditions**

Phantom Section, TSL	Position, Test Distance [mm]	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat, HSL	Bottom Surface, 0.00	5775.0, 155	5.45	5.31	35.831

**Hardware Setup**

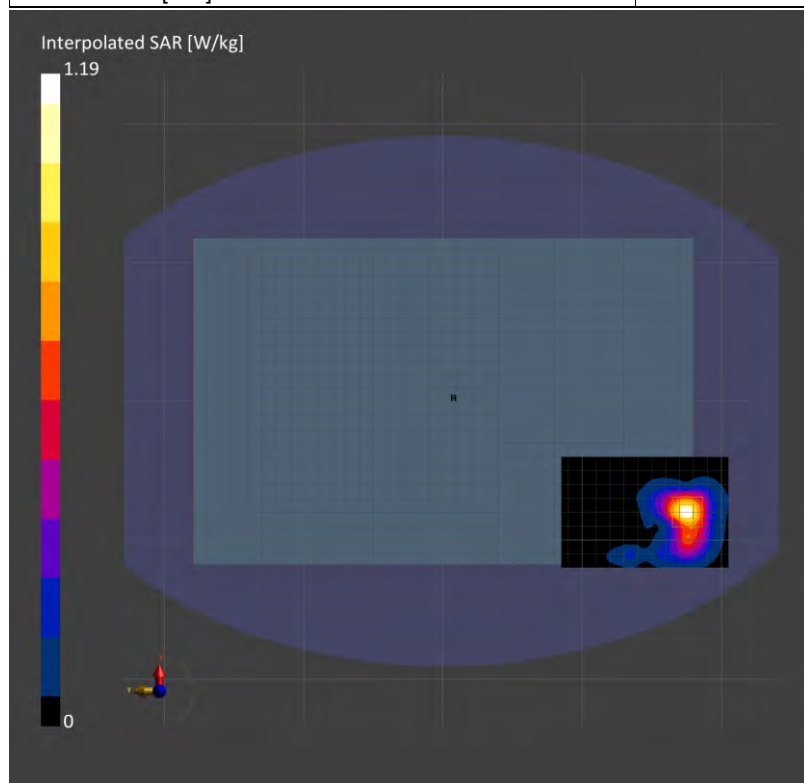
Phantom	Probe, Calibration Date	DAE, Calibration Date
ELI	EX3DV4 - SN7712, 2022-03-21	DAE4 Sn1719, 2022-03-25

**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	2022-12-01	2022-12-01
psSAR1g [W/kg]	0.837	0.865
psSAR8g [W/kg]	0.341	0.361
psSAR10g [W/kg]	0.305	0.321
Power Drift [dB]	0.06	-0.05
M2/M1 [%]		56.6
Dist 3dB Peak [mm]		10.2



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ID: 019

Report No. : TESA2208000309E5

Measurement Report for HB, WLAN 802.11b\_Body\_Bottom Surface\_CH 1\_0mm\_Main

Ambient temperature: 23.6°C; Liquid temperature: 23.0°C

**Exposure Conditions**

Phantom Section, TSL	Position, Test Distance [mm]	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat, HSL	Bottom Surface, 0.00	2412.0, 1	8.16	1.818	40.248

**Hardware Setup**

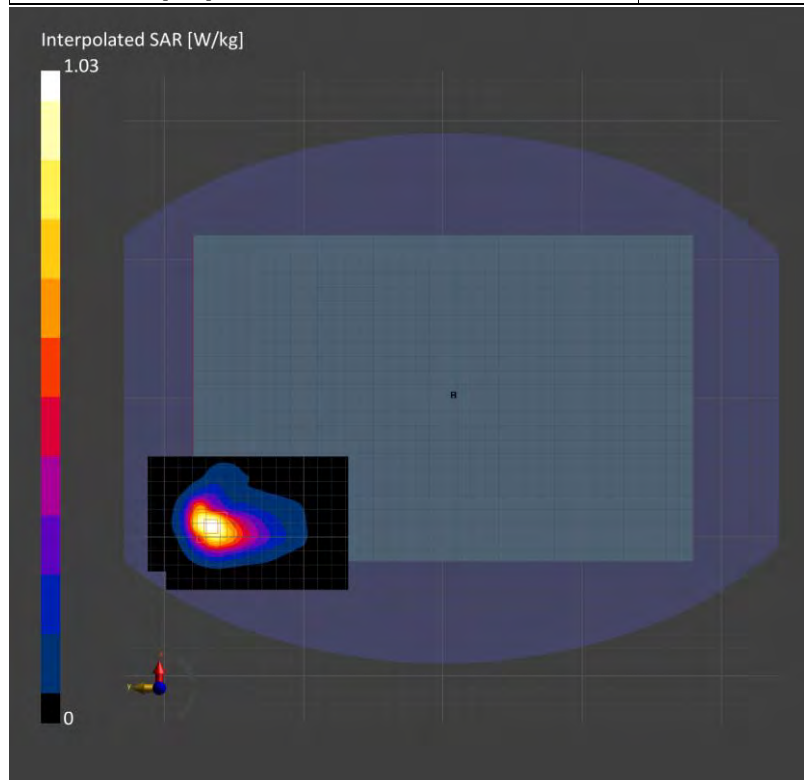
Phantom	Probe, Calibration Date	DAE, Calibration Date
ELI	EX3DV4 - SN7712, 2022-03-21	DAE4 Sn1719, 2022-03-25

**Scans Setup**

	Area Scan	Zoom Scan
Grid Extents [mm]	96.0 x 144.0	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	2022-11-28	2022-11-28
psSAR1g [W/kg]	0.828	0.884
psSAR8g [W/kg]	0.461	0.486
psSAR10g [W/kg]	0.422	0.447
Power Drift [dB]	0.01	-0.03
M2/M1 [%]		50.5
Dist 3dB Peak [mm]		9.8



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ID: 020

Report No. : TESA2208000309E5

Measurement Report for HB, WLAN 802.11a 5.2G\_Body\_Bottom Surface\_CH 40\_0mm\_Main

Ambient temperature: 23.4°C; Liquid temperature: 22.8°C

**Exposure Conditions**

Phantom Section, TSL	Position, Test Distance [mm]	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat, HSL	Bottom Surface, 0.00	5200.0, 40	5.94	4.774	36.966

**Hardware Setup**

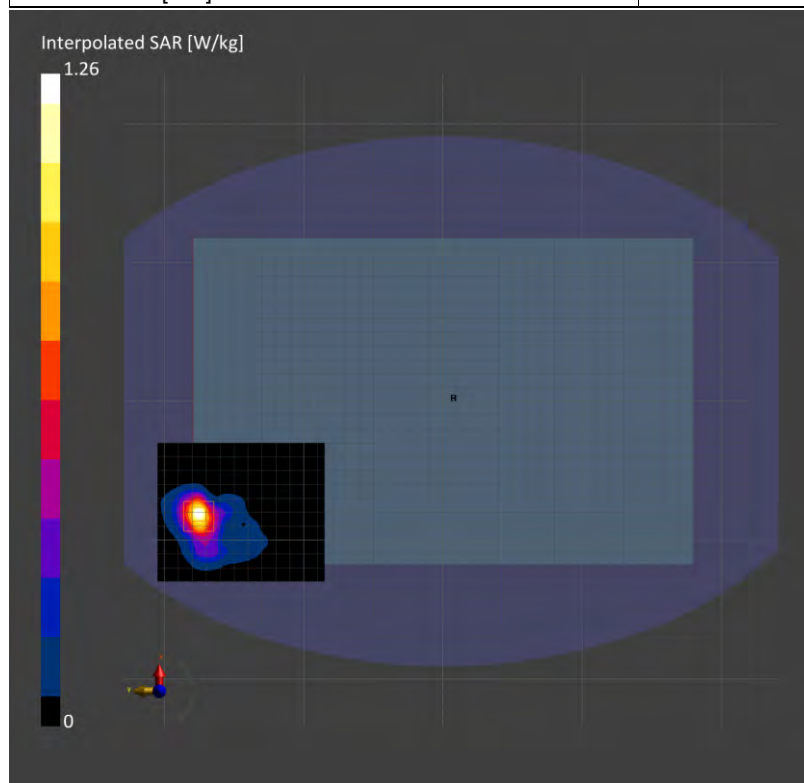
Phantom	Probe, Calibration Date	DAE, Calibration Date
ELI	EX3DV4 - SN7712, 2022-03-21	DAE4 Sn1719, 2022-03-25

**Scans Setup**

	Area Scan	Zoom Scan
Grid Extents [mm]	100.0 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	2022-11-28	2022-11-28
psSAR1g [W/kg]	0.850	0.867
psSAR8g [W/kg]	0.334	0.352
psSAR10g [W/kg]	0.296	0.310
Power Drift [dB]	0.02	0.05
M2/M1 [%]		62.8
Dist 3dB Peak [mm]		8.2



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ID: 021

Report No. : TESA2208000309E5

Measurement Report for HB, WLAN 802.11n(40M) 5.2G\_Body\_Bottom Surface\_CH 46\_0mm\_Main

Ambient temperature: 23.4°C; Liquid temperature: 22.8°C

**Exposure Conditions**

Phantom Section, TSL	Position, Test Distance [mm]	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat, HSL	Bottom Surface, 0.00	5230.0, 46	5.94	4.805	36.931

**Hardware Setup**

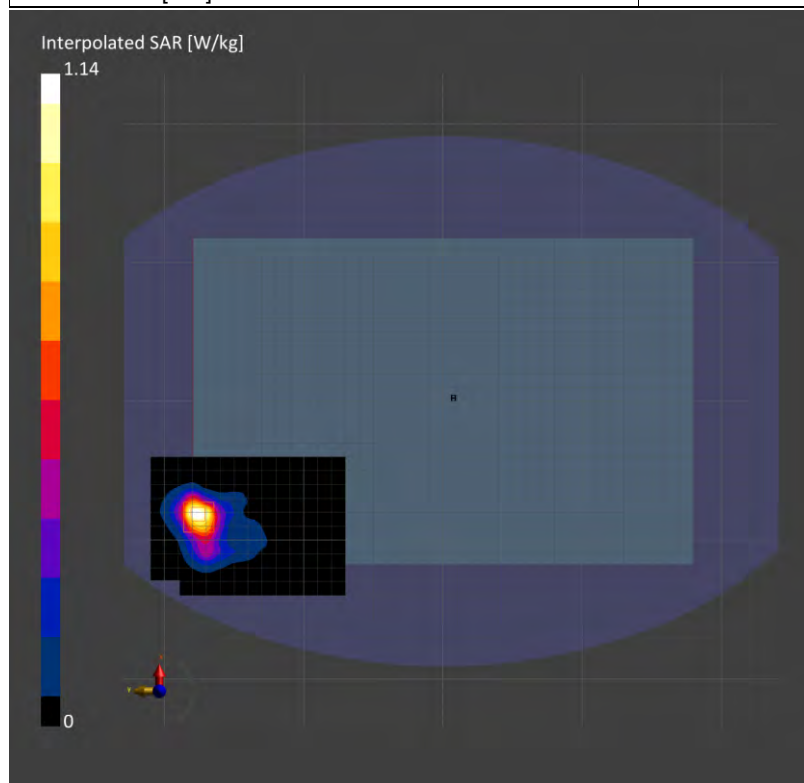
Phantom	Probe, Calibration Date	DAE, Calibration Date
ELI	EX3DV4 - SN7712, 2022-03-21	DAE4 Sn1719, 2022-03-25

**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	2022-11-28	2022-11-28
psSAR1g [W/kg]	0.828	0.917
psSAR8g [W/kg]	0.345	0.368
psSAR10g [W/kg]	0.306	0.323
Power Drift [dB]	-0.04	0.06
M2/M1 [%]		62.0
Dist 3dB Peak [mm]		7.9



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ID: 022

Report No. : TESA2208000309E5

Measurement Report for HB, WLAN 802.11ax(80M) 5.3G\_Body\_Bottom Surface\_CH 58\_0mm\_Main

Ambient temperature: 23.4°C; Liquid temperature: 22.8°C

**Exposure Conditions**

Phantom Section, TSL	Position, Test Distance [mm]	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat, HSL	Bottom Surface, 0.00	5290.0, 58	5.94	4.868	36.863

**Hardware Setup**

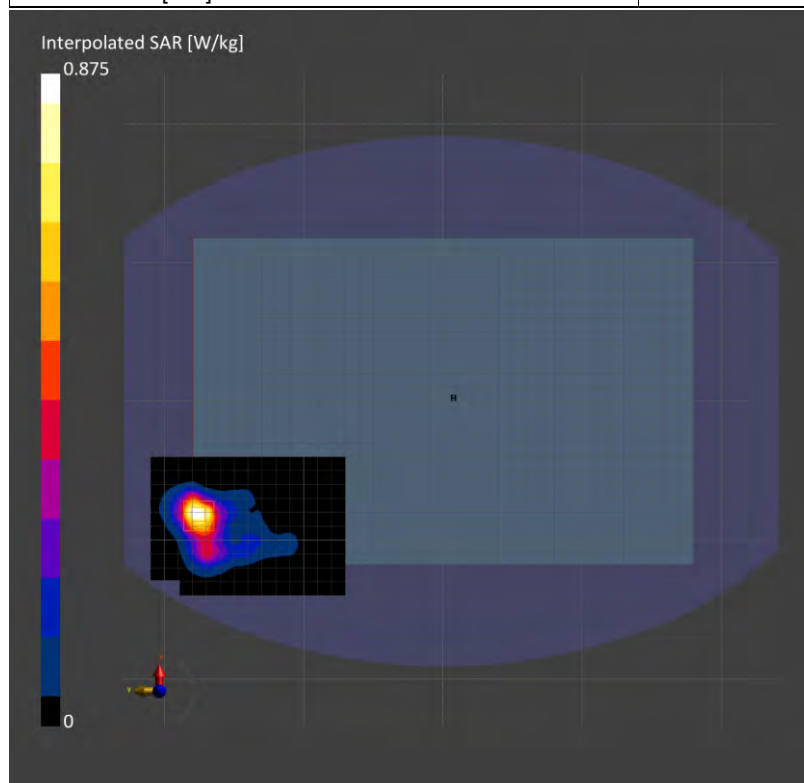
Phantom	Probe, Calibration Date	DAE, Calibration Date
ELI	EX3DV4 - SN7712, 2022-03-21	DAE4 Sn1719, 2022-03-25

**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	2022-11-28	2022-11-28
psSAR1g [W/kg]	0.634	0.747
psSAR8g [W/kg]	0.264	0.299
psSAR10g [W/kg]	0.235	0.263
Power Drift [dB]	0.03	0.05
M2/M1 [%]		60.3
Dist 3dB Peak [mm]		8.0



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ID: 023

Report No. : TESA2208000309E5

Measurement Report for HB, WLAN 802.11n(40M) 5.6G\_Body\_Bottom Surface\_CH 134\_0mm\_Main

Ambient temperature: 23.2°C; Liquid temperature: 22.6°C

**Exposure Conditions**

Phantom Section, TSL	Position, Test Distance [mm]	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat, HSL	Bottom Surface, 0.00	5670.0, 134	5.29	5.267	36.429

**Hardware Setup**

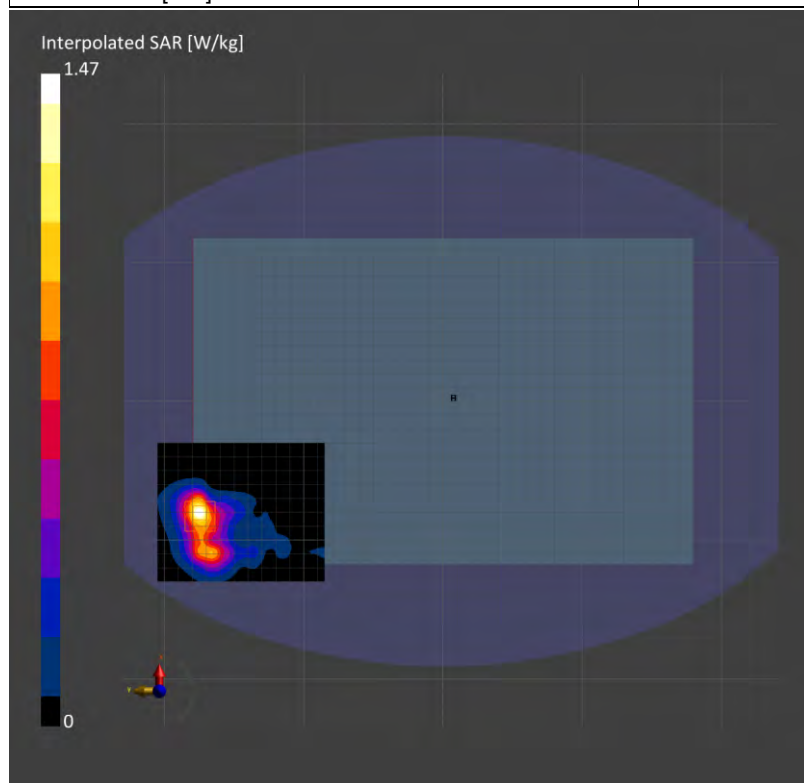
Phantom	Probe, Calibration Date	DAE, Calibration Date
ELI	EX3DV4 - SN7712, 2022-03-21	DAE4 Sn1719, 2022-03-25

**Scans Setup**

	Area Scan	Zoom Scan
Grid Extents [mm]	100.0 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	2022-11-29	2022-11-29
psSAR1g [W/kg]	1.01	1.02
psSAR8g [W/kg]	0.401	0.321
psSAR10g [W/kg]	0.359	0.373
Power Drift [dB]	-0.04	0.04
M2/M1 [%]		58.5
Dist 3dB Peak [mm]		9.8



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ID: 024

Report No. : TESA2208000309E5

Measurement Report for HB, WLAN 802.11ac(80M) 5.6G\_Body\_Bottom Surface\_CH 138\_0mm\_Main

Ambient temperature: 23.2°C; Liquid temperature: 22.5°C

**Exposure Conditions**

Phantom Section, TSL	Position, Test Distance [mm]	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat, HSL	Bottom Surface, 0.00	5690.0, 138	5.45	5.288	36.406

**Hardware Setup**

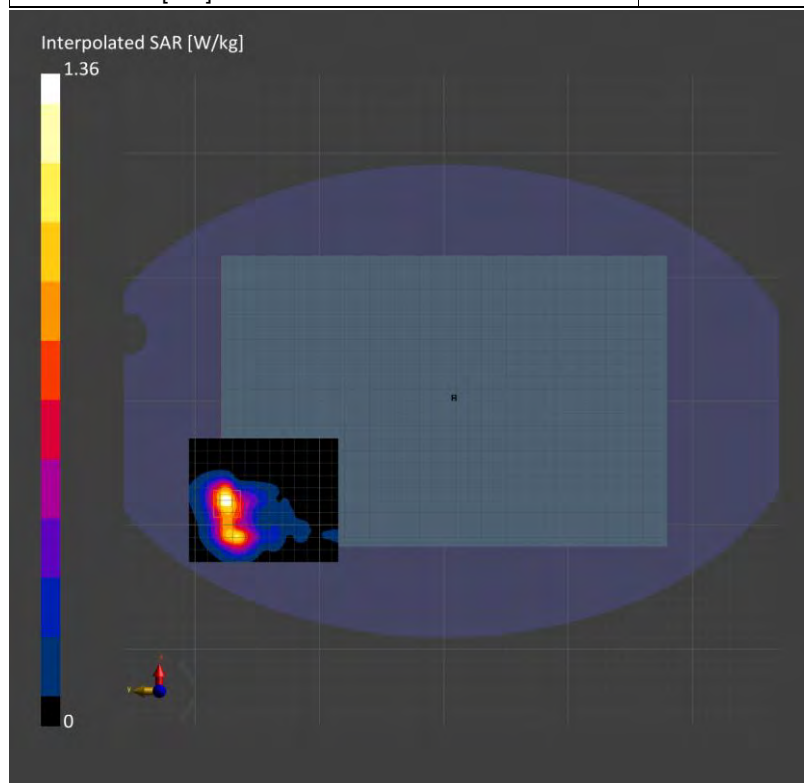
Phantom	Probe, Calibration Date	DAE, Calibration Date
ELI	EX3DV4 - SN7712, 2022-03-21	DAE4 Sn1719, 2022-03-25

**Scans Setup**

	Area Scan	Zoom Scan
Grid Extents [mm]	100.0 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	2022-11-29	2022-11-29
psSAR1g [W/kg]	0.934	0.977
psSAR8g [W/kg]	0.375	0.327
psSAR10g [W/kg]	0.336	0.354
Power Drift [dB]	0.05	0.01
M2/M1 [%]		55.8
Dist 3dB Peak [mm]		9.8



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ID: 025

Report No. : TESA2208000309E5

Measurement Report for HB, WLAN 802.11n(40M) 5.8G\_Body\_Bottom Surface\_CH 151\_0mm\_Main

Ambient temperature: 23.2°C; Liquid temperature: 22.5°C

**Exposure Conditions**

Phantom Section, TSL	Position, Test Distance [mm]	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat, HSL	Bottom Surface, 0.00	5755.0, 151	5.45	5.356	36.331

**Hardware Setup**

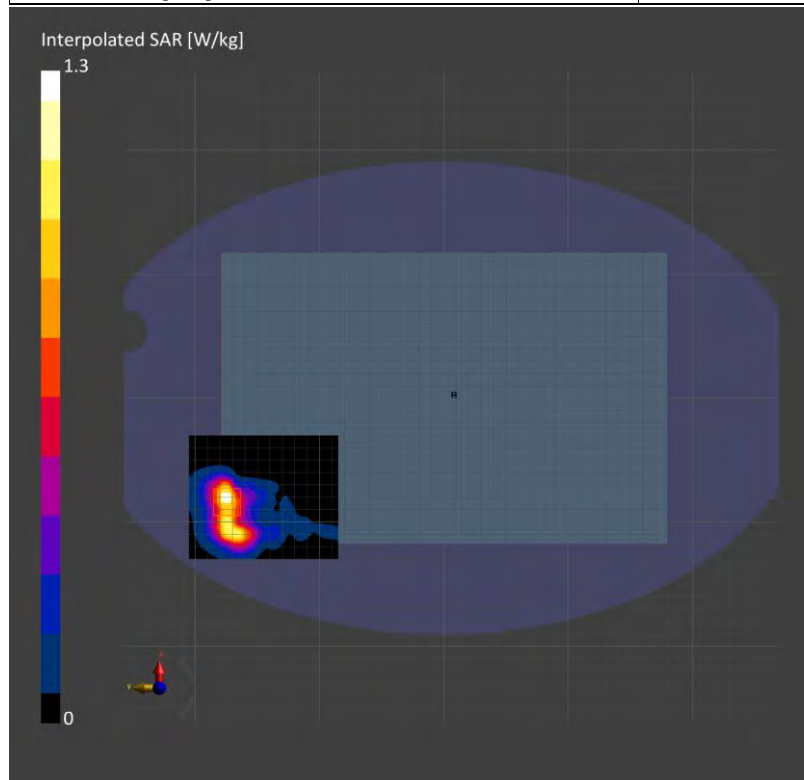
Phantom	Probe, Calibration Date	DAE, Calibration Date
ELI	EX3DV4 - SN7712, 2022-03-21	DAE4 Sn1719, 2022-03-25

**Scans Setup**

	Area Scan	Zoom Scan
Grid Extents [mm]	100.0 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	2022-11-29	2022-11-29
psSAR1g [W/kg]	0.894	0.891
psSAR8g [W/kg]	0.362	0.346
psSAR10g [W/kg]	0.325	0.330
Power Drift [dB]	0.06	0.02
M2/M1 [%]		57.9
Dist 3dB Peak [mm]		9.6



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ID: 026

Report No. : TESA2208000309E5

Measurement Report for HB, WLAN 802.11ac(80M) 5.8G\_Body\_Bottom Surface\_CH 155\_0mm\_Main

Ambient temperature: 23.2°C; Liquid temperature: 22.5°C

**Exposure Conditions**

Phantom Section, TSL	Position, Test Distance [mm]	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat, HSL	Bottom Surface, 0.00	5775.0, 155	5.45	5.377	36.309

**Hardware Setup**

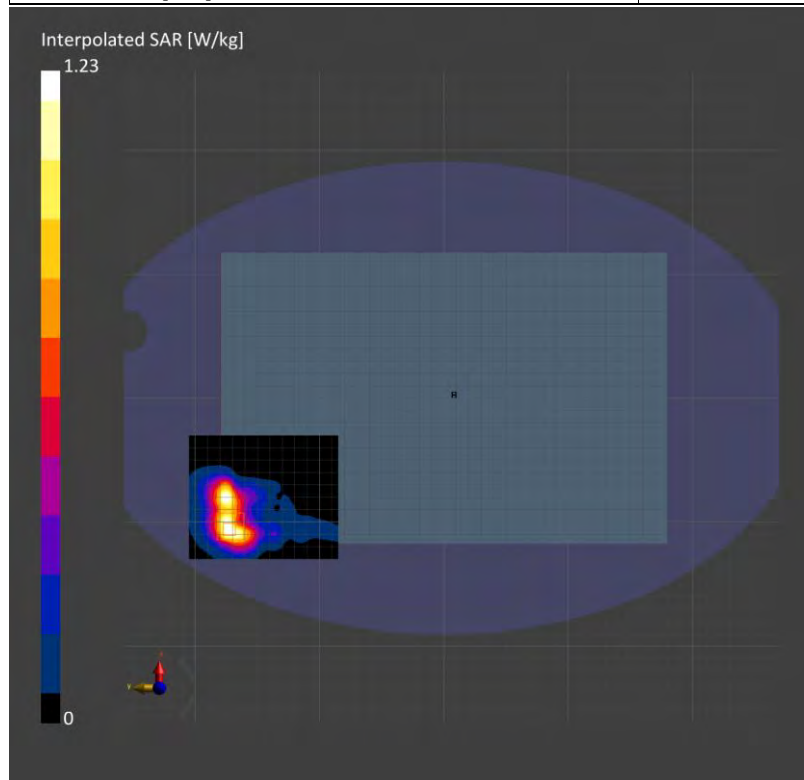
Phantom	Probe, Calibration Date	DAE, Calibration Date
ELI	EX3DV4 - SN7712, 2022-03-21	DAE4 Sn1719, 2022-03-25

**Scans Setup**

	Area Scan	Zoom Scan
Grid Extents [mm]	100.0 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	2022-11-29	2022-11-29
psSAR1g [W/kg]	0.895	0.894
psSAR8g [W/kg]	0.389	0.381
psSAR10g [W/kg]	0.351	0.337
Power Drift [dB]	0.05	0.04
M2/M1 [%]		56.4
Dist 3dB Peak [mm]		9.1



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ID: 027

Report No. : TESA2208000309E5

Measurement Report for HB, WLAN 802.11b\_Body\_Bottom Surface\_CH 6\_0mm\_Aux

Ambient temperature: 23.6°C; Liquid temperature: 23.0°C

**Exposure Conditions**

Phantom Section, TSL	Position, Test Distance [mm]	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat, HSL	Bottom Surface, 0.00	2437.0, 6	8.16	1.84	40.203

**Hardware Setup**

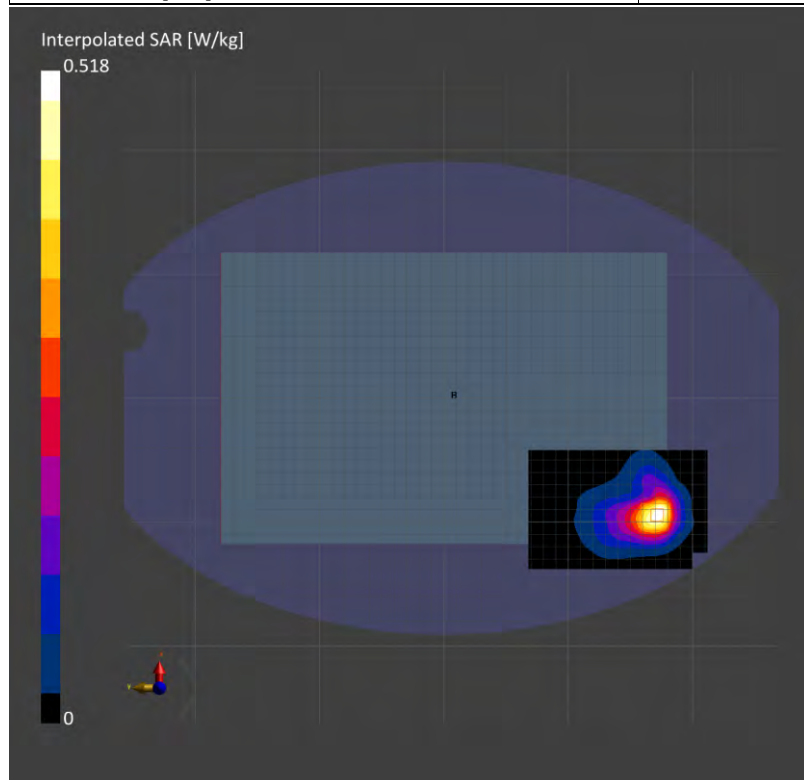
Phantom	Probe, Calibration Date	DAE, Calibration Date
ELI	EX3DV4 - SN7712, 2022-03-21	DAE4 Sn1719, 2022-03-25

**Scans Setup**

	Area Scan	Zoom Scan
Grid Extents [mm]	96.0 x 144.0	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	2022-11-28	2022-11-28
psSAR1g [W/kg]	0.414	0.440
psSAR8g [W/kg]	0.235	0.249
psSAR10g [W/kg]	0.215	0.229
Power Drift [dB]	0.02	0.03
M2/M1 [%]		55.9
Dist 3dB Peak [mm]		10.8



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ID: 028

Report No. : TESA2208000309E5

Measurement Report for HB, BLE2M\_Body\_Bottom Surface\_CH 19\_0mm\_Aux

Ambient temperature: 23.6°C; Liquid temperature: 23.0°C

**Exposure Conditions**

Phantom Section, TSL	Position, Test Distance [mm]	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat, HSL	Bottom Surface, 0.00	2440.0, 19	8.16	1.843	40.198

**Hardware Setup**

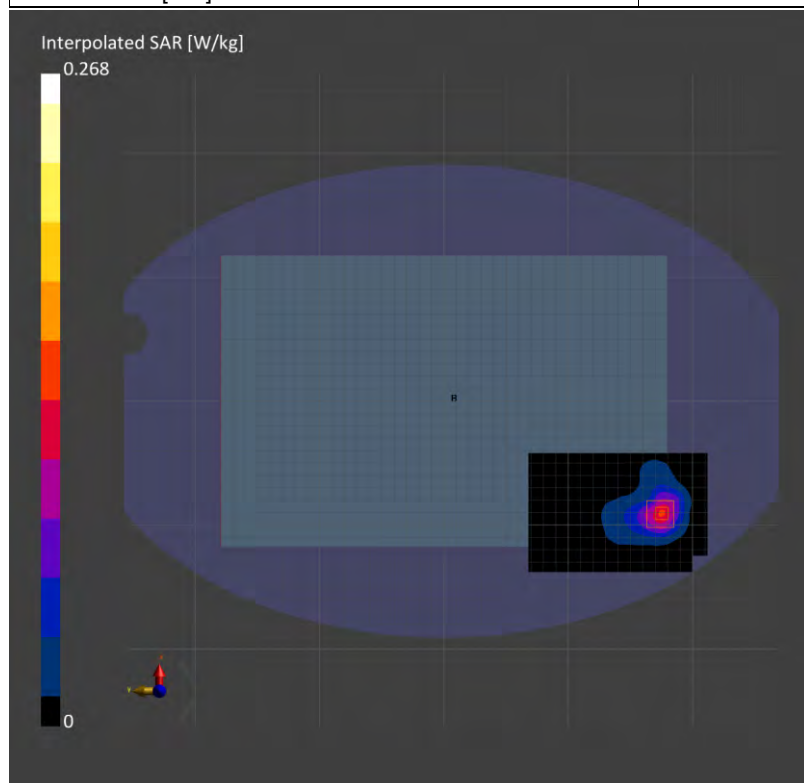
Phantom	Probe, Calibration Date	DAE, Calibration Date
ELI	EX3DV4 - SN7712, 2022-03-21	DAE4 Sn1719, 2022-03-25

**Scans Setup**

	Area Scan	Zoom Scan
Grid Extents [mm]	96.0 x 144.0	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	2022-11-28	2022-11-28
psSAR1g [W/kg]	0.209	0.215
psSAR8g [W/kg]	0.115	0.123
psSAR10g [W/kg]	0.105	0.113
Power Drift [dB]	0.06	0.01
M2/M1 [%]		56.3
Dist 3dB Peak [mm]		11.0



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ID: 029

Report No. : TESA2208000309E5

Measurement Report for HB, WLAN 802.11a 5.2G\_Body\_Bottom Surface\_CH 48\_0mm\_Aux

Ambient temperature: 23.4°C; Liquid temperature: 22.8°C

**Exposure Conditions**

Phantom Section, TSL	Position, Test Distance [mm]	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat, HSL	Bottom Surface, 0.00	5240.0, 48	5.94	4.816	36.92

**Hardware Setup**

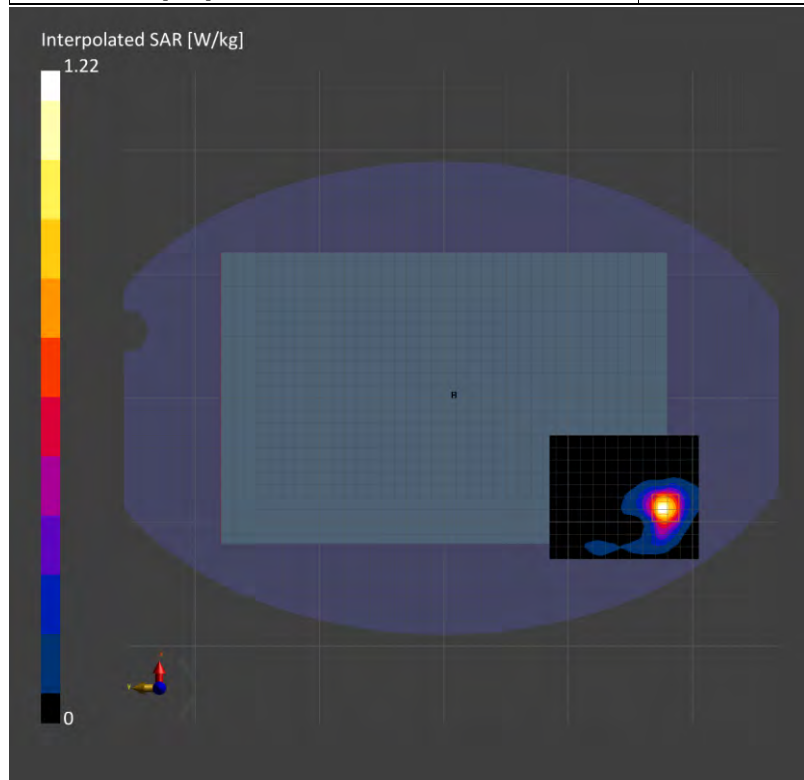
Phantom	Probe, Calibration Date	DAE, Calibration Date
ELI	EX3DV4 - SN7712, 2022-03-21	DAE4 Sn1719, 2022-03-25

**Scans Setup**

	Area Scan	Zoom Scan
Grid Extents [mm]	100.0 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	2022-11-28	2022-11-28
psSAR1g [W/kg]	0.840	0.865
psSAR8g [W/kg]	0.339	0.356
psSAR10g [W/kg]	0.300	0.313
Power Drift [dB]	-0.04	0.02
M2/M1 [%]		61.1
Dist 3dB Peak [mm]		8.7



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Report No. : TESA2208000309E5

Measurement Report for HB, WLAN 802.11n(40M) 5.2G\_Body\_Bottom Surface\_CH 46\_0mm\_Aux

Ambient temperature: 23.4°C; Liquid temperature: 22.8°C

**Exposure Conditions**

Phantom Section, TSL	Position, Test Distance [mm]	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat, HSL	Bottom Surface, 0.00	5230.0, 46	5.94	4.805	36.931

**Hardware Setup**

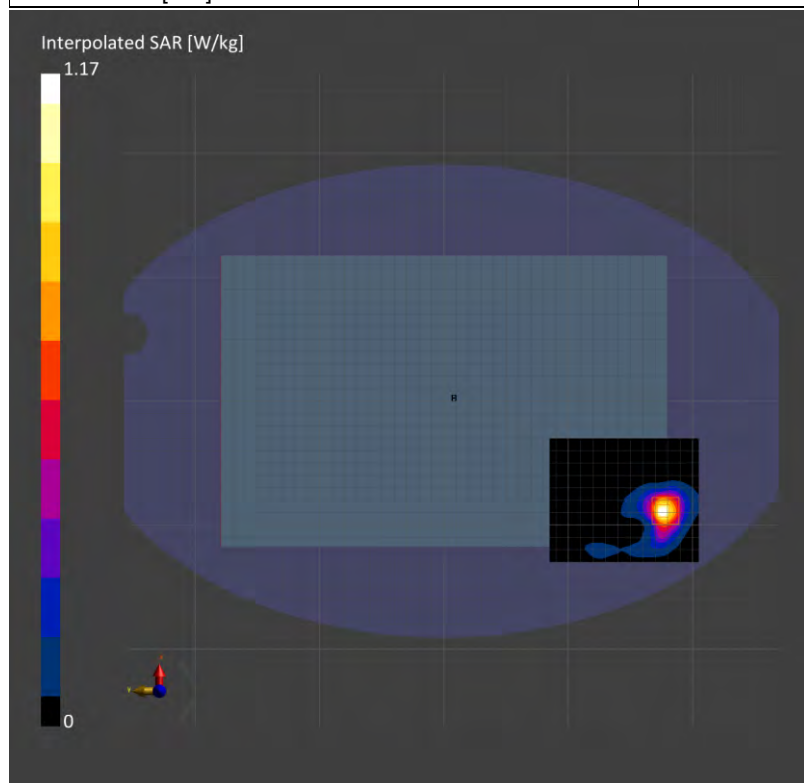
Phantom	Probe, Calibration Date	DAE, Calibration Date
ELI	EX3DV4 - SN7712, 2022-03-21	DAE4 Sn1719, 2022-03-25

**Scans Setup**

	Area Scan	Zoom Scan
Grid Extents [mm]	100.0 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	2022-11-28	2022-11-28
psSAR1g [W/kg]	0.807	0.837
psSAR8g [W/kg]	0.326	0.344
psSAR10g [W/kg]	0.289	0.305
Power Drift [dB]	0.05	-0.05
M2/M1 [%]		61.3
Dist 3dB Peak [mm]		8.6



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ID: 031

Report No. : TESA2208000309E5

Measurement Report for HB, WLAN 802.11n(40M) 5.3G\_Body\_Bottom Surface\_CH 62\_0mm\_Aux

Ambient temperature: 23.4°C; Liquid temperature: 22.8°C

**Exposure Conditions**

Phantom Section, TSL	Position, Test Distance [mm]	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat, HSL	Bottom Surface, 0.00	5310.0, 62	5.94	4.889	36.84

**Hardware Setup**

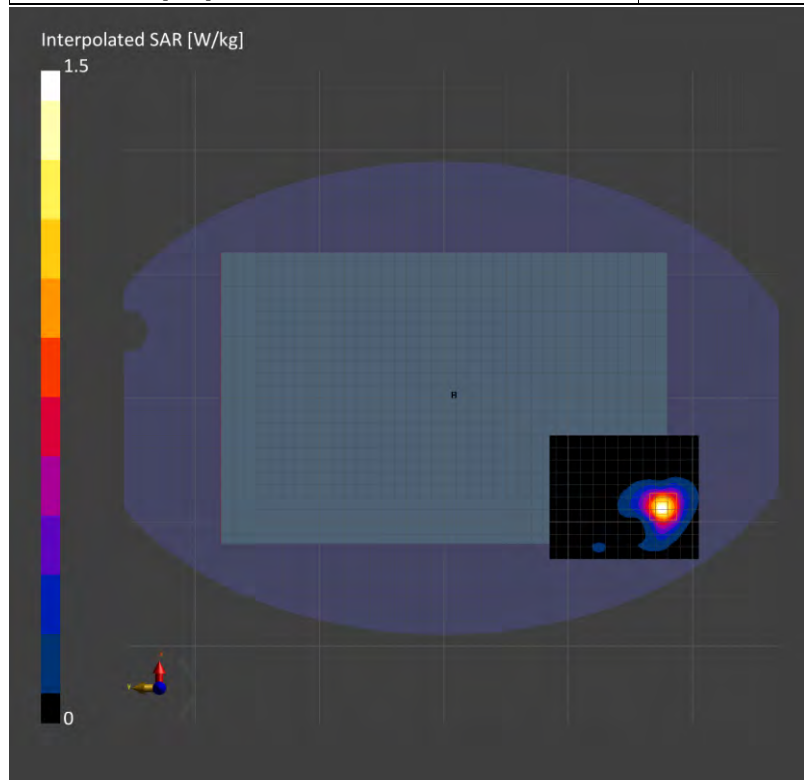
Phantom	Probe, Calibration Date	DAE, Calibration Date
ELI	EX3DV4 - SN7712, 2022-03-21	DAE4 Sn1719, 2022-03-25

**Scans Setup**

	Area Scan	Zoom Scan
Grid Extents [mm]	100.0 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	2022-11-28	2022-11-28
psSAR1g [W/kg]	1.04	1.05
psSAR8g [W/kg]	0.416	0.433
psSAR10g [W/kg]	0.369	0.382
Power Drift [dB]	0.04	0.05
M2/M1 [%]		60.5
Dist 3dB Peak [mm]		9.1



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ID: 032

Report No. : TESA2208000309E5

Measurement Report for HB, WLAN 802.11n(40M) 5.6G\_Body\_Bottom Surface\_CH 142\_0mm\_Aux

Ambient temperature: 23.2°C; Liquid temperature: 22.5°C

**Exposure Conditions**

Phantom Section, TSL	Position, Test Distance [mm]	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat, HSL	Bottom Surface, 0.00	5710.0, 142	5.45	5.309	36.383

**Hardware Setup**

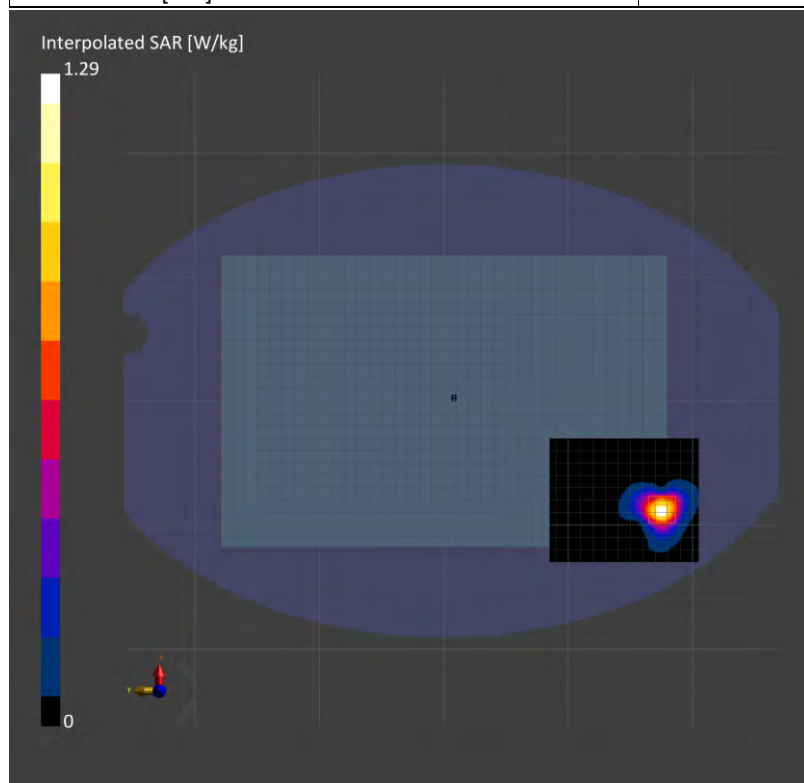
Phantom	Probe, Calibration Date	DAE, Calibration Date
ELI	EX3DV4 - SN7712, 2022-03-21	DAE4 Sn1719, 2022-03-25

**Scans Setup**

	Area Scan	Zoom Scan
Grid Extents [mm]	100.0 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	2022-11-29	2022-11-29
psSAR1g [W/kg]	0.902	0.918
psSAR8g [W/kg]	0.361	0.380
psSAR10g [W/kg]	0.321	0.337
Power Drift [dB]	-0.01	0.03
M2/M1 [%]		57.4
Dist 3dB Peak [mm]		10.0



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ID: 033

Report No. : TESA2208000309E5

Measurement Report for HB, WLAN 802.11ac(80M) 5.6G\_Body\_Bottom Surface\_CH 138\_0mm\_Aux

Ambient temperature: 23.2°C; Liquid temperature: 22.5°C

**Exposure Conditions**

Phantom Section, TSL	Position, Test Distance [mm]	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat, HSL	Bottom Surface, 0.00	5690.0, 138	5.45	5.288	36.406

**Hardware Setup**

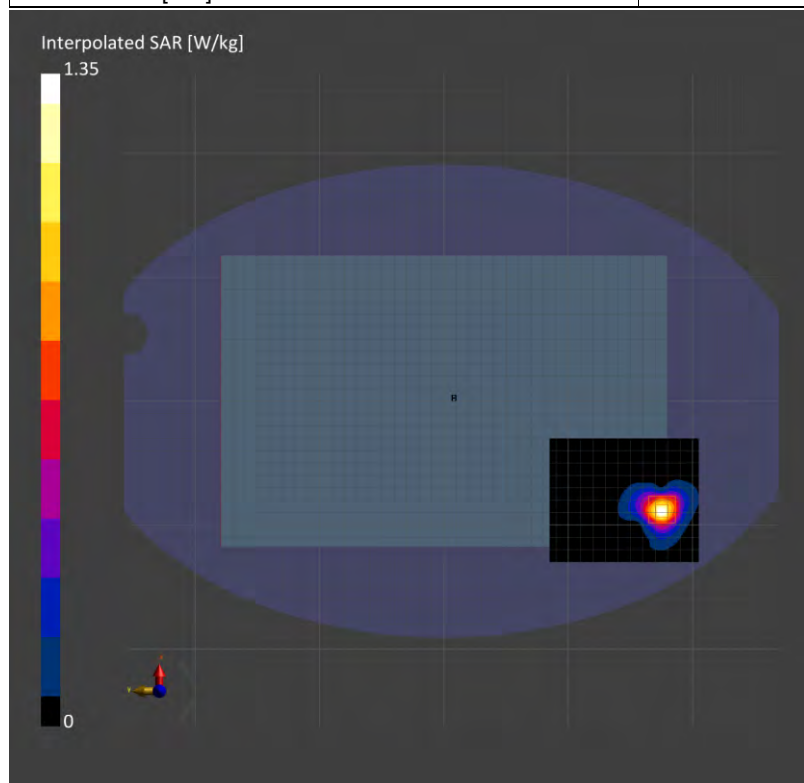
Phantom	Probe, Calibration Date	DAE, Calibration Date
ELI	EX3DV4 - SN7712, 2022-03-21	DAE4 Sn1719, 2022-03-25

**Scans Setup**

	Area Scan	Zoom Scan
Grid Extents [mm]	100.0 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	2022-11-29	2022-11-29
psSAR1g [W/kg]	0.948	0.954
psSAR8g [W/kg]	0.379	0.394
psSAR10g [W/kg]	0.336	0.350
Power Drift [dB]	0.03	0.04
M2/M1 [%]		57.5
Dist 3dB Peak [mm]		10.0



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ID: 034

Report No. : TESA2208000309E5

Measurement Report for HB, WLAN 802.11n(40M) 5.8G\_Body\_Bottom Surface\_CH 151\_0mm\_Aux

Ambient temperature: 23.2°C; Liquid temperature: 22.5°C

**Exposure Conditions**

Phantom Section, TSL	Position, Test Distance [mm]	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat, HSL	Bottom Surface, 0.00	5755.0, 151	5.45	5.356	36.331

**Hardware Setup**

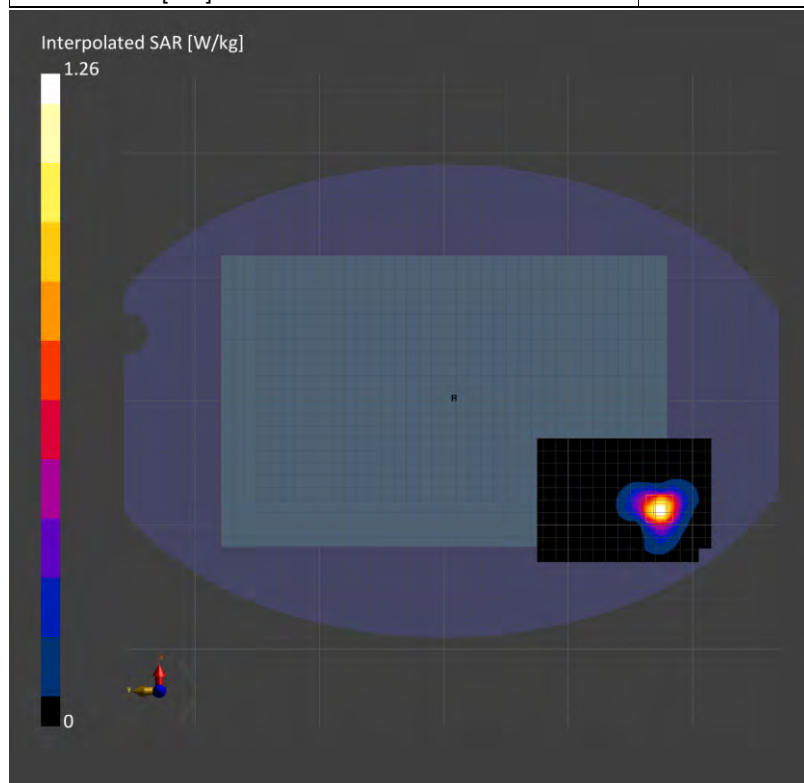
Phantom	Probe, Calibration Date	DAE, Calibration Date
ELI	EX3DV4 - SN7712, 2022-03-21	DAE4 Sn1719, 2022-03-25

**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	2022-11-29	2022-11-29
psSAR1g [W/kg]	0.909	0.938
psSAR8g [W/kg]	0.368	0.392
psSAR10g [W/kg]	0.327	0.345
Power Drift [dB]	0.05	-0.02
M2/M1 [%]		57.0
Dist 3dB Peak [mm]		10.1



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ID: 035

Report No. : TESA2208000309E5

Measurement Report for HB, WLAN 802.11ac(80M) 5.8G\_Body\_Bottom Surface\_CH 155\_0mm\_Aux

Ambient temperature: 23.2°C; Liquid temperature: 22.5°C

**Exposure Conditions**

Phantom Section, TSL	Position, Test Distance [mm]	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat, HSL	Bottom Surface, 0.00	5775.0, 155	5.45	5.377	36.309

**Hardware Setup**

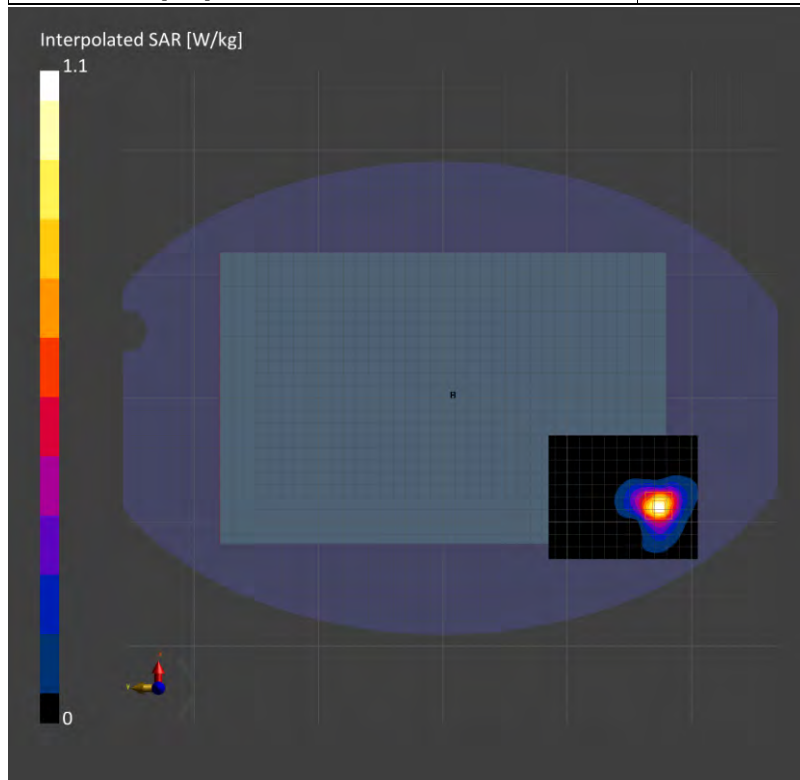
Phantom	Probe, Calibration Date	DAE, Calibration Date
ELI	EX3DV4 - SN7712, 2022-03-21	DAE4 Sn1719, 2022-03-25

**Scans Setup**

	Area Scan	Zoom Scan
Grid Extents [mm]	100.0 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	2022-11-29	2022-11-29
psSAR1g [W/kg]	0.798	0.800
psSAR8g [W/kg]	0.325	0.337
psSAR10g [W/kg]	0.289	0.297
Power Drift [dB]	0.01	-0.02
M2/M1 [%]		57.2
Dist 3dB Peak [mm]		10.2



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ID: 036

Report No. : TESA2303000123E5

Measurement Report\_WLAN 802.11ax(80M) 5.9G\_Body\_Bottom Surface\_CH 171\_0mm\_Main

Ambient temperature: 22.3°C; Liquid temperature: 21.8°C

**Exposure Conditions**

Phantom Section, TSL	Position, Test Distance [mm]	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat, HSL	Bottom Surface, 0.00	5855.0, 171	5.33	5.493	36.177

**Hardware Setup**

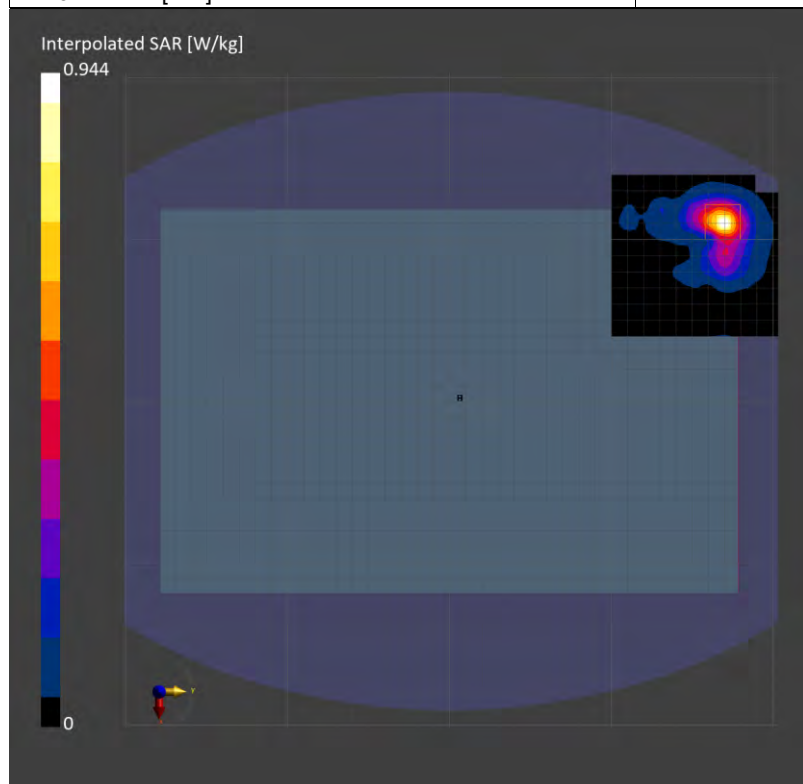
Phantom	Probe, Calibration Date	DAE, Calibration Date
ELI	EX3DV4 - SN7686, 2022-09-27	DAE4 Sn856, 2022-04-21

**Scans Setup**

	Area Scan	Zoom Scan
Grid Extents [mm]	100.0 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	2023-03-17	2023-03-17
psSAR1g [W/kg]	0.633	0.653
psSAR8g [W/kg]	0.238	0.263
psSAR10g [W/kg]	0.210	0.233
Power Drift [dB]	0.04	0.02
M2/M1 [%]		52.9
Dist 3dB Peak [mm]		7.6



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ID: 037

Report No. : TESA2303000123E5

Measurement Report\_WLAN 802.11ax(80M) 5.9G\_Body\_Bottom Surface\_CH 171\_0mm\_Aux

Ambient temperature: 22.3°C; Liquid temperature: 21.8°C

**Exposure Conditions**

Phantom Section, TSL	Position, Test Distance [mm]	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat, HSL	Bottom Surface, 0.00	5855.0, 171	5.33	5.493	36.177

**Hardware Setup**

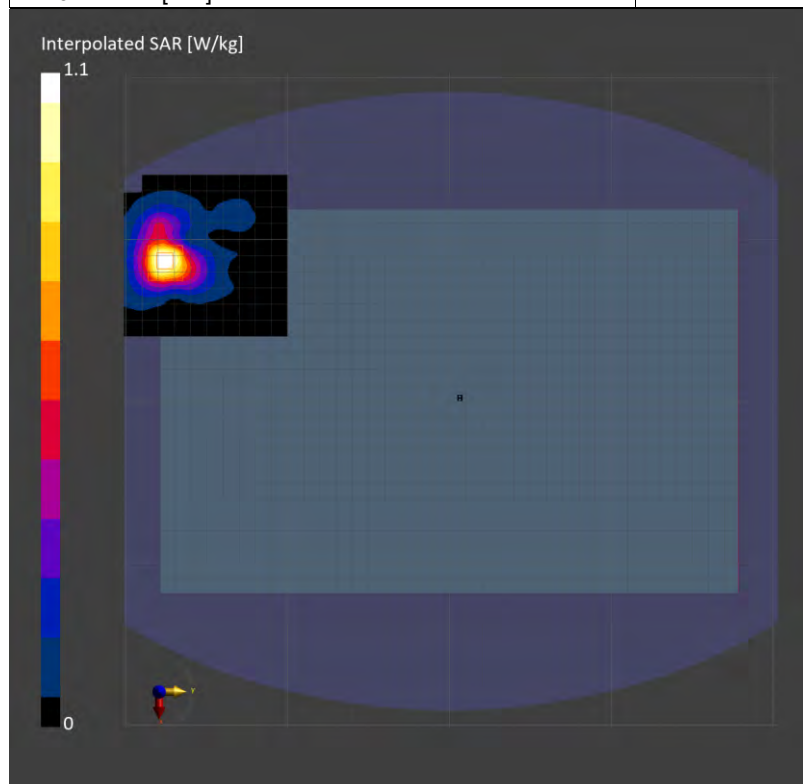
Phantom	Probe, Calibration Date	DAE, Calibration Date
ELI	EX3DV4 - SN7686, 2022-09-27	DAE4 Sn856, 2022-04-21

**Scans Setup**

	Area Scan	Zoom Scan
Grid Extents [mm]	100.0 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	2023-03-17	2023-03-17
psSAR1g [W/kg]	0.845	0.875
psSAR8g [W/kg]	0.359	0.381
psSAR10g [W/kg]	0.320	0.342
Power Drift [dB]	-0.02	0.03
M2/M1 [%]		53.5
Dist 3dB Peak [mm]		10.7



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ID: 038

Report No. : TESA2303000123E5

Measurement Report\_WLAN 802.11ax(80M) 5.9G\_Body\_Bottom Surface\_CH 171\_0mm\_Main

Ambient temperature: 22.3°C; Liquid temperature: 21.8°C

**Exposure Conditions**

Phantom Section, TSL	Position, Test Distance [mm]	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat, HSL	Bottom Surface, 0.00	5855.0, 171	5.33	5.493	36.177

**Hardware Setup**

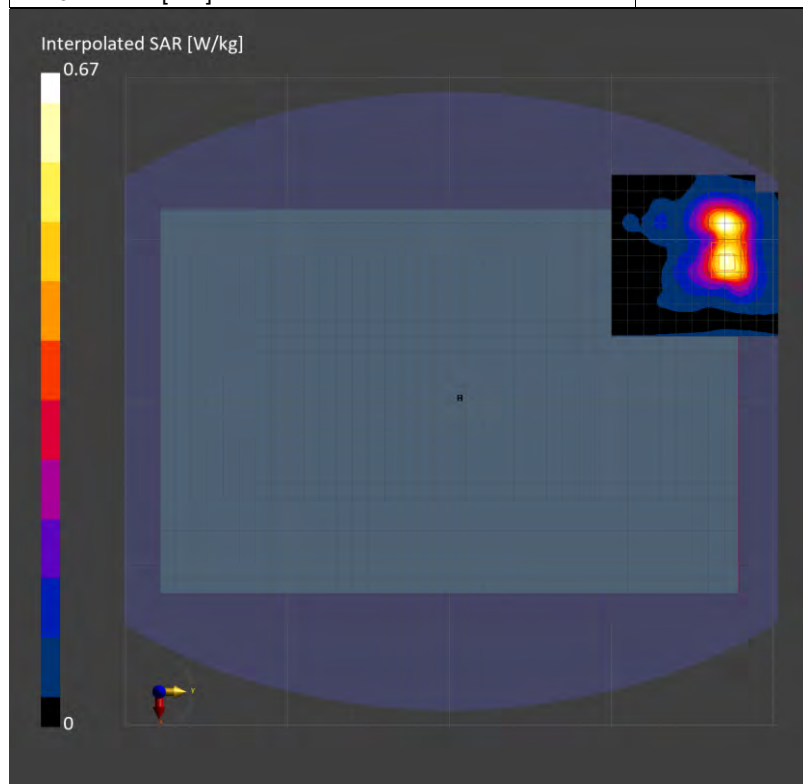
Phantom	Probe, Calibration Date	DAE, Calibration Date
ELI	EX3DV4 - SN7686, 2022-09-27	DAE4 Sn856, 2022-04-21

**Scans Setup**

	Area Scan	Zoom Scan
Grid Extents [mm]	100.0 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	2023-03-17	2023-03-17
psSAR1g [W/kg]	0.474	0.527
psSAR8g [W/kg]	0.204	0.228
psSAR10g [W/kg]	0.184	0.206
Power Drift [dB]	0.03	0.02
M2/M1 [%]		50.9
Dist 3dB Peak [mm]		9.0



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ID: 039

Report No. : TESA2303000123E5

Measurement Report\_WLAN 802.11ax(80M) 5.9G\_Body\_Bottom Surface\_CH 171\_0mm\_Aux

Ambient temperature: 22.3°C; Liquid temperature: 21.8°C

**Exposure Conditions**

Phantom Section, TSL	Position, Test Distance [mm]	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat, HSL	Bottom Surface, 0.00	5855.0, 171	5.33	5.493	36.177

**Hardware Setup**

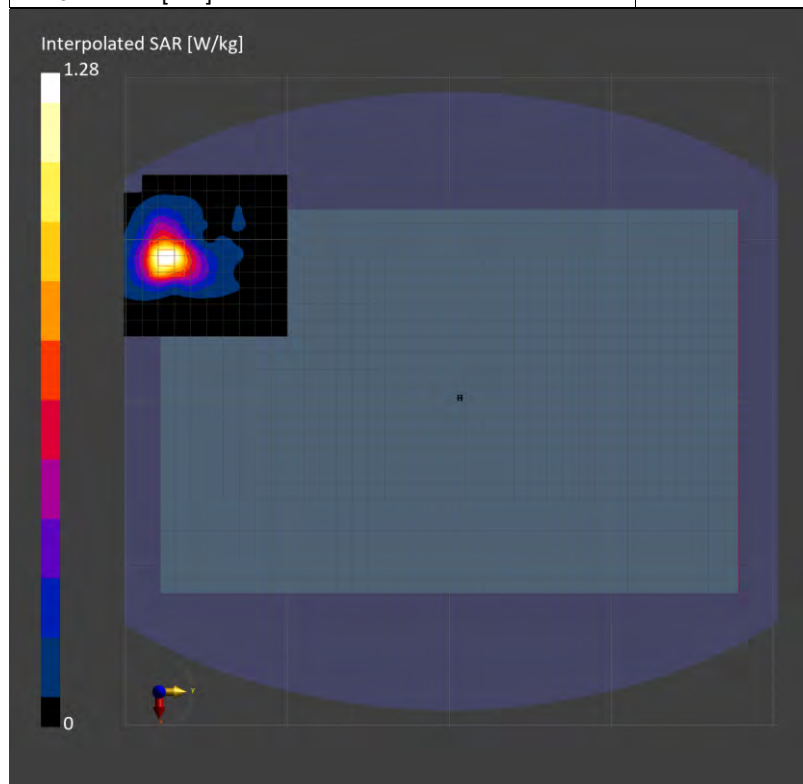
Phantom	Probe, Calibration Date	DAE, Calibration Date
ELI	EX3DV4 - SN7686, 2022-09-27	DAE4 Sn856, 2022-04-21

**Scans Setup**

	Area Scan	Zoom Scan
Grid Extents [mm]	100.0 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	2023-03-17	2023-03-17
psSAR1g [W/kg]	0.969	1.01
psSAR8g [W/kg]	0.407	0.436
psSAR10g [W/kg]	0.363	0.391
Power Drift [dB]	-0.04	-0.05
M2/M1 [%]		53.0
Dist 3dB Peak [mm]		11.2



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## 12 SAR SYSTEM CHECK RESULTS

Report No. : TESA2208000309E5

Measurement Report for Device, FRONT, D2450

CW, Channel 2450 (2450.0 MHz), SN:727

Ambient temperature: 23.5°C; Liquid temperature: 22.8°C

### Exposure Conditions

Phantom Section, TSL	Position, Test Distance [mm]	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat, HSL	FRONT, 10.00	8.16	1.83	39.702

### Hardware Setup

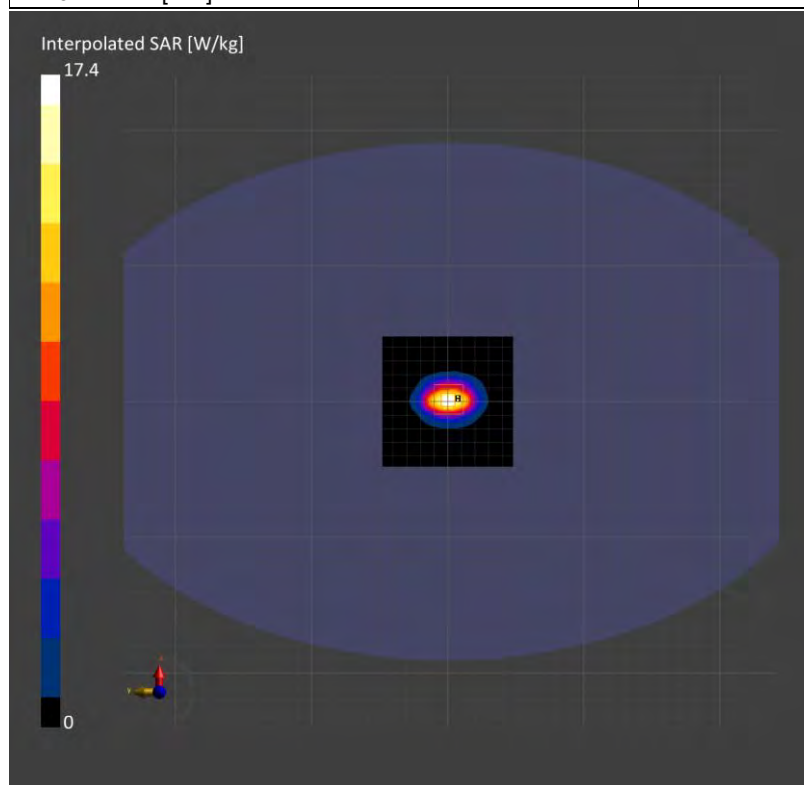
Phantom	Probe, Calibration Date	DAE, Calibration Date
ELI	EX3DV4 - SN7712, 2022-03-21	DAE4 Sn1719, 2022-03-25

### Scans Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	96.0 x 96.0	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	2022-11-30	2022-11-30
psSAR1g [W/kg]	13.1	13.14
psSAR8g [W/kg]	6.72	6.84
psSAR10g [W/kg]	6.07	6.20
Power Drift [dB]	-0.02	-0.01
M2/M1 [%]		59.8
Dist 3dB Peak [mm]		9.0



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Report No. : TESA2208000309E5

Measurement Report for Device, FRONT, D5GHz,

CW, Channel 5250 (5250.0 MHz), SN:1023

Ambient temperature: 23.3°C; Liquid temperature: 22.6°C

**Exposure Conditions**

Phantom Section, TSL	Position, Test Distance [mm]	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat, HSL	FRONT, 10.00	5.94	4.745	36.431

**Hardware Setup**

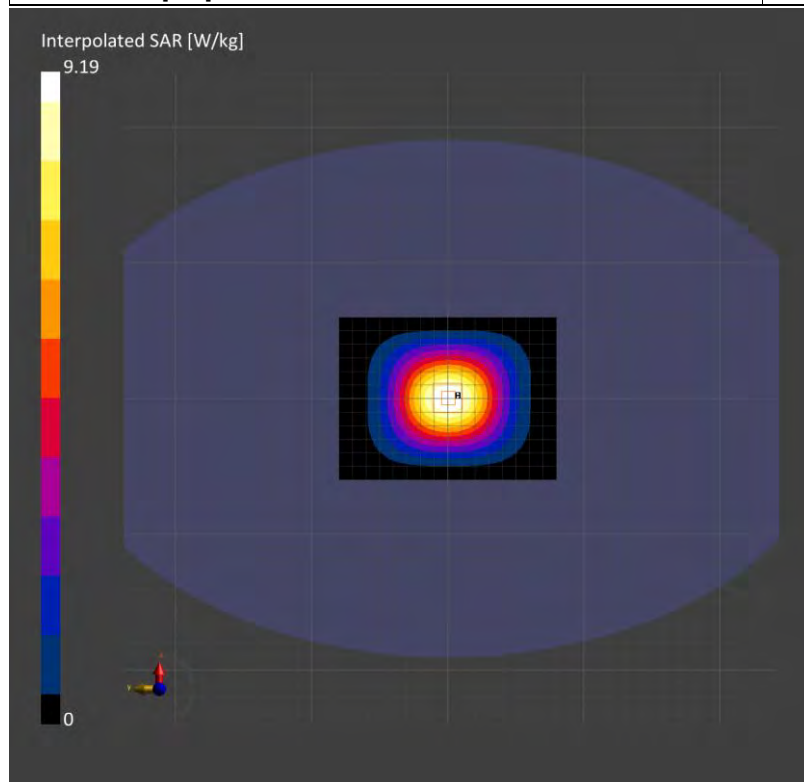
Phantom	Probe, Calibration Date	DAE, Calibration Date
ELI	EX3DV4 - SN7712, 2022-03-21	DAE4 Sn1719, 2022-03-25

**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	2022-11-30	2022-11-30
psSAR1g [W/kg]	6.00	7.98
psSAR8g [W/kg]	3.04	2.68
psSAR10g [W/kg]	2.77	2.27
psPDab (4.0cm2, sq) [W/m2]		53.6
Power Drift [dB]	-0.06	-0.02
M2/M1 [%]		55.4
Dist 3dB Peak [mm]		8.5



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Report No. : TESA2208000309E5

Measurement Report for Device, FRONT, D5GHz,

CW, Channel 5600 (5600.0 MHz), SN:1023

Ambient temperature: 23.1°C; Liquid temperature: 22.4°C

**Exposure Conditions**

Phantom Section, TSL	Position, Test Distance [mm]	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat, HSL	FRONT, 10.00	5.29	5.129	36.031

**Hardware Setup**

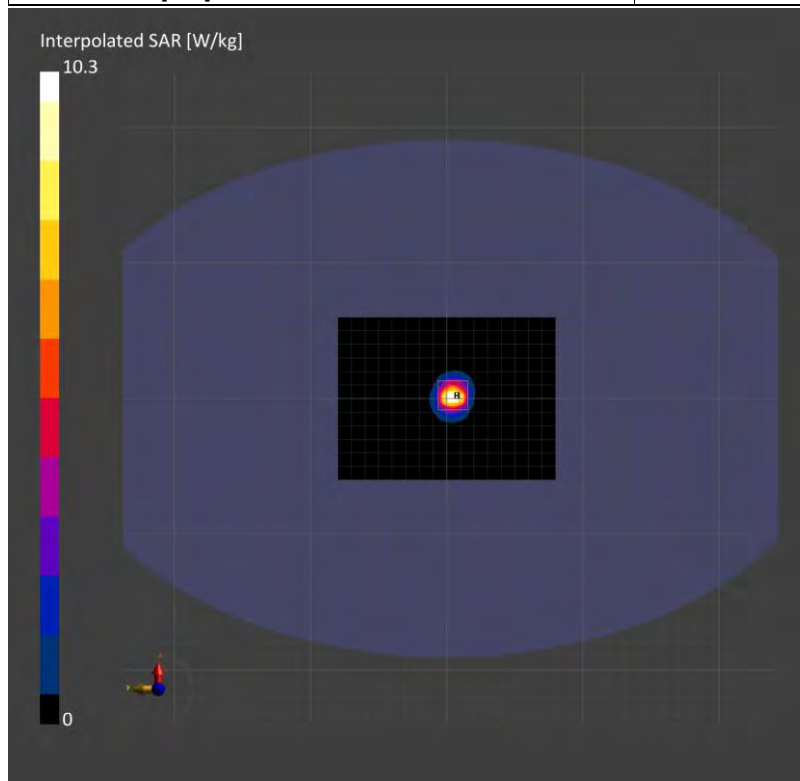
Phantom	Probe, Calibration Date	DAE, Calibration Date
ELI	EX3DV4 - SN7712, 2022-03-21	DAE4 Sn1719, 2022-03-25

**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	2022-12-01	2022-12-01
psSAR1g [W/kg]	7.23	8.14
psSAR8g [W/kg]	2.60	2.68
psSAR10g [W/kg]	2.24	2.29
Power Drift [dB]	-0.04	0.03
M2/M1 [%]		53.3
Dist 3dB Peak [mm]		7.6



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Report No. : TESA2208000309E5

Measurement Report for Device, FRONT, D5GHz,

CW, Channel 5750 (5750.0 MHz), SN:1023

Ambient temperature: 23.1°C; Liquid temperature: 22.3°C

**Exposure Conditions**

Phantom Section, TSL	Position, Test Distance [mm]	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat, HSL	FRONT, 10.00	5.45	5.284	35.859

**Hardware Setup**

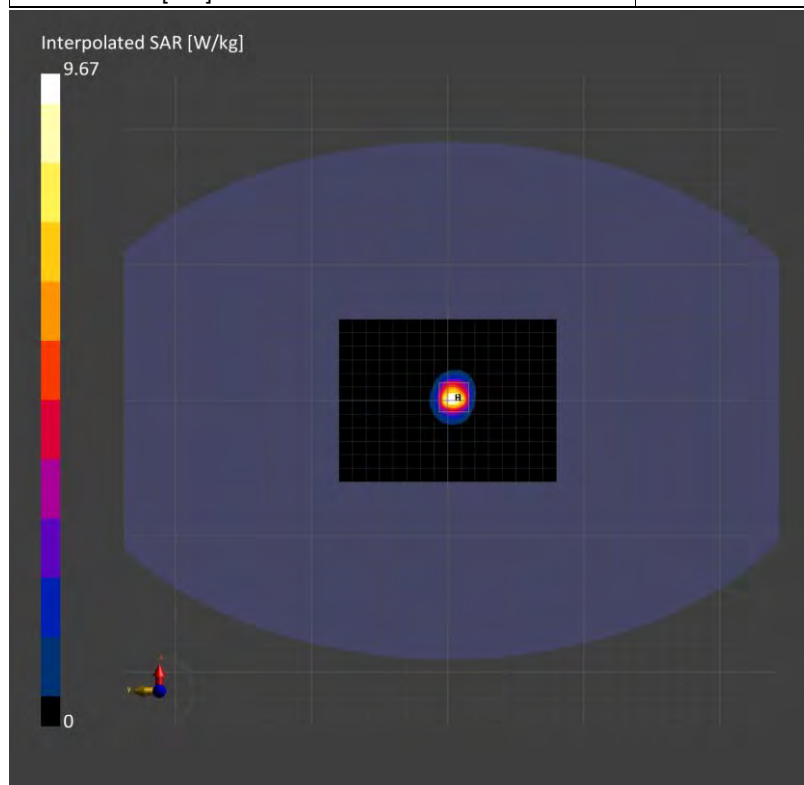
Phantom	Probe, Calibration Date	DAE, Calibration Date
ELI	EX3DV4 - SN7712, 2022-03-21	DAE4 Sn1719, 2022-03-25

**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	2022-12-01	2022-12-01
psSAR1g [W/kg]	6.94	8.10
psSAR8g [W/kg]	2.49	2.70
psSAR10g [W/kg]	2.15	2.30
Power Drift [dB]	0.02	-0.03
M2/M1 [%]		52.7
Dist 3dB Peak [mm]		8.3



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Report No. : TESA2208000309E5

Measurement Report for Device, FRONT, D2450

CW, Channel 2450 (2450.0 MHz), SN:727

Ambient temperature: 23.6°C; Liquid temperature: 23.0°C

**Exposure Conditions**

Phantom Section, TSL	Position, Test Distance [mm]	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat, HSL	FRONT, 10.00	8.16	1.852	40.18

**Hardware Setup**

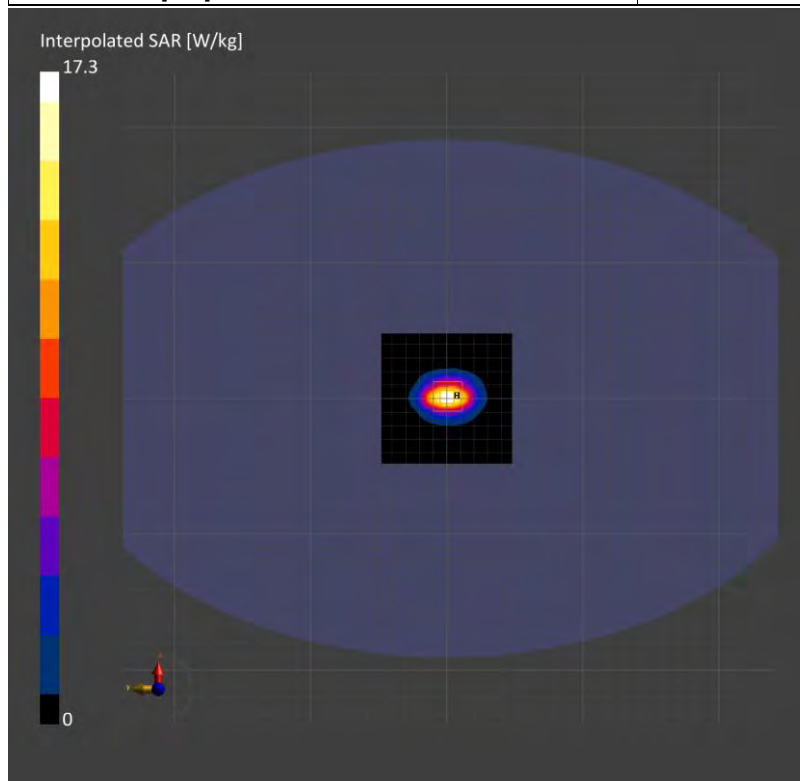
Phantom	Probe, Calibration Date	DAE, Calibration Date
ELI	EX3DV4 - SN7712, 2022-03-21	DAE4 Sn1719, 2022-03-25

**Scans Setup**

	Area Scan	Zoom Scan
Grid Extents [mm]	96.0 x 96.0	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	2022-11-28	2022-11-28
psSAR1g [W/kg]	13.07	13.14
psSAR8g [W/kg]	6.69	6.82
psSAR10g [W/kg]	6.04	6.19
Power Drift [dB]	-0.02	-0.01
M2/M1 [%]		57.2
Dist 3dB Peak [mm]		9.2



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Report No. : TESA2208000309E5

Measurement Report for Device, FRONT, D5GHz,

CW, Channel 5250 (5250.0 MHz), SN:1023

Ambient temperature: 23.4°C; Liquid temperature: 22.8°C

**Exposure Conditions**

Phantom Section, TSL	Position, Test Distance [mm]	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat, HSL	FRONT, 10.00	5.94	4.826	36.909

**Hardware Setup**

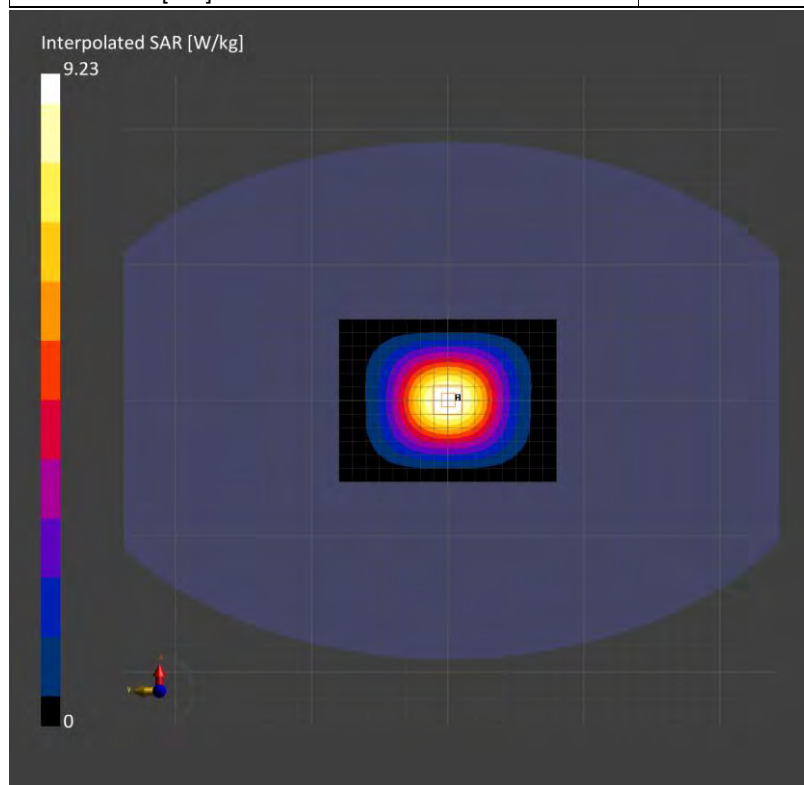
Phantom	Probe, Calibration Date	DAE, Calibration Date
ELI	EX3DV4 - SN7712, 2022-03-21	DAE4 Sn1719, 2022-03-25

**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	2022-11-28	2022-11-28
psSAR1g [W/kg]	6.09	8.18
psSAR8g [W/kg]	3.06	2.73
psSAR10g [W/kg]	2.82	2.34
Power Drift [dB]	-0.04	-0.03
M2/M1 [%]		55.1
Dist 3dB Peak [mm]		7.2



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Report No. : TESA2208000309E5

Measurement Report for Device, FRONT, D5GHz,

CW, Channel 5600 (5600.0 MHz), SN:1023

Ambient temperature: 23.2°C; Liquid temperature: 22.6°C

**Exposure Conditions**

Phantom Section, TSL	Position, Test Distance [mm]	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat, HSL	FRONT, 10.00	5.29	5.194	36.509

**Hardware Setup**

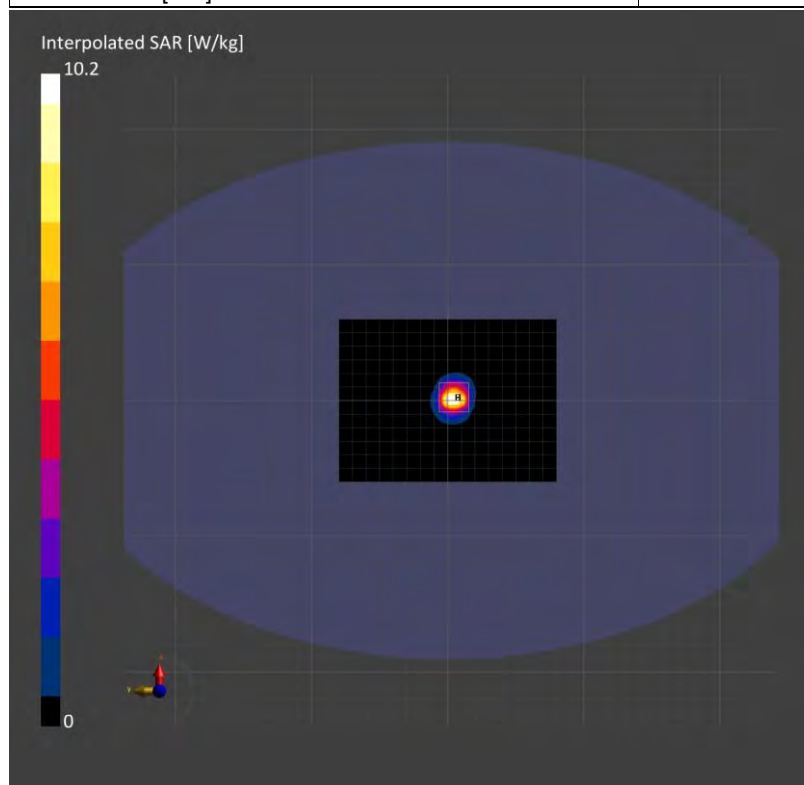
Phantom	Probe, Calibration Date	DAE, Calibration Date
ELI	EX3DV4 - SN7712, 2022-03-21	DAE4 Sn1719, 2022-03-25

**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	2022-11-29	2022-11-29
psSAR1g [W/kg]	7.36	8.07
psSAR8g [W/kg]	2.57	2.65
psSAR10g [W/kg]	2.22	2.28
Power Drift [dB]	-0.01	-0.05
M2/M1 [%]		51.6
Dist 3dB Peak [mm]		7.7



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Report No. : TESA2208000309E5

Measurement Report for Device, FRONT, D5GHz,

CW, Channel 5750 (5750.0 MHz), SN:1023

Ambient temperature: 23.2°C; Liquid temperature: 22.5°C

**Exposure Conditions**

Phantom Section, TSL	Position, Test Distance [mm]	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat, HSL	FRONT, 10.00	5.45	5.351	36.337

**Hardware Setup**

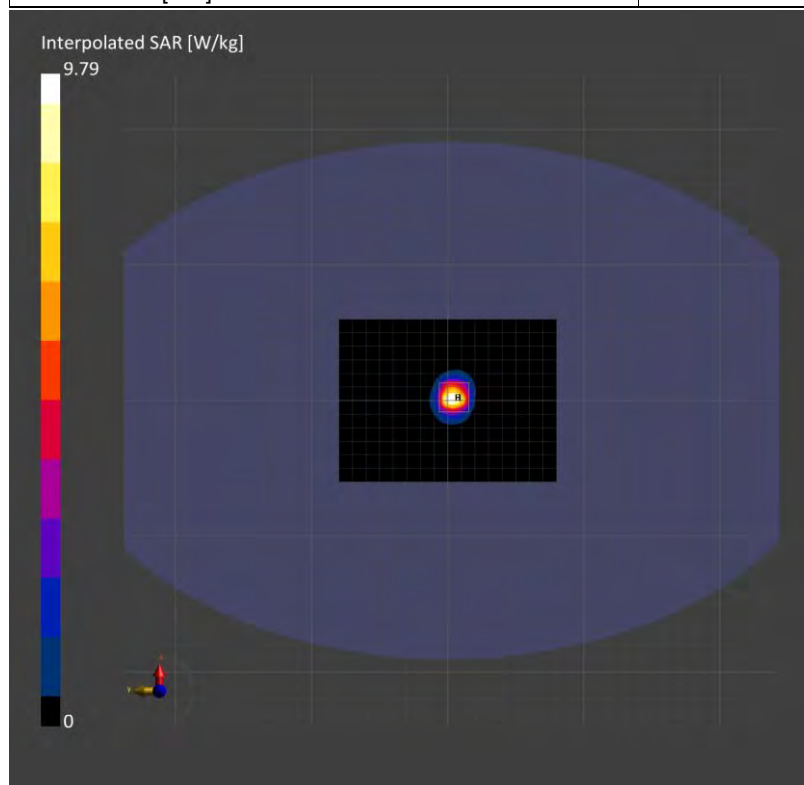
Phantom	Probe, Calibration Date	DAE, Calibration Date
ELI	EX3DV4 - SN7712, 2022-03-21	DAE4 Sn1719, 2022-03-25

**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	2022-11-29	2022-11-29
psSAR1g [W/kg]	7.11	8.25
psSAR8g [W/kg]	2.52	2.72
psSAR10g [W/kg]	2.18	2.34
Power Drift [dB]	0.03	-0.02
M2/M1 [%]		56.4
Dist 3dB Peak [mm]		8.1



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Report No. : TESA2303000123E5

## Measurement Report

Dipole\_D5750-SN: 1349

Ambient temperature: 22.3°C; Liquid temperature: 21.8°C

## Exposure Conditions

Phantom Section, TSL	Position, Test Distance [mm]	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat, HSL	FRONT, 10.00	5.33	5.382	36.297

## Hardware Setup

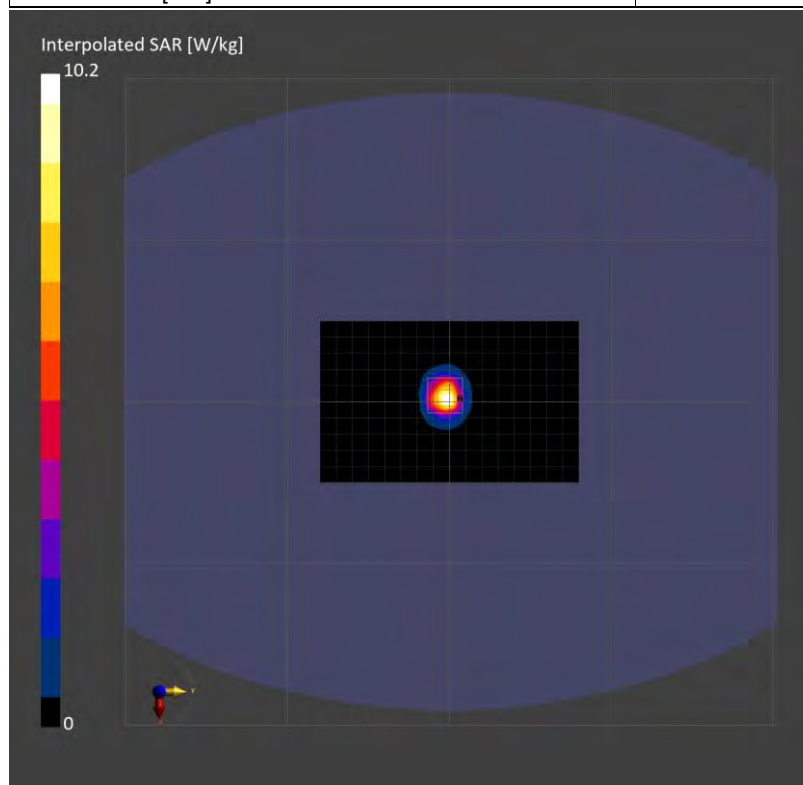
Phantom	Probe, Calibration Date	DAE, Calibration Date
ELI	EX3DV4 - SN7686, 2022-09-27	DAE4 Sn856, 2022-04-21

## 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	2023-03-17	2023-03-17
psSAR1g [W/kg]	6.98	7.80
psSAR8g [W/kg]	2.49	2.63
psSAR10g [W/kg]	2.15	2.26
Power Drift [dB]	-0.02	0.01
M2/M1 [%]		52.6
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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