

RF Exposure report



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

EUT Description Wireless module installed in Notebook PC
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 Jan. 02, 2025
Date of Test(s) Jan. 11, 2025 ~ Jan. 15, 2025
Date of Issue Feb. 21, 2025

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 / Cindy Chou	PM / Tom Chiang	Approved By / John Yeh
Cindy Chou	Tom Chiang	John Teh

Date: Feb. 21, 2025

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Revision History

Report Number	Revision	Description	Issue Date	Revised By	Remark
TESA2501000002ES	00	Initial creation of document	Feb. 10, 2025	Cindy Chou	
TESA2501000002ES	01	Modify comment	Feb. 21, 2025	Cindy Chou	*

Note:

1. The mark " * " is the revised version of the report due to comments submitted by the certification.
2. Variant information of model numbers is provided by the applicant, test results of this report are applicable to the sample EUT(s) received.
And are assessed as electrically identical in RF characteristics, therefore, no further assessment required for the variant(s).

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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

EUT Description	Wireless module installed in Notebook PC	
Brand Name	REALTEK	
Model No.	RTL8852BE	
FCC ID	TX2-RTL8852BE	
Host Information:	Product Type: Notebook PC Brand Name: ASUS Model Name: M3607H Family Model Name: D3607H M3607K D3607K All models are electrically identical, different model names are for marketing purpose.	
Duty Cycle	WLAN802.11	Please refer to section 7
	Bluetooth	Please refer to section 7
Supported radios (TX Frequency Range, MHz)	802.11 b/g/n/ac/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) 5.9GHz (5850.0 – 5895.0 MHz)
	Bluetooth	2.4GHz (2400.0 – 2483.5 MHz)

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1.3 Maximum value

Summary of Maximum SAR Value	
Mode	Highest SAR 1g (W/kg)
Bluetooth(GFSK)	0.06
2.4G WLAN	1.15
5.2G WLAN	0.93
5.3G WLAN	0.92
5.6G WLAN	1.15
5.8G WLAN	1.16
5.9G WLAN	1.18

1.4 Antenna Information

Vendor	INPAQ					
Antenna	Main					
Part Number	WA-P-LE-02-370					
Frequency(MHz)	2400~2483.5	5150~5250	5250~5350	5470~5725	5725~5850	5850~5895
Gain (dBi)	1.83	2.56	2.61	3.20	3.58	3.58
Antenna	Aux					
Part Number	WA-P-LE-01-096					
Frequency(MHz)	2400~2483.5	5150~5250	5250~5350	5470~5725	5725~5850	5850~5895
Gain (dBi)	2.08	2.65	2.73	2.98	3.43	3.48
Note: Antenna information is provided by the applicant.						

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2 MEASUREMENT SYSTEM

2.1 Test Facility

Laboratory	Test Site Address	Test Site Name	FCC Designation number	IC CAB identifier
SGS Taiwan Ltd. Central RF Lab. (TAF code 3702)	1F, No. 8, Alley 15, Lane 120, Sec. 1, NeiHu Road, NeiHu District, Taipei City, 11493, Taiwan.	SAR 2	TW0029	TW3702
		SAR 6		
		SAR 8		
	No. 2, Keji 1st Rd., Guishan Township, Taoyuan County, 33383, Taiwan	SAR 1	TW0028	
		SAR 4		
	No.134, Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan	SAR 3	TW0027	
		SAR 7		

Note: Test site name is remarked on a bolded mark as an indication where measurements occurred in specific test site and address.

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Block Diagram (DASY5)

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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 2450/5250/5600/5750/5850 MHz Additional CF for other liquids and frequencies upon request	
Frequency	10 MHz to > 6 GHz	
Directivity	± 0.3 dB in HSL (rotation around probe axis) ± 0.5 dB in tissue material (rotation normal to probe axis)	
Dynamic Range	10 μW/g to > 100 mW/g Linearity: ± 0.2 dB (noise: typically < 1 μW/g)	
Dimensions	Tip diameter: 2.5 mm	
Application	High precision dosimetric measurements in any exposure scenario (e.g., very strong gradient fields). Only probe which enables compliance testing for frequencies up to 6 GHz with precision of better 30%.	

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PHANTOM (ELI)

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

DEVICE HOLDER

Construction	The device holder (Supporter) for Notebook is made by POM (polyoxymethylene resin) , which is non-metal and non-conductive. The height can be adjusted to fit varies kind of notebooks.	
		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 rint (ERP) of the phantom to the liquid top surface is larger than 15cm. For body SAR testing, the liquid height from the center of the flat phantom to the liquid top surface is larger than 15cm.

3.2 Tissue Simulant Liquid measurement

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

Measured Frequency (MHz)	Target Dielectric Constant, ϵ_r	Target Conductivity, σ (S/m)	Measured Dielectric Constant, ϵ_r	Measured Conductivity, σ (S/m)	% dev ϵ_r	% dev σ	Limit	Measurement Date
2402	39.296	1.758	39.266	1.757	-0.08%	-0.06%	$\pm 5\%$	Jan. 14, 2025
2412	39.276	1.767	39.253	1.820	-0.06%	3.00%	$\pm 5\%$	
2437	39.226	1.789	39.233	1.832	0.02%	2.40%	$\pm 5\%$	
2441	39.218	1.792	39.192	1.833	-0.07%	2.29%	$\pm 5\%$	
2442	39.216	1.793	39.162	1.843	-0.14%	2.79%	$\pm 5\%$	
2450	39.200	1.800	39.137	1.846	-0.16%	2.56%	$\pm 5\%$	
2462	39.184	1.813	39.027	1.852	-0.40%	2.15%	$\pm 5\%$	
2472	39.171	1.823	39.025	1.862	-0.37%	2.14%	$\pm 5\%$	
2480	39.160	1.832	39.019	1.862	-0.36%	1.64%	$\pm 5\%$	
5190	36.010	4.650	35.998	4.744	-0.03%	2.02%	$\pm 5\%$	Jan. 15, 2025
5210	35.990	4.670	35.871	4.762	-0.33%	1.97%	$\pm 5\%$	
5230	35.970	4.690	35.854	4.791	-0.32%	2.15%	$\pm 5\%$	
5250	35.950	4.710	35.813	4.825	-0.38%	2.44%	$\pm 5\%$	
5290	35.910	4.750	35.787	4.856	-0.34%	2.23%	$\pm 5\%$	
5530	35.605	4.997	35.627	5.120	0.06%	2.46%	$\pm 5\%$	
5600	35.500	5.070	35.416	5.188	-0.24%	2.33%	$\pm 5\%$	
5610	35.490	5.080	35.388	5.193	-0.29%	2.22%	$\pm 5\%$	
5690	35.410	5.160	35.375	5.293	-0.10%	2.58%	$\pm 5\%$	
5750	35.350	5.220	35.353	5.348	0.01%	2.45%	$\pm 5\%$	
5775	35.325	5.245	35.258	5.380	-0.19%	2.57%	$\pm 5\%$	
5850	35.250	5.323	35.114	5.457	-0.39%	2.53%	$\pm 5\%$	
5855	35.245	5.328	35.114	5.475	-0.37%	2.76%	$\pm 5\%$	

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3.4 The composition of the tissue simulating liquid:

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

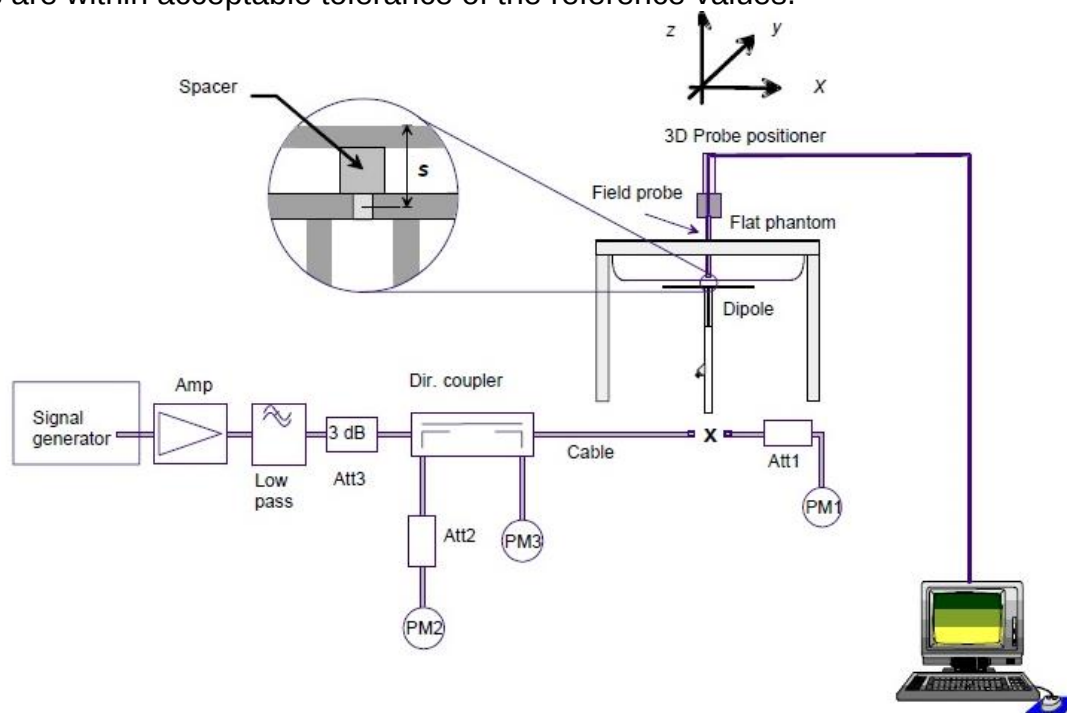
Broad-band head tissue simulating liquids	SPEAG Product	Frequency range (MHz)	Main Ingredients
	HBBL600-10000V6	600 - 10000	Water, Oil

3.5 System check

The microwave circuit arrangement for system check is sketched in below. The daily system accuracy verification occurs within the flat section of the SAM phantom and ELI phantom. A SAR measurement was performed to see if the measured SAR was within +/- 10% from the target SAR values.

The tests were conducted on the same days as the measurement of the DUT. The obtained results from the system accuracy verification are displayed with SAR values normalized to 1W forward power delivered to the dipole.

During the tests, the liquid depth from the center of the flat phantom to the liquid top surface was 15 cm above in all the cases. It is seen that the system is operating within its specification, as the results are within acceptable tolerance of the reference values.



The block diagram of system check

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3.6 System check results

Validation Kit	S/N	Frequency (MHz)	1W Target 1g-SAR (W/kg)	pin=250mW Measured 1g-SAR (W/kg)	Normalized to 1W 1g-SAR (W/kg)	Deviation (%)	Limit	Measurement Date
D2450V2	727	2450	52.7	12.9	51.6	-2.09	± 10%	Jan.14,2025
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	5250	80.9	7.87	78.7	-2.72	± 10%	Jan.15,2025
D5GHzV2	1349	5600	82.4	8.25	82.5	0.12	± 10%	Jan.15,2025
D5GHzV2	1349	5750	80.8	7.67	76.7	-5.07	± 10%	Jan.15,2025
D5GHzV2	1349	5850	79.9	8.36	83.6	4.63	± 10%	Jan.15,2025

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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 $\leq 100 \text{ MHz}$. 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

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adjusted by the ratio of the subsequent test configuration to initial test configuration specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg, SAR is not required for subsequent test configuration.

- **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.

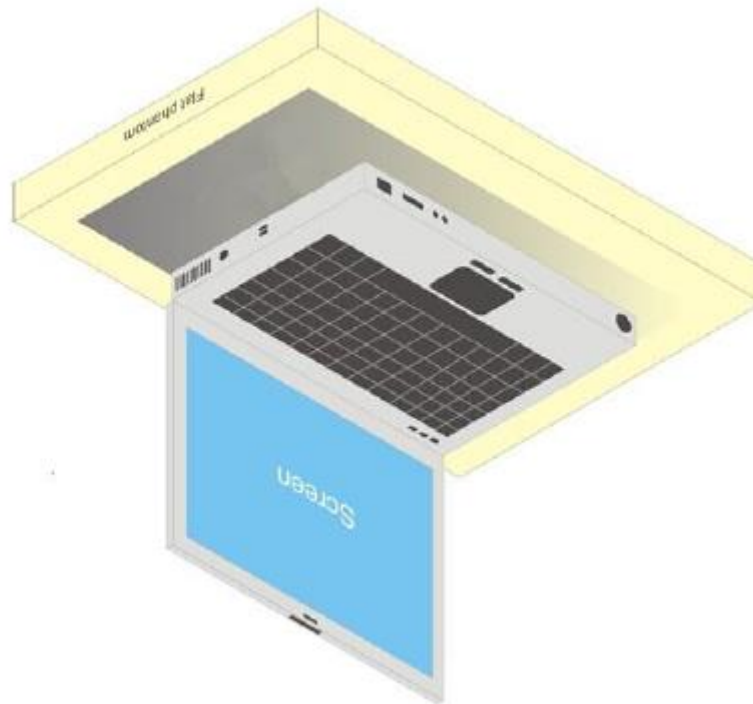


Illustration for Laptop Setup

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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 Electromagnetic Fields," NCRP Report No. 86, Section 17.4.5, copyright 1986 by NCRP, Bethesda, Maryland 20814. Limits for whole body SAR and peak spatial-average SAR are based

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

Portable devices that transmit at frequencies above 6 GHz shall be evaluated in terms of the MPE limits specified in Table 1 to [§ 1.1310\(e\)\(1\)](#).

According to ANSI/IEEE C95.1-1992, the criteria listed in the following Table shall be used to evaluate the environmental impact of human exposure to radio frequency (RF) radiation as specified in §1.1310.

Peak Spatially Averaged Power Density was evaluated over a circular area of 4cm² per interim FCC Guidance for near-field power density evaluations per October 2018 TCB Workshop notes

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

f = frequency in MHz. * = Plane-wave equivalent power density.

Table 1 to § 1.1310(e)(1) - Limits for Maximum Permissible Exposure (MPE)

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5 MAXIMUM OUTPUT POWER

5.1 WLAN

Ant 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	20.00	19.91
		6	2437		20.00	19.96
		11	2462		20.00	19.99
	802.11g	1	2412	6Mbps	17.00	16.90
		6	2437		20.00	19.86
		11	2462		17.00	16.84
	802.11n20-HT0	1	2412	MCS0	16.00	15.75
		6	2437		20.00	19.89
		11	2462		16.00	15.74
	802.11ac20-VHT0	1	2412	MCS0	16.00	15.89
		6	2437		20.00	19.82
		11	2462		16.00	15.79
	802.11ax20-HE0	1	2412	MCS0	16.00	15.75
		6	2437		20.00	19.90
		11	2462		16.00	15.75
	802.11n40-HT0	3	2422	MCS0	15.00	14.78
		6	2437		18.00	17.85
		9	2452		15.00	14.84
	802.11ac40-VHT0	3	2422	MCS0	15.00	14.89
		6	2437		18.00	17.81
		9	2452		15.00	14.89
	802.11ax40-HE0	3	2422	MCS0	15.00	14.87
		6	2437		18.00	17.93
		9	2452		15.00	14.77

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Ant 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	14.50	14.35
		40	5200		14.50	14.39
		44	5220		14.50	14.36
		48	5240		14.50	14.32
	802.11n20-HT0	36	5180	MCS0	14.50	14.31
		40	5200		14.50	14.38
		44	5220		14.50	14.32
		48	5240		14.50	14.38
	802.11ac20-VHT0	36	5180	MCS0	14.50	14.35
		40	5200		14.50	14.36
		44	5220		14.50	14.34
		48	5240		14.50	14.31
	802.11ax20-HE0	36	5180	MCS0	14.50	14.40
		40	5200		14.50	14.36
		44	5220		14.50	14.35
		48	5240		14.50	14.40
	802.11n40-HT0	38	5190	MCS0	14.50	14.37
		46	5230		14.50	14.48
	802.11ac40-VHT0	38	5190	MCS0	14.50	14.42
		46	5230		14.50	14.30
	802.11ax40-HE0	38	5190	MCS0	14.50	14.39
		46	5230		14.50	14.35
	802.11ac80-VHT0	42	5210	MCS0	14.50	14.32
	802.11ax80-HE0	42	5210	MCS0	14.50	14.45

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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	14.50	14.28
		56	5280		14.50	14.24
		60	5300		14.50	14.32
		64	5320		14.50	14.22
	802.11n20-HT0	52	5260	MCS0	14.50	14.35
		56	5280		14.50	14.34
		60	5300		14.50	14.24
		64	5320		14.50	14.28
	802.11ac20-VHT0	52	5260	MCS0	14.50	14.28
		56	5280		14.50	14.39
		60	5300		14.50	14.25
		64	5320		14.50	14.41
	802.11ax20-HE0	52	5260	MCS0	14.50	14.30
		56	5280		14.50	14.41
		60	5300		14.50	14.24
		64	5320		14.50	14.41
	802.11n40-HT0	54	5270	MCS0	14.50	14.35
		62	5310		14.50	14.36
	802.11ac40-VHT0	54	5270	MCS0	14.50	14.40
		62	5310		14.50	14.23
	802.11ax40-HE0	54	5270	MCS0	14.50	14.37
		62	5310		14.50	14.38
	802.11ac80-VHT0	58	5290	MCS0	14.50	14.42
	802.11ax80-HE0	58	5290	MCS0	14.50	14.25

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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	17.00	16.77
		120	5600		17.00	16.82
		140	5700		17.00	16.72
		144	5720		17.00	16.84
	802.11n20-HT0	100	5500	MCS0	17.00	16.81
		120	5600		17.00	16.83
		140	5700		17.00	16.80
		144	5720		17.00	16.79
	802.11ac20-VHT0	100	5500	MCS0	17.00	16.71
		120	5600		17.00	16.84
		140	5700		17.00	16.79
		144	5720		17.00	16.83
	802.11ax20-HE0	100	5500	MCS0	17.00	16.71
		120	5600		17.00	16.85
		140	5700		17.00	16.83
		144	5720		17.00	16.79
	802.11n40-HT0	102	5510	MCS0	15.50	15.36
		118	5590		17.00	16.79
		134	5670		17.00	16.90
		142	5710		17.00	16.76
	802.11ac40-VHT0	102	5510	MCS0	15.50	15.38
		118	5590		17.00	16.76
		134	5670		17.00	16.76
		142	5710		17.00	16.87
	802.11ax40-HE0	102	5510	MCS0	15.50	15.36
		118	5590		17.00	16.78
		134	5670		17.00	16.87
		142	5710		17.00	16.85
	802.11ac80-VHT0	106	5530	MCS0	15.50	15.35
		122	5610		17.00	16.96
		138	5690		17.00	16.99
	802.11ax80-HE0	106	5530	MCS0	15.50	15.34
		122	5610		17.00	16.87
		138	5690		17.00	16.72

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Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
5.8GHz	802.11a	149	5745	6Mbps	16.00	15.95
		157	5785		16.00	15.96
		165	5825		16.00	15.94
	802.11n20-HT0	149	5745	MCS0	16.00	15.84
		157	5785		16.00	15.94
		165	5825		16.00	15.96
	802.11ac20-VHT0	149	5745	MCS0	16.00	15.93
		157	5785		16.00	15.85
		165	5825		16.00	15.83
	802.11ax20-HE0	149	5745	MCS0	16.00	15.89
		157	5785		16.00	15.95
		165	5825		16.00	15.87
	802.11n40-HT0	151	5755	MCS0	16.00	15.92
		159	5795		16.00	15.88
	802.11ac40-VHT0	151	5755	MCS0	16.00	15.94
		159	5795		16.00	15.88
	802.11ax40-HE0	151	5755	MCS0	16.00	15.92
		159	5795		16.00	15.97
	802.11ac80-VHT0	155	5775	MCS0	16.00	15.99
	802.11ax80-HE0	155	5775	MCS0	16.00	15.96
Ant Main						
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
5.9GHz	802.11a	169	5845	6Mbps	15.50	15.29
		173	5865		15.50	15.32
		177	5885		15.50	15.20
	802.11n20-HT0	169	5845	MCS0	16.00	15.73
		173	5865		16.00	15.74
		177	5885		16.00	15.78
	802.11ac20-VHT0	169	5845	MCS0	16.00	15.74
		173	5865		16.00	15.87
		177	5885		16.00	15.86
	802.11ax20-HE0	169	5845	MCS0	16.00	15.83
		173	5865		16.00	15.84
		177	5885		16.00	15.78
	802.11n40-HT0	167	5835	MCS0	16.00	15.68
		175	5875		16.00	15.78
	802.11ac40-VHT0	167	5835	MCS0	16.00	15.84
		175	5875		16.00	15.80
	802.11ax40-HE0	167	5835	MCS0	16.00	15.84
		175	5875		16.00	15.79
	802.11ac80-VHT0	171	5855	MCS0	16.00	15.99
	802.11ax80-HE0	171	5855	MCS0	16.00	15.84

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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	20.00	19.96
		6	2437		20.00	19.91
		11	2462		20.00	19.88
	802.11g	1	2412	6Mbps	17.00	16.91
		6	2437		20.00	19.74
		11	2462		17.00	16.80
	802.11n20-HT0	1	2412	MCS0	16.00	15.83
		6	2437		20.00	19.86
		11	2462		16.00	15.84
	802.11ac20-VHT0	1	2412	MCS0	16.00	15.77
		6	2437		20.00	19.93
		11	2462		16.00	15.78
	802.11ax20-HE0	1	2412	MCS0	16.00	15.92
		6	2437		20.00	19.82
		11	2462		16.00	15.78
	802.11n40-HT0	3	2422	MCS0	15.00	14.77
		6	2437		18.00	17.87
		9	2452		15.00	14.77
	802.11ac40-VHT0	3	2422	MCS0	15.00	14.88
		6	2437		18.00	17.76
		9	2452		15.00	14.79
	802.11ax40-HE0	3	2422	MCS0	15.00	14.82
		6	2437		18.00	17.88
		9	2452		15.00	14.79

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5.15-5.25 GHz	802.11a	36	5180	6Mbps	14.50	14.31
		40	5200		14.50	14.36
		44	5220		14.50	14.35
		48	5240		14.50	14.40
	802.11n20-HT0	36	5180	MCS0	14.50	14.32
		40	5200		14.50	14.32
		44	5220		14.50	14.34
		48	5240		14.50	14.38
	802.11ac20-VHT0	36	5180	MCS0	14.50	14.32
		40	5200		14.50	14.33
		44	5220		14.50	14.32
		48	5240		14.50	14.39
	802.11ax20-HE0	36	5180	MCS0	14.50	14.38
		40	5200		14.50	14.31
		44	5220		14.50	14.36
		48	5240		14.50	14.33
	802.11n40-HT0	38	5190	MCS0	14.50	14.35
		46	5230		14.50	14.40
	802.11ac40-VHT0	38	5190	MCS0	14.50	14.37
		46	5230		14.50	14.40
	802.11ax40-HE0	38	5190	MCS0	14.50	14.43
		46	5230		14.50	14.29
	802.11ac80-VHT0	42	5210	MCS0	14.50	14.28
	802.11ax80-HE0	42	5210	MCS0	14.50	14.40

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5.25-5.35 GHz	802.11a	52	5260	6Mbps	14.50	14.40
		56	5280		14.50	14.33
		60	5300		14.50	14.37
		64	5320		14.50	14.26
	802.11n20-HT0	52	5260	MCS0	14.50	14.26
		56	5280		14.50	14.34
		60	5300		14.50	14.24
		64	5320		14.50	14.23
	802.11ac20-VHT0	52	5260	MCS0	14.50	14.29
		56	5280		14.50	14.26
		60	5300		14.50	14.31
		64	5320		14.50	14.37
	802.11ax20-HE0	52	5260	MCS0	14.50	14.29
		56	5280		14.50	14.25
		60	5300		14.50	14.41
		64	5320		14.50	14.27
	802.11n40-HT0	54	5270	MCS0	14.50	14.27
		62	5310		14.50	14.31
	802.11ac40-VHT0	54	5270	MCS0	14.50	14.42
		62	5310		14.50	14.35
	802.11ax40-HE0	54	5270	MCS0	14.50	14.37
		62	5310		14.50	14.27
	802.11ac80-VHT0	58	5290	MCS0	14.50	14.49
	802.11ax80-HE0	58	5290	MCS0	14.50	14.24

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5.6GHz	802.11a	100	5500	6Mbps	17.00	16.81
		120	5600		17.00	16.75
		140	5700		17.00	16.85
		144	5720		17.00	16.87
	802.11n20-HT0	100	5500	MCS0	17.00	16.89
		120	5600		17.00	16.76
		140	5700		17.00	16.73
		144	5720		17.00	16.77
	802.11ac20-VHT0	100	5500	MCS0	17.00	16.90
		120	5600		17.00	16.88
		140	5700		17.00	16.88
		144	5720		17.00	16.81
	802.11ax20-HE0	100	5500	MCS0	17.00	16.80
		120	5600		17.00	16.74
		140	5700		17.00	16.88
		144	5720		17.00	16.90
	802.11n40-HT0	102	5510	MCS0	15.50	15.41
		118	5590		17.00	16.80
		134	5670		17.00	16.80
		142	5710		17.00	16.84
	802.11ac40-VHT0	102	5510	MCS0	15.50	15.35
		118	5590		17.00	16.71
		134	5670		17.00	16.86
		142	5710		17.00	16.89
	802.11ax40-HE0	102	5510	MCS0	15.50	15.35
		118	5590		17.00	16.76
		134	5670		17.00	16.90
		142	5710		17.00	16.79
	802.11ac80-VHT0	106	5530	MCS0	15.50	15.49
		122	5610		17.00	16.99
		138	5690		17.00	16.98
	802.11ax80-HE0	106	5530	MCS0	15.50	15.36
		122	5610		17.00	16.77
		138	5690		17.00	16.75

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Ant Aux						
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
5.8GHz	802.11a	149	5745	6Mbps	16.00	15.97
		157	5785		16.00	15.85
		165	5825		16.00	15.88
	802.11n20-HT0	149	5745	MCS0	16.00	15.80
		157	5785		16.00	15.84
		165	5825		16.00	15.91
	802.11ac20-VHT0	149	5745	MCS0	16.00	15.97
		157	5785		16.00	15.83
		165	5825		16.00	15.79
	802.11ax20-HE0	149	5745	MCS0	16.00	15.86
		157	5785		16.00	15.90
		165	5825		16.00	15.82
	802.11n40-HT0	151	5755	MCS0	16.00	15.97
		159	5795		16.00	15.94
	802.11ac40-VHT0	151	5755	MCS0	16.00	15.86
		159	5795		16.00	15.95
	802.11ax40-HE0	151	5755	MCS0	16.00	15.92
		159	5795		16.00	15.90
	802.11ac80-VHT0	155	5775	MCS0	16.00	15.99
	802.11ax80-HE0	155	5775	MCS0	16.00	15.90
Ant Aux						
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
5.9GHz	802.11a	169	5845	6Mbps	15.50	15.22
		173	5865		15.50	15.27
		177	5885		15.50	15.36
	802.11n20-HT0	169	5845	MCS0	16.00	15.83
		173	5865		16.00	15.72
		177	5885		16.00	15.73
	802.11ac20-VHT0	169	5845	MCS0	16.00	15.71
		173	5865		16.00	15.71
		177	5885		16.00	15.88
	802.11ax20-HE0	169	5845	MCS0	16.00	15.78
		173	5865		16.00	15.70
		177	5885		16.00	15.87
	802.11n40-HT0	167	5835	MCS0	16.00	15.78
		175	5875		16.00	15.76
	802.11ac40-VHT0	167	5835	MCS0	16.00	15.84
		175	5875		16.00	15.79
	802.11ax40-HE0	167	5835	MCS0	16.00	15.85
		175	5875		16.00	15.78
	802.11ac80-VHT0	171	5855	MCS0	16.00	15.99
	802.11ax80-HE0	171	5855	MCS0	16.00	15.88

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5.2 Bluetooth

Mode	Channel	Frequency (MHz)	1Mbps		2Mbps		3Mbps	
			Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
BR/EDR	CH 00	2402	6.00	5.71	6.00	4.71	6.00	4.73
	CH 39	2441		5.09		4.25		4.81
	CH 78	2480		4.43		4.89		4.77

5.3 BLE

Mode	Channel	Frequency (MHz)	GFSK	
			Max. Rated Avg. Power + Max. Tolerance (dBm)	Average Output Power (dBm)
BLE_1M	CH 00	2402	6	5.29
	CH 19	2440		5.38
	CH 39	2480		5.56
Mode	Channel	Frequency (MHz)	GFSK	
			Max. Rated Avg. Power + Max. Tolerance (dBm)	Average Output Power (dBm)
BLE_2M	CH 00	2402	6	5.14
	CH 19	2440		5.34
	CH 39	2480		5.58

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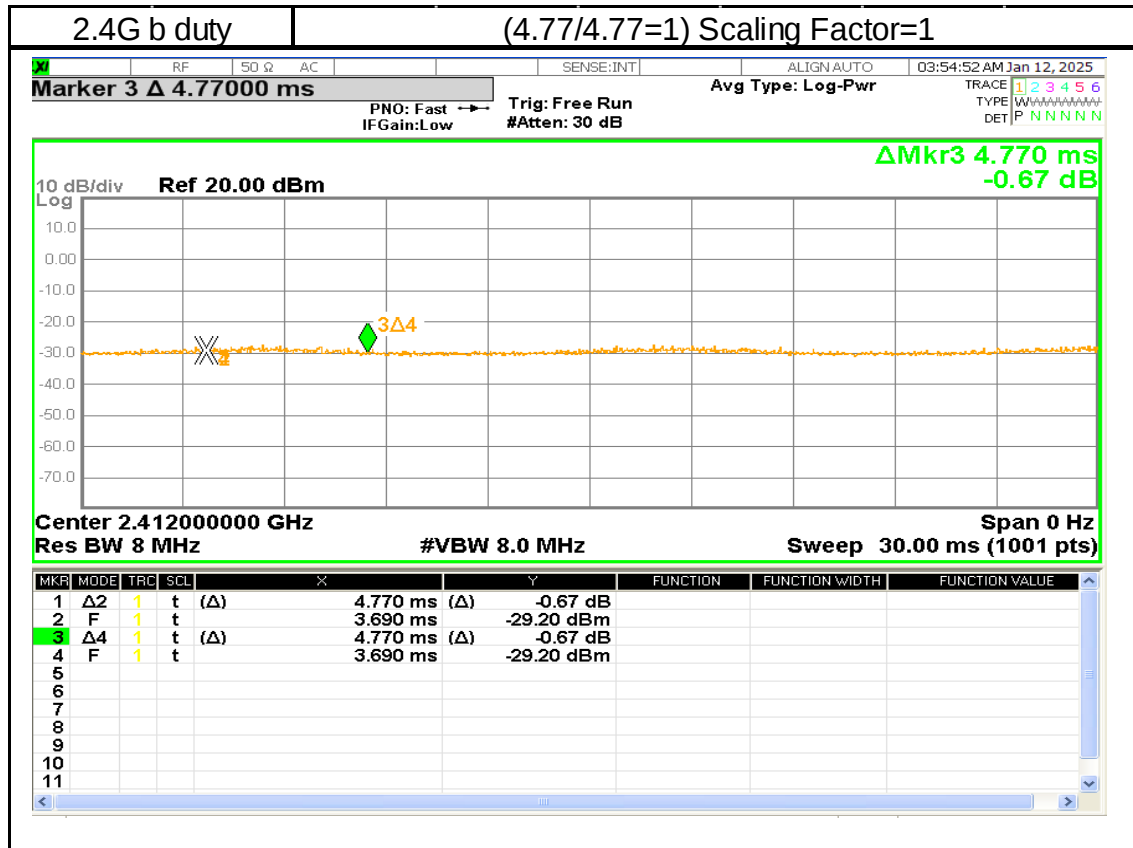
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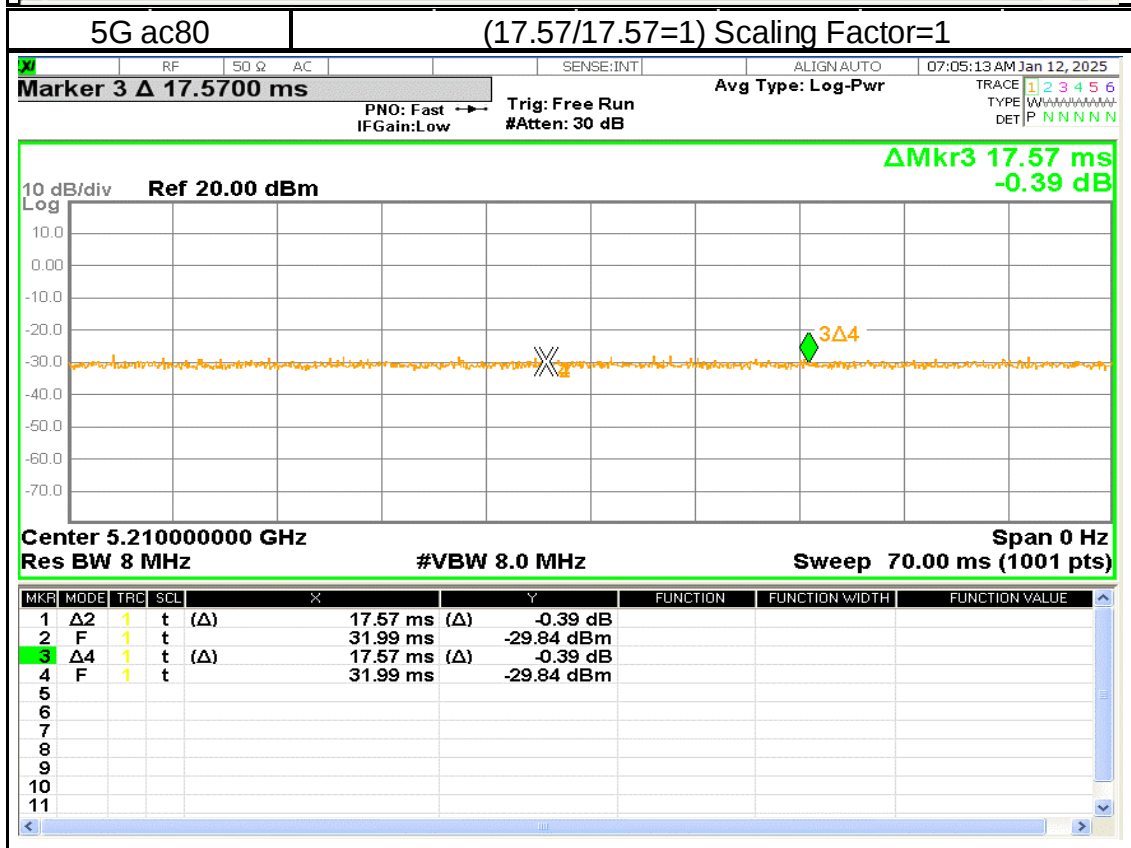
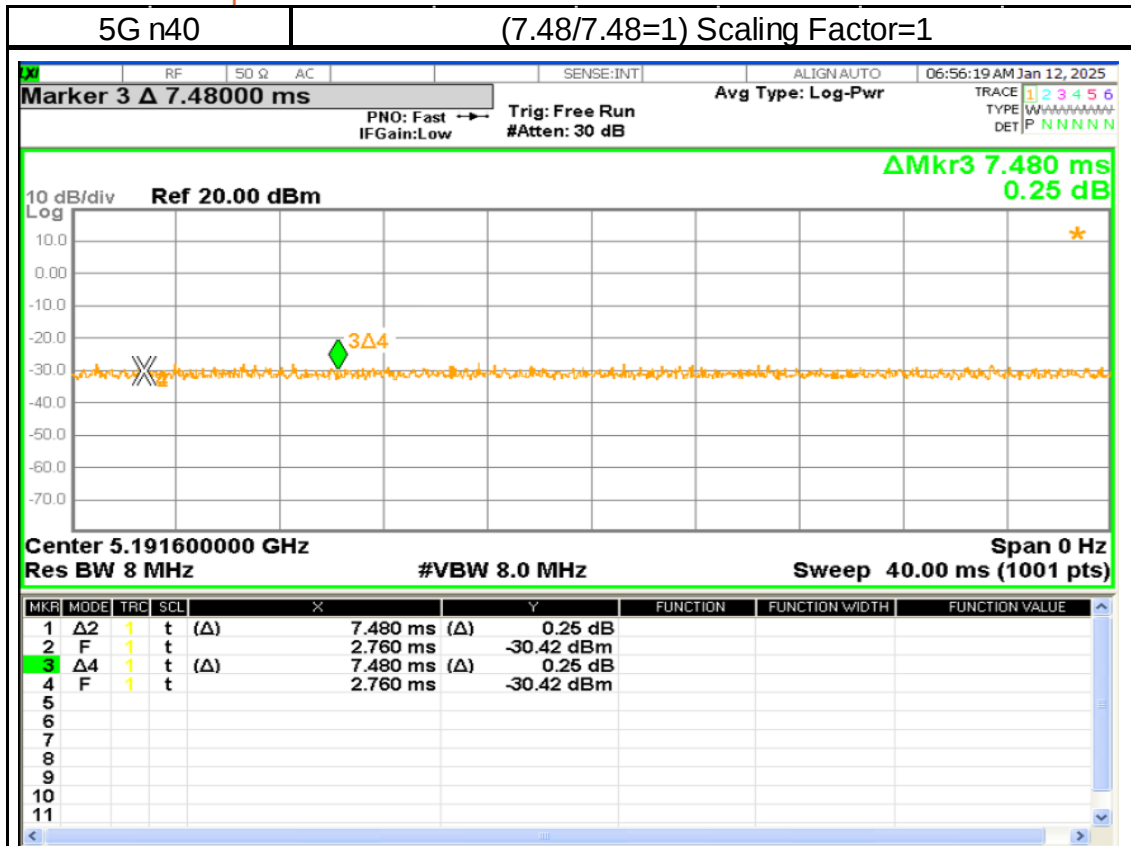
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6 DUTY CYCLE



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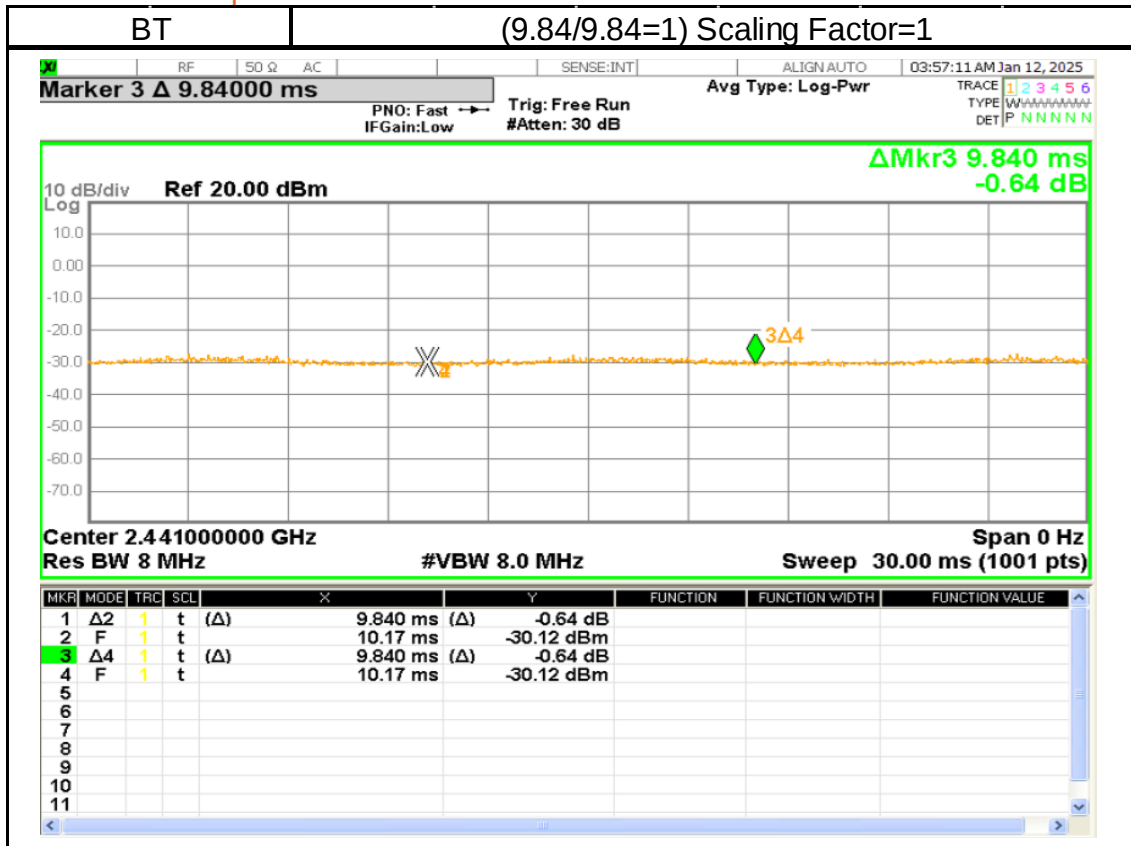
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7 SUMMARY OF RESULTS

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

Band	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	Ant Main	Bottom of Laptop	0	11	2462	20.00	19.99	1.00	100.23%	0.359	0.360	001
WLAN 802.11b	Ant Main	Front Edge of Laptop	0	1	2412	20.00	19.91	1.00	102.09%	1.100	1.123	-
WLAN 802.11b	Ant Main	Front Edge of Laptop	0	6	2437	20.00	19.96	1.00	100.93%	1.030	1.040	-
WLAN 802.11b	Ant Main	Front Edge of Laptop	0	11	2462	20.00	19.99	1.00	100.23%	1.150	1.153	014
WLAN 802.11b	Ant Main	Front Edge of Laptop*	0	11	2462	20.00	19.99	1.00	100.23%	1.130	1.133	-
Band	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 802.11ac(80M) 5.2G	Ant Main	Bottom of Laptop	0	42	5210	14.50	14.32	1.00	104.23%	0.073	0.076	002
WLAN 802.11ac(80M) 5.2G	Ant Main	Front Edge of Laptop	0	42	5210	14.50	14.32	1.00	104.23%	0.893	0.931	015
WLAN 802.11ac(80M) 5.2G	Ant Main	Front Edge of Laptop*	0	42	5210	14.50	14.32	1.00	104.23%	0.888	0.926	-
Band	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 802.11ac(80M) 5.3G	Ant Main	Bottom of Laptop	0	58	5290	14.50	14.42	1.00	101.86%	0.077	0.078	003
WLAN 802.11ac(80M) 5.3G	Ant Main	Front Edge of Laptop	0	58	5290	14.50	14.42	1.00	101.86%	0.898	0.915	016
WLAN 802.11ac(80M) 5.3G	Ant Main	Front Edge of Laptop*	0	58	5290	14.50	14.42	1.00	101.86%	0.877	0.893	-
Band	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 802.11ac(80M) 5.6G	Ant Main	Bottom of Laptop	0	106	5530	15.50	15.35	1.00	103.51%	0.103	0.107	-
WLAN 802.11ac(80M) 5.6G	Ant Main	Bottom of Laptop	0	138	5690	17.00	16.99	1.00	100.23%	0.161	0.161	004
WLAN 802.11ac(80M) 5.6G	Ant Main	Front Edge of Laptop	0	106	5530	15.50	15.35	1.00	103.51%	1.060	1.097	-
WLAN 802.11ac(80M) 5.6G	Ant Main	Front Edge of Laptop	0	138	5690	17.00	16.99	1.00	100.23%	1.150	1.153	017
WLAN 802.11ac(80M) 5.6G	Ant Main	Front Edge of Laptop*	0	138	5690	17.00	16.99	1.00	100.23%	1.120	1.123	-
Band	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 802.11ac(80M) 5.8G	Ant Main	Bottom of Laptop	0	155	5775	16.00	15.99	1.00	100.23%	0.121	0.121	005
WLAN 802.11ac(80M) 5.8G	Ant Main	Front Edge of Laptop	0	155	5775	16.00	15.99	1.00	100.23%	1.160	1.163	018
WLAN 802.11ac(80M) 5.8G	Ant Main	Front Edge of Laptop*	0	155	5775	16.00	15.99	1.00	100.23%	1.120	1.123	-
Band	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 802.11ac(80M) 5.9G	Ant Main	Bottom of Laptop	0	171	5855	16.00	15.99	1.00	100.23%	0.136	0.136	006
WLAN 802.11ac(80M) 5.9G	Ant Main	Front Edge of Laptop	0	171	5855	16.00	15.99	1.00	100.23%	1.180	1.183	019
WLAN 802.11ac(80M) 5.9G	Ant Main	Front Edge of Laptop*	0	171	5855	16.00	15.99	1.00	100.23%	1.150	1.153	-
Band	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	Ant Aux	Bottom of Laptop	0	1	2412	20.00	19.96	1.00	100.93%	0.295	0.298	007
WLAN 802.11b	Ant Aux	Bottom of Laptop	0	6	2437	20.00	19.91	1.00	102.09%	0.234	0.239	-
WLAN 802.11b	Ant Aux	Bottom of Laptop	0	11	2462	20.00	19.88	1.00	102.80%	0.255	0.262	-
WLAN 802.11b	Ant Aux	Front Edge of Laptop	0	1	2412	20.00	19.96	1.00	100.93%	1.040	1.050	020
WLAN 802.11b	Ant Aux	Front Edge of Laptop	0	6	2437	20.00	19.91	1.00	102.09%	0.994	1.015	-
WLAN 802.11b	Ant Aux	Front Edge of Laptop	0	11	2462	20.00	19.88	1.00	102.80%	0.982	1.010	-
Band	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	
Bluetooth(GFSK)	Ant Aux	Bottom of Laptop	0	00	2402	6.00	5.71	1.00	106.91%	0.020	0.021	008
Bluetooth(GFSK)	Ant Aux	Front Edge of Laptop	0	00	2402	6.00	5.71	1.00	106.91%	0.053	0.057	021
Bluetooth(GFSK)	Ant Aux	Front Edge of Laptop	0	39	2441	6.00	5.09	1.00	123.31%	0.041	0.051	-
Bluetooth(GFSK)	Ant Aux	Front Edge of Laptop	0	78	2480	6.00	4.43	1.00	143.55%	0.037	0.053	-
Band	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 802.11ac(80M) 5.2G	Ant Aux	Bottom of Laptop	0	42	5210	14.50	14.28	1.00	105.20%	0.071	0.075	009
WLAN 802.11ac(80M) 5.2G	Ant Aux	Front Edge of Laptop	0	42	5210	14.50	14.28	1.00	105.20%	0.550	0.579	022
Band	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 802.11ac(80M) 5.3G	Ant Aux	Bottom of Laptop	0	58	5290	14.50	14.49	1.00	100.23%	0.079	0.079	010
WLAN 802.11ac(80M) 5.3G	Ant Aux	Front Edge of Laptop	0	58	5290	14.50	14.49	1.00	100.23%	0.614	0.615	023
Band	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 802.11ac(80M) 5.6G	Ant Aux	Bottom of Laptop	0	138	5690	17.00	16.98	1.00	100.46%	0.095	0.095	011
WLAN 802.11ac(80M) 5.6G	Ant Aux	Front Edge of Laptop	0	106	5530	15.50	15.49	1.00	100.23%	0.971	0.973	-
WLAN 802.11ac(80M) 5.6G	Ant Aux	Front Edge of Laptop	0	138	5690	17.00	16.98	1.00	100.46%	1.060	1.065	024
Band	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 802.11ac(80M) 5.8G	Ant Aux	Bottom of Laptop	0	155	5775	16.00	15.99	1.00	100.23%	0.093	0.093	012
WLAN 802.11ac(80M) 5.8G	Ant Aux	Front Edge of Laptop	0	155	5775	16.00	15.99	1.00	100.23%	1.020	1.022	025

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Band	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 802.11ac(80M) 5.9G	Ant Aux	Bottom of Laptop	0	171	5855	16.00	15.99	1.00	100.23%	0.075	0.075	013
WLAN 802.11ac(80M) 5.9G	Ant Aux	Front Edge of Laptop	0	171	5855	16.00	15.99	1.00	100.23%	0.834	0.836	026

* - 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 Transmission configurations
WLAN 2.4GHz Main + WLAN 2.4GHz Aux
WLAN 5GHz Main + WLAN 5GHz Aux
WLAN 2.4GHz Main + BT Aux
WLAN 5GHz Main + BT Aux
WLAN 5GHz Main + WLAN 5GHz Aux + BT Aux

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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 ≤ 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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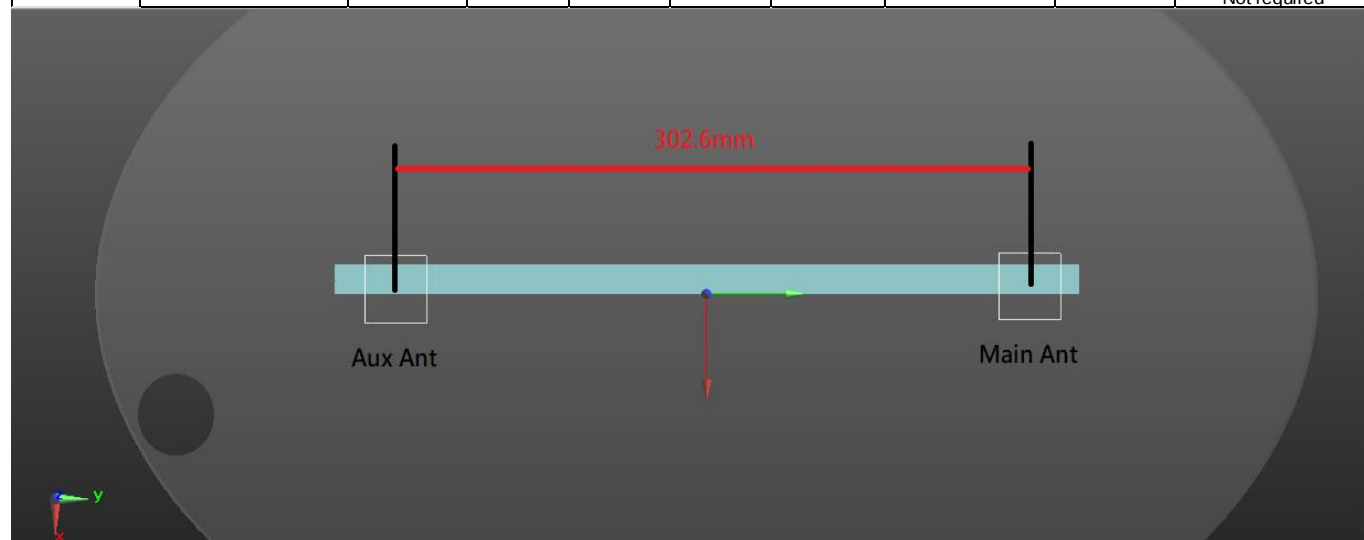
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Simultaneous Transmission Combination

Exposure Position		Reported SAR					Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5
		2	3	4	5	7	2+3	4+5	2+7	4+7	4+5+7
		2.4GHz WLAN Ant Main	2.4GHz WLAN Ant Aux	5GHz WLAN Ant Main	5GHz WLAN Ant Aux	Bluetooth Ant Aux	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 of Laptop	0	0.360	0.298	0.161	0.095	0.021	0.658	0.256	0.381	0.182	0.277
Front Edge of Laptop	0	1.153	1.050	1.183	1.065	0.057	2.203	2.248	1.210	1.240	2.305

SPLSR

Scenario 1: Co-location_1g_Body									
Position	Conditions	SAR Value (W/kg)	Coordinates (cm)			ΣSAR (W/kg)	Peak Location Separation Distance (mm)	SPLSR	Simultaneous Transmission SAR Test
			x	y	z				
Front Edge of Laptop	WLAN 2.4G Main	1.153	-0.24	15.44	-0.38	-	-	-	-
	WLAN 2.4G Aux	1.050	-0.12	-14.82	-0.37	2.203	302.60	0.011	SPLSR ≤ 0.04, Not required



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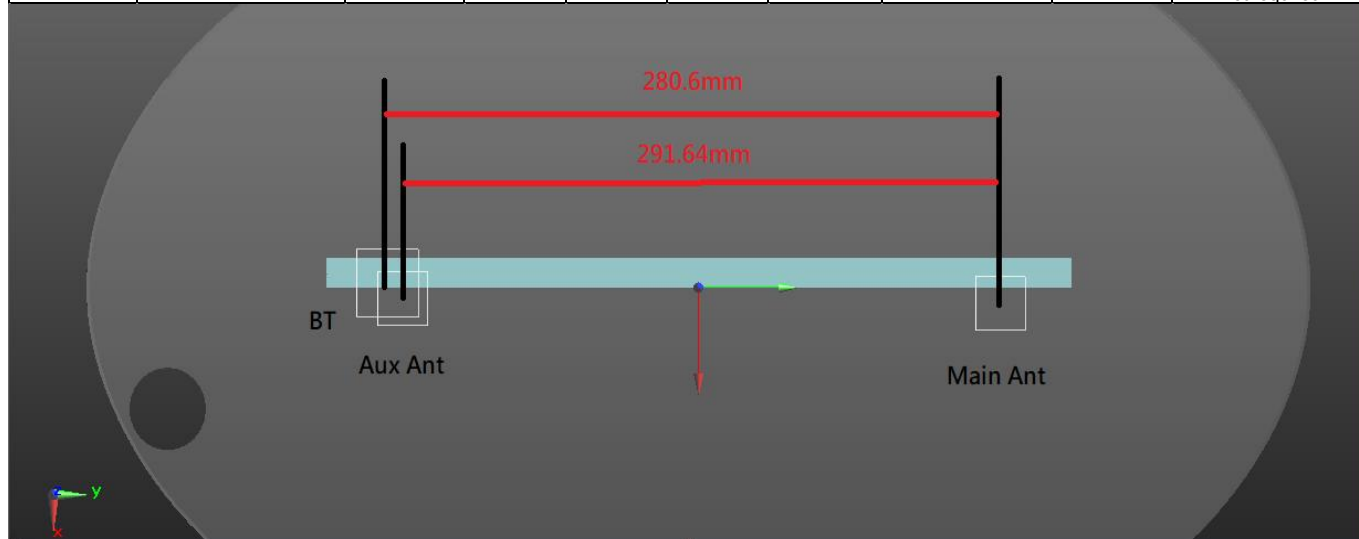
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Scenario 2&5: Co-location_1g_Body_IC									
Position	Conditions	SAR Value (W/kg)	Coordinates (cm)			Σ SAR (W/kg)	Peak Location Separation Distance (mm)	SPLSR	Simultaneous Transmission SAR Test
			x	y	z				
Front Edge of Laptop	WLAN 5G Main	1.183	0.38	14.34	-0.40	-	-	-	-
	WLAN 5G Aux	1.065	0.50	-13.72	-0.39	2.248	280.60	0.012	SPLSR $\leq$ 0.04, Not required
	BT Aux	0.057	-0.12	-14.82	-0.38	1.240	291.64	0.005	SPLSR $\leq$ 0.04, Not required
	WLAN 5G + BT Aux	1.122	0.50	-13.72	-0.39	2.305	280.60	0.012	SPLSR $\leq$ 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	1665	Feb/15/2024	Feb/14/2025
SPEAG	Dosimetric E-Field Probe	EX3DV4	7686	Oct/07/2024	Oct/06/2025
SPEAG	System Validation Dipole	D2450V2	727	Apr/22/2024	Apr/21/2025
SPEAG	System Validation Dipole	D5GHzV2	1349	Mar/19/2024	Mar/18/2025
SPEAG	Dielectric Assessment Kit	DAK-3.5	1342	May/21/2024	May/20/2025
R&S	MXG Analog Signal Generator	SMB100A03	182012	May/21/2024	May/20/2025
Agilent	Dual-directional coupler	772D	MY52180142	Oct/30/2024	Oct/29/2025
Agilent	Dual-directional coupler	778D	MY52180302	Nov/06/2024	Nov/05/2025
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	102191	Feb/27/2024	Feb/26/2025
R&S	Power Sensor	NRP18S	109065	Aug/28/2024	Aug/27/2025
R&S	Power Sensor	NRP18S	101974	Nov/11/2024	Nov/10/2025
Agilent	Network Analyzer	E5071C	MY46107530	May/03/2024	May/02/2025
Keysight	EXA Signal Analyzer	N9010B	MY63440390	Feb/16/2024	Feb/15/2025
Keysight	Economy calibration kit	85032E	MY61410221	May/29/2024	May/28/2025
SPEAG	Software	DASY 52 V52.10.4.152 7	N/A	Calibration not required	Calibration not required
SPEAG	Phantom	ELI	N/A	Calibration not required	Calibration not required
LKM	Digital thermometer	DTM3000	EC14010603	Nov/11/2024	Nov/10/2025
TECPEL	Digital thermometer	DTM-303A	TP131515	May/23/2024	May/22/2025

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10 UNCERTAINTY BUDGET

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

A	c	D	e		f	g	h=c * f / e	i=c * g / e	k
Source of Uncertainty	Tolerance/ Uncertainty	Probability Distributio	Div	Div Value	ci (1g)	ci (10g)	Standard uncertainty	Standard uncertainty	vi, or Veff
Measurement system									
Probe calibration	6.55%	N	1	1	1	1	6.55%	6.55%	∞
<i>Isotropy, Axial</i>	3.50%	R	√3	1.732	1	1	2.02%	2.02%	∞
<i>Isotropy, Hemispherical</i>	9.60%	R	√3	1.732	1	1	5.54%	5.54%	∞
Modulation Response	2.40%	R	√3	1.732	1	1	1.40%	1.40%	∞
Boundary Effect	1.00%	R	√3	1.732	1	1	0.58%	0.58%	∞
Linearity	4.70%	R	√3	1.732	1	1	2.71%	2.71%	∞
Detection Limits	1.00%	R	√3	1.732	1	1	0.58%	0.58%	∞
Readout Electronics	0.30%	N	1	1	1	1	0.30%	0.30%	∞
Response time	0.80%	R	√3	1.732	1	1	0.46%	0.46%	∞
Integration Time	2.60%	R	√3	1.732	1	1	1.50%	1.50%	∞
Measurement drift (class A evaluation)	1.75%	R	√3	1.732	1	1	1.01%	1.01%	∞
RF ambient condition - noise	3.00%	R	√3	1.732	1	1	1.73%	1.73%	∞
RF ambient conditions - reflections	3.00%	R	√3	1.732	1	1	1.73%	1.73%	∞
Probe positioner Mechanical restrictions	0.40%	R	√3	1.732	1	1	0.23%	0.23%	∞
Probe Positioning with respect to phantom shell	2.90%	R	√3	1.732	1	1	1.67%	1.67%	∞
Post-processing	1.00%	R	√3	1.732	1	1	0.58%	0.58%	∞
Max SAR Eval	1.00%	R	√3	1.732	1	1	0.58%	0.58%	∞
Test Sample related									
Test sample positioning	2.90%	N	1	1	1	1	2.90%	2.90%	M-1
Device Holder Uncertainty	3.60%	N	1	1	1	1	3.60%	3.60%	M-1
Drift of output power	5.00%	R	√3	1.732	1	1	2.89%	2.89%	∞
Phantom and Setup									
Phantom Uncertainty	4.00%	R	√3	1.732	1	1	2.31%	2.31%	∞
Liquid permittivity (mea.)	0.39%	N	1	1	0.64	0.43	0.25%	0.17%	M
Liquid Conductivity (mea.)	2.76%	N	1	1	0.6	0.49	1.66%	1.35%	M
Combined standard uncertainty		RSS					11.84%	11.79%	
Expan uncertainty (95% confidence interval), K=2							23.67%	23.57%	

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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 Distribution	Div	Div Value	ci (1g)	ci (10g)	Standard uncertainty	Standard uncertainty	vi, or Veff
Measurement system									
Probe calibration	6.00%	N	1	1	1	1	6.00%	6.00%	∞
<i>Isotropy, Axial</i>	3.50%	R	$\sqrt{3}$	1.732	1	1	2.02%	2.02%	∞
<i>Isotropy, Hemispherical</i>	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%	∞
Measurement drift (class A evaluation)	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	0.40%	R	$\sqrt{3}$	1.732	1	1	0.23%	0.23%	∞
Mechanical restrictions									
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%	∞
Test Sample related									
Test sample positioning	2.90%	N	1	1	1	1	2.90%	2.90%	M-1
Device Holder Uncertainty	3.60%	N	1	1	1	1	3.60%	3.60%	M-1
Drift of output power	5.00%	R	$\sqrt{3}$	1.732	1	1	2.89%	2.89%	∞
Phantom and Setup									
Phantom Uncertainty	4.00%	R	$\sqrt{3}$	1.732	1	1	2.31%	2.31%	∞
Liquid permittivity (mea.)	0.40%	N	1	1	0.64	0.43	0.26%	0.17%	M
Liquid Conductivity (mea.)	3.00%	N	1	1	0.6	0.49	1.80%	1.47%	M
Combined standard uncertainty		RSS					11.56%	11.50%	
Expart uncertainty (95% confidence interval), K=2							23.12%	23.01%	

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11 SAR MEASUREMENT RESULTS

Date: 2025/1/14

ID: 001

Report No.: TESA2501000002ES

WLAN 802.11b_Body_Bottom of Laptop_CH 11_0mm_Main

Communication System: WLAN; Frequency: 2462 MHz; Duty cycle= 1:1

Medium parameters used: $f = 2462 \text{ MHz}$; $\sigma = 1.852 \text{ S/m}$; $\epsilon_r = 39.027$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Ambient temperature: 22.5°C; Liquid temperature: 22.3°C

DASY5 Configuration:

- Probe: EX3DV4 - SN7686; ConvF(7.73, 7.08, 7.39) @ 2462 MHz; Calibrated: 2024/10/7
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1665; Calibrated: 2024/2/15
- Phantom: ELI
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (81x101x1): Interpolated grid: $dx=12 \text{ mm}$, $dy=12 \text{ mm}$

Maximum value of SAR (interpolated) = 0.462 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 14.39 V/m; Power Drift = -0.14 dB

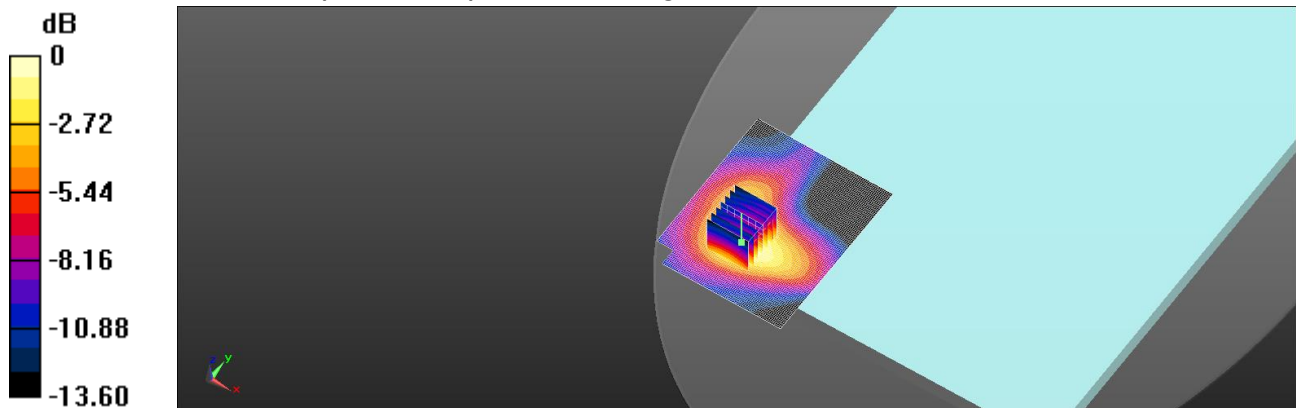
Peak SAR (extrapolated) = 0.517 W/kg

SAR(1 g) = 0.359 W/kg; SAR(10 g) = 0.220 W/kg

Smallest distance from peaks to all points 3 dB below = 15 mm

Ratio of SAR at M2 to SAR at M1 = 68.8%

Maximum value of SAR (measured) = 0.456 W/kg



0 dB = 0.456 W/kg = -3.41 dBW/kg

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Date: 2025/1/15

ID: 002

Report No. :TESA2501000002ES

WLAN 802.11ac(80M) 5.2G_Body_Bottom of Laptop_CH 42_0mm_Main

Communication System: WLAN; Frequency: 5210 MHz; Duty cycle= 1:1

Medium parameters used: $f = 5210 \text{ MHz}$; $\sigma = 4.762 \text{ S/m}$; $\epsilon_r = 35.871$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Ambient temperature: 22.4°C; Liquid temperature: 22.1°C

DASY5 Configuration:

- Probe: EX3DV4 - SN7686; ConvF(6.25, 5.72, 5.98) @ 5210 MHz; Calibrated: 2024/10/7
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1665; Calibrated: 2024/2/15
- Phantom: ELI
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (91x121x1): Interpolated grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 0.233 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 7.152 V/m; Power Drift = -0.06 dB

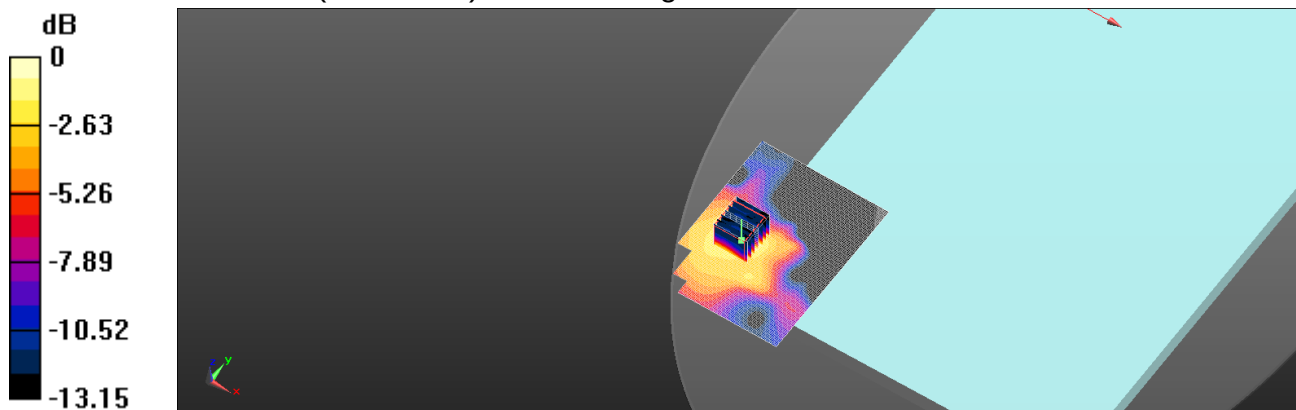
Peak SAR (extrapolated) = 0.330 W/kg

SAR(1 g) = 0.073 W/kg; SAR(10 g) = 0.055 W/kg

Smallest distance from peaks to all points 3 dB below = 12.9 mm

Ratio of SAR at M2 to SAR at M1 = 64.4%

Maximum value of SAR (measured) = 0.234 W/kg



0 dB = 0.234 W/kg = -6.31 dBW/kg

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Date: 2025/1/15

ID: 003

Report No. :TESA2501000002ES

WLAN 802.11ac(80M) 5.3G_Body_Bottom of Laptop_CH 58_0mm_Main

Communication System: WLAN; Frequency: 5290 MHz; Duty cycle= 1:1

Medium parameters used: $f = 5290 \text{ MHz}$; $\sigma = 4.856 \text{ S/m}$; $\epsilon_r = 35.787$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Ambient temperature: 22.4°C; Liquid temperature: 22.1°C

DASY5 Configuration:

- Probe: EX3DV4 - SN7686; ConvF(6.25, 5.72, 5.98) @ 5290 MHz; Calibrated: 2024/10/7
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1665; Calibrated: 2024/2/15
- Phantom: ELI
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (91x121x1): Interpolated grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 0.221 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 6.886 V/m; Power Drift = -0.15 dB

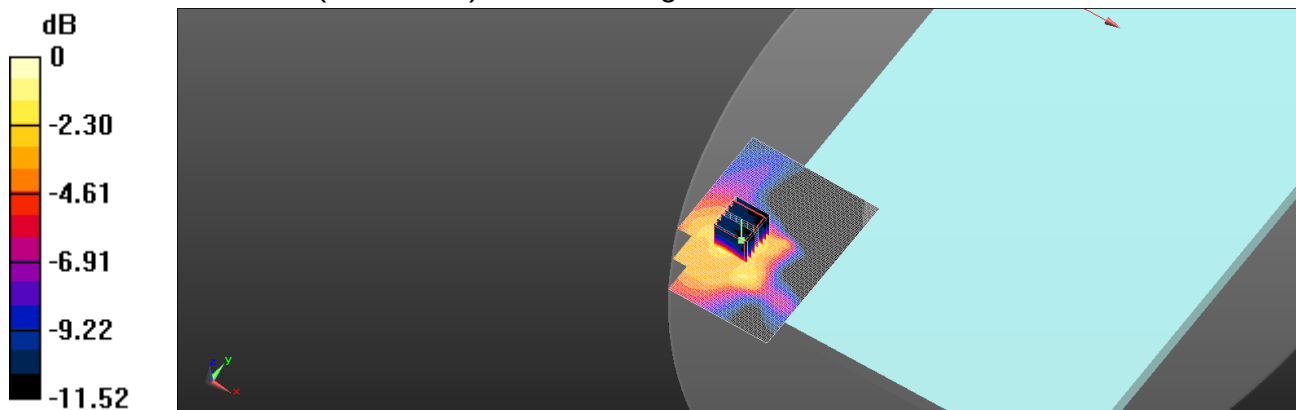
Peak SAR (extrapolated) = 0.329 W/kg

SAR(1 g) = 0.077 W/kg; SAR(10 g) = 0.048 W/kg

Smallest distance from peaks to all points 3 dB below = 10.7 mm

Ratio of SAR at M2 to SAR at M1 = 64.2%

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



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

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Date: 2025/1/15

ID: 004

Report No. :TESA2501000002ES

WLAN 802.11ac(80M) 5.6G_Body_Bottom of Laptop_CH 138_0mm_Main

Communication System: WLAN; Frequency: 5690 MHz; Duty cycle= 1:1

Medium parameters used: $f = 5690 \text{ MHz}$; $\sigma = 5.293 \text{ S/m}$; $\epsilon_r = 35.375$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Ambient temperature: 22.4°C; Liquid temperature: 22.1°C

DASY5 Configuration:

- Probe: EX3DV4 - SN7686; ConvF(5.81, 5.32, 5.56) @ 5690 MHz; Calibrated: 2024/10/7
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1665; Calibrated: 2024/2/15
- Phantom: ELI
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (91x121x1): Interpolated grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 0.304 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 7.966 V/m; Power Drift = -0.11 dB

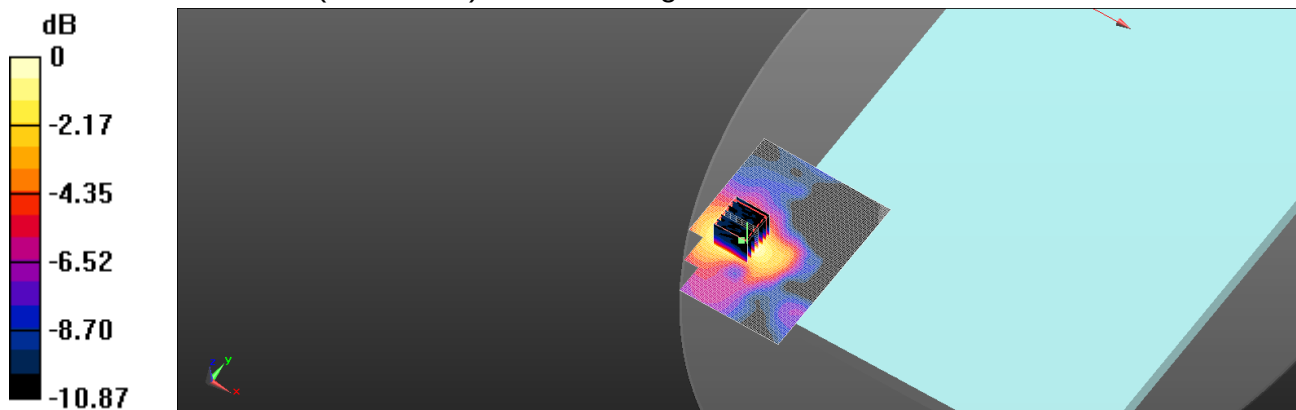
Peak SAR (extrapolated) = 0.458 W/kg

SAR(1 g) = 0.161 W/kg; SAR(10 g) = 0.083 W/kg

Smallest distance from peaks to all points 3 dB below = 11.8 mm

Ratio of SAR at M2 to SAR at M1 = 61.4%

Maximum value of SAR (measured) = 0.303 W/kg



0 dB = 0.303 W/kg = -5.19 dBW/kg

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Date: 2025/1/15

ID: 005

Report No. :TESA2501000002ES

WLAN 802.11ac(80M) 5.8G_Body_Bottom of Laptop_CH 155_0mm_Main

Communication System: WLAN; Frequency: 5775 MHz; Duty cycle= 1:1

Medium parameters used: $f = 5775 \text{ MHz}$; $\sigma = 5.38 \text{ S/m}$; $\epsilon_r = 35.258$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Ambient temperature: 22.4°C; Liquid temperature: 22.1°C

DASY5 Configuration:

- Probe: EX3DV4 - SN7686; ConvF(5.81, 5.32, 5.56) @ 5775 MHz; Calibrated: 2024/10/7
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1665; Calibrated: 2024/2/15
- Phantom: ELI
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (91x121x1): Interpolated grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 0.218 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 6.765 V/m; Power Drift = -0.08 dB

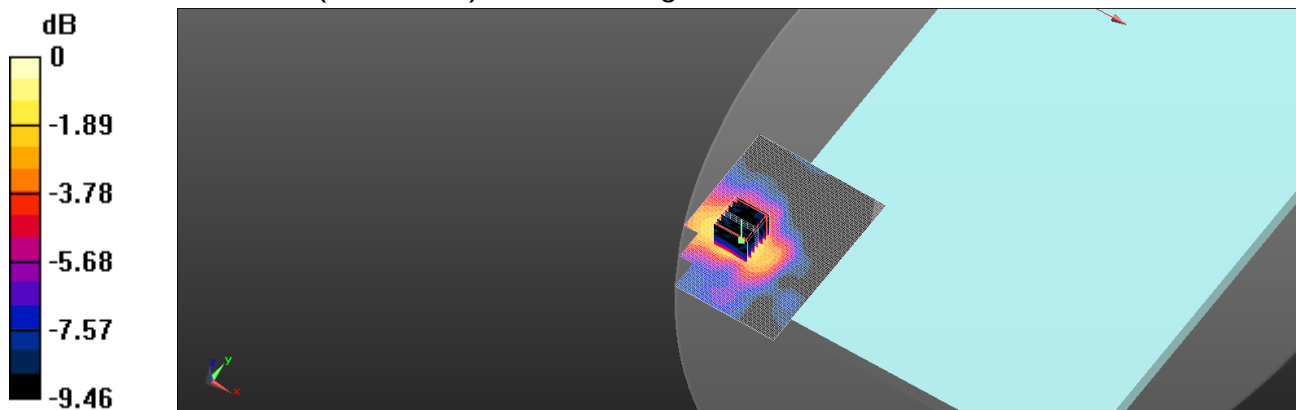
Peak SAR (extrapolated) = 0.341 W/kg

SAR(1 g) = 0.121 W/kg; SAR(10 g) = 0.065 W/kg

Smallest distance from peaks to all points 3 dB below = 12 mm

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

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



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

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Date: 2025/1/15

ID: 006

Report No. :TESA2501000002ES

WLAN 802.11ac(80M) 5.9G_Body_Bottom of Laptop_CH 171_0mm_Main

Communication System: WLAN; Frequency: 5855 MHz; Duty cycle= 1:1

Medium parameters used: $f = 5855 \text{ MHz}$; $\sigma = 5.475 \text{ S/m}$; $\epsilon_r = 35.114$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Ambient temperature: 22.4°C; Liquid temperature: 22.1°C

DASY5 Configuration:

- Probe: EX3DV4 - SN7686; ConvF(5.76, 5.28, 5.51) @ 5855 MHz; Calibrated: 2024/10/7
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1665; Calibrated: 2024/2/15
- Phantom: ELI
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (91x121x1): Interpolated grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 0.254 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 7.212 V/m; Power Drift = -0.08 dB

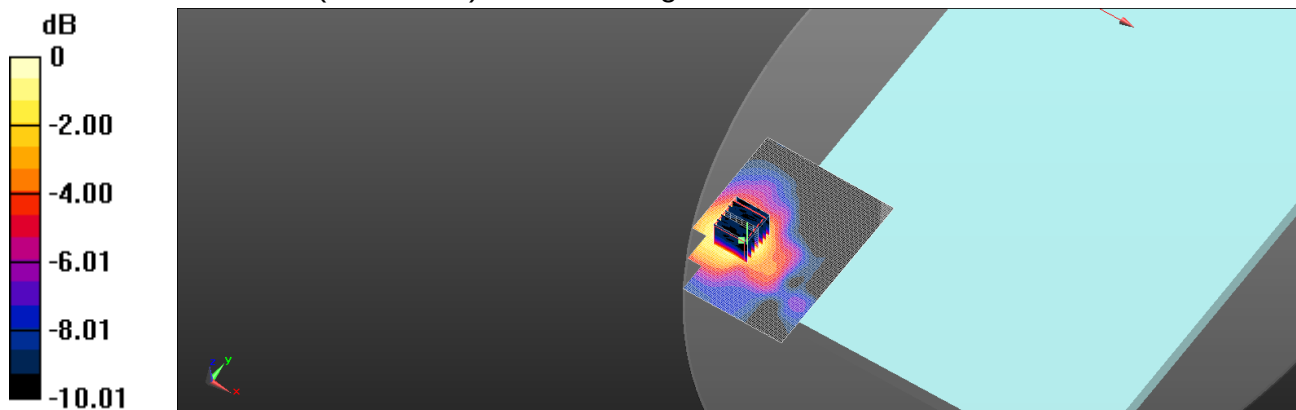
Peak SAR (extrapolated) = 0.395 W/kg

SAR(1 g) = 0.136 W/kg; SAR(10 g) = 0.074 W/kg

Smallest distance from peaks to all points 3 dB below = 13.6 mm

Ratio of SAR at M2 to SAR at M1 = 61.3%

Maximum value of SAR (measured) = 0.250 W/kg



0 dB = 0.250 W/kg = -6.02 dBW/kg

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Date: 2025/1/14

ID: 007

Report No. :TESA2501000002ES

WLAN 802.11b_Body_Bottom of Laptop_CH 1_0mm_Aux

Communication System: WLAN; Frequency: 2412 MHz; Duty cycle= 1:1

Medium parameters used: $f = 2412$ MHz; $\sigma = 1.82$ S/m; $\epsilon_r = 39.253$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Ambient temperature: 22.5°C; Liquid temperature: 22.3°C

DASY5 Configuration:

- Probe: EX3DV4 - SN7686; ConvF(7.73, 7.08, 7.39) @ 2412 MHz; Calibrated: 2024/10/7
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1665; Calibrated: 2024/2/15
- Phantom: ELI
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (81x101x1): Interpolated grid: dx=12 mm, dy=12 mm

Maximum value of SAR (interpolated) = 0.372 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 12.63 V/m; Power Drift = -0.05 dB

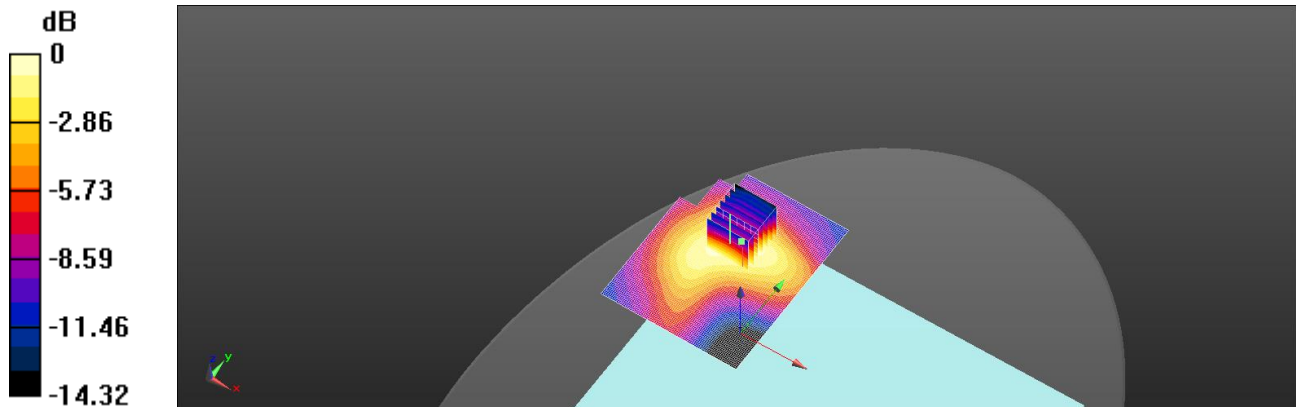
Peak SAR (extrapolated) = 0.425 W/kg

SAR(1 g) = 0.295 W/kg; SAR(10 g) = 0.184 W/kg

Smallest distance from peaks to all points 3 dB below = 17 mm

Ratio of SAR at M2 to SAR at M1 = 67.3%

Maximum value of SAR (measured) = 0.366 W/kg



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

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Date: 2025/1/14

ID: 008

Report No. :TESA2501000002ES

Bluetooth(GFSK)_Body_Bottom of Laptop_CH 1_0mm_Aux

Communication System: Bluetooth; Frequency: 2402 MHz; Duty cycle= 1:1

Medium parameters used: $f = 2402$ MHz; $\sigma = 1.757$ S/m; $\epsilon_r = 39.266$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Ambient temperature: 22.5°C; Liquid temperature: 22.3°C

DASY5 Configuration:

- Probe: EX3DV4 - SN7686; ConvF(7.73, 7.08, 7.39) @ 2402 MHz; Calibrated: 2024/10/7
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1665; Calibrated: 2024/2/15
- Phantom: ELI
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (81x101x1): Interpolated grid: dx=12 mm, dy=12 mm

Maximum value of SAR (interpolated) = 0.0243 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 3.267 V/m; Power Drift = 0.12 dB

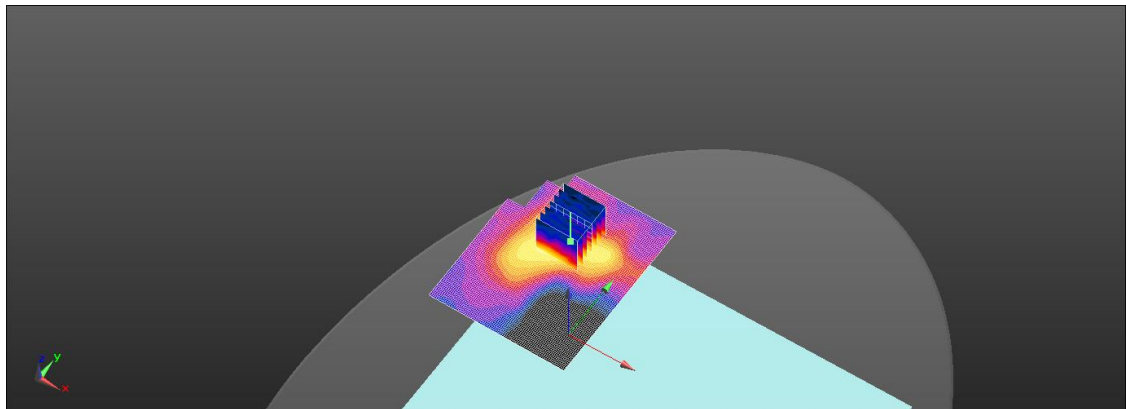
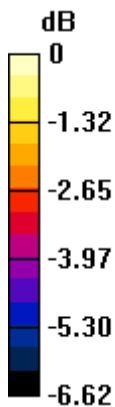
Peak SAR (extrapolated) = 0.0270 W/kg

SAR(1 g) = 0.020 W/kg; SAR(10 g) = 0.015 W/kg

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

Ratio of SAR at M2 to SAR at M1 = 74.4%

Maximum value of SAR (measured) = 0.0246 W/kg



0 dB = 0.0246 W/kg = -16.09 dBW/kg

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Date: 2025/1/15

ID: 009

Report No. :TESA2501000002ES

WLAN 802.11ac(80M) 5.2G_Body_Bottom of Laptop_CH 42_0mm_Aux

Communication System: WLAN; Frequency: 5210 MHz; Duty cycle= 1:1

Medium parameters used: $f = 5210 \text{ MHz}$; $\sigma = 4.762 \text{ S/m}$; $\epsilon_r = 35.871$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Ambient temperature: 22.4°C; Liquid temperature: 22.1°C

DASY5 Configuration:

- Probe: EX3DV4 - SN7686; ConvF(6.25, 5.72, 5.98) @ 5210 MHz; Calibrated: 2024/10/7
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1665; Calibrated: 2024/2/15
- Phantom: ELI
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (91x121x1): Interpolated grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 0.226 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 6.258 V/m; Power Drift = 0.11 dB

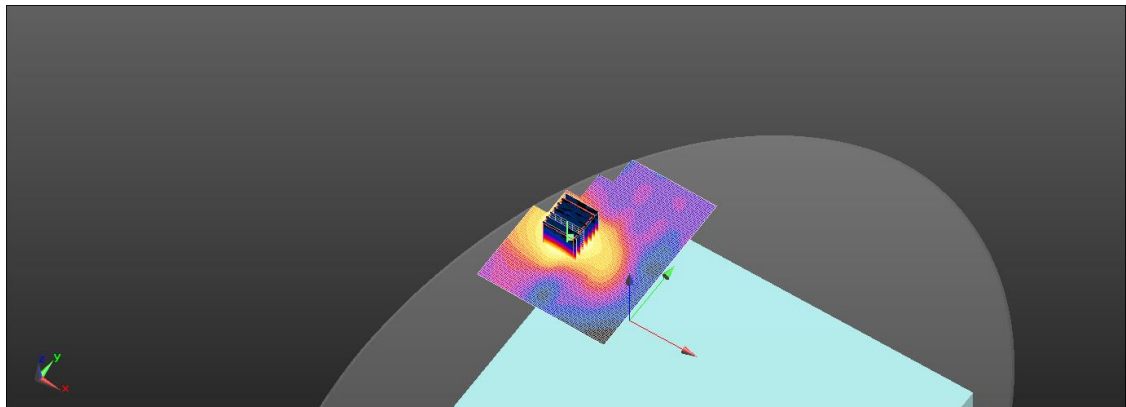
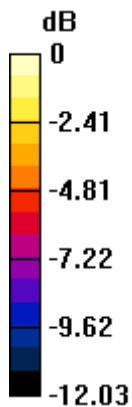
Peak SAR (extrapolated) = 0.351 W/kg

SAR(1 g) = 0.071 W/kg; SAR(10 g) = 0.042 W/kg

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

Ratio of SAR at M2 to SAR at M1 = 67.1%

Maximum value of SAR (measured) = 0.228 W/kg



0 dB = 0.228 W/kg = -6.42 dBW/kg

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Date: 2025/1/15

ID: 010

Report No. :TESA2501000002ES

WLAN 802.11ac(80M) 5.3G_Body_Bottom of Laptop_CH 58_0mm_Aux

Communication System: WLAN; Frequency: 5290 MHz; Duty cycle= 1:1

Medium parameters used: $f = 5290 \text{ MHz}$; $\sigma = 4.856 \text{ S/m}$; $\epsilon_r = 35.787$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Ambient temperature: 22.4°C; Liquid temperature: 22.1°C

DASY5 Configuration:

- Probe: EX3DV4 - SN7686; ConvF(6.25, 5.72, 5.98) @ 5290 MHz; Calibrated: 2024/10/7
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1665; Calibrated: 2024/2/15
- Phantom: ELI
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (91x121x1): Interpolated grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 0.252 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 6.483 V/m; Power Drift = 0.12 dB

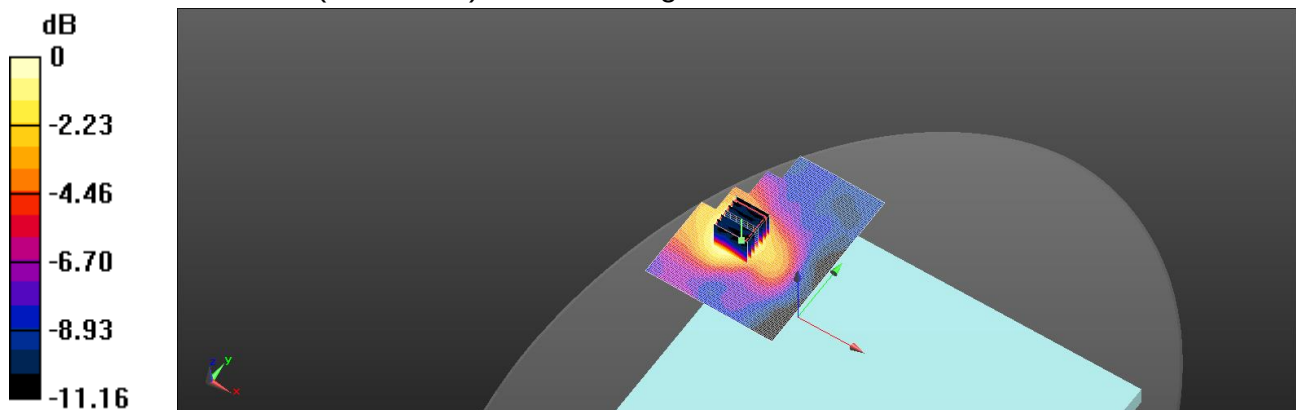
Peak SAR (extrapolated) = 0.386 W/kg

SAR(1 g) = 0.079 W/kg; SAR(10 g) = 0.051 W/kg

Smallest distance from peaks to all points 3 dB below = 16.4 mm

Ratio of SAR at M2 to SAR at M1 = 67.4%

Maximum value of SAR (measured) = 0.248 W/kg



0 dB = 0.248 W/kg = -6.06 dBW/kg

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Date: 2025/1/15

ID: 011

Report No. :TESA2501000002ES

WLAN 802.11ac(80M) 5.6G_Body_Bottom of Laptop_CH 138_0mm_Aux

Communication System: WLAN; Frequency: 5690 MHz; Duty cycle= 1:1

Medium parameters used: $f = 5690 \text{ MHz}$; $\sigma = 5.293 \text{ S/m}$; $\epsilon_r = 35.375$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Ambient temperature: 22.4°C; Liquid temperature: 22.1°C

DASY5 Configuration:

- Probe: EX3DV4 - SN7686; ConvF(5.81, 5.32, 5.56) @ 5690 MHz; Calibrated: 2024/10/7
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1665; Calibrated: 2024/2/15
- Phantom: ELI
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (91x121x1): Interpolated grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 0.152 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 5.308 V/m; Power Drift = 0.15 dB

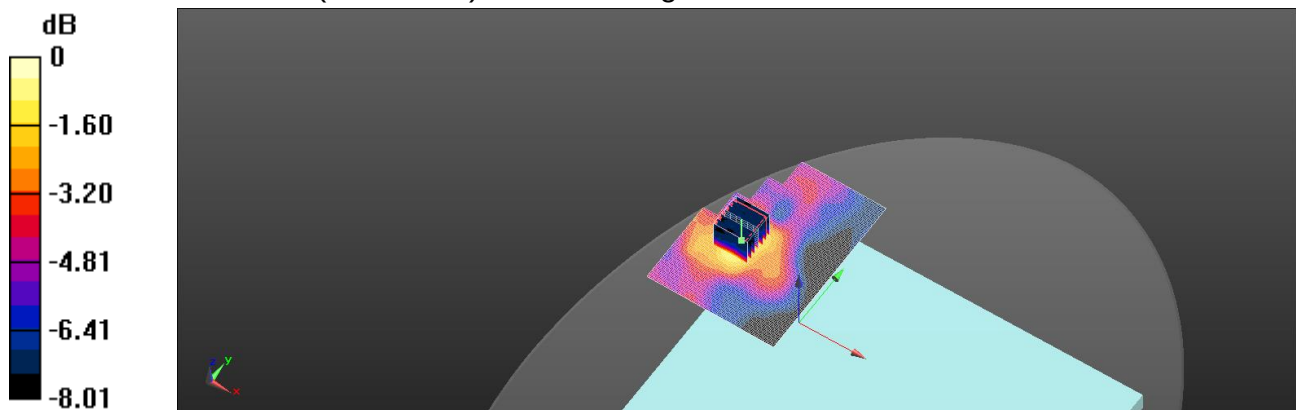
Peak SAR (extrapolated) = 0.252 W/kg

SAR(1 g) = 0.095 W/kg; SAR(10 g) = 0.058 W/kg

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

Ratio of SAR at M2 to SAR at M1 = 67.1%

Maximum value of SAR (measured) = 0.154 W/kg



0 dB = 0.154 W/kg = -8.12 dBW/kg

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Date: 2025/1/15

ID: 012

Report No. :TESA2501000002ES

WLAN 802.11ac(80M) 5.8G_Body_Bottom of Laptop_CH 155_0mm_Aux

Communication System: WLAN; Frequency: 5775 MHz; Duty cycle= 1:1

Medium parameters used: $f = 5775 \text{ MHz}$; $\sigma = 5.38 \text{ S/m}$; $\epsilon_r = 35.258$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Ambient temperature: 22.4°C; Liquid temperature: 22.1°C

DASY5 Configuration:

- Probe: EX3DV4 - SN7686; ConvF(5.81, 5.32, 5.56) @ 5775 MHz; Calibrated: 2024/10/7
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1665; Calibrated: 2024/2/15
- Phantom: ELI
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (91x121x1): Interpolated grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 0.141 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 5.410 V/m; Power Drift = 0.14 dB

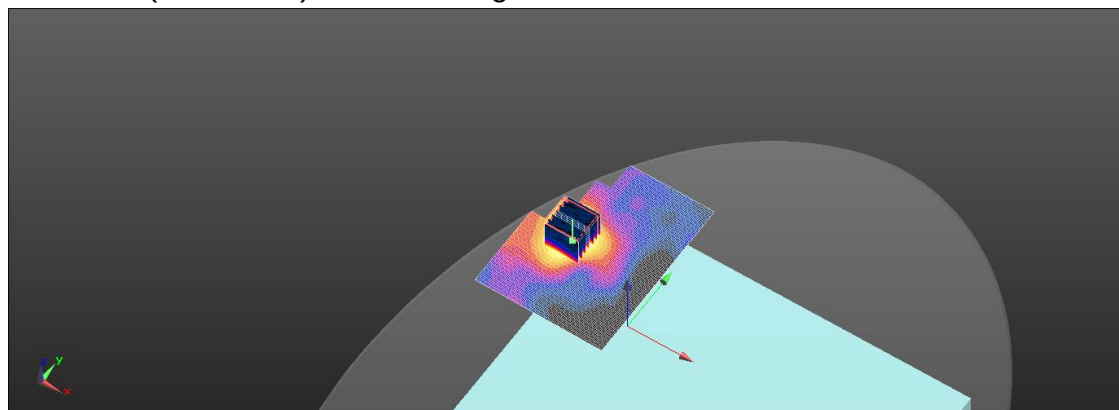
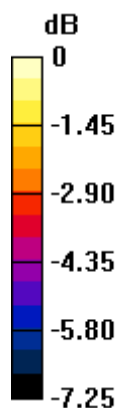
Peak SAR (extrapolated) = 0.227 W/kg

SAR(1 g) = 0.093 W/kg; SAR(10 g) = 0.058 W/kg

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

Ratio of SAR at M2 to SAR at M1 = 69%

Maximum value of SAR (measured) = 0.138 W/kg



0 dB = 0.138 W/kg = -8.60 dBW/kg

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Date: 2025/1/15

ID: 013

Report No. :TESA2501000002ES

WLAN 802.11ac(80M) 5.9G_Body_Bottom of Laptop_CH 171_0mm_Aux

Communication System: WLAN; Frequency: 5855 MHz; Duty cycle= 1:1

Medium parameters used: $f = 5855 \text{ MHz}$; $\sigma = 5.475 \text{ S/m}$; $\epsilon_r = 35.114$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Ambient temperature: 22.4°C; Liquid temperature: 22.1°C

DASY5 Configuration:

- Probe: EX3DV4 - SN7686; ConvF(5.76, 5.28, 5.51) @ 5855 MHz; Calibrated: 2024/10/7
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1665; Calibrated: 2024/2/15
- Phantom: ELI
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (91x121x1): Interpolated grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 0.112 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 4.806 V/m; Power Drift = 0.17 dB

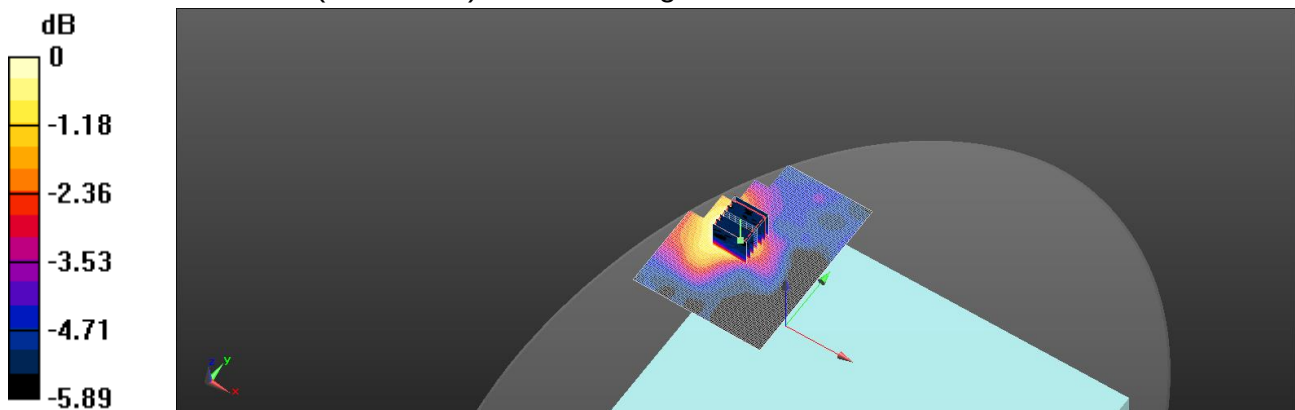
Peak SAR (extrapolated) = 0.183 W/kg

SAR(1 g) = 0.075 W/kg; SAR(10 g) = 0.050 W/kg

Smallest distance from peaks to all points 3 dB below = 15.4 mm

Ratio of SAR at M2 to SAR at M1 = 70.7%

Maximum value of SAR (measured) = 0.109 W/kg



0 dB = 0.109 W/kg = -9.63 dBW/kg

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Date: 2025/1/14

ID: 014

Report No. :TESA2501000002ES

WLAN 802.11b_Body_Front Edge of Laptop_CH 11_0mm_Main

Communication System: WLAN; Frequency: 2462 MHz; Duty cycle= 1:1

Medium parameters used: $f = 2462 \text{ MHz}$; $\sigma = 1.852 \text{ S/m}$; $\epsilon_r = 39.027$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Ambient temperature: 22.5°C; Liquid temperature: 22.3°C

DASY5 Configuration:

- Probe: EX3DV4 - SN7686; ConvF(7.73, 7.08, 7.39) @ 2462 MHz; Calibrated: 2024/10/7
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1665; Calibrated: 2024/2/15
- Phantom: ELI
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (71x111x1): Interpolated grid: dx=12 mm, dy=12 mm

Maximum value of SAR (interpolated) = 1.77 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 15.01 V/m; Power Drift = 0.02 dB

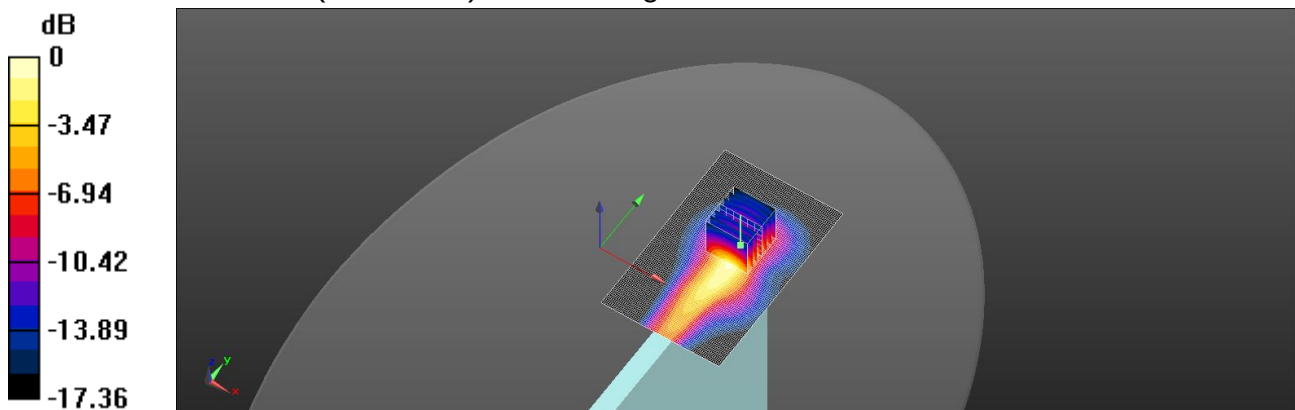
Peak SAR (extrapolated) = 2.12 W/kg

SAR(1 g) = 1.15 W/kg; SAR(10 g) = 0.573 W/kg

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

Ratio of SAR at M2 to SAR at M1 = 54.8%

Maximum value of SAR (measured) = 1.66 W/kg



0 dB = 1.66 W/kg = 2.20 dBW/kg

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Date: 2025/1/15

ID: 015

Report No. :TESA2501000002ES

WLAN 802.11ac(80M) 5.2G_Body_Front Edge of Laptop_CH 42_0mm_Main

Communication System: WLAN; Frequency: 5210 MHz; Duty cycle= 1:1

Medium parameters used: $f = 5210 \text{ MHz}$; $\sigma = 4.762 \text{ S/m}$; $\epsilon_r = 35.871$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Ambient temperature: 22.4°C; Liquid temperature: 22.1°C

DASY5 Configuration:

- Probe: EX3DV4 - SN7686; ConvF(6.25, 5.72, 5.98) @ 5210 MHz; Calibrated: 2024/10/7
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1665; Calibrated: 2024/2/15
- Phantom: ELI
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (81x121x1): Interpolated grid: dx=10 mm, dy=10 mm

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

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 11.48 V/m; Power Drift = -0.10 dB

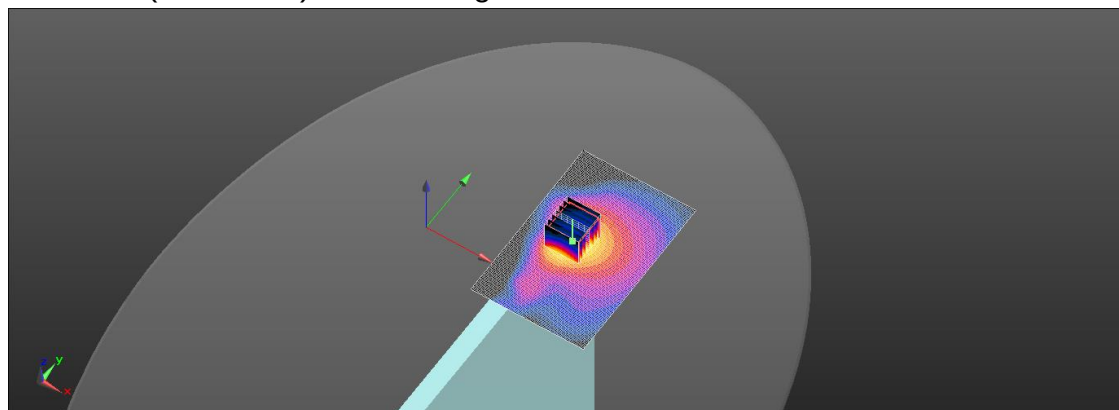
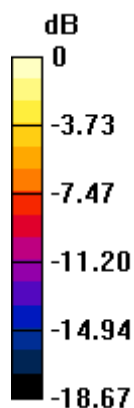
Peak SAR (extrapolated) = 2.69 W/kg

SAR(1 g) = 0.893 W/kg; SAR(10 g) = 0.333 W/kg

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

Ratio of SAR at M2 to SAR at M1 = 65.8%

Maximum value of SAR (measured) = 1.61 W/kg



0 dB = 1.61 W/kg = 2.07 dBW/kg

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Date: 2025/1/15

ID: 016

Report No. :TESA2501000002ES

WLAN 802.11ac(80M) 5.3G_Body_Front Edge of Laptop_CH 58_0mm_Main

Communication System: WLAN; Frequency: 5290 MHz; Duty cycle= 1:1

Medium parameters used: $f = 5290 \text{ MHz}$; $\sigma = 4.856 \text{ S/m}$; $\epsilon_r = 35.787$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Ambient temperature: 22.4°C; Liquid temperature: 22.1°C

DASY5 Configuration:

- Probe: EX3DV4 - SN7686; ConvF(6.25, 5.72, 5.98) @ 5290 MHz; Calibrated: 2024/10/7
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1665; Calibrated: 2024/2/15
- Phantom: ELI
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (81x121x1): Interpolated grid: dx=10 mm, dy=10 mm

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

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 11.38 V/m; Power Drift = -0.16 dB

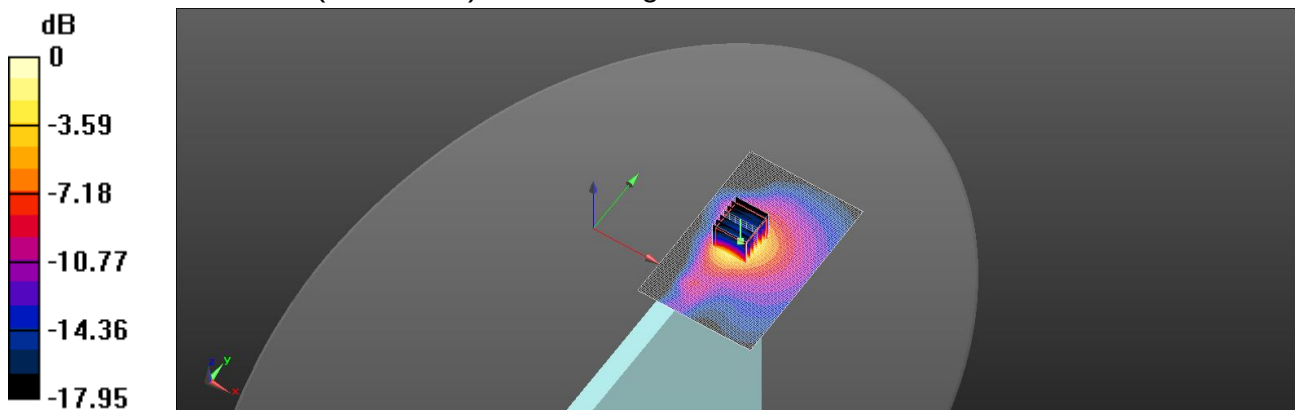
Peak SAR (extrapolated) = 2.63 W/kg

SAR(1 g) = 0.898 W/kg; SAR(10 g) = 0.342 W/kg

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

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

Maximum value of SAR (measured) = 1.59 W/kg



0 dB = 1.59 W/kg = 2.01 dBW/kg

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Date: 2025/1/15

ID: 017

Report No. :TESA2501000002ES

WLAN 802.11ac(80M) 5.6G_Body_Front Edge of Laptop_CH 138_0mm_Main

Communication System: WLAN; Frequency: 5690 MHz; Duty cycle= 1:1

Medium parameters used: $f = 5690 \text{ MHz}$; $\sigma = 5.293 \text{ S/m}$; $\epsilon_r = 35.375$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Ambient temperature: 22.4°C; Liquid temperature: 22.1°C

DASY5 Configuration:

- Probe: EX3DV4 - SN7686; ConvF(5.81, 5.32, 5.56) @ 5690 MHz; Calibrated: 2024/10/7
- Sensor-Surface: 1.4mm (Mechanical Surface Detection), Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1665; Calibrated: 2024/2/15
- Phantom: ELI
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (71x71x1): Interpolated grid: $dx=10 \text{ mm}$, $dy=10 \text{ mm}$

Maximum value of SAR (interpolated) = 2.11 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: $dx=4\text{mm}$, $dy=4\text{mm}$, $dz=2\text{mm}$

Reference Value = 14.64 V/m; Power Drift = -0.10 dB

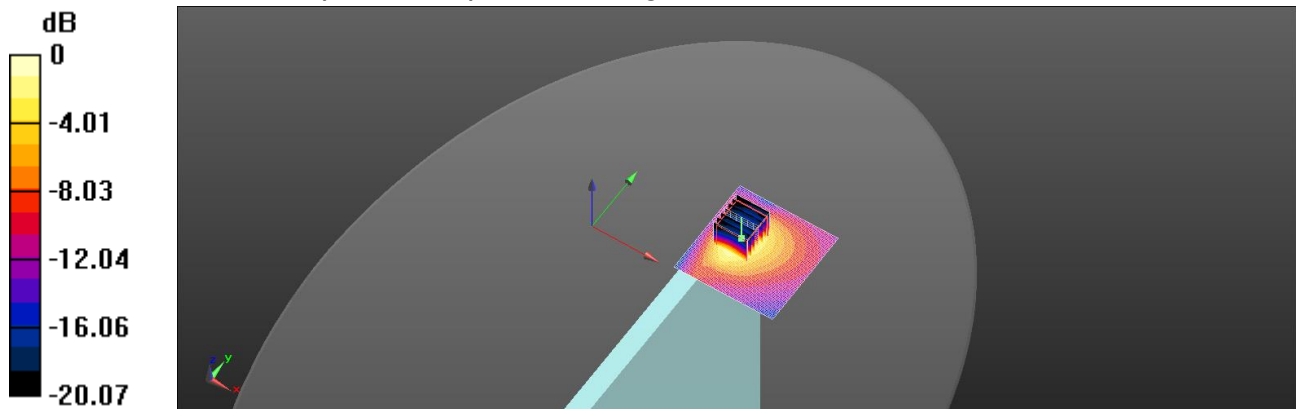
Peak SAR (extrapolated) = 3.62 W/kg

SAR(1 g) = 1.15 W/kg; SAR(10 g) = 0.474 W/kg

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

Ratio of SAR at M2 to SAR at M1 = 60.1%

Maximum value of SAR (measured) = 2.34 W/kg



0 dB = 2.34 W/kg = 3.69 dBW/kg

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Date: 2025/1/15

ID: 018

Report No. :TESA2501000002ES

WLAN 802.11ac(80M) 5.8G_Body_Front Edge of Laptop_CH 155_0mm_Main

Communication System: WLAN; Frequency: 5775 MHz; Duty cycle= 1:1

Medium parameters used: $f = 5775 \text{ MHz}$; $\sigma = 5.38 \text{ S/m}$; $\epsilon_r = 35.258$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Ambient temperature: 22.4°C; Liquid temperature: 22.1°C

DASY5 Configuration:

- Probe: EX3DV4 - SN7686; ConvF(5.81, 5.32, 5.56) @ 5775 MHz; Calibrated: 2024/10/7
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1665; Calibrated: 2024/2/15
- Phantom: ELI
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (81x121x1): Interpolated grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 2.05 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 15.13 V/m; Power Drift = -0.10 dB

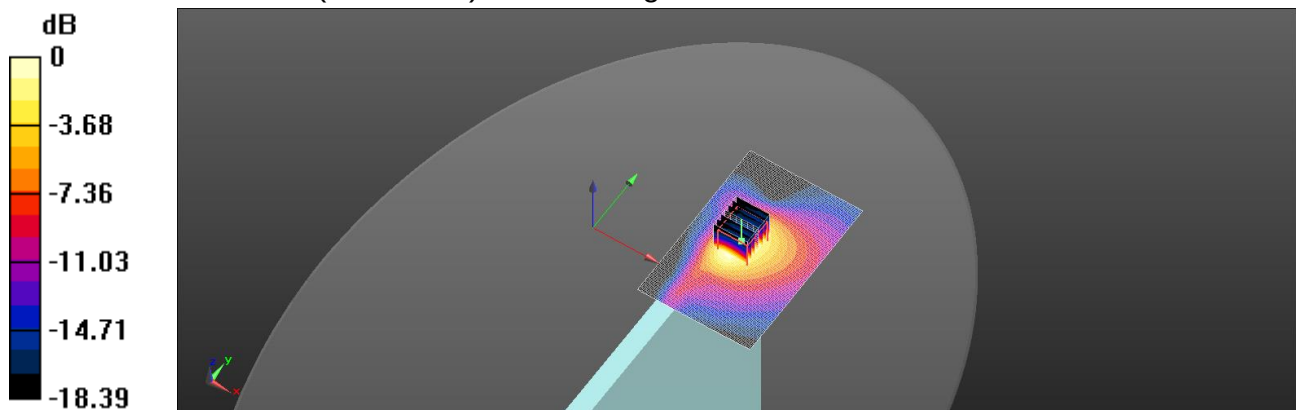
Peak SAR (extrapolated) = 3.43 W/kg

SAR(1 g) = 1.16 W/kg; SAR(10 g) = 0.494 W/kg

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

Ratio of SAR at M2 to SAR at M1 = 61.7%

Maximum value of SAR (measured) = 1.96 W/kg



0 dB = 1.96 W/kg = 2.92 dBW/kg

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Date: 2025/1/15

ID: 019

Report No. :TESA2501000002ES

WLAN 802.11ac(80M) 5.9G_Body_Front Edge of Laptop_CH 171_0mm_Main

Communication System: WLAN; Frequency: 5855 MHz; Duty cycle= 1:1

Medium parameters used: $f = 5855 \text{ MHz}$; $\sigma = 5.475 \text{ S/m}$; $\epsilon_r = 35.114$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Ambient temperature: 22.4°C; Liquid temperature: 22.1°C

DASY5 Configuration:

- Probe: EX3DV4 - SN7686; ConvF(5.76, 5.28, 5.51) @ 5855 MHz; Calibrated: 2024/10/7
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1665; Calibrated: 2024/2/15
- Phantom: ELI
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (81x121x1): Interpolated grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 2.06 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 15.29 V/m; Power Drift = -0.08 dB

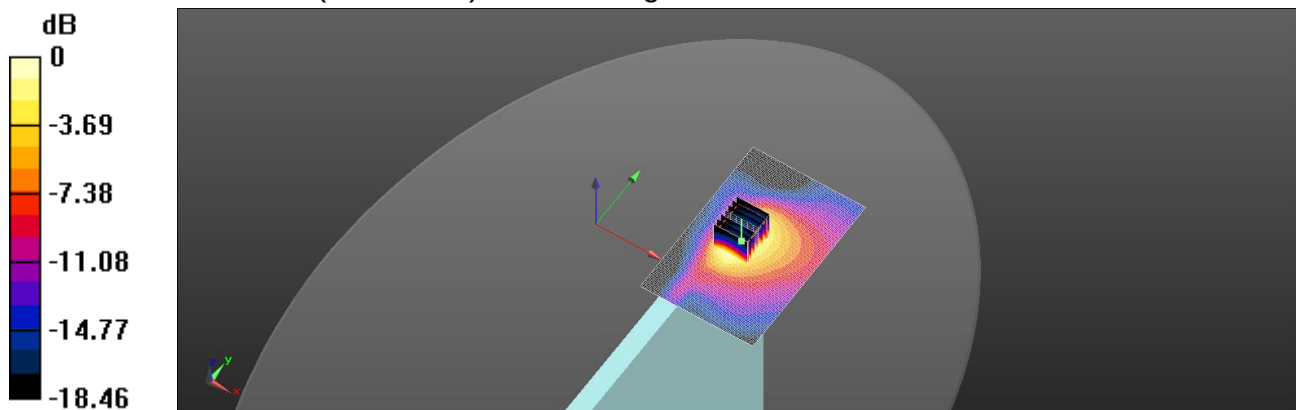
Peak SAR (extrapolated) = 3.52 W/kg

SAR(1 g) = 1.18 W/kg; SAR(10 g) = 0.506 W/kg

Smallest distance from peaks to all points 3 dB below = 7.9 mm

Ratio of SAR at M2 to SAR at M1 = 60.9%

Maximum value of SAR (measured) = 1.92 W/kg



0 dB = 1.92 W/kg = 2.83 dBW/kg

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Date: 2025/1/14

ID: 020

Report No. :TESA2501000002ES

WLAN 802.11b_Body_Front Edge of Laptop_CH 1_0mm_Aux

Communication System: WLAN; Frequency: 2412 MHz; Duty cycle= 1:1

Medium parameters used: $f = 2412$ MHz; $\sigma = 1.82$ S/m; $\epsilon_r = 39.253$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Ambient temperature: 22.5°C; Liquid temperature: 22.3°C

DASY5 Configuration:

- Probe: EX3DV4 - SN7686; ConvF(7.73, 7.08, 7.39) @ 2412 MHz; Calibrated: 2024/10/7
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1665; Calibrated: 2024/2/15
- Phantom: ELI
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (61x111x1): Interpolated grid: dx=12 mm, dy=12 mm

Maximum value of SAR (interpolated) = 1.55 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 19.35 V/m; Power Drift = -0.12 dB

Peak SAR (extrapolated) = 1.83 W/kg

SAR(1 g) = 1.04 W/kg; SAR(10 g) = 0.531 W/kg

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

Ratio of SAR at M2 to SAR at M1 = 58.2%

Maximum value of SAR (measured) = 1.49 W/kg

Zoom Scan (7x7x7)/Cube 1: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 19.35 V/m; Power Drift = -0.12 dB

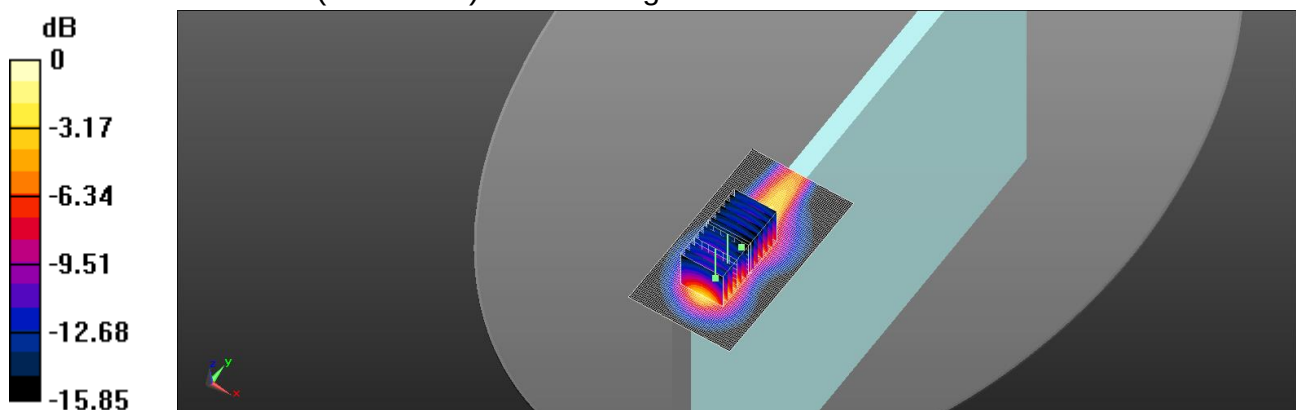
Peak SAR (extrapolated) = 1.55 W/kg

SAR(1 g) = 0.832 W/kg; SAR(10 g) = 0.429 W/kg

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

Ratio of SAR at M2 to SAR at M1 = 55.4%

Maximum value of SAR (measured) = 1.22 W/kg



0 dB = 1.49 W/kg = 1.73 dBW/kg

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Date: 2025/1/14

ID: 021

Report No. :TESA2501000002ES

Bluetooth(GFSK)_Body_Front Edge of Laptop_CH 0_0mm_Aux

Communication System: Bluetooth; Frequency: 2402 MHz; Duty cycle= 1:1

Medium parameters used: $f = 2402 \text{ MHz}$; $\sigma = 1.757 \text{ S/m}$; $\epsilon_r = 39.266$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Ambient temperature: 22.5°C; Liquid temperature: 22.3°C

DASY5 Configuration:

- Probe: EX3DV4 - SN7686; ConvF(7.73, 7.08, 7.39) @ 2402 MHz; Calibrated: 2024/10/7
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1665; Calibrated: 2024/2/15
- Phantom: ELI
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (61x111x1): Interpolated grid: dx=12 mm, dy=12 mm

Maximum value of SAR (interpolated) = 0.0812 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 4.288 V/m; Power Drift = -0.13 dB

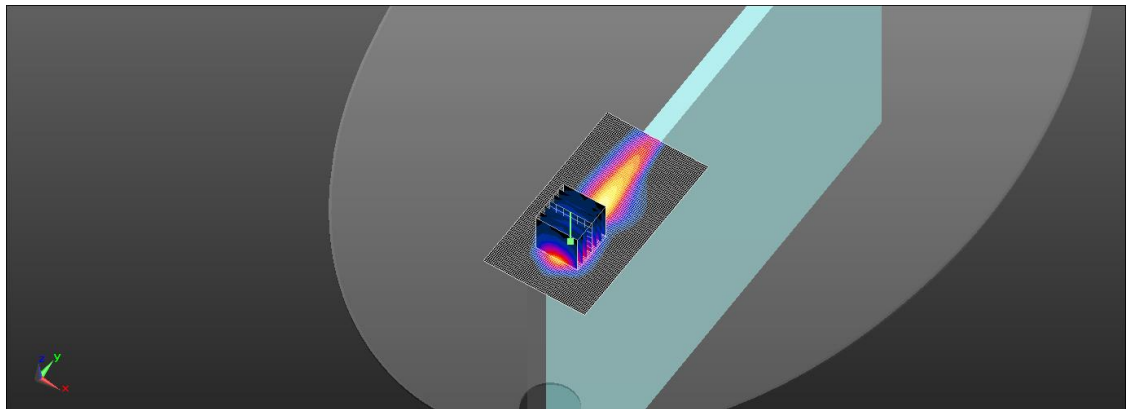
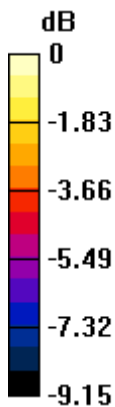
Peak SAR (extrapolated) = 0.0910 W/kg

SAR(1 g) = 0.053 W/kg; SAR(10 g) = 0.030 W/kg

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

Ratio of SAR at M2 to SAR at M1 = 61.2%

Maximum value of SAR (measured) = 0.0739 W/kg



0 dB = 0.0739 W/kg = -11.31 dBW/kg

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Date: 2025/1/15

ID: 022

Report No. :TESA2501000002ES

WLAN 802.11ac(80M) 5.2G_Body_Front Edge of Laptop_CH 42_0mm_Aux

Communication System: WLAN; Frequency: 5210 MHz; Duty cycle= 1:1

Medium parameters used: $f = 5210 \text{ MHz}$; $\sigma = 4.762 \text{ S/m}$; $\epsilon_r = 35.871$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Ambient temperature: 22.4°C; Liquid temperature: 22.1°C

DASY5 Configuration:

- Probe: EX3DV4 - SN7686; ConvF(6.25, 5.72, 5.98) @ 5210 MHz; Calibrated: 2024/10/7
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1665; Calibrated: 2024/2/15
- Phantom: ELI
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (81x141x1): Interpolated grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 1.01 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 12.00 V/m; Power Drift = -0.15 dB

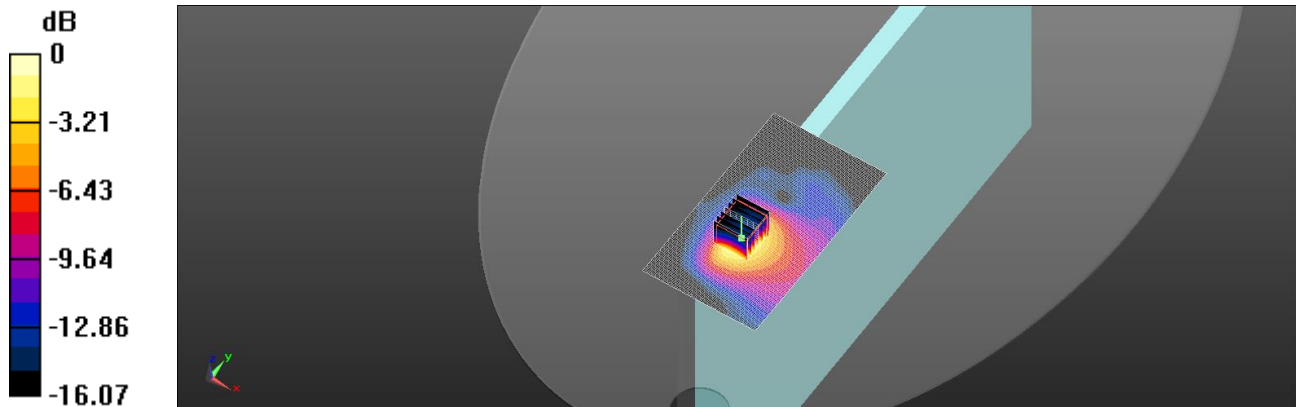
Peak SAR (extrapolated) = 1.65 W/kg

SAR(1 g) = 0.550 W/kg; SAR(10 g) = 0.238 W/kg

Smallest distance from peaks to all points 3 dB below = 8.8 mm

Ratio of SAR at M2 to SAR at M1 = 64.7%

Maximum value of SAR (measured) = 1.02 W/kg



0 dB = 1.02 W/kg = 0.09 dBW/kg

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Date: 2025/1/15

ID: 023

Report No. :TESA2501000002ES

WLAN 802.11ac(80M) 5.3G_Body_Front Edge of Laptop_CH 58_0mm_Aux

Communication System: WLAN; Frequency: 5290 MHz; Duty cycle= 1:1

Medium parameters used: $f = 5290 \text{ MHz}$; $\sigma = 4.856 \text{ S/m}$; $\epsilon_r = 35.787$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Ambient temperature: 22.4°C; Liquid temperature: 22.1°C

DASY5 Configuration:

- Probe: EX3DV4 - SN7686; ConvF(6.25, 5.72, 5.98) @ 5290 MHz; Calibrated: 2024/10/7
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1665; Calibrated: 2024/2/15
- Phantom: ELI
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (81x141x1): Interpolated grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 1.00 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 11.96 V/m; Power Drift = -0.10 dB

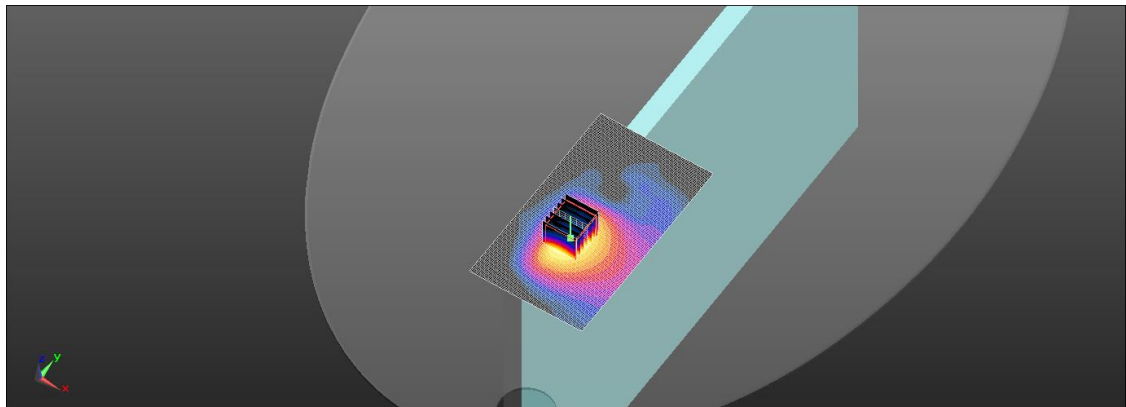
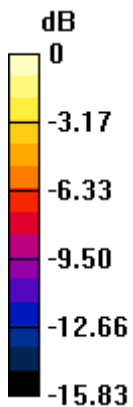
Peak SAR (extrapolated) = 1.71 W/kg

SAR(1 g) = 0.614 W/kg; SAR(10 g) = 0.257 W/kg

Smallest distance from peaks to all points 3 dB below = 8.6 mm

Ratio of SAR at M2 to SAR at M1 = 64.7%

Maximum value of SAR (measured) = 1.05 W/kg



0 dB = 1.05 W/kg = 0.21 dBW/kg

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Date: 2025/1/15

ID: 024

Report No. :TESA2501000002ES

WLAN 802.11ac(80M) 5.6G_Body_Front Edge of Laptop_CH 138_0mm_Aux

Communication System: WLAN; Frequency: 5690 MHz; Duty cycle= 1:1

Medium parameters used: $f = 5690 \text{ MHz}$; $\sigma = 5.293 \text{ S/m}$; $\epsilon_r = 35.375$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Ambient temperature: 22.4°C; Liquid temperature: 22.1°C

DASY5 Configuration:

- Probe: EX3DV4 - SN7686; ConvF(5.81, 5.32, 5.56) @ 5690 MHz; Calibrated: 2024/10/7
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1665; Calibrated: 2024/2/15
- Phantom: ELI
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (81x141x1): Interpolated grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 1.83 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 13.99 V/m; Power Drift = -0.14 dB

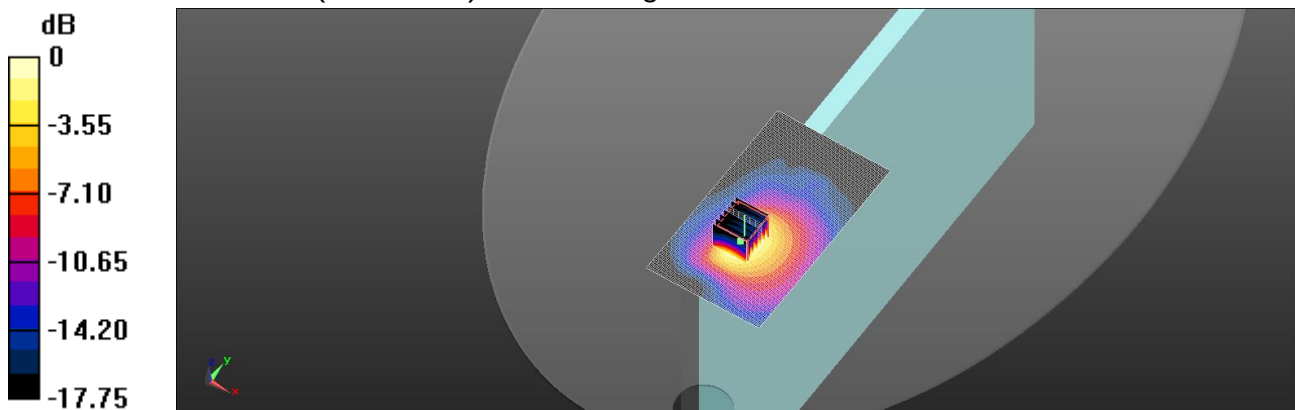
Peak SAR (extrapolated) = 3.29 W/kg

SAR(1 g) = 1.06 W/kg; SAR(10 g) = 0.429 W/kg

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

Ratio of SAR at M2 to SAR at M1 = 60.8%

Maximum value of SAR (measured) = 1.84 W/kg



0 dB = 1.84 W/kg = 2.65 dBW/kg

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Date: 2025/1/15

ID: 025

Report No. :TESA2501000002ES

WLAN 802.11ac(80M) 5.8G_Body_Front Edge of Laptop_CH 155_0mm_Aux

Communication System: WLAN; Frequency: 5775 MHz; Duty cycle= 1:1

Medium parameters used: $f = 5775 \text{ MHz}$; $\sigma = 5.38 \text{ S/m}$; $\epsilon_r = 35.258$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Ambient temperature: 22.4°C; Liquid temperature: 22.1°C

DASY5 Configuration:

- Probe: EX3DV4 - SN7686; ConvF(5.81, 5.32, 5.56) @ 5775 MHz; Calibrated: 2024/10/7
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1665; Calibrated: 2024/2/15
- Phantom: ELI
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (81x141x1): Interpolated grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 1.81 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 13.51 V/m; Power Drift = -0.15 dB

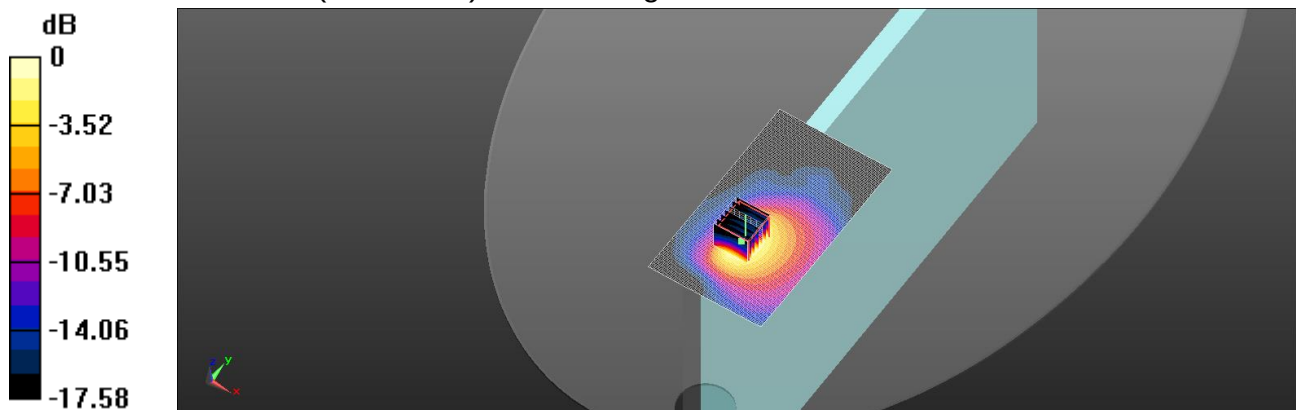
Peak SAR (extrapolated) = 3.18 W/kg

SAR(1 g) = 1.02 W/kg; SAR(10 g) = 0.413 W/kg

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

Ratio of SAR at M2 to SAR at M1 = 59.9%

Maximum value of SAR (measured) = 1.76 W/kg



0 dB = 1.76 W/kg = 2.45 dBW/kg

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Date: 2025/1/15

ID: 026

Report No. :TESA2501000002ES

WLAN 802.11ac(80M) 5.9G_Body_Front Edge of Laptop_CH 171_0mm_Aux

Communication System: WLAN; Frequency: 5855 MHz; Duty cycle= 1:1

Medium parameters used: $f = 5855 \text{ MHz}$; $\sigma = 5.475 \text{ S/m}$; $\epsilon_r = 35.114$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Ambient temperature: 22.4°C; Liquid temperature: 22.1°C

DASY5 Configuration:

- Probe: EX3DV4 - SN7686; ConvF(5.76, 5.28, 5.51) @ 5855 MHz; Calibrated: 2024/10/7
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1665; Calibrated: 2024/2/15
- Phantom: ELI
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (81x141x1): Interpolated grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 1.49 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 12.25 V/m; Power Drift = -0.13 dB

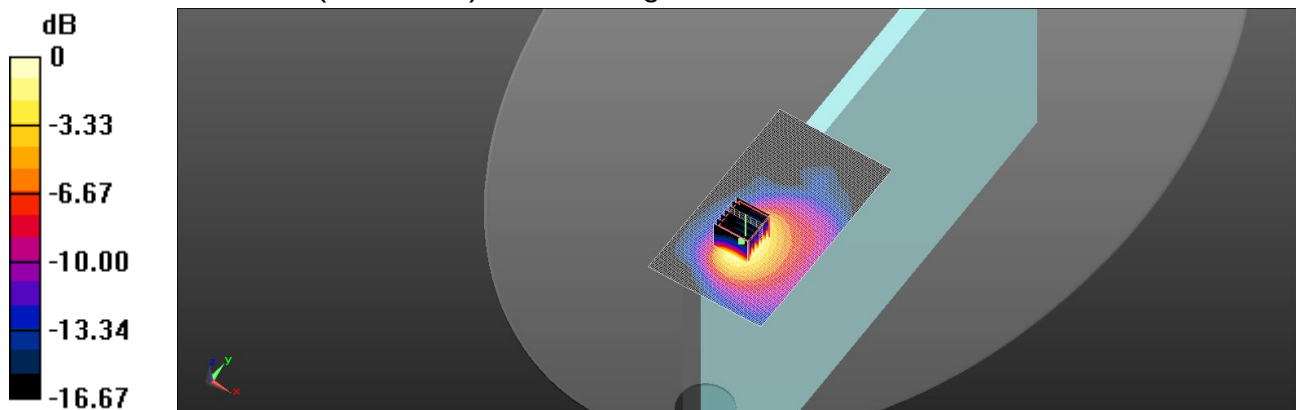
Peak SAR (extrapolated) = 2.64 W/kg

SAR(1 g) = 0.834 W/kg; SAR(10 g) = 0.341 W/kg

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

Ratio of SAR at M2 to SAR at M1 = 59.4%

Maximum value of SAR (measured) = 1.43 W/kg



0 dB = 1.43 W/kg = 1.55 dBW/kg

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12 SAR SYSTEM CHECK RESULTS

Date: 2025/1/14

Report No. :TESA2501000002ES

Dipole 2450 MHz_SN:727

Communication System: CW; Frequency: 2450 MHz; Duty cycle= 1:1

Medium parameters used: $f = 2450$ MHz; $\sigma = 1.846$ S/m; $\epsilon_r = 39.137$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Ambient temperature: 22.5°C; Liquid temperature: 22.3°C

DASY5 Configuration:

- Probe: EX3DV4 - SN7686; ConvF(7.73, 7.08, 7.39) @ 2450 MHz; Calibrated: 2024/10/7
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1665; Calibrated: 2024/2/15
- Phantom: ELI
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (71x91x1): Interpolated grid: dx=12 mm, dy=12 mm

Maximum value of SAR (interpolated) = 20.3 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 99.53 V/m; Power Drift = -0.05 dB

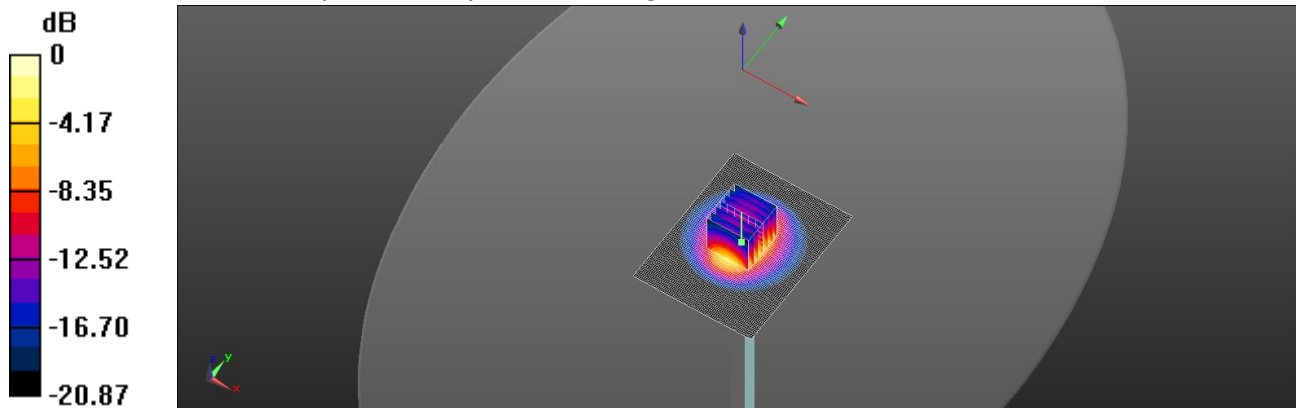
Peak SAR (extrapolated) = 25.7 W/kg

SAR(1 g) = 12.9 W/kg; SAR(10 g) = 6.21 W/kg

Smallest distance from peaks to all points 3 dB below = 9.2 mm

Ratio of SAR at M2 to SAR at M1 = 51.6%

Maximum value of SAR (measured) = 19.2 W/kg



0 dB = 19.2 W/kg = 12.84 dBW/kg

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Date: 2025/1/15

Report No. :TESA2501000002ES

Dipole 5250 MHz_SN:1349

Communication System: CW; Frequency: 5250 MHz; Duty cycle= 1:1

Medium parameters used: $f = 5250 \text{ MHz}$; $\sigma = 4.825 \text{ S/m}$; $\epsilon_r = 35.813$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Ambient temperature: 22.4°C; Liquid temperature: 22.1°C

DASY5 Configuration:

- Probe: EX3DV4 - SN7686; ConvF(6.25, 5.72, 5.98) @ 5250 MHz; Calibrated: 2024/10/7
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1665; Calibrated: 2024/2/15
- Phantom: ELI
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (81x101x1): Interpolated grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 16.3 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 81.21 V/m; Power Drift = -0.03 dB

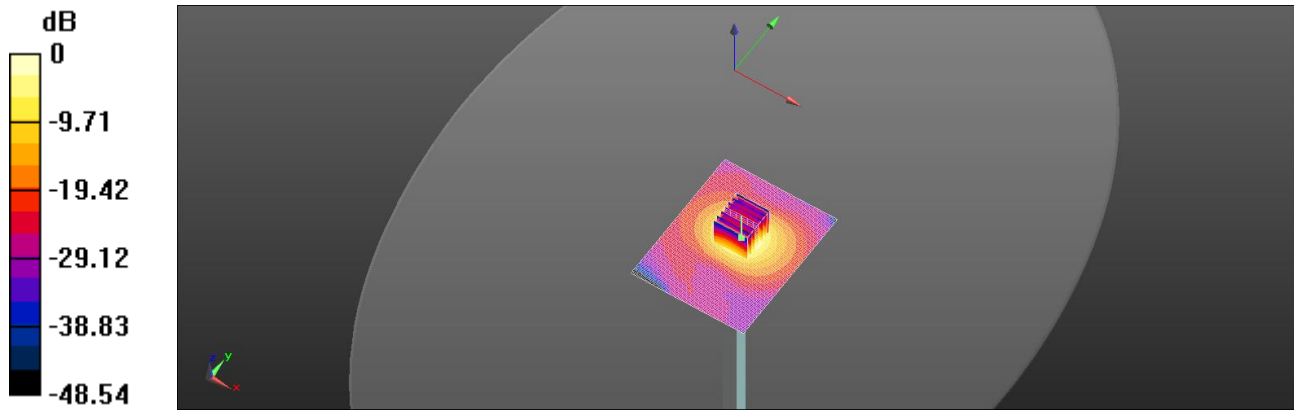
Peak SAR (extrapolated) = 31.7 W/kg

SAR(1 g) = 7.87 W/kg; SAR(10 g) = 2.27 W/kg

Smallest distance from peaks to all points 3 dB below = 7.5 mm

Ratio of SAR at M2 to SAR at M1 = 55%

Maximum value of SAR (measured) = 16.2 W/kg



0 dB = 16.2 W/kg = 12.11 dBW/kg

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Date: 2025/1/15

Report No. :TESA2501000002ES

Dipole 5600 MHz_SN:1349

Communication System: CW; Frequency: 5600 MHz; Duty cycle= 1:1

Medium parameters used: $f = 5600$ MHz; $\sigma = 5.188$ S/m; $\epsilon_r = 35.416$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Ambient temperature: 22.4°C; Liquid temperature: 22.1°C

DASY5 Configuration:

- Probe: EX3DV4 - SN7686; ConvF(5.68, 5.20, 5.44) @ 5600 MHz; Calibrated: 2024/10/7
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1665; Calibrated: 2024/2/15
- Phantom: ELI
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (101x131x1): Interpolated grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 17.4 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 77.03 V/m; Power Drift = 0.10 dB

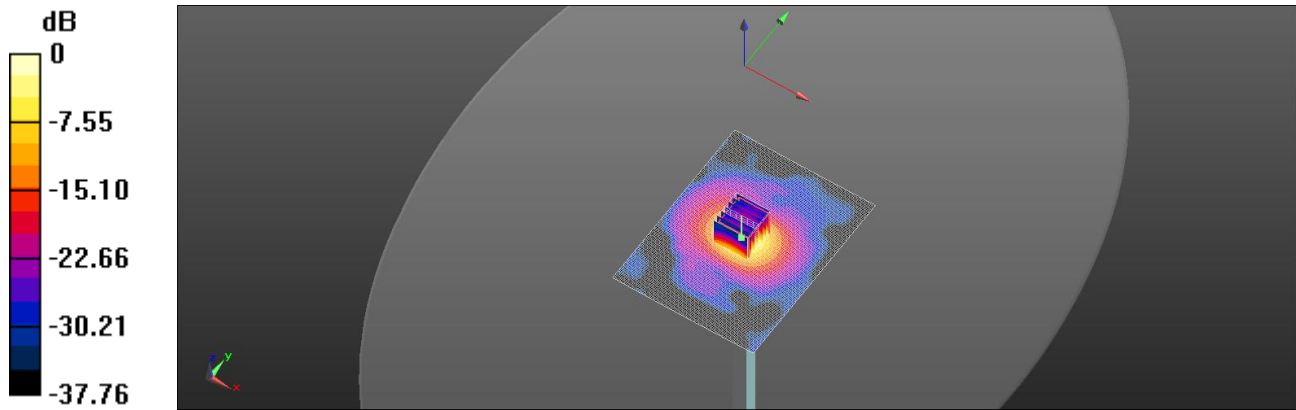
Peak SAR (extrapolated) = 32.8 W/kg

SAR(1 g) = 8.25 W/kg; SAR(10 g) = 2.37 W/kg

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

Ratio of SAR at M2 to SAR at M1 = 55.7%

Maximum value of SAR (measured) = 17.0 W/kg



0 dB = 17.0 W/kg = 12.30 dBW/kg

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Date: 2025/1/15

Report No. :TESA2501000002ES

Dipole 5750 MHz_SN:1349

Communication System: CW; Frequency: 5750 MHz; Duty cycle= 1:1

Medium parameters used: $f = 5750 \text{ MHz}$; $\sigma = 5.348 \text{ S/m}$; $\epsilon_r = 35.353$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Ambient temperature: 22.4°C; Liquid temperature: 22.1°C

DASY5 Configuration:

- Probe: EX3DV4 - SN7686; ConvF(5.81, 5.32, 5.56) @ 5750 MHz; Calibrated: 2024/10/7
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1665; Calibrated: 2024/2/15
- Phantom: ELI
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (81x101x1): Interpolated grid: $dx=10 \text{ mm}$, $dy=10 \text{ mm}$

Maximum value of SAR (interpolated) = 15.9 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: $dx=4\text{mm}$, $dy=4\text{mm}$, $dz=2\text{mm}$

Reference Value = 73.72 V/m; Power Drift = -0.08 dB

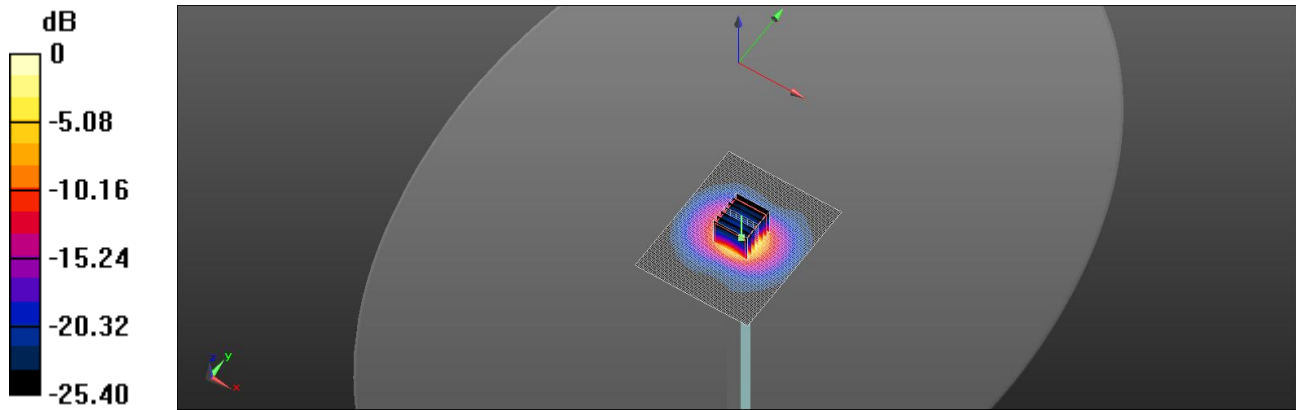
Peak SAR (extrapolated) = 31.7 W/kg

SAR(1 g) = 7.67 W/kg; SAR(10 g) = 2.26 W/kg

Smallest distance from peaks to all points 3 dB below = 7.5 mm

Ratio of SAR at M2 to SAR at M1 = 55.6%

Maximum value of SAR (measured) = 15.4 W/kg



0 dB = 15.4 W/kg = 11.89 dBW/kg

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Date: 2025/1/15

Report No. :TESA2501000002ES

Dipole 5850 MHz_SN:1349

Communication System: CW; Frequency: 5850 MHz; Duty cycle= 1:1

Medium parameters used: $f = 5800$ MHz; $\sigma = 5.457$ S/m; $\epsilon_r = 35.114$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Ambient temperature: 22.4°C; Liquid temperature: 22.1°C

DASY5 Configuration:

- Probe: EX3DV4 - SN7686; ConvF(5.76, 5.28, 5.51) @ 5850 MHz; Calibrated: 2024/10/7
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1665; Calibrated: 2024/2/15
- Phantom: ELI
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (61x81x1): Interpolated grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 18.9 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 69.12 V/m; Power Drift = -0.04 dB

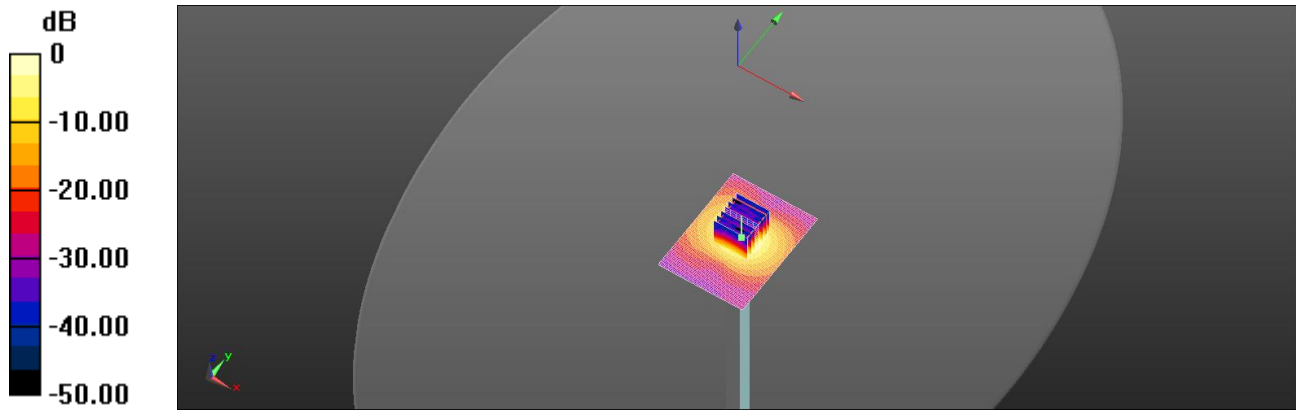
Peak SAR (extrapolated) = 42.9 W/kg

SAR(1 g) = 8.36 W/kg; SAR(10 g) = 2.38 W/kg

Smallest distance from peaks to all points 3 dB below = 7.6 mm

Ratio of SAR at M2 to SAR at M1 = 45%

Maximum value of SAR (measured) = 17.5 W/kg



0 dB = 17.5 W/kg = 12.44 dBW/kg

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