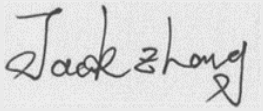
DEKRA Testing and Certification (Suzhou) Co., Ltd.
No.99 Hongye Rd., Suzhou Industrial Park, Suzhou, 215006, Jiangsu, China
TEL: +86-512-6251-5088 / FAX: +86-512-6251-5098

Test report No:
2231093R-RF-US-P03V01

SAR TEST REPORT

Product Name	Barcode Scanner
Trademark	Honeywell
Model and /or type reference	8690i
FCC ID	HD5-8690B
FCC Designation Number	CN1199
Applicant's name / address	HONEYWELL INTERNATIONAL INC Honeywell Safety and Productivity Solutions 9680 OLD BAILES RD FORT MILL SC 29707-7539,USA
Test method requested, standard	FCC KDB Publication 248227 D01v02r02 FCC KDB Publication 447498 D01v06 FCC KDB Publication 865664 D01v01r04 IEEE Std. 1528-2013 FCC 47CFR §2.1093 ANSI C95.1-2005 EN 62209-2: 2010
Test Result	Max. SAR Measurement (10g) 2.4G Wifi: 0.841 W/kg 5G Wifi: 2.505 W/kg Bluetooth: 0.030 W/kg RFID: 0.095 W/kg 5G Wifi + RFID: 2.600 W/kg
Verdict Summary	IN COMPLIANCE
Documented by (name / position & signature)	Tim Cao /Project Engineer 

Approved by (name / position & signature)	Jack Zhang/Manager 
Date of issue	2022-06-07
Report template No	Template_FCC SAR-RF-V1.0

INDEX

Page

COMPETENCES AND GUARANTEES

DEKRA is a testing laboratory competent to carry out the tests described in this report.
In order to assure the traceability to other national and international laboratories, DEKRA has a calibration and Maintenance program for its measurement equipment.

DEKRA guarantees the reliability of the data presented in this report, which is the result of the measurements and the tests performed to the item under test on the date and under the conditions stated in the report and it is based on the knowlEdge and technical facilities available at DEKRA at the time of performance of the test.

DEKRA is liable to the client for the Maintenance of the confidentiality of all information related to the item under test and the results of the test.

The results presented in this Test Report apply only to the particular item under test established in this document.

IMPORTANT: No parts of this report may be reproduced or quoted out of context, in any form or by any means, except in full, without the previous written permission of DEKRA.

GENERAL CONDITIONS

Test Location	No. 99, Hongye Road, Suzhou Industrial Park Suzhou, 215006, P.R. China
Date(receive sample)	May. 13, 2022
Date (start test)	May. 15, 2022
Date (finish test)	May. 25, 2022

1. This report is only referred to the item that has undergone the test.
2. This report does not constitute or imply on its own an approval of the product by the Certification Bodies or Competent Authorities.
3. This document is only valid if complete; no partial reproduction can be made without previous written permission of DEKRA.
4. This test report cannot be used partially or in full for publicity and/or promotional purposes without previous written permission of DEKRA.

ENVIRONMENTAL CONDITIONS

The climatic conditions during the tests are within the limits specified by the manufacturer for the operation of the EUT and the test equipment. The climatic conditions during the tests were within the following limits:

Ambient temperature	18 °C – 25 °C
Relative Humidity air	30% - 60%

If explicitly required in the basic standard or applied product / product family standard the climatic values are recorded and documented separately in this test report.

POSSIBLE TEST CASE VERDICTS

Test case does not apply to test object	N/A
Test object does meet requirement	P (Pass) / PASS
Test object does not meet requirement	F (Fail) / FAIL
Not measured	N/M

DOCUMENT HISTORY

Report No.	Version	Description	Issued Date
2231093R-RF-US-P03V01	V1.0	Initial issue of report.	2022-06-07

REMARKS AND COMMENTS

1. The equipment under test (EUT) does meet the essential requirements of the stated standard(s)/test(s).
2. These test results on a sample of the device are for the purpose of demonstrating Compliance with FCC KDB Publication 248227 D01v02r02, FCC KDB Publication 447498 D01v06, FCC KDB Publication 865664 D01v01r04, IEEE Std. 1528-2013, FCC 47CFR §2.1093, ANSI C95.1-2005, RSS 102: Issue 5, EN 62209-2: 2010.
3. The measurement result is considered in conformance with the requirement if it is within the prescribed limit, It is not necessary to account the uncertainty associated with the measurement result.
4. The test results presented in this report relate only to the object tested.
5. The test report shall not be reproduced without the written approval of DEKRA Testing and Certification (Suzhou) Co., Ltd.
6. This report will not be used for social proof function in China market.
7. DEKRA declines any responsibility with the following test data provided by customer that may affect the validity of result:
   - Chapter 1.1 General Description of the Item(s);
   - Chapter 1.2 Antenna Informaion;
   - Chapter 1.3 Channel List.

1 General Information

1.1 General Description of the Item(s)

Product Name.....:	Barcode Scanner
Model No. .....:	8690i
Trademark .....:	Honeywell
FCC ID.....:	HD5-8690B
Manufacturer.....:	HONEYWELL INTERNATIONAL INC Honeywell Safety and Productivity Solutions
Manufacturer Address .....:	9680 OLD BAILES RD FORT MILL SC 29707-7539,USA
Factory .....:	Metro(Suzhou)Technologies Co.,Ltd
Address.....:	No.221 Xinghai street China-Singapore Suzhou Industrial Park

Product Name	Barcode Scanner
Model No.	8690i
EUT Voltage	Battery 3.7 V
Wireless specifiction	WIFI 2.4G
Frequency Range	802.11b/g/n/ac/ax(20MHz): 2412~2462MHz
Channel Number	802.11b/g/n(20MHz): 11
Type of Modulation	802.11b: DSSS-DBPSK, DQPSK, CCK
	802.11g/n: OFDM-BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM
Data Rate	802.11b: 1/2/5.5/11 Mbps
	802.11g: 6/9/12/18/24/36/48/54 Mbps
	802.11n: up to 150 Mbps
	802.11ac: up to 433.3Mbps
	802.11ax: up to 143.4Mbps
Channel Control	Auto

Product Name	Barcode Scanner						
Model No.	8690i						
EUT Voltage	Battery 3.7 V						
Wireless specifiction	WIFI 5G						
Data Rate	802.11a: 6/9/12/18/24/36/48/54Mbps						
	802.11n: up to 150Mbps						
	802.11ac: up to 433.3Mbps						
	802.11ax: up to 600.5Mbps						
Channel Control	Auto						
Transmit modes	☒	802.11a	☒	802.11n(20MHz)	☒	802.11n(40MHz)	
	☒	802.11ac(20MHz)	☒	802.11ac(40MHz)	☒	802.11ac(80MHz)	
	☒	802.11ax(20MHz)	☒	802.11ax(40MHz)	☒	802.11ax(80MHz)	
Support Bands	☒	5150MHz~5250MHz	☐	Outdoor AP			
			☐	Indoor AP			
			☐	Fixed point-to-point AP			
			☒	Mobile and Portable Client			
	☒	5250MHz~5350MHz					
	☒	For FCC 5470MHz~5725MHz	☒	With TDWR Channels			
			☐	Without TDWR Channels			
	☒	For IC 5470MHz~5725MHz	☐	With TDWR Channels			
			☒	Without TDWR Channels			
	☒	5725MHz~5850MHz					

Product Name	Barcode Scanner
Model No.	8690i
EUT Voltage	Battery 3.7 V
Wireless specifiction	Bluetooth BR+EDR
Frequency Range	2402- 2480 MHz
Channel Number	79
Channel Separation	1MHz
Type of Modulation	GFSK, Pi/4 DQPSK, 8DPSK
Data Rate	1Mbps(GFSK), 2Mbps(Pi/4 DQPSK), 3Mbps(8DPSK)

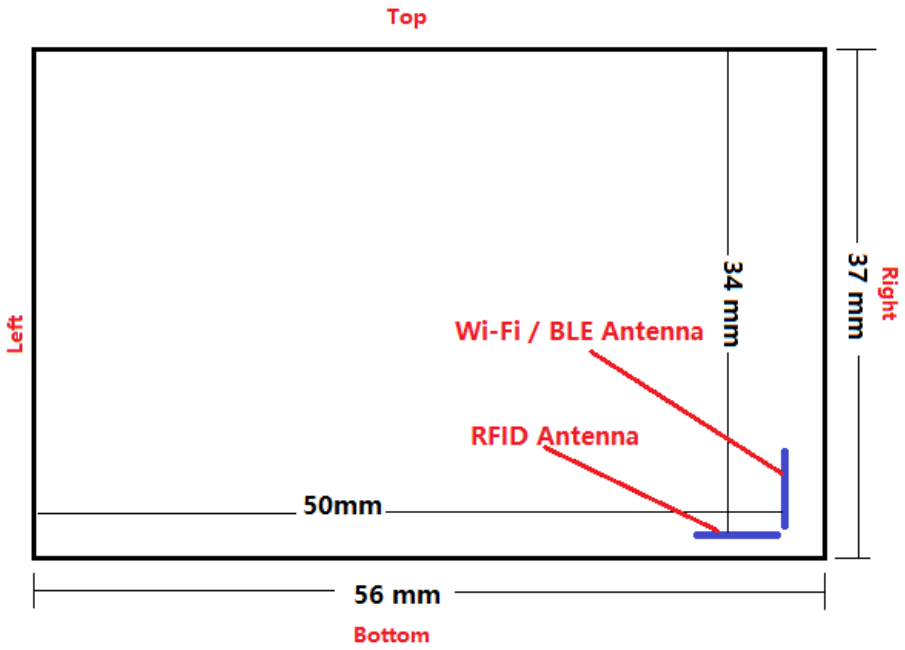
Product Name	Barcode Scanner					
Model No.	8690i					
EUT Voltage	Battery 3.7 V					
Wireless specifiction	Bluetooth LE					
Frequency Range	2402- 2480 MHz					
Channel Number	40					
Channel Separation	2MHz					
Type of Modulation	GFSK					
PHYs	☒	LE 1M	☒	LE 2M	☐	LE Coded S=2/8
Data Rate	☒	1 Mbps	☒	2 Mbps	☐	500/125 Kbps

Rated power supply.....:	Voltage and Frequency	
	☐	AC: 220 – 240 V, 50/60 Hz
	☐	AC: 100 – 240 V, 50/60 Hz
	☐	DC: 12 V
	☒	Battery: 3.7 Vdc
	☐	PoE:
Mounting position.....:	☐	Table top equipment
	☐	Wall/Ceiling mounted equipment
	☐	Floor standing equipment
	☒	Hand-held equipment
	☐	Other:

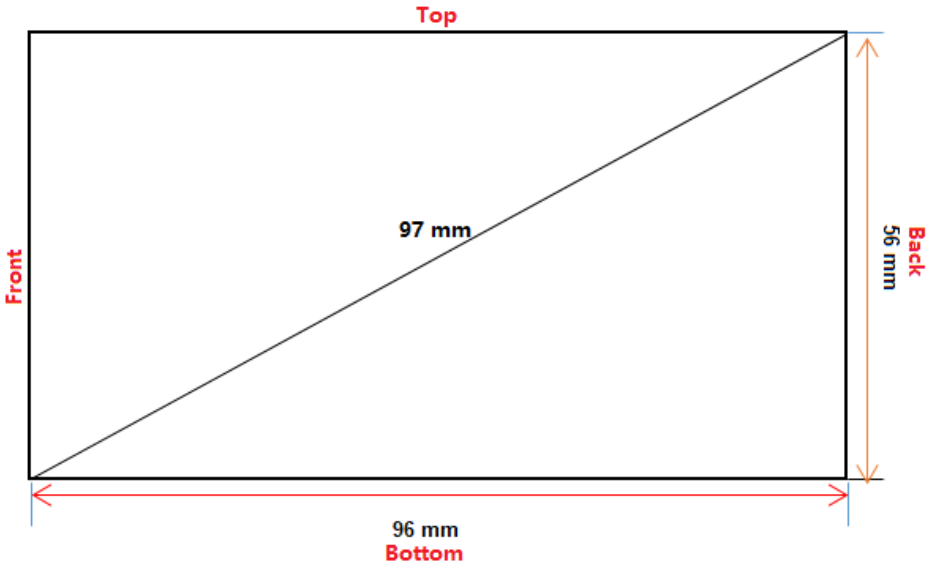
1.2 Antenna Information

Antenna Delivery .....:	☒	1TX + 1RX		
	☐	2TX + 2RX		
	☐	Others:……		
Antenna technology .....:	☒	SISO		
	☐	MIMO	☐	CDD
			☐	Beam-forming
Antenna Type .....:	☐	External	☐	Dipole
			☐	PIFA
			☐	Sectorized
	☒	Internal	☐	Metal antenna
			☒	PCB
			☐	Others……..
Antenna Gain .....:	2400 ~ 2483.5MHz: 0.5 dBi			
	5150 ~ 5850MHz: 2.0 dBi			
	902 ~ 928MHz:		Internal Antenna：-0.85 dBi	
			External Antenna：1.5 dBi	

1.3 Antenna Location



overall diagonal dimension:



1.4 Channel List

IEEE 802.11b/g/n/ac/ax(20MHz)

Working Frequency of Each Channel							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
001	2412 MHz	002	2417 MHz	003	2422 MHz	004	2427 MHz
005	2432 MHz	006	2437 MHz	007	2442 MHz	008	2447 MHz
009	2452 MHz	010	2457 MHz	011	2462 MHz	--	--

IEEE 802.11a/n/ac/ax(20MHz)

Working Frequency of Each Channel							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
036	5180 MHz	040	5200 MHz	044	5220 MHz	048	5240 MHz
052	5260 MHz	056	5280 MHz	060	5300 MHz	064	5320 MHz
100	5500 MHz	104	5520 MHz	108	5540 MHz	112	5560 MHz
116	5580 MHz	120	5600 MHz	124	5620 MHz	128	5640 MHz
132	5660 MHz	136	5680 MHz	140	5700 MHz	149	5745 MHz
153	5765 MHz	157	5785 MHz	161	5805 MHz	165	5825 MHz

IEEE 802.11n/ac/ax(40MHz)

Working Frequency of Each Channel							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
038	5190 MHz	046	5230 MHz	054	5270 MHz	062	5310 MHz
102	5510 MHz	110	5550 MHz	118	5590 MHz	126	5630 MHz
134	5670 MHz	151	5755 MHz	159	5795 MHz	--	--

IEEE 802.11ac/ax(80MHz)

Working Frequency of Each Channel							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
42	5210 MHz	58	5290 MHz	106	5530 MHz	122	5610 MHz
155	5775 MHz	--	--	--	--	--	--

For Bluetooth

Bluetooth Working Frequency of Each Channel: (FHSS)							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
00	2402 MHz	01	2403 MHz	02	2404 MHz	03	2405 MHz
04	2406 MHz	05	2407 MHz	06	2408 MHz	07	2409 MHz
08	2410 MHz	09	2411 MHz	10	2412 MHz	11	2413 MHz
12	2414 MHz	13	2415 MHz	14	2416 MHz	15	2417 MHz
16	2418 MHz	17	2419 MHz	18	2420 MHz	19	2421 MHz
20	2422 MHz	21	2423 MHz	22	2424 MHz	23	2425 MHz
24	2426 MHz	25	2427 MHz	26	2428 MHz	27	2429 MHz
28	2430 MHz	29	2431 MHz	30	2432 MHz	31	2433 MHz
32	2434 MHz	33	2435 MHz	34	2436 MHz	35	2437 MHz
36	2438 MHz	37	2439 MHz	38	2440 MHz	39	2441 MHz
40	2442 MHz	41	2443 MHz	42	2444 MHz	43	2445 MHz
44	2446 MHz	45	2447 MHz	46	2448 MHz	47	2449 MHz
48	2450 MHz	49	2451 MHz	50	2452 MHz	51	2453 MHz
52	2454 MHz	53	2455 MHz	54	2456 MHz	55	2457 MHz
56	2458 MHz	57	2459 MHz	58	2460 MHz	59	2461 MHz
60	2462 MHz	61	2463 MHz	62	2464 MHz	63	2465 MHz
64	2466 MHz	65	2467 MHz	66	2468 MHz	67	2469 MHz
68	2470 MHz	69	2471 MHz	70	2472 MHz	71	2473 MHz
72	2474 MHz	73	2475 MHz	74	2476 MHz	75	2477 MHz
76	2478 MHz	77	2479 MHz	78	2480 MHz	N/A	N/A

Bluetooth Working Frequency of Each Channel: (BT 5.0)							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
00	2402 MHz	01	2404 MHz	02	2406 MHz	03	2408 MHz
04	2410 MHz	05	2412 MHz	06	2414 MHz	07	2416 MHz
08	2418 MHz	09	2420 MHz	10	2422 MHz	11	2424 MHz
12	2426 MHz	13	2428 MHz	14	2430 MHz	15	2432 MHz
16	2434 MHz	17	2436 MHz	18	2438 MHz	19	2440 MHz
20	2442 MHz	21	2444 MHz	22	2446 MHz	23	2448 MHz
24	2450 MHz	25	2452 MHz	26	2454 MHz	27	2456 MHz
28	2458 MHz	29	2460 MHz	30	2462 MHz	31	2464 MHz
32	2466 MHz	33	2468 MHz	34	2470 MHz	35	2472 MHz
36	2474 MHz	37	2476 MHz	38	2478 MHz	39	2480 MHz

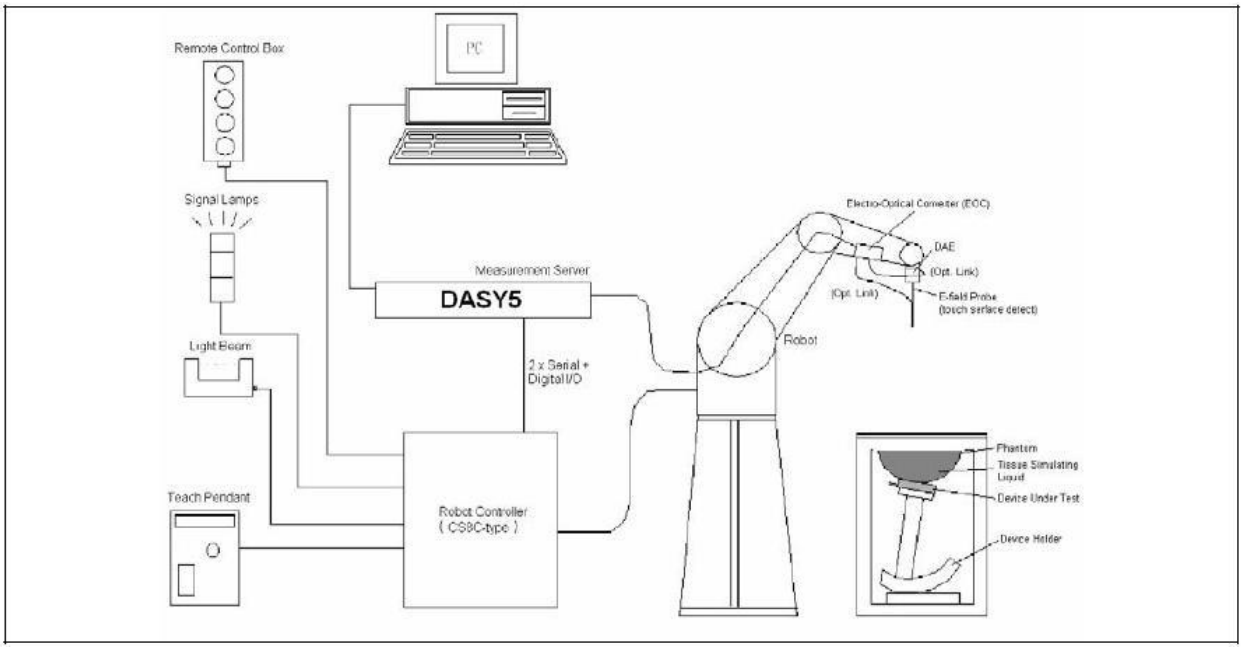
For RFID

Working Frequency of Each Channel: (For RFID)							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
14	907.25 MHz	15	907.75 MHz	16	908.25 MHz	17	908.75 MHz
18	909.25 MHz	19	909.75 MHz	20	910.25 MHz	21	910.75 MHz
22	911.25 MHz	23	911.75 MHz	24	912.25 MHz	25	912.75 MHz
26	913.25 MHz	27	913.75 MHz	28	914.25 MHz	29	914.75 MHz
30	915.25 MHz	31	915.25 MHz	32	916.25 MHz	33	916.25 MHz
34	917.25 MHz	35	917.25 MHz	36	918.25 MHz	37	918.25 MHz
38	919.25 MHz	39	919.25 MHz	40	920.25 MHz	41	920.25 MHz

Note: The General Description of the Item, antenna information and Channel List in clause 1 are provided and confirmed by the client.

2 SAR MEASUREMENT SYSTEM

2.1 DASY5 System Description



The DASY5 system for performing compliance tests consists of the following items:
1. A standard high precision 6-axis robot with controller, teach pendant and software. An arm extension for accommodating the data acquisition electronics (DAE).
2. A data acquisition electronics (DAE) which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.
3. The Electro-optical converter (EOC) performs the conversion from optical to electrical signals for the digital communication to the DAE. To use optical surface detection, a special version of the EOC is required. The EOC signal is transmitted to the measurement server.
4. The Light Beam used is for probe alignment. This improves the (absolute) accuracy of the probe positioning.
5. A computer running WinXP and the DASY5 software.
6. Remote control and teach pendant as well as additional circuitry for robot safety such as warning lamps, etc.
7. The phantom, the device holder and other accessories according to the targeted measurement.

2.1.1. Applications

Predefined procedures and evaluations for automated compliance testing with all worldwide standards, e.g., IEEE 1528, OET 65, IEC 62209-1, IEC 62209-2, EN 50360, EN 50383, EN62311 and others.

2.1.2. Area Scans

Area scans are defined prior to the measurement process being executed with a user defined variable spacing between each measurement point (integral) allowing low uncertainty measurements to be conducted. Scans defined for FCC applications utilize a 10mm² step integral, with 1mm interpolation used to locate the peak SAR area used for zoom scan assessments.

When an Area Scan has measured all reachable points, it computes the field maxima found in the scanned area, within a range of the global maximum. The range (in dB) is specified in the standards for compliance testing. For example, a 2 dB range is required in IEEE 1528-2003 and IEC 62209 standards, whereby 3 dB is a requirement when compliance is assessed in accordance with the ARIB standard (Japan).

2.1.3. Zoom Scan (Cube Scan Averaging)

Zoom Scans are used to assess the peak spatial SAR values within a cubic averaging volume containing 1 g and 10 g of simulated tissue. A density of 1000 kg/m³ is used to represent the head and Body tissue density and not the phantom liquid density, in order to be consistent with the definition of the liquid dielectric properties, i.e. the side length of the 1 g cube is 10mm, with the side length of the 10 g cube 21,5mm.

The zoom scan integer steps can be user defined so as to reduce uncertainty, but normal practice for typical test applications utilize a physical step of 7x7x7 (5mmx5mmx5mm) providing a volume of 30mm in the X & Y axis, and 30mm in the Z axis.

2.1.4. Uncertainty of Inter-/Extrapolation and Averaging

In order to evaluate the uncertainty of the interpolation, extrapolation and averaged SAR calculation algorithms of the Postprocessor, DASY5 allows the generation of measurement grids which are artificially predefined by analytically based test functions. Therefore, the grids of area scans and zoom scans can be filled with uncertainty test data, according to the SAR benchmark functions of IEEE 1528.The three analytical functions shown in equations as below are used to describe the possible range of the expected SAR distributions for the tested handsets. The field gradients are covered by the spatially flat distribution f1, the spatially steep distribution f3 and f2 accounts for H-field cancellation on the phantom/tissue surface.

$$f_1(x,y,z) = Ae^{-\frac{z}{2a}}\cos^2\left(\frac{\pi}{2}\frac{\sqrt{x'^2+y'^2}}{5a}\right)$$

$$f_2(x,y,z) = Ae^{-\frac{z}{a}}\frac{a^2}{a^2+x'^2}\left(3-e^{-\frac{2z}{a}}\right)\cos^2\left(\frac{\pi}{2}\frac{y'}{3a}\right)$$

$$f_3(x,y,z) = A\frac{a^2}{\frac{a^2}{4}+x'^2+y'^2}\left(e^{-\frac{2z}{a}}+\frac{a^2}{2(a+2z)^2}\right)$$

2.2 DASY5 E-Field Probe

The SAR measurement is conducted with the dosimetric probe manufactured by SPEAG. The probe is specially designed and calibrated for use in liquid with high permittivity. The dosimetric probe has special calibration in liquid at different frequency.

SPEAG conducts the probe calibration in compliance with international and national standards (e.g. IEEE 1528, EN 62209-1, IEC 62209, etc.) under ISO 17025. The calibration data are in Appendix D**.**

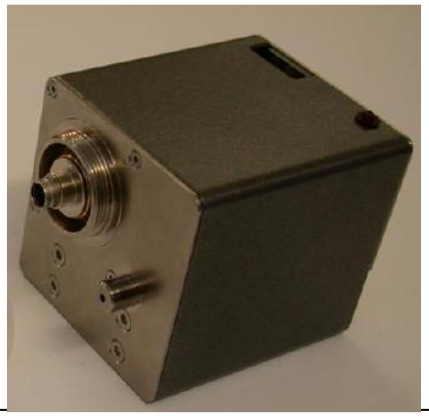
Model	EX3DV4	
Construction	Symmetrical design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)	
Frequency	10 MHz to 6 GHz Linearity: ± 0.2 dB (30 MHz to 6 GHz)	
Directivity	± 0.3 dB in HSL (rotation around probe axis) ± 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	Overall length: 330 mm (Tip: 20 mm) Tip diameter: 2.5 mm (Body: 12 mm) Typical distance from probe tip to dipole centers: 1 mm	
Application	High precision dosimetric measurements in any exposure scenario (e.g., very strong gradient fields). Only probe which enables compliance testing for frequencies up to 6 GHz with precision of better 30%.	

2.3 Boundary Detection Unit and Probe Mounting Device

The DASY probes use a precise connector and an additional holder for the probe, consisting of a plastic tube and a flexible silicon ring to center the probe. The connector at the DAE is flexibly mounted and held in the default position with magnets and springs. Two switching systems in the connector mount detect Frontal and lateral probe collisions and trigger the necessary software response.

2.4 DATA Acquisition Electronics (DAE) and Measurement Server

The data acquisition electronics (DAE) consists of a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain-switching multiplexer, a fast 16 bit AD-converter and a command decoder and control logic unit.
Transmission to the measurement server is accomplished through an optical downlink for data and status information as well as an optical uplink for commands and the clock.
The input impedance of the DAE4 is 200M Ohm; the inputs are symmetrical and floating. Common mode rejection is above 80dB.



The DASY5 measurement server is based on a PC/104 CPU board with a 400MHz intel ULV Celeron, 128MB chipdisk and 128MB RAM. The necessary circuits for communication with the DAE electronics box, as well as the 16 bit AD converter system for optical detection and digital I/O interface are contained on the DASY5 I/O board, which is directly connected to the PC/104 bus of the CPU board.

2.5 Robot

The DASY5 system uses the high precision robots TX90 XL type out of the newer series from Stäubli SA (France). For the 6-axis controller DASY5 system, the CS8C robot controller version from Stäubli is used. The XL robot series have many features that are important for our application:

- High precision (repeatability 0.02 mm)
- High reliability (industrial design)
- Jerk-free straight movements
- Low ELF interference (the closed metallic construction shields against motor control fields)
- 6-axis controller

2.6 Light Beam Unit

The light beam switch allows automatic "tooling" of the probe. During the process, the actual position of the probe tip with respect to the robot arm is measured, as well as the probe length and the horizontal probe offset. The software then corrects all movements, such that the robot coordinates are valid for the probe tip.
The repeatability of this process is better than 0.1 mm. If a position has been taught with an aligned probe, the same position will be reached with another aligned probe within 0.1 mm, even if the other probe has different dimensions. During probe rotations, the probe tip will keep its actual position.

2.7 Device Holder

The DASY5 device holder is designed to cope with different positions given in the standard. It has two scales for the device rotation (with respect to the Body axis) and the device inclination (with respect to the line between the ear reference points). The rotation center for both scales is the ear reference point (EPR).

Thus the device needs no repositioning when changing the angles.

The DASY5 device holder has been made out of low-loss POM material having the following dielectric parameters: relative permittivity εr =3 and loss tangent δ = 0.02. The amount of dielectric material has been reduced in the closest vicinity of the device, since measurements have suggested that the influence of the clamp on the test results could thus be lowered.

2.8 SAM Twin Phantom

The SAM twin phantom is a fiberglass shell phantom with 2mm shell thickness (except the ear region where shell thickness increases to 6mm). It has three measurement areas:

- Left head
- Right head
- Flat phantom

The bottom plate contains three pair of bolts for locking the device holder. The device holder positions are adjusted to the standard measurement positions in the three sections. A white cover is provided to tap the phantom during off-periods to prevent water evaporation and changes in the liquid parameters. On the phantom top, three reference markers are provided to identify the phantom position with respect to the robot.

3 TISSUE SIMULATING LIQUID

3.1 The composition of the tissue simulating liquid

INGREDIENT (% Weight)	900MHz Head	2450MHz Head	5250/5600/5750 MHz Head
Water	56.0	73.2	75.68
Salt	0.76	0.01	0.43
Sugar	41.76	0.00	0.00
HEC	1.21	0.00	0.00
Preventol	0.27	0.00	0.00
DGBE	0.00	26.7	4.42
Triton X-100	0.00	0.00	19.47

3.2 Tissue Calibration Result

The dielectric parameters of the liquids were verified prior to the SAR evaluation using DASY5 Dielectric Probe Kit and Agilent Vector Network Analyzer E5071C

Body Tissue Simulant Measurement				
Frequency [MHz]	Description	Dielectric Parameters		Tissue Temp. [°C]
		ε_r	σ [s/m]	
900MHz	Reference result ± 5% window	41.5 39.43 to 43.58	0.97 0.92 to 1.02	N/A
	05-26-2022	43.37	0.976	21.0
2450MHz	Reference result ± 5% window	39.2 37.24 to 41.16	1.80 1.71 to 1.89	N/A
	05-24-2022	39.225	1.824	21.0
5250MHz	Reference result ± 5% window	39.5 37.53 to 41.48	4.71 4.47 to 4.95	N/A
	05-25-2022	36.384	4.6	21.0
5600MHz	Reference result ± 5% window	35.5 33.74 to 37.28	5.07 4.82 to 5.32	N/A
	05-25-2022	35.802	4.99	21.0
5750MHz	Reference result ± 5% window	35.4 33.63 to 37.17	5.22 4.96 to 5.48	N/A
	05-25-2022	35.552	5.167	21.0

Body Tissue Simulant Measurement (Test Data: 05-25-2022)								
Frequency [MHz]	Channel	Dielectric Parameters						Tissue Temp. [°C]
		Permittivity ε_r	Conductivity σ	Permittivity Target ε_r	Conductivity Target σ	Delta (ε_r) %	Delta (σ) %	
907.25	Low	43.36	0.98	41.41	0.94	4.71	4.26	21.0
913.75	Mid	43.33	0.98	41.40	0.94	4.66	4.26	21.0
920.75	High	43.31	0.98	41.39	0.95	4.64	3.16	21.0
2412	Low	39.33	1.79	39.27	1.77	0.15	1.13	21.0
2437	Mid	39.26	1.81	39.22	1.79	0.10	1.12	21.0
2462	High	39.21	1.83	39.18	1.81	0.08	1.10	21.0
2402	Low	39.34	1.79	39.29	1.76	0.13	1.70	21.0
2441	Mid	39.25	1.82	39.22	1.79	0.08	1.68	21.0
2480	High	39.20	1.85	39.15	1.83	0.13	1.09	21.0
5260	Low	36.37	4.62	35.94	4.72	1.20	-2.12	21.0
5300	Mid	36.30	4.65	35.90	4.76	1.11	-2.31	21.0
5320	High	36.29	4.67	35.87	4.78	1.17	-2.30	21.0
5500	Low	35.97	4.87	35.63	4.97	0.95	-2.01	21.0
5580	Mid	35.87	4.97	35.53	5.05	0.96	-1.58	21.0
5720	High	35.61	5.13	35.38	5.19	0.65	-1.16	21.0
5745	Low	35.56	5.16	35.36	5.22	0.57	-1.15	21.0
5785	Mid	35.53	5.20	35.32	5.26	0.59	-1.14	21.0
5825	High	35.44	5.25	35.28	5.30	0.45	-0.94	21.0

Note:

1. The delta (ε_r) and (σ) are within ±5%, delta SAR value was not calculated in this report.
2. As per IEC 62209-2 Annex F, the SAR correction factor is given by:

   $\Delta SAR = c_\varepsilon \Delta\varepsilon_r + c_\sigma \Delta\sigma$

   For the1g average SAR Cε and Cσ are given by:

   Cε = -7.854x10^-4f^3 + 9.402x10^-3f^2 – 2.742x10^-2f – 0.2026

   Cσ = 9.804x10^-3f^3 – 8.661x10^-2f^2 + 2.981x10^-2f + 0.7829

   Where f is the frequency in GHz.

Body Tissue Simulant Measurement (Test Data: 05-25-2022)							
Frequency [MHz]	Channel	Dielectric Parameters					Tissue Temp. [°C]
		Delta (ε_r) %	Delta (σ) %	Cε	Cσ	Delta SAR%	
907.25	Low	4.71	4.26	-0.22	0.75	2.14	21.0
913.75	Mid	4.66	4.26	-0.22	0.75	2.14	21.0
920.75	High	4.64	3.16	-0.22	0.74	1.33	21.0
2412	Low	0.15	1.13	-0.23	0.49	0.52	21.0
2437	Mid	0.10	1.12	-0.22	0.48	0.52	21.0
2462	High	0.08	1.10	-0.22	0.48	0.51	21.0
2402	Low	0.13	1.70	-0.23	0.49	0.81	21.0
2441	Mid	0.08	1.68	-0.22	0.48	0.79	21.0
2480	High	0.13	1.09	-0.22	0.47	0.49	21.0
5260	Low	1.20	-2.12	-0.20	-0.03	-0.18	21.0
5300	Mid	1.11	-2.31	-0.20	-0.03	-0.15	21.0
5320	High	1.17	-2.30	-0.20	-0.03	-0.16	21.0
5500	Low	0.95	-2.01	-0.20	-0.04	-0.11	21.0
5580	Mid	0.96	-1.58	-0.20	-0.04	-0.12	21.0
5720	High	0.65	-1.16	-0.20	-0.05	-0.08	21.0
5745	Low	0.57	-1.15	-0.20	-0.05	-0.06	21.0
5785	Mid	0.59	-1.14	-0.20	-0.05	-0.07	21.0
5825	High	0.45	-0.94	-0.20	-0.04	-0.05	21.0

Note: The ΔSAR refers to the percent change in SAR relative to the percent change in dielectric properties versus the target values. Anegative ΔSAR would translate to a lower measured SAR value than what would be measured if using dielectric properties equal to the target values. A positive ΔSAR would translate to a higher measured SAR value than what would be measured if using dielectric properties equal to the target values. SAR correction shall not be made when the ΔSAR has a positive sign to provide a conservative SAR value.The SAR is only corrected when ΔSAR has a negative sign.

3.3 Tissue Dielectric Parameters for Head and Body Phantoms

The head tissue dielectric parameters recommended by the IEEE SCC-34/SC-2 in P1528 have been incorporated in the following table. These head parameters are derived from planar layer models simulating the highest expected SAR for the dielectric properties and tissue thickness variations in a human head. Other head and Body tissue parameters that have not been specified in P1528 are derived from the tissue dielectric parameters computed from the 4-Cole-Cole equations described in Reference [12] and extrapolated according to the head parameters specified in P1528.

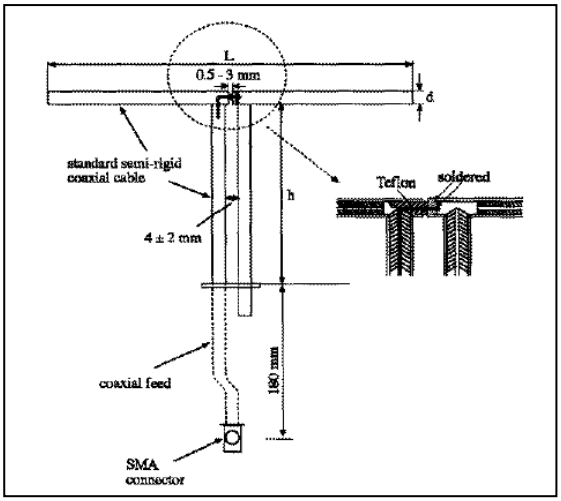
Target Frequency	Head		Body	
(MHz)	ε_r	σ (S/m)	ε_r	σ (S/m)
150	52.3	0.76	61.9	0.80
300	45.3	0.87	58.2	0.92
450	43.5	0.87	56.7	0.94
835	41.5	0.90	55.2	0.97
900	**41.5**	**0.97**	55.0	1.05
915	41.5	0.98	55.0	1.06
1450	40.5	1.20	54.0	1.30
1610	40.3	1.29	53.8	1.40
1800 – 2000	40.0	1.40	53.3	1.52
2450	**39.2**	**1.80**	52.7	1.95
3000	38.5	2.40	52.0	2.73
5800	**35.3**	**5.07**	48.2	6.00

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

4 SAR MEASUREMENT PROCEDURE

4.1 SAR System Validation

4.1.1. Validation Dipoles



The dipoles used is based on the IEEE-1528 standard, and is complied with mechanical and electrical specifications in line with the requirements of both IEEE and FCC Supplement C. the table below provides details for the mechanical and electrical specifications for the dipoles.

Frequency	L (mm)	h (mm)	d (mm)
900MHz	149.0	83.3	3.6
2450MHz	53.5	30.4	3.6
5250MHz	20.6	14.2	3.6
5600MHz	20.6	14.2	3.6
5750MHz	20.6	14.2	3.6

4.1.2. Validation Result

System Performance Check Body at 2450MHz, 5250MHz, 5600MHz and 5750MHz **Validation Dipole: D2450V2, SN: 839; D5GHzV2, SN: 1078**				
Frequency [MHz]	Description	SAR [w/kg] 1g	SAR [w/kg] 10g	Tissue Temp. [°C]
900 MHz	Reference result ± 10% window	10.9 9.81 to 11.99	7.04 6.34 to 7.74	N/A
	05-26-2022	10.68	6.84	21.0
2450 MHz	Reference result ± 10% window	52.6 47.34 to 57.86	24.3 21.87 to 26.73	N/A
	05-24-2022	52.0	24.16	21.0
5250 MHz	Reference result ± 10% window	76.0 68.4 to 83.6	21.6 19.44 to 23.76	N/A
	05-25-2022	81.2	22.6	21.0
5600 MHz	Reference result ± 10% window	79.5 71.55 to 87.45	22.4 20.16 to 24.64	N/A
	05-25-2022	75.8	21.7	21.0
5750 MHz	Reference result ± 10% window	75.7 68.13 to 83.27	21.3 19.17 to 23.43	N/A
	05-25-2022	80.3	22.2	21.0
Note: All SAR values are normalized to 1W forward power.				

4.2 SAR Measurement Procedure

The DASY 5 calculates SAR using the following equation,

$$SAR = \frac{\sigma |E|^2}{\rho}$$

σ: represents the simulated tissue conductivity

ρ: represents the tissue density

The EUT is set to transmit at the required power in line with product specification, at each frequency relating to the LOW, MID, and HIGH channel settings.

Pre-scans are made on the device to establish the location for the transmitting antenna, using a large area scan in either air or tissue simulation fluid.

The EUT is placed against the Universal Phantom where the maximum area scan dimensions are larger than the physical size of the resonating antenna. When the scan size is not large enough to cover the peak SAR distribution, it is modified by either extending the area scan size in both the X and Y directions, or the device is shifted within the predefined area.

The area scan is then run to establish the peak SAR location (interpolated resolution set at 1mm²) which is then used to orient the center of the zoom scan. The zoom scan is then executed and the 1g and 10g averages are derived from the zoom scan volume (interpolated resolution set at 1mm³).

4.3 SAR Measurement Procedure

4.3.1. Duty Factor Control

Unless it is permitted by specific KDB procedures or continuous transmission is specifically restricted by the device, the reported SAR must be scaled to 100% transmission duty factor to determine compliance at the maximum tune-up tolerance limit.

4.3.2. Initial Test Position SAR Test Reduction Procedure

DSSS and OFDM configurations are considered separately according to the required SAR procedures. SAR is measured in the initial test position using the 802.11 transmission mode configuration required by the DSSS procedure or initial test configuration and subsequent test configuration(s) according to the OFDM procedures.16 The initial test position procedure is described in the following:

When the reported SAR of the initial test position is ≤ 0.4 W/kg, further SAR measurement is not required for the other (reMaining) test positions in that exposure configuration and 802.11 transmission mode combinations within the frequency band or aggregated band. SAR is also not required for that exposure configuration in the subsequent test configuration(s).

a) When the reported SAR of the initial test position is > 0.4 W/kg, SAR is repeated for the 802.11 transmission mode configuration tested in the initial test position using subsequent highest extrapolated or estimated 1-g SAR conditions determined by area scans or next closest/smallest test separation distance and maximum RF coupling test positions based on manufacturer justification, on the highest maximum output power channel, until the reported SAR is ≤ 0.8 W/kg or all required test positions (left, right, touch, tilt or subsequent surfaces and Edges) are tested.

b) For all positions/configurations tested using the initial test position and subsequent test positions, when the reported SAR is > 0.8 W/kg, SAR is measured for these test positions/configurations on the subsequent next highest measured output power channel(s) until the reported SAR is ≤ 1.2 W/kg or all required channels are tested.
Additional power measurements may be required for this step, which should be limited to those necessary for identifying the subsequent highest output power channels.

5 SAR EXPOSURE LIMITS

SAR assessments have been made in line with the requirements of IEEE-1528, FCC Supplement C, and comply with ANSI/IEEE C95.1-1992 “Uncontrolled Environments” limits. These limits apply to a location which is deemed as “Uncontrolled Environment” which can be described as a situation where the general public may be exposed to an RF source with no prior knowlEdge or control over their exposure.

Limits for General Population/Uncontrolled Exposure (W/kg)

Type Exposure	Uncontrolled Environment Limit
Spatial Peak SAR (1g cube tissue for brain or Body)	**1.6 W/kg**
Spatial Average SAR (whole Body)	**0.08 W/kg**
Spatial Peak SAR (10g for hands, feet, ankles and wrist)	**4.00 W/kg**

6 TEST EQUIPMENT LIST

Instrument	Manufacturer	Model No.	Serial No.	Cali. Due Date
Stäubli Robot TX60L	Stäubli	TX60L	F10/5C90A1/A/01	N/A
Controller	Stäubli	SP1	S-0034	N/A
Dipole Validation Kits	Speag	D900V2	1d096	2023.03.28
Dipole Validation Kits	Speag	D2450V2	839	2023.03.31
Dipole Validation Kits	Speag	D5GHzV2	1078	2023.03.27
SAM Twin Phantom	Speag	SAM	TP-1561/1562	N/A
ELI1 Phantom	Speag	QDOVA002AA	TP:2106	N/A
Device Holder	Speag	SD 000 H01 HA	N/A	N/A
Data Acquisition Electronic	Speag	DAE4	1220	2023.03.23
E-Field Probe	Speag	EX3DV4	3710	2023.04.17
SAR Software	Speag	DASY5	V5.2 Build 162	N/A
Power Amplifier	Mini-Circuit	ZVA-183-S+	N657400950	N/A
Directional Coupler	Agilent	778D	20160	N/A
Vector Network	Agilent	E5071C	MY48367267	2023.03.09
Signal Generator	Agilent	E4438C	MY49070163	2023.03.09
Spectrum Analyzer	Agilent	N9010A	MY48030494	2022.08.24
Temperature/Humidity Meter	Zhichen	ZC1-2	N/A	2023.04.16
Temperature Meter	Dretec	O-274	RF-001	2023.11.05

7 MEASUREMENT UNCERTAINTY

DASY5 Uncertainty according to IEEE std. 1528-2013 Measurement uncertainty for 300 MHz to 3 GHz averaged over 1 gram / 10 gram.								
Error Description	Uncert. value	Prob. Dist.	Div.	(ci) 1g	(ci) 10g	Std. Unc. (1g)	Std. Unc. (10g)	(vi) veff
Measurement System								
Probe Calibration	±6.0%	N	1	1	1	±6.0%	±6.0%	∞
Axial Isotropy	±4.7%	R	$\sqrt{3}$	0.7	0.7	±1.9%	±1.9%	∞
Hemispherical Isotropy	±9.6%	R	$\sqrt{3}$	0.7	0.7	±3.9%	±3.9%	∞
Boundary Effects	±1.0%	R	$\sqrt{3}$	1	1	±0.6%	±0.6%	∞
Linearity	±4.7%	R	$\sqrt{3}$	1	1	±2.7%	±2.7%	∞
System Detection Limits	±1.0%	R	$\sqrt{3}$	1	1	±0.6%	±0.6%	∞
Readout Electronics	±0.3%	N	1	1	1	±0.3%	±0.3%	∞
Response Time	±0.8%	R	$\sqrt{3}$	1	1	±0.5%	±0.5%	∞
Integration Time	±2.6%	R	$\sqrt{3}$	1	1	±1.5%	±1.5%	∞
RF Ambient Noise	±3.0%	R	$\sqrt{3}$	1	1	±1.7%	±1.7%	∞
RF Ambient Reflections	±3.0%	R	$\sqrt{3}$	1	1	±1.7%	±1.7%	∞
Probe Positioner	±0.4%	R	$\sqrt{3}$	1	1	±0.2%	±0.2%	∞
Probe Positioning	±2.9%	R	$\sqrt{3}$	1	1	±1.7%	±1.7%	∞
Max. SAR Eval.	±1.0%	R	$\sqrt{3}$	1	1	±0.6%	±0.6%	∞
Test Sample Related								
Device Positioning	±2.9%	N	1	1	1	±2.9%	±2.9%	145
Device Holder	±3.6%	N	1	1	1	±3.6%	±3.6%	5
Power Drift	±5.0%	R	$\sqrt{3}$	1	1	±2.9%	±2.9%	∞
Phantom and Setup								
Phantom Uncertainty	±4.0%	R	$\sqrt{3}$	1	1	±2.3%	±2.3%	∞
Liquid Conductivity (target)	±5.0%	R	$\sqrt{3}$	0.64	0.43	±1.8%	±1.2%	∞
Liquid Conductivity (meas.)	±2.5%	N	1	0.64	0.43	±1.6%	±1.1%	∞
Liquid Permittivity (target)	±5.0%	R	$\sqrt{3}$	0.6	0.49	±1.7%	±1.4%	∞
Liquid Permittivity (meas.)	±2.5%	N	1	0.6	0.49	±1.5%	±1.2%	∞
Combined Std. Uncertainty						±11.0%	±10.8%	387
Expanded STD Uncertainty						±22.0%	±21.5%	

DASY5 Uncertainty according to IEEE std. 1528-2013 Measurement uncertainty for 3 GHz to 6 GHz averaged over 1 gram / 10 gram.								
Error Description	Uncert. value	Prob. Dist.	Div.	(ci) 1g	(ci) 10g	Std. Unc. (1g)	Std. Unc. (10g)	(vi) veff
Measurement System								
Probe Calibration	±6.55%	N	1	1	1	±6.55%	±6.55%	∞
Axial Isotropy	±4.7%	R	$\sqrt{3}$	0.7	0.7	±1.9%	±1.9%	∞
Hemispherical Isotropy	±9.6%	R	$\sqrt{3}$	0.7	0.7	±3.9%	±3.9%	∞
Boundary Effects	±2.0%	R	$\sqrt{3}$	1	1	±1.2%	±1.2%	∞
Linearity	±4.7%	R	$\sqrt{3}$	1	1	±2.7%	±2.7%	∞
System Detection Limits	±1.0%	R	$\sqrt{3}$	1	1	±0.6%	±0.6%	∞
Readout Electronics	±0.3%	N	1	1	1	±0.3%	±0.3%	∞
Response Time	±0.8%	R	$\sqrt{3}$	1	1	±0.5%	±0.5%	∞
Integration Time	±2.6%	R	$\sqrt{3}$	1	1	±1.5%	±1.5%	∞
RF Ambient Noise	±3.0%	R	$\sqrt{3}$	1	1	±1.7%	±1.7%	∞
RF Ambient Reflections	±3.0%	R	$\sqrt{3}$	1	1	±1.7%	±1.7%	∞
Probe Positioner	±0.8%	R	$\sqrt{3}$	1	1	±0.5%	±0.5%	∞
Probe Positioning	±9.9%	R	$\sqrt{3}$	1	1	±5.7%	±5.7%	∞
Max. SAR Eval.	±4.0%	R	$\sqrt{3}$	1	1	±2.3%	±2.3%	∞
Test Sample Related								
Device Positioning	±2.9%	N	1	1	1	±2.9%	±2.9%	145
Device Holder	±3.6%	N	1	1	1	±3.6%	±3.6%	5
Power Drift	±5.0%	R	$\sqrt{3}$	1	1	±2.9%	±2.9%	∞
Phantom and Setup								
Phantom Uncertainty	±4.0%	R	$\sqrt{3}$	1	1	±2.3%	±2.3%	∞
Liquid Conductivity (target)	±5.0%	R	$\sqrt{3}$	0.64	0.43	±1.8%	±1.2%	∞
Liquid Conductivity (meas.)	±2.5%	N	1	0.64	0.43	±1.6%	±1.1%	∞
Liquid Permittivity (target)	±5.0%	R	$\sqrt{3}$	0.6	0.49	±1.7%	±1.4%	∞
Liquid Permittivity (meas.)	±2.5%	N	1	0.6	0.49	±1.5%	±1.2%	∞
Combined Std. Uncertainty						±12.8%	±12.6%	330
Expanded STD Uncertainty						±25.6%	±25.2%	

Measurement uncertainty evaluation template for system repeatability

Measurement uncertainty for 30 MHz to 6 GHz averaged over 1 gram / 10 gram.

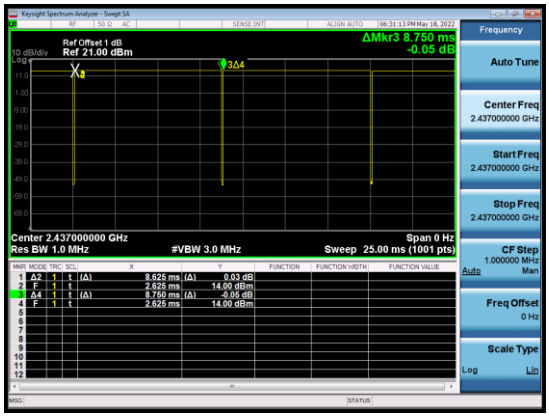
Error Description	Uncert. Value	Prob. Dist.	Div.	(ci) 1g	(ci) 10g	Std. Unc. (1g)	Std. Unc. (10g)	(vi) veff
Measurement System								
Probe Calibration	±6.5%	N	1	1	1	±6.5%	±6.5%	∞
Axial Isotropy	±4.7%	R	$\sqrt{3}$	0.7	0.7	±1.9%	±1.9%	∞
Hemispherical Isotropy	±9.6%	R	$\sqrt{3}$	0.7	0.7	±3.9%	±3.9%	∞
Boundary Effects	±2.0%	R	$\sqrt{3}$	0	0	±1.2%	±1.2%	∞
Linearity	±4.7%	R	$\sqrt{3}$	1	1	±2.7%	±2.7%	∞
Modulation Response	±2.4%	R	$\sqrt{3}$	0	0	±1.4%	±1.4%	∞
System Detection Limits	±1.0%	R	$\sqrt{3}$	0	0	±0.6%	±0.6%	∞
Readout Electronics	±0.3%	N	1	0	0	±0.3%	±0.3%	∞
Response Time	±0.8%	R	$\sqrt{3}$	0	0	±0.5%	±0.5%	∞
Integration Time	±2.6%	R	$\sqrt{3}$	0	0	±1.5%	±1.5%	∞
RF Ambient Noise	±3.0%	R	$\sqrt{3}$	0	0	±1.7%	±1.7%	∞
RF Ambient Reflections	±3.0%	R	$\sqrt{3}$	0	0	±1.7%	±1.7%	∞
Probe Positioner	±0.8%	R	$\sqrt{3}$	1	1	±0.5%	±0.5%	∞
Probe Positioning	±6.7%	R	$\sqrt{3}$	1	1	±3.9%	±3.9%	∞
Post-processing	±4.0%	R	$\sqrt{3}$	0	0	±2.3%	±2.3%	∞
Test Sample Related								
Test Sample Positioning	±2.9%	N	1	1	1	±2.9%	±2.9%	145
Device Holder	±3.6%	N	1	1	1	±3.6%	±3.6%	5
Power Drift	±0.0%	R	$\sqrt{3}$	1	1	±0.0%	±0.0%	∞
Power Scaling	±5.0%	R	$\sqrt{3}$	1	1	±2.9%	±2.9%	∞
Phantom and Setup								
Phantom Uncertainty	±7.9%	R	$\sqrt{3}$	1	1	±4.6%	±4.6%	∞
SAR correction	±1.9%	R	$\sqrt{3}$	1	1	±1.1%	±0.9%	∞
Liquid Conductivity (meas.)	±2.5%	N	1	0.78	0.71	±2.0%	±1.8%	∞
Liquid Permittivity (meas.)	±2.5%	N	1	0.26	0.26	±0.6%	±0.7%	∞
Temp. unc. - Conductivity	±5.2%	R	$\sqrt{3}$	0.78	0.71	±2.3%	±2.1%	∞
Temp. unc. - Permittivity	±0.8%	R	$\sqrt{3}$	0.23	0.26	±0.1%	±0.1%	∞
Combined Std. Uncertainty						±12.8%	±12.7%	748
Expanded STD Uncertainty						±25.6%	±25.4%	

8 CONDUCTED POWER MEASUREMENT

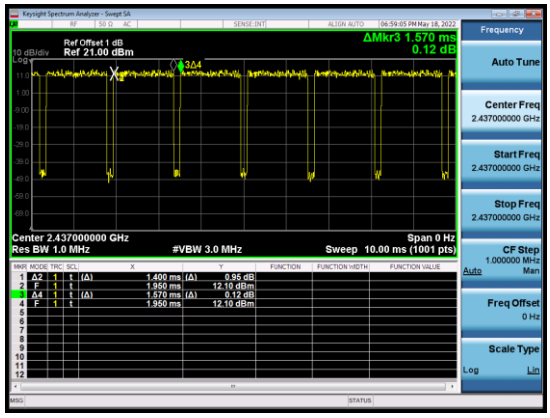
2.4GHz WLAN Duty Cycle

Test Mode	Tx On (ms)	Tx Off (ms)	Tx On + Tx Off (ms)	Duty Cycle (%)
802.11b	8.63	0.12	8.75	98.63
802.11g	1.40	0.17	1.57	89.17
802.11n(20MHz)	1.32	0.16	1.48	89.19
802.11ac(20MHz)	1.28	0.19	1.47	87.07
802.11ax(20MHz)	1.30	0.18	1.48	87.84

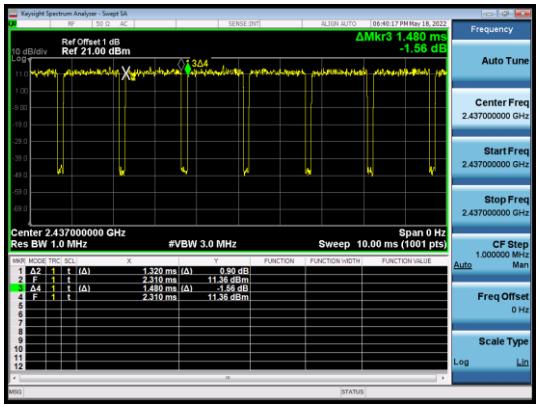
802.11b



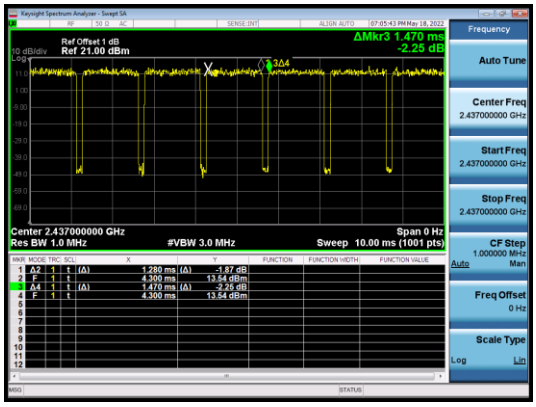
802.11g



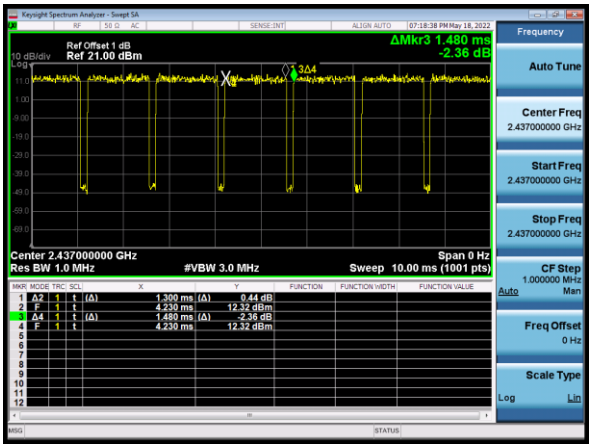
802.11n(20MHz)



802.11ac(20MHz)



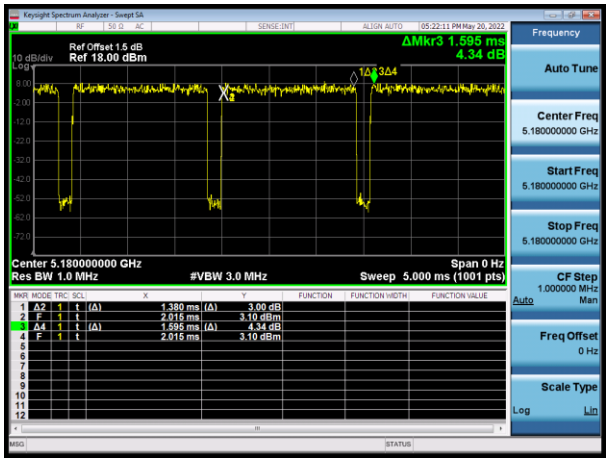
802.11ax(20MHz)



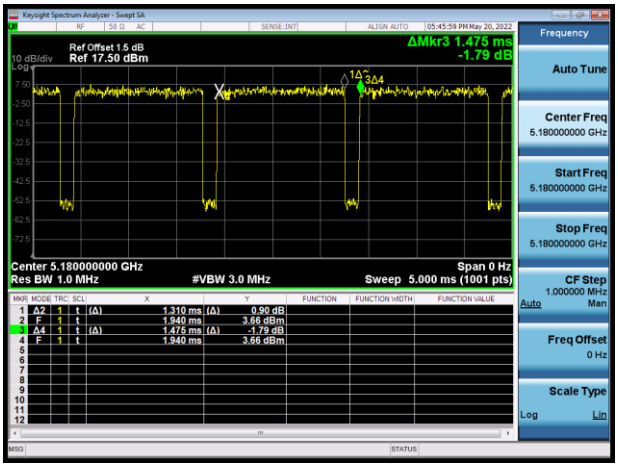
5GHz WLAN Duty Cycle

Test Mode	Tx On (ms)	Tx Off (ms)	Tx On + Tx Off (ms)	Duty Cycle (%)
802.11a	1.38	0.22	1.60	86.25
802.11n(20MHz)	1.31	0.17	1.48	88.51
802.11n(40MHz)	0.60	0.20	0.80	75.00
802.11ac(20MHz)	1.31	0.17	1.48	88.51
802.11ac(40MHz)	0.61	0.21	0.82	74.39
802.11ac(80MHz)	0.31	0.17	0.48	64.58
802.11ax(20MHz)	1.30	0.21	1.51	86.09
802.11ax(40MHz)	0.60	0.20	0.80	75.00
802.11ax(80MHz)	0.61	0.22	0.83	73.49

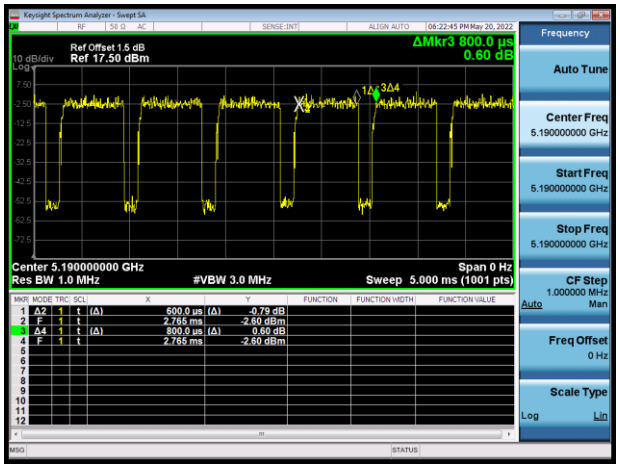
802.11a



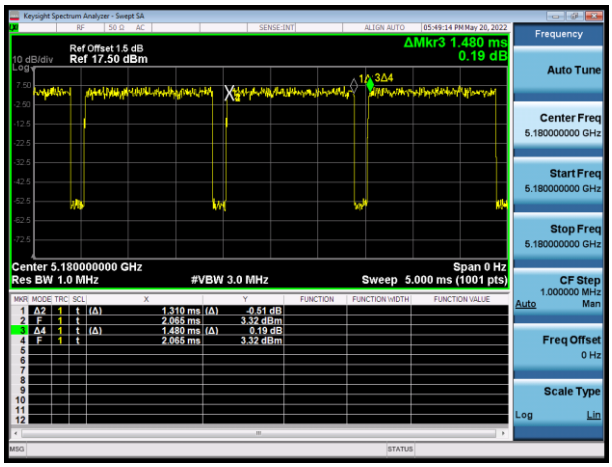
802.11 n(20MHz)



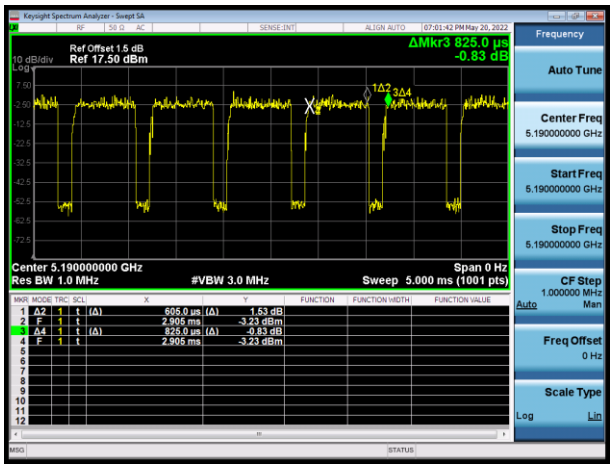
802.11n(40MHz)



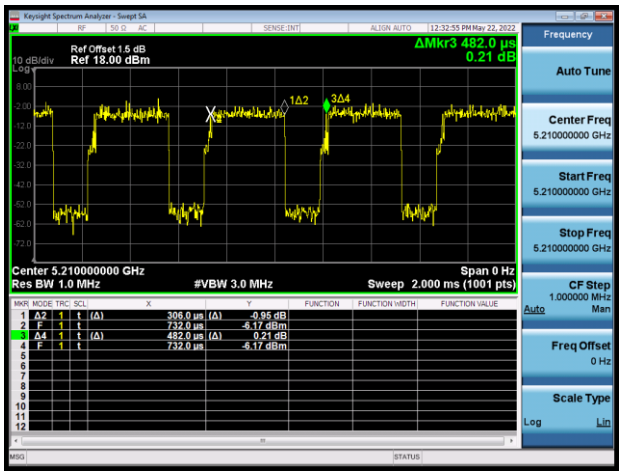
802.11ac(20MHz)



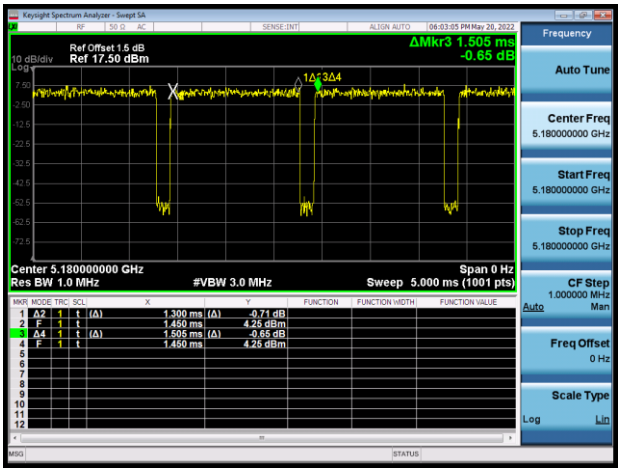
802.11ac(40MHz)



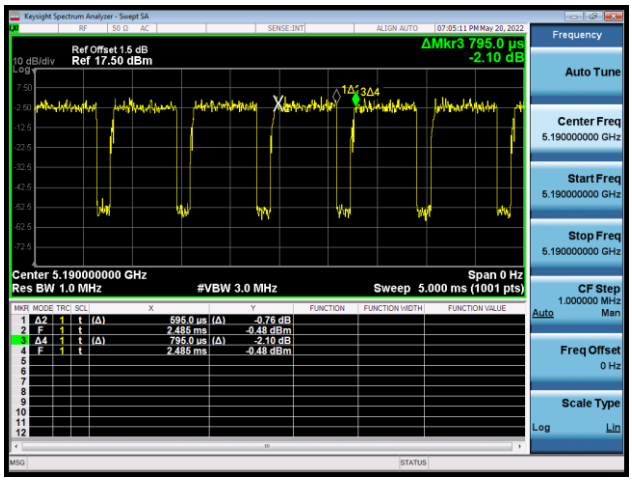
802.11ac(80MHz)



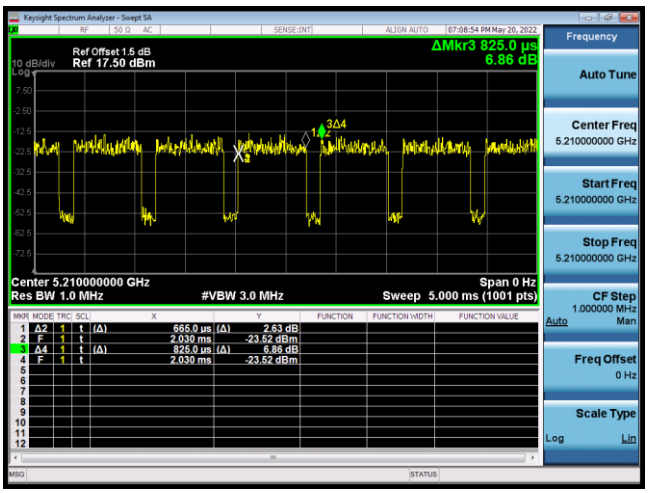
802.11ax(20MHz)



802.11ax(40MHz)



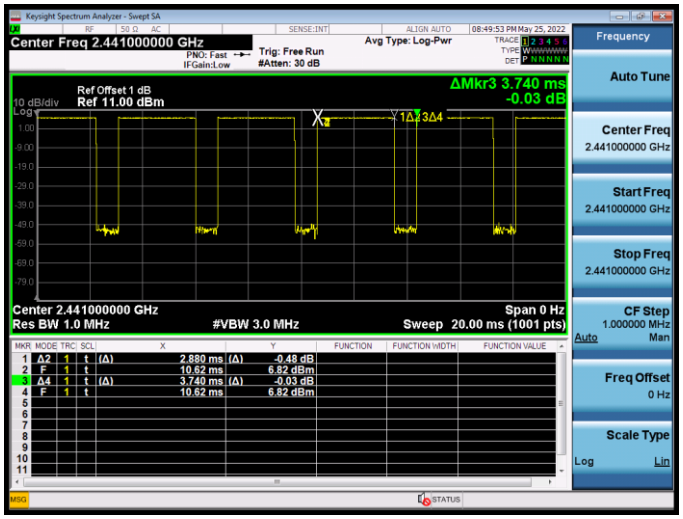
802.11 ax(80MHz)



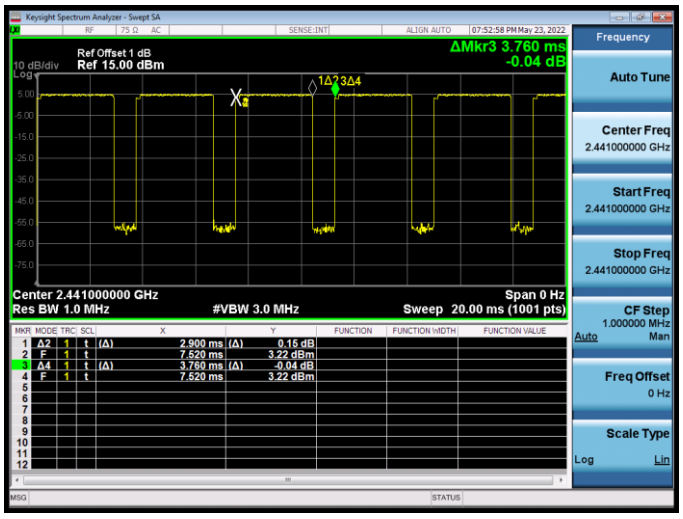
Bluetooth Duty Cycle

Test Mode	Tx On (ms)	Tx Off (ms)	Tx On + Tx Off (ms)	Duty Cycle (%)
DH5	2.88	0.86	3.74	77.01
2DH5	2.90	0.86	3.76	77.13
3DH5	2.90	0.86	3.76	77.13
LE_1M	0.38	0.222	0.63	60.32
LE_2M	0.19	0.222	0.62	30.65

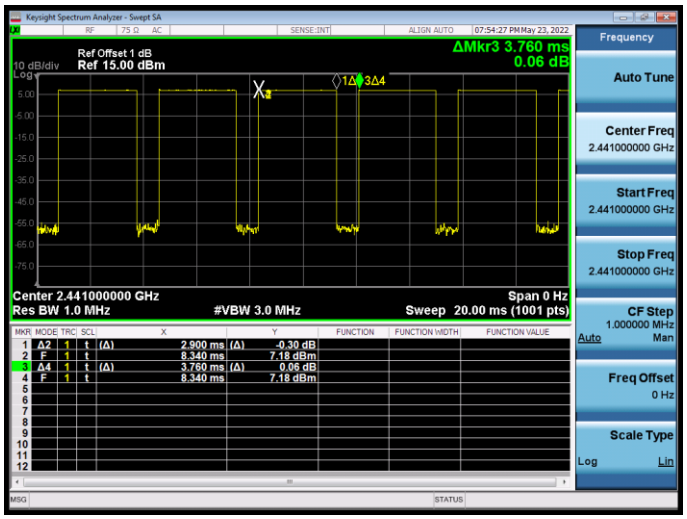
DH5



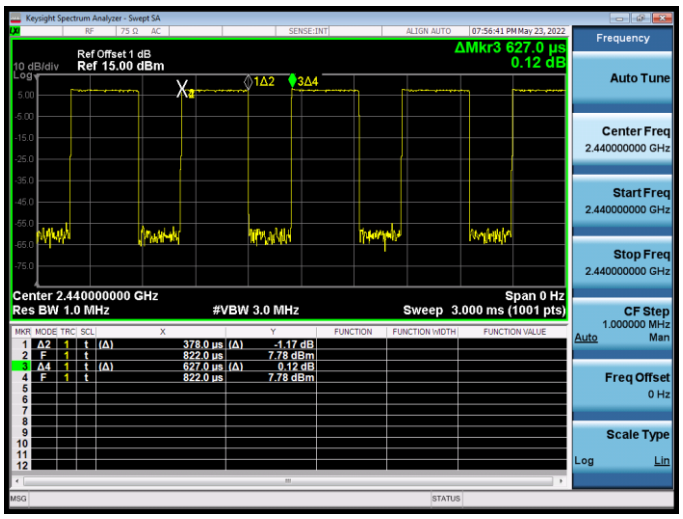
2DH5



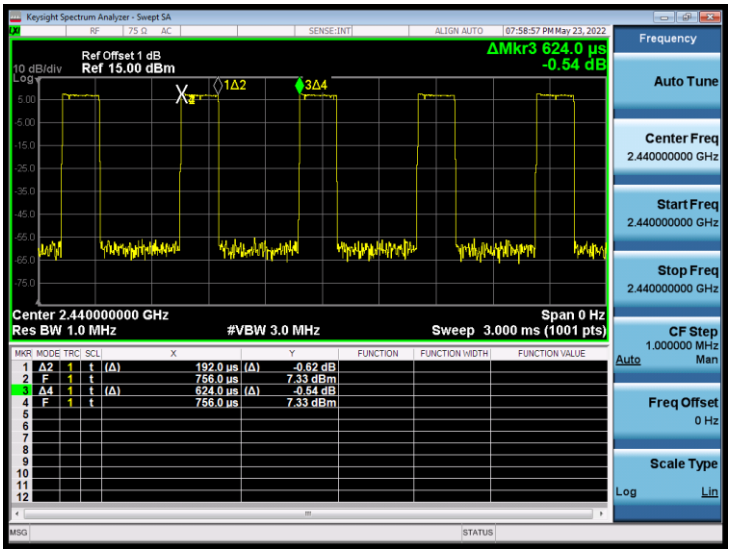
3DH5



LE_1M



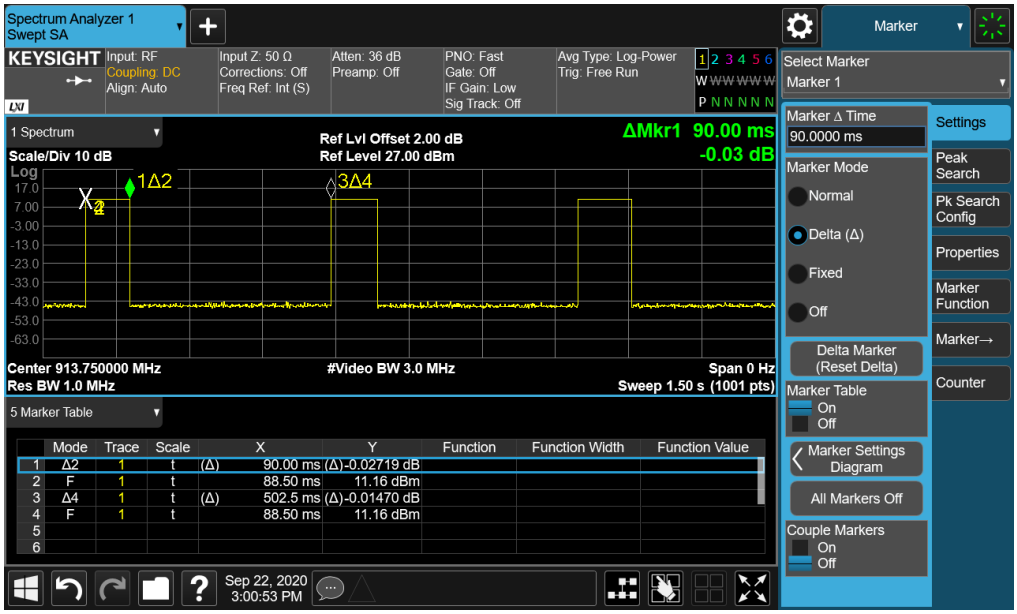
LE_2M


Keysight Spectrum Analyzer - Swept SA
Ref Offset 1 dB
10 dB/div Ref 15.00 dBm
ΔMkr3 624.0 µs
-0.54 dB
Center 2.440000000 GHz
Res BW 1.0 MHz
#VBW 3.0 MHz
Span 0 Hz
Sweep 3.000 ms (1001 pts)
1 Δ2 1 t (Δ) 192.0 µs (Δ) -0.62 dB
2 F 1 t 756.0 µs 7.33 dBm
3 Δ4 1 t (Δ) 624.0 µs (Δ) -0.54 dB
4 F 1 t 756.0 µs 7.33 dBm
Frequency
Auto Tune
Center Freq
2.440000000 GHz
Start Freq
2.440000000 GHz
Stop Freq
2.440000000 GHz
CF Step
1.000000 MHz
Auto Man
Freq Offset
0 Hz
Scale Type
Log Lin

RFID Duty Cycle

Test Mode	Tx On (ms)	Tx Off (ms)	Period (ms)	Duty Cycle (%)
ASK	90.00	412.50	100.00	90%

ASK



For 2.4G:

Test Mode	Test Conditions	Frequency (MHz)	Avg. Power (dBm)	Duty cycle (%)	Tune-up Power (dBm)	Scaling Factor
802.11b	Tnom (25℃)	2412	19.41	98.63	20.0	1.146
		2437	21.21	98.63	22.0	1.199
		2462	20.45	98.63	21.0	1.135
802.11g	Tnom (25℃)	2412	19.47	89.17	20.0	1.130
		2437	20.62	89.17	21.0	1.091
		2462	19.46	89.17	20.0	1.132
802.11n(20MHz)	Tnom (25℃)	2412	19.45	89.19	20.0	1.135
		2437	20.51	89.19	21.0	1.119
		2462	18.44	89.19	19.0	1.138
802.11ac(20MHz)	Tnom (25℃)	2412	19.46	87.07	20.0	1.132
		2437	20.64	87.07	21.0	1.086
		2462	20.53	87.07	21.0	1.114
802.11ax(20MHz)	Tnom (25℃)	2412	19.52	87.84	20.0	1.117
		2437	20.62	87.84	21.0	1.091
		2462	20.54	87.84	21.0	1.112

For 5G

Test Mode	Test Conditions	Frequency (MHz)	Avg. Power (dBm)	Duty cycle (%)	Tune-up Power (dBm)	Scaling Factor
802.11a	Tnom (25℃)	5180	11.98	86.25	12.5	1.127
		5200	13.92	86.25	14.5	1.143
		5220	13.35	86.25	14.0	1.161
		5240	16.12	86.25	16.5	1.091
		5260	16.19	86.25	16.5	1.074
		5280	15.08	86.25	15.5	1.102
		5300	14.09	86.25	14.5	1.099
		5320	11.38	86.25	12.0	1.153
		5500	9.72	86.25	10.5	1.197
		5520	11.58	86.25	12.5	1.236
		5540	13.59	86.25	14.0	1.099
		5560	16.58	86.25	17.0	1.102
		5580	16.64	86.25	17.0	1.086
		5700	9.87	86.25	10.5	1.156
		5720	16.65	86.25	17.0	1.084
		5745	16.47	86.25	17.0	1.130
		5785	16.38	86.25	17.0	1.153
		5825	16.32	86.25	17.0	1.169

Test Mode	Test Conditions	Frequency (MHz)	Avg. Power (dBm)	Duty cycle (%)	Tune-up Power (dBm)	Scaling Factor
802.11n(20MHz)	Tnom (25℃)	5180	10.80	88.51	11.5	1.175
		5200	13.95	88.51	14.5	1.135
		5220	13.34	88.51	14.0	1.164
		5240	16.29	88.51	16.5	1.050
		5260	16.21	88.51	16.5	1.069
		5280	15.02	88.51	15.5	1.117
		5300	14.01	88.51	14.5	1.119
		5320	11.36	88.51	12.0	1.159
		5500	9.68	88.51	10.5	1.208
		5520	11.53	88.51	12.5	1.250
		5540	13.52	88.51	14.0	1.117
		5560	15.56	88.51	16.5	1.242
		5580	15.29	88.51	16.5	1.321
		5700	8.89	88.51	9.5	1.151
		5720	15.69	88.51	16.0	1.074
		5745	15.24	88.51	16.0	1.191
		5785	15.15	88.51	16.0	1.216
		5825	15.29	88.51	16.0	1.178

Test Mode	Test Conditions	Frequency (MHz)	Avg. Power (dBm)	Duty cycle (%)	Tune-up Power (dBm)	Scaling Factor
802.11n(40MHz)	Tnom (25℃)	5190	11.15	75.00	12.0	1.216
		5230	14.29	75.00	15.0	1.178
		5270	14.71	75.00	15.5	1.199
		5310	11.53	75.00	12.0	1.114
		5510	8.68	75.00	9.0	1.076
		5550	13.52	75.00	14.0	1.117
		5590	15.65	75.00	16.0	1.084
		5670	10.43	75.00	11.0	1.140
		5710	15.26	75.00	16.0	1.186
		5755	15.23	75.00	16.0	1.194
		5795	15.28	75.00	16.0	1.180

Test Mode	Test Conditions	Frequency (MHz)	Avg. Power (dBm)	Duty cycle (%)	Tune-up Power (dBm)	Scaling Factor
802.11ac (20MHz)	Tnom (25℃)	5180	10.82	88.51	11.5	1.169
		5200	13.92	88.51	14.5	1.143
		5220	13.38	88.51	14.0	1.153
		5240	16.41	88.51	16.5	1.021
		5260	16.39	88.51	16.5	1.026
		5280	15.05	88.51	15.5	1.109
		5300	14.09	88.51	14.5	1.099
		5320	11.31	88.51	12.0	1.172
		5500	9.61	88.51	10.5	1.227
		5520	11.56	88.51	12.5	1.242
		5540	13.55	88.51	14.0	1.109
		5560	16.69	88.51	17.0	1.074
		5580	16.63	88.51	17.0	1.089
		5700	8.81	88.51	9.5	1.172
		5720	16.66	88.51	17.0	1.081
		5745	16.63	88.51	17.0	1.089
		5785	16.59	88.51	17.0	1.099
		5825	16.66	88.51	17.0	1.081

Test Mode	Test Conditions	Frequency (MHz)	Avg. Power (dBm)	Duty cycle (%)	Tune-up Power (dBm)	Scaling Factor
802.11ac (40MHz)	Tnom (25℃)	5190	11.21	74.39	12.0	1.199
		5230	14.35	74.39	15.0	1.161
		5270	14.70	74.39	15.5	1.202
		5310	11.59	74.39	12.0	1.099
		5510	8.82	74.39	9.0	1.042
		5550	13.59	74.39	14.0	1.099
		5590	14.79	74.39	15.5	1.178
		5670	10.47	74.39	11.0	1.130
		5710	14.63	74.39	15.0	1.089
		5755	14.56	74.39	15.0	1.107
		5795	14.59	74.39	15.0	1.099
802.11ac (80MHz)	Tnom (25℃)	5210	12.64	64.58	13.0	1.086
		5290	13.39	64.58	14.0	1.151
		5530	10.21	64.58	11.0	1.199
		5610	10.56	64.58	11.0	1.107
		5690	14.11	64.58	14.5	1.094
		5775	14.09	64.58	14.5	1.099

Test Mode	Test Conditions	Frequency (MHz)	Avg. Power (dBm)	Duty cycle (%)	Tune-up Power (dBm)	Scaling Factor
802.11ax (20MHz)	Tnom (25℃)	5180	10.74	86.09	11.5	1.191
		5200	13.96	86.09	14.5	1.132
		5220	13.39	86.09	14.0	1.151
		5240	16.21	86.09	16.5	1.069
		5260	16.16	86.09	16.5	1.081
		5280	15.03	86.09	15.5	1.114
		5300	14.22	86.09	14.5	1.067
		5320	11.25	86.09	12.0	1.189
		5500	9.75	86.09	10.5	1.189
		5520	11.49	86.09	12.0	1.125
		5540	13.57	86.09	14.0	1.104
		5560	15.58	86.09	16.0	1.102
		5580	15.61	86.09	16.0	1.094
		5700	8.76	86.09	9.5	1.186
		5720	15.73	86.09	16.0	1.064
		5745	15.64	86.09	16.0	1.086
		5785	15.61	86.09	16.0	1.094
		5825	15.58	86.09	16.0	1.102

Test Mode	Test Conditions	Frequency (MHz)	Avg. Power (dBm)	Duty cycle (%)	Tune-up Power (dBm)	Scaling Factor
802.11ax (40MHz)	Tnom (25℃)	5190	11.15	75.00	12.0	1.216
		5230	14.43	75.00	15.0	1.140
		5270	14.65	75.00	15.5	1.216
		5310	11.62	75.00	12.0	1.091
		5510	8.71	75.00	9.0	1.069
		5550	13.59	75.00	14.0	1.099
		5590	14.68	75.00	15.5	1.208
		5670	9.51	75.00	10.0	1.119
		5710	14.35	75.00	15.0	1.161
		5755	14.31	75.00	15.0	1.172
		5795	14.25	75.00	15.0	1.189
802.11ax (80MHz)	Tnom (25℃)	5210	12.61	73.49	13.0	1.094
		5290	13.33	73.49	14.0	1.167
		5530	10.26	73.49	11.0	1.186
		5610	10.42	73.49	11.0	1.143
		5690	14.08	73.49	14.5	1.102
		5775	14.02	73.49	14.5	1.117

For BT

Test Mode	Test Conditions	Frequency (MHz)	Avg. Power (dBm)	Duty cycle (%)	Tune-up Power (dBm)	Scaling Factor
DH5	Tnom (25℃)	2402	7.60	77.01	8.0	1.096
		2441	7.02	77.01	7.5	1.117
		2480	7.49	77.01	8.0	1.125
2DH5	Tnom (25℃)	2402	5.58	77.13	6.5	1.236
		2441	5.85	77.13	6.5	1.161
		2480	5.37	77.13	6.5	1.297
3DH5	Tnom (25℃)	2402	5.85	77.13	6.5	1.161
		2441	6.07	77.13	6.5	1.104
		2480	5.60	77.13	6.5	1.230
LE_1M	Tnom (25℃)	2402	8.19	60.32	8.5	1.074
		2440	8.05	60.32	8.5	1.109
		2480	8.00	60.32	8.5	1.122
LE_2M	Tnom (25℃)	2402	8.30	30.65	8.5	1.047
		2440	8.34	30.65	8.5	1.038
		2480	8.30	30.65	8.5	1.047

For RFID:

Test Mode	Test Conditions	Frequency (MHz)	Avg. Power (dBm)	Duty cycle (%)	Tune-up Power (dBm)	Scaling Factor
ASK	Tnom (25℃)	907.25	15.98	90.00	16.5	1.127
		913.75	16.74	90.00	17.0	1.061
		920.75	17.04	90.00	17.5	1.111

9 TEST PROCEDURES

9.1 SAR Test Results Summary

2.4GHz WLAN SAR Measurement									
Ambient Temperature (°C) : 21.5 ± 2				Relative Humidity (%): 52					
Liquid Temperature (°C) : 21.0 ± 2				Depth of Liquid (cm):>15					
Product Name: Scanner									
Limb SAR: Spacing 0mm									
Test Mode	Side	Frequency (MHz)	Frame Power (dBm)	Power Drift (<±0.2)	SAR 10g (W/kg)	Scaling Factor	Duty factor	Scaled SAR 10g (W/kg)	Limit (W/kg)
802.11b	Bottom	2437	21.21	0.15	0.065	1.199	1.014	0.079	4.0
802.11b	Top	2437	21.21	0.02	0.172	1.199	1.014	0.209	4.0
802.11b	Right	2437	21.21	0.01	0.604	1.199	1.014	0.734	4.0
802.11b	Left	2437	21.21	0.12	0.032	1.199	1.014	0.039	4.0
802.11b	Front	2437	21.21	0.17	0.025	1.199	1.014	0.030	4.0
802.11b	Back	2437	21.21	0.18	0.032	1.199	1.014	0.039	4.0
802.11b	Right	2412	19.41	-0.13	0.520	1.146	1.014	0.604	4.0
802.11b	Right	2462	20.45	-0.01	0.707	1.135	1.014	**0.814**	4.0

5GHz WLAN SAR Measurement									
Ambient Temperature (°C) : 21.5 ± 2				Relative Humidity (%): 52					
Liquid Temperature (°C) : 21.0 ± 2				Depth of Liquid (cm):>15					
Product Name: Scanner									
Limb SAR: Spacing 0mm									
Test Mode	Side	Frequency (MHz)	Frame Power (dBm)	Power Drift (<±0.2)	SAR 10g (W/kg)	Scaling Factor	Duty factor	Scaled SAR 10g (W/kg)	Limit (W/kg)
802.11a	Bottom	5260	16.19	0.03	0.058	1.074	1.159	0.072	4.0
802.11a	Top	5260	16.19	0.07	0.887	1.074	1.159	1.104	4.0
802.11a	Right	5260	16.19	-0.03	1.32	1.074	1.159	1.643	4.0
802.11a	Left	5260	16.19	0.16	0.043	1.074	1.159	0.054	4.0
802.11a	Front	5260	16.19	0.19	0.025	1.074	1.159	0.031	4.0
802.11a	Back	5260	16.19	-0.01	0.047	1.074	1.159	0.059	4.0
802.11a	Right	5300	14.09	-0.15	1.38	1.099	1.159	1.758	4.0
802.11a	Right	5320	11.38	-0.03	1.11	1.153	1.159	1.483	4.0
802.11a	Right	5500	9.72	0.03	0.319	1.197	1.159	0.443	4.0
802.11a	Right	5580	16.64	-0.09	1.99	1.086	1.159	**2.505**	4.0
802.11a	Right	5720	16.65	0.14	1.64	1.084	1.159	2.060	4.0
802.11a	Right	5745	16.47	0.12	0.469	1.130	1.159	0.614	4.0
802.11a	Right	5785	16.38	-0.04	0.41	1.153	1.159	0.548	4.0
802.11a	Right	5825	16.32	0.17	0.412	1.169	1.159	0.558	4.0

Bluetooth SAR Measurement									
Ambient Temperature (°C) : 21.5 ± 2				Relative Humidity (%): 52					
Liquid Temperature (°C) : 21.0 ± 2				Depth of Liquid (cm):>15					
Product Name: Scanner									
Limb SAR: Spacing 0mm									
Test Mode	Side	Frequency (MHz)	Frame Power (dBm)	Power Drift (<±0.2)	SAR 10g (W/kg)	Scaling Factor	Duty factor	Scaled SAR 10g (W/kg)	Limit (W/kg)
DH5	Right	2402	7.60	0.16	0.019	1.096	1.299	0.027	4.0
DH5	Right	2441	7.02	0.06	0.021	1.117	1.299	**0.030**	4.0
DH5	Right	2480	7.49	0.09	0.008	1.125	1.299	0.012	4.0

RFID SAR Measurement									
Ambient Temperature (°C) : 21.5 ± 2				Relative Humidity (%): 52					
Liquid Temperature (°C) : 21.0 ± 2				Depth of Liquid (cm):>15					
Product Name: Scanner									
Limb SAR: Spacing 0mm									
Test Mode	Side	Frequency (MHz)	Frame Power (dBm)	Power Drift (<±0.2)	SAR 10g (W/kg)	Scaling Factor	Duty factor	Scaled SAR 10g (W/kg)	Limit (W/kg)
Internal antenna	Right	907.25	15.98	0.14	0.071	1.114	1.111	0.088	4.0
Internal antenna	Right	913.75	16.74	0.04	0.076	1.114	1.111	0.094	4.0
Internal antenna	Right	920.75	17.04	-0.13	0.077	1.114	1.111	**0.095**	4.0
External antenna	Right	907.25	15.98	0.14	0.003	1.114	1.111	0.004	4.0
External antenna	Right	913.75	16.74	0.04	0.003	1.114	1.111	0.004	4.0
External antenna	Right	920.75	17.04	-0.13	0.002	1.114	1.111	0.003	4.0
Verify the worst value based on the original case.									
Internal antenna	Right	920.75	17.04	-0.11	0.052	1.114	1.111	0.064	4.0

9.2 Simultaneous Transmission Analysis

1	WLAN 2.4GHz + RFID
2	WLAN 5GHz + RFID
3	BT + RFID

Simultaneous Transmission of Wi-Fi and other wireless technologies

Mode	WLAN 2.4GHz SAR (W/kg)	WLAN 5GHz SAR (W/kg)	RFID SAR (W/kg)	Simultaneous Transmission	Antenna Pair in mm	Peak location Separation radio
WLAN 2.4GHz + RFID	0.841	--	0.095	0.936	N/A	N/A
WLAN 5GHz + RFID	--	2.505	0.095	2.600	N/A	N/A
Mode	BT SAR (W/kg)		RFID SAR (W/kg)	Simultaneous Transmission	Antenna Pair in mm	Peak location Separation radio
BT + RFID	0.030		0.095	0.125	N/A	N/A

Note: The sum of value is less than 1.6W/kg or The ratio is determined by (SAR1+ SAR2)^1.5/Ri, rounded to two decimal digits, and must be ≤ 0.04 for all antenna pairs in the configuration to qualify for SAR test exclusion.

9.3 Test position and configuration

1. Liquid tissue depth was at least 15.0 cm for all frequencies.
2. The manufacturer has confirmed that the device(s) tested have the same physical, mechanical and thermal characteristics and are within operational tolerances expected for production units.
3. SAR results were scaled to the maximum allowed power to demonstrate compliance per FCC KDB Publication 447498 D01v06.
4. Reported SAR were scaled to the maximum duty factor to demonstrate compliance per FCC KDB 248227 D01 802.11 Wi-Fi SAR v02r02.
5. SAR was performed with the device configured in the positions according to KDB 447498 D01 SAR Procedures for general, Body SAR was performed with the device to phantom separation distance of 10mm.
6. SAR was performed with the device configured in the positions according to KDB 447498 D01 SAR Procedures for general, Limb SAR was performed with the device to phantom separation distance of 0mm.
7. Because of the Hand-held device, so addition tests are performed at five positions (Front, Back, Top, Right, Left).

WLAN Notes:
When the maximum extrapolated peak SAR of the zoom scan for the maximum output channel is <1.6 W/kg and the reported 1g averaged SAR is <0.8 W/kg, SAR testing on other default channels is not required.

Appendix A. SAR System Validation Data

Date/Time: 5/24/2022

Test Laboratory: DEKRA Lab

System Check Head 2450MHz

DUT: Dipole 2450 MHz D2450V2; Type: D2450V2

Communication System: UID 0, CW; Communication System Band: D2450(2450MHz); Duty Cycle: 1:1;

Frequency: 2450 MHz; Medium parameters used (interpolated): f = 2450 MHz; σ = 1.824 S/m; ε_r = 39.225; ρ = 1000 kg/m3 ; Phantom section: Flat Section ; Input Power=250mW

Ambient temperature (℃): 21.5, Liquid temperature (℃): 21.0

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(7.39, 7.39, 7.39); Calibrated: 4/18/2022
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 3/24/2022
- Phantom: ELI1; Type: QDOVA002AA; Serial: TP:2106
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Configuration/System Check Head 2450MHz/Area Scan (7x11x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (measured) = 14.3 W/kg

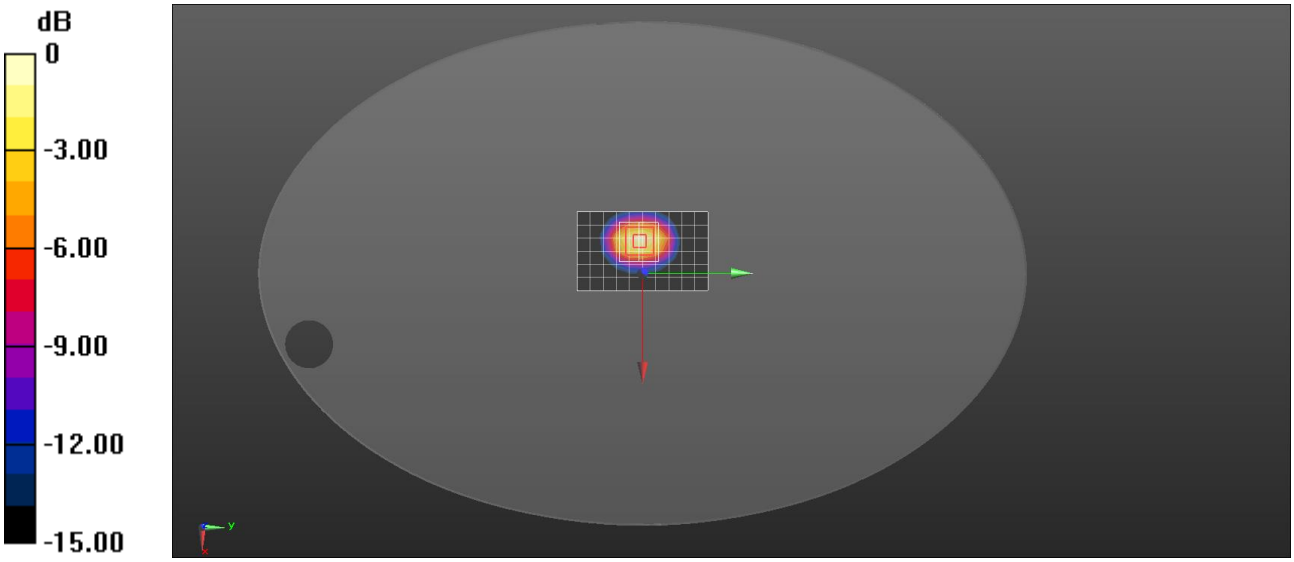
Configuration/System Check Head 2450MHz/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=4mm

Reference Value = 71.40 V/m; Power Drift = 0.17 dB

Peak SAR (extrapolated) = 26.8 W/kg

SAR(1 g) = 13 W/kg; SAR(10 g) = 6.04 W/kg

Maximum value of SAR (measured) = 14.9 W/kg



0 dB = 14.9 W/kg = 11.73 dBW/kg

Date/Time: 5/25/2022

Test Laboratory: DEKRA Lab

System Check Head 5250MHz

DUT: Dipole D5GHzV2; Type: D5GHzV2

Communication System: UID 0, CW (0); Communication System Band: 5GHz(5000.0-6000.0MHz); Duty Cycle: 1:1; Frequency: 5250 MHz; Medium parameters used (interpolated): f = 5250 MHz; σ = 4.6 S/m; ε r = 36.384; ρ = 1000 kg/m3 ; Phantom section: Flat Section ; Input Power=100mW

Ambient temperature (℃): 21.5, Liquid temperature (℃): 21.0

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(5.4, 5.4, 5.4); Calibrated: 4/18/2022
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 3/24/2022
- Phantom: ELI1; Type: QDOVA002AA; Serial: TP:2106
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Configuration/System Check Head 5250MHz/Area Scan (6x8x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (measured) = 6.17 W/kg

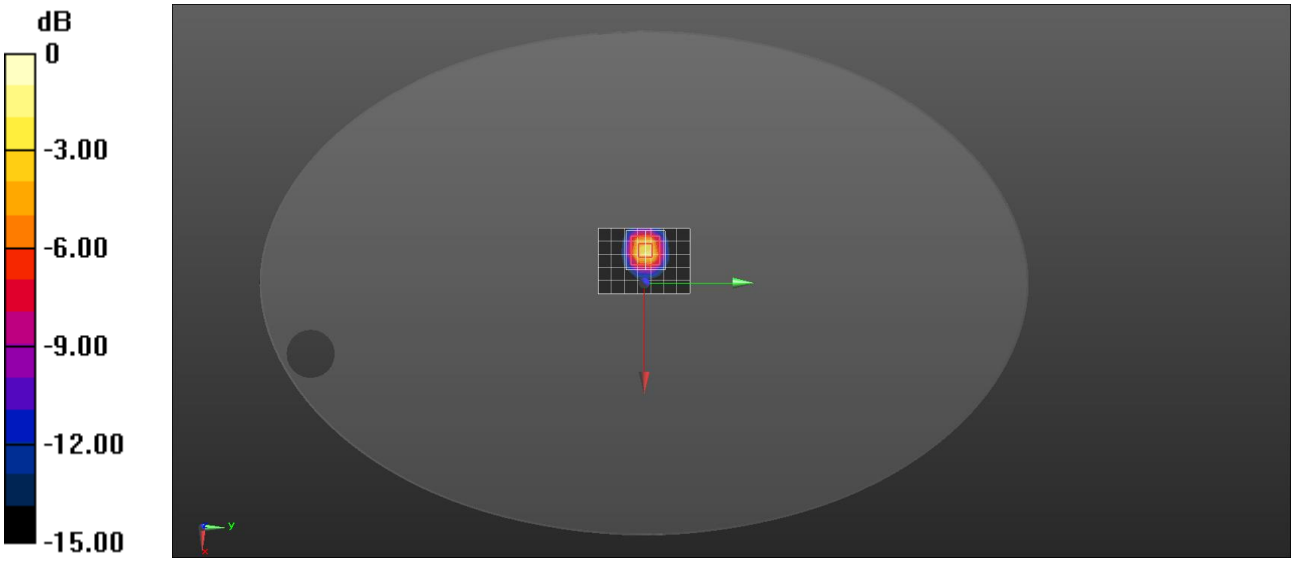
Configuration/System Check Head 5250MHz/Zoom Scan (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 30.59 V/m; Power Drift = 0.07 dB

Peak SAR (extrapolated) = 44.4 W/kg

SAR(1 g) = 8.12 W/kg; SAR(10 g) = 2.26 W/kg

Maximum value of SAR (measured) = 8.41 W/kg



0 dB = 8.41 W/kg = 9.25 dBW/kg

Date/Time: 5/25/2022

Test Laboratory: DEKRA Lab

System Check Head 5600MHz

DUT: Dipole D5GHzV2; Type: D5GHzV2

Communication System: UID 0, CW (0); Communication System Band: 5GHz(5000.0-6000.0MHz); Duty Cycle: 1:1; Frequency: 5600 MHz; Medium parameters used: f = 5600 MHz; σ = 4.99 S/m; ε r = 35.802; ρ = 1000 kg/m3 ; Phantom section: Flat Section ; Input Power=100mW

Ambient temperature (℃): 21.5, Liquid temperature (℃): 21.0

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(4.85, 4.85, 4.85); Calibrated: 4/18/2022
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 3/24/2022
- Phantom: ELI1; Type: QDOVA002AA; Serial: TP:2106
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Configuration/System Check Head 5600MHz/Area Scan (6x8x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (measured) = 7.87 W/kg

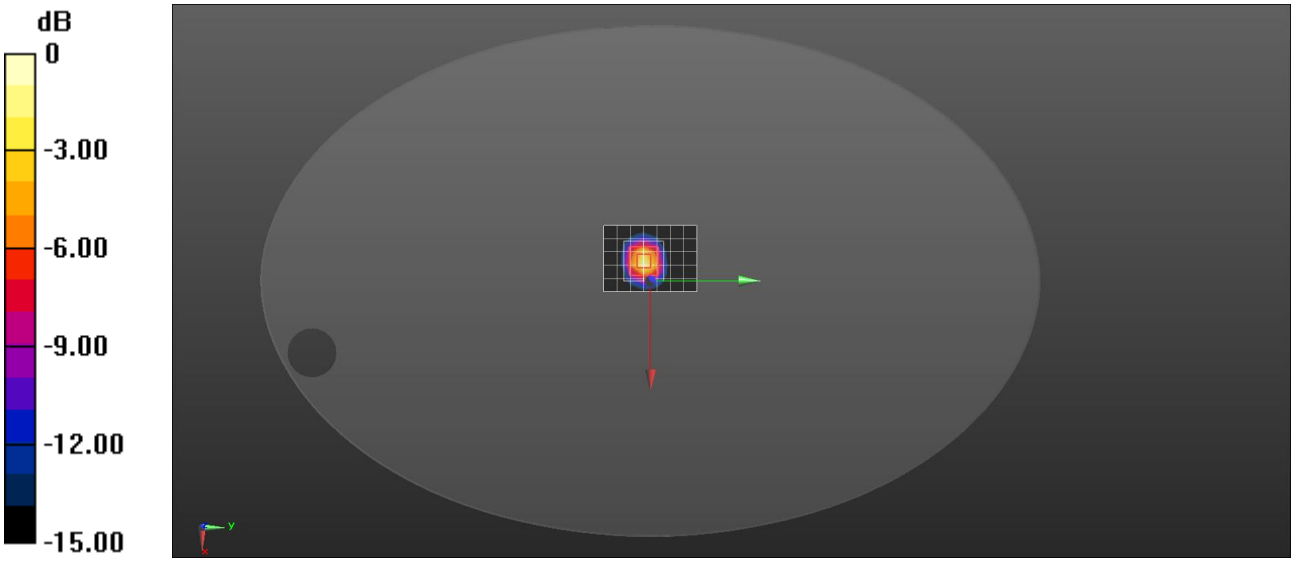
Configuration/System Check Head 5600MHz/Zoom Scan (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 36.38 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 23.2 W/kg

SAR(1 g) = 7.58 W/kg; SAR(10 g) = 2.17 W/kg

Maximum value of SAR (measured) = 8.80 W/kg



0 dB = 8.80 W/kg = 9.44 dBW/kg

Date/Time: 5/25/2022

Test Laboratory: DEKRA Lab

System Check Head 5750MHz

DUT: Dipole D5GHzV2; Type: D5GHzV2

Communication System: UID 0, CW (0); Communication System Band: 5GHz(5000.0-6000.0MHz); Duty Cycle: 1:1; Frequency: 5750 MHz; Medium parameters used: f = 5750 MHz; σ = 5.167 S/m; ε_r = 35.552; ρ = 1000 kg/m3 ; Phantom section: Flat Section ; Input Power=100mW

Ambient temperature (℃): 21.5, Liquid temperature (℃): 21.0

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(4.88, 4.88, 4.88); Calibrated: 4/18/2022
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 3/24/2022
- Phantom: ELI1; Type: QDOVA002AA; Serial: TP:2106
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Configuration/System Check Head 5750MHz/Area Scan (5x8x1): Measurement grid: dx=10mm, dy=10mm

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

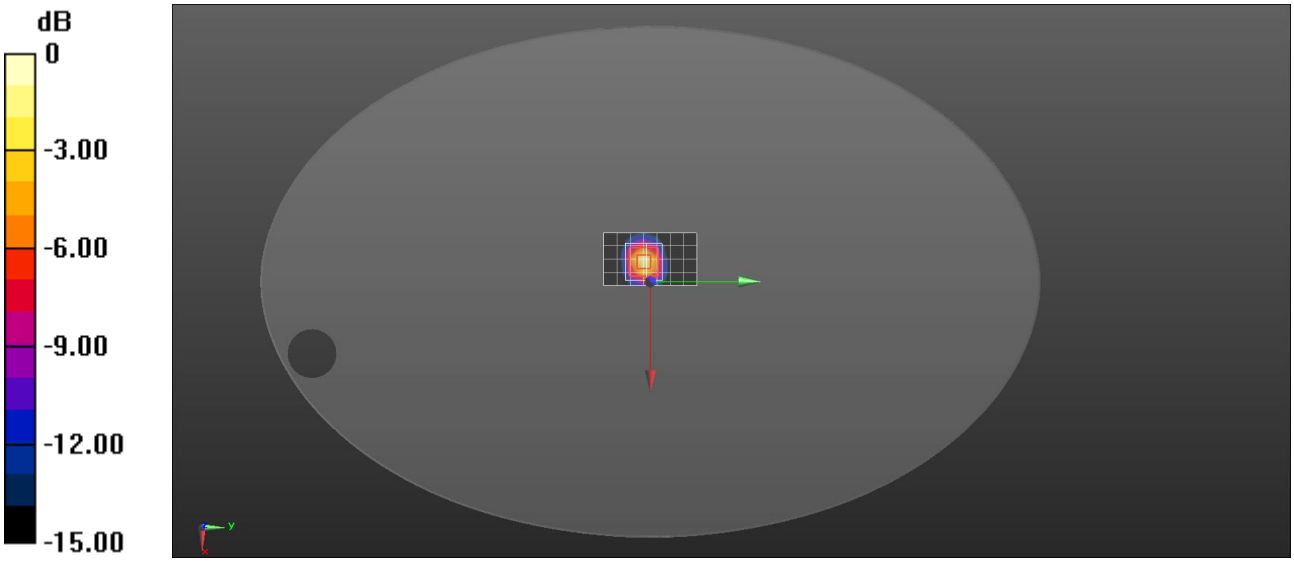
Configuration/System Check Head 5750MHz/Zoom Scan (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 35.39 V/m; Power Drift = -0.06 dB

Peak SAR (extrapolated) = 36.5 W/kg

SAR(1 g) = 8.03 W/kg; SAR(10 g) = 2.22 W/kg

Maximum value of SAR (measured) = 16.4 W/kg



0 dB = 16.4 W/kg = 12.15 dBW/kg

Date/Time: 5/26/2022

Test Laboratory: DEKRA Lab

System Check Head 900MHz

DUT: Dipole 900 MHz D900V2; Type: D900V2

Communication System: UID 0, CW (0); Communication System Band: Exported from older format (data unavailable - please correct).; Duty Cycle: 1:1; Frequency: 900 MHz; Medium parameters used: f = 900 MHz; σ = 0.976 S/m; ε r = 43.37; ρ = 1000 kg/m3 ; Phantom section: Flat Section ; Input Power=250mW

Ambient temperature (℃): 21.5, Liquid temperature (℃): 21.0

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(9.3, 9.3, 9.3); Calibrated: 4/18/2022
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 3/24/2022
- Phantom: ELI1; Type: QDOVA002AA; Serial: TP:2106
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Configuration/System Check GSM900 Head/Area Scan (6x19x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (measured) = 2.60 W/kg

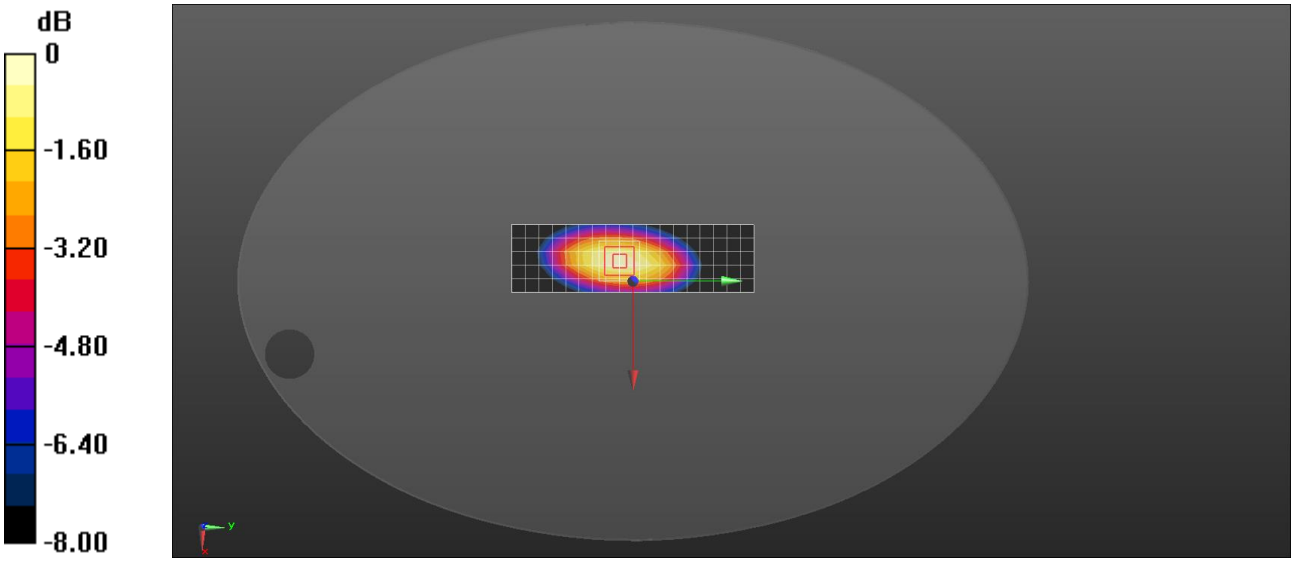
Configuration/System Check GSM900 Head/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=4mm

Reference Value = 51.08 V/m; Power Drift = -0.06 dB

Peak SAR (extrapolated) = 3.67 W/kg

SAR(1 g) = 2.67 W/kg; SAR(10 g) = 1.71 W/kg

Maximum value of SAR (measured) = 2.67 W/kg



0 dB = 2.67 W/kg = 4.27 dBW/kg

Appendix B. SAR measurement Data

2.4G WI-FI-BT

Date/Time: 5/24/2022

Test Laboratory: DEKRA Lab

WLAN2.4G 802.11b CH06 2437MHz Front

DUT: Barcode Scanner ; Type: 8690i

Communication System: UID 0, Wi-Fi (0); Communication System Band: 802.11b; Duty Cycle: 1:1; Frequency: 2437 MHz; Medium parameters used: f = 2437 MHz; σ = 1.812 S/m; ε r = 39.264; ρ = 1000 kg/m3 ;

Phantom section: Flat Section ; Input Power=250mW

Ambient temperature (℃): 21.5, Liquid temperature (℃): 21.0

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(7.39, 7.39, 7.39); Calibrated: 4/18/2022
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 3/24/2022
- Phantom: ELI1; Type: QDOVA002AA; Serial: TP:2106
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

WLAN2.4G 802.11b CH06 2437MHz Front/Area Scan (13x13x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (measured) = 0.0505 W/kg

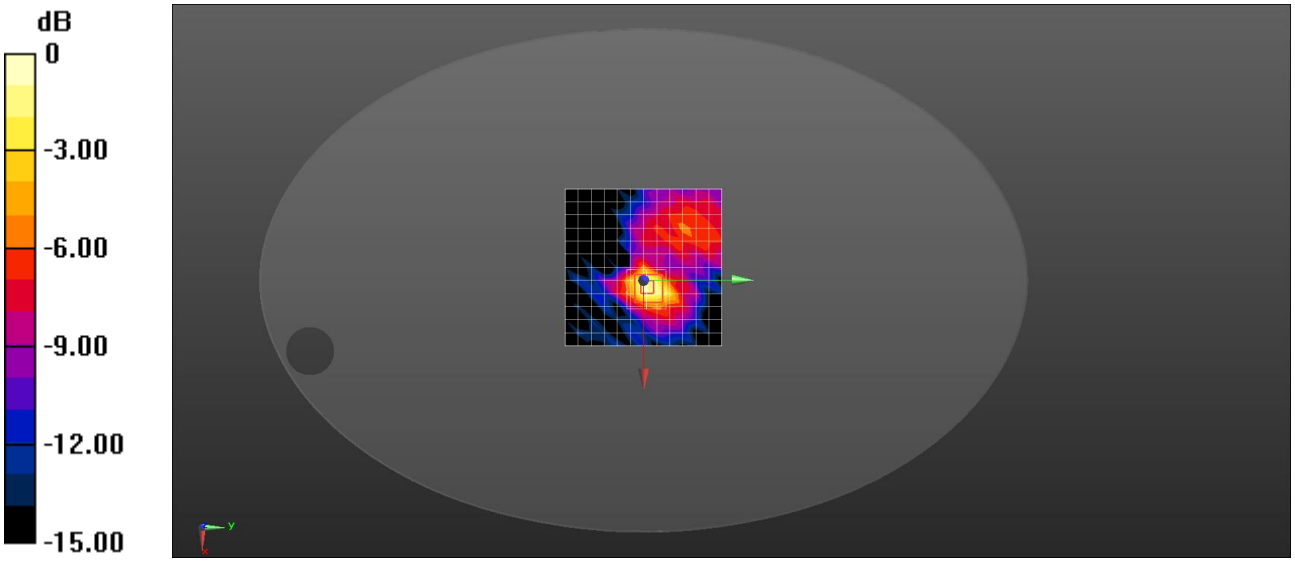
Configuration/WLAN2.4G 802.11b CH06 2437MHz Front/Zoom Scan (7x7x5)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=4mm

Reference Value = 5.351 V/m; Power Drift = 0.17 dB

Peak SAR (extrapolated) = 0.0960 W/kg

SAR(1 g) = 0.052 W/kg; SAR(10 g) = 0.025 W/kg

Maximum value of SAR (measured) = 0.0610 W/kg



0 dB = 0.0610 W/kg = -12.15 dBW/kg

Date/Time: 5/24/2022

Test Laboratory: DEKRA Lab

WLAN2.4G 802.11b CH06 2437MHz Back

DUT: Barcode Scanner ; Type: 8690i

Communication System: UID 0, Wi-Fi (0); Communication System Band: 802.11b; Duty Cycle: 1:1; Frequency: 2437 MHz; Medium parameters used: f = 2437 MHz; σ = 1.812 S/m; ε_r = 39.264; ρ = 1000 kg/m3 ;

Phantom section: Flat Section ; Input Power=250mW

Ambient temperature (℃): 21.5, Liquid temperature (℃): 21.0

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(7.39, 7.39, 7.39); Calibrated: 4/18/2022
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 3/24/2022
- Phantom: ELI1; Type: QDOVA002AA; Serial: TP:2106
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Configuration/WLAN2.4G 802.11b CH06 2437MHz Back/Area Scan (13x13x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (measured) = 0.0630 W/kg

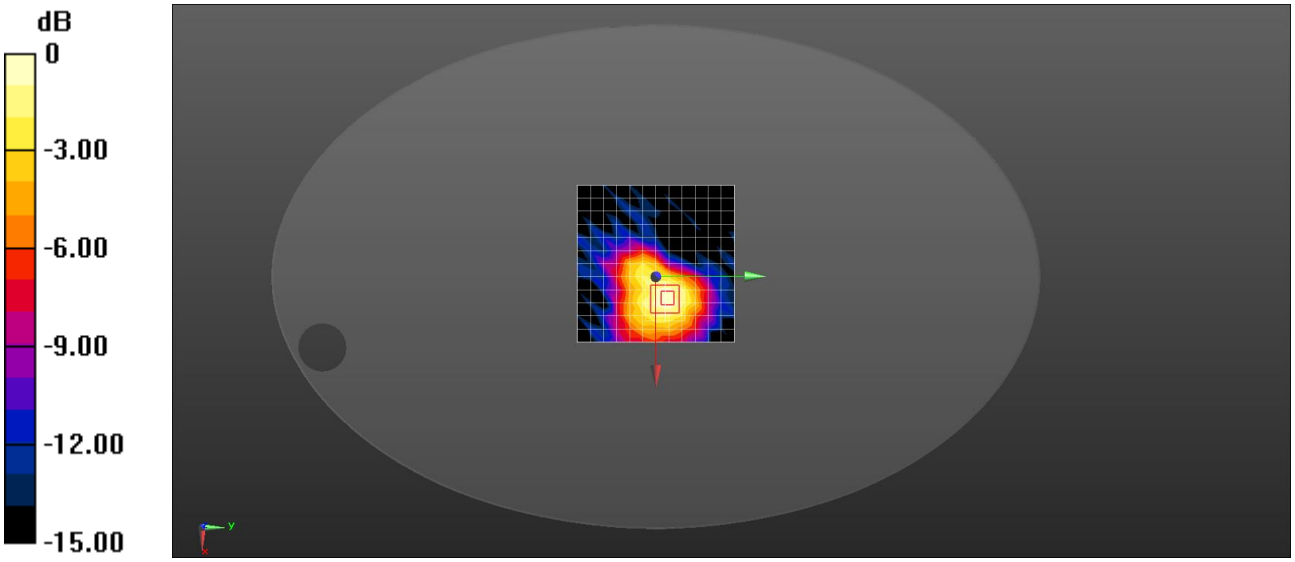
Configuration/WLAN2.4G 802.11b CH06 2437MHz Back/Zoom Scan (7x7x5)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=4mm

Reference Value = 4.732 V/m; Power Drift = 0.18 dB

Peak SAR (extrapolated) = 0.0980 W/kg

SAR(1 g) = 0.057 W/kg; SAR(10 g) = 0.032 W/kg

Maximum value of SAR (measured) = 0.0626 W/kg



0 dB = 0.0626 W/kg = -12.03 dBW/kg

Date/Time: 5/24/2022

Test Laboratory: DEKRA Lab

WLAN2.4G 802.11b CH06 2437MHz Top

DUT: Barcode Scanner ; Type: 8690i

Communication System: UID 0, Wi-Fi (0); Communication System Band: 802.11b; Duty Cycle: 1:1; Frequency: 2437 MHz; Medium parameters used: f = 2437 MHz; σ = 1.812 S/m; ε r = 39.264; ρ = 1000 kg/m3 ;

Phantom section: Flat Section ; Input Power=250mW

Ambient temperature (℃): 21.5, Liquid temperature (℃): 21.0

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(7.39, 7.39, 7.39); Calibrated: 4/18/2022
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 3/24/2022
- Phantom: ELI1; Type: QDOVA002AA; Serial: TP:2106
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Configuration/WLAN2.4G 802.11b CH06 2437MHz Top/Area Scan (13x13x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (measured) = 0.404 W/kg

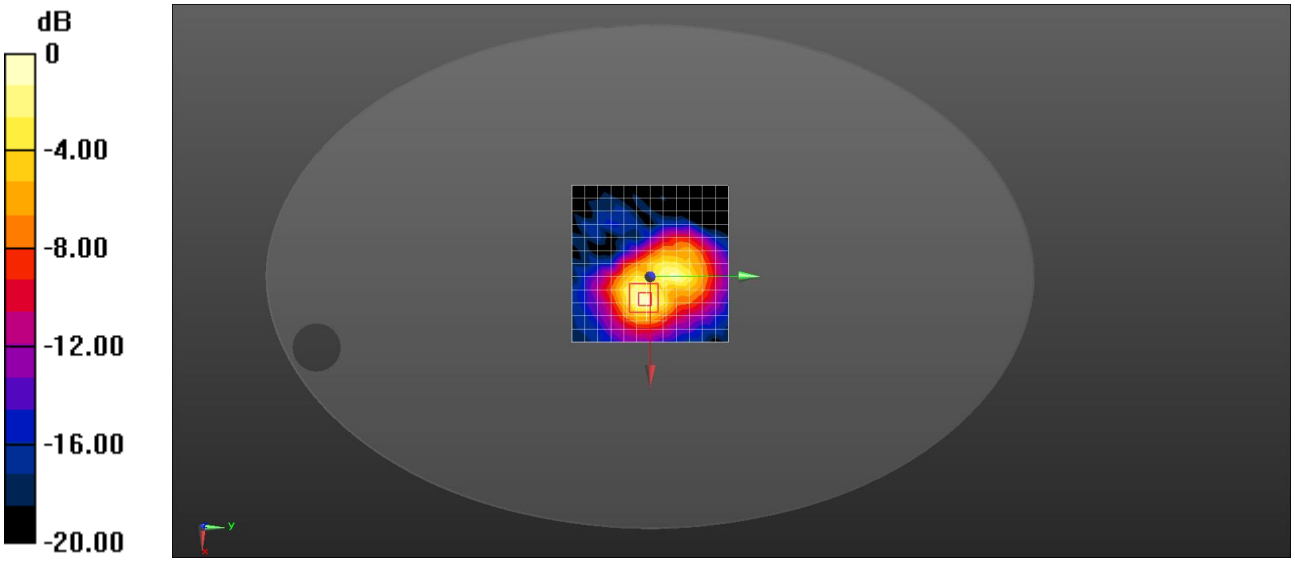
Configuration/WLAN2.4G 802.11b CH06 2437MHz Top/Zoom Scan (7x7x5)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=4mm

Reference Value = 9.253 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 0.937 W/kg

SAR(1 g) = 0.392 W/kg; SAR(10 g) = 0.172 W/kg

Maximum value of SAR (measured) = 0.442 W/kg



0 dB = 0.442 W/kg = -3.55 dBW/kg

Date/Time: 5/24/2022

Test Laboratory: DEKRA Lab

WLAN2.4G 802.11b CH06 2437MHz Bottom

DUT: Barcode Scanner ; Type: 8690i

Communication System: UID 0, Wi-Fi (0); Communication System Band: 802.11b; Duty Cycle: 1:1; Frequency: 2437 MHz; Medium parameters used: f = 2437 MHz; σ = 1.812 S/m; ε r = 39.264; ρ = 1000 kg/m3 ;

Phantom section: Flat Section ; Input Power=250mW

Ambient temperature (℃): 21.5, Liquid temperature (℃): 21.0

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(7.39, 7.39, 7.39); Calibrated: 4/18/2022
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 3/24/2022
- Phantom: ELI1; Type: QDOVA002AA; Serial: TP:2106
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Configuration/WLAN2.4G 802.11b CH06 2437MHz Bottom/Area Scan (13x13x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (measured) = 0.116 W/kg

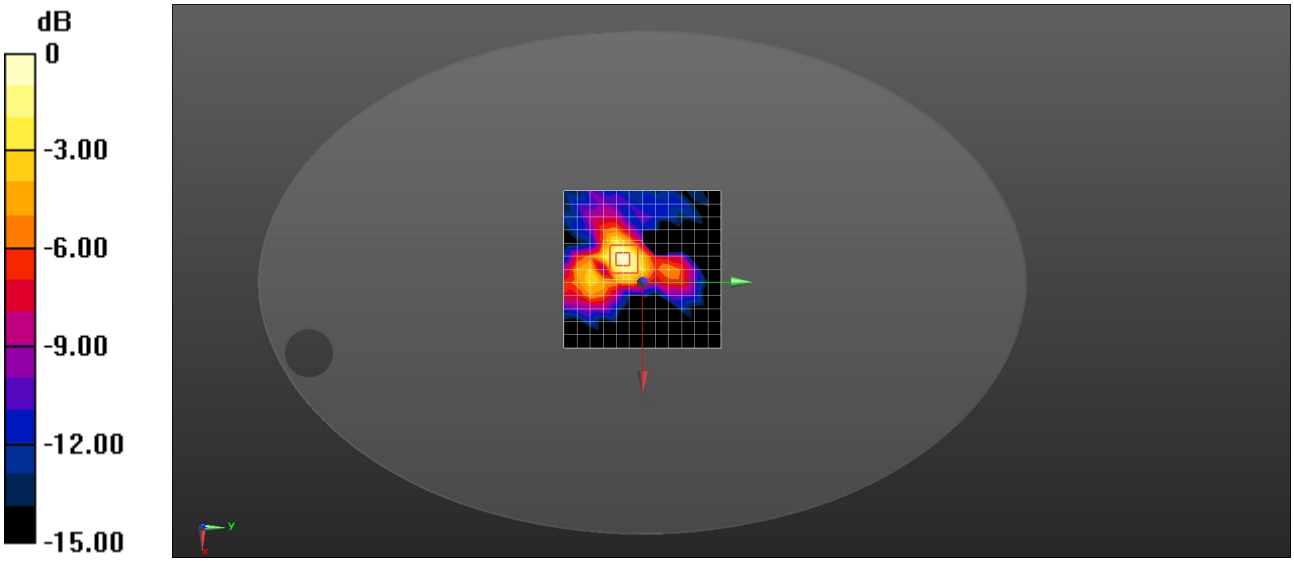
Configuration/WLAN2.4G 802.11b CH06 2437MHz Bottom/Zoom Scan (7x7x5)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=4mm

Reference Value = 4.264 V/m; Power Drift = 0.15 dB

Peak SAR (extrapolated) = 0.201 W/kg

SAR(1 g) = 0.111 W/kg; SAR(10 g) = 0.056 W/kg

Maximum value of SAR (measured) = 0.127 W/kg



0 dB = 0.127 W/kg = -8.96 dBW/kg

Date/Time: 5/24/2022

Test Laboratory: DEKRA Lab

WLAN2.4G 802.11b CH06 2437MHz Left

DUT: Barcode Scanner ; Type: 8690i

Communication System: UID 0, Wi-Fi (0); Communication System Band: 802.11b; Duty Cycle: 1:1; Frequency: 2437 MHz; Medium parameters used: f = 2437 MHz; σ = 1.812 S/m; ε r = 39.264; ρ = 1000 kg/m3 ;

Phantom section: Flat Section ; Input Power=250mW

Ambient temperature (℃): 21.5, Liquid temperature (℃): 21.0

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(7.39, 7.39, 7.39); Calibrated: 4/18/2022
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 3/24/2022
- Phantom: ELI1; Type: QDOVA002AA; Serial: TP:2106
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Configuration/WLAN2.4G 802.11b CH06 2437MHz Left/Area Scan (13x13x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (measured) = 0.0710 W/kg

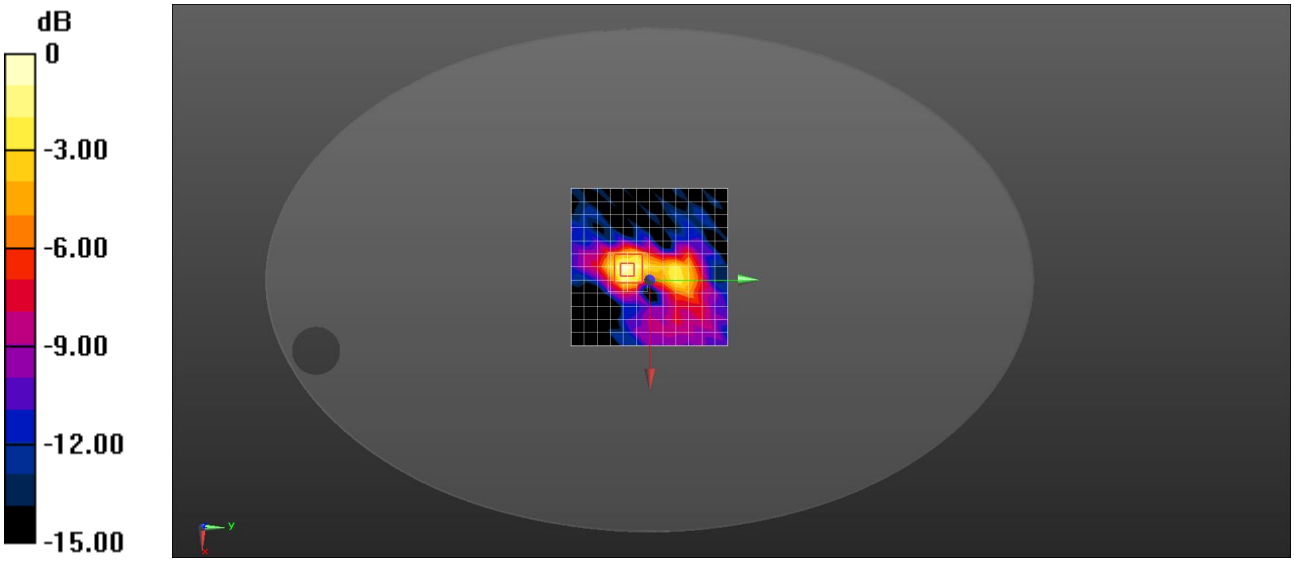
Configuration/WLAN2.4G 802.11b CH06 2437MHz Left/Zoom Scan (7x7x5)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=4mm

Reference Value = 3.038 V/m; Power Drift = 0.12 dB

Peak SAR (extrapolated) = 0.119 W/kg

SAR(1 g) = 0.066 W/kg; SAR(10 g) = 0.032 W/kg

Maximum value of SAR (measured) = 0.0779 W/kg



0 dB = 0.0779 W/kg = -11.08 dBW/kg

Date/Time: 5/24/2022

Test Laboratory: DEKRA Lab

WLAN2.4G 802.11b CH06 2437MHz Right

DUT: Barcode Scanner ; Type: 8690i

Communication System: UID 0, Wi-Fi (0); Communication System Band: 802.11b; Duty Cycle: 1:1; Frequency: 2437 MHz; Medium parameters used: f = 2437 MHz; σ = 1.812 S/m; ε r = 39.264; ρ = 1000 kg/m3 ;

Phantom section: Flat Section ; Input Power=250mW

Ambient temperature (℃): 21.5, Liquid temperature (℃): 21.0

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(7.39, 7.39, 7.39); Calibrated: 4/18/2022
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 3/24/2022
- Phantom: ELI1; Type: QDOVA002AA; Serial: TP:2106
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Configuration/WLAN2.4G 802.11b CH06 2437MHz Right/Area Scan (13x13x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (measured) = 1.40 W/kg

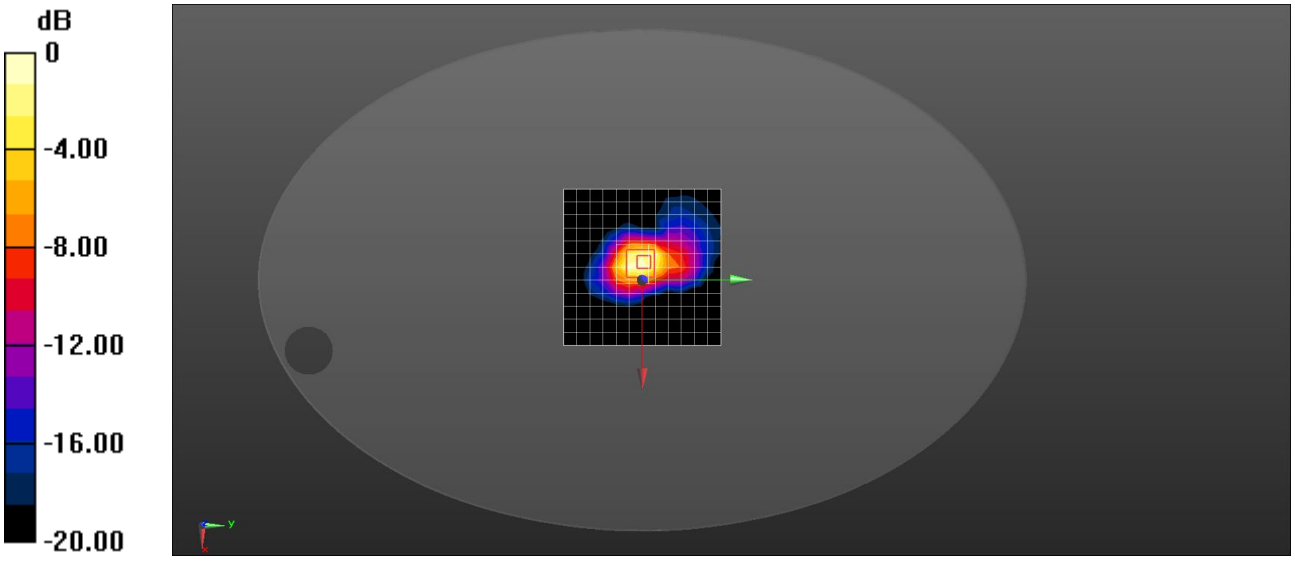
Configuration/WLAN2.4G 802.11b CH06 2437MHz Right/Zoom Scan (7x7x5)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=4mm

Reference Value = 14.74 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 3.21 W/kg

SAR(1 g) = 1.34 W/kg; SAR(10 g) = 0.604 W/kg

Maximum value of SAR (measured) = 1.50 W/kg



0 dB = 1.50 W/kg = 1.76 dBW/kg

Date/Time: 5/24/2022

Test Laboratory: DEKRA Lab

WLAN2.4G 802.11b CH01 2412MHz Right

DUT: Barcode Scanner ; Type: 8690i

Communication System: UID 0, Wi-Fi (0); Communication System Band: 802.11b; Duty Cycle: 1:1; Frequency: 2412 MHz; Medium parameters used: f = 2412 MHz; σ = 1.793 S/m; ε r = 39.332; ρ = 1000 kg/m3 ;

Phantom section: Flat Section ; Input Power=250mW

Ambient temperature (℃): 21.5, Liquid temperature (℃): 21.0

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(7.39, 7.39, 7.39); Calibrated: 4/18/2022
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 3/24/2022
- Phantom: ELI1; Type: QDOVA002AA; Serial: TP:2106
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Configuration/WLAN2.4G 802.11b CH01 2412MHz Right/Area Scan (13x13x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (measured) = 1.50 W/kg

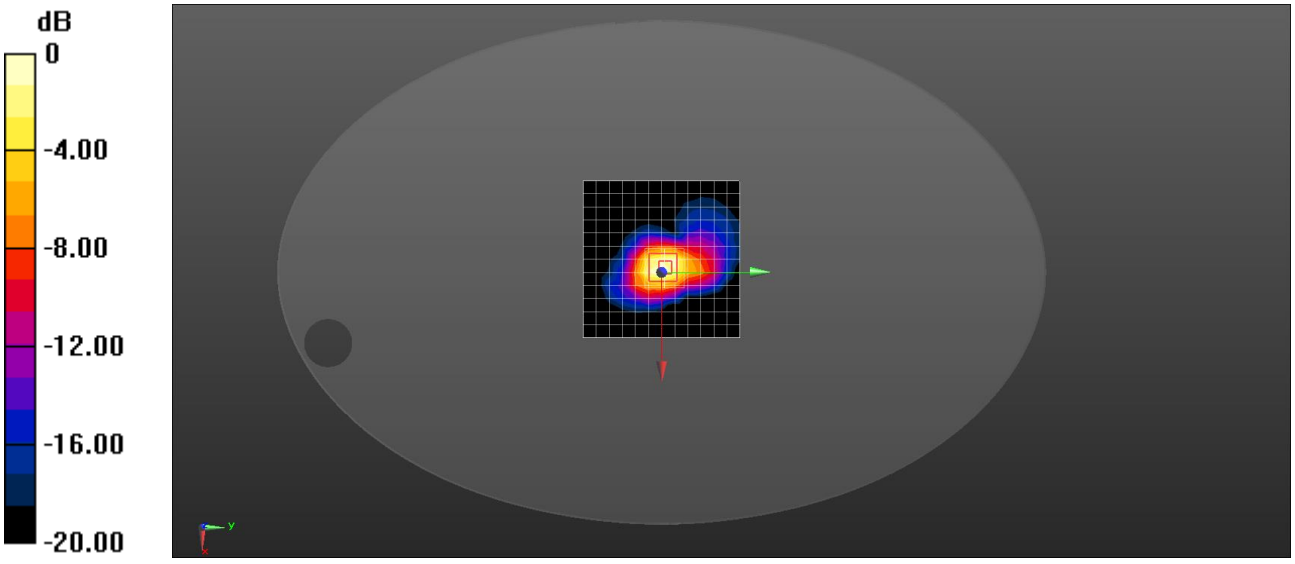
Configuration/WLAN2.4G 802.11b CH01 2412MHz Right/Zoom Scan (7x7x5)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=4mm

Reference Value = 22.88 V/m; Power Drift = -0.13 dB

Peak SAR (extrapolated) = 2.69 W/kg

SAR(1 g) = 1.15 W/kg; SAR(10 g) = 0.520 W/kg

Maximum value of SAR (measured) = 1.21 W/kg



0 dB = 1.51 W/kg = 1.79 dBW/kg

Date/Time: 5/24/2022

Test Laboratory: DEKRA Lab

WLAN2.4G 802.11b CH11 2462MHz Right

DUT: Barcode Scanner ; Type: 8690i

Communication System: UID 0, Wi-Fi (0); Communication System Band: 802.11b; Duty Cycle: 1:1; Frequency: 2462 MHz; Medium parameters used (interpolated): f = 2437 MHz; σ = 1.833 S/m; ε_r = 39.205; ρ = 1000 kg/m3 ; Phantom section: Flat Section ; Input Power=250mW

Ambient temperature (℃): 21.5, Liquid temperature (℃): 21.0

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(7.39, 7.39, 7.39); Calibrated: 4/18/2022
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 3/24/2022
- Phantom: ELI1; Type: QDOVA002AA; Serial: TP:2106
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Configuration/WLAN2.4G 802.11b CH11 2462MHz Right/Area Scan (13x13x1): Measurement grid: dx=10mm, dy=10mm

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

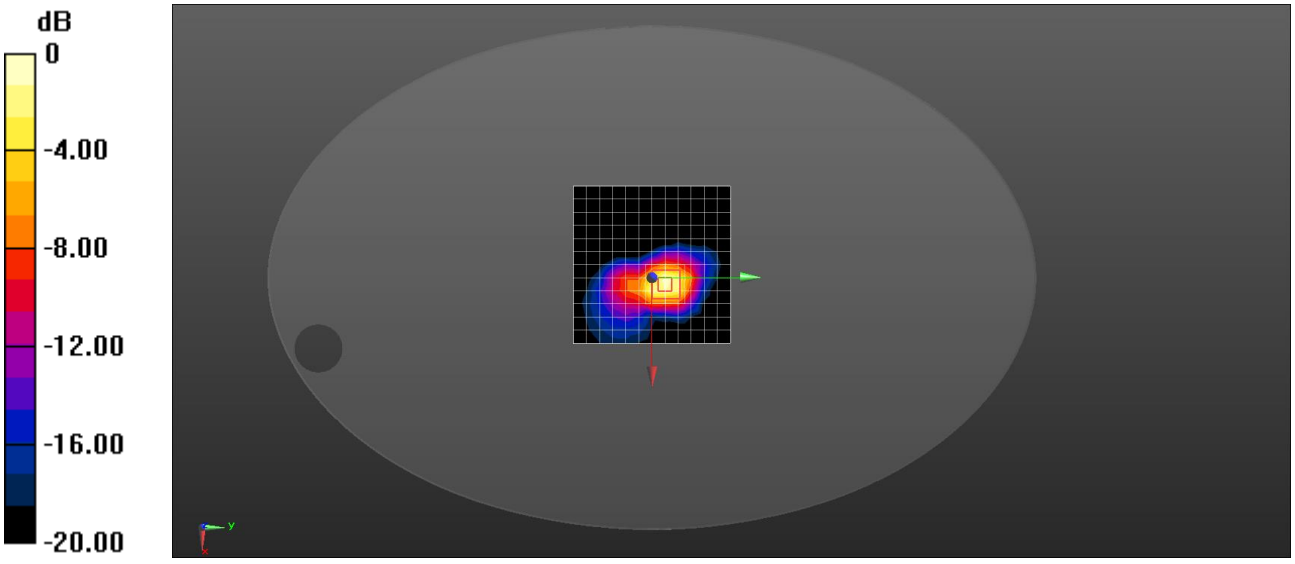
Configuration/WLAN2.4G 802.11b CH11 2462MHz Right/Zoom Scan (7x7x5)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=4mm

Reference Value = 20.49 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 3.60 W/kg

SAR(1 g) = 1.61 W/kg; SAR(10 g) = 0.707 W/kg

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



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

Date/Time: 5/24/2022

Test Laboratory: DEKRA Lab

DH5 CH39 2441MHz Right

DUT: Barcode Scanner ; Type: 8690i

Communication System: UID 0, Bluetooth (0); Communication System Band:ISM Band; Duty Cycle: 1:1; Frequency: 2441 MHz; Medium parameters used: f = 2441 MHz; σ = 1.815 S/m; ε r = 39.253; ρ = 1000 kg/m3 ; Phantom section: Flat Section ; Input Power=250mW

Ambient temperature (℃): 21.5, Liquid temperature (℃): 21.0

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(7.39, 7.39, 7.39); Calibrated: 4/18/2022
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 3/24/2022
- Phantom: ELI1; Type: QDOVA002AA; Serial: TP:2106
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Configuration/DH5 CH39 2441MHz Right/Area Scan (13x13x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (measured) = 0.0561 W/kg

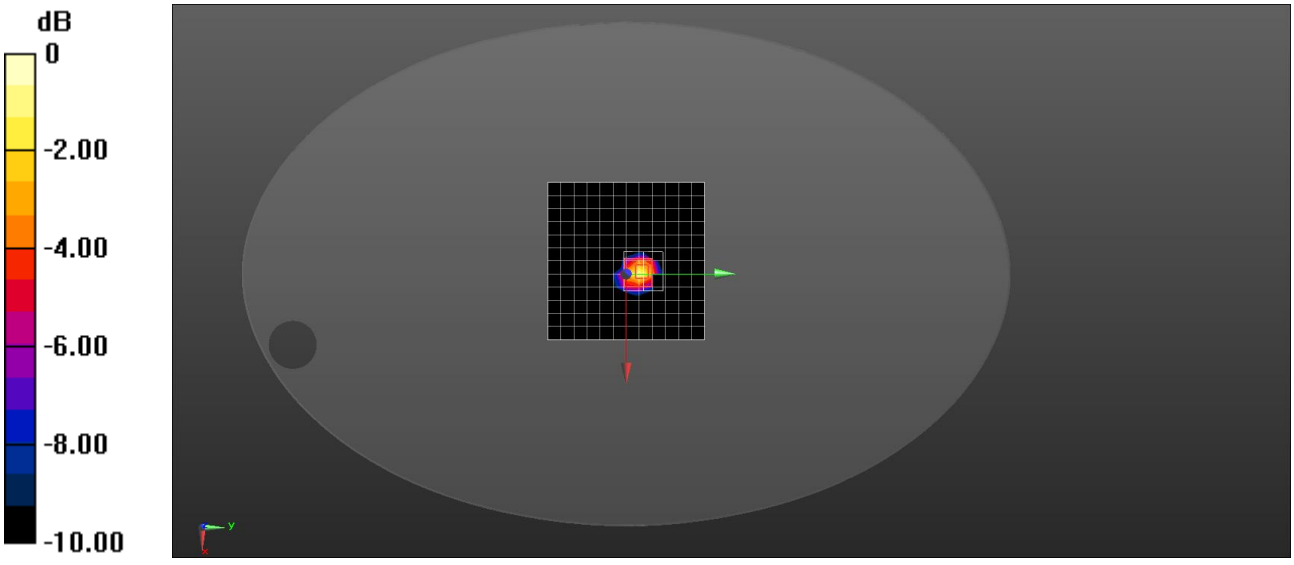
Configuration/DH5 CH39 2441MHz Right/Zoom Scan (7x7x5)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=4mm

Reference Value = 4.581 V/m; Power Drift = 0.06 dB

Peak SAR (extrapolated) = 0.132 W/kg

SAR(1 g) = 0.051 W/kg; SAR(10 g) = 0.021 W/kg

Maximum value of SAR (measured) = 0.0636 W/kg



0 dB = 0.0636 W/kg = -11.97 dBW/kg

Date/Time: 5/24/2022

Test Laboratory: DEKRA Lab

DH5 CH00 2402MHz Right

DUT: Barcode Scanner ; Type: 8690i

Communication System: UID 0, Bluetooth (0); Communication System Band:ISM Band; Duty Cycle: 1:1; Frequency: 2402 MHz; Medium parameters used: f = 2402 MHz; σ = 1.787 S/m; ε r = 39.341; ρ = 1000 kg/m3 ; Phantom section: Flat Section ; Input Power=250mW

Ambient temperature (℃): 21.5, Liquid temperature (℃): 21.0

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(7.39, 7.39, 7.39); Calibrated: 4/18/2022
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 3/24/2022
- Phantom: ELI1; Type: QDOVA002AA; Serial: TP:2106
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Configuration/DH5 CH00 2402MHz Right/Area Scan (13x13x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (measured) = 0.0561 W/kg

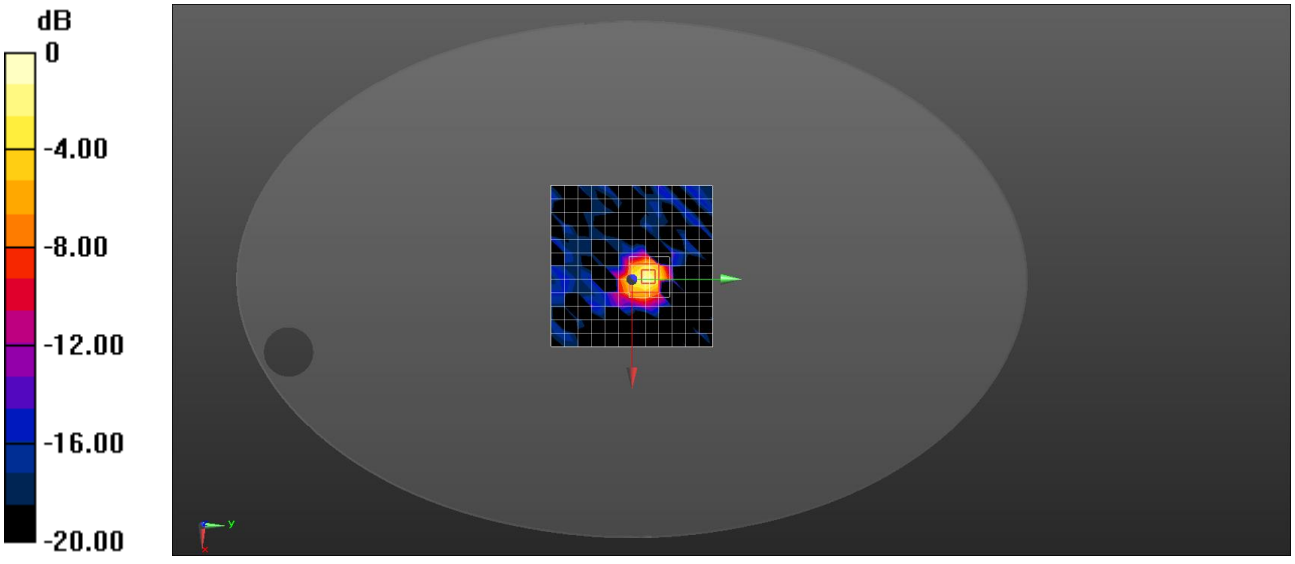
Configuration/DH5 CH00 2402MHz Right/Zoom Scan (7x7x5)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=4mm

Reference Value = 4.553 V/m; Power Drift = 0.16 dB

Peak SAR (extrapolated) = 0.128 W/kg

SAR(1 g) = 0.049 W/kg; SAR(10 g) = 0.019 W/kg

Maximum value of SAR (measured) = 0.0618 W/kg



0 dB = 0.0618 W/kg = -12.09 dBW/kg

Date/Time: 5/24/2022

Test Laboratory: DEKRA Lab

DH5 CH78 2480MHz Right

DUT: Barcode Scanner ; Type: 8690i

Communication System: UID 0, Bluetooth (0); Communication System Band:ISM Band; Duty Cycle: 1:1; Frequency: 2480 MHz; Medium parameters used: f = 2480 MHz; σ = 1.845 S/m; ε r = 39.196; ρ = 1000 kg/m3 ; Phantom section: Flat Section ; Input Power=250mW

Ambient temperature (℃): 21.5, Liquid temperature (℃): 21.0

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(7.39, 7.39, 7.39); Calibrated: 4/18/2022
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 3/24/2022
- Phantom: ELI1; Type: QDOVA002AA; Serial: TP:2106
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Configuration/DH5 CH78 2480MHz Right/Area Scan (13x13x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (measured) = 0.0274 W/kg

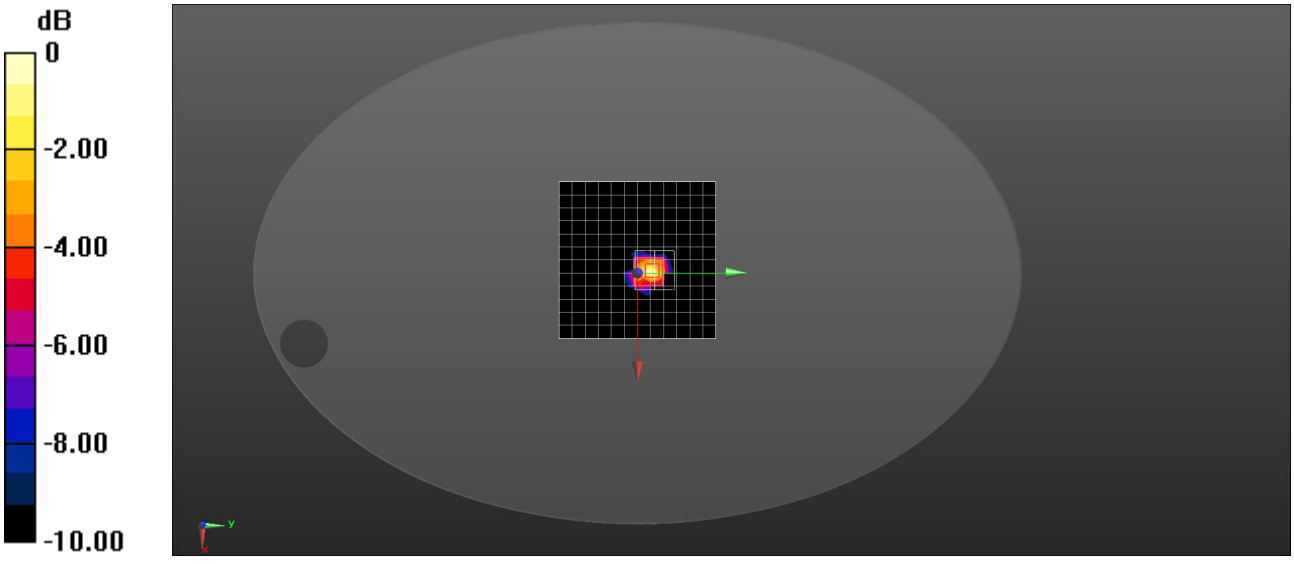
Configuration/DH5 CH78 2480MHz Right/Zoom Scan (7x7x5)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=4mm

Reference Value = 3.183 V/m; Power Drift = 0.09 dB

Peak SAR (extrapolated) = 0.0720 W/kg

SAR(1 g) = 0.020 W/kg; SAR(10 g) = 0.00842 W/kg

Maximum value of SAR (measured) = 0.0264 W/kg



0 dB = 0.0264 W/kg = -15.78 dBW/kg

5G WI-FI

Date/Time: 5/25/2022

Test Laboratory: DEKRA Lab

WLAN5G 802.11a(20MHz) CH52 5260MHz Front

DUT: Barcode Scanner ; Type: 8690i

Communication System: UID 0, CW (0); Communication System Band: 5GHz(5000.0-6000.0MHz); Duty Cycle: 1:1.0; Frequency: 5260 MHz; Medium parameters used: f = 5260 MHz; σ = 4.617 S/m; ε r = 36.368; ρ = 1000 kg/m3 ; Phantom section: Flat Section

Ambient temperature (℃): 21.5, Liquid temperature (℃): 21.0

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(5.4, 5.4, 5.4); Calibrated: 4/18/2022
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 3/24/2022
- Phantom: ELI1; Type: QDOVA002AA; Serial: TP:2106
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Configuration/WLAN5G 802.11a(20MHz) CH52 5260MHz Front/Area Scan (13x13x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (measured) = 0.104 W/kg

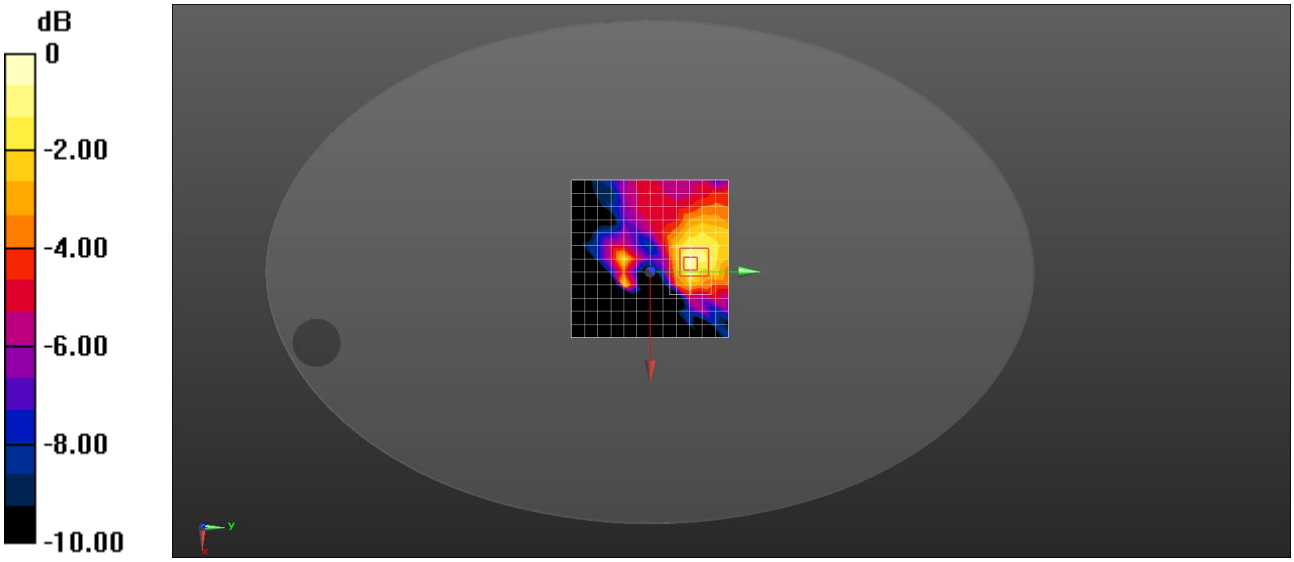
Configuration/WLAN5G 802.11a(20MHz) CH52 5260MHz Front/Zoom Scan (10x9x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 1.376 V/m; Power Drift = 0.19 dB

Peak SAR (extrapolated) = 0.191 W/kg

SAR(1 g) = 0.060 W/kg; SAR(10 g) = 0.025 W/kg

Maximum value of SAR (measured) = 0.113 W/kg



0 dB = 0.113 W/kg = -9.47 dBW/kg

Date/Time: 5/25/2022

Test Laboratory: DEKRA Lab

WLAN5G 802.11a(20MHz) CH52 5260MHz Back

DUT: Barcode Scanner ; Type: 8690i

Communication System: UID 0, CW (0); Communication System Band: 5GHz(5000.0-6000.0MHz); Duty Cycle: 1:1.0; Frequency: 5260 MHz; Medium parameters used: f = 5260 MHz; σ = 4.617 S/m; ε_r = 36.368; ρ = 1000 kg/m3 ; Phantom section: Flat Section

Ambient temperature (℃): 21.5, Liquid temperature (℃): 21.0

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(5.4, 5.4, 5.4); Calibrated: 4/18/2022
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 3/24/2022
- Phantom: ELI1; Type: QDOVA002AA; Serial: TP:2106
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Configuration/WLAN5G 802.11a(20MHz) CH52 5260MHz Back/Area Scan (13x13x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (measured) = 0.181 W/kg

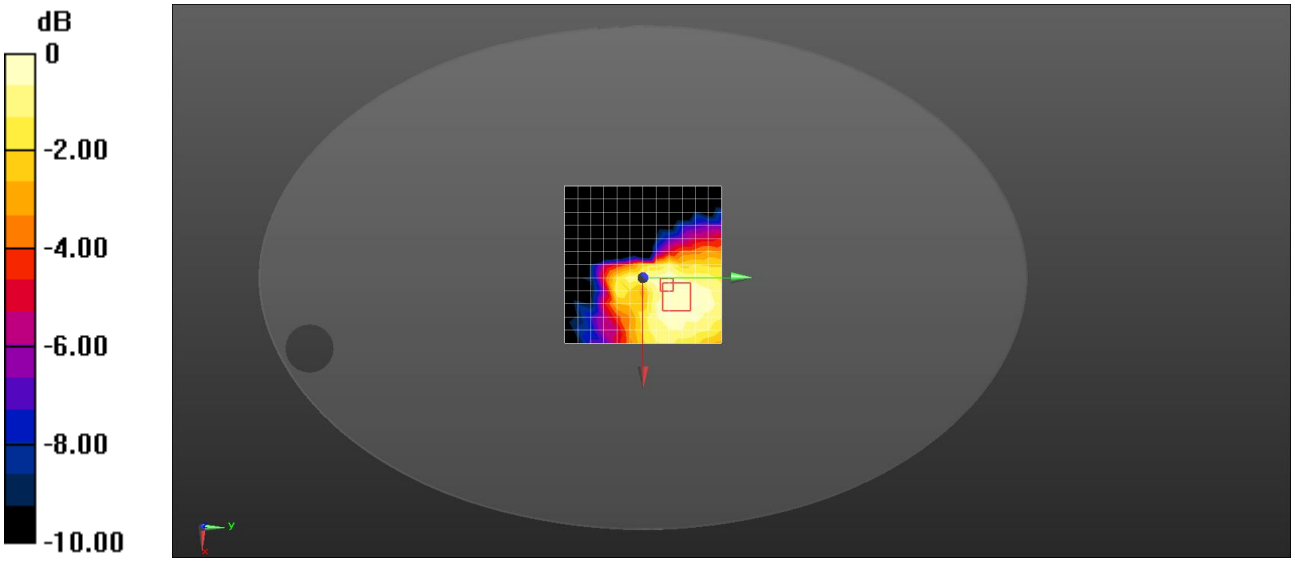
Configuration/WLAN5G 802.11a(20MHz) CH52 5260MHz Back/Zoom Scan (10x10x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 4.430 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 0.338 W/kg

SAR(1 g) = 0.101 W/kg; SAR(10 g) = 0.047 W/kg

Maximum value of SAR (measured) = 0.179 W/kg



0 dB = 0.179 W/kg = -7.47 dBW/kg

Date/Time: 5/25/2022

Test Laboratory: DEKRA Lab

WLAN5G 802.11a(20MHz) CH52 5260MHz Top

DUT: Barcode Scanner ; Type: 8690i

Communication System: UID 0, CW (0); Communication System Band: 5GHz(5000.0-6000.0MHz); Duty Cycle: 1:1.0; Frequency: 5260 MHz; Medium parameters used: f = 5260 MHz; σ = 4.617 S/m; ε_r = 36.368; ρ = 1000 kg/m3 ; Phantom section: Flat Section

Ambient temperature (℃): 21.5, Liquid temperature (℃): 21.0

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(5.4, 5.4, 5.4); Calibrated: 4/18/2022
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 3/24/2022
- Phantom: ELI1; Type: QDOVA002AA; Serial: TP:2106
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Configuration/WLAN5G 802.11a(20MHz) CH52 5260MHz Top/Area Scan (13x13x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (measured) = 5.10 W/kg

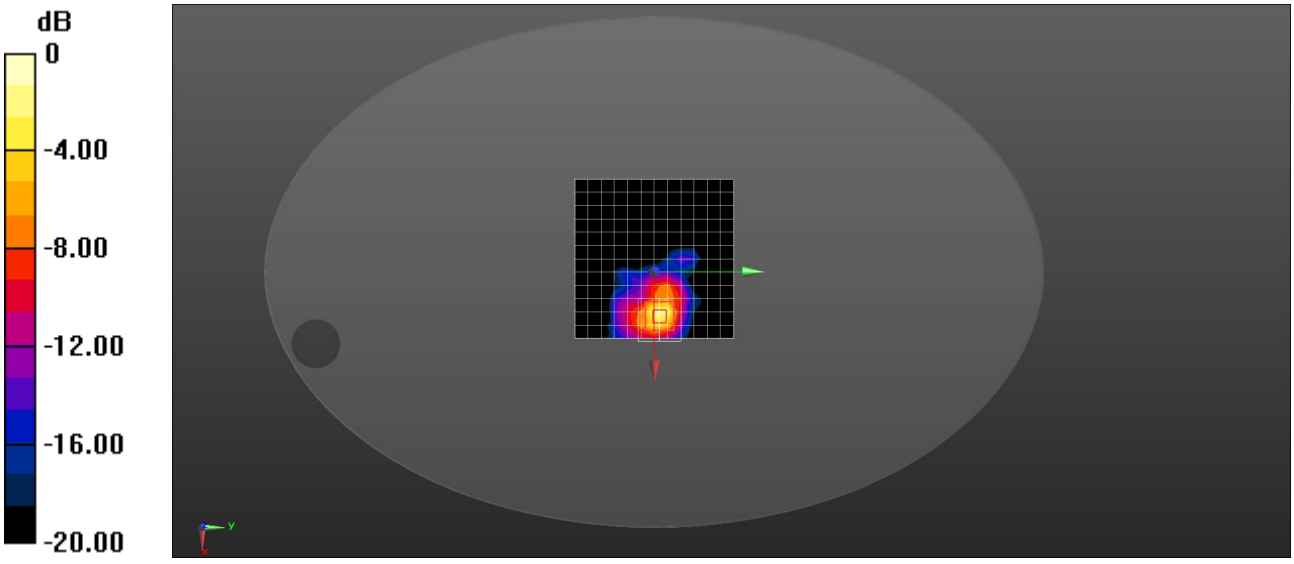
Configuration/WLAN5G 802.11a(20MHz) CH52 5260MHz Top/Zoom Scan (9x9x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 5.953 V/m; Power Drift = 0.07 dB

Peak SAR (extrapolated) = 14.7 W/kg

SAR(1 g) = 3.24 W/kg; SAR(10 g) = 0.887 W/kg

Maximum value of SAR (measured) = 7.15 W/kg



0 dB = 7.15 W/kg = 8.54 dBW/kg

Date/Time: 5/25/2022

Test Laboratory: DEKRA Lab

WLAN5G 802.11a(20MHz) CH52 5260MHz Bottom

DUT: Barcode Scanner ; Type: 8690i

Communication System: UID 0, CW (0); Communication System Band: 5GHz(5000.0-6000.0MHz); Duty Cycle: 1:1.0; Frequency: 5260 MHz; Medium parameters used: f = 5260 MHz; σ = 4.617 S/m; ε_r = 36.368; ρ = 1000 kg/m3 ; Phantom section: Flat Section

Ambient temperature (℃): 21.5, Liquid temperature (℃): 21.0

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(5.4, 5.4, 5.4); Calibrated: 4/18/2022
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 3/24/2022
- Phantom: ELI1; Type: QDOVA002AA; Serial: TP:2106
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Configuration/WLAN5G 802.11a(20MHz) CH52 5260MHz Bottom/Area Scan (13x13x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (measured) = 0.367 W/kg

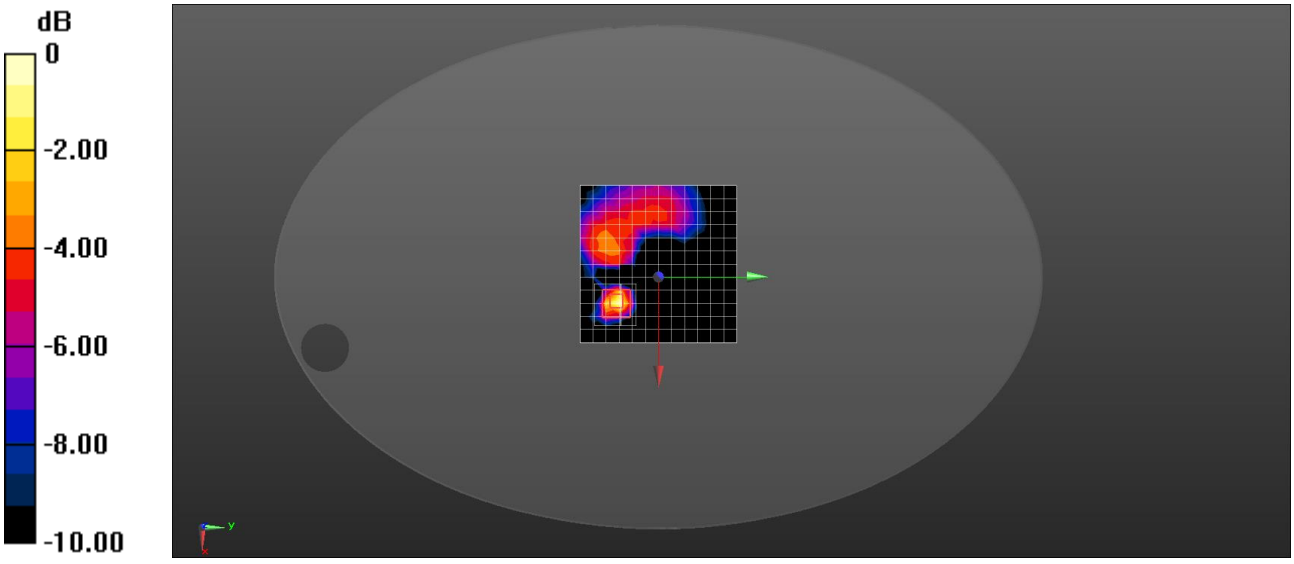
Configuration/WLAN5G 802.11a(20MHz) CH52 5260MHz Bottom/Zoom Scan (9x9x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 0 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 0.679 W/kg

SAR(1 g) = 0.198 W/kg; SAR(10 g) = 0.058 W/kg

Maximum value of SAR (measured) = 0.384 W/kg



0 dB = 0.384 W/kg = -4.16 dBW/kg

Date/Time: 5/25/2022

Test Laboratory: DEKRA Lab

WLAN5G 802.11a(20MHz) CH52 5260MHz Left

DUT: Barcode Scanner ; Type: 8690i

Communication System: UID 0, CW (0); Communication System Band: 5GHz(5000.0-6000.0MHz); Duty Cycle: 1:1.0; Frequency: 5260 MHz; Medium parameters used: f = 5260 MHz; σ = 4.617 S/m; ε r = 36.368; ρ = 1000 kg/m3 ; Phantom section: Flat Section

Ambient temperature (℃): 21.5, Liquid temperature (℃): 21.0

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(5.4, 5.4, 5.4); Calibrated: 4/18/2022
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 3/24/2022
- Phantom: ELI1; Type: QDOVA002AA; Serial: TP:2106
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Configuration/WLAN5G 802.11a(20MHz) CH52 5260MHz Left/Area Scan (13x13x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (measured) = 0.345 W/kg

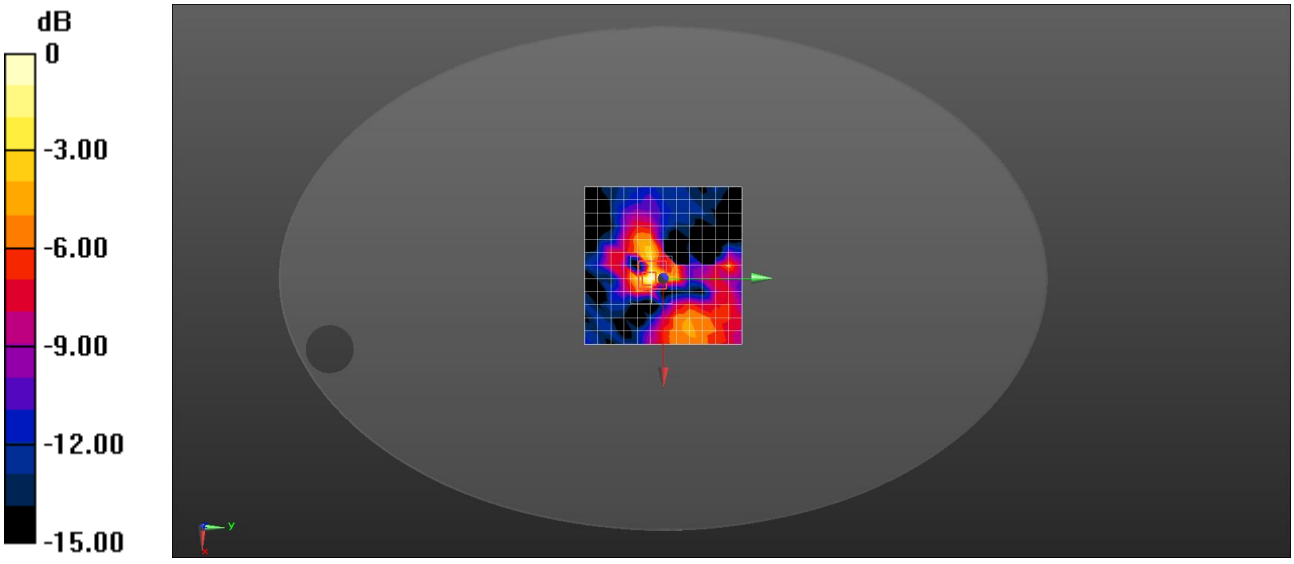
Configuration/WLAN5G 802.11a(20MHz) CH52 5260MHz Left/Zoom Scan (10x9x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 4.531 V/m; Power Drift = 0.16 dB

Peak SAR (extrapolated) = 0.560 W/kg

SAR(1 g) = 0.155 W/kg; SAR(10 g) = 0.042 W/kg

Maximum value of SAR (measured) = 0.322 W/kg



0 dB = 0.322 W/kg = -4.92 dBW/kg

Date/Time: 5/25/2022

Test Laboratory: DEKRA Lab

WLAN5G 802.11a(20MHz) CH52 5260MHz Right

DUT: Barcode Scanner ; Type: 8690i

Communication System: UID 0, CW (0); Communication System Band: 5GHz(5000.0-6000.0MHz); Duty Cycle: 1:1.0; Frequency: 5260 MHz; Medium parameters used: f = 5260 MHz; σ = 4.617 S/m; ε_r = 36.368; ρ = 1000 kg/m3 ; Phantom section: Flat Section

Ambient temperature (℃): 21.5, Liquid temperature (℃): 21.0

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(5.4, 5.4, 5.4); Calibrated: 4/18/2022
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 3/24/2022
- Phantom: ELI1; Type: QDOVA002AA; Serial: TP:2106
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Configuration/WLAN5G 802.11a(20MHz) CH52 5260MHz Right/Area Scan (13x13x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (measured) = 13.1 W/kg

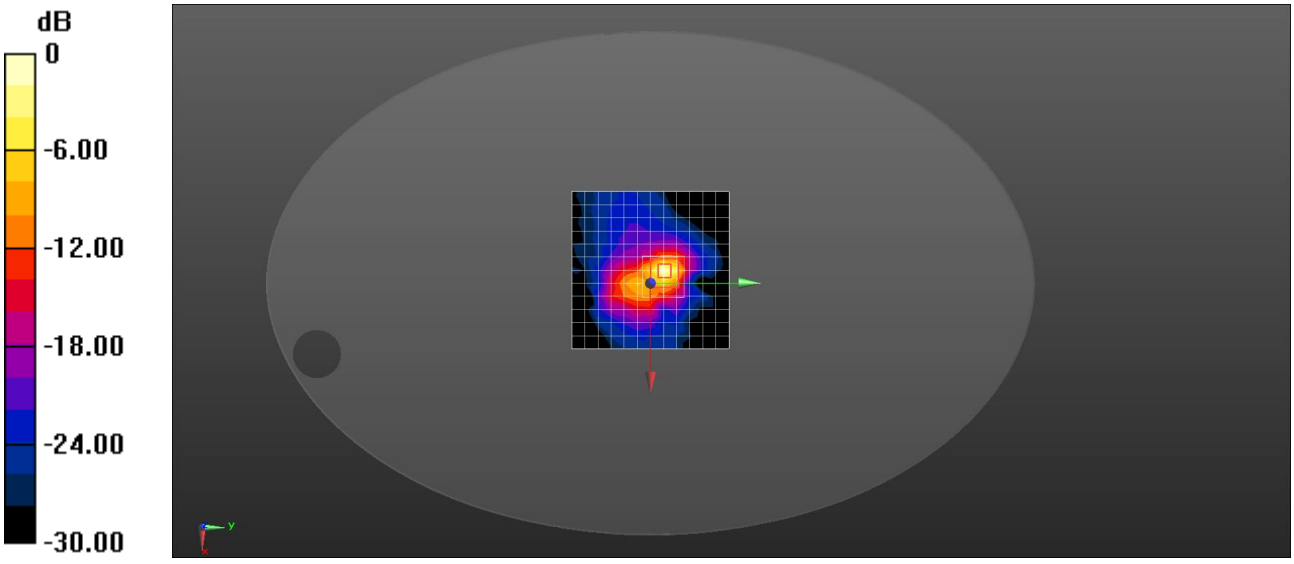
Configuration/WLAN5G 802.11a(20MHz) CH52 5260MHz Right/Zoom Scan (9x9x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 14.30 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 26.9 W/kg

SAR(1 g) = 5.56 W/kg; SAR(10 g) = 1.32 W/kg

Maximum value of SAR (measured) = 12.9 W/kg



0 dB = 12.9 W/kg = 11.11 dBW/kg

Date/Time: 5/25/2022

Test Laboratory: DEKRA Lab

WLAN5G 802.11a(20MHz) CH60 5300MHz Right

DUT: Barcode Scanner ; Type: 8690i

Communication System: UID 0, CW (0); Communication System Band: 5GHz(5000.0-6000.0MHz); Duty Cycle: 1:1.0; Frequency: 5300 MHz; Medium parameters used (interpolated): f = 5300 MHz; σ = 4.653 S/m; ε r = 36.302; ρ = 1000 kg/m3 ; Phantom section: Flat Section

Ambient temperature (℃): 21.5, Liquid temperature (℃): 21.0

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(5.4, 5.4, 5.4); Calibrated: 4/18/2022
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 3/24/2022
- Phantom: ELI1; Type: QDOVA002AA; Serial: TP:2106
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Configuration/WLAN5G 802.11a(20MHz) CH60 5300MHz Right/Area Scan (13x13x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (measured) = 10.4 W/kg

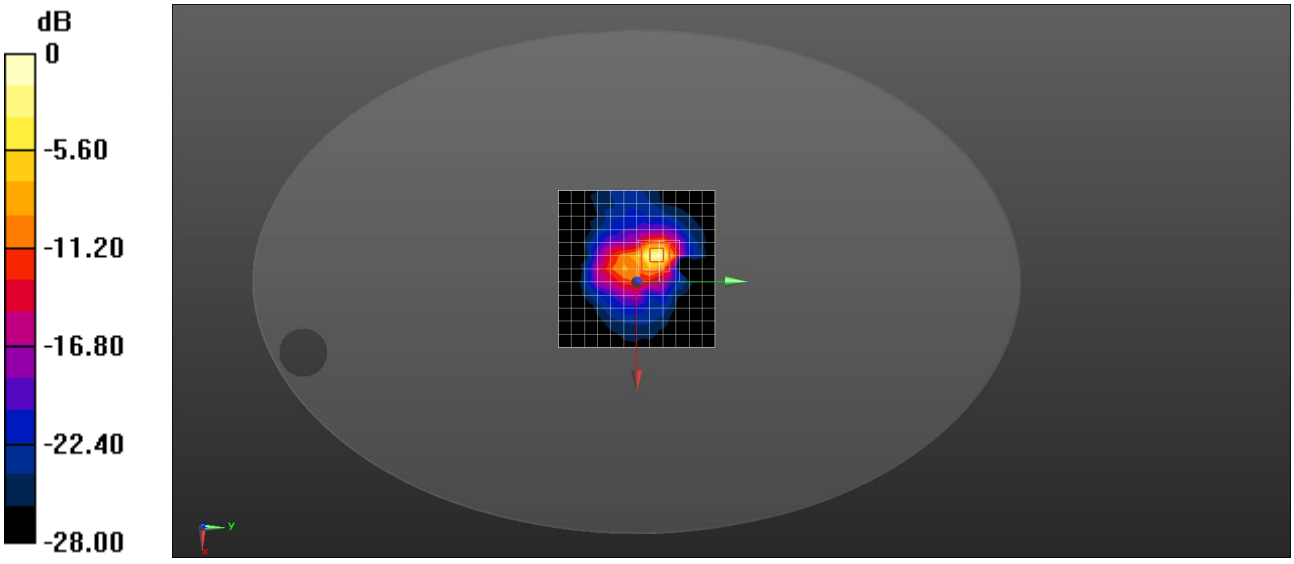
Configuration/WLAN5G 802.11a(20MHz) CH60 5300MHz Right/Zoom Scan (9x9x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 12.32 V/m; Power Drift = -0.15 dB

Peak SAR (extrapolated) = 28.2 W/kg

SAR(1 g) = 5.85 W/kg; SAR(10 g) = 1.38 W/kg

Maximum value of SAR (measured) = 13.2 W/kg



0 dB = 13.2 W/kg = 11.21 dBW/kg

Date/Time: 5/25/2022

Test Laboratory: DEKRA Lab

WLAN5G 802.11a(20MHz) CH64 5320MHz Right

DUT: Barcode Scanner ; Type: 8690i

Communication System: UID 0, CW (0); Communication System Band: 5GHz(5000.0-6000.0MHz); Duty Cycle: 1:1.0; Frequency: 5320 MHz; Medium parameters used: f = 5320 MHz; σ = 4.667 S/m; ε_r = 36.289; ρ = 1000 kg/m3 ; Phantom section: Flat Section

Ambient temperature (℃): 21.5, Liquid temperature (℃): 21.0

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(5.4, 5.4, 5.4); Calibrated: 4/18/2022
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 3/24/2022
- Phantom: ELI1; Type: QDOVA002AA; Serial: TP:2106
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Configuration/WLAN5G 802.11a(20MHz) CH102 5320MHz Right/Area Scan (13x13x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (measured) = 10.0 W/kg

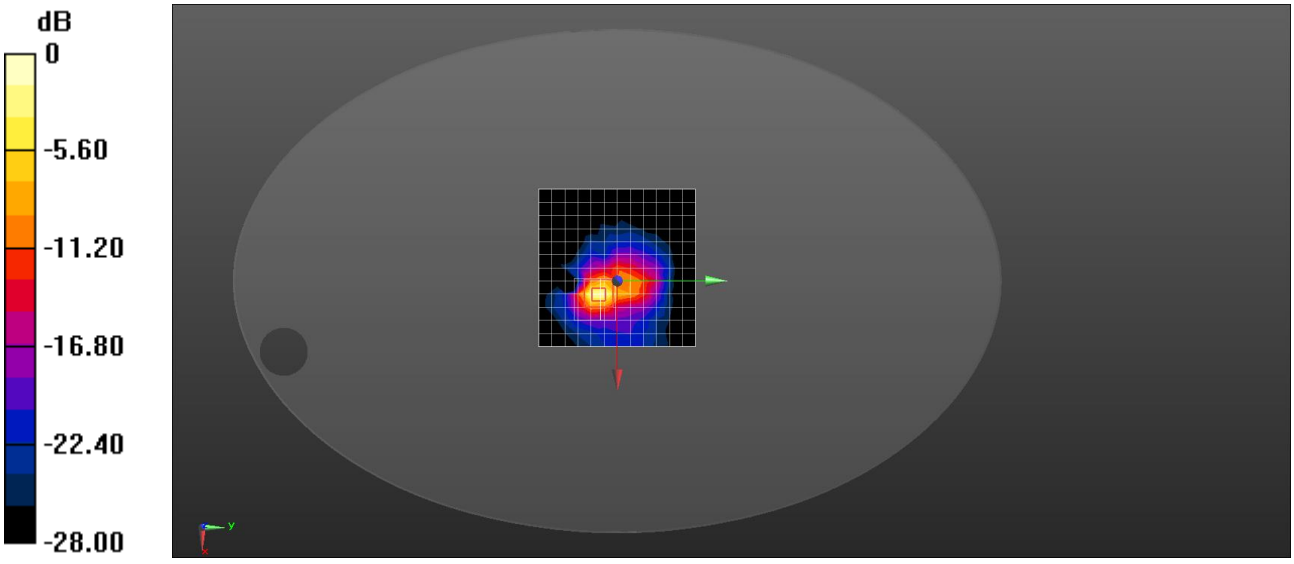
Configuration/WLAN5G 802.11a(20MHz) CH102 5320MHz Right/Zoom Scan (9x9x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 9.70 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 23.5 W/kg

SAR(1 g) = 4.95 W/kg; SAR(10 g) = 1.11 W/kg

Maximum value of SAR (measured) = 11.8 W/kg



0 dB = 13.8 W/kg = 11.40 dBW/kg

Date/Time: 5/25/2022

Test Laboratory: DEKRA Lab

WLAN5G 802.11a(20MHz) CH116 5580MHz Right

DUT: Barcode Scanner ; Type: 8690i

Communication System: UID 0, CW (0); Communication System Band: 5GHz(5000.0-6000.0MHz); Duty Cycle: 1:1.0; Frequency: 5580 MHz; Medium parameters used: f = 5580 MHz; σ = 4.971 S/m; ε_r = 35.869; ρ = 1000 kg/m3 ; Phantom section: Flat Section

Ambient temperature (℃): 21.5, Liquid temperature (℃): 21.0

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(4.85, 4.85, 4.85); Calibrated: 4/18/2022
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 3/24/2022
- Phantom: ELI1; Type: QDOVA002AA; Serial: TP:2106
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Configuration/WLAN5G 802.11a(20MHz) CH116 5580MHz Right/Area Scan (13x13x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (measured) = 23.6 W/kg

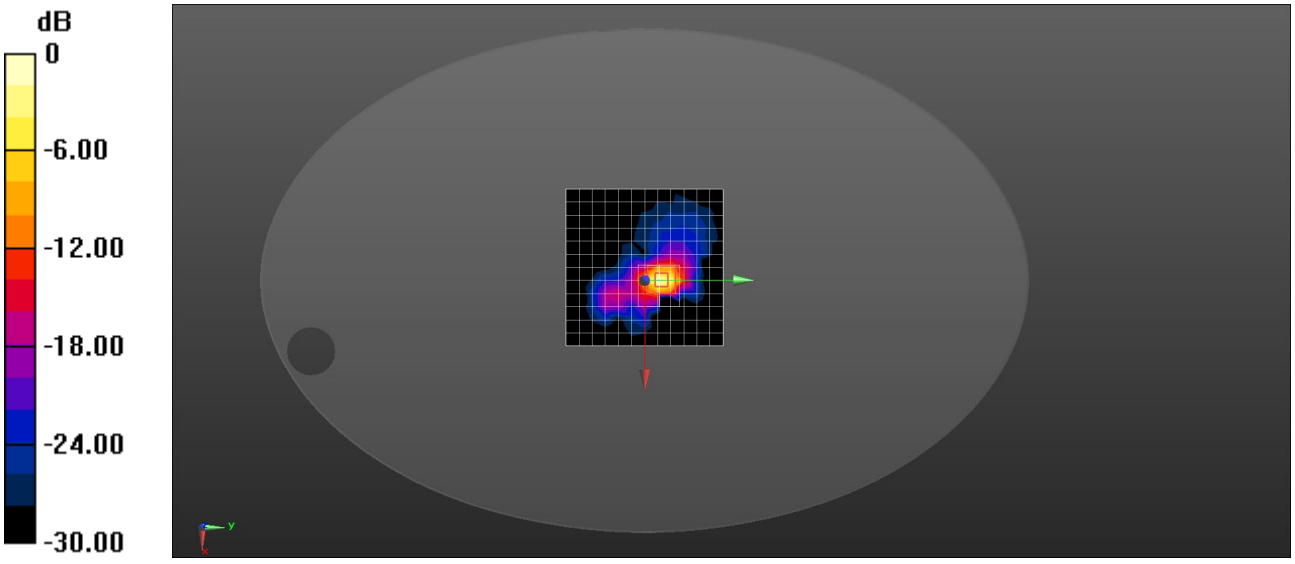
Configuration/WLAN5G 802.11a(20MHz) CH116 5580MHz Right/Zoom Scan (9x9x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 20.50 V/m; Power Drift = -0.09 dB

Peak SAR (extrapolated) = 54.1 W/kg

SAR(1 g) = 9.71 W/kg; SAR(10 g) = 1.99 W/kg

Maximum value of SAR (measured) = 23.9 W/kg



0 dB = 23.9 W/kg = 13.78 dBW/kg

Date/Time: 5/25/2022

Test Laboratory: DEKRA Lab

WLAN5G 802.11a CH100 5500MHz Right

DUT: Barcode Scanner ; Type: 8690i

Communication System: UID 0, CW (0); Communication System Band: 5GHz(5000.0-6000.0MHz); Duty Cycle: 1:1.0; Frequency: 5500 MHz; Medium parameters used: f = 5500 MHz; σ = 4.874 S/m; ε_r = 35.974; ρ = 1000 kg/m3 ; Phantom section: Flat Section

Ambient temperature (℃): 21.5, Liquid temperature (℃): 21.0

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(4.85, 4.85, 4.85); Calibrated: 4/18/2022
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 3/24/2022
- Phantom: ELI1; Type: QDOVA002AA; Serial: TP:2106
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Configuration/WLAN5G 802.11a(20MHz) CH100 5500MHz Right/Area Scan (13x13x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (measured) = 2.23 W/kg

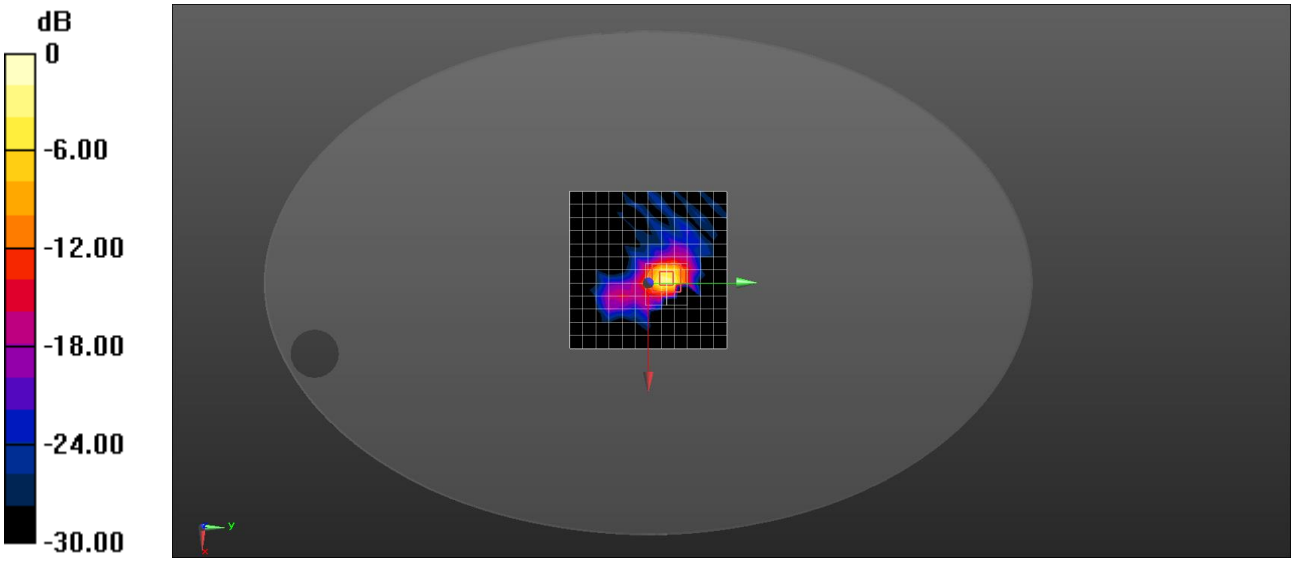
Configuration/WLAN5G 802.11a(20MHz) CH100 5500MHz Right/Zoom Scan (9x9x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 6.673 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 7.29 W/kg

SAR(1 g) = 1.4 W/kg; SAR(10 g) = 0.319 W/kg

Maximum value of SAR (measured) = 3.37 W/kg



0 dB = 3.37 W/kg = 5.28 dBW/kg

Date/Time: 5/25/2022

Test Laboratory: DEKRA Lab

WLAN5G 802.11a CH144 5720MHz Right

DUT: Barcode Scanner ; Type: 8690i

Communication System: UID 0, CW (0); Communication System Band: 5GHz(5000.0-6000.0MHz); Duty Cycle: 1:1.0; Frequency: 5720 MHz; Medium parameters used (interpolated): f = 5720 MHz; σ = 5.131 S/m; ε_r = 35.612; ρ = 1000 kg/m3 ; Phantom section: Flat Section

Ambient temperature (℃): 21.5, Liquid temperature (℃): 21.0

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(4.85, 4.85, 4.85); Calibrated: 4/18/2022
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 3/24/2022
- Phantom: ELI1; Type: QDOVA002AA; Serial: TP:2106
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Configuration/WLAN5G 802.11a(20MHz) CH144 5720MHz Right/Area Scan (13x13x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (measured) = 21.9 W/kg

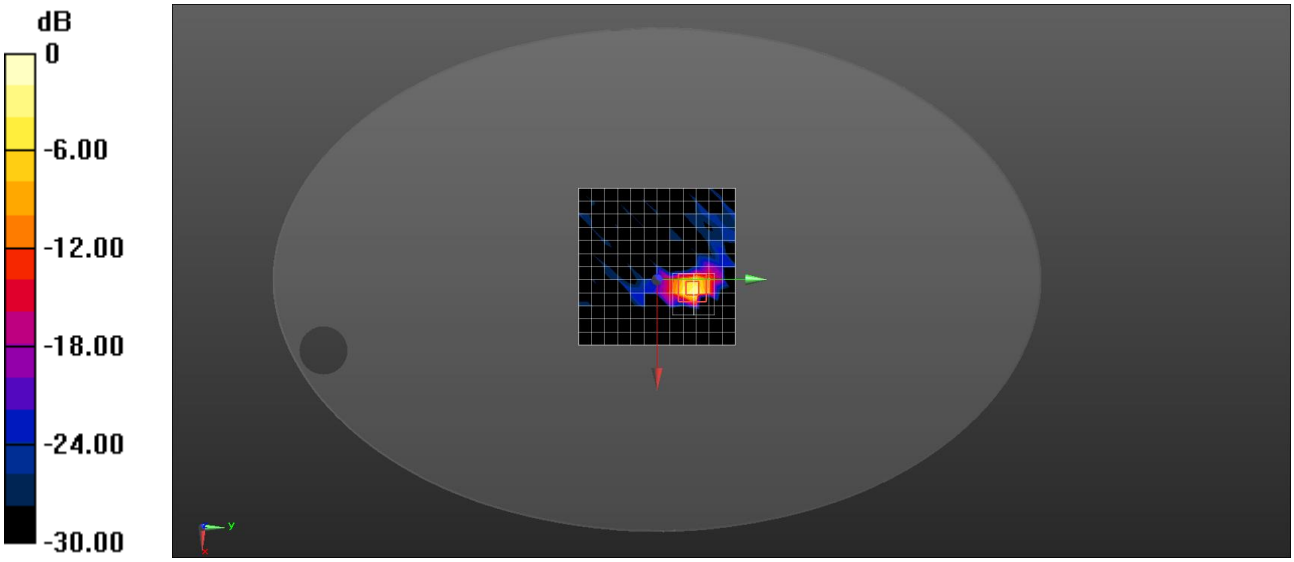
Configuration/WLAN5G 802.11a(20MHz) CH144 5720MHz Right/Zoom Scan (9x9x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 18.3 V/m; Power Drift = 0.14 dB

Peak SAR (extrapolated) = 41.7 W/kg

SAR(1 g) = 8.64 W/kg; SAR(10 g) = 1.64 W/kg

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



0 dB = 16.2 W/kg = 10.6 dBW/kg

Date/Time: 5/25/2022

Test Laboratory: DEKRA Lab

WLAN5G 802.11a(20MHz) CH149 5745MHz Right

DUT: Barcode Scanner ; Type: 8690i

Communication System: UID 0, CW (0); Communication System Band: 5GHz(5000.0-6000.0MHz); Duty Cycle: 1:1.0; Frequency: 5745 MHz; Medium parameters used (interpolated): f = 5745 MHz; σ = 5.16 S/m; ε_r = 35.563; ρ = 1000 kg/m3 ; Phantom section: Flat Section

Ambient temperature (℃): 21.5, Liquid temperature (℃): 21.0

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(4.88, 4.88, 4.88); Calibrated: 4/18/2022
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 3/24/2022
- Phantom: ELI1; Type: QDOVA002AA; Serial: TP:2106
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Configuration/WLAN5G 802.11a(20MHz) CH149 5745MHz Right/Area Scan (13x13x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (measured) = 2.91 W/kg

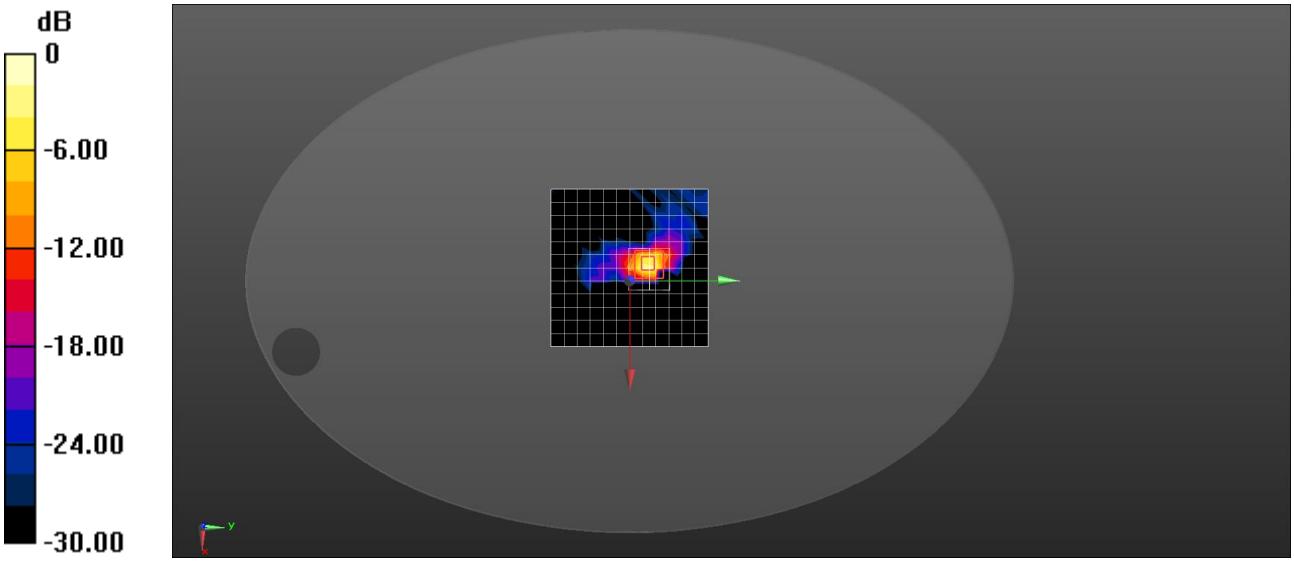
Configuration/WLAN5G 802.11a(20MHz) CH149 5745MHz Right/Zoom Scan (9x9x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 3.389 V/m; Power Drift = 0.12 dB

Peak SAR (extrapolated) = 12.3 W/kg

SAR(1 g) = 2.16 W/kg; SAR(10 g) = 0.469 W/kg

Maximum value of SAR (measured) = 5.28 W/kg



0 dB = 5.28 W/kg = 7.23 dBW/kg

Date/Time: 5/25/2022

Test Laboratory: DEKRA Lab

WLAN5G 802.11a(20MHz) CH157 5785MHz Right

DUT: Barcode Scanner ; Type: 8690i

Communication System: UID 0, CW (0); Communication System Band: 5GHz(5000.0-6000.0MHz); Duty Cycle: 1:1.0; Frequency: 5785 MHz; Medium parameters used (interpolated): f = 5785 MHz; σ = 5.204 S/m; ε r = 35.53; ρ = 1000 kg/m3 ; Phantom section: Flat Section

Ambient temperature (℃): 21.5, Liquid temperature (℃): 21.0

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(4.88, 4.88, 4.88); Calibrated: 4/18/2022
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 3/24/2022
- Phantom: ELI1; Type: QDOVA002AA; Serial: TP:2106
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Configuration/WLAN5G 802.11a(20MHz) CH157 5785MHz Right/Area Scan (13x13x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (measured) = 4.31 W/kg

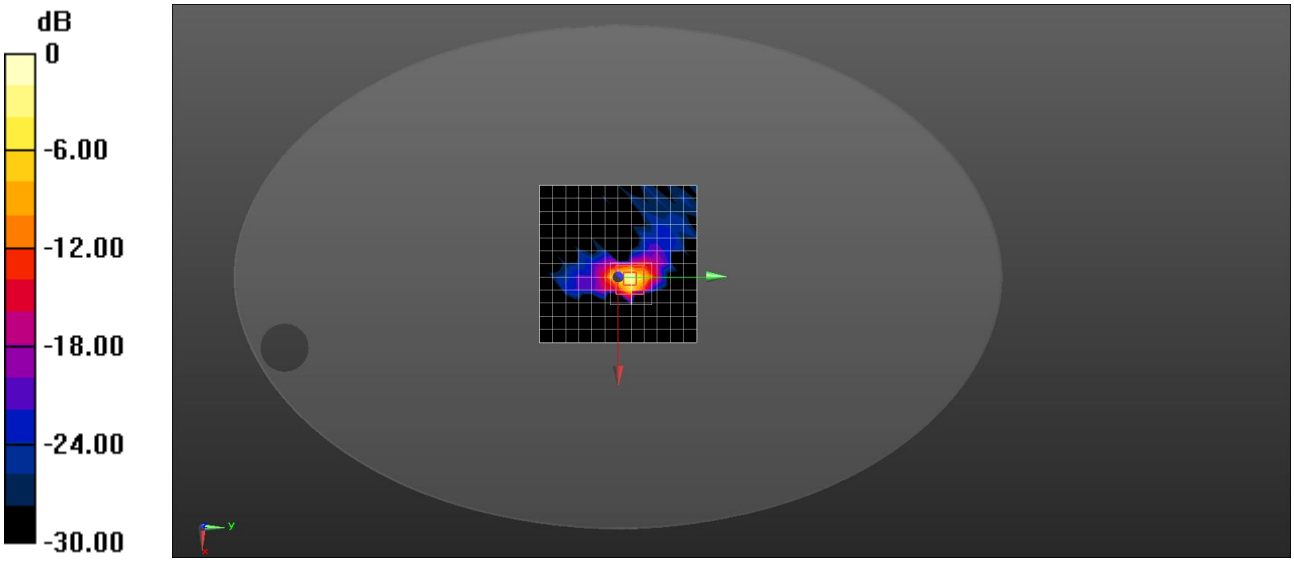
Configuration/WLAN5G 802.11a(20MHz) CH157 5785MHz Right/Zoom Scan (9x9x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 12.64 V/m; Power Drift = -0.04 dB

Peak SAR (extrapolated) = 11.1 W/kg

SAR(1 g) = 1.9 W/kg; SAR(10 g) = 0.410 W/kg

Maximum value of SAR (measured) = 4.54 W/kg



0 dB = 4.54 W/kg = 6.57 dBW/kg

Date/Time: 5/25/2022

Test Laboratory: DEKRA Lab

WLAN5G 802.11a(20MHz) CH165 5825MHz Right

DUT: Barcode Scanner ; Type: 8690i

Communication System: UID 0, CW (0); Communication System Band: 5GHz(5000.0-6000.0MHz); Duty Cycle: 1:1.0; Frequency: 5825 MHz; Medium parameters used (interpolated): f = 5825 MHz; σ = 5.25 S/m; ε_r = 35.438; ρ = 1000 kg/m3 ; Phantom section: Flat Section

Ambient temperature (℃): 21.5, Liquid temperature (℃): 21.0

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(4.88, 4.88, 4.88); Calibrated: 4/18/2022
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 3/24/2022
- Phantom: ELI1; Type: QDOVA002AA; Serial: TP:2106
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Configuration/WLAN5G 802.11a(20MHz) CH165 5825MHz Right/Area Scan (13x13x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (measured) = 2.30 W/kg

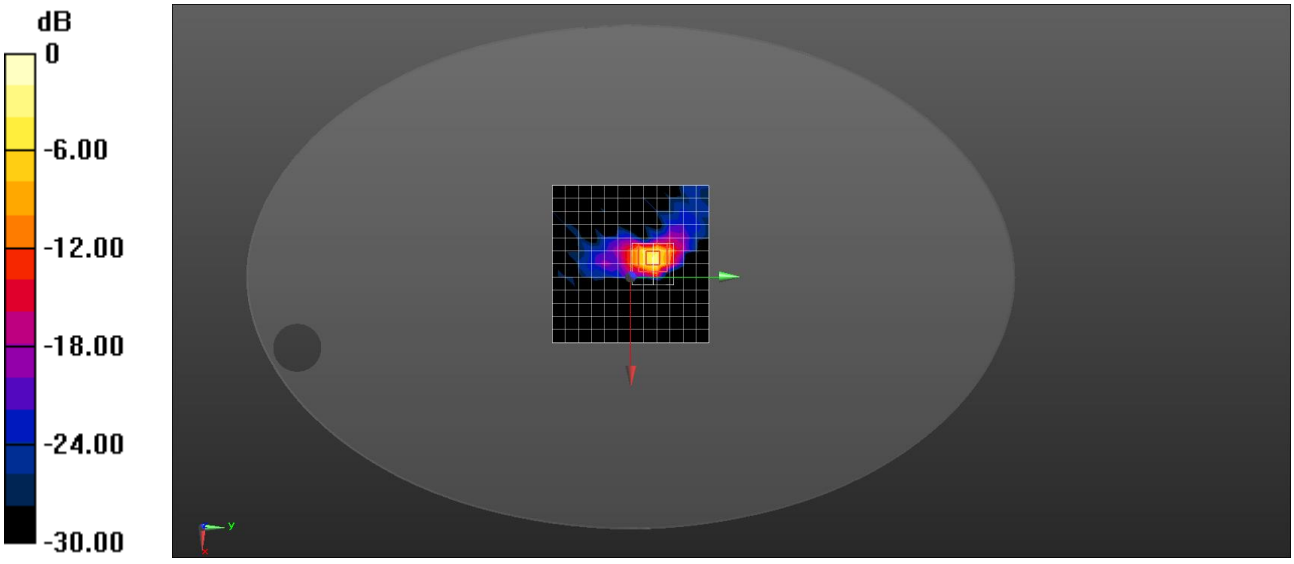
Configuration/WLAN5G 802.11a(20MHz) CH165 5825MHz Right/Zoom Scan (9x9x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 2.765 V/m; Power Drift = 0.17 dB

Peak SAR (extrapolated) = 11.1 W/kg

SAR(1 g) = 1.89 W/kg; SAR(10 g) = 0.412 W/kg

Maximum value of SAR (measured) = 4.54 W/kg



0 dB = 4.54 W/kg = 6.57 dBW/kg

RFID Internal Antenna

Date/Time: 27/09/2020

Test Laboratory: DEKRA Lab

RFID 907.25MHz Body Right

DUT: Scanner; Type: 8690i

Communication System: UID 0, Custom system (0); Communication System Band: 1; Duty Cycle: 1:1.0; Frequency: 907.25 MHz; Medium parameters used: f = 907.25 MHz; σ = 0.99 S/m; εr = 53.47; ρ = 1000 kg/m3 ; Phantom section: Flat Section

Ambient temperature (℃): 21.5, Liquid temperature (℃): 21.0

DASY5 Configuration:

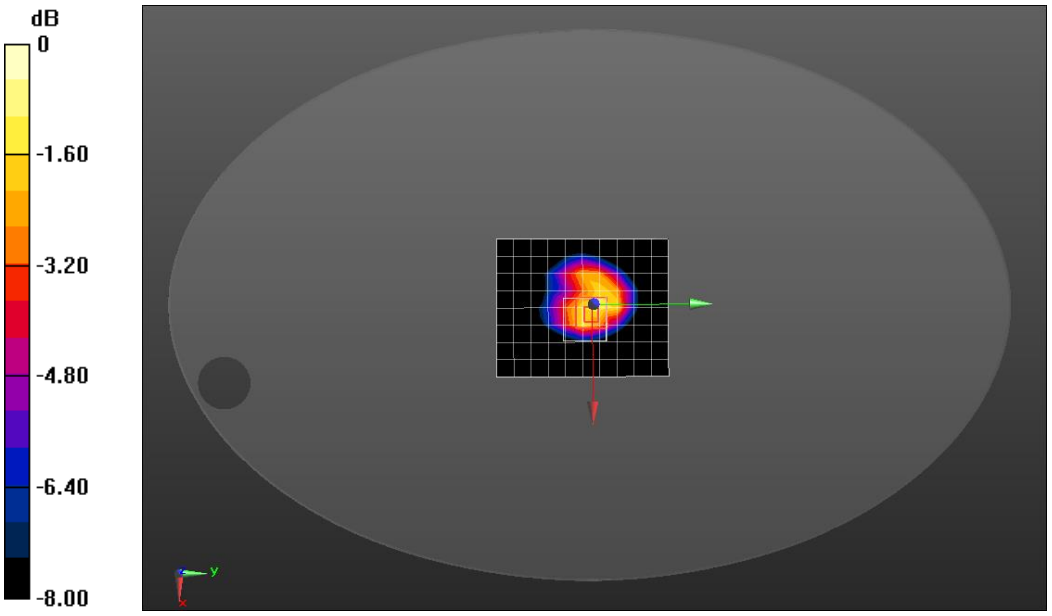
- Probe: EX3DV4 - SN3710; ConvF(9.25, 9.25, 9.25); Calibrated: 21/04/2020;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 27/04/2020
- Phantom: ELI1; Type: QDOVA002AA; Serial: TP:2106
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/RFID 907.25MHz -Right/Area Scan (9x11x1): Measurement grid: dx=12mm, dy=12mm Maximum value of SAR (measured) = 0.116 W/kg

Configuration/RFID 907.25MHz -Right/Zoom Scan (7x7x5)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=4mm Reference Value = 10.74 V/m; Power Drift = 0.14 dB

Peak SAR (extrapolated) = 0.279 W/kg

SAR(1 g) = 0.123 W/kg; SAR(10 g) = 0.071 W/kg Maximum value of SAR (measured) = 0.153 W/kg



0 dB = 0.153 W/kg = -8.15 dBW/kg

Date/Time: 27/09/2020

Test Laboratory: DEKRA Lab

RFID 913.75MHz Body Right

DUT: Scanner; Type: 8690i

Communication System: UID 0, Custom system (0); Communication System Band: 1; Duty Cycle: 1:1.0;

Frequency: 913.75 MHz; Medium parameters used: f = 913.75 MHz; σ = 1 S/m; εr = 53.41; ρ = 1000 kg/m3 ;

Phantom section: Flat Section

Ambient temperature (℃): 21.5, Liquid temperature (℃): 21.0

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(9.25, 9.25, 9.25); Calibrated: 21/04/2020;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 27/04/2020
- Phantom: ELI1; Type: QDOVA002AA; Serial: TP:2106
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

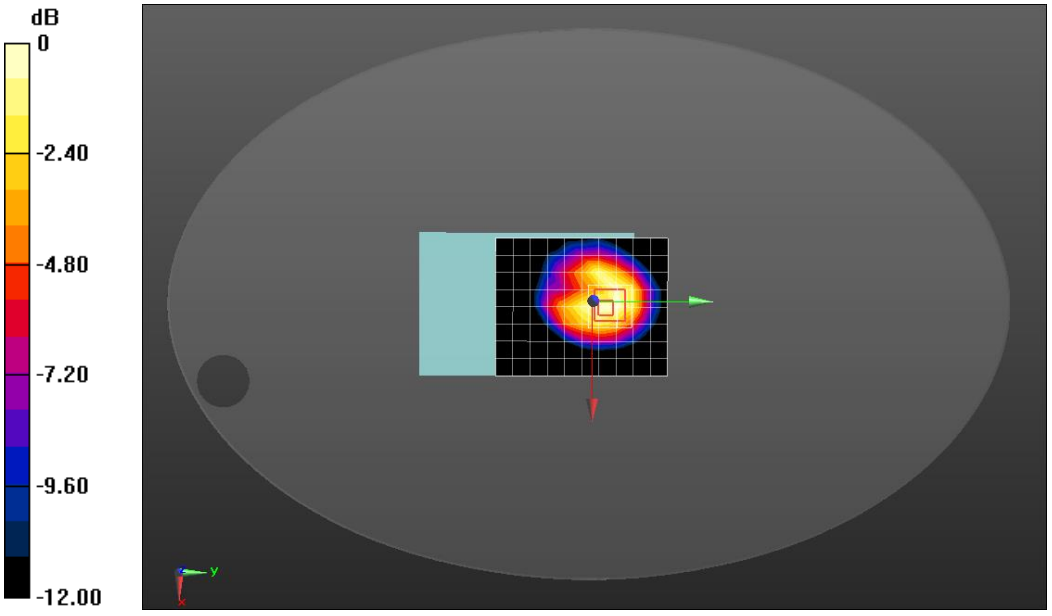
Configuration/RFID 913.75MHz -Right/Area Scan (9x11x1): Measurement grid: dx=12mm, dy=12mm

Maximum value of SAR (measured) = 0.144 W/kg

Configuration/RFID 913.75MHz -Right/Zoom Scan (7x7x5)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=4mm Reference Value = 10.32 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 0.296 W/kg

SAR(1 g) = 0.127 W/kg; SAR(10 g) = 0.076 W/kg Maximum value of SAR (measured) = 0.146 W/kg



0 dB = 0.146 W/kg = -8.36 dBW/kg

Date/Time: 27/09/2020

Test Laboratory: DEKRA Lab

RFID 920.75MHz Body Right

DUT: Scanner; Type: 8690i

Communication System: UID 0, Custom system (0); Communication System Band: 1; Duty Cycle: 1:1.0; Frequency: 920.75 MHz; Medium parameters used: f = 920.75 MHz; σ = 1.01 S/m; εr = 53.37; ρ = 1000 kg/m3 ; Phantom section: Flat Section

Ambient temperature (℃): 21.5, Liquid temperature (℃): 21.0

DASY5 Configuration:

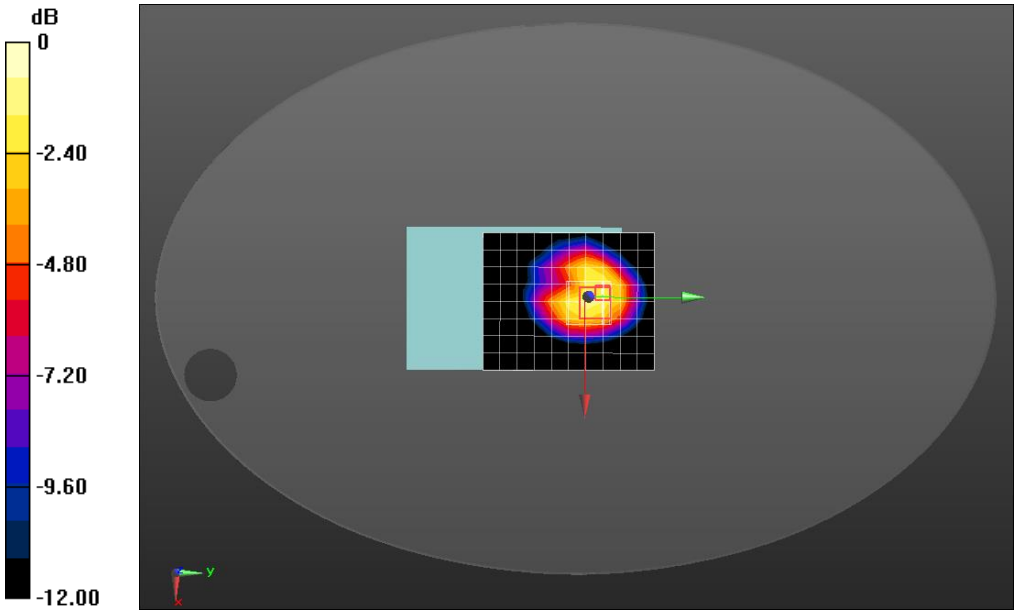
- Probe: EX3DV4 - SN3710; ConvF(9.25, 9.25, 9.25); Calibrated: 21/04/2020;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 27/04/2020
- Phantom: ELI1; Type: QDOVA002AA; Serial: TP:2106
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/RFID 920.75MHz -Right/Area Scan (9x11x1): Measurement grid: dx=12mm, dy=12mm Maximum value of SAR (measured) = 0.131 W/kg

Configuration/RFID 920.75MHz -Right/Zoom Scan (7x7x5)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=4mm Reference Value = 9.784 V/m; Power Drift = -0.13 dB

Peak SAR (extrapolated) = 0.295 W/kg

SAR(1 g) = 0.134 W/kg; SAR(10 g) = 0.077 W/kg Maximum value of SAR (measured) = 0.164 W/kg



0 dB = 0.164 W/kg = -7.85 dBW/kg

RFID External Antenna

Date/Time: 15/10/2020

Test Laboratory: DEKRA Lab

RFID 907.25MHz Body

DUT: Scanner; Type: 8690i

Communication System: UID 0, Custom system (0); Communication System Band: 1; Duty Cycle: 1:1.0; Frequency: 907.25 MHz; Medium parameters used: f = 907.25 MHz; σ = 1.01 S/m; εr = 53.46; ρ = 1000 kg/m3 ; Phantom section: Flat Section

Ambient temperature (℃): 21.5, Liquid temperature (℃): 21.0

DASY5 Configuration:

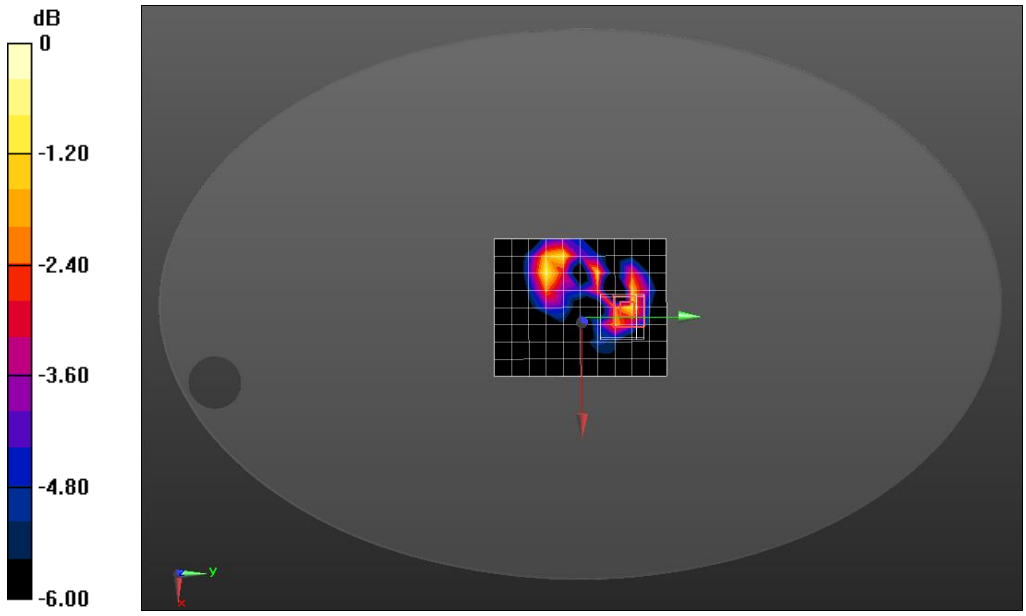
- Probe: EX3DV4 - SN3710; ConvF(9.25, 9.25, 9.25); Calibrated: 21/04/2020;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 27/04/2020
- Phantom: ELI1; Type: QDOVA002AA; Serial: TP:2106
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/RFID 907.25MHz/Area Scan (9x11x1): Measurement grid: dx=12mm, dy=12mm Maximum value of SAR (measured) = 0.00545 W/kg

Configuration/RFID 907.25MHz/Zoom Scan (7x7x5)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=4mm Reference Value = 1.183 V/m; Power Drift = -0.11 dB

Peak SAR (extrapolated) = 0.0110 W/kg

SAR(1 g) = 0.00535 W/kg; SAR(10 g) = 0.00285 W/kg Maximum value of SAR (measured) = 0.00658 W/kg



0 dB = 0.00658 W/kg = -21.82 dBW/kg

Date/Time: 15/10/2020

Test Laboratory: DEKRA Lab

RFID 913.75MHz Body

DUT: Scanner; Type: 8690i

Communication System: UID 0, Custom system (0); Communication System Band: 1; Duty Cycle: 1:1.0; Frequency: 913.75 MHz; Medium parameters used: f = 913.75 MHz; σ = 1.02 S/m; εr = 53.43; ρ = 1000 kg/m3 ; Phantom section: Flat Section

Ambient temperature (℃): 21.5, Liquid temperature (℃): 21.0

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(9.25, 9.25, 9.25); Calibrated: 21/04/2020;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 27/04/2020
- Phantom: ELI1; Type: QDOVA002AA; Serial: TP:2106
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

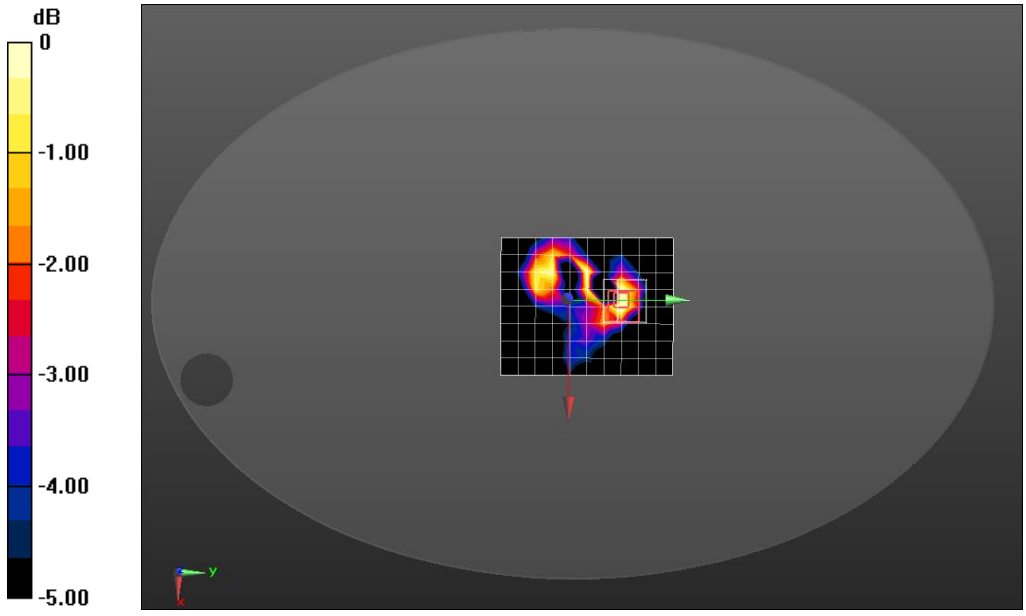
Configuration/RFID 913.755MHz/Area Scan (9x11x1): Measurement grid: dx=12mm, dy=12mm

Maximum value of SAR (measured) = 0.00817 W/kg

Configuration/RFID 913.755MHz/Zoom Scan (7x7x5)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=4mm Reference Value = 1.931 V/m; Power Drift = -0.08 dB

Peak SAR (extrapolated) = 0.0100 W/kg

SAR(1 g) = 0.00613 W/kg; SAR(10 g) = 0.00336 W/kg Maximum value of SAR (measured) = 0.00687 W/kg



0 dB = 0.00687 W/kg = -21.63 dBW/kg

Date/Time: 15/10/2020

Test Laboratory: DEKRA Lab

RFID 920.75MHz Body

DUT: Scanner; Type: 8690i

Communication System: UID 0, Custom system (0); Communication System Band: 1; Duty Cycle: 1:1.0;

Frequency: 920.75 MHz; Medium parameters used: f = 920.75 MHz; σ = 1.03 S/m; εr = 53.4; ρ = 1000 kg/m3 ;

Phantom section: Flat Section

Ambient temperature (℃): 21.5, Liquid temperature (℃): 21.0

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(9.25, 9.25, 9.25); Calibrated: 21/04/2020;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 27/04/2020
- Phantom: ELI1; Type: QDOVA002AA; Serial: TP:2106
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

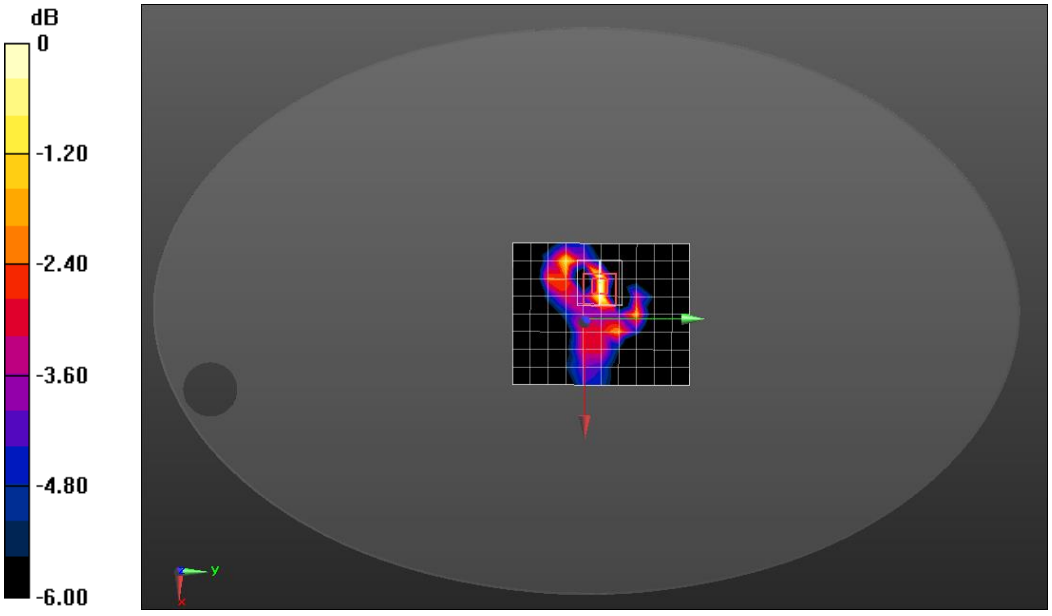
Configuration/RFID 920.75MHz/Area Scan (9x11x1): Measurement grid: dx=12mm, dy=12mm

Maximum value of SAR (measured) = 0.00882 W/kg

Configuration/RFID 920.75MHz/Zoom Scan (7x7x5)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=4mm Reference Value = 2.279 V/m; Power Drift = -0.09 dB

Peak SAR (extrapolated) = 0.0190 W/kg

SAR(1 g) = 0.00678 W/kg; SAR(10 g) = 0.00241 W/kg Maximum value of SAR (measured) = 0.00911 W/kg



0 dB = 0.00911 W/kg = -20.40 dBW/kg

Appendix C. Probe Calibration Data

In Collaboration with
CALIBRATION LABORATORY
Add: No.52 HuaYuanBei Road, Haidian District, Beijing, 100191, China
Tel: +86-10-62304633-2512 Fax: +86-10-62304633-2504
E-mail: cttl@chinattl.com Http://www.chinattl.cn

CALIBRATION
CNAS L0570

Client Dekra-CN Certificate No: Z22-60083

CALIBRATION CERTIFICATE

Object	EX3DV4 - SN : 3710
Calibration Procedure(s)	FF-Z11-004-02 Calibration Procedures for Dosimetric E-field Probes
Calibration date:	April 18, 2022

This calibration Certificate documents the traceability to national standards, which realize the physical units of measurements(SI). The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature(22±3)°C and humidity<70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date(Calibrated by, Certificate No.)	Scheduled Calibration
Power Meter NRP2	101919	15-Jun-21(CTTL, No.J21X04466)	Jun-22
Power sensor NRP-Z91	101547	15-Jun-21(CTTL, No.J21X04466)	Jun-22
Power sensor NRP-Z91	101548	15-Jun-21(CTTL, No.J21X04466)	Jun-22
Reference 10dBAttenuator	18N50W-10dB	20-Jan-21(CTTL, No.J21X00486)	Jan-23
Reference 20dBAttenuator	18N50W-20dB	20-Jan-21(CTTL, No.J21X00485)	Jan-23
Reference Probe EX3DV4	SN 7307	26-May-21(SPEAG, No.EX3-7307_May21)	May-22
Reference Probe EX3DV4	SN 7464	26-Jan-22(SPEAG, No.EX3-7464_Jan22)	Jan-23
DAE4	SN 1555	20-Aug-21(SPEAG, No.DAE4-1555_Aug21/2)	Aug-22
Secondary Standards	**ID #**	**Cal Date(Calibrated by, Certificate No.)**	**Scheduled Calibration**
SignalGenerator MG3700A	6201052605	16-Jun-21(CTTL, No.J21X04467)	Jun-22
Network Analyzer E5071C	MY46110673	14-Jan-22(CTTL, No.J22X00406)	Jan-23

	Name	Function	Signature
Calibrated by:	Yu Zongying	SAR Test Engineer	
Reviewed by:	Lin Hao	SAR Test Engineer	
Approved by:	Qi Dianyuan	SAR Project Leader	

Issued: April 19, 2022

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.

Certificate No: Z22-60083 Page 1 of 9

In Collaboration with
s p e a g
CALIBRATION LABORATORY

Add: No.52 HuaYuanBei Road, Haidian District, Beijing, 100191, China
Tel: +86-10-62304633-2512 Fax: +86-10-62304633-2504
E-mail: cttl@chinattl.com Http://www.chinattl.cn

Glossary:

TSL	tissue simulating liquid
NORMx,y,z	sensitivity in free space
ConvF	sensitivity in TSL / NORMx,y,z
DCP	diode compression point
CF	crest factor (1/duty_cycle) of the RF signal
A,B,C,D	modulation dependent linearization parameters
Polarization Φ	Φ rotation around probe axis
Polarization θ	θ rotation around an axis that is in the plane normal to probe axis (at measurement center), i θ=0 is normal to probe axis
Connector Angle	information used in DASY system to align probe sensor X to the robot coordinate system

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013

b) IEC 62209-1, "Measurement procedure for the assessment of Specific Absorption Rate (SAR) from hand-held and body-mounted devices used next to the ear (frequency range of 300 MHz to 6 GHz)", July 2016

c) IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010

d) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Methods Applied and Interpretation of Parameters:

- *NORMx,y,z:* Assessed for E-field polarization θ=0 (f≤900MHz in TEM-cell; f>1800MHz: waveguide). NORMx,y,z are only intermediate values, i.e., the uncertainties of NORMx,y,z does not effect the E^2-field uncertainty inside TSL (see below ConvF).
- *NORM(f)x,y,z = NORMx,y,z* frequency_response* (see Frequency Response Chart). This linearization is implemented in DASY4 software versions later than 4.2. The uncertainty of the frequency response is included in the stated uncertainty of ConvF.
- *DCPx,y,z:* DCP are numerical linearization parameters assessed based on the data of power sweep (no uncertainty required). DCP does not depend on frequency nor media.
- PAR: PAR is the Peak to Average Ratio that is not calibrated but determined based on the signal characteristics.
- *Ax,y,z; Bx,y,z; Cx,y,z; VRx,y,z:* A,B,C are numerical linearization parameters assessed based on the data of power sweep for specific modulation signal. The parameters do not depend on frequency nor media. VR is the maximum calibration range expressed in RMS voltage across the diode.
- *ConvF and Boundary Effect Parameters:* Assessed in flat phantom using E-field (or Temperature Transfer Standard for f≤800MHz) and inside waveguide using analytical field distributions based on power measurements for f >800MHz. The same setups are used for assessment of the parameters applied for boundary compensation (alpha, depth) of which typical uncertainty valued are given. These parameters are used in DASY4 software to improve probe accuracy close to the boundary. The sensitivity in TSL corresponds to NORMx,y,z* ConvF whereby the uncertainty corresponds to that given for ConvF. A frequency dependent ConvF is used in DASY version 4.4 and higher which allows extending the validity from±50MHz to±100MHz.
- *Spherical isotropy (3D deviation from isotropy):* in a field of low gradients realized using a flat phantom exposed by a patch antenna.
- *Sensor Offset:* The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.
- *Connector Angle:* The angle is assessed using the information gained by determining the *NORMx* (no uncertainty required).

In Collaboration with
CALIBRATION LABORATORY
Add: No.52 HuaYuanBei Road, Haidian District, Beijing, 100191, China
Tel: +86-10-62304633-2512 Fax: +86-10-62304633-2504
E-mail: cttl@chinattl.com Http://www.chinattl.cn

DASY/EASY – Parameters of Probe: EX3DV4 – SN:3710

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (*k*=2)
Norm(μV/(V/m)²)[A]	0.37	0.41	0.49	±10.0%
DCP(mV)[B]	101.9	102.3	102.5	

Modulation Calibration Parameters

UID	Communication System Name		A dB	B dB√μV	C	D dB	VR mV	Unc[E] (*k*=2)
0	CW	X	0.0	0.0	1.0	0.00	140.6	±2.1%
		Y	0.0	0.0	1.0		148.8	
		Z	0.0	0.0	1.0		170.6	

The reported uncertainty of measurement is stated as the standard uncertainty of Measurement multiplied by the coverage factor *k*=2, which for a normal distribution Corresponds to a coverage probability of approximately 95%.

[A] The uncertainties of Norm X, Y, Z do not affect the E^2-field uncertainty inside TSL (see Page 4).
[B] Numerical linearization parameter: uncertainty not required.
[E] Uncertainly is determined using the max. deviation from linear response applying rectangular distribution and is expressed for the square of the field value.

In Collaboration with
s p e a g
CALIBRATION LABORATORY

Add: No.52 HuaYuanBei Road, Haidian District, Beijing, 100191, China
Tel: +86-10-62304633-2512 Fax: +86-10-62304633-2504
E-mail: cttl@chinattl.com Http://www.chinattl.cn

DASY/EASY – Parameters of Probe: EX3DV4 – SN:3710

Calibration Parameter Determined in Head Tissue Simulating Media

f [MHz][C]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha[G]	Depth[G] (mm)	Unct. (k=2)
750	41.9	0.89	9.60	9.60	9.60	0.17	1.28	±12.1%
835	41.5	0.90	9.31	9.31	9.31	0.15	1.41	±12.1%
900	41.5	0.97	9.30	9.30	9.30	0.17	1.27	±12.1%
1810	40.0	1.40	7.90	7.90	7.90	0.30	0.93	±12.1%
1900	40.0	1.40	7.80	7.80	7.80	0.32	0.94	±12.1%
2300	39.5	1.67	7.66	7.66	7.66	0.57	0.71	±12.1%
2450	39.2	1.80	7.39	7.39	7.39	0.61	0.69	±12.1%
2600	39.0	1.96	7.18	7.18	7.18	0.53	0.76	±12.1%
3300	38.2	2.71	7.00	7.00	7.00	0.43	0.93	±13.3%
3500	37.9	2.91	6.78	6.78	6.78	0.45	0.98	±13.3%
3700	37.7	3.12	6.49	6.49	6.49	0.42	1.02	±13.3%
3900	37.5	3.32	6.55	6.55	6.55	0.35	1.35	±13.3%
4100	37.2	3.53	6.53	6.53	6.53	0.40	1.15	±13.3%
4200	37.1	3.63	6.44	6.44	6.44	0.40	1.25	±13.3%
4400	36.9	3.84	6.34	6.34	6.34	0.40	1.25	±13.3%
4600	36.7	4.04	6.23	6.23	6.23	0.45	1.25	±13.3%
4800	36.4	4.25	6.18	6.18	6.18	0.45	1.30	±13.3%
4950	36.3	4.40	5.87	5.87	5.87	0.45	1.30	±13.3%
5250	35.9	4.71	5.40	5.40	5.40	0.45	1.30	±13.3%
5600	35.5	5.07	4.85	4.85	4.85	0.55	1.20	±13.3%
5750	35.4	5.22	4.88	4.88	4.88	0.55	1.20	±13.3%

[C] Frequency validity above 300 MHz of ±100MHz only applies for DASY v4.4 and higher (Page 2), else it is restricted to ±50MHz. The uncertainty is the RSS of ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Above 5 GHz frequency validity can be extended to ± 110 MHz.

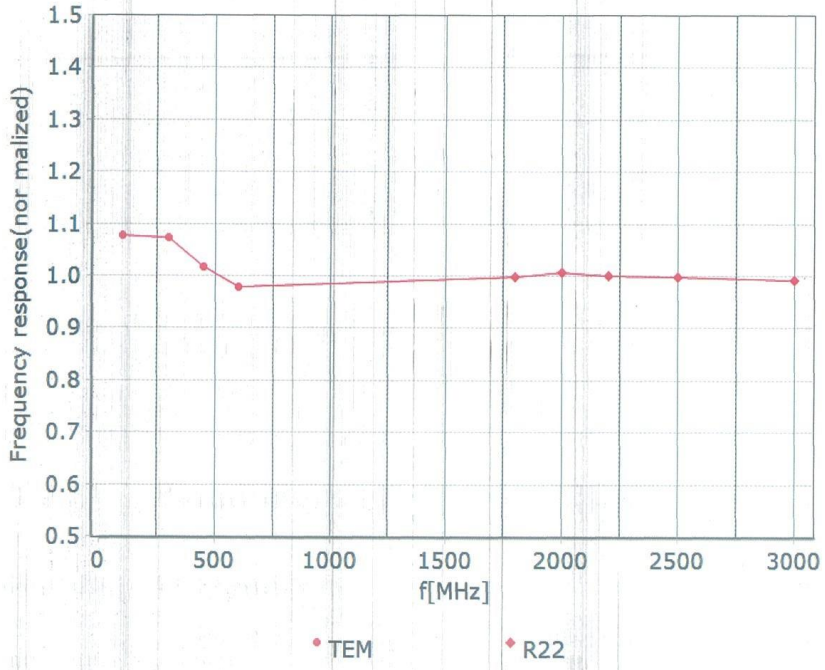
[F] At frequency below 3 GHz, the validity of tissue parameters (ε and σ) can be relaxed to ±10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ε and σ) is restricted to ±5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

[G] Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz and below ± 2% for the frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.

In Collaboration with
s p e a g
CALIBRATION LABORATORY

Add: No.52 HuaYuanBei Road, Haidian District, Beijing, 100191, China
Tel: +86-10-62304633-2512 Fax: +86-10-62304633-2504
E-mail: cttl@chinattl.com Http://www.chinattl.cn

Frequency Response of E-Field
(TEM-Cell: ifi110 EXX, Waveguide: R22)

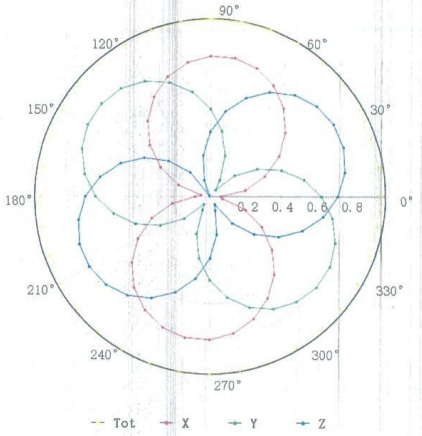


Uncertainty of Frequency Response of E-field: ±7.4% (*k*=2)

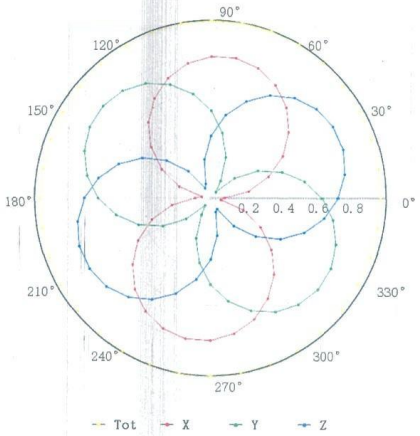
In Collaboration with
CALIBRATION LABORATORY
Add: No.52 HuaYuanBei Road, Haidian District, Beijing, 100191, China
Tel: +86-10-62304633-2512 Fax: +86-10-62304633-2504
E-mail: cttl@chinattl.com Http://www.chinattl.cn

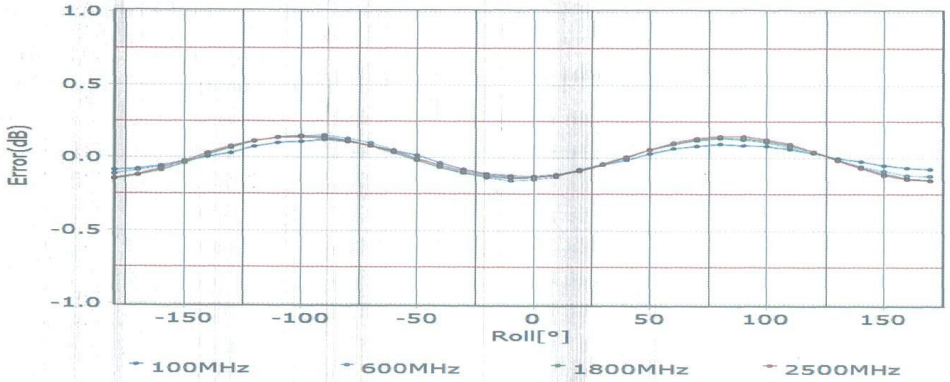
Receiving Pattern (Φ), θ=0°

f=600 MHz, TEM



f=1800 MHz, R22





Uncertainty of Axial Isotropy Assessment: ±1.2% (*k*=2)