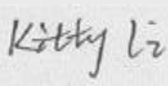
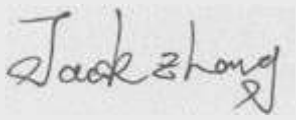
DEKRA Testing and Certification (Suzhou) Co., Ltd.
No.99 Hongye Rd., Suzhou Industrial Park, Suzhou, 215006, Jiangsu, China
TEL: +86-512-6251-5088 / FAX: +86-512-6251-5098

Test report No:
19C2189R-HP-US-P03V01

SAR TEST REPORT

Product Name	LTE CAT-M1 (eMTC) Module
Trademark	RhythmStar-W
FCC ID	2ACA9-10003
Model and /or type reference	SIM7000A
Applicant´s name / address	Rhythmedix, LLC 5000 Atrium Way Mt. Laurel New Jersey United States 08054
Test method requested, standard	FCC 47CFR §2.1093 IEEE Std. 1528-2013 KDB Publication 447498 D01v06 KDB Publication 865664 D01v01r04 KDB Publication 865664 D02 v01r02 KDB Publication 941225 D05v02r05 ANSI C95.1-2005
Verdict Summary	IN COMPLIANCE
Documented By (name / position & signature)	Kitty Li/Project Assistant 
Tested by (name / position & signature)	Frank He/Technical Supervisor 
Approved by (name / position & signature)	Jack Zhang/Supervisor 

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Date of issue	2020-04-03
Report template No	19C2189R-HP-US-P03V01

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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.

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GENERAL CONDITIONS

Test Location	No. 99, Hongye Road, Suzhou Industrial Park Suzhou, 215006, P.R. China
Date(receive sample)	Dec. 26, 2019
Date (start test)	Jan. 14, 2020
Date (finish test)	Mar. 13, 2020

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.
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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
19C2189R-HP-US-P03V01	V1.0	Initial issue of report.	2020-03-18
19C2189R-HP-US-P03V01	V1.1	Modified some typo	2020-04-01
19C2189R-HP-US-P03V01	V1.2	Add some Test Data	2020-04-03

Note:

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 47CFR §2.1093; IEEE Std. 1528-2013; KDB Publication 447498 D01v06; KDB Publication 865664 D01v01r04; KDB Publication 941225 D05v02r05; ANSI C95.1-20053.
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, unless the specification, standard or customer have special requirements
4. The test results presented in this report relate only to the object tested.
5. The test results relate only to the samples tested
6. The test report shall not be reproduced without the written approval of DEKRA Testing and Certification (Suzhou) Co., Ltd.
7. This report will not be used for social proof function in China market.

1 General Information

1.1 General Description of the Item(s)

Wireless Card .....:	SIM7000A
Wireless specification .....:	LTE CAT-M1(eMTC)
Support Band	Band 2 UL: 1850 ~ 1910MHz; DL: 1930 ~ 1990MHz; Band 4 UL: 1710 ~ 1755MHz; DL: 2110 ~ 2155MHz; Band 12 UL: 699 ~ 716MHz; DL: 729 ~ 746MHz; Band 13 UL: 777 ~ 787MHz; DL: 746 ~ 756MHz;
UL Modulation.....:	QPSK ,16QAM

Rated power supply.....:	Voltage and Frequency	
	☐	AC: 220 – 240 V, 50/60 Hz
	☐	AC: 100 – 240 V, 50/60 Hz
	☐	DC: 12 V
	☒	Battery: 3.8V
	☐	PoE:
Mounting position.....:	☐	Table top equipment
	☐	Wall/Ceiling mounted equipment
	☐	Floor standing equipment
	☐	Hand-held equipment
	☒	Other: portable devices

Host information

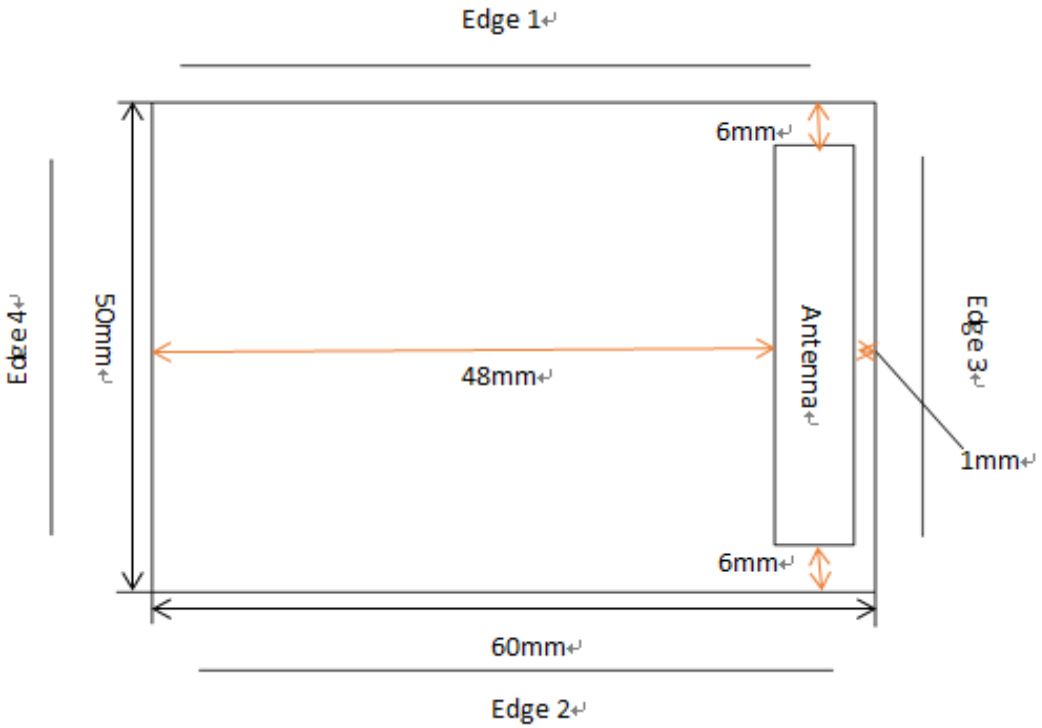
Model / Type number.....:	Wireless Event Monitor
Trademark .....:	RhythmStar-W
Manufacturer.....:	Rhythmedix, LLC
Manufacturer Address .....:	5000 Atrium Way Mt. Laurel New Jersey United States 08054

Note: This product is used on product Wireless Event Monitor. It just changed the antenna. We have evaluated that it will not affect the rf performance on product Wireless Event Monitor, so we only carry out SAR evaluation on Wireless Event Monitor hosts. Do based on Test Report No. I17D00095-RFA04.

1.2 Antenna Information

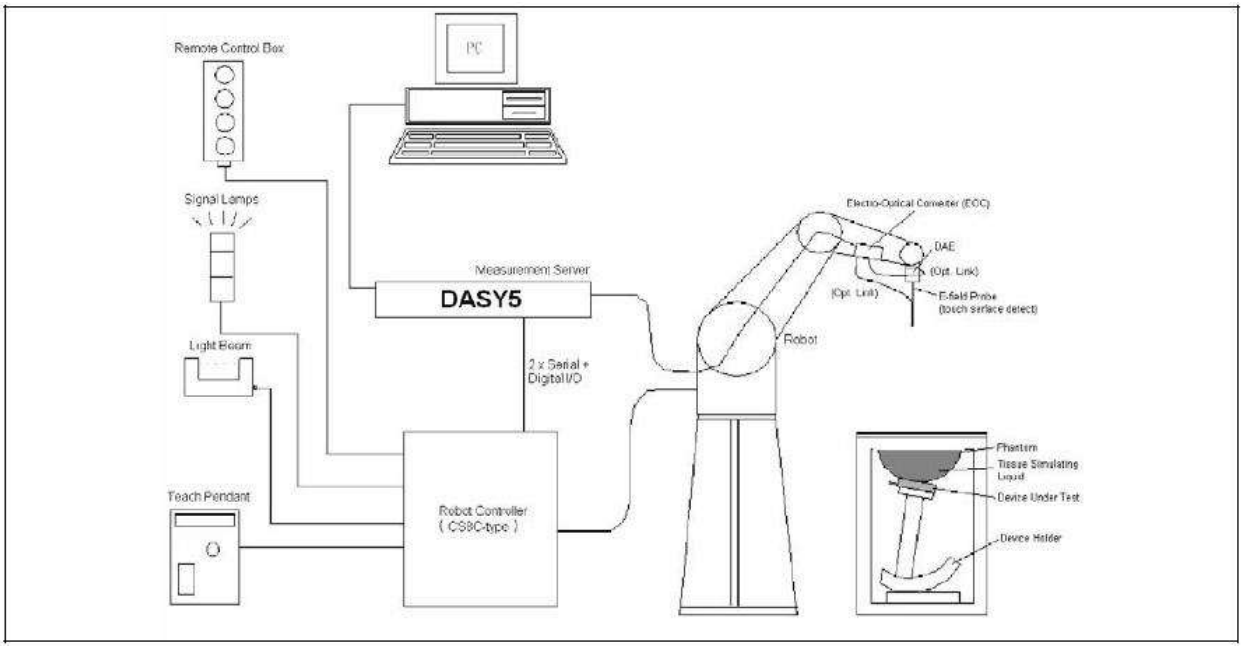
Antenna model / type number.....:	SR4L002			
Antenna Delivery .....:	☒	1TX + 1RX		
	☐	2TX + 2RX		
	☐	Others:……		
Antenna technology.....:	☒	SISO		
	☐	MIMO	☐	CDD
			☐	Beam-forming
Antenna Type.....:	☐	External	☐	Dipole
			☐	PIFA
			☐	Sectorized
	☒	Internal	☐	PIFA
			☐	PCB
			☒	SMD
			☐	Others……..
Antenna Gain.....:	Band 2 & Band 4: 2.5dBi Band 12 & Band 13: 0.5dBi			

1.3 Antenna Position



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 10mm^2 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/m^3 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 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]	
750MHz	Reference result ± 5% window	55.5 52.73 to 58.28	0.97 0.92 to 1.02	N/A
	03-03-2020	55.1	0.96	21.0
1800MHz	Reference result ± 5% window	53.3 50.64 to 55.97	1.52 1.44 to 1.60	N/A
	02-27-2020	52.61	1.48	21.0
1900MHz	Reference result ± 5% window	53.3 50.64 to 55.97	1.52 1.44 to 1.60	N/A
	02-27-2020	52.37	1.52	21.0

3.2 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.

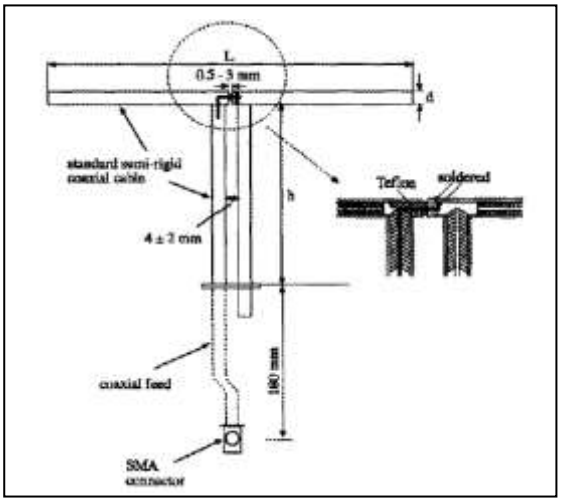
Target Frequency	Head		Body	
(MHz)	ε_r	σ (S/m)	ε_r	σ (S/m)
150	52.3	0.76	61.9	0.80
300	45.3	0.87	58.2	0.92
450	43.5	0.87	56.7	0.94
835	41.5	0.90	55.2	0.97
900	41.5	0.97	55.0	1.05
915	41.5	0.98	55.0	1.06
1450	40.5	1.20	54.0	1.30
1610	40.3	1.29	53.8	1.40
1800 – 2000	40.0	1.40	**53.3**	**1.52**
2450	39.2	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)
750MHz	176	100	6.35
1750MHz	75.2	42.9	3.6
1900MHz	68	39.5	3.6

4.1.2. Validation Result

System Performance Check at 750MHz, 1800MHz, 1900MHz

Validation Dipole: D750V3, SN: 1086

Frequency [MHz]	Description	SAR [w/kg] 1g	SAR [w/kg] 10g	Tissue Temp. [°C]
750 MHz	Reference result ± 10% window	8.59 7.73 to 9.45	5.68 5.11 to 6.25	N/A
	03-03-2020	8.36	5.6	21.0
Validation Dipole: D1800V2, SN: 2d179				
1800 MHz	Reference result ± 10% window	38.5 34.65 to 42.35	20.2 18.18 to 22.22	N/A
	02-27-2020	38.56	20.96	21.0
Validation Dipole: D1900V2, SN: 5d121				
1900 MHz	Reference result ± 10% window	40.4 36.36 to 44.44	21.0 18.90 to 23.10	N/A
	02-27-2020	40.4	21.32	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 $1mm^2$) 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 $1mm^3$).

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)	**1.60 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	D750V3	1086	2021.02.18
Dipole Validation Kits	Speag	D1800V2	2d179	2020.03.25
Dipole Validation Kits	Speag	D1900V2	5d121	2020.03.25
SAM Twin Phantom	Speag	SAM	TP-1561/1562	N/A
Device Holder	Speag	SD 000 H01 HA	N/A	N/A
Data Acquisition Electronic	Speag	DAE4	1220	2020.04.10
E-Field Probe	Speag	EX3DV4	3710	2020.04.24
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
Radio Communication Analyzer	Anritsu	MT8821C	6261849019	2020.04.25
Vector Network	Agilent	E5071C	MY46103316	2020.09.27
Signal Generator	Agilent	E4438C	MY49070163	2020.09.29
Spectrum Analyzer	Agilent	N9010A	MY48030494	2020.09.27
Temperature/Humidity Meter	Zhichen	ZC1-2	N/A	2020.04.16
Temperature Meter	Dretec	O-274	RF-001	2020.11.05

7 MEASUREMENT UNCERTAINTY

DASY5 Uncertainty 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	±5.5%	N	1	1	1	±5.5%	±5.5%	∞
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	±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 (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%	∞
Combined Std. Uncertainty						±10.6%	±10.5%	361
Expanded STD Uncertainty						±21.2%	±21.1%	

8 CONDUCTED POWER MEASUREMENT

Test Item	Maximum Output Power		
Test Mode	LTE Band 2 Link		
Date of Test	2020/01/16	Test Site	TR7

BW [MHz]	RB Size	RB Offset	Mod	MaximumAveragePower[dBm]		
				Low Ch. / Freq.	Mid Ch. / Freq.	High Ch. / Freq.
Channel				18607	18900	19193
Frequency				1850.7	1880	1909.3
1.4	1	0	QPSK	25.07	24.90	24.87
1.4	1	2		24.86	25.00	24.54
1.4	1	5		24.79	24.74	24.66
1.4	3	0		24.07	23.64	23.34
1.4	3	1		23.97	23.67	23.27
1.4	3	2		24.04	23.70	23.24
1.4	6	0		22.96	22.71	22.20
1.4	1	0	16QAM	24.35	24.23	23.64
1.4	1	2		24.81	24.35	23.91
1.4	1	5		24.57	24.13	23.70
1.4	3	0		23.38	22.98	22.77
1.4	3	1		23.42	23.00	22.74
1.4	3	2		23.43	23.07	22.66
1.4	6	0		22.42	22.05	21.63

Test Item	Maximum Output Power		
Test Mode	LTE Band 4 Link		
Date of Test	2020/01/16	Test Site	TR7

BW [MHz]	RB Size	RB Offset	Mod	MaximumAveragePower[dBm]		
				Low Ch. / Freq.	Mid Ch. / Freq.	High Ch. / Freq.
Channel				**19957**	**20175**	**20393**
Frequency				**1710.7**	**1732.5**	**1754.3**
1.4	1	0	QPSK	24.90	24.85	24.86
1.4	1	2		24.81	24.80	24.73
1.4	1	5		24.80	24.77	24.84
1.4	3	0		24.25	24.26	24.29
1.4	3	1		23.87	23.68	23.74
1.4	3	2		23.85	23.67	23.82
1.4	6	0		22.80	22.67	22.89
1.4	1	0	16QAM	24.30	24.23	24.22
1.4	1	2		24.27	24.16	24.14
1.4	1	5		23.33	23.05	23.90
1.4	3	0		23.14	23.05	22.87
1.4	3	1		23.16	22.97	22.65
1.4	3	2		23.21	23.06	22.74
1.4	6	0		22.13	22.10	21.88

Test Item	Maximum Output Power		
Test Mode	LTE Band 12 Link		
Date of Test	2020/01/16	Test Site	TR7

BW [MHz]	RB Size	RB Offset	Mod	MaximumAveragePower[dBm]		
				Low Ch. / Freq.	Mid Ch. / Freq.	High Ch. / Freq.
Channel				**23017**	**23095**	**23173**
Frequency				**699.7**	**707.5**	**715.3**
1.4	1	0	QPSK	25.26	25.23	25.11
1.4	1	2		25.07	25.08	25.05
1.4	1	5		25.09	24.95	25.11
1.4	3	0		24.00	24.10	24.07
1.4	3	1		23.93	23.97	23.94
1.4	3	2		23.93	24.01	23.91
1.4	6	0		22.85	22.97	22.79
1.4	1	0	16QAM	24.52	24.71	24.49
1.4	1	2		24.09	24.24	24.11
1.4	1	5		24.36	24.66	24.46
1.4	3	0		23.38	23.54	24.51
1.4	3	1		23.39	23.39	23.26
1.4	3	2		23.23	23.40	23.26
1.4	6	0		22.11	22.43	22.16

Test Item	Maximum Output Power		
Test Mode	LTE Band 13 Link		
Date of Test	2020/01/16	Test Site	TR7

BW [MHz]	RB Size	RB Offset	Mod	MaximumAveragePower[dBm]		
				Low Ch. / Freq.	Mid Ch. / Freq.	High Ch. / Freq.
Channel				**23205**	**23230**	**23255**
Frequency				**779.5**	**782**	**784.5**
1.4	1	0	QPSK	25.22	25.26	25.23
1.4	1	2		24.79	24.94	24.86
1.4	1	5		24.63	24.91	24.60
1.4	3	0		24.59	24.59	24.57
1.4	3	1		24.50	24.54	24.51
1.4	3	2		24.48	24.52	24.50
1.4	6	0		23.60	23.60	23.67
1.4	1	0	16QAM	24.66	24.73	24.49
1.4	1	2		24.15	24.38	24.14
1.4	1	5		23.89	24.20	23.87
1.4	3	0		23.95	23.97	23.90
1.4	3	1		23.87	23.89	23.80
1.4	3	2		23.97	23.78	23.82
1.4	6	0		22.86	23.02	23.09

9 TEST RESULTS

SAR MEASUREMENT										
Ambient Temperature (°C) : 21.5 ± 2					Relative Humidity (%): 52					
Liquid Temperature (°C) : 21.0 ± 2					Depth of Liquid (cm):>15					
Product: Wireless Event Monitor										
Test Mode: Band 2										
Test Position Body (0mm gap)	Antenna Position	Service	Frequency (MHz)	Frame Power (dBm)	Power Drift (<±0.2)	SAR 1g (W/kg)	Scaling Factor	Duty Factor	Scaled SAR 1g (W/kg)	Limit (W/kg)
Back	Fixed	QPSK,1RB, 0 RB offset	1850.7	25.07	-0.05	0.496	1.156	1	0.573	1.6
Edge 1	Fixed	QPSK,1RB, 0 RB offset	1850.7	25.07	-0.06	0.754	1.156	1	**0.872**	1.6
Edge 2	Fixed	QPSK,1RB, 0 RB offset	1850.7	25.07	0.10	0.264	1.156	1	0.305	1.6
Edge 3	Fixed	QPSK,1RB, 0 RB offset	1850.7	25.07	-0.07	0.553	1.156	1	0.639	1.6
Edge 4	Fixed	QPSK,1RB, 0 RB offset	1850.7	25.07	0.12	0.121	1.156	1	0.140	1.6
Edge 1	Fixed	QPSK,1RB, 0 RB offset	1880	24.90	-0.03	0.603	1.202	1	0.725	1.6
Edge 1	Fixed	QPSK,1RB, 0 RB offset	1909.3	24.87	-0.13	0.683	1.211	1	0.827	1.6
Edge 1	Fixed	QPSK,3RB, 0 RB offset	1850.7	24.07	0.06	0.537	1.455	1	0.782	1.6
Edge 1	Fixed	QPSK,3RB, 0 RB offset	1880	23.94	0.11	0.479	1.500	1	0.718	1.6
Edge 1	Fixed	QPSK,3RB, 0 RB offset	1909.3	23.98	0.01	0.522	1.486	1	0.776	1.6
Note: when the 10-g SAR is ≤ 1.0 W/kg, testing for low and high channel is optional.										

SAR MEASUREMENT										
Ambient Temperature (°C) : 21.5 ± 2					Relative Humidity (%): 52					
Liquid Temperature (°C) : 21.0 ± 2					Depth of Liquid (cm):>15					
Product: Wireless Event Monitor										
Test Mode: Band 4										
Test Position Body (0mm gap)	Antenna Position	Service	Frequency (MHz)	Frame Power (dBm)	Power Drift (<±0.2)	SAR 1g (W/kg)	Scaling Factor	Duty Factor	Scaled SAR 1g (W/kg)	Limit (W/kg)
Back	Fixed	QPSK,1RB, 0 RB offset	1710.7	24.90	-0.06	0.502	1.202	1	0.603	1.6
Edge 1	Fixed	QPSK,1RB, 0 RB offset	1710.7	24.90	0.08	0.643	1.202	1	0.773	1.6
Edge 2	Fixed	QPSK,1RB, 0 RB offset	1710.7	24.90	-0.1	0.361	1.202	1	0.434	1.6
Edge 3	Fixed	QPSK,1RB, 0 RB offset	1710.7	24.90	-0.18	0.556	1.202	1	0.668	1.6
Edge 4	Fixed	QPSK,1RB, 0 RB offset	1710.7	24.90	0.12	0.113	1.202	1	0.136	1.6
Edge 1	Fixed	QPSK,1RB, 0 RB offset	1732.5	24.85	-0.17	0.719	1.216	1	**0.874**	1.6
Edge 1	Fixed	QPSK,1RB, 0 RB offset	1754.3	24.86	-0.16	0.613	1.213	1	0.744	1.6
Edge 1	Fixed	QPSK,3RB, 0 RB offset	1710.7	24.25	-0.11	0.555	1.396	1	0.775	1.6
Edge 1	Fixed	QPSK,3RB, 0 RB offset	1732.5	24.26	-0.2	0.535	1.393	1	0.745	1.6
Edge 1	Fixed	QPSK,3RB, 0 RB offset	1754.3	24.29	-0.12	0.520	1.384	1	0.719	1.6
Note: when the 10-g SAR is ≤ 1.0 W/kg, testing for low and high channel is optional.										

SAR MEASUREMENT										
Ambient Temperature (°C) : 21.5 ± 2					Relative Humidity (%): 52					
Liquid Temperature (°C) : 21.0 ± 2					Depth of Liquid (cm):>15					
Product: Wireless Event Monitor										
Test Mode: Band 12										
Test Position Body (0mm gap)	Antenna Position	Service	Frequency (MHz)	Frame Power (dBm)	Power Drift (<±0.2)	SAR 1g (W/kg)	Scaling Factor	Duty Factor	Scaled SAR 1g (W/kg)	Limit (W/kg)
Back	Fixed	QPSK,1RB, 0 RB offset	699.7	25.26	0.02	0.018	1.107	1	0.020	1.6
Edge 1	Fixed	QPSK,1RB, 0 RB offset	699.7	25.26	0.05	0.020	1.107	1	0.022	1.6
Edge 2	Fixed	QPSK,1RB, 0 RB offset	699.7	25.26	0.16	0.013	1.107	1	0.014	1.6
Edge 3	Fixed	QPSK,1RB, 0 RB offset	699.7	25.26	0.01	0.019	1.107	1	0.021	1.6
Edge 4	Fixed	QPSK,1RB, 0 RB offset	699.7	25.26	0.14	0.009	1.107	1	0.010	1.6
Edge 1	Fixed	QPSK,1RB, 0 RB offset	707.5	25.23	0.15	0.028	1.114	1	0.031	1.6
Edge 1	Fixed	QPSK,1RB, 0 RB offset	715.3	25.11	0.01	0.037	1.146	1	0.042	1.6
Edge 1	Fixed	QPSK,3RB, 0 RB offset	699.7	24.00	0.06	0.015	1.479	1	0.022	1.6
Edge 1	Fixed	QPSK,3RB, 0 RB offset	707.5	24.10	0.15	0.028	1.445	1	0.040	1.6
Edge 1	Fixed	QPSK,3RB, 0 RB offset	715.3	24.07	0.02	0.035	1.455	1	0.051	1.6
Note: when the 10-g SAR is ≤ 1.0 W/kg, testing for low and high channel is optional.										

SAR MEASUREMENT										
Ambient Temperature (°C) : 21.5 ± 2					Relative Humidity (%): 52					
Liquid Temperature (°C) : 21.0 ± 2					Depth of Liquid (cm):>15					
Product: Wireless Event Monitor										
Test Mode: Band 13										
Test Position Body (0mm gap)	Antenna Position	Service	Frequency (MHz)	Frame Power (dBm)	Power Drift (<±0.2)	SAR 1g (W/kg)	Scaling Factor	Duty Factor	Scaled SAR 1g (W/kg)	Limit (W/kg)
Back	Fixed	QPSK,1RB, 0 RB offset	799.5	25.22	0.02	0.031	1.117	1	0.035	1.6
Edge 1	Fixed	QPSK,1RB, 0 RB offset	799.5	25.22	0.13	0.174	1.117	1	**0.194**	1.6
Edge 2	Fixed	QPSK,1RB, 0 RB offset	799.5	25.22	0.06	0.015	1.117	1	0.017	1.6
Edge 3	Fixed	QPSK,1RB, 0 RB offset	799.5	25.22	0.11	0.081	1.117	1	0.090	1.6
Edge 4	Fixed	QPSK,1RB, 0 RB offset	799.5	25.22	0.03	0.011	1.117	1	0.012	1.6
Edge 1	Fixed	QPSK,1RB, 0 RB offset	782	25.26	0.14	0.174	1.107	1	0.193	1.6
Edge 1	Fixed	QPSK,1RB, 0 RB offset	784.5	25.23	0.01	0.163	1.114	1	0.182	1.6
Edge 1	Fixed	QPSK,3RB, 0 RB offset	799.5	24.59	-0.02	0.138	1.291	1	0.178	1.6
Edge 1	Fixed	QPSK,3RB, 0 RB offset	782	24.59	0.04	0.131	1.291	1	0.169	1.6
Edge 1	Fixed	QPSK,3RB, 0 RB offset	784.5	24.57	-0.06	0.134	1.297	1	0.174	1.6
Note: when the 10-g SAR is ≤ 1.0 W/kg, testing for low and high channel is optional.										

Appendix A. SAR System Validation Data

Date/Time: 03/03/2020

Test Laboratory: DEKRA Lab

System Check body 750MHz

DUT: Dipole 750 MHz D750V3; Type: D750V3

Communication System: UID 0, CW (0); Communication System Band: D750(750MHz); Duty Cycle: 1:1;

Frequency: 750 MHz; Medium parameters used: f = 750 MHz; σ = 0.96 S/m; εr = 55.1; 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(9.63, 9.63, 9.63); Calibrated: 25/04/2019;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 11/04/2019
- Phantom: ELI1; Type: QDOVA002AA; Serial: TP:2106
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

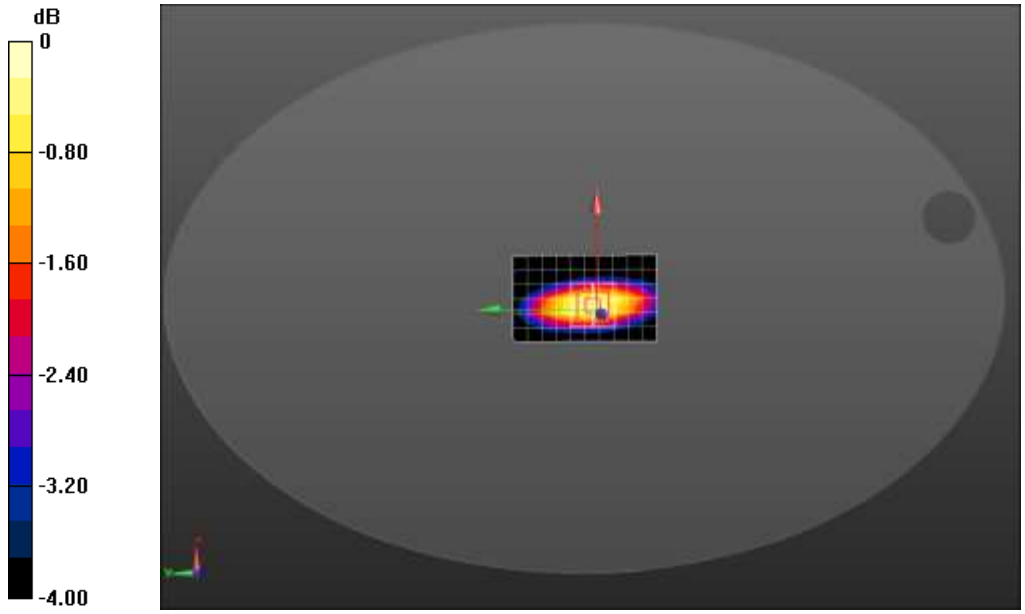
Configuration/System Check body 750MHz/Area Scan (7x11x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (measured) = 2.01 W/kg

Configuration/System Check body 750MHz/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm; Reference Value = 45.53 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 2.94 W/kg

SAR(1 g) = 2.09 W/kg; SAR(10 g) = 1.40 W/kg; Maximum value of SAR (measured) = 2.12 W/kg



0 dB = 2.12 W/kg = 3.26 dBW/kg

Date/Time: 27/02/2020

Test Laboratory: DEKRA Lab

System Check body 1800MHz

DUT: Dipole 1800 MHz D1800V2; Type: D1800V2

Communication System: UID 0, CW (0); Communication System Band: D1800(1800MHz); Duty Cycle: 1:1; Frequency: 1800 MHz; Medium parameters used: f = 1800 MHz; σ = 1.48 S/m; εr = 52.61; 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(7.63, 7.63, 7.63); Calibrated: 25/04/2019;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 11/04/2019
- Phantom: SAM2; Type: SAM; Serial: TP1562
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

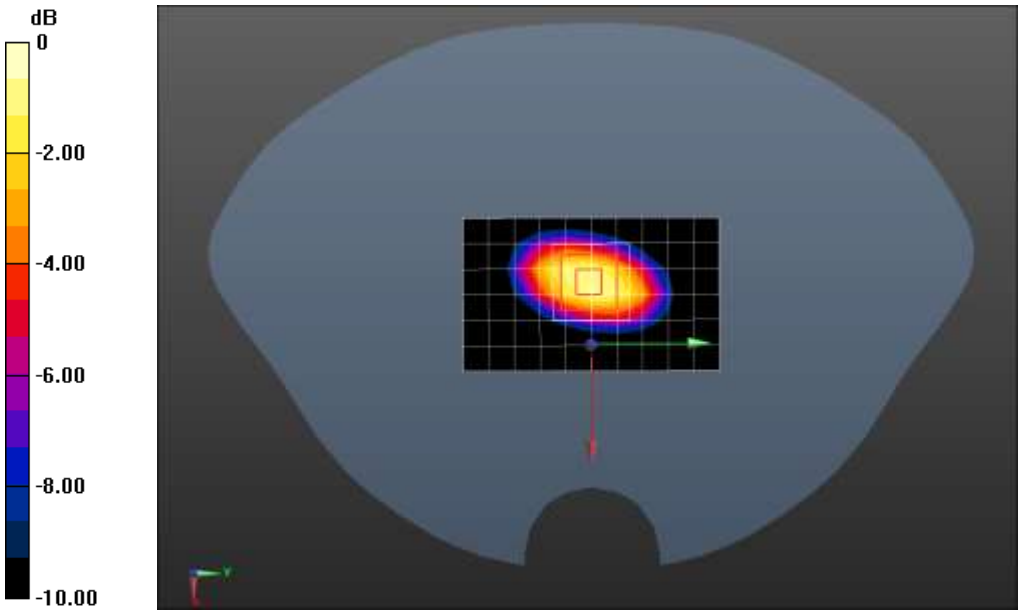
Configuration/System Check body 1800MHz/Area Scan (7x11x1): Measurement grid: dx=10mm, dy=10mm; Maximum value of SAR (measured) = 9.45 W/kg

Configuration/System Check body 1800MHz/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm; Reference Value = 79.75 V/m; Power Drift = 0.20 dB

Peak SAR (extrapolated) = 16.7 W/kg

SAR(1 g) = 9.64 W/kg; SAR(10 g) = 5.24 W/kg

Maximum value of SAR (measured) = 10.9 W/kg



0 dB = 10.9 W/kg = 10.37 dBW/kg

Date/Time: 27/02/2020

Test Laboratory: DEKRA Lab

System Check body 1900MHz

DUT: Dipole 1900 MHz D1900V2; Type: D1900V2

Communication System: UID 0, CW (0); Communication System Band: D1900(1900MHz); Duty Cycle: 1:1; Frequency: 1900 MHz; Medium parameters used: f = 1900 MHz; σ = 1.52 S/m; εr = 52.37; 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(7.65, 7.65, 7.65); Calibrated: 25/04/2019;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 11/04/2019
- Phantom: SAM2; Type: SAM; Serial: TP1562
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

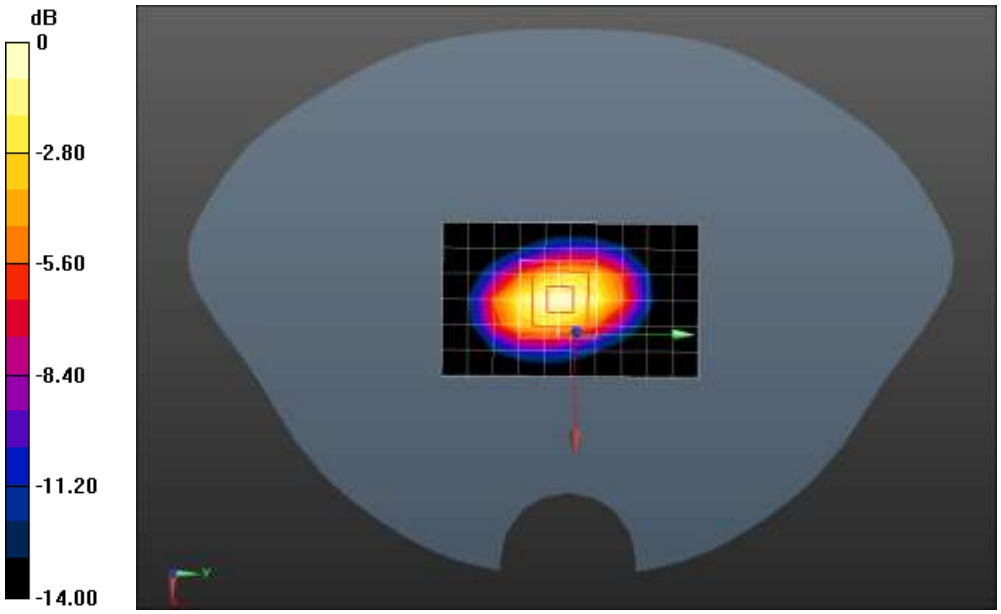
Configuration/System Check body 1900MHz/Area Scan (7x11x1): Measurement grid: dx=10mm, dy=10mm; Maximum value of SAR (measured) = 11.1 W/kg

Configuration/System Check body 1900MHz/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm; Reference Value = 85.70 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 18.0 W/kg

SAR(1 g) = 10.1 W/kg; SAR(10 g) = 5.33 W/kg

Maximum value of SAR (measured) = 11.5 W/kg



0 dB = 11.5 W/kg = 10.61 dBW/kg

Appendix B. SAR measurement Data

Date/Time: 27/02/2020

Test Laboratory: DEKRA Lab

eMTC Band 4 1.4M 1710.7MHz QPSK 1RB-Back

DUT: Monitor; Type: Mobile Cardiac Monitor

Communication System: UID 0, LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK) (0); Communication System Band: band4; Duty Cycle: 1:1.0; Frequency: 1710.7 MHz; Medium parameters used: f = 1710.7 MHz; σ = 1.42 S/m; εr = 52.95; ρ = 1000 kg/m3 ; Phantom section: Flat Section

Ambient temperature (℃): 21.5, Liquid temperature (℃): 21.0; DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(7.63, 7.63, 7.63); Calibrated: 25/04/2019;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 11/04/2019
- Phantom: SAM2; Type: SAM; Serial: TP1562
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

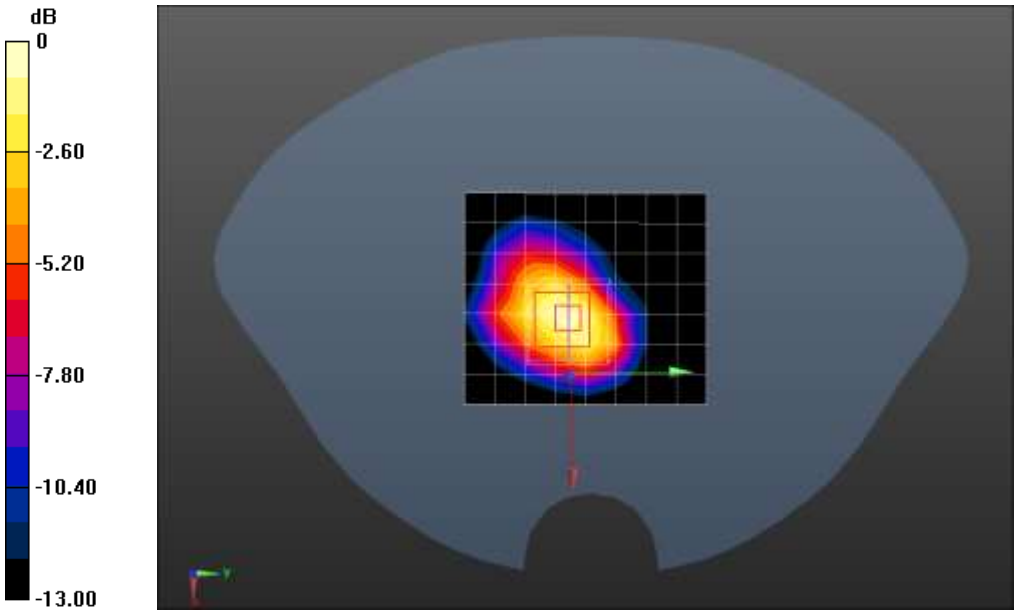
Configuration/ eMTC Band 4 1710.7MHz/Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm

Maximum value of SAR (measured) = 0.526 W/kg

Configuration/ eMTC Band 4 1710.7MHz/Zoom Scan (5x5x4)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm; Reference Value = 14.77 V/m; Power Drift = -0.06 dB

Peak SAR (extrapolated) = 0.770 W/kg

SAR(1 g) = 0.502 W/kg; SAR(10 g) = 0.298 W/kg; Maximum value of SAR (measured) = 0.557 W/kg



0 dB = 0.557 W/kg = -2.54 dBW/kg

Date/Time: 27/02/2020

Test Laboratory: DEKRA Lab

eMTC Band 4 1.4M 1710.7MHz QPSK 1RB-Edge1

DUT: Monitor; Type: Mobile Cardiac Monitor

Communication System: UID 0, LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK) (0); Communication System Band: band4; Duty Cycle: 1:1.0; Frequency: 1710.7 MHz; Medium parameters used: f = 1710.7 MHz; σ = 1.42 S/m; εr = 52.95; ρ = 1000 kg/m3 ; Phantom section: Flat Section

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

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(7.63, 7.63, 7.63); Calibrated: 25/04/2019;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 11/04/2019
- Phantom: SAM2; Type: SAM; Serial: TP1562
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/eMTC Band4 1710.7MHz/Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm

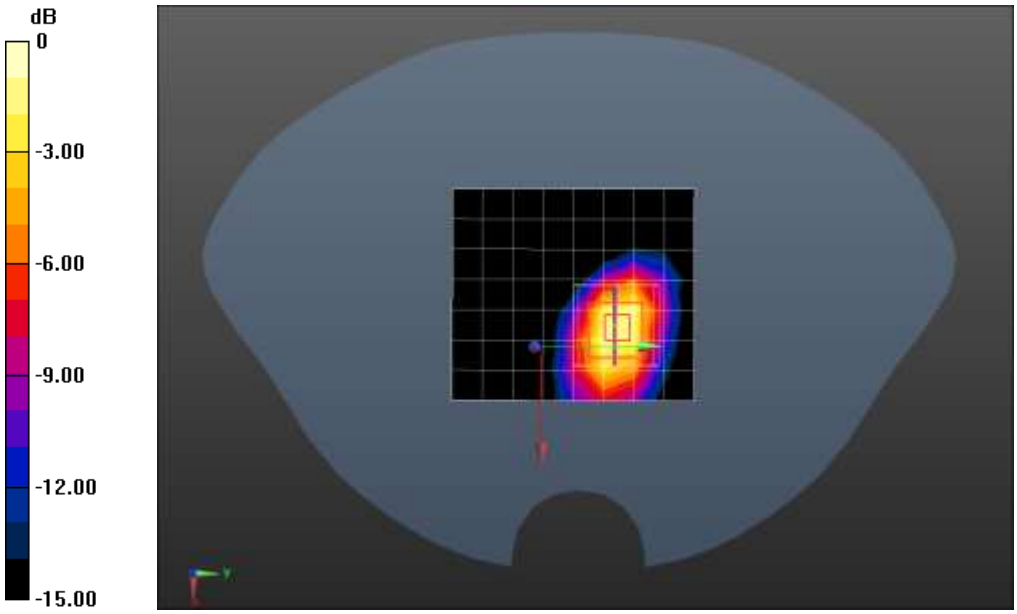
Maximum value of SAR (measured) = 0.565 W/kg

Configuration/eMTC Band4 1710.7MHz/Zoom Scan (5x5x4)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm; Reference Value = 6.590 V/m; Power Drift = 0.08 dB

Peak SAR (extrapolated) = 1.14 W/kg

SAR(1 g) = 0.643 W/kg; SAR(10 g) = 0.331 W/kg

Maximum value of SAR (measured) = 0.719 W/kg



0 dB = 0.719 W/kg = -1.43 dBW/kg

Date/Time: 27/02/2020

Test Laboratory: DEKRA Lab

eMTC Band 4 1.4M 1710.7MHz QPSK 1RB-Edge2

DUT: Monitor; Type: Mobile Cardiac Monitor

Communication System: UID 0, LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK) (0); Communication System Band: band4; Duty Cycle: 1:1.0; Frequency: 1710.7 MHz; Medium parameters used: f = 1710.7 MHz; σ = 1.42 S/m; εr = 52.95; ρ = 1000 kg/m3 ; Phantom section: Flat Section

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

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(7.63, 7.63, 7.63); Calibrated: 25/04/2019;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 11/04/2019
- Phantom: SAM2; Type: SAM; Serial: TP1562
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

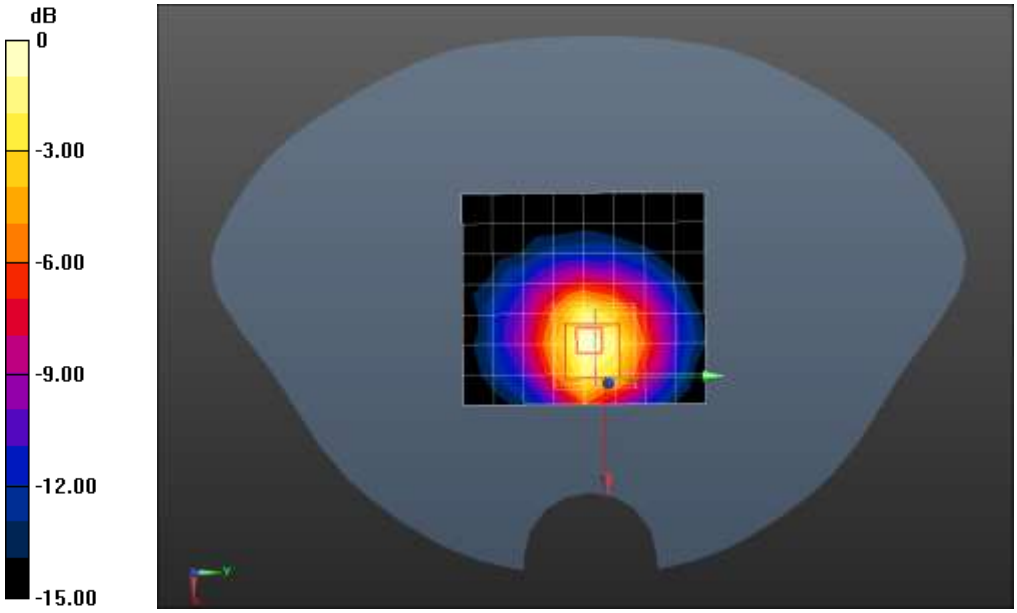
Configuration/eMTC Band4 1710.7MHz/Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm

Maximum value of SAR (measured) = 0.374 W/kg

Configuration/eMTC Band4 1710.7MHz/Zoom Scan (5x5x4)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm; Reference Value = 11.40 V/m; Power Drift = -0.10 dB

Peak SAR (extrapolated) = 0.611 W/kg

SAR(1 g) = 0.361 W/kg; SAR(10 g) = 0.198 W/kg



0 dB = 0.374 W/kg = -4.27 dBW/kg

Date/Time: 27/02/2020

Test Laboratory: DEKRA Lab

eMTC Band 4 1.4M 1710.7MHz QPSK 1RB-Edge3

DUT: Monitor; Type: Mobile Cardiac Monitor

Communication System: UID 0, LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK) (0); Communication System Band: band4; Duty Cycle: 1:1.0; Frequency: 1710.7 MHz; Medium parameters used: f = 1710.7 MHz; σ = 1.42 S/m; εr = 52.95; ρ = 1000 kg/m3 ; Phantom section: Flat Section

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

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(7.63, 7.63, 7.63); Calibrated: 25/04/2019;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 11/04/2019
- Phantom: SAM2; Type: SAM; Serial: TP1562
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/eMTC Band4 1710.7MHz/Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm

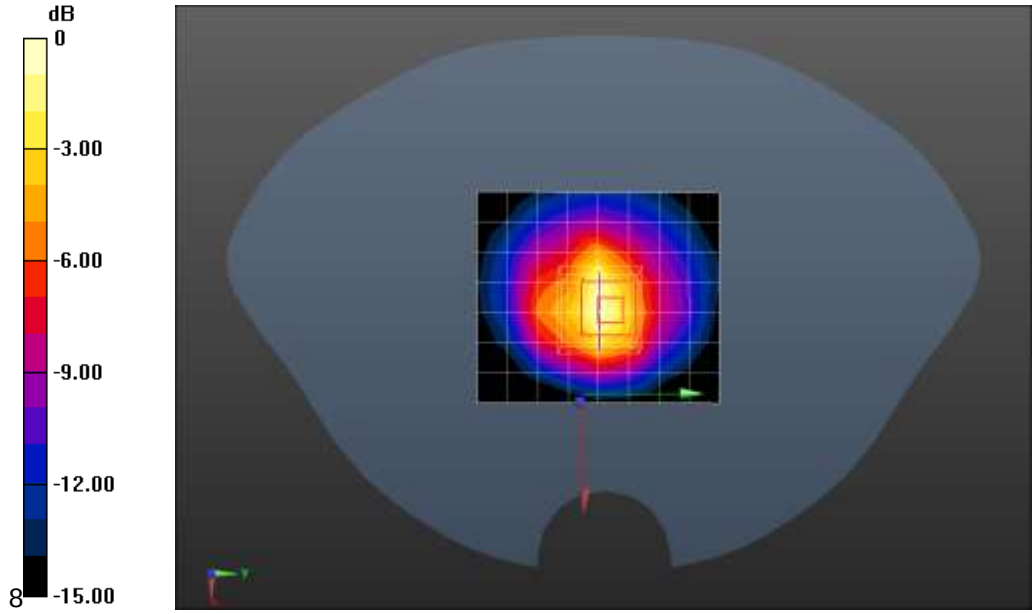
Maximum value of SAR (measured) = 0.582 W/kg

Configuration/eMTC Band4 1710.7MHz/Zoom Scan (5x5x4)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm; Reference Value = 21.97 V/m; Power Drift = -0.18 dB

Peak SAR (extrapolated) = 1.08 W/kg

SAR(1 g) = 0.556 W/kg; SAR(10 g) = 0.269 W/kg

Maximum value of SAR (measured) = 0.591 W/kg



0 dB = 0.591 W/kg = -2.28 dBW/kg

Date/Time: 27/02/2020

Test Laboratory: DEKRA Lab

eMTC Band 4 1.4M 1710.7MHz QPSK 1RB-Edge4

DUT: Monitor; Type: Mobile Cardiac Monitor

Communication System: UID 0, LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK) (0); Communication System Band: band4; Duty Cycle: 1:1.0; Frequency: 1710.7 MHz; Medium parameters used: f = 1710.7 MHz; σ = 1.42 S/m; εr = 52.95; ρ = 1000 kg/m3 ; Phantom section: Flat Section

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

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(7.63, 7.63, 7.63); Calibrated: 25/04/2019;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 11/04/2019
- Phantom: SAM2; Type: SAM; Serial: TP1562
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/eMTC Band4 1710.7MHz/Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm

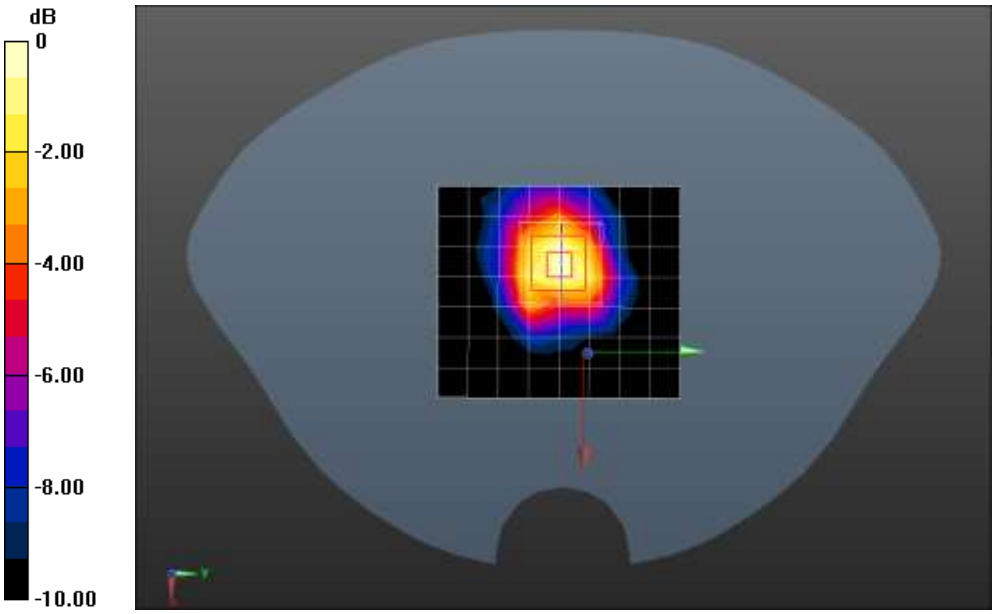
Maximum value of SAR (measured) = 0.114 W/kg

Configuration/eMTC Band4 1710.7MHz/Zoom Scan (5x5x4)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm; Reference Value = 6.691 V/m; Power Drift = 0.12 dB

Peak SAR (extrapolated) = 0.201 W/kg

SAR(1 g) = 0.113 W/kg; SAR(10 g) = 0.065 W/kg

Maximum value of SAR (measured) = 0.122 W/kg



0 dB = 0.122 W/kg = -9.14 dBW/kg

Date/Time: 27/02/2020

Test Laboratory: DEKRA Lab

eMTC Band 4 1.4M 1732.5MHz QPSK 1RB-Edge1

DUT: Monitor; Type: Mobile Cardiac Monitor

Communication System: UID 0, LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK) (0); Communication System Band: band4; Duty Cycle: 1:1.0; Frequency: 1732.5 MHz; Medium parameters used: f = 1732.5 MHz; σ = 1.44 S/m; εr = 52.89; ρ = 1000 kg/m3 ; Phantom section: Flat Section

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

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(7.63, 7.63, 7.63); Calibrated: 25/04/2019;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 11/04/2019
- Phantom: SAM2; Type: SAM; Serial: TP1562
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/eMTC Band4 1732.5MHz/Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm

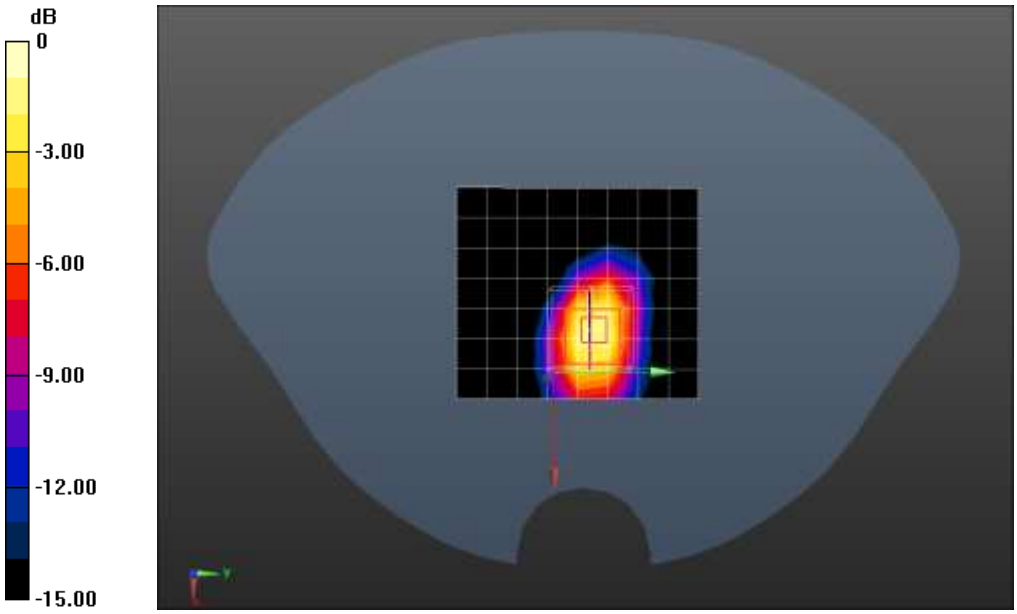
Maximum value of SAR (measured) = 0.621 W/kg

Configuration/eMTC Band4 1732.5MHz/Zoom Scan (5x5x4)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm; Reference Value = 15.96 V/m; Power Drift = -0.17 dB

Peak SAR (extrapolated) = 1.30 W/kg

SAR(1 g) = 0.719 W/kg; SAR(10 g) = 0.368 W/kg

Maximum value of SAR (measured) = 0.817 W/kg



0 dB = 0.817 W/kg = -0.88 dBW/kg

Date/Time: 27/02/2020

Test Laboratory: DEKRA Lab

eMTC Band 4 1.4M 1754.3MHz QPSK 1RB-Edge1

DUT: Monitor; Type: Mobile Cardiac Monitor

Communication System: UID 0, LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK) (0); Communication System Band: band4; Duty Cycle: 1:1.0; Frequency: 1754.3 MHz; Medium parameters used: f = 1754.3 MHz; σ = 1.45 S/m; εr = 52.82; ρ = 1000 kg/m3 ; Phantom section: Flat Section

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

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(7.63, 7.63, 7.63); Calibrated: 25/04/2019;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 11/04/2019
- Phantom: SAM2; Type: SAM; Serial: TP1562
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/ eMTC Band 4 1754.3MHz**/Area Scan (8x9x1):** Measurement grid: dx=12mm, dy=12mm

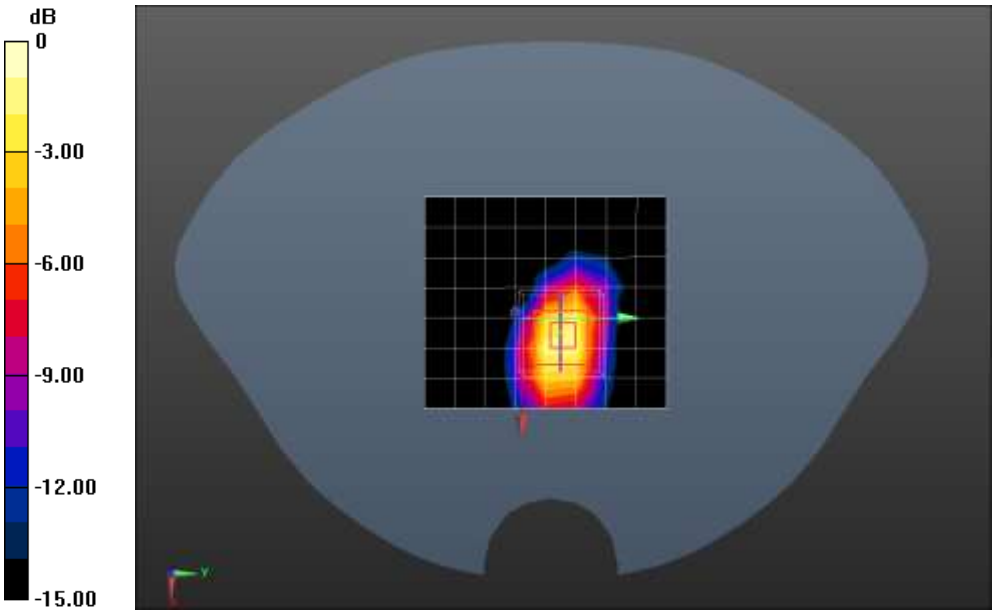
Maximum value of SAR (measured) = 0.516 W/kg

Configuration/eMTC Band4 1754.3MHz/Zoom Scan (5x5x4)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm; Reference Value = 14.46 V/m; Power Drift = -0.16 dB

Peak SAR (extrapolated) = 1.12 W/kg

SAR(1 g) = 0.613 W/kg; SAR(10 g) = 0.307 W/kg

Maximum value of SAR (measured) = 0.704 W/kg



0 dB = 0.704 W/kg = -1.52 dBW/kg

Date/Time: 27/02/2020

Test Laboratory: DEKRA Lab

eMTC Band 4 1.4M 1710.7MHz QPSK 3RB-Edge1

DUT: Monitor; Type: Mobile Cardiac Monitor

Communication System: UID 0, LTE-FDD (SC-FDMA, 3 RB, 1.4 MHz, QPSK) (0); Communication System Band: band4; Duty Cycle: 1:1.0; Frequency: 1710.7 MHz; Medium parameters used: f = 1710.7 MHz; σ = 1.42 S/m; εr = 52.95; ρ = 1000 kg/m3 ; Phantom section: Flat Section

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

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(7.63, 7.63, 7.63); Calibrated: 25/04/2019;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 11/04/2019
- Phantom: SAM2; Type: SAM; Serial: TP1562
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/ eMTC Band 4 1710.7MHz **/Area Scan (8x9x1):** Measurement grid: dx=12mm, dy=12mm

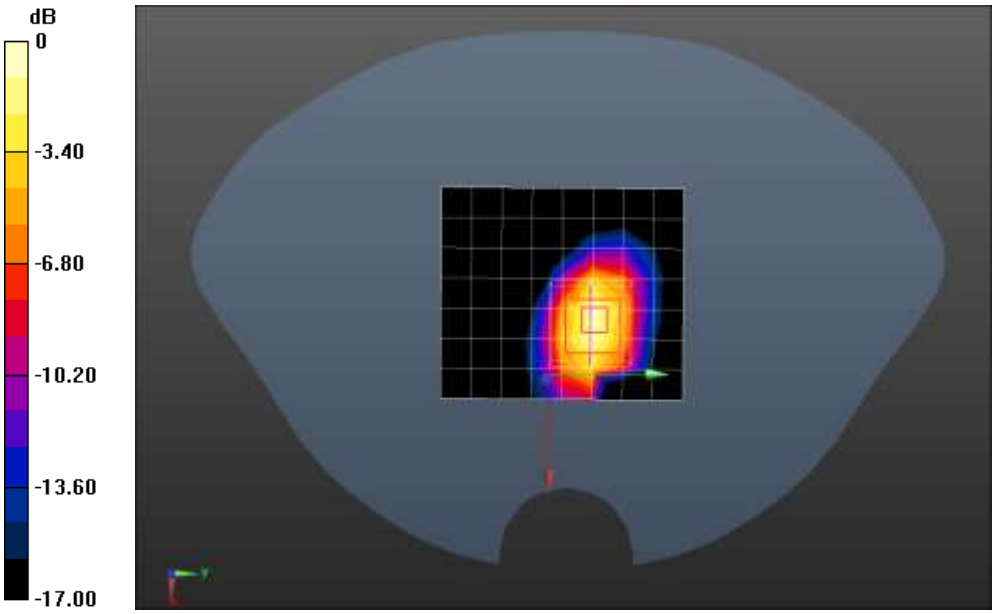
Maximum value of SAR (measured) = 0.810 W/kg

Configuration/ eMTC Band 4 1710.7MHz**/Zoom Scan (5x5x4)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm; Reference Value = 13.76 V/m; Power Drift = -0.11 dB

Peak SAR (extrapolated) = 1.33 W/kg

SAR(1 g) = 0.755 W/kg; SAR(10 g) = 0.393 W/kg

Maximum value of SAR (measured) = 0.848 W/kg



0 dB = 0.848 W/kg = -0.72 dBW/kg

Date/Time: 27/02/2020

Test Laboratory: DEKRA Lab

eMTC Band 4 1.4M 1732.5MHz QPSK 3RB-Edge1

DUT: Monitor; Type: Mobile Cardiac Monitor

Communication System: UID 0, LTE-FDD (SC-FDMA, 3 RB, 1.4 MHz, QPSK) (0); Communication System Band: band4; Duty Cycle: 1:1.0; Frequency: 1732.5 MHz; Medium parameters used: f = 1732.5 MHz; σ = 1.44 S/m; εr = 52.89; ρ = 1000 kg/m3 ; Phantom section: Flat Section

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

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(7.63, 7.63, 7.63); Calibrated: 25/04/2019;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 11/04/2019
- Phantom: SAM2; Type: SAM; Serial: TP1562
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/ eMTC Band 4 1732.5MHz/Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm

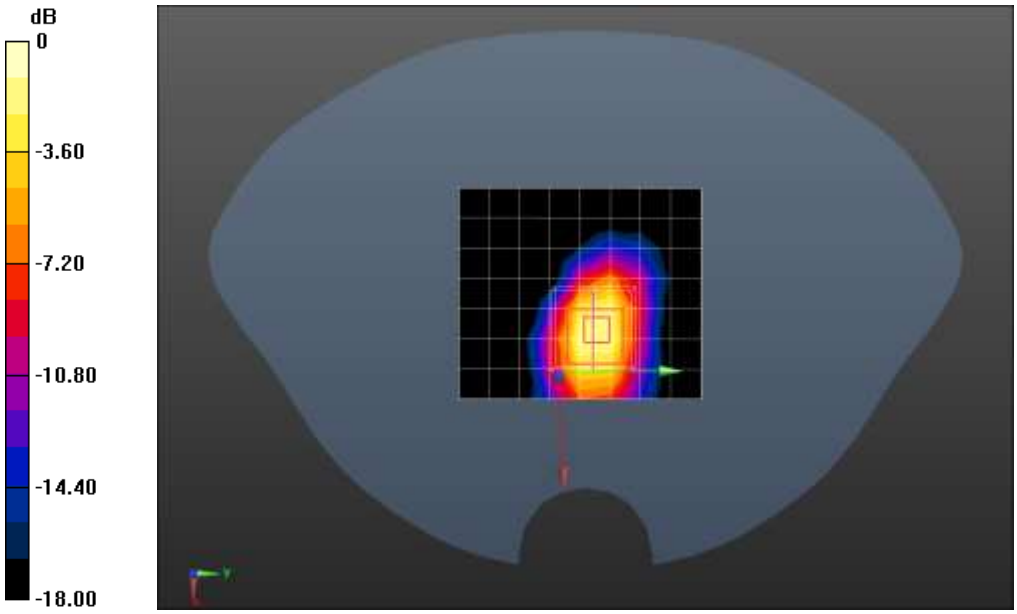
Maximum value of SAR (measured) = 0.630 W/kg

Configuration/eMTC Band4 1732.5MHz/Zoom Scan (5x5x4)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm; Reference Value = 16.16 V/m; Power Drift = -0.20 dB

Peak SAR (extrapolated) = 1.32 W/kg

SAR(1 g) = 0.735 W/kg; SAR(10 g) = 0.376 W/kg

Maximum value of SAR (measured) = 0.836 W/kg



0 dB = 0.836 W/kg = -0.78 dBW/kg

Date/Time: 27/02/2020

Test Laboratory: DEKRA Lab

eMTC Band 4 1.4M 1754.3MHz QPSK 3RB-Edge1

DUT: Monitor; Type: Mobile Cardiac Monitor

Communication System: UID 0, LTE-FDD (SC-FDMA, 3 RB, 1.4 MHz, QPSK) (0); Communication System Band: band4; Duty Cycle: 1:1.0; Frequency: 1754.3 MHz; Medium parameters used: f = 1754.3 MHz; σ = 1.45 S/m; εr = 52.82; ρ = 1000 kg/m3 ; Phantom section: Flat Section

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

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(7.63, 7.63, 7.63); Calibrated: 25/04/2019;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 11/04/2019
- Phantom: SAM2; Type: SAM; Serial: TP1562
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/eMTC Band4 1754.3MHz/Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm

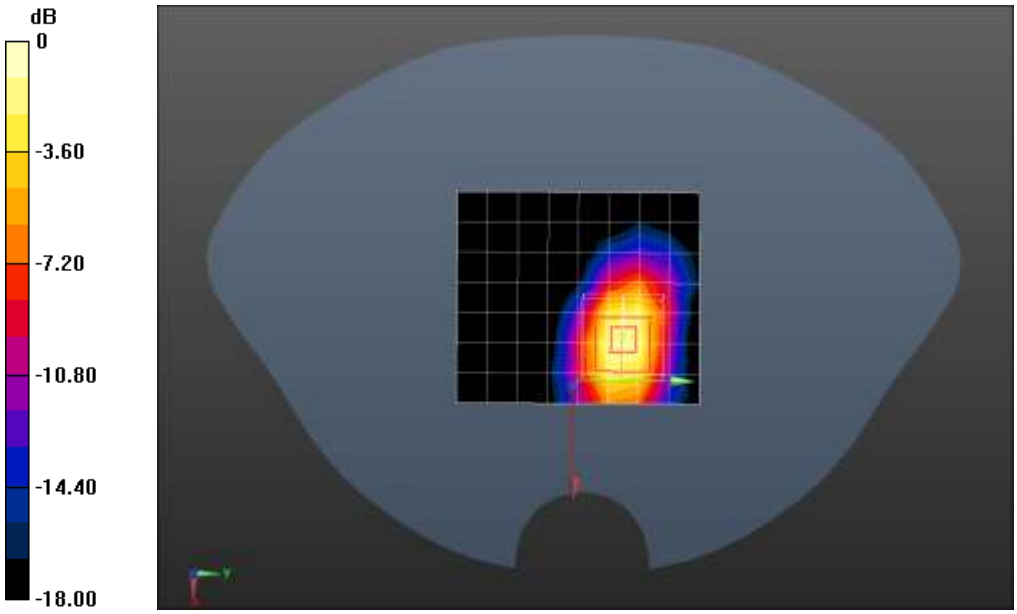
Maximum value of SAR (measured) = 0.458 W/kg

Configuration/eMTC Band4 1754.3MHz/Zoom Scan (5x5x4)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm; Reference Value = 5.321 V/m; Power Drift = -0.12 dB

Peak SAR (extrapolated) = 0.923 W/kg

SAR(1 g) = 0.520 W/kg; SAR(10 g) = 0.268 W/kg

Maximum value of SAR (measured) = 0.587 W/kg



0 dB = 0.587 W/kg = -2.31 dBW/kg

Date/Time: 27/02/2020

Test Laboratory: DEKRA Lab

eMTC Band 2 1.4M 1850.7MHz QPSK 1RB-Edge1

DUT: Monitor; Type: Mobile Cardiac Monitor

Communication System: UID 0, LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK) (0); Communication System Band: BAND2; Duty Cycle: 1:1.0; Frequency: 1850.7 MHz; Medium parameters used: f = 1850.7 MHz; σ = 1.5 S/m; εr = 52.53; ρ = 1000 kg/m3 ; Phantom section: Flat Section

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

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(7.65, 7.65, 7.65); Calibrated: 25/04/2019;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 11/04/2019
- Phantom: SAM2; Type: SAM; Serial: TP1562
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/eMTC Band2 1850.7MHz/Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm

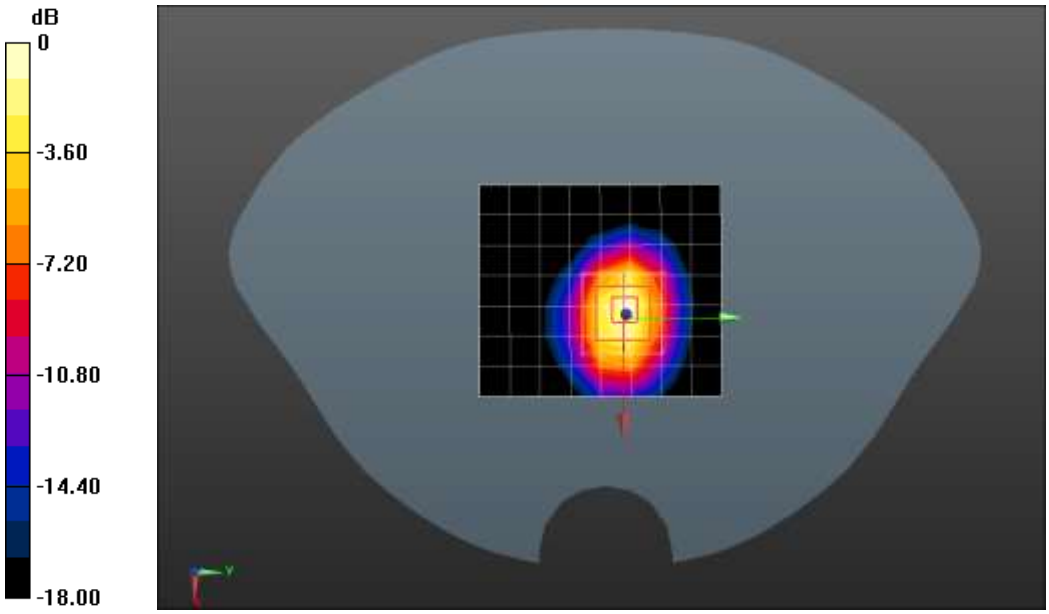
Maximum value of SAR (measured) = 0.766 W/kg

Configuration/Band2 1850.7MHz/Zoom Scan (5x5x4)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm; Reference Value = 18.23 V/m; Power Drift = -0.06 dB

Peak SAR (extrapolated) = 1.43 W/kg

SAR(1 g) = 0.754 W/kg; SAR(10 g) = 0.369 W/kg

Maximum value of SAR (measured) = 0.816 W/kg



0 dB = 0.816 W/kg = -0.88 dBW/kg

Date/Time: 27/02/2020

Test Laboratory: DEKRA Lab

eMTC Band 2 1.4M 1880MHz QPSK 1RB-Edge1

DUT: Monitor; Type: Mobile Cardiac Monitor

Communication System: UID 0, LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK) (0); Communication System Band: BAND2; Duty Cycle: 1:1.0; Frequency: 1880 MHz; Medium parameters used: f = 1880 MHz; σ = 1.51 S/m; εr = 52.45; ρ = 1000 kg/m3 ; Phantom section: Flat Section

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

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(7.65, 7.65, 7.65); Calibrated: 25/04/2019;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 11/04/2019
- Phantom: SAM2; Type: SAM; Serial: TP1562
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/eMTC Band2 1880MHz/Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm

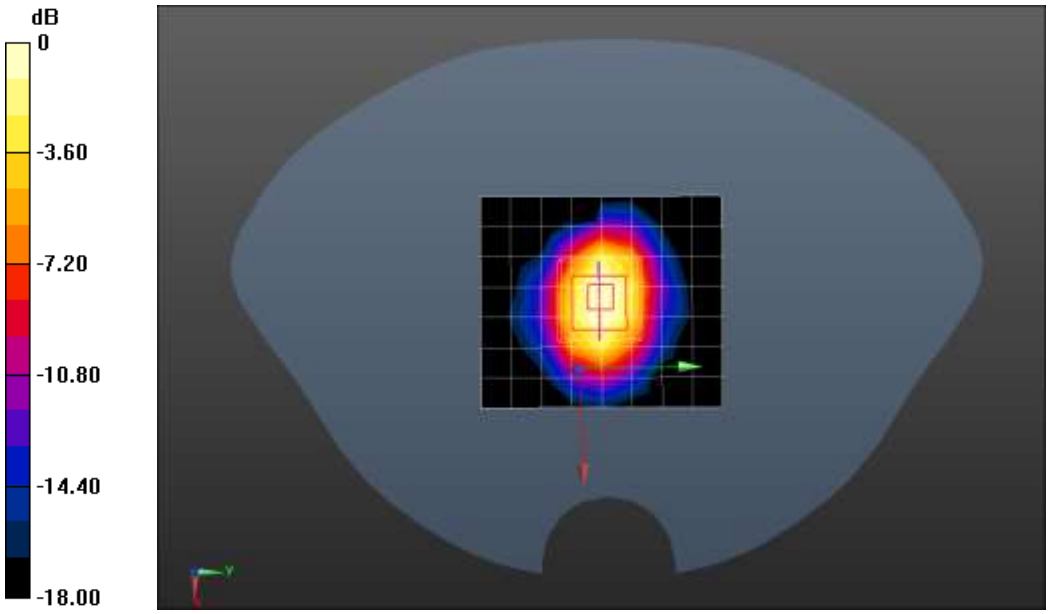
Maximum value of SAR (measured) = 0.948 W/kg

Configuration/eMTC Band2 1880MHz/Zoom Scan (5x5x4)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm; Reference Value = 24.48 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 1.08 W/kg

SAR(1 g) = 0.603 W/kg; SAR(10 g) = 0.307 W/kg

Maximum value of SAR (measured) = 0.678 W/kg



0 dB = 0.678 W/kg = -1.69 dBW/kg

Date/Time: 27/02/2020

Test Laboratory: DEKRA Lab

eMTC Band 2 1.4M 1909.3MHz QPSK 1RB-Edge1

DUT: Monitor; Type: Mobile Cardiac Monitor

Communication System: UID 0, LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK) (0); Communication System Band: BAND2; Duty Cycle: 1:1.0; Frequency: 1909.3 MHz; Medium parameters used: f = 1909.3 MHz; σ = 1.53 S/m; εr = 52.35; ρ = 1000 kg/m3 ; Phantom section: Flat Section

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

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(7.65, 7.65, 7.65); Calibrated: 25/04/2019;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 11/04/2019
- Phantom: SAM2; Type: SAM; Serial: TP1562
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/eMTC Band2 1909.3MHz/Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm

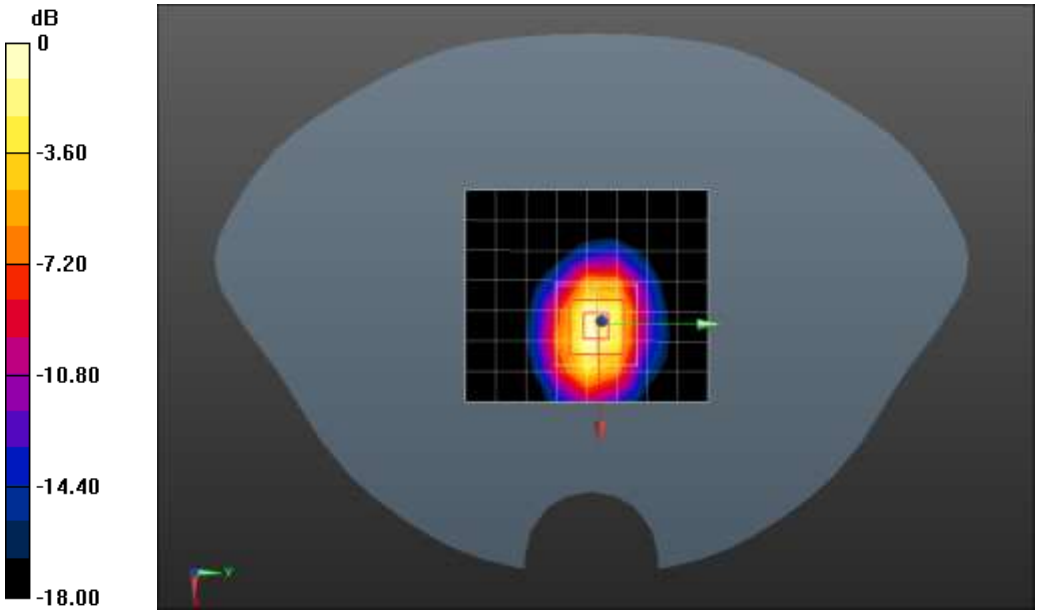
Maximum value of SAR (measured) = 0.674 W/kg

Configuration/eMTC Band2 1909.3MHz/Zoom Scan (5x5x4)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm; Reference Value = 18.89 V/m; Power Drift = -0.13 dB

Peak SAR (extrapolated) = 1.25 W/kg

SAR(1 g) = 0.683 W/kg; SAR(10 g) = 0.341 W/kg

Maximum value of SAR (measured) = 0.768 W/kg



0 dB = 0.768 W/kg = -1.15 dBW/kg

Date/Time: 27/02/2020

Test Laboratory: DEKRA Lab

eMTC Band 2 1.4M 1850.7MHz QPSK 3RB-Edge1

DUT: Monitor; Type: Mobile Cardiac Monitor

Communication System: UID 0, LTE-FDD (SC-FDMA, 3 RB, 1.4 MHz, QPSK) (0); Communication System Band: band2; Duty Cycle: 1:1.0; Frequency: 1850.7 MHz; Medium parameters used: f = 1850.7 MHz; σ = 1.5 S/m; εr = 52.53; ρ = 1000 kg/m3 ; Phantom section: Flat Section

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

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(7.65, 7.65, 7.65); Calibrated: 25/04/2019;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 11/04/2019
- Phantom: SAM2; Type: SAM; Serial: TP1562
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/eMTC Band2 1850.7MHz/Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm

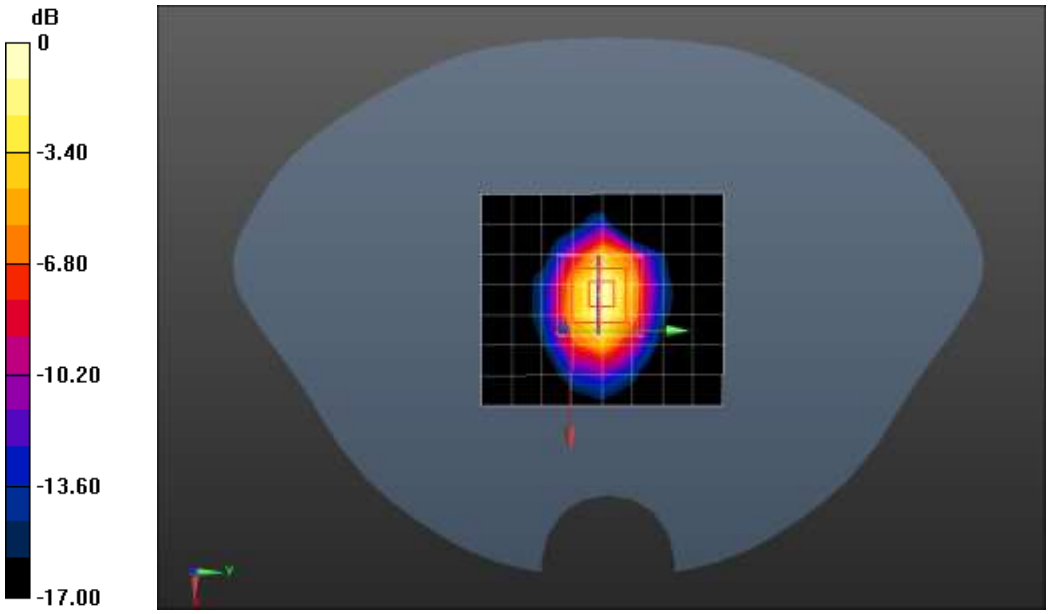
Maximum value of SAR (measured) = 0.596 W/kg

Configuration/eMTC Band2 1850.7MHz/Zoom Scan (5x5x4)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm; Reference Value = 19.29 V/m; Power Drift = 0.06 dB

Peak SAR (extrapolated) = 0.976 W/kg

SAR(1 g) = 0.537 W/kg; SAR(10 g) = 0.271 W/kg

Maximum value of SAR (measured) = 0.612 W/kg



0 dB = 0.612 W/kg = -2.13 dBW/kg

Date/Time: 27/02/2020

Test Laboratory: DEKRA Lab

eMTC Band 2 1.4M 1880MHz QPSK 3 RB-Edge1

DUT: Monitor; Type: Mobile Cardiac Monitor

Communication System: UID 0, LTE-FDD (SC-FDMA, 3 RB, 1.4 MHz, QPSK) (0); Communication System Band: band2; Duty Cycle: 1:1.0; Frequency: 1880 MHz; Medium parameters used: f = 1880 MHz; σ = 1.51 S/m; εr = 52.45; ρ = 1000 kg/m3 ; Phantom section: Flat Section

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

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(7.65, 7.65, 7.65); Calibrated: 25/04/2019;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 11/04/2019
- Phantom: SAM2; Type: SAM; Serial: TP1562
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/eMTC Band2 1880MHz/Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm

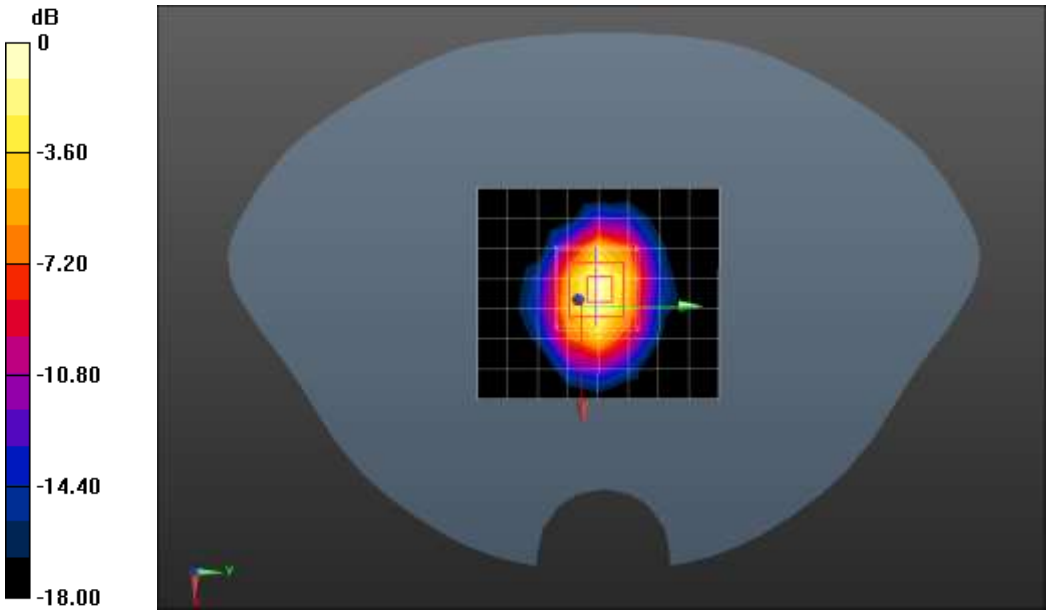
Maximum value of SAR (measured) = 0.512 W/kg

Configuration/eMTC Band2 1880MHz/Zoom Scan (5x5x4)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm; Reference Value = 18.27 V/m; Power Drift = 0.11 dB

Peak SAR (extrapolated) = 0.904 W/kg

SAR(1 g) = 0.479 W/kg; SAR(10 g) = 0.241 W/kg

Maximum value of SAR (measured) = 0.544 W/kg



0 dB = 0.544 W/kg = -2.64 dBW/kg

Date/Time: 27/02/2020

Test Laboratory: DEKRA Lab

eMTC Band 2 1.4M 1909.3MHz QPSK 3RB-Edge1

DUT: Monitor; Type: Mobile Cardiac Monitor

Communication System: UID 0, LTE-FDD (SC-FDMA, 3 RB, 1.4 MHz, QPSK) (0); Communication System Band: band2; Duty Cycle: 1:1.0; Frequency: 1909.3 MHz; Medium parameters used: f = 1909.3 MHz; σ = 1.53 S/m; εr = 52.35; ρ = 1000 kg/m3 ; Phantom section: Flat Section

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

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(7.65, 7.65, 7.65); Calibrated: 25/04/2019;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 11/04/2019
- Phantom: SAM2; Type: SAM; Serial: TP1562
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/eMTC Band2 1909.3MHz/Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm

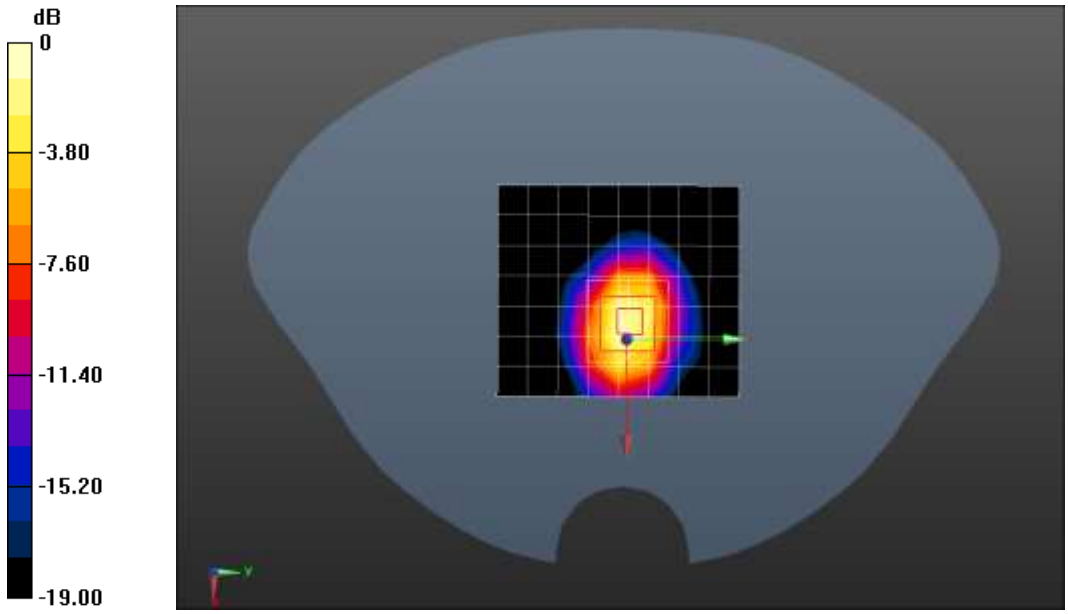
Maximum value of SAR (measured) = 0.504 W/kg

Configuration/eMTC Band2 1909.3MHz/Zoom Scan (5x5x4)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm; Reference Value = 16.10 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 0.958 W/kg

SAR(1 g) = 0.522 W/kg; SAR(10 g) = 0.259 W/kg

Maximum value of SAR (measured) = 0.593 W/kg



0 dB = 0.593 W/kg = -2.27 dBW/kg

Date/Time: 02/27/2020

Test Laboratory: DEKRA Lab

eMTC Band 2 1.4M 18607 QPSK 1RB-Back

DUT: Monitor; Type: Mobile Cardiac Monitor

Communication System: UID 0, LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK) (0); Communication System Band: BAND2; Duty Cycle: 1:1.0; Frequency: 1850.7 MHz; Medium parameters used: f = 1850.7 MHz; σ = 1.5 S/m; εr = 52.53; ρ = 1000 kg/m3 ; Phantom section: Flat Section

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

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(7.65, 7.65, 7.65); Calibrated: 25/04/2019;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 11/04/2019
- Phantom: SAM2; Type: SAM; Serial: TP1562
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

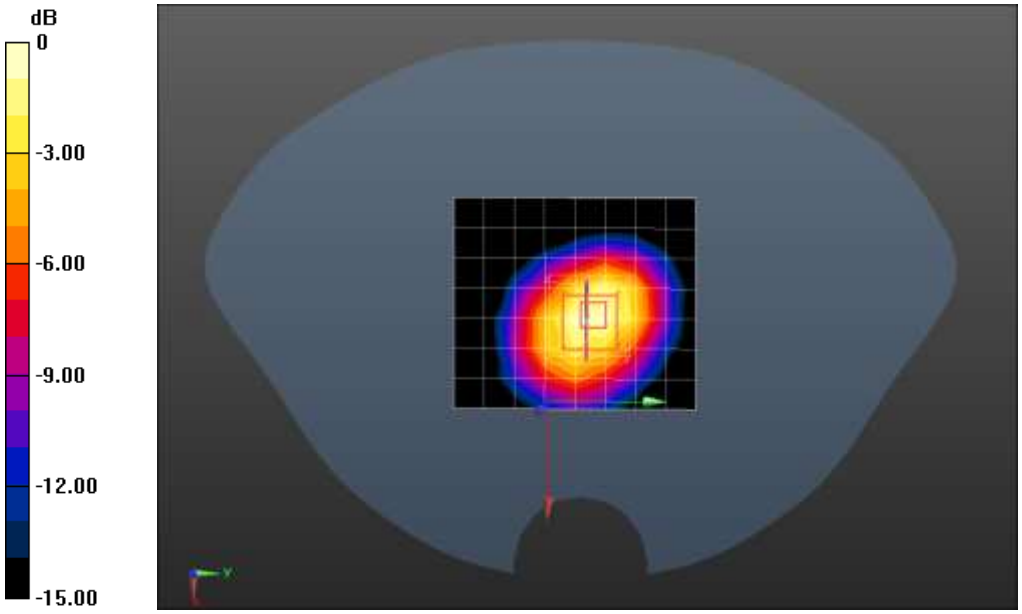
Configuration/ eMTC Band2 1850.7MHz/Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm; Maximum value of SAR (measured) = 0.498 W/kg

Configuration/ eMTC Band2 1850.7MHz/Zoom Scan (5x5x4)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm; Reference Value = 17.87 V/m; Power Drift = -0.05 dB

Peak SAR (extrapolated) = 0.796 W/kg

SAR(1 g) = 0.496 W/kg; SAR(10 g) = 0.288 W/kg

Maximum value of SAR (measured) = 0.547 W/kg



0 dB = 0.547 W/kg = -2.62 dBW/kg

Date/Time: 02/27/2020

Test Laboratory: DEKRA Lab

eMTC Band 2 1.4M 18607 QPSK 1RB-Edge2

DUT: Monitor; Type: Mobile Cardiac Monitor

Communication System: UID 0, LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK) (0); Communication System Band: BAND2; Duty Cycle: 1:1.0; Frequency: 1850.7 MHz; Medium parameters used: f = 1850.7 MHz; σ = 1.5 S/m; εr = 52.53; ρ = 1000 kg/m3 ; Phantom section: Flat Section

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

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(7.65, 7.65, 7.65); Calibrated: 25/04/2019;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 11/04/2019
- Phantom: SAM2; Type: SAM; Serial: TP1562
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/ eMTC Band2 1850.7MHz /Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm

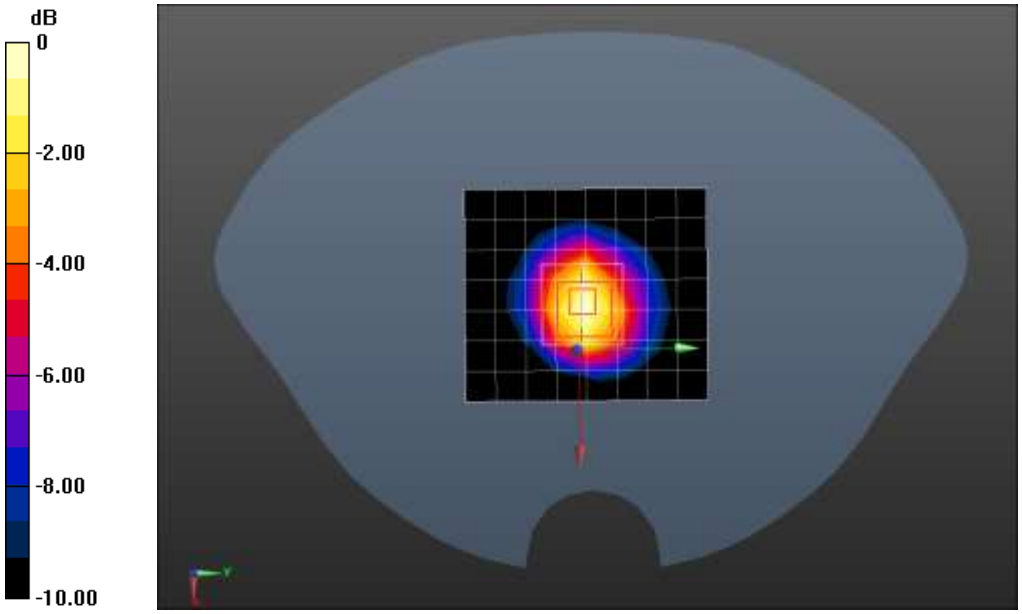
Maximum value of SAR (measured) = 0.271 W/kg

Configuration/ eMTC Band2 1850.7MHz /Zoom Scan (5x5x4)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm; Reference Value = 10.43 V/m; Power Drift = 0.10 dB

Peak SAR (extrapolated) = 0.286 W/kg

SAR(1 g) = 0.264 W/kg; SAR(10 g) = 0.120 W/kg

Maximum value of SAR (measured) = 0.293 W/kg



0 dB = 0.293 W/kg = -5.33dBW/kg

Date/Time: 02/27/2020

Test Laboratory: DEKRA Lab

eMTC Band 2 1.4M 18607 QPSK 1RB-Edge3

DUT: Monitor; Type: Mobile Cardiac Monitor

Communication System: UID 0, LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK) (0); Communication System Band: BAND2; Duty Cycle: 1:1.0; Frequency: 1850.7 MHz; Medium parameters used: f = 1850.7 MHz; σ = 1.5 S/m; εr = 52.53; ρ = 1000 kg/m3 ; Phantom section: Flat Section

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

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(7.65, 7.65, 7.65); Calibrated: 25/04/2019;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 11/04/2019
- Phantom: SAM2; Type: SAM; Serial: TP1562
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

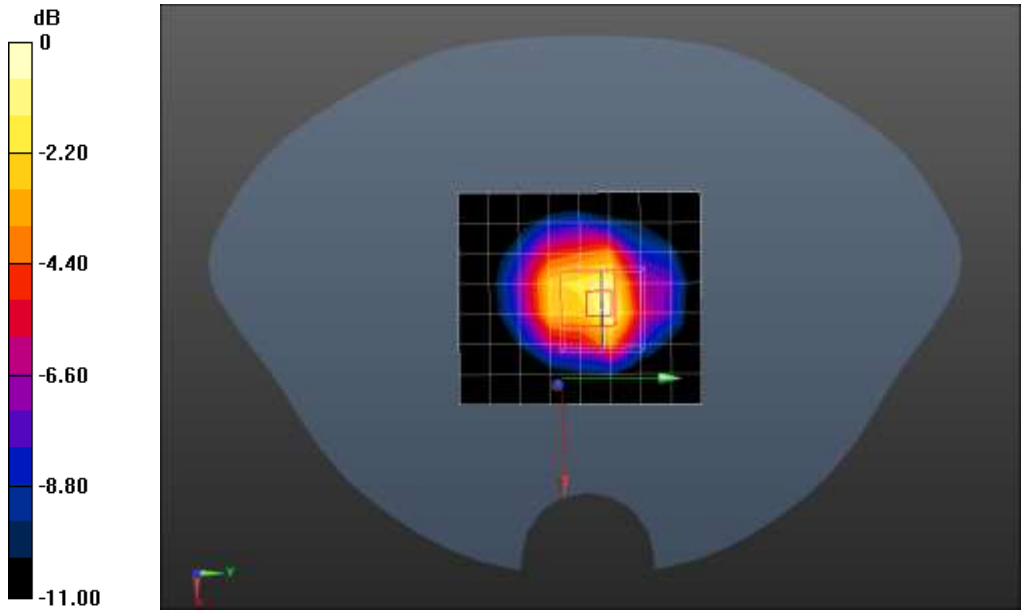
Configuration/ eMTC Band2 1850.7MHz /Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm; Maximum value of SAR (measured) = 0.597 W/kg

Configuration/ eMTC Band2 1850.7MHz /Zoom Scan (5x5x4)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm; Reference Value = 14.44 V/m; Power Drift = -0.07 dB

Peak SAR (extrapolated) = 0.627 W/kg

SAR(1 g) = 0.553 W/kg; SAR(10 g) = 0.294 W/kg

Maximum value of SAR (measured) = 0.535 W/kg



0 dB = 0.535 W/kg = -2.72 dBW/kg

Date/Time: 02/27/2020

Test Laboratory: DEKRA Lab

eMTC Band 2 1.4M 18607 QPSK 1RB-Edge4

DUT: Monitor; Type: Mobile Cardiac Monitor

Communication System: UID 0, LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK) (0); Communication System Band: BAND2; Duty Cycle: 1:1.0; Frequency: 1850.7 MHz; Medium parameters used: f = 1850.7 MHz; σ = 1.5 S/m; εr = 52.53; ρ = 1000 kg/m3 ; Phantom section: Flat Section

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

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(7.65, 7.65, 7.65); Calibrated: 25/04/2019;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 11/04/2019
- Phantom: SAM2; Type: SAM; Serial: TP1562
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/ eMTC Band2 1850.7MHz/Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm

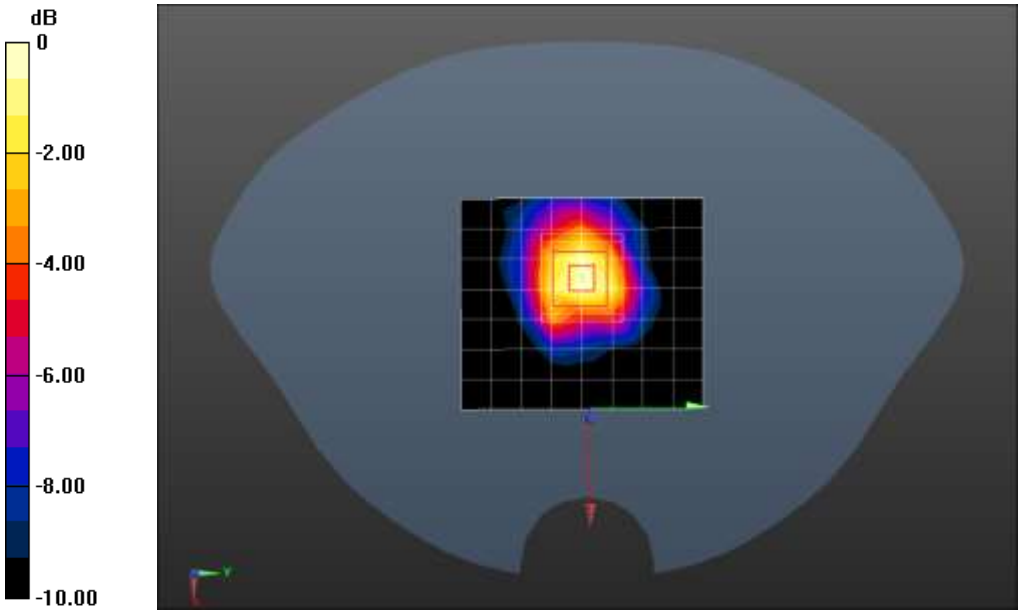
Maximum value of SAR (measured) = 0.122 W/kg

Configuration/ eMTC Band2 1850.7MHz/Zoom Scan (5x5x4)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm; Reference Value = 6.737 V/m; Power Drift = 0.12 dB

Peak SAR (extrapolated) = 0.215 W/kg

SAR(1 g) = 0.121 W/kg; SAR(10 g) = 0.070 W/kg

Maximum value of SAR (measured) = 0.131 W/kg



0 dB = 0.131 W/kg = -8.83 dBW/kg

Date/Time: 03/03/2020

Test Laboratory: DEKRA Lab

eMTC Band 12 1.4M 699.7MHz QPSK 1RB-Edge1

DUT: Monitor; Type: Mobile Cardiac Monitor

Communication System: UID 0, LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK) (0); Communication System Band: band12; Duty Cycle: 1:1.0; Frequency: 699.7 MHz; Medium parameters used: f = 699.7 MHz; σ = 0.88 S/m; εr = 55.35; ρ = 1000 kg/m3 ; Phantom section: Flat Section

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

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(9.63, 9.63, 9.63); Calibrated: 25/04/2019;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 11/04/2019
- Phantom: ELI1; Type: QDOVA002AA; Serial: TP:2106
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/eMTC Band4 699.7MHz/Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm

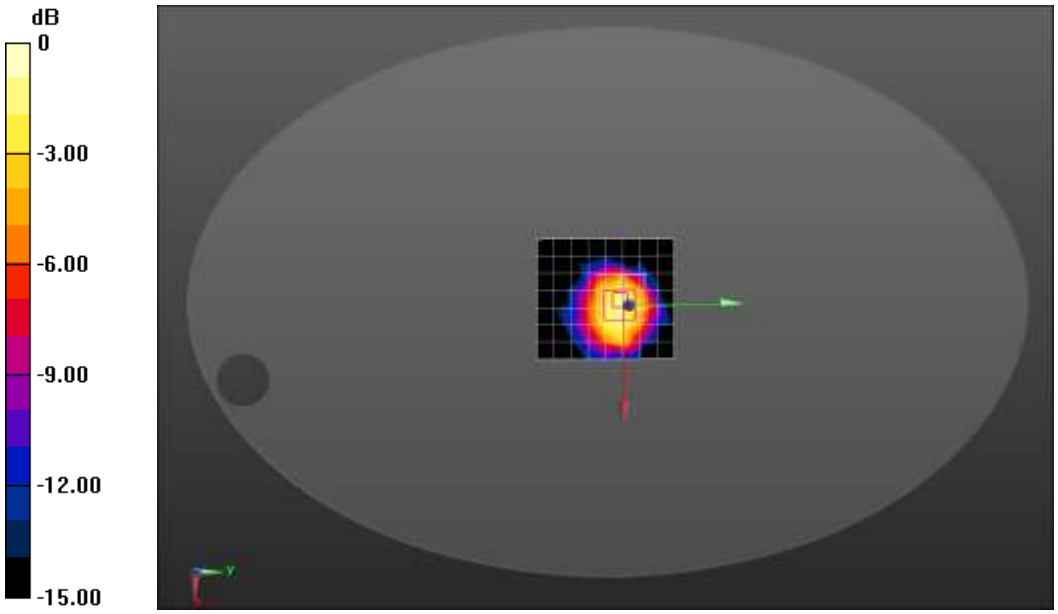
Maximum value of SAR (measured) = 0.0211 W/kg

Configuration/eMTC Band4 699.7MHz/Zoom Scan (5x5x4)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm; Reference Value = 4.566 V/m; Power Drift = 0.05 dB

Peak SAR (extrapolated) = 0.0400 W/kg

SAR(1 g) = 0.020 W/kg; SAR(10 g) = 0.012 W/kg

Maximum value of SAR (measured) = 0.0239 W/kg



0 dB = 0.0239 W/kg = -16.22 dBW/kg

Date/Time: 03/03/2020

Test Laboratory: DEKRA Lab

eMTC Band 12 1.4M 707.5MHz QPSK 1RB-Edge1

DUT: Monitor; Type: Mobile Cardiac Monitor

Communication System: UID 0, LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK) (0); Communication System Band: band12; Duty Cycle: 1:1.0; Frequency: 707.5 MHz; Medium parameters used: f = 707.5 MHz; σ = 0.9 S/m; εr = 55.29; ρ = 1000 kg/m3 ; Phantom section: Flat Section

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

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(9.63, 9.63, 9.63); Calibrated: 25/04/2019;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 11/04/2019
- Phantom: ELI1; Type: QDOVA002AA; Serial: TP:2106
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/eMTC Band4 707.5MHz/Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm

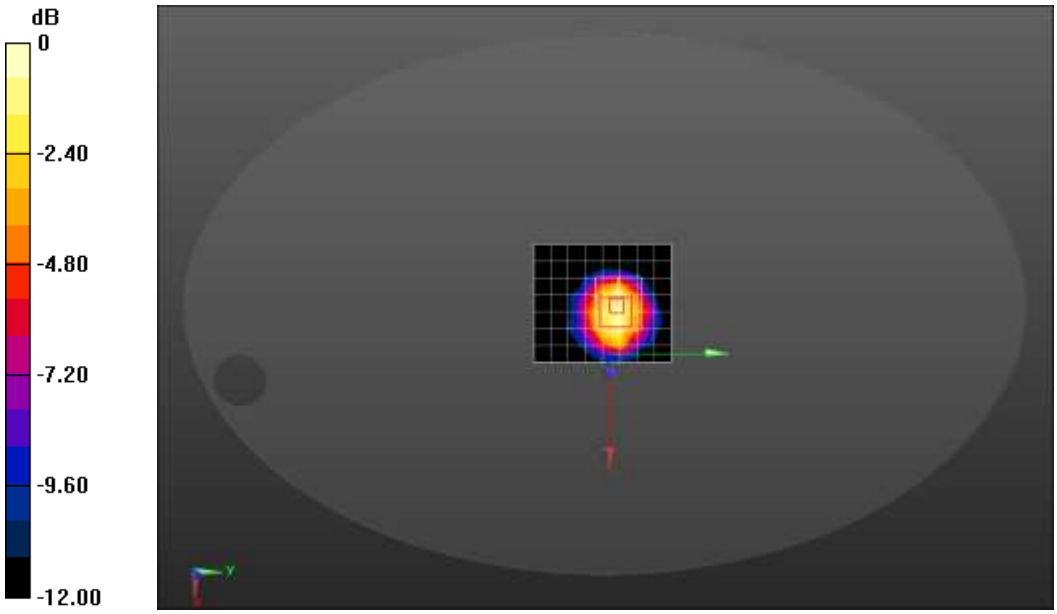
Maximum value of SAR (measured) = 0.0274 W/kg

Configuration/eMTC Band4 707.5MHz/Zoom Scan (5x5x4)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm; Reference Value = 5.142 V/m; Power Drift = 0.15 dB

Peak SAR (extrapolated) = 0.0540 W/kg

SAR(1 g) = 0.028 W/kg; SAR(10 g) = 0.016 W/kg

Maximum value of SAR (measured) = 0.0310 W/kg



0 dB = 0.0310 W/kg = -15.09 dBW/kg

Date/Time: 03/03/2020

Test Laboratory: DEKRA Lab

eMTC Band 12 1.4M 715.3MHz QPSK 1RB-Edge1

DUT: Monitor; Type: Mobile Cardiac Monitor

Communication System: UID 0, LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK) (0); Communication System Band: band12; Duty Cycle: 1:1.0; Frequency: 715.3 MHz; Medium parameters used: f = 715.3 MHz; σ = 0.92 S/m; εr = 55.21; ρ = 1000 kg/m3 ; Phantom section: Flat Section

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

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(9.63, 9.63, 9.63); Calibrated: 25/04/2019;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 11/04/2019
- Phantom: ELI1; Type: QDOVA002AA; Serial: TP:2106
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/eMTC Band12 715.3MHz/Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm

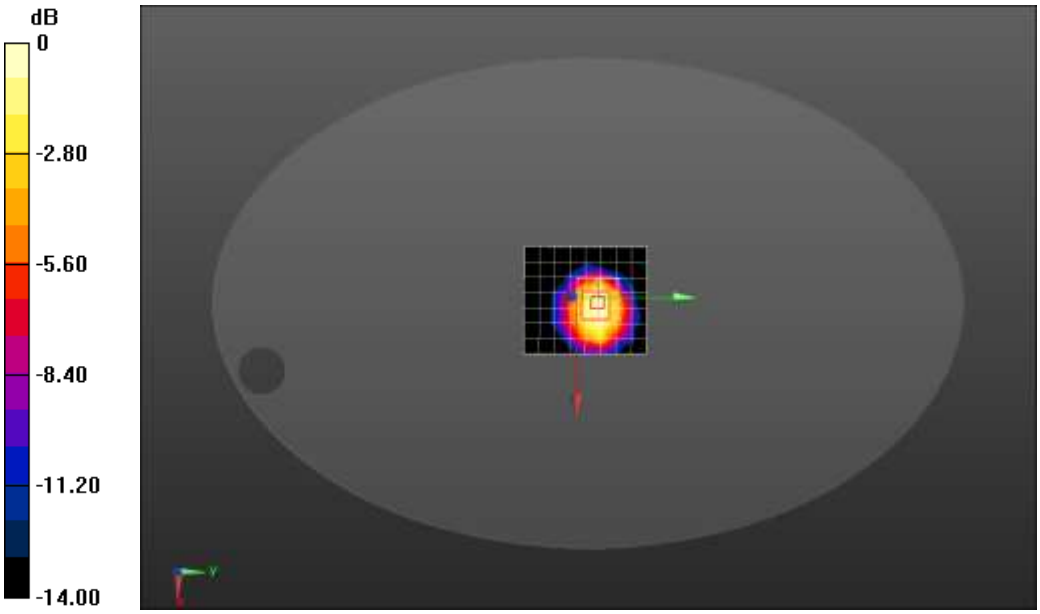
Maximum value of SAR (measured) = 0.0392 W/kg

Configuration/eMTC Band12 715.3MHz/Zoom Scan (5x5x4)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm; Reference Value = 6.000 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 0.0680 W/kg

SAR(1 g) = 0.037 W/kg; SAR(10 g) = 0.022 W/kg

Maximum value of SAR (measured) = 0.0408 W/kg



0 dB = 0.0408 W/kg = -13.89 dBW/kg

Date/Time: 03/03/2020

Test Laboratory: DEKRA Lab

eMTC Band 12 1.4M 699.7MHz QPSK 3RB-Edge1

DUT: Monitor; Type: Mobile Cardiac Monitor

Communication System: UID 0, LTE-FDD (SC-FDMA, 3 RB, 1.4 MHz, QPSK) (0); Communication System Band: band12; Duty Cycle: 1:1.0; Frequency: 699.7 MHz; Medium parameters used: f = 699.7 MHz; σ = 0.88 S/m; εr = 55.35; ρ = 1000 kg/m3 ; Phantom section: Flat Section

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

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(9.63, 9.63, 9.63); Calibrated: 25/04/2019;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 11/04/2019
- Phantom: ELI1; Type: QDOVA002AA; Serial: TP:2106
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

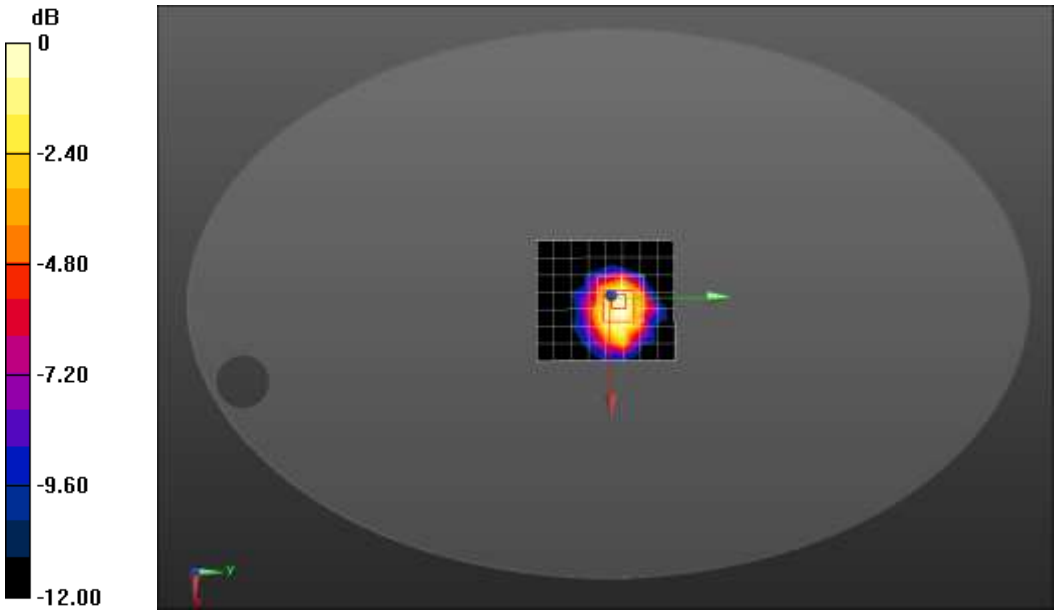
Configuration/eMTC Band4 699.7MHz/Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm

Maximum value of SAR (measured) = 0.0168 W/kg

Configuration/eMTC Band4 699.7MHz/Zoom Scan (5x5x4)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm; Reference Value = 4.016 V/m; Power Drift = 0.06 dB

Peak SAR (extrapolated) = 0.0280 W/kg

SAR(1 g) = 0.015 W/kg; SAR(10 g) = 0.00948 W/kg



0 dB = 0.0168 W/kg = -17.75 dBW/kg

Date/Time: 03/03/2020

Test Laboratory: DEKRA Lab

eMTC Band 12 1.4M 707.5MHz QPSK 3RB-Edge1

DUT: Monitor; Type: Mobile Cardiac Monitor

Communication System: UID 0, LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK) (0); Communication System Band: band12; Duty Cycle: 1:1.0; Frequency: 707.5 MHz; Medium parameters used: f = 707.5 MHz; σ = 0.9 S/m; εr = 55.29; ρ = 1000 kg/m3 ; Phantom section: Flat Section

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

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(9.63, 9.63, 9.63); Calibrated: 25/04/2019;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 11/04/2019
- Phantom: ELI1; Type: QDOVA002AA; Serial: TP:2106
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/eMTC Band4 707.5MHz/Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm

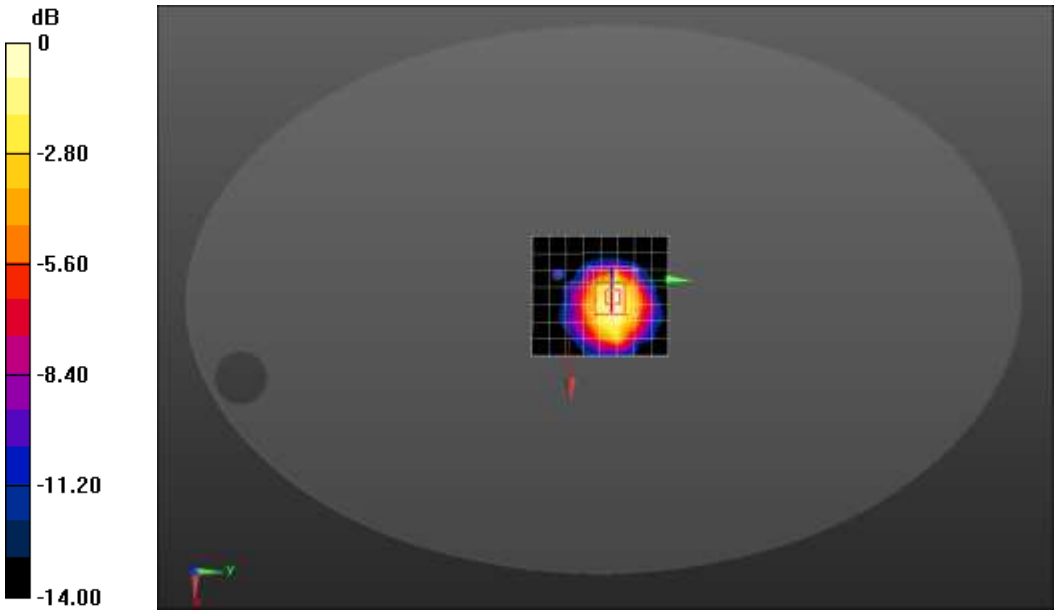
Maximum value of SAR (measured) = 0.0274 W/kg

Configuration/eMTC Band4 707.5MHz/Zoom Scan (5x5x4)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm; Reference Value = 5.142 V/m; Power Drift = 0.15 dB

Peak SAR (extrapolated) = 0.0540 W/kg

SAR(1 g) = 0.028 W/kg; SAR(10 g) = 0.016 W/kg

Maximum value of SAR (measured) = 0.0310 W/kg



0 dB = 0.0310 W/kg = -15.09 dBW/kg

Date/Time: 03/03/2020

Test Laboratory: DEKRA Lab

eMTC Band 12 1.4M 715.3MHz QPSK 3RB-Edge1

DUT: Monitor; Type: Mobile Cardiac Monitor

Communication System: UID 0, LTE-FDD (SC-FDMA, 3 RB, 1.4 MHz, QPSK) (0); Communication System Band: band12; Duty Cycle: 1:1; Frequency: 715.3 MHz; Medium parameters used: f = 715.3 MHz; σ = 0.92 S/m; εr = 55.21; 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(9.63, 9.63, 9.63); Calibrated: 25/04/2019;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 11/04/2019
- Phantom: ELI1; Type: QDOVA002AA; Serial: TP:2106
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/eMTC Band4 715.3MHz/Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm

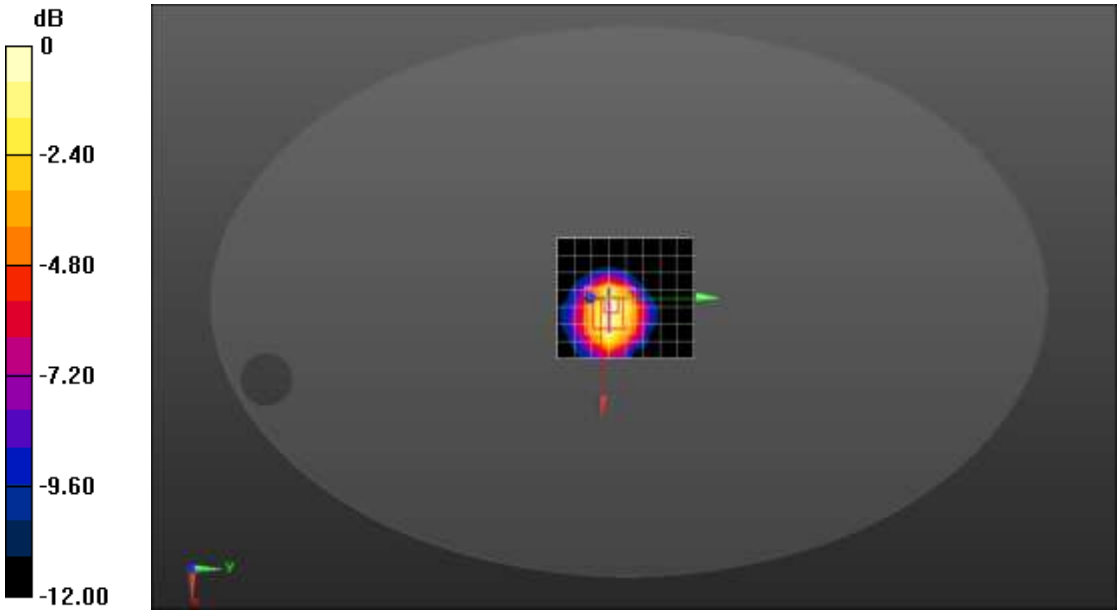
Maximum value of SAR (measured) = 0.0375 W/kg

Configuration/eMTC Band4 715.3MHz/Zoom Scan (5x5x4)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm; Reference Value = 4.710 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 0.0770 W/kg

SAR(1 g) = 0.035 W/kg; SAR(10 g) = 0.020 W/kg

Maximum value of SAR (measured) = 0.0380 W/kg



0 dB = 0.0380 W/kg = -14.20 dBW/kg

Date/Time: 03/03/2020

Test Laboratory: DEKRA Lab

eMTC Band 12 1.4M 23017 QPSK 1RB Back

DUT: Monitor; Type: Mobile Cardiac Monitor

Communication System: UID 0, LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK) (0); Communication System Band: band12; Duty Cycle: 1:1.0; Frequency: 699.7 MHz; Medium parameters used: f = 699.7 MHz; σ = 0.88 S/m; εr = 55.35; ρ = 1000 kg/m3 ; Phantom section: Flat Section

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

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(9.63, 9.63, 9.63); Calibrated: 25/04/2019;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 11/04/2019
- Phantom: ELI1; Type: QDOVA002AA; Serial: TP:2106
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/ eMTC Band12 699.7MHz/Area Scan (9x11x1): Measurement grid: dx=12mm, dy=12mm

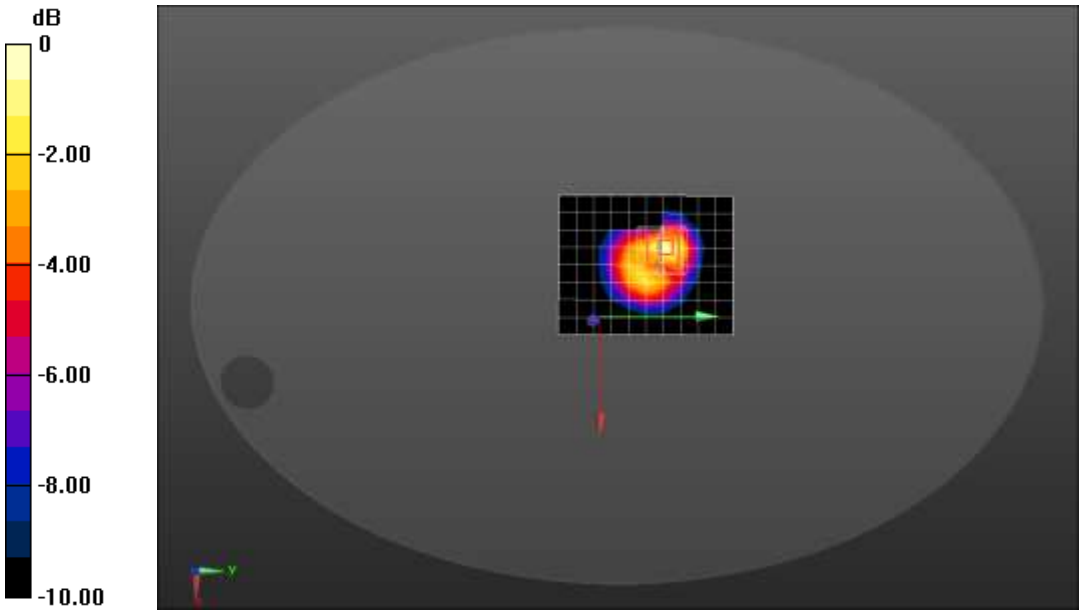
Maximum value of SAR (measured) = 0.0320 W/kg

Configuration/ eMTC Band12 699.7MHz/Zoom Scan (5x5x4)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm; Reference Value = 1.868 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 0.0520 W/kg

SAR(1 g) = 0.018 W/kg; SAR(10 g) = 0.014 W/kg

Maximum value of SAR (measured) = 0.0314 W/kg



0 dB = 0.0314 W/kg = -15.03 dBW/kg

Date/Time: 03/03/2020

Test Laboratory: DEKRA Lab

eMTC Band 12 1.4M 23017 QPSK 1RB Edge2

DUT: Monitor; Type: Mobile Cardiac Monitor

Communication System: UID 0, LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK) (0); Communication System Band: band12; Duty Cycle: 1:1.0; Frequency: 699.7 MHz; Medium parameters used: f = 699.7 MHz; σ = 0.88 S/m; εr = 55.35; ρ = 1000 kg/m3 ; Phantom section: Flat Section

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

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(9.63, 9.63, 9.63); Calibrated: 25/04/2019;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 11/04/2019
- Phantom: ELI1; Type: QDOVA002AA; Serial: TP:2106
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/eMTC Band12 699.7MHz/Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm

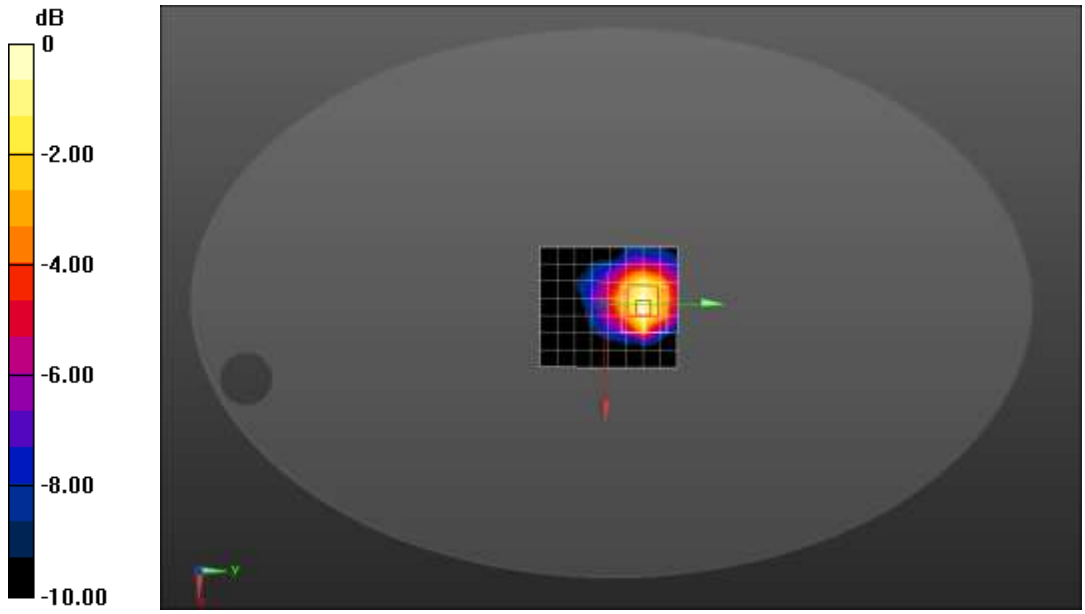
Maximum value of SAR (measured) = 0.0142 W/kg

Configuration/eMTC Band12 699.7MHz/Zoom Scan (5x5x4)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm; Reference Value = 2.397 V/m; Power Drift = 0.16 dB

Peak SAR (extrapolated) = 0.0250 W/kg

SAR(1 g) = 0.013 W/kg; SAR(10 g) = 0.00794 W/kg

Maximum value of SAR (measured) = 0.0149 W/kg



0 dB = 0.0149 W/kg = -18.27 dBW/kg

Date/Time: 03/03/2020

Test Laboratory: DEKRA Lab

eMTC Band 12 1.4M 23017 QPSK 1RB Edge3

DUT: Monitor; Type: Mobile Cardiac Monitor

Communication System: UID 0, LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK) (0); Communication System Band: band12; Duty Cycle: 1:1.0; Frequency: 699.7 MHz; Medium parameters used: f = 699.7 MHz; σ = 0.88 S/m; εr = 55.35; ρ = 1000 kg/m3 ; Phantom section: Flat Section

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

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(9.63, 9.63, 9.63); Calibrated: 25/04/2019;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 11/04/2019
- Phantom: ELI1; Type: QDOVA002AA; Serial: TP:2106
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/ eMTC Band12 699.7MHz/Area Scan (9x11x1): Measurement grid: dx=12mm, dy=12mm

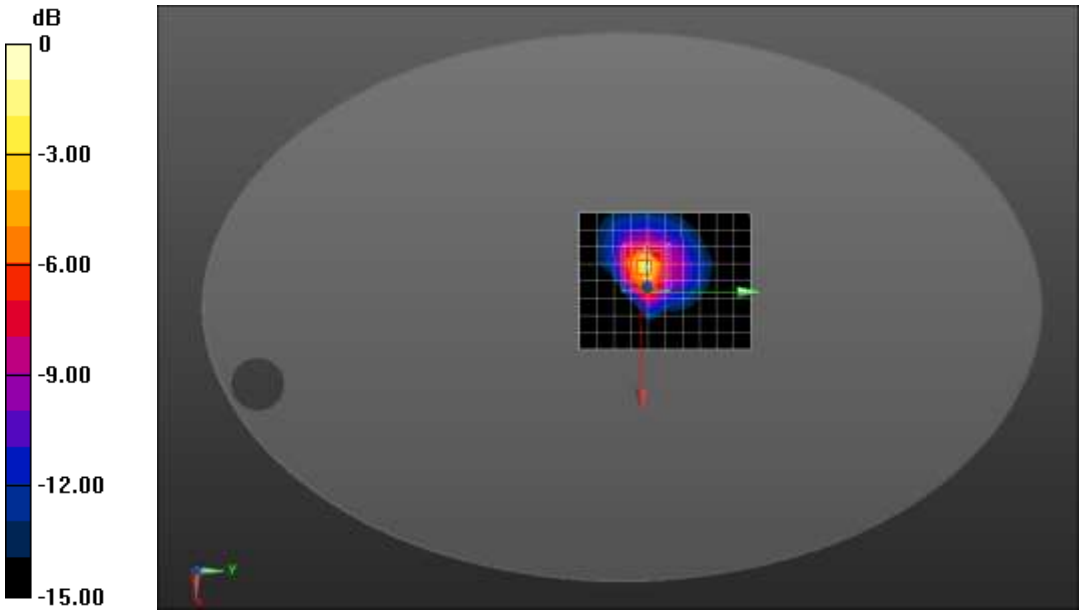
Maximum value of SAR (measured) = 0.0264 W/kg

Configuration/ eMTC Band12 699.7MHz/Zoom Scan (5x5x4)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm; Reference Value = 0.8140 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 0.273 W/kg

SAR(1 g) = 0.019 W/kg; SAR(10 g) = 0.011 W/kg

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



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

Date/Time: 03/03/2020

Test Laboratory: DEKRA Lab

eMTC Band 12 1.4M 23017 QPSK 1RB Edge4

DUT: Monitor; Type: Mobile Cardiac Monitor

Communication System: UID 0, LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK) (0); Communication System Band: band12; Duty Cycle: 1:1.0; Frequency: 699.7 MHz; Medium parameters used: f = 699.7 MHz; σ = 0.88 S/m; εr = 55.35; ρ = 1000 kg/m3 ; Phantom section: Flat Section

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

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(9.63, 9.63, 9.63); Calibrated: 25/04/2019;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 11/04/2019
- Phantom: ELI1; Type: QDOVA002AA; Serial: TP:2106
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/ eMTC Band12 699.7MHz/Area Scan (9x11x1): Measurement grid: dx=12mm, dy=12mm

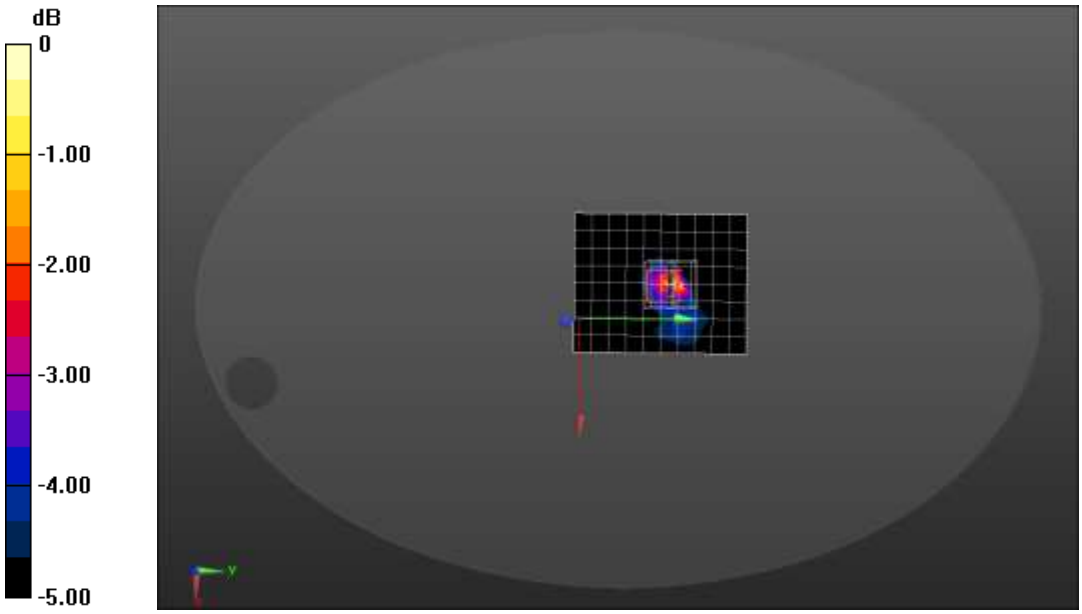
Maximum value of SAR (measured) = 0.0104 W/kg

Configuration/ eMTC Band12 699.7MHz/Zoom Scan (5x5x4)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm; Reference Value = 1.562 V/m; Power Drift = 0.14 dB

Peak SAR (extrapolated) = 0.0230 W/kg

SAR(1 g) = 0.00891 W/kg; SAR(10 g) = 0.00438 W/kg

Maximum value of SAR (measured) = 0.0116 W/kg



0 dB = 0.0116 W/kg = -19.36 dBW/kg

Date/Time: 03/03/2020

Test Laboratory: DEKRA Lab

eMTC Band 13 1.4M 779.5MHz QPSK 1RB-Edge1

DUT: Monitor; Type: Mobile Cardiac Monitor

Communication System: UID 0, LTE-FDD (SC-FDMA, 1 RB, 5 MHz, QPSK) (0); Communication System Band: band13; Duty Cycle: 1:1.0; Frequency: 779.5 MHz; Medium parameters used: f = 779.5 MHz; σ = 0.99 S/m; εr = 54.83; ρ = 1000 kg/m3 ; Phantom section: Flat Section

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

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(9.63, 9.63, 9.63); Calibrated: 25/04/2019;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 11/04/2019
- Phantom: ELI1; Type: QDOVA002AA; Serial: TP:2106
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/eMTC Band13 779.5MHz/Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm

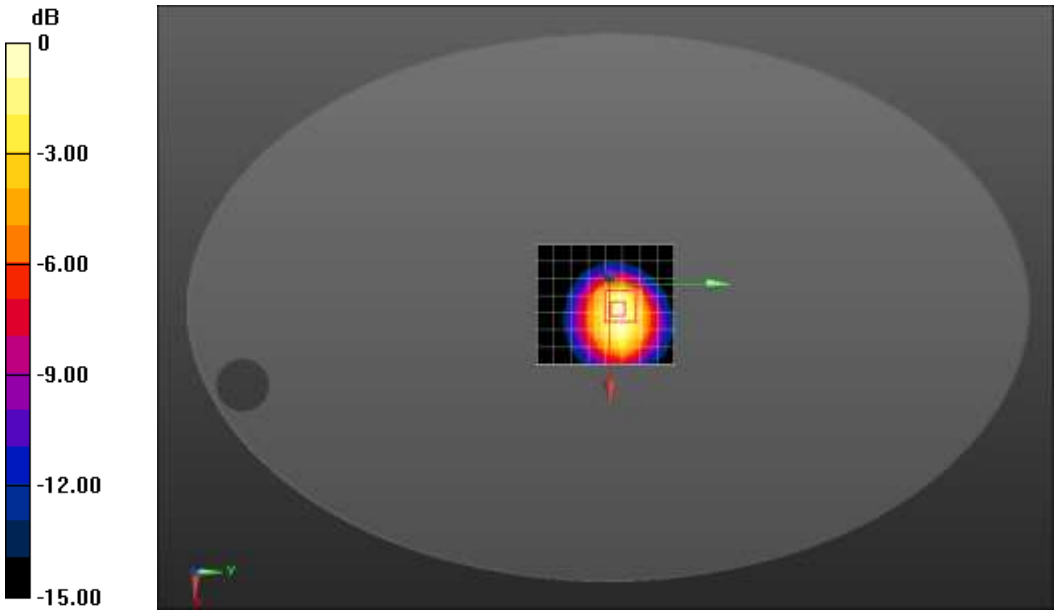
Maximum value of SAR (measured) = 0.168 W/kg

Configuration/eMTC Band13 779.5MHz/Zoom Scan (5x5x4)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm; Reference Value = 11.75 V/m; Power Drift = 0.13 dB

Peak SAR (extrapolated) = 0.361 W/kg

SAR(1 g) = 0.174 W/kg; SAR(10 g) = 0.087 W/kg

Maximum value of SAR (measured) = 0.170 W/kg



0 dB = 0.170 W/kg = -7.70 dBW/kg

Date/Time: 03/03/2020

Test Laboratory: DEKRA Lab

eMTC Band 13 1.4M 782MHz QPSK 1RB-Edge1

DUT: Monitor; Type: Mobile Cardiac Monitor

Communication System: UID 0, LTE-FDD (SC-FDMA, 1 RB, 5 MHz, QPSK) (0); Communication System Band: band13; Duty Cycle: 1:1.0; Frequency: 782 MHz; Medium parameters used: f = 782 MHz; σ = 1.01 S/m; εr = 54.72; ρ = 1000 kg/m3 ; Phantom section: Flat Section

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

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(9.63, 9.63, 9.63); Calibrated: 25/04/2019;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 11/04/2019
- Phantom: ELI1; Type: QDOVA002AA; Serial: TP:2106
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/Band13 782MHz/Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm

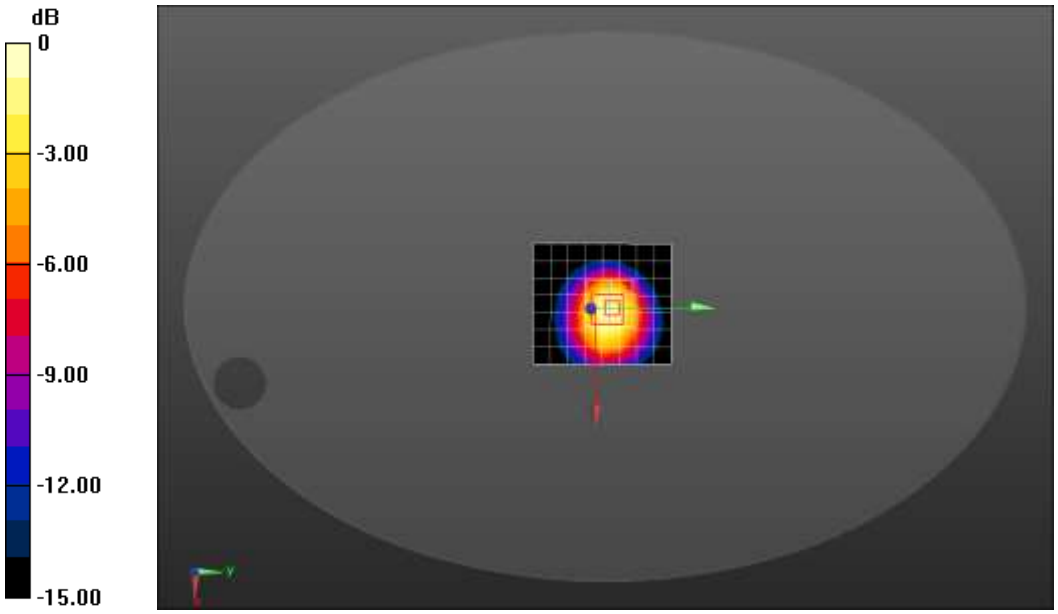
Maximum value of SAR (measured) = 0.147 W/kg

Configuration/Band13 782MHz/Zoom Scan (5x5x4)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm; Reference Value = 12.80 V/m; Power Drift = 0.14 dB

Peak SAR (extrapolated) = 0.331 W/kg

SAR(1 g) = 0.174 W/kg; SAR(10 g) = 0.092 W/kg

Maximum value of SAR (measured) = 0.177 W/kg



0 dB = 0.177 W/kg = -7.52 dBW/kg

Date/Time: 03/03/2020

Test Laboratory: DEKRA Lab

eMTC Band 13 1.4M 784.5MHz QPSK 1RB-Edge1

DUT: Monitor; Type: Mobile Cardiac Monitor

Communication System: UID 0, LTE-FDD (SC-FDMA, 1 RB, 5 MHz, QPSK) (0); Communication System Band: band13; Duty Cycle: 1:1.0; Frequency: 784.5 MHz; Medium parameters used: f = 784.5 MHz; σ = 1.02 S/m; εr = 54.69; ρ = 1000 kg/m3 ; Phantom section: Flat Section

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

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(9.63, 9.63, 9.63); Calibrated: 25/04/2019;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 11/04/2019
- Phantom: ELI1; Type: QDOVA002AA; Serial: TP:2106
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/eMTCBand13 784.5MHz/Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm

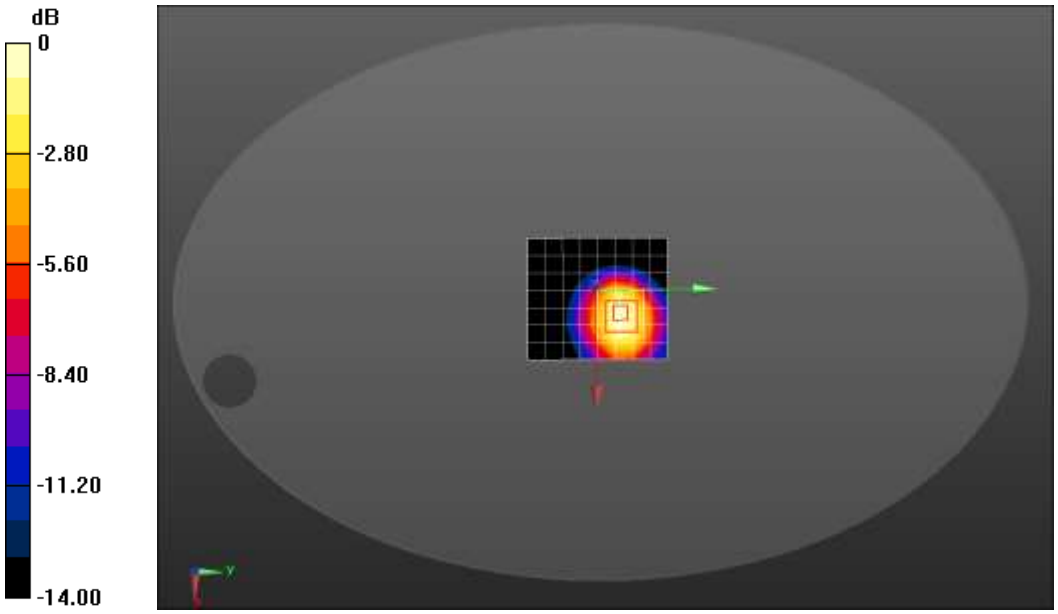
Maximum value of SAR (measured) = 0.160 W/kg

Configuration/eMTC Band13 784.5MHz/Zoom Scan (5x5x4)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm; Reference Value = 8.589 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 0.302 W/kg

SAR(1 g) = 0.163 W/kg; SAR(10 g) = 0.096 W/kg

Maximum value of SAR (measured) = 0.176 W/kg



0 dB = 0.176 W/kg = -7.54 dBW/kg

Date/Time: 03/03/2020

Test Laboratory: DEKRA Lab

eMTC Band 13 1.4M 779.5MHz QPSK 3RB-Edge1

DUT: Monitor; Type: Mobile Cardiac Monitor

Communication System: UID 0, LTE-FDD (SC-FDMA, 3 RB, 5MHz, QPSK) (0); Communication System Band: band13; Duty Cycle: 1:1.0; Frequency: 779.5 MHz; Medium parameters used: f = 779.5 MHz; σ = 0.99 S/m; εr = 54.83; ρ = 1000 kg/m3 ; Phantom section: Flat Section

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

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(9.63, 9.63, 9.63); Calibrated: 25/04/2019;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 11/04/2019
- Phantom: ELI1; Type: QDOVA002AA; Serial: TP:2106
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/eMTC Band13 779.5MHz/Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm

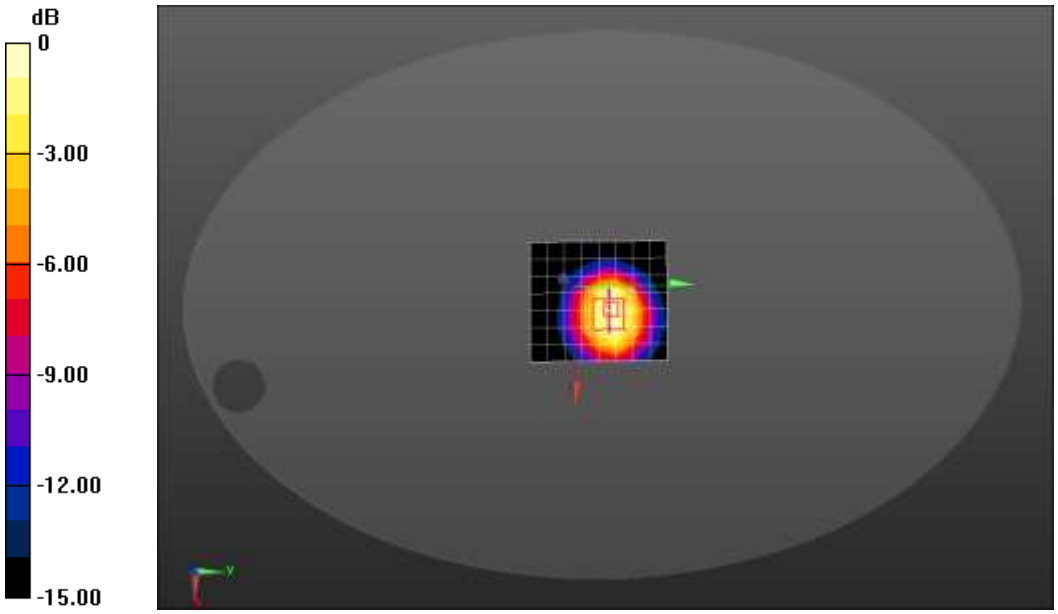
Maximum value of SAR (measured) = 0.135 W/kg

Configuration/eMTC Band13 779.5MHz/Zoom Scan (5x5x4)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm; Reference Value = 10.58 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 0.276 W/kg

SAR(1 g) = 0.138 W/kg; SAR(10 g) = 0.076 W/kg

Maximum value of SAR (measured) = 0.136 W/kg



0 dB = 0.136 W/kg = -8.66 dBW/kg

Date/Time: 03/03/2020

Test Laboratory: DEKRA Lab

eMTC Band 13 1.4M 782MHz QPSK 3RB-Edge1

DUT: Monitor; Type: Mobile Cardiac Monitor

Communication System: UID 0, LTE-FDD (SC-FDMA, 3 RB, 5MHz, QPSK) (0); Communication System Band: band13; Duty Cycle: 1:1.0; Frequency: 782 MHz; Medium parameters used: f = 782 MHz; σ = 1.01 S/m; εr = 54.72; ρ = 1000 kg/m3 ; Phantom section: Flat Section

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

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(9.63, 9.63, 9.63); Calibrated: 25/04/2019;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 11/04/2019
- Phantom: ELI1; Type: QDOVA002AA; Serial: TP:2106
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/eMTC Band13 782MHz/Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm

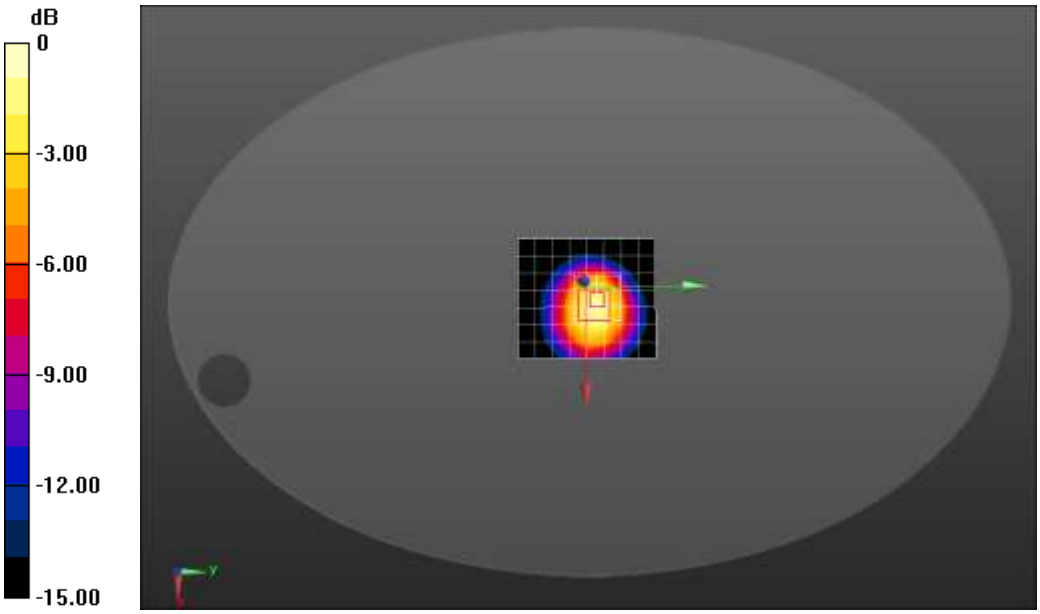
Maximum value of SAR (measured) = 0.117 W/kg

Configuration/eMTC Band13 782MHz/Zoom Scan (5x5x4)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm; Reference Value = 11.47 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 0.257 W/kg

SAR(1 g) = 0.131 W/kg; SAR(10 g) = 0.075 W/kg

Maximum value of SAR (measured) = 0.140 W/kg



0 dB = 0.140 W/kg = -8.54 dBW/kg

Date/Time: 03/03/2020

Test Laboratory: DEKRA Lab

eMTC Band 13 1.4M 784.5MHz QPSK 3RB-Edge1

DUT: Monitor; Type: Mobile Cardiac Monitor

Communication System: UID 0, LTE-FDD (SC-FDMA, 3 RB, 5MHz, QPSK) (0); Communication System Band: band13; Duty Cycle: 1:1; Frequency: 784.5 MHz; Medium parameters used: f = 784.5 MHz; σ = 1.02 S/m; εr = 54.69; 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(9.63, 9.63, 9.63); Calibrated: 25/04/2019;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 11/04/2019
- Phantom: ELI1; Type: QDOVA002AA; Serial: TP:2106
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/eMTC Band13 784.5MHz/Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm

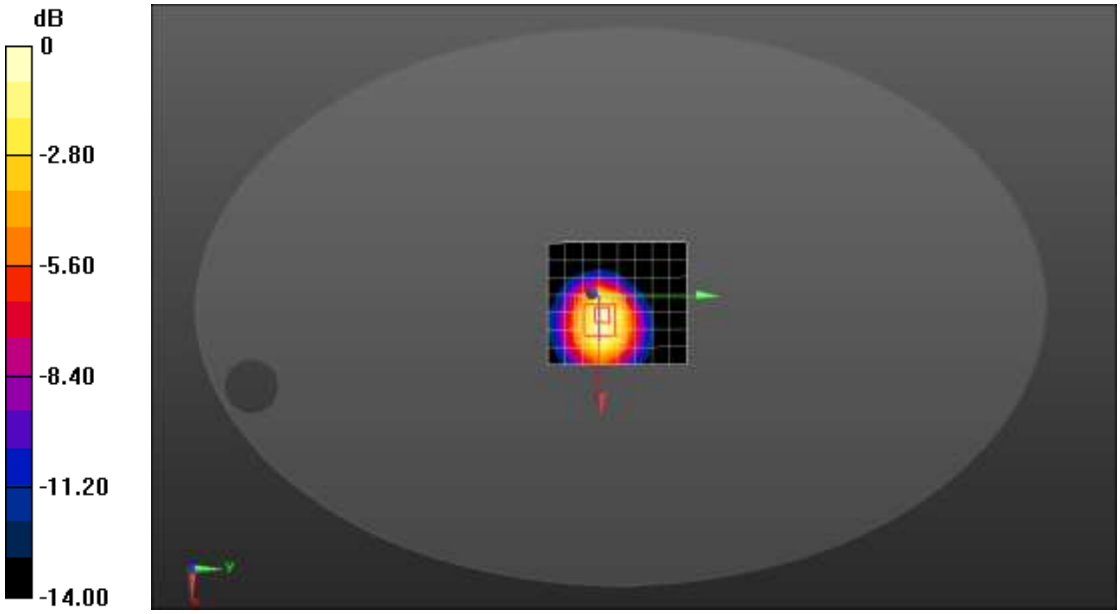
Maximum value of SAR (measured) = 0.143 W/kg

Configuration/eMTC Band13 784.5MHz/Zoom Scan (5x5x4)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm; Reference Value = 8.581 V/m; Power Drift = -0.06 dB

Peak SAR (extrapolated) = 0.259 W/kg

SAR(1 g) = 0.134 W/kg; SAR(10 g) = 0.078 W/kg

Maximum value of SAR (measured) = 0.142 W/kg



0 dB = 0.142 W/kg = -8.48 dBW/kg

Date/Time: 03/03/2020

Test Laboratory: DEKRA Lab

eMTC Band 13 1.4M 23230 QPSK 1RB-Back

DUT: Monitor; Type: Mobile Cardiac Monitor

Communication System: UID 0, LTE-FDD (SC-FDMA, 1 RB, 5 MHz, QPSK) (0); Communication System Band: band13; Duty Cycle: 1:1.0; Frequency: 782 MHz; Medium parameters used: f = 782 MHz; σ = 1.01 S/m; εr = 54.72; ρ = 1000 kg/m3 ; Phantom section: Flat Section

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

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(9.63, 9.63, 9.63); Calibrated: 25/04/2019;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 11/04/2019
- Phantom: ELI1; Type: QDOVA002AA; Serial: TP:2106
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/ eMTC Band13 782MHz /Area Scan (9x11x1): Measurement grid: dx=12mm, dy=12mm

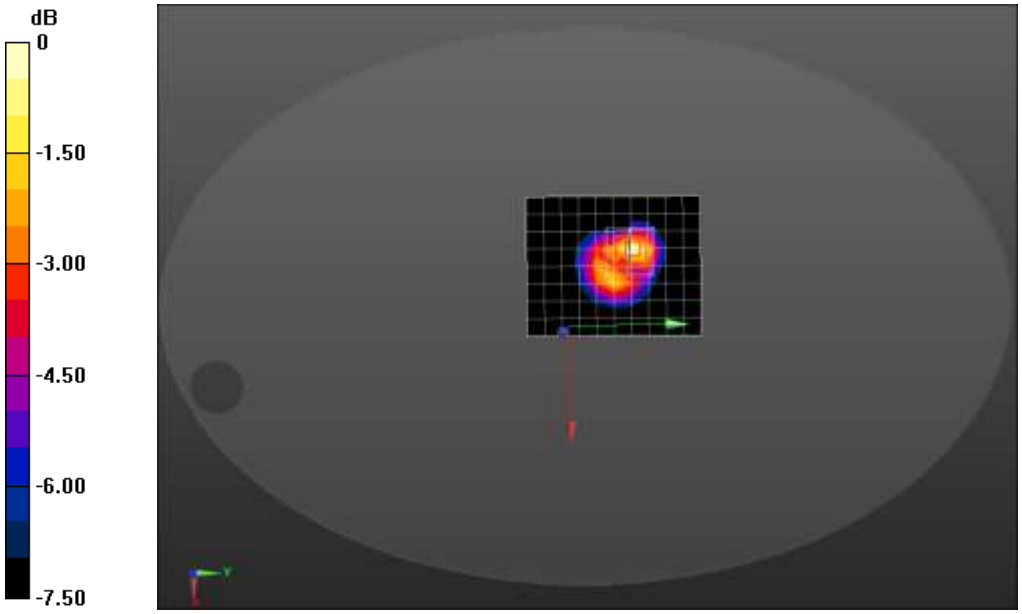
Maximum value of SAR (measured) = 0.0377 W/kg

Configuration/ eMTC Band13 782MHz /Zoom Scan (5x5x4)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm; Reference Value = 1.894 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 0.0610 W/kg

SAR(1 g) = 0.031 W/kg; SAR(10 g) = 0.016 W/kg

Maximum value of SAR (measured) = 0.0370 W/kg



0 dB = 0.0370 W/kg = -14.32 dBW/kg

Date/Time: 03/03/2020

Test Laboratory: DEKRA Lab

eMTC Band 13 1.4M 23230 QPSK 1RB-Edge2

DUT: Monitor; Type: Mobile Cardiac Monitor

Communication System: UID 0, LTE-FDD (SC-FDMA, 1 RB, 5 MHz, QPSK) (0); Communication System Band: band13; Duty Cycle: 1:1.0; Frequency: 782 MHz; Medium parameters used: f = 782 MHz; σ = 1.01 S/m; εr = 54.72; ρ = 1000 kg/m3 ; Phantom section: Flat Section

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

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(9.63, 9.63, 9.63); Calibrated: 25/04/2019;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 11/04/2019
- Phantom: ELI1; Type: QDOVA002AA; Serial: TP:2106
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/ eMTC Band13 782MHz /Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm

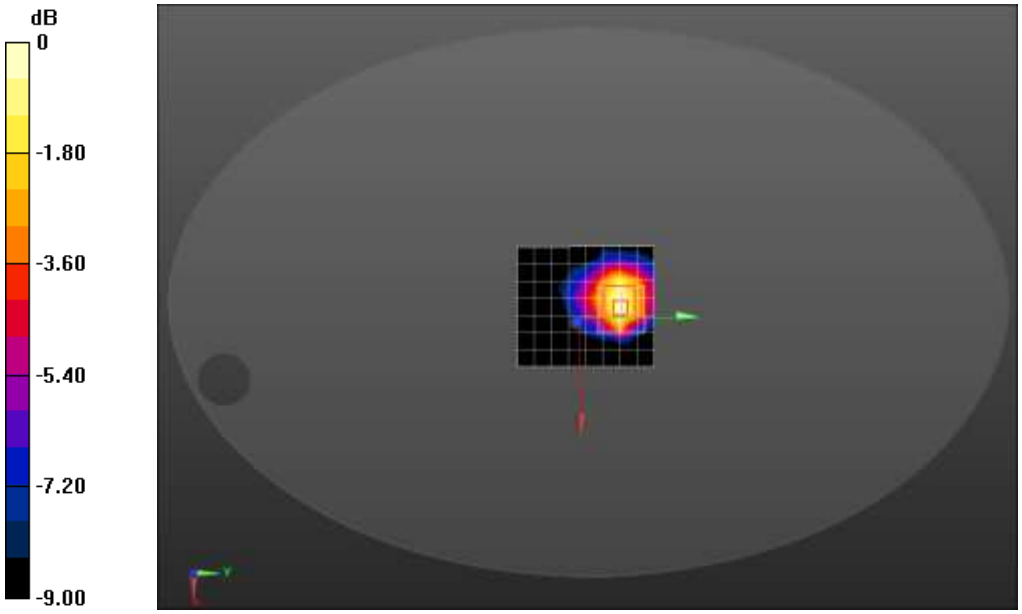
Maximum value of SAR (measured) = 0.0168 W/kg

Configuration/ eMTC Band13 782MHz /Zoom Scan (5x5x4)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm; Reference Value = 2.429 V/m; Power Drift = 0.06 dB

Peak SAR (extrapolated) = 0.0290 W/kg

SAR(1 g) = 0.015 W/kg; SAR(10 g) = 0.00937 W/kg

Maximum value of SAR (measured) = 0.0176 W/kg



0 dB = 0.0176 W/kg = -17.54 dBW/kg

Date/Time: 03/03/2020

Test Laboratory: DEKRA Lab

eMTC Band 13 1.4M 23230 QPSK 1RB-Edge3

DUT: Monitor; Type: Mobile Cardiac Monitor

Communication System: UID 0, LTE-FDD (SC-FDMA, 1 RB, 5 MHz, QPSK) (0); Communication System Band: band13; Duty Cycle: 1:1.0; Frequency: 782 MHz; Medium parameters used: f = 782 MHz; σ = 1.01 S/m; εr = 54.72; ρ = 1000 kg/m3 ; Phantom section: Flat Section

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

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(9.63, 9.63, 9.63); Calibrated: 25/04/2019;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 11/04/2019
- Phantom: ELI1; Type: QDOVA002AA; Serial: TP:2106
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/ eMTC Band13 782MHz /Area Scan (9x11x1): Measurement grid: dx=12mm, dy=12mm

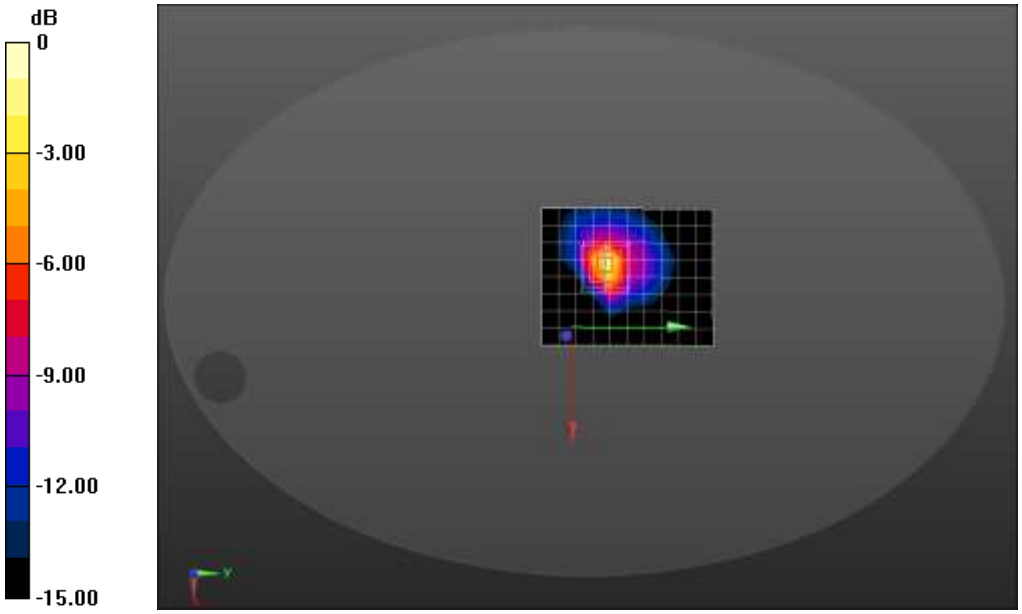
Maximum value of SAR (measured) = 0.0783 W/kg

Configuration/ eMTC Band13 782MHz /Zoom Scan (5x5x4)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm; Reference Value = 0.8250 V/m; Power Drift = 0.11 dB

Peak SAR (extrapolated) = 0.322 W/kg

SAR(1 g) = 0.081 W/kg; SAR(10 g) = 0.028 W/kg

Maximum value of SAR (measured) = 0.0998 W/kg



0 dB = 0.0998 W/kg = -10.01 dBW/kg

Date/Time: 03/03/2020

Test Laboratory: DEKRA Lab

eMTC Band 13 1.4M 23230 QPSK 1RB-Edge4

DUT: Monitor; Type: Mobile Cardiac Monitor

Communication System: UID 0, LTE-FDD (SC-FDMA, 1 RB, 5 MHz, QPSK) (0); Communication System Band: band13; Duty Cycle: 1:1.0; Frequency: 782 MHz; Medium parameters used: f = 782 MHz; σ = 1.01 S/m; εr = 54.72; ρ = 1000 kg/m3 ; Phantom section: Flat Section

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

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(9.63, 9.63, 9.63); Calibrated: 25/04/2019;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 11/04/2019
- Phantom: ELI1; Type: QDOVA002AA; Serial: TP:2106
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/ eMTC Band13 782MHz /Area Scan (9x11x1): Measurement grid: dx=12mm, dy=12mm

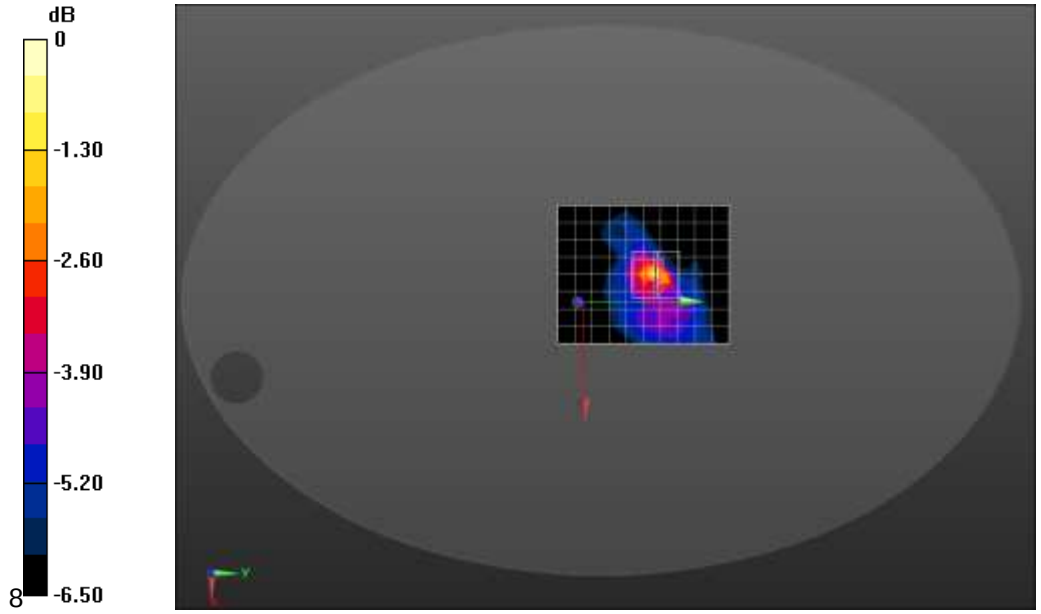
Maximum value of SAR (measured) = 0.0122 W/kg

Configuration/ eMTC Band13 782MHz /Zoom Scan (5x5x4)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm; Reference Value = 1.583 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 0.0270 W/kg

SAR(1 g) = 0.011 W/kg; SAR(10 g) = 0.00517 W/kg

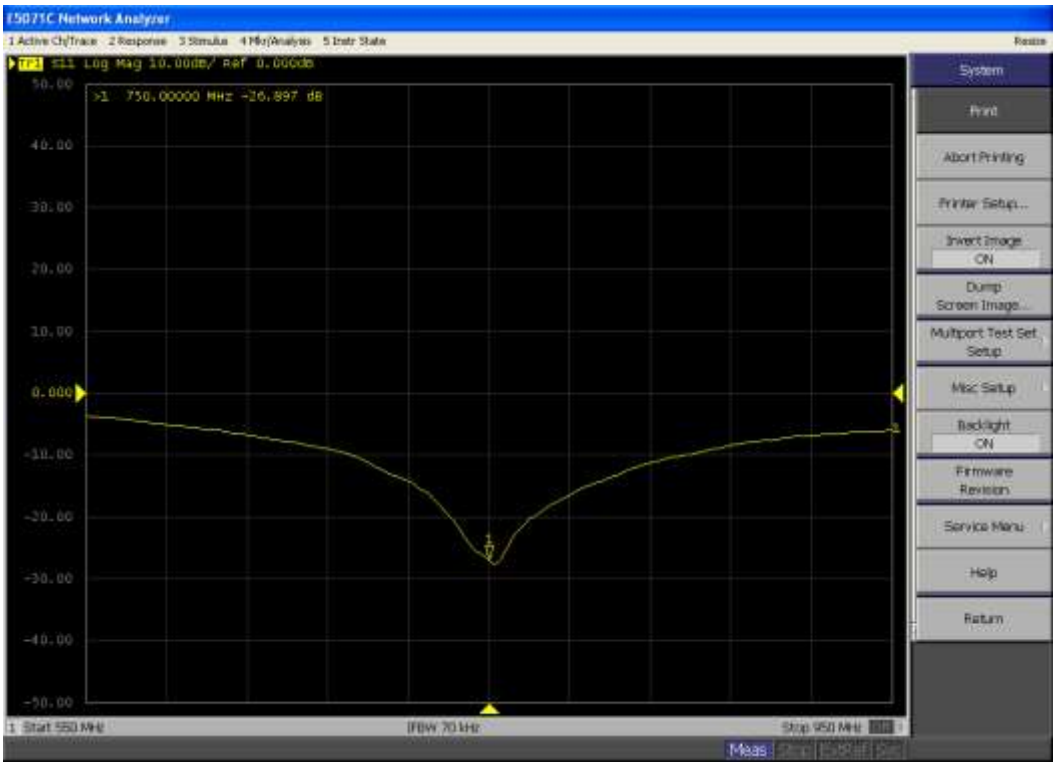
Maximum value of SAR (measured) = 0.0137 W/kg



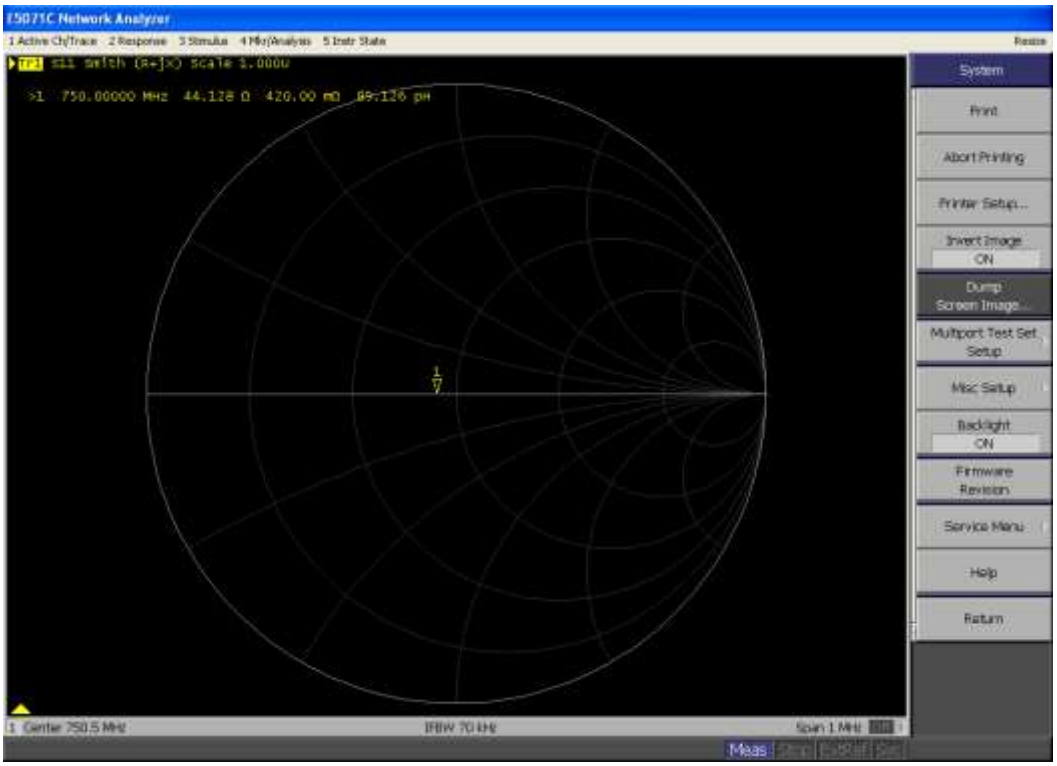
0 dB = 0.0137 W/kg = -18.63 dBW/kg

750 Body **Date/Time: 02/13/2020**

Calibrated return loss: -25.351 dB; Measured return loss: -26.897dB (within 20%)



Calibrated impedance: 48.955Ω; Measured impedance: 44.128Ω (within 5Ω)



Appendix C. Probe Calibration Data

In Collaboration with speag CALIBRATION LABORATORY
Add: No.51 Xueyuan 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

中国认可 国际互认 校准 CALIBRATION CNAS L0570

Client Dekra-CN Certificate No: Z19-60114

CALIBRATION CERTIFICATE

Object	EX3DV4 - SN:3710
Calibration Procedure(s)	FF-Z11-004-01 Calibration Procedures for Dosimetric E-field Probes
Calibration date:	April 25, 2019

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)℃ 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	20-Jun-18 (CTTL, No.J18X05032)	Jun-19
Power sensor NRP-Z91	101547	20-Jun-18 (CTTL, No.J18X05032)	Jun-19
Power sensor NRP-Z91	101548	20-Jun-18 (CTTL, No.J18X05032)	Jun-19
Reference10dBAttenuator	18N50W-10dB	09-Feb-18(CTTL, No.J18X01133)	Feb-20
Reference20dBAttenuator	18N50W-20dB	09-Feb-18(CTTL, No.J18X01132)	Feb-20
Reference Probe EX3DV4	SN 7514	27-Aug-18(SPEAG,No.EX3-7514_Aug18/2)	Aug-19
DAE4	SN 1555	20-Aug-18(SPEAG, No.DAE4-1555_Aug18)	Aug -19
Secondary Standards	**ID #**	**Cal Date(Calibrated by, Certificate No.)**	**Scheduled Calibration**
SignalGeneratorMG3700A	6201052605	21-Jun-18 (CTTL, No.J18X05033)	Jun-19
Network Analyzer E5071C	MY46110673	24-Jan-19 (CTTL, No.J19X00547)	Jan -20

	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 27, 2019

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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), 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).

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Probe EX3DV4

SN: 3710

Calibrated: April 25, 2019

Calibrated for DASY/EASY Systems

(Note: non-compatible with DASY2 system!)

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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]	102.9	103.3	102.1	

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	136.4	±2.3%
		Y	0.0	0.0	1.0		146.9	
		Z	0.0	0.0	1.0		162.0	

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 E²-field uncertainty inside TSL (see Page 5 and Page 6).
[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.

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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	9.65	9.65	9.65	0.10	1.50	±12.1%
835	41.5	0.90	9.29	9.29	9.29	0.15	1.38	±12.1%
900	41.5	0.97	9.20	9.20	9.20	0.17	1.16	±12.1%
1810	40.0	1.40	7.95	7.95	7.95	0.25	1.02	±12.1%
1900	40.0	1.40	7.78	7.78	7.78	0.26	1.00	±12.1%
2450	39.2	1.80	7.26	7.26	7.26	0.57	0.72	±12.1%
2600	39.0	1.96	7.12	7.12	7.12	0.66	0.69	±12.1%
3500	37.9	2.91	6.80	6.80	6.80	0.60	0.90	±13.3%
5250	35.9	4.71	5.12	5.12	5.12	0.45	1.60	±13.3%
5600	35.5	5.07	4.64	4.64	4.64	0.45	1.52	±13.3%
5750	35.4	5.22	4.71	4.71	4.71	0.50	1.45	±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.

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

Calibration Parameter Determined in Body 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	55.5	0.96	9.63	9.63	9.63	0.40	0.80	±12.1%
835	55.2	0.97	9.30	9.30	9.30	0.18	1.41	±12.1%
900	55.0	1.05	9.28	9.28	9.28	0.22	1.20	±12.1%
1810	53.3	1.52	7.63	7.63	7.63	0.18	1.23	±12.1%
1900	53.3	1.52	7.65	7.65	7.65	0.20	1.20	±12.1%
2450	52.7	1.95	7.44	7.44	7.44	0.60	0.75	±12.1%
2600	52.5	2.16	7.20	7.20	7.20	0.69	0.70	±12.1%
3500	51.3	3.31	6.54	6.54	6.54	0.55	1.03	±13.3%
5250	48.9	5.36	4.50	4.50	4.50	0.50	1.70	±13.3%
5600	48.5	5.77	3.99	3.99	3.99	0.55	1.68	±13.3%
5750	48.3	5.94	4.05	4.05	4.05	0.55	1.63	±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.

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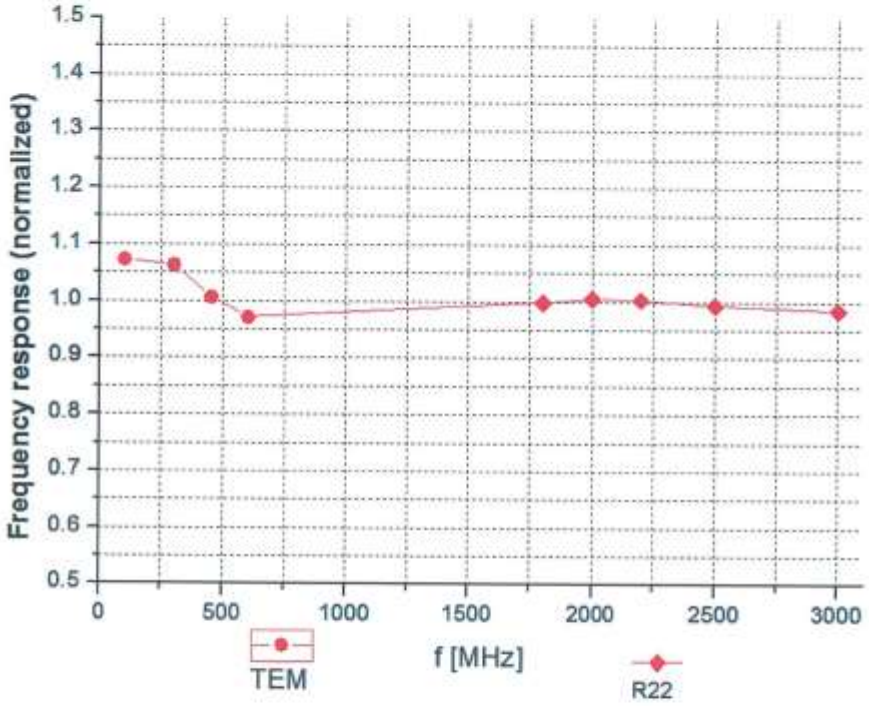
Frequency Response of E-Field
(TEM-Cell: ifi110 EXX, Waveguide: R22)



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

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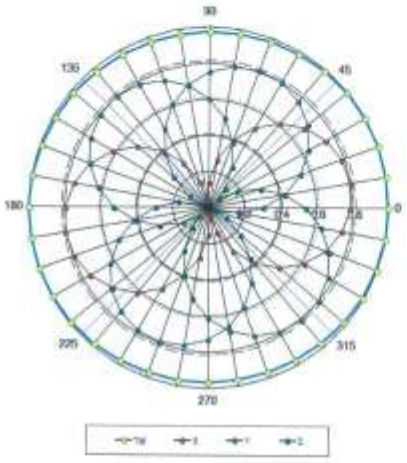
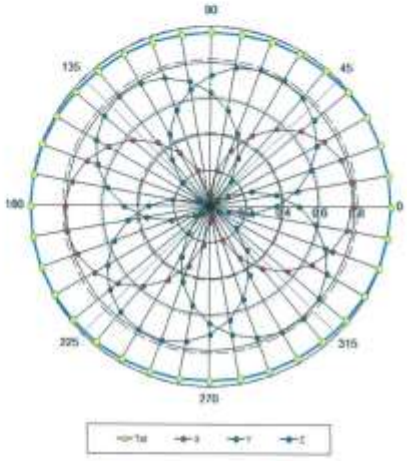
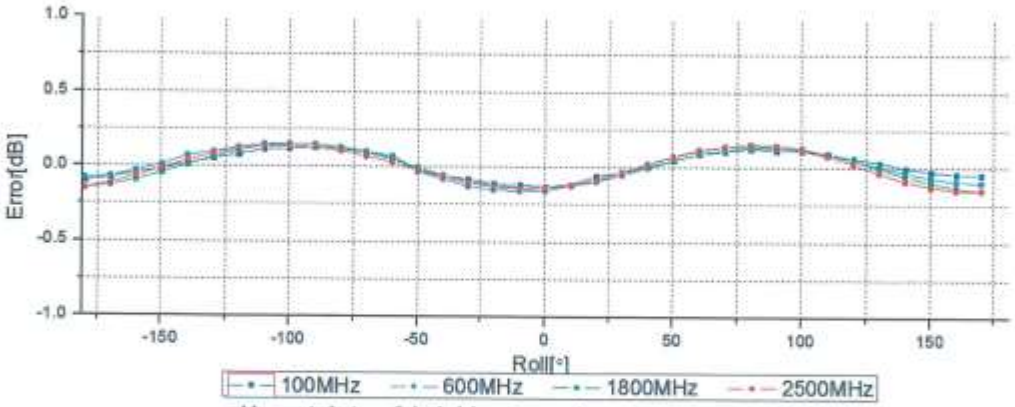
Receiving Pattern (Φ), θ=0°

f=600 MHz, TEM **f=1800 MHz, R22**







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

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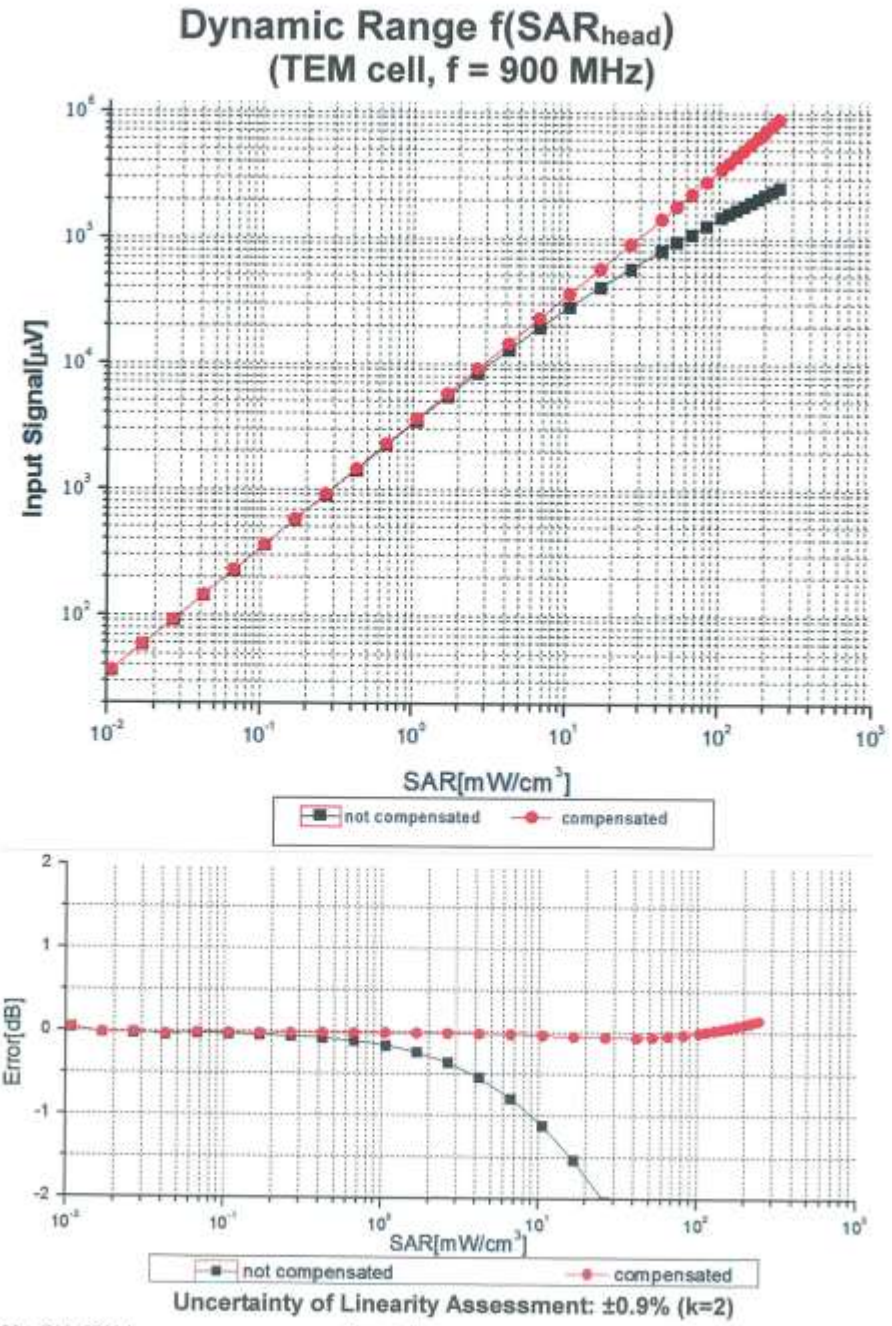

Uncertainty of Linearity Assessment: ±0.9% (k=2)

Certificate No: Z19-60114 Page 9 of 11

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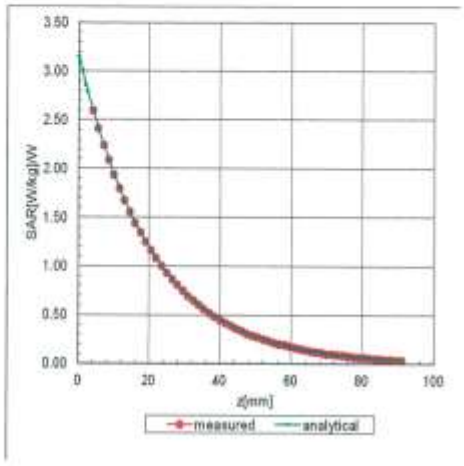
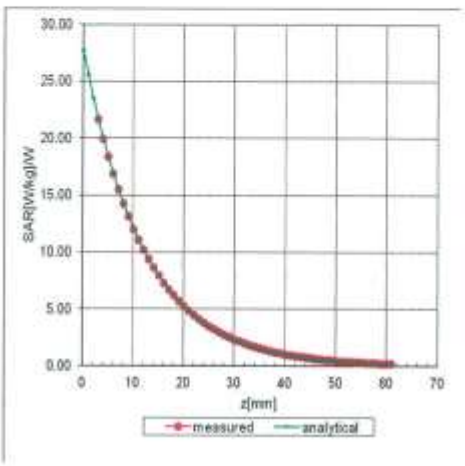
Conversion Factor Assessment

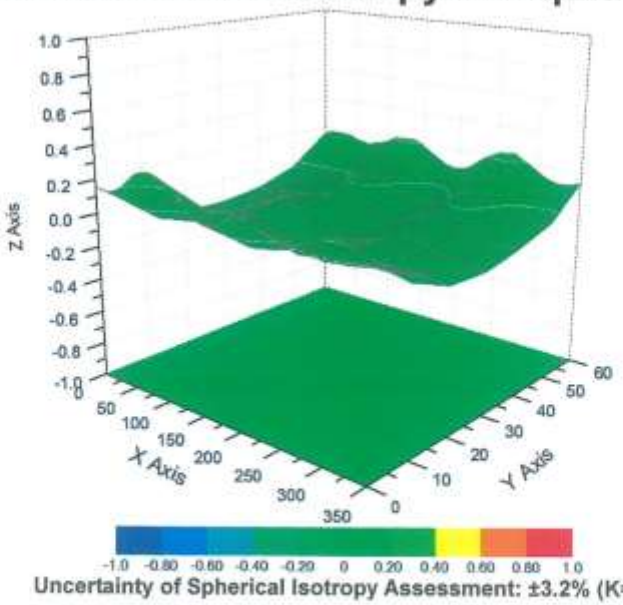
f=750 MHz, WGLS R9(H_convF)



f=1810 MHz, WGLS R22(H_convF)



Deviation from Isotropy in Liquid



Uncertainty of Spherical Isotropy Assessment: ±3.2% (K=2)

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

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	81.1
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disable
Probe Overall Length	337mm
Probe Body Diameter	10mm
Tip Length	9mm
Tip Diameter	2.5mm
Probe Tip to Sensor X Calibration Point	1mm
Probe Tip to Sensor Y Calibration Point	1mm
Probe Tip to Sensor Z Calibration Point	1mm
Recommended Measurement Distance from Surface	1.4mm

Appendix D. Dipole Calibration Data

Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S C S — Schweizerischer Kalibrierdienst / Service suisse d'étalonnage / Servizio svizzero di taratura / Swiss Calibration Service

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Accreditation No.: SCS 0108

Client DEKRA-CN (Auden) **Certificate No: D750V3-1086_Feb18**

CALIBRATION CERTIFICATE

Object	D750V3 - SN:1086
Calibration procedure(s)	QA CAL-05.v9 Calibration procedure for dipole validation kits above 700 MHz
Calibration date:	February 19, 2018

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 (Certificate No.)	Scheduled Calibration
Power meter NRP	SN: 104778	04-Apr-17 (No. 217-02521/02522)	Apr-18
Power sensor NRP-Z91	SN: 103244	04-Apr-17 (No. 217-02521)	Apr-18
Power sensor NRP-Z91	SN: 103245	04-Apr-17 (No. 217-02522)	Apr-18
Reference 20 dB Attenuator	SN: 5058 (20k)	07-Apr-17 (No. 217-02528)	Apr-18
Type-N mismatch combination	SN: 5047.2 / 06327	07-Apr-17 (No. 217-02529)	Apr-18
Reference Probe EX3DV4	SN: 7349	30-Dec-17 (No. EX3-7349_Dec17)	Dec-18
DAE4	SN: 601	26-Oct-17 (No. DAE4-601_Oct17)	Oct-18

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power meter EPM-442A	SN: GB37480704	07-Oct-15 (in house check Oct-16)	In house check: Oct-18
Power sensor HP 8481A	SN: US37292783	07-Oct-15 (in house check Oct-16)	In house check: Oct-18
Power sensor HP 8481A	SN: MY41092317	07-Oct-15 (in house check Oct-16)	In house check: Oct-18
RF generator R&S SMT-06	SN: 100972	15-Jun-15 (in house check Oct-16)	In house check: Oct-18
Network Analyzer HP 8753E	SN: US37390585	18-Oct-01 (in house check Oct-17)	In house check: Oct-18

	Name	Function	Signature
Calibrated by:	Michael Weber	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: February 19, 2018

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Certificate No: D750V3-1086_Feb18 Page 1 of 8

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Accreditation No.: SCS 0108

Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

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"

Additional Documentation:

e) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

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%.

Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY5	V52.10.0
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	15 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	750 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	41.9	0.89 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	41.4 ± 6 %	0.89 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	2.06 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**8.22 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	1.34 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**5.35 W/kg ± 16.5 % (k=2)**

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	55.5	0.96 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	55.2 ± 6 %	0.96 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm³ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	2.15 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**8.59 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	1.42 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**5.68 W/kg ± 16.5 % (k=2)**

Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	54.0 Ω - 2.4 jΩ
Return Loss	- 27.1 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	49.0 Ω - 5.2 jΩ
Return Loss	- 25.4 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.032 ns

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	March 06, 2013

DASY5 Validation Report for Head TSL

Date: 19.02.2018

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 750 MHz; Type: D750V3; Serial: D750V3 - SN:1086

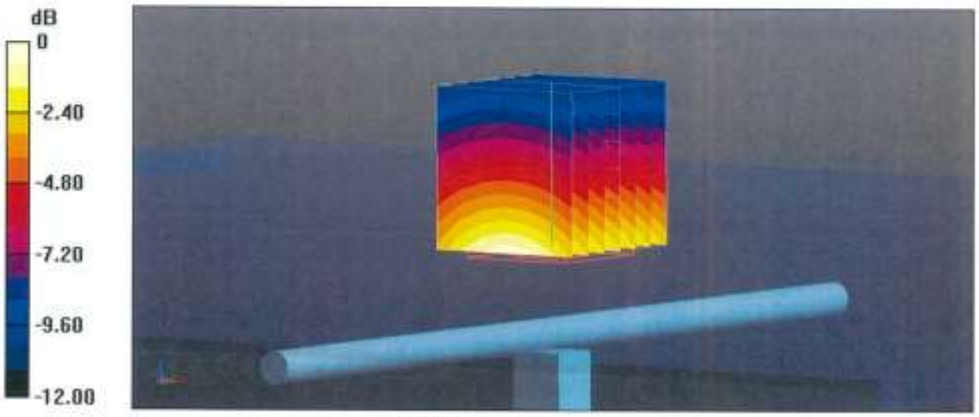
Communication System: UID 0 - CW; Frequency: 750 MHz
Medium parameters used: f = 750 MHz; σ = 0.89 S/m; ε_r = 41.4; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(10.22, 10.22, 10.22); Calibrated: 30.12.2017;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 26.10.2017
- Phantom: Flat Phantom 4.9 (front); Type: QD 00L P49 AA; Serial: 1001
- DASY52 52.10.0(1446); SEMCAD X 14.6.10(7417)

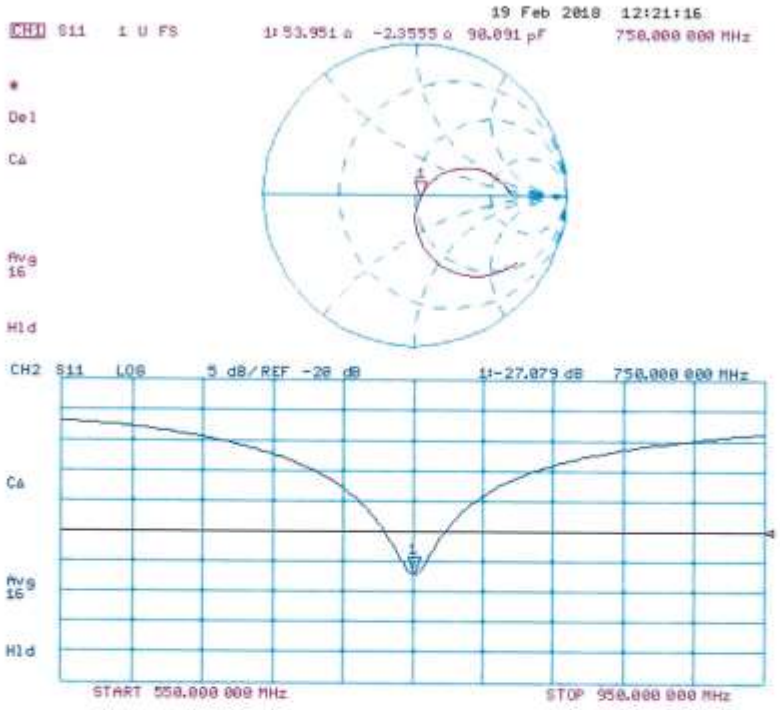
Dipole Calibration for Head Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 58.90 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 3.11 W/kg
SAR(1 g) = 2.06 W/kg; SAR(10 g) = 1.34 W/kg
Maximum value of SAR (measured) = 2.75 W/kg



0 dB = 2.75 W/kg = 4.39 dBW/kg

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 19.02.2018

Test Laboratory: SPEAG, Zurich, Switzerland

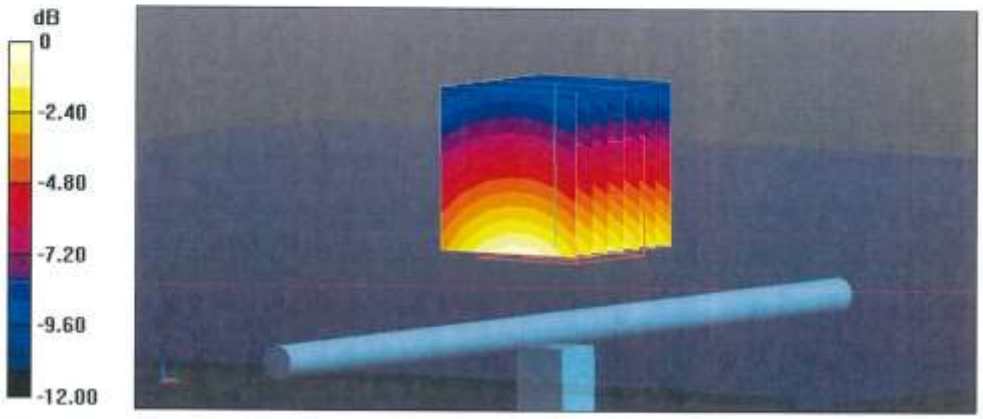
DUT: Dipole 750 MHz; Type: D750V3; Serial: D750V3 - SN:1086

Communication System: UID 0 - CW; Frequency: 750 MHz
Medium parameters used: f = 750 MHz; σ = 0.96 S/m; ε_r = 55.2; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

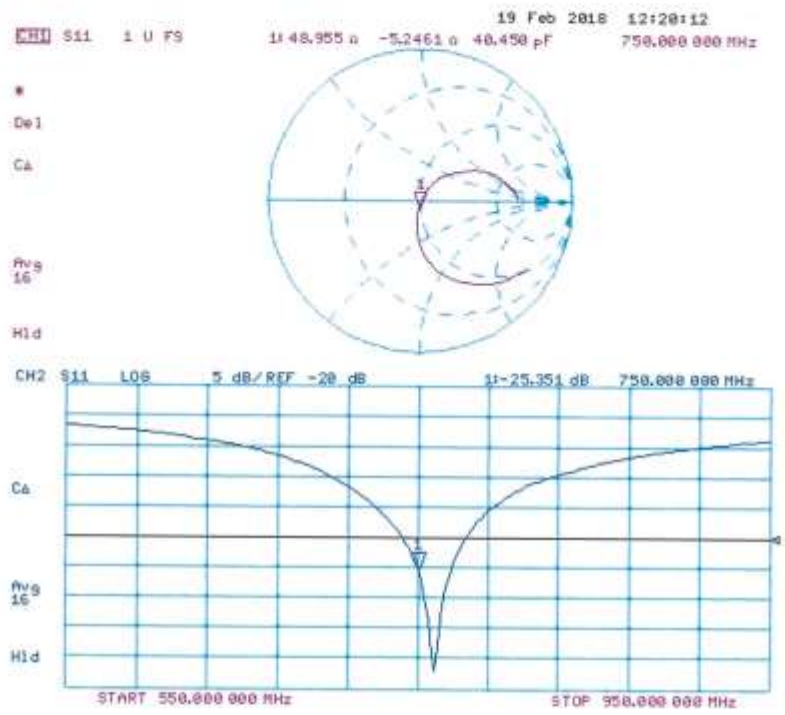
- Probe: EX3DV4 - SN7349; ConvF(10.19, 10.19, 10.19); Calibrated: 30.12.2017;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 26.10.2017
- Phantom: Flat Phantom 4.9 (Back); Type: QD 00R P49 AA; Serial: 1005
- DASY52 52.10.0(1446); SEMCAD X 14.6.10(7417)

Dipole Calibration for Body Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 57.91 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 3.26 W/kg
SAR(1 g) = 2.15 W/kg; SAR(10 g) = 1.42 W/kg
Maximum value of SAR (measured) = 2.84 W/kg



0 dB = 2.84 W/kg = 4.53 dBW/kg

Impedance Measurement Plot for Body TSL



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Client Dekra-CN Certificate No: Z19-60090

CALIBRATION CERTIFICATE

Object	D1800V2 - SN: 2d179
Calibration Procedure(s)	FF-Z11-003-01 Calibration Procedures for dipole validation kits
Calibration date:	March 26, 2019

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)℃ 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	106277	20-Aug-18 (CTTL, No.J18X06862)	Aug-19
Power sensor NRP8S	104291	20-Aug-18 (CTTL, No.J18X06862)	Aug-19
Reference Probe EX3DV4	SN 3617	31-Jan-19(SPEAG,No.EX3-3617_Jan19)	Jan-20
DAE4	SN 1331	06-Feb-19(SPEAG,No.DAE4-1331_Feb19)	Feb-20
Secondary Standards	**ID #**	**Cal Date(Calibrated by, Certificate No.)**	**Scheduled Calibration**
Signal Generator E4438C	MY49071430	23-Jan-19 (CTTL, No.J19X00336)	Jan-20
NetworkAnalyzer E5071C	MY46110673	24-Jan-19 (CTTL, No.J19X00547)	Jan-20

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

Issued: March 29, 2019

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lossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORMx,y,z
N/A	not applicable or not measured

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 assessment of specific absorption rate of human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices- Part 1: Device used next to the ear (Frequency range of 300MHz to 6GHz)", July 2016
c) IEC 62209-2, "Procedure to measure the Specific Absorption Rate (SAR) For wireless communication devices used in close proximity to the human body (frequency range of 30MHz to 6GHz)", March 2010
d) KDB865664, SAR Measurement Requirements for 100 MHz to 6 GHz

Additional Documentation:

e) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

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%.

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Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY52	52.10.2.1495
Extrapolation	Advanced Extrapolation	
Phantom	Triple Flat Phantom 5.1C	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	1800 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	40.0	1.40 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	41.0 ± 6 %	1.42 mho/m ± 6 %
Head TSL temperature change during test	<1.0 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	9.78 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**39.1 W/kg ± 18.8 % (k=2)**
SAR averaged over 10 cm^3 (10 g) of Head TSL	Condition	
SAR measured	250 mW input power	5.12 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**20.5 W/kg ± 18.7 % (k=2)**

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	53.3	1.52 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	54.9 ± 6 %	1.48 mho/m ± 6 %
Body TSL temperature change during test	<1.0 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm^3 (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	9.42 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**38.5 W/kg ± 18.8 % (k=2)**
SAR averaged over 10 cm^3 (10 g) of Body TSL	Condition	
SAR measured	250 mW input power	4.97 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**20.2 W/kg ± 18.7 % (k=2)**

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Appendix (Additional assessments outside the scope of CNAS L0570)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	48.7Ω- 1.94jΩ
Return Loss	- 32.6dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	44.7Ω- 2.15jΩ
Return Loss	- 24.4dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.077 ns

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG

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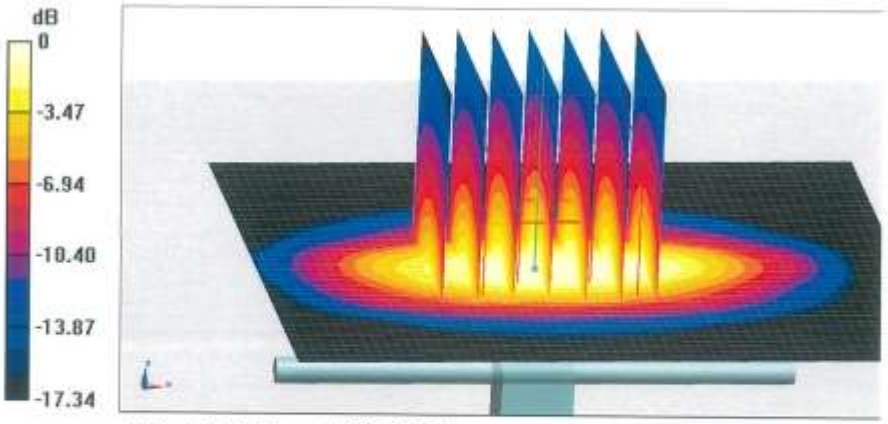
DASY5 Validation Report for Head TSL Date: 03.26.2019
Test Laboratory: CTTL, Beijing, China
DUT: Dipole 1800 MHz; Type: D1800V2; Serial: D1800V2 - SN: 2d179
Communication System: UID 0, CW; Frequency: 1800 MHz; Duty Cycle: 1:1
Medium parameters used: f = 1800 MHz; σ = 1.417 S/m; ε_r = 41.03; ρ = 1000 kg/m3
Phantom section: Center Section
DASY5 Configuration:

- Probe: EX3DV4 - SN3617; ConvF(8.11, 8.11, 8.11) @ 1800 MHz; Calibrated: 1/31/2019
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1331; Calibrated: 2/6/2019
- Phantom: MFP_V5.1C ; Type: QD 000 P51CA; Serial: 1062
- Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

System Performance Check/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 94.81 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 18.6 W/kg
SAR(1 g) = 9.78 W/kg; SAR(10 g) = 5.12 W/kg
Maximum value of SAR (measured) = 15.2 W/kg



0 dB = 15.2 W/kg = 11.82 dBW/kg

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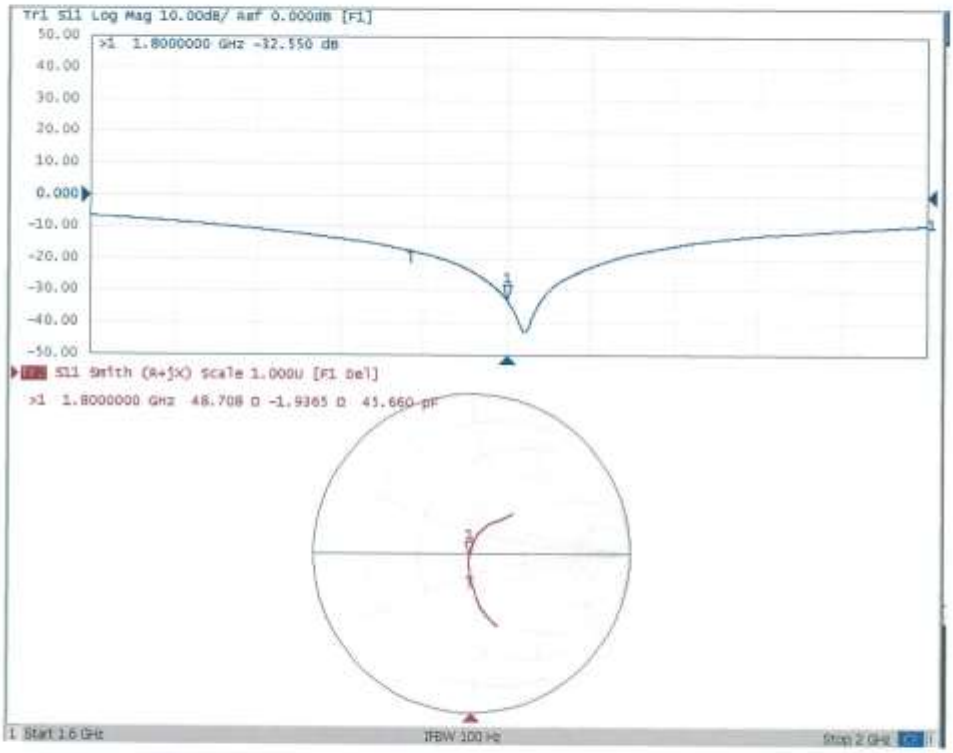
Impedance Measurement Plot for Head TSL



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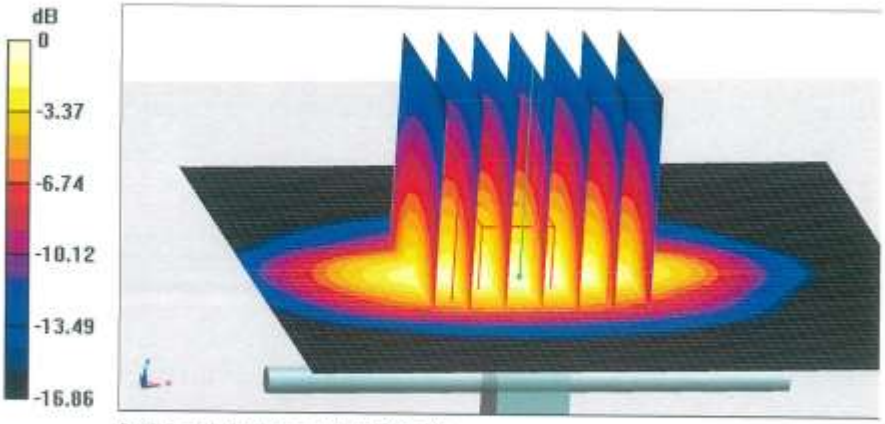
DASY5 Validation Report for Body TSL Date: 03.26.2019
Test Laboratory: CTTL, Beijing, China
DUT: Dipole 1800 MHz; Type: D1800V2; Serial: D1800V2 - SN: 2d179
Communication System: UID 0, CW; Frequency: 1800 MHz; Duty Cycle: 1:1
Medium parameters used: f = 1800 MHz; σ = 1.482 S/m; ε_r = 54.88; ρ = 1000 kg/m3
Phantom section: Right Section
DASY5 Configuration:

- Probe: EX3DV4 - SN3617; ConvF(7.94, 7.94, 7.94) @ 1800 MHz; Calibrated: 1/31/2019
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1331; Calibrated: 2/6/2019
- Phantom: MFP_V5.1C ; Type: QD 000 P51CA; Serial: 1062
- Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

System Performance Check/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 92.51 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 17.0 W/kg
SAR(1 g) = 9.42 W/kg; SAR(10 g) = 4.97 W/kg
Maximum value of SAR (measured) = 14.4 W/kg



0 dB = 14.4 W/kg = 11.58 dBW/kg

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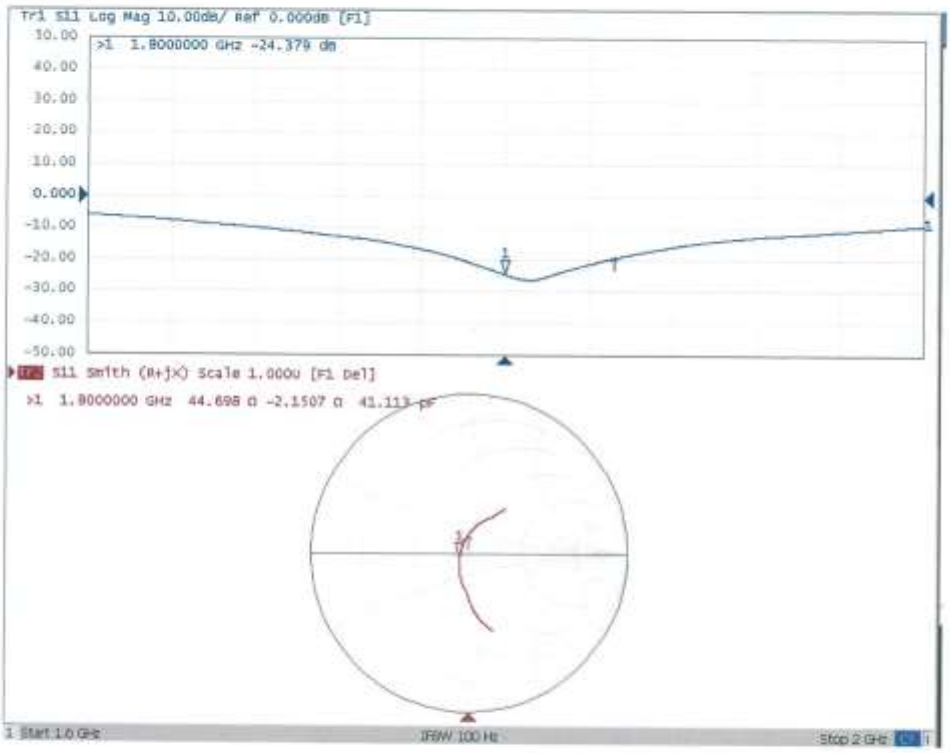
Impedance Measurement Plot for Body TSL



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Client **Dekra-CN** **Certificate No: Z19-60091**

CALIBRATION CERTIFICATE

Object	D1900V2 - SN: 5d121
Calibration Procedure(s)	FF-Z11-003-01 Calibration Procedures for dipole validation kits
Calibration date:	March 26, 2019

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)℃ 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	106277	20-Aug-18 (CTTL, No.J18X06862)	Aug-19
Power sensor NRP8S	104291	20-Aug-18 (CTTL, No.J18X06862)	Aug-19
Reference Probe EX3DV4	SN 3617	31-Jan-19(SPEAG,No.EX3-3617_Jan19)	Jan-20
DAE4	SN 1331	06-Feb-19(SPEAG,No.DAE4-1331_Feb19)	Feb-20
Secondary Standards	**ID #**	**Cal Date(Calibrated by, Certificate No.)**	**Scheduled Calibration**
Signal Generator E4438C	MY49071430	23-Jan-19 (CTTL, No.J19X00336)	Jan-20
NetworkAnalyzer E5071C	MY46110673	24-Jan-19 (CTTL, No.J19X00547)	Jan-20

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

Issued: March 29, 2019

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Certificate No: Z19-60091 Page 1 of 8

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lossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORMx,y,z
N/A	not applicable or not measured

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 assessment of specific absorption rate of human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices- Part 1: Device used next to the ear (Frequency range of 300MHz to 6GHz)", July 2016
c) IEC 62209-2, "Procedure to measure the Specific Absorption Rate (SAR) For wireless communication devices used in close proximity to the human body (frequency range of 30MHz to 6GHz)", March 2010
d) KDB865664, SAR Measurement Requirements for 100 MHz to 6 GHz

Additional Documentation:

e) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

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%.

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Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY52	52.10.2.1495
Extrapolation	Advanced Extrapolation	
Phantom	Triple Flat Phantom 5.1C	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	1900 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	40.0	1.40 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	40.5 ± 6 %	1.44 mho/m ± 6 %
Head TSL temperature change during test	<1.0 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	10.0 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**39.4 W/kg ± 18.8 % (k=2)**
SAR averaged over 10 cm^3 (10 g) of Head TSL	Condition	
SAR measured	250 mW input power	5.16 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**20.5 W/kg ± 18.7 % (k=2)**

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	53.3	1.52 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	54.5 ± 6 %	1.56 mho/m ± 6 %
Body TSL temperature change during test	<1.0 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm^3 (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	10.2 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**40.4 W/kg ± 18.8 % (k=2)**
SAR averaged over 10 cm^3 (10 g) of Body TSL	Condition	
SAR measured	250 mW input power	5.28 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**21.0 W/kg ± 18.7 % (k=2)**

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Appendix (Additional assessments outside the scope of CNAS L0570)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	50.2Ω+ 7.23jΩ
Return Loss	- 22.9dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	46.3Ω+ 8.30jΩ
Return Loss	- 20.5dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.067 ns

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG

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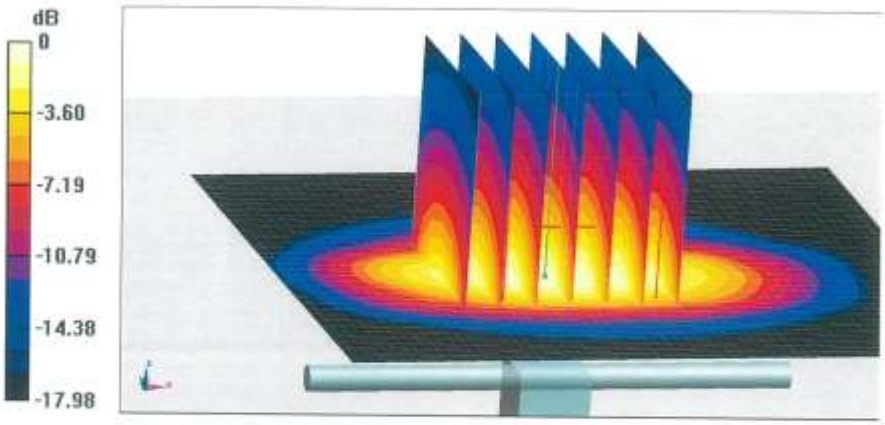
DASY5 Validation Report for Head TSL Date: 03.26.2019
Test Laboratory: CTTL, Beijing, China
DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN: 5d121
Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1
Medium parameters used: f = 1900 MHz; σ = 1.441 S/m; ε_r = 40.48; ρ = 1000 kg/m3
Phantom section: Center Section
DASY5 Configuration:

- Probe: EX3DV4 - SN3617; ConvF(8.14, 8.14, 8.14) @ 1900 MHz; Calibrated: 1/31/2019
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1331; Calibrated: 2/6/2019
- Phantom: MFP_V5.1C ; Type: QD 000 P51CA; Serial: 1062
- Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

System Performance Check/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 91.29 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 19.3 W/kg
SAR(1 g) = 10 W/kg; SAR(10 g) = 5.16 W/kg
Maximum value of SAR (measured) = 15.8 W/kg



0 dB = 15.8 W/kg = 11.99 dBW/kg

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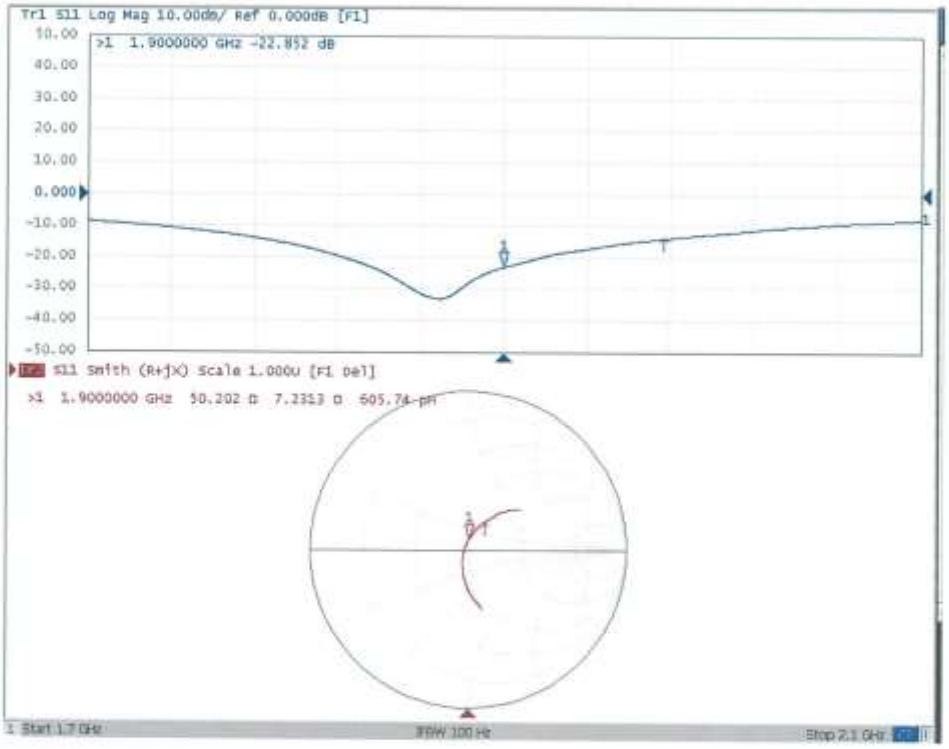
Impedance Measurement Plot for Head TSL



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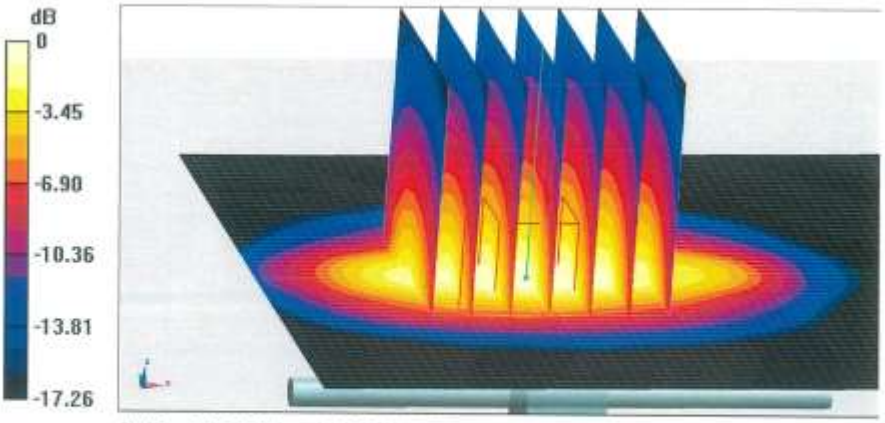
E-mail: cttl@chinattl.com http://www.chinattl.cn

DASY5 Validation Report for Body TSL Date: 03.26.2019
Test Laboratory: CTTL, Beijing, China
DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN: 5d121
Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1
Medium parameters used: f = 1900 MHz; σ = 1.56 S/m; ε_r = 54.52; ρ = 1000 kg/m3
Phantom section: Right Section
DASY5 Configuration:

- Probe: EX3DV4 - SN3617; ConvF(7.78, 7.78, 7.78) @ 1900 MHz; Calibrated: 1/31/2019
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1331; Calibrated: 2/6/2019
- Phantom: MFP_V5.1C ; Type: QD 000 P51CA; Serial: 1062
- Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

System Performance Check/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 95.45 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 18.7 W/kg
SAR(1 g) = 10.2 W/kg; SAR(10 g) = 5.28 W/kg
Maximum value of SAR (measured) = 15.7 W/kg



0 dB = 15.7 W/kg = 11.96 dBW/kg

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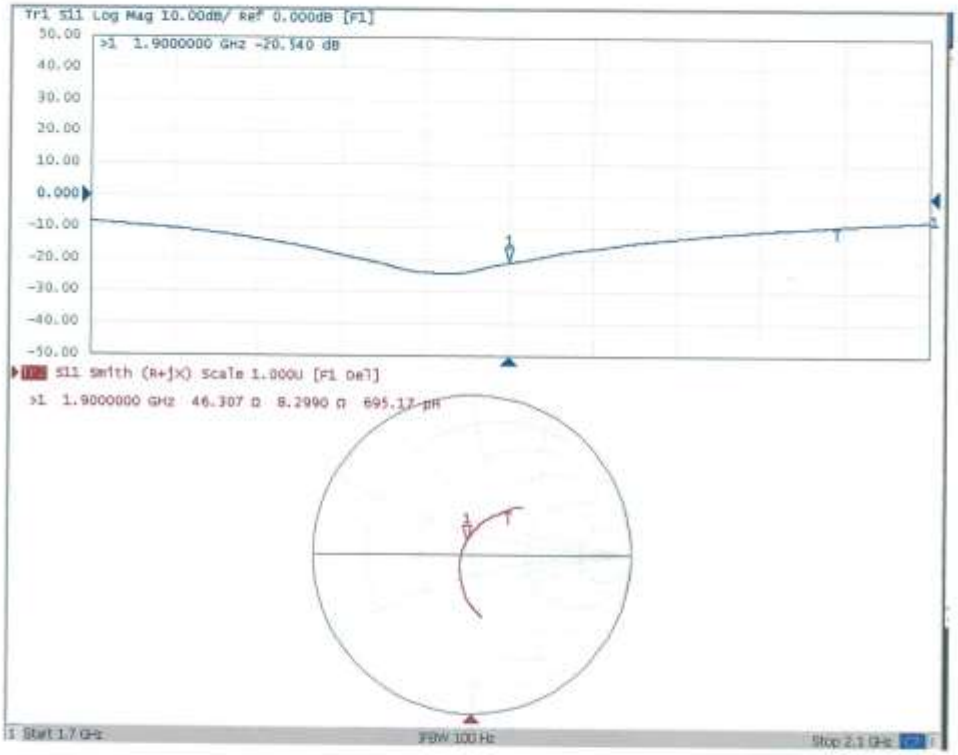
Impedance Measurement Plot for Body TSL



Appendix E. DAE Calibration Data

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Add: No.51 Xueyuan 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

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国际互认
校准
CALIBRATION
CNAS L0570

Client : **Dekra-CN** **Certificate No: Z19-60115**

CALIBRATION CERTIFICATE

Object	DAE4 - SN: 1220
Calibration Procedure(s)	FF-Z11-002-01 Calibration Procedure for the Data Acquisition Electronics (DAEx)
Calibration date:	April 11, 2019

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)℃ and humidity<70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date(Calibrated by, Certificate No.)	Scheduled Calibration
Process Calibrator 753	1971018	20-Jun-18 (CTTL, No.J18X05034)	June-19

	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 13, 2019

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

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Glossary:

DAE	data acquisition electronics
Connector angle	information used in DASY system to align probe sensor X to the robot coordinate system.

Methods Applied and Interpretation of Parameters:

- *DC Voltage Measurement*: Calibration Factor assessed for use in DASY system by comparison with a calibrated instrument traceable to national standards. The figure given corresponds to the full scale range of the voltmeter in the respective range.
- *Connector angle*: The angle of the connector is assessed measuring the angle mechanically by a tool inserted. Uncertainty is not required.
- The report provide only calibration results for DAE, it does not contain other performance test results.

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DC Voltage Measurement

A/D - Converter Resolution nominal

High Range: 1LSB = 6.1μV , full range = -100...+300 mV
Low Range: 1LSB = 61nV , full range = -1.....+3mV

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

Calibration Factors	X	Y	Z
High Range	405.134 ± 0.15% (k=2)	404.854 ± 0.15% (k=2)	404.085 ± 0.15% (k=2)
Low Range	3.97713 ± 0.7% (k=2)	3.99438 ± 0.7% (k=2)	3.98563 ± 0.7% (k=2)

Connector Angle

Connector Angle to be used in DASY system	177° ± 1 °

The End