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TEST REPORT

KCTL Inc.
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Report No.: KR17-SPF0004-D

KCTL

1. Client

- Name : Vieworks Co., Ltd.
- Address : 41-3, Burim-ro 170beon-gil, Dongan-gu, Anyang-si, Gyeonggi-do, 431-060 Republic of Korea
- Date of Receipt : 2017-01-17

2. Use of Report : -

3. Name of Product and Model : X-ray Detector

- Host Model Number : FXRD-1417NAW / FXRD-1417NBW
- Module Product Name : 802.11ac Dual Band Module
- Module Model Number : WLE900VX 7AA000S-VW

4. Manufacturer and Country of Origin : Vieworks Co., Ltd. / Korea

5. FCC ID / IC

- Host model FCC ID / IC : PFRFXRD1417N / 11233A-FXRD1417N
- Module FCC ID / IC : PFRWLE900VXVW / 11233A-WLE900VXVW

6. Date of Test : 2017-03-14 to 2017-03-16

7. Test method used : IEEE 1528-2013, ANSI/IEEE C95.1, KDB Publication RSS-102 Issue 5:2015

8. Test Results : Refer to the test result in the test report

Affirmation	Tested by Name : Kyounghoo, Min (Signature)	Technical Manager Name : Cheonsig, Choi (Signature)

2017-10-19

KCTL Inc.

REPORT REVISION HISTORY

Date	Revision	Page No
2017-07-11	Originally issued	-
2017-07-21	Change EUT Type	6
2017-07-24	Change Normal Voltage	6
2017-10-17	Added Wi-Fi module's FCC/IC IDs.	1
2017-10-19	Added Test method used	1

Please note: Report KR17-SPF0004-D issued on 2017-10-19 supercedes previously issued report KR17-SPF0004-C issued on 2017-10-17

Contents

1. Client information

Client:	Vieworks Co., Ltd.
Address:	41-3, Burim-ro 170beon-gil, Dongan-gu, Anyang-si, Gyeonggi-do, 431-060 Republic of Korea
Telephone:	+82-70-4496-1860
Fax:	+82-31-386-8631
E-mail:	mykwon@vieworks.com
Contact name:	Hayun ,Kwon

Manufacturer:	Vieworks Co., Ltd.
Address:	41-3, Burim-ro 170beon-gil, Dongan-gu, Anyang-si, Gyeonggi-do, 431-060 Republic of Korea

2. Laboratory information

Address

KCTL Inc.

65, Sinwon-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, Korea

TEL: 82 31 285 0894 FAX: 82 505 299 8311

Certificate

KOLAS No.: KT231

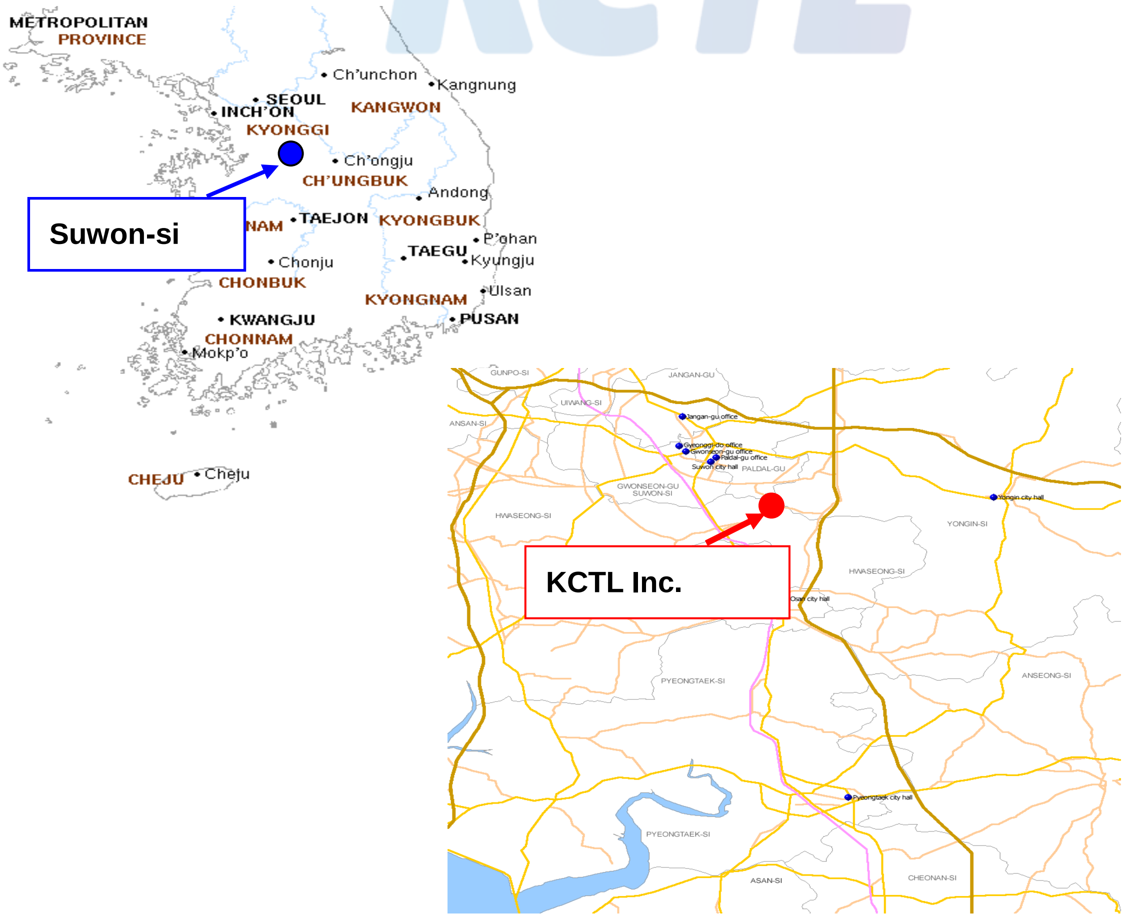
FCC Site Designation No.: KR0040

FCC Site Registration No.: 687132

VCCI Site Registration No.: R-3327, G-198, C-3706, T-1849

IC Site Registration No.: 8035A-2

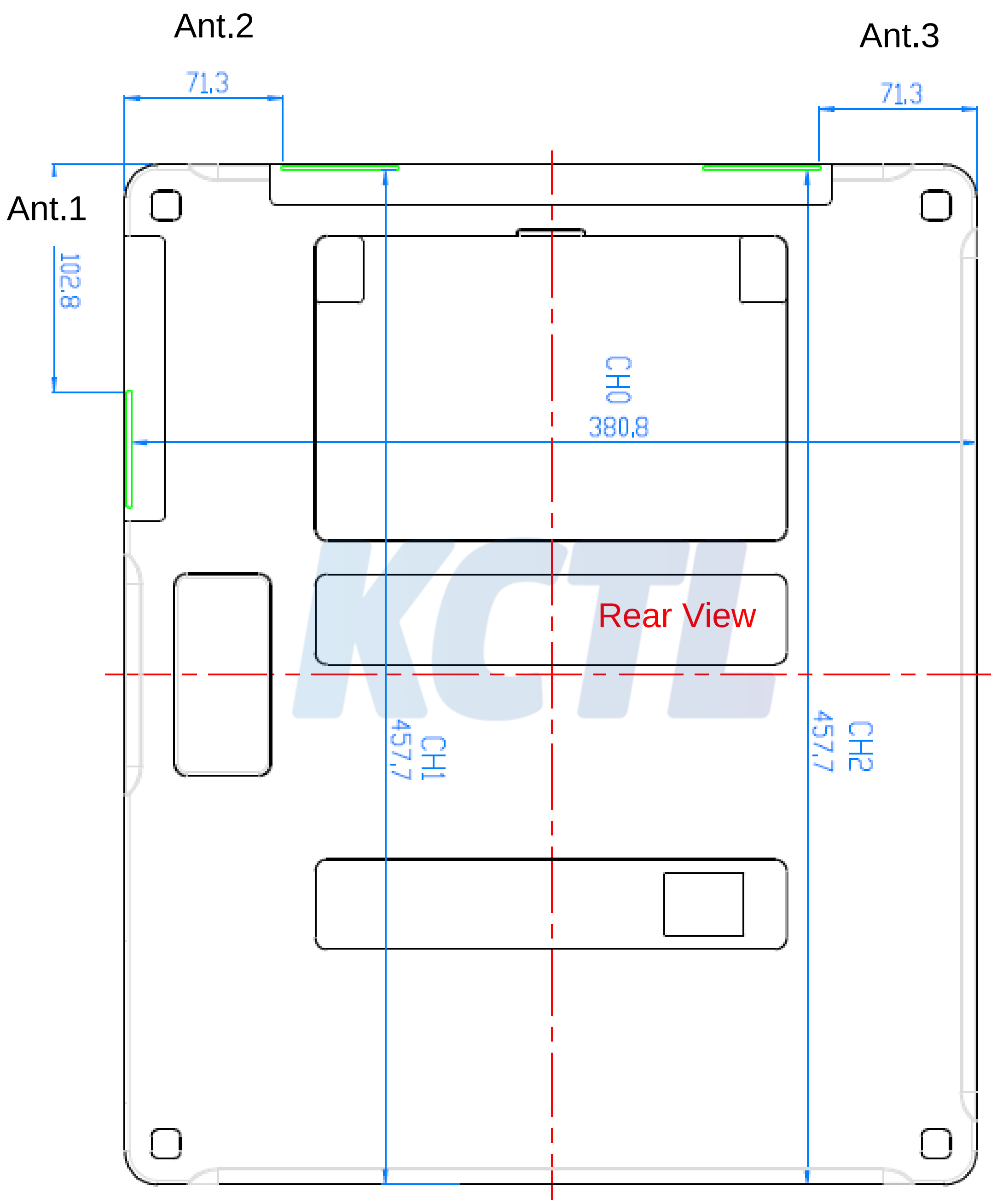
SITE MAP



3. Identification of Sample

EUT Type	X-ray Detector
Brand Name	Vieworks Co., Ltd.
Mode of Operation	WLAN 2.4 GHz / 5 GHz
Model Number	FXRD-1417NAW
Serial Number	VVDAFA907
Max. Power	WLAN 2.4 GHz: 20 dBm WLAN 5.2 GHz: 18 dBm WLAN 5.8 GHz: 21 dBm
Tx Freq.Range	WLAN 2.4 GHz: 2 412 MHz ~ 2 462 MHz WLAN 5.2 GHz: 5 180 MHz ~ 5 240 MHz WLAN 5.8 GHz: 5 745 MHz ~ 5 825 MHz
Rx Freq.Range	WLAN 2.4 GHz: 2 412 MHz ~ 2 462 MHz WLAN 5.2 GHz: 5 180 MHz ~ 5 240 MHz WLAN 5.8 GHz: 5 745 MHz ~ 5 825 MHz
Antenna Type	PCB Antenna
Antenna Size	43.5 mm x 10 mm
Normal Voltage	DC 7.6 V
H/W Version	D04
S/W Version	V1.0.0.6TS

3.1 Antenna Diagram



4.Test Result Summary

4.1 WLAN 5.2 GHz Head SAR Test Results

Mode	Frequency (MHz)	Average Power (dBm)	Max. tune up power (dBm)	EUT Position	Distance (mm)	Measured 1 g SAR (W/kg)	Duty Cycle Compensate Factor	Scaling Factor	Scaled 1 g SAR (W/kg)	Ant.#	Sum (Ant. 1+2+3)
802.11a	5 200	17.82	18.00	Front	0	0.338	1.04	1.042	**0.366**	Ant.1	**0.966**
	5 200	17.61	18.00	Front	0	0.256	1.04	1.094	0.291	Ant.2	
	5 200	17.62	18.00	Front	0	0.272	1.04	1.091	0.309	Ant.3	

<Note>

When antennas are spatially separated to the extent that SAR distributions do not overlap and can be treated independently, SAR compliance for simultaneous transmission is determined separately for each individual antenna. In general, when the aggregate SAR from multiple antennas at any location in the combined SAR distribution is either ≤ 1.2 W/kg where at least 90% of the SAR is attributed to a single SAR distribution or ≤ 0.4 W/kg where no more than one SAR distribution is contributing > 0.1 W/kg, the antennas may be considered spatially separated. The conditions can be established either by inspection or quantitative comparison using interpolated results from area scans to determine that the antennas are spatially separated. Under such circumstances, each transmitting antenna is tested independently, one at a time, according to procedures in this document. Per KDB Publication 447498 D01v06.

5. Report Overview

This report details the results of testing carried out on the samples listed in section 3, the results contained in this test report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

This report may only be reproduced and distributed in full. If the product in this test report is used in any configuration other than that detailed in the test report, the manufacturer must ensure the new configuration complies with all relevant standards and certification requirements. Any mention of KCTL Inc. Wireless lab or testing done by KCTL Inc. Wireless lab made in connection with the distribution or use of the tested product must be approved in writing by KCTL Inc. Wireless lab.

6. Test Lab Declaration or Comments

None

7. Applicant Declaration or Comments

None

8. Measurement Uncertainty

All measurements and results are recorded and maintained at the laboratory performing the tests and measurement uncertainties are taken into account when comparing measurements to pass/ fail criteria.

Uncertainty of SAR equipments for measurement 300 MHz to 3 GHz (Head)

SAR Measurement Uncertainty

A	*b*	*c*	D	*e = f(d,k)*	*g*	*i = c x g / e*	*k*
Source of Uncertainty	**Description** IEEE P1528 HEAD (0.3 ~ 3 GHz)	**Tolerance/ Uncertainty value** ± %	**Probability Distribution**	**Div.**	**Ci** (1 g)	**Standard uncertainty** ± %, (1 g)	**Vi or Veff**
Measurement System							
Probe calibration(k=1)	E.2.1	6.30	N	1	1	6.30	∞
Axial isotropy	E.2.2	0.50	R	1.73	0.71	0.20	∞
Hemispherical isotropy	E.2.2	2.60	R	1.73	0.71	1.06	∞
Linearity	E.2.4	0.60	R	1.73	1	0.35	∞
Boundary effect	E.2.3	1.00	R	1.73	1	0.58	∞
System detection limits	E.2.5	1.00	R	1.73	1	0.58	∞
Readout electronics	E.2.6	0.30	N	1	1	0.30	∞
Response time	E.2.7	0.80	R	1.73	1	0.46	∞
Integration time	E.2.8	2.60	R	1.73	1	1.50	∞
RF ambient conditions–noise	E.6.1	3.00	R	1.73	1	1.73	∞
RF ambient conditions–reflections	E.6.1	3.00	R	1.73	1	1.73	∞
Probe positioner mechanical tolerance	E.6.2	0.40	R	1.73	1	0.23	∞
Probe positioning with respect to phantom shell	E.6.3	2.90	R	1.73	1	1.67	∞
Extrapolation, interpolation, and integration algorithms for max. SAR evaluation	E.5	2.00	R	1.73	1	1.15	∞
Test Sample Related							
Test sample positioning	E.4.2	4.71	N	1	1	4.71	9
Device holder uncertainty	E.4.1	3.60	N	1	1	3.60	5
Output power variation—SAR drift measurement	6.6.2	5.00	R	1.73	1	2.89	∞
Phantom and Tissue Parameters							
Phantom uncertainty (shape and thickness tolerances)	E.3.1	6.10	R	1.73	1	3.52	∞
Liquid conductivity-measurement uncertainty	E.3.3	1.53	N	1	0.64	0.98	5
Liquid permittivity-measurement uncertainty	E.3.3	3.07	N	1	0.6	1.84	5
Liquid conductivity-deviation from target values	E.3.2	5.00	R	1.73	0.64	1.85	∞
Liquid permittivity-deviation from target values	E.3.2	5.00	R	1.73	0.6	1.73	∞
Combined standard uncertainty				RSS		11.00	165
Expanded uncertainty (95% CONFIDENCE INTERVAL)				K=2		22.00	

Uncertainty of SAR equipments for measurement 3 GHz to 6 GHz(Head)

SAR Measurement Uncertainty

A	b	c	D	e = f(d,k)	g	i = c x g / e	k
Source of Uncertainty	**Description** IEEE P1528 HEAD	**Tolerance/ Uncertainty value**	**Probability Distribution**	**Div.**	**Ci**	**Standard uncertainty**	**Vi or Veff**
	(3 ~ 6 GHz)	± %			(1 g)	± %, (1 g)	
Measurement System							
Probe calibration(k=1)	E.2.1	6.30	N	1	1	6.30	∞
Axial isotropy	E.2.2	0.50	R	1.73	0.71	0.20	∞
Hemispherical isotropy	E.2.2	2.60	R	1.73	0.71	1.06	∞
Linearity	E.2.4	0.60	R	1.73	1	0.35	∞
Boundary effect	E.2.3	2.00	R	1.73	1	1.15	∞
System detection limits	E.2.5	1.00	R	1.73	1	0.58	∞
Readout electronics	E.2.6	0.30	N	1	1	0.30	∞
Response time	E.2.7	0.80	R	1.73	1	0.46	∞
Integration time	E.2.8	2.60	R	1.73	1	1.50	∞
RF ambient conditions–noise	E.6.1	3.00	R	1.73	1	1.73	∞
RF ambient conditions–reflections	E.6.1	3.00	R	1.73	1	1.73	∞
Probe positioner mechanical tolerance	E.6.2	0.80	R	1.73	1	0.46	∞
Probe positioning with respect to phantom shell	E.6.3	6.70	R	1.73	1	3.87	∞
Extrapolation, interpolation, and integration algorithms for max. SAR evaluation	E.5	4.00	R	1.73	1	2.31	∞
Test Sample Related							
Test sample positioning	E.4.2	4.63	N	1	1	4.63	9
Device holder uncertainty	E.4.1	3.60	N	1	1	3.60	5
Output power variation—SAR drift measurement	6.6.2	5.00	R	1.73	1	2.89	∞
Phantom and Tissue Parameters							
Phantom uncertainty (shape and thickness tolerances)	E.3.1	6.60	R	1.73	1	3.81	∞
Liquid conductivity-measurement uncertainty	E.3.3	1.50	N	1	0.64	0.96	5
Liquid permittivity-measurement uncertainty	E.3.3	2.23	N	1	0.6	1.34	5
Liquid conductivity-deviation from target values	E.3.2	5.00	R	1.73	0.64	1.85	∞
Liquid permittivity-deviation from target values	E.3.2	5.00	R	1.73	0.6	1.73	∞
Combined standard uncertainty				RSS		11.75	225
Expanded uncertainty (95% CONFIDENCE INTERVAL)				K=2		23.50	

Uncertainty of SAR equipments for measurement 300 MHz to 3 GHz (Body)

SAR Measurement Uncertainty

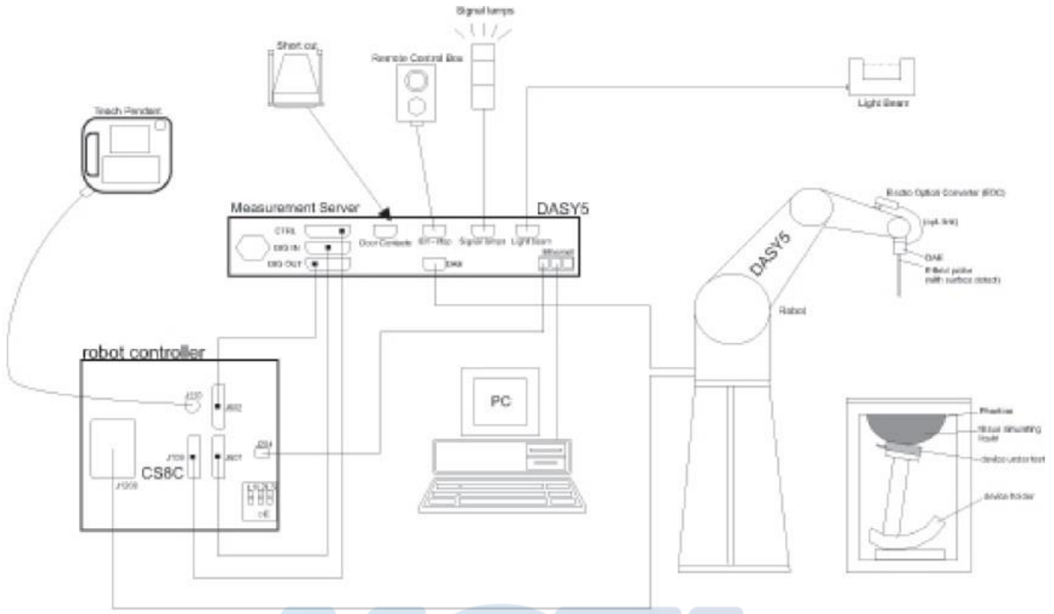
A	*b*	*c*	D	*e = f(d,k)*	*g*	*i = c x g / e*	*k*
Source of Uncertainty	Description IEEE P1528 BODY (0.3 ~ 3 GHz)	**Tolerance/ Uncertainty value** ± %	**Probability Distribution**	**Div.**	**Ci** (1 g)	**Standard uncertainty** ± %, (1 g)	**Vi or Veff**
Measurement System							
Probe calibration(k=1)	E.2.1	6.30	N	1	1	6.30	∞
Axial isotropy	E.2.2	0.50	R	1.73	0.71	0.20	∞
Hemispherical isotropy	E.2.2	2.60	R	1.73	0.71	1.06	∞
Linearity	E.2.4	0.60	R	1.73	1	0.35	∞
Boundary effect	E.2.3	1.00	R	1.73	1	0.58	∞
System detection limits	E.2.5	1.00	R	1.73	1	0.58	∞
Readout electronics	E.2.6	0.30	N	1	1	0.30	∞
Response time	E.2.7	0.80	R	1.73	1	0.46	∞
Integration time	E.2.8	2.60	R	1.73	1	1.50	∞
RF ambient conditions–noise	E.6.1	3.00	R	1.73	1	1.73	∞
RF ambient conditions–reflections	E.6.1	3.00	R	1.73	1	1.73	∞
Probe positioner mechanical tolerance	E.6.2	0.40	R	1.73	1	0.23	∞
Probe positioning with respect to phantom shell	E.6.3	2.90	R	1.73	1	1.67	∞
Extrapolation, interpolation, and integration algorithms for max. SAR evaluation	E.5	2.00	R	1.73	1	1.15	∞
Test Sample Related							
Test sample positioning	E.4.2	4.71	N	1	1	4.71	9
Device holder uncertainty	E.4.1	3.60	N	1	1	3.60	5
Output power variation—SAR drift measurement	6.6.2	5.00	R	1.73	1	2.89	∞
Phantom and Tissue Parameters							
Phantom uncertainty (shape and thickness tolerances)	E.3.1	7.50	R	1.73	1	4.33	∞
Liquid conductivity-measurement uncertainty	E.3.3	1.53	N	1	0.64	0.98	5
Liquid permittivity-measurement uncertainty	E.3.3	3.07	N	1	0.6	1.84	5
Liquid conductivity-deviation from target values	E.3.2	5.00	R	1.73	0.64	1.85	∞
Liquid permittivity-deviation from target values	E.3.2	5.00	R	1.73	0.6	1.73	∞
Combined standard uncertainty				RSS		11.29	183
Expanded uncertainty (95% CONFIDENCE INTERVAL)				K=2		22.57	

Uncertainty of SAR equipments for measurement 3 GHz to 6 GHz (Body)

SAR Measurement Uncertainty

A	b	c	D	e = f(d,k)	g	i = c x g / e	k
Source of Uncertainty	Description IEEE P1528 BODY (3 ~ 6 GHz)	Tolerance/ Uncertainty value ± %	Probability Distribution	Div.	Ci (1 g)	Standard uncertainty ± %, (1 g)	Vi or Veff
Measurement System							
Probe calibration(k=1)	E.2.1	6.30	N	1	1	6.30	∞
Axial isotropy	E.2.2	0.50	R	1.73	0.71	0.20	∞
Hemispherical isotropy	E.2.2	2.60	R	1.73	0.71	1.06	∞
Linearity	E.2.4	0.60	R	1.73	1	0.35	∞
Boundary effect	E.2.3	2.00	R	1.73	1	1.15	∞
System detection limits	E.2.5	1.00	R	1.73	1	0.58	∞
Readout electronics	E.2.6	0.30	N	1	1	0.30	∞
Response time	E.2.7	0.80	R	1.73	1	0.46	∞
Integration time	E.2.8	2.60	R	1.73	1	1.50	∞
RF ambient conditions–noise	E.6.1	3.00	R	1.73	1	1.73	∞
RF ambient conditions–reflections	E.6.1	3.00	R	1.73	1	1.73	∞
Probe positioner mechanical tolerance	E.6.2	0.80	R	1.73	1	0.46	∞
Probe positioning with respect to phantom shell	E.6.3	6.70	R	1.73	1	3.87	∞
Extrapolation, interpolation, and integration algorithms for max. SAR evaluation	E.5	4.00	R	1.73	1	2.31	∞
Test Sample Related							
Test sample positioning	E.4.2	4.63	N	1	1	4.63	9
Device holder uncertainty	E.4.1	3.60	N	1	1	3.60	5
Output power variation—SAR drift measurement	6.6.2	5.00	R	1.73	1	2.89	∞
Phantom and Tissue Parameters							
Phantom uncertainty (shape and thickness tolerances)	E.3.1	7.90	R	1.73	1	4.56	∞
Liquid conductivity-measurement uncertainty	E.3.3	1.50	N	1	0.64	0.96	5
Liquid permittivity-measurement uncertainty	E.3.3	2.23	N	1	0.6	1.34	5
Liquid conductivity-deviation from target values	E.3.2	5.00	R	1.73	0.64	1.85	∞
Liquid permittivity-deviation from target values	E.3.2	5.00	R	1.73	0.6	1.73	∞
Combined standard uncertainty				RSS		12.02	246
Expanded uncertainty (95% CONFIDENCE INTERVAL)				K=2		24.03	

9. The SAR Measurement System

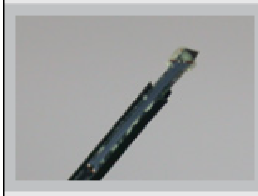


<SAR System Configuration>

- A standard high precision 6-axis robot with controller, teach pendant and software. An arm extension for accommodating the data acquisition electronics (DAE).
- An isotropic Field probe optimized and calibrated for the targeted measurement.
- Data acquisition electronics (DAE) which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.
- The Electro-optical converter (EOC) performs the conversion from optical to electrical signals for the digital communication to the DAE. To use optical surface detection, a special version of the EOC is required. The EOC signal is transmitted to the measurement server.
- The function of the measurement server is to perform the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
- The Light Beam used is for probe alignment. This improves the (absolute) accuracy of the probe positioning.
- A computer running WinXP or Win7 and the DASY5 software.
- Remote control and teach pendant as well as additional circuitry for robot safety such as warning lamps, etc.
- The phantom, the device holder and other accessories according to the targeted measurement.

9.1 Isotropic E-field Probe

ES3DV3
Isotropic E-Field Probe for Dosimetric Measurements

	Symmetrical design with triangular core Interleaved sensors Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)
Calibration	ISO/IEC 17025 calibration service available.
Frequency	10 MHz to 4 GHz; Linearity: ± 0.2 dB (30 MHz to 4 GHz)
Directivity	± 0.2 dB in TSL (rotation around probe axis) ± 0.3 dB in TSL (rotation normal to probe axis)
Dynamic Range	5 μW/g to > 100 mW/g; Linearity: ± 0.2 dB
Dimensions	Overall length: 337 mm (Tip: 20 mm) Tip diameter: 3.9 mm (Body: 12 mm) Distance from probe tip to dipole centers: 2.0 mm
Application	General dosimetry up to 4 GHz Dosimetry in strong gradient fields Compliance tests of mobile phones
Compatibility	DASY3, DASY4, DASY52 SAR and higher, EASY4/MRI

EX3DV4
Smallest Isotropic E-Field Probe for Dosimetric Measurements
(Preliminary Specifications)

	Symmetrical design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)
Calibration	ISO/IEC 17025 calibration service available.
Frequency	10 MHz to > 6 GHz Linearity: ± 0.2 dB (30 MHz to 6 GHz)
Directivity	± 0.3 dB in TSL (rotation around probe axis) ± 0.5 dB in TSL (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: 337 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); the only probe that enables compliance testing for frequencies up to 6 GHz with precision of better 30%.
Compatibility	DASY3, DASY4, DASY52 SAR and higher, EASY4/MRI

9.2 Phantom

Twin SAM	
	The shell corresponds to the specifications of the Specific Anthropomorphic Mannequin (SAM) phantom defined in IEEE 1528 and IEC 62209-1. It enables the dosimetric evaluation of left and right hand phone usage as well as body mounted usage at the flat phantom region. A cover prevents evaporation of the liquid. Reference markings on the phantom allow the complete setup of all predefined phantom positions and measurement grids by teaching three points with the robot. Twin SAM V5.0 has the same shell geometry and is manufactured from the same material as Twin SAM V4.0, but has reinforced top structure.
Material	Vinylester, glass fiber reinforced (VE-GF)
Liquid Compatibility	Compatible with all SPEAG tissue simulating liquids (incl. DGBE type)
Shell Thickness	2 ± 0.2 mm (6 ± 0.2 mm at ear point)
Dimensions (incl. Wooden Support)	Length: 1000 mm Width: 500 mm Height: adjustable feet
Filling Volume	approx. 25 liters
Wooden Support	SPEAG standard phantom table
Accessories	Mounting Device and Adaptors

ELI	
	Phantom for compliance testing of handheld and body-mounted wireless devices in the frequency range of 30 MHz to 6 GHz. ELI is fully compatible with the IEC 62209-2 standard and all known tissue simulating liquids. ELI has been optimized regarding its performance and can be integrated into our standard phantom tables. A cover prevents evaporation of the liquid. Reference markings on the phantom allow installation of the complete setup, including all predefined phantom positions and measurement grids, by teaching three points. The phantom is compatible with all SPEAG dosimetric probes and dipoles. ELI V5.0 has the same shell geometry and is manufactured from the same material as ELI4, but has reinforced top structure. ELI V6.0, released in August 2014, has the same shell geometry as ELI4 but offers increased longterm stability.
Material	Vinylester, glass fiber reinforced (VE-GF)
Liquid Compatibility	Compatible with all SPEAG tissue simulating liquids (incl. DGBE type)
Shell Thickness	2.0 ± 0.2 mm (bottom plate)
Dimensions	Major axis: 600 mm Minor axis: 400 mm
Filling Volume	approx. 30 liters
Wooden Support	SPEAG standard phantom table
Accessories	Mounting Device and Adaptors

9.3 Device Holder for Transmitters

Mounting Devices and Adaptors

Mounting Device for Hand-Held Transmitters

MD4HHTV5 - Mounting Device for Hand-Held Transmitters

In combination with the Twin SAM V5.0/V5.0c or ELI Phantoms, the Mounting Device for Hand-Held Transmitters enables rotation of the mounted transmitter device to specified spherical coordinates. At the heads, the rotation axis is at the ear opening. Transmitter devices can be easily and accurately positioned according to IEC 62209-1, IEEE 1528, FCC, or other specifications. The device holder can be locked for positioning at different phantom sections (left head, right head, flat).

Material: Polyoxymethylene (POM)

Mounting Device for Laptops

MD4LAPV5 - Mounting Device for Laptops and other Body-Worn Transmitters

In combination with the Twin SAM V5.0/V5.0c or ELI Phantoms, the Mounting Device (Body-Worn) enables testing of ransmitter devices according to IEC 62209-2 specifications. The device holder can be locked for positioning at flat phantom section.

Material: Polyoxymethylene (POM), PET-G, Foam

10. System Verification

10.1 Tissue Verification

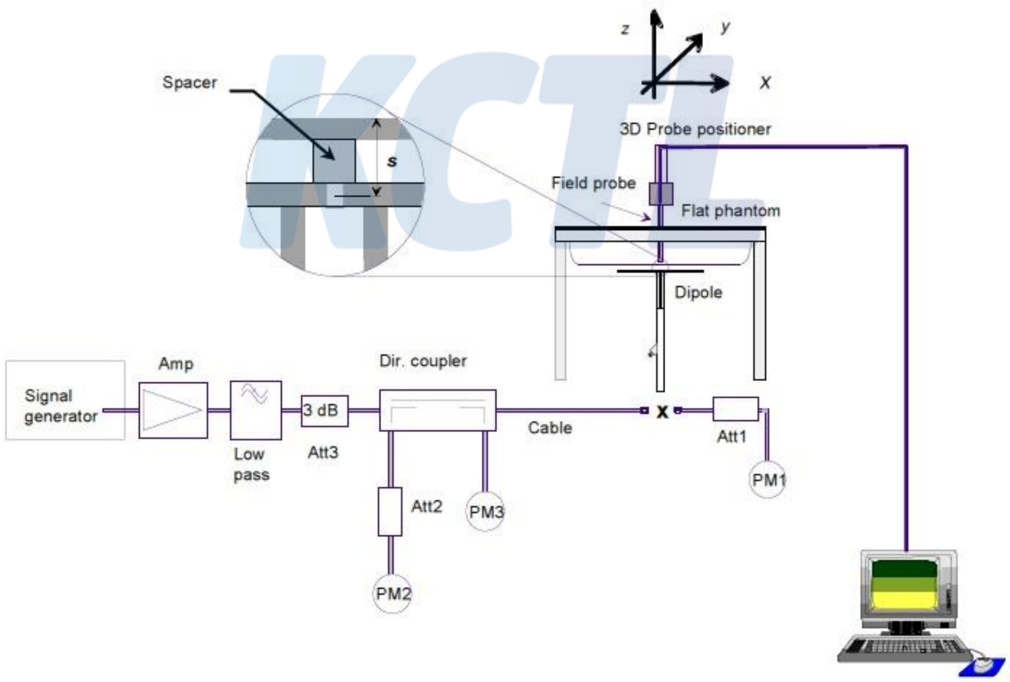
The dielectric properties for this Tissue Simulant Liquids were measured by using the SPEAG Model DAK3.5 Dielectric Probe in conjunction with Agilent E5071B Network Analyzer (300 kHz – 8 500 MHz). The Conductivity (σ) and Permittivity (ρ) are listed in Table 1. For the SAR measurement given in this report. The temperature variation of the Tissue Simulant Liquids was (22 ± 2) °C.

Freq. (MHz)	Tissue Type	Limit/Measured	Permittivity (ρ)	Conductivity (σ)	Temp (℃)
2 450	HSL	Recommended Limit	39.20 ± 5 % (37.24 ~ 41.16)	1.80 ± 5 % (1.71 ~ 1.89)	22 ± 2
		Measured, 2017-03-16	39.08	1.82	21.22
2 450	MSL	Recommended Limit	52.70 ± 5 % (50.07 ~ 55.34)	1.95 ± 5 % (1.85 ~ 2.05)	22 ± 2
		Measured, 2017-03-15	52.16	2.00	21.28
5 200	HSL	Recommended Limit	36.00 ± 5 % (34.20 ~ 37.80)	4.66 ± 5 % (4.43 ~ 4.89)	22 ± 2
		Measured, 2017-03-14	36.85	4.79	21.96
5 200	MSL	Recommended Limit	49.01 ± 5 % (46.56 ~ 51.46)	5.30 ± 5 % (5.04 ~ 5.57)	22 ± 2
		Measured, 2017-03-15	48.94	5.10	21.56
5 800	HSL	Recommended Limit	35.30 ± 5 % (33.54 ~ 37.07)	5.27 ± 5 % (5.01 ~ 5.53)	22 ± 2
		Measured, 2017-03-14	34.48	5.39	21.96
5 800	MSL	Recommended Limit	48.20 ± 5 % (45.79 ~ 50.61)	6.00 ± 5 % (5.70 ~ 6.30)	22 ± 2
		Measured, 2017-03-15	47.73	6.04	21.56

<Table 1. Measurement result of Tissue electric parameters>

10.2 Test System Verification

The microwave circuit arrangement for system verification is sketched below picture. The daily system accuracy verification occurs within the flat section of the SAM ph antom. A SAR measurement was performed to see if the measured SAR was with in ± 10% from the target SAR values.. The tests were conducted on the sameday s as the measurement of the EUT. The obtained results from the system accuracy verification are displayed in the Table 2. During the tests, the ambient temperatur e of the laboratory was in the range (22 ± 2) ℃, the relative humidity was in the range (50 ± 20)% and the liquid depth above the ear/grid reference points was ab ove 15 cm in all the cases. It is seen that the system is operating within its speci fication, as the results are within acceptable tolerance of the reference values.



Validation Kit	Dipole Ant. S/N	Frequency (MHz)	Tissue Type	Limit/Measurement (Normalized to 1 W)	
					1 g
D2450V2	895	2 450	HSL	Recommended Limit (Normalized)	52.00 ± 10 % (46.80 ~ 57.20)
				Measured, 2017-03-16	53.60
D2450V2	895	2 450	MSL	Recommended Limit (Normalized)	50.80 ± 10 % (45.72 ~ 55.88)
				Measured, 2017-03-15	51.20
D5GHzV2	1134	5 200	HSL	Recommended Limit (Normalized)	76.90 ± 10 % (69.21 ~ 84.59)
				Measured, 2017-03-14	80.40
D5GHzV2	1134	5 200	MSL	Recommended Limit (Normalized)	74.80 ± 10 % (67.32 ~ 82.28)
				Measured, 2017-03-15	76.40
D5GHzV2	1134	5 800	HSL	Recommended Limit (Normalized)	77.70 ± 10 % (69.93 ~ 85.47)
				Measured, 2017-03-14	80.90
D5GHzV2	1134	5 800	MSL	Recommended Limit (Normalized)	76.70 ± 10 % (69.03 ~ 84.37)
				Measured, 2017-03-15	75.70

<Table 2. Test System Verification Result>

10.3 Justification for Extended SAR Dipole Calibrations

Instead of the typical annual calibration recommended by measurement standards, longer calibration intervals of up to three years may be considered when it is demonstrated that the SAR target, impedance and return loss of a dipole have remain stable according to the following requirements

KDB 865664 D01v01r04 requirements

a) return loss : < - 20 dB, within 20 % of previous measurement

b) impedance : within 5Ω from previous measurement.

5 200 MHz

Dipole Antenna	Head/Body	Date of Measurement	Return Loss (dB)	△ %	Impedance (Ω)	Δ Ω
D5GHzV2 SN 1134	Head	2015. 05. 22	-20.2	3.0	47.9	0.9
		2016. 05. 13	-20.8		47.0	

Dipole Antenna	Head/Body	Date of Measurement	Return Loss (dB)	△ %	Impedance (Ω)	Δ Ω
D5GHzV2 SN 1134	Body	2015. 05. 22	-21.8	5.5	48.0	1.7
		2016. 05. 13	-20.6		49.7	

5 800 MHz

Dipole Antenna	Head/Body	Date of Measurement	Return Loss (dB)	△ %	Impedance (Ω)	Δ Ω
D5GHzV2 SN 1134	Head	2015. 05. 22	-23.3	6.9	55.3	0.3
		2016. 05. 13	-21.7		55.6	

Dipole Antenna	Head/Body	Date of Measurement	Return Loss (dB)	△ %	Impedance (Ω)	Δ Ω
D5GHzV2 SN 1134	Body	2015. 05. 22	-23.7	8.4	55.9	3.1
		2016. 05. 13	-21.7		52.8	

c) extrapolated peak SAR : within 15% of that reported in the calibration data

5 200 MHz

Dipole Antenna	Head/Body	Date of Measurement	extrapolated peak SAR (W/kg)	△ %
D5GHzV2 SN 1134	Head	2015. 05. 22	27.9	14.0
		2016. 10. 18	31.8	

Dipole Antenna	Head/Body	Date of Measurement	extrapolated peak SAR (W/kg)	△ %
D5GHzV2 SN 1134	Body	2015. 05. 22	29.5	2.7
		2016. 10. 19	30.3	

5 800 MHz

Dipole Antenna	Head/Body	Date of Measurement	extrapolated peak SAR (W/kg)	△ %
D5GHzV2 SN 1134	Head	2015. 05. 22	32.1	7.8
		2016. 10. 17	34.6	

Dipole Antenna	Head/Body	Date of Measurement	extrapolated peak SAR (W/kg)	△ %
D5GHzV2 SN 1134	Body	2015. 05. 22	35.6	11.2
		2016. 10. 20	31.6	

11. Operation Configurations

Measurements were performed at the middle channel of the operating band. All the tests were done at the maximum power level of EUT which is connected to power supply.

12. SAR Measurement Procedures

Step 1: Power Reference Measurement

The Power Reference Measurement and Power Drift Measurements are for monitoring the power drift ofthe device under test in the batch process. The Minimum distance of probe sensors to surfacedetermines the closest measurement point to phantom surface. The minimum distance of probe sensorsto surface is 2 mm. This distance cannot be smaller than the Distance of sensor calibration points toprobe tip as defined in the probe properties.

Step 2: Area Scan

The Area Scan is used as a fast scan in two dimensions to find the area of high field values, before doinga fine measurement around the hot spot. The sophisticated interpolation routines implemented in DASYsoftware can find the maximum locations even in relatively coarse grids. When an Area Scan hasmeasured all reachable points, it computes the field maximal found in the scanned area, within a rangeof the global maximum. The range (in dB) is specified in the standards for compliance testing. Forexample, a 2 dB range is required in IEEE Standard 1528 and IEC 62209 standards, whereby 3 dB is arequirement when compliance is assessed in accordance with the ARIB standard (Japan). If only oneZoom Scan follows the Area Scan, then only the absolute maximum will be taken as reference. Forcases where multiple maximums are detected, the number of Zoom Scans has to be increasedaccordingly.

Area Scan Parameters extracted from KDB 865664 D01 SAR Measument 100 MHz to 6 GHz v01r04.

	≤ 3 GHz	> 3 GHz
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface	5 ± 1 mm	½·δ·ln(2) ± 0.5 mm
Maximum probe angle from probe axis to phantom surface normal at the measurement location	30° ± 1°	20° ± 1°
Maximum area scan spatial resolution: Δx_{Area}, Δy_{Area}	≤ 2 GHz: ≤ 15 mm 2 – 3 GHz: ≤ 12 mm	3 – 4 GHz: ≤ 12 mm 4 – 6 GHz: ≤ 10 mm
	When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be ≤ the corresponding x or y dimension of the test device with at least one measurement point on the test device.	

Step 3: Zoom Scan
Zoom Scans are used to assess the peak spatial SAR values within a cubic averaging volume containing1 g and 10 g of simulated tissue. The Zoom Scan measures 5x5x7 points within a cube whose base faces are centered on the maxima found in a preceding area scanjob within the same procedure. When the measurement is done, the Zoom Scan evaluates theaveraged SAR for 1 g and 10 g and displays these values next to the job's label.

Zoom Scan Parameters extracted from KDB 865664 D01 SAR Measument 100 MHz to 6 GHz v01r04.

			≤ 3 GHz	> 3 GHz
Maximum zoom scan spatial resolution: Δx_{Zoom}, Δy_{Zoom}			≤ 2 GHz: ≤ 8 mm 2 – 3 GHz: ≤ 5 mm*	3 – 4 GHz: ≤ 5 mm* 4 – 6 GHz: ≤ 4 mm*
Maximum zoom scan spatial resolution, normal to phantom surface	uniform grid: $\Delta z_{Zoom}(n)$		≤ 5 mm	3 – 4 GHz: ≤ 4 mm 4 – 5 GHz: ≤ 3 mm 5 – 6 GHz: ≤ 2 mm
	graded grid	$\Delta z_{Zoom}(1)$: between 1st two points closest to phantom surface	≤ 4 mm	3 – 4 GHz: ≤ 3 mm 4 – 5 GHz: ≤ 2.5 mm 5 – 6 GHz: ≤ 2 mm
		$\Delta z_{Zoom}(n>1)$: between subsequent points	≤ 1.5·$\Delta z_{Zoom}(n-1)$	
Minimum zoom scan volume	x, y, z		≥ 30 mm	3 – 4 GHz: ≥ 28 mm 4 – 5 GHz: ≥ 25 mm 5 – 6 GHz: ≥ 22 mm
Note: δ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see draft standard IEEE P1528-2011 for details. * When zoom scan is required and the *reported* SAR from the *area scan based 1-g SAR estimation* procedures of KDB 447498 is ≤ 1.4 W/kg, ≤ 8 mm, ≤ 7 mm and ≤ 5 mm zoom scan resolution may be applied, respectively, for 2 GHz to 3 GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.				

Step 4: Power drift measurement
The Power Drift Measurement measures the field at the same location as the most recent powerreference measurement within the same procedure, and with the same settings. The Power DriftMeasurement gives the field difference in dB from the reading conducted within the last PowerReference Measurement. This allows a user to monitor the power drift of the device under test within abatch process. The measurement procedure is the same as Step 1.

Step 5: Z-Scan
The Z Scan measures points along a vertical straight line. The line runs along the Z-axis of a onedimensionalgrid. In order to get a reasonable extrapolation, the extrapolated distance should not belarger than the step size in Z-direction.

* Z Scan Report on Liquid Measure the height Annex C Liquid Depth photo to replace

13. Test Equipment Information

Test Platform	SPEAG DASY5 System			
Version	DASY5 : Version 52.8.8.1222 / SEMCAD : Version 14.6.10 (7331)			
Location	KCTL Inc.			
Manufacture	SPEAG			
Hardware Reference				
Equipment	Model	Serial Number	Date of Calibration	Due date of next Calibration
Shield Room	Shield Room	8F - #2	N/A	N/A
DASY5 Robot	TX90XL Speag	F12/5L7FA1/A/01	N/A	N/A
DASY5 Controller	TX90XL Speag	F12/5L7FA1/C/01	N/A	N/A
Phantom	2mm Oval Phantom ELI 5	1178	N/A	N/A
Mounting Device	Mounting Device	None	N/A	N/A
DAE	DAE4	1342	2016-07-26	2017-07-26
Probe	EX3DV4	3865	2016-08-30	2017-08-30
Signal Generator	E4438C	MY42080486	2017-01-06	2018-01-06
Dual Power Meter	E4419B	GB43312301	2016-07-12	2017-07-12
Power Sensor	8481H	3318A19377	2016-07-20	2017-07-20
Power Sensor	8481H	3318A19379	2016-07-20	2017-07-20
Attenuator	8491B 3dB	17387	2016-07-14	2017-07-14
Attenuator	8491B-6dB	MY39270294	2016-08-04	2017-08-04
Attenuator	8491B-6dB	MY39270295	2016-08-04	2017-08-04
Attenuator	8491B 10dB	29425	2016-07-14	2017-07-14
Power Amplifier	2055 BBS3Q7E9I	1005D/C0521	2016-05-18	2017-05-18
Power Amplifier	5190FE	1012	2016-07-12	2017-07-12
Dual Directional Coupler	772D	2839A00719	2016-07-12	2017-07-12
Low Pass Filter	LA-30N	36543	2016-07-14	2017-07-14
Low Pass Filter	LA-60N	40058	2016-07-12	2017-07-12
Dipole Validation Kits	D2450V2	895	2016-07-25	2018-07-25
Dipole Validation Kits	D5GHzV2	1134	2015-05-22	2017-05-22
Network Analyzer	E5071B	MY42403524	2017-01-06	2018-01-06
Dielectric Assessment kit	DAK-3.5	1078	2016-08-25	2017-08-25
HumidityTemp.Data Recorder	MHB-382SD	73871	2016-07-15	2017-07-15
Usb Rf Power Sensor	RPR3006W	13I00030SNO73	2016-08.29	2017-08.29

14. RF Average Conducted Output Power

14.1 Average Conducted Output Power

14.1.1 WLAN 2.4 GHz

Ant.1 (SISO)

Mode	Data Rate	Conducted Powers (dBm)		
		Low	Mid.	High
802.11b	1 Mbps	19.22	19.43	19.28
802.11g	6 Mbps	14.88	18.74	14.92
802.11n(HT-20)	MCS0	14.75	18.66	14.74
802.11n(HT-40)	MCS0	13.09	16.33	13.21

Ant.2 (SISO)

Mode	Data Rate	Conducted Powers (dBm)		
		Low	Mid.	High
802.11b	1 Mbps	19.17	19.46	19.33
802.11g	6 Mbps	15.20	18.84	15.40
802.11n(HT-20)	MCS0	15.00	18.66	15.42
802.11n(HT-40)	MCS0	12.87	16.40	12.91

Ant.3 (SISO)

Mode	Data Rate	Conducted Powers (dBm)		
		Low	Mid.	High
802.11b	1 Mbps	19.21	19.55	19.12
802.11g	6 Mbps	15.27	18.84	14.76
802.11n(HT-20)	MCS0	15.21	18.83	14.72
802.11n(HT-40)	MCS0	13.20	16.09	13.18

Ant.1 + Ant.2 (MIMO)

Mode	Data Rate	Conducted Powers (dBm)		
		Low	Mid.	High
802.11n(HT-20)	MCS8	15.69	18.37	15.61
802.11n(HT-40)	MCS8	13.47	16.04	13.50

Ant.1 + Ant.2 + Ant.3 (MIMO)

Mode	Data Rate	Conducted Powers (dBm)		
		Low	Mid.	High
802.11n(HT-20)	MCS16	16.33	18.84	16.22
802.11n(HT-40)	MCS16	14.11	16.22	14.17

14.1.2 WLAN 5 GHz

Ant.1 (SISO)

Mode	Conducted Powers (dBm)					
	5.2G			5.8G		
	Low	Mid.	High	Low	Mid.	High
802.11a_6 Mbps	17.74	17.82	17.75	19.24	19.36	19.27
802.11n(HT-20)_MCS0	17.34	17.25	17.26	18.93	18.92	18.77
802.11n(HT-40)_MCS0	13.63	-	14.18	18.68	-	19.00
802.11ac(VHT-20)_VHT0	17.24	17.29	17.26	19.00	18.83	18.85
802.11ac(VHT-40)_VHT0	13.63	-	14.13	18.76	-	18.72
802.11ac(VHT-80)_VHT0	12.05	-	-	18.92	-	-

Ant.2 (SISO)

Mode	Conducted Powers (dBm)					
	5.2G			5.8G		
	Low	Mid.	High	Low	Mid.	High
802.11a_6 Mbps	17.64	17.61	17.60	19.21	19.25	19.18
802.11n(HT-20)_MCS0	17.14	15.75	16.65	18.86	18.88	18.75
802.11n(HT-40)_MCS0	13.28	-	13.60	18.88	-	18.96
802.11ac(VHT-20)_VHT0	17.19	15.71	16.20	18.83	19.08	18.93
802.11ac(VHT-40)_VHT0	13.23	-	13.55	18.63	-	18.88
802.11ac(VHT-80)_VHT0	12.02	-	-	18.85	-	-

Ant.3 (SISO)

Mode	Conducted Powers (dBm)					
	5.2G			5.8G		
	Low	Mid.	High	Low	Mid.	High
802.11a_6 Mbps	17.14	17.62	17.60	19.32	19.19	19.30
802.11n(HT-20)_MCS0	16.51	17.04	17.15	18.73	18.78	18.60
802.11n(HT-40)_MCS0	13.45	-	13.82	18.80	-	18.96
802.11ac(VHT-20)_VHT0	16.43	16.82	16.92	18.73	18.83	18.74
802.11ac(VHT-40)_VHT0	13.44	-	13.84	18.78	-	18.94
802.11ac(VHT-80)_VHT0	12.09	-	-	18.97	-	-

Ant.1 + Ant.2 (MIMO)

Mode	Conducted Powers (dBm)					
	5.2G			5.8G		
	Low	Mid.	High	Low	Mid.	High
802.11n(HT-20)_MCS8	16.15	16.65	16.73	18.51	18.52	18.59
802.11n(HT-40)_MCS8	13.42	-	13.36	18.56	-	18.56
802.11ac(VHT-20)_VHT8	16.41	16.89	16.96	18.53	18.55	18.53
802.11ac(VHT-40)_VHT8	13.49	-	13.88	18.72	-	18.67
802.11ac(VHT-80)_VHT8	11.92	-	-	18.60	-	-

Ant.1 + Ant.2 + Ant.3 (MIMO)

Mode	Conducted Powers (dBm)					
	5.2G			5.8G		
	Low	Mid.	High	Low	Mid.	High
802.11n(HT-20)_MCS16	16.15	16.79	16.69	18.55	18.65	18.61
802.11n(HT-40)_MCS16	13.45	-	14.03	18.92	-	18.74
802.11ac(VHT-20)_VHT16	16.04	16.45	16.66	18.53	18.57	18.52
802.11ac(VHT-40)_VHT16	13.74	-	13.92	18.82	-	18.62
802.11ac(VHT-80)_VHT16	12.03	-	-	18.67	-	-

14.2 Max. tune up power

14.2.1 WLAN 2.4 GHz Ant.1 (SISO)

Mode		Target Power	Tolerance	Max. Allowed Power
802.11b	Low	19.00 dBm	± 1.00 dB	20.00 dBm
	Middle	19.00 dBm	± 1.00 dB	20.00 dBm
	High	19.00 dBm	± 1.00 dB	20.00 dBm
802.11g	Low	15.00 dBm	± 1.00 dB	16.00 dBm
	Middle	19.00 dBm	± 1.00 dB	20.00 dBm
	High	15.00 dBm	± 1.00 dB	16.00 dBm
802.11n(HT-20)	Low	15.00 dBm	± 1.00 dB	16.00 dBm
	Middle	19.00 dBm	± 1.00 dB	20.00 dBm
	High	15.00 dBm	± 1.00 dB	16.00 dBm
802.11n(HT-40)	Low	13.00 dBm	± 1.00 dB	14.00 dBm
	Middle	16.00 dBm	± 1.00 dB	17.00 dBm
	High	13.00 dBm	± 1.00 dB	14.00 dBm

14.2.2 WLAN 2.4 GHz Ant.2 (SISO)

Mode		Target Power	Tolerance	Max. Allowed Power
802.11b	Low	19.00 dBm	± 1.00 dB	20.00 dBm
	Middle	19.00 dBm	± 1.00 dB	20.00 dBm
	High	19.00 dBm	± 1.00 dB	20.00 dBm
802.11g	Low	15.00 dBm	± 1.00 dB	16.00 dBm
	Middle	19.00 dBm	± 1.00 dB	20.00 dBm
	High	15.00 dBm	± 1.00 dB	16.00 dBm
802.11n(HT-20)	Low	15.00 dBm	± 1.00 dB	16.00 dBm
	Middle	19.00 dBm	± 1.00 dB	20.00 dBm
	High	15.00 dBm	± 1.00 dB	16.00 dBm
802.11n(HT-40)	Low	13.00 dBm	± 1.00 dB	14.00 dBm
	Middle	16.00 dBm	± 1.00 dB	17.00 dBm
	High	13.00 dBm	± 1.00 dB	14.00 dBm

14.2.3 WLAN 2.4 GHz Ant.3 (SISO)

Mode		Target Power	Tolerance	Max. Allowed Power
802.11b	Low	19.0 dBm	± 1.0 dB	20.0 dBm
	Middle	19.0 dBm	± 1.0 dB	20.0 dBm
	High	19.0 dBm	± 1.0 dB	20.0 dBm
802.11g	Low	15.0 dBm	± 1.0 dB	16.0 dBm
	Middle	19.0 dBm	± 1.0 dB	20.0 dBm
	High	15.0 dBm	± 1.0 dB	16.0 dBm
802.11n(HT-20)	Low	15.0 dBm	± 1.0 dB	16.0 dBm
	Middle	19.0 dBm	± 1.0 dB	20.0 dBm
	High	15.0 dBm	± 1.0 dB	16.0 dBm
802.11n(HT-40)	Low	13.0 dBm	± 1.0 dB	14.0 dBm
	Middle	16.0 dBm	± 1.0 dB	17.0 dBm
	High	13.0 dBm	± 1.0 dB	14.0 dBm

14.2.4 WLAN 2.4 GHz (MIMO)

Mode		Target Power	Tolerance	Max. Allowed Power
802.11n(HT-20) Ant.1 + 2	Low	16.0 dBm	± 1.0 dB	17.0 dBm
	Middle	19.0 dBm	± 1.0 dB	20.0 dBm
	High	16.0 dBm	± 1.0 dB	17.0 dBm
802.11n(HT-40) Ant.1 + 2	Low	14.0 dBm	± 1.0 dB	15.0 dBm
	Middle	16.0 dBm	± 1.0 dB	17.0 dBm
	High	14.0 dBm	± 1.0 dB	15.0 dBm
802.11n(HT-20) Ant.1 + 2 + 3	Low	16.0 dBm	± 1.0 dB	17.0 dBm
	Middle	19.0 dBm	± 1.0 dB	20.0 dBm
	High	16.0 dBm	± 1.0 dB	17.0 dBm
802.11n(HT-40) Ant.1 + 2 + 3	Low	14.0 dBm	± 1.0 dB	15.0 dBm
	Middle	16.0 dBm	± 1.0 dB	17.0 dBm
	High	14.0 dBm	± 1.0 dB	15.0 dBm

14.2.5 WLAN 5.2 GHz Ant. 1 (SISO)

Mode		Target Power	Tolerance	Max. Allowed Power
802.11a	Low	17.0 dBm	± 1.0 dB	18.0 dBm
	Middle	17.0 dBm	± 1.0 dB	18.0 dBm
	High	17.0 dBm	± 1.0 dB	18.0 dBm
802.11n(HT-20)	Low	17.0 dBm	± 1.0 dB	18.0 dBm
	Middle	17.0 dBm	± 1.0 dB	18.0 dBm
	High	17.0 dBm	± 1.0 dB	18.0 dBm
802.11n(HT-40)	Low	14.0 dBm	± 1.0 dB	15.0 dBm
	High	14.0 dBm	± 1.0 dB	15.0 dBm
802.11ac(VHT-20)	Low	17.0 dBm	± 1.0 dB	18.0 dBm
	Middle	17.0 dBm	± 1.0 dB	18.0 dBm
	High	17.0 dBm	± 1.0 dB	18.0 dBm
802.11ac(VHT-40)	Low	14.0 dBm	± 1.0 dB	15.0 dBm
	High	14.0 dBm	± 1.0 dB	15.0 dBm
802.11ac(VHT-80)	Low	12.0 dBm	± 1.0 dB	13.0 dBm

14.2.6 WLAN 5.2 GHz Ant. 2 (SISO)

Mode		Target Power	Tolerance	Max. Allowed Power
802.11a	Low	17.0 dBm	± 1.0 dB	18.0 dBm
	Middle	17.0 dBm	± 1.0 dB	18.0 dBm
	High	17.0 dBm	± 1.0 dB	18.0 dBm
802.11n(HT-20)	Low	17.0 dBm	± 1.0 dB	18.0 dBm
	Middle	16.0 dBm	± 1.0 dB	17.0 dBm
	High	17.0 dBm	± 1.0 dB	18.0 dBm
802.11n(HT-40)	Low	14.0 dBm	± 1.0 dB	15.0 dBm
	High	14.0 dBm	± 1.0 dB	15.0 dBm
802.11ac(VHT-20)	Low	17.0 dBm	± 1.0 dB	18.0 dBm
	Middle	16.0 dBm	± 1.0 dB	17.0 dBm
	High	17.0 dBm	± 1.0 dB	18.0 dBm
802.11ac(VHT-40)	Low	14.0 dBm	± 1.0 dB	15.0 dBm
	High	14.0 dBm	± 1.0 dB	15.0 dBm
802.11ac(VHT-80)	Low	12.0 dBm	± 1.0 dB	13.0 dBm

14.2.7 WLAN 5.2 GHz Ant. 3 (SISO)

Mode		Target Power	Tolerance	Max. Allowed Power
802.11a	Low	17.0 dBm	± 1.0 dB	18.0 dBm
	Middle	17.0 dBm	± 1.0 dB	18.0 dBm
	High	17.0 dBm	± 1.0 dB	18.0 dBm
802.11n(HT-20)	Low	17.0 dBm	± 1.0 dB	18.0 dBm
	Middle	17.0 dBm	± 1.0 dB	18.0 dBm
	High	17.0 dBm	± 1.0 dB	18.0 dBm
802.11n(HT-40)	Low	14.0 dBm	± 1.0 dB	15.0 dBm
	High	14.0 dBm	± 1.0 dB	15.0 dBm
802.11ac(VHT-20)	Low	17.0 dBm	± 1.0 dB	18.0 dBm
	Middle	17.0 dBm	± 1.0 dB	18.0 dBm
	High	17.0 dBm	± 1.0 dB	18.0 dBm
802.11ac(VHT-40)	Low	14.0 dBm	± 1.0 dB	15.0 dBm
	High	14.0 dBm	± 1.0 dB	15.0 dBm
802.11ac(VHT-80)	Low	12.0 dBm	± 1.0 dB	13.0 dBm

14.2.8 WLAN 5.8 GHz Ant.1 (SISO)

Mode		Target Power	Tolerance	Max. Allowed Power
802.11a	Low	19.0 dBm	± 1.0 dB	20.0 dBm
	Middle	19.0 dBm	± 1.0 dB	20.0 dBm
	High	19.0 dBm	± 1.0 dB	20.0 dBm
802.11n(HT-20)	Low	19.0 dBm	± 1.0 dB	20.0 dBm
	Middle	19.0 dBm	± 1.0 dB	20.0 dBm
	High	19.0 dBm	± 1.0 dB	20.0 dBm
802.11n(HT-40)	Low	19.0 dBm	± 1.0 dB	20.0 dBm
	High	19.0 dBm	± 1.0 dB	20.0 dBm
802.11ac(VHT-20)	Low	19.0 dBm	± 1.0 dB	20.0 dBm
	Middle	19.0 dBm	± 1.0 dB	20.0 dBm
	High	19.0 dBm	± 1.0 dB	20.0 dBm
802.11ac(VHT-40)	Low	19.0 dBm	± 1.0 dB	20.0 dBm
	High	19.0 dBm	± 1.0 dB	20.0 dBm
802.11ac(VHT-80)	Low	19.0 dBm	± 1.0 dB	20.0 dBm

14.2.9 WLAN 5.8 GHz Ant.2 (SISO)

Mode		Target Power	Tolerance	Max. Allowed Power
802.11a	Low	19.0 dBm	± 1.0 dB	20.0 dBm
	Middle	19.0 dBm	± 1.0 dB	20.0 dBm
	High	19.0 dBm	± 1.0 dB	20.0 dBm
802.11n(HT-20)	Low	19.0 dBm	± 1.0 dB	20.0 dBm
	Middle	19.0 dBm	± 1.0 dB	20.0 dBm
	High	19.0 dBm	± 1.0 dB	20.0 dBm
802.11n(HT-40)	Low	19.0 dBm	± 1.0 dB	20.0 dBm
	High	19.0 dBm	± 1.0 dB	20.0 dBm
802.11ac(VHT-20)	Low	19.0 dBm	± 1.0 dB	20.0 dBm
	Middle	19.0 dBm	± 1.0 dB	20.0 dBm
	High	19.0 dBm	± 1.0 dB	20.0 dBm
802.11ac(VHT-40)	Low	19.0 dBm	± 1.0 dB	20.0 dBm
	High	19.0 dBm	± 1.0 dB	20.0 dBm
802.11ac(VHT-80)	Low	19.0 dBm	± 1.0 dB	20.0 dBm

14.2.10 WLAN 5.8 GHz Ant.3 (SISO)

Mode		Target Power	Tolerance	Max. Allowed Power
802.11a	Low	19.0 dBm	± 1.0 dB	20.0 dBm
	Middle	19.0 dBm	± 1.0 dB	20.0 dBm
	High	19.0 dBm	± 1.0 dB	20.0 dBm
802.11n(HT-20)	Low	19.0 dBm	± 1.0 dB	20.0 dBm
	Middle	19.0 dBm	± 1.0 dB	20.0 dBm
	High	19.0 dBm	± 1.0 dB	20.0 dBm
802.11n(HT-40)	Low	19.0 dBm	± 1.0 dB	20.0 dBm
	High	19.0 dBm	± 1.0 dB	20.0 dBm
802.11ac(VHT-20)	Low	19.0 dBm	± 1.0 dB	20.0 dBm
	Middle	19.0 dBm	± 1.0 dB	20.0 dBm
	High	19.0 dBm	± 1.0 dB	20.0 dBm
802.11ac(VHT-40)	Low	19.0 dBm	± 1.0 dB	20.0 dBm
	High	19.0 dBm	± 1.0 dB	20.0 dBm
802.11ac(VHT-80)	Low	19.0 dBm	± 1.0 dB	20.0 dBm

14.2.11 WLAN 5.2 GHz (MIMO)

Mode		Target Power	Tolerance	Max. Allowed Power
802.11n(HT-20) Ant.1 + 2	Low	19.0 dBm	± 1.0 dB	20.0 dBm
	Middle	19.0 dBm	± 1.0 dB	20.0 dBm
	High	19.0 dBm	± 1.0 dB	20.0 dBm
802.11n(HT-40) Ant.1 + 2	Low	19.0 dBm	± 1.0 dB	20.0 dBm
	High	19.0 dBm	± 1.0 dB	20.0 dBm
802.11ac(VHT-20) Ant.1 + 2	Low	19.0 dBm	± 1.0 dB	20.0 dBm
	Middle	19.0 dBm	± 1.0 dB	20.0 dBm
	High	19.0 dBm	± 1.0 dB	20.0 dBm
802.11ac(VHT-40) Ant.1 + 2	Low	19.0 dBm	± 1.0 dB	20.0 dBm
	High	19.0 dBm	± 1.0 dB	20.0 dBm
802.11ac(VHT-80) Ant.1 + 2	Low	19.0 dBm	± 1.0 dB	20.0 dBm
802.11n(HT-20) Ant.1 + 2 + 3	Low	19.0 dBm	± 1.0 dB	20.0 dBm
	Middle	19.0 dBm	± 1.0 dB	20.0 dBm
	High	19.0 dBm	± 1.0 dB	20.0 dBm
802.11n(HT-40) Ant.1 + 2 + 3	Low	19.0 dBm	± 1.0 dB	20.0 dBm
	High	19.0 dBm	± 1.0 dB	20.0 dBm
802.11ac(VHT-20) Ant.1 + 2 + 3	Low	19.0 dBm	± 1.0 dB	20.0 dBm
	Middle	19.0 dBm	± 1.0 dB	20.0 dBm
	High	19.0 dBm	± 1.0 dB	20.0 dBm
802.11ac(VHT-40) Ant.1 + 2 + 3	Low	19.0 dBm	± 1.0 dB	20.0 dBm
	High	19.0 dBm	± 1.0 dB	20.0 dBm
802.11ac(VHT-80) Ant.1 + 2 + 3	Low	19.0 dBm	± 1.00 dB	20.0 dBm

14.2.12 WLAN 5.8 GHz (MIMO)

Mode		Target Power	Tolerance	Max. Allowed Power
802.11n(HT-20) Ant.1 + 2	Low	19.0 dBm	± 1.0 dB	20.0 dBm
	Middle	19.0 dBm	± 1.0 dB	20.0 dBm
	High	19.0 dBm	± 1.0 dB	20.0 dBm
802.11n(HT-40) Ant.1 + 2	Low	19.0 dBm	± 1.0 dB	20.0 dBm
	High	19.0 dBm	± 1.0 dB	20.0 dBm
802.11ac(VHT-20) Ant.1 + 2	Low	19.0 dBm	± 1.0 dB	20.0 dBm
	Middle	19.0 dBm	± 1.0 dB	20.0 dBm
	High	19.0 dBm	± 1.0 dB	20.0 dBm
802.11ac(VHT-40) Ant.1 + 2	Low	19.0 dBm	± 1.0 dB	20.0 dBm
	High	19.0 dBm	± 1.0 dB	20.0 dBm
802.11ac(VHT-80) Ant.1 + 2	Low	19.0 dBm	± 1.0 dB	20.0 dBm
802.11n(HT-20) Ant.1 + 2 + 3	Low	19.0 dBm	± 1.0 dB	20.0 dBm
	Middle	19.0 dBm	± 1.0 dB	20.0 dBm
	High	19.0 dBm	± 1.0 dB	20.0 dBm
802.11n(HT-40) Ant.1 + 2 + 3	Low	19.0 dBm	± 1.0 dB	20.0 dBm
	High	19.0 dBm	± 1.0 dB	20.0 dBm
802.11ac(VHT-20) Ant.1 + 2 + 3	Low	19.0 dBm	± 1.0 dB	20.0 dBm
	Middle	19.0 dBm	± 1.0 dB	20.0 dBm
	High	19.0 dBm	± 1.0 dB	20.0 dBm
802.11ac(VHT-40) Ant.1 + 2 + 3	Low	19.0 dBm	± 1.0 dB	20.0 dBm
	High	19.0 dBm	± 1.0 dB	20.0 dBm
802.11ac(VHT-80) Ant.1 + 2 + 3	Low	19.0 dBm	± 1.0 dB	20.00 dBm

15. SAR Test Results

15.1 WLAN 2.4 GHz Head SAR Test Results

Mode	Frequency (MHz)	Average Power (dBm)	Max. tune up power (dBm)	EUT Position	Distance (mm)	Measured 1 g SAR (W/kg)	Duty Cycle Compensate Factor	Scaling Factor	Scaled 1 g SAR (W/kg)	Ant.#
802.11b	2 437	19.43	20.00	Front	0	0.293	1.01	1.140	**0.337**	Ant.1
	2 437	19.46	20.00	Front	0	0.091	1.01	1.132	0.104	Ant.2
	2 437	19.55	20.00	Front	0	0.046	1.01	1.109	0.052	Ant.3

<Note>

* The front with touch configuration was only tested since only the front is touched to human body in normal operation condition of this device.
* SAR values were scaled to the maximum allowed power to determine compliance per KDB Publication 447498 D01v06.
* For WLAN 2.4 GHz, the highest measured maximum output power channel for DSSS was selected for SAR measurement. When the reported SAR is <= 0.8 W/kg, no further SAR testing is required. Otherwise, SAR is evaluated at the next highest measured output power channel. When any reported SAR is > 1.2 W/kg, SAR is required for the third channel. For OFDM modes (802.11g/n), SAR is not required when the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and it is <= 1.2 W/kg per KDB Publication 248227 D01v02r02.

15.2 WLAN 2.4 GHz Body SAR Test Results

Mode	Frequency (MHz)	Average Power (dBm)	Max. tune up power (dBm)	EUT Position	Distance (mm)	Measured 1 g SAR (W/kg)	Duty Cycle Compensate Factor	Scaling Factor	Scaled 1 g SAR (W/kg)	Ant.#
802.11b	2 437	19.43	20.00	Front	0	0.238	1.01	1.140	**0.274**	Ant.1
	2 437	19.46	20.00	Front	0	0.086	1.01	1.132	0.098	Ant.2
	2 437	19.55	20.00	Front	0	0.047	1.01	1.109	0.053	Ant.3

<Note>

* The front with touch configuration was only tested since only the front is touched to human body in normal operation condition of this device.
* SAR values were scaled to the maximum allowed power to determine compliance per KDB Publication 447498 D01v06.
* For WLAN 2.4 GHz, the highest measured maximum output power channel for DSSS was selected for SAR measurement. When the reported SAR is <= 0.8 W/kg, no further SAR testing is required. Otherwise, SAR is evaluated at the next highest measured output power channel. When any reported SAR is > 1.2 W/kg, SAR is required for the third channel. For OFDM modes (802.11g/n), SAR is not required when the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and it is <= 1.2 W/kg per KDB Publication 248227 D01v02r02.

15.3 WLAN 5.2 GHz Head SAR Test Results

Mode	Frequency (MHz)	Average Power (dBm)	Max. tune up power (dBm)	EUT Position	Distance (mm)	Measured 1 g SAR (W/kg)	Duty Cycle Compensate Factor	Scaling Factor	Scaled 1 g SAR (W/kg)	Ant.#
802.11a	5 200	17.82	18.00	Front	0	0.338	1.04	1.042	**0.366**	Ant.1
	5 200	17.61	18.00	Front	0	0.256	1.04	1.094	0.291	Ant.2
	5 200	17.62	18.00	Front	0	0.272	1.04	1.091	0.309	Ant.3

<Note>

* The front with touch configuration was only tested since only the front is touched to human body in normal operation condition of this device.
* SAR values were scaled to the maximum allowed power to determine compliance per KDB Publication 447498 D01v06.
* For WLAN 2.4 GHz, the highest measured maximum output power channel for DSSS was selected for SAR measurement. When the reported SAR is <= 0.8 W/kg, no further SAR testing is required. Otherwise, SAR is evaluated at the next highest measured output power channel. When any reported SAR is > 1.2 W/kg, SAR is required for the third channel. For OFDM modes (802.11g/n), SAR is not required when the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and it is <= 1.2 W/kg per KDB Publication 248227 D01v02r02.

15.4 WLAN 5.2 GHz Body SAR Test Results

Mode	Frequency (MHz)	Average Power (dBm)	Max. tune up power (dBm)	EUT Position	Distance (mm)	Measured 1 g SAR (W/kg)	Duty Cycle Compensate Factor	Scaling Factor	Scaled 1 g SAR (W/kg)	Ant.#
802.11a	5 200	17.82	18.00	Front	0	0.200	1.04	1.042	0.217	Ant.1
	5 200	17.61	18.00	Front	0	0.192	1.04	1.094	0.218	Ant.2
	5 200	17.62	18.00	Front	0	0.197	1.04	1.091	**0.224**	Ant.3

<Note>

* The front with touch configuration was only tested since only the front is touched to human body in normal operation condition of this device.
* SAR values were scaled to the maximum allowed power to determine compliance per KDB Publication 447498 D01v06.
* For WLAN 2.4 GHz, the highest measured maximum output power channel for DSSS was selected for SAR measurement. When the reported SAR is <= 0.8 W/kg, no further SAR testing is required. Otherwise, SAR is evaluated at the next highest measured output power channel. When any reported SAR is > 1.2 W/kg, SAR is required for the third channel. For OFDM modes (802.11g/n), SAR is not required when the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and it is <= 1.2 W/kg per KDB Publication 248227 D01v02r02.

15.5 WLAN 5.8 GHz Head SAR Test Results

Mode	Frequency (MHz)	Average Power (dBm)	Max. tune up power (dBm)	EUT Position	Distance (mm)	Measured 1 g SAR (W/kg)	Duty Cycle Compensate Factor	Scaling Factor	Scaled 1 g SAR (W/kg)	Ant.#
802.11a	5 785	19.36	20.00	Front	0	0.375	1.04	1.159	**0.452**	Ant.1
	5 785	19.25	20.00	Front	0	0.176	1.04	1.189	0.218	Ant.2
	5 785	19.19	20.00	Front	0	0.067	1.04	1.205	0.084	Ant.3

<Note>

* The front with touch configuration was only tested since only the front is touched to human body in normal operation condition of this device.
* SAR values were scaled to the maximum allowed power to determine compliance per KDB Publication 447498 D01v06.
* For WLAN 2.4 GHz, the highest measured maximum output power channel for DSSS was selected for SAR measurement. When the reported SAR is <= 0.8 W/kg, no further SAR testing is required. Otherwise, SAR is evaluated at the next highest measured output power channel. When any reported SAR is > 1.2 W/kg, SAR is required for the third channel. For OFDM modes (802.11g/n), SAR is not required when the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and it is <= 1.2 W/kg per KDB Publication 248227 D01v02r02.

15.6 WLAN 5.8 GHz Body SAR Test Results

Mode	Frequency (MHz)	Average Power (dBm)	Max. tune up power (dBm)	EUT Position	Distance (mm)	Measured 1 g SAR (W/kg)	Duty Cycle Compensate Factor	Scaling Factor	Scaled 1 g SAR (W/kg)	Ant.#
802.11a	5 785	19.36	20.00	Front	0	0.279	1.04	1.159	**0.336**	Ant.1
	5 785	19.25	20.00	Front	0	0.134	1.04	1.189	0.166	Ant.2
	5 785	19.19	20.00	Front	0	0.053	1.04	1.205	0.066	Ant.3

<Note>

* The front with touch configuration was only tested since only the front is touched to human body in normal operation condition of this device.

* SAR values were scaled to the maximum allowed power to determine compliance per KDB Publication 447498 D01v06.

* For WLAN 2.4 GHz, the highest measured maximum output power channel for DSSS was selected for SAR measurement. When the reported SAR is <= 0.8 W/kg, no further SAR testing is required. Otherwise, SAR is evaluated at the next highest measured output power channel. When any reported SAR is > 1.2 W/kg, SAR is required for the third channel. For OFDM modes (802.11g/n), SAR is not required when the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and it is <= 1.2 W/kg per KDB Publication 248227 D01v02r02.

16. Test System Verification Results

Head 2 450 MHz

Procedure Name: d=10 mm, Pin=250 mW, dist=2.0mm (EX-Probe)

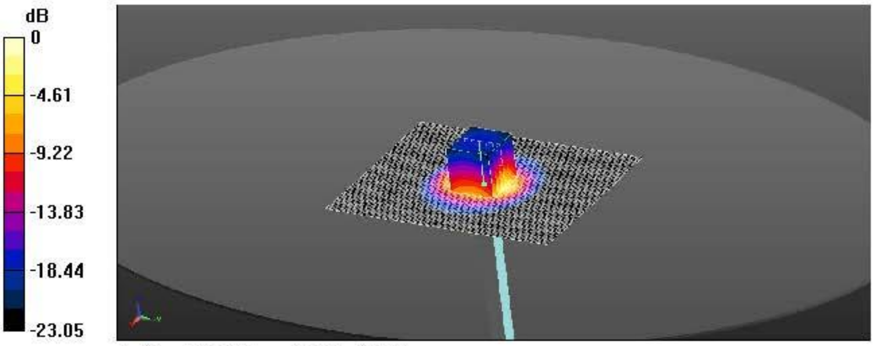
Frequency: 2450 MHz; Duty Cycle: 1:1
Medium parameters used: f = 2450 MHz; σ = 1.82 S/m; ε_r = 39.08; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3865; ConvF(7.81, 7.81, 7.81); Calibrated: 2016-08-30;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1342; Calibrated: 2016-07-26
- Phantom: ELI v5.0 sn1178; Type: QDOVA002AA; Serial: TP:1178
- Measurement SW: DASY52, Version 52.8 (8);

System Performance Check (without Area Scan)/d=10 mm, Pin=250 mW, dist=2.0mm (EX-Probe)/Area Scan (101x131x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 21.4 W/kg

System Performance Check (without Area Scan)/d=10 mm, Pin=250 mW, dist=2.0mm (EX-Probe)/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 108.1 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 28.3 W/kg
SAR(1 g) = 13.4 W/kg; SAR(10 g) = 6.17 W/kg
Maximum value of SAR (measured) = 20.6 W/kg



0 dB = 20.6 W/kg = 13.14 dBW/kg

Body 2450 MHz

Procedure Name: d=10 mm, Pin=250 mW, dist=2.0mm (EX-Probe)

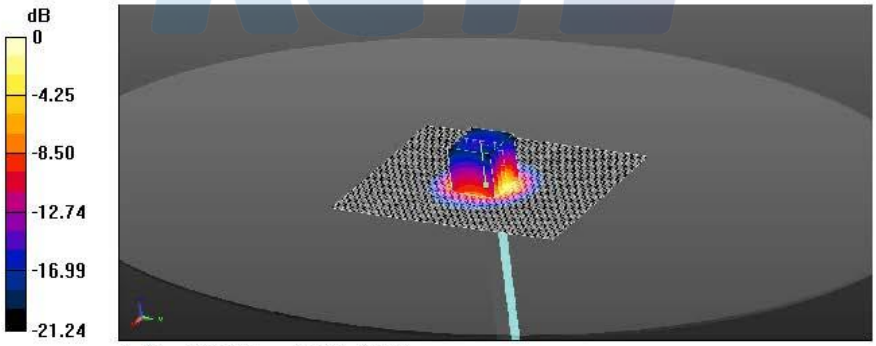
Frequency: 2450 MHz; Duty Cycle: 1:1
Medium parameters used: f = 2450 MHz; σ = 2.001 S/m; ε_r = 52.158; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3865; ConvF(7.86, 7.86, 7.86); Calibrated: 2016-08-30;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1342; Calibrated: 2016-07-26
- Phantom: ELI v5.0 sn1178; Type: QDOVA002AA; Serial: TP:1178
- Measurement SW: DASY52, Version 52.8 (8);

System Performance Check (without Area Scan)/d=10 mm, Pin=250 mW, dist=2.0mm (EX-Probe)/Area Scan (101x131x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 19.8 W/kg

System Performance Check (without Area Scan)/d=10 mm, Pin=250 mW, dist=2.0mm (EX-Probe)/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 97.02 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 25.9 W/kg
SAR(1 g) = 12.8 W/kg; SAR(10 g) = 6.01 W/kg
Maximum value of SAR (measured) = 19.5 W/kg



0 dB = 19.5 W/kg = 12.90 dBW/kg

Head 5 200 MHz

Procedure Name: d=10mm, Pin=100mW, f=5200MHz

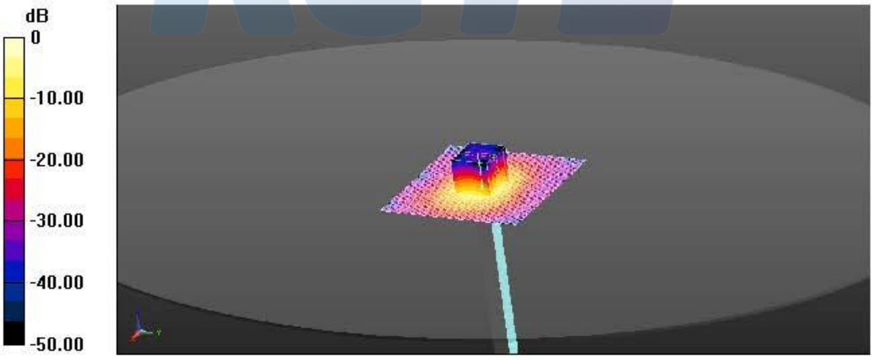
Frequency: 5200 MHz; Duty Cycle: 1:1
Medium parameters used: f = 5200 MHz; σ = 4.791 S/m; ε_r = 36.851; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3865; ConvF(5.06, 5.06, 5.06); Calibrated: 2016-08-30;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1342; Calibrated: 2016-07-26
- Phantom: ELI v5.0 sn1178; Type: QDOVA002AA; Serial: TP:1178
- Measurement SW: DASY52, Version 52.8 (8);

Configuration/d=10mm, Pin=100mW, f=5200MHz/Area Scan (91x91x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 15.5 W/kg

Configuration/d=10mm, Pin=100mW, f=5200MHz/Zoom Scan (7x7x12)/Cube 0:
Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 60.99 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 36.6 W/kg
SAR(1 g) = 8.04 W/kg; SAR(10 g) = 2.33 W/kg
Maximum value of SAR (measured) = 16.8 W/kg



0 dB = 16.8 W/kg = 12.25 dBW/kg

Body 5 200 MHz

Procedure Name: d=10mm, Pin=100mW, f=5200MHz

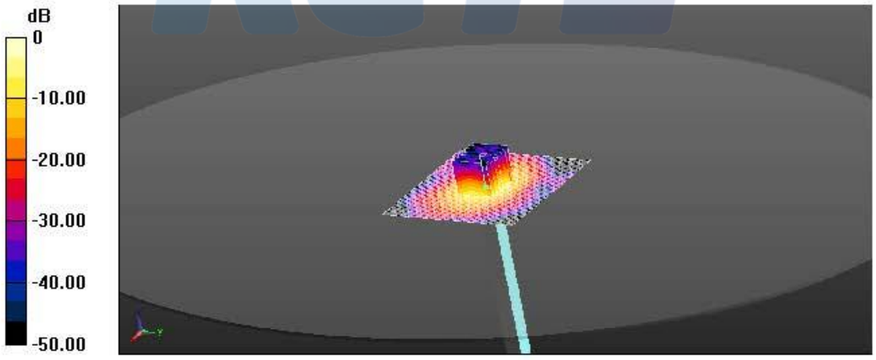
Frequency: 5200 MHz; Duty Cycle: 1:1
Medium parameters used: f = 5200 MHz; $\sigma = 5.104$ S/m; $\varepsilon_r = 48.939$; $\rho = 1000$ kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3865; ConvF(4.61, 4.61, 4.61); Calibrated: 2016-08-30;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1342; Calibrated: 2016-07-26
- Phantom: ELI v5.0 sn1178; Type: QDOVA002AA; Serial: TP:1178
- Measurement SW: DASY52, Version 52.8 (8);

Configuration/d=10mm, Pin=100mW, f=5200MHz/Area Scan (91x91x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 15.4 W/kg

Configuration/d=10mm, Pin=100mW, f=5200MHz/Zoom Scan (7x7x12)/Cube 0:
Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 59.85 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 31.8 W/kg
SAR(1 g) = 7.64 W/kg; SAR(10 g) = 2.19 W/kg
Maximum value of SAR (measured) = 16.0 W/kg



0 dB = 16.0 W/kg = 12.04 dBW/kg

Head 5 800 MHz

Procedure Name: d=10mm, Pin=100mW, f=5800MHz

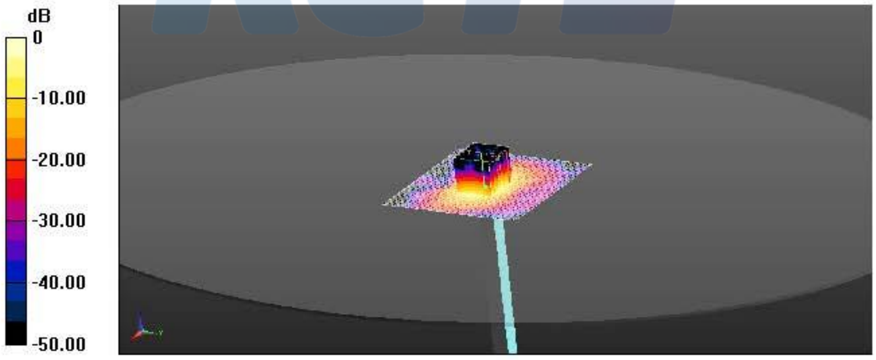
Frequency: 5800 MHz; Duty Cycle: 1:1
Medium parameters used: f = 5800 MHz; σ = 5.389 S/m; ε_r = 34.482; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3865; ConvF(4.55, 4.55, 4.55); Calibrated: 2016-08-30;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1342; Calibrated: 2016-07-26
- Phantom: ELI v5.0 sn1178; Type: QDOVA002AA; Serial: TP:1178
- Measurement SW: DASY52, Version 52.8 (8);

Configuration/d=10mm, Pin=100mW, f=5800MHz/Area Scan (91x91x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 17.5 W/kg

Configuration/d=10mm, Pin=100mW, f=5800MHz/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 59.63 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 40.3 W/kg
SAR(1 g) = 8.09 W/kg; SAR(10 g) = 2.27 W/kg
Maximum value of SAR (measured) = 17.6 W/kg



0 dB = 17.6 W/kg = 12.46 dBW/kg

Body 5 800 MHz

Procedure Name: d=10mm, Pin=100mW, f=5800MHz

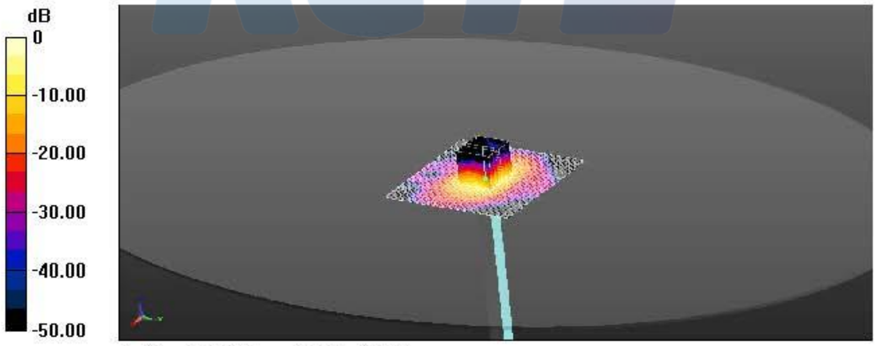
Frequency: 5800 MHz; Duty Cycle: 1:1
Medium parameters used: f = 5800 MHz; σ = 6.041 S/m; ε_r = 47.732; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3865; ConvF(4.29, 4.29, 4.29); Calibrated: 2016-08-30;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1342; Calibrated: 2016-07-26
- Phantom: ELI v5.0 sn1178; Type: QDOVA002AA; Serial: TP:1178
- Measurement SW: DASY52, Version 52.8 (8);

Configuration/d=10mm, Pin=100mW, f=5800MHz/Area Scan (91x91x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 16.7 W/kg

Configuration/d=10mm, Pin=100mW, f=5800MHz/Zoom Scan (7x7x12)/Cube 0:
Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 56.38 V/m; Power Drift = 0.17 dB
Peak SAR (extrapolated) = 35.8 W/kg
SAR(1 g) = 7.57 W/kg; SAR(10 g) = 2.11 W/kg
Maximum value of SAR (measured) = 16.4 W/kg



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

17. Test Results

Procedure Name: 802.11a_f.5 200_Front_0 mm_Ant 1

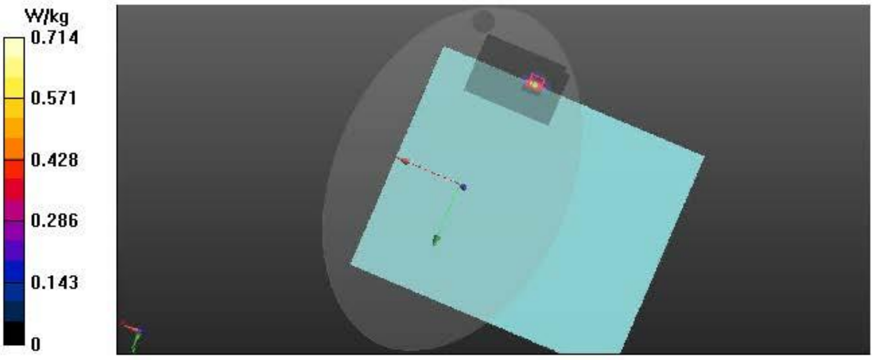
Frequency: 5200 MHz; Duty Cycle: 1:1
Medium parameters used: f = 5200 MHz; σ = 4.791 S/m; ε_r = 36.851; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3865; ConvF(5.06, 5.06, 5.06); Calibrated: 2016-08-30;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1342; Calibrated: 2016-07-26
- Phantom: ELI v5.0 sn1178; Type: QDOVA002AA; Serial: TP:1178
- Measurement SW: DASY52, Version 52.8 (8);

Configuration/802.11a_f.5 200_Front_0 mm_Ant 1/Area Scan (151x101x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 1.09 W/kg

Configuration/802.11a_f.5 200_Front_0 mm_Ant 1/Zoom Scan (9x9x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 8.818 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 1.77 W/kg
SAR(1 g) = 0.338 W/kg; SAR(10 g) = 0.097 W/kg
Maximum value of SAR (measured) = 0.714 W/kg



Procedure Name: 802.11a_f.5 200_Front_0 mm_Ant 2

Frequency: 5200 MHz; Duty Cycle: 1:1
Medium parameters used: f = 5200 MHz; σ = 4.791 S/m; ε_r = 36.851; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3865; ConvF(5.06, 5.06, 5.06); Calibrated: 2016-08-30;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1342; Calibrated: 2016-07-26
- Phantom: ELI v5.0 sn1178; Type: QDOVA002AA; Serial: TP:1178
- Measurement SW: DASY52, Version 52.8 (8);

Configuration/802.11a_f.5 200_Front_0 mm_Ant 2/Area Scan (101x151x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.706 W/kg

Configuration/802.11a_f.5 200_Front_0 mm_Ant 2/Zoom Scan (9x9x12)/Cube 0:
Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 7.101 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 1.36 W/kg
SAR(1 g) = 0.256 W/kg; SAR(10 g) = 0.071 W/kg
Maximum value of SAR (measured) = 0.556 W/kg

Procedure Name: 802.11a_f.5 200_Front_0 mm_Ant 3

Frequency: 5200 MHz; Duty Cycle: 1:1
Medium parameters used: f = 5200 MHz; σ = 4.791 S/m; ε_r = 36.851; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3865; ConvF(5.06, 5.06, 5.06); Calibrated: 2016-08-30;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1342; Calibrated: 2016-07-26
- Phantom: ELI v5.0 sn1178; Type: QDOVA002AA; Serial: TP:1178
- Measurement SW: DASY52, Version 52.8 (8);

Configuration/802.11a_f.5 200_Front_0 mm_Ant 3/Area Scan (101x151x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.606 W/kg

Configuration/802.11a_f.5 200_Front_0 mm_Ant 3/Zoom Scan (9x9x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 10.80 V/m; Power Drift = 0.13 dB
Peak SAR (extrapolated) = 1.65 W/kg
SAR(1 g) = 0.272 W/kg; SAR(10 g) = 0.079 W/kg
Maximum value of SAR (measured) = 0.542 W/kg