SAR TEST REPORT

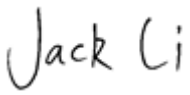
Report No.:	BCTC2203264445-8E
Applicant:	Emdoor Information Co.,Ltd.
Product Name:	Rugged Tablet
Model/Type Ref.:	EM-I16H
Tested Date:	2022-05-14 to 2022-05-17
Issued Date:	2022-05-23

Shenzhen BCTC Testing Co., Ltd.

FCC ID:2A37Q-EM-I16H

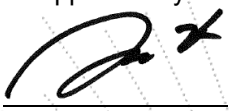
Product Name:	Rugged Tablet
Trademark:	Emdoor
Model/Type Ref.:	EM-I16H EM-I16HH,W16H,W16HH
Applicant:	Emdoor Information Co.,Ltd.
Address:	3/F, Bldg 5th, Wonderful Life Wisdom Valley TechnoPark, No.83 Dabao Rd, Xin'an Sub-district, Bao'an District, Shenzhen518101, Guangdong Province, China
Manufacturer:	Emdoor Information Co.,Ltd.
Address:	3/F, Bldg 5th, Wonderful Life Wisdom Valley TechnoPark, No.83 Dabao Rd, Xin'an Sub-district, Bao'an District, Shenzhen518101, Guangdong Province, China
Factory:	N/A
Address:	N/A
Prepared By:	Shenzhen BCTC Testing Co., Ltd.
Address:	1-2/F., Building B, Pengzhou Industrial Park, No.158, Fuyuan 1st Road, Tangwei, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, China
Sample Received Date:	2022-05-13
Sample tested Date:	2022-05-14 to 2022-05-17
Issue Date:	2022-05-23
Test Standards:	IEEE Std C95.1, 2019/IEEE Std 1528™-2013/FCC Part 2.1093
Test Results:	PASS
Remark:	This is SAR test report

Tested by:



Jack Li/Project Handler

Approved by:



Zero zhou/Reviewer

Table Of Content

(Note: N/A Means Not Applicable)

1. Version

Report No.	Issue Date	Description	Approved
BCTC2203264445-8E	2022-05-23	Original	Valid

2. Test Standards

IEEE Std C95.1-2019: IEEE Standard for Safety Levels with Respect to Human Exposure to Electric, Magnetic, and Electromagnetic Fields, 0 Hz to 300 GHz.It specifies the maximum exposure limit of 1.6 W/kg as averaged over any 1 gram of tissue for portable devices being used within 20 cm of the user in the uncontrolled environment.
IEEE Std 1528™-2013: IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques.
FCC Part 2.1093 Radiofrequency Radiation Exposure Evaluation:Portable Devices
KDB 447498 D04 Interim General RF Exposure Guidance v01: RF Exposure Procedures and Equipment Authorization Policies for Mobile and Portable Devices
KDB 648474 D04: Handset SAR v01r03: SAR Evaluation Considerations for Wireless Handsets
KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz v01r04 : SAR Measurement Requirements for 100 MHz to 6 GHz
KDB 865664 D02 RF Exposure Reporting v01r02: RF Exposure Compliance Reporting and Documentation Considerations
KDB 248227 D01 802.11 Wi-Fi SAR v02r02: SAR GUIDANCE FOR IEEE 802.11 (Wi-Fi) TRANSMITTERS
KDB 941225 D01 3G SAR Procedures: 3G SAR MEAUREMENT PROCEDURES
KDB 941225 D05 SAR for LTE Devices: SAR Evaluation Considerations For LTE Devices
KDB 616217 D04 SAR for laptop and tablets v01r02: SAR EVALUATION CONSIDERATIONS FOR LAPTOP, NOTEBOOK, NETBOOK AND TABLET COMPUTERS

3. Test Summary

The maximum results of Specific Absorption Rate (SAR) have found during testing are as follows:

Frequency Band	Head SAR	Body (0mm Gap)	SAR_{1g} Limit (W/kg)
	Report SAR_{1g} (W/kg)	Report SAR_{1g} (W/kg)	
WCDMA Band II	N/A	0.569	1.6
WCDMA Band IV	N/A	**0.663**	1.6
WCDMA Band V	N/A	0.346	1.6
LTE 2	N/A	0.526	1.6
LTE 4	N/A	0.471	1.6
LTE 12	N/A	0.269	1.6
WIFI 2.4G	N/A	**0.220**	1.6
WIFI 5.2G	N/A	0.122	1.6
WIFI 5.8G	N/A	0.110	1.6

The device is in compliance with Specific Absorption Rate (SAR) for general population/uncontrolled exposure limits (1.6 W/kg) specified in FCC 47 CFR part 2 (2.1093) and ANSI/IEEE C95.1-2019, and had been tested in accordance with the measurement methods and procedure specified in IEEE 1528-2013.

Highest Reported simultaneous SAR

Exposure Position	Classment Class	Highest Reported Simultaneous Transmission SAR1-g (W/kg)
Body	WCDMA Band IV	**0.883**
	WIFI 2.4G	

4. SAR Limits

FCC Limit (1g Tissue)

EXPOSURE LIMITS	SAR (W/kg)	
	(General Population / Uncontrolled Exposure Environment)	(Occupational / Controlled Exposure Environment)
Spatial Average(averaged over the whole body)	0.08	0.4
Spatial Peak(averaged over any 1 g of tissue)	1.6	8.0
Spatial Peak(hands/wrists/ feet/anklesaveraged over 10 g)	4.0	20.0

Population/Uncontrolled Environments are defined as locations where there is the exposure of individual who have no knowledge or control of their exposure.
Occupational/Controlled Environments are defined as locations where there is exposure that may be incurred by people who are aware of the potential for exposure (i.e. as a result of employment or occupation).

5. Measurement Uncertainty

Not required as SAR measurement uncertainty analysis is required in SAR reports only when the highestmeasured SAR in a frequency band is ≥ 1.5 W/kg for 1-g SAR accoridng to KDB865664D01.

Uncertainty Component	Tol (+- %)	Prob. Dist.	Div.	Ci (1g)	Ci (10g)	1g Ui (+-%)	10g Ui (+-%)	Veff
Measurement System								
Probe calibration	5.8	N	1	1	1	5.80	5.80	∞
Axial Isotropy	3.5	R	√3	$\sqrt{1-C_p}$	$\sqrt{1-C_p}$	1.43	1.43	∞
Hemispherical Isotropy	5.9	R	√3	$\sqrt{C_p}$	$\sqrt{C_p}$	2.41	2.41	∞
Boundary effect	1.0	R	√3	1	1	0.58	0.58	∞
Linearity	4.7	R	√3	1	1	2.71	2.71	∞
System detection limits	1.0	R	√3	1	1	0.58	0.58	∞
Readout Electronics	0.5	N	1	1	1	0.50	0.50	∞
Response Time	0.0	R	√3	1	1	0.00	0.00	∞
Integration Time	1.4	R	√3	1	1	0.81	0.81	∞
RF ambient Conditions - Noise	3.0	R	√3	1	1	1.73	1.73	∞
RF ambient Conditions - Reflections	3.0	R	√3	1	1	1.73	1.73	∞
Probe positioner Mechanical Tolerance	1.4	R	√3	1	1	0.81	0.81	∞
Probe positioning with respect to Phantom Shell	1.4	R	√3	1	1	0.81	0.81	∞
Max. SAR Evaluation	1.0	R	√3	1	1	0.6	0.6	∞
Test sample Related								
Device positioning	2.6	N	1	1	1	2.6	2.6	11
Device holder	3.0	N	1	1	1	3.0	3.0	7
Drift of output power	5.0	N	√3	1	1	2.89	2.89	∞
Phantom and Tissue Parameters								
Phantom uncertainty	4.00	R	√3	1	1	2.31	2.31	∞
Liquid conductivity (target)	2.50	N	1	0.78	0.71	1.95	1.78	5
Liquid conductivity (meas)	4.00	N	1	0.23	0.26	0.92	1.04	5
Liquid Permittivity (target)	2.50	N	1	0.78	0.71	1.95	1.78	∞
Liquid Permittivity (meas)	5.00	N	1	0.23	0.26	1.15	1.30	∞
Combined Standard		RSS	$U_c = \sqrt{\sum_{i=1}^{n} C_i^2 U_i^2}$			10.63 %	10.54%	
Expanded Uncertainty (95% Confidence interval)	U = k UC , k=2					21.26 %	21.08%	

6. Product Information And Test Setup

6.1 Product Information

Model/Type Ref.:	EM-I16H EM-I16HH,W16H,W16HH
Model differences:	All the model are the same circuit and RF module, except model names.
Hardware Version:	N/A
Software Version:	N/A
Ratings:	AC 120V/60Hz/DC 3.7V
Adapter:	Model:AW018WR-0500300UH Inout:100-240V~50/60 0.5A Output:DC 5V 3A

BT Classic

Operation Frequency:	Bluetooth(EDR): 2402-2480MHz
Bluetooth Version:	BT 5.0
Type of Modulation:	Bluetooth(EDR): GFSK, π/4DQPSK, 8DPSK
Antenna Type:	Internal antenna
Antenna Gain:	Bluetooth (EDR): 2 dBi

BT BLE

Operation Frequency:	Bluetooth (BLE): 2402-2480MHz
Bluetooth Version:	BT 5.0
Type of Modulation:	Bluetooth (BLE): GFSK
Number Of Channel:	40CH
Antenna Type:	Internal antenna
Antenna Gain:	Bluetooth (BLE): 2 dBi

WIFI 2.4GHz

Operation Frequency:	WiFi (2.4GHz):	IEEE 802.11b/g/n HT20: 2412-2472MHz; HT40: 2422-2462MHz
Bit Rate of Transmitter	802.11b:11/5.5/2/1 Mbps 802.11g:54/48/36/24/18/12/9/6Mbps 802.11n Up to 75Mbps	
Type of Modulation:	WiFi: DSSS, OFDM	
Number Of Channel	802.11b/g/n20MHz:11 CH 802.11n40MHz: 7 CH	
Antenna Type:	Internal antenna*2	
Antenna Gain:	Antenna A:2dBi Antenna B:2dBi	

WIFI 5GHz

IEEE 802.11 WLAN Mode Supported	802.11a/n/ac(20MHz channel bandwidth) 802.11n/ac(40MHz channel bandwidth) 802.11ac(80MHz channel bandwidth)

Operation Frequency:	5180-5240MHz for 802.11a/n(HT20); 5190-5230MHz for 802.11n(HT40); 5210MHz for 802.11 ac80; 5745-5825 MHz for 802.11a/n(HT20); 5755-5795 MHz for 802.11n(HT40); 5775MHz for 802.11 ac80;
Data Rate	802.11a: 6,9,12,18,24,36,48,54Mbps; 802.11n(HT20/HT40):MCS0-MCS15; 802.11ac(VHT20): NSS1, MCS0-MCS8 802.11ac(VHT40/VHT80):NSS1, MCS0-MCS
Type of Modulation:	OFDM with BPSK/QPSK/16QAM/64QAM/256QAM for 802.11a/n/ac;
Number Of Channel	4 channels for 802.11a/n20 in the 5180-5240MHz band ; 2 channels for 802.11 n40 in the 5190-5230MHz band ; 1 channels for 802.11 ac80 in the 5210MHz band ; 5 channels for 802.11a/n20 in the 5745-5825MHz band ; 2 channels for 802.11 n40 in the 5755-5795MHz band ; 1 channels for 802.11 ac80 in the 5775MHz band
Antenna Type:	Internal antenna
Antenna Gain:	5.1G: Antenna A: 1dBi Antenna B: 1dBi 5.8G: Antenna A: 1dBi Antenna B: 1dBi

3G-WCDMA

Operation Frequency:	WCDMA Band II: TX: 1852.40~1907.60MHz; Rx: 1932.60~1987.40MHz; WCDMA Band IV: TX: 1712.40~1752.60MHz; RX: 2112.60 – 2452.40MHz WCDMA Band V: TX: 826.40~846.60MHz; RX: 871.40~ 891.60MHz;
GPRS Class:	Class 12
MaxRF Output Power:	WCDMA Band II: 22.27dBm WCDMA Band IV:22.14dBm WCDMA Band V: 22.52dBm
Type of Modulation:	WCDMA Mode with BPSK Modulation HSDPA Mode with QPSK, 16QAM Modulation HSUPA Mode with QPSK, 16QAM Modulation
Type of Emission:	WCDMA Band II: 4M16F9W WCDMA Band IV: 4M14F9W WCDMA Band V: 4M16F9W
Antenna installation:	Internal antenna
Antenna Gain:	WCDMA Band II:1.5 dBi WCDMA Band IV:1.5 dBi WCDMA Band V: 0.5 dBi
Connecting I/O Port(s)	Please refer to the User's Manual

4G-LTE

Tx Frequency:	LTE Band 2: 1850 MHz ~ 1910 MHz LTE Band 4: 1710 MHz ~ 1755 MHz LTE Band 12: 699 MHz ~ 716 MHz
Rx Frequency:	LTE Band 2: 1930 MHz ~ 1990 MHz LTE Band 4: 2110 MHz ~ 2155 MHz LTE Band 12: 729 MHz ~ 746 MHz
Bandwidth:	LTE Band 2: 1.4MHz /3MHz /5MHz /10MHz /15MHz /20MHz

	LTE Band 4: 1.4MHz /3MHz /5MHz /10MHz /15MHz /20MHz LTE Band 12: 1.4MHz /3MHz /5MHz /10MHz
Maximum Output Power to Antenna:	LTE Band 2: 21.19dBm LTE Band 4: 22.61dBm LTE Band 12: 24.68dBm
99% Occupied Bandwidth:	LTE Band 2: 17M9G7D LTE Band 4: 18M0G7D LTE Band 12: 9M02G7D
Type of Modulation:	QPSK/16QAM
Antenna Type:	Internal Antenna
Antenna Gain:	LTE Band 2: 1.5dBi LTE Band 4: 1.5dBi LTE Band 12: 0.5dBi
Connecting I/O Port(s):	Please refer to the User's Manual

NFC

Operation Frequency:	13.56 MHz
Modulation Type:	ASK
Number Of Channel	1 CH
Antenna installation:	Internal Antenna
Antenna Gain:	0dBi

6.2 Test Setup Configuration

See test photographs attached in EUT TEST SETUP PHOTOGRAPHS for the actual connections between Product and support equipment.

6.3 Support Equipment

Cable of Product

No.	Cable Type	Quantity	Provider	Length (m)	Shielded	Note
1	--	--	Applicant	---	Yes/No	--
2	--	--	BCTC	--	Yes/No	--

No.	Device Type	Brand	Model	Series No.	Note
1.	---	---	---	---	---
2.	--	--	--	--	--

Notes:
1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
2. Grounding was established in accordance with the manufacturer’s requirements and conditions for the intended use.

6.4 Test Environment

1. Normal Test Conditions:

Humidity(%):	40-65
Atmospheric Pressure(kPa):	95-105
Temperature(℃):	18-25

2.Extreme Test Conditions:
N/A

7. Test Facility And Test Instrument Used

7.1 Test Facility

All measurement facilities used to collect the measurement data are located at Shenzhen BCTC Testing Co., Ltd. Address: 1-2/F., Building B, Pengzhou Industrial Park, No.158, Fuyuan 1st Road, Tangwei, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, China. The site and apparatus are constructed in conformance with the requirements of ANSI C63.4 and CISPR 16-1-1 other equivalent standards.

7.2 Test Instrument Used

Equipment	Manufacturer	Model#	Serial#	Last Cal.	Next Cal.
PC	DELL	\	\	N/A	N/A
SAR Measurement system	SATIMO	\	\	N/A	N/A
Signal Generator	Agilent	83712A	\	May 28, 2021	May 27, 2022
Multimeter	Keithley	1160271	\	Nov. 12, 2021	Nov 11, 2022
S-parameter Network Analyzer	R&S	ZVB 8	101353	Dec. 09, 2021	Dec. 08, 2022
Wideband Radio Communication Tester	R&S	CMW500	\	Nov. 12, 2021	Nov 11, 2022
E SAR PROBE 6GHz	MVG	SSE2	SN EPGO362	Nov. 20, 2021	Nov. 19, 2022
DIPOLE 750	SATIMO	SID 750	SN 47/21 DIP 0G750-620	Nov. 20, 2021	Nov. 19, 2024
DIPOLE 835	SATIMO	SID 835	SN 47/21 DIP 2G450-627	Nov. 20, 2021	Nov. 19, 2024
DIPOLE 1800	SATIMO	SID 835	SN 47/21 DIP 1G800-623	Nov. 20, 2021	Nov. 19, 2024
DIPOLE 2450	SATIMO	SID 2450	SN 47/21 DIP 0G835-621	Nov. 20, 2021	Nov. 19, 2024
DIPOLE 5000	SATIMO	SID5000	SN 47/21 DIP 5G000-629	Nov. 20, 2021	Nov. 19, 2024
COMOSAR OPENCoaxial Probe	SATIMO	\	\	Nov. 20, 2021	Nov. 19, 2022
SAR Locator	SATIMO	\	\	Nov. 20, 2021	Nov. 19, 2022
Communication Antenna	SATIMO	\	\	Nov. 20, 2021	Nov. 19, 2022
FEATURE PHONEPOSITIONING DEVICE	SATIMO	\	\	N/A	N/A
DUMMY PROBE	SATIMO	\	\	N/A	N/A
SAM Phantom	MVG	\	SN 13/09 SAM68	N/A	N/A
Liquid measurement Kit	HP	85033D	3423A08186	Nov. 20, 2021	Nov. 19, 2022
Power meter	Agilent	E4419	\	May 28, 2021	May 27, 2022
Power meter	Agilent	E4419	\	May 28, 2021	May 27, 2022
Power sensor	Agilent	E9300A	\	May 28, 2021	May 27, 2022
Power sensor	Agilent	E9300A	\	May 28, 2021	May 27, 2022
Directional Coupler	Krytar 158020	131467	\	Nov. 12, 2021	Nov 11, 2022

Note:

Per KDB865664D01 requirements for dipole calibration, the test laboratory has adopted three year extended calibration interval. Each measured dipole is expected to evalute with following criteria at least on annual interval.

1. There is no physical damage on the dipole;
2. System check with specific dipole is within 10% of calibrated values;
3. The most recent return-loss results,measued at least annually,deviates by no more than 20% from the previous measurement;
4. The most recent measurement of the real or imaginary parts of the impedance, measured at least annually is within 5Ω from the provious measurement.

Network analyzer probe calibration against air, distilled water and a shorting block performed before measuring liquid parameters.

8. Specific Absorption Rate (SAR)

8.1 Introduction

SAR is related to the rate at which energy is absorbed per unit mass in an object exposed to a radio field. The SAR distribution in a biological body is complicated and is usually carried out by experimental techiques or numerical modeling. The standard recommends limits for two tiers of groups, occupational/controlled and general population/uncontrolled, based on a person's awareness and ability to exercise control over his or her exposure. In general, occupational/controlled exposure limits are higher than the limits for general population/uncontrolled.

8.2 SAR Definition

The SAR definition is the time derivative (rate) of the incremental energy (dW) absorbed by (dissipated in) an incremental mass (dm) contained in a volume element (dv) of a given density (ρ). The equation description is as below:

$$\mathbf{SAR} = \frac{\mathbf{d}}{\mathbf{dt}}\left(\frac{\mathbf{dW}}{\mathbf{dm}}\right) = \frac{\mathbf{d}}{\mathbf{dt}}\left(\frac{\mathbf{dW}}{\boldsymbol{\rho}\mathbf{dv}}\right)$$

SAR is expressed in units of Watts per kilogram (W/kg)

SAR measurement can be either related to the temperature elevation in tissue by

$$\mathbf{SAR} = \mathbf{C}\left(\frac{\boldsymbol{\delta}\mathbf{T}}{\boldsymbol{\delta}\mathbf{t}}\right)$$

Where: C is the specific heat capacity, δ T is the temperature rise and δ t is the exposure duration, or related to the

electrical field in the tissue by

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

Where: σ is the conductivity of the tissue, ρ is the mass density of the tissue and E is the RMS electrical field strength.

However for evaluating SAR of low power transmitter, electrical field measurement is typically applied.

9. SAR Measurement System

9.1 The Measurement System

Comosar is a system that is able to determine the SAR distribution inside a phantom of human being according to different standards. The Comosar system consists of the following items:
- Main computer to control all the system
- 6 axis robot
- Data acquisition system
- Miniature E-field probe
- Phone holder
- Head simulating tissue

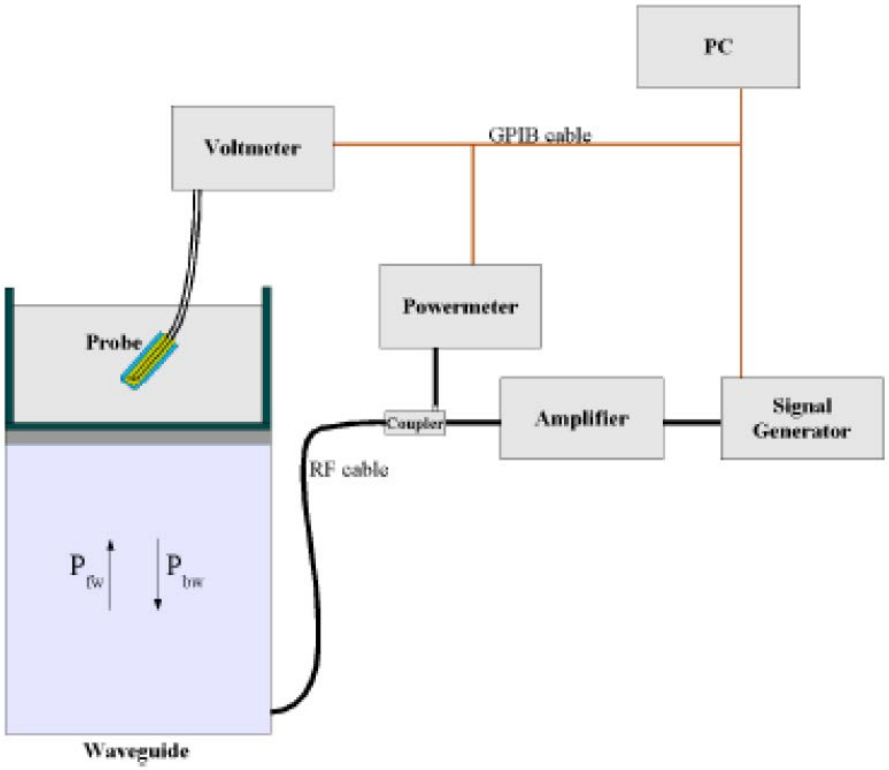
The following figure shows the system.

The EUT under test operating at the maximum power level is placed in the phone holder, under the phantom, which is filled with head simulating liquid. The E-Field probe measures the electric field inside the phantom. The OpenSAR software computes the results to give a SAR value in a 1g or 10g mass.

9.2 Probe

For the measurements the Specific Dosimetric E-Field Probe SN 46/21 EPGO362 with following specifications is used
- Dynamic range: 0.01-100 W/kg
- Tip Diameter : 5 mm
- Distance between probe tip and sensor center: 2.10mm
- Distance between sensor center and the inner phantom surface: 4 mm (repeatability better than +/- 1mm)
- Probe linearity: ＜0.25 dB
- Axial Isotropy: ＜0.25 dB
- Spherical Isotropy: ＜0.50 dB
- Calibration range: 835 to 2500MHz for head & body simulating liquid.

Angle between probe axis (evaluation axis) and surface normal line:1ess than 30°
Probe calibration is realized, in compliance with EN 62209-1 and IEEE 1528 STD, with CALISAR, Antennessa proprietary calibration system. The calibration is performed with the EN 62209-1 annex technique using reference guide at the five frequencies.



$$SAR = \frac{4(p_{\int w} - p_{Pbw})}{ab\delta} cos^2 \left(\pi \frac{y}{a}\right) c^{(2\pi/\delta)}$$

Where :
Pfw = Forward Power
Pbw = Backward Power
a and b =Waveguide dimensions
l = Skin depth

Keithley configuration:
Rate = Medium; Filter = ON; RDGS = 10; Filter type = Moving Average; Range auto after each calibration, a SAR measurement is performed on a validation dipole and compared with a NPL calibrated probe, to verify it.

The calibration factors, CF(N), for the 3 sensors corresponding to dipole 1, dipole 2 and dipole 3 are:

CF(N)=SAR(N)/Vlin(N) (N=1,2,3)

The linearised output voltage Vlin(N) is obtained from the displayed output voltage V(N) using

Vlin(N)=V(N)*(1+V(N)/DCP(N)) (N=1,2,3)

where DCP is the diode compression point in mV.

9.3 Test Procedure

Dosimetric Assessment Procedure
Each E-Probe/Probe Amplifier combination has unique calibration parameters. SATIMO Probe calibration procedure is conducted to determine the proper amplifier settings to enter in the probe parameters. The amplifier settings are determined for a given frequency by subjecting the probe to a known E-field density (1 mW/cm2) using an with CALISAR, Antenna proprietary calibration system.

Free Space Assessment Procedure
The free space E-field from amplified probe outputs is determined in a test chamber. This calibration can be performed in a TEM cell if the frequency is below 1 GHz and in a waveguide or other methodologies above 1 GHz for free space. For the free space calibration, the probe is placed in the volumetric center of the cavity and at the proper orientation with the field. The probe is rotated 360 degrees until the three channels show the maximum reading. The power density readings equates to 1mW/cm2.

Temperature Assessment Procedure
E-field temperature correlation calibration is performed in a flat phantom filled with the appropriate simulated head tissue. The E-field in the medium correlates with the temperature rise in the dielectric medium. For temperature correlation calibration a RF transparent thermistor-based temperature probe is used in conjunction with the E-field probe.

$$SAR = C\frac{\Delta T}{\Delta t}$$

Where:
Δt = exposure time (30 seconds),
C = heat capacity of tissue (brain or muscle),
ΔT = temperature increase due to RF exposure.

SAR is proportional to $\Delta T/\Delta t$, the initial rate of tissue heating, before thermal diffusion takes place. The electric field in the simulated tissue can be used to estimate SAR by equating the thermally derived SAR to that with the E- field component.

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

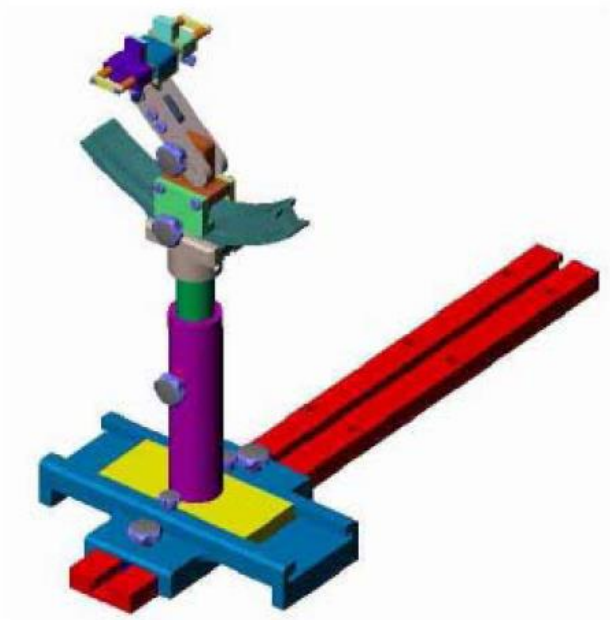
Where:
σ = simulated tissue conductivity,
ρ = Tissue density (1.25 g/cm3 for brain tissue)

9.4 Phantom

For the measurements the Specific Anthropomorphic Mannequin (SAM) defined by the IEEE SCC-34/SC2 group is used. The phantom is a polyurethane shell integrated in a wooden table. The thickness of the phantom amounts to 2mm +/- 0.2mm. It enables the dosimetric evaluation of left and right phone usage and includes an additional flat phantom part for the simplified performance check. The phantom set-up includes a cover, which prevents the evaporation of the liquid.

9.5 Phantom

The positioning system allows obtaining cheek and tilting position with a very good accuracy. In compliance with CENELEC, the tilt angle uncertainty is lower than 1°.



System Material	Permittivity	Loss Tangent
Delrin	3.7	0.005

10. Tissue Simulating Liquids

10.1 Composition of Tissue Simulating Liquid

For the measurement of the field distribution inside the SAM phantom with SMTIMO, the phantom must be filled with around 25 liters of homogeneous body tissue simulating liquid. For head SAR testing, the liquid height from the ear reference point (ERP) of the phantom to the liquid top surface is larger than 15 cm. For body SAR testing, the liquid height from the center of the flat phantom to the liquid top surface is larger than 15 cm. Please see the following photos for the liquid height.

Liquid Height for Body SAR

The Composition of Tissue Simulating Liquid

Frequency (MHz)	Water (%)	Salt (%)	1,2-Propane diol (%)	HEC (%)	Preventol (%)	DGBE (%)
Head/Body						
835	40.3	1.4	57.9	0.2	0.2	0
900	40.3	1.4	57.9	0.2	0.2	0
1800-2000	55.2	0.3	0	0	0	44.5
2450	55.0	0.1	0	0	0	44.9
2600	54.9	0.1	0	0	0	45.0

Frequency (MHz)	Water (%)	Hexyl Carbitol (%)	Triton X-100 (%)
Head/Body			
5000-6000	65.52	17.24	17.24

10.2 Limit

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 (MHz)	Head/Body	
	Conductivity (σ)	Permittivity (ε_r)
150	0.76	52.3
300	0.87	45.3
450	0.87	43.5
750	0.89	41.9
835	**0.90**	**41.5**
900	**0.97**	**41.5**
915	0.98	41.5
1450	1.20	40.5
1610	1.29	40.3
1800-2000	**1.40**	**40.0**
2450	**1.80**	**39.2**
2600	**1.96**	**39.0**
3000	2.40	38.5
5200	4.66	36.0
5400	4.86	35.8
5600	5.07	35.5
5800	5.27	35.3

10.3 Tissue Calibration Result

The dielectric parameters of the liquids were verified prior to the SAR evaluation using an R&S ZVB 8. Dielectric Probe Kit and an Agilent Network Analyzer.

Calibration Result for Dielectric Parameters of Tissue Simulating Liquid

Frequency(MHz)	Liquid	Target Permitivity (F/m)	Target Conductivity (S/m)	Measured Permitivity (F/m)	Measured Conductivity (S/m)	Deviation Perm.|Cond.(%)	Date	Temp. Ambient|TSL (°C)
750	Head	41.9	0.89	40.5	0.95	-3.34%|6.74%	05/14/2022	20.0
835	Head	41.5	0.90	40.8	0.97	-1.69%|7.78%	05/14/2022	20.0
1800	Head	40.0	1.40	39.2	1.52	-2.00%|8.57%	05/15/2022	20.0
2450	Head	39.2	1.80	38.6	1.95	-1.53%|8.33%	05/15/2022	20.0
5200	Head	36.0	4.66	35.7	4.52	-0.83%|-3.00%	05/17/2022	20.0
5800	Head	35.3	5.27	34.9	5.17	-1.13%|-1.90%	05/17/2022	20.0

11. SAR Measurement Evaluation

11.1 Purpose of System Performance Check

At the device test frequencies. System check verifies the measurement repeatability of a SAR system before compliance testing and is not a validation of all system specifications. The latter is not required for testing a device but is mandatory before the system is deployed. The system check detects possible short-term drift and unacceptable measurement errors or uncertainties in the system.

11.2 System Setup

In the simplified setup for system evaluation, the EUT is replaced by a calibrated dipole and the power source is replaced by a continuous wave which comes from a signal generator at frequency 850MHz,900 MHz,1800MHz,2000MHz, 2450MHz,2600MHz. The calibrated dipole must be placed beneath the flat phantom section of the SAM twin phantom with the correct distance holder. The distance holder should touch the phantom surface with a light pressure at the reference marking and be oriented parallel to the long side of the phantom. The output power on dipole port must be calibrated to 24 dBm (250 mW) before dipole is connected.

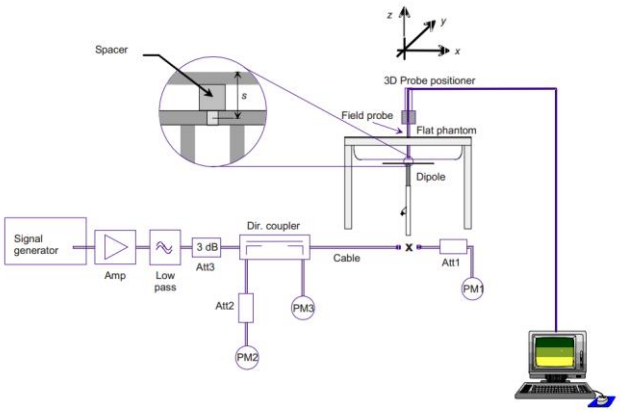


Figure B.1 – Set-up for the system check

11.3 Validation Results

Comparing to the original SAR value provided by SATIMO, the validation data should be within its specification of 10 %. The following table shows the target SAR and measured SAR after normalized to 1W input power. The table below indicates the system performance check can meet the variation criterion.

Mixture Type	Frequency (MHz)	Power	SAR1g (W/Kg)	SAR10g (W/Kg)	Drift (%)	1W Target		Difference percentage		Liquid Temp	Date
						SAR1g (W/Kg)	SAR10g (W/Kg)	1g	10g		
Head	750	100 mW	0.892	0.592	-0.19	8.49	5.55	5.06%	6.67%	20.0	05/14/2022
		Normalize to 1 Watt	8.92	5.92							
Head	835	100 mW	0.987	0.638	-0.33	9.56	6.22	3.24%	2.57%	20.0	05/14/2022
		Normalize to 1 Watt	9.87	6.38							
Head	1800	100 mW	3.940	1.995	0.07	38.4	20.1	2.60%	-0.50%	20.0	05/15/2022

		Normalize to 1 Watt	39.4	20.0							
Head	2450	100 mW	5.085	2.457	0.36	52.4	24	-2.86%	2.50%	20.0	05/15/2022
		Normalize to 1 Watt	50.9	24.6							
Head	5200	100 mW	6.953	2.041	0.43	76.5	21.6	-9.15%	-5.56%	20.0	05/17/2022
		Normalize to 1 Watt	69.5	20.4							
Head	5800	100 mW	7.125	2.063	0.43	78.0	21.9	-8.59%	-5.94%	20.0	05/17/2022
		Normalize to 1 Watt	71.3	20.6							

12. EUT Testing Position

12.1 Define Two Imaginary Lines on The Handset

(a) The vertical centerline passes through two points on the front side of the handset - the midpoint of the width wt of the handset at the level of the acoustic output, and the midpoint of the width wb of the bottom of the handset.

(b) The horizontal line is perpendicular to the vertical centerline and passes through the center of the acoustic
output. The horizontal line is also tangential to the face of the handset at point A.

(c) The two lines intersect at point A. Note that for many handsets, point A coincides with the center of the acoustic output; however, the acoustic output may be located elsewhere on the horizontal line. Also note that the vertical centerline is not necessarily parallel to the front face of the handset, especially for clamshell handsets, handsets with flip covers, and other irregularly shaped handsets.

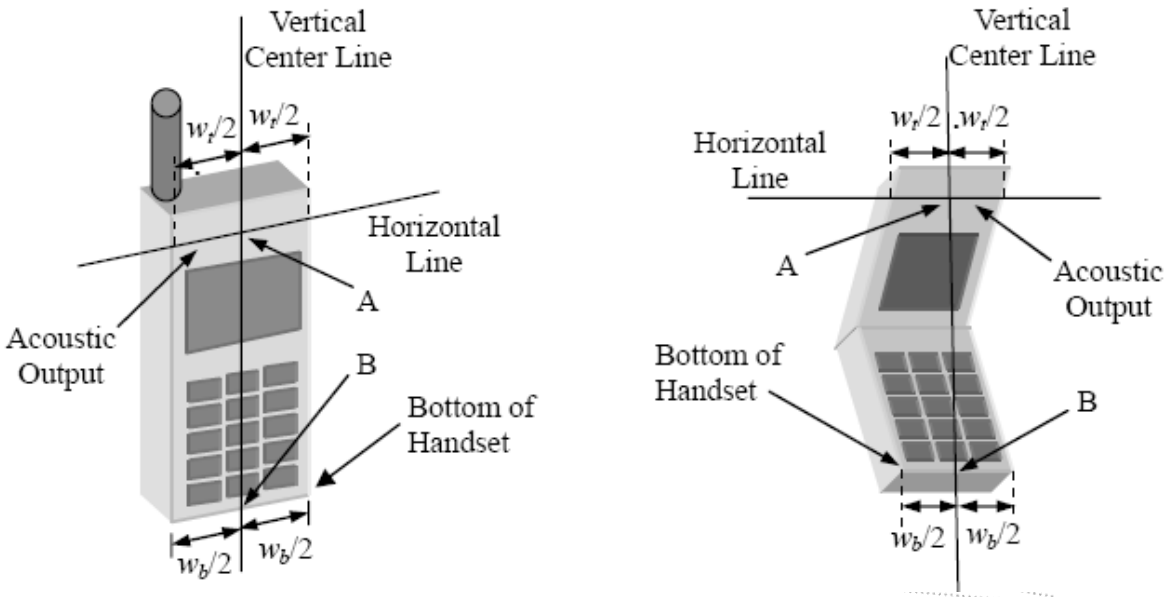


Illustration for Handset Vertical and Horizontal Reference Lines

12.2 Cheek Position

(a) To position the device with the vertical center line of the body of the device and the horizontal line crossing the center piece in a plane parallel to the sagittal plane of the phantom. While maintaining the device in this plane, align the vertical center line with the reference plane containing the three ear and mouth reference point (M: Mouth, RE: Right Ear, and LE: Left Ear) and align the center of the ear piece with the line RE-LE.
(b) To move the device towards the phantom with the ear piece aligned with the line LE-RE until the phone touched the ear. While maintaining the device in the reference plane and maintaining the phone contact with the ear, move the bottom of the phone until any point on the front side is in contact with the cheek of the phantom or until contact with the ear is lost (see below).

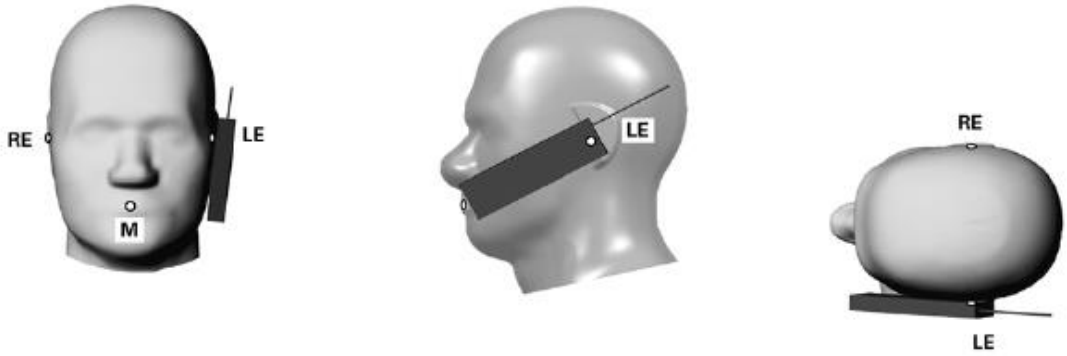


Illustration for Cheek Position

12.3 Tilted Position

(a) To position the device in the “cheek” position described above.

(b) While maintaining the device the reference plane described above and pivoting against the ear, moves it outward away from the mouth by an angle of 15 degrees or until contact with the ear is lost (see below).

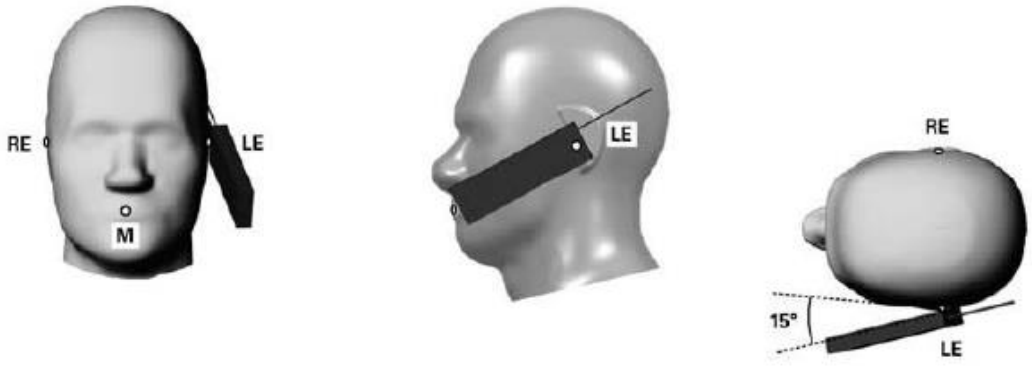


Illustration for Tilted Position

12.4 Body Position

(a) To position the device parallel to the phantom surface with each side.
(b) To adjust the device parallel to the flat phantom.
(c) To adjust the distance between the device surface and the flat phantom to 5mm. a separation distance of 5mm between the phone and the body is used in the measurement conducted for body SAR. This distance represents a typical phone-skin distance when the phone is close to the body e.g. located in pants pocket taking into consideration typical average clothing fabric thickness.

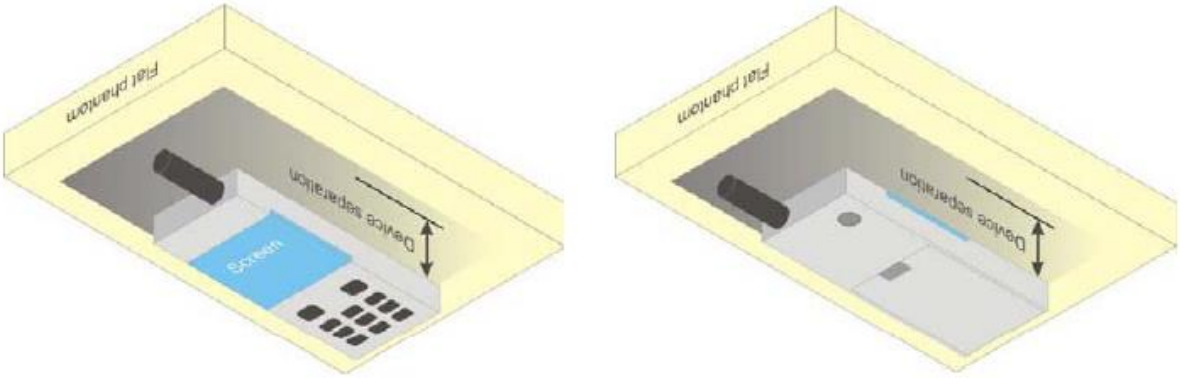


Illustration for Body Worn Position

13. SAR Measurement Procedures

13.1 Measurement Procedures

The measurement procedures are as follows:
(a) Use base station simulator (if applicable) or engineering software to transmit RF power continuously (continuous Tx) in the highest power channel.
(b) Keep EUT to radiate maximum output power or 100% factor (if applicable)
(c) Measure output power through RF cable and power meter.
(d) Place the EUT in the positions as Annex D demonstrates.
(e) Set scan area, grid size and other setting on the SATIMO software.
(f) Measure SAR results for the highest power channel on each testing position.
(g) Find out the largest SAR result on these testing positions of each band
(h) Measure SAR results for other channels in worst SAR testing position if the SAR of highest power channel is larger than 0.8 W/kg

According to the test standard, the recommended procedure for assessing the peak spatial-average SAR value consists of the following steps:
(a) Power reference measurement
(b) Area scan
(c) Zoom scan
(d) Power drift measurement

13.2 Spatial Peak SAR Evaluation

The procedure for spatial peak SAR evaluation has been implemented according to the test standard. It can be conducted for 1g and 10g, as well as for user-specific masses. The SATIMO software includes all numerical procedures necessary to evaluate the spatial peak SAR value.
The base for the evaluation is a "cube" measurement. The measured volume must include the 1g and 10g cubes with the highest averaged SAR values. For that purpose, the center of the measured volume is aligned to the interpolated peak SAR value of a previously performed area scan.
The entire evaluation of the spatial peak values is performed within the post-processing engine. The system always gives the maximum values for the 1g and 10g cubes. The algorithm to find the cube with highest averaged SAR is divided into the following stages:
(a) Extraction of the measured data (grid and values) from the Zoom Scan
(b) Calculation of the SAR value at every measurement point based on all stored data
(c) Generation of a high-resolution mesh within the measured volume
(d) Interpolation of all measured values form the measurement grid to the high-resolution grid

(e) Extrapolation of the entire 3D field distribution to the phantom surface over the distance from sensor to surface
(f) Calculation of the averaged SAR within masses of 1g and 10g

13.3 Area & Zoom Scan Procedures

First Area Scan is used to locate the approximate location(s) of the local peak SAR value(s). The measurement grid within an Area Scan is defined by the grid extent, grid step size and grid offset. Next, in order to determine the EM field distribution in a three-dimensional spatial extension, Zoom Scan is required. The Zoom Scan measures 5x5x7 points with step size 8, 8 and 5 mm for 300 MHz to 3 GHz, and 8x8x8 points with step size 4, 4 and 2.5 mm for 3 GHz to 6 GHz. The Zoom Scan is performed around the highest E-field value to determine the averaged SAR-distribution over 10 g.

13.4 Volume Scan Procedures

The volume scan is used for assess overlapping SAR distributions for antennas transmitting in different frequency bands. It is equivalent to an oversized zoom scan used in standalone measurements. The measurement volume will be used to enclose all the simultaneous transmitting antennas. For antennas transmitting simultaneously in different frequency bands, the volume scan is measured separately in each frequency band. In order to sum correctly to compute the 1g aggregate SAR, the EUT remain in the same test position for all measurements and all volume scan use the same spatial resolution and grid spacing (step-size is 4, 4 and 2.5 mm). When all volume scan were completed, the software can combine and subsequently superpose these measurement data to calculating the multiband SAR.

13.5 SAR Averaged Methods

The local SAR inside the phantom is measured using small dipole sensing elements inside a probe body. The probe tip must not be in contact with the phantom surface in order to minimize measurements errors, but the highest local SAR will occur at the surface of the phantom.

An extrapolation is using to determinate this highest local SAR values. The extrapolation is based on a fourth-order least-square polynomial fit of measured data. The local SAR value is then extrapolated from the liquid surface with a 1mm step.

The measurements have to be performed over a limited time (due to the duration of the battery) so the step of measurement is high. It could vary between 5 and 8 mm. To obtain an accurate assessment of the maximum SAR averaged over 10g and 1 g requires a very fine resolution in the three dimensional scanned data array.

13.6 Power Drift Monitoring

All SAR testing is under the EUT install full charged battery and transmit maximum output power. In SATIMO measurement software, the power reference measurement and power drift measurement procedures are used for monitoring the power drift of EUT during SAR test. Both these procedures measure the field at a specified reference position before and after the SAR testing. The software will calculate the field difference in dB. If the power drift more than 5%, the SAR will be retested.

14. SAR Test Result

14.1 Conducted RF Output Power

According KDB 447498 D01 General RF Exposure Guidance v06 Section 4.1 2) states that “Unless it is specified differently in the published RF exposure KDB procedures, these requirements also apply to test reduction and test exclusion considerations. Time-averaged maximum conducted output power applies to SAR and, as required by § 2.1091(c), time-averaged ERP applies to MPE. When an antenna port is not available on the device to support conducted power measurement, such as FRS and certain Part 15 transmitters with built-in integral antennas, the maximum output power allowed for production units should be used to determine RF exposure test exclusion and compliance.”

<UMTS Conducted Power>
The following tests were conducted according to the test requirements outlines in 3GPP TS 34.121 specification. A summary of these settings are illustrated below:

HSDPA Setup Configuration:

- The EUT was connected to Base Station E5515C referred to the Setup Configuration.
- The RF path losses were compensated into the measurements.
- A call was established between EUT and Base Station with following setting:
  Chapitre 1 Set Gain Factors (βc and βd) and parameters were set according to each
  Chapitre 2 Specific sub-test in the following table, C10.1.4, quoted from the TS 34.121
  Chapitre 3 Set RMC 12.2Kbps + HSDPA mode.
  Chapitre 4 Set Cell Power = -86 dBm
  Chapitre 5 Set HS-DSCH Configuration Type to FRC (H-set 1, QPSK)
  Chapitre 6 Select HSDPA Uplink Parameters
  Chapitre 7 Set Delta ACK, Delta NACK and Delta CQI = 8
  Chapitre 8 Set Ack-Nack Repetition Factor to 3
  Chapitre 9 Set CQI Feedback Cycle (k) to 4 ms
  Chapitre 10 Set CQI Repetition Factor to 2
  Chapitre 11 Power Ctrl Mode = All Up bits
- The transmitted maximum output power was recorded.

Table C.10.1.4: β values for transmitter characteristics tests with HS-DPCCH

Sub-test	β_c	β_d	β_d (SF)	β_c/β_d	β_{HS} (Note1, Note 2)	CM (dB) (Note 3)	MPR (dB) (Note 3)
1	2/15	15/15	64	2/15	4/15	0.0	0.0
2	12/15 (Note 4)	15/15 (Note 4)	64	12/15 (Note 4)	24/15	1.0	0.0
3	15/15	8/15	64	15/8	30/15	1.5	0.5
4	15/15	4/15	64	15/4	30/15	1.5	0.5

Note 1: Δ_{ACK}, Δ_{NACK} and Δ_{CQI} = 30/15 with β_{hs} = 30/15 * β_c.

Note 2: For the HS-DPCCH power mask requirement test in clause 5.2C, 5.7A, and the Error Vector Magnitude (EVM) with HS-DPCCH test in clause 5.13.1A, and HSDPA EVM with phase discontinuity in clause 5.13.1AA, Δ_{ACK} and Δ_{NACK} = 30/15 with β_{hs} = 30/15 * β_c, and Δ_{CQI} = 24/15 with β_{hs} = 24/15 * β_c.

Note 3: CM = 1 for β_c/β_d =12/15, β_{hs}/β_c=24/15. For all other combinations of DPDCH, DPCCH and HS-DPCCH the MPR is based on the relative CM difference. This is applicable for only UEs that support HSDPA in release 6 and later releases.

Note 4: For subtest 2 the β_c/β_d ratio of 12/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to β_c = 11/15 and β_d = 15/15.

Setup Configuration

HSUPA Setup Configuration:

a) The EUT was connected to Base Station R&S CMU200 referred to the Setup Configuration.
b) The RF path losses were compensated into the measurements.
c) A call was established between EUT and Base Station with following setting * :
- Call Configs = 5.2B, 5.9B, 5.10B, and 5.13.2B with QPSK
- Set the Gain Factors (βc and βd) and parameters (AG Index) were set according to each specific sub-test in the following table, C11.1.3, quoted from the TS 34.121
- Set Cell Power = -86 dBm
- Set Channel Type = 12.2k + HSPA
- Set UE Target Power
- Power Ctrl Mode= Alternating bits
- Set and observe the E-TFCI
- Confirm that E-TFCI is equal to the target E-TFCI of 75 for sub-test 1, and other subtest's E-TFCI

d) The transmitted maximum output power was recorded.

Table C.11.1.3: β values for transmitter characteristics tests with HS-DPCCH and E-DCH

Sub-test	β_c	β_d	β_d (SF)	β_c/β_d	β_{HS} (Note1)	β_{ec}	β_{ed} (Note 5) (Note 6)	β_{ed} (SF)	β_{ed} (Codes)	CM (dB) (Note 2)	MPR (dB) (Note 2)	AG Index (Note 6)	E-TFCI
1	11/15 (Note 3)	15/15 (Note 3)	64	11/15 (Note 3)	22/15	209/225	1309/225	4	1	1.0	0.0	20	75
2	6/15	15/15	64	6/15	12/15	12/15	94/75	4	1	3.0	2.0	12	67
3	15/15	9/15	64	15/9	30/15	30/15	$\beta_{ed}1$: 47/15 $\beta_{ed}2$: 47/15	4 4	2	2.0	1.0	15	92
4	2/15	15/15	64	2/15	4/15	2/15	56/75	4	1	3.0	2.0	17	71
5	15/15 (Note 4)	15/15 (Note 4)	64	15/15 (Note 4)	30/15	24/15	134/15	4	1	1.0	0.0	21	81

Note 1: Δ_{ACK}, Δ_{NACK} and Δ_{CQI} = 30/15 with β_{hs} = 30/15 * β_c.

Note 2: CM = 1 for β_c/β_d =12/15, β_{hs}/β_c=24/15. For all other combinations of DPDCH, DPCCH, HS- DPCCH, E-DPDCH and E-DPCCH the MPR is based on the relative CM difference.

Note 3: For subtest 1 the β_c/β_d ratio of 11/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to β_c = 10/15 and β_d = 15/15.

Note 4: For subtest 5 the β_c/β_d ratio of 15/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to β_c = 14/15 and β_d = 15/15.

Note 5: In case of testing by UE using E-DPDCH Physical Layer category 1, Sub-test 3 is omitted according to TS25.306 Table 5.1g.

Note 6: β_{ed} can not be set directly, it is set by Absolute Grant Value.

General Note

1. Per KDB 941225 D01, RMC 12.2kbps setting is used to evaluate SAR. If AMR 12.2kbps power is < 0.25dB higher than RMC 12.2kbps, SAR tests with AMR 12.2kbps can be excluded.
2. By design, AMR and HSDPA/HSUPA RF power will not be larger than RMC 12.2kbps, detailed information is included in Tune-up Procure exhibit.
3. It is expected by the manufacturer that MPR for some HSDPA/HSUPA subtests may differ from the specification of 3GPP, according to the chipset implementation in this model. The implementation and expected deviation are detailed in tune-up procedure exhibit.

Band	WCDMA Band II			WCDMA Band IV			WCDMA Band V		
Channel	9262	9400	9538	1312	1450	1513	4132	4182	4233
Frequency (MHz)	1852.4	1880.0	1907.6	1712.4	1740	1752.6	826.4	836.4	846.6
RMC	22.13	**22.27**	22.22	21.80	**22.14**	22.00	22.25	**22.52**	22.44
HSDPA Subtest-1	20.76	21.08	21.13	20.79	21.01	20.97	21.25	21.50	21.52
HSDPA Subtest-2	20.94	20.76	20.98	20.81	20.82	20.89	21.42	21.34	21.13
HSDPA Subtest-3	20.06	19.95	20.06	19.69	19.83	20.01	20.15	20.38	20.04
HSDPA Subtest-4	19.36	19.83	19.99	19.81	19.84	19.68	20.03	20.04	20.19
HSUPA Subtest-1	20.19	20.44	20.56	20.11	20.24	20.37	20.61	20.83	20.84
HSUPA Subtest-2	20.96	21.04	21.08	20.92	21.03	21.00	21.43	21.45	21.49
HSUPA Subtest-3	20.56	20.40	20.64	20.34	20.61	20.46	21.03	21.14	21.01
HSUPA Subtest-4	21.13	21.11	21.24	20.72	21.11	20.99	21.54	21.47	21.67
HSUPA Subtest-5	20.25	20.37	20.54	20.31	20.28	20.36	20.81	20.68	20.77

Note: When the maximum output power and tune-up tolerance specified for production units in a secondary mode is ≤1/2dB higher than the primary mode (RMC12.2kbps) or when the highest reported SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of secondary to primary mode and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for the secondary mode.

Band	Bandwidth (MHz)	UL Channel	RB Size	RB Position	Modulation	Average Powe [dBm]	E.i.r.p [dBm]
Band2	1.4	18607	1	#0	QPSK	20.72	22.22
Band2	1.4	18607	1	#Mid	QPSK	20.8	22.30
Band2	1.4	18607	1	#Max	QPSK	20.77	22.27
Band2	1.4	18607	3	#0	QPSK	20.47	21.97
Band2	1.4	18607	3	#Mid	QPSK	20.51	22.01
Band2	1.4	18607	3	#Max	QPSK	20.5	22.00
Band2	1.4	18607	6	#0	QPSK	19.62	21.12
Band2	1.4	18607	1	#0	QAM16	19.89	21.39
Band2	1.4	18607	1	#Mid	QAM16	19.64	21.14
Band2	1.4	18607	1	#Max	QAM16	19.42	20.92
Band2	1.4	18607	3	#0	QAM16	19.16	20.66
Band2	1.4	18607	3	#Mid	QAM16	19.2	20.70
Band2	1.4	18607	3	#Max	QAM16	19.18	20.68
Band2	1.4	18607	6	#0	QAM16	18.37	19.87
Band2	1.4	18900	1	#0	QPSK	20.51	22.01
Band2	1.4	18900	1	#Mid	QPSK	20.67	22.17
Band2	1.4	18900	1	#Max	QPSK	20.56	22.06
Band2	1.4	18900	3	#0	QPSK	20.61	22.11
Band2	1.4	18900	3	#Mid	QPSK	20.62	22.12
Band2	1.4	18900	3	#Max	QPSK	20.64	22.14
Band2	1.4	18900	6	#0	QPSK	19.72	21.22
Band2	1.4	18900	1	#0	QAM16	19.49	20.99
Band2	1.4	18900	1	#Mid	QAM16	19.57	21.07
Band2	1.4	18900	1	#Max	QAM16	19.44	20.94
Band2	1.4	18900	3	#0	QAM16	19.59	21.09
Band2	1.4	18900	3	#Mid	QAM16	19.62	21.12
Band2	1.4	18900	3	#Max	QAM16	19.56	21.06
Band2	1.4	18900	6	#0	QAM16	18.74	20.24
Band2	1.4	19193	1	#0	QPSK	20.78	22.28
Band2	1.4	19193	1	#Mid	QPSK	20.88	22.38
Band2	1.4	19193	1	#Max	QPSK	20.68	22.18
Band2	1.4	19193	3	#0	QPSK	20.68	22.18
Band2	1.4	19193	3	#Mid	QPSK	20.64	22.14
Band2	1.4	19193	3	#Max	QPSK	20.58	22.08
Band2	1.4	19193	6	#0	QPSK	19.55	21.05
Band2	1.4	19193	1	#0	QAM16	19.43	20.93
Band2	1.4	19193	1	#Mid	QAM16	19.55	21.05
Band2	1.4	19193	1	#Max	QAM16	19.43	20.93
Band2	1.4	19193	3	#0	QAM16	19.63	21.13
Band2	1.4	19193	3	#Mid	QAM16	19.6	21.10
Band2	1.4	19193	3	#Max	QAM16	19.71	21.21
Band2	1.4	19193	6	#0	QAM16	18.91	20.41
Band2	3	18615	1	#0	QPSK	20.37	21.87
Band2	3	18615	1	#Mid	QPSK	20.43	21.93
Band2	3	18615	1	#Max	QPSK	20.59	22.09
Band2	3	18615	8	#0	QPSK	19.45	20.95
Band2	3	18615	8	#Mid	QPSK	19.42	20.92
Band2	3	18615	8	#Max	QPSK	19.43	20.93
Band2	3	18615	15	#0	QPSK	19.37	20.87
Band2	3	18615	1	#0	QAM16	20.07	21.57
Band2	3	18615	1	#Mid	QAM16	19.98	21.48
Band2	3	18615	1	#Max	QAM16	20.19	21.69

Band2	3	18615	8	#0	QAM16	18.76	20.26
Band2	3	18615	8	#Mid	QAM16	18.76	20.26
Band2	3	18615	8	#Max	QAM16	18.83	20.33
Band2	3	18615	15	#0	QAM16	18.59	20.09
Band2	3	18900	1	#0	QPSK	20.57	22.07
Band2	3	18900	1	#Mid	QPSK	20.75	22.25
Band2	3	18900	1	#Max	QPSK	20.75	22.25
Band2	3	18900	8	#0	QPSK	19.71	21.21
Band2	3	18900	8	#Mid	QPSK	19.7	21.20
Band2	3	18900	8	#Max	QPSK	19.64	21.14
Band2	3	18900	15	#0	QPSK	19.68	21.18
Band2	3	18900	1	#0	QAM16	19.31	20.81
Band2	3	18900	1	#Mid	QAM16	19.69	21.19
Band2	3	18900	1	#Max	QAM16	19.26	20.76
Band2	3	18900	8	#0	QAM16	18.72	20.22
Band2	3	18900	8	#Mid	QAM16	18.71	20.21
Band2	3	18900	8	#Max	QAM16	18.72	20.22
Band2	3	18900	15	#0	QAM16	18.72	20.22
Band2	3	19185	1	#0	QPSK	20.48	21.98
Band2	3	19185	1	#Mid	QPSK	20.58	22.08
Band2	3	19185	1	#Max	QPSK	20.52	22.02
Band2	3	19185	8	#0	QPSK	19.52	21.02
Band2	3	19185	8	#Mid	QPSK	19.51	21.01
Band2	3	19185	8	#Max	QPSK	19.45	20.95
Band2	3	19185	15	#0	QPSK	19.56	21.06
Band2	3	19185	1	#0	QAM16	19.49	20.99
Band2	3	19185	1	#Mid	QAM16	19.43	20.93
Band2	3	19185	1	#Max	QAM16	19.22	20.72
Band2	3	19185	8	#0	QAM16	18.64	20.14
Band2	3	19185	8	#Mid	QAM16	18.63	20.13
Band2	3	19185	8	#Max	QAM16	18.58	20.08
Band2	3	19185	15	#0	QAM16	18.65	20.15
Band2	5	18625	1	#0	QPSK	20.38	21.88
Band2	5	18625	1	#Mid	QPSK	20.61	22.11
Band2	5	18625	1	#Max	QPSK	20.51	22.01
Band2	5	18625	12	#0	QPSK	19.39	20.89
Band2	5	18625	12	#Mid	QPSK	19.42	20.92
Band2	5	18625	12	#Max	QPSK	19.49	20.99
Band2	5	18625	25	#0	QPSK	19.44	20.94
Band2	5	18625	1	#0	QAM16	19.44	20.94
Band2	5	18625	1	#Mid	QAM16	19.37	20.87
Band2	5	18625	1	#Max	QAM16	19.58	21.08
Band2	5	18625	12	#0	QAM16	18.26	19.76
Band2	5	18625	12	#Mid	QAM16	18.31	19.81
Band2	5	18625	12	#Max	QAM16	18.37	19.87
Band2	5	18625	25	#0	QAM16	18.57	20.07
Band2	5	18900	1	#0	QPSK	20.43	21.93
Band2	5	18900	1	#Mid	QPSK	20.52	22.02
Band2	5	18900	1	#Max	QPSK	20.55	22.05
Band2	5	18900	12	#0	QPSK	19.7	21.20
Band2	5	18900	12	#Mid	QPSK	19.66	21.16
Band2	5	18900	12	#Max	QPSK	19.6	21.10
Band2	5	18900	25	#0	QPSK	19.67	21.17
Band2	5	18900	1	#0	QAM16	19.41	20.91
Band2	5	18900	1	#Mid	QAM16	19.2	20.70
Band2	5	18900	1	#Max	QAM16	19.28	20.78
Band2	5	18900	12	#0	QAM16	18.55	20.05

Band2	5	18900	12	#Mid	QAM16	18.63	20.13
Band2	5	18900	12	#Max	QAM16	18.62	20.12
Band2	5	18900	25	#0	QAM16	18.76	20.26
Band2	5	19175	1	#0	QPSK	20.47	21.97
Band2	5	19175	1	#Mid	QPSK	20.52	22.02
Band2	5	19175	1	#Max	QPSK	20.45	21.95
Band2	5	19175	12	#0	QPSK	19.74	21.24
Band2	5	19175	12	#Mid	QPSK	19.62	21.12
Band2	5	19175	12	#Max	QPSK	19.59	21.09
Band2	5	19175	25	#0	QPSK	19.47	20.97
Band2	5	19175	1	#0	QAM16	19.68	21.18
Band2	5	19175	1	#Mid	QAM16	19.55	21.05
Band2	5	19175	1	#Max	QAM16	19.45	20.95
Band2	5	19175	12	#0	QAM16	18.7	20.20
Band2	5	19175	12	#Mid	QAM16	18.69	20.19
Band2	5	19175	12	#Max	QAM16	18.65	20.15
Band2	5	19175	25	#0	QAM16	18.49	19.99
Band2	10	18650	1	#0	QPSK	20.37	21.87
Band2	10	18650	1	#Mid	QPSK	20.8	22.30
Band2	10	18650	1	#Max	QPSK	20.54	22.04
Band2	10	18650	25	#0	QPSK	19.53	21.03
Band2	10	18650	25	#Mid	QPSK	19.78	21.28
Band2	10	18650	25	#Max	QPSK	19.66	21.16
Band2	10	18650	50	#0	QPSK	19.59	21.09
Band2	10	18650	1	#0	QAM16	19.85	21.35
Band2	10	18650	1	#Mid	QAM16	20.56	22.06
Band2	10	18650	1	#Max	QAM16	19.95	21.45
Band2	10	18650	25	#0	QAM16	18.62	20.12
Band2	10	18650	25	#Mid	QAM16	18.75	20.25
Band2	10	18650	25	#Max	QAM16	18.75	20.25
Band2	10	18650	50	#0	QAM16	18.75	20.25
Band2	10	18900	1	#0	QPSK	20.46	21.96
Band2	10	18900	1	#Mid	QPSK	20.56	22.06
Band2	10	18900	1	#Max	QPSK	20.46	21.96
Band2	10	18900	25	#0	QPSK	19.68	21.18
Band2	10	18900	25	#Mid	QPSK	19.75	21.25
Band2	10	18900	25	#Max	QPSK	19.61	21.11
Band2	10	18900	50	#0	QPSK	19.64	21.14
Band2	10	18900	1	#0	QAM16	19.22	20.72
Band2	10	18900	1	#Mid	QAM16	19.36	20.86
Band2	10	18900	1	#Max	QAM16	19.25	20.75
Band2	10	18900	25	#0	QAM16	18.66	20.16
Band2	10	18900	25	#Mid	QAM16	18.75	20.25
Band2	10	18900	25	#Max	QAM16	18.69	20.19
Band2	10	18900	50	#0	QAM16	18.75	20.25
Band2	10	19150	1	#0	QPSK	20.67	22.17
Band2	10	19150	1	#Mid	QPSK	20.95	22.45
Band2	10	19150	1	#Max	QPSK	20.43	21.93
Band2	10	19150	25	#0	QPSK	19.56	21.06
Band2	10	19150	25	#Mid	QPSK	19.69	21.19
Band2	10	19150	25	#Max	QPSK	19.52	21.02
Band2	10	19150	50	#0	QPSK	19.52	21.02
Band2	10	19150	1	#0	QAM16	19.32	20.82
Band2	10	19150	1	#Mid	QAM16	19.59	21.09
Band2	10	19150	1	#Max	QAM16	19.37	20.87
Band2	10	19150	25	#0	QAM16	18.53	20.03
Band2	10	19150	25	#Mid	QAM16	18.69	20.19

Band2	10	19150	25	#Max	QAM16	18.57	20.07
Band2	10	19150	50	#0	QAM16	18.6	20.10
Band2	15	18675	1	#0	QPSK	20.34	21.84
Band2	15	18675	1	#Mid	QPSK	20.87	22.37
Band2	15	18675	1	#Max	QPSK	20.64	22.14
Band2	15	18675	36	#0	QPSK	19.58	21.08
Band2	15	18675	36	#Mid	QPSK	19.67	21.17
Band2	15	18675	36	#Max	QPSK	19.57	21.07
Band2	15	18675	75	#0	QPSK	19.53	21.03
Band2	15	18675	1	#0	QAM16	19.93	21.43
Band2	15	18675	1	#Mid	QAM16	20.47	21.97
Band2	15	18675	1	#Max	QAM16	20.14	21.64
Band2	15	18675	36	#0	QAM16	18.6	20.10
Band2	15	18675	36	#Mid	QAM16	18.77	20.27
Band2	15	18675	36	#Max	QAM16	18.68	20.18
Band2	15	18675	75	#0	QAM16	18.6	20.10
Band2	15	18900	1	#0	QPSK	20.38	21.88
Band2	15	18900	1	#Mid	QPSK	20.75	22.25
Band2	15	18900	1	#Max	QPSK	20.64	22.14
Band2	15	18900	36	#0	QPSK	19.67	21.17
Band2	15	18900	36	#Mid	QPSK	19.73	21.23
Band2	15	18900	36	#Max	QPSK	19.61	21.11
Band2	15	18900	75	#0	QPSK	19.58	21.08
Band2	15	18900	1	#0	QAM16	19.4	20.90
Band2	15	18900	1	#Mid	QAM16	19.65	21.15
Band2	15	18900	1	#Max	QAM16	19.46	20.96
Band2	15	18900	36	#0	QAM16	18.62	20.12
Band2	15	18900	36	#Mid	QAM16	18.71	20.21
Band2	15	18900	36	#Max	QAM16	18.56	20.06
Band2	15	18900	75	#0	QAM16	18.57	20.07
Band2	15	19125	1	#0	QPSK	20.51	22.01
Band2	15	19125	1	#Mid	QPSK	20.73	22.23
Band2	15	19125	1	#Max	QPSK	20.37	21.87
Band2	15	19125	36	#0	QPSK	19.64	21.14
Band2	15	19125	36	#Mid	QPSK	19.73	21.23
Band2	15	19125	36	#Max	QPSK	19.65	21.15
Band2	15	19125	75	#0	QPSK	19.52	21.02
Band2	15	19125	1	#0	QAM16	19.84	21.34
Band2	15	19125	1	#Mid	QAM16	20.01	21.51
Band2	15	19125	1	#Max	QAM16	20.07	21.57
Band2	15	19125	36	#0	QAM16	18.67	20.17
Band2	15	19125	36	#Mid	QAM16	18.79	20.29
Band2	15	19125	36	#Max	QAM16	18.72	20.22
Band2	15	19125	75	#0	QAM16	18.71	20.21
Band2	20	18700	1	#0	QPSK	20.28	21.78
Band2	20	18700	1	#Mid	QPSK	20.59	22.09
Band2	20	18700	1	#Max	QPSK	20.43	21.93
Band2	20	18700	50	#0	QPSK	19.61	21.11
Band2	20	18700	50	#Mid	QPSK	19.74	21.24
Band2	20	18700	50	#Max	QPSK	19.61	21.11
Band2	20	18700	100	#0	QPSK	19.54	21.04
Band2	20	18700	1	#0	QAM16	19.45	20.95
Band2	20	18700	1	#Mid	QAM16	19.35	20.85
Band2	20	18700	1	#Max	QAM16	19.02	20.52
Band2	20	18700	50	#0	QAM16	18.74	20.24
Band2	20	18700	50	#Mid	QAM16	18.87	20.37
Band2	20	18700	50	#Max	QAM16	18.74	20.24

Band2	20	18700	100	#0	QAM16	18.69	20.19
Band2	20	18900	1	#0	QPSK	20.74	22.24
Band2	20	18900	1	#Mid	QPSK	21.19	22.69
Band2	20	18900	1	#Max	QPSK	20.82	22.32
Band2	20	18900	50	#0	QPSK	19.68	21.18
Band2	20	18900	50	#Mid	QPSK	19.75	21.25
Band2	20	18900	50	#Max	QPSK	19.57	21.07
Band2	20	18900	100	#0	QPSK	19.7	21.20
Band2	20	18900	1	#0	QAM16	19.71	21.21
Band2	20	18900	1	#Mid	QAM16	20.27	21.77
Band2	20	18900	1	#Max	QAM16	19.81	21.31
Band2	20	18900	50	#0	QAM16	18.75	20.25
Band2	20	18900	50	#Mid	QAM16	18.82	20.32
Band2	20	18900	50	#Max	QAM16	18.68	20.18
Band2	20	18900	100	#0	QAM16	18.77	20.27
Band2	20	19100	1	#0	QPSK	20.45	21.95
Band2	20	19100	1	#Mid	QPSK	20.7	22.20
Band2	20	19100	1	#Max	QPSK	20.37	21.87
Band2	20	19100	50	#0	QPSK	19.64	21.14
Band2	20	19100	50	#Mid	QPSK	19.64	21.14
Band2	20	19100	50	#Max	QPSK	19.62	21.12
Band2	20	19100	100	#0	QPSK	19.58	21.08
Band2	20	19100	1	#0	QAM16	19.11	20.61
Band2	20	19100	1	#Mid	QAM16	19.16	20.66
Band2	20	19100	1	#Max	QAM16	19.22	20.72
Band2	20	19100	50	#0	QAM16	18.67	20.17
Band2	20	19100	50	#Mid	QAM16	18.78	20.28
Band2	20	19100	50	#Max	QAM16	18.77	20.27
Band2	20	19100	100	#0	QAM16	18.69	20.19

Band	Bandwidth (MHz)	UL Channel	RB Size	RB Position	Modulation	Average Powe [dBm]	E.i.r.p [dBm]
Band4	1.4	19957	1	#0	QPSK	20.81	22.31
Band4	1.4	19957	1	#Mid	QPSK	20.95	22.45
Band4	1.4	19957	1	#Max	QPSK	20.68	22.18
Band4	1.4	19957	3	#0	QPSK	20.86	22.36
Band4	1.4	19957	3	#Mid	QPSK	20.89	22.39
Band4	1.4	19957	3	#Max	QPSK	20.87	22.37
Band4	1.4	19957	6	#0	QPSK	19.94	21.44
Band4	1.4	19957	1	#0	QAM16	19.57	21.07
Band4	1.4	19957	1	#Mid	QAM16	19.65	21.15
Band4	1.4	19957	1	#Max	QAM16	19.44	20.94
Band4	1.4	19957	3	#0	QAM16	19.74	21.24
Band4	1.4	19957	3	#Mid	QAM16	19.69	21.19
Band4	1.4	19957	3	#Max	QAM16	19.62	21.12
Band4	1.4	19957	6	#0	QAM16	18.87	20.37
Band4	1.4	20175	1	#0	QPSK	20.9	22.40
Band4	1.4	20175	1	#Mid	QPSK	20.99	22.49
Band4	1.4	20175	1	#Max	QPSK	20.98	22.48
Band4	1.4	20175	3	#0	QPSK	20.81	22.31
Band4	1.4	20175	3	#Mid	QPSK	20.79	22.29
Band4	1.4	20175	3	#Max	QPSK	20.86	22.36
Band4	1.4	20175	6	#0	QPSK	19.82	21.32
Band4	1.4	20175	1	#0	QAM16	19.68	21.18
Band4	1.4	20175	1	#Mid	QAM16	19.83	21.33
Band4	1.4	20175	1	#Max	QAM16	19.67	21.17
Band4	1.4	20175	3	#0	QAM16	19.65	21.15
Band4	1.4	20175	3	#Mid	QAM16	19.67	21.17
Band4	1.4	20175	3	#Max	QAM16	19.72	21.22
Band4	1.4	20175	6	#0	QAM16	18.76	20.26
Band4	1.4	20393	1	#0	QPSK	20.27	21.77
Band4	1.4	20393	1	#Mid	QPSK	20.31	21.81
Band4	1.4	20393	1	#Max	QPSK	20.3	21.80
Band4	1.4	20393	3	#0	QPSK	20.56	22.06
Band4	1.4	20393	3	#Mid	QPSK	20.48	21.98
Band4	1.4	20393	3	#Max	QPSK	20.4	21.90
Band4	1.4	20393	6	#0	QPSK	19.57	21.07
Band4	1.4	20393	1	#0	QAM16	19.09	20.59
Band4	1.4	20393	1	#Mid	QAM16	19.1	20.60
Band4	1.4	20393	1	#Max	QAM16	18.91	20.41
Band4	1.4	20393	3	#0	QAM16	19.2	20.70
Band4	1.4	20393	3	#Mid	QAM16	19.12	20.62
Band4	1.4	20393	3	#Max	QAM16	19.05	20.55
Band4	1.4	20393	6	#0	QAM16	18.49	19.99
Band4	3	19965	1	#0	QPSK	20.67	22.17
Band4	3	19965	1	#Mid	QPSK	20.6	22.10
Band4	3	19965	1	#Max	QPSK	20.41	21.91
Band4	3	19965	8	#0	QPSK	19.79	21.29
Band4	3	19965	8	#Mid	QPSK	19.65	21.15
Band4	3	19965	8	#Max	QPSK	19.6	21.10
Band4	3	19965	15	#0	QPSK	19.62	21.12
Band4	3	19965	1	#0	QAM16	19.99	21.49

Band4	3	19965	1	#Mid	QAM16	20.01	21.51
Band4	3	19965	1	#Max	QAM16	19.82	21.32
Band4	3	19965	8	#0	QAM16	18.82	20.32
Band4	3	19965	8	#Mid	QAM16	18.77	20.27
Band4	3	19965	8	#Max	QAM16	18.71	20.21
Band4	3	19965	15	#0	QAM16	18.82	20.32
Band4	3	20175	1	#0	QPSK	20.58	22.08
Band4	3	20175	1	#Mid	QPSK	20.97	22.47
Band4	3	20175	1	#Max	QPSK	21.11	22.61
Band4	3	20175	8	#0	QPSK	19.88	21.38
Band4	3	20175	8	#Mid	QPSK	19.82	21.32
Band4	3	20175	8	#Max	QPSK	19.87	21.37
Band4	3	20175	15	#0	QPSK	19.79	21.29
Band4	3	20175	1	#0	QAM16	19.47	20.97
Band4	3	20175	1	#Mid	QAM16	19.79	21.29
Band4	3	20175	1	#Max	QAM16	19.47	20.97
Band4	3	20175	8	#0	QAM16	18.59	20.09
Band4	3	20175	8	#Mid	QAM16	18.62	20.12
Band4	3	20175	8	#Max	QAM16	18.68	20.18
Band4	3	20175	15	#0	QAM16	18.65	20.15
Band4	3	20385	1	#0	QPSK	20.44	21.94
Band4	3	20385	1	#Mid	QPSK	20.6	22.10
Band4	3	20385	1	#Max	QPSK	20.43	21.93
Band4	3	20385	8	#0	QPSK	19.55	21.05
Band4	3	20385	8	#Mid	QPSK	19.53	21.03
Band4	3	20385	8	#Max	QPSK	19.56	21.06
Band4	3	20385	15	#0	QPSK	19.63	21.13
Band4	3	20385	1	#0	QAM16	19.6	21.10
Band4	3	20385	1	#Mid	QAM16	18.97	20.47
Band4	3	20385	1	#Max	QAM16	18.73	20.23
Band4	3	20385	8	#0	QAM16	18.2	19.70
Band4	3	20385	8	#Mid	QAM16	18.18	19.68
Band4	3	20385	8	#Max	QAM16	18.27	19.77
Band4	3	20385	15	#0	QAM16	18.47	19.97
Band4	5	19975	1	#0	QPSK	20.51	22.01
Band4	5	19975	1	#Mid	QPSK	20.65	22.15
Band4	5	19975	1	#Max	QPSK	20.61	22.11
Band4	5	19975	12	#0	QPSK	19.71	21.21
Band4	5	19975	12	#Mid	QPSK	19.62	21.12
Band4	5	19975	12	#Max	QPSK	19.55	21.05
Band4	5	19975	25	#0	QPSK	19.51	21.01
Band4	5	19975	1	#0	QAM16	19.68	21.18
Band4	5	19975	1	#Mid	QAM16	19.54	21.04
Band4	5	19975	1	#Max	QAM16	19.45	20.95
Band4	5	19975	12	#0	QAM16	18.58	20.08
Band4	5	19975	12	#Mid	QAM16	18.48	19.98
Band4	5	19975	12	#Max	QAM16	18.36	19.86
Band4	5	19975	25	#0	QAM16	18.63	20.13
Band4	5	20175	1	#0	QPSK	20.47	21.97
Band4	5	20175	1	#Mid	QPSK	20.89	22.39
Band4	5	20175	1	#Max	QPSK	20.81	22.31
Band4	5	20175	12	#0	QPSK	19.71	21.21
Band4	5	20175	12	#Mid	QPSK	19.79	21.29
Band4	5	20175	12	#Max	QPSK	19.87	21.37
Band4	5	20175	25	#0	QPSK	19.71	21.21
Band4	5	20175	1	#0	QAM16	19.42	20.92
Band4	5	20175	1	#Mid	QAM16	19.49	20.99

Band4	5	20175	1	#Max	QAM16	19.54	21.04
Band4	5	20175	12	#0	QAM16	18.27	19.77
Band4	5	20175	12	#Mid	QAM16	18.37	19.87
Band4	5	20175	12	#Max	QAM16	18.44	19.94
Band4	5	20175	25	#0	QAM16	18.6	20.10
Band4	5	20375	1	#0	QPSK	20.41	21.91
Band4	5	20375	1	#Mid	QPSK	20.56	22.06
Band4	5	20375	1	#Max	QPSK	20.47	21.97
Band4	5	20375	12	#0	QPSK	19.6	21.10
Band4	5	20375	12	#Mid	QPSK	19.52	21.02
Band4	5	20375	12	#Max	QPSK	19.52	21.02
Band4	5	20375	25	#0	QPSK	19.6	21.10
Band4	5	20375	1	#0	QAM16	19.54	21.04
Band4	5	20375	1	#Mid	QAM16	19.19	20.69
Band4	5	20375	1	#Max	QAM16	19.08	20.58
Band4	5	20375	12	#0	QAM16	18.55	20.05
Band4	5	20375	12	#Mid	QAM16	18.36	19.86
Band4	5	20375	12	#Max	QAM16	18.47	19.97
Band4	5	20375	25	#0	QAM16	18.58	20.08
Band4	10	20000	1	#0	QPSK	20.61	22.11
Band4	10	20000	1	#Mid	QPSK	20.51	22.01
Band4	10	20000	1	#Max	QPSK	20.27	21.77
Band4	10	20000	25	#0	QPSK	19.5	21.00
Band4	10	20000	25	#Mid	QPSK	19.5	21.00
Band4	10	20000	25	#Max	QPSK	19.38	20.88
Band4	10	20000	50	#0	QPSK	19.57	21.07
Band4	10	20000	1	#0	QAM16	20.01	21.51
Band4	10	20000	1	#Mid	QAM16	20.02	21.52
Band4	10	20000	1	#Max	QAM16	19.69	21.19
Band4	10	20000	25	#0	QAM16	18.42	19.92
Band4	10	20000	25	#Mid	QAM16	18.51	20.01
Band4	10	20000	25	#Max	QAM16	18.47	19.97
Band4	10	20000	50	#0	QAM16	18.66	20.16
Band4	10	20175	1	#0	QPSK	20.56	22.06
Band4	10	20175	1	#Mid	QPSK	20.9	22.40
Band4	10	20175	1	#Max	QPSK	20.77	22.27
Band4	10	20175	25	#0	QPSK	19.59	21.09
Band4	10	20175	25	#Mid	QPSK	19.71	21.21
Band4	10	20175	25	#Max	QPSK	19.76	21.26
Band4	10	20175	50	#0	QPSK	19.57	21.07
Band4	10	20175	1	#0	QAM16	19.51	21.01
Band4	10	20175	1	#Mid	QAM16	19.19	20.69
Band4	10	20175	1	#Max	QAM16	19.36	20.86
Band4	10	20175	25	#0	QAM16	18.58	20.08
Band4	10	20175	25	#Mid	QAM16	18.79	20.29
Band4	10	20175	25	#Max	QAM16	18.94	20.44
Band4	10	20175	50	#0	QAM16	18.83	20.33
Band4	10	20350	1	#0	QPSK	20.71	22.21
Band4	10	20350	1	#Mid	QPSK	20.72	22.22
Band4	10	20350	1	#Max	QPSK	20.47	21.97
Band4	10	20350	25	#0	QPSK	19.58	21.08
Band4	10	20350	25	#Mid	QPSK	19.5	21.00
Band4	10	20350	25	#Max	QPSK	19.52	21.02
Band4	10	20350	50	#0	QPSK	19.67	21.17
Band4	10	20350	1	#0	QAM16	19.5	21.00
Band4	10	20350	1	#Mid	QAM16	19.36	20.86
Band4	10	20350	1	#Max	QAM16	19.51	21.01

Band4	10	20350	25	#0	QAM16	18.64	20.14
Band4	10	20350	25	#Mid	QAM16	18.5	20.00
Band4	10	20350	25	#Max	QAM16	18.44	19.94
Band4	10	20350	50	#0	QAM16	18.53	20.03
Band4	15	20025	1	#0	QPSK	20.49	21.99
Band4	15	20025	1	#Mid	QPSK	20.41	21.91
Band4	15	20025	1	#Max	QPSK	20.54	22.04
Band4	15	20025	36	#0	QPSK	19.57	21.07
Band4	15	20025	36	#Mid	QPSK	19.47	20.97
Band4	15	20025	36	#Max	QPSK	19.36	20.86
Band4	15	20025	75	#0	QPSK	19.41	20.91
Band4	15	20025	1	#0	QAM16	20.06	21.56
Band4	15	20025	1	#Mid	QAM16	19.71	21.21
Band4	15	20025	1	#Max	QAM16	19.86	21.36
Band4	15	20025	36	#0	QAM16	18.45	19.95
Band4	15	20025	36	#Mid	QAM16	18.4	19.90
Band4	15	20025	36	#Max	QAM16	18.27	19.77
Band4	15	20025	75	#0	QAM16	18.38	19.88
Band4	15	20175	1	#0	QPSK	20.44	21.94
Band4	15	20175	1	#Mid	QPSK	20.94	22.44
Band4	15	20175	1	#Max	QPSK	20.68	22.18
Band4	15	20175	36	#0	QPSK	19.6	21.10
Band4	15	20175	36	#Mid	QPSK	19.7	21.20
Band4	15	20175	36	#Max	QPSK	19.71	21.21
Band4	15	20175	75	#0	QPSK	19.68	21.18
Band4	15	20175	1	#0	QAM16	19.32	20.82
Band4	15	20175	1	#Mid	QAM16	19.96	21.46
Band4	15	20175	1	#Max	QAM16	19.34	20.84
Band4	15	20175	36	#0	QAM16	18.73	20.23
Band4	15	20175	36	#Mid	QAM16	18.92	20.42
Band4	15	20175	36	#Max	QAM16	18.85	20.35
Band4	15	20175	75	#0	QAM16	18.68	20.18
Band4	15	20325	1	#0	QPSK	20.7	22.20
Band4	15	20325	1	#Mid	QPSK	20.81	22.31
Band4	15	20325	1	#Max	QPSK	20.49	21.99
Band4	15	20325	36	#0	QPSK	19.68	21.18
Band4	15	20325	36	#Mid	QPSK	19.65	21.15
Band4	15	20325	36	#Max	QPSK	19.59	21.09
Band4	15	20325	75	#0	QPSK	19.62	21.12
Band4	15	20325	1	#0	QAM16	19.61	21.11
Band4	15	20325	1	#Mid	QAM16	19.54	21.04
Band4	15	20325	1	#Max	QAM16	19.71	21.21
Band4	15	20325	36	#0	QAM16	18.73	20.23
Band4	15	20325	36	#Mid	QAM16	18.7	20.20
Band4	15	20325	36	#Max	QAM16	18.37	19.87
Band4	15	20325	75	#0	QAM16	18.66	20.16
Band4	20	20050	1	#0	QPSK	20.34	21.84
Band4	20	20050	1	#Mid	QPSK	20.24	21.74
Band4	20	20050	1	#Max	QPSK	20.55	22.05
Band4	20	20050	50	#0	QPSK	19.33	20.83
Band4	20	20050	50	#Mid	QPSK	19.41	20.91
Band4	20	20050	50	#Max	QPSK	19.48	20.98
Band4	20	20050	100	#0	QPSK	19.39	20.89
Band4	20	20050	1	#0	QAM16	19.27	20.77
Band4	20	20050	1	#Mid	QAM16	19.19	20.69
Band4	20	20050	1	#Max	QAM16	19.55	21.05
Band4	20	20050	50	#0	QAM16	18.36	19.86

Band4	20	20050	50	#Mid	QAM16	18.51	20.01
Band4	20	20050	50	#Max	QAM16	18.52	20.02
Band4	20	20050	100	#0	QAM16	18.38	19.88
Band4	20	20175	1	#0	QPSK	20.57	22.07
Band4	20	20175	1	#Mid	QPSK	21.1	22.60
Band4	20	20175	1	#Max	QPSK	20.72	22.22
Band4	20	20175	50	#0	QPSK	19.45	20.95
Band4	20	20175	50	#Mid	QPSK	19.62	21.12
Band4	20	20175	50	#Max	QPSK	19.71	21.21
Band4	20	20175	100	#0	QPSK	19.57	21.07
Band4	20	20175	1	#0	QAM16	19.76	21.26
Band4	20	20175	1	#Mid	QAM16	19.57	21.07
Band4	20	20175	1	#Max	QAM16	18.97	20.47
Band4	20	20175	50	#0	QAM16	18.46	19.96
Band4	20	20175	50	#Mid	QAM16	18.69	20.19
Band4	20	20175	50	#Max	QAM16	18.61	20.11
Band4	20	20175	100	#0	QAM16	18.66	20.16
Band4	20	20300	1	#0	QPSK	20.65	22.15
Band4	20	20300	1	#Mid	QPSK	20.67	22.17
Band4	20	20300	1	#Max	QPSK	20.37	21.87
Band4	20	20300	50	#0	QPSK	19.75	21.25
Band4	20	20300	50	#Mid	QPSK	19.77	21.27
Band4	20	20300	50	#Max	QPSK	19.5	21.00
Band4	20	20300	100	#0	QPSK	19.76	21.26
Band4	20	20300	1	#0	QAM16	20.08	21.58
Band4	20	20300	1	#Mid	QAM16	19.39	20.89
Band4	20	20300	1	#Max	QAM16	18.89	20.39
Band4	20	20300	50	#0	QAM16	18.78	20.28
Band4	20	20300	50	#Mid	QAM16	18.78	20.28
Band4	20	20300	50	#Max	QAM16	18.51	20.01
Band4	20	20300	100	#0	QAM16	18.77	20.27

Band	Bandwidth (MHz)	UL Channel	RB Size	RB Position	Modulation	Average Powe [dBm]	E.R.P [dBm]
Band12	1.4	23017	1	#0	QPSK	24.3	22.65
Band12	1.4	23017	1	#Mid	QPSK	24.51	22.86
Band12	1.4	23017	1	#Max	QPSK	24.47	22.82
Band12	1.4	23017	3	#0	QPSK	24.23	22.58
Band12	1.4	23017	3	#Mid	QPSK	24.37	22.72
Band12	1.4	23017	3	#Max	QPSK	24.47	22.82
Band12	1.4	23017	6	#0	QPSK	23.37	21.72
Band12	1.4	23017	1	#0	QAM16	23.18	21.53
Band12	1.4	23017	1	#Mid	QAM16	23.31	21.66
Band12	1.4	23017	1	#Max	QAM16	23.17	21.52
Band12	1.4	23017	3	#0	QAM16	23.57	21.92
Band12	1.4	23017	3	#Mid	QAM16	23.58	21.93
Band12	1.4	23017	3	#Max	QAM16	23.42	21.77
Band12	1.4	23017	6	#0	QAM16	22.44	20.79
Band12	1.4	23095	1	#0	QPSK	24.48	22.83
Band12	1.4	23095	1	#Mid	QPSK	24.68	23.03
Band12	1.4	23095	1	#Max	QPSK	24.42	22.77
Band12	1.4	23095	3	#0	QPSK	24.3	22.65
Band12	1.4	23095	3	#Mid	QPSK	24.28	22.63
Band12	1.4	23095	3	#Max	QPSK	24.34	22.69
Band12	1.4	23095	6	#0	QPSK	23.43	21.78
Band12	1.4	23095	1	#0	QAM16	23.33	21.68
Band12	1.4	23095	1	#Mid	QAM16	23.51	21.86
Band12	1.4	23095	1	#Max	QAM16	23.29	21.64
Band12	1.4	23095	3	#0	QAM16	23.43	21.78
Band12	1.4	23095	3	#Mid	QAM16	23.47	21.82
Band12	1.4	23095	3	#Max	QAM16	23.36	21.71
Band12	1.4	23095	6	#0	QAM16	22.48	20.83
Band12	1.4	23173	1	#0	QPSK	23.92	22.27
Band12	1.4	23173	1	#Mid	QPSK	24.17	22.52
Band12	1.4	23173	1	#Max	QPSK	24.24	22.59
Band12	1.4	23173	3	#0	QPSK	24.24	22.59
Band12	1.4	23173	3	#Mid	QPSK	24.41	22.76
Band12	1.4	23173	3	#Max	QPSK	24.16	22.51
Band12	1.4	23173	6	#0	QPSK	23.33	21.68
Band12	1.4	23173	1	#0	QAM16	23.14	21.49
Band12	1.4	23173	1	#Mid	QAM16	23.17	21.52
Band12	1.4	23173	1	#Max	QAM16	23.12	21.47
Band12	1.4	23173	3	#0	QAM16	23.2	21.55
Band12	1.4	23173	3	#Mid	QAM16	23.29	21.64
Band12	1.4	23173	3	#Max	QAM16	23.59	21.94
Band12	1.4	23173	6	#0	QAM16	22.5	20.85
Band12	3	23025	1	#0	QPSK	24.32	22.67
Band12	3	23025	1	#Mid	QPSK	24.43	22.78
Band12	3	23025	1	#Max	QPSK	24.5	22.85
Band12	3	23025	8	#0	QPSK	23.36	21.71
Band12	3	23025	8	#Mid	QPSK	23.37	21.72
Band12	3	23025	8	#Max	QPSK	23.39	21.74
Band12	3	23025	15	#0	QPSK	23.32	21.67
Band12	3	23025	1	#0	QAM16	23.76	22.11
Band12	3	23025	1	#Mid	QAM16	23.63	21.98
Band12	3	23025	1	#Max	QAM16	23.71	22.06

Band12	3	23025	8	#0	QAM16	22.04	20.39
Band12	3	23025	8	#Mid	QAM16	22.06	20.41
Band12	3	23025	8	#Max	QAM16	22.06	20.41
Band12	3	23025	15	#0	QAM16	22.39	20.74
Band12	3	23095	1	#0	QPSK	24.32	22.67
Band12	3	23095	1	#Mid	QPSK	24.35	22.70
Band12	3	23095	1	#Max	QPSK	24.12	22.47
Band12	3	23095	8	#0	QPSK	23.42	21.77
Band12	3	23095	8	#Mid	QPSK	23.41	21.76
Band12	3	23095	8	#Max	QPSK	23.25	21.60
Band12	3	23095	15	#0	QPSK	23.38	21.73
Band12	3	23095	1	#0	QAM16	23.16	21.51
Band12	3	23095	1	#Mid	QAM16	23.02	21.37
Band12	3	23095	1	#Max	QAM16	23	21.35
Band12	3	23095	8	#0	QAM16	22.28	20.63
Band12	3	23095	8	#Mid	QAM16	22.31	20.66
Band12	3	23095	8	#Max	QAM16	22.2	20.55
Band12	3	23095	15	#0	QAM16	22.38	20.73
Band12	3	23165	1	#0	QPSK	24.25	22.60
Band12	3	23165	1	#Mid	QPSK	24.37	22.72
Band12	3	23165	1	#Max	QPSK	24.54	22.89
Band12	3	23165	8	#0	QPSK	23.41	21.76
Band12	3	23165	8	#Mid	QPSK	23.46	21.81
Band12	3	23165	8	#Max	QPSK	23.4	21.75
Band12	3	23165	15	#0	QPSK	23.34	21.69
Band12	3	23165	1	#0	QAM16	23.23	21.58
Band12	3	23165	1	#Mid	QAM16	23.16	21.51
Band12	3	23165	1	#Max	QAM16	23.27	21.62
Band12	3	23165	8	#0	QAM16	22.09	20.44
Band12	3	23165	8	#Mid	QAM16	22.16	20.51
Band12	3	23165	8	#Max	QAM16	22.25	20.60
Band12	3	23165	15	#0	QAM16	22.42	20.77
Band12	5	23035	1	#0	QPSK	24.19	22.54
Band12	5	23035	1	#Mid	QPSK	24.45	22.80
Band12	5	23035	1	#Max	QPSK	24.36	22.71
Band12	5	23035	12	#0	QPSK	23.47	21.82
Band12	5	23035	12	#Mid	QPSK	23.41	21.76
Band12	5	23035	12	#Max	QPSK	23.4	21.75
Band12	5	23035	25	#0	QPSK	23.34	21.69
Band12	5	23035	1	#0	QAM16	23.39	21.74
Band12	5	23035	1	#Mid	QAM16	23.3	21.65
Band12	5	23035	1	#Max	QAM16	23.62	21.97
Band12	5	23035	12	#0	QAM16	22.11	20.46
Band12	5	23035	12	#Mid	QAM16	22.15	20.50
Band12	5	23035	12	#Max	QAM16	22.33	20.68
Band12	5	23035	25	#0	QAM16	22.44	20.79
Band12	5	23095	1	#0	QPSK	24.39	22.74
Band12	5	23095	1	#Mid	QPSK	24.3	22.65
Band12	5	23095	1	#Max	QPSK	24.1	22.45
Band12	5	23095	12	#0	QPSK	23.38	21.73
Band12	5	23095	12	#Mid	QPSK	23.46	21.81
Band12	5	23095	12	#Max	QPSK	23.38	21.73
Band12	5	23095	25	#0	QPSK	23.41	21.76
Band12	5	23095	1	#0	QAM16	23.41	21.76
Band12	5	23095	1	#Mid	QAM16	23.46	21.81
Band12	5	23095	1	#Max	QAM16	23.13	21.48
Band12	5	23095	12	#0	QAM16	22.11	20.46

Band12	5	23095	12	#Mid	QAM16	22.23	20.58
Band12	5	23095	12	#Max	QAM16	22.2	20.55
Band12	5	23095	25	#0	QAM16	22.33	20.68
Band12	5	23155	1	#0	QPSK	24.29	22.64
Band12	5	23155	1	#Mid	QPSK	24.4	22.75
Band12	5	23155	1	#Max	QPSK	24.33	22.68
Band12	5	23155	12	#0	QPSK	23.39	21.74
Band12	5	23155	12	#Mid	QPSK	23.4	21.75
Band12	5	23155	12	#Max	QPSK	23.32	21.67
Band12	5	23155	25	#0	QPSK	23.31	21.66
Band12	5	23155	1	#0	QAM16	23.43	21.78
Band12	5	23155	1	#Mid	QAM16	23.51	21.86
Band12	5	23155	1	#Max	QAM16	23.33	21.68
Band12	5	23155	12	#0	QAM16	22.31	20.66
Band12	5	23155	12	#Mid	QAM16	22.3	20.65
Band12	5	23155	12	#Max	QAM16	22.39	20.74
Band12	5	23155	25	#0	QAM16	22.42	20.77
Band12	10	23060	1	#0	QPSK	24.17	22.52
Band12	10	23060	1	#Mid	QPSK	24.4	22.75
Band12	10	23060	1	#Max	QPSK	24.35	22.70
Band12	10	23060	25	#0	QPSK	23.27	21.62
Band12	10	23060	25	#Mid	QPSK	23.48	21.83
Band12	10	23060	25	#Max	QPSK	23.47	21.82
Band12	10	23060	50	#0	QPSK	23.43	21.78
Band12	10	23060	1	#0	QAM16	23.62	21.97
Band12	10	23060	1	#Mid	QAM16	23.85	22.20
Band12	10	23060	1	#Max	QAM16	23.71	22.06
Band12	10	23060	25	#0	QAM16	22.32	20.67
Band12	10	23060	25	#Mid	QAM16	22.44	20.79
Band12	10	23060	25	#Max	QAM16	22.41	20.76
Band12	10	23060	50	#0	QAM16	22.43	20.78
Band12	10	23095	1	#0	QPSK	24.19	22.54
Band12	10	23095	1	#Mid	QPSK	24.35	22.70
Band12	10	23095	1	#Max	QPSK	24.2	22.55
Band12	10	23095	25	#0	QPSK	23.34	21.69
Band12	10	23095	25	#Mid	QPSK	23.4	21.75
Band12	10	23095	25	#Max	QPSK	23.37	21.72
Band12	10	23095	50	#0	QPSK	23.36	21.71
Band12	10	23095	1	#0	QAM16	23.01	21.36
Band12	10	23095	1	#Mid	QAM16	23.09	21.44
Band12	10	23095	1	#Max	QAM16	22.94	21.29
Band12	10	23095	25	#0	QAM16	22.37	20.72
Band12	10	23095	25	#Mid	QAM16	22.6	20.95
Band12	10	23095	25	#Max	QAM16	22.58	20.93
Band12	10	23095	50	#0	QAM16	22.5	20.85
Band12	10	23130	1	#0	QPSK	24.27	22.62
Band12	10	23130	1	#Mid	QPSK	24.61	22.96
Band12	10	23130	1	#Max	QPSK	24.23	22.58
Band12	10	23130	25	#0	QPSK	23.47	21.82
Band12	10	23130	25	#Mid	QPSK	23.49	21.84
Band12	10	23130	25	#Max	QPSK	23.37	21.72
Band12	10	23130	50	#0	QPSK	23.39	21.74
Band12	10	23130	1	#0	QAM16	23.23	21.58
Band12	10	23130	1	#Mid	QAM16	23.29	21.64
Band12	10	23130	1	#Max	QAM16	23	21.35
Band12	10	23130	25	#0	QAM16	22.48	20.83
Band12	10	23130	25	#Mid	QAM16	22.48	20.83

Band12	10	23130	25	#Max	QAM16	22.51	20.86
Band12	10	23130	50	#0	QAM16	22.41	20.76

WLAN(2.4G) - Conducted Power						
Test Mode	**Data Rate**	**Channel**	**Frequency (MHz)**	**Average Power (dBm)ANTA**	**Average Power (dBm)ANTB**	**Total(dBm)**
802.11b	1Mbps	CH 01	2412	13.94	14.61	/
		CH 06	2437	14.25	14.51	/
		CH 11	2462	14.72	14.15	/
802.11g	6Mbps	CH 01	2412	13.74	14.59	/
		CH 06	2437	14.45	14.27	/
		CH 11	2462	15.09	14.02	/
802.11n (20MHz)	6.5Mbps	CH 01	2412	12.87	14.34	16.68
		CH 06	2437	13.80	14.00	16.91
		CH 11	2462	14.43	13.70	17.09
802.11n (40MHz)	13.5Mbps	CH 03	2422	13.67	14.29	17.00
		CH 06	2437	13.86	14.28	17.09
		CH 09	2452	14.19	14.44	17.33

Note: SAR is not required for the following 2.4 GHz OFDM conditions as the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg.

WLAN(5.1G) - Conducted Power						
Test Mode	**Data Rate**	**Channel**	**Frequency (MHz)**	**Average Power (dBm)ANTA**	**Average Power (dBm)ANTB**	**Total(dBm)**
802.11a	6Mbps	CH 36	5180	14.56	13.71	/
		CH 40	5200	14.45	13.30	/
		CH 48	5240	13.76	12.41	/
802.11a HT20	6.5Mbps	CH 36	5180	14.11	12.52	16.40
		CH 40	5200	13.74	12.08	16.00
		CH 48	5240	12.86	12.82	15.85
802.11n HT40	13.5Mbps	CH 38	5190	12.97	12.11	15.57
		/	/	/	/	/
		CH 46	5230	11.55	12.48	15.05
802.11ac ac20	6.5Mbps	CH 36	5180	13.73	13.28	16.52
		CH 40	5200	13.35	12.49	15.95
		CH 48	5240	12.14	12.60	15.39
802.11ac HT40	13.5Mbps	CH 38	5190	13.14	12.70	15.94
		/	/	/	/	/
		CH 46	5230	11.28	12.27	14.81
802.11ac HT80	29.3Mbps	/	/	/	/	/
		42	5210	12.99	12.69	15.85
		/	/	/	/	/

WLAN(5.8G) - Conducted Power						
Test Mode	Data Rate	Channel	Frequency (MHz)	Average Power (dBm)ANTA	Average Power (dBm)ANTB	Total(dBm)
802.11a	6Mbps	CH 149	5745	13.41	13.49	/
		CH 157	5785	12.97	11.87	/
		CH 165	5825	12.51	10.96	/
802.11n(HT20)	6.5Mbps	CH 149	5745	13.5	13.31	16.42
		CH 157	5785	12.85	12.77	15.82
		CH 165	5825	12.40	12.38	15.40
802.11n(HT40)	13.5Mbps	CH 151	5755	12.46	12.28	15.38
		/	/	/	/	/
		CH 159	5795	11.90	11.75	14.84
802.11ac(HT20)	6.5Mbps	CH 149	5745	13.39	13.26	16.34
		CH 157	5785	12.83	12.73	15.79
		CH 165	5825	12.43	12.24	15.35
802.11ac(HT40)	13.5Mbps	CH 151	5755	12.16	12.45	15.32
		/	/	/	/	/
		CH 159	5795	11.67	11.80	14.75
802.11ac(HT80)	29.3Mbps	/	/	/	/	/
		CH 155	5775	12.10	12.61	15.37
		/	/	/	/	/

Bluetooth - EIRP Power				
Test Mode	Data Rate	Channel	Frequency (MHz)	Average Power(dBm)
GFSK	1Mbps	0	2402	3.73
		39	2441	4.27
		78	2480	4.21
π/4DQPSK	2Mbps	0	2402	-0.37
		39	2441	0.32
		78	2480	0.46
8DPSK	3Mbps	0	2402	-0.17
		39	2441	0.68
		78	2480	0.58

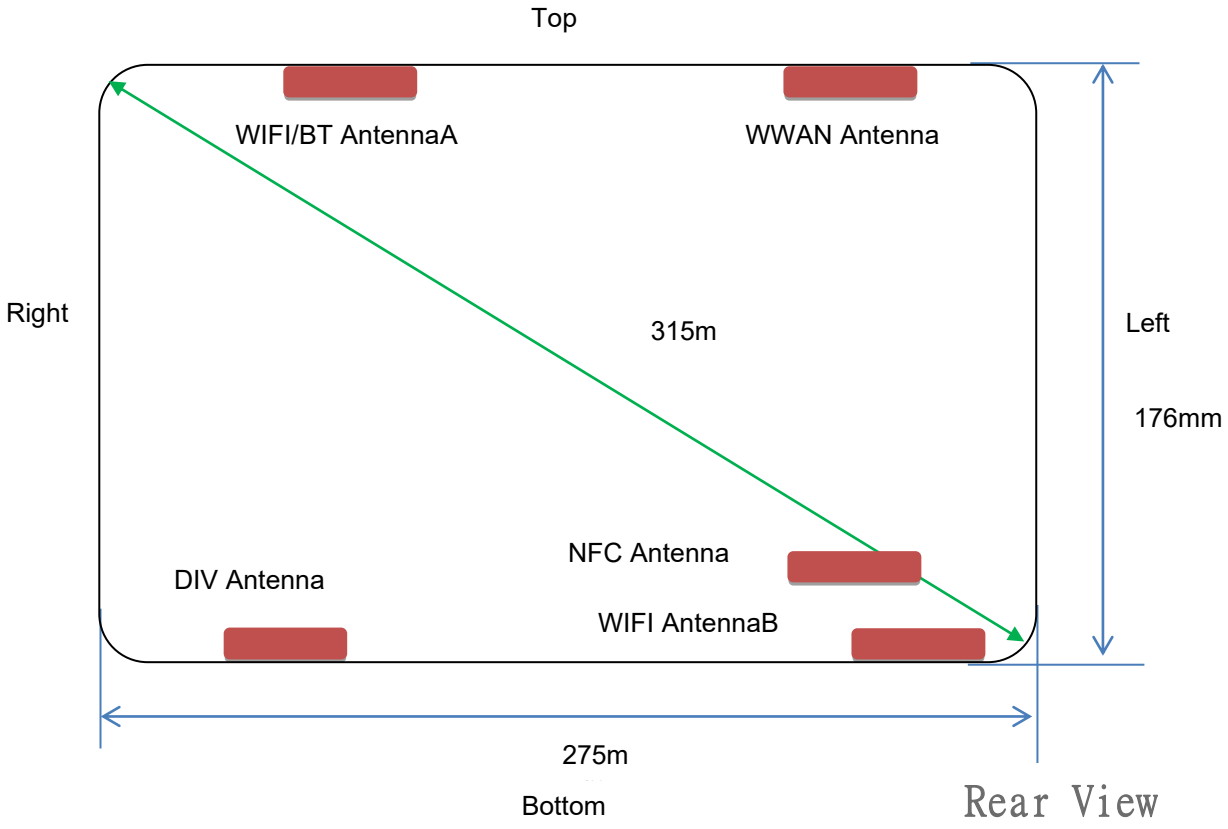
Bluetooth - EIRP Power				
Test Mode	Data Rate	Channel	Frequency (MHz)	Average Power (dBm)
BLE	1Mbps	CH 00	2402	2.40
		CH 19	2440	3.00
		CH 39	2480	3.11

Per KDB 447498 D01v06, the 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:
[(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)] ·[$\sqrt{}$f(GHz)] ≤ 3.0 for 1-g SAR and ≤ 7.5 for 10-g extremity SAR
f(GHz) is the RF channel transmit frequency in GHz
Power and distance are rounded to the nearest mW and mm before calculation
The result is rounded to one decimal place for comparison

Bluetooth Turn up Power (dBm)	Separation Distance (mm)	Frequency (GHz)	Exclusion Thresholds
4.5	5	2.45	0.9

Per KDB 447498 D01v06, when the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion. The test exclusion threshold is 0.9< 3.0, SAR testing is not required.

14.2 Transmit Antennas and SAR Measurement Position



Antenna information:

WWAN Main Antenna	GSM/UMTS/LTE TX/RX
LTE Diversity antenna	Only RX
WLAN/BT Antenna	WLAN/BT TX/RX

Note:
1). Per KDB648474 D04, because the overall diagonal distance of this devices is 315mm>160mm, it is considered as “Tablet PC“ device.
2). Per KDB648474 D04, 10-g extremity SAR is not required when Body-Worn mode 1-g reported SAR < 1.2 W/Kg.
3). According to the KDB941225 D06 Hot Spot SAR v02, the edges with less than 25 mm distance to the antennas need to be tested for SAR.
4). Per KDB 616217 D04, The antennas in tablets are typically located near the back (bottom) surface and/or along the edges of the devices; therefore, SAR evaluation is required for these configurations. Exposures from antennas through the front (top) surface of the displaysection of a full-size tablet, away from the edges, are generally limited to the user’s hands.

Distance of The Antenna to the EUT surface and edge (mm)						
Antennas	Front	Back	Top Side	Bottom Side	Left Side	Right Side
WWAN	<5	<5	<5	150	27	215
BT/WLANA	<5	<5	<5	151	202	38
WLANB	<5	<5	150	<5	<5	237

Positions for SAR tests; Hotspot mode						
Antennas	Front	Back	Top Side	Bottom Side	Left Side	Right Side
WWAN	Yes	Yes	Yes	No	No	No
BT/WLANA	Yes	Yes	Yes	No	No	No
WLANB	Yes	Yes	No	Yes	Yes	No

General Note: Referring to KDB 941225 D06 v02, When the overall device length and width are ≥9cm*5cm, the test distance is 0mm, SAR must be measured for all sides and surfaces with a transmitting antenna located with 25mm from that surface or edge.

14.3 Test Results for Standalone SAR Test

The calculated SAR is obtained by the following formula:

Reported SAR=Measured SAR*10(Ptarget-Pmeasured))/10
Scaling factor=10(Ptarget-Pmeasured))/10
Reported SAR= Measured SAR* Scaling factor

Where
Ptarget is the power of manufacturing upper limit;
Pmeasured is the measured power;
Measured SAR is measured SAR at measured power which including power drift)
Reported SAR which including Power Drift and Scaling factor

Duty Cycle

Test Mode	Duty Cycle
UMTS	1:1
LTE	1:1
WLAN2450	1:1
WLAN5200	1:1
WLAN5800	1:1

SAR Values [WCDMA Band II]

Ch.	Freq. (MHz)	Channel Type	Test Position	Conducted Power (dBm)	Maximum Allowed Power (dBm)	Power Drift (%)	Scaling Factor	SAR1-g results(W/kg)		Graph Results
								Measured	Reported	
measured / reported SAR numbers - Body (hotspot open, distance 0mm)										
9400	1880.0	RMC*	Front	22.27	22.50	0.58	1.054	0.487	0.513	
9400	1880.0	RMC*	Rear	22.27	22.50	-1.17	1.054	0.540	**0.569**	Plot 1
9400	1880.0	RMC*	Top	22.27	22.50	1.12	1.054	0.400	0.422	

Remark:
1. The value with black color is the maximum SAR Value of each test band.
2. Per FCC KDB Publication 447498 D01, if the reported (scaled) SAR measured at the middle channel or highest output power channel for each test configuration is ≤ 0.8 W/kg then testing at the other channels is optional for such test configuration(s).
3. RMC* - RMC 12.2kbps mode;

SAR Values [WCDMA Band IV]

Ch.	Freq. (MHz)	Channel Type	Test Position	Conducted Power (dBm)	Maximum Allowed Power (dBm)	Power Drift (%)	Scaling Factor	SAR1-g results(W/kg)		Graph Results
								Measured	Reported	
measured / reported SAR numbers - Body (hotspot open, distance 0mm)										
1450	1740	RMC*	Front	22.14	22.50	0.12	1.086	0.502	0.545	
1450	1740	RMC*	Rear	22.14	22.50	1.87	1.086	0.610	**0.663**	Plot 2
1450	1740	RMC*	Top	22.14	22.50	1.52	1.086	0.421	0.457	

Remark:
1. The value with black color is the maximum SAR Value of each test band.
2. Per FCC KDB Publication 447498 D01, if the reported (scaled) SAR measured at the middle channel or highest output power channel for each test configuration is ≤ 0.8 W/kg then testing at the other channels is optional for such test configuration(s).
3. RMC* - RMC 12.2kbps mode;

SAR Values [WCDMA Band V]

Ch.	Freq. (MHz)	Channel Type	Test Position	Conducted Power	Maximum Allowed	Power	Scaling	SAR1-g results(W/kg)	Graph Result

				(dBm)	Power (dBm)	Drift (%)	Factor	Measured	Reported	s
measured / reported SAR numbers - Body (hotspot open, distance 0mm)										
4182	836.4	RMC*	Front	22.52	23.00	0.21	1.117	0.275	0.307	
4182	836.4	RMC*	Rear	22.52	23.00	-3.43	1.117	0.310	**0.346**	Plot 3
4182	836.4	RMC*	Top	22.52	23.00	0.10	1.117	0.241	0.269	

Remark:
1. The value with black color is the maximum SAR Value of each test band.
2. Per FCC KDB Publication 447498 D01, if the reported (scaled) SAR measured at the middle channel or highest output power channel for each test configuration is ≤ 0.8 W/kg then testing at the other channels is optional for such test configuration(s).
3. RMC* - RMC 12.2kbps mode;

SAR Values [WIFI5.2G]ANTA

Ch.	Freq. (MHz)	Service	Test Position	Conducted Power (dBm)	Maximum Allowed Power (dBm)	Power Drift (%)	Scaling Factor	SAR1-g results(W/kg)		Graph Results
								Measured	Reported	
measured / reported SAR numbers - Body (hotspot open, distance 0mm)										
36	5180	802.11a	Front	14.56	15.00	1.14	1.107	0.082	0.091	
36	5180	802.11a	Rear	14.56	15.00	4.67	1.107	0.110	**0.122**	Plot 4
36	5180	802.11a	Top	14.56	15.00	0.63	1.107	0.070	0.077	

SAR Values [WIFI5.8G]ANTA

Ch.	Freq. (MHz)	Service	Test Position	Conducted Power (dBm)	Maximum Allowed Power (dBm)	Power Drift (%)	Scaling Factor	SAR1-g results(W/kg)		Graph Results
								Measured	Reported	
measured / reported SAR numbers - Body (hotspot open, distance 0mm)										
149	5745	802.11n20	Front	13.50	13.50	1.20	1.000	0.076	0.076	
149	5745	802.11n20	Rear	13.50	13.50	-0.63	1.000	0.110	**0.110**	Plot 5
149	5745	802.11n20	Top	13.50	13.50	0.69	1.000	0.061	0.061	

SAR Values [WIFI2.4G]ANTA

Ch.	Freq. (MHz)	Service	Test Position	Conducted Power (dBm)	Maximum Allowed Power (dBm)	Power Drift (%)	Scaling Factor	SAR1-g results(W/kg)		Graph Results
								Measured	Reported	
measured / reported SAR numbers - Body (hotspot open, distance 0mm)										
11	2462	802.11g	Front	15.09	15.50	1.12	1.099	0.168	0.185	
11	2462	802.11g	Rear	15.09	15.50	-0.24	1.099	0.200	**0.220**	Plot 6
11	2462	802.11g	Top	15.09	15.50	1.55	1.099	0.136	0.149	

SAR Values [WIFI5.2G]ANTB

Ch.	Freq. (MHz)	Service	Test Position	Conducted Power (dBm)	Maximum Allowed Power (dBm)	Power Drift (%)	Scaling Factor	SAR1-g results(W/kg)		Graph Results
								Measured	Reported	
measured / reported SAR numbers - Body (hotspot open, distance 0mm)										
36	5180	802.11a	Front	13.71	14.00	0.25	1.069	0.071	0.076	
36	5180	802.11a	Rear	13.71	14.00	1.23	1.069	0.108	**0.115**	Plot 7
36	5180	802.11a	Left	13.71	14.00	2.35	1.069	0.054	0.058	
36	5180	802.11a	Bottom	13.71	14.00	1.74	1.069	0.050	0.053	

SAR Values [WIFI5.8G]ANTB

Ch.	Freq. (MHz)	Service	Test Position	Conducted Power	Maximum Allowed	Power	Scaling	SAR1-g results(W/kg)	Graph Result

				(dBm)	Power (dBm)	Drift (%)	Factor	Measured	Reported	s
measured / reported SAR numbers - Body (hotspot open, distance 0mm)										
149	5745	802.11a	Front	13.49	13.50	3.58	1.002	0.067	0.067	
149	5745	802.11a	Rear	13.49	13.50	2.03	1.002	0.104	**0.104**	Plot 8
149	5745	802.11a	Left	13.49	13.50	4.16	1.002	0.051	0.051	
149	5745	802.11a	Bottom	13.49	13.50	4.05	1.002	0.047	0.047	

SAR Values [WIFI2.4G]ANTB

Ch.	Freq. (MHz)	Service	Test Position	Conducted Power (dBm)	Maximum Allowed Power (dBm)	Power Drift (%)	Scaling Factor	SAR1-g results(W/kg)		Graph Results
								Measured	Reported	
measured / reported SAR numbers - Body (hotspot open, distance 0mm)										
1	2412.0	802.11b	Front	14.61	15.00	2.32	1.094	0.140	0.153	
1	2412.0	802.11b	Rear	14.61	15.00	1.52	1.094	0.192	**0.210**	Plot 9
1	2412.0	802.11b	Left	14.61	15.00	0.74	1.094	0.122	0.133	
1	2412.0	802.11b	Bottom	14.61	15.00	4.23	1.094	0.103	0.113	

SAR Values [LTE Band 2]

Ch.	Freq. (MHz)	Channel Type (10M)	Test Position	Conducted Power (dBm)	Maximum Allowed Power (dBm)	Power Drift (%)	Scaling Factor	SAR1-g results(W/kg)		Graph Results
								Measured	Reported	
measured / reported SAR numbers - Body (hotspot open, distance 0mm)										
18900	1880.0	1RB	Front	21.19	21.50	0.12	1.074	0.365	0.392	
18900	1880.0	1RB	Rear	21.19	21.50	0.56	1.074	0.490	**0.526**	Plot 10
18900	1880.0	1RB	Top	21.19	21.50	1.15	1.074	0.312	0.335	
18900	1880.0	50%RB	Front	21.19	21.50	0.64	1.074	0.320	0.344	
18900	1880.0	50%RB	Rear	21.19	21.50	2.34	1.074	0.452	0.485	
18900	1880.0	50%RB	Top	21.19	21.50	1.18	1.074	0.281	0.302	

SAR Values [LTE Band 4]

Ch.	Freq. (MHz)	Channel Type (10M)	Test Position	Conducted Power (dBm)	Maximum Allowed Power (dBm)	Power Drift (%)	Scaling Factor	SAR1-g results(W/kg)		Graph Results
								Measured	Reported	
measured / reported SAR numbers - Body (hotspot open, distance 0mm)										
20175	1732.5	1RB	Front	21.10	21.50	1.14	1.096	0.320	0.351	
20175	1732.5	1RB	Rear	21.10	21.50	1.68	1.096	0.430	**0.471**	Plot 11
20175	1732.5	1RB	Top	21.10	21.50	0.63	1.096	0.300	0.329	
20175	1732.5	50%RB	Front	21.10	21.50	3.45	1.096	0.303	0.332	
20175	1732.5	50%RB	Rear	21.10	21.50	4.12	1.096	0.411	0.451	
20175	1732.5	50%RB	Top	21.10	21.50	1.18	1.096	0.276	0.303	

SAR Values [LTE Band 12]

Ch.	Freq. (MHz)	Channel Type (20M)	Test Position	Conducted Power (dBm)	Maximum Allowed Power (dBm)	Power Drift (%)	Scaling Factor	SAR1-g results(W/kg)		Graph Results
								Measured	Reported	
measured / reported SAR numbers - Body (hotspot open, distance 0mm)										
23095	707.5	1RB	Front	24.68	25.00	0.02	1.076	0.198	0.213	
23095	707.5	1RB	Rear	24.68	25.00	1.08	1.076	0.250	**0.269**	Plot 12
23095	707.5	1RB	Top	24.68	25.00	1.13	1.076	0.162	0.174	
23095	707.5	50%RB	Front	24.68	25.00	0.56	1.076	0.166	0.179	

23095	707.5	50%RB	Rear	24.68	25.00	4.23	1.076	0.214	0.230	
23095	707.5	50%RB	Top	24.68	25.00	2.28	1.076	0.141	0.152	

Remark:
1. The value with blue color is the maximum SAR Value of each test band.
2. Per FCC KDB Publication 447498 D01, if the reported (scaled) SAR measured at the middle channel or highest output power channel for each test configuration is ≤ 0.8 W/kg then testing at the other channels is optional for such test configuration(s).

14.4 Standalone SAR Test Exclusion Considerations and Estimated SAR

Per KDB447498 requires when the standalone SAR test exclusion of section 4.3.1 is applied to an antenna that transmits simultaneously with other antennas, the standalone SAR must be estimated according to the following to determine simultaneous transmission SAR test exclusion;

● (max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)]·[√f(GHz)/x] W/kg for test separation distances ≤ 50 mm;

where x = 7.5 for 1-g SAR, and x = 18.75 for 10-g SAR.

● 0.4 W/kg for 1-g SAR and 1.0 W/kg for 10-g SAR, when the test separation distances is > 50 mm

Per FCC KD B447498 D01,simultaneous transmission SAR test exclusion may be applied when the sum of the 1-g SAR for all the transmitting antenna in a specific a physical test configuration is ≤1.6 W/Kg.When the sum is greater than the SAR limit,SAR test exclusion is determined by the SAR to peak location separation ratio.

$$\text{Ratio}=\frac{(SAR_1+SAR_2)^{1.5}}{(\text{peak location separation,mm})}<0.04$$

Estimated stand alone SAR					
Communication system	Frequency (MHz)	Configuration	Maximum Power (dBm)	Separation Distance (mm)	Estimated SAR1-g (W/kg)
Bluetooth*	2450	Hotspot	4.50	5	0.118
Bluetooth*	2450	Body-worn	4.50	5	0.118

Remark:

1. Bluetooth*- Including Lower power Bluetooth
2. Maximum average power including tune-up tolerance;
3. When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion
4. Body as body use distance is 5mm from manufacturer declaration of user manual

14.5 Simultaneous TX SAR Considerations

Simultaneous transmission SAR test exclusion is determined for each operating configuration and exposure condition according to the reported standalone SAR of each applicable simultaneous transmiting antenna.The device has 5 antennas, WWAN main antenna, WWAN diversity antenna(RX only), NFC antenna(RX only) and 2 WiFi/BT antennas supports 2.4/5G Wi-Fi and BT.The 2 TX antennas can always transmit simultaneously.The work mode combination is showed as below table.;

Application Simultaneous Transmission information:

Combination No.	Mode
1	WWAN+WIFI
2	WWAN+BT

Body Hotspot Exposure Conditions

Simultaneous transmission SAR for WiFi and UMTS

Test Position	UMTS Band V Reported SAR1-g	UMTS Band IV Reported SAR1-g	UMTS Band II Reported SAR1-g	WiFi2.4G Reported SAR1-g (W/kg)	WiFi5.2G Reported SAR1-g (W/kg)	WiFi5.8G Reported SAR1-g (W/kg)	MAX. ΣSAR1-g (W/kg)	SAR1-g Limit (W/kg)	Peak location separation ratio	Simut Meas. Required

	(W/kg)	(W/kg)	(W/kg)							
Front	0.307	**0.545**	0.513	**0.185**	0.091	0.076	0.730	1.6	no	no
Rear	0.346	**0.663**	0.569	**0.220**	0.122	0.110	**0.785**	1.6	no	no
Left	/	**/**	/	**/**	/	/	/	1.6	no	no
Right	/	**/**	/	**/**	/	/	/	1.6	no	no
Bottom	/	**/**	/	**/**	/	/	/	1.6	no	no
Top	0.269	**0.457**	0.422	**0.149**	0.077	0.061	0.602	1.6	no	no

SAR for WiFi and LTE

Reported SAR1-g(W/kg)	Test Position					
	Front	Rear	Left	Right	Bottom	Top
LTE Band2	**0.392**	**0.526**	**/**	**/**	**/**	**0.335**
LTE Band4	0.351	0.471	/	/	/	0.329
LTE Band12	0.213	0.269	/	/	/	0.174
WiFi2.4G	**0.185**	**0.220**	**/**	**/**	**/**	**0.149**
WiFi5.2G	0.091	0.122	/	/	/	0.077
WiFi5.8G	0.076	0.110	/	/	/	0.061
MAX. ΣSAR1-g (W/kg)	0.577	**0.746**	/	/	/	0.484
SAR1-g Limit (W/kg)	1.6	1.6	1.6	1.6	1.6	1.6
Peak location separation ratio	no	no	no	no	no	no
Simut Meas. Required	no	no	no	no	no	no

Simultaneous transmission SAR for BT and UMTS

Test Position	UMTS Band V Reported SAR1-g (W/kg)	UMTS Band IV Reported SAR1-g (W/kg	UMTS Band II Reported SAR1-g (W/kg)	BT Estimated SAR1-g (W/kg)	MAX. ΣSAR1-g (W/kg)	SAR1-g Limit (W/kg)	Peak location separation ratio	Simut Meas. Required
Front	0.307	**0.545**	0.513	0.118	0.663	1.6	no	no
Rear	0.346	**0.663**	0.569	0.118	**0.781**	1.6	no	no
Left	/	**/**	/	/	/	1.6	no	no
Right	/	**/**	/	/	/	1.6	no	no
Bottom	/	**/**	/	/	/	1.6	no	no
Top	0.269	**0.457**	0.422	0.118	0.575	1.6	no	no

Simultaneous transmission SAR for BT and LTE

Reported SAR1-g(W/kg)	Test Position					
	Front	Rear	Left	Right	Bottom	Top
LTE Band2	**0.392**	**0.526**	**/**	**/**	**/**	**0.335**
LTE Band4	0.351	0.471	/	/	/	0.329
LTE Band12	0.213	0.269	/	/	/	0.174
BT Estimated SAR1-g (W/kg)	0.118	0.118	/	/	/	0.118
MAX. ΣSAR1-g (W/kg)	0.510	**0.644**	/	/	/	0.453
SAR1-g Limit (W/kg)	1.6	1.6	1.6	1.6	1.6	1.6
Peak location separation ratio	no	no	no	no	no	no
Simut Meas. Required	no	no	no	no	no	no

Note:
1. The WiFi and BT share same antenna, so cannot transmit at same time.
2. The value with The bold is the maximum values of standalone
3. The value with The bold is the maximum values of ∑SAR1-g

14.6 SAR Measurement Variability

According to KDB865664, Repeated measurements are required only when the measured SAR is ≥ 0.80 W/kg. If the measured SAR value of the initial repeated measurement is < 1.45 W/kg with ≤ 20% variation, only one repeated measurement is required to reaffirm that the results are not expected to have substantial variations, which may introduce significant compliance concerns. A second repeated measurement is required only if the measured result for the initial repeated measurement is within 10% of the SAR limit and vary by more than 20%, which are often related to device and measurement setup difficulties. The following procedures are applied to determine if repeated measurements are required. The same procedures should be adapted for measurements according to extremity and occupational exposure limits by applying a factor of 2.5 for extremity exposure and a factor of 5 for occupational exposure to the corresponding SAR thresholds.19 The repeated measurement results must be clearly identified in the SAR report. All measured SAR, including the repeated results, must be considered to determine compliance and for reporting according to KDB 690783.Repeated measurement is not required when the original highest measured SAR is < 0.80 W/kg; steps 2) through 4) do not apply.

1) When the original highest measured SAR is ≥ 0.80 W/kg, repeat that measurement once.
2) Perform a second repeated measurement only if the ratio of largest to smallest SAR for the original and first repeated measurements is > 1.20 or when the original or repeated measurement is ≥ 1.45 W/kg (~ 10% from the 1-g SAR limit).
3) Perform a third repeated measurement only if the original, first or second repeated measurement is ≥ 1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20.
4) Perform a third repeated measurement only if the original, first or second repeated measurement is ≥ 1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20

Frequency Band (MHz)	Air Interface	RF Exposure Configuration	Test Position	Repeated SAR (yes/no)	Highest Measured SAR1-g (Wkg)	First Repeated	
						Measued SAR1-g (W/kg)	Largest to Smallest SAR Ratio
750	LTE Band 12	Standalone	Body-Rear	no	0.250	n/a	n/a
835	WCDMA Band V	Standalone	Body-Rear	no	0.310	n/a	n/a
1800	WCDMA Band II	Standalone	Body-Rear	no	0.540	n/a	n/a
	WCDMA Band IV	Standalone	Body-Rear	no	0.610	n/a	n/a
	LTE Band 2	Standalone	Body-Rear	no	0.490	n/a	n/a
	LTE Band 4	Standalone	Body-Rear	no	0.430	n/a	n/a
2450	2.4GWLAN	Standalone	Body-Rear	no	0.200	n/a	n/a
5200	5.2GWLAN	Standalone	Body-Rear	no	0.110	n/a	n/a
5800	5.8GWLAN	Standalone	Cheek-Right	no	0.110	n/a	n/a

Remark:

1. Second Repeated Measurement is not required since the ratio of the largest to smallest SAR for the orignal and first repeated measurement is not > 1.20 or 3 (1-g or 10-g respectively)

12.3 General description of test procedures

1. The DUT is tested using CMU 200 communications testers as controller unit to set test channels and maximum output power to the DUT, as well as for measuring the conducted peak power.
2. Test positions as described in the tables above are in accordance with the specified test standard.
3. Tests in body position were performed in that configuration, which generates the highest time based averaged output power (see conducted power results).

4. Tests in head position with GSM were performed in voice mode with 1 timeslot unless GPRS/EGPRS/DTM function allows parallel voice and data traffic on 2 or more timeslots.
5. UMTS was tested in RMC mode with 12.2 kbit/s and TPC bits set to 'all 1'.
6. WiFi was tested in 802.11b/g/n mode with 1 Mbit/s and 6 Mbit/s. According to KDB 248227 the SAR testing for 802.11g/n is not required since When the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg.
7. Required WiFi test channels were selected according to KDB 248227
8. According to FCC KDB pub 248227 D01, When there are multiple test channels with the same measured maximum output power, the channel closest to mid-band frequency is selected for SAR measurement and when there are multiple test channels with the same measured maximum output power and equal separation from mid-band frequency; for example, high and low channels or two mid-band channels, the higher frequency (number) channel is selected for SAR measurement.
9. According to FCC KDB pub 941225 D06 this device has been tested with 10 mm distance to the phantom for operation in WiFi hot spot mode.
10. Per FCC KDB pub 941225 D06 the edges with antennas within 2.5 cm are required to be evaluated for SAR to cover WiFi hot spot function.
11. According to IEEE 1528 the SAR test shall be performed at middle channel. Testing of top and bottom channel is optional.
12. According to KDB 447498 D01 testing of other required channels within the operating mode of a frequency band is not required when the reported 1-g or 10-g SAR for the mid-band or highest output power channel is:
    ● ≤ 0.8 W/kg or 2.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≤ 100 MHz
    ● ≤ 0.6 W/kg or 1.5 W/kg, for 1-g or 10-g respectively, when the transmission band is between 100 MHz and 200 MHz
    ● ≤ 0.4 W/kg or 1.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≥ 200 MHz
13. IEEE 1528-2003 require the middle channel to be tested first. This generally applies to wireless devices that are designed to operate in technologies with tight tolerances for maximum output power variations across channels in the band.
14. Per KDB648474 D04 require when the reported SAR for a body-worn accessory, measured without a headset connected to the handset, is < 1.2 W/kg.
15. Per KDB648474 D04 require when the separation distance required for body-worn accessory testing is larger than or equal to that tested for hotspot mode, using the same wireless mode test configuration for voice and data, such as UMTS, LTE and Wi-Fi, and for the same surface of the phone, the hotspot mode SAR data may be used to support body-worn accessory SAR compliance for that particular configuration (surface)
16. 10-g extremity SAR is required only for the surfaces and edges with hotspot mode 1-g SAR > 1.2 W/kg.
17. Per KDB648474 D04 require for phablet SAR test considerations，For Smart phones with a display diagonal dimension > 15.0 cm or an overall diagonal dimension > 16.0 cm, When hotspot mode applies, 10-g extremity SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg.
18. 10-g extremity SAR is required only for the surfaces and edges with hotspot mode 1-g SAR > 1.2 W/kg.

15. Test Plots

15.1 System Check Results

System check at 750 MHz

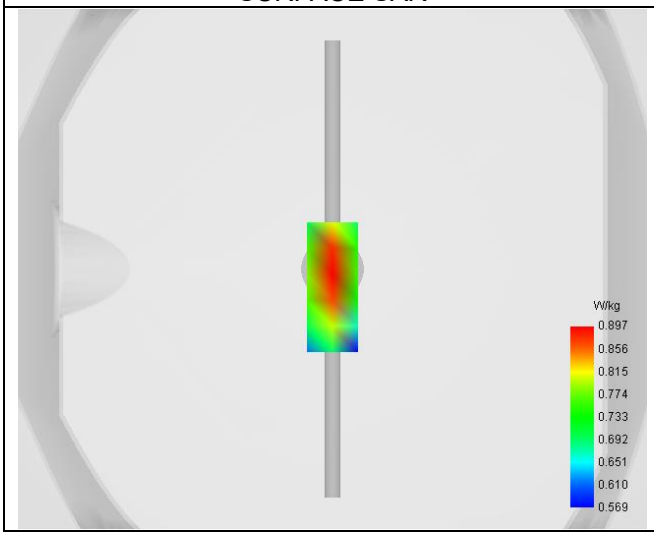
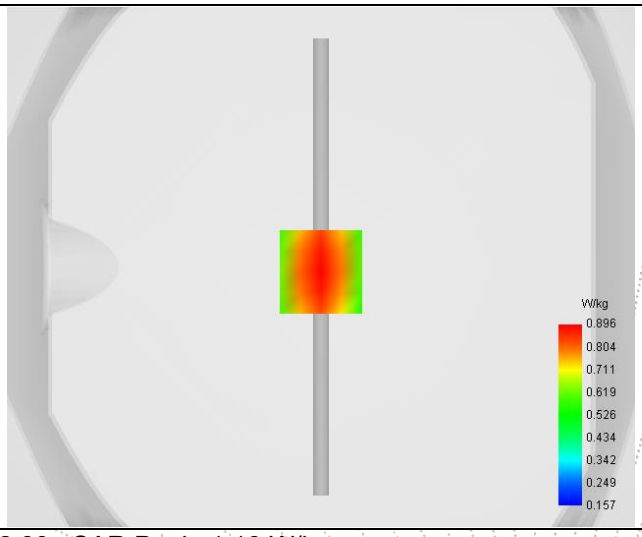
A. Experimental conditions.

Probe	SN EPGO362
ConvF	23.31
Area Scan	dx=10mm dy=10mm, Adaptative 2 max
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm,Very fast
Phantom	Validation plane
Device Position	Dipole
Band	CW750
Channels	Middle
Signal	CW (Crest factor: 1.0)

B. Permitivity

Frequency (MHz)	750.000
Relative permitivity (real part)	40.523
Relative permitivity (imaginary part)	24.595
Conductivity (S/m)	0.950

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

Maximum location: X=0.00, Y=-2.00 ; SAR Peak: 1.18 W/kg

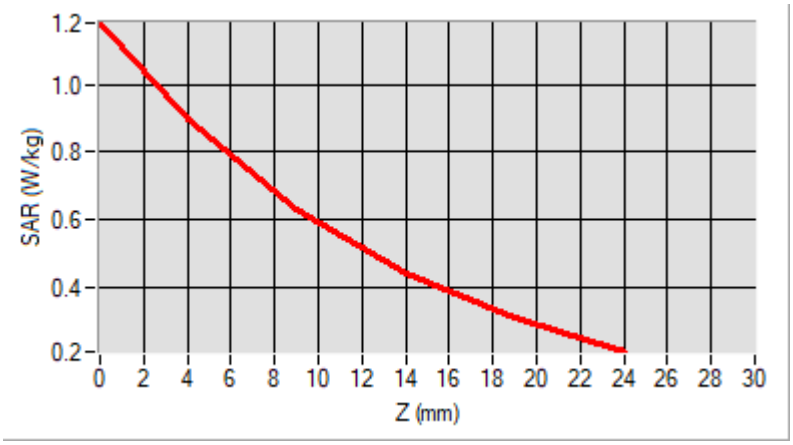
D. SAR 1g & 10g

SAR 10g (W/Kg)	0.592
SAR 1g (W/Kg)	0.892
Variation (%)	-0.190
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

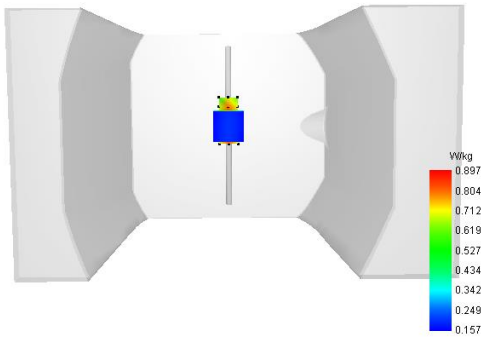
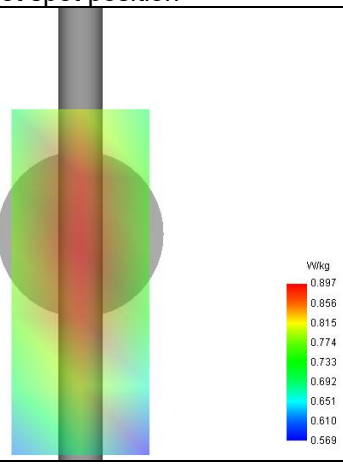
E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00

SAR (W/Kg)	1.181	0.896	0.629	0.440	0.307



F. 3D Image

3D screen shot	Hot spot position
	

System check at 835 MHz

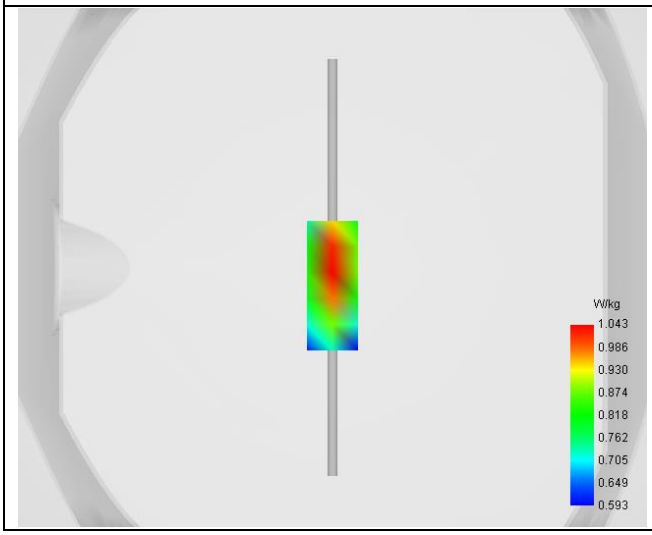
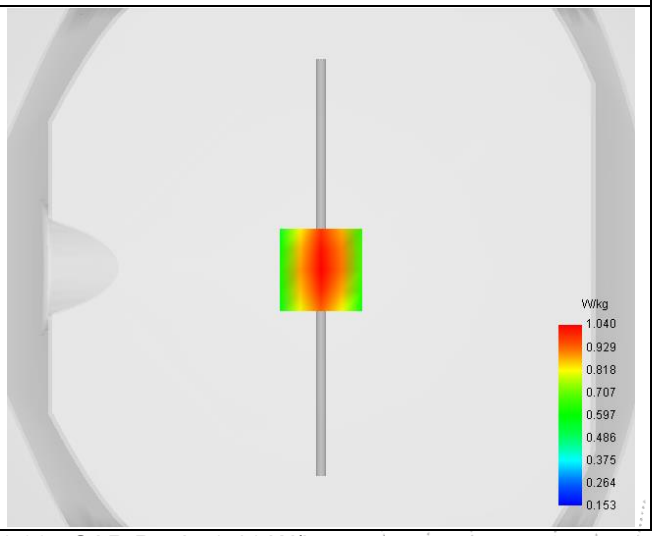
A. Experimental conditions.

Probe	SN EPGO362
ConvF	25.00
Area Scan	dx=10mm dy=10mm, Adaptative 2 max
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm,Very fast
Phantom	Validation plane
Device Position	Dipole
Band	CW835
Channels	Middle
Signal	CW (Crest factor: 1.0)

B. Permitivity

Frequency (MHz)	835.000
Relative permitivity (real part)	40.830
Relative permitivity (imaginary part)	20.910
Conductivity (S/m)	0.970

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

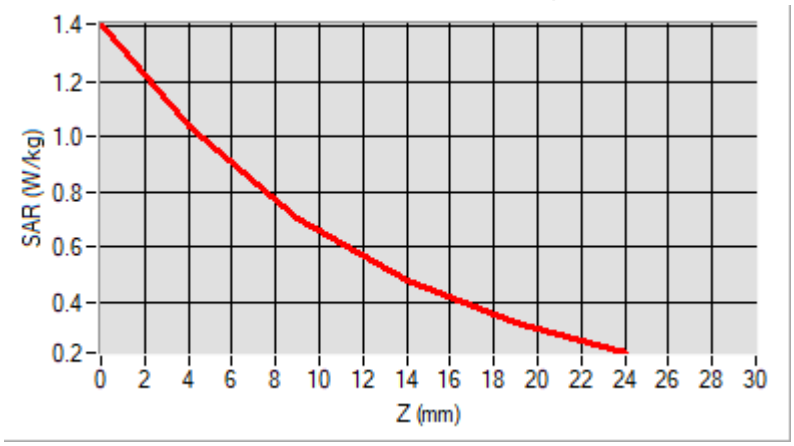
Maximum location: X=0.00, Y=-1.00 ; SAR Peak: 1.41 W/kg

D. SAR 1g & 10g

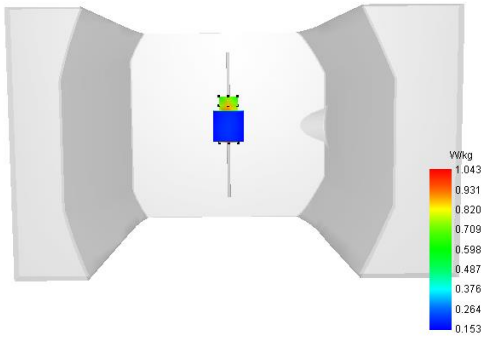
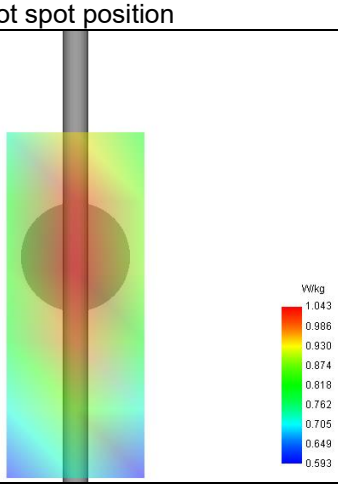
SAR 10g (W/Kg)	0.638
SAR 1g (W/Kg)	0.987
Variation (%)	-0.330
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	1.411	1.040	0.704	0.477	0.325



F. 3D Image

3D screen shot	Hot spot position
	

System check at 1800 MHz

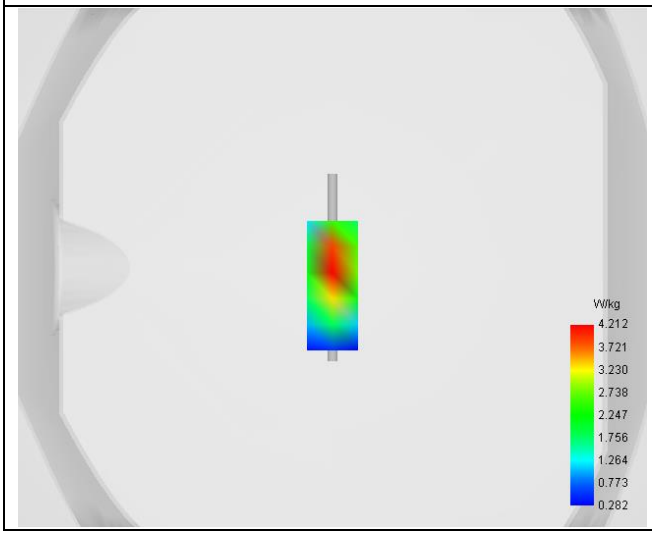
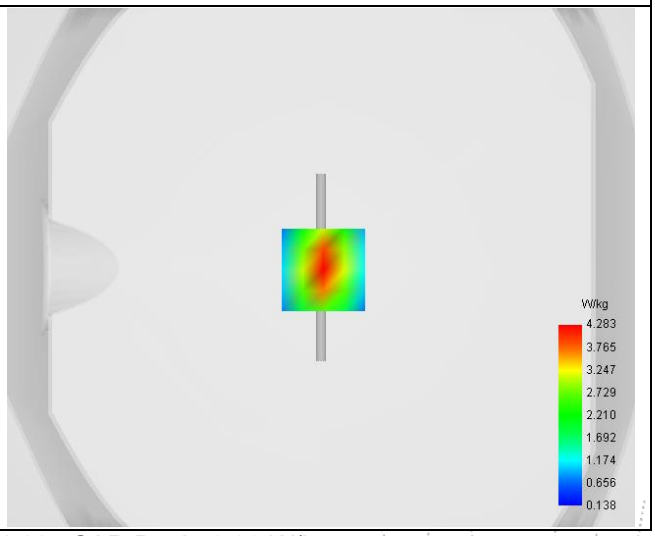
A. Experimental conditions.

Probe	SN EPGO362
ConvF	24.68
Area Scan	dx=10mm dy=10mm, Adaptative 2 max
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm,Very fast
Phantom	Validation plane
Device Position	Dipole
Band	CW1800
Channels	Middle
Signal	CW (Crest factor: 1.0)

B. Permitivity

Frequency (MHz)	1800.000
Relative permitivity (real part)	39.200
Relative permitivity (imaginary part)	15.200
Conductivity (S/m)	1.520

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

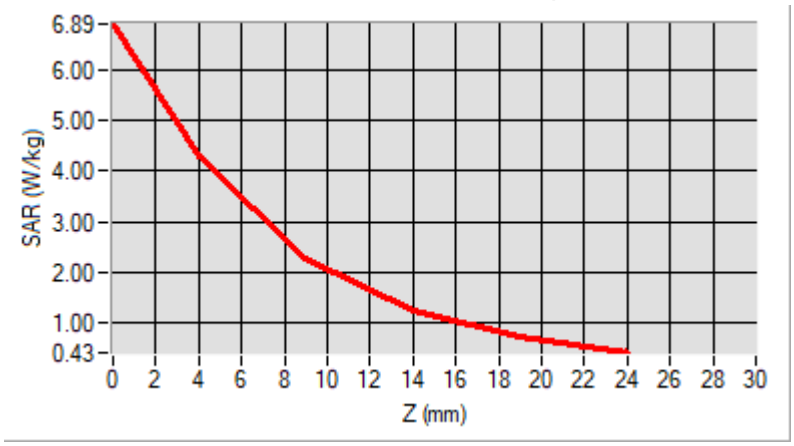
Maximum location: X=1.00, Y=-1.00 ; SAR Peak: 6.89 W/kg

D. SAR 1g & 10g

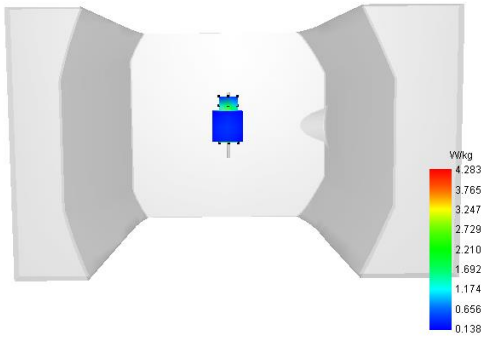
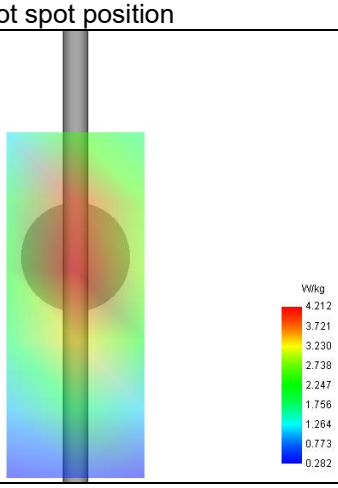
SAR 10g (W/Kg)	1.995
SAR 1g (W/Kg)	3.940
Variation (%)	0.070
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	6.889	4.283	2.298	1.249	0.726



F. 3D Image

3D screen shot	Hot spot position
	

System check at 2450 MHz

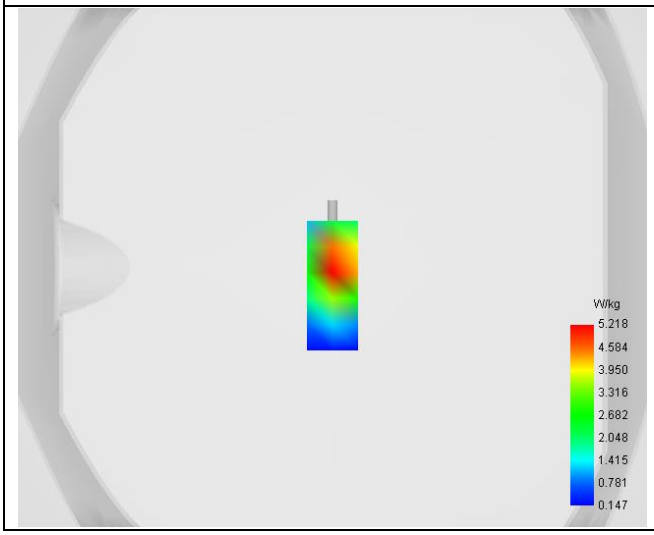
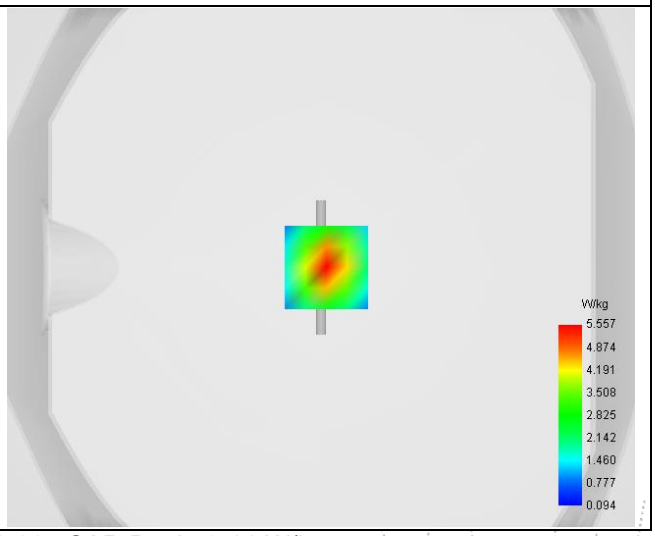
A. Experimental conditions.

Probe	SN EPGO362
ConvF	26.43
Area Scan	dx=10mm dy=10mm, Adaptative 2 max
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm,Very fast
Phantom	Validation plane
Device Position	Dipole
Band	CW2450
Channels	Middle
Signal	CW (Crest factor: 1.0)

B. Permitivity

Frequency (MHz)	2450.000
Relative permitivity (real part)	38.600
Relative permitivity (imaginary part)	14.330
Conductivity (S/m)	1.950

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

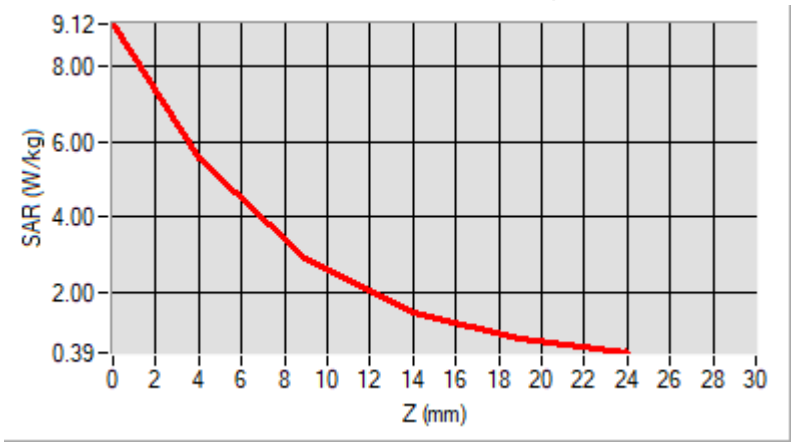
Maximum location: X=2.00, Y=0.00 ; SAR Peak: 9.11 W/kg

D. SAR 1g & 10g

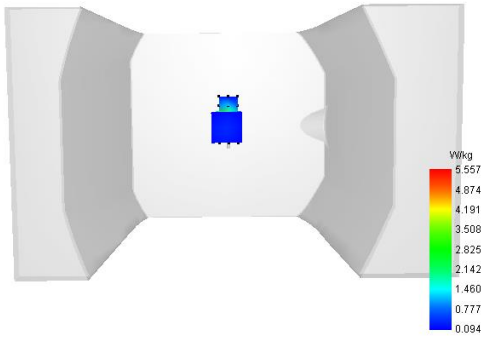
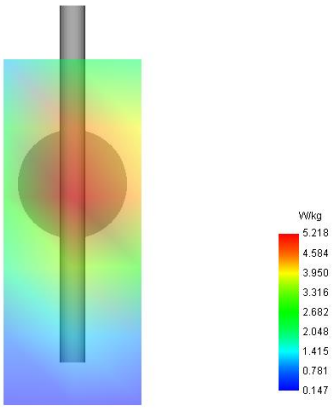
SAR 10g (W/Kg)	2.457
SAR 1g (W/Kg)	5.085
Variation (%)	0.360
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	9.121	5.557	2.866	1.459	0.770



F. 3D Image

3D screen shot	Hot spot position
	

System check at 5200 MHz

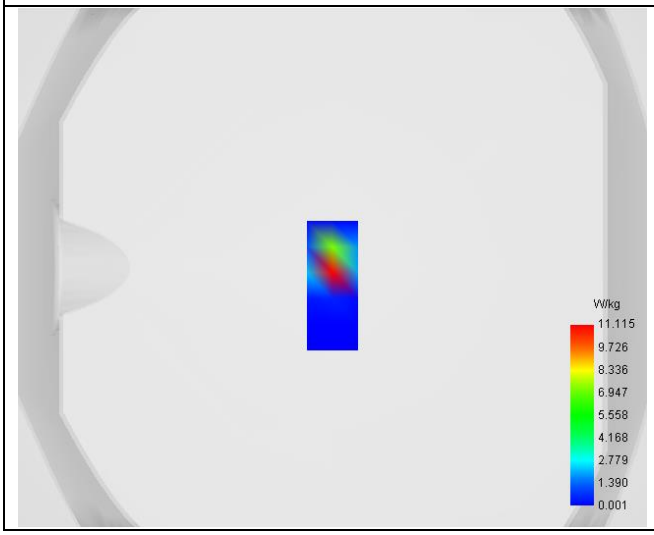
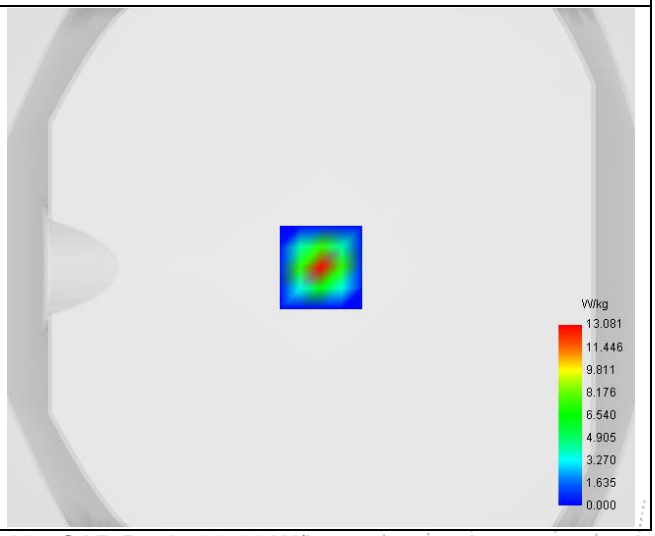
A. Experimental conditions.

Probe	SN EPGO362
ConvF	21.98
Area Scan	dx=10mm dy=10mm, Adaptative 2 max
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm,Very fast
Phantom	Validation plane
Device Position	Dipole
Band	CW5200
Channels	Middle
Signal	CW (Crest factor: 1.0)

B. Permitivity

Frequency (MHz)	5200.000
Relative permitivity (real part)	35.726
Relative permitivity (imaginary part)	18.140
Conductivity (S/m)	4.521

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

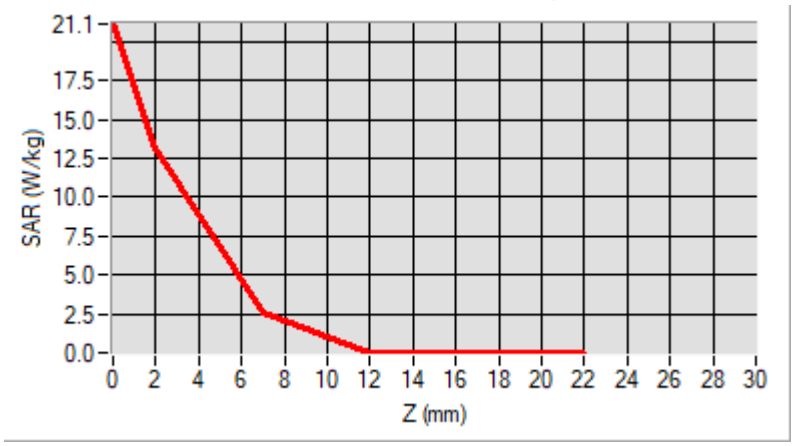
Maximum location: X=0.00, Y=0.00 ; SAR Peak: 22.28 W/kg

D. SAR 1g & 10g

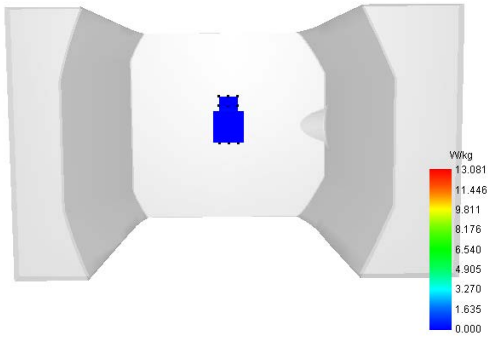
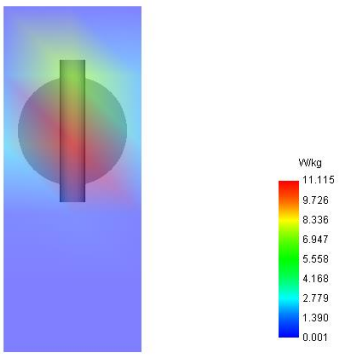
SAR 10g (W/Kg)	2.041
SAR 1g (W/Kg)	6.953
Variation (%)	0.430
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	2.00	7.00	12.00	17.00
SAR (W/Kg)	21.117	13.081	2.622	0.000	0.003



F. 3D Image

3D screen shot	Hot spot position
	

System check at 5800 MHz

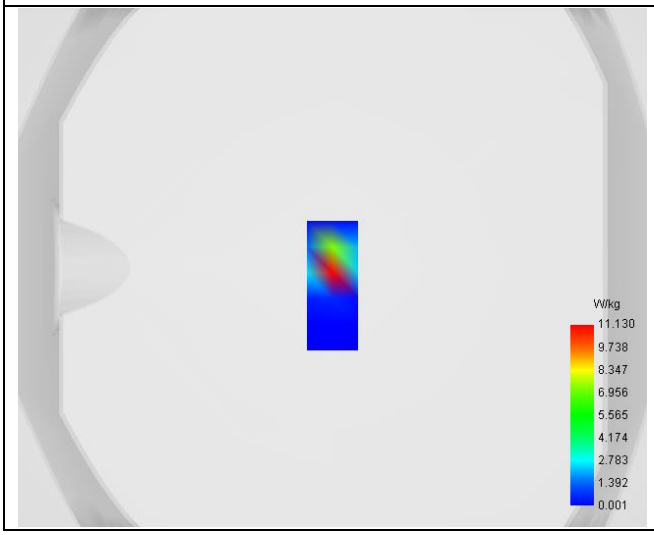
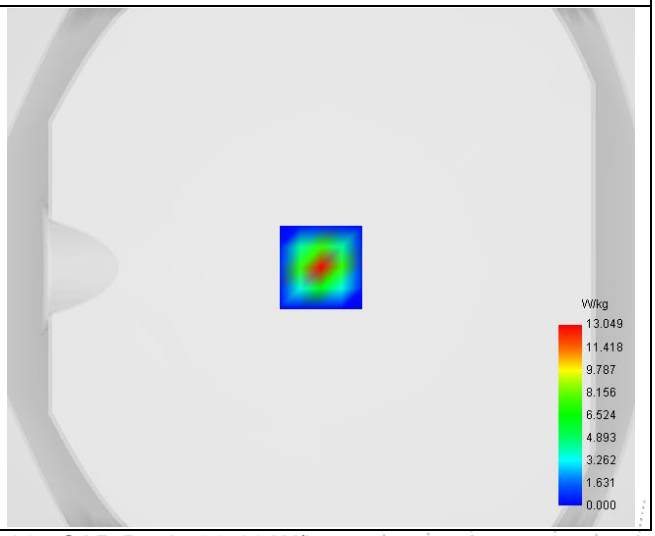
A. Experimental conditions.

Probe	SN EPGO362
ConvF	21.00
Area Scan	dx=10mm dy=10mm, Adaptative 2 max
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm,Very fast
Phantom	Validation plane
Device Position	Dipole
Band	CW5800
Channels	Middle
Signal	CW (Crest factor: 1.0)

B. Permitivity

Frequency (MHz)	5800.000
Relative permitivity (real part)	34.900
Relative permitivity (imaginary part)	18.620
Conductivity (S/m)	5.170

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

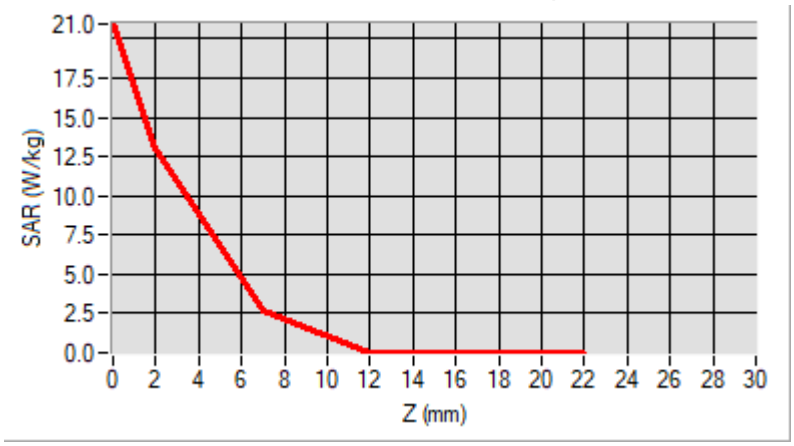
Maximum location: X=0.00, Y=0.00 ; SAR Peak: 22.11 W/kg

D. SAR 1g & 10g

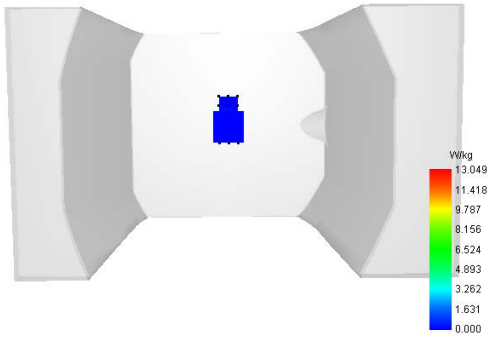
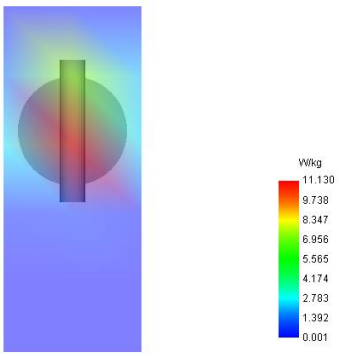
SAR 10g (W/Kg)	2.063
SAR 1g (W/Kg)	7.125
Variation (%)	0.430
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	2.00	7.00	12.00	17.00
SAR (W/Kg)	20.951	13.049	2.674	0.012	0.003



F. 3D Image

3D screen shot	Hot spot position
	

15.2 SAR Test Graph Results

SAR plots for the highest measured SAR in each exposure configuration, wireless mode and frequency band combination according to FCC KDB 865664 D02

Plot 1

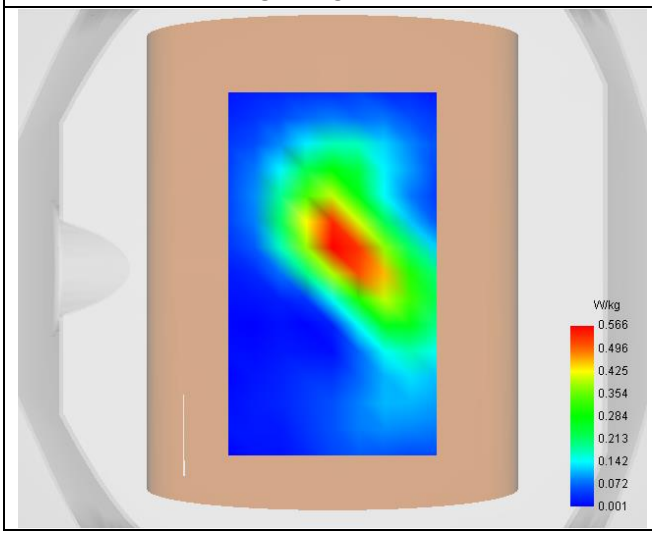
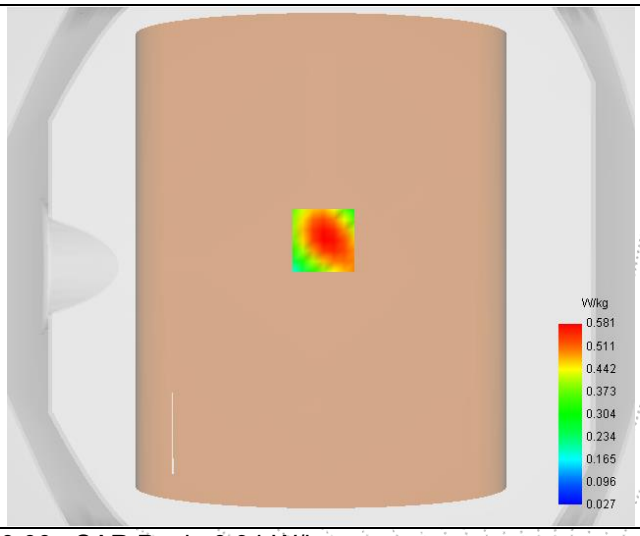
A. Experimental conditions.

Probe	SN EPGO362
ConvF	27.38
Area Scan	surf_sam_plan.txt
Zoom Scan	7x7x12,dx=4mm dy=4mm dz=5mm,Very fast
Phantom	Validation plane
Device Position	Body
Band	Band2_WCDMA1900
Channels	Middle (9400)
Signal	WCDMA (Crest factor: 1.0)

B. Permitivity

Frequency (MHz)	1880.000
Relative permitivity (real part)	40.000
Relative permitivity (imaginary part)	13.408
Conductivity (S/m)	1.400

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

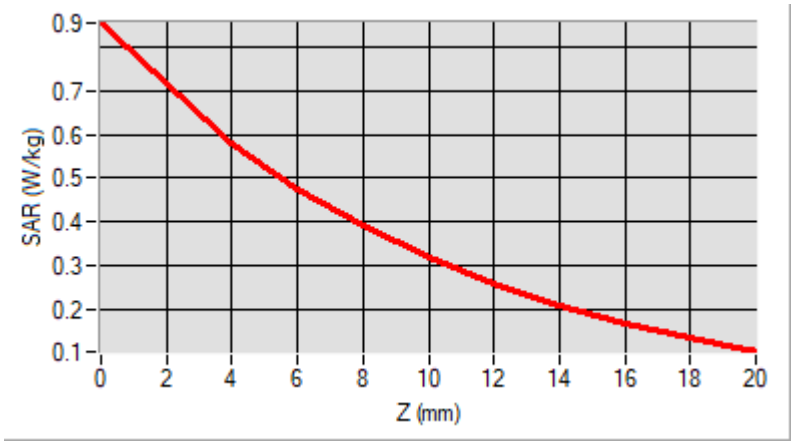
Maximum location: X=1.00, Y=10.00 ; SAR Peak: 0.94 W/kg

D. SAR 1g & 10g

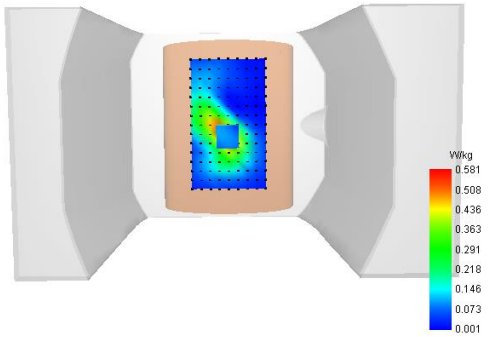
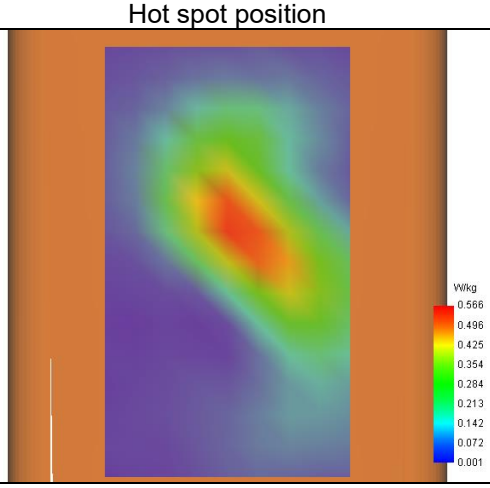
SAR 10g (W/Kg)	0.303
SAR 1g (W/Kg)	0.540
Variation (%)	-1.170
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	6.00	8.00	10.00	12.00	14.00	16.00	18.00
SAR (W/Kg)	0.857	0.581	0.476	0.390	0.318	0.259	0.209	0.168	0.132



F. 3D Image

3D screen shot	Hot spot position
	

Plot 2

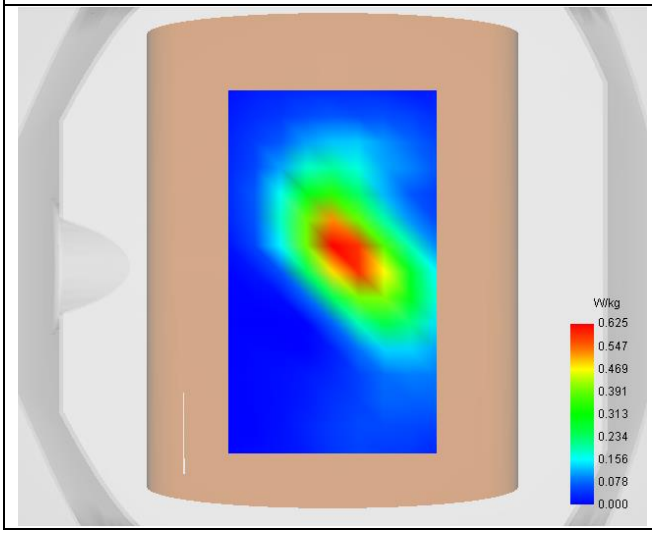
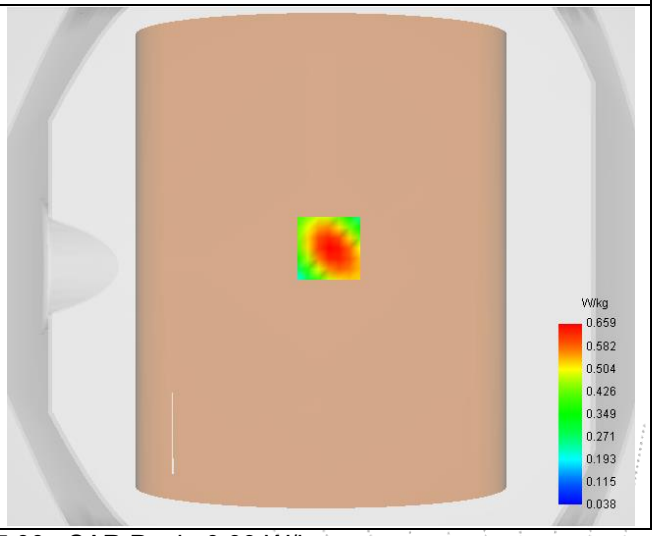
A. Experimental conditions.

Probe	SN EPGO362
ConvF	24.00
Area Scan	surf_sam_plan.txt
Zoom Scan	7x7x12,dx=4mm dy=4mm dz=5mm,Very fast
Phantom	Validation plane
Device Position	Body
Band	Band4_WCDMA1700
Channels	Middle (1450)
Signal	WCDMA (Crest factor: 1.0)

B. Permitivity

Frequency (MHz)	1740.000
Relative permitivity (real part)	40.116
Relative permitivity (imaginary part)	14.136
Conductivity (S/m)	1.361

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

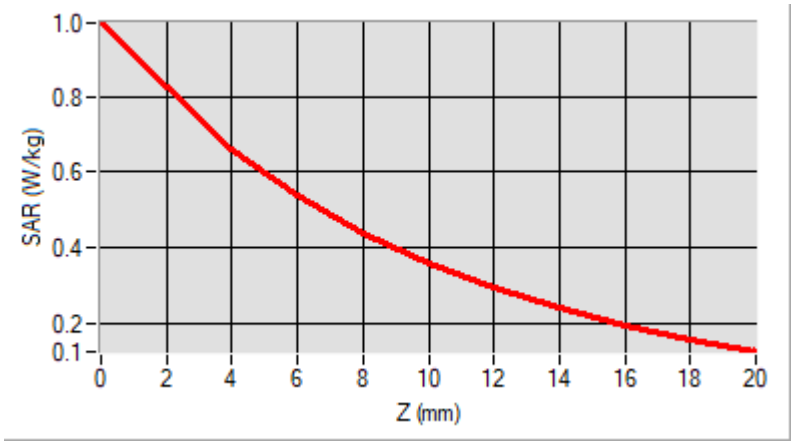
Maximum location: X=3.00, Y=7.00 ; SAR Peak: 0.99 W/kg

D. SAR 1g & 10g

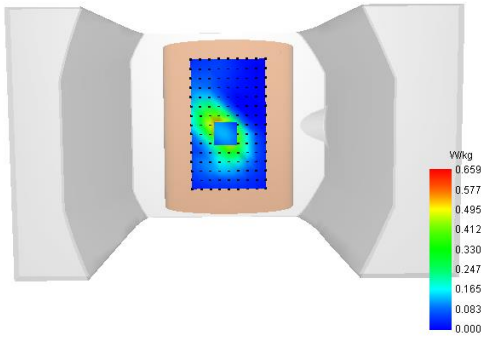
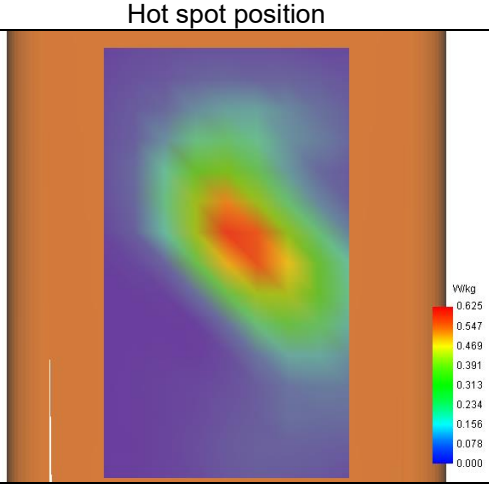
SAR 10g (W/Kg)	0.341
SAR 1g (W/Kg)	0.610
Variation (%)	1.870
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	6.00	8.00	10.00	12.00	14.00	16.00	18.00
SAR (W/Kg)	0.993	0.659	0.538	0.439	0.359	0.295	0.242	0.198	0.160



F. 3D Image

3D screen shot	Hot spot position
	

Plot 3

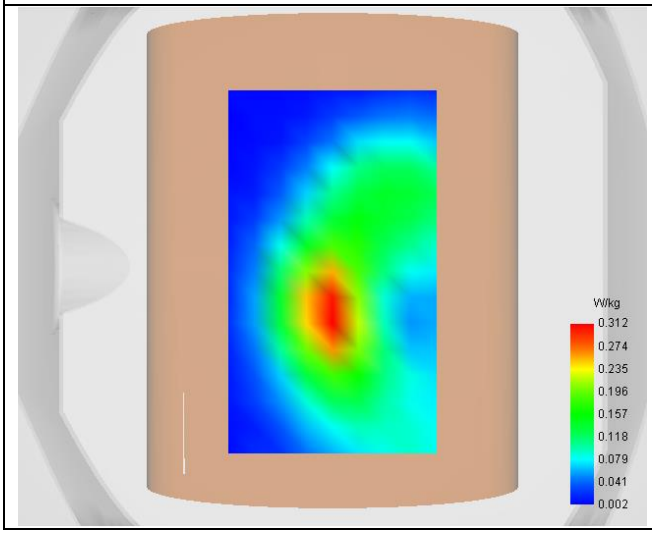
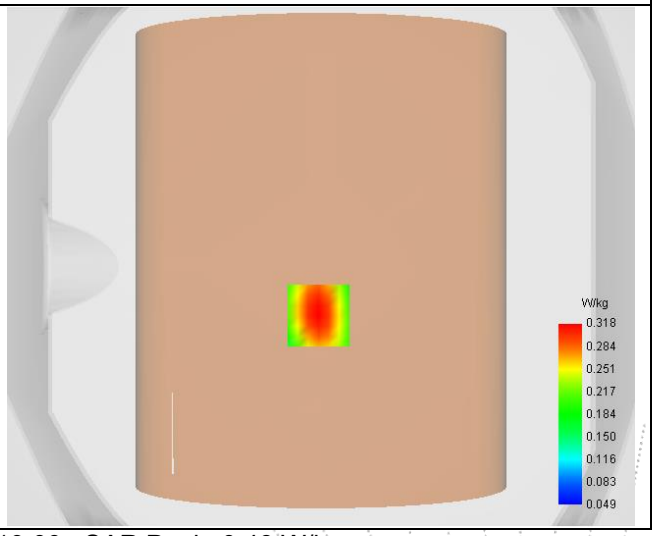
A. Experimental conditions.

Probe	SN EPGO362
ConvF	24.05
Area Scan	surf_sam_plan.txt
Zoom Scan	7x7x12,dx=4mm dy=4mm dz=5mm,Very fast
Phantom	Validation plane
Device Position	Body
Band	Band5_WCDMA850
Channels	Middle (4182)
Signal	WCDMA (Crest factor: 1.0)

B. Permitivity

Frequency (MHz)	836.400
Relative permitivity (real part)	42.285
Relative permitivity (imaginary part)	20.226
Conductivity (S/m)	0.940

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

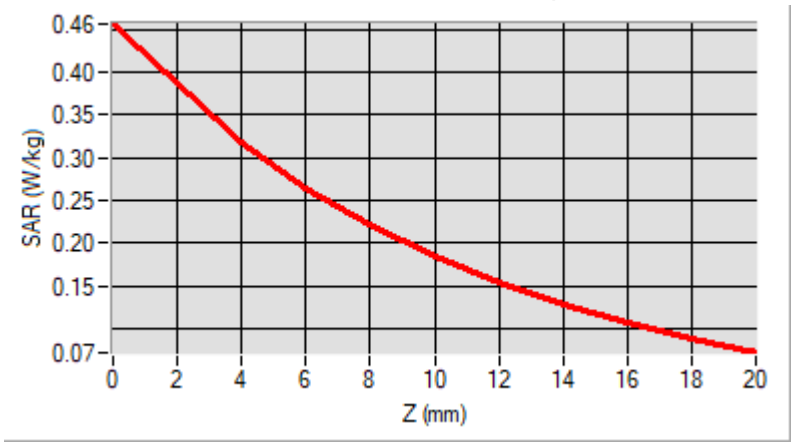
Maximum location: X=-1.00, Y=-19.00 ; SAR Peak: 0.48 W/kg

D. SAR 1g & 10g

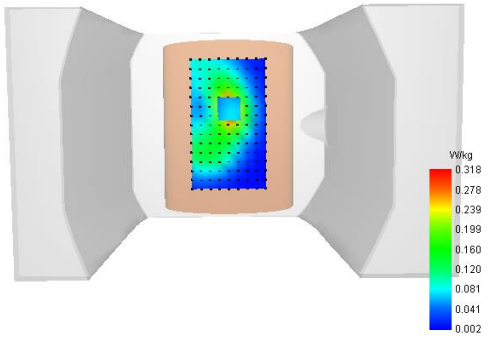
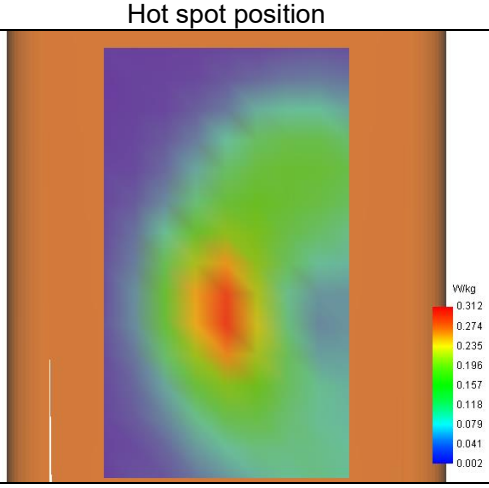
SAR 10g (W/Kg)	0.181
SAR 1g (W/Kg)	0.307
Variation (%)	-3.430
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	6.00	8.00	10.00	12.00	14.00	16.00	18.00
SAR (W/Kg)	0.456	0.318	0.265	0.221	0.185	0.155	0.130	0.108	0.089



F. 3D Image

3D screen shot	Hot spot position
	

Plot 4

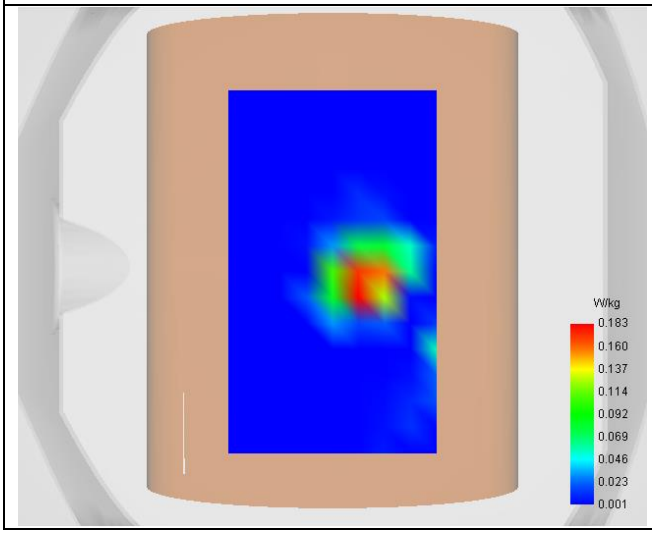
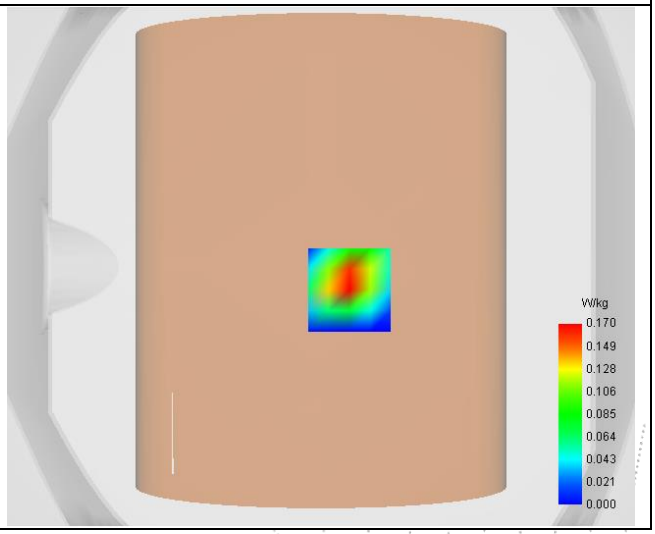
A. Experimental conditions.

Probe	SN EPGO362
ConvF	24.50
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm,Very fast
Phantom	Validation plane
Device Position	Body
Band	IEEE 802.11a U-NII
Channels	Low (36)
Signal	IEEE802.a (Crest factor: 1.0)

B. Permitivity

Frequency (MHz)	5180.000
Relative permitivity (real part)	48.607
Relative permitivity (imaginary part)	18.380
Conductivity (S/m)	5.616

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

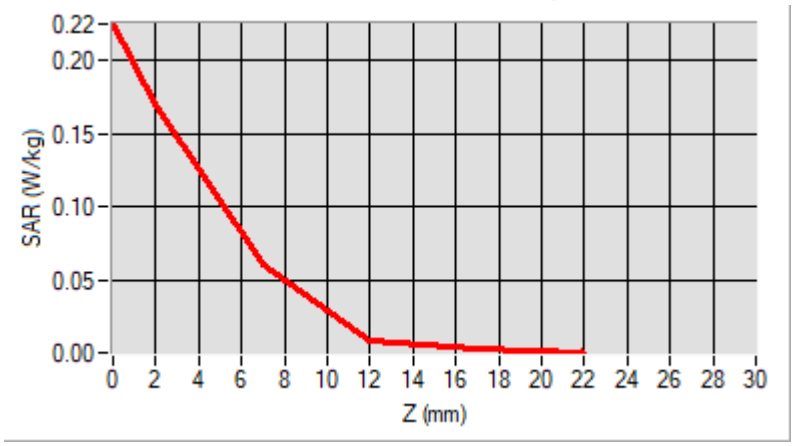
Maximum location: X=11.00, Y=-9.00 ; SAR Peak: 0.27 W/kg

D. SAR 1g & 10g

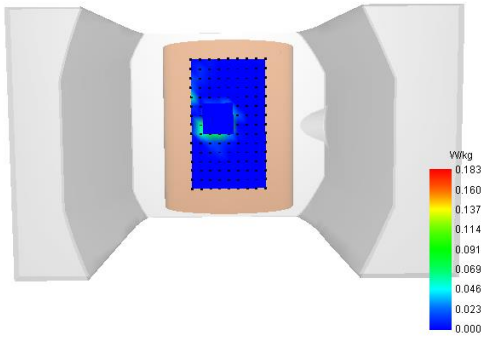
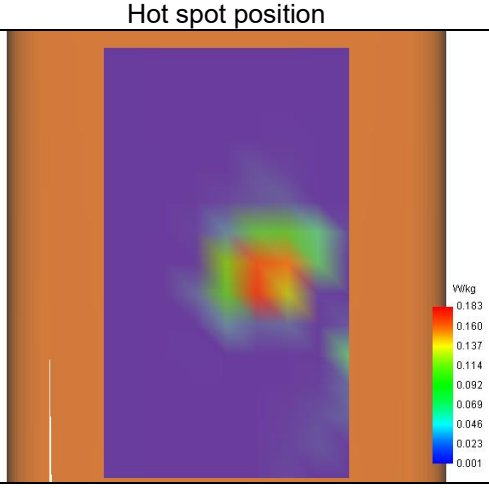
SAR 10g (W/Kg)	0.043
SAR 1g (W/Kg)	0.113
Variation (%)	4.670
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	2.00	7.00	12.00	17.00
SAR (W/Kg)	0.225	0.170	0.061	0.008	0.003



F. 3D Image

3D screen shot	Hot spot position
	

Plot 5

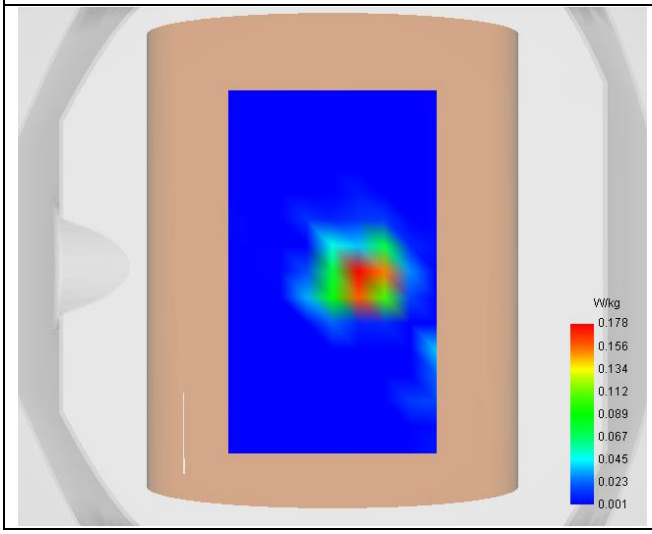
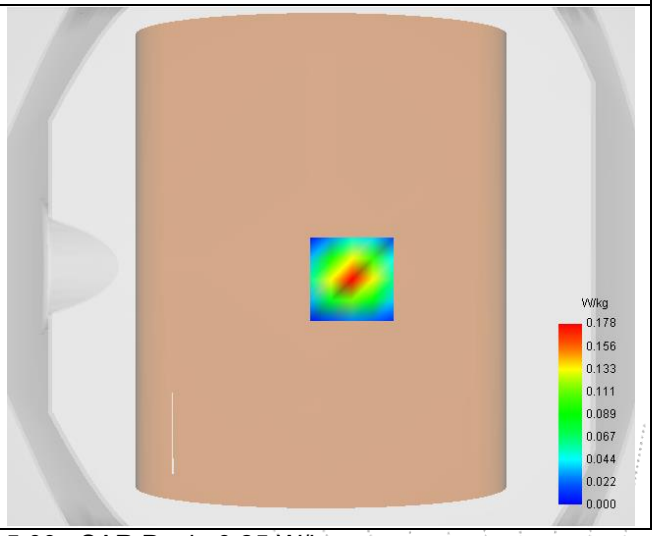
A. Experimental conditions.

Probe	SN EPGO362
ConvF	24.50
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm,Very fast
Phantom	Validation plane
Device Position	Body
Band	IEEE 802.11a U-NII
Channels	Low (149)
Signal	IEEE802.n20 (Crest factor: 1.0)

B. Permitivity

Frequency (MHz)	5745.000
Relative permitivity (real part)	48.607
Relative permitivity (imaginary part)	18.380
Conductivity (S/m)	5.616

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

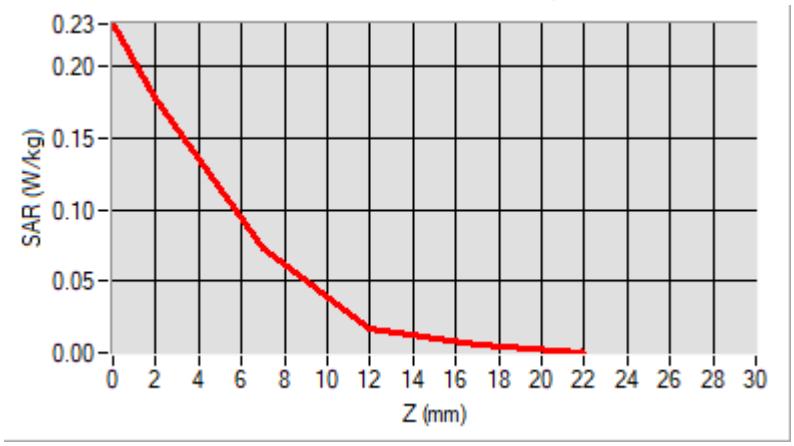
Maximum location: X=12.00, Y=-5.00 ; SAR Peak: 0.25 W/kg

D. SAR 1g & 10g

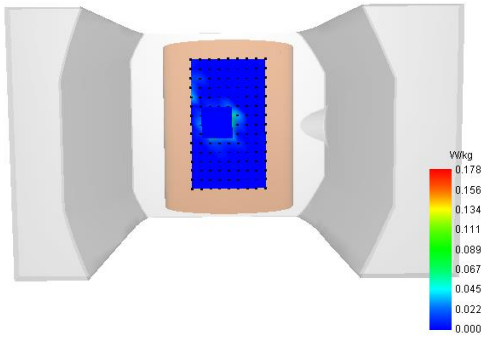
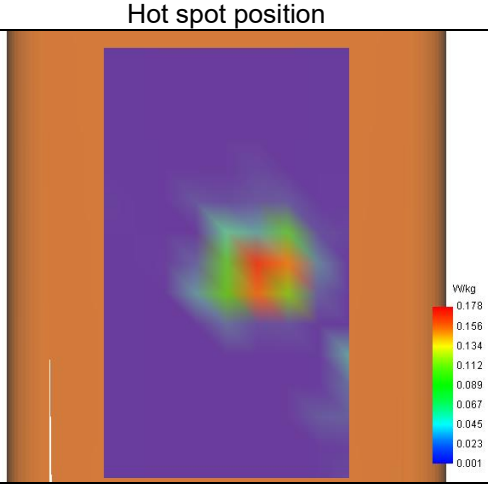
SAR 10g (W/Kg)	0.044
SAR 1g (W/Kg)	0.114
Variation (%)	-0.630
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	2.00	7.00	12.00	17.00
SAR (W/Kg)	0.229	0.178	0.073	0.017	0.006



F. 3D Image

3D screen shot	Hot spot position
	

Plot 6

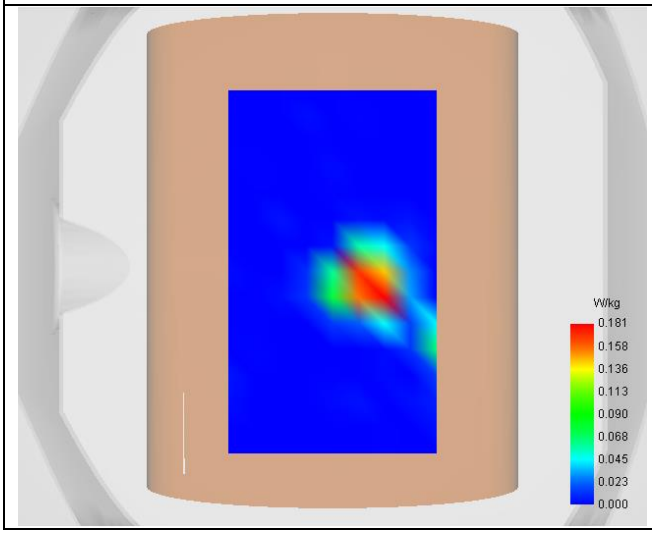
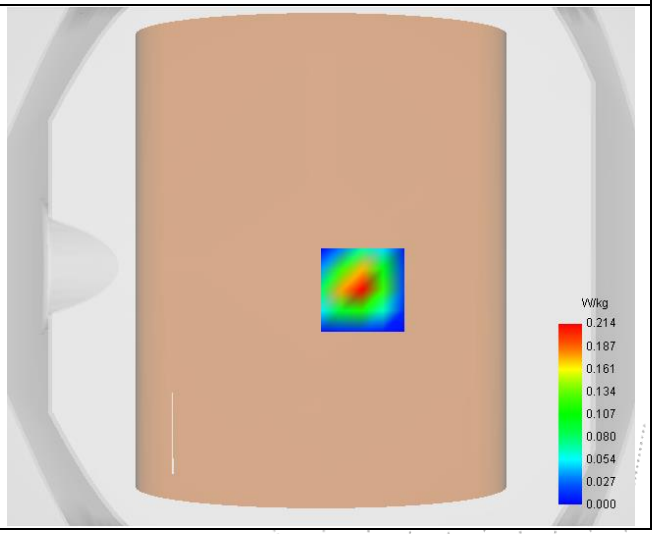
A. Experimental conditions.

Probe	SN EPGO362
ConvF	26.43
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm,Very fast
Phantom	Validation plane
Device Position	Body
Band	IEEE 802.11b ISM
Channels	High (11)
Signal	IEEE802.g (Crest factor: 1.0)

B. Permitivity

Frequency (MHz)	2462.000
Relative permitivity (real part)	52.717
Relative permitivity (imaginary part)	14.311
Conductivity (S/m)	1.938

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

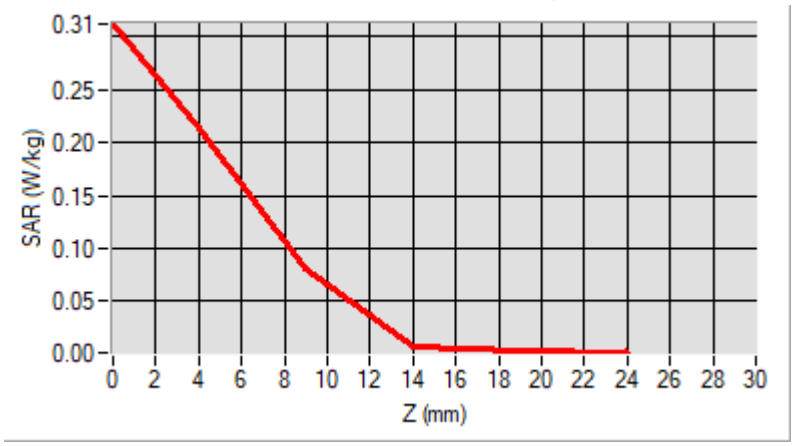
Maximum location: X=16.00, Y=-9.00 ; SAR Peak: 0.44 W/kg

D. SAR 1g & 10g

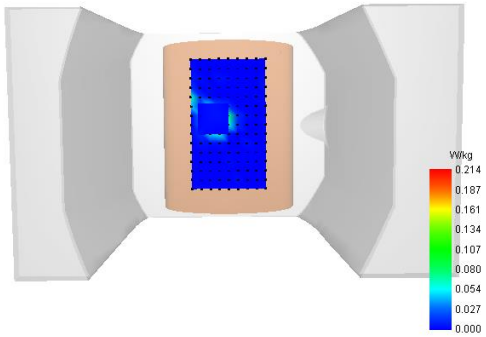
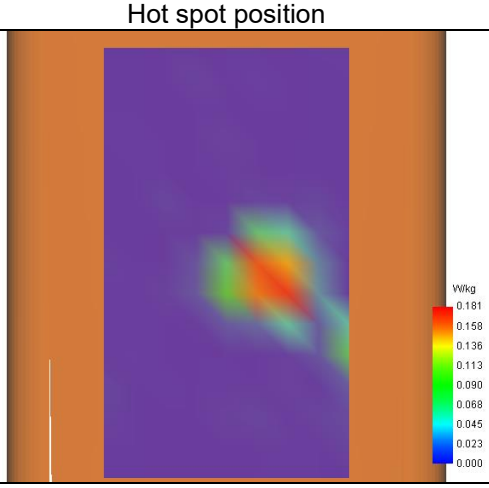
SAR 10g (W/Kg)	0.074
SAR 1g (W/Kg)	0.199
Variation (%)	-0.240
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.312	0.214	0.081	0.008	0.003



F. 3D Image

3D screen shot	Hot spot position
	

Plot 7

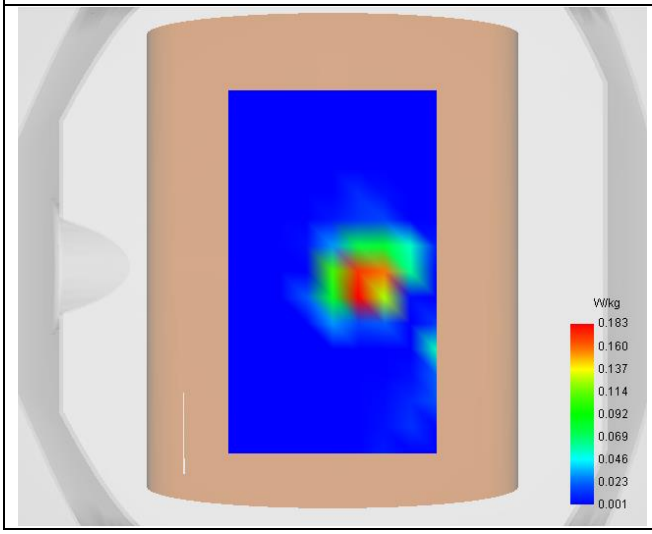
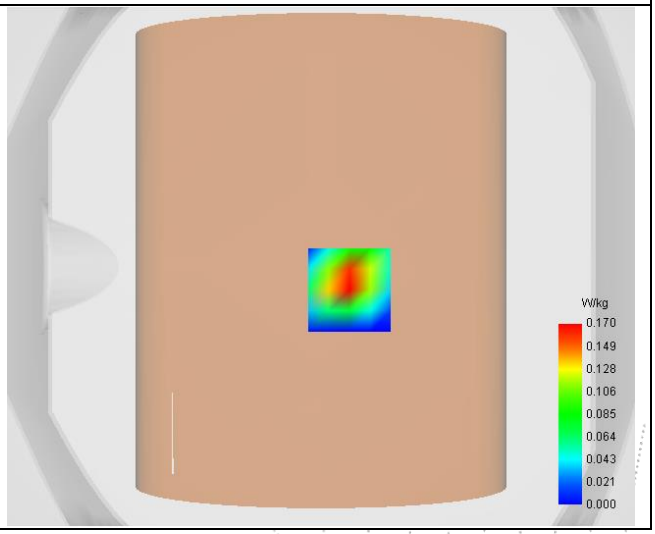
A. Experimental conditions.

Probe	SN EPGO362
ConvF	24.50
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm,Very fast
Phantom	Validation plane
Device Position	Body
Band	IEEE 802.11a U-NII
Channels	Low (36)
Signal	IEEE802.a (Crest factor: 1.0)

B. Permitivity

Frequency (MHz)	5180.000
Relative permitivity (real part)	48.607
Relative permitivity (imaginary part)	18.380
Conductivity (S/m)	5.616

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

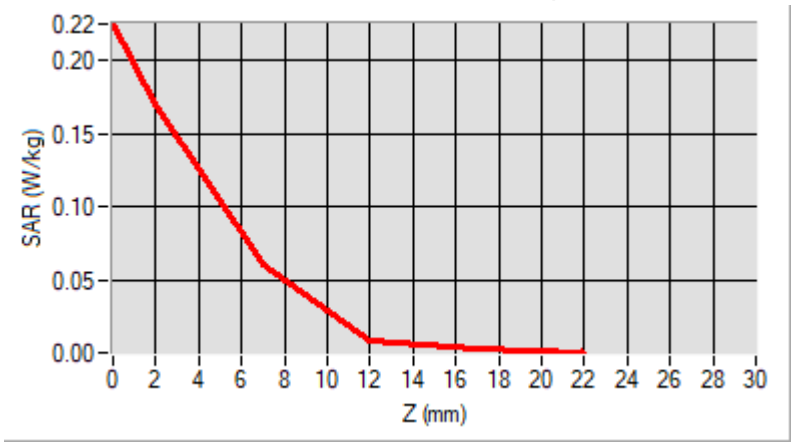
Maximum location: X=11.00, Y=-9.00 ; SAR Peak: 0.27 W/kg

D. SAR 1g & 10g

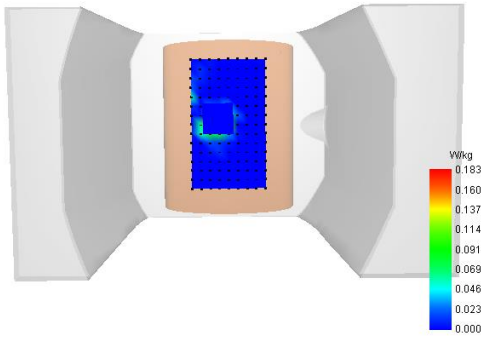
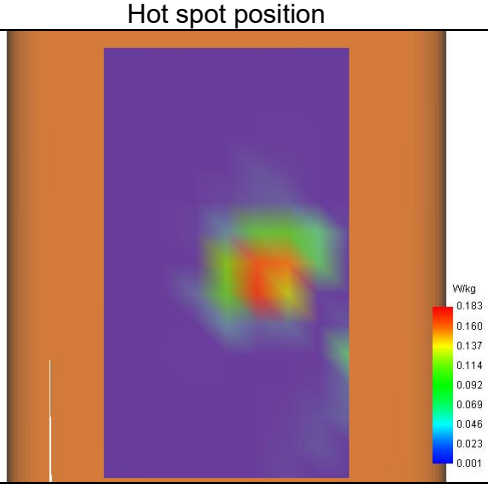
SAR 10g (W/Kg)	0.041
SAR 1g (W/Kg)	0.108
Variation (%)	1.230
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	2.00	7.00	12.00	17.00
SAR (W/Kg)	0.222	0.170	0.060	0.007	0.003



F. 3D Image

3D screen shot	Hot spot position
	

Plot 8

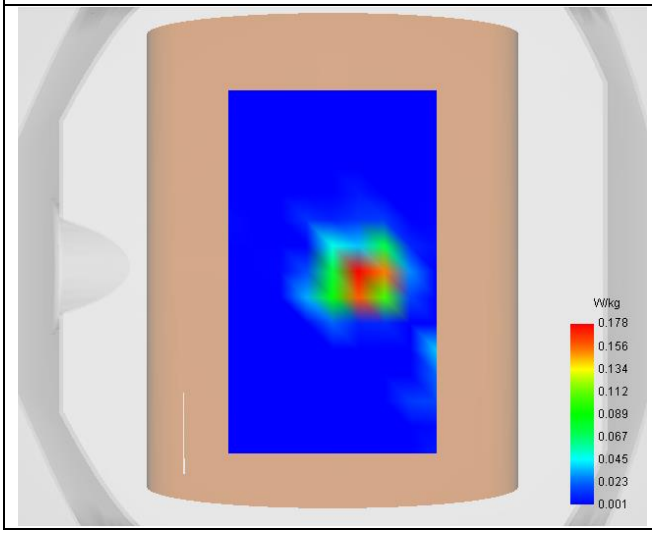
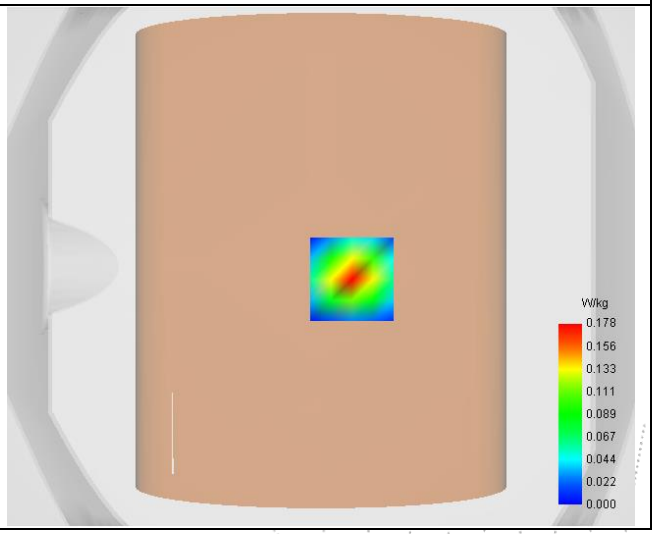
A. Experimental conditions.

Probe	SN EPGO362
ConvF	24.50
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm,Very fast
Phantom	Validation plane
Device Position	Body
Band	IEEE 802.11a U-NII
Channels	Low (149)
Signal	IEEE802.a (Crest factor: 1.0)

B. Permitivity

Frequency (MHz)	5745.000
Relative permitivity (real part)	48.607
Relative permitivity (imaginary part)	18.380
Conductivity (S/m)	5.616

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

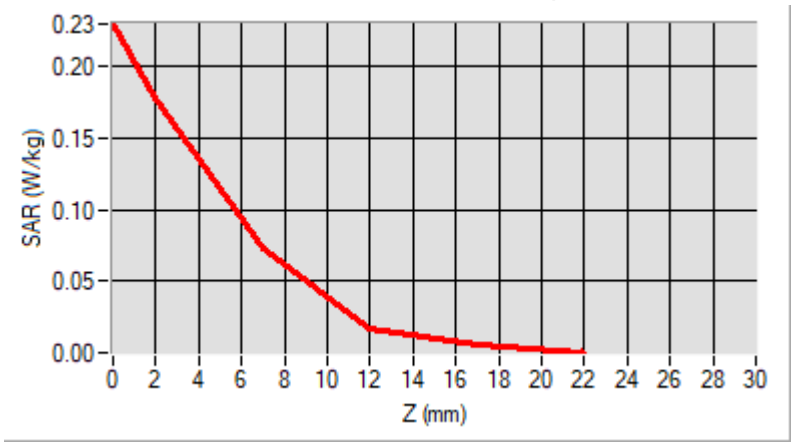
Maximum location: X=12.00, Y=-5.00 ; SAR Peak: 0.25 W/kg

D. SAR 1g & 10g

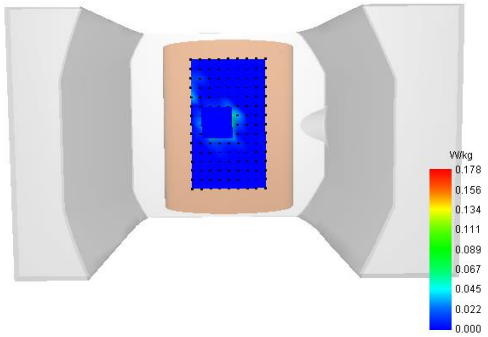
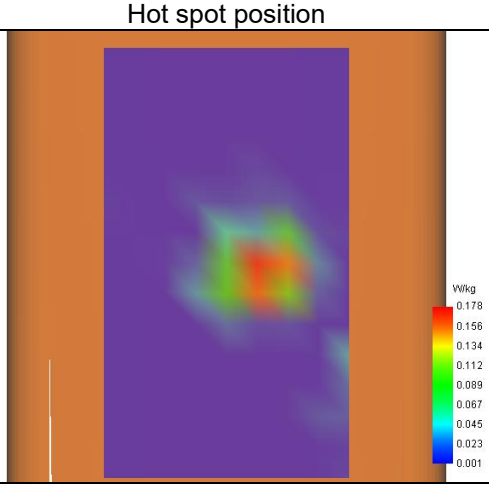
SAR 10g (W/Kg)	0.040
SAR 1g (W/Kg)	0.104
Variation (%)	2.030
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	2.00	7.00	12.00	17.00
SAR (W/Kg)	0.227	0.175	0.073	0.014	0.005



F. 3D Image

3D screen shot	Hot spot position
	

Plot 9

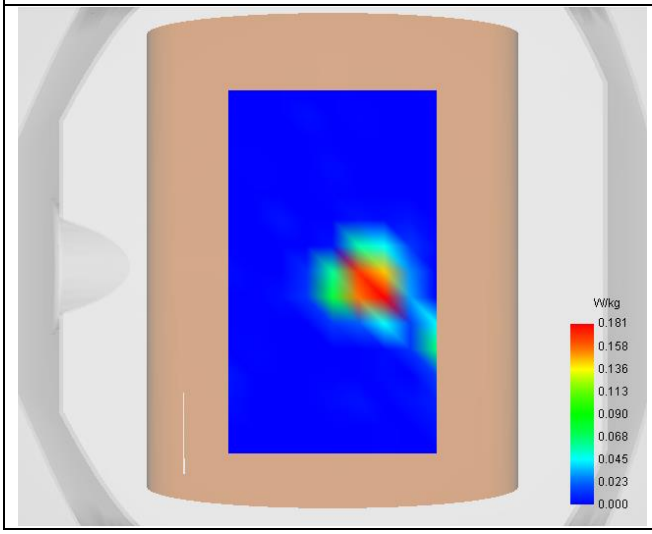
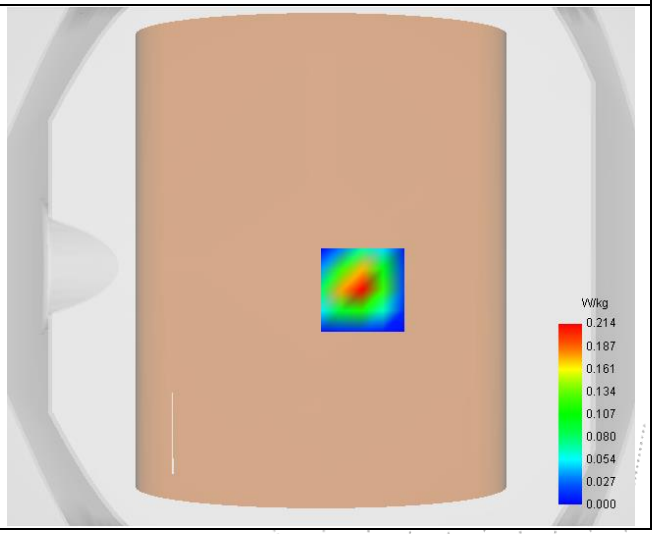
A. Experimental conditions.

Probe	SN EPGO362
ConvF	26.43
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm,Very fast
Phantom	Validation plane
Device Position	Body
Band	IEEE 802.11b ISM
Channels	Low (1)
Signal	IEEE802.b (Crest factor: 1.0)

B. Permitivity

Frequency (MHz)	2412.000
Relative permitivity (real part)	52.704
Relative permitivity (imaginary part)	14.302
Conductivity (S/m)	1.928

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

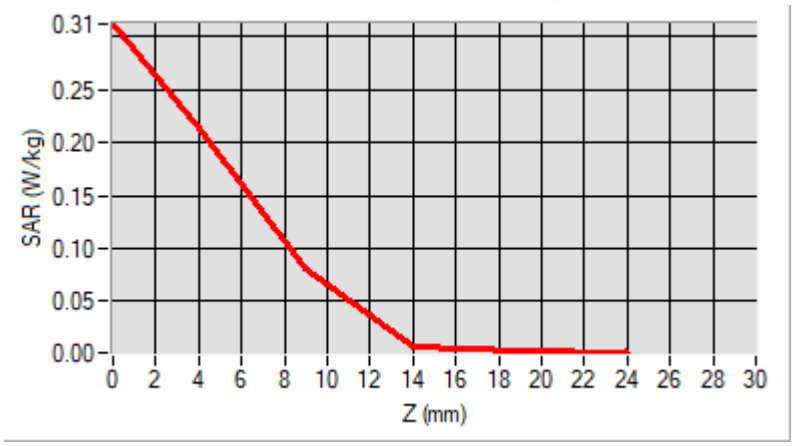
Maximum location: X=16.00, Y=-9.00 ; SAR Peak: 0.44 W/kg

D. SAR 1g & 10g

SAR 10g (W/Kg)	0.071
SAR 1g (W/Kg)	0.192
Variation (%)	1.520
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.310	0.213	0.079	0.007	0.003



F. 3D Image

3D screen shot	Hot spot position