

# FCC SAR Compliance Test Report

For

**HONG KONG LESIA TECHNOLOGY CO., LIMITED**

**UNIT 04, 7/F BRIGHT WAY TOWER NO.33 MONG KOK RD KL**

Model: Prime P6

Test Engineer: Lily Zhao

Report Number: FCC17080754A-SAR

Report Date: 2017-07-10

FCC ID: 2AM6RPRIMEP6

Check By: Stars Liang

*Stars Liang*

Approved By: Michal Ling

*Michal Ling*

Prepared By:

QTC Certification & Testing Co., Ltd.  
2nd Floor, BI Building, Fengyeyuan Industrial Plant,,  
Liuxian 2st. Road, Xin'an Street, Bao'an  
District,, Shenzhen, 518000  
Tel: +86-755-26996144 EXT:8164  
Fax: +86-755-26996253

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### Modified History

| REV.    | Modification Description    | Issued Date | Remark      |
|---------|-----------------------------|-------------|-------------|
| REV.1.0 | Initial Test Report Release | 2017-07-10  | Stars Liang |
|         |                             |             |             |
|         |                             |             |             |
|         |                             |             |             |
|         |                             |             |             |
|         |                             |             |             |

## 1 General information

### 1.1 Notes

The test results of this test report relate exclusively to the test item specified in this test report. QTC Certification & Testing Co., Ltd. does not assume responsibility for any conclusions and generalisations drawn from the test results with regard to other specimens or samples of the type of the equipment represented by the test item. The test report is not to be reproduced or published in full without the prior written permission.

### 1.2 Application details

Date of receipt of test item: 2017-07-04  
Start of test: 2017-07-04  
End of test: 2017-07-06

### 1.3 Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for Prime P6 is as below:

| Band                                                        | Position  | MAX Reported SAR <sub>1g</sub> (W/kg) |
|-------------------------------------------------------------|-----------|---------------------------------------|
| GSM 850                                                     | Head      | <b>0.566</b>                          |
|                                                             | Body 10mm | <b>0.758</b>                          |
| GSM1900                                                     | Head      | 0.551                                 |
|                                                             | Body 10mm | 0.745                                 |
| The highest simultaneous SAR is 0.800W/kg per KDB690783 D01 |           |                                       |

The device is in compliance with Specific Absorption Rate (SAR) for general population/uncontrolled exposure limits of 1.6 W/Kg as averaged over any 1g tissue according to the FCC rule §2.1093, the ANSI/IEEE C95.1:2005, the NCRP Report Number 86 for uncontrolled environment, according to the Industry Canada Radio Standards Specification RSS-102 for General Population/Uncontrolled exposure, and had been tested in accordance with the measurement methods and procedures specified in IEEE Std 1528-2013.

**1.4 EUT Information**

| Device Information:                            |                                                                                                                           |           |           |
|------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|-----------|-----------|
| <b>Product Type:</b>                           | Mobile phone                                                                                                              |           |           |
| <b>Model:</b>                                  | Prime P6                                                                                                                  |           |           |
| <b>Brand Name:</b>                             | Lesia                                                                                                                     |           |           |
| <b>Device Type:</b>                            | Portable device                                                                                                           |           |           |
| <b>Exposure Category:</b>                      | uncontrolled environment / general population                                                                             |           |           |
| <b>Production Unit or Identical Prototype:</b> | Production Unit                                                                                                           |           |           |
| <b>Software version:</b>                       | FF225M04_J10_KLT_KT1706_LESIA_PRIME_P6_V05_128X160_EN_170728_0859_3232_UEDP_DSIM_FM_BT_CLASSAB_SC_FL_TORCH_VIB_9089_notes |           |           |
| <b>Hardware version :</b>                      | FF225-04J                                                                                                                 |           |           |
| <b>Antenna Type :</b>                          | Internal Antenna                                                                                                          |           |           |
| Device Operating Configurations:               |                                                                                                                           |           |           |
| <b>Supporting Mode(s) :</b>                    | GSM850/1900, BT                                                                                                           |           |           |
| <b>Modulation:</b>                             | GSM(GMSK), BT(GFSK/π/4-DQPSK/ 8-DPSK)                                                                                     |           |           |
| <b>Device Class :</b>                          | Class B, No DTM Mode                                                                                                      |           |           |
| <b>Operating Frequency Range(s)</b>            | Band                                                                                                                      | TX(MHz)   | RX(MHz)   |
|                                                | GSM850                                                                                                                    | 824~849   | 869~894   |
|                                                | GSM1900                                                                                                                   | 1850~1910 | 1930~1990 |
|                                                | BT                                                                                                                        | 2402~2480 |           |
| <b>GPRS class level:</b>                       | GPRS class 12                                                                                                             |           |           |
| <b>Test Channels (low-mid-high):</b>           | 128-190-251(GSM850)                                                                                                       |           |           |
|                                                | 512-661-810(GSM1900)                                                                                                      |           |           |
|                                                | 0-39-78(BT)                                                                                                               |           |           |
| <b>Power Source:</b>                           | 3.7 VDC/800mAh Rechargeable Battery                                                                                       |           |           |

## 2 Testing laboratory

|               |                                                                                                                            |
|---------------|----------------------------------------------------------------------------------------------------------------------------|
| Test Site     | QTC Certification & Testing Co., Ltd.                                                                                      |
| Test Location | 2nd Floor, BI Building, Fengyeyuan Industrial Plant,, Liuxian 2st. Road, Xin'an Street, Bao'an District,, Shenzhen, 518000 |
| Telephone     | +86-755-26996144 EXT:8164                                                                                                  |
| Fax           | +86-755-26996253                                                                                                           |

## 3 Test Environment

|                            | Required   | Actual    |
|----------------------------|------------|-----------|
| Ambient temperature:       | 18 – 25 °C | 22 ± 2 °C |
| Tissue Simulating liquid:  | 22 ± 2 °C  | 22 ± 2 °C |
| Relative humidity content: | 30 – 70 %  | 30 – 70 % |

## 4 Applicant and Manufacturer

|                        |                                                                                                            |
|------------------------|------------------------------------------------------------------------------------------------------------|
| Applicant/Client Name: | HONG KONG LESIA TECHNOLOGY CO., LIMITED                                                                    |
| Applicant Address:     | UNIT 04, 7/F BRIGHT WAY TOWER NO.33 MONG KOK RD KL                                                         |
| Manufacturer Name:     | Shenzhen Kleadtone Technology Co.,Ltd                                                                      |
| Manufacturer Address:  | Room 506- 507, E Bldg, Dianzi Fuhua Jidi, Taojindi, Longsheng community, Longhua District, Shenzhen, China |

**5 Test standard/s:**

|                     |                                                                                                                                                                             |
|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ANSI Std C95.1-2005 | Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz.                                                                   |
| IEEE Std 1528-2013  | Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques |
| RSS-102             | Radio Frequency Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands (Issue 5 March 2015)                                                               |
| KDB447498 D01       | General RF Exposure Guidance v06                                                                                                                                            |
| KDB648474 D04       | Head set SAR v01r03                                                                                                                                                         |
| KDB865664 D01       | SAR Measurement 100 MHz to 6 GHz v01r04                                                                                                                                     |
| KDB865664 D02       | RF Exposure Reporting v01r02                                                                                                                                                |



## 5.1 RF exposure limits

| Human Exposure                                          | Uncontrolled Environment<br>General Population | Controlled Environment<br>Occupational |
|---------------------------------------------------------|------------------------------------------------|----------------------------------------|
| <b>Spatial Peak SAR*</b><br>(Brain/Body/Arms/Legs)      | <b>1.60 mW/g</b>                               | 8.00 mW/g                              |
| <b>Spatial Average SAR**</b><br>(Whole Body)            | 0.08 mW/g                                      | 0.40 mW/g                              |
| <b>Spatial Peak SAR***</b><br>(Head s/Feet/Ankle/Wrist) | 4.00 mW/g                                      | 20.00 mW/g                             |

The limit applied in this test report is shown in bold letters

### Notes:

- \* The Spatial Peak value of the SAR averaged over any 1 gram of tissue (defined as a tissue volume in the shape of a cube) and over the appropriate averaging time.
- \*\* The Spatial Average value of the SAR averaged over the whole body.
- \*\*\* The Spatial Peak value of the SAR averaged over any 10 grams of tissue (defined as a tissue volume in the shape of a cube) and over the appropriate averaging time.

**Uncontrolled Environments** are defined as locations where there is the exposure of individuals who have no knowledge or control of their exposure.

**Controlled Environments** are defined as locations where there is exposure that may be incurred by persons who are aware of the potential for exposure, (i.e. as a result of employment or occupation).

## 5.2 SAR Definition

Specific Absorption Rate is defined as 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 ( $\rho$ ).

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

SAR is expressed in units of watts per kilogram (W/kg). SAR can be related to the electric field at a point by

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

where:

$\sigma$  = conductivity of the tissue (S/m)

$\rho$  = mass density of the tissue (kg/m<sup>3</sup>)

E = rms electric field strength (V/m)

## 6 SAR Measurement System

### 6.1 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
- Device 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.

## 6.2 Robot

The COMOSAR system uses the high precision robots KR 6 R900 sixx type out of the newer series from Satimo SA (France).For the 6-axis controller COMOSAR system, the KUKA robot controller version from Satimo is used. The KR 6 R900 sixx robot series have many features that are important for our application:

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

## 6.3 Probe

For the measurements the Specific Dosimetric E-Field Probe SSE 5 with following specifications is used



- Dynamic range: 0.01-100 W/kg
- Tip Diameter : 5 mm
- Distance between probe tip and sensor center: 2.5mm
- 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: 300MHz to 3GHz for head & body simulating liquid..

Angle between probe axis (evaluation axis) and surface normal line:less than 30°

## 6.4 Measurement procedure

The following steps are used for each test position

- Establish a call with the maximum output power with a base station simulator.The connection between the mobile and the base station simulator is established via air interface.
- Measurement of the local E-field value at a fixed location.This value serves as a reference value for calculating a possible power drift.

- Measurement of the SAR distribution with a grid of 8 to 16 mm \* 8 to 16 mm and a constant distance to the inner surface of the phantom. Since the sensors can not directly measure at the inner phantom surface, the values between the sensors and the inner phantom surface are extrapolated. With these values the area of the maximum SAR is calculated by an interpolation scheme.
- Around this point, a cube of 30 \* 30 \* 30 mm or 32 \* 32 \* 32 mm is assessed by measuring 5 or 8 \* 5 or 8 \* 4 or 5 mm. With these data, the peak spatial-average SAR value can be calculated.

## 6.5 Description of interpolation/extrapolation scheme

- 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 minimise measurements errors, but the highest local SAR will occur at the surface of the phantom.
- An extrapolation is used to determine these 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 1 mm 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 average over 10 grams and 1 gram requires a very fine resolution in the three dimensional scanned data array.

## 6.6 Phantom

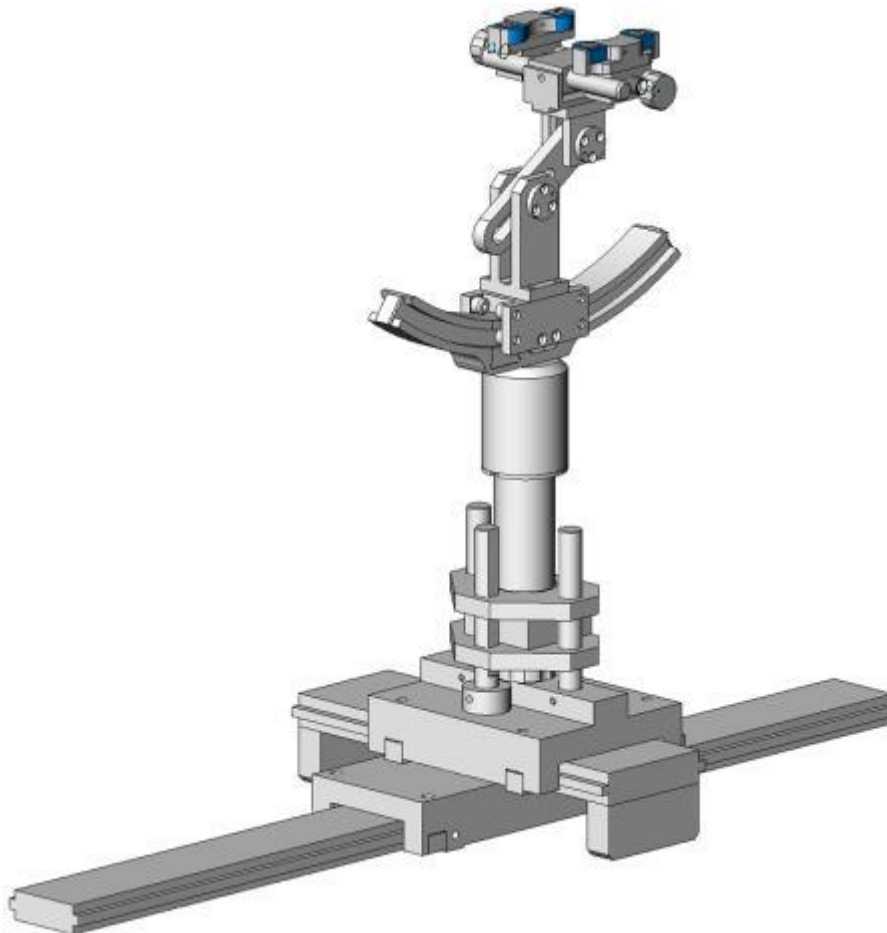
For the measurements the Specific Anthropomorphic Mannequin (SAM) defined by the IEEE SCC-34/SC2 group is used. The phantom is a polyurethane shell integrated in a wooden table. The thickness of the phantom amounts to 2mm +/- 0.2mm. It enables the dosimetric evaluation of left and right phone usage and 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.



| System Material | Permittivity | Loss Tangent |
|-----------------|--------------|--------------|
| Delrin          | 3.7          | 0.005        |

### 6.7 Device Holder

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°.



Device holder

| System Material | Permittivity | Loss Tangent |
|-----------------|--------------|--------------|
| Delrin          | 3.7          | 0.005        |

## 6.8 Video Positioning System

- The video positioning system is used in OpenSAR to check the probe. Which is composed of a camera, LED, mirror and mechanical parts. The camera is piloted by the main computer with firewire link.
- During the process, the actual position of the probe tip with respect to the robot arm is measured, as well as the probe length and the horizontal probe offset. The software then corrects all movements, such that the robot coordinates are valid for the probe tip.
- The repeatability of this process is better than 0.1 mm. If a position has been taught with an aligned probe, the same position will be reached with another aligned probe within 0.1 mm, even if the other probe has different dimensions. During probe rotations, the probe tip will keep its actual position.



### 6.9 Tissue simulating liquids: dielectric properties

The following materials are used for producing the tissue-equivalent materials.

(Liquids used for tests are marked with ☒):

| Ingredients(% of weight) | Frequency (MHz)              |                                         |                               |                                          |                               |
|--------------------------|------------------------------|-----------------------------------------|-------------------------------|------------------------------------------|-------------------------------|
|                          | <input type="checkbox"/> 450 | <input checked="" type="checkbox"/> 835 | <input type="checkbox"/> 1800 | <input checked="" type="checkbox"/> 1900 | <input type="checkbox"/> 2450 |
| frequency band           |                              |                                         |                               |                                          |                               |
| Tissue Type              | Head                         | Head                                    | Head                          | Head                                     | Head                          |
| Water                    | 38.56                        | 41.45                                   | 52.64                         | 55.242                                   | 62.7                          |
| Salt (NaCl)              | 3.95                         | 1.45                                    | 0.36                          | 0.306                                    | 0.5                           |
| Sugar                    | 56.32                        | 56.0                                    | 0.0                           | 0.0                                      | 0.0                           |
| HEC                      | 0.98                         | 1.0                                     | 0.0                           | 0.0                                      | 0.0                           |
| Bactericide              | 0.19                         | 0.1                                     | 0.0                           | 0.0                                      | 0.0                           |
| Triton X-100             | 0.0                          | 0.0                                     | 0.0                           | 0.0                                      | 36.8                          |
| DGBE                     | 0.0                          | 0.0                                     | 47.0                          | 44.542                                   | 0.0                           |
| Ingredients(% of weight) | Frequency (MHz)              |                                         |                               |                                          |                               |
| frequency band           | <input type="checkbox"/> 450 | <input checked="" type="checkbox"/> 835 | <input type="checkbox"/> 1800 | <input checked="" type="checkbox"/> 1900 | <input type="checkbox"/> 2450 |
| Tissue Type              | Body                         | Body                                    | Body                          | Body                                     | Body                          |
| Water                    | 51.16                        | 52.4                                    | 69.91                         | 69.91                                    | 73.2                          |
| Salt (NaCl)              | 1.49                         | 1.40                                    | 0.13                          | 0.13                                     | 0.04                          |
| Sugar                    | 46.78                        | 45.0                                    | 0.0                           | 0.0                                      | 0.0                           |
| HEC                      | 0.52                         | 1.0                                     | 0.0                           | 0.0                                      | 0.0                           |
| Bactericide              | 0.05                         | 0.1                                     | 0.0                           | 0.0                                      | 0.0                           |
| Triton X-100             | 0.0                          | 0.0                                     | 0.0                           | 0.0                                      | 0.0                           |
| DGBE                     | 0.0                          | 0.0                                     | 29.96                         | 29.96                                    | 26.7                          |

Salt: 99+% Pure Sodium Chloride

Sugar: 98+% Pure Sucrose

Water: De-ionized, 16MΩ+ resistivity

HEC: Hydroxyethyl Cellulose

DGBE: 99+% Di(ethylene glycol) butyl ether, [2-(2-butoxyethoxy)ethanol]

Triton X-100(ultra pure): Polyethylene glycol mono [4-(1,1,3,3-tetramethylbutyl)phenyl]ether



**6.10 Tissue simulating liquids: parameters**

| Tissue Type  | Measured Frequency (MHz) | Target Tissue          |                        | Measured Tissue |                | Liquid Temp. | Test Date  |
|--------------|--------------------------|------------------------|------------------------|-----------------|----------------|--------------|------------|
|              |                          | $\epsilon_r$ (+/-5%)   | $\sigma$ (S/m) (+/-5%) | $\epsilon_r$    | $\sigma$ (S/m) |              |            |
| 835MHz Head  | 825                      | 41.50<br>(39.43~43.58) | 0.90<br>(0.86~0.95)    | 40.34           | 0.91           | 21.6°C       | 2017-07-04 |
|              | 835                      | 41.50<br>(39.43~43.58) | 0.90<br>(0.86~0.95)    | 40.33           | 0.92           |              |            |
|              | 850                      | 41.50<br>(39.43~43.58) | 0.90<br>(0.86~0.95)    | 40.11           | 0.94           |              |            |
| 835MHz Body  | 825                      | 55.20<br>(52.44~57.96) | 0.97<br>(0.92~1.02)    | 54.04           | 0.98           |              |            |
|              | 835                      | 55.20<br>(52.44~57.96) | 0.97<br>(0.92~1.02)    | 53.93           | 0.99           |              |            |
|              | 850                      | 55.20<br>(52.44~57.96) | 0.99<br>(0.94~1.04)    | 53.69           | 1.01           |              |            |
| 1900MHz Head | 1850                     | 40.00<br>(38.00~42.00) | 1.40<br>(1.33~1.47)    | 39.93           | 1.37           | 21.6°C       | 2017-07-06 |
|              | 1880                     | 40.00<br>(38.00~42.00) | 1.40<br>(1.33~1.47)    | 39.91           | 1.40           |              |            |
|              | 1900                     | 40.00<br>(38.00~42.00) | 1.40<br>(1.33~1.47)    | 39.98           | 1.41           |              |            |
|              | 1910                     | 40.00<br>(38.00~42.00) | 1.40<br>(1.33~1.47)    | 39.97           | 1.42           |              |            |
| 1900MHz Body | 1850                     | 53.30<br>(50.64~55.97) | 1.52<br>(1.44~1.60)    | 53.23           | 1.49           |              |            |
|              | 1880                     | 53.30<br>(50.64~55.97) | 1.52<br>(1.44~1.60)    | 53.36           | 1.53           |              |            |
|              | 1900                     | 53.30<br>(50.64~55.97) | 1.52<br>(1.44~1.60)    | 53.37           | 1.56           |              |            |
|              | 1910                     | 53.30<br>(50.64~55.97) | 1.52<br>(1.44~1.60)    | 53.37           | 1.57           |              |            |

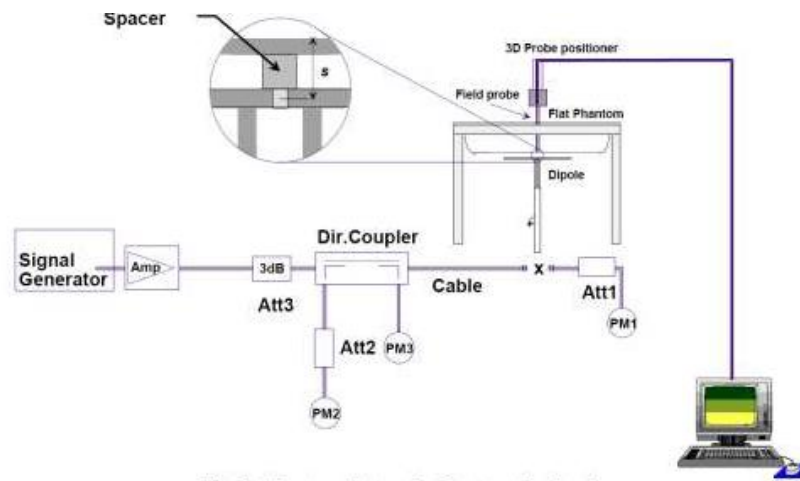
$\epsilon_r$  = Relative permittivity,  $\sigma$  = Conductivity

## 7 System Check

### 7.1 System check procedure

The System check is performed by using a System check dipole which is positioned parallel to the planar part of the SAM phantom at the reference point. The distance of the dipole to the SAM phantom is determined by a spacer. The dipole is connected to the signal source consisting of signal generator and amplifier via a directional coupler, N-connector cable and adaption to SMA. It is fed with a power of 100 mW. To adjust this power a power meter is used. The power sensor is connected to the cable before the System check to measure the power at this point and do adjustments at the signal generator. At the outputs of the directional coupler both return loss as well as forward power are controlled during the validation to make sure that emitted power at the dipole is kept constant. This can also be checked by the power drift measurement after the test (result on plot).

System check results have to be equal or near the values determined during dipole calibration (target SAR in table above) with the relevant liquids and test system.



## 7.2 System check results

The system Check is performed for verifying the accuracy of the complete measurement system and performance of the software. The following table shows System check results for all frequency bands and tissue liquids used during the tests (plot(s) see annex A).

| System Check        | Target SAR (1W) (+/-10%) |                        | Measured SAR (Normalized to 1W) |             | Liquid Temp. | Test Date  |
|---------------------|--------------------------|------------------------|---------------------------------|-------------|--------------|------------|
|                     | 1-g (mW/g)               | 10-g (mW/g)            | 1-g (mW/g)                      | 10-g (mW/g) |              |            |
| <b>D835V2 Head</b>  | 9.56<br>(8.60~10.52)     | 6.19<br>(5.57~6.81)    | 9.70                            | 6.15        | 21.6°C       | 2017/07/04 |
| <b>D1900V2 Head</b> | 39.46<br>(35.51~43.41)   | 20.42<br>(18.38~22.46) | 39.98                           | 21.07       | 21.6°C       | 2017/07/06 |
| <b>D835V2 Body</b>  | 9.86<br>(8.87~10.85)     | 6.38<br>(5.74~7.02)    | 10.15                           | 6.45        | 21.6°C       | 2017/07/04 |
| <b>D1900V2 Body</b> | 40.06<br>(36.05~44.07)   | 20.76<br>(18.68~22.84) | 39.33                           | 20.94       | 21.6°C       | 2017/07/06 |

Note: All SAR values are normalized to 1W forward power.

## **8 SAR Test Test Configuration**

### **8.1 GSM Test Configurations**

SAR tests for GSM850 and GSM1900, a communication link is set up with a base station by air link. Using CMU200 the power lever is set to “5”and “0” in SAR of GSM850 and GSM1900. The tests in the band of GSM 850 and GSM 1900 are performed in the mode of GPRS/EGPRS function. Since the GPRS class is 12 for this EUT, it has at most 4 timeslots in uplink and at most 4 timeslots in downlink, the maximum total timeslot is 5.

## 9 Detailed Test Results

### 9.1 Conducted Power measurements

The output power was measured using an integrated RF connector and attached RF cable.

#### 9.1.1 Conducted Power of GSM850

| GSM850(SIM1) |            | Burst-Averaged output Power (dBm) |       |       | Division Factors | Source Based time Average Power(dBm) |       |       |
|--------------|------------|-----------------------------------|-------|-------|------------------|--------------------------------------|-------|-------|
|              |            | 128CH                             | 190CH | 251CH |                  | 128CH                                | 190CH | 251CH |
| GSM(CS)      |            | 33.15                             | 33.10 | 33.13 | -9.03            | 24.12                                | 24.07 | 24.10 |
| GPRS (GMSK)  | 1 Tx Slot  | 32.46                             | 32.42 | 32.45 | -9.03            | 23.43                                | 23.39 | 23.42 |
|              | 2 Tx Slots | 31.56                             | 31.53 | 31.55 | -6.02            | 25.54                                | 25.51 | 25.53 |
|              | 3 Tx Slots | 30.63                             | 30.60 | 30.61 | -4.26            | 26.37                                | 26.34 | 26.35 |
|              | 4 Tx Slots | <b>29.88</b>                      | 29.83 | 29.86 | -3.01            | <b>26.87</b>                         | 26.82 | 26.85 |

Note: 1) The conducted power of GSM850 is measured with RMS detector.

2) Source Based time Average Power was calculated from the measured burst-averaged output power by converting the slot powers into linear units and calculating the energy over 8 timeslots.

3)The bolded GPRS 4Tx slots mode was selected for SAR testing according the highest Source Based time Average Power table.

4) channel /Frequency: 128/824.2; 190/836.6; 251/848.8

**9.1.2 Conducted Power of GSM1900**

| GSM1900(SIM1) |            | Burst-Averaged output Power (dBm) |              |       | Division Factors | Source Based time Average Power(dBm) |              |       |
|---------------|------------|-----------------------------------|--------------|-------|------------------|--------------------------------------|--------------|-------|
|               |            | 512CH                             | 661CH        | 810CH |                  | 512CH                                | 661CH        | 810CH |
| GSM(CS)       |            | 30.02                             | 30.02        | 30.10 | -9.03            | 20.99                                | 20.99        | 21.07 |
| GPRS (GMSK)   | 1 Tx Slot  | 29.38                             | 29.35        | 29.37 | -9.03            | 20.35                                | 20.32        | 20.34 |
|               | 2 Tx Slots | 28.43                             | 28.46        | 28.48 | -6.02            | 22.41                                | 22.44        | 22.46 |
|               | 3 Tx Slots | 27.53                             | 27.56        | 27.52 | -4.26            | 23.27                                | 23.30        | 23.26 |
|               | 4 Tx Slots | 26.85                             | <b>26.90</b> | 26.86 | -3.01            | 23.84                                | <b>23.89</b> | 23.85 |

Note: 1) The conducted power of GSM1900 is measured with RMS detector.

2) Source Based time Average Power was calculated from the measured burst-averaged output power by converting the slot powers into linear units and calculating the energy over 8 timeslots.

3)The bolded GPRS 4Tx slots mode was selected for SAR testing according the highest Source Based time Average Power table.

4) channel /Frequency: 512/1850.2; 661/1880; 810/1909.8

**9.1.3 Conducted Power of BT**

The maximum output power of BT is:

| Mode                      | 1Mbps   |          |          |
|---------------------------|---------|----------|----------|
| Channel / Frequency (MHz) | 0(2402) | 39(2441) | 78(2480) |
| Average Power(dBm)        | 2.65    | 2.71     | 2.29     |
| Mode                      | 2Mbps   |          |          |
| Channel / Frequency (MHz) | 0(2402) | 39(2441) | 78(2480) |
| Average Power(dBm)        | 1.95    | 1.88     | 1.45     |
| Mode                      | 3Mbps   |          |          |
| Channel / Frequency (MHz) | 0(2402) | 39(2441) | 78(2480) |
| Average Power(dBm)        | 1.51    | 1.84     | 0.99     |

**9.1.4 Tune-up power tolerance**

| Band    | Tune-up power tolerance(dBm) |                               |                                  |
|---------|------------------------------|-------------------------------|----------------------------------|
| GSM850  | GSM/GPRS (GMSK)              | GSM                           | Max output power =33.0dBm±0.5dBm |
|         |                              | 1TXslots                      | Max output power =32.0dBm±0.5dBm |
|         |                              | 2TXslots                      | Max output power =31.5dBm±0.5dBm |
|         |                              | 3TXslots                      | Max output power =30.5dBm±0.5dBm |
|         |                              | 4TXslots                      | Max output power =29.5dBm±0.5dBm |
| GSM1900 | GSM/GPRS (GMSK)              | GSM                           | Max output power =30.0dBm±0.5dBm |
|         |                              | 1TXslots                      | Max output power =29.0dBm±0.5dBm |
|         |                              | 2TXslots                      | Max output power =28.0dBm±0.5dBm |
|         |                              | 3TXslots                      | Max output power =27.5dBm±0.5dBm |
|         |                              | 4TXslots                      | Max output power =26.5dBm±0.5dBm |
| BT      | 1Mbps                        | Max output power =2.0dBm±1dbm |                                  |
|         | 2Mbps                        | Max output power =1.0dBm±1dbm |                                  |
|         | 3Mbps                        | Max output power =1.0dBm±1dbm |                                  |

## 9.2 SAR test results

### Notes:

1) Per KDB447498 D01v05 r02, the SAR test shall be performed at the high, middle and low frequency channels of each operating mode. If the scaled SAR measured at mid-band channel for each test configuration is at least 3.0 dB lower than the SAR limit ( $< 0.8 \text{ W/kg}$ ), testing at the high and low channels is optional.

2) Per KDB447498 D01v05r02, 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:  $\leq 0.8 \text{ W/kg}$  or  $2.0 \text{ W/kg}$ , for 1-g or 10-g respectively, when the transmission band is  $\leq 100 \text{ MHz}$ . When the maximum output power variation across the required test channels is  $> \frac{1}{2} \text{ dB}$ , instead of the middle channel, the highest output power channel must be used.

3) Per KDB447498 D01v05r02, All measurement SAR result is scaled-up to account for tune-up tolerance is compliant.

4) Per KDB648474 D04v01r02, body-worn accessory testing is typically associated with voice operations. Therefore, GSM voice was evaluated for body-worn with headset SAR.

5) Per KDB865664 D01v01r04, for each frequency band, repeated SAR measurement is required only when the measured SAR is  $\geq 0.8 \text{ W/Kg}$ ; if the deviation among the repeated measurement is  $\leq 20\%$ , and the measured SAR  $< 1.45 \text{ W/Kg}$ , only one repeated measurement is required.

6) Per KDB865664 D02v01r01, SAR plot is only required for the highest measured SAR in each exposure configuration, wireless mode and frequency band combination; Plots are also required when the measured SAR is  $> 1.5 \text{ W/kg}$ , or  $> 7.0 \text{ W/kg}$  for occupational exposure. The published RF exposure KDB procedures may require additional plots; for example, to support SAR to peak location separation ratio test exclusion and/or volume scan post-processing (Refer to appendix B for details).



**9.2.1 Results overview of GSM850**

| Test Position of Head           | Test channel /Freq.(MHz) | Test Mode | SAR Value (W/kg) |       | Power Drift (%) | Conducted Power (dBm) | Tune-up Limit (dBm) | Scaled SAR <sub>1-g</sub> (W/kg) | Scaling Factor |
|---------------------------------|--------------------------|-----------|------------------|-------|-----------------|-----------------------|---------------------|----------------------------------|----------------|
|                                 |                          |           | 1-g              | 10-g  |                 |                       |                     |                                  |                |
| Left Head Touched               | 128/824.2                | GPRS 4TS  | 0.551            | 0.373 | -1.440          | 29.880                | 30.000              | <b>0.566</b>                     | 1.028          |
| Left Head Tilted 15°            | 128/824.2                | GPRS 4TS  | 0.272            | 0.186 | 4.720           | 29.880                | 30.000              | 0.280                            | 1.028          |
| Right Head Touched              | 128/824.2                | GPRS 4TS  | 0.457            | 0.313 | -0.850          | 29.880                | 30.000              | 0.470                            | 1.028          |
| Right Head Tilted 15°           | 128/824.2                | GPRS 4TS  | 0.216            | 0.152 | 2.210           | 29.880                | 30.000              | 0.222                            | 1.028          |
| Test Position of Body with 10mm | Test channel /Freq.(MHz) | Test Mode | SAR Value (W/kg) |       | Power Drift (%) | Conducted Power (dBm) | Tune-up Limit (dBm) | Scaled SAR <sub>1-g</sub> (W/kg) | Scaling Factor |
|                                 |                          |           | 1-g              | 10-g  |                 |                       |                     |                                  |                |
| Towards Phantom                 | 128/824.2                | GPRS 4TS  | 0.454            | 0.295 | -0.410          | 29.880                | 30.000              | 0.467                            | 1.028          |
| Towards Ground                  | 128/824.2                | GPRS 4TS  | 0.737            | 0.566 | 1.820           | 29.880                | 30.000              | <b>0.758</b>                     | 1.028          |

**9.2.2 Results overview of GSM1900**

| Test Position of Head           | Test channel /Freq.(MHz) | Test Mode | SAR Value (W/kg) |       | Power Drift (%) | Conducted Power (dBm) | Tune-up Limit (dBm) | Scaled SAR <sub>1-g</sub> (W/kg) | Scalig Factor  |
|---------------------------------|--------------------------|-----------|------------------|-------|-----------------|-----------------------|---------------------|----------------------------------|----------------|
|                                 |                          |           | 1-g              | 10-g  |                 |                       |                     |                                  |                |
| Left Head Touched               | 661/1880                 | GPRS 4TS  | 0.521            | 0.401 | 3.710           | 26.900                | 27.000              | 0.533                            | 1.023          |
| Left Head Tilted 15°            | 661/1880                 | GPRS 4TS  | 0.366            | 0.291 | -4.110          | 26.900                | 27.000              | 0.375                            | 1.023          |
| Right Head Touched              | 661/1880                 | GPRS 4TS  | 0.538            | 0.421 | 1.290           | 26.900                | 27.000              | <b>0.551</b>                     | 1.023          |
| Right Head Tilted 15°           | 661/1880                 | GPRS 4TS  | 0.379            | 0.305 | 3.020           | 26.900                | 27.000              | 0.388                            | 1.023          |
| Test Position of Body with 10mm | Test channel /Freq.(MHz) | Test Mode | SAR Value (W/kg) |       | Power Drift (%) | Conducted Power (dBm) | Tune-up Limit (dBm) | Scaled SAR <sub>1-g</sub> (W/kg) | Scaling Factor |
|                                 |                          |           | 1-g              | 10-g  |                 |                       |                     |                                  |                |
| Towards Phantom                 | 661/1880                 | GPRS 4TS  | 0.728            | 0.536 | -0.580          | 26.900                | 27.000              | <b>0.745</b>                     | 1.023          |
| Towards Ground                  | 661/1880                 | GPRS 4TS  | 0.636            | 0.509 | -0.210          | 26.900                | 27.000              | 0.651                            | 1.023          |

### 9.2.3 Stand-alone SAR test exclusion

The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances  $\leq$  50 mm are determined by:

$[(\text{max. power of channel, including tune-up tolerance, mW})/(\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}] \leq 3.0$  for 1-g SAR and  $\leq 7.5$  for 10-g extremity SAR, where

- $f(\text{GHz})$  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

When the minimum test separation distance is  $< 5$  mm, a distance of 5 mm is applied to determine SAR test exclusion.

a) Head position

| Mode | Pmax(dBm) | Pmax(mW) | Distance(mm) | f(GHz) | Calculation Result | exclusion Threshold | SAR test exclusion |
|------|-----------|----------|--------------|--------|--------------------|---------------------|--------------------|
| BT   | 3.00      | 2.00     | 5.00         | 2.45   | 0.62               | 3.00                | Yes                |

Body-Worn position

| Mode | Pmax(dBm) | Pmax(mW) | Distance(mm) | f(GHz) | Calculation Result | exclusion Threshold | SAR test exclusion |
|------|-----------|----------|--------------|--------|--------------------|---------------------|--------------------|
| BT   | 3.00      | 2.00     | 10.00        | 2.45   | 0.31               | 3.00                | Yes                |

When the standalone SAR test exclusion applies 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

$(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm}) \cdot [\sqrt{f(\text{GHz})/x}] \text{ W/kg}$  for test separation distances  $\leq 50 \text{ mm}$ , where  $x = 7.5$  for 1-g SAR.

When the minimum test separation distance is  $< 5 \text{ mm}$ , a distance of  $5 \text{ mm}$  is applied to determine SAR test exclusion.

| Mode | Position | Pmax(dBm) | Pmax(mW) | Distance(mm) | f(GHz) | X    | Estimated SAR(W/Kg) |
|------|----------|-----------|----------|--------------|--------|------|---------------------|
| BT   | Head     | 3.00      | 2.00     | 5.00         | 2.45   | 7.50 | 0.083               |
| BT   | Body     | 3.00      | 2.00     | 10.00        | 2.45   | 7.50 | 0.042               |

### 9.2.4 Simultaneous Transmission Possibilities

The Simultaneous Transmission Possibilities are as below:

| Simultaneous Transmission Possibilities |               |      |      |         |
|-----------------------------------------|---------------|------|------|---------|
| Simultaneous Tx Combination             | Configuration | Head | Body | Hotspot |
| 2                                       | GSM/GPRS +BT  | YES  | YES  | NO      |

### 9.2.5 SAR Summation Scenario

| Test Position |                       | Scaled SAR <sub>Max</sub> |       | $\sum_{1-g}$ SAR | SPLSP |
|---------------|-----------------------|---------------------------|-------|------------------|-------|
|               |                       | GSM850                    | BT    |                  |       |
| Head          | Left Head Touched     | 0.566                     | 0.083 | 0.649            | NA    |
|               | Left Head Tilted 15°  | 0.280                     | 0.083 | 0.363            | NA    |
|               | Right Head Touched    | 0.470                     | 0.083 | 0.553            | NA    |
|               | Right Head Tilted 15° | 0.222                     | 0.083 | 0.305            | NA    |
| Body          | Towards Phantom       | 0.467                     | 0.042 | 0.509            | NA    |
|               | Towards Ground        | 0.758                     | 0.042 | <b>0.800</b>     | NA    |

Note: Simultaneous Tx Combination of GSM850 and BT

| Test Position |                       | Scaled SAR <sub>Max</sub> |       | $\sum_{1-g}$ SAR | SPLSP |
|---------------|-----------------------|---------------------------|-------|------------------|-------|
|               |                       | GSM1900                   | BT    |                  |       |
| Head          | Left Head Touched     | 0.533                     | 0.083 | 0.616            | NA    |
|               | Left Head Tilted 15°  | 0.375                     | 0.083 | 0.458            | NA    |
|               | Right Head Touched    | 0.551                     | 0.083 | 0.634            | NA    |
|               | Right Head Tilted 15° | 0.388                     | 0.083 | 0.471            | NA    |
| Body          | Towards Phantom       | 0.745                     | 0.042 | <b>0.787</b>     | NA    |
|               | Towards Ground        | 0.651                     | 0.042 | 0.693            | NA    |

Note: Simultaneous Tx Combination of GSM1900 and BT

MAX. $\sum$ SAR<sub>1g</sub> = 0.800W/kg < 1.6 W/kg, so the Simultaneous SAR is not required for BT and GSM antenna.

## 10 Measurement uncertainty evaluation

### 10.1 Measurement uncertainty evaluation for SAR test

The following table includes the uncertainty table of the IEEE 1528. The values are determined by Satimo. The breakdown of the individual uncertainties is as follows:

| Measurement Uncertainty evaluation for SAR test                                |              |                |            |                        |                         |                           |                            |                |
|--------------------------------------------------------------------------------|--------------|----------------|------------|------------------------|-------------------------|---------------------------|----------------------------|----------------|
| Uncertainty Component                                                          | Tol.<br>(±%) | Prob.<br>Dist. | Div.       | C <sub>i</sub><br>(1g) | C <sub>i</sub><br>(10g) | 1g U <sub>i</sub><br>(±%) | 10g U <sub>i</sub><br>(±%) | V <sub>i</sub> |
| <b>measurement system</b>                                                      |              |                |            |                        |                         |                           |                            |                |
| Probe Calibration                                                              | 5.8          | N              | 1          | 1                      | 1                       | 5.8                       | 5.8                        | ∞              |
| Axial Isotropy                                                                 | 3.5          | R              | $\sqrt{3}$ | $(1-C_p)^{1/2}$        | $(1-C_p)^{1/2}$         | 1.43                      | 1.43                       | ∞              |
| Hemispherical Isotropy                                                         | 5.9          | R              | $\sqrt{3}$ | $\sqrt{C_p}$           | $\sqrt{C_p}$            | 2.41                      | 2.41                       | ∞              |
| Boundary Effect                                                                | 1            | R              | $\sqrt{3}$ | 1                      | 1                       | 0.58                      | 0.58                       | ∞              |
| Linearity                                                                      | 4.7          | R              | $\sqrt{3}$ | 1                      | 1                       | 2.71                      | 2.71                       | ∞              |
| system Detection Limits                                                        | 1            | R              | $\sqrt{3}$ | 1                      | 1                       | 0.58                      | 0.58                       | ∞              |
| Modulation response                                                            | 3            | N              | 1          | 1                      | 1                       | 3.00                      | 3.00                       | ∞              |
| Readout Electronics                                                            | 0.5          | N              | 1          | 1                      | 1                       | 0.50                      | 0.50                       | ∞              |
| Response Time                                                                  | 0            | R              | $\sqrt{3}$ | 1                      | 1                       | 0.00                      | 0.00                       | ∞              |
| Integration Time                                                               | 1.4          | R              | $\sqrt{3}$ | 1                      | 1                       | 0.81                      | 0.81                       | ∞              |
| RF Ambient Conditions-Noise                                                    | 3            | R              | $\sqrt{3}$ | 1                      | 1                       | 1.73                      | 1.73                       | ∞              |
| RF Ambient Conditions-Reflections                                              | 3            | R              | $\sqrt{3}$ | 1                      | 1                       | 1.73                      | 1.73                       | ∞              |
| Probe Positioner Mechanical Tolerance                                          | 1.4          | R              | $\sqrt{3}$ | 1                      | 1                       | 0.81                      | 0.81                       | ∞              |
| Probe positioning with respect to Phantom Shell                                | 1.4          | R              | $\sqrt{3}$ | 1                      | 1                       | 0.81                      | 0.81                       | ∞              |
| Extrapolation, interpolation and Integration Algorithms for Max.SAR Evaluation | 2.3          | R              | $\sqrt{3}$ | 1                      | 1                       | 1.33                      | 1.33                       | ∞              |
| <b>Test sample Related</b>                                                     |              |                |            |                        |                         |                           |                            |                |
| Test Sample Positioning                                                        | 2.6          | N              | 1          | 1                      | 1                       | 2.60                      | 2.60                       | 11             |
| Device Holder Uncertainty                                                      | 3            | N              | 1          | 1                      | 1                       | 3.00                      | 3.00                       | 7              |
| Output Power Variation-SAR drift measurement                                   | 5            | R              | $\sqrt{3}$ | 1                      | 1                       | 2.89                      | 2.89                       | ∞              |
| SAR scaling                                                                    | 2            | R              | $\sqrt{3}$ | 1                      | 1                       | 1.15                      | 1.15                       | ∞              |
| <b>Phantom and Tissue Parameters</b>                                           |              |                |            |                        |                         |                           |                            |                |
| Phantom Uncertainty (shape and thickness tolerances)                           | 4            | R              | $\sqrt{3}$ | 1                      | 1                       | 2.31                      | 2.31                       | ∞              |
| Uncertainty in SAR correction for deviation (in permittivity and conductivity) | 2            | N              | 1          | 1                      | 0.84                    | 2.00                      | 1.68                       | ∞              |
| Liquid conductivity ( meas. )                                                  | 2.5          | N              | 1          | 0.64                   | 0.43                    | 1.60                      | 1.08                       | 5              |
| Liquid conductivity (target.)                                                  | 5            | R              | $\sqrt{3}$ | 0.64                   | 0.43                    | 1.85                      | 1.24                       | 5              |
| Liquid Permittivity ( meas. )                                                  | 2.5          | N              | 1          | 0.60                   | 0.49                    | 1.50                      | 1.23                       | ∞              |
| Liquid Permittivity (target.)                                                  | 5            | R              | $\sqrt{3}$ | 0.60                   | 0.49                    | 1.73                      | 1.42                       | ∞              |
| <b>Combined Standard Uncertainly</b>                                           |              | Rss            |            |                        |                         | 10.63                     | 10.54                      |                |
| <b>Expanded Uncertainty{95% CONFIDENCE INTERVAL}</b>                           |              | k              |            |                        |                         | 21.26                     | 21.08                      |                |

**10.2 Measurement uncertainty evaluation for system check**

The following table includes the uncertainty table of the IEEE 1528. The values are determined by Satimo. The breakdown of the individual uncertainties is as follows:

| Uncertainty For System Performance Check                                        |           |             |            |                   |                    |                        |                         |                |
|---------------------------------------------------------------------------------|-----------|-------------|------------|-------------------|--------------------|------------------------|-------------------------|----------------|
| Uncertainty Component                                                           | Tol. (±%) | Prob. Dist. | Div.       | C <sub>i</sub> 1g | C <sub>i</sub> 10g | 1g U <sub>i</sub> (±%) | 10g U <sub>i</sub> (±%) | V <sub>i</sub> |
| <b>measurement system</b>                                                       |           |             |            |                   |                    |                        |                         |                |
| Probe Calibration                                                               | 5.8       | N           | 1          | 1                 | 1                  | 5.80                   | 5.80                    | ∞              |
| Axial Isotropy                                                                  | 3.5       | R           | $\sqrt{3}$ | $(1-C_p)^{1/2}$   | $(1-C_p)^{1/2}$    | 1.43                   | 1.43                    | ∞              |
| Hemispherical Isotropy                                                          | 5.9       | R           | $\sqrt{3}$ | $\sqrt{C_p}$      | $\sqrt{C_p}$       | 2.41                   | 2.41                    | ∞              |
| Boundary Effect                                                                 | 1         | R           | $\sqrt{3}$ | 1                 | 1                  | 0.58                   | 0.58                    | ∞              |
| Linearity                                                                       | 4.7       | R           | $\sqrt{3}$ | 1                 | 1                  | 2.71                   | 2.71                    | ∞              |
| system detection Limits                                                         | 1         | R           | $\sqrt{3}$ | 1                 | 1                  | 0.58                   | 0.58                    | ∞              |
| Modulation response                                                             | 0         | N           | 1          | 1                 | 1                  | 0.00                   | 0.00                    | ∞              |
| Readout Electronics                                                             | 0.5       | N           | 1          | 1                 | 1                  | 0.50                   | 0.50                    | ∞              |
| Response Time                                                                   | 0         | R           | $\sqrt{3}$ | 1                 | 1                  | 0.00                   | 0.00                    | ∞              |
| Integration Time                                                                | 1.4       | R           | $\sqrt{3}$ | 1                 | 1                  | 0.81                   | 0.81                    | ∞              |
| RF ambient Conditions - Noise                                                   | 3         | R           | $\sqrt{3}$ | 1                 | 1                  | 1.73                   | 1.73                    | ∞              |
| RF ambient Conditions – Reflections                                             | 3         | R           | $\sqrt{3}$ | 1                 | 1                  | 1.73                   | 1.73                    | ∞              |
| Probe positioned Mechanical Tolerance                                           | 1.4       | R           | $\sqrt{3}$ | 1                 | 1                  | 0.81                   | 0.81                    | ∞              |
| Probe positioning with respect to Phantom Shell                                 | 1.4       | R           | $\sqrt{3}$ | 1                 | 1                  | 0.81                   | 0.81                    | ∞              |
| Extrapolation, interpolation and integration Algorithms for Max. SAR Evaluation | 2.3       | R           | $\sqrt{3}$ | 1                 | 1                  | 1.33                   | 1.33                    | ∞              |
| <b>Dipole</b>                                                                   |           |             |            |                   |                    |                        |                         |                |
| Deviation of experimental source from numerical source                          | 4         | N           | 1          | 1                 | 1                  | 4.00                   | 4.00                    | ∞              |
| Input power and SAR drift measurement                                           | 5         | R           | $\sqrt{3}$ | 1                 | 1                  | 2.89                   | 2.89                    | ∞              |
| Dipole axis to liquid Distance                                                  | 2         | R           | $\sqrt{3}$ | 1                 | 1                  | 1.16                   | 1.16                    | ∞              |
| <b>Phantom and Tissue Parameters</b>                                            |           |             |            |                   |                    |                        |                         |                |
| Phantom Uncertainty (shape and thickness tolerances)                            | 4         | R           | $\sqrt{3}$ | 1                 | 1                  | 2.31                   | 2.31                    | ∞              |
| Uncertainty in SAR correction for deviation (in permittivity and conductivity)  | 2         | N           | 1          | 1                 | 0.84               | 2.00                   | 1.68                    | ∞              |
| Liquid conductivity (meas.)                                                     | 2.5       | N           | 1          | 0.64              | 0.43               | 1.60                   | 1.08                    | 5              |
| Liquid conductivity (target.)                                                   | 5         | R           | $\sqrt{3}$ | 0.64              | 0.43               | 1.85                   | 1.24                    | 5              |
| Liquid Permittivity (meas.)                                                     | 2.5       | N           | 1          | 0.60              | 0.49               | 1.50                   | 1.23                    | ∞              |
| Liquid Permittivity (target.)                                                   | 5         | R           | $\sqrt{3}$ | 0.60              | 0.49               | 1.73                   | 1.41                    | ∞              |
| <b>Combined Standard Uncertainty</b>                                            |           | Rss         |            |                   |                    | 10.28                  | 9.98                    |                |
| <b>Expanded Uncertainty (95% Confidence interval)</b>                           |           | k           |            |                   |                    | 20.57                  | 19.95                   |                |

## 11 Test equipment and ancillaries used for tests

To simplify the identification of the test equipment and/or ancillaries which were used, the reporting of the relevant test cases only refer to the test item number as specified in the table below.

|                                     | Manufacturer | Device Type                          | Type(Model)              | Serial number            | calibration |            |
|-------------------------------------|--------------|--------------------------------------|--------------------------|--------------------------|-------------|------------|
|                                     |              |                                      |                          |                          | Last Cal.   | Due Date   |
| <input checked="" type="checkbox"/> | SATIMO       | COMOSAR DOSIMETRIC E FIELD PROBE     | SSE5                     | SN 09/13 EP170           | 2016-07-25  | 2017-07-24 |
| <input checked="" type="checkbox"/> | SATIMO       | COMOSAR 835 MHz REFERENCE DIPOLE     | SID835                   | SN 14/13<br>DIP0G835-235 | 2016-07-25  | 2017-07-24 |
| <input type="checkbox"/>            | SATIMO       | COMOSAR 900 MHz REFERENCE DIPOLE     | SID900                   | SN 14/13<br>DIP0G900-231 | 2016-07-25  | 2017-07-24 |
| <input type="checkbox"/>            | SATIMO       | COMOSAR 1800 MHz REFERENCE DIPOLE    | SID1800                  | SN 14/13<br>DIP1G800-232 | 2016-07-25  | 2017-07-24 |
| <input checked="" type="checkbox"/> | SATIMO       | COMOSAR 1900 MHz REFERENCE DIPOLE    | SID1900                  | SN 14/13<br>DIP1G900-236 | 2016-07-25  | 2017-07-24 |
| <input type="checkbox"/>            | SATIMO       | COMOSAR 2000 MHz REFERENCE DIPOLE    | SID2000                  | SN 14/13<br>DIP2G000-237 | 2016-07-25  | 2017-07-24 |
| <input type="checkbox"/>            | SATIMO       | COMOSAR 2450 MHz REFERENCE DIPOLE    | SID2450                  | SN 14/13<br>DIP2G450-238 | 2016-07-25  | 2017-07-24 |
| <input type="checkbox"/>            | SATIMO       | COMOSAR 2600 MHz REFERENCE DIPOLE    | SID2600                  | SN 28/14<br>DIP2G600-327 | 2016-07-25  | 2017-07-24 |
| <input checked="" type="checkbox"/> | SATIMO       | Software                             | OPENSAR                  | N/A                      | 2016-07-25  | 2017-07-24 |
| <input checked="" type="checkbox"/> | SATIMO       | Phantom                              | COMOSAR IEEE SAM PHANTOM | SN 14/13<br>SAM99        | N/A         | N/A        |
| <input checked="" type="checkbox"/> | R & S        | Universal Radio Communication Tester | CMU 200                  | 117528                   | N/A         | N/A        |
| <input checked="" type="checkbox"/> | HP           | Network Analyser                     | 8753D                    | 3410A08889               | 2016-08-19  | 2017-08-18 |
| <input checked="" type="checkbox"/> | HP           | Signal Generator                     | E4421B                   | GB39340770               | 2016-08-19  | 2017-08-18 |
| <input checked="" type="checkbox"/> | Keithley     | Multimeter                           | Keithley 2000            | 4014539                  | 2016-08-19  | 2017-08-18 |
| <input checked="" type="checkbox"/> | SATIMO       | Amplifier                            | Power Amplifier          | MODU-023-A-0004          | 2016-08-19  | 2017-08-18 |
| <input checked="" type="checkbox"/> | Agilent      | Power Meter                          | E4418B                   | GB43312909               | 2016-08-19  | 2017-08-18 |
| <input checked="" type="checkbox"/> | Agilent      | Power Meter Sensor                   | E4412A                   | MY41500046               | 2016-10-13  | 2017-10-12 |
| <input checked="" type="checkbox"/> | Agilent      | Power Meter                          | E4417A                   | GB41291826               | 2016-10-13  | 2017-10-12 |
| <input checked="" type="checkbox"/> | Agilent      | Power Meter Sensor                   | 8481H                    | MY41091215               | 2016-10-13  | 2017-10-12 |



**Annex A: System performance verification**

(Please See the SAR Measurement Plots of annex A.)

**Annex B: Measurement results**

(Please See the SAR Measurement Plots of annex B.)

**Annex C: Calibration reports**

(Please See the Calibration reports of annex C.)

**Annex D: Photo documentation**

Photo 1: Measurement System OPENSAR



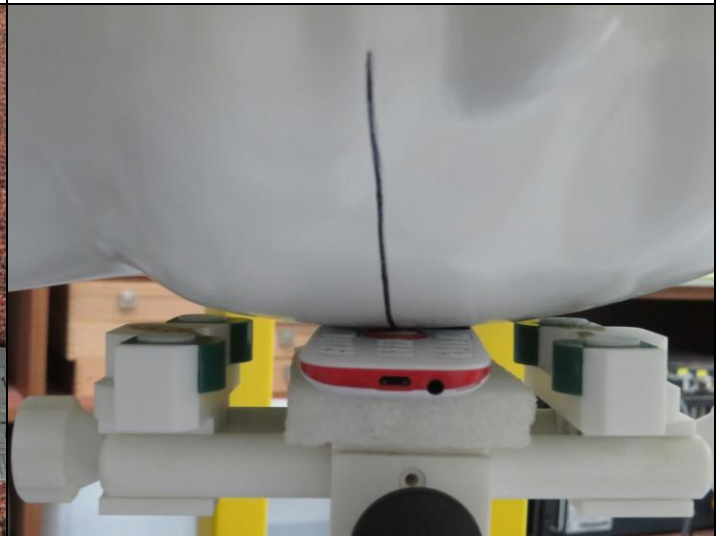
Photo 2: Front view

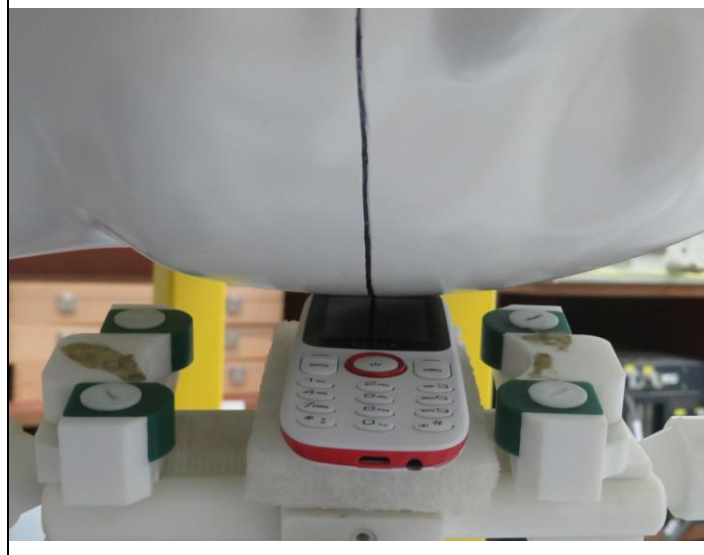
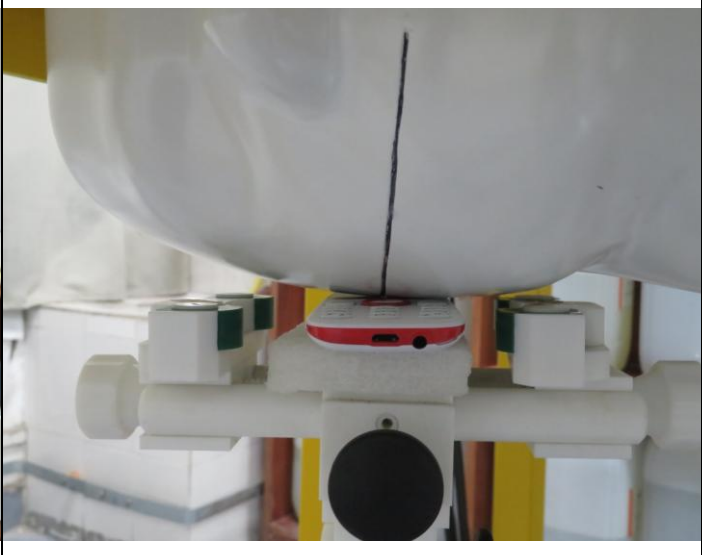

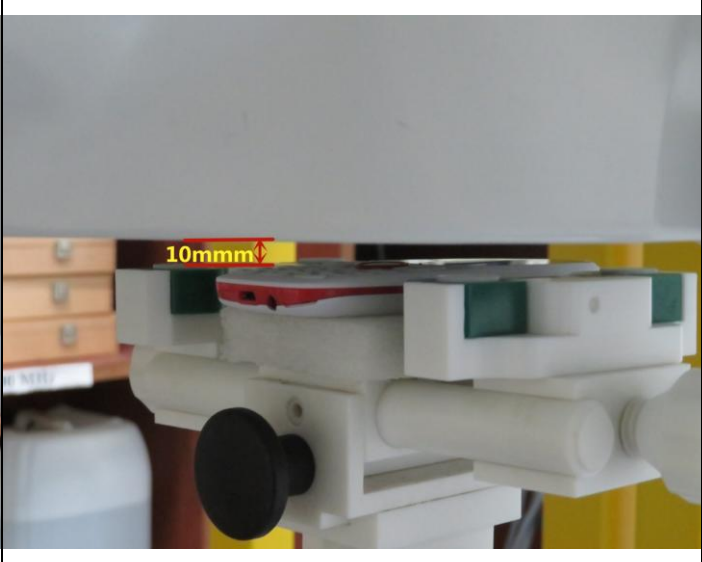


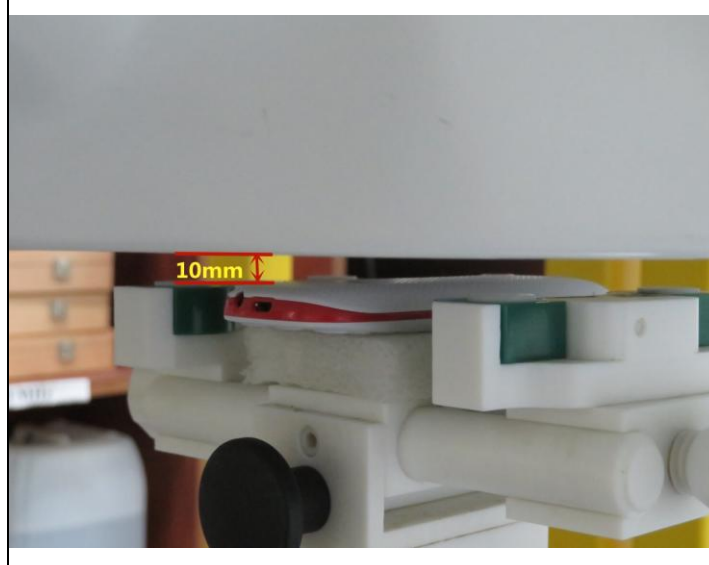


Photo 3: Rear View



Photo 4: Left Head Touched



|                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                           |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Photo 5: Left Head Tilted 15°</p>                                                                                                                                                                                                                                                                                                    | <p>Photo 6: Right Head Touched</p>                                                                                                                                                                                                                                                                                                                        |
|  A photograph showing a white mobile phone held in a white plastic fixture. The phone is tilted to the left. A vertical black line is drawn on the phone's screen to indicate the tilt angle. The fixture has several green and white adjustment knobs. |  A photograph showing the same mobile phone fixture from a different angle. The phone is now tilted to the right. A vertical black line is drawn on the screen. A black circular object is visible in the foreground, partially obscuring the phone.                    |
| <p>Photo 7: Right Head Tilted 15°</p>                                                                                                                                                                                                                                                                                                   | <p>Photo 8: Towards Phantom 10mm</p>                                                                                                                                                                                                                                                                                                                      |
|  A photograph showing the mobile phone fixture with the phone tilted to the right. A vertical black line is drawn on the screen to indicate the tilt angle.                                                                                            |  A photograph showing the mobile phone fixture from a side angle. A yellow double-headed arrow is drawn between the top of the phone and a horizontal surface above it, with the text "10mm" written next to it. A black circular object is visible in the foreground. |

|                                                                                    |                                                                                    |
|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| Photo 9: Towards Ground 10mm                                                       | Photo 10: 850MHz Liquid Depth $\geq 15.0\text{cm}$                                 |
|    |  |
| Photo 11: 1800~1900MHz Liquid Depth $\geq 15.0\text{cm}$                           |                                                                                    |
|  |                                                                                    |

**End**