

SAR TEST REPORT

Test report No: EMC-FCC-A0019
Type of Equipment: Baby Monitor
Model Name: SEW-3037W
Applicant: Samsung Techwin Co., Ltd.
FCC ID: NLMSEW3037W
FCC Rule Part: CFR §2.1093
Test standards: IEEE 1528, 2003
ANSI/IEEE C95.1
KDB Publication
Max. SAR(1g): 1.24 W/kg
Test result: Complied

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

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Issued date: 2015.06.03

Tested by:



Kim Dong-kyu

Approved by:



Choi Cheon-sig

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1. Applicant information

Applicant: Samsung Techwin Co., Ltd.

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Manufacturer: GCT

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2. Laboratory information

Address

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Certificate

KOLAS No.: 231

FCC Site Designation No.: KR0040

FCC Site Registration No.: 687132

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

IC Site Registration No.: 8035A-2

SITE MAP



3. Identification of Sample

| | |
|-------------------|---------------------------|
| EUT Type | Baby Monitor |
| Brand Name | Samsung Techwin Co., Ltd. |
| Mode of Operation | FHSS |
| Model Number | SEW-3037W |
| Serial Number | N/A |
| Max. Power | 14.06 dBm |
| Tx Freq.Range | 2 410.875 ~ 2 471.625 MHz |
| Rx Freq.Range | 2 410.875 ~ 2 471.625 MHz |
| Antenna Type | PCB Type |
| Normal Voltage | DC 3.7 V |
| H/W Version | VM9600-ALL-HM00 |
| S/W Version | HS961020130408_5F71 |

4. Test Result Summary

| Frequency | | Average Power (dBm) | Max. tune up power (dBm) | Scaling Factor | EUT Position | Measured 1 g SAR (W/kg) | Scaled 1 g SAR (W/kg) | 1 g SAR Limit (W/kg) |
|-----------|---------|---------------------|--------------------------|----------------|--------------|-------------------------|-----------------------|----------------------|
| MHz | Channel | | | | | | | |
| 2 471.625 | 5 | 14.45 | 16 | 1.4289 | Back_out | 0.867 | 1.24 | 1.6 |
| Frequency | | Average Power (dBm) | Max. tune up power (dBm) | Scaling Factor | EUT Position | Measured 1 g SAR (W/kg) | Scaled 1 g SAR (W/kg) | 1 g SAR Limit (W/kg) |
| MHz | Channel | | | | | | | |
| 2 441.250 | 3 | 14.06 | 16 | 1.5631 | Top_in | 0.702 | 1.10 | 4.0 |

* Contain the results of the worst test SAR including battery.

5. Report Overview

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

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6. Test Lab Declaration or Comments

None

7. Applicant Declaration or Comments

None

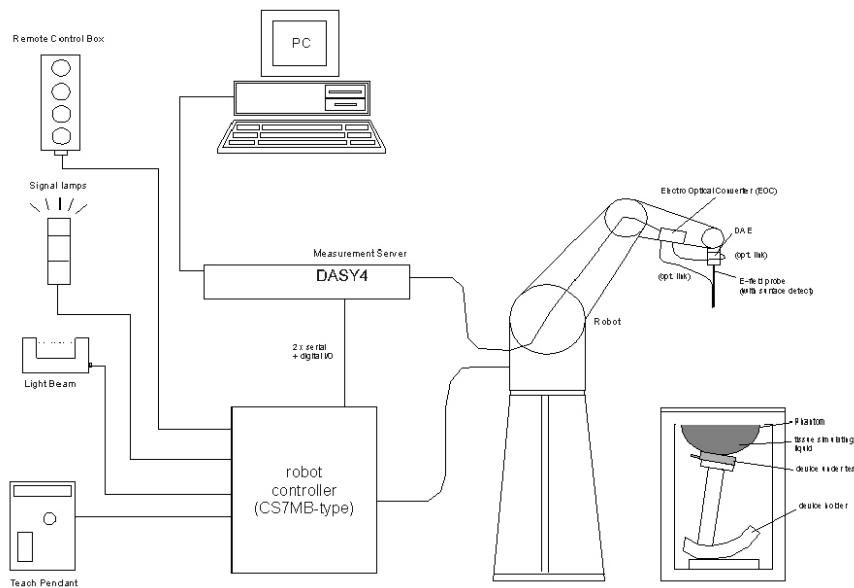
8. Measurement Uncertainty

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

Uncertainty of SAR equipments for measurement 300 MHz to 3GHz

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

9. The SAR Measurement System



<SAR System Configuration>

- A standard high precision 6-axis robot (Staubli RX family) with controller, teach pendant and software. An arm extension for accommodating the data acquisition electronics (DAE).
- A dosimetric probe, i.e., an isotropic E-field probe optimized and calibrated for usage in tissue simulating liquid. The probe is equipped with an optical surface detector system.
- A data acquisition electronics (DAE) which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.
- The Electro-optical converter (EOC) performs the conversion between optical and electrical of the signals for the digital communication to the DAE and for the analog signal from the optical surface detection. The EOC is connected to the measurement server.
- The function of the measurement server is to perform the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
- A probe alignment unit which improves the (absolute) accuracy of the probe positioning.
- A computer operating Windows 2000 or Windows XP.
- DASY4 software.
- Remote control with teach pendant and additional circuitry for robot safety such as warning lamps, etc.
- The SAM twin phantom enabling testing left-hand and right-hand usage.
- The device holder for handheld mobile phones.
- Tissue simulating liquid mixed according to the given recipes.
- Validation dipole kits allowing to validate the proper functioning of the system.

9.1 Isotropic E-field Probe

EX3DV4

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

| | |
|---|---|
|  | Symmetrical design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE) |
| Calibration | ISO/IEC 17025 calibration service available. |
| Frequency | 10 MHz to > 6 GHz Linearity: ± 0.2 dB (30 MHz to 6 GHz) |
| Directivity | ± 0.3 dB in TSL (rotation around probe axis) ± 0.5 dB in TSL (rotation normal to probe axis) |
| Dynamic Range | 10 μ W/g to > 100 mW/g Linearity: ± 0.2 dB (noise: typically < 1 μ W/g) |
| Dimensions | Overall length: 337 mm (Tip: 20 mm) Tip diameter: 2.5 mm (Body: 12 mm) Typical distance from probe tip to dipole centers: 1 mm |
| Application | High precision dosimetric measurements in any exposure scenario (e.g., very strong gradient fields); the only probe that enables compliance testing for frequencies up to 6 GHz with precision of better 30%. |
| Compatibility | DASY3, DASY4, DASY52 SAR and higher, EASY4/MRI |

9.2 Phantom

Twin SAM



The shell corresponds to the specifications of the Specific Anthropomorphic Mannequin (SAM) phantom defined in IEEE 1528 and IEC 62209-1. It enables the dosimetric evaluation of left and right hand phone usage as well as body mounted usage at the flat phantom region. A cover prevents evaporation of the liquid. Reference markings on the phantom allow the complete setup of all predefined phantom positions and measurement grids by teaching three points with the robot.

Twin SAM V5.0 has the same shell geometry and is manufactured from the same material as Twin SAM V4.0, but has reinforced top structure.

| | |
|--|---|
| Material | Vinylester, glass fiber reinforced (VE-GF) |
| Liquid Compatibility | Compatible with all SPEAG tissue simulating liquids (incl. DGBE type) |
| Shell Thickness | 2 ± 0.2 mm (6 ± 0.2 mm at ear point) |
| Dimensions (incl. Wooden Support) | Length: 1000 mm Width: 500 mm Height: adjustable feet |
| Filling Volume | approx. 25 liters |
| Wooden Support | SPEAG standard phantom table |
| Accessories | Mounting Device and Adaptors |

9.3 Device Holder for Transmitters

Mounting Devices and Adaptors



Mounting Device for Hand-Held
Transmitters

MD4HHTV5 - Mounting Device for Hand-Held Transmitters

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

Material: Polyoxymethylene (POM)

10. System Verification

10.1 Tissue Verification

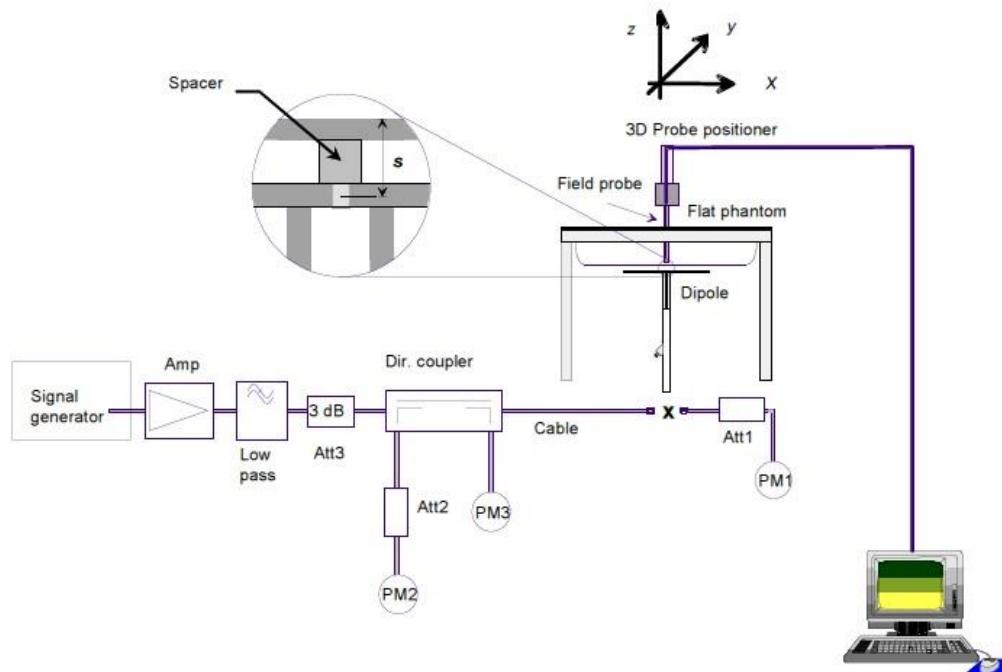
The dielectric properties for this Tissue Simulant Liquids were measured by using the SPEAG Model DAK3.5 Dielectric Probe (rates frequency band 200 MHz to 20 GHz) in conjunction with Agilent E5070B Network Analyzer (9 kHz -3000 MHz). The Conductivity (σ) and Permittivity (ρ) are listed in Table 1. For the SAR measurement given in this report. The temperature variation of the Tissue Simulant Liquids was $(22 \pm 2)^\circ\text{C}$.

| Freq. (MHz) | Tissue Type | Limit/Measured | Permittivity (ρ) | Conductivity (σ) | Temp ($^\circ\text{C}$) |
|----------------|----------------|----------------------|--|-------------------------------------|------------------------------|
| 2410.875 | MSL2450 | Recommended Limit | $52.75 \pm 5\%$ (50.1131 ~ 55.3882) | $1.91 \pm 5\%$ (1.8180 ~ 2.0094) | 22 ± 2 |
| | | Measured, 2015-05-13 | 52.99 | 1.92 | 20.81 |
| 2441.250 | MSL2450 | Recommended Limit | $52.71 \pm 5\%$ (50.0745 ~ 55.3455) | $1.94 \pm 5\%$ (1.8430 ~ 2.0370) | 22 ± 2 |
| | | Measured, 2015-05-13 | 52.84 | 1.97 | 20.81 |
| 2450.000 | MSL2450 | Recommended Limit | $52.70 \pm 5\%$ (50.0650 ~ 55.3350) | $1.95 \pm 5\%$ (1.8525 ~ 2.0475) | 22 ± 2 |
| | | Measured, 2015-05-13 | 52.79 | 1.98 | 20.81 |
| 2471.625 | MSL2450 | Recommended Limit | $52.68 \pm 5\%$ (50.0460 ~ 55.3140) | $1.98 \pm 5\%$ (1.8810 ~ 2.0790) | 22 ± 2 |
| | | Measured, 2015-05-13 | 52.65 | 2.01 | 20.81 |

<Table 1.Measurement result of Tissue electric parameters>

10.2 Test System Verification

The microwave circuit arrangement for system verification is sketched below picture. The daily system accuracy verification occurs within the flat section of the SAM phantom. A SAR measurement was performed to see if the measured SAR was within $\pm 10\%$ from the target SAR values. The tests were conducted on the same days as the measurement of the EUT. The obtained results from the system accuracy verification are displayed in the table Table 2 (A power level of 250 mW was input to the dipole antenna). During the tests, the ambient temperature of the laboratory was in the range $(22 \pm 2)^\circ\text{C}$, the relative humidity was in the range $(50 \pm 20)\%$ and the liquid depth above the ear/grid reference points was above 15 cm in all the cases. It is seen that the system is operating within its specification, as the results are within acceptable tolerance of the reference values.



| Validation Kit | Dipole Ant. S/N | Frequency (MHz) | Tissue Type | Limit/Measurement (Normalized to 1 W) | | |
|----------------|-----------------|-----------------|-------------|---------------------------------------|------------------------------------|------------------------------------|
| | | | | | 1 g | 10 g |
| D2450V2 | 895 | 2 450 | MSL2450 | Recommended Limit (Normalized) | $50.9 \pm 10\%$ (45.81 ~ 55.99) | $23.6 \pm 10\%$ (21.24 ~ 25.96) |
| | | | | Measured, 2015-05-13 | 52.00 | 24.16 |

<Table 2. Test System Verification Result>

11. Operation Configurations

Measurements were performed at the lowest, middle and highest channels of the operating band. The EUT was set to maximum power level during all tests and at the beginning of each test the battery was fully charged.

12. SAR Measurement Procedures

Step 1: Power Reference Measurement

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

Step 2: Area Scan

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

Area Scan Parameters extracted from KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz v01r03.

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

Step 3: Zoom Scan

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

Zoom Scan Parameters extracted from KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz v01r03.

| | | ≤ 3 GHz | > 3 GHz |
|---|------------------------------------|--|---|
| Maximum zoom scan spatial resolution: Δx_{Zoom} , Δy_{Zoom} | | ≤ 2 GHz: ≤ 8 mm $2 - 3$ GHz: ≤ 5 mm* | $3 - 4$ GHz: ≤ 5 mm* $4 - 6$ GHz: ≤ 4 mm* |
| Maximum zoom scan spatial resolution, normal to phantom surface | uniform grid: $\Delta z_{Zoom}(n)$ | ≤ 5 mm | $3 - 4$ GHz: ≤ 4 mm $4 - 5$ GHz: ≤ 3 mm $5 - 6$ GHz: ≤ 2 mm |
| | graded grid | $\Delta z_{Zoom}(1)$: between 1 st two points closest to phantom surface $\Delta z_{Zoom}(n>1)$: between subsequent points | ≤ 4 mm $\leq 1.5 \cdot \Delta z_{Zoom}(n-1)$ |
| Minimum zoom scan volume | x, y, z | ≥ 30 mm | $3 - 4$ GHz: ≥ 28 mm $4 - 5$ GHz: ≥ 25 mm $5 - 6$ GHz: ≥ 22 mm |

Note: δ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see draft standard IEEE P1528-2011 for details.

* When zoom scan is required and the reported SAR from the *area scan based 1-g SAR estimation* procedures of KDB 447498 is ≤ 1.4 W/kg, ≤ 8 mm, ≤ 7 mm and ≤ 5 mm zoom scan resolution may be applied, respectively, for 2 GHz to 3 GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.

Step 4: Power drift measurement

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

Step 5: Z-Scan

The Z Scan measures points along a vertical straight line. The line runs along the Z-axis of a one-dimensional grid. In order to get a reasonable extrapolation, the extrapolated distance should not be larger than the step size in Z-direction.

* Z Scan Report on Liquid Measure the height Annex A.4 Liquid Depth photo to replace

13. Test Equipment Information

| Test Platform | SPEAG DASY5 System | | | |
|-----------------------------------|--|-----------------|---------------------|------------------------------|
| Version | DASY5 : Version 52.8.8.1222 SEMCAD : Version 14.6.10 (7331) | | | |
| Location | EMC compliance Lab. | | | |
| Manufacture | SPEAG | | | |
| Hardware Reference | | | | |
| Equipment | Model | Serial Number | Date of Calibration | Due date of next Calibration |
| Shield Room | Shield Room | None | N/A | N/A |
| DASY5 Robot | TX90XL Speag | F12/5L7FA1/A/01 | N/A | N/A |
| DASY5 Controller | TX90XL Speag | F12/5L7FA1/C/01 | N/A | N/A |
| Phantom | SAM Twin Phantom | 1728 | N/A | N/A |
| Mounting Device | Mounting Device | None | N/A | N/A |
| DAE | DAE4 | 1342 | 2014-07-24 | 2015-07-24 |
| Probes | EX3DV4 | 3865 | 2014-08-25 | 2015-08-25 |
| Dipole Validation Kits | D2450V2 | 895 | 2014-07-24 | 2016-07-24 |
| Network Analyzer | E5071B | MY42403524 | 2014-07-15 | 2015-07-15 |
| Dual Directional Coupler | 772D | 2839A00719 | 2014-08-29 | 2015-08-29 |
| Signal Generator | E4438C | MY42080486 | 2015-01-19 | 2016-01-19 |
| Power Amplifier | 2055 BBS3Q7E9I | 1005D/C0521 | 2014-05-15 | 2015-05-15 |
| LP Filter | LA-30N | 40058 | 2014-08-29 | 2015-08-29 |
| Dual Power Meter | E4419B | GB43312301 | 2014-07-17 | 2015-07-17 |
| Power Sensor | 8481H | 3318A19377 | 2014-08-30 | 2015-08-30 |
| Power Sensor | 8481H | 3318A19379 | 2014-08-30 | 2015-08-30 |
| Dielectric Assessment Kit | DAK-3.5 | 1078 | 2014-08-19 | 2015-08-19 |
| Humidity/Baro/Temp. Data Recorder | MHB-382SD | 73871 | 2014-08-26 | 2015-08-26 |

14. RF Average Conducted Output Power

14.1 Average Conducted Output Power

| Mode | Conducted Powers (dBm) | | |
|------|------------------------|----------|----------|
| | 2410.875 | 2441.250 | 2471.625 |
| FHSS | 15.38 | 14.06 | 14.45 |

14.2 Max. tune up power

| Mode | Target Power | Tolerance | Max. Allowed Power |
|------|--------------|-----------|--------------------|
| FHSS | 14 dBm | ± 2 dB | 16 dBm |

15. SAR Test Results

15.1 Body SAR

| Frequency | | Average Power (dBm) | Max. tune up power (dBm) | Scaling Factor | EUT Position | Measured 1 g SAR (W/kg) | Scaled 1 g SAR (W/kg) | 1 g SAR Limit (W/kg) |
|-----------|---------|---------------------|--------------------------|----------------|--------------|-------------------------|-----------------------|----------------------|
| MHz | Channel | | | | | | | |
| 2 441.250 | 3 | 14.06 | 16 | 1.5631 | Front_out | 0.289 | 0.452 | |
| 2 441.250 | 3 | 14.06 | 16 | 1.5631 | Back_out | 0.579 | 0.905 | |
| 2 410.875 | 0 | 15.38 | 16 | 1.1535 | Back_out | 0.691 | 0.797 | |
| 2 471.625 | 5 | 14.45 | 16 | 1.4289 | Back_out | 0.867 | 1.24 | 1.6 |

<Note> SAR values were scaled to the maximum allowed power to determine compliance per KDB Publication 447498D01v05r02.

15.2 Limb SAR

| Frequency | | Average Power (dBm) | Max. tune up power (dBm) | Scaling Factor | EUT Position | Measured 10 g SAR (W/kg) | Scaled 10 g SAR (W/kg) | 10 g SAR Limits (W/kg) |
|-----------|---------|---------------------|--------------------------|----------------|--------------|--------------------------|------------------------|------------------------|
| MHz | Channel | | | | | | | |
| 2 441.250 | 3 | 14.06 | 16 | 1.5631 | Front_out | 0.148 | 0.231 | |
| 2 441.250 | 3 | 14.06 | 16 | 1.5631 | Back_out | 0.281 | 0.439 | |
| 2 441.250 | 3 | 14.06 | 16 | 1.5631 | Top_in | 0.702 | 1.10 | |
| 2 441.250 | 3 | 14.06 | 16 | 1.5631 | Left_out | 0.135 | 0.211 | |
| 2 441.250 | 3 | 14.06 | 16 | 1.5631 | Right_out | 0.000 | 0.000 | |
| 2 441.250 | 3 | 14.06 | 16 | 1.5631 | Bottom_out | 0.003 | 0.005 | |
| 2 410.875 | 0 | 15.38 | 16 | 1.1535 | Top_in | 0.569 | 0.656 | |
| 2 471.625 | 5 | 14.45 | 16 | 1.4289 | Top_in | 0.517 | 0.739 | 4.0 |

<Note> SAR values were scaled to the maximum allowed power to determine compliance per KDB Publication 447498D01v05r02.

16. Test System Verification Results

System check for 2450 MHz(2015-05-13)

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

Frequency: 2450 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 2450$ MHz; $\sigma = 1.979$ S/m; $\epsilon_r = 52.775$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3865; ConvF(7.56, 7.56, 7.56); Calibrated: 2014-08-25;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1342; Calibrated: 2014-07-24
- Phantom: SAM twin 1728; Type: QD000P40CD; Serial: TP:1728
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

System Performance Check at Frequencies/d=10mm, Pin=250 mW, dist=2.0mm (EX-Probe)/Area Scan (81x101x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm

Maximum value of SAR (interpolated) = 19.9 W/kg

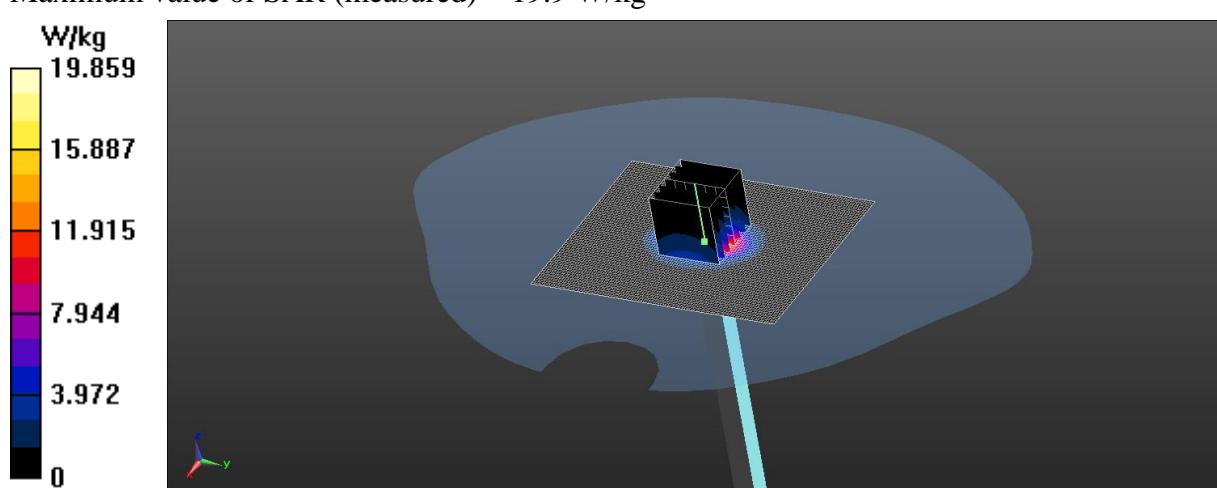
System Performance Check at Frequencies/d=10mm, Pin=250 mW, dist=2.0mm (EX-Probe)/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 101.5 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 26.8 W/kg

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

Maximum value of SAR (measured) = 19.9 W/kg



17. Test Results

#1

Procedure Name: SEW-3037W_c.0_f.2471.625_Body Back_out

Frequency: 2471.62 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 2471.62$ MHz; $\sigma = 2.006$ S/m; $\epsilon_r = 52.649$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3865; ConvF(7.56, 7.56, 7.56); Calibrated: 2014-08-25;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1342; Calibrated: 2014-07-24
- Phantom: SAM twin 1728; Type: QD000P40CD; Serial: TP:1728
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/SEW-3037W_c.0_f.2471.625_Body Back_out/Area Scan (81x81x1):

Interpolated grid: dx=1.200 mm, dy=1.200 mm

Maximum value of SAR (interpolated) = 1.33 W/kg

Configuration/SEW-3037W_c.0_f.2471.625_Body Back_out/Zoom Scan (7x7x7)

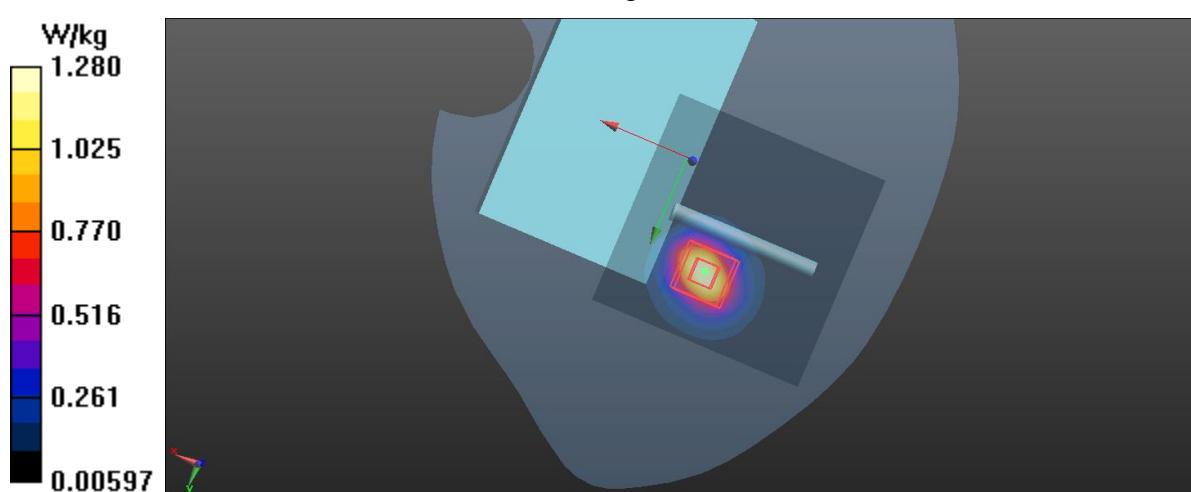
(7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 10.53 V/m; Power Drift = -0.09 dB

Peak SAR (extrapolated) = 1.73 W/kg

SAR(1 g) = 0.867 W/kg; SAR(10 g) = 0.418 W/kg

Maximum value of SAR (measured) = 1.28 W/kg



#2

Procedure Name: SEW-3037W_c.3_f.2441.250_Body Top_in

Frequency: 2441.25 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 2441.25$ MHz; $\sigma = 1.969$ S/m; $\epsilon_r = 52.836$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3865; ConvF(7.56, 7.56, 7.56); Calibrated: 2014-08-25;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1342; Calibrated: 2014-07-24
- Phantom: SAM twin 1728; Type: QD000P40CD; Serial: TP:1728
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/SEW-3037W_c.3_f.2441.250_Body Top_in/Area Scan (71x121x1):

Interpolated grid: dx=1.200 mm, dy=1.200 mm

Maximum value of SAR (interpolated) = 3.15 W/kg

Configuration/SEW-3037W_c.3_f.2441.250_Body Top_in/Zoom Scan (7x7x7)

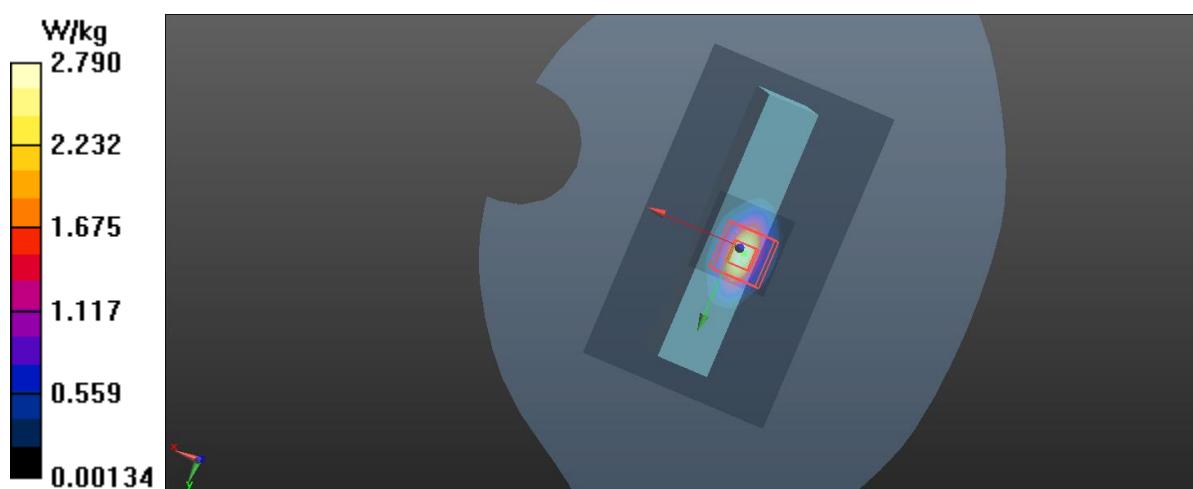
(8x8x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 30.86 V/m; Power Drift = 0.13 dB

Peak SAR (extrapolated) = 4.01 W/kg

SAR(1 g) = 1.74 W/kg; SAR(10 g) = 0.702 W/kg

Maximum value of SAR (measured) = 2.79 W/kg



Annex A. Photographs

Annex A.1 EUT

Front View



Front Antenna Out View



Back View



Right side View



Left side View



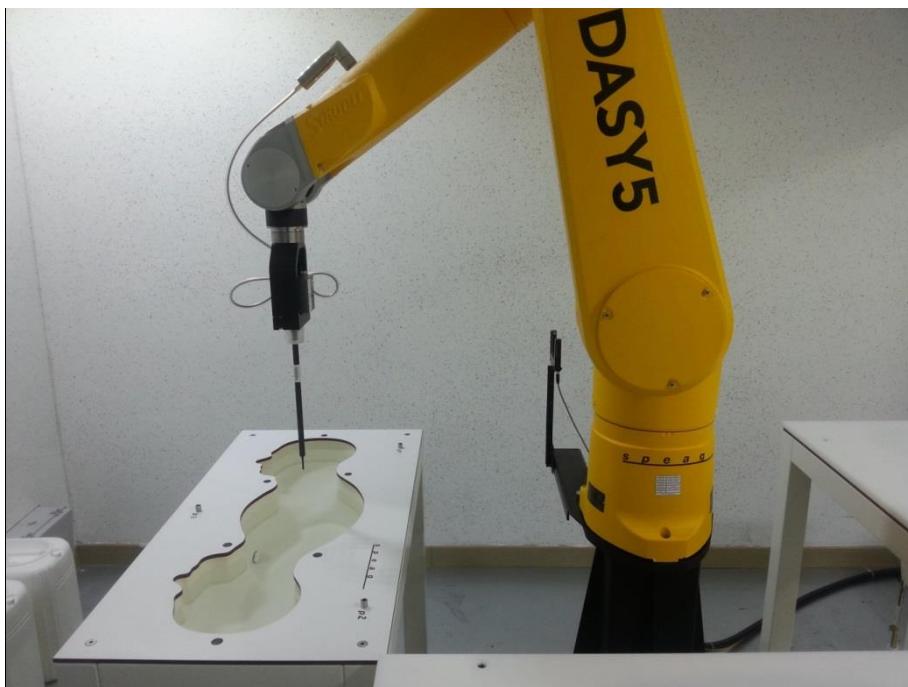
Top side View



Bottom side View

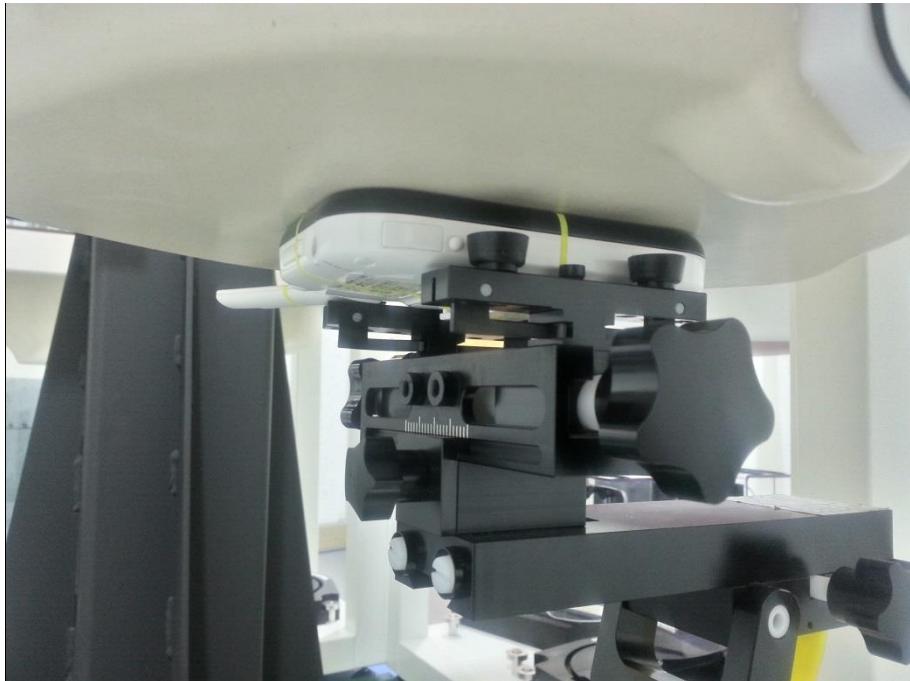


Annex A.2 Photographs of Test Setup

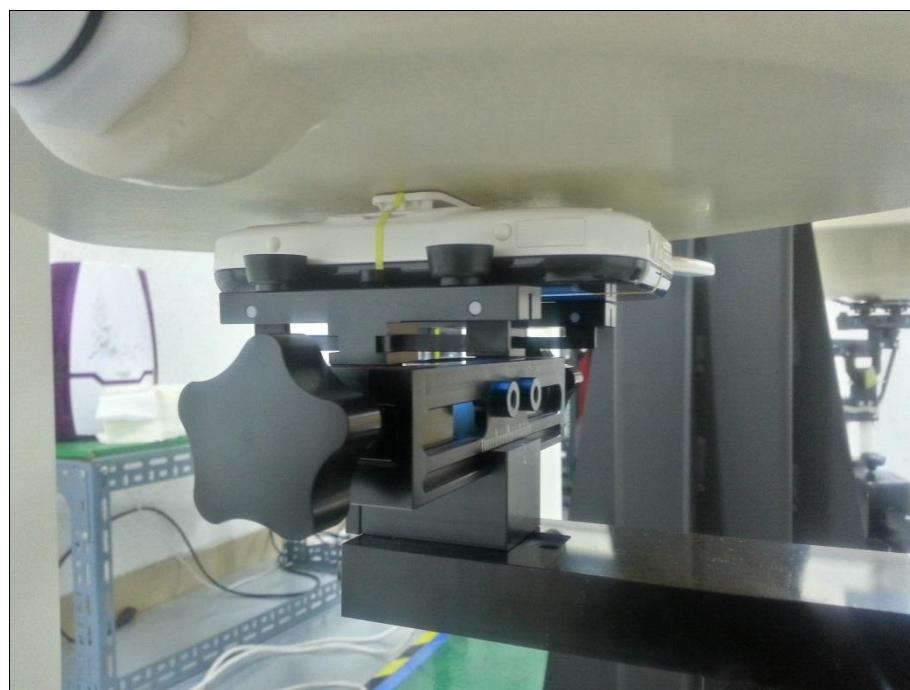


Photograph of the SAR measurement System

Annex A.3 Test Position



(a) Body_Front



(b)Body_Back