SAR TEST REPORT

For

2G HOME PHONE

Model Number: F112G

FCC ID: 2ACCJB020

Report Number : WT158002420

Test Laboratory	:	Shenzhen Academy of Metrology and Quality Inspection National Testing Center for Digital Electronic Products
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Test report declaration

Applicant	:	TCL Communication Ltd.
Address	:	5F, C-Tower, No. 232, Liang Jing Road,ZhangJiang High-Tech Park, Pudong,Shanghai, China
Manufacturer	:	TCL COMMUNICATION TECHNOLOGY HOLDINGS LIMITED
Address	:	70 Huifeng 4rd,ZhongKai Hi-tech Development District ,Huizhou,Guangdong 516006 P.R.China（TCL Mobile Communication Co.,LTD.Huizhou）
EUT Description	:	Fix wireless terminal
Model No	:	F112G
Trade mark	:	ALCATEL ONETOUCH
Marketing name	:	--
FCC ID	:	2ACCJB020

Test Standards:

IEEE 1528-2003 FCC KDB 865664 D01 v01r3

The EUT described above is tested by Shenzhen Academy of Metrology and Quality Inspection EMC Laboratory to determine the compliance of the applicable standards stated above.

Shenzhen Academy of Metrology and Quality Inspection EMC Laboratory is assumed full responsibility for the accuracy of the test results.

The results documented in this report only apply to the tested sample, under the conditions and modes of operation as described herein.

The test report shall not be reproduced in part without written approval of the laboratory.

Project Engineer:	(Liu Zheng)	Date:	Jun.19.2015
Checked by:	(Yang Dongping)	Date:	Jun.19.2015
Approved by:	(Lin Bin)	Date:	Jun.19.2015

Revision History

No	Date	Reason
--	2015-06-19	Initial issue

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1. REPORTED SAR SUMMARY

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

Highest Reported Standalone SAR Summary

Exposure Position	Frequency Band	Highest Reported1g-SAR (W/kg)(25mm)
Back	GSM850	0.462
Back	GSM1900	0.339

2. GENERAL INFORMATION

2.1. Report information

This report is not a certificate of quality; it only applies to the sample of the specific product/equipment given at the time of its testing. The results are not used to indicate or imply that they are application to the similar items. In addition, such results must not be used to indicate or imply that SMQ approves recommends or endorses the manufacture, supplier or use of such product/equipment, or that SMQ in any way guarantees the later performance of the product/equipment.

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2.2. Laboratory Accreditation and Relationship to Customer

The testing report were performed by the Shenzhen Academy of Metrology and quality Inspection EMC Laboratory (Guangdong EMC compliance testing center), in their facilities located at Bldg. of Metrology & Quality Inspection, Longzhu Road, Nanshan District, Shenzhen, Guangdong, China. At the time of testing, Laboratory is accredited by the following organizations:

China National Accreditation Service for Conformity Assessment (CNAS) accredits the Laboratory for conformance to FCC standards, EMC international standards and EN standards. The Registration Number is CNAS L0579.

The Laboratory is listed in the United States of American Federal Communications Commission (FCC), and the registration number are 446246 806614 994606 (semi anechoic chamber).

The Laboratory is registered to perform emission tests with Industry Canada (IC), and the registration number is IC4174.

TUV Rhineland accredits the Laboratory for conformance to IEC and EN standards, the registration number is E2024086Z02.

3. DESCRIPTION OF THE DEVICE UNDER TEST (DUT)

3.1. DUT Description

Frequency Bands		GSM850/GSM1900
Modulation Mode	:	GSM(GMSK)
Antenna type		External Antenna
Battery Model		CAB0400000C1
Battery Specification		3.7V/400mAh
Hardware Revision		V3
Software Revision		K4210ZZ0BM00

Remark: This product is prototype.

3.2. RF output power Tune up limit

Technology/Band	Max Tune Up Limit (dBm)
GSM850	33
GSM1900	30.5

3.3. Applied Standards

ANSI Std C95.1-1992	Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3kHz-300GHz.(IEEE Std C95.1-1991)
IEEE Std 1528-2003	Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate(SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques
IEEE Std 1528a-2005	IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate(SAR) in the Human head from Wireless Communications Devices: Measurement Techniques Amendment1: CAD File for Human Head Model(SAM Phantom)
KDB 447498 D01 Mobile Portable RF Exposure v05r02	Mobile and Portable Device RF Exposure Procedures and Equipment Authorization Policies
KDB 865664 D01 SAR measurement 100 MHz to 6 GHz v01r03	SAR Measurement Requirements for 100 MHz to 6 GHz
KDB 865664 D02 RF Exposure Reporting v01r01	RF Exposure Compliance Reporting and Documentation Considerations

3.4. SAR Limit

This device belongs to portable device category because its radiating structure is allowed to be used within 20 centimeters of the body of the user. Limit for General Population/Uncontrolled exposure should be applied for this device, it is 1.6 W/kg as averaged over any 1 gram of tissue.

4. TEST CONDITIONS

4.1. Temperature and Humidity

Ambient temperature (°C):	21-22
Ambient humidity (RH %):	59-60

4.2. Introduction of SAR

SAR is related to the rate at which energy is absorbed per unit mass in an object exposed to a radio field. The SAR distribution in a biological body is complicated and is usually carried out by experimental techniques or numerical modeling. The standard recommends limits for general public group.

SAR Definition:

$$SAR = \frac{d}{dt}\left(\frac{dW}{dm}\right) = \frac{d}{dt}\left(\frac{dW}{\rho dv}\right) \qquad SAR = C\frac{\delta T}{\delta t} \qquad SAR = \frac{\sigma |E|^2}{\rho}$$

In the first equation, the SAR definition is the time derivative (rate) of the incremental energy (dW) absorbed by (dissipated in) an incremental mass (dm) contained in a volume element (dv) of a given density ρ).

In the second equation, C is the specific head capacity, δT is the temperature rise and δt is the exposure duration.

The last equation relates to the electrical field, where σ is the conductivity of the tissue, ρ is the mass density of the tissue and E is the rms electrical field strength. However for evaluating SAR of low power transmitter, electrical field measurement is typically applied.

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

4.3. Test Configuration

GSM Test Configurations

SAR tests for GSM 850 and GSM 1900, a communication link is set up with a System Simulator (SS) by air link. Using CMU200 the power level is set to “5” for GSM 850, set to “0” for GSM 1900.

According to specification 3GPP TS 51.010, the maximum power of the GSM can do the power reduction for the multi-slot. The allowed power reduction in the multi-slot configuration is as following:

Output power of reductions:

Number of timeslots in uplink assignment	Permissible nominal reduction of maximum output power,(dB)
1	0
2	0 to 3,0
3	1,8 to 4,8
4	3,0 to 6,0

5. DESCRIPTION OF THE TEST EQUIPMENTS

5.1. Measurement System and Components

No.	Equipment	Model No.	Serial No.	Manufacturer	Last Calibration Date	Period
1	SAR test system	TX60L	F08/5AY8A1/A/01+F08/	SPEAG	NCR	NCR
2	Electronic Data Transmitter	DAE4	876	SPEAG	2015.03.09	1year
3	SAR Probe	ES3DV3	3203	SPEAG	2014.12.19	1year
4	SAR Probe	EX3DV4	3881	SPEAG	2014.07.22	1year
5	System Validation Dipole,835MHz	D835V2	4d141	SPEAG	2012.09.24	3year
6	System Validation Dipole,1900MHz	D1900V2	5d162	SPEAG	2012.09.21	3year
7	Dielectric Probe Kit	85070E	MY44300455	Agilent	NCR	NCR
8	Dual-directional coupler,0.10-2.0GHz	778D	MY48220198	Agilent	NCR	NCR
9	Dual-directional coupler,2.00-18GHz	772D	MY46151160	Agilent	NCR	NCR
10	Coaxial attenuator	8491A	MY39266348	Agilent	NCR	NCR
11	Power Amplifier	ZHL42W	81709	MINI-CIRCUITS	NCR	NCR
12	Signal Generator	SMR20	100047	R&S	2015.01.14	1year
13	Power Meter	NRVD	100041	R&S	2015.01.22	1year
14	Power Sensor	URV5-Z2	100012	R&S	2014.07.03	1year
15	Power Sensor	URV5-Z2	100013	R&S	2014.07.03	1year
16	Call Tester	CMU 200	100110	R&S	2015.01.06	1year
17	Network Analyzer	E5071C	MY46109550	Agilent	2015.04.23	1Year
18	Twin Phantom	SAM	TP-1504	SPEAG	NCR	NCR

The measurements were performed using an automated near-field scanning system, DASY5, manufactured by Schmid & Partner Engineering AG (SPEAG) in Switzerland. The SAR extrapolation algorithm used in all measurements was the “ advanced extrapolation” algorithm.

5.2. Isotropic E-field Probe Type EX3DV4

Construction	Symmetrical design with triangular core Interleaved sensors Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., butyl diglycol)
Calibration	Calibration certificate in Appendix C
Frequency	10MHz to 4GHz (dosimetry); Linearity: ±0.2dB (30MHz to 4GHz)
Directivity	± 0.2 dB in HSL (rotation around probe axis) ± 0.3 dB in HSL (rotation normal to probe axis)
Dynamic Range	5 μW/g to > 100mW/g; Linearity: ± 0.2 dB
Dimensions	Overall length: 330 mm Tip length: 20 mm Body diameter: 12 mm Tip diameter: 3.9 mm Distance from probe tip to dipole centers: 2.0 mm
Application	General dosimetry up to 4 GHz Compliance tests of mobile phones Fast automatic scanning in arbitrary phantoms

5.3. Phantoms

The phantom used for all tests i.e. for both system checks and device testing, was the twin-headed "SAM Phantom", manufactured by SPEAG. The SAM twin phantom is a fiberglass shell phantom with 2mm shell thickness (except the ear region, where shell thickness increases to 6mm).

System checking was performed using the flat section, whilst Head SAR tests used the left and right head profile sections. Body SAR testing also used the flat section between the head profiles.

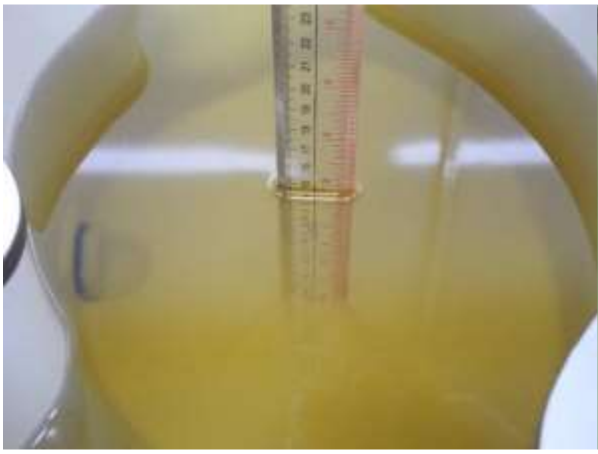
5.4. Tissue-equivalent Liquids

Tissue-equivalent liquids that are used for testing, which are made mainly of sugar, salt and water solution. All tests were carried out using tissue-equivalent liquids whose dielectric parameters were within ± 5% of the recommended values. All tests were carried out within 24 hours of measuring the dielectric parameters.
The depth of the Tissue-equivalent liquid was 15.0±0.5 cm measured from the ear reference point (ERP) during system checking and device measurements.

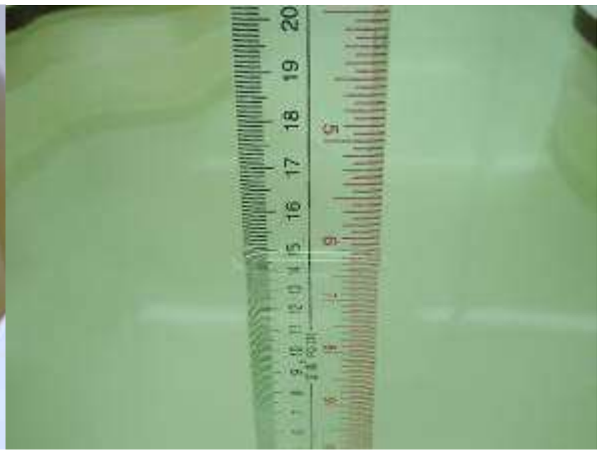
Tissue-equivalent liquid Recipes

The following recipe(s) were used for Head Tissue-equivalent liquid(s):

MSL 900 15.0cm



MSL1900 15.0cm



Ingredient (% by weight)	Frequency Band	
	800-900	1800-1900
Tissue Type	Body	Body
Water	50.8	68.9
Sugar	48.2	--
Salt	0.9	0.1
Preventol D-7	0.1	--
DGMBE	--	31
Cellulose	--	--

Tissue-equivalent liquids used in the Measurements

Dielectric parameters of the Tissue-equivalent liquids were measured before testing using the dielectric probe kit and the Network Analyzer. The measurement is carried out following the Agilent 85070 dielectric probe software instruction. A calibration of the probe open in air, probe with shorting block and probe in water is performed before measurement. After calibration, Insert the probe into the tissue liquid, trigger a measurement on software interface and record the data.

Body Tissue-equivalent liquid measurements:

Used Target Frequency	Target Tissue		Measured Tissue		Liquid Temp.	Test Date
	ε_r (+/-5%)	σ (S/m) (+/-5%)	ε_r	σ (S/m)		
835MHz Body	55.20 (52.44~57.96)	0.97 (0.92~1.02)	55.87	0.96	22°C	2015-05-25
1900MHz Body	53.30 (50.64~55.97)	1.52 (1.44~1.60)	51.05	1.57	22°C	2015-05-27
ε_r= Relative permittivity, σ= Conductivity						

System Check

The system check is performed for verifying the accuracy of the complete measurement system and performance of the software. The system check is performed with tissue equivalent material according to IEEE P1528(described above). The following table shows system check results for all frequency bands and tissue liquids used during the tests(Graphic Plot(s)see Appendix A).

System checking, Body Tissue-equivalent liquid:

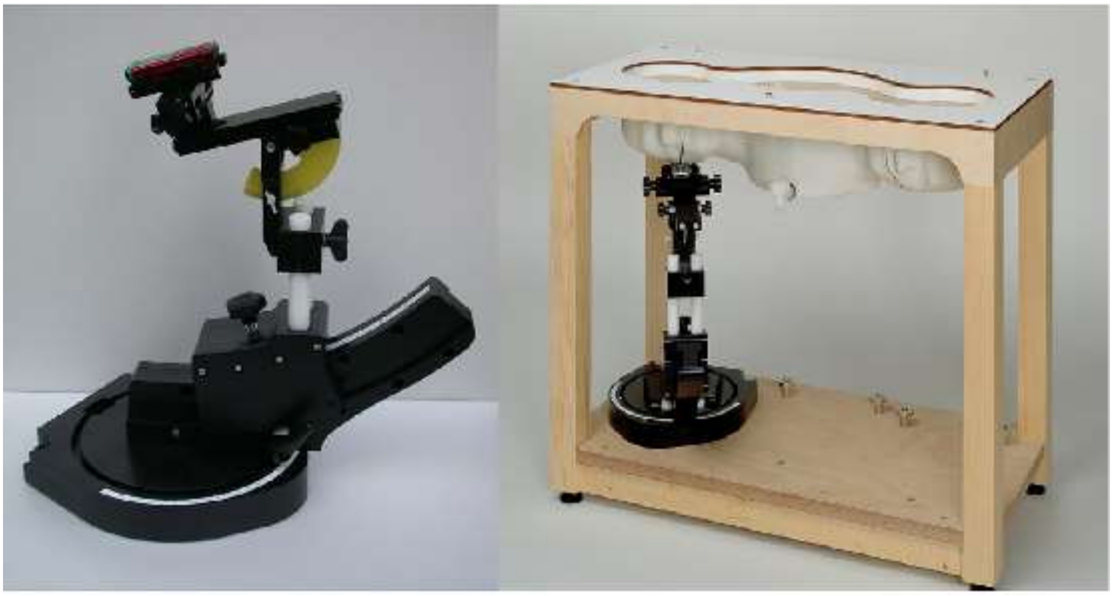
System Check	Target SAR (1W) (+/-10%)		Measured SAR (Normalized to 1W)		Liquid Temp.	Test Date
	1-g (W/kg)	10-g (W/kg)	1-g (W/kg)	10-g (W/kg)		
D835V2 Body	9.46 (8.514~10.406)	6.25 (5.625~6.875)	9.92	6.44	22°C	2015-05-25
D1900V2 Body	40.70 (36.63~44.77)	21.60 (19.44~23.76)	44.40	22.04	22°C	2015-05-27

Plots of the system checking scans are given in Appendix A.

5.5. Device Holder

The device was placed in the device holder (illustrated below) that is supplied by SPEAG as an integral part of the DASY system.

The DASY device holder is designed to cope with the different positions given in the standard. It has two scales for device rotation (with respect to the body axis) and device inclination (with respect to the line between the ear reference points). The rotation centers for both scales is the ear reference point (ERP). Thus the device needs no repositioning when changing the angles.



Device holder supplied by SPEAG

5.6. Test Position

The device has an external antenna, the antenna is located on the top side of the EUT, and can be oriented in different directions. According to the usage scenarios, the following positions with the transmitting antenna located at a distance 25mm from the flat phantom are tested:

1) Back side with antenna horizontal left
2) Back side with antenna horizontal right
3) Back side with antenna horizontal top
4) Back side with antenna vertical down
5) Top side with antenna horizontal left
6) Top side with antenna horizontal right
7) Top side with antenna vertical up
8) Top side with antenna vertical down

5.7. Scan Procedures

- The reference and drift measurements are located at the beginning and end of the batch process. They measure the field drift at one single point in the liquid over the complete procedure. The indicated drift is mainly the variation of the DUT's output power and should vary max. +/- 5 %.

- The surface check measurement tests the optical surface detection system of the DASY5 system by repeatedly detecting the surface with the optical and mechanical surface detector and comparing the results. The output gives the detecting heights of both systems, the difference between the two systems and the standard deviation of the detection repeatability. Air bubbles or refraction in the liquid due to separation of the sugar-water mixture gives poor repeatability (above ±0.1mm). To prevent wrong results tests are only executed when the liquid is free of air bubbles. The difference between the optical surface detection and the actual surface depends on the probe and is specified with each probe. (It does not depend on the surface reflectivity or the probe angle to the surface within ±30°.)

- The area scan measures the SAR above the DUT or verification dipole on a parallel plane to the surface. It is used to locate the approximate location of the peak SAR with 2D spline interpolation. The robot performs a stepped movement along one grid axis while the local electrical field strenth is measured by the probe. The probe is touching the surface of the SAM during acquisition of measurement values. The standard scan uses large grid spacing for faster measurement. Standard grid spacing for head measurements is 15 mm in x- and y- dimension(≤2GHz)，12 mm in x- and y- dimension(2-4 GHz) and 10mm in x- and y- dimension(4-6GHz). If a finer resolution is needed, the grid spacing can be reduced. Grid spacing and orientation have no influence on the SAR result. For special applications where the standard scan method does not find the peak SAR within the grid, e.g. mobile phones with flip cover, the grid can be adapted in orientation.
  Results of this coarse scan are shown in Appendix B.

- A "zoom scan" measures the field in a volume around the 2D peak SAR value acquired in the previous "coarse" scan. This is a fine grid with maximum scan spatial resolution: Δx_{zoom}, Δy_{zoom} ≤2GHZ≤ 8 mm, 2-4GHz - ≤ 5 mm and 4-6 GHz-≤ 4 mm; Δz_{zoom} ≤ 3GHz - ≤ 5 mm, 3-4 GHz- ≤ 4 mm and 4-6GHz-≤2mm where the robot additionally moves the probe along the z-axis away from the bottom of the Phantom. DASY5 is also able to perform repeated zoom scans if more than 1 peak is found during area scan. Test results relevant for the specified standard (see chapter 1.5.) are shown in table form in chapter 3.2.
- A Z-axis scan measures the total SAR value at the x-and y-position of the maximum SAR value found during the cube scan. The probe is moved away in z-direction from the bottom of the SAM phantom in 2mm steps. This measurement shows the continuity of the liquid and can – depending in the field strength- also show the liquid depth. A z-axis scan of the measurement with maximum SAR value is shown in Appendix B.
  The following table summarizes the area scan and zoom scan resolutions per FCC KDB 865664D01:

Frequency	Maximum Area Scan resolution (Δx_{area}, Δy_{area})	Maximum Zoom Scan spatial resolution(Δx_{zoom} Δy_{zoom})	Maximum Zoom Scan spatial resolution			Minimum zoom scan volume (x,y,z)
			Uniform Grid	Graded Grad		
			$\Delta z_{zoom}(n)$	$\Delta z_{zoom}(1)$	$\Delta z_{zoom}(n>1)$	
≤2GHz	≤15mm	≤8mm	≤5mm	≤4mm	≤ 1.5* $\Delta z_{zoom}(n-1)$	≥30mm
2-3GHz	≤12mm	≤5mm	≤5mm	≤4mm	≤ 1.5* $\Delta z_{zoom}(n-1)$	≥30mm
3-4GHz	≤10mm	≤5mm	≤4mm	≤3mm	≤ 1.5* $\Delta z_{zoom}(n-1)$	≥28mm
4-5GHz	≤10mm	≤4mm	≤3mm	≤2.5mm	≤ 1.5* $\Delta z_{zoom}(n-1)$	≥25mm
5-6GHz	≤10mm	≤4mm	≤2mm	≤2mm	≤ 1.5* $\Delta z_{zoom}(n-1)$	≥22mm

5.8. SAR Averaging Methods

The DASY5 software includes all numerical procedures necessary to evaluate the spatial peak SAR values. The base for the evaluation is a “ cube” measurement in a volume of (30mm)3 (7x7x7 points). The maximum SAR value was averaged over the cube of tissue using interpolation and extrapolation.

The interpolation, extrapolation and maximum search routines within Dasy5 are all based on the modified Quadratic Shepard’ s method.

The interpolation scheme combines a least-square fitted function method with a weighted average method. A trivariate 3-D / bivariate 2-D quadratic function is computed for each measurement point and fitted to neighbouring points by a least-square method. For the zoom scan, inverse distance weighting is incorporated to fit distant points more accurately. The interpolating function is finally calculated as a weighted average of the quadratics.

In the zoom scan, the interpolation function is used to extrapolate the Peak SAR from the deepest measurement points to the inner surface of the phantom.

6. MEASUREMENT UNCERTAINTY

6.1. Uncertainty for SAR Test

Uncertainty Budget of DASY for frequency range 300 MHz to 3 GHz

Uncertainty Component	**Tol. (%)**	**Prob Dist.**	**Div**	**ci (1g)**	**ci.ui(%) (1g)**	**vi**
Measurement System						
Probe Calibration	±5.9	N	1	1	±5.9	∞
Axial Isotropy	±4.7	R	$\sqrt{3}$	0.7	±1.9	∞
Hemispherical Isotropy	±9.6	R	$\sqrt{3}$	0.7	±3.9	∞
Boundary Effect	±1.0	R	$\sqrt{3}$	1	±0.6	∞
Linearity	±4.7	R	$\sqrt{3}$	1	±2.7	∞
System Detection Limits	±1.0	R	$\sqrt{3}$	1	±0.6	∞
Readout Electronics	±0.3	N	1	1	±0.3	∞
Response Time	±0.8	R	$\sqrt{3}$	1	±0.5	∞
Integration Time	±2.6	R	$\sqrt{3}$	1	±1.5	∞
RF Ambient Conditions - Noise	±3.0	R	$\sqrt{3}$	1	±1.7	∞
RF Ambient Conditions - Reflections	±3.0	R	$\sqrt{3}$	1	±1.7	∞
Probe Positioner Mechanical Tolerance	±0.4	R	$\sqrt{3}$	1	±0.2	∞
Probe Positioning with respect to Phantom Shell	±2.9	R	$\sqrt{3}$	1	±1.7	∞
Extrapolation, interpolation and Integration Algorithms for Max. SAR Evaluation	±1.0	R	$\sqrt{3}$	1	±0.6	∞
Test Sample Related						
Test Sample Positioning	±2.9	N	1	1	±2.9	145
Device Holder Uncertainty	±3.6	N	1	1	±3.6	5
Output Power Variation - SAR drift measurement	±5.0	R	$\sqrt{3}$	1	±2.9	∞
Phantom and Tissue Parameters						
Phantom Uncertainty (shape and thickness tolerances)	±4.0	R	$\sqrt{3}$	1	±2.3	∞
Conductivity Target - tolerance	±5.0	R	$\sqrt{3}$	0.43	±1.2	∞
Conductivity - measurement uncertainty	±2.5	N	1	0.43	±1.1	∞
Permittivity Target - tolerance	±5.0	R	$\sqrt{3}$	0.49	±1.4	∞
Permittivity - measurement uncertainty	±2.5	N	1	0.49	±1.2	5
Combined Standard Uncertainty					**±10.7**	**387**
Expanded STD Uncertainty					**±21.4**	

6.2. Uncertainty for System Validation

Uncertainty Component	Uncert. value	Prob. Dist.	Div.	(ci) (1g)	Std. Unc. (1g)	(vi) veff
Probe Calibration	±6.55 %	N	1	1	±6.55 %	1
Axial Isotropy	±4.7 %	R	$\sqrt{3}$	1	±2.7 %	1
Hemispherical Isotropy	±9.6 %	R	$\sqrt{3}$	0	±0 %	1
Boundary E_ects	±1.0 %	R	$\sqrt{3}$	1	±0.6 %	1
Linearity	±4.7 %	R	$\sqrt{3}$	1	±2.7 %	1
System Detection Limits	±1.0 %	R	$\sqrt{3}$	1	±0.6 %	1
Modulation Response	±0 %	R	$\sqrt{3}$	1	±0 %	1
Readout Electronics	±0.3 %	N	1	1	±0.3 %	1
Response Time	±0 %	R	$\sqrt{3}$	1	±0 %	1
Integration Time	±0 %	R	$\sqrt{3}$	1	±0 %	1
RF Ambient Noise	±1.0 %	R	$\sqrt{3}$	1	±0.6 %	1
RF Ambient Re ections	±1.0 %	R	$\sqrt{3}$	1	±0.6 %	1
Probe Positioner	±0.8 %	R	$\sqrt{3}$	1	±0.5 %	1
Probe Positioning	±6.7 %	R	$\sqrt{3}$	1	±3.9 %	1
Max. SAR Eval.	±2.0 %	R	$\sqrt{3}$	1	±1.2 %	1
Dipole Related						
Deviation of exp. dipole	±5.5 %	R	$\sqrt{3}$	1	±3.2 %	1
Dipole Axis to Liquid Dist.	±2.0 %	R	$\sqrt{3}$	1	±1.2 %	1
Input power & SAR drift	±3.4 %	R	$\sqrt{3}$	1	±2.0 %	1
Phantom and Setup						
Phantom Uncertainty	±4.0 %	R	$\sqrt{3}$	1	±2.3 %	1
SAR correction	±1.9 %	R	$\sqrt{3}$	0.84	±0.9 %	1
Liquid Conductivity (meas.)	±2.5 %	N	1	0.71	±1.8 %	1
Liquid Permittivity (meas.)	±2.5 %	N	1	0.26	±0.7 %	1
Temp. unc. -Conductivity	±1.7 %	R	$\sqrt{3}$	0.71	±0.7 %	1
Temp. unc. -Permittivity	±0.3 %	R	$\sqrt{3}$	0.26	±0.0 %	∞
Combined Std. Uncertainty					±10.1 %	
Expanded STD Uncertainty					±20.1 %	

7. CONDUCTED TEST RESULTS

7.1. Conducted power measurements of GSM850

Band: GSM850	Burst Average Power (dBm)			Frame Average Power (dBm)		
Channel	**128**	**190**	**251**	**128**	**190**	**251**
Frequency (MHz)	**824.2**	**836.6**	**848.8**	**824.2**	**836.6**	**848.8**
GSM (CS)	32.73	32.62	32.71	23.54	23.43	23.52

7.2. Conducted power measurements of GSM1900

Band: GSM1900	Burst Average Power (dBm)			Frame Average Power (dBm)		
Channel	**512**	**661**	**810**	**512**	**661**	**810**
Frequency (MHz)	**1850.2**	**1880**	**1909.8**	**1850.2**	**1880**	**1909.8**
GSM (CS)	30.15	30.21	30.24	20.96	21.02	21.05

Remark: For GSM 1 timeslot, below duty cycle is considered and used to calculate the frame average power.

No. of timeslots	1
Duty Cycle	1:8.3
Time based avg. power compared to slotted avg. power	-9.19dB

8. SAR TEST RESULTS

Remark:

1) Per KDB447498 D01v05r02, all measurement SAR results are scaled to the maximum tune-up tolerance limit to demonstrate compliant.
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 :≤0.8 W/kg or 2.0W/kg, for 1-g or 10-g respectively, when the transmission band is ≤100MHz. When the maximum output power variation across the required test channels is >1/2 dB, instead of the middle channel, the highest output power channel must be used.
3) Per KDB865664 D01v01r03, for each frequency band, repeated SAR measurement is required only when the measure SAR is ≥0.8W/kg; if the deviation among the repeated measurement is ≤20%, and the measured SAR<1.45W/kg, only one repeated measurement is required.
4) 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 >1.5W/kg, or >7.0W/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 plots-processing (refer to appendix B for details).

8.1. GSM850 SAR results

Distance 25mm

Band	Mode	Test Position	Ch.	Freq. (MHz)	Burst Average Power (dBm)	Tune-Up Limit (dBm)	Scaling Factor	Measured SAR (W/kg)	Reported SAR (W/kg)
GSM850	GSM Voice	Back Side Antenna Horizontal right	190	836.6	32.62	33	1.091	0.423	**0.462**
GSM850	GSM Voice	Back Side Antenna Horizontal left	190	836.6	32.62	33	1.091	0.362	0.395
GSM850	GSM Voice	Back Side Antenna Horizontal top	190	836.6	32.62	33	1.091	0.091	0.099
GSM850	GSM Voice	Back Side Antenna Vertical down	190	836.6	32.62	33	1.091	0.012	0.013
GSM850	GSM Voice	Top Side Antenna Horizontal left	190	836.6	32.62	33	1.091	0.358	0.391
GSM850	GSM Voice	Top Side Antenna Horizontal right	190	836.6	32.62	33	1.091	0.264	0.288
GSM850	GSM Voice	Top Side Antenna Vertical up	190	836.6	32.62	33	1.091	0.212	0.231
GSM850	GSM Voice	Top Side Antenna Vertical down	190	836.6	32.62	33	1.091	0.233	0.254
Worst case with adaptor									
GSM850	GSM Voice	Back Side Antenna Horizontal right	190	836.6	32.62	33	1.091	0.397	0.433

Remark:

1) Only GSM voice mode is supported by this EUT.

2) The SAR test shall be performed at the high, middle and low frequency channels of each operating mode, when the reported SAR value is <0.8 W/kg, testing at the high and low channels is optional.

8.2. GSM1900 SAR results

Band	Mode	Test Position	Ch.	Freq. (MHz)	Burst Average Power (dBm)	Tune-Up Limit (dBm)	Scaling Factor	Measured SAR (W/kg)	Reported SAR (W/kg)
GSM1900	GSM Voice	Back Side Antenna Horizontal right	661	1880.0	30.21	30.5	1.069	0.317	**0.339**
GSM1900	GSM Voice	Back Side Antenna Horizontal left	661	1880.0	30.21	30.5	1.069	0.241	0.258
GSM1900	GSM Voice	Back Side Antenna Horizontal top	661	1880.0	30.21	30.5	1.069	0.203	0.217
GSM1900	GSM Voice	Back Side Antenna Vertical down	661	1880.0	30.21	30.5	1.069	0.049	0.052
GSM1900	GSM Voice	Top Side Antenna Horizontal left	661	1880.0	30.21	30.5	1.069	0.109	0.117
GSM1900	GSM Voice	Top Side Antenna Horizontal right	661	1880.0	30.21	30.5	1.069	0.121	0.129
GSM1900	GSM Voice	Top Side Antenna Vertical up	661	1880.0	30.21	30.5	1.069	0.192	0.205
GSM1900	GSM Voice	Top Side Antenna Vertical down	661	1880.0	30.21	30.5	1.069	0.164	0.175
Worst case with adaptor									
GSM1900	GSM Voice	Back Side Antenna Horizontal right	661	1880.0	30.21	30.5	1.069	0.304	0.325

Remark:

1) Only GSM voice mode is supported by this EUT.

2) The SAR test shall be performed at the high, middle and low frequency channels of each operating mode, when the reported SAR value is <0.8 W/kg, testing at the high and low channels is optional.

8.3. Repeated SAR results

Remark:

1 According to KDB 865664 D01v01r3, for each frequency band, repeated SAR measurement is required only when the measured SAR is ⩾0.8W/kg.

2 KDB 865664 D01v01r3, if the deviation among the repeated measurement is ⩽ 20% and the measured SAR<1.45W/kg, only one repeated measurement is required.

3 The variability measurement procedures should be applied to the tissue medium with the highest measured SAR, using the highest measured SAR configuration for that tissue-equivalent medium.

Band	Mode	Test Position	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Scaling Factor	Measured SAR (W/kg)	Reported SAR (W/kg)	Ratio
--										
--										

Measured SAR of all frequency band are lower than 0.8W/kg, repeated SAR is not required .

9. SIMULTANEOUS TRANSMISSION SAR ANALYSIS

Remark:

This product is not applicable in Simultaneous Transmission.

APPENDIX A: SYSTEM CHECKING SCANS

Date: 2015.05.25.

Test Laboratory: SMQ SAR Test

SystemPerformanceCheck-D835 Body

DUT: Dipole 835 MHz D835V2; Type: D835V2;

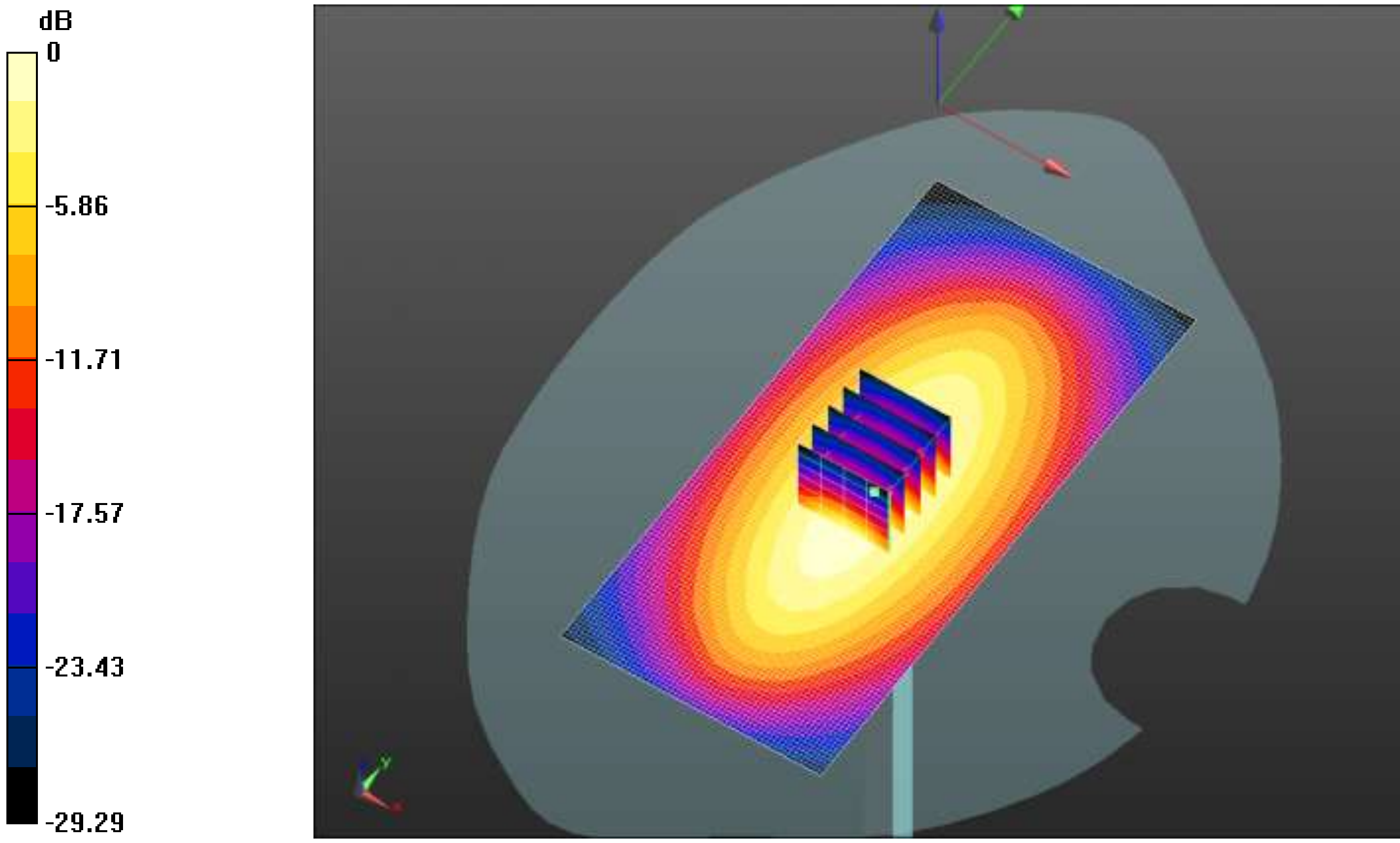
Communication System: CW; Communication System Band: D835 (835.0 MHz); Frequency: 835 MHz;Duty Cycle: 1:1
Medium parameters used: f = 835 MHz; σ = 0.96 mho/m; ε_r = 55.87; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: ES3DV3 - SN3203; ConvF(6.2, 6.2, 6.2); Calibrated: 2014.12.19.;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn876; Calibrated: 2015.03.09.
- Phantom: SAM 1; Type: QD000P40CC; Serial: TP:1504
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

Body/Dipole835/Area Scan (61x131x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 55.902 V/m; Power Drift = -0.07 dB
Fast SAR: SAR(1 g) = 2.55 mW/g; SAR(10 g) = 1.67 mW/g
Maximum value of SAR (interpolated) = 2.76 W/kg

Body/Dipole835/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 55.902 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 3.791 mW/g
SAR(1 g) = 2.48 mW/g; SAR(10 g) = 1.61 mW/g
Maximum value of SAR (measured) = 2.69 W/kg



0 dB = 2.76 W/kg = 8.82 dB W/kg

Date: 2015.05.27.

Test Laboratory: SMQ SAR Test

SystemPerformanceCheck-D1900-Body

DUT: Dipole 1900 MHz D1900V2; Type: D1900V2;

Communication System: CW; Communication System Band: D1900 (1900.0 MHz); Frequency: 1900 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1900 MHz; σ = 1.57 mho/m; ε_r = 51.05; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

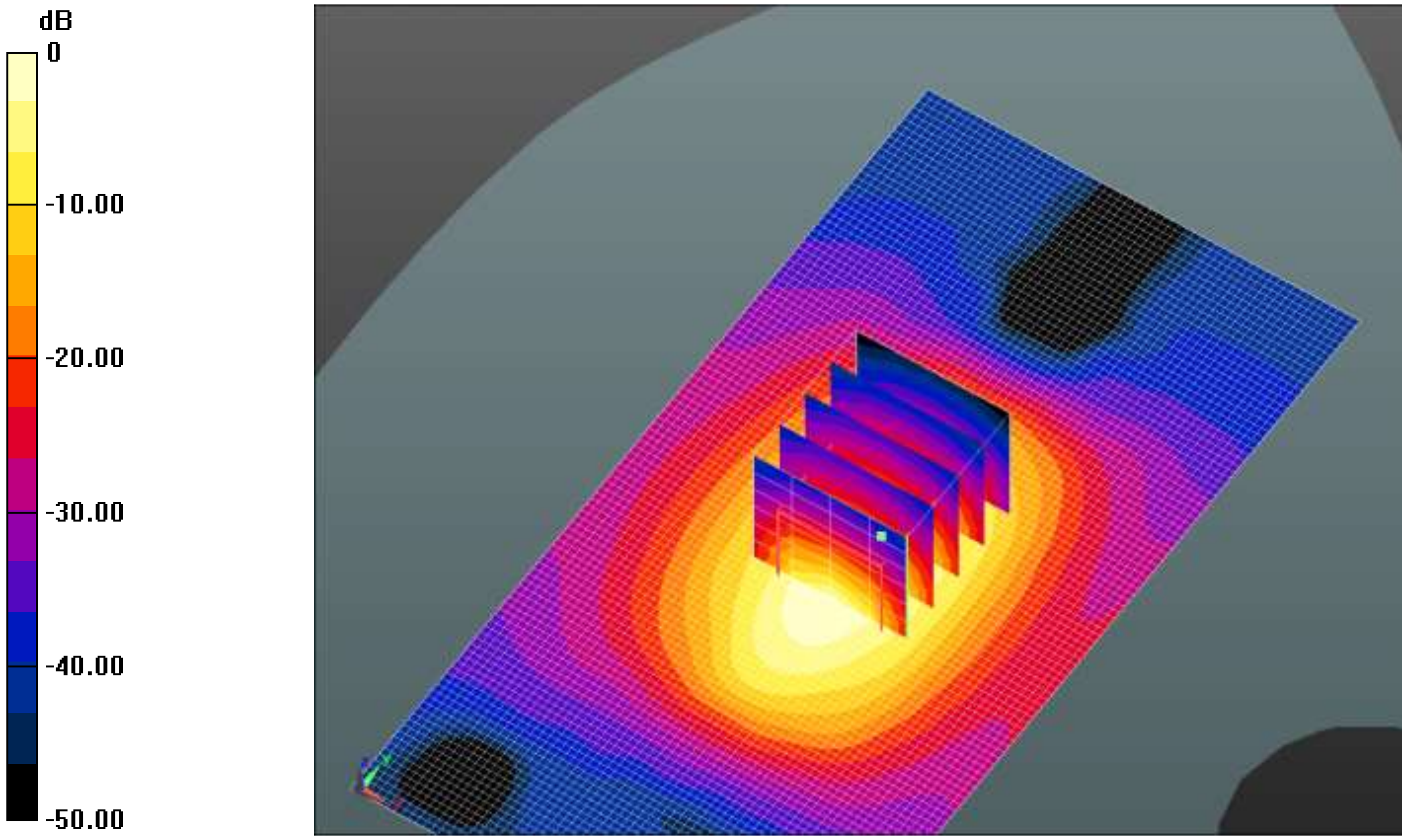
DASY5 Configuration:

- Probe: EX3DV4 - SN3881; ConvF(8.25, 8.25, 8.25); Calibrated: 2014.07.22.;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn876; Calibrated: 2015.03.09.
- Phantom: SAM 1; Type: QD000P40CC; Serial: TP:1504
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

Body/Dipole1900 2/Area Scan (61x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 87.274 V/m; Power Drift = 0.08 dB
Fast SAR: SAR(1 g) = 11 mW/g; SAR(10 g) = 5.35 mW/g
Maximum value of SAR (interpolated) = 12.9 W/kg

Body/Dipole1900 2/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 87.274 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 21.346 mW/g
SAR(1 g) = 11.1 mW/g; SAR(10 g) = 5.51 mW/g

Maximum value of SAR (measured) = 12.6 W/kg



0 dB = 12.9 W/kg = 22.24 dB W/kg

APPENDIX B: System Validation

Per KDB 865664 D02v01, SAR system validation status should be documented to confirm measurement accuracy. SAR measurement systems are validated according to procedures in KDB 865664 D01v01r3. The validation status is documented according to the validation date(s), measurement frequencies, SAR probe and tissue dielectric parameters. When multiple SAR system is used, the validation status of each SAR system is needed to be documented separately according to the associated system components.

A tabulated summary of the system validation status including the validation date(s), measurement frequencies, SAR probe and tissue dielectric parameters are shown as below.

Date	Probe S/N	Tested Freq MHz	Tissue	CW			Mod. Validation		
				Sensitivity	Linearity	Isotropy	Mod	Duty Factor	Peak to Average Power Ration
2014.09.21	3881	1900	body	pass	pass	Pass	GMSK	pass	N/A
2014.09.21	3203	850	body	pass	pass	Pass	GMSK	pass	N/A
--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--

APPENDIX C: MEASUREMENT SCANS

Date: 2015.05.25.

F112G GSM850 Body Back Side antenna horizontal right

Medium: MSL900

Communication System: GSM (TDMA,GSMK); Communication System Band: GSM 850 (824.0 - 849.0 MHz); Frequency: 836.6 MHz;Duty Cycle: 1:8.30042

Medium parameters used (interpolated): f = 836.6 MHz; σ = 1.01 mho/m; ε_r = 55.858; ρ = 1000 kg/m^3

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:Probe: ES3DV3 - SN3203; ConvF(6.2, 6.2, 6.2); Calibrated: 2014.12.19.; Electronics: DAE4 Sn876; Calibrated: 2015.03.09.

GSM 850/GSM 850 Back Mid Hor right/Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Reference Value = 10.832 V/m; Power Drift = -0.07 dB

Fast SAR: SAR(1 g) = 0.427 mW/g; SAR(10 g) = 0.290 mW/g

Info: Interpolated medium parameters used for SAR evaluation.

Maximum value of SAR (interpolated) = 0.457 W/kg

GSM 850/GSM 850 Back Mid Hor right/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

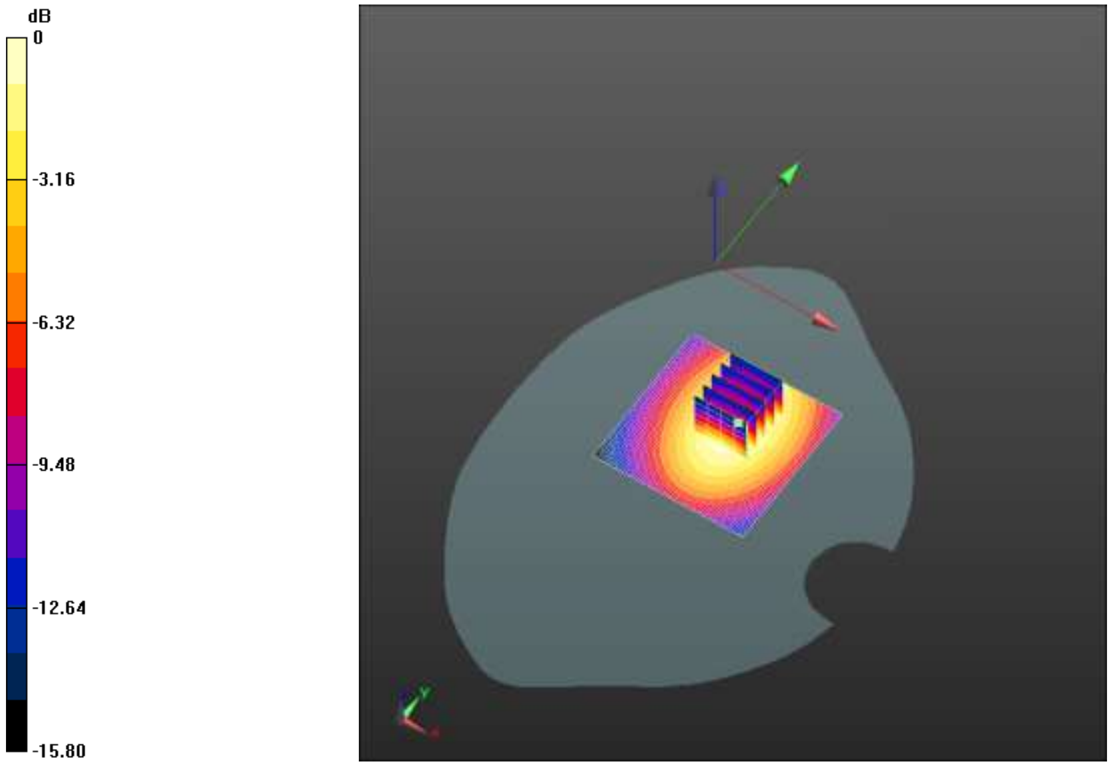
Reference Value = 10.832 V/m; Power Drift = -0.07 dB

Peak SAR (extrapolated) = 0.557 mW/g

SAR(1 g) = 0.423 mW/g; SAR(10 g) = 0.305 mW/g

Info: Interpolated medium parameters used for SAR evaluation.

Maximum value of SAR (measured) = 0.449 W/kg



0 dB = 0.457 W/kg = -6.80 dB W/kg

Date: 2015.05.27.

F112G GSM1900 Body Back Side antenna horizontal right

Medium: MSL1900

Communication System: Generic GSM; Communication System Band: PCS 1900 (1850.0 - 1910.0 MHz); Frequency: 1880 MHz;Duty Cycle: 1:8.30042

Medium parameters used: f = 1880 MHz; σ = 1.57 mho/m; ε_r = 51.14; ρ = 1000 kg/m^3

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:Probe: EX3DV4 - SN3881; ConvF(8.25, 8.25, 8.25); Calibrated: 2014.07.22.; Electronics: DAE4 Sn876; Calibrated: 2015.03.09.

1900_GSM1900/GSM1900 Back Mid Hor right/Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Reference Value = 9.312 V/m; Power Drift = -0.12 dB

Fast SAR: SAR(1 g) = 0.333 mW/g; SAR(10 g) = 0.194 mW/g

Maximum value of SAR (interpolated) = 0.367 W/kg

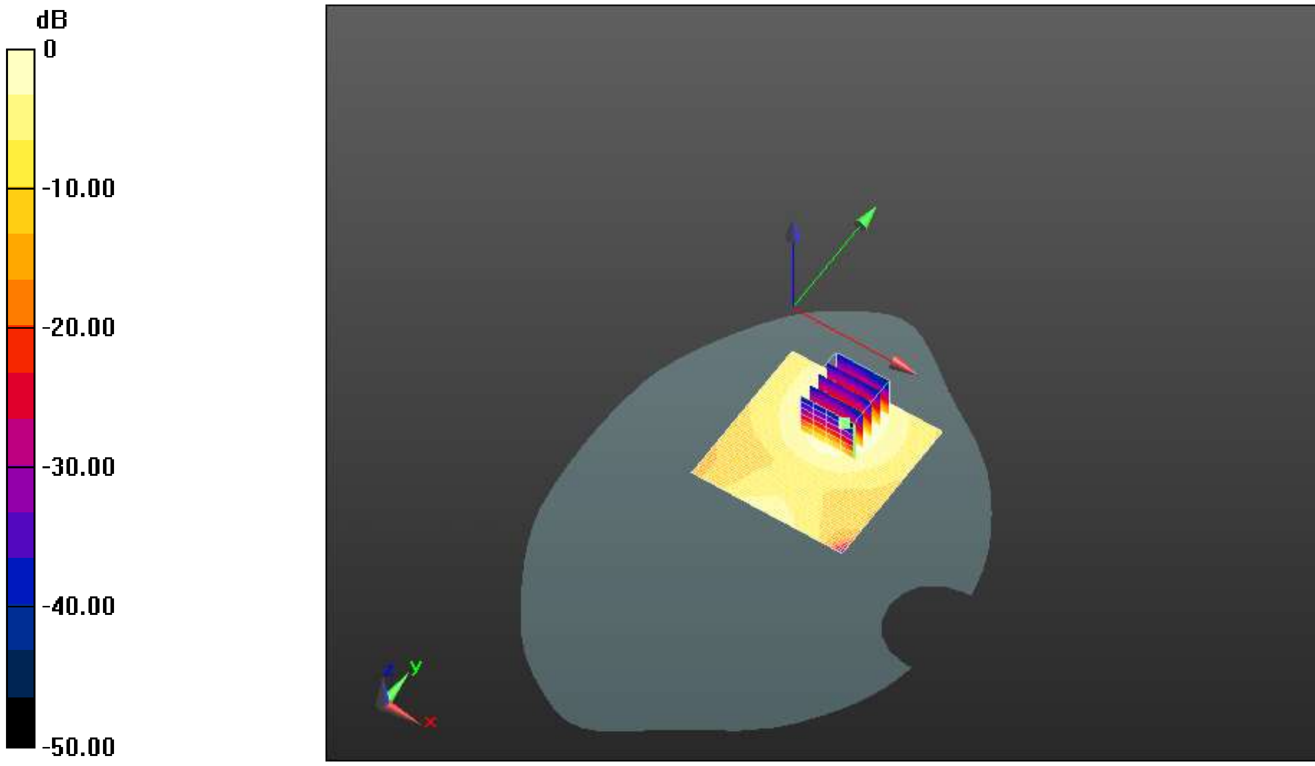
1900_GSM1900/GSM1900 Back Mid Hor right /Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 9.312 V/m; Power Drift = -0.12 dB

Peak SAR (extrapolated) = 0.512 mW/g

SAR(1 g) = 0.317 mW/g; SAR(10 g) = 0.189 mW/g

Maximum value of SAR (measured) = 0.345 W/kg



0 dB = 0.367 W/kg = -8.72 dB W/kg

APPENDIX D: RELEVANT PAGES FROM PROBE CALIBRATION REPORT(S)

Acceptable Conditions for SAR Measurements Using Probes and Dipoles Calibrated under the SPEAG-TMC Dual-Logo Calibration Program to Support FCC Equipment Certification

The acceptable conditions for SAR measurements using probes, dipoles and DAEs calibrated by TMC (*Telecommunication Metrology Center of MITT in Beijing, China*), under the Dual-Logo Calibration Certificate program and quality assurance (QA) protocols established between SPEAG (*Schmid & Partner Engineering AG, Switzerland*) and TMC, to support FCC (*U.S. Federal Communications Commission*) equipment certification are defined and described in the following.

1) The agreement established between SPEAG and TMC is only applicable to calibration services performed by TMC where its clients (companies and divisions of such companies) are headquartered in the Greater China Region, including Taiwan and Hong Kong. This agreement is subject to renewal at the end of each calendar year between SPEAG and TMC. TMC shall inform the FCC of any changes or early termination to the agreement.
2) Only a subset of the calibration services specified in the SPEAG-TMC agreement, while it remains valid, are applicable to SAR measurements performed using such equipment for supporting FCC equipment certification. These are identified in the following.
   a) Calibration of dosimetric (SAR) probes EX3DVx, ET3DVx and ES3DVx.
      i) Free-space E-field and H-field probes, including those used for HAC (hearing aid compatibility) evaluation, temperature probes, other probes or equipment not identified in this document, when calibrated by TMC, are excluded and cannot be used for measurements to support FCC equipment certification.
      ii) Signal specific and bundled probe calibrations based on PMR (probe modulation response) characteristics are handled according to the requirements of KDB 865664; that is, "Until standardized procedures are available to make such determination, the applicability of a signal specific probe calibration for testing specific wireless modes and technologies is determined on a case-by-case basis through KDB inquiries, including SAR system verification requirements."
   b) Calibration of SAR system validation dipoles, excluding HAC dipoles.
   c) Calibration of data acquisition electronics DAE3Vx, DAE4Vx and DAEasyVx.
   d) For FCC equipment certification purposes, the frequency range of SAR probe and dipole calibrations is limited to 700 MHz - 6 GHz and provided it is supported by the equipment identified in the TMC QA protocol (a separate attachment to this document).
   e) The identical system and equipment setup, measurement configurations, hardware, evaluation algorithms, calibration and QA protocols, including the format of calibration certificates and reports used by SPEAG shall be applied by TMC.
   f) The calibrated items are only applicable to SPEAG DASY 4 and DASY 5 or higher version systems.

APPENDIX E: RELEVANT PAGES FROM DIPOLE VALIDATION KIT REPORT(S)

Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	53.2 Ω + 4.0 jΩ
Return Loss	- 26.1 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	49.2 Ω + 5.0 jΩ
Return Loss	- 25.9 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.197 ns

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

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

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	December 20, 2011

DASY5 Validation Report for Head TSL

Date: 21.09.2012

Test Laboratory: SPEAG, Zurich, Switzerland

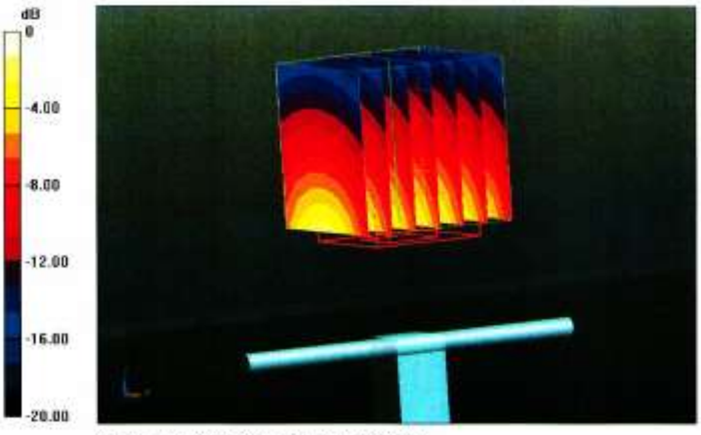
DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN: 5d162

Communication System: CW; Frequency: 1900 MHz
Medium parameters used: f = 1900 MHz; σ = 1.37 mho/m; ε_r = 40.6; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

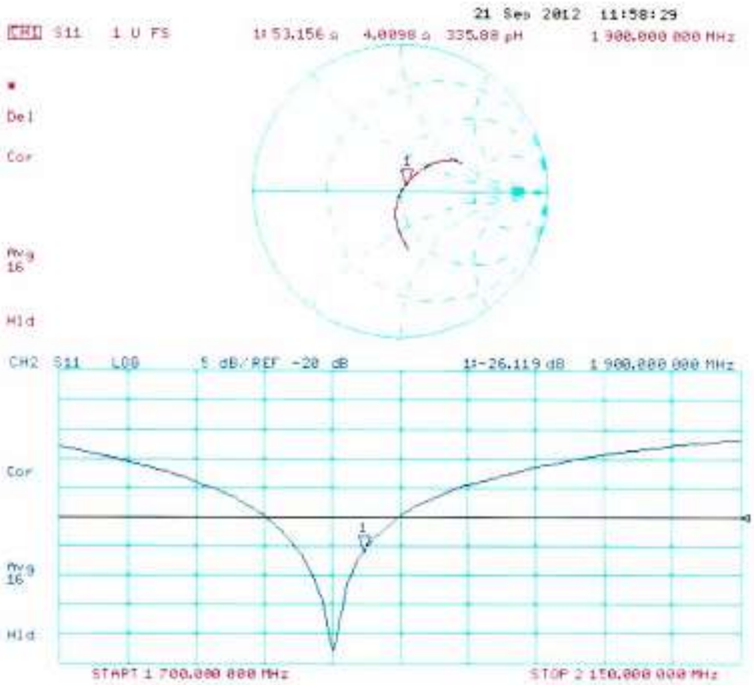
- Probe: ES3DV3 - SN3205; ConvF(5.01, 5.01, 5.01); Calibrated: 30.12.2011;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 27.06.2012
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.8.2(969); SEMCAD X 14.6.6(6824)

Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 95.423 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 17.236 mW/g
SAR(1 g) = 9.69 mW/g; SAR(10 g) = 5.13 mW/g
Maximum value of SAR (measured) = 11.9 W/kg



0 dB = 11.9 W/kg = 21.51 dB W/kg

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 21.09.2012

Test Laboratory: SPEAG, Zurich, Switzerland

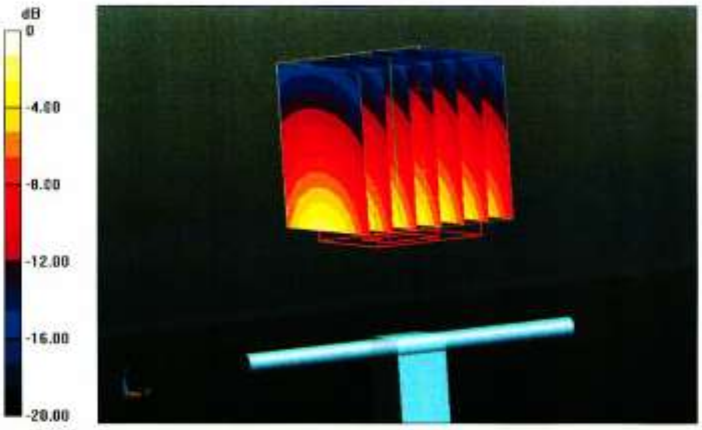
DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN: 5d162

Communication System: CW; Frequency: 1900 MHz
Medium parameters used: f = 1900 MHz; σ = 1.54 mho/m; ε_r = 52.5; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

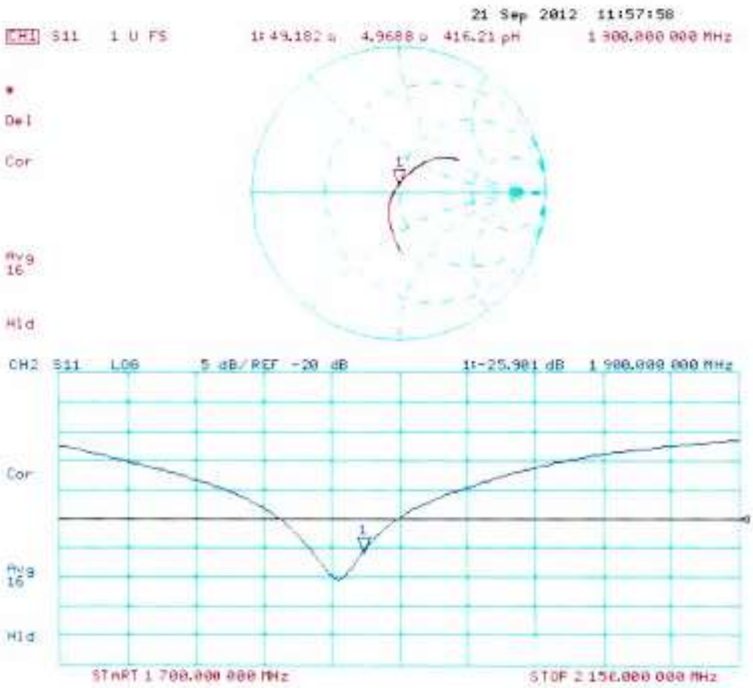
- Probe: ES3DV3 - SN3205; ConvF(4.62, 4.62, 4.62); Calibrated: 30.12.2011;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 27.06.2012
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- DASY52 52.8.2(969); SEMCAD X 14.6.6(6824)

Dipole Calibration for Body Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 95.423 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 17.979 mW/g
SAR(1 g) = 10.3 mW/g; SAR(10 g) = 5.45 mW/g
Maximum value of SAR (measured) = 12.9 W/kg



0 dB = 12.9 W/kg = 22.21 dB W/kg

Impedance Measurement Plot for Body TSL



Certificate No: D1900V2-5d162_Sep12 Page 8 of 8

Note:

1) Per KDB865664D01 requirements for dipole calibration, the test laboratory has adopted three-year extended calibration interval. Each measured dipole is expected to evaluate with the following criteria at least on annual interval in Appendix D.

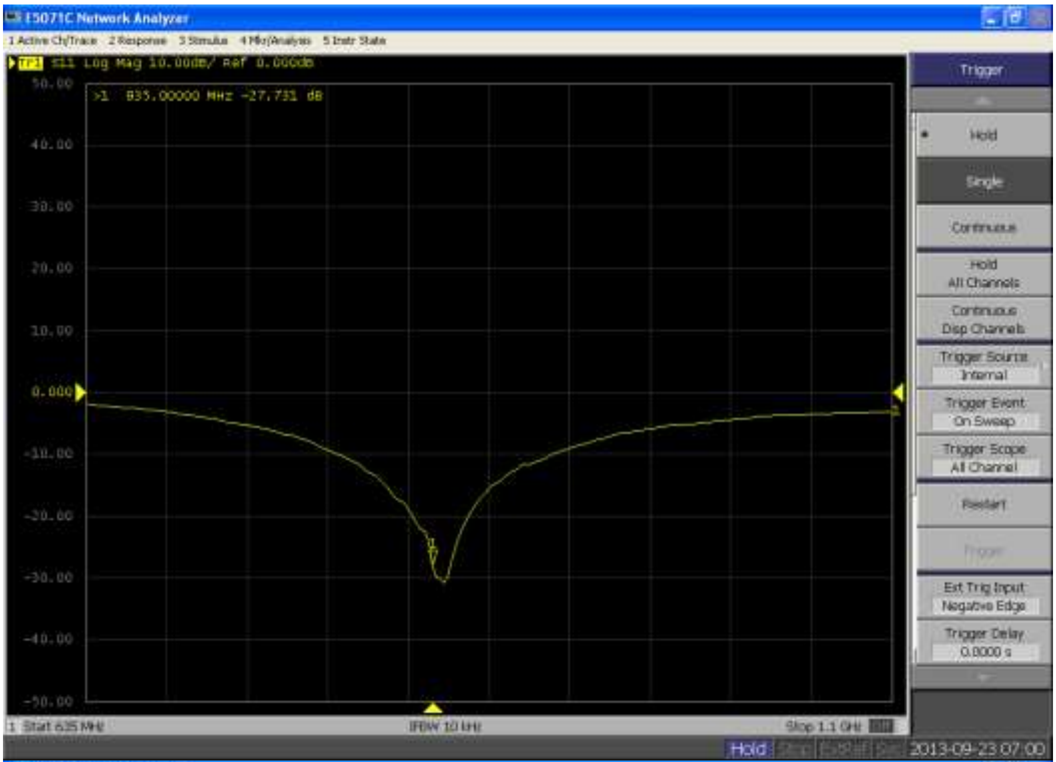
a) There is no physical damage on the dipole;

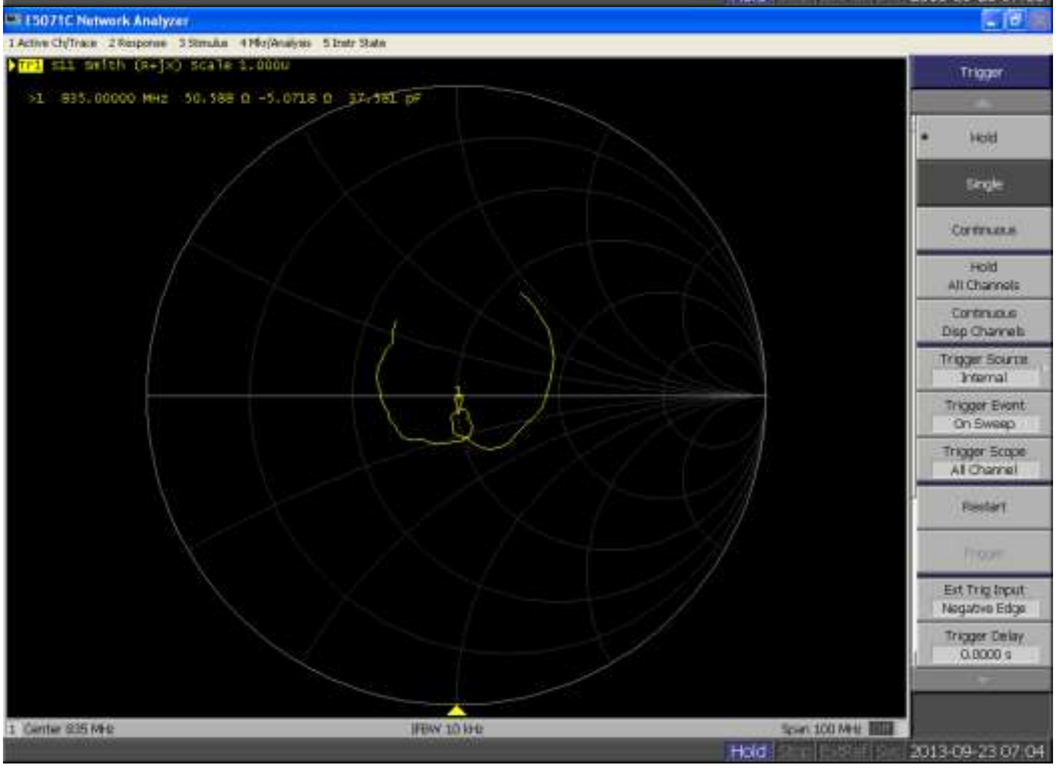
b) System check with specific dipole is within 10% of calibrated value;

c) The most recent return-loss result, measured at least annually, deviates by no more than 20% from the previous measurement.

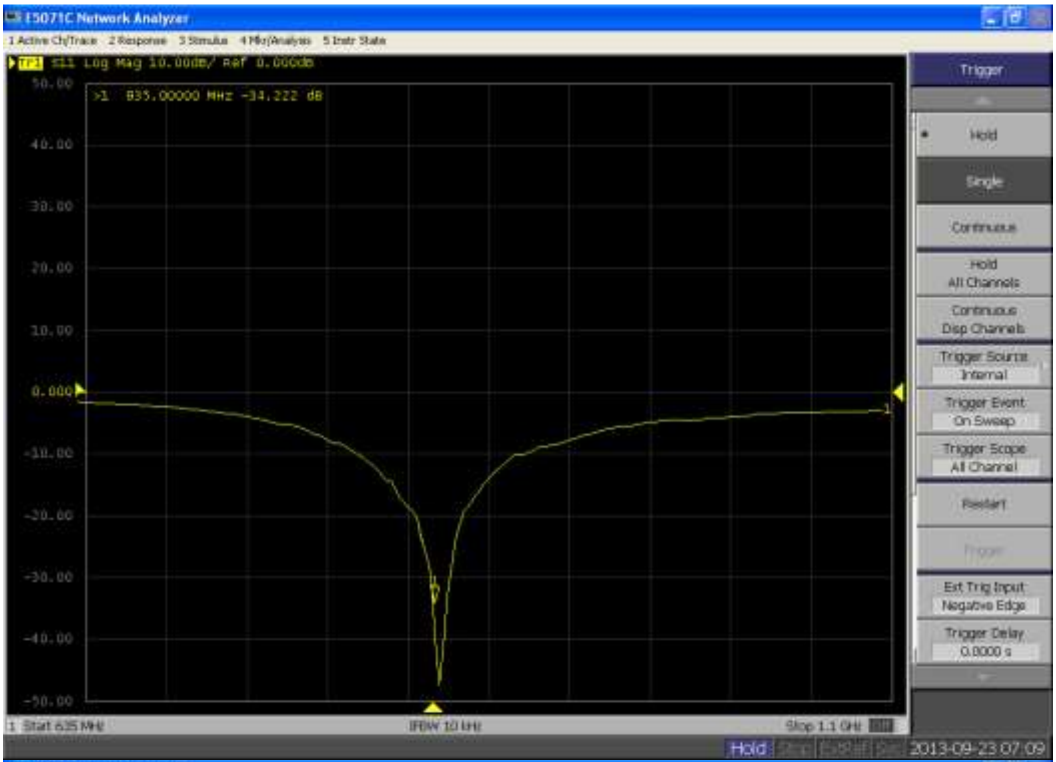
d) The most recent measurement of the real or imaginary parts of the impedance, measured at least annually is within 5Ω from the previous measurement.

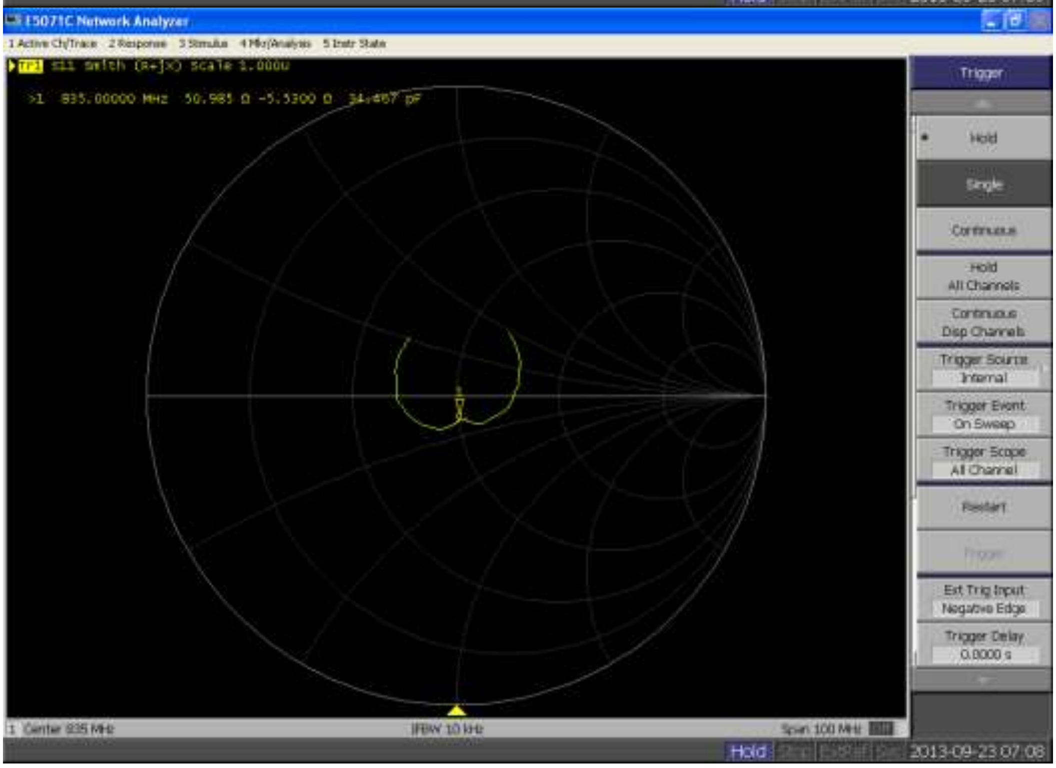
2013



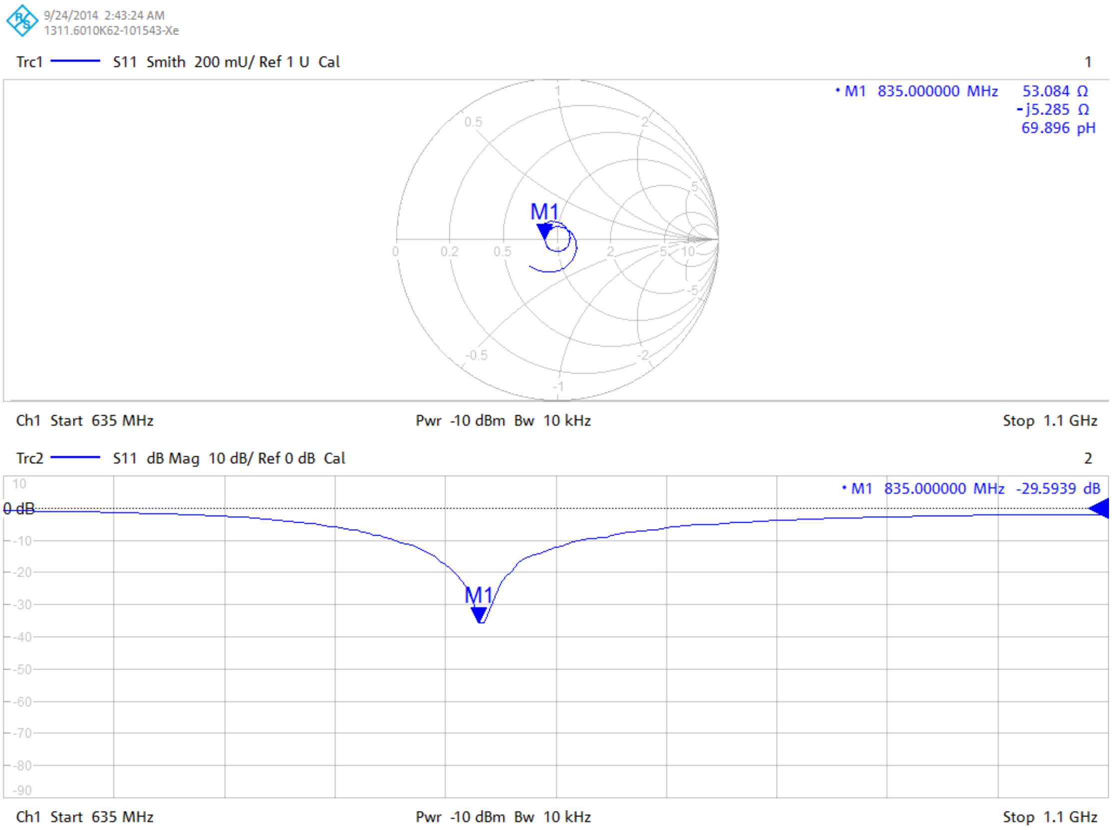


835MHz Dipole Head

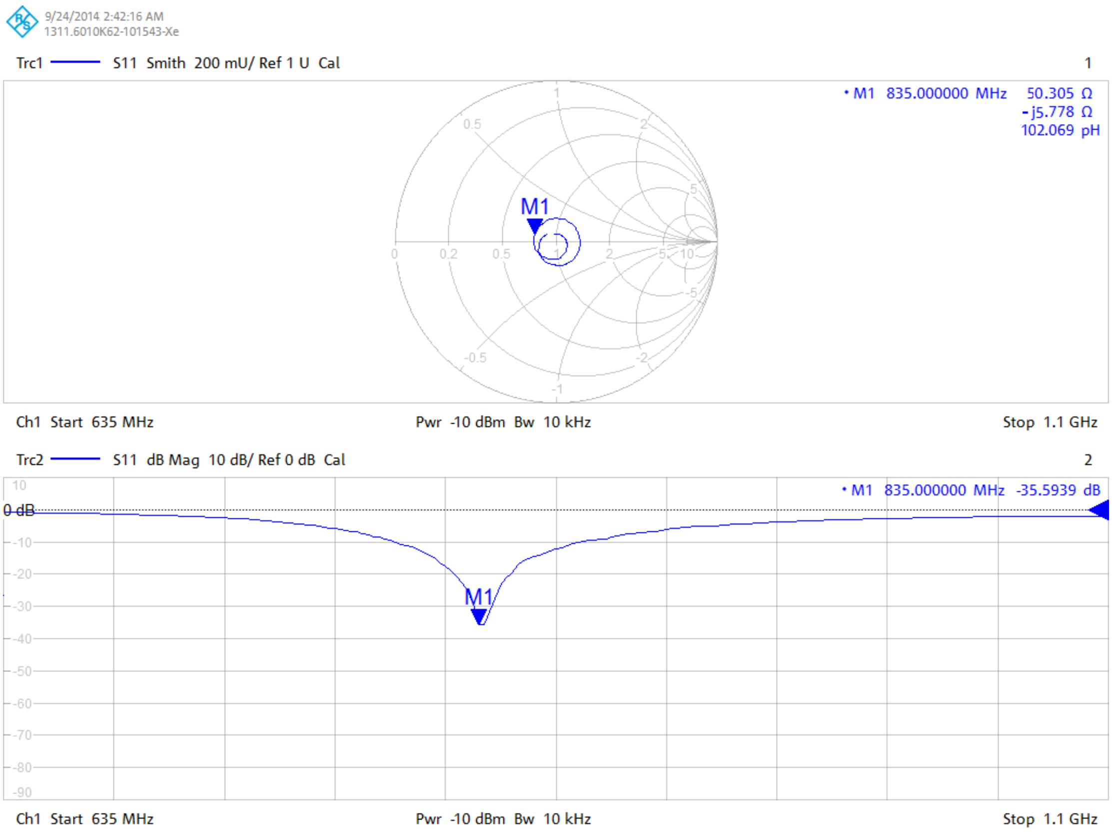

E5071C Network Analyzer
1 Active Ch/Trace 2 Response 3 Stimulus 4 Mkr/Analysis 5 Instr State
Tr1 S11 Log Mag 10.00dB/ Ref 0.000dB
>1 835.00000 MHz -34.222 dB
50.00
40.00
30.00
20.00
10.00
0.000
-10.00
-20.00
-30.00
-40.00
-50.00
1 Start 635 MHz
IFBW 10 kHz
Stop 1.1 GHz
Trigger
Hold
Single
Continuous
Hold All Channels
Continuous Disp Channels
Trigger Source Internal
Trigger Event On Sweep
Trigger Scope All Channel
Restart
Trigger
Ext Trig Input Negative Edge
Trigger Delay 0.0000 s
Hold
2013-09-23 07:09


E5071C Network Analyzer
1 Active Ch/Trace 2 Response 3 Stimulus 4 Mkr/Analysis 5 Instr State
Tr1 S11 Smith (R+jX) Scale 1.000U
>1 835.00000 MHz 50.985 Ω -5.5300 Ω 34.467 pF
1 Center 835 MHz
IFBW 10 kHz
Span 100 MHz
Trigger
Hold
Single
Continuous
Hold All Channels
Continuous Disp Channels
Trigger Source Internal
Trigger Event On Sweep
Trigger Scope All Channel
Restart
Trigger
Ext Trig Input Negative Edge
Trigger Delay 0.0000 s
Hold
2013-09-23 07:08

2014



835MHz Dipole Head

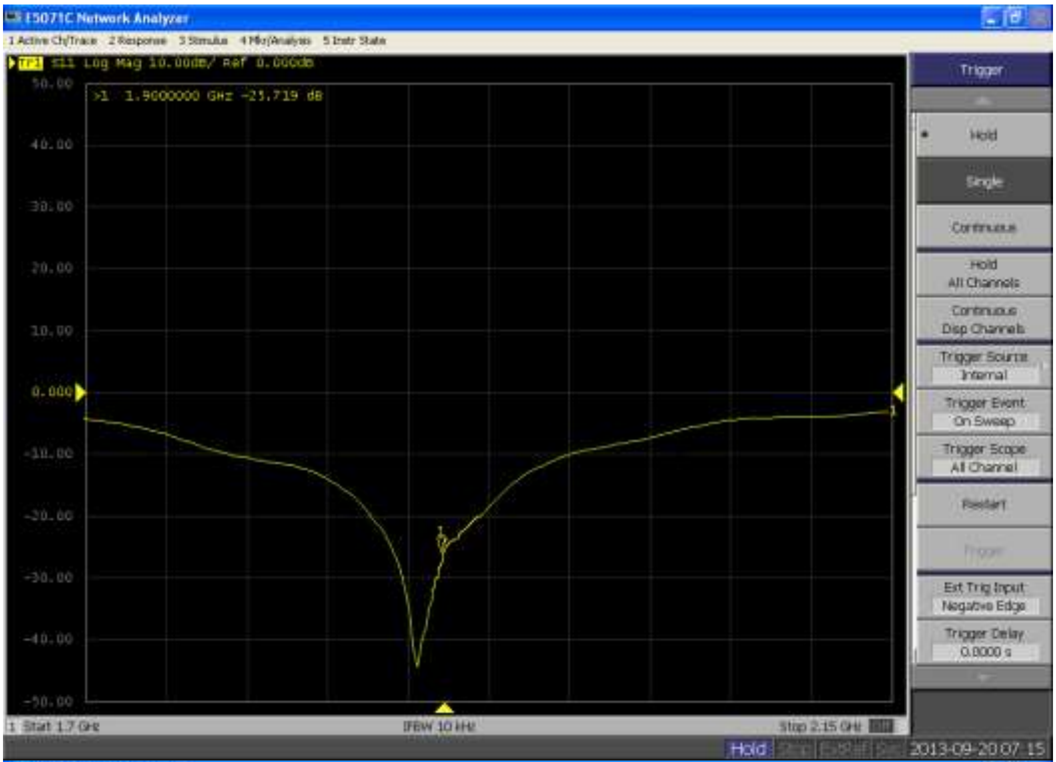


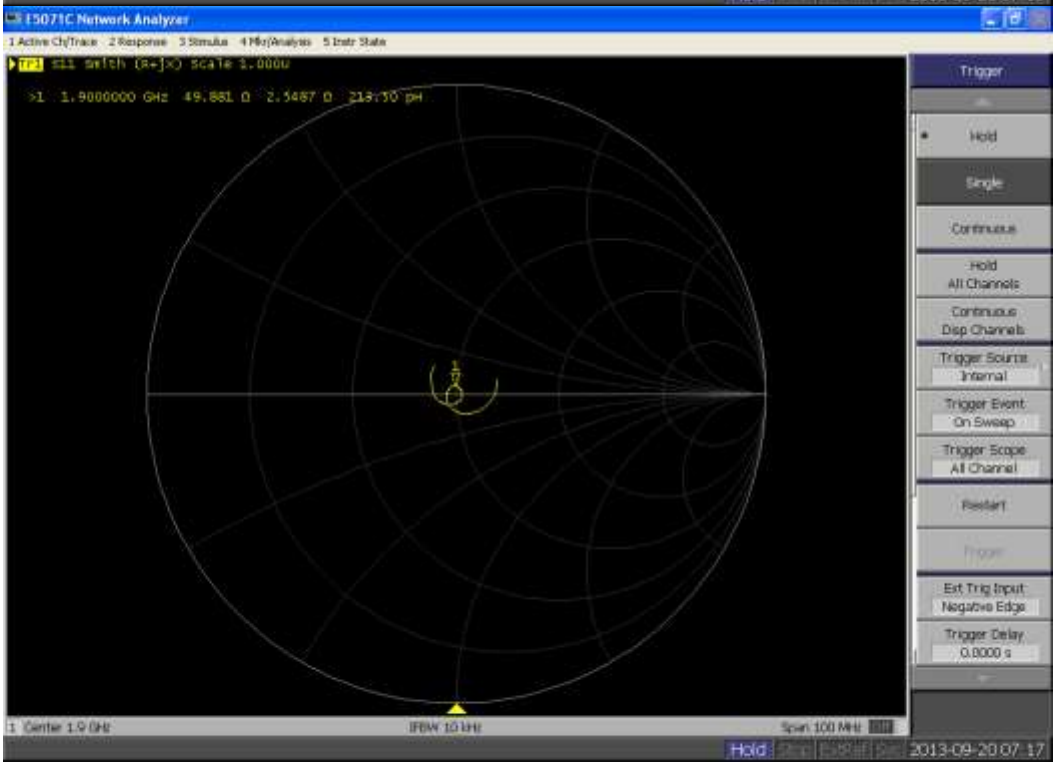
835MHz Dipole Body

D835V2, serial No. 4d141 Extended Dipole Calibrations

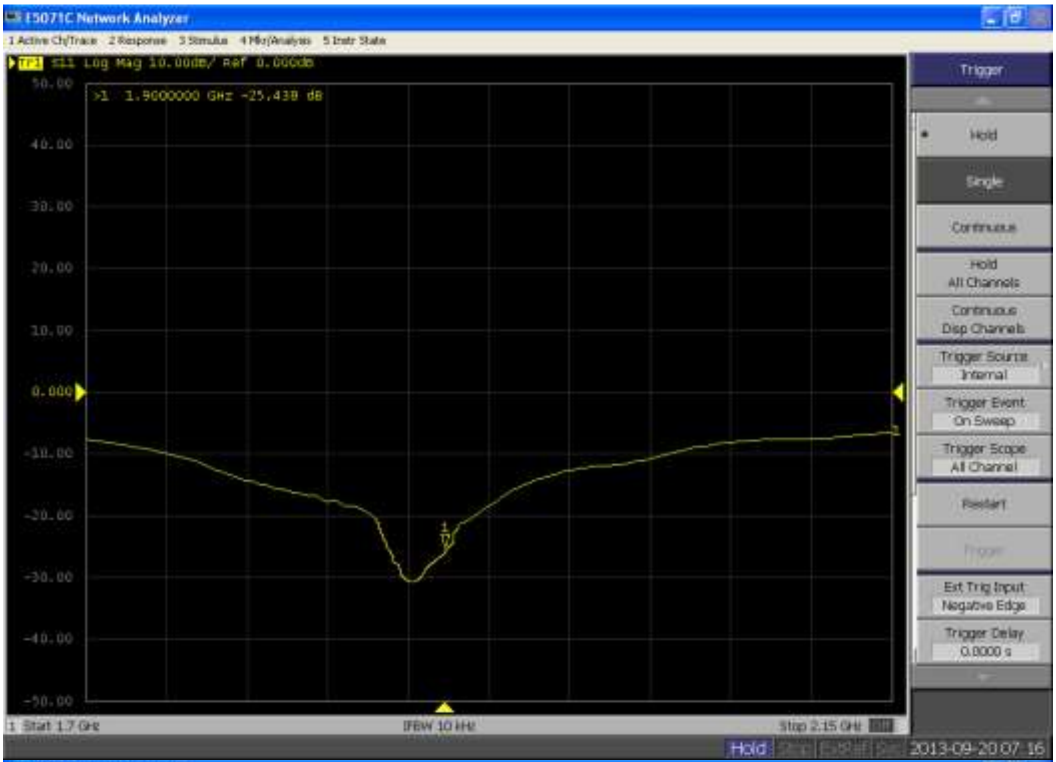
r	835 Head					
Date of Measurement	Return-Loss (dB)	Delta(%)	Real Impedance(ohm)	Delta (ohm)	Imaginary Impedance(ohm)	Delta (ohm)
2012-9-24	-28.714		52.572		-2.7344	
2013-9-23	-27.731	-3.42%	50.59	-1.98	-5.0718	-2.34
2014-9-24	-29.594	-2.97	53.084	0.51	-5.285	-2.55
	835 Body					
	Return-Loss (dB)	Delta(%)	Real Impedance(ohm)	Delta (ohm)	Imaginary Impedance(ohm)	Delta (ohm)
2012-9-24	-34.633		50.082		-1.8672	
2013-9-23	-34.222	-1.19%	50.985	0.90	-5.5300	-3.66
2014-9-24	-35.594	-2.70	50.305	0.22	-5.778	-3.91

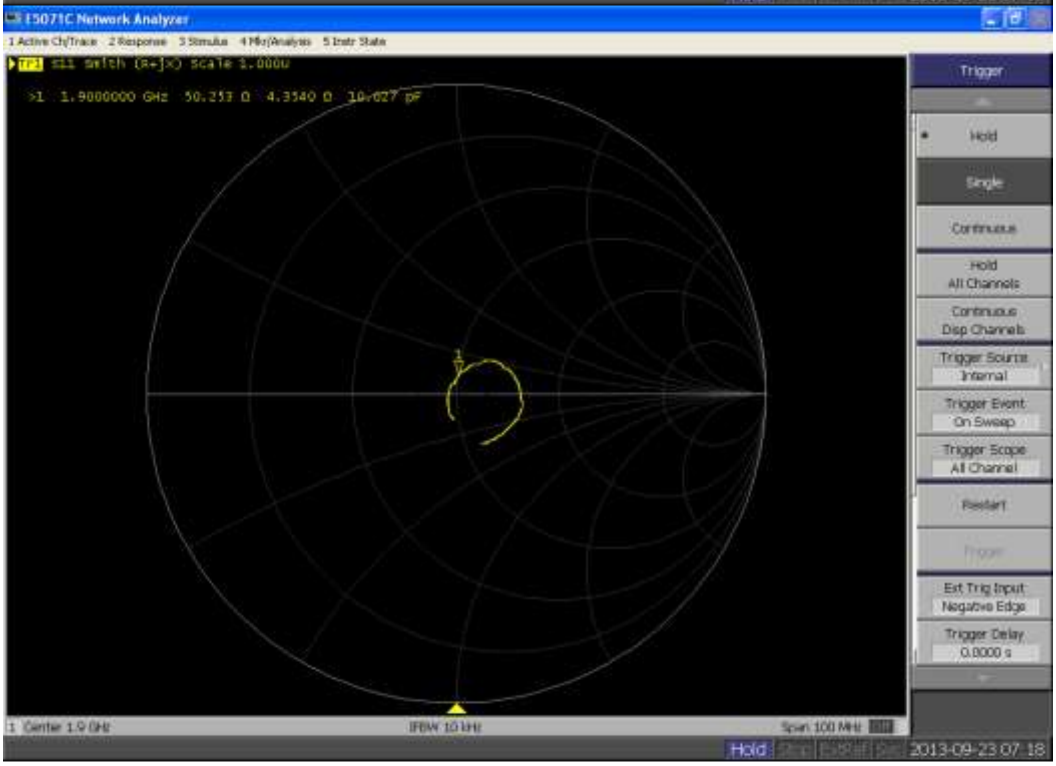
2013





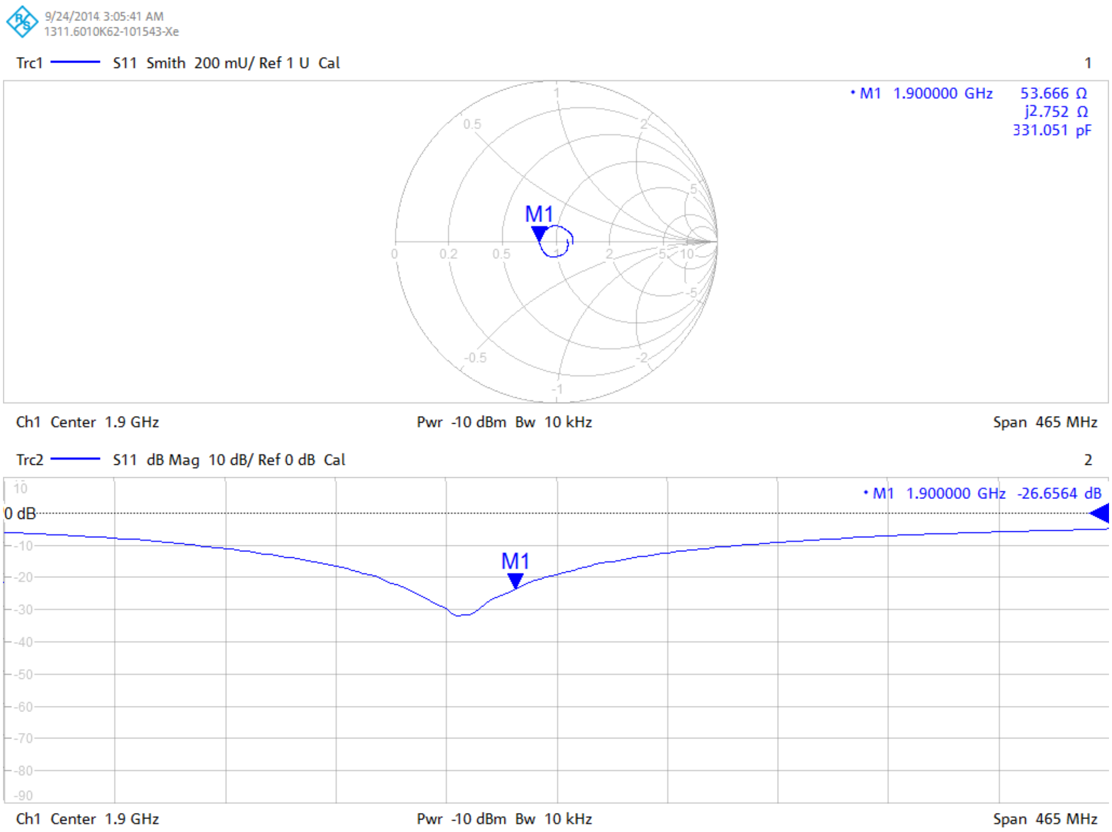
1900MHz head



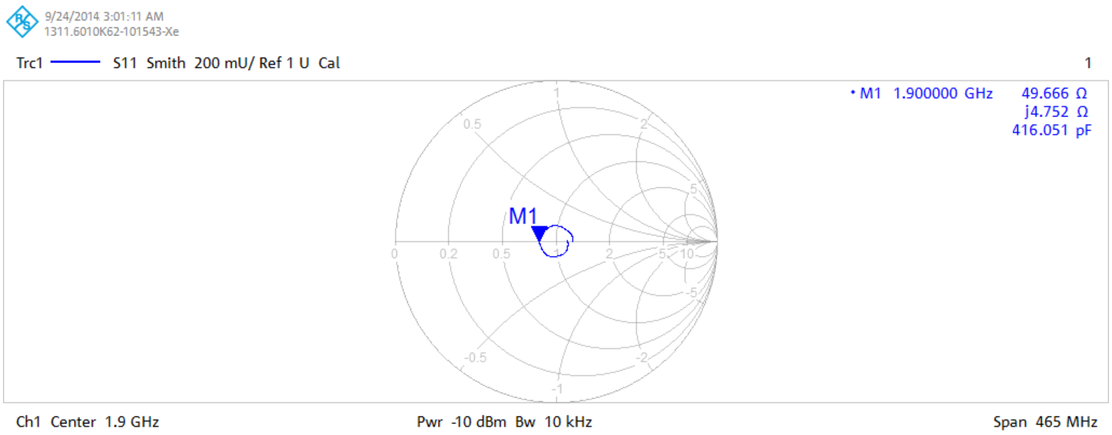


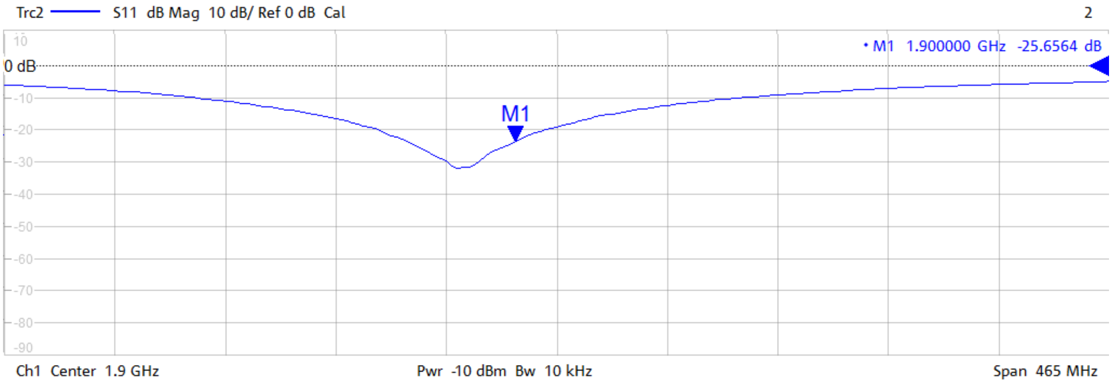
1900MHz Body

2014



1900MHz head

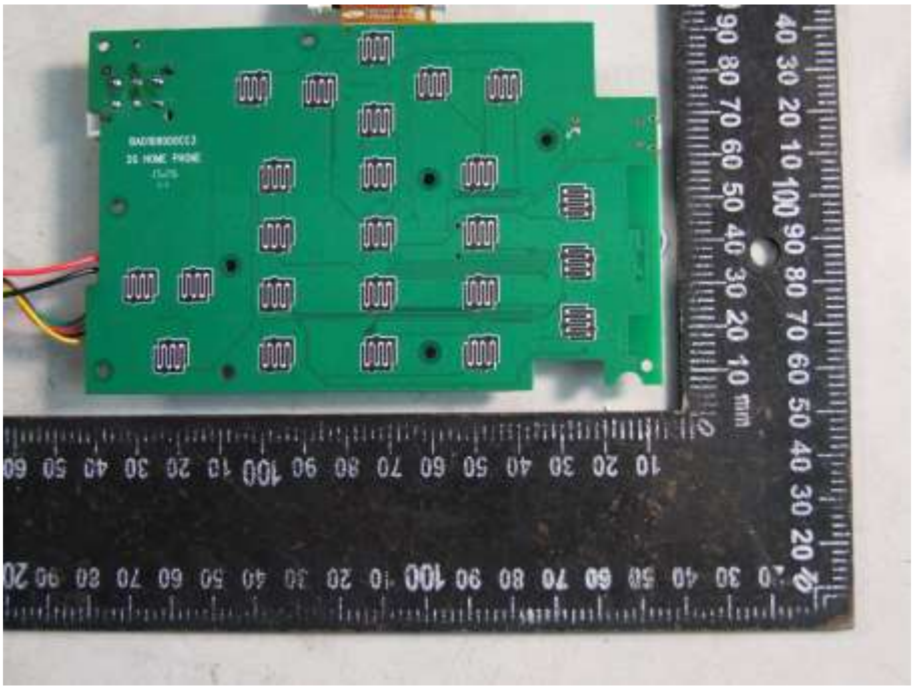


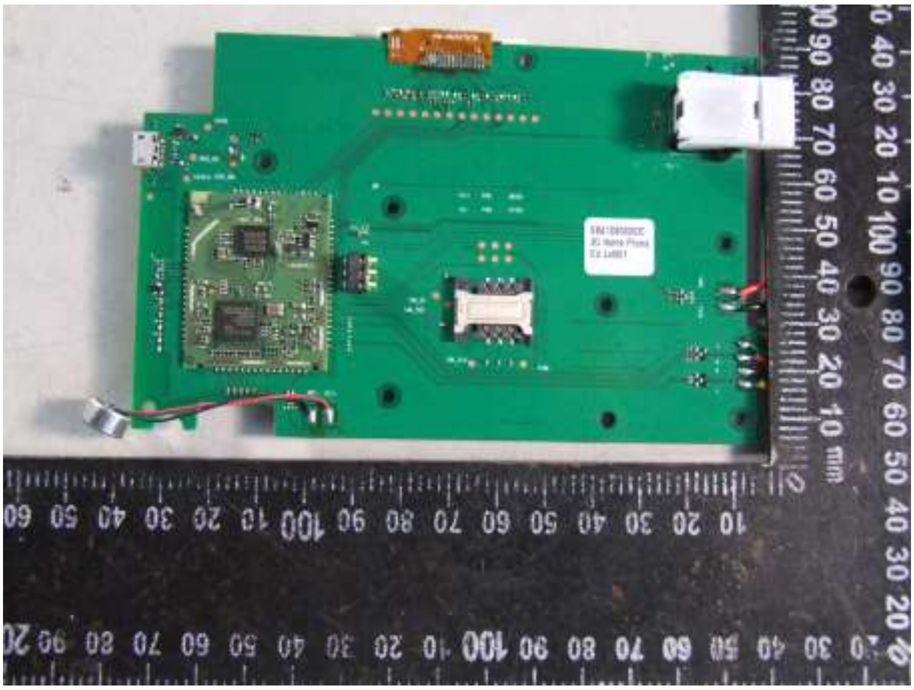


D1900V2, serial No. 5d162 Extended Dipole Calibrations
1900MHz Body

r	1900 Head					
Date of Measurement	Return-Loss (dB)	Delta(%)	Real Impedance(ohm)	Delta (ohm)	Imaginary Impedance(ohm)	Delta (ohm)
2012-9-21	-26.119		53.156		4.0098	
2013-9-20	-25.719	-1.53	49.881	-3.28	2.5487	-1.46
2014-9-24	-26.656	-2.02	53.666	0.51	2.752	-1.26
	1900 Body					
	Return-Loss (dB)	Delta(%)	Real Impedance(ohm)	Delta (ohm)	Imaginary Impedance(ohm)	Delta (ohm)
2012-9-21	-25.901		49.182		4.968	
2013-9-20	-25.438	-10.41	50.253	-2.73	4.354	-0.614
2014-9-24	-25.656	0.11	49.666	-3.32	4.752	-0.216

APPENDIX F: DUT Photos





APPENDIX G: Test Position Photos

Back side with antenna horizontal left 25mm

Back side with antenna horizontal right 25mm

Back side with antenna horizontal top 25mm

Back side with antenna vertical down 25mm

Top side with antenna horizontal left 25mm

Top side with antenna horizontal right 25mm

Top side with antenna vertical up 25mm

Top side with antenna vertical down 25mm