Schmid & Partner Engineering AG

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IMPORTANT NOTICE

USAGE OF THE DAE 4

The DAE unit is a delicate, high precision instrument and requires careful treatment by the user. There are no serviceable parts inside the DAE. Special attention shall be given to the following points:

Battery Exchange: The battery cover of the DAE4 unit is closed using a screw, over tightening the screw may cause the threads inside the DAE to wear out.

Shipping of the DAE: Before shipping the DAE to SPEAG for calibration, remove the batteries and pack the DAE in an antistatic bag. This antistatic bag shall then be packed into a larger box or container which protects the DAE from impacts during transportation. The package shall be marked to indicate that a fragile instrument is inside.

E-Stop Failures: Touch detection may be malfunctioning due to broken magnets in the E-stop. Rough handling of the E-stop may lead to damage of these magnets. Touch and collision errors are often caused by dust and dirt accumulated in the E-stop. To prevent E-stop failure, the customer shall always mount the probe to the DAE carefully and keep the DAE unit in a non-dusty environment if not used for measurements.

Repair: Minor repairs are performed at no extra cost during the annual calibration. However, SPEAG reserves the right to charge for any repair especially if rough unprofessional handling caused the defect.

DASY Configuration Files: Since the exact values of the DAE input resistances, as measured during the calibration procedure of a DAE unit, are not used by the DASY software, a nominal value of 200 MOhm is given in the corresponding configuration file.

Important Note:
Warranty and calibration is void if the DAE unit is disassembled partly or fully by the Customer.

Important Note:
Never attempt to grease or oil the E-stop assembly. Cleaning and readjusting of the E-stop assembly is allowed by certified SPEAG personnel only and is part of the annual calibration procedure.

Important Note:
To prevent damage of the DAE probe connector pins, use great care when installing the probe to the DAE. Carefully connect the probe with the connector notch oriented in the mating position. Avoid any rotational movement of the probe body versus the DAE while turning the locking nut of the connector. The same care shall be used when disconnecting the probe from the DAE.

Schmid & Partner Engineering

Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S **Schweizerischer Kalibrierdienst**
C **Service suisse d'étalonnage**
S **Servizio svizzero di taratura**
S **Swiss Calibration Service**

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 0108

Client **BTL-TW (Auden)**

Certificate No: DAE4-1486_Aug17

CALIBRATION CERTIFICATE

Object	DAE4 - SD 000 D04 BM - SN: 1486
Calibration procedure(s)	QA CAL-06.v29 Calibration procedure for the data acquisition electronics (DAE)
Calibration date:	August 17, 2017

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Keithley Multimeter Type 2001	SN: 0810278	09-Sep-16 (No:19065)	Sep-17
Secondary Standards	**ID #**	**Check Date (in house)**	**Scheduled Check**
Auto DAE Calibration Unit	SE UWS 053 AA 1001	05-Jan-17 (in house check)	In house check: Jan-18
Calibrator Box V2.1	SE UMS 006 AA 1002	05-Jan-17 (in house check)	In house check: Jan-18

	Name	Function	Signature
Calibrated by:	Adrian Gehring	Laboratory Technician	
Approved by:	Sven Kühn	Deputy Manager	

Issued: August 17, 2017

Glossary

DAE	data acquisition electronics
Connector angle	information used in DASY system to align probe sensor X to the robot coordinate system.

Methods Applied and Interpretation of Parameters

- *DC Voltage Measurement:* Calibration Factor assessed for use in DASY system by comparison with a calibrated instrument traceable to national standards. The figure given corresponds to the full scale range of the voltmeter in the respective range.
- *Connector angle*: The angle of the connector is assessed measuring the angle mechanically by a tool inserted. Uncertainty is not required.
- The following parameters as documented in the Appendix contain technical information as a result from the performance test and require no uncertainty.
  - *DC Voltage Measurement Linearity:* Verification of the Linearity at +10% and -10% of the nominal calibration voltage. Influence of offset voltage is included in this measurement.
  - *Common mode sensitivity:* Influence of a positive or negative common mode voltage on the differential measurement.
  - *Channel separation:* Influence of a voltage on the neighbor channels not subject to an input voltage.
  - *AD Converter Values with inputs shorted:* Values on the internal AD converter corresponding to zero input voltage
  - *Input Offset Measurement*: Output voltage and statistical results over a large number of zero voltage measurements.
  - *Input Offset Current:* Typical value for information; Maximum channel input offset current, not considering the input resistance.
  - *Input resistance:* Typical value for information: DAE input resistance at the connector, during internal auto-zeroing and during measurement.
  - *Low Battery Alarm Voltage:* Typical value for information. Below this voltage, a battery alarm signal is generated.
  - *Power consumption:* Typical value for information. Supply currents in various operating modes.

DC Voltage Measurement

A/D - Converter Resolution nominal

High Range: 1LSB = 6.1μV , full range = -100...+300 mV

Low Range: 1LSB = 61nV , full range = -1.......+3mV

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

Calibration Factors	X	Y	Z
High Range	403.886 ± 0.02% (k=2)	403.965 ± 0.02% (k=2)	403.685 ± 0.02% (k=2)
Low Range	3.98071 ± 1.50% (k=2)	3.99029 ± 1.50% (k=2)	3.96215 ± 1.50% (k=2)

Connector Angle

Connector Angle to be used in DASY system	33.0 ° ± 1 °

Appendix (Additional assessments outside the scope of SCS0108)

1. DC Voltage Linearity

High Range		Reading (μV)	Difference (μV)	Error (%)
Channel X	+ Input	199997.44	0.31	0.00
Channel X	+ Input	20002.73	0.71	0.00
Channel X	- Input	-19995.90	4.82	-0.02
Channel Y	+ Input	199999.46	2.39	0.00
Channel Y	+ Input	20001.00	-1.00	-0.00
Channel Y	- Input	-19997.45	3.19	-0.02
Channel Z	+ Input	199997.95	0.65	0.00
Channel Z	+ Input	19998.34	-3.54	-0.02
Channel Z	- Input	-20000.69	0.09	-0.00

Low Range		Reading (μV)	Difference (μV)	Error (%)
Channel X	+ Input	2002.71	1.12	0.06
Channel X	+ Input	202.48	0.42	0.21
Channel X	- Input	-197.65	0.33	-0.17
Channel Y	+ Input	2002.22	0.65	0.03
Channel Y	+ Input	201.72	-0.18	-0.09
Channel Y	- Input	-198.36	-0.38	0.19
Channel Z	+ Input	2002.31	0.90	0.05
Channel Z	+ Input	200.73	-1.14	-0.56
Channel Z	- Input	-199.28	-1.23	0.62

2. Common mode sensitivity

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

	Common mode Input Voltage (mV)	High Range Average Reading (μV)	Low Range Average Reading (μV)
Channel X	200	-0.07	-2.29
	- 200	3.97	2.09
Channel Y	200	-20.08	-20.90
	- 200	19.68	19.66
Channel Z	200	-4.68	-4.54
	- 200	2.49	2.35

3. Channel separation

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

	Input Voltage (mV)	Channel X (μV)	Channel Y (μV)	Channel Z (μV)
Channel X	200	-	-1.12	-3.45
Channel Y	200	6.57	-	0.57
Channel Z	200	10.50	4.12	-

4. AD-Converter Values with inputs shorted

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

	High Range (LSB)	Low Range (LSB)
Channel X	16076	13636
Channel Y	16440	13108
Channel Z	15998	15556

5. Input Offset Measurement

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec
Input 10MΩ

	Average (μV)	min. Offset (μV)	max. Offset (μV)	Std. Deviation (μV)
Channel X	0.52	-0.57	1.85	0.38
Channel Y	0.07	-1.20	0.98	0.34
Channel Z	-0.31	-1.17	0.56	0.35

6. Input Offset Current

Nominal Input circuitry offset current on all channels: <25fA

7. Input Resistance (Typical values for information)

	Zeroing (kOhm)	Measuring (MOhm)
Channel X	200	200
Channel Y	200	200
Channel Z	200	200

8. Low Battery Alarm Voltage (Typical values for information)

Typical values	Alarm Level (VDC)
Supply (+ Vcc)	+7.9
Supply (- Vcc)	-7.6

9. Power Consumption (Typical values for information)

Typical values	Switched off (mA)	Stand by (mA)	Transmitting (mA)
Supply (+ Vcc)	+0.01	+6	+14
Supply (- Vcc)	–0.01	-8	-9

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Accreditation No.: **SCS 0108**

Client BTL-TW (Auden)

Certificate No: EX3-7369_Aug17

CALIBRATION CERTIFICATE

Object: EX3DV4 - SN:7369

Calibration procedure(s): QA CAL-01.v9, QA CAL-14.v4, QA CAL-23.v5, QA CAL-25.v6
Calibration procedure for dosimetric E-field probes

Calibration date: August 24, 2017

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NRP	SN: 104778	04-Apr-17 (No. 217-02521/02522)	Apr-18
Power sensor NRP-Z91	SN: 103244	04-Apr-17 (No. 217-02521)	Apr-18
Power sensor NRP-Z91	SN: 103245	04-Apr-17 (No. 217-02525)	Apr-18
Reference 20 dB Attenuator	SN: S5277 (20x)	07-Apr-17 (No. 217-02528)	Apr-18
Reference Probe ES3DV2	SN: 3013	31-Dec-16 (No. ES3-3013_Dec16)	Dec-17
DAE4	SN: 660	7-Dec-16 (No. DAE4-660_Dec16)	Dec-17
Secondary Standards	ID	Check Date (in house)	Scheduled Check
Power meter E4419B	SN: GB41293874	06-Apr-16 (in house check Jun-16)	In house check: Jun-18
Power sensor E4412A	SN: MY41498087	06-Apr-16 (in house check Jun-16)	In house check: Jun-18
Power sensor E4412A	SN: 000110210	06-Apr-16 (in house check Jun-16)	In house check: Jun-18
RF generator HP 8648C	SN: US3642U01700	04-Aug-99 (in house check Jun-16)	In house check: Jun-18
Network Analyzer HP 8753E	SN: US37390585	18-Oct-01 (in house check Oct-16)	In house check: Oct-17

	Name	Function	Signature
Calibrated by:	Michael Weber	Laboratory Technician	M.Weber
Approved by:	Katja Pokovic	Technical Manager	[signature]

Issued: August 24, 2017

Glossary:

TSL	tissue simulating liquid
NORMx,y,z	sensitivity in free space
ConvF	sensitivity in TSL / NORMx,y,z
DCP	diode compression point
CF	crest factor (1/duty_cycle) of the RF signal
A, B, C, D	modulation dependent linearization parameters
Polarization φ	φ rotation around probe axis
Polarization ϑ	ϑ rotation around an axis that is in the plane normal to probe axis (at measurement center), i.e., ϑ = 0 is normal to probe axis
Connector Angle	information used in DASY system to align probe sensor X to the robot coordinate system

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
b) IEC 62209-1, ", "Measurement procedure for the assessment of Specific Absorption Rate (SAR) from hand-held and body-mounted devices used next to the ear (frequency range of 300 MHz to 6 GHz)", July 2016
c) IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
d) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Methods Applied and Interpretation of Parameters:

- *NORMx,y,z:* Assessed for E-field polarization ϑ = 0 (f ≤ 900 MHz in TEM-cell; f > 1800 MHz: R22 waveguide). NORMx,y,z are only intermediate values, i.e., the uncertainties of NORMx,y,z does not affect the E^2-field uncertainty inside TSL (see below *ConvF*).
- *NORM(f)x,y,z = NORMx,y,z * frequency_response* (see Frequency Response Chart). This linearization is implemented in DASY4 software versions later than 4.2. The uncertainty of the frequency response is included in the stated uncertainty of *ConvF*.
- *DCPx,y,z:* DCP are numerical linearization parameters assessed based on the data of power sweep with CW signal (no uncertainty required). DCP does not depend on frequency nor media.
- *PAR:* PAR is the Peak to Average Ratio that is not calibrated but determined based on the signal characteristics
- *Ax,y,z; Bx,y,z; Cx,y,z; Dx,y,z; VRx,y,z: A, B, C, D* are numerical linearization parameters assessed based on the data of power sweep for specific modulation signal. The parameters do not depend on frequency nor media. *VR* is the maximum calibration range expressed in RMS voltage across the diode.
- *ConvF and Boundary Effect Parameters:* Assessed in flat phantom using E-field (or Temperature Transfer Standard for f ≤ 800 MHz) and inside waveguide using analytical field distributions based on power measurements for f > 800 MHz. The same setups are used for assessment of the parameters applied for boundary compensation (alpha, depth) of which typical uncertainty values are given. These parameters are used in DASY4 software to improve probe accuracy close to the boundary. The sensitivity in TSL corresponds to *NORMx,y,z * ConvF* whereby the uncertainty corresponds to that given for *ConvF*. A frequency dependent *ConvF* is used in DASY version 4.4 and higher which allows extending the validity from ± 50 MHz to ± 100 MHz.
- *Spherical isotropy (3D deviation from isotropy)*: in a field of low gradients realized using a flat phantom exposed by a patch antenna.
- *Sensor Offset*: The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.
- *Connector Angle*: The angle is assessed using the information gained by determining the *NORMx* (no uncertainty required).

Probe EX3DV4

SN:7369

Manufactured: March 17, 2015
Calibrated: August 24, 2017

Calibrated for DASY/EASY Systems
(Note: non-compatible with DASY2 system!)

DASY/EASY - Parameters of Probe: EX3DV4 - SN:7369

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu V/(V/m)^2$)[A]	0.39	0.49	0.38	± 10.1 %
DCP (mV)[B]	99.9	95.8	107.7	

Modulation Calibration Parameters

UID	Communication System Name		A dB	B dB$\sqrt{\mu V}$	C	D dB	VR mV	Unc[E] (k=2)
0	CW	X	0.0	0.0	1.0	0.00	150.8	±3.3 %
		Y	0.0	0.0	1.0		142.3	
		Z	0.0	0.0	1.0		156.8	

Note: For details on UID parameters see Appendix.

Sensor Model Parameters

	C1 fF	C2 fF	α V^{-1}	T1 $ms.V^{-2}$	T2 $ms.V^{-1}$	T3 ms	T4 V^{-2}	T5 V^{-1}	T6
X	40.56	302.8	35.84	7.674	0.262	5.023	0.259	0.347	1.003
Y	46.93	365.4	38.36	7.111	0.309	5.084	0.000	0.524	1.008
Z	24.38	175.4	33.42	3.584	0.000	5.000	0.400	0.179	1.000

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

[A] The uncertainties of Norm X,Y,Z do not affect the E^2-field uncertainty inside TSL (see Pages 5 and 6).
[B] Numerical linearization parameter: uncertainty not required.
[E] Uncertainty is determined using the max. deviation from linear response applying rectangular distribution and is expressed for the square of the field value.

DASY/EASY - Parameters of Probe: EX3DV4 - SN:7369

Calibration Parameter Determined in Head Tissue Simulating Media

f (MHz) [C]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha [G]	Depth [G] (mm)	Unc (k=2)
750	41.9	0.89	10.63	10.63	10.63	0.48	0.80	± 12.0 %
835	41.5	0.90	10.16	10.16	10.16	0.50	0.80	± 12.0 %
900	41.5	0.97	9.94	9.94	9.94	0.46	0.85	± 12.0 %
1750	40.1	1.37	8.96	8.96	8.96	0.40	0.86	± 12.0 %
1900	40.0	1.40	8.56	8.56	8.56	0.38	0.80	± 12.0 %
2000	40.0	1.40	8.21	8.21	8.21	0.34	0.86	± 12.0 %
2300	39.5	1.67	8.02	8.02	8.02	0.41	0.80	± 12.0 %
2450	39.2	1.80	7.60	7.60	7.60	0.36	0.80	± 12.0 %
2600	39.0	1.96	7.42	7.42	7.42	0.43	0.85	± 12.0 %
5200	36.0	4.66	5.28	5.28	5.28	0.40	1.80	± 13.1 %
5300	35.9	4.76	5.02	5.02	5.02	0.40	1.80	± 13.1 %
5600	35.5	5.07	4.84	4.84	4.84	0.40	1.80	± 13.1 %
5800	35.3	5.27	4.90	4.90	4.90	0.40	1.80	± 13.1 %

[C] Frequency validity above 300 MHz of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Above 5 GHz frequency validity can be extended to ± 110 MHz.
[F] At frequencies below 3 GHz, the validity of tissue parameters (ε and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ε and σ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.
[G] Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz and below ± 2% for frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.

DASY/EASY - Parameters of Probe: EX3DV4 - SN:7369

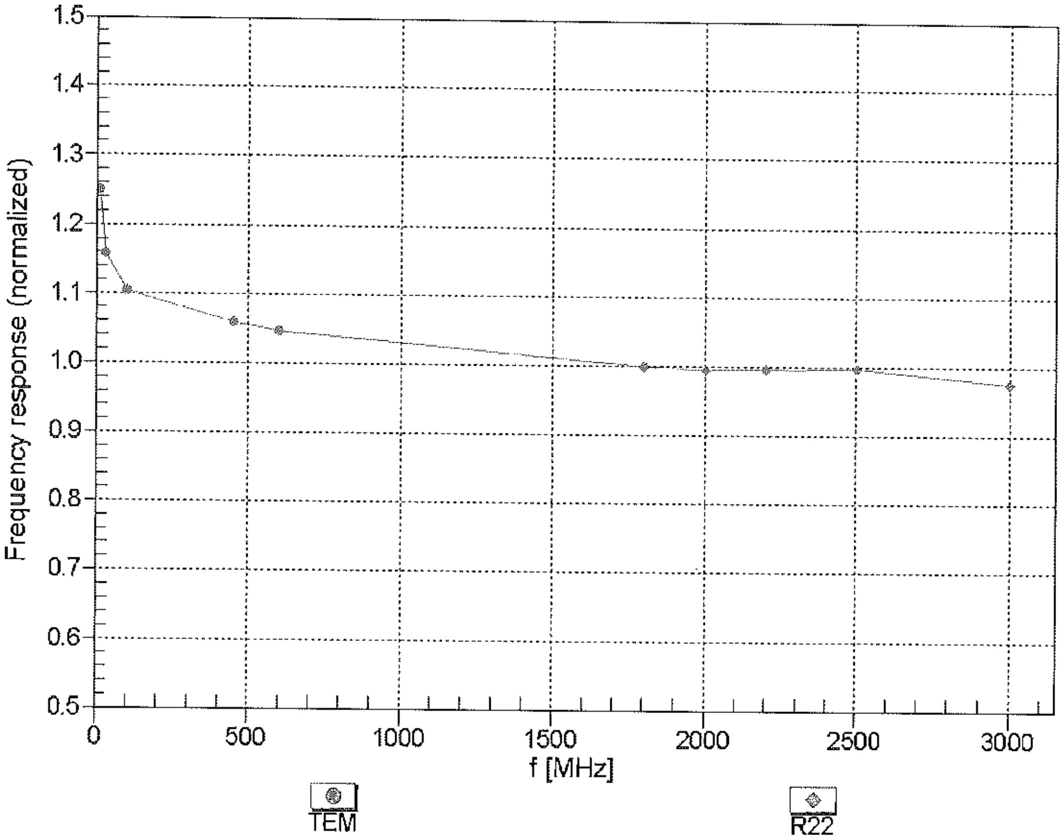
Calibration Parameter Determined in Body Tissue Simulating Media

f (MHz) [C]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha [G]	Depth [G] (mm)	Unc (k=2)
750	55.5	0.96	10.55	10.55	10.55	0.52	0.80	± 12.0 %
835	55.2	0.97	10.39	10.39	10.39	0.34	1.01	± 12.0 %
900	55.0	1.05	10.23	10.23	10.23	0.40	0.94	± 12.0 %
1750	53.4	1.49	8.45	8.45	8.45	0.41	0.86	± 12.0 %
1900	53.3	1.52	8.16	8.16	8.16	0.37	0.84	± 12.0 %
2000	53.3	1.52	8.13	8.13	8.13	0.38	0.89	± 12.0 %
2300	52.9	1.81	7.89	7.89	7.89	0.43	0.85	± 12.0 %
2450	52.7	1.95	7.65	7.65	7.65	0.39	0.84	± 12.0 %
2600	52.5	2.16	7.52	7.52	7.52	0.30	0.93	± 12.0 %
5200	49.0	5.30	4.74	4.74	4.74	0.40	1.90	± 13.1 %
5300	48.9	5.42	4.61	4.61	4.61	0.40	1.90	± 13.1 %
5600	48.5	5.77	3.96	3.96	3.96	0.40	1.90	± 13.1 %
5800	48.2	6.00	4.03	4.03	4.03	0.50	1.90	± 13.1 %

[C] Frequency validity above 300 MHz of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Above 5 GHz frequency validity can be extended to ± 110 MHz.
[F] At frequencies below 3 GHz, the validity of tissue parameters (ε and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ε and σ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.
[G] Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz and below ± 2% for frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.

Frequency Response of E-Field

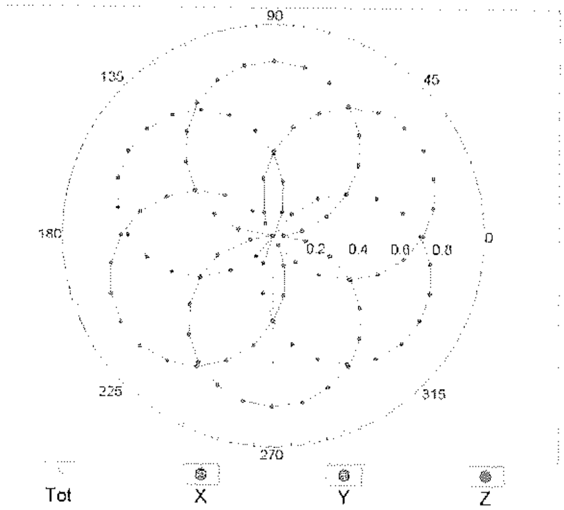
(TEM-Cell:ifi110 EXX, Waveguide: R22)



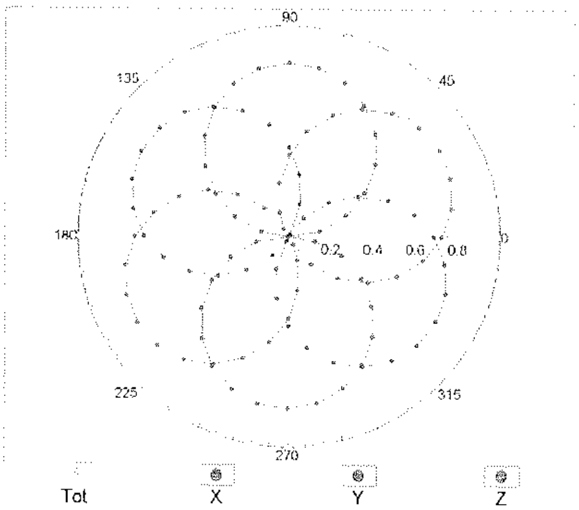
Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

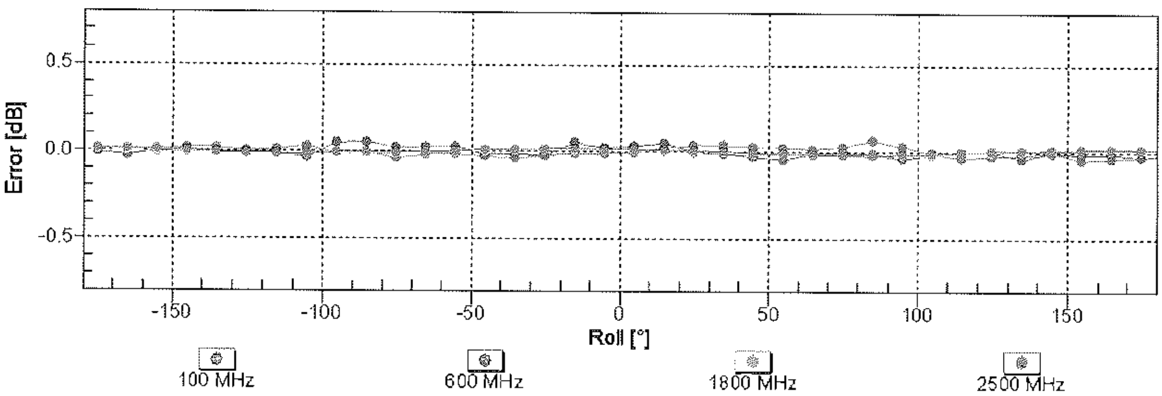
Receiving Pattern (ϕ), ϑ = 0°

f=600 MHz,TEM



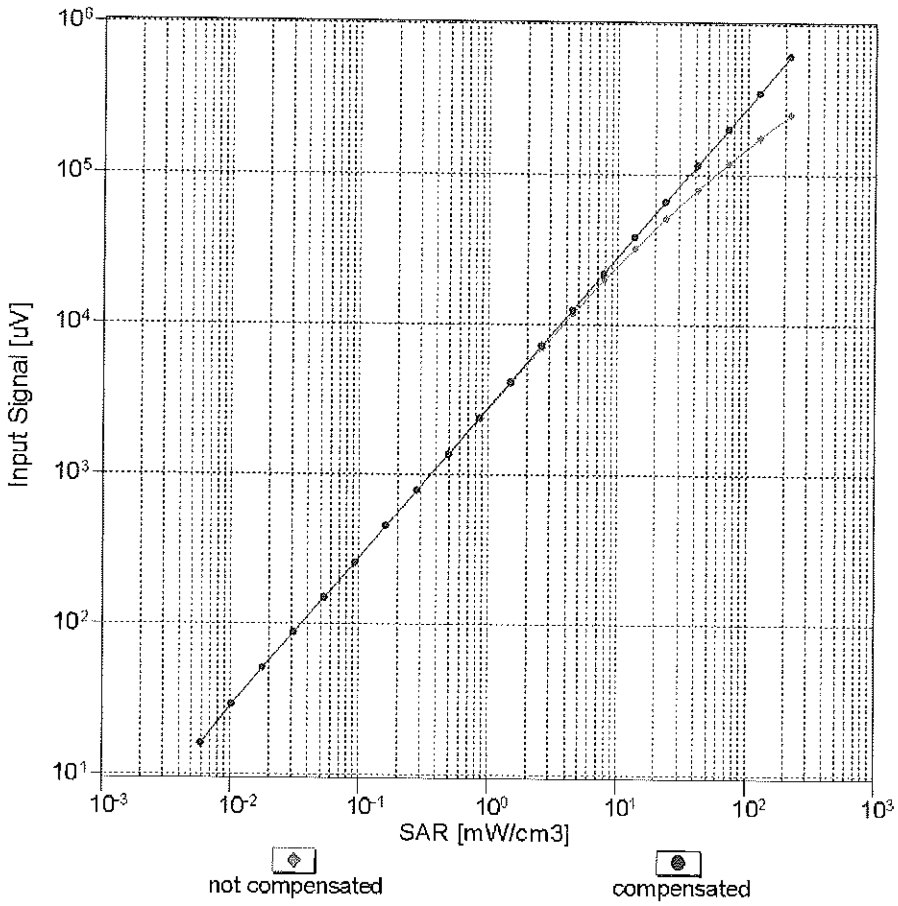
f=1800 MHz,R22

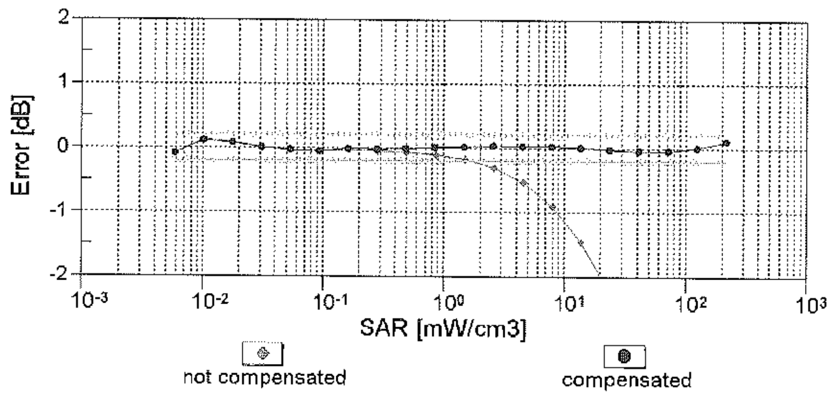




Uncertainty of Axial Isotropy Assessment: ± 0.5% (k=2)

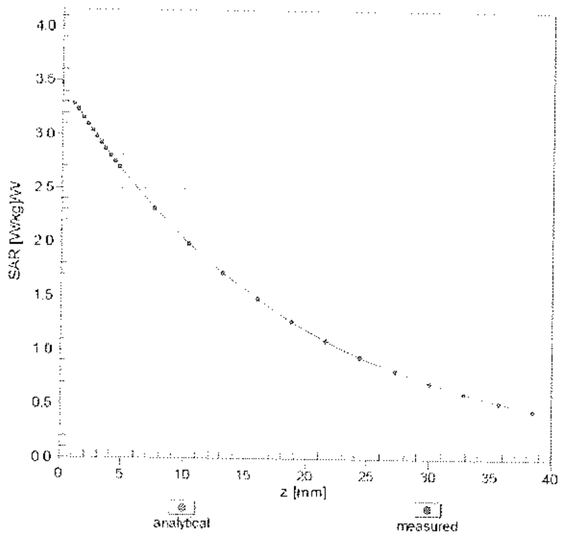
Dynamic Range f(SAR_{head})
(TEM cell , f_{eval}= 1900 MHz)

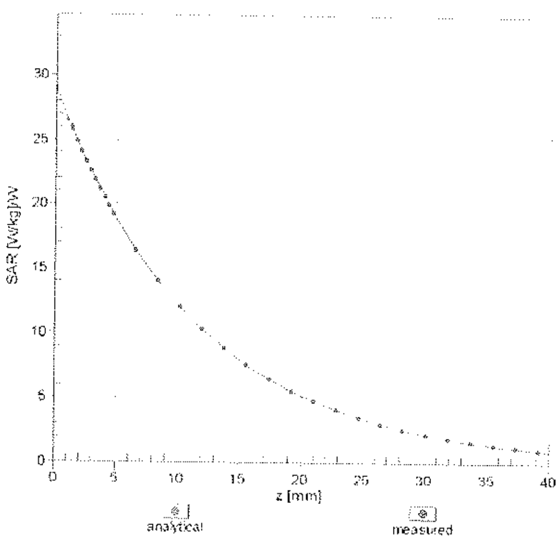




Uncertainty of Linearity Assessment: ± 0.6% (k=2)

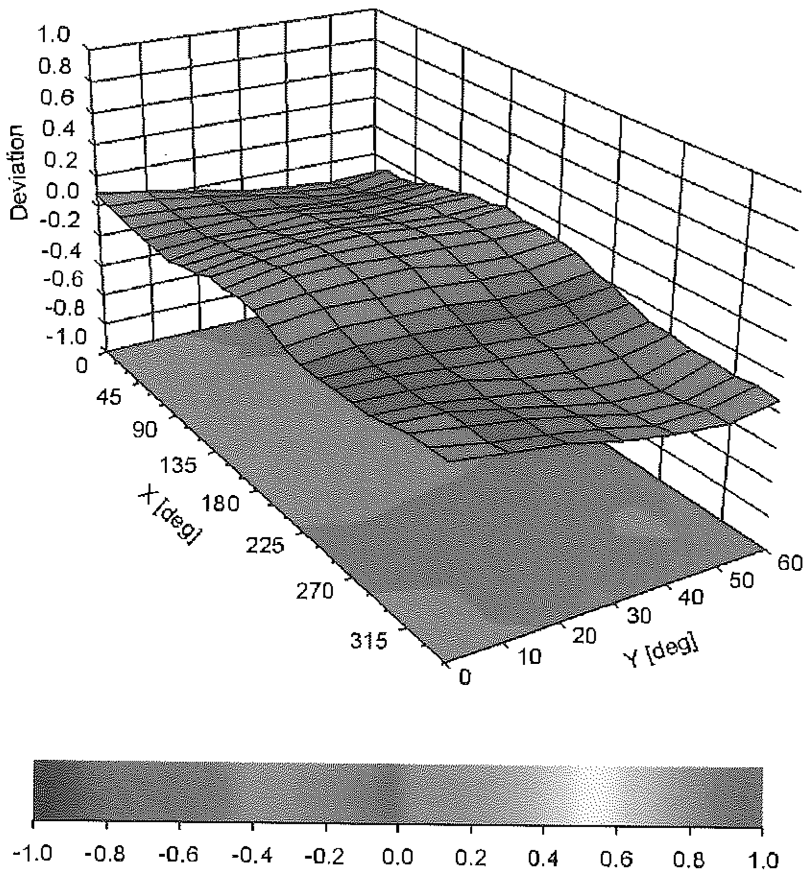
Conversion Factor Assessment





Deviation from Isotropy in Liquid

Error (ϕ, ϑ), f = 900 MHz



Uncertainty of Spherical Isotropy Assessment: ± 2.6% (k=2)

DASY/EASY - Parameters of Probe: EX3DV4 - SN:7369

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	64.6
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disabled
Probe Overall Length	337 mm
Probe Body Diameter	10 mm
Tip Length	9 mm
Tip Diameter	2.5 mm
Probe Tip to Sensor X Calibration Point	1 mm
Probe Tip to Sensor Y Calibration Point	1 mm
Probe Tip to Sensor Z Calibration Point	1 mm
Recommended Measurement Distance from Surface	1.4 mm

Appendix: Modulation Calibration Parameters

UID	Communication System Name		A dB	B dB√μV	C	D dB	VR mV	Max Unc^E (k=2)
0	CW	X	0.00	0.00	1.00	0.00	150.8	± 3.3 %
		Y	0.00	0.00	1.00		142.3	
		Z	0.00	0.00	1.00		156.8	
10010-CAA	SAR Validation (Square, 100ms, 10ms)	X	1.70	63.39	8.38	10.00	20.0	± 9.6 %
		Y	1.62	62.89	8.10		20.0	
		Z	1.38	61.38	6.66		20.0	
10011-CAB	UMTS-FDD (WCDMA)	X	1.56	76.27	20.03	0.00	150.0	± 9.6 %
		Y	0.97	67.60	15.05		150.0	
		Z	0.99	69.60	15.81		150.0	
10012-CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps)	X	1.19	65.55	16.83	0.41	150.0	± 9.6 %
		Y	1.06	63.50	15.20		150.0	
		Z	1.08	64.20	15.20		150.0	
10013-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps)	X	4.77	66.95	17.33	1.46	150.0	± 9.6 %
		Y	4.79	66.54	17.17		150.0	
		Z	4.38	67.01	16.83		150.0	
10021-DAC	GSM-FDD (TDMA, GMSK)	X	100.00	107.79	23.86	9.39	50.0	± 9.6 %
		Y	100.00	109.70	24.80		50.0	
		Z	6.32	75.54	13.57		50.0	
10023-DAC	GPRS-FDD (TDMA, GMSK, TN 0)	X	100.00	107.30	23.69	9.57	50.0	± 9.6 %
		Y	100.00	109.20	24.63		50.0	
		Z	3.93	70.79	11.86		50.0	
10024-DAC	GPRS-FDD (TDMA, GMSK, TN 0-1)	X	100.00	108.42	23.03	6.56	60.0	± 9.6 %
		Y	100.00	109.89	23.67		60.0	
		Z	100.00	98.31	18.05		60.0	
10025-DAC	EDGE-FDD (TDMA, 8PSK, TN 0)	X	4.61	75.59	29.50	12.57	50.0	± 9.6 %
		Y	3.71	68.31	25.61		50.0	
		Z	4.43	75.29	28.97		50.0	
10026-DAC	EDGE-FDD (TDMA, 8PSK, TN 0-1)	X	7.29	89.46	32.43	9.56	60.0	± 9.6 %
		Y	7.05	88.32	32.08		60.0	
		Z	4.89	80.81	28.73		60.0	
10027-DAC	GPRS-FDD (TDMA, GMSK, TN 0-1-2)	X	100.00	111.74	23.68	4.80	80.0	± 9.6 %
		Y	100.00	110.51	23.08		80.0	
		Z	100.00	98.35	17.33		80.0	
10028-DAC	GPRS-FDD (TDMA, GMSK, TN 0-1-2-3)	X	100.00	118.91	25.96	3.55	100.0	± 9.6 %
		Y	100.00	110.05	22.12		100.0	
		Z	100.00	99.89	17.35		100.0	
10029-DAC	EDGE-FDD (TDMA, 8PSK, TN 0-1-2)	X	4.53	78.22	26.64	7.80	80.0	± 9.6 %
		Y	4.50	77.85	26.58		80.0	
		Z	3.36	72.43	23.81		80.0	
10030-CAA	IEEE 802.15.1 Bluetooth (GFSK, DH1)	X	100.00	107.29	22.07	5.30	70.0	± 9.6 %
		Y	100.00	107.95	22.32		70.0	
		Z	1.26	66.00	8.41		70.0	
10031-CAA	IEEE 802.15.1 Bluetooth (GFSK, DH3)	X	100.00	128.40	28.13	1.88	100.0	± 9.6 %
		Y	0.21	60.00	4.35		100.0	
		Z	0.16	60.00	3.82		100.0	

10032-CAA	IEEE 802.15.1 Bluetooth (GFSK, DH5)	X	100.00	228.90	64.12	1.17	100.0	± 9.6 %
		Y	43.34	60.67	1.40		100.0	
		Z	0.12	60.00	2.93		100.0	
10033-CAA	IEEE 802.15.1 Bluetooth (PI/4-DQPSK, DH1)	X	58.16	120.86	32.08	5.30	70.0	± 9.6 %
		Y	73.08	127.84	34.69		70.0	
		Z	3.30	75.01	15.48		70.0	
10034-CAA	IEEE 802.15.1 Bluetooth (PI/4-DQPSK, DH3)	X	17.29	103.30	26.09	1.88	100.0	± 9.6 %
		Y	3.73	82.51	20.17		100.0	
		Z	0.87	63.86	8.96		100.0	
10035-CAA	IEEE 802.15.1 Bluetooth (PI/4-DQPSK, DH5)	X	8.48	94.37	23.42	1.17	100.0	± 9.6 %
		Y	1.97	74.37	16.75		100.0	
		Z	0.68	62.71	8.12		100.0	
10036-CAA	IEEE 802.15.1 Bluetooth (8-DPSK, DH1)	X	100.00	129.64	34.21	5.30	70.0	± 9.6 %
		Y	100.00	133.46	36.10		70.0	
		Z	4.11	77.84	16.57		70.0	
10037-CAA	IEEE 802.15.1 Bluetooth (8-DPSK, DH3)	X	11.45	97.84	24.62	1.88	100.0	± 9.6 %
		Y	3.26	80.81	19.56		100.0	
		Z	0.80	63.23	8.66		100.0	
10038-CAA	IEEE 802.15.1 Bluetooth (8-DPSK, DH5)	X	9.10	95.95	24.06	1.17	100.0	± 9.6 %
		Y	2.03	75.05	17.16		100.0	
		Z	0.69	62.94	8.37		100.0	
10039-CAB	CDMA2000 (1xRTT, RC1)	X	28.36	109.44	26.88	0.00	150.0	± 9.6 %
		Y	1.61	70.59	14.37		150.0	
		Z	0.50	61.27	6.98		150.0	
10042-CAB	IS-54 / IS-136 FDD (TDMA/FDM, PI/4-DQPSK, Halfrate)	X	100.00	104.56	21.66	7.78	50.0	± 9.6 %
		Y	100.00	105.11	21.90		50.0	
		Z	1.75	65.65	8.95		50.0	
10044-CAA	IS-91/EIA/TIA-553 FDD (FDMA, FM)	X	0.00	119.15	1.25	0.00	150.0	± 9.6 %
		Y	0.14	127.58	0.37		150.0	
		Z	0.01	115.82	8.35		150.0	
10048-CAA	DECT (TDD, TDMA/FDM, GFSK, Full Slot, 24)	X	10.35	78.81	17.06	13.80	25.0	± 9.6 %
		Y	35.66	93.86	21.87		25.0	
		Z	3.53	64.91	10.77		25.0	
10049-CAA	DECT (TDD, TDMA/FDM, GFSK, Double Slot, 12)	X	18.40	87.69	18.86	10.79	40.0	± 9.6 %
		Y	100.00	107.77	24.39		40.0	
		Z	3.32	67.51	10.70		40.0	
10056-CAA	UMTS-TDD (TD-SCDMA, 1.28 Mcps)	X	100.00	121.25	31.61	9.03	50.0	± 9.6 %
		Y	100.00	124.09	33.14		50.0	
		Z	10.13	83.44	18.71		50.0	
10058-DAC	EDGE-FDD (TDMA, 8PSK, TN 0-1-2-3)	X	3.63	73.77	23.88	6.55	100.0	± 9.6 %
		Y	3.60	73.45	23.80		100.0	
		Z	2.83	69.36	21.57		100.0	
10059-CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 2 Mbps)	X	1.22	66.72	17.49	0.61	110.0	± 9.6 %
		Y	1.08	64.53	15.86		110.0	
		Z	1.06	64.79	15.54		110.0	
10060-CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 5.5 Mbps)	X	100.00	151.36	40.97	1.30	110.0	± 9.6 %
		Y	100.00	143.76	37.44		110.0	
		Z	5.28	100.19	27.20		110.0	

10061-CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 11 Mbps)	X	3.32	87.15	25.78	2.04	110.0	± 9.6 %
		Y	2.58	82.36	23.79		110.0	
		Z	1.52	73.69	19.57		110.0	
10062-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps)	X	4.61	67.08	16.86	0.49	100.0	± 9.6 %
		Y	4.60	66.54	16.58		100.0	
		Z	4.20	67.06	16.32		100.0	
10063-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 9 Mbps)	X	4.61	67.15	16.94	0.72	100.0	± 9.6 %
		Y	4.61	66.63	16.68		100.0	
		Z	4.21	67.14	16.41		100.0	
10064-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 12 Mbps)	X	4.87	67.34	17.12	0.86	100.0	± 9.6 %
		Y	4.90	66.91	16.92		100.0	
		Z	4.40	67.26	16.55		100.0	
10065-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 18 Mbps)	X	4.73	67.18	17.19	1.21	100.0	± 9.6 %
		Y	4.76	66.79	17.02		100.0	
		Z	4.27	67.01	16.58		100.0	
10066-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 24 Mbps)	X	4.73	67.15	17.32	1.46	100.0	± 9.6 %
		Y	4.78	66.81	17.20		100.0	
		Z	4.26	66.90	16.66		100.0	
10067-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 36 Mbps)	X	5.01	67.30	17.73	2.04	100.0	± 9.6 %
		Y	5.06	66.97	17.65		100.0	
		Z	4.49	67.04	17.04		100.0	
10068-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 48 Mbps)	X	5.02	67.21	17.87	2.55	100.0	± 9.6 %
		Y	5.10	67.00	17.87		100.0	
		Z	4.55	67.10	17.29		100.0	
10069-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 54 Mbps)	X	5.09	67.21	18.05	2.67	100.0	± 9.6 %
		Y	5.18	67.00	18.06		100.0	
		Z	4.57	66.99	17.39		100.0	
10071-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 9 Mbps)	X	4.85	66.97	17.58	1.99	100.0	± 9.6 %
		Y	4.88	66.61	17.48		100.0	
		Z	4.46	67.03	17.10		100.0	
10072-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 12 Mbps)	X	4.80	67.23	17.77	2.30	100.0	± 9.6 %
		Y	4.84	66.92	17.70		100.0	
		Z	4.37	67.09	17.20		100.0	
10073-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 18 Mbps)	X	4.84	67.33	18.06	2.83	100.0	± 9.6 %
		Y	4.89	67.04	18.02		100.0	
		Z	4.43	67.28	17.53		100.0	
10074-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 24 Mbps)	X	4.82	67.19	18.17	3.30	100.0	± 9.6 %
		Y	4.86	66.89	18.15		100.0	
		Z	4.46	67.33	17.73		100.0	
10075-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 36 Mbps)	X	4.83	67.19	18.42	3.82	90.0	± 9.6 %
		Y	4.88	66.97	18.46		90.0	
		Z	4.48	67.33	17.96		90.0	
10076-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 48 Mbps)	X	4.85	66.98	18.53	4.15	90.0	± 9.6 %
		Y	4.88	66.70	18.55		90.0	
		Z	4.52	67.15	18.10		90.0	
10077-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 54 Mbps)	X	4.87	67.04	18.63	4.30	90.0	± 9.6 %
		Y	4.91	66.76	18.64		90.0	
		Z	4.55	67.27	18.24		90.0	

10081-CAB	CDMA2000 (1xRTT, RC3)	X	2.48	81.61	18.64	0.00	150.0	± 9.6 %
		Y	0.69	64.41	10.84		150.0	
		Z	0.31	60.00	5.68		150.0	
10082-CAB	IS-54 / IS-136 FDD (TDMA/FDM, PI/4-DQPSK, Fullrate)	X	0.58	60.00	3.51	4.77	80.0	± 9.6 %
		Y	0.60	60.00	3.18		80.0	
		Z	0.65	126.85	1.56		80.0	
10090-DAC	GPRS-FDD (TDMA, GMSK, TN 0-4)	X	100.00	108.44	23.06	6.56	60.0	± 9.6 %
		Y	100.00	110.04	23.76		60.0	
		Z	100.00	98.33	18.07		60.0	
10097-CAB	UMTS-FDD (HSDPA)	X	2.24	72.42	18.21	0.00	150.0	± 9.6 %
		Y	1.76	67.72	15.57		150.0	
		Z	1.87	70.84	16.02		150.0	
10098-CAB	UMTS-FDD (HSUPA, Subtest 2)	X	2.20	72.44	18.22	0.00	150.0	± 9.6 %
		Y	1.72	67.67	15.54		150.0	
		Z	1.83	70.79	16.02		150.0	
10099-DAC	EDGE-FDD (TDMA, 8PSK, TN 0-4)	X	7.35	89.64	32.49	9.56	60.0	± 9.6 %
		Y	7.11	88.49	32.15		60.0	
		Z	4.93	80.96	28.79		60.0	
10100-CAD	LTE-FDD (SC-FDMA, 100% RB, 20 MHz, QPSK)	X	3.52	73.24	18.42	0.00	150.0	± 9.6 %
		Y	3.06	70.19	16.62		150.0	
		Z	2.82	70.70	17.03		150.0	
10101-CAD	LTE-FDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM)	X	3.33	68.75	16.85	0.00	150.0	± 9.6 %
		Y	3.16	67.34	15.90		150.0	
		Z	2.93	67.74	15.96		150.0	
10102-CAD	LTE-FDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM)	X	3.42	68.66	16.90	0.00	150.0	± 9.6 %
		Y	3.27	67.32	16.00		150.0	
		Z	3.03	67.80	16.07		150.0	
10103-CAD	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, QPSK)	X	5.85	76.16	20.99	3.98	65.0	± 9.6 %
		Y	5.55	74.98	20.61		65.0	
		Z	4.65	73.89	19.80		65.0	
10104-CAD	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM)	X	5.51	72.79	20.28	3.98	65.0	± 9.6 %
		Y	5.42	72.22	20.18		65.0	
		Z	4.50	70.59	18.88		65.0	
10105-CAD	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM)	X	5.36	72.01	20.23	3.98	65.0	± 9.6 %
		Y	5.14	70.95	19.90		65.0	
		Z	4.49	70.27	19.03		65.0	
10108-CAE	LTE-FDD (SC-FDMA, 100% RB, 10 MHz, QPSK)	X	3.06	72.66	18.37	0.00	150.0	± 9.6 %
		Y	2.66	69.52	16.49		150.0	
		Z	2.41	70.32	16.89		150.0	
10109-CAE	LTE-FDD (SC-FDMA, 100% RB, 10 MHz, 16-QAM)	X	3.00	68.97	16.91	0.00	150.0	± 9.6 %
		Y	2.82	67.24	15.80		150.0	
		Z	2.58	68.04	15.81		150.0	
10110-CAE	LTE-FDD (SC-FDMA, 100% RB, 5 MHz, QPSK)	X	2.53	72.40	18.26	0.00	150.0	± 9.6 %
		Y	2.15	68.69	16.07		150.0	
		Z	1.91	69.84	16.19		150.0	
10111-CAE	LTE-FDD (SC-FDMA, 100% RB, 5 MHz, 16-QAM)	X	2.88	71.18	17.76	0.00	150.0	± 9.6 %
		Y	2.54	68.19	16.08		150.0	
		Z	2.42	70.18	16.04		150.0	

10112-CAE	LTE-FDD (SC-FDMA, 100% RB, 10 MHz, 64-QAM)	X	3.12	68.90	16.92	0.00	150.0	± 9.6 %
		Y	2.94	67.24	15.86		150.0	
		Z	2.71	68.20	15.91		150.0	
10113-CAE	LTE-FDD (SC-FDMA, 100% RB, 5 MHz, 64-QAM)	X	3.03	71.19	17.81	0.00	150.0	± 9.6 %
		Y	2.69	68.35	16.23		150.0	
		Z	2.55	70.30	16.13		150.0	
10114-CAB	IEEE 802.11n (HT Greenfield, 13.5 Mbps, BPSK)	X	5.09	67.60	16.84	0.00	150.0	± 9.6 %
		Y	5.08	67.11	16.51		150.0	
		Z	4.69	67.30	16.40		150.0	
10115-CAB	IEEE 802.11n (HT Greenfield, 81 Mbps, 16-QAM)	X	5.34	67.61	16.84	0.00	150.0	± 9.6 %
		Y	5.36	67.23	16.58		150.0	
		Z	4.91	67.37	16.41		150.0	
10116-CAB	IEEE 802.11n (HT Greenfield, 135 Mbps, 64-QAM)	X	5.18	67.79	16.86	0.00	150.0	± 9.6 %
		Y	5.17	67.29	16.53		150.0	
		Z	4.75	67.47	16.41		150.0	
10117-CAB	IEEE 802.11n (HT Mixed, 13.5 Mbps, BPSK)	X	5.07	67.49	16.80	0.00	150.0	± 9.6 %
		Y	5.03	66.92	16.43		150.0	
		Z	4.68	67.22	16.38		150.0	
10118-CAB	IEEE 802.11n (HT Mixed, 81 Mbps, 16-QAM)	X	5.42	67.81	16.95	0.00	150.0	± 9.6 %
		Y	5.46	67.49	16.72		150.0	
		Z	4.95	67.44	16.45		150.0	
10119-CAB	IEEE 802.11n (HT Mixed, 135 Mbps, 64-QAM)	X	5.17	67.76	16.86	0.00	150.0	± 9.6 %
		Y	5.16	67.26	16.53		150.0	
		Z	4.76	67.49	16.43		150.0	
10140-CAD	LTE-FDD (SC-FDMA, 100% RB, 15 MHz, 16-QAM)	X	3.45	68.66	16.81	0.00	150.0	± 9.6 %
		Y	3.30	67.32	15.91		150.0	
		Z	3.03	67.82	15.96		150.0	
10141-CAD	LTE-FDD (SC-FDMA, 100% RB, 15 MHz, 64-QAM)	X	3.58	68.75	16.96	0.00	150.0	± 9.6 %
		Y	3.43	67.43	16.10		150.0	
		Z	3.17	68.11	16.20		150.0	
10142-CAD	LTE-FDD (SC-FDMA, 100% RB, 3 MHz, QPSK)	X	2.47	73.79	18.38	0.00	150.0	± 9.6 %
		Y	1.91	68.66	15.61		150.0	
		Z	1.62	69.30	14.72		150.0	
10143-CAD	LTE-FDD (SC-FDMA, 100% RB, 3 MHz, 16-QAM)	X	3.04	73.63	17.97	0.00	150.0	± 9.6 %
		Y	2.39	68.84	15.61		150.0	
		Z	1.93	68.45	13.52		150.0	
10144-CAD	LTE-FDD (SC-FDMA, 100% RB, 3 MHz, 64-QAM)	X	2.40	68.98	15.29	0.00	150.0	± 9.6 %
		Y	2.12	66.24	13.82		150.0	
		Z	1.45	64.15	10.76		150.0	
10145-CAE	LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, QPSK)	X	1.32	67.40	12.34	0.00	150.0	± 9.6 %
		Y	1.01	63.39	10.25		150.0	
		Z	0.47	60.00	4.95		150.0	
10146-CAE	LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, 16-QAM)	X	1.35	63.32	9.27	0.00	150.0	± 9.6 %
		Y	1.59	64.33	10.38		150.0	
		Z	0.61	60.00	4.07		150.0	
10147-CAE	LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, 64-QAM)	X	1.52	64.59	10.05	0.00	150.0	± 9.6 %
		Y	1.81	65.77	11.24		150.0	
		Z	0.61	60.00	4.13		150.0	

10149-CAD	LTE-FDD (SC-FDMA, 50% RB, 20 MHz, 16-QAM)	X	3.01	69.05	16.97	0.00	150.0	± 9.6 %
		Y	2.83	67.31	15.85		150.0	
		Z	2.59	68.14	15.87		150.0	
10150-CAD	LTE-FDD (SC-FDMA, 50% RB, 20 MHz, 64-QAM)	X	3.13	68.98	16.97	0.00	150.0	± 9.6 %
		Y	2.95	67.30	15.91		150.0	
		Z	2.72	68.28	15.97		150.0	
10151-CAD	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, QPSK)	X	6.14	78.94	22.21	3.98	65.0	± 9.6 %
		Y	5.81	77.70	21.86		65.0	
		Z	4.61	75.91	20.54		65.0	
10152-CAD	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 16-QAM)	X	5.07	72.87	19.98	3.98	65.0	± 9.6 %
		Y	4.97	72.24	19.90		65.0	
		Z	3.99	70.37	18.11		65.0	
10153-CAD	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 64-QAM)	X	5.43	73.94	20.83	3.98	65.0	± 9.6 %
		Y	5.30	73.21	20.72		65.0	
		Z	4.36	71.74	19.14		65.0	
10154-CAE	LTE-FDD (SC-FDMA, 50% RB, 10 MHz, QPSK)	X	2.62	73.06	18.62	0.00	150.0	± 9.6 %
		Y	2.20	69.16	16.36		150.0	
		Z	1.96	70.32	16.47		150.0	
10155-CAE	LTE-FDD (SC-FDMA, 50% RB, 10 MHz, 16-QAM)	X	2.89	71.21	17.79	0.00	150.0	± 9.6 %
		Y	2.54	68.21	16.10		150.0	
		Z	2.43	70.28	16.10		150.0	
10156-CAE	LTE-FDD (SC-FDMA, 50% RB, 5 MHz, QPSK)	X	2.47	75.15	18.60	0.00	150.0	± 9.6 %
		Y	1.75	68.66	15.28		150.0	
		Z	1.33	67.76	13.19		150.0	
10157-CAE	LTE-FDD (SC-FDMA, 50% RB, 5 MHz, 16-QAM)	X	2.39	70.64	15.72	0.00	150.0	± 9.6 %
		Y	1.95	66.69	13.72		150.0	
		Z	1.16	63.12	9.54		150.0	
10158-CAE	LTE-FDD (SC-FDMA, 50% RB, 10 MHz, 64-QAM)	X	3.04	71.31	17.88	0.00	150.0	± 9.6 %
		Y	2.70	68.43	16.28		150.0	
		Z	2.57	70.46	16.22		150.0	
10159-CAE	LTE-FDD (SC-FDMA, 50% RB, 5 MHz, 64-QAM)	X	2.56	71.36	16.09	0.00	150.0	± 9.6 %
		Y	2.05	67.14	14.00		150.0	
		Z	1.19	63.18	9.58		150.0	
10160-CAD	LTE-FDD (SC-FDMA, 50% RB, 15 MHz, QPSK)	X	2.99	71.27	17.90	0.00	150.0	± 9.6 %
		Y	2.71	68.82	16.37		150.0	
		Z	2.42	69.56	16.47		150.0	
10161-CAD	LTE-FDD (SC-FDMA, 50% RB, 15 MHz, 16-QAM)	X	3.04	69.06	16.95	0.00	150.0	± 9.6 %
		Y	2.85	67.25	15.83		150.0	
		Z	2.60	68.29	15.74		150.0	
10162-CAD	LTE-FDD (SC-FDMA, 50% RB, 15 MHz, 64-QAM)	X	3.15	69.23	17.05	0.00	150.0	± 9.6 %
		Y	2.96	67.42	15.95		150.0	
		Z	2.71	68.61	15.92		150.0	
10166-CAE	LTE-FDD (SC-FDMA, 50% RB, 1.4 MHz, QPSK)	X	3.34	69.69	19.44	3.01	150.0	± 9.6 %
		Y	3.46	69.42	19.21		150.0	
		Z	2.59	67.11	17.87		150.0	
10167-CAE	LTE-FDD (SC-FDMA, 50% RB, 1.4 MHz, 16-QAM)	X	3.99	72.59	19.88	3.01	150.0	± 9.6 %
		Y	4.18	72.06	19.51		150.0	
		Z	2.80	69.17	18.01		150.0	

10168-CAE	LTE-FDD (SC-FDMA, 50% RB, 1.4 MHz, 64-QAM)	X	4.55	75.49	21.54	3.01	150.0	± 9.6 %
		Y	4.71	74.68	21.05		150.0	
		Z	3.16	71.87	19.73		150.0	
10169-CAD	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, QPSK)	X	2.64	68.14	18.82	3.01	150.0	± 9.6 %
		Y	2.80	68.40	18.79		150.0	
		Z	2.19	65.68	17.12		150.0	
10170-CAD	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM)	X	3.48	74.11	21.34	3.01	150.0	± 9.6 %
		Y	3.77	74.16	21.12		150.0	
		Z	2.55	69.97	19.09		150.0	
10171-AAD	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, 64-QAM)	X	2.84	69.77	18.34	3.01	150.0	± 9.6 %
		Y	3.06	69.79	18.14		150.0	
		Z	2.14	66.44	16.29		150.0	
10172-CAD	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK)	X	5.21	85.53	27.06	6.02	65.0	± 9.6 %
		Y	6.10	87.88	28.22		65.0	
		Z	2.36	72.38	21.35		65.0	
10173-CAD	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM)	X	9.95	94.55	28.03	6.02	65.0	± 9.6 %
		Y	14.45	100.65	30.35		65.0	
		Z	2.98	76.17	20.98		65.0	
10174-CAD	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 64-QAM)	X	8.15	89.74	25.80	6.02	65.0	± 9.6 %
		Y	10.99	94.18	27.67		65.0	
		Z	2.56	73.38	19.24		65.0	
10175-CAE	LTE-FDD (SC-FDMA, 1 RB, 10 MHz, QPSK)	X	2.61	67.84	18.56	3.01	150.0	± 9.6 %
		Y	2.76	68.08	18.52		150.0	
		Z	2.16	65.44	16.89		150.0	
10176-CAE	LTE-FDD (SC-FDMA, 1 RB, 10 MHz, 16-QAM)	X	3.48	74.13	21.36	3.01	150.0	± 9.6 %
		Y	3.77	74.19	21.13		150.0	
		Z	2.56	69.98	19.10		150.0	
10177-CAG	LTE-FDD (SC-FDMA, 1 RB, 5 MHz, QPSK)	X	2.63	67.98	18.65	3.01	150.0	± 9.6 %
		Y	2.79	68.24	18.62		150.0	
		Z	2.17	65.52	16.94		150.0	
10178-CAE	LTE-FDD (SC-FDMA, 1 RB, 5 MHz, 16-QAM)	X	3.45	73.94	21.25	3.01	150.0	± 9.6 %
		Y	3.73	73.95	21.01		150.0	
		Z	2.55	69.90	19.04		150.0	
10179-CAE	LTE-FDD (SC-FDMA, 1 RB, 10 MHz, 64-QAM)	X	3.13	71.85	19.72	3.01	150.0	± 9.6 %
		Y	3.38	71.82	19.48		150.0	
		Z	2.32	68.09	17.55		150.0	
10180-CAE	LTE-FDD (SC-FDMA, 1 RB, 5 MHz, 64-QAM)	X	2.83	69.71	18.29	3.01	150.0	± 9.6 %
		Y	3.06	69.72	18.09		150.0	
		Z	2.14	66.43	16.27		150.0	
10181-CAD	LTE-FDD (SC-FDMA, 1 RB, 15 MHz, QPSK)	X	2.62	67.96	18.64	3.01	150.0	± 9.6 %
		Y	2.78	68.22	18.62		150.0	
		Z	2.17	65.50	16.94		150.0	
10182-CAD	LTE-FDD (SC-FDMA, 1 RB, 15 MHz, 16-QAM)	X	3.45	73.91	21.23	3.01	150.0	± 9.6 %
		Y	3.73	73.93	20.99		150.0	
		Z	2.54	69.87	19.03		150.0	
10183-AAC	LTE-FDD (SC-FDMA, 1 RB, 15 MHz, 64-QAM)	X	2.83	69.69	18.28	3.01	150.0	± 9.6 %
		Y	3.05	69.70	18.08		150.0	
		Z	2.13	66.41	16.26		150.0	

10184-CAD	LTE-FDD (SC-FDMA, 1 RB, 3 MHz, QPSK)	X	2.63	68.01	18.67	3.01	150.0	± 9.6 %
		Y	2.79	68.26	18.64		150.0	
		Z	2.18	65.53	16.96		150.0	
10185-CAD	LTE-FDD (SC-FDMA, 1 RB, 3 MHz, 16-QAM)	X	3.47	73.99	21.27	3.01	150.0	± 9.6 %
		Y	3.75	74.01	21.03		150.0	
		Z	2.55	69.94	19.07		150.0	
10186-AAD	LTE-FDD (SC-FDMA, 1 RB, 3 MHz, 64-QAM)	X	2.84	69.75	18.32	3.01	150.0	± 9.6 %
		Y	3.07	69.76	18.12		150.0	
		Z	2.14	66.46	16.29		150.0	
10187-CAE	LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK)	X	2.64	68.07	18.74	3.01	150.0	± 9.6 %
		Y	2.80	68.32	18.71		150.0	
		Z	2.19	65.63	17.06		150.0	
10188-CAE	LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, 16-QAM)	X	3.58	74.66	21.67	3.01	150.0	± 9.6 %
		Y	3.87	74.72	21.45		150.0	
		Z	2.61	70.41	19.39		150.0	
10189-AAE	LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, 64-QAM)	X	2.90	70.18	18.61	3.01	150.0	± 9.6 %
		Y	3.14	70.19	18.41		150.0	
		Z	2.18	66.76	16.53		150.0	
10193-CAB	IEEE 802.11n (HT Greenfield, 6.5 Mbps, BPSK)	X	4.50	67.21	16.60	0.00	150.0	± 9.6 %
		Y	4.45	66.47	16.16		150.0	
		Z	4.13	67.38	16.15		150.0	
10194-CAB	IEEE 802.11n (HT Greenfield, 39 Mbps, 16-QAM)	X	4.65	67.48	16.72	0.00	150.0	± 9.6 %
		Y	4.62	66.77	16.29		150.0	
		Z	4.23	67.48	16.26		150.0	
10195-CAB	IEEE 802.11n (HT Greenfield, 65 Mbps, 64-QAM)	X	4.69	67.50	16.74	0.00	150.0	± 9.6 %
		Y	4.66	66.81	16.31		150.0	
		Z	4.25	67.43	16.24		150.0	
10196-CAB	IEEE 802.11n (HT Mixed, 6.5 Mbps, BPSK)	X	4.49	67.24	16.60	0.00	150.0	± 9.6 %
		Y	4.45	66.52	16.18		150.0	
		Z	4.10	67.32	16.10		150.0	
10197-CAB	IEEE 802.11n (HT Mixed, 39 Mbps, 16-QAM)	X	4.66	67.49	16.73	0.00	150.0	± 9.6 %
		Y	4.63	66.80	16.30		150.0	
		Z	4.24	67.48	16.26		150.0	
10198-CAB	IEEE 802.11n (HT Mixed, 65 Mbps, 64-QAM)	X	4.69	67.51	16.74	0.00	150.0	± 9.6 %
		Y	4.66	66.82	16.32		150.0	
		Z	4.24	67.42	16.24		150.0	
10219-CAB	IEEE 802.11n (HT Mixed, 7.2 Mbps, BPSK)	X	4.44	67.29	16.58	0.00	150.0	± 9.6 %
		Y	4.40	66.54	16.14		150.0	
		Z	4.07	67.41	16.11		150.0	
10220-CAB	IEEE 802.11n (HT Mixed, 43.3 Mbps, 16-QAM)	X	4.65	67.45	16.72	0.00	150.0	± 9.6 %
		Y	4.62	66.76	16.29		150.0	
		Z	4.23	67.43	16.25		150.0	
10221-CAB	IEEE 802.11n (HT Mixed, 72.2 Mbps, 64-QAM)	X	4.70	67.43	16.72	0.00	150.0	± 9.6 %
		Y	4.67	66.75	16.31		150.0	
		Z	4.26	67.40	16.24		150.0	
10222-CAB	IEEE 802.11n (HT Mixed, 15 Mbps, BPSK)	X	5.04	67.49	16.79	0.00	150.0	± 9.6 %
		Y	5.01	66.92	16.43		150.0	
		Z	4.66	67.21	16.37		150.0	

10223-CAB	IEEE 802.11n (HT Mixed, 90 Mbps, 16-QAM)	X	5.32	67.67	16.89	0.00	150.0	± 9.6 %
		Y	5.34	67.23	16.61		150.0	
		Z	4.85	67.26	16.37		150.0	
10224-CAB	IEEE 802.11n (HT Mixed, 150 Mbps, 64-QAM)	X	5.08	67.61	16.78	0.00	150.0	± 9.6 %
		Y	5.05	67.04	16.41		150.0	
		Z	4.70	67.37	16.37		150.0	
10225-CAB	UMTS-FDD (HSPA+)	X	2.85	67.53	16.12	0.00	150.0	± 9.6 %
		Y	2.71	65.98	15.23		150.0	
		Z	2.40	66.65	14.21		150.0	
10226-CAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 16-QAM)	X	10.84	96.23	28.66	6.02	65.0	± 9.6 %
		Y	15.92	102.62	31.06		65.0	
		Z	3.13	77.11	21.45		65.0	
10227-CAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 64-QAM)	X	10.89	94.67	27.41	6.02	65.0	± 9.6 %
		Y	15.92	100.78	29.76		65.0	
		Z	2.96	75.63	20.15		65.0	
10228-CAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK)	X	5.83	88.10	28.08	6.02	65.0	± 9.6 %
		Y	7.50	92.66	30.03		65.0	
		Z	2.46	73.31	21.80		65.0	
10229-CAB	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 16-QAM)	X	10.04	94.68	28.07	6.02	65.0	± 9.6 %
		Y	14.58	100.79	30.40		65.0	
		Z	3.00	76.26	21.02		65.0	
10230-CAB	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 64-QAM)	X	9.98	93.07	26.83	6.02	65.0	± 9.6 %
		Y	14.47	98.96	29.13		65.0	
		Z	2.82	74.75	19.73		65.0	
10231-CAB	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, QPSK)	X	5.58	87.13	27.64	6.02	65.0	± 9.6 %
		Y	7.13	91.51	29.55		65.0	
		Z	2.40	72.72	21.45		65.0	
10232-CAD	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 16-QAM)	X	10.02	94.66	28.07	6.02	65.0	± 9.6 %
		Y	14.55	100.76	30.40		65.0	
		Z	3.00	76.24	21.02		65.0	
10233-CAD	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 64-QAM)	X	9.95	93.03	26.81	6.02	65.0	± 9.6 %
		Y	14.42	98.91	29.12		65.0	
		Z	2.81	74.73	19.73		65.0	
10234-CAD	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, QPSK)	X	5.39	86.32	27.22	6.02	65.0	± 9.6 %
		Y	6.85	90.55	29.09		65.0	
		Z	2.35	72.29	21.14		65.0	
10235-CAD	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 16-QAM)	X	10.04	94.70	28.08	6.02	65.0	± 9.6 %
		Y	14.58	100.82	30.42		65.0	
		Z	2.99	76.25	21.02		65.0	
10236-CAD	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 64-QAM)	X	10.10	93.25	26.88	6.02	65.0	± 9.6 %
		Y	14.67	99.17	29.19		65.0	
		Z	2.84	74.84	19.76		65.0	
10237-CAD	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, QPSK)	X	5.58	87.17	27.66	6.02	65.0	± 9.6 %
		Y	7.14	91.58	29.58		65.0	
		Z	2.39	72.70	21.45		65.0	
10238-CAD	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 16-QAM)	X	9.99	94.63	28.06	6.02	65.0	± 9.6 %
		Y	14.51	100.74	30.39		65.0	
		Z	2.99	76.22	21.01		65.0	

10239-CAD	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 64-QAM)	X	9.90	92.97	26.80	6.02	65.0	± 9.6 %
		Y	14.36	98.87	29.11		65.0	
		Z	2.80	74.69	19.71		65.0	
10240-CAD	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, QPSK)	X	5.56	87.13	27.65	6.02	65.0	± 9.6 %
		Y	7.11	91.52	29.56		65.0	
		Z	2.39	72.70	21.45		65.0	
10241-CAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 16-QAM)	X	6.69	79.53	24.88	6.98	65.0	± 9.6 %
		Y	6.94	79.25	25.05		65.0	
		Z	4.77	76.42	23.34		65.0	
10242-CAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 64-QAM)	X	6.37	78.52	24.37	6.98	65.0	± 9.6 %
		Y	6.44	77.62	24.25		65.0	
		Z	4.56	75.69	22.98		65.0	
10243-CAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, QPSK)	X	5.22	75.00	23.77	6.98	65.0	± 9.6 %
		Y	5.23	74.06	23.59		65.0	
		Z	4.00	72.71	22.54		65.0	
10244-CAB	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 16-QAM)	X	4.24	72.12	16.22	3.98	65.0	± 9.6 %
		Y	5.25	75.72	18.71		65.0	
		Z	1.68	61.87	8.30		65.0	
10245-CAB	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 64-QAM)	X	4.09	71.33	15.81	3.98	65.0	± 9.6 %
		Y	5.05	74.82	18.27		65.0	
		Z	1.68	61.69	8.15		65.0	
10246-CAB	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, QPSK)	X	5.18	79.27	19.77	3.98	65.0	± 9.6 %
		Y	5.17	79.65	20.53		65.0	
		Z	1.66	64.47	10.67		65.0	
10247-CAD	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 16-QAM)	X	4.32	73.14	18.02	3.98	65.0	± 9.6 %
		Y	4.29	73.07	18.54		65.0	
		Z	2.36	65.53	12.06		65.0	
10248-CAD	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 64-QAM)	X	4.23	72.28	17.61	3.98	65.0	± 9.6 %
		Y	4.26	72.34	18.17		65.0	
		Z	2.33	64.96	11.76		65.0	
10249-CAD	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, QPSK)	X	6.94	84.57	23.01	3.98	65.0	± 9.6 %
		Y	6.34	83.27	22.99		65.0	
		Z	3.00	72.28	16.18		65.0	
10250-CAD	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 16-QAM)	X	5.21	75.90	21.22	3.98	65.0	± 9.6 %
		Y	5.02	75.06	21.19		65.0	
		Z	3.93	72.61	18.51		65.0	
10251-CAD	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 64-QAM)	X	4.88	73.38	19.69	3.98	65.0	± 9.6 %
		Y	4.79	72.77	19.75		65.0	
		Z	3.55	69.71	16.66		65.0	
10252-CAD	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, QPSK)	X	6.58	82.89	23.68	3.98	65.0	± 9.6 %
		Y	6.05	81.24	23.29		65.0	
		Z	4.42	77.84	20.76		65.0	
10253-CAD	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 16-QAM)	X	4.98	72.40	19.71	3.98	65.0	± 9.6 %
		Y	4.86	71.69	19.63		65.0	
		Z	3.93	70.06	17.71		65.0	
10254-CAD	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 64-QAM)	X	5.31	73.36	20.45	3.98	65.0	± 9.6 %
		Y	5.18	72.60	20.37		65.0	
		Z	4.24	71.16	18.54		65.0	

10255-CAD	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, QPSK)	X	5.77	77.98	22.02	3.98	65.0	± 9.6 %
		Y	5.46	76.73	21.69		65.0	
		Z	4.37	75.14	20.23		65.0	
10256-CAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 16-QAM)	X	2.88	66.71	12.43	3.98	65.0	± 9.6 %
		Y	3.76	70.54	15.28		65.0	
		Z	1.24	60.00	5.88		65.0	
10257-CAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 64-QAM)	X	2.80	66.03	11.98	3.98	65.0	± 9.6 %
		Y	3.60	69.53	14.70		65.0	
		Z	1.26	60.00	5.79		65.0	
10258-CAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, QPSK)	X	3.12	71.18	15.31	3.98	65.0	± 9.6 %
		Y	3.48	73.11	16.86		65.0	
		Z	1.14	60.65	7.08		65.0	
10259-CAB	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 16-QAM)	X	4.71	74.37	19.27	3.98	65.0	± 9.6 %
		Y	4.60	73.91	19.54		65.0	
		Z	2.92	68.20	14.43		65.0	
10260-CAB	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 64-QAM)	X	4.70	73.94	19.07	3.98	65.0	± 9.6 %
		Y	4.62	73.56	19.38		65.0	
		Z	2.94	67.92	14.26		65.0	
10261-CAB	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, QPSK)	X	6.27	82.57	22.82	3.98	65.0	± 9.6 %
		Y	5.76	81.12	22.65		65.0	
		Z	3.49	74.21	17.83		65.0	
10262-CAD	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 16-QAM)	X	5.19	75.82	21.17	3.98	65.0	± 9.6 %
		Y	5.01	75.00	21.14		65.0	
		Z	3.91	72.50	18.43		65.0	
10263-CAD	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 64-QAM)	X	4.87	73.35	19.68	3.98	65.0	± 9.6 %
		Y	4.78	72.74	19.74		65.0	
		Z	3.54	69.69	16.66		65.0	
10264-CAD	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, QPSK)	X	6.49	82.62	23.55	3.98	65.0	± 9.6 %
		Y	5.98	81.00	23.17		65.0	
		Z	4.36	77.57	20.62		65.0	
10265-CAD	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 16-QAM)	X	5.06	72.87	19.99	3.98	65.0	± 9.6 %
		Y	4.96	72.24	19.91		65.0	
		Z	3.99	70.37	18.12		65.0	
10266-CAD	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 64-QAM)	X	5.43	73.93	20.82	3.98	65.0	± 9.6 %
		Y	5.30	73.20	20.71		65.0	
		Z	4.36	71.73	19.13		65.0	
10267-CAD	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, QPSK)	X	6.12	78.88	22.19	3.98	65.0	± 9.6 %
		Y	5.80	77.65	21.84		65.0	
		Z	4.59	75.85	20.51		65.0	
10268-CAD	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 16-QAM)	X	5.66	72.67	20.32	3.98	65.0	± 9.6 %
		Y	5.56	72.05	20.20		65.0	
		Z	4.68	70.82	19.02		65.0	
10269-CAD	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 64-QAM)	X	5.65	72.23	20.16	3.98	65.0	± 9.6 %
		Y	5.55	71.61	20.05		65.0	
		Z	4.73	70.61	18.92		65.0	
10270-CAD	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, QPSK)	X	5.86	75.43	20.89	3.98	65.0	± 9.6 %
		Y	5.65	74.50	20.63		65.0	
		Z	4.77	73.64	19.83		65.0	

10274-CAB	UMTS-FDD (HSUPA, Subtest 5, 3GPP Rel8.10)	X	2.73	68.46	16.34	0.00	150.0	± 9.6 %
		Y	2.51	66.37	15.13		150.0	
		Z	2.29	67.56	14.48		150.0	
10275-CAB	UMTS-FDD (HSUPA, Subtest 5, 3GPP Rel8.4)	X	2.05	73.38	18.52	0.00	150.0	± 9.6 %
		Y	1.54	67.93	15.38		150.0	
		Z	1.50	69.87	15.73		150.0	
10277-CAA	PHS (QPSK)	X	1.58	59.87	5.31	9.03	50.0	± 9.6 %
		Y	1.70	60.33	5.92		50.0	
		Z	1.53	57.08	1.83		50.0	
10278-CAA	PHS (QPSK, BW 884MHz, Rolloff 0.5)	X	3.26	67.96	12.44	9.03	50.0	± 9.6 %
		Y	4.39	72.45	15.13		50.0	
		Z	1.87	61.34	6.93		50.0	
10279-CAA	PHS (QPSK, BW 884MHz, Rolloff 0.38)	X	3.38	68.32	12.68	9.03	50.0	± 9.6 %
		Y	4.58	72.92	15.39		50.0	
		Z	1.90	61.44	7.05		50.0	
10290-AAB	CDMA2000, RC1, SO55, Full Rate	X	3.75	82.46	18.92	0.00	150.0	± 9.6 %
		Y	1.23	67.08	12.50		150.0	
		Z	0.42	60.00	5.92		150.0	
10291-AAB	CDMA2000, RC3, SO55, Full Rate	X	2.22	80.17	18.12	0.00	150.0	± 9.6 %
		Y	0.67	64.20	10.72		150.0	
		Z	0.31	60.00	5.66		150.0	
10292-AAB	CDMA2000, RC3, SO32, Full Rate	X	100.00	132.83	32.46	0.00	150.0	± 9.6 %
		Y	0.90	68.52	13.18		150.0	
		Z	0.35	61.41	6.83		150.0	
10293-AAB	CDMA2000, RC3, SO3, Full Rate	X	100.00	138.28	34.96	0.00	150.0	± 9.6 %
		Y	1.88	78.08	17.57		150.0	
		Z	1.00	70.07	11.16		150.0	
10295-AAB	CDMA2000, RC1, SO3, 1/8th Rate 25 fr.	X	14.58	92.66	25.47	9.03	50.0	± 9.6 %
		Y	13.99	93.48	26.60		50.0	
		Z	19.90	90.00	21.12		50.0	
10297-AAC	LTE-FDD (SC-FDMA, 50% RB, 20 MHz, QPSK)	X	3.08	72.81	18.46	0.00	150.0	± 9.6 %
		Y	2.68	69.64	16.56		150.0	
		Z	2.42	70.47	16.98		150.0	
10298-AAC	LTE-FDD (SC-FDMA, 50% RB, 3 MHz, QPSK)	X	2.22	74.17	16.75	0.00	150.0	± 9.6 %
		Y	1.40	66.71	13.14		150.0	
		Z	0.64	60.99	7.38		150.0	
10299-AAC	LTE-FDD (SC-FDMA, 50% RB, 3 MHz, 16-QAM)	X	2.26	68.90	13.29	0.00	150.0	± 9.6 %
		Y	2.33	68.48	13.54		150.0	
		Z	0.75	60.00	5.57		150.0	
10300-AAC	LTE-FDD (SC-FDMA, 50% RB, 3 MHz, 64-QAM)	X	1.52	63.47	9.85	0.00	150.0	± 9.6 %
		Y	1.73	64.02	10.60		150.0	
		Z	0.57	57.99	3.64		150.0	
10301-AAA	IEEE 802.16e WiMAX (29:18, 5ms, 10MHz, QPSK, PUSC)	X	4.48	65.33	17.45	4.17	50.0	± 9.6 %
		Y	4.71	65.65	17.61		50.0	
		Z	3.84	64.84	16.39		50.0	
10302-AAA	IEEE 802.16e WiMAX (29:18, 5ms, 10MHz, QPSK, PUSC, 3 CTRL symbols)	X	4.97	66.01	18.20	4.96	50.0	± 9.6 %
		Y	5.09	65.74	18.01		50.0	
		Z	4.34	65.56	17.18		50.0	

10303-AAA	IEEE 802.16e WiMAX (31:15, 5ms, 10MHz, 64QAM, PUSC)	X	4.71	65.59	17.99	4.96	50.0	± 9.6 %
		Y	4.83	65.34	17.82		50.0	
		Z	4.13	65.31	16.96		50.0	
10304-AAA	IEEE 802.16e WiMAX (29:18, 5ms, 10MHz, 64QAM, PUSC)	X	4.56	65.64	17.59	4.17	50.0	± 9.6 %
		Y	4.65	65.25	17.34		50.0	
		Z	3.99	65.39	16.61		50.0	
10305-AAA	IEEE 802.16e WiMAX (31:15, 10ms, 10MHz, 64QAM, PUSC, 15 symbols)	X	4.03	66.72	19.04	6.02	35.0	± 9.6 %
		Y	4.21	66.93	19.23		35.0	
		Z	3.34	65.30	16.54		35.0	
10306-AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, 64QAM, PUSC, 18 symbols)	X	4.40	66.02	18.82	6.02	35.0	± 9.6 %
		Y	4.56	66.11	18.93		35.0	
		Z	3.78	65.31	17.11		35.0	
10307-AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, QPSK, PUSC, 18 symbols)	X	4.28	66.06	18.74	6.02	35.0	± 9.6 %
		Y	4.45	66.23	18.87		35.0	
		Z	3.65	65.18	16.93		35.0	
10308-AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, 16QAM, PUSC)	X	4.25	66.25	18.88	6.02	35.0	± 9.6 %
		Y	4.42	66.41	19.00		35.0	
		Z	3.63	65.36	17.08		35.0	
10309-AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, 16QAM, AMC 2x3, 18 symbols)	X	4.43	66.16	18.94	6.02	35.0	± 9.6 %
		Y	4.61	66.33	19.07		35.0	
		Z	3.79	65.36	17.21		35.0	
10310-AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, QPSK, AMC 2x3, 18 symbols)	X	4.35	66.06	18.80	6.02	35.0	± 9.6 %
		Y	4.51	66.16	18.89		35.0	
		Z	3.74	65.37	17.13		35.0	
10311-AAC	LTE-FDD (SC-FDMA, 100% RB, 15 MHz, QPSK)	X	3.46	71.70	17.89	0.00	150.0	± 9.6 %
		Y	3.03	68.82	16.20		150.0	
		Z	2.77	69.43	16.58		150.0	
10313-AAA	iDEN 1:3	X	3.56	76.06	17.46	6.99	70.0	± 9.6 %
		Y	2.81	72.98	16.17		70.0	
		Z	2.06	70.15	14.72		70.0	
10314-AAA	iDEN 1:6	X	9.55	93.75	26.46	10.00	30.0	± 9.6 %
		Y	7.33	89.30	24.95		30.0	
		Z	6.10	86.59	23.60		30.0	
10315-AAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps, 96pc duty cycle)	X	1.13	65.87	17.04	0.17	150.0	± 9.6 %
		Y	0.98	63.47	15.13		150.0	
		Z	1.02	64.50	15.34		150.0	
10316-AAB	IEEE 802.11g WiFi 2.4 GHz (ERP-OFDM, 6 Mbps, 96pc duty cycle)	X	4.52	67.13	16.67	0.17	150.0	± 9.6 %
		Y	4.50	66.52	16.33		150.0	
		Z	4.11	67.07	16.11		150.0	
10317-AAB	IEEE 802.11a WiFi 5 GHz (OFDM, 6 Mbps, 96pc duty cycle)	X	4.52	67.13	16.67	0.17	150.0	± 9.6 %
		Y	4.50	66.52	16.33		150.0	
		Z	4.11	67.07	16.11		150.0	
10400-AAC	IEEE 802.11ac WiFi (20MHz, 64-QAM, 99pc duty cycle)	X	4.63	67.52	16.71	0.00	150.0	± 9.6 %
		Y	4.61	66.83	16.29		150.0	
		Z	4.13	67.27	16.13		150.0	
10401-AAC	IEEE 802.11ac WiFi (40MHz, 64-QAM, 99pc duty cycle)	X	5.32	67.44	16.74	0.00	150.0	± 9.6 %
		Y	5.37	67.18	16.56		150.0	
		Z	4.95	67.38	16.38		150.0	

10402-AAC	IEEE 802.11ac WiFi (80MHz, 64-QAM, 99pc duty cycle)	X	5.59	67.77	16.77	0.00	150.0	± 9.6 %
		Y	5.57	67.28	16.46		150.0	
		Z	5.22	67.54	16.40		150.0	
10403-AAB	CDMA2000 (1xEV-DO, Rev. 0)	X	3.75	82.46	18.92	0.00	115.0	± 9.6 %
		Y	1.23	67.08	12.50		115.0	
		Z	0.42	60.00	5.92		115.0	
10404-AAB	CDMA2000 (1xEV-DO, Rev. A)	X	3.75	82.46	18.92	0.00	115.0	± 9.6 %
		Y	1.23	67.08	12.50		115.0	
		Z	0.42	60.00	5.92		115.0	
10406-AAB	CDMA2000, RC3, SO32, SCH0, Full Rate	X	100.00	125.32	31.33	0.00	100.0	± 9.6 %
		Y	100.00	124.13	31.24		100.0	
		Z	48.69	101.59	20.93		100.0	
10410-AAC	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	100.00	126.91	31.64	3.23	80.0	± 9.6 %
		Y	100.00	128.24	32.65		80.0	
		Z	1.38	71.60	14.59		80.0	
10415-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps, 99pc duty cycle)	X	1.07	65.22	16.59	0.00	150.0	± 9.6 %
		Y	0.93	62.78	14.56		150.0	
		Z	0.98	64.12	15.02		150.0	
10416-AAA	IEEE 802.11g WiFi 2.4 GHz (ERP-OFDM, 6 Mbps, 99pc duty cycle)	X	4.49	67.22	16.67	0.00	150.0	± 9.6 %
		Y	4.45	66.51	16.24		150.0	
		Z	4.10	67.24	16.17		150.0	
10417-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps, 99pc duty cycle)	X	4.49	67.22	16.67	0.00	150.0	± 9.6 %
		Y	4.45	66.51	16.24		150.0	
		Z	4.10	67.24	16.17		150.0	
10418-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps, 99pc duty cycle, Long preambule)	X	4.49	67.44	16.73	0.00	150.0	± 9.6 %
		Y	4.44	66.67	16.26		150.0	
		Z	4.10	67.48	16.27		150.0	
10419-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps, 99pc duty cycle, Short preambule)	X	4.51	67.37	16.71	0.00	150.0	± 9.6 %
		Y	4.46	66.62	16.26		150.0	
		Z	4.11	67.40	16.23		150.0	
10422-AAA	IEEE 802.11n (HT Greenfield, 7.2 Mbps, BPSK)	X	4.61	67.32	16.70	0.00	150.0	± 9.6 %
		Y	4.58	66.61	16.27		150.0	
		Z	4.21	67.33	16.24		150.0	
10423-AAA	IEEE 802.11n (HT Greenfield, 43.3 Mbps, 16-QAM)	X	4.76	67.60	16.80	0.00	150.0	± 9.6 %
		Y	4.74	66.92	16.39		150.0	
		Z	4.30	67.55	16.30		150.0	
10424-AAA	IEEE 802.11n (HT Greenfield, 72.2 Mbps, 64-QAM)	X	4.69	67.57	16.78	0.00	150.0	± 9.6 %
		Y	4.66	66.88	16.36		150.0	
		Z	4.23	67.47	16.27		150.0	
10425-AAA	IEEE 802.11n (HT Greenfield, 15 Mbps, BPSK)	X	5.29	67.69	16.88	0.00	150.0	± 9.6 %
		Y	5.29	67.24	16.58		150.0	
		Z	4.84	67.34	16.40		150.0	
10426-AAA	IEEE 802.11n (HT Greenfield, 90 Mbps, 16-QAM)	X	5.31	67.77	16.92	0.00	150.0	± 9.6 %
		Y	5.32	67.35	16.64		150.0	
		Z	4.88	67.50	16.48		150.0	

10427-AAA	IEEE 802.11n (HT Greenfield, 150 Mbps, 64-QAM)	X	5.29	67.64	16.85	0.00	150.0	± 9.6 %
		Y	5.31	67.25	16.58		150.0	
		Z	4.86	67.35	16.40		150.0	
10430-AAB	LTE-FDD (OFDMA, 5 MHz, E-TM 3.1)	X	4.68	73.95	19.66	0.00	150.0	± 9.6 %
		Y	4.25	71.28	18.40		150.0	
		Z	4.69	75.91	18.95		150.0	
10431-AAB	LTE-FDD (OFDMA, 10 MHz, E-TM 3.1)	X	4.18	68.05	16.75	0.00	150.0	± 9.6 %
		Y	4.12	67.09	16.20		150.0	
		Z	3.66	67.91	15.86		150.0	
10432-AAB	LTE-FDD (OFDMA, 15 MHz, E-TM 3.1)	X	4.47	67.73	16.77	0.00	150.0	± 9.6 %
		Y	4.42	66.94	16.30		150.0	
		Z	4.00	67.68	16.18		150.0	
10433-AAB	LTE-FDD (OFDMA, 20 MHz, E-TM 3.1)	X	4.70	67.60	16.80	0.00	150.0	± 9.6 %
		Y	4.67	66.91	16.38		150.0	
		Z	4.26	67.53	16.31		150.0	
10434-AAA	W-CDMA (BS Test Model 1, 64 DPCH)	X	5.03	75.65	19.86	0.00	150.0	± 9.6 %
		Y	4.37	72.21	18.33		150.0	
		Z	4.57	75.61	17.94		150.0	
10435-AAC	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	100.00	126.58	31.49	3.23	80.0	± 9.6 %
		Y	100.00	127.98	32.52		80.0	
		Z	1.33	71.11	14.33		80.0	
10447-AAB	LTE-FDD (OFDMA, 5 MHz, E-TM 3.1, Clipping 44%)	X	3.52	68.47	16.11	0.00	150.0	± 9.6 %
		Y	3.39	67.04	15.38		150.0	
		Z	2.75	66.83	13.72		150.0	
10448-AAB	LTE-FDD (OFDMA, 10 MHz, E-TM 3.1, Clippin 44%)	X	4.03	67.85	16.63	0.00	150.0	± 9.6 %
		Y	3.96	66.86	16.06		150.0	
		Z	3.55	67.74	15.77		150.0	
10449-AAB	LTE-FDD (OFDMA, 15 MHz, E-TM 3.1, Cliping 44%)	X	4.30	67.59	16.70	0.00	150.0	± 9.6 %
		Y	4.24	66.76	16.19		150.0	
		Z	3.87	67.53	16.10		150.0	
10450-AAB	LTE-FDD (OFDMA, 20 MHz, E-TM 3.1, Clipping 44%)	X	4.49	67.41	16.68	0.00	150.0	± 9.6 %
		Y	4.44	66.67	16.23		150.0	
		Z	4.09	67.32	16.18		150.0	
10451-AAA	W-CDMA (BS Test Model 1, 64 DPCH, Clipping 44%)	X	3.40	68.67	15.63	0.00	150.0	± 9.6 %
		Y	3.26	67.10	14.88		150.0	
		Z	2.35	65.44	12.16		150.0	
10456-AAA	IEEE 802.11ac WiFi (160MHz, 64-QAM, 99pc duty cycle)	X	6.21	68.26	17.03	0.00	150.0	± 9.6 %
		Y	6.18	67.78	16.74		150.0	
		Z	6.02	68.47	16.90		150.0	
10457-AAA	UMTS-FDD (DC-HSDPA)	X	3.79	65.88	16.40	0.00	150.0	± 9.6 %
		Y	3.72	65.14	15.94		150.0	
		Z	3.57	66.23	15.97		150.0	
10458-AAA	CDMA2000 (1xEV-DO, Rev. B, 2 carriers)	X	4.55	74.54	18.94	0.00	150.0	± 9.6 %
		Y	3.96	71.22	17.53		150.0	
		Z	2.52	66.98	12.92		150.0	
10459-AAA	CDMA2000 (1xEV-DO, Rev. B, 3 carriers)	X	5.21	70.11	18.87	0.00	150.0	± 9.6 %
		Y	5.07	68.76	18.36		150.0	
		Z	4.31	68.85	16.39		150.0	

10460-AAA	UMTS-FDD (WCDMA, AMR)	X	1.67	81.44	22.82	0.00	150.0	± 9.6 %
		Y	0.85	68.84	16.08		150.0	
		Z	0.99	72.50	17.64		150.0	
10461-AAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	100.00	132.27	34.17	3.29	80.0	± 9.6 %
		Y	100.00	133.76	35.24		80.0	
		Z	0.86	67.05	13.87		80.0	
10462-AAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	0.88	61.91	8.92	3.23	80.0	± 9.6 %
		Y	5.67	79.11	16.10		80.0	
		Z	0.23	55.22	3.15		80.0	
10463-AAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	0.73	60.00	7.31	3.23	80.0	± 9.6 %
		Y	1.14	62.85	9.51		80.0	
		Z	34.56	202.30	4.51		80.0	
10464-AAA	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	100.00	128.52	32.27	3.23	80.0	± 9.6 %
		Y	100.00	130.48	33.54		80.0	
		Z	0.63	63.66	11.53		80.0	
10465-AAA	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	0.80	61.04	8.42	3.23	80.0	± 9.6 %
		Y	2.64	71.55	13.56		80.0	
		Z	0.23	55.13	3.04		80.0	
10466-AAA	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	0.73	60.00	7.25	3.23	80.0	± 9.6 %
		Y	1.03	61.91	9.01		80.0	
		Z	37.14	195.60	0.28		80.0	
10467-AAC	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	100.00	128.99	32.47	3.23	80.0	± 9.6 %
		Y	100.00	130.89	33.72		80.0	
		Z	0.65	64.09	11.80		80.0	
10468-AAC	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	0.82	61.28	8.57	3.23	80.0	± 9.6 %
		Y	3.09	73.14	14.14		80.0	
		Z	0.23	55.18	3.10		80.0	
10469-AAC	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	0.73	60.00	7.25	3.23	80.0	± 9.6 %
		Y	1.03	61.93	9.02		80.0	
		Z	36.80	196.02	0.07		80.0	
10470-AAC	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	100.00	129.03	32.47	3.23	80.0	± 9.6 %
		Y	100.00	130.94	33.73		80.0	
		Z	0.65	64.09	11.79		80.0	
10471-AAC	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	0.81	61.21	8.52	3.23	80.0	± 9.6 %
		Y	3.01	72.86	14.02		80.0	
		Z	0.23	55.16	3.07		80.0	
10472-AAC	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	0.73	60.00	7.23	3.23	80.0	± 9.6 %
		Y	1.02	61.86	8.97		80.0	
		Z	36.57	196.42	0.04		80.0	
10473-AAC	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	100.00	128.98	32.45	3.23	80.0	± 9.6 %
		Y	100.00	130.89	33.70		80.0	
		Z	0.65	64.06	11.77		80.0	
10474-AAC	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	0.81	61.18	8.50	3.23	80.0	± 9.6 %
		Y	2.96	72.71	13.97		80.0	
		Z	0.23	55.15	3.06		80.0	
10475-AAC	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	0.73	60.00	7.23	3.23	80.0	± 9.6 %
		Y	1.02	61.83	8.96		80.0	
		Z	36.54	196.30	0.09		80.0	

10477-AAC	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	0.79	60.97	8.37	3.23	80.0	± 9.6 %
		Y	2.60	71.42	13.49		80.0	
		Z	0.23	55.10	3.00		80.0	
10478-AAC	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	0.73	60.00	7.22	3.23	80.0	± 9.6 %
		Y	1.01	61.77	8.92		80.0	
		Z	36.61	196.19	0.22		80.0	
10479-AAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	20.16	103.23	27.85	3.23	80.0	± 9.6 %
		Y	19.65	103.34	28.54		80.0	
		Z	2.37	74.81	17.26		80.0	
10480-AAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	9.89	85.57	20.17	3.23	80.0	± 9.6 %
		Y	15.72	92.07	22.93		80.0	
		Z	0.84	60.40	8.22		80.0	
10481-AAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	5.25	76.97	16.93	3.23	80.0	± 9.6 %
		Y	9.21	84.04	20.06		80.0	
		Z	0.81	60.00	7.48		80.0	
10482-AAA	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	4.08	78.12	18.78	2.23	80.0	± 9.6 %
		Y	2.96	73.52	17.41		80.0	
		Z	0.80	60.00	7.98		80.0	
10483-AAA	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	3.16	70.31	14.77	2.23	80.0	± 9.6 %
		Y	4.98	76.32	17.94		80.0	
		Z	1.04	60.00	6.62		80.0	
10484-AAA	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	2.88	68.90	14.19	2.23	80.0	± 9.6 %
		Y	4.35	74.28	17.19		80.0	
		Z	1.06	60.00	6.62		80.0	
10485-AAC	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	4.30	79.68	20.81	2.23	80.0	± 9.6 %
		Y	3.30	75.19	19.27		80.0	
		Z	1.58	66.77	13.46		80.0	
10486-AAC	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	3.32	71.67	16.87	2.23	80.0	± 9.6 %
		Y	2.95	69.56	16.29		80.0	
		Z	1.23	60.80	9.31		80.0	
10487-AAC	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	3.23	70.86	16.50	2.23	80.0	± 9.6 %
		Y	2.93	69.03	16.04		80.0	
		Z	1.23	60.51	9.10		80.0	
10488-AAC	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	3.73	75.41	20.23	2.23	80.0	± 9.6 %
		Y	3.36	73.10	19.27		80.0	
		Z	2.33	69.98	17.03		80.0	
10489-AAC	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	3.39	70.37	17.99	2.23	80.0	± 9.6 %
		Y	3.19	68.86	17.42		80.0	
		Z	2.47	67.34	15.33		80.0	
10490-AAC	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	3.45	70.06	17.85	2.23	80.0	± 9.6 %
		Y	3.27	68.65	17.33		80.0	
		Z	2.51	67.07	15.18		80.0	
10491-AAC	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	3.73	72.52	19.20	2.23	80.0	± 9.6 %
		Y	3.51	71.01	18.52		80.0	
		Z	2.62	68.84	17.00		80.0	
10492-AAC	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	3.62	68.89	17.71	2.23	80.0	± 9.6 %
		Y	3.50	67.86	17.30		80.0	
		Z	2.86	66.99	15.98		80.0	

10493-AAC	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	3.67	68.70	17.62	2.23	80.0	± 9.6 %
		Y	3.57	67.71	17.24		80.0	
		Z	2.90	66.85	15.89		80.0	
10494-AAC	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	4.15	74.48	19.87	2.23	80.0	± 9.6 %
		Y	3.86	72.77	19.10		80.0	
		Z	2.79	69.91	17.50		80.0	
10495-AAC	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	3.65	69.23	17.93	2.23	80.0	± 9.6 %
		Y	3.53	68.24	17.51		80.0	
		Z	2.89	67.18	16.30		80.0	
10496-AAC	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	3.71	68.88	17.79	2.23	80.0	± 9.6 %
		Y	3.61	67.94	17.41		80.0	
		Z	2.97	67.05	16.26		80.0	
10497-AAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	1.93	67.80	13.30	2.23	80.0	± 9.6 %
		Y	1.77	66.59	13.26		80.0	
		Z	0.80	60.00	5.90		80.0	
10498-AAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	1.18	60.00	8.23	2.23	80.0	± 9.6 %
		Y	1.27	60.23	8.90		80.0	
		Z	1.28	60.00	4.37		80.0	
10499-AAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	1.19	60.00	8.06	2.23	80.0	± 9.6 %
		Y	1.27	60.00	8.62		80.0	
		Z	1.47	60.00	4.12		80.0	
10500-AAA	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	3.88	77.27	20.36	2.23	80.0	± 9.6 %
		Y	3.24	73.87	19.11		80.0	
		Z	1.94	68.67	15.14		80.0	
10501-AAA	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	3.40	71.39	17.40	2.23	80.0	± 9.6 %
		Y	3.08	69.41	16.78		80.0	
		Z	1.73	63.77	11.83		80.0	
10502-AAA	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	3.43	71.08	17.18	2.23	80.0	± 9.6 %
		Y	3.13	69.22	16.63		80.0	
		Z	1.72	63.42	11.54		80.0	
10503-AAC	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	3.67	75.14	20.11	2.23	80.0	± 9.6 %
		Y	3.31	72.86	19.16		80.0	
		Z	2.29	69.74	16.91		80.0	
10504-AAC	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	3.37	70.25	17.91	2.23	80.0	± 9.6 %
		Y	3.17	68.75	17.36		80.0	
		Z	2.45	67.19	15.24		80.0	
10505-AAC	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	3.43	69.95	17.78	2.23	80.0	± 9.6 %
		Y	3.25	68.55	17.27		80.0	
		Z	2.49	66.94	15.10		80.0	
10506-AAC	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	4.11	74.30	19.78	2.23	80.0	± 9.6 %
		Y	3.82	72.61	19.01		80.0	
		Z	2.77	69.76	17.41		80.0	
10507-AAC	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	3.63	69.16	17.89	2.23	80.0	± 9.6 %
		Y	3.52	68.17	17.47		80.0	
		Z	2.88	67.11	16.26		80.0	

10508-AAC	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	3.69	68.80	17.75	2.23	80.0	± 9.6 %
		Y	3.59	67.87	17.36		80.0	
		Z	2.96	66.96	16.20		80.0	
10509-AAC	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	4.32	72.25	18.91	2.23	80.0	± 9.6 %
		Y	4.11	70.97	18.31		80.0	
		Z	3.21	69.01	17.20		80.0	
10510-AAC	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	4.06	68.53	17.71	2.23	80.0	± 9.6 %
		Y	3.98	67.79	17.39		80.0	
		Z	3.33	66.76	16.43		80.0	
10511-AAC	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	4.11	68.24	17.61	2.23	80.0	± 9.6 %
		Y	4.03	67.51	17.30		80.0	
		Z	3.41	66.67	16.41		80.0	
10512-AAC	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	4.63	74.28	19.59	2.23	80.0	± 9.6 %
		Y	4.34	72.78	18.91		80.0	
		Z	3.23	69.90	17.47		80.0	
10513-AAC	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	3.96	68.81	17.84	2.23	80.0	± 9.6 %
		Y	3.87	68.06	17.51		80.0	
		Z	3.23	66.78	16.48		80.0	
10514-AAC	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	3.97	68.33	17.67	2.23	80.0	± 9.6 %
		Y	3.89	67.61	17.37		80.0	
		Z	3.29	66.55	16.41		80.0	
10515-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 2 Mbps, 99pc duty cycle)	X	1.04	65.65	16.81	0.00	150.0	± 9.6 %
		Y	0.89	62.99	14.61		150.0	
		Z	0.94	64.35	15.12		150.0	
10516-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 5.5 Mbps, 99pc duty cycle)	X	6.55	119.55	35.94	0.00	150.0	± 9.6 %
		Y	0.64	73.86	17.93		150.0	
		Z	0.76	76.88	20.34		150.0	
10517-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 11 Mbps, 99pc duty cycle)	X	0.99	70.42	19.03	0.00	150.0	± 9.6 %
		Y	0.74	65.18	15.26		150.0	
		Z	0.80	66.68	16.07		150.0	
10518-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 9 Mbps, 99pc duty cycle)	X	4.49	67.33	16.67	0.00	150.0	± 9.6 %
		Y	4.44	66.59	16.21		150.0	
		Z	4.10	67.40	16.20		150.0	
10519-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 12 Mbps, 99pc duty cycle)	X	4.65	67.51	16.75	0.00	150.0	± 9.6 %
		Y	4.62	66.81	16.33		150.0	
		Z	4.21	67.51	16.26		150.0	
10520-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 18 Mbps, 99pc duty cycle)	X	4.51	67.48	16.69	0.00	150.0	± 9.6 %
		Y	4.47	66.77	16.25		150.0	
		Z	4.08	67.43	16.18		150.0	
10521-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 24 Mbps, 99pc duty cycle)	X	4.44	67.48	16.69	0.00	150.0	± 9.6 %
		Y	4.41	66.75	16.23		150.0	
		Z	4.01	67.33	16.13		150.0	
10522-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 36 Mbps, 99pc duty cycle)	X	4.50	67.61	16.79	0.00	150.0	± 9.6 %
		Y	4.47	66.88	16.33		150.0	
		Z	4.02	67.33	16.14		150.0	

10523-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 48 Mbps, 99pc duty cycle)	X	4.41	67.57	16.69	0.00	150.0	± 9.6 %
		Y	4.35	66.74	16.17		150.0	
		Z	4.02	67.62	16.24		150.0	
10524-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 54 Mbps, 99pc duty cycle)	X	4.45	67.54	16.77	0.00	150.0	± 9.6 %
		Y	4.41	66.79	16.30		150.0	
		Z	4.00	67.45	16.24		150.0	
10525-AAA	IEEE 802.11ac WiFi (20MHz, MCS0, 99pc duty cycle)	X	4.47	66.64	16.38	0.00	150.0	± 9.6 %
		Y	4.41	65.83	15.89		150.0	
		Z	4.08	66.68	15.93		150.0	
10526-AAA	IEEE 802.11ac WiFi (20MHz, MCS1, 99pc duty cycle)	X	4.61	66.96	16.50	0.00	150.0	± 9.6 %
		Y	4.57	66.19	16.03		150.0	
		Z	4.16	66.85	16.00		150.0	
10527-AAA	IEEE 802.11ac WiFi (20MHz, MCS2, 99pc duty cycle)	X	4.54	66.94	16.46	0.00	150.0	± 9.6 %
		Y	4.49	66.15	15.97		150.0	
		Z	4.11	66.87	15.96		150.0	
10528-AAA	IEEE 802.11ac WiFi (20MHz, MCS3, 99pc duty cycle)	X	4.56	66.95	16.48	0.00	150.0	± 9.6 %
		Y	4.51	66.16	16.00		150.0	
		Z	4.11	66.84	15.98		150.0	
10529-AAA	IEEE 802.11ac WiFi (20MHz, MCS4, 99pc duty cycle)	X	4.56	66.95	16.48	0.00	150.0	± 9.6 %
		Y	4.51	66.16	16.00		150.0	
		Z	4.11	66.84	15.98		150.0	
10531-AAA	IEEE 802.11ac WiFi (20MHz, MCS6, 99pc duty cycle)	X	4.54	67.03	16.49	0.00	150.0	± 9.6 %
		Y	4.49	66.26	16.01		150.0	
		Z	4.06	66.82	15.93		150.0	
10532-AAA	IEEE 802.11ac WiFi (20MHz, MCS7, 99pc duty cycle)	X	4.41	66.90	16.43	0.00	150.0	± 9.6 %
		Y	4.36	66.10	15.94		150.0	
		Z	3.97	66.72	15.88		150.0	
10533-AAA	IEEE 802.11ac WiFi (20MHz, MCS8, 99pc duty cycle)	X	4.57	67.04	16.49	0.00	150.0	± 9.6 %
		Y	4.51	66.22	16.00		150.0	
		Z	4.11	66.98	16.00		150.0	
10534-AAA	IEEE 802.11ac WiFi (40MHz, MCS0, 99pc duty cycle)	X	5.09	66.86	16.46	0.00	150.0	± 9.6 %
		Y	5.05	66.26	16.08		150.0	
		Z	4.69	66.62	16.03		150.0	
10535-AAA	IEEE 802.11ac WiFi (40MHz, MCS1, 99pc duty cycle)	X	5.15	67.03	16.53	0.00	150.0	± 9.6 %
		Y	5.13	66.47	16.18		150.0	
		Z	4.70	66.68	16.07		150.0	
10536-AAA	IEEE 802.11ac WiFi (40MHz, MCS2, 99pc duty cycle)	X	5.04	67.03	16.52	0.00	150.0	± 9.6 %
		Y	5.00	66.40	16.12		150.0	
		Z	4.61	66.71	16.06		150.0	
10537-AAA	IEEE 802.11ac WiFi (40MHz, MCS3, 99pc duty cycle)	X	5.09	66.97	16.49	0.00	150.0	± 9.6 %
		Y	5.05	66.36	16.10		150.0	
		Z	4.69	66.78	16.10		150.0	
10538-AAA	IEEE 802.11ac WiFi (40MHz, MCS4, 99pc duty cycle)	X	5.16	66.94	16.51	0.00	150.0	± 9.6 %
		Y	5.14	66.37	16.15		150.0	
		Z	4.72	66.63	16.05		150.0	
10540-AAA	IEEE 802.11ac WiFi (40MHz, MCS6, 99pc duty cycle)	X	5.09	66.93	16.53	0.00	150.0	± 9.6 %
		Y	5.08	66.43	16.19		150.0	
		Z	4.66	66.59	16.06		150.0	

10541-AAA	IEEE 802.11ac WiFi (40MHz, MCS7, 99pc duty cycle)	X	5.07	66.82	16.46	0.00	150.0	± 9.6 %
		Y	5.04	66.26	16.10		150.0	
		Z	4.67	66.59	16.03		150.0	
10542-AAA	IEEE 802.11ac WiFi (40MHz, MCS8, 99pc duty cycle)	X	5.22	66.89	16.50	0.00	150.0	± 9.6 %
		Y	5.20	66.33	16.15		150.0	
		Z	4.80	66.65	16.08		150.0	
10543-AAA	IEEE 802.11ac WiFi (40MHz, MCS9, 99pc duty cycle)	X	5.28	66.90	16.53	0.00	150.0	± 9.6 %
		Y	5.27	66.37	16.19		150.0	
		Z	4.85	66.69	16.13		150.0	
10544-AAA	IEEE 802.11ac WiFi (80MHz, MCS0, 99pc duty cycle)	X	5.42	66.89	16.41	0.00	150.0	± 9.6 %
		Y	5.38	66.35	16.07		150.0	
		Z	5.06	66.58	15.99		150.0	
10545-AAA	IEEE 802.11ac WiFi (80MHz, MCS1, 99pc duty cycle)	X	5.61	67.34	16.58	0.00	150.0	± 9.6 %
		Y	5.59	66.84	16.26		150.0	
		Z	5.18	66.92	16.13		150.0	
10546-AAA	IEEE 802.11ac WiFi (80MHz, MCS2, 99pc duty cycle)	X	5.46	67.05	16.45	0.00	150.0	± 9.6 %
		Y	5.44	66.55	16.13		150.0	
		Z	5.08	66.67	16.01		150.0	
10547-AAA	IEEE 802.11ac WiFi (80MHz, MCS3, 99pc duty cycle)	X	5.53	67.12	16.48	0.00	150.0	± 9.6 %
		Y	5.51	66.61	16.15		150.0	
		Z	5.19	66.91	16.13		150.0	
10548-AAA	IEEE 802.11ac WiFi (80MHz, MCS4, 99pc duty cycle)	X	5.73	67.91	16.85	0.00	150.0	± 9.6 %
		Y	5.81	67.71	16.67		150.0	
		Z	5.17	67.04	16.17		150.0	
10550-AAA	IEEE 802.11ac WiFi (80MHz, MCS6, 99pc duty cycle)	X	5.51	67.17	16.53	0.00	150.0	± 9.6 %
		Y	5.48	66.64	16.19		150.0	
		Z	5.17	67.03	16.20		150.0	
10551-AAA	IEEE 802.11ac WiFi (80MHz, MCS7, 99pc duty cycle)	X	5.48	67.07	16.44	0.00	150.0	± 9.6 %
		Y	5.47	66.61	16.13		150.0	
		Z	5.05	66.59	15.95		150.0	
10552-AAA	IEEE 802.11ac WiFi (80MHz, MCS8, 99pc duty cycle)	X	5.43	67.00	16.40	0.00	150.0	± 9.6 %
		Y	5.38	66.41	16.04		150.0	
		Z	5.06	66.75	16.03		150.0	
10553-AAA	IEEE 802.11ac WiFi (80MHz, MCS9, 99pc duty cycle)	X	5.49	66.96	16.41	0.00	150.0	± 9.6 %
		Y	5.46	66.43	16.08		150.0	
		Z	5.10	66.64	15.99		150.0	
10554-AAB	IEEE 802.11ac WiFi (160MHz, MCS0, 99pc duty cycle)	X	5.83	67.20	16.46	0.00	150.0	± 9.6 %
		Y	5.79	66.72	16.16		150.0	
		Z	5.50	66.84	16.04		150.0	
10555-AAB	IEEE 802.11ac WiFi (160MHz, MCS1, 99pc duty cycle)	X	5.94	67.48	16.58	0.00	150.0	± 9.6 %
		Y	5.93	67.06	16.30		150.0	
		Z	5.55	66.98	16.10		150.0	
10556-AAB	IEEE 802.11ac WiFi (160MHz, MCS2, 99pc duty cycle)	X	5.98	67.56	16.61	0.00	150.0	± 9.6 %
		Y	5.95	67.09	16.31		150.0	
		Z	5.60	67.13	16.16		150.0	
10557-AAB	IEEE 802.11ac WiFi (160MHz, MCS3, 99pc duty cycle)	X	5.93	67.43	16.56	0.00	150.0	± 9.6 %
		Y	5.90	66.96	16.27		150.0	
		Z	5.56	67.01	16.12		150.0	

10558-AAB	IEEE 802.11ac WiFi (160MHz, MCS4, 99pc duty cycle)	X	5.97	67.56	16.65	0.00	150.0	± 9.6 %
		Y	5.95	67.13	16.37		150.0	
		Z	5.52	66.94	16.10		150.0	
10560-AAB	IEEE 802.11ac WiFi (160MHz, MCS6, 99pc duty cycle)	X	5.96	67.42	16.61	0.00	150.0	± 9.6 %
		Y	5.94	66.96	16.32		150.0	
		Z	5.56	66.94	16.14		150.0	
10561-AAB	IEEE 802.11ac WiFi (160MHz, MCS7, 99pc duty cycle)	X	5.90	67.41	16.64	0.00	150.0	± 9.6 %
		Y	5.88	66.97	16.36		150.0	
		Z	5.50	66.91	16.15		150.0	
10562-AAB	IEEE 802.11ac WiFi (160MHz, MCS8, 99pc duty cycle)	X	5.97	67.66	16.77	0.00	150.0	± 9.6 %
		Y	5.99	67.32	16.54		150.0	
		Z	5.54	67.03	16.21		150.0	
10563-AAB	IEEE 802.11ac WiFi (160MHz, MCS9, 99pc duty cycle)	X	6.05	67.54	16.67	0.00	150.0	± 9.6 %
		Y	6.14	67.41	16.54		150.0	
		Z	5.71	67.27	16.30		150.0	
10564-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 9 Mbps, 99pc duty cycle)	X	4.79	67.27	16.73	0.46	150.0	± 9.6 %
		Y	4.77	66.65	16.37		150.0	
		Z	4.38	67.27	16.26		150.0	
10565-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 12 Mbps, 99pc duty cycle)	X	5.00	67.70	17.05	0.46	150.0	± 9.6 %
		Y	4.99	67.10	16.70		150.0	
		Z	4.56	67.70	16.60		150.0	
10566-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 18 Mbps, 99pc duty cycle)	X	4.84	67.54	16.87	0.46	150.0	± 9.6 %
		Y	4.82	66.93	16.50		150.0	
		Z	4.40	67.45	16.37		150.0	
10567-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 24 Mbps, 99pc duty cycle)	X	4.88	67.99	17.27	0.46	150.0	± 9.6 %
		Y	4.86	67.35	16.88		150.0	
		Z	4.45	67.94	16.81		150.0	
10568-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 36 Mbps, 99pc duty cycle)	X	4.74	67.27	16.61	0.46	150.0	± 9.6 %
		Y	4.73	66.70	16.26		150.0	
		Z	4.23	66.90	15.94		150.0	
10569-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 48 Mbps, 99pc duty cycle)	X	4.86	68.20	17.40	0.46	150.0	± 9.6 %
		Y	4.82	67.47	16.96		150.0	
		Z	4.46	68.31	17.04		150.0	
10570-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 54 Mbps, 99pc duty cycle)	X	4.87	67.98	17.29	0.46	150.0	± 9.6 %
		Y	4.85	67.30	16.88		150.0	
		Z	4.42	67.93	16.84		150.0	
10571-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps, 90pc duty cycle)	X	1.17	66.02	17.09	0.46	130.0	± 9.6 %
		Y	1.04	63.86	15.42		130.0	
		Z	1.04	64.38	15.27		130.0	
10572-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 2 Mbps, 90pc duty cycle)	X	1.20	66.83	17.59	0.46	130.0	± 9.6 %
		Y	1.05	64.45	15.81		130.0	
		Z	1.05	64.98	15.67		130.0	
10573-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 5.5 Mbps, 90pc duty cycle)	X	100.00	164.31	45.70	0.46	130.0	± 9.6 %
		Y	2.93	94.62	25.95		130.0	
		Z	1.57	86.06	23.92		130.0	
10574-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 11 Mbps, 90pc duty cycle)	X	1.56	77.05	22.72	0.46	130.0	± 9.6 %
		Y	1.16	70.99	19.18		130.0	
		Z	1.13	71.05	19.03		130.0	

10575-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps, 90pc duty cycle)	X	4.56	67.00	16.74	0.46	130.0	± 9.6 %
		Y	4.55	66.43	16.43		130.0	
		Z	4.15	66.95	16.18		130.0	
10576-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 9 Mbps, 90pc duty cycle)	X	4.59	67.22	16.83	0.46	130.0	± 9.6 %
		Y	4.57	66.61	16.50		130.0	
		Z	4.19	67.24	16.33		130.0	
10577-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 12 Mbps, 90pc duty cycle)	X	4.77	67.46	16.98	0.46	130.0	± 9.6 %
		Y	4.77	66.91	16.67		130.0	
		Z	4.32	67.43	16.45		130.0	
10578-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 18 Mbps, 90pc duty cycle)	X	4.68	67.66	17.12	0.46	130.0	± 9.6 %
		Y	4.67	67.07	16.78		130.0	
		Z	4.24	67.63	16.61		130.0	
10579-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 24 Mbps, 90pc duty cycle)	X	4.42	66.81	16.34	0.46	130.0	± 9.6 %
		Y	4.42	66.29	16.04		130.0	
		Z	3.95	66.50	15.66		130.0	
10580-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 36 Mbps, 90pc duty cycle)	X	4.46	66.87	16.37	0.46	130.0	± 9.6 %
		Y	4.47	66.34	16.07		130.0	
		Z	3.94	66.40	15.58		130.0	
10581-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 48 Mbps, 90pc duty cycle)	X	4.59	67.75	17.09	0.46	130.0	± 9.6 %
		Y	4.56	67.10	16.72		130.0	
		Z	4.17	67.78	16.63		130.0	
10582-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 54 Mbps, 90pc duty cycle)	X	4.35	66.55	16.11	0.46	130.0	± 9.6 %
		Y	4.37	66.05	15.82		130.0	
		Z	3.86	66.19	15.39		130.0	
10583-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps, 90pc duty cycle)	X	4.56	67.00	16.74	0.46	130.0	± 9.6 %
		Y	4.55	66.43	16.43		130.0	
		Z	4.15	66.95	16.18		130.0	
10584-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 9 Mbps, 90pc duty cycle)	X	4.59	67.22	16.83	0.46	130.0	± 9.6 %
		Y	4.57	66.61	16.50		130.0	
		Z	4.19	67.24	16.33		130.0	
10585-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 12 Mbps, 90pc duty cycle)	X	4.77	67.46	16.98	0.46	130.0	± 9.6 %
		Y	4.77	66.91	16.67		130.0	
		Z	4.32	67.43	16.45		130.0	
10586-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 18 Mbps, 90pc duty cycle)	X	4.68	67.66	17.12	0.46	130.0	± 9.6 %
		Y	4.67	67.07	16.78		130.0	
		Z	4.24	67.63	16.61		130.0	
10587-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 24 Mbps, 90pc duty cycle)	X	4.42	66.81	16.34	0.46	130.0	± 9.6 %
		Y	4.42	66.29	16.04		130.0	
		Z	3.95	66.50	15.66		130.0	
10588-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 36 Mbps, 90pc duty cycle)	X	4.46	66.87	16.37	0.46	130.0	± 9.6 %
		Y	4.47	66.34	16.07		130.0	
		Z	3.94	66.40	15.58		130.0	
10589-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 48 Mbps, 90pc duty cycle)	X	4.59	67.75	17.09	0.46	130.0	± 9.6 %
		Y	4.56	67.10	16.72		130.0	
		Z	4.17	67.78	16.63		130.0	
10590-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 54 Mbps, 90pc duty cycle)	X	4.35	66.55	16.11	0.46	130.0	± 9.6 %
		Y	4.37	66.05	15.82		130.0	
		Z	3.86	66.19	15.39		130.0	

10591-AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS0, 90pc duty cycle)	X	4.71	67.06	16.84	0.46	130.0	± 9.6 %
		Y	4.70	66.50	16.54		130.0	
		Z	4.31	67.10	16.36		130.0	
10592-AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS1, 90pc duty cycle)	X	4.85	67.38	16.97	0.46	130.0	± 9.6 %
		Y	4.85	66.84	16.67		130.0	
		Z	4.39	67.31	16.46		130.0	
10593-AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS2, 90pc duty cycle)	X	4.76	67.27	16.83	0.46	130.0	± 9.6 %
		Y	4.77	66.73	16.54		130.0	
		Z	4.32	67.19	16.31		130.0	
10594-AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS3, 90pc duty cycle)	X	4.82	67.45	17.01	0.46	130.0	± 9.6 %
		Y	4.82	66.91	16.71		130.0	
		Z	4.37	67.37	16.49		130.0	
10595-AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS4, 90pc duty cycle)	X	4.79	67.42	16.91	0.46	130.0	± 9.6 %
		Y	4.79	66.86	16.60		130.0	
		Z	4.33	67.34	16.39		130.0	
10596-AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS5, 90pc duty cycle)	X	4.72	67.41	16.91	0.46	130.0	± 9.6 %
		Y	4.72	66.86	16.60		130.0	
		Z	4.24	67.21	16.34		130.0	
10597-AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS6, 90pc duty cycle)	X	4.67	67.28	16.77	0.46	130.0	± 9.6 %
		Y	4.67	66.74	16.47		130.0	
		Z	4.21	67.09	16.18		130.0	
10598-AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS7, 90pc duty cycle)	X	4.66	67.55	17.06	0.46	130.0	± 9.6 %
		Y	4.66	66.99	16.74		130.0	
		Z	4.25	67.48	16.55		130.0	
10599-AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS0, 90pc duty cycle)	X	5.38	67.46	17.00	0.46	130.0	± 9.6 %
		Y	5.39	67.08	16.78		130.0	
		Z	5.06	67.57	16.73		130.0	
10600-AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS1, 90pc duty cycle)	X	5.50	67.86	17.17	0.46	130.0	± 9.6 %
		Y	5.58	67.68	17.05		130.0	
		Z	5.02	67.48	16.66		130.0	
10601-AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS2, 90pc duty cycle)	X	5.39	67.63	17.08	0.46	130.0	± 9.6 %
		Y	5.43	67.31	16.88		130.0	
		Z	4.98	67.44	16.66		130.0	
10602-AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS3, 90pc duty cycle)	X	5.53	67.81	17.08	0.46	130.0	± 9.6 %
		Y	5.55	67.42	16.86		130.0	
		Z	5.01	67.28	16.49		130.0	
10603-AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS4, 90pc duty cycle)	X	5.60	68.12	17.37	0.46	130.0	± 9.6 %
		Y	5.61	67.66	17.11		130.0	
		Z	5.03	67.44	16.73		130.0	
10604-AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS5, 90pc duty cycle)	X	5.47	67.74	17.17	0.46	130.0	± 9.6 %
		Y	5.43	67.16	16.85		130.0	
		Z	4.97	67.18	16.56		130.0	
10605-AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS6, 90pc duty cycle)	X	5.49	67.78	17.18	0.46	130.0	± 9.6 %
		Y	5.55	67.52	17.03		130.0	
		Z	4.99	67.27	16.60		130.0	
10606-AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS7, 90pc duty cycle)	X	5.24	67.08	16.69	0.46	130.0	± 9.6 %
		Y	5.24	66.65	16.44		130.0	
		Z	4.89	67.04	16.33		130.0	

10607-AAA	IEEE 802.11ac WiFi (20MHz, MCS0, 90pc duty cycle)	X	4.57	66.48	16.53	0.46	130.0	± 9.6 %
		Y	4.55	65.84	16.17		130.0	
		Z	4.18	66.50	16.05		130.0	
10608-AAA	IEEE 802.11ac WiFi (20MHz, MCS1, 90pc duty cycle)	X	4.73	66.85	16.68	0.46	130.0	± 9.6 %
		Y	4.72	66.24	16.34		130.0	
		Z	4.27	66.73	16.16		130.0	
10609-AAA	IEEE 802.11ac WiFi (20MHz, MCS2, 90pc duty cycle)	X	4.63	66.69	16.51	0.46	130.0	± 9.6 %
		Y	4.61	66.07	16.16		130.0	
		Z	4.17	66.56	15.97		130.0	
10610-AAA	IEEE 802.11ac WiFi (20MHz, MCS3, 90pc duty cycle)	X	4.68	66.87	16.68	0.46	130.0	± 9.6 %
		Y	4.66	66.24	16.33		130.0	
		Z	4.22	66.75	16.16		130.0	
10611-AAA	IEEE 802.11ac WiFi (20MHz, MCS4, 90pc duty cycle)	X	4.59	66.66	16.53	0.46	130.0	± 9.6 %
		Y	4.58	66.04	16.18		130.0	
		Z	4.13	66.50	15.97		130.0	
10612-AAA	IEEE 802.11ac WiFi (20MHz, MCS5, 90pc duty cycle)	X	4.59	66.81	16.58	0.46	130.0	± 9.6 %
		Y	4.58	66.20	16.22		130.0	
		Z	4.08	66.48	15.94		130.0	
10613-AAA	IEEE 802.11ac WiFi (20MHz, MCS6, 90pc duty cycle)	X	4.58	66.63	16.42	0.46	130.0	± 9.6 %
		Y	4.58	66.05	16.09		130.0	
		Z	4.09	66.33	15.79		130.0	
10614-AAA	IEEE 802.11ac WiFi (20MHz, MCS7, 90pc duty cycle)	X	4.55	66.89	16.70	0.46	130.0	± 9.6 %
		Y	4.53	66.26	16.34		130.0	
		Z	4.11	66.71	16.14		130.0	
10615-AAA	IEEE 802.11ac WiFi (20MHz, MCS8, 90pc duty cycle)	X	4.58	66.46	16.28	0.46	130.0	± 9.6 %
		Y	4.57	65.86	15.94		130.0	
		Z	4.10	66.28	15.69		130.0	
10616-AAA	IEEE 802.11ac WiFi (40MHz, MCS0, 90pc duty cycle)	X	5.21	66.76	16.64	0.46	130.0	± 9.6 %
		Y	5.21	66.31	16.38		130.0	
		Z	4.79	66.50	16.19		130.0	
10617-AAA	IEEE 802.11ac WiFi (40MHz, MCS1, 90pc duty cycle)	X	5.28	66.96	16.71	0.46	130.0	± 9.6 %
		Y	5.30	66.56	16.48		130.0	
		Z	4.80	66.53	16.19		130.0	
10618-AAA	IEEE 802.11ac WiFi (40MHz, MCS2, 90pc duty cycle)	X	5.18	67.02	16.77	0.46	130.0	± 9.6 %
		Y	5.17	66.53	16.48		130.0	
		Z	4.73	66.65	16.27		130.0	
10619-AAA	IEEE 802.11ac WiFi (40MHz, MCS3, 90pc duty cycle)	X	5.18	66.77	16.57	0.46	130.0	± 9.6 %
		Y	5.19	66.33	16.31		130.0	
		Z	4.77	66.54	16.14		130.0	
10620-AAA	IEEE 802.11ac WiFi (40MHz, MCS4, 90pc duty cycle)	X	5.26	66.78	16.62	0.46	130.0	± 9.6 %
		Y	5.27	66.36	16.38		130.0	
		Z	4.79	66.38	16.10		130.0	
10621-AAA	IEEE 802.11ac WiFi (40MHz, MCS5, 90pc duty cycle)	X	5.27	66.94	16.83	0.46	130.0	± 9.6 %
		Y	5.28	66.50	16.57		130.0	
		Z	4.84	66.63	16.36		130.0	
10622-AAA	IEEE 802.11ac WiFi (40MHz, MCS6, 90pc duty cycle)	X	5.27	67.06	16.88	0.46	130.0	± 9.6 %
		Y	5.30	66.69	16.66		130.0	
		Z	4.82	66.67	16.38		130.0	

10623-AAA	IEEE 802.11ac WiFi (40MHz, MCS7, 90pc duty cycle)	X	5.14	66.56	16.49	0.46	130.0	± 9.6 %
		Y	5.16	66.17	16.27		130.0	
		Z	4.73	66.28	16.02		130.0	
10624-AAA	IEEE 802.11ac WiFi (40MHz, MCS8, 90pc duty cycle)	X	5.34	66.79	16.67	0.46	130.0	± 9.6 %
		Y	5.36	66.38	16.44		130.0	
		Z	4.90	66.49	16.20		130.0	
10625-AAA	IEEE 802.11ac WiFi (40MHz, MCS9, 90pc duty cycle)	X	5.53	67.24	16.95	0.46	130.0	± 9.6 %
		Y	5.72	67.37	16.98		130.0	
		Z	4.98	66.67	16.36		130.0	
10626-AAA	IEEE 802.11ac WiFi (80MHz, MCS0, 90pc duty cycle)	X	5.53	66.77	16.57	0.46	130.0	± 9.6 %
		Y	5.52	66.36	16.33		130.0	
		Z	5.17	66.45	16.14		130.0	
10627-AAA	IEEE 802.11ac WiFi (80MHz, MCS1, 90pc duty cycle)	X	5.77	67.38	16.84	0.46	130.0	± 9.6 %
		Y	5.79	67.05	16.64		130.0	
		Z	5.33	66.94	16.36		130.0	
10628-AAA	IEEE 802.11ac WiFi (80MHz, MCS2, 90pc duty cycle)	X	5.53	66.78	16.47	0.46	130.0	± 9.6 %
		Y	5.55	66.45	16.27		130.0	
		Z	5.13	66.35	15.99		130.0	
10629-AAA	IEEE 802.11ac WiFi (80MHz, MCS3, 90pc duty cycle)	X	5.62	66.89	16.52	0.46	130.0	± 9.6 %
		Y	5.63	66.51	16.30		130.0	
		Z	5.28	66.74	16.18		130.0	
10630-AAA	IEEE 802.11ac WiFi (80MHz, MCS4, 90pc duty cycle)	X	5.94	68.09	17.12	0.46	130.0	± 9.6 %
		Y	6.16	68.32	17.19		130.0	
		Z	5.28	66.93	16.29		130.0	
10631-AAA	IEEE 802.11ac WiFi (80MHz, MCS5, 90pc duty cycle)	X	5.90	68.06	17.30	0.46	130.0	± 9.6 %
		Y	5.97	67.86	17.17		130.0	
		Z	5.37	67.35	16.70		130.0	
10632-AAA	IEEE 802.11ac WiFi (80MHz, MCS6, 90pc duty cycle)	X	5.75	67.52	17.06	0.46	130.0	± 9.6 %
		Y	5.76	67.11	16.82		130.0	
		Z	5.42	67.45	16.76		130.0	
10633-AAA	IEEE 802.11ac WiFi (80MHz, MCS7, 90pc duty cycle)	X	5.60	67.00	16.62	0.46	130.0	± 9.6 %
		Y	5.60	66.57	16.37		130.0	
		Z	5.15	66.45	16.08		130.0	
10634-AAA	IEEE 802.11ac WiFi (80MHz, MCS8, 90pc duty cycle)	X	5.59	67.04	16.70	0.46	130.0	± 9.6 %
		Y	5.58	66.62	16.45		130.0	
		Z	5.20	66.73	16.28		130.0	
10635-AAA	IEEE 802.11ac WiFi (80MHz, MCS9, 90pc duty cycle)	X	5.44	66.26	16.02	0.46	130.0	± 9.6 %
		Y	5.46	65.92	15.82		130.0	
		Z	5.02	65.82	15.51		130.0	
10636-AAB	IEEE 802.11ac WiFi (160MHz, MCS0, 90pc duty cycle)	X	5.95	67.11	16.63	0.46	130.0	± 9.6 %
		Y	5.94	66.74	16.43		130.0	
		Z	5.61	66.74	16.20		130.0	
10637-AAB	IEEE 802.11ac WiFi (160MHz, MCS1, 90pc duty cycle)	X	6.09	67.47	16.80	0.46	130.0	± 9.6 %
		Y	6.12	67.19	16.64		130.0	
		Z	5.68	66.93	16.29		130.0	
10638-AAB	IEEE 802.11ac WiFi (160MHz, MCS2, 90pc duty cycle)	X	6.10	67.46	16.77	0.46	130.0	± 9.6 %
		Y	6.12	67.15	16.59		130.0	
		Z	5.73	67.08	16.34		130.0	

10639-AAB	IEEE 802.11ac WiFi (160MHz, MCS3, 90pc duty cycle)	X	6.07	67.38	16.77	0.46	130.0	± 9.6 %
		Y	6.07	67.04	16.58		130.0	
		Z	5.68	66.93	16.31		130.0	
10640-AAB	IEEE 802.11ac WiFi (160MHz, MCS4, 90pc duty cycle)	X	6.05	67.35	16.70	0.46	130.0	± 9.6 %
		Y	6.08	67.05	16.53		130.0	
		Z	5.59	66.66	16.11		130.0	
10641-AAB	IEEE 802.11ac WiFi (160MHz, MCS5, 90pc duty cycle)	X	6.12	67.33	16.71	0.46	130.0	± 9.6 %
		Y	6.14	67.02	16.53		130.0	
		Z	5.70	66.79	16.20		130.0	
10642-AAB	IEEE 802.11ac WiFi (160MHz, MCS6, 90pc duty cycle)	X	6.16	67.56	17.00	0.46	130.0	± 9.6 %
		Y	6.16	67.22	16.80		130.0	
		Z	5.74	67.06	16.50		130.0	
10643-AAB	IEEE 802.11ac WiFi (160MHz, MCS7, 90pc duty cycle)	X	6.00	67.25	16.73	0.46	130.0	± 9.6 %
		Y	6.01	66.93	16.55		130.0	
		Z	5.58	66.67	16.19		130.0	
10644-AAB	IEEE 802.11ac WiFi (160MHz, MCS8, 90pc duty cycle)	X	6.09	67.54	16.90	0.46	130.0	± 9.6 %
		Y	6.15	67.36	16.79		130.0	
		Z	5.63	66.85	16.30		130.0	
10645-AAB	IEEE 802.11ac WiFi (160MHz, MCS9, 90pc duty cycle)	X	6.22	67.57	16.87	0.46	130.0	± 9.6 %
		Y	6.39	67.71	16.93		130.0	
		Z	5.81	67.14	16.41		130.0	
10646-AAD	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, QPSK, UL Subframe=2,7)	X	11.03	101.75	35.34	9.30	60.0	± 9.6 %
		Y	12.68	104.47	36.60		60.0	
		Z	3.70	79.24	26.83		60.0	
10647-AAC	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK, UL Subframe=2,7)	X	9.37	98.53	34.41	9.30	60.0	± 9.6 %
		Y	10.92	101.53	35.78		60.0	
		Z	3.32	77.14	26.04		60.0	
10648-AAA	CDMA2000 (1x Advanced)	X	0.86	67.94	12.60	0.00	150.0	± 9.6 %
		Y	0.54	62.00	8.94		150.0	
		Z	0.29	60.00	5.06		150.0	
10652-AAB	LTE-TDD (OFDMA, 5 MHz, E-TM 3.1, Clipping 44%)	X	3.51	67.68	17.01	2.23	80.0	± 9.6 %
		Y	3.36	66.42	16.50		80.0	
		Z	2.89	66.54	15.34		80.0	
10653-AAB	LTE-TDD (OFDMA, 10 MHz, E-TM 3.1, Clipping 44%)	X	3.96	66.46	16.95	2.23	80.0	± 9.6 %
		Y	3.88	65.65	16.61		80.0	
		Z	3.47	65.85	15.96		80.0	
10654-AAB	LTE-TDD (OFDMA, 15 MHz, E-TM 3.1, Clipping 44%)	X	3.94	66.00	16.92	2.23	80.0	± 9.6 %
		Y	3.86	65.27	16.60		80.0	
		Z	3.53	65.38	16.05		80.0	
10655-AAB	LTE-TDD (OFDMA, 20 MHz, E-TM 3.1, Clipping 44%)	X	4.01	65.90	16.93	2.23	80.0	± 9.6 %
		Y	3.92	65.24	16.63		80.0	
		Z	3.63	65.20	16.10		80.0	

[E] Uncertainty is determined using the max. deviation from linear response applying rectangular distribution and is expressed for the square of the field value.

Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S **Schweizerischer Kalibrierdienst**
C **Service suisse d'étalonnage**
Servizio svizzero di taratura
S **Swiss Calibration Service**

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 0108

Client **BTL-TW (Auden)**

Certificate No: D750V3-1145_Aug15

CALIBRATION CERTIFICATE

Object	D750V3 - SN: 1145
Calibration procedure(s)	QA CAL-05.v9 Calibration procedure for dipole validation kits above 700 MHz
Calibration date:	August 24, 2015

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter EPM-442A	GB37480704	07-Oct-14 (No. 217-02020)	Oct-15
Power sensor HP 8481A	US37292783	07-Oct-14 (No. 217-02020)	Oct-15
Power sensor HP 8481A	MY41092317	07-Oct-14 (No. 217-02021)	Oct-15
Reference 20 dB Attenuator	SN: 5058 (20k)	01-Apr-15 (No. 217-02131)	Mar-16
Type-N mismatch combination	SN: 5047.2 / 06327	01-Apr-15 (No. 217-02134)	Mar-16
Reference Probe ES3DV3	SN: 3205	30-Dec-14 (No. ES3-3205_Dec14)	Dec-15
DAE4	SN: 601	17-Aug-15 (No. DAE4-601_Aug15)	Aug-16

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
RF generator R&S SMT-06	100005	04-Aug-99 (in house check Oct-13)	In house check: Oct-16
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-14)	In house check: Oct-15

	Name	Function	Signature
Calibrated by:	Michael Weber	Laboratory Technician	M.Weber
Approved by:	Katja Pokovic	Technical Manager	

Issued: August 26, 2015

Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
c) IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
d) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

e) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY5	V52.8.8
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	15 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	750 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	41.9	0.89 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	42.1 ± 6 %	0.91 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	2.04 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**8.03 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	250 mW input power	1.33 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**5.25 W/kg ± 16.5 % (k=2)**

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Body TSL parameters	22.0 °C	55.5	0.96 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	56.3 ± 6 %	1.00 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm^3 (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	2.21 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**8.60 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	250 mW input power	1.46 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**5.71 W/kg ± 16.5 % (k=2)**

Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	53.7 Ω - 4.2 jΩ
Return Loss	- 25.3 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	48.7 Ω - 5.8 jΩ
Return Loss	- 24.4 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.033 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	January 28, 2015

DASY5 Validation Report for Head TSL

Date: 21.08.2015

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 750 MHz; Type: D750V3; Serial: D750V3 - SN: 1145

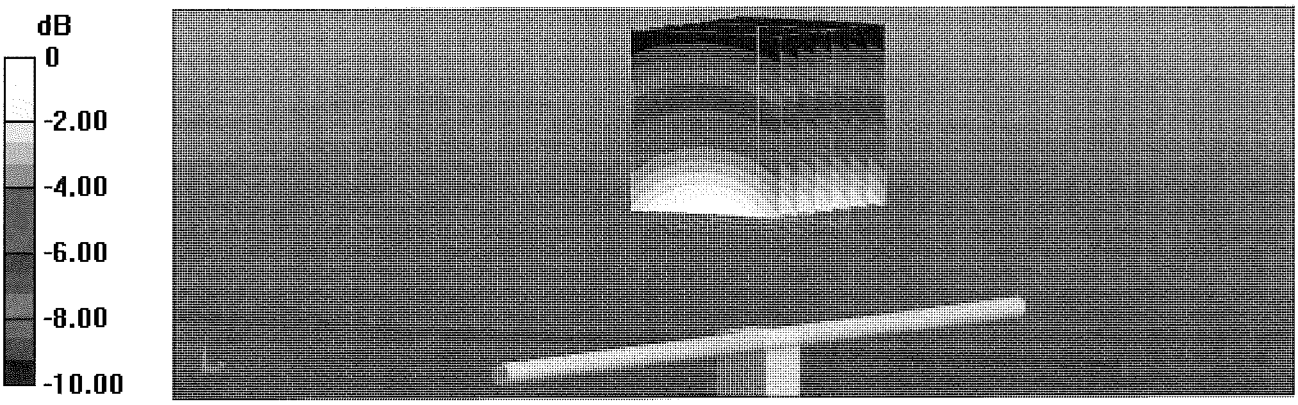
Communication System: UID 0 - CW; Frequency: 750 MHz
Medium parameters used: f = 750 MHz; $\sigma = 0.91$ S/m; $\varepsilon_r = 42.1$; $\rho = 1000$ kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(6.44, 6.44, 6.44); Calibrated: 30.12.2014;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 17.08.2015
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

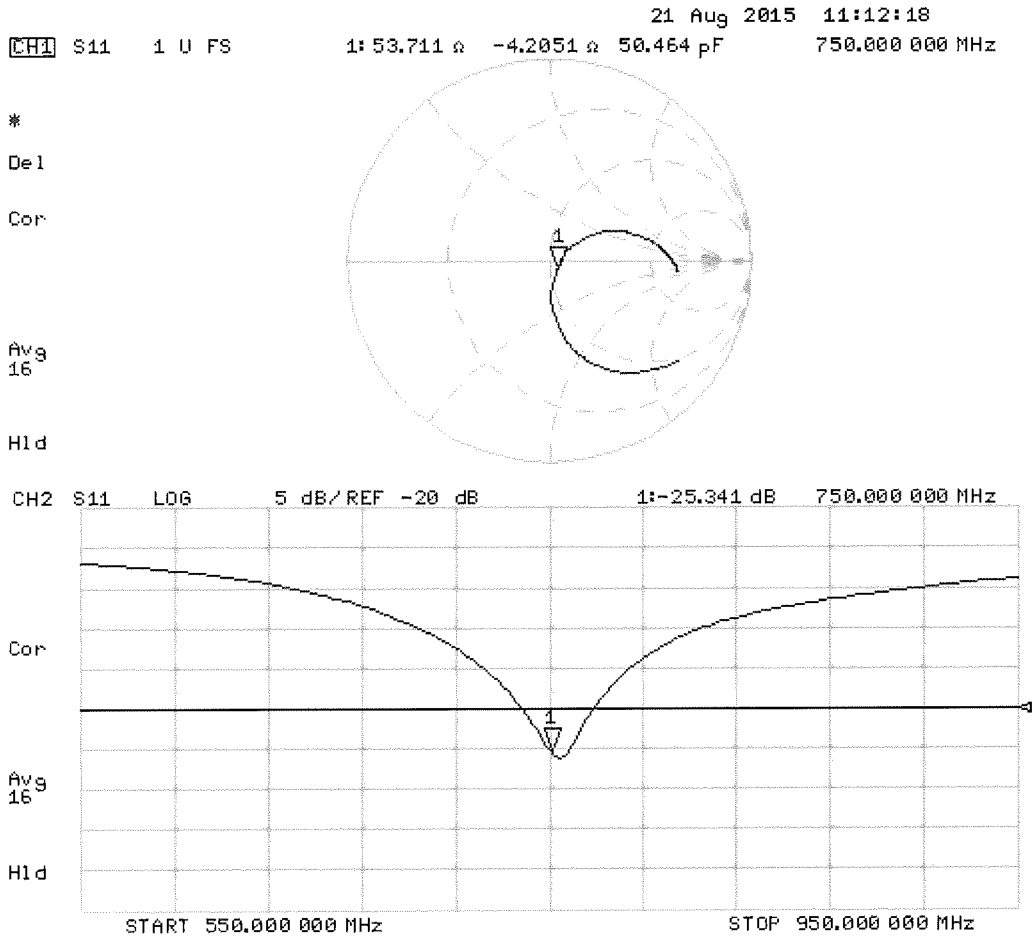
Dipole Calibration for Head Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 52.96 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 3.04 W/kg
SAR(1 g) = 2.04 W/kg; SAR(10 g) = 1.33 W/kg
Maximum value of SAR (measured) = 2.39 W/kg



0 dB = 2.39 W/kg = 3.78 dBW/kg

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 24.08.2015

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 750 MHz; Type: D750V3; Serial: D750V3 - SN: 1145

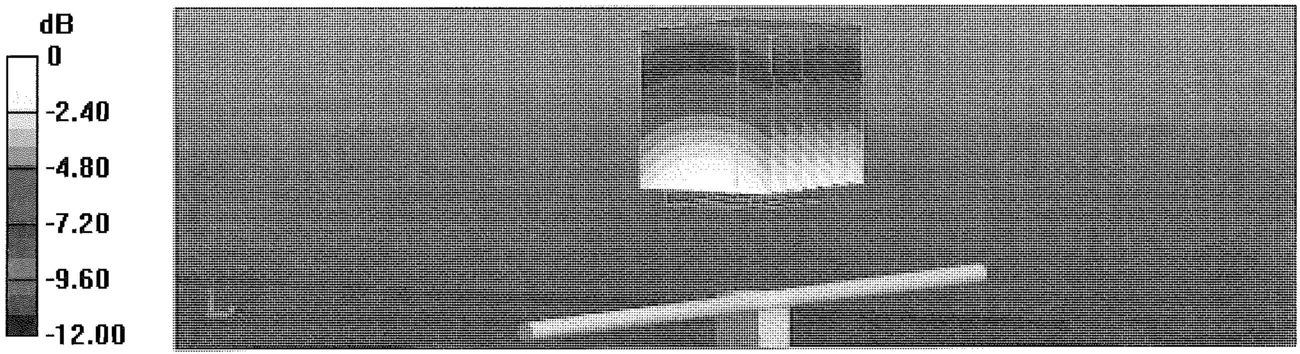
Communication System: UID 0 - CW; Frequency: 750 MHz
Medium parameters used: f = 750 MHz; σ = 1 S/m; ε_r = 56.3; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(6.21, 6.21, 6.21); Calibrated: 30.12.2014;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 17.08.2015
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

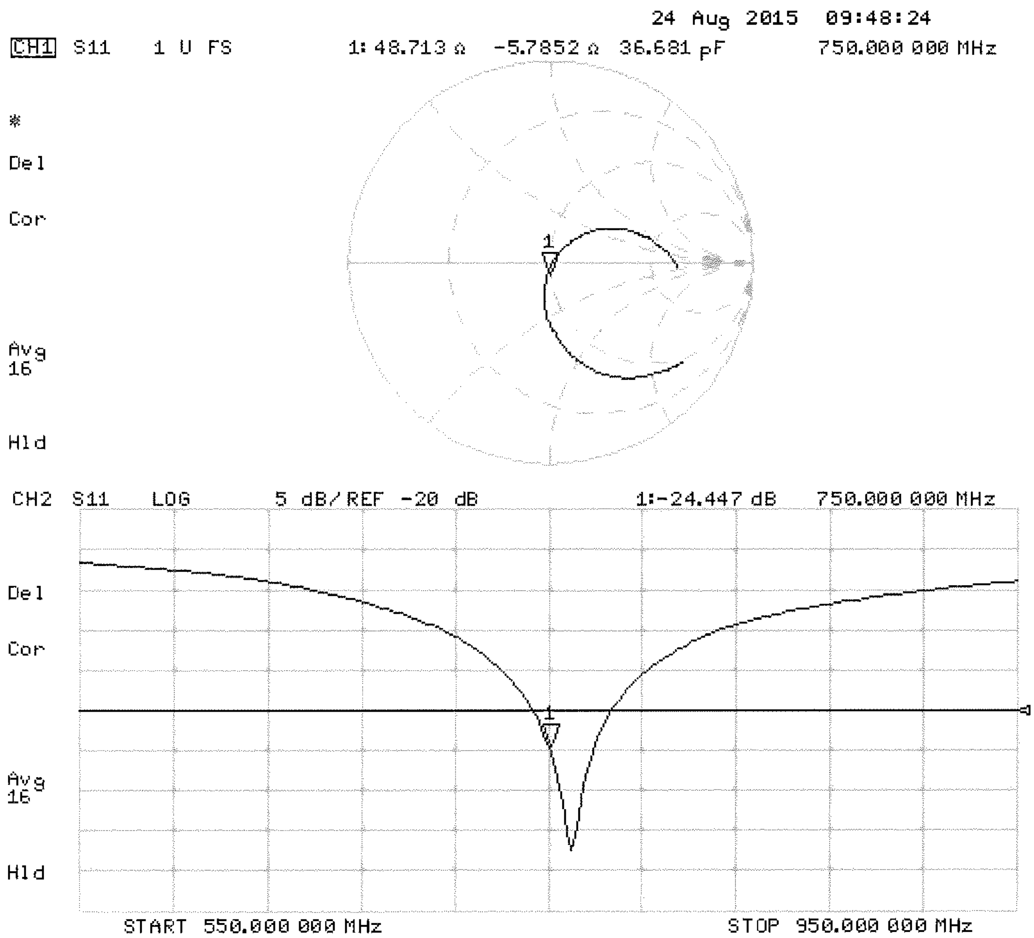
Dipole Calibration for Body Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 52.55 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 3.23 W/kg
SAR(1 g) = 2.21 W/kg; SAR(10 g) = 1.46 W/kg
Maximum value of SAR (measured) = 2.57 W/kg



0 dB = 2.57 W/kg = 4.10 dBW/kg

Impedance Measurement Plot for Body TSL



Dipole Internal Calibration Record

NO. : SAR-D750-17-2

Asset No. :	E-531	Model No. :	D750V3	Cal. Date :		2017/11/2
Equipment :	Dipole	Serial No. :	1145	Next Cal. Date :		2018/5/1
Environmental condition :		Temp :	22.5 ℃	R.H. :	59	%

Standard List

1	IEEE Std 1528-2013	IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorpiton Rate(SAR) in the Human Head from Wireless Communication Devices: Measurement Texhniques, June 2013
2	IEC 62209-2	Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body(frequency range of 30 MHz to 6 GHz), March 2010
3	KDB865664	SAR Measurement Requirements for 100 MHz to 6 GHz

Equipment Information

Equipment :	Manufacturer :	Model No. :	Serial No. :	Cal.Organization :	Certificate No. :	Cal. Date :
ENA	Keysight	E5071C	MY46524658	ETC	16-12-BAC-032-01	2016/12/6

Originak Cal. Report

Equipment :	Manufacturer :	Model No. :	Serial No. :	Cal.Organization :	Certificate No. :	Cal. Date :
Dipole	Speag	D750V3	1145	SAS	D750V3-1145_Aug15	Aug. 24, 2015
Calibration Value :						

For Head Tissue

Frequency	Item	Originak Cal. Result	Verified Result	Deviation	Result	Annex
750Hz	Impedance, transformed to feed point(Ω)	53.711	53.97	-0.259	Pass	a
	Impedance, transformed to feed point(Ω) (Imaginary Part)	-4.2051	-3.1861	-1.019	Pass	a
	Return Loss(dB)	-25.341	-22.843	-2.498	Pass	a

For Body Tissue

Frequency	Item	Originak Cal. Result	Verified Result	Deviation	Result	Annex
750MHz	Impedance, transformed to feed point(Ω)	48.713	48.439	0.274	Pass	b
	Impedance, transformed to feed point(Ω) (Imaginary Part)	-5.7852	-7.6787	1.8935	Pass	b
	Return Loss(dB)	-24.447	-23.83	-0.617	Pass	b

Note : SAR System Uncertainty : % , (95% CONFIDENCE LEVEL , Expanded uncertainty K=2)

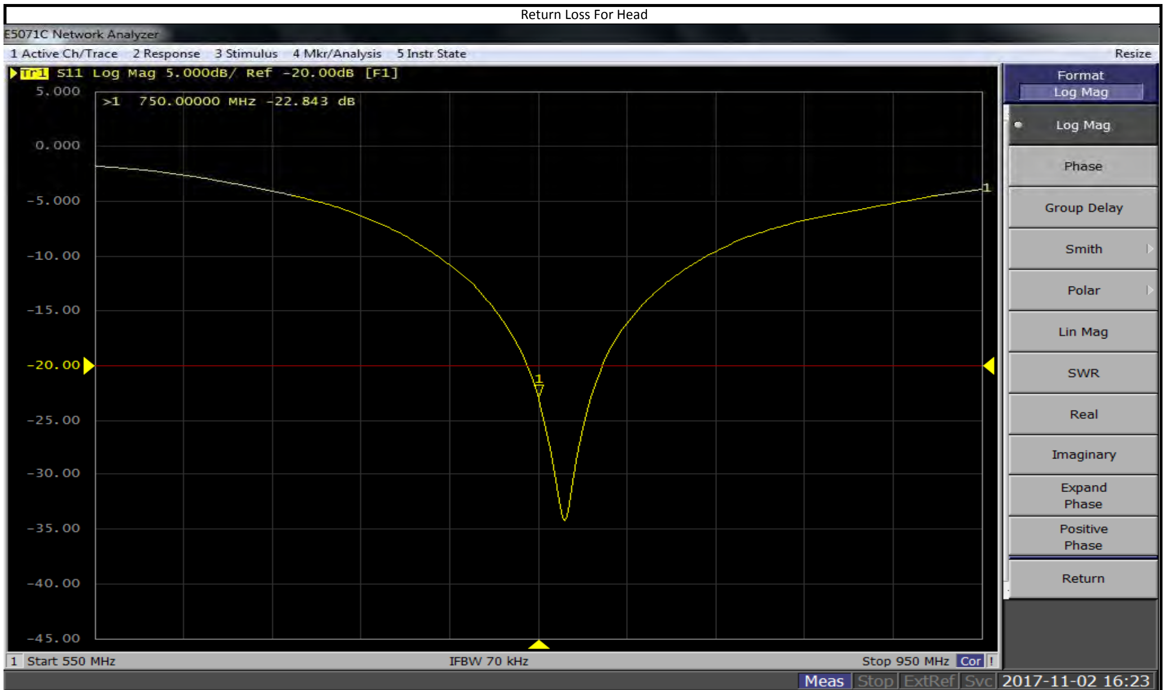
From NO. : E_YYMMDD ; E=Dipole NO. ,YYMMDD=Year/Month/Date。

Tester : Morrison Huang Technical Director : Herbort Liu

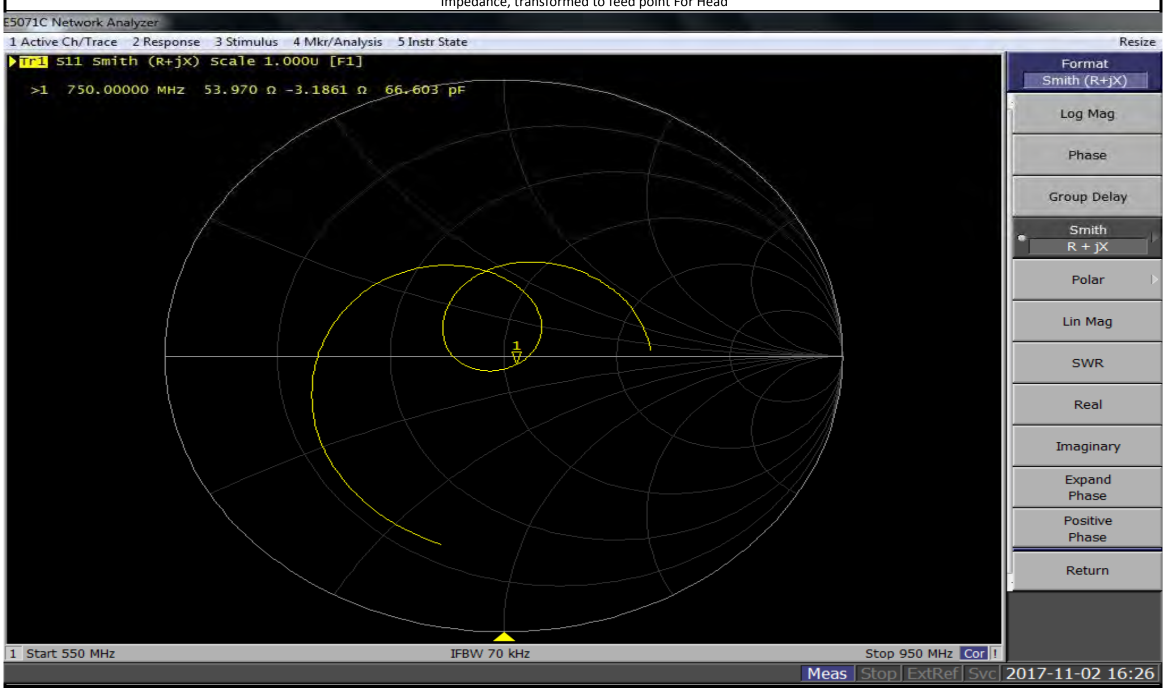
FM-506-09 Ver.6

Annex a

Return Loss For Head

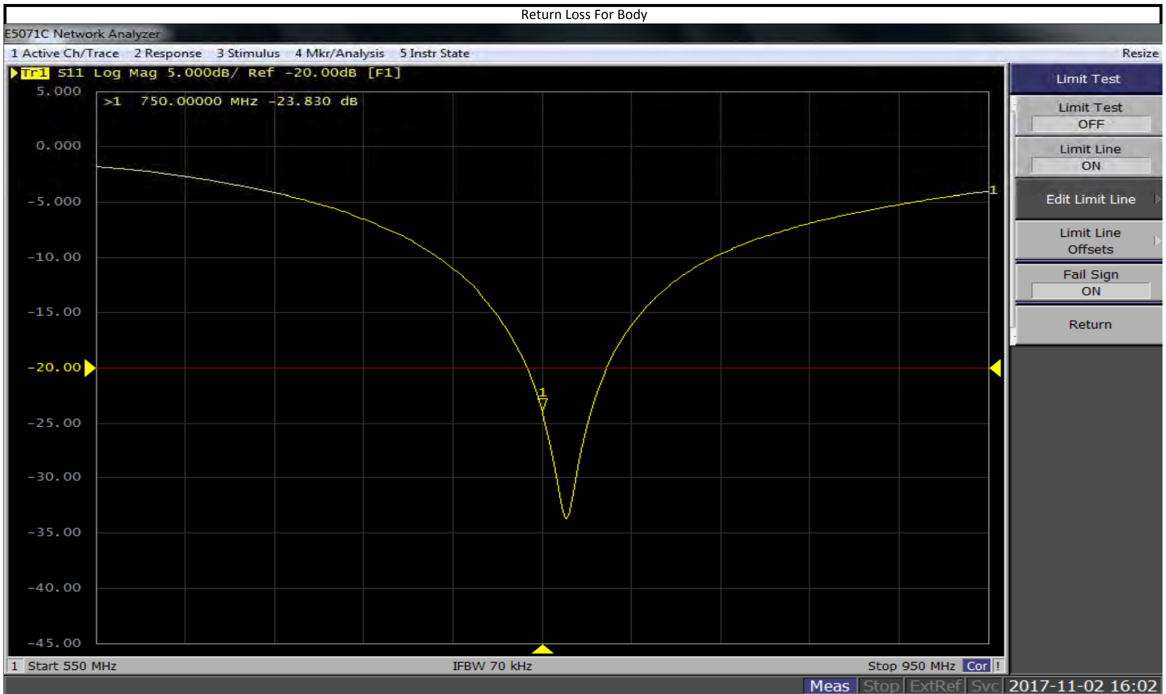


Impedance, transformed to feed point For Head

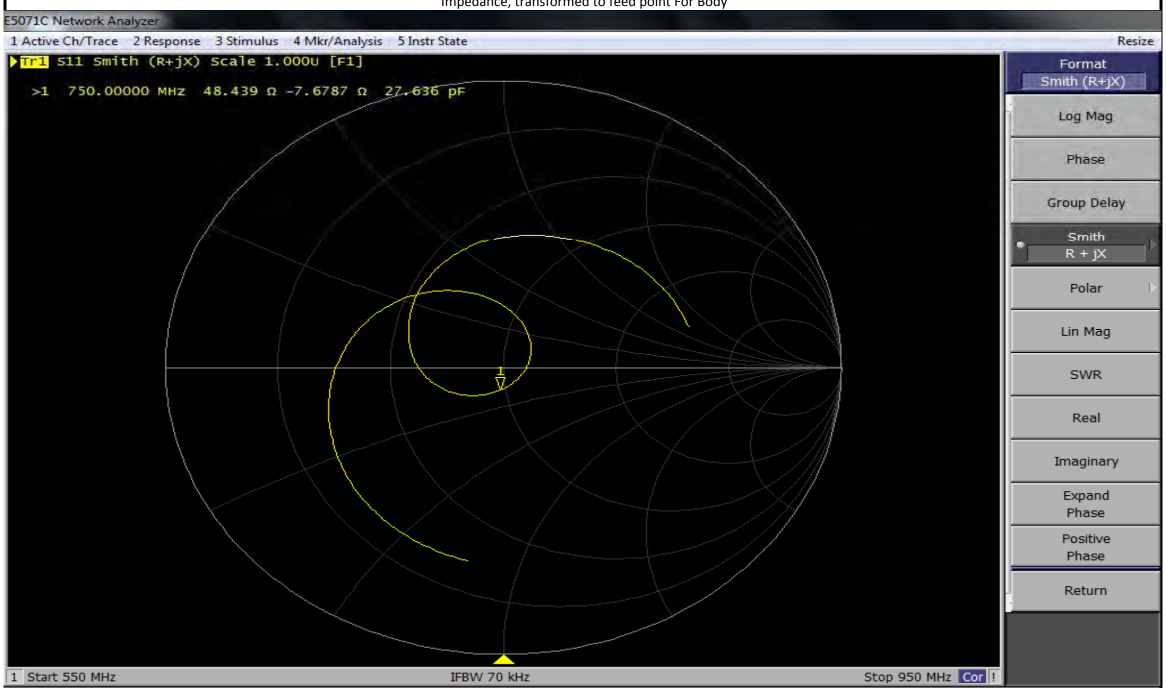


Annex b

Return Loss For Body



Impedance, transformed to feed point For Body



Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S **Schweizerischer Kalibrierdienst**
C **Service suisse d'étalonnage**
S **Servizio svizzero di taratura**
Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 0108

Client **BTL-TW (Auden)**

Certificate No: D835V2-4d199_Aug15

CALIBRATION CERTIFICATE

Object	D835V2 - SN: 4d199
Calibration procedure(s)	QA CAL-05.v9 Calibration procedure for dipole validation kits above 700 MHz
Calibration date:	August 12, 2015

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter EPM-442A	GB37480704	07-Oct-14 (No. 217-02020)	Oct-15
Power sensor HP 8481A	US37292783	07-Oct-14 (No. 217-02020)	Oct-15
Power sensor HP 8481A	MY41092317	07-Oct-14 (No. 217-02021)	Oct-15
Reference 20 dB Attenuator	SN: 5058 (20k)	01-Apr-15 (No. 217-02131)	Mar-16
Type-N mismatch combination	SN: 5047.2 / 06327	01-Apr-15 (No. 217-02134)	Mar-16
Reference Probe ES3DV3	SN: 3205	30-Dec-14 (No. ES3-3205_Dec14)	Dec-15
DAE4	SN: 601	18-Aug-14 (No. DAE4-601_Aug14)	Aug-15

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
RF generator R&S SMT-06	100005	04-Aug-99 (in house check Oct-13)	In house check: Oct-16
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-14)	In house check: Oct-15

	Name	Function	Signature
Calibrated by:	Jeton Kastrati	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: August 12, 2015

Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2013, “IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques”, June 2013
b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
c) IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
d) KDB 865664, “SAR Measurement Requirements for 100 MHz to 6 GHz”

Additional Documentation:

e) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY5	V52.8.8
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	15 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	835 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	41.5	0.90 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	41.9 ± 6 %	0.93 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	2.34 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**9.15 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	250 mW input power	1.51 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**5.93 W/kg ± 16.5 % (k=2)**

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Body TSL parameters	22.0 °C	55.2	0.97 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	56.1 ± 6 %	1.02 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm^3 (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	2.44 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**9.43 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	250 mW input power	1.60 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**6.23 W/kg ± 16.5 % (k=2)**

Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	51.6 Ω - 3.5 jΩ
Return Loss	- 28.5 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	47.1 Ω - 5.1 jΩ
Return Loss	- 24.4 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.391 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 15, 2014

DASY5 Validation Report for Head TSL

Date: 12.08.2015

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN: 4d199

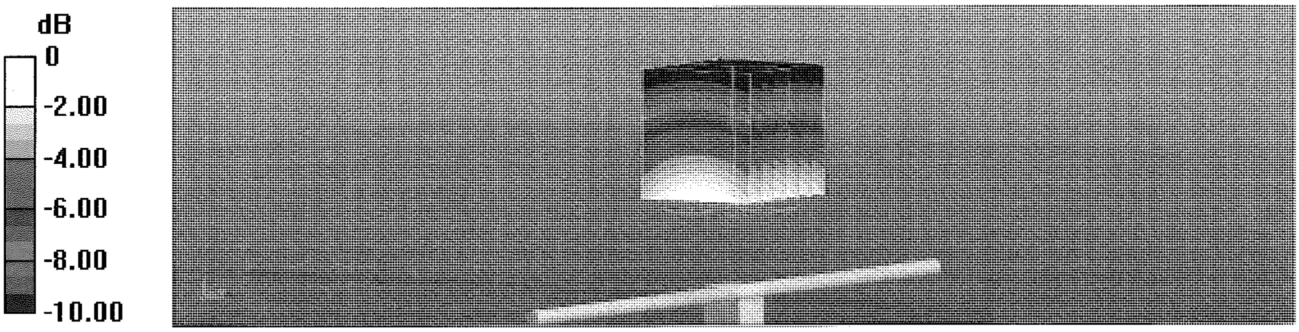
Communication System: UID 0 - CW; Frequency: 835 MHz
Medium parameters used: f = 835 MHz; σ = 0.93 S/m; ε_r = 41.9; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(6.2, 6.2, 6.2); Calibrated: 30.12.2014;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 18.08.2014
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

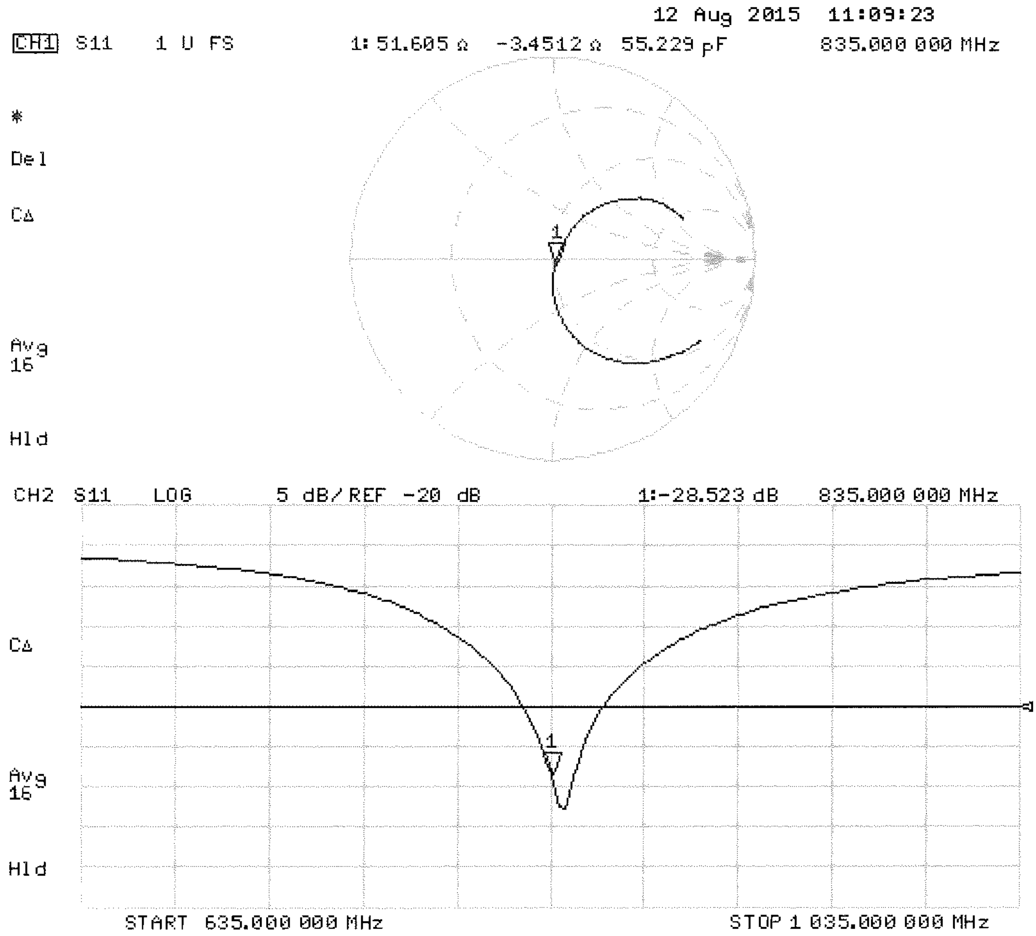
Dipole Calibration for Head Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 56.08 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 3.49 W/kg
SAR(1 g) = 2.34 W/kg; SAR(10 g) = 1.51 W/kg
Maximum value of SAR (measured) = 2.74 W/kg



0 dB = 2.74 W/kg = 4.38 dBW/kg

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 12.08.2015

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN: 4d199

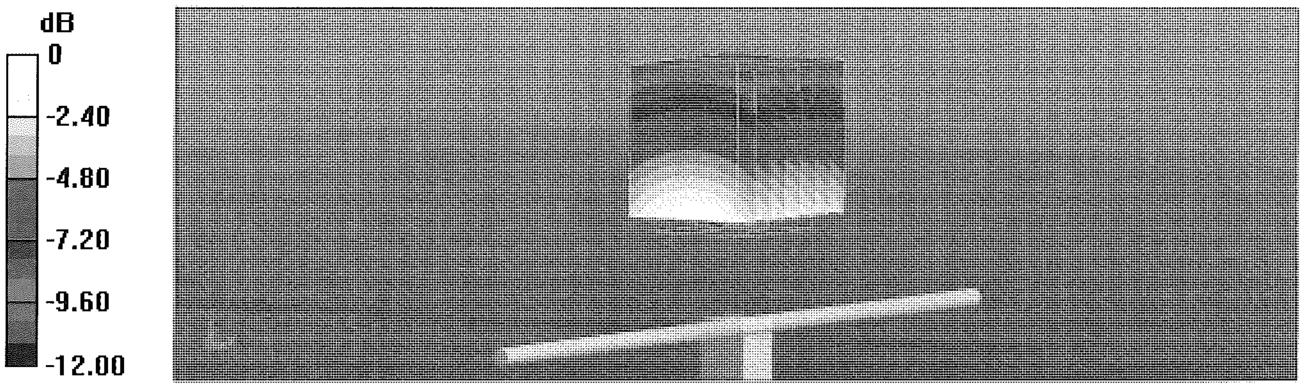
Communication System: UID 0 - CW; Frequency: 835 MHz
Medium parameters used: f = 835 MHz; σ = 1.02 S/m; ε_r = 56.1; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(6.17, 6.17, 6.17); Calibrated: 30.12.2014;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 18.08.2014
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

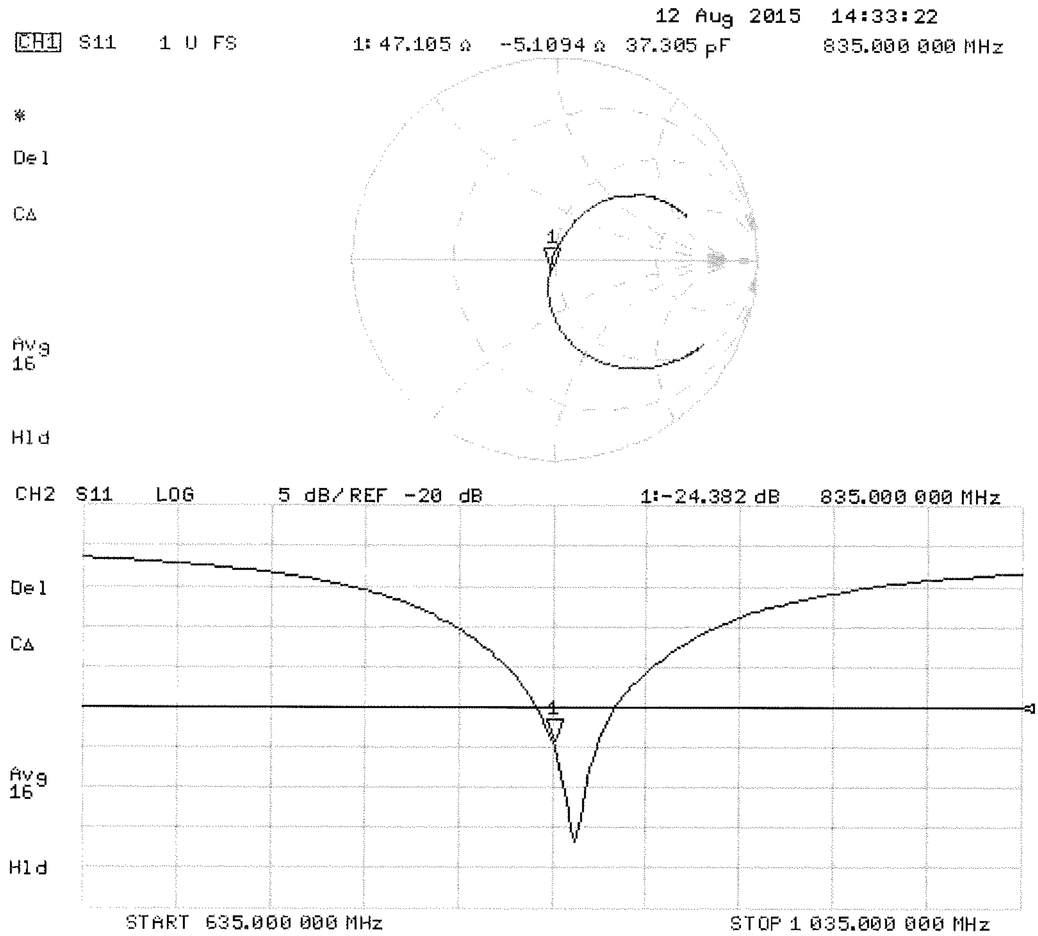
Dipole Calibration for Body Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 54.84 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 3.61 W/kg
SAR(1 g) = 2.44 W/kg; SAR(10 g) = 1.60 W/kg
Maximum value of SAR (measured) = 2.86 W/kg



0 dB = 2.86 W/kg = 4.56 dBW/kg

Impedance Measurement Plot for Body TSL



3TL

Dipole Internal Calibration Record

NO.： SAR-D835-17-2

Asset No.：	E-534	Model No.：	D835V2	Cal. Date：		2017/11/2
Equipment：	Dipole	Serial No.：	4d199	Next Cal. Date：		2018/5/1
Environmental condition：		Temp：	22.7 ℃	R.H.：	62	%

Standard List

1	IEEE Std 1528-2013	IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorpiton Rate(SAR) in the Human Head from Wireless Communication Devices: Measurement Texhniques, June 2013
2	IEC 62209-2	Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body(frequency range of 30 MHz to 6 GHz), March 2010
3	KDB865664	SAR Measurement Requirements for 100 MHz to 6 GHz

Equipment Information

Equipment：	Manufacturer：	Model No.：	Serial No.：	Cal.Organization：	Certificate No.：	Cal. Date：
ENA	Keysight	E5071C	MY46524658	ETC	16-12-BAC-032-01	2016/12/6

Originak Cal. Report

Equipment：	Manufacturer：	Model No.：	Serial No.：	Cal.Organization：	Certificate No.：	Cal. Date：
Dipole	Speag	D835V2	4d199	SAS	D835V2-4d199_Aug15	Aug. 12, 2015

Calibration Value：

For Head Tissue

Frequency	Item	Originak Cal. Result	Verified Result	Deviation	Result	Annex
835MHz	Impedance, transformed to feed point (Ω)(Real Part)	51.605	49.738	1.867	Pass	a
	Impedance, transformed to feed point(Ω) (Imaginary Part)	-3.4512	-3.5444	0.0932	Pass	a
	Return Loss(dB)	-28.523	-26.684	-1.839	Pass	a

For Body Tissue

Frequency	Item	Originak Cal. Result	VerifiedResult	Deviation	Result	Annex
835MHz	Impedance, transformed to feed point (Real Part)	47.105	49.58	-2.475	Pass	b
	Impedance, transformed to feed point(Ω) (Imaginary Part)	-5.1094	-2.3114	-2.798	Pass	b
	Return Loss(dB)	-24.382	-25.262	0.88	Pass	b

Note：	SAR System Uncertainty： % ，(95% CONFIDENCE LEVEL ，Expanded uncertainty K=2)

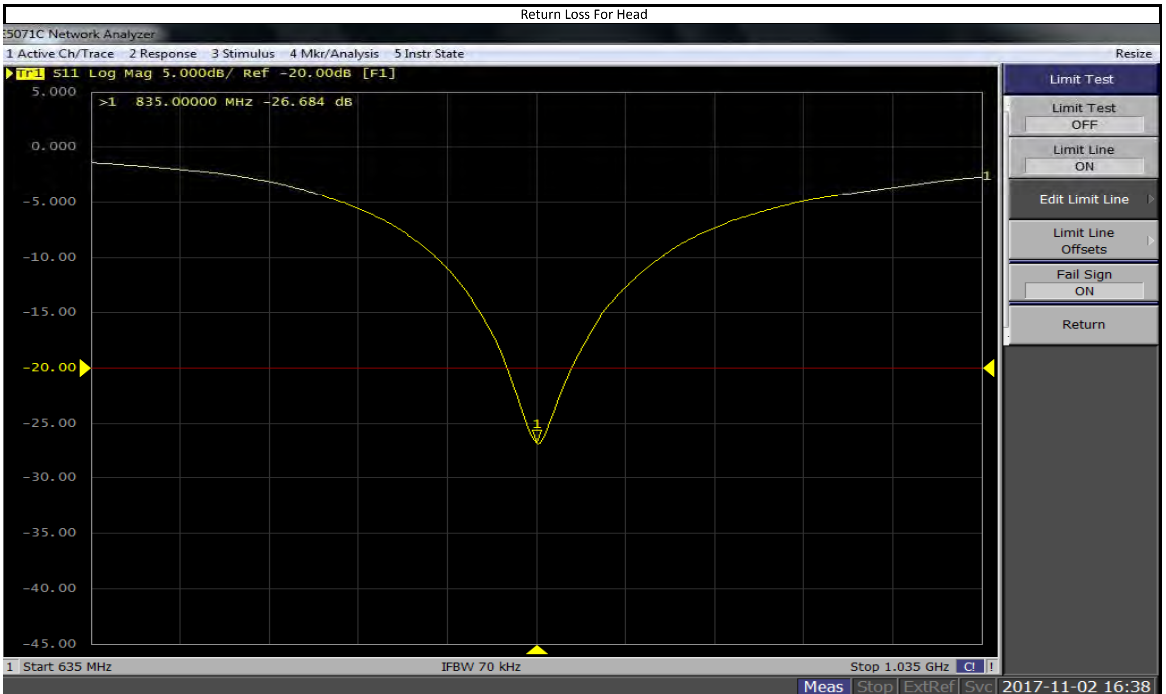
From NO.：E_YYMMDD；E=Dipole NO. ,YYMMDD=Year/Month/Date。

Tester： Morrison Huang Technical Director： Herbort Liu

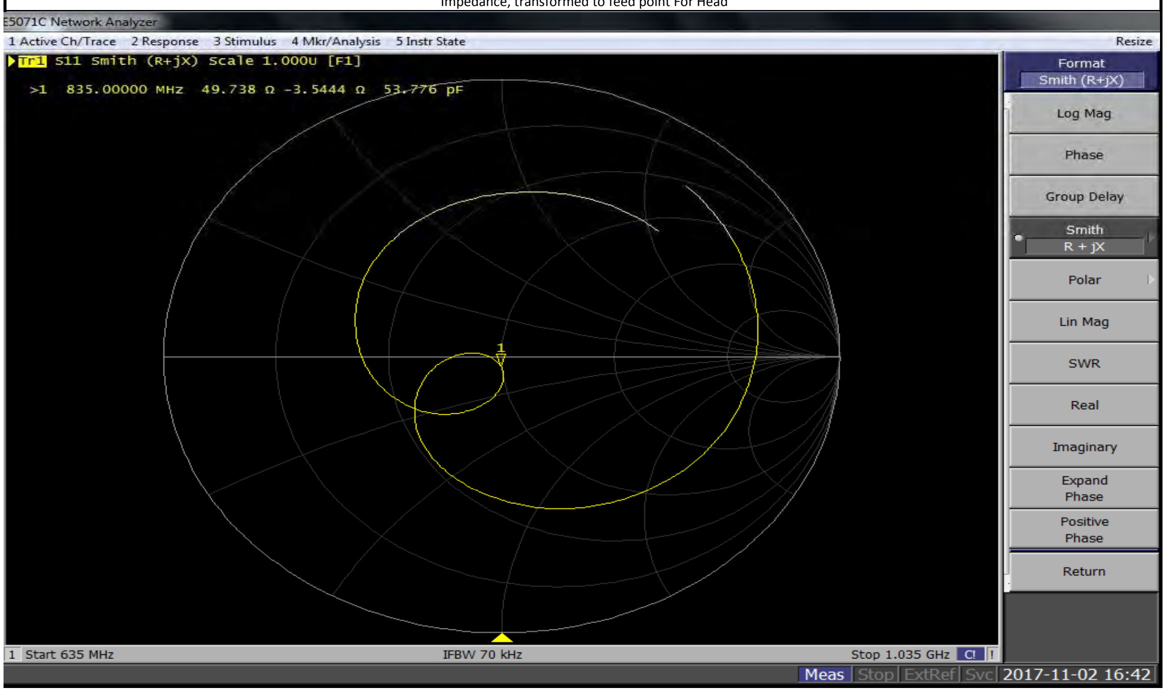
FM-506-09 Ver.6

Annex a

Return Loss For Head

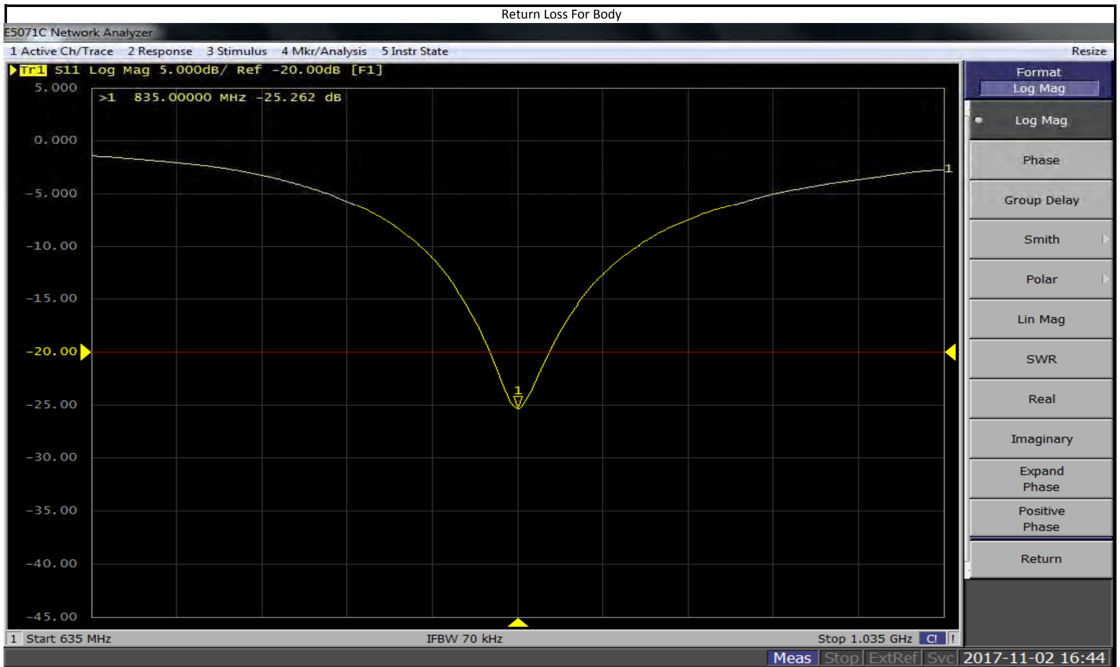


Impedance, transformed to feed point For Head

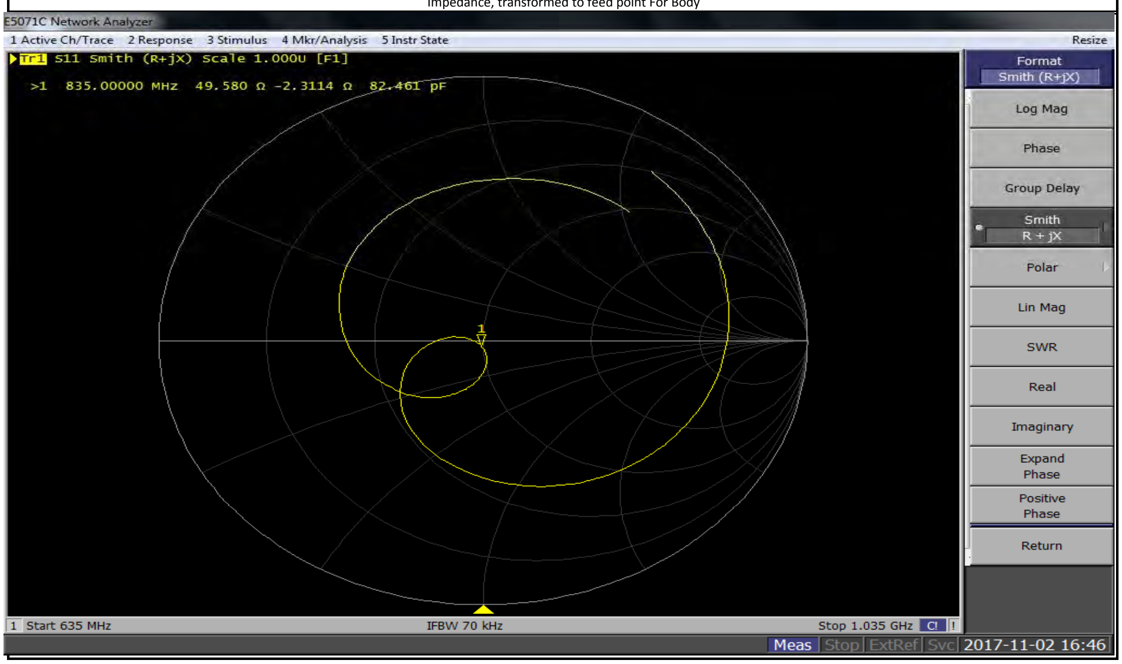


Annex b

Return Loss For Body



Impedance, transformed to feed point For Body



Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S **Schweizerischer Kalibrierdienst**
C **Service suisse d'étalonnage**
S **Servizio svizzero di taratura**
Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 0108

Client **BTL-TW (Auden)**

Certificate No: D1800V2-2d210_Aug15

CALIBRATION CERTIFICATE

Object	D1800V2 - SN: 2d210
Calibration procedure(s)	QA CAL-05.v9 Calibration procedure for dipole validation kits above 700 MHz
Calibration date:	August 13, 2015

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter EPM-442A	GB37480704	07-Oct-14 (No. 217-02020)	Oct-15
Power sensor HP 8481A	US37292783	07-Oct-14 (No. 217-02020)	Oct-15
Power sensor HP 8481A	MY41092317	07-Oct-14 (No. 217-02021)	Oct-15
Reference 20 dB Attenuator	SN: 5058 (20k)	01-Apr-15 (No. 217-02131)	Mar-16
Type-N mismatch combination	SN: 5047.2 / 06327	01-Apr-15 (No. 217-02134)	Mar-16
Reference Probe ES3DV3	SN: 3205	30-Dec-14 (No. ES3-3205_Dec14)	Dec-15
DAE4	SN: 601	18-Aug-14 (No. DAE4-601_Aug14)	Aug-15

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
RF generator R&S SMT-06	100005	04-Aug-99 (in house check Oct-13)	In house check: Oct-16
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-14)	In house check: Oct-15

	Name	Function	Signature
Calibrated by:	Jeton Kastrati	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: August 13, 2015

Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
c) IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
d) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

e) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY5	V52.8.8
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	1800 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	40.0	1.40 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	39.6 ± 6 %	1.41 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	9.75 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**38.7 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	250 mW input power	5.14 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**20.5 W/kg ± 16.5 % (k=2)**

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Body TSL parameters	22.0 °C	53.3	1.52 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	51.9 ± 6 %	1.53 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm^3 (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	9.39 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**37.2 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	250 mW input power	4.96 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**19.7 W/kg ± 16.5 % (k=2)**

Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	50.4 Ω - 2.3 jΩ
Return Loss	- 32.8 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	46.5 Ω - 2.4 jΩ
Return Loss	- 27.1 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.211 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	August 29, 2013

DASY5 Validation Report for Head TSL

Date: 13.08.2015

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1800 MHz; Type: D1800V2; Serial: D1800V2 - SN: 244

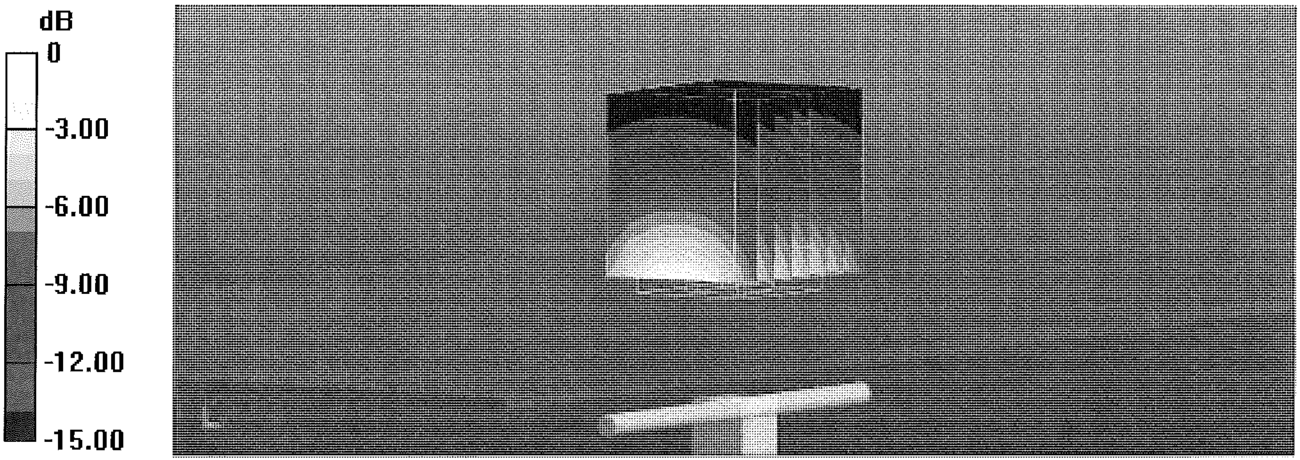
Communication System: UID 0 - CW; Frequency: 1800 MHz
Medium parameters used: f = 1800 MHz; σ = 1.41 S/m; ε_r = 39.6; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(5.06, 5.06, 5.06); Calibrated: 30.12.2014;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 18.08.2014
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

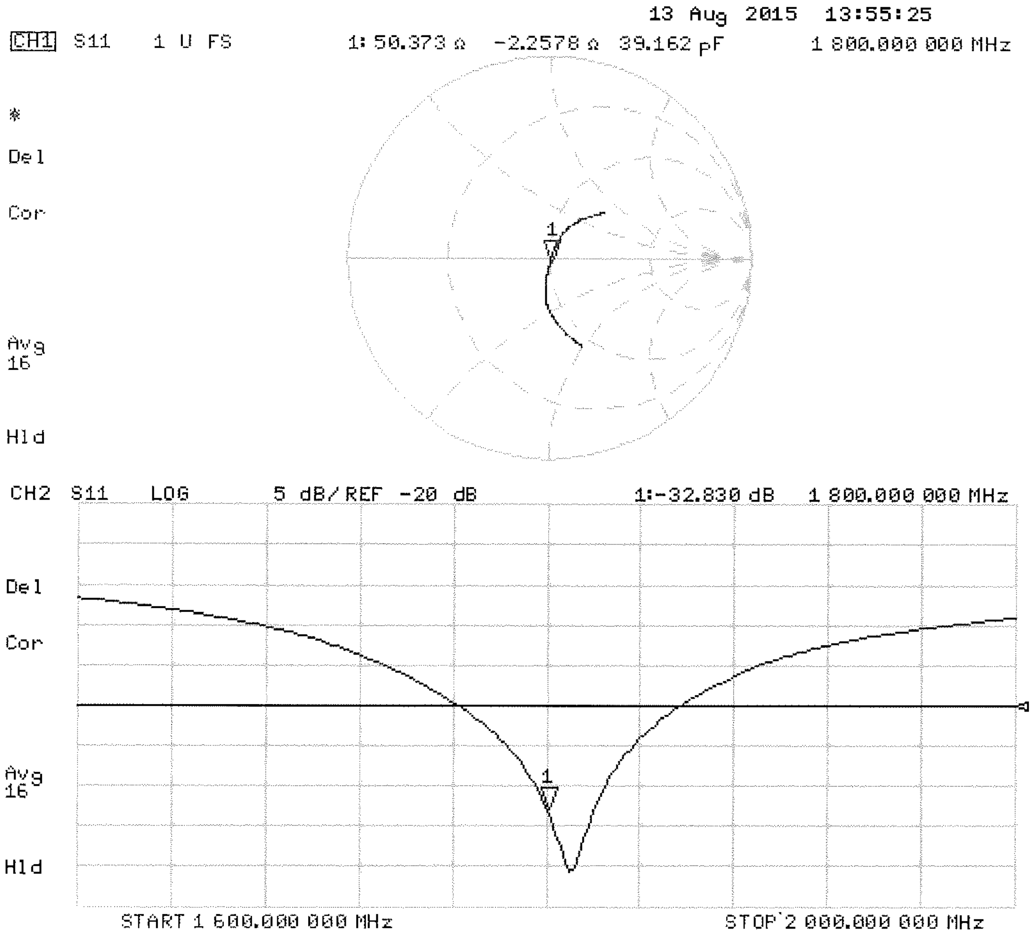
Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 96.38 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 17.8 W/kg
SAR(1 g) = 9.75 W/kg; SAR(10 g) = 5.14 W/kg
Maximum value of SAR (measured) = 12.4 W/kg



0 dB = 12.4 W/kg = 10.93 dBW/kg

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 13.08.2015

Test Laboratory: SPEAG, Zurich, Switzerland

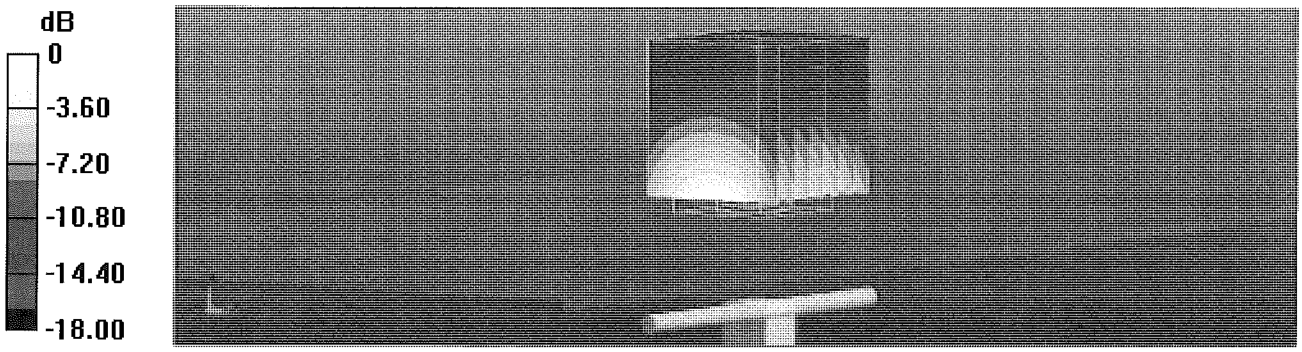
DUT: Dipole 1800 MHz; Type: D1800V2; Serial: D1800V2 - SN: 2d210

Communication System: UID 0 - CW; Frequency: 1800 MHz
Medium parameters used: f = 1800 MHz; σ = 1.53 S/m; ε_r = 51.9; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

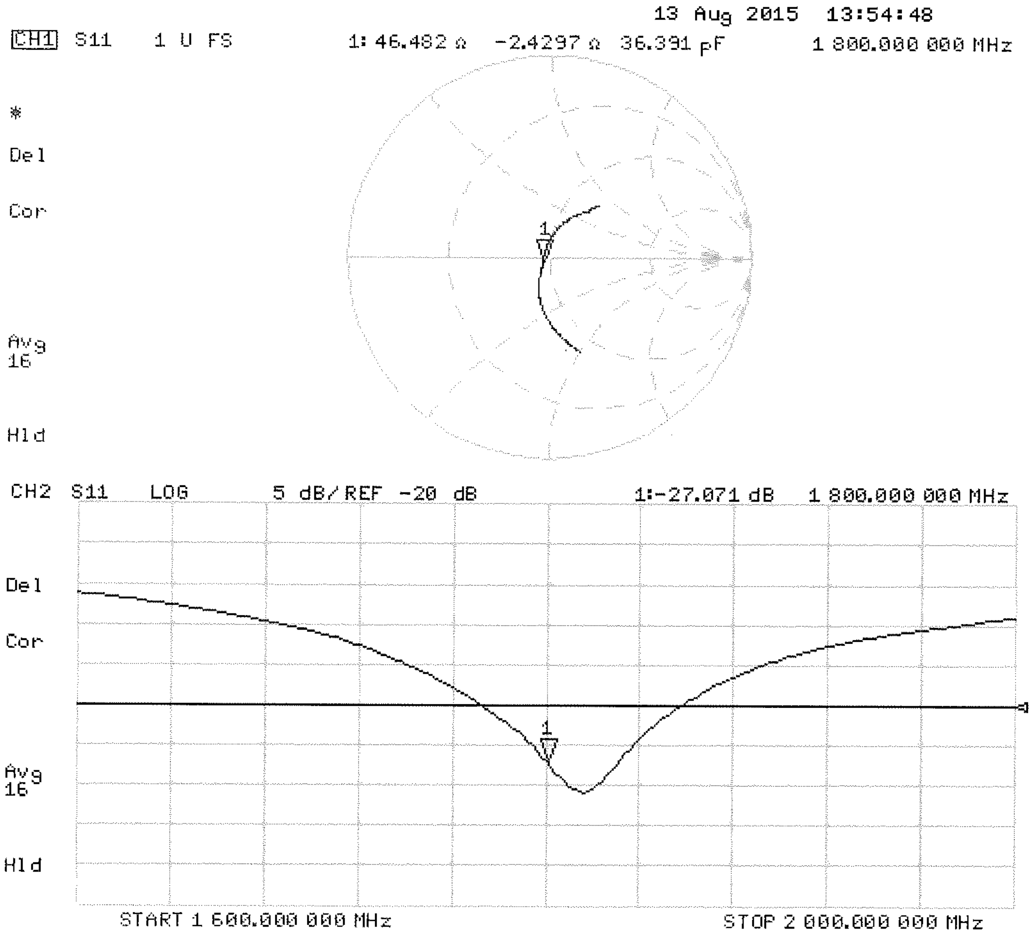
- Probe: ES3DV3 - SN3205; ConvF(4.77, 4.77, 4.77); Calibrated: 30.12.2014;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 18.08.2014
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

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 = 90.68 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 16.9 W/kg
SAR(1 g) = 9.39 W/kg; SAR(10 g) = 4.96 W/kg
Maximum value of SAR (measured) = 11.9 W/kg



0 dB = 11.9 W/kg = 10.76 dBW/kg

Impedance Measurement Plot for Body TSL



Dipole Internal Calibration Record

NO.： SAR-D1800-17-2

Asset No.：	E-533	Model No.：	D1800V2	Cal. Date：		2017/11/2
Equipment：	Dipole	Serial No.：	2d210	Next Cal. Date：		2018/5/1
Environmental condition：		Temp：	22.8 ℃	R.H.：	59	%

Standard List

1	IEEE Std 1528-2013	IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorpiton Rate(SAR) in the Human Head from Wireless Communication Devices: Measurement Texhniques, June 2013
2	IEC 62209-2	Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body(frequency range of 30 MHz to 6 GHz), March 2010
3	KDB865664	SAR Measurement Requirements for 100 MHz to 6 GHz

Equipment Information

Equipment：	Manufacturer：	Model No.：	Serial No.：	Cal.Organization：	Certificate No.：	Cal. Date：
ENA	Keysight	E5071C	MY46524658	ETC	16-12-BAC-032-01	2016/12/6

Originak Cal. Report

Equipment：	Manufacturer：	Model No.：	Serial No.：	Cal.Organization：	Certificate No.：	Cal. Date：
Dipole	Speag	D1800V2	2d210	SAS	D1800V2-2d210_Aug15	Aug. 13, 2015

Calibration Value：

For Head Tissue

Frequency	Item	Originak Cal. Result	Verified Result	Deviation	Result	Annex
1800MHz	Impedance, transformed to feed point (Ω)(Real Part)	50.373	48.681	1.692	Pass	a
	Impedance, transformed to feed point(Ω) (Imaginary Part)	-2.2578	-4.7363	2.4785	Pass	a
	Return Loss(dB)	-32.83	-30.277	-2.553	Pass	a

For Body Tissue

Frequency	Item	Originak Cal. Result	Verified Result	Deviation		
1800MHz	Impedance, transformed to feed point (Ω)(Real Part)	46.482	48.52	-2.038	Pass	b
	Impedance, transformed to feed point(Ω) (Imaginary Part)	-2.4297	-2.487	0.0573	Pass	b
	Return Loss(dB)	-27.071	-25.2	-1.871	Pass	b

Note： SAR System Uncertainty： % ，(95% CONFIDENCE LEVEL ，Expanded uncertainty K=2)

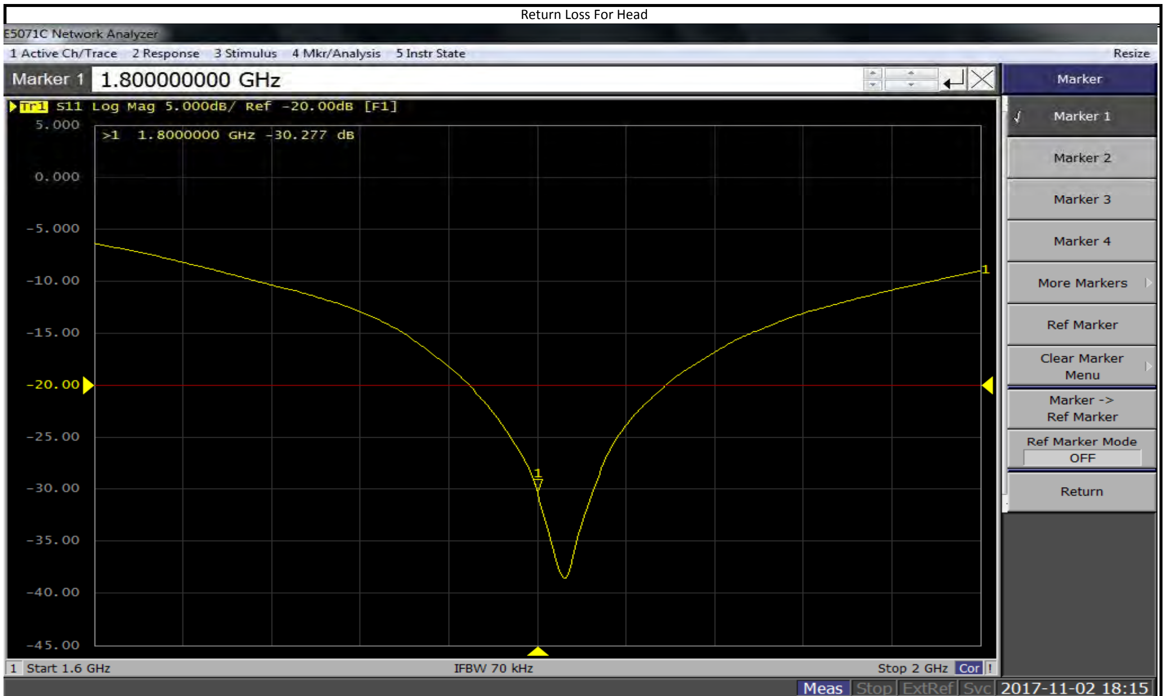
From NO.：E_YYMMDD；E=Dipole NO. ,YYMMDD=Year/Month/Date。

Tester： Morrison Huang Technical Director： Herbort Liu

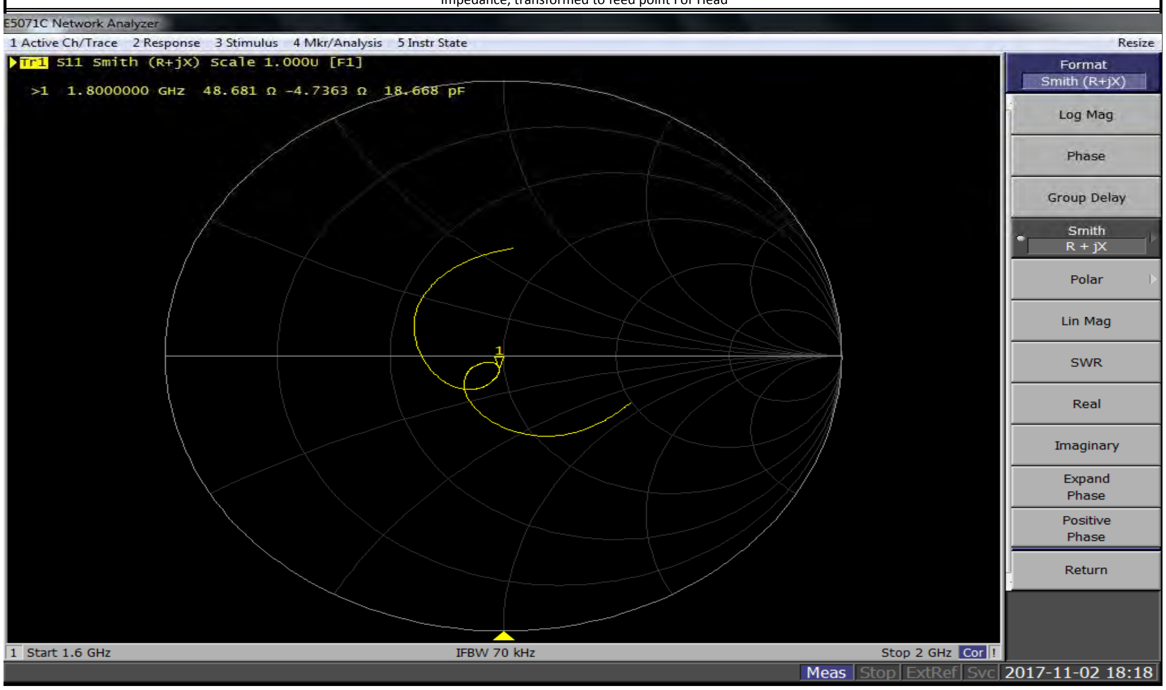
FM-506-09 Ver.6

Annex a

Return Loss For Head

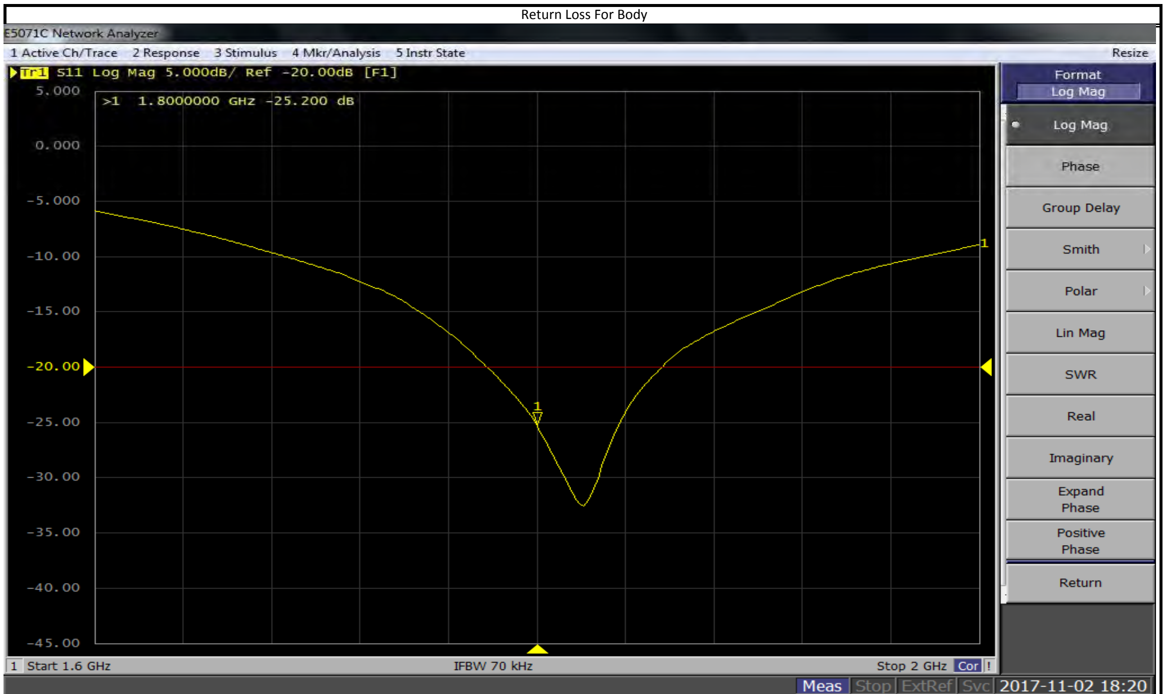


Impedance, transformed to feed point For Head

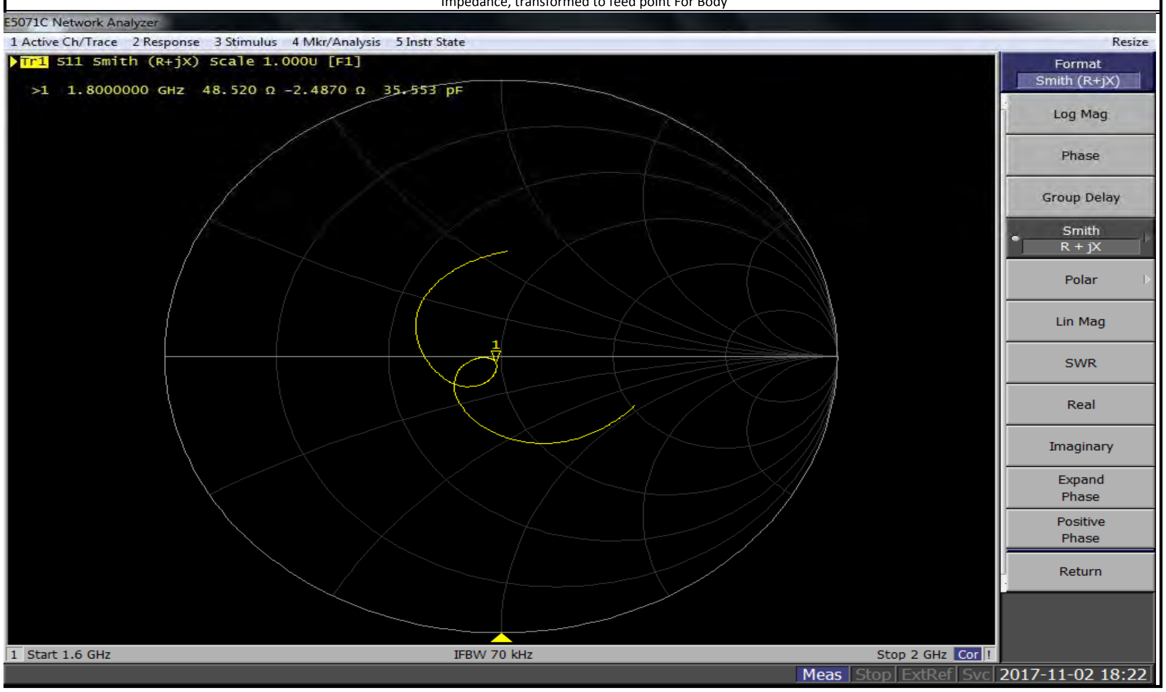


Annex b

Return Loss For Body



Impedance, transformed to feed point For Body



Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S **Schweizerischer Kalibrierdienst**
C **Service suisse d'étalonnage**
S **Servizio svizzero di taratura**
Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 0108

Client **BTL-TW (Auden)**

Certificate No: D1900V2-5d208_Aug15

CALIBRATION CERTIFICATE

Object	D1900V2 - SN:5d208
Calibration procedure(s)	QA CAL-05.v9 Calibration procedure for dipole validation kits above 700 MHz
Calibration date:	August 13, 2015

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter EPM-442A	GB37480704	07-Oct-14 (No. 217-02020)	Oct-15
Power sensor HP 8481A	US37292783	07-Oct-14 (No. 217-02020)	Oct-15
Power sensor HP 8481A	MY41092317	07-Oct-14 (No. 217-02021)	Oct-15
Reference 20 dB Attenuator	SN: 5058 (20k)	01-Apr-15 (No. 217-02131)	Mar-16
Type-N mismatch combination	SN: 5047.2 / 06327	01-Apr-15 (No. 217-02134)	Mar-16
Reference Probe ES3DV3	SN: 3205	30-Dec-14 (No. ES3-3205_Dec14)	Dec-15
DAE4	SN: 601	18-Aug-14 (No. DAE4-601_Aug14)	Aug-15

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
RF generator R&S SMT-06	100005	04-Aug-99 (in house check Oct-13)	In house check: Oct-16
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-14)	In house check: Oct-15

	Name	Function	Signature
Calibrated by:	Jeton Kastrati	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: August 13, 2015

Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
c) IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
d) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

e) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY5	V52.8.8
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	1900 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	40.0	1.40 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	38.9 ± 6 %	1.39 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	10.4 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**41.5 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	250 mW input power	5.49 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**21.9 W/kg ± 16.5 % (k=2)**

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Body TSL parameters	22.0 °C	53.3	1.52 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	52.5 ± 6 %	1.51 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm^3 (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	10.1 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**40.4 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	250 mW input power	5.42 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**21.7 W/kg ± 16.5 % (k=2)**

Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	51.6 Ω + 5.1 jΩ
Return Loss	- 25.6 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	48.3 Ω + 5.4 jΩ
Return Loss	- 24.7 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.201 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	October 21, 2014

DASY5 Validation Report for Head TSL

Date: 13.08.2015

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:5d208

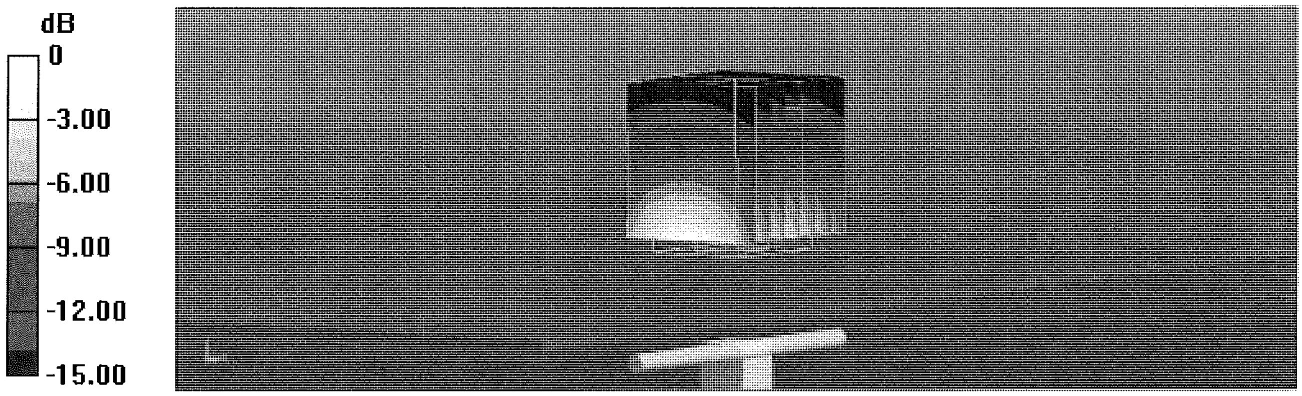
Communication System: UID 0 - CW; Frequency: 1900 MHz
Medium parameters used: f = 1900 MHz; σ = 1.39 S/m; ε_r = 38.9; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(5, 5, 5); Calibrated: 30.12.2014;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 18.08.2014
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

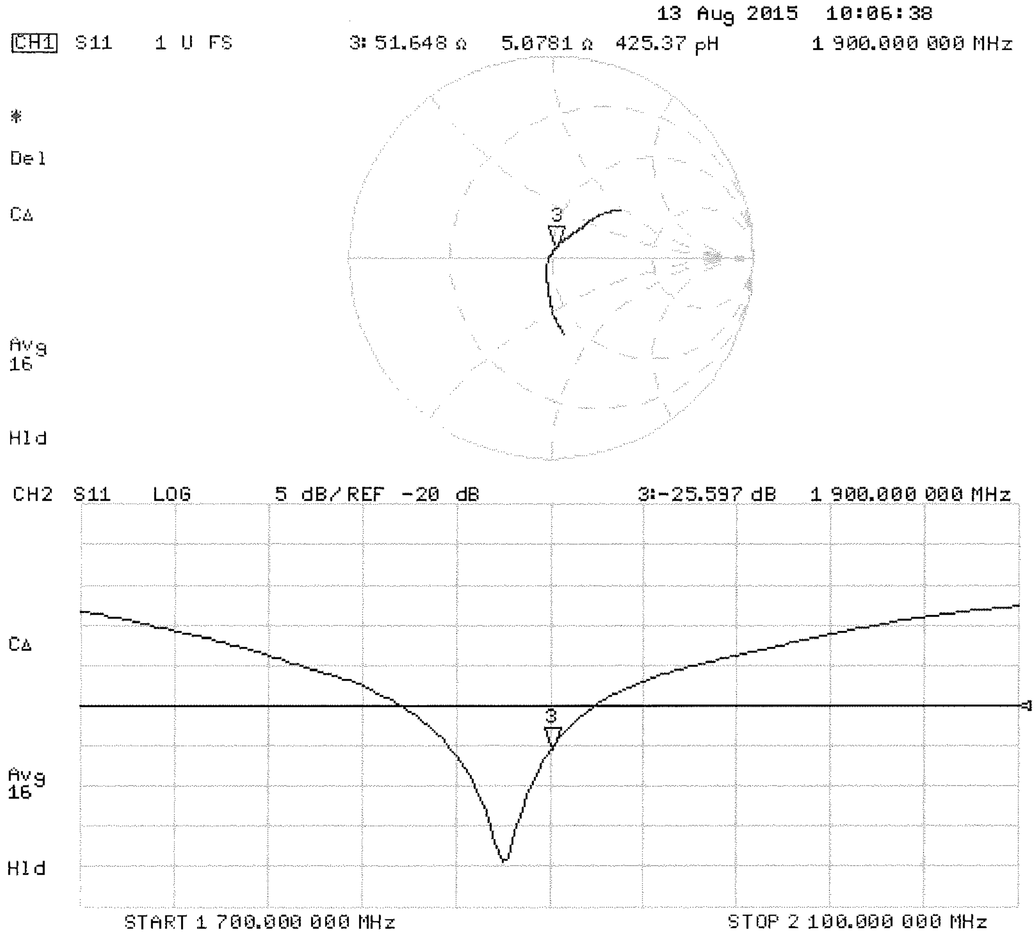
Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 100.1 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 19.1 W/kg
SAR(1 g) = 10.4 W/kg; SAR(10 g) = 5.49 W/kg
Maximum value of SAR (measured) = 13.2 W/kg



0 dB = 13.2 W/kg = 11.21 dBW/kg

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 13.08.2015

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:5d208

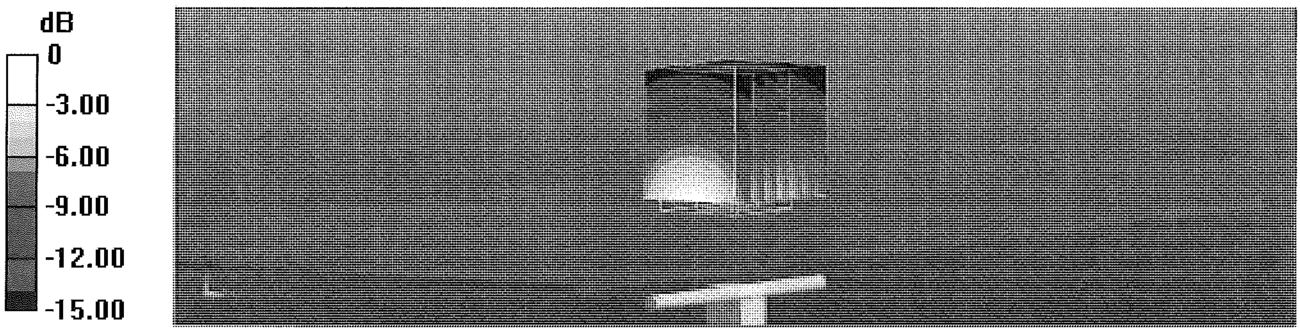
Communication System: UID 0 - CW; Frequency: 1900 MHz
Medium parameters used: f = 1900 MHz; σ = 1.51 S/m; ε_r = 52.5; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.65, 4.65, 4.65); Calibrated: 30.12.2014;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 18.08.2014
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

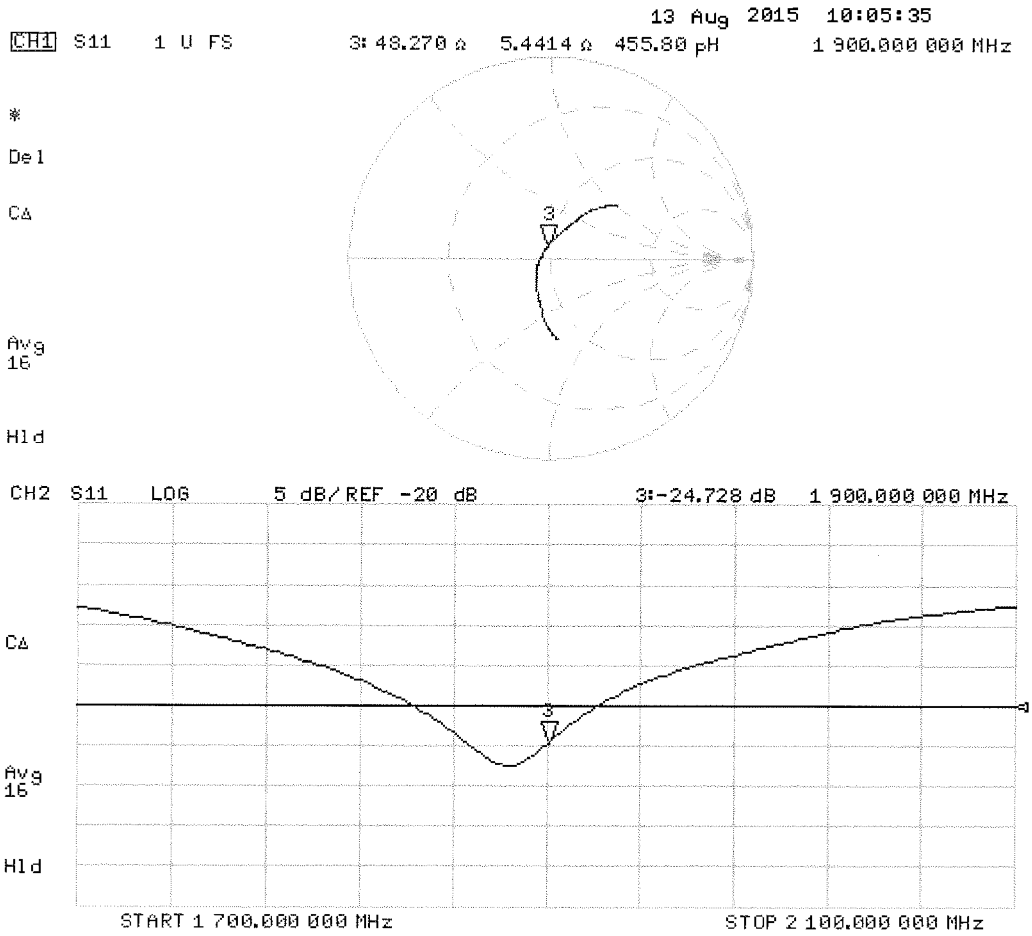
Dipole Calibration for Body Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 96.00 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 17.1 W/kg
SAR(1 g) = 10.1 W/kg; SAR(10 g) = 5.42 W/kg
Maximum value of SAR (measured) = 12.5 W/kg



0 dB = 12.5 W/kg = 10.97 dBW/kg

Impedance Measurement Plot for Body TSL



Dipole Internal Calibration Record

NO.： SAR-D1900-17-2

Asset No.：	E-535	Model No.：	D1900V2	Cal. Date：	2017/11/2
Equipment：	Dipole	Serial No.：	5d208	Next Cal. Date：	2018/5/1
Environmental condition：		Temp：	22.4 ℃	R.H.：	58 %

Standard List

1	IEEE Std 1528-2013	IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorpiton Rate(SAR) in the Human Head from Wireless Communication Devices: Measurement Texhniques, June 2013
2	IEC 62209-2	Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body(frequency range of 30 MHz to 6 GHz), March 2010
3	KDB865664	SAR Measurement Requirements for 100 MHz to 6 GHz

Equipment Information

Equipment：	Manufacturer：	Model No.：	Serial No.：	Cal.Organization：	Certificate No.：	Cal. Date：
ENA	Keysight	E5071C	MY46524658	ETC	16-12-BAC-032-01	2016/12/6

Originak Cal. Report

Equipment：	Manufacturer：	Model No.：	Serial No.：	Cal.Organization：	Certificate No.：	Cal. Date：
Dipole	Speag	D1900V2	5d208	SAS	D1900V2-5d208_Aug15	Aug. 13, 2015

Calibration Value：

For Head Tissue

Frequency	Item	Originak Cal. Result	Verified Result	Deviation	Result	Annex
1900MHz	Impedance, transformed to feed point(Ω)	51.648	48.968	2.68	Pass	a
	Impedance, transformed to feed point(Ω) (Imaginary Part)	5.0781	3.4063	1.6718	Pass	a
	Return Loss(dB)	-25.597	-28.07	2.473	Pass	a

For Body Tissue

Frequency	Item	Originak Cal. Result	Verified Result	Deviation		
1900MHz	Impedance, transformed to feed point(Ω)	48.27	50.251	-1.981	Pass	b
	Impedance, transformed to feed point(Ω) (Imaginary Part)	5.4414	3.8209	1.6205	Pass	b
	Return Loss(dB)	-24.728	-27.396	2.668	Pass	b

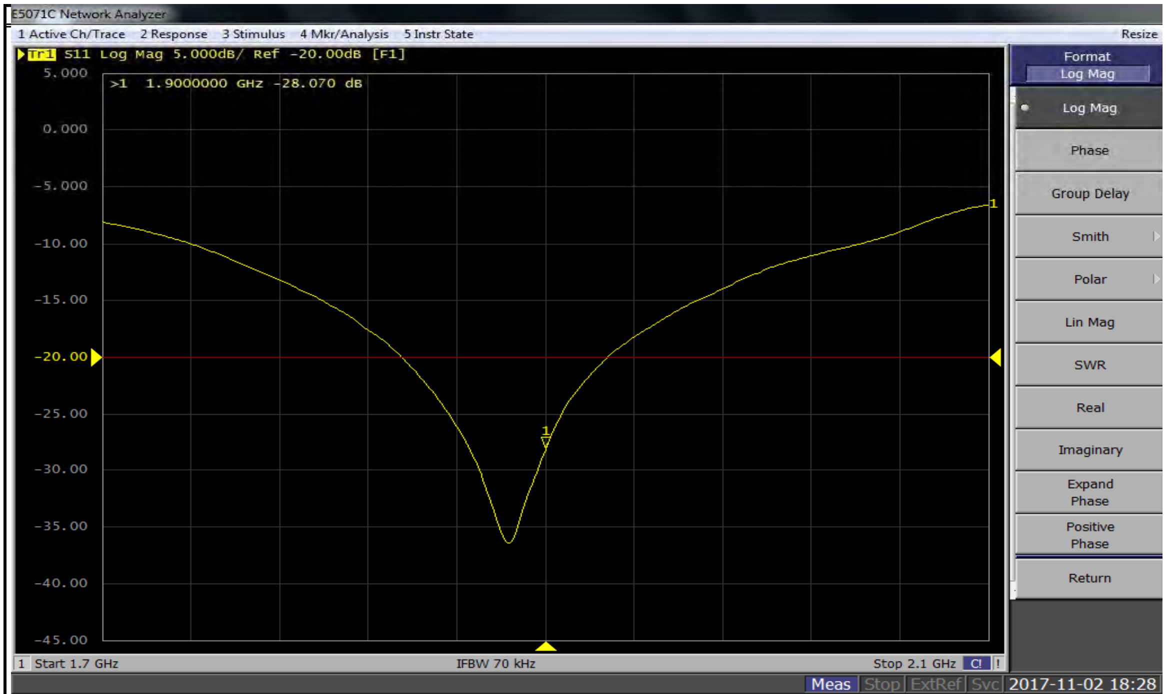
Note： SAR System Uncertainty： % ，(95% CONFIDENCE LEVEL ，Expanded uncertainty K=2)

From NO.：E_YYMMDD；E=Dipole NO. ,YYMMDD=Year/Month/Date。

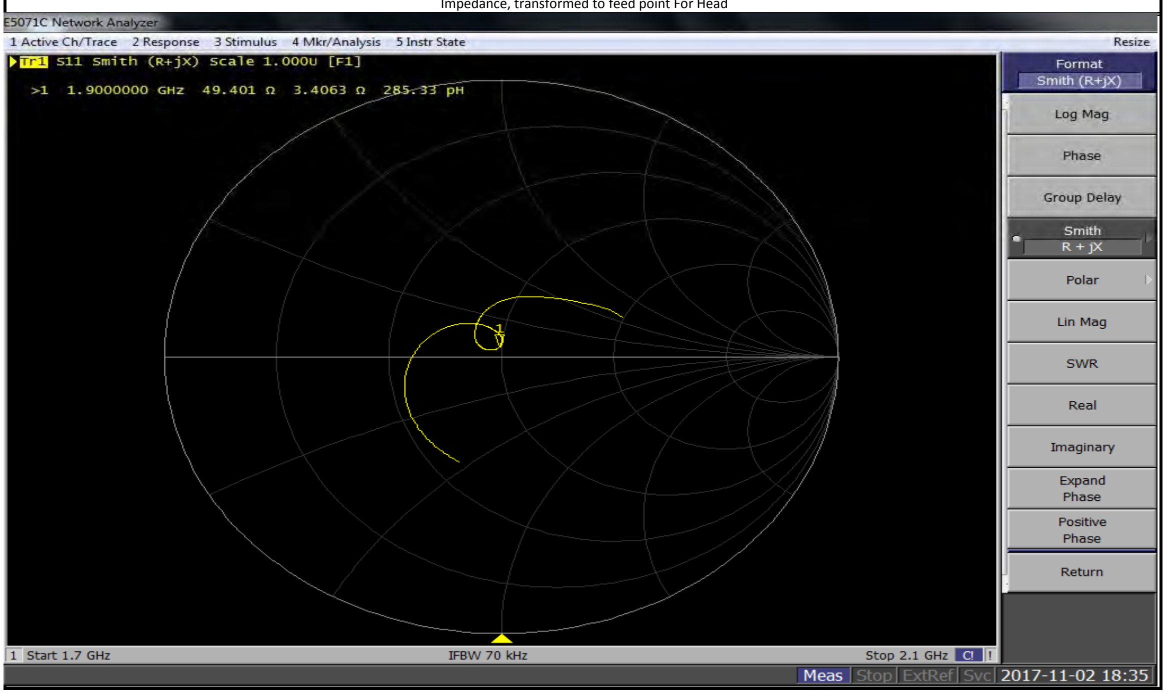
Tester： Morrison Huang   Technical Director： Herbort Liu

FM-506-09 Ver.6

Annex a

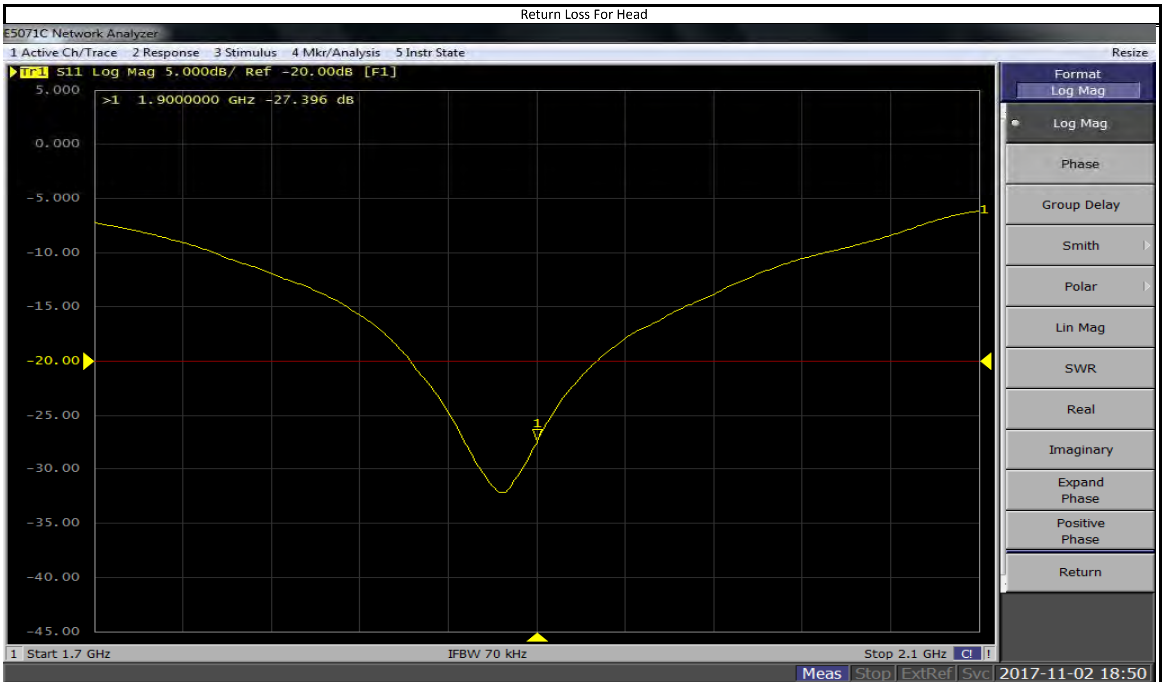


Impedance, transformed to feed point For Head

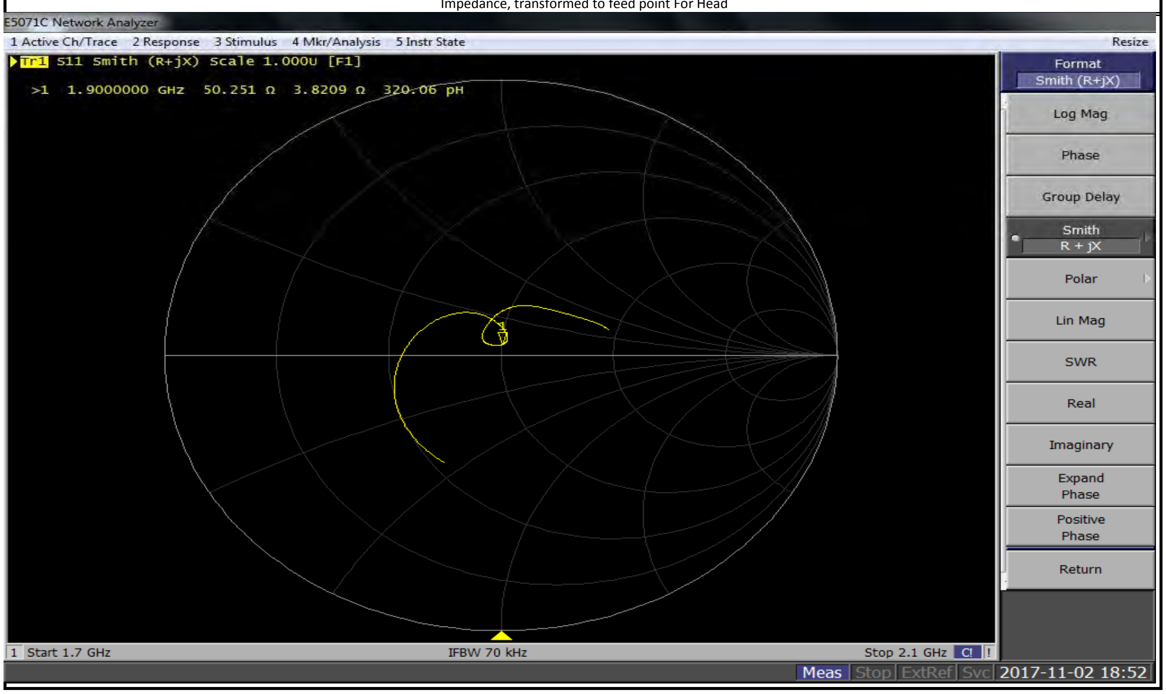


Annex b

Return Loss For Head



Impedance, transformed to feed point For Head



Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S **Schweizerischer Kalibrierdienst**
C **Service suisse d'étalonnage**
S **Servizio svizzero di taratura**
Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 0108

Client **BTL-TW (Auden)**

Certificate No: D2300V2-1054_Aug15

CALIBRATION CERTIFICATE

Object	D2300V2 - SN: 1054
Calibration procedure(s)	QA CAL-05.v9 Calibration procedure for dipole validation kits above 700 MHz
Calibration date:	August 14, 2015

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter EPM-442A	GB37480704	07-Oct-14 (No. 217-02020)	Oct-15
Power sensor HP 8481A	US37292783	07-Oct-14 (No. 217-02020)	Oct-15
Power sensor HP 8481A	MY41092317	07-Oct-14 (No. 217-02021)	Oct-15
Reference 20 dB Attenuator	SN: 5058 (20k)	01-Apr-15 (No. 217-02131)	Mar-16
Type-N mismatch combination	SN: 5047.2 / 06327	01-Apr-15 (No. 217-02134)	Mar-16
Reference Probe ES3DV3	SN: 3205	30-Dec-14 (No. ES3-3205_Dec14)	Dec-15
DAE4	SN: 601	18-Aug-14 (No. DAE4-601_Aug14)	Aug-15

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
RF generator R&S SMT-06	100005	04-Aug-99 (in house check Oct-13)	In house check: Oct-16
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-14)	In house check: Oct-15

	Name	Function	Signature
Calibrated by:	Michael Weber	Laboratory Technician	M.Weber
Approved by:	Katja Pokovic	Technical Manager	

Issued: August 14, 2015

Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
c) IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
d) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

e) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY5	V52.8.8
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	2300 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	39.5	1.67 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	38.7 ± 6 %	1.71 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	12.4 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**48.8 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	250 mW input power	6.00 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**23.8 W/kg ± 16.5 % (k=2)**

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Body TSL parameters	22.0 °C	52.9	1.81 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	52.8 ± 6 %	1.86 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm^3 (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	12.3 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**48.5 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	250 mW input power	5.93 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**23.5 W/kg ± 16.5 % (k=2)**

Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	48.0 Ω - 4.4 jΩ
Return Loss	- 26.1 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	45.5 Ω - 3.2 jΩ
Return Loss	- 24.7 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.169 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	September 12, 2014

DASY5 Validation Report for Head TSL

Date: 14.08.2015

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 2300 MHz; Type: D2300V2; Serial: D2300V2 - SN: 1054

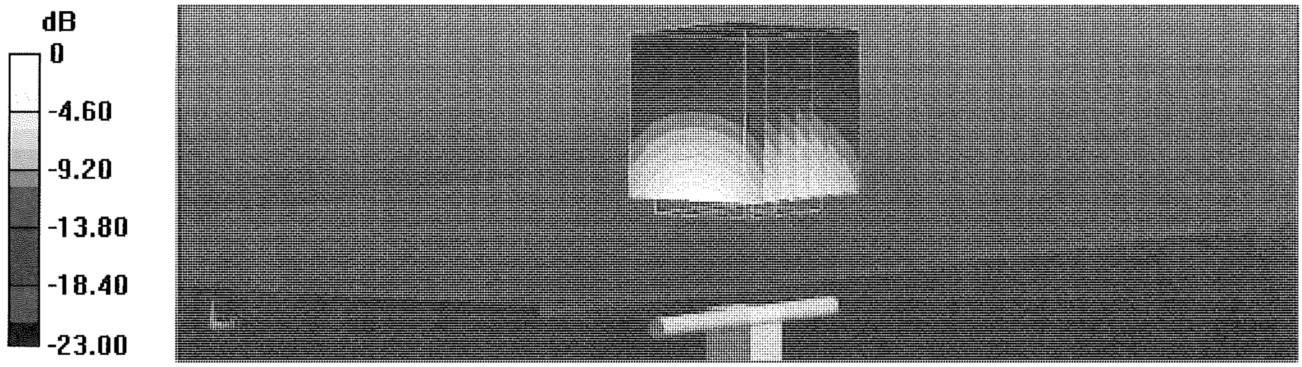
Communication System: UID 0 - CW; Frequency: 2300 MHz
Medium parameters used: f = 2300 MHz; σ = 1.71 S/m; ε_r = 38.7; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.75, 4.75, 4.75); Calibrated: 30.12.2014;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 18.08.2014
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

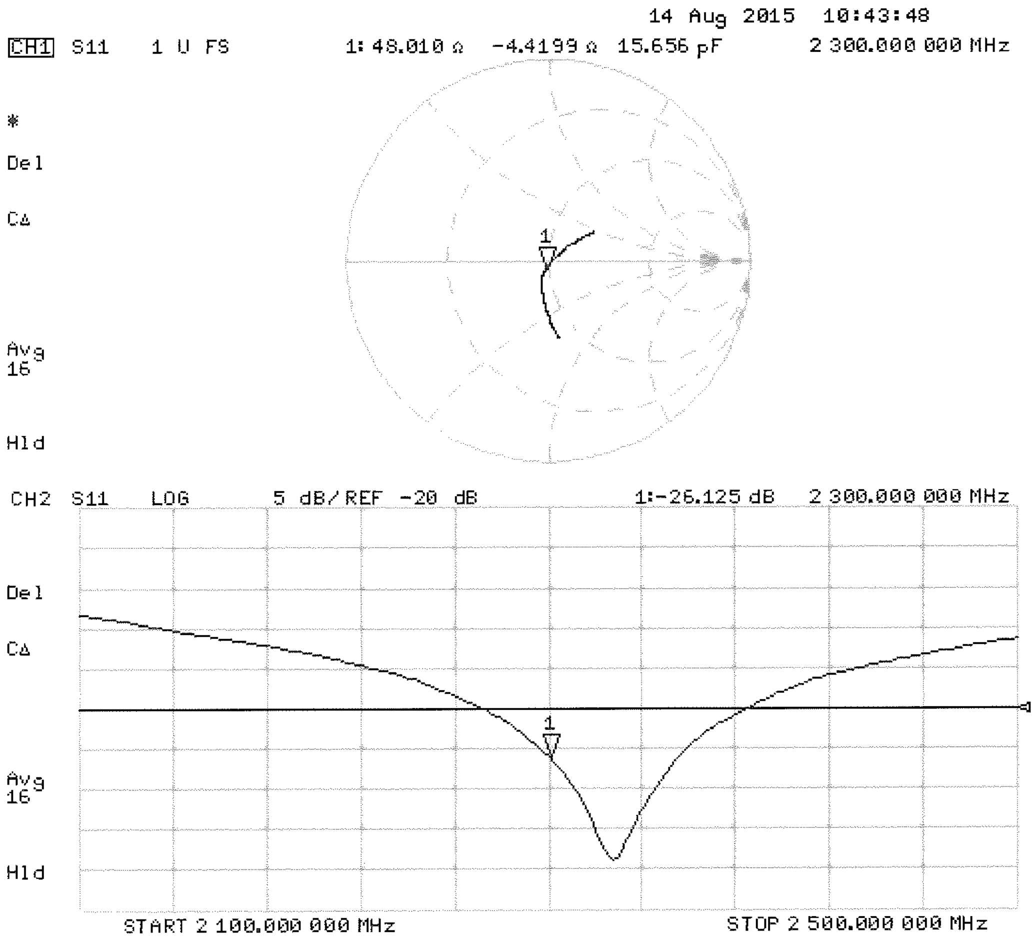
Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 101.6 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 23.6 W/kg
SAR(1 g) = 12.4 W/kg; SAR(10 g) = 6.00 W/kg
Maximum value of SAR (measured) = 16.1 W/kg



0 dB = 16.1 W/kg = 12.07 dBW/kg

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 14.08.2015

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 2300 MHz; Type: D2300V2; Serial: D2300V2 - SN: 1054

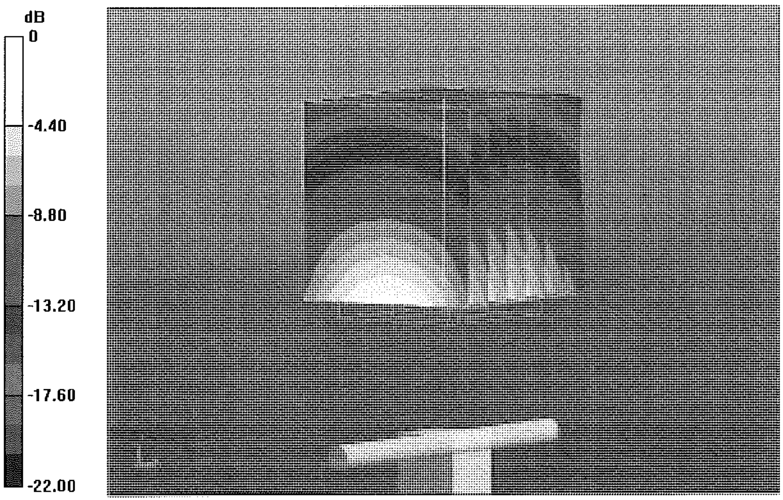
Communication System: UID 0 - CW; Frequency: 2300 MHz
Medium parameters used: f = 2300 MHz; σ = 1.86 S/m; ε_r = 52.8; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.44, 4.44, 4.44); Calibrated: 30.12.2014;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 18.08.2014
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

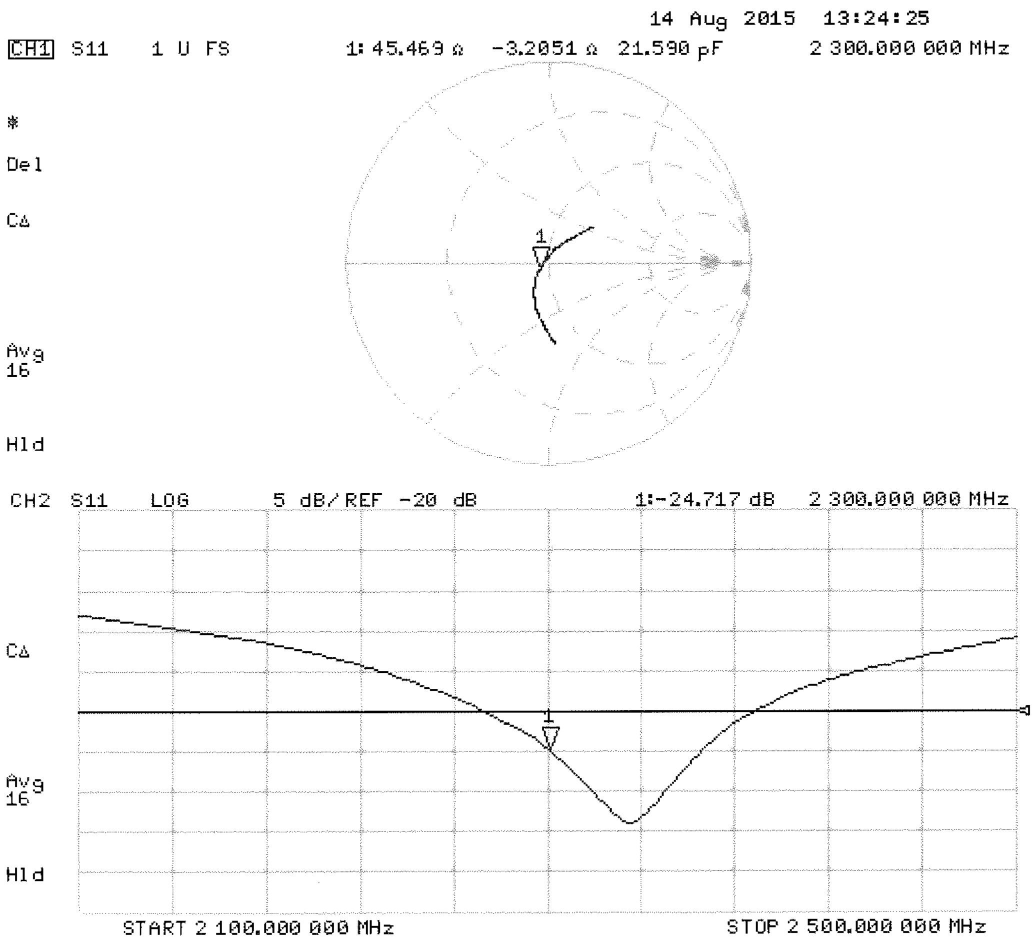
Dipole Calibration for Body Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 96.41 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 23.9 W/kg
SAR(1 g) = 12.3 W/kg; SAR(10 g) = 5.93 W/kg
Maximum value of SAR (measured) = 16.0 W/kg



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

Impedance Measurement Plot for Body TSL



Dipole Internal Calibration Record

NO.： SAR-D2300-17-2

Asset No.：	E-536	Model No.：	D2300V2	Cal. Date：		2017/11/3
Equipment：	Dipole	Serial No.：	1054	Next Cal. Date：		2018/5/2
Environmental condition：		Temp：	22.7 ℃	R.H.：	59	%

Standard List

1	IEEE Std 1528-2013	IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorpiton Rate(SAR) in the Human Head from Wireless Communication Devices: Measurement Texhniques, June 2013
2	IEC 62209-2	Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body(frequency range of 30 MHz to 6 GHz), March 2010
3	KDB865664	SAR Measurement Requirements for 100 MHz to 6 GHz

Equipment Information

Equipment：	Manufacturer：	Model No.：	Serial No.：	Cal.Organization：	Certificate No.：	Cal. Date：
ENA	Keysight	E5071C	MY46524658	ETC	16-12-BAC-032-01	2016/12/6

Originak Cal. Report

Equipment：	Manufacturer：	Model No.：	Serial No.：	Cal.Organization：	Certificate No.：	Cal. Date：
Dipole	Speag	D2300V2	1054	SAS	D2300V2-1054_Aug15	Aug. 14, 2015

Calibration Value：

For Head Tissue

Frequency	Item	Originak Cal. Result	Verified Result	Deviation	Result	Annex
2300MHz	Impedance, transformed to feed point(Ω)	48.01	45.01	3	Pass	a
	Impedance, transformed to feed point(Ω) (Imaginary Part)	-4.4199	-3.44	0.677	Pass	a
	Return Loss(dB)	-26.125	-24.976	-1.149	Pass	a

For Body Tissue

Frequency	Item	Originak Cal. Result	Verified Result	Deviation		
2300MHz	Impedance, transformed to feed point(Ω)	45.469	44.678	0.791	Pass	b
	Impedance, transformed to feed point(Ω) (Imaginary Part)	-3.2051	-1.7537	-1.4514	Pass	b
	Return Loss(dB)	-24.717	-25.037	0.32	Pass	b

Note： SAR System Uncertainty： %，(95% CONFIDENCE LEVEL ，Expanded uncertainty K=2)

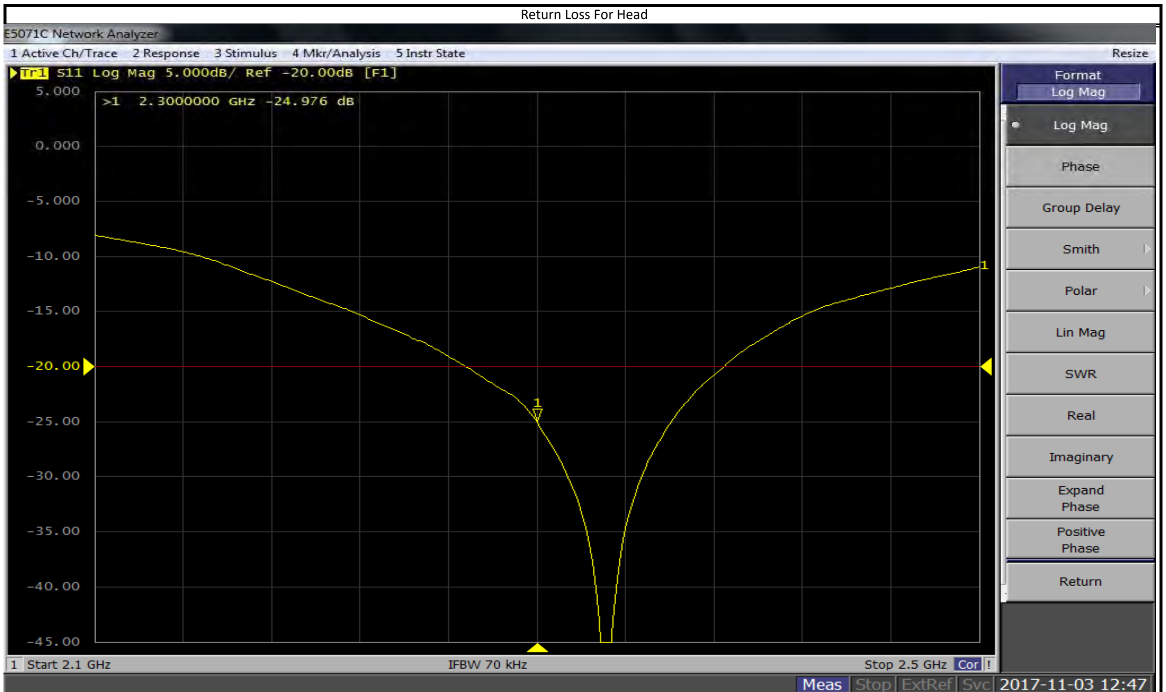
From NO.：E_YYMMDD；E=Dipole NO. ,YYMMDD=Year/Month/Date。

Tester： Morrison Huang　　Technical Director： Herbort Liu

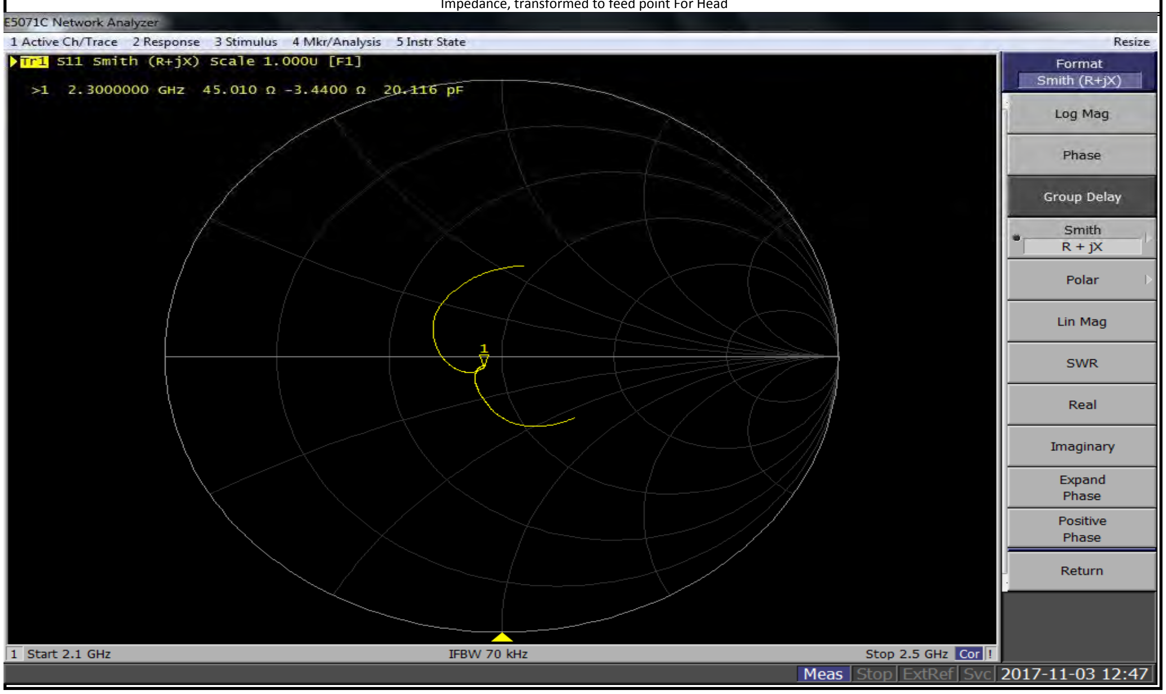
FM-506-09 Ver.6

Annex a

Return Loss For Head

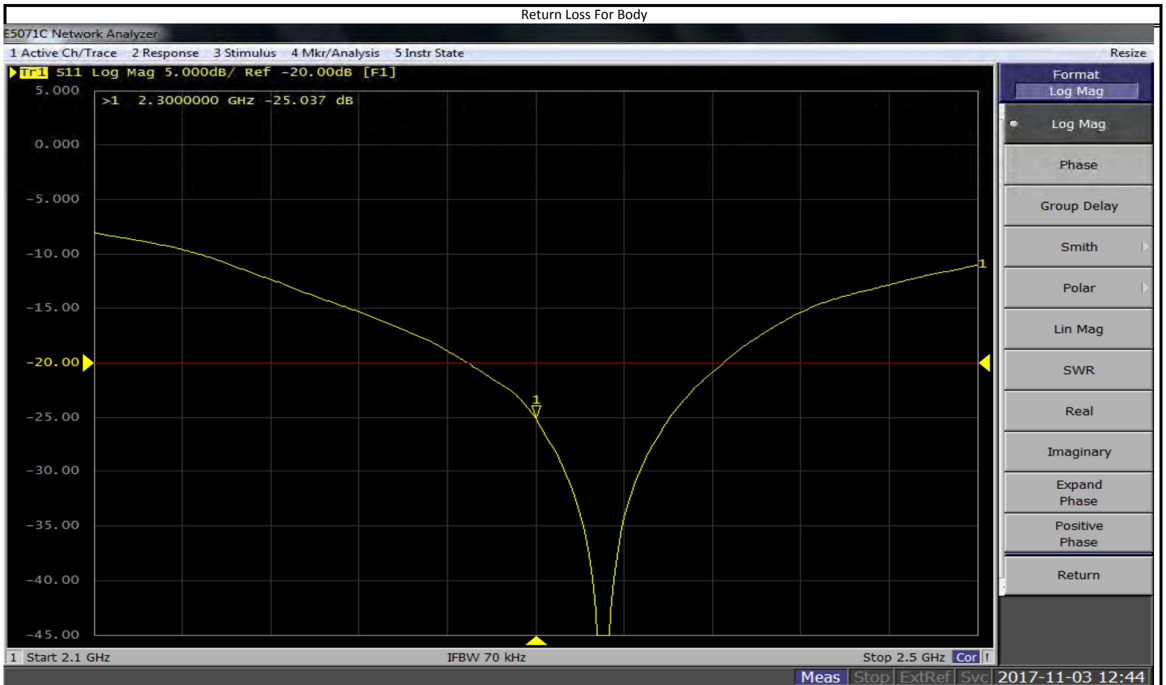


Impedance, transformed to feed point For Head

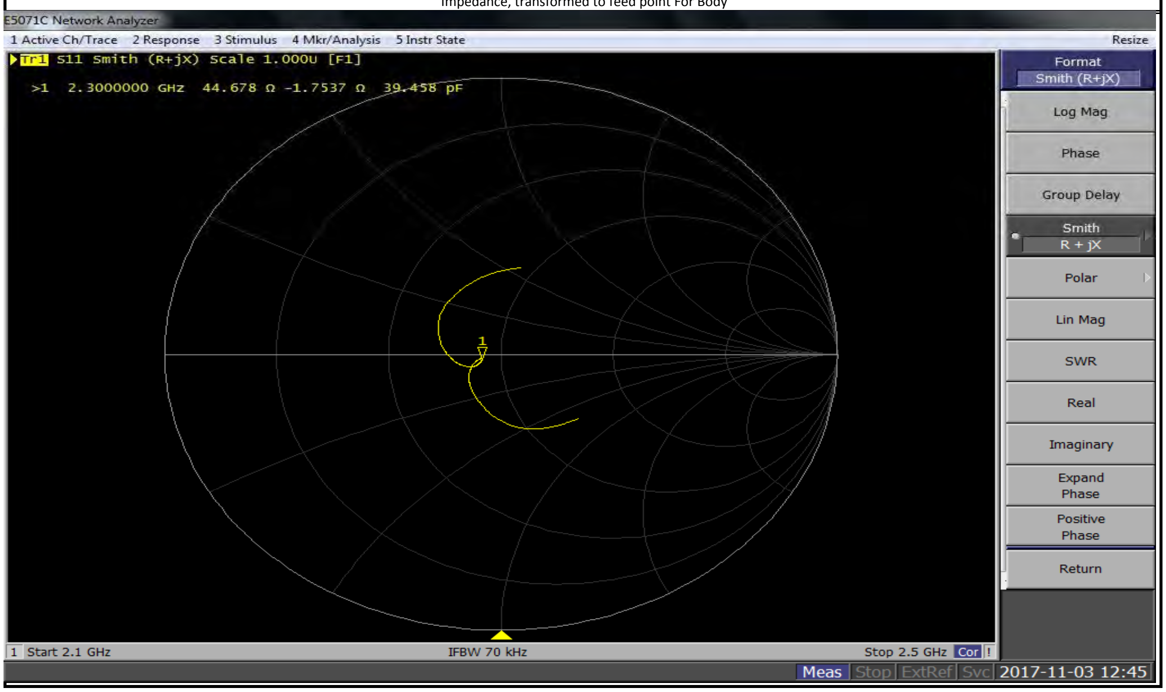


Annex b

Return Loss For Body



Impedance, transformed to feed point For Body



Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S **Schweizerischer Kalibrierdienst**
C **Service suisse d'étalonnage**
S **Servizio svizzero di taratura**
S **Swiss Calibration Service**

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 0108

Client **BTL-TW (Auden)**

Certificate No: D2450V2-973_Aug15

CALIBRATION CERTIFICATE

Object	D2450V2 - SN: 973
Calibration procedure(s)	QA CAL-05.v9 Calibration procedure for dipole validation kits above 700 MHz
Calibration date:	August 14, 2015

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter EPM-442A	GB37480704	07-Oct-14 (No. 217-02020)	Oct-15
Power sensor HP 8481A	US37292783	07-Oct-14 (No. 217-02020)	Oct-15
Power sensor HP 8481A	MY41092317	07-Oct-14 (No. 217-02021)	Oct-15
Reference 20 dB Attenuator	SN: 5058 (20k)	01-Apr-15 (No. 217-02131)	Mar-16
Type-N mismatch combination	SN: 5047.2 / 06327	01-Apr-15 (No. 217-02134)	Mar-16
Reference Probe ES3DV3	SN: 3205	30-Dec-14 (No. ES3-3205_Dec14)	Dec-15
DAE4	SN: 601	18-Aug-14 (No. DAE4-601_Aug14)	Aug-15

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
RF generator R&S SMT-06	100005	04-Aug-99 (in house check Oct-13)	In house check: Oct-16
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-14)	In house check: Oct-15

	Name	Function	Signature
Calibrated by:	Michael Weber	Laboratory Technician	M.Weber
Approved by:	Katja Pokovic	Technical Manager	

Issued: August 14, 2015

Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
c) IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
d) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

e) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY5	V52.8.8
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	2450 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	39.2	1.80 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	38.1 ± 6 %	1.87 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	13.7 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**53.5 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	6.33 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**25.0 W/kg ± 16.5 % (k=2)**

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Body TSL parameters	22.0 °C	52.7	1.95 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	52.4 ± 6 %	2.03 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm³ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	13.2 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**51.7 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	6.12 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**24.2 W/kg ± 16.5 % (k=2)**

Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	54.0 Ω + 1.4 jΩ
Return Loss	- 27.8 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	51.5 Ω + 2.9 jΩ
Return Loss	- 29.7 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.157 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 30, 2014

Date: 14.08.2015

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN: 973

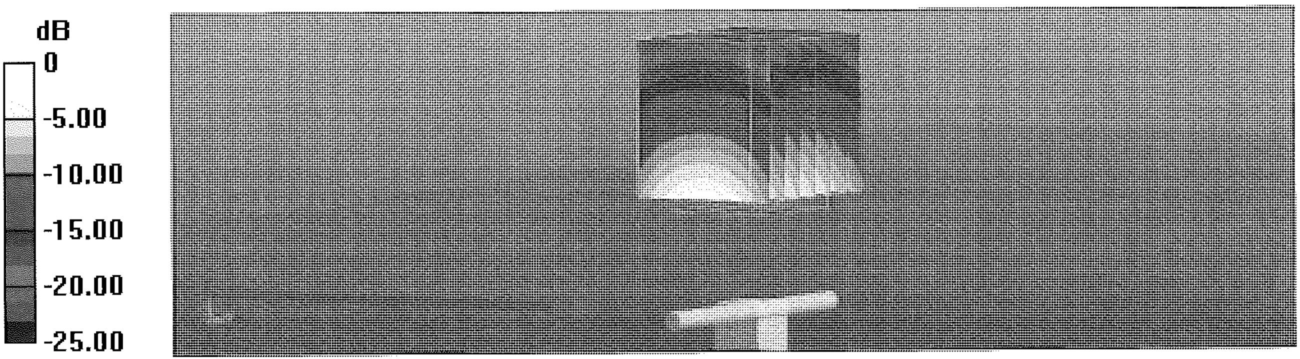
Communication System: UID 0 - CW; Frequency: 2450 MHz
Medium parameters used: f = 2450 MHz; σ = 1.87 S/m; ε_r = 38.1; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.54, 4.54, 4.54); Calibrated: 30.12.2014;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 18.08.2014
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

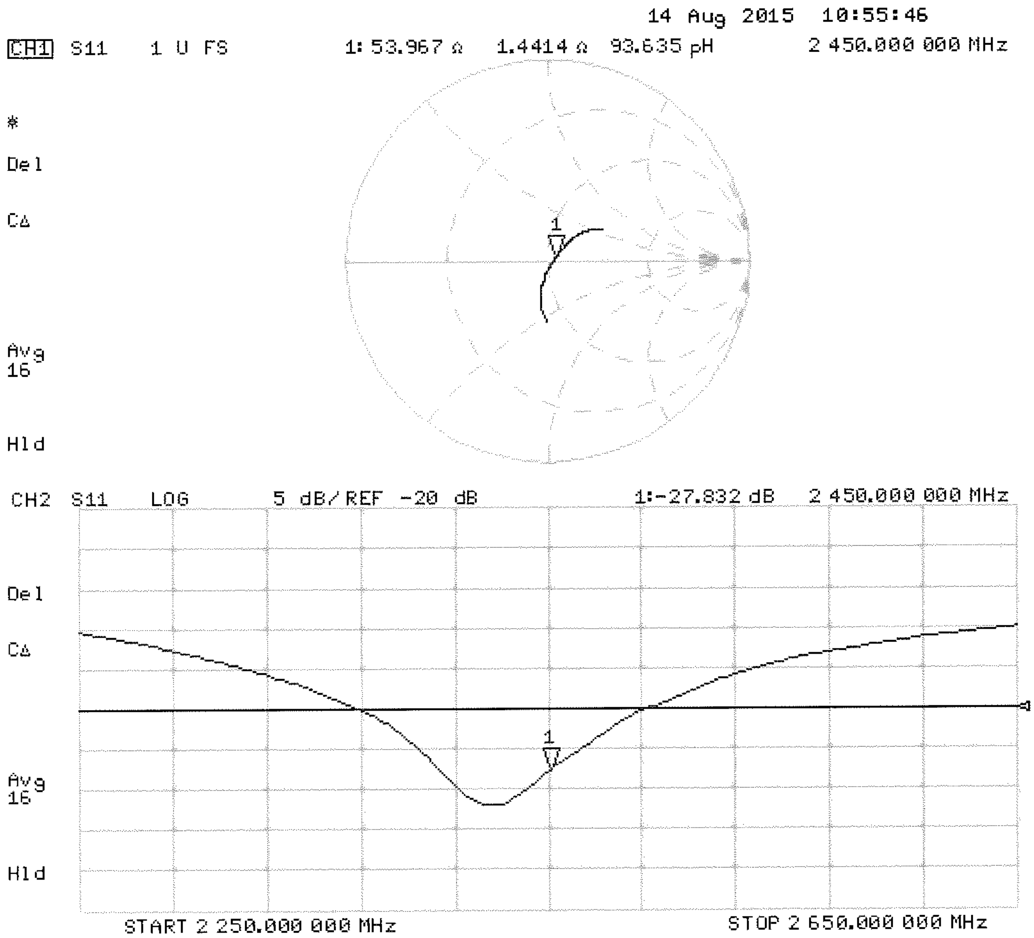
Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 102.2 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 28.4 W/kg
SAR(1 g) = 13.7 W/kg; SAR(10 g) = 6.33 W/kg
Maximum value of SAR (measured) = 18.2 W/kg



0 dB = 18.2 W/kg = 12.60 dBW/kg

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 14.08.2015

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN: 973

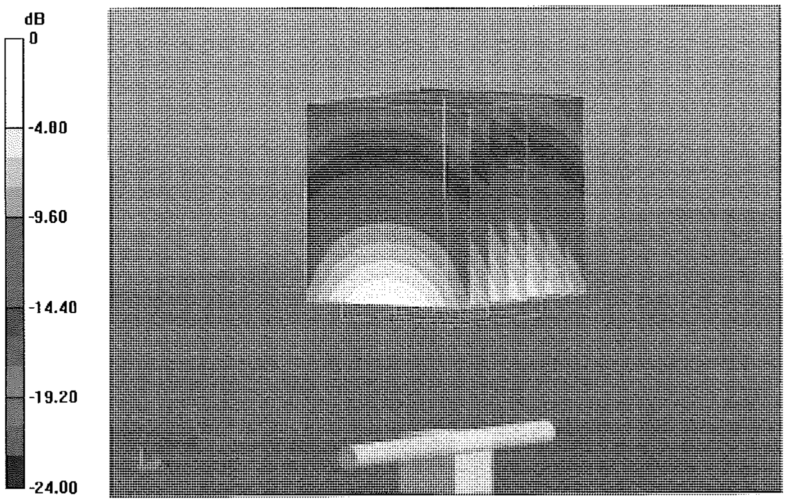
Communication System: UID 0 - CW; Frequency: 2450 MHz
Medium parameters used: f = 2450 MHz; σ = 2.03 S/m; ε_r = 52.4; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.32, 4.32, 4.32); Calibrated: 30.12.2014;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 18.08.2014
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

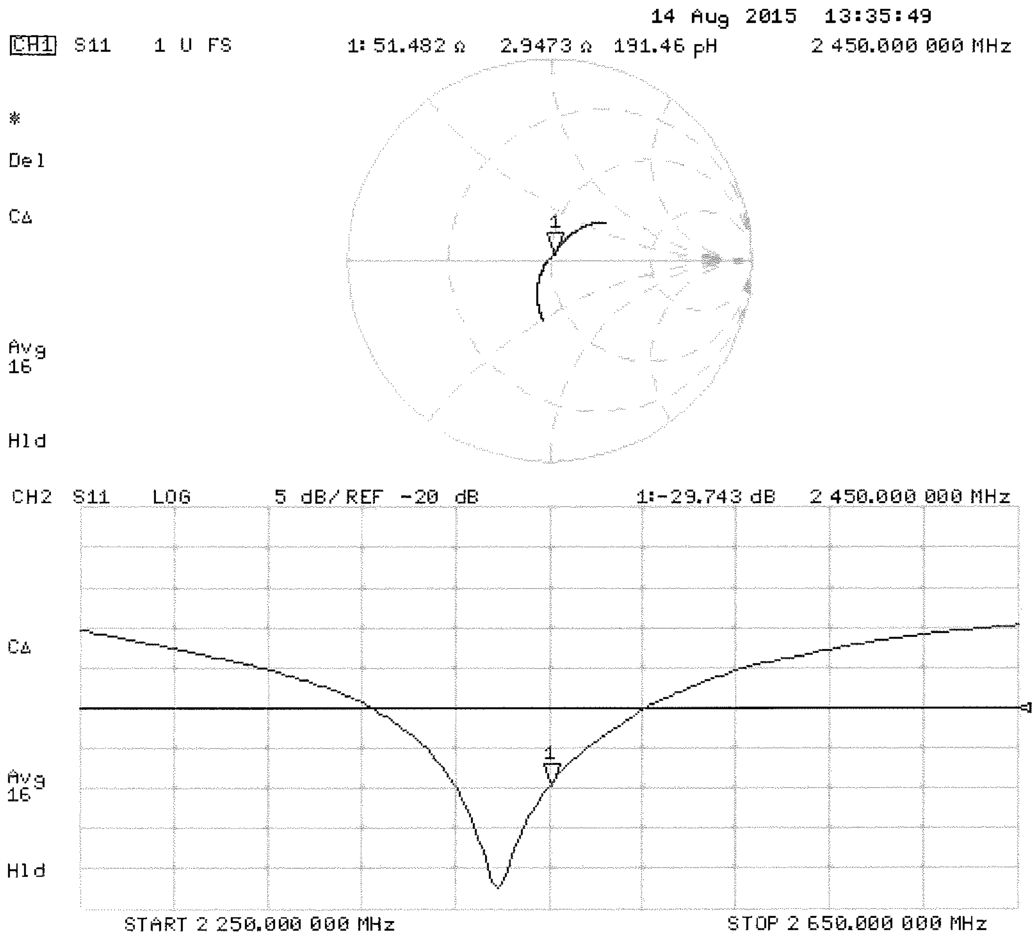
Dipole Calibration for Body Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 95.96 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 27.6 W/kg
SAR(1 g) = 13.2 W/kg; SAR(10 g) = 6.12 W/kg
Maximum value of SAR (measured) = 17.5 W/kg



0 dB = 17.5 W/kg = 12.43 dBW/kg

Impedance Measurement Plot for Body TSL



Dipole Internal Verification Record

NO.： SAR-D2450-17-2

Asset No.：	E537	Model No.：	D2450V2	Cal. Date：		2017/11/3
Equipment：	Dipole	Serial No.：	973	Next Cal. Date：		2018/5/2
Environmental condition：		Temp：	22.8 ℃	R.H.：	57	%

Standard List

1	IEEE Std 1528-2013	IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorpiton Rate(SAR) in the Human Head from Wireless Communication Devices: Measurement Texhniques, June 2013
2	IEC 62209-2	Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body(frequency range of 30 MHz to 6 GHz), March 2010
3	KDB865664	SAR Measurement Requirements for 100 MHz to 6 GHz

Equipment Information

Equipment：	Manufacturer：	Model No.：	Serial No.：	Cal.Organization	Certificate No.：	Cal. Date：
ENA	Keysight	E5071C	MY46524658	ETC	16-12-BAC-032-01	2016/12/6

Originak Cal. Report

Equipment：	Manufacturer：	Model No.：	Serial No.：	Cal.Organization	Certificate No.：	Cal. Date：
Dipole	Speag	D2450V2	973	SAS	D2450V2-973_ANg15	Aug. 14, 2015

Calibration Value：

For Head Tissue

Frequency	Item	Originak Cal. Result	Verified Result	Deviation	Result	Annex
2450MHz	Impedance, transformed to feed point(Ω)	53.967	52.252	1.715	Pass	a
	Impedance, transformed to feed point(Ω) (Imaginary Part)	1.4414	1.6282	-0.1868	Pass	a
	Return Loss(dB)	-27.832	-24.446	-3.386	Pass	a

For Body Tissue

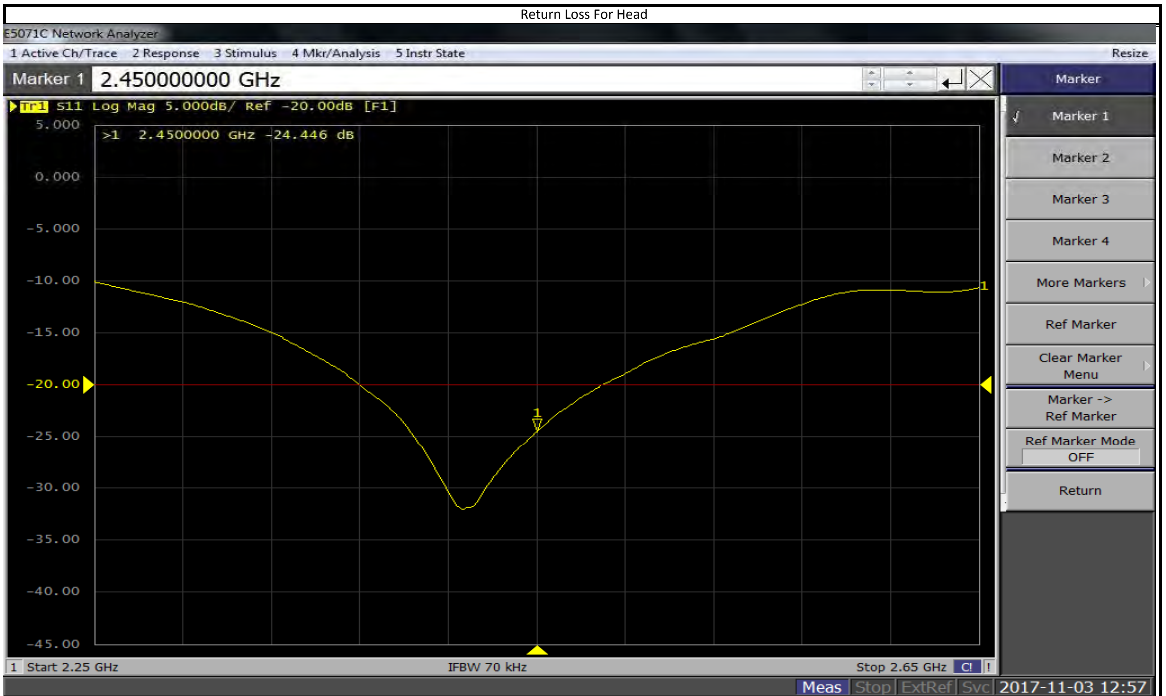
Frequency	Item	Originak Cal. Result	Verified Result	Deviation	Result	Annex
2450MHz	Impedance, transformed to feed point(Ω)	51.482	49.856	1.626	Pass	b
	Impedance, transformed to feed point(Ω) (Imaginary Part)	2.9473	1.2528	1.6945	Pass	b
	Return Loss(dB)	-29.743	-28.643	-1.1	Pass	b

Note： SAR System Uncertainty： % ，(95% CONFIDENCE LEVEL ，Expanded uncertainty K=2)

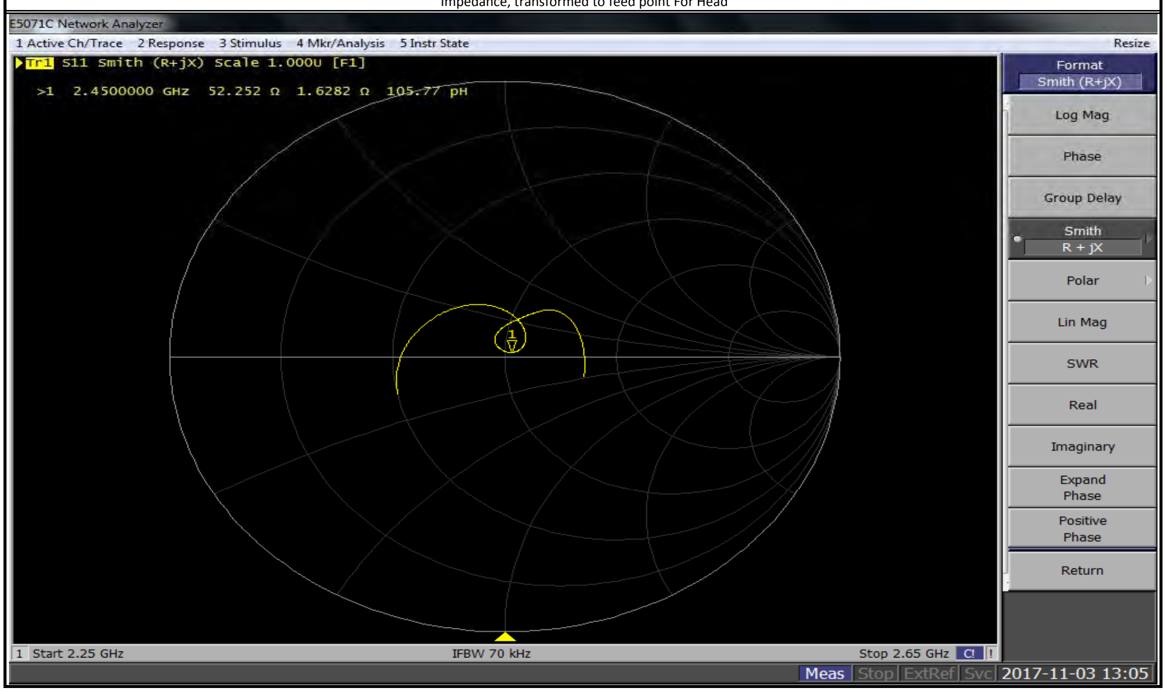
Tester： Morrison Huang   Technical Director： Herbort Liu

Annex a

Return Loss For Head

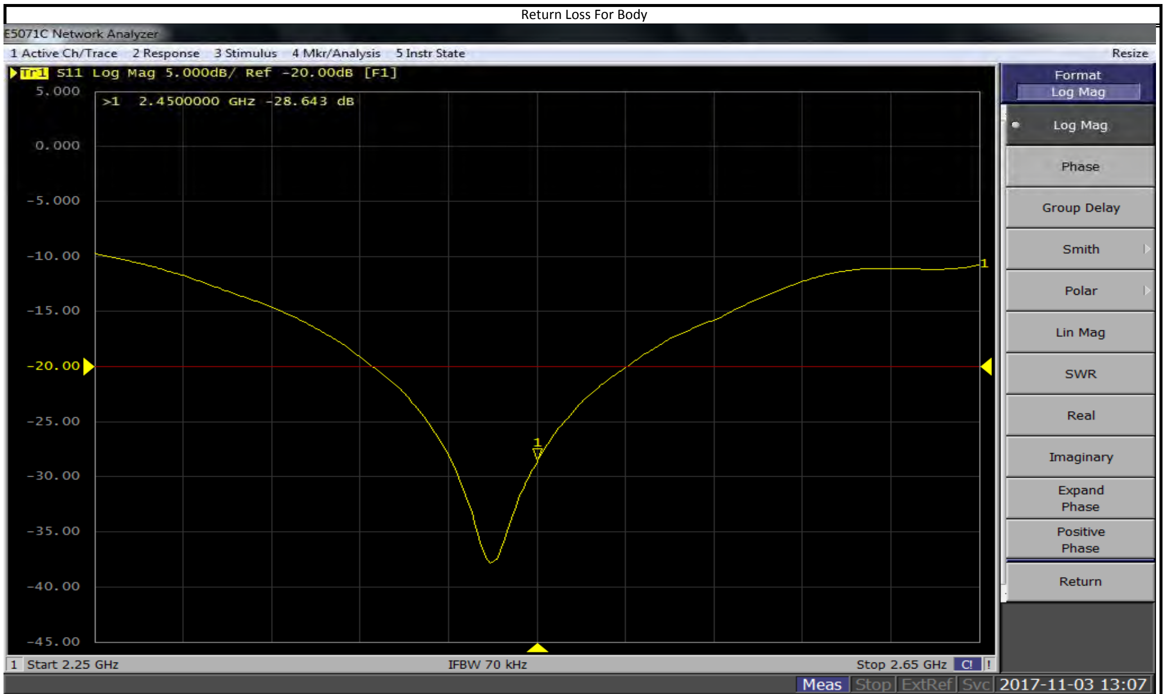


Impedance, transformed to feed point For Head

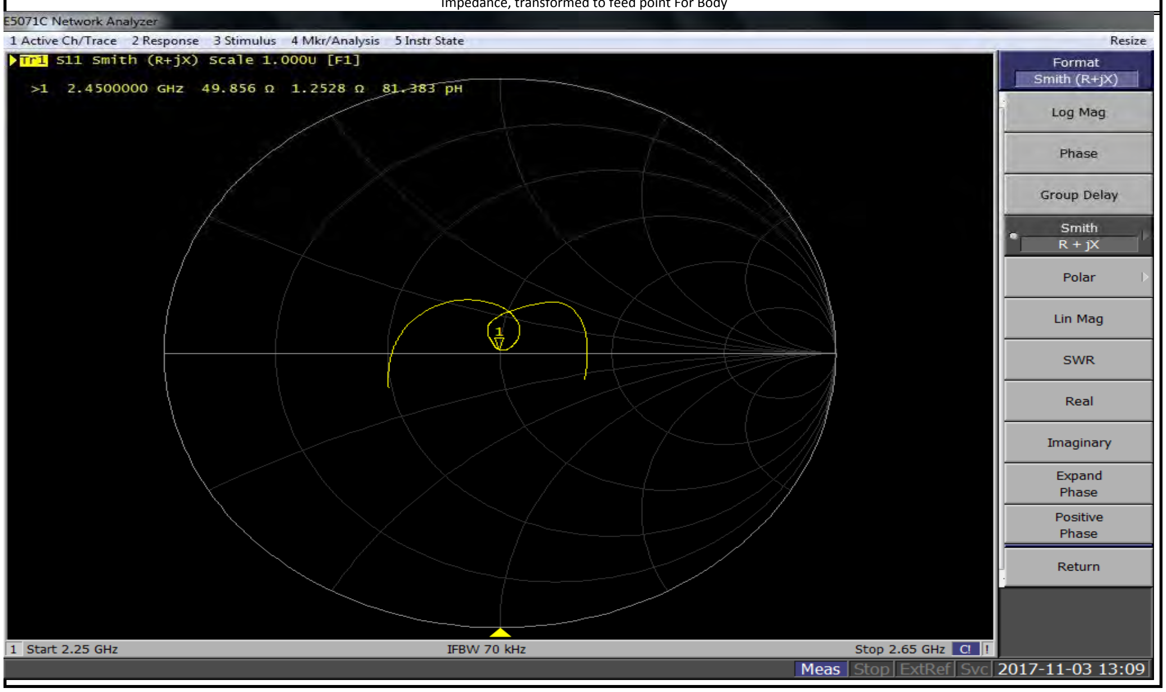


Annex b

Return Loss For Body



Impedance, transformed to feed point For Body



Calibration Laboratory of
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Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

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Accreditation No.: SCS 0108

Client **BTL-TW (Auden)**

Certificate No: D2600V2-1111_Aug15

CALIBRATION CERTIFICATE

Object	D2600V2 - SN: 1111
Calibration procedure(s)	QA CAL-05.v9 Calibration procedure for dipole validation kits above 700 MHz
Calibration date:	August 14, 2015

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter EPM-442A	GB37480704	07-Oct-14 (No. 217-02020)	Oct-15
Power sensor HP 8481A	US37292783	07-Oct-14 (No. 217-02020)	Oct-15
Power sensor HP 8481A	MY41092317	07-Oct-14 (No. 217-02021)	Oct-15
Reference 20 dB Attenuator	SN: 5058 (20k)	01-Apr-15 (No. 217-02131)	Mar-16
Type-N mismatch combination	SN: 5047.2 / 06327	01-Apr-15 (No. 217-02134)	Mar-16
Reference Probe ES3DV3	SN: 3205	30-Dec-14 (No. ES3-3205_Dec14)	Dec-15
DAE4	SN: 601	18-Aug-14 (No. DAE4-601_Aug14)	Aug-15

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
RF generator R&S SMT-06	100005	04-Aug-99 (in house check Oct-13)	In house check: Oct-16
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-14)	In house check: Oct-15

	Name	Function	Signature
Calibrated by:	Michael Weber	Laboratory Technician	M.Weber
Approved by:	Katja Pokovic	Technical Manager	

Issued: August 14, 2015

Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
c) IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
d) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

e) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY5	V52.8.8
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	2600 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	39.0	1.96 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	37.6 ± 6 %	2.04 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	14.6 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**56.9 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	250 mW input power	6.56 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**25.8 W/kg ± 16.5 % (k=2)**

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Body TSL parameters	22.0 °C	52.5	2.16 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	51.9 ± 6 %	2.22 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm^3 (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	14.5 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**57.2 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	250 mW input power	6.44 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**25.6 W/kg ± 16.5 % (k=2)**

Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	49.2 Ω - 6.6 jΩ
Return Loss	- 23.5 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	46.7 Ω - 4.8 jΩ
Return Loss	- 24.4 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.150 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	February 18, 2015

DASY5 Validation Report for Head TSL

Date: 14.08.2015

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 2600 MHz; Type: D2600V2; Serial: D2600V2 - SN: 1111

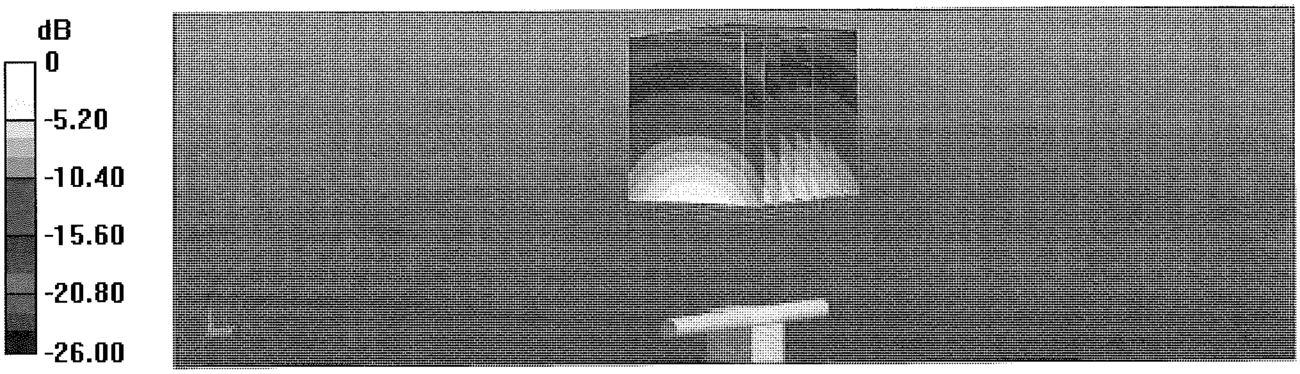
Communication System: UID 0 - CW; Frequency: 2600 MHz
Medium parameters used: f = 2600 MHz; σ = 2.04 S/m; ε_r = 37.6; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.49, 4.49, 4.49); Calibrated: 30.12.2014;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 18.08.2014
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

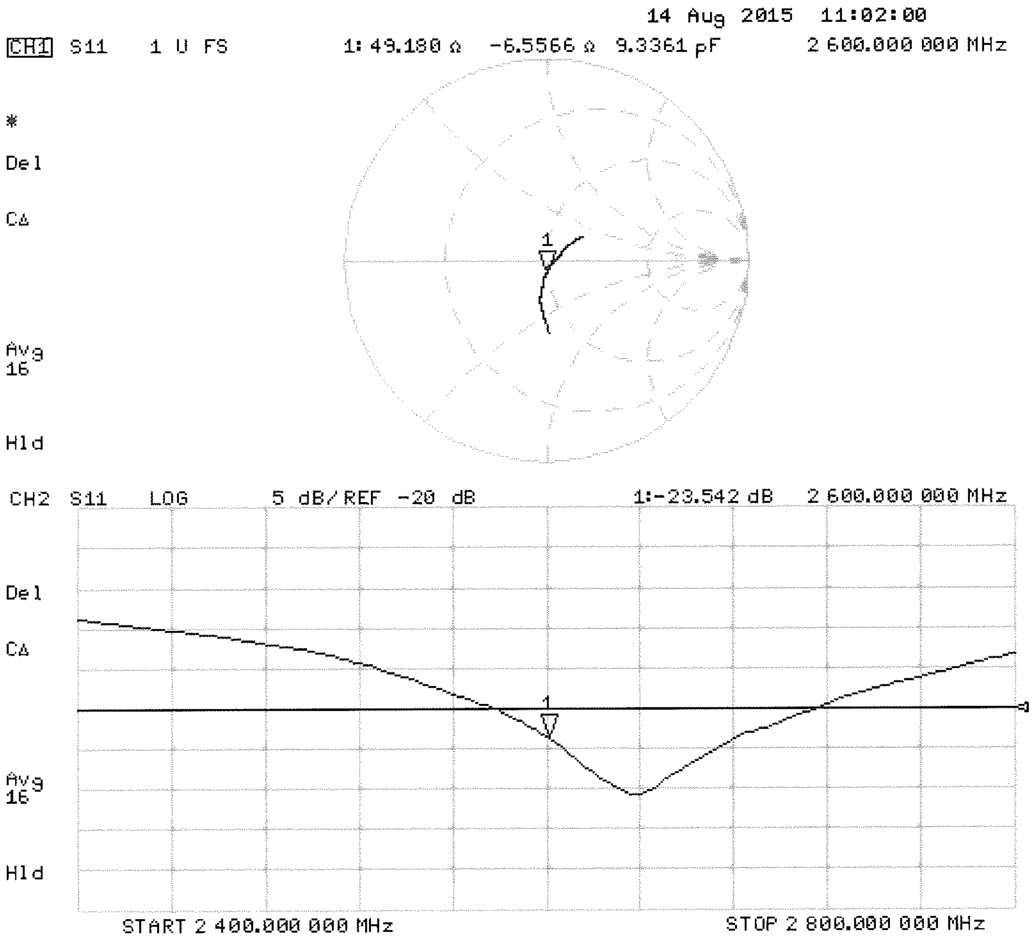
Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 102.8 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 30.5 W/kg
SAR(1 g) = 14.6 W/kg; SAR(10 g) = 6.56 W/kg
Maximum value of SAR (measured) = 19.5 W/kg



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

Impedance Measurement Plot for Head TSL



Date: 14.08.2015

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 2600 MHz; Type: D2600V2; Serial: D2600V2 - SN: 1111

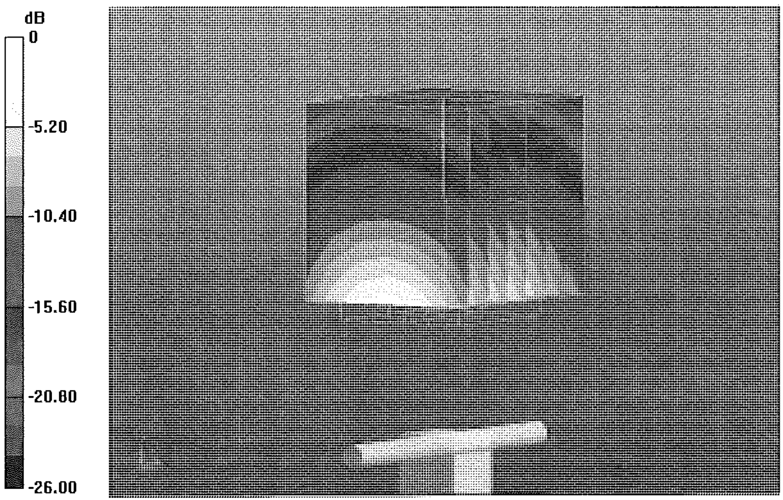
Communication System: UID 0 - CW; Frequency: 2600 MHz
Medium parameters used: f = 2600 MHz; σ = 2.22 S/m; ε_r = 51.9; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.13, 4.13, 4.13); Calibrated: 30.12.2014;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 18.08.2014
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

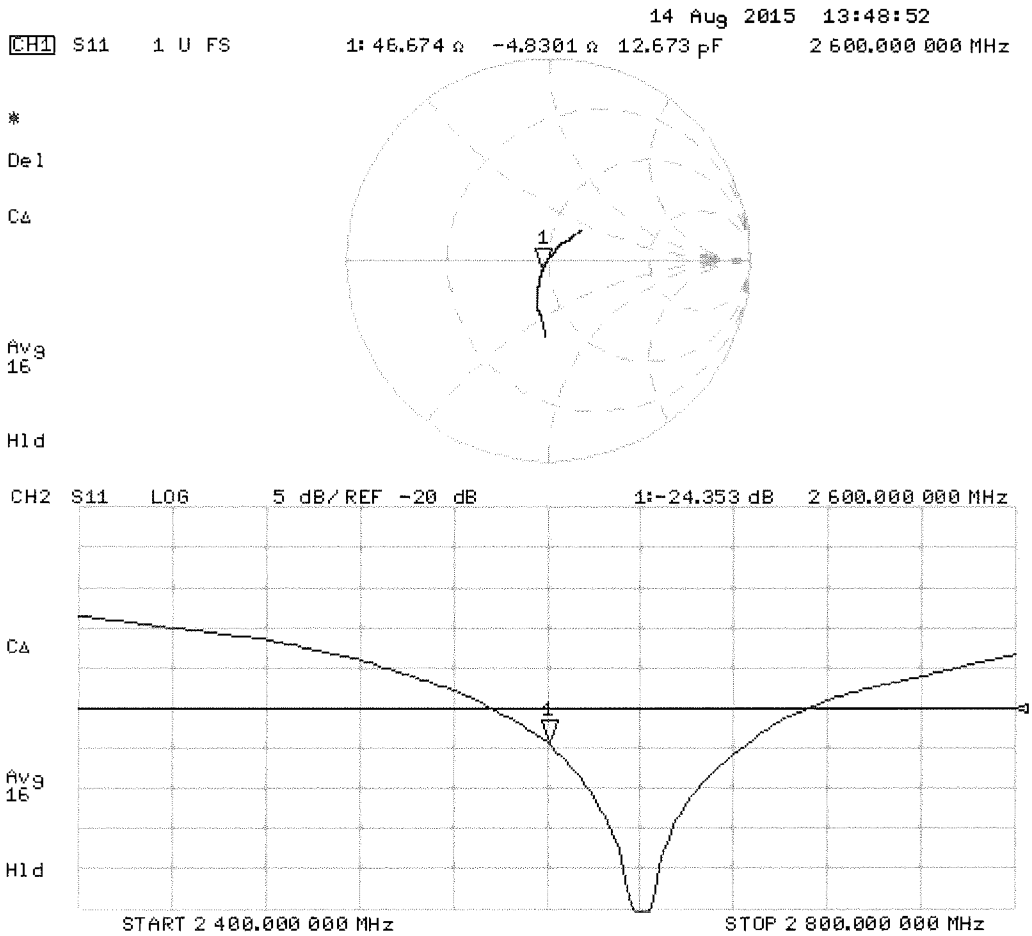
Dipole Calibration for Body Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 97.67 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 30.3 W/kg
SAR(1 g) = 14.5 W/kg; SAR(10 g) = 6.44 W/kg
Maximum value of SAR (measured) = 19.4 W/kg



0 dB = 19.4 W/kg = 12.88 dBW/kg

Impedance Measurement Plot for Body TSL



Dipole Internal Calibration Record

NO. : SAR-D2600-17-2

Asset No. :	E537	Model No. :	D2600V2	Cal. Date :		2017/11/3
Equipment :	Dipole	Serial No. :	1111	Next Cal. Date :		2018/5/2
Environmental condition :		Temp :	22.7 ℃	R.H. :	57	%

Standard List

1	IEEE Std 1528-2013	IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorpiton Rate(SAR) in the Human Head from Wireless Communication Devices: Measurement Texhniques, June 2013
2	IEC 62209-2	Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body(frequency range of 30 MHz to 6 GHz), March 2010
3	KDB865664	SAR Measurement Requirements for 100 MHz to 6 GHz

Equipment Information

Equipment :	Manufacturer :	Model No. :	Serial No. :	Cal.Organization :	Certificate No. :	Cal. Date :
ENA	Keysight	E5071C	MY46524658	ETC	16-12-BAC-032-01	2016/12/6

Originak Cal. Report

Equipment :	Manufacturer :	Model No. :	Serial No. :	Cal.Organization :	Certificate No. :	Cal. Date :
Dipole	Speag	D2600V2	1111	SAS	D2600V2-1111_Aug15	Aug. 14, 2015

Calibration Value :

For Head Tissue

Frequency	Item	Originak Cal. Result	Verified Result	Deviation	Result	Annex
2600MHz	Impedance, transformed to feed point(Ω)	49.18	51.346	-2.166	Pass	a
	Impedance, transformed to feed point(Ω) (Imaginary Part)	-6.5566	-6.6859	0.1293	Pass	a
	Return Loss(dB)	-23.542	-21.018	-2.524	Pass	a

For Body Tissue

Frequency	Item	Originak Cal. Result	Verified Result	Deviation		
2600MHz	Impedance, transformed to feed point(Ω)	46.674	48.914	-2.24	Pass	b
	Impedance, transformed to feed point(Ω) (Imaginary Part)	-4.8301	-6.5532	1.7231	Pass	b
	Return Loss(dB)	-24.353	-23.576	-0.777	Pass	b

Note : SAR System Uncertainty : % , (95% CONFIDENCE LEVEL , Expanded uncertainty K=2)

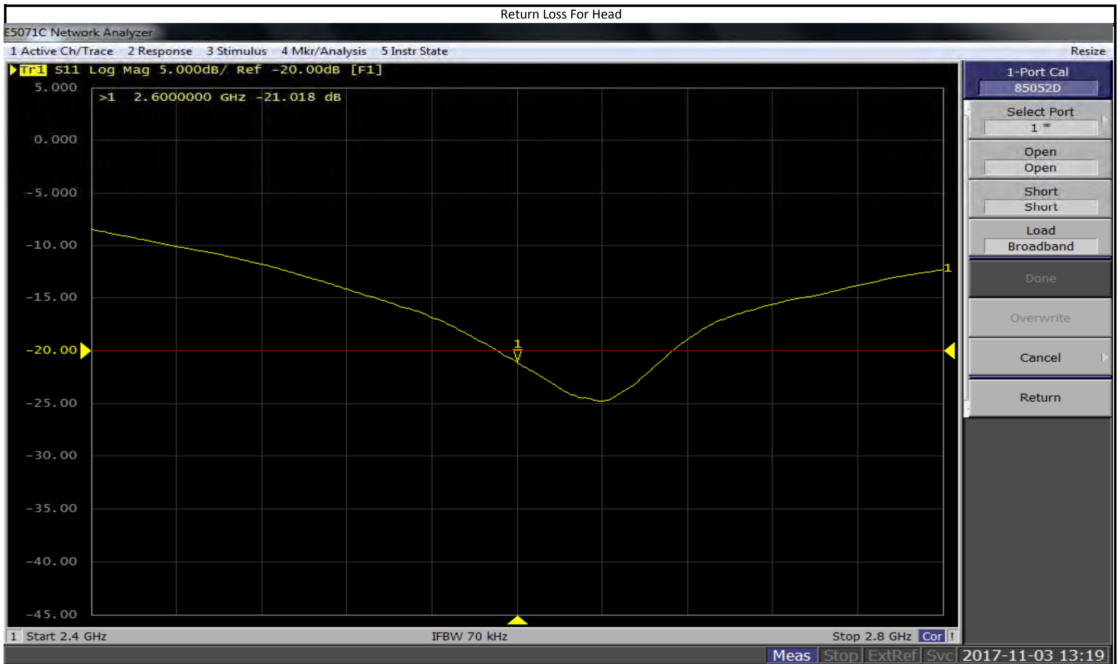
From NO. : E_YYMMDD ; E=Dipole NO. ,YYMMDD=Year/Month/Date。

Tester : Morrison Huang   Technical Director : Herbort Liu

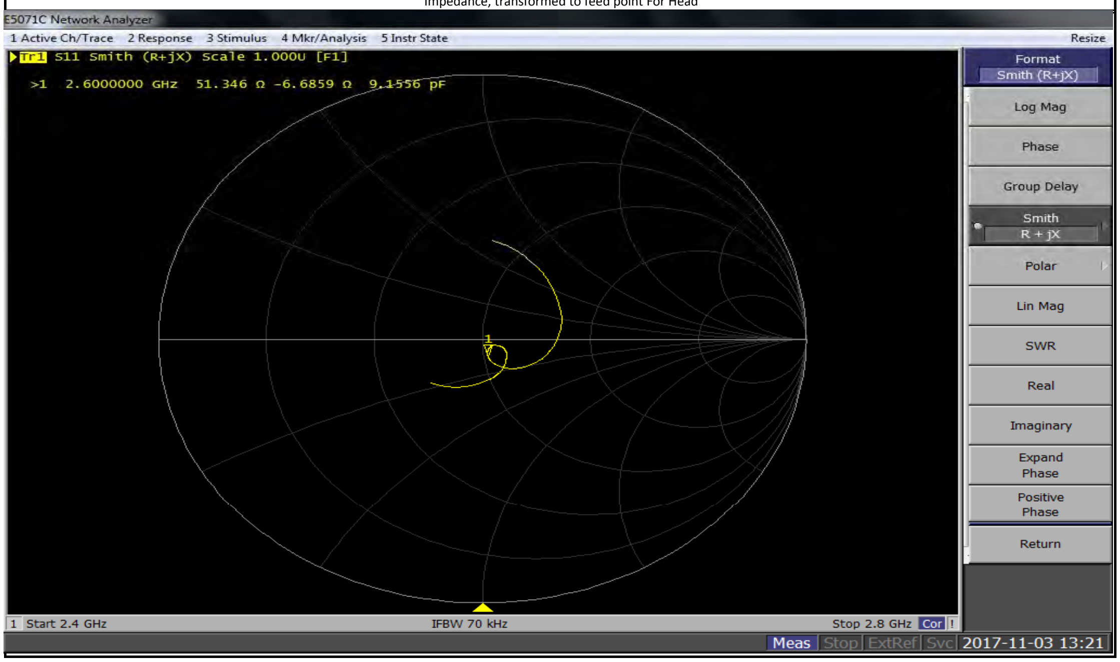
FM-506-09 Ver.6

Annex a

Return Loss For Head

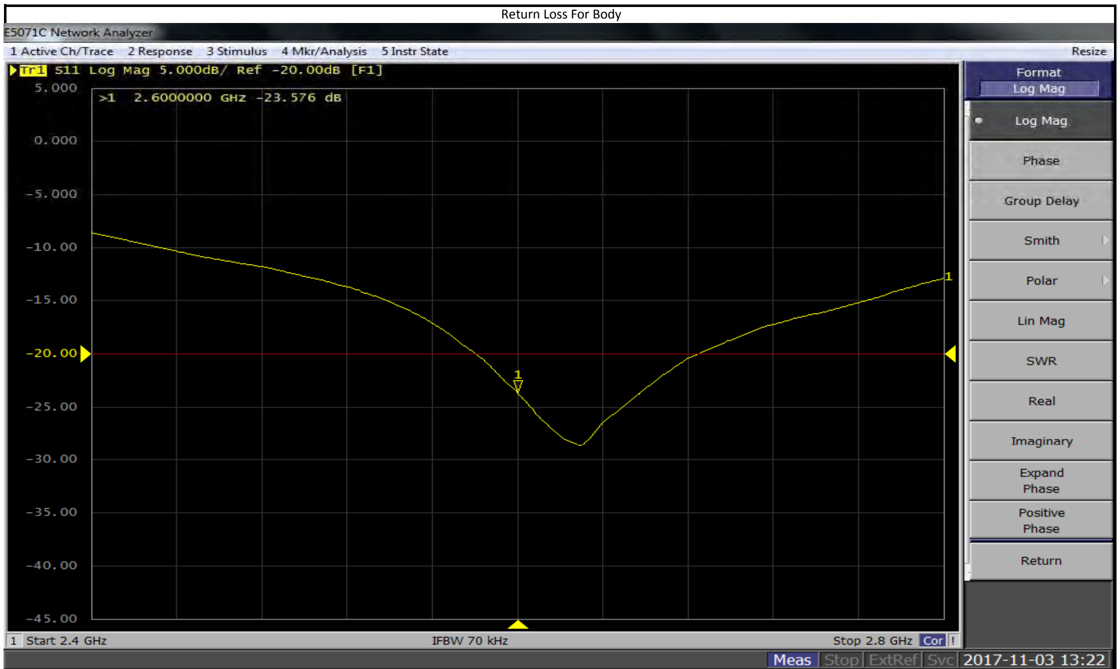


Impedance, transformed to feed point For Head

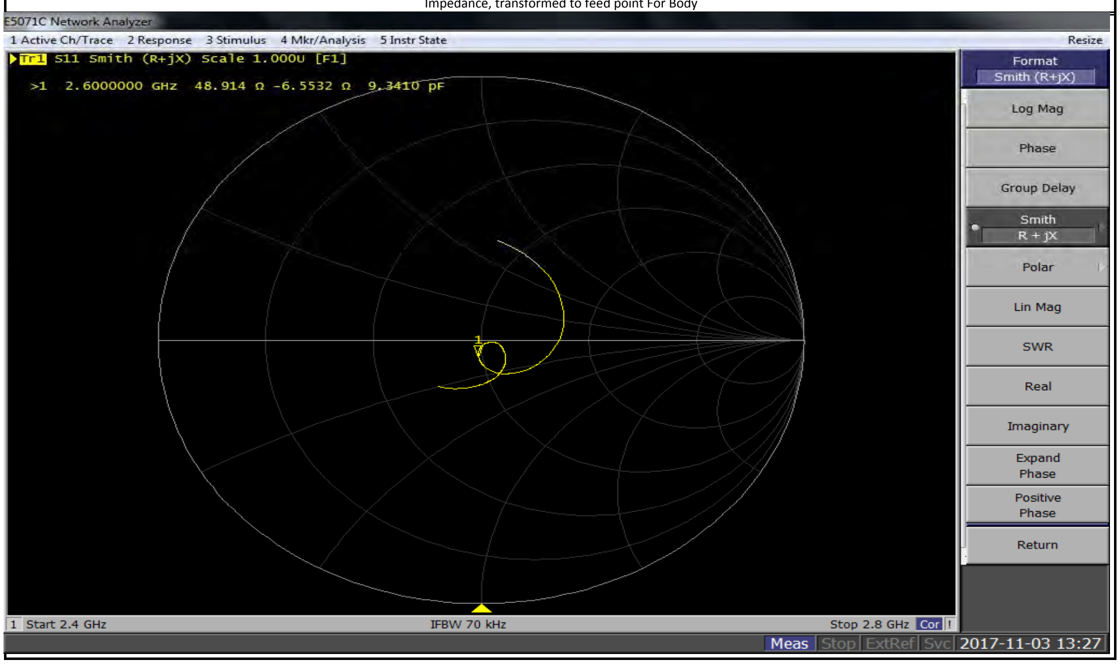


Annex b

Return Loss For Body



Impedance, transformed to feed point For Body



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Accreditation No.: SCS 0108

Client **BTL-TW (Auden)**

Certificate No: D5GHzV2-1221_Aug15

CALIBRATION CERTIFICATE

Object	D5GHzV2 - SN: 1221
Calibration procedure(s)	QA CAL-22.v2 Calibration procedure for dipole validation kits between 3-6 GHz
Calibration date:	August 11, 2015

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter EPM-442A	GB37480704	07-Oct-14 (No. 217-02020)	Oct-15
Power sensor HP 8481A	US37292783	07-Oct-14 (No. 217-02020)	Oct-15
Power sensor HP 8481A	MY41092317	07-Oct-14 (No. 217-02021)	Oct-15
Reference 20 dB Attenuator	SN: 5058 (20k)	01-Apr-15 (No. 217-02131)	Mar-16
Type-N mismatch combination	SN: 5047.2 / 06327	01-Apr-15 (No. 217-02134)	Mar-16
Reference Probe EX3DV4	SN: 3503	30-Dec-14 (No. EX3-3503_Dec14)	Dec-15
DAE4	SN: 601	18-Aug-14 (No. DAE4-601_Aug14)	Aug-15

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
RF generator R&S SMT-06	100005	04-Aug-99 (in house check Oct-13)	In house check: Oct-16
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-14)	In house check: Oct-15

	Name	Function	Signature
Calibrated by:	Israe Elnaouq	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: August 11, 2015

Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
b) IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
c) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

d) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY5	V52.8.8
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom V5.0	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy = 4.0 mm, dz = 1.4 mm	Graded Ratio = 1.4 (Z direction)
Frequency	5200 MHz ± 1 MHz 5300 MHz ± 1 MHz 5500 MHz ± 1 MHz 5600 MHz ± 1 MHz 5800 MHz ± 1 MHz	

Head TSL parameters at 5200 MHz

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	36.0	4.66 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	35.5 ± 6 %	4.53 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL at 5200 MHz

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	8.10 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**80.7 W/kg ± 19.9 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	100 mW input power	2.32 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**23.1 W/kg ± 19.5 % (k=2)**

Head TSL parameters at 5300 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	35.9	4.76 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	35.4 ± 6 %	4.63 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL at 5300 MHz

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	8.43 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**84.0 W / kg ± 19.9 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	100 mW input power	2.42 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**24.1 W/kg ± 19.5 % (k=2)**

Head TSL parameters at 5500 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	35.6	4.96 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	35.1 ± 6 %	4.82 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL at 5500 MHz

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	8.40 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**83.6 W/kg ± 19.9 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	100 mW input power	2.40 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**23.9 W/kg ± 19.5 % (k=2)**

Head TSL parameters at 5600 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	35.5	5.07 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	34.9 ± 6 %	4.93 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL at 5600 MHz

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	8.35 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**83.1 W/kg ± 19.9 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	100 mW input power	2.38 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**23.7 W/kg ± 19.5 % (k=2)**

Head TSL parameters at 5800 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	35.3	5.27 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	34.7 ± 6 %	5.14 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL at 5800 MHz

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	8.03 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**79.9 W/kg ± 19.9 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	100 mW input power	2.29 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**22.8 W/kg ± 19.5 % (k=2)**

Body TSL parameters at 5200 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	49.0	5.30 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	47.1 ± 6 %	5.47 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL at 5200 MHz

SAR averaged over 1 cm^3 (1 g) of Body TSL	Condition	
SAR measured	100 mW input power	7.53 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**74.7 W/kg ± 19.9 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	100 mW input power	2.11 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**20.9 W/kg ± 19.5 % (k=2)**

Body TSL parameters at 5300 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	48.9	5.42 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	46.9 ± 6 %	5.60 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL at 5300 MHz

SAR averaged over 1 cm^3 (1 g) of Body TSL	Condition	
SAR measured	100 mW input power	7.64 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**75.8 W/kg ± 19.9 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	100 mW input power	2.15 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**21.3 W/kg ± 19.5 % (k=2)**

Body TSL parameters at 5500 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	48.6	5.65 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	46.5 ± 6 %	5.86 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL at 5500 MHz

SAR averaged over 1 cm^3 (1 g) of Body TSL	Condition	
SAR measured	100 mW input power	8.14 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**80.8 W/kg ± 19.9 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	100 mW input power	2.27 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**22.5 W/kg ± 19.5 % (k=2)**

Body TSL parameters at 5600 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	48.5	5.77 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	46.3 ± 6 %	6.00 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL at 5600 MHz

SAR averaged over 1 cm^3 (1 g) of Body TSL	Condition	
SAR measured	100 mW input power	8.12 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**80.6 W/kg ± 19.9 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	100 mW input power	2.26 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**22.4 W/kg ± 19.5 % (k=2)**

Body TSL parameters at 5800 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	48.2	6.00 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	46.0 ± 6 %	6.28 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL at 5800 MHz

SAR averaged over 1 cm^3 (1 g) of Body TSL	Condition	
SAR measured	100 mW input power	7.83 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**77.7 W/kg ± 19.9 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	100 mW input power	2.18 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**21.6 W/kg ± 19.5 % (k=2)**

Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL at 5200 MHz

Impedance, transformed to feed point	47.9 Ω - 8.0 jΩ
Return Loss	- 21.5 dB

Antenna Parameters with Head TSL at 5300 MHz

Impedance, transformed to feed point	50.9 Ω - 1.3 jΩ
Return Loss	- 35.9 dB

Antenna Parameters with Head TSL at 5500 MHz

Impedance, transformed to feed point	47.7 Ω + 0.2 jΩ
Return Loss	- 32.5 dB

Antenna Parameters with Head TSL at 5600 MHz

Impedance, transformed to feed point	51.8 Ω - 1.9 jΩ
Return Loss	- 31.8 dB

Antenna Parameters with Head TSL at 5800 MHz

Impedance, transformed to feed point	54.2 Ω + 2.3 jΩ
Return Loss	- 26.8 dB

Antenna Parameters with Body TSL at 5200 MHz

Impedance, transformed to feed point	48.1 Ω - 7.1 jΩ
Return Loss	- 22.6 dB

Antenna Parameters with Body TSL at 5300 MHz

Impedance, transformed to feed point	50.7 Ω - 0.9 jΩ
Return Loss	- 39.0 dB

Antenna Parameters with Body TSL at 5500 MHz

Impedance, transformed to feed point	48.0 Ω + 1.2 jΩ
Return Loss	- 32.6 dB

Antenna Parameters with Body TSL at 5600 MHz

Impedance, transformed to feed point	52.3 Ω - 0.7 jΩ
Return Loss	- 32.4 dB

Antenna Parameters with Body TSL at 5800 MHz

Impedance, transformed to feed point	54.8 Ω + 4.4 jΩ
Return Loss	- 24.2 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.202 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	February 02, 2015

DASY5 Validation Report for Head TSL

Date: 10.08.2015

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 5GHz; Type: D5GHzV2; Serial: D5GHzV2 - SN: 1221

Communication System: UID 0 - CW; Frequency: 5200 MHz, Frequency: 5300 MHz, Frequency: 5500 MHz, Frequency: 5600 MHz, Frequency: 5800 MHz
Medium parameters used: f = 5200 MHz; σ = 4.53 S/m; ε_r = 35.5; ρ = 1000 kg/m^3 , Medium parameters used: f = 5300 MHz; σ = 4.63 S/m; ε_r = 35.4; ρ = 1000 kg/m^3 , Medium parameters used: f = 5500 MHz; σ = 4.82 S/m; ε_r = 35.1; ρ = 1000 kg/m^3 , Medium parameters used: f = 5600 MHz; σ = 4.93 S/m; ε_r = 34.9; ρ = 1000 kg/m^3 , Medium parameters used: f = 5800 MHz; σ = 5.14 S/m; ε_r = 34.7; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN3503; ConvF(5.51, 5.51, 5.51); Calibrated: 30.12.2014, ConvF(5.21, 5.21, 5.21); Calibrated: 30.12.2014, ConvF(5.12, 5.12, 5.12); Calibrated: 30.12.2014, ConvF(4.92, 4.92, 4.92); Calibrated: 30.12.2014, ConvF(4.9, 4.9, 4.9); Calibrated: 30.12.2014;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 18.08.2014
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

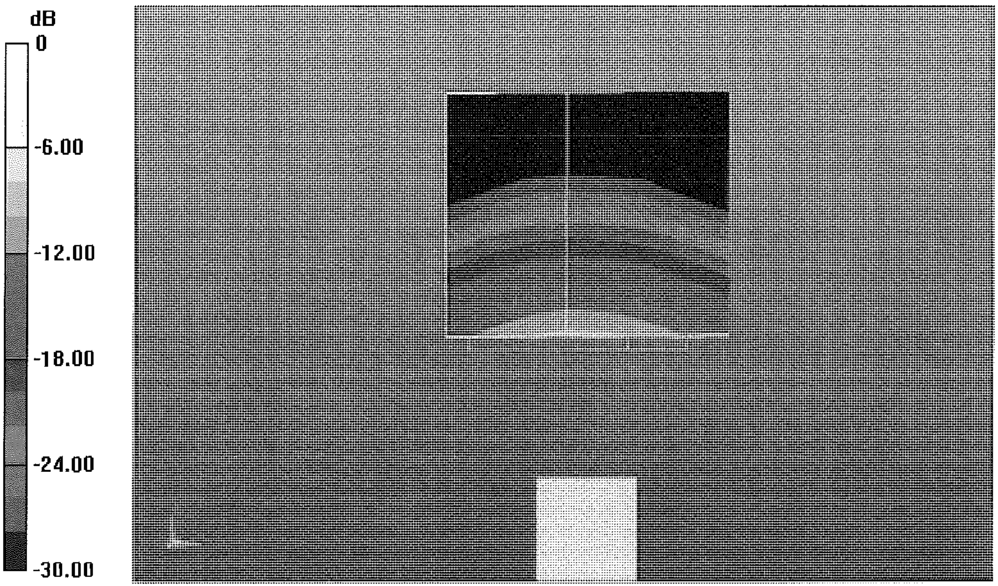
Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5200 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 66.36 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 29.7 W/kg
SAR(1 g) = 8.1 W/kg; SAR(10 g) = 2.32 W/kg
Maximum value of SAR (measured) = 18.7 W/kg

Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5300 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 66.97 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 32.0 W/kg
SAR(1 g) = 8.43 W/kg; SAR(10 g) = 2.42 W/kg
Maximum value of SAR (measured) = 19.7 W/kg

Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5500 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 65.68 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 33.4 W/kg
SAR(1 g) = 8.4 W/kg; SAR(10 g) = 2.4 W/kg
Maximum value of SAR (measured) = 20.0 W/kg

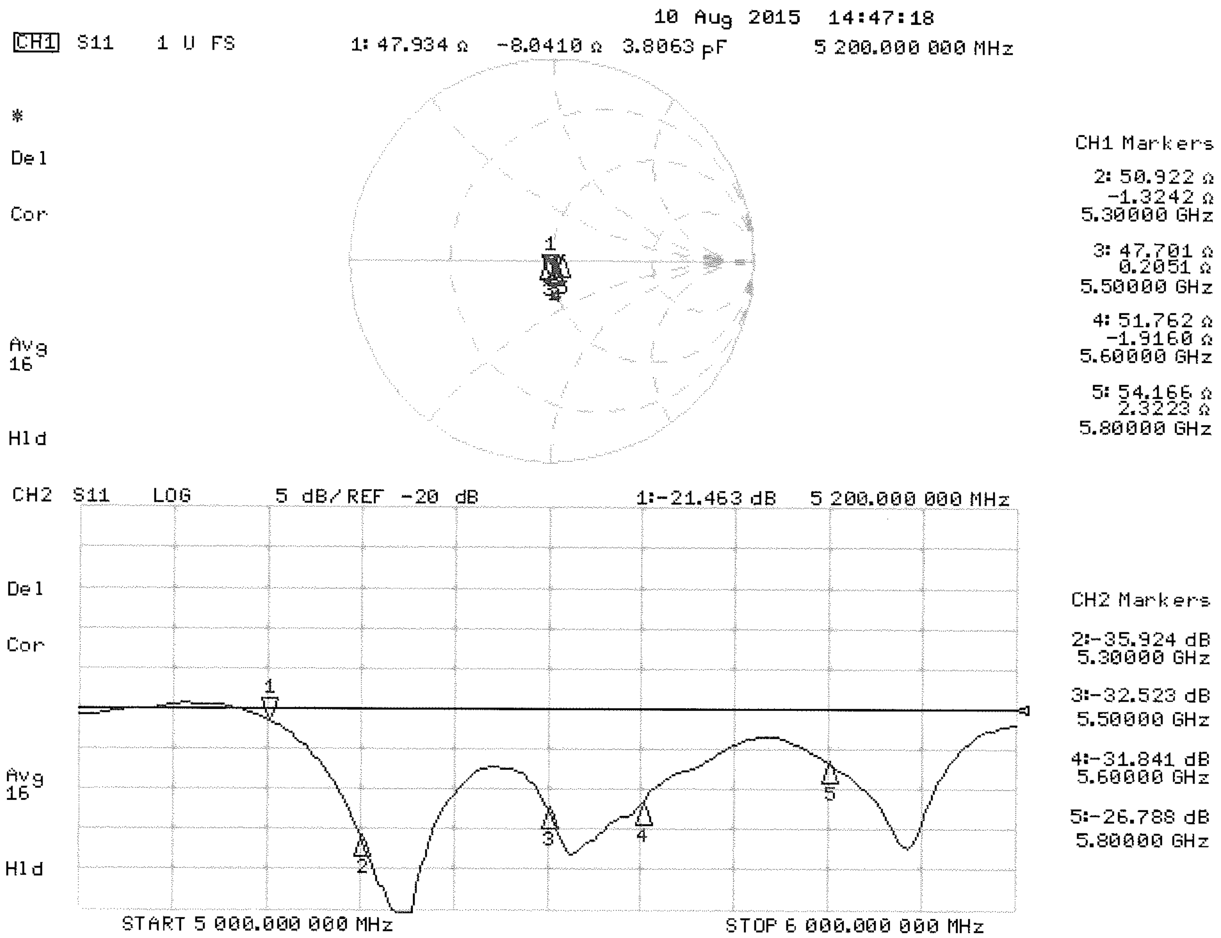
Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5600 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 65.45 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 33.3 W/kg
SAR(1 g) = 8.35 W/kg; SAR(10 g) = 2.38 W/kg
Maximum value of SAR (measured) = 19.9 W/kg

Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5800 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 63.09 V/m; Power Drift = -0.00 dB
Peak SAR (extrapolated) = 33.2 W/kg
SAR(1 g) = 8.03 W/kg; SAR(10 g) = 2.29 W/kg
Maximum value of SAR (measured) = 19.4 W/kg



0 dB = 18.7 W/kg = 12.72 dBW/kg

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 11.08.2015

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 5GHz; Type: D5GHzV2; Serial: D5GHzV2 - SN: 1221

Communication System: UID 0 - CW; Frequency: 5200 MHz, Frequency: 5300 MHz, Frequency: 5500 MHz, Frequency: 5600 MHz, Frequency: 5800 MHz
Medium parameters used: f = 5200 MHz; σ = 5.47 S/m; ε_r = 47.1; ρ = 1000 kg/m^3 , Medium parameters used: f = 5300 MHz; σ = 5.6 S/m; ε_r = 46.9; ρ = 1000 kg/m^3 , Medium parameters used: f = 5500 MHz; σ = 5.86 S/m; ε_r = 46.5; ρ = 1000 kg/m^3 , Medium parameters used: f = 5600 MHz; σ = 6 S/m; ε_r = 46.3; ρ = 1000 kg/m^3 , Medium parameters used: f = 5800 MHz; σ = 6.28 S/m; ε_r = 46; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN3503; ConvF(4.95, 4.95, 4.95); Calibrated: 30.12.2014, ConvF(4.78, 4.78, 4.78); Calibrated: 30.12.2014, ConvF(4.45, 4.45, 4.45); Calibrated: 30.12.2014, ConvF(4.35, 4.35, 4.35); Calibrated: 30.12.2014, ConvF(4.32, 4.32, 4.32); Calibrated: 30.12.2014;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 18.08.2014
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

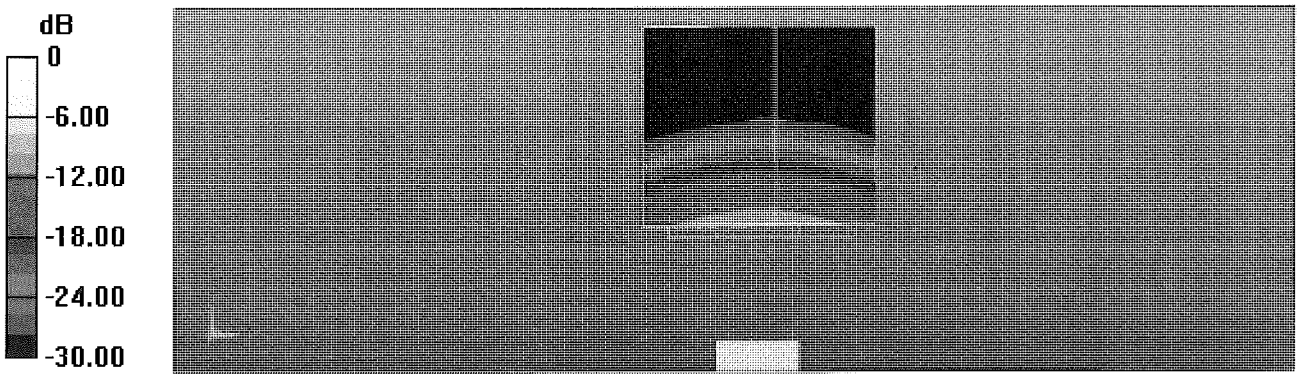
Dipole Calibration for Body Tissue/Pin=100mW, dist=10mm, f=5200 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 58.78 V/m; Power Drift = -0.00 dB
Peak SAR (extrapolated) = 29.2 W/kg
SAR(1 g) = 7.53 W/kg; SAR(10 g) = 2.11 W/kg
Maximum value of SAR (measured) = 17.6 W/kg

Dipole Calibration for Body Tissue/Pin=100mW, dist=10mm, f=5300 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 58.89 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 30.4 W/kg
SAR(1 g) = 7.64 W/kg; SAR(10 g) = 2.15 W/kg
Maximum value of SAR (measured) = 17.9 W/kg

Dipole Calibration for Body Tissue/Pin=100mW, dist=10mm, f=5500 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 59.35 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 34.4 W/kg
SAR(1 g) = 8.14 W/kg; SAR(10 g) = 2.27 W/kg
Maximum value of SAR (measured) = 19.6 W/kg

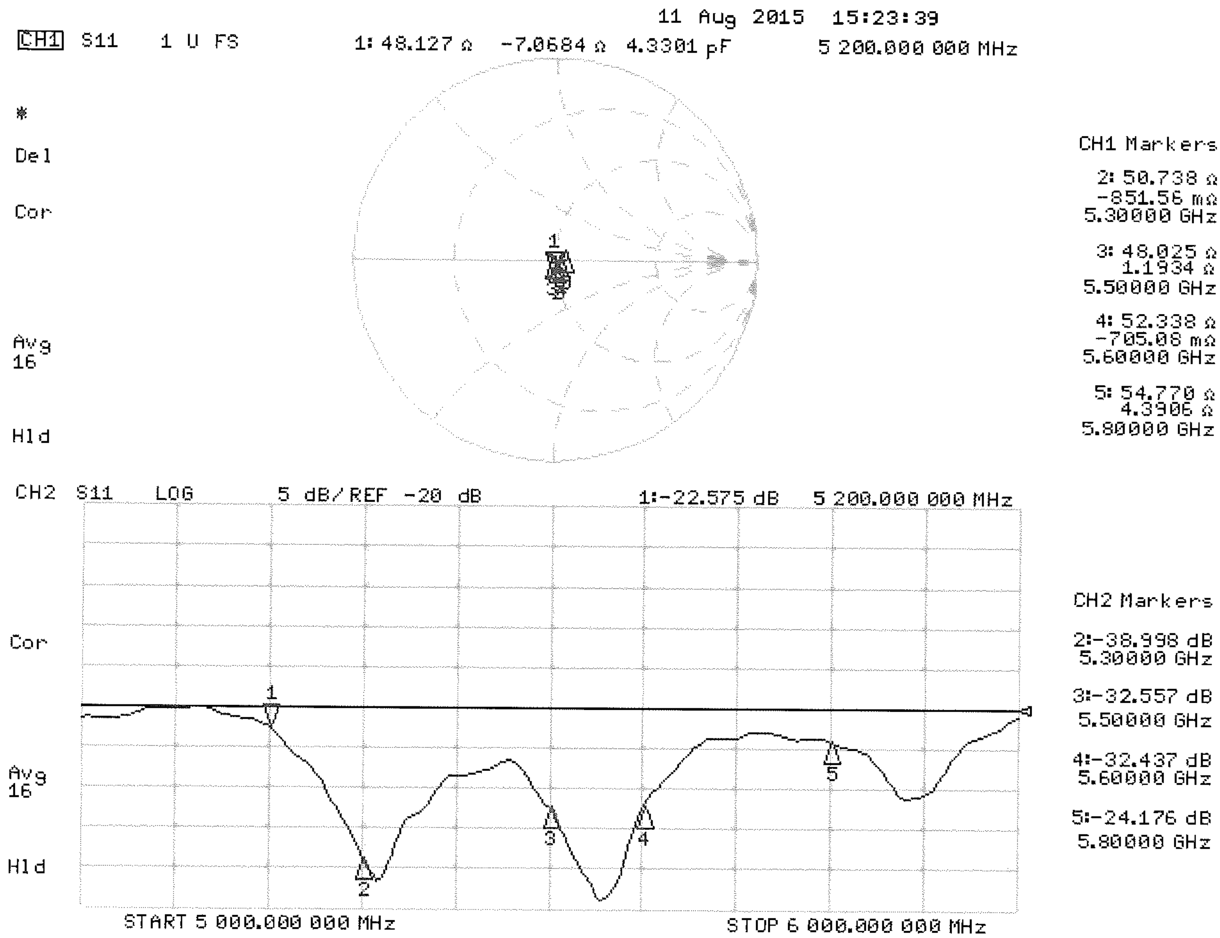
Dipole Calibration for Body Tissue/Pin=100mW, dist=10mm, f=5600 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 59.04 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 35.3 W/kg
SAR(1 g) = 8.12 W/kg; SAR(10 g) = 2.26 W/kg
Maximum value of SAR (measured) = 19.7 W/kg

Dipole Calibration for Body Tissue/Pin=100mW, dist=10mm, f=5800 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 56.74 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 35.5 W/kg
SAR(1 g) = 7.83 W/kg; SAR(10 g) = 2.18 W/kg
Maximum value of SAR (measured) = 19.2 W/kg



0 dB = 19.2 W/kg = 12.83 dBW/kg

Impedance Measurement Plot for Body TSL



Dipole Internal Calibration Record

NO.： SAR-D5GHz-17-2

Asset No. :	E-529	Model No. :	D5GHzV2	Cal. Date :	2017/11/13
Equipment :	Dipole	Serial No. :	1221	Next Cal. Date :	2018/5/12
Environmental condition :		Temp :	22.8 ℃	R.H. :	58 %

Standard List

1	IEEE Std 1528-2013	IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorpiton Rate(SAR) in the Human Head from Wireless Communication Devices: Measurement Texhniques, June 2013
2	IEC 62209-2	Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body(frequency range of 30 MHz to 6 GHz), March 2010
3	KDB865664	SAR Measurement Requirements for 100 MHz to 6 GHz

Equipment Information

Equipment :	Manufacturer :	Model No. :	Serial No. :	Cal.Organization :	Certificate No. :	Cal. Date :
ENA	Keysight	E5071C	MY46524658	ETC	15-12-BAC-294-01I	2016/12/6

Originak Cal. Report

Equipment :	Manufacturer :	Model No. :	Serial No. :	Cal.Organization :	Certificate No. :	Cal. Date :
Dipole	Speag	D5GHzV2	1221	SAS	D5GHzV2-1221_Aug15	Aug. 11, 2015

Calibration Value :

For Head Tissue

Frequency	Item	Originak Cal. Result	Verified Result	Deviation	Result	Annex
5.2G	Impedance, transformed to feed point(Ω)	47.934	46.466	1.468	Pass	a
	Impedance, transformed to feed point(Ω) (Imaginary Part)	-8.041	-6.0371	-2.0039	Pass	a
	Return Loss(dB)	-21.463	-23.108	1.645	Pass	a
5.3G	Impedance, transformed to feed point(Ω)	50.922	53.335	-2.413	Pass	a
	Impedance, transformed to feed point(Ω) (Imaginary Part)	-1.3242	-4.6998	3.3756	Pass	a
	Return Loss(dB)	-35.924	-35.456	-0.468	Pass	a
5.6G	Impedance, transformed to feed point(Ω)	51.762	48.953	2.809	Pass	a
	Impedance, transformed to feed point(Ω) (Imaginary Part)	-1.963	-6.3177	4.3547	Pass	a
	Return Loss(dB)	-32.523	-32.129	-0.394	Pass	a
5.8G	Impedance, transformed to feed point(Ω)	54.166	50.114	4.052	Pass	a
	Impedance, transformed to feed point(Ω) (Imaginary Part)	2.3223	-0.43586	2.75816	Pass	a
	Return Loss(dB)	-26.788	-29.643	2.855	Pass	a

For Body Tissue

Frequency	Item	Originak Cal. Result	Verified Result	Deviation		
5.2G	Impedance, transformed to feed point(Ω)	48.127	46.304	1.823	Pass	b
	Impedance, transformed to feed point(Ω) (Imaginary Part)	-7.0684	-2.2415	-4.8269	Pass	b
	Return Loss(dB)	-22.575	-21.354	-1.221	Pass	b
5.3G	Impedance, transformed to feed point(Ω)	50.738	53.694	-2.956	Pass	b
	Impedance, transformed to feed point(Ω) (Imaginary Part)	-0.85156	-4.7381	3.88654	Pass	b
	Return Loss(dB)	-38.998	-34.933	-4.065	Pass	b
5.6G	Impedance, transformed to feed point(Ω)	52.338	48.771	3.567	Pass	b
	Impedance, transformed to feed point(Ω) (Imaginary Part)	-0.70508	-5.5871	4.88202	Pass	b
	Return Loss(dB)	-32.437	-29.558	-2.879	Pass	b
5.8G	Impedance, transformed to feed point(Ω)	54.77	51.658	3.112	Pass	b
	Impedance, transformed to feed point(Ω) (Imaginary Part)	4.3906	1.1751	3.2155	Pass	b
	Return Loss(dB)	-24.176	-28.177	4.001	Pass	b
Note :	SAR System Uncertainty : % ，(95% CONFIDENCE LEVEL ，Expanded uncertainty K=2)					

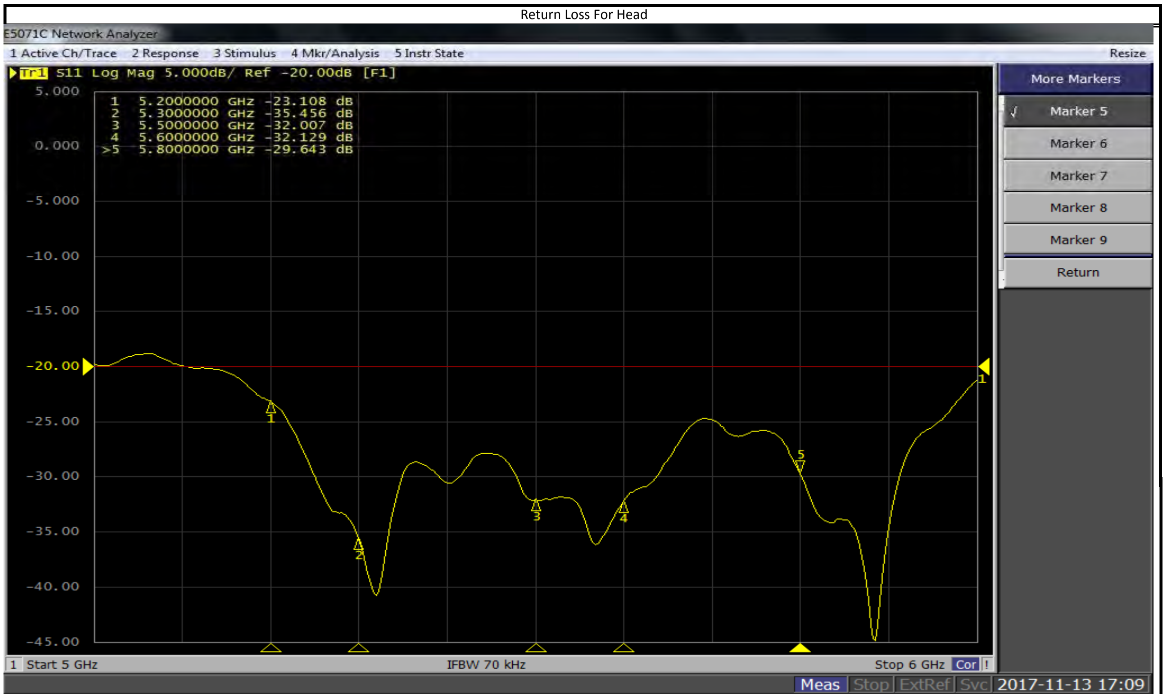
From NO.：E_YYMMDD；E=Dipole NO. ,YYMMDD=Year/Month/Date。

Tester : Morrison Huang　　Technical Director : Herbort Liu

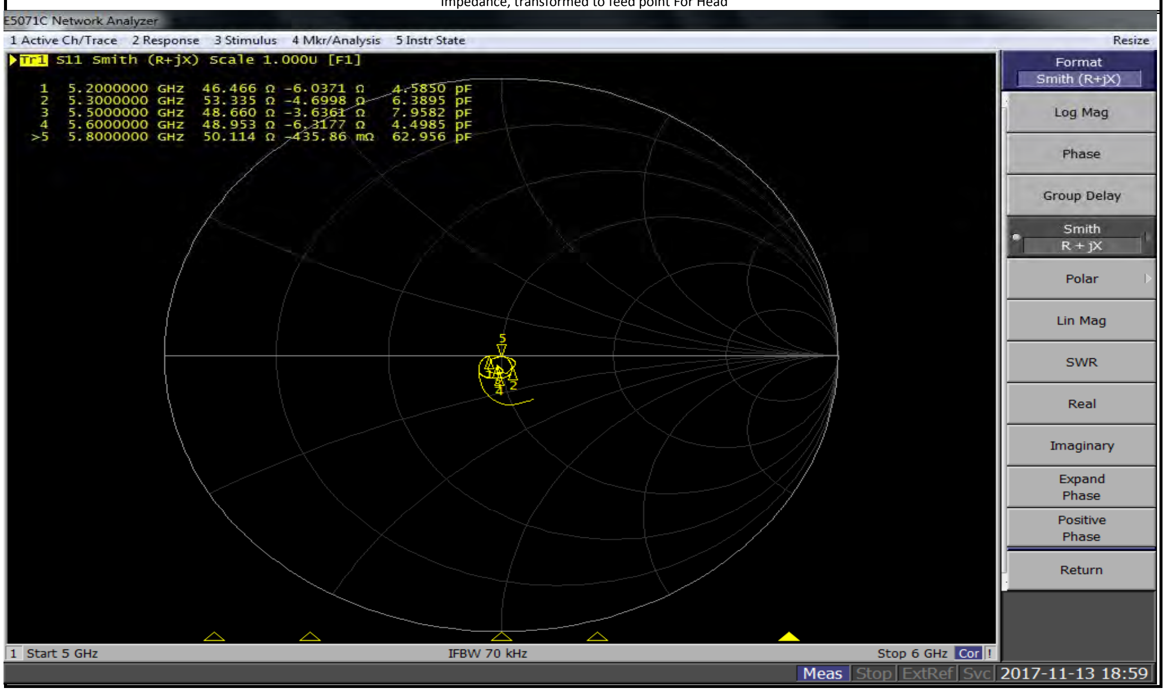
FM-506-09 Ver.6

Annex a

Return Loss For Head

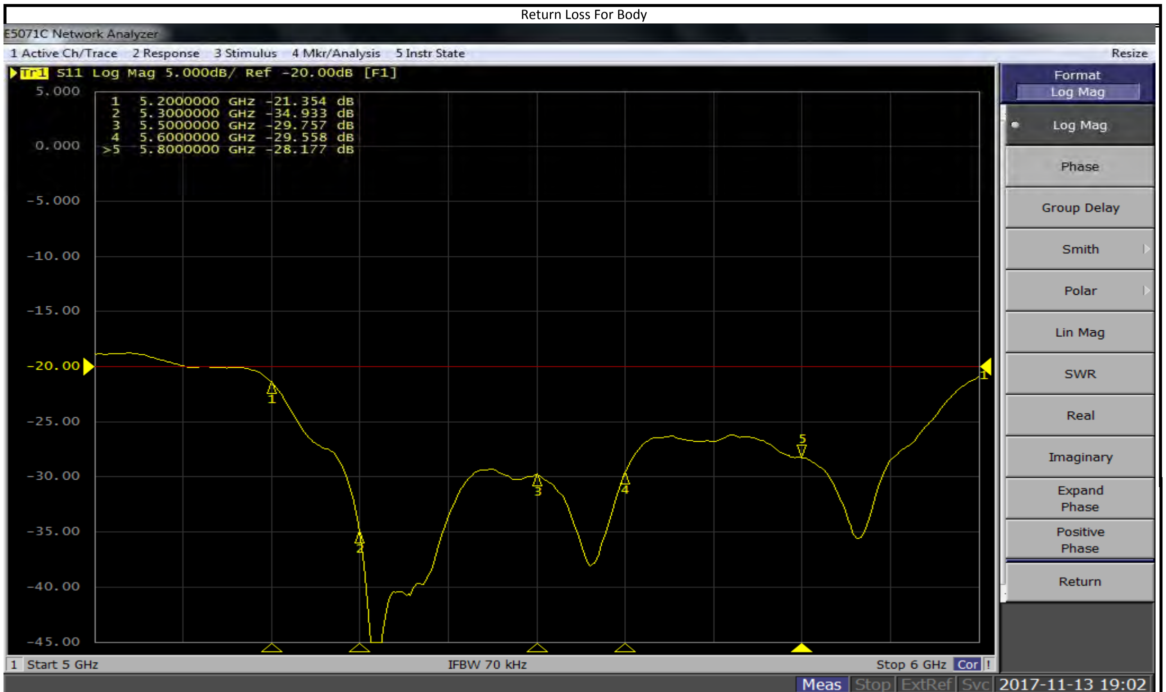


Impedance, transformed to feed point For Head



Annex b

Return Loss For Body



Impedance, transformed to feed point For Body