

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	15840	15800
Channel Y	16134	12789
Channel Z	15811	16844

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	1.16	0.11	3.01	0.45
Channel Y	0.12	-0.83	1.50	0.46
Channel Z	-0.42	-1.81	0.51	0.42

6. Input Offset Current

Nonvital input circuitry offset current on all channels: <25A

7. Input Resistance (Typical values for information)

	Zeroing (kΩhm)	Measuring (MΩhm)
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

ES3DV3 Sn:3127

Calibration Laboratory of
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Multilateral Agreement for the recognition of calibration certificates

Client: SRTC (Auden) Certificate No: ES3-3127_Aug19

CALIBRATION CERTIFICATE

Object: ES3DV3 - SN:3127
Calibration procedure(s): QA CAL-01.v8, QA CAL-23.v5, QA CAL-25.v7
Calibration procedure for dosimetric E-field probes

Calibration date: August 27, 2019
The 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 close laboratory facility, environment temperature (22 ± 1)°C and humidity < 70%.
Calibration Equipment used (MATE critical for calibration)

Primary Standards	ID	Cal Date (Certificate No.)	Scheduled Calibrator
Power meter N991	SN: 101718	03-Apr-19 (No. 211-03980-03980)	Apr-20
Power sensor N991-291	SN: 103245	03-Apr-19 (No. 211-03980)	Apr-20
Power sensor N991-291	SN: 103245	03-Apr-19 (No. 211-03980)	Apr-20
Reference 70-99 Attenuator	SN: 052017 (2702)	04-Apr-19 (No. 211-03980)	Apr-20
LM4	SN: 860	15-Dec-18 (No. LM4-860_18c19)	Dec-19
Reference Probe ES3DV3	SN: 3013	31-Dec-18 (No. ES3-3013_18c19)	Dec-19

Secondary Standards	ID	Check Date (in house)	Scheduled Check
Power meter E411-98	SN: 0841201874	08-Apr-19 (in house check, Jun-19)	in house check, Jun-20
Power sensor E4111A	SN: 0814180087	08-Apr-19 (in house check, Jun-19)	in house check, Jun-20
Power sensor E4111A	SN: 00111210	08-Apr-19 (in house check, Jun-19)	in house check, Jun-20
RF generator HP 8440G	SN: U03642001795	04-Aug-19 (in house check, Jun-19)	in house check, Jun-20
Network Analyser E8328A	SN: U01098477	31-Mar-14 (in house check, Oct-19)	in house check, Oct-19

Calibrated by: Name: Menu/Isatz, Function: Laboratory Technician, Signature: [Signature]
Approved by: Name: Kjetil Polovic, Function: Technical Manager, Signature: [Signature]

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.
Issued: August 29, 2019

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Client: SRTC (Auden) Certificate No: ES3-3127_Aug19

Glossary:

TSI: Issue simulating liquid
NORM_{x,y,z}: sensitivity in free space
ConF: sensitivity in TSL / NORM_{x,y,z}
DCP: diode compression point
CF: crest factor (1/foury, cycle/s)
A, B, C, D: modulation dependent linearization parameters
Polarization ϕ : rotation around probe axis
Polarization θ : rotation around an axis that is in the plane normal to probe axis (at measurement center), i.e., $\theta = 0$ 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) IEC62209-1-1: "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
- 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 868664: "SAR Measurement Requirements for 100 MHz to 6 GHz"

Methods Applied and Interpretation of Parameters:

- NORM_{x,y,z}: Assessed for E-field polarization $\theta = 0$ ($\theta > 900$ MHz in TEM-cell, $\theta > 1900$ MHz R22 waveguide). NORM_{x,y,z} are only intermediate values, i.e., the uncertainties of NORM_{x,y,z} does not affect the E²-field uncertainty inside TSL (see below ConF).
- NORM_{x,y,z} + NORM_{x,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 ConF.
- DCP_{x,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.
- A_{k,y,z}, B_{k,y,z}, C_{k,y,z}, D_{k,y,z}, V_{k,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. V_k is the maximum calibration range expressed in RMS voltage across the diode.
- ConF and boundary E-field Parameters: Assessed in flat phantom using E-field (or Temperature Transfer Standard) for 1 to 600 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 NORM_{x,y,z} * ConF, whereby the uncertainty corresponds to that given for ConF. A frequency dependent ConF is used in DASY version 4.4 and higher which allows extending the validity from 1 to 100 MHz.
- Spherical Isotropy (SD 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 NORM_{x,y,z} (no uncertainty required).

ES3DV3 - SN:3127 August 27, 2019

DASY/EASY - Parameters of Probe: ES3DV3 - SN:3127

Basic Calibration Parameters	Sensor X	Sensor Y	Sensor Z	Unc. (k=2)
Norm (uV/V/m) ²	1.26	1.23	1.19	± 10.1 %
DCP (mV)	103.2	103.9	103.8	

Calibration Results for Modulation Response	UD	Communication System Name	A dB	B dB	C dB	D dB	VR mV	Max dev. (k=2)	Unc. (k=2)
0	CW	X	0.0	0.0	1.0	0.0	216.9	+3.5 %	± 6.7 %
		Y	0.0	0.0	1.0	0.0	214.8		
		Z	0.0	0.0	1.0	0.0	213.3		

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%.

* The uncertainties of Norm X,Y,Z do not affect the E²-field uncertainty inside TSL (see Page 5).
* Numerical linearization parameter uncertainty not reported.
* Uncertainty is determined using the max. deviation from linear response applying rectangular distribution and is expressed for the square of the field value.

ES3DV3 - SN:3127 August 27, 2019

DASY/EASY - Parameters of Probe: ES3DV3 - SN:3127

Other Probe Parameters	
Sensor Arrangement	Triangular
Connector Angle (°)	-10
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disabled
Probe Overall Length	337 mm
Probe Body Diameter	10 mm
Tip Length	10 mm
Tip Diameter	4 mm
Probe Tip to Sensor X Calibration Point	2 mm
Probe Tip to Sensor Y Calibration Point	2 mm
Probe Tip to Sensor Z Calibration Point	2 mm
Recommended Measurement Distance from Surface	3 mm

ES3DV3-SN:3127

August 27, 2019

DASY/EASY - Parameters of Probe: ES3DV3 - SN:3127

Calibration Parameter Determined in Head Tissue Simulating Media

f (MHz)	Relative Permittivity ¹	Conductivity (S/m) ²	ConvF X	ConvF Y	ConvF Z	Alpha ³	Depth ⁴ (mm)	Unc. (k=2)
750	41.0	0.89	6.34	6.34	6.34	0.80	1.25	± 12.0 %
835	41.5	0.90	6.20	6.20	6.20	0.42	1.61	± 12.0 %
1810	40.0	1.40	5.10	5.10	5.10	0.70	1.20	± 12.0 %
2000	40.0	1.40	5.02	5.02	5.02	0.69	1.27	± 12.0 %
2300	39.5	1.67	4.68	4.68	4.68	0.63	1.38	± 12.0 %
2450	39.2	1.80	4.50	4.50	4.50	0.67	1.37	± 12.0 %
2600	39.0	1.86	4.32	4.32	4.32	0.70	1.35	± 12.0 %

¹ Frequency validity above 300 MHz of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), when 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, 20, 40, 60 and 70 MHz for ConvF assessments at 30, 60, 120, 150 and 220 MHz respectively. Validity of ConvF assessed at 6 MHz to 4.9 MHz, and ConvF assessed at 13 MHz to 9.19 MHz. Above 0 GHz frequency validity can be extended to ± 10 MHz. At frequencies below 3 GHz, the value of tissue dielectricity (ε and σ) can be reduced by ± 10% if equal 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.
² AlphaDepth are determined during calibration. SPECAG 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 3.0 GHz at any distance larger than half the probe tip diameter from the boundary.

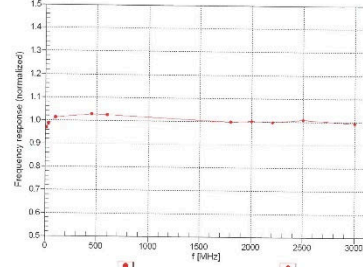
Certificate No: ES3-3127_Aug19

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August 27, 2019

**Frequency Response of E-Field
(TEM-Cell:f1110 EXX, Waveguide: R22)**



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

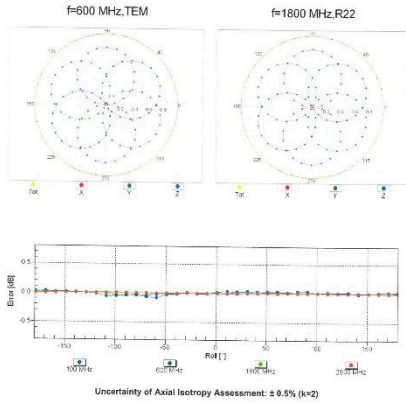
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August 27, 2019

Receiving Pattern (φ), θ = 0°



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

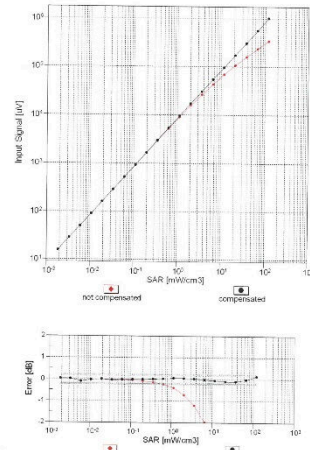
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August 27, 2019

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



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

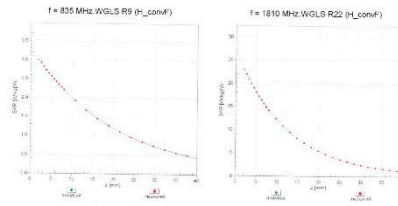
Certificate No: ES3-3127_Aug19

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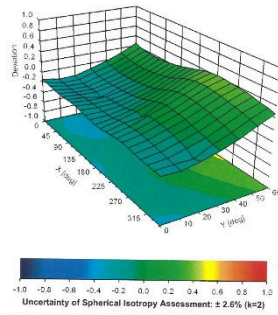
ES30V3-SN-3127

August 27, 2019

Conversion Factor Assessment



Deviation from Isotropy in Liquid
 Error (φ, θ), f = 900 MHz



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

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Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 0108

Client: SRTC (Alden)

Certificate No.: EX3-3708_Sep19

CALIBRATION CERTIFICATE

Object: EX3DV4 - SN:3708

Calibration procedure(s): QA CAL-01-v9, QA CAL-12-v8, QA CAL-14-v5, QA CAL-23-v5,
QA CAL-25-v7
Calibration procedure for dosimetric E-field probes

Calibration date: September 26, 2019

This calibration certificate documents the traceability to national standards, when raised the physical units of measurement (SI).
The measurement and the uncertainty 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 ± 0.5°C and humidity < 75%.

Calibration Equipment used (NIST certified calibration):

Primary Standard	ID	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NRP 2P	SN: 101778	05-Apr-18 (SN: 217-02962/2889)	Apr-20
Power meter NRP 2P	SN: 103944	05-Apr-18 (SN: 217-02962)	Apr-20
Power meter NRP-2A	SN: 103545	05-Apr-18 (SN: 217-02963)	Apr-20
Reference 30 dB Attenuator	SN: 3127/1 (DIN)	06-Apr-18 (SN: 217-02954)	Apr-20
DSP	SN: 169	19-Jul-18 (SN: 044-400) (DIN 19)	Dec-19
Reference Probe EX3DV2	SN: 3015	31-Dec-18 (SN: K33-3015) (DIN 19)	Dec-19

Secondary Standards	ID	Check Date & Result	Scheduled Check
Power meter E4411B	SN: 624-283374	05-Apr-18 (in house check Jun-18)	In-house check Jun-20
Power meter E4473A	SN: M741484247	08-Apr-18 (in house check Jun-18)	In-house check Jun-20
Temp sensor E4473A	SN: 101111076	16-Apr-18 (in house check Jun-18)	In-house check Jun-20
RF generator HP 8947C	SN: US354530700	04-Apr-18 (in house check Jun-18)	In-house check Jun-20
Near-field Analyser 2858A	SN: US11081477	31-Mar-18 (in house check Oct-18)	In-house check Oct-19

Calibrated by: Michael Weber, Laboratory Technician
Approved by: Ralf Pokorski, Technical Manager

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Certificate No.: EX3-3708_Sep19

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Accreditation No.: SCS 0108

Glossary:

TSL: tissue simulating liquid
NORM_{k,y,z}: sensitivity in Free space
ConvF: diode compression point
CF: crest factor (1 duty cycle) of the RF signal
A, B, C, D: modulation dependent linearization parameters
e: rotation on around probe axis
Polarization: 5: 8° rotation around an axis that is in the plane normal to probe axis (at measurement center), 10: 8° ± 0.1° 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:

- 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
- IEC 62209-1, "Measurement procedure for the assessment of Specific Absorption Rate (SAR) from hand-held and body-mounted devices used near to the ear (frequency range of 300 MHz to 6 GHz)", July 2016
- 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
- KDB 885661, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Methods Applied and Interpretation of Parameters:

- NORM_{k,y,z}: Assessed for E-field polarization $\theta = 0$ ($f < 300$ MHz in TEM-cell; $f > 300$ MHz: R22 wg-ridge). NORM_{k,y,z} are only intermediate values, i.e., the uncertainty of NORM_{k,y,z} does not affect the E-field uncertainty inside TSL (see below ConvF).
- NORM_{k,y,z} - NORM_{k,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.
- DCP_{k,y,z}: DCP are numerical linearization parameters assessed based on the fits 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.
- A_{k,y,z}, B_{k,y,z}, C_{k,y,z}, D_{k,y,z}, V_{k,y,z}: A, B, C, D are numerical linearization parameters assessed based on the data of power sweep for specific modulation signals. The parameters do not depend on frequency nor media. V_{k,y,z} 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 $f < 300$ MHz) and inside waxyphantom using analytical field distributions based on power measurements for $f > 300$ 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 NORM_{k,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 NORM_{k,y,z} (no uncertainty required).

Certificate No.: EX3-3708_Sep19

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EX3DV4 - SN:3708

September 26, 2019

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3708

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm. $(\mu V/mV)^2$	0.29	0.34	0.40	$\pm 10.1\%$
DCP (mV)	63.8	104.0	101.0	

Calibration Results for Modulation Response

UID	Communication System Name	A	B	C	D	VR	Max dev.	Max Unc. (k=2)
		dB	dB μV		dB	mV		
0	CW	X: 0.00	0.00	1.00	0.00	115.9	± 0.3%	± 4.7%
		Y: 0.00	0.00	1.00	0.00	114.3		
		Z: 0.00	0.00	1.00	0.00	122.2		
10302-AAA	Pulse Waveform (200Hz, 10%)	X: 8.00	78.10	16.96	± 0.60	70.0	± 2.9%	± 9.6%
		Y: 7.71	77.21	16.31		69.0		
		Z: 18.03	87.89	20.24		69.0		
10303-AAA	Pulse Waveform (200Hz, 20%)	X: 8.00	80.44	16.96	± 0.60	80.0	± 1.6%	± 9.6%
		Y: 7.78	79.10	16.09		80.0		
		Z: 13.00	88.59	16.48		80.0		
10304-AAA	Pulse Waveform (200Hz, 40%)	X: 15.00	56.19	16.08	± 0.60	85.0	± 1.4%	± 9.6%
		Y: 15.00	64.89	15.37		85.0		
		Z: 18.00	83.22	20.25		85.0		
10305-AAA	Pulse Waveform (200Hz, 50%)	X: 15.00	58.25	15.18	± 0.60	100.0	± 1.4%	± 9.6%
		Y: 1.57	88.82	15.71		100.0		
		Z: 15.00	101.50	22.73		100.0		
10307-AAA	QPSK Waveform, 1 MHz	X: 0.75	83.37	1.63	± 0.60	180.0	± 3.2%	± 9.6%
		Y: 0.67	89.00	1.10		150.0		
		Z: 0.88	95.01	0.71		150.0		
10308-AAA	QPSK Waveform, 10 MHz	X: 2.90	71.88	11.74	± 0.60	150.0	± 1.3%	± 9.6%
		Y: 2.07	88.13	15.80		150.0		
		Z: 2.64	71.77	11.78		150.0		
10309-AAA	64-QAM Waveform, 100 kHz	X: 2.83	78.18	18.74	± 0.60	150.0	± 1.2%	± 9.6%
		Y: 2.82	89.08	15.21		150.0		
		Z: 3.59	75.94	21.11		150.0		
10309-AAA	64-QAM Waveform, 40 MHz	X: 3.63	88.18	18.39	± 0.60	150.0	± 2.5%	± 9.6%
		Y: 3.38	87.29	15.81		150.0		
		Z: 3.67	84.94	18.84		150.0		
10414-AAA	WLAN CCDF, 64-QAM, 80MHz	X: 3.03	85.86	18.26	± 0.60	150.0	± 4.5%	± 9.6%
		Y: 4.67	86.80	19.59		150.0		
		Z: 4.81	89.39	18.01		150.0		

Note: For details on UID parameters see Appendix

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%.

* The uncertainties of Norm X, Y, Z do not affect the E-field uncertainty inside TSL (see Page 5).
* Numerical linearization parameters uncertainty required.
* Uncertainty is determined using the max. deviation from linear response applying rectangular extraction and is expressed for the states of the test value.

Certificate No.: EX3-3708_Sep19

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EX3DV4 - SN:3708

September 26, 2019

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3708

Sensor Model Parameters

	C1	C2	a	T1	T2	T3	T4	T5	T6
	CF	CF	V ⁻¹	ms V ⁻¹	ms V ⁻¹	ms V ⁻¹	ms V ⁻¹	ms V ⁻¹	ms V ⁻¹
X	44.6	339.24	37.00	9.24	1.08	5.00	0.30	0.50	1.90
Y	36.2	275.04	38.77	10.87	1.00	5.00	0.30	0.45	1.81
Z	41.8	304.10	34.22	14.01	0.71	5.05	1.88	0.21	1.01

Other Probe Parameters

Parameter	Value
Sensor Arrangement	Triangular
Connector Angle [°]	-4.2
Mechanics: 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

Certificate No.: EX3-3708_Sep19

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EX3DV4 - SN:3708

September 26, 2019

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3708

Calibration Parameter Determined In Head Tissue Simulating Media

f (MHz)	Relative Permittivity	Conductivity (S/m)	ConvF X	ConvF Y	ConvF Z	Alpha ^o	Depth ^o (mm)	Unc (k=2)
450	43.5	0.87	10.04	10.04	10.04	0.15	1.20	±13.3%
750	41.9	0.89	9.83	9.83	9.83	0.67	0.80	±12.0%
835	41.5	0.90	9.48	9.48	9.48	0.60	0.90	±12.0%
1450	40.5	1.20	8.59	8.59	8.59	0.41	0.90	±12.0%
1750	40.1	1.37	8.41	8.41	8.41	0.36	0.87	±12.0%
1900	40.0	1.40	8.10	8.10	8.10	0.36	0.87	±12.0%
2000	40.0	1.43	8.09	8.09	8.09	0.35	0.87	±12.0%
2300	39.5	1.67	7.69	7.69	7.69	0.30	0.90	±12.0%
2450	39.2	1.80	7.50	7.50	7.50	0.28	0.90	±12.0%
2600	39.0	1.86	7.37	7.37	7.37	0.32	0.90	±12.0%
3300	38.2	2.71	6.91	6.91	6.91	0.40	1.35	±13.1%
3500	37.9	2.91	6.78	6.78	6.78	0.40	1.35	±13.1%
3700	37.7	3.12	6.50	6.50	6.50	0.40	1.35	±13.1%
3900	37.5	3.32	6.34	6.34	6.34	0.40	1.60	±13.1%
4100	37.2	3.53	6.23	6.23	6.23	0.35	1.60	±13.1%
4200	37.1	3.63	6.22	6.22	6.22	0.40	1.60	±13.1%
4400	36.9	3.84	5.82	5.82	5.82	0.40	1.70	±13.1%
4600	36.7	4.04	5.81	5.81	5.81	0.40	1.70	±13.1%
4800	36.4	4.25	5.80	5.80	5.80	0.40	1.80	±13.1%
4950	36.3	4.40	5.70	5.70	5.70	0.40	1.80	±13.1%
5200	36.0	4.66	5.63	5.63	5.63	0.40	1.80	±13.1%
5300	35.9	4.78	5.46	5.46	5.46	0.40	1.80	±13.1%
5500	35.8	4.86	5.20	5.20	5.20	0.40	1.80	±13.1%
5800	35.6	5.07	5.05	5.05	5.05	0.40	1.80	±13.1%
5800	35.3	5.27	5.17	5.17	5.17	0.40	1.80	±13.1%

* Frequency values above 300 MHz or ϵ' ϵ'' are only applied for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty in the RSS of the ϵ' ϵ'' or calibration frequency and the uncertainty in the ϵ' ϵ'' frequency based frequency validity based on 300 MHz is $\pm 10, 25, 40, 50$ and $\pm 10, 14, 18, 150$ and 225 MHz respectively. Validity of ConvF assessed at f MHz is 4.0 MHz, and ConvF assessed at 1.0 MHz is 19.0 MHz. Above 10 GHz frequency validity can be extended to 1.117 GHz.
 † As frequencies below 3 GHz, the validity of tissue parameters (ϵ' and ϵ'') can be extended to $\pm 10\%$ of equal compensation formula is applied to propagate SAR values, all frequencies above 10 GHz, the validity of tissue parameters (ϵ' and ϵ'') is restricted to $\pm 5\%$. The uncertainty in the RSS of the ConvF Uncertainty for individual target tissue parameters.
 ‡ AlphaDepth are selected from during calibration. SREAC estimates that the remaining deviation due to the boundary effect after compensation is always less than $\pm 1\%$ for frequencies below 3 GHz and below $\pm 2\%$ for frequencies between 3-5 GHz or any distance larger than half the probe diameter from the boundary.

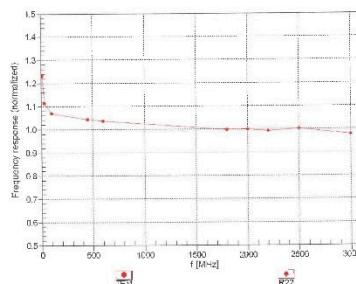
Certificate No: EX3-3708_Sep19

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EX3DV4 - SN:3708

September 26, 2019

Frequency Response of E-Field
(TEM-Cell: f110 EXX, Waveguide: R22)



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

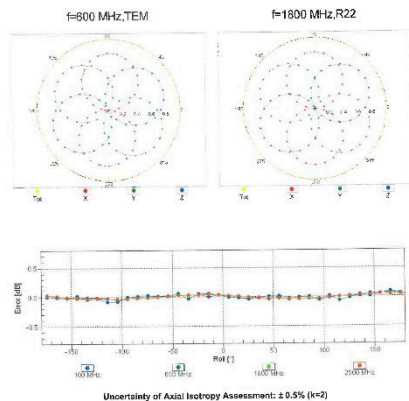
Certificate No: EX3-3708_Sep19

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EX3DV4 - SN:3708

September 26, 2019

Receiving Pattern (ϕ), $\theta = 0^\circ$



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

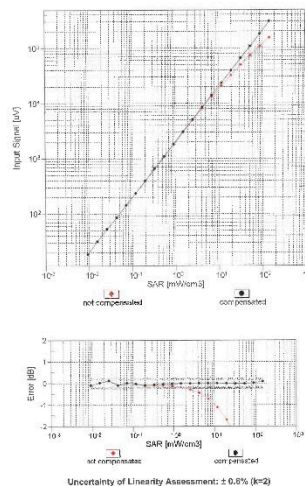
Certificate No: EX3-3708_Sep19

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EX3DV4 - SN:3708

September 26, 2019

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



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

Certificate No: EX3-3708_Sep19

Page 8 of 22

750V3 Sn:1101 (1/2)

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E-mail: csl@chinaeet.com http://www.chinaeet.com

Client: **SRTC** Certificate No: **Z17-97134**

CALIBRATION CERTIFICATE

Object: D750V3 - SN: 1101

Calibration Procedure(s): FF-211-003-01
Calibration Procedures for dipole validation kits

Calibration date: September 13, 2017

This calibration Certificate documents the traceability to national standards, which realize the physical units of measurements(S). 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 (MTE critical for calibration)

Primary Standards	ID #	Cal Date(Calibrated by: Certificate No.)	Scheduled Calibration
Power Meter NRV-D	102196	02-Mar-17 (CTTL No.J17X01254)	Mar-18
Power sensor NRV-Z5	100596	02-Mar-17 (CTTL No.J17X01254)	Mar-18
Reference Probe EX3D/V4	SN 7433	26-Sep-16(SPEAG No EX3-7433_Sep16)	Sep-17
DAE4	SN 1331	19-Jan-17(CTTL-SPEAG No Z17-97015)	Jan-18
Secondary Standards	ID #	Cal Date(Calibrated by: Certificate No.)	Scheduled Calibration
Signal Generator E4439C	MY49071430	13-Jan-17 (CTTL No.J17X00286)	Jan-18
Network Analyzer E5071C	MY46111013	13-Jan-17 (CTTL No.J17X00285)	Jan-18

Calibrated by:	Name	Function	Signature
	Zhao Jing	SAR Test Engineer	
Reviewed by:	Yu Zongying	SAR Test Engineer	
Approved by:	Qi Dianyuan	SAR Project Leader	

Issued: September 16, 2017
This calibration certificate shall not be reproduced except in full without written approval of the laboratory

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Client: **SRTC** Certificate No: **Z17-97134**

CALIBRATION CERTIFICATE

Object: D750V3 - SN: 1101

Calibration Procedure(s): FF-211-003-01
Calibration Procedures for dipole validation kits

Calibration date: September 13, 2017

This calibration Certificate documents the traceability to national standards, which realize the physical units of measurements(S). 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 (MTE critical for calibration)

Primary Standards	ID #	Cal Date(Calibrated by: Certificate No.)	Scheduled Calibration
Power Meter NRV-D	102196	02-Mar-17 (CTTL No.J17X01254)	Mar-18
Power sensor NRV-Z5	100596	02-Mar-17 (CTTL No.J17X01254)	Mar-18
Reference Probe EX3D/V4	SN 7433	26-Sep-16(SPEAG No EX3-7433_Sep16)	Sep-17
DAE4	SN 1331	19-Jan-17(CTTL-SPEAG No Z17-97015)	Jan-18
Secondary Standards	ID #	Cal Date(Calibrated by: Certificate No.)	Scheduled Calibration
Signal Generator E4439C	MY49071430	13-Jan-17 (CTTL No.J17X00286)	Jan-18
Network Analyzer E5071C	MY46111013	13-Jan-17 (CTTL No.J17X00285)	Jan-18

Calibrated by:	Name	Function	Signature
	Zhao Jing	SAR Test Engineer	
Reviewed by:	Yu Zongying	SAR Test Engineer	
Approved by:	Qi Dianyuan	SAR Project Leader	

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Glossary:
TSL: Issue simulating liquid
ConvF: sensitivity in TSL / NORMx,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, "Measurement procedure for assessment of specific absorption rate of human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices- Part 1: Device used next to the ear (Frequency range of 300MHz to 6GHz)", July 2016
c) IEC 62209-2, "Procedure to measure the Specific Absorption Rate (SAR) For wireless communication devices used in close proximity to the human body (frequency range of 30MHz to 6GHz)", March 2010
d) KDB655664, SAR Measurement Requirements for 100 MHz to 6 GHz.

Additional Documentation:
e) DAS4/S 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%.

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Client: **SRTC** Certificate No: **Z17-97134**

CALIBRATION CERTIFICATE

Object: D750V3 - SN: 1101

Calibration Procedure(s): FF-211-003-01
Calibration Procedures for dipole validation kits

Calibration date: September 13, 2017

This calibration Certificate documents the traceability to national standards, which realize the physical units of measurements(S). 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 (MTE critical for calibration)

Primary Standards	ID #	Cal Date(Calibrated by: Certificate No.)	Scheduled Calibration
Power Meter NRV-D	102196	02-Mar-17 (CTTL No.J17X01254)	Mar-18
Power sensor NRV-Z5	100596	02-Mar-17 (CTTL No.J17X01254)	Mar-18
Reference Probe EX3D/V4	SN 7433	26-Sep-16(SPEAG No EX3-7433_Sep16)	Sep-17
DAE4	SN 1331	19-Jan-17(CTTL-SPEAG No Z17-97015)	Jan-18
Secondary Standards	ID #	Cal Date(Calibrated by: Certificate No.)	Scheduled Calibration
Signal Generator E4439C	MY49071430	13-Jan-17 (CTTL No.J17X00286)	Jan-18
Network Analyzer E5071C	MY46111013	13-Jan-17 (CTTL No.J17X00285)	Jan-18

Calibrated by:	Name	Function	Signature
	Zhao Jing	SAR Test Engineer	
Reviewed by:	Yu Zongying	SAR Test Engineer	
Approved by:	Qi Dianyuan	SAR Project Leader	

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Measurement Conditions
DASY system configuration, as far as not given on page 1

DASY Version	DASY92	52.10.0.1448
Extrapolation	Advanced Extrapolation	
Phantom	Tripole Flat Phantom S 1C	
Distance Dipole Center - TSL	10 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	41.5 ± 6 %	0.89 mho/m ± 6 %
Head TSL temperature change during test	<1.0 °C	---	---

SAR result with Head TSL

SAR averaged over 1 cm ³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	2.95 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	8.26 mW / g ± 18.8 % (k=2)
SAR averaged over 10 cm ³ (10 g) of Head TSL	Condition	
SAR measured	250 mW input power	1.34 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	8.39 mW / g ± 18.7 % (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	55.4 ± 6 %	0.95 mho/m ± 6 %
Body TSL temperature change during test	<1.0 °C	---	---

SAR result with Body TSL

SAR averaged over 1 cm ³ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	2.15 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	8.69 mW / g ± 18.8 % (k=2)
SAR averaged over 10 cm ³ (10 g) of Body TSL	Condition	
SAR measured	250 mW input power	1.42 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	8.73 mW / g ± 18.7 % (k=2)

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Client: **SRTC** Certificate No: **Z17-97134**

CALIBRATION CERTIFICATE

Object: D750V3 - SN: 1101

Calibration Procedure(s): FF-211-003-01
Calibration Procedures for dipole validation kits

Calibration date: September 13, 2017

This calibration Certificate documents the traceability to national standards, which realize the physical units of measurements(S). 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 (MTE critical for calibration)

Primary Standards	ID #	Cal Date(Calibrated by: Certificate No.)	Scheduled Calibration
Power Meter NRV-D	102196	02-Mar-17 (CTTL No.J17X01254)	Mar-18
Power sensor NRV-Z5	100596	02-Mar-17 (CTTL No.J17X01254)	Mar-18
Reference Probe EX3D/V4	SN 7433	26-Sep-16(SPEAG No EX3-7433_Sep16)	Sep-17
DAE4	SN 1331	19-Jan-17(CTTL-SPEAG No Z17-97015)	Jan-18
Secondary Standards	ID #	Cal Date(Calibrated by: Certificate No.)	Scheduled Calibration
Signal Generator E4439C	MY49071430	13-Jan-17 (CTTL No.J17X00286)	Jan-18
Network Analyzer E5071C	MY46111013	13-Jan-17 (CTTL No.J17X00285)	Jan-18

Calibrated by:	Name	Function	Signature
	Zhao Jing	SAR Test Engineer	
Reviewed by:	Yu Zongying	SAR Test Engineer	
Approved by:	Qi Dianyuan	SAR Project Leader	

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Appendix (Additional assessments outside the scope of CNAS L5570)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	53.90 ± 0.24(j0)
Return Loss	-28.4dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	52.0(j0; -2.22(j0)
Return Loss	-30.8dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.136 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
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D750V3 Sn:1101 (2/2)

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DASY5 Validation Report for Head TSL Date: 09.13.2017
Test Laboratory: C.T.T.L., Beijing, China
DUT: Dipole 750 MHz; Type: D750V3; Serial: D750V3 - SN: 1101
Communication System: UID 0, CW; Frequency: 750 MHz; Duty Cycle: 1:1
Medium parameters used: $f = 750$ MHz; $\sigma = 0.879$ S/m; $\epsilon_r = 41.54$; $\rho = 1000$ kg/m³
Phantom section: Left Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN7433; ConvF(10.01, 10.01, 10.01); Calibrated: 9/26/2016;
- Sensor-Surface: 1.8mm (Mechanical Surface Detection)
- Electronics: DAE4 SN1331; Calibrated: 1/19/2017
- Phantom: Triple Flat Phantom 5.1C; Type: QD 000 P51 CA; Serial: 1161/1
- Measurement SW: DASY52, Version 52.10 (0); SEMCAD X Version 14.6.10 (7417)

Dipole Calibration/Zoom Scan (7x7x7) (7x7x7) Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 53.10 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 3.17 W/kg
SAR(1 g) = 2.05 W/kg; SAR(10 g) = 1.34 W/kg
Maximum value of SAR (measured) = 2.77 W/kg

Certificate No: Z17-97134 Page 5 of 8

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Impedance Measurement Plot for Head TSL

Certificate No: Z17-97134 Page 6 of 8

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E-mail: csl@chinafl.com http://www.chinafl.com

DASY5 Validation Report for Body TSL Date: 09.13.2017
Test Laboratory: C.T.T.L., Beijing, China
DUT: Dipole 750 MHz; Type: D750V3; Serial: D750V3 - SN: 1101
Communication System: UID 0, CW; Frequency: 750 MHz; Duty Cycle: 1:1
Medium parameters used: $f = 750$ MHz; $\sigma = 0.946$ S/m; $\epsilon_r = 55.41$; $\rho = 1000$ kg/m³
Phantom section: Center Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN7433; ConvF(9.83, 9.83, 9.83); Calibrated: 9/26/2016;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 SN1331; Calibrated: 1/19/2017
- Phantom: Triple Flat Phantom 5.1C; Type: QD 000 P51 CA; Serial: 1161/1
- Measurement SW: DASY52, Version 52.10 (0); SEMCAD X Version 14.6.10 (7417)

Dipole Calibration/Zoom Scan (7x7x7) (7x7x7) Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 53.35 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 3.27 W/kg
SAR(1 g) = 2.15 W/kg; SAR(10 g) = 1.42 W/kg
Maximum value of SAR (measured) = 2.88 W/kg

Certificate No: Z17-97134 Page 7 of 8

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Impedance Measurement Plot for Body TSL

Certificate No: Z17-97134 Page 8 of 8

D835V2 Sn:4d023

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CNAS L5570

Client: SRTC Certificate No: Z17-97135

CALIBRATION CERTIFICATE

Object: D835V2 - SN: 4d023

Calibration Procedure(s): FF-Z11-003-01
Calibration Procedures for dipole validation kits

Calibration date: September 13, 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(23±3)°C and humidity<70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date/Calibrated by, Certificate No.	Scheduled Calibration
Power Meter NRV-D	102196	02-Mar-17 (CTTL, No.J17X01254)	Mar-18
Power sensor NRV-Z5	100596	02-Mar-17 (CTTL, No.J17X01254)	Mar-18
Reference Probe EX3D/V4	SN 7433	26-Sep-16(SPEAG, No EX3-7433_Sep16)	Sep-17
DAE4	SN 1331	19-Jan-17(CTTL-SPEAG, No Z17-97015)	Jan-18
Secondary Standards	ID #	Cal Date/Calibrated by, Certificate No.	Scheduled Calibration
Signal Generator E4438C	MY49071430	13-Jan-17 (CTTL, No.J17X00286)	Jan-18
Network Analyzer E5071C	MY46110673	13-Jan-17 (CTTL, No.J17X00286)	Jan-18

Calibrated by: Zhao Jing SAR Test Engineer

Reviewed by: Yu Zongying SAR Test Engineer

Approved by: Qi Dianyuan SAR Project Leader

Issued: September 16, 2017

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Client: SRTC Certificate No: Z17-97135

Glossary:

TSL: tissue simulating liquid
Con/F: sensitivity in TSL / NORMk,y,z
N/A: not applicable or not measured

Calibration is Performed According to the Following Standards:

- 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
- IEC 62209-1, "Measurement procedure for assessment of specific absorption rate of human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices- Part 1: Device used next to the ear (Frequency range of 300MHz to 6GHz)", July 2016
- IEC 62209-2, "Procedure to measure the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30MHz to 6GHz)", March 2010
- KDB85664, 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 positioned 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%.

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

DASY Version	DASY92	52.10.0.1446
Extrapolation	Advanced Extrapolation	
Phantom	Triple Flat Phantom 5.1C	
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	41.3 ± 6 %	0.90 mho/m ± 6 %
Head TSL temperature change during test	<1.0 °C	---	---

SAR result with Head TSL

SAR averaged over 1 cm ³ (1 g) of Head TSL	Condition	2.35 mW / g
SAR measured	250 mW input power	2.35 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	9.37 mW / g ± 18.8 % (k=2)
SAR averaged over 10 cm ³ (10 g) of Head TSL	Condition	1.52 mW / g
SAR measured	250 mW input power	1.52 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	6.06 mW / g ± 18.7 % (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	55.7 ± 6 %	0.96 mho/m ± 6 %
Body TSL temperature change during test	<1.0 °C	---	---

SAR result with Body TSL

SAR averaged over 1 cm ³ (1 g) of Body TSL	Condition	2.34 mW / g
SAR measured	250 mW input power	2.34 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	9.47 mW / g ± 18.8 % (k=2)
SAR averaged over 10 cm ³ (10 g) of Body TSL	Condition	1.53 mW / g
SAR measured	250 mW input power	1.53 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	6.17 mW / g ± 18.7 % (k=2)

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Appendix (Additional assessments outside the scope of CNAS L5570)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	51.0Ω - 2.79jΩ
Return Loss	- 30.7dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	46.6Ω - 3.61jΩ
Return Loss	- 25.8dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.495 ns
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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

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