



Appendix C. Calibration Certificate

Table of contents
Probe EX3DV4-3744
Probe EX3DV4-7381
DAE4-1492
Dipole D750V3-1044
Dipole D835V2-4d059
Dipole D1750V2-1145
Dipole D1900V2-5d091
Dipole D2450V2-978



Accreditation No.: **SCS 0108**

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

Client **Huawei-SZ (Auden)**

Certificate No: **EX3-3744_Jul15**

CALIBRATION CERTIFICATE

Object **EX3DV4 - SN:3744**

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: **July 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 $(22 \pm 3)^\circ\text{C}$ and humidity $< 70\%$.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID	Cal Date (Certificate No.)	Scheduled Calibration
Power meter E4419B	GB41293874	01-Apr-15 (No. 217-02128)	Mar-16
Power sensor E4412A	MY41498087	01-Apr-15 (No. 217-02128)	Mar-16
Reference 3 dB Attenuator	SN: S5054 (3c)	01-Apr-15 (No. 217-02129)	Mar-16
Reference 20 dB Attenuator	SN: S5277 (20x)	01-Apr-15 (No. 217-02132)	Mar-16
Reference 30 dB Attenuator	SN: S5129 (30b)	01-Apr-15 (No. 217-02133)	Mar-16
Reference Probe ES3DV2	SN: 3013	30-Dec-14 (No. ES3-3013_Dec14)	Dec-15
DAE4	SN: 660	14-Jan-15 (No. DAE4-660_Jan15)	Jan-16
Secondary Standards	ID	Check Date (in house)	Scheduled Check
RF generator HP 8648C	US3642U01700	4-Aug-99 (in house check Apr-13)	In house check: Apr-16
Network Analyzer HP 8753E	US37390585	18-Oct-01 (in house check Oct-14)	In house check: Oct-15

Calibrated by:	Name Claudio Leubler	Function Laboratory Technician	Signature
Approved by:	Name Katja Pokovic	Function Technical Manager	Signature

Issued: July 24, 2015

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.



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

Glossary:

TSL	tissue simulating liquid
NORM _{x,y,z}	sensitivity in free space
ConvF	sensitivity in TSL / NORM _{x,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., $\vartheta = 0$ 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, "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"

Methods Applied and Interpretation of Parameters:

- **NORM_{x,y,z}**: Assessed for E-field polarization $\vartheta = 0$ ($f \leq 900$ MHz in TEM-cell; $f > 1800$ 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 ConvF).
- **NORM(f)_{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 ConvF.
- **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_{x,y,z}; B_{x,y,z}; C_{x,y,z}; D_{x,y,z}; VR_{x,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 $f \leq 800$ 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 NORM_{x,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_x (no uncertainty required).

Probe EX3DV4

SN:3744

Manufactured: March 26, 2010
Calibrated: July 24, 2015

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

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3744

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu\text{V}/(\text{V}/\text{m})^2$) ^A	0.48	0.50	0.42	$\pm 10.1 \%$
DCP (mV) ^B	99.8	100.2	100.2	

Modulation Calibration Parameters

UID	Communication System Name		A dB	B dB $\sqrt{\mu\text{V}}$	C	D dB	VR mV	Unc ^E (k=2)
0	CW	X	0.0	0.0	1.0	0.00	154.2	$\pm 3.0 \%$
		Y	0.0	0.0	1.0		156.7	
		Z	0.0	0.0	1.0		143.2	

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:3744

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	9.44	9.44	9.44	0.40	0.91	± 12.0 %
850	41.5	0.92	8.77	8.77	8.77	0.21	1.52	± 12.0 %
1750	40.1	1.37	7.84	7.84	7.84	0.46	0.80	± 12.0 %
1900	40.0	1.40	7.54	7.54	7.54	0.42	0.80	± 12.0 %
2150	39.7	1.53	7.32	7.32	7.32	0.37	0.80	± 12.0 %
2450	39.2	1.80	6.84	6.84	6.84	0.38	0.89	± 12.0 %
2600	39.0	1.96	6.68	6.68	6.68	0.46	0.85	± 12.0 %
3500	37.9	2.91	6.87	6.87	6.87	0.46	0.98	± 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:3744

Calibration Parameter Determined in Body Tissue Simulating Media

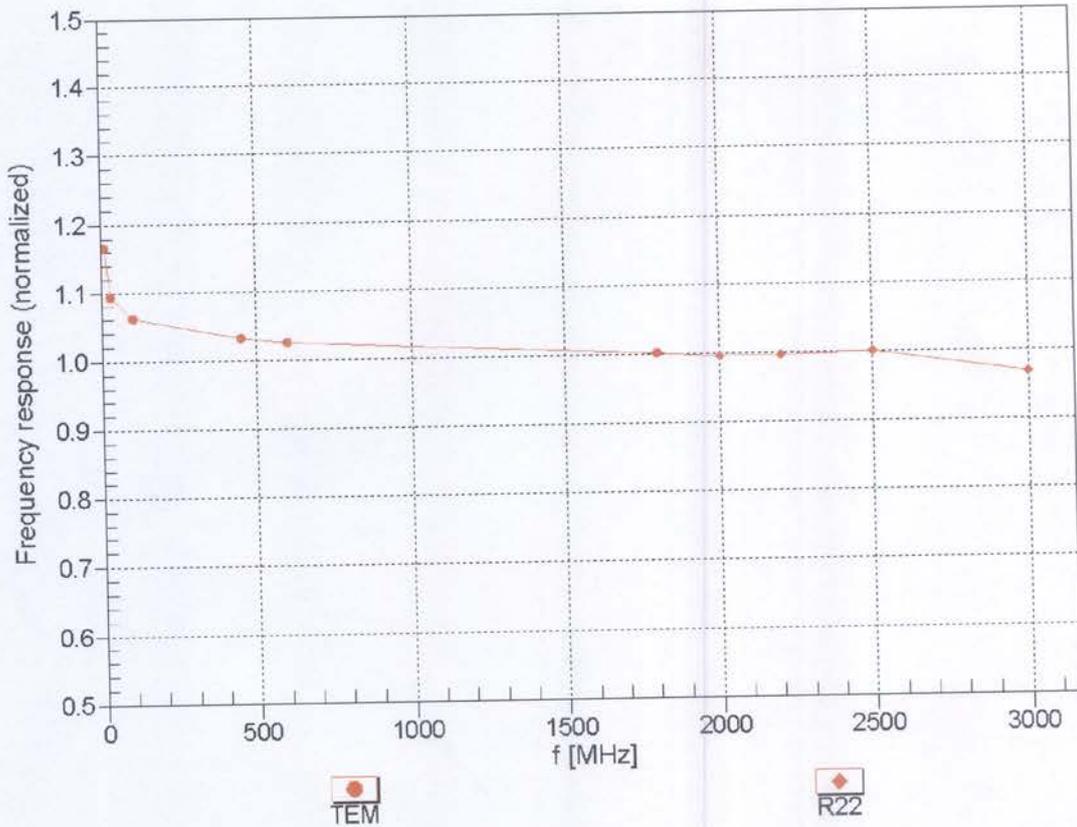
f (MHz) ^C	Relative Permittivity ^F	Conductivity (S/m) ^F	ConvF X	ConvF Y	ConvF Z	Alpha ^G	Depth ^G (mm)	Unc (k=2)
750	55.5	0.96	9.01	9.01	9.01	0.37	0.94	± 12.0 %
850	55.2	0.99	8.82	8.82	8.82	0.34	1.08	± 12.0 %
1750	53.4	1.49	7.45	7.45	7.45	0.43	0.80	± 12.0 %
1900	53.3	1.52	7.24	7.24	7.24	0.50	0.80	± 12.0 %
2450	52.7	1.95	6.77	6.77	6.77	0.38	0.90	± 12.0 %
2600	52.5	2.16	6.65	6.65	6.65	0.30	0.95	± 12.0 %
3500	51.3	3.31	6.16	6.16	6.16	0.44	1.03	± 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.

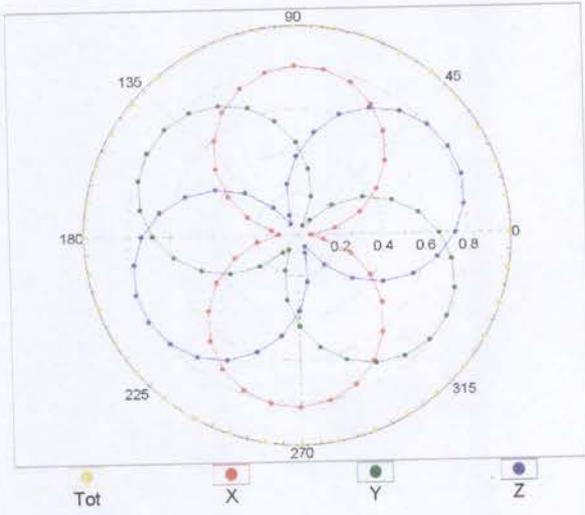
Frequency Response of E-Field (TEM-Cell:ifi110 EXX, Waveguide: R22)



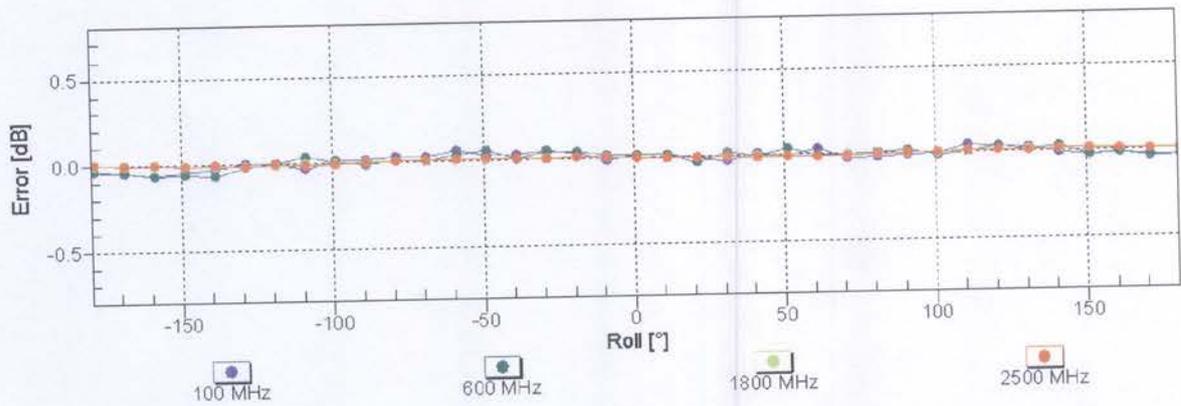
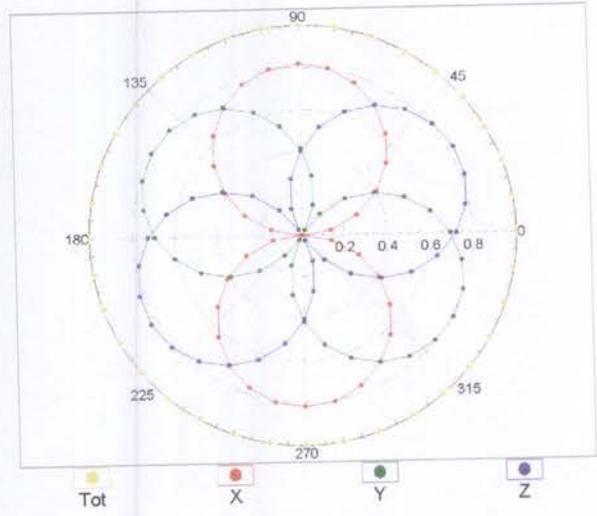
Uncertainty of Frequency Response of E-field: $\pm 6.3\%$ (k=2)

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

f=600 MHz,TEM

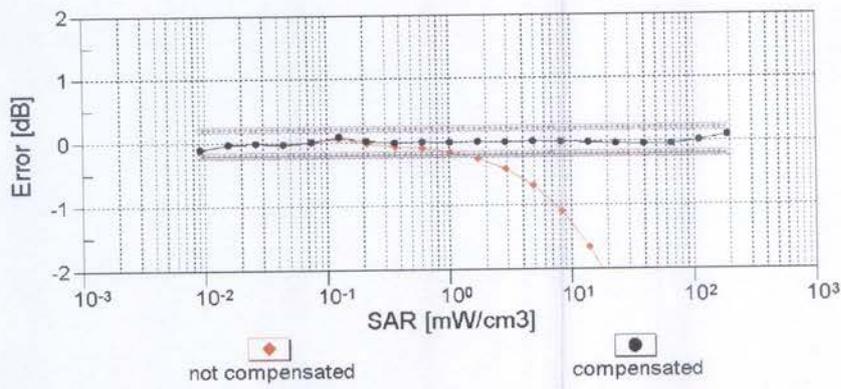
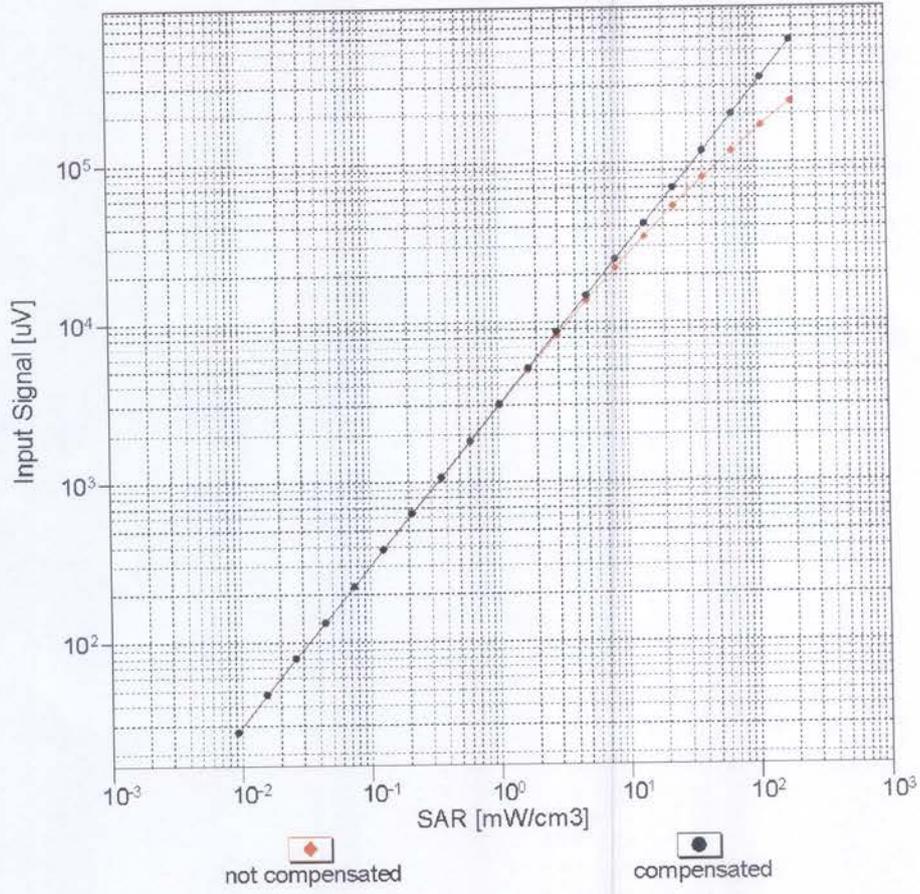


f=1800 MHz,R22



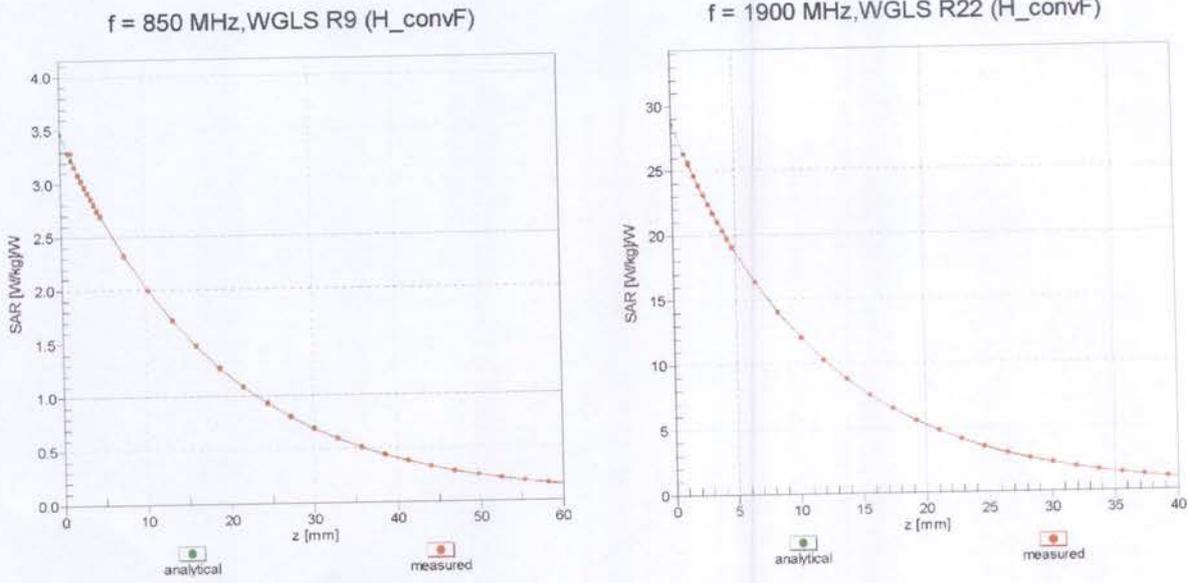
Uncertainty of Axial Isotropy Assessment: $\pm 0.5\%$ (k=2)

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

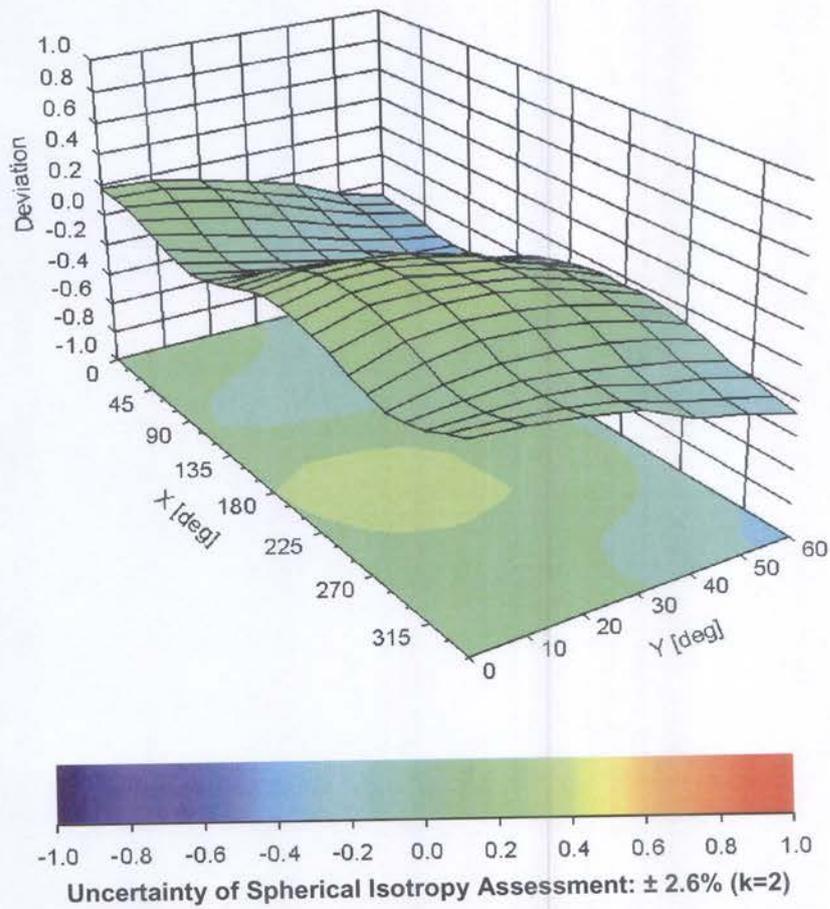


Uncertainty of Linearity Assessment: ± 0.6% (k=2)

Conversion Factor Assessment



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



DASY/EASY - Parameters of Probe: EX3DV4 - SN:3744**Other Probe Parameters**

Sensor Arrangement	Triangular
Connector Angle (°)	71.1
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



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 **Huawei-SZ (Auden)**

Certificate No: **EX3-7381_Oct15**

CALIBRATION CERTIFICATE

Object **EX3DV4 - SN:7381**

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

Calibration date: **October 30, 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 E4419B	GB41293874	01-Apr-15 (No. 217-02128)	Mar-16
Power sensor E4412A	MY41498087	01-Apr-15 (No. 217-02128)	Mar-16
Reference 3 dB Attenuator	SN: S5054 (3c)	01-Apr-15 (No. 217-02129)	Mar-16
Reference 20 dB Attenuator	SN: S5277 (20x)	01-Apr-15 (No. 217-02132)	Mar-16
Reference 30 dB Attenuator	SN: S5129 (30b)	01-Apr-15 (No. 217-02133)	Mar-16
Reference Probe ES3DV2	SN: 3013	30-Dec-14 (No. ES3-3013_Dec14)	Dec-15
DAE4	SN: 660	14-Jan-15 (No. DAE4-660_Jan15)	Jan-16
Secondary Standards	ID	Check Date (in house)	Scheduled Check
RF generator HP 8648C	US3642U01700	4-Aug-99 (in house check Apr-13)	In house check: Apr-16
Network Analyzer HP 8753E	US37390585	18-Oct-01 (in house check Oct-15)	In house check: Oct-16

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

Issued: October 30, 2015

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.



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**

Glossary:

TSL	tissue simulating liquid
NORM _{x,y,z}	sensitivity in free space
ConvF	sensitivity in TSL / NORM _{x,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., $\vartheta = 0$ 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, "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"

Methods Applied and Interpretation of Parameters:

- *NORM_{x,y,z}*: Assessed for E-field polarization $\vartheta = 0$ ($f \leq 900$ MHz in TEM-cell; $f > 1800$ MHz: R22 waveguide). *NORM_{x,y,z}* are only intermediate values, i.e., the uncertainties of *NORM_{x,y,z}* does not affect the E^2 -field uncertainty inside TSL (see below *ConvF*).
- *NORM(f)_{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 *ConvF*.
- *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_{x,y,z}*; *B_{x,y,z}*; *C_{x,y,z}*; *D_{x,y,z}*; *VR_{x,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 $f \leq 800$ 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 *NORM_{x,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_x* (no uncertainty required).

Probe EX3DV4

SN:7381

Manufactured: April 13, 2015
Calibrated: October 30, 2015

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

DASY/EASY - Parameters of Probe: EX3DV4 - SN:7381

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu\text{V}/(\text{V}/\text{m})^2$) ^A	0.41	0.44	0.44	$\pm 10.1\%$
DCP (mV) ^B	97.7	96.3	97.7	

Sensor Model Parameters

	C1 fF	C2 fF	α V^{-1}	T1 $\text{ms}\cdot\text{V}^{-2}$	T2 $\text{ms}\cdot\text{V}^{-1}$	T3 ms	T4 V^{-2}	T5 V^{-1}	T6
X	45.2	344.4	36.4	7.025	0.472	4.946	0	0.26	1.002
Y	42.71	321.5	36.07	6.028	0.734	4.942	1.81	0.061	1.004
Z	43.64	327.4	35.66	4.916	0.647	4.947	0.247	0.234	1.001

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 NormX,Y,Z do not affect the E^2 -field uncertainty inside TSL (see Pages 5 and 6).

^B Numerical linearization parameter: uncertainty not required.

DASY/EASY - Parameters of Probe: EX3DV4 - SN:7381

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)
850	41.5	0.92	9.76	9.76	9.76	0.45	0.81	± 12.0 %
1750	40.1	1.37	8.25	8.25	8.25	0.27	0.80	± 12.0 %
1900	40.0	1.40	7.98	7.98	7.98	0.29	0.80	± 12.0 %
2300	39.5	1.67	7.59	7.59	7.59	0.34	0.82	± 12.0 %
2450	39.2	1.80	7.18	7.18	7.18	0.29	0.91	± 12.0 %
2600	39.0	1.96	6.96	6.96	6.96	0.28	0.97	± 12.0 %

^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:7381

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)
850	55.2	0.99	9.67	9.67	9.67	0.25	1.35	± 12.0 %
1750	53.4	1.49	7.82	7.82	7.82	0.40	0.80	± 12.0 %
1900	53.3	1.52	7.60	7.60	7.60	0.34	0.93	± 12.0 %
2300	52.9	1.81	7.38	7.38	7.38	0.34	0.80	± 12.0 %
2450	52.7	1.95	7.22	7.22	7.22	0.27	0.80	± 12.0 %
2600	52.5	2.16	7.03	7.03	7.03	0.24	0.80	± 12.0 %

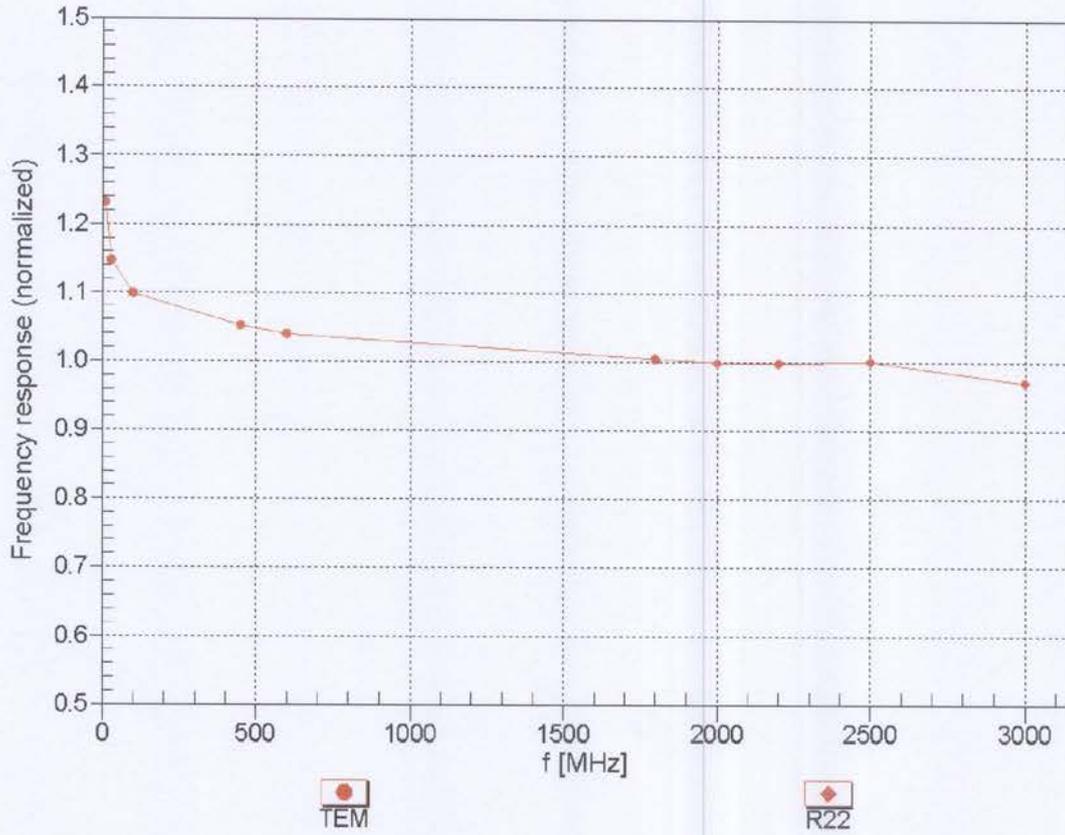
^C Frequency validity above 300 MHz of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ± 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

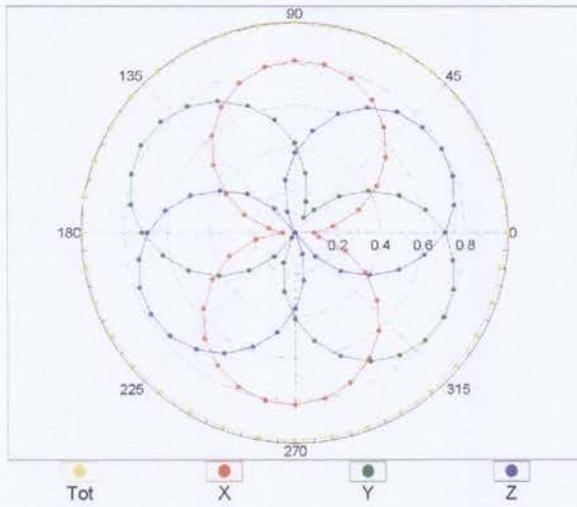
(TEM-Cell:ifi110 EXX, Waveguide: R22)



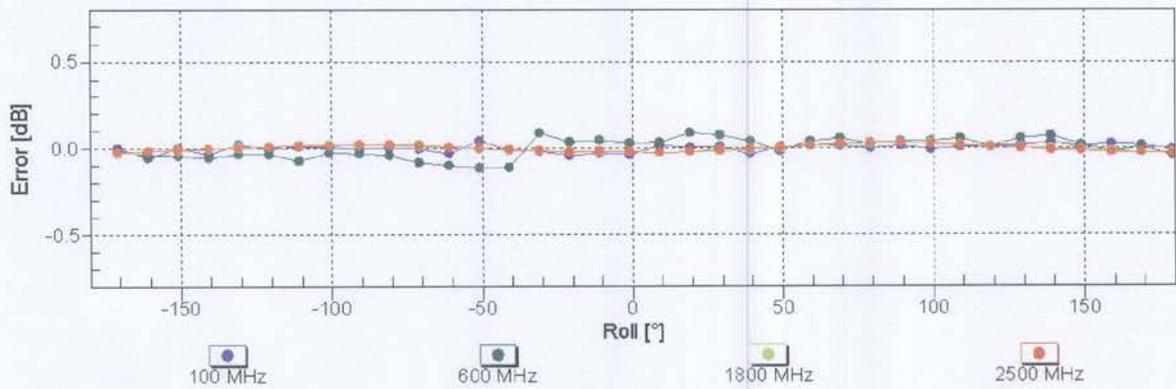
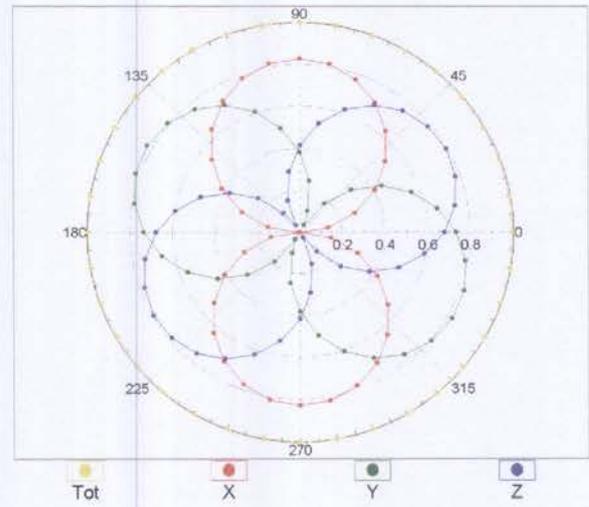
Uncertainty of Frequency Response of E-field: $\pm 6.3\%$ (k=2)

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

f=600 MHz,TEM

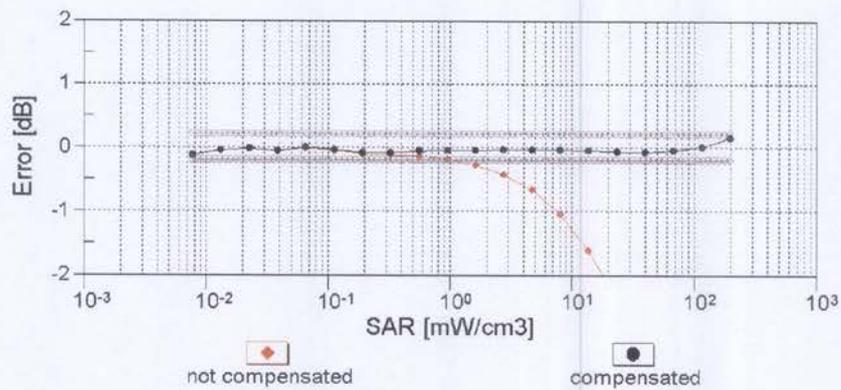
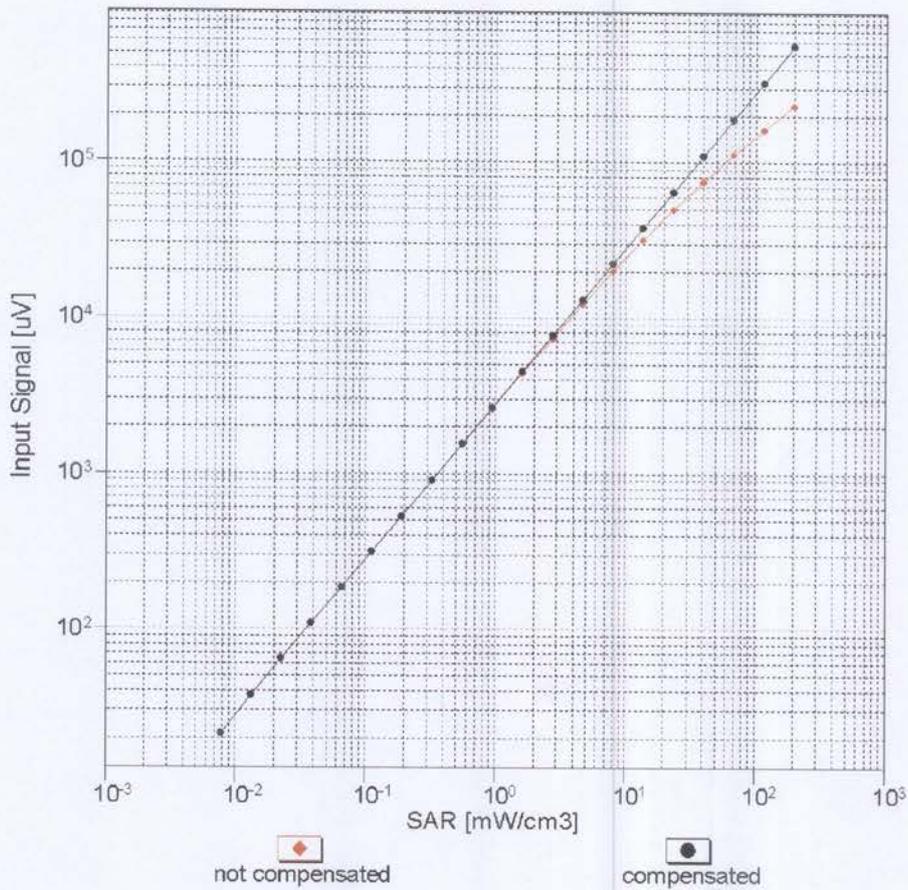


f=1800 MHz,R22



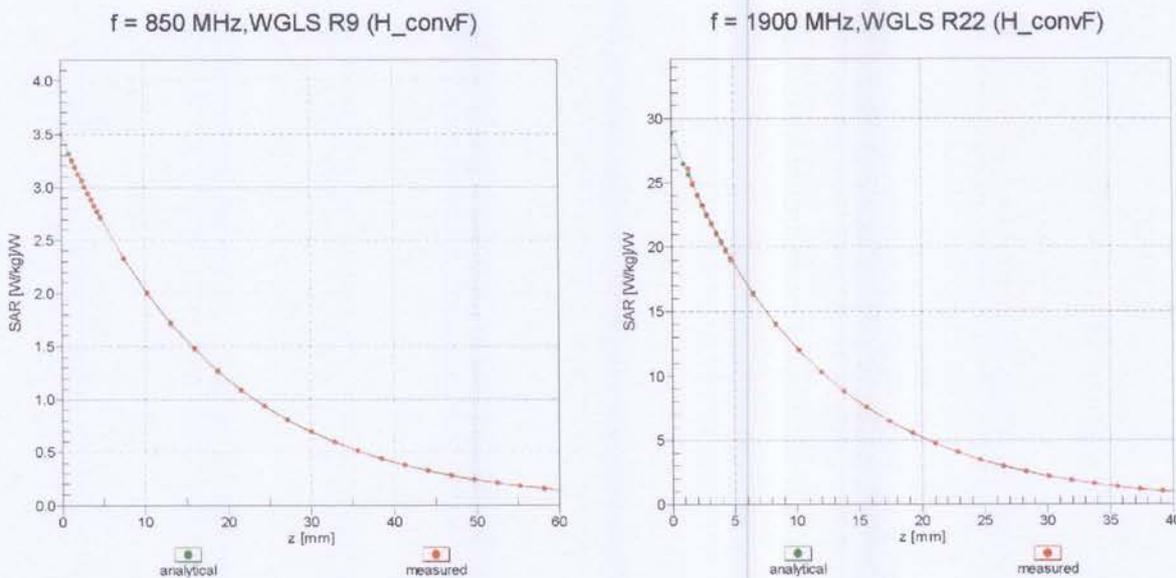
Uncertainty of Axial Isotropy Assessment: $\pm 0.5\%$ (k=2)

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

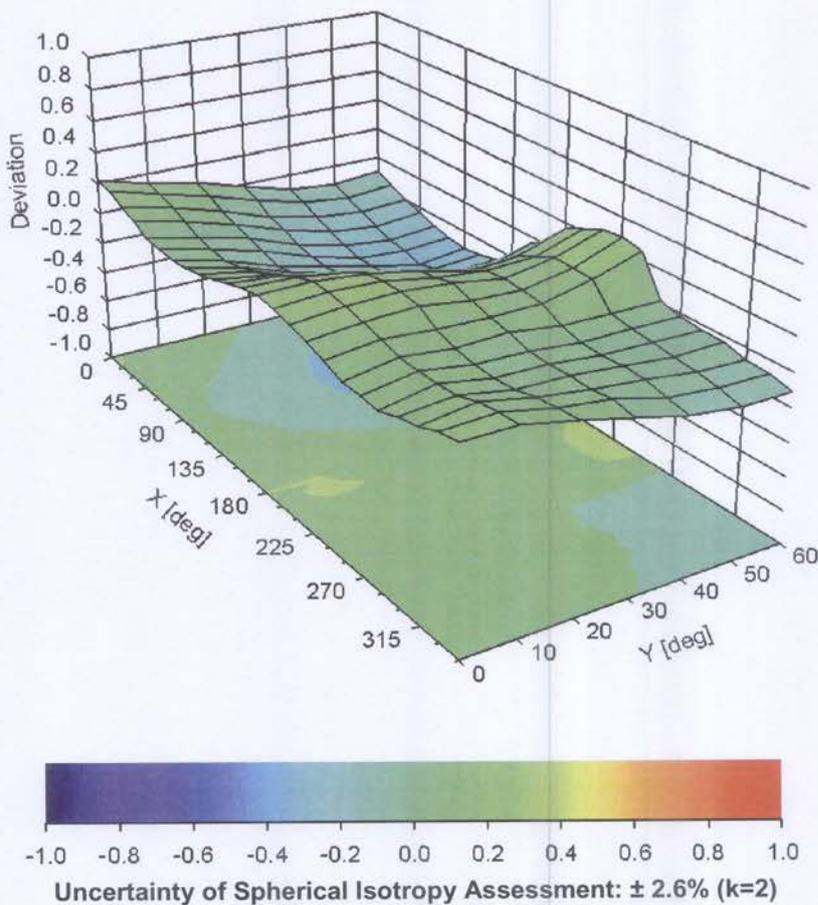


Uncertainty of Linearity Assessment: ± 0.6% (k=2)

Conversion Factor Assessment



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



DASY/EASY - Parameters of Probe: EX3DV4 - SN:7381

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	-30.9
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 $\sqrt{\mu}$ V	C	D dB	VR mV	Max Unc ^E (k=2)
0	CW	X	0.00	0.00	1.00	0.00	145.3	$\pm 3.8\%$
		Y	0.00	0.00	1.00		133.2	
		Z	0.00	0.00	1.00		148.7	
10010- CAA	SAR Validation (Square, 100ms, 10ms)	X	11.00	70.00	30.00	10.00	20.0	$\pm 9.6\%$
		Y	4.22	73.05	14.56		20.0	
		Z	3.10	69.01	12.43		20.0	
10011- CAB	UMTS-FDD (WCDMA)	X	0.83	62.04	11.34	0.00	150.0	$\pm 9.6\%$
		Y	1.09	65.41	14.62		150.0	
		Z	0.98	63.81	13.21		150.0	
10012- CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps)	X	1.08	61.01	12.48	0.41	150.0	$\pm 9.6\%$
		Y	1.27	62.71	14.48		150.0	
		Z	1.20	61.98	13.65		150.0	
10013- CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps)	X	4.71	65.66	16.09	1.46	150.0	$\pm 9.6\%$
		Y	4.88	66.27	16.72		150.0	
		Z	4.82	66.06	16.47		150.0	
10021- DAB	GSM-FDD (TDMA, GMSK)	X	3.41	69.45	12.33	9.39	50.0	$\pm 9.6\%$
		Y	77.32	111.77	27.32		50.0	
		Z	18.09	91.36	21.33		50.0	
10023- DAB	GPRS-FDD (TDMA, GMSK, TN 0)	X	3.36	69.06	12.18	9.57	50.0	$\pm 9.6\%$
		Y	36.39	101.60	24.78		50.0	
		Z	13.29	87.21	20.10		50.0	
10024- DAB	GPRS-FDD (TDMA, GMSK, TN 0-1)	X	1.78	66.16	10.01	6.56	60.0	$\pm 9.6\%$
		Y	100.00	116.37	27.39		60.0	
		Z	16.18	92.50	20.72		60.0	
10025- DAB	EDGE-FDD (TDMA, 8PSK, TN 0)	X	6.45	83.24	31.90	12.57	50.0	$\pm 9.6\%$
		Y	4.12	67.77	23.98		50.0	
		Z	5.85	79.07	30.11		50.0	
10026- DAB	EDGE-FDD (TDMA, 8PSK, TN 0-1)	X	6.00	81.31	27.65	9.56	60.0	$\pm 9.6\%$
		Y	5.56	78.65	26.95		60.0	
		Z	5.78	80.18	27.65		60.0	
10027- DAB	GPRS-FDD (TDMA, GMSK, TN 0-1-2)	X	1.15	64.74	8.87	4.80	80.0	$\pm 9.6\%$
		Y	100.00	119.59	27.97		80.0	
		Z	13.62	93.37	20.66		80.0	
10028- DAB	GPRS-FDD (TDMA, GMSK, TN 0-1-2-3)	X	0.81	63.93	8.18	3.55	100.0	$\pm 9.6\%$
		Y	100.00	124.44	29.38		100.0	
		Z	7.46	90.18	19.91		100.0	
10029- DAB	EDGE-FDD (TDMA, 8PSK, TN 0-1-2)	X	4.03	72.96	22.88	7.80	80.0	$\pm 9.6\%$
		Y	4.02	72.07	22.96		80.0	
		Z	3.98	72.32	23.03		80.0	
10030- CAA	IEEE 802.15.1 Bluetooth (GFSK, DH1)	X	1.24	64.19	8.66	5.30	70.0	$\pm 9.6\%$
		Y	27.48	101.08	23.25		70.0	
		Z	5.77	81.88	17.14		70.0	
10031- CAA	IEEE 802.15.1 Bluetooth (GFSK, DH3)	X	0.32	60.65	5.76	1.88	100.0	$\pm 9.6\%$
		Y	1.55	80.11	18.47		100.0	
		Z	0.82	71.38	13.86		100.0	

10032-CAA	IEEE 802.15.1 Bluetooth (GFSK, DH5)	X	0.21	60.61	5.68	1.17	100.0	± 9.6 %
		Y	0.50	70.05	15.91		100.0	
		Z	0.37	66.21	12.57		100.0	
10033-CAA	IEEE 802.15.1 Bluetooth (PI/4-DQPSK, DH1)	X	2.18	68.09	14.24	5.30	70.0	± 9.6 %
		Y	2.89	72.54	17.48		70.0	
		Z	2.57	70.85	16.47		70.0	
10034-CAA	IEEE 802.15.1 Bluetooth (PI/4-DQPSK, DH3)	X	1.14	63.33	10.91	1.88	100.0	± 9.6 %
		Y	1.57	67.54	14.30		100.0	
		Z	1.34	65.43	12.91		100.0	
10035-CAA	IEEE 802.15.1 Bluetooth (PI/4-DQPSK, DH5)	X	0.99	62.59	10.37	1.17	100.0	± 9.6 %
		Y	1.36	66.70	13.80		100.0	
		Z	1.17	64.60	12.35		100.0	
10036-CAA	IEEE 802.15.1 Bluetooth (8-DPSK, DH1)	X	2.27	68.80	14.61	5.30	70.0	± 9.6 %
		Y	3.09	73.73	18.06		70.0	
		Z	2.71	71.84	16.97		70.0	
10037-CAA	IEEE 802.15.1 Bluetooth (8-DPSK, DH3)	X	1.11	63.16	10.80	1.88	100.0	± 9.6 %
		Y	1.51	67.12	14.09		100.0	
		Z	1.30	65.13	12.74		100.0	
10038-CAA	IEEE 802.15.1 Bluetooth (8-DPSK, DH5)	X	0.99	62.62	10.47	1.17	100.0	± 9.6 %
		Y	1.35	66.73	13.91		100.0	
		Z	1.17	64.62	12.44		100.0	
10039-CAB	CDMA2000 (1xRTT, RC1)	X	1.06	63.43	10.77	0.00	150.0	± 9.6 %
		Y	1.67	69.94	15.24		150.0	
		Z	1.34	66.46	13.14		150.0	
10042-CAB	IS-54 / IS-136 FDD (TDMA/FDM, PI/4-DQPSK, Halfrate)	X	2.01	65.85	9.99	7.78	50.0	± 9.6 %
		Y	100.00	114.11	26.78		50.0	
		Z	13.02	88.09	19.46		50.0	
10044-CAA	IS-91/EIA/TIA-553 FDD (FDMA, FM)	X	0.02	60.04	4.92	0.00	150.0	± 9.6 %
		Y	0.14	60.00	14.41		150.0	
		Z	0.11	60.00	12.21		150.0	
10048-CAA	DECT (TDD, TDMA/FDM, GFSK, Full Slot, 24)	X	4.00	66.58	12.56	13.80	25.0	± 9.6 %
		Y	12.30	82.75	20.34		25.0	
		Z	8.50	76.81	17.83		25.0	
10049-CAA	DECT (TDD, TDMA/FDM, GFSK, Double Slot, 12)	X	3.73	68.72	12.26	10.79	40.0	± 9.6 %
		Y	14.81	88.29	21.17		40.0	
		Z	8.91	80.60	18.13		40.0	
10056-CAA	UMTS-TDD (TD-SCDMA, 1.28 Mcps)	X	5.38	75.45	17.46	9.03	50.0	± 9.6 %
		Y	8.02	82.70	21.47		50.0	
		Z	7.54	81.43	20.71		50.0	
10058-DAB	EDGE-FDD (TDMA, 8PSK, TN 0-1-2-3)	X	3.29	69.39	20.45	6.55	100.0	± 9.6 %
		Y	3.37	69.15	20.88		100.0	
		Z	3.30	69.03	20.71		100.0	
10059-CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 2 Mbps)	X	1.06	61.27	12.56	0.61	110.0	± 9.6 %
		Y	1.25	63.04	14.63		110.0	
		Z	1.18	62.24	13.77		110.0	
10060-CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 5.5 Mbps)	X	0.78	64.29	11.94	1.30	110.0	± 9.6 %
		Y	1.14	69.33	16.51		110.0	
		Z	0.95	66.58	14.55		110.0	

10061-CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 11 Mbps)	X	1.20	64.46	13.66	2.04	110.0	± 9.6 %
		Y	1.47	67.11	16.35		110.0	
		Z	1.33	65.73	15.25		110.0	
10062-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps)	X	4.54	65.71	15.61	0.49	100.0	± 9.6 %
		Y	4.72	66.42	16.32		100.0	
		Z	4.66	66.16	16.03		100.0	
10063-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 9 Mbps)	X	4.54	65.74	15.66	0.72	100.0	± 9.6 %
		Y	4.72	66.45	16.36		100.0	
		Z	4.66	66.19	16.08		100.0	
10064-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 12 Mbps)	X	4.82	66.03	15.91	0.86	100.0	± 9.6 %
		Y	4.99	66.68	16.57		100.0	
		Z	4.93	66.45	16.30		100.0	
10065-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 18 Mbps)	X	4.67	65.83	15.92	1.21	100.0	± 9.6 %
		Y	4.84	66.47	16.58		100.0	
		Z	4.78	66.24	16.32		100.0	
10066-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 24 Mbps)	X	4.67	65.80	16.04	1.46	100.0	± 9.6 %
		Y	4.84	66.41	16.68		100.0	
		Z	4.78	66.20	16.43		100.0	
10067-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 36 Mbps)	X	4.95	66.02	16.50	2.04	100.0	± 9.6 %
		Y	5.12	66.58	17.08		100.0	
		Z	5.07	66.40	16.86		100.0	
10068-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 48 Mbps)	X	4.98	66.00	16.67	2.55	100.0	± 9.6 %
		Y	5.14	66.51	17.22		100.0	
		Z	5.09	66.36	17.02		100.0	
10069-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 54 Mbps)	X	5.07	66.04	16.87	2.67	100.0	± 9.6 %
		Y	5.21	66.52	17.39		100.0	
		Z	5.17	66.38	17.21		100.0	
10071-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 9 Mbps)	X	4.79	65.70	16.35	1.99	100.0	± 9.6 %
		Y	4.96	66.27	16.94		100.0	
		Z	4.90	66.08	16.72		100.0	
10072-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 12 Mbps)	X	4.73	65.86	16.45	2.30	100.0	± 9.6 %
		Y	4.90	66.44	17.06		100.0	
		Z	4.85	66.25	16.84		100.0	
10073-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 18 Mbps)	X	4.77	65.94	16.70	2.83	100.0	± 9.6 %
		Y	4.94	66.49	17.30		100.0	
		Z	4.88	66.32	17.09		100.0	
10074-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 24 Mbps)	X	4.74	65.81	16.82	3.30	100.0	± 9.6 %
		Y	4.92	66.36	17.40		100.0	
		Z	4.86	66.19	17.20		100.0	
10075-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 36 Mbps)	X	4.76	65.86	17.08	3.82	90.0	± 9.6 %
		Y	4.93	66.37	17.63		90.0	
		Z	4.88	66.22	17.45		90.0	
10076-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 48 Mbps)	X	4.78	65.70	17.21	4.15	90.0	± 9.6 %
		Y	4.96	66.20	17.76		90.0	
		Z	4.90	66.07	17.58		90.0	
10077-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 54 Mbps)	X	4.80	65.74	17.29	4.30	90.0	± 9.6 %
		Y	4.98	66.25	17.84		90.0	
		Z	4.93	66.12	17.67		90.0	

10081-CAB	CDMA2000 (1xRTT, RC3)	X	0.64	61.07	9.00	0.00	150.0	± 9.6 %
		Y	0.93	65.35	12.91		150.0	
		Z	0.80	63.13	11.17		150.0	
10082-CAB	IS-54 / IS-136 FDD (TDMA/FDM, PI/4-DQPSK, Fullrate)	X	0.61	60.00	3.83	4.77	80.0	± 9.6 %
		Y	0.56	58.68	4.37		80.0	
		Z	0.48	58.01	3.51		80.0	
10090-DAB	GPRS-FDD (TDMA, GMSK, TN 0-4)	X	1.78	66.13	10.00	6.56	60.0	± 9.6 %
		Y	100.00	116.24	27.35		60.0	
		Z	15.32	91.80	20.52		60.0	
10097-CAB	UMTS-FDD (HSDPA)	X	1.56	63.81	12.88	0.00	150.0	± 9.6 %
		Y	1.90	66.76	15.34		150.0	
		Z	1.75	65.42	14.28		150.0	
10098-CAB	UMTS-FDD (HSUPA, Subtest 2)	X	1.52	63.73	12.82	0.00	150.0	± 9.6 %
		Y	1.86	66.69	15.30		150.0	
		Z	1.72	65.35	14.24		150.0	
10099-DAB	EDGE-FDD (TDMA, 8PSK, TN 0-4)	X	6.03	81.39	27.68	9.56	60.0	± 9.6 %
		Y	5.59	78.72	26.97		60.0	
		Z	5.81	80.26	27.67		60.0	
10100-CAB	LTE-FDD (SC-FDMA, 100% RB, 20 MHz, QPSK)	X	2.63	66.55	14.37	0.00	150.0	± 9.6 %
		Y	3.08	69.15	16.39		150.0	
		Z	2.89	68.03	15.54		150.0	
10101-CAB	LTE-FDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM)	X	3.02	65.54	14.47	0.00	150.0	± 9.6 %
		Y	3.30	67.03	15.80		150.0	
		Z	3.19	66.42	15.25		150.0	
10102-CAB	LTE-FDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM)	X	3.13	65.61	14.62	0.00	150.0	± 9.6 %
		Y	3.41	67.05	15.91		150.0	
		Z	3.30	66.47	15.37		150.0	
10103-CAB	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, QPSK)	X	4.39	69.15	16.92	3.98	65.0	± 9.6 %
		Y	4.89	70.92	18.29		65.0	
		Z	4.55	69.82	17.63		65.0	
10104-CAB	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM)	X	5.05	69.54	17.94	3.98	65.0	± 9.6 %
		Y	5.33	70.34	18.73		65.0	
		Z	5.16	69.90	18.40		65.0	
10105-CAB	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM)	X	4.77	68.24	17.62	3.98	65.0	± 9.6 %
		Y	5.05	69.06	18.40		65.0	
		Z	4.82	68.33	17.93		65.0	
10108-CAC	LTE-FDD (SC-FDMA, 100% RB, 10 MHz, QPSK)	X	2.31	65.81	14.11	0.00	150.0	± 9.6 %
		Y	2.70	68.38	16.18		150.0	
		Z	2.54	67.26	15.31		150.0	
10109-CAC	LTE-FDD (SC-FDMA, 100% RB, 10 MHz, 16-QAM)	X	2.66	65.14	14.17	0.00	150.0	± 9.6 %
		Y	2.95	66.84	15.67		150.0	
		Z	2.84	66.13	15.04		150.0	
10110-CAC	LTE-FDD (SC-FDMA, 100% RB, 5 MHz, QPSK)	X	1.86	64.77	13.48	0.00	150.0	± 9.6 %
		Y	2.21	67.46	15.73		150.0	
		Z	2.07	66.26	14.77		150.0	
10111-CAC	LTE-FDD (SC-FDMA, 100% RB, 5 MHz, 16-QAM)	X	2.30	65.14	13.93	0.00	150.0	± 9.6 %
		Y	2.65	67.58	15.89		150.0	
		Z	2.50	66.48	15.04		150.0	

10112-CAC	LTE-FDD (SC-FDMA, 100% RB, 10 MHz, 64-QAM)	X	2.79	65.26	14.31	0.00	150.0	± 9.6 %
		Y	3.08	66.91	15.75		150.0	
		Z	2.97	66.22	15.14		150.0	
10113-CAC	LTE-FDD (SC-FDMA, 100% RB, 5 MHz, 64-QAM)	X	2.44	65.40	14.15	0.00	150.0	± 9.6 %
		Y	2.80	67.78	16.04		150.0	
		Z	2.65	66.71	15.22		150.0	
10114-CAB	IEEE 802.11n (HT Greenfield, 13.5 Mbps, BPSK)	X	5.04	66.45	15.77	0.00	150.0	± 9.6 %
		Y	5.23	67.16	16.47		150.0	
		Z	5.16	66.89	16.17		150.0	
10115-CAB	IEEE 802.11n (HT Greenfield, 81 Mbps, 16-QAM)	X	5.31	66.60	15.87	0.00	150.0	± 9.6 %
		Y	5.50	67.24	16.52		150.0	
		Z	5.43	66.99	16.24		150.0	
10116-CAB	IEEE 802.11n (HT Greenfield, 135 Mbps, 64-QAM)	X	5.12	66.61	15.79	0.00	150.0	± 9.6 %
		Y	5.32	67.33	16.49		150.0	
		Z	5.24	67.05	16.19		150.0	
10117-CAB	IEEE 802.11n (HT Mixed, 13.5 Mbps, BPSK)	X	5.00	66.32	15.72	0.00	150.0	± 9.6 %
		Y	5.20	67.03	16.43		150.0	
		Z	5.13	66.76	16.12		150.0	
10118-CAB	IEEE 802.11n (HT Mixed, 81 Mbps, 16-QAM)	X	5.39	66.79	15.98	0.00	150.0	± 9.6 %
		Y	5.57	67.43	16.63		150.0	
		Z	5.50	67.17	16.34		150.0	
10119-CAB	IEEE 802.11n (HT Mixed, 135 Mbps, 64-QAM)	X	5.10	66.57	15.78	0.00	150.0	± 9.6 %
		Y	5.30	67.29	16.48		150.0	
		Z	5.22	67.01	16.18		150.0	
10140-CAB	LTE-FDD (SC-FDMA, 100% RB, 15 MHz, 16-QAM)	X	3.16	65.64	14.56	0.00	150.0	± 9.6 %
		Y	3.44	67.07	15.84		150.0	
		Z	3.33	66.49	15.30		150.0	
10141-CAB	LTE-FDD (SC-FDMA, 100% RB, 15 MHz, 64-QAM)	X	3.29	65.80	14.77	0.00	150.0	± 9.6 %
		Y	3.57	67.21	16.02		150.0	
		Z	3.46	66.64	15.49		150.0	
10142-CAC	LTE-FDD (SC-FDMA, 100% RB, 3 MHz, QPSK)	X	1.62	64.25	12.81	0.00	150.0	± 9.6 %
		Y	1.98	67.41	15.35		150.0	
		Z	1.82	65.96	14.26		150.0	
10143-CAC	LTE-FDD (SC-FDMA, 100% RB, 3 MHz, 16-QAM)	X	2.04	64.96	13.15	0.00	150.0	± 9.6 %
		Y	2.48	68.23	15.56		150.0	
		Z	2.28	66.70	14.50		150.0	
10144-CAC	LTE-FDD (SC-FDMA, 100% RB, 3 MHz, 64-QAM)	X	1.96	63.85	12.14	0.00	150.0	± 9.6 %
		Y	2.28	66.19	14.04		150.0	
		Z	2.15	65.16	13.25		150.0	
10145-CAC	LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, QPSK)	X	0.98	61.52	9.14	0.00	150.0	± 9.6 %
		Y	1.31	65.08	12.07		150.0	
		Z	1.16	63.33	10.80		150.0	
10146-CAC	LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, 16-QAM)	X	1.22	61.22	8.20	0.00	150.0	± 9.6 %
		Y	1.82	65.22	10.91		150.0	
		Z	1.39	62.50	9.32		150.0	
10147-CAC	LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, 64-QAM)	X	1.28	61.61	8.52	0.00	150.0	± 9.6 %
		Y	2.06	66.69	11.75		150.0	
		Z	1.48	63.15	9.78		150.0	

10149-CAB	LTE-FDD (SC-FDMA, 50% RB, 20 MHz, 16-QAM)	X	2.67	65.18	14.21	0.00	150.0	± 9.6 %
		Y	2.96	66.90	15.71		150.0	
		Z	2.84	66.18	15.08		150.0	
10150-CAB	LTE-FDD (SC-FDMA, 50% RB, 20 MHz, 64-QAM)	X	2.80	65.30	14.34	0.00	150.0	± 9.6 %
		Y	3.09	66.96	15.79		150.0	
		Z	2.97	66.26	15.18		150.0	
10151-CAB	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, QPSK)	X	4.45	70.82	17.66	3.98	65.0	± 9.6 %
		Y	4.92	72.56	19.05		65.0	
		Z	4.66	71.74	18.52		65.0	
10152-CAB	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 16-QAM)	X	4.53	69.01	17.34	3.98	65.0	± 9.6 %
		Y	4.81	69.94	18.22		65.0	
		Z	4.65	69.46	17.88		65.0	
10153-CAB	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 64-QAM)	X	4.82	69.82	18.07	3.98	65.0	± 9.6 %
		Y	5.12	70.80	18.97		65.0	
		Z	4.94	70.25	18.59		65.0	
10154-CAC	LTE-FDD (SC-FDMA, 50% RB, 10 MHz, QPSK)	X	1.88	64.96	13.63	0.00	150.0	± 9.6 %
		Y	2.24	67.79	15.94		150.0	
		Z	2.09	66.51	14.95		150.0	
10155-CAC	LTE-FDD (SC-FDMA, 50% RB, 10 MHz, 16-QAM)	X	2.30	65.15	13.95	0.00	150.0	± 9.6 %
		Y	2.65	67.60	15.90		150.0	
		Z	2.50	66.50	15.06		150.0	
10156-CAC	LTE-FDD (SC-FDMA, 50% RB, 5 MHz, QPSK)	X	1.44	63.87	12.31	0.00	150.0	± 9.6 %
		Y	1.82	67.38	15.11		150.0	
		Z	1.65	65.72	13.89		150.0	
10157-CAC	LTE-FDD (SC-FDMA, 50% RB, 5 MHz, 16-QAM)	X	1.74	63.73	11.79	0.00	150.0	± 9.6 %
		Y	2.11	66.66	14.07		150.0	
		Z	1.95	65.32	13.10		150.0	
10158-CAC	LTE-FDD (SC-FDMA, 50% RB, 10 MHz, 64-QAM)	X	2.45	65.44	14.18	0.00	150.0	± 9.6 %
		Y	2.81	67.84	16.08		150.0	
		Z	2.66	66.76	15.25		150.0	
10159-CAC	LTE-FDD (SC-FDMA, 50% RB, 5 MHz, 64-QAM)	X	1.81	63.98	11.97	0.00	150.0	± 9.6 %
		Y	2.20	67.08	14.32		150.0	
		Z	2.03	65.64	13.31		150.0	
10160-CAB	LTE-FDD (SC-FDMA, 50% RB, 15 MHz, QPSK)	X	2.41	65.57	14.20	0.00	150.0	± 9.6 %
		Y	2.76	67.82	16.05		150.0	
		Z	2.61	66.82	15.25		150.0	
10161-CAB	LTE-FDD (SC-FDMA, 50% RB, 15 MHz, 16-QAM)	X	2.69	65.16	14.20	0.00	150.0	± 9.6 %
		Y	2.98	66.91	15.71		150.0	
		Z	2.87	66.17	15.07		150.0	
10162-CAB	LTE-FDD (SC-FDMA, 50% RB, 15 MHz, 64-QAM)	X	2.79	65.36	14.35	0.00	150.0	± 9.6 %
		Y	3.09	67.09	15.83		150.0	
		Z	2.97	66.35	15.20		150.0	
10166-CAC	LTE-FDD (SC-FDMA, 50% RB, 1.4 MHz, QPSK)	X	3.02	66.04	16.77	3.01	150.0	± 9.6 %
		Y	3.49	68.70	18.75		150.0	
		Z	3.17	66.83	17.49		150.0	
10167-CAC	LTE-FDD (SC-FDMA, 50% RB, 1.4 MHz, 16-QAM)	X	3.28	67.38	16.69	3.01	150.0	± 9.6 %
		Y	4.21	71.96	19.44		150.0	
		Z	3.50	68.52	17.58		150.0	

10168-CAC	LTE-FDD (SC-FDMA, 50% RB, 1.4 MHz, 64-QAM)	X	3.50	68.80	17.70	3.01	150.0	± 9.6 %
		Y	4.73	74.50	20.94		150.0	
		Z	3.77	70.13	18.68		150.0	
10169-CAB	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, QPSK)	X	2.30	64.22	15.85	3.01	150.0	± 9.6 %
		Y	2.85	67.89	18.43		150.0	
		Z	2.46	65.10	16.68		150.0	
10170-CAB	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM)	X	2.50	66.64	16.90	3.01	150.0	± 9.6 %
		Y	3.86	74.52	21.24		150.0	
		Z	2.75	68.13	18.03		150.0	
10171-AAB	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, 64-QAM)	X	2.22	64.56	14.94	3.01	150.0	± 9.6 %
		Y	3.14	70.15	18.29		150.0	
		Z	2.43	65.77	15.96		150.0	
10172-CAB	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK)	X	2.66	69.27	18.50	6.02	65.0	± 9.6 %
		Y	3.40	73.63	21.39		65.0	
		Z	2.76	69.67	19.27		65.0	
10173-CAB	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM)	X	3.22	71.65	17.87	6.02	65.0	± 9.6 %
		Y	5.43	80.90	22.56		65.0	
		Z	3.61	73.78	19.49		65.0	
10174-CAB	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 64-QAM)	X	2.67	68.40	16.02	6.02	65.0	± 9.6 %
		Y	4.21	76.14	20.30		65.0	
		Z	2.91	69.90	17.40		65.0	
10175-CAC	LTE-FDD (SC-FDMA, 1 RB, 10 MHz, QPSK)	X	2.28	64.06	15.68	3.01	150.0	± 9.6 %
		Y	2.82	67.60	18.19		150.0	
		Z	2.44	64.92	16.49		150.0	
10176-CAC	LTE-FDD (SC-FDMA, 1 RB, 10 MHz, 16-QAM)	X	2.50	66.66	16.90	3.01	150.0	± 9.6 %
		Y	3.87	74.55	21.25		150.0	
		Z	2.75	68.15	18.04		150.0	
10177-CAE	LTE-FDD (SC-FDMA, 1 RB, 5 MHz, QPSK)	X	2.29	64.14	15.74	3.01	150.0	± 9.6 %
		Y	2.84	67.75	18.28		150.0	
		Z	2.45	65.02	16.56		150.0	
10178-CAC	LTE-FDD (SC-FDMA, 1 RB, 5 MHz, 16-QAM)	X	2.49	66.56	16.83	3.01	150.0	± 9.6 %
		Y	3.83	74.33	21.13		150.0	
		Z	2.74	68.04	17.97		150.0	
10179-CAC	LTE-FDD (SC-FDMA, 1 RB, 10 MHz, 64-QAM)	X	2.34	65.53	15.80	3.01	150.0	± 9.6 %
		Y	3.46	72.19	19.62		150.0	
		Z	2.57	66.89	16.89		150.0	
10180-CAC	LTE-FDD (SC-FDMA, 1 RB, 5 MHz, 64-QAM)	X	2.22	64.53	14.92	3.01	150.0	± 9.6 %
		Y	3.13	70.09	18.25		150.0	
		Z	2.43	65.74	15.93		150.0	
10181-CAB	LTE-FDD (SC-FDMA, 1 RB, 15 MHz, QPSK)	X	2.29	64.13	15.73	3.01	150.0	± 9.6 %
		Y	2.84	67.73	18.27		150.0	
		Z	2.45	65.00	16.55		150.0	
10182-CAB	LTE-FDD (SC-FDMA, 1 RB, 15 MHz, 16-QAM)	X	2.49	66.54	16.82	3.01	150.0	± 9.6 %
		Y	3.82	74.30	21.11		150.0	
		Z	2.74	68.02	17.96		150.0	
10183-AAA	LTE-FDD (SC-FDMA, 1 RB, 15 MHz, 64-QAM)	X	2.22	64.52	14.91	3.01	150.0	± 9.6 %
		Y	3.13	70.06	18.24		150.0	
		Z	2.42	65.72	15.92		150.0	

10184-CAC	LTE-FDD (SC-FDMA, 1 RB, 3 MHz, QPSK)	X	2.30	64.16	15.75	3.01	150.0	± 9.6 %
		Y	2.85	67.77	18.29		150.0	
		Z	2.46	65.04	16.57		150.0	
10185-CAC	LTE-FDD (SC-FDMA, 1 RB, 3 MHz, 16-QAM)	X	2.50	66.59	16.85	3.01	150.0	± 9.6 %
		Y	3.84	74.38	21.16		150.0	
		Z	2.75	68.07	17.99		150.0	
10186-AAC	LTE-FDD (SC-FDMA, 1 RB, 3 MHz, 64-QAM)	X	2.23	64.56	14.93	3.01	150.0	± 9.6 %
		Y	3.14	70.13	18.27		150.0	
		Z	2.43	65.77	15.95		150.0	
10187-CAC	LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK)	X	2.30	64.20	15.81	3.01	150.0	± 9.6 %
		Y	2.86	67.82	18.36		150.0	
		Z	2.47	65.08	16.63		150.0	
10188-CAC	LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, 16-QAM)	X	2.54	66.92	17.11	3.01	150.0	± 9.6 %
		Y	3.97	75.09	21.56		150.0	
		Z	2.80	68.44	18.26		150.0	
10189-AAC	LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, 64-QAM)	X	2.26	64.77	15.12	3.01	150.0	± 9.6 %
		Y	3.21	70.56	18.56		150.0	
		Z	2.47	66.01	16.16		150.0	
10193-CAB	IEEE 802.11n (HT Greenfield, 6.5 Mbps, BPSK)	X	4.42	65.78	15.37	0.00	150.0	± 9.6 %
		Y	4.62	66.60	16.15		150.0	
		Z	4.55	66.29	15.82		150.0	
10194-CAB	IEEE 802.11n (HT Greenfield, 39 Mbps, 16-QAM)	X	4.58	66.08	15.51	0.00	150.0	± 9.6 %
		Y	4.78	66.88	16.28		150.0	
		Z	4.71	66.57	15.95		150.0	
10195-CAB	IEEE 802.11n (HT Greenfield, 65 Mbps, 64-QAM)	X	4.62	66.12	15.53	0.00	150.0	± 9.6 %
		Y	4.82	66.91	16.29		150.0	
		Z	4.75	66.61	15.97		150.0	
10196-CAB	IEEE 802.11n (HT Mixed, 6.5 Mbps, BPSK)	X	4.42	65.82	15.38	0.00	150.0	± 9.6 %
		Y	4.62	66.64	16.16		150.0	
		Z	4.55	66.32	15.83		150.0	
10197-CAB	IEEE 802.11n (HT Mixed, 39 Mbps, 16-QAM)	X	4.59	66.10	15.52	0.00	150.0	± 9.6 %
		Y	4.79	66.90	16.29		150.0	
		Z	4.72	66.59	15.96		150.0	
10198-CAB	IEEE 802.11n (HT Mixed, 65 Mbps, 64-QAM)	X	4.62	66.13	15.54	0.00	150.0	± 9.6 %
		Y	4.82	66.92	16.30		150.0	
		Z	4.75	66.62	15.98		150.0	
10219-CAB	IEEE 802.11n (HT Mixed, 7.2 Mbps, BPSK)	X	4.36	65.81	15.32	0.00	150.0	± 9.6 %
		Y	4.57	66.65	16.12		150.0	
		Z	4.49	66.32	15.78		150.0	
10220-CAB	IEEE 802.11n (HT Mixed, 43.3 Mbps, 16-QAM)	X	4.59	66.07	15.51	0.00	150.0	± 9.6 %
		Y	4.78	66.86	16.27		150.0	
		Z	4.71	66.56	15.95		150.0	
10221-CAB	IEEE 802.11n (HT Mixed, 72.2 Mbps, 64-QAM)	X	4.64	66.08	15.54	0.00	150.0	± 9.6 %
		Y	4.83	66.86	16.29		150.0	
		Z	4.76	66.56	15.97		150.0	
10222-CAB	IEEE 802.11n (HT Mixed, 15 Mbps, BPSK)	X	4.98	66.32	15.71	0.00	150.0	± 9.6 %
		Y	5.18	67.03	16.42		150.0	
		Z	5.10	66.76	16.11		150.0	

10223-CAB	IEEE 802.11n (HT Mixed, 90 Mbps, 16-QAM)	X	5.29	66.61	15.90	0.00	150.0	± 9.6 %
		Y	5.48	67.29	16.56		150.0	
		Z	5.41	67.03	16.28		150.0	
10224-CAB	IEEE 802.11n (HT Mixed, 150 Mbps, 64-QAM)	X	5.02	66.41	15.69	0.00	150.0	± 9.6 %
		Y	5.22	67.14	16.40		150.0	
		Z	5.14	66.86	16.10		150.0	
10225-CAB	UMTS-FDD (HSPA+)	X	2.63	64.38	13.83	0.00	150.0	± 9.6 %
		Y	2.88	65.89	15.16		150.0	
		Z	2.78	65.26	14.60		150.0	
10226-CAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 16-QAM)	X	3.30	72.07	18.13	6.02	65.0	± 9.6 %
		Y	5.68	81.73	22.96		65.0	
		Z	3.71	74.25	19.76		65.0	
10227-CAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 64-QAM)	X	3.29	71.36	17.27	6.02	65.0	± 9.6 %
		Y	5.72	80.94	22.07		65.0	
		Z	3.73	73.70	18.99		65.0	
10228-CAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK)	X	3.11	72.05	19.73	6.02	65.0	± 9.6 %
		Y	3.98	76.71	22.72		65.0	
		Z	3.30	73.06	20.80		65.0	
10229-CAB	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 16-QAM)	X	3.24	71.72	17.91	6.02	65.0	± 9.6 %
		Y	5.47	81.00	22.61		65.0	
		Z	3.64	73.85	19.52		65.0	
10230-CAB	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 64-QAM)	X	3.20	70.98	17.05	6.02	65.0	± 9.6 %
		Y	5.48	80.17	21.72		65.0	
		Z	3.63	73.26	18.74		65.0	
10231-CAB	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, QPSK)	X	3.05	71.70	19.51	6.02	65.0	± 9.6 %
		Y	3.89	76.21	22.44		65.0	
		Z	3.24	72.70	20.58		65.0	
10232-CAB	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 16-QAM)	X	3.23	71.70	17.90	6.02	65.0	± 9.6 %
		Y	5.46	80.98	22.60		65.0	
		Z	3.63	73.83	19.52		65.0	
10233-CAB	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 64-QAM)	X	3.20	70.97	17.04	6.02	65.0	± 9.6 %
		Y	5.46	80.15	21.71		65.0	
		Z	3.63	73.24	18.74		65.0	
10234-CAB	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, QPSK)	X	2.99	71.37	19.27	6.02	65.0	± 9.6 %
		Y	3.81	75.78	22.16		65.0	
		Z	3.19	72.38	20.34		65.0	
10235-CAB	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 16-QAM)	X	3.23	71.70	17.90	6.02	65.0	± 9.6 %
		Y	5.46	80.99	22.60		65.0	
		Z	3.63	73.83	19.52		65.0	
10236-CAB	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 64-QAM)	X	3.22	71.03	17.07	6.02	65.0	± 9.6 %
		Y	5.51	80.26	21.75		65.0	
		Z	3.65	73.32	18.76		65.0	
10237-CAB	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, QPSK)	X	3.04	71.70	19.51	6.02	65.0	± 9.6 %
		Y	3.88	76.22	22.44		65.0	
		Z	3.23	72.70	20.58		65.0	
10238-CAB	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 16-QAM)	X	3.22	71.68	17.89	6.02	65.0	± 9.6 %
		Y	5.45	80.95	22.59		65.0	
		Z	3.62	73.80	19.50		65.0	

10239-CAB	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 64-QAM)	X	3.19	70.94	17.03	6.02	65.0	± 9.6 %
		Y	5.44	80.11	21.70		65.0	
		Z	3.61	73.21	18.72		65.0	
10240-CAB	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, QPSK)	X	3.03	71.68	19.50	6.02	65.0	± 9.6 %
		Y	3.87	76.19	22.43		65.0	
		Z	3.23	72.68	20.57		65.0	
10241-CAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 16-QAM)	X	5.32	72.86	21.06	6.98	65.0	± 9.6 %
		Y	6.26	76.31	23.10		65.0	
		Z	5.54	73.69	21.77		65.0	
10242-CAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 64-QAM)	X	4.88	71.18	20.22	6.98	65.0	± 9.6 %
		Y	5.64	74.17	22.09		65.0	
		Z	4.99	71.61	20.74		65.0	
10243-CAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, QPSK)	X	4.38	69.33	20.14	6.98	65.0	± 9.6 %
		Y	4.81	71.12	21.47		65.0	
		Z	4.46	69.55	20.53		65.0	
10244-CAB	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 16-QAM)	X	3.08	66.06	12.96	3.98	65.0	± 9.6 %
		Y	3.86	69.24	15.05		65.0	
		Z	3.32	67.18	13.90		65.0	
10245-CAB	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 64-QAM)	X	3.09	65.89	12.84	3.98	65.0	± 9.6 %
		Y	3.83	68.89	14.83		65.0	
		Z	3.32	66.95	13.74		65.0	
10246-CAB	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, QPSK)	X	2.71	67.19	13.92	3.98	65.0	± 9.6 %
		Y	3.27	69.99	15.98		65.0	
		Z	3.00	68.80	15.27		65.0	
10247-CAB	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 16-QAM)	X	3.36	67.18	14.65	3.98	65.0	± 9.6 %
		Y	3.77	68.93	16.02		65.0	
		Z	3.56	68.15	15.54		65.0	
10248-CAB	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 64-QAM)	X	3.45	67.11	14.63	3.98	65.0	± 9.6 %
		Y	3.82	68.67	15.88		65.0	
		Z	3.63	67.98	15.44		65.0	
10249-CAB	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, QPSK)	X	3.28	69.49	15.92	3.98	65.0	± 9.6 %
		Y	3.88	72.30	17.92		65.0	
		Z	3.58	71.06	17.20		65.0	
10250-CAB	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 16-QAM)	X	4.17	69.65	17.49	3.98	65.0	± 9.6 %
		Y	4.55	71.11	18.68		65.0	
		Z	4.33	70.34	18.19		65.0	
10251-CAB	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 64-QAM)	X	4.20	68.75	16.78	3.98	65.0	± 9.6 %
		Y	4.51	69.89	17.76		65.0	
		Z	4.34	69.32	17.39		65.0	
10252-CAB	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, QPSK)	X	3.95	71.02	17.61	3.98	65.0	± 9.6 %
		Y	4.47	73.19	19.26		65.0	
		Z	4.19	72.17	18.63		65.0	
10253-CAB	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 16-QAM)	X	4.48	68.70	17.17	3.98	65.0	± 9.6 %
		Y	4.76	69.62	18.03		65.0	
		Z	4.60	69.14	17.70		65.0	
10254-CAB	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 64-QAM)	X	4.74	69.43	17.82	3.98	65.0	± 9.6 %
		Y	5.04	70.40	18.69		65.0	
		Z	4.86	69.87	18.33		65.0	

10255-CAB	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, QPSK)	X	4.34	70.48	17.71	3.98	65.0	± 9.6 %
		Y	4.76	72.08	19.01		65.0	
		Z	4.53	71.30	18.51		65.0	
10256-CAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 16-QAM)	X	2.50	63.83	10.78	3.98	65.0	± 9.6 %
		Y	3.05	66.22	12.52		65.0	
		Z	2.68	64.74	11.63		65.0	
10257-CAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 64-QAM)	X	2.52	63.66	10.62	3.98	65.0	± 9.6 %
		Y	3.03	65.83	12.23		65.0	
		Z	2.69	64.48	11.41		65.0	
10258-CAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, QPSK)	X	2.24	64.81	11.90	3.98	65.0	± 9.6 %
		Y	2.67	67.13	13.75		65.0	
		Z	2.47	66.16	13.14		65.0	
10259-CAB	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 16-QAM)	X	3.67	68.13	15.70	3.98	65.0	± 9.6 %
		Y	4.07	69.78	17.00		65.0	
		Z	3.86	69.00	16.52		65.0	
10260-CAB	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 64-QAM)	X	3.75	68.10	15.70	3.98	65.0	± 9.6 %
		Y	4.14	69.68	16.95		65.0	
		Z	3.93	68.94	16.49		65.0	
10261-CAB	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, QPSK)	X	3.48	69.79	16.48	3.98	65.0	± 9.6 %
		Y	4.02	72.21	18.27		65.0	
		Z	3.74	71.12	17.62		65.0	
10262-CAB	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 16-QAM)	X	4.17	69.62	17.46	3.98	65.0	± 9.6 %
		Y	4.55	71.07	18.64		65.0	
		Z	4.33	70.30	18.16		65.0	
10263-CAB	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 64-QAM)	X	4.20	68.73	16.77	3.98	65.0	± 9.6 %
		Y	4.51	69.87	17.76		65.0	
		Z	4.33	69.30	17.39		65.0	
10264-CAB	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, QPSK)	X	3.93	70.92	17.55	3.98	65.0	± 9.6 %
		Y	4.44	73.07	19.18		65.0	
		Z	4.17	72.06	18.56		65.0	
10265-CAB	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 16-QAM)	X	4.53	69.01	17.35	3.98	65.0	± 9.6 %
		Y	4.81	69.94	18.22		65.0	
		Z	4.65	69.46	17.88		65.0	
10266-CAB	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 64-QAM)	X	4.81	69.81	18.07	3.98	65.0	± 9.6 %
		Y	5.12	70.79	18.96		65.0	
		Z	4.93	70.24	18.58		65.0	
10267-CAB	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, QPSK)	X	4.45	70.80	17.65	3.98	65.0	± 9.6 %
		Y	4.91	72.53	19.04		65.0	
		Z	4.66	71.72	18.51		65.0	
10268-CAB	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 16-QAM)	X	5.24	69.62	18.10	3.98	65.0	± 9.6 %
		Y	5.51	70.39	18.85		65.0	
		Z	5.34	69.95	18.54		65.0	
10269-CAB	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 64-QAM)	X	5.28	69.42	18.07	3.98	65.0	± 9.6 %
		Y	5.54	70.15	18.79		65.0	
		Z	5.38	69.73	18.48		65.0	
10270-CAB	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, QPSK)	X	4.89	70.21	17.62	3.98	65.0	± 9.6 %
		Y	5.28	71.53	18.75		65.0	
		Z	5.06	70.88	18.30		65.0	

10274-CAB	UMTS-FDD (HSUPA, Subtest 5, 3GPP Rel8.10)	X	2.39	64.40	13.55	0.00	150.0	± 9.6 %
		Y	2.67	66.21	15.10		150.0	
		Z	2.56	65.45	14.45		150.0	
10275-CAB	UMTS-FDD (HSUPA, Subtest 5, 3GPP Rel8.4)	X	1.33	63.45	12.41	0.00	150.0	± 9.6 %
		Y	1.65	66.55	15.10		150.0	
		Z	1.51	65.13	13.96		150.0	
10277-CAA	PHS (QPSK)	X	1.85	60.42	5.96	9.03	50.0	± 9.6 %
		Y	2.20	61.72	7.46		50.0	
		Z	2.12	61.45	7.13		50.0	
10278-CAA	PHS (QPSK, BW 884MHz, Rolloff 0.5)	X	2.97	65.77	11.44	9.03	50.0	± 9.6 %
		Y	3.75	68.89	13.87		50.0	
		Z	3.56	68.16	13.32		50.0	
10279-CAA	PHS (QPSK, BW 884MHz, Rolloff 0.38)	X	3.06	66.00	11.61	9.03	50.0	± 9.6 %
		Y	3.84	69.10	14.02		50.0	
		Z	3.65	68.38	13.48		50.0	
10290-AAB	CDMA2000, RC1, SO55, Full Rate	X	0.99	62.62	10.11	0.00	150.0	± 9.6 %
		Y	1.42	67.59	13.88		150.0	
		Z	1.20	65.03	12.18		150.0	
10291-AAB	CDMA2000, RC3, SO55, Full Rate	X	0.63	61.01	8.95	0.00	150.0	± 9.6 %
		Y	0.92	65.20	12.81		150.0	
		Z	0.79	63.03	11.10		150.0	
10292-AAB	CDMA2000, RC3, SO32, Full Rate	X	0.65	61.72	9.64	0.00	150.0	± 9.6 %
		Y	1.05	67.96	14.63		150.0	
		Z	0.84	64.53	12.27		150.0	
10293-AAB	CDMA2000, RC3, SO3, Full Rate	X	0.72	62.67	10.52	0.00	150.0	± 9.6 %
		Y	1.35	71.68	16.75		150.0	
		Z	0.98	66.46	13.64		150.0	
10295-AAB	CDMA2000, RC1, SO3, 1/8th Rate 25 fr.	X	5.45	74.62	18.49	9.03	50.0	± 9.6 %
		Y	6.88	78.78	20.96		50.0	
		Z	6.39	77.53	20.31		50.0	
10297-AAA	LTE-FDD (SC-FDMA, 50% RB, 20 MHz, QPSK)	X	2.32	65.86	14.15	0.00	150.0	± 9.6 %
		Y	2.71	68.47	16.24		150.0	
		Z	2.54	67.33	15.36		150.0	
10298-AAB	LTE-FDD (SC-FDMA, 50% RB, 3 MHz, QPSK)	X	1.19	62.80	10.78	0.00	150.0	± 9.6 %
		Y	1.56	66.63	13.82		150.0	
		Z	1.39	64.75	12.48		150.0	
10299-AAB	LTE-FDD (SC-FDMA, 50% RB, 3 MHz, 16-QAM)	X	1.54	62.79	10.04	0.00	150.0	± 9.6 %
		Y	2.43	68.24	13.40		150.0	
		Z	1.76	64.39	11.30		150.0	
10300-AAB	LTE-FDD (SC-FDMA, 50% RB, 3 MHz, 64-QAM)	X	1.40	61.49	8.72	0.00	150.0	± 9.6 %
		Y	1.89	64.49	10.87		150.0	
		Z	1.55	62.46	9.62		150.0	
10301-AAA	IEEE 802.16e WiMAX (29:18, 5ms, 10MHz, QPSK, PUSC)	X	4.35	63.69	16.30	4.17	50.0	± 9.6 %
		Y	4.55	64.48	17.00		50.0	
		Z	4.44	63.98	16.61		50.0	
10302-AAA	IEEE 802.16e WiMAX (29:18, 5ms, 10MHz, QPSK, PUSC, 3 CTRL symbols)	X	4.84	64.44	17.12	4.96	50.0	± 9.6 %
		Y	5.02	65.10	17.73		50.0	
		Z	4.97	64.93	17.53		50.0	

10303-AAA	IEEE 802.16e WiMAX (31:15, 5ms, 10MHz, 64QAM, PUSC)	X	4.58	63.98	16.88	4.96	50.0	± 9.6 %
		Y	4.76	64.67	17.51		50.0	
		Z	4.72	64.48	17.30		50.0	
10304-AAA	IEEE 802.16e WiMAX (29:18, 5ms, 10MHz, 64QAM, PUSC)	X	4.40	63.86	16.36	4.17	50.0	± 9.6 %
		Y	4.59	64.64	17.06		50.0	
		Z	4.53	64.39	16.81		50.0	
10305-AAA	IEEE 802.16e WiMAX (31:15, 10ms, 10MHz, 64QAM, PUSC, 15 symbols)	X	3.81	64.07	17.44	6.02	35.0	± 9.6 %
		Y	4.05	65.16	18.27		35.0	
		Z	3.99	64.90	18.06		35.0	
10306-AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, 64QAM, PUSC, 18 symbols)	X	4.25	63.96	17.49	6.02	35.0	± 9.6 %
		Y	4.46	64.81	18.19		35.0	
		Z	4.41	64.62	18.01		35.0	
10307-AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, QPSK, PUSC, 18 symbols)	X	4.12	63.94	17.36	6.02	35.0	± 9.6 %
		Y	4.34	64.83	18.10		35.0	
		Z	4.29	64.63	17.91		35.0	
10308-AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, 16QAM, PUSC)	X	4.08	64.03	17.45	6.02	35.0	± 9.6 %
		Y	4.30	64.95	18.20		35.0	
		Z	4.25	64.74	18.01		35.0	
10309-AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, 16QAM, AMC 2x3, 18 symbols)	X	4.29	64.12	17.61	6.02	35.0	± 9.6 %
		Y	4.50	64.94	18.29		35.0	
		Z	4.45	64.77	18.12		35.0	
10310-AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, QPSK, AMC 2x3, 18 symbols)	X	4.19	63.95	17.43	6.02	35.0	± 9.6 %
		Y	4.41	64.83	18.15		35.0	
		Z	4.36	64.63	17.96		35.0	
10311-AAA	LTE-FDD (SC-FDMA, 100% RB, 15 MHz, QPSK)	X	2.63	65.37	13.99	0.00	150.0	± 9.6 %
		Y	3.06	67.90	15.95		150.0	
		Z	2.88	66.81	15.12		150.0	
10313-AAA	iDEN 1:3	X	1.72	64.46	11.73	6.99	70.0	± 9.6 %
		Y	2.26	68.46	15.15		70.0	
		Z	1.97	66.67	13.93		70.0	
10314-AAA	iDEN 1:6	X	1.91	65.09	14.72	10.00	30.0	± 9.6 %
		Y	2.89	71.86	19.37		30.0	
		Z	2.50	69.37	17.84		30.0	
10315-AAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps, 96pc duty cycle)	X	1.01	60.90	12.34	0.17	150.0	± 9.6 %
		Y	1.19	62.79	14.52		150.0	
		Z	1.13	61.97	13.61		150.0	
10316-AAB	IEEE 802.11g WiFi 2.4 GHz (ERP-OFDM, 6 Mbps, 96pc duty cycle)	X	4.44	65.70	15.39	0.17	150.0	± 9.6 %
		Y	4.63	66.46	16.13		150.0	
		Z	4.56	66.18	15.82		150.0	
10317-AAB	IEEE 802.11a WiFi 5 GHz (OFDM, 6 Mbps, 96pc duty cycle)	X	4.44	65.70	15.39	0.17	150.0	± 9.6 %
		Y	4.63	66.46	16.13		150.0	
		Z	4.56	66.18	15.82		150.0	
10400-AAC	IEEE 802.11ac WiFi (20MHz, 64-QAM, 99pc duty cycle)	X	4.56	66.11	15.49	0.00	150.0	± 9.6 %
		Y	4.76	66.90	16.26		150.0	
		Z	4.69	66.60	15.94		150.0	
10401-AAC	IEEE 802.11ac WiFi (40MHz, 64-QAM, 99pc duty cycle)	X	5.31	66.52	15.83	0.00	150.0	± 9.6 %
		Y	5.49	67.13	16.45		150.0	
		Z	5.41	66.87	16.17		150.0	

10402-AAC	IEEE 802.11ac WiFi (80MHz, 64-QAM, 99pc duty cycle)	X	5.54	66.78	15.83	0.00	150.0	± 9.6 %
		Y	5.74	67.43	16.48		150.0	
		Z	5.67	67.19	16.20		150.0	
10403-AAB	CDMA2000 (1xEV-DO, Rev. 0)	X	0.99	62.62	10.11	0.00	115.0	± 9.6 %
		Y	1.42	67.59	13.88		115.0	
		Z	1.20	65.03	12.18		115.0	
10404-AAB	CDMA2000 (1xEV-DO, Rev. A)	X	0.99	62.62	10.11	0.00	115.0	± 9.6 %
		Y	1.42	67.59	13.88		115.0	
		Z	1.20	65.03	12.18		115.0	
10406-AAA	CDMA2000, RC3, SO32, SCH0, Full Rate	X	0.72	62.67	10.52	0.00	150.0	± 9.6 %
		Y	1.35	71.68	16.75		150.0	
		Z	0.98	66.46	13.64		150.0	
10410-AAA	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	240.55	59.08	0.71	2.23	80.0	± 9.6 %
		Y	0.64	60.00	3.10		80.0	
		Z	5.31	60.00	1.56		80.0	
10415-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps, 99pc duty cycle)	X	0.97	60.66	12.13	0.00	150.0	± 9.6 %
		Y	1.16	62.56	14.34		150.0	
		Z	1.09	61.76	13.42		150.0	
10416-AAA	IEEE 802.11g WiFi 2.4 GHz (ERP-OFDM, 6 Mbps, 99pc duty cycle)	X	4.42	65.82	15.44	0.00	150.0	± 9.6 %
		Y	4.62	66.62	16.21		150.0	
		Z	4.55	66.31	15.89		150.0	
10417-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps, 99pc duty cycle)	X	4.42	65.82	15.44	0.00	150.0	± 9.6 %
		Y	4.62	66.62	16.21		150.0	
		Z	4.55	66.31	15.89		150.0	
10418-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps, 99pc duty cycle, Long preamble)	X	4.41	65.94	15.44	0.00	150.0	± 9.6 %
		Y	4.61	66.79	16.24		150.0	
		Z	4.54	66.46	15.90		150.0	
10419-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps, 99pc duty cycle, Short preamble)	X	4.43	65.91	15.45	0.00	150.0	± 9.6 %
		Y	4.63	66.73	16.24		150.0	
		Z	4.56	66.41	15.91		150.0	
10422-AAA	IEEE 802.11n (HT Greenfield, 7.2 Mbps, BPSK)	X	4.55	65.95	15.50	0.00	150.0	± 9.6 %
		Y	4.75	66.74	16.26		150.0	
		Z	4.68	66.43	15.94		150.0	
10423-AAA	IEEE 802.11n (HT Greenfield, 43.3 Mbps, 16-QAM)	X	4.70	66.23	15.61	0.00	150.0	± 9.6 %
		Y	4.89	67.02	16.36		150.0	
		Z	4.82	66.72	16.04		150.0	
10424-AAA	IEEE 802.11n (HT Greenfield, 72.2 Mbps, 64-QAM)	X	4.62	66.17	15.57	0.00	150.0	± 9.6 %
		Y	4.82	66.97	16.34		150.0	
		Z	4.75	66.66	16.01		150.0	
10425-AAA	IEEE 802.11n (HT Greenfield, 15 Mbps, BPSK)	X	5.24	66.59	15.86	0.00	150.0	± 9.6 %
		Y	5.43	67.26	16.53		150.0	
		Z	5.35	66.99	16.23		150.0	
10426-AAA	IEEE 802.11n (HT Greenfield, 90 Mbps, 16-QAM)	X	5.25	66.65	15.89	0.00	150.0	± 9.6 %
		Y	5.45	67.34	16.56		150.0	
		Z	5.37	67.06	16.26		150.0	

10427-AAA	IEEE 802.11n (HT Greenfield, 150 Mbps, 64-QAM)	X	5.26	66.61	15.86	0.00	150.0	± 9.6 %
		Y	5.45	67.27	16.52		150.0	
		Z	5.38	67.01	16.24		150.0	
10430-AAA	LTE-FDD (OFDMA, 5 MHz, E-TM 3.1)	X	3.82	68.29	16.38	0.00	150.0	± 9.6 %
		Y	4.32	70.87	18.16		150.0	
		Z	4.07	69.56	17.28		150.0	
10431-AAA	LTE-FDD (OFDMA, 10 MHz, E-TM 3.1)	X	4.04	66.05	15.21	0.00	150.0	± 9.6 %
		Y	4.26	67.09	16.14		150.0	
		Z	4.18	66.67	15.75		150.0	
10432-AAA	LTE-FDD (OFDMA, 15 MHz, E-TM 3.1)	X	4.37	66.11	15.43	0.00	150.0	± 9.6 %
		Y	4.58	67.00	16.26		150.0	
		Z	4.50	66.65	15.91		150.0	
10433-AAA	LTE-FDD (OFDMA, 20 MHz, E-TM 3.1)	X	4.63	66.20	15.59	0.00	150.0	± 9.6 %
		Y	4.83	67.00	16.35		150.0	
		Z	4.76	66.69	16.03		150.0	
10434-AAA	W-CDMA (BS Test Model 1, 64 DPCH)	X	3.78	68.61	16.09	0.00	150.0	± 9.6 %
		Y	4.41	71.72	18.11		150.0	
		Z	4.09	70.12	17.12		150.0	
10435-AAA	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	160.92	59.05	0.72	2.23	80.0	± 9.6 %
		Y	0.65	60.00	3.06		80.0	
		Z	15.70	60.29	1.48		80.0	
10447-AAA	LTE-FDD (OFDMA, 5 MHz, E-TM 3.1, Clipping 44%)	X	3.25	65.50	14.13	0.00	150.0	± 9.6 %
		Y	3.52	66.98	15.34		150.0	
		Z	3.42	66.36	14.83		150.0	
10448-AAA	LTE-FDD (OFDMA, 10 MHz, E-TM 3.1, Clipping 44%)	X	3.89	65.81	15.06	0.00	150.0	± 9.6 %
		Y	4.11	66.88	16.01		150.0	
		Z	4.03	66.45	15.61		150.0	
10449-AAA	LTE-FDD (OFDMA, 15 MHz, E-TM 3.1, Clipping 44%)	X	4.19	65.90	15.30	0.00	150.0	± 9.6 %
		Y	4.40	66.82	16.16		150.0	
		Z	4.32	66.46	15.80		150.0	
10450-AAA	LTE-FDD (OFDMA, 20 MHz, E-TM 3.1, Clipping 44%)	X	4.40	65.93	15.41	0.00	150.0	± 9.6 %
		Y	4.61	66.77	16.21		150.0	
		Z	4.53	66.45	15.87		150.0	
10451-AAA	W-CDMA (BS Test Model 1, 64 DPCH, Clipping 44%)	X	3.09	65.40	13.59	0.00	150.0	± 9.6 %
		Y	3.38	67.06	14.90		150.0	
		Z	3.26	66.36	14.36		150.0	
10456-AAA	IEEE 802.11ac WiFi (160MHz, 64-QAM, 99pc duty cycle)	X	6.13	67.29	16.14	0.00	150.0	± 9.6 %
		Y	6.35	67.93	16.75		150.0	
		Z	6.26	67.67	16.48		150.0	

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

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.