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Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 0108**

Client **PC Test**

Certificate No: **D1900V2-5d149_Jul15**

CALIBRATION CERTIFICATE

Object **D1900V2 - SN:5d149**

Calibration procedure(s) **QA CAL-05.v9**
Calibration procedure for dipole validation kits above 700 MHz

CCV
8/4/15

Calibration date: **July 14, 2015**

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

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

Calibration Equipment used (M&TE critical for calibration)

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

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

Calibrated by: **Leif Klysner** Name: **Leif Klysner** Function: **Laboratory Technician**

Approved by: **Katja Pokovic** Technical Manager

Signature

Leif Klysner
Katja Pokovic

Issued: July 14, 2015

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Accreditation No.: **SCS 0108**

Glossary:

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

Calibration is Performed According to the Following Standards:

- 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, "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
- 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 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

- DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

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

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

Measurement Conditions

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

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

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	40.0	1.40 mho/m
Measured Head TSL parameters	(22.0 $\pm$ 0.2) °C	39.7 $\pm$ 6 %	1.38 mho/m $\pm$ 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm ³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	10.1 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	40.7 W/kg $\pm$ 17.0 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	5.34 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	21.5 W/kg $\pm$ 16.5 % (k=2)

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	53.3	1.52 mho/m
Measured Body TSL parameters	(22.0 $\pm$ 0.2) °C	52.7 $\pm$ 6 %	1.54 mho/m $\pm$ 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm ³ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	10.2 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	40.4 W/kg $\pm$ 17.0 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	5.49 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	21.8 W/kg $\pm$ 16.5 % (k=2)

Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	$51.4 \Omega + 5.6 j\Omega$
Return Loss	- 24.9 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	$47.7 \Omega + 6.1 j\Omega$
Return Loss	- 23.5 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.197 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

Manufactured by	SPEAG
Manufactured on	March 11, 2011

DASY5 Validation Report for Head TSL

Date: 14.07.2015

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:5d149

Communication System: UID 0 - CW; Frequency: 1900 MHz

Medium parameters used: $f = 1900$ MHz; $\sigma = 1.38$ S/m; $\epsilon_r = 39.7$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

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

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

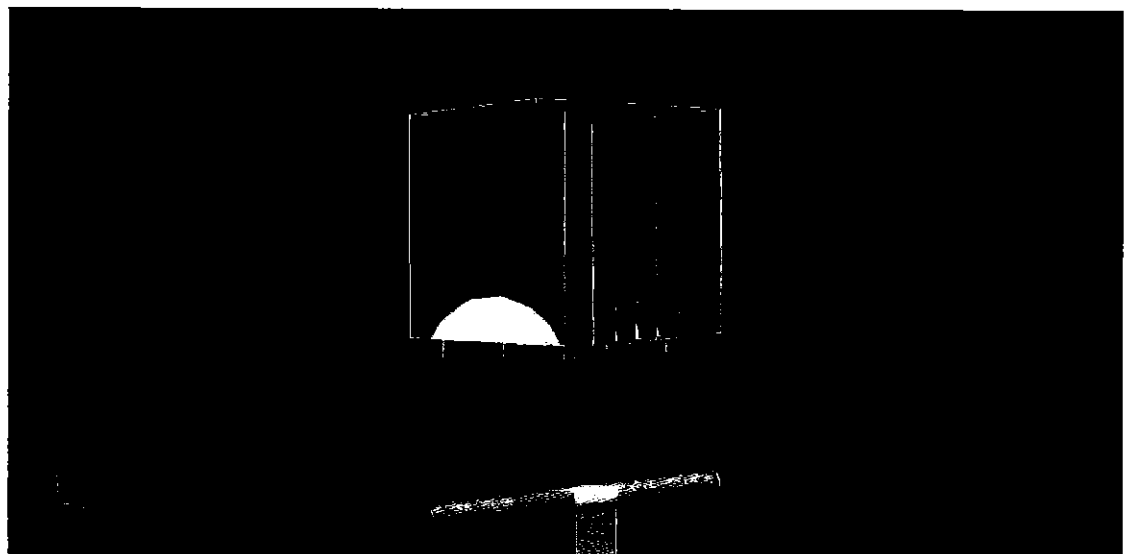
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 99.22 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 18.3 W/kg

SAR(1 g) = 10.1 W/kg; SAR(10 g) = 5.34 W/kg

Maximum value of SAR (measured) = 12.9 W/kg

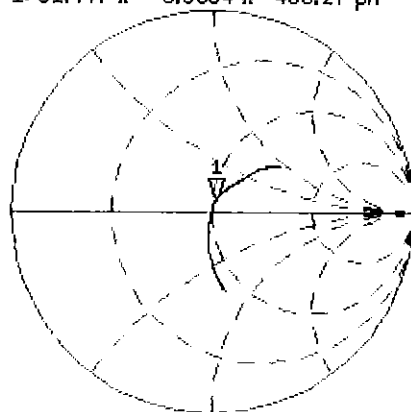


0 dB = 12.9 W/kg = 11.11 dBW/kg

Impedance Measurement Plot for Head TSL

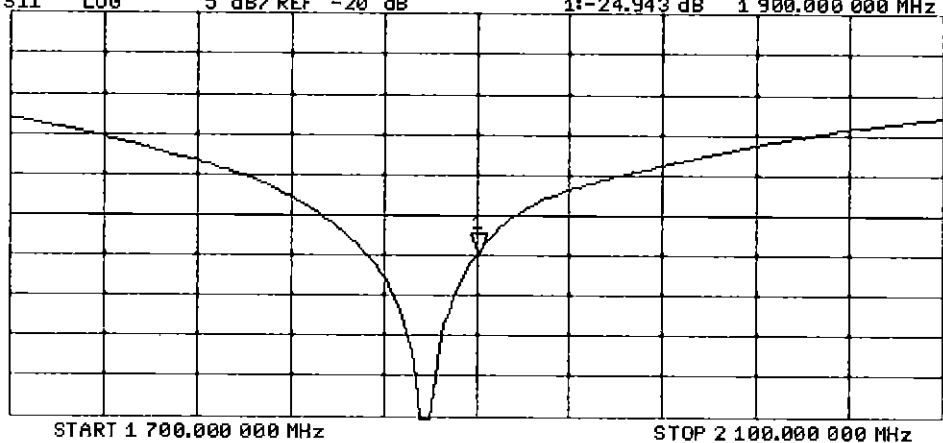
14 Jul 2015 09:20:59
 CH1 S11 1 U FS 1: 51.447 Ω 5.5664 Ω 466.27 μH 1 900.000 000 MHz

*
 De1
 CA
 Avg
 16
 H1d



CH2 S11 LOG 5 dB/REF -20 dB 1:-24.943 dB 1 900.000 000 MHz

De1
 CA
 Avg
 16
 H1d



DASY5 Validation Report for Body TSL

Date: 14.07.2015

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:5d149

Communication System: UID 0 - CW; Frequency: 1900 MHz

Medium parameters used: $f = 1900$ MHz; $\sigma = 1.54$ S/m; $\epsilon_r = 52.7$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

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

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

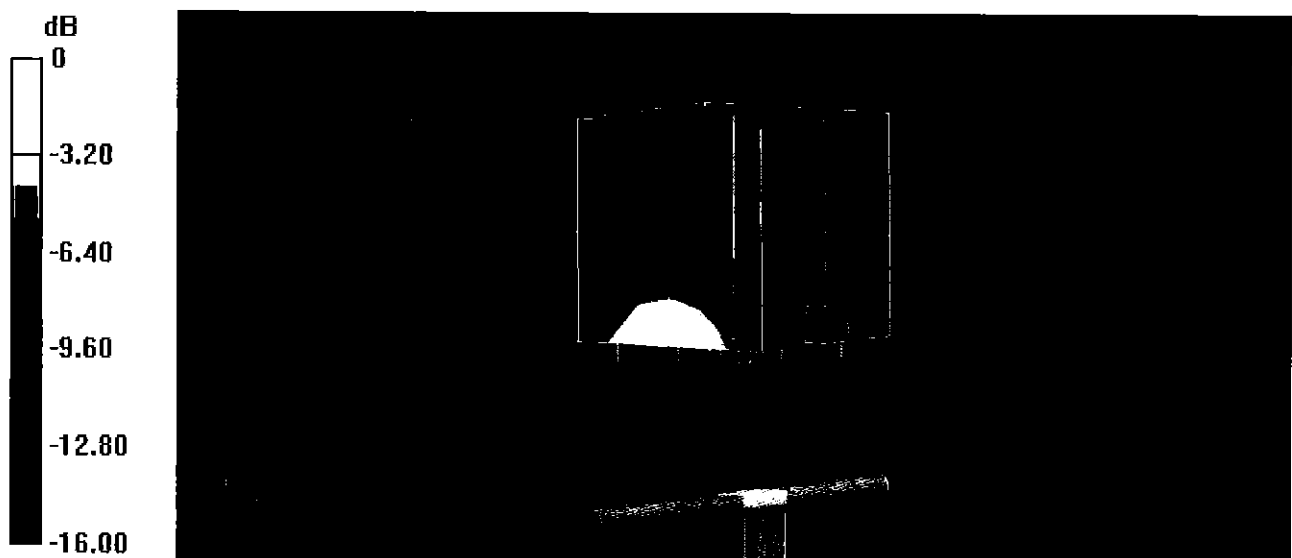
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 95.96 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 17.2 W/kg

SAR(1 g) = 10.2 W/kg; SAR(10 g) = 5.49 W/kg

Maximum value of SAR (measured) = 12.9 W/kg

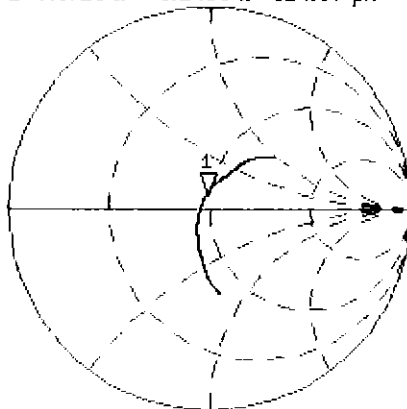


0 dB = 12.9 W/kg = 11.11 dBW/kg

Impedance Measurement Plot for Body TSL

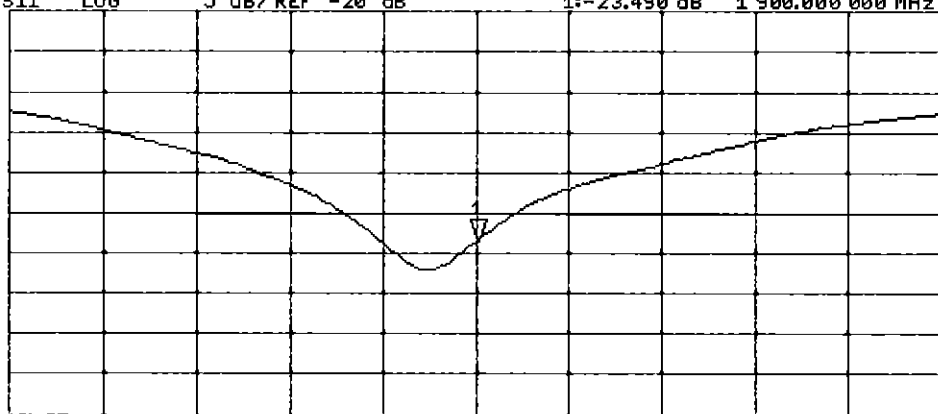
14 Jul 2015 09:20:09
 CH1 S11 1 U FS 1: 47.723 Ω 6.1406 Ω 514.37 μH 1 900.000 000 MHz

*
 Del
 CA
 Avg
 16
 H1d



CH2 S11 LOG 5 dB/REF -20 dB 1:-23.490 dB 1 900.000 000 MHz

Del
 CA
 Avg
 16
 H1d



START 1 700.000 000 MHz

STOP 2 100.000 000 MHz



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Accreditation No.: **SCS 0108**

Client **PC Test**

Certificate No: **D2450V2-719_Aug15**

CALIBRATION CERTIFICATE

Object **D2450V2 - SN: 719**

Calibration procedure(s) **QA CAL-05.v9**
Calibration procedure for dipole validation kits above 700 MHz

Calibration date: **August 20, 2015**

BN ✓
9/3/15

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter EPM-442A	GB37480704	07-Oct-14 (No. 217-02020)	Oct-15
Power sensor HP 8481A	US37292783	07-Oct-14 (No. 217-02020)	Oct-15
Power sensor HP 8481A	MY41092317	07-Oct-14 (No. 217-02021)	Oct-15
Reference 20 dB Attenuator	SN: 5058 (20k)	01-Apr-15 (No. 217-02131)	Mar-16
Type-N mismatch combination	SN: 5047.2 / 06327	01-Apr-15 (No. 217-02134)	Mar-16
Reference Probe ES3DV3	SN: 3205	30-Dec-14 (No. ES3-3205_Dec14)	Dec-15
DAE4	SN: 601	17-Aug-15 (No. DAE4-601_Aug15)	Aug-16
Secondary Standards	ID #	Check Date (in house)	Scheduled Check
RF generator R&S SMT-06	100005	04-Aug-99 (in house check Oct-13)	In house check: Oct-16
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-14)	In house check: Oct-15

Calibrated by: **Name** **Michael Weber** **Function** **Laboratory Technician**

Approved by: **Katja Pokovic** **Technical Manager**

Signature

M. Weber

Katja Pokovic

Issued: August 21, 2015

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Accreditation No.: **SCS 0108**

Glossary:

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

Calibration is Performed According to the Following Standards:

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

Additional Documentation:

- e) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

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

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

Measurement Conditions

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

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

Head TSL parameters

The following parameters and calculations were applied.

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

SAR result with Head TSL

SAR averaged over 1 cm ³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	13.8 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	54.2 W/kg $\pm$ 17.0 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	6.48 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	25.7 W/kg $\pm$ 16.5 % (k=2)

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	52.7	1.95 mho/m
Measured Body TSL parameters	(22.0 $\pm$ 0.2) °C	53.2 $\pm$ 6 %	2.00 mho/m $\pm$ 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm ³ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	13.1 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	51.9 W/kg $\pm$ 17.0 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	6.11 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	24.3 W/kg $\pm$ 16.5 % (k=2)

Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	$54.5 \Omega + 5.3 j\Omega$
Return Loss	- 23.5 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	$50.1 \Omega + 6.5 j\Omega$
Return Loss	- 23.7 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.149 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

Manufactured by	SPEAG
Manufactured on	September 10, 2002

DASY5 Validation Report for Head TSL

Date: 20.08.2015

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN: 719

Communication System: UID 0 - CW; Frequency: 2450 MHz

Medium parameters used: $f = 2450$ MHz; $\sigma = 1.87$ S/m; $\epsilon_r = 39.2$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.54, 4.54, 4.54); Calibrated: 30.12.2014;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 17.08.2015
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

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

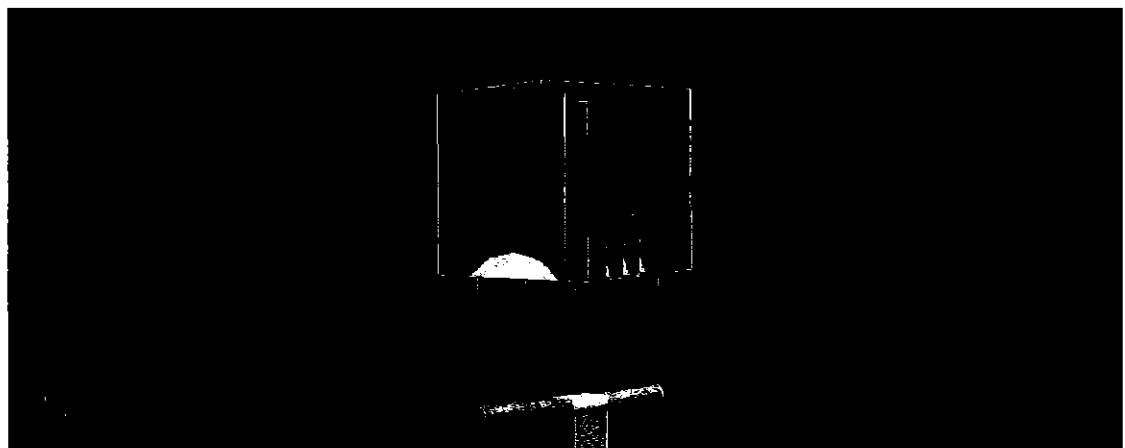
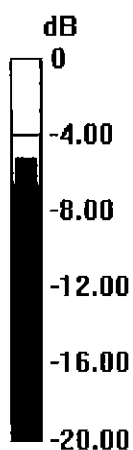
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 102.2 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 28.1 W/kg

SAR(1 g) = 13.8 W/kg; SAR(10 g) = 6.48 W/kg

Maximum value of SAR (measured) = 18.2 W/kg



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

Impedance Measurement Plot for Head TSL

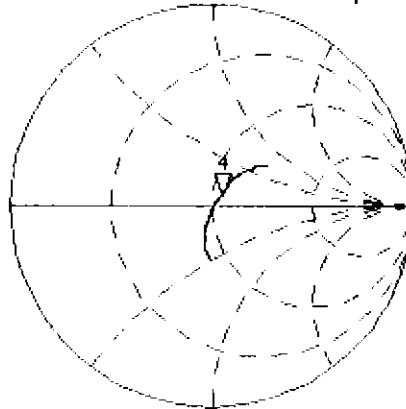
19 Aug 2015 12:34:37
 CH1 S11 1 U FS 4: 54.510 Ω 5.3223 Ω 345.74 μH 2 450.000 000 MHz

*
 Del

CA

Avg
 16

H1d

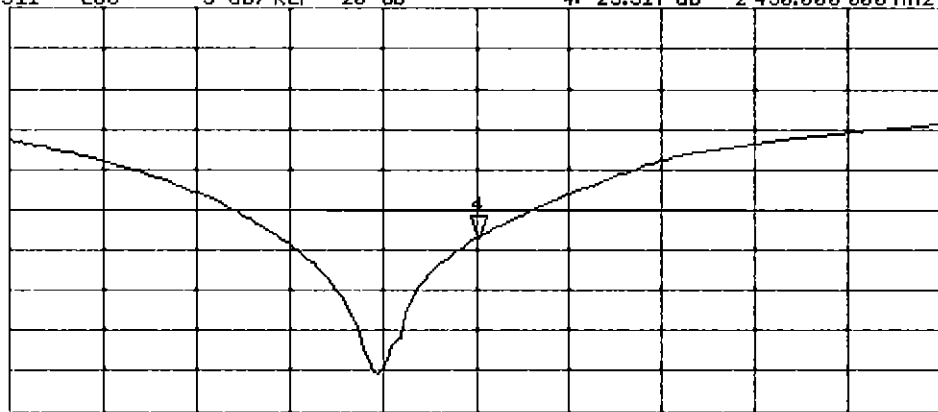


CH2 S11 LOG 5 dB/REF -20 dB 4:-23.517 dB 2 450.000 000 MHz

CA

Avg
 16

H1d



START 2 250.000 000 MHz

STOP 2 650.000 000 MHz

DASY5 Validation Report for Body TSL

Date: 19.08.2015

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN: 719

Communication System: UID 0 - CW; Frequency: 2450 MHz

Medium parameters used: $f = 2450$ MHz; $\sigma = 2$ S/m; $\epsilon_r = 53.2$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.32, 4.32, 4.32); Calibrated: 30.12.2014;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 17.08.2015
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

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

Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 95.73 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 26.9 W/kg

SAR(1 g) = 13.1 W/kg; SAR(10 g) = 6.11 W/kg

Maximum value of SAR (measured) = 17.3 W/kg

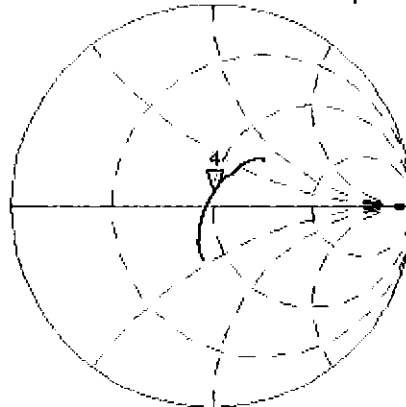


0 dB = 17.3 W/kg = 12.38 dBW/kg

Impedance Measurement Plot for Body TSL

19 Aug 2015 12:33:47
 CH1 S11 1 U FS 4: 50.098 Ω 6.5195 Ω 423.52 μH 2 450.000 000 MHz

*
 De1
 CA



Avg
 16

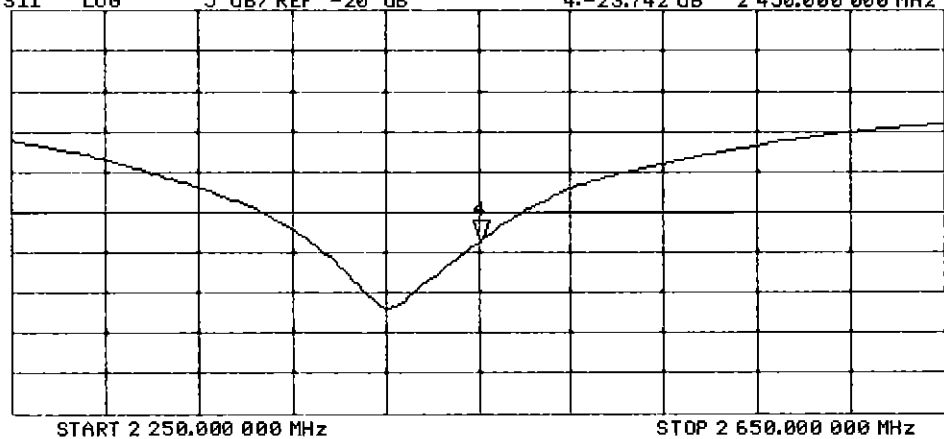
H1d

CH2 S11 LOG 5 dB/REF -20 dB 4:-23.742 dB 2 450.000 000 MHz

CA

Avg
 16

H1d





Accredited by the Swiss Accreditation Service (SAS)
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Accreditation No.: **SCS 0108**

Client **PG Test**

Certificate No: **ES3-3334_Nov15**

CALIBRATION CERTIFICATE

Object **ES3DV3 - SN:3334**

Calibration procedure(s) **QA CAL-01.v9, QA CAL-12.v9, QA CAL-23.v5, QA CAL-25.v6**
Calibration procedure for dosimetric E-field probes

BV ✓
 11/24/15

Calibration date: **November 17, 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	US3739J585	18-Oct-01 (in house check Oct-15)	In house check: Oct-16

	Name	Function	Signature
Calibrated by:	Jeton Kasrati	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	
Issued: November 17, 2015			
This calibration certificate shall not be reproduced except in full without written approval of the laboratory.			



Accredited by the Swiss Accreditation Service (SAS)

Accreditation No.: **SCS 0108**

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:

- 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, "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
- 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 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 ES3DV3

SN:3334

Manufactured: January 24, 2012
Calibrated: November 17, 2015

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

DASY/EASY - Parameters of Probe: ES3DV3 - SN:3334

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu\text{V}/(\text{V}/\text{m})^2$) ^A	1.03	1.03	0.99	$\pm 10.1 \%$
DCP (mV) ^B	107.6	105.3	107.9	

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	192.1	$\pm 2.7 \%$
		Y	0.0	0.0	1.0		183.6	
		Z	0.0	0.0	1.0		183.3	
10010- CAA	SAR Validation (Square, 100ms, 10ms)	X	2.27	60.1	10.2	10.00	38.6	$\pm 1.4 \%$
		Y	1.99	59.3	10.2		38.4	
		Z	5.38	67.8	12.9		37.2	
10011- CAB	UMTS-FDD (WCDMA)	X	3.40	68.0	18.9	2.91	131.7	$\pm 0.5 \%$
		Y	3.27	67.0	18.2		130.2	
		Z	3.41	68.3	19.1		148.5	
10012- CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps)	X	2.93	68.9	18.7	1.87	132.9	$\pm 0.7 \%$
		Y	3.12	69.6	18.8		130.2	
		Z	3.24	71.1	19.7		128.2	
10013- CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps)	X	10.90	70.3	23.0	9.46	133.5	$\pm 3.3 \%$
		Y	10.53	69.0	22.1		124.6	
		Z	11.14	71.2	23.6		147.1	
10021- DAB	GSM-FDD (TDMA, GMSK)	X	15.05	91.0	24.4	9.39	139.5	$\pm 1.9 \%$
		Y	10.11	85.5	23.3		131.9	
		Z	11.84	87.6	23.4		130.0	
10023- DAB	GPRS-FDD (TDMA, GMSK, TN 0)	X	10.42	84.9	22.6	9.57	131.5	$\pm 3.0 \%$
		Y	13.29	89.7	24.6		141.1	
		Z	14.17	90.2	24.2		148.7	
10024- DAB	GPRS-FDD (TDMA, GMSK, TN 0-1)	X	11.26	83.1	19.4	6.56	140.7	$\pm 1.9 \%$
		Y	26.29	95.5	23.8		134.7	
		Z	16.82	88.9	21.3		131.6	
10027- DAB	GPRS-FDD (TDMA, GMSK, TN 0-1-2)	X	64.74	99.9	22.2	4.80	131.5	$\pm 2.2 \%$
		Y	56.71	99.8	22.7		124.7	
		Z	63.10	99.9	22.2		124.1	
10028- DAB	GPRS-FDD (TDMA, GMSK, TN 0-1-2-3)	X	62.11	99.6	21.6	3.55	146.1	$\pm 1.9 \%$
		Y	77.61	99.8	21.2		132.0	
		Z	72.33	99.7	21.2		133.3	
10032- CAA	IEEE 802.15.1 Bluetooth (GFSK, DH5)	X	96.24	92.7	15.9	1.16	137.2	$\pm 1.7 \%$
		Y	95.69	93.1	16.2		129.5	
		Z	98.67	94.1	16.4		149.7	
10100- CAB	LTE-FDD (SC-FDMA, 100% RB, 20 MHz, QPSK)	X	6.14	66.8	19.2	5.67	126.2	$\pm 1.7 \%$
		Y	6.21	66.8	19.1		139.9	
		Z	6.41	67.9	19.9		145.9	

10103-CAB	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, QPSK)	X	10.07	75.4	25.8	9.29	138.2	±2.5 %
		Y	9.54	73.3	24.5		130.5	
		Z	9.84	75.1	25.8		130.6	
10108-CAC	LTE-FDD (SC-FDMA, 100% RB, 10 MHz, QPSK)	X	6.34	67.6	19.8	5.80	149.5	±1.4 %
		Y	6.13	66.6	19.1		132.1	
		Z	6.19	67.2	19.7		137.8	
10117-CAB	IEEE 802.11n (HT Mixed, 13.5 Mbps, BPSK)	X	10.13	68.9	21.2	8.07	138.8	±2.7 %
		Y	10.16	68.9	21.1		149.6	
		Z	9.96	68.7	21.1		127.1	
10151-CAB	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, QPSK)	X	9.42	74.4	25.5	9.28	132.9	±3.0 %
		Y	9.50	74.0	25.0		143.7	
		Z	9.01	73.4	25.0		126.5	
10154-CAC	LTE-FDD (SC-FDMA, 50% RB, 10 MHz, QPSK)	X	6.03	67.1	19.6	5.75	145.5	±1.4 %
		Y	5.81	66.0	18.9		128.9	
		Z	5.91	66.8	19.5		135.1	
10160-CAB	LTE-FDD (SC-FDMA, 50% RB, 15 MHz, QPSK)	X	6.19	66.5	19.2	5.82	126.7	±1.4 %
		Y	6.20	66.4	19.0		132.8	
		Z	6.39	67.5	19.8		141.1	
10169-CAB	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, QPSK)	X	5.05	67.6	20.0	5.73	146.8	±1.4 %
		Y	4.82	66.2	19.2		132.2	
		Z	4.96	67.4	20.0		143.8	
10172-CAB	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK)	X	8.88	79.7	28.3	9.21	147.9	±3.0 %
		Y	8.00	76.1	26.2		138.9	
		Z	8.39	78.5	27.8		141.5	
10175-CAC	LTE-FDD (SC-FDMA, 1 RB, 10 MHz, QPSK)	X	4.99	67.3	19.9	5.72	140.7	±1.2 %
		Y	4.80	66.2	19.1		131.3	
		Z	4.90	67.1	19.8		136.1	
10181-CAB	LTE-FDD (SC-FDMA, 1 RB, 15 MHz, QPSK)	X	4.99	67.3	19.9	5.72	145.4	±1.4 %
		Y	4.81	66.2	19.2		130.9	
		Z	4.89	67.1	19.8		136.0	
10196-CAB	IEEE 802.11n (HT Mixed, 6.5 Mbps, BPSK)	X	9.78	68.8	21.3	8.10	131.0	±2.5 %
		Y	9.73	68.4	21.0		140.7	
		Z	9.94	69.4	21.6		146.6	
10225-CAB	UMTS-FDD (HSPA+)	X	6.88	66.9	19.3	5.97	133.9	±1.7 %
		Y	6.96	67.1	19.3		144.8	
		Z	6.71	66.6	19.2		125.7	
10237-CAB	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, QPSK)	X	9.00	80.2	28.5	9.21	148.2	±3.0 %
		Y	7.73	75.1	25.7		131.6	
		Z	8.27	78.2	27.7		136.1	
10252-CAB	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, QPSK)	X	9.59	76.3	26.7	9.24	144.1	±2.7 %
		Y	8.74	72.9	24.5		133.4	
		Z	9.14	75.2	26.1		136.9	
10267-CAB	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, QPSK)	X	9.25	73.9	25.3	9.30	124.8	±3.0 %
		Y	9.40	73.7	24.9		142.1	
		Z	9.86	76.1	26.5		145.3	

10275-CAB	UMTS-FDD (HSUPA, Subtest 5, 3GPP Rel8.4)	X	4.38	66.9	18.7	3.96	133.3	±0.9 %
		Y	4.44	66.9	18.6		148.2	
		Z	4.30	66.7	18.6		128.9	
10291-AAB	CDMA2000, RC3, SQ55, Full Rate	X	3.68	67.3	18.7	3.46	145.8	±0.7 %
		Y	3.58	66.6	18.2		136.3	
		Z	3.62	67.3	18.8		139.4	
10292-AAB	CDMA2000, RC3, SQ32, Full Rate	X	3.73	68.0	19.1	3.39	147.5	±0.7 %
		Y	3.55	66.7	18.3		138.5	
		Z	3.60	67.6	18.9		143.0	
10297-AAA	LTE-FDD (SC-FDMA, 50% RB, 20 MHz, QPSK)	X	6.30	67.4	19.7	5.81	141.4	±1.2 %
		Y	6.11	66.5	19.1		130.3	
		Z	6.17	67.0	19.5		136.8	
10311-AAA	LTE-FDD (SC-FDMA, 100% RB, 15 MHz, QPSK)	X	6.88	68.0	20.1	6.06	147.0	±1.7 %
		Y	6.68	67.1	19.5		136.0	
		Z	6.75	67.7	20.0		141.6	
10400-AAC	IEEE 802.11ac WiFi (20MHz, 64-QAM, 99pc duty cycle)	X	9.97	68.8	21.4	8.37	126.9	±2.7 %
		Y	10.07	68.9	21.4		143.6	
		Z	10.21	69.7	22.0		147.4	
10403-AAB	CDMA2000 (1xEV-DO, Rev. 0)	X	4.77	68.5	18.8	3.76	134.9	±0.5 %
		Y	4.69	68.1	18.5		126.7	
		Z	4.74	68.8	18.9		129.4	
10404-AAB	CDMA2000 (1xEV-DO, Rev. A)	X	4.72	68.7	18.8	3.77	132.9	±0.7 %
		Y	4.78	68.9	18.9		147.4	
		Z	4.63	68.7	18.9		127.1	
10415-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps, 99pc duty cycle)	X	2.72	68.9	18.8	1.54	131.9	±0.5 %
		Y	2.65	68.0	18.1		145.9	
		Z	2.72	69.3	19.0		127.3	
10416-AAA	IEEE 802.11g WiFi 2.4 GHz (ERP-OFDM, 6 Mbps, 99pc duty cycle)	X	9.81	68.6	21.2	8.23	131.6	±2.7 %
		Y	9.90	68.7	21.2		144.1	
		Z	9.97	69.3	21.7		146.0	

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 7 and 8).

^B Numerical linearization parameter: uncertainty not required.

^C 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: ES3DV3 - SN:3334

Calibration Parameter Determined in Head Tissue Simulating Media

f (MHz) ^c	Relative Permittivity ^e	Conductivity (S/m) ^e	ConvF X	ConvF Y	ConvF Z	Alpha ^g	Depth (mm) ^c	Unc (k=2)
6	55.5	0.75	6.13	6.13	6.13	0.00	1.00	± 13.3 %
13	55.5	0.75	5.76	5.76	5.76	0.00	1.00	± 13.3 %
750	41.9	0.89	6.56	6.56	6.56	0.24	2.36	± 12.0 %
835	41.5	0.90	6.37	6.37	6.37	0.37	1.70	± 12.0 %
1750	40.1	1.37	5.39	5.39	5.39	0.58	1.32	± 12.0 %
1900	40.0	1.40	5.18	5.18	5.18	0.77	1.20	± 12.0 %
2300	39.5	1.67	4.85	4.85	4.85	0.71	1.28	± 12.0 %
2450	39.2	1.80	4.58	4.58	4.58	0.79	1.17	± 12.0 %
2600	39.0	1.96	4.46	4.46	4.46	0.80	1.26	± 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.

^e 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: ES3DV3 - SN:3334

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	6.37	6.37	6.37	0.74	1.22	± 12.0 %
835	55.2	0.97	6.24	6.24	6.24	0.31	1.94	± 12.0 %
1750	53.4	1.49	5.03	5.03	5.03	0.50	1.57	± 12.0 %
1900	53.3	1.52	4.84	4.84	4.84	0.50	1.58	± 12.0 %
2300	52.9	1.81	4.61	4.61	4.61	0.74	1.23	± 12.0 %
2450	52.7	1.95	4.45	4.45	4.45	0.74	1.20	± 12.0 %
2600	52.5	2.16	4.29	4.29	4.29	0.80	1.20	± 12.0 %

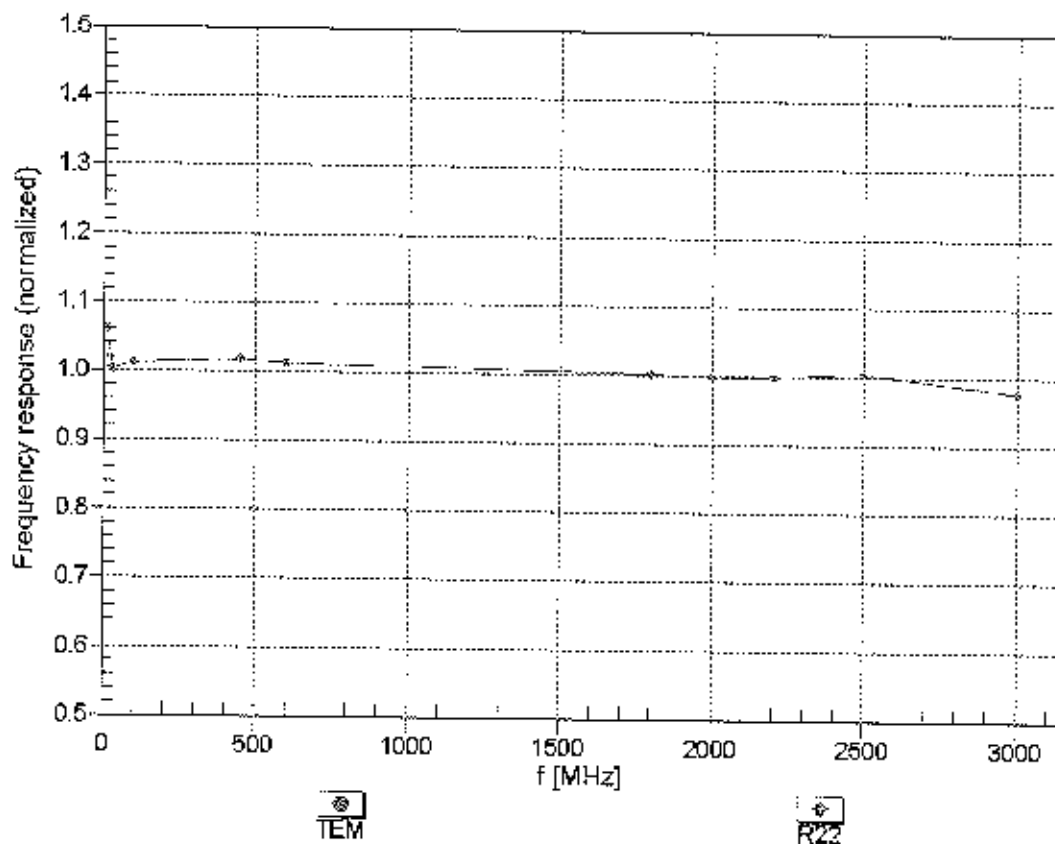
^c Frequency validity above 300 MHz of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is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

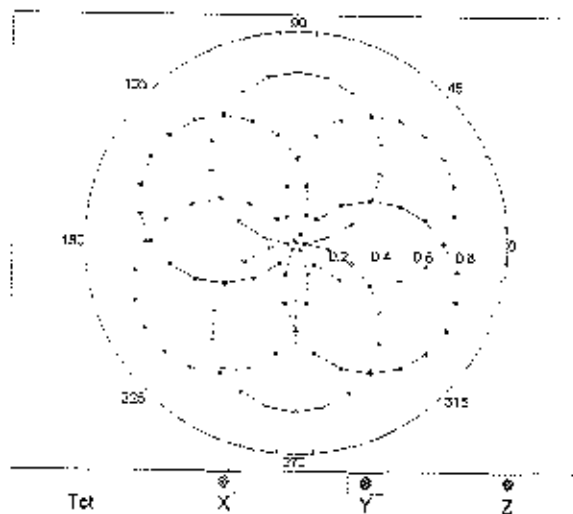
(TEM-Cell: ifi110 EXX, Waveguide: R22)



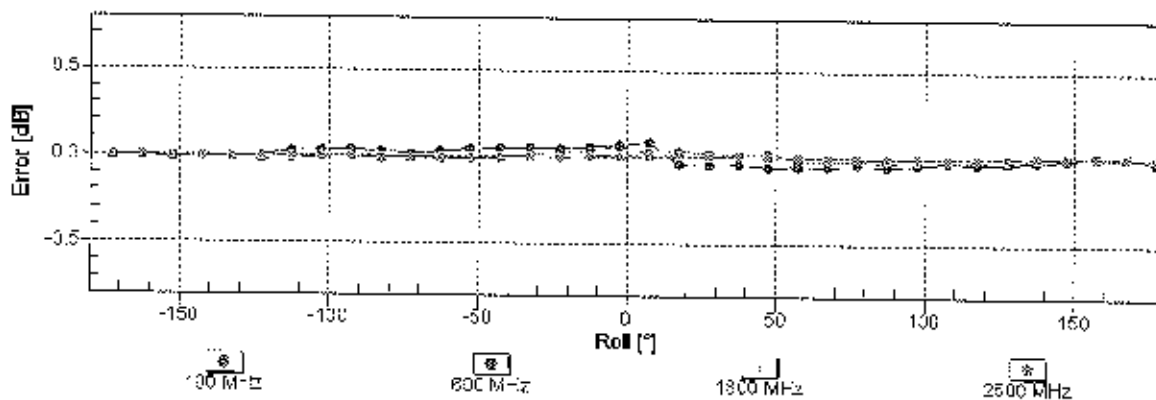
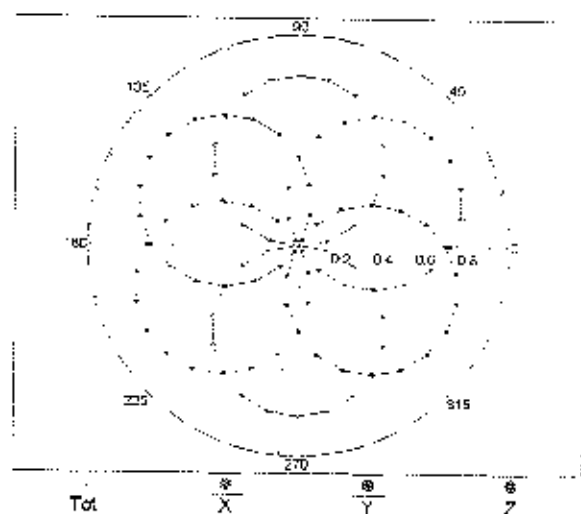
Uncertainty of Frequency Response of E-field: $\pm 6.3\%$ ($k=2$)

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

f=600 MHz,TEM

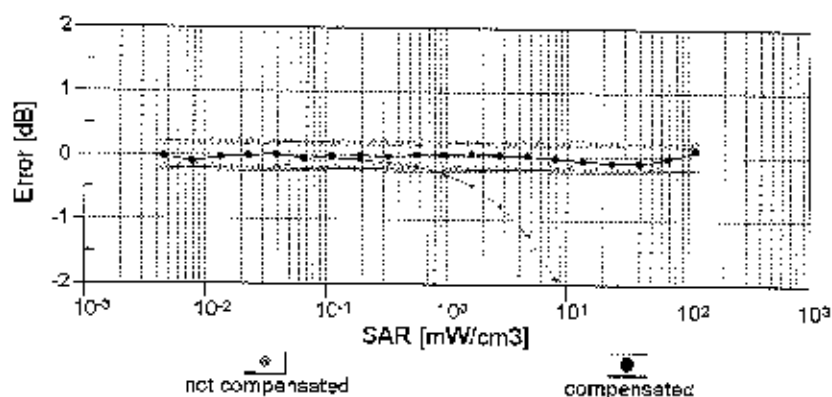
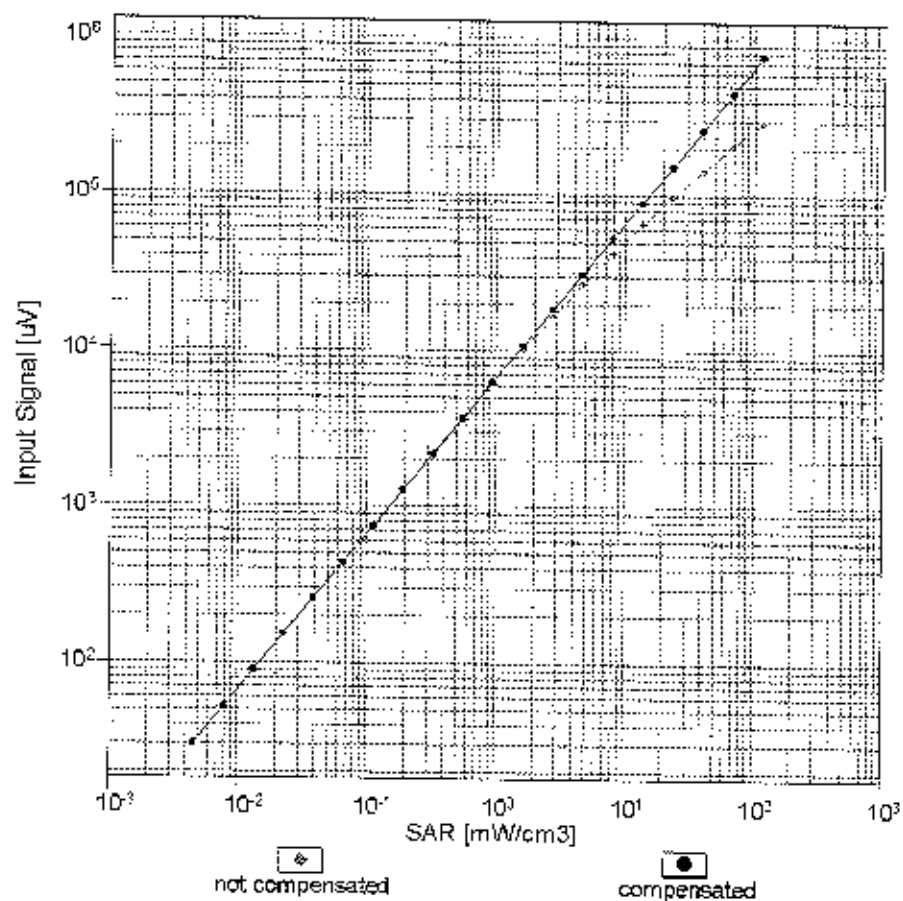


f=1800 MHz,R22



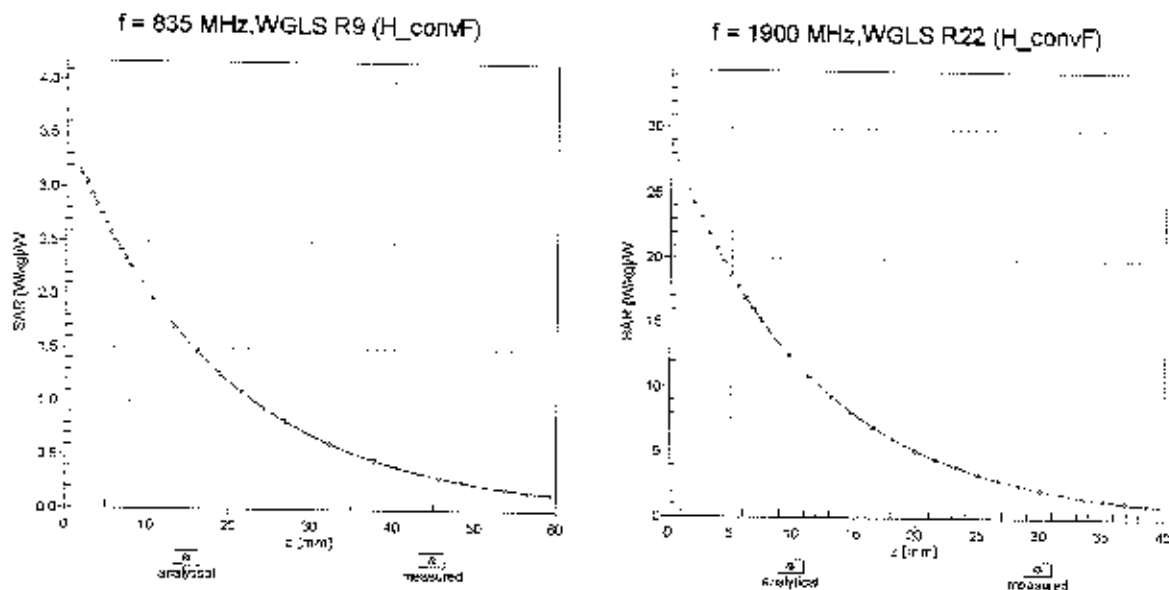
Uncertainty of Axial Isotropy Assessment: $\pm 0.5\%$ ($k=2$)

Dynamic Range $f(\text{SAR}_{\text{head}})$ (TEM cell, $f_{\text{eval}} = 1900 \text{ MHz}$)



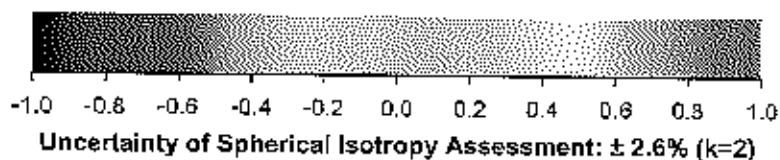
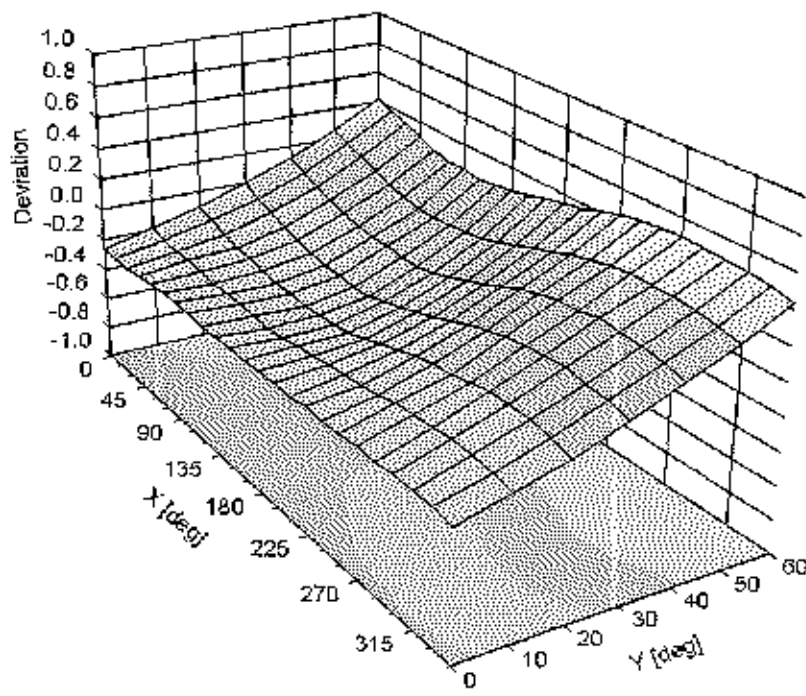
Uncertainty of Linearity Assessment: $\pm 0.6\%$ ($k=2$)

Conversion Factor Assessment



Deviation from Isotropy in Liquid

Error (ϕ, θ), $f = 900 \text{ MHz}$



DASY/EASY - Parameters of Probe: ES3DV3 - SN:3334

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	17.4
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



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 **PC Test**

Certificate No: **ES3-3334_Nov16**

CALIBRATION CERTIFICATE

Object **ES3DV3 - SN:3334**

Calibration procedure(s) **QA CAL-01.v9, QA CAL-12.v9, QA CAL-23.v5, QA CAL-25.v6**
Calibration procedure for dosimetric E-field probes

BNV
11-21-2016

Calibration date: **November 15, 2016**

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 NRP	SN: 104778	06-Apr-16 (No. 217-02288/02289)	Apr-17
Power sensor NRP-Z91	SN: 103244	06-Apr-16 (No. 217-02288)	Apr-17
Power sensor NRP-Z91	SN: 103245	06-Apr-16 (No. 217-02289)	Apr-17
Reference 20 dB Attenuator	SN: S5277 (20x)	05-Apr-16 (No. 217-02293)	Apr-17
Reference Probe ES3DV2	SN: 3013	31-Dec-15 (No. ES3-3013_Dec15)	Dec-16
DAE4	SN: 660	23-Dec-15 (No. DAE4-660_Dec15)	Dec-16
Secondary Standards	ID	Check Date (in house)	Scheduled Check
Power meter E4419B	SN: GB41293874	06-Apr-16 (in house check Jun-16)	In house check: Jun-18
Power sensor E4412A	SN: MY41498087	06-Apr-16 (in house check Jun-16)	In house check: Jun-18
Power sensor E4412A	SN: 000110210	06-Apr-16 (in house check Jun-16)	In house check: Jun-18
RF generator HP 8648C	SN: US3642U01700	04-Aug-99 (in house check Jun-16)	In house check: Jun-18
Network Analyzer HP 8753E	SN: US37390585	18-Oct-01 (in house check Oct-16)	In house check: Oct-17

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

Issued: November 15, 2016

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



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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:

- 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, "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
- 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 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 ES3DV3

SN:3334

Manufactured: January 24, 2012
Calibrated: November 15, 2016

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

DASY/EASY - Parameters of Probe: ES3DV3 - SN:3334

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu V/(V/m)^2$) ^A	1.01	1.01	0.97	± 10.1 %
DCP (mV) ^B	104.9	104.3	106.9	

Modulation Calibration Parameters

UID	Communication System Name		A dB	B dB $\sqrt{\mu V}$	C	D dB	VR mV	Unc ^E (k=2)
0	CW	X	0.0	0.0	1.0	0.00	187.7	±3.3 %
		Y	0.0	0.0	1.0		186.1	
		Z	0.0	0.0	1.0		182.2	

Note: For details on UID parameters see Appendix.

Sensor Model Parameters

	C1 fF	C2 fF	α V ⁻¹	T1 ms.V ⁻²	T2 ms.V ⁻¹	T3 ms	T4 V ⁻²	T5 V ⁻¹	T6
X	70.73	504.3	35.08	31.68	3.658	5.1	1.261	0.548	1.013
Y	65.12	464.8	35.12	29.88	3.928	5.1	1.127	0.529	1.01
Z	65.17	461.4	34.69	29.79	3.402	5.1	0.804	0.54	1.01

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 E²-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: ES3DV3 - SN:3334

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)
6	55.5	0.75	6.51	6.51	6.51	0.05	1.10	± 13.3 %
13	55.5	0.75	6.87	6.87	6.87	0.05	1.20	± 13.3 %
750	41.9	0.89	6.76	6.76	6.76	0.40	1.68	± 12.0 %
835	41.5	0.90	6.49	6.49	6.49	0.41	1.68	± 12.0 %
1750	40.1	1.37	5.45	5.45	5.45	0.51	1.46	± 12.0 %
1900	40.0	1.40	5.27	5.27	5.27	0.52	1.49	± 12.0 %
2300	39.5	1.67	4.92	4.92	4.92	0.69	1.31	± 12.0 %
2450	39.2	1.80	4.73	4.73	4.73	0.77	1.27	± 12.0 %
2600	39.0	1.96	4.51	4.51	4.51	0.80	1.27	± 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. Validity of ConvF assessed at 6 MHz is 4-9 MHz, and ConvF assessed at 13 MHz is 9-19 MHz. 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: ES3DV3 - SN:3334

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	6.33	6.33	6.33	0.45	1.54	± 12.0 %
835	55.2	0.97	6.31	6.31	6.31	0.74	1.21	± 12.0 %
1750	53.4	1.49	5.12	5.12	5.12	0.52	1.50	± 12.0 %
1900	53.3	1.52	4.91	4.91	4.91	0.41	1.81	± 12.0 %
2300	52.9	1.81	4.68	4.68	4.68	0.80	1.21	± 12.0 %
2450	52.7	1.95	4.52	4.52	4.52	0.79	1.20	± 12.0 %
2600	52.5	2.16	4.42	4.42	4.42	0.80	1.18	± 12.0 %

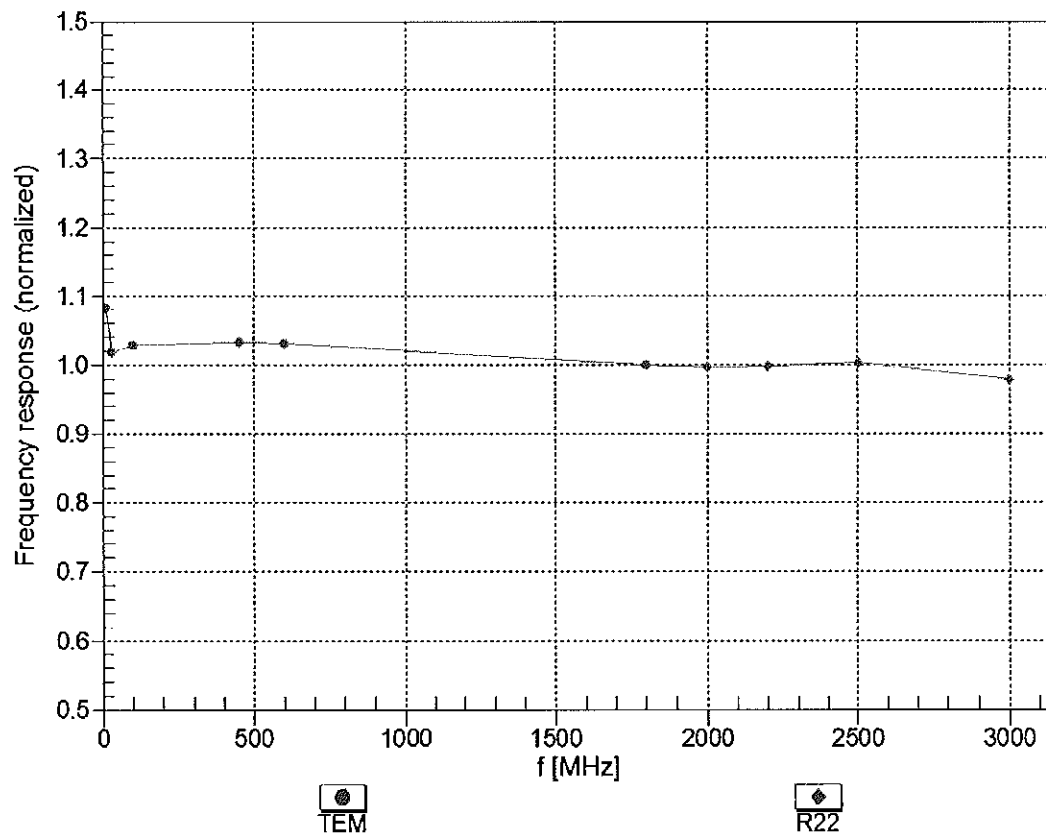
^C Frequency validity above 300 MHz of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is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

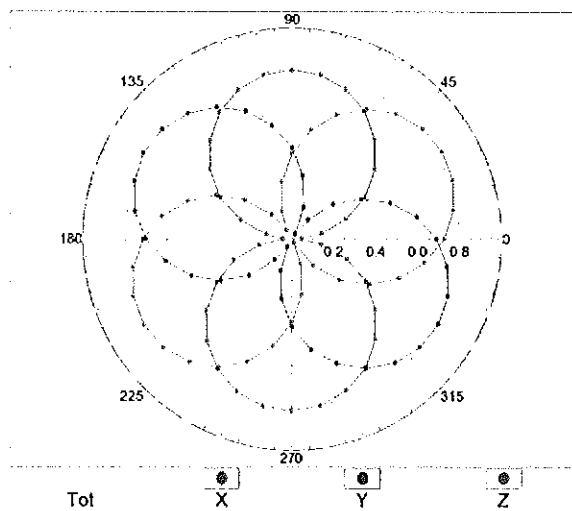
(TEM-Cell:ifi110 EXX, Waveguide: R22)



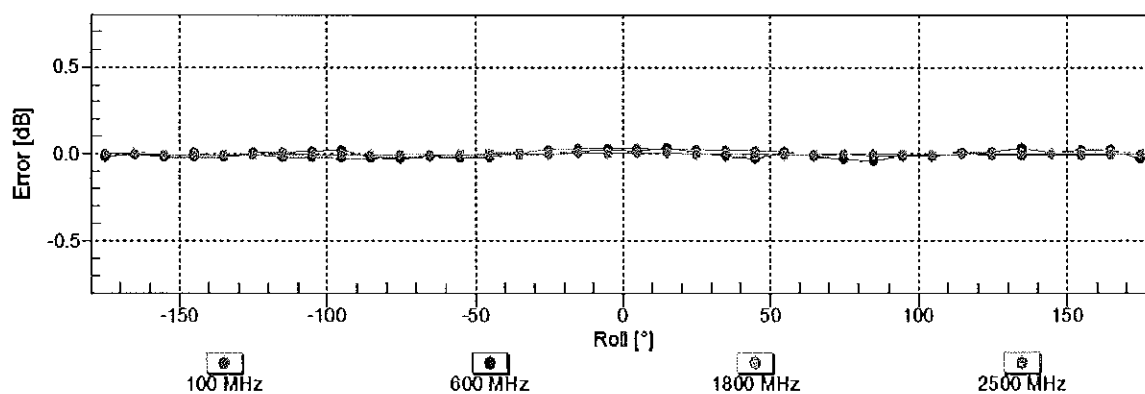
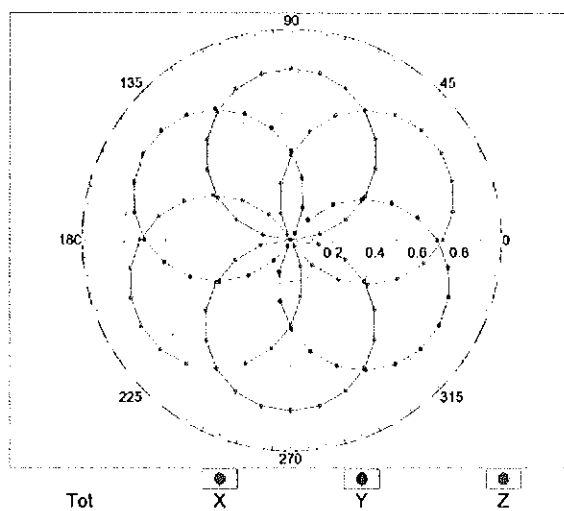
Uncertainty of Frequency Response of E-field: $\pm 6.3\%$ ($k=2$)

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

f=600 MHz,TEM

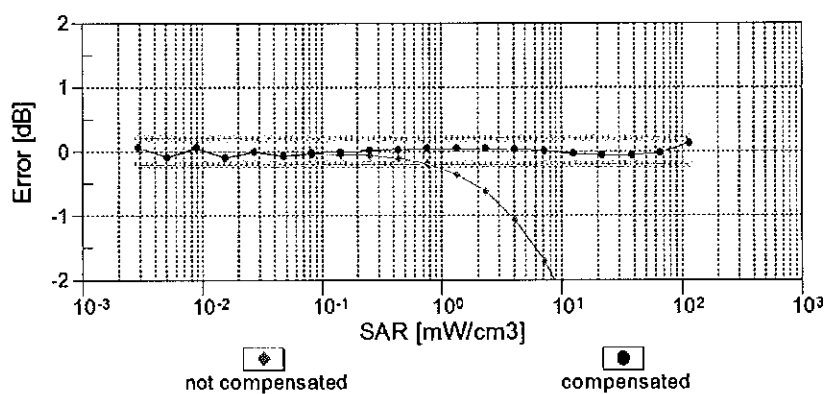
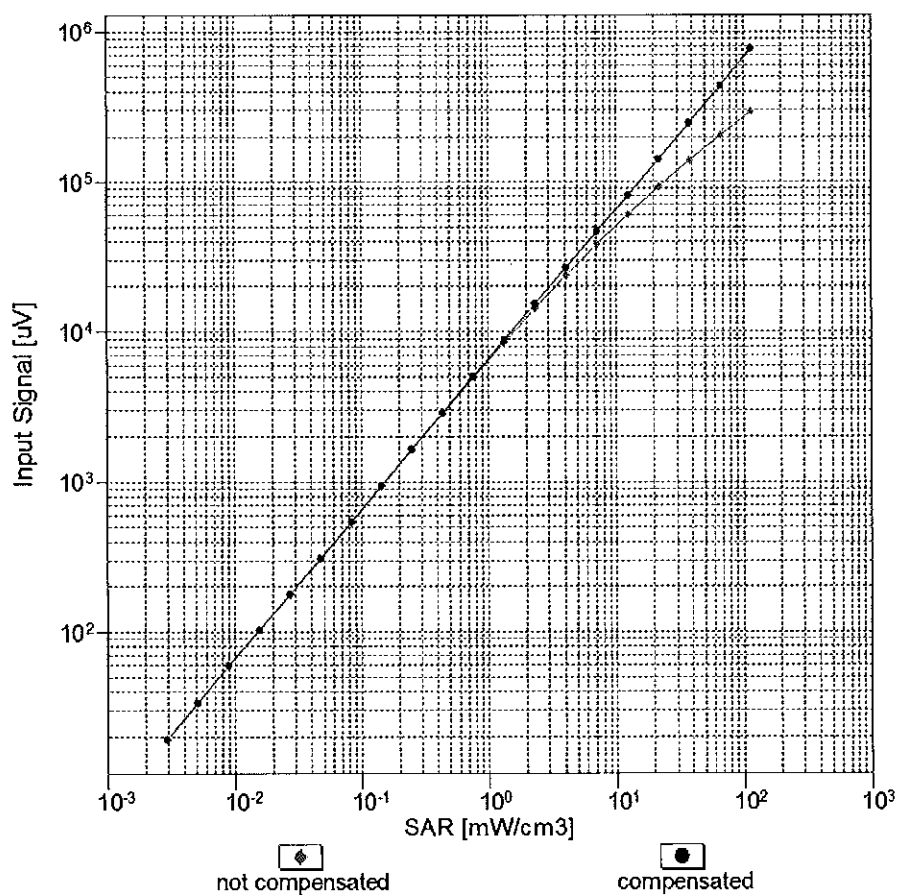


f=1800 MHz,R22



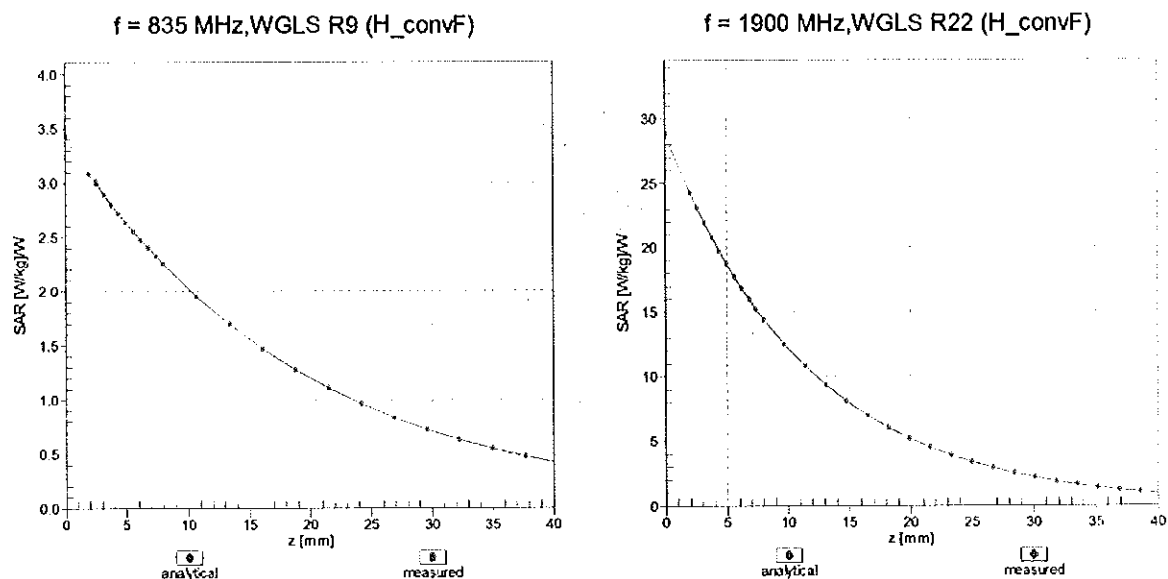
Uncertainty of Axial Isotropy Assessment: $\pm 0.5\%$ ($k=2$)

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



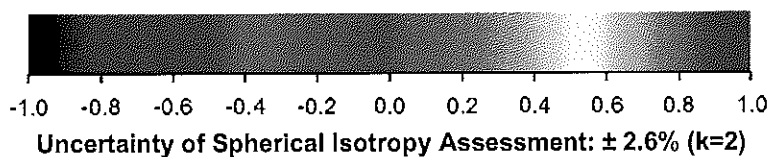
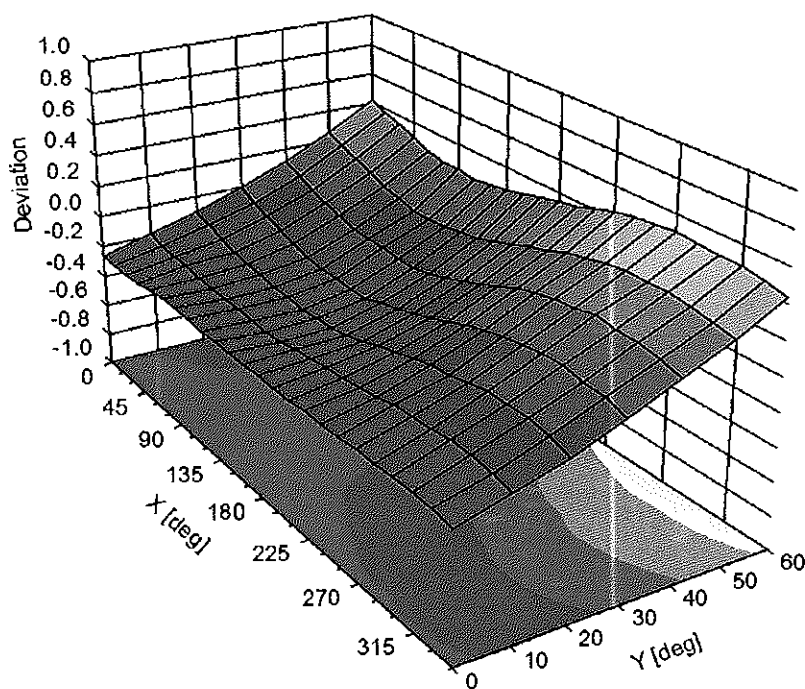
Uncertainty of Linearity Assessment: $\pm 0.6\%$ (k=2)

Conversion Factor Assessment



Deviation from Isotropy in Liquid

Error (ϕ, ϑ), $f = 900 \text{ MHz}$



DASY/EASY - Parameters of Probe: ES3DV3 - SN:3334

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	14.8
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

Appendix: Modulation Calibration Parameters

UID	Communication System Name		A dB	B dB μ V	C	D dB	VR mV	Max Unc ^E (k=2)
0	CW	X	0.00	0.00	1.00	0.00	187.7	$\pm 3.3 \%$
		Y	0.00	0.00	1.00		186.1	
		Z	0.00	0.00	1.00		182.2	
10010- CAA	SAR Validation (Square, 100ms, 10ms)	X	8.77	79.31	19.59	10.00	25.0	$\pm 9.6 \%$
		Y	9.54	81.15	20.73		25.0	
		Z	9.84	81.78	20.60		25.0	
10011- CAB	UMTS-FDD (WCDMA)	X	1.16	69.33	16.31	0.00	150.0	$\pm 9.6 \%$
		Y	1.10	67.90	15.63		150.0	
		Z	1.22	70.12	16.93		150.0	
10012- CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps)	X	1.34	65.77	16.28	0.41	150.0	$\pm 9.6 \%$
		Y	1.35	65.28	15.96		150.0	
		Z	1.37	65.99	16.52		150.0	
10013- CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps)	X	5.24	67.29	17.48	1.46	150.0	$\pm 9.6 \%$
		Y	5.25	67.32	17.47		150.0	
		Z	5.24	67.39	17.55		150.0	
10021- DAB	GSM-FDD (TDMA, GMSK)	X	14.04	88.44	24.56	9.39	50.0	$\pm 9.6 \%$
		Y	15.09	90.46	25.72		50.0	
		Z	17.26	92.82	26.12		50.0	
10023- DAB	GPRS-FDD (TDMA, GMSK, TN 0)	X	13.38	87.46	24.27	9.57	50.0	$\pm 9.6 \%$
		Y	14.20	89.20	25.34		50.0	
		Z	16.01	91.37	25.70		50.0	
10024- DAB	GPRS-FDD (TDMA, GMSK, TN 0-1)	X	38.05	104.88	27.91	6.56	60.0	$\pm 9.6 \%$
		Y	46.94	109.69	29.75		60.0	
		Z	100.00	120.75	32.11		60.0	
10025- DAB	EDGE-FDD (TDMA, 8PSK, TN 0)	X	17.81	101.01	37.92	12.57	50.0	$\pm 9.6 \%$
		Y	13.12	91.27	33.89		50.0	
		Z	16.92	100.44	37.93		50.0	
10026- DAB	EDGE-FDD (TDMA, 8PSK, TN 0-1)	X	17.77	98.41	33.58	9.56	60.0	$\pm 9.6 \%$
		Y	14.79	93.85	31.99		60.0	
		Z	18.16	99.88	34.34		60.0	
10027- DAB	GPRS-FDD (TDMA, GMSK, TN 0-1-2)	X	100.00	118.25	29.99	4.80	80.0	$\pm 9.6 \%$
		Y	100.00	120.44	31.14		80.0	
		Z	100.00	119.61	30.56		80.0	
10028- DAB	GPRS-FDD (TDMA, GMSK, TN 0-1-2-3)	X	100.00	117.97	28.98	3.55	100.0	$\pm 9.6 \%$
		Y	100.00	120.46	30.24		100.0	
		Z	100.00	119.89	29.81		100.0	
10029- DAB	EDGE-FDD (TDMA, 8PSK, TN 0-1-2)	X	13.52	92.94	30.62	7.80	80.0	$\pm 9.6 \%$
		Y	11.42	89.03	29.23		80.0	
		Z	13.37	93.50	31.06		80.0	
10030- CAA	IEEE 802.15.1 Bluetooth (GFSK, DH1)	X	100.00	118.21	30.35	5.30	70.0	$\pm 9.6 \%$
		Y	100.00	120.20	31.41		70.0	
		Z	100.00	119.30	30.79		70.0	
10031- CAA	IEEE 802.15.1 Bluetooth (GFSK, DH3)	X	100.00	118.75	27.66	1.88	100.0	$\pm 9.6 \%$
		Y	100.00	121.92	29.18		100.0	
		Z	100.00	122.14	29.14		100.0	

10032-CAA	IEEE 802.15.1 Bluetooth (GFSK, DH5)	X	100.00	122.24	27.95	1.17	100.0	± 9.6 %
		Y	100.00	126.42	29.90		100.0	
		Z	100.00	128.02	30.44		100.0	
10033-CAA	IEEE 802.15.1 Bluetooth (PI/4-DQPSK, DH1)	X	14.25	92.44	25.75	5.30	70.0	± 9.6 %
		Y	12.48	90.39	25.26		70.0	
		Z	16.14	95.22	26.75		70.0	
10034-CAA	IEEE 802.15.1 Bluetooth (PI/4-DQPSK, DH3)	X	8.01	88.33	23.06	1.88	100.0	± 9.6 %
		Y	6.72	85.60	22.20		100.0	
		Z	9.24	90.99	24.02		100.0	
10035-CAA	IEEE 802.15.1 Bluetooth (PI/4-DQPSK, DH5)	X	4.78	82.59	20.90	1.17	100.0	± 9.6 %
		Y	4.12	80.18	20.04		100.0	
		Z	5.37	84.73	21.75		100.0	
10036-CAA	IEEE 802.15.1 Bluetooth (8-DPSK, DH1)	X	16.24	94.81	26.57	5.30	70.0	± 9.6 %
		Y	14.09	92.64	26.06		70.0	
		Z	18.84	98.03	27.68		70.0	
10037-CAA	IEEE 802.15.1 Bluetooth (8-DPSK, DH3)	X	7.84	88.03	22.91	1.88	100.0	± 9.6 %
		Y	6.49	85.11	21.99		100.0	
		Z	8.95	90.55	23.84		100.0	
10038-CAA	IEEE 802.15.1 Bluetooth (8-DPSK, DH5)	X	5.00	83.47	21.28	1.17	100.0	± 9.6 %
		Y	4.25	80.87	20.36		100.0	
		Z	5.60	85.62	22.13		100.0	
10039-CAB	CDMA2000 (1xRTT, RC1)	X	2.21	73.71	17.42	0.00	150.0	± 9.6 %
		Y	2.07	72.72	16.90		150.0	
		Z	2.43	75.47	18.19		150.0	
10042-CAB	IS-54 / IS-136 FDD (TDMA/FDM, PI/4-DQPSK, Halfrate)	X	21.10	94.61	24.99	7.78	50.0	± 9.6 %
		Y	25.53	98.75	26.74		50.0	
		Z	36.08	103.76	27.77		50.0	
10044-CAA	IS-91/EIA/TIA-553 FDD (FDMA, FM)	X	0.00	112.80	5.71	0.00	150.0	± 9.6 %
		Y	0.00	96.18	0.45		150.0	
		Z	0.00	107.58	0.68		150.0	
10048-CAA	DECT (TDD, TDMA/FDM, GFSK, Full Slot, 24)	X	10.49	80.43	23.52	13.80	25.0	± 9.6 %
		Y	10.81	81.22	24.23		25.0	
		Z	11.11	82.26	24.27		25.0	
10049-CAA	DECT (TDD, TDMA/FDM, GFSK, Double Slot, 12)	X	11.49	83.98	23.46	10.79	40.0	± 9.6 %
		Y	11.98	85.23	24.35		40.0	
		Z	12.68	86.48	24.43		40.0	
10056-CAA	UMTS-TDD (TD-SCDMA, 1.28 Mcps)	X	11.65	84.59	23.99	9.03	50.0	± 9.6 %
		Y	11.36	84.29	24.10		50.0	
		Z	12.41	86.38	24.72		50.0	
10058-DAB	EDGE-FDD (TDMA, 8PSK, TN 0-1-2-3)	X	10.62	88.69	28.41	6.55	100.0	± 9.6 %
		Y	9.13	85.32	27.18		100.0	
		Z	10.28	88.69	28.63		100.0	
10059-CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 2 Mbps)	X	1.56	68.30	17.46	0.61	110.0	± 9.6 %
		Y	1.54	67.48	17.02		110.0	
		Z	1.58	68.47	17.70		110.0	
10060-CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 5.5 Mbps)	X	100.00	129.94	33.28	1.30	110.0	± 9.6 %
		Y	82.67	128.45	33.38		110.0	
		Z	100.00	132.52	34.47		110.0	

10061-CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 11 Mbps)	X	12.22	98.02	27.41	2.04	110.0	± 9.6 %
		Y	8.15	91.42	25.55		110.0	
		Z	12.67	99.62	28.21		110.0	
10062-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps)	X	4.95	67.04	16.77	0.49	100.0	± 9.6 %
		Y	4.95	67.04	16.75		100.0	
		Z	4.95	67.16	16.84		100.0	
10063-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 9 Mbps)	X	5.00	67.22	16.92	0.72	100.0	± 9.6 %
		Y	5.00	67.22	16.90		100.0	
		Z	5.00	67.33	16.99		100.0	
10064-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 12 Mbps)	X	5.37	67.60	17.20	0.86	100.0	± 9.6 %
		Y	5.35	67.58	17.17		100.0	
		Z	5.35	67.68	17.26		100.0	
10065-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 18 Mbps)	X	5.27	67.66	17.37	1.21	100.0	± 9.6 %
		Y	5.27	67.65	17.35		100.0	
		Z	5.25	67.74	17.44		100.0	
10066-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 24 Mbps)	X	5.34	67.81	17.61	1.46	100.0	± 9.6 %
		Y	5.33	67.80	17.59		100.0	
		Z	5.32	67.89	17.67		100.0	
10067-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 36 Mbps)	X	5.67	67.95	18.07	2.04	100.0	± 9.6 %
		Y	5.66	67.95	18.04		100.0	
		Z	5.64	68.02	18.12		100.0	
10068-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 48 Mbps)	X	5.84	68.42	18.48	2.55	100.0	± 9.6 %
		Y	5.84	68.39	18.44		100.0	
		Z	5.80	68.45	18.52		100.0	
10069-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 54 Mbps)	X	5.91	68.29	18.64	2.67	100.0	± 9.6 %
		Y	5.91	68.28	18.60		100.0	
		Z	5.88	68.35	18.68		100.0	
10071-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 9 Mbps)	X	5.40	67.57	17.88	1.99	100.0	± 9.6 %
		Y	5.42	67.58	17.87		100.0	
		Z	5.39	67.65	17.94		100.0	
10072-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 12 Mbps)	X	5.50	68.20	18.23	2.30	100.0	± 9.6 %
		Y	5.51	68.20	18.21		100.0	
		Z	5.48	68.27	18.29		100.0	
10073-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 18 Mbps)	X	5.66	68.60	18.67	2.83	100.0	± 9.6 %
		Y	5.67	68.59	18.64		100.0	
		Z	5.63	68.66	18.73		100.0	
10074-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 24 Mbps)	X	5.71	68.74	18.97	3.30	100.0	± 9.6 %
		Y	5.72	68.71	18.92		100.0	
		Z	5.68	68.77	19.01		100.0	
10075-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 36 Mbps)	X	5.92	69.39	19.54	3.82	90.0	± 9.6 %
		Y	5.92	69.30	19.46		90.0	
		Z	5.87	69.36	19.56		90.0	
10076-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 48 Mbps)	X	5.92	69.17	19.65	4.15	90.0	± 9.6 %
		Y	5.94	69.10	19.58		90.0	
		Z	5.88	69.15	19.67		90.0	
10077-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 54 Mbps)	X	5.96	69.26	19.75	4.30	90.0	± 9.6 %
		Y	5.98	69.19	19.68		90.0	
		Z	5.92	69.25	19.77		90.0	

10081-CAB	CDMA2000 (1xRTT, RC3)	X	1.06	68.38	14.68	0.00	150.0	± 9.6 %
		Y	1.00	67.23	14.06		150.0	
		Z	1.15	69.61	15.40		150.0	
10082-CAB	IS-54 / IS-136 FDD (TDMA/FDM, PI/4-DQPSK, Fullrate)	X	2.58	65.03	9.90	4.77	80.0	± 9.6 %
		Y	2.69	65.68	10.51		80.0	
		Z	2.57	65.43	10.13		80.0	
10090-DAB	GPRS-FDD (TDMA, GMSK, TN 0-4)	X	36.90	104.46	27.83	6.56	60.0	± 9.6 %
		Y	45.21	109.15	29.65		60.0	
		Z	94.87	120.02	31.97		60.0	
10097-CAB	UMTS-FDD (HSDPA)	X	1.90	68.06	16.14	0.00	150.0	± 9.6 %
		Y	1.89	67.63	15.88		150.0	
		Z	1.96	68.55	16.47		150.0	
10098-CAB	UMTS-FDD (HSUPA, Subtest 2)	X	1.86	68.04	16.12	0.00	150.0	± 9.6 %
		Y	1.85	67.59	15.85		150.0	
		Z	1.92	68.55	16.45		150.0	
10099-DAB	EDGE-FDD (TDMA, 8PSK, TN 0-4)	X	17.69	98.25	33.53	9.56	60.0	± 9.6 %
		Y	14.75	93.74	31.95		60.0	
		Z	18.07	99.72	34.29		60.0	
10100-CAB	LTE-FDD (SC-FDMA, 100% RB, 20 MHz, QPSK)	X	3.44	71.50	17.09	0.00	150.0	± 9.6 %
		Y	3.34	70.90	16.87		150.0	
		Z	3.49	71.85	17.37		150.0	
10101-CAB	LTE-FDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM)	X	3.45	68.24	16.24	0.00	150.0	± 9.6 %
		Y	3.42	67.96	16.11		150.0	
		Z	3.46	68.39	16.38		150.0	
10102-CAB	LTE-FDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM)	X	3.54	68.11	16.30	0.00	150.0	± 9.6 %
		Y	3.52	67.89	16.19		150.0	
		Z	3.56	68.26	16.44		150.0	
10103-CAB	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, QPSK)	X	8.66	77.35	20.84	3.98	65.0	± 9.6 %
		Y	8.46	77.01	20.81		65.0	
		Z	8.71	77.85	21.15		65.0	
10104-CAB	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM)	X	8.88	76.70	21.45	3.98	65.0	± 9.6 %
		Y	8.67	76.23	21.29		65.0	
		Z	8.82	76.91	21.62		65.0	
10105-CAB	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM)	X	8.13	74.97	20.97	3.98	65.0	± 9.6 %
		Y	7.88	74.31	20.72		65.0	
		Z	7.92	74.75	20.95		65.0	
10108-CAC	LTE-FDD (SC-FDMA, 100% RB, 10 MHz, QPSK)	X	3.04	70.66	16.91	0.00	150.0	± 9.6 %
		Y	2.95	70.09	16.69		150.0	
		Z	3.08	70.99	17.20		150.0	
10109-CAC	LTE-FDD (SC-FDMA, 100% RB, 10 MHz, 16-QAM)	X	3.12	68.03	16.19	0.00	150.0	± 9.6 %
		Y	3.09	67.76	16.05		150.0	
		Z	3.14	68.21	16.35		150.0	
10110-CAC	LTE-FDD (SC-FDMA, 100% RB, 5 MHz, QPSK)	X	2.50	69.68	16.63	0.00	150.0	± 9.6 %
		Y	2.43	69.09	16.36		150.0	
		Z	2.53	70.06	16.93		150.0	
10111-CAC	LTE-FDD (SC-FDMA, 100% RB, 5 MHz, 16-QAM)	X	2.81	68.48	16.49	0.00	150.0	± 9.6 %
		Y	2.78	68.30	16.36		150.0	
		Z	2.84	68.81	16.69		150.0	

10112-CAC	LTE-FDD (SC-FDMA, 100% RB, 10 MHz, 64-QAM)	X	3.24	67.90	16.20	0.00	150.0	± 9.6 %
		Y	3.21	67.68	16.09		150.0	
		Z	3.25	68.09	16.35		150.0	
10113-CAC	LTE-FDD (SC-FDMA, 100% RB, 5 MHz, 64-QAM)	X	2.97	68.50	16.56	0.00	150.0	± 9.6 %
		Y	2.94	68.37	16.47		150.0	
		Z	2.99	68.82	16.76		150.0	
10114-CAB	IEEE 802.11n (HT Greenfield, 13.5 Mbps, BPSK)	X	5.29	67.41	16.51	0.00	150.0	± 9.6 %
		Y	5.28	67.36	16.48		150.0	
		Z	5.28	67.49	16.58		150.0	
10115-CAB	IEEE 802.11n (HT Greenfield, 81 Mbps, 16-QAM)	X	5.70	67.80	16.71	0.00	150.0	± 9.6 %
		Y	5.66	67.68	16.65		150.0	
		Z	5.66	67.80	16.73		150.0	
10116-CAB	IEEE 802.11n (HT Greenfield, 135 Mbps, 64-QAM)	X	5.42	67.66	16.55	0.00	150.0	± 9.6 %
		Y	5.41	67.63	16.54		150.0	
		Z	5.42	67.76	16.63		150.0	
10117-CAB	IEEE 802.11n (HT Mixed, 13.5 Mbps, BPSK)	X	5.29	67.43	16.54	0.00	150.0	± 9.6 %
		Y	5.29	67.39	16.52		150.0	
		Z	5.29	67.52	16.61		150.0	
10118-CAB	IEEE 802.11n (HT Mixed, 81 Mbps, 16-QAM)	X	5.72	67.78	16.70	0.00	150.0	± 9.6 %
		Y	5.72	67.79	16.71		150.0	
		Z	5.72	67.90	16.79		150.0	
10119-CAB	IEEE 802.11n (HT Mixed, 135 Mbps, 64-QAM)	X	5.39	67.61	16.55	0.00	150.0	± 9.6 %
		Y	5.39	67.59	16.53		150.0	
		Z	5.39	67.71	16.62		150.0	
10140-CAB	LTE-FDD (SC-FDMA, 100% RB, 15 MHz, 16-QAM)	X	3.60	68.11	16.22	0.00	150.0	± 9.6 %
		Y	3.57	67.89	16.12		150.0	
		Z	3.61	68.26	16.36		150.0	
10141-CAB	LTE-FDD (SC-FDMA, 100% RB, 15 MHz, 64-QAM)	X	3.71	68.11	16.35	0.00	150.0	± 9.6 %
		Y	3.69	67.93	16.26		150.0	
		Z	3.72	68.27	16.48		150.0	
10142-CAC	LTE-FDD (SC-FDMA, 100% RB, 3 MHz, QPSK)	X	2.28	69.60	16.50	0.00	150.0	± 9.6 %
		Y	2.20	69.01	16.20		150.0	
		Z	2.31	70.09	16.82		150.0	
10143-CAC	LTE-FDD (SC-FDMA, 100% RB, 3 MHz, 16-QAM)	X	2.70	69.15	16.46	0.00	150.0	± 9.6 %
		Y	2.67	68.99	16.31		150.0	
		Z	2.74	69.63	16.70		150.0	
10144-CAC	LTE-FDD (SC-FDMA, 100% RB, 3 MHz, 64-QAM)	X	2.54	67.36	15.17	0.00	150.0	± 9.6 %
		Y	2.49	67.09	14.94		150.0	
		Z	2.55	67.71	15.33		150.0	
10145-CAC	LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, QPSK)	X	1.68	68.42	14.82	0.00	150.0	± 9.6 %
		Y	1.60	67.64	14.26		150.0	
		Z	1.72	69.05	15.06		150.0	
10146-CAC	LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, 16-QAM)	X	4.83	77.87	18.53	0.00	150.0	± 9.6 %
		Y	3.98	75.00	17.05		150.0	
		Z	3.89	75.00	17.12		150.0	
10147-CAC	LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, 64-QAM)	X	6.50	82.39	20.39	0.00	150.0	± 9.6 %
		Y	5.41	79.51	18.99		150.0	
		Z	5.09	78.98	18.85		150.0	

10149-CAB	LTE-FDD (SC-FDMA, 50% RB, 20 MHz, 16-QAM)	X	3.13	68.08	16.23	0.00	150.0	± 9.6 %
		Y	3.10	67.82	16.09		150.0	
		Z	3.14	68.27	16.39		150.0	
10150-CAB	LTE-FDD (SC-FDMA, 50% RB, 20 MHz, 64-QAM)	X	3.25	67.94	16.24	0.00	150.0	± 9.6 %
		Y	3.22	67.73	16.12		150.0	
		Z	3.26	68.13	16.39		150.0	
10151-CAB	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, QPSK)	X	9.12	79.35	21.75	3.98	65.0	± 9.6 %
		Y	8.93	79.07	21.74		65.0	
		Z	9.26	80.07	22.14		65.0	
10152-CAB	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 16-QAM)	X	8.52	76.90	21.36	3.98	65.0	± 9.6 %
		Y	8.28	76.34	21.15		65.0	
		Z	8.47	77.14	21.53		65.0	
10153-CAB	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 64-QAM)	X	8.83	77.49	21.93	3.98	65.0	± 9.6 %
		Y	8.62	77.01	21.76		65.0	
		Z	8.79	77.75	22.10		65.0	
10154-CAC	LTE-FDD (SC-FDMA, 50% RB, 10 MHz, QPSK)	X	2.57	70.18	16.94	0.00	150.0	± 9.6 %
		Y	2.49	69.59	16.67		150.0	
		Z	2.60	70.55	17.23		150.0	
10155-CAC	LTE-FDD (SC-FDMA, 50% RB, 10 MHz, 16-QAM)	X	2.81	68.47	16.49	0.00	150.0	± 9.6 %
		Y	2.78	68.29	16.36		150.0	
		Z	2.84	68.81	16.70		150.0	
10156-CAC	LTE-FDD (SC-FDMA, 50% RB, 5 MHz, QPSK)	X	2.16	69.95	16.57	0.00	150.0	± 9.6 %
		Y	2.07	69.28	16.21		150.0	
		Z	2.20	70.51	16.91		150.0	
10157-CAC	LTE-FDD (SC-FDMA, 50% RB, 5 MHz, 16-QAM)	X	2.38	68.05	15.40	0.00	150.0	± 9.6 %
		Y	2.33	67.74	15.13		150.0	
		Z	2.41	68.51	15.61		150.0	
10158-CAC	LTE-FDD (SC-FDMA, 50% RB, 10 MHz, 64-QAM)	X	2.97	68.54	16.60	0.00	150.0	± 9.6 %
		Y	2.95	68.41	16.50		150.0	
		Z	2.99	68.87	16.80		150.0	
10159-CAC	LTE-FDD (SC-FDMA, 50% RB, 5 MHz, 64-QAM)	X	2.50	68.46	15.67	0.00	150.0	± 9.6 %
		Y	2.45	68.21	15.44		150.0	
		Z	2.53	68.95	15.89		150.0	
10160-CAB	LTE-FDD (SC-FDMA, 50% RB, 15 MHz, QPSK)	X	2.97	69.28	16.60	0.00	150.0	± 9.6 %
		Y	2.92	68.92	16.43		150.0	
		Z	3.00	69.58	16.83		150.0	
10161-CAB	LTE-FDD (SC-FDMA, 50% RB, 15 MHz, 16-QAM)	X	3.13	67.81	16.19	0.00	150.0	± 9.6 %
		Y	3.11	67.62	16.07		150.0	
		Z	3.15	68.02	16.34		150.0	
10162-CAB	LTE-FDD (SC-FDMA, 50% RB, 15 MHz, 64-QAM)	X	3.23	67.81	16.23	0.00	150.0	± 9.6 %
		Y	3.21	67.66	16.13		150.0	
		Z	3.25	68.04	16.39		150.0	
10166-CAC	LTE-FDD (SC-FDMA, 50% RB, 1.4 MHz, QPSK)	X	4.28	71.44	20.14	3.01	150.0	± 9.6 %
		Y	4.14	70.84	19.78		150.0	
		Z	4.08	70.78	19.80		150.0	
10167-CAC	LTE-FDD (SC-FDMA, 50% RB, 1.4 MHz, 16-QAM)	X	5.82	75.47	21.02	3.01	150.0	± 9.6 %
		Y	5.49	74.58	20.57		150.0	
		Z	5.34	74.36	20.53		150.0	

10168-CAC	LTE-FDD (SC-FDMA, 50% RB, 1.4 MHz, 64-QAM)	X	6.39	77.47	22.15	3.01	150.0	± 9.6 %
		Y	6.08	76.81	21.83		150.0	
		Z	5.84	76.29	21.65		150.0	
10169-CAB	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, QPSK)	X	4.38	75.00	21.59	3.01	150.0	± 9.6 %
		Y	3.97	73.13	20.72		150.0	
		Z	3.86	72.93	20.71		150.0	
10170-CAB	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM)	X	7.68	84.36	24.73	3.01	150.0	± 9.6 %
		Y	6.57	81.73	23.77		150.0	
		Z	6.11	80.75	23.47		150.0	
10171-AAB	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, 64-QAM)	X	5.83	78.41	21.57	3.01	150.0	± 9.6 %
		Y	5.03	75.97	20.56		150.0	
		Z	4.85	75.79	20.60		150.0	
10172-CAB	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK)	X	34.00	110.08	33.55	6.02	65.0	± 9.6 %
		Y	23.82	103.43	31.66		65.0	
		Z	27.68	107.07	32.82		65.0	
10173-CAB	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM)	X	32.90	104.70	30.42	6.02	65.0	± 9.6 %
		Y	28.30	102.52	29.89		65.0	
		Z	30.73	104.44	30.45		65.0	
10174-CAB	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 64-QAM)	X	25.83	99.19	28.36	6.02	65.0	± 9.6 %
		Y	22.98	97.66	28.00		65.0	
		Z	24.34	99.06	28.41		65.0	
10175-CAC	LTE-FDD (SC-FDMA, 1 RB, 10 MHz, QPSK)	X	4.30	74.53	21.28	3.01	150.0	± 9.6 %
		Y	3.90	72.69	20.41		150.0	
		Z	3.80	72.54	20.44		150.0	
10176-CAC	LTE-FDD (SC-FDMA, 1 RB, 10 MHz, 16-QAM)	X	7.70	84.38	24.74	3.01	150.0	± 9.6 %
		Y	6.58	81.76	23.78		150.0	
		Z	6.11	80.77	23.48		150.0	
10177-CAE	LTE-FDD (SC-FDMA, 1 RB, 5 MHz, QPSK)	X	4.35	74.76	21.41	3.01	150.0	± 9.6 %
		Y	3.95	72.91	20.54		150.0	
		Z	3.84	72.73	20.55		150.0	
10178-CAC	LTE-FDD (SC-FDMA, 1 RB, 5 MHz, 16-QAM)	X	7.52	83.92	24.54	3.01	150.0	± 9.6 %
		Y	6.44	81.32	23.58		150.0	
		Z	6.01	80.41	23.31		150.0	
10179-CAC	LTE-FDD (SC-FDMA, 1 RB, 10 MHz, 64-QAM)	X	6.63	81.06	22.94	3.01	150.0	± 9.6 %
		Y	5.69	78.55	21.97		150.0	
		Z	5.41	78.06	21.87		150.0	
10180-CAC	LTE-FDD (SC-FDMA, 1 RB, 5 MHz, 64-QAM)	X	5.79	78.25	21.48	3.01	150.0	± 9.6 %
		Y	4.99	75.83	20.48		150.0	
		Z	4.83	75.67	20.53		150.0	
10181-CAB	LTE-FDD (SC-FDMA, 1 RB, 15 MHz, QPSK)	X	4.34	74.74	21.40	3.01	150.0	± 9.6 %
		Y	3.94	72.89	20.53		150.0	
		Z	3.83	72.71	20.54		150.0	
10182-CAB	LTE-FDD (SC-FDMA, 1 RB, 15 MHz, 16-QAM)	X	7.51	83.89	24.53	3.01	150.0	± 9.6 %
		Y	6.43	81.29	23.57		150.0	
		Z	6.00	80.39	23.30		150.0	
10183-AAA	LTE-FDD (SC-FDMA, 1 RB, 15 MHz, 64-QAM)	X	5.78	78.22	21.47	3.01	150.0	± 9.6 %
		Y	4.98	75.80	20.47		150.0	
		Z	4.82	75.64	20.52		150.0	

10184-CAC	LTE-FDD (SC-FDMA, 1 RB, 3 MHz, QPSK)	X	4.36	74.79	21.43	3.01	150.0	± 9.6 %
		Y	3.95	72.94	20.56		150.0	
		Z	3.85	72.76	20.56		150.0	
10185-CAC	LTE-FDD (SC-FDMA, 1 RB, 3 MHz, 16-QAM)	X	7.55	83.99	24.57	3.01	150.0	± 9.6 %
		Y	6.47	81.38	23.61		150.0	
		Z	6.03	80.47	23.34		150.0	
10186-AAC	LTE-FDD (SC-FDMA, 1 RB, 3 MHz, 64-QAM)	X	5.81	78.31	21.51	3.01	150.0	± 9.6 %
		Y	5.01	75.88	20.50		150.0	
		Z	4.84	75.72	20.55		150.0	
10187-CAC	LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK)	X	4.37	74.83	21.47	3.01	150.0	± 9.6 %
		Y	3.96	72.98	20.60		150.0	
		Z	3.85	72.80	20.61		150.0	
10188-CAC	LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, 16-QAM)	X	7.95	85.05	25.06	3.01	150.0	± 9.6 %
		Y	6.80	82.42	24.11		150.0	
		Z	6.29	81.33	23.77		150.0	
10189-AAC	LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, 64-QAM)	X	6.01	78.95	21.85	3.01	150.0	± 9.6 %
		Y	5.17	76.49	20.84		150.0	
		Z	4.98	76.26	20.86		150.0	
10193-CAB	IEEE 802.11n (HT Greenfield, 6.5 Mbps, BPSK)	X	4.72	66.78	16.30	0.00	150.0	± 9.6 %
		Y	4.71	66.76	16.26		150.0	
		Z	4.72	66.90	16.38		150.0	
10194-CAB	IEEE 802.11n (HT Greenfield, 39 Mbps, 16-QAM)	X	4.93	67.17	16.41	0.00	150.0	± 9.6 %
		Y	4.91	67.14	16.38		150.0	
		Z	4.92	67.28	16.49		150.0	
10195-CAB	IEEE 802.11n (HT Greenfield, 65 Mbps, 64-QAM)	X	4.97	67.17	16.41	0.00	150.0	± 9.6 %
		Y	4.95	67.14	16.38		150.0	
		Z	4.96	67.29	16.49		150.0	
10196-CAB	IEEE 802.11n (HT Mixed, 6.5 Mbps, BPSK)	X	4.74	66.90	16.34	0.00	150.0	± 9.6 %
		Y	4.73	66.86	16.30		150.0	
		Z	4.74	67.01	16.41		150.0	
10197-CAB	IEEE 802.11n (HT Mixed, 39 Mbps, 16-QAM)	X	4.94	67.19	16.42	0.00	150.0	± 9.6 %
		Y	4.93	67.16	16.39		150.0	
		Z	4.94	67.30	16.50		150.0	
10198-CAB	IEEE 802.11n (HT Mixed, 65 Mbps, 64-QAM)	X	4.97	67.18	16.41	0.00	150.0	± 9.6 %
		Y	4.96	67.16	16.39		150.0	
		Z	4.97	67.30	16.50		150.0	
10219-CAB	IEEE 802.11n (HT Mixed, 7.2 Mbps, BPSK)	X	4.69	66.91	16.31	0.00	150.0	± 9.6 %
		Y	4.68	66.88	16.27		150.0	
		Z	4.69	67.03	16.38		150.0	
10220-CAB	IEEE 802.11n (HT Mixed, 43.3 Mbps, 16-QAM)	X	4.95	67.19	16.42	0.00	150.0	± 9.6 %
		Y	4.93	67.15	16.39		150.0	
		Z	4.94	67.30	16.50		150.0	
10221-CAB	IEEE 802.11n (HT Mixed, 72.2 Mbps, 64-QAM)	X	4.98	67.12	16.41	0.00	150.0	± 9.6 %
		Y	4.96	67.09	16.38		150.0	
		Z	4.97	67.24	16.49		150.0	
10222-CAB	IEEE 802.11n (HT Mixed, 15 Mbps, BPSK)	X	5.28	67.46	16.55	0.00	150.0	± 9.6 %
		Y	5.27	67.41	16.52		150.0	
		Z	5.27	67.54	16.61		150.0	

10223-CAB	IEEE 802.11n (HT Mixed, 90 Mbps, 16-QAM)	X	5.66	67.79	16.73	0.00	150.0	± 9.6 %
		Y	5.66	67.78	16.72		150.0	
		Z	5.66	67.89	16.81		150.0	
10224-CAB	IEEE 802.11n (HT Mixed, 150 Mbps, 64-QAM)	X	5.34	67.59	16.53	0.00	150.0	± 9.6 %
		Y	5.32	67.52	16.49		150.0	
		Z	5.33	67.65	16.59		150.0	
10225-CAB	UMTS-FDD (HSPA+)	X	2.98	66.36	15.75	0.00	150.0	± 9.6 %
		Y	2.97	66.26	15.63		150.0	
		Z	2.99	66.57	15.86		150.0	
10226-CAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 16-QAM)	X	34.49	105.68	30.78	6.02	65.0	± 9.6 %
		Y	29.79	103.57	30.28		65.0	
		Z	32.28	105.46	30.82		65.0	
10227-CAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 64-QAM)	X	26.80	99.98	28.68	6.02	65.0	± 9.6 %
		Y	24.57	98.96	28.48		65.0	
		Z	25.66	100.11	28.80		65.0	
10228-CAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK)	X	34.73	111.06	33.97	6.02	65.0	± 9.6 %
		Y	25.52	105.30	32.35		65.0	
		Z	30.95	109.77	33.72		65.0	
10229-CAB	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 16-QAM)	X	32.90	104.69	30.43	6.02	65.0	± 9.6 %
		Y	28.35	102.53	29.91		65.0	
		Z	30.75	104.44	30.46		65.0	
10230-CAB	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 64-QAM)	X	25.79	99.22	28.39	6.02	65.0	± 9.6 %
		Y	23.57	98.14	28.17		65.0	
		Z	24.66	99.32	28.50		65.0	
10231-CAB	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, QPSK)	X	33.18	110.06	33.62	6.02	65.0	± 9.6 %
		Y	24.40	104.32	31.99		65.0	
		Z	29.56	108.76	33.36		65.0	
10232-CAB	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 16-QAM)	X	32.89	104.69	30.43	6.02	65.0	± 9.6 %
		Y	28.33	102.53	29.90		65.0	
		Z	30.74	104.44	30.46		65.0	
10233-CAB	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 64-QAM)	X	25.82	99.25	28.40	6.02	65.0	± 9.6 %
		Y	23.57	98.15	28.17		65.0	
		Z	24.67	99.34	28.51		65.0	
10234-CAB	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, QPSK)	X	31.54	108.89	33.19	6.02	65.0	± 9.6 %
		Y	23.30	103.27	31.58		65.0	
		Z	28.13	107.61	32.94		65.0	
10235-CAB	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 16-QAM)	X	32.98	104.76	30.45	6.02	65.0	± 9.6 %
		Y	28.39	102.58	29.92		65.0	
		Z	30.82	104.50	30.48		65.0	
10236-CAB	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 64-QAM)	X	26.00	99.35	28.43	6.02	65.0	± 9.6 %
		Y	23.73	98.25	28.20		65.0	
		Z	24.86	99.45	28.54		65.0	
10237-CAB	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, QPSK)	X	33.51	110.27	33.67	6.02	65.0	± 9.6 %
		Y	24.55	104.47	32.03		65.0	
		Z	29.82	108.95	33.42		65.0	
10238-CAB	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 16-QAM)	X	32.92	104.72	30.43	6.02	65.0	± 9.6 %
		Y	28.33	102.54	29.91		65.0	
		Z	30.76	104.46	30.46		65.0	

10239-CAB	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 64-QAM)	X	25.84	99.28	28.41	6.02	65.0	± 9.6 %
		Y	23.57	98.17	28.18		65.0	
		Z	24.68	99.36	28.51		65.0	
10240-CAB	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, QPSK)	X	33.41	110.22	33.66	6.02	65.0	± 9.6 %
		Y	24.49	104.42	32.01		65.0	
		Z	29.73	108.90	33.40		65.0	
10241-CAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 16-QAM)	X	13.87	87.85	27.97	6.98	65.0	± 9.6 %
		Y	12.90	86.30	27.27		65.0	
		Z	13.00	86.99	27.62		65.0	
10242-CAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 64-QAM)	X	13.03	86.40	27.33	6.98	65.0	± 9.6 %
		Y	12.04	84.70	26.56		65.0	
		Z	12.01	85.17	26.83		65.0	
10243-CAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, QPSK)	X	10.68	84.11	27.32	6.98	65.0	± 9.6 %
		Y	9.82	82.05	26.33		65.0	
		Z	9.82	82.65	26.70		65.0	
10244-CAB	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 16-QAM)	X	10.69	81.99	22.20	3.98	65.0	± 9.6 %
		Y	10.07	80.96	21.68		65.0	
		Z	10.02	81.14	21.69		65.0	
10245-CAB	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 64-QAM)	X	10.57	81.58	22.00	3.98	65.0	± 9.6 %
		Y	9.98	80.56	21.49		65.0	
		Z	9.91	80.72	21.49		65.0	
10246-CAB	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, QPSK)	X	9.29	82.24	22.05	3.98	65.0	± 9.6 %
		Y	8.84	81.48	21.78		65.0	
		Z	9.57	83.17	22.39		65.0	
10247-CAB	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 16-QAM)	X	8.07	77.79	20.87	3.98	65.0	± 9.6 %
		Y	7.81	77.20	20.60		65.0	
		Z	8.04	78.08	20.96		65.0	
10248-CAB	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 64-QAM)	X	8.11	77.42	20.72	3.98	65.0	± 9.6 %
		Y	7.83	76.80	20.42		65.0	
		Z	8.05	77.65	20.78		65.0	
10249-CAB	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, QPSK)	X	9.78	83.07	22.80	3.98	65.0	± 9.6 %
		Y	9.36	82.41	22.61		65.0	
		Z	10.14	84.18	23.26		65.0	
10250-CAB	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 16-QAM)	X	8.72	78.97	22.30	3.98	65.0	± 9.6 %
		Y	8.48	78.45	22.12		65.0	
		Z	8.71	79.35	22.51		65.0	
10251-CAB	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 64-QAM)	X	8.36	77.15	21.34	3.98	65.0	± 9.6 %
		Y	8.13	76.62	21.11		65.0	
		Z	8.33	77.46	21.50		65.0	
10252-CAB	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, QPSK)	X	9.59	81.92	22.81	3.98	65.0	± 9.6 %
		Y	9.28	81.44	22.73		65.0	
		Z	9.85	82.90	23.29		65.0	
10253-CAB	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 16-QAM)	X	8.31	76.36	21.21	3.98	65.0	± 9.6 %
		Y	8.09	75.81	20.99		65.0	
		Z	8.25	76.57	21.35		65.0	
10254-CAB	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 64-QAM)	X	8.64	76.97	21.75	3.98	65.0	± 9.6 %
		Y	8.44	76.49	21.55		65.0	
		Z	8.59	77.21	21.89		65.0	

10255-CAB	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, QPSK)	X	8.88	79.09	21.89	3.98	65.0	± 9.6 %
		Y	8.67	78.72	21.83		65.0	
		Z	8.98	79.73	22.24		65.0	
10256-CAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 16-QAM)	X	10.07	80.79	21.11	3.98	65.0	± 9.6 %
		Y	9.36	79.53	20.48		65.0	
		Z	9.27	79.61	20.43		65.0	
10257-CAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 64-QAM)	X	9.93	80.22	20.83	3.98	65.0	± 9.6 %
		Y	9.22	78.95	20.18		65.0	
		Z	9.12	79.01	20.13		65.0	
10258-CAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, QPSK)	X	8.66	80.91	21.13	3.98	65.0	± 9.6 %
		Y	8.13	79.89	20.72		65.0	
		Z	8.71	81.36	21.24		65.0	
10259-CAB	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 16-QAM)	X	8.32	78.14	21.35	3.98	65.0	± 9.6 %
		Y	8.07	77.59	21.11		65.0	
		Z	8.30	78.48	21.48		65.0	
10260-CAB	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 64-QAM)	X	8.37	77.96	21.30	3.98	65.0	± 9.6 %
		Y	8.11	77.40	21.05		65.0	
		Z	8.33	78.25	21.41		65.0	
10261-CAB	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, QPSK)	X	9.44	82.16	22.69	3.98	65.0	± 9.6 %
		Y	9.05	81.51	22.50		65.0	
		Z	9.69	83.12	23.12		65.0	
10262-CAB	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 16-QAM)	X	8.72	78.94	22.28	3.98	65.0	± 9.6 %
		Y	8.47	78.42	22.09		65.0	
		Z	8.71	79.32	22.48		65.0	
10263-CAB	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 64-QAM)	X	8.36	77.16	21.34	3.98	65.0	± 9.6 %
		Y	8.13	76.62	21.11		65.0	
		Z	8.33	77.46	21.50		65.0	
10264-CAB	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, QPSK)	X	9.55	81.82	22.76	3.98	65.0	± 9.6 %
		Y	9.23	81.33	22.67		65.0	
		Z	9.80	82.79	23.23		65.0	
10265-CAB	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 16-QAM)	X	8.52	76.91	21.37	3.98	65.0	± 9.6 %
		Y	8.28	76.34	21.16		65.0	
		Z	8.46	77.15	21.54		65.0	
10266-CAB	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 64-QAM)	X	8.84	77.48	21.92	3.98	65.0	± 9.6 %
		Y	8.62	77.01	21.75		65.0	
		Z	8.79	77.75	22.10		65.0	
10267-CAB	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, QPSK)	X	9.11	79.33	21.73	3.98	65.0	± 9.6 %
		Y	8.91	79.04	21.73		65.0	
		Z	9.25	80.04	22.13		65.0	
10268-CAB	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 16-QAM)	X	8.95	76.40	21.47	3.98	65.0	± 9.6 %
		Y	8.77	75.99	21.33		65.0	
		Z	8.89	76.60	21.62		65.0	
10269-CAB	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 64-QAM)	X	8.88	76.03	21.40	3.98	65.0	± 9.6 %
		Y	8.71	75.62	21.25		65.0	
		Z	8.81	76.21	21.54		65.0	
10270-CAB	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, QPSK)	X	8.82	77.21	21.03	3.98	65.0	± 9.6 %
		Y	8.69	77.00	21.04		65.0	
		Z	8.86	77.65	21.31		65.0	

10274-CAB	UMTS-FDD (HSUPA, Subtest 5, 3GPP Rel8.10)	X	2.68	66.55	15.56	0.00	150.0	± 9.6 %
		Y	2.68	66.43	15.43		150.0	
		Z	2.71	66.85	15.73		150.0	
10275-CAB	UMTS-FDD (HSUPA, Subtest 5, 3GPP Rel8.4)	X	1.76	69.02	16.21	0.00	150.0	± 9.6 %
		Y	1.71	68.23	15.83		150.0	
		Z	1.82	69.57	16.62		150.0	
10277-CAA	PHS (QPSK)	X	6.62	71.52	15.81	9.03	50.0	± 9.6 %
		Y	6.77	71.96	16.20		50.0	
		Z	6.48	71.54	15.70		50.0	
10278-CAA	PHS (QPSK, BW 884MHz, Rolloff 0.5)	X	9.81	80.35	21.62	9.03	50.0	± 9.6 %
		Y	9.58	79.96	21.62		50.0	
		Z	9.84	80.82	21.76		50.0	
10279-CAA	PHS (QPSK, BW 884MHz, Rolloff 0.38)	X	10.00	80.57	21.71	9.03	50.0	± 9.6 %
		Y	9.73	80.14	21.69		50.0	
		Z	10.02	81.03	21.84		50.0	
10290-AAB	CDMA2000, RC1, SO55, Full Rate	X	1.82	70.77	15.90	0.00	150.0	± 9.6 %
		Y	1.72	69.89	15.40		150.0	
		Z	1.95	72.06	16.51		150.0	
10291-AAB	CDMA2000, RC3, SO55, Full Rate	X	1.03	68.06	14.52	0.00	150.0	± 9.6 %
		Y	0.98	66.97	13.92		150.0	
		Z	1.11	69.26	15.22		150.0	
10292-AAB	CDMA2000, RC3, SO32, Full Rate	X	1.32	72.62	17.03	0.00	150.0	± 9.6 %
		Y	1.20	70.85	16.19		150.0	
		Z	1.50	74.78	18.11		150.0	
10293-AAB	CDMA2000, RC3, SO3, Full Rate	X	1.86	78.12	19.78	0.00	150.0	± 9.6 %
		Y	1.66	75.88	18.82		150.0	
		Z	2.25	81.38	21.19		150.0	
10295-AAB	CDMA2000, RC1, SO3, 1/8th Rate 25 fr.	X	10.17	82.01	23.87	9.03	50.0	± 9.6 %
		Y	10.08	81.64	23.75		50.0	
		Z	10.46	83.00	24.26		50.0	
10297-AAA	LTE-FDD (SC-FDMA, 50% RB, 20 MHz, QPSK)	X	3.06	70.75	16.98	0.00	150.0	± 9.6 %
		Y	2.97	70.19	16.76		150.0	
		Z	3.09	71.09	17.26		150.0	
10298-AAB	LTE-FDD (SC-FDMA, 50% RB, 3 MHz, QPSK)	X	1.94	69.59	15.88	0.00	150.0	± 9.6 %
		Y	1.86	68.90	15.44		150.0	
		Z	2.00	70.30	16.23		150.0	
10299-AAB	LTE-FDD (SC-FDMA, 50% RB, 3 MHz, 16-QAM)	X	4.90	77.67	19.07	0.00	150.0	± 9.6 %
		Y	4.30	75.67	18.00		150.0	
		Z	4.17	75.58	18.03		150.0	
10300-AAB	LTE-FDD (SC-FDMA, 50% RB, 3 MHz, 64-QAM)	X	3.47	71.44	15.80	0.00	150.0	± 9.6 %
		Y	3.06	69.68	14.73		150.0	
		Z	3.03	69.87	14.88		150.0	
10301-AAA	IEEE 802.16e WiMAX (29:18, 5ms, 10MHz, QPSK, PUSC)	X	6.02	68.68	19.11	4.17	80.0	± 9.6 %
		Y	5.98	68.44	18.86		80.0	
		Z	5.95	68.58	19.03		80.0	
10302-AAA	IEEE 802.16e WiMAX (29:18, 5ms, 10MHz, QPSK, PUSC, 3 CTRL symbols)	X	6.59	69.62	20.04	4.96	80.0	± 9.6 %
		Y	6.48	69.09	19.63		80.0	
		Z	6.53	69.66	20.05		80.0	

10303-AAA	IEEE 802.16e WiMAX (31:15, 5ms, 10MHz, 64QAM, PUSC)	X	6.50	69.94	20.23	4.96	80.0	± 9.6 %
		Y	6.37	69.29	19.74		80.0	
		Z	6.43	69.92	20.21		80.0	
10304-AAA	IEEE 802.16e WiMAX (29:18, 5ms, 10MHz, 64QAM, PUSC)	X	6.04	68.91	19.25	4.17	80.0	± 9.6 %
		Y	5.94	68.42	18.86		80.0	
		Z	5.99	68.95	19.25		80.0	
10305-AAA	IEEE 802.16e WiMAX (31:15, 10ms, 10MHz, 64QAM, PUSC, 15 symbols)	X	8.62	79.07	24.92	6.02	50.0	± 9.6 %
		Y	11.34	86.21	27.91		50.0	
		Z	8.42	78.75	24.71		50.0	
10306-AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, 64QAM, PUSC, 18 symbols)	X	7.30	73.86	22.83	6.02	50.0	± 9.6 %
		Y	6.99	72.41	21.84		50.0	
		Z	7.19	73.72	22.72		50.0	
10307-AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, QPSK, PUSC, 18 symbols)	X	7.53	74.88	23.08	6.02	50.0	± 9.6 %
		Y	7.13	73.19	22.00		50.0	
		Z	7.41	74.71	22.96		50.0	
10308-AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, 16QAM, PUSC)	X	7.64	75.45	23.34	6.02	50.0	± 9.6 %
		Y	7.20	73.62	22.20		50.0	
		Z	7.51	75.27	23.22		50.0	
10309-AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, 16QAM, AMC 2x3, 18 symbols)	X	7.44	74.18	22.99	6.02	50.0	± 9.6 %
		Y	7.11	72.71	22.00		50.0	
		Z	7.33	74.08	22.90		50.0	
10310-AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, QPSK, AMC 2x3, 18 symbols)	X	7.36	74.18	22.87	6.02	50.0	± 9.6 %
		Y	7.02	72.66	21.86		50.0	
		Z	7.24	74.05	22.76		50.0	
10311-AAA	LTE-FDD (SC-FDMA, 100% RB, 15 MHz, QPSK)	X	3.41	70.03	16.61	0.00	150.0	± 9.6 %
		Y	3.32	69.51	16.42		150.0	
		Z	3.45	70.34	16.87		150.0	
10313-AAA	IDEN 1:3	X	7.37	77.22	18.46	6.99	70.0	± 9.6 %
		Y	7.49	77.91	19.05		70.0	
		Z	7.96	79.06	19.32		70.0	
10314-AAA	IDEN 1:6	X	8.75	81.12	22.17	10.00	30.0	± 9.6 %
		Y	8.84	81.70	22.74		30.0	
		Z	9.56	83.47	23.24		30.0	
10315-AAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps, 96pc duty cycle)	X	1.18	65.17	15.98	0.17	150.0	± 9.6 %
		Y	1.19	64.74	15.68		150.0	
		Z	1.21	65.44	16.26		150.0	
10316-AAB	IEEE 802.11g WiFi 2.4 GHz (ERP-OFDM, 6 Mbps, 96pc duty cycle)	X	4.83	66.99	16.50	0.17	150.0	± 9.6 %
		Y	4.83	66.97	16.48		150.0	
		Z	4.83	67.11	16.58		150.0	
10317-AAB	IEEE 802.11a WiFi 5 GHz (OFDM, 6 Mbps, 96pc duty cycle)	X	4.83	66.99	16.50	0.17	150.0	± 9.6 %
		Y	4.83	66.97	16.48		150.0	
		Z	4.83	67.11	16.58		150.0	
10400-AAC	IEEE 802.11ac WiFi (20MHz, 64-QAM, 99pc duty cycle)	X	4.95	67.24	16.40	0.00	150.0	± 9.6 %
		Y	4.92	67.19	16.36		150.0	
		Z	4.94	67.35	16.49		150.0	
10401-AAC	IEEE 802.11ac WiFi (40MHz, 64-QAM, 99pc duty cycle)	X	5.53	67.22	16.43	0.00	150.0	± 9.6 %
		Y	5.54	67.25	16.44		150.0	
		Z	5.54	67.37	16.53		150.0	

10402-AAC	IEEE 802.11ac WiFi (80MHz, 64-QAM, 99pc duty cycle)	X	5.85	67.86	16.58	0.00	150.0	± 9.6 %
		Y	5.85	67.83	16.57		150.0	
		Z	5.85	67.95	16.65		150.0	
10403-AAB	CDMA2000 (1xEV-DO, Rev. 0)	X	1.82	70.77	15.90	0.00	115.0	± 9.6 %
		Y	1.72	69.89	15.40		115.0	
		Z	1.95	72.06	16.51		115.0	
10404-AAB	CDMA2000 (1xEV-DO, Rev. A)	X	1.82	70.77	15.90	0.00	115.0	± 9.6 %
		Y	1.72	69.89	15.40		115.0	
		Z	1.95	72.06	16.51		115.0	
10406-AAB	CDMA2000, RC3, SO32, SCH0, Full Rate	X	100.00	122.48	31.59	0.00	100.0	± 9.6 %
		Y	100.00	122.39	31.44		100.0	
		Z	100.00	123.91	32.06		100.0	
10410-AAA	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	100.00	119.39	30.70	3.23	80.0	± 9.6 %
		Y	100.00	120.18	31.03		80.0	
		Z	100.00	120.31	30.97		80.0	
10415-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps, 99pc duty cycle)	X	1.00	63.40	15.00	0.00	150.0	± 9.6 %
		Y	1.03	63.13	14.76		150.0	
		Z	1.04	63.74	15.31		150.0	
10416-AAA	IEEE 802.11g WiFi 2.4 GHz (ERP-OFDM, 6 Mbps, 99pc duty cycle)	X	4.72	66.80	16.33	0.00	150.0	± 9.6 %
		Y	4.71	66.79	16.30		150.0	
		Z	4.72	66.93	16.41		150.0	
10417-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps, 99pc duty cycle)	X	4.72	66.80	16.33	0.00	150.0	± 9.6 %
		Y	4.71	66.79	16.30		150.0	
		Z	4.72	66.93	16.41		150.0	
10418-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps, 99pc duty cycle, Long preamble)	X	4.70	66.93	16.32	0.00	150.0	± 9.6 %
		Y	4.69	66.92	16.30		150.0	
		Z	4.70	67.07	16.41		150.0	
10419-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps, 99pc duty cycle, Short preamble)	X	4.73	66.90	16.34	0.00	150.0	± 9.6 %
		Y	4.72	66.88	16.31		150.0	
		Z	4.73	67.03	16.42		150.0	
10422-AAA	IEEE 802.11n (HT Greenfield, 7.2 Mbps, BPSK)	X	4.86	66.91	16.35	0.00	150.0	± 9.6 %
		Y	4.85	66.90	16.33		150.0	
		Z	4.86	67.04	16.44		150.0	
10423-AAA	IEEE 802.11n (HT Greenfield, 43.3 Mbps, 16-QAM)	X	5.08	67.33	16.51	0.00	150.0	± 9.6 %
		Y	5.06	67.29	16.47		150.0	
		Z	5.07	67.43	16.58		150.0	
10424-AAA	IEEE 802.11n (HT Greenfield, 72.2 Mbps, 64-QAM)	X	4.99	67.25	16.46	0.00	150.0	± 9.6 %
		Y	4.97	67.22	16.43		150.0	
		Z	4.98	67.37	16.54		150.0	
10425-AAA	IEEE 802.11n (HT Greenfield, 15 Mbps, BPSK)	X	5.55	67.62	16.62	0.00	150.0	± 9.6 %
		Y	5.54	67.58	16.60		150.0	
		Z	5.54	67.69	16.68		150.0	
10426-AAA	IEEE 802.11n (HT Greenfield, 90 Mbps, 16-QAM)	X	5.56	67.65	16.63	0.00	150.0	± 9.6 %
		Y	5.55	67.62	16.61		150.0	
		Z	5.55	67.73	16.70		150.0	

10427-AAA	IEEE 802.11n (HT Greenfield, 150 Mbps, 64-QAM)	X	5.59	67.68	16.64	0.00	150.0	± 9.6 %
		Y	5.57	67.63	16.62		150.0	
		Z	5.58	67.75	16.70		150.0	
10430-AAA	LTE-FDD (OFDMA, 5 MHz, E-TM 3.1)	X	4.40	70.01	18.10	0.00	150.0	± 9.6 %
		Y	4.43	70.35	18.24		150.0	
		Z	4.41	70.36	18.25		150.0	
10431-AAA	LTE-FDD (OFDMA, 10 MHz, E-TM 3.1)	X	4.49	67.37	16.43	0.00	150.0	± 9.6 %
		Y	4.45	67.33	16.37		150.0	
		Z	4.47	67.52	16.51		150.0	
10432-AAA	LTE-FDD (OFDMA, 15 MHz, E-TM 3.1)	X	4.77	67.29	16.44	0.00	150.0	± 9.6 %
		Y	4.74	67.25	16.40		150.0	
		Z	4.75	67.42	16.53		150.0	
10433-AAA	LTE-FDD (OFDMA, 20 MHz, E-TM 3.1)	X	5.00	67.31	16.50	0.00	150.0	± 9.6 %
		Y	4.98	67.27	16.46		150.0	
		Z	4.99	67.42	16.57		150.0	
10434-AAA	W-CDMA (BS Test Model 1, 64 DPCH)	X	4.48	70.64	18.10	0.00	150.0	± 9.6 %
		Y	4.52	71.07	18.25		150.0	
		Z	4.50	71.08	18.27		150.0	
10435-AAA	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	100.00	119.25	30.64	3.23	80.0	± 9.6 %
		Y	100.00	120.04	30.96		80.0	
		Z	100.00	120.17	30.90		80.0	
10447-AAA	LTE-FDD (OFDMA, 5 MHz, E-TM 3.1, Clipping 44%)	X	3.81	67.43	16.04	0.00	150.0	± 9.6 %
		Y	3.77	67.36	15.92		150.0	
		Z	3.80	67.63	16.11		150.0	
10448-AAA	LTE-FDD (OFDMA, 10 MHz, E-TM 3.1, Clipping 44%)	X	4.29	67.14	16.28	0.00	150.0	± 9.6 %
		Y	4.27	67.10	16.23		150.0	
		Z	4.28	67.30	16.37		150.0	
10449-AAA	LTE-FDD (OFDMA, 15 MHz, E-TM 3.1, Clipping 44%)	X	4.54	67.10	16.34	0.00	150.0	± 9.6 %
		Y	4.52	67.07	16.30		150.0	
		Z	4.53	67.24	16.43		150.0	
10450-AAA	LTE-FDD (OFDMA, 20 MHz, E-TM 3.1, Clipping 44%)	X	4.71	67.05	16.35	0.00	150.0	± 9.6 %
		Y	4.70	67.01	16.31		150.0	
		Z	4.71	67.17	16.43		150.0	
10451-AAA	W-CDMA (BS Test Model 1, 64 DPCH, Clipping 44%)	X	3.76	67.73	15.85	0.00	150.0	± 9.6 %
		Y	3.70	67.65	15.70		150.0	
		Z	3.74	67.97	15.92		150.0	
10456-AAA	IEEE 802.11ac WiFi (160MHz, 64-QAM, 99pc duty cycle)	X	6.40	68.27	16.81	0.00	150.0	± 9.6 %
		Y	6.40	68.22	16.78		150.0	
		Z	6.39	68.32	16.85		150.0	
10457-AAA	UMTS-FDD (DC-HSDPA)	X	3.86	65.46	16.08	0.00	150.0	± 9.6 %
		Y	3.88	65.42	16.03		150.0	
		Z	3.88	65.58	16.16		150.0	
10458-AAA	CDMA2000 (1xEV-DO, Rev. B, 2 carriers)	X	3.55	66.84	15.36	0.00	150.0	± 9.6 %
		Y	3.51	66.84	15.20		150.0	
		Z	3.55	67.17	15.43		150.0	
10459-AAA	CDMA2000 (1xEV-DO, Rev. B, 3 carriers)	X	4.71	65.21	16.07	0.00	150.0	± 9.6 %
		Y	4.63	65.09	15.89		150.0	
		Z	4.67	65.34	16.07		150.0	

10460-AAA	UMTS-FDD (WCDMA, AMR)	X	0.99	70.26	17.25	0.00	150.0	± 9.6 %
		Y	0.94	68.45	16.37		150.0	
		Z	1.07	71.18	17.96		150.0	
10461-AAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	100.00	122.02	31.99	3.29	80.0	± 9.6 %
		Y	100.00	122.59	32.22		80.0	
		Z	100.00	122.98	32.28		80.0	
10462-AAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	100.00	109.85	26.14	3.23	80.0	± 9.6 %
		Y	100.00	110.36	26.33		80.0	
		Z	100.00	110.34	26.21		80.0	
10463-AAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	100.00	107.53	25.02	3.23	80.0	± 9.6 %
		Y	100.00	107.98	25.17		80.0	
		Z	100.00	107.85	25.00		80.0	
10464-AAA	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	100.00	120.45	31.12	3.23	80.0	± 9.6 %
		Y	100.00	121.00	31.33		80.0	
		Z	100.00	121.35	31.38		80.0	
10465-AAA	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	100.00	109.46	25.94	3.23	80.0	± 9.6 %
		Y	100.00	109.95	26.11		80.0	
		Z	100.00	109.93	25.99		80.0	
10466-AAA	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	100.00	107.15	24.83	3.23	80.0	± 9.6 %
		Y	100.00	107.57	24.97		80.0	
		Z	100.00	107.44	24.80		80.0	
10467-AAA	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	100.00	120.62	31.20	3.23	80.0	± 9.6 %
		Y	100.00	121.18	31.42		80.0	
		Z	100.00	121.53	31.46		80.0	
10468-AAA	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	100.00	109.57	26.00	3.23	80.0	± 9.6 %
		Y	100.00	110.07	26.17		80.0	
		Z	100.00	110.05	26.05		80.0	
10469-AAA	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	100.00	107.16	24.83	3.23	80.0	± 9.6 %
		Y	100.00	107.58	24.96		80.0	
		Z	100.00	107.45	24.80		80.0	
10470-AAA	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	100.00	120.64	31.20	3.23	80.0	± 9.6 %
		Y	100.00	121.21	31.42		80.0	
		Z	100.00	121.56	31.46		80.0	
10471-AAA	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	100.00	109.54	25.97	3.23	80.0	± 9.6 %
		Y	100.00	110.04	26.15		80.0	
		Z	100.00	110.01	26.03		80.0	
10472-AAA	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	100.00	107.12	24.81	3.23	80.0	± 9.6 %
		Y	100.00	107.54	24.94		80.0	
		Z	100.00	107.41	24.78		80.0	
10473-AAA	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	100.00	120.62	31.19	3.23	80.0	± 9.6 %
		Y	100.00	121.18	31.41		80.0	
		Z	100.00	121.53	31.45		80.0	
10474-AAA	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	100.00	109.55	25.98	3.23	80.0	± 9.6 %
		Y	100.00	110.05	26.15		80.0	
		Z	100.00	110.03	26.03		80.0	
10475-AAA	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	100.00	107.13	24.81	3.23	80.0	± 9.6 %
		Y	100.00	107.55	24.95		80.0	
		Z	100.00	107.42	24.78		80.0	

10477-AAA	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	100.00	109.42	25.91	3.23	80.0	± 9.6 %
		Y	100.00	109.91	26.09		80.0	
		Z	100.00	109.89	25.96		80.0	
10478-AAA	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	100.00	107.10	24.80	3.23	80.0	± 9.6 %
		Y	100.00	107.52	24.93		80.0	
		Z	100.00	107.38	24.76		80.0	
10479-AAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	15.27	94.34	26.55	3.23	80.0	± 9.6 %
		Y	13.93	92.73	25.91		80.0	
		Z	13.69	92.81	25.94		80.0	
10480-AAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	17.85	91.69	24.29	3.23	80.0	± 9.6 %
		Y	17.05	90.96	23.91		80.0	
		Z	15.74	90.05	23.61		80.0	
10481-AAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	16.05	89.42	23.31	3.23	80.0	± 9.6 %
		Y	15.20	88.58	22.88		80.0	
		Z	14.01	87.66	22.58		80.0	
10482-AAA	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	6.46	79.79	20.49	2.23	80.0	± 9.6 %
		Y	6.00	78.69	20.07		80.0	
		Z	6.94	81.30	21.05		80.0	
10483-AAA	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	10.64	84.45	22.26	2.23	80.0	± 9.6 %
		Y	10.00	83.37	21.70		80.0	
		Z	9.59	82.97	21.54		80.0	
10484-AAA	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	9.96	83.22	21.86	2.23	80.0	± 9.6 %
		Y	9.31	82.09	21.27		80.0	
		Z	8.95	81.72	21.12		80.0	
10485-AAA	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	6.59	80.11	21.11	2.23	80.0	± 9.6 %
		Y	6.08	78.90	20.69		80.0	
		Z	6.88	81.28	21.62		80.0	
10486-AAA	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	5.22	73.82	18.61	2.23	80.0	± 9.6 %
		Y	5.09	73.44	18.41		80.0	
		Z	5.33	74.50	18.88		80.0	
10487-AAA	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	5.19	73.39	18.45	2.23	80.0	± 9.6 %
		Y	5.06	73.02	18.24		80.0	
		Z	5.27	73.99	18.68		80.0	
10488-AAA	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	6.39	78.18	20.73	2.23	80.0	± 9.6 %
		Y	5.97	77.14	20.41		80.0	
		Z	6.48	78.88	21.13		80.0	
10489-AAA	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	5.20	72.70	18.88	2.23	80.0	± 9.6 %
		Y	5.07	72.27	18.71		80.0	
		Z	5.21	73.04	19.09		80.0	
10490-AAA	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	5.24	72.29	18.75	2.23	80.0	± 9.6 %
		Y	5.12	71.92	18.59		80.0	
		Z	5.24	72.63	18.94		80.0	
10491-AAA	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	6.02	75.43	19.78	2.23	80.0	± 9.6 %
		Y	5.76	74.73	19.57		80.0	
		Z	6.05	75.89	20.09		80.0	
10492-AAA	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	5.38	71.48	18.58	2.23	80.0	± 9.6 %
		Y	5.27	71.13	18.44		80.0	
		Z	5.35	71.71	18.74		80.0	

10493-AAA	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	5.42	71.24	18.51	2.23	80.0	± 9.6 %
		Y	5.32	70.91	18.38		80.0	
		Z	5.40	71.45	18.66		80.0	
10494-AAA	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	6.80	77.48	20.35	2.23	80.0	± 9.6 %
		Y	6.41	76.59	20.10		80.0	
		Z	6.87	78.03	20.70		80.0	
10495-AAA	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	5.50	72.14	18.82	2.23	80.0	± 9.6 %
		Y	5.37	71.71	18.66		80.0	
		Z	5.48	72.35	18.98		80.0	
10496-AAA	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	5.52	71.65	18.67	2.23	80.0	± 9.6 %
		Y	5.40	71.28	18.53		80.0	
		Z	5.49	71.85	18.82		80.0	
10497-AAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	5.51	77.56	19.18	2.23	80.0	± 9.6 %
		Y	5.11	76.42	18.67		80.0	
		Z	5.89	78.83	19.60		80.0	
10498-AAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	4.31	71.42	16.10	2.23	80.0	± 9.6 %
		Y	4.05	70.52	15.58		80.0	
		Z	4.34	71.77	16.11		80.0	
10499-AAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	4.27	70.94	15.80	2.23	80.0	± 9.6 %
		Y	3.98	70.00	15.24		80.0	
		Z	4.25	71.16	15.75		80.0	
10500-AAA	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	6.24	78.61	20.73	2.23	80.0	± 9.6 %
		Y	5.82	77.56	20.37		80.0	
		Z	6.42	79.55	21.18		80.0	
10501-AAA	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	5.18	73.19	18.64	2.23	80.0	± 9.6 %
		Y	5.05	72.81	18.45		80.0	
		Z	5.24	73.73	18.88		80.0	
10502-AAA	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	5.20	72.88	18.49	2.23	80.0	± 9.6 %
		Y	5.09	72.56	18.32		80.0	
		Z	5.26	73.41	18.72		80.0	
10503-AAA	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	6.31	77.98	20.65	2.23	80.0	± 9.6 %
		Y	5.89	76.94	20.32		80.0	
		Z	6.40	78.67	21.04		80.0	
10504-AAA	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	5.18	72.62	18.84	2.23	80.0	± 9.6 %
		Y	5.05	72.19	18.66		80.0	
		Z	5.18	72.96	19.04		80.0	
10505-AAA	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	5.22	72.20	18.70	2.23	80.0	± 9.6 %
		Y	5.10	71.83	18.54		80.0	
		Z	5.22	72.54	18.90		80.0	
10506-AAA	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	6.75	77.34	20.29	2.23	80.0	± 9.6 %
		Y	6.36	76.44	20.03		80.0	
		Z	6.81	77.88	20.63		80.0	
10507-AAA	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	5.48	72.08	18.79	2.23	80.0	± 9.6 %
		Y	5.35	71.65	18.63		80.0	
		Z	5.46	72.29	18.95		80.0	

10508-AAA	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	5.50	71.59	18.63	2.23	80.0	± 9.6 %
		Y	5.38	71.22	18.49		80.0	
		Z	5.47	71.78	18.79		80.0	
10509-AAA	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	6.53	74.93	19.40	2.23	80.0	± 9.6 %
		Y	6.29	74.36	19.25		80.0	
		Z	6.55	75.31	19.67		80.0	
10510-AAA	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	5.88	71.44	18.58	2.23	80.0	± 9.6 %
		Y	5.77	71.08	18.45		80.0	
		Z	5.84	71.58	18.71		80.0	
10511-AAA	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	5.87	71.05	18.47	2.23	80.0	± 9.6 %
		Y	5.77	70.72	18.36		80.0	
		Z	5.83	71.17	18.60		80.0	
10512-AAA	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	7.22	77.19	20.09	2.23	80.0	± 9.6 %
		Y	6.85	76.38	19.87		80.0	
		Z	7.29	77.69	20.41		80.0	
10513-AAA	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	5.86	72.04	18.79	2.23	80.0	± 9.6 %
		Y	5.72	71.59	18.64		80.0	
		Z	5.82	72.17	18.93		80.0	
10514-AAA	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	5.77	71.41	18.61	2.23	80.0	± 9.6 %
		Y	5.66	71.02	18.47		80.0	
		Z	5.73	71.53	18.74		80.0	
10515-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 2 Mbps, 99pc duty cycle)	X	0.97	63.64	15.09	0.00	150.0	± 9.6 %
		Y	0.99	63.32	14.82		150.0	
		Z	1.01	63.99	15.42		150.0	
10516-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 5.5 Mbps, 99pc duty cycle)	X	0.78	76.08	19.79	0.00	150.0	± 9.6 %
		Y	0.63	70.67	17.47		150.0	
		Z	0.88	77.61	21.01		150.0	
10517-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 11 Mbps, 99pc duty cycle)	X	0.85	66.24	16.04	0.00	150.0	± 9.6 %
		Y	0.85	65.35	15.50		150.0	
		Z	0.89	66.77	16.53		150.0	
10518-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 9 Mbps, 99pc duty cycle)	X	4.72	66.89	16.32	0.00	150.0	± 9.6 %
		Y	4.71	66.87	16.28		150.0	
		Z	4.72	67.02	16.40		150.0	
10519-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 12 Mbps, 99pc duty cycle)	X	4.96	67.21	16.46	0.00	150.0	± 9.6 %
		Y	4.94	67.17	16.43		150.0	
		Z	4.94	67.32	16.54		150.0	
10520-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 18 Mbps, 99pc duty cycle)	X	4.80	67.20	16.39	0.00	150.0	± 9.6 %
		Y	4.78	67.15	16.36		150.0	
		Z	4.79	67.31	16.47		150.0	
10521-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 24 Mbps, 99pc duty cycle)	X	4.73	67.21	16.38	0.00	150.0	± 9.6 %
		Y	4.71	67.16	16.34		150.0	
		Z	4.72	67.32	16.46		150.0	
10522-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 36 Mbps, 99pc duty cycle)	X	4.77	67.11	16.38	0.00	150.0	± 9.6 %
		Y	4.75	67.11	16.36		150.0	
		Z	4.76	67.26	16.48		150.0	

10523-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 48 Mbps, 99pc duty cycle)	X	4.64	67.06	16.26	0.00	150.0	± 9.6 %
		Y	4.63	67.02	16.23		150.0	
		Z	4.64	67.19	16.35		150.0	
10524-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 54 Mbps, 99pc duty cycle)	X	4.73	67.10	16.38	0.00	150.0	± 9.6 %
		Y	4.71	67.08	16.36		150.0	
		Z	4.72	67.24	16.48		150.0	
10525-AAA	IEEE 802.11ac WiFi (20MHz, MCS0, 99pc duty cycle)	X	4.67	66.13	15.97	0.00	150.0	± 9.6 %
		Y	4.66	66.11	15.94		150.0	
		Z	4.67	66.26	16.06		150.0	
10526-AAA	IEEE 802.11ac WiFi (20MHz, MCS1, 99pc duty cycle)	X	4.89	66.55	16.11	0.00	150.0	± 9.6 %
		Y	4.87	66.51	16.09		150.0	
		Z	4.88	66.68	16.21		150.0	
10527-AAA	IEEE 802.11ac WiFi (20MHz, MCS2, 99pc duty cycle)	X	4.80	66.53	16.08	0.00	150.0	± 9.6 %
		Y	4.78	66.49	16.04		150.0	
		Z	4.79	66.66	16.17		150.0	
10528-AAA	IEEE 802.11ac WiFi (20MHz, MCS3, 99pc duty cycle)	X	4.82	66.56	16.11	0.00	150.0	± 9.6 %
		Y	4.80	66.51	16.08		150.0	
		Z	4.81	66.68	16.20		150.0	
10529-AAA	IEEE 802.11ac WiFi (20MHz, MCS4, 99pc duty cycle)	X	4.82	66.56	16.11	0.00	150.0	± 9.6 %
		Y	4.80	66.51	16.08		150.0	
		Z	4.81	66.68	16.20		150.0	
10531-AAA	IEEE 802.11ac WiFi (20MHz, MCS6, 99pc duty cycle)	X	4.84	66.72	16.14	0.00	150.0	± 9.6 %
		Y	4.82	66.67	16.11		150.0	
		Z	4.83	66.84	16.23		150.0	
10532-AAA	IEEE 802.11ac WiFi (20MHz, MCS7, 99pc duty cycle)	X	4.69	66.61	16.10	0.00	150.0	± 9.6 %
		Y	4.66	66.54	16.05		150.0	
		Z	4.68	66.72	16.18		150.0	
10533-AAA	IEEE 802.11ac WiFi (20MHz, MCS8, 99pc duty cycle)	X	4.84	66.57	16.08	0.00	150.0	± 9.6 %
		Y	4.81	66.53	16.05		150.0	
		Z	4.83	66.70	16.17		150.0	
10534-AAA	IEEE 802.11ac WiFi (40MHz, MCS0, 99pc duty cycle)	X	5.33	66.74	16.17	0.00	150.0	± 9.6 %
		Y	5.31	66.69	16.14		150.0	
		Z	5.32	66.83	16.24		150.0	
10535-AAA	IEEE 802.11ac WiFi (40MHz, MCS1, 99pc duty cycle)	X	5.40	66.88	16.22	0.00	150.0	± 9.6 %
		Y	5.39	66.83	16.19		150.0	
		Z	5.39	66.97	16.29		150.0	
10536-AAA	IEEE 802.11ac WiFi (40MHz, MCS2, 99pc duty cycle)	X	5.26	66.87	16.20	0.00	150.0	± 9.6 %
		Y	5.25	66.82	16.17		150.0	
		Z	5.26	66.97	16.28		150.0	
10537-AAA	IEEE 802.11ac WiFi (40MHz, MCS3, 99pc duty cycle)	X	5.33	66.84	16.18	0.00	150.0	± 9.6 %
		Y	5.32	66.80	16.16		150.0	
		Z	5.33	66.94	16.26		150.0	
10538-AAA	IEEE 802.11ac WiFi (40MHz, MCS4, 99pc duty cycle)	X	5.46	66.94	16.27	0.00	150.0	± 9.6 %
		Y	5.44	66.88	16.24		150.0	
		Z	5.44	67.01	16.34		150.0	
10540-AAA	IEEE 802.11ac WiFi (40MHz, MCS6, 99pc duty cycle)	X	5.34	66.86	16.25	0.00	150.0	± 9.6 %
		Y	5.33	66.81	16.22		150.0	
		Z	5.34	66.95	16.32		150.0	

10541-AAA	IEEE 802.11ac WiFi (40MHz, MCS7, 99pc duty cycle)	X	5.34	66.83	16.23	0.00	150.0	± 9.6 %
		Y	5.32	66.74	16.19		150.0	
		Z	5.33	66.88	16.29		150.0	
10542-AAA	IEEE 802.11ac WiFi (40MHz, MCS8, 99pc duty cycle)	X	5.48	66.80	16.24	0.00	150.0	± 9.6 %
		Y	5.47	66.76	16.21		150.0	
		Z	5.47	66.89	16.31		150.0	
10543-AAA	IEEE 802.11ac WiFi (40MHz, MCS9, 99pc duty cycle)	X	5.58	66.84	16.26	0.00	150.0	± 9.6 %
		Y	5.55	66.78	16.23		150.0	
		Z	5.56	66.91	16.32		150.0	
10544-AAA	IEEE 802.11ac WiFi (80MHz, MCS0, 99pc duty cycle)	X	5.59	66.84	16.14	0.00	150.0	± 9.6 %
		Y	5.59	66.80	16.12		150.0	
		Z	5.59	66.93	16.22		150.0	
10545-AAA	IEEE 802.11ac WiFi (80MHz, MCS1, 99pc duty cycle)	X	5.80	67.23	16.27	0.00	150.0	± 9.6 %
		Y	5.81	67.21	16.27		150.0	
		Z	5.81	67.33	16.35		150.0	
10546-AAA	IEEE 802.11ac WiFi (80MHz, MCS2, 99pc duty cycle)	X	5.70	67.16	16.26	0.00	150.0	± 9.6 %
		Y	5.69	67.10	16.23		150.0	
		Z	5.70	67.23	16.32		150.0	
10547-AAA	IEEE 802.11ac WiFi (80MHz, MCS3, 99pc duty cycle)	X	5.80	67.24	16.29	0.00	150.0	± 9.6 %
		Y	5.78	67.16	16.25		150.0	
		Z	5.79	67.29	16.34		150.0	
10548-AAA	IEEE 802.11ac WiFi (80MHz, MCS4, 99pc duty cycle)	X	6.11	68.33	16.80	0.00	150.0	± 9.6 %
		Y	6.11	68.30	16.79		150.0	
		Z	6.10	68.40	16.87		150.0	
10550-AAA	IEEE 802.11ac WiFi (80MHz, MCS6, 99pc duty cycle)	X	5.72	67.09	16.23	0.00	150.0	± 9.6 %
		Y	5.71	67.04	16.21		150.0	
		Z	5.72	67.17	16.30		150.0	
10551-AAA	IEEE 802.11ac WiFi (80MHz, MCS7, 99pc duty cycle)	X	5.74	67.22	16.25	0.00	150.0	± 9.6 %
		Y	5.73	67.16	16.23		150.0	
		Z	5.74	67.28	16.32		150.0	
10552-AAA	IEEE 802.11ac WiFi (80MHz, MCS8, 99pc duty cycle)	X	5.64	66.96	16.15	0.00	150.0	± 9.6 %
		Y	5.63	66.91	16.12		150.0	
		Z	5.63	67.04	16.21		150.0	
10553-AAA	IEEE 802.11ac WiFi (80MHz, MCS9, 99pc duty cycle)	X	5.73	67.00	16.19	0.00	150.0	± 9.6 %
		Y	5.72	66.95	16.17		150.0	
		Z	5.73	67.08	16.26		150.0	
10554-AAA	IEEE 1602.11ac WiFi (160MHz, MCS0, 99pc duty cycle)	X	5.98	67.23	16.24	0.00	150.0	± 9.6 %
		Y	5.99	67.19	16.23		150.0	
		Z	5.99	67.31	16.31		150.0	
10555-AAA	IEEE 1602.11ac WiFi (160MHz, MCS1, 99pc duty cycle)	X	6.16	67.63	16.41	0.00	150.0	± 9.6 %
		Y	6.15	67.55	16.37		150.0	
		Z	6.15	67.67	16.46		150.0	
10556-AAA	IEEE 1602.11ac WiFi (160MHz, MCS2, 99pc duty cycle)	X	6.15	67.58	16.38	0.00	150.0	± 9.6 %
		Y	6.15	67.54	16.36		150.0	
		Z	6.16	67.66	16.45		150.0	
10557-AAA	IEEE 1602.11ac WiFi (160MHz, MCS3, 99pc duty cycle)	X	6.15	67.59	16.40	0.00	150.0	± 9.6 %
		Y	6.15	67.52	16.38		150.0	
		Z	6.15	67.65	16.46		150.0	

10558-AAA	IEEE 1602.11ac WiFi (160MHz, MCS4, 99pc duty cycle)	X	6.22	67.79	16.52	0.00	150.0	± 9.6 %
		Y	6.21	67.72	16.49		150.0	
		Z	6.21	67.84	16.57		150.0	
10560-AAA	IEEE 1602.11ac WiFi (160MHz, MCS6, 99pc duty cycle)	X	6.21	67.62	16.48	0.00	150.0	± 9.6 %
		Y	6.20	67.54	16.44		150.0	
		Z	6.21	67.67	16.52		150.0	
10561-AAA	IEEE 1602.11ac WiFi (160MHz, MCS7, 99pc duty cycle)	X	6.12	67.56	16.48	0.00	150.0	± 9.6 %
		Y	6.11	67.49	16.45		150.0	
		Z	6.11	67.62	16.54		150.0	
10562-AAA	IEEE 1602.11ac WiFi (160MHz, MCS8, 99pc duty cycle)	X	6.29	68.09	16.75	0.00	150.0	± 9.6 %
		Y	6.28	68.00	16.71		150.0	
		Z	6.28	68.13	16.80		150.0	
10563-AAA	IEEE 1602.11ac WiFi (160MHz, MCS9, 99pc duty cycle)	X	6.54	68.36	16.83	0.00	150.0	± 9.6 %
		Y	6.57	68.41	16.85		150.0	
		Z	6.57	68.51	16.93		150.0	
10564-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 9 Mbps, 99pc duty cycle)	X	5.06	67.04	16.51	0.46	150.0	± 9.6 %
		Y	5.05	67.01	16.47		150.0	
		Z	5.06	67.15	16.59		150.0	
10565-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 12 Mbps, 99pc duty cycle)	X	5.34	67.54	16.84	0.46	150.0	± 9.6 %
		Y	5.32	67.51	16.80		150.0	
		Z	5.33	67.64	16.90		150.0	
10566-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 18 Mbps, 99pc duty cycle)	X	5.17	67.43	16.67	0.46	150.0	± 9.6 %
		Y	5.15	67.38	16.64		150.0	
		Z	5.16	67.53	16.75		150.0	
10567-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 24 Mbps, 99pc duty cycle)	X	5.19	67.79	16.99	0.46	150.0	± 9.6 %
		Y	5.18	67.77	16.98		150.0	
		Z	5.18	67.89	17.07		150.0	
10568-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 36 Mbps, 99pc duty cycle)	X	5.08	67.13	16.42	0.46	150.0	± 9.6 %
		Y	5.06	67.09	16.38		150.0	
		Z	5.07	67.25	16.51		150.0	
10569-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 48 Mbps, 99pc duty cycle)	X	5.13	67.78	16.99	0.46	150.0	± 9.6 %
		Y	5.12	67.79	17.00		150.0	
		Z	5.12	67.90	17.08		150.0	
10570-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 54 Mbps, 99pc duty cycle)	X	5.17	67.61	16.93	0.46	150.0	± 9.6 %
		Y	5.16	67.61	16.93		150.0	
		Z	5.16	67.74	17.02		150.0	
10571-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps, 90pc duty cycle)	X	1.39	66.83	16.76	0.46	130.0	± 9.6 %
		Y	1.39	66.19	16.38		130.0	
		Z	1.42	67.03	17.01		130.0	
10572-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 2 Mbps, 90pc duty cycle)	X	1.43	67.56	17.16	0.46	130.0	± 9.6 %
		Y	1.42	66.85	16.75		130.0	
		Z	1.46	67.77	17.42		130.0	
10573-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 5.5 Mbps, 90pc duty cycle)	X	18.61	116.47	31.43	0.46	130.0	± 9.6 %
		Y	4.07	92.61	25.14		130.0	
		Z	21.94	121.24	33.33		130.0	
10574-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 11 Mbps, 90pc duty cycle)	X	1.85	75.72	20.80	0.46	130.0	± 9.6 %
		Y	1.71	73.65	19.92		130.0	
		Z	1.88	76.05	21.19		130.0	

10575-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps, 90pc duty cycle)	X	4.89	66.92	16.62	0.46	130.0	± 9.6 %
		Y	4.88	66.90	16.59		130.0	
		Z	4.88	67.03	16.69		130.0	
10576-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 9 Mbps, 90pc duty cycle)	X	4.91	67.07	16.68	0.46	130.0	± 9.6 %
		Y	4.91	67.06	16.65		130.0	
		Z	4.91	67.19	16.75		130.0	
10577-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 12 Mbps, 90pc duty cycle)	X	5.16	67.42	16.86	0.46	130.0	± 9.6 %
		Y	5.15	67.40	16.83		130.0	
		Z	5.15	67.52	16.93		130.0	
10578-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 18 Mbps, 90pc duty cycle)	X	5.06	67.59	16.95	0.46	130.0	± 9.6 %
		Y	5.04	67.58	16.94		130.0	
		Z	5.04	67.69	17.03		130.0	
10579-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 24 Mbps, 90pc duty cycle)	X	4.84	67.04	16.37	0.46	130.0	± 9.6 %
		Y	4.82	66.95	16.30		130.0	
		Z	4.83	67.12	16.43		130.0	
10580-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 36 Mbps, 90pc duty cycle)	X	4.88	66.96	16.35	0.46	130.0	± 9.6 %
		Y	4.86	66.90	16.28		130.0	
		Z	4.87	67.07	16.42		130.0	
10581-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 48 Mbps, 90pc duty cycle)	X	4.97	67.71	16.92	0.46	130.0	± 9.6 %
		Y	4.95	67.68	16.90		130.0	
		Z	4.95	67.80	16.99		130.0	
10582-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 54 Mbps, 90pc duty cycle)	X	4.80	66.79	16.17	0.46	130.0	± 9.6 %
		Y	4.77	66.69	16.09		130.0	
		Z	4.78	66.88	16.24		130.0	
10583-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps, 90pc duty cycle)	X	4.89	66.92	16.62	0.46	130.0	± 9.6 %
		Y	4.88	66.90	16.59		130.0	
		Z	4.88	67.03	16.69		130.0	
10584-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 9 Mbps, 90pc duty cycle)	X	4.91	67.07	16.68	0.46	130.0	± 9.6 %
		Y	4.91	67.06	16.65		130.0	
		Z	4.91	67.19	16.75		130.0	
10585-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 12 Mbps, 90pc duty cycle)	X	5.16	67.42	16.86	0.46	130.0	± 9.6 %
		Y	5.15	67.40	16.83		130.0	
		Z	5.15	67.52	16.93		130.0	
10586-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 18 Mbps, 90pc duty cycle)	X	5.06	67.59	16.95	0.46	130.0	± 9.6 %
		Y	5.04	67.58	16.94		130.0	
		Z	5.04	67.69	17.03		130.0	
10587-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 24 Mbps, 90pc duty cycle)	X	4.84	67.04	16.37	0.46	130.0	± 9.6 %
		Y	4.82	66.95	16.30		130.0	
		Z	4.83	67.12	16.43		130.0	
10588-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 36 Mbps, 90pc duty cycle)	X	4.88	66.96	16.35	0.46	130.0	± 9.6 %
		Y	4.86	66.90	16.28		130.0	
		Z	4.87	67.07	16.42		130.0	
10589-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 48 Mbps, 90pc duty cycle)	X	4.97	67.71	16.92	0.46	130.0	± 9.6 %
		Y	4.95	67.68	16.90		130.0	
		Z	4.95	67.80	16.99		130.0	
10590-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 54 Mbps, 90pc duty cycle)	X	4.80	66.79	16.17	0.46	130.0	± 9.6 %
		Y	4.77	66.69	16.09		130.0	
		Z	4.78	66.88	16.24		130.0	

10591-AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS0, 90pc duty cycle)	X	5.03	66.97	16.70	0.46	130.0	± 9.6 %
		Y	5.03	66.96	16.68		130.0	
		Z	5.03	67.08	16.78		130.0	
10592-AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS1, 90pc duty cycle)	X	5.22	67.32	16.82	0.46	130.0	± 9.6 %
		Y	5.21	67.31	16.80		130.0	
		Z	5.21	67.42	16.90		130.0	
10593-AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS2, 90pc duty cycle)	X	5.16	67.30	16.75	0.46	130.0	± 9.6 %
		Y	5.14	67.27	16.71		130.0	
		Z	5.14	67.40	16.82		130.0	
10594-AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS3, 90pc duty cycle)	X	5.20	67.42	16.87	0.46	130.0	± 9.6 %
		Y	5.19	67.41	16.85		130.0	
		Z	5.19	67.53	16.94		130.0	
10595-AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS4, 90pc duty cycle)	X	5.19	67.42	16.79	0.46	130.0	± 9.6 %
		Y	5.17	67.39	16.76		130.0	
		Z	5.17	67.51	16.86		130.0	
10596-AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS5, 90pc duty cycle)	X	5.12	67.41	16.79	0.46	130.0	± 9.6 %
		Y	5.11	67.38	16.76		130.0	
		Z	5.11	67.51	16.86		130.0	
10597-AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS6, 90pc duty cycle)	X	5.08	67.37	16.71	0.46	130.0	± 9.6 %
		Y	5.06	67.32	16.67		130.0	
		Z	5.06	67.46	16.78		130.0	
10598-AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS7, 90pc duty cycle)	X	5.06	67.63	16.97	0.46	130.0	± 9.6 %
		Y	5.04	67.59	16.94		130.0	
		Z	5.04	67.71	17.04		130.0	
10599-AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS0, 90pc duty cycle)	X	5.70	67.60	16.89	0.46	130.0	± 9.6 %
		Y	5.70	67.57	16.88		130.0	
		Z	5.69	67.67	16.95		130.0	
10600-AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS1, 90pc duty cycle)	X	5.96	68.36	17.25	0.46	130.0	± 9.6 %
		Y	5.93	68.27	17.19		130.0	
		Z	5.92	68.36	17.27		130.0	
10601-AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS2, 90pc duty cycle)	X	5.77	67.88	17.02	0.46	130.0	± 9.6 %
		Y	5.76	67.84	17.00		130.0	
		Z	5.76	67.94	17.07		130.0	
10602-AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS3, 90pc duty cycle)	X	5.89	67.97	16.99	0.46	130.0	± 9.6 %
		Y	5.86	67.86	16.92		130.0	
		Z	5.85	67.97	17.01		130.0	
10603-AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS4, 90pc duty cycle)	X	6.01	68.36	17.30	0.46	130.0	± 9.6 %
		Y	5.97	68.24	17.24		130.0	
		Z	5.97	68.34	17.32		130.0	
10604-AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS5, 90pc duty cycle)	X	5.72	67.60	16.91	0.46	130.0	± 9.6 %
		Y	5.71	67.55	16.89		130.0	
		Z	5.70	67.65	16.97		130.0	
10605-AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS6, 90pc duty cycle)	X	5.82	67.89	17.06	0.46	130.0	± 9.6 %
		Y	5.81	67.84	17.03		130.0	
		Z	5.81	67.95	17.12		130.0	
10606-AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS7, 90pc duty cycle)	X	5.59	67.36	16.67	0.46	130.0	± 9.6 %
		Y	5.59	67.33	16.65		130.0	
		Z	5.59	67.46	16.75		130.0	

10607-AAA	IEEE 802.11ac WiFi (20MHz, MCS0, 90pc duty cycle)	X	4.86	66.24	16.30	0.46	130.0	± 9.6 %
		Y	4.85	66.24	16.28		130.0	
		Z	4.86	66.37	16.38		130.0	
10608-AAA	IEEE 802.11ac WiFi (20MHz, MCS1, 90pc duty cycle)	X	5.09	66.68	16.46	0.46	130.0	± 9.6 %
		Y	5.07	66.67	16.44		130.0	
		Z	5.08	66.80	16.54		130.0	
10609-AAA	IEEE 802.11ac WiFi (20MHz, MCS2, 90pc duty cycle)	X	4.98	66.59	16.34	0.46	130.0	± 9.6 %
		Y	4.96	66.55	16.31		130.0	
		Z	4.97	66.70	16.42		130.0	
10610-AAA	IEEE 802.11ac WiFi (20MHz, MCS3, 90pc duty cycle)	X	5.03	66.73	16.49	0.46	130.0	± 9.6 %
		Y	5.02	66.71	16.47		130.0	
		Z	5.02	66.85	16.57		130.0	
10611-AAA	IEEE 802.11ac WiFi (20MHz, MCS4, 90pc duty cycle)	X	4.96	66.60	16.37	0.46	130.0	± 9.6 %
		Y	4.94	66.56	16.33		130.0	
		Z	4.95	66.70	16.44		130.0	
10612-AAA	IEEE 802.11ac WiFi (20MHz, MCS5, 90pc duty cycle)	X	4.98	66.74	16.40	0.46	130.0	± 9.6 %
		Y	4.96	66.69	16.36		130.0	
		Z	4.97	66.85	16.48		130.0	
10613-AAA	IEEE 802.11ac WiFi (20MHz, MCS6, 90pc duty cycle)	X	5.00	66.68	16.32	0.46	130.0	± 9.6 %
		Y	4.97	66.62	16.27		130.0	
		Z	4.98	66.79	16.39		130.0	
10614-AAA	IEEE 802.11ac WiFi (20MHz, MCS7, 90pc duty cycle)	X	4.92	66.87	16.54	0.46	130.0	± 9.6 %
		Y	4.90	66.82	16.51		130.0	
		Z	4.91	66.96	16.61		130.0	
10615-AAA	IEEE 802.11ac WiFi (20MHz, MCS8, 90pc duty cycle)	X	4.96	66.40	16.15	0.46	130.0	± 9.6 %
		Y	4.94	66.35	16.10		130.0	
		Z	4.95	66.52	16.23		130.0	
10616-AAA	IEEE 802.11ac WiFi (40MHz, MCS0, 90pc duty cycle)	X	5.51	66.85	16.50	0.46	130.0	± 9.6 %
		Y	5.51	66.82	16.48		130.0	
		Z	5.51	66.93	16.57		130.0	
10617-AAA	IEEE 802.11ac WiFi (40MHz, MCS1, 90pc duty cycle)	X	5.58	66.97	16.52	0.46	130.0	± 9.6 %
		Y	5.57	66.93	16.50		130.0	
		Z	5.57	67.05	16.59		130.0	
10618-AAA	IEEE 802.11ac WiFi (40MHz, MCS2, 90pc duty cycle)	X	5.47	67.03	16.57	0.46	130.0	± 9.6 %
		Y	5.47	67.01	16.56		130.0	
		Z	5.47	67.12	16.65		130.0	
10619-AAA	IEEE 802.11ac WiFi (40MHz, MCS3, 90pc duty cycle)	X	5.49	66.84	16.42	0.46	130.0	± 9.6 %
		Y	5.48	66.81	16.40		130.0	
		Z	5.49	66.94	16.49		130.0	
10620-AAA	IEEE 802.11ac WiFi (40MHz, MCS4, 90pc duty cycle)	X	5.63	67.01	16.55	0.46	130.0	± 9.6 %
		Y	5.61	66.94	16.51		130.0	
		Z	5.61	67.06	16.60		130.0	
10621-AAA	IEEE 802.11ac WiFi (40MHz, MCS5, 90pc duty cycle)	X	5.59	67.04	16.67	0.46	130.0	± 9.6 %
		Y	5.58	67.00	16.66		130.0	
		Z	5.58	67.11	16.73		130.0	
10622-AAA	IEEE 802.11ac WiFi (40MHz, MCS6, 90pc duty cycle)	X	5.58	67.13	16.71	0.46	130.0	± 9.6 %
		Y	5.58	67.10	16.70		130.0	
		Z	5.57	67.21	16.77		130.0	

10623-AAA	IEEE 802.11ac WiFi (40MHz, MCS7, 90pc duty cycle)	X	5.50	66.83	16.46	0.46	130.0	± 9.6 %
		Y	5.47	66.72	16.39		130.0	
		Z	5.48	66.85	16.49		130.0	
10624-AAA	IEEE 802.11ac WiFi (40MHz, MCS8, 90pc duty cycle)	X	5.66	66.88	16.54	0.46	130.0	± 9.6 %
		Y	5.65	66.86	16.52		130.0	
		Z	5.65	66.97	16.61		130.0	
10625-AAA	IEEE 802.11ac WiFi (40MHz, MCS9, 90pc duty cycle)	X	6.01	67.74	17.01	0.46	130.0	± 9.6 %
		Y	6.05	67.88	17.08		130.0	
		Z	6.04	67.96	17.15		130.0	
10626-AAA	IEEE 802.11ac WiFi (80MHz, MCS0, 90pc duty cycle)	X	5.75	66.88	16.43	0.46	130.0	± 9.6 %
		Y	5.76	66.85	16.41		130.0	
		Z	5.75	66.96	16.49		130.0	
10627-AAA	IEEE 802.11ac WiFi (80MHz, MCS1, 90pc duty cycle)	X	6.01	67.38	16.62	0.46	130.0	± 9.6 %
		Y	6.02	67.40	16.64		130.0	
		Z	6.01	67.49	16.71		130.0	
10628-AAA	IEEE 802.11ac WiFi (80MHz, MCS2, 90pc duty cycle)	X	5.83	67.09	16.43	0.46	130.0	± 9.6 %
		Y	5.83	67.04	16.40		130.0	
		Z	5.83	67.16	16.49		130.0	
10629-AAA	IEEE 802.11ac WiFi (80MHz, MCS3, 90pc duty cycle)	X	5.95	67.23	16.49	0.46	130.0	± 9.6 %
		Y	5.93	67.12	16.43		130.0	
		Z	5.93	67.24	16.52		130.0	
10630-AAA	IEEE 802.11ac WiFi (80MHz, MCS4, 90pc duty cycle)	X	6.53	69.08	17.41	0.46	130.0	± 9.6 %
		Y	6.52	69.03	17.38		130.0	
		Z	6.50	69.10	17.45		130.0	
10631-AAA	IEEE 802.11ac WiFi (80MHz, MCS5, 90pc duty cycle)	X	6.39	68.76	17.42	0.46	130.0	± 9.6 %
		Y	6.37	68.68	17.39		130.0	
		Z	6.35	68.75	17.45		130.0	
10632-AAA	IEEE 802.11ac WiFi (80MHz, MCS6, 90pc duty cycle)	X	6.01	67.52	16.82	0.46	130.0	± 9.6 %
		Y	6.00	67.49	16.82		130.0	
		Z	5.99	67.58	16.88		130.0	
10633-AAA	IEEE 802.11ac WiFi (80MHz, MCS7, 90pc duty cycle)	X	5.97	67.44	16.62	0.46	130.0	± 9.6 %
		Y	5.95	67.35	16.58		130.0	
		Z	5.95	67.46	16.66		130.0	
10634-AAA	IEEE 802.11ac WiFi (80MHz, MCS8, 90pc duty cycle)	X	5.94	67.39	16.66	0.46	130.0	± 9.6 %
		Y	5.92	67.31	16.62		130.0	
		Z	5.91	67.41	16.70		130.0	
10635-AAA	IEEE 802.11ac WiFi (80MHz, MCS9, 90pc duty cycle)	X	5.81	66.73	16.09	0.46	130.0	± 9.6 %
		Y	5.79	66.63	16.02		130.0	
		Z	5.80	66.78	16.13		130.0	
10636-AAA	IEEE 1602.11ac WiFi (160MHz, MCS0, 90pc duty cycle)	X	6.15	67.27	16.52	0.46	130.0	± 9.6 %
		Y	6.16	67.25	16.52		130.0	
		Z	6.16	67.35	16.59		130.0	
10637-AAA	IEEE 1602.11ac WiFi (160MHz, MCS1, 90pc duty cycle)	X	6.36	67.74	16.73	0.46	130.0	± 9.6 %
		Y	6.35	67.67	16.70		130.0	
		Z	6.34	67.77	16.77		130.0	
10638-AAA	IEEE 1602.11ac WiFi (160MHz, MCS2, 90pc duty cycle)	X	6.33	67.63	16.65	0.46	130.0	± 9.6 %
		Y	6.34	67.61	16.65		130.0	
		Z	6.33	67.71	16.72		130.0	

10639-AAA	IEEE 1602.11ac WiFi (160MHz, MCS3, 90pc duty cycle)	X	6.35	67.70	16.74	0.46	130.0	± 9.6 %
		Y	6.35	67.65	16.72		130.0	
		Z	6.34	67.75	16.79		130.0	
10640-AAA	IEEE 1602.11ac WiFi (160MHz, MCS4, 90pc duty cycle)	X	6.39	67.82	16.74	0.46	130.0	± 9.6 %
		Y	6.38	67.74	16.71		130.0	
		Z	6.38	67.86	16.79		130.0	
10641-AAA	IEEE 1602.11ac WiFi (160MHz, MCS5, 90pc duty cycle)	X	6.37	67.50	16.60	0.46	130.0	± 9.6 %
		Y	6.36	67.44	16.57		130.0	
		Z	6.36	67.56	16.65		130.0	
10642-AAA	IEEE 1602.11ac WiFi (160MHz, MCS6, 90pc duty cycle)	X	6.45	67.86	16.94	0.46	130.0	± 9.6 %
		Y	6.43	67.79	16.91		130.0	
		Z	6.43	67.88	16.98		130.0	
10643-AAA	IEEE 1602.11ac WiFi (160MHz, MCS7, 90pc duty cycle)	X	6.27	67.55	16.69	0.46	130.0	± 9.6 %
		Y	6.26	67.47	16.66		130.0	
		Z	6.26	67.59	16.74		130.0	
10644-AAA	IEEE 1602.11ac WiFi (160MHz, MCS8, 90pc duty cycle)	X	6.53	68.33	17.11	0.46	130.0	± 9.6 %
		Y	6.51	68.21	17.05		130.0	
		Z	6.51	68.32	17.13		130.0	
10645-AAA	IEEE 1602.11ac WiFi (160MHz, MCS9, 90pc duty cycle)	X	6.77	68.56	17.17	0.46	130.0	± 9.6 %
		Y	6.81	68.62	17.19		130.0	
		Z	6.80	68.72	17.27		130.0	
10646-AAB	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, QPSK, UL Subframe=2,7)	X	25.99	106.58	35.17	9.30	60.0	± 9.6 %
		Y	21.82	102.72	33.95		60.0	
		Z	27.43	108.77	35.97		60.0	
10647-AAA	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK, UL Subframe=2,7)	X	27.16	108.33	35.83	9.30	60.0	± 9.6 %
		Y	22.36	104.00	34.47		60.0	
		Z	28.70	110.58	36.65		60.0	
10648-AAA	CDMA2000 (1x Advanced)	X	0.86	65.46	12.69	0.00	150.0	± 9.6 %
		Y	0.83	64.77	12.28		150.0	
		Z	0.90	66.26	13.22		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.



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 Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 0108**

Client **PC Test**

Certificate No.: **ES3-3332_Sep15**

CALIBRATION CERTIFICATE

Object **ES3DV3 - SN:3332**

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

Calibration date: **September 18, 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	US3642U01730	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

	Name	Function	Signature
Calibrated by:	Michael Weber	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	
This calibration certificate shall not be reproduced except in full without written approval of the laboratory.			

Issued: September 19, 2015



Accredited by the Swiss Accreditation Service (SAS)

Accreditation No.: **SCS 0108**

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 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., $\theta = 0$ 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:

- 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, "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
- 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 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 $\theta = 0$ ($f \leq 900$ 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 ES3DV3

SN:3332

Manufactured: January 24, 2012
Calibrated: September 18, 2015

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

DASY/EASY - Parameters of Probe: ES3DV3 - SN:3332

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu\text{V}/(\text{V}/\text{m})^2$) ^A	0.93	1.15	0.99	$\pm 10.1 \%$
DCP (mV) ^B	108.2	105.6	111.7	

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	180.2	$\pm 3.3 \%$
		Y	0.0	0.0	1.0		198.1	
		Z	0.0	0.0	1.0		187.7	
10010-CAA	SAR Validation (Square, 100ms, 10ms)	X	2.96	64.5	11.8	10.00	35.0	$\pm 1.2 \%$
		Y	2.25	60.5	10.6		40.1	
		Z	2.62	65.4	12.1		35.6	
10011-CAB	UMTS-FDD (WCDMA)	X	3.44	68.4	19.2	2.91	147.3	$\pm 0.5 \%$
		Y	3.37	67.7	18.7		139.1	
		Z	3.45	69.0	19.4		149.1	
10012-CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps)	X	3.28	71.7	20.1	1.87	148.2	$\pm 0.9 \%$
		Y	3.30	71.1	19.7		137.5	
		Z	4.01	76.3	22.2		149.5	
10013-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps)	X	10.53	69.8	22.7	9.46	139.2	$\pm 2.5 \%$
		Y	10.78	69.9	22.7		131.2	
		Z	10.35	69.9	22.9		138.0	
10021-DAB	GSM-FDD (TDMA, GMSK)	X	5.49	76.7	19.0	9.39	136.0	$\pm 1.7 \%$
		Y	10.71	86.8	23.3		136.5	
		Z	4.51	77.8	20.5		131.7	
10023-DAB	GPRS-FDD (TDMA, GMSK, TN 0)	X	6.10	78.4	19.8	9.57	129.5	$\pm 2.5 \%$
		Y	10.58	86.6	23.3		129.0	
		Z	4.53	77.3	20.2		146.7	
10024-DAB	GPRS-FDD (TDMA, GMSK, TN 0-1)	X	6.33	78.5	17.8	6.56	140.5	$\pm 1.9 \%$
		Y	37.44	99.7	24.4		145.2	
		Z	24.95	99.6	24.7		141.3	
10027-DAB	GPRS-FDD (TDMA, GMSK, TN 0-1-2)	X	54.77	99.9	21.9	4.80	140.5	$\pm 2.5 \%$
		Y	45.73	99.6	22.9		135.1	
		Z	16.63	92.9	21.5		136.4	
10028-DAB	GPRS-FDD (TDMA, GMSK, TN 0-1-2-3)	X	93.62	99.9	20.2	3.55	127.4	$\pm 1.9 \%$
		Y	67.21	100.0	21.5		144.3	
		Z	46.91	99.9	21.3		149.2	
10032-CAA	IEEE 802.15.1 Bluetooth (GFSK, DH5)	X	97.19	90.7	14.6	1.16	145.1	$\pm 1.9 \%$
		Y	96.34	95.4	17.0		135.4	
		Z	96.75	90.9	14.5		146.6	
10100-CAB	LTE-FDD (SC-FDMA, 100% RB, 20 MHz, QPSK)	X	6.19	67.1	19.4	5.67	135.5	$\pm 1.4 \%$
		Y	6.42	67.7	19.7		146.7	
		Z	6.28	67.8	19.9		135.8	

10103-CAB	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, QPSK)	X	8.89	72.8	24.6	9.29	142.1	±2.7 %
		Y	9.60	73.9	24.9		135.4	
		Z	8.51	72.3	24.5		138.8	
10108-CAC	LTE-FDD (SC-FDMA, 100% RB, 10 MHz, QPSK)	X	6.05	66.7	19.3	5.80	134.0	±1.4 %
		Y	6.32	67.4	19.7		145.7	
		Z	6.03	67.1	19.6		133.7	
10117-CAB	IEEE 802.11n (HT Mixed, 13.5 Mbps, BPSK)	X	9.80	68.3	20.9	8.07	123.8	±2.2 %
		Y	10.05	68.7	21.1		136.1	
		Z	9.72	68.4	21.0		123.8	
10151-CAB	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, QPSK)	X	8.37	72.1	24.4	9.28	136.9	±2.7 %
		Y	9.10	73.2	24.8		131.4	
		Z	7.92	71.3	24.2		133.2	
10154-CAC	LTE-FDD (SC-FDMA, 50% RB, 10 MHz, QPSK)	X	5.75	66.3	19.1	5.75	130.7	±1.4 %
		Y	6.00	66.8	19.4		142.7	
		Z	5.71	66.6	19.4		131.5	
10160-CAB	LTE-FDD (SC-FDMA, 50% RB, 15 MHz, QPSK)	X	6.17	68.7	19.3	5.82	136.2	±1.4 %
		Y	6.44	67.3	19.6		147.2	
		Z	6.16	67.2	19.7		135.7	
10169-CAB	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, QPSK)	X	4.74	66.7	19.6	5.73	133.7	±1.2 %
		Y	5.01	67.4	19.9		145.0	
		Z	4.85	67.0	19.9		133.6	
10172-CAB	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK)	X	6.67	73.1	25.1	9.21	126.3	±2.5 %
		Y	8.08	76.9	26.9		144.3	
		Z	6.29	72.8	25.4		129.2	
10175-CAC	LTE-FDD (SC-FDMA, 1 RB, 10 MHz, QPSK)	X	4.87	67.3	19.9	5.72	149.0	±1.2 %
		Y	4.98	67.2	19.8		144.1	
		Z	4.63	66.9	19.9		131.7	
10181-CAB	LTE-FDD (SC-FDMA, 1 RB, 15 MHz, QPSK)	X	4.68	66.4	19.4	5.72	127.1	±1.2 %
		Y	4.98	67.2	19.8		144.1	
		Z	4.63	66.9	19.9		131.9	
10196-CAB	IEEE 802.11n (HT Mixed, 6.5 Mbps, BPSK)	X	9.73	68.9	21.4	8.10	141.6	±2.2 %
		Y	9.66	68.3	21.0		128.4	
		Z	9.56	69.0	21.4		139.9	
10225-CAB	UMTS-FDD (HSPA+)	X	6.84	67.3	19.5	5.97	145.4	±1.4 %
		Y	6.90	66.9	19.3		134.3	
		Z	6.82	68.0	20.1		144.5	
10237-CAB	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, QPSK)	X	6.71	73.3	25.2	9.21	127.4	±2.5 %
		Y	8.21	77.5	27.2		147.1	
		Z	6.58	74.2	26.2		146.3	
10252-CAB	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, QPSK)	X	8.26	73.2	25.2	9.24	147.4	±2.5 %
		Y	9.17	74.7	25.7		148.9	
		Z	7.77	72.2	24.9		149.4	
10267-CAB	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, QPSK)	X	8.34	72.0	24.4	9.30	130.4	±2.2 %
		Y	9.09	73.2	24.8		130.5	
		Z	8.00	71.6	24.4		132.7	

10275-CAB	UMTS-FDD (HSUPA, Subtest 5, 3GPP Rel8.4)	X	4.39	67.2	18.8	3.96	143.6	±0.7 %
		Y	4.42	66.9	18.7		137.9	
		Z	4.44	68.0	19.3		149.9	
10291-AAB	CDMA2000, RC3, SO55, Full Rate	X	3.61	67.5	18.9	3.46	134.1	±0.7 %
		Y	3.82	68.1	19.3		149.7	
		Z	3.86	69.8	20.3		138.7	
10292-AAB	CDMA2000, RC3, SO32, Full Rate	X	3.55	67.5	18.8	3.39	135.0	±0.7 %
		Y	3.64	67.5	18.9		128.2	
		Z	3.70	69.2	19.9		140.6	
10297-AAA	LTE-FDD (SC-FDMA, 50% RB, 20 MHz, QPSK)	X	6.00	66.5	19.2	5.81	127.3	±1.7 %
		Y	6.31	67.3	19.7		143.5	
		Z	6.10	67.3	19.8		133.1	
10311-AAA	LTE-FDD (SC-FDMA, 100% RB, 15 MHz, QPSK)	X	6.58	67.1	19.6	6.06	132.3	±1.7 %
		Y	6.89	67.9	20.0		150.0	
		Z	6.66	67.9	20.1		139.0	
10400-AAC	IEEE 802.11ac WiFi (20MHz, 64-QAM, 99pc duty cycle)	X	9.89	68.9	21.5	8.37	137.7	±2.5 %
		Y	9.99	68.7	21.4		131.9	
		Z	9.84	69.3	21.8		142.0	
10403-AAB	CDMA2000 (1xEV-DO, Rev. 0)	X	4.79	69.6	19.3	3.76	144.7	±0.5 %
		Y	4.91	69.1	19.1		139.1	
		Z	5.14	72.5	20.9		148.7	
10404-AAB	CDMA2000 (1xEV-DO, Rev. A)	X	5.05	70.9	19.9	3.77	143.6	±0.9 %
		Y	4.92	69.5	19.3		137.0	
		Z	5.15	72.8	21.0		146.1	
10415-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps, 99pc duty cycle)	X	2.75	69.3	19.0	1.54	143.9	±0.7 %
		Y	2.86	69.9	19.3		134.9	
		Z	3.83	76.3	22.3		149.9	
10416-AAA	IEEE 802.11g WiFi 2.4 GHz (ERP-OFDM, 6 Mbps, 99pc duty cycle)	X	9.83	69.0	21.5	8.23	142.4	±2.2 %
		Y	9.78	68.4	21.1		130.2	
		Z	9.68	69.0	21.6		141.2	

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 7 and 8).

^B Numerical linearization parameter: uncertainty not required.

^C 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: ES3DV3 - SN:3332

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 (mm) ^G	Unc (k=2)
750	41.9	0.89	6.44	6.44	6.44	0.46	1.55	± 12.0 %
835	41.5	0.90	6.23	6.23	6.23	0.25	2.20	± 12.0 %
1750	40.1	1.37	5.25	5.25	5.25	0.46	1.48	± 12.0 %
1900	40.0	1.40	5.06	5.06	5.06	0.61	1.30	± 12.0 %
2300	39.5	1.67	4.78	4.78	4.78	0.61	1.43	± 12.0 %
2450	39.2	1.80	4.44	4.44	4.44	0.80	1.26	± 12.0 %
2600	39.0	1.96	4.31	4.31	4.31	0.80	1.27	± 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: ES3DV3 - SN:3332

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 (mm) ^G	Unc (k=2)
750	55.5	0.96	6.36	6.36	6.36	0.80	1.16	± 12.0 %
835	55.2	0.97	6.21	6.21	6.21	0.53	1.43	± 12.0 %
1750	53.4	1.49	4.85	4.85	4.85	0.40	1.67	± 12.0 %
1900	53.3	1.52	4.70	4.70	4.70	0.55	1.55	± 12.0 %
2300	52.9	1.81	4.46	4.46	4.46	0.80	1.25	± 12.0 %
2450	52.7	1.95	4.30	4.30	4.30	0.80	1.25	± 12.0 %
2600	52.5	2.16	4.06	4.06	4.06	0.80	1.20	± 12.0 %

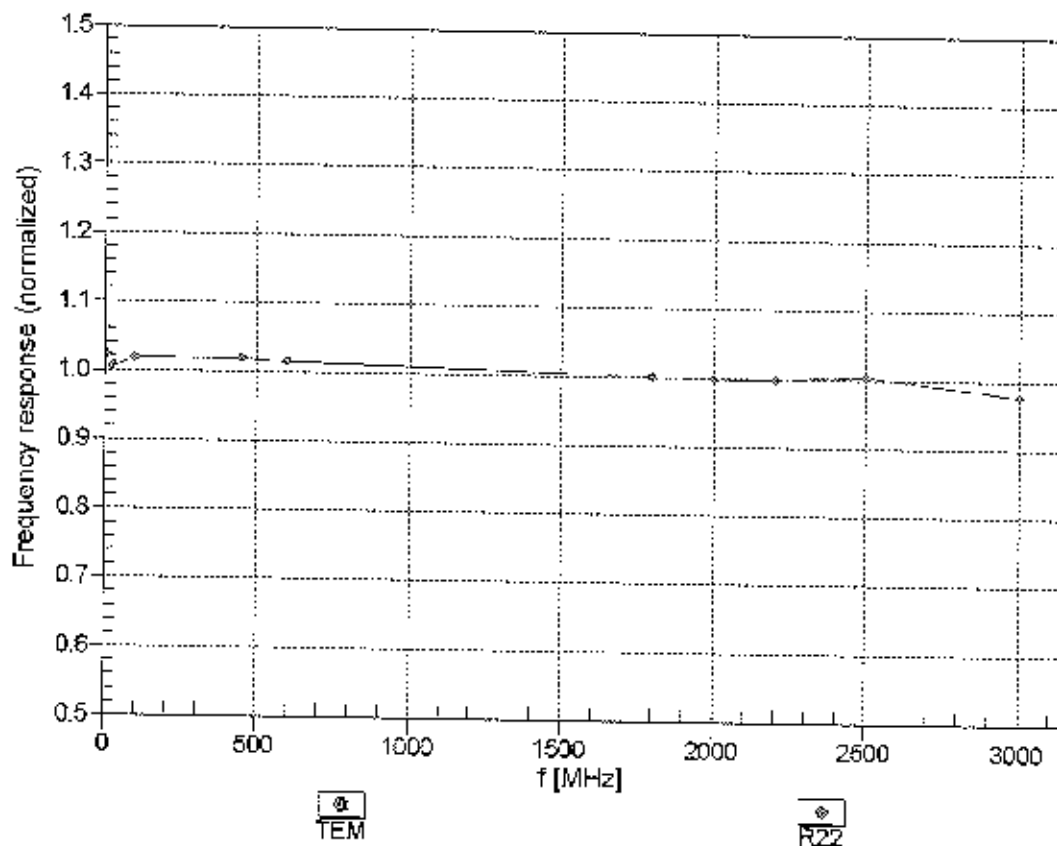
^C Frequency validity above 300 MHz of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is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

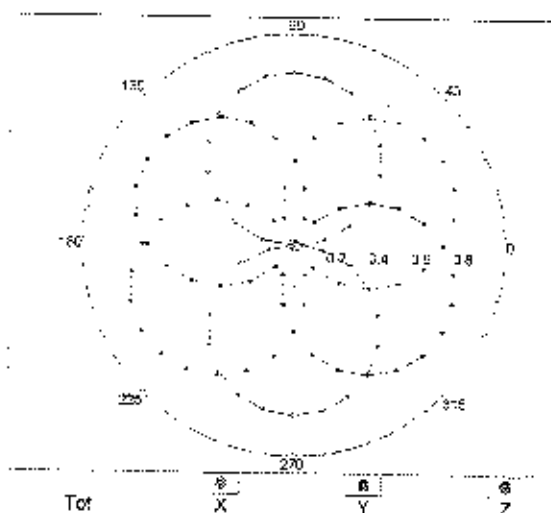
(TEM-Cell:ifi110 EXX, Waveguide: R22)



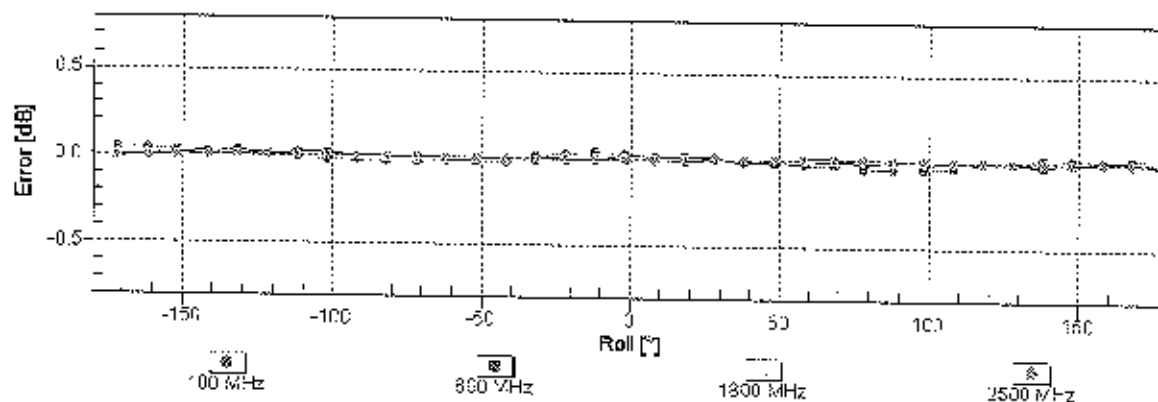
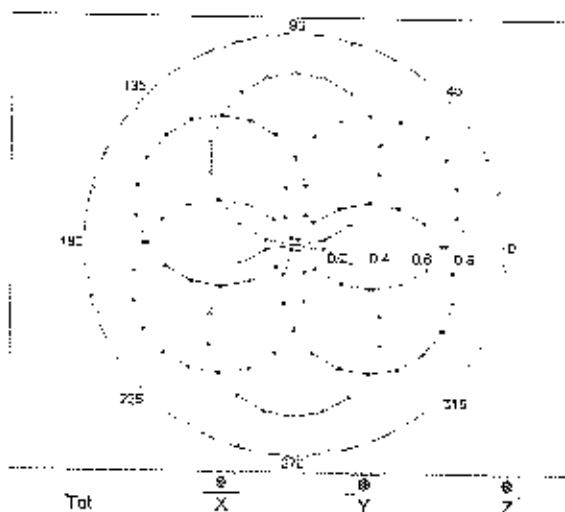
Uncertainty of Frequency Response of E-field: $\pm 6.3\%$ ($k=2$)

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

f=600 MHz,TEM

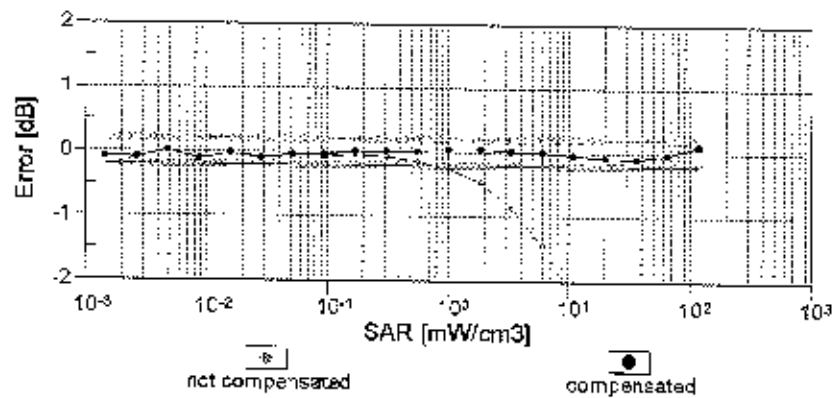
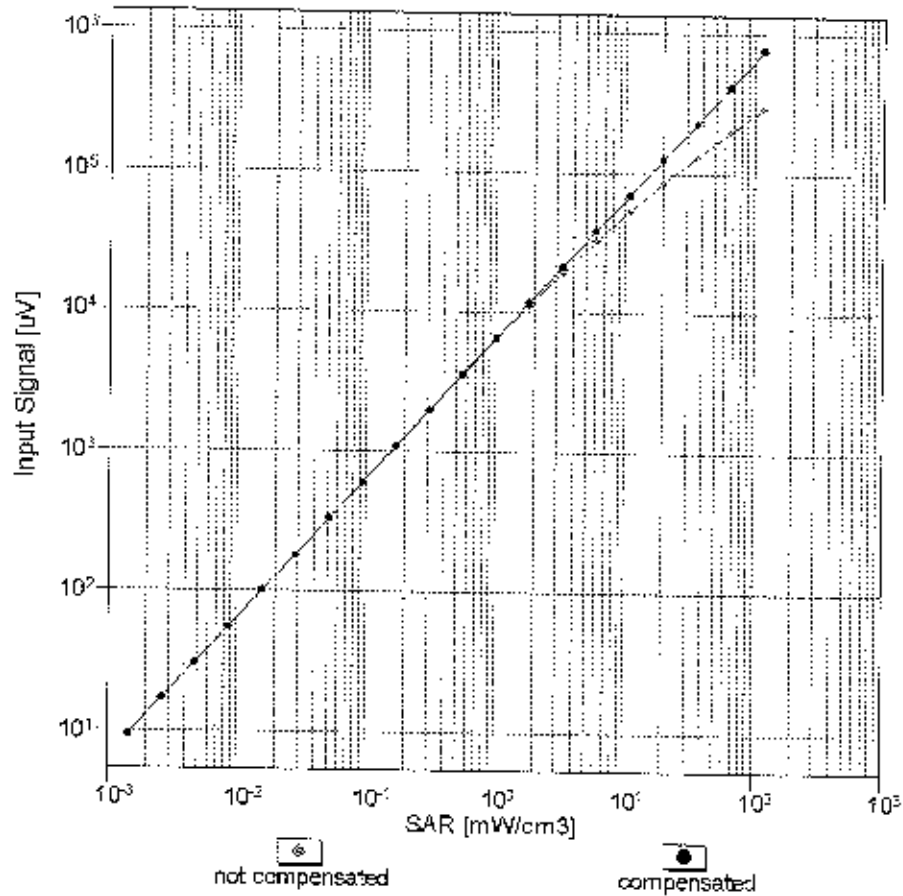


f=1800 MHz,R22



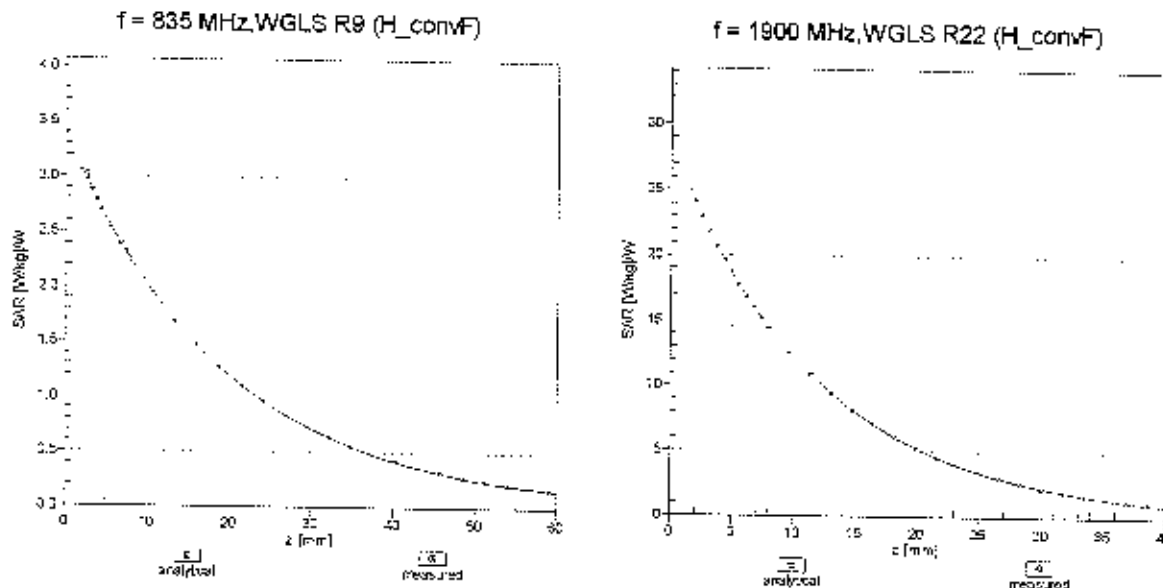
Uncertainty of Axial Isotropy Assessment: $\pm 0.5\%$ ($k=2$)

Dynamic Range $f(\text{SAR}_{\text{head}})$ (TEM cell, $f_{\text{eval}} = 1900 \text{ MHz}$)



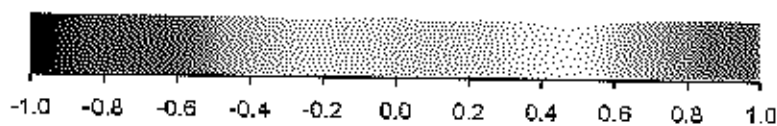
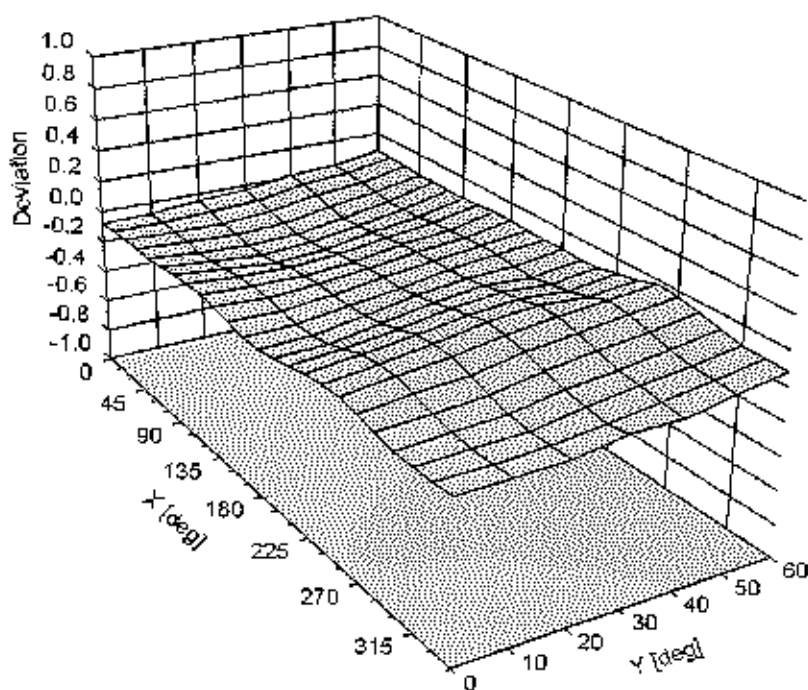
Uncertainty of Linearity Assessment: $\pm 0.6\%$ ($k=2$)

Conversion Factor Assessment



Deviation from Isotropy in Liquid

Error (ϕ, θ) , $f = 900 \text{ MHz}$



Uncertainty of Spherical Isotropy Assessment: $\pm 2.6\%$ ($k=2$)

DASY/EASY - Parameters of Probe: ES3DV3 - SN:3332

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	-1.9
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



Accredited by the Swiss Accreditation Service (SAS)

Accreditation No.: **SCS 0108**

The Swiss Accreditation Service is one of the signatories to the EA
 Multilateral Agreement for the recognition of calibration certificates

Client **PC Test**

Certificate No: **ES3-3287_Sep16**

CALIBRATION CERTIFICATE

Object **ES3DV3 - SN:3287**

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

Calibration date: **September 19, 2016**

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 NRP	SN: 104778	06-Apr-16 (No. 217-02288/02289)	Apr-17
Power sensor NRP-Z91	SN: 103244	06-Apr-16 (No. 217-02288)	Apr-17
Power sensor NRP-Z91	SN: 103245	06-Apr-16 (No. 217-02289)	Apr-17
Reference 20 dB Attenuator	SN: S5277 (20x)	05-Apr-16 (No. 217-02293)	Apr-17
Reference Probe ES3DV2	SN: 3013	31-Dec-15 (No. ES3-3013_Dec15)	Dec-16
DAE4	SN: 660	23-Dec-15 (No. DAE4-660_Dec15)	Dec-16
Secondary Standards	ID	Check Date (in house)	Scheduled Check
Power meter E4419B	SN: GB41293874	06-Apr-16 (in house check Jun-16)	In house check: Jun-18
Power sensor E4412A	SN: MY41498087	06-Apr-16 (in house check Jun-16)	In house check: Jun-18
Power sensor E4412A	SN: 000110210	06-Apr-16 (in house check Jun-16)	In house check: Jun-18
RF generator HP 8648C	SN: US3642U01700	04-Aug-99 (in house check Jun-16)	In house check: Jun-18
Network Analyzer HP 8753E	SN: US37390585	18-Oct-01 (in house check Oct-15)	In house check: Oct-16

Calibrated by:	Name Leif Klysner	Function Laboratory Technician	Signature
Approved by:	Katja Pokovic	Technical Manager	
Issued: September 20, 2016 This calibration certificate shall not be reproduced except in full without written approval of the laboratory.			



Accredited by the Swiss Accreditation Service (SAS)

Accreditation No.: **SCS 0108**

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:

- 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, "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
- 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 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 ES3DV3

SN:3287

Manufactured: June 7, 2010
Calibrated: September 19, 2016

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

DASY/EASY - Parameters of Probe: ES3DV3 - SN:3287

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu\text{V}/(\text{V}/\text{m})^2$) ^A	0.87	0.98	1.00	$\pm 10.1 \%$
DCP (mV) ^B	101.9	101.4	106.1	

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	198.4	$\pm 3.5 \%$
		Y	0.0	0.0	1.0		189.6	
		Z	0.0	0.0	1.0		184.8	

Note: For details on UID parameters see Appendix.

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	65.67	459.4	34.07	29.08	2.68	5.077	2	0.308	1.009
Y	71.46	511.8	35.31	29.86	3.707	5.1	0.748	0.607	1.009
Z	50.48	357.3	34.55	27.84	2.262	5.1	1.583	0.279	1.01

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: ES3DV3 - SN:3287

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	6.96	6.96	6.96	0.44	1.36	± 12.0 %
835	41.5	0.90	6.67	6.67	6.67	0.29	1.69	± 12.0 %
1750	40.1	1.37	5.49	5.49	5.49	0.43	1.42	± 12.0 %
1900	40.0	1.40	5.27	5.27	5.27	0.41	1.45	± 12.0 %
2300	39.5	1.67	4.86	4.86	4.86	0.61	1.28	± 12.0 %
2450	39.2	1.80	4.54	4.54	4.54	0.47	1.51	± 12.0 %
2600	39.0	1.96	4.41	4.41	4.41	0.77	1.18	± 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: ES3DV3 - SN:3287

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	6.64	6.64	6.64	0.27	1.86	± 12.0 %
835	55.2	0.97	6.55	6.55	6.55	0.50	1.37	± 12.0 %
1750	53.4	1.49	5.11	5.11	5.11	0.33	1.85	± 12.0 %
1900	53.3	1.52	4.94	4.94	4.94	0.42	1.59	± 12.0 %
2300	52.9	1.81	4.55	4.55	4.55	0.55	1.42	± 12.0 %
2450	52.7	1.95	4.35	4.35	4.35	0.80	1.09	± 12.0 %
2600	52.5	2.16	4.12	4.12	4.12	0.80	1.10	± 12.0 %

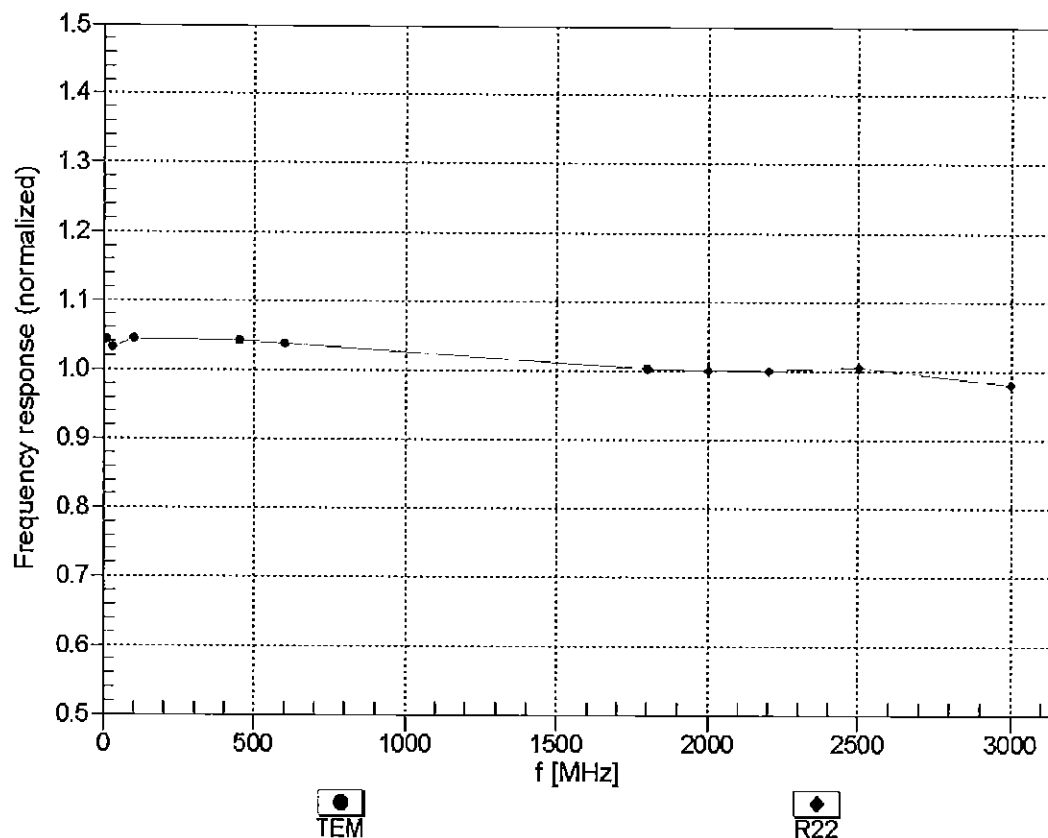
^C Frequency validity above 300 MHz of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is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

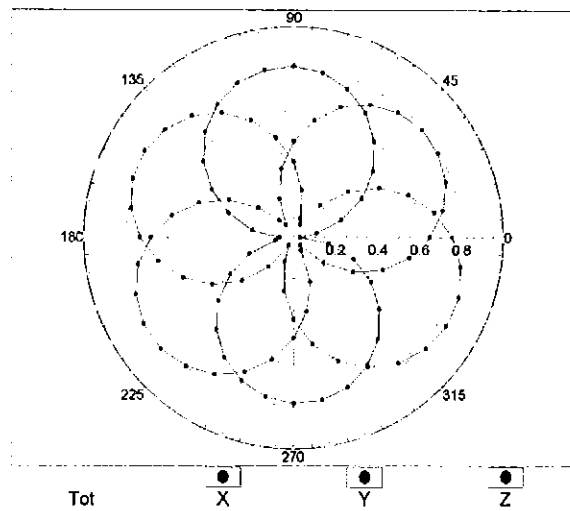
(TEM-Cell:ifi110 EXX, Waveguide: R22)



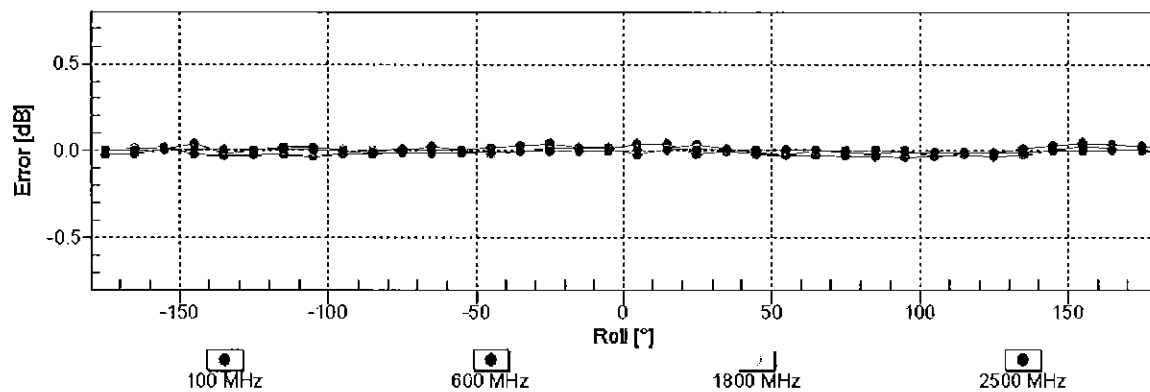
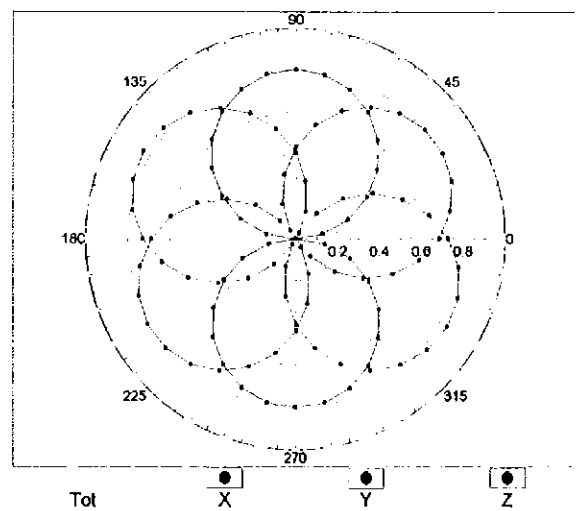
Uncertainty of Frequency Response of E-field: $\pm 6.3\%$ ($k=2$)

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

f=600 MHz,TEM

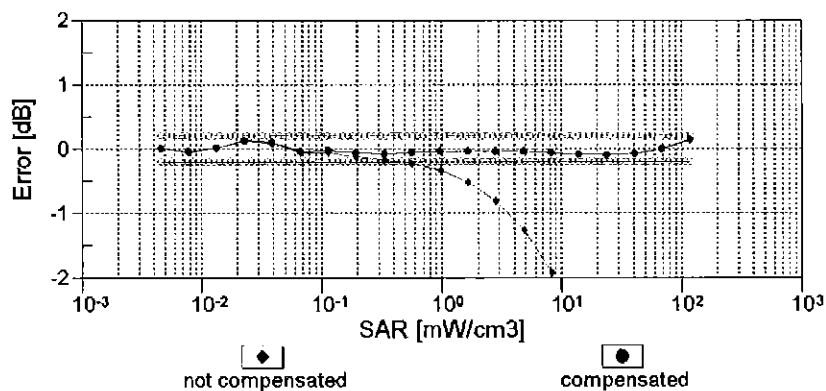
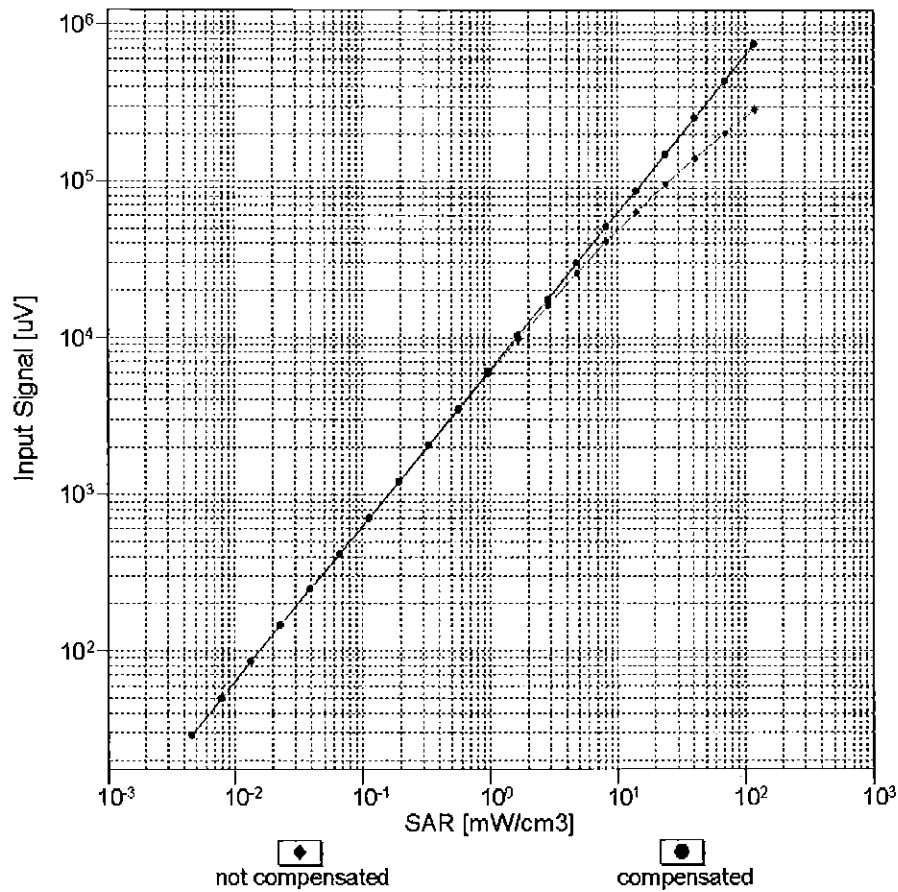


f=1800 MHz,R22



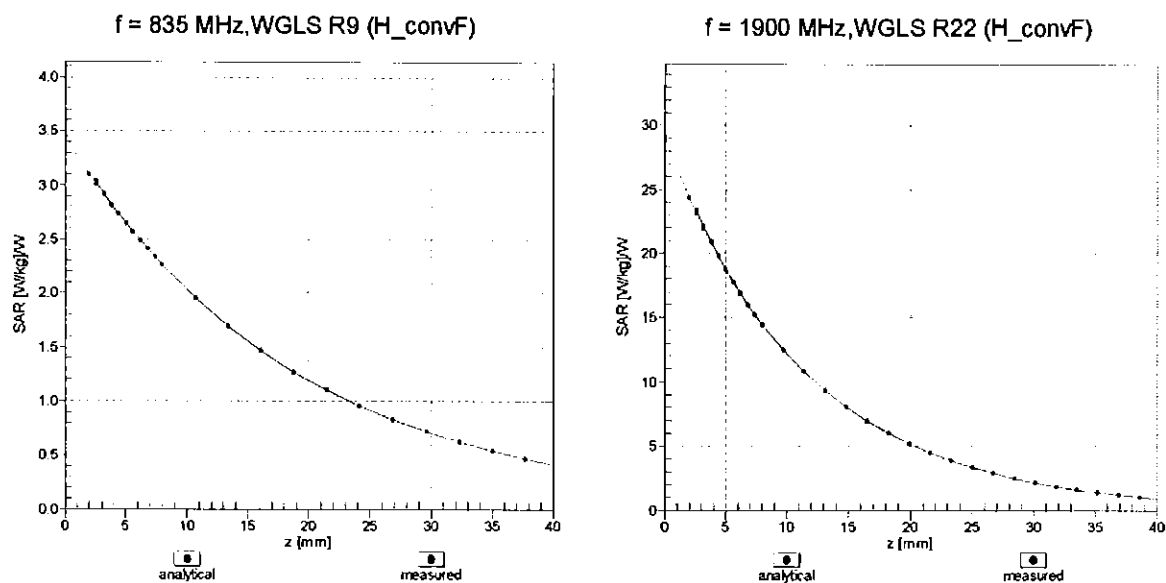
Uncertainty of Axial Isotropy Assessment: $\pm 0.5\%$ ($k=2$)

Dynamic Range $f(\text{SAR}_{\text{head}})$ (TEM cell , $f_{\text{eval}} = 1900 \text{ MHz}$)



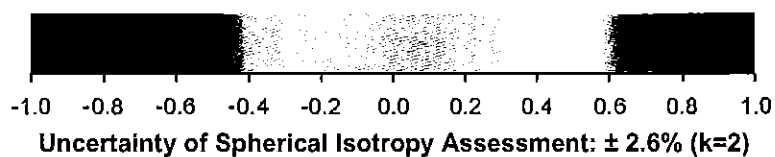
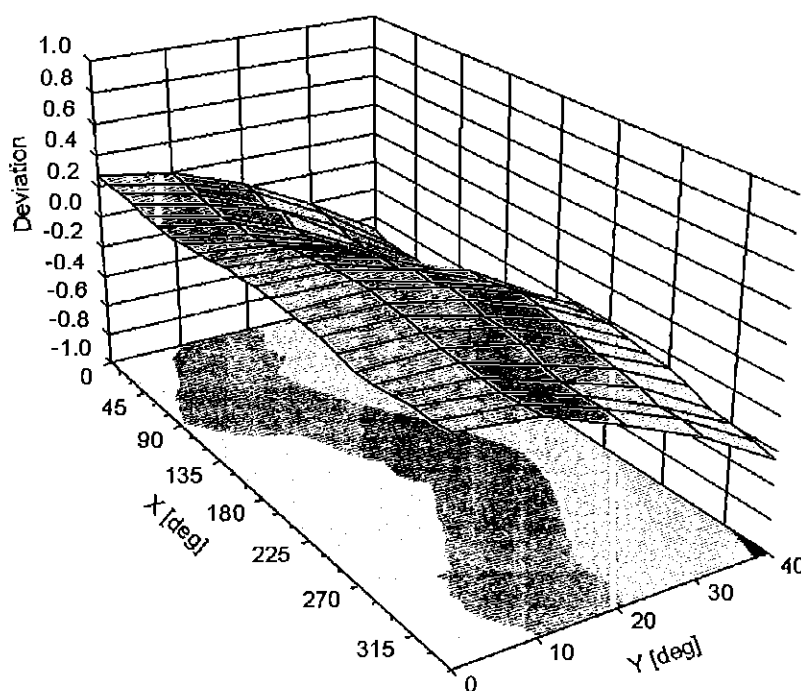
Uncertainty of Linearity Assessment: $\pm 0.6\%$ ($k=2$)

Conversion Factor Assessment



Deviation from Isotropy in Liquid

Error (ϕ, ϑ), $f = 900 \text{ MHz}$



DASY/EASY - Parameters of Probe: ES3DV3 - SN:3287

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	84.9
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

Appendix: Modulation Calibration Parameters

UID	Communication System Name		A dB	B dB μ V	C	D dB	VR mV	Max Unc ^E (k=2)
0	CW	X	0.00	0.00	1.00	0.00	198.4	$\pm 3.5\%$
		Y	0.00	0.00	1.00		189.6	
		Z	0.00	0.00	1.00		184.8	
10010- CAA	SAR Validation (Square, 100ms, 10ms)	X	9.57	81.27	19.66	10.00	25.0	$\pm 9.6\%$
		Y	9.48	81.17	20.59		25.0	
		Z	11.44	84.72	20.81		25.0	
10011- CAB	UMTS-FDD (WCDMA)	X	1.41	73.12	18.60	0.00	150.0	$\pm 9.6\%$
		Y	1.09	67.36	15.29		150.0	
		Z	1.04	67.24	15.12		150.0	
10012- CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps)	X	1.39	66.79	17.15	0.41	150.0	$\pm 9.6\%$
		Y	1.33	64.98	15.75		150.0	
		Z	1.31	64.97	15.66		150.0	
10013- CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps)	X	5.20	67.40	17.54	1.46	150.0	$\pm 9.6\%$
		Y	5.27	67.18	17.41		150.0	
		Z	5.09	67.33	17.40		150.0	
10021- DAB	GSM-FDD (TDMA, GMSK)	X	25.12	98.64	27.15	9.39	50.0	$\pm 9.6\%$
		Y	16.05	91.61	25.96		50.0	
		Z	54.58	112.47	31.02		50.0	
10023- DAB	GPRS-FDD (TDMA, GMSK, TN 0)	X	21.90	96.28	26.48	9.57	50.0	$\pm 9.6\%$
		Y	15.04	90.31	25.57		50.0	
		Z	40.95	107.64	29.77		50.0	
10024- DAB	GPRS-FDD (TDMA, GMSK, TN 0-1)	X	100.00	118.44	30.60	6.56	60.0	$\pm 9.6\%$
		Y	56.85	112.42	30.28		60.0	
		Z	100.00	119.26	30.80		60.0	
10025- DAB	EDGE-FDD (TDMA, 8PSK, TN 0)	X	15.98	100.03	37.68	12.57	50.0	$\pm 9.6\%$
		Y	12.36	89.89	33.32		50.0	
		Z	14.92	100.13	38.33		50.0	
10026- DAB	EDGE-FDD (TDMA, 8PSK, TN 0-1)	X	19.89	102.72	35.15	9.56	60.0	$\pm 9.6\%$
		Y	15.11	94.49	32.22		60.0	
		Z	21.16	106.39	36.94		60.0	
10027- DAB	GPRS-FDD (TDMA, GMSK, TN 0-1-2)	X	100.00	117.46	29.21	4.80	80.0	$\pm 9.6\%$
		Y	100.00	119.97	30.83		80.0	
		Z	100.00	118.35	29.47		80.0	
10028- DAB	GPRS-FDD (TDMA, GMSK, TN 0-1-2-3)	X	100.00	117.97	28.63	3.55	100.0	$\pm 9.6\%$
		Y	100.00	119.91	29.91		100.0	
		Z	100.00	118.74	28.84		100.0	
10029- DAB	EDGE-FDD (TDMA, 8PSK, TN 0-1-2)	X	14.03	95.19	31.54	7.80	80.0	$\pm 9.6\%$
		Y	11.54	89.32	29.33		80.0	
		Z	13.09	95.17	31.96		80.0	
10030- CAA	IEEE 802.15.1 Bluetooth (GFSK, DH1)	X	100.00	117.04	29.36	5.30	70.0	$\pm 9.6\%$
		Y	100.00	119.78	31.12		70.0	
		Z	100.00	117.69	29.49		70.0	
10031- CAA	IEEE 802.15.1 Bluetooth (GFSK, DH3)	X	100.00	120.90	28.34	1.88	100.0	$\pm 9.6\%$
		Y	100.00	121.14	28.78		100.0	
		Z	100.00	119.84	27.78		100.0	

10032-CAA	IEEE 802.15.1 Bluetooth (GFSK, DH5)	X	100.00	128.75	30.50	1.17	100.0	± 9.6 %
		Y	100.00	125.19	29.33		100.0	
		Z	100.00	124.54	28.68		100.0	
10033-CAA	IEEE 802.15.1 Bluetooth (PI/4-DQPSK, DH1)	X	24.47	102.44	28.62	5.30	70.0	± 9.6 %
		Y	12.93	91.34	25.64		70.0	
		Z	20.22	99.06	27.27		70.0	
10034-CAA	IEEE 802.15.1 Bluetooth (PI/4-DQPSK, DH3)	X	15.75	99.73	26.60	1.88	100.0	± 9.6 %
		Y	6.06	84.29	21.90		100.0	
		Z	7.41	86.87	21.79		100.0	
10035-CAA	IEEE 802.15.1 Bluetooth (PI/4-DQPSK, DH5)	X	8.06	91.60	24.06	1.17	100.0	± 9.6 %
		Y	3.71	78.74	19.66		100.0	
		Z	4.06	80.00	19.16		100.0	
10036-CAA	IEEE 802.15.1 Bluetooth (8-DPSK, DH1)	X	31.59	106.91	29.95	5.30	70.0	± 9.6 %
		Y	14.71	93.73	26.48		70.0	
		Z	25.49	103.04	28.49		70.0	
10037-CAA	IEEE 802.15.1 Bluetooth (8-DPSK, DH3)	X	15.02	99.00	26.34	1.88	100.0	± 9.6 %
		Y	5.91	83.93	21.74		100.0	
		Z	6.95	86.01	21.48		100.0	
10038-CAA	IEEE 802.15.1 Bluetooth (8-DPSK, DH5)	X	8.64	92.97	24.58	1.17	100.0	± 9.6 %
		Y	3.82	79.37	19.97		100.0	
		Z	4.16	80.58	19.47		100.0	
10039-CAB	CDMA2000 (1xRTT, RC1)	X	3.32	80.83	20.52	0.00	150.0	± 9.6 %
		Y	1.99	71.59	16.56		150.0	
		Z	1.78	71.38	15.53		150.0	
10042-CAB	IS-54 / IS-136 FDD (TDMA/FDM, PI/4-DQPSK, Halfrate)	X	93.96	116.51	30.17	7.78	50.0	± 9.6 %
		Y	28.36	100.31	27.04		50.0	
		Z	100.00	118.01	30.46		50.0	
10044-CAA	IS-91/EIA/TIA-553 FDD (FDMA, FM)	X	0.00	110.81	0.68	0.00	150.0	± 9.6 %
		Y	0.00	94.68	0.92		150.0	
		Z	0.01	95.27	0.89		150.0	
10048-CAA	DECT (TDD, TDMA/FDM, GFSK, Full Slot, 24)	X	12.13	84.40	24.33	13.80	25.0	± 9.6 %
		Y	11.03	81.88	24.36		25.0	
		Z	15.47	90.17	26.32		25.0	
10049-CAA	DECT (TDD, TDMA/FDM, GFSK, Double Slot, 12)	X	14.56	88.92	24.53	10.79	40.0	± 9.6 %
		Y	12.34	85.94	24.48		40.0	
		Z	20.46	95.78	26.73		40.0	
10056-CAA	UMTS-TDD (TD-SCDMA, 1.28 Mcps)	X	13.90	88.80	25.15	9.03	50.0	± 9.6 %
		Y	11.60	84.93	24.34		50.0	
		Z	15.96	92.01	26.12		50.0	
10058-DAB	EDGE-FDD (TDMA, 8PSK, TN 0-1-2-3)	X	10.54	89.79	28.95	6.55	100.0	± 9.6 %
		Y	9.17	85.43	27.21		100.0	
		Z	9.28	88.15	28.66		100.0	
10059-CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 2 Mbps)	X	1.62	69.54	18.42	0.61	110.0	± 9.6 %
		Y	1.52	67.09	16.78		110.0	
		Z	1.47	67.00	16.67		110.0	
10060-CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 5.5 Mbps)	X	100.00	133.57	34.76	1.30	110.0	± 9.6 %
		Y	47.37	119.92	31.34		110.0	
		Z	100.00	131.70	33.88		110.0	

10061-CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 11 Mbps)	X	24.29	111.37	31.49	2.04	110.0	± 9.6 %
		Y	7.57	90.21	25.12		110.0	
		Z	8.96	94.42	26.47		110.0	
10062-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps)	X	4.94	67.26	16.92	0.49	100.0	± 9.6 %
		Y	4.99	66.94	16.70		100.0	
		Z	4.80	67.06	16.67		100.0	
10063-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 9 Mbps)	X	4.98	67.42	17.05	0.72	100.0	± 9.6 %
		Y	5.03	67.12	16.85		100.0	
		Z	4.84	67.22	16.80		100.0	
10064-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 12 Mbps)	X	5.33	67.75	17.30	0.86	100.0	± 9.6 %
		Y	5.40	67.50	17.13		100.0	
		Z	5.14	67.52	17.06		100.0	
10065-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 18 Mbps)	X	5.22	67.77	17.45	1.21	100.0	± 9.6 %
		Y	5.30	67.55	17.30		100.0	
		Z	5.05	67.55	17.23		100.0	
10066-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 24 Mbps)	X	5.28	67.89	17.67	1.46	100.0	± 9.6 %
		Y	5.37	67.69	17.54		100.0	
		Z	5.11	67.69	17.47		100.0	
10067-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 36 Mbps)	X	5.58	67.96	18.07	2.04	100.0	± 9.6 %
		Y	5.70	67.83	17.99		100.0	
		Z	5.44	67.94	17.97		100.0	
10068-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 48 Mbps)	X	5.73	68.36	18.44	2.55	100.0	± 9.6 %
		Y	5.86	68.26	18.38		100.0	
		Z	5.56	68.20	18.31		100.0	
10069-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 54 Mbps)	X	5.80	68.22	18.58	2.67	100.0	± 9.6 %
		Y	5.93	68.12	18.53		100.0	
		Z	5.64	68.21	18.51		100.0	
10071-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 9 Mbps)	X	5.34	67.61	17.91	1.99	100.0	± 9.6 %
		Y	5.43	67.44	17.80		100.0	
		Z	5.23	67.57	17.79		100.0	
10072-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 12 Mbps)	X	5.41	68.20	18.23	2.30	100.0	± 9.6 %
		Y	5.52	68.04	18.13		100.0	
		Z	5.28	68.10	18.11		100.0	
10073-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 18 Mbps)	X	5.54	68.52	18.63	2.83	100.0	± 9.6 %
		Y	5.67	68.41	18.56		100.0	
		Z	5.42	68.46	18.55		100.0	
10074-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 24 Mbps)	X	5.57	68.60	18.89	3.30	100.0	± 9.6 %
		Y	5.71	68.53	18.84		100.0	
		Z	5.46	68.55	18.80		100.0	
10075-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 36 Mbps)	X	5.74	69.13	19.40	3.82	90.0	± 9.6 %
		Y	5.91	69.12	19.39		90.0	
		Z	5.60	68.97	19.28		90.0	
10076-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 48 Mbps)	X	5.73	68.87	19.48	4.15	90.0	± 9.6 %
		Y	5.91	68.89	19.48		90.0	
		Z	5.64	68.84	19.44		90.0	
10077-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 54 Mbps)	X	5.76	68.96	19.58	4.30	90.0	± 9.6 %
		Y	5.95	68.98	19.59		90.0	
		Z	5.68	68.95	19.55		90.0	

10081-CAB	CDMA2000 (1xRTT, RC3)	X	1.45	73.74	17.54	0.00	150.0	± 9.6 %
		Y	1.01	66.70	13.93		150.0	
		Z	0.86	65.95	12.65		150.0	
10082-CAB	IS-54 / IS-136 FDD (TDMA/FDM, PI/4-DQPSK, Fullrate)	X	2.22	64.23	9.03	4.77	80.0	± 9.6 %
		Y	2.60	65.39	10.25		80.0	
		Z	2.07	64.06	8.86		80.0	
10090-DAB	GPRS-FDD (TDMA, GMSK, TN 0-4)	X	100.00	118.52	30.65	6.56	60.0	± 9.6 %
		Y	54.54	111.83	30.17		60.0	
		Z	100.00	119.33	30.85		60.0	
10097-CAB	UMTS-FDD (HSDPA)	X	2.07	69.87	17.29	0.00	150.0	± 9.6 %
		Y	1.87	67.25	15.70		150.0	
		Z	1.83	67.53	15.55		150.0	
10098-CAB	UMTS-FDD (HSUPA, Subtest 2)	X	2.03	69.88	17.28	0.00	150.0	± 9.6 %
		Y	1.83	67.20	15.65		150.0	
		Z	1.80	67.49	15.52		150.0	
10099-DAB	EDGE-FDD (TDMA, 8PSK, TN 0-4)	X	19.79	102.55	35.10	9.56	60.0	± 9.6 %
		Y	15.06	94.38	32.19		60.0	
		Z	21.07	106.24	36.89		60.0	
10100-CAB	LTE-FDD (SC-FDMA, 100% RB, 20 MHz, QPSK)	X	3.71	73.15	18.05	0.00	150.0	± 9.6 %
		Y	3.34	70.68	16.71		150.0	
		Z	3.15	70.31	16.60		150.0	
10101-CAB	LTE-FDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM)	X	3.53	68.94	16.73	0.00	150.0	± 9.6 %
		Y	3.44	67.88	16.03		150.0	
		Z	3.28	67.66	15.91		150.0	
10102-CAB	LTE-FDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM)	X	3.62	68.78	16.77	0.00	150.0	± 9.6 %
		Y	3.55	67.81	16.12		150.0	
		Z	3.38	67.61	16.00		150.0	
10103-CAB	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, QPSK)	X	9.03	78.84	21.45	3.98	65.0	± 9.6 %
		Y	8.52	77.08	20.81		65.0	
		Z	8.79	79.04	21.64		65.0	
10104-CAB	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM)	X	8.83	77.31	21.70	3.98	65.0	± 9.6 %
		Y	8.68	76.21	21.28		65.0	
		Z	8.45	77.10	21.68		65.0	
10105-CAB	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM)	X	8.12	75.63	21.27	3.98	65.0	± 9.6 %
		Y	7.58	73.53	20.37		65.0	
		Z	7.68	75.16	21.11		65.0	
10108-CAC	LTE-FDD (SC-FDMA, 100% RB, 10 MHz, QPSK)	X	3.26	72.24	17.88	0.00	150.0	± 9.6 %
		Y	2.97	69.86	16.52		150.0	
		Z	2.76	69.54	16.43		150.0	
10109-CAC	LTE-FDD (SC-FDMA, 100% RB, 10 MHz, 16-QAM)	X	3.21	68.83	16.74	0.00	150.0	± 9.6 %
		Y	3.12	67.65	15.97		150.0	
		Z	2.93	67.47	15.80		150.0	
10110-CAC	LTE-FDD (SC-FDMA, 100% RB, 5 MHz, QPSK)	X	2.68	71.31	17.65	0.00	150.0	± 9.6 %
		Y	2.45	68.82	16.19		150.0	
		Z	2.25	68.65	16.05		150.0	
10111-CAC	LTE-FDD (SC-FDMA, 100% RB, 5 MHz, 16-QAM)	X	2.94	69.70	17.25	0.00	150.0	± 9.6 %
		Y	2.81	68.04	16.25		150.0	
		Z	2.63	68.09	16.01		150.0	

10112-CAC	LTE-FDD (SC-FDMA, 100% RB, 10 MHz, 64-QAM)	X	3.32	68.66	16.72	0.00	150.0	± 9.6 %
		Y	3.24	67.56	16.01		150.0	
		Z	3.06	67.45	15.85		150.0	
10113-CAC	LTE-FDD (SC-FDMA, 100% RB, 5 MHz, 64-QAM)	X	3.09	69.65	17.28	0.00	150.0	± 9.6 %
		Y	2.97	68.11	16.35		150.0	
		Z	2.78	68.22	16.13		150.0	
10114-CAB	IEEE 802.11n (HT Greenfield, 13.5 Mbps, BPSK)	X	5.30	67.67	16.69	0.00	150.0	± 9.6 %
		Y	5.32	67.34	16.45		150.0	
		Z	5.18	67.41	16.46		150.0	
10115-CAB	IEEE 802.11n (HT Greenfield, 81 Mbps, 16-QAM)	X	5.68	67.95	16.83	0.00	150.0	± 9.6 %
		Y	5.74	67.75	16.66		150.0	
		Z	5.49	67.60	16.57		150.0	
10116-CAB	IEEE 802.11n (HT Greenfield, 135 Mbps, 64-QAM)	X	5.43	67.93	16.74	0.00	150.0	± 9.6 %
		Y	5.45	67.58	16.50		150.0	
		Z	5.29	67.63	16.50		150.0	
10117-CAB	IEEE 802.11n (HT Mixed, 13.5 Mbps, BPSK)	X	5.31	67.69	16.73	0.00	150.0	± 9.6 %
		Y	5.33	67.35	16.48		150.0	
		Z	5.15	67.28	16.42		150.0	
10118-CAB	IEEE 802.11n (HT Mixed, 81 Mbps, 16-QAM)	X	5.73	68.05	16.89	0.00	150.0	± 9.6 %
		Y	5.76	67.71	16.65		150.0	
		Z	5.58	67.82	16.69		150.0	
10119-CAB	IEEE 802.11n (HT Mixed, 135 Mbps, 64-QAM)	X	5.40	67.88	16.73	0.00	150.0	± 9.6 %
		Y	5.42	67.54	16.49		150.0	
		Z	5.26	67.56	16.48		150.0	
10140-CAB	LTE-FDD (SC-FDMA, 100% RB, 15 MHz, 16-QAM)	X	3.67	68.77	16.68	0.00	150.0	± 9.6 %
		Y	3.60	67.81	16.05		150.0	
		Z	3.42	67.62	15.92		150.0	
10141-CAB	LTE-FDD (SC-FDMA, 100% RB, 15 MHz, 64-QAM)	X	3.79	68.75	16.79	0.00	150.0	± 9.6 %
		Y	3.72	67.84	16.19		150.0	
		Z	3.54	67.70	16.08		150.0	
10142-CAC	LTE-FDD (SC-FDMA, 100% RB, 3 MHz, QPSK)	X	2.48	71.58	17.67	0.00	150.0	± 9.6 %
		Y	2.22	68.66	16.03		150.0	
		Z	2.02	68.57	15.71		150.0	
10143-CAC	LTE-FDD (SC-FDMA, 100% RB, 3 MHz, 16-QAM)	X	2.90	70.86	17.43	0.00	150.0	± 9.6 %
		Y	2.68	68.61	16.20		150.0	
		Z	2.48	68.71	15.71		150.0	
10144-CAC	LTE-FDD (SC-FDMA, 100% RB, 3 MHz, 64-QAM)	X	2.65	68.53	15.87	0.00	150.0	± 9.6 %
		Y	2.53	66.90	14.94		150.0	
		Z	2.29	66.75	14.27		150.0	
10145-CAC	LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, QPSK)	X	2.00	71.65	16.48	0.00	150.0	± 9.6 %
		Y	1.64	67.49	14.42		150.0	
		Z	1.28	65.53	12.17		150.0	
10146-CAC	LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, 16-QAM)	X	6.65	82.42	19.81	0.00	150.0	± 9.6 %
		Y	3.51	73.00	16.51		150.0	
		Z	2.73	70.16	13.72		150.0	
10147-CAC	LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, 64-QAM)	X	11.62	90.60	22.70	0.00	150.0	± 9.6 %
		Y	4.34	76.22	18.03		150.0	
		Z	3.53	73.44	15.25		150.0	

10149-CAB	LTE-FDD (SC-FDMA, 50% RB, 20 MHz, 16-QAM)	X	3.22	68.90	16.79	0.00	150.0	± 9.6 %
		Y	3.13	67.70	16.01		150.0	
		Z	2.94	67.52	15.84		150.0	
10150-CAB	LTE-FDD (SC-FDMA, 50% RB, 20 MHz, 64-QAM)	X	3.33	68.71	16.76	0.00	150.0	± 9.6 %
		Y	3.25	67.61	16.05		150.0	
		Z	3.06	67.50	15.89		150.0	
10151-CAB	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, QPSK)	X	9.59	81.08	22.43	3.98	65.0	± 9.6 %
		Y	8.87	78.87	21.64		65.0	
		Z	9.33	81.38	22.62		65.0	
10152-CAB	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 16-QAM)	X	8.50	77.58	21.63	3.98	65.0	± 9.6 %
		Y	8.30	76.31	21.16		65.0	
		Z	8.08	77.33	21.50		65.0	
10153-CAB	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 64-QAM)	X	8.85	78.28	22.25	3.98	65.0	± 9.6 %
		Y	8.62	76.95	21.75		65.0	
		Z	8.48	78.15	22.17		65.0	
10154-CAC	LTE-FDD (SC-FDMA, 50% RB, 10 MHz, QPSK)	X	2.77	71.95	18.01	0.00	150.0	± 9.6 %
		Y	2.51	69.32	16.50		150.0	
		Z	2.29	69.01	16.28		150.0	
10155-CAC	LTE-FDD (SC-FDMA, 50% RB, 10 MHz, 16-QAM)	X	2.94	69.69	17.25	0.00	150.0	± 9.6 %
		Y	2.80	68.03	16.25		150.0	
		Z	2.63	68.10	16.02		150.0	
10156-CAC	LTE-FDD (SC-FDMA, 50% RB, 5 MHz, QPSK)	X	2.40	72.31	17.91	0.00	150.0	± 9.6 %
		Y	2.09	68.89	16.05		150.0	
		Z	1.86	68.62	15.51		150.0	
10157-CAC	LTE-FDD (SC-FDMA, 50% RB, 5 MHz, 16-QAM)	X	2.55	69.65	16.30	0.00	150.0	± 9.6 %
		Y	2.36	67.46	15.11		150.0	
		Z	2.12	67.25	14.30		150.0	
10158-CAC	LTE-FDD (SC-FDMA, 50% RB, 10 MHz, 64-QAM)	X	3.10	69.70	17.32	0.00	150.0	± 9.6 %
		Y	2.97	68.15	16.39		150.0	
		Z	2.78	68.27	16.17		150.0	
10159-CAC	LTE-FDD (SC-FDMA, 50% RB, 5 MHz, 64-QAM)	X	2.69	70.18	16.62	0.00	150.0	± 9.6 %
		Y	2.48	67.89	15.40		150.0	
		Z	2.22	67.66	14.56		150.0	
10160-CAB	LTE-FDD (SC-FDMA, 50% RB, 15 MHz, QPSK)	X	3.10	70.43	17.35	0.00	150.0	± 9.6 %
		Y	2.94	68.69	16.29		150.0	
		Z	2.78	68.69	16.25		150.0	
10161-CAB	LTE-FDD (SC-FDMA, 50% RB, 15 MHz, 16-QAM)	X	3.22	68.62	16.74	0.00	150.0	± 9.6 %
		Y	3.14	67.48	16.00		150.0	
		Z	2.96	67.42	15.82		150.0	
10162-CAB	LTE-FDD (SC-FDMA, 50% RB, 15 MHz, 64-QAM)	X	3.32	68.61	16.76	0.00	150.0	± 9.6 %
		Y	3.24	67.49	16.04		150.0	
		Z	3.07	67.56	15.92		150.0	
10166-CAC	LTE-FDD (SC-FDMA, 50% RB, 1.4 MHz, QPSK)	X	4.32	72.20	20.50	3.01	150.0	± 9.6 %
		Y	4.09	70.13	19.37		150.0	
		Z	3.89	71.03	19.86		150.0	
10167-CAC	LTE-FDD (SC-FDMA, 50% RB, 1.4 MHz, 16-QAM)	X	6.13	77.20	21.71	3.01	150.0	± 9.6 %
		Y	5.31	73.40	20.02		150.0	
		Z	5.17	75.28	20.82		150.0	

10168-CAC	LTE-FDD (SC-FDMA, 50% RB, 1.4 MHz, 64-QAM)	X	6.94	79.87	23.11	3.01	150.0	± 9.6 %
		Y	5.79	75.28	21.14		150.0	
		Z	5.82	77.80	22.20		150.0	
10169-CAB	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, QPSK)	X	4.47	76.31	22.20	3.01	150.0	± 9.6 %
		Y	3.93	72.42	20.26		150.0	
		Z	3.45	71.87	20.27		150.0	
10170-CAB	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM)	X	9.97	90.37	26.89	3.01	150.0	± 9.6 %
		Y	6.08	79.64	22.84		150.0	
		Z	5.69	81.07	23.66		150.0	
10171-AAB	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, 64-QAM)	X	6.58	81.51	22.72	3.01	150.0	± 9.6 %
		Y	4.82	74.69	19.94		150.0	
		Z	4.39	75.54	20.48		150.0	
10172-CAB	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK)	X	73.64	126.23	37.77	6.02	65.0	± 9.6 %
		Y	18.65	98.22	29.94		65.0	
		Z	50.70	122.38	37.42		65.0	
10173-CAB	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM)	X	94.74	123.96	35.21	6.02	65.0	± 9.6 %
		Y	22.61	98.04	28.47		65.0	
		Z	96.90	127.66	36.64		65.0	
10174-CAB	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 64-QAM)	X	56.11	113.11	31.91	6.02	65.0	± 9.6 %
		Y	18.59	93.53	26.66		65.0	
		Z	65.46	118.77	33.84		65.0	
10175-CAC	LTE-FDD (SC-FDMA, 1 RB, 10 MHz, QPSK)	X	4.37	75.74	21.85	3.01	150.0	± 9.6 %
		Y	3.86	71.99	19.97		150.0	
		Z	3.41	71.52	20.02		150.0	
10176-CAC	LTE-FDD (SC-FDMA, 1 RB, 10 MHz, 16-QAM)	X	9.99	90.41	26.90	3.01	150.0	± 9.6 %
		Y	6.09	79.66	22.85		150.0	
		Z	5.70	81.10	23.67		150.0	
10177-CAE	LTE-FDD (SC-FDMA, 1 RB, 5 MHz, QPSK)	X	4.43	76.02	22.00	3.01	150.0	± 9.6 %
		Y	3.90	72.21	20.10		150.0	
		Z	3.44	71.69	20.11		150.0	
10178-CAC	LTE-FDD (SC-FDMA, 1 RB, 5 MHz, 16-QAM)	X	9.65	89.71	26.63	3.01	150.0	± 9.6 %
		Y	5.97	79.26	22.66		150.0	
		Z	5.62	80.80	23.53		150.0	
10179-CAC	LTE-FDD (SC-FDMA, 1 RB, 10 MHz, 64-QAM)	X	7.97	85.43	24.54	3.01	150.0	± 9.6 %
		Y	5.36	76.88	21.19		150.0	
		Z	4.98	78.13	21.92		150.0	
10180-CAC	LTE-FDD (SC-FDMA, 1 RB, 5 MHz, 64-QAM)	X	6.51	81.29	22.61	3.01	150.0	± 9.6 %
		Y	4.79	74.55	19.86		150.0	
		Z	4.38	75.44	20.42		150.0	
10181-CAB	LTE-FDD (SC-FDMA, 1 RB, 15 MHz, QPSK)	X	4.42	75.99	21.99	3.01	150.0	± 9.6 %
		Y	3.90	72.19	20.09		150.0	
		Z	3.43	71.67	20.11		150.0	
10182-CAB	LTE-FDD (SC-FDMA, 1 RB, 15 MHz, 16-QAM)	X	9.63	89.67	26.62	3.01	150.0	± 9.6 %
		Y	5.96	79.23	22.65		150.0	
		Z	5.61	80.77	23.51		150.0	
10183-AAA	LTE-FDD (SC-FDMA, 1 RB, 15 MHz, 64-QAM)	X	6.50	81.25	22.60	3.01	150.0	± 9.6 %
		Y	4.78	74.53	19.85		150.0	
		Z	4.37	75.41	20.41		150.0	

10184-CAC	LTE-FDD (SC-FDMA, 1 RB, 3 MHz, QPSK)	X	4.44	76.05	22.02	3.01	150.0	± 9.6 %
		Y	3.91	72.24	20.12		150.0	
		Z	3.45	71.72	20.13		150.0	
10185-CAC	LTE-FDD (SC-FDMA, 1 RB, 3 MHz, 16-QAM)	X	9.70	89.80	26.67	3.01	150.0	± 9.6 %
		Y	5.99	79.32	22.68		150.0	
		Z	5.64	80.86	23.56		150.0	
10186-AAC	LTE-FDD (SC-FDMA, 1 RB, 3 MHz, 64-QAM)	X	6.54	81.37	22.64	3.01	150.0	± 9.6 %
		Y	4.81	74.60	19.88		150.0	
		Z	4.39	75.50	20.45		150.0	
10187-CAC	LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK)	X	4.45	76.10	22.07	3.01	150.0	± 9.6 %
		Y	3.92	72.26	20.15		150.0	
		Z	3.46	71.78	20.19		150.0	
10188-CAC	LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, 16-QAM)	X	10.51	91.45	27.34	3.01	150.0	± 9.6 %
		Y	6.26	80.23	23.14		150.0	
		Z	5.89	81.76	24.00		150.0	
10189-AAC	LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, 64-QAM)	X	6.85	82.27	23.07	3.01	150.0	± 9.6 %
		Y	4.94	75.14	20.19		150.0	
		Z	4.52	76.06	20.77		150.0	
10193-CAB	IEEE 802.11n (HT Greenfield, 6.5 Mbps, BPSK)	X	4.73	67.10	16.51	0.00	150.0	± 9.6 %
		Y	4.75	66.68	16.23		150.0	
		Z	4.57	66.79	16.16		150.0	
10194-CAB	IEEE 802.11n (HT Greenfield, 39 Mbps, 16-QAM)	X	4.94	67.48	16.62	0.00	150.0	± 9.6 %
		Y	4.96	67.08	16.34		150.0	
		Z	4.75	67.11	16.28		150.0	
10195-CAB	IEEE 802.11n (HT Greenfield, 65 Mbps, 64-QAM)	X	4.98	67.48	16.62	0.00	150.0	± 9.6 %
		Y	5.00	67.07	16.34		150.0	
		Z	4.79	67.14	16.30		150.0	
10196-CAB	IEEE 802.11n (HT Mixed, 6.5 Mbps, BPSK)	X	4.76	67.21	16.55	0.00	150.0	± 9.6 %
		Y	4.78	66.80	16.27		150.0	
		Z	4.58	66.86	16.18		150.0	
10197-CAB	IEEE 802.11n (HT Mixed, 39 Mbps, 16-QAM)	X	4.96	67.50	16.63	0.00	150.0	± 9.6 %
		Y	4.98	67.09	16.35		150.0	
		Z	4.76	67.14	16.30		150.0	
10198-CAB	IEEE 802.11n (HT Mixed, 65 Mbps, 64-QAM)	X	4.99	67.50	16.63	0.00	150.0	± 9.6 %
		Y	5.01	67.09	16.35		150.0	
		Z	4.79	67.16	16.31		150.0	
10219-CAB	IEEE 802.11n (HT Mixed, 7.2 Mbps, BPSK)	X	4.71	67.23	16.53	0.00	150.0	± 9.6 %
		Y	4.73	66.82	16.24		150.0	
		Z	4.53	66.87	16.14		150.0	
10220-CAB	IEEE 802.11n (HT Mixed, 43.3 Mbps, 16-QAM)	X	4.96	67.50	16.63	0.00	150.0	± 9.6 %
		Y	4.98	67.10	16.35		150.0	
		Z	4.76	67.11	16.29		150.0	
10221-CAB	IEEE 802.11n (HT Mixed, 72.2 Mbps, 64-QAM)	X	4.99	67.43	16.62	0.00	150.0	± 9.6 %
		Y	5.01	67.03	16.34		150.0	
		Z	4.80	67.09	16.30		150.0	
10222-CAB	IEEE 802.11n (HT Mixed, 15 Mbps, BPSK)	X	5.29	67.72	16.73	0.00	150.0	± 9.6 %
		Y	5.31	67.38	16.49		150.0	
		Z	5.12	67.29	16.41		150.0	

10223-CAB	IEEE 802.11n (HT Mixed, 90 Mbps, 16-QAM)	X	5.67	68.03	16.90	0.00	150.0	± 9.6 %
		Y	5.70	67.71	16.67		150.0	
		Z	5.43	67.50	16.54		150.0	
10224-CAB	IEEE 802.11n (HT Mixed, 150 Mbps, 64-QAM)	X	5.35	67.84	16.72	0.00	150.0	± 9.6 %
		Y	5.37	67.51	16.48		150.0	
		Z	5.17	67.40	16.39		150.0	
10225-CAB	UMTS-FDD (HSPA+)	X	3.03	67.01	16.18	0.00	150.0	± 9.6 %
		Y	3.00	66.12	15.59		150.0	
		Z	2.84	66.23	15.31		150.0	
10226-CAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 16-QAM)	X	100.00	125.13	35.58	6.02	65.0	± 9.6 %
		Y	23.60	98.91	28.82		65.0	
		Z	100.00	128.43	36.91		65.0	
10227-CAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 64-QAM)	X	61.16	114.83	32.47	6.02	65.0	± 9.6 %
		Y	19.96	94.87	27.16		65.0	
		Z	73.77	120.96	34.46		65.0	
10228-CAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK)	X	72.18	126.53	38.01	6.02	65.0	± 9.6 %
		Y	21.44	101.40	31.05		65.0	
		Z	53.16	123.89	37.96		65.0	
10229-CAB	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 16-QAM)	X	94.57	123.93	35.21	6.02	65.0	± 9.6 %
		Y	22.66	98.06	28.49		65.0	
		Z	96.87	127.65	36.65		65.0	
10230-CAB	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 64-QAM)	X	56.39	113.28	31.99	6.02	65.0	± 9.6 %
		Y	19.26	94.16	26.88		65.0	
		Z	66.99	119.13	33.93		65.0	
10231-CAB	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, QPSK)	X	66.18	124.67	37.45	6.02	65.0	± 9.6 %
		Y	20.62	100.55	30.72		65.0	
		Z	48.89	122.07	37.41		65.0	
10232-CAB	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 16-QAM)	X	94.69	123.96	35.21	6.02	65.0	± 9.6 %
		Y	22.64	98.05	28.48		65.0	
		Z	97.00	127.68	36.66		65.0	
10233-CAB	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 64-QAM)	X	56.52	113.33	32.00	6.02	65.0	± 9.6 %
		Y	19.26	94.17	26.88		65.0	
		Z	67.07	119.16	33.94		65.0	
10234-CAB	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, QPSK)	X	60.26	122.59	36.81	6.02	65.0	± 9.6 %
		Y	19.81	99.63	30.34		65.0	
		Z	45.11	120.21	36.81		65.0	
10235-CAB	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 16-QAM)	X	95.38	124.09	35.25	6.02	65.0	± 9.6 %
		Y	22.67	98.09	28.50		65.0	
		Z	97.77	127.84	36.70		65.0	
10236-CAB	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 64-QAM)	X	57.18	113.50	32.04	6.02	65.0	± 9.6 %
		Y	19.38	94.26	26.90		65.0	
		Z	68.10	119.39	33.99		65.0	
10237-CAB	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, QPSK)	X	67.28	125.01	37.54	6.02	65.0	± 9.6 %
		Y	20.74	100.68	30.76		65.0	
		Z	49.59	122.38	37.49		65.0	
10238-CAB	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 16-QAM)	X	95.00	124.02	35.23	6.02	65.0	± 9.6 %
		Y	22.64	98.06	28.49		65.0	
		Z	97.19	127.73	36.66		65.0	

10239-CAB	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 64-QAM)	X	56.67	113.39	32.01	6.02	65.0	± 9.6 %
		Y	19.26	94.19	26.88		65.0	
		Z	67.13	119.19	33.94		65.0	
10240-CAB	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, QPSK)	X	67.00	124.93	37.52	6.02	65.0	± 9.6 %
		Y	20.68	100.63	30.74		65.0	
		Z	49.37	122.30	37.47		65.0	
10241-CAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 16-QAM)	X	14.43	89.77	28.56	6.98	65.0	± 9.6 %
		Y	12.31	85.00	26.80		65.0	
		Z	13.89	90.56	28.94		65.0	
10242-CAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 64-QAM)	X	13.70	88.57	28.03	6.98	65.0	± 9.6 %
		Y	10.82	82.08	25.53		65.0	
		Z	13.16	89.30	28.37		65.0	
10243-CAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, QPSK)	X	10.55	84.90	27.56	6.98	65.0	± 9.6 %
		Y	8.88	79.49	25.25		65.0	
		Z	9.99	85.03	27.70		65.0	
10244-CAB	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 16-QAM)	X	11.43	83.67	22.47	3.98	65.0	± 9.6 %
		Y	9.78	80.48	21.64		65.0	
		Z	9.76	81.22	20.90		65.0	
10245-CAB	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 64-QAM)	X	11.21	83.09	22.22	3.98	65.0	± 9.6 %
		Y	9.71	80.13	21.47		65.0	
		Z	9.48	80.50	20.58		65.0	
10246-CAB	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, QPSK)	X	10.58	85.22	23.00	3.98	65.0	± 9.6 %
		Y	8.86	81.57	21.94		65.0	
		Z	9.16	83.05	21.67		65.0	
10247-CAB	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 16-QAM)	X	8.25	78.94	21.22	3.98	65.0	± 9.6 %
		Y	7.85	77.32	20.79		65.0	
		Z	7.47	77.61	20.18		65.0	
10248-CAB	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 64-QAM)	X	8.20	78.37	20.99	3.98	65.0	± 9.6 %
		Y	7.89	76.93	20.61		65.0	
		Z	7.41	77.03	19.93		65.0	
10249-CAB	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, QPSK)	X	11.20	86.28	23.89	3.98	65.0	± 9.6 %
		Y	9.29	82.26	22.62		65.0	
		Z	10.48	85.66	23.36		65.0	
10250-CAB	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 16-QAM)	X	8.93	80.25	22.81	3.98	65.0	± 9.6 %
		Y	8.46	78.37	22.14		65.0	
		Z	8.46	79.88	22.48		65.0	
10251-CAB	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 64-QAM)	X	8.39	77.98	21.64	3.98	65.0	± 9.6 %
		Y	8.12	76.54	21.14		65.0	
		Z	7.98	77.74	21.34		65.0	
10252-CAB	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, QPSK)	X	10.53	84.51	23.78	3.98	65.0	± 9.6 %
		Y	9.19	81.18	22.63		65.0	
		Z	10.24	84.82	23.86		65.0	
10253-CAB	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 16-QAM)	X	8.25	76.95	21.44	3.98	65.0	± 9.6 %
		Y	8.10	75.77	21.00		65.0	
		Z	7.89	76.78	21.28		65.0	
10254-CAB	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 64-QAM)	X	8.62	77.66	22.02	3.98	65.0	± 9.6 %
		Y	8.44	76.43	21.56		65.0	
		Z	8.28	77.57	21.89		65.0	

10255-CAB	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, QPSK)	X	9.25	80.67	22.52	3.98	65.0	± 9.6 %
		Y	8.61	78.53	21.74		65.0	
		Z	9.00	80.97	22.67		65.0	
10256-CAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 16-QAM)	X	10.45	81.80	21.06	3.98	65.0	± 9.6 %
		Y	9.25	79.43	20.63		65.0	
		Z	8.10	77.76	18.69		65.0	
10257-CAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 64-QAM)	X	10.14	80.97	20.68	3.98	65.0	± 9.6 %
		Y	9.17	78.95	20.38		65.0	
		Z	7.78	76.81	18.23		65.0	
10258-CAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, QPSK)	X	9.51	83.16	21.76	3.98	65.0	± 9.6 %
		Y	8.34	80.46	21.12		65.0	
		Z	7.35	79.00	19.46		65.0	
10259-CAB	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 16-QAM)	X	8.50	79.32	21.74	3.98	65.0	± 9.6 %
		Y	8.08	77.61	21.22		65.0	
		Z	7.86	78.44	21.00		65.0	
10260-CAB	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 64-QAM)	X	8.50	79.04	21.65	3.98	65.0	± 9.6 %
		Y	8.14	77.44	21.18		65.0	
		Z	7.85	78.11	20.87		65.0	
10261-CAB	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, QPSK)	X	10.46	84.88	23.66	3.98	65.0	± 9.6 %
		Y	8.99	81.35	22.49		65.0	
		Z	9.90	84.54	23.31		65.0	
10262-CAB	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 16-QAM)	X	8.92	80.22	22.77	3.98	65.0	± 9.6 %
		Y	8.45	78.35	22.11		65.0	
		Z	8.45	79.83	22.45		65.0	
10263-CAB	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 64-QAM)	X	8.39	77.98	21.64	3.98	65.0	± 9.6 %
		Y	8.12	76.54	21.14		65.0	
		Z	7.97	77.72	21.33		65.0	
10264-CAB	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, QPSK)	X	10.46	84.37	23.71	3.98	65.0	± 9.6 %
		Y	9.15	81.08	22.57		65.0	
		Z	10.16	84.65	23.78		65.0	
10265-CAB	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 16-QAM)	X	8.50	77.59	21.64	3.98	65.0	± 9.6 %
		Y	8.29	76.32	21.16		65.0	
		Z	8.08	77.33	21.51		65.0	
10266-CAB	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 64-QAM)	X	8.85	78.27	22.25	3.98	65.0	± 9.6 %
		Y	8.62	76.95	21.75		65.0	
		Z	8.48	78.14	22.17		65.0	
10267-CAB	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, QPSK)	X	9.58	81.04	22.42	3.98	65.0	± 9.6 %
		Y	8.86	78.85	21.63		65.0	
		Z	9.31	81.34	22.60		65.0	
10268-CAB	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 16-QAM)	X	8.89	76.95	21.70	3.98	65.0	± 9.6 %
		Y	8.78	75.95	21.31		65.0	
		Z	8.54	76.83	21.69		65.0	
10269-CAB	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 64-QAM)	X	8.79	76.51	21.59	3.98	65.0	± 9.6 %
		Y	8.71	75.58	21.23		65.0	
		Z	8.47	76.42	21.58		65.0	
10270-CAB	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, QPSK)	X	8.98	78.26	21.47	3.98	65.0	± 9.6 %
		Y	8.66	76.86	20.96		65.0	
		Z	8.70	78.39	21.61		65.0	

10274-CAB	UMTS-FDD (HSUPA, Subtest 5, 3GPP Rel8.10)	X	2.76	67.40	16.12	0.00	150.0	± 9.6 %
		Y	2.68	66.20	15.35		150.0	
		Z	2.61	66.55	15.21		150.0	
10275-CAB	UMTS-FDD (HSUPA, Subtest 5, 3GPP Rel8.4)	X	1.97	71.33	17.64	0.00	150.0	± 9.6 %
		Y	1.71	67.84	15.61		150.0	
		Z	1.63	67.82	15.44		150.0	
10277-CAA	PHS (QPSK)	X	5.79	70.12	14.44	9.03	50.0	± 9.6 %
		Y	6.71	72.04	16.24		50.0	
		Z	5.20	69.01	13.39		50.0	
10278-CAA	PHS (QPSK, BW 884MHz, Rolloff 0.5)	X	10.14	81.72	21.64	9.03	50.0	± 9.6 %
		Y	10.00	81.13	22.16		50.0	
		Z	8.80	79.36	20.19		50.0	
10279-CAA	PHS (QPSK, BW 884MHz, Rolloff 0.38)	X	10.33	81.92	21.72	9.03	50.0	± 9.6 %
		Y	10.19	81.33	22.24		50.0	
		Z	8.92	79.53	20.27		50.0	
10290-AAB	CDMA2000, RC1, SO55, Full Rate	X	2.41	75.76	18.30	0.00	150.0	± 9.6 %
		Y	1.70	69.18	15.23		150.0	
		Z	1.46	68.58	14.00		150.0	
10291-AAB	CDMA2000, RC3, SO55, Full Rate	X	1.39	73.22	17.31	0.00	150.0	± 9.6 %
		Y	0.98	66.45	13.79		150.0	
		Z	0.85	65.74	12.53		150.0	
10292-AAB	CDMA2000, RC3, SO32, Full Rate	X	2.43	83.14	21.70	0.00	150.0	± 9.6 %
		Y	1.15	69.63	15.75		150.0	
		Z	1.04	69.40	14.71		150.0	
10293-AAB	CDMA2000, RC3, SO3, Full Rate	X	5.22	96.14	26.57	0.00	150.0	± 9.6 %
		Y	1.48	73.58	17.97		150.0	
		Z	1.47	74.43	17.37		150.0	
10295-AAB	CDMA2000, RC1, SO3, 1/8th Rate 25 fr.	X	10.48	83.75	24.32	9.03	50.0	± 9.6 %
		Y	9.84	81.54	23.85		50.0	
		Z	11.88	86.37	24.91		50.0	
10297-AAA	LTE-FDD (SC-FDMA, 50% RB, 20 MHz, QPSK)	X	3.28	72.37	17.95	0.00	150.0	± 9.6 %
		Y	2.98	69.95	16.59		150.0	
		Z	2.77	69.63	16.49		150.0	
10298-AAB	LTE-FDD (SC-FDMA, 50% RB, 3 MHz, QPSK)	X	2.26	72.62	17.48	0.00	150.0	± 9.6 %
		Y	1.88	68.51	15.39		150.0	
		Z	1.59	67.65	14.14		150.0	
10299-AAB	LTE-FDD (SC-FDMA, 50% RB, 3 MHz, 16-QAM)	X	6.40	81.89	20.37	0.00	150.0	± 9.6 %
		Y	3.78	73.44	17.26		150.0	
		Z	3.62	73.66	16.18		150.0	
10300-AAB	LTE-FDD (SC-FDMA, 50% RB, 3 MHz, 64-QAM)	X	3.72	72.73	16.07	0.00	150.0	± 9.6 %
		Y	2.96	68.88	14.55		150.0	
		Z	2.44	67.52	12.75		150.0	
10301-AAA	IEEE 802.16e WiMAX (29:18, 5ms, 10MHz, QPSK, PUSC)	X	5.70	68.03	18.84	4.17	80.0	± 9.6 %
		Y	5.77	67.36	18.35		80.0	
		Z	5.64	68.37	18.74		80.0	
10302-AAA	IEEE 802.16e WiMAX (29:18, 5ms, 10MHz, QPSK, PUSC, 3 CTRL symbols)	X	6.21	68.72	19.60	4.96	80.0	± 9.6 %
		Y	6.41	68.65	19.47		80.0	
		Z	6.13	69.05	19.54		80.0	

10303-AAA	IEEE 802.16e WiMAX (31:15, 5ms, 10MHz, 64QAM, PUSC)	X	6.07	68.83	19.70	4.96	80.0	± 9.6 %
		Y	6.30	68.82	19.58		80.0	
		Z	5.97	69.08	19.56		80.0	
10304-AAA	IEEE 802.16e WiMAX (29:18, 5ms, 10MHz, 64QAM, PUSC)	X	5.71	68.13	18.89	4.17	80.0	± 9.6 %
		Y	5.89	68.01	18.73		80.0	
		Z	5.61	68.35	18.73		80.0	
10305-AAA	IEEE 802.16e WiMAX (31:15, 10ms, 10MHz, 64QAM, PUSC, 15 symbols)	X	6.90	74.81	23.11	6.02	50.0	± 9.6 %
		Y	9.48	82.28	26.60		50.0	
		Z	9.03	82.45	26.20		50.0	
10306-AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, 64QAM, PUSC, 18 symbols)	X	6.40	71.34	21.64	6.02	50.0	± 9.6 %
		Y	6.75	71.50	21.57		50.0	
		Z	6.43	72.04	21.56		50.0	
10307-AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, QPSK, PUSC, 18 symbols)	X	6.49	72.10	21.82	6.02	50.0	± 9.6 %
		Y	6.85	72.21	21.70		50.0	
		Z	6.50	72.67	21.67		50.0	
10308-AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, 16QAM, PUSC)	X	6.53	72.49	22.02	6.02	50.0	± 9.6 %
		Y	6.89	72.58	21.88		50.0	
		Z	6.59	73.18	21.92		50.0	
10309-AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, 16QAM, AMC 2x3, 18 symbols)	X	6.52	71.66	21.81	6.02	50.0	± 9.6 %
		Y	6.86	71.77	21.70		50.0	
		Z	6.53	72.35	21.74		50.0	
10310-AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, QPSK, AMC 2x3, 18 symbols)	X	6.41	71.57	21.66	6.02	50.0	± 9.6 %
		Y	6.75	71.71	21.56		50.0	
		Z	6.45	72.29	21.59		50.0	
10311-AAA	LTE-FDD (SC-FDMA, 100% RB, 15 MHz, QPSK)	X	3.66	71.55	17.51	0.00	150.0	± 9.6 %
		Y	3.33	69.32	16.27		150.0	
		Z	3.12	68.94	16.14		150.0	
10313-AAA	IDEN 1:3	X	8.19	79.62	19.16	6.99	70.0	± 9.6 %
		Y	7.35	77.72	18.90		70.0	
		Z	8.21	80.46	19.57		70.0	
10314-AAA	IDEN 1:6	X	11.35	86.83	24.06	10.00	30.0	± 9.6 %
		Y	8.72	81.68	22.69		30.0	
		Z	10.81	87.34	24.49		30.0	
10315-AAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps, 96pc duty cycle)	X	1.24	66.34	16.99	0.17	150.0	± 9.6 %
		Y	1.18	64.44	15.46		150.0	
		Z	1.17	64.45	15.36		150.0	
10316-AAB	IEEE 802.11g WiFi 2.4 GHz (ERP-OFDM, 6 Mbps, 96pc duty cycle)	X	4.83	67.25	16.68	0.17	150.0	± 9.6 %
		Y	4.86	66.88	16.43		150.0	
		Z	4.68	66.99	16.39		150.0	
10317-AAB	IEEE 802.11a WiFi 5 GHz (OFDM, 6 Mbps, 96pc duty cycle)	X	4.83	67.25	16.68	0.17	150.0	± 9.6 %
		Y	4.86	66.88	16.43		150.0	
		Z	4.68	66.99	16.39		150.0	
10400-AAC	IEEE 802.11ac WiFi (20MHz, 64-QAM, 99pc duty cycle)	X	4.96	67.54	16.61	0.00	150.0	± 9.6 %
		Y	4.98	67.13	16.32		150.0	
		Z	4.75	67.19	16.29		150.0	
10401-AAC	IEEE 802.11ac WiFi (40MHz, 64-QAM, 99pc duty cycle)	X	5.54	67.49	16.61	0.00	150.0	± 9.6 %
		Y	5.56	67.14	16.37		150.0	
		Z	5.45	67.43	16.49		150.0	

10402-AAC	IEEE 802.11ac WiFi (80MHz, 64-QAM, 99pc duty cycle)	X	5.87	68.11	16.75	0.00	150.0	± 9.6 %
		Y	5.89	67.80	16.54		150.0	
		Z	5.70	67.70	16.47		150.0	
10403-AAB	CDMA2000 (1xEV-DO, Rev. 0)	X	2.41	75.76	18.30	0.00	115.0	± 9.6 %
		Y	1.70	69.18	15.23		115.0	
		Z	1.46	68.58	14.00		115.0	
10404-AAB	CDMA2000 (1xEV-DO, Rev. A)	X	2.41	75.76	18.30	0.00	115.0	± 9.6 %
		Y	1.70	69.18	15.23		115.0	
		Z	1.46	68.58	14.00		115.0	
10406-AAB	CDMA2000, RC3, SO32, SCH0, Full Rate	X	100.00	120.32	30.30	0.00	100.0	± 9.6 %
		Y	37.67	108.93	28.46		100.0	
		Z	100.00	119.28	29.39		100.0	
10410-AAA	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	100.00	118.51	29.90	3.23	80.0	± 9.6 %
		Y	100.00	119.74	30.88		80.0	
		Z	100.00	120.99	30.71		80.0	
10415-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps, 99pc duty cycle)	X	1.06	64.54	16.02	0.00	150.0	± 9.6 %
		Y	1.03	62.90	14.57		150.0	
		Z	1.03	63.04	14.51		150.0	
10416-AAA	IEEE 802.11g WiFi 2.4 GHz (ERP-OFDM, 6 Mbps, 99pc duty cycle)	X	4.73	67.12	16.55	0.00	150.0	± 9.6 %
		Y	4.75	66.70	16.25		150.0	
		Z	4.58	66.83	16.23		150.0	
10417-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps, 99pc duty cycle)	X	4.73	67.12	16.55	0.00	150.0	± 9.6 %
		Y	4.75	66.70	16.25		150.0	
		Z	4.58	66.83	16.23		150.0	
10418-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps, 99pc duty cycle, Long preamble)	X	4.72	67.27	16.56	0.00	150.0	± 9.6 %
		Y	4.73	66.83	16.25		150.0	
		Z	4.56	66.98	16.24		150.0	
10419-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps, 99pc duty cycle, Short preamble)	X	4.75	67.23	16.56	0.00	150.0	± 9.6 %
		Y	4.76	66.80	16.26		150.0	
		Z	4.59	66.94	16.24		150.0	
10422-AAA	IEEE 802.11n (HT Greenfield, 7.2 Mbps, BPSK)	X	4.87	67.22	16.56	0.00	150.0	± 9.6 %
		Y	4.89	66.82	16.28		150.0	
		Z	4.71	66.94	16.26		150.0	
10423-AAA	IEEE 802.11n (HT Greenfield, 43.3 Mbps, 16-QAM)	X	5.09	67.62	16.71	0.00	150.0	± 9.6 %
		Y	5.12	67.23	16.44		150.0	
		Z	4.88	67.27	16.38		150.0	
10424-AAA	IEEE 802.11n (HT Greenfield, 72.2 Mbps, 64-QAM)	X	5.00	67.56	16.68	0.00	150.0	± 9.6 %
		Y	5.02	67.15	16.39		150.0	
		Z	4.80	67.22	16.35		150.0	
10425-AAA	IEEE 802.11n (HT Greenfield, 15 Mbps, BPSK)	X	5.55	67.83	16.78	0.00	150.0	± 9.6 %
		Y	5.59	67.55	16.57		150.0	
		Z	5.40	67.57	16.55		150.0	
10426-AAA	IEEE 802.11n (HT Greenfield, 90 Mbps, 16-QAM)	X	5.56	67.88	16.79	0.00	150.0	± 9.6 %
		Y	5.60	67.58	16.58		150.0	
		Z	5.41	67.59	16.56		150.0	

10427-AAA	IEEE 802.11n (HT Greenfield, 150 Mbps, 64-QAM)	X	5.59	67.91	16.80	0.00	150.0	± 9.6 %
		Y	5.63	67.61	16.59		150.0	
		Z	5.42	67.56	16.54		150.0	
10430-AAA	LTE-FDD (OFDMA, 5 MHz, E-TM 3.1)	X	4.54	71.07	18.70	0.00	150.0	± 9.6 %
		Y	4.46	69.99	18.11		150.0	
		Z	4.20	70.41	17.89		150.0	
10431-AAA	LTE-FDD (OFDMA, 10 MHz, E-TM 3.1)	X	4.50	67.77	16.69	0.00	150.0	± 9.6 %
		Y	4.51	67.23	16.34		150.0	
		Z	4.26	67.36	16.21		150.0	
10432-AAA	LTE-FDD (OFDMA, 15 MHz, E-TM 3.1)	X	4.78	67.63	16.67	0.00	150.0	± 9.6 %
		Y	4.80	67.18	16.37		150.0	
		Z	4.56	67.25	16.29		150.0	
10433-AAA	LTE-FDD (OFDMA, 20 MHz, E-TM 3.1)	X	5.01	67.62	16.71	0.00	150.0	± 9.6 %
		Y	5.04	67.21	16.43		150.0	
		Z	4.81	67.25	16.37		150.0	
10434-AAA	W-CDMA (BS Test Model 1, 64 DPCH)	X	4.66	71.93	18.79	0.00	150.0	± 9.6 %
		Y	4.53	70.61	18.11		150.0	
		Z	4.27	71.15	17.82		150.0	
10435-AAA	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	100.00	118.35	29.82	3.23	80.0	± 9.6 %
		Y	100.00	119.61	30.82		80.0	
		Z	100.00	120.81	30.62		80.0	
10447-AAA	LTE-FDD (OFDMA, 5 MHz, E-TM 3.1, Clipping 44%)	X	3.85	68.02	16.38	0.00	150.0	± 9.6 %
		Y	3.83	67.22	15.92		150.0	
		Z	3.54	67.32	15.53		150.0	
10448-AAA	LTE-FDD (OFDMA, 10 MHz, E-TM 3.1, Clipping 44%)	X	4.31	67.56	16.56	0.00	150.0	± 9.6 %
		Y	4.32	66.99	16.19		150.0	
		Z	4.10	67.13	16.07		150.0	
10449-AAA	LTE-FDD (OFDMA, 15 MHz, E-TM 3.1, Clipping 44%)	X	4.56	67.47	16.59	0.00	150.0	± 9.6 %
		Y	4.57	66.98	16.26		150.0	
		Z	4.37	67.07	16.19		150.0	
10450-AAA	LTE-FDD (OFDMA, 20 MHz, E-TM 3.1, Clipping 44%)	X	4.73	67.38	16.58	0.00	150.0	± 9.6 %
		Y	4.74	66.94	16.27		150.0	
		Z	4.56	67.01	16.22		150.0	
10451-AAA	W-CDMA (BS Test Model 1, 64 DPCH, Clipping 44%)	X	3.81	68.42	16.23	0.00	150.0	± 9.6 %
		Y	3.77	67.50	15.73		150.0	
		Z	3.44	67.49	15.16		150.0	
10456-AAA	IEEE 802.11ac WiFi (160MHz, 64-QAM, 99pc duty cycle)	X	6.40	68.45	16.93	0.00	150.0	± 9.6 %
		Y	6.44	68.23	16.77		150.0	
		Z	6.27	68.12	16.71		150.0	
10457-AAA	UMTS-FDD (DC-HSDPA)	X	3.89	65.77	16.30	0.00	150.0	± 9.6 %
		Y	3.90	65.36	15.99		150.0	
		Z	3.82	65.47	15.93		150.0	
10458-AAA	CDMA2000 (1xEV-DO, Rev. B, 2 carriers)	X	3.60	67.53	15.71	0.00	150.0	± 9.6 %
		Y	3.56	66.59	15.22		150.0	
		Z	3.27	66.88	14.62		150.0	
10459-AAA	CDMA2000 (1xEV-DO, Rev. B, 3 carriers)	X	4.70	65.53	16.21	0.00	150.0	± 9.6 %
		Y	4.63	64.60	15.71		150.0	
		Z	4.27	64.85	15.38		150.0	

10460-AAA	UMTS-FDD (WCDMA, AMR)	X	1.28	75.29	20.20	0.00	150.0	± 9.6 %
		Y	0.92	67.71	15.91		150.0	
		Z	0.90	67.71	15.78		150.0	
10461-AAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	100.00	122.97	32.01	3.29	80.0	± 9.6 %
		Y	100.00	121.34	31.70		80.0	
		Z	100.00	125.58	32.88		80.0	
10462-AAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	100.00	108.03	24.84	3.23	80.0	± 9.6 %
		Y	100.00	109.86	26.18		80.0	
		Z	100.00	108.99	24.93		80.0	
10463-AAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	100.00	105.21	23.49	3.23	80.0	± 9.6 %
		Y	47.92	99.26	23.13		80.0	
		Z	100.00	105.71	23.36		80.0	
10464-AAA	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	100.00	121.12	31.00	3.23	80.0	± 9.6 %
		Y	100.00	119.76	30.82		80.0	
		Z	100.00	123.61	31.80		80.0	
10465-AAA	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	100.00	107.54	24.59	3.23	80.0	± 9.6 %
		Y	92.10	108.50	25.75		80.0	
		Z	100.00	108.47	24.68		80.0	
10466-AAA	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	100.00	104.76	23.28	3.23	80.0	± 9.6 %
		Y	27.79	92.79	21.40		80.0	
		Z	53.71	98.96	21.73		80.0	
10467-AAA	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	100.00	121.32	31.10	3.23	80.0	± 9.6 %
		Y	100.00	119.93	30.90		80.0	
		Z	100.00	123.83	31.91		80.0	
10468-AAA	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	100.00	107.68	24.66	3.23	80.0	± 9.6 %
		Y	100.00	109.58	26.02		80.0	
		Z	100.00	108.64	24.75		80.0	
10469-AAA	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	100.00	104.76	23.27	3.23	80.0	± 9.6 %
		Y	28.45	93.06	21.47		80.0	
		Z	57.15	99.60	21.88		80.0	
10470-AAA	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	100.00	121.35	31.10	3.23	80.0	± 9.6 %
		Y	100.00	119.95	30.90		80.0	
		Z	100.00	123.86	31.91		80.0	
10471-AAA	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	100.00	107.63	24.63	3.23	80.0	± 9.6 %
		Y	100.00	109.54	26.00		80.0	
		Z	100.00	108.59	24.73		80.0	
10472-AAA	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	100.00	104.72	23.24	3.23	80.0	± 9.6 %
		Y	28.52	93.08	21.46		80.0	
		Z	57.07	99.54	21.85		80.0	
10473-AAA	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	100.00	121.32	31.09	3.23	80.0	± 9.6 %
		Y	100.00	119.92	30.89		80.0	
		Z	100.00	123.84	31.90		80.0	
10474-AAA	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	100.00	107.64	24.63	3.23	80.0	± 9.6 %
		Y	100.00	109.55	26.00		80.0	
		Z	100.00	108.60	24.73		80.0	
10475-AAA	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	100.00	104.73	23.25	3.23	80.0	± 9.6 %
		Y	28.13	92.93	21.42		80.0	
		Z	55.36	99.25	21.78		80.0	

10477-AAA	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	100.00	107.49	24.56	3.23	80.0	± 9.6 %
		Y	96.57	109.01	25.85		80.0	
		Z	100.00	108.42	24.64		80.0	
10478-AAA	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	100.00	104.68	23.23	3.23	80.0	± 9.6 %
		Y	27.68	92.72	21.36		80.0	
		Z	53.23	98.81	21.67		80.0	
10479-AAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	26.63	104.01	29.13	3.23	80.0	± 9.6 %
		Y	9.63	86.48	23.96		80.0	
		Z	24.30	102.59	28.22		80.0	
10480-AAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	38.31	102.90	27.02	3.23	80.0	± 9.6 %
		Y	11.50	85.06	22.20		80.0	
		Z	29.11	98.49	25.10		80.0	
10481-AAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	30.40	98.59	25.52	3.23	80.0	± 9.6 %
		Y	10.74	83.47	21.41		80.0	
		Z	20.94	92.98	23.18		80.0	
10482-AAA	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	8.51	84.82	22.25	2.23	80.0	± 9.6 %
		Y	5.60	77.58	19.80		80.0	
		Z	5.41	78.09	19.19		80.0	
10483-AAA	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	14.01	88.92	23.41	2.23	80.0	± 9.6 %
		Y	8.14	80.18	20.73		80.0	
		Z	9.32	82.50	20.44		80.0	
10484-AAA	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	12.47	87.00	22.82	2.23	80.0	± 9.6 %
		Y	7.81	79.33	20.43		80.0	
		Z	8.26	80.64	19.81		80.0	
10485-AAA	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	8.06	84.25	22.66	2.23	80.0	± 9.6 %
		Y	5.75	77.87	20.37		80.0	
		Z	5.68	79.10	20.42		80.0	
10486-AAA	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	5.66	75.87	19.43	2.23	80.0	± 9.6 %
		Y	4.94	72.86	18.29		80.0	
		Z	4.62	73.05	17.69		80.0	
10487-AAA	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	5.56	75.25	19.19	2.23	80.0	± 9.6 %
		Y	4.94	72.51	18.16		80.0	
		Z	4.56	72.51	17.46		80.0	
10488-AAA	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	7.10	80.82	21.84	2.23	80.0	± 9.6 %
		Y	5.79	76.47	20.13		80.0	
		Z	5.49	77.19	20.36		80.0	
10489-AAA	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	5.34	73.87	19.44	2.23	80.0	± 9.6 %
		Y	5.00	71.87	18.57		80.0	
		Z	4.68	72.17	18.47		80.0	
10490-AAA	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	5.35	73.36	19.26	2.23	80.0	± 9.6 %
		Y	5.06	71.53	18.46		80.0	
		Z	4.74	71.87	18.36		80.0	
10491-AAA	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	6.36	77.12	20.56	2.23	80.0	± 9.6 %
		Y	5.66	74.28	19.36		80.0	
		Z	5.31	74.67	19.54		80.0	
10492-AAA	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	5.41	72.24	18.98	2.23	80.0	± 9.6 %
		Y	5.23	70.84	18.33		80.0	
		Z	4.89	71.01	18.29		80.0	

10493-AAA	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	5.44	71.94	18.88	2.23	80.0	± 9.6 %
		Y	5.28	70.63	18.27		80.0	
		Z	4.94	70.81	18.22		80.0	
10494-AAA	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	7.43	79.70	21.31	2.23	80.0	± 9.6 %
		Y	6.30	76.13	19.88		80.0	
		Z	5.88	76.40	20.05		80.0	
10495-AAA	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	5.56	72.97	19.25	2.23	80.0	± 9.6 %
		Y	5.33	71.45	18.55		80.0	
		Z	4.97	71.48	18.50		80.0	
10496-AAA	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	5.54	72.39	19.06	2.23	80.0	± 9.6 %
		Y	5.37	71.03	18.42		80.0	
		Z	5.01	71.08	18.38		80.0	
10497-AAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	7.31	82.38	20.82	2.23	80.0	± 9.6 %
		Y	4.87	75.75	18.64		80.0	
		Z	4.03	73.68	16.68		80.0	
10498-AAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	4.73	73.29	16.69	2.23	80.0	± 9.6 %
		Y	4.12	70.77	15.97		80.0	
		Z	2.73	66.24	12.60		80.0	
10499-AAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	4.59	72.54	16.27	2.23	80.0	± 9.6 %
		Y	4.10	70.38	15.70		80.0	
		Z	2.62	65.47	12.11		80.0	
10500-AAA	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	7.19	81.83	22.01	2.23	80.0	± 9.6 %
		Y	5.57	76.69	20.07		80.0	
		Z	5.44	77.85	20.24		80.0	
10501-AAA	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	5.46	74.81	19.33	2.23	80.0	± 9.6 %
		Y	4.94	72.30	18.33		80.0	
		Z	4.65	72.67	17.97		80.0	
10502-AAA	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	5.46	74.43	19.15	2.23	80.0	± 9.6 %
		Y	4.98	72.05	18.20		80.0	
		Z	4.68	72.41	17.81		80.0	
10503-AAA	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	6.99	80.56	21.73	2.23	80.0	± 9.6 %
		Y	5.72	76.28	20.04		80.0	
		Z	5.42	76.98	20.27		80.0	
10504-AAA	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	5.31	73.78	19.39	2.23	80.0	± 9.6 %
		Y	4.98	71.79	18.52		80.0	
		Z	4.66	72.08	18.42		80.0	
10505-AAA	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	5.32	73.26	19.21	2.23	80.0	± 9.6 %
		Y	5.03	71.44	18.41		80.0	
		Z	4.72	71.78	18.31		80.0	
10506-AAA	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	7.35	79.52	21.23	2.23	80.0	± 9.6 %
		Y	6.24	75.99	19.82		80.0	
		Z	5.83	76.25	19.98		80.0	
10507-AAA	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	5.53	72.90	19.22	2.23	80.0	± 9.6 %
		Y	5.31	71.39	18.51		80.0	
		Z	4.95	71.42	18.47		80.0	

10508-AAA	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	5.52	72.31	19.02	2.23	80.0	± 9.6 %
		Y	5.35	70.96	18.38		80.0	
		Z	4.99	71.02	18.34		80.0	
10509-AAA	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	6.86	76.40	20.08	2.23	80.0	± 9.6 %
		Y	6.23	74.05	19.09		80.0	
		Z	5.83	74.13	19.18		80.0	
10510-AAA	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	5.89	72.04	18.91	2.23	80.0	± 9.6 %
		Y	5.75	70.91	18.36		80.0	
		Z	5.36	70.80	18.32		80.0	
10511-AAA	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	5.86	71.58	18.77	2.23	80.0	± 9.6 %
		Y	5.75	70.55	18.27		80.0	
		Z	5.39	70.48	18.23		80.0	
10512-AAA	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	7.85	79.24	20.97	2.23	80.0	± 9.6 %
		Y	6.75	76.04	19.69		80.0	
		Z	6.30	76.05	19.77		80.0	
10513-AAA	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	5.88	72.72	19.16	2.23	80.0	± 9.6 %
		Y	5.70	71.43	18.55		80.0	
		Z	5.29	71.21	18.47		80.0	
10514-AAA	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	5.77	72.00	18.94	2.23	80.0	± 9.6 %
		Y	5.64	70.86	18.38		80.0	
		Z	5.26	70.69	18.32		80.0	
10515-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 2 Mbps, 99pc duty cycle)	X	1.03	64.88	16.19	0.00	150.0	± 9.6 %
		Y	0.99	63.07	14.62		150.0	
		Z	0.99	63.20	14.56		150.0	
10516-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 5.5 Mbps, 99pc duty cycle)	X	1.64	91.04	26.85	0.00	150.0	± 9.6 %
		Y	0.59	69.22	16.60		150.0	
		Z	0.59	69.23	16.57		150.0	
10517-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 11 Mbps, 99pc duty cycle)	X	0.96	68.68	17.89	0.00	150.0	± 9.6 %
		Y	0.84	64.94	15.18		150.0	
		Z	0.84	64.94	15.09		150.0	
10518-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 9 Mbps, 99pc duty cycle)	X	4.73	67.22	16.54	0.00	150.0	± 9.6 %
		Y	4.75	66.79	16.24		150.0	
		Z	4.57	66.91	16.20		150.0	
10519-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 12 Mbps, 99pc duty cycle)	X	4.96	67.51	16.67	0.00	150.0	± 9.6 %
		Y	4.99	67.12	16.39		150.0	
		Z	4.76	67.15	16.33		150.0	
10520-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 18 Mbps, 99pc duty cycle)	X	4.82	67.52	16.62	0.00	150.0	± 9.6 %
		Y	4.84	67.09	16.32		150.0	
		Z	4.61	67.11	16.25		150.0	
10521-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 24 Mbps, 99pc duty cycle)	X	4.75	67.54	16.61	0.00	150.0	± 9.6 %
		Y	4.77	67.10	16.31		150.0	
		Z	4.54	67.10	16.23		150.0	
10522-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 36 Mbps, 99pc duty cycle)	X	4.79	67.47	16.62	0.00	150.0	± 9.6 %
		Y	4.80	67.00	16.30		150.0	
		Z	4.60	67.19	16.31		150.0	

10523-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 48 Mbps, 99pc duty cycle)	X	4.66	67.41	16.50	0.00	150.0	± 9.6 %
		Y	4.67	66.95	16.18		150.0	
		Z	4.48	67.04	16.16		150.0	
10524-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 54 Mbps, 99pc duty cycle)	X	4.74	67.44	16.62	0.00	150.0	± 9.6 %
		Y	4.76	66.99	16.31		150.0	
		Z	4.54	67.10	16.28		150.0	
10525-AAA	IEEE 802.11ac WiFi (20MHz, MCS0, 99pc duty cycle)	X	4.69	66.48	16.21	0.00	150.0	± 9.6 %
		Y	4.70	66.02	15.89		150.0	
		Z	4.53	66.15	15.87		150.0	
10526-AAA	IEEE 802.11ac WiFi (20MHz, MCS1, 99pc duty cycle)	X	4.91	66.90	16.35	0.00	150.0	± 9.6 %
		Y	4.91	66.43	16.04		150.0	
		Z	4.70	66.52	16.01		150.0	
10527-AAA	IEEE 802.11ac WiFi (20MHz, MCS2, 99pc duty cycle)	X	4.82	66.89	16.32	0.00	150.0	± 9.6 %
		Y	4.83	66.42	16.00		150.0	
		Z	4.62	66.47	15.95		150.0	
10528-AAA	IEEE 802.11ac WiFi (20MHz, MCS3, 99pc duty cycle)	X	4.84	66.91	16.35	0.00	150.0	± 9.6 %
		Y	4.85	66.44	16.03		150.0	
		Z	4.63	66.49	15.99		150.0	
10529-AAA	IEEE 802.11ac WiFi (20MHz, MCS4, 99pc duty cycle)	X	4.84	66.91	16.35	0.00	150.0	± 9.6 %
		Y	4.85	66.44	16.03		150.0	
		Z	4.63	66.49	15.99		150.0	
10531-AAA	IEEE 802.11ac WiFi (20MHz, MCS6, 99pc duty cycle)	X	4.86	67.08	16.39	0.00	150.0	± 9.6 %
		Y	4.87	66.60	16.06		150.0	
		Z	4.63	66.60	16.00		150.0	
10532-AAA	IEEE 802.11ac WiFi (20MHz, MCS7, 99pc duty cycle)	X	4.71	66.97	16.35	0.00	150.0	± 9.6 %
		Y	4.72	66.49	16.02		150.0	
		Z	4.49	66.45	15.93		150.0	
10533-AAA	IEEE 802.11ac WiFi (20MHz, MCS8, 99pc duty cycle)	X	4.86	66.93	16.33	0.00	150.0	± 9.6 %
		Y	4.87	66.45	16.01		150.0	
		Z	4.64	66.54	15.97		150.0	
10534-AAA	IEEE 802.11ac WiFi (40MHz, MCS0, 99pc duty cycle)	X	5.34	67.03	16.36	0.00	150.0	± 9.6 %
		Y	5.36	66.66	16.11		150.0	
		Z	5.17	66.62	16.06		150.0	
10535-AAA	IEEE 802.11ac WiFi (40MHz, MCS1, 99pc duty cycle)	X	5.42	67.17	16.42	0.00	150.0	± 9.6 %
		Y	5.43	66.80	16.16		150.0	
		Z	5.24	66.80	16.14		150.0	
10536-AAA	IEEE 802.11ac WiFi (40MHz, MCS2, 99pc duty cycle)	X	5.29	67.18	16.41	0.00	150.0	± 9.6 %
		Y	5.30	66.78	16.13		150.0	
		Z	5.11	66.74	16.09		150.0	
10537-AAA	IEEE 802.11ac WiFi (40MHz, MCS3, 99pc duty cycle)	X	5.35	67.14	16.39	0.00	150.0	± 9.6 %
		Y	5.36	66.75	16.12		150.0	
		Z	5.16	66.71	16.08		150.0	
10538-AAA	IEEE 802.11ac WiFi (40MHz, MCS4, 99pc duty cycle)	X	5.47	67.20	16.46	0.00	150.0	± 9.6 %
		Y	5.49	66.85	16.21		150.0	
		Z	5.26	66.74	16.13		150.0	
10540-AAA	IEEE 802.11ac WiFi (40MHz, MCS6, 99pc duty cycle)	X	5.36	67.15	16.45	0.00	150.0	± 9.6 %
		Y	5.38	66.77	16.18		150.0	
		Z	5.19	66.76	16.16		150.0	

10541-AAA	IEEE 802.11ac WiFi (40MHz, MCS7, 99pc duty cycle)	X	5.35	67.08	16.42	0.00	150.0	± 9.6 %
		Y	5.38	66.75	16.17		150.0	
		Z	5.16	66.62	16.08		150.0	
10542-AAA	IEEE 802.11ac WiFi (40MHz, MCS8, 99pc duty cycle)	X	5.49	67.08	16.42	0.00	150.0	± 9.6 %
		Y	5.51	66.73	16.18		150.0	
		Z	5.31	66.69	16.13		150.0	
10543-AAA	IEEE 802.11ac WiFi (40MHz, MCS9, 99pc duty cycle)	X	5.58	67.09	16.44	0.00	150.0	± 9.6 %
		Y	5.61	66.77	16.21		150.0	
		Z	5.39	66.74	16.17		150.0	
10544-AAA	IEEE 802.11ac WiFi (80MHz, MCS0, 99pc duty cycle)	X	5.61	67.12	16.33	0.00	150.0	± 9.6 %
		Y	5.62	66.77	16.09		150.0	
		Z	5.48	66.74	16.05		150.0	
10545-AAA	IEEE 802.11ac WiFi (80MHz, MCS1, 99pc duty cycle)	X	5.83	67.51	16.46	0.00	150.0	± 9.6 %
		Y	5.84	67.15	16.22		150.0	
		Z	5.68	67.16	16.22		150.0	
10546-AAA	IEEE 802.11ac WiFi (80MHz, MCS2, 99pc duty cycle)	X	5.72	67.42	16.44	0.00	150.0	± 9.6 %
		Y	5.73	67.08	16.20		150.0	
		Z	5.55	66.95	16.13		150.0	
10547-AAA	IEEE 802.11ac WiFi (80MHz, MCS3, 99pc duty cycle)	X	5.81	67.48	16.46	0.00	150.0	± 9.6 %
		Y	5.83	67.17	16.24		150.0	
		Z	5.62	66.99	16.14		150.0	
10548-AAA	IEEE 802.11ac WiFi (80MHz, MCS4, 99pc duty cycle)	X	6.10	68.50	16.94	0.00	150.0	± 9.6 %
		Y	6.15	68.24	16.74		150.0	
		Z	5.89	67.98	16.61		150.0	
10550-AAA	IEEE 802.11ac WiFi (80MHz, MCS6, 99pc duty cycle)	X	5.74	67.36	16.42	0.00	150.0	± 9.6 %
		Y	5.75	67.01	16.18		150.0	
		Z	5.57	66.96	16.14		150.0	
10551-AAA	IEEE 802.11ac WiFi (80MHz, MCS7, 99pc duty cycle)	X	5.76	67.47	16.43	0.00	150.0	± 9.6 %
		Y	5.78	67.14	16.20		150.0	
		Z	5.58	67.00	16.12		150.0	
10552-AAA	IEEE 802.11ac WiFi (80MHz, MCS8, 99pc duty cycle)	X	5.66	67.23	16.33	0.00	150.0	± 9.6 %
		Y	5.67	66.89	16.10		150.0	
		Z	5.49	66.80	16.03		150.0	
10553-AAA	IEEE 802.11ac WiFi (80MHz, MCS9, 99pc duty cycle)	X	5.75	67.26	16.37	0.00	150.0	± 9.6 %
		Y	5.76	66.93	16.14		150.0	
		Z	5.58	66.84	16.08		150.0	
10554-AAA	IEEE 1602.11ac WiFi (160MHz, MCS0, 99pc duty cycle)	X	6.01	67.49	16.42	0.00	150.0	± 9.6 %
		Y	6.02	67.17	16.20		150.0	
		Z	5.89	67.10	16.15		150.0	
10555-AAA	IEEE 1602.11ac WiFi (160MHz, MCS1, 99pc duty cycle)	X	6.17	67.85	16.56	0.00	150.0	± 9.6 %
		Y	6.20	67.56	16.36		150.0	
		Z	6.02	67.41	16.28		150.0	
10556-AAA	IEEE 1602.11ac WiFi (160MHz, MCS2, 99pc duty cycle)	X	6.18	67.83	16.55	0.00	150.0	± 9.6 %
		Y	6.19	67.51	16.33		150.0	
		Z	6.04	67.46	16.30		150.0	
10557-AAA	IEEE 1602.11ac WiFi (160MHz, MCS3, 99pc duty cycle)	X	6.17	67.82	16.57	0.00	150.0	± 9.6 %
		Y	6.19	67.52	16.36		150.0	
		Z	6.00	67.36	16.27		150.0	

10558-AAA	IEEE 1602.11ac WiFi (160MHz, MCS4, 99pc duty cycle)	X	6.23	68.01	16.68	0.00	150.0	± 9.6 %
		Y	6.25	67.72	16.47		150.0	
		Z	6.05	67.53	16.37		150.0	
10560-AAA	IEEE 1602.11ac WiFi (160MHz, MCS6, 99pc duty cycle)	X	6.22	67.85	16.63	0.00	150.0	± 9.6 %
		Y	6.25	67.56	16.43		150.0	
		Z	6.05	67.37	16.33		150.0	
10561-AAA	IEEE 1602.11ac WiFi (160MHz, MCS7, 99pc duty cycle)	X	6.13	67.79	16.64	0.00	150.0	± 9.6 %
		Y	6.15	67.49	16.43		150.0	
		Z	5.97	67.35	16.35		150.0	
10562-AAA	IEEE 1602.11ac WiFi (160MHz, MCS8, 99pc duty cycle)	X	6.29	68.28	16.89	0.00	150.0	± 9.6 %
		Y	6.33	68.01	16.70		150.0	
		Z	6.10	67.74	16.55		150.0	
10563-AAA	IEEE 1602.11ac WiFi (160MHz, MCS9, 99pc duty cycle)	X	6.57	68.63	17.00	0.00	150.0	± 9.6 %
		Y	6.57	68.27	16.77		150.0	
		Z	6.35	68.10	16.68		150.0	
10564-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 9 Mbps, 99pc duty cycle)	X	5.07	67.31	16.69	0.46	150.0	± 9.6 %
		Y	5.10	66.95	16.44		150.0	
		Z	4.91	67.04	16.40		150.0	
10565-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 12 Mbps, 99pc duty cycle)	X	5.34	67.80	17.01	0.46	150.0	± 9.6 %
		Y	5.38	67.46	16.78		150.0	
		Z	5.14	67.47	16.71		150.0	
10566-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 18 Mbps, 99pc duty cycle)	X	5.17	67.69	16.85	0.46	150.0	± 9.6 %
		Y	5.21	67.33	16.61		150.0	
		Z	4.97	67.33	16.54		150.0	
10567-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 24 Mbps, 99pc duty cycle)	X	5.20	68.09	17.20	0.46	150.0	± 9.6 %
		Y	5.23	67.71	16.94		150.0	
		Z	5.00	67.68	16.86		150.0	
10568-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 36 Mbps, 99pc duty cycle)	X	5.08	67.38	16.59	0.46	150.0	± 9.6 %
		Y	5.11	67.01	16.33		150.0	
		Z	4.90	67.16	16.34		150.0	
10569-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 48 Mbps, 99pc duty cycle)	X	5.14	68.11	17.22	0.46	150.0	± 9.6 %
		Y	5.16	67.71	16.95		150.0	
		Z	4.96	67.77	16.91		150.0	
10570-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 54 Mbps, 99pc duty cycle)	X	5.18	67.92	17.15	0.46	150.0	± 9.6 %
		Y	5.21	67.52	16.88		150.0	
		Z	4.99	67.63	16.86		150.0	
10571-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps, 90pc duty cycle)	X	1.45	67.97	17.69	0.46	130.0	± 9.6 %
		Y	1.38	65.84	16.15		130.0	
		Z	1.34	65.80	16.05		130.0	
10572-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 2 Mbps, 90pc duty cycle)	X	1.49	68.86	18.18	0.46	130.0	± 9.6 %
		Y	1.40	66.47	16.51		130.0	
		Z	1.36	66.39	16.40		130.0	
10573-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 5.5 Mbps, 90pc duty cycle)	X	100.00	149.30	40.22	0.46	130.0	± 9.6 %
		Y	3.11	88.03	23.54		130.0	
		Z	3.23	89.37	24.00		130.0	
10574-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 11 Mbps, 90pc duty cycle)	X	2.21	80.01	23.13	0.46	130.0	± 9.6 %
		Y	1.65	72.75	19.44		130.0	
		Z	1.56	72.33	19.21		130.0	

10575-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps, 90pc duty cycle)	X	4.88	67.15	16.77	0.46	130.0	± 9.6 %
		Y	4.92	66.81	16.54		130.0	
		Z	4.73	66.93	16.51		130.0	
10576-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 9 Mbps, 90pc duty cycle)	X	4.91	67.32	16.84	0.46	130.0	± 9.6 %
		Y	4.94	66.97	16.61		130.0	
		Z	4.75	67.08	16.56		130.0	
10577-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 12 Mbps, 90pc duty cycle)	X	5.15	67.65	17.01	0.46	130.0	± 9.6 %
		Y	5.20	67.33	16.79		130.0	
		Z	4.96	67.36	16.73		130.0	
10578-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 18 Mbps, 90pc duty cycle)	X	5.05	67.86	17.13	0.46	130.0	± 9.6 %
		Y	5.09	67.50	16.89		130.0	
		Z	4.85	67.51	16.82		130.0	
10579-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 24 Mbps, 90pc duty cycle)	X	4.82	67.24	16.51	0.46	130.0	± 9.6 %
		Y	4.87	66.90	16.27		130.0	
		Z	4.63	66.89	16.19		130.0	
10580-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 36 Mbps, 90pc duty cycle)	X	4.86	67.17	16.48	0.46	130.0	± 9.6 %
		Y	4.91	66.83	16.25		130.0	
		Z	4.68	66.92	16.22		130.0	
10581-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 48 Mbps, 90pc duty cycle)	X	4.96	67.97	17.11	0.46	130.0	± 9.6 %
		Y	5.00	67.61	16.86		130.0	
		Z	4.76	67.57	16.77		130.0	
10582-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 54 Mbps, 90pc duty cycle)	X	4.78	66.97	16.29	0.46	130.0	± 9.6 %
		Y	4.83	66.64	16.06		130.0	
		Z	4.58	66.67	16.00		130.0	
10583-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps, 90pc duty cycle)	X	4.88	67.15	16.77	0.46	130.0	± 9.6 %
		Y	4.92	66.81	16.54		130.0	
		Z	4.73	66.93	16.51		130.0	
10584-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 9 Mbps, 90pc duty cycle)	X	4.91	67.32	16.84	0.46	130.0	± 9.6 %
		Y	4.94	66.97	16.61		130.0	
		Z	4.75	67.08	16.56		130.0	
10585-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 12 Mbps, 90pc duty cycle)	X	5.15	67.65	17.01	0.46	130.0	± 9.6 %
		Y	5.20	67.33	16.79		130.0	
		Z	4.96	67.36	16.73		130.0	
10586-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 18 Mbps, 90pc duty cycle)	X	5.05	67.86	17.13	0.46	130.0	± 9.6 %
		Y	5.09	67.50	16.89		130.0	
		Z	4.85	67.51	16.82		130.0	
10587-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 24 Mbps, 90pc duty cycle)	X	4.82	67.24	16.51	0.46	130.0	± 9.6 %
		Y	4.87	66.90	16.27		130.0	
		Z	4.63	66.89	16.19		130.0	
10588-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 36 Mbps, 90pc duty cycle)	X	4.86	67.17	16.48	0.46	130.0	± 9.6 %
		Y	4.91	66.83	16.25		130.0	
		Z	4.68	66.92	16.22		130.0	
10589-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 48 Mbps, 90pc duty cycle)	X	4.96	67.97	17.11	0.46	130.0	± 9.6 %
		Y	5.00	67.61	16.86		130.0	
		Z	4.76	67.57	16.77		130.0	
10590-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 54 Mbps, 90pc duty cycle)	X	4.78	66.97	16.29	0.46	130.0	± 9.6 %
		Y	4.83	66.64	16.06		130.0	
		Z	4.58	66.67	16.00		130.0	

10591-AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS0, 90pc duty cycle)	X	5.03	67.20	16.86	0.46	130.0	± 9.6 %
		Y	5.07	66.88	16.64		130.0	
		Z	4.88	66.97	16.60		130.0	
10592-AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS1, 90pc duty cycle)	X	5.21	67.55	16.98	0.46	130.0	± 9.6 %
		Y	5.26	67.23	16.76		130.0	
		Z	5.03	67.30	16.73		130.0	
10593-AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS2, 90pc duty cycle)	X	5.14	67.52	16.89	0.46	130.0	± 9.6 %
		Y	5.19	67.20	16.68		130.0	
		Z	4.96	67.23	16.62		130.0	
10594-AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS3, 90pc duty cycle)	X	5.19	67.66	17.03	0.46	130.0	± 9.6 %
		Y	5.24	67.33	16.81		130.0	
		Z	5.01	67.38	16.76		130.0	
10595-AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS4, 90pc duty cycle)	X	5.17	67.65	16.95	0.46	130.0	± 9.6 %
		Y	5.23	67.33	16.73		130.0	
		Z	4.98	67.35	16.67		130.0	
10596-AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS5, 90pc duty cycle)	X	5.11	67.64	16.94	0.46	130.0	± 9.6 %
		Y	5.16	67.30	16.71		130.0	
		Z	4.92	67.35	16.67		130.0	
10597-AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS6, 90pc duty cycle)	X	5.06	67.59	16.86	0.46	130.0	± 9.6 %
		Y	5.11	67.26	16.64		130.0	
		Z	4.87	67.26	16.56		130.0	
10598-AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS7, 90pc duty cycle)	X	5.05	67.87	17.14	0.46	130.0	± 9.6 %
		Y	5.09	67.53	16.91		130.0	
		Z	4.85	67.47	16.80		130.0	
10599-AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS0, 90pc duty cycle)	X	5.68	67.76	17.01	0.46	130.0	± 9.6 %
		Y	5.74	67.54	16.84		130.0	
		Z	5.54	67.51	16.80		130.0	
10600-AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS1, 90pc duty cycle)	X	5.91	68.42	17.31	0.46	130.0	± 9.6 %
		Y	6.00	68.29	17.19		130.0	
		Z	5.69	67.96	17.01		130.0	
10601-AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS2, 90pc duty cycle)	X	5.75	68.03	17.13	0.46	130.0	± 9.6 %
		Y	5.81	67.81	16.96		130.0	
		Z	5.57	67.70	16.89		130.0	
10602-AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS3, 90pc duty cycle)	X	5.85	68.05	17.05	0.46	130.0	± 9.6 %
		Y	5.93	67.91	16.93		130.0	
		Z	5.67	67.73	16.83		130.0	
10603-AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS4, 90pc duty cycle)	X	5.97	68.46	17.38	0.46	130.0	± 9.6 %
		Y	6.05	68.29	17.25		130.0	
		Z	5.74	68.01	17.09		130.0	
10604-AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS5, 90pc duty cycle)	X	5.70	67.75	17.03	0.46	130.0	± 9.6 %
		Y	5.76	67.53	16.86		130.0	
		Z	5.55	67.48	16.81		130.0	
10605-AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS6, 90pc duty cycle)	X	5.80	68.03	17.16	0.46	130.0	± 9.6 %
		Y	5.86	67.81	17.00		130.0	
		Z	5.67	67.84	17.00		130.0	
10606-AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS7, 90pc duty cycle)	X	5.58	67.53	16.79	0.46	130.0	± 9.6 %
		Y	5.62	67.26	16.60		130.0	
		Z	5.41	67.19	16.54		130.0	

10607-AAA	IEEE 802.11ac WiFi (20MHz, MCS0, 90pc duty cycle)	X	4.86	66.52	16.48	0.46	130.0	± 9.6 %
		Y	4.89	66.14	16.23		130.0	
		Z	4.71	66.27	16.21		130.0	
10608-AAA	IEEE 802.11ac WiFi (20MHz, MCS1, 90pc duty cycle)	X	5.09	66.96	16.64	0.46	130.0	± 9.6 %
		Y	5.12	66.58	16.39		130.0	
		Z	4.90	66.67	16.37		130.0	
10609-AAA	IEEE 802.11ac WiFi (20MHz, MCS2, 90pc duty cycle)	X	4.98	66.85	16.52	0.46	130.0	± 9.6 %
		Y	5.01	66.47	16.26		130.0	
		Z	4.79	66.53	16.22		130.0	
10610-AAA	IEEE 802.11ac WiFi (20MHz, MCS3, 90pc duty cycle)	X	5.03	67.01	16.67	0.46	130.0	± 9.6 %
		Y	5.06	66.63	16.42		130.0	
		Z	4.84	66.68	16.37		130.0	
10611-AAA	IEEE 802.11ac WiFi (20MHz, MCS4, 90pc duty cycle)	X	4.96	66.86	16.54	0.46	130.0	± 9.6 %
		Y	4.99	66.50	16.29		130.0	
		Z	4.76	66.50	16.23		130.0	
10612-AAA	IEEE 802.11ac WiFi (20MHz, MCS5, 90pc duty cycle)	X	4.97	67.00	16.58	0.46	130.0	± 9.6 %
		Y	5.01	66.61	16.31		130.0	
		Z	4.77	66.66	16.28		130.0	
10613-AAA	IEEE 802.11ac WiFi (20MHz, MCS6, 90pc duty cycle)	X	4.99	66.94	16.49	0.46	130.0	± 9.6 %
		Y	5.03	66.55	16.23		130.0	
		Z	4.77	66.56	16.17		130.0	
10614-AAA	IEEE 802.11ac WiFi (20MHz, MCS7, 90pc duty cycle)	X	4.92	67.15	16.73	0.46	130.0	± 9.6 %
		Y	4.95	66.76	16.47		130.0	
		Z	4.71	66.71	16.38		130.0	
10615-AAA	IEEE 802.11ac WiFi (20MHz, MCS8, 90pc duty cycle)	X	4.95	66.65	16.31	0.46	130.0	± 9.6 %
		Y	4.99	66.28	16.06		130.0	
		Z	4.76	66.36	16.03		130.0	
10616-AAA	IEEE 802.11ac WiFi (40MHz, MCS0, 90pc duty cycle)	X	5.51	67.07	16.65	0.46	130.0	± 9.6 %
		Y	5.55	66.78	16.45		130.0	
		Z	5.35	66.74	16.40		130.0	
10617-AAA	IEEE 802.11ac WiFi (40MHz, MCS1, 90pc duty cycle)	X	5.58	67.18	16.67	0.46	130.0	± 9.6 %
		Y	5.62	66.89	16.46		130.0	
		Z	5.43	66.92	16.46		130.0	
10618-AAA	IEEE 802.11ac WiFi (40MHz, MCS2, 90pc duty cycle)	X	5.47	67.27	16.74	0.46	130.0	± 9.6 %
		Y	5.50	66.95	16.52		130.0	
		Z	5.31	66.92	16.47		130.0	
10619-AAA	IEEE 802.11ac WiFi (40MHz, MCS3, 90pc duty cycle)	X	5.49	67.07	16.57	0.46	130.0	± 9.6 %
		Y	5.52	66.76	16.36		130.0	
		Z	5.33	66.76	16.33		130.0	
10620-AAA	IEEE 802.11ac WiFi (40MHz, MCS4, 90pc duty cycle)	X	5.62	67.19	16.68	0.46	130.0	± 9.6 %
		Y	5.67	66.93	16.49		130.0	
		Z	5.42	66.79	16.40		130.0	
10621-AAA	IEEE 802.11ac WiFi (40MHz, MCS5, 90pc duty cycle)	X	5.59	67.25	16.82	0.46	130.0	± 9.6 %
		Y	5.63	66.98	16.62		130.0	
		Z	5.41	66.88	16.56		130.0	
10622-AAA	IEEE 802.11ac WiFi (40MHz, MCS6, 90pc duty cycle)	X	5.58	67.35	16.86	0.46	130.0	± 9.6 %
		Y	5.62	67.06	16.66		130.0	
		Z	5.43	67.06	16.64		130.0	

10623-AAA	IEEE 802.11ac WiFi (40MHz, MCS7, 90pc duty cycle)	X	5.48	66.99	16.57	0.46	130.0	± 9.6 %
		Y	5.54	66.75	16.40		130.0	
		Z	5.31	66.61	16.29		130.0	
10624-AAA	IEEE 802.11ac WiFi (40MHz, MCS8, 90pc duty cycle)	X	5.65	67.09	16.68	0.46	130.0	± 9.6 %
		Y	5.69	66.81	16.49		130.0	
		Z	5.50	66.79	16.45		130.0	
10625-AAA	IEEE 802.11ac WiFi (40MHz, MCS9, 90pc duty cycle)	X	6.03	68.01	17.18	0.46	130.0	± 9.6 %
		Y	6.05	67.65	16.95		130.0	
		Z	5.88	67.81	17.01		130.0	
10626-AAA	IEEE 802.11ac WiFi (80MHz, MCS0, 90pc duty cycle)	X	5.76	67.09	16.57	0.46	130.0	± 9.6 %
		Y	5.79	66.81	16.38		130.0	
		Z	5.64	66.79	16.35		130.0	
10627-AAA	IEEE 802.11ac WiFi (80MHz, MCS1, 90pc duty cycle)	X	6.01	67.60	16.77	0.46	130.0	± 9.6 %
		Y	6.04	67.32	16.58		130.0	
		Z	5.89	67.37	16.60		130.0	
10628-AAA	IEEE 802.11ac WiFi (80MHz, MCS2, 90pc duty cycle)	X	5.83	67.28	16.56	0.46	130.0	± 9.6 %
		Y	5.87	67.01	16.37		130.0	
		Z	5.69	66.92	16.32		130.0	
10629-AAA	IEEE 802.11ac WiFi (80MHz, MCS3, 90pc duty cycle)	X	5.93	67.36	16.58	0.46	130.0	± 9.6 %
		Y	5.99	67.16	16.43		130.0	
		Z	5.77	67.00	16.35		130.0	
10630-AAA	IEEE 802.11ac WiFi (80MHz, MCS4, 90pc duty cycle)	X	6.47	69.11	17.45	0.46	130.0	± 9.6 %
		Y	6.56	68.99	17.34		130.0	
		Z	6.24	68.58	17.14		130.0	
10631-AAA	IEEE 802.11ac WiFi (80MHz, MCS5, 90pc duty cycle)	X	6.36	68.89	17.53	0.46	130.0	± 9.6 %
		Y	6.44	68.71	17.39		130.0	
		Z	6.09	68.24	17.15		130.0	
10632-AAA	IEEE 802.11ac WiFi (80MHz, MCS6, 90pc duty cycle)	X	6.00	67.73	16.97	0.46	130.0	± 9.6 %
		Y	6.05	67.48	16.79		130.0	
		Z	5.85	67.39	16.74		130.0	
10633-AAA	IEEE 802.11ac WiFi (80MHz, MCS7, 90pc duty cycle)	X	5.95	67.59	16.73	0.46	130.0	± 9.6 %
		Y	6.01	67.38	16.58		130.0	
		Z	5.74	67.05	16.41		130.0	
10634-AAA	IEEE 802.11ac WiFi (80MHz, MCS8, 90pc duty cycle)	X	5.92	67.56	16.78	0.46	130.0	± 9.6 %
		Y	5.98	67.34	16.62		130.0	
		Z	5.72	67.07	16.47		130.0	
10635-AAA	IEEE 802.11ac WiFi (80MHz, MCS9, 90pc duty cycle)	X	5.80	66.87	16.18	0.46	130.0	± 9.6 %
		Y	5.85	66.64	16.01		130.0	
		Z	5.62	66.48	15.93		130.0	
10636-AAA	IEEE 1602.11ac WiFi (160MHz, MCS0, 90pc duty cycle)	X	6.16	67.47	16.65	0.46	130.0	± 9.6 %
		Y	6.19	67.22	16.49		130.0	
		Z	6.06	67.16	16.44		130.0	
10637-AAA	IEEE 1602.11ac WiFi (160MHz, MCS1, 90pc duty cycle)	X	6.34	67.89	16.84	0.46	130.0	± 9.6 %
		Y	6.39	67.69	16.69		130.0	
		Z	6.22	67.55	16.62		130.0	
10638-AAA	IEEE 1602.11ac WiFi (160MHz, MCS2, 90pc duty cycle)	X	6.33	67.82	16.78	0.46	130.0	± 9.6 %
		Y	6.36	67.57	16.61		130.0	
		Z	6.21	67.52	16.58		130.0	

10639-AAA	IEEE 1602.11ac WiFi (160MHz, MCS3, 90pc duty cycle)	X	6.34	67.88	16.86	0.46	130.0	± 9.6 %
		Y	6.38	67.64	16.70		130.0	
		Z	6.19	67.47	16.60		130.0	
10640-AAA	IEEE 1602.11ac WiFi (160MHz, MCS4, 90pc duty cycle)	X	6.37	67.96	16.84	0.46	130.0	± 9.6 %
		Y	6.42	67.75	16.69		130.0	
		Z	6.20	67.51	16.57		130.0	
10641-AAA	IEEE 1602.11ac WiFi (160MHz, MCS5, 90pc duty cycle)	X	6.36	67.66	16.71	0.46	130.0	± 9.6 %
		Y	6.40	67.44	16.56		130.0	
		Z	6.24	67.40	16.53		130.0	
10642-AAA	IEEE 1602.11ac WiFi (160MHz, MCS6, 90pc duty cycle)	X	6.44	68.03	17.05	0.46	130.0	± 9.6 %
		Y	6.49	67.81	16.91		130.0	
		Z	6.28	67.62	16.80		130.0	
10643-AAA	IEEE 1602.11ac WiFi (160MHz, MCS7, 90pc duty cycle)	X	6.26	67.70	16.80	0.46	130.0	± 9.6 %
		Y	6.31	67.48	16.64		130.0	
		Z	6.12	67.34	16.57		130.0	
10644-AAA	IEEE 1602.11ac WiFi (160MHz, MCS8, 90pc duty cycle)	X	6.50	68.41	17.18	0.46	130.0	± 9.6 %
		Y	6.57	68.25	17.05		130.0	
		Z	6.29	67.86	16.85		130.0	
10645-AAA	IEEE 1602.11ac WiFi (160MHz, MCS9, 90pc duty cycle)	X	6.78	68.77	17.29	0.46	130.0	± 9.6 %
		Y	6.81	68.48	17.11		130.0	
		Z	6.68	68.60	17.18		130.0	
10646-AAB	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, QPSK, UL Subframe=2,7)	X	37.14	116.21	38.03	9.30	60.0	± 9.6 %
		Y	19.95	100.33	33.06		60.0	
		Z	62.05	131.91	43.22		60.0	
10647-AAA	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK, UL Subframe=2,7)	X	38.52	117.84	38.64	9.30	60.0	± 9.6 %
		Y	20.25	101.35	33.50		60.0	
		Z	63.43	133.45	43.81		60.0	
10648-AAA	CDMA2000 (1x Advanced)	X	1.03	68.68	14.68	0.00	150.0	± 9.6 %
		Y	0.85	64.54	12.30		150.0	
		Z	0.71	63.65	10.90		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.



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Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 0108**

Client **PC Test**

Certificate No: **EX3-7406_Apr16**

CALIBRATION CERTIFICATE

Object **EX3DV4 - SN:7406**

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

BN 04/26/2d6

Calibration date: **April 19, 2016**

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 NRP	SN: 104778	06-Apr-16 (No. 217-02288/02289)	Apr-17
Power sensor NRP-Z91	SN: 103244	06-Apr-16 (No. 217-02288)	Apr-17
Power sensor NRP-Z91	SN: 103245	06-Apr-16 (No. 217-02289)	Apr-17
Reference 20 dB Attenuator	SN: S5277 (20x)	05-Apr-16 (No. 217-02293)	Apr-17
Reference Probe ES3DV2	SN: 3013	31-Dec-15 (No. ES3-3013_Dec15)	Dec-16
DAE4	SN: 660	23-Dec-15 (No. DAE4-660_Dec15)	Dec-16
Secondary Standards	ID	Check Date (in house)	Scheduled Check
Power meter E4419B	SN: GB41293874	06-Apr-16 (No. 217-02285/02284)	In house check: Jun-16
Power sensor E4412A	SN: MY41498087	06-Apr-16 (No. 217-02285)	In house check: Jun-16
Power sensor E4412A	SN: 000110210	06-Apr-16 (No. 217-02284)	In house check: Jun-16
RF generator HP 8648C	SN: US3642U01700	04-Aug-99 (in house check Apr-13)	In house check: Jun-16
Network Analyzer HP 8753E	SN: US37390585	18-Oct-01 (in house check Oct-15)	In house check: Oct-16

Calibrated by:	Name Jeton Kastrati	Function Laboratory Technician	Signature
Approved by:	Katja Pokovic	Technical Manager	
			Issued: April 20, 2016
This calibration certificate shall not be reproduced except in full without written approval of the laboratory.			



Accredited by the Swiss Accreditation Service (SAS)

Accreditation No.: **SCS 0108**

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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:

- 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
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- 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 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:7406

Manufactured: November 24, 2015
Calibrated: April 19, 2016

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

DASY/EASY - Parameters of Probe: EX3DV4 - SN:7406

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu\text{V}/(\text{V}/\text{m})^2$) ^A	0.48	0.44	0.47	$\pm 10.1 \%$
DCP (mV) ^B	100.7	97.9	98.6	

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	120.4	$\pm 3.3 \%$
		Y	0.0	0.0	1.0		148.3	
		Z	0.0	0.0	1.0		146.7	
10010- CAA	SAR Validation (Square, 100ms, 10ms)	X	0.81	54.6	7.4	10.00	50.3	$\pm 2.2 \%$
		Y	0.68	55.1	7.9		47.9	
		Z	1.34	61.0	11.0		46.8	
10012- CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps)	X	2.83	68.0	18.3	1.87	127.8	$\pm 0.5 \%$
		Y	2.82	68.4	18.4		117.8	
		Z	3.00	69.2	19.0		115.9	
10100- CAB	LTE-FDD (SC-FDMA, 100% RB, 20 MHz, QPSK)	X	6.54	67.4	19.5	5.67	142.1	$\pm 1.2 \%$
		Y	6.19	66.7	19.3		127.6	
		Z	6.37	66.7	19.2		125.7	
10103- CAB	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, QPSK)	X	7.58	67.9	21.8	9.29	114.4	$\pm 1.7 \%$
		Y	7.34	68.3	22.5		144.3	
		Z	7.53	67.7	21.8		139.5	
10108- CAC	LTE-FDD (SC-FDMA, 100% RB, 10 MHz, QPSK)	X	6.34	66.9	19.4	5.80	137.5	$\pm 1.2 \%$
		Y	5.90	65.9	19.0		123.8	
		Z	6.24	66.4	19.2		123.7	
10151- CAB	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, QPSK)	X	7.17	67.2	21.5	9.28	109.5	$\pm 1.7 \%$
		Y	6.83	67.6	22.3		137.0	
		Z	7.23	67.4	21.7		135.1	
10154- CAC	LTE-FDD (SC-FDMA, 50% RB, 10 MHz, QPSK)	X	5.99	66.4	19.2	5.75	132.4	$\pm 0.9 \%$
		Y	5.61	65.8	19.1		119.4	
		Z	5.91	65.9	19.0		120.1	
10160- CAB	LTE-FDD (SC-FDMA, 50% RB, 15 MHz, QPSK)	X	6.47	67.0	19.5	5.82	137.0	$\pm 1.2 \%$
		Y	5.96	66.0	19.1		123.9	
		Z	6.33	66.3	19.1		124.2	
10169- CAB	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, QPSK)	X	4.71	65.5	18.9	5.73	113.2	$\pm 1.2 \%$
		Y	4.60	66.2	19.6		144.2	
		Z	4.93	66.5	19.5		143.2	
10172- CAB	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK)	X	5.68	68.2	22.4	9.21	117.6	$\pm 1.7 \%$
		Y	5.56	70.1	24.1		146.1	
		Z	5.87	69.4	23.2		143.7	
10175- CAC	LTE-FDD (SC-FDMA, 1 RB, 10 MHz, QPSK)	X	4.75	65.7	19.1	5.72	112.3	$\pm 0.9 \%$
		Y	4.58	66.1	19.5		143.2	
		Z	4.95	66.7	19.6		142.0	

10181-CAB	LTE-FDD (SC-FDMA, 1 RB, 15 MHz, QPSK)	X	4.71	65.5	18.9	5.72	110.2	±0.9 %
		Y	4.53	65.8	19.4		141.4	
		Z	4.90	66.5	19.5		138.1	
10237-CAB	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, QPSK)	X	5.69	68.3	22.5	9.21	117.3	±1.7 %
		Y	5.47	69.5	23.8		145.1	
		Z	5.85	69.3	23.1		142.0	
10252-CAB	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, QPSK)	X	7.04	68.1	22.2	9.24	141.2	±1.9 %
		Y	6.35	67.2	22.2		125.4	
		Z	6.82	67.1	21.7		127.5	
10267-CAB	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, QPSK)	X	7.45	68.3	22.2	9.30	148.0	±1.9 %
		Y	6.84	67.5	22.3		132.0	
		Z	7.24	67.4	21.8		134.6	
10297-AAA	LTE-FDD (SC-FDMA, 50% RB, 20 MHz, QPSK)	X	6.35	66.9	19.4	5.81	135.3	±1.2 %
		Y	5.92	65.9	19.0		122.9	
		Z	6.26	66.4	19.2		122.1	
10311-AAA	LTE-FDD (SC-FDMA, 100% RB, 15 MHz, QPSK)	X	6.92	67.4	19.7	6.06	139.3	±1.2 %
		Y	6.52	66.6	19.5		127.9	
		Z	6.82	66.9	19.5		126.8	

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 6 and 7).

^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:7406

Calibration Parameter Determined in Head Tissue Simulating Media

f (MHz) ^C	Relative Permittivity ^F	Conductivity (S/m) ^F	ConvF X	ConvF Y	ConvF Z	Alpha ^G	Depth ^G (mm)	Unc (k=2)
750	41.9	0.89	10.52	10.52	10.52	0.52	0.89	± 12.0 %
835	41.5	0.90	9.83	9.83	9.83	0.54	0.80	± 12.0 %
1750	40.1	1.37	8.85	8.85	8.85	0.49	0.85	± 12.0 %
1900	40.0	1.40	8.22	8.22	8.22	0.40	0.88	± 12.0 %
2300	39.5	1.67	7.67	7.67	7.67	0.36	0.89	± 12.0 %
2450	39.2	1.80	7.29	7.29	7.29	0.40	0.80	± 12.0 %
2600	39.0	1.96	7.08	7.08	7.08	0.37	0.95	± 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:7406

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	9.54	9.54	9.54	0.46	0.80	± 12.0 %
835	55.2	0.97	9.35	9.35	9.35	0.45	0.84	± 12.0 %
1750	53.4	1.49	7.78	7.78	7.78	0.37	0.85	± 12.0 %
1900	53.3	1.52	7.49	7.49	7.49	0.33	0.91	± 12.0 %
2300	52.9	1.81	7.37	7.37	7.37	0.42	0.80	± 12.0 %
2450	52.7	1.95	7.24	7.24	7.24	0.37	0.88	± 12.0 %
2600	52.5	2.16	6.94	6.94	6.94	0.27	0.99	± 12.0 %

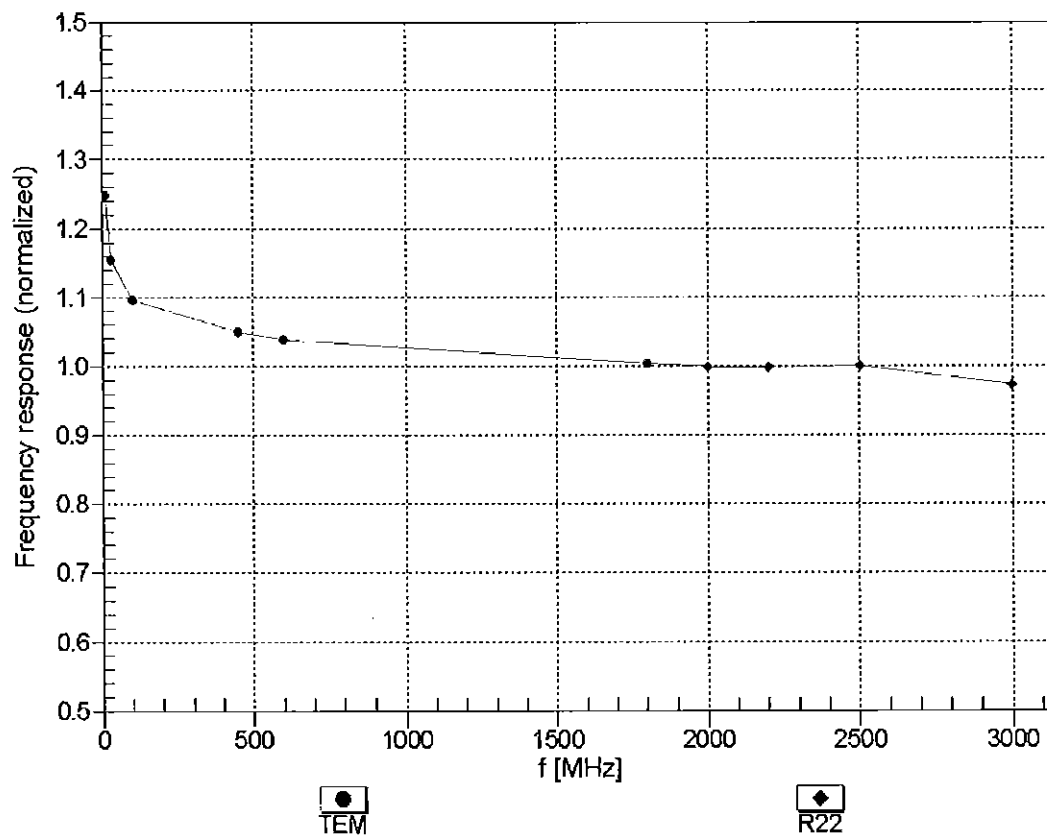
^C Frequency validity above 300 MHz of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is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

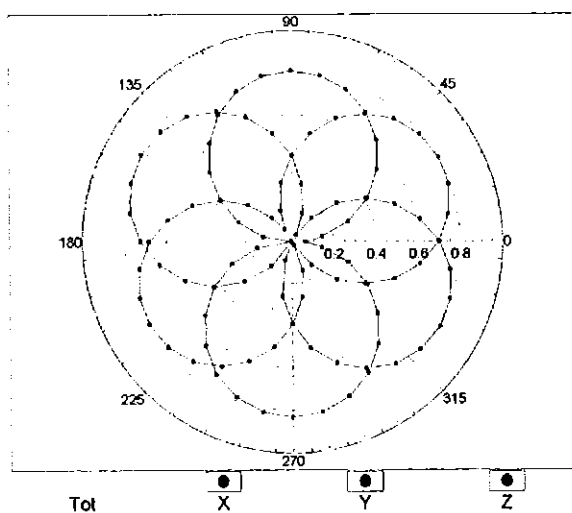
(TEM-Cell:ifi110 EXX, Waveguide: R22)



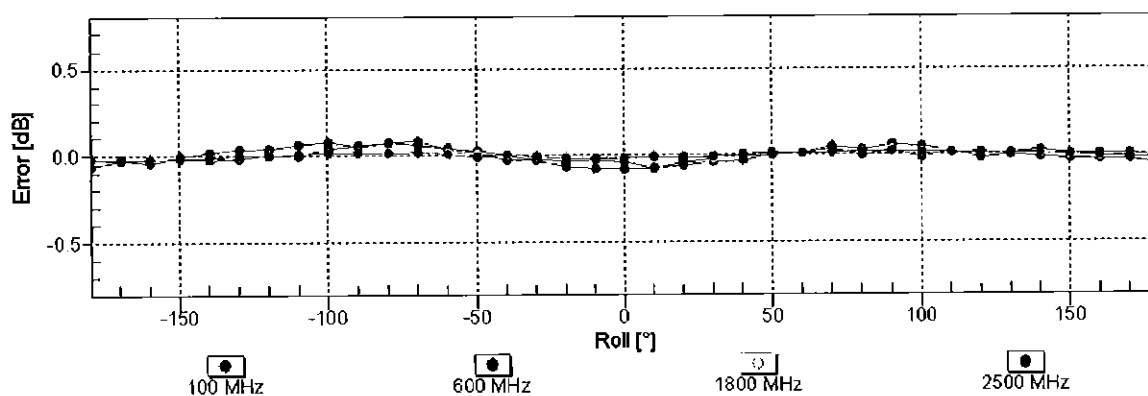
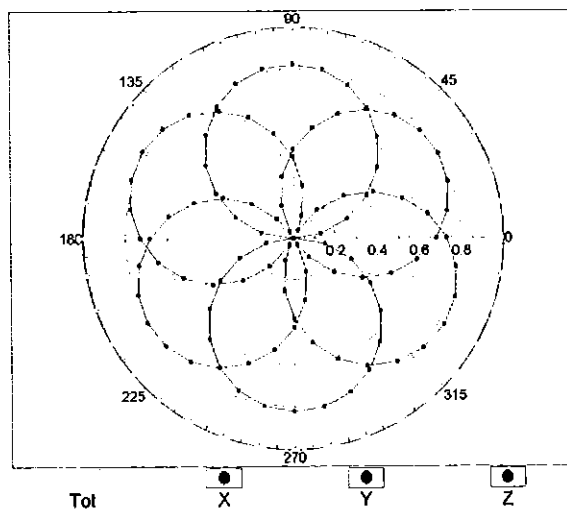
Uncertainty of Frequency Response of E-field: $\pm 6.3\%$ ($k=2$)

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

f=600 MHz,TEM



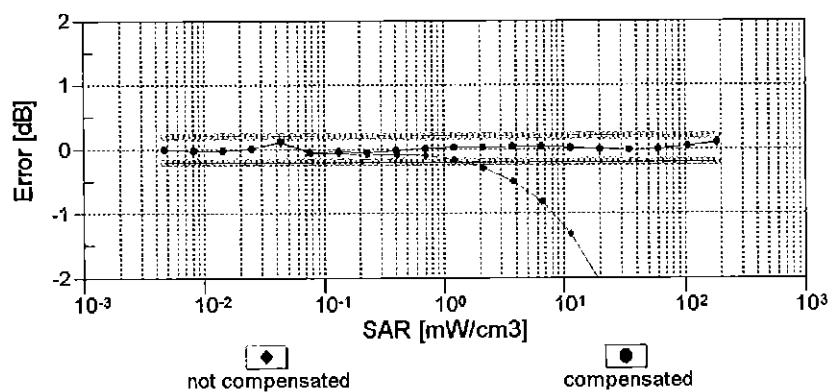
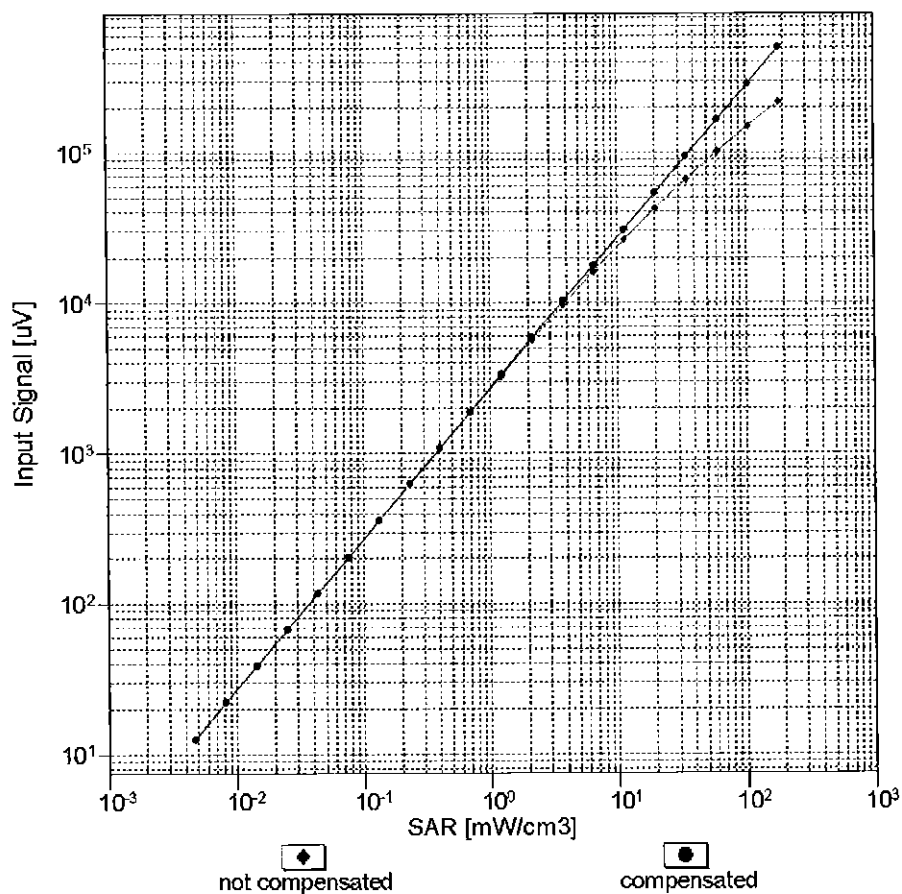
f=1800 MHz,R22



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

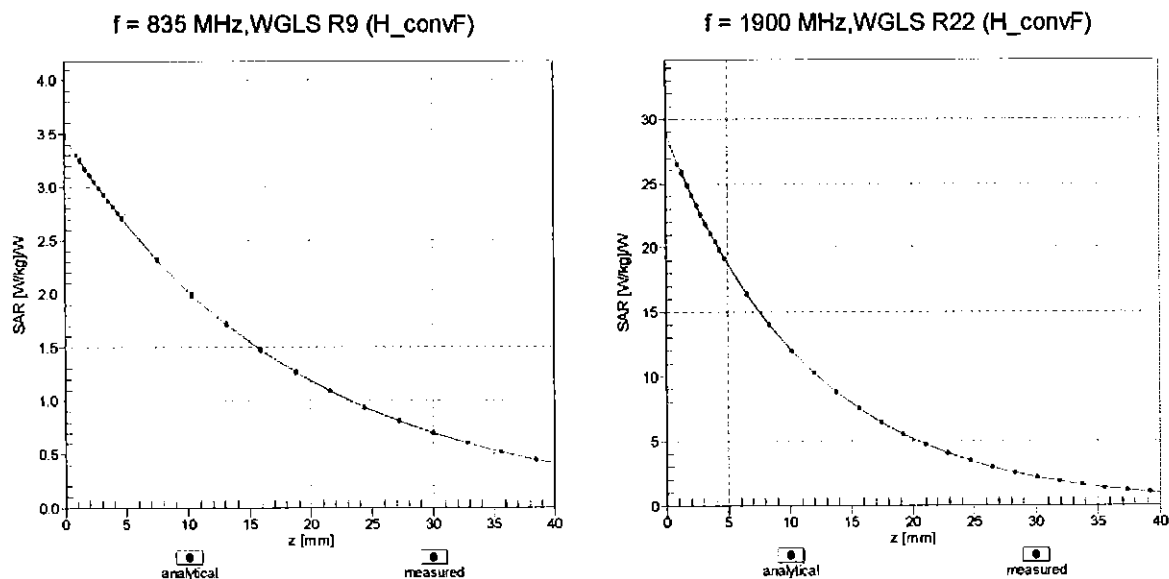
Dynamic Range f(SAR_{head})

(TEM cell , f_{eval}= 1900 MHz)



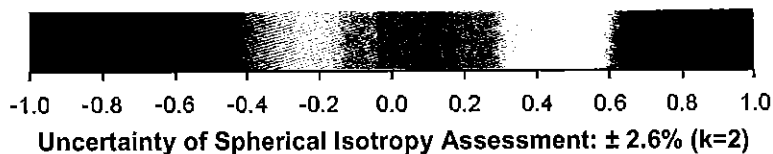
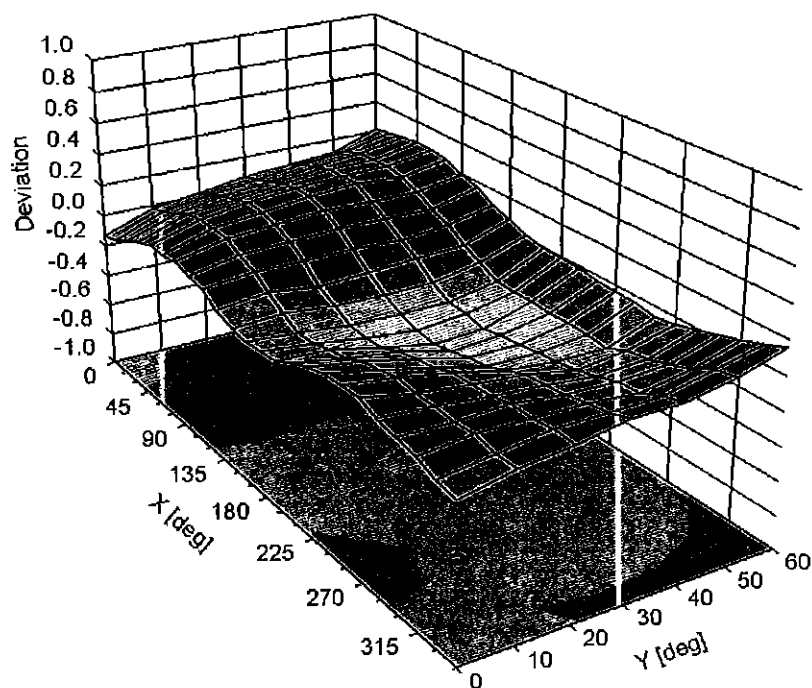
Uncertainty of Linearity Assessment: $\pm 0.6\%$ ($k=2$)

Conversion Factor Assessment



Deviation from Isotropy in Liquid

Error (ϕ, θ), $f = 900 \text{ MHz}$



DASY/EASY - Parameters of Probe: EX3DV4 - SN:7406**Other Probe Parameters**

Sensor Arrangement	Triangular
Connector Angle (°)	0.4
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



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Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 0108**

Client **PC Test**

Certificate No: **ES3-3288_Sep15**

CALIBRATION CERTIFICATE

Object **ES3DV3 - SN:3288**

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

BN ✓
10/02/15

Calibration date: **September 18, 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 (2Dx)	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: 560	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 Michael Weber	Function Laboratory Technician	Signature
Approved by:	Name Katja Pokovic	Function Technical Manager	Signature

Issued: September 19, 2015

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



Accredited by the Swiss Accreditation Service (SAS)

Accreditation No.: **SCS 0108**

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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., $\theta = 0$ is normal to probe axis
Connector Angle	information used in DASY system to align probe sensor X to the robot coordinate system

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- 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, "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
- 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 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 $\theta = 0$ ($f \leq 900$ 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 ES3DV3

SN:3288

Manufactured: July 6, 2010
Calibrated: September 18, 2015

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

DASY/EASY - Parameters of Probe: ES3DV3 - SN:3288

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu\text{V}/(\text{V}/\text{m})^2$) ^A	1.05	1.16	0.92	$\pm 10.1 \%$
DCP (mV) ^B	106.9	106.9	107.4	

Modulation Calibration Parameters

UID	Communication System Name		A dB	B dB $\sqrt{\mu\text{V}}$	C	D dB	VR mV	Unc ^C (k=2)
0	CW	X	0.0	0.0	1.0	0.00	190.7	$\pm 3.0 \%$
		Y	0.0	0.0	1.0		181.4	
		Z	0.0	0.0	1.0		179.1	
10010- CAA	SAR Validation (Square, 100ms, 10ms)	X	2.56	61.8	10.9	10.00	38.0	$\pm 1.2 \%$
		Y	99.34	97.0	21.5		36.6	
		Z	6.26	70.5	13.9		36.2	
10011- CAB	UMTS-FDD (WCDMA)	X	3.28	67.4	18.7	2.91	129.4	$\pm 0.5 \%$
		Y	3.60	69.3	19.8		143.8	
		Z	3.38	67.9	18.8		143.0	
10012- CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps)	X	3.07	70.1	19.4	1.87	131.0	$\pm 0.7 \%$
		Y	3.79	74.2	21.4		145.4	
		Z	3.15	70.5	19.4		144.5	
10013- CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps)	X	10.64	69.8	22.8	9.46	122.7	$\pm 2.7 \%$
		Y	10.89	70.2	22.9		140.0	
		Z	10.70	70.2	23.0		136.7	
10021- DAB	GSM-FDD (TDMA, GMSK)	X	10.49	86.3	22.8	9.39	138.5	$\pm 2.2 \%$
		Y	13.76	90.7	24.6		145.7	
		Z	7.99	82.4	21.3		141.8	
10023- DAB	GPRS-FDD (TDMA, GMSK, TN 0)	X	9.73	85.3	22.7	9.57	149.4	$\pm 2.7 \%$
		Y	9.12	84.3	22.7		131.8	
		Z	8.21	83.4	22.1		134.8	
10024- DAB	GPRS-FDD (TDMA, GMSK, TN 0-1)	X	34.75	99.7	24.5	6.56	135.8	$\pm 2.5 \%$
		Y	22.21	94.5	23.5		148.5	
		Z	8.93	81.8	18.8		148.3	
10027- DAB	GPRS-FDD (TDMA, GMSK, TN 0-1-2)	X	51.22	100.0	22.6	4.80	132.9	$\pm 1.9 \%$
		Y	45.95	99.6	23.0		139.7	
		Z	14.90	87.0	19.2		138.0	
10028- DAB	GPRS-FDD (TDMA, GMSK, TN 0-1-2-3)	X	56.25	99.8	21.6	3.55	141.8	$\pm 1.9 \%$
		Y	61.05	99.6	21.6		149.8	
		Z	70.48	99.7	20.8		126.6	
10032- CAA	IEEE 802.15.1 Bluetooth (GFSK, DH5)	X	98.24	98.4	18.0	1.16	135.4	$\pm 1.9 \%$
		Y	71.59	99.7	19.3		144.2	
		Z	98.96	91.6	15.1		148.2	
10100- CAB	LTE-FDD (SC-FDMA, 100% RB, 20 MHz, QPSK)	X	6.44	67.9	19.9	5.67	148.9	$\pm 1.4 \%$
		Y	6.27	67.2	19.6		131.4	
		Z	6.28	67.3	19.5		137.9	

10103-CAB	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, QPSK)	X	9.52	74.2	25.3	9.29	134.3	±2.5 %
		Y	9.97	75.1	25.7		146.8	
		Z	9.47	74.4	25.4		147.4	
10108-CAC	LTE-FDD (SC-FDMA, 100% RB, 10 MHz, QPSK)	X	6.31	67.5	19.8	5.80	147.4	±1.4 %
		Y	6.21	67.1	19.6		131.0	
		Z	6.16	67.0	19.5		136.4	
10117-CAB	IEEE 802.11n (HT Mixed, 13.5 Mbps, BPSK)	X	10.11	68.9	21.2	8.07	137.9	±2.2 %
		Y	10.26	69.3	21.5		147.7	
		Z	9.85	68.3	20.9		126.0	
10151-CAB	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, QPSK)	X	8.90	73.2	25.0	9.28	129.8	±3.3 %
		Y	9.32	74.0	25.2		142.5	
		Z	8.86	73.4	25.1		142.1	
10154-CAC	LTE-FDD (SC-FDMA, 50% RB, 10 MHz, QPSK)	X	5.98	66.9	19.6	5.75	143.7	±1.2 %
		Y	5.91	66.6	19.4		128.0	
		Z	5.84	66.5	19.3		133.4	
10160-CAB	LTE-FDD (SC-FDMA, 50% RB, 15 MHz, QPSK)	X	6.43	67.5	19.8	5.82	148.9	±1.4 %
		Y	6.31	67.0	19.6		132.2	
		Z	6.30	67.1	19.5		138.0	
10169-CAB	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, QPSK)	X	4.93	67.3	20.0	5.73	145.7	±1.2 %
		Y	4.89	66.9	19.8		131.7	
		Z	4.82	66.9	19.7		134.9	
10172-CAB	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK)	X	7.96	77.5	27.4	9.21	143.6	±2.7 %
		Y	7.61	75.5	26.3		129.2	
		Z	7.10	74.5	25.9		129.7	
10175-CAC	LTE-FDD (SC-FDMA, 1 RB, 10 MHz, QPSK)	X	4.89	67.1	19.9	5.72	138.9	±1.2 %
		Y	5.02	67.5	20.1		148.1	
		Z	4.77	66.7	19.6		129.3	
10181-CAB	LTE-FDD (SC-FDMA, 1 RB, 15 MHz, QPSK)	X	4.93	67.3	20.0	5.72	143.8	±1.2 %
		Y	5.08	67.8	20.3		149.0	
		Z	4.73	66.5	19.5		129.4	
10196-CAB	IEEE 802.11n (HT Mixed, 6.5 Mbps, BPSK)	X	9.73	68.7	21.3	8.10	130.0	±1.9 %
		Y	9.74	68.6	21.2		132.7	
		Z	9.78	69.0	21.4		138.2	
10225-CAB	UMTS-FDD (HSPA+)	X	6.83	66.9	19.4	5.97	134.3	±1.4 %
		Y	6.98	67.3	19.6		139.3	
		Z	6.92	67.4	19.6		142.7	
10237-CAB	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, QPSK)	X	7.94	77.5	27.4	9.21	143.5	±2.7 %
		Y	7.44	74.8	25.9		125.0	
		Z	7.14	74.7	26.0		131.4	
10252-CAB	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, QPSK)	X	8.95	74.9	26.1	9.24	140.8	±2.7 %
		Y	8.53	72.8	24.7		127.2	
		Z	8.14	72.3	24.6		127.1	
10267-CAB	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, QPSK)	X	9.66	75.7	26.4	9.30	149.7	±3.0 %
		Y	9.20	73.6	25.1		135.1	
		Z	8.81	73.3	25.1		134.3	

10275-CAB	UMTS-FDD (HSUPA, Subtest 5, 3GPP Rel8.4)	X	4.39	67.0	18.8	3.96	138.0	±0.7 %
		Y	4.51	67.5	19.2		141.4	
		Z	4.46	67.3	18.9		146.2	
10291-AAB	CDMA2000, RC3, SO55, Full Rate	X	3.59	67.1	18.7	3.46	128.3	±0.5 %
		Y	3.80	68.2	19.5		130.9	
		Z	3.74	68.1	19.2		135.6	
10292-AAB	CDMA2000, RC3, SO32, Full Rate	X	3.55	67.3	18.9	3.39	129.6	±0.5 %
		Y	3.73	68.2	19.4		132.7	
		Z	3.63	67.8	19.0		137.7	
10297-AAA	LTE-FDD (SC-FDMA, 50% RB, 20 MHz, QPSK)	X	6.30	67.4	19.8	5.81	145.6	±1.4 %
		Y	6.38	67.7	19.9		148.2	
		Z	6.12	66.8	19.4		129.8	
10311-AAA	LTE-FDD (SC-FDMA, 100% RB, 15 MHz, QPSK)	X	6.56	66.9	19.5	6.06	126.9	±1.2 %
		Y	6.71	67.4	19.8		129.7	
		Z	6.71	67.5	19.8		136.5	
10400-AAC	IEEE 802.11ac WiFi (20MHz, 64-QAM, 99pc duty cycle)	X	9.96	68.8	21.5	8.37	132.0	±2.2 %
		Y	10.06	69.0	21.6		137.4	
		Z	10.06	69.3	21.7		140.2	
10403-AAB	CDMA2000 (1xEV-DO, Rev. 0)	X	4.89	69.6	19.3	3.76	139.4	±0.5 %
		Y	5.05	70.0	19.6		143.9	
		Z	4.98	70.0	19.5		146.8	
10404-AAB	CDMA2000 (1xEV-DO, Rev. A)	X	4.81	69.6	19.4	3.77	136.6	±0.7 %
		Y	5.07	70.4	19.9		146.8	
		Z	4.90	70.2	19.6		144.5	
10415-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps, 99pc duty cycle)	X	2.82	69.8	19.4	1.54	136.4	±0.7 %
		Y	3.19	72.3	20.7		145.1	
		Z	2.84	69.7	19.1		145.5	
10416-AAA	IEEE 802.11g WiFi 2.4 GHz (ERP-OFDM, 6 Mbps, 99pc duty cycle)	X	9.77	68.6	21.3	8.23	130.4	±2.2 %
		Y	9.95	69.0	21.5		140.4	
		Z	9.88	69.0	21.5		138.1	

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 7 and 8).

^B Numerical linearization parameter: uncertainty not required.

^C 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: ES3DV3 - SN:3288

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	6.69	6.69	6.69	0.80	1.17	± 12.0 %
835	41.5	0.90	6.41	6.41	6.41	0.68	1.22	± 12.0 %
1750	40.1	1.37	5.40	5.40	5.40	0.57	1.39	± 12.0 %
1900	40.0	1.40	5.17	5.17	5.17	0.76	1.14	± 12.0 %
2300	39.5	1.67	4.85	4.85	4.85	0.64	1.32	± 12.0 %
2450	39.2	1.80	4.57	4.57	4.57	0.75	1.34	± 12.0 %
2600	39.0	1.96	4.44	4.44	4.44	0.68	1.38	± 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: ES3DV3 - SN:3288

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	6.57	6.57	6.57	0.80	1.13	± 12.0 %
835	55.2	0.97	6.40	6.40	6.40	0.53	1.45	± 12.0 %
1750	53.4	1.49	4.99	4.99	4.99	0.37	1.82	± 12.0 %
1900	53.3	1.52	4.81	4.81	4.81	0.42	1.72	± 12.0 %
2300	52.9	1.81	4.54	4.54	4.54	0.80	1.24	± 12.0 %
2450	52.7	1.95	4.37	4.37	4.37	0.80	1.20	± 12.0 %
2600	52.5	2.16	4.23	4.23	4.23	0.80	1.18	± 12.0 %

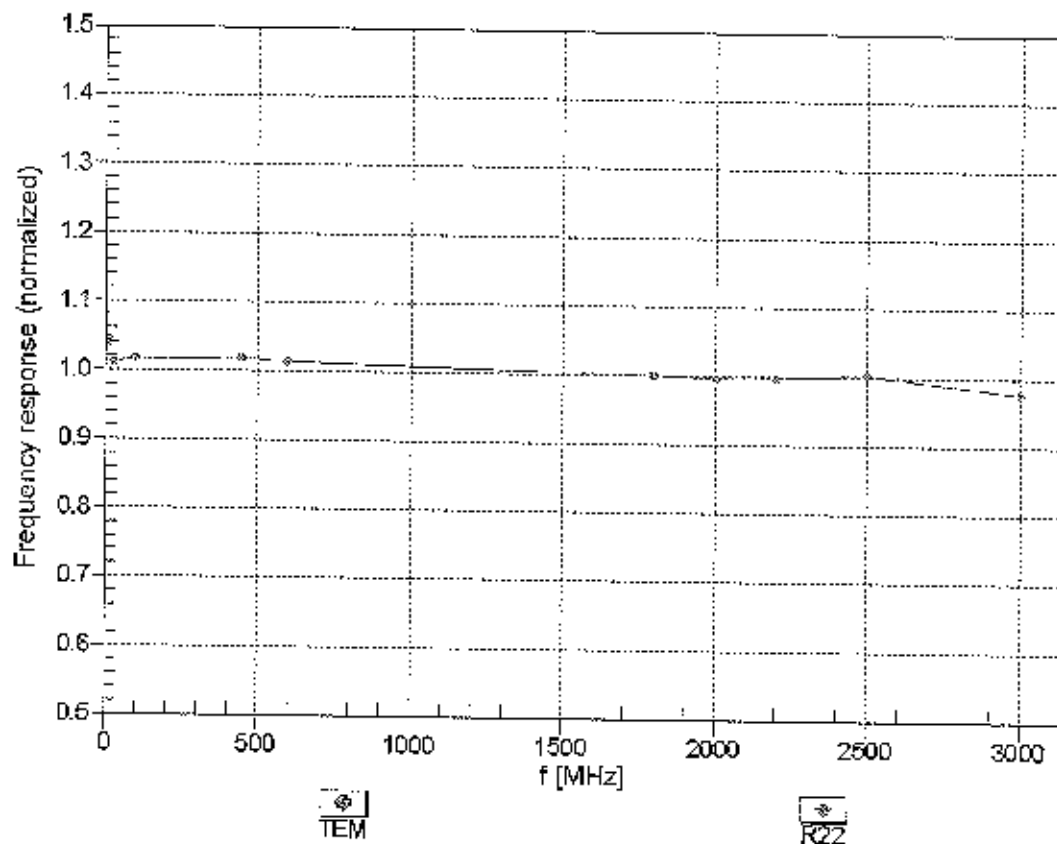
^c Frequency validity above 300 MHz of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is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

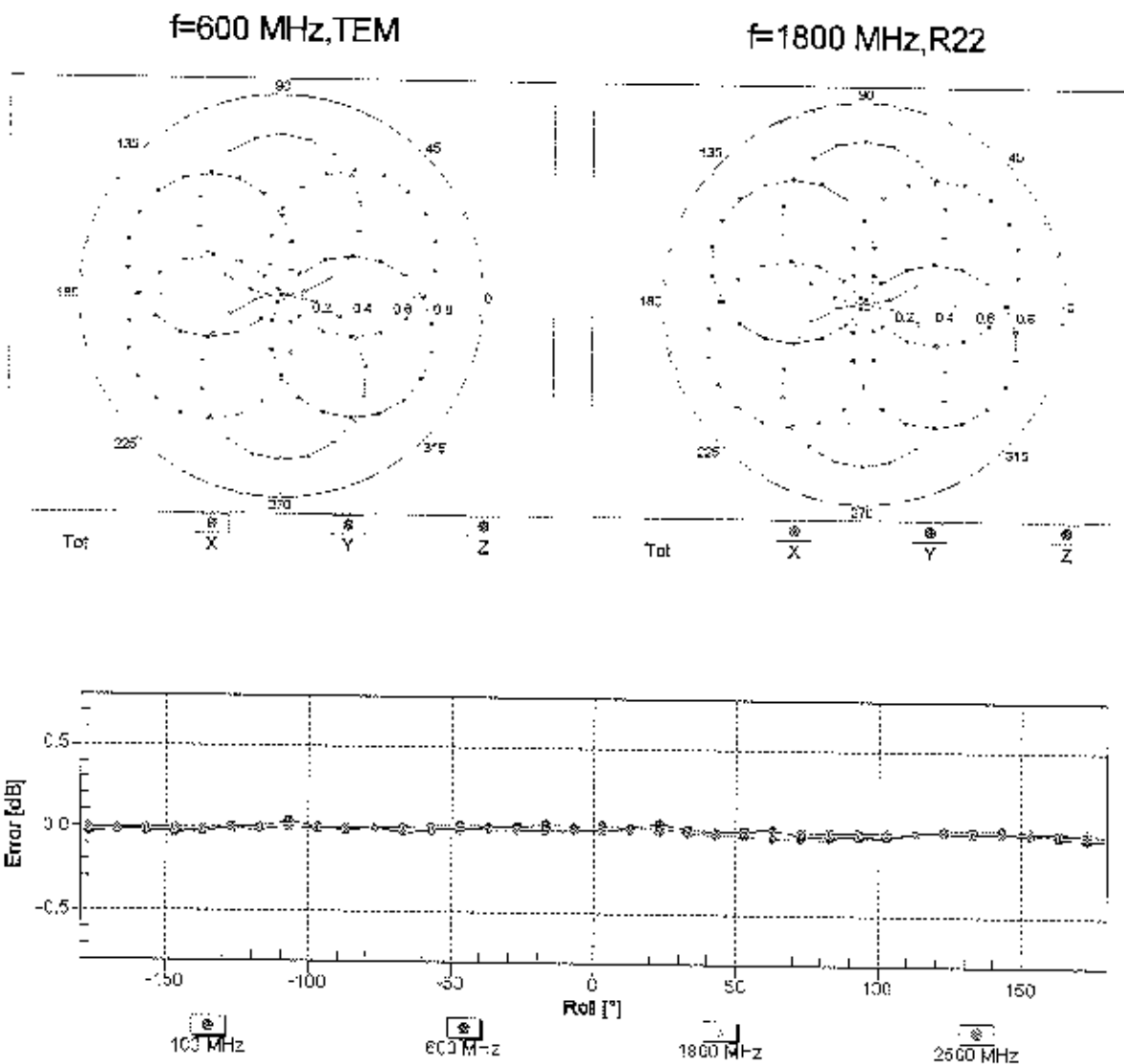
Frequency Response of E-Field

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



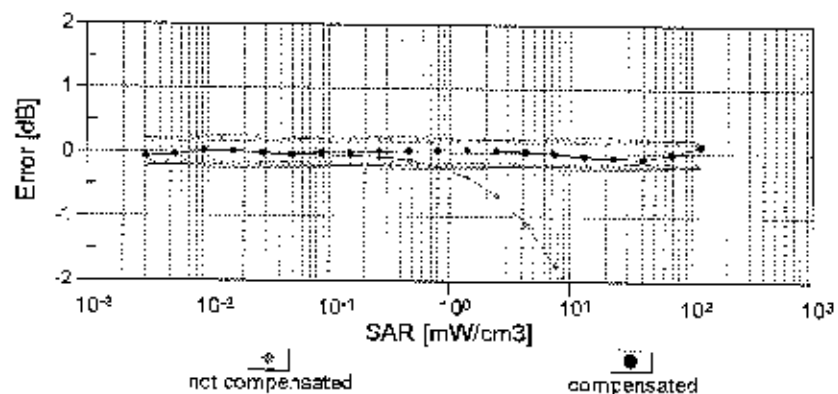
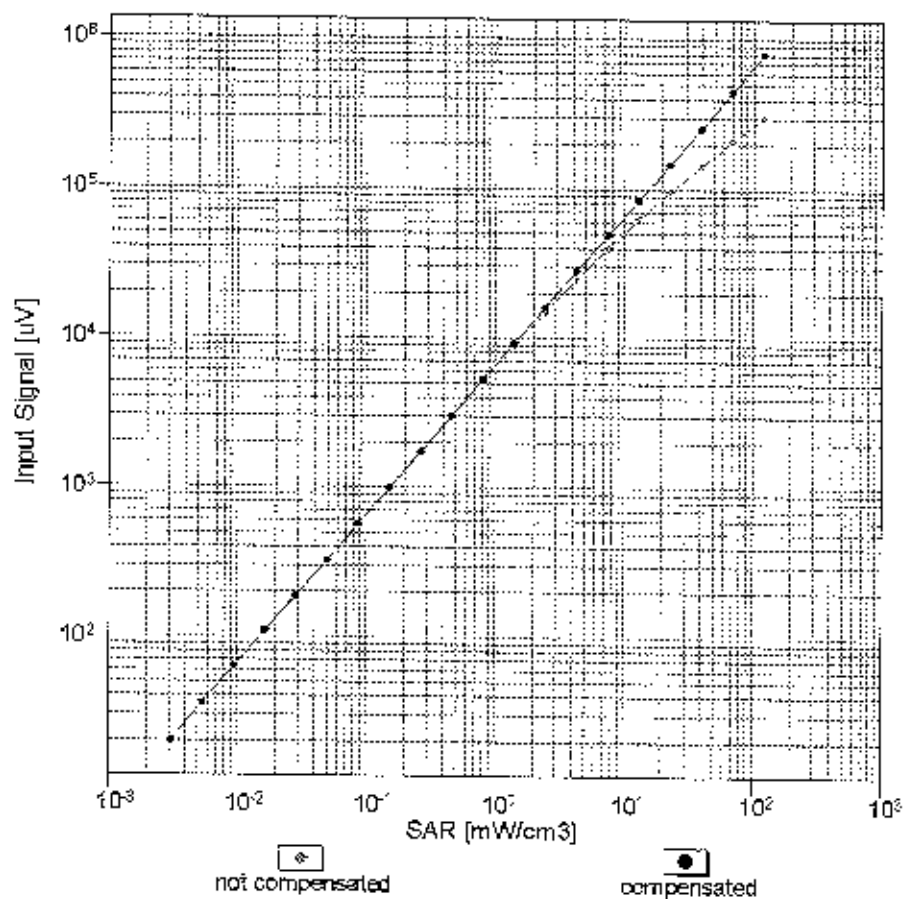
Uncertainty of Frequency Response of E-field: $\pm 6.3\%$ (k=2)

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



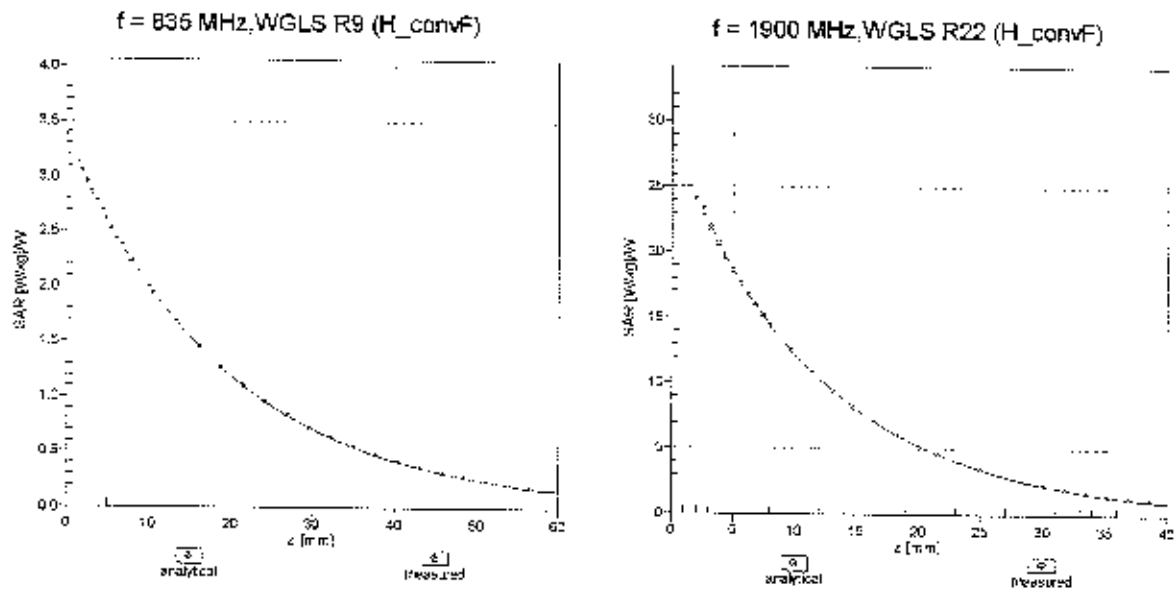
Uncertainty of Axial Isotropy Assessment: $\pm 0.5\%$ ($k=2$)

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



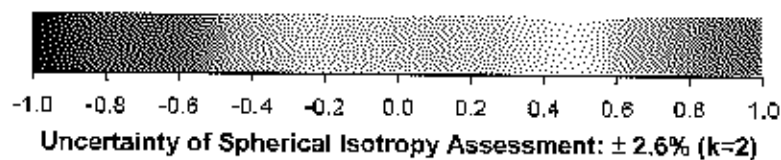
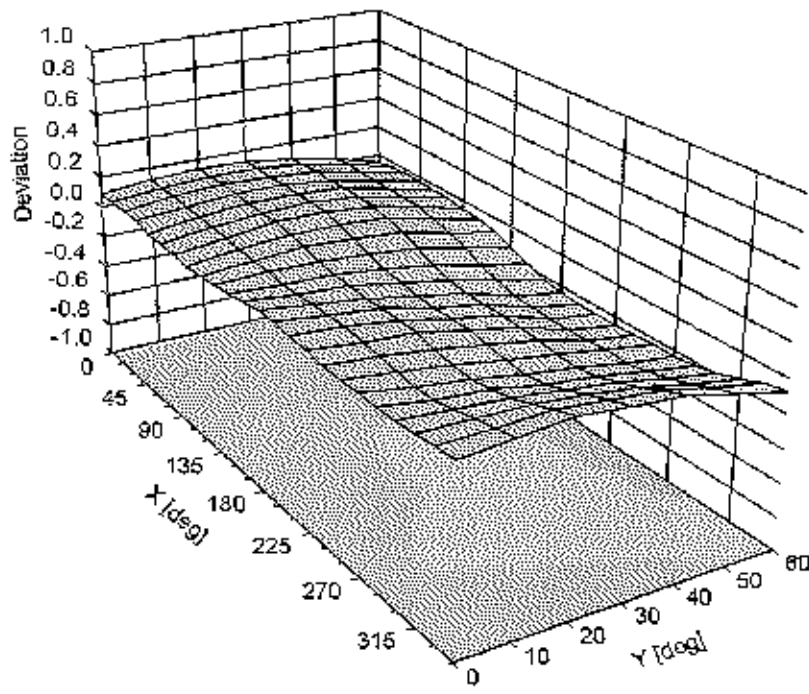
Uncertainty of Linearity Assessment: $\pm 0.6\%$ (k=2)

Conversion Factor Assessment



Deviation from Isotropy in Liquid

Error (ϕ , θ), $f = 900$ MHz



DASY/EASY - Parameters of Probe: ES3DV3 - SN:3288

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	73.1
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



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 **PC Test**

Certificate No: **ES3-3318_Feb17**

CALIBRATION CERTIFICATE

Object **ES3DV3 - SN:3318**

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

Calibration date: **February 10, 2017**

BNV
03-01-2017

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

All calibrations have been conducted in the closed laboratory facility: environment temperature $(22 \pm 3)^\circ\text{C}$ and humidity $< 70\%$.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NRP	SN: 104778	06-Apr-16 (No. 217-02288/02289)	Apr-17
Power sensor NRP-Z91	SN: 103244	06-Apr-16 (No. 217-02288)	Apr-17
Power sensor NRP-Z91	SN: 103245	06-Apr-16 (No. 217-02289)	Apr-17
Reference 20 dB Attenuator	SN: S5277 (20x)	05-Apr-16 (No. 217-02293)	Apr-17
Reference Probe ES3DV2	SN: 3013	31-Dec-16 (No. ES3-3013_Dec16)	Dec-17
DAE4	SN: 660	7-Dec-16 (No. DAE4-660_Dec16)	Dec-17
Secondary Standards	ID	Check Date (in house)	Scheduled Check
Power meter E4419B	SN: GB41293874	06-Apr-16 (in house check Jun-16)	In house check: Jun-18
Power sensor E4412A	SN: MY41498087	06-Apr-16 (in house check Jun-16)	In house check: Jun-18
Power sensor E4412A	SN: 000110210	06-Apr-16 (in house check Jun-16)	In house check: Jun-18
RF generator HP 8648C	SN: US3642U01700	04-Aug-99 (in house check Jun-16)	In house check: Jun-18
Network Analyzer HP 8753E	SN: US37390585	18-Oct-01 (in house check Oct-16)	In house check: Oct-17

Calibrated by:	Name Claudio Leubler	Function Laboratory Technician	Signature
Approved by:	Name Katja Pokovic	Function Technical Manager	Signature
			Issued: February 13, 2017
This calibration certificate shall not be reproduced except in full without written approval of the laboratory.			



Accredited by the Swiss Accreditation Service (SAS)

Accreditation No.: **SCS 0108**

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:

- 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, "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
- 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 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 ES3DV3

SN:3318

Manufactured: January 10, 2012
Calibrated: February 10, 2017

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

DASY/EASY - Parameters of Probe: ES3DV3 - SN:3318

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu\text{V}/(\text{V}/\text{m})^2$) ^A	1.11	0.89	1.24	$\pm 10.1 \%$
DCP (mV) ^B	104.2	104.2	103.5	

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	207.9	$\pm 3.3 \%$
		Y	0.0	0.0	1.0		188.2	
		Z	0.0	0.0	1.0		201.5	

Note: For details on UID parameters see Appendix.

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	63.42	453.7	35.34	29.18	2.667	5.1	0.885	0.445	1.01
Y	50.41	352.5	33.95	25.81	1.921	5.062	1.77	0.176	1.007
Z	62.08	445.4	35.38	29.73	3.23	5.1	0.803	0.494	1.012

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: ES3DV3 - SN:3318

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	6.73	6.73	6.73	0.43	1.53	± 12.0 %
835	41.5	0.90	6.47	6.47	6.47	0.57	1.36	± 12.0 %
1750	40.1	1.37	5.49	5.49	5.49	0.74	1.19	± 12.0 %
1900	40.0	1.40	5.31	5.31	5.31	0.60	1.33	± 12.0 %
2300	39.5	1.67	4.95	4.95	4.95	0.60	1.42	± 12.0 %
2450	39.2	1.80	4.74	4.74	4.74	0.71	1.28	± 12.0 %
2600	39.0	1.96	4.53	4.53	4.53	0.75	1.35	± 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: ES3DV3 - SN:3318

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	6.50	6.50	6.50	0.62	1.33	± 12.0 %
835	55.2	0.97	6.37	6.37	6.37	0.66	1.31	± 12.0 %
1750	53.4	1.49	5.12	5.12	5.12	0.42	1.72	± 12.0 %
1900	53.3	1.52	4.96	4.96	4.96	0.67	1.38	± 12.0 %
2300	52.9	1.81	4.70	4.70	4.70	0.77	1.22	± 12.0 %
2450	52.7	1.95	4.55	4.55	4.55	0.75	1.17	± 12.0 %
2600	52.5	2.16	4.34	4.34	4.34	0.80	1.05	± 12.0 %

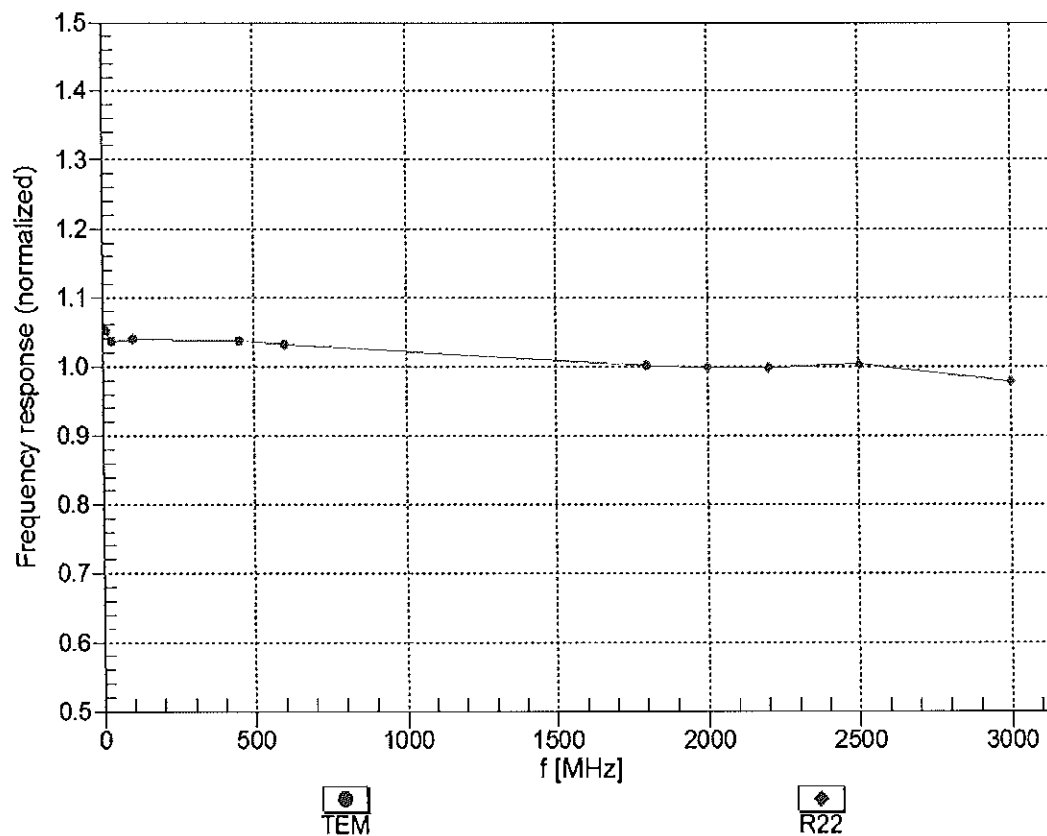
^C Frequency validity above 300 MHz of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is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

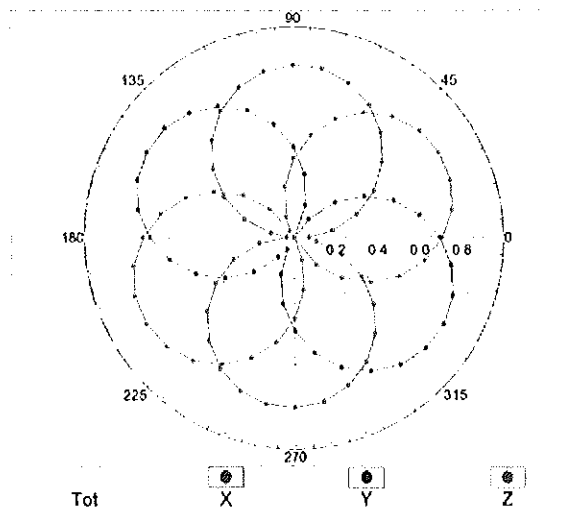
(TEM-Cell:ifi110 EXX, Waveguide: R22)



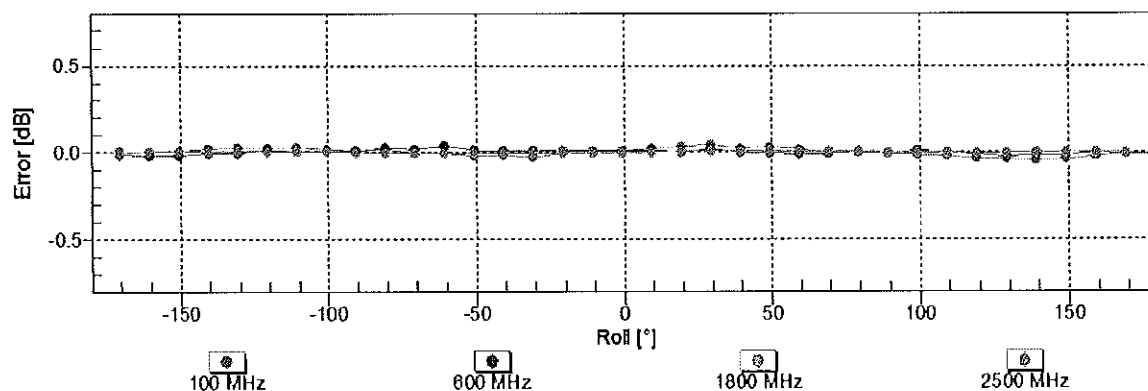
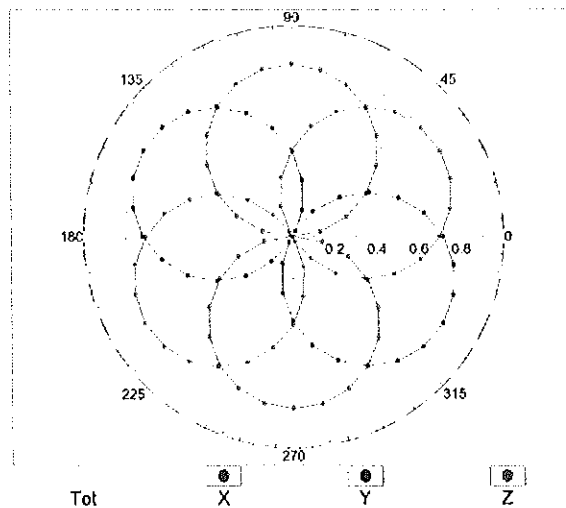
Uncertainty of Frequency Response of E-field: $\pm 6.3\%$ ($k=2$)

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

f=600 MHz,TEM

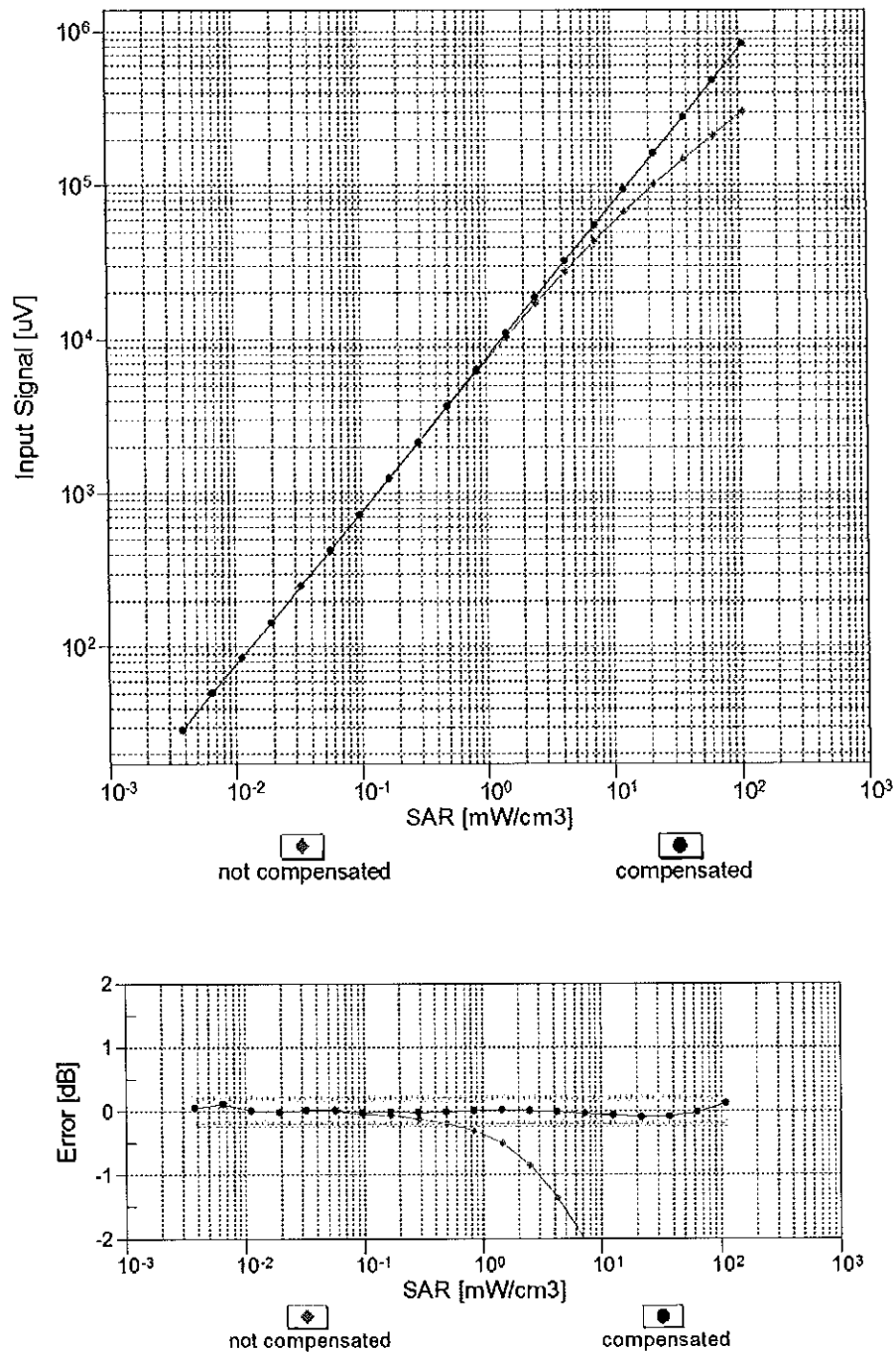


f=1800 MHz,R22

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

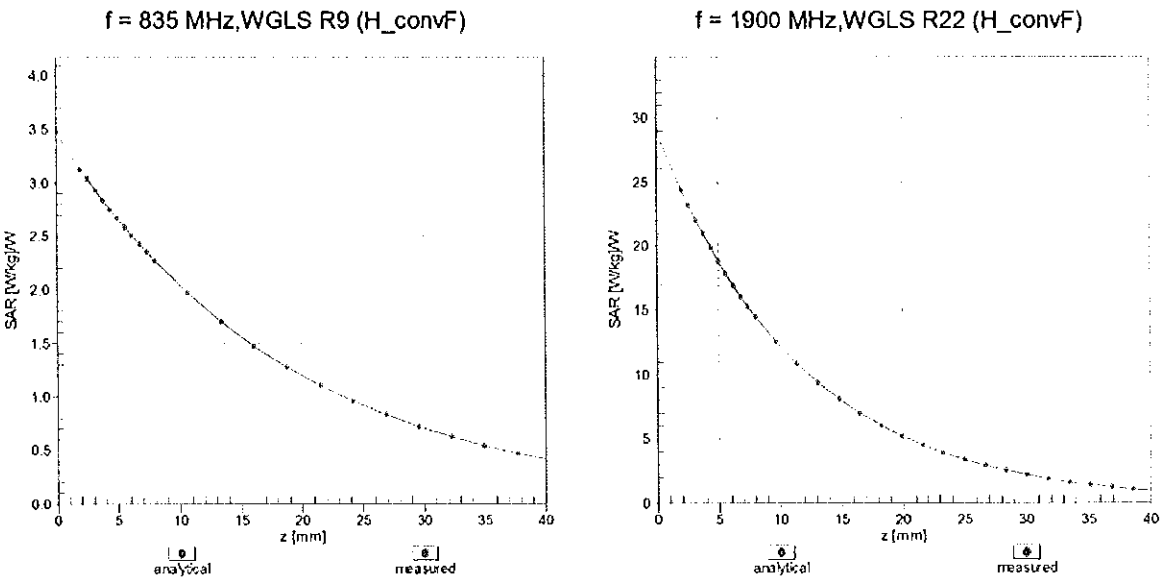
Dynamic Range f(SAR_{head})

(TEM cell , f_{eval}= 1900 MHz)

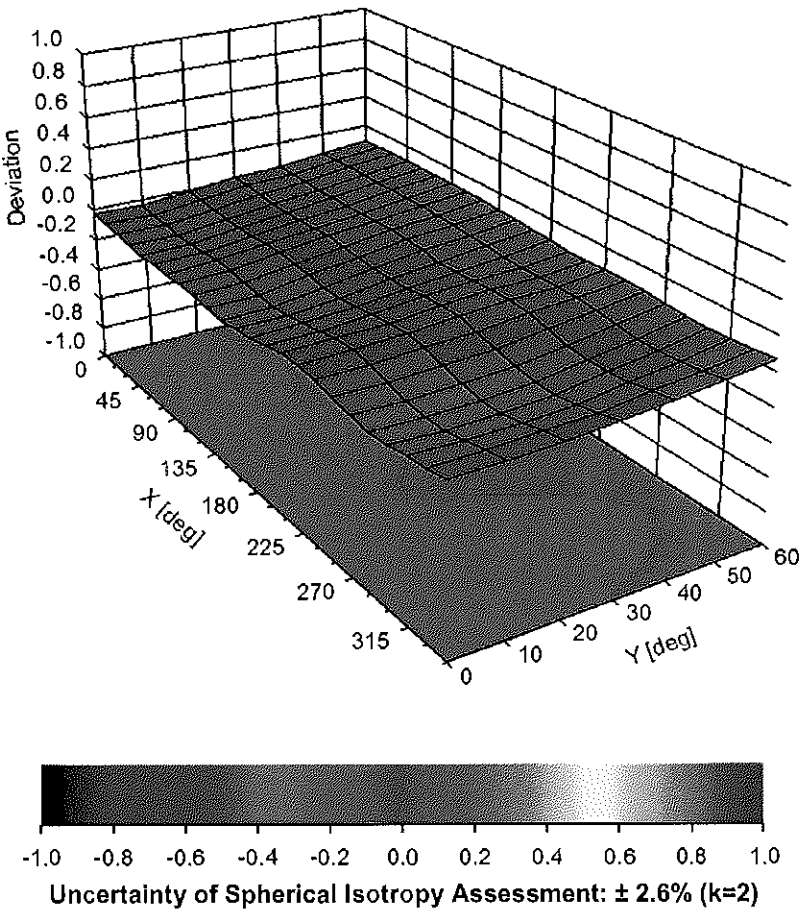


Uncertainty of Linearity Assessment: $\pm 0.6\%$ ($k=2$)

Conversion Factor Assessment



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



DASY/EASY - Parameters of Probe: ES3DV3 - SN:3318

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	79.3
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

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	207.9	$\pm 3.3 \%$
		Y	0.00	0.00	1.00		188.2	
		Z	0.00	0.00	1.00		201.5	
10010- CAA	SAR Validation (Square, 100ms, 10ms)	X	10.65	83.39	20.62	10.00	25.0	$\pm 9.6 \%$
		Y	8.27	79.56	18.19		25.0	
		Z	9.41	81.26	20.29		25.0	
10011- CAB	UMTS-FDD (WCDMA)	X	1.26	70.62	17.25	0.00	150.0	$\pm 9.6 \%$
		Y	1.14	69.56	16.54		150.0	
		Z	1.10	67.80	15.49		150.0	
10012- CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps)	X	1.36	66.00	16.64	0.41	150.0	$\pm 9.6 \%$
		Y	1.31	65.69	16.25		150.0	
		Z	1.33	65.14	15.84		150.0	
10013- CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps)	X	5.21	67.34	17.59	1.46	150.0	$\pm 9.6 \%$
		Y	5.03	67.33	17.37		150.0	
		Z	5.21	67.28	17.47		150.0	
10021- DAC	GSM-FDD (TDMA, GMSK)	X	30.30	102.62	28.60	9.39	50.0	$\pm 9.6 \%$
		Y	85.74	117.41	31.25		50.0	
		Z	16.72	92.33	25.82		50.0	
10023- DAC	GPRS-FDD (TDMA, GMSK, TN 0)	X	25.90	99.89	27.85	9.57	50.0	$\pm 9.6 \%$
		Y	53.57	110.04	29.42		50.0	
		Z	15.58	90.96	25.42		50.0	
10024- DAC	GPRS-FDD (TDMA, GMSK, TN 0-1)	X	100.00	119.72	31.24	6.56	60.0	$\pm 9.6 \%$
		Y	100.00	116.42	29.08		60.0	
		Z	69.15	114.71	30.44		60.0	
10025- DAC	EDGE-FDD (TDMA, 8PSK, TN 0)	X	21.22	110.03	42.06	12.57	50.0	$\pm 9.6 \%$
		Y	14.02	98.31	37.05		50.0	
		Z	20.65	107.68	41.04		50.0	
10026- DAC	EDGE-FDD (TDMA, 8PSK, TN 0-1)	X	22.74	107.18	37.14	9.56	60.0	$\pm 9.6 \%$
		Y	17.09	100.87	34.58		60.0	
		Z	19.56	102.47	35.45		60.0	
10027- DAC	GPRS-FDD (TDMA, GMSK, TN 0-1-2)	X	100.00	118.87	29.89	4.80	80.0	$\pm 9.6 \%$
		Y	100.00	115.45	27.78		80.0	
		Z	100.00	119.07	30.22		80.0	
10028- DAC	GPRS-FDD (TDMA, GMSK, TN 0-1-2-3)	X	100.00	119.42	29.31	3.55	100.0	$\pm 9.6 \%$
		Y	100.00	115.85	27.21		100.0	
		Z	100.00	119.09	29.37		100.0	
10029- DAC	EDGE-FDD (TDMA, 8PSK, TN 0-1-2)	X	14.97	97.57	32.79	7.80	80.0	$\pm 9.6 \%$
		Y	11.33	91.85	30.38		80.0	
		Z	13.70	94.63	31.63		80.0	
10030- CAA	IEEE 802.15.1 Bluetooth (GFSK, DH1)	X	100.00	118.36	30.01	5.30	70.0	$\pm 9.6 \%$
		Y	100.00	114.74	27.76		70.0	
		Z	100.00	118.80	30.46		70.0	
10031- CAA	IEEE 802.15.1 Bluetooth (GFSK, DH3)	X	100.00	121.98	28.84	1.88	100.0	$\pm 9.6 \%$
		Y	100.00	117.00	26.24		100.0	
		Z	100.00	120.23	28.25		100.0	

10032-CAA	IEEE 802.15.1 Bluetooth (GFSK, DH5)	X	100.00	128.67	30.50	1.17	100.0	± 9.6 %
		Y	100.00	122.90	27.66		100.0	
		Z	100.00	124.38	28.87		100.0	
10033-CAA	IEEE 802.15.1 Bluetooth (PI/4-DQPSK, DH1)	X	24.23	102.94	29.00	5.30	70.0	± 9.6 %
		Y	23.03	100.70	27.25		70.0	
		Z	13.78	92.43	25.72		70.0	
10034-CAA	IEEE 802.15.1 Bluetooth (PI/4-DQPSK, DH3)	X	11.07	94.32	25.04	1.88	100.0	± 9.6 %
		Y	10.51	92.09	23.22		100.0	
		Z	6.22	84.45	21.59		100.0	
10035-CAA	IEEE 802.15.1 Bluetooth (PI/4-DQPSK, DH5)	X	5.82	86.43	22.33	1.17	100.0	± 9.6 %
		Y	5.46	84.67	20.69		100.0	
		Z	3.82	79.09	19.43		100.0	
10036-CAA	IEEE 802.15.1 Bluetooth (8-DPSK, DH1)	X	30.87	107.24	30.28	5.30	70.0	± 9.6 %
		Y	31.94	106.09	28.82		70.0	
		Z	15.75	94.83	26.54		70.0	
10037-CAA	IEEE 802.15.1 Bluetooth (8-DPSK, DH3)	X	10.70	93.84	24.85	1.88	100.0	± 9.6 %
		Y	9.44	90.62	22.74		100.0	
		Z	6.06	84.12	21.44		100.0	
10038-CAA	IEEE 802.15.1 Bluetooth (8-DPSK, DH5)	X	6.09	87.40	22.75	1.17	100.0	± 9.6 %
		Y	5.73	85.66	21.12		100.0	
		Z	3.92	79.69	19.73		100.0	
10039-CAB	CDMA2000 (1xRTT, RC1)	X	2.51	76.10	18.44	0.00	150.0	± 9.6 %
		Y	2.58	77.34	18.13		150.0	
		Z	1.93	71.68	16.25		150.0	
10042-CAB	IS-54 / IS-136 FDD (TDMA/FDM, PI/4-DQPSK, Halfrate)	X	100.00	118.55	30.95	7.78	50.0	± 9.6 %
		Y	100.00	115.26	28.77		50.0	
		Z	30.52	101.01	26.83		50.0	
10044-CAA	IS-91/EIA/TIA-553 FDD (FDMA, FM)	X	0.01	122.84	6.61	0.00	150.0	± 9.6 %
		Y	0.00	101.52	0.76		150.0	
		Z	0.01	121.65	1.51		150.0	
10048-CAA	DECT (TDD, TDMA/FDM, GFSK, Full Slot, 24)	X	12.97	86.24	25.23	13.80	25.0	± 9.6 %
		Y	16.21	90.42	25.53		25.0	
		Z	11.00	82.40	24.22		25.0	
10049-CAA	DECT (TDD, TDMA/FDM, GFSK, Double Slot, 12)	X	16.11	91.33	25.58	10.79	40.0	± 9.6 %
		Y	21.17	95.34	25.70		40.0	
		Z	12.51	86.41	24.27		40.0	
10056-CAA	UMTS-TDD (TD-SCDMA, 1.28 Mcps)	X	14.93	90.68	26.04	9.03	50.0	± 9.6 %
		Y	15.30	90.91	25.15		50.0	
		Z	12.28	86.39	24.64		50.0	
10058-DAC	EDGE-FDD (TDMA, 8PSK, TN 0-1-2-3)	X	10.77	90.92	29.72	6.55	100.0	± 9.6 %
		Y	8.37	86.08	27.58		100.0	
		Z	10.19	88.91	28.83		100.0	
10059-CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 2 Mbps)	X	1.56	68.48	17.84	0.61	110.0	± 9.6 %
		Y	1.47	67.87	17.29		110.0	
		Z	1.52	67.28	16.88		110.0	
10060-CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 5.5 Mbps)	X	100.00	133.74	34.89	1.30	110.0	± 9.6 %
		Y	100.00	132.17	33.87		110.0	
		Z	100.00	130.92	33.73		110.0	

10061-CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 11 Mbps)	X	16.46	105.21	30.01	2.04	110.0	± 9.6 %
		Y	11.67	99.37	27.84		110.0	
		Z	8.39	92.33	25.80		110.0	
10062-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps)	X	4.94	67.14	16.89	0.49	100.0	± 9.6 %
		Y	4.78	67.19	16.74		100.0	
		Z	4.92	67.01	16.73		100.0	
10063-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 9 Mbps)	X	4.98	67.31	17.04	0.72	100.0	± 9.6 %
		Y	4.81	67.33	16.86		100.0	
		Z	4.96	67.18	16.88		100.0	
10064-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 12 Mbps)	X	5.32	67.65	17.30	0.86	100.0	± 9.6 %
		Y	5.11	67.60	17.09		100.0	
		Z	5.31	67.54	17.16		100.0	
10065-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 18 Mbps)	X	5.22	67.69	17.47	1.21	100.0	± 9.6 %
		Y	5.01	67.59	17.23		100.0	
		Z	5.22	67.59	17.34		100.0	
10066-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 24 Mbps)	X	5.28	67.82	17.71	1.46	100.0	± 9.6 %
		Y	5.05	67.68	17.43		100.0	
		Z	5.28	67.74	17.58		100.0	
10067-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 36 Mbps)	X	5.59	67.95	18.15	2.04	100.0	± 9.6 %
		Y	5.36	67.86	17.87		100.0	
		Z	5.61	67.93	18.06		100.0	
10068-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 48 Mbps)	X	5.74	68.35	18.54	2.55	100.0	± 9.6 %
		Y	5.47	68.07	18.17		100.0	
		Z	5.77	68.35	18.47		100.0	
10069-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 54 Mbps)	X	5.82	68.26	18.71	2.67	100.0	± 9.6 %
		Y	5.55	68.05	18.34		100.0	
		Z	5.85	68.30	18.66		100.0	
10071-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 9 Mbps)	X	5.35	67.58	17.97	1.99	100.0	± 9.6 %
		Y	5.16	67.52	17.72		100.0	
		Z	5.37	67.56	17.88		100.0	
10072-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 12 Mbps)	X	5.42	68.17	18.31	2.30	100.0	± 9.6 %
		Y	5.20	68.01	18.01		100.0	
		Z	5.45	68.15	18.22		100.0	
10073-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 18 Mbps)	X	5.56	68.52	18.74	2.83	100.0	± 9.6 %
		Y	5.32	68.31	18.39		100.0	
		Z	5.60	68.54	18.67		100.0	
10074-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 24 Mbps)	X	5.59	68.60	19.01	3.30	100.0	± 9.6 %
		Y	5.35	68.34	18.61		100.0	
		Z	5.65	68.66	18.95		100.0	
10075-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 36 Mbps)	X	5.76	69.14	19.54	3.82	90.0	± 9.6 %
		Y	5.46	68.68	19.02		90.0	
		Z	5.83	69.24	19.50		90.0	
10076-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 48 Mbps)	X	5.75	68.91	19.64	4.15	90.0	± 9.6 %
		Y	5.48	68.50	19.14		90.0	
		Z	5.84	69.05	19.63		90.0	
10077-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 54 Mbps)	X	5.79	69.00	19.75	4.30	90.0	± 9.6 %
		Y	5.52	68.61	19.25		90.0	
		Z	5.89	69.15	19.74		90.0	

10081-CAB	CDMA2000 (1xRTT, RC3)	X	1.18	70.18	15.67	0.00	150.0	± 9.6 %
		Y	1.02	69.06	14.35		150.0	
		Z	0.97	66.70	13.60		150.0	
10082-CAB	IS-54 / IS-136 FDD (TDMA/FDM, PI/4-DQPSK, Fullrate)	X	2.27	64.65	9.36	4.77	80.0	± 9.6 %
		Y	1.70	62.49	7.53		80.0	
		Z	2.45	65.05	9.86		80.0	
10090-DAC	GPRS-FDD (TDMA, GMSK, TN 0-4)	X	100.00	119.81	31.30	6.56	60.0	± 9.6 %
		Y	100.00	116.49	29.13		60.0	
		Z	65.88	114.04	30.31		60.0	
10097-CAB	UMTS-FDD (HSDPA)	X	1.98	68.72	16.60	0.00	150.0	± 9.6 %
		Y	1.94	68.99	16.45		150.0	
		Z	1.87	67.43	15.70		150.0	
10098-CAB	UMTS-FDD (HSUPA, Subtest 2)	X	1.94	68.72	16.59	0.00	150.0	± 9.6 %
		Y	1.90	68.95	16.42		150.0	
		Z	1.83	67.41	15.68		150.0	
10099-DAC	EDGE-FDD (TDMA, 8PSK, TN 0-4)	X	22.60	106.99	37.08	9.56	60.0	± 9.6 %
		Y	17.07	100.80	34.55		60.0	
		Z	19.45	102.29	35.39		60.0	
10100-CAC	LTE-FDD (SC-FDMA, 100% RB, 20 MHz, QPSK)	X	3.50	71.91	17.47	0.00	150.0	± 9.6 %
		Y	3.32	71.58	17.29		150.0	
		Z	3.29	70.63	16.73		150.0	
10101-CAC	LTE-FDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM)	X	3.47	68.41	16.46	0.00	150.0	± 9.6 %
		Y	3.33	68.22	16.28		150.0	
		Z	3.39	67.84	16.04		150.0	
10102-CAC	LTE-FDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM)	X	3.56	68.27	16.50	0.00	150.0	± 9.6 %
		Y	3.43	68.17	16.36		150.0	
		Z	3.49	67.75	16.11		150.0	
10103-CAC	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, QPSK)	X	8.90	78.76	21.58	3.98	65.0	± 9.6 %
		Y	8.47	78.68	21.35		65.0	
		Z	8.34	77.15	20.86		65.0	
10104-CAC	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM)	X	8.80	77.42	21.93	3.98	65.0	± 9.6 %
		Y	8.21	76.81	21.41		65.0	
		Z	8.69	76.77	21.58		65.0	
10105-CAC	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM)	X	7.68	74.71	21.04	3.98	65.0	± 9.6 %
		Y	7.62	75.33	21.07		65.0	
		Z	7.87	74.75	20.97		65.0	
10108-CAD	LTE-FDD (SC-FDMA, 100% RB, 10 MHz, QPSK)	X	3.09	71.08	17.31	0.00	150.0	± 9.6 %
		Y	2.90	70.80	17.14		150.0	
		Z	2.90	69.83	16.56		150.0	
10109-CAD	LTE-FDD (SC-FDMA, 100% RB, 10 MHz, 16-QAM)	X	3.14	68.25	16.42	0.00	150.0	± 9.6 %
		Y	2.99	68.15	16.24		150.0	
		Z	3.05	67.61	15.95		150.0	
10110-CAD	LTE-FDD (SC-FDMA, 100% RB, 5 MHz, QPSK)	X	2.54	70.21	17.07	0.00	150.0	± 9.6 %
		Y	2.36	69.95	16.81		150.0	
		Z	2.39	68.91	16.24		150.0	
10111-CAD	LTE-FDD (SC-FDMA, 100% RB, 5 MHz, 16-QAM)	X	2.84	68.87	16.76	0.00	150.0	± 9.6 %
		Y	2.74	69.25	16.71		150.0	
		Z	2.73	68.00	16.14		150.0	

10112-CAD	LTE-FDD (SC-FDMA, 100% RB, 10 MHz, 64-QAM)	X	3.25	68.12	16.42	0.00	150.0	± 9.6 %
		Y	3.11	68.10	16.28		150.0	
		Z	3.17	67.53	15.98		150.0	
10113-CAD	LTE-FDD (SC-FDMA, 100% RB, 5 MHz, 64-QAM)	X	2.99	68.87	16.82	0.00	150.0	± 9.6 %
		Y	2.90	69.34	16.82		150.0	
		Z	2.88	68.07	16.24		150.0	
10114-CAB	IEEE 802.11n (HT Greenfield, 13.5 Mbps, BPSK)	X	5.29	67.49	16.64	0.00	150.0	± 9.6 %
		Y	5.18	67.60	16.59		150.0	
		Z	5.26	67.32	16.47		150.0	
10115-CAB	IEEE 802.11n (HT Greenfield, 81 Mbps, 16-QAM)	X	5.67	67.81	16.80	0.00	150.0	± 9.6 %
		Y	5.49	67.77	16.68		150.0	
		Z	5.63	67.65	16.65		150.0	
10116-CAB	IEEE 802.11n (HT Greenfield, 135 Mbps, 64-QAM)	X	5.43	67.78	16.70	0.00	150.0	± 9.6 %
		Y	5.29	67.82	16.63		150.0	
		Z	5.39	67.60	16.54		150.0	
10117-CAB	IEEE 802.11n (HT Mixed, 13.5 Mbps, BPSK)	X	5.30	67.53	16.68	0.00	150.0	± 9.6 %
		Y	5.15	67.48	16.55		150.0	
		Z	5.27	67.35	16.51		150.0	
10118-CAB	IEEE 802.11n (HT Mixed, 81 Mbps, 16-QAM)	X	5.73	67.95	16.88	0.00	150.0	± 9.6 %
		Y	5.58	67.98	16.80		150.0	
		Z	5.71	67.82	16.74		150.0	
10119-CAB	IEEE 802.11n (HT Mixed, 135 Mbps, 64-QAM)	X	5.40	67.74	16.70	0.00	150.0	± 9.6 %
		Y	5.26	67.75	16.61		150.0	
		Z	5.37	67.56	16.53		150.0	
10140-CAC	LTE-FDD (SC-FDMA, 100% RB, 15 MHz, 16-QAM)	X	3.61	68.27	16.43	0.00	150.0	± 9.6 %
		Y	3.47	68.16	16.27		150.0	
		Z	3.54	67.76	16.04		150.0	
10141-CAC	LTE-FDD (SC-FDMA, 100% RB, 15 MHz, 64-QAM)	X	3.73	68.28	16.55	0.00	150.0	± 9.6 %
		Y	3.59	68.25	16.43		150.0	
		Z	3.65	67.79	16.17		150.0	
10142-CAD	LTE-FDD (SC-FDMA, 100% RB, 3 MHz, QPSK)	X	2.33	70.29	16.97	0.00	150.0	± 9.6 %
		Y	2.16	70.21	16.65		150.0	
		Z	2.16	68.78	16.01		150.0	
10143-CAD	LTE-FDD (SC-FDMA, 100% RB, 3 MHz, 16-QAM)	X	2.74	69.72	16.76	0.00	150.0	± 9.6 %
		Y	2.67	70.41	16.67		150.0	
		Z	2.59	68.55	15.97		150.0	
10144-CAD	LTE-FDD (SC-FDMA, 100% RB, 3 MHz, 64-QAM)	X	2.56	67.80	15.39	0.00	150.0	± 9.6 %
		Y	2.37	67.67	14.84		150.0	
		Z	2.45	66.93	14.76		150.0	
10145-CAD	LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, QPSK)	X	1.73	69.15	15.06	0.00	150.0	± 9.6 %
		Y	1.44	67.55	13.30		150.0	
		Z	1.51	66.84	13.63		150.0	
10146-CAD	LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, 16-QAM)	X	4.00	75.69	17.38	0.00	150.0	± 9.6 %
		Y	2.68	70.09	13.45		150.0	
		Z	3.36	72.93	16.09		150.0	
10147-CAD	LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, 64-QAM)	X	5.35	79.98	19.20	0.00	150.0	± 9.6 %
		Y	3.76	74.33	15.35		150.0	
		Z	4.15	75.99	17.51		150.0	

10149-CAC	LTE-FDD (SC-FDMA, 50% RB, 20 MHz, 16-QAM)	X	3.15	68.30	16.47	0.00	150.0	± 9.6 %
		Y	3.00	68.22	16.29		150.0	
		Z	3.06	67.66	15.99		150.0	
10150-CAC	LTE-FDD (SC-FDMA, 50% RB, 20 MHz, 64-QAM)	X	3.26	68.16	16.46	0.00	150.0	± 9.6 %
		Y	3.12	68.16	16.32		150.0	
		Z	3.18	67.57	16.02		150.0	
10151-CAC	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, QPSK)	X	9.51	81.17	22.64	3.98	65.0	± 9.6 %
		Y	9.26	81.54	22.52		65.0	
		Z	9.00	79.66	21.96		65.0	
10152-CAC	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 16-QAM)	X	8.48	77.76	21.88	3.98	65.0	± 9.6 %
		Y	7.81	76.97	21.19		65.0	
		Z	8.33	76.97	21.46		65.0	
10153-CAC	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 64-QAM)	X	8.81	78.38	22.46	3.98	65.0	± 9.6 %
		Y	8.28	78.00	21.97		65.0	
		Z	8.64	77.56	22.02		65.0	
10154-CAD	LTE-FDD (SC-FDMA, 50% RB, 10 MHz, QPSK)	X	2.61	70.67	17.35	0.00	150.0	± 9.6 %
		Y	2.43	70.50	17.14		150.0	
		Z	2.44	69.28	16.48		150.0	
10155-CAD	LTE-FDD (SC-FDMA, 50% RB, 10 MHz, 16-QAM)	X	2.84	68.87	16.77	0.00	150.0	± 9.6 %
		Y	2.74	69.26	16.73		150.0	
		Z	2.73	68.00	16.15		150.0	
10156-CAD	LTE-FDD (SC-FDMA, 50% RB, 5 MHz, QPSK)	X	2.21	70.73	17.05	0.00	150.0	± 9.6 %
		Y	2.04	70.63	16.63		150.0	
		Z	2.02	68.93	15.94		150.0	
10157-CAD	LTE-FDD (SC-FDMA, 50% RB, 5 MHz, 16-QAM)	X	2.42	68.64	15.67	0.00	150.0	± 9.6 %
		Y	2.25	68.58	15.08		150.0	
		Z	2.28	67.47	14.87		150.0	
10158-CAD	LTE-FDD (SC-FDMA, 50% RB, 10 MHz, 64-QAM)	X	2.99	68.92	16.86	0.00	150.0	± 9.6 %
		Y	2.90	69.42	16.87		150.0	
		Z	2.89	68.11	16.28		150.0	
10159-CAD	LTE-FDD (SC-FDMA, 50% RB, 5 MHz, 64-QAM)	X	2.54	69.05	15.93	0.00	150.0	± 9.6 %
		Y	2.38	69.17	15.42		150.0	
		Z	2.38	67.83	15.11		150.0	
10160-CAC	LTE-FDD (SC-FDMA, 50% RB, 15 MHz, QPSK)	X	3.02	69.72	16.97	0.00	150.0	± 9.6 %
		Y	2.87	69.64	16.82		150.0	
		Z	2.89	68.80	16.35		150.0	
10161-CAC	LTE-FDD (SC-FDMA, 50% RB, 15 MHz, 16-QAM)	X	3.15	68.06	16.41	0.00	150.0	± 9.6 %
		Y	3.02	68.13	16.28		150.0	
		Z	3.07	67.45	15.95		150.0	
10162-CAC	LTE-FDD (SC-FDMA, 50% RB, 15 MHz, 64-QAM)	X	3.25	68.09	16.46	0.00	150.0	± 9.6 %
		Y	3.13	68.25	16.37		150.0	
		Z	3.18	67.52	16.02		150.0	
10166-CAD	LTE-FDD (SC-FDMA, 50% RB, 1.4 MHz, QPSK)	X	4.03	70.84	19.96	3.01	150.0	± 9.6 %
		Y	3.83	71.14	19.84		150.0	
		Z	4.01	70.55	19.74		150.0	
10167-CAD	LTE-FDD (SC-FDMA, 50% RB, 1.4 MHz, 16-QAM)	X	5.25	74.55	20.76	3.01	150.0	± 9.6 %
		Y	5.14	75.60	20.85		150.0	
		Z	5.18	74.06	20.47		150.0	

10168-CAD	LTE-FDD (SC-FDMA, 50% RB, 1.4 MHz, 64-QAM)	X	5.75	76.52	21.89	3.01	150.0	± 9.6 %
		Y	6.00	78.90	22.58		150.0	
		Z	5.63	75.85	21.52		150.0	
10169-CAC	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, QPSK)	X	3.71	72.74	20.84	3.01	150.0	± 9.6 %
		Y	3.37	72.07	20.29		150.0	
		Z	3.67	72.12	20.45		150.0	
10170-CAC	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM)	X	5.90	81.03	23.83	3.01	150.0	± 9.6 %
		Y	6.20	83.55	24.55		150.0	
		Z	5.54	79.34	23.04		150.0	
10171-AAC	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, 64-QAM)	X	4.69	76.04	20.92	3.01	150.0	± 9.6 %
		Y	4.32	75.87	20.46		150.0	
		Z	4.54	75.03	20.42		150.0	
10172-CAC	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK)	X	39.66	116.21	35.79	6.02	65.0	± 9.6 %
		Y	26.05	109.12	33.27		65.0	
		Z	30.93	110.22	33.96		65.0	
10173-CAC	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM)	X	52.84	115.80	33.80	6.02	65.0	± 9.6 %
		Y	100.00	126.65	35.61		65.0	
		Z	32.54	106.36	31.18		65.0	
10174-CAC	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 64-QAM)	X	36.42	107.54	31.02	6.02	65.0	± 9.6 %
		Y	52.24	113.81	31.84		65.0	
		Z	25.50	100.70	29.05		65.0	
10175-CAD	LTE-FDD (SC-FDMA, 1 RB, 10 MHz, QPSK)	X	3.66	72.37	20.58	3.01	150.0	± 9.6 %
		Y	3.31	71.62	19.97		150.0	
		Z	3.62	71.80	20.21		150.0	
10176-CAD	LTE-FDD (SC-FDMA, 1 RB, 10 MHz, 16-QAM)	X	5.91	81.06	23.84	3.01	150.0	± 9.6 %
		Y	6.22	83.59	24.56		150.0	
		Z	5.55	79.36	23.05		150.0	
10177-CAF	LTE-FDD (SC-FDMA, 1 RB, 5 MHz, QPSK)	X	3.70	72.55	20.68	3.01	150.0	± 9.6 %
		Y	3.35	71.84	20.10		150.0	
		Z	3.65	71.95	20.31		150.0	
10178-CAD	LTE-FDD (SC-FDMA, 1 RB, 5 MHz, 16-QAM)	X	5.81	80.70	23.67	3.01	150.0	± 9.6 %
		Y	6.07	83.11	24.35		150.0	
		Z	5.47	79.07	22.91		150.0	
10179-CAD	LTE-FDD (SC-FDMA, 1 RB, 10 MHz, 64-QAM)	X	5.24	78.36	22.22	3.01	150.0	± 9.6 %
		Y	5.11	79.33	22.28		150.0	
		Z	5.00	77.05	21.59		150.0	
10180-CAD	LTE-FDD (SC-FDMA, 1 RB, 5 MHz, 64-QAM)	X	4.67	75.92	20.85	3.01	150.0	± 9.6 %
		Y	4.29	75.73	20.38		150.0	
		Z	4.52	74.94	20.36		150.0	
10181-CAC	LTE-FDD (SC-FDMA, 1 RB, 15 MHz, QPSK)	X	3.69	72.54	20.68	3.01	150.0	± 9.6 %
		Y	3.34	71.81	20.09		150.0	
		Z	3.65	71.94	20.30		150.0	
10182-CAC	LTE-FDD (SC-FDMA, 1 RB, 15 MHz, 16-QAM)	X	5.80	80.67	23.66	3.01	150.0	± 9.6 %
		Y	6.06	83.07	24.33		150.0	
		Z	5.46	79.04	22.90		150.0	
10183-AAB	LTE-FDD (SC-FDMA, 1 RB, 15 MHz, 64-QAM)	X	4.66	75.89	20.84	3.01	150.0	± 9.6 %
		Y	4.28	75.70	20.36		150.0	
		Z	4.51	74.92	20.35		150.0	

10184-CAD	LTE-FDD (SC-FDMA, 1 RB, 3 MHz, QPSK)	X	3.70	72.58	20.70	3.01	150.0	± 9.6 %
		Y	3.35	71.87	20.12		150.0	
		Z	3.66	71.98	20.32		150.0	
10185-CAD	LTE-FDD (SC-FDMA, 1 RB, 3 MHz, 16-QAM)	X	5.83	80.75	23.70	3.01	150.0	± 9.6 %
		Y	6.11	83.20	24.39		150.0	
		Z	5.49	79.12	22.93		150.0	
10186-AAD	LTE-FDD (SC-FDMA, 1 RB, 3 MHz, 64-QAM)	X	4.69	75.98	20.88	3.01	150.0	± 9.6 %
		Y	4.31	75.80	20.41		150.0	
		Z	4.54	74.99	20.38		150.0	
10187-CAD	LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK)	X	3.71	72.62	20.75	3.01	150.0	± 9.6 %
		Y	3.36	71.93	20.19		150.0	
		Z	3.67	72.03	20.37		150.0	
10188-CAD	LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, 16-QAM)	X	6.08	81.63	24.13	3.01	150.0	± 9.6 %
		Y	6.51	84.55	25.01		150.0	
		Z	5.69	79.85	23.31		150.0	
10189-AAD	LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, 64-QAM)	X	4.82	76.52	21.19	3.01	150.0	± 9.6 %
		Y	4.47	76.53	20.81		150.0	
		Z	4.65	75.46	20.66		150.0	
10193-CAB	IEEE 802.11n (HT Greenfield, 6.5 Mbps, BPSK)	X	4.72	66.91	16.43	0.00	150.0	± 9.6 %
		Y	4.58	67.02	16.33		150.0	
		Z	4.68	66.73	16.24		150.0	
10194-CAB	IEEE 802.11n (HT Greenfield, 39 Mbps, 16-QAM)	X	4.92	67.29	16.55	0.00	150.0	± 9.6 %
		Y	4.76	67.35	16.45		150.0	
		Z	4.88	67.10	16.36		150.0	
10195-CAB	IEEE 802.11n (HT Greenfield, 65 Mbps, 64-QAM)	X	4.96	67.30	16.55	0.00	150.0	± 9.6 %
		Y	4.80	67.37	16.46		150.0	
		Z	4.92	67.11	16.37		150.0	
10196-CAB	IEEE 802.11n (HT Mixed, 6.5 Mbps, BPSK)	X	4.74	67.02	16.47	0.00	150.0	± 9.6 %
		Y	4.59	67.09	16.35		150.0	
		Z	4.70	66.83	16.28		150.0	
10197-CAB	IEEE 802.11n (HT Mixed, 39 Mbps, 16-QAM)	X	4.93	67.31	16.56	0.00	150.0	± 9.6 %
		Y	4.77	67.37	16.46		150.0	
		Z	4.90	67.12	16.37		150.0	
10198-CAB	IEEE 802.11n (HT Mixed, 65 Mbps, 64-QAM)	X	4.96	67.32	16.56	0.00	150.0	± 9.6 %
		Y	4.80	67.39	16.47		150.0	
		Z	4.93	67.13	16.38		150.0	
10219-CAB	IEEE 802.11n (HT Mixed, 7.2 Mbps, BPSK)	X	4.69	67.04	16.44	0.00	150.0	± 9.6 %
		Y	4.54	67.11	16.31		150.0	
		Z	4.65	66.84	16.24		150.0	
10220-CAB	IEEE 802.11n (HT Mixed, 43.3 Mbps, 16-QAM)	X	4.93	67.31	16.56	0.00	150.0	± 9.6 %
		Y	4.77	67.34	16.45		150.0	
		Z	4.90	67.11	16.37		150.0	
10221-CAB	IEEE 802.11n (HT Mixed, 72.2 Mbps, 64-QAM)	X	4.97	67.25	16.55	0.00	150.0	± 9.6 %
		Y	4.81	67.32	16.45		150.0	
		Z	4.93	67.06	16.37		150.0	
10222-CAB	IEEE 802.11n (HT Mixed, 15 Mbps, BPSK)	X	5.28	67.55	16.68	0.00	150.0	± 9.6 %
		Y	5.13	67.49	16.55		150.0	
		Z	5.25	67.37	16.50		150.0	

10223-CAB	IEEE 802.11n (HT Mixed, 90 Mbps, 16-QAM)	X	5.67	67.92	16.89	0.00	150.0	± 9.6 %
		Y	5.43	67.67	16.66		150.0	
		Z	5.63	67.75	16.72		150.0	
10224-CAB	IEEE 802.11n (HT Mixed, 150 Mbps, 64-QAM)	X	5.33	67.64	16.65	0.00	150.0	± 9.6 %
		Y	5.17	67.60	16.53		150.0	
		Z	5.29	67.46	16.47		150.0	
10225-CAB	UMTS-FDD (HSPA+)	X	2.99	66.62	15.92	0.00	150.0	± 9.6 %
		Y	2.87	66.77	15.69		150.0	
		Z	2.94	66.17	15.53		150.0	
10226-CAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 16-QAM)	X	56.85	117.30	34.28	6.02	65.0	± 9.6 %
		Y	100.00	126.89	35.76		65.0	
		Z	34.18	107.38	31.54		65.0	
10227-CAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 64-QAM)	X	39.67	109.19	31.57	6.02	65.0	± 9.6 %
		Y	88.35	122.59	34.09		65.0	
		Z	26.95	101.76	29.43		65.0	
10228-CAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK)	X	48.41	120.61	37.08	6.02	65.0	± 9.6 %
		Y	45.84	120.16	36.35		65.0	
		Z	31.93	111.39	34.43		65.0	
10229-CAB	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 16-QAM)	X	52.77	115.76	33.79	6.02	65.0	± 9.6 %
		Y	100.00	126.65	35.62		65.0	
		Z	32.55	106.35	31.18		65.0	
10230-CAB	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 64-QAM)	X	37.48	108.07	31.19	6.02	65.0	± 9.6 %
		Y	75.87	119.84	33.34		65.0	
		Z	25.90	100.97	29.14		65.0	
10231-CAB	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, QPSK)	X	45.44	119.21	36.63	6.02	65.0	± 9.6 %
		Y	41.18	117.91	35.67		65.0	
		Z	30.52	110.38	34.07		65.0	
10232-CAC	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 16-QAM)	X	52.80	115.78	33.80	6.02	65.0	± 9.6 %
		Y	100.00	126.66	35.62		65.0	
		Z	32.54	106.35	31.18		65.0	
10233-CAC	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 64-QAM)	X	37.54	108.11	31.20	6.02	65.0	± 9.6 %
		Y	75.89	119.86	33.34		65.0	
		Z	25.92	100.99	29.14		65.0	
10234-CAC	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, QPSK)	X	42.47	117.63	36.10	6.02	65.0	± 9.6 %
		Y	37.31	115.74	34.97		65.0	
		Z	29.08	109.25	33.65		65.0	
10235-CAC	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 16-QAM)	X	53.08	115.89	33.83	6.02	65.0	± 9.6 %
		Y	100.00	126.67	35.62		65.0	
		Z	32.64	106.42	31.20		65.0	
10236-CAC	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 64-QAM)	X	37.96	108.28	31.24	6.02	65.0	± 9.6 %
		Y	77.12	120.09	33.39		65.0	
		Z	26.14	101.12	29.18		65.0	
10237-CAC	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, QPSK)	X	46.10	119.52	36.72	6.02	65.0	± 9.6 %
		Y	41.64	118.15	35.73		65.0	
		Z	30.82	110.60	34.14		65.0	
10238-CAC	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 16-QAM)	X	52.89	115.82	33.81	6.02	65.0	± 9.6 %
		Y	100.00	126.66	35.62		65.0	
		Z	32.55	106.37	31.18		65.0	

10239-CAC	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 64-QAM)	X	37.59	108.15	31.21	6.02	65.0	± 9.6 %
		Y	75.87	119.87	33.34		65.0	
		Z	25.93	101.02	29.15		65.0	
10240-CAC	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, QPSK)	X	45.90	119.44	36.69	6.02	65.0	± 9.6 %
		Y	41.47	118.08	35.71		65.0	
		Z	30.71	110.54	34.12		65.0	
10241-CAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 16-QAM)	X	13.10	88.25	28.31	6.98	65.0	± 9.6 %
		Y	12.64	88.66	27.87		65.0	
		Z	13.02	87.59	27.99		65.0	
10242-CAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 64-QAM)	X	11.52	85.34	27.10	6.98	65.0	± 9.6 %
		Y	10.36	84.46	26.20		65.0	
		Z	12.32	86.33	27.43		65.0	
10243-CAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, QPSK)	X	9.39	82.67	26.96	6.98	65.0	± 9.6 %
		Y	7.89	80.01	25.32		65.0	
		Z	10.15	83.98	27.43		65.0	
10244-CAB	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 16-QAM)	X	10.37	82.39	22.15	3.98	65.0	± 9.6 %
		Y	9.21	80.31	20.18		65.0	
		Z	9.60	80.54	21.38		65.0	
10245-CAB	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 64-QAM)	X	10.20	81.86	21.90	3.98	65.0	± 9.6 %
		Y	8.91	79.56	19.85		65.0	
		Z	9.50	80.13	21.18		65.0	
10246-CAB	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, QPSK)	X	10.29	85.01	23.02	3.98	65.0	± 9.6 %
		Y	9.28	83.44	21.56		65.0	
		Z	8.83	81.79	21.72		65.0	
10247-CAC	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 16-QAM)	X	8.11	78.82	21.25	3.98	65.0	± 9.6 %
		Y	7.33	77.58	19.99		65.0	
		Z	7.71	77.37	20.55		65.0	
10248-CAC	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 64-QAM)	X	8.09	78.31	21.04	3.98	65.0	± 9.6 %
		Y	7.21	76.86	19.68		65.0	
		Z	7.75	77.03	20.41		65.0	
10249-CAC	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, QPSK)	X	11.01	86.29	24.03	3.98	65.0	± 9.6 %
		Y	10.81	86.39	23.39		65.0	
		Z	9.54	83.16	22.78		65.0	
10250-CAC	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 16-QAM)	X	8.83	80.24	22.94	3.98	65.0	± 9.6 %
		Y	8.38	80.07	22.43		65.0	
		Z	8.48	78.94	22.29		65.0	
10251-CAC	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 64-QAM)	X	8.37	78.15	21.84	3.98	65.0	± 9.6 %
		Y	7.73	77.46	21.06		65.0	
		Z	8.17	77.24	21.36		65.0	
10252-CAC	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, QPSK)	X	10.43	84.63	24.00	3.98	65.0	± 9.6 %
		Y	10.38	85.34	23.87		65.0	
		Z	9.48	82.30	23.02		65.0	
10253-CAC	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 16-QAM)	X	8.24	77.12	21.67	3.98	65.0	± 9.6 %
		Y	7.62	76.41	20.97		65.0	
		Z	8.12	76.42	21.28		65.0	
10254-CAC	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 64-QAM)	X	8.59	77.78	22.22	3.98	65.0	± 9.6 %
		Y	8.06	77.36	21.67		65.0	
		Z	8.46	77.05	21.81		65.0	

10255-CAC	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, QPSK)	X	9.19	80.79	22.74	3.98	65.0	± 9.6 %
		Y	8.89	81.04	22.54		65.0	
		Z	8.75	79.38	22.09		65.0	
10256-CAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 16-QAM)	X	9.46	80.54	20.72	3.98	65.0	± 9.6 %
		Y	7.26	76.12	17.61		65.0	
		Z	8.73	78.73	19.97		65.0	
10257-CAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 64-QAM)	X	9.23	79.78	20.35	3.98	65.0	± 9.6 %
		Y	6.96	75.17	17.14		65.0	
		Z	8.59	78.13	19.66		65.0	
10258-CAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, QPSK)	X	9.10	82.63	21.62	3.98	65.0	± 9.6 %
		Y	7.16	78.79	19.11		65.0	
		Z	7.85	79.60	20.38		65.0	
10259-CAB	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 16-QAM)	X	8.39	79.27	21.82	3.98	65.0	± 9.6 %
		Y	7.73	78.47	20.85		65.0	
		Z	8.02	77.92	21.16		65.0	
10260-CAB	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 64-QAM)	X	8.39	78.99	21.73	3.98	65.0	± 9.6 %
		Y	7.70	78.11	20.72		65.0	
		Z	8.05	77.71	21.09		65.0	
10261-CAB	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, QPSK)	X	10.34	84.95	23.83	3.98	65.0	± 9.6 %
		Y	10.04	85.03	23.28		65.0	
		Z	9.23	82.32	22.74		65.0	
10262-CAC	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 16-QAM)	X	8.82	80.21	22.91	3.98	65.0	± 9.6 %
		Y	8.36	80.01	22.38		65.0	
		Z	8.47	78.91	22.26		65.0	
10263-CAC	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 64-QAM)	X	8.36	78.15	21.85	3.98	65.0	± 9.6 %
		Y	7.72	77.44	21.06		65.0	
		Z	8.17	77.23	21.37		65.0	
10264-CAC	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, QPSK)	X	10.37	84.50	23.93	3.98	65.0	± 9.6 %
		Y	10.27	85.13	23.77		65.0	
		Z	9.43	82.19	22.96		65.0	
10265-CAC	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 16-QAM)	X	8.48	77.76	21.88	3.98	65.0	± 9.6 %
		Y	7.81	76.97	21.20		65.0	
		Z	8.32	76.97	21.47		65.0	
10266-CAC	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 64-QAM)	X	8.81	78.38	22.45	3.98	65.0	± 9.6 %
		Y	8.27	77.98	21.97		65.0	
		Z	8.64	77.56	22.02		65.0	
10267-CAC	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, QPSK)	X	9.50	81.14	22.63	3.98	65.0	± 9.6 %
		Y	9.25	81.50	22.50		65.0	
		Z	8.99	79.63	21.95		65.0	
10268-CAC	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 16-QAM)	X	8.86	77.06	21.92	3.98	65.0	± 9.6 %
		Y	8.31	76.56	21.43		65.0	
		Z	8.78	76.48	21.59		65.0	
10269-CAC	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 64-QAM)	X	8.77	76.63	21.82	3.98	65.0	± 9.6 %
		Y	8.23	76.12	21.32		65.0	
		Z	8.71	76.12	21.52		65.0	
10270-CAC	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, QPSK)	X	8.91	78.30	21.65	3.98	65.0	± 9.6 %
		Y	8.57	78.39	21.47		65.0	
		Z	8.67	77.36	21.19		65.0	

10274-CAB	UMTS-FDD (HSUPA, Subtest 5, 3GPP Rel8.10)	X	2.73	66.93	15.81	0.00	150.0	± 9.6 %
		Y	2.66	67.19	15.64		150.0	
		Z	2.67	66.38	15.35		150.0	
10275-CAB	UMTS-FDD (HSUPA, Subtest 5, 3GPP Rel8.4)	X	1.85	69.82	16.81	0.00	150.0	± 9.6 %
		Y	1.73	69.48	16.43		150.0	
		Z	1.70	68.07	15.69		150.0	
10277-CAA	PHS (QPSK)	X	5.86	70.53	14.71	9.03	50.0	± 9.6 %
		Y	4.40	66.90	11.75		50.0	
		Z	6.19	70.94	15.24		50.0	
10278-CAA	PHS (QPSK, BW 884MHz, Rolloff 0.5)	X	10.27	82.27	21.99	9.03	50.0	± 9.6 %
		Y	7.88	77.57	18.90		50.0	
		Z	9.35	79.97	21.25		50.0	
10279-CAA	PHS (QPSK, BW 884MHz, Rolloff 0.38)	X	10.47	82.49	22.08	9.03	50.0	± 9.6 %
		Y	8.00	77.73	18.99		50.0	
		Z	9.52	80.18	21.35		50.0	
10290-AAB	CDMA2000, RC1, SO55, Full Rate	X	2.00	72.56	16.71	0.00	150.0	± 9.6 %
		Y	1.81	72.10	15.72		150.0	
		Z	1.64	69.27	14.92		150.0	
10291-AAB	CDMA2000, RC3, SO55, Full Rate	X	1.15	69.82	15.49	0.00	150.0	± 9.6 %
		Y	0.99	68.71	14.17		150.0	
		Z	0.95	66.46	13.46		150.0	
10292-AAB	CDMA2000, RC3, SO32, Full Rate	X	1.59	75.79	18.53	0.00	150.0	± 9.6 %
		Y	1.63	76.74	18.06		150.0	
		Z	1.13	69.78	15.46		150.0	
10293-AAB	CDMA2000, RC3, SO3, Full Rate	X	2.45	82.81	21.72	0.00	150.0	± 9.6 %
		Y	4.29	91.48	23.73		150.0	
		Z	1.46	73.68	17.64		150.0	
10295-AAB	CDMA2000, RC1, SO3, 1/8th Rate 25 fr.	X	11.26	85.50	25.18	9.03	50.0	± 9.6 %
		Y	11.00	85.02	23.98		50.0	
		Z	10.64	83.52	24.39		50.0	
10297-AAB	LTE-FDD (SC-FDMA, 50% RB, 20 MHz, QPSK)	X	3.10	71.18	17.38	0.00	150.0	± 9.6 %
		Y	2.91	70.92	17.21		150.0	
		Z	2.91	69.91	16.61		150.0	
10298-AAC	LTE-FDD (SC-FDMA, 50% RB, 3 MHz, QPSK)	X	2.01	70.53	16.33	0.00	150.0	± 9.6 %
		Y	1.80	70.02	15.42		150.0	
		Z	1.78	68.34	15.01		150.0	
10299-AAC	LTE-FDD (SC-FDMA, 50% RB, 3 MHz, 16-QAM)	X	4.29	76.33	18.36	0.00	150.0	± 9.6 %
		Y	3.82	74.61	16.37		150.0	
		Z	3.76	74.04	17.28		150.0	
10300-AAC	LTE-FDD (SC-FDMA, 50% RB, 3 MHz, 64-QAM)	X	3.03	70.18	15.03	0.00	150.0	± 9.6 %
		Y	2.35	67.31	12.44		150.0	
		Z	2.84	69.06	14.39		150.0	
10301-AAA	IEEE 802.16e WiMAX (29:18, 5ms, 10MHz, QPSK, PUSC)	X	5.75	68.04	18.85	4.17	80.0	± 9.6 %
		Y	5.34	67.59	18.38		80.0	
		Z	6.02	68.99	19.26		80.0	
10302-AAA	IEEE 802.16e WiMAX (29:18, 5ms, 10MHz, QPSK, PUSC, 3 CTRL symbols)	X	6.35	69.28	19.97	4.96	80.0	± 9.6 %
		Y	5.77	67.89	18.92		80.0	
		Z	6.57	69.95	20.23		80.0	

10303-AAA	IEEE 802.16e WiMAX (31:15, 5ms, 10MHz, 64QAM, PUSC)	X	6.22	69.45	20.09	4.96	80.0	± 9.6 %
		Y	5.58	67.78	18.88		80.0	
		Z	6.47	70.23	20.40		80.0	
10304-AAA	IEEE 802.16e WiMAX (29:18, 5ms, 10MHz, 64QAM, PUSC)	X	5.82	68.59	19.17	4.17	80.0	± 9.6 %
		Y	5.30	67.36	18.23		80.0	
		Z	6.00	69.14	19.36		80.0	
10305-AAA	IEEE 802.16e WiMAX (31:15, 10ms, 10MHz, 64QAM, PUSC, 15 symbols)	X	7.58	77.08	24.20	6.02	50.0	± 9.6 %
		Y	6.71	75.99	23.36		50.0	
		Z	8.94	80.39	25.44		50.0	
10306-AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, 64QAM, PUSC, 18 symbols)	X	6.74	72.69	22.39	6.02	50.0	± 9.6 %
		Y	6.02	71.61	21.57		50.0	
		Z	7.38	74.60	23.18		50.0	
10307-AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, QPSK, PUSC, 18 symbols)	X	6.88	73.57	22.61	6.02	50.0	± 9.6 %
		Y	6.12	72.48	21.82		50.0	
		Z	7.63	75.68	23.46		50.0	
10308-AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, 16QAM, PUSC)	X	6.95	74.06	22.85	6.02	50.0	± 9.6 %
		Y	6.19	73.01	22.10		50.0	
		Z	7.77	76.32	23.75		50.0	
10309-AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, 16QAM, AMC 2x3, 18 symbols)	X	6.88	73.08	22.59	6.02	50.0	± 9.6 %
		Y	5.75	69.67	20.38		50.0	
		Z	7.54	75.02	23.39		50.0	
10310-AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, QPSK, AMC 2x3, 18 symbols)	X	6.76	72.98	22.43	6.02	50.0	± 9.6 %
		Y	6.05	71.97	21.66		50.0	
		Z	7.45	74.97	23.24		50.0	
10311-AAB	LTE-FDD (SC-FDMA, 100% RB, 15 MHz, QPSK)	X	3.46	70.38	16.96	0.00	150.0	± 9.6 %
		Y	3.29	70.15	16.82		150.0	
		Z	3.26	69.20	16.26		150.0	
10313-AAA	IDEN 1:3	X	8.57	80.77	19.81	6.99	70.0	± 9.6 %
		Y	7.42	78.97	18.59		70.0	
		Z	7.51	78.37	19.04		70.0	
10314-AAA	IDEN 1:6	X	11.07	87.09	24.45	10.00	30.0	± 9.6 %
		Y	12.16	89.30	24.68		30.0	
		Z	8.76	82.33	22.85		30.0	
10315-AAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps, 96pc duty cycle)	X	1.21	65.47	16.38	0.17	150.0	± 9.6 %
		Y	1.17	65.32	16.10		150.0	
		Z	1.18	64.56	15.52		150.0	
10316-AAB	IEEE 802.11g WiFi 2.4 GHz (ERP-OFDM, 6 Mbps, 96pc duty cycle)	X	4.82	67.11	16.64	0.17	150.0	± 9.6 %
		Y	4.66	67.15	16.49		150.0	
		Z	4.80	66.95	16.46		150.0	
10317-AAB	IEEE 802.11a WiFi 5 GHz (OFDM, 6 Mbps, 96pc duty cycle)	X	4.82	67.11	16.64	0.17	150.0	± 9.6 %
		Y	4.66	67.15	16.49		150.0	
		Z	4.80	66.95	16.46		150.0	
10400-AAC	IEEE 802.11ac WiFi (20MHz, 64-QAM, 99pc duty cycle)	X	4.93	67.37	16.55	0.00	150.0	± 9.6 %
		Y	4.75	67.39	16.43		150.0	
		Z	4.90	67.18	16.37		150.0	
10401-AAC	IEEE 802.11ac WiFi (40MHz, 64-QAM, 99pc duty cycle)	X	5.56	67.43	16.63	0.00	150.0	± 9.6 %
		Y	5.44	67.54	16.57		150.0	
		Z	5.53	67.31	16.49		150.0	

10402-AAC	IEEE 802.11ac WiFi (80MHz, 64-QAM, 99pc duty cycle)	X	5.86	67.95	16.72	0.00	150.0	± 9.6 %
		Y	5.70	67.88	16.59		150.0	
		Z	5.83	67.79	16.56		150.0	
10403-AAB	CDMA2000 (1xEV-DO, Rev. 0)	X	2.00	72.56	16.71	0.00	115.0	± 9.6 %
		Y	1.81	72.10	15.72		115.0	
		Z	1.64	69.27	14.92		115.0	
10404-AAB	CDMA2000 (1xEV-DO, Rev. A)	X	2.00	72.56	16.71	0.00	115.0	± 9.6 %
		Y	1.81	72.10	15.72		115.0	
		Z	1.64	69.27	14.92		115.0	
10406-AAB	CDMA2000, RC3, SO32, SCH0, Full Rate	X	100.00	125.12	32.45	0.00	100.0	± 9.6 %
		Y	100.00	117.90	28.49		100.0	
		Z	100.00	124.11	32.05		100.0	
10410-AAB	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	100.00	121.42	31.29	3.23	80.0	± 9.6 %
		Y	100.00	118.14	29.02		80.0	
		Z	100.00	121.09	31.26		80.0	
10415-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps, 99pc duty cycle)	X	1.05	63.84	15.45	0.00	150.0	± 9.6 %
		Y	1.03	63.83	15.26		150.0	
		Z	1.03	63.06	14.64		150.0	
10416-AAA	IEEE 802.11g WiFi 2.4 GHz (ERP-OFDM, 6 Mbps, 99pc duty cycle)	X	4.72	66.95	16.47	0.00	150.0	± 9.6 %
		Y	4.58	67.06	16.39		150.0	
		Z	4.69	66.77	16.29		150.0	
10417-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps, 99pc duty cycle)	X	4.72	66.95	16.47	0.00	150.0	± 9.6 %
		Y	4.58	67.06	16.39		150.0	
		Z	4.69	66.77	16.29		150.0	
10418-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps, 99pc duty cycle, Long preamble)	X	4.71	67.09	16.48	0.00	150.0	± 9.6 %
		Y	4.57	67.23	16.41		150.0	
		Z	4.67	66.90	16.28		150.0	
10419-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps, 99pc duty cycle, Short preamble)	X	4.73	67.05	16.49	0.00	150.0	± 9.6 %
		Y	4.59	67.17	16.41		150.0	
		Z	4.70	66.86	16.30		150.0	
10422-AAA	IEEE 802.11n (HT Greenfield, 7.2 Mbps, BPSK)	X	4.86	67.05	16.50	0.00	150.0	± 9.6 %
		Y	4.71	67.16	16.42		150.0	
		Z	4.82	66.88	16.32		150.0	
10423-AAA	IEEE 802.11n (HT Greenfield, 43.3 Mbps, 16-QAM)	X	5.07	67.45	16.64	0.00	150.0	± 9.6 %
		Y	4.88	67.49	16.53		150.0	
		Z	5.03	67.26	16.46		150.0	
10424-AAA	IEEE 802.11n (HT Greenfield, 72.2 Mbps, 64-QAM)	X	4.97	67.38	16.61	0.00	150.0	± 9.6 %
		Y	4.80	67.44	16.51		150.0	
		Z	4.94	67.19	16.42		150.0	
10425-AAA	IEEE 802.11n (HT Greenfield, 15 Mbps, BPSK)	X	5.55	67.72	16.76	0.00	150.0	± 9.6 %
		Y	5.40	67.74	16.67		150.0	
		Z	5.52	67.56	16.60		150.0	
10426-AAA	IEEE 802.11n (HT Greenfield, 90 Mbps, 16-QAM)	X	5.56	67.76	16.77	0.00	150.0	± 9.6 %
		Y	5.41	67.76	16.67		150.0	
		Z	5.53	67.59	16.61		150.0	

10427-AAA	IEEE 802.11n (HT Greenfield, 150 Mbps, 64-QAM)	X	5.58	67.76	16.77	0.00	150.0	± 9.6 %
		Y	5.42	67.74	16.66		150.0	
		Z	5.55	67.59	16.61		150.0	
10430-AAA	LTE-FDD (OFDMA, 5 MHz, E-TM 3.1)	X	4.39	70.34	18.26	0.00	150.0	± 9.6 %
		Y	4.45	71.92	18.77		150.0	
		Z	4.28	69.73	17.80		150.0	
10431-AAA	LTE-FDD (OFDMA, 10 MHz, E-TM 3.1)	X	4.47	67.55	16.57	0.00	150.0	± 9.6 %
		Y	4.28	67.68	16.44		150.0	
		Z	4.42	67.30	16.33		150.0	
10432-AAA	LTE-FDD (OFDMA, 15 MHz, E-TM 3.1)	X	4.75	67.43	16.59	0.00	150.0	± 9.6 %
		Y	4.57	67.51	16.47		150.0	
		Z	4.71	67.22	16.38		150.0	
10433-AAA	LTE-FDD (OFDMA, 20 MHz, E-TM 3.1)	X	4.99	67.43	16.63	0.00	150.0	± 9.6 %
		Y	4.82	67.48	16.53		150.0	
		Z	4.95	67.24	16.45		150.0	
10434-AAA	W-CDMA (BS Test Model 1, 64 DPCH)	X	4.48	71.07	18.26	0.00	150.0	± 9.6 %
		Y	4.62	73.01	18.85		150.0	
		Z	4.34	70.35	17.75		150.0	
10435-AAB	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	100.00	121.26	31.21	3.23	80.0	± 9.6 %
		Y	100.00	117.94	28.93		80.0	
		Z	100.00	120.94	31.19		80.0	
10447-AAA	LTE-FDD (OFDMA, 5 MHz, E-TM 3.1, Clipping 44%)	X	3.79	67.68	16.16	0.00	150.0	± 9.6 %
		Y	3.59	67.83	15.87		150.0	
		Z	3.72	67.28	15.81		150.0	
10448-AAA	LTE-FDD (OFDMA, 10 MHz, E-TM 3.1, Clipping 44%)	X	4.28	67.32	16.43	0.00	150.0	± 9.6 %
		Y	4.12	67.46	16.30		150.0	
		Z	4.23	67.06	16.18		150.0	
10449-AAA	LTE-FDD (OFDMA, 15 MHz, E-TM 3.1, Clipping 44%)	X	4.53	67.25	16.49	0.00	150.0	± 9.6 %
		Y	4.38	67.35	16.38		150.0	
		Z	4.49	67.03	16.27		150.0	
10450-AAA	LTE-FDD (OFDMA, 20 MHz, E-TM 3.1, Clipping 44%)	X	4.71	67.18	16.49	0.00	150.0	± 9.6 %
		Y	4.57	67.25	16.39		150.0	
		Z	4.68	66.98	16.29		150.0	
10451-AAA	W-CDMA (BS Test Model 1, 64 DPCH, Clipping 44%)	X	3.73	68.01	15.94	0.00	150.0	± 9.6 %
		Y	3.50	68.08	15.53		150.0	
		Z	3.65	67.53	15.55		150.0	
10456-AAA	IEEE 802.11ac WiFi (160MHz, 64-QAM, 99pc duty cycle)	X	6.41	68.33	16.92	0.00	150.0	± 9.6 %
		Y	6.26	68.26	16.79		150.0	
		Z	6.38	68.19	16.79		150.0	
10457-AAA	UMTS-FDD (DC-HSDPA)	X	3.89	65.58	16.22	0.00	150.0	± 9.6 %
		Y	3.82	65.69	16.10		150.0	
		Z	3.87	65.41	16.01		150.0	
10458-AAA	CDMA2000 (1xEV-DO, Rev. B, 2 carriers)	X	3.54	67.26	15.47	0.00	150.0	± 9.6 %
		Y	3.31	67.35	14.92		150.0	
		Z	3.47	66.87	15.11		150.0	
10459-AAA	CDMA2000 (1xEV-DO, Rev. B, 3 carriers)	X	4.64	65.34	16.09	0.00	150.0	± 9.6 %
		Y	4.30	65.17	15.60		150.0	
		Z	4.52	64.85	15.72		150.0	

10460-AAA	UMTS-FDD (WCDMA, AMR)	X	1.11	71.80	18.35	0.00	150.0	± 9.6 %
		Y	1.02	70.94	17.72		150.0	
		Z	0.94	68.21	16.13		150.0	
10461-AAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	100.00	125.25	33.13	3.29	80.0	± 9.6 %
		Y	100.00	123.29	31.43		80.0	
		Z	100.00	123.80	32.59		80.0	
10462-AAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	100.00	111.09	26.31	3.23	80.0	± 9.6 %
		Y	100.00	103.84	22.21		80.0	
		Z	100.00	110.71	26.28		80.0	
10463-AAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	100.00	108.22	24.94	3.23	80.0	± 9.6 %
		Y	4.72	73.15	13.51		80.0	
		Z	72.14	104.46	24.20		80.0	
10464-AAA	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	100.00	123.51	32.16	3.23	80.0	± 9.6 %
		Y	100.00	120.82	30.14		80.0	
		Z	100.00	122.14	31.67		80.0	
10465-AAA	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	100.00	110.62	26.08	3.23	80.0	± 9.6 %
		Y	27.97	91.21	19.17		80.0	
		Z	100.00	110.30	26.07		80.0	
10466-AAA	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	100.00	107.77	24.72	3.23	80.0	± 9.6 %
		Y	3.48	70.24	12.45		80.0	
		Z	39.27	97.36	22.41		80.0	
10467-AAB	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	100.00	123.71	32.25	3.23	80.0	± 9.6 %
		Y	100.00	121.09	30.25		80.0	
		Z	100.00	122.32	31.75		80.0	
10468-AAB	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	100.00	110.77	26.14	3.23	80.0	± 9.6 %
		Y	40.47	94.85	20.08		80.0	
		Z	100.00	110.43	26.13		80.0	
10469-AAB	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	100.00	107.78	24.72	3.23	80.0	± 9.6 %
		Y	3.50	70.33	12.47		80.0	
		Z	40.62	97.74	22.51		80.0	
10470-AAB	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	100.00	123.74	32.26	3.23	80.0	± 9.6 %
		Y	100.00	121.11	30.26		80.0	
		Z	100.00	122.35	31.76		80.0	
10471-AAB	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	100.00	110.72	26.12	3.23	80.0	± 9.6 %
		Y	38.79	94.39	19.96		80.0	
		Z	100.00	110.39	26.11		80.0	
10472-AAB	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	100.00	107.74	24.69	3.23	80.0	± 9.6 %
		Y	3.46	70.20	12.41		80.0	
		Z	40.93	97.80	22.51		80.0	
10473-AAB	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	100.00	123.71	32.25	3.23	80.0	± 9.6 %
		Y	100.00	121.07	30.24		80.0	
		Z	100.00	122.32	31.75		80.0	
10474-AAB	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	100.00	110.73	26.12	3.23	80.0	± 9.6 %
		Y	37.59	94.10	19.89		80.0	
		Z	100.00	110.40	26.11		80.0	
10475-AAB	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	100.00	107.75	24.70	3.23	80.0	± 9.6 %
		Y	3.43	70.14	12.40		80.0	
		Z	40.21	97.61	22.46		80.0	

10477-AAB	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	100.00	110.58	26.05	3.23	80.0	± 9.6 %
		Y	28.26	91.26	19.16		80.0	
		Z	100.00	110.26	26.05		80.0	
10478-AAB	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	100.00	107.71	24.68	3.23	80.0	± 9.6 %
		Y	3.38	69.99	12.33		80.0	
		Z	39.53	97.39	22.40		80.0	
10479-AAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	16.61	96.96	27.34	3.23	80.0	± 9.6 %
		Y	32.48	106.45	28.76		80.0	
		Z	11.40	90.02	25.04		80.0	
10480-AAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	20.13	94.40	24.94	3.23	80.0	± 9.6 %
		Y	34.21	99.63	24.79		80.0	
		Z	12.99	87.40	22.71		80.0	
10481-AAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	17.26	91.33	23.70	3.23	80.0	± 9.6 %
		Y	20.52	91.89	22.28		80.0	
		Z	11.58	85.08	21.67		80.0	
10482-AAA	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	7.19	82.36	21.43	2.23	80.0	± 9.6 %
		Y	6.22	80.40	19.88		80.0	
		Z	5.41	77.39	19.43		80.0	
10483-AAA	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	10.36	84.69	22.14	2.23	80.0	± 9.6 %
		Y	9.30	82.35	20.02		80.0	
		Z	8.11	80.45	20.55		80.0	
10484-AAA	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	9.50	83.16	21.63	2.23	80.0	± 9.6 %
		Y	8.10	80.30	19.34		80.0	
		Z	7.64	79.37	20.17		80.0	
10485-AAB	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	7.05	82.24	22.03	2.23	80.0	± 9.6 %
		Y	6.34	81.22	21.08		80.0	
		Z	5.64	78.03	20.28		80.0	
10486-AAB	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	5.27	74.77	19.00	2.23	80.0	± 9.6 %
		Y	4.82	74.06	18.02		80.0	
		Z	4.76	72.67	17.96		80.0	
10487-AAB	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	5.20	74.21	18.78	2.23	80.0	± 9.6 %
		Y	4.72	73.41	17.75		80.0	
		Z	4.74	72.26	17.79		80.0	
10488-AAB	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	6.49	79.45	21.44	2.23	80.0	± 9.6 %
		Y	5.74	78.36	20.74		80.0	
		Z	5.67	76.65	20.18		80.0	
10489-AAB	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	5.12	73.18	19.22	2.23	80.0	± 9.6 %
		Y	4.72	72.73	18.67		80.0	
		Z	4.87	71.89	18.50		80.0	
10490-AAB	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	5.15	72.75	19.07	2.23	80.0	± 9.6 %
		Y	4.76	72.36	18.54		80.0	
		Z	4.93	71.59	18.41		80.0	
10491-AAB	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	5.99	76.19	20.30	2.23	80.0	± 9.6 %
		Y	5.39	75.34	19.75		80.0	
		Z	5.53	74.37	19.41		80.0	
10492-AAB	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	5.26	71.76	18.85	2.23	80.0	± 9.6 %
		Y	4.86	71.30	18.38		80.0	
		Z	5.11	70.90	18.33		80.0	

10493-AAB	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	5.30	71.51	18.76	2.23	80.0	± 9.6 %
		Y	4.91	71.07	18.30		80.0	
		Z	5.17	70.71	18.27		80.0	
10494-AAB	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	6.84	78.43	20.95	2.23	80.0	± 9.6 %
		Y	6.08	77.35	20.35		80.0	
		Z	6.10	76.07	19.88		80.0	
10495-AAB	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	5.38	72.41	19.10	2.23	80.0	± 9.6 %
		Y	4.95	71.82	18.61		80.0	
		Z	5.20	71.44	18.53		80.0	
10496-AAB	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	5.39	71.89	18.93	2.23	80.0	± 9.6 %
		Y	4.98	71.37	18.47		80.0	
		Z	5.24	71.04	18.41		80.0	
10497-AAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	5.97	79.48	19.78	2.23	80.0	± 9.6 %
		Y	4.38	75.06	17.02		80.0	
		Z	4.42	74.52	17.73		80.0	
10498-AAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	4.17	71.56	15.92	2.23	80.0	± 9.6 %
		Y	2.60	65.94	12.29		80.0	
		Z	3.55	68.95	14.65		80.0	
10499-AAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	4.06	70.87	15.52	2.23	80.0	± 9.6 %
		Y	2.47	65.10	11.77		80.0	
		Z	3.49	68.43	14.31		80.0	
10500-AAA	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	6.49	80.29	21.53	2.23	80.0	± 9.6 %
		Y	5.83	79.38	20.74		80.0	
		Z	5.49	76.96	20.08		80.0	
10501-AAA	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	5.17	73.94	19.00	2.23	80.0	± 9.6 %
		Y	4.77	73.47	18.24		80.0	
		Z	4.79	72.25	18.12		80.0	
10502-AAA	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	5.19	73.61	18.84	2.23	80.0	± 9.6 %
		Y	4.79	73.16	18.07		80.0	
		Z	4.83	72.02	17.99		80.0	
10503-AAB	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	6.41	79.23	21.35	2.23	80.0	± 9.6 %
		Y	5.64	78.08	20.63		80.0	
		Z	5.60	76.47	20.11		80.0	
10504-AAB	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	5.09	73.10	19.17	2.23	80.0	± 9.6 %
		Y	4.69	72.61	18.60		80.0	
		Z	4.85	71.82	18.46		80.0	
10505-AAB	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	5.13	72.66	19.02	2.23	80.0	± 9.6 %
		Y	4.73	72.25	18.47		80.0	
		Z	4.91	71.52	18.36		80.0	
10506-AAB	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	6.78	78.28	20.88	2.23	80.0	± 9.6 %
		Y	6.01	77.16	20.27		80.0	
		Z	6.06	75.95	19.82		80.0	
10507-AAB	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	5.36	72.35	19.07	2.23	80.0	± 9.6 %
		Y	4.93	71.74	18.57		80.0	
		Z	5.18	71.38	18.50		80.0	

10508-AAB	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	5.37	71.83	18.89	2.23	80.0	± 9.6 %
		Y	4.96	71.29	18.42		80.0	
		Z	5.23	70.98	18.38		80.0	
10509-AAB	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	6.48	75.49	19.83	2.23	80.0	± 9.6 %
		Y	5.91	74.73	19.37		80.0	
		Z	6.04	73.93	19.06		80.0	
10510-AAB	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	5.74	71.59	18.80	2.23	80.0	± 9.6 %
		Y	5.32	71.00	18.37		80.0	
		Z	5.62	70.87	18.36		80.0	
10511-AAB	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	5.74	71.18	18.68	2.23	80.0	± 9.6 %
		Y	5.33	70.64	18.26		80.0	
		Z	5.63	70.53	18.27		80.0	
10512-AAB	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	7.25	77.99	20.61	2.23	80.0	± 9.6 %
		Y	6.50	76.91	20.04		80.0	
		Z	6.53	75.84	19.64		80.0	
10513-AAB	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	5.72	72.19	19.03	2.23	80.0	± 9.6 %
		Y	5.25	71.45	18.54		80.0	
		Z	5.56	71.34	18.53		80.0	
10514-AAB	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	5.63	71.53	18.83	2.23	80.0	± 9.6 %
		Y	5.21	70.89	18.37		80.0	
		Z	5.51	70.80	18.38		80.0	
10515-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 2 Mbps, 99pc duty cycle)	X	1.02	64.11	15.57	0.00	150.0	± 9.6 %
		Y	1.00	64.07	15.36		150.0	
		Z	0.99	63.25	14.70		150.0	
10516-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 5.5 Mbps, 99pc duty cycle)	X	0.98	79.68	22.01	0.00	150.0	± 9.6 %
		Y	0.77	75.78	20.20		150.0	
		Z	0.64	70.56	17.22		150.0	
10517-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 11 Mbps, 99pc duty cycle)	X	0.91	67.05	16.78	0.00	150.0	± 9.6 %
		Y	0.87	66.61	16.37		150.0	
		Z	0.85	65.23	15.33		150.0	
10518-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 9 Mbps, 99pc duty cycle)	X	4.72	67.03	16.46	0.00	150.0	± 9.6 %
		Y	4.58	67.14	16.37		150.0	
		Z	4.68	66.84	16.27		150.0	
10519-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 12 Mbps, 99pc duty cycle)	X	4.94	67.33	16.60	0.00	150.0	± 9.6 %
		Y	4.77	67.38	16.49		150.0	
		Z	4.90	67.14	16.41		150.0	
10520-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 18 Mbps, 99pc duty cycle)	X	4.79	67.32	16.53	0.00	150.0	± 9.6 %
		Y	4.62	67.35	16.42		150.0	
		Z	4.75	67.11	16.33		150.0	
10521-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 24 Mbps, 99pc duty cycle)	X	4.72	67.33	16.52	0.00	150.0	± 9.6 %
		Y	4.55	67.35	16.41		150.0	
		Z	4.68	67.11	16.32		150.0	
10522-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 36 Mbps, 99pc duty cycle)	X	4.76	67.29	16.55	0.00	150.0	± 9.6 %
		Y	4.61	67.43	16.49		150.0	
		Z	4.73	67.10	16.35		150.0	

10523-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 48 Mbps, 99pc duty cycle)	X	4.64	67.20	16.41	0.00	150.0	± 9.6 %
		Y	4.49	67.31	16.34		150.0	
		Z	4.60	66.98	16.20		150.0	
10524-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 54 Mbps, 99pc duty cycle)	X	4.72	67.26	16.54	0.00	150.0	± 9.6 %
		Y	4.55	67.35	16.45		150.0	
		Z	4.68	67.06	16.34		150.0	
10525-AAA	IEEE 802.11ac WiFi (20MHz, MCS0, 99pc duty cycle)	X	4.67	66.28	16.12	0.00	150.0	± 9.6 %
		Y	4.54	66.41	16.05		150.0	
		Z	4.64	66.07	15.92		150.0	
10526-AAA	IEEE 802.11ac WiFi (20MHz, MCS1, 99pc duty cycle)	X	4.88	66.69	16.27	0.00	150.0	± 9.6 %
		Y	4.71	66.78	16.19		150.0	
		Z	4.84	66.48	16.07		150.0	
10527-AAA	IEEE 802.11ac WiFi (20MHz, MCS2, 99pc duty cycle)	X	4.79	66.67	16.23	0.00	150.0	± 9.6 %
		Y	4.64	66.75	16.14		150.0	
		Z	4.75	66.45	16.02		150.0	
10528-AAA	IEEE 802.11ac WiFi (20MHz, MCS3, 99pc duty cycle)	X	4.81	66.69	16.26	0.00	150.0	± 9.6 %
		Y	4.65	66.76	16.17		150.0	
		Z	4.77	66.47	16.05		150.0	
10529-AAA	IEEE 802.11ac WiFi (20MHz, MCS4, 99pc duty cycle)	X	4.81	66.69	16.26	0.00	150.0	± 9.6 %
		Y	4.65	66.76	16.17		150.0	
		Z	4.77	66.47	16.05		150.0	
10531-AAA	IEEE 802.11ac WiFi (20MHz, MCS6, 99pc duty cycle)	X	4.83	66.85	16.29	0.00	150.0	± 9.6 %
		Y	4.65	66.88	16.19		150.0	
		Z	4.78	66.62	16.08		150.0	
10532-AAA	IEEE 802.11ac WiFi (20MHz, MCS7, 99pc duty cycle)	X	4.68	66.72	16.24	0.00	150.0	± 9.6 %
		Y	4.51	66.74	16.13		150.0	
		Z	4.63	66.47	16.02		150.0	
10533-AAA	IEEE 802.11ac WiFi (20MHz, MCS8, 99pc duty cycle)	X	4.83	66.71	16.24	0.00	150.0	± 9.6 %
		Y	4.66	66.81	16.16		150.0	
		Z	4.78	66.49	16.03		150.0	
10534-AAA	IEEE 802.11ac WiFi (40MHz, MCS0, 99pc duty cycle)	X	5.33	66.83	16.29	0.00	150.0	± 9.6 %
		Y	5.18	66.84	16.20		150.0	
		Z	5.29	66.64	16.12		150.0	
10535-AAA	IEEE 802.11ac WiFi (40MHz, MCS1, 99pc duty cycle)	X	5.40	66.97	16.35	0.00	150.0	± 9.6 %
		Y	5.25	67.01	16.28		150.0	
		Z	5.36	66.78	16.17		150.0	
10536-AAA	IEEE 802.11ac WiFi (40MHz, MCS2, 99pc duty cycle)	X	5.27	66.97	16.34	0.00	150.0	± 9.6 %
		Y	5.12	66.97	16.25		150.0	
		Z	5.23	66.76	16.15		150.0	
10537-AAA	IEEE 802.11ac WiFi (40MHz, MCS3, 99pc duty cycle)	X	5.33	66.94	16.32	0.00	150.0	± 9.6 %
		Y	5.18	66.94	16.23		150.0	
		Z	5.29	66.75	16.14		150.0	
10538-AAA	IEEE 802.11ac WiFi (40MHz, MCS4, 99pc duty cycle)	X	5.45	67.02	16.40	0.00	150.0	± 9.6 %
		Y	5.27	66.95	16.28		150.0	
		Z	5.41	66.83	16.23		150.0	
10540-AAA	IEEE 802.11ac WiFi (40MHz, MCS6, 99pc duty cycle)	X	5.35	66.96	16.39	0.00	150.0	± 9.6 %
		Y	5.20	66.97	16.30		150.0	
		Z	5.31	66.77	16.21		150.0	

10541-AAA	IEEE 802.11ac WiFi (40MHz, MCS7, 99pc duty cycle)	X	5.33	66.87	16.34	0.00	150.0	± 9.6 %
		Y	5.17	66.84	16.23		150.0	
		Z	5.29	66.67	16.16		150.0	
10542-AAA	IEEE 802.11ac WiFi (40MHz, MCS8, 99pc duty cycle)	X	5.48	66.90	16.37	0.00	150.0	± 9.6 %
		Y	5.32	66.90	16.27		150.0	
		Z	5.44	66.72	16.20		150.0	
10543-AAA	IEEE 802.11ac WiFi (40MHz, MCS9, 99pc duty cycle)	X	5.56	66.90	16.38	0.00	150.0	± 9.6 %
		Y	5.40	66.93	16.30		150.0	
		Z	5.52	66.73	16.22		150.0	
10544-AAA	IEEE 802.11ac WiFi (80MHz, MCS0, 99pc duty cycle)	X	5.60	66.92	16.27	0.00	150.0	± 9.6 %
		Y	5.49	66.94	16.19		150.0	
		Z	5.57	66.75	16.10		150.0	
10545-AAA	IEEE 802.11ac WiFi (80MHz, MCS1, 99pc duty cycle)	X	5.82	67.35	16.42	0.00	150.0	± 9.6 %
		Y	5.68	67.35	16.34		150.0	
		Z	5.79	67.18	16.26		150.0	
10546-AAA	IEEE 802.11ac WiFi (80MHz, MCS2, 99pc duty cycle)	X	5.71	67.23	16.38	0.00	150.0	± 9.6 %
		Y	5.56	67.16	16.26		150.0	
		Z	5.67	67.04	16.21		150.0	
10547-AAA	IEEE 802.11ac WiFi (80MHz, MCS3, 99pc duty cycle)	X	5.79	67.29	16.40	0.00	150.0	± 9.6 %
		Y	5.63	67.19	16.27		150.0	
		Z	5.75	67.11	16.24		150.0	
10548-AAA	IEEE 802.11ac WiFi (80MHz, MCS4, 99pc duty cycle)	X	6.16	68.54	17.00	0.00	150.0	± 9.6 %
		Y	5.89	68.14	16.71		150.0	
		Z	6.10	68.32	16.82		150.0	
10550-AAA	IEEE 802.11ac WiFi (80MHz, MCS6, 99pc duty cycle)	X	5.72	67.17	16.36	0.00	150.0	± 9.6 %
		Y	5.58	67.16	16.27		150.0	
		Z	5.68	66.99	16.19		150.0	
10551-AAA	IEEE 802.11ac WiFi (80MHz, MCS7, 99pc duty cycle)	X	5.74	67.28	16.37	0.00	150.0	± 9.6 %
		Y	5.59	67.21	16.26		150.0	
		Z	5.70	67.08	16.20		150.0	
10552-AAA	IEEE 802.11ac WiFi (80MHz, MCS8, 99pc duty cycle)	X	5.64	67.02	16.26	0.00	150.0	± 9.6 %
		Y	5.50	67.01	16.17		150.0	
		Z	5.60	66.83	16.09		150.0	
10553-AAA	IEEE 802.11ac WiFi (80MHz, MCS9, 99pc duty cycle)	X	5.73	67.06	16.31	0.00	150.0	± 9.6 %
		Y	5.58	67.04	16.21		150.0	
		Z	5.69	66.89	16.15		150.0	
10554-AAA	IEEE 1602.11ac WiFi (160MHz, MCS0, 99pc duty cycle)	X	6.01	67.31	16.36	0.00	150.0	± 9.6 %
		Y	5.89	67.29	16.27		150.0	
		Z	5.97	67.14	16.21		150.0	
10555-AAA	IEEE 1602.11ac WiFi (160MHz, MCS1, 99pc duty cycle)	X	6.16	67.66	16.51	0.00	150.0	± 9.6 %
		Y	6.02	67.59	16.39		150.0	
		Z	6.12	67.49	16.35		150.0	
10556-AAA	IEEE 1602.11ac WiFi (160MHz, MCS2, 99pc duty cycle)	X	6.17	67.67	16.51	0.00	150.0	± 9.6 %
		Y	6.04	67.64	16.41		150.0	
		Z	6.14	67.50	16.35		150.0	
10557-AAA	IEEE 1602.11ac WiFi (160MHz, MCS3, 99pc duty cycle)	X	6.16	67.64	16.52	0.00	150.0	± 9.6 %
		Y	6.01	67.55	16.38		150.0	
		Z	6.12	67.46	16.36		150.0	

10558-AAA	IEEE 1602.11ac WiFi (160MHz, MCS4, 99pc duty cycle)	X	6.23	67.85	16.64	0.00	150.0	± 9.6 %
		Y	6.06	67.71	16.48		150.0	
		Z	6.19	67.66	16.47		150.0	
10560-AAA	IEEE 1602.11ac WiFi (160MHz, MCS6, 99pc duty cycle)	X	6.21	67.65	16.58	0.00	150.0	± 9.6 %
		Y	6.05	67.56	16.44		150.0	
		Z	6.17	67.48	16.42		150.0	
10561-AAA	IEEE 1602.11ac WiFi (160MHz, MCS7, 99pc duty cycle)	X	6.12	67.61	16.60	0.00	150.0	± 9.6 %
		Y	5.97	67.52	16.46		150.0	
		Z	6.09	67.44	16.44		150.0	
10562-AAA	IEEE 1602.11ac WiFi (160MHz, MCS8, 99pc duty cycle)	X	6.30	68.15	16.87	0.00	150.0	± 9.6 %
		Y	6.10	67.92	16.66		150.0	
		Z	6.26	67.96	16.71		150.0	
10563-AAA	IEEE 1602.11ac WiFi (160MHz, MCS9, 99pc duty cycle)	X	6.62	68.62	17.05	0.00	150.0	± 9.6 %
		Y	6.35	68.25	16.78		150.0	
		Z	6.58	68.47	16.91		150.0	
10564-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 9 Mbps, 99pc duty cycle)	X	5.06	67.17	16.65	0.46	150.0	± 9.6 %
		Y	4.90	67.19	16.50		150.0	
		Z	5.03	67.02	16.49		150.0	
10565-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 12 Mbps, 99pc duty cycle)	X	5.32	67.64	16.96	0.46	150.0	± 9.6 %
		Y	5.14	67.66	16.84		150.0	
		Z	5.29	67.48	16.80		150.0	
10566-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 18 Mbps, 99pc duty cycle)	X	5.16	67.53	16.80	0.46	150.0	± 9.6 %
		Y	4.97	67.52	16.66		150.0	
		Z	5.12	67.36	16.63		150.0	
10567-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 24 Mbps, 99pc duty cycle)	X	5.18	67.87	17.11	0.46	150.0	± 9.6 %
		Y	5.01	67.94	17.03		150.0	
		Z	5.14	67.68	16.93		150.0	
10568-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 36 Mbps, 99pc duty cycle)	X	5.07	67.28	16.58	0.46	150.0	± 9.6 %
		Y	4.89	67.27	16.41		150.0	
		Z	5.04	67.14	16.42		150.0	
10569-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 48 Mbps, 99pc duty cycle)	X	5.11	67.89	17.13	0.46	150.0	± 9.6 %
		Y	4.97	68.06	17.11		150.0	
		Z	5.08	67.69	16.94		150.0	
10570-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 54 Mbps, 99pc duty cycle)	X	5.16	67.75	17.08	0.46	150.0	± 9.6 %
		Y	5.00	67.87	17.02		150.0	
		Z	5.13	67.56	16.90		150.0	
10571-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps, 90pc duty cycle)	X	1.41	67.04	17.13	0.46	130.0	± 9.6 %
		Y	1.34	66.60	16.67		130.0	
		Z	1.38	66.01	16.24		130.0	
10572-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 2 Mbps, 90pc duty cycle)	X	1.44	67.79	17.55	0.46	130.0	± 9.6 %
		Y	1.37	67.37	17.11		130.0	
		Z	1.40	66.61	16.58		130.0	
10573-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 5.5 Mbps, 90pc duty cycle)	X	48.76	135.45	36.87	0.46	130.0	± 9.6 %
		Y	13.63	114.31	31.46		130.0	
		Z	3.91	91.83	24.74		130.0	
10574-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 11 Mbps, 90pc duty cycle)	X	1.88	76.30	21.44	0.46	130.0	± 9.6 %
		Y	1.78	75.95	21.10		130.0	
		Z	1.63	72.68	19.39		130.0	

10575-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps, 90pc duty cycle)	X	4.87	67.03	16.75	0.46	130.0	± 9.6 %
		Y	4.71	67.06	16.59		130.0	
		Z	4.85	66.89	16.59		130.0	
10576-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 9 Mbps, 90pc duty cycle)	X	4.90	67.18	16.80	0.46	130.0	± 9.6 %
		Y	4.74	67.24	16.66		130.0	
		Z	4.88	67.03	16.63		130.0	
10577-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 12 Mbps, 90pc duty cycle)	X	5.14	67.51	16.98	0.46	130.0	± 9.6 %
		Y	4.95	67.52	16.83		130.0	
		Z	5.11	67.36	16.82		130.0	
10578-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 18 Mbps, 90pc duty cycle)	X	5.03	67.68	17.07	0.46	130.0	± 9.6 %
		Y	4.85	67.72	16.95		130.0	
		Z	5.00	67.50	16.89		130.0	
10579-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 24 Mbps, 90pc duty cycle)	X	4.82	67.12	16.49	0.46	130.0	± 9.6 %
		Y	4.61	66.97	16.24		130.0	
		Z	4.79	66.96	16.33		130.0	
10580-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 36 Mbps, 90pc duty cycle)	X	4.86	67.08	16.49	0.46	130.0	± 9.6 %
		Y	4.65	66.99	16.25		130.0	
		Z	4.84	66.94	16.33		130.0	
10581-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 48 Mbps, 90pc duty cycle)	X	4.94	67.77	17.04	0.46	130.0	± 9.6 %
		Y	4.75	67.79	16.91		130.0	
		Z	4.91	67.57	16.84		130.0	
10582-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 54 Mbps, 90pc duty cycle)	X	4.77	66.89	16.31	0.46	130.0	± 9.6 %
		Y	4.55	66.70	16.01		130.0	
		Z	4.75	66.75	16.15		130.0	
10583-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps, 90pc duty cycle)	X	4.87	67.03	16.75	0.46	130.0	± 9.6 %
		Y	4.71	67.06	16.59		130.0	
		Z	4.85	66.89	16.59		130.0	
10584-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 9 Mbps, 90pc duty cycle)	X	4.90	67.18	16.80	0.46	130.0	± 9.6 %
		Y	4.74	67.24	16.66		130.0	
		Z	4.88	67.03	16.63		130.0	
10585-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 12 Mbps, 90pc duty cycle)	X	5.14	67.51	16.98	0.46	130.0	± 9.6 %
		Y	4.95	67.52	16.83		130.0	
		Z	5.11	67.36	16.82		130.0	
10586-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 18 Mbps, 90pc duty cycle)	X	5.03	67.68	17.07	0.46	130.0	± 9.6 %
		Y	4.85	67.72	16.95		130.0	
		Z	5.00	67.50	16.89		130.0	
10587-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 24 Mbps, 90pc duty cycle)	X	4.82	67.12	16.49	0.46	130.0	± 9.6 %
		Y	4.61	66.97	16.24		130.0	
		Z	4.79	66.96	16.33		130.0	
10588-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 36 Mbps, 90pc duty cycle)	X	4.86	67.08	16.49	0.46	130.0	± 9.6 %
		Y	4.65	66.99	16.25		130.0	
		Z	4.84	66.94	16.33		130.0	
10589-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 48 Mbps, 90pc duty cycle)	X	4.94	67.77	17.04	0.46	130.0	± 9.6 %
		Y	4.75	67.79	16.91		130.0	
		Z	4.91	67.57	16.84		130.0	
10590-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 54 Mbps, 90pc duty cycle)	X	4.77	66.89	16.31	0.46	130.0	± 9.6 %
		Y	4.55	66.70	16.01		130.0	
		Z	4.75	66.75	16.15		130.0	

10591-AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS0, 90pc duty cycle)	X	5.02	67.07	16.83	0.46	130.0	± 9.6 %
		Y	4.86	67.11	16.68		130.0	
		Z	5.00	66.93	16.67		130.0	
10592-AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS1, 90pc duty cycle)	X	5.20	67.42	16.95	0.46	130.0	± 9.6 %
		Y	5.02	67.45	16.81		130.0	
		Z	5.17	67.28	16.79		130.0	
10593-AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS2, 90pc duty cycle)	X	5.13	67.39	16.87	0.46	130.0	± 9.6 %
		Y	4.94	67.36	16.70		130.0	
		Z	5.11	67.24	16.71		130.0	
10594-AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS3, 90pc duty cycle)	X	5.18	67.52	17.00	0.46	130.0	± 9.6 %
		Y	5.00	67.54	16.86		130.0	
		Z	5.15	67.37	16.84		130.0	
10595-AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS4, 90pc duty cycle)	X	5.16	67.51	16.92	0.46	130.0	± 9.6 %
		Y	4.97	67.49	16.75		130.0	
		Z	5.13	67.35	16.75		130.0	
10596-AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS5, 90pc duty cycle)	X	5.10	67.51	16.92	0.46	130.0	± 9.6 %
		Y	4.90	67.49	16.76		130.0	
		Z	5.07	67.36	16.76		130.0	
10597-AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS6, 90pc duty cycle)	X	5.05	67.46	16.83	0.46	130.0	± 9.6 %
		Y	4.85	67.39	16.64		130.0	
		Z	5.02	67.30	16.67		130.0	
10598-AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS7, 90pc duty cycle)	X	5.03	67.69	17.08	0.46	130.0	± 9.6 %
		Y	4.84	67.66	16.92		130.0	
		Z	5.00	67.51	16.90		130.0	
10599-AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS0, 90pc duty cycle)	X	5.70	67.69	17.03	0.46	130.0	± 9.6 %
		Y	5.52	67.61	16.86		130.0	
		Z	5.67	67.57	16.89		130.0	
10600-AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS1, 90pc duty cycle)	X	5.93	68.39	17.35	0.46	130.0	± 9.6 %
		Y	5.66	68.03	17.04		130.0	
		Z	5.89	68.22	17.20		130.0	
10601-AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS2, 90pc duty cycle)	X	5.76	67.96	17.15	0.46	130.0	± 9.6 %
		Y	5.55	67.79	16.94		130.0	
		Z	5.73	67.82	17.01		130.0	
10602-AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS3, 90pc duty cycle)	X	5.85	67.98	17.08	0.46	130.0	± 9.6 %
		Y	5.64	67.79	16.85		130.0	
		Z	5.82	67.84	16.94		130.0	
10603-AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS4, 90pc duty cycle)	X	5.95	68.31	17.37	0.46	130.0	± 9.6 %
		Y	5.73	68.12	17.15		130.0	
		Z	5.91	68.13	17.20		130.0	
10604-AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS5, 90pc duty cycle)	X	5.70	67.66	17.03	0.46	130.0	± 9.6 %
		Y	5.53	67.58	16.87		130.0	
		Z	5.68	67.53	16.89		130.0	
10605-AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS6, 90pc duty cycle)	X	5.82	67.98	17.20	0.46	130.0	± 9.6 %
		Y	5.64	67.90	17.03		130.0	
		Z	5.79	67.85	17.07		130.0	
10606-AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS7, 90pc duty cycle)	X	5.59	67.45	16.81	0.46	130.0	± 9.6 %
		Y	5.39	67.26	16.56		130.0	
		Z	5.56	67.33	16.68		130.0	

10607-AAA	IEEE 802.11ac WiFi (20MHz, MCS0, 90pc duty cycle)	X	4.85	66.37	16.44	0.46	130.0	± 9.6 %
		Y	4.70	66.44	16.32		130.0	
		Z	4.82	66.20	16.26		130.0	
10608-AAA	IEEE 802.11ac WiFi (20MHz, MCS1, 90pc duty cycle)	X	5.07	66.80	16.60	0.46	130.0	± 9.6 %
		Y	4.89	66.85	16.48		130.0	
		Z	5.04	66.63	16.42		130.0	
10609-AAA	IEEE 802.11ac WiFi (20MHz, MCS2, 90pc duty cycle)	X	4.96	66.70	16.47	0.46	130.0	± 9.6 %
		Y	4.78	66.70	16.32		130.0	
		Z	4.93	66.52	16.29		130.0	
10610-AAA	IEEE 802.11ac WiFi (20MHz, MCS3, 90pc duty cycle)	X	5.01	66.84	16.62	0.46	130.0	± 9.6 %
		Y	4.83	66.87	16.49		130.0	
		Z	4.98	66.66	16.44		130.0	
10611-AAA	IEEE 802.11ac WiFi (20MHz, MCS4, 90pc duty cycle)	X	4.94	66.69	16.49	0.46	130.0	± 9.6 %
		Y	4.75	66.67	16.34		130.0	
		Z	4.91	66.51	16.31		130.0	
10612-AAA	IEEE 802.11ac WiFi (20MHz, MCS5, 90pc duty cycle)	X	4.96	66.85	16.54	0.46	130.0	± 9.6 %
		Y	4.76	66.83	16.38		130.0	
		Z	4.92	66.67	16.36		130.0	
10613-AAA	IEEE 802.11ac WiFi (20MHz, MCS6, 90pc duty cycle)	X	4.97	66.79	16.45	0.46	130.0	± 9.6 %
		Y	4.76	66.71	16.26		130.0	
		Z	4.94	66.60	16.27		130.0	
10614-AAA	IEEE 802.11ac WiFi (20MHz, MCS7, 90pc duty cycle)	X	4.90	66.94	16.66	0.46	130.0	± 9.6 %
		Y	4.71	66.92	16.51		130.0	
		Z	4.86	66.73	16.46		130.0	
10615-AAA	IEEE 802.11ac WiFi (20MHz, MCS8, 90pc duty cycle)	X	4.94	66.52	16.29	0.46	130.0	± 9.6 %
		Y	4.74	66.48	16.10		130.0	
		Z	4.91	66.36	16.12		130.0	
10616-AAA	IEEE 802.11ac WiFi (40MHz, MCS0, 90pc duty cycle)	X	5.51	66.93	16.62	0.46	130.0	± 9.6 %
		Y	5.34	66.89	16.49		130.0	
		Z	5.48	66.77	16.47		130.0	
10617-AAA	IEEE 802.11ac WiFi (40MHz, MCS1, 90pc duty cycle)	X	5.57	67.04	16.64	0.46	130.0	± 9.6 %
		Y	5.41	67.05	16.54		130.0	
		Z	5.54	66.88	16.49		130.0	
10618-AAA	IEEE 802.11ac WiFi (40MHz, MCS2, 90pc duty cycle)	X	5.46	67.12	16.70	0.46	130.0	± 9.6 %
		Y	5.30	67.08	16.57		130.0	
		Z	5.43	66.94	16.53		130.0	
10619-AAA	IEEE 802.11ac WiFi (40MHz, MCS3, 90pc duty cycle)	X	5.49	66.94	16.55	0.46	130.0	± 9.6 %
		Y	5.31	66.88	16.40		130.0	
		Z	5.46	66.78	16.40		130.0	
10620-AAA	IEEE 802.11ac WiFi (40MHz, MCS4, 90pc duty cycle)	X	5.61	67.07	16.67	0.46	130.0	± 9.6 %
		Y	5.41	66.92	16.47		130.0	
		Z	5.58	66.91	16.51		130.0	
10621-AAA	IEEE 802.11ac WiFi (40MHz, MCS5, 90pc duty cycle)	X	5.57	67.08	16.78	0.46	130.0	± 9.6 %
		Y	5.41	67.05	16.66		130.0	
		Z	5.54	66.91	16.62		130.0	
10622-AAA	IEEE 802.11ac WiFi (40MHz, MCS6, 90pc duty cycle)	X	5.58	67.21	16.84	0.46	130.0	± 9.6 %
		Y	5.42	67.22	16.74		130.0	
		Z	5.54	67.04	16.67		130.0	

10623-AAA	IEEE 802.11ac WiFi (40MHz, MCS7, 90pc duty cycle)	X	5.47	66.83	16.54	0.46	130.0	± 9.6 %
		Y	5.29	66.72	16.36		130.0	
		Z	5.44	66.67	16.38		130.0	
10624-AAA	IEEE 802.11ac WiFi (40MHz, MCS8, 90pc duty cycle)	X	5.65	66.97	16.67	0.46	130.0	± 9.6 %
		Y	5.48	66.92	16.52		130.0	
		Z	5.63	66.83	16.52		130.0	
10625-AAA	IEEE 802.11ac WiFi (40MHz, MCS9, 90pc duty cycle)	X	6.08	68.09	17.28	0.46	130.0	± 9.6 %
		Y	5.86	67.92	17.07		130.0	
		Z	6.05	67.95	17.14		130.0	
10626-AAA	IEEE 802.11ac WiFi (80MHz, MCS0, 90pc duty cycle)	X	5.76	66.94	16.55	0.46	130.0	± 9.6 %
		Y	5.63	66.92	16.43		130.0	
		Z	5.73	66.80	16.40		130.0	
10627-AAA	IEEE 802.11ac WiFi (80MHz, MCS1, 90pc duty cycle)	X	6.03	67.53	16.79	0.46	130.0	± 9.6 %
		Y	5.87	67.49	16.67		130.0	
		Z	6.00	67.38	16.65		130.0	
10628-AAA	IEEE 802.11ac WiFi (80MHz, MCS2, 90pc duty cycle)	X	5.84	67.16	16.55	0.46	130.0	± 9.6 %
		Y	5.67	67.02	16.37		130.0	
		Z	5.81	67.01	16.41		130.0	
10629-AAA	IEEE 802.11ac WiFi (80MHz, MCS3, 90pc duty cycle)	X	5.93	67.23	16.58	0.46	130.0	± 9.6 %
		Y	5.75	67.09	16.40		130.0	
		Z	5.90	67.08	16.43		130.0	
10630-AAA	IEEE 802.11ac WiFi (80MHz, MCS4, 90pc duty cycle)	X	6.57	69.29	17.61	0.46	130.0	± 9.6 %
		Y	6.20	68.62	17.15		130.0	
		Z	6.52	69.09	17.44		130.0	
10631-AAA	IEEE 802.11ac WiFi (80MHz, MCS5, 90pc duty cycle)	X	6.37	68.79	17.53	0.46	130.0	± 9.6 %
		Y	6.10	68.43	17.26		130.0	
		Z	6.32	68.57	17.35		130.0	
10632-AAA	IEEE 802.11ac WiFi (80MHz, MCS6, 90pc duty cycle)	X	6.00	67.56	16.93	0.46	130.0	± 9.6 %
		Y	5.85	67.56	16.85		130.0	
		Z	5.96	67.39	16.77		130.0	
10633-AAA	IEEE 802.11ac WiFi (80MHz, MCS7, 90pc duty cycle)	X	5.94	67.43	16.71	0.46	130.0	± 9.6 %
		Y	5.73	67.19	16.48		130.0	
		Z	5.91	67.25	16.55		130.0	
10634-AAA	IEEE 802.11ac WiFi (80MHz, MCS8, 90pc duty cycle)	X	5.91	67.37	16.74	0.46	130.0	± 9.6 %
		Y	5.72	67.22	16.56		130.0	
		Z	5.87	67.19	16.57		130.0	
10635-AAA	IEEE 802.11ac WiFi (80MHz, MCS9, 90pc duty cycle)	X	5.80	66.77	16.19	0.46	130.0	± 9.6 %
		Y	5.59	66.52	15.94		130.0	
		Z	5.77	66.64	16.07		130.0	
10636-AAA	IEEE 1602.11ac WiFi (160MHz, MCS0, 90pc duty cycle)	X	6.17	67.34	16.65	0.46	130.0	± 9.6 %
		Y	6.04	67.28	16.50		130.0	
		Z	6.15	67.20	16.51		130.0	
10637-AAA	IEEE 1602.11ac WiFi (160MHz, MCS1, 90pc duty cycle)	X	6.35	67.76	16.83	0.46	130.0	± 9.6 %
		Y	6.20	67.66	16.68		130.0	
		Z	6.32	67.61	16.69		130.0	
10638-AAA	IEEE 1602.11ac WiFi (160MHz, MCS2, 90pc duty cycle)	X	6.35	67.72	16.79	0.46	130.0	± 9.6 %
		Y	6.20	67.63	16.64		130.0	
		Z	6.32	67.58	16.65		130.0	

10639-AAA	IEEE 1602.11ac WiFi (160MHz, MCS3, 90pc duty cycle)	X	6.35	67.74	16.85	0.46	130.0	± 9.6 %
		Y	6.18	67.59	16.66		130.0	
		Z	6.32	67.59	16.70		130.0	
10640-AAA	IEEE 1602.11ac WiFi (160MHz, MCS4, 90pc duty cycle)	X	6.39	67.87	16.86	0.46	130.0	± 9.6 %
		Y	6.18	67.60	16.61		130.0	
		Z	6.36	67.71	16.72		130.0	
10641-AAA	IEEE 1602.11ac WiFi (160MHz, MCS5, 90pc duty cycle)	X	6.37	67.56	16.72	0.46	130.0	± 9.6 %
		Y	6.22	67.48	16.57		130.0	
		Z	6.34	67.42	16.59		130.0	
10642-AAA	IEEE 1602.11ac WiFi (160MHz, MCS6, 90pc duty cycle)	X	6.43	67.86	17.02	0.46	130.0	± 9.6 %
		Y	6.27	67.76	16.88		130.0	
		Z	6.40	67.70	16.88		130.0	
10643-AAA	IEEE 1602.11ac WiFi (160MHz, MCS7, 90pc duty cycle)	X	6.27	67.59	16.80	0.46	130.0	± 9.6 %
		Y	6.10	67.43	16.61		130.0	
		Z	6.24	67.44	16.67		130.0	
10644-AAA	IEEE 1602.11ac WiFi (160MHz, MCS8, 90pc duty cycle)	X	6.52	68.35	17.21	0.46	130.0	± 9.6 %
		Y	6.27	67.95	16.89		130.0	
		Z	6.48	68.18	17.06		130.0	
10645-AAA	IEEE 1602.11ac WiFi (160MHz, MCS9, 90pc duty cycle)	X	6.86	68.85	17.40	0.46	130.0	± 9.6 %
		Y	6.65	68.64	17.18		130.0	
		Z	6.84	68.75	17.29		130.0	
10646-AAC	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, QPSK, UL Subframe=2,7)	X	42.01	120.68	39.91	9.30	60.0	± 9.6 %
		Y	39.04	120.15	39.21		60.0	
		Z	32.57	113.89	37.85		60.0	
10647-AAB	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK, UL Subframe=2,7)	X	44.40	122.83	40.67	9.30	60.0	± 9.6 %
		Y	37.67	120.23	39.39		60.0	
		Z	34.51	116.06	38.63		60.0	
10648-AAA	CDMA2000 (1x Advanced)	X	0.92	66.62	13.41	0.00	150.0	± 9.6 %
		Y	0.77	65.29	11.91		150.0	
		Z	0.81	64.38	11.88		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.



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 **PC Test**

Certificate No: **ES3-3022_Aug15**

CALIBRATION CERTIFICATE

Object **ES3DV2 - SN:3022**

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

Calibration date: **August 26, 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)

BN ✓
 9/3/2015

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 Michael Weber	Function Laboratory Technician	Signature 
Approved by:	Katja Pokovic	Technical Manager	
Issued: August 27, 2015 This calibration certificate shall not be reproduced except in full without written approval of the laboratory.			



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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:

- 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, "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
- 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 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 ES3DV2

SN:3022

Manufactured: April 15, 2003
Calibrated: August 26, 2015

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

DASY/EASY - Parameters of Probe: ES3DV2 - SN:3022

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu\text{V}/(\text{V}/\text{m})^2$) ^A	1.00	1.03	0.95	$\pm 10.1 \%$
DCP (mV) ^B	99.9	99.7	100.9	

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	179.6	$\pm 3.3 \%$
		Y	0.0	0.0	1.0		183.9	
		Z	0.0	0.0	1.0		179.0	
10010- CAA	SAR Validation (Square, 100ms, 10ms)	X	3.60	65.9	14.2	10.00	43.5	$\pm 2.2 \%$
		Y	2.84	63.5	13.0		43.3	
		Z	2.76	63.7	12.7		41.7	
10011- CAB	UMTS-FDD (WCDMA)	X	3.32	67.0	18.7	2.91	144.4	$\pm 0.7 \%$
		Y	3.24	66.3	18.0		147.3	
		Z	3.19	66.3	18.0		143.5	
10012- CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps)	X	3.15	69.9	19.5	1.87	146.1	$\pm 0.7 \%$
		Y	2.88	67.7	18.0		147.9	
		Z	2.78	67.4	17.8		145.6	
10013- CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps)	X	11.40	71.3	23.8	9.46	144.9	$\pm 3.3 \%$
		Y	11.15	70.5	23.1		146.9	
		Z	10.95	70.5	23.3		140.3	
10021- DAB	GSM-FDD (TDMA, GMSK)	X	20.66	99.8	29.2	9.39	132.6	$\pm 2.2 \%$
		Y	14.36	93.3	26.6		145.3	
		Z	17.17	97.2	27.8		145.4	
10023- DAB	GPRS-FDD (TDMA, GMSK, TN 0)	X	17.22	96.5	28.2	9.57	125.4	$\pm 1.9 \%$
		Y	11.06	88.6	25.0		136.0	
		Z	8.71	84.6	23.4		130.7	
10024- DAB	GPRS-FDD (TDMA, GMSK, TN 0-1)	X	31.05	99.5	25.9	6.56	135.2	$\pm 2.2 \%$
		Y	25.28	97.4	25.0		132.5	
		Z	21.58	95.7	24.5		144.4	
10027- DAB	GPRS-FDD (TDMA, GMSK, TN 0-1-2)	X	42.88	99.9	24.0	4.80	129.5	$\pm 1.9 \%$
		Y	40.80	99.6	23.7		124.9	
		Z	38.42	99.7	23.7		137.8	
10028- DAB	GPRS-FDD (TDMA, GMSK, TN 0-1-2-3)	X	44.48	100.0	23.2	3.55	138.2	$\pm 1.9 \%$
		Y	44.03	99.7	22.8		133.0	
		Z	41.36	99.8	22.8		147.5	
10032- CAA	IEEE 802.15.1 Bluetooth (GFSK, DH5)	X	16.08	99.5	23.3	1.16	127.5	$\pm 1.4 \%$
		Y	79.69	99.6	19.3		146.2	
		Z	45.81	99.9	20.4		138.2	
10100- CAB	LTE-FDD (SC-FDMA, 100% RB, 20 MHz, QPSK)	X	6.43	67.4	19.8	5.67	138.7	$\pm 1.4 \%$
		Y	6.27	66.8	19.2		134.9	
		Z	6.16	66.6	19.2		127.6	

10103-CAB	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, QPSK)	X	10.13	75.0	25.9	9.29	129.4	±3.3 %
		Y	9.46	73.0	24.5		131.8	
		Z	9.52	74.0	25.4		137.0	
10108-CAC	LTE-FDD (SC-FDMA, 100% RB, 10 MHz, QPSK)	X	6.27	66.9	19.7	5.80	137.0	±1.7 %
		Y	6.24	66.7	19.3		140.0	
		Z	6.06	66.3	19.2		127.1	
10117-CAB	IEEE 802.11n (HT Mixed, 13.5 Mbps, BPSK)	X	10.16	68.7	21.3	8.07	127.7	±2.2 %
		Y	9.99	68.2	20.9		131.5	
		Z	10.22	69.1	21.4		141.6	
10151-CAB	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, QPSK)	X	9.34	73.4	25.2	9.28	125.0	±3.3 %
		Y	8.92	72.2	24.3		127.2	
		Z	8.95	73.1	25.1		131.9	
10154-CAC	LTE-FDD (SC-FDMA, 50% RB, 10 MHz, QPSK)	X	5.95	66.4	19.4	5.75	134.4	±1.4 %
		Y	5.92	66.2	19.1		137.0	
		Z	5.98	66.7	19.5		146.8	
10160-CAB	LTE-FDD (SC-FDMA, 50% RB, 15 MHz, QPSK)	X	6.39	66.9	19.6	5.82	139.9	±1.7 %
		Y	6.35	66.7	19.3		141.9	
		Z	6.15	66.2	19.2		128.4	
10169-CAB	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, QPSK)	X	4.96	66.6	19.8	5.73	137.3	±1.4 %
		Y	4.85	66.1	19.3		139.8	
		Z	4.85	66.6	19.7		146.7	
10172-CAB	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK)	X	8.75	78.7	28.3	9.21	138.9	±3.0 %
		Y	7.69	75.1	26.1		140.1	
		Z	7.80	76.6	27.2		144.0	
10175-CAC	LTE-FDD (SC-FDMA, 1 RB, 10 MHz, QPSK)	X	4.88	66.2	19.6	5.72	132.0	±1.4 %
		Y	4.77	65.8	19.1		132.6	
		Z	4.83	66.5	19.6		146.0	
10181-CAB	LTE-FDD (SC-FDMA, 1 RB, 15 MHz, QPSK)	X	4.91	66.3	19.7	5.72	131.7	±1.4 %
		Y	4.82	66.0	19.2		138.4	
		Z	4.86	66.7	19.7		145.7	
10196-CAB	IEEE 802.11n (HT Mixed, 6.5 Mbps, BPSK)	X	10.04	69.1	21.7	8.10	140.9	±2.2 %
		Y	9.62	67.9	20.8		125.2	
		Z	9.74	68.6	21.3		133.3	
10225-CAB	UMTS-FDD (HSPA+)	X	7.01	67.1	19.6	5.97	143.7	±1.4 %
		Y	6.78	66.2	19.0		129.3	
		Z	6.80	66.7	19.3		136.5	
10237-CAB	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, QPSK)	X	8.55	78.0	27.9	9.21	134.6	±3.0 %
		Y	7.79	75.6	26.3		141.6	
		Z	7.89	76.9	27.4		145.2	
10252-CAB	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, QPSK)	X	9.30	74.8	26.1	9.24	134.8	±3.3 %
		Y	8.65	72.5	24.5		136.4	
		Z	8.33	72.3	24.8		126.6	
10267-CAB	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, QPSK)	X	10.20	76.2	26.8	9.30	144.8	±3.3 %
		Y	9.41	73.7	25.1		145.9	
		Z	9.18	73.9	25.6		138.6	

10275-CAB	UMTS-FDD (HSUPA, Subtest 5, 3GPP Rel8.4)	X	4.45	66.7	18.9	3.96	147.0	±0.9 %
		Y	4.21	65.5	17.9		126.5	
		Z	4.36	66.5	18.5		148.0	
10291-AAB	CDMA2000, RC3, SO55, Full Rate	X	3.57	66.3	18.5	3.46	134.3	±0.7 %
		Y	3.48	65.6	17.8		136.8	
		Z	3.51	66.2	18.3		136.4	
10292-AAB	CDMA2000, RC3, SO32, Full Rate	X	3.53	66.4	18.6	3.39	135.8	±0.7 %
		Y	3.45	65.8	17.9		140.4	
		Z	3.50	66.5	18.5		137.0	
10297-AAA	LTE-FDD (SC-FDMA, 50% RB, 20 MHz, QPSK)	X	6.18	66.5	19.5	5.81	129.4	±1.4 %
		Y	6.15	66.3	19.1		133.6	
		Z	6.13	66.5	19.3		131.2	
10311-AAA	LTE-FDD (SC-FDMA, 100% RB, 15 MHz, QPSK)	X	6.77	67.2	19.9	6.06	134.8	±1.7 %
		Y	6.81	67.3	19.7		144.8	
		Z	6.68	67.1	19.7		136.7	
10400-AAC	IEEE 802.11ac WiFi (20MHz, 64-QAM, 99pc duty cycle)	X	10.30	69.4	22.0	8.37	142.0	±2.5 %
		Y	9.90	68.2	21.1		126.8	
		Z	10.15	69.3	21.9		142.6	
10403-AAB	CDMA2000 (1xEV-DO, Rev. 0)	X	4.72	68.1	18.9	3.76	147.8	±0.7 %
		Y	4.56	67.5	18.2		133.6	
		Z	4.61	68.2	18.7		147.4	
10404-AAB	CDMA2000 (1xEV-DO, Rev. A)	X	4.57	67.8	18.8	3.77	144.3	±0.7 %
		Y	4.43	67.3	18.1		131.3	
		Z	4.57	68.3	18.8		145.0	
10415-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps, 99pc duty cycle)	X	2.64	67.9	18.7	1.54	142.1	±0.5 %
		Y	2.36	65.4	16.8		130.3	
		Z	2.50	66.7	17.7		145.0	
10416-AAA	IEEE 802.11g WiFi 2.4 GHz (ERP-OFDM, 6 Mbps, 99pc duty cycle)	X	10.04	69.0	21.7	8.23	138.8	±2.2 %
		Y	9.71	68.0	20.9		125.6	
		Z	9.94	69.0	21.6		140.4	

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 7 and 8).

^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: ES3DV2 - SN:3022

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	6.33	6.33	6.33	0.46	1.43	± 12.0 %
835	41.5	0.90	6.11	6.11	6.11	0.24	2.08	± 12.0 %
1750	40.1	1.37	5.08	5.08	5.08	0.45	1.47	± 12.0 %
1900	40.0	1.40	4.93	4.93	4.93	0.59	1.25	± 12.0 %
2300	39.5	1.67	4.63	4.63	4.63	0.55	1.39	± 12.0 %
2450	39.2	1.80	4.30	4.30	4.30	0.51	1.47	± 12.0 %
2600	39.0	1.96	4.12	4.12	4.12	0.57	1.46	± 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: ES3DV2 - SN:3022

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	6.16	6.16	6.16	0.50	1.34	± 12.0 %
835	55.2	0.97	6.13	6.13	6.13	0.25	2.16	± 12.0 %
1750	53.4	1.49	4.79	4.79	4.79	0.61	1.33	± 12.0 %
1900	53.3	1.52	4.56	4.56	4.56	0.31	2.02	± 12.0 %
2300	52.9	1.81	4.32	4.32	4.32	0.79	1.19	± 12.0 %
2450	52.7	1.95	4.08	4.08	4.08	0.80	1.12	± 12.0 %
2600	52.5	2.16	3.96	3.96	3.96	0.80	1.10	± 12.0 %

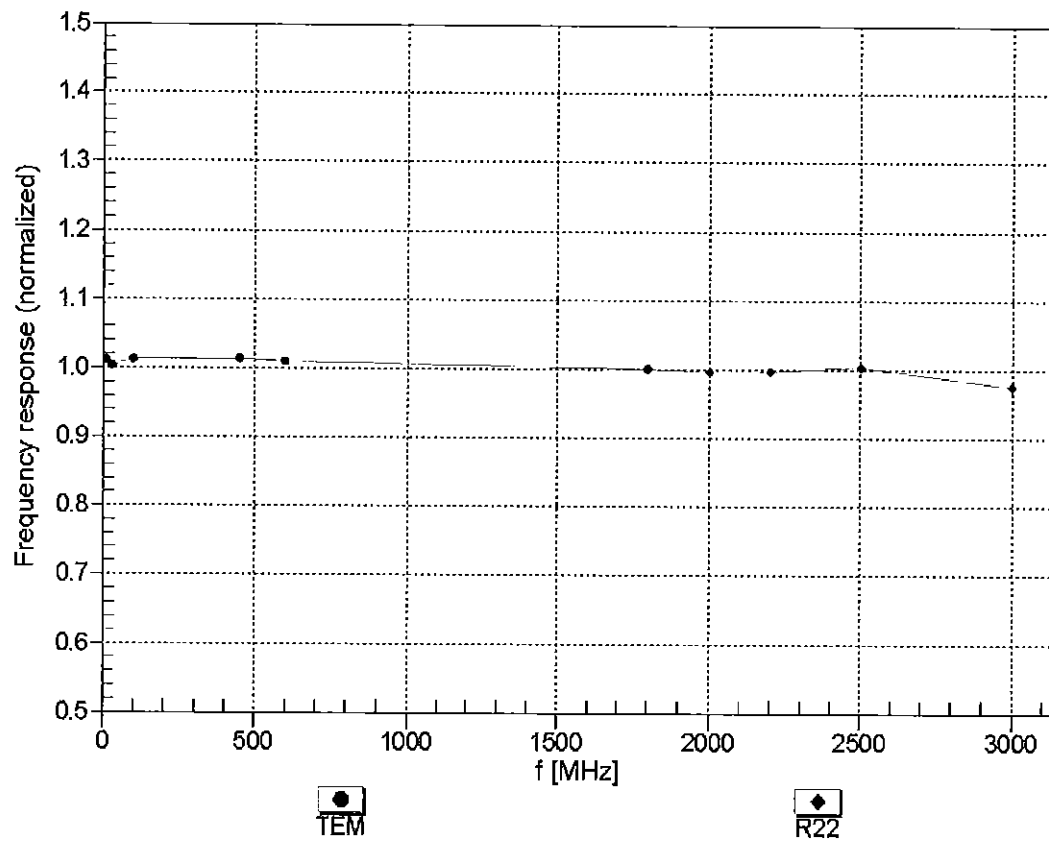
^C Frequency validity above 300 MHz of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is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

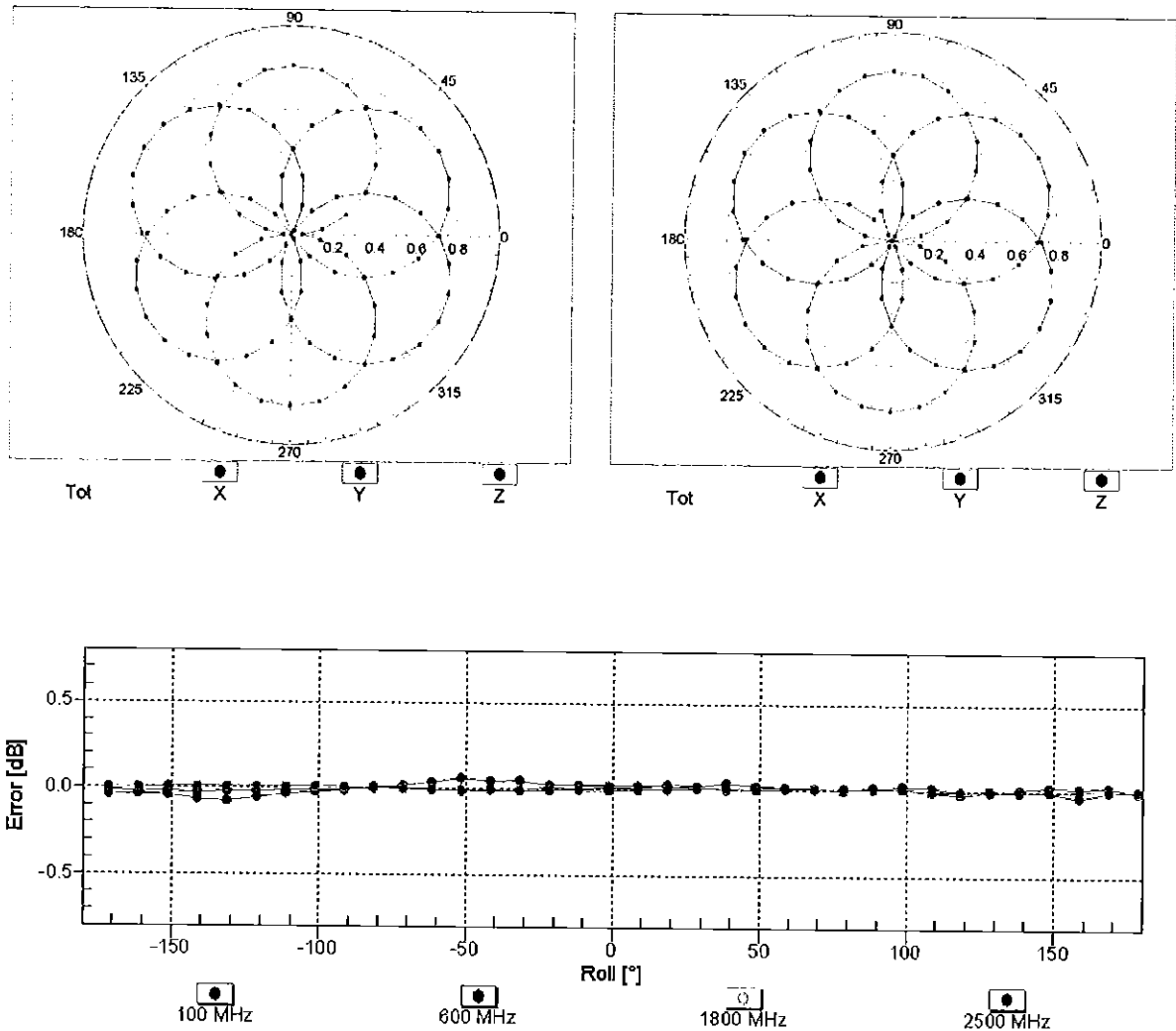


Uncertainty of Frequency Response of E-field: $\pm 6.3\%$ ($k=2$)

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

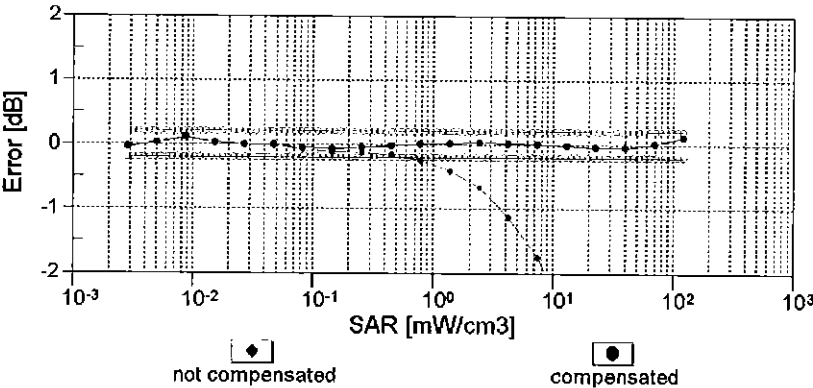
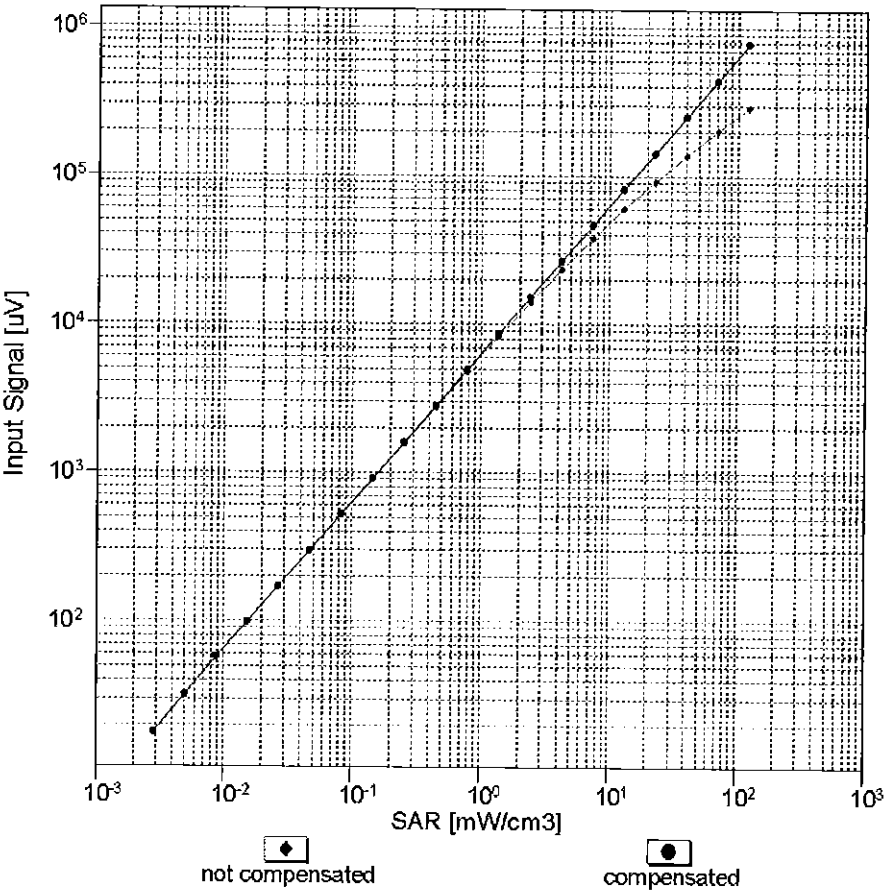
f=600 MHz,TEM

f=1800 MHz,R22



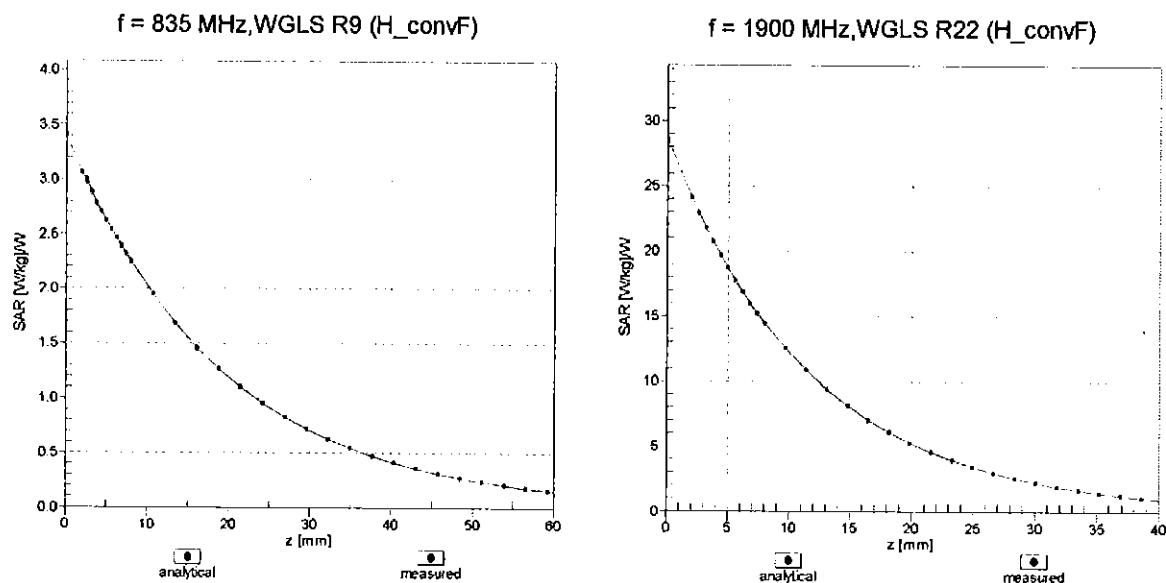
Uncertainty of Axial Isotropy Assessment: $\pm 0.5\%$ ($k=2$)

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



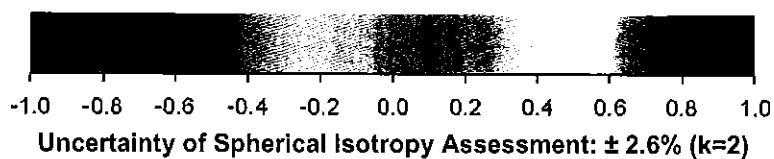
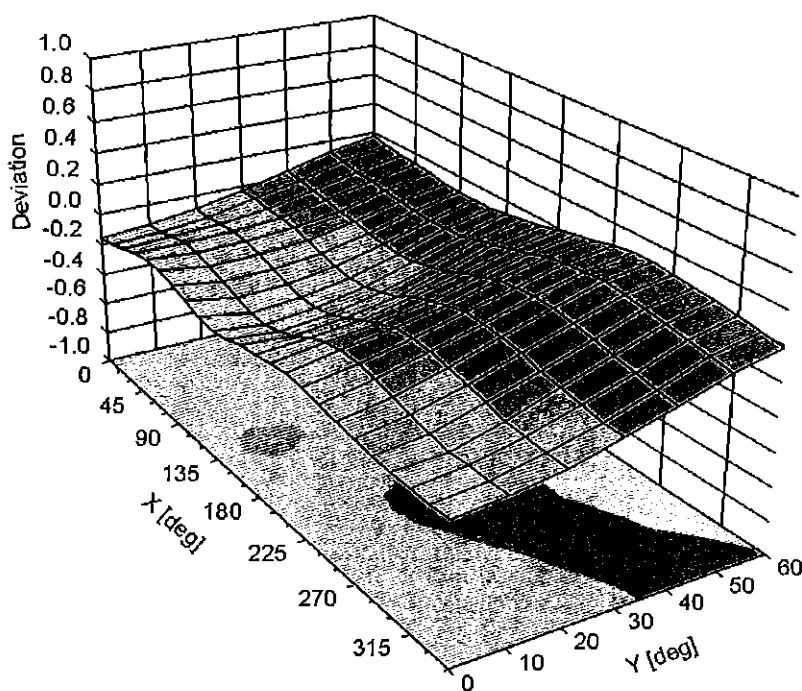
Uncertainty of Linearity Assessment: ± 0.6% (k=2)

Conversion Factor Assessment



Deviation from Isotropy in Liquid

Error (ϕ, θ), $f = 900 \text{ MHz}$



Uncertainty of Spherical Isotropy Assessment: $\pm 2.6\%$ ($k=2$)

DASY/EASY - Parameters of Probe: ES3DV2 - SN:3022

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	98.5
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



Accredited by the Swiss Accreditation Service (SAS)

Accreditation No.: **SCS 0108**

The Swiss Accreditation Service is one of the signatories to the EA
Multilateral Agreement for the recognition of calibration certificates

Client **PC Test**

Certificate No: **ES3-3333_Oct15**

CALIBRATION CERTIFICATE

Object **ES3DV3 - SN:3333**

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

*DN ✓
14/03/15*

Calibration date: **October 29, 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-15)	In house check: Oct-16

Calibrated by:	Name Lutz Klysner	Function Laboratory Technician	Signature
Approved by:	Name Katja Pokovic	Technical Manager	

Issued: October 29, 2015

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



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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., $\theta = 0$ 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:

- 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, "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
- 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 865604, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Methods Applied and Interpretation of Parameters:

- NORM_{x,y,z}**: Assessed for E-field polarization $\theta = 0$ ($f \leq 900$ 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.
- DCPx,y,z**: DCP are numerical linearization parameters assessed based on the data of power sweep with CW signal (no uncertainty required). DCP does not depend on frequency nor media.
- PAR**: PAR is the Peak to Average Ratio that is not calibrated but determined based on the signal characteristics
- 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 ES3DV3

SN:3333

Manufactured: January 24, 2012
Calibrated: October 29, 2015

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

DASY/EASY - Parameters of Probe: ES3DV3 - SN:3333

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu\text{V}/(\text{V}/\text{m})^2$) ^A	1.07	0.90	0.88	$\pm 10.1 \%$
DCP (mV) ^B	106.8	108.5	106.8	

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	201.0	$\pm 3.5 \%$
		Y	0.0	0.0	1.0		187.1	
		Z	0.0	0.0	1.0		184.8	
10010- CAA	SAR Validation (Square, 100ms, 10ms)	X	2.43	80.7	11.4	10.00	41.6	$\pm 2.2 \%$
		Y	4.35	67.4	13.2		35.6	
		Z	1.46	57.0	8.7		36.2	
10011- CAB	UMTS-FDD (WCDMA)	X	3.35	67.9	19.1	2.91	138.2	$\pm 0.5 \%$
		Y	3.48	68.8	19.2		127.5	
		Z	3.37	67.6	18.6		149.0	
10012- CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps)	X	3.80	72.8	20.8	1.87	141.0	$\pm 0.7 \%$
		Y	3.68	73.3	20.8		128.0	
		Z	3.01	69.3	18.8		128.2	
10013- CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps)	X	11.52	71.7	23.9	9.46	139.3	$\pm 3.0 \%$
		Y	10.94	70.4	22.9		147.1	
		Z	10.95	70.8	23.4		144.5	
10021- DAB	GSM-FDD (TDMA, GMSK)	X	21.45	95.2	26.5	9.39	139.9	$\pm 2.5 \%$
		Y	9.12	82.9	21.9		142.0	
		Z	11.47	88.1	23.9		127.6	
10023- DAB	GPRS-FDD (TDMA, GMSK, TN 0)	X	20.81	95.6	27.0	9.57	135.8	$\pm 2.2 \%$
		Y	9.78	84.4	22.7		135.3	
		Z	9.12	83.5	22.1		144.6	
10024- DAB	GPRS-FDD (TDMA, GMSK, TN 0-1)	X	39.84	99.8	25.2	6.56	140.9	$\pm 1.9 \%$
		Y	35.07	100.0	25.0		128.4	
		Z	35.20	99.8	24.7		131.9	
10027- DAB	GPRS-FDD (TDMA, GMSK, TN 0-1-2)	X	47.16	99.8	23.9	4.80	124.9	$\pm 2.5 \%$
		Y	49.75	99.6	22.8		145.4	
		Z	45.37	99.9	23.1		148.5	
10028- DAB	GPRS-FDD (TDMA, GMSK, TN 0-1-2-3)	X	56.24	99.6	22.6	3.55	140.4	$\pm 2.7 \%$
		Y	56.95	99.7	21.9		129.1	
		Z	48.45	99.6	22.1		133.2	
10032- CAA	IEEE 802.15.1 Bluetooth (GFSK, DH5)	X	18.03	98.1	22.8	1.16	127.5	$\pm 1.9 \%$
		Y	35.17	99.6	20.7		141.1	
		Z	21.08	99.9	21.9		127.5	
10100- CAB	LTE-FDD (SC-FDMA, 100% RB, 20 MHz, QPSK)	X	6.36	87.6	19.8	5.67	137.5	$\pm 1.2 \%$
		Y	6.29	87.4	19.6		128.9	
		Z	6.35	87.5	19.7		139.5	

10103-CAB	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, QPSK)	X	10.85	76.6	28.4	9.29	130.8	±2.7 %
		Y	9.58	73.7	24.8		143.0	
		Z	9.94	75.6	26.2		149.3	
10108-CAC	LTE-FDD (SC-FDMA, 100% RB, 10 MHz, QPSK)	X	8.21	67.0	19.7	5.80	128.9	±1.2 %
		Y	6.16	66.9	19.5		129.2	
		Z	6.22	67.2	19.7		138.0	
10117-CAB	IEEE 802.11n (HT Mixed, 13.5 Mbps, BPSK)	X	10.05	68.7	21.2	8.07	126.1	±2.5 %
		Y	10.13	69.0	21.3		146.1	
		Z	9.97	68.7	21.1		126.2	
10151-CAB	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, QPSK)	X	10.11	75.5	26.0	9.28	125.8	±3.3 %
		Y	9.08	73.2	24.7		138.2	
		Z	9.32	74.8	26.0		143.1	
10154-CAC	LTE-FDD (SC-FDMA, 50% RB, 10 MHz, QPSK)	X	5.97	66.8	19.6	5.75	133.4	±1.2 %
		Y	5.92	66.7	19.5		127.0	
		Z	5.91	68.7	19.5		134.2	
10160-CAB	LTE-FDD (SC-FDMA, 50% RB, 15 MHz, QPSK)	X	6.40	67.3	19.9	5.82	137.8	±1.2 %
		Y	6.31	67.1	19.6		130.7	
		Z	6.32	67.1	19.8		139.8	
10169-CAB	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, QPSK)	X	5.05	67.3	20.1	5.73	136.8	±1.2 %
		Y	4.89	67.0	19.9		131.1	
		Z	4.93	67.2	20.0		137.4	
10172-CAB	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK)	X	10.74	83.9	30.3	9.21	136.8	±2.7 %
		Y	7.34	74.3	25.5		125.9	
		Z	7.74	76.6	27.1		131.2	
10175-CAC	LTE-FDD (SC-FDMA, 1 RB, 10 MHz, QPSK)	X	4.97	66.9	19.9	5.72	130.8	±1.2 %
		Y	4.86	66.9	19.8		128.5	
		Z	4.97	67.3	20.1		137.0	
10181-CAB	LTE-FDD (SC-FDMA, 1 RB, 15 MHz, QPSK)	X	4.99	67.0	19.9	5.72	130.1	±1.2 %
		Y	4.88	67.0	19.9		127.6	
		Z	4.95	67.2	20.0		136.2	
10196-CAB	IEEE 802.11n (HT Mixed, 6.5 Mbps, BPSK)	X	10.00	69.2	21.7	8.10	137.9	±2.2 %
		Y	9.75	68.7	21.2		137.5	
		Z	9.94	69.4	21.7		145.3	
10225-CAB	UMTS-FDD (HSPA+)	X	7.08	67.5	19.8	5.97	147.1	±1.4 %
		Y	7.06	67.7	19.8		142.3	
		Z	7.04	67.7	19.9		148.8	
10237-CAB	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, QPSK)	X	10.66	83.5	30.1	9.21	144.0	±3.0 %
		Y	7.43	74.7	25.7		127.6	
		Z	7.86	77.1	27.4		132.3	
10252-CAB	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, QPSK)	X	10.81	78.7	27.9	9.24	139.7	±3.0 %
		Y	8.48	72.4	24.4		130.1	
		Z	8.71	74.1	25.8		135.2	
10267-CAB	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, QPSK)	X	11.73	79.9	28.3	9.30	148.6	±3.3 %
		Y	9.11	73.2	24.8		139.0	
		Z	9.38	74.9	26.1		142.7	

10275-CAB	UMTS-FDD (HSUPA, Subtest 5, 3GPP Ref8.4)	X	4.52	67.6	19.3	3.96	144.5	±0.7 %
		Y	4.67	68.3	19.6		146.0	
		Z	4.41	67.0	18.9		130.0	
10291-AAB	CDMA2000, RC3, SO55, Full Rate	X	3.66	67.2	19.0	3.46	134.5	±0.5 %
		Y	3.91	68.9	19.9		133.2	
		Z	3.86	68.5	19.6		146.9	
10292-AAB	CDMA2000, RC3, SO32, Full Rate	X	3.63	67.5	19.1	3.39	134.9	±0.5 %
		Y	3.93	69.3	20.0		136.0	
		Z	3.81	68.5	19.6		148.6	
10297-AAA	LTE-FDD (SC-FDMA, 50% RB, 20 MHz, QPSK)	X	6.20	67.1	19.7	5.81	129.0	±1.2 %
		Y	6.20	67.0	19.6		128.0	
		Z	6.32	67.5	19.9		142.7	
10311-AAA	LTE-FDD (SC-FDMA, 100% RB, 15 MHz, QPSK)	X	6.76	67.6	20.0	6.06	134.7	±1.4 %
		Y	6.75	67.5	19.9		133.5	
		Z	6.90	68.1	20.3		149.2	
10400-AAC	IEEE 802.11ac WiFi (20MHz, 64-QAM, 99pc duty cycle)	X	10.30	69.7	22.1	8.37	140.1	±2.5 %
		Y	10.05	69.0	21.5		141.2	
		Z	9.94	69.0	21.7		126.3	
10403-AAB	CDMA2000 (1xEV-DO, Rev. 0)	X	4.80	68.5	19.0	3.76	129.3	±0.5 %
		Y	5.30	71.1	20.2		148.4	
		Z	5.10	70.4	19.9		135.2	
10404-AAB	CDMA2000 (1xEV-DO, Rev. A)	X	4.77	68.8	19.2	3.77	127.3	±0.7 %
		Y	5.35	71.7	20.5		145.4	
		Z	5.03	70.6	20.1		133.3	
10415-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps, 99pc duty cycle)	X	2.77	69.7	19.7	1.54	147.0	±0.7 %
		Y	3.73	75.4	22.2		143.7	
		Z	3.25	72.2	20.7		133.9	
10416-AAA	IEEE 802.11g WiFi 2.4 GHz (ERP-OFDM, 8 Mbps, 99pc duty cycle)	X	10.11	69.4	21.8	8.23	144.7	±2.5 %
		Y	9.86	68.8	21.4		139.3	
		Z	9.72	68.6	21.3		126.0	

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 7 and 8).

^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: ES3DV3 - SN:3333

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	6.46	6.46	6.46	0.75	1.22	± 12.0 %
835	41.5	0.90	6.16	6.16	6.16	0.36	1.67	± 12.0 %
1750	40.1	1.37	5.21	5.21	5.21	0.80	1.19	± 12.0 %
1900	40.0	1.40	5.03	5.03	5.03	0.73	1.25	± 12.0 %
2300	39.5	1.67	4.73	4.73	4.73	0.60	1.43	± 12.0 %
2450	39.2	1.80	4.53	4.53	4.53	0.80	1.28	± 12.0 %
2600	39.0	1.96	4.39	4.39	4.39	0.80	1.29	± 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: ES3DV3 - SN:3333

Calibration Parameter Determined in Body Tissue Simulating Media

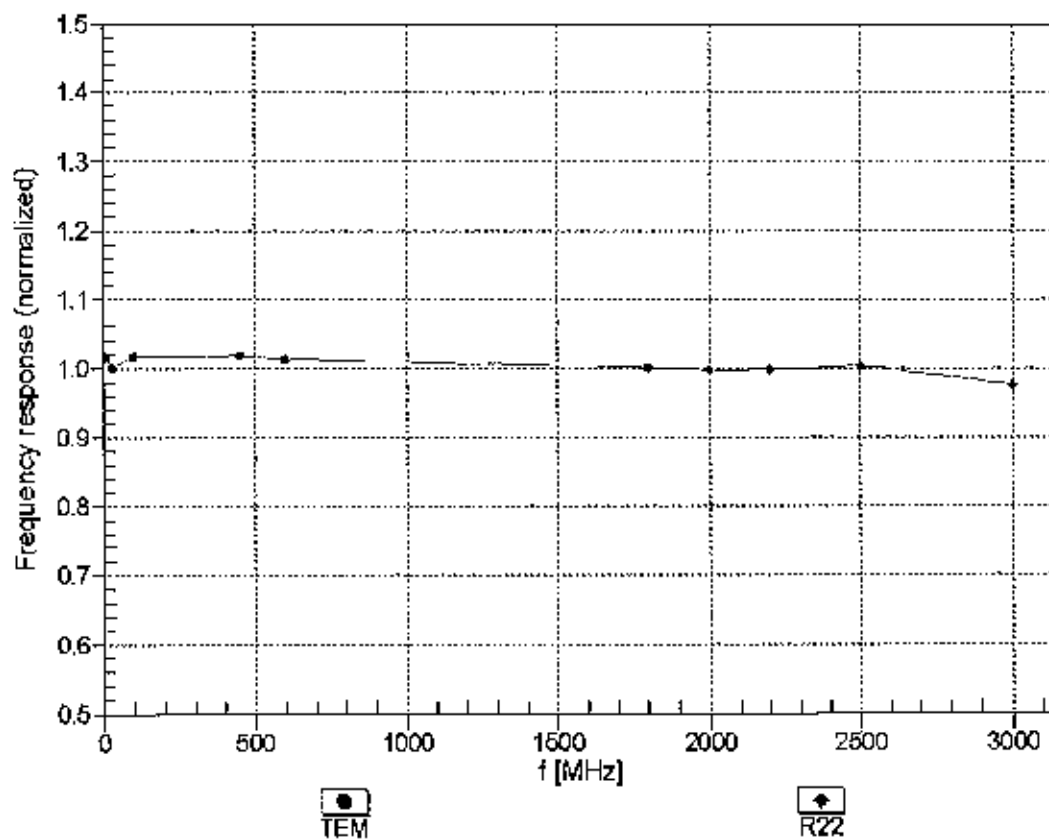
f (MHz) ^c	Relative Permittivity ^F	Conductivity (S/m) ^F	ConvF X	ConvF Y	ConvF Z	Alpha ^g	Depth ^g (mm)	Unc (k=2)
750	55.5	0.98	6.31	6.31	6.31	0.70	1.26	± 12.0 %
835	55.2	0.97	6.25	6.25	6.25	0.47	1.54	± 12.0 %
1750	53.4	1.49	4.90	4.90	4.90	0.49	1.63	± 12.0 %
1900	53.3	1.52	4.70	4.70	4.70	0.54	1.49	± 12.0 %
2300	52.9	1.81	4.51	4.51	4.51	0.80	1.15	± 12.0 %
2450	52.7	1.95	4.34	4.34	4.34	0.80	1.15	± 12.0 %
2600	52.5	2.16	4.23	4.23	4.23	0.80	1.03	± 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, 160 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.

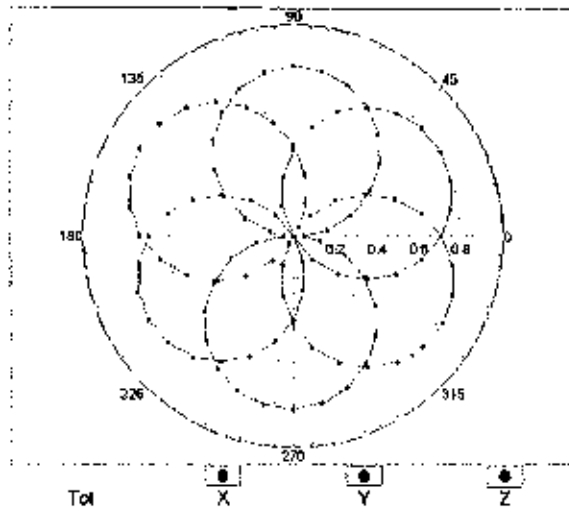
Frequency Response of E-Field (TEM-Cell:ifi110 EXX, Waveguide: R22)



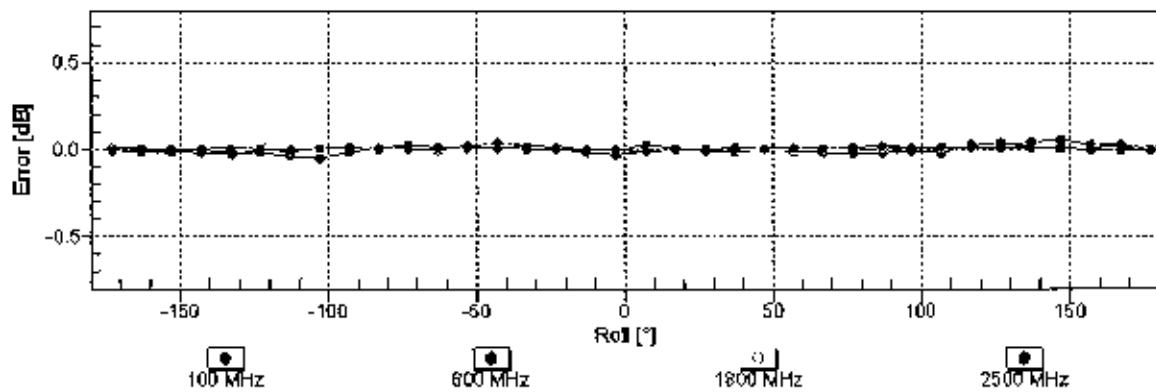
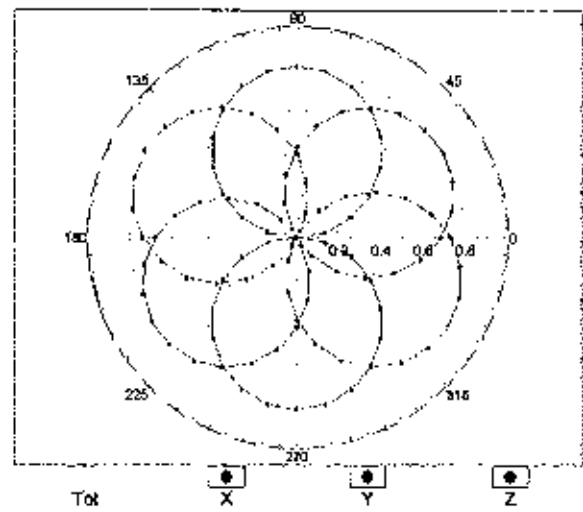
Uncertainty of Frequency Response of E-field: $\pm 6.3\%$ ($k=2$)

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

f=600 MHz,TEM

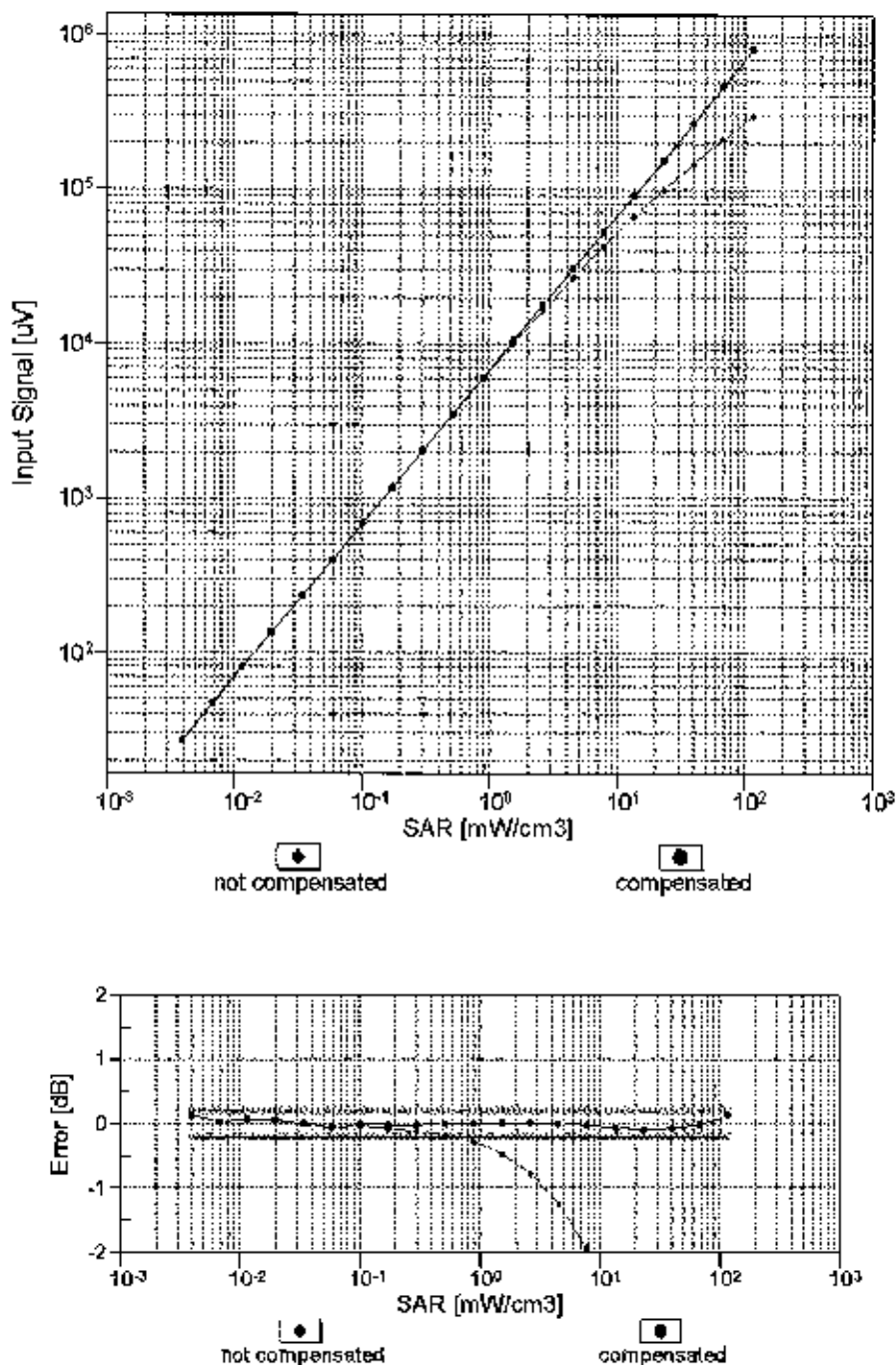


f=1800 MHz,R22



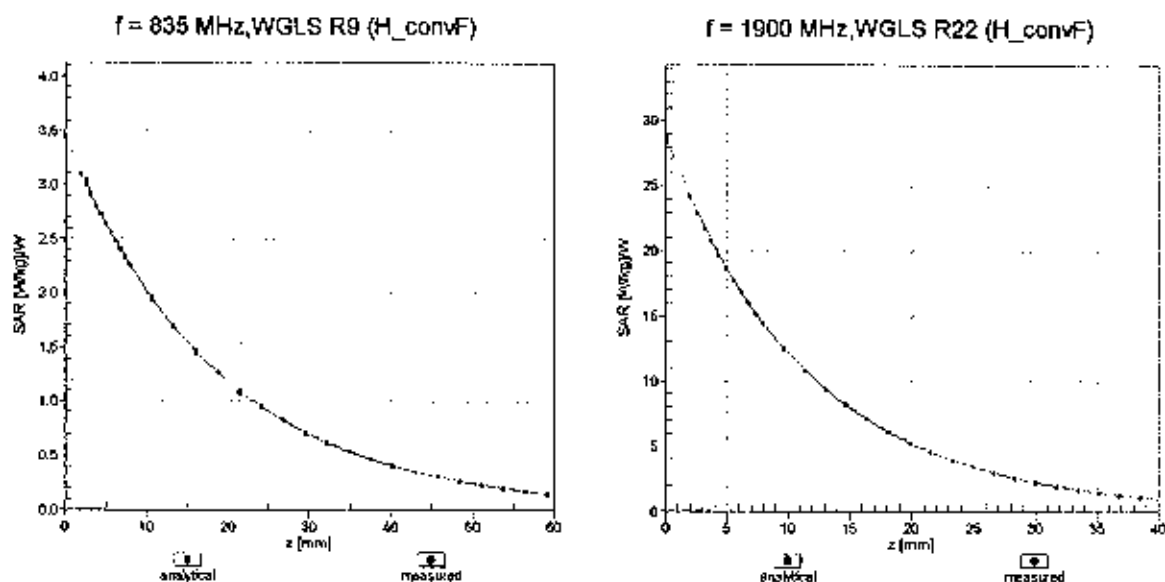
Uncertainty of Axial Isotropy Assessment: $\pm 0.5\%$ ($k=2$)

Dynamic Range $f(\text{SAR}_{\text{head}})$ **(TEM cell , $f_{\text{eval}} = 1900 \text{ MHz}$)**



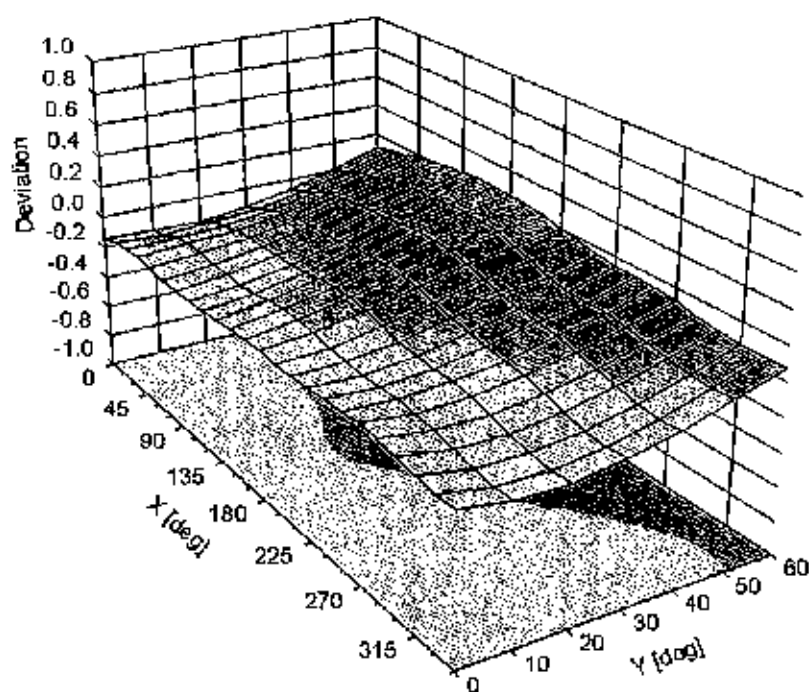
Uncertainty of Linearity Assessment: $\pm 0.6\%$ ($k=2$)

Conversion Factor Assessment



Deviation from Isotropy in Liquid

Error (ϕ, θ), $f = 900 \text{ MHz}$



DASY/EASY - Parameters of Probe: ES3DV3 - SN:3333**Other Probe Parameters**

Sensor Arrangement	Triangular
Connector Angle (°)	-32.8
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



Accredited by the Swiss Accreditation Service (SAS)

Accreditation No.: **SCS 0108**

The Swiss Accreditation Service is one of the signatories to the EA
 Multilateral Agreement for the recognition of calibration certificates

Client **PC Test**

Certificate No: **ES3-3319_Mar16**

CALIBRATION CERTIFICATE

Object **ES3DV3 - SN:3319**

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

Calibration date: **March 18, 2016**

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)

BN
03/20/2016

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	31-Dec-15 (No. ES3-3013_Dec15)	Dec-16
DAE4	SN: 660	23-Dec-15 (No. DAE4-660_Dec15)	Dec-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:	Leif Klysner	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	
Issued: March 21, 2016			
This calibration certificate shall not be reproduced except in full without written approval of the laboratory.			



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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:

- 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, "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
- 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 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 ES3DV3

SN:3319

Manufactured: January 10, 2012
Calibrated: March 18, 2016

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

DASY/EASY - Parameters of Probe: ES3DV3 - SN:3319

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu V/(V/m)^2$) ^A	1.12	1.08	1.16	$\pm 10.1 \%$
DCP (mV) ^B	104.1	104.5	103.7	

Modulation Calibration Parameters

UID	Communication System Name		A dB	B dB $\sqrt{\mu V}$	C	D dB	VR mV	Unc ^E (k=2)
0	CW	X	0.0	0.0	1.0	0.00	203.1	$\pm 3.5 \%$
		Y	0.0	0.0	1.0		203.8	
		Z	0.0	0.0	1.0		200.4	
10010- CAA	SAR Validation (Square, 100ms, 10ms)	X	2.29	60.1	11.2	10.00	42.0	$\pm 1.2 \%$
		Y	1.95	58.7	10.4		42.0	
		Z	3.15	62.5	12.1		42.9	
10012- CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps)	X	3.45	71.5	19.9	1.87	122.0	$\pm 0.5 \%$
		Y	2.88	68.4	18.6		122.8	
		Z	3.35	70.8	19.5		120.5	
10100- CAB	LTE-FDD (SC-FDMA, 100% RB, 20 MHz, QPSK)	X	6.39	67.3	19.5	5.67	132.3	$\pm 1.2 \%$
		Y	6.54	68.2	20.1		134.5	
		Z	6.40	67.4	19.6		130.2	
10103- CAB	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, QPSK)	X	10.41	75.3	25.6	9.29	124.2	$\pm 2.2 \%$
		Y	10.45	76.3	26.6		122.6	
		Z	10.82	75.9	25.8		124.8	
10108- CAC	LTE-FDD (SC-FDMA, 100% RB, 10 MHz, QPSK)	X	6.30	67.1	19.5	5.80	130.7	$\pm 1.2 \%$
		Y	6.35	67.5	19.9		131.5	
		Z	6.33	67.1	19.6		128.5	
10151- CAB	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, QPSK)	X	9.70	74.1	25.2	9.28	118.8	$\pm 2.2 \%$
		Y	9.65	74.9	26.0		117.1	
		Z	10.15	75.0	25.5		119.2	
10154- CAC	LTE-FDD (SC-FDMA, 50% RB, 10 MHz, QPSK)	X	6.00	66.6	19.3	5.75	127.4	$\pm 1.2 \%$
		Y	6.01	66.9	19.6		128.9	
		Z	6.02	66.6	19.3		125.6	
10160- CAB	LTE-FDD (SC-FDMA, 50% RB, 15 MHz, QPSK)	X	6.45	67.2	19.6	5.82	132.2	$\pm 1.2 \%$
		Y	6.47	67.5	19.9		133.5	
		Z	6.45	67.1	19.5		130.0	
10169- CAB	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, QPSK)	X	4.76	65.7	19.0	5.73	110.8	$\pm 0.9 \%$
		Y	4.80	66.3	19.5		112.0	
		Z	4.84	65.9	19.1		109.2	
10172- CAB	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK)	X	8.98	78.7	27.7	9.21	132.0	$\pm 2.5 \%$
		Y	9.71	82.4	30.0		132.2	
		Z	9.79	80.4	28.4		133.4	
10175- CAC	LTE-FDD (SC-FDMA, 1 RB, 10 MHz, QPSK)	X	4.76	65.6	19.0	5.72	109.8	$\pm 0.9 \%$
		Y	4.76	66.1	19.4		111.4	
		Z	4.83	65.8	19.1		108.9	

10181-CAB	LTE-FDD (SC-FDMA, 1 RB, 15 MHz, QPSK)	X	4.77	65.7	19.1	5.72	109.2	±0.9 %
		Y	4.78	66.2	19.4		111.9	
		Z	5.24	67.7	20.2		149.0	
10237-CAB	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, QPSK)	X	8.93	78.5	27.6	9.21	131.4	±2.5 %
		Y	9.48	81.7	29.7		131.7	
		Z	9.69	80.3	28.3		131.6	
10252-CAB	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, QPSK)	X	8.94	73.0	24.7	9.24	111.2	±2.2 %
		Y	9.05	74.3	25.9		111.8	
		Z	9.29	73.6	24.9		111.3	
10267-CAB	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, QPSK)	X	9.62	73.9	25.1	9.30	117.4	±2.2 %
		Y	9.73	75.1	26.1		118.2	
		Z	10.08	74.8	25.5		118.2	
10297-AAA	LTE-FDD (SC-FDMA, 50% RB, 20 MHz, QPSK)	X	6.31	67.1	19.6	5.81	128.6	±1.2 %
		Y	6.39	67.6	20.0		132.2	
		Z	6.33	67.1	19.6		127.2	
10311-AAA	LTE-FDD (SC-FDMA, 100% RB, 15 MHz, QPSK)	X	6.87	67.6	19.9	6.06	132.8	±1.4 %
		Y	6.96	68.2	20.3		137.0	
		Z	6.88	67.6	19.9		131.3	

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%.

^A The uncertainties of Norm X,Y,Z do not affect the E^2 -field uncertainty inside TSL (see Pages 6 and 7).

^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: ES3DV3 - SN:3319

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	6.44	6.44	6.44	0.49	1.80	± 12.0 %
835	41.5	0.90	6.16	6.16	6.16	0.46	1.80	± 12.0 %
1750	40.1	1.37	5.20	5.20	5.20	0.51	1.45	± 12.0 %
1900	40.0	1.40	5.03	5.03	5.03	0.58	1.40	± 12.0 %
2300	39.5	1.67	4.69	4.69	4.69	0.80	1.21	± 12.0 %
2450	39.2	1.80	4.47	4.47	4.47	0.75	1.32	± 12.0 %
2600	39.0	1.96	4.33	4.33	4.33	0.80	1.31	± 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: ES3DV3 - SN:3319

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	6.06	6.06	6.06	0.47	1.45	± 12.0 %
835	55.2	0.97	6.04	6.04	6.04	0.63	1.27	± 12.0 %
1750	53.4	1.49	4.91	4.91	4.91	0.46	1.66	± 12.0 %
1900	53.3	1.52	4.70	4.70	4.70	0.80	1.24	± 12.0 %
2300	52.9	1.81	4.36	4.36	4.36	0.74	1.33	± 12.0 %
2450	52.7	1.95	4.20	4.20	4.20	0.80	1.25	± 12.0 %
2600	52.5	2.16	3.99	3.99	3.99	0.80	1.20	± 12.0 %

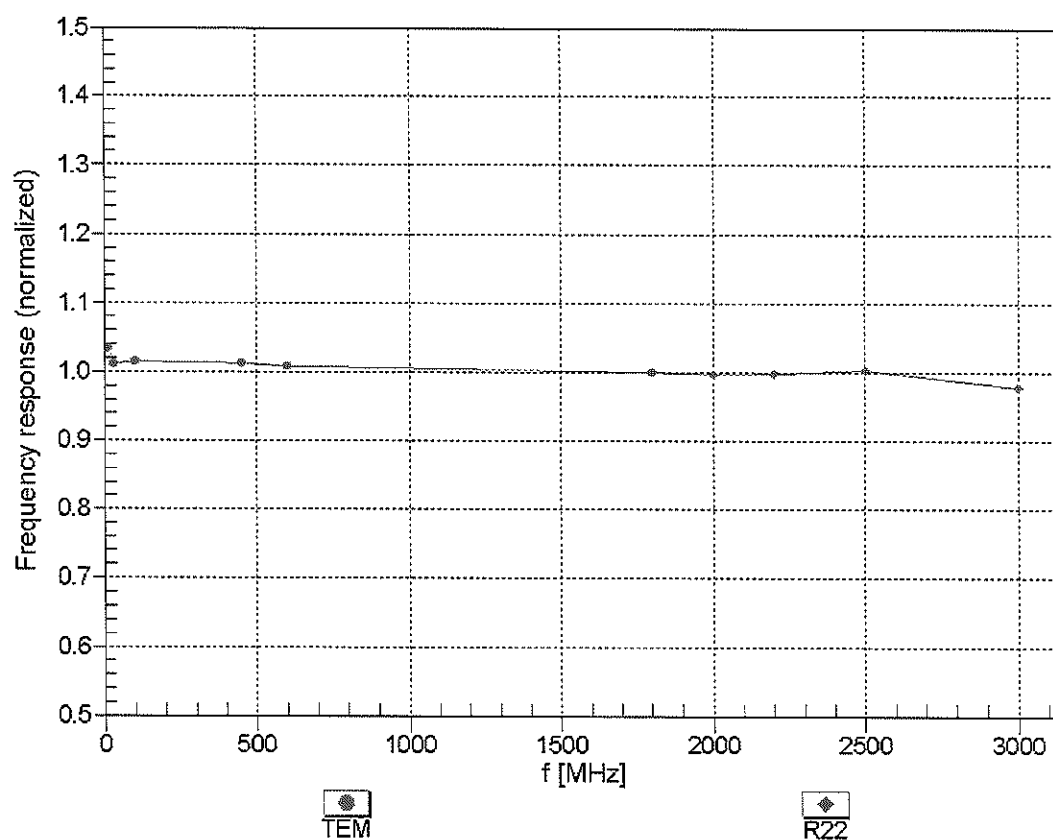
^C Frequency validity above 300 MHz of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is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

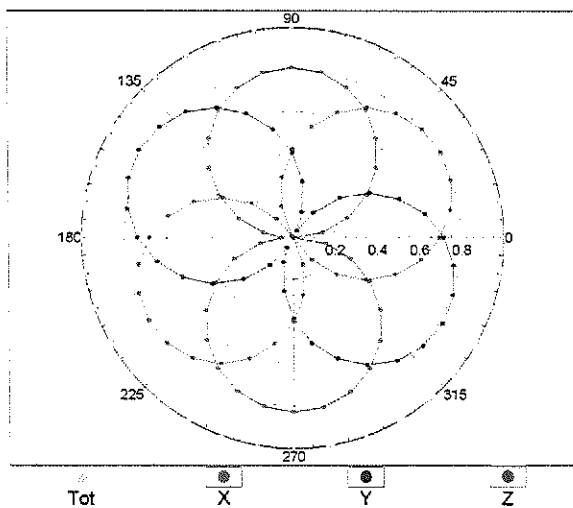
(TEM-Cell:ifi110 EXX, Waveguide: R22)



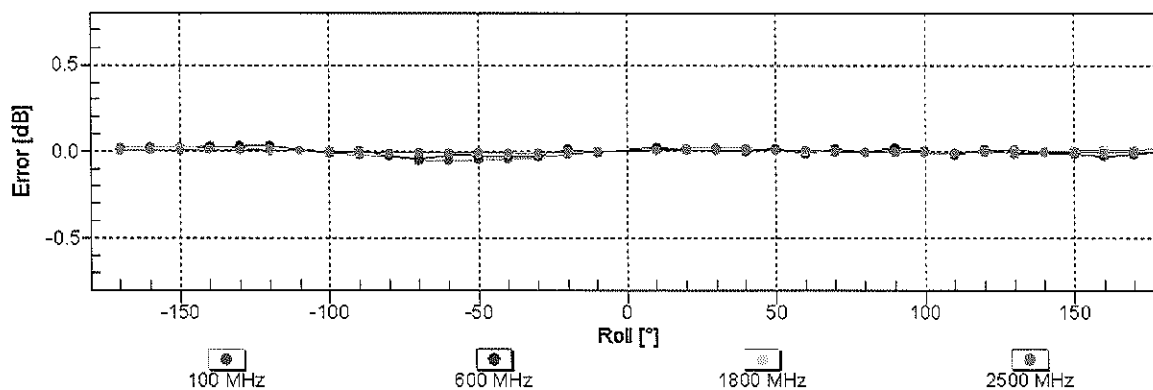
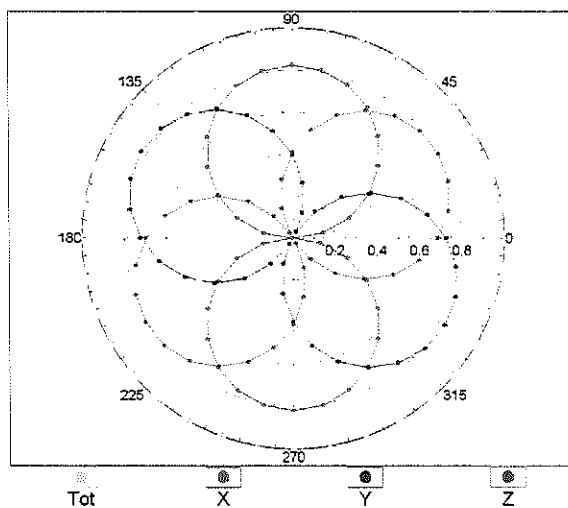
Uncertainty of Frequency Response of E-field: $\pm 6.3\%$ ($k=2$)

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

f=600 MHz,TEM

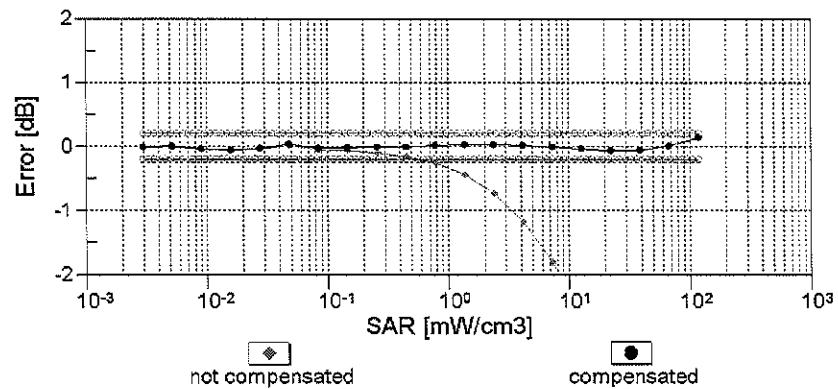
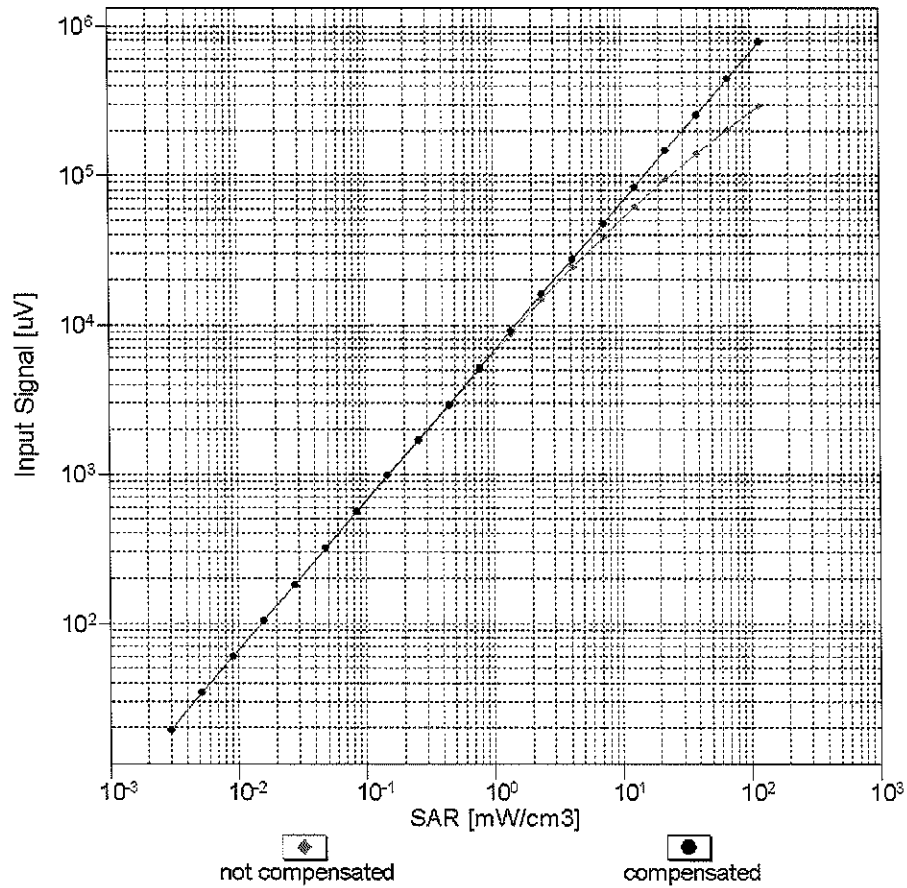


f=1800 MHz,R22



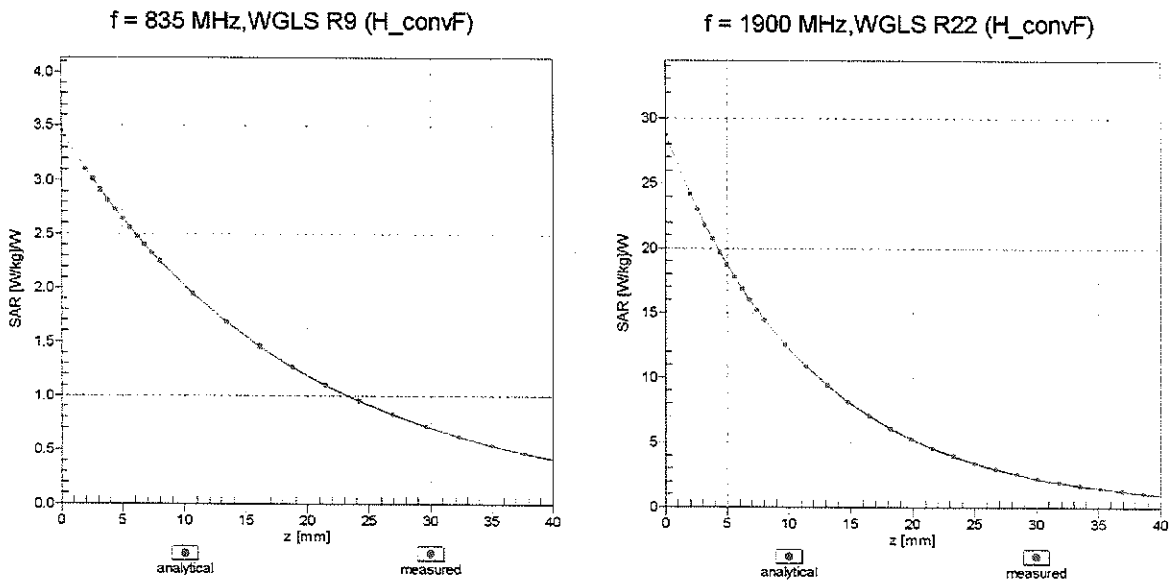
Uncertainty of Axial Isotropy Assessment: $\pm 0.5\%$ (k=2)

Dynamic Range $f(\text{SAR}_{\text{head}})$ (TEM cell , $f_{\text{eval}} = 1900 \text{ MHz}$)

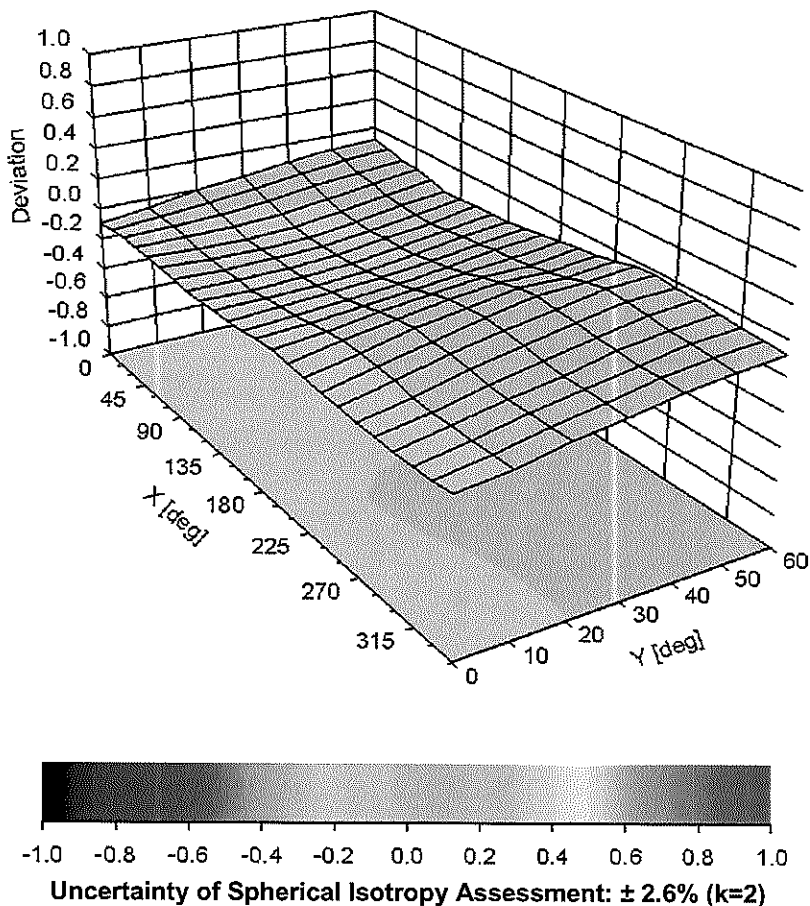


Uncertainty of Linearity Assessment: $\pm 0.6\%$ ($k=2$)

Conversion Factor Assessment



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



DASY/EASY - Parameters of Probe: ES3DV3 - SN:3319

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	60
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

APPENDIX D: SAR TISSUE SPECIFICATIONS

Measurement Procedure for Tissue verification:

- 1) The network analyzer and probe system was configured and calibrated.
- 2) The probe was immersed in the tissue. The tissue was placed in a nonmetallic container. Trapped air bubbles beneath the flange were minimized by placing the probe at a slight angle.
- 3) The complex admittance with respect to the probe aperture was measured
- 4) The complex relative permittivity ϵ' can be calculated from the below equation (Pournaropoulos and Misra):

$$Y = \frac{j2\omega\epsilon_r\epsilon_0}{[\ln(b/a)]^2} \int_a^b \int_a^b \int_0^\pi \cos\phi' \frac{\exp[-j\omega r(\mu_0\epsilon_r'\epsilon_0)^{1/2}]}{r} d\phi' d\rho' d\rho$$

where Y is the admittance of the probe in contact with the sample, the primed and unprimed coordinates refer to source and observation points, respectively, $r^2 = \rho^2 + \rho'^2 - 2\rho\rho'\cos\phi'$, ω is the angular frequency, and $j = \sqrt{-1}$.

Table D-I
Composition of the Tissue Equivalent Matter

Frequency (MHz)	835	835	1900	1900	2450-2600	2450-2600
Tissue	Head	Body	Head	Body	Head	Body
Ingredients (% by weight)						
Bactericide	0.1	0.1			See page 2	
DGBE			44.92	29.44		26.7
HEC	1	1				
NaCl	1.45	0.94	0.18	0.39		0.1
Sucrose	57	44.9				
Water	40.45	53.06	54.9	70.17		73.2

FCC ID: A3LSMJ3119S	 SAR EVALUATION REPORT 	Reviewed by: Quality Manager
Test Dates: 05/02/16 - 05/10/16 03/27/17 - 03/30/17	DUT Type: Portable Handset	APPENDIX D: Page 1 of 2

3 Composition / Information on ingredients

The Item is composed of the following ingredients:

Water	50 – 73 %	
Non-ionic detergents	25 – 50 %	polyoxyethylenesorbitan monolaurate
NaCl	0 – 2 %	
Preservative	0.05 – 0.1 %	Preventol-D7

Safety relevant ingredients:

CAS-No. 55965-84-9	< 0.1 %	aqueous preparation, containing 5-chloro-2-methyl-3(2H)-isothiazolone and 2-methyl-3(2H)-isothiazolone
CAS-No. 9005-64-5	< 50 %	polyoxyethylenesorbitan monolaurate

According to international guidelines, the product is not a dangerous mixture and therefore not required to be marked by symbols.

Figure D-1
Composition of 2450-2600 MHz Head Tissue Equivalent Matter

Note: 2450-2600 MHz head liquid recipes are proprietary SPEAG. Since the composition is approximate to the actual liquids utilized, the manufacturer tissue-equivalent liquid data sheets are provided below.

Measurement Certificate / Material Test

Item Name	Head Tissue Simulating Liquid (HBBL1900-3800V3)
Product No.	SL AAH 196 AB (Batch: 160330-1)
Manufacturer	SPEAG

Measurement Method

TSL dielectric parameters measured using calibrated DAK probe.

Setup Validation

Validation results were within $\pm 2.5\%$ towards the target values of Methanol.

Target Parameters

Target parameters as defined in the IEEE 1528 and IEC 62209 compliance standards.

Test Condition

Ambient	Environment temperatur (22 ± 3)°C and humidity < 70%.
TSL Temperature	22°C
Test Date	30-Mar-16
Operator	WJM

Additional Information

TSL Density 1.054 g/cm³

TSL Heat-capacity 3.389 kJ/(kg·K)

f (MHz)	e'	e''	sigma	eps	sigma	Δ-eps	Δ-sigma
1900	40.7	12.3	1.3	40.0	1.4	1.7	-6.9
1950	40.5	12.5	1.4	40.0	1.4	1.2	-3.3
2000	40.3	12.6	1.4	40.0	1.4	0.8	0.1
2050	40.1	12.7	1.5	39.9	1.4	0.6	0.5
2100	39.9	12.9	1.5	39.8	1.5	0.3	0.9
2150	39.8	13.0	1.6	39.7	1.5	-0.1	1.2
2200	39.6	13.1	1.6	39.6	1.6	-0.2	1.7
2250	39.4	13.2	1.7	39.6	1.6	-0.3	2.0
2300	39.2	13.3	1.7	39.5	1.7	-0.6	2.4
2350	39.1	13.5	1.8	39.4	1.7	-0.8	2.9
2400	38.9	13.6	1.8	39.3	1.8	-1.0	3.4
2450	38.7	13.7	1.9	39.2	1.8	-1.2	4.0
2500	38.5	13.8	1.9	39.1	1.9	-1.5	3.9
2550	38.3	13.9	2.0	39.1	1.9	-1.9	3.5
2600	38.2	14.1	2.0	39.0	2.0	-2.2	3.9
2650	37.9	14.2	2.1	38.9	2.0	-2.6	3.8
2700	37.8	14.3	2.2	38.9	2.1	-2.8	3.9
2750	37.5	14.4	2.2	38.8	2.1	-3.3	3.6
2800	37.4	14.5	2.3	38.8	2.2	-3.6	3.6
2850	37.2	14.6	2.3	38.7	2.2	-3.9	3.7
2900	37.0	14.7	2.4	38.6	2.3	-4.1	3.8
2950	36.8	14.8	2.4	38.6	2.3	-4.5	3.7
3000	36.6	14.9	2.5	38.5	2.4	-4.8	3.6
3050	36.4	15.0	2.5	38.4	2.5	-5.2	3.8
3100	36.2	15.1	2.6	38.4	2.5	-5.6	3.8
3150	36.1	15.2	2.7	38.3	2.6	-5.9	4.0
3200	35.9	15.2	2.7	38.3	2.6	-6.2	3.9
3250	35.7	15.3	2.8	38.2	2.7	-6.6	4.1
3300	35.5	15.3	2.8	38.2	2.7	-6.9	4.0
3350	35.4	15.4	2.9	38.1	2.8	-7.2	4.2
3400	35.2	15.5	2.9	38.0	2.8	-7.5	4.1
3450	35.0	15.5	3.0	38.0	2.9	-7.8	4.2
3500	34.9	15.6	3.0	37.9	2.9	-8.1	4.2
3550	34.7	15.6	3.1	37.9	3.0	-8.4	4.2
3600	34.5	15.7	3.1	37.8	3.0	-8.7	4.4
3650	34.4	15.8	3.2	37.8	3.1	-9.0	4.3
3700	34.2	15.8	3.3	37.7	3.1	-9.3	4.5
3750	34.1	15.9	3.3	37.6	3.2	-9.5	4.4
3800	33.9	15.9	3.4	37.6	3.2	-9.9	4.7
3850	33.7	16.0	3.4	37.5	3.3	-10.1	4.7

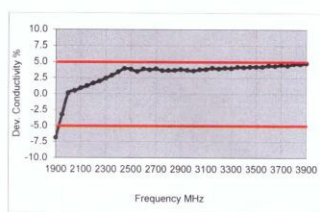
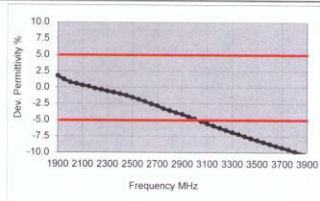


Figure D-2
2450-2600 MHz Head Tissue Equivalent Matter

FCC ID: A3LSMJ3119S		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Test Dates: 05/02/16 - 05/10/16 03/27/17 - 03/30/17	DUT Type: Portable Handset			APPENDIX D: Page 2 of 2

APPENDIX E: SAR SYSTEM VALIDATION

Per FCC KDB Publication 865664 D02v01r02, SAR system validation status should be documented to confirm measurement accuracy. The SAR systems (including SAR probes, system components and software versions) used for this device were validated against its performance specifications prior to the SAR measurements. Reference dipoles were used with the required tissue- equivalent media for system validation, according to the procedures outlined in FCC KDB Publication 865664 D01v01r04 and IEEE 1528-2013. Since SAR probe calibrations are frequency dependent, each probe calibration point was validated at a frequency within the valid frequency range of the probe calibration point, using the system that normally operates with the probe for routine SAR measurements and according to the required tissue-equivalent media.

A tabulated summary of the system validation status including the validation date(s), measurement frequencies, SAR probes and tissue dielectric parameters has been included.

Table E-I
SAR System Validation Summary

SAR SYSTEM #	FREQ. [MHz]	DATE	PROBE SN	PROBE TYPE	PROBE CAL. POINT		COND. (σ)	PERM. (ϵ_r)	CW VALIDATION			MOD. VALIDATION		
									SENSITIVITY	PROBE LINEARITY	PROBE ISOTROPY	MOD. TYPE	DUTY FACTOR	PAR
G	835	11/28/2015	3334	ES3DV3	835	Head	0.923	41.629	PASS	PASS	PASS	GMSK	PASS	N/A
J	835	2/10/2017	3334	ES3DV3	835	Head	0.904	40.790	PASS	PASS	PASS	GMSK	PASS	N/A
A	1900	2/16/2016	3332	ES3DV3	1900	Head	1.452	39.489	PASS	PASS	PASS	GMSK	PASS	N/A
G	2450	9/28/2016	3287	ES3DV3	2450	Head	1.875	37.737	PASS	PASS	PASS	OFDM/TDD	PASS	PASS
E	2600	5/2/2016	7406	EX3DV4	2600	Head	1.964	37.450	PASS	PASS	PASS	TDD	PASS	N/A
C	835	10/6/2015	3288	ES3DV3	835	Body	1.016	54.040	PASS	PASS	PASS	GMSK	PASS	N/A
H	835	3/2/2017	3318	ES3DV3	835	Body	0.982	53.900	PASS	PASS	PASS	GMSK	PASS	N/A
K	1900	2/11/2016	3022	ES3DV2	1900	Body	1.561	52.478	PASS	PASS	PASS	GMSK	PASS	N/A
I	1900	11/4/2015	3333	ES3DV3	1900	Body	1.579	51.524	PASS	PASS	PASS	GMSK	PASS	N/A
H	2450	4/6/2016	3319	ES3DV3	2450	Body	2.023	51.922	PASS	PASS	PASS	OFDM/TDD	PASS	PASS
H	2600	4/6/2016	3319	ES3DV3	2600	Body	2.231	51.366	PASS	PASS	PASS	TDD	PASS	N/A

NOTE: While the probes have been calibrated for both CW and modulated signals, all measurements were performed using communication systems calibrated for CW signals only. Modulations in the table above represent test configurations for which the measurement system has been validated per FCC KDB Publication 865664 D01v01r04 for scenarios when CW probe calibrations are used with other signal types. SAR systems were validated for modulated signals with a periodic duty cycle, such as GMSK, or with a high peak to average ratio (>5 dB), such as OFDM according to FCC KDB Publication 865664 D01v01r04.

FCC ID: A3LSMJ3119S	 SAR EVALUATION REPORT 	Reviewed by: Quality Manager
Test Dates: 05/02/16 - 05/10/16 03/27/17 - 03/30/17	DUT Type: Portable Handset	APPENDIX E: Page 1 of 1