

Test Plot:	DF	Test Position:	Front of Face
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Date: 2018-06-19

Communication System: UID 0, A-CW (0); Frequency: 512.013 MHz; Duty Cycle: 1:1

Medium parameters used (interpolated): $f = 512.013 \text{ MHz}$; $\sigma = 0.908 \text{ S/m}$; $\epsilon_r = 43.158$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7494; ConvF(11.7, 11.7, 11.7) @ 512.013 MHz; Calibrated: 2/26/2018
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1549; Calibrated: 4/25/2018
- Phantom: ELI V8.0 ; Type: QD OVA 004 AA ; Serial: 2078
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7439)

Front of face/Procedure/Area Scan (61x151x1): Interpolated grid: $dx=1.500 \text{ mm}$, $dy=1.500 \text{ mm}$

Info: [Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 1.91 W/kg

Front of face/Procedure/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

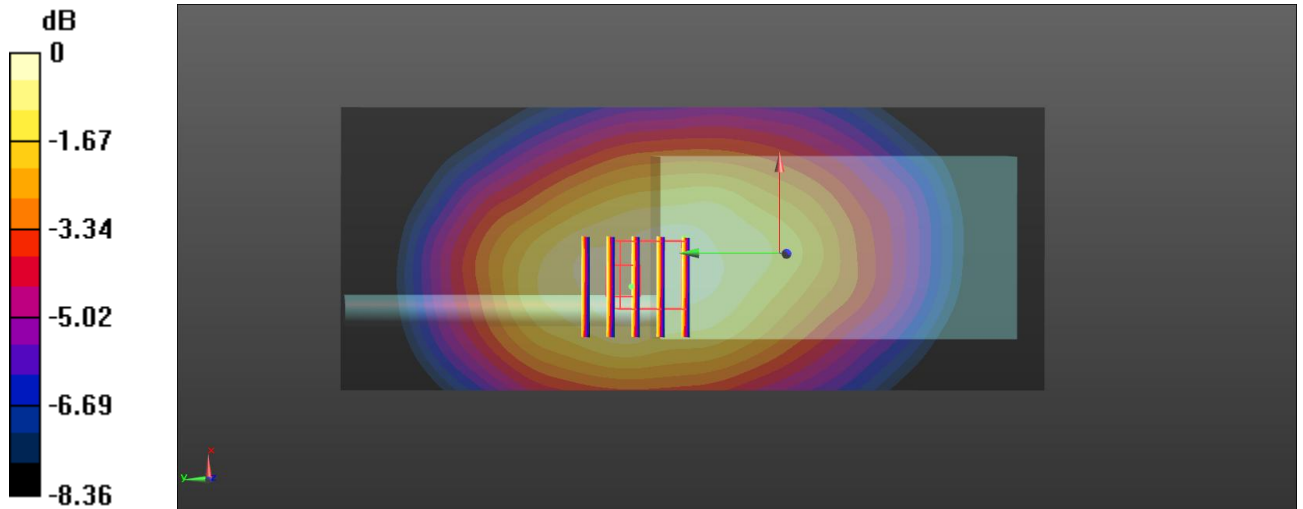
Reference Value = 42.32 V/m; Power Drift = 0.20 dB

Peak SAR (extrapolated) = 2.42 W/kg

SAR(1 g) = 1.81 W/kg; SAR(10 g) = 1.36 W/kg

Info: [Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 1.91 W/kg



0 dB = 1.91 W/kg = 2.81 dBW/kg

Test Plot:	AB	Test Position:	Body-worn
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Date: 2018-06-19

Communication System: UID 0, A-CW (0); Frequency: 481.013 MHz; Duty Cycle: 1:1

Medium parameters used (interpolated): $f = 481.013$ MHz; $\sigma = 0.991$ S/m; $\epsilon_r = 55.63$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7494; ConvF(11.87, 11.87, 11.87) @ 481.013 MHz; Calibrated: 2/26/2018
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1549; Calibrated: 4/25/2018
- Phantom: ELI V8.0 ; Type: QD OVA 004 AA ; Serial: 2078
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7439)

Body Worn/Procedure/Area Scan (61x151x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Info: [Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 14.3 W/kg

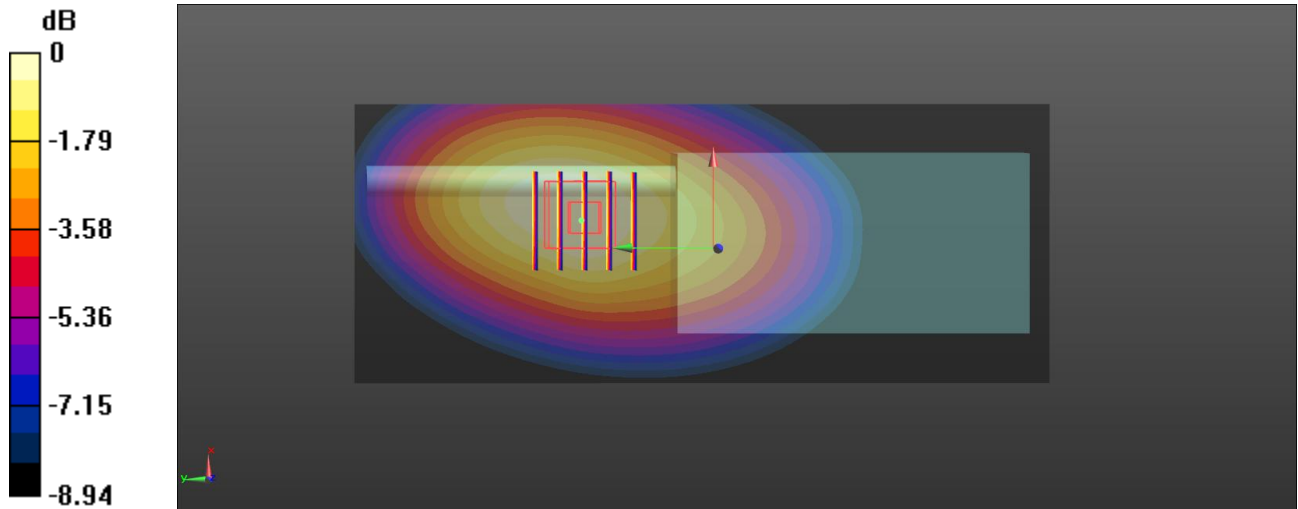
Body Worn/Procedure/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 100.1 V/m; Power Drift = -0.16 dB

Peak SAR (extrapolated) = 17.9 W/kg

SAR(1 g) = 11.62 W/kg; SAR(10 g) = 9.21 W/kgInfo: [Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 13.7 W/kg



0 dB = 13.7 W/kg = 11.37 dBW/kg

Test Plot:	DB	Test Position:	Body-worn
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Date: 2018-06-19

Communication System: UID 0, A-CW (0); Frequency: 512.013 MHz; Duty Cycle: 1:1

Medium parameters used (extrapolated): $f = 512.013$ MHz; $\sigma = 1.022$ S/m; $\epsilon_r = 55.63$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7494; ConvF(11.87, 11.87, 11.87) @ 512.013 MHz; Calibrated: 2/26/2018
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1549; Calibrated: 4/25/2018
- Phantom: ELI V8.0 ; Type: QD OVA 004 AA ; Serial: 2078
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7439)

Body Worn/Procedure/Area Scan (61x151x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Info: [Extrapolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 4.68 W/kg

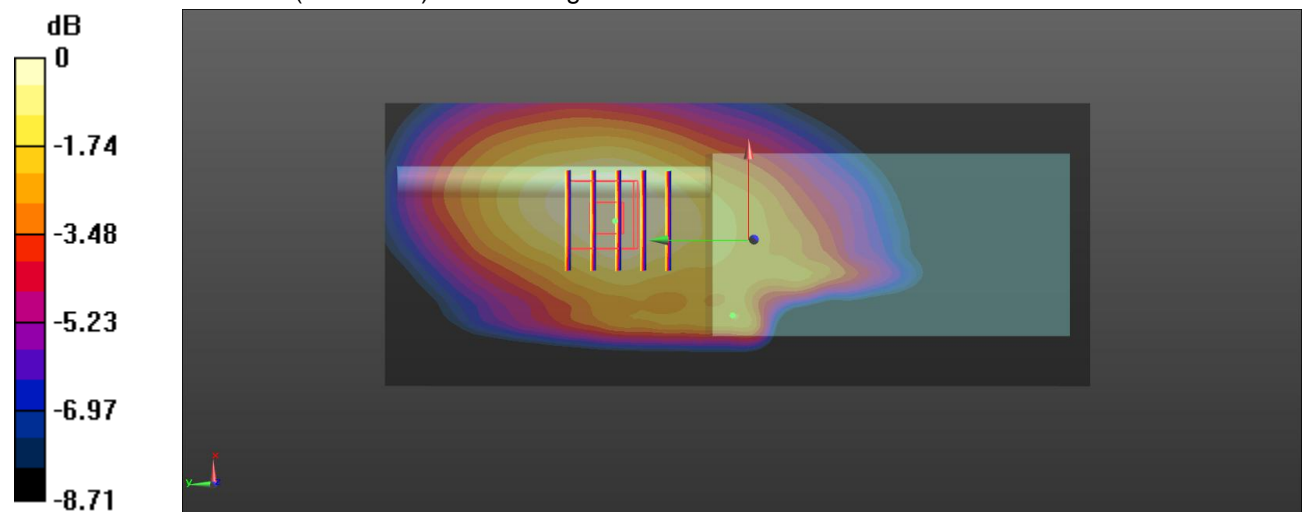
Body Worn/Procedure/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 56.03 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 5.82 W/kg

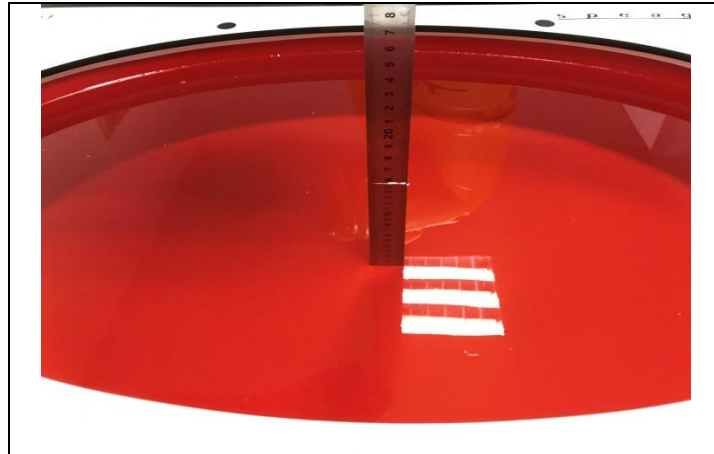
SAR(1 g) = 4.18 W/kg; SAR(10 g) = 3.06 W/kgInfo: [Extrapolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 4.42 W/kg



0 dB = 4.42 W/kg = 6.45 dBW/kg

15. Test Setup Photos



Liquid depth in the flat Phantom (450MHz) (15.3cm deep)



Front of face(25mm)



Body Worn (0mm)

16. External and Internal Photos of the EUT

Please refer to the test report No.: TRE18060094.

-----End of Report-----

1.1. DAE4 Calibration Certificate

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Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 0108**

Client **CCIC - HTW (Auden)**

Certificate No: **DAE4-1549_Apr18**

CALIBRATION CERTIFICATE																							
Object	DAE4 - SD 000 D04 BN - SN: 1549																						
Calibration procedure(s)	QA CAL-06.v29 Calibration procedure for the data acquisition electronics (DAE)																						
Calibration date:	April 25, 2018																						
<p>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.</p> <p>All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.</p> <p>Calibration Equipment used (M&TE critical for calibration)</p> <table border="1"> <thead> <tr> <th>Primary Standards</th> <th>ID #</th> <th>Cal Date (Certificate No.)</th> <th>Scheduled Calibration</th> </tr> </thead> <tbody> <tr> <td>Keithley Multimeter Type 2001</td> <td>SN: 0810278</td> <td>31-Aug-17 (No:21092)</td> <td>Aug-18</td> </tr> <tr> <th>Secondary Standards</th> <th>ID #</th> <th>Check Date (in house)</th> <th>Scheduled Check</th> </tr> <tr> <td>Auto DAE Calibration Unit</td> <td>SE UWS 053 AA 1001</td> <td>04-Jan-18 (in house check)</td> <td>In house check: Jan-19</td> </tr> <tr> <td>Calibrator Box V2.1</td> <td>SE UMS 006 AA 1002</td> <td>04-Jan-18 (in house check)</td> <td>In house check: Jan-19</td> </tr> </tbody> </table>				Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration	Keithley Multimeter Type 2001	SN: 0810278	31-Aug-17 (No:21092)	Aug-18	Secondary Standards	ID #	Check Date (in house)	Scheduled Check	Auto DAE Calibration Unit	SE UWS 053 AA 1001	04-Jan-18 (in house check)	In house check: Jan-19	Calibrator Box V2.1	SE UMS 006 AA 1002	04-Jan-18 (in house check)	In house check: Jan-19
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Calibrator Box V2.1	SE UMS 006 AA 1002	04-Jan-18 (in house check)	In house check: Jan-19																				
Calibrated by:	Name Eric Hainfeld	Function Laboratory Technician	Signature 																				
Approved by:	Sven Kühn	Deputy Manager																					
This calibration certificate shall not be reproduced except in full without written approval of the laboratory.			Issued: April 25, 2018																				

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Accreditation No.: **SCS 0108**

Glossary

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

Methods Applied and Interpretation of Parameters

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

DC Voltage Measurement

A/D - Converter Resolution nominal

High Range: 1LSB = 6.1 μ V, full range = -100...+300 mV
 Low Range: 1LSB = 61nV, full range = -1.....+3mV

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

Calibration Factors	X	Y	Z
High Range	406.286 \pm 0.02% (k=2)	405.992 \pm 0.02% (k=2)	406.121 \pm 0.02% (k=2)
Low Range	3.98481 \pm 1.50% (k=2)	3.99129 \pm 1.50% (k=2)	3.99380 \pm 1.50% (k=2)

Connector Angle

Connector Angle to be used in DASY system	19.5 $^{\circ}$ \pm 1 $^{\circ}$
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Appendix (Additional assessments outside the scope of SCS0108)

1. DC Voltage Linearity

High Range	Reading (μV)	Difference (μV)	Error (%)
Channel X + Input	200032.88	-6.49	-0.00
Channel X + Input	20007.86	2.59	0.01
Channel X - Input	-19999.45	5.51	-0.03
Channel Y + Input	200041.48	8.18	0.00
Channel Y + Input	20005.02	-0.19	-0.00
Channel Y - Input	-20006.61	-1.53	0.01
Channel Z + Input	200032.37	-0.87	-0.00
Channel Z + Input	20003.95	-1.15	-0.01
Channel Z - Input	-20006.60	-1.44	0.01

Low Range	Reading (μV)	Difference (μV)	Error (%)
Channel X + Input	2001.67	0.37	0.02
Channel X + Input	201.82	0.29	0.15
Channel X - Input	-198.25	0.31	-0.16
Channel Y + Input	2001.35	0.05	0.00
Channel Y + Input	200.82	-0.59	-0.29
Channel Y - Input	-199.06	-0.48	0.24
Channel Z + Input	2000.94	-0.41	-0.02
Channel Z + Input	200.84	-0.55	-0.27
Channel Z - Input	-199.79	-1.17	0.59

2. Common mode sensitivity

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

	Common mode Input Voltage (mV)	High Range Average Reading (μV)	Low Range Average Reading (μV)
Channel X	200	-15.83	-18.16
	- 200	21.36	19.06
Channel Y	200	20.98	20.64
	- 200	-22.25	-22.23
Channel Z	200	5.37	5.05
	- 200	-7.46	-7.54

3. Channel separation

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

	Input Voltage (mV)	Channel X (μV)	Channel Y (μV)	Channel Z (μV)
Channel X	200	-	-1.66	-2.66
Channel Y	200	5.97	-	-0.75
Channel Z	200	9.87	3.19	-

4. AD-Converter Values with inputs shorted

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

	High Range (LSB)	Low Range (LSB)
Channel X	16424	16943
Channel Y	15770	17113
Channel Z	15616	15207

5. Input Offset Measurement

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

Input 10MΩ

	Average (μV)	min. Offset (μV)	max. Offset (μV)	Std. Deviation (μV)
Channel X	-0.33	-1.57	0.89	0.48
Channel Y	0.13	-0.93	1.54	0.52
Channel Z	-0.98	-2.13	0.50	0.47

6. Input Offset Current

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

7. Input Resistance (Typical values for information)

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

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

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

9. Power Consumption (Typical values for information)

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

1.2. Probe Calibration Certificate

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Accreditation No.: **SCS 0108**

Client **CCIC-HTW (Auden)**

Certificate No: **EX3-7494_Feb18**

CALIBRATION CERTIFICATE

Object: **EX3DV4 - SN:7494**

Calibration procedure(s): **QA CAL-01.v9, QA CAL-12.v9, QA CAL-14.v4, QA CAL-23.v5,
QA CAL-25.v6
Calibration procedure for dosimetric E-field probes**

Calibration date: **February 26, 2018**

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NRP	SN: 104778	04-Apr-17 (No. 217-02521/02522)	Apr-18
Power sensor NRP-Z91	SN: 103244	04-Apr-17 (No. 217-02521)	Apr-18
Power sensor NRP-Z91	SN: 103245	04-Apr-17 (No. 217-02525)	Apr-18
Reference 20 dB Attenuator	SN: S5277 (20x)	07-Apr-17 (No. 217-02528)	Apr-18
Reference Probe ES3DV2	SN: 3013	30-Dec-17 (No. ES3-3013_Dec17)	Dec-18
DAE4	SN: 660	21-Dec-17 (No. DAE4-660_Dec17)	Dec-18
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-17)	In house check: Oct-18

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

Issued: February 27, 2018

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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:

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

Methods Applied and Interpretation of Parameters:

- *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).

EX3DV4 – SN:7494

February 26, 2018

Probe EX3DV4

SN:7494

Manufactured: March 20, 2017
Calibrated: February 26, 2018

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

EX3DV4- SN:7494

February 26, 2018

DASY/EASY - Parameters of Probe: EX3DV4 - SN:7494**Basic Calibration Parameters**

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu\text{V}/(\text{V}/\text{m})^2$) ^A	0.40	0.46	0.38	$\pm 10.1\%$
DCP (mV) ^B	96.1	100.9	97.7	

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	139.9	$\pm 3.0\%$
		Y	0.0	0.0	1.0		130.5	
		Z	0.0	0.0	1.0		141.2	

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	35.16	262.6	35.64	5.712	0.042	5.019	0.180	0.312	1.002
Y	33.86	260.4	37.41	4.029	0.204	5.030	0.324	0.359	1.006
Z	29.60	221.1	35.61	5.101	0.000	5.027	0.562	0.186	1.003

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.

EX3DV4- SN:7494

February 26, 2018

DASY/EASY - Parameters of Probe: EX3DV4 - SN:7494**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)
150	52.3	0.76	13.63	13.63	13.63	0.00	1.00	± 13.3 %
450	43.5	0.87	11.70	11.70	11.70	0.14	1.25	± 13.3 %
750	41.9	0.89	11.02	11.02	11.02	0.43	0.86	± 12.0 %
835	41.5	0.90	10.73	10.73	10.73	0.44	0.82	± 12.0 %
1750	40.1	1.37	9.23	9.23	9.23	0.30	0.96	± 12.0 %
1900	40.0	1.40	8.83	8.83	8.83	0.36	0.84	± 12.0 %
2450	39.2	1.80	8.27	8.27	8.27	0.32	0.85	± 12.0 %
2600	39.0	1.96	7.92	7.92	7.92	0.35	0.84	± 12.0 %
5200	36.0	4.66	5.63	5.63	5.63	0.35	1.80	± 13.1 %
5300	35.9	4.76	5.40	5.40	5.40	0.35	1.80	± 13.1 %
5500	35.6	4.96	5.06	5.06	5.06	0.40	1.80	± 13.1 %
5600	35.5	5.07	4.93	4.93	4.93	0.40	1.80	± 13.1 %
5800	35.3	5.27	4.90	4.90	4.90	0.40	1.80	± 13.1 %

^C Frequency validity above 300 MHz of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Above 5 GHz frequency validity can be extended to ± 110 MHz.

^F At frequencies below 3 GHz, the validity of tissue parameters (ϵ and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ϵ and σ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

^G Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz and below ± 2% for frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.

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DASY/EASY - Parameters of Probe: EX3DV4 - SN:7494**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 ^d (mm)	Unc (k=2)
150	61.9	0.80	12.81	12.81	12.81	0.00	1.00	± 13.3 %
450	56.7	0.94	11.87	11.87	11.87	0.08	1.25	± 13.3 %
750	55.5	0.96	10.87	10.87	10.87	0.41	0.85	± 12.0 %
835	55.2	0.97	10.50	10.50	10.50	0.38	0.85	± 12.0 %
1750	53.4	1.49	8.77	8.77	8.77	0.31	0.90	± 12.0 %
1900	53.3	1.52	8.42	8.42	8.42	0.36	0.84	± 12.0 %
2450	52.7	1.95	8.08	8.08	8.08	0.24	1.07	± 12.0 %
2600	52.5	2.16	7.51	7.51	7.51	0.19	1.10	± 12.0 %
5200	49.0	5.30	5.30	5.30	5.30	0.35	1.90	± 13.1 %
5300	48.9	5.42	4.97	4.97	4.97	0.40	1.90	± 13.1 %
5500	48.6	5.65	4.62	4.62	4.62	0.40	1.90	± 13.1 %
5600	48.5	5.77	4.51	4.51	4.51	0.40	1.90	± 13.1 %
5800	48.2	6.00	4.61	4.61	4.61	0.40	1.90	± 13.1 %

^C Frequency validity above 300 MHz of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Above 5 GHz frequency validity can be extended to ± 110 MHz.

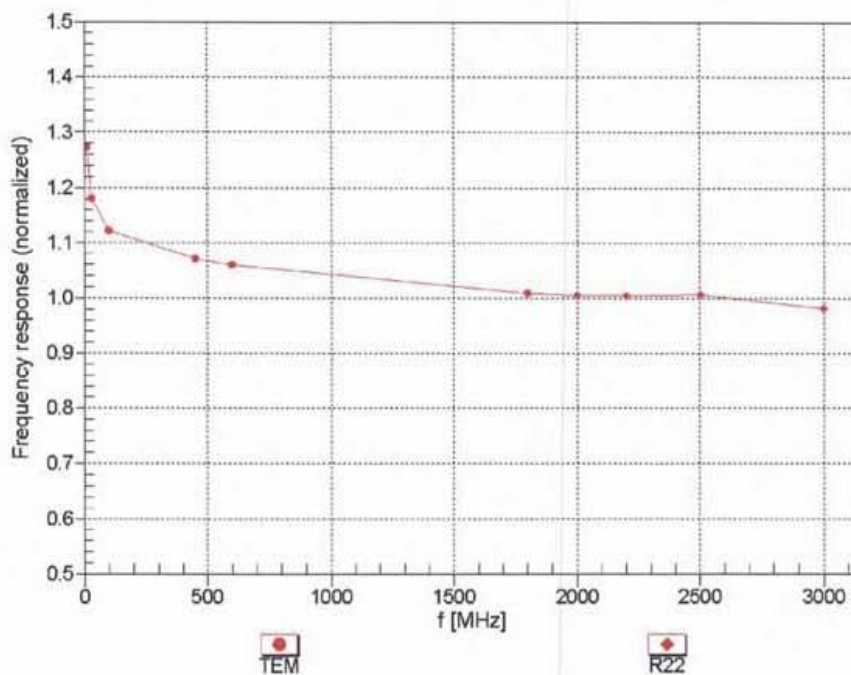
^F At frequencies below 3 GHz, the validity of tissue parameters (ϵ and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ϵ and σ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

^G Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz and below ± 2% for frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.

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

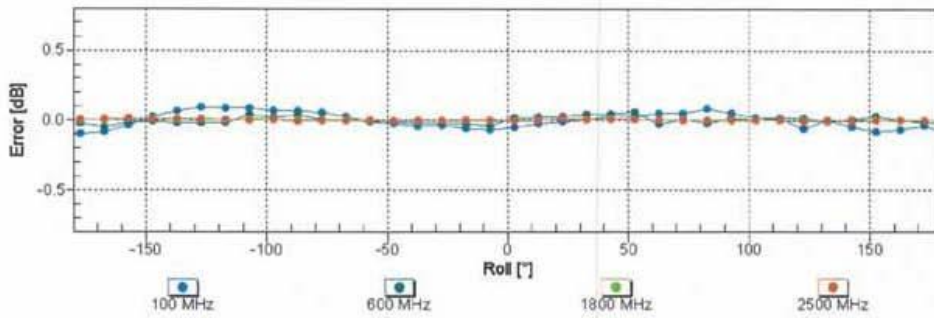
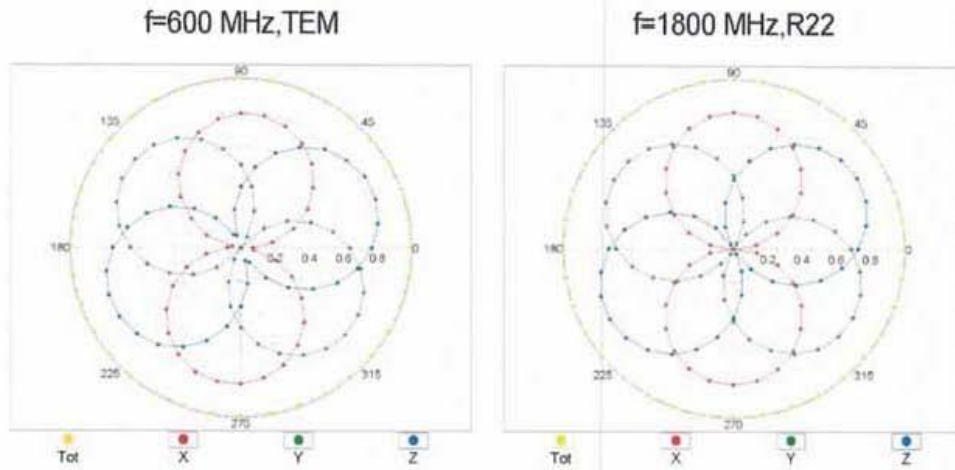


Uncertainty of Frequency Response of E-field: $\pm 6.3\%$ (k=2)

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

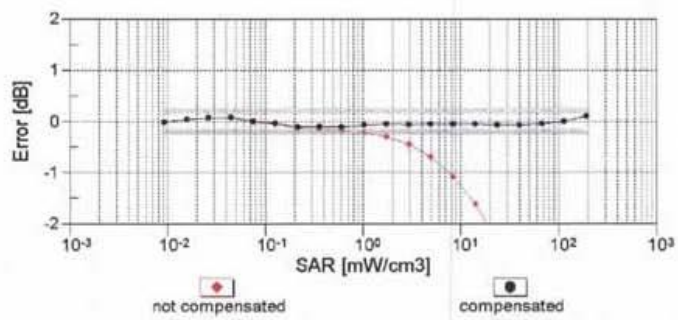
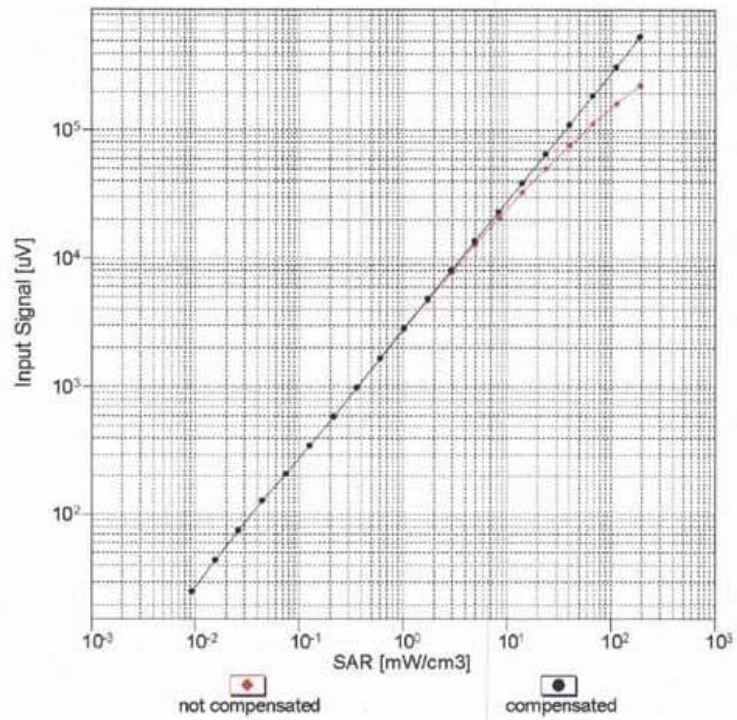


Uncertainty of Axial Isotropy Assessment: $\pm 0.5\%$ ($k=2$)

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

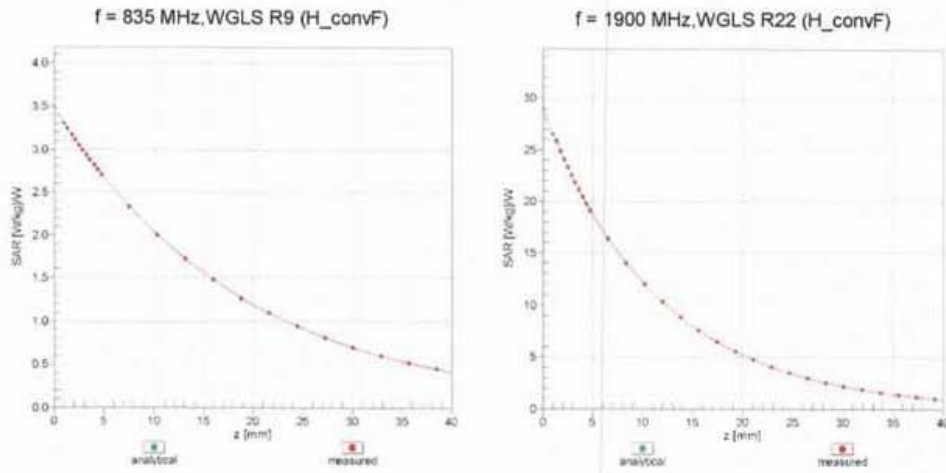


Uncertainty of Linearity Assessment: $\pm 0.6\%$ ($k=2$)

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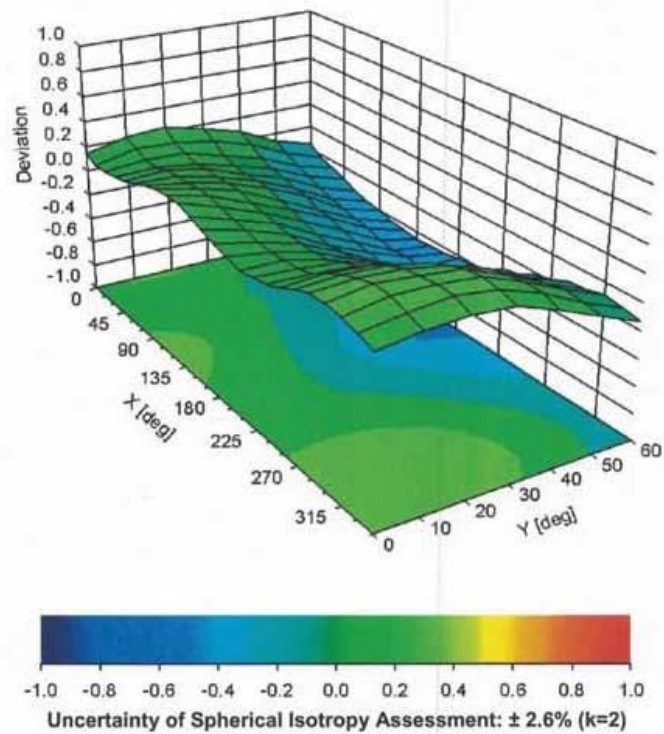
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Conversion Factor Assessment



Deviation from Isotropy in Liquid

Error (ϕ, θ), f = 900 MHz



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DASY/EASY - Parameters of Probe: EX3DV4 - SN:7494

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	22.8
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disabled
Probe Overall Length	337 mm
Probe Body Diameter	10 mm
Tip Length	9 mm
Tip Diameter	2.5 mm
Probe Tip to Sensor X Calibration Point	1 mm
Probe Tip to Sensor Y Calibration Point	1 mm
Probe Tip to Sensor Z Calibration Point	1 mm
Recommended Measurement Distance from Surface	1.4 mm

Appendix A: DAE and Probe Calibration Certificate

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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	139.9	$\pm 3.0\%$
		Y	0.00	0.00	1.00		130.5	
		Z	0.00	0.00	1.00		141.2	
10010- CAA	SAR Validation (Square, 100ms, 10ms)	X	1.49	62.54	7.67	10.00	20.0	$\pm 9.6\%$
		Y	1.40	61.40	6.89		20.0	
		Z	1.51	62.75	7.79		20.0	
10011- CAB	UMTS-FDD (WCDMA)	X	0.98	67.35	15.11	0.00	150.0	$\pm 9.6\%$
		Y	0.81	65.02	13.17		150.0	
		Z	0.93	66.90	14.65		150.0	
10012- CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps)	X	1.11	63.45	14.96	0.41	150.0	$\pm 9.6\%$
		Y	1.01	62.50	14.08		150.0	
		Z	1.10	63.40	14.81		150.0	
10013- CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps)	X	4.64	66.63	16.93	1.46	150.0	$\pm 9.6\%$
		Y	4.55	66.39	16.76		150.0	
		Z	4.54	66.74	16.91		150.0	
10021- DAC	GSM-FDD (TDMA, GMSK)	X	100.00	105.24	22.43	9.39	50.0	$\pm 9.6\%$
		Y	7.56	78.16	14.98		50.0	
		Z	100.00	105.86	22.69		50.0	
10023- DAC	GPRS-FDD (TDMA, GMSK, TN 0)	X	100.00	104.66	22.23	9.57	50.0	$\pm 9.6\%$
		Y	5.00	73.77	13.48		50.0	
		Z	100.00	105.06	22.39		50.0	
10024- DAC	GPRS-FDD (TDMA, GMSK, TN 0-1)	X	100.00	105.71	21.52	6.56	60.0	$\pm 9.6\%$
		Y	6.98	78.84	13.84		60.0	
		Z	100.00	107.13	22.08		60.0	
10025- DAC	EDGE-FDD (TDMA, 8PSK, TN 0)	X	4.17	73.26	28.42	12.57	50.0	$\pm 9.6\%$
		Y	3.36	65.73	23.63		50.0	
		Z	4.00	72.02	27.83		50.0	
10026- DAC	EDGE-FDD (TDMA, 8PSK, TN 0-1)	X	5.43	82.70	29.77	9.56	60.0	$\pm 9.6\%$
		Y	5.01	80.20	28.37		60.0	
		Z	4.92	80.62	29.06		60.0	
10027- DAC	GPRS-FDD (TDMA, GMSK, TN 0-1-2)	X	100.00	108.47	21.93	4.80	80.0	$\pm 9.6\%$
		Y	100.00	97.70	17.18		80.0	
		Z	100.00	111.35	23.07		80.0	
10028- DAC	GPRS-FDD (TDMA, GMSK, TN 0-1-2-3)	X	100.00	113.56	23.37	3.55	100.0	$\pm 9.6\%$
		Y	0.84	65.84	7.87		100.0	
		Z	100.00	118.99	25.50		100.0	
10029- DAC	EDGE-FDD (TDMA, 8PSK, TN 0-1-2)	X	3.69	73.69	24.54	7.80	80.0	$\pm 9.6\%$
		Y	3.47	72.25	23.68		80.0	
		Z	3.48	72.59	24.16		80.0	
10030- CAA	IEEE 802.15.1 Bluetooth (GFSK, DH1)	X	100.00	103.93	20.28	5.30	70.0	$\pm 9.6\%$
		Y	1.23	65.73	8.63		70.0	
		Z	100.00	104.97	20.64		70.0	
10031- CAA	IEEE 802.15.1 Bluetooth (GFSK, DH3)	X	100.00	106.93	19.48	1.88	100.0	$\pm 9.6\%$
		Y	0.22	60.00	2.94		100.0	
		Z	100.00	109.18	20.25		100.0	

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10032-CAA	IEEE 802.15.1 Bluetooth (GFSK, DH5)	X	100.00	122.55	24.60	1.17	100.0	± 9.6 %
		Y	7.61	60.44	1.42		100.0	
		Z	100.00	126.07	25.78		100.0	
10033-CAA	IEEE 802.15.1 Bluetooth (PI/4-DQPSK, DH1)	X	6.59	87.18	22.06	5.30	70.0	± 9.6 %
		Y	3.47	76.95	17.71		70.0	
		Z	6.68	86.39	21.09		70.0	
10034-CAA	IEEE 802.15.1 Bluetooth (PI/4-DQPSK, DH3)	X	1.88	72.27	15.10	1.88	100.0	± 9.6 %
		Y	1.10	65.57	11.17		100.0	
		Z	1.53	69.51	13.02		100.0	
10035-CAA	IEEE 802.15.1 Bluetooth (PI/4-DQPSK, DH5)	X	1.40	69.50	13.68	1.17	100.0	± 9.6 %
		Y	0.87	63.95	10.05		100.0	
		Z	1.12	66.96	11.59		100.0	
10036-CAA	IEEE 802.15.1 Bluetooth (8-DPSK, DH1)	X	9.62	92.97	23.95	5.30	70.0	± 9.6 %
		Y	4.28	80.05	18.91		70.0	
		Z	10.09	92.34	23.01		70.0	
10037-CAA	IEEE 802.15.1 Bluetooth (8-DPSK, DH3)	X	1.68	71.06	14.59	1.88	100.0	± 9.6 %
		Y	1.03	65.05	10.91		100.0	
		Z	1.36	68.33	12.52		100.0	
10038-CAA	IEEE 802.15.1 Bluetooth (8-DPSK, DH5)	X	1.40	69.76	13.93	1.17	100.0	± 9.6 %
		Y	0.87	64.12	10.26		100.0	
		Z	1.13	67.19	11.84		100.0	
10039-CAB	CDMA2000 (1xRTT, RC1)	X	1.34	69.22	13.14	0.00	150.0	± 9.6 %
		Y	0.77	63.08	9.10		150.0	
		Z	0.85	64.80	10.09		150.0	
10042-CAB	IS-54 / IS-136 FDD (TDMA/FDM, PI/4-DQPSK, Halfrate)	X	100.00	102.28	20.38	7.78	50.0	± 9.6 %
		Y	1.72	65.50	9.21		50.0	
		Z	100.00	102.90	20.62		50.0	
10044-CAA	IS-91/EIA/TIA-553 FDD (FDMA, FM)	X	0.00	99.20	3.16	0.00	150.0	± 9.6 %
		Y	0.09	120.69	13.78		150.0	
		Z	0.00	99.13	4.03		150.0	
10048-CAA	DECT (TDD, TDMA/FDM, GFSK, Full Slot, 24)	X	6.20	72.28	14.23	13.80	25.0	± 9.6 %
		Y	4.17	67.17	12.27		25.0	
		Z	7.20	73.81	14.76		25.0	
10049-CAA	DECT (TDD, TDMA/FDM, GFSK, Double Slot, 12)	X	7.52	77.18	14.97	10.79	40.0	± 9.6 %
		Y	3.87	69.54	12.04		40.0	
		Z	10.31	80.47	16.03		40.0	
10056-CAA	UMTS-TDD (TD-SCDMA, 1.28 Mcps)	X	44.37	107.84	27.61	9.03	50.0	± 9.6 %
		Y	11.98	87.68	21.33		50.0	
		Z	50.57	108.48	27.27		50.0	
10058-DAC	EDGE-FDD (TDMA, 8PSK, TN 0-1-2-3)	X	3.09	70.29	22.11	6.55	100.0	± 9.6 %
		Y	2.91	69.17	21.43		100.0	
		Z	2.96	69.57	21.87		100.0	
10059-CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 2 Mbps)	X	1.11	64.07	15.34	0.61	110.0	± 9.6 %
		Y	1.00	63.03	14.40		110.0	
		Z	1.09	64.00	15.19		110.0	
10060-CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 5.5 Mbps)	X	3.00	89.75	24.24	1.30	110.0	± 9.6 %
		Y	1.55	78.88	19.29		110.0	
		Z	2.52	87.33	23.49		110.0	

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10061-CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 11 Mbps)	X	1.60	73.10	19.62	2.04	110.0	± 9.6 %
		Y	1.35	70.56	17.98		110.0	
		Z	1.53	72.62	19.39		110.0	
10062-CAC	IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps)	X	4.47	66.68	16.41	0.49	100.0	± 9.6 %
		Y	4.36	66.37	16.19		100.0	
		Z	4.36	66.73	16.35		100.0	
10063-CAC	IEEE 802.11a/h WiFi 5 GHz (OFDM, 9 Mbps)	X	4.47	66.74	16.49	0.72	100.0	± 9.6 %
		Y	4.37	66.45	16.27		100.0	
		Z	4.37	66.82	16.44		100.0	
10064-CAC	IEEE 802.11a/h WiFi 5 GHz (OFDM, 12 Mbps)	X	4.71	66.94	16.68	0.86	100.0	± 9.6 %
		Y	4.60	66.65	16.48		100.0	
		Z	4.58	66.99	16.62		100.0	
10065-CAC	IEEE 802.11a/h WiFi 5 GHz (OFDM, 18 Mbps)	X	4.57	66.74	16.73	1.21	100.0	± 9.6 %
		Y	4.47	66.46	16.54		100.0	
		Z	4.45	66.78	16.67		100.0	
10066-CAC	IEEE 802.11a/h WiFi 5 GHz (OFDM, 24 Mbps)	X	4.57	66.71	16.86	1.46	100.0	± 9.6 %
		Y	4.47	66.44	16.68		100.0	
		Z	4.45	66.73	16.80		100.0	
10067-CAC	IEEE 802.11a/h WiFi 5 GHz (OFDM, 36 Mbps)	X	4.85	66.96	17.32	2.04	100.0	± 9.6 %
		Y	4.75	66.72	17.16		100.0	
		Z	4.71	66.99	17.26		100.0	
10068-CAC	IEEE 802.11a/h WiFi 5 GHz (OFDM, 48 Mbps)	X	4.86	66.83	17.46	2.55	100.0	± 9.6 %
		Y	4.77	66.61	17.31		100.0	
		Z	4.75	66.91	17.45		100.0	
10069-CAC	IEEE 802.11a/h WiFi 5 GHz (OFDM, 54 Mbps)	X	4.93	66.84	17.64	2.67	100.0	± 9.6 %
		Y	4.84	66.64	17.50		100.0	
		Z	4.79	66.90	17.60		100.0	
10071-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 9 Mbps)	X	4.72	66.65	17.20	1.99	100.0	± 9.6 %
		Y	4.63	66.43	17.04		100.0	
		Z	4.63	66.78	17.20		100.0	
10072-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 12 Mbps)	X	4.66	66.84	17.36	2.30	100.0	± 9.6 %
		Y	4.57	66.61	17.20		100.0	
		Z	4.56	66.93	17.35		100.0	
10073-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 18 Mbps)	X	4.70	66.96	17.65	2.83	100.0	± 9.6 %
		Y	4.62	66.75	17.51		100.0	
		Z	4.61	67.10	17.68		100.0	
10074-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 24 Mbps)	X	4.69	66.86	17.79	3.30	100.0	± 9.6 %
		Y	4.62	66.67	17.65		100.0	
		Z	4.62	67.06	17.85		100.0	
10075-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 36 Mbps)	X	4.70	66.81	18.01	3.82	90.0	± 9.6 %
		Y	4.63	66.64	17.88		90.0	
		Z	4.63	67.02	18.07		90.0	
10076-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 48 Mbps)	X	4.73	66.67	18.17	4.15	90.0	± 9.6 %
		Y	4.66	66.51	18.05		90.0	
		Z	4.67	66.88	18.24		90.0	
10077-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 54 Mbps)	X	4.75	66.74	18.27	4.30	90.0	± 9.6 %
		Y	4.69	66.59	18.15		90.0	
		Z	4.70	66.98	18.36		90.0	

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10081-CAB	CDMA2000 (1xRTT, RC3)	X	0.65	64.28	10.38	0.00	150.0	± 9.6 %
		Y	0.42	60.39	6.92		150.0	
		Z	0.48	61.97	8.16		150.0	
10082-CAB	IS-54 / IS-136 FDD (TDMA/FDM, PI/4-DQPSK, Fullrate)	X	0.61	60.00	2.85	4.77	80.0	± 9.6 %
		Y	0.27	125.15	3.93		80.0	
		Z	0.68	60.01	2.64		80.0	
10090-DAC	GPRS-FDD (TDMA, GMSK, TN 0-4)	X	100.00	105.71	21.53	6.56	60.0	± 9.6 %
		Y	7.96	79.91	14.17		60.0	
		Z	100.00	107.12	22.09		60.0	
10097-CAB	UMTS-FDD (HSDPA)	X	1.81	68.35	15.62	0.00	150.0	± 9.6 %
		Y	1.59	66.62	14.28		150.0	
		Z	1.75	68.38	15.28		150.0	
10098-CAB	UMTS-FDD (HSUPA, Subtest 2)	X	1.77	68.30	15.60	0.00	150.0	± 9.6 %
		Y	1.55	66.55	14.25		150.0	
		Z	1.71	68.32	15.26		150.0	
10099-DAC	EDGE-FDD (TDMA, 8PSK, TN 0-4)	X	5.47	82.85	29.83	9.56	60.0	± 9.6 %
		Y	5.04	80.32	28.42		60.0	
		Z	4.96	80.77	29.11		60.0	
10100-CAD	LTE-FDD (SC-FDMA, 100% RB, 20 MHz, QPSK)	X	2.96	70.04	16.68	0.00	150.0	± 9.6 %
		Y	2.71	68.69	15.83		150.0	
		Z	2.82	69.64	16.51		150.0	
10101-CAD	LTE-FDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM)	X	3.10	67.35	15.86	0.00	150.0	± 9.6 %
		Y	2.94	66.61	15.35		150.0	
		Z	3.00	67.17	15.74		150.0	
10102-CAD	LTE-FDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM)	X	3.20	67.37	15.97	0.00	150.0	± 9.6 %
		Y	3.05	66.67	15.48		150.0	
		Z	3.10	67.22	15.85		150.0	
10103-CAD	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, QPSK)	X	5.04	73.87	19.92	3.98	65.0	± 9.6 %
		Y	4.45	71.80	18.94		65.0	
		Z	4.83	73.72	19.95		65.0	
10104-CAD	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM)	X	4.93	71.04	19.34	3.98	65.0	± 9.6 %
		Y	4.66	70.09	18.84		65.0	
		Z	4.74	70.79	19.24		65.0	
10105-CAD	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM)	X	4.89	70.60	19.44	3.98	65.0	± 9.6 %
		Y	4.42	68.79	18.52		65.0	
		Z	4.68	70.25	19.28		65.0	
10108-CAE	LTE-FDD (SC-FDMA, 100% RB, 10 MHz, QPSK)	X	2.55	69.38	16.50	0.00	150.0	± 9.6 %
		Y	2.32	68.05	15.61		150.0	
		Z	2.42	69.06	16.32		150.0	
10109-CAE	LTE-FDD (SC-FDMA, 100% RB, 10 MHz, 16-QAM)	X	2.74	67.33	15.73	0.00	150.0	± 9.6 %
		Y	2.57	66.48	15.09		150.0	
		Z	2.63	67.20	15.54		150.0	
10110-CAE	LTE-FDD (SC-FDMA, 100% RB, 5 MHz, QPSK)	X	2.04	68.62	15.99	0.00	150.0	± 9.6 %
		Y	1.82	67.09	14.87		150.0	
		Z	1.91	68.30	15.65		150.0	
10111-CAE	LTE-FDD (SC-FDMA, 100% RB, 5 MHz, 16-QAM)	X	2.48	68.58	15.98	0.00	150.0	± 9.6 %
		Y	2.26	67.29	15.00		150.0	
		Z	2.37	68.51	15.63		150.0	

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10112-CAE	LTE-FDD (SC-FDMA, 100% RB, 10 MHz, 64-QAM)	X	2.87	67.40	15.81	0.00	150.0	± 9.6 %
		Y	2.70	66.60	15.21		150.0	
		Z	2.76	67.33	15.64		150.0	
10113-CAE	LTE-FDD (SC-FDMA, 100% RB, 5 MHz, 64-QAM)	X	2.63	68.77	16.12	0.00	150.0	± 9.6 %
		Y	2.40	67.53	15.19		150.0	
		Z	2.51	68.70	15.76		150.0	
10114-CAC	IEEE 802.11n (HT Greenfield, 13.5 Mbps, BPSK)	X	4.95	67.13	16.42	0.00	150.0	± 9.6 %
		Y	4.85	66.84	16.24		150.0	
		Z	4.85	67.12	16.40		150.0	
10115-CAC	IEEE 802.11n (HT Greenfield, 81 Mbps, 16-QAM)	X	5.19	67.19	16.45	0.00	150.0	± 9.6 %
		Y	5.10	66.92	16.29		150.0	
		Z	5.08	67.17	16.41		150.0	
10116-CAC	IEEE 802.11n (HT Greenfield, 135 Mbps, 64-QAM)	X	5.03	67.31	16.44	0.00	150.0	± 9.6 %
		Y	4.93	67.00	16.25		150.0	
		Z	4.91	67.26	16.39		150.0	
10117-CAC	IEEE 802.11n (HT Mixed, 13.5 Mbps, BPSK)	X	4.94	67.08	16.41	0.00	150.0	± 9.6 %
		Y	4.84	66.75	16.22		150.0	
		Z	4.83	67.00	16.35		150.0	
10118-CAC	IEEE 802.11n (HT Mixed, 81 Mbps, 16-QAM)	X	5.26	67.38	16.55	0.00	150.0	± 9.6 %
		Y	5.18	67.15	16.41		150.0	
		Z	5.14	67.33	16.50		150.0	
10119-CAC	IEEE 802.11n (HT Mixed, 135 Mbps, 64-QAM)	X	5.03	67.31	16.45	0.00	150.0	± 9.6 %
		Y	4.93	67.03	16.27		150.0	
		Z	4.92	67.30	16.42		150.0	
10140-CAD	LTE-FDD (SC-FDMA, 100% RB, 15 MHz, 16-QAM)	X	3.22	67.39	15.88	0.00	150.0	± 9.6 %
		Y	3.07	66.69	15.39		150.0	
		Z	3.11	67.25	15.76		150.0	
10141-CAD	LTE-FDD (SC-FDMA, 100% RB, 15 MHz, 64-QAM)	X	3.35	67.56	16.08	0.00	150.0	± 9.6 %
		Y	3.20	66.89	15.61		150.0	
		Z	3.24	67.46	15.97		150.0	
10142-CAD	LTE-FDD (SC-FDMA, 100% RB, 3 MHz, QPSK)	X	1.80	68.59	15.33	0.00	150.0	± 9.6 %
		Y	1.53	66.49	13.76		150.0	
		Z	1.64	67.93	14.59		150.0	
10143-CAD	LTE-FDD (SC-FDMA, 100% RB, 3 MHz, 16-QAM)	X	2.29	69.05	15.16	0.00	150.0	± 9.6 %
		Y	1.94	66.78	13.54		150.0	
		Z	2.05	68.12	14.12		150.0	
10144-CAD	LTE-FDD (SC-FDMA, 100% RB, 3 MHz, 64-QAM)	X	1.95	65.96	13.09	0.00	150.0	± 9.6 %
		Y	1.71	64.37	11.76		150.0	
		Z	1.71	64.91	11.94		150.0	
10145-CAE	LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, QPSK)	X	0.80	61.66	8.31	0.00	150.0	± 9.6 %
		Y	0.63	60.00	6.42		150.0	
		Z	0.60	60.00	6.26		150.0	
10146-CAE	LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, 16-QAM)	X	0.93	60.23	6.53	0.00	150.0	± 9.6 %
		Y	0.85	59.54	5.70		150.0	
		Z	0.78	60.00	5.45		150.0	
10147-CAE	LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, 64-QAM)	X	0.97	60.53	6.79	0.00	150.0	± 9.6 %
		Y	0.90	60.00	6.07		150.0	
		Z	0.79	60.00	5.50		150.0	

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10149-CAD	LTE-FDD (SC-FDMA, 50% RB, 20 MHz, 16-QAM)	X	2.75	67.40	15.78	0.00	150.0	± 9.6 %
		Y	2.58	66.55	15.14		150.0	
		Z	2.64	67.28	15.59		150.0	
10150-CAD	LTE-FDD (SC-FDMA, 50% RB, 20 MHz, 64-QAM)	X	2.88	67.47	15.86	0.00	150.0	± 9.6 %
		Y	2.71	66.66	15.25		150.0	
		Z	2.77	67.39	15.69		150.0	
10151-CAD	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, QPSK)	X	4.99	75.67	20.72	3.98	65.0	± 9.6 %
		Y	4.54	74.14	19.94		65.0	
		Z	4.82	75.77	20.80		65.0	
10152-CAD	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 16-QAM)	X	4.45	70.90	18.86	3.98	65.0	± 9.6 %
		Y	4.17	69.87	18.26		65.0	
		Z	4.26	70.67	18.66		65.0	
10153-CAD	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 64-QAM)	X	4.79	71.97	19.73	3.98	65.0	± 9.6 %
		Y	4.50	70.99	19.17		65.0	
		Z	4.61	71.85	19.59		65.0	
10154-CAE	LTE-FDD (SC-FDMA, 50% RB, 10 MHz, QPSK)	X	2.08	69.01	16.23	0.00	150.0	± 9.6 %
		Y	1.85	67.42	15.08		150.0	
		Z	1.95	68.66	15.88		150.0	
10155-CAE	LTE-FDD (SC-FDMA, 50% RB, 10 MHz, 16-QAM)	X	2.49	68.62	16.01	0.00	150.0	± 9.6 %
		Y	2.26	67.33	15.03		150.0	
		Z	2.38	68.57	15.67		150.0	
10156-CAE	LTE-FDD (SC-FDMA, 50% RB, 5 MHz, QPSK)	X	1.62	68.33	14.75	0.00	150.0	± 9.6 %
		Y	1.32	65.72	12.82		150.0	
		Z	1.42	67.19	13.63		150.0	
10157-CAE	LTE-FDD (SC-FDMA, 50% RB, 5 MHz, 16-QAM)	X	1.76	66.14	12.77	0.00	150.0	± 9.6 %
		Y	1.47	64.00	11.06		150.0	
		Z	1.47	64.54	11.21		150.0	
10158-CAE	LTE-FDD (SC-FDMA, 50% RB, 10 MHz, 64-QAM)	X	2.64	68.86	16.18	0.00	150.0	± 9.6 %
		Y	2.41	67.62	15.24		150.0	
		Z	2.52	68.81	15.83		150.0	
10159-CAE	LTE-FDD (SC-FDMA, 50% RB, 5 MHz, 64-QAM)	X	1.84	66.49	12.98	0.00	150.0	± 9.6 %
		Y	1.52	64.19	11.20		150.0	
		Z	1.52	64.73	11.33		150.0	
10160-CAD	LTE-FDD (SC-FDMA, 50% RB, 15 MHz, QPSK)	X	2.60	68.75	16.31	0.00	150.0	± 9.6 %
		Y	2.41	67.74	15.55		150.0	
		Z	2.47	68.55	16.10		150.0	
10161-CAD	LTE-FDD (SC-FDMA, 50% RB, 15 MHz, 16-QAM)	X	2.76	67.44	15.73	0.00	150.0	± 9.6 %
		Y	2.59	66.58	15.07		150.0	
		Z	2.65	67.35	15.50		150.0	
10162-CAD	LTE-FDD (SC-FDMA, 50% RB, 15 MHz, 64-QAM)	X	2.88	67.68	15.88	0.00	150.0	± 9.6 %
		Y	2.70	66.83	15.23		150.0	
		Z	2.76	67.62	15.66		150.0	
10166-CAE	LTE-FDD (SC-FDMA, 50% RB, 1.4 MHz, QPSK)	X	3.02	67.96	18.28	3.01	150.0	± 9.6 %
		Y	3.03	68.30	18.53		150.0	
		Z	2.86	67.79	18.34		150.0	
10167-CAE	LTE-FDD (SC-FDMA, 50% RB, 1.4 MHz, 16-QAM)	X	3.42	70.11	18.44	3.01	150.0	± 9.6 %
		Y	3.50	70.73	18.75		150.0	
		Z	3.20	70.16	18.62		150.0	

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10168-CAE	LTE-FDD (SC-FDMA, 50% RB, 1.4 MHz, 64-QAM)	X	3.80	72.47	19.91	3.01	150.0	± 9.6 %
		Y	3.97	73.52	20.42		150.0	
		Z	3.59	72.78	20.23		150.0	
10169-CAD	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, QPSK)	X	2.40	66.10	17.40	3.01	150.0	± 9.6 %
		Y	2.46	66.60	17.71		150.0	
		Z	2.33	66.05	17.51		150.0	
10170-CAD	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM)	X	2.86	70.22	19.21	3.01	150.0	± 9.6 %
		Y	3.07	71.47	19.80		150.0	
		Z	2.76	70.55	19.53		150.0	
10171-AAD	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, 64-QAM)	X	2.43	67.02	16.67	3.01	150.0	± 9.6 %
		Y	2.55	67.67	16.96		150.0	
		Z	2.33	67.12	16.84		150.0	
10172-CAD	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK)	X	3.22	76.35	23.22	6.02	65.0	± 9.6 %
		Y	2.88	74.18	22.38		65.0	
		Z	2.74	74.43	22.80		65.0	
10173-CAD	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM)	X	4.36	80.46	22.94	6.02	65.0	± 9.6 %
		Y	4.63	81.45	23.36		65.0	
		Z	3.93	80.61	23.43		65.0	
10174-CAD	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 64-QAM)	X	3.95	78.13	21.47	6.02	65.0	± 9.6 %
		Y	3.58	76.48	20.90		65.0	
		Z	3.41	77.60	21.68		65.0	
10175-CAE	LTE-FDD (SC-FDMA, 1 RB, 10 MHz, QPSK)	X	2.38	65.87	17.19	3.01	150.0	± 9.6 %
		Y	2.43	66.33	17.47		150.0	
		Z	2.30	65.82	17.28		150.0	
10176-CAE	LTE-FDD (SC-FDMA, 1 RB, 10 MHz, 16-QAM)	X	2.86	70.24	19.22	3.01	150.0	± 9.6 %
		Y	3.08	71.50	19.81		150.0	
		Z	2.76	70.57	19.54		150.0	
10177-CAG	LTE-FDD (SC-FDMA, 1 RB, 5 MHz, QPSK)	X	2.39	65.97	17.26	3.01	150.0	± 9.6 %
		Y	2.45	66.44	17.54		150.0	
		Z	2.32	65.91	17.35		150.0	
10178-CAE	LTE-FDD (SC-FDMA, 1 RB, 5 MHz, 16-QAM)	X	2.85	70.12	19.14	3.01	150.0	± 9.6 %
		Y	3.06	71.36	19.72		150.0	
		Z	2.75	70.47	19.48		150.0	
10179-CAE	LTE-FDD (SC-FDMA, 1 RB, 10 MHz, 64-QAM)	X	2.62	68.53	17.82	3.01	150.0	± 9.6 %
		Y	2.78	69.42	18.23		150.0	
		Z	2.52	68.74	18.07		150.0	
10180-CAE	LTE-FDD (SC-FDMA, 1 RB, 5 MHz, 64-QAM)	X	2.43	66.99	16.64	3.01	150.0	± 9.6 %
		Y	2.55	67.64	16.93		150.0	
		Z	2.33	67.10	16.82		150.0	
10181-CAD	LTE-FDD (SC-FDMA, 1 RB, 15 MHz, QPSK)	X	2.39	65.96	17.25	3.01	150.0	± 9.6 %
		Y	2.44	66.43	17.54		150.0	
		Z	2.31	65.90	17.34		150.0	
10182-CAD	LTE-FDD (SC-FDMA, 1 RB, 15 MHz, 16-QAM)	X	2.84	70.10	19.13	3.01	150.0	± 9.6 %
		Y	3.05	71.33	19.71		150.0	
		Z	2.75	70.45	19.47		150.0	
10183-AAC	LTE-FDD (SC-FDMA, 1 RB, 15 MHz, 64-QAM)	X	2.43	66.97	16.63	3.01	150.0	± 9.6 %
		Y	2.55	67.62	16.92		150.0	
		Z	2.32	67.08	16.81		150.0	

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10184-CAD	LTE-FDD (SC-FDMA, 1 RB, 3 MHz, QPSK)	X	2.39	65.99	17.27	3.01	150.0	± 9.6 %
		Y	2.45	66.47	17.56		150.0	
		Z	2.32	65.93	17.36		150.0	
10185-CAD	LTE-FDD (SC-FDMA, 1 RB, 3 MHz, 16-QAM)	X	2.85	70.16	19.17	3.01	150.0	± 9.6 %
		Y	3.07	71.40	19.75		150.0	
		Z	2.76	70.51	19.50		150.0	
10186-AAD	LTE-FDD (SC-FDMA, 1 RB, 3 MHz, 64-QAM)	X	2.44	67.02	16.66	3.01	150.0	± 9.6 %
		Y	2.56	67.67	16.95		150.0	
		Z	2.33	67.13	16.84		150.0	
10187-CAE	LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK)	X	2.40	66.06	17.35	3.01	150.0	± 9.6 %
		Y	2.46	66.54	17.64		150.0	
		Z	2.33	66.01	17.45		150.0	
10188-CAE	LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, 16-QAM)	X	2.92	70.63	19.48	3.01	150.0	± 9.6 %
		Y	3.15	71.97	20.11		150.0	
		Z	2.82	70.99	19.83		150.0	
10189-AAE	LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, 64-QAM)	X	2.48	67.32	16.90	3.01	150.0	± 9.6 %
		Y	2.60	68.01	17.21		150.0	
		Z	2.37	67.44	17.08		150.0	
10193-CAC	IEEE 802.11n (HT Greenfield, 6.5 Mbps, BPSK)	X	4.36	66.79	16.12	0.00	150.0	± 9.6 %
		Y	4.24	66.43	15.86		150.0	
		Z	4.25	66.88	16.06		150.0	
10194-CAC	IEEE 802.11n (HT Greenfield, 39 Mbps, 16-QAM)	X	4.50	67.02	16.25	0.00	150.0	± 9.6 %
		Y	4.38	66.66	16.00		150.0	
		Z	4.38	67.06	16.19		150.0	
10195-CAC	IEEE 802.11n (HT Greenfield, 65 Mbps, 64-QAM)	X	4.53	67.04	16.27	0.00	150.0	± 9.6 %
		Y	4.41	66.68	16.02		150.0	
		Z	4.40	67.05	16.19		150.0	
10196-CAC	IEEE 802.11n (HT Mixed, 6.5 Mbps, BPSK)	X	4.34	66.79	16.11	0.00	150.0	± 9.6 %
		Y	4.22	66.42	15.84		150.0	
		Z	4.23	66.84	16.03		150.0	
10197-CAC	IEEE 802.11n (HT Mixed, 39 Mbps, 16-QAM)	X	4.51	67.03	16.26	0.00	150.0	± 9.6 %
		Y	4.38	66.66	16.01		150.0	
		Z	4.38	67.05	16.19		150.0	
10198-CAC	IEEE 802.11n (HT Mixed, 65 Mbps, 64-QAM)	X	4.53	67.04	16.27	0.00	150.0	± 9.6 %
		Y	4.40	66.67	16.02		150.0	
		Z	4.39	67.04	16.19		150.0	
10219-CAC	IEEE 802.11n (HT Mixed, 7.2 Mbps, BPSK)	X	4.30	66.83	16.08	0.00	150.0	± 9.6 %
		Y	4.17	66.45	15.81		150.0	
		Z	4.19	66.90	16.01		150.0	
10220-CAC	IEEE 802.11n (HT Mixed, 43.3 Mbps, 16-QAM)	X	4.50	66.99	16.24	0.00	150.0	± 9.6 %
		Y	4.38	66.63	16.00		150.0	
		Z	4.37	67.02	16.18		150.0	
10221-CAC	IEEE 802.11n (HT Mixed, 72.2 Mbps, 64-QAM)	X	4.54	66.98	16.26	0.00	150.0	± 9.6 %
		Y	4.42	66.63	16.01		150.0	
		Z	4.41	67.00	16.19		150.0	
10222-CAC	IEEE 802.11n (HT Mixed, 15 Mbps, BPSK)	X	4.91	67.06	16.39	0.00	150.0	± 9.6 %
		Y	4.81	66.75	16.20		150.0	
		Z	4.81	67.01	16.35		150.0	