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CALIBRATION LABORATORY
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Client : **Amphenol** **Certificate No: Z20-60071**

CALIBRATION CERTIFICATE

Object	DAE4 - SN: 799
Calibration Procedure(s)	FF-Z11-002-01 Calibration Procedure for the Data Acquisition Electronics (DAEx)
Calibration date:	February 10, 2020

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)℃ and humidity<70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date(Calibrated by, Certificate No.)	Scheduled Calibration
Process Calibrator 753	1971018	24-Jun-19 (CTTL, No.J19X05126)	Jun-20

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

Issued: February 11, 2020

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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 report provide only calibration results for DAE, it does not contain other performance test results.

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DC Voltage Measurement

A/D - Converter Resolution nominal

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

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

Calibration Factors	X	Y	Z
High Range	405.644 ± 0.15% (k=2)	405.087 ± 0.15% (k=2)	405.831 ± 0.15% (k=2)
Low Range	3.98565 ± 0.7% (k=2)	4.00142 ± 0.7% (k=2)	4.00514 ± 0.7% (k=2)

Connector Angle

Connector Angle to be used in DASY system	177° ± 1 °

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

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
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S Swiss Calibration Service

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Accreditation No.: SCS 0108

Client **Auden**

Certificate No: DAE4-1356_May20

CALIBRATION CERTIFICATE

Object	DAE4 - SD 000 D04 BJ - SN: 1356
Calibration procedure(s)	QA CAL-06.v30 Calibration procedure for the data acquisition electronics (DAE)
Calibration date:	May 19, 2020

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Keithley Multimeter Type 2001	SN: 0810278	03-Sep-19 (No:25949)	Sep-20
Secondary Standards	**ID #**	**Check Date (in house)**	**Scheduled Check**
Auto DAE Calibration Unit	SE UWS 053 AA 1001	09-Jan-20 (in house check)	In house check: Jan-21
Calibrator Box V2.1	SE UMS 006 AA 1002	09-Jan-20 (in house check)	In house check: Jan-21

	Name	Function	Signature
Calibrated by:	Dominique Steffen	Laboratory Technician	
Approved by:	Sven Kühn	Deputy Manager	

Issued: May 20, 2020

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Glossary

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

Methods Applied and Interpretation of Parameters

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

DC Voltage Measurement

A/D - Converter Resolution nominal

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

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

Calibration Factors	X	Y	Z
High Range	404.180 ± 0.02% (k=2)	403.982 ± 0.02% (k=2)	404.201 ± 0.02% (k=2)
Low Range	3.97702 ± 1.50% (k=2)	3.96329 ± 1.50% (k=2)	3.97892 ± 1.50% (k=2)

Connector Angle

Connector Angle to be used in DASY system	268.5 ° ± 1 °

Appendix (Additional assessments outside the scope of SCS0108)

1. DC Voltage Linearity

High Range		Reading (µV)	Difference (µV)	Error (%)
Channel X	+ Input	200036.91	4.93	0.00
Channel X	+ Input	20003.33	-2.05	-0.01
Channel X	- Input	-20003.72	1.76	-0.01
Channel Y	+ Input	200031.46	-0.39	-0.00
Channel Y	+ Input	20003.32	-1.93	-0.01
Channel Y	- Input	-20005.93	-0.40	0.00
Channel Z	+ Input	200028.99	-3.17	-0.00
Channel Z	+ Input	20001.58	-3.59	-0.02
Channel Z	- Input	-20007.24	-1.55	0.01

Low Range		Reading (µV)	Difference (µV)	Error (%)
Channel X	+ Input	2001.23	0.11	0.01
Channel X	+ Input	201.14	-0.00	-0.00
Channel X	- Input	-199.01	-0.14	0.07
Channel Y	+ Input	2000.67	-0.35	-0.02
Channel Y	+ Input	199.89	-1.12	-0.56
Channel Y	- Input	-198.23	0.78	-0.39
Channel Z	+ Input	2000.97	-0.10	-0.01
Channel Z	+ Input	200.56	-0.38	-0.19
Channel Z	- Input	-199.65	-0.57	0.29

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	-7.39	-9.12
	- 200	10.05	8.28
Channel Y	200	-10.37	-10.55
	- 200	8.09	8.04
Channel Z	200	-16.40	-15.83
	- 200	14.16	14.37

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	-	2.10	-3.79
Channel Y	200	7.59	-	3.07
Channel Z	200	9.79	5.97	-

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	16325	15231
Channel Y	16143	12708
Channel Z	15880	15875

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	0.69	-0.54	1.75	0.38
Channel Y	-0.88	-2.99	1.75	0.75
Channel Z	-0.46	-1.79	0.32	0.37

6. Input Offset Current

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

7. Input Resistance (Typical values for information)

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

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

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

9. Power Consumption (Typical values for information)

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

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Accreditation No.: SCS 0108

Client Sporton

Certificate No: EX3-3843_Sep19

CALIBRATION CERTIFICATE

Object	EX3DV4 - SN:3843
Calibration procedure(s)	QA CAL-01.v9, QA CAL-14.v5, QA CAL-23.v5, QA CAL-25.v7 Calibration procedure for dosimetric E-field probes
Calibration date:	September 26, 2019

This calibration certificate documents the traceability to national standards, 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	03-Apr-19 (No. 217-02892/02893)	Apr-20
Power sensor NRP-Z91	SN: 103244	03-Apr-19 (No. 217-02892)	Apr-20
Power sensor NRP-Z91	SN: 103245	03-Apr-19 (No. 217-02893)	Apr-20
Reference 20 dB Attenuator	SN: S5277 (20x)	04-Apr-19 (No. 217-02894)	Apr-20
DAE4	SN: 660	19-Dec-18 (No. DAE4-660_Dec18)	Dec-19
Reference Probe ES3DV2	SN: 3013	31-Dec-18 (No. ES3-3013_Dec18)	Dec-19
Secondary Standards	ID	Check Date (in house)	Scheduled Check
Power meter E4419B	SN: GB41293874	06-Apr-16 (in house check Jun-18)	In house check: Jun-20
Power sensor E4412A	SN: MY41498087	06-Apr-16 (in house check Jun-18)	In house check: Jun-20
Power sensor E4412A	SN: 000110210	06-Apr-16 (in house check Jun-18)	In house check: Jun-20
RF generator HP 8648C	SN: US3642U01700	04-Aug-99 (in house check Jun-18)	In house check: Jun-20
Network Analyzer E8358A	SN: US41080477	31-Mar-14 (in house check Oct-18)	In house check: Oct-19

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

Issued: October 1, 2019

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Glossary:

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

Calibration is Performed According to the Following Standards:

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

Methods Applied and Interpretation of Parameters:

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

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3843

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm (μV/(V/m)²)[A]	0.34	0.35	0.25	± 10.1 %
DCP (mV)[B]	110.9	96.1	101.1	

Calibration Results for Modulation Response

UID	Communication System Name		A dB	B dB√μV	C	D dB	VR mV	Max dev.	Unc[E] (k=2)
0	CW	X	0.0	0.0	1.0	0.00	134.1	±3.8 %	± 4.7 %
		Y	0.0	0.0	1.0		146.5		
		Z	0.0	0.0	1.0		132.2		

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 Page 5).
[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:3843

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	-34.3
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

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3843

Calibration Parameter Determined in Head Tissue Simulating Media

f (MHz) [C]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha [G]	Depth [G] (mm)	Unc (k=2)
750	41.9	0.89	9.37	9.37	9.37	0.50	0.87	± 12.0 %
835	41.5	0.90	9.07	9.07	9.07	0.43	0.80	± 12.0 %
900	41.5	0.97	8.92	8.92	8.92	0.41	0.90	± 12.0 %
1450	40.5	1.20	8.17	8.17	8.17	0.32	0.80	± 12.0 %
1750	40.1	1.37	7.95	7.95	7.95	0.34	0.87	± 12.0 %
1900	40.0	1.40	7.67	7.67	7.67	0.32	0.87	± 12.0 %
2000	40.0	1.40	7.66	7.66	7.66	0.34	0.87	± 12.0 %
2300	39.5	1.67	7.30	7.30	7.30	0.26	0.90	± 12.0 %
2450	39.2	1.80	7.06	7.06	7.06	0.35	0.90	± 12.0 %
2600	39.0	1.96	6.90	6.90	6.90	0.43	0.80	± 12.0 %
5250	35.9	4.71	4.74	4.74	4.74	0.40	1.80	± 14.0 %
5600	35.5	5.07	4.47	4.47	4.47	0.40	1.80	± 14.0 %
5750	35.4	5.22	4.44	4.44	4.44	0.40	1.80	± 14.0 %

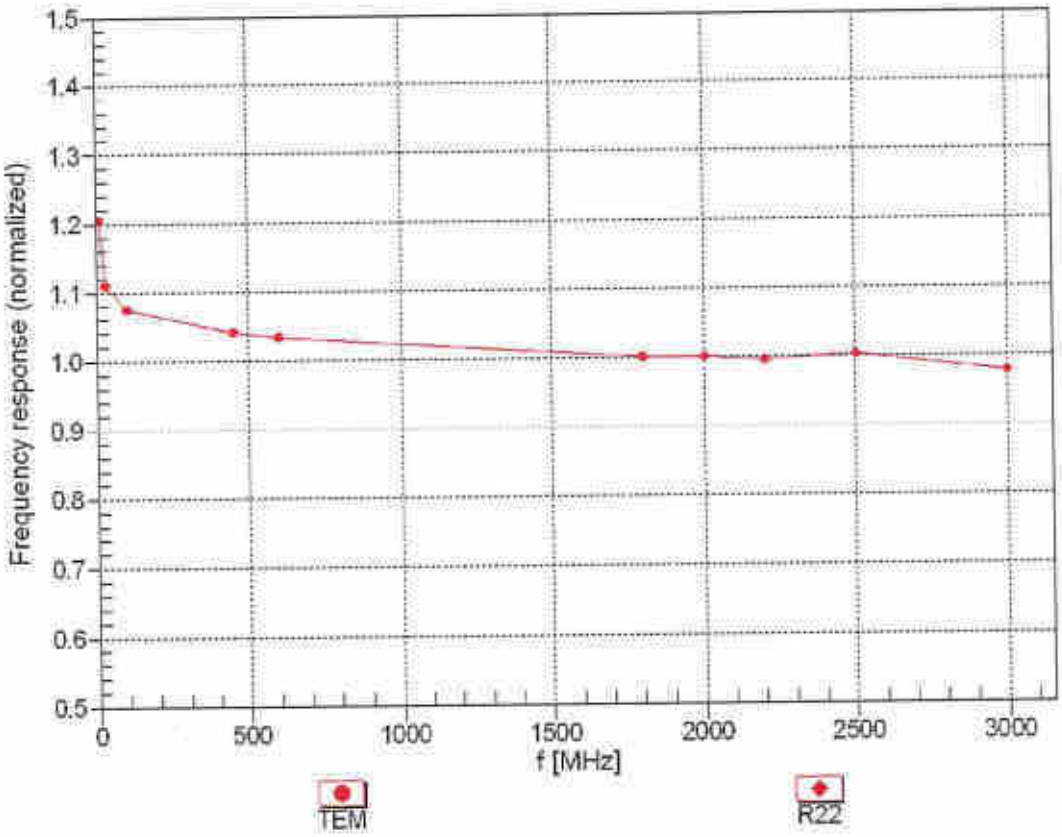
[C] Frequency validity above 300 MHz of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz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

Frequency Response of E-Field

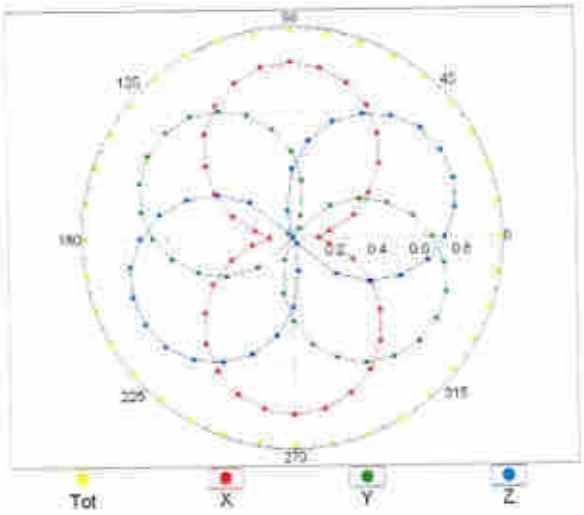
(TEM-Cell:ifi110 EXX, Waveguide: R22)



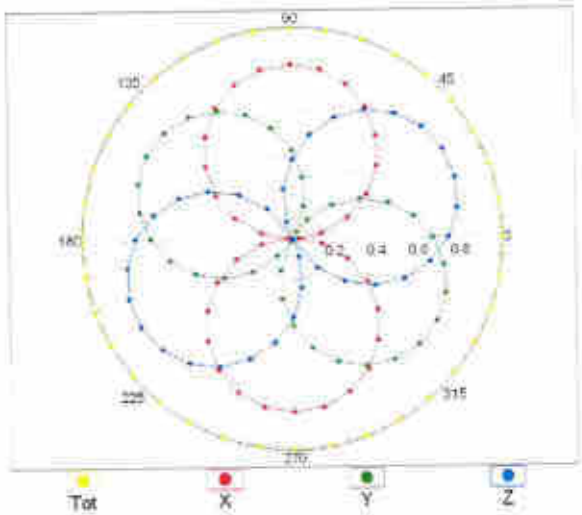
Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

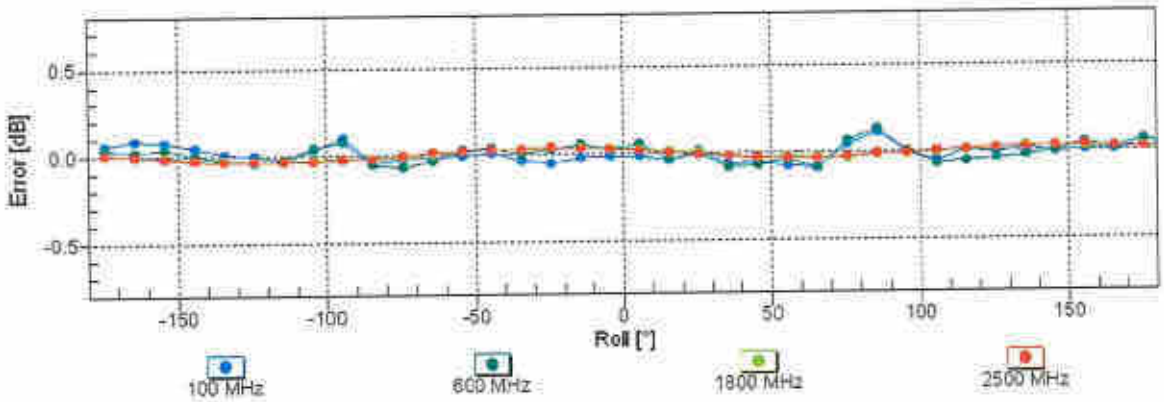
Receiving Pattern (ϕ), ϑ = 0°

f=600 MHz,TEM



f=1800 MHz,R22

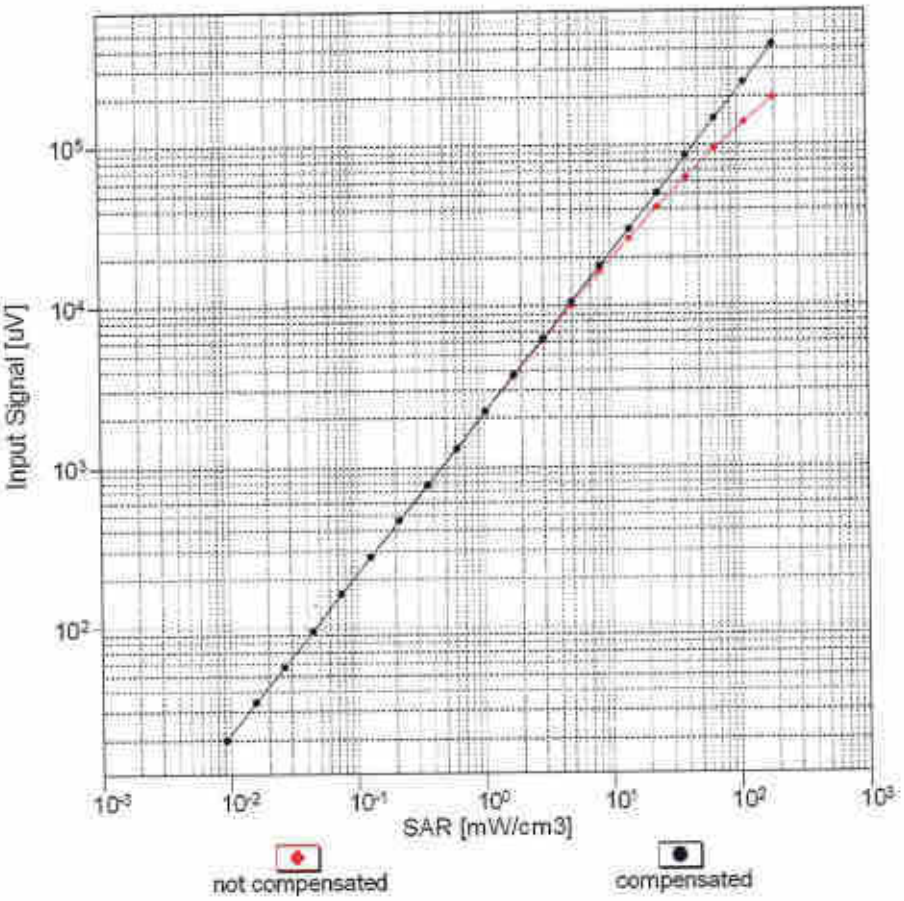


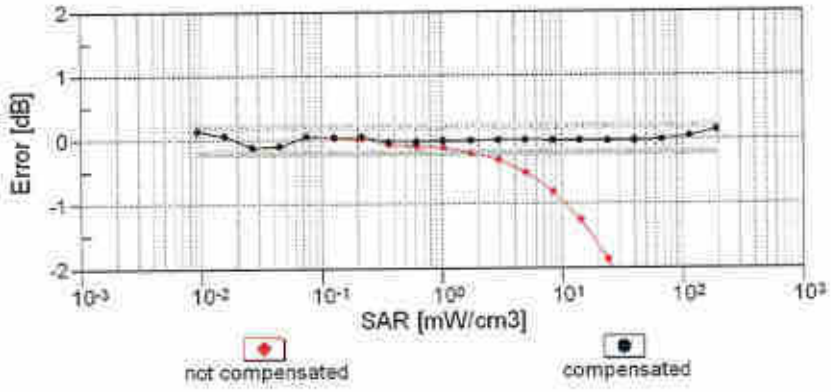


Uncertainty of Axial Isotropy Assessment: ± 0.5% (k=2)

Dynamic Range f(SAR_{head})

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

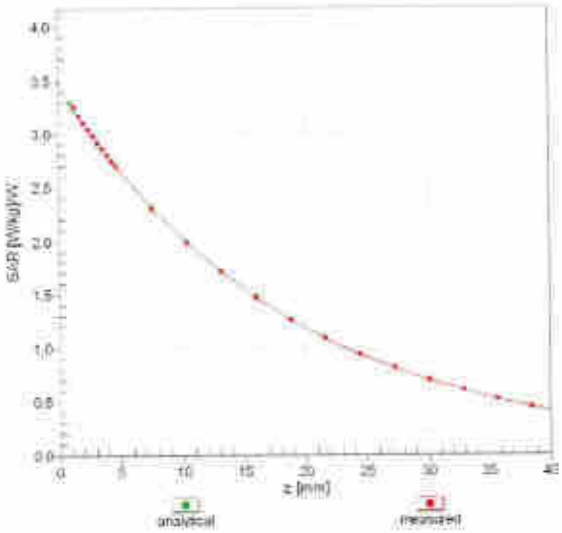




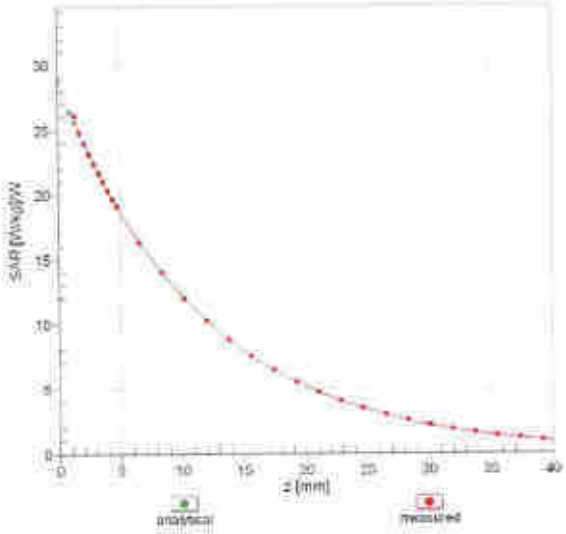
Uncertainty of Linearity Assessment: ± 0.6% (k=2)

Conversion Factor Assessment

f = 835 MHz,WGLS R9 (H_convF)

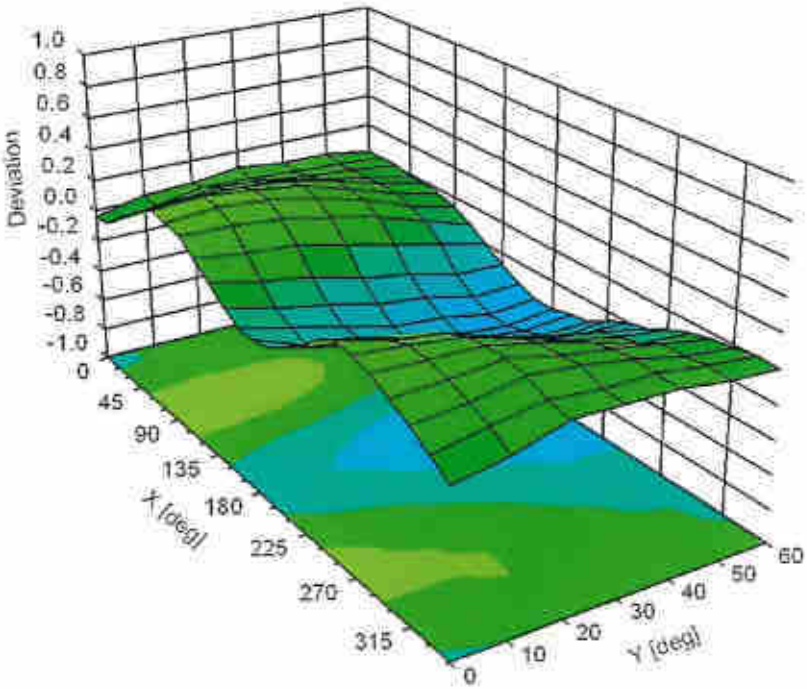


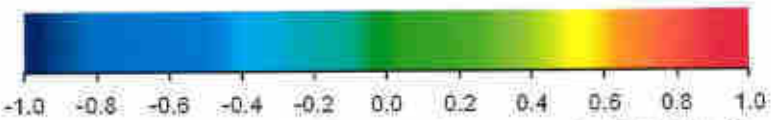
f = 1900 MHz,WGLS R22 (H_convF)



Deviation from Isotropy in Liquid

Error (ϕ, ϑ), f = 900 MHz





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

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CALIBRATION
CNAS L0570

Client **Auden** **Certificate No: Z20-60166**

CALIBRATION CERTIFICAT

Object	EX3DV4 - SN : 3826
Calibration Procedure(s)	FF-Z11-004-01 Calibration Procedures for Dosimetric E-field Probes
Calibration date:	May 20, 2020

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)℃ and humidity<70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date(Calibrated by, Certificate No.)	Scheduled Calibration
Power Meter NRP2	101919	18-Jun-19(CTTL, No.J19X05125)	Jun-20
Power sensor NRP-Z91	101547	18-Jun-19(CTTL, No.J19X05125)	Jun-20
Power sensor NRP-Z91	101548	18-Jun-19(CTTL, No.J19X05125)	Jun-20
Reference 10dBAttenuator	18N50W-10dB	10-Feb-20(CTTL, No.J20X00525)	Feb-22
Reference 20dBAttenuator	18N50W-20dB	10-Feb-20(CTTL, No.J20X00526)	Feb-22
Reference Probe EX3DV4	SN 3617	30-Jan-20(SPEAG, No.EX3-3617_Jan20/2)	Jan-21
DAE4	SN 1556	4-Feb-20(SPEAG, No.DAE4-1556_Feb20)	Feb-21

Secondary Standards	ID #	Cal Date(Calibrated by, Certificate No.)	Scheduled Calibration
SignalGenerator MG3700A	6201052605	18-Jun-19(CTTL, No.J19X05127)	Jun-20
Network Analyzer E5071C	MY46110673	10-Feb-20(CTTL, No.J20X00515)	Feb-21

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

Issued: May 22, 2020

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

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013

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

c) IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010

d) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Methods Applied and Interpretation of Parameters:

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

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DASY/EASY – Parameters of Probe: EX3DV4 – SN:3826

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (*k*=2)
Norm(μV/(V/m)²)[A]	0.48	0.41	0.36	±10.0%
DCP(mV)[B]	100.2	99.8	103.2	

Modulation Calibration Parameters

UID	Communication System Name		A dB	B dB√μV	C	D dB	VR mV	Unc[E] (*k*=2)
0	CW	X	0.0	0.0	1.0	0.00	160.2	±2.7%
		Y	0.0	0.0	1.0		141.6	
		Z	0.0	0.0	1.0		130.8	

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 Page 4).
[B] Numerical linearization parameter: uncertainty not required.
[E] Uncertainly 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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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)	Unct. (k=2)
750	41.9	0.89	9.37	9.37	9.37	0.40	0.80	±12.1%
835	41.5	0.90	9.12	9.12	9.12	0.17	1.26	±12.1%
900	41.5	0.97	9.10	9.10	9.10	0.18	1.30	±12.1%
1750	40.1	1.37	7.98	7.98	7.98	0.19	1.14	±12.1%
1900	40.0	1.40	7.67	7.67	7.67	0.22	1.14	±12.1%
2000	40.0	1.40	7.77	7.77	7.77	0.24	1.10	±12.1%
2300	39.5	1.67	7.35	7.35	7.35	0.51	0.73	±12.1%
2450	39.2	1.80	7.12	7.12	7.12	0.53	0.72	±12.1%
2600	39.0	1.96	6.94	6.94	6.94	0.45	0.85	±12.1%
3500	37.9	2.91	6.62	6.62	6.62	0.39	0.98	±13.3%
5250	35.9	4.71	5.09	5.09	5.09	0.45	1.30	±13.3%
5600	35.5	5.07	4.66	4.66	4.66	0.45	1.40	±13.3%
5750	35.4	5.22	4.68	4.68	4.68	0.45	1.40	±13.3%

[C] Frequency validity above 300 MHz of ±100MHz only applies for DASY v4.4 and higher (Page 2), else it is restricted to ±50MHz. The uncertainty is the RSS of 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 frequency 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 the frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.

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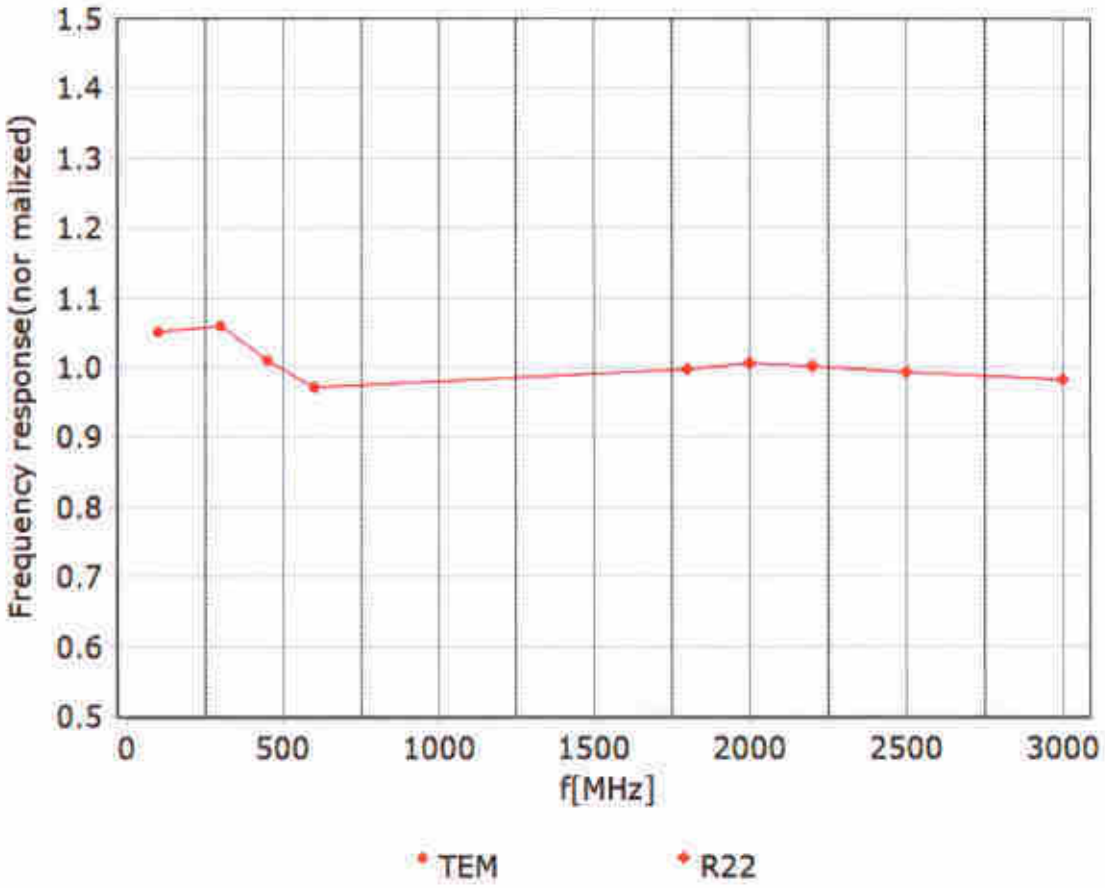
Frequency Response of E-Field
(TEM-Cell: ifi110 EXX, Waveguide: R22)



Uncertainty of Frequency Response of E-field: ±7.4% (*k*=2)

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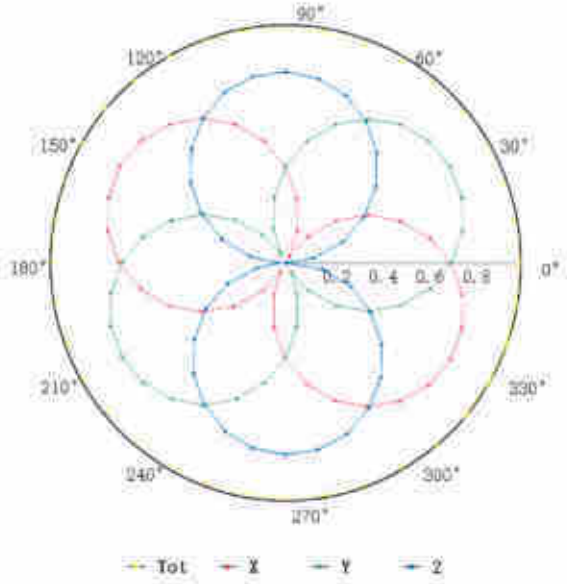
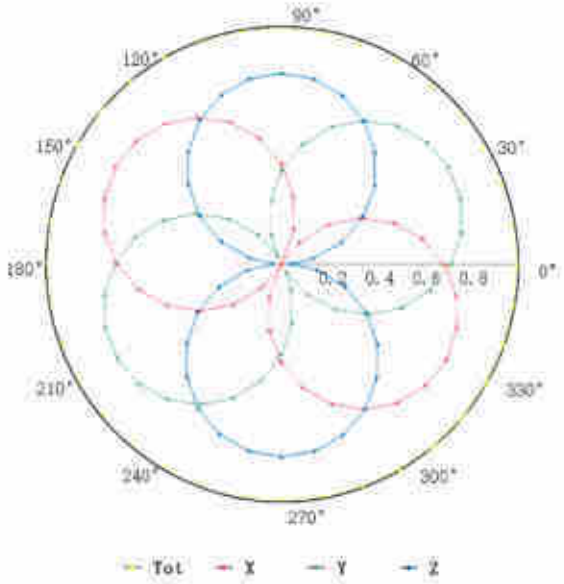
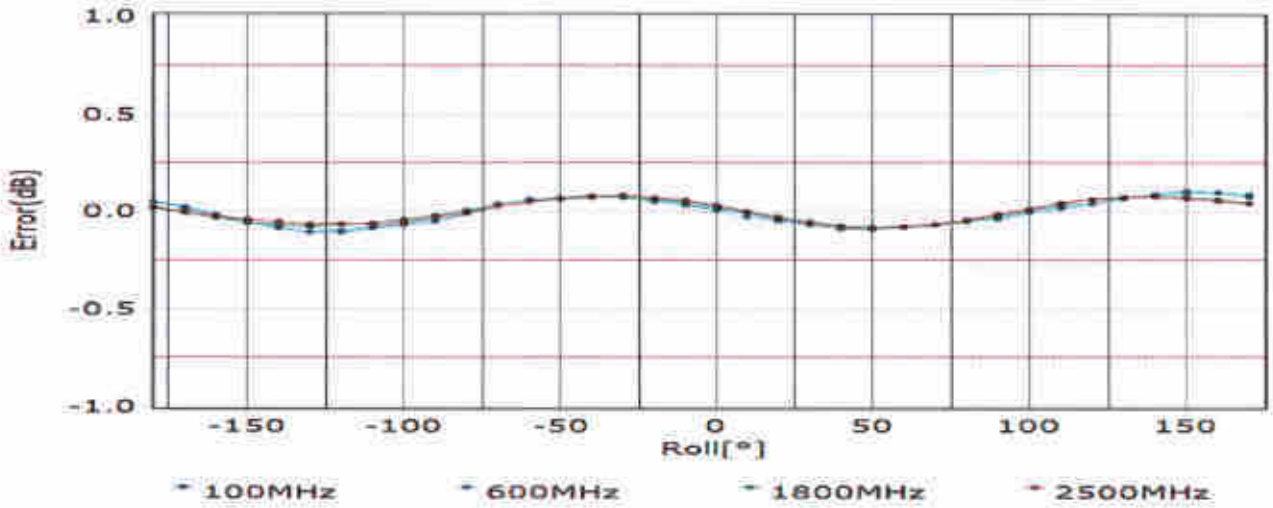
Receiving Pattern (Φ), θ=0°

f=600 MHz, TEM



f=1800 MHz, R22





Uncertainty of Axial Isotropy Assessment: ±1.2% (*k*=2)

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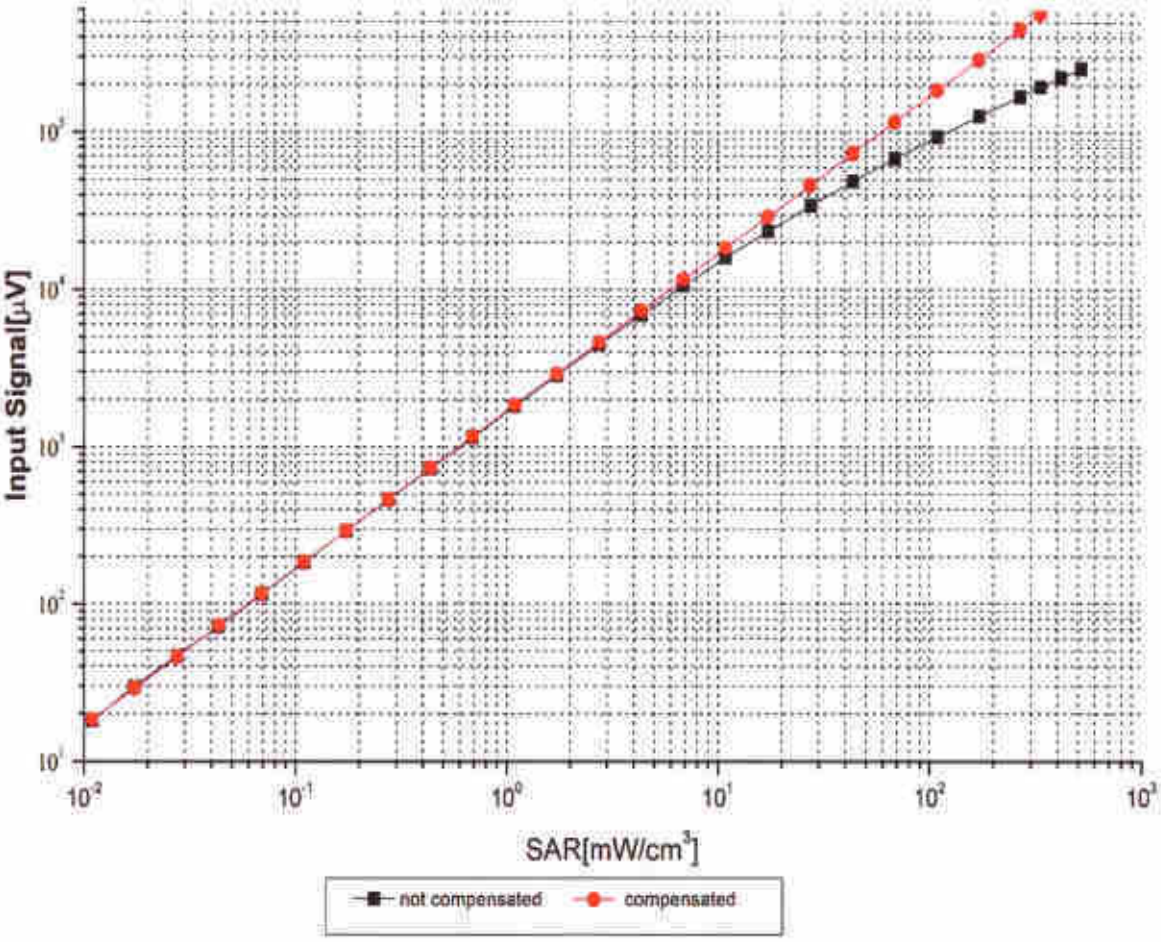
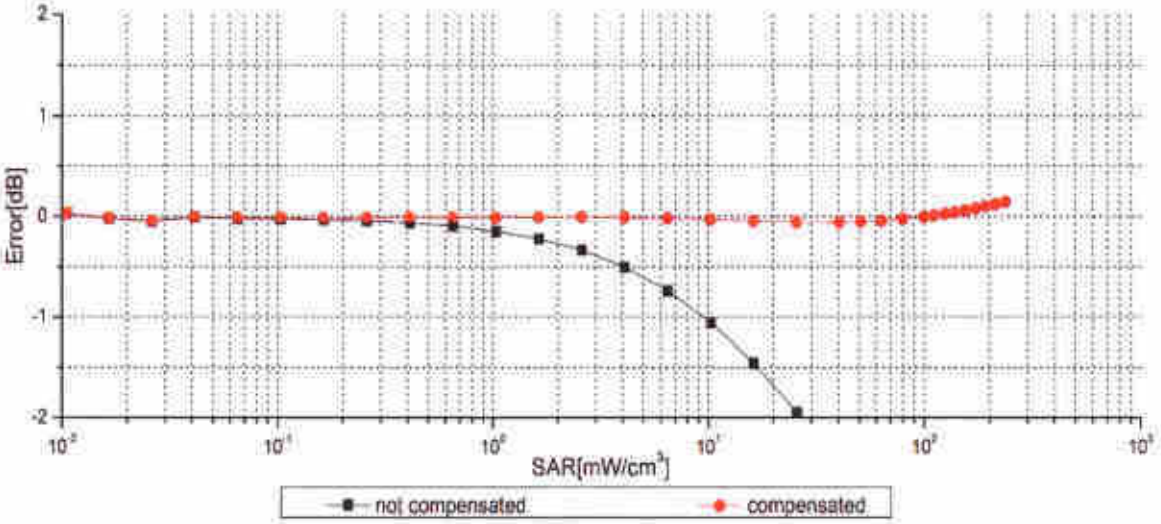
Dynamic Range f(SAR$_{head}$)
(TEM cell, f = 900 MHz)





Uncertainty of Linearity Assessment: ±0.9% (*k*=2)

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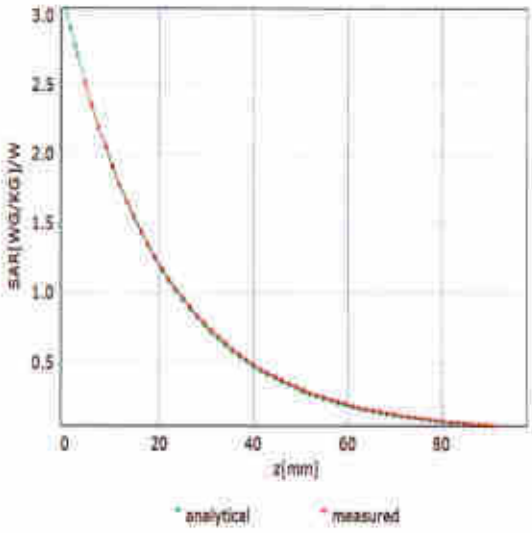
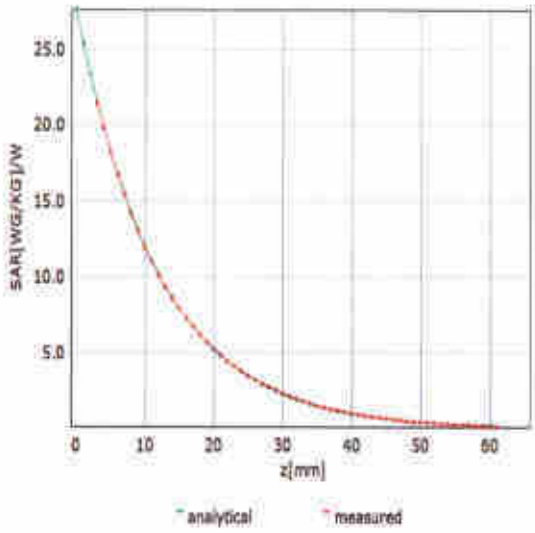
Conversion Factor Assessment

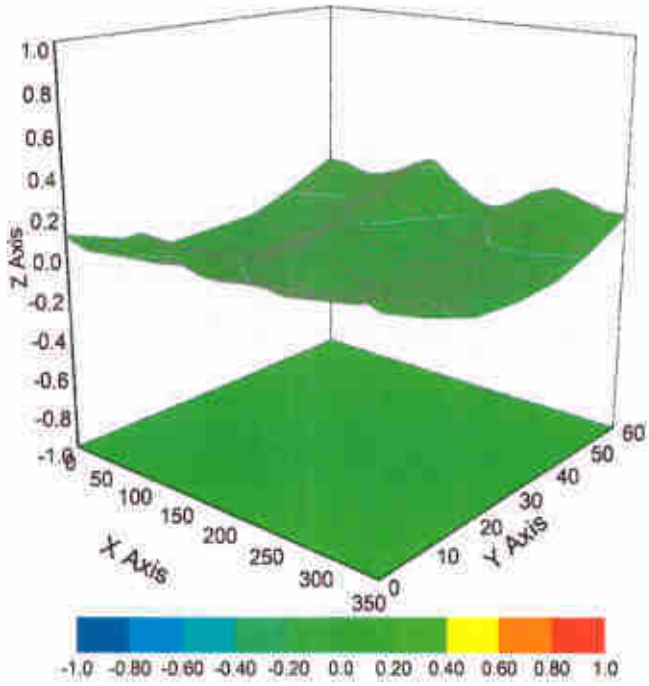
f=750 MHz,WGLS R9(H_convF)



f=1750 MHz,WGLS R22(H_convF)



Deviation from Isotropy in Liquid



Uncertainty of Spherical Isotropy Assessment: ±3.2% (*k*=2)

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DASY/EASY – Parameters of Probe: EX3DV4 – SN:3826

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	51.5
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disable
Probe Overall Length	337mm
Probe Body Diameter	10mm
Tip Length	10mm
Tip Diameter	2.5mm
Probe Tip to Sensor X Calibration Point	1mm
Probe Tip to Sensor Y Calibration Point	1mm
Probe Tip to Sensor Z Calibration Point	1mm
Recommended Measurement Distance from Surface	1.4mm

Appendix E. Conducted RF Output Power Table

The detailed power tables are shown as follows.

Full Power Mode

Band		WCDMA V			Tune-up Limit (dBm)
TX Channel		4132	4182	4233	
Rx Channel		4357	4407	4458	
Frequency (MHz)		826.4	836.4	846.6	
3GPP Rel 99	RMC 12.2Kbps	22.91	23.04	22.98	24.00
3GPP Rel 6	HSDPA Subtest-1	22.12	22.12	21.97	23.00
3GPP Rel 6	HSDPA Subtest-2	22.13	22.09	22.00	23.00
3GPP Rel 6	HSDPA Subtest-3	21.59	21.64	21.51	22.50
3GPP Rel 6	HSDPA Subtest-4	21.60	21.57	21.51	22.50
3GPP Rel 6	HSUPA Subtest-1	22.03	22.10	21.99	23.00
3GPP Rel 6	HSUPA Subtest-2	20.11	20.19	19.94	21.00
3GPP Rel 6	HSUPA Subtest-3	21.08	21.06	20.97	22.00
3GPP Rel 6	HSUPA Subtest-4	20.10	20.12	20.01	21.00
3GPP Rel 6	HSUPA Subtest-5	22.10	22.10	21.90	23.00

Band 5 (Celluar Band) Part 22H(only on channel required)								
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				20450	20525	20600		
Frequency (MHz)				829	836.5	844		
10	QPSK	1	0	22.54	22.35	22.97	24	0
10	QPSK	1	25	22.36	22.73	22.90		
10	QPSK	1	49	22.39	23.07	22.46		
10	QPSK	25	0	21.52	21.60	22.04	23	1
10	QPSK	25	12	21.44	21.70	21.96		
10	QPSK	25	25	21.42	21.88	21.67		
10	QPSK	50	0	21.44	21.70	21.93		
10	16QAM	1	0	21.85	21.62	22.26	23	1
10	16QAM	1	25	21.73	22.03	22.22		
10	16QAM	1	49	21.66	22.39	21.69		
10	16QAM	25	0	20.63	20.70	21.15	22	2
10	16QAM	25	12	20.58	20.79	21.07		
10	16QAM	25	25	20.50	20.93	20.74		
10	16QAM	50	0	20.53	20.81	21.01		
10	64QAM	1	0	20.84	20.55	21.24	22	2
10	64QAM	1	25	20.61	20.95	21.20		
10	64QAM	1	49	20.58	21.33	20.65		
10	64QAM	25	0	19.63	19.72	20.18	21	3
10	64QAM	25	12	19.60	19.83	20.12		
10	64QAM	25	25	19.50	19.95	19.78		
10	64QAM	50	0	19.59	19.80	20.02		
Channel				20425	20525	20625	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				826.5	836.5	846.5		
5	QPSK	1	0	22.54	22.57	22.87	24	0
5	QPSK	1	12	22.50	22.71	22.60		
5	QPSK	1	24	22.42	22.93	22.47		
5	QPSK	12	0	21.62	21.69	21.76	23	1
5	QPSK	12	7	21.58	21.75	21.66		
5	QPSK	12	13	21.54	21.85	21.51		
5	QPSK	25	0	21.50	21.72	21.66		
5	16QAM	1	0	21.91	21.83	22.16	23	1
5	16QAM	1	12	21.85	22.02	21.89		
5	16QAM	1	24	21.77	22.23	21.63		
5	16QAM	12	0	20.76	20.74	20.85	22	2
5	16QAM	12	7	20.67	20.82	20.75		
5	16QAM	12	13	20.64	20.91	20.59		
5	16QAM	25	0	20.64	20.77	20.74		
5	64QAM	1	0	20.81	20.82	21.13	22	2
5	64QAM	1	12	20.79	20.95	20.90		
5	64QAM	1	24	20.74	21.18	20.66		
5	64QAM	12	0	19.80	19.80	19.95	21	3
5	64QAM	12	7	19.74	19.85	19.81		
5	64QAM	12	13	19.72	19.93	19.65		
5	64QAM	25	0	19.65	19.81	19.78		
Channel				20415	20525	20635	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				825.5	836.5	847.5		
3	QPSK	1	0	22.54	22.63	22.66	24	0
3	QPSK	1	8	22.57	22.72	22.51		
3	QPSK	1	14	22.47	22.79	22.49		
3	QPSK	8	0	21.65	21.65	21.59	23	1
3	QPSK	8	4	21.66	21.74	21.64		
3	QPSK	8	7	21.60	21.82	21.52		
3	QPSK	15	0	21.63	21.70	21.55		
3	16QAM	1	0	21.88	21.88	21.86	23	1
3	16QAM	1	8	21.99	21.99	21.72		
3	16QAM	1	14	21.80	22.03	21.65		
3	16QAM	8	0	20.83	20.77	20.70	22	2
3	16QAM	8	4	20.85	20.84	20.72		
3	16QAM	8	7	20.72	20.92	20.62		
3	16QAM	15	0	20.72	20.80	20.62		
3	64QAM	1	0	20.81	20.84	20.86	22	2
3	64QAM	1	8	20.93	20.95	20.73		
3	64QAM	1	14	20.76	20.98	20.65		
3	64QAM	8	0	19.81	19.80	19.73	21	3
3	64QAM	8	4	19.84	19.83	19.76		
3	64QAM	8	7	19.74	19.94	19.66		
3	64QAM	15	0	19.74	19.77	19.64		
Channel				20407	20525	20643	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				824.7	836.5	848.3		
1.4	QPSK	1	0	22.49	22.59	22.44	24	0
1.4	QPSK	1	3	22.59	22.71	22.52		
1.4	QPSK	1	5	22.49	22.66	22.42		
1.4	QPSK	3	0	22.54	22.61	22.51		
1.4	QPSK	3	1	22.57	22.68	22.57		
1.4	QPSK	3	3	22.54	22.71	22.50		
1.4	QPSK	6	0	21.48	21.64	21.53	23	1
1.4	16QAM	1	0	21.84	21.87	21.69	23	1
1.4	16QAM	1	3	21.94	21.94	21.69		
1.4	16QAM	1	5	21.81	21.93	21.59		
1.4	16QAM	3	0	21.64	21.66	21.50		
1.4	16QAM	3	1	21.65	21.70	21.53		
1.4	16QAM	3	3	21.63	21.72	21.48		
1.4	16QAM	6	0	20.66	20.78	20.63	22	2
1.4	64QAM	1	0	20.79	20.79	20.67	22	2
1.4	64QAM	1	3	20.84	20.99	20.70		
1.4	64QAM	1	5	20.81	20.93	20.59		
1.4	64QAM	3	0	20.75	20.85	20.69		
1.4	64QAM	3	1	20.83	20.87	20.71		
1.4	64QAM	3	3	20.77	20.89	20.66		
1.4	64QAM	6	0	19.60	19.75	19.57	21	3

Band 38(only on channel required)

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				37850	38000	38150		
Frequency (MHz)				2580	2595	2610		
20	QPSK	1	0	23.01	22.85	23.07	24	0
20	QPSK	1	49	23.12	23.14	23.37		
20	QPSK	1	99	23.58	23.08	23.33		
20	QPSK	50	0	22.43	22.30	22.33	23	1
20	QPSK	50	24	22.27	22.29	22.35		
20	QPSK	50	50	22.24	22.18	22.33		
20	QPSK	100	0	22.44	22.14	22.38		
20	16QAM	1	0	22.06	21.98	22.42	23	1
20	16QAM	1	49	22.36	22.28	22.53		
20	16QAM	1	99	22.51	22.21	22.49		
20	16QAM	50	0	21.23	21.38	21.43	22	2
20	16QAM	50	24	21.36	21.28	21.45		
20	16QAM	50	50	21.52	21.40	21.55		
20	16QAM	100	0	21.32	21.23	21.49		
20	64QAM	1	0	20.98	20.90	20.96	22	2
20	64QAM	1	49	21.09	21.12	21.28		
20	64QAM	1	99	21.03	21.16	21.26		
20	64QAM	50	0	20.29	20.23	20.40	21	3
20	64QAM	50	24	20.32	20.36	20.43		
20	64QAM	50	50	20.49	20.37	20.63		
20	64QAM	100	0	20.28	20.31	20.38		
Channel				37825	38000	38175	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2577.5	2595	2612.5		
15	QPSK	1	0	23.10	23.14	23.35	24	0
15	QPSK	1	37	23.28	23.23	23.34		
15	QPSK	1	74	23.36	23.27	23.54		
15	QPSK	36	0	22.14	22.15	22.37	23	1
15	QPSK	36	20	22.23	22.22	22.46		
15	QPSK	36	39	22.17	22.25	22.46		
15	QPSK	75	0	22.29	22.09	22.42		
15	16QAM	1	0	22.11	22.24	22.46	23	1
15	16QAM	1	37	22.37	22.31	22.54		
15	16QAM	1	74	22.51	22.38	22.67		
15	16QAM	36	0	21.31	21.26	21.40	22	2
15	16QAM	36	20	21.32	21.26	21.51		
15	16QAM	36	39	21.37	21.30	21.53		
15	16QAM	75	0	21.34	21.29	21.43		
15	64QAM	1	0	20.79	20.96	20.99	22	2
15	64QAM	1	37	21.16	21.02	21.39		
15	64QAM	1	74	21.31	21.22	21.23		
15	64QAM	36	0	20.29	20.26	20.42	21	3
15	64QAM	36	20	20.40	20.26	20.53		
15	64QAM	36	39	20.35	20.30	20.56		
15	64QAM	75	0	20.39	20.25	20.41		
Channel				37800	38000	38200	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2575	2595	2615		
10	QPSK	1	0	22.99	23.17	23.27	24	0
10	QPSK	1	25	23.13	23.06	23.39		
10	QPSK	1	49	23.18	23.05	23.39		
10	QPSK	25	0	22.14	22.16	22.35	23	1
10	QPSK	25	12	22.16	22.18	22.50		
10	QPSK	25	25	22.19	22.22	22.52		
10	QPSK	50	0	22.33	22.26	22.45		
10	16QAM	1	0	22.26	22.30	22.52	23	1
10	16QAM	1	25	22.32	22.18	22.55		
10	16QAM	1	49	22.41	22.25	22.63		
10	16QAM	25	0	21.22	21.27	21.47	22	2
10	16QAM	25	12	21.33	21.29	21.63		
10	16QAM	25	25	21.36	21.22	21.65		
10	16QAM	50	0	21.39	21.25	21.67		
10	64QAM	1	0	20.82	20.92	21.16	22	2
10	64QAM	1	25	21.01	21.00	21.31		
10	64QAM	1	49	21.21	21.15	21.41		
10	64QAM	25	0	20.30	20.30	20.60	21	3
10	64QAM	25	12	20.41	20.33	20.66		
10	64QAM	25	25	20.44	20.38	20.69		
10	64QAM	50	0	20.32	20.36	20.56		
Channel				37775	38000	38225	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2572.5	2595	2617.5		
5	QPSK	1	0	23.15	22.98	23.48	24	0
5	QPSK	1	12	23.11	23.08	23.46		
5	QPSK	1	24	23.10	22.99	23.38		
5	QPSK	12	0	22.14	22.13	22.43	23	1
5	QPSK	12	7	22.16	22.16	22.60		
5	QPSK	12	13	22.19	22.20	22.50		
5	QPSK	25	0	22.07	22.19	22.54		
5	16QAM	1	0	22.09	22.19	22.41	23	1
5	16QAM	1	12	22.31	22.32	22.63		
5	16QAM	1	24	22.33	22.17	22.47		
5	16QAM	12	0	21.16	21.19	21.61	22	2
5	16QAM	12	7	21.30	21.33	21.59		
5	16QAM	12	13	21.23	21.27	21.58		
5	16QAM	25	0	21.29	21.32	21.59		
5	64QAM	1	0	21.01	21.04	21.29	22	2
5	64QAM	1	12	20.99	20.94	21.40		
5	64QAM	1	24	21.05	21.11	21.25		
5	64QAM	12	0	20.18	20.24	20.67	21	3
5	64QAM	12	7	20.31	20.28	20.64		
5	64QAM	12	13	20.35	20.33	20.63		
5	64QAM	25	0	20.29	20.35	20.62		

Band 41 (2.6G Band)

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Low Ch. / Freq.	Power Middle High Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				40140	40400	40670	41140		
Frequency (MHz)				2545	2571	2598	2645		
20	QPSK	1	0	23.11	23.11	23.51	23.19	24	0
20	QPSK	1	49	23.14	23.37	23.56	23.06		
20	QPSK	1	99	23.09	23.48	23.65	23.11		
20	QPSK	50	0	22.46	22.57	22.81	22.55	23	1
20	QPSK	50	24	22.54	22.66	22.97	22.67		
20	QPSK	50	50	22.46	22.71	22.81	22.24		
20	QPSK	100	0	22.51	22.64	22.80	22.27		
20	16QAM	1	0	22.12	22.16	22.64	22.05	23	1
20	16QAM	1	49	22.23	22.54	22.70	22.17		
20	16QAM	1	99	22.08	22.62	22.81	21.51		
20	16QAM	50	0	21.24	21.52	21.68	21.91	22	2
20	16QAM	50	24	21.35	21.65	21.73	22.00		
20	16QAM	50	50	21.41	21.59	21.75	21.98		
20	16QAM	100	0	21.35	21.51	21.72	21.93		
20	64QAM	1	0	20.90	20.81	21.24	20.10	22	2
20	64QAM	1	49	21.02	21.16	21.42	20.81		
20	64QAM	1	99	21.16	21.24	21.13	20.01		
20	64QAM	50	0	20.23	20.33	20.49	20.61	21	3
20	64QAM	50	24	20.44	20.39	20.58	20.73		
20	64QAM	50	50	20.53	20.42	20.64	20.61		
20	64QAM	100	0	20.43	20.38	20.57	20.71		
Channel				40115	40395	40685	41165	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2542.5	2570.5	2599.5	2647.5		
15	QPSK	1	0	23.12	23.32	23.56	22.62	24	0
15	QPSK	1	37	23.15	23.45	23.64	23.17		
15	QPSK	1	74	23.31	23.49	23.25	22.75		
15	QPSK	36	0	22.16	22.43	22.65	22.90	23	1
15	QPSK	36	20	22.30	22.49	22.70	22.92		
15	QPSK	36	39	22.30	22.51	22.67	22.87		
15	QPSK	75	0	22.30	22.53	22.64	22.89		
15	16QAM	1	0	22.21	22.36	22.63	21.63	23	1
15	16QAM	1	37	22.31	22.53	22.75	22.27		
15	16QAM	1	74	22.46	22.65	22.86	21.85		
15	16QAM	36	0	21.18	21.48	21.61	21.88	22	2
15	16QAM	36	20	21.34	21.57	21.70	21.92		
15	16QAM	36	39	21.37	21.58	21.70	21.95		
15	16QAM	75	0	21.36	21.59	21.72	21.96		
15	64QAM	1	0	20.99	20.89	21.19	20.11	22	2
15	64QAM	1	37	21.09	21.19	21.17	20.71		
15	64QAM	1	74	21.26	21.24	21.36	20.18		
15	64QAM	36	0	20.23	20.30	20.57	20.63	21	3
15	64QAM	36	20	20.41	20.33	20.65	20.65		
15	64QAM	36	39	20.38	20.34	20.56	20.66		
15	64QAM	75	0	20.43	20.34	20.59	20.67		
Channel				40090	40390	40690	41190	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2540	2570	2600	2650		
10	QPSK	1	0	23.07	23.40	23.53	22.95	24	0
10	QPSK	1	25	23.14	23.45	23.61	23.17		
10	QPSK	1	49	23.20	23.48	23.63	23.08		
10	QPSK	25	0	22.18	22.45	22.57	22.86	23	1
10	QPSK	25	12	22.16	22.49	22.66	22.91		
10	QPSK	25	25	22.19	22.51	22.67	22.88		
10	QPSK	50	0	22.21	22.52	22.72	22.89		
10	16QAM	1	0	22.19	22.52	22.68	21.98	23	1
10	16QAM	1	25	22.25	22.50	22.71	22.27		
10	16QAM	1	49	22.28	22.58	22.77	22.16		
10	16QAM	25	0	21.24	21.54	21.69	21.93	22	2
10	16QAM	25	12	21.29	21.55	21.77	21.93		
10	16QAM	25	25	21.26	21.58	21.73	21.98		
10	16QAM	50	0	21.28	21.53	21.74	21.97		
10	64QAM	1	0	20.94	21.08	21.40	20.41	22	2
10	64QAM	1	25	20.99	21.12	21.43	20.65		
10	64QAM	1	49	21.08	21.18	21.28	20.49		
10	64QAM	25	0	20.27	20.38	20.60	20.67	21	3
10	64QAM	25	12	20.29	20.34	20.68	20.78		
10	64QAM	25	25	20.26	20.45	20.62	20.72		
10	64QAM	50	0	20.27	20.33	20.57	20.66		
Channel				40065	40385	40705	41215	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2537.5	2569.5	2601.5	2652.5		
5	QPSK	1	0	23.12	23.37	23.61	23.59	24	0
5	QPSK	1	12	23.13	23.42	23.57	23.56		
5	QPSK	1	24	23.12	23.41	23.62	23.59		
5	QPSK	12	0	22.12	22.46	22.63	22.63	23	1
5	QPSK	12	7	22.19	22.48	22.67	22.67		
5	QPSK	12	13	22.17	22.46	22.71	22.69		
5	QPSK	25	0	22.14	22.48	22.65	22.67		
5	16QAM	1	0	22.16	22.50	22.66	22.65	23	1
5	16QAM	1	12	22.24	22.58	22.78	22.76		
5	16QAM	1	24	22.24	22.57	22.75	22.76		
5	16QAM	12	0	21.20	21.48	21.67	21.67	22	2
5	16QAM	12	7	21.25	21.51	21.71	21.73		
5	16QAM	12	13	21.21	21.49	21.70	21.70		
5	16QAM	25	0	21.27	21.56	21.77	21.75		
5	64QAM	1	0	20.99	21.04	21.17	20.84	22	2
5	64QAM	1	12	20.99	21.09	21.26	20.66		
5	64QAM	1	24	20.87	21.11	21.35	20.93		
5	64QAM	12	0	20.13	20.34	20.53	20.62	21	3
5	64QAM	12	7	20.21	20.34	20.61	20.70		
5	64QAM	12	13	20.28	20.35	20.58	20.67		
5	64QAM	25	0	20.26	20.39	20.58	20.66		

Reduced Power Mode for Sensor On

Band		WCDMA V			Tune-up Limit (dBm)
TX Channel		4132	4182	4233	
Rx Channel		4357	4407	4458	
Frequency (MHz)		826.4	836.4	846.6	
3GPP Rel 99	RMC 12.2Kbps	14.69	14.72	14.63	15.50
3GPP Rel 6	HSDPA Subtest-1	13.58	13.61	13.51	14.50
3GPP Rel 6	HSDPA Subtest-2	13.60	13.66	13.57	14.50
3GPP Rel 6	HSDPA Subtest-3	13.15	13.20	13.04	14.00
3GPP Rel 6	HSDPA Subtest-4	13.11	13.19	13.05	14.00
3GPP Rel 6	HSUPA Subtest-1	13.64	13.70	13.67	14.50
3GPP Rel 6	HSUPA Subtest-2	11.64	11.69	11.56	12.50
3GPP Rel 6	HSUPA Subtest-3	12.07	12.04	11.96	13.50
3GPP Rel 6	HSUPA Subtest-4	11.63	11.68	11.56	12.50
3GPP Rel 6	HSUPA Subtest-5	13.65	13.75	13.63	14.50

Band 5 (Celluar Band) Part 22H(only on channel required)								
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				20450	20525	20600		
Frequency (MHz)				829	836.5	844		
10	QPSK	1	0	15.25	15.05	15.10	16.5	0
10	QPSK	1	25	15.14	15.47	15.05		
10	QPSK	1	49	15.28	15.72	15.19		
10	QPSK	25	0	15.22	15.60	15.40	16.5	0
10	QPSK	25	12	15.16	15.39	15.33		
10	QPSK	25	25	15.12	15.58	15.26		
10	QPSK	50	0	15.17	15.59	15.44		
10	16QAM	1	0	15.15	14.99	15.66	16.5	0
10	16QAM	1	25	15.07	15.38	15.60		
10	16QAM	1	49	15.03	15.59	15.14		
10	16QAM	25	0	14.94	15.01	15.45	16.5	0
10	16QAM	25	12	14.91	15.12	15.40		
10	16QAM	25	25	14.83	15.26	15.12		
10	16QAM	50	0	14.91	15.08	15.31		
10	64QAM	1	0	15.14	14.95	15.59	16.5	0
10	64QAM	1	25	15.06	15.33	15.55		
10	64QAM	1	49	15.01	15.63	15.12		
10	64QAM	25	0	14.92	15.04	15.47	16.5	0
10	64QAM	25	12	14.89	15.11	15.41		
10	64QAM	25	25	14.86	15.29	15.13		
10	64QAM	50	0	14.90	15.13	15.32		
Channel				20425	20525	20625	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				826.5	836.5	846.5		
5	QPSK	1	0	14.84	14.87	15.19	16.5	0
5	QPSK	1	12	14.81	15.06	14.96		
5	QPSK	1	24	14.76	15.24	14.82		
5	QPSK	12	0	14.92	14.94	15.10	16.5	0
5	QPSK	12	7	14.89	15.03	15.04		
5	QPSK	12	13	14.88	15.12	14.88		
5	QPSK	25	0	14.83	15.02	15.03		
5	16QAM	1	0	15.18	15.23	15.62	16.5	0
5	16QAM	1	12	15.20	15.44	15.34		
5	16QAM	1	24	15.18	15.59	15.14		
5	16QAM	12	0	15.03	15.05	15.19	16.5	0
5	16QAM	12	7	14.98	15.10	15.14		
5	16QAM	12	13	14.94	15.25	14.99		
5	16QAM	25	0	14.93	15.11	15.13		
5	64QAM	1	0	15.13	15.19	15.49	16.5	0
5	64QAM	1	12	15.10	15.36	15.29		
5	64QAM	1	24	15.04	15.54	15.09		
5	64QAM	12	0	15.10	15.13	15.23	16.5	0
5	64QAM	12	7	15.04	15.20	15.18		
5	64QAM	12	13	15.03	15.28	15.01		
5	64QAM	25	0	14.98	15.12	15.13		
Channel				20415	20525	20635	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				825.5	836.5	847.5		
3	QPSK	1	0	14.82	14.95	15.03	16.5	0
3	QPSK	1	8	14.93	15.07	14.87		
3	QPSK	1	14	14.78	15.13	14.83		
3	QPSK	8	0	14.96	14.97	14.98	16.5	0
3	QPSK	8	4	15.00	15.05	14.98		
3	QPSK	8	7	14.87	15.13	14.90		
3	QPSK	15	0	14.90	15.01	14.88		
3	16QAM	1	0	15.21	15.32	15.34	16.5	0
3	16QAM	1	8	15.30	15.41	15.19		
3	16QAM	1	14	15.14	15.45	15.15		
3	16QAM	8	0	15.10	15.11	15.11	16.5	0
3	16QAM	8	4	15.10	15.15	15.10		
3	16QAM	8	7	15.05	15.23	15.03		
3	16QAM	15	0	15.04	15.13	14.98		
3	64QAM	1	0	15.08	15.22	15.28	16.5	0
3	64QAM	1	8	15.20	15.35	15.14		
3	64QAM	1	14	15.08	15.41	15.11		
3	64QAM	8	0	15.15	15.12	15.11	16.5	0
3	64QAM	8	4	15.12	15.17	15.11		
3	64QAM	8	7	15.04	15.27	15.04		
3	64QAM	15	0	15.03	15.14	15.00		
Channel				20407	20525	20643	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				824.7	836.5	848.3		
1.4	QPSK	1	0	14.80	14.93	14.81	16.5	0
1.4	QPSK	1	3	14.79	14.93	14.80		
1.4	QPSK	1	5	14.78	14.93	14.80		
1.4	QPSK	3	0	14.86	14.96	14.82		
1.4	QPSK	3	1	14.86	14.96	14.83		
1.4	QPSK	3	3	14.86	14.95	14.83		
1.4	QPSK	6	0	14.85	14.96	14.84	16.5	0
1.4	16QAM	1	0	15.09	15.24	15.12	16.5	0
1.4	16QAM	1	3	15.10	15.21	15.11		
1.4	16QAM	1	5	15.11	15.25	15.11		
1.4	16QAM	3	0	14.98	15.08	14.96		
1.4	16QAM	3	1	14.97	15.08	14.96		
1.4	16QAM	3	3	14.97	15.08	14.96		
1.4	16QAM	6	0	14.97	15.07	14.96	16.5	0
1.4	64QAM	1	0	15.09	15.20	15.09	16.5	0
1.4	64QAM	1	3	15.08	15.20	15.08		
1.4	64QAM	1	5	15.08	15.21	15.11		
1.4	64QAM	3	0	14.94	15.09	14.96		
1.4	64QAM	3	1	14.94	15.08	14.95		
1.4	64QAM	3	3	14.94	15.08	14.95		
1.4	64QAM	6	0	14.94	15.08	14.95	16.5	0

Band 38(only on channel required)

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				37850	38000	38150		
Frequency (MHz)				2580	2595	2610		
20	QPSK	1	0	11.66	11.48	11.41	12.5	0
20	QPSK	1	49	11.60	11.47	11.60		
20	QPSK	1	99	11.91	11.65	11.74		
20	QPSK	50	0	11.87	11.63	11.73	12.5	0
20	QPSK	50	24	11.61	11.47	11.67		
20	QPSK	50	50	11.69	11.48	11.54		
20	QPSK	100	0	11.79	11.61	11.72		
20	16QAM	1	0	11.77	11.48	11.63	12.5	0
20	16QAM	1	49	11.81	11.68	11.77		
20	16QAM	1	99	11.76	11.71	11.90		
20	16QAM	50	0	11.73	11.53	11.57	12.5	0
20	16QAM	50	24	11.77	11.63	11.59		
20	16QAM	50	50	11.80	11.53	11.76		
20	16QAM	100	0	11.70	11.57	11.54		
20	64QAM	1	0	11.25	11.18	11.33	12.5	0
20	64QAM	1	49	11.63	11.37	11.46		
20	64QAM	1	99	11.46	11.47	11.41		
20	64QAM	50	0	11.60	11.49	11.65	12.5	0
20	64QAM	50	24	11.75	11.61	11.57		
20	64QAM	50	50	11.76	11.61	11.73		
20	64QAM	100	0	11.68	11.66	11.62		
Channel				37825	38000	38175	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2577.5	2595	2612.5		
15	QPSK	1	0	11.37	11.59	11.49	12.5	0
15	QPSK	1	37	11.48	11.64	11.76		
15	QPSK	1	74	11.77	11.63	11.80		
15	QPSK	36	0	11.58	11.46	11.63	12.5	0
15	QPSK	36	20	11.70	11.54	11.76		
15	QPSK	36	39	11.66	11.57	11.82		
15	QPSK	75	0	11.57	11.51	11.62		
15	16QAM	1	0	11.60	11.60	11.60	12.5	0
15	16QAM	1	37	11.70	11.65	11.78		
15	16QAM	1	74	11.75	11.74	11.89		
15	16QAM	36	0	11.47	11.33	11.52	12.5	0
15	16QAM	36	20	11.49	11.43	11.66		
15	16QAM	36	39	11.55	11.47	11.72		
15	16QAM	75	0	11.61	11.44	11.67		
15	64QAM	1	0	11.26	11.29	11.30	12.5	0
15	64QAM	1	37	11.39	11.33	11.46		
15	64QAM	1	74	11.34	11.26	11.71		
15	64QAM	36	0	11.48	11.46	11.55	12.5	0
15	64QAM	36	20	11.50	11.57	11.69		
15	64QAM	36	39	11.56	11.48	11.75		
15	64QAM	75	0	11.47	11.54	11.65		
Channel				37800	38000	38200	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2575	2595	2615		
10	QPSK	1	0	11.48	11.50	11.82	12.5	0
10	QPSK	1	25	11.47	11.59	11.81		
10	QPSK	1	49	11.54	11.60	11.90		
10	QPSK	25	0	11.49	11.50	11.78	12.5	0
10	QPSK	25	12	11.62	11.51	11.85		
10	QPSK	25	25	11.66	11.54	11.81		
10	QPSK	50	0	11.69	11.47	11.90		
10	16QAM	1	0	11.37	11.52	11.84	12.5	0
10	16QAM	1	25	11.58	11.59	11.82		
10	16QAM	1	49	11.49	11.45	11.87		
10	16QAM	25	0	11.45	11.46	11.74	12.5	0
10	16QAM	25	12	11.57	11.46	11.81		
10	16QAM	25	25	11.49	11.49	11.77		
10	16QAM	50	0	11.62	11.51	11.84		
10	64QAM	1	0	11.18	11.11	11.53	12.5	0
10	64QAM	1	25	11.28	11.18	11.51		
10	64QAM	1	49	11.41	11.27	11.59		
10	64QAM	25	0	11.58	11.49	11.76	12.5	0
10	64QAM	25	12	11.60	11.50	11.84		
10	64QAM	25	25	11.63	11.52	11.89		
10	64QAM	50	0	11.49	11.50	11.71		
Channel				37775	38000	38225	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2572.5	2595	2617.5		
5	QPSK	1	0	11.40	11.50	11.71	12.5	0
5	QPSK	1	12	11.52	11.44	11.83		
5	QPSK	1	24	11.53	11.46	11.77		
5	QPSK	12	0	11.57	11.50	11.83	12.5	0
5	QPSK	12	7	11.49	11.52	11.80		
5	QPSK	12	13	11.54	11.58	11.90		
5	QPSK	25	0	11.51	11.56	11.84		
5	16QAM	1	0	11.48	11.43	11.68	12.5	0
5	16QAM	1	12	11.52	11.43	11.84		
5	16QAM	1	24	11.56	11.49	11.82		
5	16QAM	12	0	11.47	11.40	11.73	12.5	0
5	16QAM	12	7	11.50	11.53	11.82		
5	16QAM	12	13	11.44	11.47	11.83		
5	16QAM	25	0	11.48	11.50	11.80		
5	64QAM	1	0	11.21	11.15	11.51	12.5	0
5	64QAM	1	12	11.22	11.35	11.53		
5	64QAM	1	24	11.28	11.31	11.52		
5	64QAM	12	0	11.51	11.45	11.77	12.5	0
5	64QAM	12	7	11.55	11.46	11.86		
5	64QAM	12	13	11.49	11.51	11.86		
5	64QAM	25	0	11.49	11.53	11.82		

Band 41 (2.6G Band)

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Low Ch. / Freq.	Power Middle High Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				40140	40400	40670	41140		
Frequency (MHz)				2545	2571	2598	2645		
20	QPSK	1	0	11.42	11.58	11.60	11.48	12.5	0
20	QPSK	1	49	11.31	11.57	11.75	11.39		
20	QPSK	1	99	11.61	11.62	11.94	11.55		
20	QPSK	50	0	11.56	11.60	11.85	11.50	12.5	0
20	QPSK	50	24	11.33	11.60	11.75	11.49		
20	QPSK	50	50	11.5	11.59	11.75	11.47		
20	QPSK	100	0	11.53	11.56	11.78	11.47		
20	16QAM	1	0	11.71	11.78	11.75	11.80	12.5	0
20	16QAM	1	49	11.66	11.91	11.79	11.76		
20	16QAM	1	99	11.78	11.86	11.79	11.87		
20	16QAM	50	0	11.57	11.64	11.75	11.62	12.5	0
20	16QAM	50	24	11.57	11.80	11.89	11.53		
20	16QAM	50	50	11.61	11.72	11.90	11.62		
20	16QAM	100	0	11.57	11.66	11.75	11.60		
20	64QAM	1	0	11.37	11.23	11.36	11.49	12.5	0
20	64QAM	1	49	11.11	11.25	11.48	11.55		
20	64QAM	1	99	11.34	11.74	11.41	11.56		
20	64QAM	50	0	11.43	11.74	11.77	11.49	12.5	0
20	64QAM	50	24	11.67	11.67	11.79	11.63		
20	64QAM	50	50	11.59	11.82	11.71	11.60		
20	64QAM	100	0	11.45	11.65	11.76	11.59		
Channel				40115	40395	40685	41165	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2542.5	2570.5	2599.5	2647.5		
15	QPSK	1	0	11.04	11.59	11.80	11.59	12.5	0
15	QPSK	1	37	11.05	11.38	11.81	11.59		
15	QPSK	1	74	11.34	11.86	11.53	11.72		
15	QPSK	36	0	11.24	11.63	11.72	11.47	12.5	0
15	QPSK	36	20	11.42	11.60	11.74	11.57		
15	QPSK	36	39	11.31	11.62	11.65	11.43		
15	QPSK	75	0	11.33	11.65	11.62	11.46		
15	16QAM	1	0	11.33	11.79	11.85	11.78	12.5	0
15	16QAM	1	37	11.62	11.93	11.63	11.81		
15	16QAM	1	74	11.87	11.69	11.83	11.56		
15	16QAM	36	0	11.31	11.58	11.78	11.57	12.5	0
15	16QAM	36	20	11.50	11.72	11.72	11.57		
15	16QAM	36	39	11.51	11.63	11.75	11.66		
15	16QAM	75	0	11.46	11.65	11.77	11.61		
15	64QAM	1	0	11.23	11.48	11.72	11.47	12.5	0
15	64QAM	1	37	11.32	11.66	11.81	11.27		
15	64QAM	1	74	11.55	11.85	11.77	11.25		
15	64QAM	36	0	11.34	11.63	11.74	11.59	12.5	0
15	64QAM	36	20	11.41	11.76	11.70	11.58		
15	64QAM	36	39	11.53	11.78	11.72	11.56		
15	64QAM	75	0	11.55	11.64	11.78	11.58		
Channel				40090	40390	40690	41190	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2540	2570	2600	2650		
10	QPSK	1	0	11.20	11.42	11.69	11.58	12.5	0
10	QPSK	1	25	11.32	11.46	11.51	11.60		
10	QPSK	1	49	11.48	11.67	11.80	11.64		
10	QPSK	25	0	11.36	11.50	11.62	11.54	12.5	0
10	QPSK	25	12	11.41	11.57	11.74	11.59		
10	QPSK	25	25	11.41	11.58	11.66	11.68		
10	QPSK	50	0	11.43	11.61	11.64	11.62		
10	16QAM	1	0	11.40	11.66	11.74	11.68	12.5	0
10	16QAM	1	25	11.53	11.80	11.73	11.82		
10	16QAM	1	49	11.62	11.73	11.83	11.82		
10	16QAM	25	0	11.44	11.70	11.77	11.73	12.5	0
10	16QAM	25	12	11.49	11.65	11.90	11.78		
10	16QAM	25	25	11.59	11.77	11.82	11.75		
10	16QAM	50	0	11.49	11.66	11.78	11.65		
10	64QAM	1	0	11.34	11.48	11.61	11.38	12.5	0
10	64QAM	1	25	11.35	11.50	11.67	11.38		
10	64QAM	1	49	11.42	11.55	11.68	11.63		
10	64QAM	25	0	11.48	11.73	11.85	11.74	12.5	0
10	64QAM	25	12	11.54	11.80	11.85	11.80		
10	64QAM	25	25	11.52	11.80	11.88	11.77		
10	64QAM	50	0	11.60	11.63	11.71	11.74		
Channel				40065	40385	40705	41215	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2537.5	2569.5	2601.5	2652.5		
5	QPSK	1	0	11.15	11.41	11.45	11.70	12.5	0
5	QPSK	1	12	11.24	11.55	11.42	11.66		
5	QPSK	1	24	11.22	11.60	11.31	11.60		
5	QPSK	12	0	11.39	11.52	11.46	11.66	12.5	0
5	QPSK	12	7	11.42	11.51	11.51	11.63		
5	QPSK	12	13	11.33	11.63	11.39	11.70		
5	QPSK	25	0	11.43	11.53	11.45	11.64		
5	16QAM	1	0	11.54	11.72	11.62	11.71	12.5	0
5	16QAM	1	12	11.46	11.78	11.75	11.74		
5	16QAM	1	24	11.58	11.82	11.64	11.79		
5	16QAM	12	0	11.41	11.66	11.54	11.73	12.5	0
5	16QAM	12	7	11.44	11.65	11.64	11.81		
5	16QAM	12	13	11.47	11.76	11.61	11.77		
5	16QAM	25	0	11.51	11.60	11.58	11.88		
5	64QAM	1	0	11.26	11.55	11.31	11.63	12.5	0
5	64QAM	1	12	11.39	11.35	11.31	11.67		
5	64QAM	1	24	11.30	11.40	11.45	11.48		
5	64QAM	12	0	11.46	11.82	11.57	11.76	12.5	0
5	64QAM	12	7	11.61	11.70	11.66	11.79		
5	64QAM	12	13	11.64	11.79	11.62	11.73		
5	64QAM	25	0	11.54	11.86	11.70	11.80		

2.4GHz WLAN	Full Power					
	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
2.4GHz WLAN	802.11b 1Mbps	1	2412	16.55	17.00	100.00
		6	2437	16.86	17.00	
		11	2462	16.63	17.00	
	802.11g 6Mbps	1	2412	14.92	16.00	98.28
		6	2437	15.10	16.00	
		11	2462	15.01	16.00	
	802.11n-HT20 MCS0	1	2412	14.84	16.00	98.16
		6	2437	14.94	16.00	
		11	2462	14.85	16.00	
	802.11n-HT40 MCS0	3	2422	12.69	14.50	94.93
		6	2437	14.06	14.50	
		9	2452	14.05	14.50	

2.4GHz WLA	Sensor on					
	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
2.4GHz WLAN	802.11b 1Mbps	1	2412	8.02	9.00	100.00
		6	2437	8.33	9.00	
		11	2462	8.07	9.00	
	802.11g 6Mbps	1	2412	Not Inquired	8.00	98.28
		6	2437		8.00	
		11	2462		8.00	
	802.11n-HT20 MCS0	1	2412		8.00	98.16
		6	2437		8.00	
		11	2462		8.00	
	802.11n-HT40 MCS0	3	2422		8.00	94.93
		6	2437		8.00	
		9	2452		8.00	

5GHz WLAN	Full Power					
	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.2GHz WLAN	802.11a 6Mbps	36	5180	15.76	17.00	98.28
		40	5200	16.04	17.00	
		44	5220	16.02	17.00	
		48	5240	15.79	17.00	
	802.11n-HT20 MCS0	36	5180	15.80	17.00	98.16
		40	5200	16.05	17.00	
		44	5220	16.04	17.00	
		48	5240	15.82	17.00	
	802.11n-HT40 MCS0	38	5190	13.26	15.00	96.32
		46	5230	13.92	15.00	
	802.11ac-VHT20 MCS0	36	5180	12.78	14.00	98.16
		40	5200	13.03	14.00	
		44	5220	13.02	14.00	
		48	5240	12.80	14.00	
	802.11ac-VHT40 MCS0	38	5190	13.24	14.00	96.32
		46	5230	13.28	14.00	
	802.11ac-VHT80 MCS0	42	5210	11.78	12.00	96.31

5GHz WLA	Sensor on					
	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.2GHz WLAN	802.11a 6Mbps	36	5180	8.06	8.50	98.28
		40	5200	8.11	8.50	
		44	5220	8.19	8.50	
		48	5240	7.90	8.50	
	802.11n-HT20 MCS0	36	5180	Not Inquired	8.50	98.16
		40	5200		8.50	
		44	5220		8.50	
		48	5240		8.50	
	802.11n-HT40 MCS0	38	5190		8.00	96.32
		46	5230		8.00	
	802.11ac-VHT20 MCS0	36	5180		8.50	98.16
		40	5200		8.50	
		44	5220		8.50	
		48	5240		8.50	
	802.11ac-VHT40 MCS0	38	5190		8.00	96.32
		46	5230		8.00	
	802.11ac-VHT80 MCS0	42	5210		8.00	96.31

5GHz WLAN	Full Power					
	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.3GHz WLAN	802.11a 6Mbps	52	5260	15.41	17.00	98.28
		56	5280	15.66	17.00	
		60	5300	15.93	17.00	
		64	5320	15.91	17.00	
	802.11n-HT20 MCS0	52	5260	15.48	17.00	98.16
		56	5280	15.69	17.00	
		60	5300	15.98	17.00	
		64	5320	15.90	17.00	
	802.11n-HT40 MCS0	54	5270	13.88	15.00	96.32
		62	5310	13.78	15.00	
	802.11ac-VHT20 MCS0	52	5260	12.50	14.00	98.16
		56	5280	12.69	14.00	
		60	5300	13.00	14.00	
		64	5320	12.87	14.00	
	802.11ac-VHT40 MCS0	54	5270	12.88	14.00	96.32
		62	5310	13.22	14.00	
	802.11ac-VHT80 MCS0	58	5290	10.84	12.00	96.31

5GHz WLA	Sensor on					
	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.3GHz WLAN	802.11a 6Mbps	52	5260	9.66	10.00	98.28
		56	5280	9.52	10.00	
		60	5300	9.76	10.00	
		64	5320	9.61	10.00	
	802.11n-HT20 MCS0	52	5260	Not Inquired	10.00	98.16
		56	5280		10.00	
		60	5300		10.00	
		64	5320		10.00	
	802.11n-HT40 MCS0	54	5270		9.00	96.32
		62	5310		9.00	
	802.11ac-VHT20 MCS0	52	5260		10.00	98.16
		56	5280		10.00	
		60	5300		10.00	
		64	5320		10.00	
	802.11ac-VHT40 MCS0	54	5270		9.00	96.32
		62	5310		9.00	
	802.11ac-VHT80 MCS0	58	5290		9.00	96.31

5GHz WLAN	Full Power					
	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.5GHz WLAN	802.11a 6Mbps	100	5500	15.74	17.00	98.28
		116	5580	15.80	17.00	
		124	5620	16.27	17.00	
		132	5660	16.18	17.00	
		140	5700	16.19	17.00	
		144	5720	15.93	17.00	
	802.11n-HT20 MCS0	100	5500	15.76	17.00	98.16
		116	5580	15.82	17.00	
		124	5620	16.15	17.00	
		132	5660	16.19	17.00	
		140	5700	15.46	17.00	
		144	5720	16.03	17.00	
	802.11n-HT40 MCS0	102	5510	13.45	15.00	96.32
		110	5550	13.90	15.00	
		126	5630	14.03	15.00	
		134	5670	14.04	15.00	
		142	5710	13.84	15.00	
	802.11ac-VHT20 MCS0	100	5500	12.85	14.00	98.16
		116	5580	12.74	14.00	
		124	5620	13.31	14.00	
		132	5660	13.12	14.00	
		140	5700	13.19	14.00	
		144	5720	12.91	14.00	
	802.11ac-VHT40 MCS0	102	5510	12.88	14.00	96.32
		110	5550	12.95	14.00	
		126	5630	13.02	14.00	
		134	5670	13.07	14.00	
		142	5710	12.90	14.00	
	802.11ac-VHT80 MCS0	106	5530	10.38	12.00	93.31
		122	5610	12.88	13.00	
		138	5690	12.81	13.00	

5GHz WLA	Sensor on					
	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.5GHz WLAN	802.11a 6Mbps	100	5500	7.86	9.00	98.28
		116	5580	8.24	9.00	
		124	5620	8.61	9.00	
		132	5660	8.60	9.00	
		140	5700	8.55	9.00	
		144	5720	8.53	9.00	
	802.11n-HT20 MCS0	100	5500	Not Inquired	9.00	98.16
		116	5580		9.00	
		124	5620		9.00	
		132	5660		9.00	
		140	5700		9.00	
		144	5720		9.00	
	802.11n-HT40 MCS0	102	5510		8.00	96.32
		110	5550		8.00	
		126	5630		8.00	
		134	5670		8.00	
		142	5710		8.00	
	802.11ac-VHT20 MCS0	100	5500		9.00	98.16
		116	5580		9.00	
		124	5620		9.00	
		132	5660		9.00	
		140	5700		9.00	
		144	5720		9.00	
	802.11ac-VHT40 MCS0	102	5510		8.00	96.32
		110	5550		8.00	
		126	5630		8.00	
		134	5670		8.00	
		142	5710		8.00	
	802.11ac-VHT80 MCS0	106	5530		8.00	93.31
		122	5610		8.00	
		138	5690		8.00	

5GHz WLAN	Full Power					
	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.8GHz WLAN	802.11a 6Mbps	149	5745	15.71	17.00	98.28
		157	5785	15.48	17.00	
		165	5825	15.97	17.00	
	802.11n-HT20 MCS0	149	5745	15.72	17.00	98.16
		157	5785	15.48	17.00	
		165	5825	15.91	17.00	
	802.11n-HT40 MCS0	151	5755	13.94	15.00	96.32
		159	5795	13.75	15.00	
	802.11ac-VHT20 MCS0	149	5745	12.72	14.00	98.16
		157	5785	12.54	14.00	
		165	5825	12.91	14.00	
	802.11ac-VHT40 MCS0	151	5755	13.01	14.00	96.32
		159	5795	12.65	14.00	
	802.11ac-VHT80 MCS0	155	5775	13.17	14.00	93.31

5GHz WLA	Sensor on					
	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.8GHz WLAN	802.11a 6Mbps	149	5745	7.45	7.50	98.28
		157	5785	7.26	7.50	
		165	5825	7.31	7.50	
	802.11n-HT20 MCS0	149	5745	Not Inquired	7.50	98.16
		157	5785		7.50	
		165	5825		7.50	
	802.11n-HT40 MCS0	151	5755		7.00	96.32
		159	5795		7.00	
	802.11ac-VHT20 MCS0	149	5745		7.50	98.16
		157	5785		7.50	
		165	5825		7.50	
	802.11ac-VHT40 MCS0	151	5755		7.00	96.32
		159	5795		7.00	
	802.11ac-VHT80 MCS0	155	5775		7.00	93.31

BT BR/EDR

Mode	Channel	Frequency (MHz)	Average power (dBm)		
			1Mbps	2Mbps	3Mbps
BR / EDR	CH 00	2402	11.90	7.20	7.11
	CH 39	2441	12.26	8.03	8.06
	CH 78	2480	11.33	7.06	8.11
Tune-up Limit			12.5	9	9

BT LE

Mode	Channel	Frequency (MHz)	Average power (dBm)
			GFSK
LE	CH 00	2402	2.66
	CH 19	2440	2.76
	CH 39	2480	1.97
Tune-up Limit			3