

Appendix (Additional assessments outside the scope of SCS0108)

1. DC Voltage Linearity

High Range	Reading (μV)	Difference (μV)	Error (%)
Channel X + Input	200024.85	-8.32	-0.00
Channel X + Input	20005.36	0.39	0.00
Channel X - Input	-20003.50	2.72	-0.01
Channel Y + Input	200030.06	-2.90	-0.00
Channel Y + Input	20004.14	-0.70	-0.00
Channel Y - Input	-20008.00	-1.63	0.01
Channel Z + Input	200034.52	1.89	0.00
Channel Z + Input	20005.02	0.16	0.00
Channel Z - Input	-20007.28	-0.87	0.00

Low Range	Reading (μV)	Difference (μV)	Error (%)
Channel X + Input	2000.94	0.03	0.00
Channel X + Input	200.94	0.01	0.01
Channel X - Input	-198.93	0.16	-0.08
Channel Y + Input	2000.58	-0.17	-0.01
Channel Y + Input	199.97	-0.81	-0.40
Channel Y - Input	-200.24	-0.99	0.50
Channel Z + Input	2000.83	0.21	0.01
Channel Z + Input	199.97	-0.67	-0.34
Channel Z - Input	-199.90	-0.63	0.32

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	23.26	21.16
	- 200	-21.29	-22.70
Channel Y	200	-27.83	-28.04
	- 200	26.48	26.49
Channel Z	200	-11.47	-11.06
	- 200	9.80	9.70

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	-	1.92	-3.40
Channel Y	200	8.27	-	3.32
Channel Z	200	9.47	5.42	-

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	15579	16774
Channel Y	16044	14871
Channel Z	16074	16518

5. Input Offset Measurement

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

Input 10M Ω

	Average (μ V)	min. Offset (μ V)	max. Offset (μ V)	Std. Deviation (μ V)
Channel X	0.87	-0.93	1.98	0.46
Channel Y	-0.62	-1.71	0.15	0.38
Channel Z	-0.46	-1.45	0.52	0.39

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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Client **Sporton**

Certificate No: **Z20-60181**

CALIBRATION CERTIFICATE

Object **ES3DV3 - SN : 3279**

Calibration Procedure(s)
FF-Z11-004-01
Calibration Procedures for Dosimetric E-field Probes

Calibration date: **June 02, 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(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: June 04, 2020

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



Glossary:

TSL	tissue simulating liquid
NORM _{x,y,z}	sensitivity in free space
ConvF	sensitivity in TSL / NORM _{x,y,z}
DCP	diode compression point
CF	crest factor (1/duty_cycle) of the RF signal
A,B,C,D	modulation dependent linearization parameters
Polarization Φ	Φ rotation around probe axis
Polarization θ	θ rotation around an axis that is in the plane normal to probe axis (at measurement center), i.e. $\theta=0$ is normal to probe axis

Connector Angle information used in DASY system to align probe sensor X to the robot coordinate system

Calibration is Performed According to the Following Standards:

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

Methods Applied and Interpretation of Parameters:

- NORM_{x,y,z}**: Assessed for E-field polarization $\theta=0$ ($f \leq 900\text{MHz}$ in TEM-cell; $f > 1800\text{MHz}$: waveguide). NORM_{x,y,z} are only intermediate values, i.e., the uncertainties of NORM_{x,y,z} does not effect 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 (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}; VR_{x,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 $f \leq 800\text{MHz}$) and inside waveguide using analytical field distributions based on power measurements for $f > 800\text{MHz}$. 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 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 $\pm 50\text{MHz}$ to $\pm 100\text{MHz}$.
- 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).



DASY/EASY – Parameters of Probe: ES3DV3 – SN:3279

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm($\mu\text{V}/(\text{V}/\text{m})^2$) ^A	1.32	1.39	1.31	±10.0%
DCP(mV) ^B	104.2	106.6	106.1	

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	264.4	±2.2%
		Y	0.0	0.0	1.0		276.5	
		Z	0.0	0.0	1.0		268.2	

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 E²-field uncertainty inside TSL (see Page 4).

^B Numerical linearization parameter: uncertainty not required.

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



DASY/EASY – Parameters of Probe: ES3DV3 – SN:3279

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	6.44	6.44	6.44	0.40	1.40	±12.1%
835	41.5	0.90	6.25	6.25	6.25	0.43	1.48	±12.1%
1750	40.1	1.37	5.40	5.40	5.40	0.75	1.19	±12.1%
1900	40.0	1.40	5.16	5.16	5.16	0.69	1.25	±12.1%
2000	40.0	1.40	5.13	5.13	5.13	0.63	1.31	±12.1%
2300	39.5	1.67	4.92	4.92	4.92	0.90	1.10	±12.1%
2450	39.2	1.80	4.71	4.71	4.71	0.90	1.16	±12.1%
2600	39.0	1.96	4.54	4.54	4.54	0.90	1.15	±12.1%

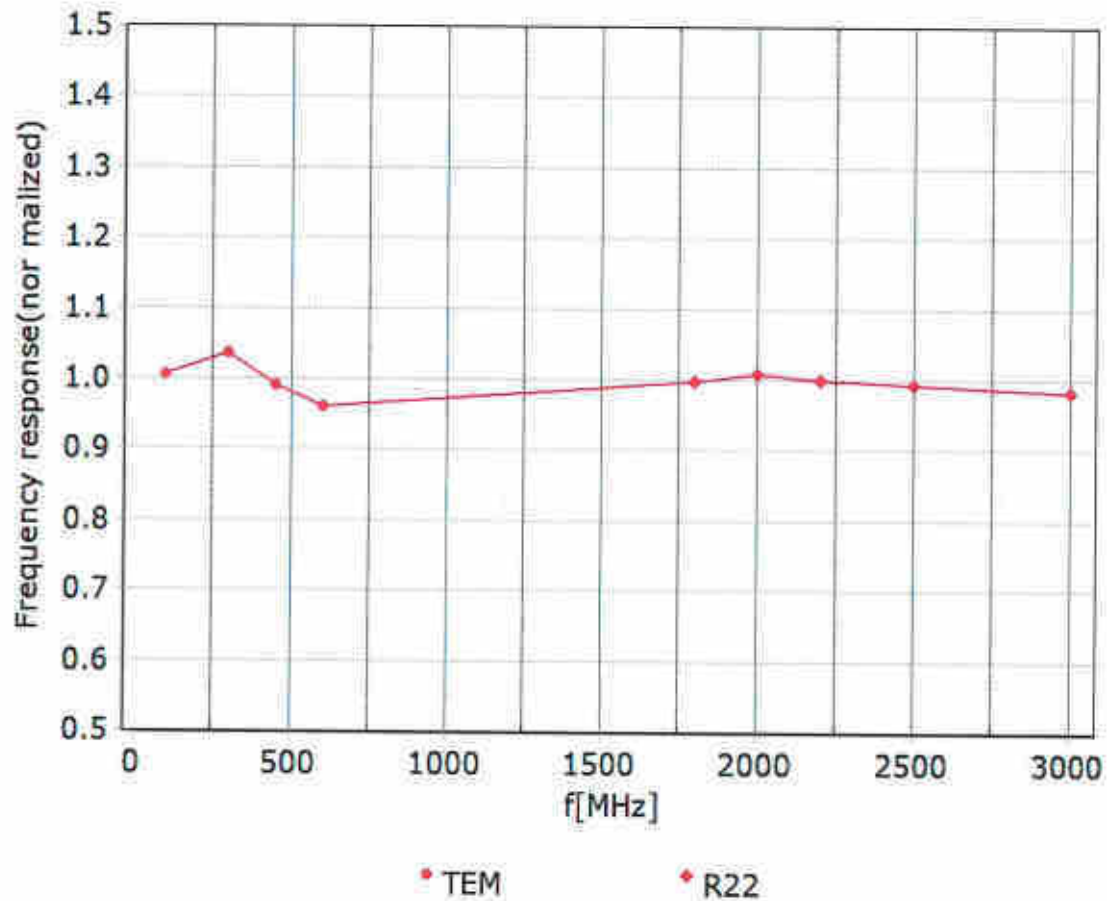
^C Frequency validity above 300 MHz of ±100MHz only applies for DASY v4.4 and higher (Page 2), else it is restricted to ±50MHz. The uncertainty is the RSS of ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ± 10, 25, 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.



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



Uncertainty of Frequency Response of E-field: $\pm 7.4\%$ ($k=2$)

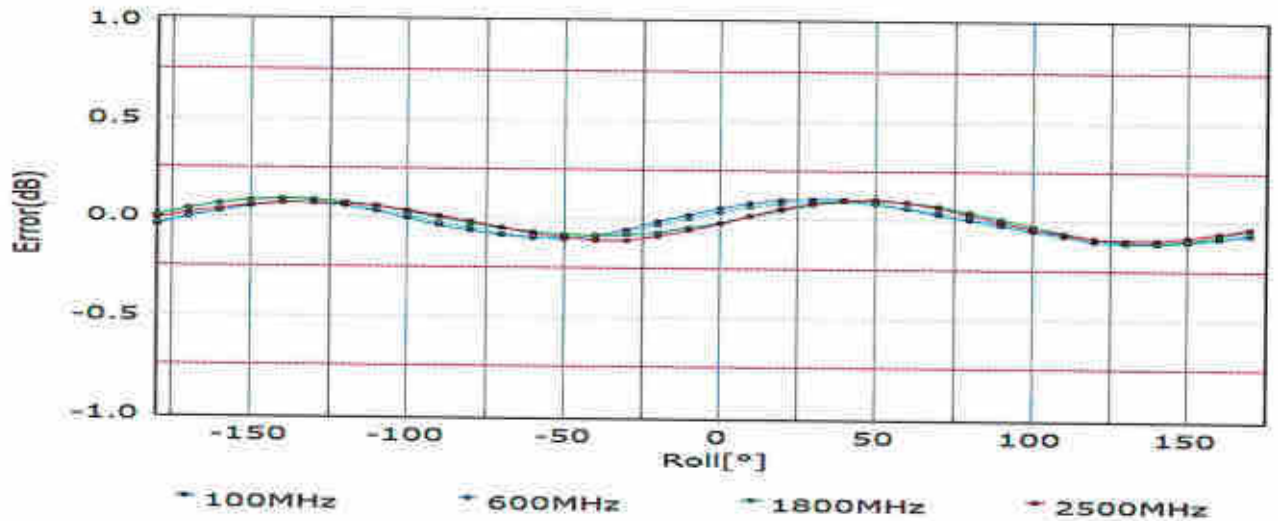
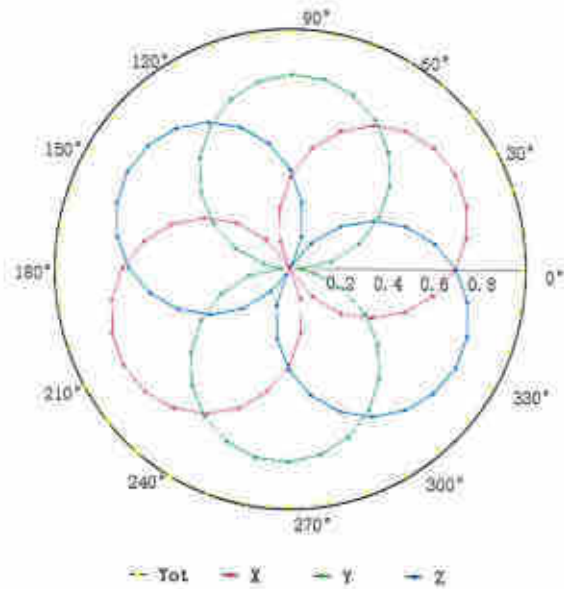
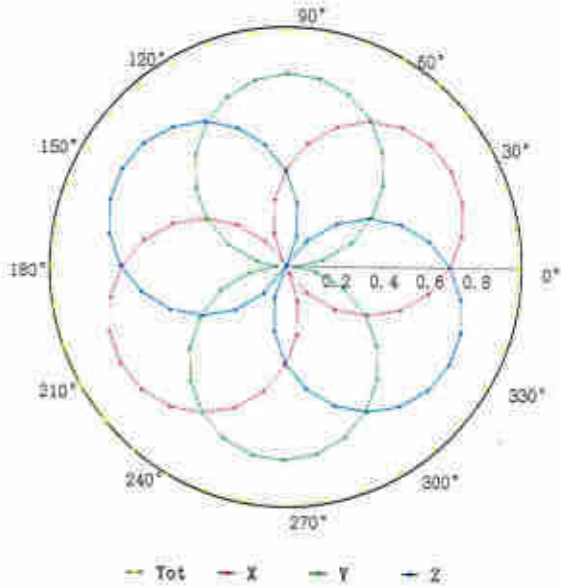


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Receiving Pattern (Φ), $\theta=0^\circ$

f=600 MHz, TEM

f=1800 MHz, R22

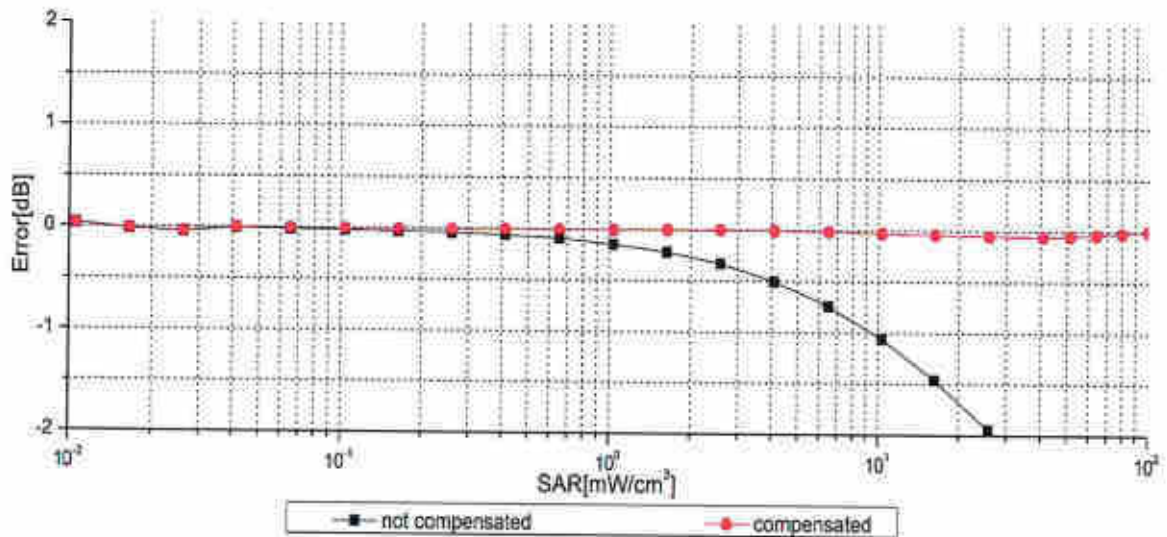
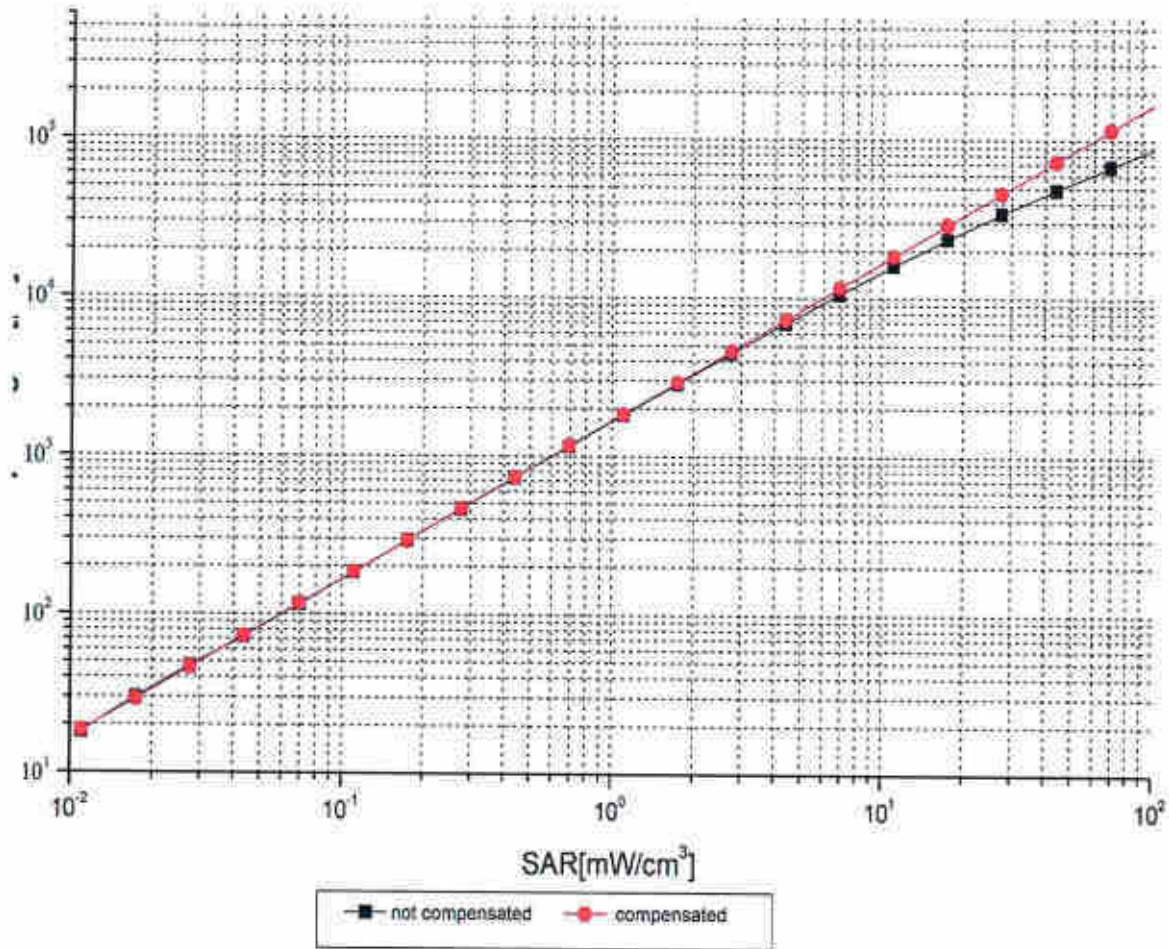


Uncertainty of Axial Isotropy Assessment: $\pm 1.2\%$ ($k=2$)



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Dynamic Range f(SAR_{head}) (TEM cell, f = 900 MHz)



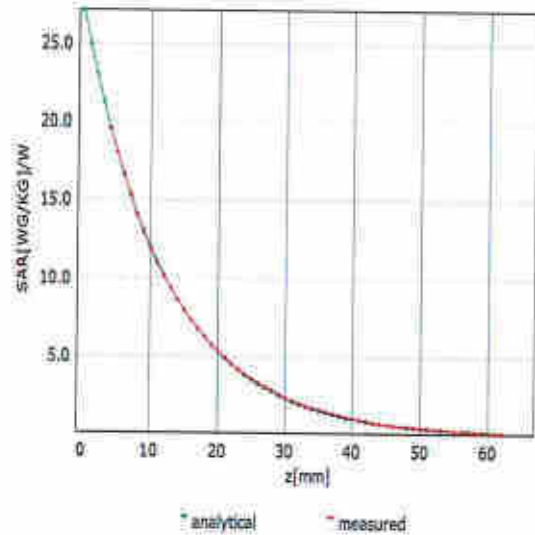
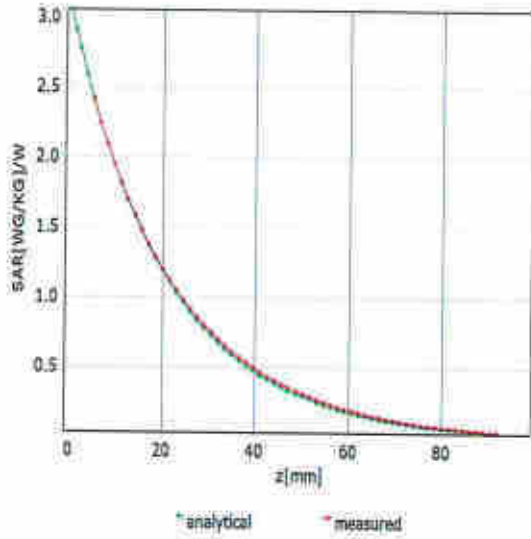
Uncertainty of Linearity Assessment: $\pm 0.9\%$ ($k=2$)



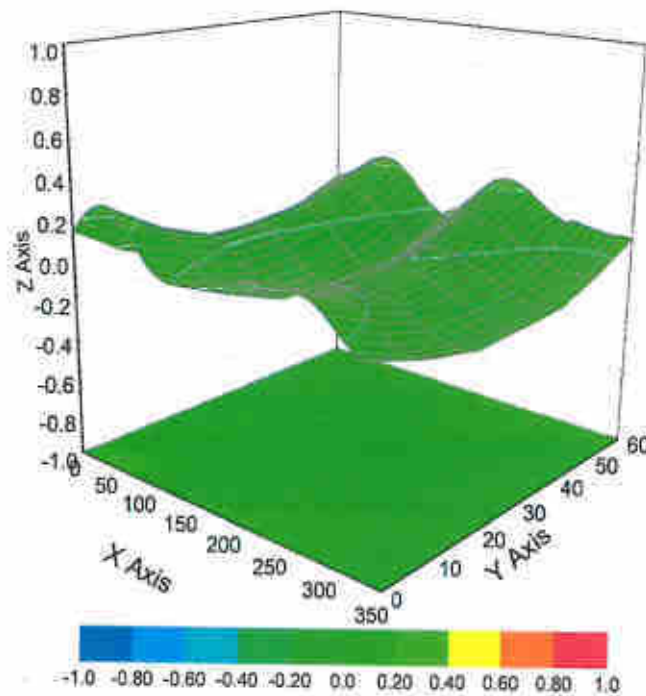
Conversion Factor Assessment

f=750 MHz,WGLS R9(H_convF)

f=1750 MHz,WGLS R22(H_convF)



Deviation from Isotropy in Liquid



Uncertainty of Spherical Isotropy Assessment: $\pm 3.2\%$ ($k=2$)



DASY/EASY – Parameters of Probe: ES3DV3 – SN:3279

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	170.7
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disable
Probe Overall Length	337mm
Probe Body Diameter	10mm
Tip Length	10mm
Tip Diameter	4mm
Probe Tip to Sensor X Calibration Point	2mm
Probe Tip to Sensor Y Calibration Point	2mm
Probe Tip to Sensor Z Calibration Point	2mm
Recommended Measurement Distance from Surface	3mm



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Accreditation No.: **SCS 0108**

Client **Sporton**

Certificate No: **EX3-3935_May20**

CALIBRATION CERTIFICATE

Object **EX3DV4 - SN:3935**

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: **May 27, 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
Power meter NRP	SN: 104778	01-Apr-20 (No. 217-03100/03101)	Apr-21
Power sensor NRP-Z91	SN: 103244	01-Apr-20 (No. 217-03100)	Apr-21
Power sensor NRP-Z91	SN: 103245	01-Apr-20 (No. 217-03101)	Apr-21
Reference 20 dB Attenuator	SN: CC2552 (20x)	31-Mar-20 (No. 217-03106)	Apr-21
DAE4	SN: 660	27-Dec-19 (No. DAE4-660_Dec19)	Dec-20
Reference Probe ES3DV2	SN: 3013	31-Dec-19 (No. ES3-3013_Dec19)	Dec-20
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-19)	In house check: Oct-20

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

Issued: June 1, 2020

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Accredited by the Swiss Accreditation Service (SAS)

Accreditation No.: **SCS 0108**

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Glossary:

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

Calibration is Performed According to the Following Standards:

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

Methods Applied and Interpretation of Parameters:

- NORM_{x,y,z}**: Assessed for E-field polarization $\vartheta = 0$ ($f \leq 900$ MHz in TEM-cell; $f > 1800$ MHz: R22 waveguide). NORM_{x,y,z} are only intermediate values, i.e., the uncertainties of NORM_{x,y,z} does not affect the E²-field uncertainty inside TSL (see below ConvF).
- NORM(f)_{x,y,z}** = NORM_{x,y,z} * frequency_response (see Frequency Response Chart). This linearization is implemented in DASY4 software versions later than 4.2. The uncertainty of the frequency response is included in the stated uncertainty of ConvF.
- DCP_{x,y,z}**: DCP are numerical linearization parameters assessed based on the data of power sweep with CW signal (no uncertainty required). DCP does not depend on frequency nor media.
- PAR**: PAR is the Peak to Average Ratio that is not calibrated but determined based on the signal characteristics
- A_{x,y,z}; B_{x,y,z}; C_{x,y,z}; D_{x,y,z}; VR_{x,y,z}**: A, B, C, D are numerical linearization parameters assessed based on the data of power sweep for specific modulation signal. The parameters do not depend on frequency nor media. VR is the maximum calibration range expressed in RMS voltage across the diode.
- ConvF and Boundary Effect Parameters**: Assessed in flat phantom using E-field (or Temperature Transfer Standard for $f \leq 800$ MHz) and inside waveguide using analytical field distributions based on power measurements for $f > 800$ MHz. The same setups are used for assessment of the parameters applied for boundary compensation (alpha, depth) of which typical uncertainty values are given. These parameters are used in DASY4 software to improve probe accuracy close to the boundary. The sensitivity in TSL corresponds to NORM_{x,y,z} * ConvF whereby the uncertainty corresponds to that given for ConvF. A frequency dependent ConvF is used in DASY version 4.4 and higher which allows extending the validity from ± 50 MHz to ± 100 MHz.
- Spherical isotropy (3D deviation from isotropy)**: in a field of low gradients realized using a flat phantom exposed by a patch antenna.
- Sensor Offset**: The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.
- Connector Angle**: The angle is assessed using the information gained by determining the NORM_x (no uncertainty required).

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3935

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu\text{V}/(\text{V}/\text{m})^2$) ^A	0.49	0.53	0.48	$\pm 10.1 \%$
DCP (mV) ^B	102.6	103.2	102.3	

Calibration Results for Modulation Response

UID	Communication System Name		A dB	B dB $\sqrt{\mu\text{V}}$	C	D dB	VR mV	Max dev.	Unc ^E (k=2)
0	CW	X	0.0	0.0	1.0	0.00	137.0	$\pm 3.3 \%$	$\pm 4.7 \%$
		Y	0.0	0.0	1.0		150.1		
		Z	0.0	0.0	1.0		141.6		

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 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:3935

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	44.5
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:3935

Calibration Parameter Determined in Head Tissue Simulating Media

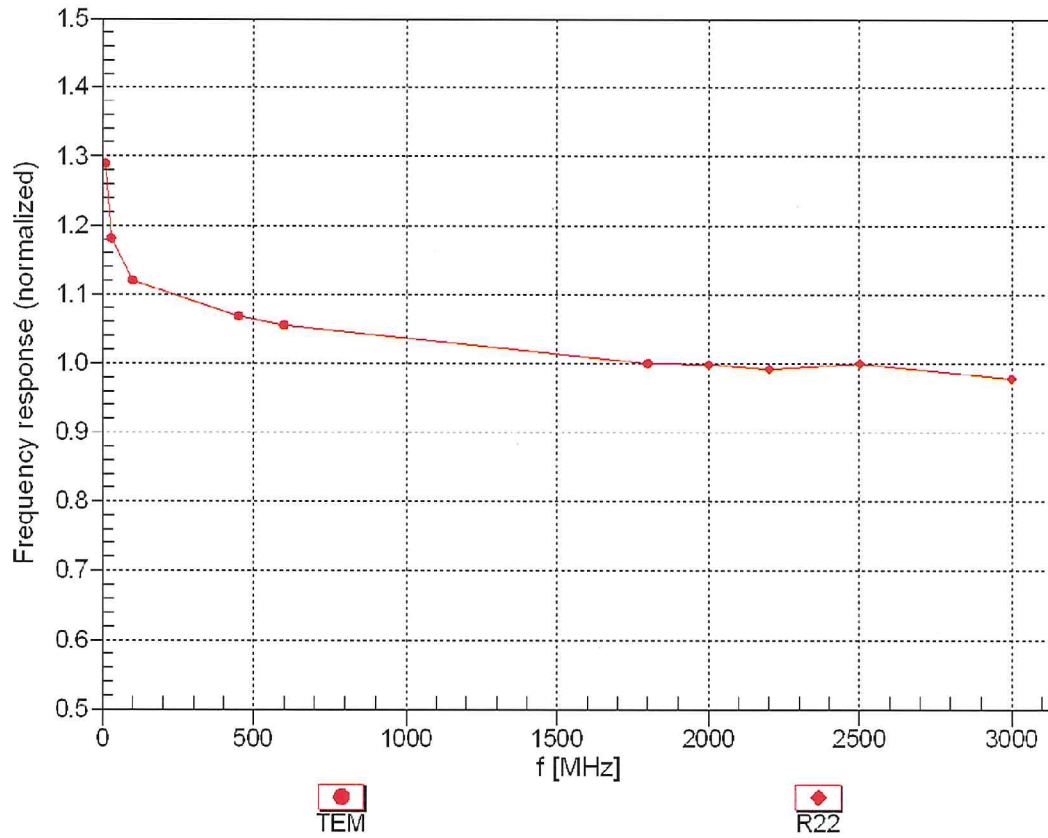
f (MHz) ^C	Relative Permittivity ^F	Conductivity (S/m) ^F	ConvF X	ConvF Y	ConvF Z	Alpha ^G	Depth (mm) ^G	Unc (k=2)
750	41.9	0.89	10.58	10.58	10.58	0.57	0.80	± 12.0 %
835	41.5	0.90	10.31	10.31	10.31	0.38	0.93	± 12.0 %
900	41.5	0.97	10.16	10.16	10.16	0.40	0.88	± 12.0 %
1750	40.1	1.37	8.60	8.60	8.60	0.27	0.86	± 12.0 %
1900	40.0	1.40	8.35	8.35	8.35	0.24	0.86	± 12.0 %
2000	40.0	1.40	8.25	8.25	8.25	0.34	0.86	± 12.0 %
2300	39.5	1.67	7.86	7.86	7.86	0.35	0.90	± 12.0 %
2450	39.2	1.80	7.60	7.60	7.60	0.33	0.90	± 12.0 %
2600	39.0	1.96	7.43	7.43	7.43	0.37	0.90	± 12.0 %
5250	35.9	4.71	5.04	5.04	5.04	0.40	1.80	± 14.0 %
5600	35.5	5.07	4.76	4.76	4.76	0.40	1.80	± 14.0 %
5750	35.4	5.22	4.67	4.67	4.67	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 up to 6 GHz, the validity of tissue parameters (ϵ and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

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

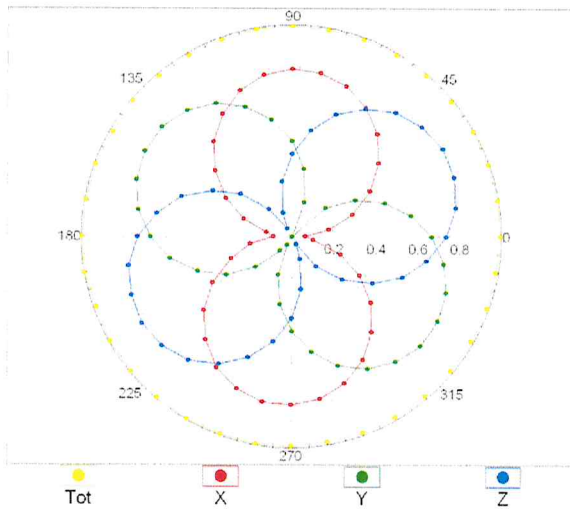
Frequency Response of E-Field (TEM-Cell:ifi110 EXX, Waveguide: R22)



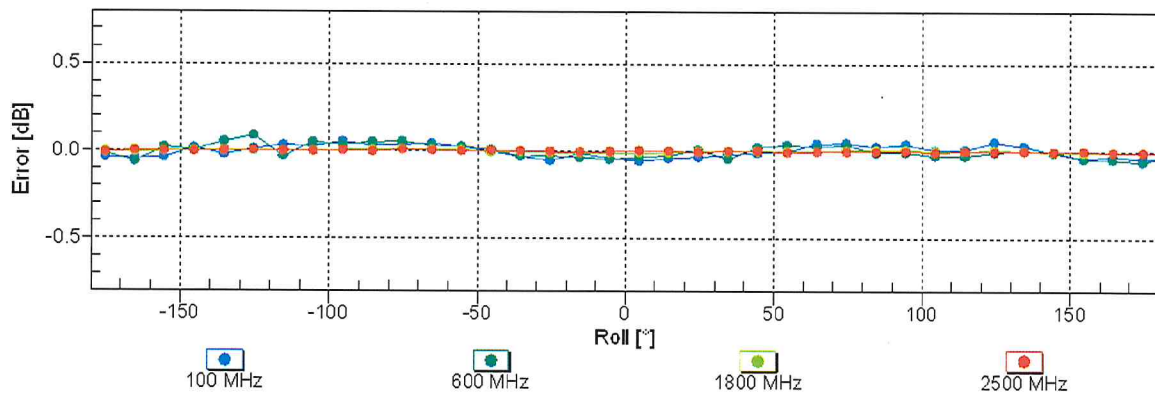
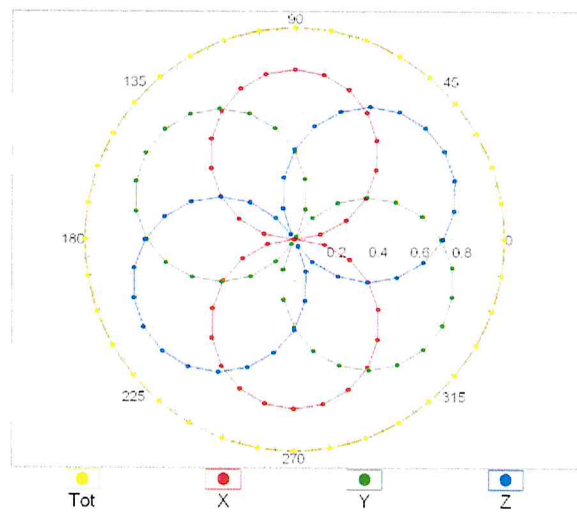
Uncertainty of Frequency Response of E-field: $\pm 6.3\%$ (k=2)

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

f=600 MHz,TEM

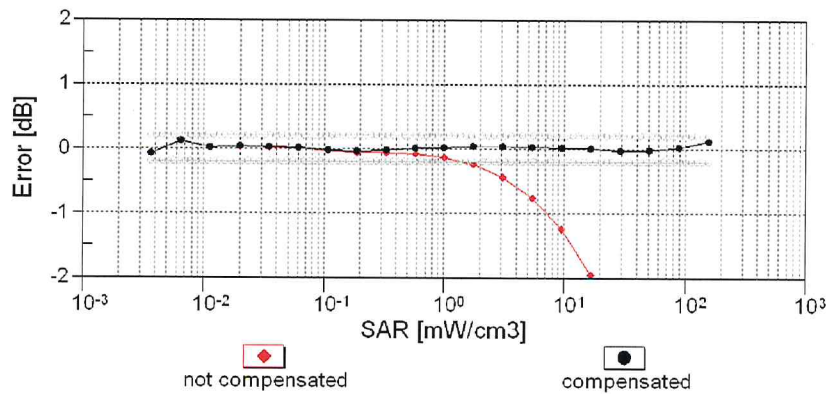
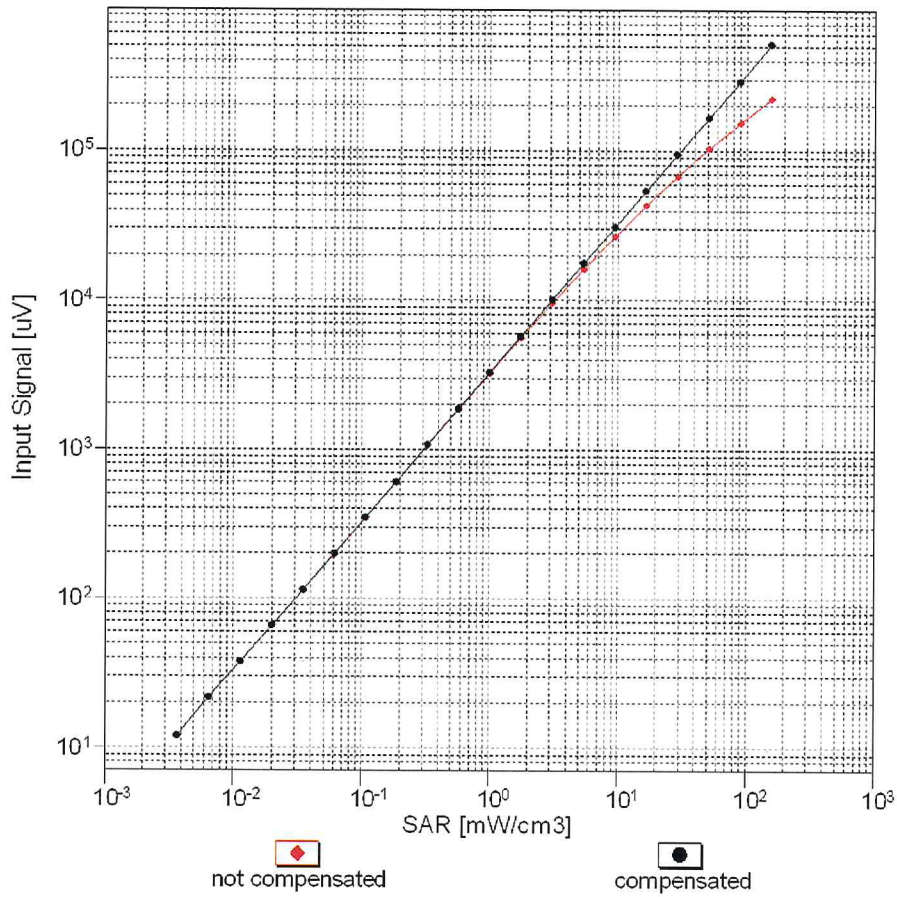


f=1800 MHz,R22



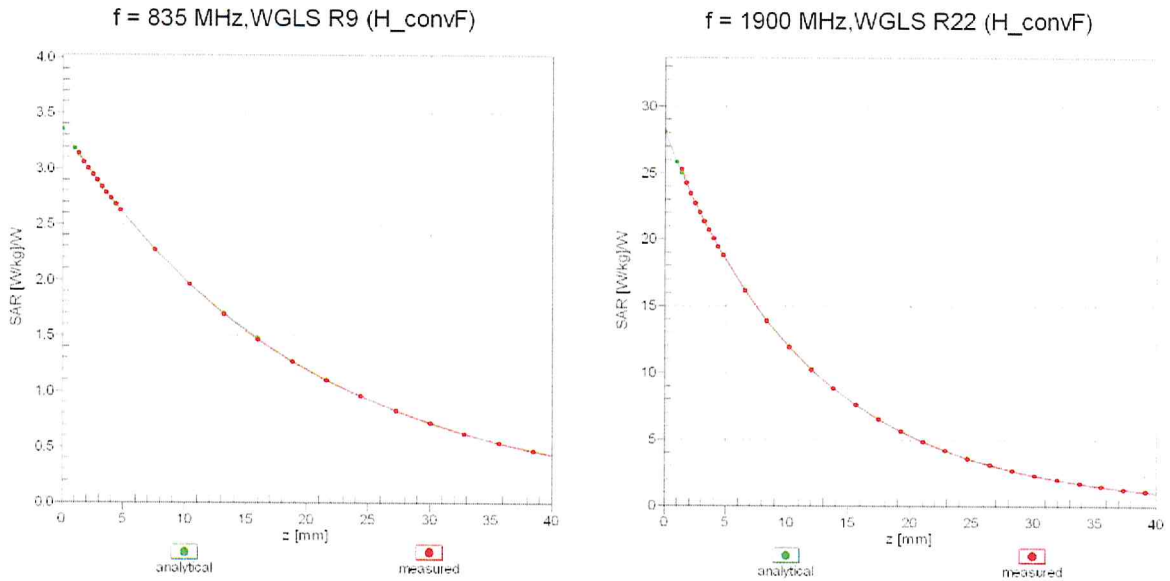
Uncertainty of Axial Isotropy Assessment: $\pm 0.5\%$ ($k=2$)

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

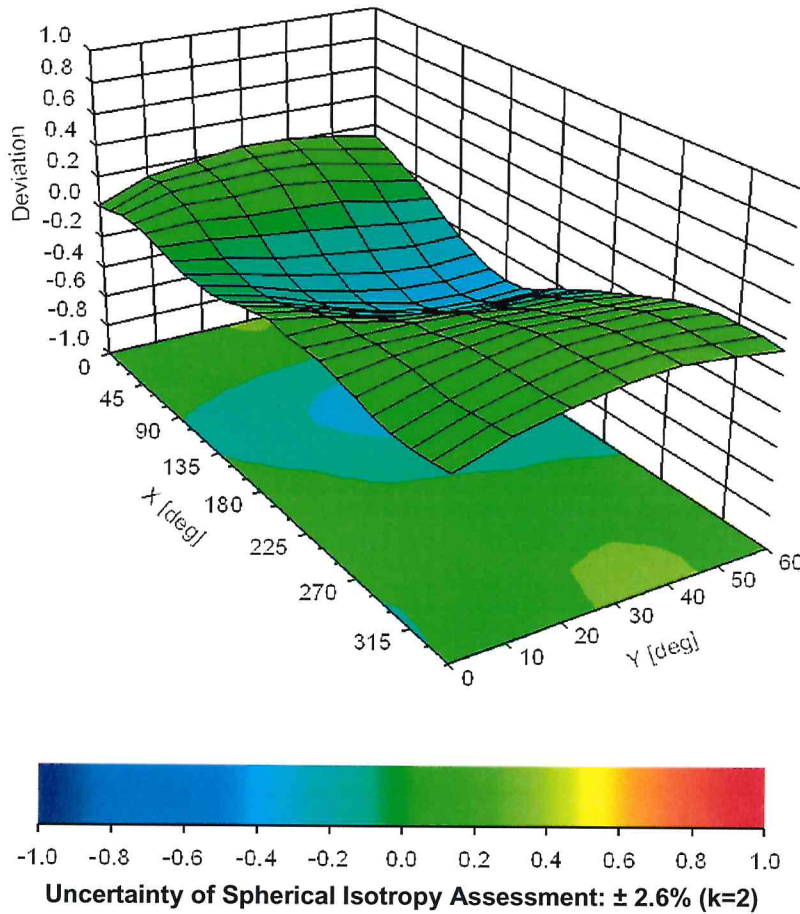


Uncertainty of Linearity Assessment: ± 0.6% (k=2)

Conversion Factor Assessment



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





Appendix E. Conducted RF Output Power Table

The detailed power table are shown as follows.



Full Power

GSM850	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)	
	TX Channel	128	189		251	128	189		251
	Frequency (MHz)	824.2	836.4		848.8	824.2	836.4		848.8
GSM 1 Tx slot	31.85	31.98	32.03	33.50	22.85	22.98	23.03	24.50	
GPRS 1 Tx slot	31.83	31.96	32.01	33.50	22.83	22.96	23.01	24.50	
GPRS 2 Tx slots	28.86	29.11	29.10	30.50	22.86	23.11	23.10	24.50	
GPRS 3 Tx slots	26.79	26.94	27.01	28.50	22.53	22.68	22.75	24.24	
GPRS 4 Tx slots	25.42	25.11	25.26	26.50	22.42	22.11	22.26	23.50	
EDGE 1 Tx slot	25.38	25.42	25.53	27.00	16.38	16.42	16.53	18.00	
EDGE 2 Tx slots	25.25	25.27	25.40	26.50	19.25	19.27	19.40	20.50	
EDGE 3 Tx slots	23.88	23.85	23.89	25.50	19.62	19.59	19.63	21.24	
EDGE 4 Tx slots	22.37	22.48	22.45	24.00	19.37	19.48	19.45	21.00	

GSM1900	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)	
	TX Channel	512	661		810	512	661		810
	Frequency (MHz)	1850.2	1880		1909.8	1850.2	1880		1909.8
GSM 1 Tx slot	29.25	29.28	29.10	30.50	20.25	20.28	20.10	21.50	
GPRS 1 Tx slot	29.24	29.26	29.09	30.50	20.24	20.26	20.09	21.50	
GPRS 2 Tx slots	26.34	26.35	26.25	27.50	20.34	20.35	20.25	21.50	
GPRS 3 Tx slots	24.36	24.34	24.14	25.50	20.10	20.08	19.88	21.24	
GPRS 4 Tx slots	22.87	22.87	22.74	24.00	19.87	19.87	19.74	21.00	
EDGE 1 Tx slot	25.12	25.01	24.92	26.00	16.12	16.01	15.92	17.00	
EDGE 2 Tx slots	25.01	24.91	24.81	26.00	19.01	18.91	18.81	20.00	
EDGE 3 Tx slots	23.11	23.11	22.97	24.00	18.85	18.85	18.71	19.74	
EDGE 4 Tx slots	21.72	21.68	21.56	23.00	18.72	18.68	18.56	20.00	

Band	WCDMA II			Tune-up Limit (dBm)	WCDMA IV			Tune-up Limit (dBm)	WCDMA V			Tune-up Limit (dBm)	
	TX Channel	9262	9400		9538	1312	1413		1513	4132	4182		4233
	Rx Channel	9662	9800		9938	1537	1638		1738	4567	4407		4459
Frequency (MHz)	1852.4	1890	1907.6	1712.4	1722.6	1759.6	825.4	836.4	846.6				
3GPP Rel 99	AMR 12.2Kbps	22.95	23.03	22.84	24.00	23.14	23.21	23.08	24.00	23.20	23.29	23.11	24.00
3GPP Rel 99	RM-C 12.2Kbps	22.96	23.05	22.86	24.00	23.16	23.23	23.10	24.00	23.23	23.29	23.14	24.00
3GPP Rel 6	HS-PA Subtest-1	21.69	21.49	21.57	23.00	22.20	22.04	22.07	23.00	22.24	21.96	22.25	23.00
3GPP Rel 6	HS-PA Subtest-2	21.66	21.81	21.51	23.00	22.13	22.07	22.08	23.00	22.23	21.98	22.22	23.00
3GPP Rel 6	HS-PA Subtest-3	21.12	21.00	21.04	22.50	21.65	21.59	21.60	22.50	21.73	21.50	21.74	22.50
3GPP Rel 6	HS-PA Subtest-4	21.12	21.25	21.05	22.50	21.66	21.60	21.58	22.50	21.71	21.43	21.71	22.50
3GPP Rel 6	DC-HS-PA Subtest-1	21.66	21.59	21.56	23.00	22.16	22.03	22.04	23.00	22.23	21.93	22.23	23.00
3GPP Rel 6	DC-HS-PA Subtest-2	21.63	21.79	21.50	23.00	22.11	22.06	22.05	23.00	22.22	21.95	22.20	23.00
3GPP Rel 6	DC-HS-PA Subtest-3	21.09	21.25	21.03	22.50	21.63	21.58	21.57	22.50	21.72	21.47	21.72	22.50
3GPP Rel 6	DC-HS-PA Subtest-4	21.09	21.23	21.04	22.50	21.64	21.59	21.55	22.50	21.70	21.40	21.69	22.50
3GPP Rel 6	HS-PA Subtest-1	21.78	21.65	21.66	23.00	22.28	22.27	22.06	23.00	22.23	22.05	22.30	23.00
3GPP Rel 6	HS-PA Subtest-2	19.81	19.68	19.77	21.00	20.26	20.15	20.22	21.00	20.30	20.06	20.27	21.00
3GPP Rel 6	HS-PA Subtest-3	20.80	20.66	20.75	22.00	21.06	21.03	20.96	22.00	21.19	21.11	21.22	22.00
3GPP Rel 6	HS-PA Subtest-4	19.80	19.68	19.73	21.00	20.17	20.04	20.04	21.00	20.19	20.12	20.28	21.00
3GPP Rel 6	HS-PA Subtest-6	21.79	21.72	21.83	23.00	22.28	22.17	22.15	23.00	22.09	22.18	22.16	23.00

Band	CDMA BC0			Tune-up Limit (dBm)	CDMA BC1			Tune-up Limit (dBm)	CDMA BC10			Tune-up Limit (dBm)	
	TX Channel	1013	384		777	25	600		1175	476	580		684
	Frequency (MHz)	824.7	836.52		848.31	1851.25	1880		1908.75	817.9	820.5		823.1
RC1 SO55	24.28	24.38	24.31	25.00	24.02	24.35	24.30	25.00	24.10	24.21	24.01	25.00	
RC3 SO55	24.23	24.39	24.33	25.00	24.01	24.36	24.24	25.00	24.00	24.25	24.13	25.00	
RC3 SO32 (F+SCH)	24.20	24.35	24.19	25.00	24.05	24.33	24.22	25.00	24.10	24.15	24.02	25.00	
RC3 SO32 (SCH)	24.15	24.30	24.09	25.00	24.09	24.27	24.28	25.00	23.98	24.17	24.04	25.00	
RTAP 153.6Kbps	24.00	24.16	23.95	25.00	24.02	24.28	24.18	25.00	23.87	24.01	24.03	25.00	
RETAP 4006B/s	23.99	24.15	23.95	25.00	24.04	24.26	24.20	25.00	23.89	24.06	24.05	25.00	



Band 12 (700MHz Low Band) Part 27F(only on channel required)										
BW (MHz)	Modulation	RB Size	RB Offset	Power Tx Ch./Freq.	Power Rx Ch./Freq.	Power Rx Ch./Freq.	Time-up Rate (dBm)	MFR (dB)		
Channel										
Frequency (MHz)										
10	QPSK	1	0	23.98	23.98	23.98			24	0
10	QPSK	1	25	23.93	22.98	22.99				
10	QPSK	1	49	23.12	23.11	23.12				
10	QPSK	5	0	22.14	22.12	22.12			23	1
10	QPSK	25	12	22.03	21.95	22.08				
10	QPSK	25	25	22.01	21.89	22.10				
10	QPSK	50	0	22.43	22.47	22.44			23	1
10	16QAM	1	0	22.43	22.47	22.44				
10	16QAM	1	25	22.20	22.20	22.20			23	1
10	16QAM	1	49	22.22	22.22	22.22				
10	16QAM	5	0	21.28	21.20	21.25				
10	16QAM	25	12	21.10	21.07	21.13			22	2
10	16QAM	25	25	21.06	21.00	21.02				
10	16QAM	50	0	21.61	21.68	21.78				
10	8QAM	1	0	21.31	21.47	21.38			22	2
10	8QAM	1	25	21.25	21.26	21.27				
10	8QAM	1	49	21.38	21.18	21.27				
10	8QAM	5	0	19.99	19.72	19.99			21	3
10	8QAM	25	12	19.71	19.74	19.77				
10	8QAM	25	25	19.80	19.84	20.01				
10	8QAM	50	0	19.99	19.79	19.91				
Channel										
Frequency (MHz)										
5	QPSK	1	0	22.94	22.78	22.79			24	0
5	QPSK	1	12	22.92	22.93	22.91				
5	QPSK	1	24	22.87	22.93	23.13				
5	QPSK	12	0	22.96	22.93	22.92			23	1
5	QPSK	12	7	22.92	21.98	22.96				
5	QPSK	12	14	22.97	22.98	22.96				
5	QPSK	25	0	21.96	22.00	22.00			23	1
5	16QAM	1	0	22.21	22.23	22.23				
5	16QAM	1	12	22.27	22.29	22.29			23	1
5	16QAM	1	24	22.13	22.10	22.13				
5	16QAM	12	0	21.02	20.95	21.01				
5	16QAM	12	7	21.01	21.04	21.04			22	2
5	16QAM	12	14	21.06	21.04	21.03				
5	16QAM	25	0	21.01	21.06	20.96				
5	8QAM	1	0	20.98	21.09	21.03			22	2
5	8QAM	1	12	21.06	20.91	21.10				
5	8QAM	1	24	20.97	20.97	21.07				
5	8QAM	12	0	19.72	19.73	19.77			21	3
5	8QAM	12	7	19.73	19.72	19.76				
5	8QAM	12	14	19.76	19.74	19.71				
5	8QAM	25	0	19.78	19.72	19.81				
Channel										
Frequency (MHz)										
3	QPSK	1	0	22.92	22.78	22.72			24	0
3	QPSK	1	16	22.80	23.95	23.97				
3	QPSK	1	14	22.87	22.91	23.01				
3	QPSK	8	0	22.07	21.97	21.96			23	1
3	QPSK	8	4	22.08	22.06	22.06				
3	QPSK	8	7	21.88	21.94	22.09				
3	QPSK	15	0	21.84	21.95	22.08				
3	16QAM	1	0	22.28	22.28	22.27			23	1
3	16QAM	1	8	22.11	22.41	22.51				
3	16QAM	1	14	22.08	22.29	22.24				
3	16QAM	8	0	20.96	21.02	21.03			22	2
3	16QAM	8	4	20.97	20.97	21.28				
3	16QAM	8	7	20.99	20.98	21.04				
3	16QAM	15	0	20.90	20.94	21.11				
3	8QAM	1	0	20.94	21.00	21.13			22	2
3	8QAM	1	8	21.02	21.08	21.03				
3	8QAM	1	14	21.14	21.15	20.92				
3	8QAM	8	0	19.68	19.68	19.68			21	3
3	8QAM	8	4	19.60	19.74	19.88				
3	8QAM	8	7	19.68	19.62	19.68				
3	8QAM	15	0	19.54	19.68	19.81				
Channel										
Frequency (MHz)										
1.4	QPSK	1	0	22.76	22.92	22.86			24	0
1.4	QPSK	1	3	22.78	22.92	23.00				
1.4	QPSK	1	5	22.88	22.77	22.82				
1.4	QPSK	3	0	22.78	22.92	23.01			23	1
1.4	QPSK	3	3	22.76	22.86	23.06				
1.4	QPSK	6	0	21.74	21.99	21.90			22	1
1.4	16QAM	1	0	22.10	22.02	22.18				
1.4	16QAM	1	3	22.09	22.41	22.43			23	1
1.4	16QAM	1	5	22.15	22.20	22.24				
1.4	16QAM	3	0	21.80	21.87	21.99				
1.4	16QAM	3	1	21.80	21.92	22.18				
1.4	16QAM	3	3	21.90	21.95	22.08				
1.4	16QAM	6	0	20.99	20.98	21.03			22	2
1.4	8QAM	1	0	21.04	20.93	21.07				
1.4	8QAM	1	3	21.17	21.06	21.08				
1.4	8QAM	1	5	21.21	20.88	21.17			22	2
1.4	8QAM	3	0	20.72	21.05	21.05				
1.4	8QAM	3	1	21.13	21.04	21.19			21	3
1.4	8QAM	3	3	20.98	20.83	21.16				
1.4	8QAM	6	0	19.57	19.69	19.62			21	3

Band 13(700MHz Band) Part 27F										
BW (MHz)	Modulation	RB Size	RB Offset	Power Tx Ch./Freq.	Power Rx Ch./Freq.	Power Rx Ch./Freq.	Time-up Rate (dBm)	MFR (dB)		
Channel										
Frequency (MHz)										
10	QPSK	1	0	23.25					24	0
10	QPSK	1	25	23.14						
10	QPSK	1	49	23.12						
10	QPSK	25	12	21.98					23	1
10	QPSK	25	25	21.90						
10	16QAM	1	0	22.36					23	1
10	16QAM	1	25	22.04						
10	16QAM	1	49	22.40						
10	16QAM	25	12	21.08					22	2
10	16QAM	25	25	20.91						
10	16QAM	50	0	21.46						
10	8QAM	1	0	21.17					22	2
10	8QAM	1	25	21.44						
10	8QAM	1	49	21.45						
10	8QAM	25	12	20.92					21	3
10	8QAM	25	25	20.98						
10	8QAM	50	0	20.12						
Channel										
Frequency (MHz)										
5	QPSK	1	0	23.07	23.05	23.04			24	0
5	QPSK	1	12	23.10	23.17	23.03				
5	QPSK	1	24	23.02	23.11	23.12				
5	QPSK	12	0	22.27	22.27	22.36			23	1
5	QPSK	12	7	22.14	22.18	22.29				
5	QPSK	12	14	22.17	22.28	22.34				
5	QPSK	25	0	22.10	22.25	22.29				
5	16QAM	1	0	22.64	22.49	22.60			23	1
5	16QAM	1	12	22.92	22.28	22.41				
5	16QAM	1	24	22.82	22.38	22.55				
5	16QAM	12	0	21.21	21.30	21.30			22	2
5	16QAM	12	7	21.19	21.24	21.33				
5	16QAM	12	14	21.16	21.41	21.50				
5	16QAM	25	0	21.27	21.23	21.47				
5	8QAM	1	0	21.26	21.17	21.38			22	2
5	8QAM	1	12	21.28	21.60	21.33				
5	8QAM	1	24	21.26	21.43	21.37				
5	8QAM	12	0	19.91	20.02	20.08			21	3
5	8QAM	12	7	19.89	19.98	19.99				
5	8QAM	12	14	19.96	20.06	20.03				
5	8QAM	25	0	19.94	20.02	20.09				

Band 17 (700MHz Band) Part 27H(only on channel required)										
BW (MHz)	Modulation	RB Size	RB Offset	Power Tx Ch./Freq.	Power Rx Ch./Freq.	Power Rx Ch./Freq.	Time-up Rate (dBm)	MFR (dB)		
Channel										
Frequency (MHz)										
10	QPSK	1	0	23.12	23.04	23.12			24	0
10	QPSK	1	25	23.09	23.07	23.06				
10	QPSK	1	49	23.12	23.21	23.22				
10	QPSK	5	0	22.09	22.08	22.22			23	1
10	QPSK	25	12	22.13	22.18	21.96				
10	QPSK	25	25	22.05	22.25	22.14				
10	QPSK	50	0	21.99	22.14	22.12			23	1
10	16QAM	1	0	22.86	22.73	22.70				
10	16QAM	1	25	22.27	22.83	22.25			23	1
10	16QAM	1	49	22.28	22.66	22.27				
10	16QAM	5	0	21.12	21.14	21.27				
10	16QAM	25	12	21.18	21.12	21.03			22	2
10	16QAM	25	25	20.91	21.16	21.06				
10	16QAM	50	0	21.47	21.16	21.16				
10	8QAM	1	0	21.50	21.37	21.17			22	2
10	8QAM	1	25	21.34	21.30	21.42				
10	8QAM	1	49	21.61	21.14	21.39				
10	8QAM	5	0	20.18	20.18	20.13			21	3
10	8QAM	25	12	20.18	20.10	20.09				
10	8QAM	25	25	20.98	20.14	20.08				
10	8QAM	50	0	20.12	20.09	20.09				
Channel										
Frequency (MHz)										
5	QPSK	1	0	23.08	23.13	23.21			24	0
5	QPSK	1	12	23.21	23.11	23.08				
5	QPSK									



Band 26 for FCC (only on channel required)										
BW (MHz)	Modulation	RB Size	RB Offset	Power Ch / Freq 20765	Power Ch / Freq 20865	Power Ch / Freq 20965	Take-up limit (dB)	MFR (dB)		
Channel										
Frequency (MHz)										
15	QPSK	1	0	23.11	23.27	23.21	24	0		
15	QPSK	1	37	23.15	23.14	23.14				
15	QPSK	1	74	23.14	23.23	23.15				
15	QPSK	36	0	22.92	22.91	22.91	23	1		
15	QPSK	36	20	22.93	22.98	22.95				
15	QPSK	36	39	22.91	22.91	22.92				
15	QPSK	75	0	22.78	22.78	22.88	23	1		
15	QPSK	75	0	22.78	22.78	22.88				
15	16QAM	1	37	22.47	22.54	22.59	23	1		
15	16QAM	1	74	22.62	22.54	22.79				
15	16QAM	36	0	21.29	21.26	21.43	22	2		
15	16QAM	36	20	21.01	21.16	21.15				
15	16QAM	36	39	21.33	21.24	21.64				
15	16QAM	75	0	21.66	21.61	21.24	22	2		
15	16QAM	75	0	20.96	21.17	21.08				
15	64QAM	1	37	20.97	21.41	21.16	22	2		
15	64QAM	1	74	21.26	21.27	21.66				
15	64QAM	36	0	20.34	20.14	20.21	21	3		
15	64QAM	36	20	19.81	19.98	19.93				
15	64QAM	36	39	19.97	19.74	19.78				
15	64QAM	75	0	19.47	19.99	19.86	21	3		
Channel										
Frequency (MHz)										
10	QPSK	1	0	23.11	23.24	22.97	24	0		
10	QPSK	1	26	22.61	23.04	23.06				
10	QPSK	36	0	22.04	22.24	22.18	23	1		
10	QPSK	36	0	22.04	22.24	22.18				
10	QPSK	25	12	22.19	22.12	22.17				
10	QPSK	25	12	22.24	22.07	22.23				
10	QPSK	50	0	22.24	22.07	22.23	23	1		
10	16QAM	1	0	22.68	22.61	22.83	23	1		
10	16QAM	1	26	22.28	22.92	22.34				
10	16QAM	36	0	21.23	21.26	21.34	22	2		
10	16QAM	36	0	21.12	21.14	21.18				
10	16QAM	25	12	21.18	21.13	21.19				
10	16QAM	25	12	21.18	21.07	21.07				
10	16QAM	50	0	21.13	21.17	21.22	22	2		
10	64QAM	1	0	21.47	21.32	21.33	22	2		
10	64QAM	1	25	21.19	21.36	21.31				
10	64QAM	36	0	19.81	19.98	19.91	21	3		
10	64QAM	25	12	19.95	19.99	19.94				
10	64QAM	25	12	19.81	19.87	19.87				
10	64QAM	50	0	19.90	19.96	19.95				
Channel										
Frequency (MHz)										
5	QPSK	1	0	22.85	23.12	23.11	24	0		
5	QPSK	1	24	23.08	23.03	23.11				
5	QPSK	1	48	23.08	23.18	23.09				
5	QPSK	12	0	22.11	22.18	22.18	23	1		
5	QPSK	12	0	22.11	22.18	22.18				
5	QPSK	12	13	22.09	22.15	22.11				
5	QPSK	25	0	22.09	22.14	22.19	23	1		
5	QPSK	25	0	22.08	22.12	22.48				
5	16QAM	1	0	22.08	22.20	22.41	23	1		
5	16QAM	1	24	22.47	22.48	22.15				
5	16QAM	12	0	21.10	21.15	21.18	22	2		
5	16QAM	12	13	21.06	21.16	21.10				
5	16QAM	25	0	21.00	21.15	21.06	22	2		
5	64QAM	1	0	21.26	21.24	21.36	22	2		
5	64QAM	1	7	21.07	21.07	21.39				
5	64QAM	1	24	21.11	21.25	21.02				
5	64QAM	12	0	19.87	19.95	19.89	21	3		
5	64QAM	12	13	19.81	19.87	19.84				
5	64QAM	25	0	19.77	19.88	19.91				
Channel										
Frequency (MHz)										
3	QPSK	1	0	23.14	23.12	23.13	24	0		
3	QPSK	1	8	23.11	23.21	23.09				
3	QPSK	1	14	22.91	23.19	23.09				
3	QPSK	3	0	22.04	22.11	22.05	23	1		
3	QPSK	3	0	22.08	22.23	22.05				
3	QPSK	3	7	22.00	22.14	22.07				
3	16QAM	1	0	22.11	22.09	22.07	23	1		
3	16QAM	1	0	22.49	22.33	22.36				
3	16QAM	1	8	22.37	22.50	22.46				
3	16QAM	1	14	22.19	22.51	22.46				
3	16QAM	3	0	21.27	21.17	21.11	22	2		
3	16QAM	3	0	21.21	21.25	21.02				
3	16QAM	3	7	20.98	21.17	21.11				
3	16QAM	15	0	21.04	21.10	21.07				
3	64QAM	1	0	21.06	21.16	21.42	22	2		
3	64QAM	1	8	21.26	21.32	21.17				
3	64QAM	1	14	21.23	21.08	21.10				
3	64QAM	3	0	19.83	19.82	19.89	21	3		
3	64QAM	3	0	19.87	19.87	19.87				
3	64QAM	3	7	19.71	19.84	19.82				
3	64QAM	15	0	19.81	19.87	19.86	21	3		
Channel										
Frequency (MHz)										
1.4	QPSK	1	0	23.05	23.08	23.10	24	0		
1.4	QPSK	1	3	23.26	23.13	23.12				
1.4	QPSK	1	5	23.11	23.25	23.08				
1.4	QPSK	3	0	23.11	23.26	23.24	23	1		
1.4	QPSK	3	0	23.17	23.23	23.22				
1.4	QPSK	3	1	23.19	23.11	23.08				
1.4	QPSK	3	1	23.19	23.11	23.08				
1.4	QPSK	3	1	22.13	22.18	22.12	23	1		
1.4	16QAM	1	0	22.48	22.45	22.37	23	1		
1.4	16QAM	1	3	22.46	22.63	22.42				
1.4	16QAM	3	0	22.09	22.16	22.24	23	1		
1.4	16QAM	3	0	22.09	22.16	22.24				
1.4	16QAM	3	1	22.22	22.33	22.25				
1.4	16QAM	3	3	22.14	22.26	22.17				
1.4	16QAM	3	0	21.18	21.26	21.21	22	2		
1.4	64QAM	1	0	21.24	21.31	21.08	22	2		
1.4	64QAM	1	3	21.15	21.03	21.05				
1.4	64QAM	1	5	21.21	21.26	21.12				
1.4	64QAM	3	0	21.03	20.92	21.08	22	2		
1.4	64QAM	3	1	21.17	21.35	21.09				
1.4	64QAM	3	1	21.09	21.27	20.97	21	3		
1.4	64QAM	6	0	19.99	19.81	19.77				

Band 66										
BW (MHz)	Modulation	RB Size	RB Offset	Power Ch / Freq 133072	Power Ch / Freq 133502	Power Ch / Freq 133932	Take-up limit (dB)	MFR (dB)		
Channel										
Frequency (MHz)										
20	QPSK	1	0	23.09	23.36	23.33	24	0		
20	QPSK	1	49	23.07	23.09	23.11				
20	QPSK	1	99	23.12	23.34	23.30				
20	QPSK	50	0	22.92	23.26	23.25	23	1		
20	QPSK	50	24	22.25	22.19	22.21				
20	QPSK	50	50	22.96	22.27	22.23				
20	QPSK	99	0	22.90	22.90	22.92	23	1		
20	16QAM	1	0	22.67	22.70	22.64	23	1		
20	16QAM	1	49	22.48	22.52	22.49				
20	16QAM	1	99	22.39	22.34	22.23				
20	16QAM	50	0	21.17	21.26	21.28	22	2		
20	16QAM	50	24	21.22	21.17	21.21				
20	16QAM	50	50	21.26	21.29	21.24				
20	16QAM	100	0	21.26	21.26	21.47	22	2		
20	64QAM	1	0	21.46	21.58	21.59	22	2		
20	64QAM	1	49	21.48	21.38	21.51				
20	64QAM	1	99	21.37	21.36	21.30				
20	64QAM	50	0	20.80	20.87	20.82	21	3		
20	64QAM	50	24	20.59	20.54	20.40				
20	64QAM	50	50	20.45	20.75	20.58				
20	64QAM	100	0	20.40	20.49	20.54	21	3		
Channel										
Frequency (MHz)										
15	QPSK	1	0	23.31	23.18	23.12	24	0		
15	QPSK	1	37	23.11	23.05	23.00				
15	QPSK	1	74	23.12	23.12	23.12				
15	QPSK	36	0	22.24	22.32	22.33	23	1		
15	QPSK	36	20	22.20	22.13	22.17				
15	QPSK	36	39	22.25	22.18	22.24				
15	QPSK	75	0	22.07	22.18	22.22	23	1		
15	16QAM	1	0	22.78	22.74	22.82	23	1		
15	16QAM	1	37	22.92	22.49	22.38				
15	16QAM	36	0	21.27	21.31	21.33	22	2		
15	16QAM	36	0	21.24	21.31	21.31				
15	16QAM	25	12	21.26	21.18	21.15				
15	16QAM	25	12	21.40	21.29	21.29				
15	16QAM	50	0	21.24	21.19	21.25	22	2		
15	16QAM	50	0	21.02	21.13	21.27				
15	64QAM	1	37	21.08	20.86	21.08	21	3		
15	64QAM	1	74	21.36	21.03	20.91				
15	64QAM	36	0	19.93	19.93	19.95	21	3		
15	64QAM	25	12	20.02	19.83	20.01				
15	64QAM	25	12	19.87	19.84	19.84				
15	64QAM	50	0	19.86	19.94	20.04				
Channel										
Frequency (MHz)										
10	QPSK	1	0	23.31	23.02	23.13	24	0		
10	QPSK	1	49	23.07	23.07	23.15				
10	QPSK	1	99	23.11	23.29	23.38				



Band 38(only on channel required)

Table with columns: BW (MHz), Modulation, RB Size, RB Offset, Power Low (W), Power Mid (W), Power High (W), Tune-up (ms), MPR (dB). Includes sub-headers for Channel, Frequency (MHz), and Channel, Frequency (MHz).

Band 41 (2.6G Band)

Table with columns: BW (MHz), Modulation, RB Size, RB Offset, Power Low (W), Power Low-Mid (W), Power High (W), Power High-Mid (W), Tune-up (ms), MPR (dB). Includes sub-headers for Channel, Frequency (MHz), and Channel, Frequency (MHz).

Band 41 (2.6G Band) HPUE (Limit 27)

Table with columns: BW (MHz), Modulation, RB Size, RB Offset, Power Low (W), Power Low-Mid (W), Power Mid (W), Power High (W), Tune-up (ms), MPR (dB). Includes sub-headers for Channel, Frequency (MHz), and Channel, Frequency (MHz).



Reduced Power Mode for Sensor on

GSM1900 TX Channel Frequency (MHz)	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
	512	661	810		512	661	810	
	1850.2	1880	1909.8		1850.2	1880	1909.8	
GSM 1 Tx slot	26.11	26.07	26.12	27.00	17.11	17.07	17.12	18.00
GPRS 1 Tx slot	26.09	26.05	26.11	27.00	17.09	17.05	17.11	18.00
GPRS 2 Tx slots	22.39	22.42	22.33	24.00	16.38	16.42	16.33	18.00
GPRS 3 Tx slots	20.95	20.83	20.80	22.00	16.69	16.57	16.64	17.74
GPRS 4 Tx slots	19.58	19.54	19.60	20.50	16.58	16.54	16.60	17.50
EDGE 1 Tx slot	21.93	22.01	21.90	22.50	12.93	13.01	12.90	13.50
EDGE 2 Tx slots	21.77	21.91	21.68	22.50	15.77	15.91	15.68	16.50
EDGE 3 Tx slots	19.80	20.02	19.69	20.50	15.54	15.76	15.43	16.24
EDGE 4 Tx slots	18.65	18.81	18.56	19.50	15.65	15.81	15.56	16.50

Band TX Channel Rx Channel Frequency (MHz)	WCDMA II			Tune-up Limit (dBm)	WCDMA IV			Tune-up Limit (dBm)	WCDMA V			Tune-up Limit (dBm)	
	9262	9400	9538		1312	1413	1513		4132	4182	4233		
	9662	9800	9938		1537	1638	1738		4357	4407	4458		
	1852.4	1880	1907.6		1712.4	1732.6	1752.6		826.4	836.4	846.6		
3GPP Rel 99	AMR 12.2kbps	13.81	13.84	13.77	15.00	15.30	15.28	15.21	16.00	20.89	21.16	21.11	22.00
3GPP Rel 99	AMR 12.2kbps	13.80	13.86	13.79	15.00	15.32	15.31	15.24	16.00	20.91	21.28	21.20	22.00
3GPP Rel 6	HSDPA Subtest-1	13.23	13.12	13.23	14.00	14.22	14.15	14.16	15.00	20.18	20.41	20.42	21.00
3GPP Rel 6	HSDPA Subtest-2	13.22	13.34	13.22	14.00	14.19	14.16	14.13	15.00	20.21	20.37	20.35	21.00
3GPP Rel 6	HSDPA Subtest-3	12.56	12.56	12.67	13.50	13.73	13.64	13.69	14.50	19.73	19.54	19.91	20.50
3GPP Rel 6	HSDPA Subtest-4	12.67	12.68	12.55	13.50	13.72	13.69	13.69	14.50	19.69	19.51	19.90	20.50
3GPP Rel 8	DC-HSDPA Subtest-1	13.24	13.20	13.23	14.00	14.26	14.08	14.17	15.00	20.23	19.97	20.44	21.00
3GPP Rel 8	DC-HSDPA Subtest-2	13.21	13.45	13.11	14.00	14.17	14.13	14.16	15.00	20.20	20.01	20.39	21.00
3GPP Rel 8	DC-HSDPA Subtest-3	12.56	13.01	12.56	13.50	13.65	13.69	13.66	14.50	19.66	19.57	19.89	20.50
3GPP Rel 8	DC-HSDPA Subtest-4	12.45	12.56	12.55	13.50	13.70	13.72	13.60	14.50	19.68	19.52	19.82	20.50
3GPP Rel 6	HSUPA Subtest-1	13.24	13.23	13.23	14.00	14.32	14.38	14.15	15.00	20.19	20.15	20.47	21.00
3GPP Rel 6	HSUPA Subtest-2	11.21	11.34	11.45	12.00	12.26	12.28	12.27	13.00	18.22	18.18	18.40	19.00
3GPP Rel 6	HSUPA Subtest-3	12.33	12.32	12.44	13.00	13.10	13.14	13.05	14.00	19.15	19.21	19.39	20.00
3GPP Rel 6	HSUPA Subtest-4	11.23	11.34	11.45	12.00	12.17	12.17	12.09	13.00	18.11	18.24	18.41	19.00
3GPP Rel 6	HSUPA Subtest-5	13.49	13.24	13.54	14.00	14.30	14.28	14.24	15.00	20.03	20.28	20.33	21.00

Band TX Channel Frequency (MHz)	CDMA BC0			Tune-up Limit (dBm)	CDMA BC1			Tune-up Limit (dBm)	CDMA BC10			Tune-up Limit (dBm)
	1013	384	777		25	600	1175		476	580	684	
	824.7	836.52	848.31		1851.25	1880	1908.75		817.9	820.5	823.1	
RC1 SO55	22.28	22.35	22.36	23.00	17.22	17.11	17.13	17.50	22.38	22.46	22.44	23.00
RC3 SO55	22.30	22.37	22.34	23.00	17.24	17.31	17.12	17.50	22.36	22.47	22.34	23.00
RC3 SO32 (+SCH)	22.35	22.22	22.34	23.00	17.23	17.10	17.17	17.50	22.29	22.43	22.42	23.00
RC3 SO32 (+SCH)	22.29	22.26	22.31	23.00	17.30	17.01	17.19	17.50	22.35	22.44	22.46	23.00
RTAP 153.6Kbps	22.24	22.27	22.21	23.00	17.21	17.26	17.12	17.50	22.34	22.44	22.43	23.00
RTAP 4066Bps	22.15	22.16	22.24	23.00	17.22	17.21	17.12	17.50	22.31	22.35	22.45	23.00



Band 2 (1900MHz Band)										
Part 24E										
BW (MHz)	Modulation	RB Size	RB Offset	Power	Power	Power	Power	Turn-up	MFR	
				Class	Class	Class	Class	Limit (dBm)	(dB)	
				Ch1/Freq	Ch2/Freq	Ch3/Freq	Ch4/Freq			
Channel										
Frequency (MHz)										
20	QPSK	1	0	15.80	15.80	15.80	15.80			
20	QPSK	1	49	15.76	15.80	15.80	15.80	16.5	0	
20	QPSK	1	99	15.69	15.84	15.80	15.80			
20	QPSK	50	0	15.80	15.80	15.80	15.80			
20	QPSK	50	24	15.97	15.96	15.79	15.79	16.5	0	
20	QPSK	50	50	15.82	15.70	15.78	15.78			
20	QPSK	50	80	15.88	15.80	15.81	15.81			
20	HQAM	1	0	15.99	15.90	15.87	15.87			
20	HQAM	1	49	15.88	15.86	15.77	15.77	16.5	0	
20	HQAM	50	0	15.80	15.70	15.75	15.75			
20	HQAM	50	24	15.98	15.96	15.75	15.75	16.5	0	
20	HQAM	50	50	15.71	15.71	15.75	15.75			
20	HQAM	100	0	15.84	15.80	15.82	15.82			
20	HQAM	100	24	15.77	15.75	15.85	15.85	16.5	0	
20	HQAM	1	99	15.78	15.90	16.00	16.00			
20	HQAM	50	24	15.98	15.79	15.77	15.77	16.5	0	
20	HQAM	50	50	15.88	15.90	15.80	15.80			
20	HQAM	50	80	15.82	15.82	15.77	15.77			
20	HQAM	100	0	15.80	15.82	15.79	15.79			
20	HQAM	100	24	15.83	15.82	15.77	15.77			
20	HQAM	100	50	15.82	15.82	15.79	15.79			
Channel										
Frequency (MHz)										
15	QPSK	1	0	15.77	15.80	15.75	15.75	Turn-up	MFR	
				15.80	15.80	15.79	15.79	Limit (dBm)	(dB)	
15	QPSK	1	37	15.82	15.81	15.76	15.76	16.5	0	
15	QPSK	1	74	15.81	15.80	15.81	15.81			
15	QPSK	1	111	15.80	15.80	15.80	15.80			
15	QPSK	36	20	15.82	15.80	15.81	15.81	16.5	0	
15	QPSK	36	50	15.82	15.80	15.80	15.80			
15	QPSK	36	80	15.87	15.80	15.80	15.80			
15	HQAM	1	0	15.73	15.83	16.03	16.03	16.5	0	
15	HQAM	1	49	15.77	15.80	15.81	15.81			
15	HQAM	1	74	15.83	15.80	15.74	15.74			
15	HQAM	36	0	15.99	15.80	15.82	15.82			
15	HQAM	36	36	15.83	15.80	15.83	15.83	16.5	0	
15	HQAM	36	72	15.80	15.84	15.87	15.87			
15	HQAM	36	108	15.82	15.80	15.80	15.80			
15	HQAM	72	0	16.02	15.86	15.88	15.88			
15	HQAM	72	36	15.80	15.80	15.77	15.77			
15	HQAM	72	72	15.83	15.80	15.79	15.79			
15	HQAM	1	37	15.83	15.80	15.79	15.79	16.5	0	
15	HQAM	1	74	15.82	15.76	15.85	15.85			
15	HQAM	1	111	15.80	15.82	15.82	15.82			
15	HQAM	36	36	15.91	15.80	15.87	15.87	16.5	0	
15	HQAM	36	72	15.86	15.80	15.80	15.80			
15	HQAM	72	0	15.90	15.84	15.86	15.86			
15	HQAM	72	36	15.80	15.84	15.86	15.86			
15	HQAM	72	72	15.83	15.80	15.80	15.80			
15	HQAM	100	0	15.80	15.84	15.86	15.86			
15	HQAM	100	36	15.80	15.84	15.86	15.86			
15	HQAM	100	72	15.83	15.80	15.80	15.80			
15	HQAM	100	108	15.80	15.84	15.86	15.86			
Channel										
Frequency (MHz)										
5	QPSK	1	0	15.78	15.80	15.78	15.78	Turn-up	MFR	
				15.78	15.80	15.80	15.80	Limit (dBm)	(dB)	
5	QPSK	1	25	15.78	15.80	15.80	15.80	16.5	0	
5	QPSK	1	49	15.80	15.80	15.80	15.80			
5	QPSK	25	0	15.80	15.80	15.80	15.80			
5	QPSK	25	12	15.83	15.80	15.80	15.80	16.5	0	
5	QPSK	25	25	15.80	15.80	15.80	15.80			
5	QPSK	50	0	15.82	15.80	15.83	15.83			
5	QPSK	50	24	15.92	15.87	15.83	15.83	16.5	0	
5	HQAM	1	0	15.80	15.81	15.81	15.81			
5	HQAM	1	49	15.87	15.87	15.80	15.80	16.5	0	
5	HQAM	25	0	15.82	15.80	15.85	15.85			
5	HQAM	25	12	15.83	15.80	15.80	15.80			
5	HQAM	25	25	15.88	15.73	15.78	15.78	16.5	0	
5	HQAM	50	0	15.80	15.80	15.87	15.87			
5	HQAM	50	24	15.92	15.82	15.87	15.87	16.5	0	
5	HQAM	1	25	15.79	15.82	15.83	15.83			
5	HQAM	1	49	15.80	15.82	15.80	15.80			
5	HQAM	25	12	15.83	15.80	15.86	15.86	16.5	0	
5	HQAM	25	25	15.84	15.80	15.80	15.80			
5	HQAM	50	0	15.83	15.87	15.80	15.80			
5	HQAM	50	24	15.83	15.87	15.80	15.80			
5	HQAM	100	0	15.83	15.87	15.80	15.80			
Channel										
Frequency (MHz)										
5	QPSK	1	0	15.92	15.81	15.80	15.80	Turn-up	MFR	
				15.87	15.76	15.71	15.71	Limit (dBm)	(dB)	
5	QPSK	1	12	15.87	15.76	15.71	15.71	16.5	0	
5	QPSK	1	25	15.79	15.84	15.84	15.84			
5	QPSK	12	0	15.80	15.80	15.82	15.82			
5	QPSK	12	7	15.84	15.80	15.81	15.81	16.5	0	
5	QPSK	12	13	15.80	15.80	15.80	15.80			
5	QPSK	25	0	15.87	15.80	15.83	15.83			
5	QPSK	25	7	15.86	15.80	15.80	15.80			
5	HQAM	1	12	15.86	15.82	15.83	15.83	16.5	0	
5	HQAM	1	24	15.80	15.86	15.88	15.88			
5	HQAM	1	37	15.80	15.86	15.76	15.76			
5	HQAM	12	7	15.79	15.76	15.76	15.76	16.5	0	
5	HQAM	12	13	15.82	15.81	15.84	15.84			
5	HQAM	25	0	15.82	15.70	15.83	15.83			
5	HQAM	25	7	15.80	15.80	15.80	15.80			
5	HQAM	12	12	15.85	15.84	15.83	15.83	16.5	0	
5	HQAM	1	24	15.80	15.86	15.88	15.88			
5	HQAM	1	37	15.80	15.86	15.76	15.76			
5	HQAM	12	13	15.79	15.77	15.80	15.80	16.5	0	
5	HQAM	12	24	15.82	15.84	15.81	15.81			
5	HQAM	1	12	15.87	15.86	15.83	15.83			
5	HQAM	1	24	15.80	15.86	15.88	15.88			
5	HQAM	12	13	15.79	15.77	15.80	15.80	16.5	0	
5	HQAM	12	24	15.82	15.84	15.81	15.81			
5	HQAM	1	12	15.87	15.86	15.83	15.83			
5	HQAM	1	24	15.80	15.86	15.88	15.88			
5	HQAM	12	13	15.79	15.77	15.80	15.80	16.5	0	
5	HQAM	12	24	15.82	15.84	15.81	15.81			
5	HQAM	1	12	15.87	15.86	15.83	15.83			
5	HQAM	1	24	15.80	15.86	15.88	15.88			
5	HQAM	12	13	15.79	15.77	15.80	15.80	16.5	0	
5	HQAM	12	24	15.82	15.84	15.81	15.81			
5	HQAM	1	12	15.87	15.86	15.83	15.83			
5	HQAM	1	24	15.80	15.86	15.88	15.88			
5	HQAM	12	13	15.79	15.77	15.80	15.80	16.5	0	
5	HQAM	12	24	15.82	15.84	15.81	15.81			
5	HQAM	1	12	15.87	15.86	15.83	15.83			
5	HQAM	1	24	15.80	15.86	15.88	15.88			
5	HQAM	12	13	15.79	15.77	15.80	15.80	16.5	0	
5	HQAM	12	24	15.82	15.84	15.81	15.81			
5	HQAM	1	12	15.87	15.86	15.83	15.83			
5	HQAM	1	24	15.80	15.86	15.88	15.88			
5	HQAM	12	13	15.79	15.77	15.80	15.80	16.5	0	
5	HQAM	12	24	15.82	15.84	15.81	15.81			
5	HQAM	1	12	15.87	15.86	15.83	15.83			
5	HQAM	1	24	15.80	15.86	15.88	15.88			
5	HQAM	12	13	15.79	15.77	15.80	15.80	16.5	0	
5	HQAM	12	24	15.82	15.84	15.81	15.81			
5	HQAM	1	12	15.87	15.86	15.83	15.83			
5	HQAM	1	24	15.80	15.86	15.88	15.88			
5	HQAM	12	13	15.79	15.77	15.80	15.80	16.5	0	
5	HQAM	12	24	15.82	15.84	15.81	15.81			
5	HQAM	1	12	15.87	15.86	15.83	15.83			
5	HQAM	1	24	15.80	15.86	15.88	15.88			
5	HQAM	12	13	15.79	15.77	15.80	15.80	16.5	0	
5	HQAM	12	24	15.82	15.84	15.81	15.81			
5	HQAM	1	12	15.87	15.86	15.83	15.83			
5	HQAM	1	24	15.80	15.86	15.88	15.88			
5	HQAM	12	13	15.79	15.77	15.80	15.80	16.5	0	
5	HQAM	12	24	15.82	15.84	15.81	15.81			
5	HQAM	1	12	15.87	15.86	15.83	15.83			
5	HQAM	1	24	15.80	15.86	15.88	15.88			
5	HQAM	12	13	15.79	15.77	15.80	15.80	16.5	0	
5	HQAM	12	24	15.82	15.84	15.81	15.81			
5	HQAM	1	12	15.87	15.86	15.83	15.83			
5	HQAM	1	24	15.80	15.86	1				



Band 38(only on channel required)										
BW (MHz)	Modulation	RB Size	RB Offset	Power Ch / Freq	Power Ch / Freq	Power Ch / Freq	Time-up limit (min)	MFR (dB)		
Channel										
				37860	38000	38160				
20	QPSK	1	0	20.41	20.55	20.29	21.5	0		
20	QPSK	1	40	20.30	20.36	20.42				
20	QPSK	1	80	20.53	20.79	20.60				
20	QPSK	50	0	20.28	20.42	20.39				
20	QPSK	50	24	20.36	20.45	20.47				
20	QPSK	50	50	20.53	20.59	20.49	21.5	0		
20	QPSK	100	0	20.38	20.42	20.48				
20	HQAM	1	0	20.40	20.44	20.50				
20	HQAM	1	40	20.41	20.44	20.47	21.5	0		
20	HQAM	1	80	20.59	20.66	20.64				
20	HQAM	50	0	20.31	20.45	20.40				
20	HQAM	50	24	20.29	20.44	20.51	21.5	0		
20	HQAM	50	50	20.55	20.55	20.46				
20	HQAM	100	0	20.37	20.44	20.48				
20	HQAM	100	40	20.43	20.41	20.45	21.5	0		
20	HQAM	100	80	20.19	20.39	20.11	20.50	20.28		
20	HQAM	50	0	20.41	20.39	20.41	20.51	20.38		
20	HQAM	50	24	20.45	20.40	20.54	20.20	20.43	21.5	0
20	HQAM	50	50	20.37	20.50	20.47	20.40	20.57		
20	HQAM	100	0	20.35	20.34	20.40	20.46	20.25		
20	HQAM	100	40	19.99	20.05	19.92	19.98	20.01	21.5	0
20	HQAM	100	80	20.12	20.08	20.21	20.26	20.01		
20	HQAM	1	0	19.59	19.01	19.59	19.08	19.08		
20	HQAM	1	40	20.25	20.54	20.28	20.44	20.26		
20	HQAM	1	80	20.45	20.37	20.45	20.51	20.41	21	0.5
20	HQAM	50	0	20.31	20.25	20.38	20.39	20.33		
20	HQAM	100	0	20.35	20.40	20.46	20.48	20.38		
Channel										
				37925	38075	38175				
15	QPSK	1	0	20.21	20.26	20.15				
15	QPSK	1	37	20.31	20.27	20.20	21.5	0		
15	QPSK	1	74	20.44	20.58	20.40				
15	QPSK	36	0	20.35	20.45	20.49				
15	QPSK	36	20	20.38	20.50	20.48	21.5	0		
15	QPSK	36	40	20.47	20.48	20.46				
15	QPSK	75	0	20.34	20.48	20.49				
15	HQAM	1	0	20.43	20.42	20.50				
15	HQAM	1	37	20.54	20.56	20.46	21.5	0		
15	HQAM	1	74	20.67	20.64	20.68				
15	HQAM	36	0	20.35	20.45	20.49				
15	HQAM	36	20	20.36	20.45	20.48	21.5	0		
15	HQAM	36	40	20.44	20.56	20.58				
15	HQAM	75	0	20.39	20.41	20.49				
15	HQAM	1	0	20.68	20.17	20.28	21.5	0		
15	HQAM	1	37	20.54	20.54	20.50				
15	HQAM	1	74	20.58	20.57	20.60				
15	HQAM	36	0	20.41	20.41	20.49	21.5	0.5		
15	HQAM	36	20	20.44	20.59	20.58				
15	HQAM	36	40	20.44	20.59	20.58				
15	HQAM	75	0	20.37	20.47	20.48				
Channel										
				37960	38090	38200				
10	QPSK	1	0	20.45	20.44	20.54	21.5	0		
10	QPSK	1	25	20.50	20.44	20.50				
10	QPSK	1	40	20.67	20.65	20.64				
10	QPSK	25	0	20.42	20.48	20.50				
10	QPSK	25	12	20.45	20.45	20.49	21.5	0		
10	QPSK	25	25	20.54	20.61	20.67				
10	QPSK	50	0	20.51	20.45	20.58				
10	QPSK	50	8	20.54	20.58	20.64	21.5	0		
10	QPSK	50	16	20.55	20.48	20.50	20.44	20.46		
10	HQAM	1	0	20.41	20.48	20.43	20.46	20.51		
10	HQAM	1	40	20.46	20.37	20.66	20.63	20.48		
10	HQAM	25	0	20.27	20.52	20.58	20.65	20.55	21.5	0
10	HQAM	25	12	20.54	20.51	20.66	20.43	20.60		
10	HQAM	25	25	20.52	20.48	20.58	20.64	20.51		
10	HQAM	50	0	20.29	20.47	20.58	20.49	20.52		
10	HQAM	50	8	20.13	20.12	20.13	20.15	20.08		
10	HQAM	50	16	20.20	20.17	20.32	20.37	20.29	21.5	0
10	HQAM	25	0	20.11	20.05	20.24	20.43	20.22		
10	HQAM	25	8	20.49	20.41	20.49	20.60	20.49		
10	HQAM	25	16	20.40	20.44	20.57	20.65	20.54	21	0.5
10	HQAM	25	25	20.49	20.43	20.53	20.60	20.44		
10	HQAM	50	0	20.45	20.41	20.38	20.38	20.45		
Channel										
				37975	38105	38215				
5	QPSK	1	0	20.31	20.34	20.35				
5	QPSK	1	12	20.36	20.38	20.50	21.5	0		
5	QPSK	1	24	20.40	20.50	20.51				
5	QPSK	12	0	20.41	20.54	20.67				
5	QPSK	12	7	20.47	20.41	20.53	21.5	0		
5	QPSK	12	13	20.41	20.48	20.54	20.63	20.53		
5	HQAM	1	0	20.56	20.61	20.44	20.34	20.64		
5	HQAM	1	12	20.47	20.45	20.55	20.44	20.55	21.5	0
5	HQAM	1	24	20.51	20.38	20.57	20.63	20.53		
5	HQAM	12	0	20.46	20.50	20.64	20.65	20.52		
5	HQAM	12	7	20.42	20.44	20.65	20.66	20.52		
5	HQAM	12	13	20.47	20.45	20.54	20.61	20.68	21.5	0
5	HQAM	25	0	20.57	20.59	20.60	20.45	20.56		
5	HQAM	25	7	20.47	20.27	20.69	20.50	20.34		
5	HQAM	1	12	20.28	20.23	20.27	20.34	20.26	21.5	0
5	HQAM	1	24	20.24	20.12	20.24	20.49	20.29		
5	HQAM	12	0	20.64	20.45	20.64	20.61	20.52		
5	HQAM	12	7	20.24	20.41	20.53	20.61	20.48	21	0.5
5	HQAM	12	13	20.48	20.41	20.48	20.56	20.46		
5	HQAM	25	0	20.59	20.44	20.57	20.43	20.48		

Band 41 (2.6G Band)										
BW (MHz)	Modulation	RB Size	RB Offset	Power Ch / Freq	Power Ch / Freq	Power Ch / Freq	Power Leak Ch / Freq	Power Leak Ch / Freq	Time-up limit (min)	MFR (dB)
Channel										
				39760	40198	40600	41568	41600		
20	QPSK	1	0	20.68	20.68	20.59	20.64	20.81		
20	QPSK	1	40	20.72	20.74	20.79	20.85	20.70	21.5	0
20	QPSK	1	80	20.83	20.68	20.50	20.64	20.54		
20	QPSK	50	0	20.80	20.75	20.68	20.71	20.73		
20	QPSK	50	24	20.83	20.63	20.73	20.76	20.76	21.5	0
20	QPSK	50	50	20.54	20.50	20.70	20.69	20.54		
20	QPSK	100	0	20.30	20.36	20.51	20.49	20.36		
20	HQAM	1	0	20.40	20.44	20.57	20.51	20.55		
20	HQAM	1	40	20.43	20.41	20.54	20.55	20.37	21.5	0
20	HQAM	1	80	20.19	20.39	20.11	20.30	20.28		
20	HQAM	50	0	20.41	20.39	20.41	20.51	20.38		
20	HQAM	50	24	20.45	20.40	20.54	20.20	20.43	21.5	0
20	HQAM	50	50	20.37	20.50	20.47	20.40	20.57		
20	HQAM	100	0	20.35	20.34	20.40	20.46	20.25		
20	HQAM	100	40	19.99	20.05	19.92	19.98	20.01	21.5	0
20	HQAM	100	80	20.12	20.08	20.21	20.26	20.01		
20	HQAM	1	0	19.59	19.01	19.59	19.08	19.08		
20	HQAM	1	40	20.25	20.54	20.28	20.44	20.26		
20	HQAM	1	80	20.45	20.37	20.45	20.51	20.41	21	0.5
20	HQAM	50	0	20.31	20.25	20.38	20.39	20.33		
20	HQAM	100	0	20.35	20.40	20.46	20.48	20.38		
Channel										
				39745	40173	40600	41068	41515		
15	QPSK	1	0	20.42	20.13	20.18	20.17	20.15		
15	QPSK	1	37	20.27	20.25	20.18	20.20	20.27	21.5	0
15	QPSK	1	74	20.42	20.5					



Reduced Power Mode for Hotspot on

GSM1900 TX Channel Frequency (MHz)	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
	512	661	810		512	661	810	
	1850.2	1880	1909.8		1850.2	1880	1909.8	
GSM 1 Tx slot	23.42	23.56	23.44	24.50	14.42	14.56	14.44	15.50
GPRS 1 Tx slot	23.41	23.55	23.42	24.50	14.41	14.55	14.42	15.50
GPRS 2 Tx slots	20.03	20.20	20.12	21.50	14.03	14.20	14.12	15.50
GPRS 3 Tx slots	17.75	18.09	17.75	19.50	13.49	13.83	13.49	15.24
GPRS 4 Tx slots	16.63	16.86	16.63	18.00	13.63	13.86	13.63	15.00
EDGE 1 Tx slot	19.50	19.52	19.46	20.00	10.50	10.52	10.46	11.00
EDGE 2 Tx slots	19.59	19.39	19.42	20.00	13.59	13.39	13.42	14.00
EDGE 3 Tx slots	17.72	17.68	17.81	18.00	13.46	13.42	13.55	13.74
EDGE 4 Tx slots	16.03	16.12	16.02	17.00	13.03	13.12	13.02	14.00

Band TX Channel Rx Channel Frequency (MHz)	WCDMA II			Tune-up Limit (dBm)	WCDMA IV			Tune-up Limit (dBm)	WCDMA V			Tune-up Limit (dBm)
	9262	9400	9538		1312	1413	1513		4132	4182	4233	
	9662	9800	9938		1537	1638	1738		4357	4407	4458	
	1852.4	1880	1907.6		1712.4	1732.6	1752.6		826.4	836.4	846.6	
3GPP Rel 99 AMR 12.2Kbps	11.73	11.79	11.52	13.00	13.04	13.25	13.16	14.00	20.89	21.16	21.11	22.00
3GPP Rel 99 RMC 12.2Kbps	11.75	11.81	11.55	13.00	13.24	13.29	13.25	14.00	20.91	21.28	21.20	22.00
3GPP Rel 6 HSDPA Subtest-1	11.09	11.02	11.13	12.00	12.04	11.89	11.86	13.00	20.18	20.41	20.42	21.00
3GPP Rel 6 HSDPA Subtest-2	11.10	11.32	11.03	12.00	11.99	11.91	11.85	13.00	20.21	20.37	20.35	21.00
3GPP Rel 6 HSDPA Subtest-3	10.58	10.47	10.60	11.50	11.52	11.41	11.39	12.50	19.73	19.54	19.91	20.50
3GPP Rel 6 HSDPA Subtest-4	10.56	10.76	10.63	11.50	11.52	11.44	11.38	12.50	19.69	19.51	19.90	20.50
3GPP Rel 8 DC-HSDPA Subtest-1	11.12	11.06	11.16	12.00	12.05	11.85	11.85	13.00	20.23	19.97	20.44	21.00
3GPP Rel 8 DC-HSDPA Subtest-2	11.07	11.29	11.08	12.00	11.97	11.89	11.85	13.00	20.20	20.01	20.39	21.00
3GPP Rel 8 DC-HSDPA Subtest-3	10.49	10.78	10.61	11.50	11.47	11.43	11.36	12.50	19.66	19.57	19.89	20.50
3GPP Rel 8 DC-HSDPA Subtest-4	10.53	10.76	10.59	11.50	11.50	11.45	11.32	12.50	19.68	19.52	19.82	20.50
3GPP Rel 6 HSUPA Subtest-1	11.20	11.15	11.22	12.00	12.13	12.12	11.85	13.00	20.19	20.15	20.47	21.00
3GPP Rel 6 HSUPA Subtest-2	9.19	9.21	9.29	10.00	10.09	10.01	9.99	11.00	18.22	18.18	18.40	19.00
3GPP Rel 6 HSUPA Subtest-3	10.22	10.19	10.31	11.00	10.91	10.88	10.75	12.00	19.15	19.21	19.39	20.00
3GPP Rel 6 HSUPA Subtest-4	9.18	9.23	9.25	10.00	10.00	9.90	9.81	11.00	18.11	18.24	18.41	19.00
3GPP Rel 6 HSUPA Subtest-5	11.19	11.25	11.39	12.00	12.12	12.02	11.94	13.00	20.03	20.28	20.33	21.00

Band TX Channel Frequency (MHz)	CDMA BC0			Tune-up Limit (dBm)	CDMA BC1			Tune-up Limit (dBm)	CDMA BC10			Tune-up Limit (dBm)
	1013	384	777		25	600	1175		476	580	684	
	824.7	836.52	848.31		1851.25	1880	1908.75		817.9	820.5	823.1	
RC1 SO55	22.28	22.35	22.36	23.00	14.44	14.49	14.54	15.00	22.38	22.46	22.44	23.00
RC3 SO55	22.30	22.37	22.34	23.00	14.38	14.57	14.43	15.00	22.36	22.47	22.34	23.00
RC3 SO32 (F+SCH)	22.35	22.22	22.34	23.00	14.35	14.50	14.43	15.00	22.29	22.43	22.42	23.00
RC3 SO32 (H+SCH)	22.29	22.26	22.31	23.00	14.43	14.44	14.51	15.00	22.35	22.44	22.46	23.00
RTAP 153.6Kbps	22.24	22.27	22.21	23.00	14.54	14.56	14.18	15.00	22.34	22.44	22.43	23.00
RETAP 4096Bits	22.15	22.16	22.24	23.00	14.51	14.54	14.11	15.00	22.31	22.35	22.45	23.00



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Band 2 (1900MHz Band)													
Part 24E													
BW (MHz)	Modulation	RB Size	RB Offset	Power Ch./Freq. [dBm]	Power Max. [dBm]	Power Min. [dBm]	Turn-up init. [dBm]	MPR (dB)					
Channel													
Frequency (MHz)													
20	QPSK	1	0	12.50	12.50	12.50							
20	QPSK	1	49	12.45	12.51	12.50	13.5	0					
20	QPSK	1	99	12.74	12.61	12.29							
20	QPSK	50	0	12.50	12.50	12.50							
20	QPSK	50	24	12.50	12.48	12.38	13.5	0					
20	QPSK	50	50	12.50	12.27	12.25							
20	QPSK	50	75	12.40	12.40	12.40							
20	HQAM	1	0	12.34	12.38	12.25							
20	HQAM	1	49	12.33	12.26	12.21	13.5	0					
20	HQAM	50	0	12.22	12.20	12.22							
20	HQAM	50	0	12.18	12.18	11.98							
20	HQAM	50	24	12.20	12.10	12.00	13.5	0					
20	HQAM	50	50	11.98	11.98	11.94							
20	HQAM	100	0	12.11	12.01	12.03							
20	HQAM	1	49	12.35	12.35	12.25	13.5	0					
20	HQAM	1	99	12.18	12.32	12.29							
20	HQAM	50	24	12.19	12.00	12.01	13.5	0					
20	HQAM	50	50	11.93	11.86	11.81							
20	HQAM	100	0	12.09	12.01	12.04							
Channel													
Frequency (MHz)													
15	QPSK	1	0	11.57	11.60	11.61	Turn-up init. [dBm]	MPR (dB)					
15	QPSK	1	37	11.50	12.00	11.83	13.5	0					
15	QPSK	1	74	12.30	12.18	12.14							
15	QPSK	1	111	12.18	12.15	11.88							
15	QPSK	36	20	12.07	12.07	12.02	13.5	0					
15	QPSK	36	56	12.08	12.08	11.86							
15	QPSK	36	87	12.07	12.07	11.81							
15	HQAM	1	0	12.72	12.70	12.51							
15	HQAM	1	49	12.70	12.65	12.52	13.5	0					
15	HQAM	1	94	12.70	12.60	12.65							
15	HQAM	36	0	12.11	12.10	12.00	13.5	0					
15	HQAM	36	36	12.10	12.00	12.01							
15	HQAM	36	72	12.10	12.00	12.00							
15	HQAM	72	0	12.04	12.07	12.00							
15	HQAM	72	36	12.08	12.00	12.03							
15	HQAM	1	97	12.54	12.48	12.38	13.5	0					
15	HQAM	1	74	12.80	12.61	12.45							
15	HQAM	1	49	12.84	12.61	12.45							
15	HQAM	36	50	12.10	12.00	12.02	13.5	0					
15	HQAM	36	80	12.09	12.00	12.00							
15	HQAM	72	0	12.05	12.07	12.00							
Channel													
Frequency (MHz)													
10	QPSK	1	0	12.21	12.22	12.24	Turn-up init. [dBm]	MPR (dB)					
10	QPSK	1	25	11.92	11.80	11.84	13.5	0					
10	QPSK	1	50	12.06	12.04	12.04							
10	QPSK	25	0	12.17	12.12	12.10							
10	QPSK	25	12	12.15	12.08	12.04	13.5	0					
10	QPSK	50	0	12.09	12.05	12.00							
10	QPSK	50	0	12.13	12.10	12.14							
10	HQAM	1	0	12.71	12.73	12.58							
10	HQAM	1	49	12.70	12.65	12.52	13.5	0					
10	HQAM	1	99	12.71	12.59	12.54							
10	HQAM	25	0	12.18	12.12	12.10							
10	HQAM	25	12	12.16	12.10	12.03	13.5	0					
10	HQAM	25	25	12.05	12.01	12.03							
10	HQAM	50	0	12.07	12.05	12.00							
10	HQAM	1	25	12.41	12.34	12.32	13.5	0					
10	HQAM	1	49	12.36	12.32	12.31							
10	HQAM	25	0	12.15	12.15	12.00	13.5	0					
10	HQAM	25	12	12.11	12.06	12.00							
10	HQAM	25	12	12.09	12.00	12.00							
10	HQAM	50	0	12.10	12.00	12.08							
Channel													
Frequency (MHz)													
5	QPSK	1	0	12.15	12.18	12.18	Turn-up init. [dBm]	MPR (dB)					
5	QPSK	1	12	11.99	11.96	11.89	13.5	0					
5	QPSK	1	25	12.07	11.98	11.97							
5	QPSK	12	0	12.25	12.19	12.18							
5	QPSK	12	7	12.20	12.12	12.08	13.5	0					
5	QPSK	12	13	12.16	12.09	12.07							
5	QPSK	25	0	12.20	12.13	12.11							
5	HQAM	1	12	12.51	12.47	12.37	13.5	0					
5	HQAM	1	24	12.48	12.31	12.35							
5	HQAM	12	0	12.05	12.04	12.03							
5	HQAM	12	7	12.21	12.14	12.13	13.5	0					
5	HQAM	12	13	12.19	12.11	12.09							
5	HQAM	25	0	12.13	12.13	12.00							
5	HQAM	1	0	12.50	12.40	12.38	13.5	0					
5	HQAM	1	12	12.30	12.21	12.18							
5	HQAM	12	0	12.06	12.06	12.00							
5	HQAM	12	0	12.22	12.17	12.13	13.5	0					
5	HQAM	12	13	12.13	12.07	12.03							
5	HQAM	25	0	12.20	12.12	12.09							
Channel													
Frequency (MHz)													
3	QPSK	1	0	12.17	11.80	11.67	Turn-up init. [dBm]	MPR (dB)					
3	QPSK	1	8	12.10	12.00	12.04	13.5	0					
3	QPSK	1	14	12.07	11.95	11.95							
3	QPSK	8	0	12.18	12.11	12.05							
3	QPSK	8	4	12.12	12.11	12.07	13.5	0					
3	QPSK	8	7	12.13	12.08	12.02							
3	HQAM	1	8	12.19	12.11	12.08							
3	HQAM	1	14	12.44	12.30	12.20	13.5	0					
3	HQAM	8	8	12.38	12.30	12.29							
3	HQAM	1	14	12.34	12.26	12.22							
3	HQAM	8	0	12.26	12.21	12.16	13.5	0					
3	HQAM	8	4	12.27	12.18	12.13							
3	HQAM	8	7	12.21	12.17	12.11							
3	HQAM	15	0	12.16	12.10	12.08							
3	HQAM	1	0	12.30	12.28	12.17	13.5	0					
3	HQAM	8	12	12.24	12.22	12.20							
3	HQAM	1	14	12.28	12.10	12.12							
3	HQAM	8	0	12.11	12.00	12.05							
3	HQAM	8	4	12.17	12.10	12.05	13.5	0					
3	HQAM	15	0	12.20	12.00	12.03							
3	HQAM	15	0	12.12	12.00	12.03							
Channel													
Frequency (MHz)													
1.4	QPSK	1	0	12.04	11.86	11.80	Turn-up init. [dBm]	MPR (dB)					
1.4	QPSK	1	5	12.11	12.08	11.98	13.5	0					
1.4	QPSK	1	5	12.09	12.04	12.03							
1.4	QPSK	3	0	12.13	12.07	12.02							
1.4	QPSK	1	5	12.17	12.08	12.03	13.5	0					
1.4	QPSK	3	3	12.09	12.01	11.97							
1.4	HQAM	0	0	12.31	12.19	12.19	13.5	0					
1.4	HQAM	1	3	12.37	12.30	12.31							
1.4	HQAM	1	5	12.28	12.20	12.23							
1.4	HQAM	3	1	12.21	12.16	12.11	13.5	0					
1.4	HQAM	3	1	12.25	12.21	12.17							
1.4	HQAM	3	1	12.10	12.10	12.10							
1.4	HQAM	6	0	12.12	12.05	12.00	13.5	0					
1.4	HQAM	1	0	12.11	12.22	12.12							
1.4	HQAM	3	0	12.33	12.20	12.19							
1.4	HQAM	1	5	12.23	12.16	12.11	13.5	0					
1.4	HQAM	1	5	12.27	12.20	12.18							
1.4	HQAM	3	3	12.28	12.18	12.13							
1.4	HQAM	3	3	12.28	12.18	12.13	13.5	0					
1.4	HQAM	6	0	12.10	12.00	12.03							

Band 4 (AWS Band)													
Part 27L (only on channel required)													
BW (MHz)	Modulation	RB Size	RB Offset	Power Ch./Freq. [dBm]	Power Max. [dBm]	Power Min. [dBm]	Turn-up init. [dBm]	MPR (dB)					
Channel													
Frequency (MHz)													
20	QPSK	1	0	12.08	12.18	12.11							
20	QPSK	1	49	12.07	12.08	12.78	14	0					
20	QPSK	50	0	12.30	12.45	12.37							
20	QPSK	50	24	12.48	12.42	12.41							
20	QPSK	50	50	12.38	12.45	12.37	14	0					
20	HQAM	1	0	12.27	12.36	12.32							
20	HQAM	1	49	12.41	12.33	12.31	14	0					
20	HQAM	50	0	12.33	12.38	12.26							
20	HQAM	50	0	12.40	12.48	12.47							
20	HQAM	50	24	12.48	12.42	12.38	14	0					
20	HQAM	50	50	12.33	12.38	12.26							
20	HQAM	100	0	12.45	12.48	12.43							
20	HQAM	1	49	12.35	12.34	12.34	14	0					
20	HQAM	1	99	12.57	12.62	12.59							
20	HQAM	50	24	12.44	12.36	12.38	14	0					
20	HQAM	50	50	12.44	12.50	12.46							
Channel													
Frequency (MHz)													
15	QPSK	1	0	12.03	12.03	12.03	Turn-up init. [dBm]	MPR (dB)					
15	QPSK	1	37	12.15	12.20	12.23	13	0					
15	QPSK	1	74	12.41	12.40	12.34							
15	QPSK	1	111	12.35	12.31	12.28							
15	QPSK	36	20	12.50	12.53	12.45							
15	QPSK	36	56	12.48	12.47	12.44							
15	QPSK	36	87	12.38	12.45	12.41							
15	HQAM	1	0	12.51	12.59	12.59							
15	HQAM	1	49	12.42	12.38	12.30	14	0					
15	HQAM	1	94	12.83	12.80	12.79							
15	HQAM	36	0	12.46	12.51	12.48							
15	HQAM	36	36	12.40	12.54	12.48	</						



Band 38(only on channel required)										
RF [MHz]	Modulation	RB Size	RB Offset	Power Ch / Freq	Power Ch / Freq	Power Ch / Freq	Power Leak Ch / Freq	Power Leak Ch / Freq	Time-up limit (dBm)	MPR (dB)
Channel										
				37860	38000	38160				
20	QPSK	1	0	20.41	20.65	20.29			21.5	0
20	QPSK	1	40	20.30	20.36	20.42				
20	QPSK	1	80	20.53	20.79	20.60				
20	QPSK	50	0	20.28	20.42	20.38				
20	QPSK	50	24	20.36	20.45	20.47				
20	QPSK	50	50	20.53	20.59	20.49			21.5	0
20	QPSK	100	0	20.38	20.42	20.48				
20	HQAM	1	0	20.31	20.44	20.50				
20	HQAM	1	40	20.41	20.44	20.47			21.5	0
20	HQAM	1	80	20.59	20.60	20.64				
20	HQAM	50	0	20.31	20.45	20.40				
20	HQAM	50	24	20.29	20.44	20.51			21.5	0
20	HQAM	50	50	20.55	20.55	20.46				
20	HQAM	100	0	20.37	20.44	20.48				
20	HQAM	100	0	20.45	20.45	20.52			21.5	0
20	HQAM	100	40	20.63	20.76	20.61				
20	HQAM	100	80	20.79	20.87	20.82				
20	HQAM	50	24	20.25	20.45	20.44			21.0	0.5
20	HQAM	50	50	20.47	20.49	20.42				
20	HQAM	100	0	20.45	20.45	20.52				
Channel										
				37865	38000	38175				
15	QPSK	1	0	20.21	20.26	20.15			21.5	0
15	QPSK	1	37	20.31	20.27	20.20				
15	QPSK	1	74	20.54	20.58	20.60				
15	QPSK	36	0	20.35	20.45	20.40				
15	QPSK	36	20	20.38	20.50	20.48			21.5	0
15	QPSK	36	40	20.47	20.48	20.46				
15	QPSK	75	0	20.34	20.48	20.49				
15	QPSK	1	0	20.43	20.42	20.50				
15	HQAM	1	37	20.44	20.46	20.40			21.5	0
15	HQAM	1	74	20.67	20.64	20.68				
15	HQAM	36	0	20.39	20.48	20.46				
15	HQAM	36	20	20.36	20.45	20.48			21.5	0
15	HQAM	36	40	20.44	20.56	20.58				
15	HQAM	75	0	20.39	20.47	20.50			21.0	0.5
15	HQAM	75	0	20.47	20.47	20.48				
15	HQAM	75	0	20.55	20.55	20.55			21.5	0
15	HQAM	1	0	20.49	20.44	20.50				
15	HQAM	1	37	20.44	20.46	20.40			21.5	0
15	HQAM	1	74	20.69	20.66	20.70				
15	HQAM	36	0	20.41	20.41	20.39			21.0	0.5
15	HQAM	36	20	20.50	20.48	20.58				
15	HQAM	36	40	20.44	20.59	20.58				
15	HQAM	75	0	20.40	20.48	20.50			21.5	0
15	HQAM	75	0	20.49	20.48	20.50				
15	HQAM	75	0	20.57	20.57	20.55			21.5	0
15	HQAM	1	0	20.43	20.34	20.50				
15	HQAM	1	40	20.38	20.34	20.57			21.5	0
15	HQAM	1	80	20.52	20.50	20.56				
15	HQAM	36	0	20.32	20.52	20.58				
15	HQAM	36	20	20.37	20.52	20.58			21.5	0
15	HQAM	36	40	20.46	20.48	20.54				
15	HQAM	75	0	20.47	20.45	20.52			21.5	0
15	HQAM	75	0	20.55	20.52	20.58				
15	HQAM	75	0	20.63	20.57	20.65			21.5	0
15	HQAM	1	0	20.27	20.52	20.58				
15	HQAM	1	37	20.54	20.51	20.56			21.5	0
15	HQAM	1	74	20.79	20.76	20.80				
15	HQAM	36	0	20.32	20.48	20.58				
15	HQAM	36	20	20.39	20.48	20.54			21.5	0
15	HQAM	36	40	20.48	20.48	20.54				
15	HQAM	75	0	20.49	20.49	20.52			21.5	0
15	HQAM	75	0	20.57	20.57	20.55				
15	HQAM	75	0	20.65	20.62	20.68			21.5	0
15	HQAM	1	0	20.31	20.49	20.50				
15	HQAM	1	37	20.44	20.46	20.40			21.5	0
15	HQAM	1	74	20.69	20.66	20.70				
15	HQAM	36	0	20.41	20.41	20.39			21.0	0.5
15	HQAM	36	20	20.50	20.48	20.58				
15	HQAM	36	40	20.44	20.59	20.58				
15	HQAM	75	0	20.40	20.48	20.50			21.5	0
15	HQAM	75	0	20.49	20.48	20.50				
15	HQAM	75	0	20.57	20.57	20.55			21.5	0
15	HQAM	1	0	20.43	20.34	20.50				
15	HQAM	1	40	20.38	20.34	20.57			21.5	0
15	HQAM	1	80	20.52	20.50	20.56				
15	HQAM	36	0	20.32	20.52	20.58				
15	HQAM	36	20	20.37	20.52	20.58			21.5	0
15	HQAM	36	40	20.46	20.48	20.54				
15	HQAM	75	0	20.47	20.45	20.52			21.5	0
15	HQAM	75	0	20.55	20.52	20.58				
15	HQAM	75	0	20.63	20.57	20.65			21.5	0
15	HQAM	1	0	20.27	20.52	20.58				
15	HQAM	1	37	20.54	20.51	20.56			21.5	0
15	HQAM	1	74	20.79	20.76	20.80				
15	HQAM	36	0	20.32	20.48	20.58				
15	HQAM	36	20	20.39	20.48	20.54			21.5	0
15	HQAM	36	40	20.48	20.48	20.54				
15	HQAM	75	0	20.49	20.49	20.52			21.5	0
15	HQAM	75	0	20.57	20.57	20.55				
15	HQAM	75	0	20.65	20.62	20.68			21.5	0
15	HQAM	1	0	20.31	20.49	20.50				
15	HQAM	1	37	20.44	20.46	20.40			21.5	0
15	HQAM	1	74	20.69	20.66	20.70				
15	HQAM	36	0	20.41	20.41	20.39			21.0	0.5
15	HQAM	36	20	20.50	20.48	20.58				
15	HQAM	36	40	20.44	20.59	20.58				
15	HQAM	75	0	20.40	20.48	20.50			21.5	0
15	HQAM	75	0	20.49	20.48	20.50				
15	HQAM	75	0	20.57	20.57	20.55			21.5	0
15	HQAM	1	0	20.43	20.34	20.50				
15	HQAM	1	40	20.38	20.34	20.57			21.5	0
15	HQAM	1	80	20.52	20.50	20.56				
15	HQAM	36	0	20.32	20.52	20.58				
15	HQAM	36	20	20.37	20.52	20.58			21.5	0
15	HQAM	36	40	20.46	20.48	20.54				
15	HQAM	75	0	20.47	20.45	20.52			21.5	0
15	HQAM	75	0	20.55	20.52	20.58				
15	HQAM	75	0	20.63	20.57	20.65			21.5	0
15	HQAM	1	0	20.27	20.52	20.58				
15	HQAM	1	37	20.54	20.51	20.56			21.5	0
15	HQAM	1	74	20.79	20.76	20.80				
15	HQAM	36	0	20.32	20.48	20.58				
15	HQAM	36	20	20.39	20.48	20.54			21.5	0
15	HQAM	36	40	20.48	20.48	20.54				
15	HQAM	75	0	20.49	20.49	20.52			21.5	0
15	HQAM	75	0	20.57	20.57	20.55				
15	HQAM	75	0	20.65	20.62	20.68			21.5	0
15	HQAM	1	0	20.31	20.49	20.50				
15	HQAM	1	37	20.44	20.46	20.40			21.5	0
15	HQAM	1	74	20.69	20.66	20.70				
15	HQAM	36	0	20.41	20.41	20.39			21.0	0.5
15	HQAM	36	20	20.50	20.48	20.58				
15	HQAM	36	40	20.44	20.59	20.58				
15	HQAM	75	0	20.40	20.48	20.50			21.5	0
15	HQAM	75	0	20.49	20.48	20.50				
15	HQAM	75	0	20.57	20.57	20.55			21.5	0
15	HQAM	1	0	20.43	20.34	20.50				
15	HQ									



Reduced Power Mode for Handheld on

GSM1900	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
	512	661	810		512	661	810	
TX Channel	1850.2	1880	1909.8		1850.2	1880	1909.8	
Frequency (MHz)								
GSM 1 Tx slot	28.91	29.07	28.89	30.00	19.91	20.07	19.89	21.00
GPRS 1 Tx slot	28.90	29.05	28.84	30.00	19.90	20.05	19.84	21.00
GPRS 2 Tx slots	25.59	25.42	25.43	27.00	19.59	19.42	19.43	21.00
GPRS 3 Tx slots	24.15	23.83	24.00	25.00	19.89	19.57	19.74	20.74
GPRS 4 Tx slots	22.78	22.54	22.70	23.50	19.78	19.54	19.70	20.50
EDGE 1 Tx slot	25.01	25.01	24.78	25.50	16.01	16.01	15.78	16.50
EDGE 2 Tx slots	24.97	24.91	24.78	25.50	16.97	16.91	16.78	19.50
EDGE 3 Tx slots	23.00	23.02	22.79	23.50	18.74	18.76	18.53	19.24
EDGE 4 Tx slots	21.45	21.56	21.45	22.50	18.45	18.56	18.45	19.50

Band	WCDMA II			Tune-up Limit (dBm)	WCDMA IV			Tune-up Limit (dBm)	
	9262	9400	9538		1312	1413	1513		
TX Channel	9662	9800	9938		1537	1638	1738		
Rx Channel	1852.4	1880	1907.6		1712.4	1732.6	1752.6		
Frequency (MHz)									
3GPP Rel 99	AMR 12.2kbps	18.36	18.38	18.06	19.50	19.20	19.17	19.14	20.50
3GPP Rel 99	RMC 12.2kbps	18.41	18.42	18.12	19.50	19.52	19.54	19.45	20.50
3GPP Rel 6	HSDPA Subtest-1	17.79	17.76	17.80	18.50	18.14	18.03	18.03	19.50
3GPP Rel 6	HSDPA Subtest-2	17.80	18.06	17.70	18.50	18.09	18.05	18.02	19.50
3GPP Rel 6	HSDPA Subtest-3	17.28	17.21	17.27	18.00	17.62	17.55	17.56	19.00
3GPP Rel 6	HSDPA Subtest-4	17.26	17.50	17.30	18.00	17.62	17.58	17.55	19.00
3GPP Rel 8	DC-HSDPA Subtest-1	17.82	17.80	17.83	18.50	18.15	17.99	18.02	19.50
3GPP Rel 8	DC-HSDPA Subtest-2	17.77	18.02	17.75	18.50	18.07	18.03	18.02	19.50
3GPP Rel 8	DC-HSDPA Subtest-3	17.19	17.52	17.26	18.00	17.57	17.57	17.53	19.00
3GPP Rel 8	DC-HSDPA Subtest-4	17.23	17.82	17.23	18.00	17.60	17.59	17.49	19.00
3GPP Rel 6	HSUPA Subtest-1	17.90	17.92	17.89	18.50	18.23	18.26	18.02	19.50
3GPP Rel 6	HSUPA Subtest-2	15.89	15.97	15.96	16.50	16.19	16.15	16.16	17.50
3GPP Rel 6	HSUPA Subtest-3	16.92	16.93	16.98	17.50	17.01	17.02	16.92	18.50
3GPP Rel 6	HSUPA Subtest-4	15.88	15.97	15.92	16.50	16.10	16.04	15.98	17.50
3GPP Rel 6	HSUPA Subtest-5	17.89	17.99	18.06	18.50	18.22	18.16	18.11	19.50

Band	CDMA BC0			Tune-up Limit (dBm)	CDMA BC1			Tune-up Limit (dBm)	CDMA BC10			Tune-up Limit (dBm)
	1013	984	777		25	500	1175		476	580	584	
TX Channel	824.7	836.52	848.31		1861.95	1880	1908.76		817.9	820.5	823.1	
Frequency (MHz)												
RC1 SO55	23.35	23.22	23.33	24.00	21.03	21.05	21.11	21.50	23.54	23.60	23.48	24.00
RC3 SO55	23.05	23.38	23.30	24.00	21.04	21.14	21.09	21.50	23.45	23.68	23.49	24.00
RC3 SO32 (F+SCH)	23.21	23.33	23.19	24.00	21.11	21.11	21.10	21.50	23.65	23.50	23.38	24.00
RC3 SO32 (F+SCH)	23.21	23.37	23.22	24.00	21.09	21.09	21.13	21.50	23.65	23.55	23.22	24.00
RTAP 153.6kbps	23.21	23.34	23.22	24.00	21.05	21.06	21.02	21.50	23.56	23.67	23.65	24.00
RETAP 4066Bits	23.22	23.25	23.21	24.00	21.11	21.05	21.13	21.50	23.54	23.55	23.57	24.00



Band 2 (1900MHz Band) Part 24E											
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											
Frequency (MHz)				1860	1880	1900					
20	QPSK	1	0	19.56	19.66	19.41					
20	QPSK	1	49	19.62	19.54	19.55	20	0			
20	QPSK	1	99	19.58	19.55	19.55					
20	QPSK	50	24	19.60	19.45	19.37	20	0			
20	QPSK	50	50	19.44	19.27	19.37					
20	QPSK	100	0	19.62	19.63	19.49					
20	16QAM	1	0	19.51	19.52	19.18					
20	16QAM	1	49	19.38	19.41	19.15	20	0			
20	16QAM	1	99	19.30	19.23	19.29					
20	16QAM	50	0	19.55	19.53	19.52					
20	16QAM	50	24	19.52	19.46	19.27	20	0			
20	16QAM	50	50	19.39	19.33	19.39					
20	16QAM	100	0	19.55	19.40	19.43					
20	64QAM	1	0	19.61	19.65	19.59					
20	64QAM	1	49	19.61	19.60	19.65	20	0			
20	64QAM	1	99	19.54	19.42	19.48					
20	64QAM	50	0	19.56	19.55	19.50					
20	64QAM	50	24	19.53	19.41	19.37	20	0			
20	64QAM	50	50	19.40	19.30	19.36					
20	64QAM	100	0	19.56	19.55	19.41					
Channel											
Frequency (MHz)				1867.5	1880	1912.5	Tune-up limit (dBm)	MPR (dB)			
15	QPSK	1	0	19.32	19.38	19.38					
15	QPSK	1	37	19.35	19.23	19.29	20	0			
15	QPSK	1	74	19.67	19.63	19.65					
15	QPSK	36	0	19.52	19.40	19.34					
15	QPSK	36	20	19.44	19.46	19.40	20	0			
15	QPSK	36	39	19.48	19.38	19.41					
15	QPSK	75	0	19.48	19.38	19.37					
15	16QAM	1	0	19.25	19.25	19.26					
15	16QAM	1	37	19.36	19.27	19.25	20	0			
15	16QAM	1	74	19.62	19.45	19.63					
15	16QAM	36	0	19.48	19.55	19.45					
15	16QAM	36	20	19.51	19.44	19.43	20	0			
15	16QAM	36	39	19.55	19.39	19.45					
15	16QAM	75	0	19.43	19.44	19.37					
15	64QAM	1	0	19.56	19.24	19.42					
15	64QAM	1	37	19.57	19.56	19.44	20	0			
15	64QAM	1	74	19.45	19.62	19.55					
15	64QAM	36	0	19.54	19.51	19.44					
15	64QAM	36	20	19.47	19.39	19.40	20	0			
15	64QAM	36	39	19.51	19.24	19.42					
15	64QAM	75	0	19.44	19.54	19.49					
Channel											
Frequency (MHz)				1865	1880	1905	Tune-up limit (dBm)	MPR (dB)			
10	QPSK	1	0	19.32	19.42	19.48					
10	QPSK	1	25	19.41	19.50	19.35	20	0			
10	QPSK	1	49	19.51	19.47	19.41					
10	QPSK	25	0	19.52	19.40	19.44					
10	QPSK	25	12	19.34	19.35	19.29	20	0			
10	QPSK	25	25	19.38	19.27	19.27					
10	QPSK	50	0	19.34	19.43	19.35					
10	16QAM	1	0	19.45	19.35	19.54					
10	16QAM	1	25	19.36	19.27	19.25	20	0			
10	16QAM	1	49	19.54	19.54	19.50					
10	16QAM	25	0	19.49	19.36	19.36					
10	16QAM	25	12	19.42	19.45	19.33	20	0			
10	16QAM	25	25	19.37	19.46	19.32					
10	16QAM	50	0	19.41	19.52	19.37					
10	64QAM	1	0	19.54	19.51	19.52					
10	64QAM	1	25	19.47	19.48	19.37	20	0			
10	64QAM	1	49	19.65	19.47	19.44					
10	64QAM	25	0	19.46	19.38	19.43					
10	64QAM	25	12	19.40	19.43	19.31	20	0			
10	64QAM	25	25	19.45	19.29	19.26					
10	64QAM	50	0	19.38	19.48	19.33					
Channel											
Frequency (MHz)				1862.5	1880	1917.5	Tune-up limit (dBm)	MPR (dB)			
5	QPSK	1	0	19.54	19.26	19.29					
5	QPSK	1	12	19.35	19.25	19.17	20	0			
5	QPSK	1	24	19.17	19.22	19.27					
5	QPSK	12	0	19.47	19.33	19.34					
5	QPSK	12	7	19.39	19.43	19.23	20	0			
5	QPSK	12	13	19.41	19.33	19.27					
5	QPSK	25	0	19.42	19.46	19.34					
5	16QAM	1	0	19.49	19.39	19.57					
5	16QAM	1	12	19.36	19.25	19.26	20	0			
5	16QAM	1	24	19.45	19.40	19.37					
5	16QAM	12	0	19.44	19.42	19.41					
5	16QAM	12	7	19.42	19.46	19.31	20	0			
5	16QAM	12	13	19.35	19.30	19.19					
5	16QAM	25	0	19.46	19.35	19.26					
5	64QAM	1	0	19.56	19.51	19.47					
5	64QAM	1	12	19.50	19.54	19.48	20	0			
5	64QAM	1	24	19.57	19.51	19.38					
5	64QAM	12	0	19.44	19.42	19.29					
5	64QAM	12	7	19.41	19.41	19.14	20	0			
5	64QAM	12	13	19.35	19.36	19.07					
5	64QAM	25	0	19.42	19.37	19.30					
Channel											
Frequency (MHz)				1857.5	1880	1909.5	Tune-up limit (dBm)	MPR (dB)			
1.4	QPSK	1	0	19.46	19.45	19.38					
1.4	QPSK	1	3	19.32	19.49	19.39	20	0			
1.4	QPSK	1	5	19.19	19.25	19.04					
1.4	QPSK	3	0	19.30	19.29	19.23					
1.4	QPSK	3	1	19.40	19.37	19.25	20	0			
1.4	QPSK	3	3	19.32	19.20	19.08					
1.4	QPSK	6	0	19.31	19.31	19.19	20	0			
1.4	16QAM	1	0	19.54	19.54	19.67					
1.4	16QAM	1	3	19.45	19.41	19.54	20	0			
1.4	16QAM	1	5	19.54	19.34	19.53					
1.4	16QAM	3	0	19.36	19.14	19.13					
1.4	16QAM	3	1	19.49	19.55	19.26	20	0			
1.4	16QAM	3	3	19.30	19.40	19.26					
1.4	16QAM	6	0	19.25	19.33	19.16	20	0			
1.4	64QAM	1	0	19.54	19.66	19.52					
1.4	64QAM	1	3	19.55	19.56	19.59	20	0			
1.4	64QAM	1	5	19.54	19.45	19.52					
1.4	64QAM	3	0	19.50	19.39	19.33					
1.4	64QAM	3	1	19.43	19.52	19.38	20	0			
1.4	64QAM	3	3	19.47	19.46	19.23					
1.4	64QAM	6	0	19.39	19.30	19.26	20	0			

Band 4 (AWS Band) Part 27L (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											
Frequency (MHz)				1720	1732.5	1745					
20	QPSK	1	0	19.35	19.68	19.53					
20	QPSK	1	49	19.35	19.33	19.38	20.5	0			
20	QPSK	1	99	19.35	19.38	19.27					
20	QPSK	50	24	19.30	19.40	19.30	20	0			
20	QPSK	50	24	19.32	19.27	19.37					
20	QPSK	50	50	19.21	19.25	19.20	20.5	0			
20	QPSK	100	0	19.21	19.37	19.35					
20	16QAM	1	0	19.33	19.27	19.34					
20	16QAM	1	49	19.32	19.29	19.51	20.5	0			
20	16QAM	1	99	19.50	19.31	19.51					
20	16QAM	50	0	19.29	19.23	19.20					
20	16QAM	50	24	19.13	19.10	19.16	20.5	0			
20	16QAM	50	50	19.04	19.27	19.11					
20	16QAM	100	0	19.24	19.16	19.14					
20	64QAM	1	0	19.10	19.06	19.31					
20	64QAM	1	49	19.98	19.29	19.05	20.5	0			
20	64QAM	1	99	19.15	19.06	19.18					
20	64QAM	50	0	19.14	19.19	19.15					
20	64QAM	50	24	19.08	19.05	19.13	20.5	0			
20	64QAM	50	50	1							



Band 25 (1900MHz Band) Part 24E												
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												
Frequency (MHz)												
20	QPSK	1	0	18.87	19.75	19.72	20	0				
20	QPSK	1	49	19.33	19.47	19.35						
20	QPSK	1	99	19.55	19.55	19.56						
20	QPSK	50	0	19.55	19.55	19.55						
20	QPSK	50	24	19.55	19.54	19.55	20	0				
20	QPSK	50	50	19.56	19.55	19.55						
20	QPSK	100	0	19.20	19.56	19.45						
20	16QAM	1	0	19.19	19.22	19.21						
20	16QAM	1	49	19.29	19.25	19.20	20	0				
20	16QAM	1	99	18.96	18.89	18.18						
20	16QAM	50	0	19.16	19.11	19.06						
20	16QAM	50	24	19.02	19.06	18.93						
20	16QAM	50	50	19.10	18.98	18.93	20	0				
20	16QAM	100	0	19.11	19.04	19.03						
20	84QAM	1	0	19.06	19.11	19.30						
20	84QAM	1	49	19.15	19.20	19.09						
20	84QAM	1	99	19.32	19.16	19.15	20	0				
20	84QAM	50	0	19.32	19.05	19.00						
20	84QAM	50	24	19.14	19.11	18.95						
20	84QAM	50	50	19.00	19.01	18.96						
20	84QAM	100	0	19.20	19.01	19.02	20	0				
Channel												
Frequency (MHz)												
15	QPSK	1	0	19.20	19.18	19.16			20	0		
15	QPSK	1	37	19.11	19.06	18.94						
15	QPSK	1	74	19.22	19.16	19.35						
15	QPSK	36	0	19.22	19.17	19.07						
15	QPSK	36	20	19.29	19.17	19.06	20	0				
15	QPSK	36	39	19.18	19.18	19.09						
15	QPSK	75	0	19.33	19.21	19.07						
15	16QAM	1	0	19.43	19.44	19.43						
15	16QAM	1	37	19.44	19.53	19.48	20	0				
15	16QAM	1	74	19.45	19.60	19.58						
15	16QAM	36	0	19.26	19.21	19.12						
15	16QAM	36	20	19.34	19.11	19.10						
15	16QAM	36	39	19.29	19.15	19.02	20	0				
15	16QAM	75	0	19.27	19.11	19.01						
15	84QAM	1	0	19.70	19.60	19.58						
15	84QAM	1	37	19.45	19.43	19.44						
15	84QAM	1	74	19.68	19.82	19.56	20	0				
15	84QAM	36	0	19.36	19.19	19.00						
15	84QAM	36	20	19.32	19.19	18.98						
15	84QAM	36	39	19.20	19.15	19.33						
15	84QAM	75	0	19.26	19.10	19.21	20	0				
Channel												
Frequency (MHz)												
10	QPSK	1	0	19.05	18.99	19.00			20	0		
10	QPSK	1	25	19.13	18.91	19.14						
10	QPSK	1	49	19.18	19.25	19.38						
10	QPSK	25	0	19.23	19.17	19.07						
10	QPSK	25	12	19.28	19.20	19.21	20	0				
10	QPSK	25	25	19.28	19.19	19.27						
10	QPSK	50	0	19.24	19.11	19.16						
10	16QAM	1	0	19.43	19.74	19.45						
10	16QAM	1	25	19.44	19.53	19.47	20	0				
10	16QAM	1	49	19.43	19.45	19.63						
10	16QAM	25	0	19.21	19.10	19.00						
10	16QAM	25	12	19.18	19.05	19.08						
10	16QAM	25	25	19.10	18.99	19.11	20	0				
10	16QAM	50	0	19.16	19.14	19.54						
10	84QAM	1	0	19.45	19.53	19.72						
10	84QAM	1	25	19.55	19.54	19.53						
10	84QAM	1	49	19.60	19.70	19.48	20	0				
10	84QAM	25	0	19.23	19.13	19.12						
10	84QAM	25	12	19.30	19.08	19.11						
10	84QAM	25	25	19.32	19.17	19.05						
10	84QAM	50	0	19.19	19.03	19.16	20	0				
Channel												
Frequency (MHz)												
5	QPSK	1	0	18.84	19.32	19.33			20	0		
5	QPSK	1	12	19.05	18.88	19.07						
5	QPSK	1	24	19.23	19.12	19.13						
5	QPSK	12	0	19.23	19.08	19.14						
5	QPSK	12	7	19.17	19.08	19.01	20	0				
5	QPSK	12	13	19.18	19.07	19.15						
5	QPSK	25	0	19.20	19.15	19.18						
5	16QAM	1	0	19.68	19.65	19.72						
5	16QAM	1	12	19.70	19.68	19.61	20	0				
5	16QAM	1	24	19.74	19.64	19.46						
5	16QAM	12	0	19.26	19.10	19.14						
5	16QAM	12	7	19.22	19.08	19.10						
5	16QAM	12	13	19.11	19.02	19.05	20	0				
5	16QAM	25	0	19.11	19.06	19.09						
5	84QAM	1	0	19.52	19.40	19.39						
5	84QAM	1	12	19.39	19.30	19.34						
5	84QAM	1	24	19.54	19.48	19.32	20	0				
5	84QAM	12	0	19.29	19.22	19.19						
5	84QAM	12	7	19.24	19.12	19.14						
5	84QAM	12	13	19.26	19.07	19.09						
5	84QAM	25	0	19.23	19.12	19.13	20	0				
Channel												
Frequency (MHz)												
3	QPSK	1	0	19.00	18.98	18.96			20	0		
3	QPSK	1	8	19.18	19.14	19.11						
3	QPSK	1	14	19.08	18.96	19.00						
3	QPSK	8	0	19.15	19.02	19.03						
3	QPSK	8	4	19.21	19.09	19.07	20	0				
3	QPSK	8	7	19.14	19.01	19.07						
3	QPSK	15	0	19.12	19.04	19.02						
3	16QAM	1	0	19.49	19.58	19.29						
3	16QAM	1	8	19.55	19.66	19.63	20	0				
3	16QAM	1	14	19.33	19.47	19.37						
3	16QAM	8	0	19.24	19.27	19.18						
3	16QAM	8	4	19.15	19.11	19.08						
3	16QAM	8	7	19.19	19.04	18.98	20	0				
3	16QAM	15	0	19.06	18.93	19.05						
3	84QAM	1	0	19.31	19.12	19.18						
3	84QAM	1	8	19.47	19.47	19.34						
3	84QAM	1	14	19.42	19.05	19.12	20	0				
3	84QAM	8	0	19.12	19.07	19.12						
3	84QAM	8	4	19.24	19.05	19.08						
3	84QAM	8	7	19.07	19.06	19.04						
3	84QAM	15	0	19.17	19.10	19.11	20	0				
Channel												
Frequency (MHz)												
1.4	QPSK	1	0	19.14	19.15	19.19			20	0		
1.4	QPSK	1	3	19.13	19.14	18.96						
1.4	QPSK	1	5	19.02	18.95	18.96						
1.4	QPSK	3	0	19.16	19.08	19.08						
1.4	QPSK	3	1	19.14	19.07	19.12	20	0				
1.4	QPSK	3	3	19.03	18.96	19.04						
1.4	QPSK	6	0	19.13	19.00	19.04						
1.4	16QAM	1	0	19.23	19.34	19.38						
1.4	16QAM	1	3	19.41	19.28	19.40	20	0				
1.4	16QAM	1	5	19.42	19.29	19.19						
1.4	16QAM	3	0	19.27	19.10	19.11						
1.4	16QAM	3	1	19.18	19.31	19.19						
1.4	16QAM	3	3	19.20	19.02	19.20	20	0				
1.4	16QAM	6	0	19.14	19.09	19.14						
1.4	84QAM	1	0	19.01	19.10	19.05						
1.4	84QAM	1	3	19.11	18.73	18.89						
1.4	84QAM	1	5	18.92	18.77	18.81	20	0				
1.4	84QAM	3	0	19.20	18.99	19.03						
1.4	84QAM	3	1	19.23	19.12	19.11						
1.4	84QAM	3	3	19.15	18.11	19.01						
1.4	84QAM	6	0	19.20	19.09	19.05	20	0				

Band 66										
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										
Frequency (MHz)										
20	QPSK	1	0	19.69	19.77	19.71	20.5	0		
20	QPSK	1	49	19.55	19.63	19.61				
20	QPSK	1	99	19.44	19.43	19.58				
20	QPSK	50	0	19.56	19.66	19.54				
20	QPSK	50	24	19.25	19.33	19.43	20.5	0		
20	QPSK	50	50	19.45	19.22	19.32				
20	QPSK	100	0	19.26	19.45	19.34				
20	16QAM	1	0	19.32	19.29	19.41				
20	16QAM	1	49	19.48	19.38	19.44	20.5	0		
20	16QAM	1	99	19.62						



Band 38(only on channel required)										
RF (MHz)	Modulation	RB Size	RB Offset	Power Ch / Freq	Power Ch / Freq	Power Ch / Freq	Power Lvl Ch / Freq	Power Lvl Ch / Freq	Time-up (min)	MPR (dB)
Channel										
Frequency (MHz)										
30	QPSK	1	0	22.59	22.61	22.65			23.5	0
30	QPSK	1	40	22.54	22.46	22.32				
30	QPSK	1	80	22.74	22.66	22.52				
30	QPSK	50	0	22.49	22.75	22.43				
30	QPSK	50	24	22.45	22.65	22.61				
30	QPSK	50	50	22.58	22.67	22.72			23	0.5
30	QPSK	100	0	22.84	22.66	22.69				
30	HQAM	1	0	22.60	22.60	22.60				
30	HQAM	1	40	22.85	22.54	22.58			23	0.5
30	HQAM	1	80	22.75	22.76	22.78				
30	HQAM	50	0	22.94	22.96	23.02				
30	HQAM	50	24	20.97	20.93	21.02			22	1.5
30	HQAM	100	0	21.40	21.17	21.04				
30	HQAM	1	0	20.97	20.89	21.13			22	1.5
30	HQAM	1	40	20.94	21.03	21.02				
30	HQAM	1	80	21.19	20.94	21.28				
30	HQAM	50	0	19.58	19.47	19.41				
30	HQAM	50	24	19.58	19.35	19.46			21	2.5
30	HQAM	50	50	19.34	19.52	19.67				
30	HQAM	100	0	19.34	19.65	19.34				
Channel										
Frequency (MHz)										
15	QPSK	1	0	22.62	22.66	22.63			23.5	0
15	QPSK	1	37	22.51	22.42	22.40				
15	QPSK	1	74	22.81	22.78	22.76				
15	QPSK	36	0	22.48	22.53	22.64				
15	QPSK	36	20	22.48	22.52	22.62			23	0.5
15	QPSK	36	40	22.68	22.73	22.86				
15	QPSK	75	0	22.48	22.63	22.86				
15	HQAM	1	0	22.62	22.67	22.75			23	0.5
15	HQAM	1	37	22.51	22.42	22.40				
15	HQAM	1	74	22.75	22.71	22.84				
15	HQAM	36	0	21.11	21.06	21.06				
15	HQAM	36	20	21.19	21.16	21.12			22	1.5
15	HQAM	36	40	21.03	21.18	21.00				
15	HQAM	75	0	20.97	21.21	21.03				
15	HQAM	1	0	20.88	20.93	21.12			22	1.5
15	HQAM	1	37	21.01	20.95	21.01				
15	HQAM	1	74	21.15	21.14	21.07				
15	HQAM	36	0	19.41	19.56	19.48				
15	HQAM	36	20	19.40	19.45	19.46			21	2.5
15	HQAM	36	40	19.43	19.61	19.71				
15	HQAM	75	0	19.40	19.46	19.51				
Channel										
Frequency (MHz)										
10	QPSK	1	0	22.62	22.66	22.63			23.5	0
10	QPSK	1	35	22.55	22.47	22.59				
10	QPSK	1	70	22.58	22.62	22.69				
10	QPSK	25	0	22.68	22.46	22.67				
10	QPSK	25	12	22.85	22.54	22.58			23	0.5
10	QPSK	25	25	22.64	22.64	22.74				
10	QPSK	50	0	22.81	22.51	22.53				
10	HQAM	1	0	22.67	22.71	22.85			23	0.5
10	HQAM	1	35	22.56	22.61	22.66				
10	HQAM	1	70	22.84	22.77	22.86				
10	HQAM	25	0	20.97	21.05	20.98			22	1.5
10	HQAM	25	12	21.13	20.94	21.08				
10	HQAM	25	25	21.26	21.26	21.33				
10	HQAM	50	0	21.05	21.29	21.30				
10	HQAM	50	0	21.02	21.18	21.16			22	1.5
10	HQAM	1	0	21.08	21.05	21.09				
10	HQAM	1	40	21.18	21.14	21.04				
10	HQAM	25	0	19.85	19.82	19.83				
10	HQAM	25	12	19.81	19.80	19.81			21	2.5
10	HQAM	25	25	19.86	19.87	19.87				
10	HQAM	50	0	19.43	19.39	19.64				
Channel										
Frequency (MHz)										
5	QPSK	1	0	22.55	22.59	22.63			23.5	0
5	QPSK	1	12	22.77	22.64	22.79				
5	QPSK	1	24	22.54	22.51	22.66				
5	QPSK	12	0	22.67	22.61	22.66			23	0.5
5	QPSK	12	6	22.81	22.45	22.53				
5	QPSK	12	13	22.68	22.56	22.84				
5	QPSK	25	0	22.71	22.66	22.88				
5	HQAM	1	0	22.56	22.59	22.69			23	0.5
5	HQAM	1	12	22.62	22.67	22.67				
5	HQAM	1	24	22.64	22.61	22.67				
5	HQAM	12	0	21.21	21.16	21.17				
5	HQAM	12	6	20.84	21.08	20.88			22	1.5
5	HQAM	12	13	21.13	21.05	21.36				
5	HQAM	25	0	21.05	21.17	21.07				
5	HQAM	1	0	21.07	20.88	21.10				
5	HQAM	1	12	20.97	20.92	21.13			22	1.5
5	HQAM	1	24	21.19	21.08	21.14				
5	HQAM	12	0	19.38	19.46	19.71				
5	HQAM	12	6	19.58	19.59	19.80			21	2.5
5	HQAM	12	13	19.63	19.76	19.86				
5	HQAM	25	0	19.59	19.74	19.83				

Band 41 (2.6G Band)										
RF (MHz)	Modulation	RB Size	RB Offset	Power Ch / Freq	Power Ch / Freq	Power Ch / Freq	Power Lvl Ch / Freq	Power Lvl Ch / Freq	Time-up (min)	MPR (dB)
Channel										
Frequency (MHz)										
30	QPSK	1	0	22.22	22.25	22.26	22.24	22.29	23.5	0
30	QPSK	1	40	22.42	22.36	22.49	22.51	22.32		
30	QPSK	1	80	22.29	22.19	22.19	22.29	22.23		
30	QPSK	50	0	21.89	21.86	21.81	21.65	21.53		
30	QPSK	50	24	21.81	21.69	21.73	21.78	21.56		
30	QPSK	50	50	21.81	21.78	21.62	21.65	21.51	23	0.5
30	QPSK	100	0	21.81	21.82	21.68	21.69	21.61		
30	HQAM	1	0	21.80	21.82	21.64	21.66	21.47		
30	HQAM	1	40	21.82	21.73	21.88	21.70	21.51	23	0.5
30	HQAM	1	80	21.45	21.39	21.43	21.42	21.49		
30	HQAM	50	0	20.94	20.95	20.82	20.79	20.54		
30	HQAM	50	24	20.94	20.91	20.72	20.86	20.60	22	1.5
30	HQAM	100	0	20.88	20.83	20.83	20.71	20.46		
30	HQAM	1	0	20.76	20.72	20.79	20.91	20.78		
30	HQAM	1	40	20.59	20.70	20.68	20.78	20.82		
30	HQAM	1	80	20.70	20.62	20.67	20.62	20.66		
30	HQAM	50	0	19.41	19.46	19.46	19.49	19.60		
30	HQAM	50	24	19.43	19.45	19.31	19.35	19.11	21	2.5
30	HQAM	50	50	19.41	19.34	19.15	19.22	19.07		
30	HQAM	100	0	19.42	19.40	19.35	19.30	19.06		
Channel										
Frequency (MHz)										
15	QPSK	1	0	22.23	22.24	22.23	22.27	22.16	23.5	0
15	QPSK	1	37	22.25	22.25	22.15	22.17	22.23		
15	QPSK	1	74	22.41	22.36	22.37	22.46	22.46		
15	QPSK	36	0	21.88	21.93	21.81	21.63	21.59		
15	QPSK	36	20	21.97	21.91	21.72	21.77	21.58	23	0.5
15	QPSK	36	40	22.03	21.99	21.80	21.82	21.66		
15	QPSK	75	0	22.01	21.92	21.87	21.72	21.56		
15	HQAM	1	0	21.94	21.46	21.98	21.27	21.29	23	0.5
15	HQAM	1	37	21.48	21.46	21.39	21.62	21.81		
15	HQAM	1	74	21.36	21.33	21.32	21.36	21.47		
15	HQAM	36	0	20.95	21.06	20.96	20.96	20.96		
15	HQAM	36	20	20.98	20.91	20.70	20.78	20.60	22	1.5
15	HQAM	36	40	20.96	20.95	20.75	20.78	20.64		
15	HQAM	75	0	21.00	20.92	20.86	20.71	20.58		
15	HQAM	1	0	20.44	20.41	20.37	20.39	20.42	22	1.5
15	HQAM	1	37	20.47	20.50	20.50	20.52	20.44		
15	HQAM	1	74	20.17	20.16	20.16	20.12	20.12		
15	HQAM	36	0	19.40	19.43	19.46	19.25	19.24	21	2.5
15	HQAM	36	20	19.39	19.54	19.33	19.38	19.18		
15	HQAM	36	40	19.44	19.61	19.36	19.46	19.28		
15	HQAM	75	0	19.36	19.51	19.20	19.31	19.14		
Channel										
Frequency (MHz)										
10	QPSK	1	0	22.21	22.27	22.23	22.23	22.25	23.5	0
10	QPSK	1	35	22.50	22.42	22.30	22.34	22.48		
10	QPSK	1	70	22.42	22.33	22.34	22.25	22.44		
10	QPSK	25	0	21.60	21.60	21.74	21.62	21.83		
10	QPSK	25	12	21.69	21.94	21.77	21.84	21.89	23	0.5
10	QPSK	25	25	22.00	21.91	21.75	21.80	21.92		
10	HQAM	1	0	21.84	21.87	21.73	21.79	21.71		
10	HQAM	1	35	21.62	21.62	21.69	21.64	21.61	23	0.5
10	HQAM	1	70	21.89	21.79	21.79	21.75	21.53		
10	HQAM	25	0	20.86	20.92	20.77	20.85	20.86		
10	HQAM	25	12	21.05	20.95	20.75	20.80	20.89		
10	HQAM	25	25	20.97	20.89	20.70	20.78	20.82	22	1.5
10	HQAM	50	0	21.00	21.00	20.76	20.80	20.64		
10	HQAM	50	0	20.73	20.72	20.41	20.74	20.59		
10	HQAM	1	0	20.78	20.78	20.59	20.72	20.58		
10	HQAM	1	40	20.70	20.53	20.71	20.73	20.55	22	1.5
10										

Full

CA_41C								
Combination 20MHz+20MHz (100RB+100RB)								
PCC Channel	SCC Channel	Modulation	PCC		SCC		Measured Power (dBm)	Tune up Power (dBm)
			RB Size	RB offset	RB Size	RB offset		
39750	39948	QPSK	1	0	0	0	24.24	25
40185	39987	QPSK	1	0	0	0	23.63	25
40620	40422	QPSK	1	0	0	0	23.31	25
41055	40857	QPSK	1	0	0	0	23.3	25
41490	41292	QPSK	1	0	0	0	23.27	25
39750	39948	16QAM	1	0	0	0	22.43	23
40185	39987	16QAM	1	0	0	0	21.89	23
40620	40422	16QAM	1	0	0	0	22.01	23
41055	40857	16QAM	1	0	0	0	22.21	23
41490	41292	16QAM	1	0	0	0	22.1	23
39750	39948	64QAM	1	0	0	0	21.34	22
40185	39987	64QAM	1	0	0	0	20.99	22
40620	40422	64QAM	1	0	0	0	21.03	22
41055	40857	64QAM	1	0	0	0	21.09	22
41490	41292	64QAM	1	0	0	0	20.89	22

Sensor on

CA_41C								
Combination 20MHz+20MHz (100RB+100RB)								
PCC Channel	SCC Channel	Modulation	PCC		SCC		Measured Power (dBm)	Tune up Power (dBm)
			RB Size	RB offset	RB Size	RB offset		
39750	39948	QPSK	1	0	0	0	20.23	21.5
40185	39987	QPSK	1	0	0	0	20.28	21.5
40620	40422	QPSK	1	0	0	0	20.17	21.5
41055	40857	QPSK	1	0	0	0	20.19	21.5
41490	41292	QPSK	1	0	0	0	20.09	21.5

Hotspot on

CA_41C								
Combination 20MHz+20MHz (100RB+100RB)								
PCC Channel	SCC Channel	Modulation	PCC		SCC		Measured Power (dBm)	Tune up Power (dBm)
			RB Size	RB offset	RB Size	RB offset		
39750	39948	QPSK	1	0	0	0	20.23	21.5
40185	39987	QPSK	1	0	0	0	20.28	21.5
40620	40422	QPSK	1	0	0	0	20.17	21.5
41055	40857	QPSK	1	0	0	0	20.19	21.5
41490	41292	QPSK	1	0	0	0	20.09	21.5

Handheld on

CA_41C								
Combination 20MHz+20MHz (100RB+100RB)								
PCC Channel	SCC Channel	Modulation	PCC		SCC		Measured Power (dBm)	Tune up Power (dBm)
			RB Size	RB offset	RB Size	RB offset		
39750	39948	QPSK	1	0	0	0	21.98	23.5
40185	39987	QPSK	1	0	0	0	21.92	23.5
40620	40422	QPSK	1	0	0	0	21.85	23.5
41055	40857	QPSK	1	0	0	0	21.75	23.5
41490	41292	QPSK	1	0	0	0	21.83	23.5



2CA DL

CA List	PCC						SCC				Power		
	LTE	BW	UL	UL	Mod.	UL#	UL	LTE	BW	DL	DL	With CA	Without CA
	Band	(MHz)	Freq (MHz)	Channel		RB	RB Offset	Band	(MHz)	Freq (MHz)	Channel	Tx Power (dBm)	Tx Power (dBm)
CA_2A-5A	Band 2	20M	1890	18900	QPSK	1	0	Band 5	10M	881.5	2525	23.10	23.27
	Band 5	10M	836.5	20525	QPSK	1	0	Band 2	20M	1960	900	23.10	23.24
CA_2A-7A	Band 2	20M	1880	18900	QPSK	1	0	Band 7	20M	2655	3100	23.09	23.27
	Band 7	20M	2535	21100	QPSK	1	0	Band 2	20M	1960	900	22.95	23.24
CA_5A-7A	Band 5	10M	836.5	20525	QPSK	1	0	Band 7	20M	2655	3100	23.20	23.24
	Band 7	20M	2535	21100	QPSK	1	0	Band 5	10M	881.5	2525	23.15	23.24
CA_7A-12A	Band 7	20M	2535	21100	QPSK	1	0	Band 12	10M	737.5	5095	22.98	23.24
	Band 12	10M	707.5	23095	QPSK	1	0	Band 7	20M	2655	3100	22.98	23.18
CA_25A-26A	Band 25	20M	1880	26340	QPSK	1	0	Band 26	15M	876.5	8865	23.06	23.28
	Band 26	15M	831.5	26865	QPSK	1	0	Band 25	20M	1952.5	8365	23.20	23.27
CA_25A-41A	Band 25	20M	1880	26340	QPSK	1	0	Band 41	20M	2593	40620	23.09	23.28
CA_26A-41A	Band 26	15M	831.5	26865	QPSK	1	0	Band 41	20M	2593	40620	23.10	23.27
CA_2C	Band 2	20M	1880	18900	QPSK	1	0	Band 2	20M	1979.8	1098	23.04	23.27
CA_5B	Band 5	10M	836.5	20525	QPSK	1	0	Band 5	5M	881.2	2997	23.21	23.24
CA_7C	Band 7	20M	2535	21100	QPSK	1	0	Band 7	20M	2674.8	3298	22.93	23.24
CA_12B	Band 12	5M	707.5	23095	QPSK	1	0	Band 12	5M	742.3	5143	22.56	22.78
CA_38C	Band 38	20M	2585.1	37901	QPSK	1	0	Band 38	20M	2604.9	38099	23.05	23.26
CA_41C	Band 41	20M	2593	40620	QPSK	1	0	Band 41	20M	2612.8	40818	24.42	24.35
CA_66B	Band 66	15M	1745	132322	QPSK	1	0	Band 66	5M	2164.3	66979	22.91	23.18
CA_66C	Band 66	20M	1745	132322	QPSK	1	0	Band 66	20M	2174.8	67084	23.12	23.36
CA_2A-2A	Band 2	20M	1880	18900	QPSK	1	0	Band 2	5M	1987.5	1175	23.11	23.27
CA_4A-4A	Band 4	20M	1732.5	20175	QPSK	1	0	Band 4	5M	2152.5	2375	23.01	23.25
CA_7A-7A	Band 7	20M	2535	21100	QPSK	1	0	Band 7	5M	2687.5	3425	22.98	23.24
CA_25A-25A	Band 25	20M	1880	26340	QPSK	1	0	Band 25	5M	1992.5	8665	23.02	23.28
CA_41A-41A	Band 41	20M	2593	40620	QPSK	1	0	Band 41	5M	2687.5	41565	24.25	24.35
CA_66A-66A	Band 66	20M	1745	132322	QPSK	1	0	Band 66	5M	2197.5	67311	23.09	23.36



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	18.30	20.00	98.28
		6	2437	18.60	20.00	
		11	2462	18.70	20.00	
802.11g-6Mbps	1	2412	15.70	16.00	98.28	
		6	2437	18.80		19.00
		11	2462	15.40		16.00
802.11n-HT20 MCS0	1	2412	15.00	16.00	98.16	
		6	2437	17.90		19.00
		11	2462	15.00		16.00

2.4GHz WLAN						
At Head						
Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %	
2.4GHz WLAN	802.11b-1Mbps	1	2412	15.30	16.00	98.28
		6	2437	14.70	16.00	
		11	2462	15.20	16.00	
802.11g-6Mbps	1	2412	16.00	98.28		
		6	2437		16.00	
		11	2462		16.00	
802.11n-HT20 MCS0	1	2412	Not Required	16.00	98.16	
		6	2437	16.00		
		11	2462	16.00		

5GHz WLAN						
Full power & Head & Handheld						
Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %	
5.2GHz WLAN	802.11a-6Mbps	36	5180	14.60	15.50	97.93
		40	5200	14.72	15.50	
		44	5220	14.91	15.50	
		48	5240	14.83	15.50	
		36	5180	13.87	14.00	
		40	5200	14.75	15.50	
802.11n-HT20 MCS0	44	5220	14.97	15.50	97.79	
		48	5240	14.69		15.50
		38	5190	12.13		12.50
		46	5230	15.01		15.50
802.11n-HT40 MCS0	36	5180	13.42	13.50	96.03	
		40	5200	14.66		15.50
		44	5220	14.87		15.50
		48	5240	14.59		15.50
802.11ac-VHT20 MCS0	40	5200	14.66	15.50	97.40	
		44	5220	14.87		15.50
		48	5240	14.59		15.50
		38	5190	12.08		12.50
802.11ac-VHT40 MCS0	46	5230	14.97	15.50	96.04	
		42	5210	11.20		12.00
		42	5210	11.20		12.00

5GHz WLAN						
Body-worn & Hotspot						
Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %	
5.2GHz WLAN	802.11a-6Mbps	36	5180	8.50	97.93	
		40	5200	8.50		
		44	5220	8.50		
		48	5240	8.50		
		36	5180	8.50		
		40	5200	8.50		
802.11n-HT20 MCS0	44	5220	8.50	97.79		
		48	5240		8.50	
		38	5190		8.05	
		46	5230		7.92	
802.11n-HT40 MCS0	36	5180	8.50	96.03		
		40	5200		8.50	
		44	5220		8.50	
		48	5240		8.50	
802.11ac-VHT20 MCS0	40	5200	8.50	97.40		
		44	5220		8.50	
		48	5240		8.50	
		38	5190		8.50	
802.11ac-VHT40 MCS0	46	5230	8.50	96.04		
		42	5210		8.00	
		42	5210		8.00	

5GHz WLAN						
Simultaneous-0mm						
Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %	
5.2GHz WLAN	802.11a-6Mbps	36	5180	14.50	97.93	
		40	5200	14.50		
		44	5220	14.50		
		48	5240	14.50		
		36	5180	14.00		
		40	5200	14.50		
802.11n-HT20 MCS0	44	5220	14.90	97.79		
		48	5240		14.50	
		38	5190		12.13	
		46	5230		14.12	
802.11n-HT40 MCS0	36	5180	13.50	96.03		
		40	5200		14.50	
		44	5220		14.50	
		48	5240		14.50	
802.11ac-VHT20 MCS0	40	5200	13.50	97.40		
		44	5220		14.50	
		48	5240		14.50	
		38	5190		12.50	
802.11ac-VHT40 MCS0	46	5230	14.50	96.04		
		42	5210		12.00	
		42	5210		12.00	

5GHz WLAN						
Full power & Head & Handheld						
Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %	
5.3GHz WLAN	802.11a-6Mbps	52	5260	16.27	17.00	97.93
		56	5280	16.31	17.00	
		60	5300	16.42	17.00	
		64	5320	16.21	17.00	
		52	5260	16.12	17.00	
		56	5280	16.19	17.00	
802.11n-HT20 MCS0	60	5300	16.28	17.00	97.79	
		64	5320	15.99		17.00
		54	5270	16.47		17.00
		62	5310	12.90		13.00
802.11n-HT40 MCS0	52	5260	16.02	17.00	96.03	
		56	5280	16.04		17.00
		60	5300	16.06		17.00
		64	5320	15.84		17.00
802.11ac-VHT20 MCS0	56	5280	16.04	17.00	97.40	
		60	5300	16.06		17.00
		64	5320	15.84		17.00
		54	5270	16.43		17.00
802.11ac-VHT40 MCS0	62	5310	12.57	13.00	96.04	
		58	5290	12.33		12.50
		58	5290	12.33		12.50

5GHz WLAN						
Body-worn						
Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %	
5.3GHz WLAN	802.11a-6Mbps	52	5260	8.50	97.93	
		56	5280	8.50		
		60	5300	8.50		
		64	5320	8.50		
		52	5260	8.50		
		56	5280	8.50		
802.11n-HT20 MCS0	60	5300	8.50	97.79		
		64	5320		8.50	
		54	5270		7.70	
		62	5310		7.99	
802.11n-HT40 MCS0	52	5260	8.50	96.03		
		56	5280		8.50	
		60	5300		8.50	
		64	5320		8.50	
802.11ac-VHT20 MCS0	56	5280	8.50	97.40		
		60	5300		8.50	
		64	5320		8.50	
		54	5270		8.50	
802.11ac-VHT40 MCS0	62	5310	8.50	96.04		
		58	5290		8.00	
		58	5290		8.00	

5GHz WLAN						
Simultaneous-0mm						
Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %	
5.3GHz WLAN	802.11a-6Mbps	52	5260	16.00	97.93	
		56	5280	16.00		
		60	5300	16.00		
		64	5320	16.00		
		52	5260	16.00		
		56	5280	16.00		
802.11n-HT20 MCS0	60	5300	16.00	97.79		
		64	5320		16.00	
		54	5270		14.82	
		62	5310		12.90	
802.11n-HT40 MCS0	52	5260	16.00	96.03		
		56	5280		16.00	
		60	5300		16.00	
		64	5320		16.00	
802.11ac-VHT20 MCS0	56	5280	16.00	97.40		
		60	5300		16.00	
		64	5320		16.00	
		54	5270		16.00	
802.11ac-VHT40 MCS0	62	5310	13.00	96.04		
		58	5290		12.50	
		58	5290		12.50	

5GHz WLAN								
Full power & Head & Handheld								
Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %			
5.5GHz WLAN	802.11a-6Mbps	100	5500	17.45	18.50	97.93		
		116	5580	17.65	18.50			
		124	5620	17.43	18.50			
		132	5660	17.55	18.50			
		140	5700	15.36	16.00			
		144	5720	17.38	18.50			
		100	5500	17.74	18.50			
		116	5580	17.52	18.50			
		802.11n-HT20 MCS0	124	5620	17.43		18.50	97.79
				132	5660		17.34	
140	5700			13.40	14.00			
144	5720			17.25	18.50			
102	5510			15.24	16.00			
110	5550			17.82	18.50			
802.11n-HT40 MCS0	126	5630	17.19	18.50	96.03			
		134	5670	17.28		18.50		
		142	5710	17.56		18.50		
		100	5500	17.64		18.50		
		116	5580	17.42		18.50		
		124	5620	17.39		18.50		
802.11ac-VHT20 MCS0	132	5660	17.28	18.50	97.40			
		140	5700	13.16		14.00		
		144	5720	17.19		18.50		
		102	5510	14.83		15.00		
		110	5550	17.79		18.50		
		126	5630	17.64		18.50		
802.11ac-VHT40 MCS0	134	5670	16.95	18.50	96.04			
		142	5710	17.51		18.50		
		106	5530	13.09		14.00		
		122	5610	16.73		17.00		
		138	5690	16.14		17.00		
		100	5500	17.64		18.50		

5GHz WLAN							
Body-worn							
Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %		
5.5GHz WLAN	802.11a-6Mbps	100	5500	13.00	97.93		
		116	5580	13.00			
		124	5620	13.00			
		132	5660	13.00			
		140	5700	13.00			
		144	5720	13.00			
		100	5500	13.00			
		116	5580	13.00			
		802.11n-HT20 MCS0	124	5620		13.00	97.79
				132		5660	
140	5700			13.00			
144	5720			13.00			
102	5510			12.01			
110	5550			12.06			
802.11n-HT40 MCS0	126	5630	11.86	96.03			
		134	5670		11.75		
		142	5710		11.81		
		100	5500		13.00		
		116	5580		13.00		
		124	5620		13.00		
802.11ac-VHT20 MCS0	132	5660	13.00	97.40			
		140	5700		13.00		
		144	5720		13.00		
		102	5510		13.00		
		110	5550		13.00		
		126	5630		13.00		
802.11ac-VHT40 MCS0	134	5670	13.00	96.04			
		142	5710		13.00		
		106	5530		12.00		
		122	5610		12.00		
		138	5690		12.00		
		100	5500		13.00		

5GHz WLAN						
Simultaneous-0mm						
Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %	
5.5GHz WLAN	802.11a-6Mbps	100	5500	17.50	97.93	
		116	5580	17.50		
		124	5620	17.50		
		132	5660	17.50		
		140	5700	16.00		
		144	5720	17.50		
		100				



Appendix F. Supplemental Tuner Head & Body SAR Results

The results are shown as follows.

Head

Mode	Service/Modulation	Channel	Frequency (MHz)	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)																											
									Auto-Tune	0	6	12	18	24	30	36	42	48	54	60	66	72	78	84	90	96	102	108	114	120	126	132	138	143		
WCDMA V	RMC 12.2Kbps	4132	826.4	—	—	Right Cheek	0mm	0.487	0.533	0.026	0.253	0.221	0.056	0.376	0.270	0.014	0.367	0.217	0.029	0.427	0.335	0.012	0.357	0.177	0.014	0.398	0.280	0.005	0.260	0.104	0.005	0.297	0.166	0.256		
Full Power																																				
Mode	Service/Modulation	Channel	Frequency (MHz)	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)																											
LTE Band 12	QPSK	23095	711	1	0	Right Cheek	0mm	0.317	0.503	0.309	0.173	0.159	0.005	0.052	0.029	0.052	0.031	0.137	0.002	0.041	0.058	0.161	0.055	0.129	0.001	0.037	0.065	0.081	0.013	0.110	0.001	0.032	0.043			
Full Power																																				
Mode	Service/Modulation	Channel	Frequency (MHz)	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)																											
LTE Band 13	QPSK	23030	768	1	0	Right Cheek	0mm	0.369	0.403	0.138	0.343	0.370	0.132	0.159	0.181	0.066	0.222	0.181	0.058	0.082	0.159	0.049	0.187	0.184	0.064	0.077	0.196	0.025	0.096	0.090	0.026	0.043	0.180			
Full Power																																				
Mode	Service/Modulation	Channel	Frequency (MHz)	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)																											
LTE Band 26	QPSK	26865	831.5	1	0	Right Cheek	0mm	0.502	0.558	0.166	0.042	0.408	0.280	0.058	0.494	0.164	0.027	0.380	0.284	0.006	0.478	0.145	0.017	0.342	0.256	0.014	0.406	0.081	0.008	0.270	0.140	0.004	0.327			
Full Power																																				
Mode	Service/Modulation	Channel	Frequency (MHz)	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)																											
CDMA BC0	RC3 SO55	884	838.0			Right Cheek	0mm	0.567	0.627	0.260	0.058	0.420	0.351	0.080	0.554	0.322	0.031	0.530	0.439	0.044	0.544	0.350	0.057	0.492	0.425	0.055	0.512	0.125	0.010	0.427	0.234	0.009	0.443			
Full Power																																				
Mode	Service/Modulation	Channel	Frequency (MHz)	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)																											
CDMA BC10	RC3 SO55	580	820.5			Right Cheek	0mm	0.549	0.603	0.286	0.462	0.511	0.473	0.240	0.536	0.011	0.105	0.483	0.452	0.193	0.333	0.305	0.064	0.497	0.424	0.107	0.293	0.156	0.093	0.373	0.248	0.045	0.043			
Full Power																																				

Body

Mode	Service/Modulation	Frequency (MHz)	Channel	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)																											
									0	6	12	18	24	30	36	42	48	54	60	66	72	78	84	90	96	102	108	114	120	126	132	138				
WCDMA V	RMC 12.2Kbps	4233	846.6	—	—	Front	5mm	1.180	1.520	0.056	0.926	0.453	0.049	0.725	0.381	0.036	1.029	0.566	0.022	0.894	0.423	0.024	1.078	0.441	0.011	1.038	0.398	0.012	1.124	0.252	0.003	0.708	0.180			
Mode	Service/Modulation	Frequency (MHz)	Channel	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)																											
LTE Band 12	QPSK	23095	707.5	1	0	Back	5mm	1.010	1.270	1.109	1.102	0.537	0.336	0.705	0.654	0.808	0.412	1.252	0.667	1.203	1.047	1.184	1.156	1.162	1.026	1.035	0.998	0.636	0.648	1.204	0.645	0.659	0.655			
Mode	Service/Modulation	Frequency (MHz)	Channel	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)																											
LTE Band 13	QPSK	23230	782	1	0	Front	5mm	1.050	1.380	0.456	1.363	1.351	0.691	0.891	0.962	0.275	1.105	0.914	0.415	0.527	0.959	0.206	0.987	0.779	0.279	0.393	0.995	0.092	0.568	0.479	0.118	0.289	0.881			
Mode	Service/Modulation	Frequency (MHz)	Channel	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)																											
LTE Band 26	QPSK	26965	841.5	1	0	Front	5mm	1.130	1.470	0.231	0.032	1.112	0.538	0.098	0.712	0.799	0.043	1.237	0.636	0.037	0.831	0.453	0.029	1.102	0.531	0.015	1.287	0.358	0.014	1.084	0.179	0.002	1.096			
Mode	Service/Modulation	Frequency (MHz)	Channel	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)																											
CDMA BCO	RC3 5032 (F+SCH)	777	848.31			Front	5mm	1.110	1.470	0.751	0.085	1.128	0.734	0.086	1.041	1.091	0.065	1.066	0.882	0.101	1.034	0.837	0.089	0.864	0.834	0.103	0.789	0.864	0.101	0.888	0.813	0.078	0.762			
Mode	Service/Modulation	Frequency (MHz)	Channel	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)																											
CDMA BC10	RTAP 153.6Kbps	684	823.1			Front	5mm	1.050	1.370	0.564	0.279	0.978	0.912	0.324	1.020	0.912	0.345	1.067	0.913	0.345	0.864	0.886	0.410	1.016	0.995	0.637	0.794	0.546	0.389	0.848	0.789	0.345	0.616			

Verified SAR for higher than 1.2W/Kg

Mode	Service/Modulation	Channel	Frequency (MHz)	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)																					
									Auto-Tune	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
										0.056	0.078	0.188	0.201	0.668	0.753	0.926	0.928	0.905	0.049	0.104	0.184	0.453	0.659	0.758	0.827	0.804	0.829	0.049	0.089	0.168
WCDMA V	RMC 12.2Kbps	4233	846.6			Front	Simm	1.18	1.520	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
										0.421	0.589	0.645	0.725	0.829	0.787	0.046	0.080	0.141	0.381	0.568	0.615	0.713	0.675	0.691	0.036	0.060	0.191	0.633	0.912	0.994
										1.029	1.015	0.774	0.034	0.065	0.165	0.566	0.955	0.951	0.868	0.903	0.676	0.022	0.045	0.123	0.436	0.695	0.801	0.894	0.856	0.642
										63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83
										0.019	0.042	0.115	0.423	0.692	0.794	0.786	0.863	0.579	0.024	0.046	0.118	0.411	0.813	0.877	1.078	1.025	0.688	0.017	0.037	0.094
										84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104
										0.441	0.774	0.877	0.958	0.981	0.662	0.011	0.026	0.079	0.401	0.817	0.919	1.038	1.121	0.664	0.010	0.023	0.079	0.398	0.796	0.929
										105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125
										0.974	0.885	0.596	0.012	0.027	0.073	0.294	0.747	0.958	1.124	1.063	0.591	0.008	0.016	0.053	0.252	0.568	0.747	0.903	0.651	0.391
										126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143			
										0.003	0.008	0.030	0.166	0.434	0.525	0.708	0.703	0.423	0.002	0.006	0.030	0.180	0.479	0.677	0.815	0.797	0.375			

Mode	Service/Modulation	Channel	Frequency (MHz)	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)																					
									Auto-Tune	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
										1.211	1.109	0.689	1.124	1.202	0.551	1.057	1.102	0.487	0.473	0.913	0.541	0.347	0.537	0.525	0.332	0.317	0.355	0.334	0.336	0.315
LTE Band 12	QPSK	23095	707.5	1	0	Back	Simm	1.01	1.270	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
										0.726	0.674	0.708	0.850	0.705	0.709	0.693	0.686	0.681	0.842	0.654	0.674	0.662	1.213	0.659	0.657	0.808	0.678	1.163	0.664	0.656
										0.426	0.412	0.436	0.631	0.712	1.217	0.654	1.252	0.834	0.862	0.663	1.209	0.629	0.667	0.816	0.762	0.608	1.153	0.614	1.203	0.702
										63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83
										1.097	0.953	1.053	1.023	1.047	1.021	1.251	1.036	1.026	0.988	1.184	1.008	1.159	0.996	0.968	0.984	1.156	1.215	1.066	1.076	1.047
										84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104
										1.034	1.162	1.025	1.169	1.008	1.172	1.041	1.026	0.996	1.175	1.027	1.197	1.057	1.035	1.023	1.172	1.003	1.187	1.185	0.998	0.981
										105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125
										0.248	0.656	0.626	0.857	0.636	0.665	0.645	1.232	0.837	1.213	0.648	0.629	0.847	0.634	0.844	0.825	1.204	0.614	0.648	0.837	0.833
										126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143			
										0.837	0.645	1.171	0.832	0.846	0.807	1.229	0.659	0.836	0.628	0.643	0.635	0.668	0.655	0.821	0.674	0.835	0.663			

Mode	Service/Modulation	Channel	Frequency (MHz)	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)																					
									Auto-Tune	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
										0.173	0.265	0.456	0.782	0.998	1.054	1.173	1.198	1.363	0.337	0.528	0.844	1.227	1.335	1.368	1.327	1.306	1.307	0.173	0.322	0.691
LTE Band 13	QPSK	23230	782	1	0	Bottom side	Simm	1.05	1.380	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
										1.254	1.338	1.258	1.188	1.116	0.891	0.094	0.171	0.427	0.918	1.014	0.962	0.923	0.893	0.671	0.086	0.144	0.275	0.541	0.721	0.816
										0.981	0.946	1.105	0.144	0.272	0.432	0.799	0.759	0.914	0.747	0.823	0.685	0.056	0.138	0.415	1.019	1.182	1.066	0.892	0.797	0.527
										63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83
										0.033	0.069	0.259	1.021	1.161	0.959	0.723	0.618	0.330	0.062	0.104	0.206	0.422	0.598	0.651	0.763	0.929	0.987	0.108	0.215	0.445
										84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104
										0.724	0.768	0.779	0.798	0.743	0.667	0.026	0.072	0.279	1.187	1.155	0.905	0.758	0.660	0.993	0.009	0.027	0.128	0.945	1.165	0.995
										105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125
										0.620	0.596	0.328	0.029	0.048	0.092	0.213	0.294	0.341	0.394	0.459	0.568	0.047	0.100	0.232	0.439	0.482	0.479	0.464	0.452	0.422
										126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143			
										0.009	0.026	0.118	0.715	0.778	0.685	0.492	0.457	0.289	0.003	0.009	0.049	0.573	1.061	0.881	0.562	0.457	0.217			

(Antenna #0, Slave ID=6)

Mode	Service/Modulation	Channel	Frequency (MHz)	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)																					
									Auto-Tune	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
										0.068	0.111	0.218	0.231	0.773	0.923	1.112	1.116	1.202	0.032	0.043	0.062	0.530	0.738	0.912	1.112	1.230	1.350	0.090	0.138	0.279
LTE Band 26	QPSK	26965	841.5	1	0	Front	Simm	1.13	1.470	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
										0.538	0.680	0.771	0.861	1.098	0.932	0.098	0.091	0.213	0.493	0.677	0.712	0.513	0.832	1.046	0.043	0.083	0.261	0.799	1.112	1.207
										1.138	1.219	1.103	0.043	0.273	0.386	0.799	1.121	1.201	1.237	1.322	1.113	0.039	0.089	0.234	0.636	0.793	0.921	1.080	0.968	1.029
										63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83
										0.037	0.063	0.168	0.463	0.736	0.821	0.831	1.173	0.621	0.035	0.102	0.168	0.453	0.921	1.032	1.194	1.123	1.104	0.029	0.063	0.137
										84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104
										0.533	0.836	0.921	1.102	1.236	1.034	0.019	0.043	0.096	0.531	0.962	1.103	1.137	1.276	1.040	0.015	0.035	0.092	0.421	0.836	1.138
										105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125
										1.287	1.102	0.971	0.017	0.049	0.124	0.358	0.849	1.083	1.125	1.093	0.894	0.014	0.013	0.025	0.079	0.386	0.897	1.084	0.823	0.944
										126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143			
										0.006	0.012	0.056	0.179	0.697	0.837	1.173	1.227	0.790	0.002	0.009	0.048	0.460	0.766	0.921	1.096	0.945	0.713			

Mode	Service/Modulation	Channel	Frequency (MHz)	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)																					
									Auto-Tune	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
										1.130	0.751	1.031	0.725	0.751	0.807	0.697	1.133	1.108	0.057	0.085	0.269	0.675	0.582	0.885	1.061	1.128	0.904	0.049	0.086	0.172
CDMA2000 BC0	RC3 SO32 (F+SCH)	777	848.31			Front	Simm	1.11	1.470	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
										0.536	0.734	0.823	0.897	0.696	1.029	0.037	0.086	0.158	0.527	0.682	0.774	0.627	1.041	0.896	0.037	0.069	0.378	0.629	1.091	1.203
										1.337	1.128	0.897	0.013	0.065	0.176															