

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



Add: No.51 Xueyuan Road, Haidian District, Beijing, 100191, China
Tel: +86-10-62304633-2512 Fax: +86-10-62304633-2504
E-mail: cttl@chinattl.com [Http://www.chinattl.cn](http://www.chinattl.cn)

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%

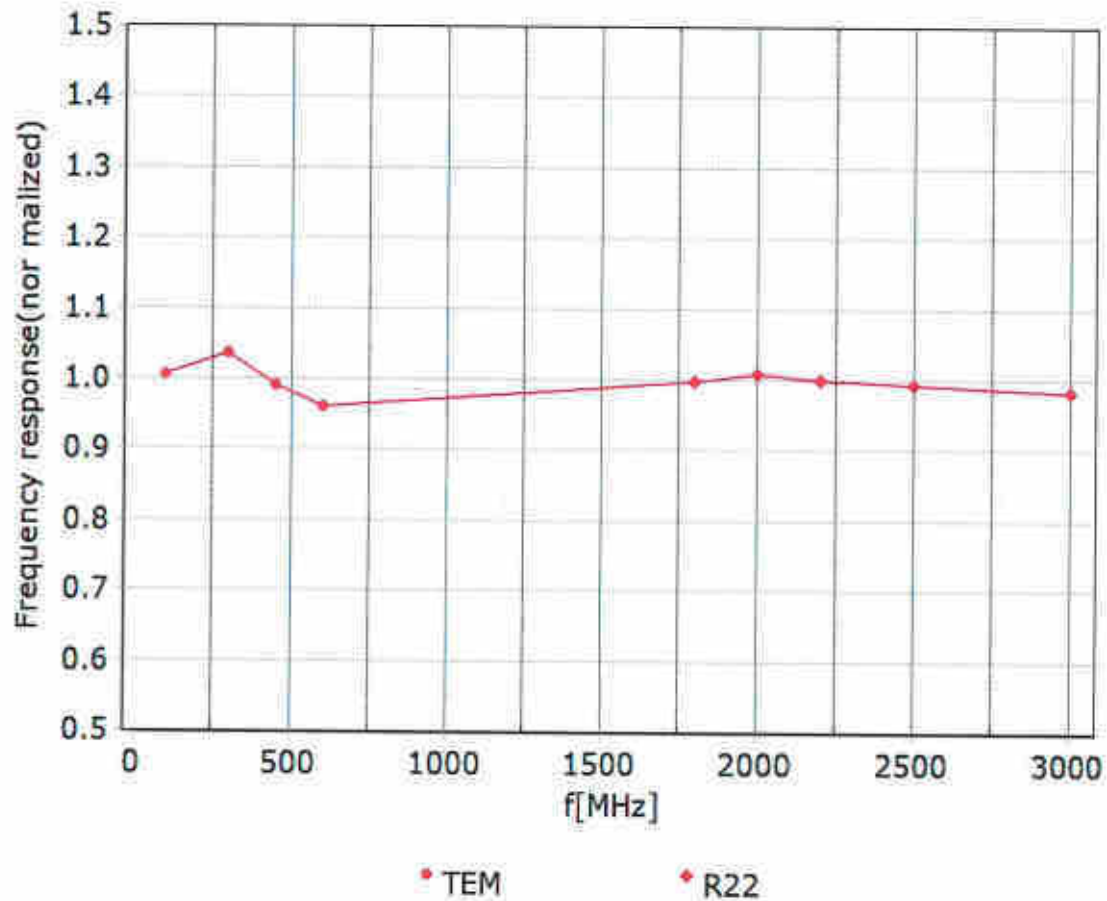
^C Frequency validity above 300 MHz of ±100MHz only applies for DASY v4.4 and higher (Page 2), else it is restricted to ±50MHz. The uncertainty is the RSS of ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ± 10, 25, 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: $\pm 7.4\%$ ($k=2$)

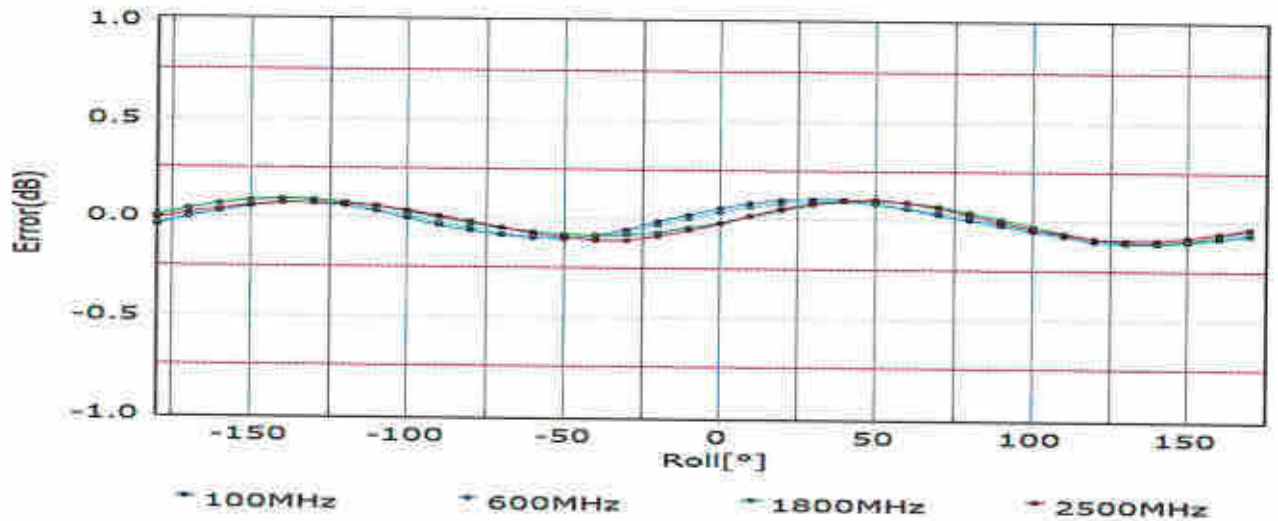
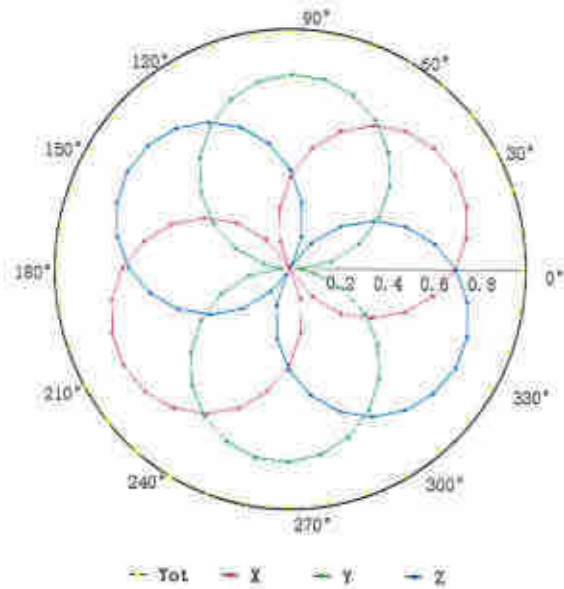
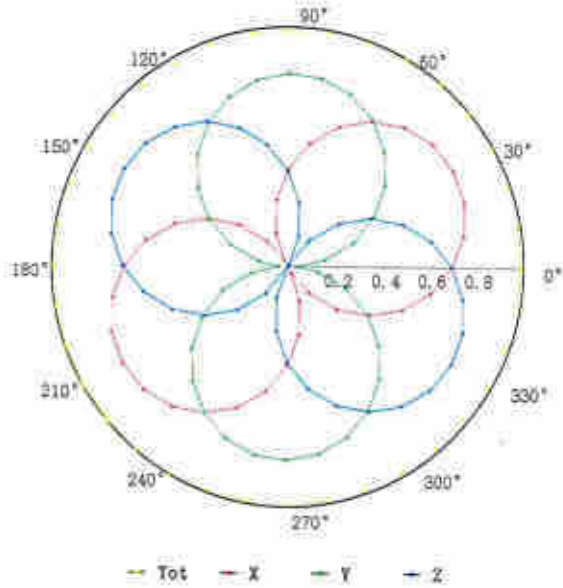


Add: No.51 Xueyuan Road, Haidian District, Beijing, 100191, China
Tel: +86-10-62304633-2512 Fax: +86-10-62304633-2504
E-mail: ctl@chinatl.com <http://www.chinatl.cn>

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

f=600 MHz, TEM

f=1800 MHz, R22

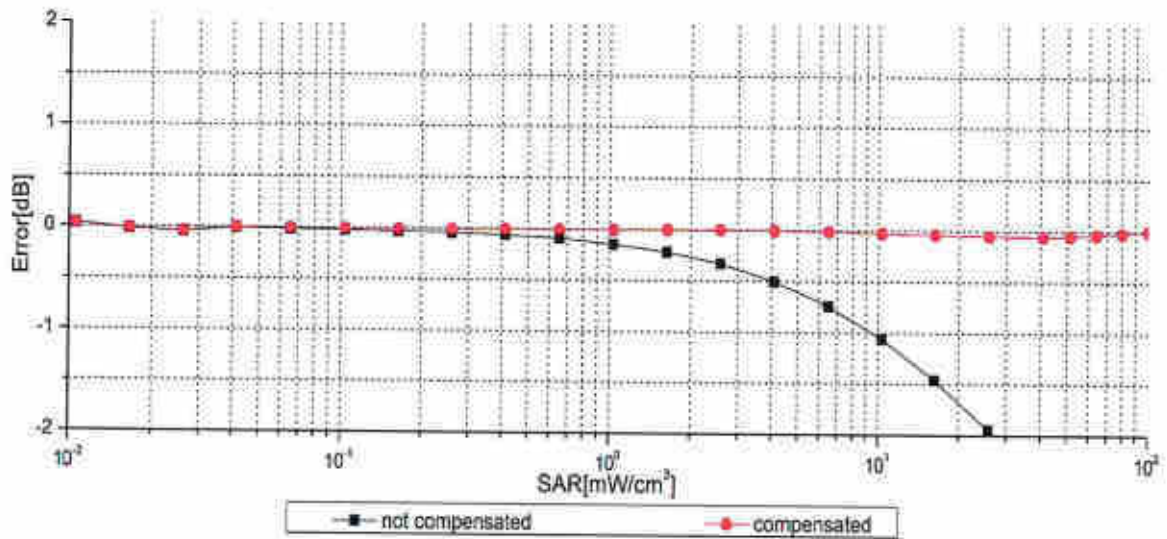
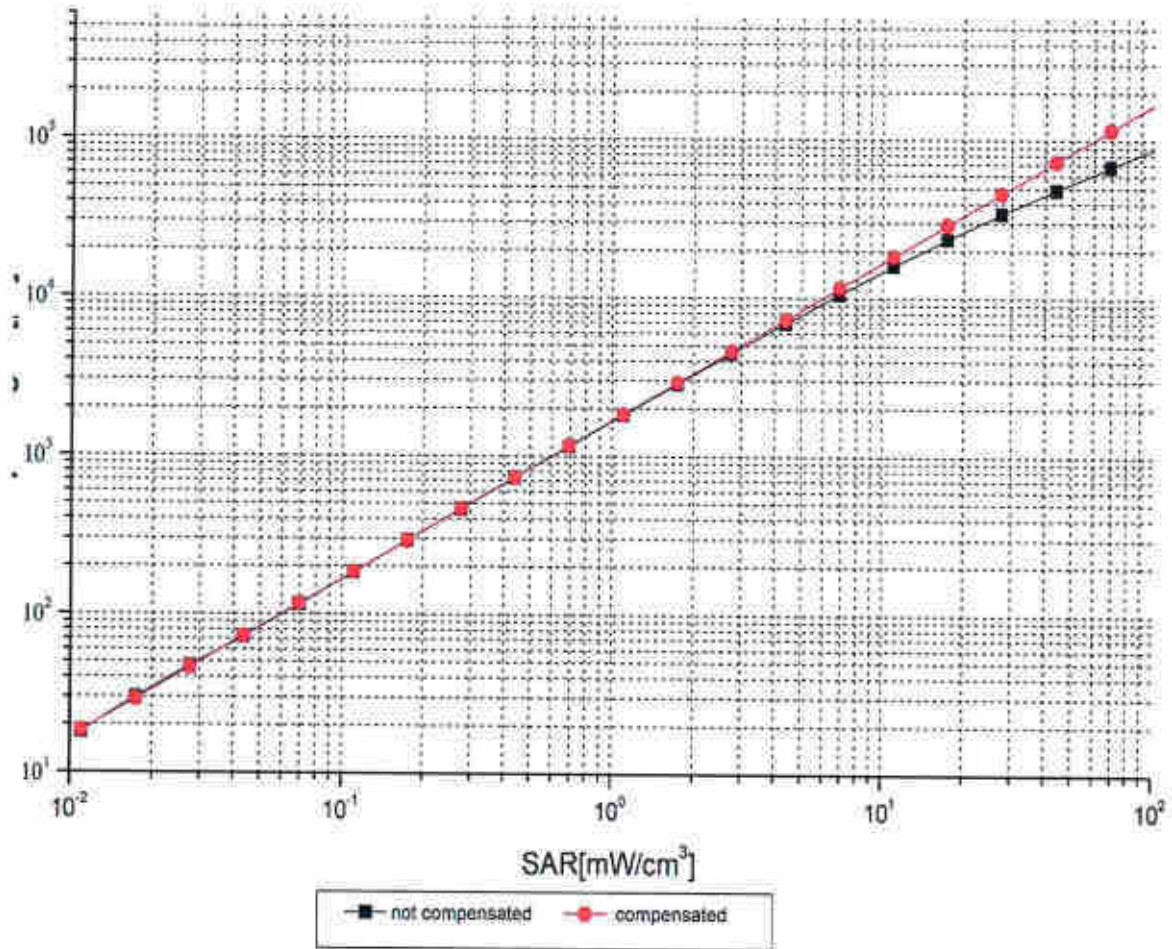


Uncertainty of Axial Isotropy Assessment: $\pm 1.2\%$ ($k=2$)



Add: No.51 Xueyuan Road, Haidian District, Beijing, 100191, China
Tel: +86-10-62304633-2512 Fax: +86-10-62304633-2504
E-mail: cttl@chinattl.com [Http://www.chinattl.cn](http://www.chinattl.cn)

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

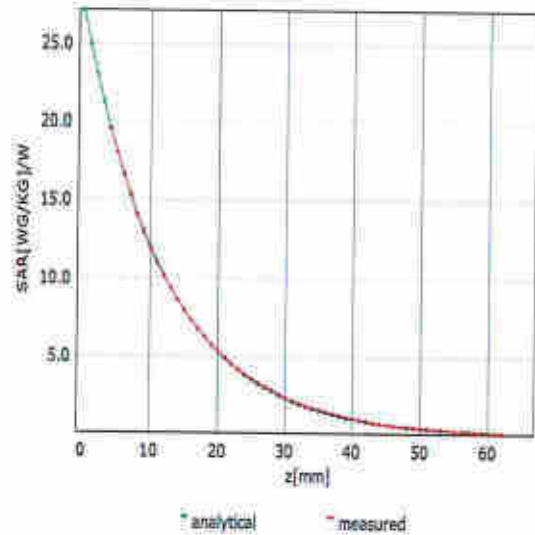
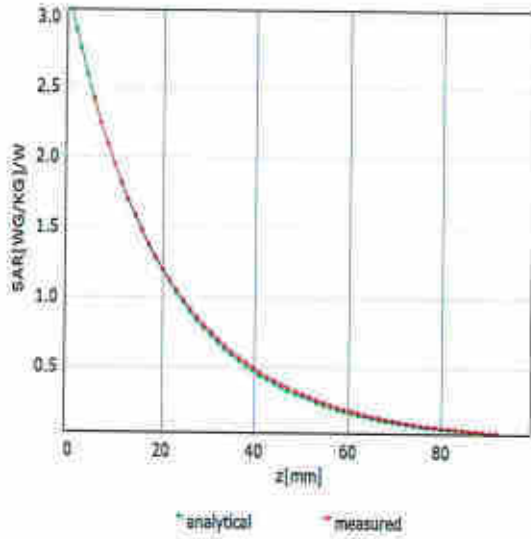


Uncertainty of Linearity Assessment: $\pm 0.9\%$ ($k=2$)

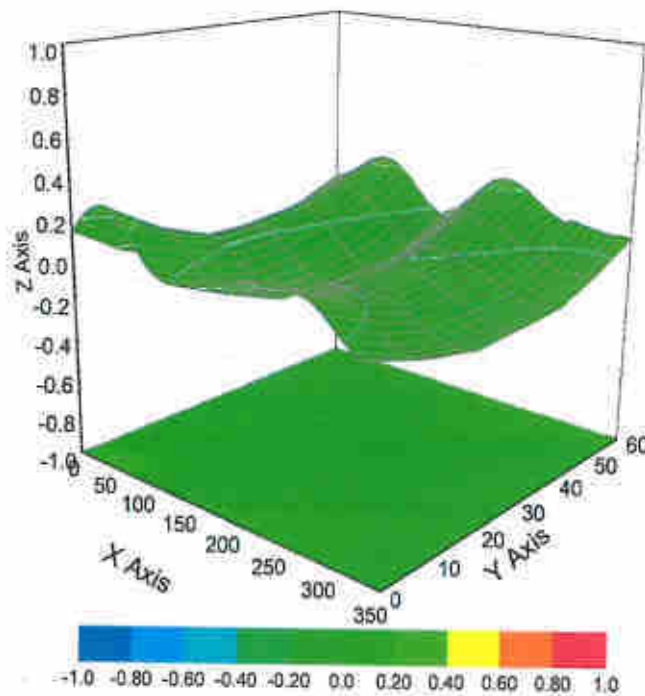
Conversion Factor Assessment

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



Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA
Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 0108**

Client **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

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



Accredited by the Swiss Accreditation Service (SAS)

Accreditation No.: **SCS 0108**

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

Glossary:

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

Calibration is Performed According to the Following Standards:

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

Methods Applied and Interpretation of Parameters:

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

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	± 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	± 3.3 %	± 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

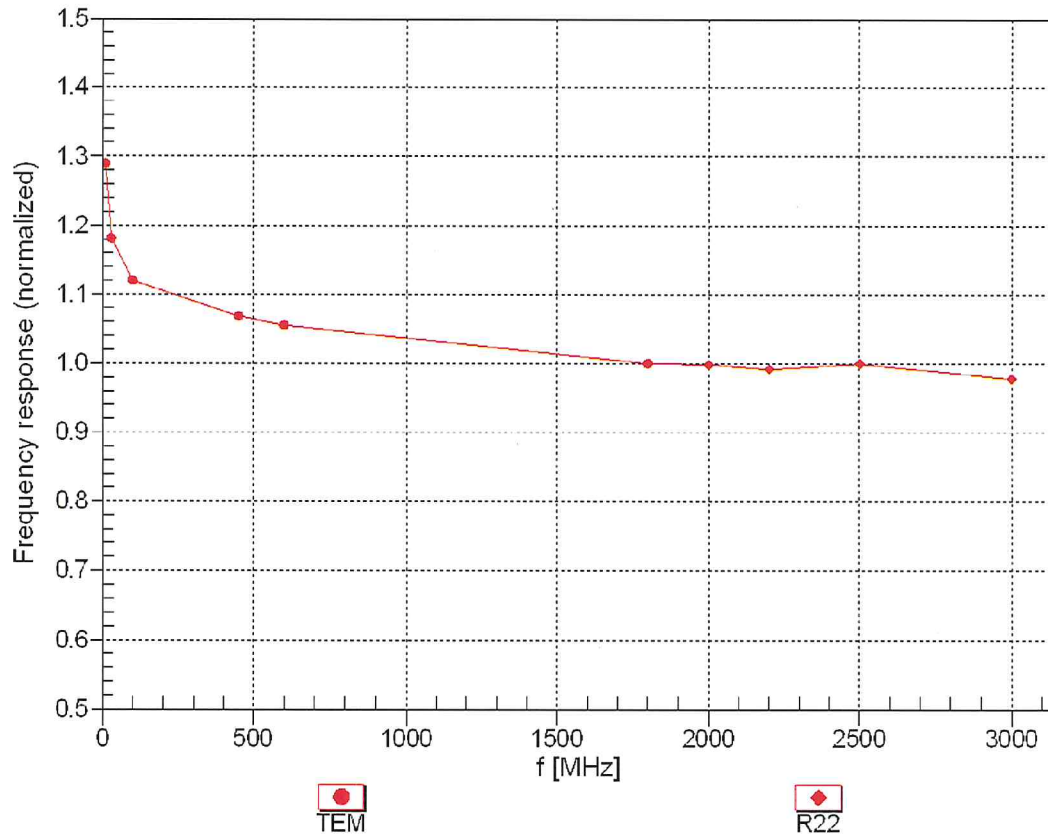
f (MHz) ^C	Relative Permittivity ^F	Conductivity (S/m) ^F	ConvF X	ConvF Y	ConvF Z	Alpha ^G	Depth (mm) ^G	Unc (k=2)
750	41.9	0.89	10.58	10.58	10.58	0.57	0.80	± 12.0 %
835	41.5	0.90	10.31	10.31	10.31	0.38	0.93	± 12.0 %
900	41.5	0.97	10.16	10.16	10.16	0.40	0.88	± 12.0 %
1750	40.1	1.37	8.60	8.60	8.60	0.27	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.

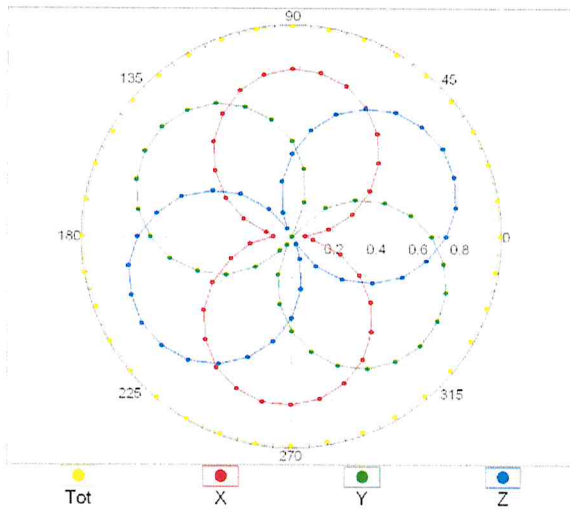
Frequency Response of E-Field (TEM-Cell:ifi110 EXX, Waveguide: R22)



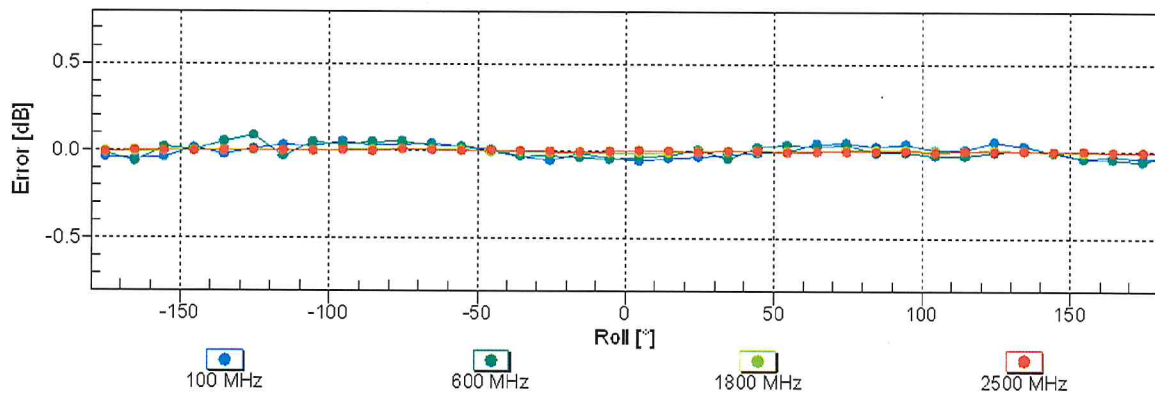
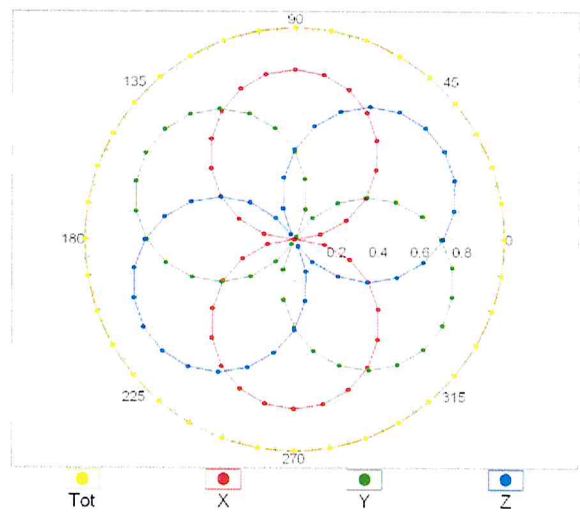
Uncertainty of Frequency Response of E-field: $\pm 6.3\%$ (k=2)

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

f=600 MHz,TEM

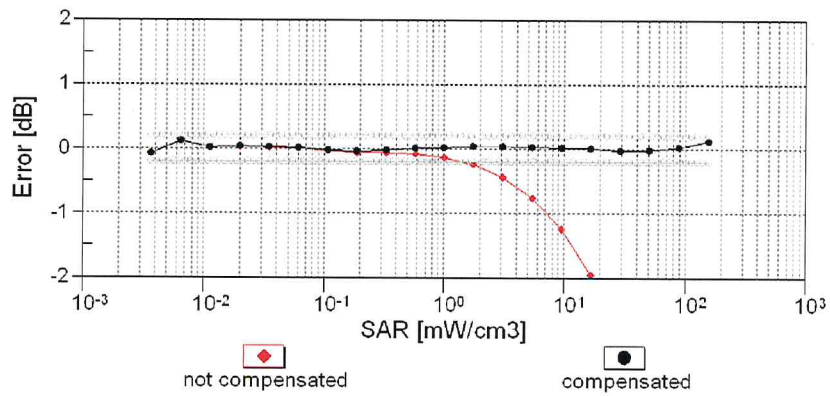
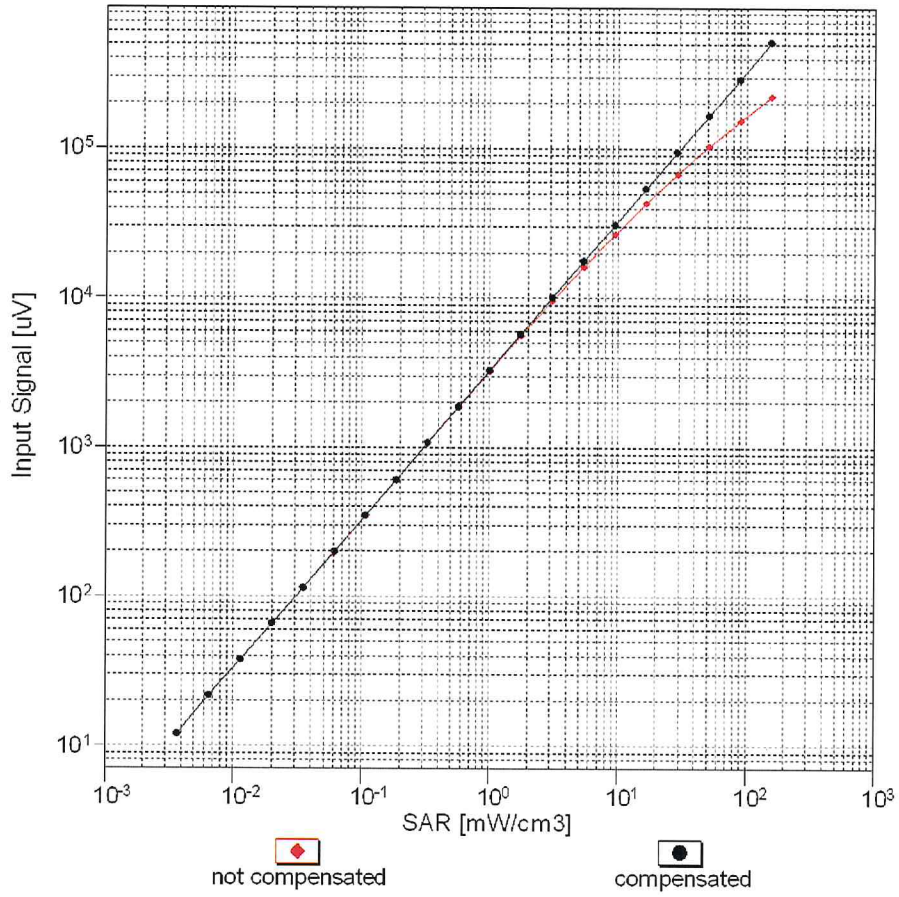


f=1800 MHz,R22



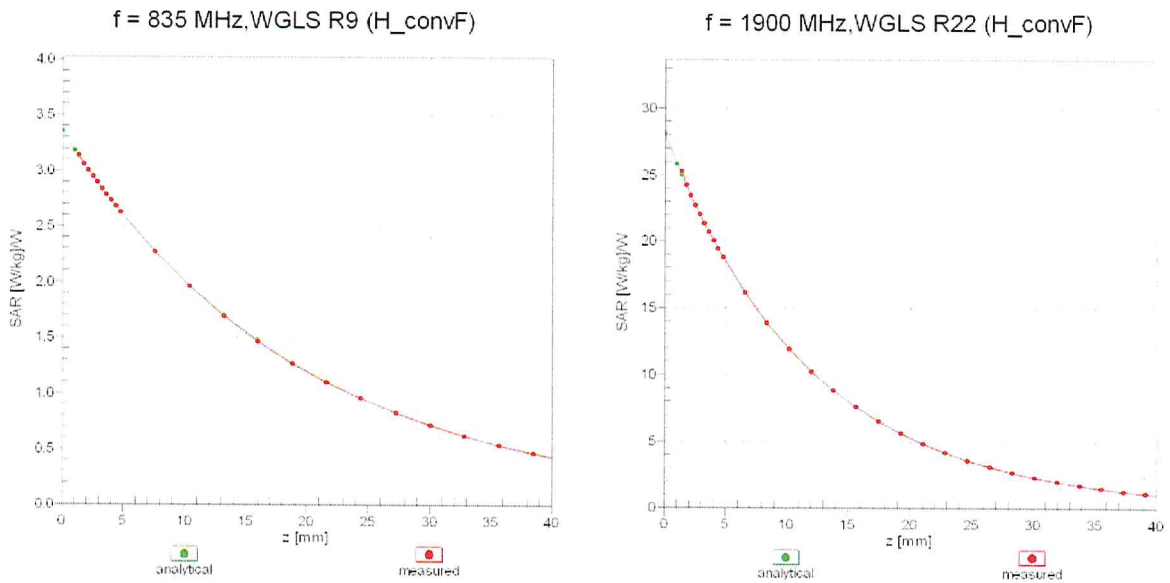
Uncertainty of Axial Isotropy Assessment: $\pm 0.5\%$ ($k=2$)

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

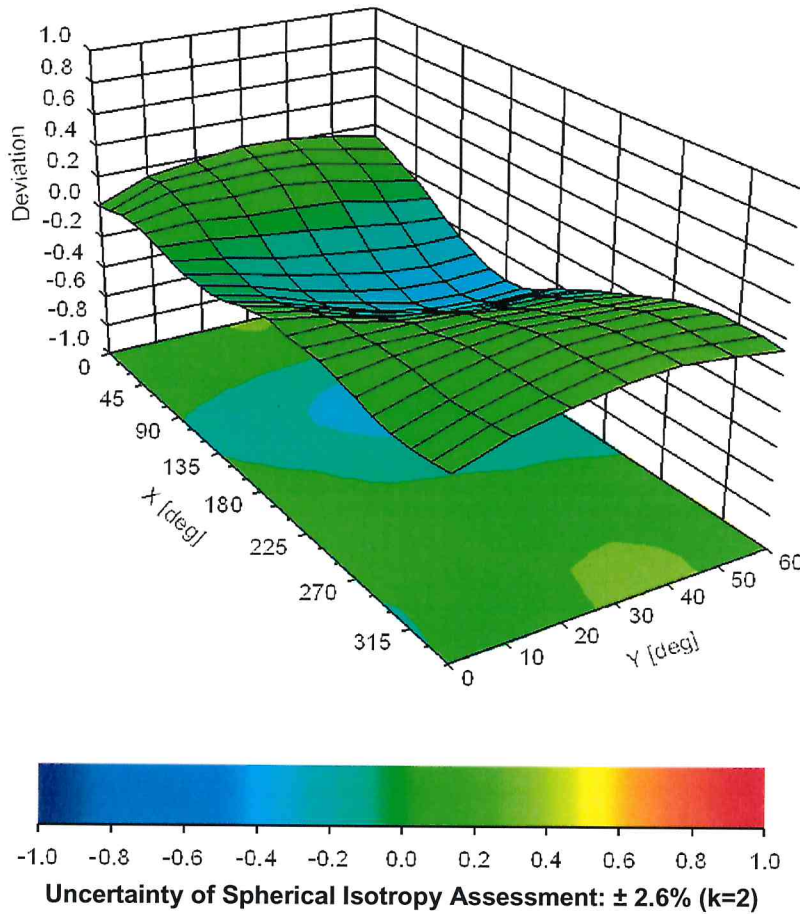


Uncertainty of Linearity Assessment: $\pm 0.6\%$ (k=2)

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	
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	
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	4162		4233
Rx Channel	9662	9800	9938		1537	1638	1738		4357	4407	4459		
Frequency (MHz)	1852.4	1890	1907.6		1712.4	1722.6	1759.6		435.4	436.4	446.6		
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 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	HSRPA 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	HSRPA 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	HSRPA 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	HSRPA 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-HSRPA 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-HSRPA 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-HSRPA 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-HSRPA 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	HSRPA 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	HSRPA 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	HSRPA 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	HSRPA 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	HSRPA Subtest-5	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	
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 163.6Kbps	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 2 (1900MHz Band) Part 24E										
BW (MHz)	Modulation	RB Size	RB Offset	Power Ch./F.Freq.	Power Ch./F.Freq.	Power Ch./F.Freq.	Turn-up (dB)	MPR (dB)		
Channel										
Frequency (MHz)										
20	QPSK	1	0	23.21	23.27	23.23				
20	QPSK	1	49	23.09	23.15	23.22			24	0
20	QPSK	1	99	23.12	23.12	23.21				
20	QPSK	1	149	23.21	23.21	23.21				
20	QPSK	50	24	22.52	22.59	21.95			23	1
20	QPSK	50	50	22.54	21.97	22.05				
20	QPSK	100	0	22.52	22.56	22.28				
20	QPSK	100	0	22.52	22.56	22.28				
20	QPSK	1	49	22.38	21.96	22.01			23	1
20	QPSK	1	99	22.24	22.19	22.03				
20	QPSK	50	0	21.25	21.53	21.45				
20	QPSK	50	24	21.36	21.35	21.24				
20	QPSK	50	50	21.22	21.26	21.41			22	2
20	QPSK	100	0	21.47	21.29	21.45				
20	QPSK	1	0	21.37	21.37	21.48				
20	QPSK	1	49	21.33	21.38	21.37			22	2
20	QPSK	1	99	21.15	21.26	21.45				
20	QPSK	50	0	20.03	19.82	19.77				
20	QPSK	50	24	20.03	19.82	19.77				
20	QPSK	50	50	19.74	19.83	19.84			21	3
20	QPSK	100	0	19.84	19.83	19.84				
Channel										
Frequency (MHz)										
15	QPSK	1	0	23.14	23.21	23.26				
15	QPSK	1	37	23.24	23.22	23.14			24	0
15	QPSK	1	74	23.21	23.21	23.21				
15	QPSK	36	0	22.35	22.11	21.95				
15	QPSK	36	20	21.66	22.05	22.08			23	1
15	QPSK	36	20	21.66	22.05	22.08				
15	QPSK	75	0	22.19	22.00	22.03				
15	QPSK	75	0	22.19	22.00	22.03				
15	QPSK	1	0	22.51	22.24	22.50				
15	QPSK	1	37	22.25	22.41	22.12			23	1
15	QPSK	1	74	22.42	22.19	22.45				
15	QPSK	36	0	21.21	21.40	21.20				
15	QPSK	36	20	21.46	21.35	21.26			22	2
15	QPSK	36	20	21.46	21.35	21.26				
15	QPSK	75	0	21.37	21.36	21.33				
15	QPSK	75	0	21.37	21.36	21.33				
15	QPSK	1	0	21.30	21.39	21.45				
15	QPSK	1	37	21.20	21.15	21.36			22	2
15	QPSK	74	0	19.78	19.91	19.74				
15	QPSK	36	20	19.94	19.80	19.80			21	3
15	QPSK	75	0	19.82	19.83	19.75				
15	QPSK	75	0	19.82	19.83	19.75				
Channel										
Frequency (MHz)										
10	QPSK	1	0	22.15	22.28	22.09				
10	QPSK	1	25	22.18	22.18	22.09			24	0
10	QPSK	1	49	22.15	22.15	22.11				
10	QPSK	25	0	22.28	22.20	22.14				
10	QPSK	25	0	22.28	22.20	22.14				
10	QPSK	50	24	22.34	22.22	22.22			23	1
10	QPSK	50	24	22.34	22.22	22.22				
10	QPSK	100	0	22.10	22.20	22.19				
10	QPSK	100	0	22.10	22.20	22.19				
10	QPSK	1	49	22.04	22.04	22.05			23	1
10	QPSK	1	99	22.04	22.04	22.05				
10	QPSK	50	0	21.25	21.25	21.25				
10	QPSK	50	24	21.34	21.32	21.27			22	2
10	QPSK	50	24	21.34	21.32	21.27				
10	QPSK	100	0	21.30	21.29	21.24				
10	QPSK	100	0	21.30	21.29	21.24				
10	QPSK	1	49	21.21	21.38	21.36			22	2
10	QPSK	1	99	21.11	21.11	21.07				
10	QPSK	50	0	20.04	20.13	20.11			21	3
10	QPSK	50	24	20.05	20.11	20.22				
10	QPSK	50	24	20.05	20.11	20.22				
10	QPSK	100	0	20.07	20.19	20.07				
Channel										
Frequency (MHz)										
5	QPSK	1	0	22.61	22.69	22.79				
5	QPSK	1	12	22.68	22.64	22.67			24	0
5	QPSK	1	24	22.67	22.62	22.67				
5	QPSK	12	0	22.08	22.14	22.07				
5	QPSK	12	0	22.08	22.14	22.07				
5	QPSK	12	13	21.96	22.07	22.08			23	1
5	QPSK	25	0	22.03	22.15	22.13				
5	QPSK	25	0	22.03	22.15	22.13				
5	QPSK	50	0	22.03	22.15	22.13				
5	QPSK	50	24	22.30	22.22	22.26			23	1
5	QPSK	50	24	22.30	22.22	22.26				
5	QPSK	100	0	21.25	21.25	21.25				
5	QPSK	100	0	21.25	21.25	21.25				
5	QPSK	1	49	21.12	21.31	21.31			23	1
5	QPSK	1	99	21.12	21.31	21.31				
5	QPSK	50	0	20.04	20.13	20.11			21	3
5	QPSK	50	24	20.05	20.11	20.22				
5	QPSK	50	24	20.05	20.11	20.22				
5	QPSK	100	0	20.07	20.19	20.07				
Channel										
Frequency (MHz)										
3	QPSK	1	0	23.10	23.02	23.21				
3	QPSK	1	8	23.24	23.18	23.00			24	0
3	QPSK	1	14	23.17	23.04	23.15				
3	QPSK	8	0	22.30	22.13	22.05				
3	QPSK	8	4	22.22	22.02	22.04			23	1
3	QPSK	8	4	22.22	22.02	22.04				
3	QPSK	15	0	22.24	22.35	22.11				
3	QPSK	15	0	22.24	22.35	22.11				
3	QPSK	1	0	22.18	22.12	22.18				
3	QPSK	1	8	22.10	22.29	22.12			23	1
3	QPSK	1	14	22.02	22.12	22.09				
3	QPSK	8	0	21.48	21.39	21.35				
3	QPSK	8	4	21.45	21.35	21.31			22	2
3	QPSK	8	7	21.41	21.42	21.34				
3	QPSK	1	0	21.41	21.37	21.28				
3	QPSK	1	0	21.29	21.25	21.08				
3	QPSK	1	8	21.18	21.15	21.11			22	2
3	QPSK	1	14	21.30	21.37	21.03				
3	QPSK	8	0	19.77	19.72	19.72				
3	QPSK	8	4	19.79	19.80	19.73			21	3
3	QPSK	8	7	19.86	19.76	19.78				
3	QPSK	15	0	19.89	19.72	19.85				
Channel										
Frequency (MHz)										
1.4	QPSK	1	0	23.20	23.10	23.10				
1.4	QPSK	1	5	23.15	23.20	23.19			24	0
1.4	QPSK	3	0	23.19	23.25	23.11				
1.4	QPSK	3	0	23.19	23.25	23.11				
1.4	QPSK	3	3	23.21	23.25	23.15				
1.4	QPSK	6	0	22.28	22.29	22.14			23	1
1.4	QPSK	6	0	22.40	22.48	22.38				
1.4	QPSK	1	0	22.61	22.56	22.69				
1.4	QPSK	1	5	22.61	22.56	22.69			23	1
1.4	QPSK	3	0	22.30	22.19	22.13				
1.4	QPSK	3	3	21.95	22.07	22.05				
1.4	QPSK	6	0	21.02	21.10	21.04			22	2
1.4	QPSK	6	0	21.31	21.27	21.25				
1.4	QPSK	1	0	21.36	21.36	21.15			24	0
1.4	QPSK	1	5	21.16	21.18	20.99				
1.4	QPSK	3	0	21.14	21.02	20.96			22	2
1.4	QPSK	3	1	21.07	21.06	21.04				
1.4	QPSK	6	0	20.07	21.07	20.79				
1.4	QPSK	6	0	19.91	19.78	19.75			21	3

Band 4 (AWS Band) Part 27L (only on channel required)										
BW (MHz)	Modulation	RB Size	RB Offset	Power Ch./F.Freq.	Power Ch./F.Freq.	Power Ch./F.Freq.	Turn-up (dB)	MPR (dB)		
Channel										
Frequency (MHz)										
20	QPSK	1	0	22.04	22.05	22.88				
20	QPSK	1	49	22.36	23.00	23.07			24	0
20	QPSK	1	99	22.23	22.34	22.22				
20	QPSK	50	0	22.23	22.14	22.21			23	1
20	QPSK	50	50	22.07	22.18	22.12				
20	QPSK	100	0	22.12	22.12	22.21				
20	QPSK	100	0	22.06	22.09	22.85				
20	QPSK	1	49	22.48	22.44	22.58			23	1
20	QPSK	1	99	22.63	22.64	22.63				
20	QPSK	50	0	21.25	21.28	21.22				
20	QPSK	50	24	21.13	21.15	21.19			22	2
20	QPSK	50	50	21.10	21.17	21.13				
20	QPSK	100	0	21.15	21.14	21.24				
20	QPSK	1	0	21.47	21.54	21.48				
20	QPSK	1	49	21.46	21.41	21.43			22	2
20	QPSK	1	99	21.59	21.48	21.69				
20	QPSK	50	0	20.12	20.10	20.07				
20	QPSK	50	24	20.19	20.00	20.27			21	3
20	QPSK	50	50	20.12	20.10	20.12				
20	QPSK	100	0	20.13	20.09	20.12				
Channel										
Frequency (MHz)										
15	QPSK	1	0	22.28	22.04					



Band 12 (700MHz Low Band) Part 27F(only on channel required)										
BW (MHz)	Modulation	RB Size	RB Offset	Power Tx / Freq.	Power Rx / Freq.	Power Thresh / Freq.	Time-up Int. (dBm)	MFR (dB)		
Channel										
Frequency (MHz)										
10	QPSK	1	0	23.98	23.98	23.98			24	0
10	QPSK	1	25	23.03	22.98	22.99				
10	QPSK	1	49	23.12	23.11	23.12				
10	QPSK	5	0	22.14	22.12	22.12				
10	QPSK	25	12	22.03	21.95	22.08			23	1
10	QPSK	25	25	22.01	21.95	22.10				
10	QPSK	50	0	22.43	22.47	22.54				
10	16QAM	1	0	22.43	22.47	22.54				
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	21.05	21.00	21.02				
10	16QAM	50	0	21.01	21.00	21.00				
10	8QAM	1	0	21.31	21.47	21.34				
10	8QAM	1	25	21.25	21.26	21.27			22	2
10	8QAM	1	49	21.38	21.18	21.27				
10	8QAM	5	0	19.98	19.72	19.99				
10	8QAM	25	12	19.71	19.74	19.77			21	3
10	8QAM	25	25	19.80	19.84	20.01				
10	8QAM	50	0	19.79	19.79	19.81				
Channel										
Frequency (MHz)										
5	QPSK	1	0	22.94	22.78	22.79				
5	QPSK	1	12	22.92	22.93	22.91			24	0
5	QPSK	1	24	22.97	22.93	22.93				
5	QPSK	12	0	22.96	22.93	22.92				
5	QPSK	12	7	22.92	21.98	22.95			23	1
5	QPSK	12	14	22.97	22.98	22.94				
5	QPSK	25	0	21.96	22.00	22.00				
5	16QAM	1	0	22.21	22.23	22.23				
5	16QAM	1	12	22.27	22.09	22.20			23	1
5	16QAM	1	24	22.13	22.09	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	21.05	20.95				
5	8QAM	1	0	20.98	21.09	21.03				
5	8QAM	1	12	21.06	20.91	21.10			22	2
5	8QAM	1	24	20.97	20.97	20.97				
5	8QAM	12	0	19.72	19.73	19.77				
5	8QAM	12	7	19.73	19.72	19.75			21	3
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				
3	QPSK	1	16	22.80	22.95	22.97			24	0
3	QPSK	1	32	22.87	22.91	22.91				
3	QPSK	8	0	22.07	21.97	21.96				
3	QPSK	8	4	22.08	22.04	22.04			23	1
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				
3	16QAM	1	8	22.11	22.41	22.51			23	1
3	16QAM	1	14	22.08	22.29	22.24				
3	16QAM	8	0	20.96	21.02	21.05				
3	16QAM	8	4	20.97	20.97	21.28			22	2
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	21.15				
3	8QAM	1	8	21.02	21.08	21.03			22	2
3	8QAM	1	14	21.14	21.15	20.92				
3	8QAM	8	0	19.68	19.68	19.68				
3	8QAM	8	4	19.60	19.74	19.80			21	3
3	8QAM	8	7	19.68	19.62	19.68				
3	8QAM	15	0	19.54	19.68	19.61				
Channel										
Frequency (MHz)										
1.4	QPSK	1	0	22.76	22.92	22.86				
1.4	QPSK	1	3	22.78	22.92	23.00			24	0
1.4	QPSK	1	5	22.88	22.77	22.82				
1.4	QPSK	3	0	22.78	22.92	22.93				
1.4	QPSK	3	1	22.75	22.92	23.01			23	1
1.4	QPSK	3	3	22.78	22.88	23.00				
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	22.49			23	1
1.4	16QAM	1	5	22.15	22.20	22.24				
1.4	16QAM	3	0	21.80	21.87	22.04				
1.4	16QAM	3	1	21.80	21.92	22.18				
1.4	16QAM	3	3	21.90	21.95	22.08			22	2
1.4	16QAM	1	0	20.98	20.98	21.05				
1.4	8QAM	1	0	21.04	20.80	21.07				
1.4	8QAM	1	3	21.17	21.08	21.08			22	2
1.4	8QAM	1	5	21.21	20.88	21.17				
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	21.15				
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 / Freq.	Power Rx / Freq.	Power Thresh / Freq.	Time-up Int. (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						
10	16QAM	1	25	22.04					23	1
10	16QAM	1	49	22.40						
10	16QAM	25	0	20.87						
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						
10	8QAM	1	25	21.44					22	2
10	8QAM	1	49	21.45						
10	8QAM	5	0	20.95						
10	8QAM	25	12	20.10					21	3
10	8QAM	25	25	20.08						
10	8QAM	50	0	20.12						
Channel										
Frequency (MHz)										
5	QPSK	1	0	23.07	23.05	23.04				
5	QPSK	1	12	23.10	23.17	23.03			24	0
5	QPSK	1	24	23.02	23.11	23.12				
5	QPSK	12	0	22.27	22.27	22.36				
5	QPSK	12	7	22.14	22.18	22.29			23	1
5	QPSK	12	14	22.17	22.28	22.34				
5	QPSK	25	0	22.19	22.25	22.29				
5	16QAM	1	0	22.64	22.49	22.60				
5	16QAM	1	12	22.92	22.26	22.41			23	1
5	16QAM	1	24	22.82	22.38	22.55				
5	16QAM	12	0	21.21	21.30	21.30				
5	16QAM	12	7	21.19	21.24	21.33			22	2
5	16QAM	12	14	21.16	21.41	21.30				
5	16QAM	25	0	21.27	21.23	21.47				
5	8QAM	1	0	21.26	21.17	21.38				
5	8QAM	1	12	21.28	21.60	21.33			22	2
5	8QAM	1	24	21.26	21.43	21.37				
5	8QAM	12	0	19.91	20.02	20.08				
5	8QAM	12	7	19.89	19.98	19.99			21	3
5	8QAM	12	14	19.96	20.06	20.03				
5	8QAM	25	0	19.94	20.02	20.00				

Band 17 (700MHz Band) Part 27H(only on channel required)										
BW (MHz)	Modulation	RB Size	RB Offset	Power Tx / Freq.	Power Rx / Freq.	Power Thresh / Freq.	Time-up Int. (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				
10	QPSK	25	12	22.13	22.18	21.96			23	1
10	QPSK	25	25	22.05	22.25	22.14				
10	QPSK	50	0	21.99	22.14	22.12				
10	16QAM	1	0	22.48	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				
10	8QAM	1	25	21.34	21.30	21.42			22	2
10	8QAM	1	49	21.61	21.14	21.39				
10	8QAM	5	0	20.16	20.18	20.13				
10	8QAM	25	12	20.18	20.10	20.09			21	3
10	8QAM	25	25	20.08	20.14	20.08				
10	8QAM	50	0	20.10	20.09	20.09				
Channel										
Frequency (MHz)										
5	Q									



Band 26 for FCC (only on channel required)										
BW (MHz)	Modulation	RB Size	RB Offset	Power Use Ch./Freq.	Power Mask Ch./Freq.	Power Spectrum Ch./Freq.	Take-up Time (dB)	MFR (dB)		
Channel										
Frequency (MHz)										
15	QPSK	1	0	23.11	23.27	23.21				
15	QPSK	1	37	23.15	23.14	23.14	24	0		
15	QPSK	1	74	23.14	23.23	23.15				
15	QPSK	36	0	22.62	22.67	22.65				
15	QPSK	36	20	22.63	22.18	22.25				
15	QPSK	36	39	22.61	22.61	22.12				
15	QPSK	75	0	22.78	22.78	22.78	23	1		
15	HQAM	0	0	22.78	22.78	22.88				
15	HQAM	1	37	22.47	22.54	22.59	23	1		
15	HQAM	1	74	22.62	22.54	22.73				
15	HQAM	36	0	21.29	21.36	21.43				
15	HQAM	36	20	21.01	21.16	21.15				
15	HQAM	36	39	21.33	21.24	21.64				
15	HQAM	75	0	21.66	21.61	21.24				
15	HQAM	1	0	20.96	21.17	21.08				
15	HQAM	1	37	20.97	21.41	21.16				
15	HQAM	1	74	21.26	21.27	21.06				
15	HQAM	36	0	20.94	20.94	20.94				
15	HQAM	36	20	19.81	19.98	19.93				
15	HQAM	36	39	19.97	19.74	19.78				
15	HQAM	75	0	19.47	19.99	19.86				
Channel										
Frequency (MHz)										
10	QPSK	1	0	23.11	23.24	22.97				
10	QPSK	1	26	22.61	23.04	23.06	24	0		
10	QPSK	1	52	23.14	23.15	23.12				
10	QPSK	36	0	22.04	22.24	22.18				
10	QPSK	36	12	22.19	22.12	22.17				
10	QPSK	36	24	22.25	22.07	22.05				
10	QPSK	36	0	22.24	22.07	22.23	23	1		
10	HQAM	1	0	22.68	22.61	22.83				
10	HQAM	1	26	22.28	22.52	22.34	23	1		
10	HQAM	36	0	21.02	21.02	21.02				
10	HQAM	36	0	21.12	21.14	21.18				
10	HQAM	36	12	21.18	21.13	21.19				
10	HQAM	36	24	21.19	21.07	21.07				
10	HQAM	36	0	21.13	21.17	21.22				
10	HQAM	1	0	21.47	21.32	21.33				
10	HQAM	1	26	21.19	21.36	21.31				
10	HQAM	36	0	21.02	21.02	21.02	22	2		
10	HQAM	36	0	19.81	19.98	19.91				
10	HQAM	36	12	19.95	19.99	19.94				
10	HQAM	36	24	19.81	19.87	19.87				
10	HQAM	36	0	19.90	19.96	19.95	21	3		
Channel										
Frequency (MHz)										
5	QPSK	1	0	22.66	23.12	23.11				
5	QPSK	1	12	23.04	23.03	23.11	24	0		
5	QPSK	1	24	23.08	23.16	23.09				
5	QPSK	12	0	22.11	22.18	22.18				
5	QPSK	12	6	22.13	22.20	22.18				
5	QPSK	12	13	22.00	22.15	22.11				
5	QPSK	36	0	22.09	22.14	22.19				
5	HQAM	1	0	22.28	22.22	22.48				
5	HQAM	1	12	22.08	22.20	22.11	23	1		
5	HQAM	1	24	22.47	22.48	22.15				
5	HQAM	12	0	21.10	21.15	21.18				
5	HQAM	12	6	21.01	21.07	21.09				
5	HQAM	12	13	21.06	21.16	21.10				
5	HQAM	36	0	21.00	21.15	21.06				
5	HQAM	1	0	21.26	21.24	21.36				
5	HQAM	1	12	21.05	21.07	21.09				
5	HQAM	1	24	21.11	21.25	21.02				
5	HQAM	12	0	19.87	19.95	19.89				
5	HQAM	12	6	19.81	19.87	19.87				
5	HQAM	12	13	19.81	19.87	19.84				
5	HQAM	36	0	19.77	19.88	19.91				
Channel										
Frequency (MHz)										
3	QPSK	1	0	23.14	23.12	23.13				
3	QPSK	1	8	23.11	23.21	23.09	24	0		
3	QPSK	1	14	22.61	23.19	23.09				
3	QPSK	8	0	22.04	22.11	22.05				
3	QPSK	8	4	22.08	22.23	22.05				
3	QPSK	8	7	22.00	22.14	22.07				
3	HQAM	1	0	22.11	22.09	22.07				
3	HQAM	1	8	22.49	22.33	22.34				
3	HQAM	1	8	22.37	22.30	22.48	23	1		
3	HQAM	1	14	22.19	22.51	22.48				
3	HQAM	8	0	21.07	21.17	21.11				
3	HQAM	8	4	21.21	21.25	21.02				
3	HQAM	8	7	20.98	21.17	21.11				
3	HQAM	16	0	21.04	21.10	21.07				
3	HQAM	1	0	21.06	21.16	21.42				
3	HQAM	1	8	21.28	21.34	21.17				
3	HQAM	1	14	21.23	21.08	21.10				
3	HQAM	8	0	19.83	19.83	19.83				
3	HQAM	8	4	19.87	20.00	19.87				
3	HQAM	8	7	19.71	19.84	19.82				
3	HQAM	16	0	19.81	19.87	19.86				
Channel										
Frequency (MHz)										
1.4	QPSK	1	0	23.05	23.08	23.10				
1.4	QPSK	1	3	23.26	23.13	23.12	24	0		
1.4	QPSK	1	5	23.11	23.25	23.08				
1.4	QPSK	3	0	23.11	23.26	23.24				
1.4	QPSK	3	1	23.17	23.23	23.22				
1.4	QPSK	3	3	23.19	23.11	23.08				
1.4	QPSK	3	5	23.11	23.25	23.08				
1.4	QPSK	3	0	22.13	22.18	22.12	23	1		
1.4	HQAM	1	0	22.48	22.45	22.37				
1.4	HQAM	1	3	22.48	22.63	22.42				
1.4	HQAM	3	0	22.09	22.16	22.24				
1.4	HQAM	3	0	22.09	22.16	22.24	23	1		
1.4	HQAM	3	1	22.22	22.33	22.25				
1.4	HQAM	3	3	22.14	22.26	22.17				
1.4	HQAM	3	0	21.18	21.26	21.21				
1.4	HQAM	1	0	21.24	21.31	21.08				
1.4	HQAM	1	3	21.15	21.03	21.05				
1.4	HQAM	1	5	21.21	21.26	21.12				
1.4	HQAM	3	0	21.03	20.92	21.08				
1.4	HQAM	3	1	21.17	21.35	21.09				
1.4	HQAM	3	3	21.09	21.27	20.97				
1.4	HQAM	6	0	19.99	19.81	19.77	21	3		

Band 66										
BW (MHz)	Modulation	RB Size	RB Offset	Power Use Ch./Freq.	Power Mask Ch./Freq.	Power Spectrum Ch./Freq.	Take-up Time (dB)	MFR (dB)		
Channel										
Frequency (MHz)										
20	QPSK	1	0	23.09	23.36	23.33				
20	QPSK	1	49	23.07	23.09	23.11	24	0		
20	QPSK	1	99	23.12	23.34	23.30				
20	QPSK	50	0	22.22	22.22	22.22				
20	QPSK	50	24	22.25	22.19	22.21				
20	QPSK	50	50	22.06	22.27	22.23				
20	QPSK	99	0	22.30	22.30	22.30	23	1		
20	HQAM	1	0	22.67	22.70	22.64				
20	HQAM	1	49	22.48	22.52	22.49				
20	HQAM	1	99	22.30	22.34	22.23				
20	HQAM	50	0	21.17	21.26	21.28				
20	HQAM	50	24	21.22	21.17	21.21				
20	HQAM	50	50	21.26	21.29	21.24				
20	HQAM	100	0	21.28	21.28	21.27				
20	HQAM	1	0	19.88	19.88	19.89				
20	HQAM	1	49	21.48	21.38	21.51				
20	HQAM	1	99	21.37	21.36	21.30				
20	HQAM	50	0	20.90	20.97	20.92				
20	HQAM	50	24	20.99	20.84	20.40				
20	HQAM	50	50	20.45	20.75	20.58				
20	HQAM	100	0	20.00	20.00	20.00				
Channel										
Frequency (MHz)										
15	QPSK	1	0	23.31	23.18	23.12				
15	QPSK	1	37	23.11	23.05	23.00	24	0		
15	QPSK	1	74	23.12	23.12	23.12				
15	QPSK	36	0	22.24	22.32	22.33				
15	QPSK	36	20	22.20	22.13	22.17				
15	QPSK	36	39	22.22	22.18	22.18				
15	QPSK	75	0	22.07	22.18	22.22				
15	HQAM	1	0	22.78	22.74	22.82				
15	HQAM	1	37	22.92	22.49	22.38				
15	HQAM	1	74	22.07	22.01	22.01	23	1		
15	HQAM	36	0	21.24	21.31	21.31				
15	HQAM	36	20	21.20	21.18	21.15				
15	HQAM	36	39	21.12	21.08	21.08				
15	HQAM	75	0	21.24	21.19	21.25				
15	HQAM	1	0	21.02	21.13	21.27				
15	HQAM	1	37	21.08	20.86	21.08				
15	HQAM	36	0	19.83	19.83	19.83				
15	HQAM	36	0	19.83	19.83	19.83	21	3		
15	HQAM	36	20	20.02	19.83	20.01				
15	HQAM	36	39	19.87	19.84	19.84				
15	HQAM	75	0	19.88	19.84	20.04				
Channel										
Frequency (MHz)										
10	QPSK	1	0							



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 RMC 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 6 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 6 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 6 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 6 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 4066bits	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 Ch./Freq.	Power Hgt./Ch./Freq.	Power Hgt./Freq.	Turn-up init. (dB)	MPR (dB)		
Channel										
Frequency (MHz)										
20	QPSK	1	0	15.80	15.80	15.80				
20	QPSK	1	49	15.76	15.76	15.76	16.5	0		
20	QPSK	1	99	15.69	15.64	15.63				
20	QPSK	50	0	15.80	15.80	15.80				
20	QPSK	50	24	15.77	15.76	15.76	16.5	0		
20	QPSK	50	50	15.62	15.70	15.78				
20	QPSK	50	75	15.68	15.71	15.81				
20	HQAM	1	0	15.99	15.90	15.87				
20	HQAM	1	49	15.88	15.86	15.77	16.5	0		
20	HQAM	50	0	15.99	15.90	15.87				
20	HQAM	50	24	15.96	15.96	15.75	16.5	0		
20	HQAM	50	50	15.71	15.71	15.75				
20	HQAM	100	0	15.94	15.83	15.82				
20	HQAM	100	24	15.88	15.79	15.78	16.5	0		
20	HQAM	100	49	15.77	15.75	15.85	16.5	0		
20	HQAM	1	99	15.78	15.90	16.00				
20	HQAM	50	24	15.98	15.79	15.77	16.5	0		
20	HQAM	50	50	15.83	15.62	15.77				
20	HQAM	100	0	15.92	15.82	15.79				
Channel										
Frequency (MHz)										
15	QPSK	1	0	15.77	15.80	15.75	Turn-up init. (dB)	MPR (dB)		
15	QPSK	1	37	15.82	15.81	15.78	16.5	0		
15	QPSK	1	74	15.81	15.80	15.81				
15	QPSK	36	0	15.98	15.97	15.98	16.5	0		
15	QPSK	36	20	15.92	15.90	15.91	16.5	0		
15	QPSK	36	36	15.92	15.92	15.80				
15	QPSK	36	52	15.97	15.96	15.97	16.5	0		
15	HQAM	1	0	15.73	15.83	16.03	16.5	0		
15	HQAM	1	37	15.88	15.88	15.84				
15	HQAM	1	74	15.83	15.80	15.74				
15	HQAM	36	0	15.99	15.98	15.82	16.5	0		
15	HQAM	36	20	15.93	15.93	15.83				
15	HQAM	36	36	16.06	15.84	15.87				
15	HQAM	36	52	16.02	16.06	16.08	16.5	0		
15	HQAM	100	0	15.92	15.90	15.77				
15	HQAM	100	24	15.83	15.80	15.79	16.5	0		
15	HQAM	100	49	15.82	15.82	15.86				
15	HQAM	1	99	15.83	15.80	15.79	16.5	0		
15	HQAM	36	0	15.91	15.89	15.87	16.5	0		
15	HQAM	36	20	15.90	15.90	15.80				
15	HQAM	36	36	15.90	15.94	15.96				
15	HQAM	36	52	15.90	15.94	15.96	16.5	0		
Channel										
Frequency (MHz)										
10	QPSK	1	0	15.78	15.80	15.78	Turn-up init. (dB)	MPR (dB)		
10	QPSK	1	25	15.78	15.80	15.89	16.5	0		
10	QPSK	1	50	15.90	15.90	15.90				
10	QPSK	25	0	15.90	15.90	15.80				
10	QPSK	25	12	15.83	15.88	15.89	16.5	0		
10	QPSK	25	25	15.83	15.88	15.89				
10	QPSK	50	0	15.92	15.92	15.83				
10	QPSK	50	12	15.98	15.81	15.81	16.5	0		
10	HQAM	1	0	15.98	15.81	15.81				
10	HQAM	1	49	15.87	15.78	15.76	16.5	0		
10	HQAM	25	0	15.92	15.90	15.85				
10	HQAM	25	12	15.86	15.82	15.86	16.5	0		
10	HQAM	50	0	15.98	15.80	15.79				
10	HQAM	50	12	15.87	15.82	15.87	16.5	0		
10	HQAM	100	0	15.92	15.92	15.87				
10	HQAM	100	25	15.79	16.02	16.03	16.5	0		
10	HQAM	100	49	15.89	15.91	15.90				
10	HQAM	25	12	15.83	15.90	15.86	16.5	0		
10	HQAM	25	25	15.87	15.88	15.89				
10	HQAM	50	0	15.83	15.87	15.89	16.5	0		
Channel										
Frequency (MHz)										
5	QPSK	1	0	15.90	15.81	15.80	Turn-up init. (dB)	MPR (dB)		
5	QPSK	1	12	15.87	15.70	15.71	16.5	0		
5	QPSK	1	25	15.73	15.84	15.84				
5	QPSK	12	0	15.90	15.80	15.82				
5	QPSK	12	7	15.94	15.80	15.81	16.5	0		
5	QPSK	12	13	15.98	15.88	15.88				
5	QPSK	25	0	15.97	15.80	15.84				
5	QPSK	25	7	15.96	15.82	15.82	16.5	0		
5	HQAM	1	0	15.98	15.92	16.01	16.5	0		
5	HQAM	1	24	16.03	15.80	16.00				
5	HQAM	12	0	15.92	15.90	15.78	16.5	0		
5	HQAM	12	13	15.88	15.82	15.77				
5	HQAM	25	0	15.93	15.88	15.89	16.5	0		
5	HQAM	25	7	15.91	15.84	15.85				
5	HQAM	1	99	15.81	15.80	15.93	16.5	0		
5	HQAM	12	0	15.90	15.82	15.82				
5	HQAM	12	7	15.93	15.87	15.85	16.5	0		
5	HQAM	25	0	15.93	15.88	15.89				
5	HQAM	25	7	15.91	15.88	15.81	16.5	0		
5	HQAM	1	99	15.89	15.90	15.93	16.5	0		
Channel										
Frequency (MHz)										
3	QPSK	1	0	15.08	15.50	15.79	Turn-up init. (dB)	MPR (dB)		
3	QPSK	1	8	15.09	15.60	15.60	16.5	0		
3	QPSK	1	14	15.08	15.70	15.88				
3	QPSK	8	0	15.92	15.80	15.82	16.5	0		
3	QPSK	8	4	15.92	15.83	15.83				
3	QPSK	8	7	15.87	15.89	15.82	16.5	0		
3	QPSK	15	0	15.87	15.88	15.73				
3	QPSK	15	4	15.88	15.70	15.87	16.5	0		
3	HQAM	1	8	15.81	15.80	15.90	16.5	0		
3	HQAM	1	14	15.80	16.02	16.00				
3	HQAM	8	0	15.90	15.88	15.74	16.5	0		
3	HQAM	8	4	15.91	15.84	15.83				
3	HQAM	15	0	15.73	15.77	15.80				
3	HQAM	15	4	15.74	15.87	15.75	16.5	0		
3	HQAM	1	0	15.84	16.00	15.91				
3	HQAM	8	0	15.98	15.91	15.78	16.5	0		
3	HQAM	8	7	15.95	16.00	15.99				
3	HQAM	15	0	15.96	16.00	15.76	16.5	0		
Channel										
Frequency (MHz)										
1.4	QPSK	1	0	15.57	15.86	15.77	Turn-up init. (dB)	MPR (dB)		
1.4	QPSK	1	5	15.65	16.01	15.85	16.5	0		
1.4	QPSK	1	5	15.71	15.97	15.89				
1.4	QPSK	3	0	15.84	15.84	15.90				
1.4	QPSK	3	1	15.83	15.82	15.86	16.5	0		
1.4	QPSK	3	3	15.96	16.02	15.84				
1.4	QPSK	3	7	15.79	15.77	15.80	16.5	0		
1.4	HQAM	1	0	15.84	15.75	15.83				
1.4	HQAM	1	3	15.86	16.01	16.04	16.5	0		
1.4	HQAM	1	5	15.84	15.88	15.87				
1.4	HQAM	3	0	15.84	15.77	15.78	16.5	0		
1.4	HQAM	3	1	15.85	16.04	16.07				
1.4	HQAM	3	3	15.85	15.90	15.90				
1.4	HQAM	3	5	15.82	15.82	15.82	16.5	0		
1.4	HQAM	3	7	15.84	15.77	15.78				
1.4	HQAM	1	99	15.80	15.80	15.87	16.5	0		
1.4	HQAM	3	0	15.82	15.82	15.82				
1.4	HQAM	3	1	15.83	15.83	15.83	16.5	0		
1.4	HQAM	3	3	15.84	15.89	15.81				
1.4	HQAM	3	5	15.86	15.85	15.85	16.5	0		
1.4	HQAM	3	7	15.80	15.80	15.88				
1.4	HQAM	3	9	15.83	16.02	15.71	16.5	0		

Band 4 (AWS Band)										
Part 27L (only on channel required)										
BW (MHz)	Modulation	RB Size	RB Offset	Power Ch./Freq.	Power Hgt./Ch./Freq.	Power Hgt./Freq.	Turn-up init. (dB)	MPR (dB)		
Channel										
Frequency (MHz)										
20	QPSK	1	0	15.81	15.81	15.81				
20	QPSK	1	49	15.81</						



Band 25 (1900MHz Band)										
Part 24E										
BW (MHz)	Modulation	RB Size	RB Offset	Power Low Ch./Freq.	Power High Ch./Freq.	Power High Ch./Freq.	Turn-up (min)	MFR (dB)		
Channel										
Frequency (MHz)										
20	QPSK	1	0	15.00	15.02	15.02				
20	QPSK	1	50	15.00	15.02	15.02	15.5	0		
20	QPSK	1	99	15.00	15.02	15.02				
20	QPSK	1	148	15.00	15.02	15.02				
20	QPSK	50	24	15.00	15.02	15.02	15.5	0		
20	QPSK	50	50	15.00	15.02	15.02				
20	QPSK	50	99	15.00	15.02	15.02				
20	QPSK	50	148	15.00	15.02	15.02				
20	QPSK	50	197	15.00	15.02	15.02				
20	QPSK	50	246	15.00	15.02	15.02	15.5	0		
20	QPSK	50	295	15.00	15.02	15.02				
20	QPSK	50	344	15.00	15.02	15.02				
20	QPSK	50	393	15.00	15.02	15.02				
20	QPSK	50	442	15.00	15.02	15.02				
20	QPSK	50	491	15.00	15.02	15.02				
20	QPSK	50	540	15.00	15.02	15.02				
20	QPSK	50	589	15.00	15.02	15.02				
20	QPSK	50	638	15.00	15.02	15.02				
20	QPSK	50	687	15.00	15.02	15.02				
20	QPSK	50	736	15.00	15.02	15.02				
20	QPSK	50	785	15.00	15.02	15.02				
20	QPSK	50	834	15.00	15.02	15.02				
20	QPSK	50	883	15.00	15.02	15.02				
20	QPSK	50	932	15.00	15.02	15.02				
20	QPSK	50	981	15.00	15.02	15.02				
20	QPSK	50	1030	15.00	15.02	15.02				
20	QPSK	50	1079	15.00	15.02	15.02				
20	QPSK	50	1128	15.00	15.02	15.02				
20	QPSK	50	1177	15.00	15.02	15.02				
20	QPSK	50	1226	15.00	15.02	15.02				
20	QPSK	50	1275	15.00	15.02	15.02				
20	QPSK	50	1324	15.00	15.02	15.02				
20	QPSK	50	1373	15.00	15.02	15.02				
20	QPSK	50	1422	15.00	15.02	15.02				
20	QPSK	50	1471	15.00	15.02	15.02				
20	QPSK	50	1520	15.00	15.02	15.02				
20	QPSK	50	1569	15.00	15.02	15.02				
20	QPSK	50	1618	15.00	15.02	15.02				
20	QPSK	50	1667	15.00	15.02	15.02				
20	QPSK	50	1716	15.00	15.02	15.02				
20	QPSK	50	1765	15.00	15.02	15.02				
20	QPSK	50	1814	15.00	15.02	15.02				
20	QPSK	50	1863	15.00	15.02	15.02				
20	QPSK	50	1912	15.00	15.02	15.02				
20	QPSK	50	1961	15.00	15.02	15.02				
20	QPSK	50	2010	15.00	15.02	15.02				
20	QPSK	50	2059	15.00	15.02	15.02				
20	QPSK	50	2108	15.00	15.02	15.02				
20	QPSK	50	2157	15.00	15.02	15.02				
20	QPSK	50	2206	15.00	15.02	15.02				
20	QPSK	50	2255	15.00	15.02	15.02				
20	QPSK	50	2304	15.00	15.02	15.02				
20	QPSK	50	2353	15.00	15.02	15.02				
20	QPSK	50	2402	15.00	15.02	15.02				
20	QPSK	50	2451	15.00	15.02	15.02				
20	QPSK	50	2500	15.00	15.02	15.02				
20	QPSK	50	2549	15.00	15.02	15.02				
20	QPSK	50	2598	15.00	15.02	15.02				
20	QPSK	50	2647	15.00	15.02	15.02				
20	QPSK	50	2696	15.00	15.02	15.02				
20	QPSK	50	2745	15.00	15.02	15.02				
20	QPSK	50	2794	15.00	15.02	15.02				
20	QPSK	50	2843	15.00	15.02	15.02				
20	QPSK	50	2892	15.00	15.02	15.02				
20	QPSK	50	2941	15.00	15.02	15.02				
20	QPSK	50	2990	15.00	15.02	15.02				
20	QPSK	50	3039	15.00	15.02	15.02				
20	QPSK	50	3088	15.00	15.02	15.02				
20	QPSK	50	3137	15.00	15.02	15.02				
20	QPSK	50	3186	15.00	15.02	15.02				
20	QPSK	50	3235	15.00	15.02	15.02				
20	QPSK	50	3284	15.00	15.02	15.02				
20	QPSK	50	3333	15.00	15.02	15.02				
20	QPSK	50	3382	15.00	15.02	15.02				
20	QPSK	50	3431	15.00	15.02	15.02				
20	QPSK	50	3480	15.00	15.02	15.02				
20	QPSK	50	3529	15.00	15.02	15.02				
20	QPSK	50	3578	15.00	15.02	15.02				
20	QPSK	50	3627	15.00	15.02	15.02				
20	QPSK	50	3676	15.00	15.02	15.02				
20	QPSK	50	3725	15.00	15.02	15.02				
20	QPSK	50	3774	15.00	15.02	15.02				
20	QPSK	50	3823	15.00	15.02	15.02				
20	QPSK	50	3872	15.00	15.02	15.02				
20	QPSK	50	3921	15.00	15.02	15.02				
20	QPSK	50	3970	15.00	15.02	15.02				
20	QPSK	50	4019	15.00	15.02	15.02				
20	QPSK	50	4068	15.00	15.02	15.02				
20	QPSK	50	4117	15.00	15.02	15.02				
20	QPSK	50	4166	15.00	15.02	15.02				
20	QPSK	50	4215	15.00	15.02	15.02				
20	QPSK	50	4264	15.00	15.02	15.02				
20	QPSK	50	4313	15.00	15.02	15.02				
20	QPSK	50	4362	15.00	15.02	15.02				
20	QPSK	50	4411	15.00	15.02	15.02				
20	QPSK	50	4460	15.00	15.02	15.02				
20	QPSK	50	4509	15.00	15.02	15.02				
20	QPSK	50	4558	15.00	15.02	15.02				
20	QPSK	50	4607	15.00	15.02	15.02				
20	QPSK	50	4656	15.00	15.02	15.02				
20	QPSK	50	4705	15.00	15.02	15.02				
20	QPSK	50	4754	15.00	15.02	15.02				
20	QPSK	50	4803	15.00	15.02	15.02				
20	QPSK	50	4852	15.00	15.02	15.02				
20	QPSK	50	4901	15.00	15.02	15.02				
20	QPSK	50	4950	15.00	15.02	15.02				
20	QPSK	50	4999	15.00	15.02	15.02				
20	QPSK	50	5048	15.00	15.02	15.02				
20	QPSK	50	5097	15.00	15.02	15.02				
20	QPSK	50	5146	15.00	15.02	15.02				
20	QPSK	50	5195	15.00	15.02	15.02				
20	QPSK	50	5244	15.00	15.02	15.02				
20	QPSK	50	5293	15.00	15.02	15.02				
20	QPSK	50	5342	15.00	15.02	15.02				
20	QPSK	50	5391	15.00	15.02	15.02				
20	QPSK	50	5440	15.00	15.02	15.02				
20	QPSK	50	5489	15.00	15.02	15.02				
20	QPSK	50	5538	15.00	15.02	15.02				
20	QPSK	50	5587	15.00	15.02	15.02				
20	QPSK	50	5636	15.00	15.02	15.02				
20	QPSK	50	5685	15.00	15.02	15.02				
20	QPSK	50	5734	15.00	15.02	15.02				
20	QPSK	50	5783	15.00	15.02	15.02				
20	QPSK	50	5832	15.00	15.02	15.02				
20	QPSK	50	5881	15.00	15.02	15.02				
20	QPSK	50	5930	15.00	15.02	15.02				
20	QPSK	50	5979	15.00	15.02	15.02				
20	QPSK	50	6028	15.00	15.02					



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 (min)	MPR (dB)
Channel										
				37650	38050	38150				
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	20.39				
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	20.60	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	20.59	20.46				
20	HQAM	100	0	20.37	20.44	20.48				
20	HQAM	100	0	20.45	20.48	20.52			21.5	0
20	HQAM	100	40	20.33	20.38	20.41				
20	HQAM	100	80	20.52	20.56	20.51				
20	HQAM	100	120	20.25	20.45	20.44			21.0	0.5
20	HQAM	100	160	20.47	20.49	20.42				
20	HQAM	100	0	20.45	20.48	20.52			21.0	0.5
Channel										
				37655	38050	38175				
15	QPSK	1	0	20.21	20.29	20.15			21.5	0
15	QPSK	1	37	20.31	20.27	20.20				
15	QPSK	1	74	20.54	20.56	20.60				
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	20.50				
15	QPSK	72	0	20.34	20.48	20.49				
15	HQAM	1	0	20.43	20.42	20.50			21.5	0
15	HQAM	1	37	20.54	20.46	20.50				
15	HQAM	1	74	20.57	20.64	20.68				
15	HQAM	36	0	20.39	20.48	20.50				
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	72	0	20.39	20.47	20.50			21.0	0.5
15	HQAM	72	0	20.47	20.48	20.48				
Channel										
				37655	38050	38200				
10	QPSK	1	0	20.45	20.46	20.54			21.5	0
10	QPSK	1	40	20.67	20.65	20.64				
10	QPSK	20	0	20.42	20.45	20.48				
10	QPSK	20	12	20.45	20.45	20.49			21.5	0
10	QPSK	20	20	20.54	20.61	20.67				
10	QPSK	50	0	20.51	20.45	20.58				
10	HQAM	1	0	20.54	20.58	20.64			21.5	0
10	HQAM	1	40	20.67	20.64	20.62				
10	HQAM	20	0	20.48	20.53	20.62				
10	HQAM	20	12	20.51	20.44	20.53			21.5	0
10	HQAM	20	20	20.59	20.56	20.68				
10	HQAM	50	0	20.55	20.48	20.59				
10	HQAM	50	0	20.35	20.45	20.55			21.5	0
10	HQAM	50	12	20.37	20.13	20.15				
10	HQAM	50	20	20.29	20.17	20.32			21.5	0
10	HQAM	50	40	20.11	20.05	20.04				
10	HQAM	50	80	20.49	20.41	20.49			21.0	0.5
10	HQAM	50	120	20.40	20.44	20.57				
10	HQAM	50	160	20.48	20.43	20.53			21.5	0
10	HQAM	50	0	20.45	20.41	20.38				
Channel										
				37655	38050	38225				
5	QPSK	1	0	20.31	20.34	20.35			21.5	0
5	QPSK	1	12	20.36	20.38	20.50				
5	QPSK	1	24	20.40	20.50	20.51				
5	QPSK	12	0	20.41	20.54	20.60			21.5	0
5	QPSK	12	7	20.47	20.41	20.53				
5	QPSK	12	13	20.41	20.48	20.54				
5	HQAM	1	0	20.56	20.61	20.63			21.5	0
5	HQAM	1	12	20.47	20.45	20.44				
5	HQAM	1	24	20.53	20.58	20.67				
5	HQAM	12	0	20.44	20.51	20.66			21.5	0
5	HQAM	12	7	20.58	20.49	20.57				
5	HQAM	12	13	20.35	20.35	20.38			21.5	0
5	HQAM	25	0	20.44	20.51	20.61				
5	HQAM	25	0	20.52	20.57	20.65			21.5	0
5	HQAM	25	7	20.51	20.48	20.48				
5	HQAM	25	13	20.48	20.41	20.53			21.0	0.5
5	HQAM	25	0	20.45	20.44	20.57				

Band 41 (2.6G Band)										
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 (min)	MPR (dB)
Channel										
				39760	40180	40600	41060	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	20.93	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	20.30		
20	HQAM	1	0	20.40	20.44	20.57	20.51	20.35		
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	20.50	20.43	21.5	0
20	HQAM	50	50	20.37	20.50	20.47	20.40	20.37		
20	HQAM	100	0	20.35	20.34	20.40	20.40	20.25		
20	HQAM	100	0	19.99	20.05	19.92	19.98	20.01	21.5	0
20	HQAM	100	40	20.12	20.08	20.21	20.26	20.01		
20	HQAM	100	80	19.99	20.01	19.99	19.98	20.08		
20	HQAM	100	120	20.05	20.04	20.08	20.04	20.06	21.5	0
20	HQAM	100	160	20.01	20.11	20.05	20.01	20.41		
20	HQAM	50	50	20.31	20.25	20.38	20.39	20.33	21	0.5
20	HQAM	100	0	20.35	20.40	20.46	20.46	20.38		
Channel										
				39765	40175	40600	41060	41615		
Frequency (MHz)										
15	QPSK	1	0	20.42	20.31	20.15	20.31	20.68		
15	QPSK	1	37	20.27	20.25	20.18	20.20	20.27	21.5	0
15	QPSK	1	74	20.42	20.46	20.34	20.36	20.51		
15	QPSK	36	0	20.44	20.45	20.41	20.48	20.53		
15	QPSK	36	20	20.51	20.50	20.59	20.55	20.48	21.5	0
15	QPSK	36	40	20.65	20.62	20.66	20.63	20.58		
15	QPSK	72	0	20.53	20.47	20.49	20.52	20.43		
15	HQAM	1	0	20.14	20.12	20.10	20.09	20.18	21.5	0
15	HQAM	1	37	20.27	20.21	20.19	20.20	20.24		
15	HQAM	1	74	20.49	20.19	20.20	20.05	20.08		
15	HQAM	36	0	20.33	20.46	20.48	20.43	20.54		
15	HQAM	36	20	20.46	20.41	20.59	20.50	20.44	21.5	0
15	HQAM	36	40	20.52	20.48	20.54	20.44	20.47		
15	HQAM	72	0	20.49	20.49	20.51	20.41	20.46		
15	HQAM	72	0	19.81	19.85	19.95	19.72	19.91	21.5	0
15	HQAM	1	37	19.94	19.84	19.90	20.01	19.95		
15	HQAM	1	74	19.92	19.95	19.90	19.90	19.88		
15	HQAM	36	0	20.41	20.41	20.39	20.48	20.33	21	0.5
15	HQAM	36	20	20.50	20.46	20.58	20.50	20.44		
15	HQAM	36	40	20.54	20.49	20.59	20.66	20.51		
15	HQAM	72	0	20.40	20.46	20.50	20.53	20.45		
Channel										
				39765	40175	40600	41060	41660		
Frequency (MHz)										
10	QPSK	1	0	20.43	20.34	20.				



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	24.50	14.42	14.56	14.44	15.50
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	1712.4	1638	1738	1752.6	4367	4407	4458		
	1852.4	1880	1907.6	1712.4	1732.6	1752.6	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	1861.25	1880	1908.75	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



MINISTRY OF NATIONAL DEFENSE

Band 2 (1900MHz Band)										
Part 24E										
BW (MHz)	Modulation	RB Size	RB Offset	Power Ch./Freq. Ch./Freq.	Power High Ch./Freq. Low Ch./Freq.	Turn-up init (dB)	MPR (dB)			
Channel										
Frequency (MHz)										
20	QPSK	1	0	1890	1900	1900				
20	QPSK	1	49	1245	1254	1254	13.5	0		
20	QPSK	1	99	1274	1284	1284				
20	QPSK	50	0	1235	1245	1245				
20	QPSK	50	24	1235	1245	1245	13.5	0		
20	QPSK	50	50	1235	1245	1245				
20	QPSK	50	24	1245	1254	1254				
20	QPSK	50	50	1245	1254	1254				
20	QPSK	50	24	1254	1263	1263				
20	QPSK	50	50	1254	1263	1263				
20	QPSK	50	24	1263	1272	1272				
20	QPSK	50	50	1263	1272	1272				
20	QPSK	50	24	1272	1281	1281				
20	QPSK	50	50	1272	1281	1281				
20	QPSK	50	24	1281	1290	1290				
20	QPSK	50	50	1281	1290	1290				
20	QPSK	50	24	1290	1299	1299				
20	QPSK	50	50	1290	1299	1299				
20	QPSK	50	24	1299	1308	1308				
20	QPSK	50	50	1299	1308	1308				
20	QPSK	50	24	1308	1317	1317				
20	QPSK	50	50	1308	1317	1317				
20	QPSK	50	24	1317	1326	1326				
20	QPSK	50	50	1317	1326	1326				
20	QPSK	50	24	1326	1335	1335				
20	QPSK	50	50	1326	1335	1335				
20	QPSK	50	24	1335	1344	1344				
20	QPSK	50	50	1335	1344	1344				
20	QPSK	50	24	1344	1353	1353				
20	QPSK	50	50	1344	1353	1353				
20	QPSK	50	24	1353	1362	1362				
20	QPSK	50	50	1353	1362	1362				
20	QPSK	50	24	1362	1371	1371				
20	QPSK	50	50	1362	1371	1371				
20	QPSK	50	24	1371	1380	1380				
20	QPSK	50	50	1371	1380	1380				
20	QPSK	50	24	1380	1389	1389				
20	QPSK	50	50	1380	1389	1389				
20	QPSK	50	24	1389	1398	1398				
20	QPSK	50	50	1389	1398	1398				
20	QPSK	50	24	1398	1407	1407				
20	QPSK	50	50	1398	1407	1407				
20	QPSK	50	24	1407	1416	1416				
20	QPSK	50	50	1407	1416	1416				
20	QPSK	50	24	1416	1425	1425				
20	QPSK	50	50	1416	1425	1425				
20	QPSK	50	24	1425	1434	1434				
20	QPSK	50	50	1425	1434	1434				
20	QPSK	50	24	1434	1443	1443				
20	QPSK	50	50	1434	1443	1443				
20	QPSK	50	24	1443	1452	1452				
20	QPSK	50	50	1443	1452	1452				
20	QPSK	50	24	1452	1461	1461				
20	QPSK	50	50	1452	1461	1461				
20	QPSK	50	24	1461	1470	1470				
20	QPSK	50	50	1461	1470	1470				
20	QPSK	50	24	1470	1479	1479				
20	QPSK	50	50	1470	1479	1479				
20	QPSK	50	24	1479	1488	1488				
20	QPSK	50	50	1479	1488	1488				
20	QPSK	50	24	1488	1497	1497				
20	QPSK	50	50	1488	1497	1497				
20	QPSK	50	24	1497	1506	1506				
20	QPSK	50	50	1497	1506	1506				
20	QPSK	50	24	1506	1515	1515				
20	QPSK	50	50	1506	1515	1515				
20	QPSK	50	24	1515	1524	1524				
20	QPSK	50	50	1515	1524	1524				
20	QPSK	50	24	1524	1533	1533				
20	QPSK	50	50	1524	1533	1533				
20	QPSK	50	24	1533	1542	1542				
20	QPSK	50	50	1533	1542	1542				
20	QPSK	50	24	1542	1551	1551				
20	QPSK	50	50	1542	1551	1551				
20	QPSK	50	24	1551	1560	1560				
20	QPSK	50	50	1551	1560	1560				
20	QPSK	50	24	1560	1569	1569				
20	QPSK	50	50	1560	1569	1569				
20	QPSK	50	24	1569	1578	1578				
20	QPSK	50	50	1569	1578	1578				
20	QPSK	50	24	1578	1587	1587				
20	QPSK	50	50	1578	1587	1587				
20	QPSK	50	24	1587	1596	1596				
20	QPSK	50	50	1587	1596	1596				
20	QPSK	50	24	1596	1605	1605				
20	QPSK	50	50	1596	1605	1605				
20	QPSK	50	24	1605	1614	1614				
20	QPSK	50	50	1605	1614	1614				
20	QPSK	50	24	1614	1623	1623				
20	QPSK	50	50	1614	1623	1623				
20	QPSK	50	24	1623	1632	1632				
20	QPSK	50	50	1623	1632	1632				
20	QPSK	50	24	1632	1641	1641				
20	QPSK	50	50	1632	1641	1641				
20	QPSK	50	24	1641	1650	1650				
20	QPSK	50	50	1641	1650	1650				
20	QPSK	50	24	1650	1659	1659				
20	QPSK	50	50	1650	1659	1659				
20	QPSK	50	24	1659	1668	1668				
20	QPSK	50	50	1659	1668	1668				
20	QPSK	50	24	1668	1677	1677				
20	QPSK	50	50	1668	1677	1677				
20	QPSK	50	24	1677	1686	1686				
20	QPSK	50	50	1677	1686	1686				
20	QPSK	50	24	1686	1695	1695				
20	QPSK	50	50	1686	1695	1695				
20	QPSK	50	24	1695	1704	1704				
20	QPSK	50	50	1695	1704	1704				
20	QPSK	50	24	1704	1713	1713				
20	QPSK	50	50	1704	1713	1713				
20	QPSK	50	24	1713	1722	1722				
20	QPSK	50	50	1713	1722	1722				
20	QPSK	50	24	1722	1731	1731				
20	QPSK	50	50	1722	1731	1731				
20	QPSK	50	24	1731	1740	1740				
20	QPSK	50	50	1731	1740	1740				
20	QPSK	50	24	1740	1749	1749				
20	QPSK	50	50	1740	1749	1749				
20	QPSK	50	24	1749	1758	1758				
20	QPSK	50	50	1749	1758	1758				
20	QPSK	50	24	1758	1767	1767				
20	QPSK	50	50	1758	1767	1767				
20	QPSK	50	24	1767	1776	1776				
20	QPSK	50	50	1767	1776	1776				
20	QPSK	50	24	1776	1785	1785				
20	QPSK	50	50	1776	1785	1785				
20	QPSK	50	24	1785	1794	1794				
20	QPSK	50	50	1785	1794	1794				
20	QPSK	50	24	1794	1803	1803				
20	QPSK	50	50	1794	1803	1803				
20	QPSK	50	24	1803	1812	1812				
20	QPSK	50	50	1803	1812	1812				
20	QPSK	50	24	1812	1821	1821				
20	QPSK	50	50	1812	1821	1821				</



Band 25 (1900MHz Band)										
Part 24E										
BW (MHz)	Modulation	RB Size	RB Offset	Power Low Ch./Freq.	Power High Ch./Freq.	Turn-up (min)	MFR (dB)			
Channel										
Frequency (MHz)										
20	QPSK	1	0	12.32	12.32	15.5	0			
20	QPSK	1	50	12.38	12.38	15.5	0			
20	QPSK	1	100	12.44	12.44	15.5	0			
20	QPSK	36	24	12.53	12.53	15.5	0			
20	QPSK	50	50	12.65	12.65	15.5	0			
20	QPSK	100	0	12.81	12.81	15.5	0			
20	QPSK	1	0	12.88	12.88	15.5	0			
20	QPSK	1	49	11.88	11.88	15.5	0			
20	QPSK	1	99	11.94	11.94	15.5	0			
20	QPSK	36	24	12.03	12.03	15.5	0			
20	QPSK	50	50	12.15	12.15	15.5	0			
20	QPSK	100	0	12.31	12.31	15.5	0			
20	QPSK	1	0	12.38	12.38	15.5	0			
20	QPSK	1	49	11.88	11.88	15.5	0			
20	QPSK	1	99	11.94	11.94	15.5	0			
20	QPSK	36	24	12.08	12.08	15.5	0			
20	QPSK	50	50	12.20	12.20	15.5	0			
20	QPSK	100	0	12.36	12.36	15.5	0			
20	QPSK	1	0	12.43	12.43	15.5	0			
20	QPSK	1	49	11.88	11.88	15.5	0			
20	QPSK	1	99	11.94	11.94	15.5	0			
20	QPSK	36	24	12.08	12.08	15.5	0			
20	QPSK	50	50	12.20	12.20	15.5	0			
20	QPSK	100	0	12.36	12.36	15.5	0			
Channel										
Frequency (MHz)										
15	QPSK	1	0	12.53	12.53	15.5	0			
15	QPSK	1	37	11.88	11.88	15.5	0			
15	QPSK	1	74	12.03	12.03	15.5	0			
15	QPSK	36	0	12.24	12.24	15.5	0			
15	QPSK	36	20	12.25	12.25	15.5	0			
15	QPSK	36	40	12.26	12.26	15.5	0			
15	QPSK	36	60	12.27	12.27	15.5	0			
15	QPSK	36	80	12.28	12.28	15.5	0			
15	QPSK	36	100	12.29	12.29	15.5	0			
15	QPSK	36	120	12.30	12.30	15.5	0			
15	QPSK	36	140	12.31	12.31	15.5	0			
15	QPSK	36	160	12.32	12.32	15.5	0			
15	QPSK	36	180	12.33	12.33	15.5	0			
15	QPSK	36	200	12.34	12.34	15.5	0			
15	QPSK	36	220	12.35	12.35	15.5	0			
15	QPSK	36	240	12.36	12.36	15.5	0			
15	QPSK	36	260	12.37	12.37	15.5	0			
15	QPSK	36	280	12.38	12.38	15.5	0			
15	QPSK	36	300	12.39	12.39	15.5	0			
15	QPSK	36	320	12.40	12.40	15.5	0			
15	QPSK	36	340	12.41	12.41	15.5	0			
15	QPSK	36	360	12.42	12.42	15.5	0			
15	QPSK	36	380	12.43	12.43	15.5	0			
15	QPSK	36	400	12.44	12.44	15.5	0			
15	QPSK	36	420	12.45	12.45	15.5	0			
15	QPSK	36	440	12.46	12.46	15.5	0			
15	QPSK	36	460	12.47	12.47	15.5	0			
15	QPSK	36	480	12.48	12.48	15.5	0			
15	QPSK	36	500	12.49	12.49	15.5	0			
15	QPSK	36	520	12.50	12.50	15.5	0			
15	QPSK	36	540	12.51	12.51	15.5	0			
15	QPSK	36	560	12.52	12.52	15.5	0			
15	QPSK	36	580	12.53	12.53	15.5	0			
15	QPSK	36	600	12.54	12.54	15.5	0			
15	QPSK	36	620	12.55	12.55	15.5	0			
15	QPSK	36	640	12.56	12.56	15.5	0			
15	QPSK	36	660	12.57	12.57	15.5	0			
15	QPSK	36	680	12.58	12.58	15.5	0			
15	QPSK	36	700	12.59	12.59	15.5	0			
15	QPSK	36	720	12.60	12.60	15.5	0			
15	QPSK	36	740	12.61	12.61	15.5	0			
15	QPSK	36	760	12.62	12.62	15.5	0			
15	QPSK	36	780	12.63	12.63	15.5	0			
15	QPSK	36	800	12.64	12.64	15.5	0			
15	QPSK	36	820	12.65	12.65	15.5	0			
15	QPSK	36	840	12.66	12.66	15.5	0			
15	QPSK	36	860	12.67	12.67	15.5	0			
15	QPSK	36	880	12.68	12.68	15.5	0			
15	QPSK	36	900	12.69	12.69	15.5	0			
15	QPSK	36	920	12.70	12.70	15.5	0			
15	QPSK	36	940	12.71	12.71	15.5	0			
15	QPSK	36	960	12.72	12.72	15.5	0			
15	QPSK	36	980	12.73	12.73	15.5	0			
15	QPSK	36	1000	12.74	12.74	15.5	0			
15	QPSK	36	1020	12.75	12.75	15.5	0			
15	QPSK	36	1040	12.76	12.76	15.5	0			
15	QPSK	36	1060	12.77	12.77	15.5	0			
15	QPSK	36	1080	12.78	12.78	15.5	0			
15	QPSK	36	1100	12.79	12.79	15.5	0			
15	QPSK	36	1120	12.80	12.80	15.5	0			
15	QPSK	36	1140	12.81	12.81	15.5	0			
15	QPSK	36	1160	12.82	12.82	15.5	0			
15	QPSK	36	1180	12.83	12.83	15.5	0			
15	QPSK	36	1200	12.84	12.84	15.5	0			
15	QPSK	36	1220	12.85	12.85	15.5	0			
15	QPSK	36	1240	12.86	12.86	15.5	0			
15	QPSK	36	1260	12.87	12.87	15.5	0			
15	QPSK	36	1280	12.88	12.88	15.5	0			
15	QPSK	36	1300	12.89	12.89	15.5	0			
15	QPSK	36	1320	12.90	12.90	15.5	0			
15	QPSK	36	1340	12.91	12.91	15.5	0			
15	QPSK	36	1360	12.92	12.92	15.5	0			
15	QPSK	36	1380	12.93	12.93	15.5	0			
15	QPSK	36	1400	12.94	12.94	15.5	0			
15	QPSK	36	1420	12.95	12.95	15.5	0			
15	QPSK	36	1440	12.96	12.96	15.5	0			
15	QPSK	36	1460	12.97	12.97	15.5	0			
15	QPSK	36	1480	12.98	12.98	15.5	0			
15	QPSK	36	1500	12.99	12.99	15.5	0			
15	QPSK	36	1520	13.00	13.00	15.5	0			
15	QPSK	36	1540	13.01	13.01	15.5	0			
15	QPSK	36	1560	13.02	13.02	15.5	0			
15	QPSK	36	1580	13.03	13.03	15.5	0			
15	QPSK	36	1600	13.04	13.04	15.5	0			
15	QPSK	36	1620	13.05	13.05	15.5	0			
15	QPSK	36	1640	13.06	13.06	15.5	0			
15	QPSK	36	1660	13.07	13.07	15.5	0			
15	QPSK	36	1680	13.08	13.08	15.5	0			
15	QPSK	36	1700	13.09	13.09	15.5	0			
15	QPSK	36	1720	13.10	13.10	15.5	0			
15	QPSK	36	1740	13.11	13.11	15.5	0			
15	QPSK	36	1760	13.12	13.12	15.5	0			
15	QPSK	36	1780	13.13	13.13	15.5	0			
15	QPSK	36	1800	13.14	13.14	15.5	0			
15	QPSK	36	1820	13.15	13.15	15.5	0			
15	QPSK	36	1840	13.16	13.16	15.5	0			
15	QPSK	36	1860	13.17	13.17	15.5	0			
15	QPSK	36	1880	13.18	13.18	15.5	0			
15	QPSK	36	1900	13.19	13.19	15.5	0			
15	QPSK	36	1920	13.20	13.20	15.5	0			
15	QPSK	36	1940	13.21	13.21	15.5	0			
15	QPSK	36	1960	13.22	13.22	15.5	0			
15	QPSK	36	1980	13.23	13.23	15.5	0			
15										



Band 38(only on channel required)										
RF (MHz)	Modulation	RB Size	RB Offset	Power Ch / Freq	Power Ch / Freq	Power Ch / Freq	Time-up limit (min)	MPR (dB)		
Channel										
				3760	3800	3850				
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	20.30	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	20.33	20.38	20.41				
20	HQAM	100	80	20.52	20.38	20.39				
20	HQAM	100	40	20.33	20.38	20.41	21.0	0.5		
20	HQAM	100	80	20.52	20.40	20.42				
Channel										
				3765	3800	3875				
Frequency (MHz)										
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	20.56	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	20.40				
15	QPSK	75	0	20.34	20.48	20.49				
15	QPSK	1	0	20.43	20.42	20.50				
15	HQAM	1	37	20.34	20.45	20.40	21.5	0		
15	HQAM	1	74	20.57	20.44	20.46				
15	HQAM	36	0	20.39	20.48	20.48				
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				
15	HQAM	1	0	20.50	20.17	20.28	21.0	0		
15	HQAM	1	37	20.34	20.14	20.20				
15	HQAM	1	74	20.58	20.41	20.40				
15	HQAM	36	0	20.40	20.47	20.50				
15	HQAM	36	20	20.47	20.48	20.49	21.0	0.5		
15	HQAM	36	40	20.44	20.59	20.58				
15	HQAM	75	0	20.37	20.47	20.48				
Channel										
				3765	3800	3875				
Frequency (MHz)										
10	QPSK	1	0	20.45	20.46	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	20.45	20.48				
10	QPSK	25	12	20.45	20.45	20.45	21.5	0		
10	QPSK	25	20	20.54	20.61	20.67				
10	QPSK	50	0	20.51	20.45	20.58				
10	QPSK	50	1	20.54	20.56	20.64	21.5	0		
10	HQAM	1	40	20.67	20.54	20.62				
10	HQAM	25	0	20.48	20.53	20.62				
10	HQAM	25	12	20.51	20.44	20.53	21.5	0		
10	HQAM	25	20	20.59	20.56	20.68				
10	HQAM	50	0	20.56	20.48	20.68				
10	HQAM	50	1	20.55	20.45	20.55	21.5	0		
10	HQAM	50	1	20.58	20.48	20.58				
10	HQAM	50	1	20.53	20.47	20.55	21.5	0		
10	HQAM	50	1	20.56	20.48	20.58				
10	HQAM	50	1	20.53	20.47	20.55	21.5	0		
10	HQAM	50	1	20.56	20.48	20.58				
10	HQAM	50	1	20.53	20.47	20.55	21.5	0		
10	HQAM	50	1	20.56	20.48	20.58				
10	HQAM	50	1	20.53	20.47	20.55	21.5	0		
10	HQAM	50	1	20.56	20.48	20.58				
10	HQAM	50	1	20.53	20.47	20.55	21.5	0		
10	HQAM	50	1	20.56	20.48	20.58				
10	HQAM	50	1	20.53	20.47	20.55	21.5	0		
10	HQAM	50	1	20.56	20.48	20.58				
10	HQAM	50	1	20.53	20.47	20.55	21.5	0		
10	HQAM	50	1	20.56	20.48	20.58				
10	HQAM	50	1	20.53	20.47	20.55	21.5	0		
10	HQAM	50	1	20.56	20.48	20.58				
10	HQAM	50	1	20.53	20.47	20.55	21.5	0		
10	HQAM	50	1	20.56	20.48	20.58				
10	HQAM	50	1	20.53	20.47	20.55	21.5	0		
10	HQAM	50	1	20.56	20.48	20.58				
10	HQAM	50	1	20.53	20.47	20.55	21.5	0		
10	HQAM	50	1	20.56	20.48	20.58				
10	HQAM	50	1	20.53	20.47	20.55	21.5	0		
10	HQAM	50	1	20.56	20.48	20.58				
10	HQAM	50	1	20.53	20.47	20.55	21.5	0		
10	HQAM	50	1	20.56	20.48	20.58				
10	HQAM	50	1	20.53	20.47	20.55	21.5	0		
10	HQAM	50	1	20.56	20.48	20.58				
10	HQAM	50	1	20.53	20.47	20.55	21.5	0		
10	HQAM	50	1	20.56	20.48	20.58				
10	HQAM	50	1	20.53	20.47	20.55	21.5	0		
10	HQAM	50	1	20.56	20.48	20.58				
10	HQAM	50	1	20.53	20.47	20.55	21.5	0		
10	HQAM	50	1	20.56	20.48	20.58				
10	HQAM	50	1	20.53	20.47	20.55	21.5	0		
10	HQAM	50	1	20.56	20.48	20.58				
10	HQAM	50	1	20.53	20.47	20.55	21.5	0		
10	HQAM	50	1	20.56	20.48	20.58				
10	HQAM	50	1	20.53	20.47	20.55	21.5	0		
10	HQAM	50	1	20.56	20.48	20.58				
10	HQAM	50	1	20.53	20.47	20.55	21.5	0		
10	HQAM	50	1	20.56	20.48	20.58				
10	HQAM	50	1	20.53	20.47	20.55	21.5	0		
10	HQAM	50	1	20.56	20.48	20.58				
10	HQAM	50	1	20.53	20.47	20.55	21.5	0		
10	HQAM	50	1	20.56	20.48	20.58				
10	HQAM	50	1	20.53	20.47	20.55	21.5	0		
10	HQAM	50	1	20.56	20.48	20.58				
10	HQAM	50	1	20.53	20.47	20.55	21.5	0		
10	HQAM	50	1	20.56	20.48	20.58				
10	HQAM	50	1	20.53	20.47	20.55	21.5	0		
10	HQAM	50	1	20.56	20.48	20.58				
10	HQAM	50	1	20.53	20.47	20.55	21.5	0		
10	HQAM	50	1	20.56	20.48	20.58				
10	HQAM	50	1	20.53	20.47	20.55	21.5	0		
10	HQAM	50	1	20.56	20.48	20.58				
10	HQAM	50	1	20.53	20.47	20.55	21.5	0		
10	HQAM	50	1	20.56	20.48	20.58				
10	HQAM	50	1	20.53	20.47	20.55	21.5	0		
10	HQAM	50	1	20.56	20.48	20.58				
10	HQAM	50	1	20.53	20.47	20.55	21.5	0		
10	HQAM	50	1	20.56	20.48	20.58				
10	HQAM	50	1	20.53	20.47	20.55	21.5	0		
10	HQAM	50	1	20.56	20.48	20.58				
10	HQAM	50	1	20.53	20.47	20.55	21.5	0		
10	HQAM	50	1	20.56	20.48	20.58				
10	HQAM	50	1	20.53	20.47	20.55	21.5	0		
10	HQAM	50	1	20.56	20.48	20.58				
10	HQAM	50	1	20.53	20.47	20.55	21.5	0		
10	HQAM	50	1	20.56	20.48	20.58				
10	HQAM	50	1	20.53	20.47	20.55	21.5	0		



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)	1850.2	1880	1909.8		1850.2	1880	1909.8	
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	9662	9800	9938		1537	1638	1738		
Frequency (MHz)	1852.4	1880	1907.6		1712.4	1732.6	1752.6		
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	384	777		25	500	1175		476	580	684	
TX Channel	824.7	836.52	848.31		1861.95	1880	1908.76		817.9	820.5	823.1	
Frequency (MHz)	824.7	836.52	848.31		1861.95	1880	1908.76		817.9	820.5	823.1	
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. (2350)	Power Middle Ch./Freq. (2350)	Power High Ch./Freq. (2350)	Tune-up limit (dBm)	MPP (dB)		
Channel										
Frequency (MHz)										
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	19.36	19.36				
20	64QAM	100	0	19.56	19.55	19.41				
Channel										
Frequency (MHz)										
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	19.48	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)										
10	QPSK	1	0	19.32	19.42	19.48				
10	QPSK	1	25	19.41	19.40	19.35	20	0		
10	QPSK	1	49	19.51	19.47	19.41				
10	QPSK	25	0	19.52	19.48	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	19.26	20	0		
10	16QAM	1	49	19.54	19.54	19.50				
10	16QAM	25	0	19.49	19.36	19.38				
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	19.25	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	19.28				
10	64QAM	50	0	19.38	19.48	19.33				
Channel										
Frequency (MHz)										
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)										
3	QPSK	1	0	19.18	19.22	19.32				
3	QPSK	1	8	19.45	19.49	19.30	20	0		
3	QPSK	1	14	19.24	19.38	19.26				
3	QPSK	3	0	19.45	19.38	19.23				
3	QPSK	3	4	19.41	19.46	19.24	20	0		
3	QPSK	8	7	19.34	19.41	19.25				
3	QPSK	15	0	19.41	19.41	19.28				
3	16QAM	1	0	19.42	19.45	19.39				
3	16QAM	1	8	19.54	19.67	19.25	20	0		
3	16QAM	1	14	19.52	19.57	19.35				
3	16QAM	8	0	19.49	19.45	19.42				
3	16QAM	8	4	19.51	19.47	19.37	20	0		
3	16QAM	8	7	19.45	19.40	19.52				
3	16QAM	15	0	19.47	19.33	19.20				
3	64QAM	1	0	19.54	19.66	19.52				
3	64QAM	1	8	19.56	19.54	19.46	20	0		
3	64QAM	1	14	19.45	19.54	19.55				
3	64QAM	8	0	19.39	19.40	19.25				
3	64QAM	8	4	19.51	19.57	19.20	20	0		
3	64QAM	8	7	19.45	19.36	19.27				
3	64QAM	15	0	19.43	19.35	19.31				
Channel										
Frequency (MHz)										
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	19.26	19.23				
1.4	QPSK	3	1	19.40	19.37	19.25				
1.4	QPSK	3	3	19.32	19.29	19.08	20	0		
1.4	QPSK	6	0	19.31	19.31	19.19				
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				
1.4	16QAM	3	3	19.30	19.40	19.26	20	0		
1.4	16QAM	6	0	19.25	19.33	19.16				
1.4	64QAM	1	0	19.54	19.66	19.49				
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				

Band 4 (AWS Band) Part 27L (only on channel required)										
BW (MHz)	Modulation	RB Size	RB Offset	Power Low Ch./Freq. (2350)	Power Middle Ch./Freq. (2350)	Power High Ch./Freq. (2350)	Tune-up limit (dBm)	MPP (dB)	</	



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 (cdm)	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	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	16QAM	1	99	19.36	18.88	19.18				
20	16QAM	50	0	19.16	19.11	19.06	20	0		
20	16QAM	50	24	19.02	19.08	18.93				
20	16QAM	50	50	19.10	18.98	18.93				
20	16QAM	100	0	19.11	19.04	19.03				
20	16QAM	1	0	19.06	19.11	19.30				
20	16QAM	1	49	19.15	19.20	19.09				
20	16QAM	1	99	19.32	19.16	19.15				
20	16QAM	50	0	19.32	19.05	19.00				
20	16QAM	50	24	19.14	19.11	18.95				
20	16QAM	50	50	19.20	19.01	18.96				
20	16QAM	100	0	19.20	19.01	19.02				
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	18.97				
15	QPSK	36	20	19.29	19.17	19.06				
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				
15	16QAM	1	74	19.45	19.60	19.58				
15	16QAM	36	0	19.26	19.21	19.12	20	0		
15	16QAM	36	20	19.34	19.11	19.10				
15	16QAM	36	39	19.29	19.15	19.02				
15	16QAM	75	0	19.27	19.11	19.01				
15	16QAM	1	0	19.70	19.59	19.58				
15	16QAM	1	37	19.45	19.43	19.44				
15	16QAM	1	74	19.68	19.82	19.56				
15	16QAM	36	0	19.36	19.19	19.00				
15	16QAM	36	20	19.32	19.19	18.98				
15	16QAM	36	39	19.20	19.15	19.33				
15	16QAM	75	0	19.26	19.19	19.21				
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				
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				
10	16QAM	1	49	19.43	19.45	19.63				
10	16QAM	25	0	19.21	19.10	19.00	20	0		
10	16QAM	25	12	19.18	19.05	19.08				
10	16QAM	25	25	19.10	18.99	19.11				
10	16QAM	50	0	19.16	19.14	19.54				
10	16QAM	1	0	19.45	19.53	19.72				
10	16QAM	1	25	19.55	19.54	19.53				
10	16QAM	1	49	19.60	19.70	19.48				
10	16QAM	25	0	19.23	19.13	19.12				
10	16QAM	25	12	19.30	19.08	19.11				
10	16QAM	25	25	19.32	19.17	19.05				
10	16QAM	50	0	19.19	19.03	19.16				
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				
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				
5	16QAM	1	24	19.74	19.64	19.46				
5	16QAM	12	0	19.26	19.10	19.14	20	0		
5	16QAM	12	7	19.22	19.08	19.10				
5	16QAM	12	13	19.11	19.02	19.05				
5	16QAM	25	0	19.11	19.06	19.09				
5	16QAM	1	0	19.52	19.40	19.39				
5	16QAM	1	12	19.39	19.30	19.34				
5	16QAM	1	24	19.54	19.48	19.32				
5	16QAM	12	0	19.29	19.22	19.19				
5	16QAM	12	7	19.24	19.12	19.14				
5	16QAM	12	13	19.26	19.07	19.09				
5	16QAM	25	0	19.23	19.12	19.13				
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				
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				
3	16QAM	1	14	19.33	19.47	19.37				
3	16QAM	8	0	19.24	19.27	19.18	20	0		
3	16QAM	8	4	19.15	19.11	19.08				
3	16QAM	8	7	19.19	19.04	18.98				
3	16QAM	15	0	19.06	18.93	19.05				
3	16QAM	1	0	19.31	19.12	19.18				
3	16QAM	1	8	19.47	19.47	19.34				
3	16QAM	1	14	19.42	19.05	19.12				
3	16QAM	8	0	19.12	19.07	19.12				
3	16QAM	8	4	19.24	19.05	19.08				
3	16QAM	8	7	19.07	19.06	19.04				
3	16QAM	15	0	19.17	19.10	19.11				
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				
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				
1.4	16QAM	1	5	19.42	19.29	19.19				
1.4	16QAM	3	0	19.27	19.10	19.11	20	0		
1.4	16QAM	3	1	19.18	19.31	19.19				
1.4	16QAM	3	3	19.20	19.02	19.20				
1.4	16QAM	6	0	19.14	19.09	19.14				
1.4	16QAM	1	0	19.01	19.10	19.05				
1.4	16QAM	1	3	19.11	18.73	18.89				
1.4	16QAM	1	5	18.92	18.77	18.81				
1.4	16QAM	3	0	19.20	18.99	19.03				
1.4	16QAM	3	1	19.23	19.12	19.11				
1.4	16QAM	3	3	19.15	18.11	19.01				
1.4	16QAM	6	0	19.20	19.09	19.05				

Band 66										
BW (MHz)	Modulation	RB Size	RB Offset	Power Low Ch / Freq.	Power Middle Ch / Freq.	Power High Ch / Freq.	Tune-up limit (cdm)	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	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	16QAM	1	99	19.62	19.68	19.54				
20	16QAM	50	0	19.09	19.23	19.39	20.5	0		
20	16QAM	50	24	19.22	19.25	19.43				
20	16QAM	50	50	19.24	19.27	19.31				
20	16QAM	100	0	19.22	19.20	19.32				
20	16QAM	1	0	19.55	19.57	19.59				
20	16QAM	1	49	19.46	19.53	19.35				
20	16QAM	1	99	19.76	19.43	19.50				
20	16QAM	50	0	19.11	19.19	19.22				
20	16QAM	50	24	19.26	19.34	19.34				
20	16QAM	50	50	19.23	19.10	19.35				
20	16QAM	100	0	19.27	19.33	19.22				
Channel										
Frequency (MHz)										
15	QPSK	1	0	19.86	19.22	18.99	20.5	0		
15	QPSK	1	37	19.35	19.41	18.97				
15	QPSK	1	74	19.35	19.41	19.45				
15	QPSK	36	0	19.22	19.17	18.97				
15	QPSK	36	20	19.10	19.28	19.40				
15	QPSK	36	39	19.14	19.20	19.26				
15	QPSK	75	0	19.17	19.33	19.25				
15	16QAM	1	0	19.57	19.45					



Band 38(only on channel required)										
RF (MHz)	Modulation	RB Size	RB Offset	Power Ch / Freq	Power Ch / Freq	Power Ch / Freq	Time-up limit (dBm)	MPR (dB)		
Channel										
Frequency (MHz)										
37650	38000	38150								
20	QPSK	1	0	22.59	22.61	22.65	23.5	0		
20	QPSK	1	40	22.54	22.49	22.52				
20	QPSK	1	80	22.74	22.69	22.70				
20	QPSK	50	0	22.49	22.75	22.43				
20	QPSK	24	0	22.45	22.63	22.61	23	0.5		
20	QPSK	50	0	22.58	22.87	22.72				
20	QPSK	100	0	22.84	22.85	22.89				
20	QPSK	50	0	21.00	20.96	21.08				
20	16QAM	1	40	22.85	22.54	22.58	23	0.5		
20	16QAM	1	80	22.75	22.76	22.78				
20	16QAM	50	0	20.94	20.96	21.02				
20	16QAM	50	24	20.97	20.93	21.02				
20	16QAM	100	0	21.40	21.17	21.04	22	1.5		
20	16QAM	1	0	20.97	20.89	21.13				
20	16QAM	40	0	20.94	21.03	21.02				
20	16QAM	1	80	21.19	20.94	21.28				
20	16QAM	1	40	20.94	21.03	21.02	21	2.5		
20	16QAM	1	80	19.58	19.35	19.46				
20	16QAM	50	50	19.34	19.52	19.67				
20	16QAM	100	0	19.34	19.60	19.34				
Channel										
Frequency (MHz)										
37650	38000	38175	Time-up limit (dBm)	MPR (dB)						
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	72	0	22.48	22.63	22.86				
15	QPSK	1	0	22.62	22.67	22.75				
15	16QAM	47	0	20.94	20.96	21.00				
15	16QAM	1	74	22.75	22.71	22.84	22	1.5		
15	16QAM	36	20	21.19	21.16	21.02				
15	16QAM	36	30	21.03	21.18	21.00				
15	16QAM	1	0	20.97	21.27	21.00				
15	16QAM	1	0	20.88	20.93	21.12	21	1.5		
15	16QAM	1	37	21.01	20.95	21.01				
15	16QAM	1	74	21.15	21.14	21.07				
15	16QAM	36	0	19.41	19.56	19.48				
15	16QAM	36	30	19.40	19.45	19.46	21	2.5		
15	16QAM	36	30	19.43	19.61	19.71				
15	16QAM	72	0	19.40	19.44	19.51				
15	16QAM	72	0	19.40	19.44	19.51				
Channel										
Frequency (MHz)										
37650	38000	38030	Time-up limit (dBm)	MPR (dB)						
10	QPSK	1	0	22.46	22.52	22.56	23.5	0		
10	QPSK	1	25	22.55	22.27	22.59				
10	QPSK	1	40	22.58	22.62	22.60				
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	20	22.84	22.94	22.74				
10	QPSK	50	0	22.81	22.51	22.53				
10	QPSK	1	0	22.87	22.71	22.85				
10	16QAM	1	25	22.86	22.61	22.66	23	0.5		
10	16QAM	1	45	22.84	22.77	22.66				
10	16QAM	25	0	20.97	21.05	20.98				
10	16QAM	25	12	21.13	20.94	21.08				
10	16QAM	25	25	21.20	21.20	21.33	22	1.5		
10	16QAM	50	0	21.00	21.09	21.00				
10	16QAM	50	0	21.02	21.18	21.15				
10	16QAM	1	25	21.08	21.05	21.09				
10	16QAM	1	40	21.18	21.14	21.04	21	2.5		
10	16QAM	25	0	19.85	19.62	19.43				
10	16QAM	25	15	19.81	19.60	19.61				
10	16QAM	25	15	19.86	19.67	19.67				
10	16QAM	50	0	19.43	19.39	19.64	21	2.5		
10	16QAM	50	0	19.43	19.39	19.64				
10	16QAM	50	0	19.43	19.39	19.64				
10	16QAM	50	0	19.43	19.39	19.64				

Band 41 (2.6G Band)										
RF (MHz)	Modulation	RB Size	RB Offset	Power Ch / Freq	Power Ch / Freq	Power Ch / Freq	Power Ch / Freq	Power Ch / Freq	Time-up limit (dBm)	MPR (dB)
Channel										
Frequency (MHz)										
39760	40186	40610	41036	41460						
20	QPSK	1	0	22.22	22.25	22.26	22.24	22.29	23.5	0
20	QPSK	1	40	22.42	22.36	22.48	22.51	22.52		
20	QPSK	1	80	22.29	22.19	22.19	22.29	22.23		
20	QPSK	50	0	21.80	21.86	21.81	21.65	21.53		
20	QPSK	24	0	21.81	21.69	21.73	21.78	21.56	23	0.5
20	QPSK	50	0	21.81	21.78	21.62	21.65	21.51		
20	QPSK	100	0	21.81	21.82	21.88	21.69	21.61		
20	16QAM	1	0	21.80	21.82	21.84	21.66	21.47		
20	16QAM	1	40	21.82	21.73	21.88	21.70	21.51	23	0.5
20	16QAM	1	80	21.45	21.39	21.43	21.42	21.49		
20	16QAM	50	0	20.94	20.95	20.82	20.79	20.54		
20	16QAM	50	24	20.94	20.91	20.72	20.86	20.60		
20	16QAM	100	0	20.88	20.83	20.83	20.71	20.46	22	1.5
20	16QAM	1	0	20.76	20.72	20.79	20.91	20.78		
20	16QAM	40	0	20.58	20.70	20.68	20.78	20.82		
20	16QAM	1	80	20.70	20.62	20.67	20.92	20.66		
20	16QAM	1	40	19.43	19.46	19.46	19.39	19.40	21	2.5
20	16QAM	1	80	19.43	19.46	19.31	19.35	19.11		
20	16QAM	50	50	19.41	19.34	19.15	19.22	19.07		
20	16QAM	100	0	19.42	19.40	19.35	19.30	19.06		
Channel										
Frequency (MHz)										
39760	40186	40610	41036	41460	Time-up limit (dBm)	MPR (dB)				
15	QPSK	1	0	22.22	22.14	22.07	22.11	21.86	23.5	0
15	QPSK	1	37	22.15	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	21.87	21.91	21.72	21.77	21.58	23	0.5
15	QPSK	72	0	22.01	21.98	21.80	21.82	21.66		
15	QPSK	1	0	21.94	21.46	21.38	21.27	21.29		
15	16QAM	47	0	21.48	21.46	21.39	21.62	21.81		
15	16QAM	1	74	21.36	21.33	21.32	21.38	21.47	22	1.5
15	16QAM	36	20	20.98	20.91	20.70	20.78	20.60		
15	16QAM	36	30	20.98	20.95	20.75	20.78	20.64		
15	16QAM	1	0	20.97	20.92	20.66	20.71	20.58		
15	16QAM	1	0	20.44	20.41	20.37	20.39	20.42	21	1.5
15	16QAM	1	37	20.47	20.50	20.50	20.52	20.44		
15	16QAM	1	74	20.17	20.16	20.16	20.12	20.12		
15	16QAM	36	0	19.40	19.43	19.46	19.25	19.24		
15	16QAM	36	30	19.38	19.54	19.33	19.38	19.18	21	2.5
15	16QAM	36	30	19.44	19.61	19.36	19.46	19.28		
15	16QAM	72	0	19.36	19.31	19.30	19.31	19.14		
15	16QAM	72	0	19.36	19.31	19.30	19.31	19.14		
Channel										
Frequency (MHz)										
39760	40186	40610	41036	41460	Time-up limit (dBm)	MPR (dB)				
10	QPSK	1	0	22.43	22.47	22.43	22.33	22.56	23.5	0
10	QPSK	1	25	22.50	22.42	22.30	22.34	22.48		
10	QPSK	1	40	22.42	22.33	22.34	22.25	22.44		
10	QPSK	25	0	21.80	21.80	21.74	21.62	21.53		
10	QPSK	25	12	21.89	21.94	21.77	21.84	21.89	23	0.5
10	QPSK	25	20	22.00	21.91	21.75	21.80	21.92		
10	QPSK	50	0	21.84	21.87	21.73	21.79	21.71		
10	16QAM	1	0	21.88	21.62	21.63	21.77	21.57		
10	16QAM	1	25	21.82	21.68	21.69	21.84	21.81	23	0.5
10	16QAM	1	40	21.89	21.79	21.79	21.75	21.53		
10	16QAM	25	0	20.86	20.92	20.77	20.85	20.68		
10	16QAM	25	12	21.00	20.95	20.75	20.80	20.69		
10	16QAM	25	25	20.97	20.89	20.70	20.78	20.62	22	1.5
10	16QAM	50	0	21.00	20.92	20.76	20.80	20.64		
10	16QAM	50	0	20.73	20.72	20.41	20.74	20.59		
10	16QAM	1	25	20.78	20.78	20.59	20.72	20.58		
10	16QAM	1	40	20.70	20.53	20.71	20.73	20.55	21	2.5
10	16QAM	25	0	19.24	19.48	19.31	19.40	19.20		
10	16QAM	25	15	19.54	19.38	19.25	19.28	19.14		
10	16QAM	50	0	19.50	19.39	19.24	19.29	19.12		

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 %	
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 %	
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 %	
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		
802.11n-HT20 MCS0	36	5180	13.87	14.00	97.79	
	40	5200	14.75	15.50		
	44	5220	14.97	15.50		
	48	5240	14.69	15.50		
802.11n-HT40 MCS0	38	5190	12.13	12.50	96.03	
	46	5230	15.01	15.50		
802.11ac-VHT20 MCS0	36	5180	13.42	13.50	97.40	
	40	5200	14.66	15.50		
	44	5220	14.87	15.50		
	48	5240	14.59	15.50		
802.11ac-VHT40 MCS0	38	5190	12.08	12.50	96.04	
	46	5230	14.97	15.50		
802.11ac-VHT80 MCS0	42	5210	11.20	12.00	92.61	

5GHz WLAN		Body-worn & Hotspot				
Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %	
802.11a 6Mbps	36	5180	8.50	97.93		
	40	5200	8.50			
	44	5220	8.50			
	48	5240	8.50			
802.11n-HT20 MCS0	36	5180	Not Required	8.50	97.79	
	40	5200	8.50			
	44	5220	8.50			
	48	5240	8.50			
802.11n-HT40 MCS0	38	5190	8.05	8.50	96.03	
	46	5230	7.92	8.50		
802.11ac-VHT20 MCS0	36	5180	8.50	97.40		
	40	5200	8.50			
	44	5220	8.50			
	48	5240	8.50			
802.11ac-VHT40 MCS0	38	5190	8.50	96.04		
	46	5230	8.50			
802.11ac-VHT80 MCS0	42	5210	8.00	92.61		

5GHz WLAN		Simultaneous-0mm				
Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %	
802.11a 6Mbps	36	5180	14.50	97.93		
	40	5200	14.50			
	44	5220	14.50			
	48	5240	14.50			
802.11n-HT20 MCS0	36	5180	Not Required	14.00	97.79	
	40	5200	14.50			
	44	5220	14.90			
	48	5240	14.50			
802.11n-HT40 MCS0	38	5190	12.13	12.50	96.03	
	46	5230	14.12	14.50		
802.11ac-VHT20 MCS0	36	5180	13.50	97.40		
	40	5200	14.50			
	44	5220	14.50			
	48	5240	14.50			
802.11ac-VHT40 MCS0	38	5190	12.50	96.04		
	46	5230	14.50			
802.11ac-VHT80 MCS0	42	5210	12.00	92.61		

5GHz WLAN		Full power & Head & Handheld				
Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %	
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		
802.11n-HT20 MCS0	52	5260	16.12	17.00	97.79	
	56	5280	16.19	17.00		
	60	5300	16.28	17.00		
	64	5320	15.99	17.00		
802.11n-HT40 MCS0	54	5270	16.47	17.00	96.03	
	62	5310	12.90	13.00		
802.11ac-VHT20 MCS0	52	5260	16.02	17.00	97.40	
	56	5280	16.04	17.00		
	60	5300	16.06	17.00		
	64	5320	15.84	17.00		
802.11ac-VHT40 MCS0	54	5270	16.43	17.00	96.04	
	62	5310	12.57	13.00		
802.11ac-VHT80 MCS0	58	5290	12.33	12.50	92.61	

5GHz WLAN		Body-worn				
Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %	
802.11a 6Mbps	52	5260	8.50	97.93		
	56	5280	8.50			
	60	5300	8.50			
	64	5320	8.50			
802.11n-HT20 MCS0	52	5260	Not Required	8.50	97.79	
	56	5280	8.50			
	60	5300	8.50			
	64	5320	8.50			
802.11n-HT40 MCS0	54	5270	7.70	8.50	96.03	
	62	5310	7.99	8.50		
802.11ac-VHT20 MCS0	52	5260	8.50	97.40		
	56	5280	8.50			
	60	5300	8.50			
	64	5320	8.50			
802.11ac-VHT40 MCS0	54	5270	8.50	96.04		
	62	5310	8.50			
802.11ac-VHT80 MCS0	58	5290	8.00	92.61		

5GHz WLAN		Simultaneous-0mm				
Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %	
802.11a 6Mbps	52	5260	16.00	97.93		
	56	5280	16.00			
	60	5300	16.00			
	64	5320	16.00			
802.11n-HT20 MCS0	52	5260	Not Required	16.00	97.79	
	56	5280	16.00			
	60	5300	16.00			
	64	5320	16.00			
802.11n-HT40 MCS0	54	5270	14.82	16.00	96.03	
	62	5310	12.90	13.00		
802.11ac-VHT20 MCS0	52	5260	16.00	97.40		
	56	5280	16.00			
	60	5300	16.00			
	64	5320	16.00			
802.11ac-VHT40 MCS0	54	5270	16.00	96.04		
	62	5310	13.00			
802.11ac-VHT80 MCS0	58	5290	12.50	92.61		

5GHz WLAN		Full power & Head & Handheld				
Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %	
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		
802.11n-HT20 MCS0	116	5580	17.52	18.50	97.79	
	124	5620	17.43	18.50		
	132	5660	17.34	18.50		
	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		
802.11ac-VHT20 MCS0	124	5620	17.39	18.50	97.40	
	132	5660	17.28	18.50		
	140	5700	13.16	14.00		
	144	5720	17.19	18.50		
	102	5510	14.83	15.00		
802.11ac-VHT40 MCS0	110	5550	17.79	18.50	96.04	
	126	5630	17.64	18.50		
	134	5670	16.95	18.50		
	142	5710	17.51	18.50		
	106	5530	13.09	14.00		
802.11ac-VHT80 MCS0	122	5610	16.73	17.00	92.61	
	138	5690	16.14	17.00		

5GHz WLAN		Body-worn				
Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %	
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			
802.11n-HT20 MCS0	116	5580	13.00	97.79		
	124	5620	13.00			
	132	5660	13.00			
	140	5700	13.00			
	144	5720	13.00			
	102	5510	12.01		13.00	
	110	5550	12.06		13.00	
802.11n-HT40 MCS0	126	5630	11.86	13.00	96.03	
	134	5670	11.75	13.00		
	142	5710	11.81	13.00		
	100	5500	13.00	97.40		
	116	5580	13.00			
124	5620	13.00				
132	5660	13.00				
140	5700	13.00				
802.11ac-VHT20 MCS0	140	5700	13.00	96.04		
	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			
802.11ac-VHT80 MCS0	122	5610	12.00	92.61		
	138	5690	12.00			

5GHz WLAN		Simultaneous-0mm				
Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %	
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	5500	17.50			
802.11n-HT20 MCS0	116	5580	17.50	97.79		
	124	5620	17.50			
	132	5660	17.50			
	140	5700	14.00			
	144	5720	17.50			
	102	5510	15.24		16.00	
	110	5550	16.61		17.50	
802.11n-HT40 MCS0	126	5630	16.42	17.50	96.03	
	134	5670	16.55	17.50		
	142	5710	16.54	17.50		
	100	5500	17.50	97.40		
	116	5580	17.50			
124	5620	17.50				
132	5660	17.50				
140	5700	14.00				
802.11ac-VHT20 MCS0	140	5700	17.50	96.04		
	144	5720	17.50			
	102	5510	15.00			
	110	5550	17.50			
	126	5630	17.50			
802.11ac-VHT4						



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	703	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	384	498.0			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 BC0	RC3 S032 (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	
WCDMA V	RMC 12.2Kbps	4233	846.6			Front	Simm	1.18	1.520	0.056	0.078	0.188	0.201	0.668	0.753	0.926	0.928	0.905	0.049	0.184	0.453	0.659	0.758	0.827	0.804	0.829	0.049	0.089	0.168	
										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
										42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62
										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	
LTE Band 12	QPSK	23095	707.5	1	0	Back	Simm	1.01	1.270	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
										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	0.676	1.163	0.664	0.656
										42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62
										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	
LTE Band 13	QPSK	23230	782	1	0	Bottom side	Simm	1.05	1.380	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
										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
										42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62
										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	
LTE Band 26	QPSK	26965	841.5	1	0	Front	Simm	1.13	1.470	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
										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
										42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62
										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	0.162	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
CDMA2000 BC0	RC3 SO32 (F+SCH)	777	848.31			Front	Simm	1.11	1.470	1																			