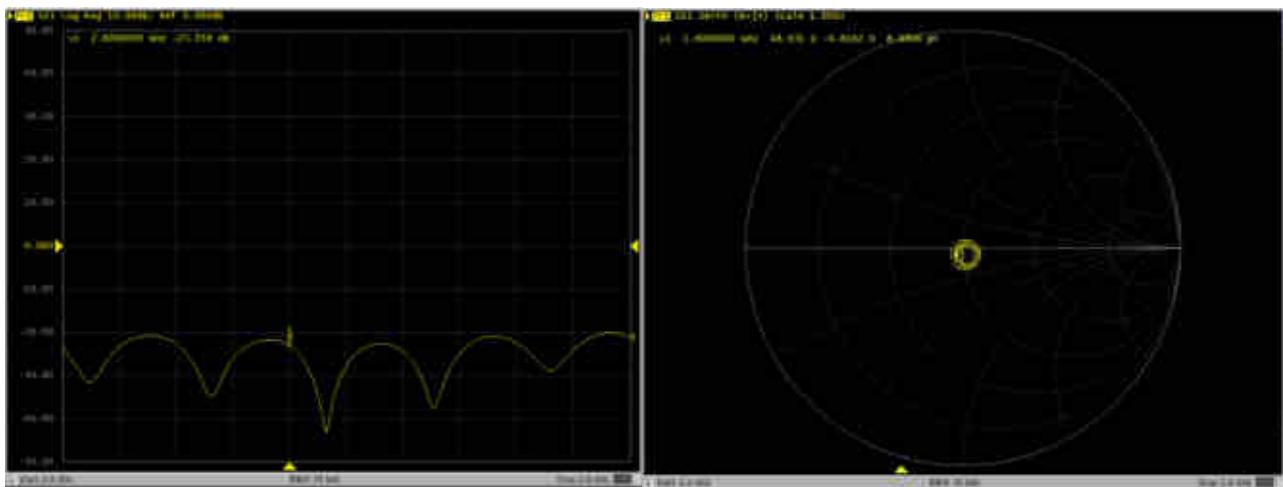




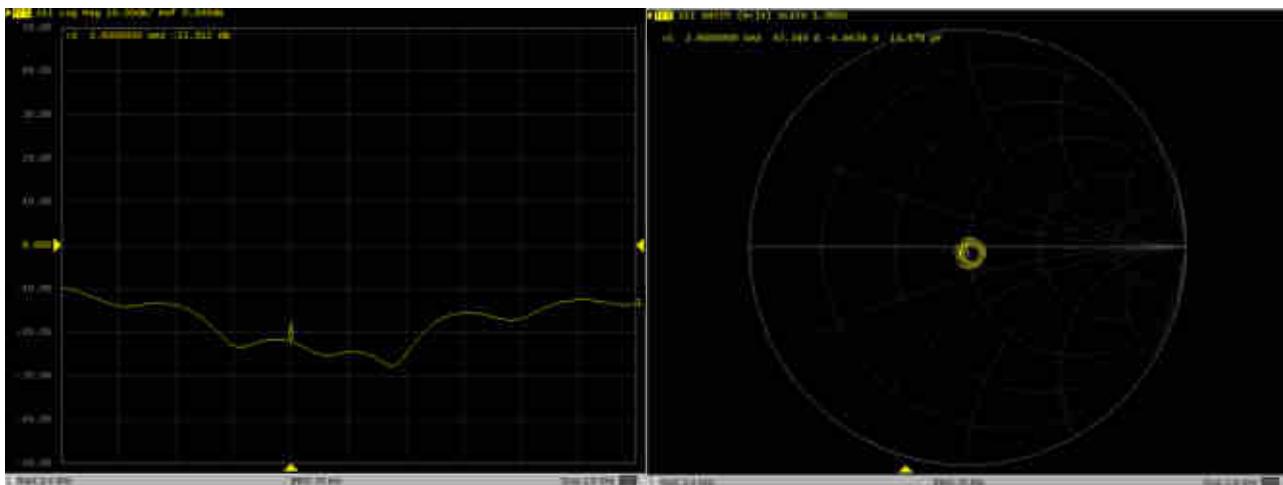
SPORTON LAB.

Dipole Verification Data > D2600V2, serial no. 1070

2600MHz - Head



2600MHz – Body





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Accreditation No.: SCS 0108

Client Sporton

Certificate No: D5GHzV2-1113_Sep19

CALIBRATION CERTIFICATE

Object D5GHzV2 - SN:1113

Calibration procedure(s) QA CAL-22.v4
Calibration Procedure for SAR Validation Sources between 3-6 GHz

Calibration date: September 24, 2019

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NRP	SN: 104778	03-Apr-19 (No. 217-02892/02893)	Apr-20
Power sensor NRP-Z91	SN: 103244	03-Apr-19 (No. 217-02892)	Apr-20
Power sensor NRP-Z91	SN: 103245	03-Apr-19 (No. 217-02893)	Apr-20
Reference 20 dB Attenuator	SN: 5058 (20k)	04-Apr-19 (No. 217-02894)	Apr-20
Type-N mismatch combination	SN: 5047.2 / 06327	04-Apr-19 (No. 217-02895)	Apr-20
Reference Probe EX3DV4	SN: 3503	25-Mar-19 (No. EX3-3503_Mar19)	Mar-20
DAE4	SN: 601	30-Apr-19 (No. DAE4-601_Apr19)	Apr-20

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power meter E4419B	SN: GB39512475	30-Oct-14 (in house check Feb-19)	In house check: Oct-20
Power sensor HP 8481A	SN: US37292783	07-Oct-15 (in house check Oct-18)	In house check: Oct-20
Power sensor HP 8481A	SN: MY41092317	07-Oct-15 (in house check Oct-18)	In house check: Oct-20
RF generator R&S SMT-06	SN: 100972	15-Jun-15 (in house check Oct-18)	In house check: Oct-20
Network Analyzer Agilent E8358A	SN: US41080477	31-Mar-14 (in house check Oct-18)	In house check: Oct-19

Calibrated by:	Name	Function	Signature
	Jeton Kastrati	Laboratory Technician	

Approved by:	Name	Function	Signature
	Katja Pokovic	Technical Manager	

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Issued: September 25, 2019



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Accreditation No.: SCS 0108

Glossary:

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

Calibration is Performed According to the Following Standards:

- a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
- b) IEC 62209-1, "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"

Additional Documentation:

- e) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

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

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

Measurement Conditions

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

DASY Version	DASY5	V52.10.2
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom V5.0	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	$dx, dy = 4.0 \text{ mm}, dz = 1.4 \text{ mm}$	Graded Ratio = 1.4 (Z direction)
Frequency	$5250 \text{ MHz} \pm 1 \text{ MHz}$ $5600 \text{ MHz} \pm 1 \text{ MHz}$ $5750 \text{ MHz} \pm 1 \text{ MHz}$	

Head TSL parameters at 5250 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	$22.0 \text{ }^{\circ}\text{C}$	35.9	4.71 mho/m
Measured Head TSL parameters	$(22.0 \pm 0.2) \text{ }^{\circ}\text{C}$	$35.1 \pm 6 \text{ \%}$	$4.53 \text{ mho/m} \pm 6 \text{ \%}$
Head TSL temperature change during test	$< 0.5 \text{ }^{\circ}\text{C}$	---	---

SAR result with Head TSL at 5250 MHz

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	8.09 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	80.5 W/kg $\pm 19.9 \text{ \% (k=2)}$
SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	100 mW input power	2.33 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	23.1 W/kg $\pm 19.5 \text{ \% (k=2)}$

Head TSL parameters at 5600 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	$22.0 \text{ }^{\circ}\text{C}$	35.5	5.07 mho/m
Measured Head TSL parameters	$(22.0 \pm 0.2) \text{ }^{\circ}\text{C}$	$34.6 \pm 6 \text{ \%}$	$4.88 \text{ mho/m} \pm 6 \text{ \%}$
Head TSL temperature change during test	$< 0.5 \text{ }^{\circ}\text{C}$	---	---

SAR result with Head TSL at 5600 MHz

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	8.40 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	83.4 W/kg $\pm 19.9 \text{ \% (k=2)}$
SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	100 mW input power	2.40 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	23.8 W/kg $\pm 19.5 \text{ \% (k=2)}$

Head TSL parameters at 5750 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	35.4	5.22 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	34.4 ± 6 %	5.03 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL at 5750 MHz

SAR averaged over 1 cm ³ (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	8.06 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	80.0 W/kg ± 19.9 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Head TSL	condition	
SAR measured	100 mW input power	2.30 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	22.8 W/kg ± 19.5 % (k=2)

Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL at 5250 MHz

Impedance, transformed to feed point	51.7 Ω - 6.2 $j\Omega$
Return Loss	- 24.0 dB

Antenna Parameters with Head TSL at 5600 MHz

Impedance, transformed to feed point	56.0 Ω - 2.7 $j\Omega$
Return Loss	- 24.1 dB

Antenna Parameters with Head TSL at 5750 MHz

Impedance, transformed to feed point	56.7 Ω - 1.0 $j\Omega$
Return Loss	- 23.9 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.195 ns
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After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.

No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
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DASY5 Validation Report for Head TSL

Date: 24.09.2019

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole D5GHzV2; Type: D5GHzV2; Serial: D5GHzV2 - SN:1113

Communication System: UID 0 - CW; Frequency: 5250 MHz, Frequency: 5600 MHz, Frequency: 5750 MHz

Medium parameters used: $f = 5250 \text{ MHz}$; $\sigma = 4.53 \text{ S/m}$; $\epsilon_r = 35.1$; $\rho = 1000 \text{ kg/m}^3$,

Medium parameters used: $f = 5600 \text{ MHz}$; $\sigma = 4.88 \text{ S/m}$; $\epsilon_r = 34.6$; $\rho = 1000 \text{ kg/m}^3$,

Medium parameters used: $f = 5750 \text{ MHz}$; $\sigma = 5.03 \text{ S/m}$; $\epsilon_r = 34.4$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

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

DASY52 Configuration:

- Probe: EX3DV4 - SN3503; ConvF(5.4, 5.4, 5.4) @ 5250 MHz, ConvF(4.95, 4.95, 4.95) @ 5600 MHz, ConvF(4.98, 4.98, 4.98) @ 5750 MHz; Calibrated: 25.03.2019
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.04.2019
- Phantom: Flat Phantom 5.0 (front); Type: QD 000 P50 AA; Serial: 1001
- DASY52 52.10.2(1504); SEMCAD X 14.6.12(7470)

Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5250 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 78.54 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 27.9 W/kg

SAR(1 g) = 8.09 W/kg; SAR(10 g) = 2.33 W/kg

Maximum value of SAR (measured) = 18.1 W/kg

Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5600 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 78.00 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 31.1 W/kg

SAR(1 g) = 8.40 W/kg; SAR(10 g) = 2.40 W/kg

Maximum value of SAR (measured) = 19.4 W/kg

Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5750 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 75.13 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 31.8 W/kg

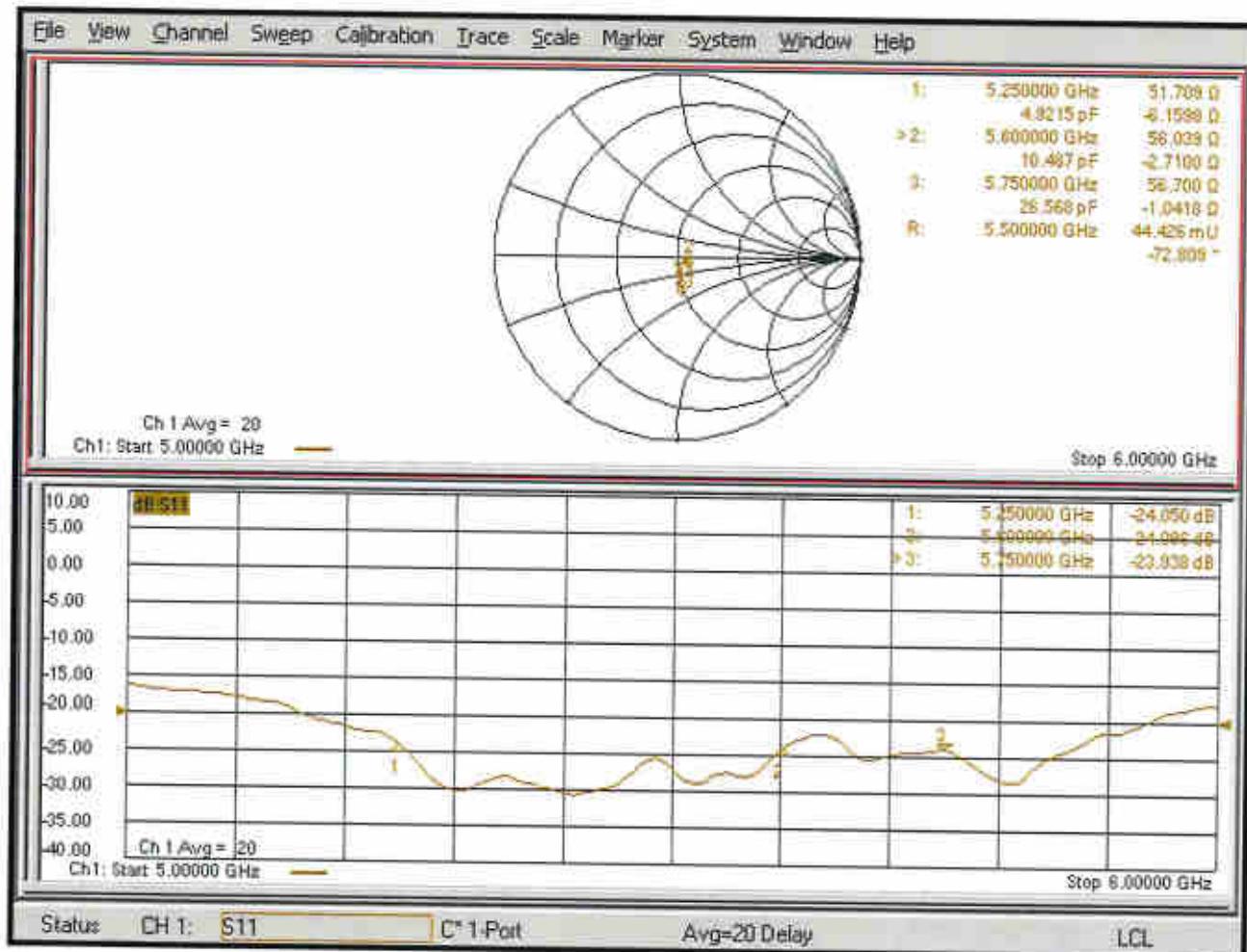
SAR(1 g) = 8.06 W/kg; SAR(10 g) = 2.30 W/kg

Maximum value of SAR (measured) = 19.0 W/kg



$$0 \text{ dB} = 18.1 \text{ W/kg} = 12.58 \text{ dBW/kg}$$

Impedance Measurement Plot for Head TSL



IMPORTANT NOTICE

USAGE OF THE DAE4

The DAE unit is a delicate, high precision instrument and requires careful treatment by the user. There are no serviceable parts inside the DAE. Special attention shall be given to the following points:

Battery Exchange: The battery cover of the DAE4 unit is fixed using a screw, over tightening the screw may cause the threads inside the DAE to wear out.

Shipping of the DAE: Before shipping the DAE to SPEAG for calibration, remove the batteries and pack the DAE in an antistatic bag. This antistatic bag shall then be packed into a larger box or container which protects the DAE from impacts during transportation. The package shall be marked to indicate that a fragile instrument is inside.

E-Stop Failures: Touch detection may be malfunctioning due to broken magnets in the E-stop. Rough handling of the E-stop may lead to damage of these magnets. Touch and collision errors are often caused by dust and dirt accumulated in the E-stop. To prevent E-stop failure, the customer shall always mount the probe to the DAE carefully and keep the DAE unit in a non-dusty environment if not used for measurements.

Repair: Minor repairs are performed at no extra cost during the annual calibration. However, SPEAG reserves the right to charge for any repair especially if rough unprofessional handling caused the defect.

DASY Configuration Files: Since the exact values of the DAE input resistances, as measured during the calibration procedure of a DAE unit, are not used by the DASY software, a nominal value of 200 M Ω is given in the corresponding configuration file.

Important Note:

Warranty and calibration is void if the DAE unit is disassembled partly or fully by the Customer.

Important Note:

Never attempt to grease or oil the E-stop assembly. Cleaning and readjusting of the E-stop assembly is allowed by certified SPEAG personnel only and is part of the annual calibration procedure.

Important Note:

To prevent damage of the DAE probe connector pins, use great care when installing the probe to the DAE. Carefully connect the probe with the connector notch oriented in the mating position. Avoid any rotational movement of the probe body versus the DAE while turning the locking nut of the connector. The same care shall be used when disconnecting the probe from the DAE.



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Accreditation No.: SCS 0108

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Client Sporton

Certificate No: DAE4-1358_Apr19

CALIBRATION CERTIFICATE

Object DAE4 - SD 000 D04 BN - SN: 1358

Calibration procedure(s) QA CAL-06.v29
Calibration procedure for the data acquisition electronics (DAE)

Calibration date: April 17, 2019

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Keithley Multimeter Type 2001	SN: 0810278	03-Sep-18 (No:23488)	Sep-19
Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Auto DAE Calibration Unit	SE UWS 053 AA 1001	07-Jan-19 (in house check)	In house check: Jan-20
Calibrator Box V2.1	SE UMS 006 AA 1002	07-Jan-19 (in house check)	In house check: Jan-20

Calibrated by:	Name: Eric Haintfeld	Function: Laboratory Technician	Signature:
Approved by:	Sven Kühn	Deputy Manager	

Issued: April 17, 2019

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Accreditation No.: **SCS 0108**

Glossary

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

Methods Applied and Interpretation of Parameters

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

DC Voltage Measurement

A/D - Converter Resolution nominal

High Range: 1LSB = $6.1\mu V$, full range = $-100...+300 mV$

Low Range: 1LSB = $61nV$, full range = $-1.....+3mV$

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

Calibration Factors	X	Y	Z
High Range	$403.463 \pm 0.02\% (k=2)$	$403.495 \pm 0.02\% (k=2)$	$403.499 \pm 0.02\% (k=2)$
Low Range	$3.96163 \pm 1.50\% (k=2)$	$3.98764 \pm 1.50\% (k=2)$	$3.99290 \pm 1.50\% (k=2)$

Connector Angle

Connector Angle to be used in DASY system	$113.0^\circ \pm 1^\circ$
---	---------------------------

Appendix (Additional assessments outside the scope of SCS0108)

1. DC Voltage Linearity

High Range		Reading (μ V)	Difference (μ V)	Error (%)
Channel X	+ Input	199991.46	-1.31	-0.00
Channel X	+ Input	20003.38	2.07	0.01
Channel X	- Input	-19999.84	1.82	-0.01
Channel Y	+ Input	199991.03	-1.92	-0.00
Channel Y	+ Input	20000.40	-0.91	-0.00
Channel Y	- Input	-20002.77	-1.13	0.01
Channel Z	+ Input	199994.09	1.49	0.00
Channel Z	+ Input	20001.51	0.27	0.00
Channel Z	- Input	-20002.76	-1.19	0.01

Low Range		Reading (μ V)	Difference (μ V)	Error (%)
Channel X	+ Input	2000.92	0.16	0.01
Channel X	+ Input	201.43	0.28	0.14
Channel X	- Input	-198.26	0.46	-0.23
Channel Y	+ Input	2000.61	-0.03	-0.00
Channel Y	+ Input	200.72	-0.33	-0.17
Channel Y	- Input	-199.37	-0.63	0.32
Channel Z	+ Input	2000.74	0.14	0.01
Channel Z	+ Input	199.99	-1.04	-0.52
Channel Z	- Input	-200.11	-1.38	0.69

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 (μ V)	Low Range Average Reading (μ V)
Channel X	200	23.19	21.08
	-200	-19.67	-21.90
Channel Y	200	-27.40	-27.73
	-200	26.53	26.79
Channel Z	200	-11.13	-11.37
	-200	9.54	9.31

3. Channel separation

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

	Input Voltage (mV)	Channel X (μ V)	Channel Y (μ V)	Channel Z (μ V)
Channel X	200	-	2.83	-3.89
Channel Y	200	8.40	-	3.80
Channel Z	200	9.80	6.24	-

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	15584	17186
Channel Y	16049	15312
Channel Z	16077	16767

5. Input Offset Measurement

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

Input $10M\Omega$

	Average (μV)	min. Offset (μV)	max. Offset (μV)	Std. Deviation (μV)
Channel X	0.71	-0.27	1.96	0.43
Channel Y	-0.32	-1.14	0.46	0.37
Channel Z	-0.75	-2.06	0.69	0.43

6. Input Offset Current

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

7. Input Resistance (Typical values for information)

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

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

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

9. Power Consumption (Typical values for information)

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

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Zeughausstrasse 43, 8004 Zurich, Switzerland



S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
S Swiss Calibration Service

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Accreditation No.: SCS 0108

Client Sporton

Certificate No: EX3-3843 Sep19

CALIBRATION CERTIFICATE

Object EX3DV4 - SN:3843

Calibration procedure(s) QA CAL-01.v9, QA CAL-14.v5, QA CAL-23.v5, QA CAL-25.v7
Calibration procedure for dosimetric E-field probes

Calibration date: September 26, 2019

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NRP	SN: 104778	03-Apr-19 (No. 217-02892/02893)	Apr-20
Power sensor NRP-Z91	SN: 103244	03-Apr-19 (No. 217-02892)	Apr-20
Power sensor NRP-Z91	SN: 103245	03-Apr-19 (No. 217-02893)	Apr-20
Reference 20 dB Attenuator	SN: S5277 (20x)	04-Apr-19 (No. 217-02894)	Apr-20
DAE4	SN: 660	19-Dec-18 (No. DAE4-660_Dec18)	Dec-19
Reference Probe ES3DV2	SN: 3013	31-Dec-18 (No. ES3-3013_Dec18)	Dec-19
Secondary Standards	ID	Check Date (in house)	Scheduled Check
Power meter E4419B	SN: GB41293874	06-Apr-16 (in house check Jun-18)	In house check: Jun-20
Power sensor E4412A	SN: MY41498087	06-Apr-16 (in house check Jun-18)	In house check: Jun-20
Power sensor E4412A	SN: 000110210	06-Apr-16 (in house check Jun-18)	In house check: Jun-20
RF generator HP 8648C	SN: US3642U01700	04-Aug-99 (in house check Jun-18)	In house check: Jun-20
Network Analyzer E8358A	SN: US41080477	31-Mar-14 (in house check Oct-18)	In house check: Oct-19

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

Issued: October 1, 2019

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Accreditation No.: SCS 0108

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:

- 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 $\theta = 0$ ($f \leq 900$ MHz in TEM-cell; $f > 1800$ MHz: R22 waveguide). $NORM_{x,y,z}$ are only intermediate values, i.e., the uncertainties of $NORM_{x,y,z}$ does not affect the E^2 -field uncertainty inside TSL (see below ConvF).
- $NORM(f)x,y,z = NORM_{x,y,z} * \text{frequency_response}$ (see Frequency Response Chart). This linearization is implemented in DASY4 software versions later than 4.2. The uncertainty of the frequency response is included in the stated uncertainty of ConvF.
- $DCPx,y,z$: DCP are numerical linearization parameters assessed based on the data of power sweep with CW signal (no uncertainty required). DCP does not depend on frequency nor media.
- PAR : PAR is the Peak to Average Ratio that is not calibrated but determined based on the signal characteristics
- $Ax,y,z; Bx,y,z; Cx,y,z; Dx,y,z; VRx,y,z$: A, B, C, D are numerical linearization parameters assessed based on the data of power sweep for specific modulation signal. The parameters do not depend on frequency nor media. VR is the maximum calibration range expressed in RMS voltage across the diode.
- $ConvF$ and Boundary Effect Parameters: Assessed in flat phantom using E-field (or Temperature Transfer Standard for $f \leq 800$ 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:3843

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu\text{V}/(\text{V/m})^2$) ^A	0.34	0.35	0.25	$\pm 10.1 \%$
DCP (mV) ^B	110.9	96.1	101.1	

Calibration Results for Modulation Response

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

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

^A The uncertainties of Norm X,Y,Z do not affect the 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:3843

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	-34.3
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disabled
Probe Overall Length	337 mm
Probe Body Diameter	10 mm
Tip Length	9 mm
Tip Diameter	2.5 mm
Probe Tip to Sensor X Calibration Point	1 mm
Probe Tip to Sensor Y Calibration Point	1 mm
Probe Tip to Sensor Z Calibration Point	1 mm
Recommended Measurement Distance from Surface	1.4 mm

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

Calibration Parameter Determined in Head Tissue Simulating Media

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

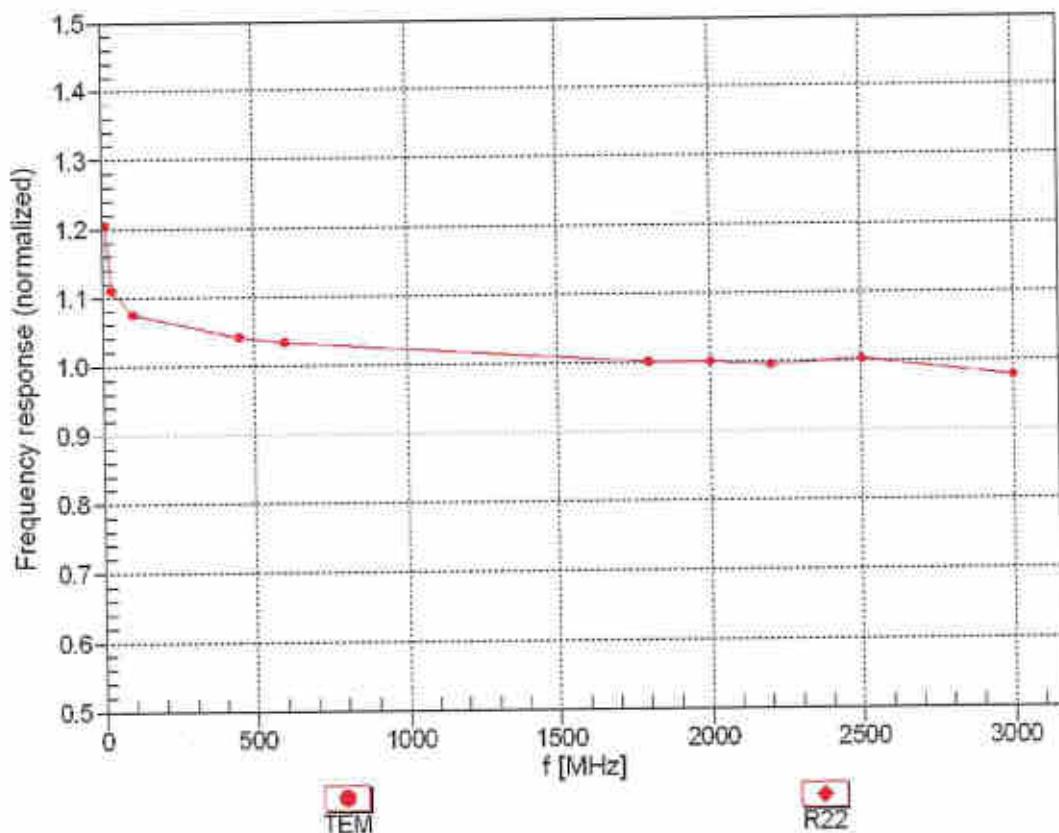
^C Frequency validity above 300 MHz of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Validity of ConvF assessed at 6 MHz is 4-9 MHz, and ConvF assessed at 13 MHz is 9-19 MHz. Above 5 GHz frequency validity can be extended to ± 110 MHz.

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

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

Frequency Response of E-Field

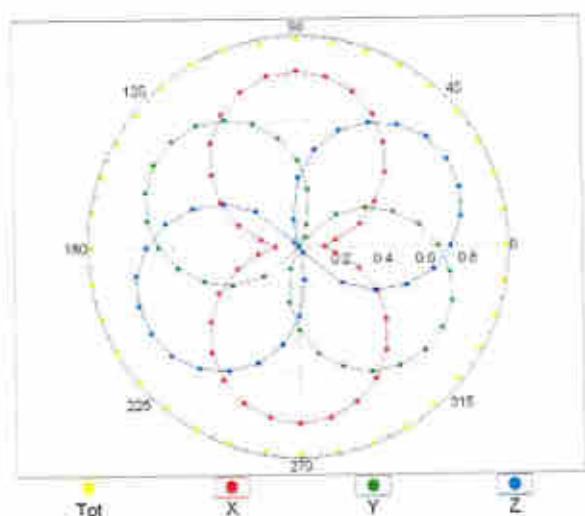
(TEM-Cell:ifi110 EXX, Waveguide: R22)



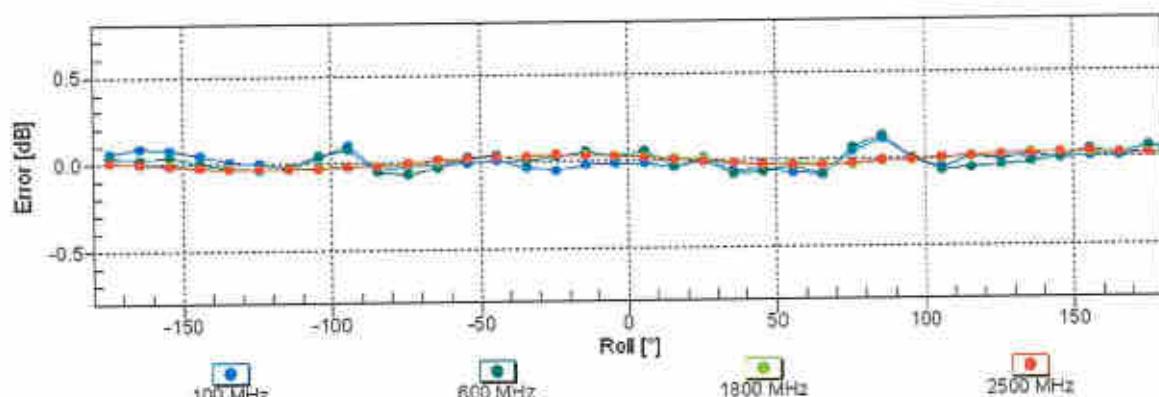
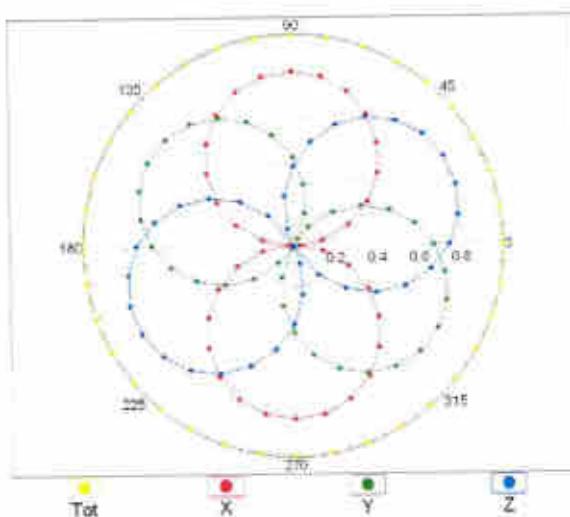
Uncertainty of Frequency Response of E-field: $\pm 6.3\%$ ($k=2$)

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

f=600 MHz, TEM



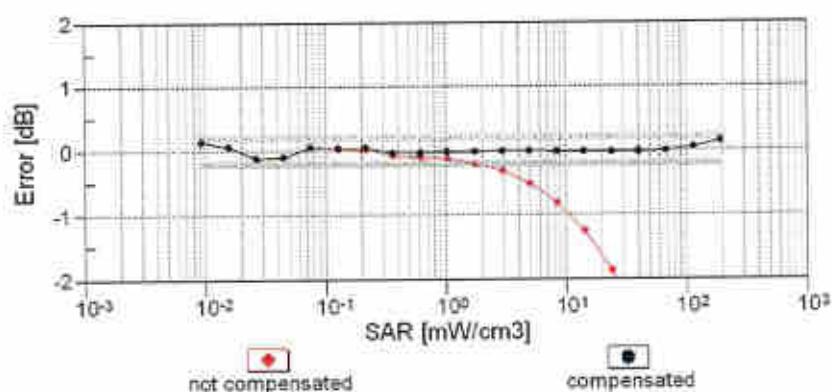
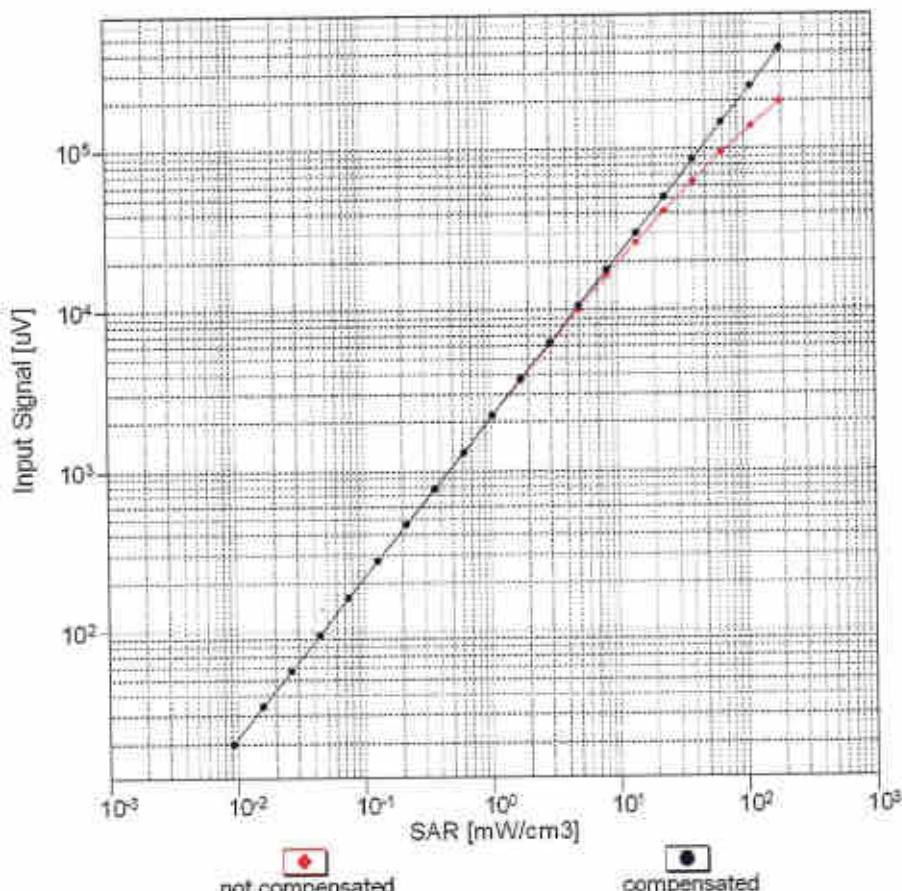
f=1800 MHz, R22



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

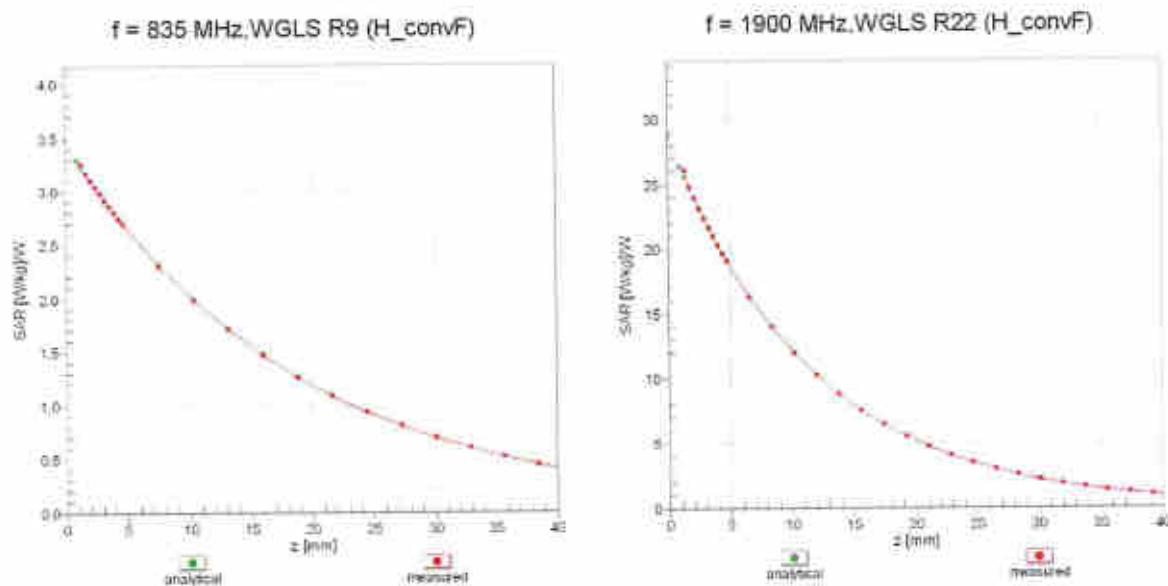
Dynamic Range f(SAR_{head})

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

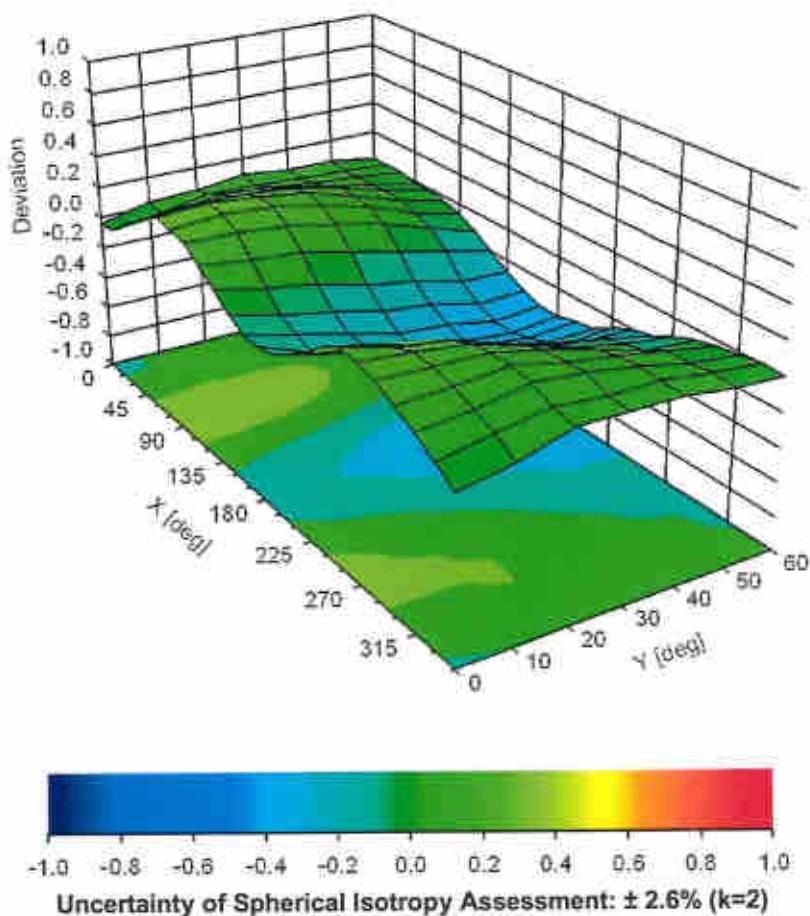


Uncertainty of Linearity Assessment: $\pm 0.6\%$ ($k=2$)

Conversion Factor Assessment



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





Appendix E. Conducted RF Output Power Table

The detailed power table are shown as follows.



SPARTON LAB.

Full Power

GSM850			Burst Average Power (dBm)		Tune-up Limit (dBm)		Frame-Average Power (dBm)		Tune-up Limit (dBm)	
TX Channel	128	189	251		128	189	251	848.8		
Frequency (MHz)	824.2	836.4	848.8		824.2	836.4	848.8			
GSM 1 Tx slot	31.69	31.91	31.77	32.50	22.69	22.91	22.77	23.50		
GPRS 1 Tx slot	31.68	31.90	31.76	32.50	22.68	22.90	22.76	23.50		
GPRS 2 Tx slots	28.51	28.77	28.67	29.50	22.51	22.77	22.87	23.50		
GPRS 3 Tx slots	27.35	27.50	27.71	28.50	23.09	23.34	23.45	24.24		
GPRS 4 Tx slots	25.80	25.74	25.62	26.50	22.60	22.74	22.62	23.50		
EDGE 1 Tx slot	25.68	25.84	25.84	26.50	16.68	16.84	16.84	17.50		
EDGE 2 Tx slots	23.17	23.44	23.25	24.50	17.17	17.44	17.25	18.50		
EDGE 3 Tx slots	22.09	22.37	22.17	23.50	17.83	18.11	17.91	19.24		
EDGE 4 Tx slots	20.18	20.35	20.32	21.50	17.18	17.35	17.32	18.50		

GSM1900			Burst Average Power (dBm)		Tune-up Limit (dBm)		Frame-Average Power (dBm)		Tune-up Limit (dBm)	
TX Channel	512	661	810		512	661	810	1939.0		
Frequency (MHz)	1890.2	1880	1909.8		1890.2	1880	1909.8			
GSM 1 Tx slot	29.34	29.68	29.49	30.00	20.34	20.68	20.49	21.00		
GPRS 1 Tx slot	29.33	29.67	29.48	30.00	20.33	20.67	20.48	21.00		
GPRS 2 Tx slots	26.27	26.68	26.32	27.50	20.27	20.68	20.32	21.50		
GPRS 3 Tx slots	25.11	25.55	25.16	26.50	20.85	21.29	20.90	22.24		
GPRS 4 Tx slots	23.30	23.47	23.34	24.50	20.30	20.47	20.34	21.50		
EDGE 1 Tx slot	24.89	25.34	25.12	26.50	15.89	16.34	16.12	17.50		
EDGE 2 Tx slots	22.75	23.19	22.81	23.50	16.75	17.19	16.81	17.50		
EDGE 3 Tx slots	21.64	22.08	21.70	23.00	17.38	17.82	17.44	18.74		
EDGE 4 Tx slots	19.76	20.2	20.04	21.00	16.76	17.02	17.04	18.00		

Band	WCDMA II			WCDMA IV			WCDMA V			Tune-up Limit (dBm)	
	TX Channel	9262	9400	9538	Tune-up Limit (dBm)	1312	1413	1513	Tune-up Limit (dBm)	4132	4182
Rx Channel	9662	9800	9938		1537	1638	1738		4357	4407	4458
Frequency (MHz)	1892.4	1880	1907.8		1712.4	1729.8	1752.5		826.4	836.4	846.8
3GPP Rel 99 AMR 12.2kps	23.91	23.87	23.89	24.00	23.90	23.91	23.86	24.00	23.32	23.35	23.31
3GPP Rel 99 RMC 12.2kps	23.94	23.86	23.90	24.00	23.91	23.92	23.87	24.00	23.33	23.36	23.32
3GPP Rel 6 HSDPA Subtest-1	22.98	22.93	22.95	23.00	22.92	22.87	22.84	23.00	22.32	22.41	22.37
3GPP Rel 6 HSDPA Subtest-2	22.97	22.95	22.98	23.00	22.86	22.84	22.85	23.00	22.34	22.45	22.40
3GPP Rel 6 HSDPA Subtest-3	22.44	22.47	22.46	22.50	22.38	22.35	22.33	22.50	21.84	21.90	21.91
3GPP Rel 6 HSDPA Subtest-4	22.41	22.43	22.46	22.50	22.40	22.35	22.33	22.50	21.85	21.92	21.92
3GPP Rel 8 DC-HSDPA Subtest-1	22.93	22.89	22.92	23.00	22.88	22.84	22.81	23.00	22.29	22.38	22.33
3GPP Rel 8 DC-HSDPA Subtest-2	22.94	22.91	22.95	23.00	22.82	22.81	22.82	23.00	22.31	22.42	22.36
3GPP Rel 8 DC-HSDPA Subtest-3	22.41	22.43	22.43	22.50	22.34	22.32	22.30	22.50	21.81	21.87	22.50
3GPP Rel 8 DC-HSDPA Subtest-4	22.38	22.39	22.43	22.50	22.36	22.32	22.30	22.50	21.82	21.89	21.88
3GPP Rel 6 HSUPA Subtest-1	22.95	22.92	22.93	23.00	22.85	22.81	22.77	23.00	22.38	22.45	22.39
3GPP Rel 6 HSUPA Subtest-2	20.94	20.94	20.97	21.00	20.85	20.79	20.80	21.00	20.38	20.42	20.41
3GPP Rel 6 HSUPA Subtest-3	21.95	21.90	21.94	22.00	21.87	21.87	21.83	22.00	21.36	21.44	22.00
3GPP Rel 6 HSUPA Subtest-4	20.98	20.98	20.96	21.00	20.84	20.85	20.79	21.00	20.39	20.41	20.43
3GPP Rel 6 HSUPA Subtest-5	22.90	23.00	23.00	23.00	22.90	22.89	22.80	23.00	22.40	22.40	23.00



Band 2 (1900MHz Band)									
Part 24E									
BW [MHz]	Modulation	RB Size	RB Offset	Power Ch / Freq	Tune-up limit (dBm)	MPR (dB)			
Channel									
Frequency (MHz)									
18700		18900	19100						
20	QPSK	1	0	23.39	23.57	23.48			
20	QPSK	1	49	23.42	23.56	23.38	24	0	
20	QPSK	1	99	23.48	23.51	23.36			
20	QPSK	50	0	23.55	23.59	23.50			
20	QPSK	50	24	23.64	23.61	23.60			
20	QPSK	50	50	23.59	23.67	23.66	24	0	
20	QPSK	100	0	23.62	23.62	23.61			
20	16QAM	1	0	23.89	23.94	23.89			
20	16QAM	1	49	23.77	23.85	23.69	24	0	
20	16QAM	1	99	23.79	23.86	23.75			
20	16QAM	50	0	22.78	22.79	22.81			
20	16QAM	50	24	22.70	22.82	22.83	23	1	
20	16QAM	50	50	22.87	22.89	22.88			
20	16QAM	100	0	22.83	22.80	22.77			
20	64QAM	1	0	22.72	22.70	22.81			
20	64QAM	1	49	22.68	22.71	22.70	23	1	
20	64QAM	1	99	22.65	22.74	22.79			
20	64QAM	50	0	21.81	21.79	21.75			
20	64QAM	50	24	21.91	21.85	21.81	22	2	
20	64QAM	50	50	21.95	21.91	21.84			
20	64QAM	100	0	21.85	21.74	21.78			
Channel									
Frequency (MHz)									
18675		18900	19125						
18675		18800	19025						
15	QPSK	1	0	23.49	23.40	23.48			
15	QPSK	1	37	23.46	23.46	23.50	24	0	
15	QPSK	1	74	23.47	23.44	23.41			
15	QPSK	36	0	23.54	23.40	23.50			
15	QPSK	36	39	23.67	23.70	23.65	24	0	
15	QPSK	75	0	23.62	23.40	23.50			
15	16QAM	1	0	23.84	23.84	23.63			
15	16QAM	1	37	23.85	23.82	23.79	24	0	
15	16QAM	1	74	23.72	23.70	23.76			
15	16QAM	36	0	22.70	22.74	22.68			
15	16QAM	36	20	22.85	22.74	22.81	23	1	
15	16QAM	36	39	22.77	22.74	22.70			
15	16QAM	75	0	22.65	22.65	22.62			
15	64QAM	1	0	23.57	23.77	22.71			
15	64QAM	1	37	22.72	22.69	22.79	23	1	
15	64QAM	1	74	22.63	22.69	22.78			
15	64QAM	36	0	21.76	21.80	21.59			
15	64QAM	36	20	21.83	21.81	21.75			
15	64QAM	36	39	21.86	21.83	21.80	22	2	
15	64QAM	75	0	21.84	21.83	21.73			
Channel									
Frequency (MHz)									
18690		18900	19100						
18690		18800	19025						
10	QPSK	1	0	23.39	23.40	23.49			
10	QPSK	1	25	23.44	23.41	23.49	24	0	
10	QPSK	1	49	23.49	23.46	23.49			
10	QPSK	25	0	23.61	23.49	23.49			
10	QPSK	25	12	23.65	23.54	23.49			
10	QPSK	25	29	23.68	23.69	23.62	24	0	
10	QPSK	50	0	23.68	23.63	23.49			
10	QPSK	50	24	23.68	23.63	23.49			
10	QPSK	50	50	23.68	23.63	23.49			
10	16QAM	1	0	23.92	23.83	23.67			
10	16QAM	1	29	23.87	23.84	23.67	24	0	
10	16QAM	1	49	23.77	23.76	23.67			
10	16QAM	25	0	22.68	22.77	22.69			
10	16QAM	25	17	22.79	22.72	22.71	23	1	
10	16QAM	25	29	22.73	22.71	22.72			
10	16QAM	50	0	22.81	22.78	22.72			
10	16QAM	50	24	22.82	22.79	22.94			
10	16QAM	50	50	22.99	22.99	22.82	23	1	
10	64QAM	1	0	21.75	21.77	21.74			
10	64QAM	25	0	21.76	21.77	21.77			
10	64QAM	25	25	21.77	21.81	21.79	22	2	
10	64QAM	50	0	21.86	21.65	21.69			
Channel									
Frequency (MHz)									
18625		18900	19175						
18625		18800	19025						
5	QPSK	1	0	23.35	23.30	23.37			
5	QPSK	1	12	23.44	23.55	23.42	24	0	
5	QPSK	1	24	23.51	23.52	23.47			
5	QPSK	12	0	23.57	23.53	23.47			
5	QPSK	12	7	23.58	23.55	23.54	24	0	
5	QPSK	12	13	23.61	23.56	23.53			
5	QPSK	25	0	23.58	23.50	23.53			
5	QPSK	25	29	23.60	23.61	23.52	24	0	
5	QPSK	50	0	23.68	23.63	23.49			
5	16QAM	1	0	23.92	23.81	23.76			
5	16QAM	1	29	23.84	23.80	23.75			
5	16QAM	1	49	23.84	23.80	23.75			
5	16QAM	25	0	22.89	22.81	22.76			
5	16QAM	25	17	22.87	22.84	22.87	24	0	
5	16QAM	25	29	22.88	22.84	22.87			
5	16QAM	50	0	22.88	22.81	22.76			
5	16QAM	50	24	22.88	22.81	22.76			
5	16QAM	50	50	22.88	22.81	22.76			
5	64QAM	1	0	22.89	22.88	22.72			
5	64QAM	1	12	22.74	22.71	22.67	23	1	
5	64QAM	1	24	22.71	22.78	22.70			
5	64QAM	1	49	22.78	22.77	22.73			
5	64QAM	25	0	21.94	21.95	21.61			
5	64QAM	25	12	21.76	21.77	21.64			
5	64QAM	25	25	21.77	21.70	21.64	22	2	
5	64QAM	50	0	21.76	21.65	21.74			
Channel									
Frequency (MHz)									
18615		18900	19195						
18615		18800	19025						
3	QPSK	1	0	23.47	23.30	23.36			
3	QPSK	1	8	23.61	23.50	23.49	24	0	
3	QPSK	1	14	23.51	23.43	23.44			
3	QPSK	8	0	23.48	23.48	23.50			
3	QPSK	8	4	23.54	23.54	23.48	24	0	
3	QPSK	8	7	23.55	23.54	23.55			
3	QPSK	15	0	23.51	23.45	23.57			
3	16QAM	1	0	23.75	23.73	23.73			
3	16QAM	1	8	23.82	23.89	23.81	24	0	
3	16QAM	1	14	23.82	23.77	23.74			
3	16QAM	8	0	22.73	22.82	22.74			
3	16QAM	8	4	22.84	22.89	22.83	23	1	
3	16QAM	8	7	22.86	22.88	22.76			
3	16QAM	15	0	22.73	22.77	22.74			
3	64QAM	1	0	22.98	22.97	22.98			
3	64QAM	1	14	22.98	22.97	22.98			
3	64QAM	8	0	21.40	21.45	21.67			
3	64QAM	8	4	21.60	21.48	21.69			
3	64QAM	8	7	21.65	21.39	21.73			
3	64QAM	15	0	21.45	21.50	21.63			
Channel									
Frequency (MHz)									
18607		18900	19193						
18607		18800	19023						
14	QPSK	1	0	23.27	23.35	23.31			
14	QPSK	1	3	23.46	23.43	23.35			
14	QPSK	1	5	23.33	23.40	23.37	24	0	
14	QPSK	3	0	23.34	23.42	23.34			
14	QPSK	3	1	23.42	23.47	23.44			
14	QPSK	3	3	23.49</td					



Band 7 (2600MHz Band)										Full Power										Band 17 (2600MHz Band)									
Part 27										Part 27[only on channel required]										Part 27[only on channel required]									
BW [MHz]	Modulation	RB Size	RB Offset	Power Ch. / Freq.	Power Ch. / Freq.	Power Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)	BW [MHz]	Modulation	RB Size	RB Offset	Power Ch. / Freq.	Power Ch. / Freq.	Power Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)	BW [MHz]	Modulation	RB Size	RB Offset	Power Ch. / Freq.	Power Ch. / Freq.	Power Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)			
Channel										Channel										Channel									
Frequency (MHz)				20850	21100	21350			Frequency (MHz)				23060	23095	23130			Frequency (MHz)				23780	23790	23800					
20	QPSK	1	0	23.45	23.80	23.91			10	QPSK	1	0	22.98	22.90	22.98			10	QPSK	1	0	22.89	22.87	22.88					
20	QPSK	1	49	23.33	23.72	23.81			10	QPSK	1	25	22.83	22.88	22.81			10	QPSK	1	25	23.01	23.03	23.01		24			
20	QPSK	1	99	23.59	23.68	23.62			10	QPSK	1	49	22.70	22.84	22.78			10	QPSK	1	49	22.84	22.85	22.81					
20	QPSK	50	0	23.37	23.54	23.54			10	QPSK	25	0	23.12	23.05	22.99			10	QPSK	25	0	22.87	22.93	22.91					
20	QPSK	50	24	23.58	23.96	23.62			10	QPSK	25	12	23.05	22.95	23.06			10	QPSK	25	12	23.07	22.97	22.93					
20	QPSK	50	50	23.33	23.64	23.64			10	QPSK	25	25	22.87	23.02	22.97			10	QPSK	25	25	23.03	23.02	23.03					
20	QPSK	100	0	23.49	23.47	23.61			10	QPSK	50	0	23.09	23.03	23.05			10	QPSK	50	0	22.98	22.96	22.96					
20	16QAM	1	0	23.80	23.93	23.98			10	16QAM	1	0	23.65	23.33	23.45			10	16QAM	1	0	23.25	23.15	23.39					
20	16QAM	1	49	23.74	23.87	23.71			10	16QAM	1	25	23.13	23.23	23.24			10	16QAM	1	25	23.27	23.19	23.25					
20	16QAM	1	99	23.76	23.67	23.69			10	16QAM	1	49	23.22	23.20	23.07			10	16QAM	1	49	23.15	23.20	23.03					
20	16QAM	50	0	22.41	22.52	23.54			10	16QAM	25	0	22.71	22.72	22.76			10	16QAM	25	0	22.58	22.65	22.80					
20	16QAM	50	24	22.92	22.96	22.65			10	16QAM	25	12	22.80	22.71	22.77			10	16QAM	25	12	22.70	22.64	22.68					
20	16QAM	50	50	22.93	22.63	22.55			10	16QAM	25	25	22.82	22.74	22.82			10	16QAM	25	25	22.65	22.78	22.61					
20	16QAM	100	0	22.46	22.64	22.62			10	16QAM	50	0	22.81	22.84	22.75			10	16QAM	50	0	22.70	22.63	22.67					
20	64QAM	1	0	22.49	22.77	22.75			10	64QAM	1	0	22.82	22.85	22.87			10	64QAM	1	0	22.67	22.65	22.81					
20	64QAM	1	49	22.65	22.66	22.69			10	64QAM	1	25	22.54	22.98	22.93			10	64QAM	1	25	22.91	22.80	22.85					
20	64QAM	1	99	22.61	22.55	22.69			10	64QAM	1	49	22.66	22.81	22.70			10	64QAM	1	49	22.60	22.59	22.52					
20	64QAM	50	0	21.34	21.51	21.43			10	64QAM	25	0	21.53	21.81	21.80			10	64QAM	25	0	21.69	21.66	21.67					
20	64QAM	50	24	21.54	21.61	21.54			10	64QAM	25	12	21.55	21.80	21.87			10	64QAM	25	12	21.76	21.75	21.70					
20	64QAM	50	50	21.53	21.53	21.53			10	64QAM	25	25	21.75	21.79	21.68			10	64QAM	25	25	21.66	21.61	21.61					
20	64QAM	100	0	21.50	21.49	21.49			10	64QAM	50	0	21.64	21.68	21.73			10	64QAM	50	0	21.77	21.66	21.55					
Channel										Channel										Channel									
Frequency (MHz)				20825	21100	21375			Frequency (MHz)				23035	23095	23155			Frequency (MHz)				23755	23790	23825					
15	QPSK	1	0	23.41	23.65	23.73			10	QPSK	1	0	23.05	22.89	22.95			10	QPSK	1	0	22.83	22.87	22.83					
15	QPSK	1	37	23.57	23.65	23.69			10	QPSK	1	12	22.90	22.96	22.96			10	QPSK	1	12	22.91	22.97	22.91					
15	QPSK	1	74	23.65	23.64	23.55			10	QPSK	1	24	22.84	22.87	22.84			10	QPSK	1	24	22.91	22.93	22.87					
15	QPSK	36	0	23.35	23.56	23.44			10	QPSK	12	0	23.14	23.07	22.99			10	QPSK	12	0	22.98	23.01	22.89					
15	QPSK	36	20	23.52	23.50	23.44			10	QPSK	12	7	23.08	22.99	23.02			10	QPSK	12	7	23.06	22.95	22.93					
15	QPSK	36	39	23.52	23.50	23.45			10	QPSK	12	13	23.05	22.98	22.97			10	QPSK	12	13	23.00	22.96	22.97					
15	QPSK	75	0	23.50	23.49	23.44			10	QPSK	25	0	23.01	22.92	22.96			10	QPSK	25	0	22.94	22.94	22.87					
15	16QAM	1	0	23.50	23.74	23.82			10	16QAM	1	0	23.28	23.25	23.29			10	16QAM	1	0	23.18	23.17	23.23					
15	16QAM	1	37	23.70	23.80	23.85			10	16QAM	1	12	23.22	23.33	23.21			10	16QAM	1	12	23.22	23.30	23.21					
15	16QAM	1	74	23.62	23.68	23.65			10	16QAM	1	24	23.22	23.28	23.22			10	16QAM	1	24	23.15	23.29	23.22					
15	16QAM	25	0	22.51	22.55	22.44			10	16QAM	12	0	22.81	22.78	22.80			10	16QAM	12	0	22.71	22.75	22.65					
15	16QAM	25	39	22.51	22.55	22.44			10	16QAM	12	18	22.71	22.69	22.69			10	16QAM	12	18	22.71	22.68	22.65					
15	16QAM	75	0	22.50	22.49	22.47			10	16QAM	25	0	22.69	22.65	22.72			10	16QAM	25	0	22.67	22.71	22.67					
15	64QAM	1	0	22.49	22.55	22.67			10	64QAM	1	0	22.73	22.82	22.80			10	64QAM	1	0	22.65	22.71	22.65					
15	64QAM	1	37	22.53	22.58	22.65			10	64QAM	1	12	22.78	22.82	22.82			10	64QAM	1	12	22.75	22.82	22.77					
15	64QAM	1	74	22.53	22.58	22.65			10	64QAM	1	24	22.73	22.82	22.82			10	64QAM	1	24	22.75	22.82	22.74					
15	64QAM	25	0	22.23	22.33	22.21			10	64QAM	25	0	22.61	22.67	22.60			10	64QAM	25	0	22.55	22.69	22.64					
15	64QAM	25	25	22.50	22.37	22.49			10	64QAM	25	12	22.61	22.67	22.60			10	64QAM	25	12	22.73	22.79	22.63					
15	64QAM	25	50	22.50	22.37	22.49			10	64QAM	25	25	22.61	22.67	22.60			10	64QAM	25	25	22.73	22.79	22.63					
15	64QAM	75	0	22.46	22.44	22.30			10	64QAM	75	0	22.61	22.67	22.60			10	64QAM	75	0	22.55	22.69	22.64					
15	64QAM	75	24	22.46	22.44	22.30			10	64QAM	75	12	22.61	22.67	22.60			10	64QAM	75	12	22.55	22.69	22.64					
15	64QAM	75	49	22.46	22.44	22.30			10	64QAM	75	25	22.61	22.67	22.60			10	64QAM	75	25	22.55	2						



Full Power												
Band 26 for FCC (only on channel required)												
BW [MHz]	Modulation	RB Size	RB Offset	Power Ch. / Freq.	Power Mod. Ch. / Freq.	Power Ch. / Freq.	Tune-up limit (dBm)	MRR (dB)				
Channel				26765	26865	26965						
Frequency (MHz)				821.5	831.5	841.5						
15	GPSK	1	0	23.11	23.03	23.09	24		0			
15	GPSK	1	37	23.04	23.06	23.08	24		0			
15	GPSK	1	74	22.98	22.97	22.91	24		0			
15	GPSK	36	0	23.10	23.21	23.22	24		0			
15	GPSK	36	20	23.15	23.21	23.24	24		0			
15	GPSK	36	38	23.31	23.11	23.16	24		0			
15	GPSK	75	0	23.15	23.21	23.15	24		0			
15	16QAM	1	0	23.69	23.26	23.41	24		0			
15	16QAM	1	37	23.32	23.33	23.46	24		0			
15	16QAM	1	74	23.35	23.34	23.15	24		0			
15	16QAM	36	0	22.86	22.86	23.87	23		1			
15	16QAM	36	20	22.84	22.92	23.94	23		1			
15	16QAM	36	39	22.83	22.85	23.80	23		1			
15	16QAM	75	0	22.77	22.85	22.81	23		1			
15	64QAM	1	0	22.81	22.90	22.67	23		1			
15	64QAM	1	37	22.88	22.98	22.99	23		1			
15	64QAM	1	74	22.95	22.78	22.66	23		1			
15	64QAM	36	0	21.67	21.93	21.95	22		2			
15	64QAM	36	20	21.87	21.96	21.67	22		2			
15	64QAM	36	39	21.80	21.89	21.86	22		2			
15	64QAM	75	0	21.81	21.93	21.95	22		2			
Channel				26740	26865	26990	Tune-up limit (dBm)		MRR (dB)			
Frequency (MHz)				810	811.5	844						
10	GPSK	1	0	23.04	23.10	23.05	24		0			
10	GPSK	1	25	22.88	22.98	23.05	24		0			
10	GPSK	1	49	22.83	23.03	23.84	24		0			
10	GPSK	25	0	23.10	22.94	23.07	24		0			
10	GPSK	25	12	23.04	23.07	23.12	24		0			
10	GPSK	25	25	22.93	22.94	23.04	24		0			
10	GPSK	50	0	22.90	22.92	22.75	24		0			
10	16QAM	1	0	22.95	22.89	23.00	23		1			
10	16QAM	1	25	22.83	22.88	22.89	23		1			
10	16QAM	1	49	22.85	22.95	22.94	23		1			
10	16QAM	25	0	22.78	22.82	22.76	23		1			
10	16QAM	25	12	22.72	22.82	22.81	23		1			
10	16QAM	25	25	22.70	22.73	22.69	23		1			
10	16QAM	50	0	22.60	22.62	22.75	23		1			
10	16QAM	50	1	22.65	22.82	22.78	23		1			
10	16QAM	50	25	22.63	22.88	22.85	23		1			
10	16QAM	50	49	22.65	22.85	22.74	23		1			
10	16QAM	75	0	21.90	21.83	21.73	22		2			
10	16QAM	75	7	22.81	22.81	22.78	22		2			
10	16QAM	75	13	22.73	22.76	22.71	22		2			
10	16QAM	75	25	22.84	22.74	22.74	22		2			
10	64QAM	1	0	23.06	23.05	23.00	24		0			
10	64QAM	1	12	23.00	23.09	23.00	24		0			
10	64QAM	1	24	23.02	23.02	23.04	24		0			
10	64QAM	12	0	23.11	23.07	23.12	24		0			
10	64QAM	12	13	23.05	23.06	23.05	24		0			
10	64QAM	12	25	23.07	23.07	23.07	24		0			
10	64QAM	12	49	23.06	23.07	23.07	24		0			
10	64QAM	15	0	23.49	23.27	23.40	24		0			
10	64QAM	15	1	23.08	23.05	23.00	24		0			
10	64QAM	15	8	23.06	23.48	23.44	24		0			
10	64QAM	15	14	23.24	23.24	23.23	24		0			
10	64QAM	6	0	22.87	22.76	22.83	23		1			
10	64QAM	6	4	23.11	23.10	22.90	23		1			
10	64QAM	8	0	22.84	22.82	22.82	24		0			
10	64QAM	8	4	23.11	23.10	22.97	24		0			
10	64QAM	8	7	23.05	23.03	23.03	24		0			
10	64QAM	15	0	22.80	22.80	22.78	24		0			
10	64QAM	15	3	22.90	22.89	22.88	24		0			
10	64QAM	15	5	22.83	22.83	22.86	24		0			
10	64QAM	15	14	22.81	22.81	22.81	24		0			
10	64QAM	15	25	22.76	22.76	22.75	24		0			
10	64QAM	15	49	22.76	22.76	22.76	24		0			
10	64QAM	75	0	21.81	21.81	21.72	23		2			
Channel				26705	26865	27025	Tune-up limit (dBm)		MRR (dB)			
Frequency (MHz)				810.5	811.5	847.5						
3	GPSK	1	0	23.14	22.93	22.84	24		0			
3	GPSK	1	8	23.06	23.06	22.98	24		0			
3	GPSK	1	14	22.92	23.02	22.86	24		0			
3	GPSK	8	0	23.10	23.03	23.07	24		0			
3	GPSK	8	4	23.11	23.10	22.97	24		0			
3	GPSK	8	7	23.04	23.04	22.94	24		0			
3	GPSK	15	0	23.08	23.05	23.00	24		0			
3	GPSK	15	3	23.04	22.98	22.87	24		0			
3	GPSK	15	5	23.12	23.20	23.19	24		0			
3												



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Band 38(only on channel required)											
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)			
Channel				37850	38000	38150					
Frequency (MHz)				2580	2595	2610					
20	QPSK	1	0	23.48	23.49	23.50		24			
20	QPSK	1	49	23.38	23.33	23.37					
20	QPSK	1	99	23.30	23.33	23.33		24			
20	QPSK	50	0	23.31	23.30	23.31					
20	QPSK	50	24	23.38	23.29	23.28		24			
20	QPSK	50	50	23.31	23.32	23.28					
20	QPSK	100	0	23.34	23.29	23.25		24			
20	16QAM	1	0	23.40	23.38	23.38					
20	16QAM	1	49	23.27	23.31	23.24		24			
20	16QAM	1	99	23.24	23.29	23.25					
20	16QAM	50	0	22.35	22.34	22.36		23			
20	16QAM	50	24	22.36	22.31	22.32					
20	16QAM	50	50	22.34	22.35	22.33		23			
20	16QAM	100	0	22.35	22.28	22.28					
20	64QAM	1	0	21.98	21.93	21.93		23			
20	64QAM	1	49	21.88	21.91	21.85					
20	64QAM	1	99	21.79	21.88	21.88		22			
20	64QAM	50	0	21.36	21.35	21.36					
20	64QAM	50	24	21.37	21.31	21.32		22			
20	64QAM	50	50	21.36	21.34	21.31					
20	64QAM	100	0	21.39	21.30	21.30		22			
Channel				37825	38000	38175					
Frequency (MHz)				2577.5	2595	2612.5					
15	QPSK	1	0	23.42	23.41	23.38		24			
15	QPSK	1	37	23.37	23.41	23.41					
15	QPSK	1	74	23.32	23.35	23.30		24			
15	QPSK	36	0	23.35	23.29	23.28					
15	QPSK	36	20	23.33	23.26	23.31		24			
15	QPSK	36	39	23.27	23.30	23.27					
15	QPSK	75	0	23.31	23.24	23.34		24			
15	16QAM	1	0	23.41	23.39	23.33					
15	16QAM	1	37	23.20	23.26	23.13		24			
15	16QAM	1	74	23.29	23.28	23.24					
15	16QAM	36	0	22.36	22.30	22.24		23			
15	16QAM	36	20	22.30	22.22	22.31					
15	16QAM	36	39	22.26	22.28	22.28		23			
15	16QAM	75	0	22.35	22.29	22.34					
15	64QAM	1	0	21.93	21.89	22.20		23			
15	64QAM	1	37	21.91	21.91	22.24					
15	64QAM	1	74	21.83	21.87	22.10		23			
15	64QAM	36	0	21.39	21.31	21.36					
15	64QAM	36	20	21.35	21.31	21.37		22			
15	64QAM	36	39	21.31	21.35	21.30					
15	64QAM	75	0	21.38	21.30	21.37		22			
Channel				37800	38000	38200					
Frequency (MHz)				2575	2595	2615					
10	QPSK	1	0	23.34	23.30	23.31		24			
10	QPSK	1	25	23.14	23.23	23.24					
10	QPSK	1	49	23.20	23.18	23.17		24			
10	QPSK	25	0	23.19	23.06	23.08					
10	QPSK	25	12	23.14	23.07	23.07		24			
10	QPSK	25	25	23.12	23.14	23.14					
10	QPSK	50	0	23.11	23.03	23.04		24			
10	16QAM	1	0	23.29	23.25	23.21					
10	16QAM	1	25	23.14	23.17	23.14		24			
10	16QAM	1	49	23.12	23.10	23.13					
10	16QAM	25	0	22.13	22.03	22.02		23			
10	16QAM	25	12	22.11	22.05	22.05					
10	16QAM	25	25	22.06	22.07	22.08		23			
10	16QAM	50	0	22.20	22.13	22.10					
10	64QAM	1	0	21.78	21.65	21.66		23			
10	64QAM	1	25	21.75	21.75	21.78					
10	64QAM	1	49	21.91	21.83	21.68		23			
10	64QAM	25	0	21.22	21.14	21.15					
10	64QAM	25	12	21.23	21.15	21.16		22			
10	64QAM	25	25	21.18	21.17	21.20					
10	64QAM	50	0	21.15	21.09	21.11		22			
Channel				37775	38000	38225					
Frequency (MHz)				2572.5	2595	2617.5					
5	QPSK	1	0	23.26	23.25	23.30		24			
5	QPSK	1	12	23.22	23.23	23.21					
5	QPSK	1	24	23.22	23.27	23.26		24			
5	QPSK	12	0	23.15	23.08	23.16					
5	QPSK	12	7	23.19	23.14	23.15		24			
5	QPSK	12	13	23.11	23.09	23.10					
5	QPSK	25	0	23.11	23.08	23.14		24			
5	16QAM	1	0	23.21	23.14	23.22					
5	16QAM	1	12	23.16	23.20	23.17		24			
5	16QAM	1	24	23.20	23.22	23.20					
5	16QAM	12	0	22.08	22.08	22.14		23			
5	16QAM	12	7	22.16	22.14	22.09					
5	16QAM	12	13	22.13	22.09	22.07		23			
5	16QAM	25	0	22.15	22.11	22.15					
5	64QAM	1	0	21.84	21.74	21.83		23			
5	64QAM	1	12	21.80	21.80	21.79					
5	64QAM	1	24	21.80	21.78	21.81		23			
5	64QAM	12	0	21.20	21.18	21.18					
5	64QAM	12	7	21.18	21.21	21.22		22			
5	64QAM	12	13	21.14	21.20	21.20					
5	64QAM	25	0	21.24	21.13	21.17		22			

Full Power											
Band 41 (2.6G Band)											
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)	Tune-up limit (dBm)	MPR (dB)	
Channel				39750	40185	40620	41055	41490			
Frequency (MHz)				2503.5	2548.3	2593	2637.8	2682.5			
20	QPSK	1	0	23.42	23.53	23.65	23.15	23.13			
20	QPSK	1	49	23.52	23.47	23.40	23.36	23.43			
20	QPSK	1	99	23.50	23.38	23.30	23.26	23.45			
20	QPSK	50	0	23.65	23.58	23.51	23.41	23.05			
20	QPSK	50	24	23.63	23.58	23.51	23.45	23.26			
20	QPSK	50	50	23.62	23.57	23.50	23.44	23.30			
20</td											



Reduced Power Mode for P-Sensor On

GSM1900	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
	512	681	810		512	681	810	
TX Channel	1850.2	1880	1909.8	1850.2	1880	1909.8	1850.2	1880
Frequency (MHz)								
GSM 1 Tx slot	25.26	25.50	25.34	26.00	16.26	16.59	16.34	17.00
GPRS 1 Tx slot	25.28	25.51	25.36	26.00	16.28	16.51	16.36	17.00
GPRS 2 Tx slots	22.30	22.45	22.13	23.50	16.30	16.45	16.13	17.50
GPRS 3 Tx slots	21.08	21.24	20.86	22.50	16.82	16.98	16.60	18.24
GPRS 4 Tx slots	19.30	19.40	19.23	20.50	16.30	16.40	16.23	17.50
EDGE 1 Tx slot	21.89	21.87	21.69	22.50	12.89	12.87	12.69	13.50
EDGE 2 Tx slots	18.78	18.93	18.64	19.50	12.78	12.93	12.64	13.50
EDGE 3 Tx slots	18.01	18.14	17.81	19.00	13.75	13.88	13.55	14.74
EDGE 4 Tx slots	15.88	16.03	15.98	17.00	12.88	13.03	12.98	14.00

Band	WCDMA II			Tune-up Limit (dBm)	WCDMA IV			Tune-up Limit (dBm)
	TX Channel	9262	9400	9539	1312	1413	1513	
Rx Channel	9962	9800	9938	1537	1639	1738	1752	1752.6
Frequency (MHz)	1852.4	1880	1907.6	1712.4	1732.6	1752.6	1752.6	1752.6
3GPP Rel 99	AMR 12.2Kbps	16.61	16.51	16.52	18.00	17.55	17.67	17.64
3GPP Rel 99	RMC 12.2Kbps	16.63	16.52	16.53	18.00	17.56	17.68	17.66
3GPP Rel 6	HSDPA Subtest-1	15.48	15.40	15.34	17.00	16.30	16.41	16.55
3GPP Rel 6	HSDPA Subtest-2	15.47	15.44	15.09	17.00	16.31	16.48	16.53
3GPP Rel 6	HSDPA Subtest-3	14.99	14.92	14.70	16.50	15.82	15.96	16.02
3GPP Rel 6	HSDPA Subtest-4	14.96	14.94	14.71	16.50	15.80	15.97	16.05
3GPP Rel 8	DC-HSDPA Subtest-1	15.46	15.37	15.30	17.00	16.27	16.37	16.53
3GPP Rel 8	DC-HSDPA Subtest-2	15.45	15.41	15.05	17.00	16.28	16.44	16.51
3GPP Rel 8	DC-HSDPA Subtest-3	14.97	14.89	14.66	16.50	15.79	15.92	16.00
3GPP Rel 8	DC-HSDPA Subtest-4	14.94	14.91	14.67	16.50	15.77	15.93	16.03
3GPP Rel 6	HSUPA Subtest-1	15.49	15.33	15.21	17.00	16.19	16.31	16.40
3GPP Rel 6	HSUPA Subtest-2	13.48	13.35	13.19	15.00	14.18	14.28	14.38
3GPP Rel 6	HSUPA Subtest-3	14.46	14.38	14.20	16.00	15.18	15.25	15.44
3GPP Rel 6	HSUPA Subtest-4	13.42	13.42	13.25	15.00	14.20	14.25	14.40
3GPP Rel 6	HSUPA Subtest-5	15.50	15.40	15.20	17.00	16.20	16.30	16.40



Reduced Power Mode for Hotspot On

GSM1900	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
	512	681	810		512	681	810	
Frequency (MHz)	1850.2	1880	1909.8	1850.2	1880	1909.8		
GSM 1 Tx slot	22.98	23.20	22.98	24.00	13.98	14.20	13.96	15.00
GPRS 1 Tx slot	23.00	23.21	22.98	24.00	14.00	14.21	13.98	15.00
GPRS 2 Tx slots	20.23	20.44	20.20	21.50	14.23	14.44	14.20	15.50
GPRS 3 Tx slots	19.02	19.34	19.12	20.50	14.76	15.08	14.86	16.24
GPRS 4 Tx slots	17.23	17.48	17.36	18.50	14.23	14.48	14.36	15.50
EDGE 1 Tx slot	19.87	20.13	19.89	20.50	10.87	11.13	10.89	11.50
EDGE 2 Tx slots	16.87	17.11	16.81	17.50	10.87	11.11	10.81	11.50
EDGE 3 Tx slots	15.83	16.12	15.83	17.00	11.57	11.86	11.57	12.74
EDGE 4 Tx slots	14.37	14.36	14.13	15.00	11.37	11.38	11.13	12.00

Band	WCDMA II			Tune-up Limit (dBm)	WCDMA IV			Tune-up Limit (dBm)
	TX Channel	9262	9400	9539	1312	1413	1513	
Rx Channel	9962	9800	9938	1537	1638	1738		
Frequency (MHz)	1852.4	1880	1907.6		1712.4	1732.6	1752.6	
3GPP Rel 99	AMR 12.2Kbps	14.10	14.08	13.90	15.50	16.80	16.62	17.50
3GPP Rel 99	RMC 12.2Kbps	14.11	14.10	13.94	15.50	16.62	16.65	16.57
3GPP Rel 6	HSDPA Subtest-1	13.18	13.11	12.90	14.50	15.37	15.42	16.50
3GPP Rel 6	HSDPA Subtest-2	13.20	13.20	12.93	14.50	15.36	15.48	16.50
3GPP Rel 6	HSDPA Subtest-3	12.71	12.65	12.40	14.00	14.85	14.95	15.00
3GPP Rel 6	HSDPA Subtest-4	12.71	12.68	12.41	14.00	14.83	14.91	15.02
3GPP Rel 8	DC-HSDPA Subtest-1	13.16	13.09	12.88	14.50	15.35	15.40	16.50
3GPP Rel 8	DC-HSDPA Subtest-2	13.18	13.18	12.91	14.50	15.34	15.46	16.50
3GPP Rel 8	DC-HSDPA Subtest-3	12.69	12.63	12.38	14.00	14.83	14.93	14.98
3GPP Rel 8	DC-HSDPA Subtest-4	12.69	12.66	12.39	14.00	14.81	14.89	16.00
3GPP Rel 6	HSUPA Subtest-1	12.96	12.94	12.73	14.50	15.43	15.50	16.50
3GPP Rel 6	HSUPA Subtest-2	11.07	10.97	10.67	12.50	13.36	13.55	13.54
3GPP Rel 6	HSUPA Subtest-3	11.97	11.96	11.70	13.50	14.40	14.54	14.57
3GPP Rel 6	HSUPA Subtest-4	11.01	10.88	10.78	12.50	13.37	13.54	13.56
3GPP Rel 6	HSUPA Subtest-5	13.00	12.90	12.80	14.50	15.40	15.50	15.60



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	1850.2	1880
Frequency (MHz)								
GSM 1 Tx slot	28.32	28.52	28.20	29.00	19.32	19.52	19.20	20.00
GPRS 1 Tx slot	28.33	28.54	28.21	29.00	19.33	19.54	19.21	20.00
GPRS 2 Tx slots	25.73	25.72	25.43	26.50	19.73	19.72	19.43	20.50
GPRS 3 Tx slots	24.55	24.73	24.38	25.50	20.29	20.47	20.12	21.24
GPRS 4 Tx slots	22.42	22.45	22.03	23.50	19.42	19.45	19.03	20.50
EDGE 1 Tx slot	24.12	24.25	24.11	25.50	15.12	15.25	15.11	16.50
EDGE 2 Tx slots	22.14	22.49	22.04	22.50	16.14	16.49	16.04	16.50
EDGE 3 Tx slots	20.98	21.30	20.89	22.00	16.72	17.04	16.63	17.74
EDGE 4 Tx slots	19.24	19.36	19.18	20.00	16.24	16.36	16.18	17.00

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					
Frequency (MHz)	1852.4	1880	1907.6		1712.4	1732.6	1752.6	

3GPP Rel 99	AMR 12.2Kbps	19.62	19.62	19.44	21.00	21.22	21.29	21.28	22.00
3GPP Rel 99	RMC 12.2Kbps	19.65	19.64	19.43	21.00	21.25	21.30	21.27	22.00
3GPP Rel 6	HSDPA Subtest-1	18.46	18.43	18.19	20.00	20.14	20.26	20.32	21.00
3GPP Rel 6	HSDPA Subtest-2	18.45	18.43	18.20	20.00	20.14	20.27	20.28	21.00
3GPP Rel 6	HSDPA Subtest-3	17.96	17.88	17.71	19.50	19.83	19.72	19.83	20.50
3GPP Rel 6	HSDPA Subtest-4	17.97	17.87	17.68	19.50	19.83	19.77	19.79	20.50
3GPP Rel 8	DC-HSDPA Subtest-1	18.43	18.38	18.17	20.00	20.09	20.24	20.29	21.00
3GPP Rel 8	DC-HSDPA Subtest-2	18.42	18.38	18.18	20.00	20.09	20.25	20.25	21.00
3GPP Rel 8	DC-HSDPA Subtest-3	17.93	17.83	17.69	19.50	19.58	19.70	19.80	20.50
3GPP Rel 8	DC-HSDPA Subtest-4	17.94	17.82	17.66	19.50	19.58	19.75	19.76	20.50
3GPP Rel 6	HSUPA Subtest-1	18.47	18.40	18.19	20.00	20.09	20.24	20.30	21.00
3GPP Rel 6	HSUPA Subtest-2	16.43	16.36	16.24	18.00	18.10	18.21	18.30	19.00
3GPP Rel 6	HSUPA Subtest-3	17.48	17.36	17.20	19.00	19.12	19.27	19.32	20.00
3GPP Rel 6	HSUPA Subtest-4	16.48	16.37	16.22	18.00	18.14	18.21	18.20	19.00
3GPP Rel 6	HSUPA Subtest-5	18.40	18.40	18.20	20.00	20.20	20.20	20.30	21.00



Reduced Power Mode for P-Sensor On

Band 2 (1900MHz Band) Part 24E												Band 4 (AWS Band) Part 27L (only on channel required)											
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch / Freq	Power Middle Ch / Freq	Power High Ch / Freq	Tune-up limit (dBm)	MRR (dB)	BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch / Freq	Power Middle Ch / Freq	Power High Ch / Freq	Tune-up limit (dBm)	MRR (dB)						
Channel				18700	18900	19100			Channel				20050	20175	20300								
Frequency (MHz)				1860	1880	1900			Frequency (MHz)				1720	1732.5	1745								
20	QPSK	1	0	16.29	16.42	16.54			20	QPSK	1	0	16.52	16.52	16.52								
20	QPSK	1	49	16.36	16.35	16.39			20	QPSK	1	49	16.30	16.36	16.39								
20	QPSK	1	99	16.11	16.43	16.24			20	QPSK	1	99	16.36	16.38	16.35								
20	QPSK	50	0	16.33	16.38	16.51			20	QPSK	50	0	16.51	16.60	16.63								
20	QPSK	50	24	16.37	16.45	16.54			20	QPSK	50	24	16.54	16.50	16.67								
20	QPSK	100	0	16.33	16.38	16.55			20	QPSK	100	0	16.51	16.54	16.54								
20	16QAM	1	0	16.66	16.89	16.85			20	16QAM	1	0	16.89	16.84	16.83								
20	16QAM	1	49	16.73	16.64	16.88			20	16QAM	1	49	16.73	16.78	16.83								
20	16QAM	1	99	16.63	16.70	16.79			20	16QAM	1	99	16.74	16.81	16.87								
20	16QAM	50	0	16.33	16.60	16.50			20	16QAM	50	0	16.53	16.63	16.67								
20	16QAM	50	24	16.44	16.49	16.63			20	16QAM	50	24	16.53	16.59	16.59								
20	16QAM	50	50	16.43	16.68	16.59			20	16QAM	50	50	16.47	16.50	16.55								
20	16QAM	100	0	16.33	16.60	16.59			20	16QAM	100	0	16.52	16.53	16.55								
20	16QAM	100	24	16.44	16.49	16.63			20	16QAM	100	24	16.53	16.59	16.59								
20	16QAM	100	50	16.34	16.40	16.62			20	16QAM	100	50	16.46	16.52	16.53								
20	16QAM	100	75	16.42	16.54	16.60			20	16QAM	100	75	16.49	16.55	16.57								
15	QPSK	1	0	16.25	16.36	16.45			15	QPSK	1	0	16.47	16.52	16.62								
15	QPSK	1	49	16.16	16.36	16.45			15	QPSK	1	49	16.25	16.37	16.42								
15	QPSK	1	99	16.13	16.30	16.39			15	QPSK	1	99	16.30	16.35	16.41								
15	QPSK	35	0	16.15	16.42	16.58			15	QPSK	35	0	16.49	16.58	16.65								
15	QPSK	35	20	16.34	16.44	16.59			15	QPSK	35	20	16.50	16.59	16.62								
15	QPSK	35	50	16.29	16.44	16.59			15	QPSK	35	50	16.44	16.51	16.58								
15	QPSK	75	0	16.38	16.47	16.57			15	QPSK	75	0	16.48	16.51	16.56								
15	16QAM	1	0	16.70	16.62	16.78			15	16QAM	1	0	16.82	16.84	16.90								
15	16QAM	1	37	16.79	16.62	16.82			15	16QAM	1	37	16.70	16.77	16.85								
15	16QAM	1	74	16.51	16.63	16.62			15	16QAM	1	74	16.68	16.70	16.81								
15	16QAM	36	0	16.34	16.49	16.66			15	16QAM	36	0	16.52	16.59	16.65								
15	16QAM	36	20	16.43	16.51	16.69			15	16QAM	36	20	16.51	16.59	16.65								
15	16QAM	36	50	16.40	16.41	16.60			15	16QAM	36	50	16.49	16.54	16.59								
15	16QAM	75	0	16.35	16.51	16.68			15	16QAM	75	0	16.50	16.52	16.57								
15	16QAM	75	24	16.41	16.49	16.67			15	16QAM	75	24	16.51	16.56	16.62								
15	16QAM	75	50	16.35	16.51	16.68			15	16QAM	75	50	16.46	16.56	16.61								
15	16QAM	100	0	16.34	16.47	16.64			15	16QAM	100	0	16.49	16.53	16.57								
15	16QAM	100	24	16.32	16.56	16.69			15	16QAM	100	24	16.50	16.55	16.61								
15	16QAM	100	50	16.32	16.56	16.69			15	16QAM	100	50	16.51	16.53	16.57								
15	16QAM	100	75	0	16.36	16.56			15	16QAM	100	75	0	16.51	16.53								
15	16QAM	100	125	16.50	16.60	16.75			15	16QAM	100	125	16.50	16.60	16.75								
15	16QAM	100	150	16.50	16.60	16.75			15	16QAM	100	150	16.50	16.60	16.75								
15	16QAM	100	175	16.50	16.60	16.75			15	16QAM	100	175	16.50	16.60	16.75								
15	16QAM	100	200	16.50	16.60	16.75			15	16QAM	100	200	16.50	16.60	16.75								
15	16QAM	100	225	16.50	16.60	16.75			15	16QAM	100	225	16.50	16.60	16.75								
15	16QAM	100	250	16.50	16.60	16.75			15	16QAM	100	250	16.50	16.60	16.75								
15	16QAM	100	275	16.50	16.60	16.75			15	16QAM	100	275	16.50	16.60	16.75								
15	16QAM	100	300	16.50	16.60	16.75			15	16QAM	100	300	16.50	16.60	16.75								
15	16QAM	100	325	16.50	16.60	16.75			15	16QAM	100	325	16.50	16.60	16.75								
15	16QAM	100	350	16.50	16.60	16.75			15	16QAM	100	350	16.50	16.60	16.75								
15	16QAM	100	375	16.50	16.60	16.75			15	16QAM	100	375	16.50	16.60	16.75								
15	16QAM	100	400	16.50	16.60	16.75			15	16QAM	100	400	16.50	16.60	16.75								
15	16QAM	100	425	16.50	16.60	16.75			15	16QAM	100	425	16.50	16.60	16.75								
15	16QAM	100	450	16.50	16.60	16.75			15	16QAM	100	450	16.50	16.60	16.75								
15	16QAM	100	475	16.50	16.60	16.75			15	16QAM	100	475	16.50	16.60	16.75								
15	16QAM	100	500	16.50	16.60	16.75			15	16QAM	100	500	16.50	16.60	16.75								
15	16QAM	100	525	16.50	16.60	16.75			15	16QAM	100	525	16.50	16.60	16.75								
15	16QAM	100	550	16.50	16.60	16.75			15	16QAM	100	550	16.50	16.60	16.75								
15	16QAM	100	575	16.50	16.60	16.75			15	16QAM	100	575	16.50	16.60	16.75								
15	16QAM	100	600	16.50	16.60	16.75			15	16QAM	100	600	16.50	16.60	16.75								
15	16QAM	100	625	16.50	16.60	16.75			15	16QAM	100	625	16.50	16.60	16.75								
15	16QAM	100	650	16.50	16.60	16.75			15	16QAM	100	650	16.50	16.60	16.75								
15	16QAM	100	675	16.50	16.60	16.75			15	16QAM	100	675	16.50	16.60	16.75								
15	16QAM	100	700	16.50	16.60	16.75			15	16QAM	100	700	16.50	16.60	16.75								
15	16QAM	100	725	16.50	16.60	16.75			15	16QAM	100	725	16.50	16.60	16.75								
15	16QAM	100	750	16.50	16.60	16.75			15	16QAM	100	750	16.50	16.60	16.75								
15	16QAM	100	775	16.50	16.60	16.75			15	16QAM	100	775	16.50	16.60	16.75								
15	16QAM	100	800	16.50	16.60	16.75			15	16QAM	100	800	16.50	16.60	16.75								
15	16QAM	100	825	16.50	16.60	16.75			15	16QAM	100	825	16.50	16.60	16.75								
15	16QAM	100	850	16.50	16.60	16.75			15	16QAM	100	850	16.50	16.60	16.75								
15	16QAM	100	875	16.50	16.60	16.75			15	16QAM	100	875	16.50	16.60	16.75								
15	16QAM	100	900	16.50	16.60	16.75			15	16QAM	100	900	16.50	16.60	16.75								
15	16QAM	100	925	16.50	16.60	16.75			15	16QAM	100	925	16.50	16.60	16.75								
15	16QAM	100	950	16.50	16.60	16.75			15	16QAM	100	950	16.50	16.60	16.75								
15	16QAM	100	975	16.50	16.60	16.75			15	16QAM	100	975	16										



Reduced Power Mode for P-Sensor On

Band 7 (800MHz Band)									
Part 27									
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq	Power Middle Ch. / Freq	Power High Ch. / Freq	Tune-up limit (dBm)	MPR (dB)	
Channel									
20	QPSK	1	0	17.52	17.26	17.52	19	0	
20	QPSK	1	49	17.60	17.51	17.38			
20	QPSK	1	99	17.49	17.51	17.29			
20	QPSK	50	0	17.62	17.48	17.66			
20	QPSK	50	24	17.68	17.62	17.59	19	0	
20	QPSK	50	50	17.66	17.68	17.58			
20	QPSK	100	0	17.62	17.50	17.65			
20	16QAM	1	0	17.66	17.89	17.91			
20	16QAM	1	49	17.69	17.67	17.75	19	0	
20	16QAM	1	99	17.68	17.78	17.66			
20	16QAM	50	0	17.68	17.57	17.61			
20	16QAM	50	24	17.72	17.59	17.75	19	0	
20	16QAM	50	50	17.68	17.69	17.67			
20	16QAM	100	0	17.63	17.68	17.64			
20	64QAM	1	0	17.75	17.74	17.62			
20	64QAM	1	49	17.77	17.65	17.62	19	0	
20	64QAM	1	99	17.66	17.73	17.78			
20	64QAM	50	0	17.48	17.50	17.36			
20	64QAM	50	24	17.64	17.93	17.49	19	0	
20	64QAM	50	50	17.68	17.74	17.57			
20	64QAM	100	0	17.65	17.48	17.48			
Frequency (MHz)									
2607.5	2635	2653	2662.5						
Channel									
15	QPSK	1	0	17.42	17.44	17.22	19	0	
15	QPSK	1	37	17.52	17.48	17.48			
15	QPSK	1	74	17.49	17.49	17.45			
15	QPSK	35	0	17.62	17.53	17.34			
15	QPSK	35	20	17.58	17.67	17.41	19	0	
15	QPSK	35	35	17.69	17.66	17.44			
15	QPSK	35	50	17.67	17.46	17.46			
15	16QAM	1	0	17.80	17.56	17.65			
15	16QAM	1	37	17.77	17.69	17.81	19	0	
15	16QAM	1	74	17.68	17.89	17.78			
15	16QAM	36	0	17.60	17.95	17.32			
15	16QAM	36	20	17.57	17.98	17.42	19	0	
15	16QAM	36	35	17.62	17.82	17.48			
15	16QAM	36	50	17.62	17.51	17.46			
15	64QAM	1	0	17.71	17.45	17.46			
15	64QAM	1	37	17.42	17.63	17.81	19	0	
15	64QAM	1	74	17.63	17.75	17.62			
15	64QAM	36	0	17.69	17.41	17.33			
15	64QAM	36	20	17.64	17.48	17.42	19	0	
15	64QAM	36	35	17.68	17.57	17.42			
15	64QAM	75	0	17.62	17.54	17.38			
Frequency (MHz)									
20800	21100	21375	21400						
Channel									
10	QPSK	1	0	17.27	17.13	17.02	19	0	
10	QPSK	1	25	17.22	17.25	16.93			
10	QPSK	1	49	17.39	17.03	16.97			
10	QPSK	25	0	17.34	17.24	17.10	19	0	
10	QPSK	25	12	17.36	17.30	17.04			
10	QPSK	25	25	17.43	17.39	17.24	19	0	
10	QPSK	50	0	17.40	17.28	17.28			
10	16QAM	1	0	17.80	17.70	17.69			
10	16QAM	1	25	17.76	17.78	17.64	19	0	
10	16QAM	1	49	17.76	17.72	17.64			
10	16QAM	25	0	17.33	17.32	17.15	19	0	
10	16QAM	25	12	17.43	17.27	17.17			
10	16QAM	25	25	17.47	17.31	17.20			
10	16QAM	50	0	17.44	17.36	17.20			
10	64QAM	1	0	17.76	17.83	17.58			
10	64QAM	1	25	17.62	17.43	17.55	19	0	
10	64QAM	1	49	17.74	17.65	17.63			
10	64QAM	25	0	17.43	17.27	17.23	19	0	
10	64QAM	25	12	17.43	17.27	17.17			
10	64QAM	25	25	17.46	17.40	17.22			
10	64QAM	50	0	17.41	17.06	17.19			
Frequency (MHz)									
20775	21100	21425	21425						
Channel									
5	QPSK	1	0	17.02	17.07	17.20	19	0	
5	QPSK	1	12	16.94	17.11	17.20			
5	QPSK	1	24	16.92	17.29	17.34			
5	QPSK	12	0	17.16	17.32	17.38			
5	QPSK	12	7	17.21	17.25	17.38	19	0	
5	QPSK	12	13	17.08	17.34	17.39			
5	QPSK	25	0	17.07	17.21	17.42			
5	16QAM	1	0	17.54	17.46	17.78			
5	16QAM	1	12	17.59	17.67	17.50	19	0	
5	16QAM	1	24	17.56	17.46	17.54			
5	16QAM	12	0	17.16	17.31	17.44			
5	16QAM	12	7	17.16	17.27	17.38	19	0	
5	16QAM	12	13	17.14	17.31	17.44			
5	16QAM	25	0	17.13	17.24	17.32			
5	64QAM	1	0	17.65	17.55	17.75			
5	64QAM	1	12	17.55	17.43	17.46	19	0	
5	64QAM	1	24	17.66	17.44	17.81			
5	64QAM	12	0	17.08	17.11	17.45			
5	64QAM	12	7	17.09	17.22	17.53	19	0	
5	64QAM	12	13	17.07	17.25	17.39			
5	64QAM	25	0	17.18	17.27	17.43			
Frequency (MHz)									
2050.5	2093	2125	2125						
Channel									
3	QPSK	1	0	17.02	17.07	17.20	19	0	
3	QPSK	1	12	16.94	17.11	17.20			
3	QPSK	1	24	16.92	17.29	17.34			
3	QPSK	12	0	17.16	17.32	17.38			
3	QPSK	12	7	17.21	17.25	17.38	19	0	
3	QPSK	12	13	17.08	17.34	17.39			
3	QPSK	25	0	17.07	17.21	17.42			
3	16QAM	1	0	17.54	17.46	17.78			
3	16QAM	1	12	17.59	17.67	17.50	19	0	
3	16QAM	1	24	17.56	17.46	17.54			
3	16QAM	12	0	17.16	17.31	17.44			
3	16QAM	12	7	17.16	17.27	17.38	19	0	
3	16QAM	12	13	17.14	17.31	17.44			
3	16QAM	25	0	17.13	17.24	17.32			
Frequency (MHz)									
1999.5	2032	2064	2064						
Channel									
1	QPSK	1	0	15.89	16.18	16.05	17	0	
1	QPSK	1	8	15.97	16.30	15.91			
1	QPSK	1	14	16.02	16.13	16.01			
1	QPSK	8	0	16.08	16.09	16.11			
1	QPSK	12	7	15.97	16.08	16.16	17	0	
1	QPSK	25	0	16.08	16.04	16.14			
1	16QAM	1	0	16.43	16.38	16.76			
1	16QAM	1	12	16.51	16.64	16.53	17	0	
1	16QAM	1	24	16.42	16.46	16.63			
1	16QAM	12	0	16.01	16.23	16.16			
1	16QAM	12	7	16.19	16.14	16.09	17	0	
1	16QAM	12	13	16.09	16.19	16.15			
1	16QAM	25	0	16.11	16.12	16.05			
Frequency (MHz)									
1999.5	2032	2064	2064						
Channel									
1	QPSK	1	0	15.93	16.23	16.08	17	0	
1	QPSK	1	3	16.01	16.33	15.96			
1	QPSK	1	5	16.05	16.18	16.05			
1	QPSK	3	0	16.13	16.12	16.15			
1	QPSK	3	1	16.04	16.18	16.23			
1	QPSK								



Reduced Power Mode for P-Sensor On

Band 38(only on channel required)										Band 41 (2.6G Band)									
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)	BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)	
Channel																			
37850				38000		38150			39750			40185		40620		41055		41490	
2560				2595		2610			2595			2595		2595		2635.5		2680	
20	QPSK	1	0	19.53	19.87	19.93			20	QPSK	1	0	19.19	20.04	19.74	19.96			
20	QPSK	1	49	19.68	19.88	19.63			20	QPSK	1	49	20.05	20.00	20.07	19.89	19.89		
20	QPSK	1	99	19.58	19.98	19.96			20	QPSK	1	99	20.04	20.08	20.13	19.79	19.89		
20	QPSK	50	0	19.83	20.04	19.68			20	QPSK	50	0	20.30	20.18	20.10	20.04	20.07		
20	QPSK	50	24	19.66	19.98	19.77			20	QPSK	50	24	20.31	20.10	20.15	19.87	19.90		
20	QPSK	50	50	19.93	20.05	19.71			20	QPSK	50	50	20.24	20.17	20.20	19.14	19.86		
20	QPSK	100	0	19.67	20.10	19.72			20	QPSK	100	0	20.24	20.22	20.27	19.77	19.88		
20	16QAM	1	0	19.88	20.08	19.78			20	16QAM	1	0	20.32	20.18	20.37	20.07	20.03		
20	16QAM	1	49	19.74	20.24	19.91			20	16QAM	1	49	20.28	20.36	20.03	19.95	19.92		
20	16QAM	1	99	19.83	20.17	19.89			20	16QAM	1	99	20.35	20.29	20.08	20.04	19.87		
20	16QAM	50	0	19.72	20.04	19.96			20	16QAM	50	0	20.33	20.16	20.11	19.93	20.06		
20	16QAM	50	24	19.70	20.11	19.79			20	16QAM	50	24	20.22	20.23	20.35	19.91	19.91		
20	16QAM	50	50	19.87	20.12	19.71			20	16QAM	50	50	20.30	20.24	20.21	20.08	19.98		
20	16QAM	100	0	19.79	20.13	19.78			20	16QAM	100	0	20.33	20.25	20.34	20.00	20.04		
20	64QAM	1	0	19.84	19.72	19.96			20	64QAM	1	0	20.26	19.84	20.05	20.05	20.04		
20	64QAM	1	49	19.65	19.82	19.80			20	64QAM	1	49	20.10	19.94	19.85	19.86	20.02		
20	64QAM	1	99	19.83	19.98	19.97			20	64QAM	1	99	20.06	20.10	19.96	20.04	19.81		
20	64QAM	50	0	19.74	20.09	19.68			20	64QAM	50	0	20.08	20.21	20.01	19.85	20.07		
20	64QAM	50	24	19.78	20.14	19.82			20	64QAM	50	24	20.21	20.26	20.10	19.83	19.92		
20	64QAM	50	50	19.83	20.12	19.72			20	64QAM	50	50	20.15	20.24	20.16	20.04	19.85		
20	64QAM	100	0	19.64	20.12	19.78			20	64QAM	100	0	20.08	20.24	20.17	19.85	19.91		
Channel																			
37825				38000		38175			39725			40173		40620		41068		41515	
2577.5				2595		2612.5			2505.5			2548.3		2593		2637.8		2682.5	
15	QPSK	1	0	19.68	19.84	19.65			15	QPSK	1	0	20.00	20.01	20.01	20.02	20.06		
15	QPSK	1	37	19.71	19.77	19.80			15	QPSK	1	37	20.02	20.03	19.95	19.72	19.80		
15	QPSK	1	74	19.82	19.57	19.70			15	QPSK	1	74	20.13	20.15	20.13	20.05	19.77		
15	QPSK	36	0	19.90	19.95	19.95			15	QPSK	36	0	20.09	20.22	20.08	19.77	19.75		
15	QPSK	36	20	19.88	19.78	19.78			15	QPSK	36	20	20.16	20.21	20.15	19.86	19.87		
15	QPSK	36	39	19.92	19.74	20.05			15	QPSK	36	39	20.16	20.24	20.13	19.80	19.92		
15	QPSK	75	0	19.93	19.76	19.68			15	QPSK	75	0	20.17	20.25	20.18	19.81	19.80		
15	16QAM	1	0	19.88	19.91	19.98			15	16QAM	1	0	20.08	20.22	20.10	19.87	20.09		
15	16QAM	1	37	19.76	19.80	19.86			15	16QAM	1	37	20.06	20.10	20.04	20.00	20.02		
15	16QAM	1	74	19.74	19.75	19.95			15	16QAM	1	74	20.22	20.08	20.17	19.77	20.01		
15	16QAM	36	0	19.89	19.94	19.84			15	16QAM	36	0	20.08	20.23	20.05	20.05	20.00		
15	16QAM	36	20	19.89	19.79	19.82			15	16QAM	36	20	20.13	20.22	20.14	19.88	19.85		
15	16QAM	36	39	19.90	19.86	19.99			15	16QAM	36	39	20.14	20.22	20.14	19.80	19.91		
15	16QAM	75	0	19.93	19.92	19.91			15	16QAM	75	0	20.19	20.28	20.20	19.87	19.85		
15	64QAM	1	0	19.72	19.92	19.96			15	64QAM	1	0	19.98	20.06	19.97	20.05	20.05		
15	64QAM	1	37	19.73	19.90	19.77			15	64QAM	1	37	19.98	20.06	19.99	19.82			
15	64QAM	1	74	19.94	19.69	19.95			15	64QAM	1	74	20.11	20.27	20.05	20.06	20.04		
15	64QAM	25	0	19.78	20.10	19.66			15	64QAM	25	0	20.05	20.09	20.05	19.74	19.77		
15	64QAM	25	12	19.84	20.09	19.68			15	64QAM	25	12	20.05	20.20	20.10	19.77	19.75		
15	64QAM	25	25	19.83	20.12	19.73			15	64QAM	25	25	20.04	20.13	20.03	19.69	19.82		
15	64QAM	50	0	19.84	20.13	19.80			15	64QAM	50	0	20.05	20.14	20.06	19.71	19.69		
15	64QAM	50	25	19.77	20.05	19.84			15	64QAM	50	25	20.10	20.09	20.05	19.76	19.77		
15	64QAM	100	0	19.66	19.94	19.84			15	64QAM	100	0	19.87	19.93	19.85	19.94	19.93		
15	64QAM	100	25	19.64	19.94	19.61			15	64QAM	100	25	19.85	19.94	19.85	19.77	19.70		
15	64QAM	100	49	19.77	20.05	19.84			15	64QAM	100	49	19.98	20.15	19.93	19.92	19.93		
15	64QAM	100	74	19.64	19.94	19.61			15	64QAM	100	74	20.06	20.12	20.07	19.80	19.77		
15	64QAM	125	0	19.64	19.94	19.61			15	64QAM	125	0	19.99	20.10	19.98	19.66	19.65		
15	64QAM	125	12	19.65	20.13	19.68			15	64QAM	125	12	20.06	20.13	20.07	19.80	19.77		
15	64QAM	125	25	19.67	20.11	19.74			15	64QAM	125	25	20.08	20.09	20.05	19.68	19.83		
15	64QAM	125	50	19.65	20.10	19.62			15	64QAM	125	50	20.03	20.13	20.07	19.75	19.71		
15	64QAM	125	74	19.65	20.16	19.76			15	64QAM	125	74	20.08	20.14	20.08	19.75	19.73		
15	64QAM	125	100	19.65	20.16	19.62			15	64QAM	125	100	20.08	20.17	20.07	19.76	19.74		
15	64QAM	125	125	19.65	20.16	19.62			15	64QAM	125	125	20.08	20.15	20.07	19.83	19.80		
15	64QAM	125	149	19.98	20.70	20.04			15	64QAM	125	149	20.09	20.16	20.12	19.85	19.82		
15	64QAM	125	174	19.95	20.76	20.04			15	64QAM	125	174	20.09	20.16	20.09	19.81	19.88		
15	64QAM	125	200	19.66	19.66	20.04			15	64QAM	125	200	20.12	20.21	20.15	19.81	19.78		
15	64QAM	125	225	19.78	19.87	19.83			15	64QAM	125	225	20.11	20.19	20.08	19.75	19.87		
15	64QAM	125	250	19.83	19.87	19.82			15	64QAM	125	250	20.12	20.20					



Reduced Power Mode for Hotspot On

Band 2 (1900MHz Band) Part 24E										
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MRR (dB)		
Channel				16700	16900	19100				
Frequency (MHz)				1660	1680	1900				
20	QPSK	1	0	14.14	14.14	13.88				
20	QPSK	1	49	14.02	13.92	13.76	15	0		
20	QPSK	1	99	13.87	13.87	13.69				
20	QPSK	50	0	14.23	14.18	14.06				
20	QPSK	50	24	14.20	14.09	14.02				
20	QPSK	50	50	14.14	14.23	13.95				
20	QPSK	100	0	14.20	14.25	14.04				
20	16QAM	1	0	14.43	14.45	14.19				
20	16QAM	1	49	14.38	14.30	14.09	15	0		
20	16QAM	1	99	14.22	14.17	14.04				
20	16QAM	50	0	14.29	14.11	14.10				
20	16QAM	50	24	14.23	14.07	14.00				
20	16QAM	50	50	14.17	14.30	14.20				
20	16QAM	100	0	14.22	14.23	14.00				
20	64QAM	1	0	14.51	14.14	14.05				
20	64QAM	1	49	14.42	14.04	14.02				
20	64QAM	1	99	14.02	14.04	14.02				
20	64QAM	50	0	14.29	14.09	14.05				
20	64QAM	50	24	14.24	14.04	14.08				
20	64QAM	50	50	14.19	14.02	14.00				
20	64QAM	100	0	14.20	14.05	14.01				
Channel				16905	16920	19125	Tune-up limit (dBm)	MRR (dB)		
Frequency (MHz)				16925	16950	19250				
15	QPSK	1	0	14.18	14.01	13.85				
15	QPSK	1	37	14.03	13.94	13.78	15	0		
15	QPSK	1	74	14.03	13.90	13.78				
15	QPSK	36	0	14.32	14.11	14.02				
15	QPSK	36	20	14.23	14.04	13.95				
15	QPSK	36	39	14.18	14.05	13.98				
15	QPSK	75	0	14.23	14.07	13.97				
15	16QAM	1	0	14.12	14.20	14.00				
15	16QAM	1	37	14.34	14.31	14.03				
15	16QAM	1	74	14.27	14.17	14.07				
15	16QAM	36	0	14.29	14.09	14.01				
15	16QAM	36	20	14.17	14.00	13.93				
15	16QAM	36	39	14.14	14.02	13.89				
15	64QAM	75	0	14.23	14.05	13.96				
Channel				16950	16970	19175	Tune-up limit (dBm)	MRR (dB)		
Frequency (MHz)				16975	16980	19200				
10	QPSK	1	0	13.97	13.87	13.62				
10	QPSK	1	25	13.94	13.85	13.60				
10	QPSK	1	49	13.91	13.76	13.60				
10	QPSK	25	0	14.09	13.92	13.77				
10	QPSK	25	25	14.12	13.89	13.81				
10	QPSK	50	0	14.09	13.91	13.85				
10	16QAM	1	0	14.37	14.28	14.08				
10	16QAM	1	37	14.14	14.04	13.91				
10	16QAM	1	74	14.16	14.05	13.97				
10	16QAM	36	0	14.28	14.11	13.99				
10	16QAM	36	20	14.17	14.00	13.92				
10	16QAM	36	39	14.14	14.02	13.89				
10	64QAM	75	0	14.23	14.05	13.96				
Channel				16980	16990	19195	Tune-up limit (dBm)	MRR (dB)		
Frequency (MHz)				16995	17005	19215				
5	QPSK	1	0	14.05	14.05	14.19				
5	QPSK	1	12	14.07	14.37	14.21				
5	QPSK	1	24	14.06	14.24	14.33				
5	QPSK	12	0	14.09	14.27	14.44				
5	QPSK	12	7	14.14	14.36	14.39				
5	QPSK	12	13	14.14	14.39	14.38				
5	QPSK	25	0	14.06	14.24	14.37				
5	16QAM	1	0	14.28	14.35	14.41				
5	16QAM	1	12	14.14	13.98	14.17				
5	16QAM	1	24	14.21	14.21	14.01				
5	16QAM	12	0	14.06	14.25	14.37				
5	16QAM	12	7	14.12	14.28	14.23				
5	16QAM	12	13	14.23	14.30	14.44				
5	16QAM	25	0	14.16	14.33	14.38				
5	64QAM	1	0	14.19	14.36	13.98				
5	64QAM	1	12	14.39	14.08	14.23				
5	64QAM	1	24	14.13	14.08	14.09				
5	64QAM	12	0	13.71	13.92	14.11				
5	64QAM	12	7	13.86	13.93	14.11				
5	64QAM	12	13	13.82	13.96	14.04				
5	64QAM	25	0	13.86	14.03	14.12				
Channel				16995	17005	19195	Tune-up limit (dBm)	MRR (dB)		
Frequency (MHz)				17005	17025	19205				
3	QPSK	1	0	13.99	13.97	14.07				
3	QPSK	1	8	13.99	14.31	14.36				
3	QPSK	1	14	13.94	14.16	14.27				
3	QPSK	8	0	13.97	14.21	14.36				
3	QPSK	8	4	14.08	14.28	14.27				
3	QPSK	8	7	14.06	14.33	14.26				
3	QPSK	15	0	13.94	14.16	14.31				
3	16QAM	1	0	14.16	14.29	14.33				
3	16QAM	1	8	14.08	13.90	14.05				
3	16QAM	1	14	14.08	14.06	14.03				
3	16QAM	8	0	13.94	14.17	14.31				
3	16QAM	8	4	14.00	14.22	14.37				
3	16QAM	8	7	14.16	14.22	14.32				
3	16QAM	15	0	14.08	14.27	14.26				
Channel				17005	17025	19205	Tune-up limit (dBm)	MRR (dB)		
Frequency (MHz)				17025	17050	19235				
1.4	QPSK	1	0	14.02	14.01	14.13				
1.4	QPSK	1	3	14.03	14.34	14.42				
1.4	QPSK	1	5	14.00	14.20	14.30				
1.4	QPSK	3	0	14.03	14.24	14.40				
1.4	QPSK	3	1	14.11	14.32	14.33				
1.4	QPSK	3	3	14.10	14.36	14.32				
1.4	QPSK	6	0	14.00	14.20	14.34				
1.4	QPSK	6	1	14.12	14.32	14.37				
1.4	QPSK	1	3	14.11	13.94	14.11				
1.4	QPSK	1	5	14.12	14.09	14.09				
1.4	QPSK	3	0	14.00	14.21	14.34				
1.4	QPSK	3	1	14.06	14.25	14.41				
1.4	QPSK	3	3	14.20	14.26	14.38				
1.4	QPSK	6	0	14.06	14.12	14.30				
1.4	QPSK	1	1	14.13	14.32	13.95				
1.4	QPSK	1	3	14.33	14.05	14.19				
1.4	QPSK	1	5	14.09	14.04	14.03				
1.4	QPSK	3								



Reduced Power Mode for Hotspot On

Band 7 (2600MHz Band) Part 27										
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MRR (dB)		
Channel										
20	QPSK	1	0	14.31	14.15	14.41	16	0		
20	QPSK	1	49	14.32	14.40	14.27	16	0		
20	QPSK	1	99	14.38	14.40	14.18	16	0		
20	QPSK	50	0	14.51	14.35	14.21	16	0		
20	QPSK	50	24	14.47	14.51	14.48	16	0		
20	QPSK	50	50	14.55	14.55	14.57	16	0		
20	QPSK	100	0	14.31	14.39	14.45	16	0		
20	16QAM	1	0	14.75	14.78	14.80	16	0		
20	16QAM	1	49	14.68	14.56	14.64	16	0		
20	16QAM	1	99	14.69	14.67	14.57	16	0		
20	16QAM	50	0	14.54	14.49	14.60	16	0		
20	16QAM	50	24	14.61	14.48	14.62	16	0		
20	16QAM	50	50	14.54	14.68	14.59	16	0		
20	16QAM	100	0	14.52	14.45	14.65	16	0		
20	64QAM	1	0	14.64	14.63	14.63	16	0		
20	64QAM	1	49	14.66	14.54	14.61	16	0		
20	64QAM	1	99	14.75	14.62	14.67	16	0		
20	64QAM	50	0	14.57	14.39	14.25	16	0		
20	64QAM	50	24	14.63	14.61	14.29	16	0		
20	64QAM	50	50	14.57	14.63	14.46	16	0		
20	64QAM	100	0	14.54	14.37	14.37	16	0		
Frequency (MHz)										
20	QPSK	1	0	14.31	14.33	14.11	20850	2535	2560	Tune-up limit (dBm)
20	QPSK	1	37	14.41	14.35	14.17	21100	2100	21375	MRR (dB)
20	QPSK	1	74	14.38	14.38	14.34	21375	1745	1770	
20	QPSK	35	0	14.51	14.42	14.25	21375	1745	1770	
20	QPSK	35	20	14.47	14.46	14.30	21375	1745	1770	
20	QPSK	35	59	14.58	14.45	14.35	21375	1745	1770	
20	QPSK	75	0	14.58	14.38	14.30	21375	1745	1770	
20	QPSK	75	37	14.69	14.59	14.54	21375	1745	1770	
20	QPSK	75	74	14.77	14.79	14.79	21375	1745	1770	
20	QPSK	35	0	14.49	14.44	14.21	21375	1745	1770	
20	QPSK	35	20	14.46	14.47	14.36	21375	1745	1770	
20	QPSK	35	39	14.51	14.51	14.37	21375	1745	1770	
20	QPSK	75	0	14.51	14.40	14.36	21375	1745	1770	
20	QPSK	75	37	14.51	14.42	14.30	21375	1745	1770	
20	QPSK	75	74	14.53	14.42	14.37	21375	1745	1770	
20	QPSK	35	0	14.49	14.44	14.21	21375	1745	1770	
20	QPSK	35	20	14.46	14.47	14.36	21375	1745	1770	
20	QPSK	35	39	14.51	14.51	14.37	21375	1745	1770	
20	QPSK	75	0	14.51	14.40	14.36	21375	1745	1770	
20	QPSK	75	37	14.51	14.42	14.30	21375	1745	1770	
20	QPSK	75	74	14.53	14.42	14.37	21375	1745	1770	
20	QPSK	35	0	14.49	14.44	14.21	21375	1745	1770	
20	QPSK	35	20	14.46	14.47	14.36	21375	1745	1770	
20	QPSK	35	39	14.51	14.51	14.37	21375	1745	1770	
20	QPSK	75	0	14.51	14.40	14.36	21375	1745	1770	
20	QPSK	75	37	14.51	14.42	14.30	21375	1745	1770	
20	QPSK	75	74	14.53	14.42	14.37	21375	1745	1770	
20	QPSK	35	0	14.49	14.44	14.21	21375	1745	1770	
20	QPSK	35	20	14.46	14.47	14.36	21375	1745	1770	
20	QPSK	35	39	14.51	14.51	14.37	21375	1745	1770	
20	QPSK	75	0	14.51	14.40	14.36	21375	1745	1770	
20	QPSK	75	37	14.51	14.42	14.30	21375	1745	1770	
20	QPSK	75	74	14.53	14.42	14.37	21375	1745	1770	
20	QPSK	35	0	14.49	14.44	14.21	21375	1745	1770	
20	QPSK	35	20	14.46	14.47	14.36	21375	1745	1770	
20	QPSK	35	39	14.51	14.51	14.37	21375	1745	1770	
20	QPSK	75	0	14.51	14.40	14.36	21375	1745	1770	
20	QPSK	75	37	14.51	14.42	14.30	21375	1745	1770	
20	QPSK	75	74	14.53	14.42	14.37	21375	1745	1770	
20	QPSK	35	0	14.49	14.44	14.21	21375	1745	1770	
20	QPSK	35	20	14.46	14.47	14.36	21375	1745	1770	
20	QPSK	35	39	14.51	14.51	14.37	21375	1745	1770	
20	QPSK	75	0	14.51	14.40	14.36	21375	1745	1770	
20	QPSK	75	37	14.51	14.42	14.30	21375	1745	1770	
20	QPSK	75	74	14.53	14.42	14.37	21375	1745	1770	
20	QPSK	35	0	14.49	14.44	14.21	21375	1745	1770	
20	QPSK	35	20	14.46	14.47	14.36	21375	1745	1770	
20	QPSK	35	39	14.51	14.51	14.37	21375	1745	1770	
20	QPSK	75	0	14.51	14.40	14.36	21375	1745	1770	
20	QPSK	75	37	14.51	14.42	14.30	21375	1745	1770	
20	QPSK	75	74	14.53	14.42	14.37	21375	1745	1770	
20	QPSK	35	0	14.49	14.44	14.21	21375	1745	1770	
20	QPSK	35	20	14.46	14.47	14.36	21375	1745	1770	
20	QPSK	35	39	14.51	14.51	14.37	21375	1745	1770	
20	QPSK	75	0	14.51	14.40	14.36	21375	1745	1770	
20	QPSK	75	37	14.51	14.42	14.30	21375	1745	1770	
20	QPSK	75	74	14.53	14.42	14.37	21375	1745	1770	
20	QPSK	35	0	14.49	14.44	14.21	21375	1745	1770	
20	QPSK	35	20	14.46	14.47	14.36	21375	1745	1770	
20	QPSK	35	39	14.51	14.51	14.37	21375	1745	1770	
20	QPSK	75	0	14.51	14.40	14.36	21375	1745	1770	
20	QPSK	75	37	14.51	14.42	14.30	21375	1745	1770	
20	QPSK	75	74	14.53	14.42	14.37	21375	1745	1770	
20	QPSK	35	0	14.49	14.44	14.21	21375	1745	1770	
20	QPSK	35	20	14.46	14.47	14.36	21375	1745	1770	
20	QPSK	35	39	14.51	14.51	14.37	21375	1745	1770	
20	QPSK	75	0	14.51	14.40	14.36	21375	1745	1770	
20	QPSK	75	37	14.51	14.42	14.30	21375	1745	1770	
20	QPSK	75	74	14.53	14.42	14.37	21375	1745	1770	
20	QPSK	35	0	14.49	14.44	14.21	21375	1745	1770	
20	QPSK	35	20	14.46	14.47	14.36	21375	1745	1770	
20	QPSK	35	39	14.51	14.51	14.37	21375	1745	1770	
20	QPSK	75	0	14.51	14.40	14.36	21375	1745	1770	
20	QPSK	75	37	14.51	14.42	14.30	21375	1745	1770	
20	QPSK	75	74	14.53	14.42	14.37	21375	1745	1770	
20	QPSK	35	0	14.49	14.44	14.21	21375	1745	1770	
20	QPSK	35	20	14.46	14.47	14.36	21375	1745	1770	
20	QPSK	35	39	14.51	14.51	14.37	21375	1745	1770	
20	QPSK	75	0	14.51	14.40	14.36	21375	1745	1770	
20	QPSK	75	37	14.51	14.42	14.30	21375	1745	1770	
20	QPSK	75	74	14.53	14.42	14.37	21375	1745	1770	
20	QPSK	35	0	14.49	14.44	14.21	21375	1745	1770	
20	QPSK	35	20	14.46	14.47	14.36	21375	1745	1770	
20	QPSK	35	39	14.51	14.51	14.37	21375	1745	1770	
20	QPSK	75	0	14.51	14.40	14.36	21375	1745	1770	
20	QPSK	75	37	14.51	14.42	14.30	21375	1745	1770	
20	QPSK	75	74	14.53	14.42	14.37	21375	1745		



Band 38(only on channel required)									
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)	
Channel				37850	38000	38150			
Frequency (MHz)				2580	2605	2610			
20	QPSK	1	0	15.67	15.76	15.99	17.5	0	
20	QPSK	1	49	15.57	15.77	15.85			
20	QPSK	1	99	15.77	15.85	15.84	17.5	0	
20	QPSK	50	0	15.72	15.93	16.10			
20	QPSK	50	24	15.67	15.87	16.11	17.5	0	
20	QPSK	50	50	15.62	15.94	16.04			
20	QPSK	100	0	15.65	15.99	16.04	17.5	0	
20	16QAM	1	0	15.75	15.95	16.12			
20	16QAM	1	49	15.78	16.13	16.08	17.5	0	
20	16QAM	1	99	15.72	16.08	16.15			
20	16QAM	50	0	15.78	15.93	16.13	17.5	0	
20	16QAM	50	24	15.77	16.00	16.02			
20	16QAM	50	50	15.76	16.01	16.10	17.5	0	
20	16QAM	100	0	15.68	16.02	16.13			
20	64QAM	1	0	15.73	15.81	16.08	17.5	0	
20	64QAM	1	49	15.76	15.71	15.90			
20	64QAM	1	99	15.72	15.87	15.86	17.5	0	
20	64QAM	50	0	15.53	15.98	15.88			
20	64QAM	50	24	15.67	16.03	16.01	17.5	0	
20	64QAM	50	50	15.72	16.01	15.95			
20	64QAM	100	0	15.53	16.01	15.88	17.5	0	
Channel				37825	38000	38175	Tune-up limit (dBm)	MPR (dB)	
Frequency (MHz)				2577.5	2595	2612.5			
15	QPSK	1	0	15.69	15.79	15.80	17.5	0	
15	QPSK	1	37	15.71	15.49	15.82			
15	QPSK	1	74	15.83	15.82	15.93	17.5	0	
15	QPSK	36	0	15.90	15.54	15.89			
15	QPSK	36	20	15.89	15.63	15.96	17.5	0	
15	QPSK	36	39	15.92	15.57	15.96			
15	QPSK	75	0	15.93	15.58	15.97	17.5	0	
15	16QAM	1	0	15.90	15.64	15.88			
15	16QAM	1	37	15.78	15.77	15.88	17.5	0	
15	16QAM	1	74	15.76	15.54	16.02			
15	16QAM	36	0	15.91	15.82	15.88	17.5	0	
15	16QAM	36	20	15.90	15.65	15.93			
15	16QAM	36	39	15.90	15.57	15.94	17.5	0	
15	16QAM	75	0	15.96	15.64	15.99			
15	64QAM	1	0	15.74	15.82	15.78	17.5	0	
15	64QAM	1	37	15.74	15.66	15.78			
15	64QAM	1	74	15.95	15.83	15.91	17.5	0	
15	64QAM	36	0	15.92	15.54	15.90			
15	64QAM	36	20	15.93	15.68	15.98	17.5	0	
15	64QAM	36	39	15.91	15.58	15.99			
15	64QAM	75	0	15.93	15.64	15.98	17.5	0	
Channel				37800	38000	38200	Tune-up limit (dBm)	MPR (dB)	
Frequency (MHz)				2575	2595	2615			
10	QPSK	1	0	15.57	15.69	15.69	17.5	0	
10	QPSK	1	25	15.58	15.39	15.72			
10	QPSK	1	49	15.71	15.70	15.83	17.5	0	
10	QPSK	25	0	15.67	15.43	15.91			
10	QPSK	25	12	15.73	15.51	15.89	17.5	0	
10	QPSK	25	25	15.72	15.46	15.93			
10	QPSK	50	0	15.73	15.48	15.94	17.5	0	
10	16QAM	1	0	15.66	15.53	15.89			
10	16QAM	1	25	15.63	15.65	15.77	17.5	0	
10	16QAM	1	49	15.77	15.42	15.75			
10	16QAM	25	0	15.63	15.72	15.90	17.5	0	
10	16QAM	25	12	15.69	15.54	15.90			
10	16QAM	25	25	15.71	15.45	15.91	17.5	0	
10	16QAM	50	0	15.76	15.52	15.94			
10	64QAM	1	0	15.65	15.71	15.73	17.5	0	
10	64QAM	1	25	15.53	15.54	15.74			
10	64QAM	1	49	15.66	15.69	15.95	17.5	0	
10	64QAM	25	0	15.67	15.58	15.90			
10	64QAM	25	12	15.74	15.57	15.93	17.5	0	
10	64QAM	25	25	15.76	15.45	15.89			
10	64QAM	50	0	15.74	15.52	15.93	17.5	0	
Channel				37775	38000	38225	Tune-up limit (dBm)	MPR (dB)	
Frequency (MHz)				2572.5	2595	2617.5			
5	QPSK	1	0	15.62	15.74	15.74	17.5	0	
5	QPSK	1	12	15.65	15.44	15.75			
5	QPSK	1	24	15.76	15.75	15.88	17.5	0	
5	QPSK	12	0	15.85	15.49	15.84			
5	QPSK	12	7	15.84	15.58	15.91	17.5	0	
5	QPSK	12	13	15.87	15.52	15.91			
5	QPSK	25	0	15.88	15.53	15.92	17.5	0	
5	16QAM	1	0	15.84	15.58	15.83			
5	16QAM	1	12	15.71	15.70	15.80	17.5	0	
5	16QAM	1	24	15.70	15.48	15.95			
5	16QAM	12	0	15.85	15.77	15.81	17.5	0	
5	16QAM	12	7	15.83	15.60	15.88			
5	16QAM	12	13	15.84	15.52	15.89	17.5	0	
5	16QAM	25	0	15.89	15.58	15.93			
5	64QAM	1	0	15.67	15.77	15.72	17.5	0	
5	64QAM	1	12	15.69	15.60	15.71			
5	64QAM	1	24	15.70	15.48	15.95	17.5	0	
5	64QAM	12	0	15.85	15.77	15.81			
5	64QAM	12	7	15.87	15.62	15.93	17.5	0	
5	64QAM	12	13	15.84	15.52	15.93			
5	64QAM	25	0	15.88	15.57	15.91	17.5	0	

Reduced Power Mode for Hotspot On

Band 41 (2.8G Band)									
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)	
Channel				39750	40185	40620	41055	41490	
Frequency (MHz)				2503.5	2548.3	2593	2637.8	2682.5	
15	QPSK	1	0	15.89	15.90	15.90	15.91	15.95	17.5
15	QPSK	1	37	15.91	15.92	15.84	15.61	15.69	
15	QPSK	1	74	16.02	16.04	16.02	15.94	15.68	17.5
15	QPSK	36	0	15.98	16.11	15.97	15.66	15.64	
15	QPSK	36	20	16.05	16.10	16.04	15.75	15.76	17.5
15	QPSK	36	39	16.05	16.13	16.02	15.69	15.81	
15	QPSK	75	0	16.06	16.14	16.07	15.70	15.69	17.5
15	QPSK	75	37	15.95	15.99	15.93	15.89	15.91	
15	QPSK	75	74	16.11	15.97	16.06	15.66	15.90	17.5
15	QPSK	36	0	15.97	16.12	15.94	15.89	15.89	
15	QPSK	36	20	16.02	16.11	16.03	15.77	15.74	17.



Reduced Power Mode for Handheld On

Band 2 (1900MHz Band)														
Part 24E														
BW [MHz]	Modulation	RB Size	RB Offset	Power Ch. / Freq	Power Ch. / Freq	Power Ch. / Freq	Tune-up limit (dBm)	MRR (dB)						
Channel														
Frequency (MHz)														
20	QPSK	1	0	20.10	20.10	19.84	21	0						
20	QPSK	1	49	19.82	19.88	19.60	21	0						
20	QPSK	1	99	19.84	19.74	19.71	21	0						
20	QPSK	50	0	19.94	19.89	19.66	21	0						
20	QPSK	50	24	20.04	19.90	19.79	21	0						
20	QPSK	50	50	19.98	20.05	19.81	21	0						
20	QPSK	100	0	20.05	20.10	19.96	21	0						
20	16QAM	1	0	19.15	20.30	20.34	21	0						
20	16QAM	1	49	20.25	20.37	20.02	21	0						
20	16QAM	1	99	19.29	20.34	20.21	21	0						
20	16QAM	50	0	19.94	20.32	20.04	21	0						
20	16QAM	50	24	20.04	20.21	20.10	21	0						
20	16QAM	50	50	20.19	20.33	20.12	21	0						
20	16QAM	100	0	20.09	20.10	19.92	21	0						
20	64QAM	1	0	20.13	20.24	20.38	21	0						
20	64QAM	1	49	20.06	20.20	20.22	21	0						
20	64QAM	1	99	20.35	20.16	20.01	21	0						
20	64QAM	50	0	19.94	19.81	19.87	21	0						
20	64QAM	50	24	20.06	19.98	19.77	21	0						
20	64QAM	50	50	19.91	20.01	19.81	21	0						
20	64QAM	100	0	19.98	19.84	19.84	21	0						
Channel														
Frequency (MHz)														
16	QPSK	1	0	19.80	19.97	19.80	21	0						
16	QPSK	1	37	19.83	19.86	19.65	21	0						
16	QPSK	1	74	19.77	19.75	19.58	21	0						
16	QPSK	36	0	19.96	19.87	19.82	21	0						
16	QPSK	36	20	20.09	19.93	19.93	21	0						
16	QPSK	36	39	20.08	19.91	19.84	21	0						
16	QPSK	75	0	19.98	19.93	19.78	21	0						
16	16QAM	1	0	19.93	20.03	20.04	21	0						
16	16QAM	1	37	20.08	20.02	19.86	21	0						
16	16QAM	1	74	20.23	20.04	20.01	21	0						
16	16QAM	36	0	20.13	19.90	19.78	21	0						
16	16QAM	36	20	20.04	20.03	19.87	21	0						
16	16QAM	36	39	19.67	19.94	19.77	21	0						
16	16QAM	75	0	19.93	19.87	19.89	21	0						
16	64QAM	1	0	20.23	19.18	19.80	21	0						
16	64QAM	1	37	20.02	20.11	20.05	21	0						
16	64QAM	1	74	19.96	19.97	20.06	21	0						
16	64QAM	36	0	20.07	19.88	19.70	21	0						
16	64QAM	36	20	19.93	19.92	19.85	21	0						
16	64QAM	36	39	20.06	19.91	20.03	21	0						
16	64QAM	75	0	19.91	19.89	19.82	21	0						
Channel														
Frequency (MHz)														
10	QPSK	1	0	19.68	19.71	19.26	21	0						
10	QPSK	1	25	19.65	19.61	19.31	21	0						
10	QPSK	1	49	19.63	19.48	19.21	21	0						
10	QPSK	25	0	19.76	19.62	19.59	21	0						
10	QPSK	25	12	19.77	19.71	19.61	21	0						
10	QPSK	25	25	19.73	19.70	19.61	21	0						
10	QPSK	50	0	19.81	19.71	19.57	21	0						
10	QPSK	50	24	19.81	19.71	19.57	21	0						
10	QPSK	100	0	20.29	20.22	20.08	21	0						
10	16QAM	1	0	20.01	20.23	20.00	21	0						
10	16QAM	1	25	19.61	19.70	19.68	21	0						
10	16QAM	1	49	19.83	19.84	19.60	21	0						
10	16QAM	25	0	19.83	19.76	19.68	21	0						
10	16QAM	25	12	19.79	19.66	19.56	21	0						
10	16QAM	25	25	19.81	19.65	19.51	21	0						
10	16QAM	50	0	19.81	19.55	19.50	21	0						
10	64QAM	1	0	20.23	19.90	20.12	21	0						
10	64QAM	1	25	20.22	19.81	20.08	21	0						
10	64QAM	1	49	20.20	20.13	19.99	21	0						
10	64QAM	25	0	19.71	19.70	19.48	21	0						
10	64QAM	25	12	19.82	19.71	19.48	21	0						
10	64QAM	25	25	19.89	19.73	19.46	21	0						
10	64QAM	50	0	19.72	19.68	19.52	21	0						
Channel														
Frequency (MHz)														
5	QPSK	1	0	19.69	19.69	19.32	21	0						
5	QPSK	1	12	19.72	19.67	19.43	21	0						
5	QPSK	1	24	19.54	19.67	19.41	21	0						
5	QPSK	12	0	19.81	19.66	19.53	21	0						
5	QPSK	12	7	19.82	19.77	19.59	21	0						
5	QPSK	12	13	19.84	19.84	19.44	21	0						
5	QPSK	25	0	19.79	19.70	19.48	21	0						
5	16QAM	1	0	20.06	20.06	19.93	21	0						
5	16QAM	1	24	20.11	20.14	19.97	21	0						
5	16QAM	1	49	19.88	19.76	19.60	21	0						
5	16QAM	12	0	19.78	19.76	19.48	21	0						
5	16QAM	12	7	19.81	19.76	19.50	21	0						
5	16QAM	12	13	19.85	19.76	19.40	21	0						
5	16QAM	12	25	19.86	19.76	19.48	21	0						
5	16QAM	25	0	19.81	19.72	19.62	21	0						
5	16QAM	25	12	19.84	19.71	19.50	21	0						
5	16QAM	25	25	19.84	19.51	19.56	21	0						
5	16QAM	50	0	19.82	19.71	19.41	21	0						
5	64QAM	1	0	19.77	19.77	19.46	21	0						
5	64QAM	1	3	19.77	19.77	19.46	21	0						
5	64QAM	1	5	19.77	19.79	19.45	21	0						
5	64QAM	3	0	19.77	19.63	19.46	21	0						
5	64QAM	3	1	19.79	19.77	19.47	21	0						
5	64QAM	3	3	19.77	19.81	19.42	21	0						
5	64QAM	6	0	19.77	19.65	19.46	21	0						



Reduced Power Mode for Handheld On

Band 7 (2600MHz Band)											
Part 27											
BW [MHz]	Modulation	RB Size	RB Offset	Power Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MRR (dB)	Channel	Frequency (MHz)	
Frequency (MHz)											
20	QPSK	1	0	21.97	21.91	21.99	23.5	0	20.00	2535	2605.0
20	QPSK	1	49	21.98	21.96	21.93	23.5	0	20.00	2535	2605.0
20	QPSK	1	99	21.94	21.96	21.74	23.5	0	20.00	2535	2605.0
20	QPSK	50	0	22.07	21.91	21.77	23.5	0	20.00	2535	2605.0
20	QPSK	50	24	22.03	22.07	22.14	23.5	0	20.00	2535	2605.0
20	QPSK	50	50	22.11	22.11	22.03	23.5	0	20.00	2535	2605.0
20	QPSK	100	0	22.07	21.95	22.08	23.5	0	20.00	2535	2605.0
20	16QAM	1	0	22.31	22.34	22.30	23.5	0	20.00	2535	2605.0
20	16QAM	1	49	22.14	22.12	22.20	23.5	0	20.00	2535	2605.0
20	16QAM	1	99	22.25	22.23	22.13	23.5	0	20.00	2535	2605.0
20	16QAM	50	0	22.10	22.02	22.16	23.5	0	20.00	2535	2605.0
20	16QAM	50	24	22.17	22.04	22.18	23.5	0	20.00	2535	2605.0
20	16QAM	50	50	22.10	22.14	22.15	23.5	0	20.00	2535	2605.0
20	16QAM	100	0	22.08	22.01	22.09	23.5	0	20.00	2535	2605.0
20	64QAM	1	0	22.20	22.19	22.07	23	0.5	20.00	2535	2605.0
20	64QAM	1	49	22.22	22.19	22.07	23	0.5	20.00	2535	2605.0
20	64QAM	1	99	22.31	22.18	22.23	23	0.5	20.00	2535	2605.0
20	64QAM	50	0	21.64	21.56	21.60	23	0.5	20.00	2535	2605.0
20	64QAM	50	24	21.66	21.66	21.71	23	0.5	20.00	2535	2605.0
20	64QAM	50	50	21.60	21.62	21.60	23	0.5	20.00	2535	2605.0
20	64QAM	100	0	21.71	21.55	21.67	23	0.5	20.00	2535	2605.0
Frequency (MHz)											
15	QPSK	1	0	21.87	21.89	21.67	23.5	0	20.00	2535	2605.0
15	QPSK	1	37	21.97	21.91	21.73	23.5	0	20.00	2535	2605.0
15	QPSK	1	74	21.94	21.94	21.90	23.5	0	20.00	2535	2605.0
15	QPSK	36	0	22.07	21.98	21.79	23.5	0	20.00	2535	2605.0
15	QPSK	36	20	22.03	22.02	21.86	23.5	0	20.00	2535	2605.0
15	QPSK	36	39	22.14	22.01	21.89	23.5	0	20.00	2535	2605.0
15	QPSK	75	0	22.02	21.91	21.91	23.5	0	20.00	2535	2605.0
15	16QAM	1	0	22.25	22.01	22.10	23.5	0	20.00	2535	2605.0
15	16QAM	1	37	22.22	22.23	22.26	23.5	0	20.00	2535	2605.0
15	16QAM	1	74	22.33	22.34	22.23	23.5	0	20.00	2535	2605.0
15	16QAM	36	0	22.05	22.00	21.77	23.5	0	20.00	2535	2605.0
15	16QAM	36	20	22.02	22.03	21.92	23	0.5	20.00	2535	2605.0
15	16QAM	36	39	22.07	22.07	21.93	23	0.5	20.00	2535	2605.0
15	16QAM	75	0	22.07	21.96	21.91	23	0.5	20.00	2535	2605.0
15	64QAM	1	0	22.16	21.90	21.91	23	0.5	20.00	2535	2605.0
15	64QAM	1	37	21.87	21.78	22.08	23	0.5	20.00	2535	2605.0
15	64QAM	1	74	21.98	22.00	22.20	23	0.5	20.00	2535	2605.0
15	64QAM	36	0	21.66	21.70	21.76	22	1.5	20.00	2535	2605.0
15	64QAM	36	20	21.62	21.67	21.66	22	1.5	20.00	2535	2605.0
15	64QAM	36	39	21.70	21.66	21.60	22	1.5	20.00	2535	2605.0
15	64QAM	75	0	21.61	21.67	21.56	22	1.5	20.00	2535	2605.0
Frequency (MHz)											
10	QPSK	1	0	21.72	21.58	21.77	23.5	0	20.00	2535	2605.0
10	QPSK	1	25	21.67	21.70	21.78	23.5	0	20.00	2535	2605.0
10	QPSK	1	49	21.84	21.68	21.62	23.5	0	20.00	2535	2605.0
10	QPSK	25	0	21.79	21.74	21.55	23.5	0	20.00	2535	2605.0
10	QPSK	25	12	21.81	21.75	21.69	23.5	0	20.00	2535	2605.0
10	QPSK	25	25	21.88	21.84	21.69	23.5	0	20.00	2535	2605.0
10	QPSK	50	0	21.85	21.73	21.65	23.5	0	20.00	2535	2605.0
10	16QAM	1	0	22.25	22.15	22.14	23.5	0	20.00	2535	2605.0
10	16QAM	1	25	22.21	22.23	22.29	23.5	0	20.00	2535	2605.0
10	16QAM	1	49	22.21	22.11	22.17	23.5	0	20.00	2535	2605.0
10	16QAM	12	0	22.21	22.17	22.09	23.5	0	20.00	2535	2605.0
10	16QAM	12	7	21.66	21.70	21.80	23.5	0	20.00	2535	2605.0
10	16QAM	12	13	21.80	21.76	21.86	23	0.5	20.00	2535	2605.0
10	16QAM	25	0	21.78	21.77	21.60	23	0.5	20.00	2535	2605.0
10	16QAM	25	12	21.88	21.72	21.62	23	0.5	20.00	2535	2605.0
10	16QAM	25	25	21.88	21.76	21.65	23	0.5	20.00	2535	2605.0
10	64QAM	1	0	22.21	22.28	22.03	23	0.5	20.00	2535	2605.0
10	64QAM	1	25	21.97	21.88	22.00	23	0.5	20.00	2535	2605.0
10	64QAM	1	49	22.19	22.10	22.08	23	0.5	20.00	2535	2605.0
10	64QAM	25	0	21.88	21.84	21.76	22	1.5	20.00	2535	2605.0
10	64QAM	25	12	21.84	21.79	21.70	22	1.5	20.00	2535	2605.0
10	64QAM	25	25	21.84	21.79	21.65	22	1.5	20.00	2535	2605.0
10	64QAM	50	0	21.89	21.81	21.65	23	0.5	20.00	2535	2605.0
Frequency (MHz)											
5	QPSK	1	0	21.77	21.52	21.65	23.5	0	20.00	2535	2605.0
5	QPSK	1	12	21.79	21.56	21.65	23.5	0	20.00	2535	2605.0
5	QPSK	1	24	21.67	21.74	21.79	23.5	0	20.00	2535	2605.0
5	QPSK	12	0	21.61	21.77	21.70	23.5	0	20.00	2535	2605.0
5	QPSK	12	7	21.66	21.70	21.80	23	0.5	20.00	2535	2605.0
5	QPSK	12	13	21.80	21.76	21.80	23	0.5	20.00	2535	2605.0
5	QPSK	25	0	21.58	21.69	21.77	23	0.5	20.00	2535	2605.0
5	QPSK	25	12	21.61	22.04	22.12	23.5	0	20.00	2535	2605.0
5	QPSK	25	24	21.61	22.11	22.11	23.5	0	20.00	2535	2605.0
5	QPSK	50	0	21.63	21.58	21.60	23	0.5	20.00	2535	2605.0
5	QPSK	50	7	21.54	21.67	21.59	23	0.5	20.00	2535	2605.0
5	QPSK	50	13	21.62	21.70	21.70	23	0.5	20.00	2535	2605.0
5	QPSK	25	0	21.63	21.72	21.88	22	1.5	20.00	2535	2605.0
Frequency (MHz)											
3	QPSK	1	0	20.59	20.62	20.72	23.5	0	20.00	2535	2605.0
3	QPSK	1	8	20.31	20.54	20.62	23.5	0	20.00	2535	2605.0
3	QPSK	1	14	20.44	20.47	20.60	23.5	0	20.00	2535	2605.0
3	QPSK	8	0	20.48	20.77	20.85	23.5	0	20.00	2535	2605.0
3	QPSK	8	4	20.61	20.84	20.73	23.5	0	20.00	2535	2605.0
3	QPSK	8	8	20.61	20.79	20.73	23.5	0	20.00	2535	2605.0
3	QPSK	8	12	20.67	20.87	20.73	23.5	0	20.00	2535	2605.0
3	QPSK	15	0	20.63	20.87	20.82	23.5	0	20.00	2535	2605.0
3	QPSK	15	3	20.64	20.82	20.79	23.5	0	20.00	2535	2605.0
3	QPSK	15	6	20.66	20.86	20.99	23.5	0	20.00	2535	2605.0
3	QPSK	15	14	20.63	20.86	20.76	23.5	0	20.00	2535	2605.0
3	QPSK	15	18	20.63	20.86	21.11	23.5	0	20.00	2535	2605.0
3	QPSK	15	24	20.63	20.86	20.76	23.5	0	20.00	2535	2605.0
3	QPSK	15	30	20.63	20.						



CA Uplink

Full Power CA_7C Combination 20MHz+20MHz (100RB+100RB)										
PCC Channel	SCC Channel	Modulation	PCC		SCC		Total RB Size	Target MPR Level (dB)	Measured Power (dBm)	Tune up Power (dBm)
			RB Size	RB offset	RB Size	RB offset				
21350	21152	QPSK	1	0	0	0	1	0	23.66	24

Reduced Power Mode for P-Sensor On CA_7C Combination 20MHz+20MHz (100RB+100RB)										
PCC Channel	SCC Channel	Modulation	PCC		SCC		Total RB Size	Target MPR Level (dB)	Measured Power (dBm)	Tune up Power (dBm)
			RB Size	RB offset	RB Size	RB offset				
21100	20902	QPSK	1	0	0	0	1	0	17.41	19

Reduced Power Mode for Hotspot On CA_7C Combination 20MHz+20MHz (100RB+100RB)										
PCC Channel	SCC Channel	Modulation	PCC		SCC		Total RB Size	Target MPR Level (dB)	Measured Power (dBm)	Tune up Power (dBm)
			RB Size	RB offset	RB Size	RB offset				
20850	21048	QPSK	1	0	0	0	1	0	14.47	16
21100	20902	QPSK	1	0	0	0	1	0	14.58	16
21350	21152	QPSK	1	0	0	0	1	0	14.72	16

Reduced Power for Handheld On CA_7C Combination 20MHz+20MHz (100RB+100RB)										
PCC Channel	SCC Channel	Modulation	PCC		SCC		Total RB Size	Target MPR Level (dB)	Measured Power (dBm)	Tune up Power (dBm)
			RB Size	RB offset	RB Size	RB offset				
21100	20902	QPSK	1	0	0	0	1	0	22.01	23.5



CA Downlink

Configure		CA List	PCC										SCC					Power			
			LTE	BW	UL	UL	Mod.	UL#	UL	LTE	BW	DL	DL	Freq.	(MHz)	Channel	Tx. Power	(dBm)	With CA	Without CA	
			Band	(MHz)	Freq.	(MHz)		RB	RB	Band	(MHz)	Offset	Band	(MHz)				Tx. Power	(dBm)		
Inter-Band	CA_4A-7A	Band 4	20M	1745	20300	16QAM	1	99	Band 7	20M	2655	3100	23.21	23.88	Channel	2175	23.26	23.98			
		Band 7	20M	2560	21350	16QAM	1	0	Band 4	20M	2132.5	2175	23.26	23.98	2132.5	2175	23.26	23.98			
		Band 5	10M	836.5	20525	16QAM	1	0	Band 38	20M	2595	38000	22.86	23.52	38000	22.86	23.52	23.52			
	CA_5A-38A	Band 38	20M	2610	38150	QPSK	1	0	Band 5	10M	881.5	2525	23.01	23.50	2525	23.01	23.50	23.50			
		Band 5	10M	836.5	20525	16QAM	1	0	Band 41	20M	2593	40620	22.83	23.52	40620	22.83	23.52	23.52			
		Band 41	20M	2593	40620	16QAM	1	0	Band 5	10M	881.5	2525	23.34	23.71	2525	23.34	23.71	23.71			
Intra-Band	Contiguous	CA_7B	15M	2535	21100	16QAM	1	0	Band 7	5M	2664.3	3103	23.62	23.88	3103	23.62	23.88	23.88			
		Band 7	20M	2560	21350	16QAM	1	0	Band 7	20M	2660.2	3152	23.61	23.88	2660.2	3152	23.61	23.88			
	Non-Contiguous	CA_7C	20M	2560	21350	16QAM	1	0	Band 7	20M	2595	38000	22.87	23.52	38000	22.87	23.52	23.52			
		CA_38C	Band 38	20M	2610	38150	QPSK	1	0	Band 5	10M	881.5	2525	20.2	20.24	2525	20.2	20.24	20.24		
	CA_4A-4A	Band 4	20M	1745	20300	16QAM	1	99	Band 38	20M	2590.2	37952	23.02	23.50	37952	23.02	23.50	23.50			
	CA_7A-7A	Band 7	20M	2560	21350	16QAM	1	0	Band 4	5M	2112.5	1975	23.07	23.66	1975	23.07	23.66	23.66			

Configure		CA List	PCC										SCC					Power			
			LTE	BW	UL	UL	Mod.	UL#	UL	LTE	BW	DL	DL	Freq.	(MHz)	Channel	Tx. Power	(dBm)	With CA	Without CA	
			Band	(MHz)	Freq.	(MHz)		RB	RB	Band	(MHz)	Offset	Band	(MHz)				Tx. Power	(dBm)		
Inter-Band	CA_4A-7A	Band 4	20M	1745	20300	16QAM	1	99	Band 7	20M	2655	3100	16.07	16.91	3100	16.07	16.91	16.91			
		Band 7	20M	2560	21350	16QAM	1	0	Band 4	20M	2132.5	2175	17.32	17.91	2132.5	17.32	17.91	17.91			
		Band 5	10M	836.5	20525	16QAM	1	0	Band 38	20M	2595	38000	22.87	23.52	38000	22.87	23.52	23.52			
	CA_5A-38A	Band 38	20M	2595	38000	QPSK	1	49	Band 5	10M	881.5	2525	20.2	20.24	2525	20.2	20.24	20.24			
		Band 5	10M	836.5	20525	16QAM	1	0	Band 41	20M	2593	40620	22.92	23.52	40620	22.92	23.52	23.52			
		Band 41	20M	2593	40620	16QAM	1	0	Band 5	10M	881.5	2525	20.08	20.37	2525	20.08	20.37	20.37			
Intra-Band	Contiguous	CA_7B	15M	2535	21100	16QAM	1	74	Band 7	5M	2664.3	3103	17.7	17.89	3103	17.7	17.89	17.89			
		CA_7C	20M	2560	21350	16QAM	1	0	Band 7	20M	2660.2	3152	17.74	17.91	2660.2	17.74	17.91	17.91			
	Non-Contiguous	CA_38C	Band 38	20M	2595	38000	QPSK	1	49	Band 38	20M	2614.8	38198	20.1	20.24	38198	20.1	20.24	20.24		
		CA_4A-4A	Band 4	20M	1745	20300	16QAM	1	99	Band 4	5M	2112.5	1975	15.31	15.36	1975	15.31	15.36	15.36		
	CA_7A-7A	Band 7	20M	2560	21350	16QAM	1	0	Band 7	5M	2622.5	2775	17.6	17.91	2775	17.6	17.91	17.91			

Configure		CA List	PCC										SCC					Power			
			LTE	BW	UL	UL	Mod.	UL#	UL	LTE	BW	DL	DL	Freq.	(MHz)	Channel	Tx. Power	(dBm)	With CA	Without CA	
			Band	(MHz)	Freq.	(MHz)		RB	RB	Band	(MHz)	Offset	Band	(MHz)				Tx. Power	(dBm)		
Inter-Band	CA_4A-7A	Band 4	20M	1745	20300	16QAM	1	99	Band 7	20M	2655	3100	15.3	15.35	3100	15.3	15.35	15.35			
		Band 7	20M	2560	21350	16QAM	1	0	Band 4	20M	2132.5	2175	14.68	14.80	2132.5	14.68	14.80	14.80			
		Band 5	10M	836.5	20525	16QAM	1	0	Band 38	20M	2595	38000	22.84	23.52	38000	22.84	23.52	23.52			
	CA_5A-38A	Band 38	20M	2610	38150	QPSK	1	99	Band 5	10M	881.5	2525	16.05	16.15	2525	16.05	16.15	16.15			
		Band 5	10M	836.5	20525	16QAM	1	0	Band 41	20M	2593	40620	22.86	23.52	40620	22.86	23.52	23.52			
		Band 41	20M	2593	40620	16QAM	1	0	Band 5	10M	881.5	2525	16.02	16.26	2525	16.02	16.26	16.26			
Intra-Band	Contiguous	CA_7B	15M	2535	21100	16QAM	1	74	Band 7	5M	2664.3	3103	14.52	14.76	3103	14.52	14.76	14.76			
		CA_7C	20M	2560	21350	16QAM	1	0	Band 7	20M	2660.2	3152	14.21	14.80	2660.2	14.21	14.80	14.80			
	Non-Contiguous	CA_38C	Band 38	20M	2610	38150	QPSK	1	99	Band 38	20M	2590.2	37952	15.39	16.15	37952	15.39	16.15	16.15		
		CA_4A-4A	Band 4	20M	1745	20300	16QAM	1	99	Band 4	5M	2112.5	1975	15.31	15.36	1975	15.31	15.36	15.36		
	CA_7A-7A	Band 7	20M	2560	21350	16QAM	1	0	Band 7	5M	2622.5	2775	14.61	14.80	2775	14.61	14.80	14.80			

Configure		CA List	PCC										SCC					Power			
			LTE	BW	UL	UL	Mod.	UL#	UL	LTE	BW	DL	DL	Freq.	(MHz)	Channel	Tx. Power	(dBm)	With CA	Without CA	
			Band	(MHz)	Freq.	(MHz)		RB	RB	Band	(MHz)	Offset	Band	(MHz)				Tx. Power	(dBm)		
Inter-Band	CA_4A-7A	Band 4	20M	1745	20300	16QAM	1	99	Band 7	20M	2655	3100	20.94	21.26	3100	20.94	21.26	21.26			
		Band 7	20M	2560	21350	16QAM	1	0	Band 4	20M	2132.5	2175	22.21	22.36	2132.5	22.21	22.36	22.36			
		Band 5	10M	836.5	20525	16QAM	1	0	Band 38	20M	2595	38									

**<Inter-Band for Three Carrier Combination> (three bands)**

Configure		PCC								SCC1				SCC2				Power	
		LTE	BW	UL	UL	Mod.	UL#	UL	LTE	BW	DL	DL	LTE	BW	DL	DL	With CA	Without CA	
		Band	(MHz)	Freq. (MHz)	Channel		RB	RB	Band	(MHz)	Freq. (MHz)	Channel	Band	(MHz)	Freq. (MHz)	Channel	Tx Power (dBm)	Tx Power (dBm)	
Inter-Band	CA_2A-4A-5A	Band 2	20M	1880	18900	16QAM	1	0	Band 4	20M	2132.5	2175	Band 5	10M	881.5	2525	23.82	23.94	
		Band 4	20M	1745	20300	16QAM	1	99	Band 5	10M	881.5	2525	Band 2	20M	1960	900	23.23	23.88	
		Band 5	10M	836.5	20525	16QAM	1	0	Band 2	20M	1960	900	Band 4	20M	2132.5	2175	22.82	23.52	

Reduced Power Mode for P-Sensor On**<Inter-Band for Three Carrier Combination> (three bands)**

Configure		PCC								SCC1				SCC2				Power	
		LTE	BW	UL	UL	Mod.	UL#	UL	LTE	BW	DL	DL	LTE	BW	DL	DL	With CA	Without CA	
		Band	(MHz)	Freq. (MHz)	Channel		RB	RB	Band	(MHz)	Freq. (MHz)	Channel	Band	(MHz)	Freq. (MHz)	Channel	Tx Power (dBm)	Tx Power (dBm)	
Inter-Band	CA_2A-4A-5A	Band 2	20M	1880	18900	16QAM	1	0	Band 4	20M	2132.5	2175	Band 5	10M	881.5	2525	16.62	16.89	
		Band 4	20M	1745	20300	16QAM	1	99	Band 5	10M	881.5	2525	Band 2	20M	1960	900	16.43	16.91	
		Band 5	10M	836.5	20525	16QAM	1	0	Band 2	20M	1960	900	Band 4	20M	2132.5	2175	22.78	23.52	

Reduced Power Mode for Hotspot On**<Inter-Band for Three Carrier Combination> (three bands)**

Configure		PCC								SCC1				SCC2				Power	
		LTE	BW	UL	UL	Mod.	UL#	UL	LTE	BW	DL	DL	LTE	BW	DL	DL	With CA	Without CA	
		Band	(MHz)	Freq. (MHz)	Channel		RB	RB	Band	(MHz)	Freq. (MHz)	Channel	Band	(MHz)	Freq. (MHz)	Channel	Tx Power (dBm)	Tx Power (dBm)	
Inter-Band	CA_2A-4A-5A	Band 2	20M	1880	18900	16QAM	1	0	Band 4	20M	2132.5	2175	Band 5	10M	881.5	2525	14.12	14.45	
		Band 4	20M	1745	20300	16QAM	1	99	Band 5	10M	881.5	2525	Band 2	20M	1960	900	15.33	15.35	
		Band 5	10M	836.5	20525	16QAM	1	0	Band 2	20M	1960	900	Band 4	20M	2132.5	2175	22.76	23.52	

Reduced Power for Handheld On**<Inter-Band for Three Carrier Combination> (three bands)**

Configure		PCC								SCC1				SCC2				Power	
		LTE	BW	UL	UL	Mod.	UL#	UL	LTE	BW	DL	DL	LTE	BW	DL	DL	With CA	Without CA	
		Band	(MHz)	Freq. (MHz)	Channel		RB	RB	Band	(MHz)	Freq. (MHz)	Channel	Band	(MHz)	Freq. (MHz)	Channel	Tx Power (dBm)	Tx Power (dBm)	
Inter-Band	CA_2A-4A-5A	Band 2	20M	1880	18900	16QAM	1	0	Band 4	20M	2132.5	2175	Band 5	10M	881.5	2525	20.11	20.39	
		Band 4	20M	1745	20300	16QAM	1	0	Band 5	10M	881.5	2525	Band 2	20M	1960	900	20.95	21.25	
		Band 5	10M	836.5	20525	16QAM	1	0	Band 2	20M	1960	900	Band 4	20M	2132.5	2175	22.82	23.52	



2.4GHz WLAN MIMO	Full Power					
	Mode	Channel	Frequency (MHz)	Average power (dBm)+2	Tune-Up Limit	Duty Cycle %
2.4GHz WLAN	802.11b 1Mbps	1	2412	22.58	23.00	100.00
		6	2437	21.94	23.00	
		11	2462	22.07	23.00	
	802.11g 6Mbps	1	2412	20.18	21.00	98.28
		6	2437	19.56	21.00	
		11	2462	19.71	21.00	
	802.11n-HT20 MCS0	1	2412	19.36	21.00	98.16
		6	2437	19.36	21.00	
		11	2462	19.54	21.00	

2.4GHz WLAN MIMO	Sensor On						
	Mode	Channel	Frequency (MHz)	Average power (dBm)+2	Tune-Up Limit	Duty Cycle %	
2.4GHz WLAN	802.11b 1Mbps	1	2412	19.03	19.50	100.00	
		6	2437	18.36	19.50		
		11	2462	18.42	19.50		
	802.11g 6Mbps	1	2412	19.50	98.28	Not Required	
		6	2437				
		11	2462				
	802.11n-HT20 MCS0	1	2412	19.50	98.16		
		6	2437				
		11	2462				

2.4GHz WLAN MIMO	Hotspot On						
	Mode	Channel	Frequency (MHz)	Average power (dBm)+2	Tune-Up Limit	Duty Cycle %	
2.4GHz WLAN	802.11b 1Mbps	1	2412	13.89	14.50	100.00	
		6	2437	13.26	14.50		
		11	2462	13.50	14.50		
	802.11g 6Mbps	1	2412	14.50	98.28	Not Required	
		6	2437				
		11	2462				
	802.11n-HT20 MCS0	1	2412	14.50	98.16		
		6	2437				
		11	2462				

5GHz WLAN MIMO	Full Power					
	Mode	Channel	Frequency (MHz)	Average power (dBm)+2	Tune-Up Limit	Duty Cycle %
5GHz WLAN	802.11a 6Mbps	36	5180	19.21	20.50	98.28
		40	5200	19.68	21.00	
		44	5220	20.13	21.00	
	802.11n-HT20 MCS0	48	5240	20.71	21.00	98.16
		36	5180	18.12	18.50	
		40	5200	18.50	19.50	
	802.11ac-VHT40 MCS0	44	5220	19.02	19.50	98.32
		48	5240	19.55	20.00	
		38	5190	14.35	15.00	
	802.11ac-VHT80 MCS0	46	5230	19.68	20.00	98.32
		36	5180	18.08	18.00	
		40	5200	18.45	19.00	
	802.11ac-VHT20 MCS0	44	5220	19.05	19.50	98.16
		48	5240	19.51	20.00	
		38	5190	14.42	15.00	
	802.11ac-VHT40 MCS0	46	5230	19.72	20.50	98.32
		42	5210	12.47	13.00	
		38	5190	14.01	14.50	

5GHz WLAN MIMO	Sensor On						
	Mode	Channel	Frequency (MHz)	Average power (dBm)+2	Tune-Up Limit	Duty Cycle %	
5GHz WLAN	802.11a 6Mbps	36	5180	17.50	98.28	Not Required	
		40	5200				
		44	5220				
	802.11n-HT20 MCS0	48	5240	17.50	98.16		
		36	5180				
		40	5200				
	802.11ac-VHT40 MCS0	44	5220	17.50	98.32	Not Required	
		48	5240				
		38	5190				
	802.11ac-VHT80 MCS0	46	5230	17.50	98.32		
		42	5210				
		38	5190				

5GHz WLAN MIMO	Hotspot On					
	Mode	Channel	Frequency (MHz)	Average power (dBm)+2	Tune-Up Limit	Duty Cycle %
5GHz WLAN	802.11a 6Mbps	36	5180	14.00	98.28	Not Required
		40	5200			
		44	5220			
	802.11n-HT20 MCS0	48	5240	14.00	98.16	Not Required
		36	5180			
		40	5200			
	802.11ac-VHT40 MCS0	44	5220	14.00	98.32	Not Required
		48	5240			
		38	5190			
	802.11ac-VHT80 MCS0	46	5230	14.00	98.32	Not Required
		42	5210			
		38	5190			

5GHz WLAN MIMO	Full Power					
	Mode	Channel	Frequency (MHz)	Average power (dBm)+2	Tune-Up Limit	Duty Cycle %
5GHz WLAN	802.11a 6Mbps	100	5500	20.35	20.50	98.28
		116	5580	20.42	21.00	
		124	5620	19.75	20.00	
	802.11n-HT20 MCS0	132	5660	19.49	20.00	98.16
		140	5700	19.39	20.00	
		100	5500	19.25	19.50	
	802.11ac-VHT20 MCS0	116	5580	19.26	19.50	98.16
		124	5620	18.74	19.00	
		132	5660	18.41	18.50	
	802.11n-HT40 MCS0	140	5700	18.41	19.00	98.32
		102	5510	17.34	17.50	
		110	5550	20.11	21.00	
	802.11ac-VHT40 MCS0	124	5620	18.69	19.00	98.16
		132	5660	18.35	18.50	
		140	5700	18.26	18.50	
	802.11ac-VHT80 MCS0	102	5510	17.31	17.50	98.16
		110	5550	18.94	19.50	
		124	5620	18.94	19.50	
	802.11n-HT40 MCS0	134	5670	18.70	19.00	98.32
		106	5530	15.03	15.50	98.32
		122	5610	17.88	18.50	

5GHz WLAN MIMO	Sensor On					
	Mode	Channel	Frequency (MHz)	Average power (dBm)+2	Tune-Up Limit	Duty Cycle %
5GHz WLAN	802.11a 6Mbps	149	5745	19.92	20.00	98.28
		157	5785	19.73	20.00	
		165	5825	19.61	20.00	
	802.11n-HT20 MCS0	149	5745	18.85	19.00	98.16
		157	5785	18.53	19.00	
		165	5825	18.50	19.00	
	802.11n-HT40 MCS0	151	5755	19.23	19.50	98.32
		159	5795	18.90	19.00	
		149	5745	18.87	19.00	
	802.11ac-VHT20 MCS0	157	5785			

**Bluetooth BR/EDR**

Mode	Channel	Frequency (MHz)	Average power (dBm)		
			1Mbps	2Mbps	3Mbps
BR / EDR	CH 00	2402	11.40	11.50	10.89
	CH 39	2441	11.87	11.59	11.29
	CH 78	2480	11.37	10.77	10.52
Tune-up Limit			12	12	12

Bluetooth LE v4.0

Mode	Channel	Frequency (MHz)	Average power (dBm)
LE	CH 00	2402	3.09
	CH 19	2440	3.85
	CH 39	2480	3.65
Tune-up Limit		5	

Bluetooth LE v5.0

Mode	Channel	Frequency (MHz)	Average power (dBm)
LE	CH 00	2402	3.50
	CH 19	2440	3.86
	CH 39	2480	3.55
Tune-up Limit		5	



Appendix F. Supplemental Tuner Head & Body SAR Results

The results are shown as follows.



Head

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)																	
									Auto-Tune	Default (State 123)	0	9	18	27	36	45	54	63	72	81	90	99	108	117	126	135
WCDMA II	RMC12.2K	1852.4	9262	N/A	N/A	Left Cheek	0 mm	0.084	0.116	0.042	0.089	0.013	0.080	0.023	0.070	0.089	0.070	0.042	0.051	0.080	0.013	0.004	0.070	0.070	0.099	
Mode	Service/Modulation	Frequency (MHz)	Channel	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Auto-Tune	Default (State 81)	1	10	19	28	37	46	55	64	73	82	91	100	109	118	127	136
WCDMA IV	RMC12.2K	1732.6	1413	N/A	N/A	Right Cheek	0 mm	0.117	0.154	0.134	0.134	0.039	0.039	0.039	0.096	0.087	0.049	0.011	0.049	0.087	0.030	0.020	0.096	0.096	0.144	
Mode	Service/Modulation	Frequency (MHz)	Channel	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Auto-Tune	Default (State 33)	2	11	20	29	38	47	56	65	74	83	92	101	110	119	128	137
WCDMA V	RMC12.2K	836.4	4182	N/A	N/A	Right Cheek	0 mm	0.148	0.180	0.138	0.072	0.110	0.024	0.034	0.110	0.157	0.119	0.053	0.081	0.072	0.015	0.100	0.129	0.129	0.034	
Mode	Service/Modulation	Frequency (MHz)	Channel	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Auto-Tune	Default (State 14)	3	12	21	30	39	48	57	66	75	84	93	102	111	120	129	138
LTE Band 2	QPSK	1880	18900	1	0	Left Cheek	0 mm	0.104	0.141	0.073	0.120	0.016	0.025	0.006	0.016	0.120	0.016	0.054	0.120	0.025	0.016	0.092	0.035	0.006	0.035	
Mode	Service/Modulation	Frequency (MHz)	Channel	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Auto-Tune	Default (State 33)	4	13	22	31	40	49	58	67	76	85	94	103	112	121	130	139
LTE Band 7	QPSK	2560	21350	1	0	Right Cheek	0 mm	0.062	0.095	0.009	0.047	0.056	0.085	0.028	0.009	0.028	0.056	0.066	0.056	0.047	0.075	0.085	0.075	0.037	0.028	
Mode	Service/Modulation	Frequency (MHz)	Channel	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Auto-Tune	Default (State 33)	5	14	23	32	41	50	59	68	77	86	95	104	113	122	131	140
LTE Band 12	QPSK	707.5	23095	1	0	Right Cheek	0 mm	0.162	0.185	0.150	0.036	0.102	0.159	0.150	0.017	0.112	0.159	0.064	0.055	0.007	0.083	0.007	0.083	0.033	0.036	
Mode	Service/Modulation	Frequency (MHz)	Channel	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Auto-Tune	Default (State 81)	6	15	24	33	42	51	60	69	78	87	96	105	114	123	132	141
LTE Band 26	QPSK	831.5	26865	1	0	Right Cheek	0 mm	0.114	0.136	0.116	0.059	0.069	0.040	0.059	0.059	0.012	0.021	0.040	0.040	0.116	0.040	0.040	0.012	0.088	0.031	0.107
Mode	Service/Modulation	Frequency (MHz)	Channel	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Auto-Tune	Default (State 33)	7	16	25	34	43	52	61	70	79	88	97	106	115	124	133	142
LTE Band 41	QPSK	2593	40620	1	0	Right Cheek	0 mm	0.045	0.069	0.036	0.045	0.017	0.055	0.055	0.055	0.007	0.007	0.017	0.017	0.007	0.007	0.055	0.036	0.026	0.055	
Mode	Service/Modulation	Frequency (MHz)	Channel	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Auto-Tune	Default (State 14)	8	17	26	35	44	53	62	71	80	89	98	107	116	125	134	143
LTE Band 66	QPSK	1745	132322	1	0	Right Cheek	0 mm	0.138	0.183	0.112	0.074	0.027	0.017	0.036	0.017	0.103	0.065	0.055	0.131	0.160	0.103	0.027	0.027	0.131	0.150	



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)																
									Auto-Tune (State 109)	0	9	18	27	36	45	54	63	72	81	90	99	108	117	126	135
WCDMA B2	RMC12.2K	1907.6	9538	N/A	N/A	Bottom Side	5mm	0.964	1.280	0.827	0.951	0.894	1.084	1.018	0.113	0.522	0.151	0.979	0.418	0.818	0.465	0.875	0.827	0.656	0.132
Mode	Service/ Modulation	Frequency (MHz)	Channel	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Auto-Tune (State 08)	1	10	19	28	37	46	55	64	73	82	91	100	109	118	127	136
WCDMA B4	RMC12.2K	1752.6	1513	N/A	N/A	Back	5mm	1.25	2.000	1.058	1.087	0.230	1.201	1.039	0.258	1.811	1.201	0.335	0.706	0.858	1.744	1.297	0.658	0.801	1.382
Mode	Service/ Modulation	Frequency (MHz)	Channel	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Auto-Tune (State 31)	2	11	20	29	38	47	56	65	74	83	92	101	110	119	128	137
WCDMA B5	RMC12.2K	836.4	4182	N/A	N/A	Back	5mm	1.15	1.860	0.677	1.515	0.448	0.420	1.791	1.077	0.858	0.944	0.677	0.706	1.820	0.410	0.1048	0.220	1.144	0.915
Mode	Service/ Modulation	Frequency (MHz)	Channel	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Auto-Tune (State 109)	3	12	21	30	39	48	57	66	75	84	93	102	111	120	129	138
LTE Band 2	QPSK	1880	18900	50	50	Front	5mm	1.08	1.580	0.770	0.379	0.122	1.198	0.408	1.294	1.389	1.027	1.284	1.046	0.751	0.751	0.284	0.722	1.246	0.313
Mode	Service/ Modulation	Frequency (MHz)	Channel	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Auto-Tune (State 72)	4	13	22	31	40	49	58	67	76	85	94	103	112	121	130	139
LTE Band 7	QPSK	2535	21100	1	0	Front	5mm	0.816	1.530	1.088	0.459	0.268	1.002	0.316	0.916	0.316	0.773	0.726	0.364	0.240	0.078	1.126	0.345	0.935	0.373
Mode	Service/ Modulation	Frequency (MHz)	Channel	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Auto-Tune (State 36)	5	14	23	32	41	50	59	68	77	86	95	104	113	122	131	140
LTE Band 12	QPSK	707.5	23095	1	0	Back	5mm	0.845	1.370	0.860	0.298	0.422	1.032	0.784	0.879	0.460	1.222	0.803	0.403	0.165	0.270	0.632	1.298	0.394	1.184
Mode	Service/ Modulation	Frequency (MHz)	Channel	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Auto-Tune (State 14)	6	15	24	33	42	51	60	69	78	87	96	105	114	123	132	141
LTE Band 26	QPSK	831.5	26865	1	0	Back	5mm	1.09	1.690	0.638	0.114	0.723	1.238	1.257	0.885	0.504	0.390	0.247	0.895	0.971	0.933	1.333	0.114	0.095	1.552
Mode	Service/ Modulation	Frequency (MHz)	Channel	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Auto-Tune (State 72)	7	16	25	34	43	52	61	70	79	88	97	106	115	124	133	142
LTE Band 41	QPSK	2593	40620	50	24	Front	5mm	0.95	1.640	0.424	0.824	0.672	1.281	0.767	0.405	0.605	1.424	0.291	0.300	0.110	1.196	1.015	0.615	1.158	0.234
Mode	Service/ Modulation	Frequency (MHz)	Channel	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Auto-Tune (State 72)	8	17	26	35	44	53	62	71	80	89	98	107	116	125	134	143
LTE Band 66	QPSK	1770	132572	1	0	Back	13mm	1.15	1.640	1.428	0.228	1.390	1.066	0.418	1.285	1.085	0.647	1.209	1.352	0.990	1.095	0.790	1.142	0.333	0.685



Body-verified for SAR higher than 1.2W/Kg

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)																			
									Auto-Tune		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
WCDMA II	RMC12.2K	1907.6	9538	N/A	Bottom Side	5mm	0.964	1.280	0.827	0.637	1.151	1.018	1.056	0.675	0.503	0.783	0.798	0.951	0.989	0.656	0.827	0.837	0.932	0.465	1.103	0.103	0.894	1.008
								20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
								1.008	0.389	0.065	0.494	0.722	1.103	0.903	1.084	0.827	0.398	0.275	0.960	1.008	1.132	0.837	0.970	1.018	0.418	0.475	0.598	0.065
								41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61
								0.837	0.275	0.398	1.046	0.113	0.808	0.494	0.189	0.570	0.589	1.046	0.608	0.589	0.522	0.170	0.065	0.798	0.503	0.198	0.398	0.446
								62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82
								1.151	1.511	1.132	0.760	0.084	1.056	0.789	0.970	0.989	0.798	0.979	0.275	0.332	0.475	0.465	0.941	0.256	0.160	0.656	0.418	0.484
								83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103
								0.313	0.103	1.084	0.351	0.275	0.932	0.694	0.818	0.065	0.789	0.094	0.875	0.341	1.113	0.256	0.322	0.465	0.227	1.170	1.094	1.103
								104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124
								0.589	0.065	0.637	0.446	0.875	1.210	0.522	0.827	0.741	0.418	0.637	0.084	0.237	0.827	1.094	1.103	0.503	0.170	1.122	0.437	0.437
								125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143		
								1.018	0.656	0.989	0.351	0.618	0.541	0.722	1.046	0.637	0.446	0.132	0.903	0.541	0.875	0.189	0.370	0.170	0.532	0.513		

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)																				
									Auto-Tune	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
WCDMA IV	RMC12.2K	1752.6	1513	N/A		Back	5mm	1.25	2.000	1.030	1.058	1.830	1.449	1.382	1.297	1.020	1.506	1.870	0.630	1.087	0.411	0.554	1.601	0.411	1.144	0.716	1.182	0.620	0.230
									20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
									1.230	0.725	1.173	1.049	0.620	1.201	0.239	1.258	1.201	1.868	0.849	0.916	1.649	0.163	0.411	1.487	0.678	1.039	0.916	1.106	1.601
									41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61
									0.506	1.830	0.125	0.525	0.325	0.258	1.763	0.287	1.820	1.401	1.030	1.011	1.468	1.258	1.811	1.278	0.839	0.106	0.744	1.525	1.744
									62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82
									0.116	1.630	1.201	1.468	0.516	1.316	1.839	0.230	0.630	1.363	1.354	0.335	0.097	1.554	0.116	1.001	1.687	0.382	0.935	1.697	0.706
									83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103
									0.649	0.458	1.230	0.554	0.763	1.068	1.849	1.592	0.858	1.049	0.097	0.144	0.658	1.173	0.592	0.163	1.792	1.744	1.430	0.125	0.725
									104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124
									1.078	1.601	0.620	0.782	1.058	1.297	1.744	0.916	1.063	1.449	0.535	1.411	1.706	0.611	0.658	1.716	0.258	1.563	0.658	1.620	0.097
									125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143		
									1.468	1.220	0.801	1.078	1.106	0.782	1.773	0.554	0.744	1.163	0.744	1.382	1.754	1.411	1.182	0.830	1.706	0.506	1.116		

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)																				
									Auto-Tune	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
WCDMA V	RMC12.2K	836.4	4182	N/A	N/A	Back	5mm	1.15	1.860	1.134	0.210	0.677	0.496	1.439	1.287	1.001	1.239	1.087	1.248	0.248	1.515	1.344	1.563	0.906	0.925	0.648	0.620	0.477	0.944
									20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
									0.448	1.506	1.668	1.039	0.763	1.153	0.544	1.182	1.134	0.420	0.191	1.860	1.010	0.182	0.972	0.115	1.715	1.725	1.791	0.410	0.782
									41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61
									1.429	1.315	0.668	0.258	1.677	0.506	1.077	0.268	1.248	1.791	0.229	1.363	1.096	0.791	1.182	0.858	1.277	0.353	0.868	0.915	1.668
									62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82
									0.325	0.668	1.382	0.944	1.820	0.172	0.629	0.391	0.210	1.725	0.153	0.125	0.677	0.353	1.296	0.772	0.591	0.687	0.277	1.477	0.858
									83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103
									0.706	1.582	0.639	0.572	0.820	1.648	0.448	1.715	0.525	1.820	1.029	1.068	0.353	1.325	0.820	0.839	0.782	0.810	0.410	0.763	0.268
									104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124
									0.925	1.848	1.258	1.848	1.801	1.020	1.048	1.858	1.429	1.810	1.591	0.448	0.677	0.458	0.334	0.220	1.296	0.915	1.677	1.477	0.487
									125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143		
									1.677	1.492	0.372	1.144	1.458	1.229	1.048	0.344	1.039	1.601	0.629	0.801	0.915	0.458	0.296	1.496	0.896	1.572	0.420		

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)																					
									Auto-Tune	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	
LTE Band 2	QPSK	1880	18900	50	50	Front	5mm	1.08	1.580	0.846	1.246	0.846	0.770	1.227	0.446	1.075	0.637	0.779	1.179	0.865	0.646	0.379	1.141	0.637	1.227	0.198	0.170	0.884	0.237	
									20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	
									1.122	0.122	0.608	0.722	0.313	1.113	1.389	1.341	0.427	0.437	1.198	1.389	1.322	1.256	1.265	1.389	0.684	1.256	0.570	0.408	0.065	
									41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	
									0.170	0.398	0.418	0.465	1.037	0.227	1.103	1.294	1.237	0.332	0.313	0.951	1.018	1.008	0.751	1.141	1.389	0.618	0.979	1.332	0.541	
									62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	
									0.951	0.513	0.151	0.151	0.656	1.027	1.313	0.875	1.075	0.951	1.284	1.389	0.103	0.427	1.284	0.960	1.189	0.494	1.360	1.351	1.094	0.646
									83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	
									0.998	1.046	0.856	0.494	0.275	0.151	0.656	0.503	0.408	0.389	0.751	1.360	1.065	0.198	1.275	1.351	1.037	0.084	1.141	0.751	0.275	
									104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	
									0.713	0.370	0.827	1.160	0.570	1.410	1.048	0.284	1.189	0.170	0.208	0.646	0.608	1.170	0.884	0.220	0.722	1.341	0.894	0.351	0.265	
									125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143			
									1.398	1.208	0.646	1.144	1.246	1.332	0.894	1.351	0.551	0.989	0.808	1.294	0.915	0.313	0.484	1.332	1.289	0.646	0.989			

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)																				
									Auto-Tune	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
LTE Band 7	QPSK	2535	21100	1	0	Front	5mm	0.816	1.530	0.507	0.288	0.897	1.183	1.088	0.468	0.859	1.011	0.211	1.059	0.297	0.630	0.926	0.459	1.345	1.192	1.173	0.764	0.545	1.288
									20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
									1.421	1.240	0.268	1.278	1.154	1.468	1.221	0.611	0.564	0.583	1.259	1.002	1.221	0.202	1.173	0.192	0.659	1.449	1.021	1.097	0.316
									41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61
									0.373	0.126	0.649	1.068	0.707	1.145	1.211	1.154	0.916	1.049	0.630	0.649	1.088	0.440	0.621	0.516	0.107	0.316	0.488	0.878	0.307
									62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82
									0.630	0.488	1.421	0.097	1.354	0.773	1.430	0.983	0.783	1.440	1.480	0.916	0.259	1.345	0.726	1.097	0.526	0.545	0.192	0.830	0.211
									83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103
									0.630	1.383	0.364	1.392	0.097	1.249	0.421	0.811	0.088	0.983	0.411	0.240	0.268	1.116	0.402	1.240	0.192	0.211	0.164	0.573	0.708
									104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124
									0.821	1.268	1.421	1.335	0.545	1.335	1.459	1.011	1.126	0.440	0.240	1.345	0.202	1.154	0.097	0.830	1.459	0.345	1.268	0.792	1.173
									125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143		
									0.897	0.235	0.525	1.440	0.259	0.925	0.497	1.368	1.397	0.850	0.507	1.011	0.007	0.272	0.098	0.231	0.164	0.621			

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)																					
									Auto-Tune	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	
LTE Band 12	QPSK	707.5	23095	1	0	Back	5mm	0.845	1.370	0.279	1.241	0.746	0.870	0.394	0.860	0.489	0.108	0.908	1.022	0.460	1.213	0.756	0.060	0.298	0.203	0.813	0.603	0.603	0.137	
									20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	
									0.289	0.441	0.794	0.422	0.413	0.356	1.165	1.375	0.356	0.518	0.889	0.870	1.032	0.203	0.241	1.279	1.310	1.253	0.565	0.518	1.146	
									41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	
									0.784	1.022	0.575	0.518	0.718	0.975	0.689	1.213	0.727	0.879	0.822	0.784	1.165	1.241	0.813	0.975	1.118	0.279	0.460	0.965	0.318	
									62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	
									0.337	1.089	0.727	1.175	1.213	0.432	1.222	1.060	0.318	1.060	1.146	1.175	0.098	0.489	1.041	0.803	0.727	0.127	1.260	0.232	0.337	
									83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	
									1.165	0.613	0.575	0.403	1.175	0.460	0.460	0.337	0.108	1.127	1.013	0.460	0.337	0.165	0.594	0.556	0.432	0.222	0.079	0.356	1.098	1.089
									104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	
									0.270	0.498	0.984	1.070	0.613	0.898	0.689	0.889	0.727	0.632	1.156	1.289	0.365	0.698	0.537	0.898	0.194	0.918	1.298	0.165	0.079	
									125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143			
									0.204	1.154	0.898	0.629	0.355	0.154	0.204	0.629	1.142	1.472	1.676	0.412	0.516	0.776	1.184	1.372	1.342	1.493				



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)																				
									Auto-Tune	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
LTE Band 26	QPSK	831.5	26865	1	0	Back	5mm	1.09	1.690	0.428	1.057	1.009	1.542	1.142	0.695	0.638	0.618	0.352	1.428	0.733	0.180	1.085	0.857	1.630	0.114	0.152	0.933	1.438	1.542
									20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
									1.085	1.276	1.238	1.142	0.723	0.123	0.714	0.885	0.485	1.047	1.485	0.695	0.228	1.238	0.780	1.561	1.495	0.580	0.123	1.085	1.104
									41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61
									0.142	1.257	1.552	0.628	0.771	1.409	1.561	0.952	1.057	1.171	0.885	1.618	1.038	1.228	0.190	1.571	0.228	1.571	1.352	0.504	1.161
									62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82
									0.295	1.323	0.190	0.323	0.990	1.561	0.933	0.390	1.409	0.676	0.790	0.485	0.809	1.533	1.571	0.438	0.247	0.961	1.152	0.799	1.018
									83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103
									1.428	1.304	0.628	1.618	0.895	0.723	0.714	1.257	1.023	0.333	1.161	0.866	1.161	0.971	1.618	1.399	1.238	0.333	1.628	0.161	0.790
									104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124
									0.418	0.933	1.561	0.961	0.952	0.590	1.095	0.657	1.352	1.104	1.333	0.942	0.266	1.057	0.476	1.352	0.285	0.161	1.333	0.114	0.752
									125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143		
									0.428	0.733	0.990	0.742	1.190	0.152	1.257	0.095	1.361	1.323	0.666	1.190	0.380	1.180	1.104	0.571	1.552	0.109	0.904		

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)																				
									Auto-Tune	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
LTE Band 41	QPSK	2593	40620	50	24	Front	5mm	0.95	1.640	0.634	0.462	0.443	0.205	0.853	1.472	0.462	0.424	0.605	0.624	1.434	1.177	0.291	0.129	0.158	1.529	0.824	1.253	0.348	1.129
									20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
									0.310	0.167	0.786	1.215	0.396	0.672	1.481	0.777	1.053	0.672	1.196	0.919	0.358	0.405	1.281	0.719	0.586	0.100	0.881	1.377	0.100
									41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61
									1.538	1.481	0.767	0.491	0.929	0.119	0.662	0.424	0.481	0.405	0.919	0.405	1.491	1.519	0.472	1.424	0.481	0.253	0.348	0.881	0.605
									62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82
									0.472	1.015	1.091	0.824	0.196	0.091	0.453	1.500	1.424	0.719	1.550	0.596	0.462	0.834	0.177	1.300	0.872	0.291	0.967	1.462	0.529
									83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103
									1.291	0.367	1.481	1.291	1.367	0.300	1.024	1.243	0.196	0.319	0.148	0.805	0.519	0.529	0.110	0.919	0.234	0.300	1.062	1.500	1.443
									104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124
									0.177	0.538	1.196	1.167	0.948	1.091	1.186	0.748	0.748	0.319	1.386	1.015	0.167	0.958	1.405	0.177	0.577	1.024	0.234	0.243	0.615
									125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143		
									1.481	0.386	1.148	0.405	0.881	0.081	0.729	0.567	1.158	1.510	0.272	0.367	0.805	0.224	0.853	1.158	0.710	0.234	1.548		

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)																				
									Auto-Tune	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
LTE Band 66	QPSK	1770	132572	1	0	Back	13mm	1.15	1.640	1.066	0.152	0.952	0.390	0.323	0.504	1.028	0.452	1.428	1.028	1.266	1.123	0.238	0.580	0.780	1.180	0.818	0.228	0.876	0.638
									20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
									0.990	0.133	0.504	0.438	0.542	0.695	1.390	0.590	1.095	0.876	0.742	0.723	0.380	1.018	0.523	1.066	0.095	0.599	0.380	0.380	1.142
									41	42	43	44	45	46	47	48	49	50	51	52	53	54	55						