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Measurement Conditions

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

DASY Version	DASY52	52.10.1.1476
Extrapolation	Advanced Extrapolation	
Phantom	Triple Flat Phantom 5.1C	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	1750 MHz $\pm$ 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	40.1	1.37 mho/m
Measured Head TSL parameters	(22.0 $\pm$ 0.2) °C	41.2 $\pm$ 6 %	1.33 mho/m $\pm$ 6 %
Head TSL temperature change during test	<1.0 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	8.91 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	36.5 mW / g $\pm$ 18.8 % (k=2)
SAR averaged over 10 cm^3 (10 g) of Head TSL	Condition	
SAR measured	250 mW input power	4.81 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	19.5 mW / g $\pm$ 18.7 % (k=2)

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	53.4	1.49 mho/m
Measured Body TSL parameters	(22.0 $\pm$ 0.2) °C	53.8 $\pm$ 6 %	1.48 mho/m $\pm$ 6 %
Body TSL temperature change during test	<1.0 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm^3 (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	9.17 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	37.0 mW / g $\pm$ 18.8 % (k=2)
SAR averaged over 10 cm^3 (10 g) of Body TSL	Condition	
SAR measured	250 mW input power	5.05 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	20.3 mW / g $\pm$ 18.7 % (k=2)



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Appendix (Additional assessments outside the scope of CNAS L0570)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	50.3- 0.87 j Ω
Return Loss	- 40.7 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	44.8 Ω - 2.59 j Ω
Return Loss	- 24.3 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.087 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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Date: 07.30.2018

DASY5 Validation Report for Head TSL

Test Laboratory: CTTL, Beijing, China

DUT: Dipole 1750 MHz; Type: D1750V2; Serial: D1750V2 - SN: 1137

Communication System: UID 0, CW; Frequency: 1750 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 1750$ MHz; $\sigma = 1.332$ S/m; $\epsilon_r = 41.17$; $\rho = 1000$ kg/m³

Phantom section: Center Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7464; ConvF(8.7, 8.7, 8.7) @ 1750 MHz; Calibrated: 9/12/2017
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1524; Calibrated: 9/13/2017
- Phantom: MFP_V5.1C ; Type: QD 000 P51CA; Serial: 1062
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7439)

System Performance Check/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid:

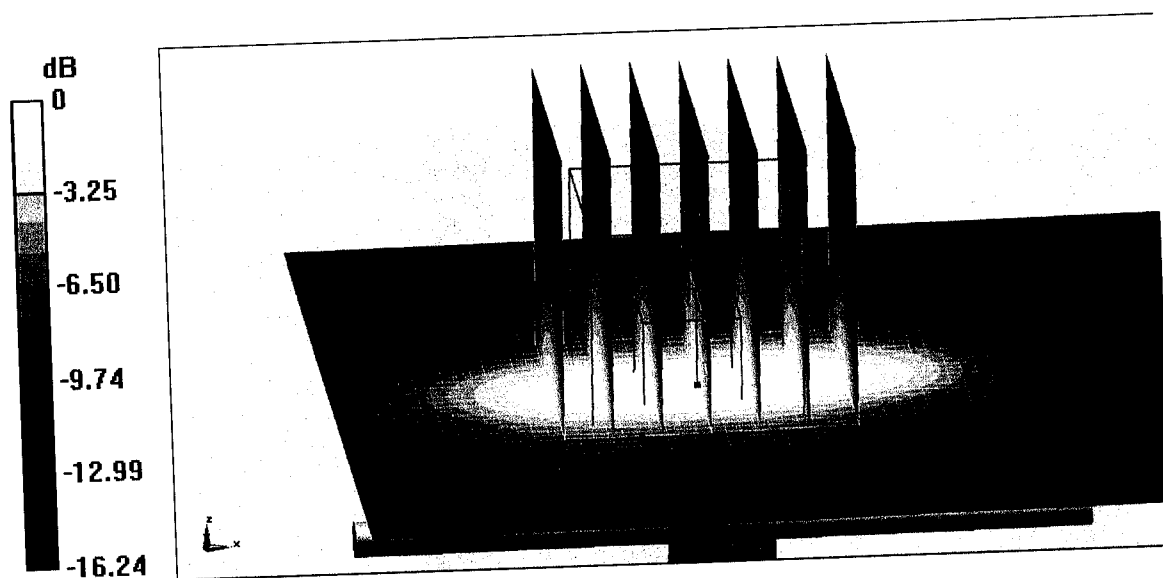
$dx=5$ mm, $dy=5$ mm, $dz=5$ mm

Reference Value = 96.50 V/m; Power Drift = 0.00 dB

Peak SAR (extrapolated) = 16.1 W/kg

SAR(1 g) = 8.91 W/kg; SAR(10 g) = 4.81 W/kg

Maximum value of SAR (measured) = 13.5 W/kg



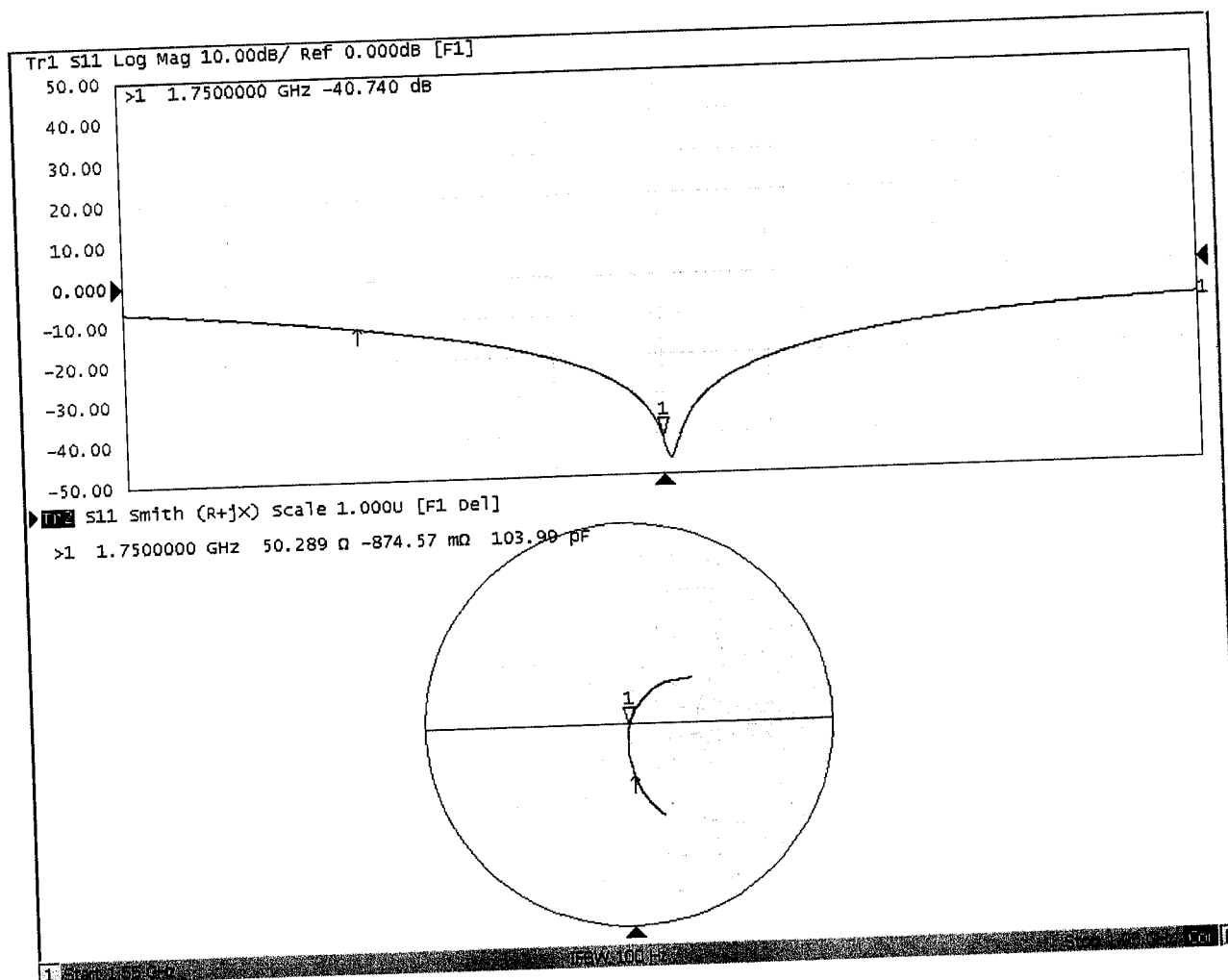
0 dB = 13.5 W/kg = 11.30 dBW/kg



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Impedance Measurement Plot for Head TSL





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Date: 07.30.2018

DASY5 Validation Report for Body TSL

Test Laboratory: CTTL, Beijing, China

DUT: Dipole 1750 MHz; Type: D1750V2; Serial: D1750V2 - SN: 1137

Communication System: UID 0, CW; Frequency: 1750 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 1750$ MHz; $\sigma = 1.477$ S/m; $\epsilon_r = 53.84$; $\rho = 1000$ kg/m³

Phantom section: Left Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7464; ConvF(8.6, 8.6, 8.6) @ 1750 MHz; Calibrated: 9/12/2017
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1524; Calibrated: 9/13/2017
- Phantom: MFP_V5.1C ; Type: QD 000 P51CA; Serial: 1062
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7439)

System Performance Check/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid:

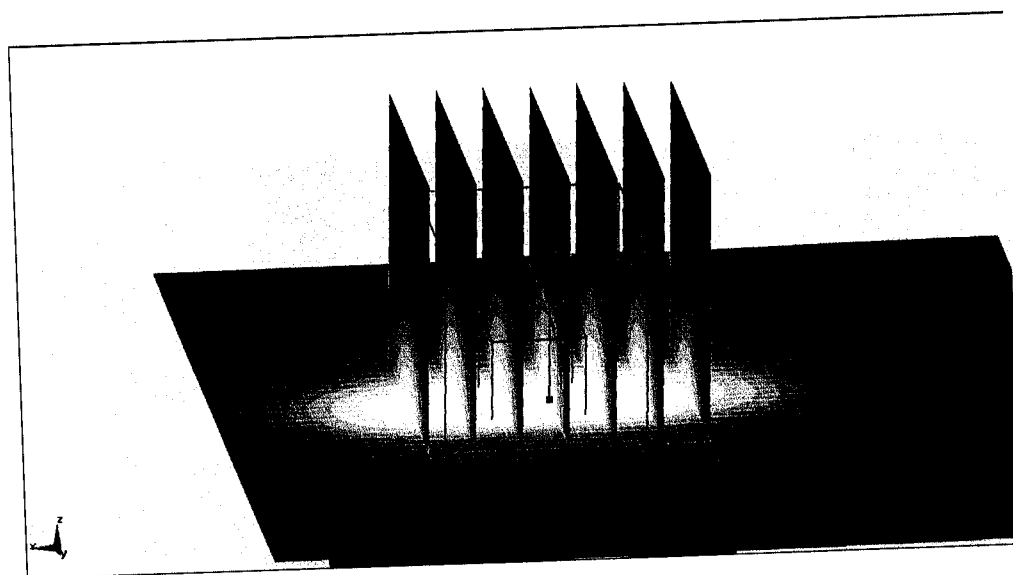
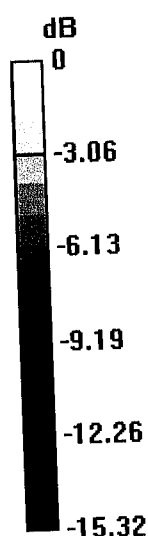
$dx=5$ mm, $dy=5$ mm, $dz=5$ mm

Reference Value = 77.55 V/m; Power Drift = 0.06 dB

Peak SAR (extrapolated) = 16.0 W/kg

SAR(1 g) = 9.17 W/kg; SAR(10 g) = 5.05 W/kg

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



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

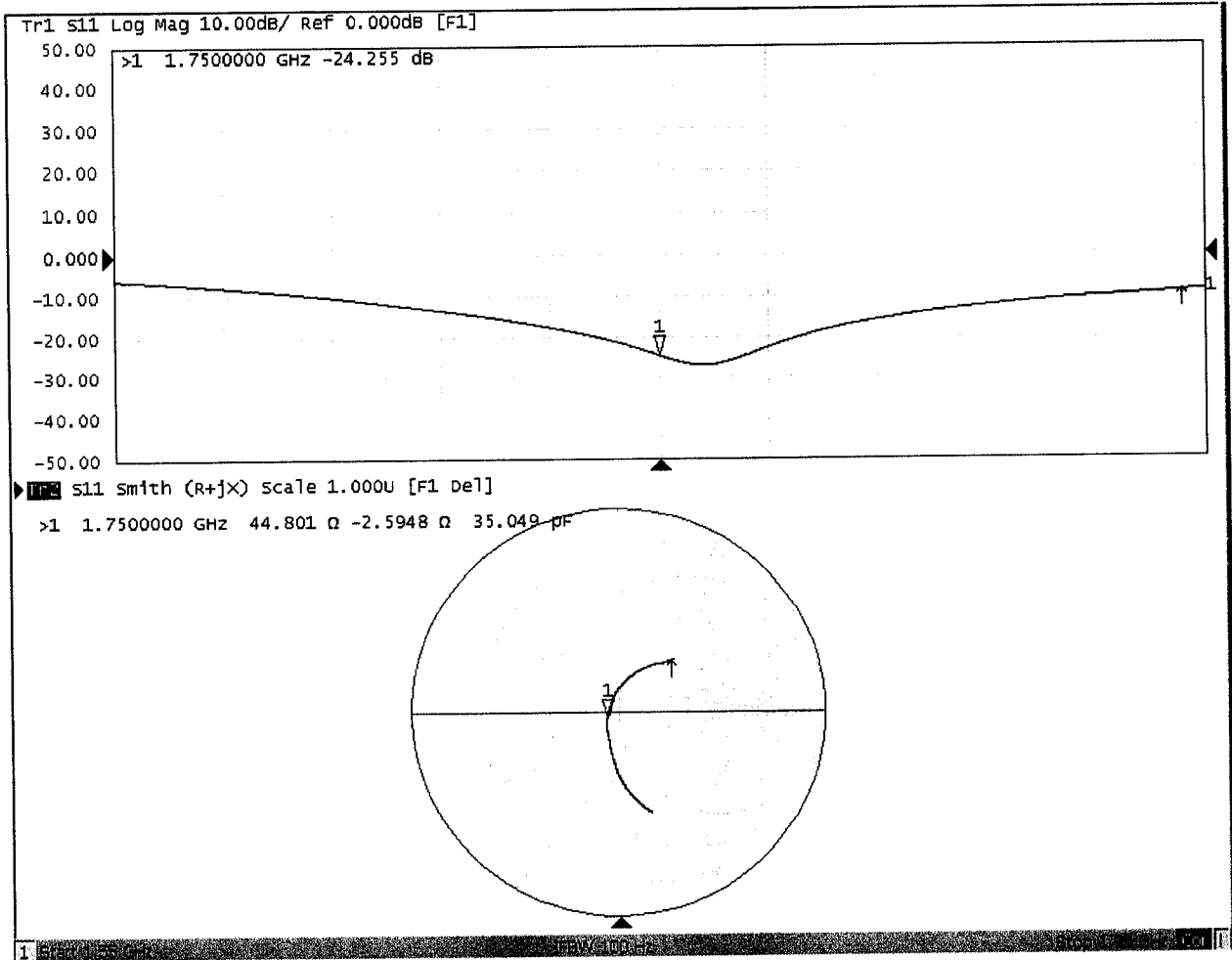


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Impedance Measurement Plot for Body TSL





D1750V2, Serial No. 1137 Extended Dipole Calibrations

Referring to KDB 865664 D01 v01r02, if dipoles are verified in return loss ($< -20\text{dB}$, within 20% of prior calibration), and in impedance (within 5 ohm of prior calibration), the annual calibration is not necessary and the calibration interval can be extended.

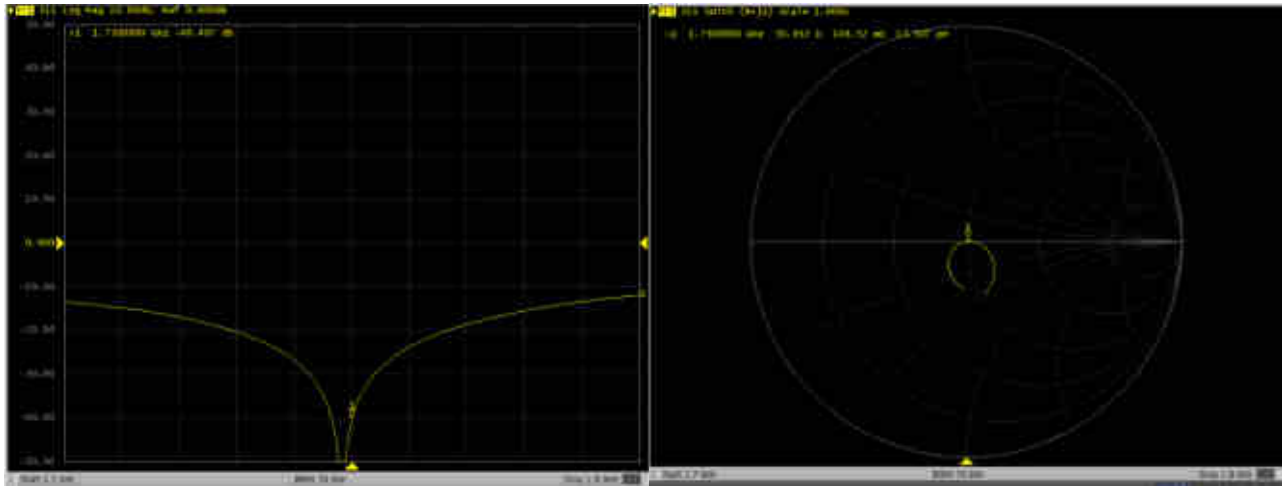
D1750V2 – serial no. 1137												
	1750 Head						1750 Body					
Date of Measurement	Return-Loss (dB)	Delta (%)	Real Impedance (ohm)	Delta (ohm)	Imaginary Impedance (ohm)	Delta (ohm)	Return-Loss (dB)	Delta (%)	Real Impedance (ohm)	Delta (ohm)	Imaginary Impedance (ohm)	Delta (ohm)
2018.07.30	-40.7		50.3		-0.87		-24.3		44.8		-2.59	
2019.10.23	-40.4	0.7	51	0.7	-0.15	0.72	-24.7	-1.6	46.1	1.3	-2.1	0.49

<Justification of the extended calibration>

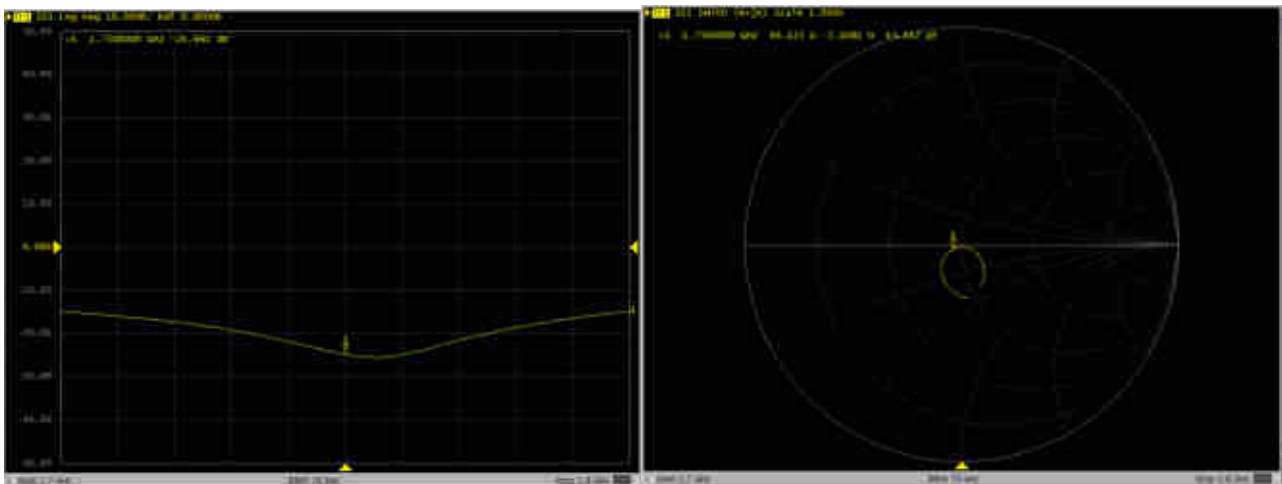
The return loss is $< -20\text{dB}$, within 20% of prior calibration; the impedance is within 5 ohm of prior calibration. Therefore the verification result should support extended calibration.

Dipole Verification Data> D1750V2, serial no. 1137

1750MHz - Head



1750MHz – Body





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Certificate No: **Z18-60536**

Client **Sporton**

CALIBRATION CERTIFICATE

Object **D1900V2 - SN: 5d182**

Calibration Procedure(s) **FF-Z11-003-01**
Calibration Procedures for dipole validation kits

Calibration date: **December 7, 2018**

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date(Calibrated by, Certificate No.)	Scheduled Calibration
Power Meter NRVD	102196	07-Mar-18 (CTTL, No.J18X01510)	Mar-19
Power sensor NRV-Z5	100596	07-Mar-18 (CTTL, No.J18X01510)	Mar-19
Reference Probe EX3DV4	SN 7514	27-Aug-18(SPEAG,No.EX3-7514_Aug18)	Aug-19
DAE4	SN 1555	20-Aug-18(SPEAG,No.DAE4-1555_Aug18)	Aug-19
Secondary Standards	ID #	Cal Date(Calibrated by, Certificate No.)	Scheduled Calibration
Signal Generator E4438C	MY49071430	23-Jan-18 (CTTL, No.J18X00560)	Jan-19
NetworkAnalyzer E5071C	MY46110673	24-Jan-18 (CTTL, No.J18X00561)	Jan-19

	Name	Function
Calibrated by:	Zhao Jing	SAR Test Engineer
Reviewed by:	Lin Hao	SAR Test Engineer
Approved by:	Qi Dianyuan	SAR Project Leader

Signature

Issued: December 10, 2018

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



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lossary:

TSL	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:

- IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
- IEC 62209-1, "Measurement procedure for assessment of specific absorption rate of human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices- Part 1: Device used next to the ear (Frequency range of 300MHz to 6GHz)", July 2016
- IEC 62209-2, "Procedure to measure the Specific Absorption Rate (SAR) For wireless communication devices used in close proximity to the human body (frequency range of 30MHz to 6GHz)", March 2010
- KDB865664, SAR Measurement Requirements for 100 MHz to 6 GHz

Additional Documentation:

- 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%.



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Measurement Conditions

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

DASY Version	DASY52	52.10.2.1495
Extrapolation	Advanced Extrapolation	
Phantom	Triple Flat Phantom 5.1C	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	1900 MHz $\pm$ 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	40.0	1.40 mho/m
Measured Head TSL parameters	(22.0 $\pm$ 0.2) °C	39.6 $\pm$ 6 %	1.44 mho/m $\pm$ 6 %
Head TSL temperature change during test	<1.0 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm ³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	10.1 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	39.6 mW / g $\pm$ 18.8 % (k=2)
SAR averaged over 10 cm ³ (10 g) of Head TSL	Condition	
SAR measured	250 mW input power	5.25 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	20.7 mW / g $\pm$ 18.7 % (k=2)

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	53.3	1.52 mho/m
Measured Body TSL parameters	(22.0 $\pm$ 0.2) °C	51.8 $\pm$ 6 %	1.56 mho/m $\pm$ 6 %
Body TSL temperature change during test	<1.0 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm ³ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	10.2 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	39.9 mW / g $\pm$ 18.8 % (k=2)
SAR averaged over 10 cm ³ (10 g) of Body TSL	Condition	
SAR measured	250 mW input power	5.31 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	20.9 mW / g $\pm$ 18.7 % (k=2)



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Appendix (Additional assessments outside the scope of CNAS L0570)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	$52.1\Omega + 5.35j\Omega$
Return Loss	- 25.0dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	$48.9\Omega + 6.19j\Omega$
Return Loss	- 24.0dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.067 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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Date: 12.06.2018

DASY5 Validation Report for Head TSL

Test Laboratory: CTTL, Beijing, China

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN: 5d182

Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 1900$ MHz; $\sigma = 1.441$ S/m; $\epsilon_r = 39.59$; $\rho = 1000$ kg/m³

Phantom section: Center Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7514; ConvF(7.73, 7.73, 7.73) @ 1900 MHz; Calibrated: 8/27/2018
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1555; Calibrated: 8/20/2018
- Phantom: MFP_V5.1C ; Type: QD 000 P51CA; Serial: 1062
- Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

System Performance Check/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid:

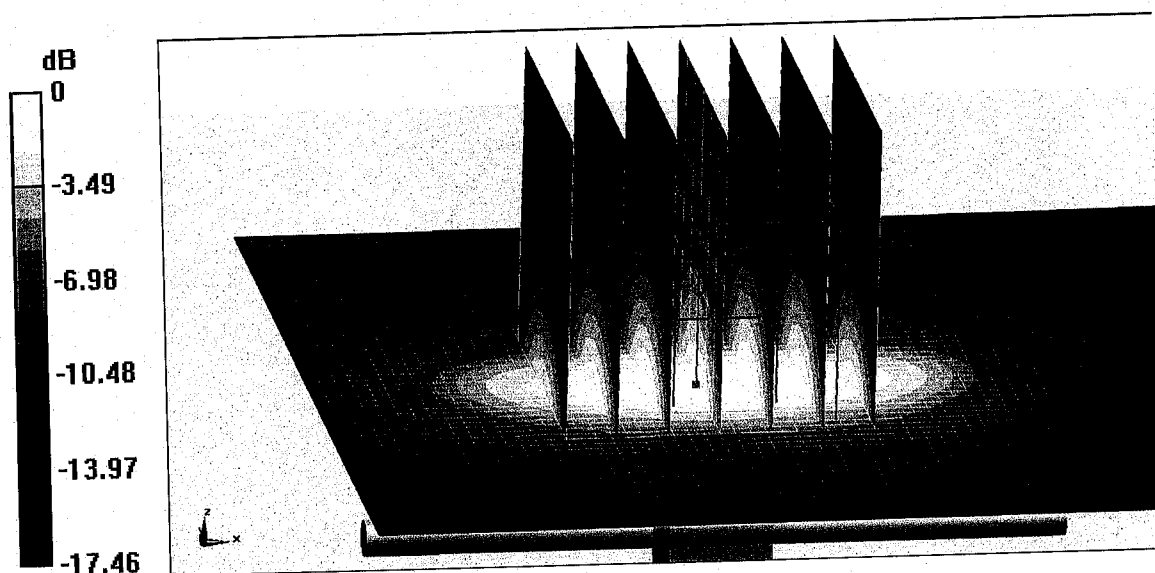
$dx=5$ mm, $dy=5$ mm, $dz=5$ mm

Reference Value = 95.91 V/m; Power Drift = 0.00 dB

Peak SAR (extrapolated) = 19.3 W/kg

SAR(1 g) = 10.1 W/kg; SAR(10 g) = 5.25 W/kg

Maximum value of SAR (measured) = 15.8 W/kg



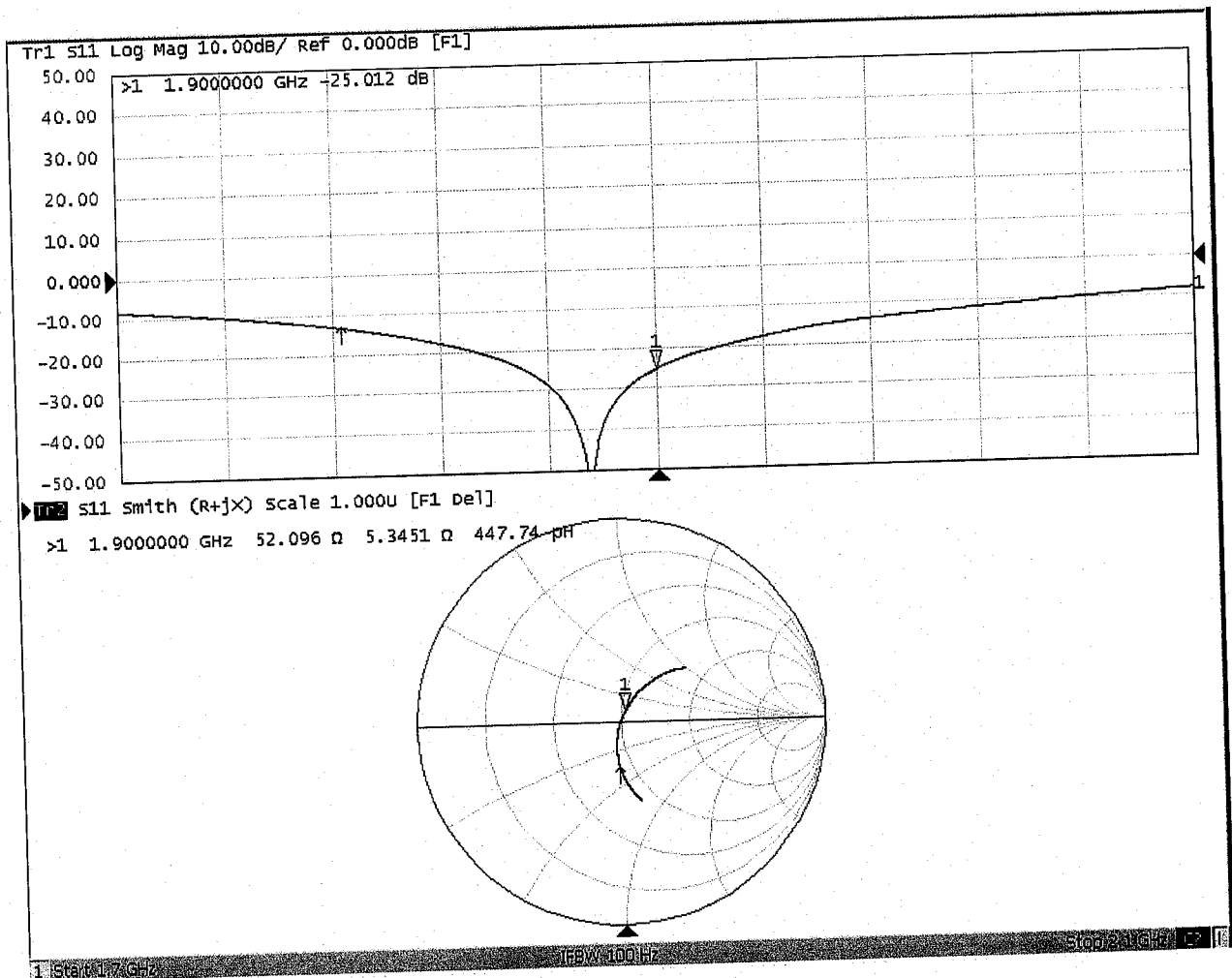
0 dB = 15.8 W/kg = 11.99 dBW/kg



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Impedance Measurement Plot for Head TSL





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DASY5 Validation Report for Body TSL

Date: 12.05.2018

Test Laboratory: CTTL, Beijing, China

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN: 5d182

Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 1900$ MHz; $\sigma = 1.564$ S/m; $\epsilon_r = 51.82$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7514; ConvF(7.53, 7.53, 7.53) @ 1900 MHz; Calibrated: 8/27/2018
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1555; Calibrated: 8/20/2018
- Phantom: MFP_V5.1C ; Type: QD 000 P51CA; Serial: 1062
- Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

System Performance Check/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid:

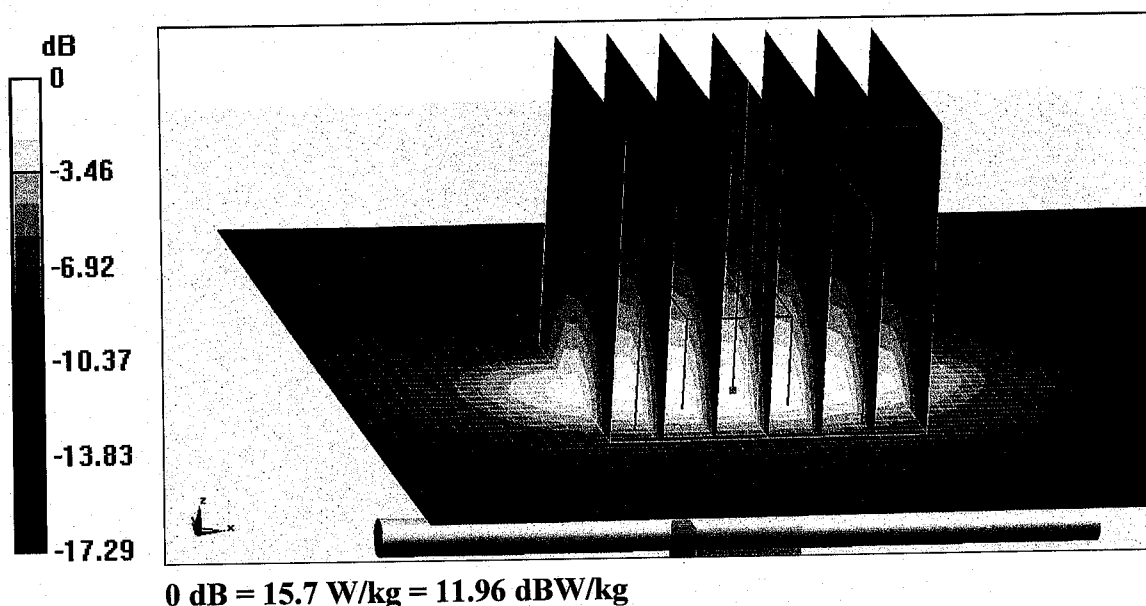
$dx=5$ mm, $dy=5$ mm, $dz=5$ mm

Reference Value = 84.07 V/m; Power Drift = -0.04 dB

Peak SAR (extrapolated) = 18.9 W/kg

SAR(1 g) = 10.2 W/kg; SAR(10 g) = 5.31 W/kg

Maximum value of SAR (measured) = 15.7 W/kg



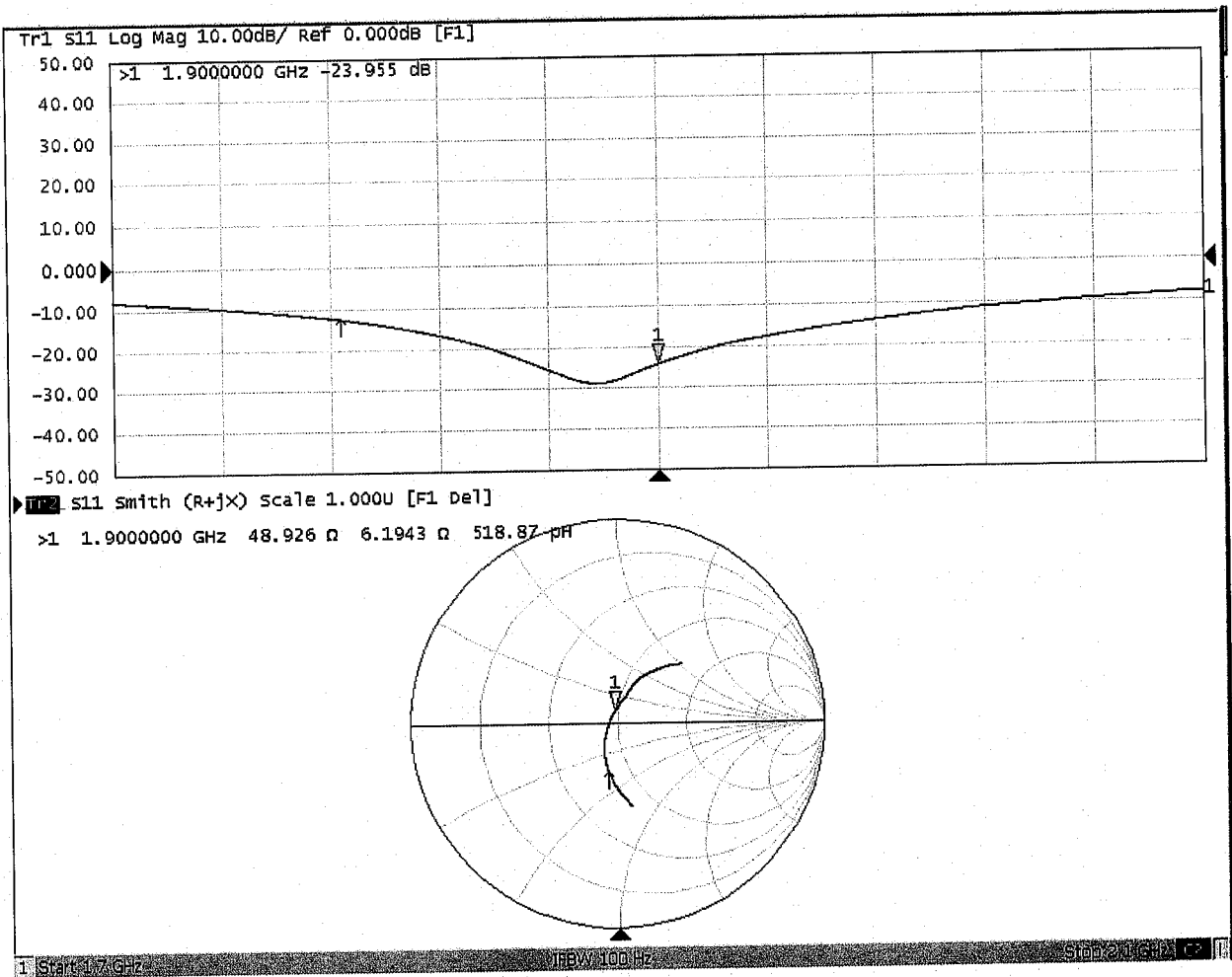


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Impedance Measurement Plot for Body TSL



D1900V2, Serial No. 5d182 Extended Dipole Calibrations

Referring to KDB 865664 D01 v01r02, if dipoles are verified in return loss ($< -20\text{dB}$, within 20% of prior calibration), and in impedance (within 5 ohm of prior calibration), the annual calibration is not necessary and the calibration interval can be extended.

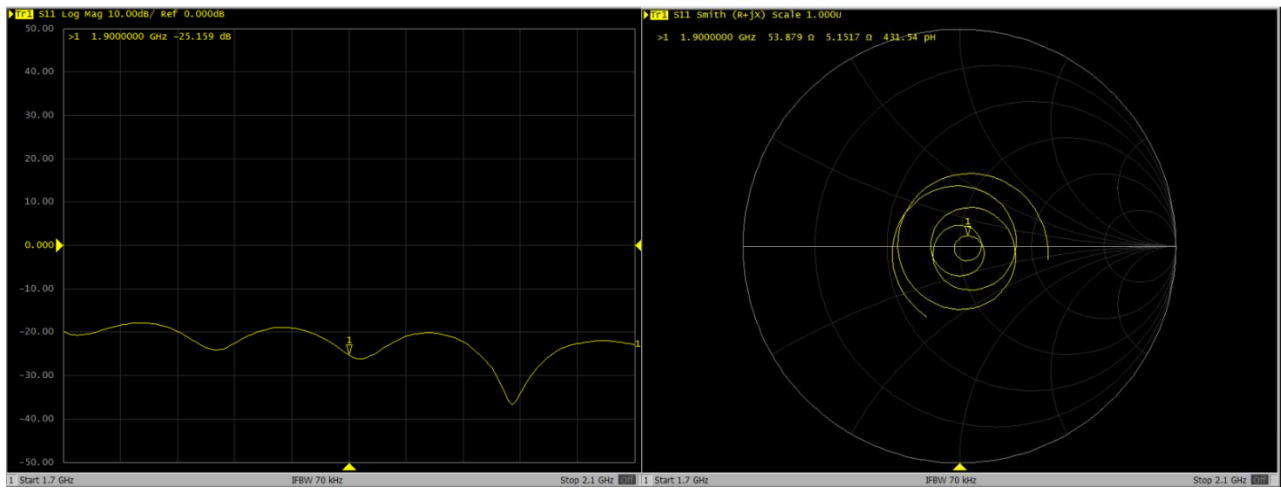
D1900V2 – serial no. 5d182												
	1900 Head						1900 Body					
Date of Measurement	Return-Loss (dB)	Delta (%)	Real Impedance (ohm)	Delta (ohm)	Imaginary Impedance (ohm)	Delta (ohm)	Return-Loss (dB)	Delta (%)	Real Impedance (ohm)	Delta (ohm)	Imaginary Impedance (ohm)	Delta (ohm)
2018.12.7	-25		52.1		5.35		-24		48.9		6.19	
2019.11.25	-25.2	-0.8	53.9	1.8	5.15	-0.2	-24.2	-0.8	48.7	-0.2	5.93	-0.26

<Justification of the extended calibration>

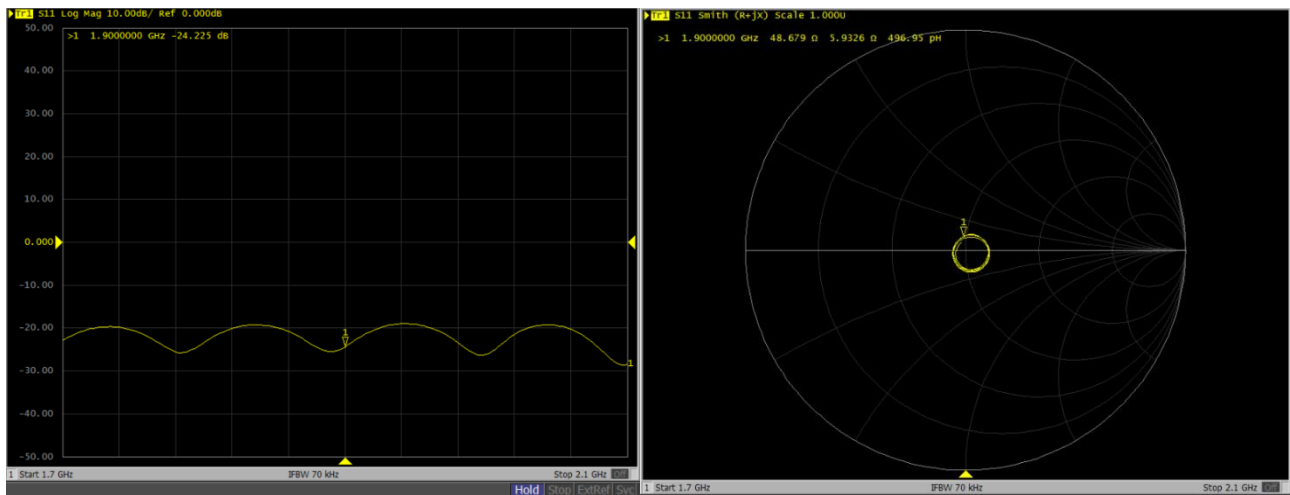
The return loss is $< -20\text{dB}$, within 20% of prior calibration; the impedance is within 5 ohm of prior calibration. Therefore the verification result should support extended calibration.

Dipole Verification Data> D1900V2, serial no. 5d182

1900MHz - Head



1900MHz - Body





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Client

Sporton

Certificate No: **Z19-60134**

CALIBRATION CERTIFICATE

Object **D2450V2 - SN: 924**

Calibration Procedure(s) **FF-Z11-003-01**
Calibration Procedures for dipole validation kits

Calibration date: **April 15, 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(Calibrated by, Certificate No.)	Scheduled Calibration
Power Meter NRP2	106277	20-Aug-18 (CTTL, No.J18X06862)	Aug-19
Power sensor NRP8S	104291	20-Aug-18 (CTTL, No.J18X06862)	Aug-19
Reference Probe EX3DV4	SN 3617	31-Jan-19(SPEAG,No.EX3-3617_Jan19)	Jan-20
DAE4	SN 1331	06-Feb-19(SPEAG,No.DAE4-1331_Feb19)	Feb-20
Secondary Standards	ID #	Cal Date(Calibrated by, Certificate No.)	Scheduled Calibration
Signal Generator E4438C	MY49071430	23-Jan-19 (CTTL, No.J19X00336)	Jan-20
NetworkAnalyzer E5071C	MY46110673	24-Jan-19 (CTTL, No.J19X00547)	Jan-20

	Name	Function
Calibrated by:	Zhao Jing	SAR Test Engineer
Reviewed by:	Lin Hao	SAR Test Engineer
Approved by:	Qi Dianyuan	SAR Project Leader

Signature

Issued: April 20, 2019

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Glossary:

TSL	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:

- IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
- IEC 62209-1, "Measurement procedure for assessment of specific absorption rate of human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices- Part 1: Device used next to the ear (Frequency range of 300MHz to 6GHz)", July 2016
- IEC 62209-2, "Procedure to measure the Specific Absorption Rate (SAR) For wireless communication devices used in close proximity to the human body (frequency range of 30MHz to 6GHz)", March 2010
- KDB865664, SAR Measurement Requirements for 100 MHz to 6 GHz

Additional Documentation:

- 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%.



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Measurement Conditions

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

DASY Version	DASY52	52.10.2.1495
Extrapolation	Advanced Extrapolation	
Phantom	Triple Flat Phantom 5.1C	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	2450 MHz $\pm$ 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	39.2	1.80 mho/m
Measured Head TSL parameters	(22.0 $\pm$ 0.2) °C	40.4 $\pm$ 6 %	1.85 mho/m $\pm$ 6 %
Head TSL temperature change during test	<1.0 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	13.1 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	52.1 W/kg $\pm$ 18.8 % (k=2)
SAR averaged over 10 cm³ (10 g) of Head TSL	Condition	
SAR measured	250 mW input power	5.99 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	23.9 W/kg $\pm$ 18.7 % (k=2)

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	52.7	1.95 mho/m
Measured Body TSL parameters	(22.0 $\pm$ 0.2) °C	54.3 $\pm$ 6 %	2.01 mho/m $\pm$ 6 %
Body TSL temperature change during test	<1.0 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm³ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	12.6 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	50.1 W/kg $\pm$ 18.8 % (k=2)
SAR averaged over 10 cm³ (10 g) of Body TSL	Condition	
SAR measured	250 mW input power	5.83 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	23.3 W/kg $\pm$ 18.7 % (k=2)



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Appendix (Additional assessments outside the scope of CNAS L0570)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	51.9Ω+ 2.68 jΩ
Return Loss	- 29.9dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	48.8Ω+ 4.17 jΩ
Return Loss	- 27.2dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.019 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: 04.15.2019

Test Laboratory: CTTL, Beijing, China

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN: 924

Communication System: UID 0, CW; Frequency: 2450 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 2450$ MHz; $\sigma = 1.85$ S/m; $\epsilon_r = 40.35$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3617; ConvF(7.62, 7.62, 7.62) @ 2450 MHz; Calibrated: 1/31/2019
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1331; Calibrated: 2/6/2019
- Phantom: MFP_V5.1C ; Type: QD 000 P51CA; Serial: 1062
- Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

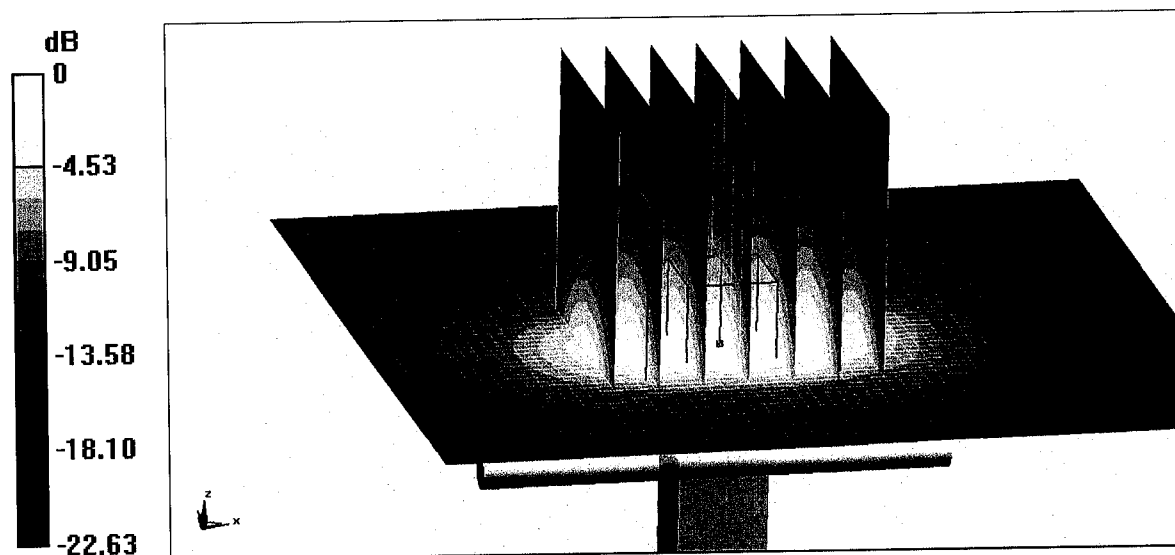
Dipole Calibration/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: $dx=5$ mm, $dy=5$ mm, $dz=5$ mm

Reference Value = 86.73 V/m; Power Drift = 0.05 dB

Peak SAR (extrapolated) = 28.0 W/kg

SAR(1 g) = 13.1 W/kg; SAR(10 g) = 5.99 W/kg

Maximum value of SAR (measured) = 22.2 W/kg



0 dB = 22.2 W/kg = 13.46 dBW/kg

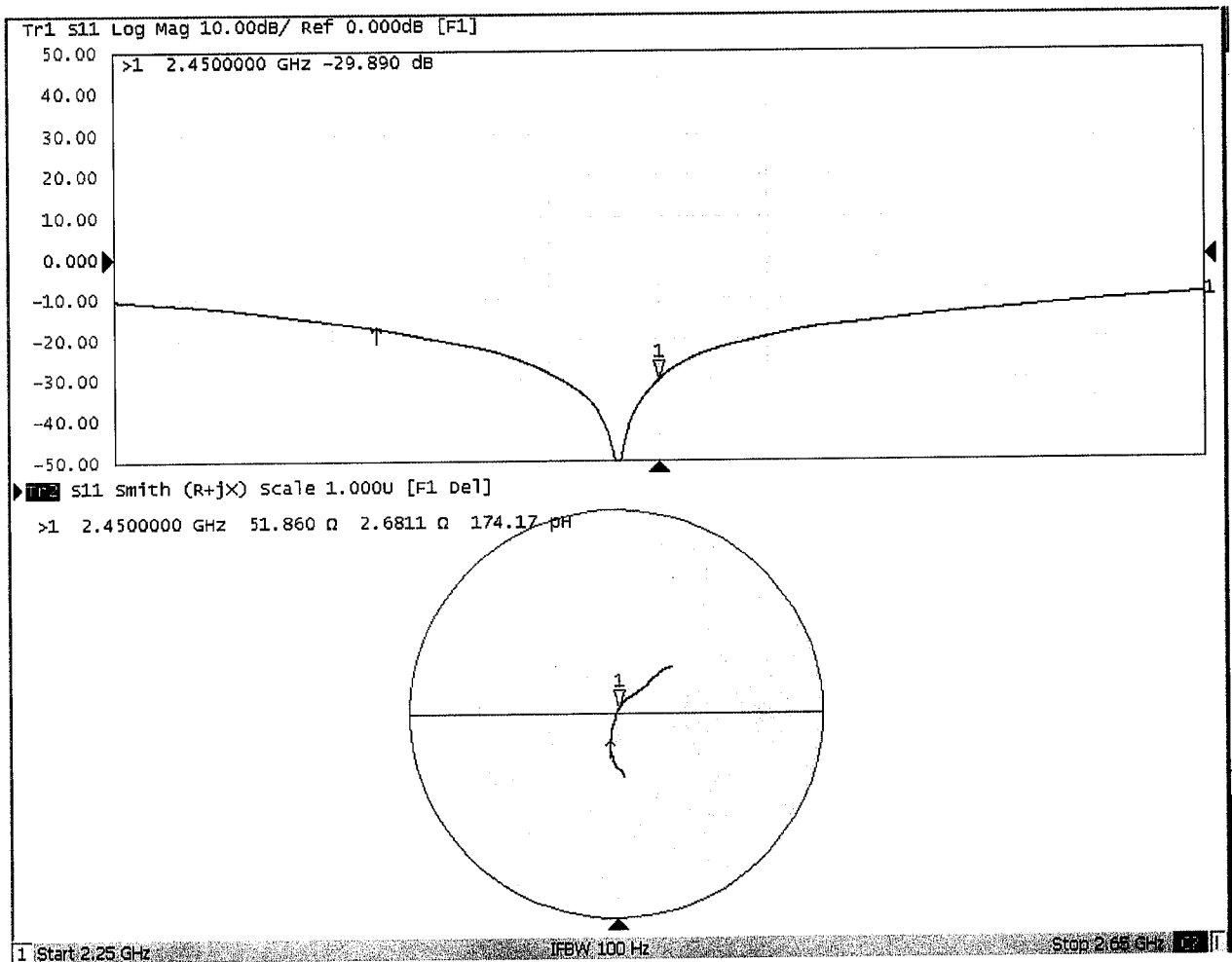


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Impedance Measurement Plot for Head TSL





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DASY5 Validation Report for Body TSL

Date: 04.15.2019

Test Laboratory: CTTL, Beijing, China

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN: 924

Communication System: UID 0, CW; Frequency: 2450 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 2450$ MHz; $\sigma = 2.005$ S/m; $\epsilon_r = 54.25$; $\rho = 1000$ kg/m³

Phantom section: Center Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3617; ConvF(7.79, 7.79, 7.79) @ 2450 MHz; Calibrated: 1/31/2019
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1331; Calibrated: 2/6/2019
- Phantom: MFP_V5.1C ; Type: QD 000 P51CA; Serial: 1062
- Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

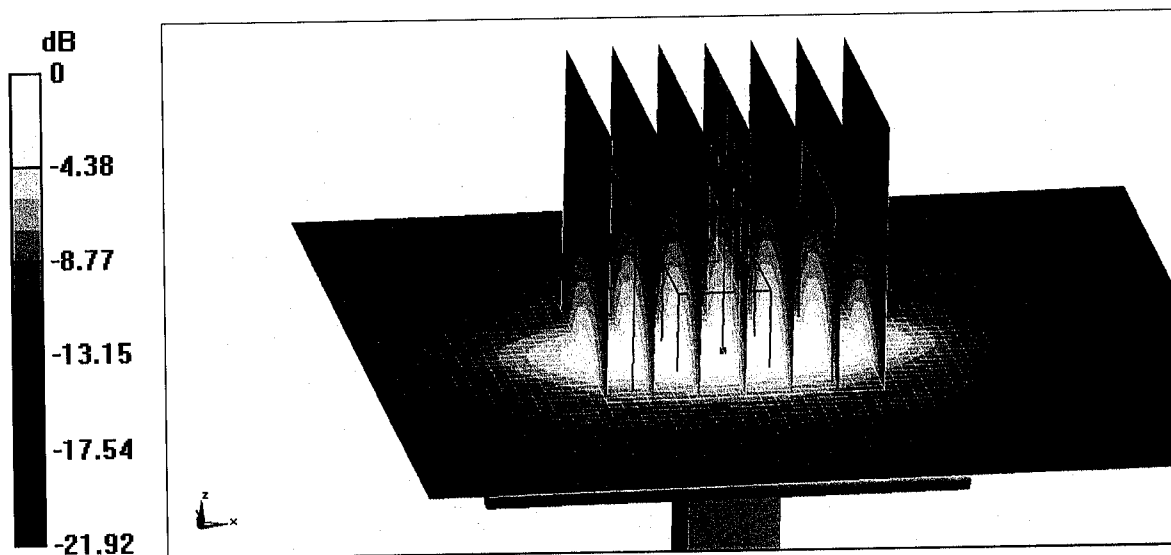
Dipole Calibration/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 95.46 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 26.3 W/kg

SAR(1 g) = 12.6 W/kg; SAR(10 g) = 5.83 W/kg

Maximum value of SAR (measured) = 20.9 W/kg



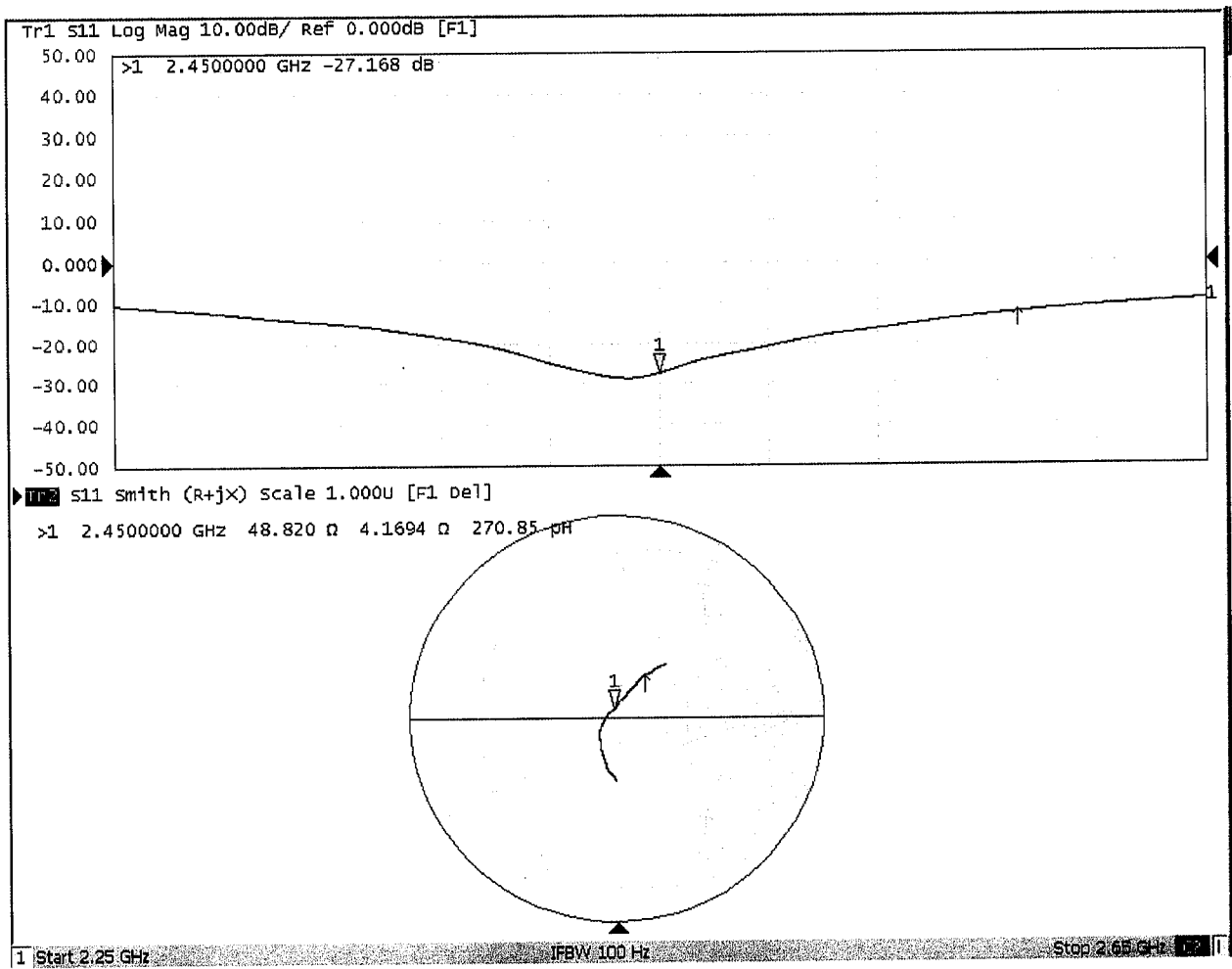
0 dB = 20.9 W/kg = 13.20 dBW/kg



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Impedance Measurement Plot for Body TSL





D2450V2, Serial No. 924 Extended Dipole Calibrations

Referring to KDB 865664 D01 v01r02, if dipoles are verified in return loss ($< -20\text{dB}$, within 20% of prior calibration), and in impedance (within 5 ohm of prior calibration), the annual calibration is not necessary and the calibration interval can be extended.

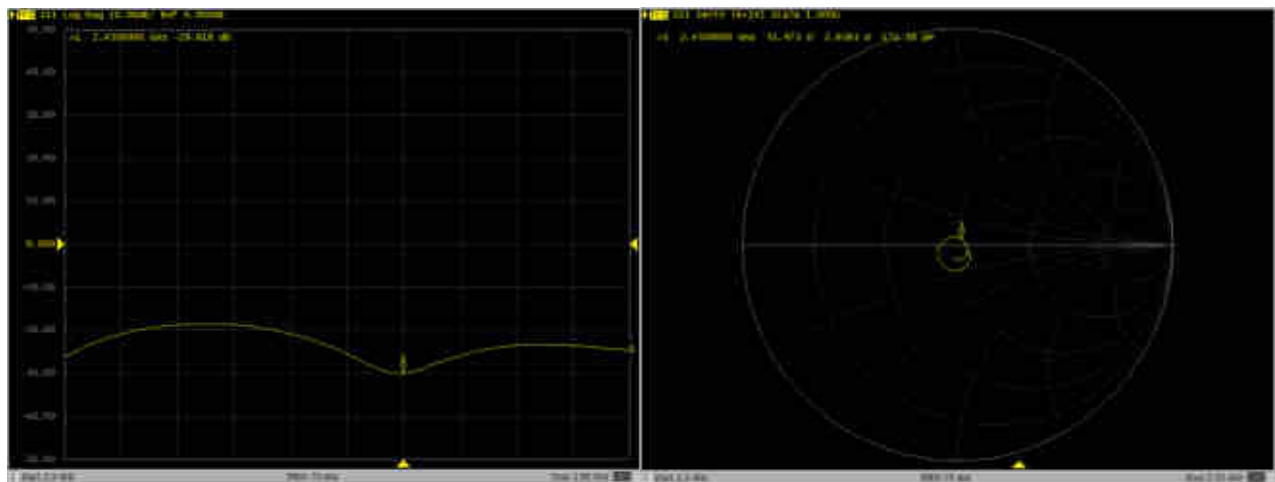
D2450V2 – serial no. 924												
	2450 Head						2450 Body					
Date of Measurement	Return-Loss (dB)	Delta (%)	Real Impedance (ohm)	Delta (ohm)	Imaginary Impedance (ohm)	Delta (ohm)	Return-Loss (dB)	Delta (%)	Real Impedance (ohm)	Delta (ohm)	Imaginary Impedance (ohm)	Delta (ohm)
2019.04.15	-29.9		51.90		2.68		-27.2		48.80		4.17	
2020.04.11	-29.8	0.3	51.97	0.07	2.64	-0.04	-26.5	2.6	48.80	0	4.52	0.35

<Justification of the extended calibration>

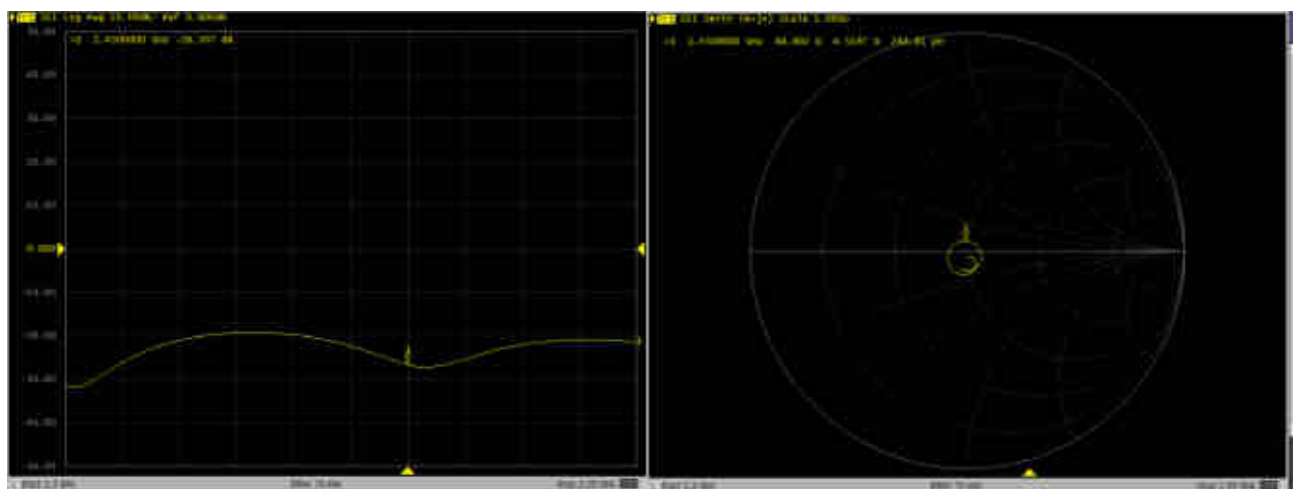
The return loss is $< -20\text{dB}$, within 20% of prior calibration; the impedance is within 5 ohm of prior calibration. Therefore the verification result should support extended calibration.

Dipole Verification Data> D2450V2, serial no. 924

2450MHz - Head



2450MHz - Body





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Client **Sporton**

Certificate No: **Z18-60537**

CALIBRATION CERTIFICATE

Object **D2600V2 - SN: 1070**

Calibration Procedure(s) **FF-Z11-003-01**
Calibration Procedures for dipole validation kits

Calibration date: **December 7, 2018**

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date(Calibrated by, Certificate No.)	Scheduled Calibration
Power Meter NRVD	102196	07-Mar-18 (CTTL, No.J18X01510)	Mar-19
Power sensor NRV-Z5	100596	07-Mar-18 (CTTL, No.J18X01510)	Mar-19
Reference Probe EX3DV4	SN 7514	27-Aug-18(SPEAG,No.EX3-7514_Aug18)	Aug-19
DAE4	SN 1555	20-Aug-18(SPEAG,No.DAE4-1555_Aug18)	Aug-19
Secondary Standards	ID #	Cal Date(Calibrated by, Certificate No.)	Scheduled Calibration
Signal Generator E4438C	MY49071430	23-Jan-18 (CTTL, No.J18X00560)	Jan-19
Network Analyzer E5071C	MY46110673	24-Jan-18 (CTTL, No.J18X00561)	Jan-19

	Name	Function
Calibrated by:	Zhao Jing	SAR Test Engineer
Reviewed by:	Lin Hao	SAR Test Engineer
Approved by:	Qi Dianyuan	SAR Project Leader

Signature

Issued: December 10, 2018

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Glossary:

TSL	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:

- IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
- IEC 62209-1, "Measurement procedure for assessment of specific absorption rate of human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices- Part 1: Device used next to the ear (Frequency range of 300MHz to 6GHz)", July 2016
- IEC 62209-2, "Procedure to measure the Specific Absorption Rate (SAR) For wireless communication devices used in close proximity to the human body (frequency range of 30MHz to 6GHz)", March 2010
- KDB865664, SAR Measurement Requirements for 100 MHz to 6 GHz

Additional Documentation:

- 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%.



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Measurement Conditions

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

DASY Version	DASY52	52.10.2.1495
Extrapolation	Advanced Extrapolation	
Phantom	Triple Flat Phantom 5.1C	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	2600 MHz $\pm$ 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	39.0	1.96 mho/m
Measured Head TSL parameters	(22.0 $\pm$ 0.2) °C	39.1 $\pm$ 6 %	1.93 mho/m $\pm$ 6 %
Head TSL temperature change during test	<1.0 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm ³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	14.4 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	58.1 mW / g $\pm$ 18.8 % (k=2)
SAR averaged over 10 cm ³ (10 g) of Head TSL	Condition	
SAR measured	250 mW input power	6.50 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	26.1 mW / g $\pm$ 18.7 % (k=2)

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	52.5	2.16 mho/m
Measured Body TSL parameters	(22.0 $\pm$ 0.2) °C	51.0 $\pm$ 6 %	2.18 mho/m $\pm$ 6 %
Body TSL temperature change during test	<1.0 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm ³ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	13.8 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	54.6 mW / g $\pm$ 18.8 % (k=2)
SAR averaged over 10 cm ³ (10 g) of Body TSL	Condition	
SAR measured	250 mW input power	6.18 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	24.6 mW / g $\pm$ 18.7 % (k=2)



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Appendix(Additional assessments outside the scope of CNAS L0570)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	48.6Ω- 6.33jΩ
Return Loss	- 23.7dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	44.8Ω- 5.36jΩ
Return Loss	- 22.1dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.015 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: 12.06.2018

Test Laboratory: CTTL, Beijing, China

DUT: Dipole 2600 MHz; Type: D2600V2; Serial: D2600V2 - SN: 1070

Communication System: UID 0, CW; Frequency: 2600 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 2600$ MHz; $\sigma = 1.926$ S/m; $\epsilon_r = 39.1$; $\rho = 1000$ kg/m³

Phantom section: Center Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7514; ConvF(6.92, 6.92, 6.92) @ 2600 MHz; Calibrated: 8/27/2018
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1555; Calibrated: 8/20/2018
- Phantom: MFP_V5.1C ; Type: QD 000 P51CA; Serial: 1062
- Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

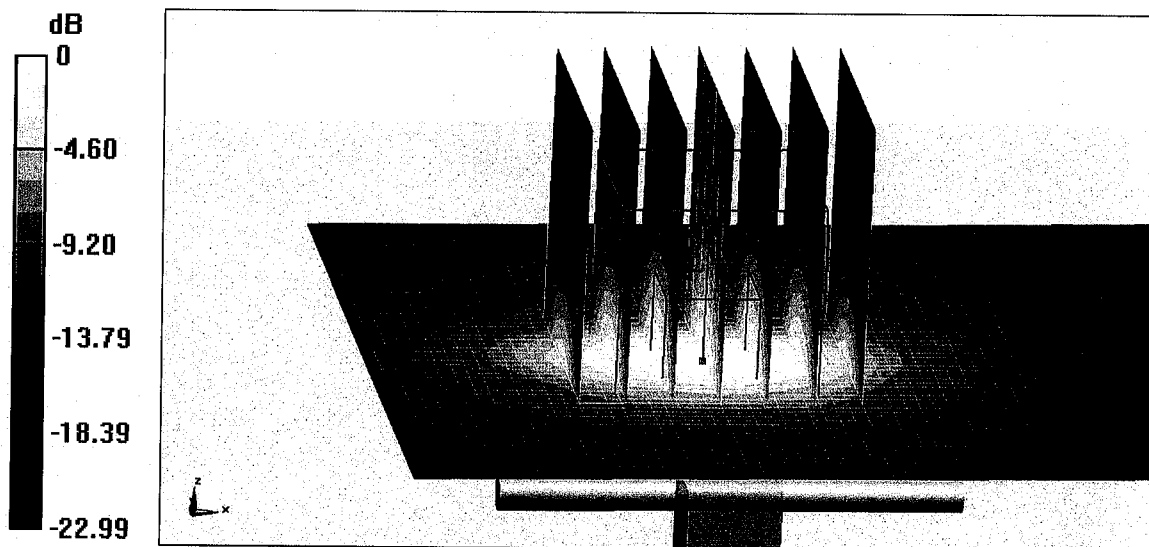
Dipole Calibration/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 99.07 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 31.1 W/kg

SAR(1 g) = 14.4 W/kg; SAR(10 g) = 6.5 W/kg

Maximum value of SAR (measured) = 24.7 W/kg



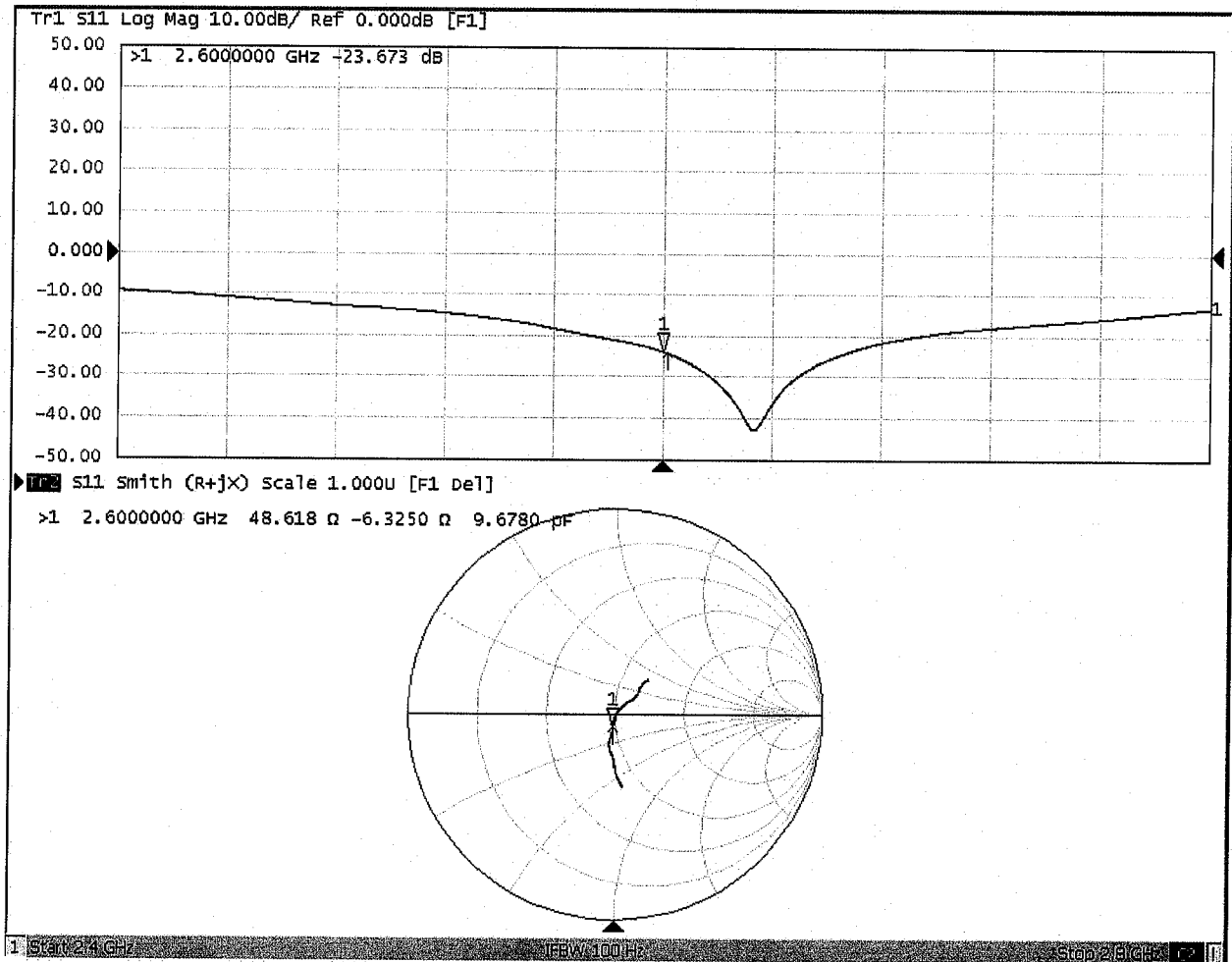
0 dB = 24.7 W/kg = 13.93 dBW/kg



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Impedance Measurement Plot for Head TSL





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DASY5 Validation Report for Body TSL

Date: 12.06.2018

Test Laboratory: CTTL, Beijing, China

DUT: Dipole 2600 MHz; Type: D2600V2; Serial: D2600V2 - SN: 1070

Communication System: UID 0, CW; Frequency: 2600 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 2600$ MHz; $\sigma = 2.181$ S/m; $\epsilon_r = 51.03$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7514; ConvF(7.06, 7.06, 7.06) @ 2600 MHz; Calibrated: 8/27/2018
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1555; Calibrated: 8/20/2018
- Phantom: MFP_V5.1C ; Type: QD 000 P51CA; Serial: 1062
- Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

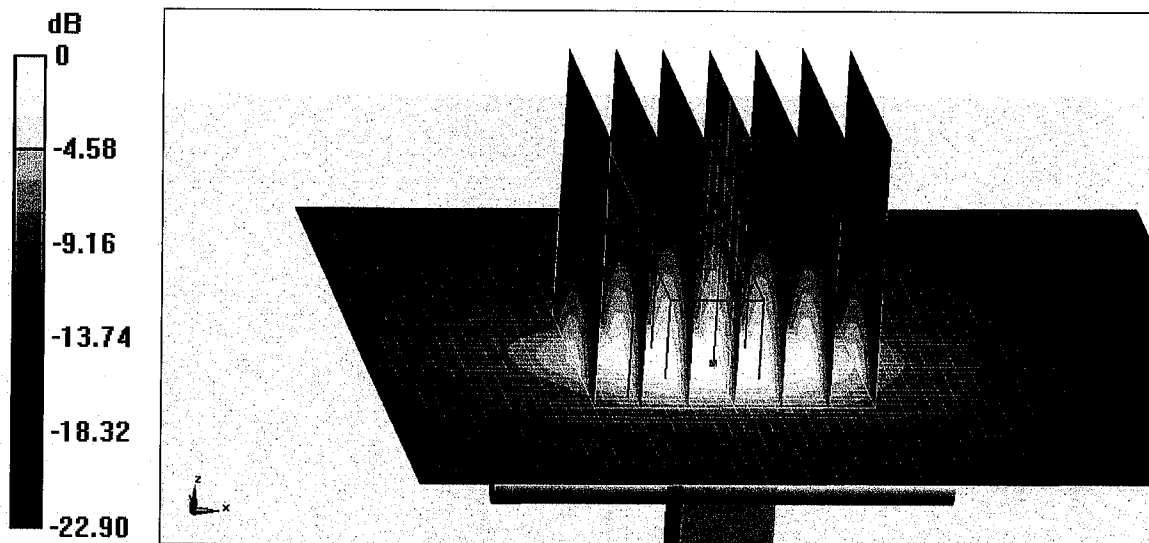
Dipole Calibration/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 87.90 V/m; Power Drift = -0.04 dB

Peak SAR (extrapolated) = 29.5 W/kg

SAR(1 g) = 13.8 W/kg; SAR(10 g) = 6.18 W/kg

Maximum value of SAR (measured) = 23.6 W/kg

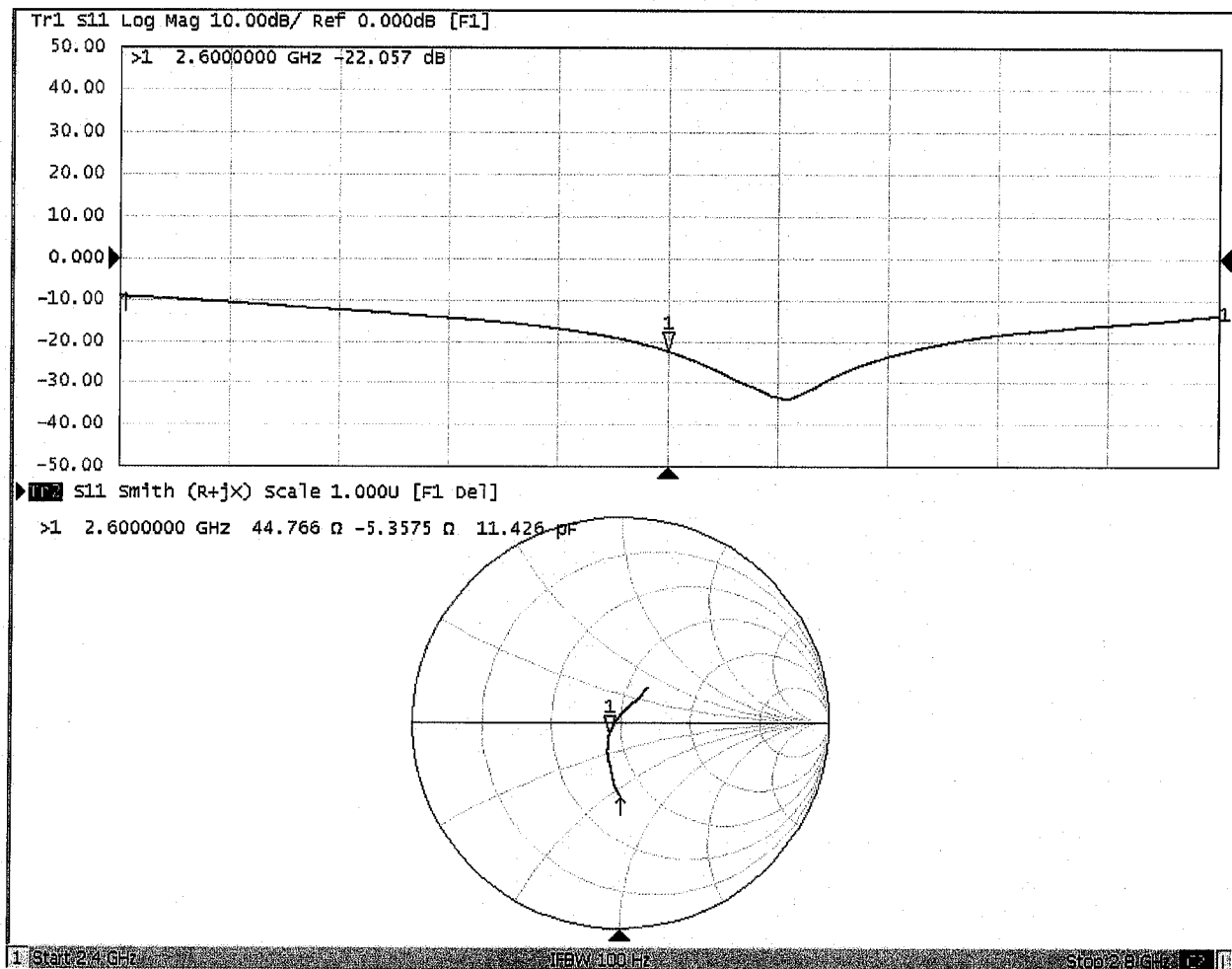


0 dB = 23.6 W/kg = 13.73 dBW/kg



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Impedance Measurement Plot for Body TSL





D2600V2, Serial No. 1070 Extended Dipole Calibrations

Referring to KDB 865664 D01 v01r02, if dipoles are verified in return loss ($< -20\text{dB}$, within 20% of prior calibration), and in impedance (within 5 ohm of prior calibration), the annual calibration is not necessary and the calibration interval can be extended.

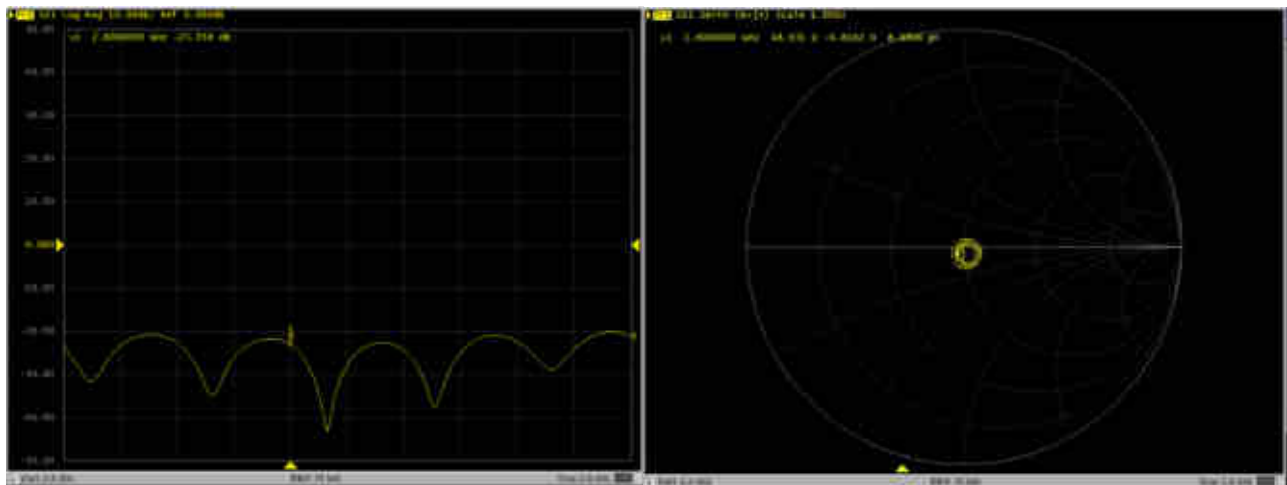
D2600V2 – serial no. 1070												
	2600 Head						2600 Body					
Date of Measurement	Return-Loss (dB)	Delta (%)	Real Impedance (ohm)	Delta (ohm)	Imaginary Impedance (ohm)	Delta (ohm)	Return-Loss (dB)	Delta (%)	Real Impedance (ohm)	Delta (ohm)	Imaginary Impedance (ohm)	Delta (ohm)
2018.12.7	-23.7		48.6		-6.33		-22.1		44.8		-5.36	
2019.11.25	-23.1	2.5	48.6	0	-6.82	-0.49	-22.0	0.5	45.3	0.5	-4.65	0.71

<Justification of the extended calibration>

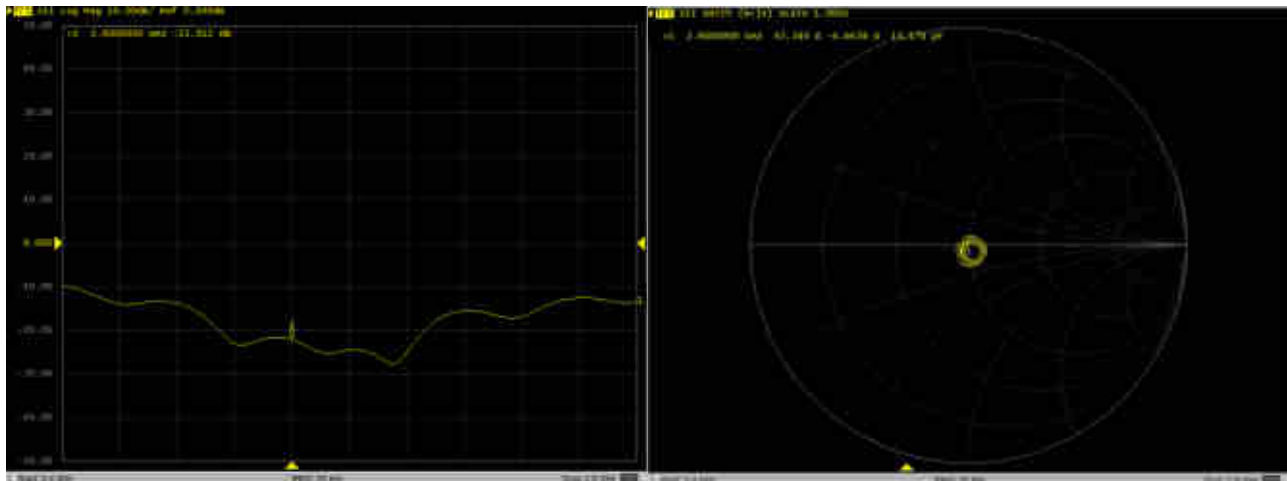
The return loss is $< -20\text{dB}$, within 20% of prior calibration; the impedance is within 5 ohm of prior calibration. Therefore the verification result should support extended calibration.

Dipole Verification Data> D2600V2, serial no. 1070

2600MHz - Head



2600MHz - Body





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Client

Sporton

Certificate No: **Z18-60259**

CALIBRATION CERTIFICATE

Object **D5GHzV2 - SN: 1167**

Calibration Procedure(s) **FF-Z11-003-01**
Calibration Procedures for dipole validation kits

Calibration date: **August 03, 2018**

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date(Calibrated by, Certificate No.)	Scheduled Calibration
Power Meter NRP2	102083	01-Nov-17 (CTTL, No.J17X08756)	Oct-18
Power sensor NRP-Z91	100542	01-Nov-17 (CTTL, No.J17X08756)	Oct-18
ReferenceProbe EX3DV4	SN 7464	12-Sep-17(SPEAG,No.EX3-7464_Sep17)	Sep-18
DAE4	SN 1524	13-Sep-17(SPEAG,No.DAE4-1524_Sep17)	Sep-18
Secondary Standards	ID #	Cal Date(Calibrated by, Certificate No.)	Scheduled Calibration
Signal Generator E4438C	MY49071430	23-Jan-18 (CTTL, No.J18X00560)	Jan-19
NetworkAnalyzerE5071C	MY46110673	24-Jan-18 (CTTL, No.J18X00561)	Jan-19

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

Issued: August 6, 2018

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



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Glossary:

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

Calibration is Performed According to the Following Standards:

- IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
- IEC 62209-1, "Measurement procedure for assessment of specific absorption rate of human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices- Part 1: Device used next to the ear (Frequency range of 300MHz to 6GHz)", July 2016
- IEC 62209-2, "Procedure to measure the Specific Absorption Rate (SAR) For wireless communication devices used in close proximity to the human body (frequency range of 30MHz to 6GHz)", March 2010
- KDB865664, SAR Measurement Requirements for 100 MHz to 6 GHz

Additional Documentation:

- 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%.



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Measurement Conditions

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

DASY Version	DASY52	52.10.1.1476
Extrapolation	Advanced Extrapolation	
Phantom	Triple Flat Phantom 5.1C	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy = 4 mm, dz = 1.4 mm	Graded Ratio = 1.4 (Z direction)
Frequency	5250 MHz $\pm$ 1 MHz 5600 MHz $\pm$ 1 MHz 5750 MHz $\pm$ 1 MHz	

Head TSL parameters at 5250 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	35.9	4.71 mho/m
Measured Head TSL parameters	(22.0 $\pm$ 0.2) °C	35.9 $\pm$ 6 %	4.82 mho/m $\pm$ 6 %
Head TSL temperature change during test	<1.0 °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	7.69 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	77.0 mW / g $\pm$ 24.4 % (k=2)
SAR averaged over 10 cm ³ (10 g) of Head TSL	Condition	
SAR measured	100 mW input power	2.20 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	22.0 mW / g $\pm$ 24.2 % (k=2)



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Head TSL parameters at 5600 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	35.5	5.07 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	35.1 ± 6 %	5.18 mho/m ± 6 %
Head TSL temperature change during test	<1.0 °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	8.09 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	80.8 mW / g ± 24.4 % (k=2)
SAR averaged over 10 cm ³ (10 g) of Head TSL	Condition	
SAR measured	100 mW input power	2.32 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	23.2 mW / g ± 24.2 % (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	34.9 ± 6 %	5.37 mho/m ± 6 %
Head TSL temperature change during test	<1.0 °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	7.70 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	76.9 mW / g ± 24.4 % (k=2)
SAR averaged over 10 cm ³ (10 g) of Head TSL	Condition	
SAR measured	100 mW input power	2.17 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	21.6 mW / g ± 24.2 % (k=2)



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Body TSL parameters at 5250 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	48.9	5.36 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	48.4 ± 6 %	5.32 mho/m ± 6 %
Body TSL temperature change during test	<1.0 °C	----	----

SAR result with Body TSL at 5250 MHz

SAR averaged over 1 cm ³ (1 g) of Body TSL	Condition	
SAR measured	100 mW input power	7.46 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	74.4 mW /g ± 24.4 % (k=2)
SAR averaged over 10 cm ³ (10 g) of Body TSL	Condition	
SAR measured	100 mW input power	2.10 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	20.9 mW /g ± 24.2 % (k=2)

Body TSL parameters at 5600 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	48.5	5.77 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	47.7 ± 6 %	5.79 mho/m ± 6 %
Body TSL temperature change during test	<1.0 °C	----	----

SAR result with Body TSL at 5600 MHz

SAR averaged over 1 cm ³ (1 g) of Body TSL	Condition	
SAR measured	100 mW input power	7.73 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	77.1 mW /g ± 24.4 % (k=2)
SAR averaged over 10 cm ³ (10 g) of Body TSL	Condition	
SAR measured	100 mW input power	2.16 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	21.5 mW /g ± 24.2 % (k=2)



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Body TSL parameters at 5750 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	48.3	5.94 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	48.5 ± 6 %	5.93 mho/m ± 6 %
Body TSL temperature change during test	<1.0 °C	----	----

SAR result with Body TSL at 5750 MHz

SAR averaged over 1 cm ³ (1 g) of Body TSL	Condition	
SAR measured	100 mW input power	7.43 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	74.3 mW /g ± 24.4 % (k=2)
SAR averaged over 10 cm ³ (10 g) of Body TSL	Condition	
SAR measured	100 mW input power	2.08 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	20.8 mW /g ± 24.2 % (k=2)



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Appendix (Additional assessments outside the scope of CNAS L0570)

Antenna Parameters with Head TSL at 5250 MHz

Impedance, transformed to feed point	50.3 Ω - 9.42j Ω
Return Loss	- 20.6dB

Antenna Parameters with Head TSL at 5600 MHz

Impedance, transformed to feed point	58.1 Ω - 7.15j Ω
Return Loss	- 20.0dB

Antenna Parameters with Head TSL at 5750 MHz

Impedance, transformed to feed point	53.5 Ω - 7.66j Ω
Return Loss	- 21.8dB

Antenna Parameters with Body TSL at 5250 MHz

Impedance, transformed to feed point	49.5 Ω - 7.40j Ω
Return Loss	- 22.6dB

Antenna Parameters with Body TSL at 5600 MHz

Impedance, transformed to feed point	58.0 Ω - 6.37j Ω
Return Loss	- 20.5dB

Antenna Parameters with Body TSL at 5750 MHz

Impedance, transformed to feed point	54.5 Ω - 7.07j Ω
Return Loss	- 21.9dB



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General Antenna Parameters and Design

Electrical Delay (one direction)	1.065 ns
----------------------------------	----------

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: 07.27.2018

Test Laboratory: CTTL, Beijing, China

DUT: Dipole 5GHz; Type: D5GHzV2; Serial: D5GHzV2 - SN: 1167

Communication System: CW; Frequency: 5250 MHz, Frequency: 5600 MHz,
Frequency: 5750 MHz,

Medium parameters used: $f = 5250$ MHz; $\sigma = 4.822$ S/m; $\epsilon_r = 35.92$; $\rho = 1000$ kg/m³, Medium parameters used: $f = 5600$ MHz; $\sigma = 5.184$ S/m; $\epsilon_r = 35.14$; $\rho = 1000$ kg/m³, Medium parameters used: $f = 5750$ MHz; $\sigma = 5.365$ S/m; $\epsilon_r = 34.88$; $\rho = 1000$ kg/m³,

Phantom section: Center Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7464; ConvF(5.68, 5.68, 5.68) @ 5250 MHz; Calibrated: 9/12/2017, ConvF(4.98, 4.98, 4.98) @ 5600 MHz; Calibrated: 9/12/2017, ConvF(5.04, 5.04, 5.04) @ 5750 MHz; Calibrated: 9/12/2017,
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1524; Calibrated: 9/13/2017
- Phantom: MFP_V5.1C ; Type: QD 000 P51CA; Serial: 1062
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7439)

Dipole Calibration /Pin=100mW, d=10mm, f=5250 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 65.09 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 32.4 W/kg
SAR(1 g) = 7.69 W/kg; SAR(10 g) = 2.2 W/kg
Maximum value of SAR (measured) = 18.0 W/kg

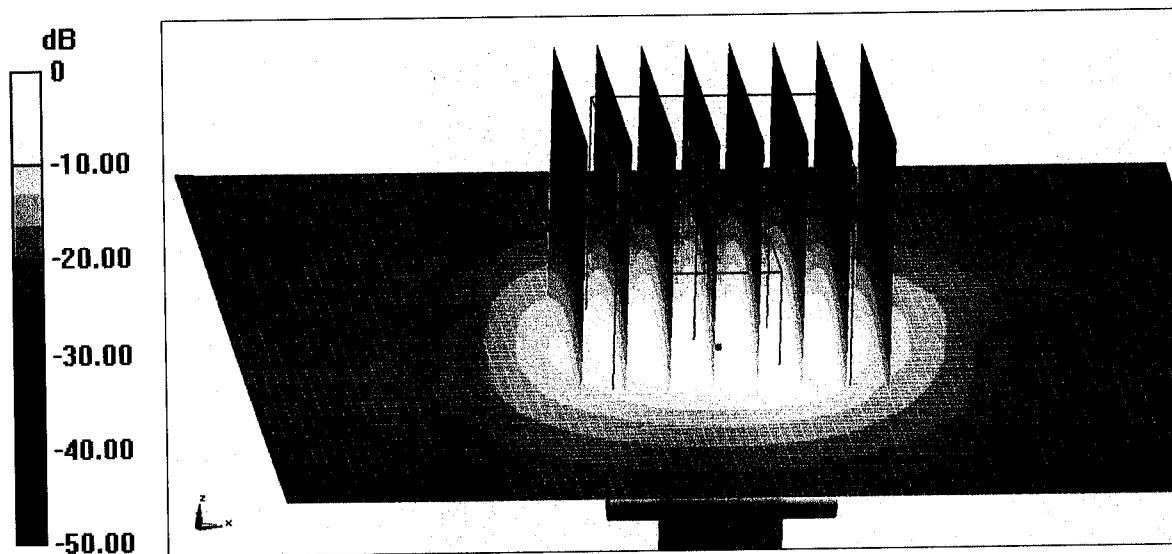
Dipole Calibration /Pin=100mW, d=10mm, f=5600 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 63.53 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 36.2 W/kg
SAR(1 g) = 8.09 W/kg; SAR(10 g) = 2.32 W/kg
Maximum value of SAR (measured) = 19.7 W/kg

Dipole Calibration /Pin=100mW, d=10mm, f=5750 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 63.79 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 36.2 W/kg
SAR(1 g) = 7.7 W/kg; SAR(10 g) = 2.17 W/kg
Maximum value of SAR (measured) = 19.0 W/kg



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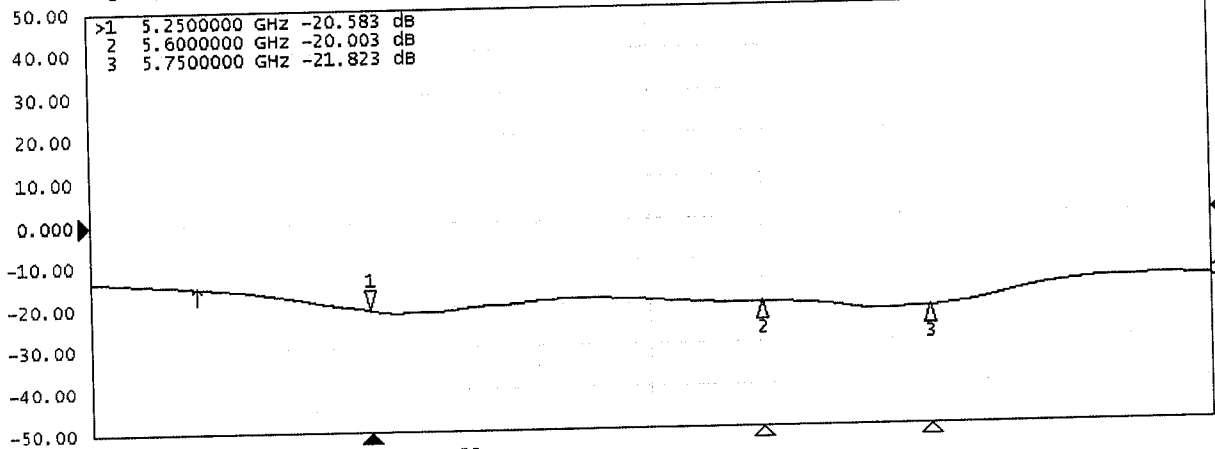
0 dB = 19.0 W/kg = 12.79 dBW/kg



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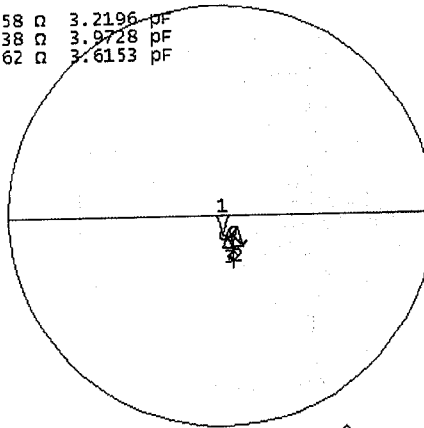
Impedance Measurement Plot for Head TSL

Tr1 S11 Log Mag 10.00dB/ Ref 0.000dB [F1]



Tr2 S11 Smith (R+jX) scale 1.000U [F1 Del]

>1	5.2500000 GHz	50.314 Ω	-9.4158 Ω	3.2196 pF
2	5.6000000 GHz	58.136 Ω	-7.1538 Ω	3.9728 pF
3	5.7500000 GHz	53.485 Ω	-7.6562 Ω	3.6153 pF



1 5.2500000 GHz

5.7500000 GHz

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Date: 08.02.2018

DASY5 Validation Report for Body TSL

Test Laboratory: CTTL, Beijing, China

DUT: Dipole 5GHz; Type: D5GHzV2; Serial: D5GHzV2 - SN: 1167

Communication System: CW; Frequency: 5250 MHz, Frequency: 5600 MHz,
Frequency: 5750 MHz,

Medium parameters used: $f = 5250$ MHz; $\sigma = 5.316$ S/m; $\epsilon_r = 48.42$; $\rho = 1000$ kg/m³, Medium parameters used: $f = 5600$ MHz; $\sigma = 5.789$ S/m; $\epsilon_r = 47.7$; $\rho = 1000$ kg/m³, Medium parameters used: $f = 5750$ MHz; $\sigma = 5.926$ S/m; $\epsilon_r = 48.45$; $\rho = 1000$ kg/m³,

Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7464; ConvF(5.29, 5.29, 5.29) @ 5250 MHz; Calibrated: 9/12/2017, ConvF(4.5, 4.5, 4.5) @ 5600 MHz; Calibrated: 9/12/2017, ConvF(4.59, 4.59, 4.59) @ 5750 MHz; Calibrated: 9/12/2017,
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1524; Calibrated: 9/13/2017
- Phantom: MFP_V5.1C ; Type: QD 000 P51CA; Serial: 1062
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7439)

Dipole Calibration /Pin=100mW, d=10mm, f=5250 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 64.14 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 31.9 W/kg
SAR(1 g) = 7.46 W/kg; SAR(10 g) = 2.1 W/kg
Maximum value of SAR (measured) = 17.6 W/kg

Dipole Calibration /Pin=100mW, d=10mm, f=5600 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 62.32 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 36.3 W/kg
SAR(1 g) = 7.73 W/kg; SAR(10 g) = 2.16 W/kg
Maximum value of SAR (measured) = 19.1 W/kg

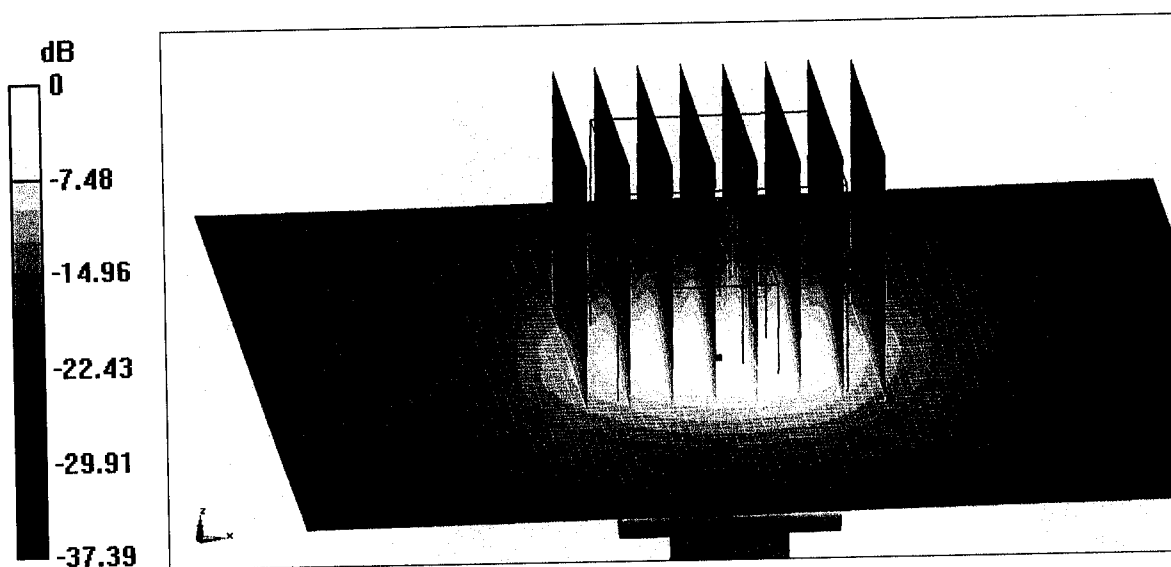
Dipole Calibration /Pin=100mW, d=10mm, f=5750 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 63.99 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 35.2 W/kg
SAR(1 g) = 7.43 W/kg; SAR(10 g) = 2.08 W/kg
Maximum value of SAR (measured) = 18.0 W/kg



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0 dB = 18.0 W/kg = 12.55 dBW/kg



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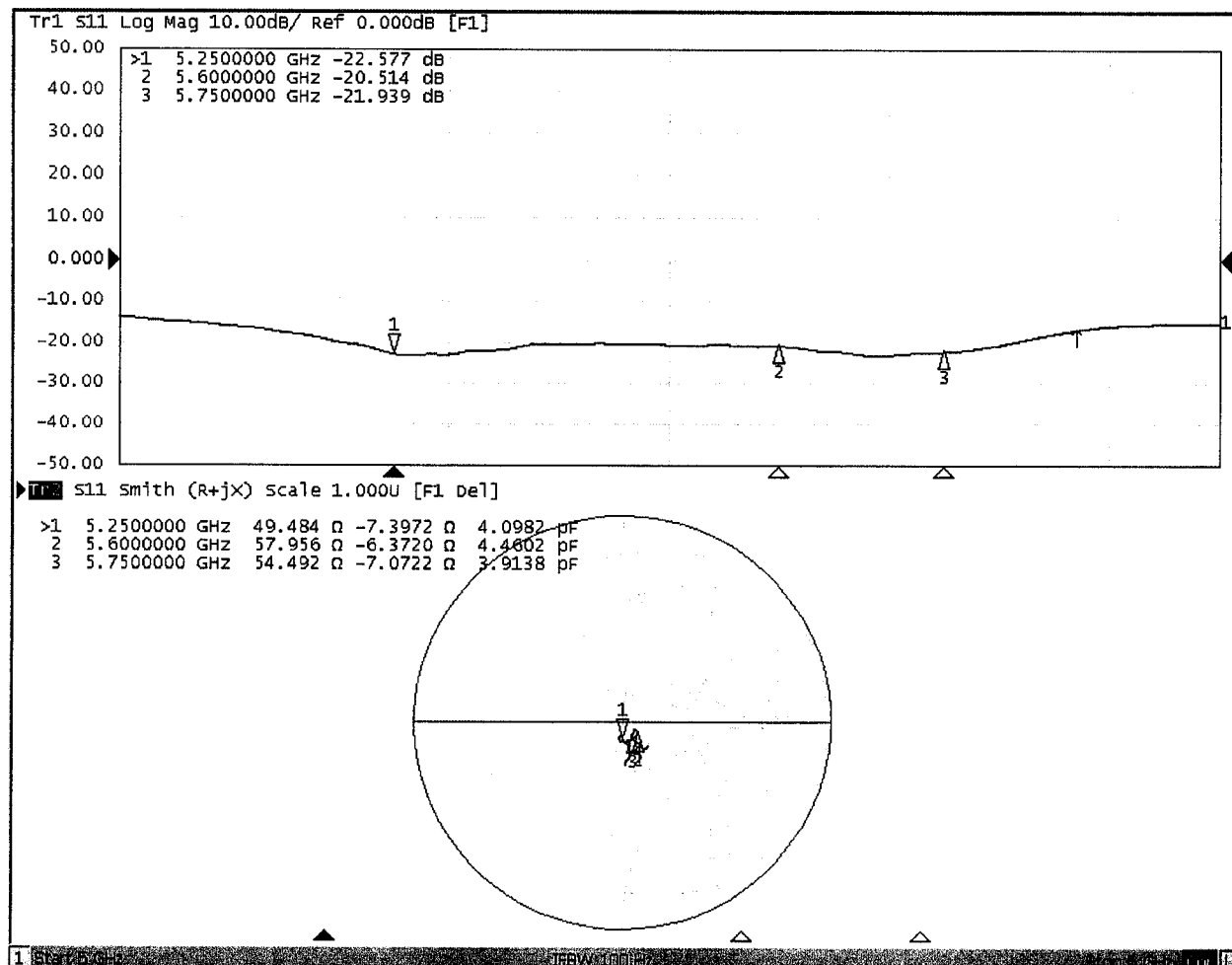
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Impedance Measurement Plot for Body TSL



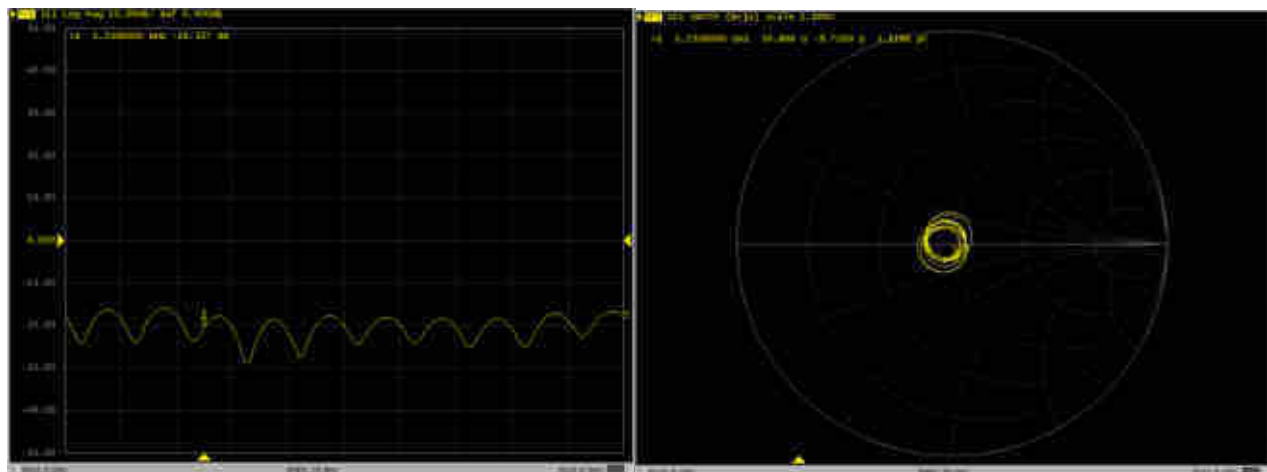
D5GHzV3, Serial No. 1167 Extended Dipole Calibrations

<Justification of the extended calibration>

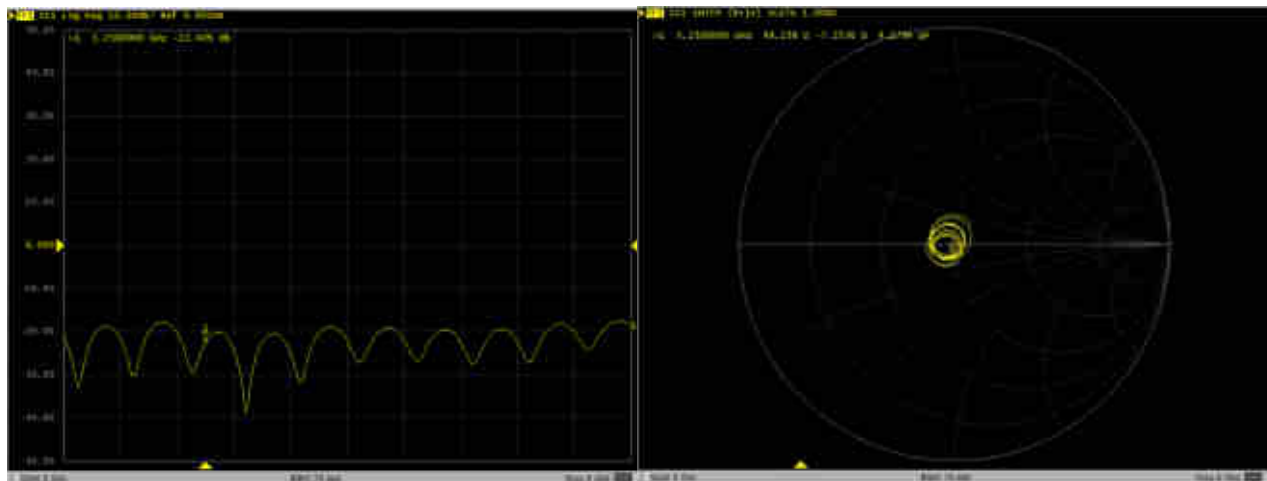
The return loss is < -20dB, within 20% of prior calibration; the impedance is within 5 ohm of prior calibration. Therefore the verification result should support extended calibration.

Dipole Verification Data> D5GHzV3, serial no. 1167

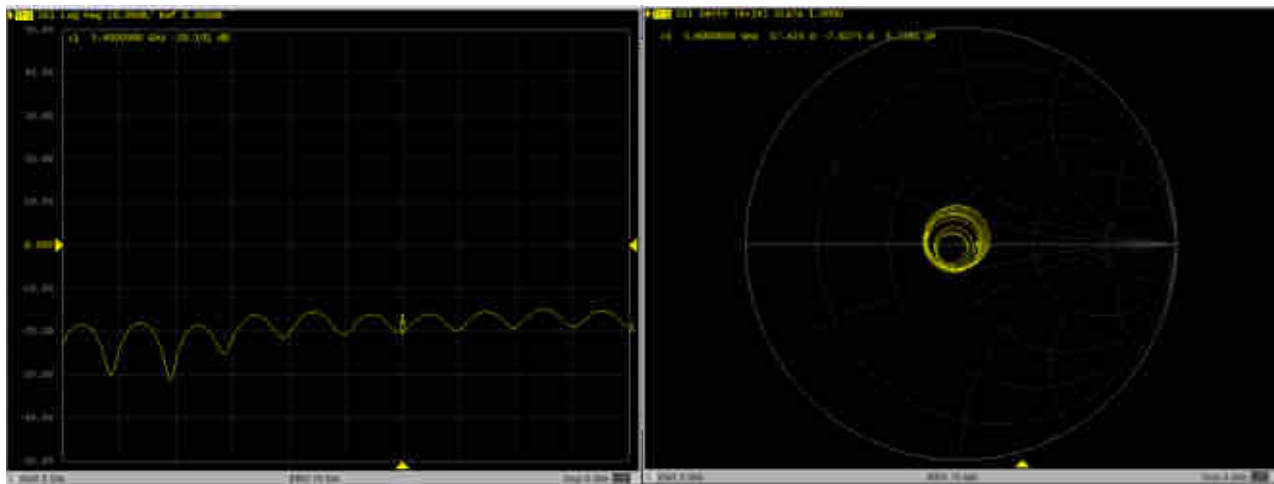
5250MHz - Head



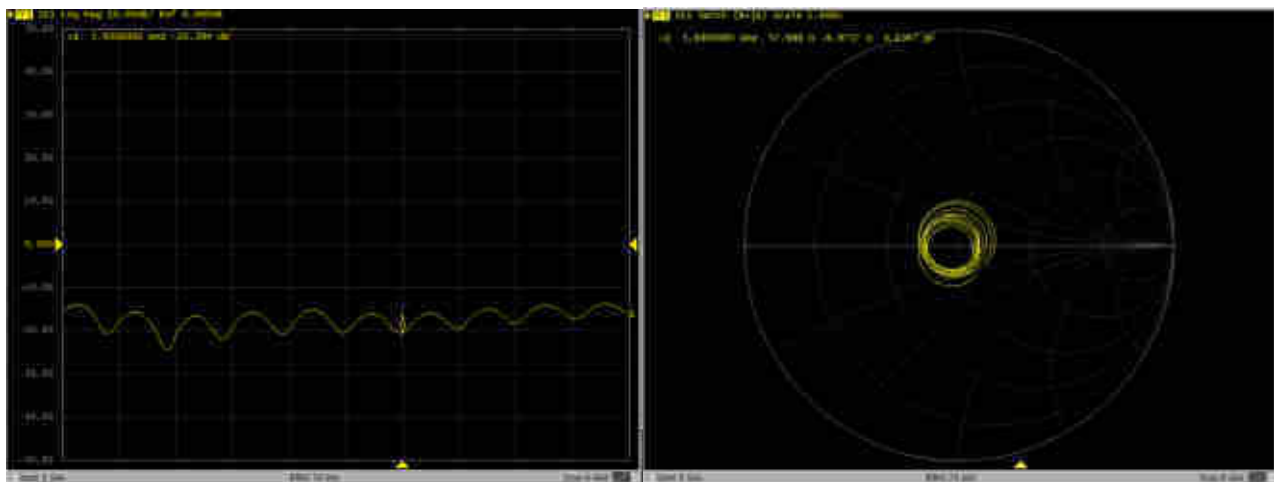
5250MHz – Body



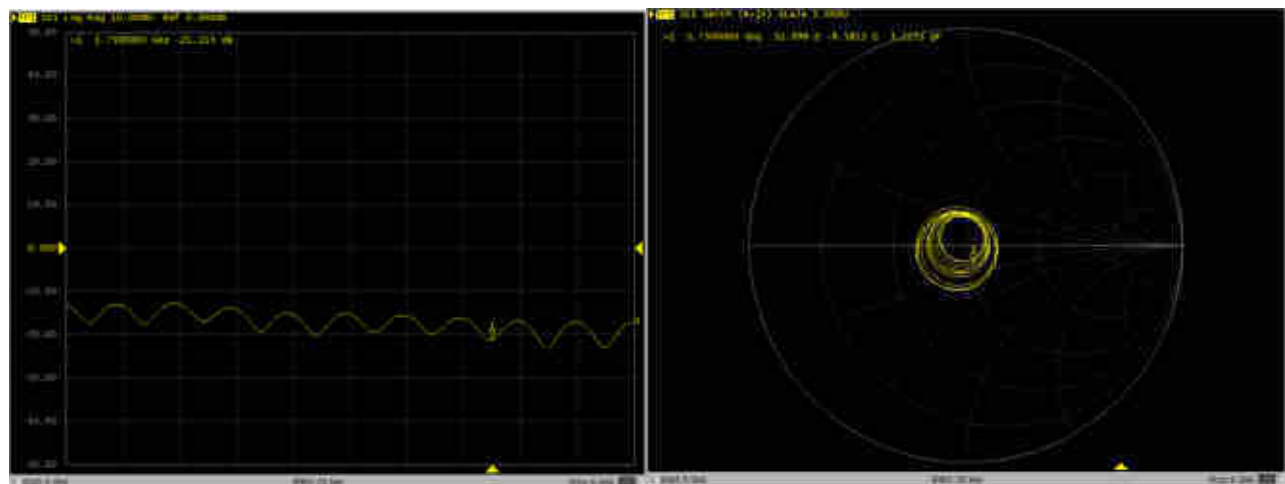
5600MHz – Head



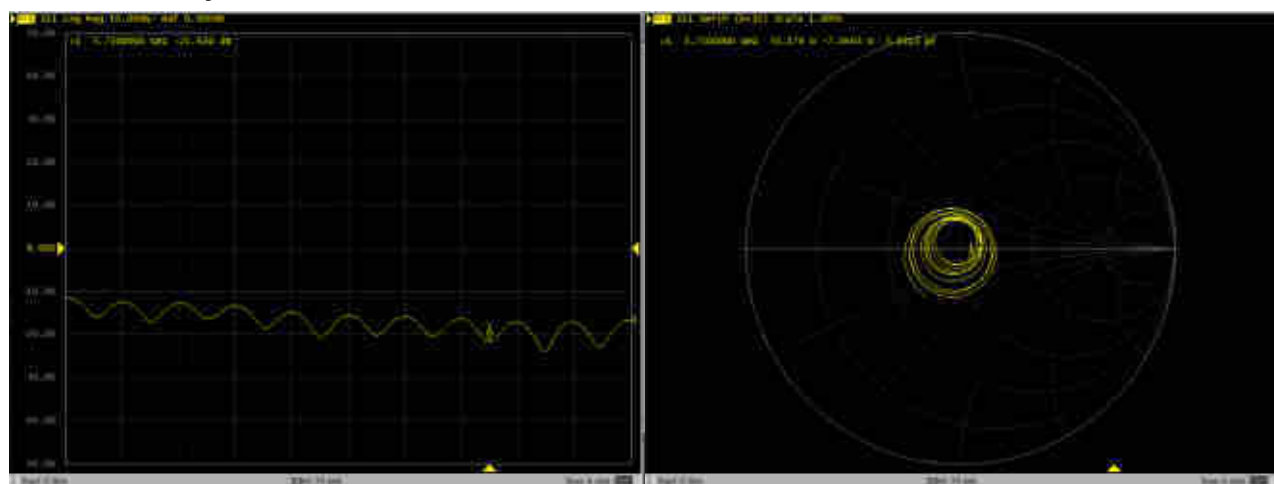
5600MHz – Body



5750MHz – Head



5750MHz – Body





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Accreditation No.: **SCS 0108**

Client **Auden**

Certificate No: **DAE3-528_Mar20**

CALIBRATION CERTIFICATE

Object **DAE3 - SD 000 D03 AA - SN: 528**

Calibration procedure(s) **QA CAL-06.v30**
Calibration procedure for the data acquisition electronics (DAE)

Calibration date: **March 16, 2020**

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

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

Calibration Equipment used (M&TE critical for calibration)

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

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

Issued: March 16, 2020

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Accreditation No.: **SCS 0108**

Glossary

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

Methods Applied and Interpretation of Parameters

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

DC Voltage Measurement

A/D - Converter Resolution nominal

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

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

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

Calibration Factors	X	Y	Z
High Range	404.513 $\pm$ 0.02% (k=2)	404.615 $\pm$ 0.02% (k=2)	404.537 $\pm$ 0.02% (k=2)
Low Range	3.97109 $\pm$ 1.50% (k=2)	3.95930 $\pm$ 1.50% (k=2)	3.96568 $\pm$ 1.50% (k=2)

Connector Angle

Connector Angle to be used in DASY system	50.0 $^{\circ}$ $\pm$ 1 $^{\circ}$
---	------------------------------------

Appendix (Additional assessments outside the scope of SCS0108)

1. DC Voltage Linearity

High Range		Reading (μV)	Difference (μV)	Error (%)
Channel X	+ Input	200037.58	3.28	0.00
Channel X	+ Input	20009.65	3.92	0.02
Channel X	- Input	-20001.89	3.62	-0.02
Channel Y	+ Input	200037.90	3.50	0.00
Channel Y	+ Input	20005.83	0.31	0.00
Channel Y	- Input	-20005.73	-0.03	0.00
Channel Z	+ Input	200033.51	-0.62	-0.00
Channel Z	+ Input	20006.48	0.89	0.00
Channel Z	- Input	-20006.01	-0.27	0.00

Low Range		Reading (μV)	Difference (μV)	Error (%)
Channel X	+ Input	2001.68	0.24	0.01
Channel X	+ Input	201.09	-0.22	-0.11
Channel X	- Input	-198.93	-0.12	0.06
Channel Y	+ Input	2001.70	0.49	0.02
Channel Y	+ Input	200.70	-0.24	-0.12
Channel Y	- Input	-199.76	-0.76	0.38
Channel Z	+ Input	2001.03	-0.04	-0.00
Channel Z	+ Input	201.25	0.40	0.20
Channel Z	- Input	-199.29	-0.32	0.16

2. Common mode sensitivity

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

	Common mode Input Voltage (mV)	High Range Average Reading (μV)	Low Range Average Reading (μV)
Channel X	200	9.59	7.82
	- 200	-7.34	-8.76
Channel Y	200	14.74	14.93
	- 200	-16.81	-17.15
Channel Z	200	-3.39	-3.82
	- 200	3.03	3.16

3. Channel separation

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

	Input Voltage (mV)	Channel X (μV)	Channel Y (μV)	Channel Z (μV)
Channel X	200	-	3.19	-1.66
Channel Y	200	6.79	-	4.73
Channel Z	200	7.16	5.28	-

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	15972	16183
Channel Y	15900	16376
Channel Z	16167	15841

5. Input Offset Measurement

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

Input 10M Ω

	Average (μ V)	min. Offset (μ V)	max. Offset (μ V)	Std. Deviation (μ V)
Channel X	1.19	0.18	2.38	0.46
Channel Y	0.15	-1.39	1.24	0.47
Channel Z	0.36	-1.22	1.42	0.42

6. Input Offset Current

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

7. Input Resistance (Typical values for information)

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

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

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

9. Power Consumption (Typical values for information)

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



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Accreditation No.: **SCS 0108**

Client **Sporton**

Certificate No: **EX3-7576_Jan20**

CALIBRATION CERTIFICATE

Object **EX3DV4 - SN:7576**

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: **January 22, 2020**

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

All calibrations have been conducted in the closed laboratory facility; environment temperature $(22 \pm 3)^\circ\text{C}$ 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	27-Dec-19 (No. DAE4-660_Dec19)	Dec-20
Reference Probe ES3DV2	SN: 3013	31-Dec-19 (No. ES3-3013_Dec19)	Dec-20
Secondary Standards	ID	Check Date (in house)	Scheduled Check
Power meter E4419B	SN: GB41293874	06-Apr-16 (in house check Jun-16)	In house check: Jun-20
Power sensor E4412A	SN: MY41498087	06-Apr-16 (in house check Jun-16)	In house check: Jun-20
Power sensor E4412A	SN: 000110210	06-Apr-16 (in house check Jun-16)	In house check: Jun-20
RF generator HP 8648C	SN: US3642U01700	04-Aug-99 (in house check Jun-16)	In house check: Jun-20
Network Analyzer E8358A	SN: US41080477	31-Mar-14 (in house check Oct-19)	In house check: Oct-20

Calibrated by:	Name Jeton Kasmati	Function Laboratory Technician	Signature
Approved by:	Name Katja Pokovic	Function Technical Manager	Signature
			Issued: January 25, 2020
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Accreditation No.: **SCS 0108**

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Glossary:

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

Calibration is Performed According to the Following Standards:

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

Methods Applied and Interpretation of Parameters:

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

DASY/EASY - Parameters of Probe: EX3DV4 - SN:7576

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu\text{V}/(\text{V}/\text{m})^2$) ^A	0.48	0.63	0.63	$\pm 10.1 \%$
DCP (mV) ^B	103.8	99.8	103.6	

Calibration Results for Modulation Response

UID	Communication System Name		A dB	B dB $\sqrt{\mu\text{V}}$	C	D dB	VR mV	Max dev.	Unc (k=2) ^E
0	CW	X	0.0	0.0	1.0	0.00	164.4	$\pm 2.7 \%$	$\pm 4.7 \%$
		Y	0.0	0.0	1.0		161.8		
		Z	0.0	0.0	1.0		164.7		

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:7576**Other Probe Parameters**

Sensor Arrangement	Triangular
Connector Angle (°)	112.2
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:7576

Calibration Parameter Determined in Head Tissue Simulating Media

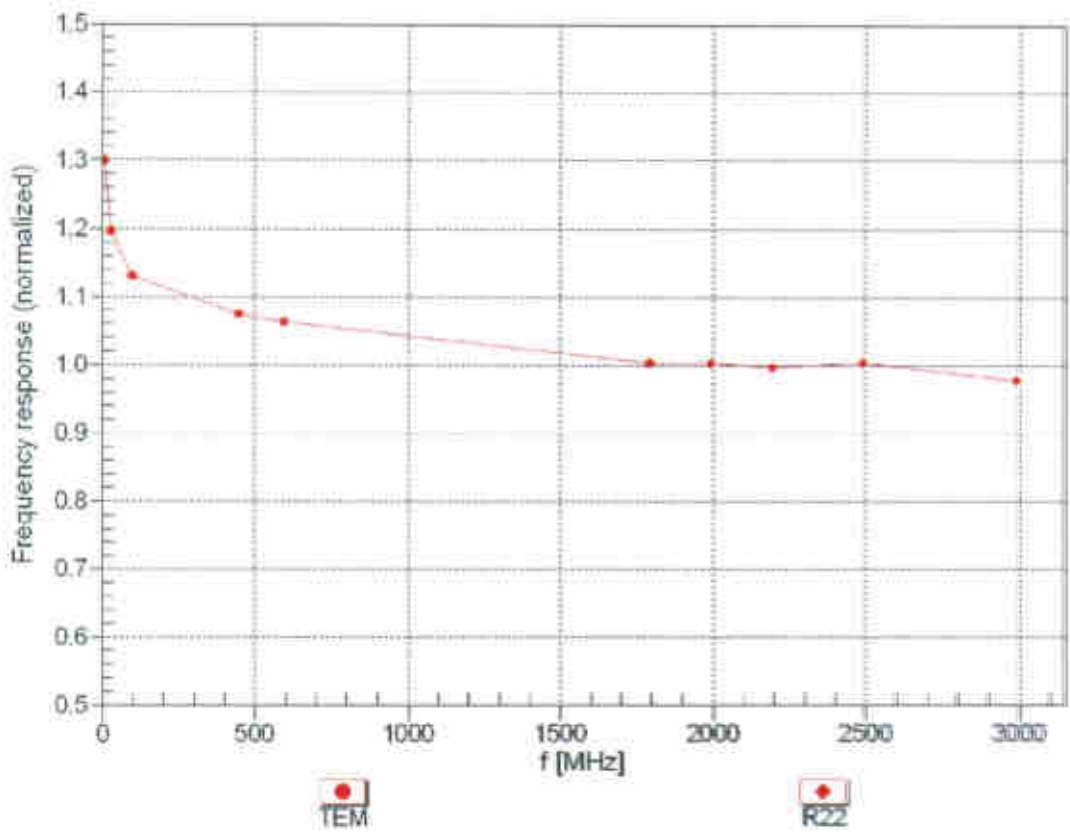
f (MHz) ^c	Relative Permittivity ^f	Conductivity (S/m) ^f	ConvF X	ConvF Y	ConvF Z	Alpha ^o	Depth (mm) ^o	Unc (k=2)
750	41.9	0.89	10.71	10.71	10.71	0.62	0.80	± 12.0 %
835	41.5	0.90	10.45	10.45	10.45	0.46	0.94	± 12.0 %
900	41.5	0.97	10.16	10.16	10.16	0.33	1.09	± 12.0 %
1750	40.1	1.37	8.88	8.88	8.88	0.42	0.86	± 12.0 %
1900	40.0	1.40	8.58	8.58	8.58	0.38	0.86	± 12.0 %
2000	40.0	1.40	8.48	8.48	8.48	0.39	0.86	± 12.0 %
2300	39.5	1.67	8.03	8.03	8.03	0.41	0.90	± 12.0 %
2450	39.2	1.80	7.76	7.76	7.76	0.44	0.90	± 12.0 %
2600	39.0	1.96	7.47	7.47	7.47	0.41	0.96	± 12.0 %
3300	38.2	2.71	7.08	7.08	7.08	0.30	1.35	± 14.0 %
3500	37.9	2.91	6.77	6.77	6.77	0.30	1.35	± 14.0 %
3700	37.7	3.12	6.74	6.74	6.74	0.30	1.35	± 14.0 %
3900	37.5	3.32	6.56	6.56	6.56	0.40	1.40	± 14.0 %
4100	37.2	3.53	6.26	6.26	6.26	0.40	1.40	± 14.0 %
4400	36.9	3.84	6.19	6.19	6.19	0.40	1.60	± 14.0 %
4600	36.7	4.04	6.06	6.06	6.06	0.40	1.60	± 14.0 %
4800	36.4	4.25	5.89	5.89	5.89	0.40	1.80	± 14.0 %
4950	36.3	4.40	5.59	5.59	5.59	0.40	1.80	± 14.0 %
5250	35.9	4.71	5.20	5.20	5.20	0.40	1.80	± 14.0 %
5600	35.5	5.07	4.62	4.62	4.62	0.40	1.80	± 14.0 %
5750	35.4	5.22	4.83	4.83	4.83	0.40	1.80	± 14.0 %

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

^f At frequencies up to 6 GHz, the validity of tissue parameters (ϵ and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

^o 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.

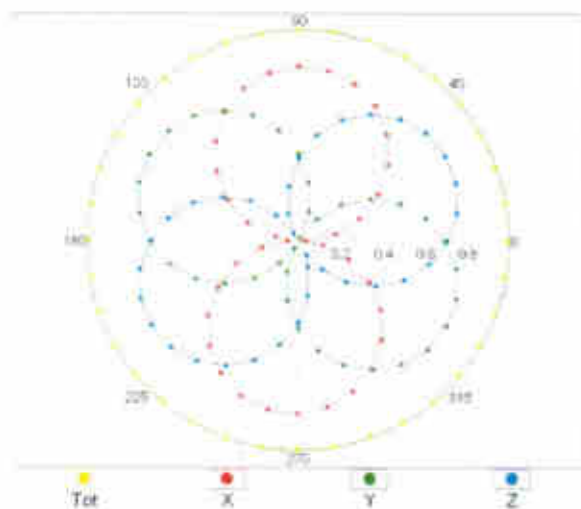
Frequency Response of E-Field
(TEM-Cell:ifi110 EXX, Waveguide: R22)



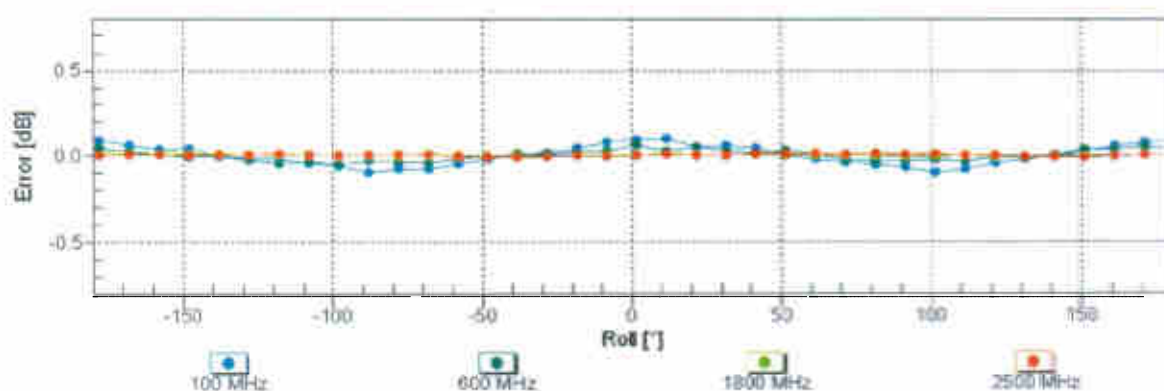
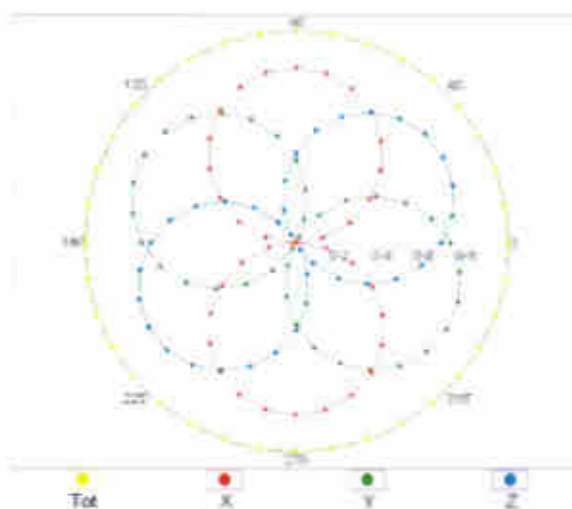
Uncertainty of Frequency Response of E-field: $\pm 6.3\%$ ($k=2$)

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

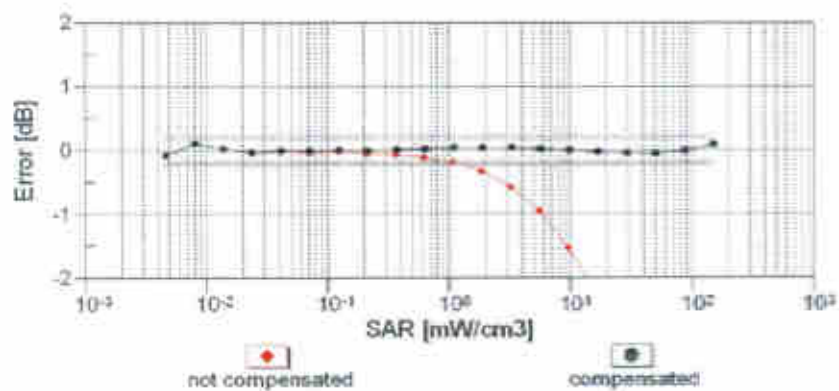
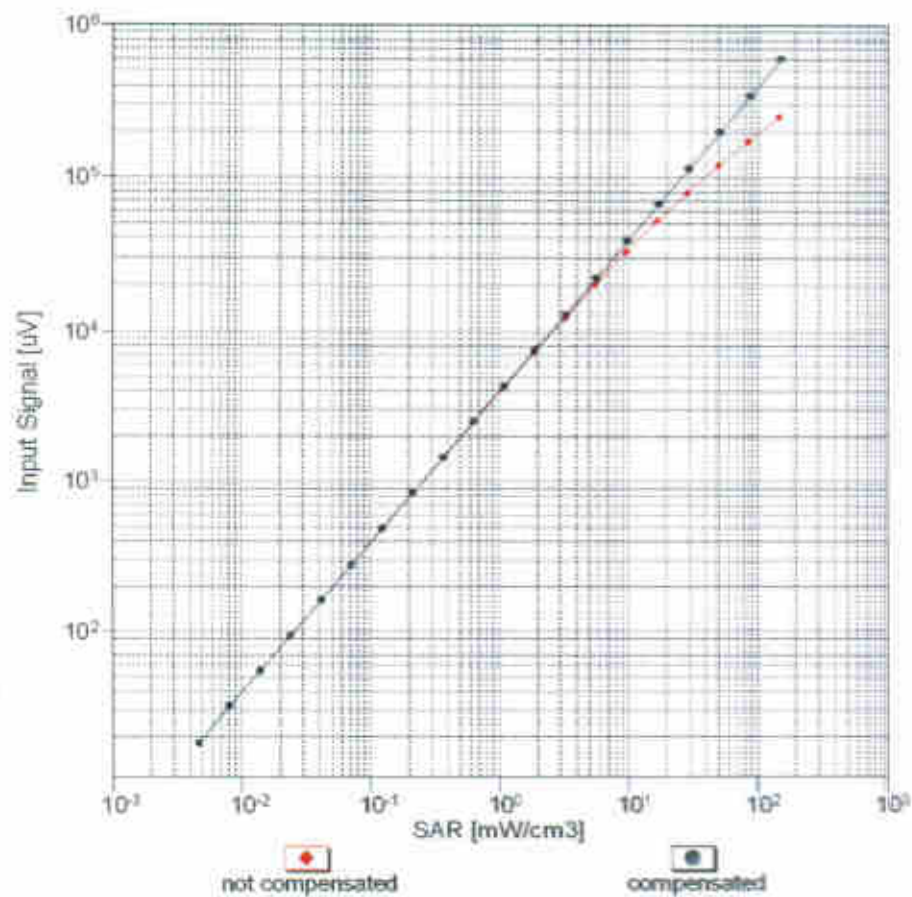
f=600 MHz,TEM



f=1800 MHz,R22

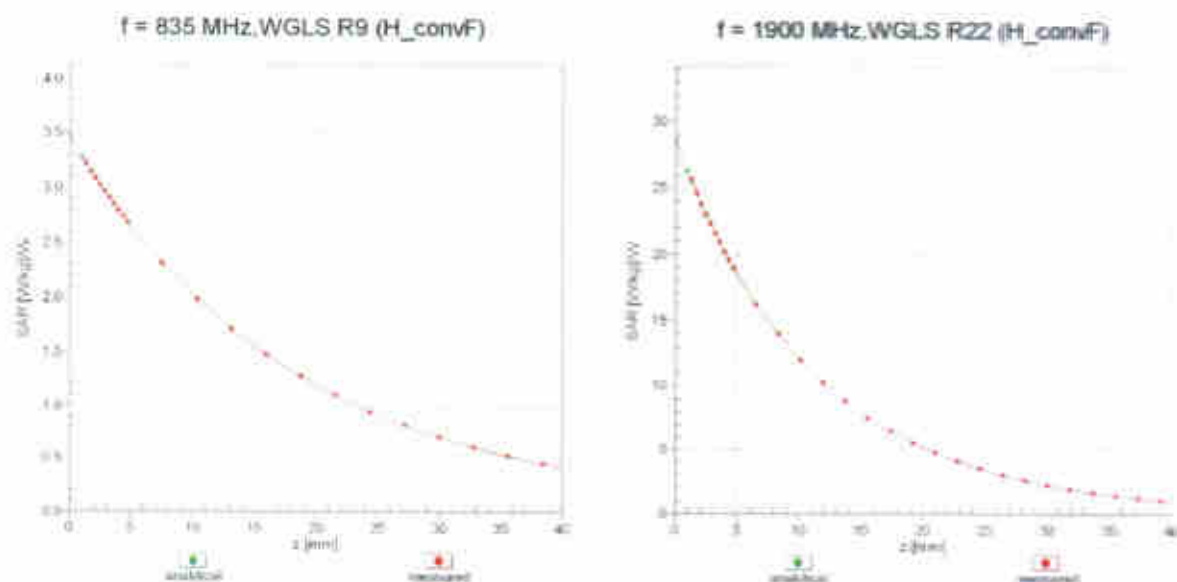
Uncertainty of Axial Isotropy Assessment: $\pm 0.5\%$ ($k=2$)

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



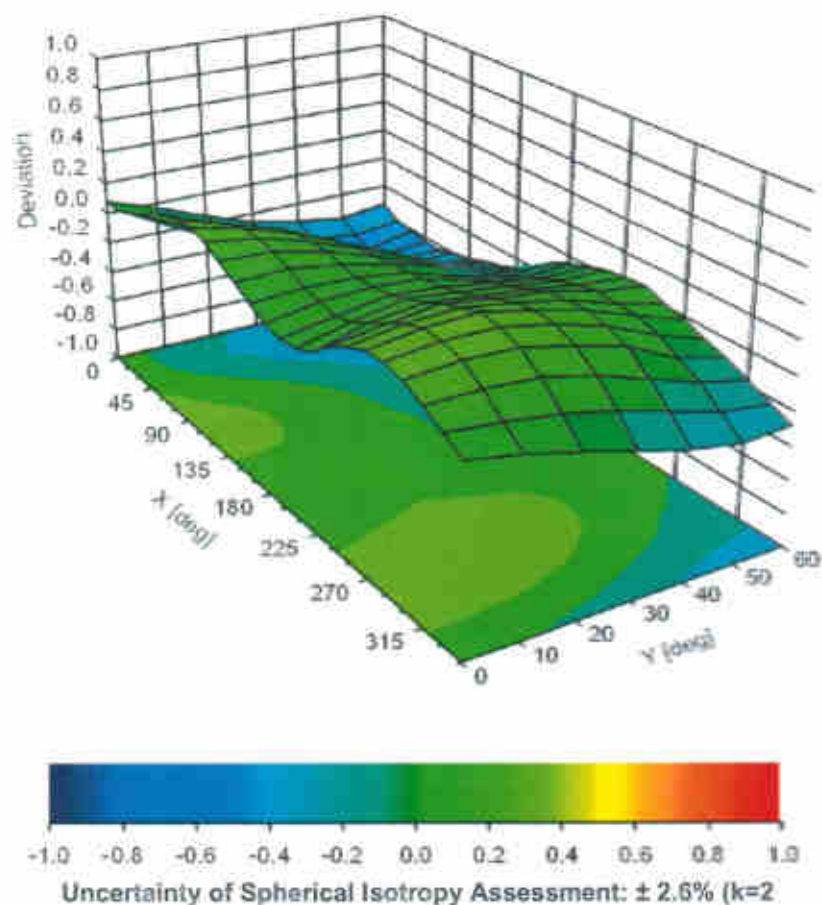
Uncertainty of Linearity Assessment: $\pm 0.6\%$ ($k=2$)

Conversion Factor Assessment



Deviation from Isotropy in Liquid

Error (ϕ, θ), $f = 900 \text{ MHz}$





Appendix E. Conducted RF Output Power Table

The detailed power tables are shown as follows.

Full Power Mode - UAT/LAT

GSM850	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame Average Power (dBm)			Tune-up Limit (dBm)
	178	189	251		178	189	251	
TX Channel	824.2	836.4	848.8		824.2	836.4	848.8	
Frequency (MHz)	824.2	836.4	848.8		824.2	836.4	848.8	
GSM 1 Tx slot	32.06	32.50	32.23	33.30	23.06	23.50	23.23	24.30
GPRS 1 Tx slot	32.04	32.46	32.20	33.30	23.04	23.46	23.20	24.30
GPRS 2 Tx slots	29.80	30.22	30.02	31.30	23.80	24.22	24.02	25.30
GPRS 3 Tx slots	28.23	28.63	28.45	29.80	23.97	24.37	24.19	25.54
GPRS 4 Tx slots	27.33	27.64	27.56	29.30	24.33	24.64	24.56	26.30
EDGE 1 Tx slot	26.65	26.52	26.77	28.30	17.65	17.52	17.77	19.30
EDGE 2 Tx slots	25.45	25.26	25.66	25.80	19.45	19.26	19.66	19.80
EDGE 3 Tx slots	23.25	23.15	23.59	24.30	18.99	18.89	19.33	20.04
EDGE 4 Tx slots	22.20	22.10	22.33	23.80	19.20	19.10	19.33	20.80

GSM1900	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame Average Power (dBm)			Tune-up Limit (dBm)
	512	661	810		512	661	810	
TX Channel	1850.2	1880	1909.8		1850.2	1880	1909.8	
Frequency (MHz)	1850.2	1880	1909.8		1850.2	1880	1909.8	
GSM 1 Tx slot	29.15	29.28	29.26	30.30	20.15	20.28	20.26	21.30
GPRS 1 Tx slot	29.13	29.26	29.23	30.30	20.13	20.26	20.23	21.30
GPRS 2 Tx slots	26.00	26.22	26.19	27.80	20.00	20.22	20.19	21.80
GPRS 3 Tx slots	25.22	25.41	25.39	26.80	20.96	21.15	21.13	22.54
GPRS 4 Tx slots	23.37	23.54	23.53	25.30	20.37	20.54	20.53	22.30
EDGE 1 Tx slot	25.84	25.90	25.72	27.30	16.84	16.90	16.72	18.30
EDGE 2 Tx slots	23.92	24.00	23.89	24.80	17.92	18.00	17.89	18.80
EDGE 3 Tx slots	22.44	22.57	22.32	23.80	18.18	18.31	18.06	19.54
EDGE 4 Tx slots	21.24	21.28	21.12	22.80	18.24	18.28	18.12	19.80

Band		WCDMA II			Tune-up Limit (dBm)	WCDMA IV			Tune-up Limit (dBm)	WCDMA V			Tune-up Limit (dBm)
TX Channel		9262	9400	9538		1312	1413	1513		4132	4182	4233	
Rx Channel		9662	9800	9938		1537	1638	1738		4357	4407	4458	
Frequency (MHz)		1852.4	1880	1907.6		1712.4	1732.6	1752.6		826.4	836.4	846.6	
3GPP Rel 99	AMR 12.2Kbps	23.76	23.69	23.75	24.30	23.52	23.60	23.57	24.30	24.09	24.10	24.14	24.80
3GPP Rel 99	RMC 12.2Kbps	23.79	23.72	23.78	24.30	23.55	23.62	23.60	24.30	24.12	24.14	24.16	24.80
3GPP Rel 6	HSDPA Subtest-1	22.75	22.74	22.77	23.30	22.54	22.62	22.63	23.30	23.17	23.17	23.18	23.80
3GPP Rel 6	HSDPA Subtest-2	22.74	22.72	22.75	23.30	22.51	22.59	22.60	23.30	23.14	23.13	23.21	23.80
3GPP Rel 6	HSDPA Subtest-3	22.26	22.26	22.27	22.80	22.05	22.16	22.12	22.80	22.71	22.67	22.69	23.30
3GPP Rel 6	HSDPA Subtest-4	22.23	22.19	22.24	22.80	22.01	22.10	22.13	22.80	22.71	22.69	22.64	23.30
3GPP Rel 8	DC-HSDPA Subtest-1	22.64	22.68	22.75	23.30	22.49	22.53	22.43	23.30	23.01	23.08	23.10	23.80
3GPP Rel 8	DC-HSDPA Subtest-2	22.61	22.64	22.71	23.30	22.42	22.46	22.38	23.30	23.03	23.01	23.11	23.80
3GPP Rel 8	DC-HSDPA Subtest-3	22.17	22.22	22.31	22.80	21.96	22.02	22.04	22.80	22.53	22.54	22.52	23.30
3GPP Rel 8	DC-HSDPA Subtest-4	22.11	22.21	22.21	22.80	21.93	21.94	21.92	22.80	22.51	22.46	22.55	23.30
3GPP Rel 6	HSUPA Subtest-1	21.20	21.19	21.24	21.80	20.99	21.11	21.13	21.80	21.55	21.60	21.59	22.30
3GPP Rel 6	HSUPA Subtest-2	20.86	20.84	20.75	21.30	20.69	20.75	20.78	21.30	21.06	21.10	21.07	21.80
3GPP Rel 6	HSUPA Subtest-3	21.75	21.71	21.78	22.30	21.56	21.63	21.61	22.30	22.12	22.12	22.11	22.80
3GPP Rel 6	HSUPA Subtest-4	20.22	20.17	20.23	20.80	19.99	20.09	20.06	20.80	20.59	20.59	20.60	21.30
3GPP Rel 6	HSUPA Subtest-5	22.70	22.70	22.80	23.30	22.50	22.60	22.60	23.30	23.10	23.10	23.10	23.80
3GPP Rel 7	HSPA+ (16QAM) Subtest-1	19.79	19.83	19.92	20.30	19.50	19.63	19.71	20.30	19.97	19.92	19.99	20.80

Band 2 (1900MHz Band)									
Part 24E									
BW (MHz)	Modulation	RB Size	RB Offset	Low Ch. F. (MHz)	Power High Ch. F. (MHz)	Power High Ch. F. (MHz)	Turn-up time (dBm)	MPR (dB)	
Channel									
Frequency (MHz)									
20	QPSK	1	0	22.90	22.98	22.88			
20	QPSK	1	49	23.00	23.08	22.98		24.3	0
20	QPSK	1	99	22.95	22.85	22.75			
20	QPSK	50	0	21.50	21.55	21.50			
20	QPSK	50	24	22.00	22.05	22.02		23.3	1
20	QPSK	50	50	21.97	21.95	22.24			
20	QPSK	100	0	21.98	21.98	22.24			
20	QPSK	1	24	22.24	22.27	22.10			
20	HQAM	1	49	22.22	22.25	22.26		23.3	1
20	HQAM	1	99	22.02	21.99	22.11			
20	HQAM	50	0	21.52	21.55	21.53			
20	HQAM	50	24	21.11	21.10	21.17		22.3	2
20	HQAM	50	50	21.13	21.04	21.30			
20	HQAM	100	0	21.11	21.02	21.30			
20	HQAM	1	24	21.52	21.55	21.51			
20	HQAM	1	49	21.18	21.17	21.23		22.3	2
20	HQAM	1	99	21.09	21.12	21.10			
20	HQAM	50	0	20.18	20.07	20.37			
20	HQAM	50	24	20.12	20.13	20.18		21.3	3
20	HQAM	50	50	20.14	20.07	20.39			
20	HQAM	100	0	20.17	20.02	20.38			
Channel									
Frequency (MHz)									
15	QPSK	1	0	22.69	22.69	22.69			
15	QPSK	1	37	22.65	22.64	22.82		24.3	0
15	QPSK	1	74	22.63	22.64	22.84			
15	QPSK	36	0	21.91	21.87	21.90			
15	QPSK	36	20	21.90	21.95	21.93		23.3	1
15	QPSK	36	36	21.86	21.87	22.01			
15	QPSK	75	0	21.80	21.82	21.92			
15	HQAM	1	0	22.15	22.25	22.12			
15	HQAM	1	37	22.20	22.25	22.18		23.3	1
15	HQAM	1	74	22.04	22.05	22.08			
15	HQAM	36	0	21.11	21.09	21.07			
15	HQAM	36	20	21.07	21.11	21.10		22.3	2
15	HQAM	36	36	21.08	21.08	21.17			
15	HQAM	75	0	21.08	21.04	21.16			
15	HQAM	1	0	21.20	21.20	21.17			
15	HQAM	1	37	21.31	21.24	21.33		22.3	2
15	HQAM	1	74	21.07	21.11	21.12			
15	HQAM	36	0	20.08	20.04	20.08			
15	HQAM	36	20	20.07	20.09	20.08		21.3	3
15	HQAM	36	36	20.06	20.01	20.10			
15	HQAM	75	0	20.02	20.05	20.05			
Channel									
Frequency (MHz)									
10	QPSK	1	0	18.65	18.65	18.65			
10	QPSK	1	25	18.62	18.65	18.64		24.3	0
10	QPSK	1	49	18.66	18.66	18.66			
10	QPSK	25	0	22.05	22.06	22.05			
10	QPSK	25	0	22.05	22.06	22.05		23.3	1
10	HQAM	1	0	22.31	22.34	22.23			
10	HQAM	1	25	22.38	22.35	22.38		23.3	1
10	HQAM	1	49	22.25	22.18	22.19			
10	HQAM	25	0	21.21	21.18	21.14			
10	HQAM	25	12	21.21	21.17	21.19		22.3	2
10	HQAM	25	24	21.17	21.17	21.28			
10	HQAM	50	0	21.24	21.19	21.22			
10	HQAM	50	1	21.21	21.17	21.25		22.3	2
10	HQAM	1	25	21.34	21.34	21.24			
10	HQAM	1	49	21.25	21.21	21.24			
10	HQAM	25	0	20.24	20.20	20.21			
10	HQAM	25	12	20.26	20.22	20.23		21.3	3
10	HQAM	25	24	20.31	20.28	20.40			
10	HQAM	50	0	20.26	20.26	20.36			
Channel									
Frequency (MHz)									
5	QPSK	1	0	22.90	22.99	22.88			
5	QPSK	1	12	23.02	22.97	22.95		24.3	0
5	QPSK	1	24	22.99	22.94	22.95			
5	QPSK	12	0	21.97	21.92	21.96			
5	QPSK	12	7	21.94	21.92	21.93		23.3	1
5	QPSK	12	13	21.94	21.92	21.84			
5	QPSK	25	0	21.97	21.96	21.87			
5	HQAM	1	12	22.21	22.25	22.21		23.3	1
5	HQAM	1	12	22.21	22.25	22.12			
5	HQAM	1	24	22.18	22.15	22.08			
5	HQAM	12	0	21.10	21.08	22.06			
5	HQAM	12	7	21.09	21.05	21.05		22.3	2
5	HQAM	12	13	21.07	21.07	21.03			
5	HQAM	25	0	21.12	21.11	21.03			
5	HQAM	25	7	21.38	21.34	21.36		22.3	2
5	HQAM	1	12	21.35	21.38	21.30			
5	HQAM	1	24	21.34	21.28	21.29		22.3	2
5	HQAM	12	0	21.08	21.03	20.98			
5	HQAM	12	7	21.05	21.01	21.00		21.3	3
5	HQAM	12	13	21.08	21.02	20.98			
5	HQAM	25	0	21.05	21.05	20.99			
Channel									
Frequency (MHz)									
3	QPSK	1	0	22.94	22.92	22.94			
3	QPSK	1	8	22.88	22.91	22.81		24.3	0
3	QPSK	1	14	22.97	22.90	22.90			
3	QPSK	8	0	22.06	21.94	21.92			
3	QPSK	8	4	21.93	21.90	21.87		23.3	1
3	QPSK	8	7	21.92	21.89	22.02			
3	QPSK	15	0	21.94	21.89	21.88			
3	HQAM	1	0	22.20	22.25	22.10			
3	HQAM	1	8	22.09	22.20	22.18		23.3	1
3	HQAM	1	14	22.29	22.18	22.28			
3	HQAM	8	0	21.13	21.15	21.10			
3	HQAM	8	4	21.18	21.11	21.10		22.3	2
3	HQAM	8	7	21.15	21.10	21.05			
3	HQAM	15	0	21.11	21.10	21.10			
3	HQAM	1	0	21.20	21.26	21.27			
3	HQAM	1	8	21.22	21.25	21.30		22.3	2
3	HQAM	1	14	21.31	21.32	21.36			
3	HQAM	8	0	20.15	20.14	20.11			
3	HQAM	8	4	20.15	20.11	20.10		21.3	3
3	HQAM	8	7	20.12	20.10	20.10			
3	HQAM	15	0	20.11	20.11	20.10			
Channel									
Frequency (MHz)									
1.4	QPSK	1	0	22.86	22.94	22.86			
1.4	QPSK	1	14	22.97	22.95	22.98			
1.4	QPSK	1	5	22.95	22.89	22.98		24.3	0
1.4	QPSK	3	0	22.98	22.94	22.91			
1.4	QPSK	3	1	22.90	22.87	22.82			
1.4	QPSK	3	2	22.90	22.91	22.90			
1.4	QPSK	6	0	21.87	21.84	21.99		23.3	1
1.4	HQAM	1	0	22.20	22.21	22.13			
1.4	HQAM	1	2	22.21	22.14	22.16			
1.4	HQAM	1	5	22.22	22.14	22.08		23.3	1
1.4	HQAM	3	0	21.96	21.84	21.87			
1.4	HQAM	3	1	21.98	21.84	21.87			
1.4	HQAM	3	2	21.92	21.95	21.88			
1.4	HQAM	6	0	21.10	21.16	21.10		22.3	2
1.4	HQAM	1	0	21.32	21.26	21.19			
1.4	HQAM	1	2	21.36	21.29	21.16			
1.4	HQAM	1	5	21.29	21.20	21.10		22.3	2
1.4	HQAM	3	0	21.26	21.27	21.13			
1.4	HQAM	3	1	21.27	21.26	21.10			
1.4	HQAM	3	2	21.27	21.21	21.14			
1.4	HQAM	6	0	20.10	20.30	19.90		21.3	3

Band 4 (AWS Band)									
Part 27L (only on channel required)									
BW (MHz)	Modulation	RB Size	RB Offset	Low Power (MHz)	High Power (MHz)	High Power (MHz)	Turn-up time (dBm)	MPR (dB)	
Channel									
Frequency (MHz)									
20	QPSK	1	0	23.43	23.48	23.51			
20	QPSK	1	49	23.52	23.55	23.57	24.3	0	
20	QPSK	1	99	23.53	23.59	23.58			
20	QPSK	50	0	21.50	21.51	21.54			
20	QPSK	50	24	22.02	22.10	22.10		23.3	1
20	QPSK	50	50	22.05	22.17	22.07			
20	QPSK	100	0	22.05	22.07	22.09			
20	HQAM	1	5	22.32	22.47	22.49			
20	HQAM	1	49	22.42	22.49	22.45	23.3	1	
20	HQAM	1	99	22.52	22.53	22.54			
20	HQAM	50	0	21.53	21.47	21.50			
20	HQAM	50	24	21.41	21.51	21.51		22.3	2
20	HQAM	50	50	21.41	21.55	21.49			
20	HQAM	100	0	21.42	21.49	21.49			
Channel									
Frequency (MHz)									
15	QPSK	1	0	23.53	23.55	23.53			
15	QPSK	1	37	23.52	23.52	23.52	24.3	0	
15	QPSK	1	74	23.53	23.47	23.48			
15	QPSK	50	0	21.53	21.52	21.52			
15	QPSK	50	20	22.08	22.16	22.21		23.3	1
15	QPSK	50	36	22.04	22.19	22.14			
15	QPSK	75	0	22.09	22.19	22.24			
15	HQAM	1	5	22.37	22.44	22.48			
15	HQAM	1	37	22.34	22.45	22.47	23.3	1	
15	HQAM	1	74	22.34	22.32	22.36			
15	HQAM	50	0	21.54	21.52	21.52			
15	HQAM	50	20	21.40	21.49	21.52		23.3	2
15	HQAM	50	36	21.33	21.52	21.45			
15	HQAM	75	0	21.37	21.47	21.50			
15	HQAM	75	0	21.46	21.52	21.51			
15	HQAM	1	37	21.04	21.80	21.65	22.3	2	
15	HQAM	1	74	21.48	21.54	21.63			
15	HQAM	50	0	20.49	20.89	20.68			
15	HQAM	50	20	20.52	20.88	20.68		21.3	3
15	HQAM	50	36	20.52	20.71	20.62			
15	HQAM	75	0	20.52	20.65	20.67			
Channel									
Frequency (MHz)									
10	QPSK	1	0	23.47	23.51	23.52			
10	QPSK	1	25	23.51	23.50	23.52	24.3	0	
10	QPSK	1	49	23.48	23.52	23.52			
10	QPSK	25	0	22.03	22.03	22.03		23.3	1
10	QPSK	25	12	22.08	22.20	22.21			
10	QPSK	25	25	22.13	22.23	22.20			
10	QPSK	50	0	22.25	22.25	22.25			
10	HQAM	1	0	22.36	22.51	22.51			
10	HQAM	1	25	22.33	22.52	22.51			
10	HQAM	1	49	22.34	22.42	22.29			
10	HQAM	25	0	21.33	21.45	21.45		23.3	2
10	HQAM	25	12	21.40	21.50	21.50			
10	HQAM	25	25	21.44	21.52	21.49			
10	HQAM	50	0	21.54	21.53	21.52			
10	HQAM	50	0	21.63	21.65	21.61		23.3	2
10	HQAM	1	49	21.40	21.59	21.60			
10	HQAM	1	25	20.48	20.68	20.68			
10	HQAM	25	12	20.54	20.65	20.67		21.3	3
10	HQAM	25	25	20.52	20.67	20.68			
10	HQAM	50	0	20.56	20.68	20.68			
Channel									
Frequency (MHz)									
5	QPSK	1	0	23.42	23.52	23.52			
5	QPSK	1	12	23.48	23.48	23.54	24.3	0	
5	QPSK	1	24	23.40	23.48	23.54			
5	QPSK	12	0	22.05	22.26	22.22			
5	QPSK	12	7	22.08	22.21	22.20		23.3	1
5	QPSK	12	19	22.08	22.21	22.21			
5	HQAM	1	0	22.27	22.48	22.48			
5	HQAM	1	12	22.27	22.48	22.37		23.3	1
5	HQAM	1	24	22.24	22.42	22.42			
5	HQAM	12	0	21.34	21.54	21.47			
5	HQAM	12	7	21.35	21.47	21.47		22.3	2
5	HQAM	12	19	21.35	21.50	21.42			
5	HQAM	25	0	20.48	20.68	20.68			
5	HQAM	1	0	21.01	21.65	21.58			
5	HQAM	1	12	21.42	21.66	21.65		23.3	2
5	HQAM	1	24	21.40	21.69	21.66			
5	HQAM	12	0	20.52	20.71	20.67		21.3	3
5	HQAM	12	13	20.53	20.70	20.65			
5	HQAM	25	0	20.52	20.68	20.68			
Channel									
Frequency (MHz)									
3	QPSK	1	0	23.48	23.52	23.49			
3	QPSK	1	8	23.51	23.53	23.53	24.3	0	
3	QPSK	1	14	23.53	23.54	23.49			
3	QPSK	8	0	22.06	22.22	22.18			
3	QPSK	8	4	22.05	22.18	22.14		23.3	1
3	QPSK	8	7	22.05	22.18	22.14			
3	QPSK	15	0	22.06	22.19	22.16			
3	HQAM	1	0	22.39	22.48	22.39			
3	HQAM	1	8	22.34	22.44	22.37		23.3	1
3	HQAM	1	14	22.39	22.47	22.33			
3	HQAM	8	0	21.39	21.57	21.53			
3	HQAM	8	4	21.39	21.52	21.52		22.3	2
3	HQAM	8	7	21.41	21.53	21.52			
3	HQAM	15	0	21.38	21.49	21.49			
3	HQAM	1	0	21.07	21.72	21.61			
3	HQAM	1	8	21.40	21.67	21.56		22.3	2
3	HQAM	1	14	21.48	21.62	21.52			
3	HQAM	8	0	20.55	20.74	20.67			
3	HQAM	8	4	20.52	20.70	20.68		21.3	3
3	HQAM	8	7	20.55	20.70	20.65			
3	HQAM	15	0	20.52	20.68	20.67			
Channel									
Frequency (MHz)									
1.4	QPSK	1	0	23.46	23.54	23.47			
1.4	QPSK	1	8	23.49	23.53	23.53	24.3	0	
1.4	QPSK	1	5	23.46	23.54	23.48			
1.4	QPSK	1	23	23.51	23.52	23.54			
1.4	QPSK	8	0	22.06	22.16	22.16		23.3	1
1.4	QPSK	8	3	22.09	22.24	22.19			
1.4	HQAM	1	0	22.35	22.48	22.44			
1.4	HQAM	1	8	22.35	22.48	22.39		23.3	1
1.4	HQAM	1	5	22.36	22.46	22.53			
1.4	HQAM	8	0	22.02	22.28	22.20		22.3	1
1.4	HQAM	8	3	21.43	21.59	21.60		22.3	2
1.4	HQAM	8	0	21.63	21.61	21.61			
1.4	HQAM	1	23	21.55	21.66	21.62			
1.4	HQAM	5	0	21.06	21.84	21.58		21.3	2
1.4	HQAM	5	0	21.09	21.87	21.59			
1.4	HQAM	1	23	21.62	21.60	21.54			
1.4	HQAM	1	24	21.44	21.58	21.57			
1.4	HQAM	8	0	20.55	20.64	20.62		21.3	3

Band 12 (700MHz Low Band) Part 27F(only on channel required)									
BW (MHz)	Modulation	RB Size	RB Offset	Power Low Ch / Freq. 23000	Power Mid Ch / Freq. 23065	Power High Ch / Freq. 23130	Turn-up (m)	MPR (dB)	
Channel									
10	QPSK	1	0	23.70	23.68	23.66			
10	QPSK	1	26	23.72	23.74	23.73		24.3	0
10	QPSK	1	46	23.72	23.72	23.71			
10	QPSK	25	0	23.65	23.67	23.68			
10	QPSK	25	12	22.38	22.40	22.34		23.3	1
10	QPSK	25	25	22.37	22.35	22.29			
10	QPSK	50	0	22.57	22.56	22.51			
10	QPSK	50	6	22.55	22.61	22.59			
10	HQAM	1	26	22.51	22.67	22.66		23.3	1
10	HQAM	1	46	22.68	22.66	22.69			
10	HQAM	25	0	21.63	21.62	21.61			
10	HQAM	25	12	21.63	21.66	21.64		22.3	2
10	HQAM	25	25	21.64	21.69	21.63			
10	HQAM	50	0	21.64	21.62	21.66			
10	HQAM	50	6	21.77	21.71	21.77			
10	SAGAM	1	26	21.72	21.86	21.79		22.3	2
10	SAGAM	1	46	21.79	21.78	21.83			
10	SAGAM	25	0	20.67	20.67	20.68			
10	SAGAM	25	12	20.59	20.64	20.62		21.3	3
10	SAGAM	25	25	20.65	20.69	20.58			
10	SAGAM	50	0	20.65	20.64	20.59			
Channel									
Frequency (MHz)				701.5	707.5	713.5	Turn-up (m)	MPR (dB)	
5	QPSK	1	0	23.68	23.62	23.64			
5	QPSK	1	12	23.69	23.69	23.70		24.3	0
5	QPSK	1	24	23.65	23.68	23.70			
5	QPSK	12	0	22.37	22.35	22.38			
5	QPSK	12	7	22.38	22.37	22.33		23.3	1
5	QPSK	12	15	22.34	22.39	22.26			
5	QPSK	25	0	22.40	22.37	22.36			
5	HQAM	1	0	22.58	22.61	22.67		23.3	1
5	HQAM	1	12	22.61	22.70	22.63			
5	HQAM	12	0	21.66	21.65	21.66			
5	HQAM	12	7	21.61	21.67	21.63		22.3	2
5	HQAM	12	15	21.64	21.67	21.52			
5	HQAM	25	0	21.71	21.83	21.61			
5	SAGAM	1	0	21.77	21.78	21.78			
5	SAGAM	1	12	21.85	21.80	21.83		22.3	2
5	SAGAM	1	24	21.82	21.81	21.84			
5	SAGAM	12	0	20.65	20.66	20.68			
5	SAGAM	12	7	20.66	20.65	20.64		21.3	3
5	SAGAM	12	15	20.68	20.70	20.52			
5	SAGAM	25	0	20.63	20.64	20.66			
Channel									
Frequency (MHz)				706.5	707.5	714.5	Turn-up (m)	MPR (dB)	
3	QPSK	1	0	23.64	23.67	23.62			
3	QPSK	1	8	23.60	23.63	23.63		24.3	0
3	QPSK	1	14	23.65	23.66	23.65			
3	QPSK	8	0	22.29	22.29	22.33			
3	QPSK	8	4	22.26	22.24	22.29		23.3	1
3	QPSK	8	24	22.27	22.31	22.32			
3	QPSK	16	0	22.26	22.26	22.31			
3	HQAM	1	0	22.61	22.64	22.55		23.3	1
3	HQAM	1	8	22.60	22.63	22.60			
3	HQAM	1	14	22.58	22.68	22.55			
3	HQAM	8	0	21.69	21.68	21.69			
3	HQAM	8	4	21.69	21.71	21.71		22.3	2
3	HQAM	8	24	21.65	21.67	21.71			
3	HQAM	16	0	21.61	21.65	21.63			
3	SAGAM	1	0	21.73	21.63	21.75		22.3	2
3	SAGAM	1	8	21.73	21.60	21.61			
3	SAGAM	1	14	21.77	21.77	21.79			
3	SAGAM	8	0	20.62	20.65	20.67			
3	SAGAM	8	4	20.63	20.65	20.68		21.3	3
3	SAGAM	8	24	20.59	20.69	20.59			
3	SAGAM	16	0	20.57	20.59	20.62			
Channel									
Frequency (MHz)				23017	23065	23173	Turn-up (m)	MPR (dB)	
1.4	QPSK	1	0	23.63	23.63	23.64			
1.4	QPSK	1	3	23.67	23.67	23.63			
1.4	QPSK	1	5	23.65	23.65	23.67		24.3	0
1.4	QPSK	3	0	23.63	23.68	23.68			
1.4	QPSK	3	1	23.63	23.67	23.68			
1.4	QPSK	3	3	23.66	23.64	23.66			
1.4	QPSK	0	0	22.31	22.33	22.31		23.3	1
1.4	HQAM	1	0	22.53	22.64	22.63			
1.4	HQAM	1	3	22.62	22.63	22.61			
1.4	HQAM	1	5	22.55	22.64	22.62		23.3	1
1.4	HQAM	3	0	22.33	22.35	22.36			
1.4	HQAM	3	1	22.33	22.38	22.33			
1.4	HQAM	3	3	22.26	22.33	22.30			
1.4	HQAM	6	0	21.71	21.75	21.79		22.3	2
1.4	HQAM	1	0	21.76	21.78	21.78			
1.4	SAGAM	1	3	21.70	21.61	21.78			
1.4	SAGAM	1	5	21.76	21.62	21.79		22.3	2
1.4	SAGAM	3	0	21.76	21.78	21.71			
1.4	SAGAM	3	1	21.73	21.79	21.76			
1.4	SAGAM	3	3	21.72	21.67	21.74			
1.4	SAGAM	6	0	20.55	20.57	20.58		21.3	3

Band 17 (700MHz Band) Part 27H(only on channel required)									
BW (MHz)	Modulation	RB Size	RB Offset	Power Low Ch / Freq. 23170	Power Mid Ch / Freq. 23190	Power High Ch / Freq. 23205	Turn-up (m)	MPR (dB)	
Channel									
10	QPSK	1	0	23.61	23.62	23.65			
10	QPSK	1	26	23.70	23.71	23.68		24.3	0
10	QPSK	1	46	23.70	23.70	23.67			
10	QPSK	25	0	23.56	23.56	23.56			
10	QPSK	25	12	22.29	22.30	22.30		23.3	1
10	QPSK	25	25	22.35	22.30	22.25			
10	QPSK	50	0	22.39	22.40	22.34			
10	QPSK	50	6	22.53	22.57	22.43			
10	HQAM	1	26	22.61	22.62	22.66		23.3	1
10	HQAM	1	46	22.62	22.65	22.59			
10	HQAM	25	0	21.50	21.50	21.50			
10	HQAM	25	12	21.60	21.57	21.58		22.3	2
10	HQAM	25	25	21.63	21.62	21.59			
10	HQAM	50	0	21.60	21.56	21.60			
10	SAGAM	1	0	21.61	21.71	21.62			
10	SAGAM	1	26	21.74	21.66	21.70		22.3	2
10	SAGAM	1	46	21.82	21.73	21.81			
10	SAGAM	25	0	20.55	20.55	20.51			
10	SAGAM	25	12	20.53	20.55	20.58		21.3	3
10	SAGAM	25	25	20.61	20.61	20.55			
10	SAGAM	50	0	20.59	20.57	20.57			
Channel									
Frequency (MHz)				706.5	710	713.5	Turn-up (m)	MPR (dB)	
5	QPSK	1	0	23.62	23.63	23.59			
5	QPSK	1	12	23.59	23.63	23.63		24.3	0
5	QPSK	1	24	23.66	23.62	23.65			
5	QPSK	12	0	22.31	22.32	22.36			
5	QPSK	12	7	22.25	22.24	22.28		23.3	1
5	QPSK	12	15	22.27	22.25	22.21			
5	QPSK	25	0	22.27	22.26	22.28			
5	HQAM	1	0	22.51	22.62	22.54			
5	HQAM	1	12	22.54	22.55	22.55		23.3	1
5	HQAM	12	0	21.50	21.50	21.50			
5	HQAM	12	7	21.58	21.53	21.58			
5	HQAM	12	15	21.53	21.54	21.58		22.3	2
5	HQAM	25	0	21.58	21.56	21.59			
5	SAGAM	1	0	21.74	21.77	21.68			
5	SAGAM	1	12	21.73	21.78	21.75		22.3	2
5	SAGAM	1	24	21.78	21.71	21.80			
5	SAGAM	12	0	20.58	20.52	20.58			
5	SAGAM	12	7	20.55	20.54	20.59		21.3	3
5	SAGAM	12	15	20.56	20.56	20.51			
5	SAGAM	25	0	20.54	20.55	20.57			

Band 26 for FCC (only on channel required)									
BW (MHz)	Modulation	RB Size	RB Offset	Low Power Ch / Freq.	Mid Power Ch / Freq.	High Power Ch / Freq.	Turn-up (m)	MPR (dB)	
Channel									
Frequency (MHz)									
15	QPSK	1	0	23.53	23.51	23.51			
15	QPSK	1	37	23.40	23.42	23.42	24.3	0	
15	QPSK	1	74	23.30	23.36	23.35			
15	QPSK	30	0	22.09	22.15	22.12			
15	QPSK	30	20	22.10	22.12	22.13		23.3	1
15	QPSK	30	36	22.05	22.12	22.08			
15	QPSK	75	0	22.14	22.15	22.14			
15	HQAM	1	37	22.28	22.31	22.30		23.3	1
15	HQAM	1	74	22.38	22.32	22.37			
15	HQAM	1	74	22.25	22.28	22.26			
15	HQAM	30	0	21.44	21.50	21.50			
15	HQAM	30	20	21.40	21.39	21.38		22.3	2
15	HQAM	30	36	21.41	21.30	21.37			
15	HQAM	75	0	21.41	21.50	21.40			
15	SAGAM	1	0	21.46	21.42	21.51			
15	SAGAM	1	37	21.57	21.59	21.60		22.3	2
15	SAGAM	1	74	21.47	21.41	21.45			
15	SAGAM	30	0	20.43	20.51	20.57			
15	SAGAM	30	20	20.39	20.46	20.43		21.3	3
15	SAGAM	30	36	20.40	20.57	20.54			
15	SAGAM	75	0	20.37	20.29	20.38			
Channel									
				20.60	20.65	20.65	Turn-up (m)	MPR (dB)	
Frequency (MHz)				83.5	83.5	84.1			
10	QPSK	1	0	23.34	23.30	23.37			
10	QPSK	1	28	23.44	23.46	23.42		24.3	0
10	QPSK	1	49	23.40	23.46	23.46			
10	QPSK	25	0	22.18	22.20	22.27			
10	QPSK	25	12	22.12	22.12	22.10		23.3	1
10	QPSK	25	25	22.12	22.03	22.09			
10	QPSK	25	37	22.21	22.15	22.15			
10	HQAM	1	0	22.30	22.29	22.25			
10	HQAM	1	28	22.39	22.38	22.42		23.3	1
10	HQAM	1	49	22.39	22.32	22.30			
10	HQAM	25	0	21.50	21.49	21.49			
10	HQAM	25	12	21.44	21.41	21.43		22.3	2
10	HQAM	25	25	21.44	21.34	21.41			
10	HQAM	25	37	21.50	21.47	21.47			
10	SAGAM	1	0	21.50	21.47	21.54			
10	SAGAM	1	28	21.56	21.57	21.58		22.3	2
10	SAGAM	1	49	21.56	21.50	21.47			
10	SAGAM	25	0	20.45	20.39	20.41			
10	SAGAM	25	12	20.38	20.41	20.43		21.3	3
10	SAGAM	25	25	20.41	20.32	20.37			
10	SAGAM	50	0	20.47	20.47	20.48			
Channel									
				20.15	20.65	27.05	Turn-up (m)	MPR (dB)	
Frequency (MHz)				58.5	63.5	64.5			
5	QPSK	1	0	23.42	23.41	23.42			
5	QPSK	1	12	23.46	23.42	23.42		24.3	0
5	QPSK	1	24	23.47	23.46	23.48			
5	QPSK	12	0	22.11	22.11	22.07			
5	QPSK	12	7	22.13	22.12	22.09		23.3	1
5	QPSK	12	19	22.05	22.07	22.11			
5	QPSK	25	0	22.10	22.12	22.10			
5	QPSK	25	7	22.38	22.28	22.45		23.3	1
5	QPSK	25	19	22.37	22.34	22.41			
5	HQAM	1	24	22.38	22.35	22.39			
5	HQAM	12	0	21.39	21.42	21.42			
5	HQAM	12	7	21.41	21.44	21.41		22.3	2
5	HQAM	12	19	21.34	21.33	21.37			
5	HQAM	25	0	21.41	21.49	21.41			
5	SAGAM	1	0	21.55	21.56	21.60			
5	SAGAM	1	12	21.60	21.51	21.59		22.3	2
5	SAGAM	1	24	21.59	21.58	21.59			
5	SAGAM	12	0	20.44	20.43	20.41			
5	SAGAM	12	7	20.44	20.46	20.41		21.3	3
5	SAGAM	12	19	20.37	20.41	20.40			
5	SAGAM	25	0	20.38	20.49	20.38			
Channel									
				20.70	20.65	27.05	Turn-up (m)	MPR (dB)	
Frequency (MHz)				83.5	83.5	84.3			
3	QPSK	1	0	23.40	23.44	23.40			
3	QPSK	1	8	23.38	23.43	23.40		24.3	0
3	QPSK	1	14	23.40	23.42	23.41			
3	QPSK	8	0	22.05	22.12	22.09			
3	QPSK	8	8	22.08	22.09	22.09		23.3	1
3	QPSK	8	7	22.06	22.12	22.09			
3	QPSK	15	0	22.07	22.13	22.12			
3	HQAM	1	14	22.33	22.33	22.33		23.3	1
3	HQAM	1	8	22.32	22.32	22.30			
3	HQAM	1	0	21.44	21.46	21.46			
3	HQAM	8	0	21.48	21.48	21.48		22.3	2
3	HQAM	8	7	21.43	21.49	21.45			
3	HQAM	15	0	21.42	21.46	21.43			
3	HQAM	15	7	21.52	21.47	21.55			
3	SAGAM	1	8	21.51	21.58	21.57		22.3	2
3	SAGAM	1	14	21.54	21.59	21.58			
3	SAGAM	8	0	20.38	20.46	20.43			
3	SAGAM	8	8	20.41	20.42	20.43		21.3	3
3	SAGAM	8	7	20.39	20.45	20.43			
3	SAGAM	15	0	20.36	20.42	20.39			
Channel									
				20.60	20.65	27.05	Turn-up (m)	MPR (dB)	
Frequency (MHz)				84.7	83.5	84.3			
1.4	QPSK	1	0	23.38	23.45	23.40			
1.4	QPSK	1	3	23.43	23.46	23.46		24.3	0
1.4	QPSK	1	6	23.41	23.43	23.45			
1.4	QPSK	3	0	23.43	23.43	23.43			
1.4	QPSK	3	3	23.42	23.42	23.46			
1.4	QPSK	6	0	22.11	22.15	22.14		23.3	1
1.4	HQAM	1	3	22.36	22.38	22.31			
1.4	HQAM	1	6	22.38	22.40	22.40		23.3	1
1.4	HQAM	3	0	22.12	22.12	22.11			
1.4	HQAM	3	3	22.13	22.13	22.10			
1.4	HQAM	6	0	21.48	21.49	21.52		22.3	2
1.4	SAGAM	1	0	21.54	21.57	21.52			
1.4	SAGAM	1	3	21.56	21.56	21.59			
1.4	SAGAM	3	0	21.54	21.51	21.55		22.3	2
1.4	SAGAM	3	3	21.52	21.51	21.53			
1.4	SAGAM	6	0	20.35	20.35	20.40		21.3	3

Band 38(only on channel required)									
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)	
Channel				37850	38000	38150	24.3	0	
Frequency (MHz)				2580	2595	2610			
20	QPSK	1	0	23.23	23.23	23.30			
20	QPSK	1	49	23.49	23.44	23.46	23.3	1	
20	QPSK	1	99	23.39	23.34	23.40			
20	QPSK	50	0	22.07	22.05	22.11			
20	QPSK	50	24	22.17	22.10	22.16	23.3	1	
20	QPSK	50	50	22.11	22.08	22.10			
20	QPSK	100	0	22.10	22.07	22.09			
20	16QAM	1	0	22.16	22.10	22.22	23.3	1	
20	16QAM	1	49	22.37	22.44	22.45			
20	16QAM	1	99	22.25	22.27	22.35			
20	16QAM	50	0	21.45	21.49	21.50	22.3	2	
20	16QAM	50	24	21.46	21.49	21.52			
20	16QAM	50	50	21.48	21.51	21.52			
20	16QAM	100	0	21.45	21.44	21.50	22.3	2	
20	64QAM	1	0	21.25	21.34	21.40			
20	64QAM	1	49	21.47	21.53	21.58			
20	64QAM	1	99	21.41	21.45	21.52	21.3	3	
20	64QAM	50	0	20.33	20.38	20.48			
20	64QAM	50	24	20.45	20.49	20.45			
20	64QAM	50	50	20.46	20.45	20.49	21.3	3	
20	64QAM	50	50	20.46	20.45	20.49			
20	64QAM	100	0	20.37	20.39	20.45			
Channel				37825	38000	38175	Tune-up limit (dBm)	MPR (dB)	
Frequency (MHz)				2577.5	2595	2612.5			
15	QPSK	1	0	23.22	23.24	23.32	24.3	0	
15	QPSK	1	37	23.34	23.44	23.47			
15	QPSK	1	74	23.40	23.37	23.41			
15	QPSK	36	0	22.09	22.07	22.18	23.3	1	
15	QPSK	36	20	22.12	22.16	22.23			
15	QPSK	36	39	22.13	22.10	22.21			
15	QPSK	75	0	22.15	22.17	22.24	23.3	1	
15	16QAM	1	0	22.19	22.18	22.20			
15	16QAM	1	37	22.32	22.35	22.35			
15	16QAM	1	74	22.33	22.28	22.35	22.3	2	
15	16QAM	36	0	21.38	21.41	21.47			
15	16QAM	36	20	21.40	21.42	21.49			
15	16QAM	36	39	21.44	21.47	21.44	22.3	2	
15	16QAM	75	0	21.40	21.47	21.54			
15	64QAM	1	0	21.36	21.32	21.49			
15	64QAM	1	37	21.45	21.53	21.52	21.3	3	
15	64QAM	1	74	21.54	21.47	21.55			
15	64QAM	36	0	20.37	20.46	20.57			
15	64QAM	36	20	20.45	20.47	20.50	21.3	3	
15	64QAM	36	39	20.39	20.49	20.45			
15	64QAM	75	0	20.39	20.42	20.41			
Channel				37800	38000	38200	Tune-up limit (dBm)	MPR (dB)	
Frequency (MHz)				2575	2595	2615			
10	QPSK	1	0	23.31	23.42	23.35	24.3	0	
10	QPSK	1	25	23.38	23.48	23.43			
10	QPSK	1	49	23.45	23.44	23.49			
10	QPSK	25	0	22.03	22.19	22.18	23.3	1	
10	QPSK	25	12	22.17	22.19	22.24			
10	QPSK	25	25	22.14	22.09	22.24			
10	QPSK	50	0	22.12	22.12	22.17	23.3	1	
10	16QAM	1	0	22.20	22.27	22.28			
10	16QAM	1	25	22.33	22.35	22.41			
10	16QAM	1	49	22.29	22.39	22.40	22.3	2	
10	16QAM	25	0	21.44	21.55	21.55			
10	16QAM	25	12	21.44	21.52	21.59			
10	16QAM	25	25	21.49	21.52	21.60	22.3	2	
10	16QAM	50	0	21.46	21.45	21.59			
10	64QAM	1	0	21.39	21.46	21.47			
10	64QAM	1	25	21.45	21.47	21.60	21.3	3	
10	64QAM	1	49	21.47	21.53	21.56			
10	64QAM	25	0	20.48	20.53	20.53			
10	64QAM	25	12	20.51	20.51	20.66	21.3	3	
10	64QAM	25	25	20.54	20.46	20.63			
10	64QAM	50	0	20.40	20.47	20.54			
Channel				37775	38000	38225	Tune-up limit (dBm)	MPR (dB)	
Frequency (MHz)				2572.5	2595	2617.5			
5	QPSK	1	0	23.31	23.40	23.48	24.3	0	
5	QPSK	1	12	23.34	23.39	23.47			
5	QPSK	1	24	23.40	23.46	23.47			
5	QPSK	12	0	22.11	22.21	22.26	23.3	1	
5	QPSK	12	7	22.12	22.20	22.22			
5	QPSK	12	13	22.11	22.15	22.27			
5	QPSK	25	0	22.19	22.16	22.25	23.3	1	
5	16QAM	1	0	22.26	22.32	22.36			
5	16QAM	1	12	22.29	22.39	22.36			
5	16QAM	1	24	22.24	22.37	22.39	22.3	2	
5	16QAM	12	0	21.38	21.47	21.54			
5	16QAM	12	7	21.37	21.46	21.62			
5	16QAM	12	13	21.42	21.45	21.56	22.3	2	
5	16QAM	25	0	21.43	21.57	21.59			
5	64QAM	1	0	21.44	21.52	21.56			
5	64QAM	1	12	21.46	21.53	21.59	21.3	3	
5	64QAM	1	24	21.49	21.52	21.58			
5	64QAM	12	0	20.38	20.53	20.50			
5	64QAM	12	7	20.41	20.48	20.50	21.3	3	
5	64QAM	12	13	20.46	20.45	20.50			
5	64QAM	25	0	20.47	20.50	20.61			

Band 41 (2.6G Band)										
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Low Middle Ch. / Freq.	Power Middle Ch. / Freq.	Power High Middle Ch. / Freq.	Power High Ch. / Freq.		
Channel				39750	40185	40620	41055	41490		
Frequency (MHz)				2506	2549.5	2593	2636.5	2680		
20	QPSK	1	0	23.40	23.34	23.47	23.49	23.52	24.3	0
20	QPSK	1	49	23.58	23.56	23.67	23.65	23.65		
20	QPSK	1	99	23.45	23.41	23.60	23.60	23.51		
20	QPSK	50	0	22.12	22.04	22.23	22.25	22.25	23.3	1
20	QPSK	50	24	22.21	22.19	22.31	22.29	22.27		
20	QPSK	50	50	22.13	22.15	22.27	22.30	22.26		
20	QPSK	100	0	22.11	22.12	22.28	22.27	22.25	23.3	1
20	16QAM	1	0	22.04	22.10	22.19	22.01	22.04		
20	16QAM	1	49	22.09	22.26	22.30	22.13	22.12		
20	16QAM	1	99	22.19	22.10	22.12	22.06	22.00	22.3	2
20	16QAM	50	0	21.26	21.43	21.58	21.39	21.38		
20	16QAM	50	24	21.38	21.46	21.59	21.44	21.41		
20	16QAM	50	50	21.37	21.51	21.56	21.44	21.36	22.3	2
20	16QAM	100	0	21.29	21.46	21.53	21.41	21.37		
20	64QAM	1	0	21.01	21.09	21.19	21.03	21.00		
20	64QAM	1	49	21.08	21.25	21.28	21.12	21.15	22.3	2
20	64QAM	1	99	21.00	21.09	21.14	21.08	21.04		
20	64QAM	50	0	20.21	20.37	20.52	20.33	20.33		
20	64QAM	50	24	20.34	20.41	20.52	20.43	20.36	21.3	3
20	64QAM	50	50	20.33	20.45	20.51	20.39	20.31		
20	64QAM	100	0	20.26	20.42	20.52	20.38	20.31		
Channel				39725	40173	40620	41068	41515	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2503.5	2548.3	2593	2637.8	2682.5		
15	QPSK	1	0	23.35	23.56	23.51	23.54	23.56	24.3	0
15	QPSK	1	37	23.47	23.57	23.57	23.55	23.55		
15	QPSK	1	74	23.41	23.59	23.52	23.54	23.51		
15	QPSK	36	0	22.15	22.35	22.27	22.36	22.48	23.3	1
15	QPSK	36	20	22.16	22.39	22.28	22.41	22.49		
15	QPSK	36	39	22.14	22.44	22.32	22.42	22.47		
15	QPSK	75	0	22.17	22.43	22.35	22.42	22.51	23.3	1
15	16QAM	1	0	22.13	22.42	22.31	22.37	22.47		
15	16QAM	1	37	22.22	22.50	22.37	22.44	22.53		
15	16QAM	1	74	22.24	22.44	22.33	22.43	22.44	22.3	2
15	16QAM	36	0	21.43	21.64	21.58	21.63	21.75		
15	16QAM	36	20	21.45	21.68	21.59	21.67	21.76		
15	16QAM	36	39	21.47	21.69	21.59	21.73	21.77	22.3	2
15	16QAM	75	0	21.48	21.75	21.66	21.70	21.84		
15	64QAM	1	0	21.17	21.42	21.33	21.40	21.52		
15	64QAM	1	37	21.30	21.52	21.43	21.47	21.56	22.3	2
15	64QAM	1	74	21.27	21.45	21.37	21.45	21.45		
15	64QAM	36	0	20.43	20.63	20.61	20.65	20.77		
15	64QAM	36	20	20.47	20.70	20.56	20.69	20.76	21.3	3
15	64QAM	36	39	20.43	20.68	20.61	20.70	20.75		
15	64QAM	75	0	20.44	20.69	20.61	20.69	20.76		
Channel				39700	40160	40620	41080	41540	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2501	2547	2593	2639	2686		
10	QPSK	1	0	23.33	23.58	23.55	23.50	23.51	24.3	0
10	QPSK	1	25	23.37	23.55	23.50	23.53	23.53		
10	QPSK	1	49	23.38	23.53	23.55	23.54	23.57		
10	QPSK	25	0	22.10	22.40	22.32	22.41	22.52	23.3	1
10	QPSK	25	12	22.16	22.46	22.33	22.43	22.50		
10	QPSK	25	25	22.15	22.44	22.34	22.46	22.48		
10	QPSK	50	0	22.15	22.44	22.34	22.45	22.51	23.3	1
10	16QAM	1	0	22.13	22.46	22.36	22.40	22.54		
10	16QAM	1	25	22.20	22.50	22.40	22.49	22.50		
10	16QAM	1	49	22.18	22.44	22.36	22.48	22.44	22.3	2
10	16QAM	25	0	21.44	21.71	21.67	21.75	21.83		
10	16QAM	25	12	21.50	21.79	21.67	21.75	21.84		
10	16QAM	25	25	21.49	21.77	21.67	21.80	21.80	22.3	2
10	16QAM	50	0	21.47	21.75	21.70	21.76	21.84		
10	64QAM	1	0	21.17	21.45	21.37	21.42	21.54		
10	64QAM	1	25	21.21	21.53	21.42	21.49	21.54	22.3	2
10	64QAM	1	49	21.22	21.45	21.37	21.47	21.49		
10	64QAM	25	0	20.43	20.72	20.67	20.74	20.83		
10	64QAM	25	12	20.52	20.77	20.63	20.77	20.83	21.3	3
10	64QAM	25	25	20.49	20.78	20.67	20.81	20.78		
10	64QAM	50	0	20.44	20.70	20.62	20.72	20.78		
Channel				39675	40148	40620	41093	41565	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2498.5	2545.8	2593	2640.30	2687.5		
5	QPSK	1	0	23.35	23.51	23.55	23.50	23.56	24.3	0
5	QPSK	1	12	23.40	23.57	23.55	23.56	23.50		
5	QPSK	1	24	23.38	23.54	23.57	23.53	23.57		
5	QPSK	12	0	22.13	22.40	22.33	22.40	22.46	23.3	1
5	QPSK	12	7	22.12	22.44	22.30	22.43	22.44		
5	QPSK	12	13	22.14	22.43	22.32	22.38	22.41		
5	QPSK	25	0	22.14	22.42	22.32	22.43	22.42	23.3	1
5	16QAM	1	0	22.15	22.49	22.37	22.45	22.46		
5	16QAM	1	12	22.17	22.51	22.36	22.43	22.43		
5	16QAM	1	24	22.18	22.52	22.39	22.47	22.44	22.3	2
5	16QAM	12	0	21.37	21.67	21.58	21.68	21.69		
5	16QAM	12	7	21.39	21.71	21.54	21.68	21.67		
5	16QAM	12	13	21.38	21.69	21.55	21.66	21.68	22.3	2
5	16QAM	25	0	21.46	21.75	21.66	21.77	21.78		
5	64QAM	1	0	21.22	21.49	21.44	21.48	21.53		
5	64QAM	1	12	21.27	21.47	21.46	21.45	21.52	22.3	2
5	64QAM	1	24	21.24	21.53	21.42	21.47	21.51		
5	64QAM	12	0	20.41	20.69	20.62	20.70	20.74		
5	64QAM	12	7	20.37	20.71	20.57	20.71	20.69	21.3	3
5	64QAM	12	13	20.42	20.70	20.58	20.69	20.70		
5	64QAM	25	0	20.48	20.74	20.63	20.77	20.74		

Reduced Power Level 1 for Head -UAT

GSM850		Burst Average Power (dbm)			Tune-up Limit	Frame-Average Power (dbm)			Tune-up Limit
TX Channel		128	189	251		128	189	251	
Frequency (Mhz)		924.2	936.4	948.6	(dbm)	924.2	936.4	948.6	(dbm)
GSM 1 Tx slot		27.24	27.39	27.29		18.24	18.39	18.29	18.80
GPRS 1 Tx slot		27.22	27.38	27.27		18.22	18.38	18.27	18.80
GPRS 3 Tx slots		24.63	24.79	24.66		16.63	16.79	16.66	16.80
GPRS 4 Tx slots		23.17	23.30	23.18		16.17	16.30	16.18	20.04
GPRS 4 Tx slots		22.13	22.30	22.23		13.80	13.93	13.90	19.23
EDGE 1 Tx slot		21.33	21.37	21.42		12.33	12.37	12.42	13.80
EDGE 2 Tx slots		20.04	19.98	20.08		14.04	13.98	14.08	14.08
EDGE 3 Tx slots		17.95	18.03	17.99		13.69	13.77	13.73	13.73
EDGE 4 Tx slots		16.97	16.96	16.96		13.30	13.97	13.96	15.34

GSM1900	Burst Average Power (dBm)				Tune-up Limit	Frame-Average Power (dBm)				Tune-up Limit
	512	661	810	Limit		512	661	810	Limit	
TX Channel	1850.2	1860	1880	1909.8	(dBm)	1850.2	1860	1880	1909.8	(dBm)
Frequency (MHz)	23.40	23.45	23.46	24.30		14.40	14.45	14.46	15.30	
GPRS 1 Tx slot	23.38	23.43	23.43	24.30		14.38	14.43	14.43	15.30	
GPRS 3 Tx slots	19.76	19.88	19.83	21.30		13.76	13.88	13.83	15.30	
GPRS 4 Tx slots	19.07	19.20	19.18	20.30		14.81	14.94	14.92	16.04	
GPRS 4 Tx slots	17.28	17.39	17.33	18.80		14.28	14.39	14.33	15.80	
EDGE 1 Tx slot	19.28	19.36	19.31	20.80		10.28	10.36	10.31	11.80	
EDGE 2 Tx slots	17.36	17.44	17.40	18.30		11.36	11.44	11.40	12.30	
EDGE 3 Tx slots	15.73	15.83	15.78	17.30		11.47	11.57	11.52	13.04	
EDGE 4 Tx slots	14.56	14.66	14.62	16.30		11.56	11.66	11.62	13.30	

Band		WCDMA II			Tune-up Limit (dBm)	WCDMA IV			Tune-up Limit (dBm)	WCDMA V			Tune-up Limit (dBm)
TX Channel		9262	9400	9538		1312	1413	1513		4132	4162	4233	
Rx Channel		9662	9800	9938		1537	1638	1738		4357	4407	4458	
Frequency (MHz)		1852.4	1860	1907.6		1712.4	1732.6	1752.6		626.4	636.4	646.6	
3GPP Rel 99	AMR 12.2Kbps	14.85	14.84	14.65	15.30	13.64	13.66	13.63	14.30	19.10	19.08	19.13	19.80
3GPP Rel 99	RMCE 12.2Kbps	14.87	14.86	14.66	15.30	13.67	13.68	13.66	14.30	19.13	19.11	19.15	19.80
3GPP Rel 6	HSDPA Subtest-1	13.79	13.82	13.71	14.30	12.60	12.61	12.65	13.30	18.08	18.08	18.03	18.80
3GPP Rel 6	HSDPA Subtest-2	13.77	13.78	13.75	14.30	12.60	12.63	12.64	13.30	18.09	18.07	17.70	18.80
3GPP Rel 6	HSDPA Subtest-3	13.34	13.35	13.28	13.80	12.14	12.13	12.20	12.80	17.80	17.75	17.75	18.30
3GPP Rel 6	HSDPA Subtest-4	13.33	13.27	13.26	13.80	12.10	12.13	12.16	12.80	17.80	17.71	17.70	18.30
3GPP Rel 8	DC-HSDPA Subtest-1	13.65	13.61	13.54	14.30	12.30	12.39	12.46	13.30	17.99	17.92	18.01	18.80
3GPP Rel 8	DC-HSDPA Subtest-2	13.66	13.64	13.72	14.30	12.44	12.47	12.38	13.30	17.79	17.79	17.39	18.80
3GPP Rel 8	DC-HSDPA Subtest-3	13.13	13.10	13.10	13.80	12.13	11.92	11.92	12.80	17.56	17.56	17.52	18.30
3GPP Rel 8	DC-HSDPA Subtest-4	13.31	13.15	13.14	13.80	12.08	11.95	11.85	12.80	17.49	17.40	17.65	18.30
3GPP Rel 8	HSUPA Subtest-1	12.22	12.31	12.16	12.80	10.70	10.79	11.00	11.80	16.51	16.67	16.64	17.30
3GPP Rel 8	HSUPA Subtest-2	11.58	11.61	11.66	12.30	10.52	10.67	10.62	11.30	16.17	16.27	16.34	16.80
3GPP Rel 6	HSUPA Subtest-3	12.82	12.70	12.71	13.30	11.43	11.35	11.54	12.30	17.32	17.30	17.23	17.80
3GPP Rel 6	HSUPA Subtest-4	11.16	11.22	11.16	11.80	9.90	9.83	9.77	10.80	15.59	15.69	15.72	16.30
3GPP Rel 6	HSUPA Subtest-5	13.70	13.60	13.70	14.30	12.30	12.30	12.50	13.30	18.20	18.20	18.30	18.80
3GPP Rel 7	HSPA+ (16QAM) Subtest-1	10.90	10.84	10.85	11.30	9.52	9.45	9.64	10.30	14.98	15.09	15.03	15.80

Band 2 (1900MHz Band) Part 24E												
BW (MHz)	Modulation	RIS Size	RIS Offset	Low Ch. Freq.	Power Ch. Freq.	Power Ch. Freq.	Time-up Time (dBm)	MPR (dB)				
Channel												
Frequency (MHz)												
20	QPSK	1	0	14.15	14.13	14.07						
20	QPSK	1	49	14.18	14.25	14.38	15.3	0				
20	QPSK	1	99	14.07	14.01	13.99						
20	QPSK	50	0	14.15	14.13	14.13						
20	QPSK	50	24	14.19	14.24	14.27	15.3	0				
20	QPSK	50	50	14.09	14.05	14.07						
20	QPSK	100	0	14.07	14.01	13.99						
20	QPSK	1	1	14.18	14.24	14.29						
20	16QAM	1	49	14.15	14.18	14.01	15.3	0				
20	16QAM	1	99	14.11	14.14	13.98						
20	16QAM	50	0	14.05	14.03	14.13						
20	16QAM	50	24	14.03	14.02	14.06	15.3	0				
20	16QAM	50	50	14.01	13.97	14.15						
20	16QAM	100	0	14.07	14.02	14.29						
20	16QAM	1	0	14.17	14.14	14.14						
20	16QAM	1	49	14.08	14.05	14.07	15.3	0				
20	16QAM	1	99	14.10	14.08	14.14						
20	16QAM	50	0	14.05	14.03	14.13						
20	16QAM	50	24	14.03	14.03	14.12	15.3	0				
20	16QAM	50	50	14.02	14.03	14.29						
20	16QAM	100	0	14.05	13.95	14.25						
Channel												
Frequency (MHz)												
15	QPSK	1	0	13.95	13.97	13.91						
15	QPSK	1	97	14.02	14.01	13.93	15.3	0				
15	QPSK	1	8	13.90	13.85	13.92						
15	QPSK	36	0	13.99	13.97	14.08						
15	QPSK	36	20	13.97	13.98	13.97	15.3	0				
15	QPSK	36	50	14.01	14.02	14.09						
15	QPSK	75	0	13.98	13.98	14.09						
15	16QAM	1	0	14.20	14.14	14.19						
15	16QAM	1	97	14.14	14.16	14.15	15.3	0				
15	16QAM	1	8	14.16	14.16	14.05						
15	16QAM	36	0	13.99	13.99	14.07						
15	16QAM	36	20	13.99	13.99	13.99	15.3	0				
15	16QAM	36	50	14.01	14.02	14.09						
15	16QAM	75	0	13.93	13.96	14.10						
15	16QAM	1	0	14.08	14.12	14.09						
15	16QAM	1	97	14.16	14.17	14.15	15.3	0				
15	16QAM	1	8	14.02	14.02	14.14						
15	16QAM	36	0	13.99	13.99	14.11						
15	16QAM	36	20	13.99	14.01	14.09	15.3	0				
15	16QAM	36	50	14.04	14.04	14.09						
15	16QAM	75	0	13.99	13.99	14.10						
Channel												
Frequency (MHz)												
10	QPSK	1	0	13.85	13.86	14.01						
10	QPSK	1	25	14.01	14.05	13.95	15.3	0				
10	QPSK	1	49	13.91	13.94	13.89						
10	QPSK	25	0	14.00	13.98	13.97						
10	QPSK	25	12	13.96	13.92	14.04						
10	QPSK	25	25	13.96	14.02	14.11	15.3	0				
10	QPSK	50	0	14.01	14.00	14.05						
10	16QAM	1	0	14.15	14.23	14.22						
10	16QAM	1	25	14.14	14.22	14.13	15.3	0				
10	16QAM	1	49	14.18	14.21	14.18						
10	16QAM	25	0	14.00	14.01	13.98						
10	16QAM	25	12	14.00	14.08	14.05	15.3	0				
10	16QAM	25	25	13.96	14.05	14.15						
10	16QAM	50	0	14.00	14.01	14.09						
10	16QAM	50	0	14.00	14.20	14.17						
10	16QAM	50	12	14.00	14.22	14.13	15.3	0				
10	16QAM	1	49	14.14	14.16	14.04						
10	16QAM	25	0	14.03	13.99	13.99						
10	16QAM	25	12	14.02	14.08	14.05	15.3	0				
10	16QAM	25	25	14.01	14.07	14.17						
10	16QAM	50	0	14.02	14.05	14.09						
Channel												
Frequency (MHz)												
5	QPSK	1	0	13.99	14.03	13.95						
5	QPSK	1	12	14.00	14.07	13.98	15.3	0				
5	QPSK	1	24	13.97	14.04	13.95						
5	QPSK	12	0	14.00	14.00	13.92						
5	QPSK	12	7	14.00	14.04	14.05	15.3	0				
5	QPSK	12	13	13.97	14.07	14.03						
5	QPSK	25	0	14.01	14.07	13.99						
5	16QAM	1	0	14.15	14.23	14.12						
5	16QAM	1	12	14.13	14.26	14.18	15.3	0				
5	16QAM	1	24	14.20	14.23	14.15						
5	16QAM	12	0	14.00	14.00	14.03						
5	16QAM	12	7	13.99	14.06	14.03	15.3	0				
5	16QAM	12	13	13.97	14.06	14.00						
5	16QAM	25	0	14.01	14.10	14.00						
5	16QAM	1	0	14.12	14.23	14.17						
5	16QAM	1	12	14.17	14.24	14.21	15.3	0				
5	16QAM	1	24	14.11	14.22	14.20						
5	16QAM	12	0	14.03	14.11	14.05						
5	16QAM	12	7	14.03	14.11	14.05	15.3	0				
5	16QAM	12	13	13.99	14.11	14.05						
5	16QAM	25	0	13.97	14.09	13.95						
Channel												
Frequency (MHz)												
3	QPSK	1	0	13.99	14.03	13.95						
3	QPSK	1	8	13.95	14.01	13.92	15.3	0				
3	QPSK	1	14	13.94	14.00	13.91						
3	QPSK	8	0	13.99	14.02	13.93						
3	QPSK	8	4	13.96	14.02	13.96	15.3	0				
3	QPSK	8	7	13.95	14.01	13.98						
3	QPSK	16	0	13.95	14.02	13.94						
3	16QAM	1	0	14.18	14.23	14.17						
3	16QAM	1	8	14.17	14.22	14.16	15.3	0				
3	16QAM	1	14	14.16	14.21	14.14						
3	16QAM	8	0	14.07	14.09	14.05						
3	16QAM	8	4	14.04	14.10	14.03	15.3	0				
3	16QAM	8	7	14.03	14.09	14.04						
3	16QAM	16	0	13.99	14.09	14.00						
3	16QAM	1	0	14.20	14.21	14.19						
3	16QAM	1	8	14.17	14.24	14.19	15.3	0				
3	16QAM	1	14	14.16	14.23	14.24						
3	16QAM	8	0	14.05	14.09	14.03						
3	16QAM	8	4	14.02	14.08	14.02	15.3	0				
3	16QAM	8	7	14.02	14.10	14.07						
3	16QAM	16	0	13.99	14.05	13.97						
Channel												
Frequency (MHz)												
1.4	QPSK	1	0	13.97	14.01	13.92						
1.4	QPSK	1	8	14.00	14.03	13.93	15.3	0				
1.4	QPSK	1	5	13.96	14.02	13.93						
1.4	QPSK	3	0	13.96	14.03	13.96						
1.4	QPSK	3	1	14.00	14.01	13.92						
1.4	QPSK	3	0	14.00	14.01	13.95	15.3	0				
1.4	QPSK	6	0	13.99	14.04	13.99						
1.4	16QAM	1	0	14.21	14.24	14.23						
1.4	16QAM	1	8	14.21	14.23	14.24	15.3	0				
1.4	16QAM	1	5	14.18	14.23	14.21						
1.4	16QAM	3	0	14.01	14.03	14.01						
1.4	16QAM	3	1	13.98	14.03	13.98						
1.4	16QAM	3	0	14.02	14.08	13.98	15.3	0				
1.4	16QAM	6	0	14.08	14.12	14.10						
1.4	16QAM	1	0	14.10	14.20	14.08						
1.4	16QAM	1	8	14.09	14.15	14.07	15.3	0				
1.4	16QAM	1	5	14.12	14.13	14.08						
1.4	16QAM	3	0	14.05	14.09	14.07						
1.4	16QAM	3	1	14.07	14.14	14.04						
1.4	16QAM	3	0	14.07	14.16	14.05	15.3	0				
1.4	16QAM	6	0	14.01	14.02	13.95						

Band 4 (AWS Band) Part 27E (only on channel required)												
BW (MHz)	Modulation	RIS Size	RIS Offset	Low Ch. Freq.	Power Ch. Freq.	Power Ch. Freq.	Time-up Time (dBm)	MPR (dB)				
Channel												
Frequency (MHz)												
20	QPSK	1	0	13.71	13.69	13.64						
20	QPSK	1	49	13.73	13.77	13.72	14.3	0				
20	QPSK	1	99	13.63	13.65	13.58						
20	QPSK	50	0</									

Band 12 (700MHz Low Band) Part 27F(only on channel required)											
BW (MHz)	Modulation	RB Size	RB Offset	Power Low Ch / Freq	Power Mid Ch / Freq	Power High Ch / Freq	Turn-up time (dBm)	MPR (dB)			
Channel											
Frequency (MHz)											
10	QPSK	1	0	22.61	22.65	22.60	23.3	0			
10	QPSK	1	26	22.64	22.68	22.65					
10	QPSK	1	49	22.63	22.62	22.60					
10	QPSK	26	0	22.60	22.60	22.57					
10	QPSK	26	12	22.63	22.66	22.62	23.3	0			
10	QPSK	26	25	22.61	22.64	22.58					
10	QPSK	26	38	22.60	22.59	22.54					
10	QPSK	26	51	22.59	22.56	22.53					
10	16QAM	1	0	22.39	22.39	22.43	23.3	0			
10	16QAM	1	26	22.45	22.51	22.43					
10	16QAM	1	49	22.49	22.47	22.53					
10	16QAM	26	0	21.50	21.50	21.46					
10	16QAM	26	12	21.53	21.50	21.51	22.3	1			
10	16QAM	26	25	21.52	21.51	21.49					
10	16QAM	26	38	21.49	21.50	21.46					
10	16QAM	26	51	21.47	21.49	21.45					
10	16QAM	1	26	21.56	21.61	21.57	22.3	1			
10	16QAM	1	49	21.61	21.57	21.49					
10	16QAM	26	0	20.40	20.36	20.35					
10	16QAM	26	12	20.43	20.40	20.40					
10	16QAM	26	25	20.43	20.42	20.36	21.3	2			
10	16QAM	26	38	20.40	20.37	20.36					
10	16QAM	26	51	20.38	20.37	20.36					
10	16QAM	26	0	20.40	20.37	20.36					
Channel											
Frequency (MHz)											
5	QPSK	1	0	22.28	22.36	22.27	23.3	0			
5	QPSK	1	12	22.35	22.41	22.29					
5	QPSK	1	24	22.36	22.36	22.37					
5	QPSK	12	0	21.98	22.02	21.98					
5	QPSK	12	7	21.97	22.03	21.99	23.3	0			
5	QPSK	12	14	21.97	22.00	21.96					
5	QPSK	26	0	21.97	22.00	21.96					
5	16QAM	1	0	22.24	22.31	22.21					
5	16QAM	1	12	22.29	22.33	22.24	23.3	0			
5	16QAM	1	24	22.33	22.36	22.30					
5	16QAM	12	0	21.27	21.34	21.29					
5	16QAM	12	7	21.25	21.31	21.27					
5	16QAM	12	13	21.29	21.33	21.29	22.3	1			
5	16QAM	26	0	21.31	21.33	21.27					
5	16QAM	1	0	21.40	21.40	21.42					
5	16QAM	1	12	21.46	21.49	21.43					
5	16QAM	1	24	21.35	21.43	21.33	21.3	2			
5	16QAM	12	0	20.25	20.34	20.31					
5	16QAM	12	7	20.29	20.32	20.29					
5	16QAM	12	13	20.29	20.33	20.29					
Channel											
Frequency (MHz)											
3	QPSK	1	0	22.47	22.46	22.38	23.3	0			
3	QPSK	1	8	22.46	22.60	22.43					
3	QPSK	1	14	22.66	22.58	22.48					
3	QPSK	8	0	22.47	22.40	22.35					
3	QPSK	8	7	22.65	22.64	22.40	23.3	0			
3	QPSK	16	0	22.51	22.66	22.38					
3	16QAM	1	0	22.40	22.23	22.37					
3	16QAM	1	8	22.40	22.45	22.37					
3	16QAM	1	14	22.50	22.39	22.33	23.3	0			
3	16QAM	8	0	21.54	21.41	21.42					
3	16QAM	8	4	21.50	21.46	21.43					
3	16QAM	1	24	21.35	21.38	21.33					
3	16QAM	16	0	21.51	21.41	21.37	22.3	1			
3	16QAM	1	0	21.48	21.33	21.29					
3	16QAM	1	8	21.41	21.49	21.40					
3	16QAM	1	14	21.41	21.53	21.39					
3	16QAM	8	0	20.18	20.36	20.37	21.3	2			
3	16QAM	8	4	20.27	20.39	20.24					
3	16QAM	8	7	20.29	20.42	20.27					
3	16QAM	16	0	20.20	20.19	20.33					
Channel											
Frequency (MHz)											
1.4	QPSK	1	0	22.41	22.40	22.38	23.3	0			
1.4	QPSK	1	3	22.60	22.44	22.38					
1.4	QPSK	1	5	22.38	22.57	22.61					
1.4	QPSK	3	0	22.43	22.57	22.42					
1.4	QPSK	3	1	22.62	22.42	22.40	23.3	0			
1.4	QPSK	3	3	22.39	22.41	22.63					
1.4	QPSK	6	0	22.56	22.63	22.57					
1.4	16QAM	1	0	22.34	22.20	22.51					
1.4	16QAM	1	3	22.38	22.39	22.44	23.3	0			
1.4	16QAM	1	5	22.38	22.40	22.57					
1.4	16QAM	3	0	21.37	21.42	21.51					
1.4	16QAM	3	1	21.55	21.39	21.26					
1.4	16QAM	3	3	21.31	21.36	21.26	22.3	1			
1.4	16QAM	6	0	21.46	21.57	21.49					
1.4	16QAM	1	0	21.46	21.44	21.35					
1.4	16QAM	1	3	21.34	21.39	21.58					
1.4	16QAM	1	5	21.43	21.61	21.45	22.3	1			
1.4	16QAM	3	0	20.37	20.33	20.12					
1.4	16QAM	3	1	20.22	20.41	20.40					
1.4	16QAM	3	3	20.31	20.30	20.21					
1.4	16QAM	6	0	20.25	20.40	20.40	21.3	2			
1.4	16QAM	6	0	20.25	20.40	20.40					
1.4	16QAM	6	0	20.25	20.40	20.40					
1.4	16QAM	6	0	20.25	20.40	20.40					

Band 17 (700MHz Band) Part 27H(only on channel required)											
BW (MHz)	Modulation	RB Size	RB Offset	Power Low Ch / Freq	Power Mid Ch / Freq	Power High Ch / Freq	Turn-up time (dBm)	MPR (dB)			
Channel				23700	23705	23800					
Frequency (MHz)											
10	QPSK	1	0	22.42	22.50	22.45	23.3	0			
10	QPSK	1	26	22.43	22.51	22.50					
10	QPSK	1	49	22.40	22.40	22.54					
10	QPSK	26	0	22.36	22.48	22.44					
10	QPSK	26	12	22.42	22.50	22.56	23.3	0			
10	QPSK	26	25	22.33	22.52	22.54					
10	QPSK	26	38	22.40	22.40	22.54					
10	QPSK	26	51	22.27	22.50	22.49					
10	16QAM	1	26	22.34	22.54	22.50	23.3	0			
10	16QAM	1	49	22.29	22.49	22.38					
10	16QAM	26	0	21.42	21.49	21.43					
10	16QAM	26	12	21.48	21.49	21.51					
10	16QAM	26	25	21.56	21.53	21.40	22.3	1			
10	16QAM	26	38	21.44	21.42	21.36					
10	16QAM	26	51	21.27	21.24	21.23					
10	16QAM	1	26	21.20	21.27	21.29					
10	16QAM	1	49	21.30	21.26	21.34	22.3	1			
10	16QAM	26	0	20.43	20.40	20.36					
10	16QAM	26	12	20.47	20.51	20.48					
10	16QAM	26	25	20.50	20.47	20.38					
10	16QAM	26	0	20.43	20.46	20.43	21.3	2			
10	16QAM	26	12	20.52	20.50	20.52					
10	16QAM	26	25	20.50	20.47	20.43					
10	16QAM	26	0	20.43	20.46	20.43					
Channel				706.5	710	713.5					
Frequency (MHz)											
5	QPSK	1	0	22.29	22.32	22.36	23.3	0			
5	QPSK	1	12	22.38	22.40	22.39					
5	QPSK	1	24	22.35	22.39	22.38					
5	QPSK	12	0	22.00	21.93	22.02	23.3	0			
5	QPSK	12	7	22.02	22.00	21.96					
5	QPSK	12	13	22.05	22.03	21.97					
5	QPSK	12	19	21.99	21.98	21.93	22.3	1			
5	16QAM	1	0	22.26	22.30	22.21					
5	16QAM	1	12	22.27	22.25	22.23					
5	16QAM	1	24	22.31	22.28	22.24	22.3	1			
5	16QAM	12	7	21.34	21.34	21.27					
5	16QAM	12	13	21.34	21.30	21.26					
5	16QAM	12	19	21.29	21.27	21.18	21.3	2			
5	16QAM	25	0	21.30	21.32	21.27					
5	16QAM	25	0	21.38	21.41	21.41					
5	16QAM	1	12	21.48	21.51	21.47	22.3	1			
5	16QAM	1	24	21.44	21.47	21.45					
5	16QAM	12	0	20.32	20.35	20.34					
5	16QAM	12	7	20.33	20.30	20.28	21.3	2			
5	16QAM	12	13	20.32	20.30	20.28					
5	16QAM	25	0	20.29	20.33	20.24					

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	18.3	0	
Frequency (MHz)				2580	2595	2610			
20	QPSK	1	0	17.33	17.33	17.40			
20	QPSK	1	49	17.63	17.60	17.55	18.3	0	
20	QPSK	1	99	17.50	17.55	17.53			
20	QPSK	50	0	17.49	17.58	17.52			
20	QPSK	50	24	17.61	17.60	17.53	18.3	0	
20	QPSK	50	50	17.57	17.59	17.50			
20	QPSK	100	0	17.58	17.57	17.51			
20	16QAM	1	0	17.42	17.44	17.46	18.3	0	
20	16QAM	1	49	17.56	17.56	17.50			
20	16QAM	1	99	17.52	17.53	17.55			
20	16QAM	50	0	17.45	17.57	17.57	18.3	0	
20	16QAM	50	24	17.58	17.56	17.61			
20	16QAM	50	50	17.49	17.56	17.62			
20	16QAM	100	0	17.56	17.48	17.59	18.3	0	
20	64QAM	1	0	17.35	17.37	17.44			
20	64QAM	1	49	17.60	17.58	17.55			
20	64QAM	1	99	17.55	17.56	17.60	18.3	0	
20	64QAM	50	0	17.49	17.48	17.49			
20	64QAM	50	24	17.45	17.49	17.56			
20	64QAM	50	50	17.46	17.46	17.57	18.3	0	
20	64QAM	100	0	17.51	17.53	17.55			
Channel				37825	38000	38175	18.3	0	
Frequency (MHz)				2577.5	2595	2612.5			
15	QPSK	1	0	17.27	17.32	17.23			
15	QPSK	1	37	17.62	17.45	17.53	18.3	0	
15	QPSK	1	74	17.52	17.46	17.44			
15	QPSK	36	0	17.29	17.61	17.39	18.3	0	
15	QPSK	36	20	17.41	17.50	17.42			
15	QPSK	36	39	17.41	17.35	17.58			
15	QPSK	75	0	17.47	17.39	17.35	18.3	0	
15	16QAM	1	0	17.43	17.32	17.46			
15	16QAM	1	37	17.44	17.50	17.51			
15	16QAM	1	74	17.44	17.29	17.35	18.3	0	
15	16QAM	36	0	17.31	17.53	17.50			
15	16QAM	36	20	17.35	17.41	17.55			
15	16QAM	36	39	17.42	17.40	17.47	18.3	0	
15	16QAM	75	0	17.44	17.44	17.51			
15	64QAM	1	0	17.37	17.32	17.32			
15	64QAM	1	37	17.41	17.56	17.41	18.3	0	
15	64QAM	1	74	17.54	17.36	17.48			
15	64QAM	36	0	17.40	17.37	17.27			
15	64QAM	36	20	17.44	17.42	17.36	18.3	0	
15	64QAM	36	39	17.24	17.40	17.38			
15	64QAM	75	0	17.42	17.34	17.31			
Channel				37800	38000	38200	18.3	0	
Frequency (MHz)				2575	2595	2615			
10	QPSK	1	0	17.34	17.37	17.23			
10	QPSK	1	25	17.60	17.52	17.30	18.3	0	
10	QPSK	1	49	17.30	17.43	17.36			
10	QPSK	25	0	17.37	17.53	17.32	18.3	0	
10	QPSK	25	12	17.51	17.44	17.34			
10	QPSK	25	25	17.44	17.34	17.29	18.3	0	
10	QPSK	50	0	17.55	17.45	17.37			
10	16QAM	1	0	17.24	17.36	17.45	18.3	0	
10	16QAM	1	25	17.59	17.33	17.27			
10	16QAM	1	49	17.54	17.33	17.53			
10	16QAM	25	0	17.22	17.52	17.61	18.3	0	
10	16QAM	25	12	17.38	17.32	17.38			
10	16QAM	25	25	17.24	17.51	17.41			
10	16QAM	50	0	17.58	17.51	17.60	18.3	0	
10	64QAM	1	0	17.14	17.18	17.39			
10	64QAM	1	25	17.53	17.34	17.42			
10	64QAM	1	49	17.57	17.46	17.45	18.3	0	
10	64QAM	25	0	17.53	17.36	17.49			
10	64QAM	25	12	17.35	17.33	17.42			
10	64QAM	25	25	17.34	17.50	17.37	18.3	0	
10	64QAM	50	0	17.35	17.45	17.41			
Channel				37775	38000	38225	18.3	0	
Frequency (MHz)				2572.5	2595	2617.5			
5	QPSK	1	0	17.38	17.23	17.40			
5	QPSK	1	12	17.62	17.52	17.35	18.3	0	
5	QPSK	1	24	17.33	17.46	17.48			
5	QPSK	12	0	17.47	17.33	17.43	18.3	0	
5	QPSK	12	7	17.39	17.43	17.53			
5	QPSK	12	13	17.48	17.58	17.41			
5	QPSK	25	0	17.43	17.38	17.37	18.3	0	
5	16QAM	1	0	17.30	17.32	17.35			
5	16QAM	1	12	17.39	17.37	17.51			
5	16QAM	1	24	17.32	17.36	17.38	18.3	0	
5	16QAM	12	0	17.48	17.52	17.51			
5	16QAM	12	7	17.60	17.47	17.54			
5	16QAM	12	13	17.51	17.54	17.40	18.3	0	
5	16QAM	25	0	17.57	17.30	17.60			
5	64QAM	1	0	17.17	17.20	17.31			
5	64QAM	1	12	17.54	17.34	17.45	18.3	0	
5	64QAM	1	24	17.39	17.61	17.40			
5	64QAM	12	0	17.45	17.49	17.27			
5	64QAM	12	7	17.37	17.44	17.33	18.3	0	
5	64QAM	12	13	17.43	17.50	17.60			
5	64QAM	25	0	17.40	17.41	17.39			

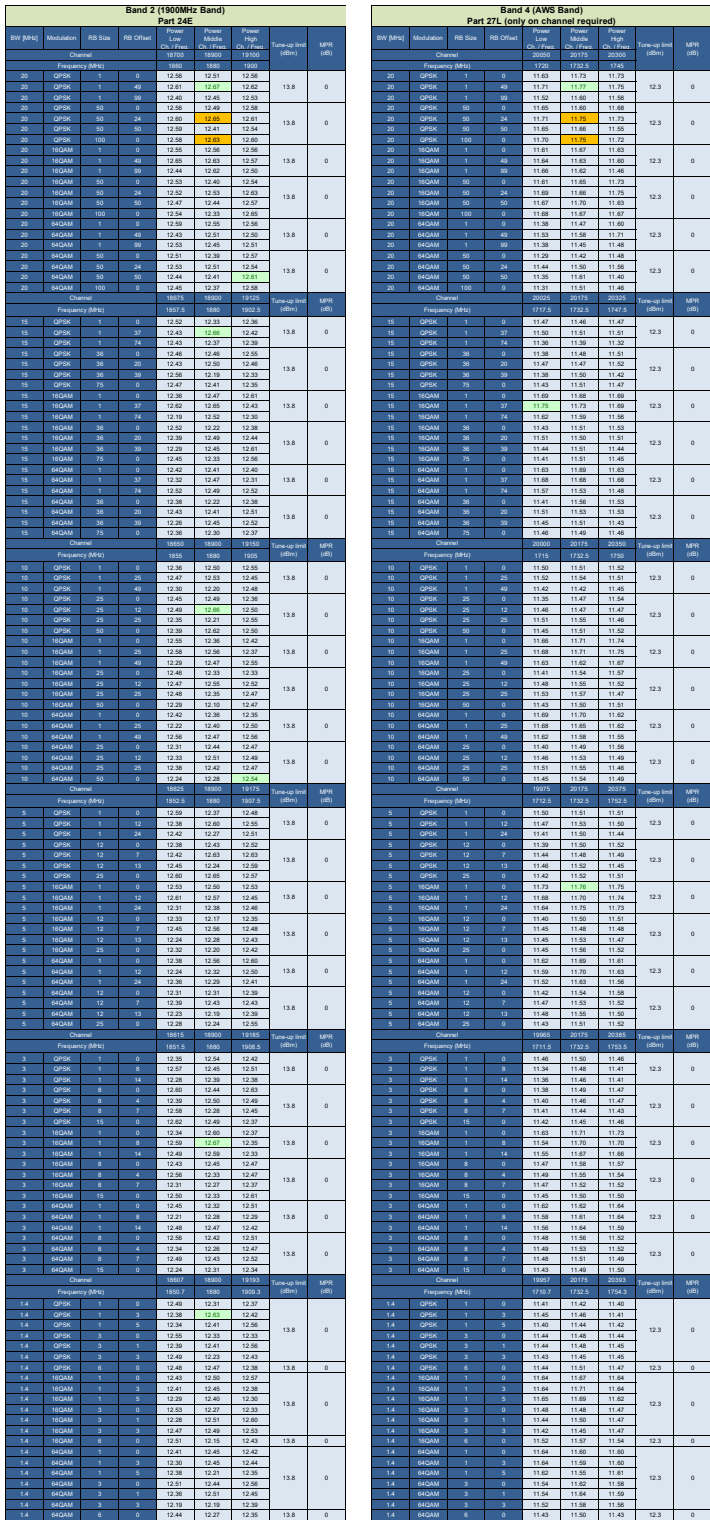
Band 41 (2.6G Band)										
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Low Middle Ch. / Freq.	Power Middle Ch. / Freq.	Power High Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				39750	40185	40620	41055	41490		
Frequency (MHz)				2506	2549.5	2593	2636.5	2680		
20	QPSK	1	0	17.54	17.49	17.60	17.68	17.58	18.3	0
20	QPSK	1	49	17.67	17.66	17.70	17.76	17.72		
20	QPSK	1	99	17.60	17.61	17.68	17.75	17.69		
20	QPSK	50	0	17.65	17.54	17.64	17.62	17.62	18.3	0
20	QPSK	50	24	17.65	17.65	17.77	17.75	17.70		
20	QPSK	50	50	17.51	17.63	17.73	17.71	17.72		
20	QPSK	100	0	17.63	17.65	17.75	17.73	17.68	18.3	0
20	16QAM	1	0	17.65	17.64	17.65	17.70	17.71		
20	16QAM	1	49	17.77	17.70	17.70	17.72	17.71		
20	16QAM	1	99	17.64	17.69	17.77	17.74	17.78	18.3	0
20	16QAM	50	0	17.53	17.45	17.60	17.78	17.66		
20	16QAM	50	24	17.55	17.55	17.70	17.78	17.67		
20	16QAM	50	50	17.45	17.57	17.65	17.77	17.62	18.3	0
20	16QAM	100	0	17.51	17.56	17.64	17.75	17.53		
20	64QAM	1	0	17.63	17.56	17.62	17.70	17.67		
20	64QAM	1	49	17.72	17.72	17.74	17.71	17.72	18.3	0
20	64QAM	1	99	17.60	17.62	17.70	17.72	17.67		
20	64QAM	50	0	17.58	17.56	17.71	17.75	17.72		
20	64QAM	50	24	17.64	17.68	17.79	17.79	17.66	18.3	0
20	64QAM	50	50	17.60	17.66	17.74	17.76	17.79		
20	64QAM	100	0	17.69	17.62	17.69	17.74	17.73		
Channel				39725	40173	40620	41068	41515	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2503.5	2548.3	2593	2637.8	2682.5		
15	QPSK	1	0	17.54	17.39	17.46	17.61	17.48	18.3	0
15	QPSK	1	37	17.49	17.54	17.60	17.77	17.72		
15	QPSK	1	74	17.54	17.55	17.60	17.76	17.53		
15	QPSK	36	0	17.61	17.37	17.51	17.62	17.57	18.3	0
15	QPSK	36	20	17.48	17.70	17.66	17.64	17.53		
15	QPSK	36	39	17.27	17.54	17.58	17.53	17.71		
15	QPSK	75	0	17.62	17.50	17.57	17.63	17.62	18.3	0
15	16QAM	1	0	17.53	17.59	17.68	17.62	17.66		
15	16QAM	1	37	17.72	17.52	17.48	17.47	17.64		
15	16QAM	1	74	17.66	17.55	17.62	17.66	17.61	18.3	0
15	16QAM	36	0	17.52	17.34	17.38	17.55	17.64		
15	16QAM	36	20	17.54	17.51	17.63	17.75	17.56		
15	16QAM	36	39	17.38	17.47	17.48	17.73	17.51	18.3	0
15	16QAM	75	0	17.53	17.33	17.60	17.62	17.45		
15	64QAM	1	0	17.38	17.31	17.46	17.54	17.59		
15	64QAM	1	37	17.51	17.57	17.59	17.47	17.76	18.3	0
15	64QAM	1	74	17.51	17.56	17.55	17.67	17.53		
15	64QAM	36	0	17.39	17.49	17.72	17.76	17.69		
15	64QAM	36	20	17.40	17.59	17.56	17.74	17.66	18.3	0
15	64QAM	36	39	17.36	17.65	17.53	17.73	17.71		
15	64QAM	75	0	17.56	17.45	17.54	17.56	17.53		
Channel				39100	40160	40620	41080	41540	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2501	2547	2593	2639	2685		
10	QPSK	1	0	17.46	17.29	17.45	17.63	17.43	18.3	0
10	QPSK	1	25	17.71	17.43	17.66	17.60	17.51		
10	QPSK	1	49	17.48	17.41	17.43	17.50	17.48		
10	QPSK	25	0	17.65	17.32	17.42	17.50	17.39	18.3	0
10	QPSK	25	12	17.64	17.62	17.60	17.70	17.60		
10	QPSK	25	25	17.54	17.70	17.70	17.76	17.69		
10	QPSK	50	0	17.43	17.68	17.57	17.74	17.68	18.3	0
10	16QAM	1	0	17.41	17.54	17.62	17.71	17.48		
10	16QAM	1	25	17.58	17.69	17.60	17.73	17.70		
10	16QAM	1	49	17.59	17.70	17.55	17.71	17.63	18.3	0
10	16QAM	25	0	17.41	17.41	17.55	17.65	17.44		
10	16QAM	25	12	17.57	17.38	17.45	17.67	17.46		
10	16QAM	25	25	17.31	17.48	17.43	17.53	17.41	18.3	0
10	16QAM	50	0	17.32	17.59	17.58	17.69	17.45		
10	64QAM	1	0	17.63	17.50	17.61	17.56	17.64		
10	64QAM	1	25	17.70	17.51	17.61	17.68	17.47	18.3	0
10	64QAM	1	49	17.35	17.43	17.65	17.63	17.50		
10	64QAM	25	0	17.38	17.39	17.72	17.61	17.51		
10	64QAM	25	12	17.66	17.58	17.59	17.75	17.46	18.3	0
10	64QAM	25	25	17.65	17.64	17.78	17.68	17.78		
10	64QAM	50	0	17.73	17.39	17.63	17.74	17.50		
Channel				39675	40148	40620	41093	41565	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2498.5	2545.8	2593	2640.30	2687.5		
5	QPSK	1	0	17.29	17.41	17.54	17.61	17.53	18.3	0
5	QPSK	1	12	17.47	17.65	17.63	17.56	17.48		
5	QPSK	1	24	17.63	17.39	17.71	17.51	17.61		
5	QPSK	12	0	17.67	17.54	17.50	17.47	17.61	18.3	0
5	QPSK	12	7	17.63	17.48	17.54	17.73	17.62		
5	QPSK	12	13	17.56	17.63	17.71	17.51	17.64		
5	QPSK	25	0	17.57	17.49	17.78	17.63	17.48	18.3	0
5	16QAM	1	0	17.42	17.58	17.52	17.68	17.68		
5	16QAM	1	12	17.78	17.50	17.46	17.64	17.65		
5	16QAM	1	24	17.39	17.73	17.68	17.68	17.75	18.3	0
5	16QAM	12	0	17.54	17.47	17.57	17.58	17.66		
5	16QAM	12	7	17.39	17.34	17.60	17.58	17.70		
5	16QAM	12	13	17.42	17.43	17.53	17.73	17.59	18.3	0
5	16QAM	25	0	17.39	17.58	17.62	17.61	17.52		
5	64QAM	1	0	17.54	17.51	17.65	17.51	17.54		
5	64QAM	1	12	17.72	17.77	17.57	17.70	17.67	18.3	0
5	64QAM	1	24	17.61	17.40	17.53	17.60	17.54		
5	64QAM	12	0	17.54	17.37	17.65	17.67	17.66		
5	64QAM	12	7	17.39	17.72	17.57	17.74	17.43	18.3	0
5	64QAM	12	13	17.63	17.69	17.60	17.70	17.58		
5	64QAM	25	0	17.71	17.48	17.56	17.56	17.59		

Reduced Power Level 2 for Head -UAT

GSM850	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame Average Power (dBm)			Tune-up Limit (dBm)
	TX Channel	128	169	251	128	169	251	
Frequency (MHz)	824.2	835.4	846.6	824.2	835.4	846.6	824.2	835.4
GSM 1 Tx slot	25.22	25.35	25.30	25.80	16.22	16.35	16.30	16.80
GPRS 1 Tx slot	25.19	25.33	25.27	25.80	16.19	16.33	16.27	16.80
GPRS 2 Tx slots	22.61	22.76	22.66	23.80	16.61	16.76	16.66	17.80
GPRS 3 Tx slots	21.13	21.29	21.21	22.30	16.87	17.03	16.95	18.04
GPRS 4 Tx slots	20.17	20.33	20.24	21.80	17.17	17.33	17.24	18.80
EDGE 1 Tx slot	19.28	19.25	19.21	20.80	10.28	10.25	10.21	11.80
EDGE 2 Tx slots	18.00	17.92	17.99	18.30	12.00	11.92	11.99	12.30
EDGE 3 Tx slots	15.79	15.84	15.96	16.80	11.53	11.58	11.70	12.54
EDGE 4 Tx slots	14.76	14.73	14.84	16.30	11.76	11.73	11.94	13.30

GSM1900	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame Average Power (dBm)			Tune-up Limit (dBm)
	TX Channel	512	661	810	512	661	810	
Frequency (MHz)	1850.2	1880	1909.6	1850.2	1880	1909.6	1850.2	1880
GSM 1 Tx slot	21.36	21.50	21.42	22.30	12.36	12.50	12.42	13.30
GPRS 1 Tx slot	21.34	21.48	21.40	22.30	12.34	12.48	12.40	13.30
GPRS 2 Tx slots	17.78	17.91	17.82	18.30	11.78	11.91	11.82	13.30
GPRS 3 Tx slots	17.04	17.19	17.09	18.30	12.78	12.92	12.83	14.04
GPRS 4 Tx slots	15.22	15.42	15.33	16.80	12.22	12.42	12.33	13.80
EDGE 1 Tx slot	17.19	17.30	17.35	18.80	8.19	8.30	8.35	9.80
EDGE 2 Tx slots	15.27	15.45	15.34	16.30	9.27	9.45	9.34	10.30
EDGE 3 Tx slots	13.74	13.81	13.70	15.30	9.48	9.55	9.44	11.04
EDGE 4 Tx slots	12.60	12.59	12.53	14.30	9.60	9.59	9.53	11.30

Band		WCDMA II			Tune-up Limit (dBm)	WCDMA IV			Tune-up Limit (dBm)	WCDMA V			Tune-up Limit (dBm)
TX Channel		9262	9400	9538		1312	1413	1513		4132	4182	4233	
Rx Channel		9662	9800	9938		1537	1638	1738		4357	4407	4458	
Frequency (MHz)		1852.4	1880	1907.6		1712.4	1732.6	1752.6		826.4	836.4	846.6	
3GPP Rel 99	AMR 12.2kbps	12.95	12.94	12.85	13.30	11.68	11.60	11.66	12.30	17.54	17.55	17.45	18.30
3GPP Rel 99	RMC 12.2kbps	12.97	12.96	12.88	13.30	11.71	11.72	11.69	12.30	17.56	17.48	17.58	18.30
3GPP Rel 6	HSDPA Subtest-1	11.90	11.87	11.78	12.30	10.61	10.63	10.67	11.30	16.22	16.20	16.17	17.30
3GPP Rel 6	HSDPA Subtest-2	11.85	11.89	11.90	12.30	10.61	10.61	10.63	11.30	16.24	16.17	16.13	17.30
3GPP Rel 6	HSDPA Subtest-3	11.39	11.47	11.35	11.80	10.12	10.14	10.16	10.80	15.80	15.72	15.67	16.80
3GPP Rel 6	HSDPA Subtest-4	11.35	11.38	11.31	11.80	10.09	10.11	10.13	10.80	15.74	15.66	15.63	16.80
3GPP Rel 8	DC-HSDPA Subtest-1	11.67	11.66	11.77	12.30	10.34	10.54	10.52	11.30	15.88	15.80	15.95	17.30
3GPP Rel 8	DC-HSDPA Subtest-2	11.73	11.87	11.56	12.30	10.45	10.31	10.32	11.30	15.99	15.88	15.78	17.30
3GPP Rel 8	DC-HSDPA Subtest-3	11.10	11.18	11.26	11.80	9.79	9.84	9.83	10.80	15.75	15.46	15.33	16.80
3GPP Rel 8	DC-HSDPA Subtest-4	11.06	11.24	11.30	11.80	9.77	9.80	10.04	10.80	15.63	15.41	15.60	16.80
3GPP Rel 6	HSUPA Subtest-1	10.14	10.07	10.29	10.80	9.09	9.03	8.95	9.80	15.13	15.22	15.33	15.80
3GPP Rel 6	HSUPA Subtest-2	9.68	9.43	9.75	10.30	8.49	8.66	8.73	9.30	14.78	14.77	14.65	15.30
3GPP Rel 6	HSUPA Subtest-3	10.74	10.46	10.57	11.30	9.64	9.53	9.71	10.30	15.81	15.60	15.56	16.30
3GPP Rel 6	HSUPA Subtest-4	9.30	9.04	9.28	9.80	7.76	8.13	7.81	8.80	14.04	14.20	14.19	14.80
3GPP Rel 6	HSUPA Subtest-5	11.80	11.80	11.80	12.30	10.50	10.60	10.50	11.30	16.90	16.70	16.70	17.30
3GPP Rel 7	HSPA+ (16QAM) Subtest-1	8.84	8.68	8.80	9.30	7.41	7.60	7.43	8.30	13.70	13.67	13.72	14.30



Band 4 (AWS Band)										
Part 27L (only on channel required)										
PRN (PRN)	Modulation	RIS Size	RIS Offset	Low Power Channel (MHz)	High Power Channel (MHz)	Power (dBm)	Power (dBm)	Power (dBm)	Power (dBm)	Power (dBm)
Frequency (MHz)										
20	QPSK	1	0	11.63	11.72	11.75				
20	QPSK	1	49	11.71	11.72	11.75	12.3	0		
20	QPSK	1	98	11.69	11.72	11.75				
20	QPSK	50	0	11.69	11.69	11.69				
20	QPSK	50	24	11.71	11.72	11.75	12.3	0		
20	QPSK	50	49	11.69	11.72	11.75				
20	QPSK	100	0	11.70	11.70	11.72				
20	QPSK	1	0	11.81	11.87	11.88				
20	QPSK	1	49	11.79	11.87	11.88	12.3	0		
20	QPSK	1	98	11.86	11.87	11.88				
20	QPSK	50	0	11.81	11.82	11.82				
20	QPSK	50	24	11.83	11.87	11.88	12.3	0		
20	QPSK	50	49	11.87	11.70	11.65				
20	QPSK	100	0	11.88	11.87	11.88				
20	QPSK	1	0	11.92	11.92	11.92				
20	QPSK	1	49	11.93	11.98	11.97	12.3	0		
20	QPSK	1	98	11.98	11.94	11.94				
20	QPSK	50	0	11.92	11.92	11.94				
20	QPSK	50	24	11.94	11.98	11.98	12.3			
20	QPSK	50	49	11.98	11.91	11.91				
20	QPSK	100	0	11.91	11.91	11.91				
Frequency (MHz)										
15	QPSK	1	0	11.67	11.68	11.67				
15	QPSK	1	49	11.68	11.61	11.61	12.3	0		
15	QPSK	1	98	11.56	11.59	11.52				
15	QPSK	50	0	11.59	11.62	11.62				
15	QPSK	50	24	11.67	11.67	11.62				
15	QPSK	50	49	11.58	11.59	11.52				
15	QPSK	100	0	11.63	11.61	11.61				
15	QPSK	1	0	11.89	11.88	11.88				
15	QPSK	1	49	11.93	11.73	11.68	12.3	0		
15	QPSK	1	98	11.92	11.82	11.82				
15	QPSK	50	0	11.83	11.81	11.82				
15	QPSK	50	24	11.91	11.90	11.91	12.3			
15	QPSK	50	49	11.91	11.81	11.82				
15	QPSK	100	0	11.88	11.88	11.88				
15	QPSK	1	0	11.91	11.91	11.91				
15	QPSK	1	49	11.91	11.81	11.82	12.3	0		
15	QPSK	1	98	11.81	11.88	11.88				
15	QPSK	50	0	11.91	11.91	11.91				
15	QPSK	50	24	11.91	11.91	11.91	12.3			
15	QPSK	50	49	11.91	11.91	11.91				
15	QPSK	100	0	11.91	11.91	11.91				
Channel										
				20000	19750	19750	19750	19750	19750	19750
Frequency (MHz)										
15	QPSK	1	0	11.52	11.51	11.52				
15	QPSK	1	49	11.54	11.54	11.51	12.3	0		
15	QPSK	1	98	11.42	11.42	11.42				
15	QPSK	50	0	11.42	11.42	11.42				
15	QPSK	50	24	11.42	11.42	11.42	12.3			
15	QPSK	50	49	11.51</						

Band 5 (Cellular Band) Part 22/NTTonly on channel required									
RF (MHz)	Modulation	ChB Size	RF ChOfst	Low Freq Start 2014.5	Low Freq End 2015.5	High Freq Start 2016.5	High Freq End 2017.5	Frequency offset	MPH offset
Frequency (MHz)									
10	QPSK	1	0	18.33	18.33	18.33	18.33		
10	QPSK	1	20	18.45	18.31	18.25	18.25	18.8	0
10	QPSK	1	40	18.57	18.21	18.15	18.15		
10	QPSK	1	60	18.69	18.13	18.07	18.07	18.8	0
10	QPSK	25	14	18.36	18.30	18.23	18.23		
10	QPSK	25	34	18.48	18.26	18.19	18.19	18.8	0
10	QPSK	50	10	18.36	18.28	18.21	18.21		
10	QPSK	50	30	18.48	18.26	18.19	18.19	18.8	0
10	HQAM	1	0	18.36	18.32	18.28	18.28		
10	HQAM	1	40	18.27	18.34	18.37	18.37	18.8	0
10	HQAM	25	0	18.23	18.37	18.29	18.29		
10	HQAM	25	20	18.36	18.26	18.23	18.23	18.8	0
10	HQAM	25	25	18.34	18.27	18.24	18.24		
10	HQAM	50	0	18.35	18.33	18.28	18.28		
10	HQAM	50	20	18.46	18.26	18.26	18.26	18.8	0
10	HQAM	1	20	18.34	18.30	18.26	18.26		
10	HQAM	1	40	18.39	18.24	18.17	18.17	18.8	0
10	HQAM	25	10	18.36	18.29	18.26	18.26		
10	HQAM	25	14	18.25	18.28	18.26	18.26	18.8	0
10	HQAM	25	18	18.30	18.26	18.24	18.24		
10	HQAM	50	4	18.33	18.33	18.24	18.24	18.8	0
Channel									
				2014.5	2015.5	2016.5	2017.5	Frequency offset	MPH offset
5	QPSK	1	0	18.33	18.33	18.33	18.33		
5	QPSK	1	20	18.05	18.15	18.12	18.12	18.8	0
5	QPSK	1	14	18.10	18.11	17.98	17.98		
5	QPSK	1	24	18.15	18.12	18.02	18.02	18.8	0
5	QPSK	12	10	18.04	18.08	18.01	18.01		
5	QPSK	12	14	18.03	18.06	17.97	17.97		
5	HQAM	1	0	18.34	18.34	18.24	18.24	18.8	0
5	HQAM	1	6	18.28	18.25	18.23	18.23		
5	HQAM	1	12	18.24	18.25	18.23	18.23	18.8	0
5	HQAM	12	0	18.04	18.08	18.02	18.02		
5	HQAM	12	6	17.96	18.01	17.99	17.99		
5	HQAM	12	7	18.01	18.08	17.93	17.93	18.8	0
5	HQAM	25	0	18.04	18.14	18.04	18.04		
5	HQAM	25	0	18.04	18.14	18.04	18.04	18.8	0
5	HQAM	1	0	18.15	18.10	18.16	18.16		
5	HQAM	1	6	18.10	18.19	18.19	18.19	18.8	0
5	HQAM	1	24	18.17	18.13	17.95	17.95		
5	HQAM	12	0	18.05	18.10	18.15	18.15		
5	HQAM	12	6	18.08	18.15	18.09	18.09	18.8	0
5	HQAM	12	10	18.10	18.10	18.07	18.07		
Channel									
				2014.5	2015.5	2016.5	2017.5	Frequency offset	MPH offset
3	QPSK	1	0	18.03	18.03	18.03	18.03		
3	QPSK	1	0	18.03	18.03	18.03	18.03	18.8	0
3	QPSK	1	14	18.01	18.01	17.94	17.94		
3	QPSK	1	0	18.01	18.04	17.97	17.97	18.8	0
3	QPSK	15							

[illegible]

Band 12 (700MHz Low Band) Part 27F (only on channel required)										
Rev (MHz)	Modulation	RB Size	RB Offset	Power Ch. 1 (Peak) Ch. 2 (Peak) Ch. 3 (Peak)	Power Ch. 1 (Peak) Ch. 2 (Peak) Ch. 3 (Peak)	Power Ch. 1 (Peak) Ch. 2 (Peak) Ch. 3 (Peak)	Time-up time (min)	MPR (dB)		
Channel										
Frequency (MHz)										
10 QPSK	1	5	20.82	20.82	20.85	20.85	21.5	0		
10 QPSK	1	49	20.87	20.75	20.73					
10 QPSK	25	5	20.83	20.85	20.88					
10 QPSK	25	49	20.85	20.75	20.72					
10 QPSK	25	25	20.80	20.75	20.80		21.5	0		
10 QPSK	50	5	20.84	20.74	20.79					
10 TQAM	1	49	20.82	20.74	20.79					
10 TQAM	1	25	20.77	20.84	20.77					
10 TQAM	25	5	20.81	20.83	20.89		21.5	0		
10 TQAM	25	12	20.88	20.88	20.85					
10 TQAM	25	25	20.84	20.86	20.85					
10 TQAM	50	5	20.82	20.83	20.82					
10 TQAM	1	0	20.78	20.74	20.74		21.5	0		
10 TQAM	1	25	20.42	20.47	20.46					
10 TQAM	1	49	20.45	20.45	20.45					
10 TQAM	25	0	20.25	20.26	20.22					
10 TQAM	25	12	20.30	20.29	20.29		21.5	0		
10 TQAM	25	25	20.31	20.30	20.28					
10 TQAM	50	0	20.28	20.27	20.25					
Channel			21005	21005	21115					
Frequency (MHz)										
5 QPSK	1	0	20.25	20.27	20.23		21.5	0		
5 QPSK	1	12	20.29	20.28	20.29					
5 QPSK	1	24	20.28	20.28	20.28					
5 QPSK	12	0	20.25	20.25	20.29					
5 QPSK	12	7	20.25	20.27	20.26		21.5	0		
5 QPSK	12	12	20.30	20.29	20.29					
5 QPSK	25	0	20.28	20.28	20.27					
5 TQAM	1	0	20.41	20.40	20.43			21.5	0	
5 TQAM	1	12	20.45	20.45	20.45					
5 TQAM	1	24	20.43	20.43	20.43					
5 TQAM	12	0	20.22	20.29	20.27					
5 TQAM	12	7	20.26	20.26	20.24		21.5	0		
5 TQAM	12	12	20.33	20.33	20.33					
5 TQAM	12	19	20.27	20.28	20.27					
5 TQAM	25	0	20.27	20.29	20.28					
5 TQAM	1	0	20.34	20.34	20.34		21.5	0		
5 TQAM	1	12	20.45	20.47	20.46					
5 TQAM	1	24	20.40	20.41	20.41					
5 TQAM	12	0	20.29	20.34	20.32					
5 TQAM	12	7	20.30	20.31	20.29		21.5	0		
5 TQAM	12	12	20.35	20.35	20.35					
5 TQAM	12	19	20.29	20.31	20.29					
5 TQAM	25	0	20.27	20.29	20.29					
Channel										
Frequency (MHz)										
3 QPSK	1	0	20.20	20.20	20.19		21.5	0		
3 QPSK	1	8	20.28	20.22	20.22					
3 QPSK	1	16	20.23	20.21	20.26					
3 QPSK	8	0	20.15	20.16	20.21					
3 QPSK	8	4	20.22	20.26	20.22		21.5	0		
3 QPSK	8	7	20.19	20.19	20.23					
3 QPSK	15	0	20.20	20.20	20.18					
3 TQAM	1	0	20.44	20.41	20.45			21.5	0	
3 TQAM	1	8	20.45	20.52	20.45					
3 TQAM	1	16	20.43	20.46	20.44					
3 TQAM	8	0	20.28	20.30	20.28					
3 TQAM	8	4	20.29	20.30	20.28		21.5	0		
3 TQAM	8	7	20.26	20.29	20.27					
3 TQAM	15	0	20.27	20.24	20.26					
3 TQAM	1	0	20.37	20.37	20.31			21.5	0	
3 TQAM	1	8	20.38	20.38	20.35					
3 TQAM	1	16	20.36	20.36	20.36					
3 TQAM	8	0	20.27	20.29	20.28					
3 TQAM	8	4	20.29	20.31	20.27		21.5	0		
3 TQAM	8	7	20.24	20.27	20.29					
3 TQAM	15	0	20.29	20.28	20.29					
Channel										
Frequency (MHz)										
1.4 QPSK	1	0	20.28	20.24	20.23		21.5	0		
1.4 QPSK	1	3	20.32	20.29	20.29					
1.4 QPSK	1	6	20.28	20.28	20.27					
1.4 QPSK	3	0	20.25	20.26	20.26					
1.4 QPSK	3	1	20.25	20.26	20.26		21.5	0		
1.4 QPSK	3	3	20.28	20.22	20.27					
1.4 QPSK	6	0	20.24	20.24	20.27					
1.4 TQAM	1	0	20.47	20.44	20.44			21.5	0	
1.4 TQAM	1	3	20.51	20.46	20.51					
1.4 TQAM	1	6	20.48	20.46	20.51					
1.4 TQAM	3	0	20.27	20.29	20.28					
1.4 TQAM	3	1	20.27	20.31	20.30		21.5	0		
1.4 TQAM	3	3	20.25	20.25	20.30					
1.4 TQAM	6	0	20.31	20.30	20.34					
1.4 TQAM	1	0	20.34	20.30	20.29					
1.4 TQAM	1	3	20.36	20.36	20.33		21.5	0		
1.4 TQAM	1	6	20.33	20.33	20.33					
1.4 TQAM	3	0	20.30	20.27	20.34					
1.4 TQAM	3	1	20.30	20.40	20.40					
1.4 TQAM	3	3	20.28	20.30	20.30		21.5	0		
1.4 TQAM	6	0	20.31	20.28	20.34					

Band 17 (700MHz Band) Part 27H (only on channel required)										
Rev (MHz)	Modulation	RB Size	RB Offset	Power Ch. 1 (Peak) Ch. 2 (Peak) Ch. 3 (Peak)			Time-up time (min)	MPR (dB)		
Channel										
Frequency (MHz)										
10	QPSK	1	0	20.48	20.54	20.46	21.5	0		
10	QPSK	1	49	20.57	20.53	20.56				
10	QPSK	25	0	20.55	20.52	20.45				
10	QPSK	25	0	20.55	20.52	20.45				
10	QPSK	25	12	20.57	20.54	20.54	21.5	0		
10	QPSK	50	5	20.58	20.54	20.53				
10	QPSK	50	0	20.58	20.46	20.52				
10	TQAM	1	49	20.48	20.46	20.51		21.5	0	
10	TQAM	1	25	20.52	20.50	20.52				
10	TQAM	1	49	20.51	20.55	20.58				
10	TQAM	25	0	20.50	20.35	20.36				
10	TQAM	25	25	20.47	20.40	20.48	21.5	0		
10	TQAM	50	0	20.51	20.37	20.48				
10	TQAM	1	0	20.31	20.48	20.34				
10	TQAM	1	25	20.38	20.42	20.40		21.5	0	
10	TQAM	1	49	20.41	20.41	20.40				
10	TQAM	25	0	20.23	20.24	20.19				
10	TQAM	25	12	20.27	20.28	20.28				
10	TQAM	25	25	20.29	20.29	20.21	21.5	0		
10	TQAM	50	0	20.28	20.27	20.25				
Channel										
Frequency (MHz)										
5	QPSK	1	0	20.26	20.25	20.28	21.5	0		
5	QPSK	1	12	20.33	20.30	20.30				
5	QPSK	1	24	20.31	20.29	20.36				
5	QPSK	12	0	20.31	20.24	20.31				
5	QPSK	12	7	20.32	20.30	20.28	21.5	0		
5	QPSK	12	12	20.30	20.29	20.19				
5	QPSK	25	0	20.29	20.29	20.23				
5	TQAM	1	0	20.47	20.47	20.49		21.5	0	
5	TQAM	1	12	20.50	20.50	20.34				
5	TQAM	1	24	20.53	20.50	20.34				
5	TQAM	12	0	20.31	20.23	20.30				
5	TQAM	12	7	20.30	20.29	20.19	21.5	0		
5	TQAM	12	12	20.33	20.28	20.28				
5	TQAM	12	19	20.28	20.28	20.17				
5	TQAM	25	0	20.31	20.32	20.26				
5	TQAM	1	0	20.41	20.40	20.41	21.5	0		
5	TQAM	1	12	20.50	20.44	20.42				
5	TQAM	1	24	20.53	20.44	20.42				
5	TQAM	12	0	20.34	20.28	20.36				
5	TQAM	12	7	20.37	20.32	20.32	21.5	0		
5	TQAM	12	12	20.37	20.32	20.32				
5	TQAM	25	0	20.29	20.28	20.24				

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	15.90	15.91	15.90	16.8	0		
20	QPSK	1	49	16.07	16.03	16.05				
20	QPSK	1	99	15.99	16.00	16.02				
20	QPSK	50	0	15.98	15.96	16.00	16.8	0		
20	QPSK	50	24	16.05	16.01	16.04				
20	QPSK	50	50	16.02	16.00	16.03				
20	QPSK	100	0	16.03	16.00	16.02	16.8	0		
20	16QAM	1	0	15.94	15.92	15.93				
20	16QAM	1	49	15.97	16.02	16.01				
20	16QAM	1	99	15.98	16.01	16.01	16.8	0		
20	16QAM	50	0	15.88	15.90	15.97				
20	16QAM	50	24	15.88	15.94	16.01				
20	16QAM	50	50	15.96	15.97	15.96	16.8	0		
20	16QAM	100	0	15.82	15.95	15.93				
20	64QAM	1	0	15.80	15.94	15.89				
20	64QAM	1	49	16.00	16.01	15.93	16.8	0		
20	64QAM	1	99	16.00	16.01	16.00				
20	64QAM	50	0	15.89	15.95	15.99				
20	64QAM	50	24	15.92	15.92	15.98	16.8	0		
20	64QAM	50	50	15.94	15.92	15.93				
20	64QAM	100	0	15.82	15.89	15.95				
Channel				37825	38000	38175	Tune-up limit (dBm)	MPR (dB)		
Frequency (MHz)				2577.5	2595	2612.5				
15	QPSK	1	0	15.66	15.90	15.87				
15	QPSK	1	37	15.95	16.05	15.85	16.8	0		
15	QPSK	1	74	15.86	15.90	15.95				
15	QPSK	36	0	15.98	15.81	15.92				
15	QPSK	36	20	16.02	16.06	15.92	16.8	0		
15	QPSK	36	39	15.82	16.02	15.89				
15	QPSK	75	0	15.88	15.86	15.77				
15	16QAM	1	0	15.95	15.83	15.77	16.8	0		
15	16QAM	1	37	15.92	15.78	15.78				
15	16QAM	1	74	15.82	15.98	15.86				
15	16QAM	36	0	15.86	15.77	15.78	16.8	0		
15	16QAM	36	20	15.65	15.97	16.05				
15	16QAM	36	39	15.98	15.82	15.76				
15	16QAM	75	0	15.82	15.70	15.76	16.8	0		
15	64QAM	1	0	15.67	15.86	15.90				
15	64QAM	1	37	15.97	15.91	15.79				
15	64QAM	1	74	15.85	15.76	15.87	16.8	0		
15	64QAM	36	0	15.94	15.81	15.93				
15	64QAM	36	20	15.69	15.86	16.01				
15	64QAM	36	39	15.99	15.89	15.88	16.8	0		
15	64QAM	75	0	15.62	15.67	15.86				
Channel				37800	38000	38200	Tune-up limit (dBm)	MPR (dB)		
Frequency (MHz)				2575	2595	2615				
10	QPSK	1	0	15.68	15.90	15.87				
10	QPSK	1	25	15.89	16.05	15.93	16.8	0		
10	QPSK	1	49	15.90	15.94	16.06				
10	QPSK	25	0	15.84	15.86	15.82				
10	QPSK	25	12	15.97	15.93	15.85	16.8	0		
10	QPSK	25	25	15.90	16.01	16.06				
10	QPSK	50	0	15.78	16.01	16.05				
10	16QAM	1	0	15.86	15.95	15.85	16.8	0		
10	16QAM	1	25	15.99	15.82	15.84				
10	16QAM	1	49	15.73	15.89	16.02				
10	16QAM	25	0	15.75	15.91	15.81	16.8	0		
10	16QAM	25	12	15.68	15.96	15.83				
10	16QAM	25	25	15.87	15.81	16.01				
10	16QAM	50	0	15.83	15.77	15.94	16.8	0		
10	64QAM	1	0	15.72	15.79	15.86				
10	64QAM	1	25	16.04	15.92	15.84				
10	64QAM	1	49	15.79	15.89	15.87	16.8	0		
10	64QAM	25	0	15.66	15.93	15.80				
10	64QAM	25	12	15.78	15.92	15.96				
10	64QAM	25	25	15.75	15.71	15.79	16.8	0		
10	64QAM	50	0	15.86	15.66	15.81				
Channel				37775	38000	38225	Tune-up limit (dBm)	MPR (dB)		
Frequency (MHz)				2572.5	2595	2617.5				
5	QPSK	1	0	15.72	15.91	15.78				
5	QPSK	1	12	16.03	15.78	16.02	16.8	0		
5	QPSK	1	24	15.91	16.01	15.96				
5	QPSK	12	0	15.96	15.78	15.95				
5	QPSK	12	7	15.86	15.86	16.03	16.8	0		
5	QPSK	12	13	15.95	15.87	15.82				
5	QPSK	25	0	15.80	15.87	15.79				
5	16QAM	1	0	15.75	15.87	15.86	16.8	0		
5	16QAM	1	12	15.98	15.96	15.80				
5	16QAM	1	24	15.92	15.84	16.01				
5	16QAM	12	0	15.92	15.92	15.95	16.8	0		
5	16QAM	12	7	15.93	15.80	15.90				
5	16QAM	12	13	15.94	15.76	15.81				
5	16QAM	25	0	15.65	15.89	15.93	16.8	0		
5	64QAM	1	0	15.80	15.79	15.73				
5	64QAM	1	12	15.82	15.91	15.74				
5	64QAM	1	24	15.92	15.84	15.81	16.8	0		
5	64QAM	12	0	15.80	15.81	15.81				
5	64QAM	12	7	15.95	15.69	15.76				
5	64QAM	12	13	15.71	15.87	15.73	16.8	0		
5	64QAM	25	0	15.80	15.91	15.91				

Band 41 (2.6G Band)										
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Low Middle Ch. / Freq.	Power Middle Ch. / Freq.	Power High Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				39750	40185	40620	41055	41490		
Frequency (MHz)				2506	2549.5	2593	2636.5	2680		
20	QPSK	1	0	15.96	15.87	15.93	16.11	15.97	16.8	0
20	QPSK	1	49	16.12	16.10	16.20	16.17	16.17		
20	QPSK	1	99	15.99	16.05	16.11	16.13	16.10		
20	QPSK	50	0	15.91	15.88	16.10	16.15	15.97	16.8	0
20	QPSK	50	24	16.10	16.08	16.19	16.16	16.15		
20	QPSK	50	50	16.01	16.05	16.06	16.13	16.01		
20	QPSK	100	0	16.08	16.07	16.17	16.14	16.13	16.8	0
20	16QAM	1	0	16.01	15.94	16.02	16.06	15.97		
20	16QAM	1	49	16.10	16.10	16.12	16.03	16.10		
20	16QAM	1	99	16.01	16.04	16.12	16.01	16.10	16.8	0
20	16QAM	50	0	15.82	15.76	15.99	16.09	15.89		
20	16QAM	50	24	15.88	15.82	16.02	16.12	15.96		
20	16QAM	50	50	15.85	15.93	15.94	16.09	15.91	16.8	0
20	16QAM	100	0	15.86	15.82	15.98	16.08	15.87		
20	64QAM	1	0	15.82	15.73	15.90	15.96	15.84		
20	64QAM	1	49	16.00	15.89	16.09	16.05	15.98	16.8	0
20	64QAM	1	99	15.78	15.84	15.93	15.93	15.91		
20	64QAM	50	0	15.76	15.77	15.90	15.99	15.89		
20	64QAM	50	24	15.84	15.82	15.95	16.03	15.93	16.8	0
20	64QAM	50	50	15.82	15.84	15.95	16.06	15.90		
20	64QAM	100	0	15.90	15.82	15.90	16.09	15.84		
Channel				39725	40173	40620	41068	41515	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2503.5	2548.3	2593	2637.8	2682.5		
15	QPSK	1	0	15.79	15.67	15.86	15.90	15.84	16.8	0
15	QPSK	1	37	15.84	15.88	15.96	16.02	15.95		
15	QPSK	1	74	15.74	15.79	15.88	15.98	15.89		
15	QPSK	36	0	15.75	15.72	15.91	15.99	15.98	16.8	0
15	QPSK	36	20	15.84	15.80	15.90	15.99	15.86		
15	QPSK	36	39	15.79	15.78	15.89	16.03	15.97		
15	QPSK	75	0	15.74	15.76	15.97	16.04	15.91	16.8	0
15	16QAM	1	0	16.03	15.94	16.11	16.16	16.00		
15	16QAM	1	37	16.14	16.04	16.14	16.06	16.17		
15	16QAM	1	74	15.96	16.04	16.16	16.12	16.08	16.8	0
15	16QAM	36	0	15.77	15.75	15.89	16.00	15.87		
15	16QAM	36	20	15.86	15.78	15.83	16.00	15.93		
15	16QAM	36	39	15.77	15.66	15.88	15.98	15.91	16.8	0
15	16QAM	75	0	15.89	15.79	15.90	16.02	15.90		
15	64QAM	1	0	15.89	15.82	15.93	16.05	15.88		
15	64QAM	1	37	15.93	15.91	16.03	16.08	16.01	16.8	0
15	64QAM	1	74	15.85	15.86	15.98	16.02	15.94		
15	64QAM	36	0	15.78	15.77	15.86	15.96	15.87		
15	64QAM	36	20	15.83	15.80	15.94	15.98	15.86	16.8	0
15	64QAM	36	39	15.87	15.77	15.92	16.02	15.95		
15	64QAM	75	0	15.87	15.70	15.86	16.01	15.95		
Channel				39700	40160	40620	41080	41540	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2501	2547	2593	2639	2686		
10	QPSK	1	0	15.74	15.69	15.79	15.87	15.82	16.8	0
10	QPSK	1	25	15.74	15.72	15.89	15.93	15.78		
10	QPSK	1	49	15.80	15.70	15.84	15.86	15.91		
10	QPSK	25	0	15.82	15.79	15.94	15.98	15.97	16.8	0
10	QPSK	25	12	15.84	15.86	15.94	16.00	15.98		
10	QPSK	25	25	15.89	15.80	16.00	16.05	16.00		
10	QPSK	50	0	15.81	15.78	15.96	16.11	15.94	16.8	0
10	16QAM	1	0	16.05	15.97	16.13	16.11	16.13		
10	16QAM	1	25	16.09	16.07	16.14	16.08	16.11		
10	16QAM	1	49	16.12	16.02	16.09	16.14	16.18	16.8	0
10	16QAM	25	0	15.91	15.73	16.00	16.02	15.98		
10	16QAM	25	12	15.86	15.89	16.01	16.04	16.00		
10	16QAM	25	25	15.94	15.83	15.95	16.06	15.99	16.8	0
10	16QAM	50	0	15.97	15.80	15.99	16.07	15.96		
10	64QAM	1	0	15.94	15.80	15.93	16.05	15.98		
10	64QAM	1	25	15.94	15.88	16.05	16.13	16.05	16.8	0
10	64QAM	1	49	15.88	15.82	16.02	16.07	15.98		
10	64QAM	25	0	15.95	15.87	15.99	16.11	15.97		
10	64QAM	25	12	15.96	15.93	16.04	16.14	16.04	16.8	0
10	64QAM	25	25	15.89	15.91	15.99	16.12	16.10		
10	64QAM	50	0	15.87	15.82	15.97	16.00	16.03		
Channel				39675	40148	40620	41093	41565	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2498.5	2545.8	2593	2640.30	2687.5		
5	QPSK	1	0	15.70	15.66	15.85	15.92	15.86	16.8	0
5	QPSK	1	12	15.76	15.77	15.89	15.93	15.92		
5	QPSK	1	24	15.77	15.75	15.81	15.90	15.81		
5	QPSK	12	0	15.79	15.79	15.96	16.01	15.98	16.8	0
5	QPSK	12	7	15.86	15.83	15.94	16.02	16.00		
5	QPSK	12	13	15.80	15.80	15.92	16.00	16.00		
5	QPSK	25	0	15.91	15.83	15.91	15.97	15.90	16.8	0
5	16QAM	1	0	16.07	16.00	16.15	16.19	16.11		
5	16QAM	1	12	16.06	16.10	16.14	16.14	16.12		
5	16QAM	1	24	16.07	16.07	16.13	16.14	16.12	16.8	0
5	16QAM	12	0	15.90	15.83	15.88	16.08	16.04		
5	16QAM	12	7	15.82	15.88	15.96	15.98	15.94		
5	16QAM	12	13	15.86	15.84	15.85	15.99	16.00	16.8	0
5	16QAM	25	0	15.92	15.88	16.01	16.06	16.03		
5	64QAM	1	0	15.90	15.86	16.02	16.06	16.09		
5	64QAM	1	12	15.92	15.88	16.00	16.10	16.05	16.8	0
5	64QAM	1	24	15.87	15.88	16.02	16.06	16.00		
5	64QAM	12	0	15.88	15.84	15.96	16.11	16.06		
5	64QAM	12	7	15.87	15.81	15.93	15.99	16.02	16.8	0
5	64QAM	12	13	15.90	15.90	15.92	15.96	15.96		
5	64QAM	25	0	15.93	15.86	16.00	16.10	16.04		

Power Level for Hotspot -UAT

GSM850	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
	128	189	251		128	189	251	
TX Channel	824.2	836.4	848.8		824.2	836.4	848.8	
Frequency (MHz)	824.2	836.4	848.8		824.2	836.4	848.8	
GSM 1 Tx slot	32.06	32.50	32.23	33.30	23.06	23.50	23.23	24.30
GPRS 1 Tx slot	32.04	32.46	32.20	33.30	23.04	23.46	23.20	24.30
GPRS 2 Tx slots	29.80	30.22	30.02	31.30	23.80	24.22	24.02	25.30
GPRS 3 Tx slots	28.23	28.63	28.45	29.80	23.97	24.37	24.19	25.54
GPRS 4 Tx slots	27.33	27.64	27.56	29.30	24.33	24.64	24.56	26.30
EDGE 1 Tx slot	26.65	26.52	26.77	28.30	17.65	17.52	17.77	19.30
EDGE 2 Tx slots	25.45	25.26	25.66	25.80	19.45	19.26	19.66	19.80
EDGE 3 Tx slots	23.25	23.15	23.59	24.50	18.90	18.89	19.33	20.04
EDGE 4 Tx slots	22.20	22.10	22.33	23.80	19.20	19.10	19.33	20.80

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	1860	1909.8		1850.2	1860	1909.8	
Frequency (MHz)	1850.2	1860	1909.8		1850.2	1860	1909.8	
GSM 1 Tx slot	25.45	25.53	25.69	26.30	16.45	16.53	16.69	17.30
GPRS 1 Tx slot	25.43	25.50	25.67	26.30	16.43	16.50	16.67	17.30
GPRS 2 Tx slots	21.79	21.91	21.84	23.30	15.79	15.91	15.84	17.30
GPRS 3 Tx slots	21.04	21.16	21.09	22.30	16.78	16.90	16.83	18.04
GPRS 4 Tx slots	19.26	19.38	19.31	20.80	16.26	16.38	16.31	17.80
EDGE 1 Tx slot	21.26	21.57	21.08	22.80	12.26	12.57	12.08	13.80
EDGE 2 Tx slots	19.40	19.65	19.43	20.30	13.40	13.65	13.43	14.30
EDGE 3 Tx slots	17.81	18.15	17.91	19.30	13.55	13.89	13.65	15.04
EDGE 4 Tx slots	16.63	16.69	16.53	18.30	13.63	13.69	13.53	15.30

Band		WCDMA II			Tune-up Limit (dBm)	WCDMA IV			Tune-up Limit (dBm)	WCDMA V			Tune-up Limit (dBm)
TX Channel		9262	9400	9538		1312	1413	1513		4132	4182	4233	
Rx Channel		9662	9800	9938		1537	1638	1738		4357	4407	4458	
Frequency (MHz)		1852.4	1880	1907.6		1712.4	1732.6	1752.6		826.4	836.4	846.6	
3GPP Rel 99	AMR 12.2kbps	17.79	17.75	17.73	18.30	17.66	17.68	17.60	18.30	24.09	24.10	24.14	24.80
3GPP Rel 99	RMC 12.2kbps	17.81	17.78	17.76	18.30	17.69	17.70	17.63	18.30	24.12	24.14	24.16	24.80
3GPP Rel 6	HSDPA Subtest-1	16.64	16.65	16.60	17.30	16.39	16.48	16.47	17.30	23.17	23.17	23.18	23.80
3GPP Rel 6	HSDPA Subtest-2	16.63	16.65	16.62	17.30	16.41	16.47	16.49	17.30	23.14	23.13	23.21	23.80
3GPP Rel 6	HSDPA Subtest-3	16.16	16.18	16.19	16.80	15.93	16.01	15.97	16.80	22.71	22.67	22.69	23.30
3GPP Rel 6	HSDPA Subtest-4	16.09	16.13	16.13	16.80	15.91	15.98	15.93	16.80	22.71	22.69	22.64	23.30
3GPP Rel 8	DC-HSDPA Subtest-1	16.56	16.43	16.80	17.30	16.20	16.27	16.31	17.30	23.01	23.08	23.10	23.80
3GPP Rel 8	DC-HSDPA Subtest-2	16.31	16.43	16.37	17.30	16.34	16.38	16.14	17.30	23.03	23.01	23.11	23.80
3GPP Rel 8	DC-HSDPA Subtest-3	15.83	16.18	16.13	16.80	15.89	15.75	15.73	16.80	22.63	22.54	22.52	23.30
3GPP Rel 8	DC-HSDPA Subtest-4	15.86	16.06	15.86	16.80	15.70	15.87	15.90	16.80	22.51	22.46	22.55	23.30
3GPP Rel 6	HSUPA Subtest-1	14.88	14.93	14.90	15.80	15.19	15.23	15.17	15.80	21.55	21.60	21.59	22.30
3GPP Rel 6	HSUPA Subtest-2	14.47	14.56	14.52	15.30	14.69	14.76	14.67	15.30	21.06	21.10	21.07	21.80
3GPP Rel 6	HSUPA Subtest-3	15.42	15.49	15.49	16.30	15.68	15.68	15.64	16.30	22.12	22.12	22.11	22.80
3GPP Rel 6	HSUPA Subtest-4	14.00	13.94	13.94	14.80	14.12	14.11	14.14	14.80	20.59	20.59	20.60	21.30
3GPP Rel 6	HSUPA Subtest-5	16.40	16.50	16.40	17.30	16.80	16.70	16.70	17.30	23.10	23.10	23.10	23.80
3GPP Rel 7	HSPA+ (16QAM) Subtest-1	13.52	13.45	13.40	14.30	13.59	13.62	13.68	14.30	19.97	19.92	19.99	20.80



Band 2 (1900MHz Band)										
SV (MHz)	Modulation	RB Size	RB Offset	Power Ch./Freq.	Power Ch./Freq.	Power Ch./Freq.	Power Ch./Freq.	Power Ch./Freq.	Turn-up time (min)	MPR (dB)
Channel										
Frequency (MHz)										
20	QPSK	1	0	17.15	17.14	17.08	17.79	17.79	18.3	0
20	QPSK	1	48	17.15	17.14	17.08	17.79	17.79	18.3	0
20	QPSK	1	96	17.16	17.21	17.20	17.80	17.80	18.3	0
20	QPSK	50	0	17.20	17.20	17.22	17.84	17.84	18.3	0
20	QPSK	50	24	17.22	17.24	17.24	17.84	17.84	18.3	0
20	QPSK	50	50	17.23	17.17	17.17	17.84	17.84	18.3	0
20	QPSK	100	0	17.20	17.24	17.20	17.84	17.84	18.3	0
20	16QAM	1	0	17.14	17.14	17.08	17.84	17.84	18.3	0
20	16QAM	1	48	17.13	17.20	17.20	17.84	17.84	18.3	0
20	16QAM	1	96	17.16	17.17	17.15	17.84	17.84	18.3	0
20	16QAM	50	0	17.20	17.20	17.20	17.84	17.84	18.3	0
20	16QAM	50	24	17.16	17.15	17.16	17.84	17.84	18.3	0
20	16QAM	50	50	17.16	17.04	17.10	17.84	17.84	18.3	0
20	16QAM	100	0	17.11	17.04	17.10	17.84	17.84	18.3	0
20	16QAM	1	0	17.06	17.06	16.99	17.84	17.84	18.3	0
20	16QAM	1	48	17.09	17.10	17.10	17.84	17.84	18.3	0
20	16QAM	1	96	17.04	17.07	17.10	17.84	17.84	18.3	0
20	16QAM	50	0	17.12	17.06	17.10	17.84	17.84	18.3	0
20	16QAM	50	24	17.13	17.13	17.10	17.84	17.84	18.3	0
20	16QAM	50	50	17.13	17.02	17.10	17.84	17.84	18.3	0
20	16QAM	100	0	17.13	17.03	17.14	17.84	17.84	18.3	0
Channel										
Frequency (MHz)										
15	QPSK	1	0	17.04	17.02	16.98	17.79	17.79	18.3	0
15	QPSK	1	37	17.25	17.26	17.10	17.84	17.84	18.3	0
15	QPSK	1	74	17.21	17.16	17.17	17.84	17.84	18.3	0
15	QPSK	36	0	17.21	17.03	17.00	17.84	17.84	18.3	0
15	QPSK	36	20	17.02	17.25	17.05	17.84	17.84	18.3	0
15	QPSK	36	39	16.99	17.13	17.17	17.84	17.84	18.3	0
15	QPSK	76	0	17.05	17.19	17.19	17.84	17.84	18.3	0
15	QPSK	1	0	17.19	16.91	16.85	17.84	17.84	18.3	0
15	16QAM	1	37	17.08	17.14	17.10	17.84	17.84	18.3	0
15	16QAM	1	74	17.07	17.09	16.98	17.84	17.84	18.3	0
15	16QAM	36	0	17.11	17.09	16.91	17.84	17.84	18.3	0
15	16QAM	36	20	16.99	17.04	17.21	17.84	17.84	18.3	0
15	16QAM	36	39	17.17	17.05	16.95	17.84	17.84	18.3	0
15	16QAM	76	0	16.96	16.98	17.01	17.84	17.84	18.3	0
15	16QAM	1	37	16.96	17.07	16.96	17.84	17.84	18.3	0
15	16QAM	1	74	17.04	16.79	17.14	17.84	17.84	18.3	0
15	16QAM	36	0	16.97	17.10	16.95	17.84	17.84	18.3	0
15	16QAM	36	20	17.11	16.96	17.10	17.84	17.84	18.3	0
15	16QAM	36	39	16.96	16.80	16.91	17.84	17.84	18.3	0
15	16QAM	76	0	17.05	16.82	16.95	17.84	17.84	18.3	0
Channel										
Frequency (MHz)										
10	QPSK	1	0	17.15	17.10	17.02	17.79	17.79	18.3	0
10	QPSK	1	25	17.17	17.26	17.18	17.84	17.84	18.3	0
10	QPSK	1	49	17.01	17.10	17.24	17.84	17.84	18.3	0
10	QPSK	25	0	17.21	17.03	17.00	17.84	17.84	18.3	0
10	QPSK	25	12	17.03	17.25	17.21	17.84	17.84	18.3	0
10	QPSK	25	25	17.02	17.00	16.99	17.84	17.84	18.3	0
10	QPSK	50	0	17.24	17.05	17.21	17.84	17.84	18.3	0
10	16QAM	1	0	17.03	17.10	16.99	17.84	17.84	18.3	0
10	16QAM	1	25	16.96	17.06	17.11	17.84	17.84	18.3	0
10	16QAM	1	49	17.06	17.06	17.10	17.84	17.84	18.3	0
10	16QAM	25	0	16.97	17.05	17.10	17.84	17.84	18.3	0
10	16QAM	25	12	17.07	17.10	17.05	17.84	17.84	18.3	0
10	16QAM	25	25	17.09	16.95	17.05	17.84	17.84	18.3	0
10	16QAM	50	0	16.93	17.02	17.05	17.84	17.84	18.3	0
10	16QAM	1	0	16.89	17.07	16.97	17.84	17.84	18.3	0
10	16QAM	1	25	16.99	17.14	16.95	17.84	17.84	18.3	0
10	16QAM	1	49	16.97	16.82	17.01	17.84	17.84	18.3	0
10	16QAM	25	0	17.10	16.87	16.92	17.84	17.84	18.3	0
10	16QAM	25	12	17.14	17.11	17.10	17.84	17.84	18.3	0
10	16QAM	25	25	17.03	16.84	17.14	17.84	17.84	18.3	0
10	16QAM	50	0	17.16	16.94	17.05	17.84	17.84	18.3	0
Channel										
Frequency (MHz)										
5	QPSK	1	0	17.04	17.00	16.95	17.79	17.79	18.3	0
5	QPSK	1	12	17.11	17.21	17.16	17.84	17.84	18.3	0
5	QPSK	1	24	17.08	17.06	17.08	17.84	17.84	18.3	0
5	QPSK	12	0	17.08	17.02	17.13	17.84	17.84	18.3	0
5	QPSK	12	7	17.16	17.11	17.08	17.84	17.84	18.3	0
5	QPSK	12	13	17.07	16.97	17.11	17.84	17.84	18.3	0
5	QPSK	25	0	17.22	17.25	17.02	17.84	17.84	18.3	0
5	16QAM	1	0	16.96	17.02	17.05	17.84	17.84	18.3	0
5	16QAM	1	12	17.13	17.15	17.10	17.84	17.84	18.3	0
5	16QAM	1	24	16.93	16.98	17.05	17.84	17.84	18.3	0
5	16QAM	12	0	17.12	16.96	17.10	17.84	17.84	18.3	0
5	16QAM	12	7	17.16	16.80	17.07	17.84	17.84	18.3	0
5	16QAM	12	13	17.13	16.83	17.05	17.84	17.84	18.3	0
5	16QAM	25	0	16.97	17.10	16.99	17.84	17.84	18.3	0
5	16QAM	1	0	16.93	17.06	17.08	17.84	17.84	18.3	0
5	16QAM	1	12	17.01	16.85	17.08	17.84	17.84	18.3	0
5	16QAM	1	24	17.01	16.81	17.08	17.84	17.84	18.3	0
5	16QAM	12	0	16.97	16.86	17.10	17.84	17.84	18.3	0
5	16QAM	12	7	17.13	16.80	17.05	17.84	17.84	18.3	0
5	16QAM	12	13	17.02	16.92	17.10	17.84	17.84	18.3	0
5	16QAM	25	0	17.14	16.83	16.95	17.84	17.84	18.3	0
Channel										
Frequency (MHz)										
3	QPSK	1	0	16.97	16.96	17.07	17.79	17.79	18.3	0
3	QPSK	1	9	17.00	17.19	17.04	17.84	17.84	18.3	0
3	QPSK	16	0	17.23	17.20	16.96	17.84	17.84	18.3	0
3	QPSK	8	0	17.23	16.95	17.03	17.84	17.84	18.3	0
3	QPSK	8	4	17.19	17.23	17.25	17.84	17.84	18.3	0
3	QPSK	16	0	17.13	17.04	16.99	17.84	17.84	18.3	0
3	QPSK	16	0	17.09	17.06	17.08	17.84	17.84	18.3	0
3	16QAM	1	0	16.90	17.10	16.95	17.84	17.84	18.3	0
3	16QAM	1	9	16.96	17.17	17.10	17.84	17.84	18.3	0
3	16QAM	16	0	16.96	17.07	17.05	17.84	17.84	18.3	0
3	16QAM	8	0	16.96	17.07	17.05	17.84	17.84	18.3	0
3	16QAM	8	4	16.99	17.17	17.05	17.84	17.84	18.3	0
3	16QAM	8	7	17.13	16.90	17.05	17.84	17.84	18.3	0
3	16QAM	16	0	16.97	17.06	17.05	17.84	17.84	18.3	0
3	16QAM	8	0	16.97	17.06	17.05	17.84	17.84	18.3	0
3	16QAM	8	4	16.99	17.17	17.05	17.84	17.84	18.3	0
3	16QAM	8	7	17.13	16.90	17.05	17.84	17.84	18.3	0
3	16QAM	16	0	16.97	17.06	17.05	17.84	17.84	18.3	0
3	16QAM	8	0	16.97	17.06	17.05	17.84	17.84	18.3	0
3	16QAM	8	4	16.94	17.16	17.04	17.84	17.84	18.3	0
3	16QAM	8	7	17.13	16.90	17.05	17.84	17.84	18.3	0
3	16QAM	16	0	16.97	17.06	17.05	17.84	17.84	18.3	0
3	16QAM	8	0	16.97	17.06	17.05	17.84	17.84	18.3	0
3	16QAM	8	4	16.94	17.16	17.04	17.84	17.84	18.3	0
3	16QAM	8	7	17.13	16.90	17.05	17.84	17.84	18.3	0
3	16QAM	16	0	16.97	17.06	17.05	17.84	17.84	18.3	0
3	16QAM	8	0	16.97	17.06	17.05	17.84	17.84	18.3	0
3	16QAM	8	4	16.94	17.16	17.04	17.84	17.84	18.3	0
3	16QAM	8	7	17.13	16.90	17.05	17.84	17.84	18.3	0
3	16QAM	16	0	16.97	17.06	17.05	17.84	17.84	18.3	0
3	16QAM	8	0	16.97	17.06	17.05	17.84	17.84	18.3	0
3	16QAM	8								

Band 12 (700MHz Low Band) Part 27E(only one channel required)											
SV (MHz)	Modulation	RB Size	RB Offset	Power Ch./Freq.	Power Ch./Freq.	Power Ch./Freq.	Time-up time (min)	MFR (dB)			
Channel											
Frequency (MHz)											
10	QPSK	1	0	23.70	23.69	23.68	24.3	0			
10	QPSK	1	26	23.73	23.74	23.73					
10	QPSK	1	49	23.73	23.74	23.73					
10	QPSK	25	0	22.36	22.34	22.28	23.3	1			
10	QPSK	25	12	22.39	22.40	22.34					
10	QPSK	25	25	22.37	22.36	22.28					
10	QPSK	50	0	22.41	22.38	22.33	23.3	1			
10	QPSK	50	0	22.41	22.38	22.33					
10	QPSK	50	0	22.41	22.38	22.33					
10	QPSK	1	0	22.02	22.01	22.00	23.3	1			
10	QPSK	1	26	22.01	22.00	22.00					
10	QPSK	1	49	22.00	22.00	22.00					
10	QPSK	25	0	21.63	21.62	21.61	22.3	2			
10	QPSK	25	12	21.63	21.60	21.64					
10	QPSK	25	25	21.64	21.60	21.63					
10	QPSK	50	0	21.64	21.62	21.60	22.3	2			
10	QPSK	50	0	21.64	21.62	21.60					
10	QPSK	50	0	21.64	21.62	21.60					
10	QPSK	1	0	21.77	21.71	21.77	22.3	2			
10	QPSK	1	26	21.72	21.66	21.70					
10	QPSK	1	49	21.70	21.70	21.65					
10	QPSK	25	0	20.67	20.57	20.56	21.3	3			
10	QPSK	25	12	20.58	20.64	20.62					
10	QPSK	25	25	20.60	20.59	20.58					
10	QPSK	50	0	20.65	20.64	20.59	21.3	3			
10	QPSK	50	0	20.65	20.64	20.59					
10	QPSK	50	0	20.65	20.64	20.59					
Channel											
Frequency (MHz)											
5	QPSK	1	0	23.68	23.69	23.64	24.3	0			
5	QPSK	1	12	23.68	23.69	23.70					
5	QPSK	1	24	23.68	23.69	23.70					
5	QPSK	12	0	22.37	22.36	22.36	23.3	1			
5	QPSK	12	7	22.36	22.37	22.37					
5	QPSK	12	19	22.34	22.39	22.35					
5	QPSK	25	0	22.40	22.37	22.37	23.3	1			
5	QPSK	25	0	22.39	22.37	22.37					
5	QPSK	25	0	22.39	22.37	22.37					
5	QPSK	1	0	22.02	22.00	22.00	23.3	1			
5	QPSK	1	24	22.02	22.00	22.01					
5	QPSK	1	47	22.00	22.00	22.00					
5	QPSK	12	0	21.60	21.60	21.61	22.3	2			
5	QPSK	12	7	21.60	21.60	21.60					
5	QPSK	12	19	21.61	21.62	21.62					
5	QPSK	25	0	21.71	21.63	21.63	22.3	2			
5	QPSK	25	0	21.71	21.63	21.63					
5	QPSK	25	0	21.71	21.63	21.63					
5	QPSK	1	0	21.77	21.70	21.70	22.3	2			
5	QPSK	1	12	21.70	21.60	21.63					
5	QPSK	1	24	21.62	21.61	21.63					
5	QPSK	12	0	20.60	20.60	20.60	21.3	3			
5	QPSK	12	7	20.60	20.60	20.60					
5	QPSK	12	19	20.60	20.60	20.60					
5	QPSK	25	0	20.63	20.64	20.58	21.3	3			
5	QPSK	25	0	20.63	20.64	20.58					
5	QPSK	25	0	20.63	20.64	20.58					
Channel											
Frequency (MHz)											
3	QPSK	1	0	23.64	23.67	23.62	24.3	0			
3	QPSK	1	6	23.60	23.63	23.63					
3	QPSK	1	14	23.60	23.60	23.60					
3	QPSK	6	0	22.29	22.29	22.30	23.3	1			
3	QPSK	6	4	22.28	22.34	22.29					
3	QPSK	6	7	22.27	22.31	22.32					
3	QPSK	15	0	22.00	22.00	22.01	23.3	1			
3	QPSK	15	0	22.00	22.00	22.00					
3	QPSK	15	0	22.00	22.00	22.00					
3	QPSK	1	0	21.60	21.60	21.60	22.3	2			
3	QPSK	1	6	21.60	21.60	21.60					
3	QPSK	1	14	21.60	21.60	21.60					
3	QPSK	6	0	20.60	20.60	20.60	21.3	3			
3	QPSK	6	4	20.60	20.60	20.60					
3	QPSK	6	7	20.59	20.59	20.59					
3	QPSK	15	0	20.59	20.59	20.59	21.3	3			
3	QPSK	15	0	20.59	20.59	20.59					
3	QPSK	15	0	20.59	20.59	20.59					
Channel											
Frequency (MHz)											
1.4	QPSK	1	0	23.64	23.63	23.64	24.3	0			
1.4	QPSK	1	0	23.67	23.67	23.63					
1.4	QPSK	1	0	23.63	23.66	23.60					
1.4	QPSK	3	0	23.63	23.67	23.60	23.3	1			
1.4	QPSK	3	0	23.63	23.67	23.60					
1.4	QPSK	3	0	23.66	23.64	23.66					
1.4	QPSK	6	0	22.31	22.31	22.31	23.3	1			
1.4	QPSK	6	0	22.31	22.31	22.31					
1.4	QPSK	6	0	22.31	22.31	22.31					
1.4	QPSK	1	0	22.03	22.04	22.03	23.3	1			
1.4	QPSK	1	0	22.02	22.03	22.01					
1.4	QPSK	1	0	22.02	22.03	22.01					
1.4	QPSK	1	0	22.02	22.03	22.01	23.3	1			
1.4	QPSK	1	0	22.02	22.03	22.01					
1.4	QPSK	1	0	22.02	22.03	22.01					
1.4	QPSK	3	0	22.30	22.30	22.30	22.3	2			
1.4	QPSK	3	0	22.30	22.30	22.30					
1.4	QPSK	3	0	22.30	22.30	22.30					
1.4	QPSK	1	0	21.70	21.70	21.70	22.3	2			
1.4	QPSK	1	0	21.70	21.70	21.70					
1.4	QPSK	1	0	21.70	21.70	21.70					
1.4	QPSK	3	0	20.60	20.60	20.60	21.3	3			
1.4	QPSK	3	0	20.60	20.60	20.60					
1.4	QPSK	3	0	20.60	20.60	20.60					
1.4	QPSK	6	0	20.58	20.57	20.56	21.3	3			
1.4	QPSK	6	0	20.58	20.57	20.56					
1.4	QPSK	6	0	20.58	20.57	20.56					

Band 17 (700MHz Band) Part 27E(only one channel required)									
SV (MHz)	Modulation	RB Size	RB Offset	Power Ch./Freq.	Power Ch./Freq.	Power Ch./Freq.	Time-up time (min)	MFR (dB)	
Channel									
Frequency (MHz)									
15	QPSK	1	0	23.61	23.62	23.55	24.3	0	
15	QPSK	1	26	23.70	23.71	23.65			
15	QPSK	1	49	23.70	23.70	23.67			
15	QPSK	25	0	22.28	22.28	22.23	23.3	1	
15	QPSK	25	12	22.29	22.30	22.31			
15	QPSK	25	25	22.28	22.28	22.25			
15	QPSK	50	0	22.32	22.32	22.31	23.3	1	
15	QPSK	50	0	22.32	22.32	22.31			
15	QPSK	50	0	22.32	22.32	22.31			
15	QPSK	1	0	22.03	22.02	22.01	23.3	1	
15	QPSK	1	25	22.01	22.02	22.00			
15	QPSK	1	49	22.02	22.00	22.00			
15	QPSK	25	0	21.58	21.55	21.50	22.3	2	
15	QPSK	25	12	21.60	21.57	21.58			
15	QPSK	25	25	21.60	21.52	21.56			
15	QPSK	50	0	21.60	21.56	21.55	22.3	2	
15	QPSK	50	0	21.60	21.56	21.55			
15	QPSK	50	0	21.60	21.56	21.55			
15	QPSK	1	0	21.61	21.71	21.62	22.3	2	
15	QPSK	1	25	21.74	21.60	21.70			
15	QPSK	1	49	21.62	21.73	21.67			
15	QPSK	25	0	20.59	20.52	20.51	21.3	3	
15	QPSK	25	12	20.53	20.50	20.50			
15	QPSK	25	25	20.51	20.51	20.50			
15	QPSK	50	0	20.59	20.57	20.57	21.3	3	

Band 38(only on channel required)									
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)	
Channel				37850	38000	38150			
Frequency (MHz)				2580	2595	2610			
20	QPSK	1	0	20.35	20.38	20.40			
20	QPSK	1	49	20.47	20.44	20.41	21.3	0	
20	QPSK	1	99	20.25	20.32	20.38			
20	QPSK	50	0	20.43	20.38	20.32			
20	QPSK	50	24	20.45	20.43	20.40	21.3	0	
20	QPSK	50	50	20.33	20.40	20.35			
20	QPSK	100	0	20.43	20.42	20.38			
20	16QAM	1	0	20.38	20.39	20.35	21.3	0	
20	16QAM	1	49	20.36	20.35	20.39			
20	16QAM	1	99	20.39	20.39	20.38			
20	16QAM	50	0	20.46	20.45	20.43	21.3	0	
20	16QAM	50	24	20.46	20.40	20.43			
20	16QAM	50	50	20.30	20.34	20.44			
20	16QAM	100	0	20.41	20.41	20.41	21.3	0	
20	64QAM	1	0	20.35	20.41	20.45			
20	64QAM	1	49	20.31	20.30	20.44			
20	64QAM	1	99	20.21	20.26	20.21	21.3	0	
20	64QAM	50	0	20.41	20.40	20.38			
20	64QAM	50	24	20.37	20.41	20.44			
20	64QAM	50	50	20.33	20.37	20.42	21.3	0	
20	64QAM	100	0	20.35	20.39	20.44			
Channel				21.12	21.17	21.28	Tune-up limit (dBm)	MPR (dB)	
Frequency (MHz)				21.12	21.11	21.23	21.3	0	
15	QPSK	1	0	20.39	20.17	20.44			
15	QPSK	1	37	20.30	20.28	20.29			
15	QPSK	1	74	20.16	20.15	20.23	21.3	0	
15	QPSK	36	0	20.36	20.38	20.08			
15	QPSK	36	20	20.43	20.24	20.43			
15	QPSK	36	39	20.32	20.42	20.23	21.3	0	
15	QPSK	75	0	20.26	20.40	20.34			
15	16QAM	1	0	20.40	20.43	20.22			
15	16QAM	1	37	20.20	20.15	20.20	21.3	0	
15	16QAM	1	74	20.37	20.24	20.43			
15	16QAM	36	0	20.21	20.41	20.18			
15	16QAM	36	20	20.41	20.15	20.43	21.3	0	
15	16QAM	36	39	20.32	20.37	20.23			
15	16QAM	75	0	20.29	20.42	20.34			
15	64QAM	1	0	20.19	20.24	20.47	21.3	0	
15	64QAM	1	37	20.22	20.16	20.25			
15	64QAM	1	74	20.15	20.02	19.97			
15	64QAM	36	0	20.30	20.28	20.16	21.3	0	
15	64QAM	36	20	20.26	20.31	20.23			
15	64QAM	36	39	20.10	20.17	20.45			
15	64QAM	75	0	20.11	20.38	20.19	21.3	0	
Channel				37800	38000	38200	Tune-up limit (dBm)	MPR (dB)	
Frequency (MHz)				2575	2595	2615	21.3	0	
10	QPSK	1	0	20.21	20.30	20.28			
10	QPSK	1	25	20.23	20.40	20.34			
10	QPSK	1	49	20.18	20.16	20.38	21.3	0	
10	QPSK	25	0	20.36	20.29	20.16			
10	QPSK	25	12	20.21	20.39	20.25			
10	QPSK	25	25	20.18	20.21	20.10	21.3	0	
10	QPSK	50	0	20.21	20.35	20.41			
10	16QAM	1	0	20.16	20.26	20.19			
10	16QAM	1	25	20.28	20.12	20.29	21.3	0	
10	16QAM	1	49	20.44	20.37	20.29			
10	16QAM	25	0	20.43	20.39	20.18			
10	16QAM	25	12	20.28	20.37	20.36	21.3	0	
10	16QAM	25	25	20.12	20.25	20.47			
10	16QAM	50	0	20.39	20.16	20.18			
10	64QAM	1	0	20.24	20.24	20.47	21.3	0	
10	64QAM	1	25	20.31	20.20	20.46			
10	64QAM	1	49	20.09	20.21	20.24			
10	64QAM	25	0	20.33	20.42	20.22	21.3	0	
10	64QAM	25	12	20.26	20.43	20.26			
10	64QAM	25	25	20.22	20.15	20.42			
10	64QAM	50	0	20.32	20.14	20.22	21.3	0	
Channel				37775	38000	38225	Tune-up limit (dBm)	MPR (dB)	
Frequency (MHz)				2572.5	2595	2617.5	21.3	0	
5	QPSK	1	0	20.20	20.35	20.20			
5	QPSK	1	12	20.31	20.37	20.35			
5	QPSK	1	24	20.13	20.20	20.40	21.3	0	
5	QPSK	12	0	20.44	20.16	20.26			
5	QPSK	12	7	20.40	20.42	20.25			
5	QPSK	12	13	20.28	20.35	20.17	21.3	0	
5	QPSK	25	0	20.45	20.18	20.29			
5	16QAM	1	0	20.17	20.37	20.25			
5	16QAM	1	12	20.21	20.39	20.23	21.3	0	
5	16QAM	1	24	20.42	20.35	20.24			
5	16QAM	12	0	20.22	20.20	20.43			
5	16QAM	12	7	20.40	20.36	20.19	21.3	0	
5	16QAM	12	13	20.05	20.27	20.38			
5	16QAM	25	0	20.38	20.44	20.40			
5	64QAM	1	0	20.29	20.19	20.39	21.3	0	
5	64QAM	1	12	20.27	20.22	20.34			
5	64QAM	1	24	20.01	20.06	20.03			
5	64QAM	12	0	20.28	20.35	20.25	21.3	0	
5	64QAM	12	7	20.25	20.23	20.35			
5	64QAM	12	13	20.30	20.40	20.43			
5	64QAM	25	0	20.24	20.37	20.21	21.3	0	

Band 41 (2.6G Band)										
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Low Middle Ch. / Freq.	Power Middle Ch. / Freq.	Power High Middle Ch. / Freq.	Power High Ch. / Freq.		
Channel				39750	40185	40620	41055	41490	Tune-up limit (dBm)	
Frequency (MHz)				2506	2549.5	2593	2636.5	2680		MPR (dB)
20	QPSK	1	0	20.55	20.47	20.57	20.64	20.58	21.3	
20	QPSK	1	49	20.68	20.63	20.78	20.76	20.73		
20	QPSK	1	99	20.56	20.61	20.72	20.74	20.65		
20	QPSK	50	0	20.59	20.52	20.74	20.68	20.70	21.3	0
20	QPSK	50	24	20.65	20.63	20.76	20.74	20.72		
20	QPSK	50	50	20.54	20.60	20.73	20.72	20.67		
20	QPSK	100	0	20.63	20.61	20.74	20.72	20.71	21.3	0
20	16QAM	1	0	20.63	20.61	20.66	20.70	20.67		
20	16QAM	1	49	20.71	20.73	20.71	20.76	20.73		
20	16QAM	1	99	20.67	20.71	20.78	20.73	20.72	21.3	0
20	16QAM	50	0	20.53	20.48	20.69	20.73	20.61		
20	16QAM	50	24	20.53	20.52	20.66	20.77	20.65		
20	16QAM	50	50	20.52	20.61	20.68	20.73	20.65	21.3	0
20	16QAM	100	0	20.49	20.49	20.67	20.71	20.63		
20	64QAM	1	0	20.48	20.41	20.51	20.62	20.43		
20	64QAM	1	49	20.60	20.56	20.73	20.72	20.56	21.3	0
20	64QAM	1	99	20.42	20.55	20.55	20.63	20.47		
20	64QAM	50	0	20.49	20.40	20.59	20.71	20.59		
20	64QAM	50	24	20.58	20.49	20.62	20.74	20.64	21.3	0
20	64QAM	50	50	20.43	20.53	20.63	20.72	20.64		
20	64QAM	100	0	20.55	20.54	20.58	20.71	20.61		
Channel				39725	40173	40620	41068	41515	Tune-up limit (dBm)	
Frequency (MHz)				2503.5	2548.3	2593	2637.8	2682.5	MPR (dB)	
15	QPSK	1	0	20.53	20.43	20.34	20.46	20.39	21.3	0
15	QPSK	1	37	20.48	20.54	20.75	20.72	20.60		
15	QPSK	1	74	20.42	20.58	20.76	20.59	20.49		
15	QPSK	36	0	20.44	20.53	20.63	20.52	20.45	21.3	0
15	QPSK	36	20	20.54	20.43	20.65	20.51	20.47		
15	QPSK	36	39	20.37	20.70	20.75	20.75	20.61		
15	QPSK	75	0	20.56	20.37	20.57	20.68	20.50	21.3	0
15	16QAM	1	0	20.66	20.42	20.58	20.69	20.61		
15	16QAM	1	37	20.51	20.59	20.76	20.69	20.71		
15	16QAM	1	74	20.71	20.67	20.70	20.69	20.51	21.3	0
15	16QAM	36	0	20.30	20.24	20.57	20.71	20.43		
15	16QAM	36	20	20.58	20.28	20.63	20.61	20.64		
15	16QAM	36	39	20.28	20.45	20.64	20.51	20.58	21.3	0
15	16QAM	75	0	20.32	20.42	20.43	20.65	20.41		
15	64QAM	1	0	20.40	20.19	20.48	20.67	20.32		
15	64QAM	1	37	20.38	20.57	20.52	20.67	20.58	21.3	0
15	64QAM	1	74	20.42	20.42	20.49	20.47	20.31		
15	64QAM	36	0	20.31	20.34	20.49	20.54	20.55		
15	64QAM	36	20	20.42	20.38	20.59	20.73	20.58	21.3	0
15	64QAM	36	39	20.32	20.45	20.42	20.62	20.47		
15	64QAM	75	0	20.31	20.54	20.43	20.47	20.58		
Channel				37700	40160	40620	41080	41540	Tune-up limit (dBm)	
Frequency (MHz)				2501	2547	2593	2639	2685	MPR (dB)	
10	QPSK	1	0	20.41	20.32	20.52	20.51	20.56	21.3	0
10	QPSK	1	25	20.45	20.47	20.57	20.71	20.67		
10	QPSK	1	49	20.48	20.63	20.75	20.60	20.62		
10	QPSK	25	0	20.41	20.54	20.56	20.46	20.62	21.3	0
10	QPSK	25	12	20.60	20.63	20.65	20.73	20.75		
10	QPSK	25	25	20.35	20.50	20.71	20.61	20.75		
10	QPSK	50	0	20.58	20.54	20.52	20.75	20.62	21.3	0
10	16QAM	1	0	20.48	20.53	20.57	20.71	20.64		
10	16QAM	1	25	20.52	20.59	20.60	20.74	20.63		
10	16QAM	1	49	20.72	20.67	20.62	20.58	20.73	21.3	0
10	16QAM	25	0	20.31	20.50	20.66	20.53	20.62		
10	16QAM	25	12	20.34	20.47	20.49	20.67	20.65		
10	16QAM	25	25	20.35	20.46	20.59	20.71	20.54	21.3	0
10	16QAM	50	0	20.40	20.24	20.45	20.59	20.56		
10	64QAM	1	0	20.23	20.23	20.30	20.56	20.34		
10	64QAM	1	25	20.60	20.54	20.65	20.48	20.40	21.3	0
10	64QAM	1	49	20.43	20.47	20.56	20.39	20.33		
10	64QAM	25	0	20.40	20.34	20.51	20.47	20.56		
10	64QAM	25	12	20.61	20.43	20.57	20.62	20.55	21.3	0
10	64QAM	25	25	20.27	20.52	20.54	20.55	20.42		
10	64QAM	50	0	20.49	20.58	20.56	20.57	20.52		
Channel				39675	40148	40620	41093	41565	Tune-up limit (dBm)	
Frequency (MHz)				2498.5	2545.8	2593	2640.30	2687.5	MPR (dB)	
5	QPSK	1	0	20.46	20.23	20.52	20.65	20.55	21.3	0
5	QPSK	1	12	20.49	20.67	20.65	20.66	20.52		
5	QPSK	1	24	20.52	20.42	20.63	20.54	20.59		
5	QPSK	12	0	20.61	20.37	20.73	20.48	20.73	21.3	0
5	QPSK	12	7	20.61	20.61	20.67	20.63	20.48		
5	QPSK	12	13	20.51	20.61	20.60	20.64	20.68		
5	QPSK	25	0	20.48	20.66	20.64	20.73	20.46	21.3	0
5	16QAM	1	0	20.60	20.48	20.48	20.45	20.69		
5	16QAM	1	12	20.65	20.56	20.57	20.72	20.75		
5	16QAM	1	24	20.57	20.53	20.63	20.63	20.76	21.3	0
5	16QAM	12	0	20.58	20.42	20.51	20.63	20.65		
5	16QAM	12	7	20.30	20.50	20.49	20.62	20.69		
5	16QAM	12	13	20.27	20.48	20.47	20.57	20.48	21.3	0
5	16QAM	25	0	20.25	20.30	20.60	20.62	20.44		
5	64QAM	1	0	20.30	20.31	20.55	20.49	20.35		
5	64QAM	1	12	20.41	20.41	20.63	20.52	20.52	21.3	0
5	64QAM	1	24	20.31	20.49	20.47	20.50	20.34		
5	64QAM	12	0	20.37	20.19	20.64	20.60	20.45		
5	64QAM	12	7	20.48	20.47	20.49	20.58	20.50	21.3	0
5	64QAM	12	13	20.36	20.48	20.53	20.58	20.41		
5	64QAM	25	0	20.35	20.40	20.36	20.55	20.58		

Power Level for Body-worn -UAT

GSM850		Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
TX Channel		128	169	251		128	169	251	
Frequency (MHz)		824.2	835.4	848.8		824.2	835.4	848.8	
GSM 1 Tx slot		32.06	32.50	32.23	33.30	23.06	23.50	23.23	24.30
GPRS 1 Tx slot		32.04	32.46	32.20	33.30	23.04	23.46	23.20	24.30
GPRS 2 Tx slots		29.80	30.22	30.02	31.30	23.80	24.22	24.02	25.30
GPRS 3 Tx slots		28.23	28.63	28.45	29.80	23.97	24.37	24.19	25.54
GPRS 4 Tx slots		27.33	27.64	27.56	29.30	24.33	24.64	24.56	26.30
EDGE 1 Tx slot		26.65	26.52	26.77	28.30	17.65	17.52	17.77	19.30
EDGE 2 Tx slots		25.45	25.26	25.66	25.80	19.45	19.26	19.66	19.80
EDGE 3 Tx slots		23.25	23.15	23.59	24.30	18.99	18.89	19.33	20.04
EDGE 4 Tx slots		22.20	22.10	22.33	23.80	19.20	19.10	19.33	20.80

GSM1900		Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
TX Channel		512	661	810		512	661	810	
Frequency (MHz)		1850.2	1880	1909.8		1850.2	1880	1909.8	
GSM 1 Tx slot		27.00	27.08	27.03	27.80	18.00	18.08	18.03	18.80
GPRS 1 Tx slot		26.97	27.06	27.00	27.80	17.97	18.06	18.00	18.80
GPRS 2 Tx slots		23.36	23.43	23.39	24.80	17.36	17.43	17.39	18.80
GPRS 3 Tx slots		22.60	22.71	22.67	23.80	16.34	16.45	16.41	19.34
GPRS 4 Tx slots		20.62	20.96	20.88	22.30	17.82	17.96	17.89	19.30
EDGE 1 Tx slot		22.56	22.80	22.72	24.30	13.56	13.60	13.72	15.30
EDGE 2 Tx slots		20.60	20.87	20.80	21.80	14.60	14.87	14.80	15.80
EDGE 3 Tx slots		19.21	19.55	19.08	20.80	14.95	15.29	14.82	16.54
EDGE 4 Tx slots		18.08	18.05	17.86	19.80	15.08	15.05	14.86	16.80

Band		WCDMA II			Tune-up Limit (dBm)	WCDMA IV			Tune-up Limit (dBm)	WCDMA V			Tune-up Limit (dBm)
TX Channel		9262	9400	9538		1312	1413	1513		4132	4182	4233	
Rx Channel		9602	9800	9938		1537	1638	1738		4357	4407	4458	
Frequency (MHz)		1852.4	1890	1909.8		1712.4	1732.6	1752.6		826.4	836.4	846.6	
3GPP Rel 99	AMR 12.2Kbps	19.37	19.33	19.25	19.80	19.11	19.15	19.13	19.80	24.09	24.10	24.14	24.80
3GPP Rel 99	AMR 12.2Kbps	19.39	19.36	19.27	19.80	19.13	19.18	19.14	19.80	24.12	24.14	24.16	24.80
3GPP Rel 6	HSDPA Subtest-1	18.30	18.31	18.24	18.80	17.99	18.13	18.12	18.80	23.17	23.17	23.18	23.80
3GPP Rel 6	HSDPA Subtest-2	18.27	18.31	18.25	18.80	17.99	18.12	18.06	18.80	23.14	23.13	23.21	23.80
3GPP Rel 6	HSDPA Subtest-3	17.83	17.84	17.75	18.30	17.54	17.63	17.62	18.30	22.71	22.67	22.69	23.30
3GPP Rel 6	HSDPA Subtest-4	17.77	17.81	17.73	18.30	17.53	17.61	17.58	18.30	22.71	22.69	22.64	23.30
3GPP Rel 8	DC-HSDPA Subtest-1	18.30	18.11	18.07	18.80	17.80	18.04	17.82	18.80	23.01	23.08	23.10	23.80
3GPP Rel 8	DC-HSDPA Subtest-2	18.15	17.98	18.16	18.80	17.99	17.97	17.77	18.80	23.03	23.01	23.11	23.80
3GPP Rel 8	DC-HSDPA Subtest-3	17.61	17.63	17.67	18.30	17.26	17.59	17.32	18.30	22.63	22.54	22.52	23.30
3GPP Rel 8	DC-HSDPA Subtest-4	17.77	17.55	17.46	18.30	17.42	17.34	17.41	18.30	22.51	22.46	22.55	23.30
3GPP Rel 6	HSUPA Subtest-1	16.83	16.80	16.73	17.30	16.54	16.60	16.61	17.30	21.55	21.60	21.59	22.30
3GPP Rel 6	HSUPA Subtest-2	16.26	16.29	16.23	16.80	16.01	16.12	16.13	16.80	21.08	21.10	21.07	21.80
3GPP Rel 6	HSUPA Subtest-3	17.33	17.32	17.26	17.80	17.13	17.14	17.15	17.80	22.12	22.12	22.11	22.80
3GPP Rel 6	HSUPA Subtest-4	15.82	15.80	15.73	16.30	15.51	15.63	15.64	16.30	20.59	20.59	20.60	21.30
3GPP Rel 6	HSUPA Subtest-5	18.33	18.33	18.23	18.80	18.00	18.10	18.10	18.80	23.10	23.10	23.10	23.80
3GPP Rel 7	HSPA+ (16QAM) Subtest-1	15.28	15.35	15.26	15.80	15.00	15.14	15.16	15.80	19.97	19.92	19.99	20.80



Band 2 (2500MHz Band)									
SVR (MHz)	Modulation	RF Size	RF Offset	Power Ch. 1 (W)	Power Ch. 2 (W)	Power Ch. 3 (W)	Time-up time (min)	MFR (dB)	
Channel <td data-kind="ghost"></td> <td data-kind="ghost"></td> <td data-kind="ghost"></td> <td data-kind="ghost"></td> <td data-kind="ghost"></td> <td data-kind="ghost"></td> <td data-kind="ghost"></td> <td data-kind="ghost"></td> <td data-kind="ghost"></td>									
Frequency (MHz) <td data-kind="ghost"></td> <td data-kind="ghost"></td> <td data-kind="ghost"></td> <td data-kind="ghost"></td> <td data-kind="ghost"></td> <td data-kind="ghost"></td> <td data-kind="ghost"></td> <td data-kind="ghost"></td> <td data-kind="ghost"></td>									
20	QPSK	1	0	18.88	18.93	18.89	20.3	0	
20	QPSK	1	8	18.88	18.93	18.89			
20	QPSK	1	16	18.88	18.93	18.89			
20	QPSK	1	24	18.88	18.93	18.89			
20	QPSK	1	32	18.88	18.93	18.89			
20	QPSK	50	0	19.04	19.04	19.08	20.3	0	
20	QPSK	50	8	19.04	19.04	19.08			
20	QPSK	50	16	19.04	19.04	19.08			
20	QPSK	50	24	19.04	19.04	19.08			
20	QPSK	50	32	19.04	19.04	19.08			
20	QPSK	100	0	19.03	19.04	19.13	20.3	0	
20	QPSK	100	8	19.03	19.04	19.13			
20	QPSK	100	16	19.03	19.04	19.13			
20	QPSK	100	24	19.03	19.04	19.13			
20	QPSK	100	32	19.03	19.04	19.13			
20	QPSK	1	40	18.93	19.14	19.17	20.3	0	
20	QPSK	1	48	18.93	19.14	19.17			
20	QPSK	1	56	18.93	19.14	19.17			
20	QPSK	1	64	18.93	19.14	19.17			
20	QPSK	1	72	18.93	19.14	19.17			
20	QPSK	50	40	19.14	19.09	19.08	20.3	0	
20	QPSK	50	48	19.14	19.09	19.08			
20	QPSK	50	56	19.14	19.09	19.08			
20	QPSK	50	64	19.14	19.09	19.08			
20	QPSK	50	72	19.14	19.09	19.08			
20	QPSK	1	80	19.08	19.09	19.09	20.3	0	
20	QPSK	1	88	19.08	19.09	19.09			
20	QPSK	1	96	19.08	19.09	19.09			
20	QPSK	1	104	19.08	19.09	19.09			
20	QPSK	1	112	19.08	19.09	19.09			
20	QPSK	50	80	19.13	19.08	19.14	20.3	0	
20	QPSK	50	88	19.13	19.08	19.14			
20	QPSK	50	96	19.13	19.08	19.14			
20	QPSK	50	104	19.13	19.08	19.14			
20	QPSK	50	112	19.13	19.08	19.14			
20	QPSK	100	0	19.10	19.09	19.09	20.3	0	
20	QPSK	100	8	19.10	19.09	19.09			
20	QPSK	100	16	19.10	19.09	19.09			
20	QPSK	100	24	19.10	19.09	19.09			
20	QPSK	100	32	19.10	19.09	19.09			
Channel <td data-kind="ghost"></td> <td data-kind="ghost"></td> <td data-kind="ghost"></td> <td data-kind="ghost"></td> <td data-kind="ghost"></td> <td data-kind="ghost"></td> <td data-kind="ghost"></td> <td data-kind="ghost"></td> <td data-kind="ghost"></td>									
Frequency (MHz) <td data-kind="ghost"></td> <td data-kind="ghost"></td> <td data-kind="ghost"></td> <td data-kind="ghost"></td> <td data-kind="ghost"></td> <td data-kind="ghost"></td> <td data-kind="ghost"></td> <td data-kind="ghost"></td> <td data-kind="ghost"></td>									
15	QPSK	1	0	19.03	19.09	19.03	20.3	0	
15	QPSK	1	32	19.08	19.24	19.07			
15	QPSK	1	64	19.03	19.03	19.08			
15	QPSK	36	0	19.03	19.09	19.03			
15	QPSK	36	20	19.09	19.25	19.04			
15	QPSK	75	0	19.03	19.11	19.03	20.3	0	
15	QPSK	75	0	19.07	19.07	19.02			
15	QPSK	75	0	19.07	19.07	19.02			
15	QPSK	75	0	19.07	19.07	19.02			
15	QPSK	75	0	19.07	19.07	19.02			
15	QPSK	36	36	19.09	19.13	19.08	20.3	0	
15	QPSK	36	36	19.09	19.13	19.08			
15	QPSK	36	36	19.09	19.13	19.08			
15	QPSK	36	36	19.09	19.13	19.08			
15	QPSK	36	36	19.09	19.13	19.08			
15	QPSK	75	0	19.03	19.07	19.03	20.3	0	
15	QPSK	75	0	19.03	19.07	19.03			
15	QPSK	75	0	19.03	19.07	19.03			
15	QPSK	75	0	19.03	19.07	19.03			
15	QPSK	75	0	19.03	19.07	19.03			
15	QPSK	36	36	19.09	19.13	19.08	20.3	0	
15	QPSK	36	36	19.09	19.13	19.08			
15	QPSK	36	36	19.09	19.13	19.08			
15	QPSK	36	36	19.09	19.13	19.08			
15	QPSK	36	36	19.09	19.13	19.08			
15	QPSK	75	0	19.03	19.07	19.03	20.3	0	
15	QPSK	75	0	19.03	19.07	19.03			
15	QPSK	75	0	19.03	19.07	19.03			
15	QPSK	75	0	19.03	19.07	19.03			
15	QPSK	75	0	19.03	19.07	19.03			
15	QPSK	36	36	19.09	19.13	19.08	20.3	0	
15	QPSK	36	36	19.09	19.13	19.08			
15	QPSK	36	36	19.09	19.13	19.08			
15	QPSK	36	36	19.09	19.13	19.08			
15	QPSK	36	36	19.09	19.13	19.08			
15	QPSK	75	0	19.03	19.07	19.03	20.3	0	
15	QPSK	75	0	19.03	19.07	19.03			
15	QPSK	75	0	19.03	19.07	19.03			
15	QPSK	75	0	19.03	19.07	19.03			
15	QPSK	75	0	19.03	19.07	19.03			
15	QPSK	36	36	19.09	19.13	19.08	20.3	0	
15	QPSK	36	36	19.09	19.13	19.08			
15	QPSK	36	36	19.09	19.13	19.08			
15	QPSK	36	36	19.09	19.13	19.08			
15	QPSK	36	36	19.09	19.13	19.08			
15	QPSK	75	0	19.03	19.07	19.03	20.3	0	
15	QPSK	75	0	19.03	19.07	19.03			
15	QPSK	75	0	19.03	19.07	19.03			
15	QPSK	75	0	19.03	19.07	19.03			
15	QPSK	75	0	19.03	19.07	19.03			
15	QPSK	36	36	19.09	19.13	19.08	20.3	0	
15	QPSK	36	36	19.09	19.13	19.08			
15	QPSK	36	36	19.09	19.13	19.08			
15	QPSK	36	36	19.09	19.13	19.08			
15	QPSK	36	36	19.09	19.13	19.08			
15	QPSK	75	0	19.03	19.07	19.03	20.3	0	
15	QPSK	75	0	19.03	19.07	19.03			
15	QPSK	75	0	19.03	19.07	19.03			
15	QPSK	75	0	19.03	19.07	19.03			
15	QPSK	75	0	19.03	19.07	19.03			
15	QPSK	36	36	19.09	19.13	19.08	20.3	0	
15	QPSK	36	36	19.09	19.13	19.08			
15	QPSK	36	36	19.09	19.13	19.08			
15	QPSK	36	36	19.09	19.13	19.08			
15	QPSK	36	36	19.09	19.13	19.08			
15	QPSK	75	0	19.03	19.07	19.03	20.3	0	
15	QPSK	75	0	19.03	19.07	19.03			
15	QPSK	75	0	19.03	19.07	19.03			
15	QPSK	75	0	19.03	19.07	19.03			
15	QPSK	75	0	19.03	19.07	19.03			
15	QPSK	36	36	19.09	19.13	19.08	20.3	0	
15	QPSK	36	36	19.09	19.13	19.08			
15	QPSK	36	36	19.09	19.13	19.08			
15	QPSK	36	36	19.09	19.13	19.08			
15	QPSK	36	36	19.09	19.13	19.08			
15	QPSK	75	0	19.03	19.07	19.03	20.3	0	
15	QPSK	75	0	19.03	19.07	19.03			
15	QPSK	75	0	19.03	19.07	19.03			
15	QPSK	75	0	19.03	19.07	19.03			
15	QPSK	75	0	19.03	19.07	19.03			
15	QPSK	36	36	19.09	19.13	19.08	20.3	0	
15	QPSK	36	36	19.09	19.13	19.08			
15	QPSK	36	36	19.09	19.13	19.08			
15	QPSK	36	36	19.09	19.13	19.08			
15	QPSK	36	36	19.09	19.13	19.08			
15	QPSK	75	0	19.03	19.07	19.03	20.3	0	
15	QPSK	75	0	19.03	19.07	19.03			
15	QPSK	75	0	19.03	19.07	19.03			
15	QPSK	75	0	19.03	19.07	19.03			
15	QPSK	75	0	19.03	19.07	19.03			
15	QPSK	36	36	19.09	19.13	19.08	20.3	0	
15	QPSK	36	36	19.09	19.13	19.08			
15	QPSK	36	36	19.09	19.13	19.08			
15	QPSK	36	36	19.09	19.13	19.08			
15	QPSK	36	36	19.09	19.13	19.08			
15	QPSK	75	0	19.03	19.07	19.03			



Band 12 (700MHz Low Band)									
Part 27 (Primary use channel required)									
BW (MHz)	Modulation	RF Size	IS Offset	Power Ch. 1 / Power Ch. 2 / Power Ch. 3 / Power	Power Ch. 1 / Power Ch. 2 / Power Ch. 3 / Power	Power Ch. 1 / Power Ch. 2 / Power Ch. 3 / Power	Time-up limit (min)	MPN (dB)	
Channel									
Frequency (MHz)									
5	QPSK	1	0	23.70	23.68	23.68	24.3	0	
5	QPSK	1	24	23.73	23.74	23.73			
5	QPSK	1	48	23.72	23.72	23.71			
5	QPSK	25	0	22.38	22.34	22.28			
5	QPSK	25	12	22.39	22.40	22.34	23.3	1	
5	QPSK	25	24	22.37	22.37	22.37			
5	QPSK	50	0	22.41	22.38	22.33			
5	QPSK	50	12	22.41	22.38	22.33			
5	QPSK	1	0	22.82	22.81	22.79	23.3	1	
5	QPSK	1	24	22.81	22.81	22.80			
5	QPSK	1	48	22.82	22.82	22.80			
5	QPSK	25	0	21.83	21.82	21.81			
5	QPSK	25	12	21.83	21.83	21.84	22.3	2	
5	QPSK	25	24	21.84	21.83	21.80			
5	QPSK	50	0	21.84	21.83	21.80			
5	QPSK	50	12	21.84	21.83	21.80			
5	QPSK	1	0	21.77	21.78	21.79	22.3	2	
5	QPSK	1	24	21.76	21.76	21.76			
5	QPSK	1	48	21.79	21.79	21.78			
5	QPSK	25	0	20.87	20.86	20.86			
5	QPSK	25	12	20.86	20.86	20.82	21.3	3	
5	QPSK	50	0	20.85	20.84	20.84			
Channel									
Frequency (MHz)									
5	QPSK	1	0	23.68	23.62	23.64	24.3	0	
5	QPSK	1	12	23.68	23.68	23.70			
5	QPSK	1	24	23.65	23.65	23.70			
5	QPSK	12	0	22.37	22.32	22.38			
5	QPSK	12	7	22.36	22.37	22.33	23.3	1	
5	QPSK	12	14	22.36	22.36	22.39			
5	QPSK	25	0	22.40	22.37	22.37			
5	QPSK	25	12	22.38	22.37	22.37			
5	QPSK	1	0	22.88	22.79	22.87	23.3	1	
5	QPSK	1	24	22.81	22.81	22.81			
5	QPSK	1	48	22.87	22.88	22.87			
5	QPSK	12	9	21.86	21.85	21.86			
5	QPSK	12	17	21.87	21.87	21.82	22.3	2	
5	QPSK	25	0	21.71	21.83	21.81			
5	QPSK	25	12	21.71	21.79	21.79			
5	QPSK	25	24	21.77	21.78	21.78			
5	QPSK	1	0	21.85	21.80	21.83	22.3	2	
5	QPSK	1	24	21.82	21.81	21.83			
5	QPSK	1	48	21.85	21.85	21.86			
5	QPSK	12	7	20.86	20.86	20.84			
5	QPSK	12	15	20.86	20.79	20.82	21.3	3	
5	QPSK	25	0	20.85	20.84	20.86			
Channel									
Frequency (MHz)									
3	QPSK	1	0	23.64	23.67	23.62	24.3	0	
3	QPSK	1	8	23.60	23.63	23.63			
3	QPSK	1	16	23.65	23.66	23.65			
3	QPSK	8	0	22.06	22.04	22.04			
3	QPSK	8	4	22.08	22.04	22.09	23.3	1	
3	QPSK	8	7	22.07	22.01	22.02			
3	QPSK	15	0	22.05	22.02	22.01			
3	QPSK	15	6	22.01	22.04	22.05			
3	QPSK	1	0	22.81	22.84	22.85	23.3	1	
3	QPSK	1	8	22.80	22.83	22.80			
3	QPSK	1	16	22.86	22.88	22.89			
3	QPSK	8	0	21.86	21.88	21.89			
3	QPSK	8	4	21.89	21.71	21.71	22.3	2	
3	QPSK	8	7	21.85	21.87	21.71			
3	QPSK	15	0	21.81	21.83	21.83			
3	QPSK	15	6	21.73	21.83	21.73			
3	QPSK	1	0	21.75	21.80	21.81	22.3	2	
3	QPSK	1	8	21.77	21.77	21.79			
3	QPSK	1	16	21.77	21.77	21.79			
3	QPSK	8	0	20.82	20.80	20.87			
3	QPSK	8	4	20.83	20.80	20.83	21.3	3	
3	QPSK	8	7	20.86	20.86	20.89			
3	QPSK	15	0	20.83	20.84	20.86			
3	QPSK	15	6	20.84	20.80	20.82			
Channel									
Frequency (MHz)									
1.4	QPSK	1	0	23.64	23.63	23.64	24.3	0	
1.4	QPSK	1	3	23.67	23.67	23.63			
1.4	QPSK	1	5	23.65	23.65	23.67			
1.4	QPSK	3	0	22.63	22.66	22.60			
1.4	QPSK	3	1	22.63	22.67	22.66	23.3	1	
1.4	QPSK	3	3	22.65	22.64	22.66			
1.4	QPSK	6	0	22.21	22.23	22.21			
1.4	QPSK	6	3	22.23	22.24	22.23			
1.4	QPSK	1	0	22.83	22.84	22.83	23.3	1	
1.4	QPSK	1	3	22.82	22.83	22.81			
1.4	QPSK	1	5	22.80	22.84	22.82			
1.4	QPSK	3	0	22.23	22.23	22.20			
1.4	QPSK	3	1	22.25	22.26	22.23	22.3	2	
1.4	QPSK	5	0	22.26	22.23	22.20			
1.4	QPSK	5	3	22.27	22.25	22.20			
1.4	QPSK	1	0	21.76	21.79	21.79			
1.4	QPSK	1	3	21.70	21.81	21.76	22.3	2	
1.4	QPSK	1	5	21.76	21.82	21.79			
1.4	QPSK	3	0	21.76	21.79	21.71			
1.4	QPSK	3	1	21.73	21.79	21.76			
1.4	QPSK	5	0	21.72	21.87	21.74	21.3	3	
1.4	QPSK	5	3	21.70	21.87	21.76			
1.4	QPSK	5	5	21.69	21.87	21.76			
1.4	QPSK	5	6	21.69	21.87	21.76			

Band 17 (700MHz Band)									
Part 27 (Primary use channel required)									
BW (MHz)	Modulation	RF Size	IS Offset	Power Ch. 1 / Power Ch. 2 / Power Ch. 3 / Power	Power Ch. 1 / Power Ch. 2 / Power Ch. 3 / Power	Power Ch. 1 / Power Ch. 2 / Power Ch. 3 / Power	Time-up limit (min)	MPN (dB)	
Channel									
Frequency (MHz)									
10	QPSK	1	0	23.61	23.62	23.60	24.3	0	
10	QPSK	1	24	23.70	23.71	23.68			
10	QPSK	1	48	23.70	23.70	23.67			
10	QPSK	25	0	22.38	22.38	22.33			
10	QPSK	25	12	22.39	22.38	22.32	23.3	1	
10	QPSK	25	24	22.35	22.35	22.28			
10	QPSK	50	0	22.32	22.31	22.31			
10	QPSK	50	12	22.32	22.29	22.31			
10	QPSK	1	0	22.83	22.82	22.83	23.3	1	
10	QPSK	1	24	22.87	22.82	22.80			
10	QPSK	1	48	22.82	22.85	22.86			
10	QPSK	25	12	21.86	21.85	21.86			
10	QPSK	25	24	21.83	21.82	21.86	22.3	2	
10	QPSK	50	0	21.83	21.82	21.86			
10	QPSK	50	12	21.83	21.82	21.86			
10	QPSK	1	0	21.81	21.71	21.82			
10	QPSK	1	24	21.82	21.80	21.76	22.3	2	
10	QPSK	1	48	21.82	21.82	21.81			
10	QPSK	25	0	20.85	20.84	20.81			
10	QPSK	25	12	20.83	20.85	20.80			
10	QPSK	25	24	20.81	20.81	20.85	21.3	3	
10	QPSK	50	0	20.81	20.81	20.85			
10	QPSK	50	12	20.81	20.81	20.85			
10	QPSK	50	24	20.81	20.81	20.85			
Channel				23.60	23.60	23.60			
Frequency (MHz)				706.5	710	712.5			
5	QPSK	1	0	23.62	23.63	23.59	24.3	0	
5	QPSK	1	12	23.59	23.63	23.63			
5	QPSK	1	24	23.66	23.62	23.65			
5	QPSK	12	0	22.37	22.29	22.36			
5	QPSK	12	7	22.29	22.24	22.28	23.3	1	
5	QPSK	12	13	22.27	22.28	22.21			
5	QPSK	25	0	22.27	22.28	22.24			
5	QPSK	25	12	22.24	22.24	22.24			
5	QPSK	1	12	22.84	22.85	22.85	23.3	1	
5	QPSK	1	24	22.84	22.86	22.88			
5	QPSK	1	48	22.84	22.84	22.85			
5	QPSK	12	7	21.53	21.54	21.58			
5	QPSK	12	13	21.54	21.58	21.58	22.3	2	
5	QPSK	25	0	21.54	21.56	21.56			
5	QPSK	25	12	21.54	21.56	21.56			
5	QPSK	1	0	21.74	21.77	21.78			
5	QPSK	1	12	21.73	21.78	21.78	22.3	2	
5	QPSK	1	24	21.74	21.79	21.78			
5	QPSK	12	0	20.98	20.92	20.93			
5	QPSK	12	7	20.95	20.94	20.98			
5	QPSK	25	0	20.98	20.98	20.98	21.3	3	
5	QPSK	25	12	20.94	20.92	20.93			
5	QPSK	25	24	20.94	20.92	20.93			
5	QPSK	50	0	20.94	20.92	20.93			

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	21.75	21.79	21.82			
20	QPSK	1	49	22.06	21.97	22.00	22.8	0	
20	QPSK	1	99	22.00	21.96	21.95			
20	QPSK	50	0	22.00	21.91	21.95			
20	QPSK	50	24	22.04	21.95	21.98	22.8	0	
20	QPSK	50	50	22.01	21.93	21.91			
20	QPSK	100	0	22.00	21.94	21.96			
20	16QAM	1	0	22.05	22.00	22.02	22.8	0	
20	16QAM	1	49	22.01	22.05	22.00			
20	16QAM	1	99	22.00	22.05	22.00			
20	16QAM	50	0	21.57	21.56	21.61	22.3	0.5	
20	16QAM	50	24	21.55	21.60	21.71			
20	16QAM	50	50	21.64	21.56	21.67			
20	16QAM	100	0	21.55	21.69	21.61	22.3	0.5	
20	64QAM	1	0	21.39	21.42	21.44			
20	64QAM	1	49	21.57	21.58	21.63			
20	64QAM	1	99	21.57	21.61	21.56	21.3	1.5	
20	64QAM	50	0	20.46	20.58	20.62			
20	64QAM	50	24	20.57	20.60	20.61			
20	64QAM	50	50	20.53	20.55	20.68	21.3	1.5	
20	64QAM	100	0	20.51	20.57	20.60			
Channel				37825	38000	38175	Tune-up limit (dBm)	MPR (dB)	
Frequency (MHz)				2577.5	2595	2612.5	22.8	0	
15	QPSK	1	0	21.70	21.62	21.71			
15	QPSK	1	37	22.03	22.01	21.75			
15	QPSK	1	74	21.80	22.00	21.72	22.8	0	
15	QPSK	36	0	22.00	21.76	21.82			
15	QPSK	36	20	22.01	21.88	21.86			
15	QPSK	36	39	22.00	21.90	21.69	22.8	0	
15	QPSK	75	0	21.96	21.72	21.93			
15	16QAM	1	0	21.83	21.80	21.78			
15	16QAM	1	37	21.94	22.05	22.02	22.8	0	
15	16QAM	1	74	21.98	22.02	21.95			
15	16QAM	36	0	21.38	21.54	21.56			
15	16QAM	36	20	21.43	21.57	21.48	22.3	0.5	
15	16QAM	36	39	21.51	21.39	21.67			
15	16QAM	75	0	21.39	21.68	21.38			
15	64QAM	1	0	21.41	21.24	21.29	22.3	0.5	
15	64QAM	1	37	21.40	21.38	21.64			
15	64QAM	1	74	21.50	21.39	21.41			
15	64QAM	36	0	20.48	20.60	20.49	21.3	1.5	
15	64QAM	36	20	20.62	20.37	20.42			
15	64QAM	36	39	20.44	20.56	20.51			
15	64QAM	75	0	20.54	20.44	20.45	21.3	1.5	
Channel				37800	38000	38200	Tune-up limit (dBm)	MPR (dB)	
Frequency (MHz)				2575	2595	2615	22.8	0	
10	QPSK	1	0	21.72	21.60	21.66			
10	QPSK	1	25	22.05	21.90	22.04			
10	QPSK	1	49	21.79	21.85	21.80	22.8	0	
10	QPSK	25	0	21.89	21.82	21.98			
10	QPSK	25	12	21.87	21.95	21.76			
10	QPSK	25	25	21.95	21.85	21.91	22.8	0	
10	QPSK	50	0	21.96	21.85	21.98			
10	16QAM	1	0	21.89	21.94	21.88			
10	16QAM	1	25	21.97	22.00	21.99	22.8	0	
10	16QAM	1	49	22.01	22.04	21.99			
10	16QAM	25	0	21.37	21.54	21.58			
10	16QAM	25	12	21.51	21.56	21.72	22.3	0.5	
10	16QAM	25	25	21.43	21.41	21.60			
10	16QAM	50	0	21.31	21.44	21.59			
10	64QAM	1	0	21.27	21.27	21.48	22.3	0.5	
10	64QAM	1	25	21.43	21.42	21.41			
10	64QAM	1	49	21.38	21.40	21.47			
10	64QAM	25	0	20.35	20.41	20.44	21.3	1.5	
10	64QAM	25	12	20.41	20.43	20.59			
10	64QAM	25	25	20.29	20.52	20.70			
10	64QAM	50	0	20.48	20.48	20.62	21.3	1.5	
Channel				37775	38000	38225	Tune-up limit (dBm)	MPR (dB)	
Frequency (MHz)				2572.5	2595	2617.5	22.8	0	
5	QPSK	1	0	21.64	21.72	21.75			
5	QPSK	1	12	21.98	21.89	21.86			
5	QPSK	1	24	21.78	22.01	21.90	22.8	0	
5	QPSK	12	0	21.99	21.66	21.80			
5	QPSK	12	7	22.03	21.90	21.95			
5	QPSK	12	13	21.96	21.80	21.88	22.8	0	
5	QPSK	25	0	21.92	21.72	21.75			
5	16QAM	1	0	21.99	21.83	21.79			
5	16QAM	1	12	22.03	21.94	21.87	22.8	0	
5	16QAM	1	24	21.80	21.87	22.04			
5	16QAM	12	0	21.33	21.60	21.41			
5	16QAM	12	7	21.39	21.54	21.58	22.3	0.5	
5	16QAM	12	13	21.57	21.61	21.45			
5	16QAM	25	0	21.44	21.52	21.60			
5	64QAM	1	0	21.41	21.19	21.30	22.3	0.5	
5	64QAM	1	12	21.54	21.58	21.44			
5	64QAM	1	24	21.48	21.53	21.42			
5	64QAM	12	0	20.27	20.49	20.50	21.3	1.5	
5	64QAM	12	7	20.53	20.58	20.45			
5	64QAM	12	13	20.44	20.36	20.67			
5	64QAM	25	0	20.27	20.45	20.51	21.3	1.5	

Band 41 (2.6G Band)										
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Low Middle Ch. / Freq.	Power Middle Ch. / Freq.	Power High Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				39750	40185	40620	41055	41490		
Frequency (MHz)				2506	2549.5	2593	2636.5	2680		
20	QPSK	1	0	21.96	21.87	21.99	22.06	21.97		
20	QPSK	1	49	22.00	22.03	22.18	22.15	22.13	22.8	0
20	QPSK	1	99	21.88	22.02	22.08	22.11	22.03		
20	QPSK	50	0	21.92	21.94	22.10	22.13	22.08		
20	QPSK	50	24	21.97	22.00	22.15	22.14	22.11	22.8	0
20	QPSK	50	50	21.95	21.98	22.08	22.12	22.10		
20	QPSK	100	0	21.95	21.97	22.13	22.12	22.09		
20	16QAM	1	0	21.83	21.85	21.90	22.02	21.97	22.8	0
20	16QAM	1	49	22.05	22.06	22.10	22.06	22.07		
20	16QAM	1	99	21.93	21.95	22.02	22.10	21.99		
20	16QAM	50	0	21.49	21.44	21.64	21.74	21.61	22.3	0.5
20	16QAM	50	24	21.61	21.49	21.68	21.77	21.89		
20	16QAM	50	50	21.51	21.59	21.68	21.74	21.83		
20	16QAM	100	0	21.48	21.46	21.49	21.71	21.61	22.3	0.5
20	64QAM	1	0	21.43	21.47	21.42	21.57	21.49		
20	64QAM	1	49	21.60	21.56	21.69	21.73	21.60		
20	64QAM	1	99	21.44	21.47	21.57	21.62	21.50	21.3	1.5
20	64QAM	50	0	20.45	20.44	20.60	20.71	20.59		
20	64QAM	50	24	20.55	20.50	20.66	20.67	20.62		
20	64QAM	50	50	20.46	20.55	20.64	20.73	20.63	21.3	1.5
20	64QAM	100	0	20.53	20.49	20.62	20.64	20.60		
Channel				39725	40173	40620	41068	41515	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2503.5	2548.3	2593	2637.8	2682.5	22.8	0
15	QPSK	1	0	21.82	21.77	21.94	22.05	21.85		
15	QPSK	1	37	21.89	22.07	22.08	22.14	21.96		
15	QPSK	1	74							

Power Level for Head -LAT

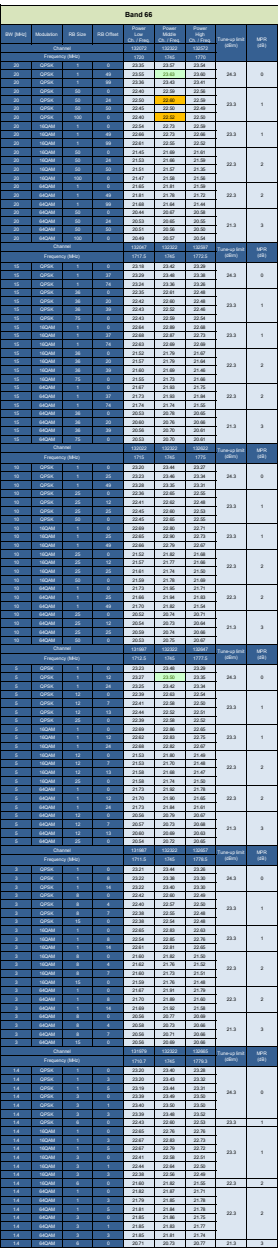
GSM850	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
	TX Channel	128	169	251	128	169	251	
Frequency (MHz)	824.2	833.4	844.6	854.2	864.2	874.4	884.6	
GSM 1 Tx slot	32.06	32.50	32.23	33.30	23.06	23.50	23.23	24.30
GPRS 1 Tx slot	32.04	32.46	32.20	33.30	23.04	23.46	23.20	24.30
GPRS 2 Tx slots	29.80	30.22	30.02	31.30	23.80	24.22	24.02	25.30
GPRS 3 Tx slots	28.23	28.63	28.45	29.80	23.97	24.37	24.19	25.54
GPRS 4 Tx slots	27.33	27.64	27.56	29.30	24.33	24.64	24.56	26.30
EDGE 1 Tx slot	26.65	26.52	26.77	28.30	17.65	17.52	17.77	19.30
EDGE 2 Tx slots	25.45	25.26	25.66	25.80	19.45	19.26	19.66	19.80
EDGE 3 Tx slots	23.25	23.15	23.59	24.30	18.99	18.89	19.33	20.04
EDGE 4 Tx slots	22.20	22.10	22.33	23.80	19.20	19.10	19.33	20.80

GSM1900	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
	TX Channel	512	661	810	512	661	810	
Frequency (MHz)	1850.2	1880	1909.8	1850.2	1880	1909.8	1850.2	
GSM 1 Tx slot	29.15	29.28	29.26	30.30	20.15	20.28	20.26	21.30
GPRS 1 Tx slot	29.13	29.26	29.23	30.30	20.13	20.26	20.23	21.30
GPRS 2 Tx slots	26.00	26.22	26.19	27.80	20.00	20.22	20.19	21.80
GPRS 3 Tx slots	25.22	25.41	25.39	26.80	20.96	21.15	21.13	22.54
GPRS 4 Tx slots	23.37	23.54	23.53	25.30	20.37	20.54	20.53	22.30
EDGE 1 Tx slot	25.84	25.90	25.72	27.30	16.84	16.90	16.72	18.30
EDGE 2 Tx slots	23.92	24.00	23.89	24.80	17.92	18.00	17.89	18.80
EDGE 3 Tx slots	22.44	22.57	22.32	23.80	18.18	18.31	18.06	19.54
EDGE 4 Tx slots	21.24	21.28	21.12	22.80	18.24	18.28	18.12	19.80

Band		WCDMA II			Tune-up Limit (dBm)	WCDMA IV			Tune-up Limit (dBm)	WCDMA V			Tune-up Limit (dBm)
TX Channel		9262	9400	9538		1312	1413	1513		4132	4182	4233	
Rx Channel		9602	9800	9938		1537	1638	1738		4357	4407	4458	
Frequency (MHz)		1852.4	1890	1927.8		1712.4	1751.5	1791.3		235.4	239.1	243.6	
3GPP Rel 99	AMR 12.2Kbps	23.78	23.69	23.75	24.30	23.52	23.60	23.57	24.30	24.09	24.10	24.14	24.80
3GPP Rel 99	RMCE 12.2Kbps	23.79	23.72	23.78	24.30	23.55	23.62	23.60	24.30	24.12	24.14	24.16	24.80
3GPP Rel 6	HSDPA Subtest-1	22.75	22.74	22.77	23.30	22.54	22.62	22.63	23.30	23.17	23.17	23.18	23.80
3GPP Rel 6	HSDPA Subtest-2	22.74	22.72	22.75	23.30	22.51	22.59	22.60	23.30	23.14	23.13	23.21	23.80
3GPP Rel 6	HSDPA Subtest-3	22.26	22.26	22.27	22.80	22.05	22.16	22.12	22.80	22.71	22.67	22.69	23.30
3GPP Rel 6	HSDPA Subtest-4	22.23	22.19	22.24	22.80	22.01	22.10	22.13	22.80	22.71	22.68	22.64	23.30
3GPP Rel 8	DCHSDPA Subtest-1	22.64	22.68	22.75	23.30	22.49	22.53	22.43	23.30	23.01	23.08	23.10	23.80
3GPP Rel 8	DCHSDPA Subtest-2	22.61	22.64	22.71	23.30	22.42	22.46	22.38	23.30	23.03	23.01	23.11	23.80
3GPP Rel 8	DCHSDPA Subtest-3	22.17	22.22	22.31	22.80	21.96	22.02	22.04	22.80	22.63	22.54	22.52	23.30
3GPP Rel 8	DCHSDPA Subtest-4	22.11	22.21	22.21	22.80	21.93	21.94	21.92	22.80	22.51	22.46	22.55	23.30
3GPP Rel 6	HSUPA Subtest-1	21.20	21.19	21.24	21.80	20.90	21.11	21.13	21.80	21.55	21.60	21.59	22.30
3GPP Rel 6	HSUPA Subtest-2	20.86	20.84	20.75	21.30	20.69	20.75	20.78	21.30	21.08	21.10	21.07	21.80
3GPP Rel 6	HSUPA Subtest-3	21.75	21.71	21.78	22.30	21.58	21.63	21.61	22.30	22.12	22.12	22.11	22.80
3GPP Rel 6	HSUPA Subtest-4	20.22	20.17	20.23	20.80	19.99	20.09	20.06	20.80	20.59	20.59	20.60	21.30
3GPP Rel 6	HSUPA Subtest-5	22.70	22.70	22.80	23.30	22.50	22.60	22.60	23.30	23.10	23.10	23.10	23.80
3GPP Rel 7	HSPA+ (16QAM) Subtest-1	19.79	19.83	19.92	20.30	19.50	19.63	19.71	20.30	19.97	19.92	19.99	20.80

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Band 7 (200MHz Band)									
Part 27									
SPN (kHz)	Subcarrier	AR Size	HS Offset	Frequency (MHz)	Channel Bandwidth (MHz)	Channel Center (MHz)	Power (dBm)	Service Area	SPN (MHz)
Frequency Block 1									
1A	SPN1A	1	NA	21.50	0.05	21.525	-120	20A	0
1A	SPN1A	1	NA	21.55	0.05	21.575	-120		
1A	SPN1A	1	NA	21.60	0.05	21.625	-120		
1A	SPN1A	1	NA	21.65	0.05	21.675	-120		
Frequency Block 2									
1A	SPN1A	1	NA	21.70	0.05	21.725	-120	20A	1
1A	SPN1A	1	NA	21.75	0.05	21.775	-120		
1A	SPN1A	1	NA	21.80	0.05	21.825	-120		
1A	SPN1A	1	NA	21.85	0.05	21.875	-120		
Frequency Block 3									
1A	SPN1A	1	NA	21.90	0.05	21.925	-120	20A	2
1A	SPN1A	1	NA	21.95	0.05	21.975	-120		
1A	SPN1A	1	NA	22.00	0.05	22.025	-120		
1A	SPN1A	1	NA	22.05	0.05	22.075	-120		
Frequency Block 4									
1A	SPN1A	1	NA	22.10	0.05	22.125	-120	20A	3
1A	SPN1A	1	NA	22.15	0.05	22.175	-120		
1A	SPN1A	1	NA	22.20	0.05	22.225	-120		
1A	SPN1A	1	NA	22.25	0.05	22.275	-120		
Channel									
1A	Channel	1	NA	21.50	0.05	21.525	-120	20A	SPN (MHz)
1A	Channel	1	NA	21.55	0.05	21.575	-120		
1A	Channel	1	NA	21.60	0.05	21.625	-120		
1A	Channel	1	NA	21.65	0.05	21.675	-120		
Frequency Block 5									
1A	SPN1A	1	NA	21.70	0.05	21.725	-120	20A	1
1A	SPN1A	1	NA	21.75	0.05	21.775	-120		
1A	SPN1A	1	NA	21.80	0.05	21.825	-120		
1A	SPN1A	1	NA	21.85	0.05	21.875	-120		
Frequency Block 6									
1A	SPN1A	1	NA	21.90	0.05	21.925	-120	20A	2
1A	SPN1A	1	NA	21.95	0.05	21.975	-120		
1A	SPN1A	1	NA	22.00	0.05	22.025	-120		
1A	SPN1A	1	NA	22.05	0.05	22.075	-120		
Frequency Block 7									
1A	SPN1A	1	NA	22.10	0.05	22.125	-120	20A	3
1A	SPN1A	1	NA	22.15	0.05	22.175	-120		
1A	SPN1A	1	NA	22.20	0.05	22.225	-120		
1A	SPN1A	1	NA	22.25	0.05	22.275	-120		
Channel									
1A	Channel	1	NA	21.50	0.05	21.525	-120	20A	SPN (MHz)
1A	Channel	1	NA	21.55	0.05	21.575	-120		
1A	Channel	1	NA	21.60	0.05	21.625	-120		
1A	Channel	1	NA	21.65	0.05	21.675	-120		
Frequency Block 8									
1A	SPN1A	1	NA	21.70	0.05	21.725	-120	20A	1
1A	SPN1A	1	NA	21.75	0.05	21.775	-120		
1A	SPN1A	1	NA	21.80	0.05	21.825	-120		
1A	SPN1A	1	NA	21.85	0.05	21.875	-120		
Frequency Block 9									
1A	SPN1A	1	NA	21.90	0.05	21.925	-120	20A	2
1A	SPN1A	1	NA	21.95	0.05	21.975	-120		
1A	SPN1A	1	NA	22.00	0.05	22.025	-120		
1A	SPN1A	1	NA	22.05	0.05	22.075	-120		
Frequency Block 10									
1A	SPN1A	1	NA	22.10	0.05	22.125	-120	20A	3
1A	SPN1A	1	NA	22.15	0.05	22.175	-120		
1A	SPN1A	1	NA	22.20	0.05	22.225	-120		
1A	SPN1A	1	NA	22.25	0.05	22.275	-120		
Channel									
1A	Channel	1	NA	21.50	0.05	21.525	-120	20A	SPN (MHz)
1A	Channel	1	NA	21.55	0.05	21.575	-120		
1A	Channel	1	NA	21.60	0.05	21.625	-120		
1A	Channel	1	NA	21.65	0.05	21.675	-120		
Frequency Block 11									
1A	SPN1A	1	NA	21.70	0.05	21.725	-120	20A	1
1A	SPN1A	1	NA	21.75	0.05	21.775	-120		
1A	SPN1A	1	NA	21.80	0.05	21.825	-120		
1A	SPN1A	1	NA	21.85	0.05	21.875	-120		
Frequency Block 12									
1A	SPN1A	1	NA	21.90	0.05	21.925	-120	20A	2
1A	SPN1A	1	NA	21.95	0.05	21.975	-120		
1A	SPN1A	1	NA	22.00	0.05	22.025	-120		
1A	SPN1A	1	NA	22.05	0.05	22.075	-120		
Frequency Block 13									
1A	SPN1A	1	NA	22.10	0.05	22.125	-120	20A	3
1A	SPN1A	1	NA	22.15	0.05	22.175	-120		
1A	SPN1A	1	NA	22.20	0.05	22.225	-120		
1A	SPN1A	1	NA	22.25	0.05	22.275	-120		
Channel									
1A	Channel	1	NA	21.50	0.05	21.525	-120	20A	SPN (MHz)
1A	Channel	1	NA	21.55	0.05	21.575	-120		
1A	Channel	1	NA	21.60	0.05	21.625	-120		
1A	Channel	1	NA	21.65	0.05	21.675	-120		



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	24.3	0	
Frequency (MHz)				2580	2595	2610			
20	QPSK	1	0	23.23	23.23	23.30	23.3	1	
20	QPSK	1	49	23.49	23.44	23.46			
20	QPSK	1	99	23.39	23.34	23.40			
20	QPSK	50	0	22.07	22.05	22.11			
20	QPSK	50	24	22.17	22.10	22.16			
20	QPSK	50	50	22.11	22.08	22.10	23.3	1	
20	QPSK	100	0	22.10	22.07	22.09			
20	16QAM	1	0	22.16	22.10	22.22			
20	16QAM	1	49	22.37	22.44	22.45			
20	16QAM	1	99	22.25	22.27	22.35			
20	16QAM	50	0	21.45	21.49	21.50	22.3	2	
20	16QAM	50	24	21.46	21.49	21.52			
20	16QAM	50	50	21.48	21.51	21.52			
20	16QAM	100	0	21.45	21.44	21.50			
20	64QAM	1	0	21.25	21.34	21.40			
20	64QAM	1	49	21.47	21.53	21.58	22.3	2	
20	64QAM	1	99	21.41	21.45	21.52			
20	64QAM	50	0	20.33	20.38	20.48			
20	64QAM	50	24	20.45	20.49	20.45			
20	64QAM	50	50	20.46	20.45	20.49			
20	64QAM	100	0	20.37	20.39	20.45	21.3	3	
Channel				37825	38000	38175			
Frequency (MHz)				2577.5	2595	2612.5			
15	QPSK	1	0	23.22	23.24	23.32	24.3	0	
15	QPSK	1	37	23.34	23.44	23.47			
15	QPSK	1	74	23.40	23.37	23.41			
15	QPSK	36	0	22.09	22.07	22.18			
15	QPSK	36	20	22.12	22.16	22.23			
15	QPSK	36	39	22.13	22.10	22.21	23.3	1	
15	QPSK	75	0	22.15	22.17	22.24			
15	16QAM	1	0	22.19	22.18	22.20			
15	16QAM	1	37	22.32	22.35	22.35			
15	16QAM	1	74	22.33	22.28	22.35			
15	16QAM	36	0	21.38	21.41	21.47	22.3	2	
15	16QAM	36	20	21.40	21.42	21.49			
15	16QAM	36	39	21.44	21.47	21.44			
15	16QAM	75	0	21.40	21.47	21.54			
15	64QAM	1	0	21.36	21.32	21.49			
15	64QAM	1	37	21.45	21.53	21.52	22.3	2	
15	64QAM	1	74	21.54	21.47	21.55			
15	64QAM	36	0	20.37	20.46	20.57			
15	64QAM	36	20	20.45	20.47	20.50			
15	64QAM	36	39	20.39	20.49	20.45			
15	64QAM	75	0	20.39	20.42	20.41	21.3	3	
Channel				37800	38000	38200			
Frequency (MHz)				2575	2595	2615			
10	QPSK	1	0	23.31	23.42	23.35	24.3	0	
10	QPSK	1	25	23.38	23.48	23.43			
10	QPSK	1	49	23.45	23.44	23.49			
10	QPSK	25	0	22.03	22.19	22.18			
10	QPSK	25	12	22.17	22.19	22.24			
10	QPSK	25	25	22.14	22.09	22.24	23.3	1	
10	QPSK	50	0	22.12	22.12	22.17			
10	16QAM	1	0	22.20	22.27	22.28			
10	16QAM	1	25	22.33	22.35	22.41			
10	16QAM	1	49	22.29	22.39	22.40			
10	16QAM	25	0	21.44	21.55	21.55	22.3	2	
10	16QAM	25	12	21.44	21.52	21.59			
10	16QAM	25	25	21.49	21.52	21.60			
10	16QAM	50	0	21.46	21.45	21.59			
10	64QAM	1	0	21.39	21.46	21.47			
10	64QAM	1	25	21.45	21.47	21.60	22.3	2	
10	64QAM	1	49	21.47	21.53	21.56			
10	64QAM	25	0	20.48	20.53	20.53			
10	64QAM	25	12	20.51	20.51	20.66			
10	64QAM	25	25	20.54	20.46	20.63			
10	64QAM	50	0	20.40	20.47	20.54	21.3	3	
Channel				37775	38000	38225			
Frequency (MHz)				2572.5	2595	2617.5			
5	QPSK	1	0	23.31	23.40	23.48	24.3	0	
5	QPSK	1	12	23.34	23.39	23.47			
5	QPSK	1	24	23.40	23.46	23.47			
5	QPSK	12	0	22.11	22.21	22.26			
5	QPSK	12	7	22.12	22.20	22.22			
5	QPSK	12	13	22.11	22.15	22.27	23.3	1	
5	QPSK	25	0	22.19	22.16	22.25			
5	16QAM	1	0	22.26	22.32	22.36			
5	16QAM	1	12	22.29	22.39	22.36			
5	16QAM	1	24	22.24	22.37	22.39			
5	16QAM	12	0	21.38	21.47	21.54	22.3	2	
5	16QAM	12	7	21.37	21.46	21.62			
5	16QAM	12	13	21.42	21.45	21.61			
5	16QAM	25	0	21.43	21.57	21.59			
5	64QAM	1	0	21.44	21.52	21.56			
5	64QAM	1	12	21.46	21.53	21.59	22.3	2	
5	64QAM	1	24	21.49	21.52	21.58			
5	64QAM	12	0	20.38	20.53	20.50			
5	64QAM	12	7	20.41	20.48	20.50			
5	64QAM	12	13	20.46	20.45	20.50			
5	64QAM	25	0	20.47	20.50	20.61	21.3	3	

Band 41 (2.6G Band)										
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Low Middle Ch. / Freq.	Power Middle Ch. / Freq.	Power High Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				39750	40185	40620	41055	41490	24.3	0
Frequency (MHz)				2506	2549.5	2593	2636.5	2680		
20	QPSK	1	0	23.40	23.34	23.47	23.49	23.52	24.3	0
20	QPSK	1	49	23.58	23.56	23.67	23.65	23.65		
20	QPSK	1	99	23.45	23.41	23.60	23.60	23.51		
20	QPSK	50	0	22.12	22.04	22.23	22.25	22.25		
20	QPSK	50	24	22.21	22.19	22.31	22.29	22.27		
20	QPSK	50	50	22.13	22.15	22.27	22.30	22.26	23.3	1
20	QPSK	100	0	22.11	22.12	22.28	22.27	22.25		
20	16QAM	1	0	22.04	22.10	22.19	22.01	22.04		
20	16QAM	1	49	22.09	22.26	22.30	22.13	22.12		
20	16QAM	1	99	22.19	22.10	22.12	22.06	22.00		
20	16QAM	50	0	21.26	21.43	21.58	21.39	21.38	22.3	2
20	16QAM	50	24	21.38	21.46	21.59	21.44	21.41		
20	16QAM	50	50	21.37	21.51	21.56	21.44	21.36		
20	16QAM	100	0	21.29	21.46	21.53	21.41	21.37		
20	64QAM	1	0	21.01	21.09	21.19	21.03	21.00		
20	64QAM	1	49	21.08	21.25	21.28	21.12	21.15	22.3	2
20	64QAM	1	99	21.00	21.09	21.14	21.08	21.04		
20	64QAM	50	0	20.21	20.37	20.52	20.33	20.33		
20	64QAM	50	24	20.34	20.41	20.52	20.43	20.36		
20	64QAM	50	50	20.33	20.45	20.51	20.39	20.31		
20	64QAM	100	0	20.26	20.42	20.52	20.38	20.31	21.3	3
Channel				39725	40173	40620	41068	41515		
Frequency (MHz)				2503.5	2548.3	2593	2637.8	2682.5		
15	QPSK	1	0	23.35	23.56	23.51	23.54	23.56	24.3	0
15	QPSK	1	37	23.47	23.57	23.57	23.55	23.55		
15	QPSK	1	74	23.41	23.59	23.52	23.54	23.51		
15	QPSK	36	0	22.15	22.35	22.27	22.36	22.48		
15	QPSK	36	20	22.16	22.39	22.28	22.41	22.49		
15	QPSK	36	39	22.14	22.44	22.32	22.42	22.47	23.3	1
15	QPSK	75	0	22.17	22.43	22.35	22.42	22.51		
15	16QAM	1	0	22.13	22.42	22.31	22.37	22.47		
15	16QAM	1	37	22.22	22.50	22.37	22.44	22.53		
15	16QAM	1	74	22.24	22.44	22.33	22.43	22.44		
15	16QAM	36	0	21.43	21.64	21.58	21.63	21.75	23.3	1
15	16QAM	36	20	21.45	21.68	21.59	21.67	21.76		
15	16QAM	36	39	21.47	21.69	21.59	21.73	21.77		
15	16QAM	75	0	21.48	21.75	21.66	21.70	21.84		
15	64QAM	1	0	21.17	21.42	21.33	21.40	21.52		
15	64QAM	1	37	21.30	21.52	21.43	21.47	21.56	22.3	2
15	64QAM	1	74	21.27	21.45	21.37	21.45	21.45		
15	64QAM	36	0	20.43	20.63	20.61	20.65	20.77		
15	64QAM	36	20	20.47	20.70	20.58	20.69	20.76		
15	64QAM	36	39	20.43	20.68	20.61	20.70	20.75		
15	64QAM	75	0	20.44	20.69	20.61	20.69	20.76	21.3	3
Channel				39700	40160	40620	41080	41560		
Frequency (MHz)				2501	2547	2593	2639	2685		
10	QPSK	1	0	23.33	23.58	23.55	23.50	23.51	24.3	0
10	QPSK	1	25	23.37	23.55	23.50	23.53	23.53		
10	QPSK	1	49	23.38	23.53	23.55	23.54	23.57		
10	QPSK	25	0	22.10	22.40	22.32	22.41	22.52		
10	QPSK	25	12	22.16	22.46	22.33	22.43	22.50		
10	QPSK	25	25	22.15	22.44	22.34	22.46	22.48	23.3	1
10	QPSK	50	0	22.15	22.44	22.34	22.45	22.51		
10	16QAM	1	0	22.13	22.46	22.36	22.40	22.54		
10	16QAM	1	25	22.20	22.50	22.40	22.49	22.50		
10	16QAM	1	49	22.18	22.44	22.36	22.48	22.44		
10	16QAM	25	0	21.44	21.71	21.67	21.75	21.83	22.3	2
10	16QAM	25	12	21.50	21.79	21.67	21.75	21.84		
10	16QAM	25	25	21.49	21.77	21.67	21.80	21.80		
10	16QAM	50	0	21.47	21.75	21.70	21.76	21.84		
10	64QAM	1	0	21.17	21.45	21.37	21.42	21.54		
10	64QAM	1	25	21.21	21.53	21.42	21.49	21.54	22.3	2
10	64QAM	1	49	21.22	21.45	21.37	21.47	21.49		
10	64QAM	25	0	20.43	20.72	20.67	20.74	20.83		
10	64QAM	25	12	20.52	20.77	20.63	20.77	20.83		
10	64QAM	25	25	20.49	20.78	20.67	20.81	20.78		
10	64QAM	50	0	20.44	20.70	20.62	20.72	20.78	21.3	3
Channel				39675	40148	40620	41093	41565		
Frequency (MHz)				2498.5	2545.8	2593	2640.30	2687.5		
5	QPSK	1	0	23.35	23.51	23.55	23.50	23.56	24.3	0
5	QPSK	1	12	23.40	23.57	23.55	23.56	23.50		
5	QPSK	1	24	23.38	23.54	23.57	23.53	23.57		
5	QPSK	12	0	22.13	22.40	22.33	22.40	22.46		
5	QPSK	12	7	22.12	22.44	22.30	22.43	22.44		
5	QPSK	12	13	22.14	22.43	22.32	22.38	22.41	23.3	1
5	QPSK	25	0	22.14	22.42	22.32	22.43	22.42		
5	16QAM	1	0	22.15	22.49	22.37	22.45	22.46		
5	16QAM	1	12	22.17	22.51	22.36	22.43	22.43		
5	16QAM	1	24	22.18	22.52	22.39	22.47	22.44		
5	16QAM	12	0	21.37	21.67	21.58	21.68	21.69	22.3	2
5	16QAM	12	7	21.39	21.71	21.54	21.68	21.67		
5	16QAM	12	13	21.38	21.69	21.55	21.66	21.68		
5	16QAM	25	0	21.46	21.75	21.66	21.77	21.78		
5	64QAM	1	0	21.22	21.49	21.44	21.48	21.53		
5	64QAM	1	12	21.27	21.47	21.46	21.45	21.52	22.3	2
5	64QAM	1	24	21.24	21.53	21.42	21.47	21.51		
5	64QAM	12	0	20.41	20.69	20.62	20.70	20.74		
5	64QAM	12	7	20.37	20.71	20.57	20.71	20.69		
5	64QAM	12	13	20.42	20.70	20.58	20.69	20.70		
5	64QAM	25	0	20.48	20.74	20.63	20.77	20.74	21.3	3

Power Level for Hotspot -LAT

GSM850	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
	128	189	251		128	189	251	
Frequency (MHz)	824.2	836.4	848.8		824.2	836.4	848.8	
GSM 1 Tx slot	32.06	32.50	32.23	33.30	23.06	23.50	23.23	24.30
GPRS 1 Tx slot	32.04	32.46	32.20	33.30	23.04	23.46	23.20	24.30
GPRS 2 Tx slots	29.80	30.22	30.02	31.30	23.80	24.22	24.02	25.30
GPRS 3 Tx slots	28.23	28.63	28.45	29.80	23.97	24.37	24.19	25.54
GPRS 4 Tx slots	27.33	27.64	27.56	29.30	24.33	24.64	24.56	26.30
EDGE 1 Tx slot	26.65	26.52	26.77	28.30	17.65	17.52	17.77	19.30
EDGE 2 Tx slots	25.45	25.26	25.66	25.80	19.45	19.26	19.66	19.80
EDGE 3 Tx slots	23.25	23.15	23.59	24.30	18.99	18.89	19.33	20.04
EDGE 4 Tx slots	22.20	22.10	22.33	23.80	19.20	19.10	19.33	20.80

GSM1900	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
	512	661	810		512	661	810	
Frequency (MHz)	1850.2	1860	1909.8		1850.2	1860	1909.8	
GSM 1 Tx slot	29.15	29.28	29.26	30.30	20.15	20.28	20.26	21.30
GPRS 1 Tx slot	29.13	29.26	29.23	30.30	20.13	20.26	20.23	21.30
GPRS 2 Tx slots	26.00	26.22	26.19	27.80	20.00	20.22	20.19	21.80
GPRS 3 Tx slots	25.22	25.41	25.39	26.80	20.96	21.15	21.13	22.54
GPRS 4 Tx slots	23.37	23.54	23.53	25.30	20.37	20.54	20.53	22.30
EDGE 1 Tx slot	25.84	25.90	25.72	27.30	16.84	16.90	16.72	18.30
EDGE 2 Tx slots	23.92	24.00	23.89	24.80	17.92	18.00	17.89	18.80
EDGE 3 Tx slots	22.44	22.57	22.32	23.80	16.18	16.31	16.06	19.54
EDGE 4 Tx slots	21.24	21.28	21.12	22.80	16.24	16.28	16.12	19.80

Band		WCDMA II			Tune-up Limit (dBm)	WCDMA IV			Tune-up Limit (dBm)	WCDMA V			Tune-up Limit (dBm)
Tx Channel		9262	9400	9538		1312	1413	1513		4132	4182	4233	
Rx Channel		9662	9800	9938		1537	1638	1738		4357	4407	4458	
Frequency (MHz)		1852.4	1860	1907.6		1712.4	1732.6	1752.6		826.4	836.4	846.6	
3GPP Rel 99	AMR 12.2Kbps	21.32	21.30	21.32	21.80	19.11	19.15	19.13	19.80	24.09	24.10	24.14	24.80
3GPP Rel 99	RMC 12.2Kbps	21.35	21.33	21.34	21.80	19.13	19.18	19.14	19.80	24.12	24.14	24.16	24.80
3GPP Rel 6	HSDPA Subtest-1	20.51	20.52	20.55	20.80	16.05	16.13	16.12	16.80	23.17	23.17	23.18	23.80
3GPP Rel 6	HSDPA Subtest-2	20.49	20.51	20.55	20.80	17.99	18.12	18.06	18.80	23.14	23.13	23.21	23.80
3GPP Rel 6	HSDPA Subtest-3	20.03	20.02	20.06	20.30	17.54	17.63	17.62	18.30	22.71	22.67	22.69	23.30
3GPP Rel 6	HSDPA Subtest-4	20.01	19.99	20.00	20.30	17.53	17.61	17.58	18.30	22.71	22.69	22.64	23.30
3GPP Rel 8	DC-HSDPA Subtest-1	20.26	20.31	20.37	20.80	17.80	18.04	17.92	18.80	23.01	23.08	23.10	23.80
3GPP Rel 8	DC-HSDPA Subtest-2	20.30	20.47	20.36	20.80	17.99	17.97	17.77	18.80	23.03	23.01	23.11	23.80
3GPP Rel 8	DC-HSDPA Subtest-3	19.99	19.76	19.82	20.30	17.26	17.59	17.32	18.30	22.53	22.54	22.52	23.30
3GPP Rel 8	DC-HSDPA Subtest-4	19.74	19.92	19.81	20.30	17.42	17.34	17.41	18.30	22.51	22.46	22.55	23.30
3GPP Rel 6	HSUPA Subtest-1	18.97	18.98	18.98	19.30	16.54	16.60	16.61	17.30	21.55	21.60	21.59	22.30
3GPP Rel 6	HSUPA Subtest-2	18.49	18.47	18.49	18.80	16.01	16.12	16.13	16.80	21.06	21.10	21.07	21.80
3GPP Rel 6	HSUPA Subtest-3	19.50	19.51	19.49	19.80	17.13	17.14	17.15	17.80	22.12	22.12	22.11	22.80
3GPP Rel 6	HSUPA Subtest-4	17.98	17.99	17.98	18.30	15.51	15.63	15.64	16.30	20.59	20.59	20.60	21.30
3GPP Rel 6	HSUPA Subtest-5	20.60	20.50	20.50	20.80	16.00	16.10	16.10	16.80	23.10	23.10	23.10	23.80
3GPP Rel 7	HSPA+ (16QAM) Subtest-1	17.42	17.46	17.52	17.80	15.00	15.14	15.16	15.80	19.97	19.92	19.99	20.80



Band 2 (1900MHz Band) Part 24E											
BSF (MHz)	Modulation	RB Size	RB Offset	Power Ch. 1 (W)	Power Ch. 2 (W)	Power Ch. 3 (W)	Turn-up time (min)	MFR (dB)			
Channel											
Frequency (MHz)											
20	QPSK	1	0	20.48	20.55	20.52	21.8	0			
20	QPSK	1	48	20.43	20.71	20.68					
20	QPSK	1	96	20.42	20.68	20.65					
20	QPSK	50	0	20.57	20.60	20.57					
20	QPSK	50	24	20.63	20.52	20.68	21.8	0			
20	QPSK	50	50	20.58	20.63	20.64					
20	QPSK	100	0	20.62	20.66	20.64					
20	QPSK	100	0	20.62	20.66	20.64					
20	QPSK	1	96	20.61	20.49	20.51	21.8	0			
20	QPSK	1	0	20.48	20.58	20.59					
20	QPSK	50	0	20.42	20.32	20.68					
20	QPSK	50	24	20.49	20.51	20.57					
20	QPSK	50	50	20.42	20.32	20.67	21.8	0			
20	QPSK	1	0	20.62	20.62	20.37					
20	QPSK	1	48	20.55	20.57	20.55					
20	QPSK	1	96	20.61	20.51	20.58					
20	QPSK	50	24	20.02	20.03	20.15	21.3	0.5			
20	QPSK	50	50	20.02	19.97	20.12					
20	QPSK	100	0	19.98	19.94	20.11					
Channel											
Frequency (MHz)											
15	QPSK	1	0	20.50	20.44	20.44			21.8	0	
15	QPSK	1	37	20.47	20.55	20.51					
15	QPSK	1	74	20.36	20.36	20.51					
15	QPSK	38	0	20.54	20.47	20.63					
15	QPSK	38	20	20.51	20.54	20.62	21.8	0			
15	QPSK	38	39	20.42	20.51	20.67					
15	QPSK	75	0	20.57	20.55	20.63					
15	QPSK	1	0	20.68	20.64	20.61					
15	QPSK	1	37	20.61	20.51	20.67	21.8	0			
15	QPSK	1	74	20.31	20.60	20.60					
15	QPSK	38	0	20.56	20.50	20.60					
15	QPSK	38	20	20.53	20.52	20.60					
15	QPSK	38	39	20.51	20.50	20.60	21.8	0			
15	QPSK	75	0	20.51	20.57	20.60					
15	QPSK	1	0	20.61	20.57	20.60					
15	QPSK	1	37	20.49	20.46	20.55					
15	QPSK	1	74	20.20	20.29	20.34	21.8	0			
15	QPSK	38	0	20.13	20.08	20.14					
15	QPSK	38	20	20.13	20.02	20.12					
15	QPSK	38	39	20.11	20.00	20.12					
15	QPSK	75	0	20.05	20.05	20.08	21.3	0.5			
15	QPSK	1	0	20.05	19.99	20.11					
15	QPSK	1	37	19.97	19.97	20.00					
15	QPSK	1	74	19.97	19.93	20.01					
Channel											
Frequency (MHz)											
10	QPSK	1	0	20.54	20.57	20.56	21.8	0			
10	QPSK	1	25	20.52	20.56	20.57					
10	QPSK	1	49	20.48	20.53	20.55					
10	QPSK	1	74	20.44	20.44	20.55					
10	QPSK	25	12	20.58	20.55	20.58	21.8	0			
10	QPSK	25	25	20.54	20.54	20.70					
10	QPSK	50	0	20.61	20.57	20.68					
10	QPSK	1	0	20.60	20.66	20.71					
10	QPSK	1	25	20.57	20.57	20.68	21.8	0			
10	QPSK	1	49	20.58	20.56	20.63					
10	QPSK	25	12	20.57	20.63	20.70					
10	QPSK	25	25	20.54	20.54	20.68					
10	QPSK	50	0	20.61	20.58	20.68	21.8	0			
10	QPSK	1	0	20.53	20.58	20.55					
10	QPSK	1	25	20.45	20.56	20.53					
10	QPSK	1	49	20.49	20.50	20.43					
10	QPSK	25	0	20.67	20.68	20.13	21.3	0.5			
10	QPSK	25	12	19.97	20.00	20.08					
10	QPSK	25	25	20.00	20.03	20.15					
10	QPSK	50	0	20.04	20.04	20.15					
Channel											
Frequency (MHz)											
5	QPSK	1	0	20.54	20.61	20.64	21.8	0			
5	QPSK	1	12	20.45	20.38	20.44					
5	QPSK	1	24	20.39	20.36	20.38					
5	QPSK	12	0	20.56	20.57	20.60					
5	QPSK	12	12	20.51	20.57	20.64	21.8	0			
5	QPSK	12	13	20.50	20.53	20.59					
5	QPSK	25	0	20.54	20.58	20.65					
5	QPSK	25	0	20.61	20.62	20.64					
5	QPSK	1	12	20.63	20.69	20.62	21.8	0			
5	QPSK	1	24	20.55	20.69	20.62					
5	QPSK	12	0	20.54	20.59	20.55					
5	QPSK	12	7	20.54	20.56	20.59					
5	QPSK	25	0	20.56	20.58	20.63	21.8	0			
5	QPSK	25	0	20.56	20.58	20.63					
5	QPSK	1	0	20.50	20.65	20.38					
5	QPSK	1	12	20.56	20.64	20.68					
5	QPSK	1	24	20.53	20.53	20.38	21.8	0			
5	QPSK	12	0	20.12	20.09	20.12					
5	QPSK	12	13	20.08	20.05	20.14					
5	QPSK	25	0	20.07	20.07	20.12					
5	QPSK	25	0	20.00	20.13	20.12	21.3	0.5			
5	QPSK	1	0	19.93	19.93	19.97					
5	QPSK	1	12	20.45	20.38	20.44					
5	QPSK	1	24	20.39	20.36	20.38					
Channel											
Frequency (MHz)											
1.4	QPSK	1	0	20.57	20.44	20.62	21.8	0			
1.4	QPSK	1	3	20.57	20.64	20.58					
1.4	QPSK	1	5	20.57	20.56	20.59					
1.4	QPSK	1	7	20.56	20.55	20.60					
1.4	QPSK	3	1	20.57	20.59	20.60	21.8	0			
1.4	QPSK	3	3	20.56	20.48	20.60					
1.4	QPSK	3	5	20.56	20.50	20.57					
1.4	QPSK	3	7	20.54	20.50	20.45					
1.4	QPSK	1	3	20.45	20.52	20.47	21.8	0			
1.4	QPSK	1	5	20.51	20.41	20.48					
1.4	QPSK	3	1	20.60	20.64	20.65					
1.4	QPSK	3	3	20.60	20.60	20.61					
1.4	QPSK	6	0	20.60	20.59	20.67	21.8	0			
1.4	QPSK	6	3	20.60	20.60	20.61					
1.4	QPSK	3	5	20.67	20.70	20.62					
1.4	QPSK	3	7	20.68	20.64	20.65					
1.4	QPSK	1	5	20.68	20.64	20.65	21.8	0			
1.4	QPSK	1	7	20.68	20.57	20.67					
1.4	QPSK	3	1	20.49	20.57	20.70					
1.4	QPSK	3	3	20.34	20.37	20.69					
1.4	QPSK	6	0	20.60	20.60	20.60	21.3	0.5			

Band 4 (AWS Band) Part 27L (only on channel required)									
BSF (MHz)	Modulation	RB Size	RB Offset	Power Ch. 1 (W)	Power Ch. 2 (W)	Power Ch. 3 (W)	Turn-up time (min)	MFR (dB)	
Channel									
Frequency (MHz)									
15	QPSK	1	0	18.04	18.05	18.05	19.8	0	
15	QPSK	1	39	18.05	18.02	18.05			
15	QPSK	1	74	18.00	18.00	18.00			
15	QPSK	50	0	18.06	18.14	18.14			
15	QPSK	36	20	18.15	18.09	18.12	19.8	0	
15	QPSK	36	20	18.00	18.04	18.10			
15	QPSK	36	20	18.04	18.10	18.10			
15	QPSK	1	0	18.12	18.08	18.05			
15	QPSK	1	39	18.11	18.12	18.07	19.8	0	
15	QPSK	1	74	18.07	18.13	18.13			
15	QPSK	36	0	18.06	18.15	18.15			
15	QPSK	36	20	18.12	18.16	18.10			
15	QPSK	36	20	18.13	18.13	18.13	19.8	0	
15	QPSK	70	0	18.03	18.08	18.05			
15	QPSK	70	0	18.12	18.06	18.05			
15	QPSK	70	0	18.08	18.08	18.05			
15	QPSK	1	39	18.12	18.08	18.05	19.8	0	
15	QPSK	1	74	18.00	18.01	18.05			
15	QPSK	36	20	18.06	18.08	18.05			
15	QPSK	36	20	18.10	18.12	18.05			
15	QPSK	36	20	18.04	18.08	18.15	19.8	0	
15	QPSK	36	20	18.04	18.08	18.15			
15	QPSK	70	0	18.04	18.08	18.15			
15	QPSK	70	0	18.04	18.08	18.15			
Channel									
Frequency (MHz)									
15	QPSK	1	24	18.10	18.20	18.20	19.8	0	
15	QPSK	1	49	18.07	18.26	18.22			
15	QPSK	20	0	18.03	18.12	18.12			
15	QPSK	20	0	18.11	18.11	18.10			
15	QPSK	20	20	18.11	18.11	18.07	19.8	0	
15	QPSK	20	20	18.01	18.21	18.21			
15	QPSK	1	20	18.20	18.27	18.17			
15	QPSK	1	20	18.20	18.27	18.17			
15	QPSK	20	12	18.20	18.21	18.20	19.8	0	
15	QPSK	20	12	18.23	18.23	18.23			
15	QPSK	50	0	18.14	18.14	18.05			
15	QPSK	1	0	18.07	18.04	18.15			
15	QPSK	1	49	18.27	18.23	18.10	19.8	0	
15	QPSK	1	49	18.06	18.20	18.10			
15	QPSK	20	0	18.03	18.19	18.10			
15	QPSK	20	0	18.03	18.19	18.10			
15	QPSK	20	18	18.10	18.19	18.15	19.8	0	
15	QPSK	20	18	18.10	18.19	18.15			
15	QPSK	50	0	18.19	18.19	18.15			
15	QPSK	50	0	18.19	18.19	18.15			
Channel									
Frequency (MHz)									
5	QPSK	1	0	19.25	19.28	19.18	19.8	0	
5	QPSK	1	39	19.20	19.28	19.20			
5	QPSK	1	74	19.22	19.25	19.27			
5	QPSK	12	0	19.03	19.13	19.12			
5	QPSK	12	0	19.03	19.13	19.12	19.8	0	
5	QPSK	12	13	19.09	19.16	19.14			
5	QPSK	20	0	19.02	19.17	19.13			
5	QPSK	20	0	19.13	19.13	19.13			
5	QPSK	1	12	19.15	19.20	19.14	19.8	0	
5	QPSK	1	12	19.15	19.20	19.14			
5	QPSK	1	24	19.07	19.20	19.16			
5	QPSK	12	7	19.07	19.12	19.12			
5	QPSK	12	7	18.99	19.14	19.14	19.8	0	
5	QPSK	12	13	19.03	19.12	19.12			
5	QPSK	1	12	19.03	19.16	19.12			
5	QPSK	1	12	19.03	19.16	19.12			
5	QPSK	12	0	19.07	19.20	19.17	19.8	0	
5	QPSK	12	0	19.07	19.15	19.10			
5	QPSK	12	7	19.07	19.16	19.20			
5	QPSK	12	7	19.07	19.16	19.20			
5	QPSK	20	0	19.09	19.12	19.10	19.8	0	
5	QPSK	20	0	19.09	19.12	19.10			
5	QPSK	20	0	19.09	19.12	19.10			
5	QPSK	20	0	19.09	19.12	19.10			
Channel									
Frequency (MHz)									
3	QPSK	1	0	19.04	19.10	19.12	19.8	0	
3	QPSK	1	8	18.97	19.07	19.15			
3	QPSK	1	16	18.95	19.06	19.15			
3	QPSK	8	0	19.05	19.16	19.15			
3	QPSK	8	8	19.07	19.10	19.10	19.8	0	
3	QPSK	8	8	19.02	19.12	19.12			
3	QPSK	16	0	19.04	19.13	19.13			
3	QPSK	1	0	19.12	19.08	19.08			
3	QPSK	1	8	19.05	19.08	19.08	19.8	0	
3	QPSK	1	16	18.97	19.06	19.11			
3	QPSK	8	0	19.08	19.27	19.21			
3	QPSK	16	0	19.14	19.22	19.22			
3	QPSK	1	0	19.06	19.17	19.15	19.8	0	
3	QPSK	1	8	19.04	19.08	19.08			
3	QPSK	1	16	18.95	19.06	19.10			
3	QPSK	8	0	19.05	19.17	19.17			
3	QPSK	1	0	19.00	19.23	19.11	19.8	0	
3	QPSK	1	8	19.00	19.23	19.11			
3	QPSK	8	0	19.13	19.23	19.23			
3	QPSK	8	0	19.20	19.23	19.20			
3	QPSK	1	0	19.11	19.18	19.27	19.8	0	
3	QPSK	1	8	19.11	19.18	19.27			
3	QPSK	8	0	19.02	19.14	19.14			
3	QPSK	16	0	19.02	19.14	19.14			
Channel									
Frequency (MHz)									
1.4	QPSK	1	0	19.14	19.22	19.05	19.8	0	
1.4	QPSK	1	0	19.12	19.12	19.06			
1.4	QPSK	1	0	19.11	19.10	19.00			
1.4	QPSK	1	0	19.16	19.16	19.16			
1.4	QPSK	1	0	19.19	19.16	19.21	19.8	0	
1.4	QPSK	1	0	19.25	19.24	19.17			
1.4	QPSK	1	0	19.13	19.13	19.13			
1.4	QPSK	1	0	19.20	19.20	19.19			
1.4	QPSK	1	0	19.14	19.20	19.20	19.8	0	
1.4	QPSK	1	0	19.14	19.20	19.20			
1.4	QPSK	1	0	19.14	19.20	19.20			
1.4	QPSK	3	0	19.11	19.18	19.18			
1.4	QPSK	1	0	19.09	19.20	19.24	19.8	0	
1.4	QPSK	1	0	19.13	19.13	19.17			
1.4	QPSK	1	0	19.06	19.18	19.15			
1.4	QPSK	1	0	19.07	19.18	19.30			
1.4	QPSK	1	0	19.07	19.24	19.24	19.8	0	
1.4	QPSK	1	0	19.07	19.24	19.24			
1.4	QPSK	3	0	19.07	19.20	19.21			
1.4	QPSK	3	0	19.13	19.20	19.21			



Band 12 (700MHz Low Band) Part 277(only on channel required)											
RF Band	Modulation	RF Size	RF Offset	Power Ch. 1 / Power Ch. 2 / Power Ch. 3	Power Ch. 1 / Power Ch. 2 / Power Ch. 3	Power Ch. 1 / Power Ch. 2 / Power Ch. 3	Time-up limit (min)	MPH (dB)			
Channel											
Frequency (MHz)											
10	QPSK	1	0	23.70	23.66	23.66	24.3	0			
10	QPSK	1	20	23.73	23.74	23.73					
10	QPSK	1	40	23.72	23.72	23.71					
10	QPSK	25	0	23.38	23.34	23.28	23.3	1			
10	QPSK	25	12	22.39	22.40	22.34					
10	QPSK	25	20	22.37	22.38	22.29					
10	QPSK	50	0	22.41	22.39	22.33	23.3	1			
10	QPSK	1	0	22.55	22.51	22.50					
10	QPSK	1	20	22.56	22.52	22.51					
10	QPSK	1	40	22.68	22.68	22.69	22.3	2			
10	QPSK	25	0	21.83	21.82	21.81					
10	QPSK	25	12	21.82	21.86	21.84					
10	QPSK	25	20	21.84	21.87	21.80	22.3	2			
10	QPSK	50	0	21.77	21.71	21.71					
10	QPSK	1	20	21.72	21.66	21.79					
10	QPSK	25	0	20.67	20.67	20.67	21.3	3			
10	QPSK	25	12	20.68	20.69	20.64					
10	QPSK	25	20	20.65	20.64	20.58					
Channel											
Frequency (MHz)											
5	QPSK	1	0	23.68	23.62	23.64	24.3	0			
5	QPSK	1	12	23.68	23.69	23.70					
5	QPSK	1	24	23.63	23.69	23.70					
5	QPSK	12	0	22.37	22.35	22.38	23.3	1			
5	QPSK	12	7	22.38	22.37	22.33					
5	QPSK	12	13	22.34	22.30	22.26					
5	QPSK	25	0	22.40	22.37	22.36	23.3	1			
5	QPSK	1	0	22.38	22.61	22.57					
5	QPSK	1	24	22.67	22.68	22.71					
5	QPSK	12	0	21.68	21.65	21.66	22.3	2			
5	QPSK	12	7	21.61	21.67	21.61					
5	QPSK	12	13	21.64	21.67	21.52					
5	QPSK	25	0	21.71	21.63	21.61	22.3	2			
5	QPSK	1	0	21.77	21.79	21.78					
5	QPSK	1	24	21.83	21.81	21.83					
5	QPSK	1	24	21.82	21.81	21.83	21.3	3			
5	QPSK	1	24	20.68	20.68	20.68					
5	QPSK	12	7	20.68	20.69	20.64					
5	QPSK	12	13	20.68	20.70	20.52	21.3	3			
5	QPSK	25	0	20.63	20.64	20.58					
5	QPSK	25	0	20.63	20.64	20.58					
Channel											
Frequency (MHz)											
3	QPSK	1	0	23.64	23.62	23.62	24.3	0			
3	QPSK	1	0	23.60	23.63	23.63					
3	QPSK	1	14	23.65	23.66	23.65					
3	QPSK	8	0	22.26	22.23	22.23	23.3	1			
3	QPSK	8	4	22.28	22.24	22.28					
3	QPSK	8	7	22.27	22.21	22.32					
3	QPSK	15	0	22.29	22.25	22.21	23.3	1			
3	QPSK	1	0	22.61	22.64	22.65					
3	QPSK	1	8	22.60	22.63	22.60					
3	QPSK	14	0	22.58	22.58	22.58	22.3	2			
3	QPSK	8	4	21.69	21.68	21.66					
3	QPSK	8	7	21.65	21.67	21.71					
3	QPSK	15	0	21.61	21.66	21.63	22.3	2			
3	QPSK	1	0	21.73	21.63	21.75					
3	QPSK	1	8	21.70	21.69	21.61					
3	QPSK	14	0	21.77	21.77	21.79	21.3	3			
3	QPSK	8	0	20.62	20.66	20.67					
3	QPSK	8	4	20.63	20.60	20.63					
3	QPSK	8	7	20.59	20.58	20.58	21.3	3			
3	QPSK	15	0	20.57	20.59	20.54					
3	QPSK	15	0	20.57	20.59	20.54					
Channel											
Frequency (MHz)											
1.4	QPSK	1	0	23.64	23.63	23.64	24.3	0			
1.4	QPSK	1	0	23.67	23.67	23.63					
1.4	QPSK	1	0	23.63	23.68	23.67					
1.4	QPSK	3	0	23.63	23.68	23.60	23.3	1			
1.4	QPSK	3	1	23.63	23.67	23.66					
1.4	QPSK	3	3	23.68	23.64	23.66					
1.4	QPSK	8	0	22.31	22.33	22.31	23.3	1			
1.4	QPSK	1	0	22.33	22.34	22.33					
1.4	QPSK	1	0	22.62	22.63	22.61					
1.4	QPSK	3	0	22.35	22.34	22.32	22.3	1			
1.4	QPSK	3	1	22.33	22.33	22.30					
1.4	QPSK	3	1	22.33	22.38	22.33					
1.4	QPSK	1	0	21.78	21.79	21.79	22.3	2			
1.4	QPSK	1	0	21.70	21.61	21.78					
1.4	QPSK	1	15	21.76	21.62	21.79					
1.4	QPSK	3	0	21.76	21.79	21.71	21.3	3			
1.4	QPSK	3	1	21.73	21.79	21.78					
1.4	QPSK	3	1	21.72	21.67	21.74					
1.4	QPSK	8	0	20.55	20.57	20.58	21.3	3			
1.4	QPSK	8	0	20.55	20.57	20.58					
1.4	QPSK	8	0	20.55	20.57	20.58					

Band 17 (700MHz Band) Part 279(only on channel required)											
RF Band	Modulation	RF Size	RF Offset	Power Ch. 1 / Power Ch. 2 / Power Ch. 3	Power Ch. 1 / Power Ch. 2 / Power Ch. 3	Power Ch. 1 / Power Ch. 2 / Power Ch. 3	Time-up limit (min)	MPH (dB)			
Channel											
Frequency (MHz)											
10	QPSK	1	0	23.81	23.82	23.58	24.3	0			
10	QPSK	1	20	23.70	23.71	23.68					
10	QPSK	1	40	23.70	23.70	23.67					
10	QPSK	25	0	22.28	22.28	22.23	23.3	1			
10	QPSK	25	12	22.29	22.32	22.25					
10	QPSK	50	0	22.32	22.32	22.31					
10	QPSK	1	0	23.83	23.81	23.83	23.3	1			
10	QPSK	1	20	23.81	23.82	23.80					
10	QPSK	1	40	22.82	22.82	22.56					
10	QPSK	25	0	21.86	21.85	21.56	22.3	2			
10	QPSK	25	12	21.88	21.85	21.56					
10	QPSK	25	20	21.83	21.82	21.56					
10	QPSK	1	0	21.81	21.71	21.82	22.3	2			
10	QPSK	1	40	21.82	21.72	21.81					
10	QPSK	1	20	21.74	21.67	21.68					
10	QPSK	25	0	20.55	20.54	20.51	21.3	3			
10	QPSK	25	12	20.53	20.55	20.50					
10	QPSK	25	20	20.61	20.61	20.55					
10	QPSK	50	0	20.58	20.57	20.57	21.3	3			
10	QPSK	50	0	20.58	20.57	20.57					
10	QPSK	50	0	20.58	20.57	20.57					
Channel											
Frequency (MHz)											
5	QPSK	1	0	23.82	23.83	23.59	24.3	0			
5	QPSK	1	12	23.88	23.83	23.63					
5	QPSK	1	24	23.86	23.83	23.63					
5	QPSK	12	0	22.31	22.32	22.28	23.3	1			
5	QPSK	12	7	22.25	22.24	22.28					
5	QPSK	12	13	22.27	22.25	22.21					
5	QPSK	25	0	22.27	22.28	22.28	23.3	1			
5	QPSK	1	0	22.27	22.28	22.24					
5	QPSK	1	24	22.84	22.85	22.86					
5	QPSK	12	0	21.58	21.53	21.58					
5	QPSK	12	7	21.53	21.54	21.56	22.3	2			
5	QPSK	12	13	21.61	21.58	21.49					
5	QPSK	1	0	21.58	21.53	21.58					
5	QPSK	1	12	21.74	21.77	21.78	22.3	2			
5	QPSK	1	24	21.73	21.74	21.75					
5	QPSK	1	12	21.78	21.79	21.80					
5	QPSK	12	0	20.58	20.58	20.58	21.3	3			
5	QPSK	12	7	20.55	20.54	20.54					
5	QPSK	12	13	20.56	20.56	20.51					

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	24.3	0	
Frequency (Mhz)				2580	2595	2610			
20	QPSK	1	0	23.23	23.23	23.30			
20	QPSK	1	49	23.49	23.44	23.46			
20	QPSK	1	99	23.39	23.34	23.40	23.3	1	
20	QPSK	50	0	22.07	22.05	22.11			
20	QPSK	50	24	22.17	22.10	22.16			
20	QPSK	50	50	22.11	22.08	22.10			
20	QPSK	100	0	22.10	22.07	22.09	23.3	1	
20	16QAM	1	0	22.16	22.10	22.22			
20	16QAM	1	49	22.37	22.44	22.45			
20	16QAM	1	99	22.25	22.27	22.35			
20	16QAM	50	0	21.45	21.49	21.50	22.3	2	
20	16QAM	50	24	21.46	21.49	21.52			
20	16QAM	50	50	21.48	21.51	21.52			
20	16QAM	100	0	21.45	21.44	21.50			
20	64QAM	1	0	21.25	21.34	21.40	22.3	2	
20	64QAM	1	49	21.47	21.53	21.58			
20	64QAM	1	99	21.41	21.45	21.52			
20	64QAM	50	0	20.33	20.38	20.48			
20	64QAM	50	24	20.45	20.49	20.45	21.3	3	
20	64QAM	50	50	20.46	20.45	20.49			
20	64QAM	100	0	20.37	20.39	20.45			
Channel				37825	38000	38175	Tune-up limit (dBm)	MPR (dB)	
Frequency (Mhz)				2577.5	2595	2612.5	24.3	0	
15	QPSK	1	0	23.22	23.24	23.32			
15	QPSK	1	37	23.34	23.44	23.47			
15	QPSK	1	74	23.40	23.37	23.41			
15	QPSK	36	0	22.09	22.07	22.18	23.3	1	
15	QPSK	36	20	22.12	22.16	22.23			
15	QPSK	36	39	22.13	22.10	22.21			
15	QPSK	75	0	22.15	22.17	22.24			
15	16QAM	1	0	22.19	22.18	22.20	23.3	1	
15	16QAM	1	37	22.32	22.35	22.35			
15	16QAM	1	74	22.33	22.28	22.35			
15	16QAM	36	0	21.38	21.41	21.47			
15	16QAM	36	20	21.40	21.42	21.49	22.3	2	
15	16QAM	36	39	21.44	21.47	21.44			
15	16QAM	75	0	21.40	21.47	21.54			
15	64QAM	1	0	21.36	21.32	21.49			
15	64QAM	1	37	21.45	21.53	21.52	22.3	2	
15	64QAM	1	74	21.54	21.47	21.55			
15	64QAM	36	0	20.37	20.46	20.57			
15	64QAM	36	20	20.45	20.47	20.50			
15	64QAM	36	39	20.39	20.49	20.45	21.3	3	
15	64QAM	75	0	20.39	20.42	20.41			
Channel				37800	38000	38200	Tune-up limit (dBm)	MPR (dB)	
Frequency (Mhz)				2575	2595	2615	24.3	0	
10	QPSK	1	0	23.31	23.42	23.35			
10	QPSK	1	25	23.38	23.48	23.43			
10	QPSK	1	49	23.45	23.44	23.49			
10	QPSK	25	0	22.03	22.19	22.18	23.3	1	
10	QPSK	25	12	22.17	22.19	22.24			
10	QPSK	25	25	22.14	22.09	22.24			
10	QPSK	50	0	22.12	22.12	22.17			
10	16QAM	1	0	22.20	22.27	22.28	23.3	1	
10	16QAM	1	25	22.33	22.35	22.41			
10	16QAM	1	49	22.29	22.39	22.40			
10	16QAM	25	0	21.44	21.55	21.55			
10	16QAM	25	12	21.44	21.52	21.59	22.3	2	
10	16QAM	25	25	21.49	21.52	21.60			
10	16QAM	50	0	21.46	21.45	21.59			
10	64QAM	1	0	21.39	21.46	21.47			
10	64QAM	1	25	21.45	21.47	21.60	22.3	2	
10	64QAM	1	49	21.47	21.53	21.56			
10	64QAM	25	0	20.48	20.53	20.53			
10	64QAM	25	12	20.51	20.51	20.66			
10	64QAM	25	25	20.54	20.46	20.63	21.3	3	
10	64QAM	50	0	20.40	20.47	20.54			
Channel				37775	38000	38225	Tune-up limit (dBm)	MPR (dB)	
Frequency (Mhz)				2572.5	2595	2617.5	24.3	0	
5	QPSK	1	0	23.31	23.40	23.48			
5	QPSK	1	12	23.34	23.39	23.47			
5	QPSK	1	24	23.40	23.46	23.47			
5	QPSK	12	0	22.11	22.21	22.26	23.3	1	
5	QPSK	12	7	22.12	22.20	22.22			
5	QPSK	12	13	22.11	22.15	22.27			
5	QPSK	25	0	22.19	22.16	22.25			
5	16QAM	1	0	22.26	22.32	22.36	23.3	1	
5	16QAM	1	12	22.29	22.39	22.36			
5	16QAM	1	24	22.24	22.37	22.39			
5	16QAM	12	0	21.38	21.47	21.54			
5	16QAM	12	7	21.37	21.46	21.62	22.3	2	
5	16QAM	12	13	21.42	21.45	21.56			
5	16QAM	25	0	21.43	21.57	21.59			
5	64QAM	1	0	21.44	21.52	21.56			
5	64QAM	1	12	21.46	21.53	21.59	22.3	2	
5	64QAM	1	24	21.49	21.52	21.58			
5	64QAM	12	0	20.38	20.53	20.50			
5	64QAM	12	7	20.41	20.48	20.50			
5	64QAM	12	13	20.46	20.45	20.50	21.3	3	
5	64QAM	25	0	20.47	20.50	20.61			

Band 41 (2.6G Band)										
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Low Middle Ch. / Freq.	Power Middle Ch. / Freq.	Power High Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				39750	40185	40620	41055	41490	24.3	0
Frequency (MHz)				2506	2549.5	2593	2636.5	2680		
20	QPSK	1	0	23.40	23.34	23.47	23.49	23.52		
20	QPSK	1	49	23.58	23.56	23.67	23.65	23.65		
20	QPSK	1	99	23.45	23.41	23.60	23.60	23.51	23.3	1
20	QPSK	50	0	22.12	22.04	22.23	22.25	22.25		
20	QPSK	50	24	22.21	22.19	22.31	22.29	22.27		
20	QPSK	50	50	22.13	22.15	22.27	22.30	22.26		
20	QPSK	100	0	22.11	22.12	22.28	22.27	22.25	23.3	1
20	16QAM	1	0	22.04	22.10	22.19	22.01	22.04		
20	16QAM	1	49	22.09	22.26	22.30	22.13	22.12		
20	16QAM	1	99	22.19	22.10	22.12	22.06	22.00		
20	16QAM	50	0	21.26	21.43	21.58	21.39	21.38	22.3	2
20	16QAM	50	24	21.38	21.46	21.59	21.44	21.41		
20	16QAM	50	50	21.37	21.51	21.56	21.44	21.36		
20	16QAM	100	0	21.29	21.46	21.53	21.41	21.37		
20	64QAM	1	0	21.01	21.09	21.19	21.03	21.00	22.3	2
20	64QAM	1	49	21.08	21.25	21.28	21.12	21.15		
20	64QAM	1	99	21.00	21.09	21.14	21.08	21.04		
20	64QAM	50	0	20.21	20.37	20.52	20.33	20.33		
20	64QAM	50	24	20.34	20.41	20.52	20.43	20.36	21.3	3
20	64QAM	50	50	20.33	20.45	20.51	20.39	20.31		
20	64QAM	100	0	20.26	20.42	20.52	20.38	20.31		
Channel				39725	40173	40620	41068	41515	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2503.5	2548.3	2593	2637.8	2682.5	24.3	0
15	QPSK	1	0	23.35	23.56	23.51	23.54	23.56		
15	QPSK	1	37	23.47	23.57	23.57	23.55	23.55		
15	QPSK	1	74	23.41	23.59	23.52	23.54	23.51		
15	QPSK	36	0	22.15	22.35	22.27	22.36	22.48	23.3	1
15	QPSK	36	20	22.16	22.39	22.28	22.41	22.49		
15	QPSK	36	39	22.14	22.44	22.32	22.42	22.47		
15	QPSK	75	0	22.17	22.43	22.35	22.42	22.51		
15	16QAM	1	0	22.13	22.42	22.31	22.37	22.47	23.3	1
15	16QAM	1	37	22.22	22.50	22.37	22.44	22.53		
15	16QAM	1	74	22.24	22.44	22.33	22.43	22.44		
15	16QAM	36	0	21.43	21.64	21.58	21.63	21.75		
15	16QAM	36	20	21.45	21.68	21.59	21.67	21.76	22.3	2
15	16QAM	36	39	21.47	21.69	21.59	21.73	21.77		
15	16QAM	75	0	21.48	21.75	21.66	21.70	21.84		
15	64QAM	1	0	21.17	21.42	21.33	21.40	21.50		
15	64QAM	1	37	21.30	21.52	21.43	21.47	21.56	22.3	2
15	64QAM	1	74	21.27	21.45	21.37	21.45	21.45		
15	64QAM	36	0	20.43	20.63	20.61	20.65	20.77		
15	64QAM	36	20	20.47	20.70	20.56	20.69	20.76		
15	64QAM	36	39	20.43	20.68	20.61	20.70	20.75	21.3	3
15	64QAM	75	0	20.44	20.69	20.61	20.69	20.76		
Channel				39700	40160	40620	41080	41540	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2501	2547	2593	2639	2685	24.3	0
10	QPSK	1	0	23.33	23.58	23.55	23.50	23.51		
10	QPSK	1	25	23.37	23.55	23.50	23.53	23.53		
10	QPSK	1	49	23.38	23.53	23.55	23.54	23.57		
10	QPSK	25	0	22.10	22.40	22.32	22.41	22.52	23.3	1
10	QPSK	25	12	22.16	22.46	22.33	22.43	22.50		
10	QPSK	25	25	22.15	22.44	22.34	22.46	22.48		
10	QPSK	50	0	22.15	22.44	22.34	22.45	22.51		
10	16QAM	1	0	22.13	22.46	22.36	22.40	22.54	23.3	1
10	16QAM	1	25	22.20	22.50	22.40	22.49	22.50		
10	16QAM	1	49	22.18	22.44	22.36	22.48	22.44		
10	16QAM	25	0	21.44	21.71	21.67	21.75	21.83		
10	16QAM	25	12	21.50	21.79	21.67	21.75	21.84	22.3	2
10	16QAM	25	25	21.49	21.77	21.67	21.80	21.80		
10	16QAM	50	0	21.47	21.75	21.70	21.76	21.84		
10	64QAM	1	0	21.17	21.45	21.37	21.42	21.54		
10	64QAM	1	25	21.21	21.53	21.42	21.49	21.54	22.3	2
10	64QAM	1	49	21.22	21.45	21.37	21.47	21.49		
10	64QAM	25	0	20.43	20.72	20.67	20.74	20.83		
10	64QAM	25	12	20.52	20.77	20.63	20.77	20.83		
10	64QAM	25	25	20.49	20.78	20.67	20.81	20.78	21.3	3
10	64QAM	50	0	20.44	20.70	20.62	20.72	20.78		
Channel				39675	40148	40620	41093	41565	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2498.5	2545.8	2593	2640.30	2687.5	24.3	0
5	QPSK	1	0	23.35	23.51	23.55	23.50	23.56		
5	QPSK	1	12	23.40	23.57	23.55	23.56	23.50		
5	QPSK	1	24	23.38	23.54	23.57	23.53	23.57		
5	QPSK	12	0	22.13	22.40	22.33	22.40	22.46	23.3	1
5	QPSK	12	7	22.12	22.44	22.30	22.43	22.44		
5	QPSK	12	13	22.14	22.43	22.32	22.38	22.41		
5	QPSK	25	0	22.14	22.42	22.32	22.43	22.42		
5	16QAM	1	0	22.15	22.49	22.37	22.45	22.46	23.3	1
5	16QAM	1	12	22.17	22.51	22.36	22.43	22.43		
5	16QAM	1	24	22.18	22.52	22.39	22.47	22.44		
5	16QAM	12	0	21.37	21.67	21.58	21.68	21.69		
5	16QAM	12	7	21.39	21.71	21.54	21.68	21.67	22.3	2
5	16QAM	12	13	21.38	21.69	21.55	21.66	21.68		
5	16QAM	25	0	21.46	21.75	21.66	21.77	21.78		
5	64QAM	1	0	21.22	21.49	21.44	21.48	21.53		
5	64QAM	1	12	21.27	21.47	21.46	21.45	21.52	22.3	2
5	64QAM	1	24	21.24	21.53	21.42	21.47	21.51		
5	64QAM	12	0	20.41	20.69	20.62	20.70	20.74	21.3	3
5	64QAM	12	7	20.37	20.71	20.57	20.71	20.69		
5	64QAM	12	13	20.42	20.70	20.58	20.69	20.70		
5	64QAM	25	0	20.48	20.74	20.63	20.77	20.74		

Power Level for Body-worn -LAT

GSM850	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
	TX Channel	178	169	251	128	169	251	
Frequency (MHz)	824.2	836.4	848.8		824.2	836.4	848.8	
GSM 1 Tx slot	32.06	32.50	32.23	33.30	23.06	23.50	23.23	24.30
GPRS 1 Tx slot	32.04	32.46	32.20	33.30	23.04	23.46	23.20	24.30
GPRS 2 Tx slots	29.80	30.22	30.02	31.30	23.80	24.22	24.02	25.30
GPRS 3 Tx slots	28.23	28.63	28.45	29.80	23.97	24.37	24.19	25.54
GPRS 4 Tx slots	27.33	27.64	27.56	29.30	24.33	24.64	24.56	26.30
EDGE 1 Tx slot	26.65	26.52	26.77	28.30	17.65	17.52	17.77	19.30
EDGE 2 Tx slots	25.45	25.26	25.66	25.80	19.45	19.26	19.66	19.80
EDGE 3 Tx slots	23.25	23.15	23.59	24.30	18.99	18.89	19.33	20.04
EDGE 4 Tx slots	22.20	22.10	22.33	23.80	19.20	19.10	19.33	20.80

GSM1900	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
	TX Channel	512	661	810	512	661	810	
Frequency (MHz)	1850.2	1860	1909.8		1850.2	1860	1909.8	
GSM 1 Tx slot	29.15	29.28	29.26	30.30	20.15	20.28	20.26	21.30
GPRS 1 Tx slot	29.13	29.26	29.23	30.30	20.13	20.26	20.23	21.30
GPRS 2 Tx slots	26.00	26.22	26.19	27.80	20.00	20.22	20.19	21.80
GPRS 3 Tx slots	25.22	25.41	25.39	26.80	20.96	21.15	21.13	22.54
GPRS 4 Tx slots	23.37	23.54	23.53	25.30	20.37	20.54	20.53	22.30
EDGE 1 Tx slot	25.84	25.90	25.72	27.30	16.84	16.90	16.72	18.30
EDGE 2 Tx slots	23.92	24.00	23.89	24.80	17.92	18.00	17.89	18.80
EDGE 3 Tx slots	22.44	22.57	22.32	23.80	18.18	18.31	18.06	19.54
EDGE 4 Tx slots	21.24	21.28	21.12	22.80	18.24	18.28	18.12	19.80

Band		WCDMA II			Tune-up Limit (dBm)	WCDMA IV			Tune-up Limit (dBm)	WCDMA V			Tune-up Limit (dBm)
TX Channel		9262	9400	9538		1312	1413	1513		4132	4162	4233	
Rx Channel		9662	9800	9938		1537	1638	1738		4357	4407	4458	
Frequency (MHz)		1852.4	1860	1907.6		1712.4	1722.6	1752.6		426.4	436.4	446.6	
3GPP Rel 99	AMR 12.2Kbps	22.70	22.68	22.68	23.30	21.10	21.15	21.08	21.80	24.09	24.10	24.14	24.80
3GPP Rel 99	AMR 12.2Kbps	22.72	22.70	22.71	23.30	21.13	21.18	21.00	21.80	24.12	24.14	24.16	24.80
3GPP Rel 6	HSDPA Subtest-1	21.66	21.69	21.67	22.30	20.15	20.18	20.22	20.80	23.17	23.17	23.18	23.80
3GPP Rel 6	HSDPA Subtest-2	21.70	21.64	21.66	22.30	20.09	20.17	20.18	20.80	23.14	23.13	23.21	23.80
3GPP Rel 6	HSDPA Subtest-3	21.19	21.22	21.20	21.80	19.69	19.70	19.72	20.30	22.71	22.67	22.69	23.30
3GPP Rel 6	HSDPA Subtest-4	21.18	21.18	21.17	21.80	19.64	19.66	19.66	20.30	22.71	22.69	22.64	23.30
3GPP Rel 8	DC-HSDPA Subtest-1	21.52	21.65	21.32	22.30	20.02	20.14	19.97	20.80	23.01	23.08	23.10	23.80
3GPP Rel 8	DC-HSDPA Subtest-2	21.56	21.60	21.50	22.30	19.83	20.17	19.86	20.80	23.03	23.01	23.11	23.80
3GPP Rel 8	DC-HSDPA Subtest-3	20.92	21.21	21.10	21.80	19.45	19.68	19.61	20.30	22.63	22.54	22.52	23.30
3GPP Rel 8	DC-HSDPA Subtest-4	21.15	21.03	20.95	21.80	19.45	19.57	19.48	20.30	22.51	22.48	22.55	23.30
3GPP Rel 6	HSUPA Subtest-1	20.19	20.17	20.16	20.80	18.61	18.65	18.69	19.30	21.55	21.60	21.59	22.30
3GPP Rel 6	HSUPA Subtest-2	19.85	19.87	19.85	20.30	18.11	18.15	18.17	18.80	21.05	21.10	21.07	21.80
3GPP Rel 6	HSUPA Subtest-3	20.88	20.88	20.70	21.30	19.14	19.17	19.22	19.80	22.12	22.12	22.11	22.80
3GPP Rel 6	HSUPA Subtest-4	19.39	19.36	19.35	19.80	17.59	17.64	17.72	18.30	20.59	20.59	20.60	21.30
3GPP Rel 6	HSUPA Subtest-5	21.70	21.70	21.70	22.30	20.10	20.20	20.20	20.80	23.10	23.10	23.10	23.80
3GPP Rel 7	HSPA+ (16QAM) Subtest-1	18.85	18.79	18.91	19.30	16.95	17.08	17.11	17.80	19.97	19.92	19.99	20.80