RF Exposure Lab

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CERTIFICATE OF COMPLIANCE
SAR EVALUATION

HP Inc.		Dates of Test:	July 15-18, 2019
3390 East Harmony Road		Test Report Number:	SAR.20190708
Fort Collins, CO 80528			Revision C

FCC ID:	B94HNI32PK
IC Certificate:	466X-HNI32PK
Model(s):	HSN-I32C
Test Sample:	Engineering Unit Same as Production
Serial Number:	Eng 1
Equipment Type:	Convertible Notebook
Classification:	Portable Transmitter Next to Body
TX Frequency Range:	699 – 716 MHz, 777 – 787 MHz, 788 – 798 MHz, 814 – 849 MHz; 1710 – 1780 MHz, 1850 – 1915 MHz, 2305 – 2315 MHz, 2496 – 2690 MHz; 2412 – 2462 MHz, 5150 – 5350 MHz, 5500 – 5700 MHz, 5745 – 5825 MHz
Frequency Tolerance:	± 2.5 ppm
Maximum RF Output:	750 MHz (LTE) – 24.0 dBm, 850 MHz (WCDMA) – 24.5 dBm, 850 MHz (LTE) – 24.0 dBm, 1750 MHz (WCDMA) – 24.5 dBm, 1750 MHz (LTE) – 24.0 dBm, 1900 MHz (WCDMA) – 24.5 dBm, 1900 MHz (LTE) – 24.0 dBm, 2300 MHz (LTE) – 24.0 dBm; 2600 MHz (LTE) – 24.0 dBm; 2450 MHz (b) – 20.50 dB, 2450 MHz (g) – 20.50 dB, 2450 MHz (n20) – 20.50 dB, 2450 MHz (n40) – 20.00 dB, 5250 MHz (a) – 20.50 dB, 5250 MHz (n20) – 20.50 dB, 5250 MHz (n40) – 20.00 dB, 5250 MHz (ac80) – 20.00 dB, 5250 MHz (ac160) – 20.00 dB, 5600 MHz (a) – 20.50 dB, 5600 MHz (n20) – 20.50 dB, 5600 MHz (n40) – 20.00 dB, 5600 MHz (ac80) – 20.00 dB, 5600 MHz (ac160) – 20.00 dB, 5800 MHz (a) – 20.50 dB, 5800 MHz (n20) – 20.50 dB, 5800 MHz (n40) – 20.00 dB, 5800 MHz (ac80) – 20.00 dB Conducted
Signal Modulation:	WCDMA, QPSK, 16QAM, DSSS, OFDM, GFSK
Antenna Type:	PIFA
Application Type:	Certification
FCC Rule Parts:	Part 2, 15C, 15E, 22, 24, 27
KDB Test Methodology:	KDB 447498 D01 v06, KDB 248227 v02r02, KDB 616217 D04 v01r02, KDB 941225 D01 v03r01 & D05 v02r05
Industry Canada:	RSS-102 Issue 5, Safety Code 6
Max. Stand Alone SAR Value:	1.43 W/kg Reported
Max. Simultaneous SAR Value:	0.02 Separation Ratio
Separation Distance:	0 mm

This wireless mobile and/or portable device has been shown to be compliant for localized specific absorption rate (SAR) for uncontrolled environment/general exposure limits specified in ANSI/IEEE Std. C95.1-1992 and had been tested in accordance with the measurement procedures specified in IEEE 1528-2013 and IEC 62209-2:2010 (See test report).

I attest to the accuracy of the data. All measurements were performed by myself or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

RF Exposure Lab, LLC certifies that no party to this application is subject to a denial of Federal benefits that includes FCC benefits pursuant to Section 5301 of the Anti-Drug Abuse Act of 1988, 21 U.S.C. 853(a).

Jay M. Moulton
Vice President

ACCREDITED
Certificate # 2387.01

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Table of Contents

1. Preface ... 4
2. Introduction ... 5
SAR Definition [5] ... 9
3. SAR Measurement Setup ... 10
Robotic System ... 10
System Hardware ... 10
System Electronics ... 11
Probe Measurement System ... 11
4. Probe and Dipole Calibration ... 18
5. Phantom & Simulating Tissue Specifications ... 19
Head & Body Simulating Mixture Characterization ... 19
6. ANSI/IEEE C95.1 – 1992 RF Exposure Limits [2] ... 20
Uncontrolled Environment ... 20
Controlled Environment ... 20
7. Measurement Uncertainty ... 21
8. System Validation ... 22
Tissue Verification ... 22
Test System Verification ... 22
9. SAR Test Data Summary ... 24
Procedures Used To Establish Test Signal ... 24
Device Test Condition ... 24
10. LTE Document Checklist ... 26
11. FCC 3G Measurement Procedures ... 31
11.1 Procedures Used to Establish RF Signal for SAR ... 31
11.2 SAR Measurement Conditions for WCDMA/HSDPA/HSUPA ... 31
11.5 SAR Measurement Conditions for LTE Bands ... 62
Tablet Mode ... 106
SAR Data Summary – 750 MHz Body – LTE Band 12 & 17 ... 175
SAR Data Summary – 750 MHz Body – LTE Band 13 ... 176
SAR Data Summary – 750 MHz Body – LTE Band 14 ... 177
SAR Data Summary – 835 MHz Body - WCDMA ... 178
SAR Data Summary – 835 MHz Body – LTE Bands 26 ... 179
SAR Data Summary – 1750 MHz Body - WCDMA ... 180
SAR Data Summary – 1750 MHz Body – LTE Band 66 & 4 ... 181
SAR Data Summary – 1900 MHz Body - WCDMA ... 182
SAR Data Summary – 1900 MHz Body – LTE Band 25 ... 183
SAR Data Summary – 2300 MHz Body – LTE Band 30 ... 184
SAR Data Summary – 2500 MHz Body – LTE Band 7 ... 185
SAR Data Summary –LTE Bands 41 & 38 ... 186
SAR Data Summary – 2450 MHz Body 802.11b & BT ... 187
SAR Data Summary – 5250 MHz Body 802.11a ... 188
SAR Data Summary – 5600 MHz Body 802.11a ... 189
SAR Data Summary – 5800 MHz Body 802.11a ... 190
SAR Data Summary – Simultaneous Evaluation ... 191
12. Test Equipment List ... 194
13. Conclusion ... 195
14. References ... 196
Appendix A – System Validation Plots and Data ... 197
Appendix B – SAR Test Data Plots ... 222
Appendix C – SAR Test Setup Photos ... 239
Appendix D – Probe Calibration Data Sheets ... 246
Appendix E – Dipole Calibration Data Sheets ... 267
Appendix F – Phantom Calibration Data Sheets ... 337
Appendix G – Validation Summary ... 339

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Comment/Revision	Date
Original Release	July 23, 2019
Revision A – Correct Antenna Manufacturers in Data Summary, Correct channels for BT and Antenna	July 26, 2019
Revision B – Correct the reduced power table on page 6 to match the power in the tables on page 35-37.	August 1, 2019
Revision C – Correct FCC responses	September 11, 2019

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1. Preface

The HP model HSN-I32C convertible PC includes the Time Averaging SAR (TAS) concept. The TAS algorithm is implemented in the Intel XMM 7560 Cellular Modem, which is incorporated in the Fibocom M2 L860-GL cellular module (FCC ID: ZMOL860GL).

The implementation details and TAS operating characteristics are described in a separated document which is held in the confidential files within the filing [1]. The validation of algorithm operations is performed by Intel Corporation according to the range of commonly used accessible control parameters used for typical host products. The validation results are reported in document [2].

The FCC SAR limit is a time averaged exposure metric. At host level, the normally required SAR test procedures are applicable for SAR compliance testing at upper-threshold values of the algorithm, which is the maximum output power level for continuous time-averaging operations TAS algorithm enforces. The reliability of this has been demonstrated by results in the Algorithm Validation Test Report [2].

The HP model HSN-I32C supports simultaneous transmission of WWAN, BT and WLAN. The TAS algorithm is only applied to WWAN cellular module.

The SAR evaluation of WWAN, WLAN / BT is performed in this report as well as the RF exposure assessment for simultaneous transmission of WWAN, WLAN and BT.

[1] 190214_TAS_Operational_Report_XMM7560_KDB_V01
[2] 171110-01.TR02 - TAS_Validation_report_Rev00

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2. Introduction

This measurement report shows compliance of the HP Inc. Model HSN-I32C FCC ID: B94HNI32PK with FCC Part 2, 1093, ET Docket 93-62 Rules for mobile and portable devices and IC Certificate: 466X-HNI32PK with RSS102 Issue 5 & Safety Code 6. The FCC has adopted the guidelines for evaluating the environmental effects of radio frequency radiation in ET Docket 93-62 on August 6, 1996 to protect the public and workers from the potential hazards of RF emissions due to FCC regulated portable devices. [1], [6]

The test results recorded herein are based on a single type test of HP Inc. Model HSN-I32C and therefore apply only to the tested sample.

The test procedures and limits, as described in ANSI C95.1 – 1992 Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz [2], ANSI C95.3 – 2002 Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields [3], IEEE Std.1528 – 2013 Recommended Practice [4], and Industry Canada Safety Code 6 Limits of Human Exposure to Radiofrequency Electromagnetic Fields in the Frequency Range from 3kHz to 300 GHz were employed.

The following table indicates all the wireless technologies operating in the HSN-I32C Convertible Notebook. The table also shows the tolerance for the power level for each mode.

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Band	Power Setting	Technology	Class	Nominal Power dBm	Tolerance dBm	Lower Tolerance dBm	Upper Tolerance dBm
Band 12 – 750 MHz	Full	LTE	3	23.0	±1.0	22.0	24.0
Band 13 – 750 MHz	Full	LTE	3	23.0	±1.0	22.0	24.0
Band 14 – 750 MHz	Full	LTE	3	23.0	±1.0	22.0	24.0
Band 17 – 750 MHz	Full	LTE	3	23.0	±1.0	22.0	24.0
Band 5 – 835 MHz	Full	LTE	3	23.0	±1.0	22.0	24.0
Band 26 – 835 MHz	Full	LTE	3	23.0	±1.0	22.0	24.0
Band 4 – 1750 MHz	Full	LTE	3	23.0	±1.0	22.0	24.0
Band 66 – 1750 MHz	Full	LTE	3	23.0	±1.0	22.0	24.0
Band 2 – 1900 MHz	Full	LTE	3	23.0	±1.0	22.0	24.0
Band 25 – 1900 MHz	Full	LTE	3	23.0	±1.0	22.0	24.0
Band 30 – 2300 MHz	Full	LTE	3	23.0	±1.0	22.0	24.0
Band 7 – 2500 MHz	Full	LTE	3	23.0	±1.0	22.0	24.0
Band 38 – 2500 MHz	Full	LTE	3	23.0	±1.0	22.0	24.0
Band 41 – 2600 MHz	Full	LTE	3	23.0	±1.0	22.0	24.0
Band 5 – 850 MHz	Full	WCDMA/HSPA	3	23.5	±1.0	22.5	24.5
Band 4 – 1750 MHz	Full	WCDMA/HSPA	3	23.5	±1.0	22.5	24.5
Band 2 – 1900 MHz	Full	WCDMA/HSPA	3	23.5	±1.0	22.5	24.5
Band 12 – 750 MHz	Notebook	LTE	3	22.0	±1.0	21.0	23.0
Band 13 – 750 MHz	Notebook	LTE	3	21.5	±1.0	20.5	22.5
Band 14 – 750 MHz	Notebook	LTE	3	21.0	±1.0	20.0	22.0
Band 17 – 750 MHz	Notebook	LTE	3	23.0	±1.0	22.0	24.0
Band 5 – 835 MHz	Notebook	LTE	3	21.0	±1.0	20.0	22.0
Band 26 – 835 MHz	Notebook	LTE	3	22.0	±1.0	21.0	23.0
Band 4 – 1750 MHz	Notebook	LTE	3	19.0	±1.0	18.0	20.0
Band 66 – 1750 MHz	Notebook	LTE	3	18.0	±1.0	17.0	19.0
Band 2 – 1900 MHz	Notebook	LTE	3	17.5	±1.0	16.5	18.5
Band 25 – 1900 MHz	Notebook	LTE	3	18.5	±1.0	17.5	19.5
Band 30 – 2300 MHz	Notebook	LTE	3	19.5	±1.0	18.5	20.5
Band 7 – 2500 MHz	Notebook	LTE	3	17.0	±1.0	16.0	18.0
Band 38 – 2500 MHz	Notebook	LTE	3	20.0	±1.0	19.0	21.0
Band 41 – 2600 MHz	Notebook	LTE	3	18.0	±1.0	17.0	19.0
Band 5 – 850 MHz	Notebook	WCDMA/HSPA	3	21.0	±1.0	20.0	22.0
Band 4 – 1750 MHz	Notebook	WCDMA/HSPA	3	19.0	±1.0	18.0	20.0
Band 2 – 1900 MHz	Notebook	WCDMA/HSPA	3	17.5	±1.0	16.5	18.5
Band 12 – 750 MHz	Tablet	LTE	3	18.5	±1.0	17.5	19.5
Band 13 – 750 MHz	Tablet	LTE	3	17.5	±1.0	16.5	18.5
Band 14– 750 MHz	Tablet	LTE	3	21.0	±1.0	20.0	22.0
Band 17 – 750 MHz	Tablet	LTE	3	18.5	±1.0	17.5	19.5
Band 5 – 835 MHz	Tablet	LTE	3	18.0	±1.0	17.0	19.0
Band 26 – 835 MHz	Tablet	LTE	3	18.0	±1.0	17.0	19.0
Band 4 – 1750 MHz	Tablet	LTE	3	14.0	±1.0	13.0	15.0
Band 66 – 1750 MHz	Tablet	LTE	3	14.0	±1.0	13.0	15.0
Band 2 – 1900 MHz	Tablet	LTE	3	14.0	±1.0	13.0	15.0
Band 25 – 1900 MHz	Tablet	LTE	3	14.0	±1.0	13.0	15.0
Band 30 – 2300 MHz	Tablet	LTE	3	13.0	±1.0	12.0	14.0
Band 7 – 2500 MHz	Tablet	LTE	3	13.0	±1.0	12.0	14.0
Band 38 – 2500 MHz	Tablet	LTE	3	14.5	±1.0	13.5	15.5
Band 41 – 2600 MHz	Tablet	LTE	3	14.5	±1.0	13.5	15.5
Band 5 – 850 MHz	Tablet	WCDMA/HSPA	3	18.0	±1.0	17.0	19.0
Band 4 – 1750 MHz	Tablet	WCDMA/HSPA	3	14.0	±1.0	13.0	15.0
Band 2 – 1900 MHz	Tablet	WCDMA/HSPA	3	14.0	±1.0	13.0	15.0
WLAN – 2.4 GHz	Notebook	802.11bgn20	N/A	19.5	±1.5	18.0	21.0
WLAN – 2.4 GHz	Notebook	802.11n40ac	N/A	19.0	±1.5	17.5	20.5
WLAN – 5 GHz Band I,IIA,IIC,III	Notebook	802.11an20	N/A	19.5	±1.5	18.0	21.0
WLAN – 5 GHz Band I,IIA,IIC,III	Notebook	802.11n40ac80/160	N/A	19.0	±1.5	17.5	20.5
WLAN – 2.4 GHz	Tablet	802.11bgn20	N/A	16.5	±1.5	15.0	18.0
WLAN – 2.4 GHz	Tablet	802.11n40ac	N/A	16.0	±1.5	14.5	17.5
WLAN – 5 GHz Band I,IIA,IIC,III	Tablet	802.11an20	N/A	13.5	±1.5	12.0	15.0
WLAN – 5 GHz Band I,IIA,IIC,III	Tablet	802.11n40ac80/160	N/A	13.0	±1.5	11.5	14.5
BT – BDR	N/A	Bluetooth	N/A	10.0	±1.5	8.5	11.5
BT – EDR2 & EDR3	N/A	Bluetooth	N/A	9.5	±1.5	8.0	11.0
BT – BLE	N/A	Bluetooth	N/A	7.5	±1.5	6.0	9.0

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As mentioned in the preface, the SAR compliance testing is performed at upper-threshold values of the algorithm, which is the maximum output power level for continuous time-averaging operations TAS algorithm enforces.

In TAS operation, the control parameters including the upper-threshold value are stored in NVM. They are inaccessible to the normal users and no other interface is available for changing these control parameters.

The table below shows the upper-threshold values used as continuous power for SAR testing (noted as Reduced Power in the previous table), as well as the different TAS parameters defined in [1] and [2] to be embedded in the host:

Notebook Mode

Mode	Bands	Nominal Power (dBm)	Upper Threshold (dBm)	Lower Threshold (dBm)	DPR_ON Power (dBm)
WCDMA	FDD II (1850.0 – 1910.0 MHz)	23.5	17.5	16.5	15.5
	FDD IV (1710.0 – 1755.0 MHz)	23.5	19	18	17
	FDD V (824.0 – 849.0 MHz)	23.5	21	20	19
LTE FDD	Band 2 (1850.0 – 1910.0 MHz)	23	17.5	16.5	15.5
	Band 4 (1710.0 – 1755.0 MHz)	23	19	18	17
	Band 5 (824.0 – 849.0 MHz)	23	21	20	19
	Band 7 (2500.0 – 2570.0 MHz)	23	17	16	15
	Band 12 (699.0 – 716.0 MHz)	23	22	21	20
	Band 13 (777.0 – 787.0 MHz)	23	21.5	20.5	19.5
	Band 14 (788.0 – 798.0 MHz)	23	21	20	19
	Band 17 (704.0 – 716.0 MHz)	23	23	22	21
	Band 25 (1850.0 – 1915.0 MHz)	23	18.5	17.5	16.5
	Band 26 (814.0 – 849.0 MHz)	23	22	21	20
	Band 30 (2305.0 – 2315.0 MHz)	23	19.5	18.5	17.5
	Band 66 (1710.0 – 1780.0 MHz)	23	18	17	16
LTE TDD	Band 38 (2570.0 – 2620.0 MHz)	23	20	19	18
	Band 41 (2496.0 – 2690.0 MHz)	23	18	17	16

SAR compliance is demonstrated with the *Reported SAR*:

Reported SAR = measured 1gSAR @ Reported Upper Threshold < FCC SAR limit
Where, *Reported Upper Threshold = Upper Threshold (stored in NVM) + Tolerance (1dB).*

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Tablet Mode

Mode	Bands	Nominal Power (dBm)	Upper Threshold (dBm)	Lower Threshold (dBm)	DPR_ON Power (dBm)
WCDMA	FDD II (1850.0 – 1910.0 MHz)	23.5	14	13	12
	FDD IV (1710.0 – 1755.0 MHz)	23.5	14	13	12
	FDD V (824.0 – 849.0 MHz)	23.5	18	17	16
LTE FDD	Band 2 (1850.0 – 1910.0 MHz)	23	14	13	12
	Band 4 (1710.0 – 1755.0 MHz)	23	14	13	12
	Band 5 (824.0 – 849.0 MHz)	23	18	17	16
	Band 7 (2500.0 – 2570.0 MHz)	23	13	12	11
	Band 12 (699.0 – 716.0 MHz)	23	18.5	17.5	16.5
	Band 13 (777.0 – 787.0 MHz)	23	17.5	16.5	15.5
	Band 14 (788.0 – 798.0 MHz)	23	17.5	16.5	15.5
	Band 17 (704.0 – 716.0 MHz)	23	18.5	17.5	16.5
	Band 25 (1850.0 – 1915.0 MHz)	23	14	13	12
	Band 26 (814.0 – 849.0 MHz)	23	18	17	16
	Band 30 (2305.0 – 2315.0 MHz)	23	13	12	11
	Band 66 (1710.0 – 1780.0 MHz)	23	14	13	12
LTE TDD	Band 38 (2570.0 – 2620.0 MHz)	23	14.5	13.5	12.5
	Band 41 (2496.0 – 2690.0 MHz)	23	14.5	13.5	12.5

SAR compliance is demonstrated with the *Reported SAR*:

Reported SAR = measured 1gSAR @ Reported Upper Threshold < FCC SAR limit
Where, *Reported Upper Threshold = Upper Threshold (stored in NVM) + Tolerance (1dB).*

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SAR Definition [5]

Specific Absorption Rate is defined as the time derivative (rate) of the incremental energy (*dW*) absorbed by (dissipated in) an incremental mass (*dm*) contained in a volume element (*dV*) of a given density (ρ).

$$SAR = \frac{d}{dt}\left(\frac{dW}{dm}\right) = \frac{d}{dt}\left(\frac{dW}{\rho dV}\right)$$

SAR is expressed in units of watts per kilogram (W/kg). *SAR* can be related to the electric field at a point by

$$SAR = \frac{\sigma \mid E \mid^2}{\rho}$$

where:

σ = conductivity of the tissue (S/m)
ρ = mass density of the tissue (kg/m^3)
E = rms electric field strength (V/m)

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3. SAR Measurement Setup

Robotic System

These measurements are performed using the DASY52 automated dosimetric assessment system. The DASY52 is made by Schmid & Partner Engineering AG (SPEAG) in Zurich, Switzerland and consists of high precision robotics system (Staubli), robot controller, Intel Core2 computer, near-field probe, probe alignment sensor, and the generic twin phantom containing the brain equivalent material. The robot is a six-axis industrial robot performing precise movements to position the probe to the location (points) of maximum electromagnetic field (EMF) (see Fig. 2.1).

System Hardware

A cell controller system contains the power supply, robot controller teach pendant (Joystick), and a remote control used to drive the robot motors. The PC consists of the HP Intel Core2 computer with Windows XP system and SAR Measurement Software DASY52, A/D interface card, monitor, mouse, and keyboard. The Staubli Robot is connected to the cell controller to allow software manipulation of the robot. A data acquisition electronic (DAE) circuit that performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. is connected to the Electro-optical coupler (EOC). The EOC performs the conversion from the optical into digital electric signal of the DAE and transfers data to the PC plug-in card.

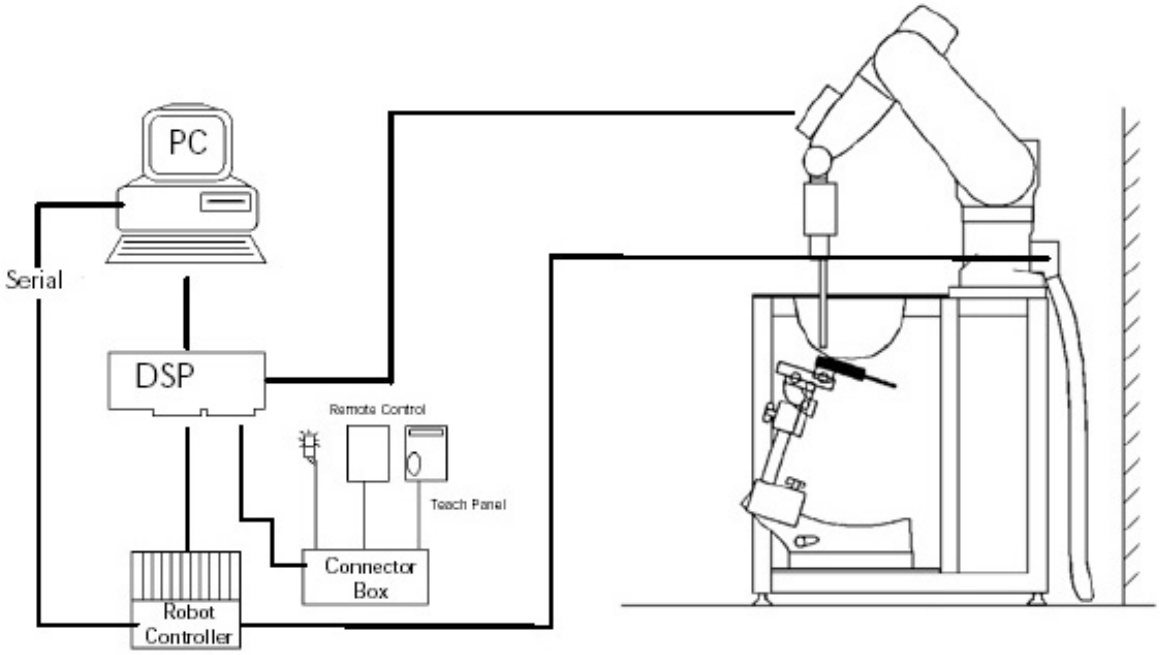

Figure 2.1 SAR Measurement System Setup

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System Electronics

The DAE4 consists of a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain-switching multiplexer, a fast 16 bit AD-converter and a command decoder and control logic unit. Transmission to the PC-card is accomplished through an optical downlink for data and status information and an optical uplink for commands and clock lines. The mechanical probe mounting device includes two different sensor systems for frontal and sidewise probe contacts. They are also used for mechanical surface detection and probe collision detection. The robot uses its own controller with a built in VME-bus computer. The system is described in detail in.

Probe Measurement System

The SAR measurements were conducted with the dosimetric probe EX3DV4, designed in the classical triangular configuration (see Fig. 2.2) and optimized for dosimetric evaluation. The probe is constructed using the thick film technique; with printed resistive lines on ceramic substrates. The probe is equipped with an optical multi fiber line ending at the front of the probe tip. (see Fig. 2.3) It is connected to the EOC box on the robot arm and provides an automatic detection of the phantom surface. Half of the fibers are connected to a pulsed infrared transmitter, the other half to a synchronized receiver. As the probe approaches the surface, the reflection from the surface produces a coupling from the transmitting to the receiving fibers. This reflection increases first during the approach, reaches maximum and then decreases. If the probe is flatly touching the surface, the coupling is zero. The distance of the coupling maximum to the surface is independent of the surface reflectivity and largely independent of the surface to probe angle. The DASY52 software reads the reflection during a software approach and looks for the maximum using a 2nd order fitting. The approach is stopped at reaching the maximum.

DAE System

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Probe Specifications

Calibration: In air from 10 MHz to 6.0 GHz
In brain and muscle simulating tissue at Frequencies of 450 MHz, 835 MHz, 1750 MHz, 1900 MHz, 2450 MHz, 2600 MHz, 3500 MHz, 5200 MHz, 5300 MHz, 5600 MHz, 5800 MHz

Frequency: 10 MHz to 6 GHz

Linearity: ±0.2dB (30 MHz to 6 GHz)

Dynamic: 10 mW/kg to 100 W/kg

Range: Linearity: ±0.2dB

Dimensions: Overall length: 330 mm

Tip length: 20 mm

Body diameter: 12 mm

Tip diameter: 2.5 mm

Distance from probe tip to sensor center: 1 mm

Application: SAR Dosimetry Testing
Compliance tests of wireless device

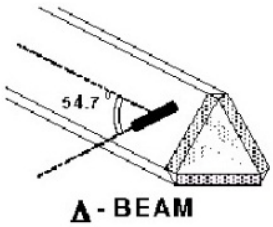

Figure 2.2 Triangular Probe Configurations

Figure 2.3 Probe Thick-Film Technique

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Probe Calibration Process

Dosimetric Assessment Procedure

Each probe is calibrated according to a dosimetric assessment procedure described in with accuracy better than +/- 10%. The spherical isotropy was evaluated with the procedure described in and found to be better than +/-0.25dB. The sensitivity parameters (Norm X, Norm Y, Norm Z), the diode compression parameter (DCP) and the conversion factor (Conv F) of the probe is tested.

Free Space Assessment

The free space E-field from amplified probe outputs is determined in a test chamber. This is performed in a TEM cell for frequencies below 1 GHz, and in a waveguide above 1GHz for free space. For the free space calibration, the probe is placed in the volumetric center of the cavity at the proper orientation with the field. The probe is then rotated 360 degrees until the three channels show the maximum reading. The power density readings equates to 1 mW/cm^2.

Temperature Assessment *

E-field temperature correlation calibration is performed in a flat phantom filled with the appropriate simulated brain tissue. The measured free space E-field in the medium, correlates to temperature rise in a dielectric medium. For temperature correlation calibration a RF transparent thermistor based temperature probe is used in conjunction with the E-field probe

$$SAR = C\frac{\Delta T}{\Delta t}$$

where:

Δt = exposure time (30 seconds),

C = heat capacity of tissue (brain or muscle),

ΔT = temperature increase due to RF exposure.

$$SAR = \frac{|E|^2 \cdot \sigma}{\rho}$$

where:

σ = simulated tissue conductivity,

ρ = Tissue density (1.25 g/cm^3 for brain tissue)

SAR is proportional to ΔT / Δt , the initial rate of tissue heating, before thermal diffusion takes place.
Now it's possible to quantify the electric field in the simulated tissue by equating the thermally derived SAR to the E- field;

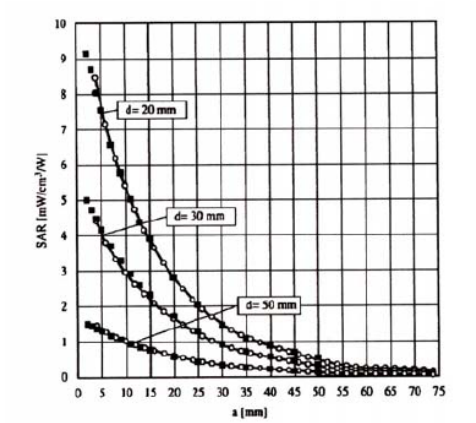

Figure 2.4 E-Field and Temperature Measurements at 900MHz

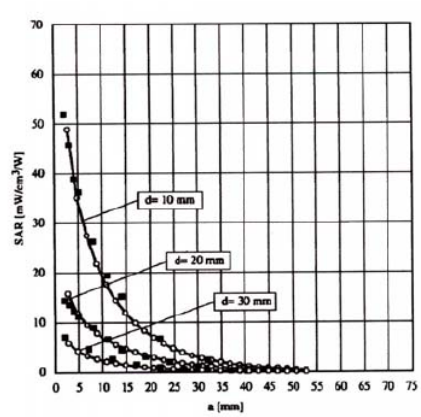

Figure 2.5 E-Field and Temperature Measurements at 1800MHz

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Data Extrapolation

The DASY52 software automatically executes the following procedures to calculate the field units from the microvolt readings at the probe connector. The first step of the evaluation is a linearization of the filtered input signal to account for the compression characteristics of the detector diode. The compensation depends on the input signal, the diode type and the DC-transmission factor from the diode to the evaluation electronics. If the exciting field is pulsed, the crest factor of the signal must be known to correctly compensate for peak power. The formula for each channel can be given like below;

$$V_i = U_i + U_i^2 \cdot \frac{cf}{dcp_i}$$

with
V_i = compensated signal of channel i (i=x,y,z)
U_i = input signal of channel i (i=x,y,z)
cf = crest factor of exciting field (DASY parameter)
dcp_i = diode compression point (DASY parameter)

From the compensated input signals the primary field data for each channel can be evaluated:

E-field probes:

$$E_i = \sqrt{\frac{V_i}{Norm_i \cdot ConvF}}$$

with
V_i = compensated signal of channel i (i = x,y,z)
$Norm_i$ = sensor sensitivity of channel i (i = x,y,z) $\mu V/(V/m)^2$ for E-field probes
ConvF = sensitivity of enhancement in solution
E_i = electric field strength of channel i in V/m

The RSS value of the field components gives the total field strength (Hermetian magnitude):

$$E_{tot} = \sqrt{E_x^2 + E_y^2 + E_z^2}$$

The primary field data are used to calculate the derived field units.

$$SAR = E_{tot}^2 \cdot \frac{\sigma}{\rho \cdot 1000}$$

with
SAR = local specific absorption rate in W/g
E_{tot} = total field strength in V/m
σ = conductivity in [mho/m] or [Siemens/m]
ρ = equivalent tissue density in g/cm^3

The power flow density is calculated assuming the excitation field to be a free space field.

$$P_{pwe} = \frac{E_{tot}^2}{3770}$$

with
P_{pwe} = equivalent power density of a plane wave in W/cm^2
E_{tot} = total electric field strength in V/m

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Scanning procedure

- The DASY installation includes predefined files with recommended procedures for measurements and system check. They are read-only document files and destined as fully defined but unmeasured masks. All test positions (head or body-worn) are tested with the same configuration of test steps differing only in the grid definition for the different test positions.

- The „reference“ and „drift“ measurements are located at the beginning and end of the batch process. They measure the field drift at one single point in the liquid over the complete procedure. The indicated drift is mainly the variation of the DUT's output power and should vary max. +/- 5 %.

- The highest integrated SAR value is the main concern in compliance test applications. These values can mostly be found at the inner surface of the phantom and cannot be measured directly due to the sensor offset in the probe. To extrapolate the surface values, the measurement distances to the surface must be known accurately. A distance error of 0.5mm could produce SAR errors of 6% at 1800 MHz. Using predefined locations for measurements is not accurate enough. Any shift of the phantom (e.g., slight deformations after filling it with liquid) would produce high uncertainties. For an automatic and accurate detection of the phantom surface, the DASY5 system uses the mechanical surface detection. The detection is always at touch, but the probe will move backward from the surface the indicated distance before starting the measurement.

- The „area scan“ measures the SAR above the DUT or verification dipole on a parallel plane to the surface. It is used to locate the approximate location of the peak SAR with 2D spline interpolation. The robot performs a stepped movement along one grid axis while the local electrical field strength is measured by the probe. The probe is touching the surface of the SAM during acquisition of measurement values. The scan uses different grid spacings for different frequency measurements. Standard grid spacing for head measurements in frequency ranges≤ 2GHz is 15 mm in x - and y-dimension. For higher frequencies a finer resolution is needed, thus for the grid spacing is reduced according the following table:

Area scan grid spacing for different frequency ranges	
Frequency range	Grid spacing
≤ 2 GHz	≤ 15 mm
2 – 4 GHz	≤ 12 mm
4 – 6 GHz	≤ 10 mm

Grid spacing and orientation have no influence on the SAR result. For special applications where the standard scan method does not find the peak SAR within the grid, e.g. mobile phones with flip cover, the grid can be adapted in orientation. Results of this coarse scan are shown in annex B.

- A „zoom scan” measures the field in a volume around the 2D peak SAR value acquired in the previous „coarse“ scan. It uses a fine meshed grid where the robot moves the probe in steps along all the 3 axis (x,y and z-axis) starting at the bottom of the Phantom. The grid spacing for the cube measurement is varied according to the measured frequency range, the dimensions are given in the following table:

Zoom scan grid spacing and volume for different frequency ranges			
Frequency range	Grid spacing for x, y axis	Grid spacing for z axis	Minimum zoom scan volume
≤ 2 GHz	≤ 8 mm	≤ 5 mm	≥ 30 mm
2 – 3 GHz	≤ 5 mm	≤ 5 mm	≥ 28 mm
3 – 4 GHz	≤ 5 mm	≤ 4 mm	≥ 28 mm
4 – 5 GHz	≤ 4 mm	≤ 3 mm	≥ 25 mm
5 – 6 GHz	≤ 4 mm	≤ 2 mm	≥ 22 mm

DASY is also able to perform repeated zoom scans if more than 1 peak is found during area scan. In this document, the evaluated peak 1g and 10g averaged SAR values are shown in the 2D-graphics in annex B. Test

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results relevant for the specified standard (see section 3) are shown in table form in section 7.

Spatial Peak SAR Evaluation

The spatial peak SAR - value for 1 and 10 g is evaluated after the Cube measurements have been done. The basis of the evaluation are the SAR values measured at the points of the fine cube grid consisting of all points in the three directions x, y and z. The algorithm that finds the maximal averaged volume is separated into three different stages.

- The data between the dipole center of the probe and the surface of the phantom are extrapolated. This data cannot be measured since the center of the dipole is 1 to 2.7 mm away from the tip of the probe and the distance between the surface and the lowest measuring point is about 1 mm (see probe calibration sheet). The extrapolated data from a cube measurement can be visualized by selecting 'Graph Evaluated'.

- The maximum interpolated value is searched with a straight-forward algorithm. Around this maximum the SAR - values averaged over the spatial volumes (1g or 10 g) are computed using the 3d-spline interpolation algorithm. If the volume cannot be evaluated (i.e., if a part of the grid was cut off by the boundary of the measurement area) the evaluation will be started on the corners of the bottom plane of the cube.

- All neighbouring volumes are evaluated until no neighbouring volume with a higher average value is found.

Extrapolation

The extrapolation is based on a least square algorithm [W. Gander, Computermathematik, p.168-180]. Through the points in the first 3 cm along the z-axis, polynomials of order four are calculated. These polynomials are then used to evaluate the points between the surface and the probe tip. The points, calculated from the surface, have a distance of 1 mm from each other.

Interpolation

The interpolation of the points is done with a 3d-Spline. The 3d-Spline is composed of three one-dimensional splines with the "Not a knot"-condition [W. Gander, Computermathematik, p.141-150] (x, y and z -direction) [Numerical Recipes in C, Second Edition, p.123ff].

Volume Averaging

At First the size of the cube is calculated. Then the volume is integrated with the trapezoidal algorithm. 8000 points (20x20x20) are interpolated to calculate the average.

Advanced Extrapolation

DASY uses the advanced extrapolation option which is able to compensate boundary effects on E-field probes.

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SAM PHANTOM

The SAM Twin Phantom V4.0 is constructed of a fiberglass shell integrated in a wooden table. The shape of the shell is based on data from an anatomical study designed to determine the maximum exposure in at least 90% of all users. It enables the dosimetric evaluation of left and right hand phone usage as well as body mounted usage at the flat phantom region. A cover prevents the evaporation of the liquid. Reference markings on the Phantom allow the complete setup of all predefined phantom positions and measurement grids by manually teaching three points in the robot. (see Fig. 2.6)

Phantom Specification

Phantom: SAM Twin Phantom (V4.0)
Shell Material: Vivac Composite
Thickness: 2.0 ± 0.2 mm

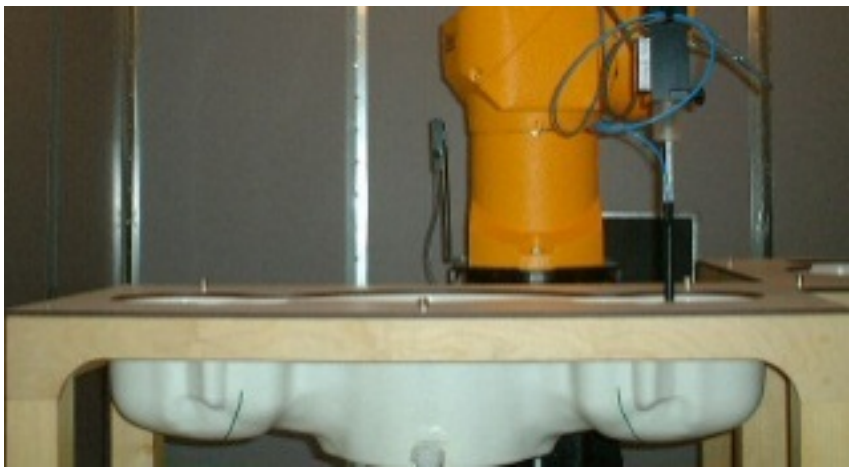

Figure 3.6 SAM Twin Phantom

Device Holder for Transmitters

In combination with the SAM Twin Phantom V4.0 the Mounting Device (see Fig. 2.7), enables the rotation of the mounted transmitter in spherical coordinates whereby the rotation point is the ear opening. The devices can be easily, accurately, and repeat ably be positioned according to the FCC, CENELEC, IEC and IEEE specifications. The device holder can be locked at different phantom locations (left head, right head, flat phantom).

Figure 2.7 Mounting Device

Note: A simulating human hand is not used due to the complex anatomical and geometrical structure of the hand that may produce infinite number of configurations. To produce the worst-case condition (the hand absorbs antenna output power), the hand is omitted during the tests.

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4. Probe and Dipole Calibration

See Appendix D and E.

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5. Phantom & Simulating Tissue Specifications

Head & Body Simulating Mixture Characterization

The head and body mixtures consist of the material based on the table listed below. The mixture is calibrated to obtain proper dielectric constant (permittivity) and conductivity of the desired tissue. Body tissue parameters that have not been specified in IEEE1528 – 2013 are derived from the issue dielectric parameters computed from the 4-Cole-Cole equations.

Table 5.1 Typical Composition of Ingredients for Tissue

Ingredients		Simulating Tissue					
		750 MHz Body	835 MHz Body	1750 MHz Body	1900 MHz Body	2300 MHz Body	2600 MHz Body
Mixing Percentage							
Water		Proprietary Purchased from Speag	52.50	Proprietary Purchased from Speag	69.91	Proprietary Purchased from Speag	Proprietary Purchased from Speag
Sugar			45.00		0.00		
Salt			1.40		0.13		
HEC			1.00		0.00		
Bactericide			0.10		0.00		
DGBE			0.00		29.96		
Dielectric Constant	Target	55.5	55.20	53.4	53.30	52.90	52.51
Conductivity (S/m)	Target	0.96	0.97	1.49	1.52	1.81	2.16

Ingredients		Simulating Tissue			
		2450 MHz Body	5250 MHz Body	5600 MHz Body	5785 MHz Body
Mixing Percentage					
Water		73.20	Proprietary Mixture Procured from Speag		
Sugar		0.00			
Salt		0.04			
HEC		0.00			
Bactericide		0.00			
DGBE		26.70			
Dielectric Constant	Target	52.70	48.96	48.47	48.25
Conductivity (S/m)	Target	1.95	5.35	5.77	5.96

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6. ANSI/IEEE C95.1 – 1992 RF Exposure Limits [2]

Uncontrolled Environment

Uncontrolled Environments are defined as locations where there is the exposure of individuals who have no knowledge or control of their exposure. The general population/uncontrolled exposure limits are applicable to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Members of the general public would come under this category when exposure is not employment-related; for example, in the case of a wireless transmitter that exposes persons in its vicinity.

Controlled Environment

Controlled Environments are defined as locations where there is exposure that may be incurred by persons who are aware of the potential for exposure, (i.e. as a result of employment or occupation). In general, occupational/controlled exposure limits are applicable to situations in which persons are exposed as a consequence of their employment, who have been made fully aware of the potential for exposure and can exercise control over their exposure. This exposure category is also applicable when the exposure is of a transient nature due to incidental passage through a location where the exposure levels may be higher than the general population/uncontrolled limits, but the exposed person is fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

Table 6.1 Human Exposure Limits

	UNCONTROLLED ENVIRONMENT General Population (W/kg) or (mW/g)	CONTROLLED ENVIROMENT Professional Population (W/kg) or (mW/g)
SPATIAL PEAK SAR [1] Head	1.60	8.00
SPATIAL AVERAGE SAR [2] Whole Body	0.08	0.40
SPATIAL PEAK SAR [3] Hands, Feet, Ankles, Wrists	4.00	20.00

[1] The Spatial Peak value of the SAR averaged over any 1 gram of tissue (defined as a tissue volume in the shape of a cube) and over the appropriate averaging time.
[2] The Spatial Average value of the SAR averaged over the whole body.
[3] The Spatial Peak value of the SAR averaged over any 10 grams of tissue (defined as a tissue volume in the shape of a cube) and over the appropriate averaging time.

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7. Measurement Uncertainty

Measurement uncertainty table is not required per KDB 865664 D01 v01r04 section 2.8.2 page 12. SAR measurement uncertainty analysis is required in the SAR report only when the highest measured SAR in a frequency band is ≥ 1.5 W/kg for 1-g SAR. The equivalent ratio (1.5/1.6) should be applied to extremity and occupational exposure conditions. The highest reported value is less than 1.5 W/kg. Therefore, the measurement uncertainty table is not required.

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8. System Validation

Tissue Verification

Table 8.1 Measured Tissue Parameters

		750 MHz Body		835 MHz Body		1750 MHz Body	
Date(s)		July 15, 2019		July 15, 2019		July 16, 2019	
Liquid Temperature (˚C)	20.0	Target	Measured	Target	Measured	Target	Measured
Dielectric Constant: ε		55.35	55.52	55.20	54.86	53.43	52.78
Conductivity: σ		0.96	1.00	0.97	0.98	1.49	1.52
		1900 MHz Body		2300 MHz Body		2550 MHz Body	
Date(s)		July 16, 2019		July 17, 2019		July 17, 2019	
Liquid Temperature (˚C)	20.0	Target	Measured	Target	Measured	Target	Measured
Dielectric Constant: ε		53.30	52.20	52.90	51.94	52.57	51.89
Conductivity: σ		1.52	1.55	1.81	1.83	2.09	2.12
		2450 MHz Body		5250 MHz Body		5600 MHz Body	
Date(s)		July 9, 2019		July 8, 2019		July 8, 2019	
Liquid Temperature (˚C)	20.0	Target	Measured	Target	Measured	Target	Measured
Dielectric Constant: ε		52.70	52.64	49.01	48.96	48.47	48.43
Conductivity: σ		1.95	1.96	5.30	5.35	5.77	5.74
		5750 MHz Body					
Date(s)		July 8, 2019					
Liquid Temperature (˚C)	20.0	Target	Measured				
Dielectric Constant: ε		48.20	48.21				
Conductivity: σ		6.00	5.91				

See Appendix A for data printout.

Test System Verification

Prior to assessment, the system is verified to the ±10% of the specifications at the test frequency by using the system kit. Power is normalized to 1 watt. (Graphic Plots Attached)

Table 8.2 System Dipole Validation Target & Measured

	Test Frequency	Targeted SAR_{1g} (W/kg)	Measure SAR_{1g} (W/kg)	Tissue Used for Verification	Deviation (%)	Plot Number
15-Jul-2019	750 MHz	8.55	8.62	Body	+ 0.82	1
15-Jul-2019	835 MHz	9.57	9.64	Body	+ 0.73	2
16-Jul-2019	1750 MHz	36.50	36.90	Body	+ 1.10	3
16-Jul-2019	1900 MHz	39.90	40.10	Body	+ 0.50	4
17-Jul-2019	2300 MHz	47.30	47.60	Body	+ 0.63	5
17-Jul-2019	2550 MHz	52.40	52.90	Body	+ 0.95	6
09-Jul-2019	2450 MHz	51.00	52.00	Body	+ 1.96	7
08-Jul-2019	5250 MHz	76.80	77.60	Body	+ 1.04	8
08-Jul-2019	5600 MHz	79.50	79.10	Body	- 0.50	9
08-Jul-2019	5750 MHz	76.20	76.60	Body	+ 0.52	10

See Appendix A for data plots.

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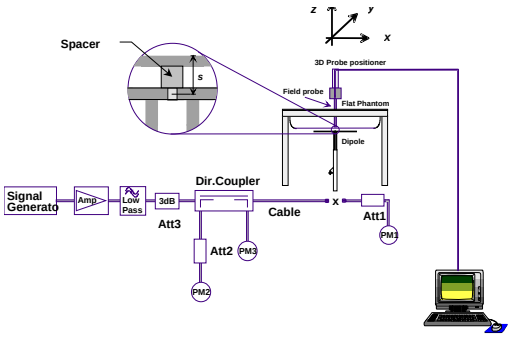

Figure 8.1 Dipole Validation Test Setup

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9. SAR Test Data Summary

See Measurement Result Data Pages

See Appendix B for SAR Test Data Plots.
See Appendix C for SAR Test Setup Photos.

Procedures Used To Establish Test Signal

The device was either placed into simulated transmit mode using the manufacturer's test codes or the actual transmission is activated through a base station simulator or similar equipment. See data pages for actual procedure used in measurement.

Device Test Condition

In order to verify that the device was tested at full power, conducted output power measurements were performed before and after each SAR measurement to confirm the output power unless otherwise noted. The power drift of each test is measured at the start of the test and again at the end of the test. The drift percentage is calculated by the formula ((end/start)-1)*100 and rounded to two decimal places.

The EUT was tested in the tablet configuration of the device. The EUT was tested on all sides of the device where the antenna was within 25 mm of that side. All measurements were conducted with the side of the device in direct contact with the phantom. For sides of the antenna which were not measured in this report, the SAR was conduct on the module in the modular approval with the maximum distance of 8 mm on all six sides of the antenna. Data is located in the original modular report. Therefore, the requirements mentioned in RSS-102 Supplementary Procedures (SPR)-001 – SAR Testing Requirements with Regards to Bystanders for Laptop Type Computers with Antennas Built-In on Display Screen (Laptop/Tablet Mode) are covered.

This device employs a sensor configuration that will reduce the power based on a gyro sensor and Hall sensor. The sensors detect the position of the LCD screen. When the LCD screen is between 130º - 360º in tablet mode or 35º – 345º in book mode, the power is reduced to the tablet power level. When the LCD screen is between 35º - 130º , the power is set to notebook mode. When the LCD screen is between 0º - 35º, the transmission is turned off. The power reduction in each of the modes was validated using the proprietary software supplied on the tablet. All testing in this report has been conducted at the tablet or notebook power settings.

The Bluetooth transmitter does simultaneously transmit with the WiFi transmitter. When the BT is turned on, it transmits on Aux and the WiFi transmits on Main. Simultaneous transmission is evaluated on pages 191-192.

The main antenna was evaluated for stand-alone SAR per RSS-102 Issue 5 for BT. Please see data sheet summary on page 187.

The data rates used when evaluating the WiFi transmitter were the lowest data rates for each mode. The device was operating at its maximum output power at the lowest data rate for all measurements.

The tablet was using the Intel test utility DRTU Version 11.1902.0-09060 and the device driver was version 20.120.0.3.

The antenna was on a minimum of 10 cm of Styrofoam during each test. The following is a pictorial drawing of the locations and separation distances.

The WCDMA testing was conducted using 12.2 kbps RMC configured in Test Loop Mode 1. The HSPA testing was conducted with HS-DPCCH, E-DPCCH and E-DPDCH all enabled and a 12.2 kbps RMC. FRC was configured according to HS-DPCCH Sub-Test 1 using H-set 1 and QPSK.

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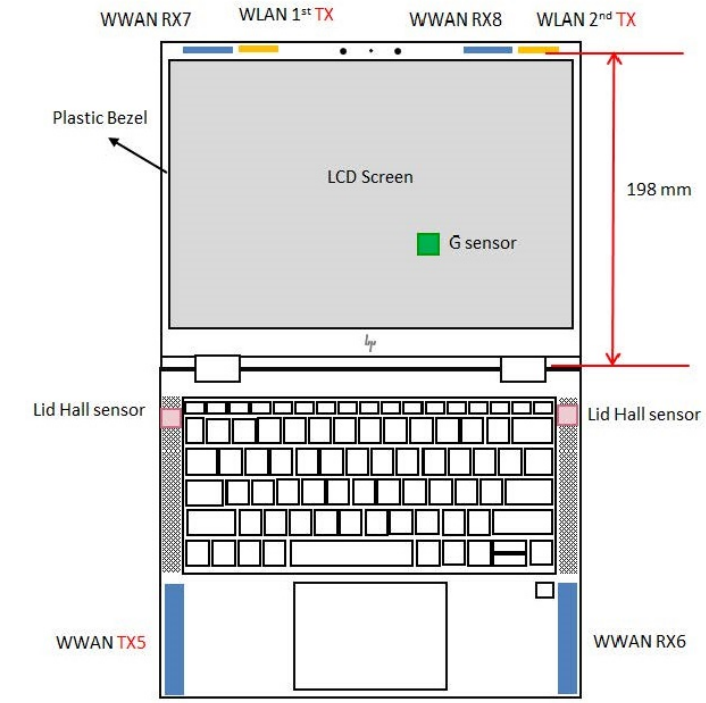
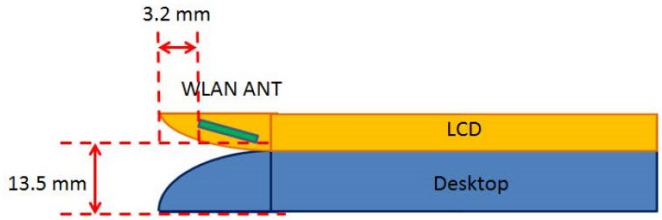
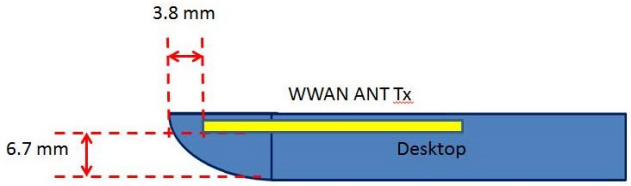
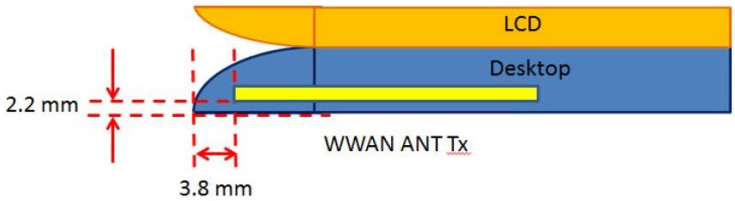
Location and Separation Distances Diagrams









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10. LTE Document Checklist

1) Identify the operating frequency range of each LTE transmission band used by the device

LTE Operating Band	Uplink (transmit)	Downlink (Receive)	Duplex mode (FDD/TDD)
	Low - high	Low - high	
4 & 66	1710-1780	2110-2200	FDD
5 & 26	814-849	859-894	FDD
13	777-787	746-756	FDD
14	788-798	758-768	FDD
12 & 17	699-716	729-746	FDD
2 & 25	1850-1915	1930-1995	FDD
30	2305-2315	2350-2360	FDD
7	2500-2570	2620-2690	FDD
38 & 41	2496-2690	2496-2690	TDD

2) Identify the channel bandwidths used in each frequency band; 1.4, 3, 5, 10, 15, 20 MHz etc

LTE Band Class	Bandwidth (MHz)	Frequency or Freq. Band (MHz)
17	5, 10	704-716
12	1.4, 3, 5, 10	699-716
13	5, 10	777-787
14	5, 10	788-798
5	1.4, 3, 5, 10	824-849
26	1.4, 3, 5, 10, 15	814-849
4	1.4, 3, 5, 10, 15, 20	1710-1755
66	1.4, 3, 5, 10, 15, 20	1710-1780
2	1.4, 3, 5, 10, 15, 20	1850-1910
25	1.4, 3, 5, 10, 15, 20	1850-1915
30	5, 10	2305-2315
7	5, 10, 15, 20	2500-2570
38	5, 10, 15, 20	2570-2620
41	5, 10, 15, 20	2496-2690

3) Identify the high, middle and low (H, M, L) channel numbers and frequencies in each LTE frequency band

LTE Band Class	Bandwidth (MHz)	Frequency (MHz)/Channel #					
		Low		Mid		High	
17	5	706.5	23755	710.0	23790	713.5	23824
17	10	709.0	23780	710.0	23790	711.0	23799
12	1.4	699.7	23017	707.5	23095	715.3	23173
12	3	700.5	23025	707.5	23095	714.5	23165
12	5	701.5	23035	707.5	23095	713.5	23155
12	10	704.0	23060	707.5	23095	711.0	23130
13	5	779.5	23205	782.0	23230	784.5	23255
13	10	-----	-----	782.0	23230	-----	-----
14	5	790.5	23305	793.0	23330	795.5	23355
14	10	-----	-----	793.0	23330	-----	-----
5	1.4	824.7	20407	836.5	20525	848.3	20643
5	3	825.5	20415	836.5	20525	847.5	20635

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5	5	826.5	20425	836.5	20525	846.5	20625
5	10	829.0	20450	836.5	20525	844.0	20600
26	1.4	814.7	26697	831.5	26865	848.3	27033
26	3	815.5	26705	831.5	26865	847.5	27025
26	5	816.5	26715	831.5	26865	846.5	27015
26	10	819.0	26740	831.5	26865	844.0	26990
26	15	821.5	24765	831.5	26865	841.5	26995
4	1.4	1710.7	19957	1732.5	20175	1754.3	20393
4	3	1711.5	19965	1732.5	20175	1753.5	20385
4	5	1712.5	19975	1732.5	20175	1752.5	20375
4	10	1715.0	20000	1732.5	20175	1750.0	20350
4	15	1717.5	20025	1732.5	20175	1747.5	20325
4	20	1720.0	20050	1732.5	20175	1745.0	20300
66	1.4	1710.7	131979	1745.0	132322	1779.3	132665
66	3	1711.5	131987	1745.0	132322	1778.5	132657
66	5	1712.5	131997	1745.0	132322	1777.5	132647
66	10	1715.0	132022	1745.0	132322	1775.0	132622
66	15	1717.5	132047	1745.0	132322	1772.5	132597
66	20	1720.0	132072	1745.0	132322	1770.0	132572
2	1.4	1850.7	18607	1880.0	18900	1909.3	19193
2	3	1851.5	18615	1880.0	18900	1908.5	19185
2	5	1852.5	18625	1880.0	18900	1907.5	19175
2	10	1855.0	18650	1880.0	18900	1905.0	19150
2	15	1857.5	18675	1880.0	18900	1902.5	19125
2	20	1860.0	18700	1880.0	18900	1900.0	19100
25	1.4	1850.7	26047	1882.5	26365	1914.3	26683
25	3	1851.5	26055	1882.5	26365	1913.5	26675
25	5	1852.5	26065	1882.5	26365	1912.5	26665
25	10	1855.0	26090	1882.5	26365	1910.0	26640
25	15	1857.5	26115	1882.5	26365	1907.5	26615
25	20	1860.0	26140	1882.5	26365	1905.0	26590
30	5	2307.5	27685	2310	27710	2312.5	27735
30	10	-----	-----	2310	27710	-----	-----
7	5	2502.5	20775	2535.0	21100	2567.5	21425
7	10	2505.0	20800	2535.0	21100	2565.0	21400
7	15	2507.5	20825	2535.0	21100	2562.5	21375
7	20	2510.0	20850	2535.0	21100	2560.0	21350
38	5	2572.5	37775	2595.0	38000	2617.5	38225
38	10	2575.0	37800	2595.0	38000	2615.0	38200
38	15	2577.5	37825	2595.0	38000	2612.5	38175
38	20	2580.0	37850	2595.0	38000	2610.0	37150
41	5	2498.5	39675	2593.0	40620	2687.5	41565
41	10	2501.0	39700	2593.0	40620	2685.0	41540
41	15	2503.5	39725	2593.0	40620	2682.5	41515
41	20	2506.0	39750	2593.0	40620	2680.0	41490

4) Specify the UE category and uplink modulations used:
   - UE Category: 3
   - Uplink modulations: QPSK and 16QAM

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5) Include descriptions of the LTE transmitter and antenna implementation; and also identify whether it is a standalone transmitter operating independently of other wireless transmitters in the device or sharing hardware components and/or antenna(s) with other transmitters etc

The device has 2 antennas:

- WWAN Main Antenna
- WWAN Diversity Antenna

6) Identify the LTE voice/data requirements in each operating mode and exposure condition with respect to head and body test configurations, antenna locations, handset flip-cover or slide positions, antenna diversity conditions etc

The device is a data only device. Data mode was tested in each operating mode and exposure condition in the body configuration. See test setup photos to see all configurations tested.

7) Identify if Maximum Power Reduction (MPR) is optional or mandatory, i.e. built-in by design:

a) Only mandatory MPR may be considered during SAR testing, when the maximum output power is permanently limited by the MPR implemented within the UE; and only for the applicable RB (resource block) configurations specified in LTE standards

MPR is mandatory, built-in by design on all production units. It was enabled during testing.

Modulation	Channel Bandwidth/transmission Bandwidth Configuration (RB)						MPR (dB)
	1.4 MHz	3.0 MHZ	5 MHz	10 MHz	15 MHz	20 MHz	
QPSK	> 5	> 4	> 8	> 12	> 16	> 18	≤ 1
16QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 1
16QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 2

b) A-MPR (additional MPR) must be disabled

A-MPR was disabled during testing.

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8) Include the maximum average conducted output power on the required test channels for each channel bandwidth and UL modulation used in each frequency band:

The maximum average conducted output power for the testing is listed on pages 63-148 of this report. The below table shows the factory set point with the allowable tolerance.

Band	Power Setting	Technology	Class	Nominal Power dBm	Tolerance dBm	Lower Tolerance dBm	Upper Tolerance dBm
Band 12 – 750 MHz	Full	LTE	3	23.0	±1.0	22.0	24.0
Band 13 – 750 MHz	Full	LTE	3	23.0	±1.0	22.0	24.0
Band 14 – 750 MHz	Full	LTE	3	23.0	±1.0	22.0	24.0
Band 17 – 750 MHz	Full	LTE	3	23.0	±1.0	22.0	24.0
Band 5 – 835 MHz	Full	LTE	3	23.0	±1.0	22.0	24.0
Band 26 – 835 MHz	Full	LTE	3	23.0	±1.0	22.0	24.0
Band 4 – 1750 MHz	Full	LTE	3	23.0	±1.0	22.0	24.0
Band 66 – 1750 MHz	Full	LTE	3	23.0	±1.0	22.0	24.0
Band 2 – 1900 MHz	Full	LTE	3	23.0	±1.0	22.0	24.0
Band 25 – 1900 MHz	Full	LTE	3	23.0	±1.0	22.0	24.0
Band 30 – 2300 MHz	Full	LTE	3	23.0	±1.0	22.0	24.0
Band 7 – 2500 MHz	Full	LTE	3	23.0	±1.0	22.0	24.0
Band 38 – 2500 MHz	Full	LTE	3	23.0	±1.0	22.0	24.0
Band 41 – 2600 MHz	Full	LTE	3	23.0	±1.0	22.0	24.0
Band 12 – 750 MHz	Notebook	LTE	3	22.0	±1.0	21.0	23.0
Band 13 – 750 MHz	Notebook	LTE	3	21.5	±1.0	20.5	22.5
Band 14 – 750 MHz	Notebook	LTE	3	21.0	±1.0	20.0	22.0
Band 17 – 750 MHz	Notebook	LTE	3	23.0	±1.0	22.0	24.0
Band 5 – 835 MHz	Notebook	LTE	3	21.0	±1.0	20.0	22.0
Band 26 – 835 MHz	Notebook	LTE	3	22.0	±1.0	21.0	23.0
Band 4 – 1750 MHz	Notebook	LTE	3	19.0	±1.0	18.0	20.0
Band 66 – 1750 MHz	Notebook	LTE	3	18.0	±1.0	17.0	19.0
Band 2 – 1900 MHz	Notebook	LTE	3	17.5	±1.0	16.5	18.5
Band 25 – 1900 MHz	Notebook	LTE	3	18.5	±1.0	17.5	19.5
Band 30 – 2300 MHz	Notebook	LTE	3	19.5	±1.0	18.5	20.5
Band 7 – 2500 MHz	Notebook	LTE	3	17.0	±1.0	16.0	18.0
Band 38 – 2500 MHz	Notebook	LTE	3	20.0	±1.0	19.0	21.0
Band 41 – 2600 MHz	Notebook	LTE	3	18.0	±1.0	17.0	19.0
Band 12 – 750 MHz	Tablet	LTE	3	18.5	±1.0	17.5	19.5
Band 13 – 750 MHz	Tablet	LTE	3	17.5	±1.0	16.5	18.5
Band 14– 750 MHz	Tablet	LTE	3	21.0	±1.0	20.0	22.0
Band 17 – 750 MHz	Tablet	LTE	3	18.5	±1.0	17.5	19.5
Band 5 – 835 MHz	Tablet	LTE	3	18.0	±1.0	17.0	19.0
Band 26 – 835 MHz	Tablet	LTE	3	18.0	±1.0	17.0	19.0
Band 4 – 1750 MHz	Tablet	LTE	3	14.0	±1.0	13.0	15.0
Band 66 – 1750 MHz	Tablet	LTE	3	14.0	±1.0	13.0	15.0
Band 2 – 1900 MHz	Tablet	LTE	3	14.0	±1.0	13.0	15.0
Band 25 – 1900 MHz	Tablet	LTE	3	14.0	±1.0	13.0	15.0
Band 30 – 2300 MHz	Tablet	LTE	3	13.0	±1.0	12.0	14.0
Band 7 – 2500 MHz	Tablet	LTE	3	13.0	±1.0	12.0	14.0
Band 38 – 2500 MHz	Tablet	LTE	3	14.5	±1.0	13.5	15.5
Band 41 – 2600 MHz	Tablet	LTE	3	14.5	±1.0	13.5	15.5

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9) Identify all other U.S. wireless operating modes (3G, Wi-Fi, WiMax, Bluetooth etc), device/exposure configurations (head and body, antenna and handset flip-cover or slide positions, antenna diversity conditions etc.) and frequency bands used for these modes

Other wireless modes:

Band	Power Setting	Technology	Class	Nominal Power dBm	Tolerance dBm	Lower Tolerance dBm	Upper Tolerance dBm
Band 5 – 850 MHz	Full	WCDMA/HSPA	3	23.5	±1.0	22.5	24.5
Band 4 – 1750 MHz	Full	WCDMA/HSPA	3	23.5	±1.0	22.5	24.5
Band 2 – 1900 MHz	Full	WCDMA/HSPA	3	23.5	±1.0	22.5	24.5
Band 5 – 850 MHz	Notebook	WCDMA/HSPA	3	21.0	±1.0	20.0	22.0
Band 4 – 1750 MHz	Notebook	WCDMA/HSPA	3	19.0	±1.0	18.0	20.0
Band 2 – 1900 MHz	Notebook	WCDMA/HSPA	3	17.5	±1.0	16.5	18.5
Band 5 – 850 MHz	Tablet	WCDMA/HSPA	3	18.0	±1.0	17.0	19.0
Band 4 – 1750 MHz	Tablet	WCDMA/HSPA	3	14.0	±1.0	13.0	15.0
Band 2 – 1900 MHz	Tablet	WCDMA/HSPA	3	14.0	±1.0	13.0	15.0
WLAN – 2.4 GHz	Notebook	802.11bgn20	N/A	19.5	±1.5	18.0	21.0
WLAN – 2.4 GHz	Notebook	802.11n40ac	N/A	19.0	±1.5	17.5	20.5
WLAN – 5 GHz Band I,IIA,IIC,III	Notebook	802.11an20	N/A	19.5	±1.5	18.0	21.0
WLAN – 5 GHz Band I,IIA,IIC,III	Notebook	802.11n40ac80/160	N/A	19.0	±1.5	17.5	20.5
WLAN – 2.4 GHz	Tablet	802.11bgn20	N/A	16.5	±1.5	15.0	18.0
WLAN – 2.4 GHz	Tablet	802.11n40ac	N/A	15.0	±1.5	13.5	16.5
WLAN – 5 GHz Band I,IIA,IIC,III	Tablet	802.11an20	N/A	14.0	±1.5	12.5	15.5
WLAN – 5 GHz Band I,IIA,IIC,III	Tablet	802.11n40ac80/160	N/A	13.5	±1.5	12.0	15.0
BT – BDR	N/A	Bluetooth	N/A	10.0	±1.5	8.5	11.5
BT – EDR2 & EDR3	N/A	Bluetooth	N/A	9.5	±1.5	8.0	11.0
BT – BLE	N/A	Bluetooth	N/A	7.5	±1.5	6.0	9.0

10) Include the maximum average conducted output power measured for the other wireless modes and frequency bands.

The maximum average conducted output power measured for the testing is listed on pages 32-40 of this report. The table in item 9 shows the factory set point with the allowable tolerance.

11) When power reduction is applied to certain wireless modes to satisfy SAR compliance for simultaneous transmission conditions, other equipment certification or operating requirements, include the maximum average conducted output power measured in each power reduction mode applicable to the simultaneous voice/data transmission configurations for such wireless configurations and frequency bands; and also include details of the power reduction implementation and measurement setup

The device has two power settings during operation. When the device is installed in keyboard case, the power is set to the full power mode. When the device is not installed in the keyboard case, the power is set to the reduced power mode. Please see the operational description (confidential) for details on power reducing control.

12) Include descriptions of the test equipment, test software, built-in test firmware etc. required to support testing the device when power reduction is applied to one or more transmitters/antennas for simultaneous voice/data transmission

No special equipment was required for the testing. A special software program by the module manufacturer is used to reduce the power.

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11. FCC 3G Measurement Procedures

Power measurements were performed using a base station simulator under average power.

11.1 Procedures Used to Establish RF Signal for SAR

The device was placed into a simulated call using a base station simulator in a screen room. Such test signals offer a consistent means for testing SAR and recommended for evaluating SAR. The SAR measurement software calculates a reference point at the start and end of the test to check for power drifts. If conducted power deviations of more than 5% occurred, the tests were repeated.

11.2 SAR Measurement Conditions for WCDMA/HSDPA/HSUPA

Configure the call box 8960 to support all WCDMA tests in respect to the 3GPP 34.121 (listed in Table below). Measure the power at Ch4132, 4182 and 4233 for US cell; Ch9262, 9400 and 9538 for US PCS band.

For Rel99

- Set a Test Mode 1 loop back with a 12.2kbps Reference Measurement Channel (RMC).
- Set and send continuously Up power control commands to the device
- Measure the power at the device antenna connector using the power meter with average detector.

For HSDPA Rel 6

- Establish a Test Mode 1 look back with both 1 12.2kbps RMC channel and a H-Set1 Fixed Reference Channel (FRC). With the 8960 this is accomplished by setting the signal Channel Coding to “Fixed Reference Channel” and configuring for HSET-1 QKSP.
- Set beta values and HSDPA settings for HSDPA Subtest1 according to Table below.
- Send continuously Up power control commands to the device
- Measure the power at the device antenna connector using the power meter with modulated average detector.
- Repeat the measurement for the HSDPA Subtest2, 3 and 4 as given in Table below.

For HSUPA Rel 6

- Use UL RMC 12.2kbps and FRC H-Set1 QPSK, Test Mode 1 loop back. With the 8960 this is accomplished by setting the signal Channel Coding to “E-DCH Test Channel” and configuring the equipment category to Cat5_10ms.
- Set the Absolute Grant for HSUPA Subtest1 according to Table below.
- Set the device power to be at least 5dB lower than the Maximum output power
- Send power control bits to give one TPC_cmd = +1 command to the device. If device doesn’t send any E-DPCH data with decreased E-TFCI within 500ms, then repeat this process until the decreased E-TFCI is reported.
- Confirm that the E-TFCI transmitted by the device is equal to the target E-TFCI in Table below. If the E-TFCI transmitted by the device is not equal to the target E-TFCI, then send power control bits to give one TPC_cmd = -1 command to the UE. If UE sends any E-DPCH data with decreased E-TFCI within 500 ms, send new power control bits to give one TPC_cmd = -1 command to the UE. Then confirm that the E-TFCI transmitted by the UE is equal to the target E-TFCI in Table below.
- Measure the power using the power meter with modulated average detector.
- Repeat the measurement for the HSUPA Subtest2, 3, 4 and 5 as given in Table below.

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Notebook Mode

3GPP Release Version	Mode	Cellular Band [dBm]			Sub-Test (See Table Below)	MPR
		4132	4183	4233		
99	WCDMA	21.23	21.22	21.40	-	-
6	HSDPA	21.14	21.47	21.32	1	0
6		21.25	21.37	21.34	2	0
6		20.76	20.54	20.54	3	0.5
6		20.83	20.72	20.51	4	0.5
6	HSUPA	21.28	21.39	21.27	1	0
6		19.33	19.46	19.27	2	2
6		20.44	20.21	20.16	3	1
6		19.42	19.37	19.00	4	2
6		21.08	21.19	21.43	5	0

PP Release Version	Mode	AWS Band [dBm]			Sub-Test (See Table Below)	MPR
		1312	1413	1513		
99	WCDMA	19.47	19.44	19.19	-	-
6	HSDPA	19.37	19.38	19.32	1	0
6		19.12	19.06	19.49	2	0
6		18.67	18.63	18.59	3	0.5
6		18.86	18.55	18.81	4	0.5
6	HSUPA	19.05	19.41	19.34	1	0
6		17.25	17.37	17.48	2	2
6		18.38	18.32	18.09	3	1
6		17.12	17.35	17.33	4	2
6		19.24	19.05	19.30	5	0

3GPP Release Version	Mode	PCS Band [dBm]			Sub-Test (See Table Below)	MPR
		9262	9400	9538		
99	WCDMA	17.55	17.85	17.85	-	-
6	HSDPA	17.94	17.69	17.61	1	0
6		17.52	17.78	17.85	2	0
6		17.48	17.49	17.20	3	0.5
6		17.22	17.35	17.42	4	0.5
6	HSUPA	17.71	17.96	17.97	1	0
6		15.57	15.83	15.95	2	2
6		16.90	16.73	16.91	3	1
6		15.80	15.83	15.62	4	2
6		17.59	17.63	17.55	5	0

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Tablet Mode

3GPP Release Version	Mode	Cellular Band [dBm]			Sub-Test (See Table Below)	MPR
		4132	4183	4233		
99	WCDMA	18.19	18.30	18.25	-	-
6	HSDPA	18.44	18.40	18.27	1	0
6		18.49	18.29	18.03	2	0
6		17.60	17.77	17.57	3	0.5
6		17.79	17.62	17.86	4	0.5
6	HSUPA	18.11	18.13	18.30	1	0
6		16.47	16.45	16.23	2	2
6		17.40	17.37	17.14	3	1
6		16.49	16.21	16.31	4	2
6		18.25	18.36	18.46	5	0

PP Release Version	Mode	AWS Band [dBm]			Sub-Test (See Table Below)	MPR
		1312	1413	1513		
99	WCDMA	14.23	14.01	14.08	-	-
6	HSDPA	14.34	14.29	14.44	1	0
6		14.12	14.39	14.47	2	0
6		13.69	13.96	13.83	3	0.5
6		13.54	13.69	13.96	4	0.5
6	HSUPA	14.30	14.33	14.39	1	0
6		12.27	12.49	12.45	2	2
6		13.06	13.03	13.33	3	1
6		12.03	12.15	12.21	4	2
6		14.00	14.47	14.44	5	0

3GPP Release Version	Mode	PCS Band [dBm]			Sub-Test (See Table Below)	MPR
		9262	9400	9538		
99	WCDMA	14.33	14.43	14.20	-	-
6	HSDPA	14.38	14.12	14.09	1	0
6		14.10	14.04	14.20	2	0
6		13.80	13.88	13.97	3	0.5
6		13.62	13.78	13.50	4	0.5
6	HSUPA	14.39	14.22	14.26	1	0
6		12.02	12.28	12.12	2	2
6		13.47	13.14	13.16	3	1
6		12.19	12.44	12.21	4	2
6		14.21	14.29	14.11	5	0

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Sub-Test Setup for Release 6 HSDPA

Sub-Test	β_c	β_d	B_c/β_d	β_{hs}
1	2/15	15/15	2/15	4/15
2	12/15	15/15	15/15	24/15
3	15/15	8/15	15/8	30/15
4	15/15	4/15	15/4	30/15
Δ_{ack}, Δ_{nack} and Δ_{cqi} = 8				

Sub-Test Setup for Release 6 HSUPA

Sub-Test	β_c	β_d	B_c/β_d	β_{hs}	B_{ec}	B_{ed}	MPR	AG Index	E-TFCI
1	11/15	15/15	11/15	22/15	209/225	1039/225	0.0	20	75
2	6/15	15/15	6/15	12/15	12/15	94/75	2.0	12	67
3	15/15	9/15	15/9	30/15	30/15	47/15	1.0	15	92
4	2/15	15/15	2/15	4/15	2/15	56/15	2.0	17	71
5	15/15	15/15	15/15	30/15	24/15	134/15	0.0	21	81
Δ_{ack}, Δ_{nack} and Δ_{cqi} = 8									

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Tablet Mode

Band	Mode	Bandwidth (MHz)	Channel	Frequency (MHz)	Data Rate	Antenna	Avg Power (dBm)	Tune-up Pwr (dBm)
2450 MHz	802.11b	20	1	2412	1 Mbps	Chain A	17.95	18.00
			6	2437			18.00	18.00
			11	2462			18.00	18.00
			1	2412		Chain B	15.94	16.00
			6	2437			16.00	16.00
			11	2462			16.00	16.00
	802.11g	20	1	2412	6 Mbps	Chain A	17.97	18.00
			6	2437			17.94	18.00
			11	2462			17.94	18.00
			1	2412		Chain B	15.89	16.00
			6	2437			15.86	16.00
			11	2462			15.92	16.00
	802.11n	20	1	2412	HT0	Chain A	17.95	18.00
			6	2437			17.87	18.00
			11	2462			17.90	18.00
			1	2412		Chain B	15.91	16.00
			6	2437			15.88	16.00
			11	2462			15.89	16.00
	802.11n	40	3	2422	HT0	Chain A	15.95	16.00
			6	2437			15.87	16.00
			10	2457			15.90	16.00
			3	2422		Chain B	15.91	16.00
			6	2437			15.88	16.00
			10	2457			15.89	16.00
5.15-5.25 GHz	802.11a	20	38	5190	6 Mbps	Chain A	13.92	14.00
			40	5200			14.00	14.00
			44	5220			14.00	14.00
			48	5240			13.97	14.00
			36	5180		Chain B	14.99	15.00
			40	5200			15.00	15.00
			44	5220			15.00	15.00
			48	5240			14.94	15.00
	802.11n	20	38	5190	HT0	Chain A	13.91	14.00
			40	5200			13.88	14.00
			44	5220			13.89	14.00
			46	5230			13.85	14.00
			36	5180		Chain B	14.84	15.00
			40	5200			14.88	15.00
			44	5220			14.89	15.00
			46	5230			14.83	15.00
	802.11n	40	38	5190	HT0	Chain A	13.42	13.50
			46	5230			13.44	13.50
			38	5190	HT0	Chain B	14.48	14.50
			46	5230			14.45	14.50
	802.11ac	80	42	5210	VHT0	Chain A	13.42	13.50
						Chain B	14.44	14.50
		160	50	5250		Chain A	13.36	13.50
			50	5250		Chain B	14.39	14.50
5.25-5.35 GHz	802.11a	20	52	5260	6 Mbps	Chain A	13.95	14.00
			56	5280			13.00	14.00
			60	5300			13.00	14.00
			63	5315			13.97	14.00
			52	5260		Chain B	14.94	15.00
			56	5280			14.00	15.00
			60	5300			14.00	15.00
			63	5315			14.98	15.00
	802.11n	20	54	5270	HT0	Chain A	13.92	14.00
			56	5280			13.89	14.00
			60	5300			13.88	14.00
			62	5310			13.90	14.00
			52	5260		Chain B	14.91	15.00
			56	5280			14.83	15.00
			60	5300			14.96	15.00
			62	5310			14.89	15.00
	802.11n	40	54	5270	HT0	Chain A	13.42	13.50
			62	5310			13.34	13.50
			54	5270	HT0	Chain B	14.39	14.50
			60	5300			14.30	14.50
	802.11ac	80	58	5290	VHT0	Chain A	13.35	13.50
						Chain B	14.41	14.50

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Band	Mode	Bandwidth (MHz)	Channel	Frequency (MHz)	Data Rate	Antenna	Avg Power (dBm)	Tune-up Pwr (dBm)
5600 MHz	802.11a	20	102	5510	6 Mbps	Chain A	13.92	14.00
			104	5520			14.00	14.00
			108	5540			13.95	14.00
			112	5560			13.97	14.00
			116	5580			14.00	14.00
			120	5600			13.91	14.00
			124	5620			14.00	14.00
			128	5640			13.98	14.00
			132	5660			13.94	14.00
			136	5680			14.00	14.00
			138	5690			13.90	14.00
			100	5500		Chain B	14.89	15.00
			104	5520			15.00	15.00
			108	5540			14.92	15.00
			112	5560			14.97	15.00
			116	5580			15.00	15.00
			120	5600			14.93	15.00
			124	5620			15.00	15.00
			128	5640			14.91	15.00
			132	5660			14.88	15.00
			136	5680			15.00	15.00
			138	5690			14.94	15.00
	802.11n	20	102	5510	HT0	Chain A	13.88	14.00
			104	5520			13.83	14.00
			108	5540			13.85	14.00
			112	5560			13.86	14.00
			116	5580			13.84	14.00
			120	5600			13.90	14.00
			124	5620			13.91	14.00
			128	5640			13.94	14.00
			132	5660			13.81	14.00
			136	5680			13.89	14.00
			138	5690			13.88	14.00
			100	5500		Chain B	14.92	15.00
			104	5520			14.90	15.00
			108	5540			14.87	15.00
			112	5560			14.89	15.00
			116	5580			14.83	15.00
			120	5600			14.86	15.00
			124	5620			14.90	15.00
			128	5640			14.94	15.00
			132	5660			14.91	15.00
			136	5680			14.86	15.00
			138	5690			14.89	15.00
	802.11n	40	102	5510	HT0	Chain A	13.45	13.50
			110	5550			13.40	13.50
			118	5580			13.42	13.50
			126	5610			13.37	13.50
			134	5670			13.38	13.50
			102	5510		Chain B	14.44	14.50
			110	5550			14.40	14.50
			118	5580			14.43	14.50
			126	5610			14.38	14.50
			134	5670			14.35	14.50
	802.11ac	80	106	5530	VHT0	Chain A	13.38	13.50
			122	5610			13.42	13.50
			138	5690			13.36	13.50
			106	5530		Chain B	14.38	14.50
			122	5610			14.41	14.50
			138	5690			14.38	14.50
		160	114	5570		Chain A	13.39	13.50
			114	5570		Chain B	14.41	14.50

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Band	Mode	Bandwidth (MHz)	Channel	Frequency (MHz)	Data Rate	Antenna	Avg Power (dBm)	Tune-up Pwr (dBm)
5800 MHz	802.11a	20	149	5745	6 Mbps	Chain A	15.00	15.00
			153	5765			14.92	15.00
			157	5785			15.00	15.00
			161	5805			14.94	15.00
			165	5825			15.00	15.00
			150	5750		Chain B	15.00	15.00
			153	5765			14.93	15.00
			157	5785			15.00	15.00
			161	5805			14.94	15.00
			165	5825			15.00	15.00
	802.11n	20	150	5750	HT0	Chain A	14.88	15.00
			153	5765			14.87	15.00
			157	5785			14.90	15.00
			161	5805			14.92	15.00
			164	5820			14.94	15.00
			150	5750		Chain B	14.95	15.00
			153	5765			14.90	15.00
			157	5785			14.89	15.00
			161	5805			14.85	15.00
			164	5820			14.87	15.00
	802.11n	40	152	5760	HT0	Chain A	14.42	14.50
			159	5795			14.45	14.50
			152	5760		Chain B	14.43	14.50
			159	5795			14.40	14.50
	802.11ac	80	155	5775	VHT0	Chain A	14.42	14.50
						Chain B	14.44	14.50

Band	Mode	Channel	Frequency (MHz)	Data Rate	Antenna	Avg Power (dBm)	Tune-up Pwr (dBm)
2450 MHz	Bluetooth v4.0	0	2402	Basic Rate GFSK	Chain A	11.40	11.50
		19	2441			11.47	11.50
		39	2480			11.42	11.50
		0	2402	EDR π/4 DQPSK		10.42	11.00
		19	2441			10.43	11.00
		39	2480			10.38	11.00
		0	2402	EDR 8-DPSK		10.44	11.00
		19	2441			10.41	11.00
		39	2480			10.43	11.00
		0	2402	Low Energy GFSK		8.99	9.00
		19	2441			8.88	9.00
		39	2480			8.93	9.00

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Notebook Mode

Band	Mode	Bandwidth (MHz)	Channel	Frequency (MHz)	Data Rate	Antenna	Avg Power (dBm)	Tune-up Pwr (dBm)
2450 MHz	802.11b	20	1	2412	1 Mbps	Chain A	20.45	20.50
			6	2437			20.50	20.50
			11	2462			20.40	20.50
			1	2412		Chain B	20.44	20.50
			6	2437			20.50	20.50
			11	2462			20.46	20.50
	802.11g	20	1	2412	6 Mbps	Chain A	19.97	20.00
			6	2437			19.94	20.00
			11	2462			19.94	20.00
			1	2412		Chain B	19.89	20.00
			6	2437			19.86	20.00
			11	2462			19.92	20.00
	802.11n	20	1	2412	HT0	Chain A	19.95	20.00
			6	2437			19.87	20.00
			11	2462			19.90	20.00
			1	2412		Chain B	19.91	20.00
			6	2437			19.88	20.00
			11	2462			19.89	20.00
	802.11n	40	3	2422	HT0	Chain A	17.45	17.50
			6	2437			17.37	17.50
			10	2457			17.40	17.50
			3	2422		Chain B	17.41	17.50
			6	2437			17.38	17.50
			10	2457			17.39	17.50
5.15-5.25 GHz	802.11a	20	38	5190	6 Mbps	Chain A	20.42	20.50
			40	5200			20.50	20.50
			44	5220			20.50	20.50
			48	5240			20.47	20.50
			36	5180		Chain B	20.49	20.50
			40	5200			20.50	20.50
			44	5220			20.50	20.50
			48	5240			20.44	20.50
	802.11n	20	38	5190	HT0	Chain A	20.41	20.50
			40	5200			20.38	20.50
			44	5220			20.39	20.50
			46	5230			20.35	20.50
			36	5180		Chain B	20.34	20.50
			40	5200			20.38	20.50
			44	5220			20.39	20.50
			46	5230			20.33	20.50
	802.11n	40	38	5190	HT0	Chain A	19.92	20.00
			46	5230			19.94	20.00
			38	5190	HT0	Chain B	19.98	20.00
			46	5230			19.95	20.00
	802.11ac	80	42	5210	VHT0	Chain A	18.42	18.50
						Chain B	18.44	18.50
		160	50	5250		Chain A	14.36	14.50
			50	5250		Chain B	14.39	14.50
5.25-5.35 GHz	802.11a	20	52	5260	6 Mbps	Chain A	20.45	20.50
			56	5280			20.50	20.50
			60	5300			20.50	20.50
			63	5315			20.47	20.50
			52	5260		Chain B	20.44	20.50
			56	5280			20.50	20.50
			60	5300			20.50	20.50
			63	5315			20.48	20.50
	802.11n	20	54	5270	HT0	Chain A	20.42	20.50
			56	5280			20.39	20.50
			60	5300			20.38	20.50
			62	5310			20.40	20.50
			52	5260		Chain B	20.41	20.50
			56	5280			20.33	20.50
			60	5300			20.46	20.50
			62	5310			20.39	20.50
	802.11n	40	54	5270	HT0	Chain A	19.82	20.00
			62	5310			19.84	20.00
			54	5270	HT0	Chain B	19.89	20.00
			60	5300			19.80	20.00
	802.11ac	80	58	5290	VHT0	Chain A	18.35	18.50
						Chain B	18.41	18.50

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Band	Mode	Bandwidth (MHz)	Channel	Frequency (MHz)	Data Rate	Antenna	Avg Power (dBm)	Tune-up Pwr (dBm)
5600 MHz	802.11a	20	102	5510	6 Mbps	Chain A	20.42	20.50
			104	5520			20.50	20.50
			108	5540			20.45	20.50
			112	5560			20.47	20.50
			116	5580			20.50	20.50
			120	5600			20.41	20.50
			124	5620			20.50	20.50
			128	5640			20.48	20.50
			132	5660			20.44	20.50
			136	5680			20.50	20.50
			138	5690			20.40	20.50
			100	5500		Chain B	20.39	20.50
			104	5520			20.50	20.50
			108	5540			20.42	20.50
			112	5560			20.47	20.50
			116	5580			20.50	20.50
			120	5600			20.42	20.50
			124	5620			20.50	20.50
			128	5640			20.41	20.50
			132	5660			20.38	20.50
			136	5680			20.50	20.50
			138	5690			20.44	20.50
	802.11n	20	102	5510	HT0	Chain A	20.38	20.50
			104	5520			20.33	20.50
			108	5540			20.35	20.50
			112	5560			20.36	20.50
			116	5580			20.34	20.50
			120	5600			20.40	20.50
			124	5620			20.41	20.50
			128	5640			20.44	20.50
			132	5660			20.31	20.50
			136	5680			20.39	20.50
			138	5690			20.38	20.50
			100	5500		Chain B	20.42	20.50
			104	5520			20.40	20.50
			108	5540			20.37	20.50
			112	5560			20.39	20.50
			116	5580			20.33	20.50
			120	5600			20.36	20.50
			124	5620			20.40	20.50
			128	5640			20.44	20.50
			132	5660			20.41	20.50
			136	5680			20.36	20.50
			138	5690			20.39	20.50
	802.11n	40	102	5510	HT0	Chain A	19.95	20.00
			110	5550			19.90	20.00
			118	5580			19.92	20.00
			126	5610			19.87	20.00
			134	5670			19.88	20.00
			102	5510		Chain B	19.94	20.00
			110	5550			19.90	20.00
			118	5580			19.93	20.00
			126	5610			19.88	20.00
			134	5670			19.85	20.00
	802.11ac	80	106	5530	VHT0	Chain A	16.88	20.00
			122	5610			16.92	20.00
			138	5690			16.86	20.00
			106	5530		Chain B	16.88	20.00
			122	5610			16.91	20.00
			138	5690			16.88	20.00
		160	114	5570		Chain A	14.89	15.00
			114	5570		Chain B	14.91	15.00

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Band	Mode	Bandwidth (MHz)	Channel	Frequency (MHz)	Data Rate	Antenna	Avg Power (dBm)	Tune-up Pwr (dBm)
5800 MHz	802.11a	20	149	5745	6 Mbps	Chain A	20.50	20.50
			153	5765			20.42	20.50
			157	5785			20.50	20.50
			161	5805			20.44	20.50
			165	5825			20.50	20.50
			150	5750		Chain B	20.50	20.50
			153	5765			20.43	20.50
			157	5785			20.50	20.50
			161	5805			20.44	20.50
			165	5825			20.50	20.50
	802.11n	20	150	5750	HT0	Chain A	20.38	20.50
			153	5765			20.37	20.50
			157	5785			20.40	20.50
			161	5805			20.42	20.50
			164	5820			20.44	20.50
			150	5750		Chain B	20.45	20.50
			153	5765			20.40	20.50
			157	5785			20.39	20.50
			161	5805			20.35	20.50
			164	5820			20.37	20.50
	802.11n	40	152	5760	HT0	Chain A	19.92	20.00
			159	5795			19.95	20.00
			152	5760		Chain B	19.93	20.00
			159	5795			19.90	20.00
	802.11ac	80	155	5775	VHT0	Chain A	18.42	18.50
						Chain B	18.44	18.50

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Antenna	Operation Mode	Lid Angle	802.11b [dBm]	Antenna	Operation Mode	Lid Angle	802.11b [dBm]
Main	Lid Close	0º	0.0	Aux	Lid Close	0º	0.0
		5º	0.0			5º	0.0
		10º	0.0			10º	0.0
		15º	0.0			15º	0.0
		20º	0.0			20º	0.0
		25º	0.0			25º	0.0
		30º	0.0			30º	0.0
		31º	0.0			31º	0.0
		32º	0.0			32º	0.0
		33º	0.0			33º	0.0
		34º	19.8			34º	0.0
		35º	19.8			35º	20.1
	Laptop Mode	35°	19.8		Laptop Mode	35°	20.1
		36°	19.8			36°	20.1
		37°	19.8			37°	20.1
		38°	19.8			38°	20.1
		39°	19.8			39°	20.1
		40°	19.8			40°	20.1
		50°	19.8			50°	20.1
		60°	19.8			60°	20.1
		70°	19.8			70°	20.1
		80°	19.8			80°	20.1
		90°	19.8			90°	20.1
		100°	19.8			100°	20.1
		110°	19.8			110°	20.1
		120°	19.8			120°	20.1
		121°	19.8			121°	20.1
		122°	19.8			122°	20.1
		123°	19.8			123°	20.1
		124°	19.8			124°	20.1
		125°	19.8			125°	20.1
		126°	19.8			126°	20.1
		127°	19.8			127°	20.1
		128°	19.8			128°	20.1
		129°	19.8			129°	15.3
		130°	17.2			130°	15.3
		131°	17.2			131°	15.3

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Antenna	Operation Mode	Lid Angle	802.11b [dBm]	Antenna	Operation Mode	Lid Angle	802.11b [dBm]
Main	Tablet Mode	130°	17.2	Aux	Tablet Mode	130°	15.3
		131°	17.2			131°	15.3
		132°	17.2			132°	15.3
		133°	17.2			133°	15.3
		135°	17.2			135°	15.3
		145°	17.2			145°	15.3
		155°	17.2			155°	15.3
		165°	17.2			165°	15.3
		185°	17.2			185°	15.3
		205°	17.2			205°	15.3
		225°	17.2			225°	15.3
		245°	17.2			245°	15.3
		265°	17.2			265°	15.3
		285°	17.2			285°	15.3
		295°	17.2			295°	15.3
		305°	17.2			305°	15.3
		315°	17.2			315°	15.3
		325°	17.2			325°	15.3
		335°	17.2			335°	15.3
		345°	17.2			345°	15.3
		355°	17.2			355°	15.3
		356°	17.2			356°	15.3
		357°	17.2			357°	15.3
		358°	17.2			358°	15.3
		359°	17.2			359°	15.3
		360°	17.2			360°	15.3

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Antenna	Operation Mode	Lid Angle	802.11b [dBm]	Antenna	Operation Mode	Lid Angle	802.11b [dBm]
Main	Book Mode	35°	17.2	Aux	Book Mode	35°	15.3
		36°	17.2			36°	15.3
		37°	17.2			37°	15.3
		38°	17.2			38°	15.3
		39°	17.2			39°	15.3
		40°	17.2			40°	15.3
		50°	17.2			50°	15.3
		60°	17.2			60°	15.3
		70°	17.2			70°	15.3
		80°	17.2			80°	15.3
		90°	17.2			90°	15.3
		100°	17.2			100°	15.3
		110°	17.2			110°	15.3
		120°	17.2			120°	15.3
		130°	17.2			130°	15.3
		140°	17.2			140°	15.3
		150°	17.2			150°	15.3
		160°	17.2			160°	15.3
		170°	17.2			170°	15.3
		180°	17.2			180°	15.3
		190°	17.2			190°	15.3
		200°	17.2			200°	15.3
		210°	17.2			210°	15.3
		220°	17.2			220°	15.3
		230°	17.2			230°	15.3
		240°	17.2			240°	15.3
		250°	17.2			250°	15.3
		260°	17.2			260°	15.3
		270°	17.2			270°	15.3
		280°	17.2			280°	15.3
		290°	17.2			290°	15.3
		300°	17.2			300°	15.3
		310°	17.2			310°	15.3
		320°	17.2			320°	15.3
		330°	17.2			330°	15.3
		335°	17.2			335°	15.3
		340°	17.2			340°	15.3
		341°	17.2			341°	15.3
		342°	17.2			342°	15.3
		343°	17.2			343°	15.3
		344°	17.2			344°	15.3
		345°	17.2			345°	15.3
		346°	17.2			346°	15.3
		347°	17.2			347°	15.3

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Antenna	Operation Mode	Lid Angle	802.11b [dBm]	Antenna	Operation Mode	Lid Angle	802.11b [dBm]
Main	Book Mode	347°	17.2	Aux	Book Mode	347°	15.3
		346°	17.2			346°	15.3
		345°	17.2			345°	15.3
		344°	17.2			344°	15.3
		343°	17.2			343°	15.3
		342°	17.2			342°	15.3
		341°	17.2			341°	15.3
		340°	17.2			340°	15.3
		335°	17.2			335°	15.3
		330°	17.2			330°	15.3
		320°	17.2			320°	15.3
		310°	17.2			310°	15.3
		300°	17.2			300°	15.3
		290°	17.2			290°	15.3
		280°	17.2			280°	15.3
		270°	17.2			270°	15.3
		260°	17.2			260°	15.3
		250°	17.2			250°	15.3
		240°	17.2			240°	15.3
		230°	17.2			230°	15.3
		220°	17.2			220°	15.3
		210°	17.2			210°	15.3
		200°	17.2			200°	15.3
		190°	17.2			190°	15.3
		180°	17.2			180°	15.3
		170°	17.2			170°	15.3
		160°	17.2			160°	15.3
		150°	17.2			150°	15.3
		140°	17.2			140°	15.3
		130°	17.2			130°	15.3
		120°	17.2			120°	15.3
		110°	17.2			110°	15.3
		100°	17.2			100°	15.3
		90°	17.2			90°	15.3
		80°	17.2			80°	15.3
		70°	17.2			70°	15.3
		60°	17.2			60°	15.3
		50°	17.2			50°	15.3
		40°	17.2			40°	15.3
		39°	17.2			39°	15.3
		38°	17.2			38°	15.3
		37°	17.2			37°	15.3
		36°	17.2			36°	15.3
		35°	17.2			35°	15.3

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Antenna	Operation Mode	Lid Angle	802.11b [dBm]	Antenna	Operation Mode	Lid Angle	802.11b [dBm]
Main	Tablet Mode	360°	17.2	Aux	Tablet Mode	360°	15.3
		359°	17.2			359°	15.3
		358°	17.2			358°	15.3
		357°	17.2			357°	15.3
		356°	17.2			356°	15.3
		355°	17.2			355°	15.3
		345°	17.2			345°	15.3
		335°	17.2			335°	15.3
		325°	17.2			325°	15.3
		315°	17.2			315°	15.3
		305°	17.2			305°	15.3
		295°	17.2			295°	15.3
		285°	17.2			285°	15.3
		265°	17.2			265°	15.3
		245°	17.2			245°	15.3
		225°	17.2			225°	15.3
		205°	17.2			205°	15.3
		185°	17.2			185°	15.3
		165°	17.2			165°	15.3
		155°	17.2			155°	15.3
		145°	17.2			145°	15.3
		135°	17.2			135°	15.3
		133°	17.2			133°	15.3
		132°	17.2			132°	15.3
		131°	17.2			131°	15.3
		130°	17.2			130°	15.3

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Antenna	Operation Mode	Lid Angle	802.11b [dBm]	Antenna	Operation Mode	Lid Angle	802.11b [dBm]
Main	Laptop Mode	131°	17.2	Aux	Laptop Mode	131°	15.3
		130°	19.8			130°	15.3
		129°	19.8			129°	20.1
		128°	19.8			128°	20.1
		127°	19.8			127°	20.1
		126°	19.8			126°	20.1
		125°	19.8			125°	20.1
		124°	19.8			124°	20.1
		123°	19.8			123°	20.1
		122°	19.8			122°	20.1
		121°	19.8			121°	20.1
		120°	19.8			120°	20.1
		110°	19.8			110°	20.1
		100°	19.8			100°	20.1
		90°	19.8			90°	20.1
		80°	19.8			80°	20.1
		70°	19.8			70°	20.1
		60°	19.8			60°	20.1
		50°	19.8			50°	20.1
		40°	19.8			40°	20.1
		39°	19.8			39°	20.1
		38°	19.8			38°	20.1
		37°	19.8			37°	20.1
		36°	19.8			36°	20.1
		35°	19.8			35°	0.0
	Lid Close	35°	0.0		Lid Close	35°	0.0
		34°	0.0			34°	0.0
		33°	0.0			33°	0.0
		32°	0.0			32°	0.0
		31°	0.0			31°	0.0
		30°	0.0			30°	0.0
		25°	0.0			25°	0.0
		20°	0.0			20°	0.0
		15°	0.0			15°	0.0
		10°	0.0			10°	0.0
		5°	0.0			5°	0.0
		0°	0.0			0°	0.0

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Figure 11.1 Test Reduction Table – 2.4 GHz Main AWAN

Mode	Side	Required Channel	Tested/Reduced
802.11b	Back	1 – 2412 MHz	Reduced[1]
		6 – 2437 MHz	Tested
		11 – 2462 MHz	Reduced[1]
	Top	1 – 2412 MHz	Reduced[2]
		6 – 2437 MHz	Tested
		11 – 2462 MHz	Tested
	Right	1 – 2412 MHz	Reduced[1]
		6 – 2437 MHz	Tested
		11 – 2462 MHz	Reduced[1]
	Left, Bottom, Laptop	1 – 2412 MHz	Reduced[4]
		6 – 2437 MHz	Reduced[4]
		11 – 2462 MHz	Reduced[4]
802.11g	Back	1 – 2412 MHz	Reduced[3]
		6 – 2437 MHz	Reduced[3]
		11 – 2462 MHz	Reduced[3]
	Top	1 – 2412 MHz	Reduced[3]
		6 – 2437 MHz	Reduced[3]
		11 – 2462 MHz	Reduced[3]
	Right	1 – 2412 MHz	Reduced[3]
		6 – 2437 MHz	Reduced[3]
		11 – 2462 MHz	Reduced[3]
	Left, Bottom, Laptop	1 – 2412 MHz	Reduced[4]
		6 – 2437 MHz	Reduced[4]
		11 – 2462 MHz	Reduced[4]
802.11n	Back	1 – 2412 MHz	Reduced[3]
		6 – 2437 MHz	Reduced[3]
		11 – 2462 MHz	Reduced[3]
	Top	1 – 2412 MHz	Reduced[3]
		6 – 2437 MHz	Reduced[3]
		11 – 2462 MHz	Reduced[3]
	Right	1 – 2412 MHz	Reduced[3]
		6 – 2437 MHz	Reduced[3]
		11 – 2462 MHz	Reduced[3]
	Left, Bottom, Laptop	1 – 2412 MHz	Reduced[4]
		6 – 2437 MHz	Reduced[4]
		11 – 2462 MHz	Reduced[4]

Reduced[1] – When the reported SAR is ≤ 0.4 W/kg, SAR is not required for the remaining test configuration per KDB 248227 D01 v02r02 section 5.1.1 1) page 9.
Reduced[2] – When the reported SAR is >0.8 W/kg, test the next highest configuration until the SAR value is ≤ 1.2 W/kg per KDB 248227 D01 v02r02 section 5.1.1 3) page 9.
Reduced[3] – When the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg, SAR is not required per KDB 248227 D01 v02r02 section 5.2.2 2) page 10.
Reduced[4] – When the antenna is more than 25 mm from a side, the test can be reduced per KDB447498 D01 v06 section 4.3.1 1) page 11. See below for calculations.

Calculations for test exclusion for Laptop, Bottom, and Left side.

Maximum power: 63.1 mW
Laptop distance: 190 mm
Bottom Edge distance: 185 mm
Left Side distance: 240 mm

The closest distance is from the bottom side. Therefore, if the bottom side is excluded the laptop and left would also be excluded.

[{[(3.0)/(√2.462)]*50 mm}]+[{185-50 mm}*10]=1445 mW which is greater than 63.1 mW

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Figure 11.2 Test Reduction Table – 2.4 GHz Aux AWAN

Mode	Side	Required Channel	Tested/Reduced
802.11b	Back	1 – 2412 MHz	Reduced[1]
		6 – 2437 MHz	Tested
		11 – 2462 MHz	Reduced[1]
	Top	1 – 2412 MHz	Reduced[2]
		6 – 2437 MHz	Tested
		11 – 2462 MHz	Tested
	Right. Left, Bottom, Laptop	1 – 2412 MHz	Reduced[4]
		6 – 2437 MHz	Reduced[4]
		11 – 2462 MHz	Reduced[4]
802.11g	Back	1 – 2412 MHz	Reduced[3]
		6 – 2437 MHz	Reduced[3]
		11 – 2462 MHz	Reduced[3]
	Top	1 – 2412 MHz	Reduced[3]
		6 – 2437 MHz	Reduced[3]
		11 – 2462 MHz	Reduced[3]
	Right. Left, Bottom, Laptop	1 – 2412 MHz	Reduced[4]
		6 – 2437 MHz	Reduced[4]
		11 – 2462 MHz	Reduced[4]
802.11n	Back	1 – 2412 MHz	Reduced[3]
		6 – 2437 MHz	Reduced[3]
		11 – 2462 MHz	Reduced[3]
	Top	1 – 2412 MHz	Reduced[3]
		6 – 2437 MHz	Reduced[3]
		11 – 2462 MHz	Reduced[3]
	Right. Left, Bottom, Laptop	1 – 2412 MHz	Reduced[4]
		6 – 2437 MHz	Reduced[4]
		11 – 2462 MHz	Reduced[4]

Reduced[1] – When the reported SAR is ≤ 0.4 W/kg, SAR is not required for the remaining test configuration per KDB 248227 D01 v02r02 section 5.1.1 1) page 9.
Reduced[2] – When the reported SAR is >0.4 W/kg, test the next highest configuration until the SAR value is ≤ 0.8 W/kg per KDB 248227 D01 v02r02 section 5.1.1 2) page 9.
Reduced[3] – When the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg, SAR is not required per KDB 248227 D01 v02r02 section 5.2.2 2) page 10.
Reduced[4] – When the antenna is more than 25 mm from a side, the test can be reduced per KDB447498 D01 v06 section 4.3.1 1) page 11. See below for calculations.

Calculations for test exclusion for Laptop, Bottom, Right and Left side.

Maximum power: 39.8 mW
Laptop distance: 190 mm
Bottom Edge distance: 185 mm
Right Side distance: 210 mm
Left Side distance: 45 mm

The closest distance is from the left side. Therefore, if the left side is excluded the laptop, right and bottom would also be excluded.

(39.8 mW/45mm)*(√2.462)=1.39 which less than or equal to 3.0

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Figure 11.3 Test Reduction Table – 5.1 GHz Main AWAN

Mode	Side	Required Channel	Tested/Reduced
802.11a 5150 MHz	Back	36 – 5180 MHz	Reduced[1]
		40 – 5200 MHz	Reduced[1]
		44 – 5220 MHz	Reduced[1]
		48 – 5240 MHz	Reduced[1]
	Top	36 – 5180 MHz	Reduced[1]
		40 – 5200 MHz	Reduced[1]
		44 – 5220 MHz	Reduced[1]
		48 – 5240 MHz	Reduced[1]
	Right	36 – 5180 MHz	Reduced[1]
		40 – 5200 MHz	Reduced[1]
		44 – 5220 MHz	Reduced[1]
		48 – 5240 MHz	Reduced[1]
	Left, Bottom, Laptop	36 – 5180 MHz	Reduced[2]
		40 – 5200 MHz	Reduced[2]
		44 – 5220 MHz	Reduced[2]
		48 – 5240 MHz	Reduced[2]
802.11n 5150 MHz	Back	36 – 5180 MHz	Reduced[1]
		40 – 5200 MHz	Reduced[1]
		44 – 5220 MHz	Reduced[1]
		48 – 5240 MHz	Reduced[1]
	Top	36 – 5180 MHz	Reduced[1]
		40 – 5200 MHz	Reduced[1]
		44 – 5220 MHz	Reduced[1]
		48 – 5240 MHz	Reduced[1]
	Right	36 – 5180 MHz	Reduced[1]
		40 – 5200 MHz	Reduced[1]
		44 – 5220 MHz	Reduced[1]
		48 – 5240 MHz	Reduced[1]
	Left, Bottom, Laptop	36 – 5180 MHz	Reduced[2]
		40 – 5200 MHz	Reduced[2]
		44 – 5220 MHz	Reduced[2]
		48 – 5240 MHz	Reduced[2]
802.11ac 5210 MHz	Back	42 – 5210 MHz	Reduced[1]
	Top	42 – 5210 MHz	Reduced[1]
	Right	42 – 5210 MHz	Reduced[1]
	Left, Bottom, Laptop	42 – 5210 MHz	Reduced[2]

Reduced[1] – When the adjusted SAR is ≤ 1.2 W/kg for UNII-2A, SAR is not required for the UNII-1 band with lower or equal maximum output power in that test configuration per KDB 248227 D01 v02 section 5.3.1 2) page 11.

Reduced[2] – When the antenna is more than 25 mm from a side, the test can be reduced per KDB447498 D01 v06 section 4.3.1 1) page 11. See below for calculations.

Calculations for test exclusion for Laptop, Bottom, and Left side.

Maximum power: 25.1 mW
Laptop distance: 190 mm
Bottom Edge distance: 185 mm
Left Side distance: 240 mm

The closest distance is from the bottom side. Therefore, if the bottom side is excluded the laptop and left would also be excluded.

[{[(3.0)/(√5.24)]*50 mm}]+[{185-50 mm}*10]=1415 mW which is greater than 25.1 mW

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Figure 11.4 Test Reduction Table – 5.1 GHz Aux AWAN

Mode	Side	Required Channel	Tested/Reduced
802.11a 5150 MHz	Back	36 – 5180 MHz	Reduced[1]
		40 – 5200 MHz	Reduced[1]
		44 – 5220 MHz	Reduced[1]
		48 – 5240 MHz	Reduced[1]
	Top	36 – 5180 MHz	Reduced[1]
		40 – 5200 MHz	Reduced[1]
		44 – 5220 MHz	Reduced[1]
		48 – 5240 MHz	Reduced[1]
	Right, Left, Bottom, Laptop	36 – 5180 MHz	Reduced[2]
		40 – 5200 MHz	Reduced[2]
		44 – 5220 MHz	Reduced[2]
		48 – 5240 MHz	Reduced[2]
802.11n 5150 MHz	Back	36 – 5180 MHz	Reduced[1]
		40 – 5200 MHz	Reduced[1]
		44 – 5220 MHz	Reduced[1]
		48 – 5240 MHz	Reduced[1]
	Top	36 – 5180 MHz	Reduced[1]
		40 – 5200 MHz	Reduced[1]
		44 – 5220 MHz	Reduced[1]
		48 – 5240 MHz	Reduced[1]
	Right, Left, Bottom, Laptop	36 – 5180 MHz	Reduced[2]
		40 – 5200 MHz	Reduced[2]
		44 – 5220 MHz	Reduced[2]
		48 – 5240 MHz	Reduced[2]
802.11ac 5210 MHz	Back	42 – 5210 MHz	Reduced[1]
	Top	42 – 5210 MHz	Reduced[1]
	Right, Left, Bottom, Laptop	42 – 5210 MHz	Reduced[2]

Reduced[1] – When the adjusted SAR is ≤ 1.2 W/kg for UNII-2A, SAR is not required for the UNII-1 band with lower or equal maximum output power in that test configuration per KDB 248227 D01 v02 section 5.3.1 2) page 11.

Reduced[2] – When the antenna is more than 25 mm from a side, the test can be reduced per KDB447498 D01 v06 section 4.3.1 1) page 11. See below for calculations.

Calculations for test exclusion for Laptop, Bottom, Right and Left side.

Maximum power: 31.6 mW
Laptop distance: 190 mm
Bottom Edge distance: 185 mm
Right Side distance: 210 mm
Left Side distance: 45 mm

The closest distance is from the left side. Therefore, if the left side is excluded the laptop, right and bottom would also be excluded.

(31.6 mW/45mm)*(√5.24)=1.61 which less than or equal to 3.0

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Figure 11.5 Test Reduction Table – 5.2 GHz Main AWAN

Mode	Side	Required Channel	Tested/Reduced
802.11a 5250 MHz	Back	52 – 5260 MHz	Reduced[1]
		56 – 5280 MHz	Reduced[1]
		60 – 5300 MHz	Tested
		64 – 5320 MHz	Reduced[1]
	Top	52 – 5260 MHz	Reduced[3]
		56 – 5280 MHz	Tested
		60 – 5300 MHz	Tested
		64 – 5320 MHz	Reduced[3]
	Right	52 – 5260 MHz	Reduced[1]
		56 – 5280 MHz	Reduced[1]
		60 – 5300 MHz	Tested
		64 – 5320 MHz	Reduced[1]
	Left, Bottom, Laptop	52 – 5260 MHz	Reduced[2]
		56 – 5280 MHz	Reduced[2]
		60 – 5300 MHz	Reduced[2]
		64 – 5320 MHz	Reduced[2]
802.11n 5250 MHz	Back	52 – 5260 MHz	Reduced[1]
		56 – 5280 MHz	Reduced[1]
		60 – 5300 MHz	Reduced[1]
		64 – 5320 MHz	Reduced[1]
	Top	52 – 5260 MHz	Reduced[3]
		56 – 5280 MHz	Reduced[3]
		60 – 5300 MHz	Reduced[3]
		64 – 5320 MHz	Reduced[3]
	Right	52 – 5260 MHz	Reduced[1]
		56 – 5280 MHz	Reduced[1]
		60 – 5300 MHz	Reduced[1]
		64 – 5320 MHz	Reduced[1]
	Left, Bottom, Laptop	52 – 5260 MHz	Reduced[2]
		56 – 5280 MHz	Reduced[2]
		60 – 5300 MHz	Reduced[2]
		64 – 5320 MHz	Reduced[2]
802.11ac 5210 MHz	Back	58 – 5290 MHz	Reduced[1]
	Top	58 – 5290 MHz	Reduced[3]
	Right	58 – 5290 MHz	Reduced[1]
	Left, Bottom, Laptop	58 – 5290 MHz	Reduced[2]

Reduced[1] – When the reported SAR is ≤ 0.4 W/kg, SAR is not required for the remaining test configuration per KDB 248227 D01 v02r02 section 5.1.1 1) page 9.
Reduced[2] – When the antenna is more than 25 mm from a side, the test can be reduced per KDB447498 D01 v06 section 4.3.1 1) page 11. See below for calculations.
Reduced[3] – When the reported SAR is >0.8 W/kg, test the next highest configuration until the SAR value is ≤ 1.2 W/kg per KDB 248227 D01 v02r02 section 5.1.1 3) page 9.
Reduced[4] – When the reported SAR is >0.4 W/kg, test the next highest configuration until the SAR value is ≤ 0.8 W/kg per KDB 248227 D01 v02r02 section 5.1.1 2) page 9.

Calculations for test exclusion for Laptop, Bottom, and Left side.

Maximum power: 25.1 mW
Laptop distance: 190 mm
Bottom Edge distance: 185 mm
Left Side distance: 240 mm

The closest distance is from the bottom side. Therefore, if the bottom side is excluded the laptop and left would also be excluded.

[{[(3.0)/(√5.32)]*50 mm}]+[{185-50 mm}*10]=1415 mW which is greater than 25.1 mW

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Figure 11.6 Test Reduction Table – 5.2 GHz Aux AWAN

Mode	Side	Required Channel	Tested/Reduced
802.11a 5250 MHz	Back	52 – 5260 MHz	Reduced[1]
		56 – 5280 MHz	Reduced[1]
		60 – 5300 MHz	Tested
		64 – 5320 MHz	Reduced[1]
	Top	52 – 5260 MHz	Reduced[3]
		56 – 5280 MHz	Tested
		60 – 5300 MHz	Tested
		64 – 5320 MHz	Reduced[3]
	Right, Left, Bottom, Laptop	52 – 5260 MHz	Reduced[2]
		56 – 5280 MHz	Reduced[2]
		60 – 5300 MHz	Reduced[2]
		64 – 5320 MHz	Reduced[2]
802.11n 5250 MHz	Back	52 – 5260 MHz	Reduced[1]
		56 – 5280 MHz	Reduced[1]
		60 – 5300 MHz	Reduced[1]
		64 – 5320 MHz	Reduced[1]
	Top	52 – 5260 MHz	Reduced[3]
		56 – 5280 MHz	Reduced[3]
		60 – 5300 MHz	Reduced[3]
		64 – 5320 MHz	Reduced[3]
	Right, Left, Bottom, Laptop	52 – 5260 MHz	Reduced[2]
		56 – 5280 MHz	Reduced[2]
		60 – 5300 MHz	Reduced[2]
		64 – 5320 MHz	Reduced[2]
802.11ac 5210 MHz	Back	58 – 5290 MHz	Reduced[1]
	Top	58 – 5290 MHz	Reduced[3]
	Right, Left, Bottom, Laptop	58 – 5290 MHz	Reduced[2]

Reduced[1] – When the reported SAR is ≤ 0.4 W/kg, SAR is not required for the remaining test configuration per KDB 248227 D01 v02r02 section 5.1.1 1) page 9.
Reduced[2] – When the antenna is more than 25 mm from a side, the test can be reduced per KDB447498 D01 v06 section 4.3.1 1) page 11. See below for calculations.
Reduced[3] – When the reported SAR is >0.8 W/kg, test the next highest configuration until the SAR value is ≤ 1.2 W/kg per KDB 248227 D01 v02r02 section 5.1.1 3) page 9.
Reduced[4] – When the reported SAR is >0.4 W/kg, test the next highest configuration until the SAR value is ≤ 0.8 W/kg per KDB 248227 D01 v02r02 section 5.1.1 2) page 9.

Calculations for test exclusion for Laptop, Bottom, Right and Left side.

Maximum power: 31.6 mW
Laptop distance: 190 mm
Bottom Edge distance: 185 mm
Right Side distance: 210 mm
Left Side distance: 45 mm

The closest distance is from the left side. Therefore, if the left side is excluded the laptop, right and bottom would also be excluded.

(31.6 mW/45mm)*(√5.32)=1.62 which less than or equal to 3.0

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Figure 11.7 Test Reduction Table – 5.6 GHz Main AWAN

Mode	Side	Required Channel	Tested/Reduced
802.11a 5600 MHz	Back	100 – 5500 MHz	Reduced[4]
		104 – 5520 MHz	Reduced[4]
		108 – 5540 MHz	Reduced[4]
		112 – 5560 MHz	Reduced[4]
		116 – 5580 MHz	Reduced[4]
		120 – 5600 MHz	Reduced[4]
		124 – 5620 MHz	Tested
		128 – 5640 MHz	Reduced[4]
		132 – 5660 MHz	Reduced[4]
		136 – 5680 MHz	Reduced[4]
		140 – 5700 MHz	Reduced[4]
	Top	100 – 5500 MHz	Reduced[1]
		104 – 5520 MHz	Reduced[1]
		108 – 5540 MHz	Reduced[1]
		112 – 5560 MHz	Reduced[1]
		116 – 5580 MHz	Tested
		120 – 5600 MHz	Reduced[1]
		124 – 5620 MHz	Tested
		128 – 5640 MHz	Reduced[1]
		132 – 5660 MHz	Reduced[1]
		136 – 5680 MHz	Reduced[1]
		140 – 5700 MHz	Reduced[1]
	Right	100 – 5500 MHz	Reduced[4]
		104 – 5520 MHz	Reduced[4]
		108 – 5540 MHz	Reduced[4]
		112 – 5560 MHz	Reduced[4]
		116 – 5580 MHz	Reduced[4]
		120 – 5600 MHz	Reduced[4]
		124 – 5620 MHz	Tested
		128 – 5640 MHz	Reduced[4]
		132 – 5660 MHz	Reduced[4]
		136 – 5680 MHz	Reduced[4]
		140 – 5700 MHz	Reduced[4]
	Left, Bottom, Laptop	100 – 5500 MHz	Reduced[3]
		104 – 5520 MHz	Reduced[3]
		108 – 5540 MHz	Reduced[3]
		112 – 5560 MHz	Reduced[3]
		116 – 5580 MHz	Reduced[3]
		120 – 5600 MHz	Reduced[3]
		124 – 5620 MHz	Reduced[3]
		128 – 5640 MHz	Reduced[3]
		132 – 5660 MHz	Reduced[3]
		136 – 5680 MHz	Reduced[3]
		140 – 5700 MHz	Reduced[3]

Reduced[1] – When the reported SAR is >0.4 W/kg, test the next highest configuration until the SAR value is ≤ 0.8 W/kg per KDB 248227 D01 v02r02 section 5.1.1 2) page 9.
Reduced[2] – When the reported SAR is >0.8 W/kg, test the next highest configuration until the SAR value is ≤ 1.2 W/kg per KDB 248227 D01 v02r02 section 5.1.1 3) page 9.
Reduced[3] – When the antenna is more than 25 mm from a side, the test can be reduced per KDB447498 D01 v06 section 4.3.1 1) page 11. See below for calculations.
Reduced[4] – When the reported SAR is ≤ 0.4 W/kg, SAR is not required for the remaining test configuration per KDB 248227 D01 v02r02 section 5.1.1 1) page 9.

Calculations for test exclusion for Laptop, Bottom, and Left side.

Maximum power: 25.1 mW
Laptop distance: 190 mm
Bottom Edge distance: 185 mm
Left Side distance: 240 mm

The closest distance is from the bottom side. Therefore, if the bottom side is excluded the laptop and left would also be excluded.

[{[(3.0)/(√5.70)]*50 mm}]+[{185-50 mm}*10]=1412 mW which is greater than 25.1 mW

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Figure 11.8 Test Reduction Table – 5.6 GHz Main AWAN

Mode	Side	Required Channel	Tested/Reduced
802.11n 5600 MHz	Back	100 – 5500 MHz	Reduced[4]
		104 – 5520 MHz	Reduced[4]
		108 – 5540 MHz	Reduced[4]
		112 – 5560 MHz	Reduced[4]
		116 – 5580 MHz	Reduced[4]
		120 – 5600 MHz	Reduced[4]
		124 – 5620 MHz	Reduced[4]
		128 – 5640 MHz	Reduced[4]
		132 – 5660 MHz	Reduced[4]
		136 – 5680 MHz	Reduced[4]
		140 – 5700 MHz	Reduced[4]
	Top	100 – 5500 MHz	Reduced[1]
		104 – 5520 MHz	Reduced[1]
		108 – 5540 MHz	Reduced[1]
		112 – 5560 MHz	Reduced[1]
		116 – 5580 MHz	Reduced[1]
		120 – 5600 MHz	Reduced[1]
		124 – 5620 MHz	Reduced[1]
		128 – 5640 MHz	Reduced[1]
		132 – 5660 MHz	Reduced[1]
		136 – 5680 MHz	Reduced[1]
		140 – 5700 MHz	Reduced[1]
	Right	100 – 5500 MHz	Reduced[4]
		104 – 5520 MHz	Reduced[4]
		108 – 5540 MHz	Reduced[4]
		112 – 5560 MHz	Reduced[4]
		116 – 5580 MHz	Reduced[4]
		120 – 5600 MHz	Reduced[4]
		124 – 5620 MHz	Reduced[4]
		128 – 5640 MHz	Reduced[4]
		132 – 5660 MHz	Reduced[4]
		136 – 5680 MHz	Reduced[4]
		140 – 5700 MHz	Reduced[4]
	Left, Bottom, Laptop	100 – 5500 MHz	Reduced[3]
		104 – 5520 MHz	Reduced[3]
		108 – 5540 MHz	Reduced[3]
		112 – 5560 MHz	Reduced[3]
		116 – 5580 MHz	Reduced[3]
		120 – 5600 MHz	Reduced[3]
		124 – 5620 MHz	Reduced[3]
		128 – 5640 MHz	Reduced[3]
		132 – 5660 MHz	Reduced[3]
		136 – 5680 MHz	Reduced[3]
		140 – 5700 MHz	Reduced[3]

Reduced[1] – When the reported SAR is >0.4 W/kg, test the next highest configuration until the SAR value is ≤ 0.8 W/kg per KDB 248227 D01 v02r02 section 5.1.1 2) page 9.
Reduced[2] – When the reported SAR is >0.8 W/kg, test the next highest configuration until the SAR value is ≤ 1.2 W/kg per KDB 248227 D01 v02r02 section 5.1.1 3) page 9.
Reduced[3] – When the antenna is more than 25 mm from a side, the test can be reduced per KDB447498 D01 v06 section 4.3.1 1) page 11. See below for calculations.
Reduced[4] – When the reported SAR is ≤ 0.4 W/kg, SAR is not required for the remaining test configuration per KDB 248227 D01 v02r02 section 5.1.1 1) page 9.

Calculations for test exclusion for Laptop, Bottom, and Left side.

Maximum power: 25.1 mW
Laptop distance: 190 mm
Bottom Edge distance: 185 mm
Left Side distance: 240 mm

The closest distance is from the bottom side. Therefore, if the bottom side is excluded the laptop and left would also be excluded.

[{[(3.0)/(√5.70)]*50 mm}]+[{185-50 mm}*10]=1412 mW which is greater than 25.1 mW

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Figure 11.9 Test Reduction Table – 5.6 GHz Main AWAN

Mode	Side	Required Channel	Tested/Reduced
802.11ac 5600 MHz	Back	106 – 5530 MHz	Reduced[4]
		122 – 5610 MHz	Reduced[4]
		138 – 5690 MHz	Reduced[4]
	Top	106 – 5530 MHz	Reduced[1]
		122 – 5610 MHz	Reduced[1]
		138 – 5690 MHz	Reduced[1]
	Right	106 – 5530 MHz	Reduced[4]
		122 – 5610 MHz	Reduced[4]
		138 – 5690 MHz	Reduced[4]
	Left, Bottom, Laptop	106 – 5530 MHz	Reduced[3]
		122 – 5610 MHz	Reduced[3]
		138 – 5690 MHz	Reduced[3]

Reduced[1] – When the reported SAR is >0.4 W/kg, test the next highest configuration until the SAR value is ≤ 0.8 W/kg per KDB 248227 D01 v02r02 section 5.1.1 2) page 9.
Reduced[2] – When the reported SAR is >0.8 W/kg, test the next highest configuration until the SAR value is ≤ 1.2 W/kg per KDB 248227 D01 v02r02 section 5.1.1 3) page 9.
Reduced[3] – When the antenna is more than 25 mm from a side, the test can be reduced per KDB447498 D01 v06 section 4.3.1 1) page 11. See below for calculations.
Reduced[4] – When the reported SAR is ≤ 0.4 W/kg, SAR is not required for the remaining test configuration per KDB 248227 D01 v02r02 section 5.1.1 1) page 9.

Calculations for test exclusion for Laptop, Bottom, and Left side.

Maximum power: 25.1 mW
Laptop distance: 190 mm
Bottom Edge distance: 185 mm
Left Side distance: 240 mm

The closest distance is from the bottom side. Therefore, if the bottom side is excluded the laptop and left would also be excluded.

[{[(3.0)/(√5.70)]*50 mm}]+[{185-50 mm}*10]=1412 mW which is greater than 25.1 mW

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Figure 11.10 Test Reduction Table – 5.6 GHz Aux AWAN

Mode	Side	Required Channel	Tested/Reduced
802.11a 5600 MHz	Back	100 – 5500 MHz	Reduced[4]
		104 – 5520 MHz	Reduced[4]
		108 – 5540 MHz	Reduced[4]
		112 – 5560 MHz	Reduced[4]
		116 – 5580 MHz	Reduced[4]
		120 – 5600 MHz	Reduced[4]
		124 – 5620 MHz	Tested
		128 – 5640 MHz	Reduced[4]
		132 – 5660 MHz	Reduced[4]
		136 – 5680 MHz	Reduced[4]
		140 – 5700 MHz	Reduced[4]
	Top	100 – 5500 MHz	Reduced[1]
		104 – 5520 MHz	Reduced[1]
		108 – 5540 MHz	Reduced[1]
		112 – 5560 MHz	Reduced[1]
		116 – 5580 MHz	Tested
		120 – 5600 MHz	Reduced[1]
		124 – 5620 MHz	Tested
		128 – 5640 MHz	Reduced[1]
		132 – 5660 MHz	Reduced[1]
		136 – 5680 MHz	Reduced[1]
		140 – 5700 MHz	Reduced[1]
	Right, Left, Bottom, Laptop	100 – 5500 MHz	Reduced[3]
		104 – 5520 MHz	Reduced[3]
		108 – 5540 MHz	Reduced[3]
		112 – 5560 MHz	Reduced[3]
		116 – 5580 MHz	Reduced[3]
		120 – 5600 MHz	Reduced[3]
		124 – 5620 MHz	Reduced[3]
		128 – 5640 MHz	Reduced[3]
		132 – 5660 MHz	Reduced[3]
		136 – 5680 MHz	Reduced[3]
		140 – 5700 MHz	Reduced[3]

Reduced[1] – When the reported SAR is >0.4 W/kg, test the next highest configuration until the SAR value is ≤ 0.8 W/kg per KDB 248227 D01 v02r02 section 5.1.1 2) page 9.
Reduced[2] – When the reported SAR is >0.8 W/kg, test the next highest configuration until the SAR value is ≤ 1.2 W/kg per KDB 248227 D01 v02r02 section 5.1.1 3) page 9.
Reduced[3] – When the antenna is more than 25 mm from a side, the test can be reduced per KDB447498 D01 v06 section 4.3.1 1) page 11. See below for calculations.
Reduced[4] – When the reported SAR is ≤ 0.4 W/kg, SAR is not required for the remaining test configuration per KDB 248227 D01 v02r02 section 5.1.1 1) page 9.

Calculations for test exclusion for Laptop, Bottom, Right and Left side.

Maximum power: 31.6 mW
Laptop distance: 190 mm
Bottom Edge distance: 185 mm
Right Side distance: 210 mm
Left Side distance: 45 mm

The closest distance is from the left side. Therefore, if the left side is excluded the laptop, right and bottom would also be excluded.

(31.6 mW/45mm)*(√5.70)=1.68 which less than or equal to 3.0

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Figure 11.11 Test Reduction Table – 5.6 GHz Aux AWAN

Mode	Side	Required Channel	Tested/Reduced
802.11n 5600 MHz	Back	100 – 5500 MHz	Reduced[4]
		104 – 5520 MHz	Reduced[4]
		108 – 5540 MHz	Reduced[4]
		112 – 5560 MHz	Reduced[4]
		116 – 5580 MHz	Reduced[4]
		120 – 5600 MHz	Reduced[4]
		124 – 5620 MHz	Reduced[4]
		128 – 5640 MHz	Reduced[4]
		132 – 5660 MHz	Reduced[4]
		136 – 5680 MHz	Reduced[4]
		140 – 5700 MHz	Reduced[4]
	Top	100 – 5500 MHz	Reduced[1]
		104 – 5520 MHz	Reduced[1]
		108 – 5540 MHz	Reduced[1]
		112 – 5560 MHz	Reduced[1]
		116 – 5580 MHz	Reduced[1]
		120 – 5600 MHz	Reduced[1]
		124 – 5620 MHz	Reduced[1]
		128 – 5640 MHz	Reduced[1]
		132 – 5660 MHz	Reduced[1]
		136 – 5680 MHz	Reduced[1]
		140 – 5700 MHz	Reduced[1]
	Right, Left, Bottom, Laptop	100 – 5500 MHz	Reduced[3]
		104 – 5520 MHz	Reduced[3]
		108 – 5540 MHz	Reduced[3]
		112 – 5560 MHz	Reduced[3]
		116 – 5580 MHz	Reduced[3]
		120 – 5600 MHz	Reduced[3]
		124 – 5620 MHz	Reduced[3]
		128 – 5640 MHz	Reduced[3]
		132 – 5660 MHz	Reduced[3]
		136 – 5680 MHz	Reduced[3]
		140 – 5700 MHz	Reduced[3]

Reduced[1] – When the reported SAR is >0.4 W/kg, test the next highest configuration until the SAR value is ≤ 0.8 W/kg per KDB 248227 D01 v02r02 section 5.1.1 2) page 9.
Reduced[2] – When the reported SAR is >0.8 W/kg, test the next highest configuration until the SAR value is ≤ 1.2 W/kg per KDB 248227 D01 v02r02 section 5.1.1 3) page 9.
Reduced[3] – When the antenna is more than 25 mm from a side, the test can be reduced per KDB447498 D01 v06 section 4.3.1 1) page 11. See below for calculations.
Reduced[4] – When the reported SAR is ≤ 0.4 W/kg, SAR is not required for the remaining test configuration per KDB 248227 D01 v02r02 section 5.1.1 1) page 9.

Calculations for test exclusion for Laptop, Bottom, Right and Left side.

Maximum power: 31.6 mW
Laptop distance: 190 mm
Bottom Edge distance: 185 mm
Right Side distance: 210 mm
Left Side distance: 45 mm

The closest distance is from the left side. Therefore, if the left side is excluded the laptop, right and bottom would also be excluded.

(31.6 mW/45mm)*(√5.70)=1.68 which less than or equal to 3.0

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Figure 11.12 Test Reduction Table – 5.6 GHz Aux AWAN

Mode	Side	Required Channel	Tested/Reduced
802.11ac 5600 MHz	Back	106 – 5530 MHz	Reduced[4]
		122 – 5610 MHz	Reduced[4]
		138 – 5690 MHz	Reduced[4]
	Top	106 – 5530 MHz	Reduced[1]
		122 – 5610 MHz	Reduced[1]
		138 – 5690 MHz	Reduced[1]
	Right, Left, Bottom, Laptop	106 – 5530 MHz	Reduced[3]
		122 – 5610 MHz	Reduced[3]
		138 – 5690 MHz	Reduced[3]

Reduced[1] – When the reported SAR is >0.4 W/kg, test the next highest configuration until the SAR value is ≤ 0.8 W/kg per KDB 248227 D01 v02r02 section 5.1.1 2) page 9.
Reduced[2] – When the reported SAR is >0.8 W/kg, test the next highest configuration until the SAR value is ≤ 1.2 W/kg per KDB 248227 D01 v02r02 section 5.1.1 3) page 9.
Reduced[3] – When the antenna is more than 25 mm from a side, the test can be reduced per KDB447498 D01 v06 section 4.3.1 1) page 11. See below for calculations.
Reduced[4] – When the reported SAR is ≤ 0.4 W/kg, SAR is not required for the remaining test configuration per KDB 248227 D01 v02r02 section 5.1.1 1) page 9.

Calculations for test exclusion for Laptop, Bottom, Right and Left side.

Maximum power: 31.6 mW
Laptop distance: 190 mm
Bottom Edge distance: 185 mm
Right Side distance: 210 mm
Left Side distance: 45 mm

The closest distance is from the left side. Therefore, if the left side is excluded the laptop, right and bottom would also be excluded.

(31.6 mW/45mm)*(√5.70)=1.68 which less than or equal to 3.0

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Figure 11.13 Test Reduction Table – 5.8 GHz Main AWAN

Mode	Side	Required Channel	Tested/Reduced
802.11a 5800 MHz	Back	149 – 5745 MHz	Reduced[1]
		153 – 5765 MHz	Reduced[1]
		157 – 5785 MHz	Tested
		161 – 5805 MHz	Reduced[1]
		165 – 5825 MHz	Reduced[1]
	Top	149 – 5745 MHz	Reduced[2]
		153 – 5765 MHz	Reduced[2]
		157 – 5785 MHz	Tested
		161 – 5805 MHz	Reduced[2]
		165 – 5825 MHz	Tested
	Right	149 – 5745 MHz	Reduced[1]
		153 – 5765 MHz	Reduced[1]
		157 – 5785 MHz	Tested
		161 – 5805 MHz	Reduced[1]
		165 – 5825 MHz	Reduced[1]
	Left, Bottom, Laptop	149 – 5745 MHz	Reduced[4]
		153 – 5765 MHz	Reduced[4]
		157 – 5785 MHz	Reduced[4]
		161 – 5805 MHz	Reduced[4]
		165 – 5825 MHz	Reduced[4]
802.11n 5800 MHz	Back	149 – 5745 MHz	Reduced[1]
		153 – 5765 MHz	Reduced[1]
		157 – 5785 MHz	Reduced[1]
		161 – 5805 MHz	Reduced[1]
		165 – 5825 MHz	Reduced[1]
	Top	149 – 5745 MHz	Reduced[2]
		153 – 5765 MHz	Reduced[2]
		157 – 5785 MHz	Reduced[2]
		161 – 5805 MHz	Reduced[2]
		165 – 5825 MHz	Reduced[2]
	Right	149 – 5745 MHz	Reduced[1]
		153 – 5765 MHz	Reduced[1]
		157 – 5785 MHz	Reduced[1]
		161 – 5805 MHz	Reduced[1]
		165 – 5825 MHz	Reduced[1]
	Left, Bottom, Laptop	149 – 5745 MHz	Reduced[4]
		153 – 5765 MHz	Reduced[4]
		157 – 5785 MHz	Reduced[4]
		161 – 5805 MHz	Reduced[4]
		165 – 5825 MHz	Reduced[4]
802.11ac 5800 MHz	Back	155 – 5775 MHz	Reduced[1]
	Top	155 – 5775 MHz	Reduced[2]
	Right	155 – 5775 MHz	Reduced[1]
	Left, Bottom, Laptop	155 – 5775 MHz	Reduced[4]

Reduced[1] – When the reported SAR is ≤ 0.4 W/kg, SAR is not required for the remaining test configuration per KDB 248227 D01 v02r02 section 5.1.1 1) page 9.
Reduced[2] – When the reported SAR is > 0.4 W/kg, test next highest output power channel until SAR ≤ 0.8 W/kg then all remaining test configurations are not required per KDB 248227 D01 v02r02 section 5.1.1 2) page 9.
Reduced[3] – When the reported SAR is >0.8 W/kg, test the next highest configuration until the SAR value is ≤ 1.2 W/kg per KDB 248227 D01 v02r02 section 5.1.1 3) page 9.
Reduced[4] – When the antenna is more than 25 mm from a side, the test can be reduced per KDB447498 D01 v06 section 4.3.1 1) page 11. See below for calculations.

Calculations for test exclusion for Laptop, Bottom, and Left side.

Maximum power: 31.6 mW
Laptop distance: 190 mm
Bottom Edge distance: 185 mm
Left Side distance: 240 mm

The closest distance is from the bottom side. Therefore, if the bottom side is excluded the laptop and left would also be excluded.

[{[(3.0)/(√5.825)]*50 mm}]+[{185-50 mm}*10]=1412 mW which is greater than 31.6 mW

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Figure 11.14 Test Reduction Table – 5.8 GHz Aux AWAN

Mode	Side	Required Channel	Tested/Reduced
802.11a 5800 MHz	Back	149 – 5745 MHz	Reduced[1]
		153 – 5765 MHz	Reduced[1]
		157 – 5785 MHz	Tested
		161 – 5805 MHz	Reduced[1]
		165 – 5825 MHz	Reduced[1]
	Top	149 – 5745 MHz	Reduced[2]
		153 – 5765 MHz	Reduced[2]
		157 – 5785 MHz	Tested
		161 – 5805 MHz	Reduced[2]
		165 – 5825 MHz	Tested
	Right, Left, Bottom, Laptop	149 – 5745 MHz	Reduced[4]
		153 – 5765 MHz	Reduced[4]
		157 – 5785 MHz	Reduced[4]
		161 – 5805 MHz	Reduced[4]
		165 – 5825 MHz	Reduced[4]
802.11n 5800 MHz	Back	149 – 5745 MHz	Reduced[1]
		153 – 5765 MHz	Reduced[1]
		157 – 5785 MHz	Reduced[1]
		161 – 5805 MHz	Reduced[1]
		165 – 5825 MHz	Reduced[1]
	Top	149 – 5745 MHz	Reduced[2]
		153 – 5765 MHz	Reduced[2]
		157 – 5785 MHz	Reduced[2]
		161 – 5805 MHz	Reduced[2]
		165 – 5825 MHz	Reduced[2]
	Right, Left, Bottom, Laptop	149 – 5745 MHz	Reduced[4]
		153 – 5765 MHz	Reduced[4]
		157 – 5785 MHz	Reduced[4]
		161 – 5805 MHz	Reduced[4]
		165 – 5825 MHz	Reduced[4]
802.11ac 5800 MHz	Back	155 – 5775 MHz	Reduced[1]
	Top	155 – 5775 MHz	Reduced[2]
	Right, Left, Bottom, Laptop	155 – 5775 MHz	Reduced[4]

Reduced[1] – When the reported SAR is ≤ 0.4 W/kg, SAR is not required for the remaining test configuration per KDB 248227 D01 v02r02 section 5.1.1 1) page 9.
Reduced[2] – When the reported SAR is > 0.4 W/kg, test next highest output power channel until SAR ≤ 0.8 W/kg then all remaining test configurations are not required per KDB 248227 D01 v02r02 section 5.1.1 2) page 9.
Reduced[3] – When the reported SAR is >0.8 W/kg, test the next highest configuration until the SAR value is ≤ 1.2 W/kg per KDB 248227 D01 v02r02 section 5.1.1 3) page 9.
Reduced[4] – When the antenna is more than 25 mm from a side, the test can be reduced per KDB447498 D01 v06 section 4.3.1 1) page 11. See below for calculations.

Calculations for test exclusion for Laptop, Bottom, Right and Left side.

Maximum power: 31.6 mW
Laptop distance: 190 mm
Bottom Edge distance: 185 mm
Right Side distance: 210 mm
Left Side distance: 45 mm

The closest distance is from the left side. Therefore, if the left side is excluded the laptop, right and bottom would also be excluded.

(31.6 mW/45mm)*(√5.825)=1.69 which less than or equal to 3.0

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Figure 11.15 Test Reduction Table – 3G

Band/ Frequency (MHz)	Technology	Side	Required Channel	Tested/ Reduced
Band 5 824-849 MHz	WCDMA	Back	4132	Tested
			4183	Tested
			4233	Tested
		Top	4132	Reduced[1]
			4183	Tested
			4233	Reduced[1]
		Left	4132	Reduced[1]
			4183	Tested
			4233	Reduced[1]
		Laptop	4132	Tested
			4183	Tested
			4233	Tested
		Remaining Sides		Reduced[2]
Band 4 1710-1755 MHz		Back	1312	Tested
			1413	Tested
			1513	Tested
		Top	1312	Reduced[1]
			1413	Tested
			1513	Reduced[1]
		Left	1312	Reduced[1]
			1413	Tested
			1513	Reduced[1]
		Laptop	1312	Tested
			1413	Tested
			1513	Tested
		Remaining Sides		Reduced[2]
Band 2 1850-1910 MHz		Back	9262	Tested
			9400	Tested
			9538	Tested
		Top	9262	Reduced[1]
			9400	Tested
			9538	Reduced[1]
		Left	9262	Reduced[1]
			9400	Tested
			9538	Reduced[1]
		Laptop	9262	Tested
			9400	Tested
			9538	Tested
		Remaining Sides		Reduced[2]

Reduced[1] – When the mid channel is 3 dB below the limit, the remaining channels are not required per KDB 447498 D01 v06 section 4.3.3 page 14.

Reduced[2] – When the antenna is more than 25 mm from a side, the test can be reduced per KDB447498 D01 v06 section 4.3.1 1) page 11. See below for calculations.

Maximum power: 281.8 mW
Closest Distance to Right: 290 mm
Closest Distance to Bottom: 130 mm

[{[(3.0)/(√0.849)]*50 mm}]+[{130-50 mm}*10]=962 mW which is greater than 281.8 mW
[{[(3.0)/(√1.755)]*50 mm}]+[{130-50 mm}*10]=913 mW which is greater than 281.8 mW
[{[(3.0)/(√1.910)]*50 mm}]+[{130-50 mm}*10]=908 mW which is greater than 281.8 mW

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11.5 SAR Measurement Conditions for LTE Bands

11.5.1 LTE Functionality

The follow table identifies all the channel bandwidths in each frequency band supported by this device.

LTE Operating Band	Uplink (transmit) Low - high	Downlink (Receive) Low - high	Duplex mode (FDD/TDD)
4 & 66	1710-1780	2110-2200	FDD
5 & 26	814-849	859-894	FDD
13	777-787	746-756	FDD
14	788-798	758-768	FDD
12 & 17	699-716	729-746	FDD
2 & 25	1850-1915	1930-1995	FDD
30	2305-2315	2350-2360	FDD
7	2500-2570	2620-2690	FDD
38 & 41	2496-2690	2496-2690	TDD

11.5.2 Test Conditions

All SAR measurements for LTE were performed using the Anritsu MT8820C. A closed loop power control setting allowed the UE to transmit at the maximum output power during the SAR measurements. The Figure 11.1 table indicates all the test reduction utilized for this report.

MPR was enabled for this device. A-MPR was disabled for all SAR test measurements.

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Notebook Mode

Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
4	QPSK	1.4 MHz	6	0	19957	1710.7	18.5
					20175	1732.5	18.4
					20393	1754.3	18.1
			3	1	19957	1710.7	18.6
					20175	1732.5	18.4
					20393	1754.3	18.6
			1	0	19957	1710.7	19.3
					20175	1732.5	19.6
					20393	1754.3	19.0
			1	5	19957	1710.7	19.7
					20175	1732.5	19.3
					20393	1754.3	19.2
		3 MHz	15	0	19965	1711.5	18.6
					20175	1732.5	18.1
					20385	1753.5	18.4
			8	3	19965	1711.5	18.2
					20175	1732.5	18.0
					20385	1753.5	18.2
			1	0	19965	1711.5	19.5
					20175	1732.5	19.0
					20385	1753.5	19.6
			1	14	19965	1711.5	19.3
					20175	1732.5	19.4
					20385	1753.5	19.3
		5 MHz	25	0	19975	1712.5	18.4
					20175	1732.5	18.4
					20375	1752.5	18.1
			12	6	19975	1712.5	18.4
					20175	1732.5	18.6
					20375	1752.5	18.2
			1	0	19975	1712.5	19.0
					20175	1732.5	19.1
					20375	1752.5	19.4
			1	24	19975	1712.5	19.1
					20175	1732.5	19.0
					20375	1752.5	19.2

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Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
4	QPSK	10 MHz	50	0	20000	1715	18.2
					20175	1732.5	18.6
					20350	1750	18.3
			25	12	20000	1715	18.2
					20175	1732.5	18.2
					20350	1750	18.4
			1	0	20000	1715	19.5
					20175	1732.5	19.0
					20350	1750	19.1
			1	24	20000	1715	19.6
					20175	1732.5	19.4
					20350	1750	19.5
		15 MHz	75	0	20025	1717.5	18.5
					20175	1732.5	18.3
					20325	1747.5	18.1
			36	19	20025	1717.5	18.7
					20175	1732.5	18.6
					20325	1747.5	18.2
			1	0	20025	1717.5	19.6
					20175	1732.5	19.0
					20325	1747.5	19.5
			1	74	20025	1717.5	19.5
					20175	1732.5	19.6
					20325	1747.5	19.3
		20 MHz	100	0	20050	1720	18.3
					20175	1732.5	18.4
					20300	1745	18.3
			50	25	20050	1720	18.1
					20175	1732.5	18.3
					20300	1745	18.6
			1	49	20050	1720	19.7
					20175	1732.5	19.5
					20300	1745	19.5
			1	99	20050	1720	19.7
					20175	1732.5	19.6
					20300	1745	19.2

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Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
4	16QAM	1.4 MHz	6	0	19957	1710.7	17.2
					20175	1732.5	17.1
					20393	1754.3	17.2
			3	1	19957	1710.7	17.7
					20175	1732.5	17.6
					20393	1754.3	17.6
			1	0	19957	1710.7	18.5
					20175	1732.5	18.0
					20393	1754.3	18.4
			1	5	19957	1710.7	18.5
					20175	1732.5	18.1
					20393	1754.3	18.6
		3 MHz	15	0	19965	1711.5	17.3
					20175	1732.5	17.2
					20385	1753.5	17.2
			8	3	19965	1711.5	17.3
					20175	1732.5	17.2
					20385	1753.5	17.4
			1	0	19965	1711.5	18.4
					20175	1732.5	18.4
					20385	1753.5	18.4
			1	14	19965	1711.5	18.7
					20175	1732.5	18.4
					20385	1753.5	18.5
		5 MHz	25	0	19975	1712.5	17.3
					20175	1732.5	17.5
					20375	1752.5	17.3
			12	6	19975	1712.5	17.7
					20175	1732.5	17.5
					20375	1752.5	17.2
			1	0	19975	1712.5	18.5
					20175	1732.5	18.4
					20375	1752.5	18.3
			1	24	19975	1712.5	18.4
					20175	1732.5	18.6
					20375	1752.5	18.3

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Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
4	16QAM	10 MHz	50	0	20000	1715	17.6
					20175	1732.5	17.4
					20350	1750	17.5
			25	12	20000	1715	17.4
					20175	1732.5	17.1
					20350	1750	17.1
			1	0	20000	1715	18.5
					20175	1732.5	18.5
					20350	1750	18.3
			1	24	20000	1715	18.2
					20175	1732.5	18.1
					20350	1750	18.3
		15 MHz	75	0	20025	1717.5	17.7
					20175	1732.5	17.6
					20325	1747.5	17.6
			36	19	20025	1717.5	17.2
					20175	1732.5	17.3
					20325	1747.5	17.2
			1	0	20025	1717.5	18.7
					20175	1732.5	18.5
					20325	1747.5	18.7
			1	74	20025	1717.5	18.1
					20175	1732.5	18.2
					20325	1747.5	18.7
		20 MHz	100	0	20050	1720	17.6
					20175	1732.5	17.1
					20300	1745	17.7
			50	25	20050	1720	17.1
					20175	1732.5	17.3
					20300	1745	17.3
			1	0	20050	1720	18.2
					20175	1732.5	18.5
					20300	1745	18.6
			1	99	20050	1720	18.3
					20175	1732.5	18.5
					20300	1745	18.2

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Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
5	QPSK	1.4 MHz	6	0	20407	824.7	20.4
					20525	836.5	20.0
					20643	848.3	20.3
			3	1	20407	824.7	20.6
					20525	836.5	20.0
					20643	848.3	20.3
			1	0	20407	824.7	21.3
					20525	836.5	21.6
					20643	848.3	21.1
			1	5	20407	824.7	21.1
					20525	836.5	21.1
					20643	848.3	21.1
		3 MHz	15	0	20415	825.5	20.5
					20525	836.5	20.4
					20635	847.5	20.7
			8	3	20415	825.5	20.2
					20525	836.5	20.7
					20635	847.5	20.5
			1	0	20415	825.5	21.5
					20525	836.5	21.5
					20635	847.5	21.7
			1	14	20415	825.5	21.3
					20525	836.5	21.6
					20635	847.5	21.3
		5 MHz	25	0	20425	826.5	20.7
					20525	836.5	20.2
					20625	846.5	20.7
			12	6	20425	826.5	20.3
					20525	836.5	20.3
					20625	846.5	20.0
			1	0	20425	826.5	21.1
					20525	836.5	21.1
					20625	846.5	21.2
			1	24	20425	826.5	21.3
					20525	836.5	21.1
					20625	846.5	21.2

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Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
5	QPSK	10 MHz	50	0	20450	829	20.2
					20525	836.5	20.5
					20600	844	20.4
			25	12	20450	829	20.1
					20525	836.5	20.7
					20600	844	20.7
			1	0	20450	829	21.5
					20525	836.5	21.1
					20600	844	21.5
			1	24	20450	829	21.5
					20525	836.5	21.1
					20600	844	21.6
	16QAM	1.4 MHz	6	0	20407	824.7	19.2
					20525	836.5	19.1
					20643	848.3	19.2
			3	1	20407	824.7	19.7
					20525	836.5	19.2
					20643	848.3	19.5
			1	0	20407	824.7	20.7
					20525	836.5	20.4
					20643	848.3	20.4
			1	5	20407	824.7	20.4
					20525	836.5	20.5
					20643	848.3	20.3
		3 MHz	15	0	20415	825.5	19.4
					20525	836.5	19.0
					20635	847.5	19.4
			8	3	20415	825.5	19.5
					20525	836.5	19.5
					20635	847.5	19.2
			1	0	20415	825.5	20.1
					20525	836.5	20.2
					20635	847.5	20.3
			1	14	20415	825.5	20.2
					20525	836.5	20.3
					20635	847.5	20.3

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Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
5	16QAM	5 MHz	25	0	20425	826.5	19.2
					20525	836.5	19.5
					20625	846.5	19.2
			12	6	20425	826.5	19.2
					20525	836.5	19.4
					20625	846.5	19.5
			1	0	20425	826.5	20.7
					20525	836.5	20.6
					20625	846.5	20.3
			1	24	20425	826.5	20.7
					20525	836.5	20.5
					20625	846.5	20.1
		10 MHz	50	0	20450	829	19.2
					20525	836.5	19.2
					20600	844	19.1
			25	12	20450	829	19.1
					20525	836.5	19.6
					20600	844	19.6
			1	0	20450	829	20.5
					20525	836.5	20.5
					20600	844	20.6
			1	24	20450	829	20.0
					20525	836.5	20.1
					20600	844	20.5

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Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
13	QPSK	5 MHz	25	0	23205	779.5	20.6
					23255	784.5	21.1
			12	6	23205	779.5	20.9
					23255	784.5	20.8
			1	0	23205	779.5	22.0
					23255	784.5	21.6
			1	24	23205	779.5	21.9
					23255	784.5	21.8
		10 MHz	50	0	23230	782.0	20.6
			25	13	23230	782.0	21.0
			1	0	23230	782.0	21.8
			1	49	23230	782.0	21.5
	16QAM	5 MHz	25	0	23205	779.5	19.9
					23255	784.5	19.8
			12	6	23205	779.5	20.0
					23255	784.5	19.7
			1	0	23205	779.5	21.2
					23255	784.5	20.7
			1	24	23205	779.5	21.1
					23255	784.5	20.6
		10 MHz	50	0	23230	782.0	19.5
			25	13	23230	782.0	19.7
			1	0	23230	782.0	21.2
			1	49	23230	782.0	21.0

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Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
14	QPSK	5 MHz	25	0	23305	790.5	20.4
					23355	795.5	20.5
			12	6	23305	790.5	20.4
					23355	795.5	20.2
			1	0	23305	790.5	21.5
					23355	795.5	21.5
			1	24	23305	790.5	21.3
					23355	795.5	21.3
		10 MHz	50	0	23330	793.0	20.5
			25	13	23330	793.0	20.4
			1	0	23330	793.0	21.5
			1	49	23330	793.0	21.2
	16QAM	5 MHz	25	0	23305	790.5	19.1
					23355	795.5	19.6
			12	6	23305	790.5	19.3
					23355	795.5	19.4
			1	0	23305	790.5	20.4
					23355	795.5	20.5
			1	24	23305	790.5	20.5
					23355	795.5	20.1
		10 MHz	50	0	23330	793.0	19.2
			25	13	23330	793.0	19.5
			1	0	23330	793.0	20.0
			1	49	23330	793.0	20.4

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Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
26	QPSK	1.4 MHz	6	0	26697	814.7	21.2
					26865	831.5	21.4
					27033	848.3	21.4
			3	1	26697	814.7	21.6
					26865	831.5	21.1
					27033	848.3	21.3
			1	0	26697	814.7	22.3
					26865	831.5	22.1
					27033	848.3	22.0
			1	5	26697	814.7	22.6
					26865	831.5	22.3
					27033	848.3	22.5
		3 MHz	15	0	26705	815.5	21.5
					26865	831.5	21.5
					27025	847.5	21.3
			8	3	26705	815.5	21.7
					26865	831.5	21.3
					27025	847.5	21.5
			1	0	26705	815.5	22.4
					26865	831.5	22.4
					27025	847.5	22.1
			1	14	26705	815.5	22.2
					26865	831.5	22.6
					27025	847.5	22.1
		5 MHz	25	0	26715	816.5	21.2
					26865	831.5	21.3
					27015	846.5	21.2
			12	6	26715	816.5	21.5
					26865	831.5	21.4
					27015	846.5	21.3
			1	0	26715	816.5	22.6
					26865	831.5	22.1
					27015	846.5	22.5
			1	24	26715	816.5	22.2
					26865	831.5	22.0
					27015	846.5	22.4

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Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
26	QPSK	10 MHz	50	0	26740	819.0	21.4
					26865	831.5	21.6
					26990	844.0	21.1
			25	12	26740	819.0	21.2
					26865	831.5	21.6
					26990	844.0	21.3
			1	0	26740	819.0	22.6
					26865	831.5	22.6
					26990	844.0	22.2
			1	24	26740	819.0	22.6
					26865	831.5	22.3
					26990	844.0	22.5
		15 MHz	75	0	24765	821.5	21.1
					26865	831.5	21.6
					26995	841.5	21.1
			36	19	24765	821.5	21.1
					26865	831.5	21.5
					26995	841.5	21.1
			1	0	24765	821.5	22.5
					26865	831.5	22.4
					26995	841.5	22.0
			1	74	24765	821.5	22.4
					26865	831.5	22.6
					26995	841.5	22.2

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Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
26	16QAM	1.4 MHz	6	0	26697	814.7	20.7
					26865	831.5	20.6
					27033	848.3	20.5
			3	1	26697	814.7	20.2
					26865	831.5	20.0
					27033	848.3	20.2
			1	0	26697	814.7	21.4
					26865	831.5	21.6
					27033	848.3	21.2
			1	5	26697	814.7	21.5
					26865	831.5	21.2
					27033	848.3	21.1
		3 MHz	15	0	26705	815.5	20.3
					26865	831.5	20.7
					27025	847.5	20.2
			8	3	26705	815.5	20.2
					26865	831.5	20.2
					27025	847.5	20.5
			1	0	26705	815.5	21.4
					26865	831.5	21.6
					27025	847.5	21.4
			1	14	26705	815.5	21.0
					26865	831.5	21.5
					27025	847.5	21.3
		5 MHz	25	0	26715	816.5	20.6
					26865	831.5	20.4
					27015	846.5	20.7
			12	6	26715	816.5	20.5
					26865	831.5	20.0
					27015	846.5	20.4
			1	0	26715	816.5	21.2
					26865	831.5	21.3
					27015	846.5	21.5
			1	24	26715	816.5	21.2
					26865	831.5	21.7
					27015	846.5	21.6

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Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
26	16QAM	10 MHz	50	0	26740	819.0	20.6
					26865	831.5	20.3
					26990	844.0	20.1
			25	12	26740	819.0	20.4
					26865	831.5	20.4
					26990	844.0	20.1
			1	0	26740	819.0	21.1
					26865	831.5	21.1
					26990	844.0	21.2
			1	24	26740	819.0	21.1
					26865	831.5	21.0
					26990	844.0	21.3
		15 MHz	75	0	24765	821.5	20.4
					26865	831.5	20.3
					26995	841.5	20.7
			36	19	24765	821.5	20.3
					26865	831.5	20.3
					26995	841.5	20.2
			1	0	24765	821.5	21.1
					26865	831.5	21.4
					26995	841.5	21.7
			1	74	24765	821.5	21.3
					26865	831.5	21.2
					26995	841.5	21.2

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Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
12	QPSK	1.4 MHz	6	0	23017	699.7	21.6
					23095	707.5	21.1
					23173	715.3	21.2
			3	1	23017	699.7	21.0
					23095	707.5	21.7
					23173	715.3	21.4
			1	0	23017	699.7	22.3
					23095	707.5	22.4
					23173	715.3	22.2
			1	5	23017	699.7	22.6
					23095	707.5	22.2
					23173	715.3	22.7
		3 MHz	15	0	23025	700.5	21.6
					23095	707.5	21.4
					23165	714.5	21.2
			8	3	23025	700.5	21.3
					23095	707.5	21.5
					23165	714.5	21.0
			1	0	23025	700.5	22.3
					23095	707.5	22.3
					23165	714.5	22.0
			1	14	23025	700.5	22.1
					23095	707.5	22.4
					23165	714.5	22.0
		5 MHz	25	0	23035	701.5	21.4
					23095	707.5	21.3
					23155	713.5	21.3
			12	6	23035	701.5	21.1
					23095	707.5	21.2
					23155	713.5	21.2
			1	0	23035	701.5	22.5
					23095	707.5	22.4
					23155	713.5	22.7
			1	24	23035	701.5	22.1
					23095	707.5	22.6
					23155	713.5	22.6

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Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
12	QPSK	10 MHz	50	0	23060	704.0	21.6
					23095	707.5	21.7
					23130	711.0	21.0
			25	12	23060	704.0	21.1
					23095	707.5	21.1
					23130	711.0	21.7
			1	0	23060	704.0	22.6
					23095	707.5	22.5
					23130	711.0	22.1
			1	24	23060	704.0	22.4
					23095	707.5	22.3
					23130	711.0	22.2
	16QAM	1.4 MHz	6	0	23017	699.7	20.3
					23095	707.5	20.3
					23173	715.3	20.1
			3	1	23017	699.7	20.3
					23095	707.5	20.3
					23173	715.3	20.1
			1	0	23017	699.7	21.5
					23095	707.5	21.6
					23173	715.3	21.5
			1	5	23017	699.7	21.5
					23095	707.5	21.0
					23173	715.3	21.6
		3 MHz	15	0	23025	700.5	20.6
					23095	707.5	20.1
					23165	714.5	20.4
			8	3	23025	700.5	20.6
					23095	707.5	20.1
					23165	714.5	20.1
			1	0	23025	700.5	21.4
					23095	707.5	21.5
					23165	714.5	21.5
			1	14	23025	700.5	21.3
					23095	707.5	21.3
					23165	714.5	21.5

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Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
12	16QAM	5 MHz	25	0	23035	701.5	20.4
					23095	707.5	20.2
					23155	713.5	20.5
			12	6	23035	701.5	20.6
					23095	707.5	20.2
					23155	713.5	20.3
			1	0	23035	701.5	21.5
					23095	707.5	21.3
					23155	713.5	21.7
			1	24	23035	701.5	21.6
					23095	707.5	21.4
					23155	713.5	21.3
		10 MHz	50	0	23060	704.0	20.5
					23095	707.5	20.2
					23130	711.0	20.1
			25	12	23060	704.0	20.6
					23095	707.5	20.4
					23130	711.0	20.0
			1	0	23060	704.0	21.1
					23095	707.5	21.1
					23130	711.0	21.3
			1	24	23060	704.0	21.0
					23095	707.5	21.2
					23130	711.0	21.5

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Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
7	QPSK	5 MHz	25	0	20775	2502.5	16.4
					21100	2535.0	16.2
					21425	2567.5	16.7
			12	6	20775	2502.5	16.5
					21100	2535.0	16.4
					21425	2567.5	16.5
			1	0	20775	2502.5	17.3
					21100	2535.0	17.6
					21425	2567.5	17.2
			1	24	20775	2502.5	17.5
					21100	2535.0	17.3
					21425	2567.5	17.5

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Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
7	QPSK	10 MHz	50	0	20800	2505.0	16.0
					21100	2535.0	16.3
					21400	2565.0	16.2
			25	12	20800	2505.0	16.7
					21100	2535.0	16.4
					21400	2565.0	16.1
			1	0	20800	2505.0	17.5
					21100	2535.0	17.7
					21400	2565.0	17.6
			1	24	20800	2505.0	17.1
					21100	2535.0	17.3
					21400	2565.0	17.5
		15 MHz	75	0	20825	2507.5	16.6
					21100	2535.0	16.7
					21375	2562.5	16.4
			36	19	20825	2507.5	16.4
					21100	2535.0	16.1
					21375	2562.5	16.4
			1	0	20825	2507.5	17.3
					21100	2535.0	17.6
					21375	2562.5	17.5
			1	74	20825	2507.5	17.7
					21100	2535.0	17.5
					21375	2562.5	17.3
		20 MHz	100	0	20850	2510.0	16.5
					21100	2535.0	16.0
					21350	2560.0	16.2
			50	25	20850	2510.0	16.6
					21100	2535.0	16.2
					21350	2560.0	16.4
			1	0	20850	2510.0	17.5
					21100	2535.0	17.5
					21350	2560.0	17.6
			1	99	20850	2510.0	17.5
					21100	2535.0	17.6
					21350	2560.0	17.6

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Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
7	16QAM	5 MHz	25	0	20775	2502.5	15.1
					21100	2535.0	15.3
					21425	2567.5	15.5
			12	6	20775	2502.5	15.1
					21100	2535.0	15.2
					21425	2567.5	15.7
			1	0	20775	2502.5	16.1
					21100	2535.0	16.3
					21425	2567.5	16.7
			1	24	20775	2502.5	16.4
					21100	2535.0	16.7
					21425	2567.5	16.5

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Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
7	16QAM	10 MHz	50	0	20800	2505.0	15.5
					21100	2535.0	15.6
					21400	2565.0	15.4
			25	12	20800	2505.0	15.7
					21100	2535.0	15.0
					21400	2565.0	15.1
			1	0	20800	2505.0	16.0
					21100	2535.0	16.3
					21400	2565.0	16.7
			1	24	20800	2505.0	16.0
					21100	2535.0	16.1
					21400	2565.0	16.6
		15 MHz	75	0	20825	2507.5	15.3
					21100	2535.0	15.2
					21375	2562.5	15.2
			36	19	20825	2507.5	15.6
					21100	2535.0	15.0
					21375	2562.5	15.3
			1	0	20825	2507.5	16.1
					21100	2535.0	16.2
					21375	2562.5	16.2
			1	74	20825	2507.5	16.3
					21100	2535.0	16.3
					21375	2562.5	16.2
		20 MHz	100	0	20850	2510.0	15.3
					21100	2535.0	15.3
					21350	2560.0	15.3
			50	25	20850	2510.0	15.2
					21100	2535.0	15.2
					21350	2560.0	15.3
			1	0	20850	2510.0	16.4
					21100	2535.0	16.6
					21350	2560.0	16.7
			1	99	20850	2510.0	16.6
					21100	2535.0	16.1
					21350	2560.0	16.2

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Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
41	QPSK	5 MHz	25	0	39675	2498.5	17.0
					40620	2593.0	17.1
					41565	2687.5	17.1
			12	6	39675	2498.5	17.5
					40620	2593.0	17.5
					41565	2687.5	17.3
			1	0	39675	2498.5	18.1
					40620	2593.0	18.1
					41565	2687.5	18.1
			1	24	39675	2498.5	18.0
					40620	2593.0	18.1
					41565	2687.5	18.0

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Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
41	QPSK	10 MHz	50	0	39700	2501.0	17.7
					40620	2593.0	17.3
					41540	2685.0	17.4
			25	12	39700	2501.0	17.1
					40620	2593.0	17.7
					41540	2685.0	17.0
			1	0	39700	2501.0	18.1
					40620	2593.0	18.1
					41540	2685.0	18.3
			1	24	39700	2501.0	18.6
					40620	2593.0	18.5
					41540	2685.0	18.6
		15 MHz	75	0	39725	2503.5	17.3
					40620	2593.0	17.4
					41515	2682.5	17.1
			36	19	39725	2503.5	17.1
					40620	2593.0	17.7
					41515	2682.5	17.3
			1	0	39725	2503.5	18.5
					40620	2593.0	18.6
					41515	2682.5	18.5
			1	74	39725	2503.5	18.3
					40620	2593.0	18.4
					41515	2682.5	18.7
		20 MHz	100	0	39750	2506.0	17.0
					40620	2593.0	17.5
					41490	2680.0	17.6
			50	25	39750	2506.0	17.3
					40620	2593.0	17.0
					41490	2680.0	17.6
			1	0	39750	2506.0	18.0
					40620	2593.0	18.5
					41490	2680.0	18.7
			1	99	39750	2506.0	18.2
					40620	2593.0	18.3
					41490	2680.0	18.6

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Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
41	16QAM	5 MHz	25	0	39675	2498.5	16.2
					40620	2593.0	16.1
					41565	2687.5	16.7
			12	6	39675	2498.5	16.5
					40620	2593.0	16.6
					41565	2687.5	16.6
			1	0	39675	2498.5	17.0
					40620	2593.0	17.1
					41565	2687.5	17.4
			1	24	39675	2498.5	17.3
					40620	2593.0	17.6
					41565	2687.5	17.0

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Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
41	16QAM	10 MHz	50	0	39700	2501.0	16.6
					40620	2593.0	16.5
					41540	2685.0	16.2
			25	12	39700	2501.0	16.2
					40620	2593.0	16.6
					41540	2685.0	16.5
			1	0	39700	2501.0	17.5
					40620	2593.0	17.6
					41540	2685.0	17.3
			1	24	39700	2501.0	17.6
					40620	2593.0	17.2
					41540	2685.0	17.5
		15 MHz	75	0	39725	2503.5	16.6
					40620	2593.0	16.3
					41515	2682.5	16.2
			36	19	39725	2503.5	16.6
					40620	2593.0	16.5
					41515	2682.5	16.2
			1	0	39725	2503.5	17.6
					40620	2593.0	17.7
					41515	2682.5	17.7
			1	74	39725	2503.5	17.6
					40620	2593.0	17.5
					41515	2682.5	17.6
		20 MHz	100	0	39750	2506.0	16.4
					40620	2593.0	16.2
					41490	2680.0	16.3
			50	25	39750	2506.0	16.4
					40620	2593.0	16.4
					41490	2680.0	16.5
			1	0	39750	2506.0	17.3
					40620	2593.0	17.1
					41490	2680.0	17.5
			1	99	39750	2506.0	17.2
					40620	2593.0	17.0
					41490	2680.0	17.3

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Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
2	QPSK	1.4 MHz	6	0	18607	1850.7	16.6
					18900	1880.0	16.7
					19193	1909.3	16.8
			3	1	18607	1850.7	16.8
					18900	1880.0	16.9
					19193	1909.3	16.7
			1	0	18607	1850.7	17.8
					18900	1880.0	17.8
					19193	1909.3	18.0
			1	5	18607	1850.7	18.2
					18900	1880.0	17.5
					19193	1909.3	17.9
		3 MHz	15	0	18615	1851.5	16.6
					18900	1880.0	16.6
					19185	1908.5	16.9
			8	3	18615	1851.5	17.2
					18900	1880.0	16.8
					19185	1908.5	16.7
			1	0	18615	1851.5	17.7
					18900	1880.0	18.0
					19185	1908.5	18.2
			1	14	18615	1851.5	18.1
					18900	1880.0	17.6
					19185	1908.5	17.9
		5 MHz	25	0	18625	1852.5	16.6
					18900	1880.0	17.2
					19175	1907.5	17.0
			12	6	18625	1852.5	16.6
					18900	1880.0	16.9
					19175	1907.5	17.0
			1	0	18625	1852.5	17.6
					18900	1880.0	17.9
					19175	1907.5	17.9
			1	24	18625	1852.5	18.1
					18900	1880.0	17.9
					19175	1907.5	18.1

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Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
2	QPSK	10 MHz	50	0	18650	1855.0	16.5
					18900	1880.0	16.8
					19150	1905.0	16.6
			25	12	18650	1855.0	16.8
					18900	1880.0	16.6
					19150	1905.0	16.8
			1	0	18650	1855.0	17.7
					18900	1880.0	18.1
					19150	1905.0	17.8
			1	24	18650	1855.0	17.7
					18900	1880.0	17.8
					19150	1905.0	17.5
		15 MHz	75	0	18675	1857.5	16.5
					18900	1880.0	16.8
					19125	1902.5	17.0
			36	19	18675	1857.5	16.9
					18900	1880.0	17.0
					19125	1902.5	17.0
			1	0	18675	1857.5	17.6
					18900	1880.0	18.1
					19125	1902.5	18.1
			1	74	18675	1857.5	18.2
					18900	1880.0	17.8
					19125	1902.5	18.2
		20 MHz	100	0	18700	1860.0	16.9
					18900	1880.0	16.6
					19100	1900.0	16.6
			50	25	18700	1860.0	17.2
					18900	1880.0	16.8
					19100	1900.0	16.6
			1	0	18700	1860.0	18.0
					18900	1880.0	18.0
					19100	1900.0	17.5
			1	99	18700	1860.0	18.1
					18900	1880.0	17.9
					19100	1900.0	17.9

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Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
2	16QAM	1.4 MHz	6	0	18607	1850.7	15.9
					18900	1880.0	15.8
					19193	1909.3	16.1
			3	1	18607	1850.7	15.6
					18900	1880.0	16.2
					19193	1909.3	15.6
			1	0	18607	1850.7	17.0
					18900	1880.0	16.7
					19193	1909.3	16.9
			1	5	18607	1850.7	17.0
					18900	1880.0	16.8
					19193	1909.3	16.6
		3 MHz	15	0	18615	1851.5	16.2
					18900	1880.0	15.9
					19185	1908.5	15.9
			8	3	18615	1851.5	16.1
					18900	1880.0	16.0
					19185	1908.5	15.6
			1	0	18615	1851.5	16.5
					18900	1880.0	17.1
					19185	1908.5	16.7
			1	14	18615	1851.5	16.6
					18900	1880.0	16.6
					19185	1908.5	16.8
		5 MHz	25	0	18625	1852.5	15.5
					18900	1880.0	16.1
					19175	1907.5	15.8
			12	6	18625	1852.5	15.9
					18900	1880.0	15.9
					19175	1907.5	16.0
			1	0	18625	1852.5	16.8
					18900	1880.0	17.1
					19175	1907.5	17.0
			1	24	18625	1852.5	16.5
					18900	1880.0	16.9
					19175	1907.5	17.0

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Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
2	16QAM	10 MHz	50	0	18650	1855.0	15.8
					18900	1880.0	15.6
					19150	1905.0	15.5
			25	12	18650	1855.0	16.0
					18900	1880.0	15.8
					19150	1905.0	15.9
			1	0	18650	1855.0	17.1
					18900	1880.0	17.0
					19150	1905.0	16.5
			1	24	18650	1855.0	16.6
					18900	1880.0	16.8
					19150	1905.0	16.8
		15 MHz	75	0	18675	1857.5	15.9
					18900	1880.0	15.9
					19125	1902.5	15.6
			36	19	18675	1857.5	16.2
					18900	1880.0	16.2
					19125	1902.5	16.1
			1	0	18675	1857.5	16.6
					18900	1880.0	17.1
					19125	1902.5	17.1
			1	74	18675	1857.5	16.7
					18900	1880.0	16.9
					19125	1902.5	16.9
		20 MHz	100	0	18700	1860.0	15.8
					18900	1880.0	15.8
					19100	1900.0	15.9
			50	25	18700	1860.0	15.5
					18900	1880.0	16.1
					19100	1900.0	16.1
			1	0	18700	1860.0	17.1
					18900	1880.0	16.9
					19100	1900.0	16.8
			1	99	18700	1860.0	16.7
					18900	1880.0	16.6
					19100	1900.0	16.7

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Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
25	QPSK	1.4 MHz	6	0	26047	1850.7	17.8
					26365	1882.5	18.0
					26683	1914.3	17.6
			3	1	26047	1850.7	18.1
					26365	1882.5	17.7
					26683	1914.3	17.8
			1	0	26047	1850.7	19.0
					26365	1882.5	18.7
					26683	1914.3	18.6
			1	5	26047	1850.7	18.6
					26365	1882.5	18.5
					26683	1914.3	18.6
		3 MHz	15	0	26055	1851.5	17.8
					26365	1882.5	18.1
					26675	1913.5	17.8
			8	3	26055	1851.5	17.6
					26365	1882.5	18.0
					26675	1913.5	18.0
			1	0	26055	1851.5	19.1
					26365	1882.5	18.5
					26675	1913.5	18.6
			1	14	26055	1851.5	18.9
					26365	1882.5	19.1
					26675	1913.5	19.1
		5 MHz	25	0	26065	1852.5	17.7
					26365	1882.5	17.8
					26665	1912.5	17.8
			12	6	26065	1852.5	17.8
					26365	1882.5	18.1
					26665	1912.5	17.9
			1	0	26065	1852.5	18.5
					26365	1882.5	18.7
					26665	1912.5	18.9
			1	24	26065	1852.5	18.5
					26365	1882.5	19.1
					26665	1912.5	18.9

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Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
25	QPSK	10 MHz	50	0	26090	1855.0	18.0
					26365	1882.5	17.8
					26640	1910.0	17.7
			25	12	26090	1855.0	17.8
					26365	1882.5	17.5
					26640	1910.0	17.9
			1	0	26090	1855.0	19.1
					26365	1882.5	19.2
					26640	1910.0	18.9
			1	24	26090	1855.0	19.0
					26365	1882.5	19.0
					26640	1910.0	19.0
		15 MHz	75	0	26115	1857.5	17.8
					26365	1882.5	18.2
					26615	1907.5	17.9
			36	19	26115	1857.5	17.7
					26365	1882.5	18.0
					26615	1907.5	18.2
			1	0	26115	1857.5	18.7
					26365	1882.5	19.1
					26615	1907.5	19.0
			1	74	26115	1857.5	18.8
					26365	1882.5	18.8
					26615	1907.5	18.6
		20 MHz	100	0	26140	1860.0	17.7
					26365	1882.5	17.8
					26590	1905.0	18.1
			50	25	26140	1860.0	17.6
					26365	1882.5	17.7
					26590	1905.0	17.9
			1	0	26140	1860.0	18.7
					26365	1882.5	19.0
					26590	1905.0	19.0
			1	99	26140	1860.0	18.7
					26365	1882.5	18.8
					26590	1905.0	18.6

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Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
25	16QAM	1.4 MHz	6	0	26047	1850.7	16.7
					26365	1882.5	17.1
					26683	1914.3	16.9
			3	1	26047	1850.7	16.5
					26365	1882.5	17.0
					26683	1914.3	16.8
			1	0	26047	1850.7	17.9
					26365	1882.5	18.2
					26683	1914.3	17.7
			1	5	26047	1850.7	17.5
					26365	1882.5	18.0
					26683	1914.3	17.6
		3 MHz	15	0	26055	1851.5	16.9
					26365	1882.5	17.1
					26675	1913.5	16.7
			8	3	26055	1851.5	16.7
					26365	1882.5	17.1
					26675	1913.5	17.1
			1	0	26055	1851.5	17.8
					26365	1882.5	17.8
					26675	1913.5	17.9
			1	14	26055	1851.5	17.8
					26365	1882.5	17.7
					26675	1913.5	17.9
		5 MHz	25	0	26065	1852.5	16.7
					26365	1882.5	16.7
					26665	1912.5	16.6
			12	6	26065	1852.5	17.0
					26365	1882.5	16.6
					26665	1912.5	16.7
			1	0	26065	1852.5	17.7
					26365	1882.5	17.9
					26665	1912.5	17.5
			1	24	26065	1852.5	18.1
					26365	1882.5	17.9
					26665	1912.5	17.5

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Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
25	16QAM	10 MHz	50	0	26090	1855.0	17.0
					26365	1882.5	16.6
					26640	1910.0	16.8
			25	12	26090	1855.0	16.8
					26365	1882.5	16.5
					26640	1910.0	16.8
			1	0	26090	1855.0	18.1
					26365	1882.5	18.1
					26640	1910.0	17.7
			1	24	26090	1855.0	18.1
					26365	1882.5	18.2
					26640	1910.0	17.6
		15 MHz	75	0	26115	1857.5	17.1
					26365	1882.5	17.2
					26615	1907.5	16.7
			36	19	26115	1857.5	16.7
					26365	1882.5	17.1
					26615	1907.5	16.6
			1	0	26115	1857.5	17.7
					26365	1882.5	17.9
					26615	1907.5	18.0
			1	74	26115	1857.5	17.7
					26365	1882.5	17.6
					26615	1907.5	18.2
		20 MHz	100	0	26140	1860.0	16.9
					26365	1882.5	16.9
					26590	1905.0	17.1
			50	25	26140	1860.0	17.1
					26365	1882.5	16.6
					26590	1905.0	16.9
			1	0	26140	1860.0	17.7
					26365	1882.5	17.7
					26590	1905.0	17.9
			1	99	26140	1860.0	17.7
					26365	1882.5	18.0
					26590	1905.0	18.0

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Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
17	QPSK	5 MHz	25	0	23755	706.5	22.6
					23790	710.0	22.5
					23824	713.5	22.3
			12	6	23755	706.5	22.6
					23790	710.0	22.0
					23824	713.5	22.7
			1	0	23755	706.5	23.5
					23790	710.0	23.4
					23824	713.5	23.1
			1	24	23755	706.5	23.2
					23790	710.0	23.3
					23824	713.5	23.6
		10 MHz	50	0	23780	709.0	22.3
					23790	710.0	22.5
					23800	711.0	22.3
			25	12	23780	709.0	22.1
					23790	710.0	22.4
					23800	711.0	22.5
			1	0	23780	709.0	23.6
					23790	710.0	23.0
					23800	711.0	23.6
			1	24	23780	709.0	23.6
					23790	710.0	23.1
					23800	711.0	23.1
	16QAM	5 MHz	25	0	23755	706.5	21.5
					23790	710.0	21.7
					23824	713.5	21.6
			12	6	23755	706.5	21.2
					23790	710.0	21.3
					23824	713.5	21.3
			1	0	23755	706.5	22.2
					23790	710.0	22.0
					23824	713.5	22.0
			1	24	23755	706.5	22.2
					23790	710.0	22.5
					23824	713.5	22.4

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Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
17	16QAM	10 MHz	50	0	23780	709.0	21.0
					23790	710.0	21.2
					23800	711.0	21.1
			25	12	23780	709.0	21.5
					23790	710.0	21.6
					23800	711.0	21.3
			1	0	23780	709.0	22.0
					23790	710.0	22.6
					23800	711.0	22.3
			1	24	23780	709.0	22.6
					23790	710.0	22.1
					23800	711.0	22.4
30	QPSK	5 MHz	25	0	27685	2307.5	19.0
					27710	2310.0	19.1
					27735	2312.5	18.6
			12	6	27685	2307.5	19.1
					27710	2310.0	18.7
					27735	2312.5	18.8
			1	0	27685	2307.5	20.1
					27710	2310.0	20.1
					27735	2312.5	19.8
			1	24	27685	2307.5	19.8
					27710	2310.0	19.6
					27735	2312.5	19.6
		10 MHz	50	0	27710	2310.0	18.7
			25	12	27710	2310.0	18.6
			1	0	27710	2310.0	19.9
			1	24	27710	2310.0	19.0

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Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
30	16QAM	5 MHz	25	0	27685	2307.5	18.1
					27710	2310.0	17.8
					27735	2312.5	18.1
			12	6	27685	2307.5	17.6
					27710	2310.0	18.1
					27735	2312.5	17.7
			1	0	27685	2307.5	18.6
					27710	2310.0	18.7
					27735	2312.5	18.9
			1	24	27685	2307.5	19.0
					27710	2310.0	19.2
					27735	2312.5	18.7
		10 MHz	50	0	27710	2310.0	17.8
			25	12	27710	2310.0	17.8
			1	0	27710	2310.0	19.1
			1	24	27710	2310.0	19.1

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Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
66	QPSK	1.4 MHz	6	0	131979	1710.7	17.1
					132322	1745.0	17.3
					132665	1779.3	17.6
			3	1	131979	1710.7	17.4
					132322	1745.0	17.1
					132665	1779.3	17.5
			1	0	131979	1710.7	18.7
					132322	1745.0	18.1
					132665	1779.3	18.2
			1	5	131979	1710.7	18.4
					132322	1745.0	18.4
					132665	1779.3	18.4
		3 MHz	15	0	131987	1711.5	17.1
					132322	1745.0	17.5
					132657	1778.5	17.1
			8	3	131987	1711.5	17.2
					132322	1745.0	17.1
					132657	1778.5	17.4
			1	0	131987	1711.5	18.5
					132322	1745.0	18.5
					132657	1778.5	18.1
			1	14	131987	1711.5	18.1
					132322	1745.0	18.3
					132657	1778.5	18.6
		5 MHz	25	0	131997	1712.5	17.2
					132322	1745.0	17.3
					132647	1777.5	17.0
			12	6	131997	1712.5	17.0
					132322	1745.0	17.4
					132647	1777.5	17.2
			1	0	131997	1712.5	18.6
					132322	1745.0	18.4
					132647	1777.5	18.4
			1	24	131997	1712.5	18.3
					132322	1745.0	18.4
					132647	1777.5	18.5

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Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
66	QPSK	10 MHz	50	0	132022	1715.0	17.5
					132322	1745.0	17.0
					132622	1775.0	17.7
			25	12	132022	1715.0	17.5
					132322	1745.0	17.6
					132622	1775.0	17.2
			1	0	132022	1715.0	18.3
					132322	1745.0	18.3
					132622	1775.0	18.3
			1	24	132022	1715.0	18.2
					132322	1745.0	18.4
					132622	1775.0	18.6
		15 MHz	75	0	132047	1717.5	17.7
					132322	1745.0	17.3
					132597	1772.5	17.0
			36	19	132047	1717.5	17.1
					132322	1745.0	17.6
					132597	1772.5	17.1
			1	0	132047	1717.5	18.0
					132322	1745.0	18.5
					132597	1772.5	18.6
			1	74	132047	1717.5	18.2
					132322	1745.0	18.1
					132597	1772.5	18.0
		20 MHz	100	0	132072	1720.0	17.3
					132322	1745.0	17.6
					132572	1770.0	17.1
			50	25	132072	1720.0	17.2
					132322	1745.0	17.3
					132572	1770.0	17.6
			1	49	132072	1720.0	18.2
					132322	1745.0	18.2
					132572	1770.0	18.0
			1	99	132072	1720.0	18.3
					132322	1745.0	18.6
					132572	1770.0	18.6

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Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
66	16QAM	1.4 MHz	6	0	131979	1710.7	16.1
					132322	1745.0	16.5
					132665	1779.3	16.3
			3	1	131979	1710.7	16.3
					132322	1745.0	16.4
					132665	1779.3	16.0
			1	0	131979	1710.7	17.5
					132322	1745.0	17.4
					132665	1779.3	17.2
			1	5	131979	1710.7	17.6
					132322	1745.0	17.2
					132665	1779.3	17.7
		3 MHz	15	0	131987	1711.5	16.6
					132322	1745.0	16.0
					132657	1778.5	16.0
			8	3	131987	1711.5	16.6
					132322	1745.0	16.7
					132657	1778.5	16.3
			1	0	131987	1711.5	17.2
					132322	1745.0	17.2
					132657	1778.5	17.4
			1	14	131987	1711.5	17.7
					132322	1745.0	17.4
					132657	1778.5	17.5
		5 MHz	25	0	131997	1712.5	16.1
					132322	1745.0	16.4
					132647	1777.5	16.7
			12	6	131997	1712.5	16.0
					132322	1745.0	16.3
					132647	1777.5	16.3
			1	0	131997	1712.5	17.5
					132322	1745.0	17.7
					132647	1777.5	17.5
			1	24	131997	1712.5	17.5
					132322	1745.0	17.1
					132647	1777.5	17.4

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Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
66	16QAM	10 MHz	50	0	132022	1715.0	16.4
					132322	1745.0	16.3
					132622	1775.0	16.0
			25	12	132022	1715.0	16.0
					132322	1745.0	16.7
					132622	1775.0	16.5
			1	0	132022	1715.0	17.1
					132322	1745.0	17.6
					132622	1775.0	17.4
			1	24	132022	1715.0	17.3
					132322	1745.0	17.5
					132622	1775.0	17.2
		15 MHz	75	0	132047	1717.5	16.2
					132322	1745.0	16.3
					132597	1772.5	16.5
			36	19	132047	1717.5	16.6
					132322	1745.0	16.5
					132597	1772.5	16.6
			1	0	132047	1717.5	17.1
					132322	1745.0	17.4
					132597	1772.5	17.2
			1	74	132047	1717.5	17.1
					132322	1745.0	17.4
					132597	1772.5	17.4
		20 MHz	100	0	132072	1720.0	16.2
					132322	1745.0	16.3
					132572	1770.0	16.6
			50	25	132072	1720.0	16.3
					132322	1745.0	16.3
					132572	1770.0	16.0
			1	0	132072	1720.0	17.4
					132322	1745.0	17.2
					132572	1770.0	17.7
			1	99	132072	1720.0	17.6
					132322	1745.0	17.7
					132572	1770.0	17.5

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Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
38	QPSK	5 MHz	25	0	37775	2572.5	19.3
					38000	2595.0	19.3
					38225	2617.5	19.6
			12	6	37775	2572.5	19.4
					38000	2595.0	19.6
					38225	2617.5	19.3
			1	0	37775	2572.5	20.6
					38000	2595.0	20.1
					38225	2617.5	20.3
			1	24	37775	2572.5	20.3
					38000	2595.0	20.7
					38225	2617.5	20.3

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Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
38	QPSK	10 MHz	50	0	37800	2575.0	19.6
					38000	2595.0	19.5
					38200	2615.0	19.4
			25	12	37800	2575.0	19.1
					38000	2595.0	19.0
					38200	2615.0	19.6
			1	0	37800	2575.0	20.2
					38000	2595.0	20.3
					38200	2615.0	20.2
			1	24	37800	2575.0	20.5
					38000	2595.0	20.2
					38200	2615.0	20.6
		15 MHz	75	0	37825	2577.5	19.3
					38000	2595.0	19.4
					38175	2612.5	19.2
			36	19	37825	2577.5	19.4
					38000	2595.0	19.2
					38175	2612.5	19.4
			1	0	37825	2577.5	20.1
					38000	2595.0	20.1
					38175	2612.5	20.4
			1	74	37825	2577.5	20.1
					38000	2595.0	20.0
					38175	2612.5	20.3
		20 MHz	100	0	37850	2580.0	19.4
					38000	2595.0	19.5
					38150	2610.0	19.6
			50	25	37850	2580.0	19.2
					38000	2595.0	19.5
					38150	2610.0	19.6
			1	0	37850	2580.0	20.1
					38000	2595.0	20.5
					38150	2610.0	20.1
			1	99	37850	2580.0	20.3
					38000	2595.0	20.3
					38150	2610.0	20.2

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Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
38	16QAM	5 MHz	25	0	37775	2572.5	18.5
					38000	2595.0	18.6
					38225	2617.5	18.1
			12	6	37775	2572.5	18.0
					38000	2595.0	18.4
					38225	2617.5	18.5
			1	0	37775	2572.5	19.1
					38000	2595.0	19.6
					38225	2617.5	19.2
			1	24	37775	2572.5	19.6
					38000	2595.0	19.4
					38225	2617.5	19.3

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Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
38	16QAM	10 MHz	50	0	37800	2575.0	18.1
					38000	2595.0	18.2
					38200	2615.0	18.1
			25	12	37800	2575.0	18.7
					38000	2595.0	18.1
					38200	2615.0	18.6
			1	0	37800	2575.0	19.1
					38000	2595.0	19.1
					38200	2615.0	19.7
			1	24	37800	2575.0	19.2
					38000	2595.0	19.5
					38200	2615.0	19.2
		15 MHz	75	0	37825	2577.5	18.5
					38000	2595.0	18.6
					38175	2612.5	18.3
			36	19	37825	2577.5	18.5
					38000	2595.0	18.4
					38175	2612.5	18.1
			1	0	37825	2577.5	19.3
					38000	2595.0	19.6
					38175	2612.5	19.2
			1	74	37825	2577.5	19.2
					38000	2595.0	19.5
					38175	2612.5	19.5
		20 MHz	100	0	37850	2580.0	18.2
					38000	2595.0	18.5
					38150	2610.0	18.5
			50	25	37850	2580.0	18.3
					38000	2595.0	18.7
					38150	2610.0	18.3
			1	0	37850	2580.0	19.1
					38000	2595.0	19.1
					38150	2610.0	19.4
			1	99	37850	2580.0	19.6
					38000	2595.0	19.4
					38150	2610.0	19.2

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Tablet Mode

Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
4	QPSK	1.4 MHz	6	0	19957	1710.7	13.1
					20175	1732.5	13.4
					20393	1754.3	13.0
			3	1	19957	1710.7	13.5
					20175	1732.5	13.3
					20393	1754.3	13.2
			1	0	19957	1710.7	14.4
					20175	1732.5	14.6
					20393	1754.3	14.6
			1	5	19957	1710.7	14.5
					20175	1732.5	14.0
					20393	1754.3	14.1
		3 MHz	15	0	19965	1711.5	13.7
					20175	1732.5	13.1
					20385	1753.5	13.4
			8	3	19965	1711.5	13.3
					20175	1732.5	13.0
					20385	1753.5	13.4
			1	0	19965	1711.5	14.1
					20175	1732.5	14.6
					20385	1753.5	14.7
			1	14	19965	1711.5	14.2
					20175	1732.5	14.0
					20385	1753.5	14.5
		5 MHz	25	0	19975	1712.5	13.6
					20175	1732.5	13.5
					20375	1752.5	13.3
			12	6	19975	1712.5	13.5
					20175	1732.5	13.5
					20375	1752.5	13.2
			1	0	19975	1712.5	14.2
					20175	1732.5	14.0
					20375	1752.5	14.4
			1	24	19975	1712.5	14.4
					20175	1732.5	14.5
					20375	1752.5	14.1

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Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
4	QPSK	10 MHz	50	0	20000	1715	13.3
					20175	1732.5	13.3
					20350	1750	13.1
			25	12	20000	1715	13.4
					20175	1732.5	13.3
					20350	1750	13.2
			1	0	20000	1715	14.3
					20175	1732.5	14.3
					20350	1750	14.3
			1	24	20000	1715	14.3
					20175	1732.5	14.6
					20350	1750	14.5
		15 MHz	75	0	20025	1717.5	13.2
					20175	1732.5	13.3
					20325	1747.5	13.4
			36	19	20025	1717.5	13.1
					20175	1732.5	13.1
					20325	1747.5	13.5
			1	0	20025	1717.5	14.2
					20175	1732.5	14.5
					20325	1747.5	14.0
			1	74	20025	1717.5	14.5
					20175	1732.5	14.2
					20325	1747.5	14.4
		20 MHz	100	0	20050	1720	13.6
					20175	1732.5	13.1
					20300	1745	13.6
			50	25	20050	1720	13.6
					20175	1732.5	13.7
					20300	1745	13.2
			1	49	20050	1720	14.5
					20175	1732.5	14.1
					20300	1745	14.5
			1	99	20050	1720	14.1
					20175	1732.5	14.1
					20300	1745	14.3

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Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
4	16QAM	1.4 MHz	6	0	19957	1710.7	12.5
					20175	1732.5	12.3
					20393	1754.3	12.3
			3	1	19957	1710.7	12.5
					20175	1732.5	12.5
					20393	1754.3	12.7
			1	0	19957	1710.7	13.3
					20175	1732.5	13.3
					20393	1754.3	13.1
			1	5	19957	1710.7	13.6
					20175	1732.5	13.2
					20393	1754.3	13.3
		3 MHz	15	0	19965	1711.5	12.1
					20175	1732.5	12.3
					20385	1753.5	12.3
			8	3	19965	1711.5	12.2
					20175	1732.5	12.0
					20385	1753.5	12.2
			1	0	19965	1711.5	13.5
					20175	1732.5	13.5
					20385	1753.5	13.4
			1	14	19965	1711.5	13.4
					20175	1732.5	13.3
					20385	1753.5	13.0
		5 MHz	25	0	19975	1712.5	12.3
					20175	1732.5	12.0
					20375	1752.5	12.4
			12	6	19975	1712.5	12.5
					20175	1732.5	12.3
					20375	1752.5	12.2
			1	0	19975	1712.5	13.2
					20175	1732.5	13.4
					20375	1752.5	13.2
			1	24	19975	1712.5	13.6
					20175	1732.5	13.6
					20375	1752.5	13.5

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Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
4	16QAM	10 MHz	50	0	20000	1715	12.3
					20175	1732.5	12.4
					20350	1750	12.4
			25	12	20000	1715	12.3
					20175	1732.5	12.5
					20350	1750	12.1
			1	0	20000	1715	13.3
					20175	1732.5	13.3
					20350	1750	13.3
			1	24	20000	1715	13.5
					20175	1732.5	13.2
					20350	1750	13.0
		15 MHz	75	0	20025	1717.5	12.2
					20175	1732.5	12.0
					20325	1747.5	12.2
			36	19	20025	1717.5	12.5
					20175	1732.5	12.2
					20325	1747.5	12.3
			1	0	20025	1717.5	13.4
					20175	1732.5	13.2
					20325	1747.5	13.2
			1	74	20025	1717.5	13.2
					20175	1732.5	13.6
					20325	1747.5	13.1
		20 MHz	100	0	20050	1720	12.1
					20175	1732.5	12.7
					20300	1745	12.5
			50	25	20050	1720	12.6
					20175	1732.5	12.7
					20300	1745	12.3
			1	0	20050	1720	13.7
					20175	1732.5	13.2
					20300	1745	13.4
			1	99	20050	1720	13.2
					20175	1732.5	13.3
					20300	1745	13.1

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Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
13	QPSK	5 MHz	25	0	23205	779.5	17.0
					23255	784.5	17.1
			12	6	23205	779.5	16.7
					23255	784.5	16.8
			1	0	23205	779.5	18.0
					23255	784.5	17.7
			1	24	23205	779.5	18.2
					23255	784.5	18.1
		10 MHz	50	0	23230	782.0	16.8
			25	13	23230	782.0	16.9
			1	0	23230	782.0	17.8
			1	49	23230	782.0	17.7
	16QAM	5 MHz	25	0	23205	779.5	15.8
					23255	784.5	15.5
			12	6	23205	779.5	16.1
					23255	784.5	16.1
			1	0	23205	779.5	16.6
					23255	784.5	16.8
			1	24	23205	779.5	16.7
					23255	784.5	16.9
		10 MHz	50	0	23230	782.0	15.9
			25	13	23230	782.0	15.5
			1	0	23230	782.0	17.0
			1	49	23230	782.0	16.7

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Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
14	QPSK	5 MHz	25	0	23305	790.5	16.7
					23355	795.5	16.7
			12	6	23305	790.5	16.5
					23355	795.5	16.6
			1	0	23305	790.5	18.0
					23355	795.5	17.9
			1	24	23305	790.5	17.6
					23355	795.5	17.7
		10 MHz	50	0	23330	793.0	17.0
			25	13	23330	793.0	16.7
			1	0	23330	793.0	18.0
			1	49	23330	793.0	17.7
	16QAM	5 MHz	25	0	23305	790.5	15.7
					23355	795.5	15.7
			12	6	23305	790.5	15.9
					23355	795.5	16.1
			1	0	23305	790.5	17.1
					23355	795.5	17.1
			1	24	23305	790.5	17.1
					23355	795.5	16.6
		10 MHz	50	0	23330	793.0	16.0
			25	13	23330	793.0	16.0
			1	0	23330	793.0	17.2
			1	49	23330	793.0	16.7

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Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
5	QPSK	1.4 MHz	6	0	20407	824.7	17.6
					20525	836.5	17.1
					20643	848.3	17.4
			3	1	20407	824.7	17.0
					20525	836.5	17.2
					20643	848.3	17.7
			1	0	20407	824.7	18.7
					20525	836.5	18.4
					20643	848.3	18.0
			1	5	20407	824.7	18.7
					20525	836.5	18.0
					20643	848.3	18.5
		3 MHz	15	0	20415	825.5	17.3
					20525	836.5	17.0
					20635	847.5	17.7
			8	3	20415	825.5	17.5
					20525	836.5	17.2
					20635	847.5	17.5
			1	0	20415	825.5	18.4
					20525	836.5	18.1
					20635	847.5	18.3
			1	14	20415	825.5	18.2
					20525	836.5	18.3
					20635	847.5	18.2
		5 MHz	25	0	20425	826.5	17.4
					20525	836.5	17.1
					20625	846.5	17.4
			12	6	20425	826.5	17.3
					20525	836.5	17.2
					20625	846.5	17.1
			1	0	20425	826.5	18.4
					20525	836.5	18.4
					20625	846.5	18.5
			1	24	20425	826.5	18.4
					20525	836.5	18.4
					20625	846.5	18.6

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Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
5	QPSK	10 MHz	50	0	20450	829	17.3
					20525	836.5	17.0
					20600	844	17.3
			25	12	20450	829	17.6
					20525	836.5	17.1
					20600	844	17.4
			1	0	20450	829	18.6
					20525	836.5	18.5
					20600	844	18.2
			1	24	20450	829	18.7
					20525	836.5	18.4
					20600	844	18.1
	16QAM	1.4 MHz	6	0	20407	824.7	16.6
					20525	836.5	16.5
					20643	848.3	16.1
			3	1	20407	824.7	16.2
					20525	836.5	16.1
					20643	848.3	16.6
			1	0	20407	824.7	17.4
					20525	836.5	17.5
					20643	848.3	17.6
			1	5	20407	824.7	17.6
					20525	836.5	17.2
					20643	848.3	17.5
		3 MHz	15	0	20415	825.5	16.6
					20525	836.5	16.1
					20635	847.5	16.5
			8	3	20415	825.5	16.4
					20525	836.5	16.1
					20635	847.5	16.2
			1	0	20415	825.5	17.7
					20525	836.5	17.3
					20635	847.5	17.7
			1	14	20415	825.5	17.5
					20525	836.5	17.1
					20635	847.5	17.6

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Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
5	16QAM	5 MHz	25	0	20425	826.5	16.5
					20525	836.5	16.6
					20625	846.5	16.0
			12	6	20425	826.5	16.1
					20525	836.5	16.3
					20625	846.5	16.5
			1	0	20425	826.5	17.5
					20525	836.5	17.1
					20625	846.5	17.7
			1	24	20425	826.5	17.5
					20525	836.5	17.5
					20625	846.5	17.5
		10 MHz	50	0	20450	829	16.6
					20525	836.5	16.1
					20600	844	16.4
			25	12	20450	829	16.2
					20525	836.5	16.4
					20600	844	16.0
			1	0	20450	829	17.1
					20525	836.5	17.1
					20600	844	17.7
			1	24	20450	829	17.5
					20525	836.5	17.3
					20600	844	17.6

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Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
26	QPSK	1.4 MHz	6	0	26697	814.7	17.2
					26865	831.5	17.5
					27033	848.3	17.3
			3	1	26697	814.7	17.6
					26865	831.5	17.2
					27033	848.3	17.2
			1	0	26697	814.7	18.1
					26865	831.5	18.4
					27033	848.3	18.4
			1	5	26697	814.7	18.0
					26865	831.5	18.1
					27033	848.3	18.0
		3 MHz	15	0	26705	815.5	17.4
					26865	831.5	17.1
					27025	847.5	17.2
			8	3	26705	815.5	17.2
					26865	831.5	17.5
					27025	847.5	17.2
			1	0	26705	815.5	18.5
					26865	831.5	18.5
					27025	847.5	18.6
			1	14	26705	815.5	18.2
					26865	831.5	18.5
					27025	847.5	18.0
		5 MHz	25	0	26715	816.5	17.6
					26865	831.5	17.4
					27015	846.5	17.0
			12	6	26715	816.5	17.5
					26865	831.5	17.0
					27015	846.5	17.6
			1	0	26715	816.5	18.7
					26865	831.5	18.1
					27015	846.5	18.1
			1	24	26715	816.5	18.3
					26865	831.5	18.7
					27015	846.5	18.2

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Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
26	QPSK	10 MHz	50	0	26740	819.0	17.4
					26865	831.5	17.6
					26990	844.0	17.5
			25	12	26740	819.0	17.1
					26865	831.5	17.2
					26990	844.0	17.5
			1	0	26740	819.0	18.5
					26865	831.5	18.5
					26990	844.0	18.1
			1	24	26740	819.0	18.7
					26865	831.5	18.5
					26990	844.0	18.6
		15 MHz	75	0	24765	821.5	17.7
					26865	831.5	17.3
					26995	841.5	17.6
			36	19	24765	821.5	17.2
					26865	831.5	17.2
					26995	841.5	17.2
			1	0	24765	821.5	18.3
					26865	831.5	18.2
					26995	841.5	18.4
			1	74	24765	821.5	18.2
					26865	831.5	18.5
					26995	841.5	18.6

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Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
26	16QAM	1.4 MHz	6	0	26697	814.7	16.5
					26865	831.5	16.2
					27033	848.3	16.7
			3	1	26697	814.7	16.1
					26865	831.5	16.7
					27033	848.3	16.2
			1	0	26697	814.7	17.2
					26865	831.5	17.5
					27033	848.3	17.3
			1	5	26697	814.7	17.2
					26865	831.5	17.2
					27033	848.3	17.6
		3 MHz	15	0	26705	815.5	16.3
					26865	831.5	16.2
					27025	847.5	16.0
			8	3	26705	815.5	16.0
					26865	831.5	16.1
					27025	847.5	16.2
			1	0	26705	815.5	17.1
					26865	831.5	17.1
					27025	847.5	17.1
			1	14	26705	815.5	17.1
					26865	831.5	17.3
					27025	847.5	17.1
		5 MHz	25	0	26715	816.5	16.5
					26865	831.5	16.3
					27015	846.5	16.5
			12	6	26715	816.5	16.1
					26865	831.5	16.4
					27015	846.5	16.1
			1	0	26715	816.5	17.5
					26865	831.5	17.7
					27015	846.5	17.5
			1	24	26715	816.5	17.4
					26865	831.5	17.3
					27015	846.5	17.6

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Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
26	16QAM	10 MHz	50	0	26740	819.0	16.5
					26865	831.5	16.6
					26990	844.0	16.4
			25	12	26740	819.0	16.3
					26865	831.5	16.5
					26990	844.0	16.5
			1	0	26740	819.0	17.6
					26865	831.5	17.3
					26990	844.0	17.4
			1	24	26740	819.0	17.5
					26865	831.5	17.0
					26990	844.0	17.5
		15 MHz	75	0	24765	821.5	16.4
					26865	831.5	16.2
					26995	841.5	16.2
			36	19	24765	821.5	16.3
					26865	831.5	16.7
					26995	841.5	16.7
			1	0	24765	821.5	17.3
					26865	831.5	17.0
					26995	841.5	17.5
			1	74	24765	821.5	17.3
					26865	831.5	17.4
					26995	841.5	17.1

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Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
12	QPSK	1.4 MHz	6	0	23017	699.7	17.7
					23095	707.5	17.8
					23173	715.3	17.7
			3	1	23017	699.7	18.1
					23095	707.5	17.6
					23173	715.3	17.8
			1	0	23017	699.7	18.8
					23095	707.5	19.1
					23173	715.3	19.0
			1	5	23017	699.7	18.9
					23095	707.5	19.1
					23173	715.3	18.6
		3 MHz	15	0	23025	700.5	17.6
					23095	707.5	17.9
					23165	714.5	17.9
			8	3	23025	700.5	18.0
					23095	707.5	17.7
					23165	714.5	17.8
			1	0	23025	700.5	18.6
					23095	707.5	18.8
					23165	714.5	19.1
			1	14	23025	700.5	18.9
					23095	707.5	18.6
					23165	714.5	18.6
		5 MHz	25	0	23035	701.5	17.6
					23095	707.5	18.0
					23155	713.5	18.2
			12	6	23035	701.5	17.7
					23095	707.5	18.0
					23155	713.5	17.8
			1	0	23035	701.5	18.8
					23095	707.5	19.0
					23155	713.5	19.0
			1	24	23035	701.5	18.7
					23095	707.5	18.9
					23155	713.5	19.1

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Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
12	QPSK	10 MHz	50	0	23060	704.0	18.0
					23095	707.5	18.1
					23130	711.0	17.7
			25	12	23060	704.0	17.7
					23095	707.5	17.7
					23130	711.0	17.8
			1	0	23060	704.0	19.0
					23095	707.5	19.0
					23130	711.0	18.6
			1	24	23060	704.0	19.2
					23095	707.5	19.1
					23130	711.0	18.5
	16QAM	1.4 MHz	6	0	23017	699.7	17.0
					23095	707.5	16.8
					23173	715.3	16.6
			3	1	23017	699.7	16.7
					23095	707.5	17.2
					23173	715.3	16.8
			1	0	23017	699.7	17.8
					23095	707.5	17.8
					23173	715.3	17.8
			1	5	23017	699.7	17.5
					23095	707.5	18.0
					23173	715.3	18.0
		3 MHz	15	0	23025	700.5	16.9
					23095	707.5	16.7
					23165	714.5	16.9
			8	3	23025	700.5	16.7
					23095	707.5	16.5
					23165	714.5	16.9
			1	0	23025	700.5	17.9
					23095	707.5	18.1
					23165	714.5	18.1
			1	14	23025	700.5	17.6
					23095	707.5	18.0
					23165	714.5	17.6

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Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
12	16QAM	5 MHz	25	0	23035	701.5	16.9
					23095	707.5	16.8
					23155	713.5	16.7
			12	6	23035	701.5	17.1
					23095	707.5	16.8
					23155	713.5	16.9
			1	0	23035	701.5	17.7
					23095	707.5	17.5
					23155	713.5	17.9
			1	24	23035	701.5	17.7
					23095	707.5	18.0
					23155	713.5	18.1
		10 MHz	50	0	23060	704.0	16.9
					23095	707.5	16.6
					23130	711.0	16.8
			25	12	23060	704.0	16.7
					23095	707.5	16.7
					23130	711.0	16.8
			1	0	23060	704.0	17.8
					23095	707.5	17.7
					23130	711.0	17.9
			1	24	23060	704.0	17.9
					23095	707.5	17.6
					23130	711.0	18.0

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Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
7	QPSK	5 MHz	25	0	20775	2502.5	12.2
					21100	2535.0	12.1
					21425	2567.5	12.3
			12	6	20775	2502.5	12.6
					21100	2535.0	12.7
					21425	2567.5	12.1
			1	0	20775	2502.5	13.0
					21100	2535.0	13.1
					21425	2567.5	13.7
			1	24	20775	2502.5	13.0
					21100	2535.0	13.5
					21425	2567.5	13.2

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Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
7	QPSK	10 MHz	50	0	20800	2505.0	12.2
					21100	2535.0	12.1
					21400	2565.0	12.5
			25	12	20800	2505.0	12.3
					21100	2535.0	12.2
					21400	2565.0	12.3
			1	0	20800	2505.0	13.6
					21100	2535.0	13.6
					21400	2565.0	13.4
			1	24	20800	2505.0	13.5
					21100	2535.0	13.1
					21400	2565.0	13.4
		15 MHz	75	0	20825	2507.5	12.1
					21100	2535.0	12.4
					21375	2562.5	12.2
			36	19	20825	2507.5	12.3
					21100	2535.0	12.2
					21375	2562.5	12.6
			1	0	20825	2507.5	13.2
					21100	2535.0	13.5
					21375	2562.5	13.4
			1	74	20825	2507.5	13.6
					21100	2535.0	13.6
					21375	2562.5	13.1
		20 MHz	100	0	20850	2510.0	12.3
					21100	2535.0	12.5
					21350	2560.0	12.5
			50	25	20850	2510.0	12.1
					21100	2535.0	12.3
					21350	2560.0	12.4
			1	0	20850	2510.0	13.6
					21100	2535.0	13.5
					21350	2560.0	13.7
			1	99	20850	2510.0	13.6
					21100	2535.0	13.7
					21350	2560.0	13.3

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Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
7	16QAM	5 MHz	25	0	20775	2502.5	11.5
					21100	2535.0	11.4
					21425	2567.5	11.2
			12	6	20775	2502.5	11.1
					21100	2535.0	11.5
					21425	2567.5	11.4
			1	0	20775	2502.5	12.4
					21100	2535.0	12.0
					21425	2567.5	12.2
			1	24	20775	2502.5	12.2
					21100	2535.0	12.3
					21425	2567.5	12.3

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