

# RF Exposure Lab

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## CERTIFICATE OF COMPLIANCE SAR EVALUATION

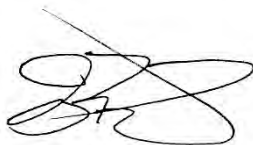
Inseego	Dates of Test:	Nov. 21-29, 2022 & Oct. 3-4, 2023
9645 Scranton Road, Suite 205	Test Report Number:	SAR.20221206
San Diego, CA 92121		Revision A
Lab Designation Number: US1195 (FCC) & US0194 (ISED)		

FCC ID:	PKRISGM3000D
IC Certificate:	3229A-M3000D
HVIN/Model(s):	M3000D
Product Market Number (PMN):	M3000
Test Sample:	Engineering Unit Same as Production
IMEI Number:	990018850002639
Equipment Type:	Portable Router (Hotspot)
Classification:	Portable Transmitter Next to Body
TX Frequency Range:	663 – 698 MHz, 699 – 716 MHz, 824 – 849 MHz, 1695 – 1710 MHz, 1710 – 1780 MHz, 1850 – 1915 MHz, 2496 – 2690 MHz, 3300 – 4200 MHz
Frequency Tolerance:	± 2.5 ppm
Maximum RF Output:	600 MHz (FR1) – 24.0 dBm, 750 MHz (FR1) – 24.0 dBm, 850 MHz (FR1) – 24.0 dBm, 1750 MHz (FR1) – 24.5 dBm, 1900 MHz (FR1) – 24.5 dBm, 2550 MHz (FR1) – 27.5 dBm, 3700 MHz (FR1) – 26.0 dBm Conducted
Signal Modulation:	DFT-s-OFDM/CP-OFDM, Pi2 BPSK
Antenna Type:	Internal
Application Type:	Certification
FCC Rule Parts:	Part 2, 22, 24, 27, 90
KDB Test Methodology:	KDB 447498 D01 v07, KDB 248227 v02r02, KDB 941225 D01 v03r01, D02 v02r01, D05 v02r05 & D06 v02r01
Industry Canada:	RSS-102 Issue 5, Safety Code 6
Max. Stand Alone SAR Value:	0.89 W/kg Reported
Max. Simultaneous Value:	1.45 W/kg Reported
Separation Distance:	10 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 62209-1528:2020 (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



Testing Cert. # 2387.01

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<b>Comment/Revision</b>	<b>Date</b>
Original Release	December 9, 2022
Revision A – Add Bands n48, n70, n77 & n78 (for Canada)	November 6, 2023

**Note: The latest version supersedes all previous versions listed in the above table. The latest version shall be used.**

# 1. Introduction

This measurement report shows compliance of the Inseego Model M3000D FCC ID: PKRISGM3000D with FCC Part 2, 1093, ET Docket 93-62 Rules for mobile and portable devices and IC Certificate: 3229A-M3000D with RSS102 Issue 5 & Safety Code 6. The FCC/ISED have adopted the guidelines for evaluating the environmental effects of radio frequency radiation to protect the public and workers from the potential hazards of RF emissions due to FCC/ISED regulated portable devices. [1], [6]

The test results recorded herein are based on a single type test of Inseego Model M3000D and therefore apply only to the tested sample.

The test procedures and limits, as described in ANSI C95.1 – 1999 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 M3000D Portable Router (Hotspot). The table also shows the tolerance for the power level for each mode.

Band	Technology	Power	3GPP Nominal Power dBm	Calibrated Nominal Power dBm	Tolerance dBm	Lower Tolerance dBm	Upper Tolerance dBm
Band n71 – 600 MHz	FR1	Full	23.0	23.0	+1.0/-1.3	21.7	24.0
Band n12 – 750 MHz	FR1	Full	23.0	23.0	+1.0/-1.3	21.7	24.0
Band n5 – 835 MHz	FR1	Full	23.0	23.0	+1.0/-1.3	21.7	24.0
Band n66 – 1750 MHz	FR1	Full	23.0	23.0	+1.5/-1.3	21.7	24.5
Band n66 – 1750 MHz	FR1	Backoff	18.0	18.0	+1.5/-1.3	16.7	19.5
Band n70 – 1700 MHz	FR1	Full	23.0	23.0	+1.0/-1.3	21.7	24.0
Band n2 & n25 – 1900 MHz	FR1	Full	23.0	23.0	+1.5/-1.3	21.7	24.5
Band n2 & n25 – 1900 MHz	FR1	Backoff	16.0	16.0	+1.5/-1.3	14.7	17.5
Band n7 – 2550 MHz	FR1	Full	23.0	23.0	+1.0/-1.3	21.7	24.0
Band n7 – 2550 MHz	FR1	Backoff	18.5	18.5	+1.0/-1.3	17.2	19.5
Band n41 & n38 – 2550 MHz PC3	FR1	Full	23.0	23.0	+1.5/-1.3	21.7	24.5
Band n41 & n38 – 2550 MHz PC3	FR1	Backoff	18.0	18.0	+1.5/-1.3	16.7	19.5
Band n41 – 2550 MHz PC2	FR1	Full	26.0	26.0	+1.0/-3.0	23.0	27.5
Band n41 – 2550 MHz PC2	FR1	Backoff	18.5	18.5	+1.0/-3.0	15.5	19.5
Band n48 – 3600 MHz	FR1	Full	20.5	20.5	+1.0/-1.3	19.2	21.5
Band n77 & n78 – 3700 MHz PC3	FR1	Full	23.0	23.0	+1.5/-1.3	21.7	24.5
Band n77 & n78 – 3700 MHz PC3	FR1	Backoff	20.0	20.0	+1.5/-1.3	18.9	21.5
Band n77 & n78 – 3700 MHz PC2	FR1	Full	25.0	25.0	+1.0/-3.0	22.0	26.0
Band n77 & n78 – 3700 MHz PC2	FR1	Backoff	20.0	20.0	+1.5/-1.3	18.9	21.5

### LTE UL CA Combinations (Aggregate Power)

Band UL 2CA Combination	Technology	Class	Nominal dBm	Tolerance dBm	Lower Tolerance dBm	Upper Tolerance dBm
2A-4A	LTE	3	23.0	+1.0/-1.3	21.7	24.0
2A-5A	LTE	3	23.0	+1.0/-1.3	21.7	24.0
2A-7A	LTE	3	23.0	+1.0/-1.3	21.7	24.0
2A-12A	LTE	3	23.0	+1.0/-1.3	21.7	24.0
2A-13A	LTE	3	23.0	+1.0/-1.3	21.7	24.0
2A-66A	LTE	3	23.0	+1.0/-1.3	21.7	24.0
4A-5A	LTE	3	23.0	+1.0/-1.3	21.7	24.0
4A-7A	LTE	3	23.0	+1.0/-1.3	21.7	24.0
4A-12A	LTE	3	23.0	+1.0/-1.3	21.7	24.0
4A-13A	LTE	3	23.0	+1.0/-1.3	21.7	24.0
5A-7A	LTE	3	23.0	+1.0/-1.3	21.7	24.0
5A-66A	LTE	3	23.0	+1.0/-1.3	21.7	24.0
12A-66A	LTE	3	23.0	+1.0/-1.3	21.7	24.0
13A-66A	LTE	3	23.0	+1.0/-1.3	21.7	24.0
48C	LTE	3	16.0	+1.0/-1.3	14.7	17.0

### FR1 UL CA Combinations (Aggregate Power)

FR1 SA 2x2 UL	Technology	Class	Nominal dBm	Tolerance dBm	Lower Tolerance dBm	Upper Tolerance dBm
n41	FR1	3	23.0	+1.5/-3.0	20.0	24.5
n48	FR1	3	18.0	+1.5/-3.0	15.0	19.5
n77	FR1	3	23.0	+1.5/-3.0	20.0	24.5
n78	FR1	3	23.0	+1.5/-3.0	20.0	24.5

**FR1 NSA UL ENDC Combinations (Aggregate Power)**

Band UL ENDC Combination	Technology	Class	Nominal dBm	Tolerance dBm	Lower Tolerance dBm	Upper Tolerance dBm
4A-n2A	LTE+FR1	3	23.0	+1.5/-3.0	20.0	24.5
5A-n2A	LTE+FR1	3	23.0	+1.5/-3.0	20.0	24.5
7A-n2A	LTE+FR1	3	23.0	+1.5/-3.0	20.0	24.5
12A-n2A	LTE+FR1	3	23.0	+1.5/-3.0	20.0	24.5
66A-n2A	LTE+FR1	3	23.0	+1.5/-3.0	20.0	24.5
71A-n2A	LTE+FR1	3	23.0	+1.5/-3.0	20.0	24.5
2A-n5A	LTE+FR1	3	23.0	+1.5/-3.0	20.0	24.5
7A-n5A	LTE+FR1	3	23.0	+1.0/-3.0	20.0	24.0
12A-n5A	LTE+FR1	3	23.0	+1.0/-3.0	20.0	24.0
66A-n5A	LTE+FR1	3	23.0	+1.5/-3.0	20.0	24.5
7A-n25A	LTE+FR1	3	23.0	+1.5/-3.0	20.0	24.5
12A-n25A	LTE+FR1	3	23.0	+1.5/-3.0	20.0	24.5
26A-n25A	LTE+FR1	3	23.0	+1.5/-3.0	20.0	24.5
66A-n25A	LTE+FR1	3	23.0	+1.5/-3.0	20.0	24.5
2A-n41A	LTE+FR1	3	23.0	+1.5/-3.0	20.0	24.5
4A-n41A	LTE+FR1	3	23.0	+1.5/-3.0	20.0	24.5
12A-n41A	LTE+FR1	3	23.0	+1.5/-3.0	20.0	24.5
25A-n41A	LTE+FR1	3	23.0	+1.5/-3.0	20.0	24.5
26A-n41A	LTE+FR1	3	23.0	+1.5/-3.0	20.0	24.5
66A-n41A	LTE+FR1	3	23.0	+1.5/-3.0	20.0	24.5
71A-n41A	LTE+FR1	3	23.0	+1.5/-3.0	20.0	24.5
2A-n66A	LTE+FR1	3	23.0	+1.5/-3.0	20.0	24.5
5A-n66A	LTE+FR1	3	23.0	+1.5/-3.0	20.0	24.5
7A-n66A	LTE+FR1	3	23.0	+1.5/-3.0	20.0	24.5
12A-n66A	LTE+FR1	3	23.0	+1.5/-3.0	20.0	24.5
13A-n66A	LTE+FR1	3	23.0	+1.5/-3.0	20.0	24.5
71A-n66A	LTE+FR1	3	23.0	+1.5/-3.0	20.0	24.5
2A-n71A	LTE+FR1	3	23.0	+1.0/-3.0	20.0	24.0
7A-n71A	LTE+FR1	3	23.0	+1.0/-3.0	20.0	24.0
66A-n71A	LTE+FR1	3	23.0	+1.5/-3.0	20.0	24.5
2A-n77A	LTE+FR1	3	23.0	+1.5/-3.0	20.0	24.5
7A-n77A	LTE+FR1	3	23.0	+1.5/-3.0	20.0	24.5
12A-n77A	LTE+FR1	3	23.0	+1.5/-3.0	20.0	24.5
66A-n77A	LTE+FR1	3	23.0	+1.5/-3.0	20.0	24.5
2A-n78A	LTE+FR1	3	23.0	+1.5/-3.0	20.0	24.5
4A-n78A	LTE+FR1	3	23.0	+1.5/-3.0	20.0	24.5
5A-n78A	LTE+FR1	3	23.0	+1.5/-3.0	20.0	24.5
7A-n78A	LTE+FR1	3	23.0	+1.0/-3.0	20.0	24.0
12A-n78A	LTE+FR1	3	23.0	+1.0/-3.0	20.0	24.0
25A-n78A	LTE+FR1	3	23.0	+1.0/-3.0	20.0	24.0
66A-n78A	LTE+FR1	3	23.0	+1.5/-3.0	20.0	24.5
71A-n78A	LTE+FR1	3	23.0	+1.5/-3.0	20.0	24.5

**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 ( $\rho$ ).

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

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

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

where:

$\sigma$  = conductivity of the tissue (S/m)

$\rho$  = mass density of the tissue (kg/m<sup>3</sup>)

$E$  = rms electric field strength (V/m)

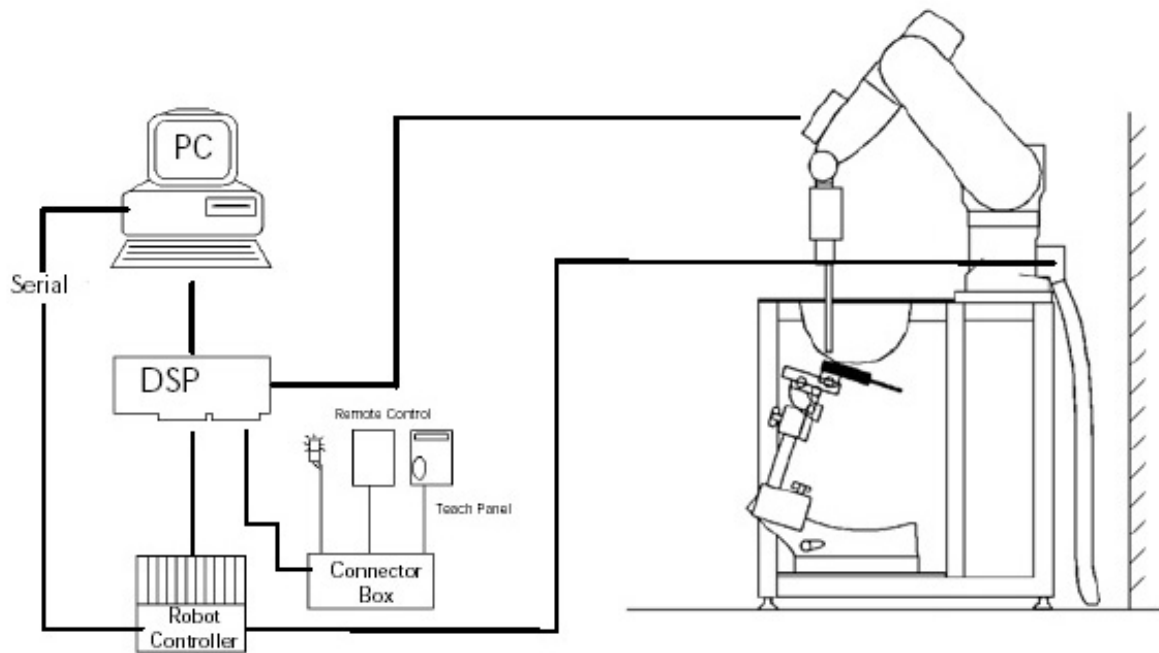
## 2. SAR Measurement Setup

### 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**



## 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**

## 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:**  $\pm 0.2$ dB (30 MHz to 6 GHz)

**Dynamic:** 10 mW/kg to 100 W/kg

**Range:** Linearity:  $\pm 0.2$ dB

**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

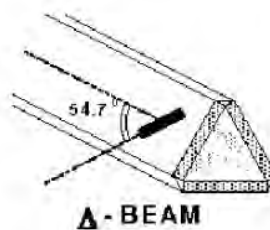


Figure 2.2 Triangular Probe Configurations



Figure 2.3 Probe Thick-Film Technique

**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<sup>2</sup>.

**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

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

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

where:

where:

$\Delta t$  = exposure time (30 seconds),

$\sigma$  = simulated tissue conductivity,

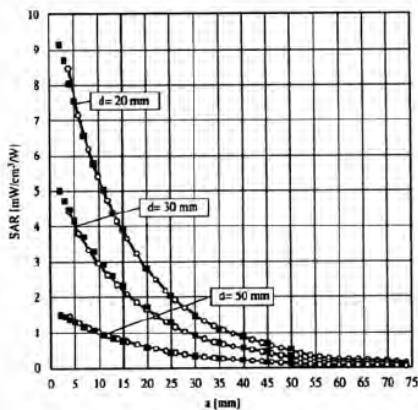
C = heat capacity of tissue (brain or muscle),

$\rho$  = Tissue density (1.25 g/cm<sup>3</sup> for brain tissue)

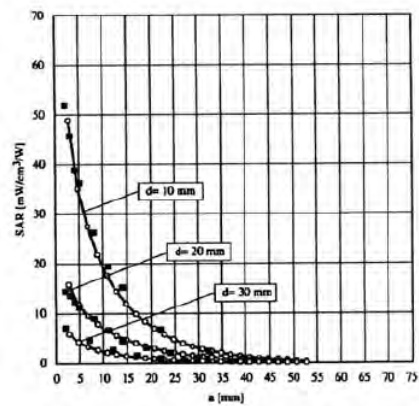
$\Delta T$  = temperature increase due to RF exposure.

SAR is proportional to  $\Delta T / \Delta t$ , 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**

## 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  
 $\sigma$  = conductivity in [mho/m] or [Siemens/m]  
 $\rho$  = equivalent tissue density in g/cm<sup>3</sup>

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

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

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

**Scanning procedure**

- The DASYS 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 DASYS5 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:

<b>Area scan grid spacing for different frequency ranges</b>	
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:

<b>Zoom scan grid spacing and volume for different frequency ranges</b>			
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 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

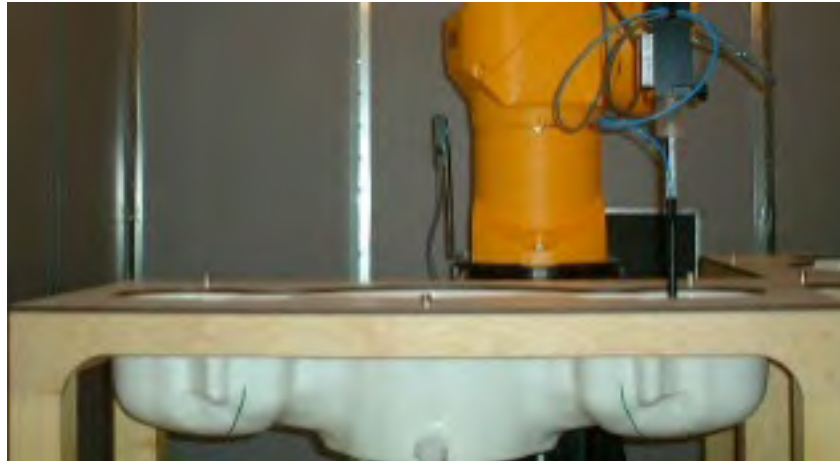
DASY uses the advanced extrapolation option which is able to compensate boundary effects on E-field probes.

**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:**  $2.0 \pm 0.2$  mm



**Figure 2.6 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.

### **3. Probe and Dipole Calibration**

See Appendix D and E.



## 4. 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 4.1 Typical Composition of Ingredients for Tissue**

Ingredients		Simulating Tissue					
		600 MHz Head	750 MHz Head	900 MHz Head	1750 MHz Head	1900 MHz Head	2550 MHz Head
Mixing Percentage							
Water		Proprietary Purchased From Speag					
Sugar							
Salt							
HEC							
Bactericide							
DGBE							
Dielectric Constant	Target	42.72	41.94	41.50	40.08	40.00	39.07
Conductivity (S/m)	Target	0.88	0.89	0.97	1.37	1.40	1.91

Ingredients		Simulating Tissue	
		3500 MHz Head	3700 MHz Head
Mixing Percentage			
Water		Proprietary Purchased From Speag	
Sugar			
Salt			
HEC			
Bactericide			
DGBE			
Dielectric Constant	Target	37.93	37.70
Conductivity (S/m)	Target	2.91	3.12

## 5. 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 5.1 Human Exposure Limits**

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

<sup>1</sup> 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.

<sup>2</sup> The Spatial Average value of the SAR averaged over the whole body.

<sup>3</sup> 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.

## 6. Measurement Uncertainty

Measurement uncertainty table is not required per KDB 865664 D01 v01 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  $\geq 1.5$  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.

## 7. System Validation

### Tissue Verification

**Table 7.1 Measured Tissue Parameters**

		600 MHz Head		750 MHz Head		900 MHz Head	
Date(s)		Nov. 22, 2022		Nov. 22, 2022		Nov. 22, 2022	
Liquid Temperature (°C)	20.0	Target	Measured	Target	Measured	Target	Measured
Dielectric Constant: $\epsilon$		42.72	41.47	41.94	41.19	41.50	40.78
Conductivity: $\sigma$		0.88	0.89	0.89	0.92	0.97	0.99
		1750 MHz Head		1900 MHz Head		2550 MHz Head	
Date(s)		Nov. 21, 2022		Nov. 21, 2022		Nov. 23, 2022	
Liquid Temperature (°C)	20.0	Target	Measured	Target	Measured	Target	Measured
Dielectric Constant: $\epsilon$		40.08	39.35	40.00	39.44	39.07	38.88
Conductivity: $\sigma$		1.37	1.38	1.40	1.43	1.91	1.94
		3500 MHz Head		1750 MHz Head		3700 MHz Head	
Date(s)		Nov. 23, 2022		Oct. 4, 2023		Oct. 3, 2023	
Liquid Temperature (°C)	20.0	Target	Measured	Target	Measured	Target	Measured
Dielectric Constant: $\epsilon$		37.93	37.67	40.08	39.13	37.70	36.87
Conductivity: $\sigma$		2.91	2.96	1.37	1.41	3.12	3.14

See Appendix A for data printout.

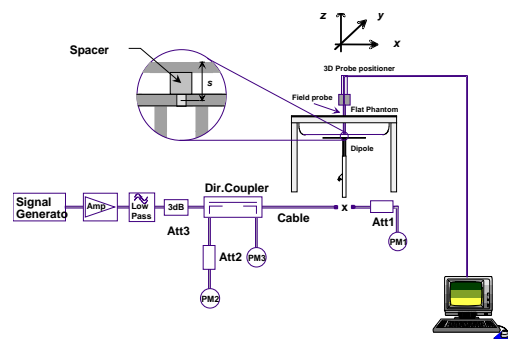
### Test System Verification

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

**Table 7.2 System Dipole Validation Target & Measured**

	Test Frequency	Targeted SAR <sub>1g</sub> (W/kg)	Measure SAR <sub>1g</sub> (W/kg)	Tissue Used for Verification	Deviation (%)	Plot Number
22-Nov-2022	750 MHz	8.57	8.61	Head	+ 0.47	1
22-Nov-2022	900 MHz	11.20	11.80	Head	+ 5.36	2
21-Nov-2022	1750 MHz	37.70	38.20	Head	+ 1.33	3
21-Nov-2022	1900 MHz	40.40	41.50	Head	+ 2.72	4
23-Nov-2022	2550 MHz	55.30	56.90	Head	+ 2.89	5
23-Nov-2022	3500 MHz	67.00	69.40	Head	+ 3.58	6
04-Oct-2023	1750 MHz	37.70	38.80	Head	+ 2.92	7
03-Oct-2023	3700 MHz	68.30	69.40	Head	+ 1.61	8

See Appendix A for data plots.



**Figure 7.1 Dipole Validation Test Setup**

## 8. 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. If a conducted power deviation of more than 5% occurred, the test was repeated. 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  $((\text{end}/\text{start})-1)*100$  and rounded to three decimal places. The drift percentage is calculated into the resultant SAR value on the data sheet for each test.

Required Test Positions						
Antenna	Side A	Side B	Side C	Side D	Side E	Side F
Ant 0	Yes	Yes	Yes	Yes	No	Yes
Ant 1	Yes	Yes	Yes	Yes	Yes	No
Ant 4	Yes	Yes	Yes	No	No	Yes
Ant 6	Yes	No	Yes	Yes	Yes	No
Ant 8	Yes	No	Yes	Yes	No	No

The testing conducted in this report is only for spot checking the device to verify that it is still in compliance with the limits based on the original referenced model M3000A Report number SAR.20220611 Revision E FCC ID: PKRISGM3000A & IC: 3229A-M3000A.

This device supports SRS capability in bands n48, n77 and n78. The SRS maximum uplink duty cycle is 1.43%. Per 47 CFR 1.1307, the average power for the maximum upper end of the tolerance for the bands are all excluded from SAR testing. The following table shows the peak transmit power, average transmit power and exclusion limit for each of the bands.

Band	Peak Transmit Power (dBm)	Duty Cycle	Average Power (mW)	Exclusion Limit
n48	21.5	1.43%	2	8
n77	26.0	1.43%	6	7
n78	26.0	1.43%	6	7

This device uses a power reduction mechanism to reduce output powers in certain use conditions when the device is used close the user's body.

When the device's antenna is within a certain distance of the user, the sensor activates and reduces the maximum allowed output power. However, the sensor is not active when the device is moved beyond the sensor triggering distance and the maximum output power is no longer limited. Therefore, additional evaluation is needed in the vicinity of the triggering distance to ensure SAR is compliant when the device is allowed to operate at a non-reduced output power level. FCC KDB Publication 616217 D04v01r02 Section 6 was used as a guideline for selecting SAR test distances for this device at these additional test positions. Sensor triggering distance summary data is included below.

The sensor is designed to support sufficient detection range and sensitivity to cover regions of the sensors in all applicable directions since the sensor entirely covers the antennas. The device form factor will not allow the device to be sitting at an angle. Therefore, tilt measurements were not conducted on this device.

Per the May 2017 TCBC Workshop Notes, demonstration of proper functioning of the power reduction mechanisms is required to support the corresponding SAR configurations. The verification process was divided into two parts: (1) evaluation of the output power levels for individual or multiple triggering mechanisms and (2) evaluation of the triggering distances for proximity-based sensors.

## 9.1 Power Verification Procedure

The power verification was performed according to the following procedure.

- A base station simulator was used to establish a conducted RF connection and the output power was monitored. The power measurements were confirmed to be within the expected tolerances for all states before and after a power reduction mechanism was triggered.
- Step 1 was repeated for all relevant modes and frequency bands for the mechanism being investigated.
- Steps 1 and 2 were repeated for all individual power reduction mechanisms and combinations thereof. For the combination cases, one mechanism was switched to a “triggered” state at a time; powers were confirmed to be within the tolerances after each additional mechanism was activated.

## 9.2 Distance Verification Procedure

The distance verification procedure was performed according to the following procedure.

- A base station simulator was used to establish an RF connection and to monitor the power levels. The device being tested was placed below the relevant section of the phantom with the relevant side or edge of the device facing toward the phantom.
- The device was moved toward and away from the phantom to determine the distance at which the mechanism triggers and the output power is reduced, per KDB Publication 616217 D04v01r02 and FCC Guidance. Each applicable test position was evaluated. The distances were confirmed to be the same or larger (more conservative) than the minimum distances provided by the manufacturer.
- Steps 1 and 2 were repeated for low, mid and high bands, as appropriate.
- Steps 1 through 3 were repeated for all distance-based power reduction mechanisms.

### 9.3 WWAN Antenna Verification Summary

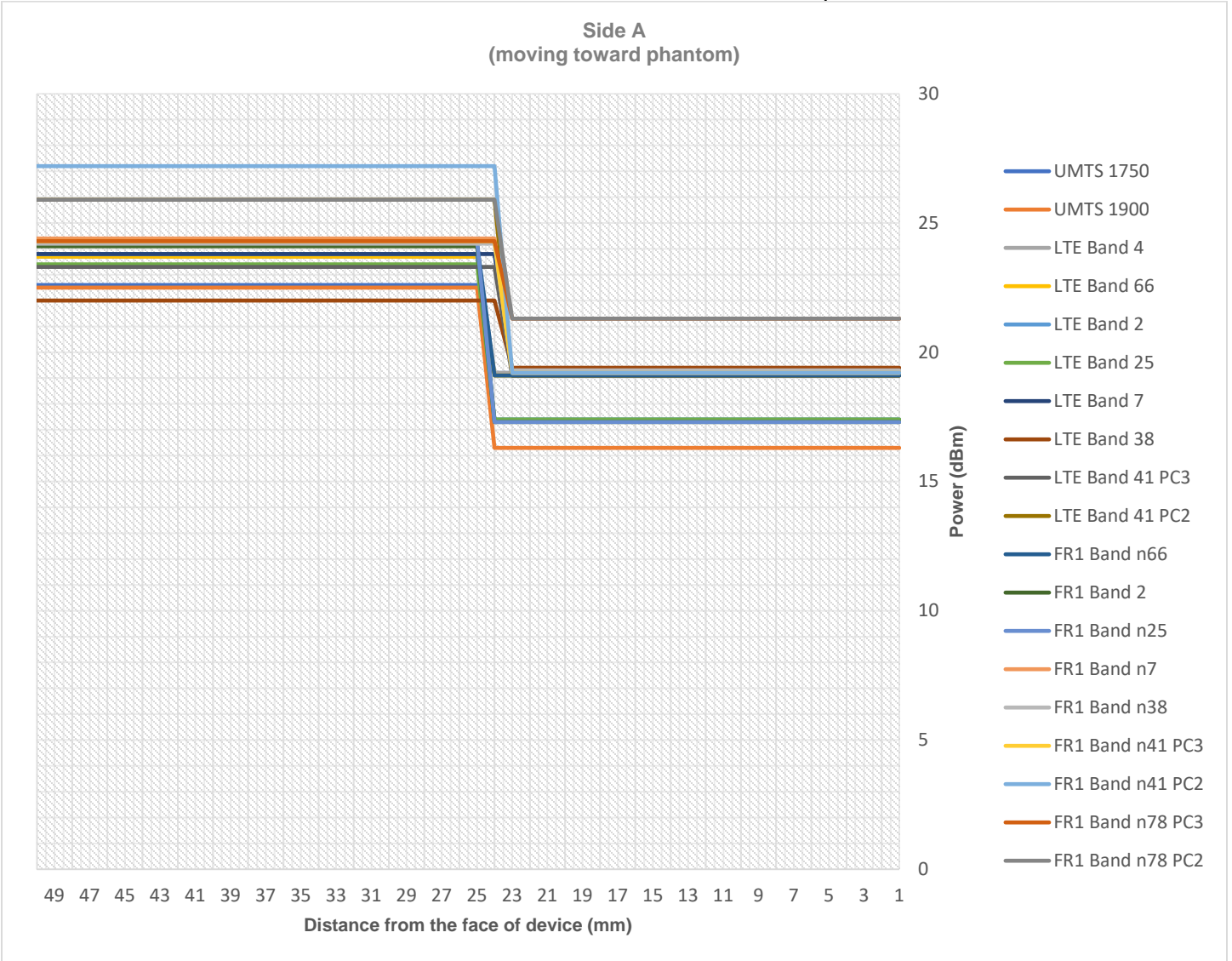
**Table 9.1**  
**Power Measurement Verification for WWAN Antenna**

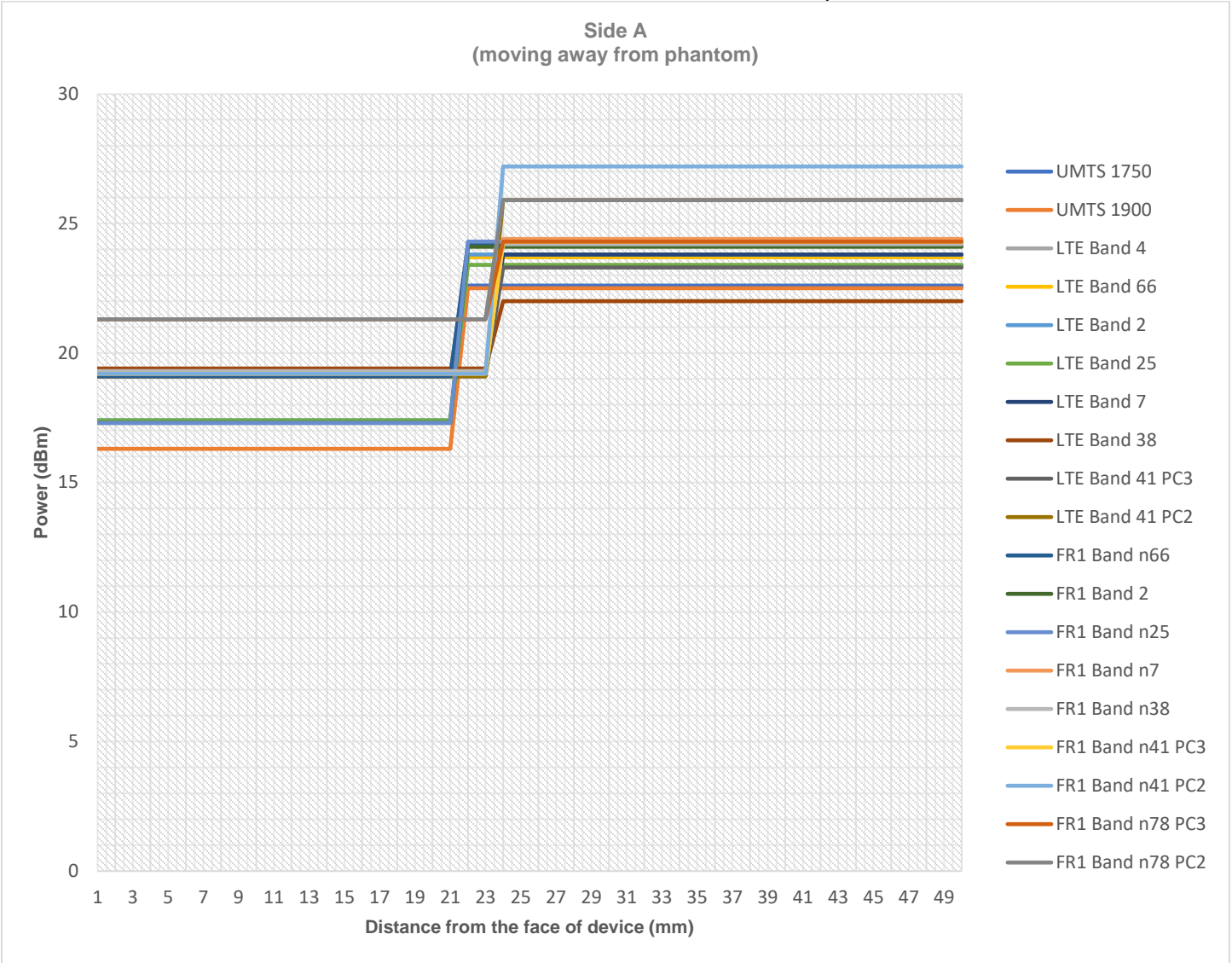
Mechanism	Mode/Band	Conducted Power (dBm)	
1 <sup>st</sup>		Un-triggered (Max)	Mechanism #1 (Reduced)
Capacitive	UMTS 1750	22.60	19.20
	UMTS 1900	22.50	16.30
	LTE FDD Band 4	23.70	19.20
	LTE FDD Band 66	23.70	19.10
	LTE FDD Band 2	23.80	17.40
	LTE FDD Band 25	23.40	17.40
	LTE FDD Band 7	23.80	19.30
	LTE TDD Band 38	22.00	19.40
	LTE TDD Band 41 (PC3)	23.30	19.10
	LTE TDD Band 41 (PC2)	25.90	19.10
	FR1 FDD Band n66	24.20	19.10
	FR1 FDD Band n2	24.10	17.30
	FR1 FDD Band n25	24.30	17.30
	FR1 FDD Band n7	24.40	19.20
	FR1 TDD Band n38	24.20	19.30
	FR1 TDD Band n41 (PC3)	24.30	19.20
	FR1 TDD Band n41 (PC2)	27.20	19.20
	FR1 TDD Band n78 (PC3)	24.30	21.30
FR1 TDD Band n78 (PC2)	25.90	21.30	

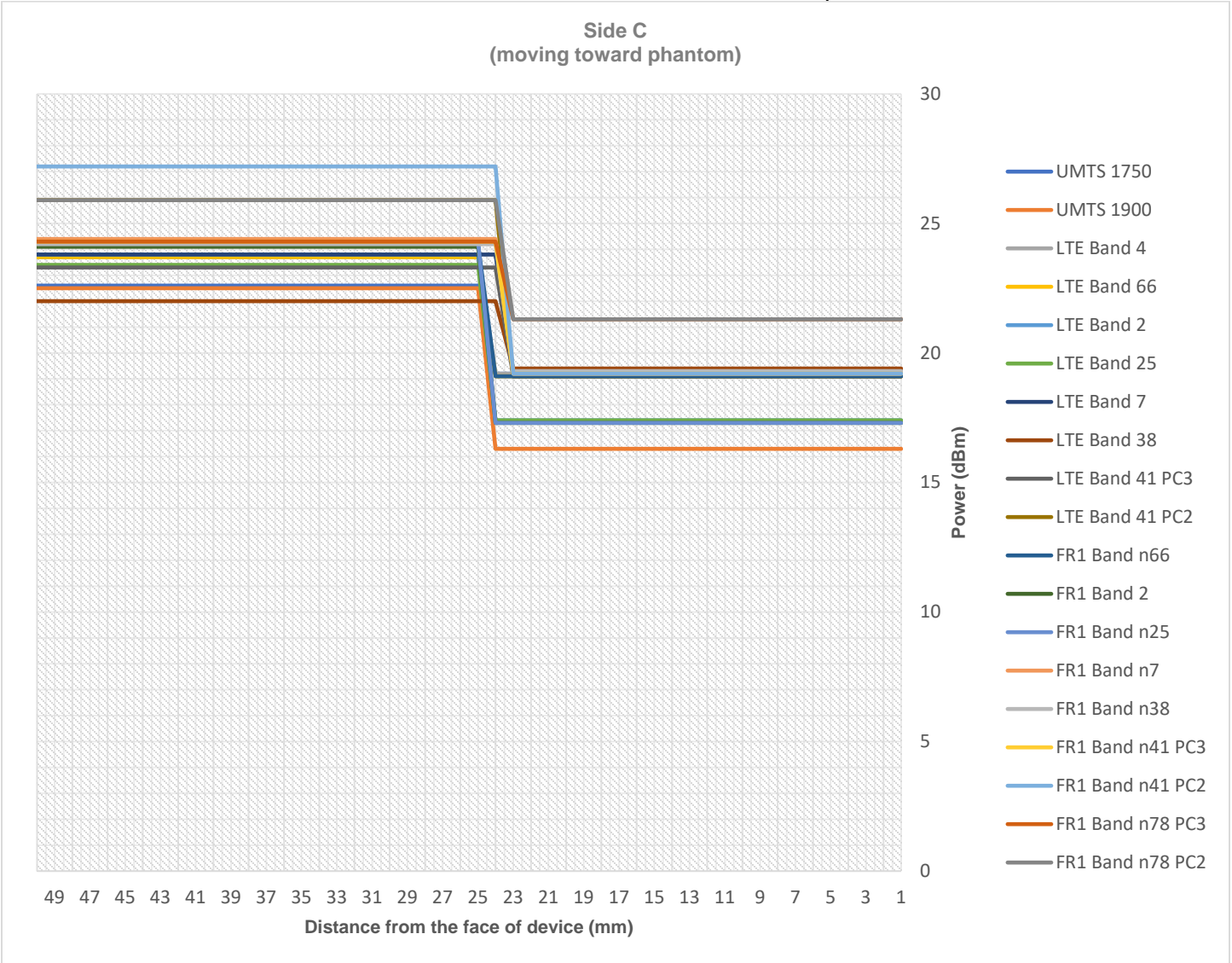
**Table 9.2**  
**Distance Measurement Verification for WWAN Antenna**

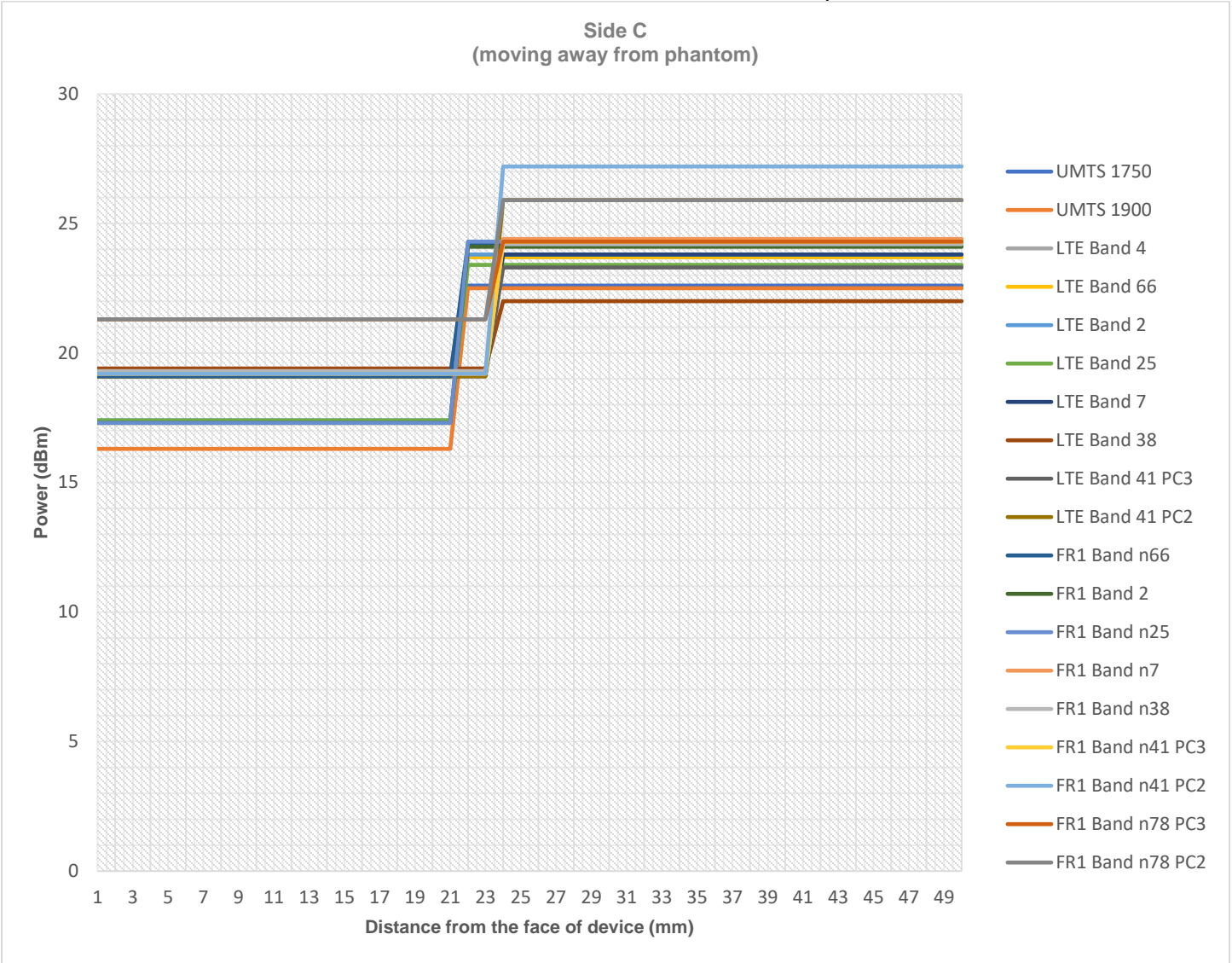
Mechanism	Test Condition	Band	Distance Measurements (mm)		Minimum Distance per Manufacturer (mm)
			Moving Toward	Moving Away	
Capacitive	Side A	Mid	22	23	20
	Side C	Mid	24	21	20
	Side D	Mid	25	25	20
	Side F	Mid	21	22	20
	Side A	High	23	24	20
	Side C	High	23	21	20
	Side D	High	25	23	20
	Side F	High	24	24	20

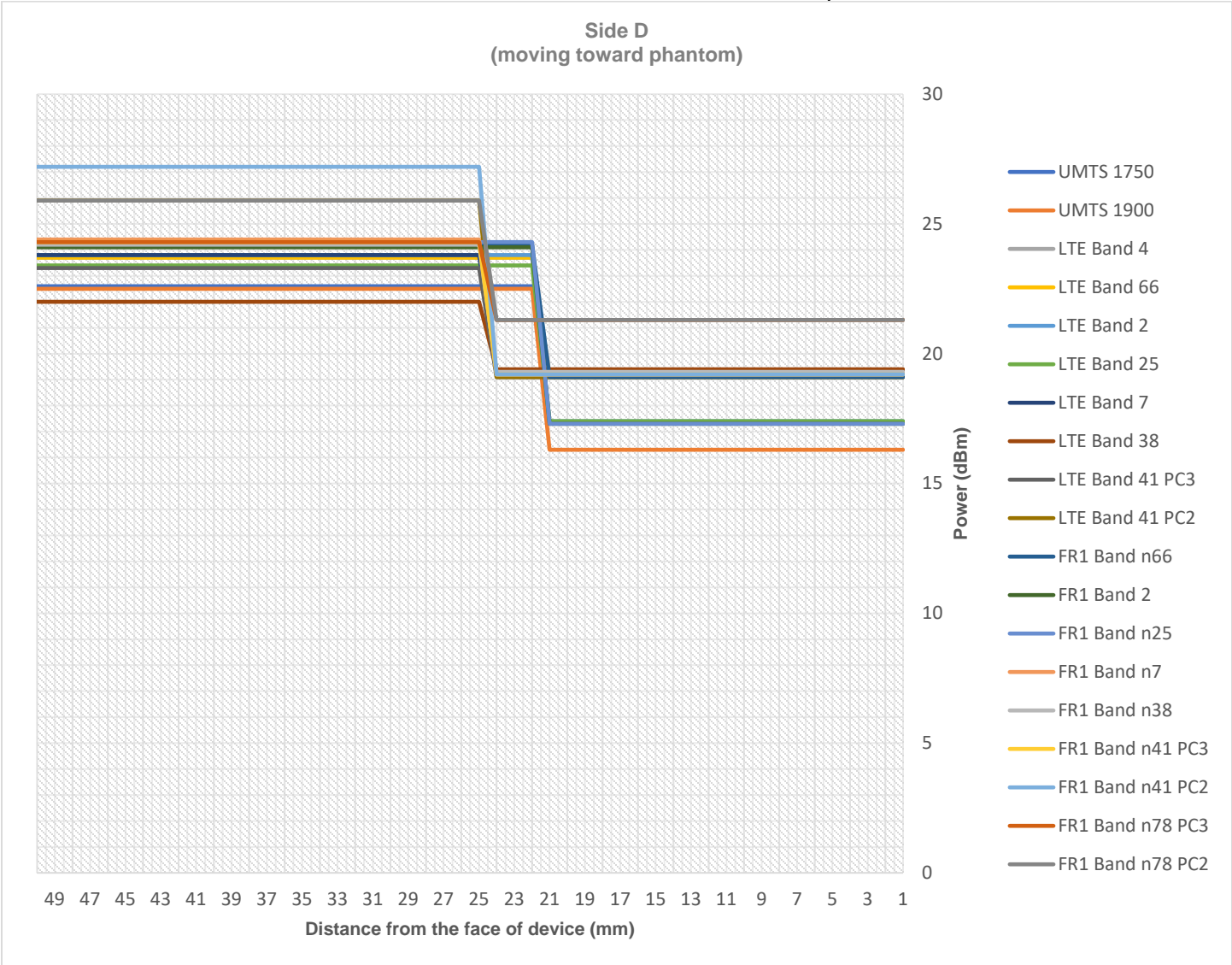


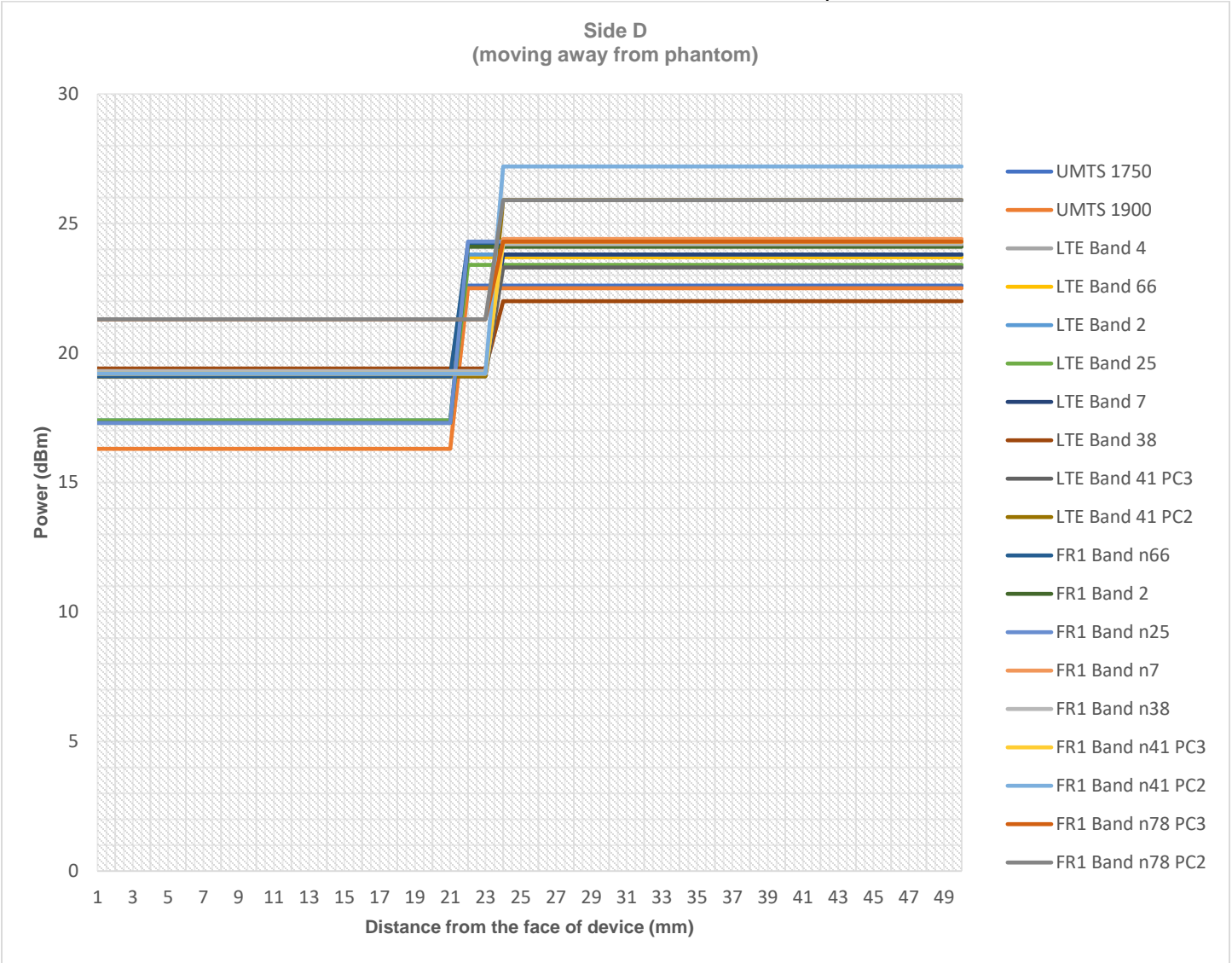


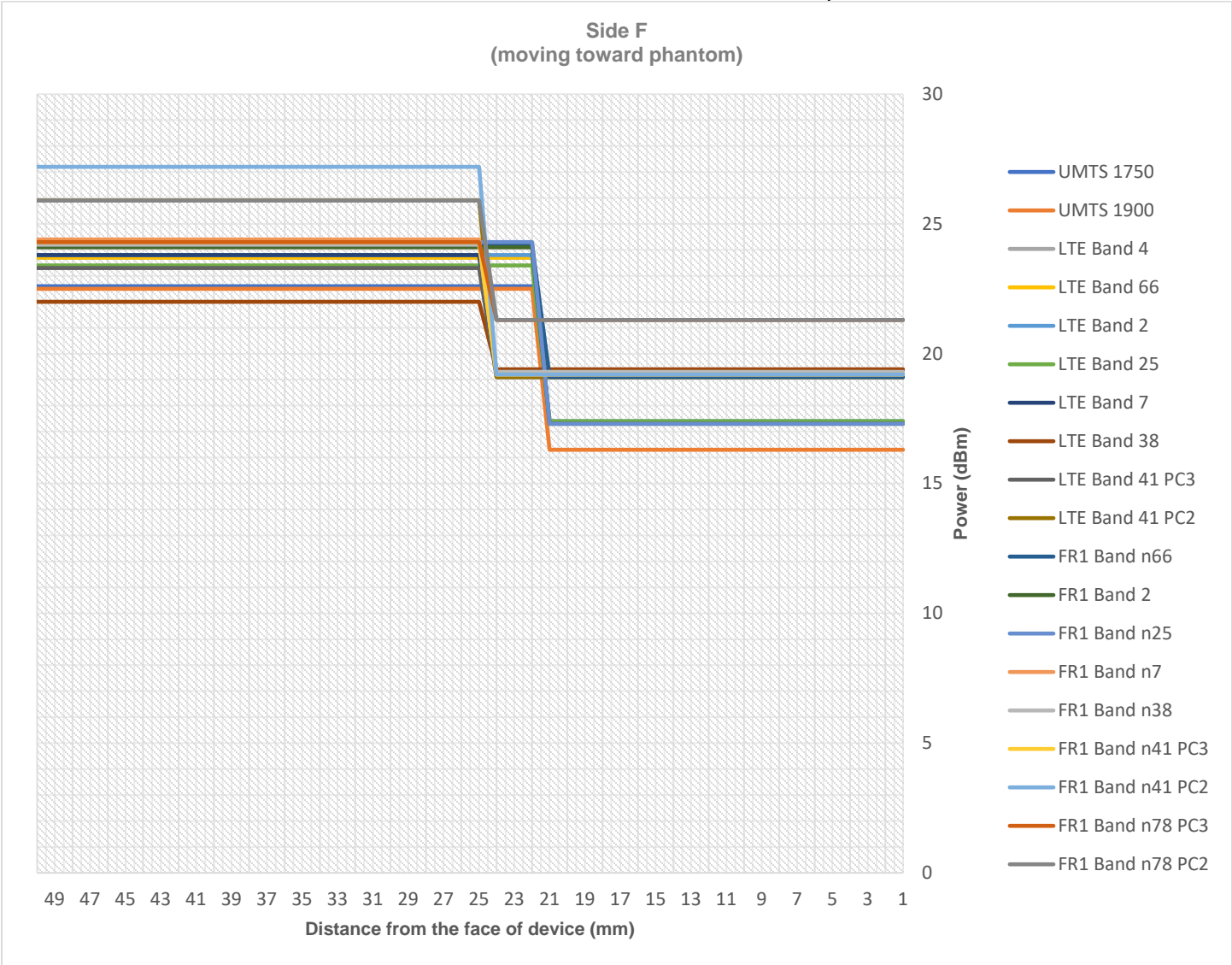


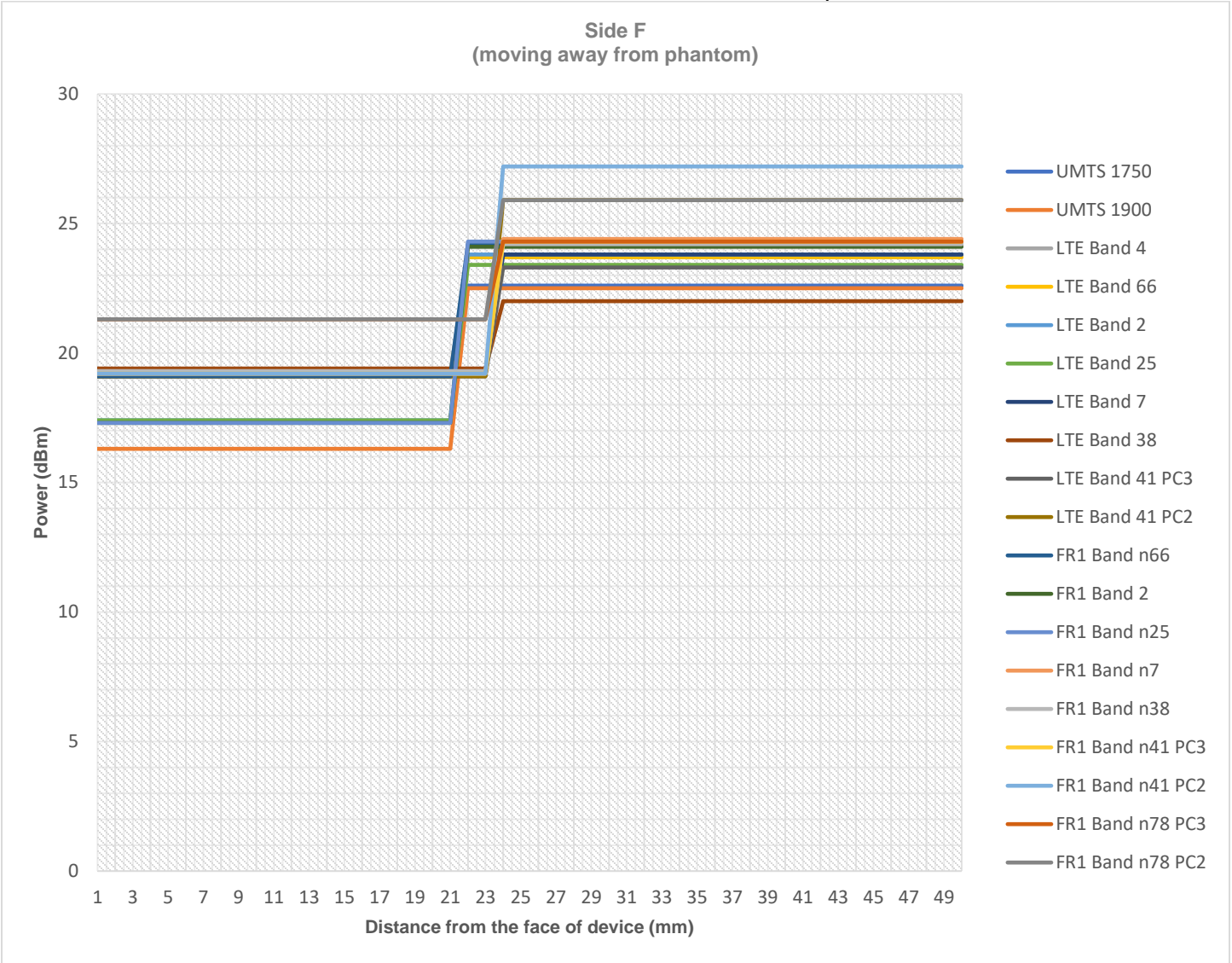














**FR1 Conducted Power**

**GENERAL NOTE:**

1. NR implementation of n2, n5, n12, n25, n41, n66 and n71 is limited to EN-DC operations only (NSA), with LTE Bands 2/4/5/7/12/13/14/25/26/30/66/71/41/48 acting as anchor bands, SAR tests for NR Bands and LTE Anchors Bands were performed separately due to limitations in SAR probe calibration factors. the detail EN-DC combination include in section3.3
2. 5G NR support SCS 15KHz / 30KHz, DFT-s/CP-OFDM, Pi/2 BPSK/QPSK/16QAM/64QAM/256QAM and support Bandwidth include in section3.3
3. For 5G NR test procedure was following step similar FCC KDB 941225 D05:
  - a. For DFT-s-OFDM and CP-OFDM output power measurement reduction, according to 38.101 maximum power reduction for power class 2 and 3, the CP-OFDM mode will not higher than DFT-s-OFDM mode, therefore, similar FCC KDB 941225 D05 procedure for other modulation output power for each RB allocation configuration is > not ½ dB higher than the same configuration in DFT-s-Pi/2 BPSK and the reported SAR for the DFT-s-Pi/2 BPSK configuration is ≤ 1.45 W/kg; CP-OFDM measurement is unnecessary.
  - b. For DFT-s-OFDM output power measurement reduction, according to 38.101 maximum power reduction for power class 3, full measurement on Pi/2 BPSK/QPSK/16QAM/64QMA/256QAM with larger bandwidth, for smaller bandwidth output power also spot check 1RB 1offset configuration at Pi/2 BPSK to ensure output power will not ½ dB higher than largest supported bandwidth.
  - c. SAR testing start with the largest channel bandwidth and measure SAR for Pi/2 BPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
  - d. 50% RB allocation for Pi/2 BPSK SAR testing follows 1RB Pi/2 BPSK allocation procedure
  - e. Pi/2 BPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.
  - f. QPSK/16QAM/64QAM/256QAM output powers are not ½ dB higher than the same configuration in Pi/2 BPSK, also reported SAR for the Pi/2 BPSK configuration is less than 1.45 W/kg, QPSK/16QAM/64QAM/256QAM SAR testing are not required.
  - g. Smaller bandwidth output power for each RB allocation configuration for this device will not ½ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ≤ 1.45 W/kg, smaller bandwidth SAR testing is not required for this device.
4. FR1 band 2/5/38/78 SAR test was covered by Band 25/26/41/77; according to April 2015 TCB workshop, SAR test for overlapping FR1 bands can be reduced if
  - a. the maximum output power, including tolerance, for the smaller band is ≤ the larger band to qualify for the SAR test exclusion
  - b. the channel bandwidth and other operating parameters for the smaller band are fully supported by the larger band
5. Due to test setup limitations, SAR testing for NR was performed using Factory Test Mode software to establish the connection and perform SAR with 100% duty cycle. The Qualcomm QRCT program was used to establish the connection.

**3GPP 38.101 MPR FOR EN-DC**

**Table 6.2.2-1 Maximum power reduction (MPR) for power class 3**

Modulation		MPR (dB)		
		Edge RB allocations	Outer RB allocations	Inner RB allocations
DFT-s-OFDM	Pi/2 BPSK	≤ 3.5 <sup>1</sup>	≤ 1.2 <sup>1</sup>	≤ 0.2 <sup>1</sup>
		≤ 0.5 <sup>2</sup>	≤ 0.5 <sup>2</sup>	0 <sup>2</sup>
	QPSK		≤ 1	0
	16 QAM		≤ 2	≤ 1
	64 QAM			
CP-OFDM	256 QAM		≤ 2.5	
	QPSK		≤ 4.5	
	16 QAM	≤ 3		≤ 1.5
	64 QAM	≤ 3		≤ 2
	256 QAM		≤ 3.5	
			≤ 6.5	

NOTE 1: Applicable for UE operating in TDD mode with Pi/2 BPSK modulation and UE indicates support for UE capability *powerBoosting-pi2BPSK* and if the IE *powerBoostPi2BPSK* is set to 1 and 40 % or less slots in radio frame are used for UL transmission for bands n40, n41, n77, n78 and n79. The reference power of 0 dB MPR is 26 dBm.

NOTE 2: Applicable for UE operating in FDD mode, or in TDD mode in bands other than n40, n41, n77, n78 and n79 with Pi/2 BPSK modulation and if the IE *powerBoostPi2BPSK* is set to 0 and if more than 40 % of slots in radio frame are used for UL transmission for bands n40, n41, n77, n78 and n79.

**Table 6.2.2-2 Maximum power reduction (MPR) for power class 2**

Modulation		MPR (dB)		
		Edge RB allocations	Outer RB allocations	Inner RB allocations
DFT-s-OFDM	Pi/2 BPSK	≤ 3.5	≤ 0.5	0
	QPSK	≤ 3.5	≤ 1	0
	16 QAM	≤ 3.5	≤ 2	≤ 1
	64 QAM	≤ 3.5		
	256 QAM		≤ 2.5	
CP-OFDM			≤ 4.5	
	QPSK	≤ 3.5	≤ 3	≤ 1.5
	16 QAM	≤ 3.5	≤ 3	≤ 2
	64 QAM		≤ 3.5	
	256 QAM		≤ 6.5	

**Table 9.1 FR1 Full Power Measurements**

&lt;n2 Ant0&gt;

BW [MHz]	Modulation	RB Size	RB Offset	Power Low	Power Middle	Power High	Tune-up limit	MPR
				Ch. / Freq.	Ch. / Freq.	Ch. / Freq.	(dBm)	(dB)
				372000	376000	380000	Tune-up limit	MPR
Channel Frequency (MHz)				1860	1880	1900	(dBm)	(dB)
20	PI/2 BPSK	1	1	23.91	24.09	23.73	24.5	0.0
20	PI/2 BPSK	1	53	24.02	24.10	24.04		
20	PI/2 BPSK	1	104	23.60	23.98	23.85		
20	PI/2 BPSK	50	0	22.76	22.96	23.06	23.5	1.0
20	PI/2 BPSK	50	28	22.70	23.00	22.62		
20	PI/2 BPSK	50	56	22.72	22.82	22.97		
20	PI/2 BPSK	100	0	22.92	22.78	23.04	23.5	1.0
20	QPSK	1	1	23.83	23.89	23.79	24.5	0.0
20	QPSK	1	53	23.92	23.68	23.68		
20	QPSK	1	104	23.76	23.62	23.88		
20	QPSK	50	0	22.66	22.90	22.96	23.5	1.0
20	QPSK	50	28	22.62	23.07	22.74		
20	QPSK	50	56	23.04	22.65	22.82		
20	QPSK	100	0	22.65	22.76	23.05	23.5	1.0
20	16QAM	1	1	23.64	23.94	23.88	24.5	0.0
20	16QAM	1	53	23.96	24.10	23.61		
20	16QAM	1	104	23.80	23.63	23.61		
20	16QAM	50	0	22.97	22.63	22.76	23.5	1.0
20	16QAM	50	28	23.03	22.97	22.69		
20	16QAM	50	56	23.02	22.70	22.90		
20	16QAM	100	0	22.60	22.99	22.73	23.5	1.0
20	64QAM	1	1	23.81	24.00	23.61	24.5	0.0
20	64QAM	1	53	23.90	23.68	23.82		
20	64QAM	1	104	23.78	23.84	23.79		
20	64QAM	50	0	22.99	22.67	22.85	23.5	1.0
20	64QAM	50	28	23.09	22.75	23.03		
20	64QAM	50	56	22.73	23.06	23.05		
20	64QAM	100	0	22.72	22.63	22.69	23.5	1.0
20	256QAM	1	1	23.93	23.78	23.89	24.5	0.0
20	256QAM	1	53	23.79	24.02	23.92		
20	256QAM	1	104	23.66	23.96	23.89		
20	256QAM	50	0	22.89	23.02	22.92	23.5	1.0
20	256QAM	50	28	22.73	23.00	22.76		
20	256QAM	50	56	22.67	23.08	22.76		
20	256QAM	100	0	22.98	22.97	22.92	23.5	1.0
Channel Frequency (MHz)				371500	376000	380500	Tune-up limit	MPR
Channel Frequency (MHz)				1857.5	1880	1902.5	(dBm)	(dB)
15	PI/2 BPSK	1	1	23.72	23.99	24.02	24.5	0.0
Channel Frequency (MHz)				371000	376000	381000	Tune-up limit	MPR
Channel Frequency (MHz)				1855	1880	1905	(dBm)	(dB)
10	PI/2 BPSK	1	1	24.07	23.83	24.09	24.5	0.0
Channel Frequency (MHz)				370500	376000	381500	Tune-up limit	MPR
Channel Frequency (MHz)				1852.5	1880	1907.5	(dBm)	(dB)
5	PI/2 BPSK	1	1	23.82	23.97	23.69	24.5	0.0

<n2 Ant8>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low	Power Middle	Power High	Tune-up limit	MPR
				Ch. / Freq.	Ch. / Freq.	Ch. / Freq.	(dBm)	(dB)
Channel				372000	376000	380000	Tune-up limit	MPR
Frequency (MHz)				1860	1880	1900	(dBm)	(dB)
20	PI/2 BPSK	1	1	20.79	20.80	20.78	21.0	0.0
20	PI/2 BPSK	1	53	20.61	20.58	20.52		
20	PI/2 BPSK	1	104	20.74	20.89	20.99		
20	PI/2 BPSK	50	0	19.89	19.91	19.83	20.0	1.0
20	PI/2 BPSK	50	28	19.54	19.84	19.90		
20	PI/2 BPSK	50	56	19.93	19.69	19.54		
20	PI/2 BPSK	100	0	19.96	19.81	19.70	20.0	1.0
20	QPSK	1	1	20.90	20.79	20.57	21.0	0.0
20	QPSK	1	53	20.95	20.54	20.54		
20	QPSK	1	104	20.70	20.59	20.76		
20	QPSK	50	0	19.61	19.54	19.77	20.0	1.0
20	QPSK	50	28	19.83	19.90	19.78		
20	QPSK	50	56	19.70	19.68	19.68		
20	QPSK	100	0	19.71	19.67	19.87	20.0	1.0
20	16QAM	1	1	20.57	20.81	20.88	21.0	0.0
20	16QAM	1	53	20.95	20.91	20.80		
20	16QAM	1	104	20.54	20.90	20.55		
20	16QAM	50	0	19.83	19.72	19.89	20.0	1.0
20	16QAM	50	28	19.97	19.70	19.58		
20	16QAM	50	56	19.75	19.86	19.58		
20	16QAM	100	0	19.82	19.90	19.94	20.0	1.0
20	64QAM	1	1	20.59	20.81	20.67	21.0	0.0
20	64QAM	1	53	20.82	20.75	20.83		
20	64QAM	1	104	20.97	20.80	20.69		
20	64QAM	50	0	19.59	19.73	19.81	20.0	1.0
20	64QAM	50	28	19.87	19.74	19.88		
20	64QAM	50	56	19.85	19.98	19.62		
20	64QAM	100	0	19.55	19.90	19.70	20.0	1.0
20	256QAM	1	1	20.64	20.50	20.73	21.0	0.0
20	256QAM	1	53	20.56	20.95	20.56		
20	256QAM	1	104	20.52	20.58	20.84		
20	256QAM	50	0	19.79	19.69	19.53	20.0	1.0
20	256QAM	50	28	19.87	19.91	19.63		
20	256QAM	50	56	19.62	19.88	19.85		
20	256QAM	100	0	19.77	19.62	19.96	20.0	1.0
Channel				371500	376000	380500	Tune-up limit	MPR
Frequency (MHz)				1857.5	1880	1902.5	(dBm)	(dB)
15	PI/2 BPSK	1	1	20.63	20.55	20.93	21.0	0.0
Channel				371000	376000	381000	Tune-up limit	MPR
Frequency (MHz)				1855	1880	1905	(dBm)	(dB)
10	PI/2 BPSK	1	1	20.80	20.58	20.57	21.0	0.0
Channel				370500	376000	381500	Tune-up limit	MPR
Frequency (MHz)				1852.5	1880	1907.5	(dBm)	(dB)
5	PI/2 BPSK	1	1	20.65	20.87	20.86	21.0	0.0

<n5 Ant0>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low	Power Middle	Power High	Tune-up limit	MPR
				Ch. / Freq.	Ch. / Freq.	Ch. / Freq.	(dBm)	(dB)
Channel				166800	167300	167300	Tune-up limit	MPR
Frequency (MHz)				834	836.5	839	(dBm)	(dB)
20	PI/2 BPSK	1	1	23.83	23.87	23.79	24.0	0.0
20	PI/2 BPSK	1	53	23.55	23.58	23.79		
20	PI/2 BPSK	1	104	23.71	23.68	23.76		
20	PI/2 BPSK	50	0	22.80	23.00	22.70	23.0	1.0
20	PI/2 BPSK	50	28	22.86	22.64	22.79		
20	PI/2 BPSK	50	56	22.53	22.69	22.78		
20	PI/2 BPSK	100	0	22.98	22.79	22.91	23.0	1.0
20	QPSK	1	1	23.52	23.69	23.69	24.0	0.0
20	QPSK	1	53	23.68	23.70	23.82		
20	QPSK	1	104	23.80	23.97	23.91		
20	QPSK	50	0	22.85	22.92	22.52	23.0	1.0
20	QPSK	50	28	22.78	22.65	22.62		
20	QPSK	50	56	22.93	22.95	22.84		
20	QPSK	100	0	22.90	22.59	22.67	23.0	1.0
20	16QAM	1	1	23.65	23.88	23.56	24.0	0.0
20	16QAM	1	53	23.96	23.73	23.71		
20	16QAM	1	104	23.80	23.91	23.87		
20	16QAM	50	0	22.59	22.54	22.81	23.0	1.0
20	16QAM	50	28	22.81	22.55	22.91		
20	16QAM	50	56	22.68	22.55	22.96		
20	16QAM	100	0	22.54	23.00	22.72	23.0	1.0
20	64QAM	1	1	23.83	23.55	23.83	24.0	0.0
20	64QAM	1	53	23.60	23.79	23.54		
20	64QAM	1	104	23.82	23.81	23.94		
20	64QAM	50	0	22.71	22.76	22.68	23.0	1.0
20	64QAM	50	28	22.62	22.77	22.63		
20	64QAM	50	56	22.73	22.54	22.73		
20	64QAM	100	0	22.75	22.88	22.86	23.0	1.0
20	256QAM	1	1	23.91	23.95	23.67	24.0	0.0
20	256QAM	1	53	23.67	23.80	23.59		
20	256QAM	1	104	23.71	23.85	23.75		
20	256QAM	50	0	22.89	22.65	22.79	23.0	1.0
20	256QAM	50	28	22.92	22.94	22.58		
20	256QAM	50	56	22.69	22.97	22.95		
20	256QAM	100	0	22.87	22.55	22.87	23.0	1.0
Channel				166300	167300	167800	Tune-up limit	MPR
Frequency (MHz)				831.5	836.5	841.5	(dBm)	(dB)
15	PI/2 BPSK	1	1	23.72	23.53	23.72	24.0	0.0
Channel				165800	167300	168200	Tune-up limit	MPR
Frequency (MHz)				829	836.5	844	(dBm)	(dB)
10	PI/2 BPSK	1	1	23.68	23.64	23.81	24.0	0.0
Channel				165300	167300	168700	Tune-up limit	MPR
Frequency (MHz)				826.5	836.5	846.5	(dBm)	(dB)
5	PI/2 BPSK	1	1	23.99	23.56	23.62	24.0	0.0

<n5 Ant1>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low	Power Middle	Power High	Tune-up limit	MPR
				Ch. / Freq.	Ch. / Freq.	Ch. / Freq.	(dBm)	(dB)
Channel				166800	167300	167300	Tune-up limit	MPR
Frequency (MHz)				834	836.5	839	(dBm)	(dB)
20	PI/2 BPSK	1	1	20.57	20.52	20.60	21.0	0.0
20	PI/2 BPSK	1	53	20.69	20.66	20.85		
20	PI/2 BPSK	1	104	20.90	20.88	20.69		
20	PI/2 BPSK	50	0	19.57	19.79	19.98	20.0	1.0
20	PI/2 BPSK	50	28	19.55	19.82	19.90		
20	PI/2 BPSK	50	56	19.91	19.98	19.71		
20	PI/2 BPSK	100	0	19.69	19.51	19.54	20.0	1.0
20	QPSK	1	1	20.58	20.53	20.66	21.0	0.0
20	QPSK	1	53	20.79	20.62	20.64		
20	QPSK	1	104	20.50	20.63	20.73		
20	QPSK	50	0	19.53	19.88	19.52	20.0	1.0
20	QPSK	50	28	19.75	19.59	19.50		
20	QPSK	50	56	19.96	19.66	19.95		
20	QPSK	100	0	19.98	19.69	19.52	20.0	1.0
20	16QAM	1	1	20.52	20.98	20.88	21.0	0.0
20	16QAM	1	53	20.65	20.74	20.72		
20	16QAM	1	104	20.94	20.62	20.69		
20	16QAM	50	0	19.79	19.93	19.99	20.0	1.0
20	16QAM	50	28	19.79	19.50	19.65		
20	16QAM	50	56	19.50	19.94	19.64		
20	16QAM	100	0	19.98	19.54	19.72	20.0	1.0
20	64QAM	1	1	20.68	20.51	20.68	21.0	0.0
20	64QAM	1	53	20.87	20.94	20.85		
20	64QAM	1	104	20.55	20.96	20.69		
20	64QAM	50	0	19.73	19.92	19.81	20.0	1.0
20	64QAM	50	28	19.95	19.56	20.00		
20	64QAM	50	56	19.62	19.51	19.92		
20	64QAM	100	0	19.54	19.71	19.51	20.0	1.0
20	256QAM	1	1	20.94	20.74	20.91	21.0	0.0
20	256QAM	1	53	20.92	20.59	20.68		
20	256QAM	1	104	20.63	20.94	20.61		
20	256QAM	50	0	19.94	19.62	19.57	20.0	1.0
20	256QAM	50	28	19.66	19.82	19.70		
20	256QAM	50	56	19.75	19.69	19.96		
20	256QAM	100	0	19.97	19.88	19.78	20.0	1.0
Channel				166300	167300	167800	Tune-up limit	MPR
Frequency (MHz)				831.5	836.5	841.5	(dBm)	(dB)
15	PI/2 BPSK	1	1	20.51	20.99	20.63	21.0	0.0
Channel				165800	167300	168200	Tune-up limit	MPR
Frequency (MHz)				829	836.5	844	(dBm)	(dB)
10	PI/2 BPSK	1	1	20.86	20.64	20.70	21.0	0.0
Channel				165300	167300	168700	Tune-up limit	MPR
Frequency (MHz)				826.5	836.5	846.5	(dBm)	(dB)
5	PI/2 BPSK	1	1	20.53	20.61	20.76	21.0	0.0

<n7 Ant0>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low	Power Middle	Power High	Tune-up limit	MPR
				Ch. / Freq.	Ch. / Freq.	Ch. / Freq.	(dBm)	(dB)
Channel				502000	507000	512000	Tune-up limit	MPR
Frequency (MHz)				2510	2535	2560	(dBm)	(dB)
20	PI/2 BPSK	1	1	24.19	24.27	24.06	24.5	0.0
20	PI/2 BPSK	1	53	24.14	24.40	24.06		
20	PI/2 BPSK	1	104	24.09	24.38	24.16		
20	PI/2 BPSK	50	0	23.21	23.01	23.17	23.5	1.0
20	PI/2 BPSK	50	28	23.04	22.95	23.02		
20	PI/2 BPSK	50	56	23.37	23.39	23.31		
20	PI/2 BPSK	100	0	23.00	23.37	23.14	23.5	1.0
20	QPSK	1	1	24.38	24.15	24.14	24.5	0.0
20	QPSK	1	53	24.34	24.09	24.05		
20	QPSK	1	104	24.02	24.00	24.00		
20	QPSK	50	0	23.21	23.04	22.91	23.5	1.0
20	QPSK	50	28	22.95	23.16	23.19		
20	QPSK	50	56	23.30	23.35	23.29		
20	QPSK	100	0	23.06	23.39	22.94	23.5	1.0
20	16QAM	1	1	24.16	23.93	23.99	24.5	0.0
20	16QAM	1	53	23.90	24.32	23.97		
20	16QAM	1	104	24.27	24.22	24.23		
20	16QAM	50	0	23.33	22.98	23.28	23.5	1.0
20	16QAM	50	28	23.35	23.14	23.40		
20	16QAM	50	56	23.03	23.06	23.10		
20	16QAM	100	0	23.28	22.99	23.37	23.5	1.0
20	64QAM	1	1	24.00	23.97	24.37	24.5	0.0
20	64QAM	1	53	24.24	23.91	24.36		
20	64QAM	1	104	24.03	24.09	24.16		
20	64QAM	50	0	23.17	23.16	23.10	23.5	1.0
20	64QAM	50	28	23.20	22.96	23.37		
20	64QAM	50	56	23.00	23.07	23.01		
20	64QAM	100	0	23.05	23.30	22.95	23.5	1.0
20	256QAM	1	1	24.29	24.22	24.19	24.5	0.0
20	256QAM	1	53	24.05	24.08	24.08		
20	256QAM	1	104	24.14	24.25	24.10		
20	256QAM	50	0	23.40	22.98	23.05	23.5	1.0
20	256QAM	50	28	23.22	22.91	23.12		
20	256QAM	50	56	23.23	23.35	23.10		
20	256QAM	100	0	23.17	23.13	22.93	23.5	1.0
Channel				501500	507000	511500	Tune-up limit	MPR
Frequency (MHz)				2507.5	2535	2562.5	(dBm)	(dB)
15	PI/2 BPSK	1	1	24.33	24.29	24.02	24.5	0.0
Channel				501000	507000	511000	Tune-up limit	MPR
Frequency (MHz)				2505	2535	2565	(dBm)	(dB)
10	PI/2 BPSK	1	1	24.28	24.04	23.93	24.5	0.0
Channel				500500	507000	510500	Tune-up limit	MPR
Frequency (MHz)				2502.5	2535	2567.5	(dBm)	(dB)
5	PI/2 BPSK	1	1	24.31	23.92	24.29	24.5	0.0

<n12 Ant0>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low	Power Middle	Power High	Tune-up limit	MPR
				Ch. / Freq.	Ch. / Freq.	Ch. / Freq.	(dBm)	(dB)
Channel				141300	141500	141700	Tune-up limit	MPR
Frequency (MHz)				706.5	707.5	708.5	(dBm)	(dB)
15	PI/2 BPSK	1	1	23.83	23.65	23.72	24.0	0.0
15	PI/2 BPSK	1	40	23.54	23.57	23.92		
15	PI/2 BPSK	1	78	23.99	23.64	23.52		
15	PI/2 BPSK	37	0	22.96	22.67	22.95	23.0	1.0
15	PI/2 BPSK	37	21	22.76	22.62	22.58		
15	PI/2 BPSK	37	42	22.87	22.83	22.73		
15	PI/2 BPSK	75	0	22.52	22.96	22.79	23.0	1.0
15	QPSK	1	1	23.83	23.99	23.90	24.0	0.0
15	QPSK	1	40	23.81	23.83	23.80		
15	QPSK	1	78	23.58	23.77	23.68		
15	QPSK	37	0	22.62	22.84	22.82	23.0	1.0
15	QPSK	37	21	22.53	22.72	22.64		
15	QPSK	37	42	22.74	22.86	22.99		
15	QPSK	75	0	22.62	22.78	22.66	23.0	1.0
15	16QAM	1	1	23.72	23.78	23.89	24.0	0.0
15	16QAM	1	40	23.87	23.53	23.96		
15	16QAM	1	78	23.51	23.77	23.67		
15	16QAM	37	0	22.70	22.58	22.68	23.0	1.0
15	16QAM	37	21	22.68	22.61	22.84		
15	16QAM	37	42	22.66	22.97	22.51		
15	16QAM	75	0	22.58	22.69	22.87	23.0	1.0
15	64QAM	1	1	23.88	23.68	23.77	24.0	0.0
15	64QAM	1	40	23.54	23.94	23.57		
15	64QAM	1	78	23.97	23.71	23.70		
15	64QAM	37	0	22.69	22.63	22.77	23.0	1.0
15	64QAM	37	21	22.53	22.57	22.99		
15	64QAM	37	42	22.92	22.65	22.67		
15	64QAM	75	0	22.79	22.90	22.51	23.0	1.0
15	256QAM	1	1	23.84	23.66	23.76	24.0	0.0
15	256QAM	1	40	23.81	23.59	23.54		
15	256QAM	1	78	23.83	23.68	23.99		
15	256QAM	37	0	22.94	22.56	22.51	23.0	1.0
15	256QAM	37	21	22.61	22.96	22.97		
15	256QAM	37	42	22.91	22.81	22.62		
15	256QAM	75	0	22.61	22.91	22.86	23.0	1.0
Channel				140920	141500	142080	Tune-up limit	MPR
Frequency (MHz)				704.6	707.5	710.4	(dBm)	(dB)
10	PI/2 BPSK	1	1	23.88	23.88	23.92	24.0	0.0
Channel				140560	141500	142440	Tune-up limit	MPR
Frequency (MHz)				702.8	707.5	712.2	(dBm)	(dB)
5	PI/2 BPSK	1	1	23.77	23.65	23.57	24.0	0.0

<n25 Ant0>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low	Power Middle	Power High	Tune-up limit	MPR
				Ch. / Freq.	Ch. / Freq.	Ch. / Freq.	(dBm)	(dB)
Channel				372000	376500	381000	Tune-up limit	MPR
Frequency (MHz)				1860	1882.5	1905	(dBm)	(dB)
20	PI/2 BPSK	1	1	23.88	23.83	23.92	24.5	0.0
20	PI/2 BPSK	1	53	24.08	24.30	24.15		
20	PI/2 BPSK	1	104	24.09	23.81	23.95		
20	PI/2 BPSK	50	0	23.23	23.21	23.19	23.5	1.0
20	PI/2 BPSK	50	28	23.26	23.03	23.17		
20	PI/2 BPSK	50	56	23.21	22.87	23.27		
20	PI/2 BPSK	100	0	23.20	23.11	22.83	23.5	1.0
20	QPSK	1	1	23.97	23.84	24.10	24.5	0.0
20	QPSK	1	53	23.81	23.89	23.95		
20	QPSK	1	104	24.14	23.97	24.05		
20	QPSK	50	0	22.83	23.21	23.13	23.5	1.0
20	QPSK	50	28	22.86	22.87	22.87		
20	QPSK	50	56	23.14	23.02	23.29		
20	QPSK	100	0	22.95	23.13	23.00	23.5	1.0
20	16QAM	1	1	23.91	24.26	23.97	24.5	0.0
20	16QAM	1	53	24.30	24.09	23.82		
20	16QAM	1	104	23.89	23.93	24.06		
20	16QAM	50	0	22.98	23.15	22.90	23.5	1.0
20	16QAM	50	28	23.11	22.90	22.96		
20	16QAM	50	56	23.06	22.93	23.18		
20	16QAM	100	0	22.80	23.15	23.16	23.5	1.0
20	64QAM	1	1	23.83	23.87	24.05	24.5	0.0
20	64QAM	1	53	23.85	24.29	23.81		
20	64QAM	1	104	23.98	24.16	24.07		
20	64QAM	50	0	23.12	23.09	22.98	23.5	1.0
20	64QAM	50	28	23.26	22.88	22.94		
20	64QAM	50	56	22.81	22.91	23.02		
20	64QAM	100	0	22.85	23.25	22.87	23.5	1.0
20	256QAM	1	1	24.15	23.82	24.26	24.5	0.0
20	256QAM	1	53	23.88	23.81	24.26		
20	256QAM	1	104	24.05	24.18	24.23		
20	256QAM	50	0	23.04	23.22	22.92	23.5	1.0
20	256QAM	50	28	23.30	23.23	22.82		
20	256QAM	50	56	23.08	22.88	23.08		
20	256QAM	100	0	23.17	22.95	23.17	23.5	1.0
Channel				371500	376500	381500	Tune-up limit	MPR
Frequency (MHz)				1857.5	1882.5	1907.5	(dBm)	(dB)
15	PI/2 BPSK	1	1	23.97	23.84	24.15	24.5	0.0
Channel				371000	376500	382000	Tune-up limit	MPR
Frequency (MHz)				1855	1882.5	1910	(dBm)	(dB)
10	PI/2 BPSK	1	1	23.84	24.12	24.20	24.5	0.0
Channel				370500	376500	382500	Tune-up limit	MPR
Frequency (MHz)				1852.5	1882.5	1912.5	(dBm)	(dB)
5	PI/2 BPSK	1	1	24.27	23.96	24.00	24.5	0.0



<n38 Ant8>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low	Power Middle	Power High	Tune-up limit	MPR
				Ch. / Freq.	Ch. / Freq.	Ch. / Freq.	(dBm)	(dB)
Channel				516000	519000	522000	Tune-up limit	MPR
Frequency (MHz)				2580	2595	2610	(dBm)	(dB)
20	PI/2 BPSK	1	1	24.04	24.09	23.98	24.5	0.0
20	PI/2 BPSK	1	53	23.85	24.20	23.86		
20	PI/2 BPSK	1	104	23.77	23.93	24.12		
20	PI/2 BPSK	50	0	22.73	22.90	23.06	23.5	1.0
20	PI/2 BPSK	50	28	23.20	22.90	23.19		
20	PI/2 BPSK	50	56	23.10	22.84	23.03		
20	PI/2 BPSK	100	0	23.01	22.97	23.13	23.5	1.0
20	QPSK	1	1	24.04	23.90	23.89	24.5	0.0
20	QPSK	1	53	23.78	24.12	24.06		
20	QPSK	1	104	24.18	24.16	24.10		
20	QPSK	50	0	22.83	23.20	22.87	23.5	1.0
20	QPSK	50	28	22.81	22.74	23.09		
20	QPSK	50	56	23.15	23.06	22.89		
20	QPSK	100	0	22.77	22.83	22.87	23.5	1.0
20	16QAM	1	1	23.93	23.71	23.78	24.5	0.0
20	16QAM	1	53	24.02	23.84	23.83		
20	16QAM	1	104	23.87	24.02	23.87		
20	16QAM	50	0	23.19	22.94	23.03	23.5	1.0
20	16QAM	50	28	22.85	23.05	23.07		
20	16QAM	50	56	23.05	23.16	23.19		
20	16QAM	100	0	22.82	22.93	23.03	23.5	1.0
20	64QAM	1	1	24.19	24.06	23.75	24.5	0.0
20	64QAM	1	53	23.84	23.88	24.04		
20	64QAM	1	104	23.72	23.77	24.17		
20	64QAM	50	0	22.83	22.87	22.84	23.5	1.0
20	64QAM	50	28	23.09	22.95	22.99		
20	64QAM	50	56	23.12	23.03	23.16		
20	64QAM	100	0	23.11	23.05	22.73	23.5	1.0
20	256QAM	1	1	23.71	23.83	24.10	24.5	0.0
20	256QAM	1	53	24.11	23.73	23.99		
20	256QAM	1	104	24.02	24.02	23.91		
20	256QAM	50	0	23.15	23.13	22.86	23.5	1.0
20	256QAM	50	28	23.03	23.19	22.90		
20	256QAM	50	56	22.75	22.77	23.13		
20	256QAM	100	0	23.05	22.82	22.74	23.5	1.0
Channel				515500	519000	522500	Tune-up limit	MPR
Frequency (MHz)				2577.5	2595	2612.5	(dBm)	(dB)
15	PI/2 BPSK	1	1	23.93	23.93	23.71	24.5	0.0
Channel				515000	519000	523000	Tune-up limit	MPR
Frequency (MHz)				2575	2595	2615	(dBm)	(dB)
10	PI/2 BPSK	1	1	24.06	23.87	23.79	24.5	0.0
Channel				514500	519000	523500	Tune-up limit	MPR
Frequency (MHz)				2572.5	2595	2617.5	(dBm)	(dB)
5	PI/2 BPSK	1	1	23.98	23.92	23.89	24.5	0.0

<n41 PC3 Ant8>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low	Power Middle	Power High	Tune-up limit	MPR
				Ch. / Freq.	Ch. / Freq.	Ch. / Freq.	(dBm)	(dB)
Channel				501200	518601	536000	Tune-up limit	MPR
Frequency (MHz)				2506	2593	2680	(dBm)	(dB)
20	PI/2 BPSK	1	1	24.00	23.99	23.81	24.5	0.0
20	PI/2 BPSK	1	53	23.90	24.30	23.89		
20	PI/2 BPSK	1	104	23.88	24.08	24.02		
20	PI/2 BPSK	50	0	22.85	23.17	22.94	23.5	1.0
20	PI/2 BPSK	50	28	23.18	23.16	23.29		
20	PI/2 BPSK	50	56	22.95	23.07	23.15		
20	PI/2 BPSK	100	0	23.14	22.91	23.20	23.5	1.0
20	QPSK	1	1	23.90	24.16	24.01	24.5	0.0
20	QPSK	1	53	24.02	23.98	23.90		
20	QPSK	1	104	24.05	24.01	24.29		
20	QPSK	50	0	23.27	22.95	23.07	23.5	1.0
20	QPSK	50	28	23.29	23.16	22.90		
20	QPSK	50	56	23.18	23.02	23.26		
20	QPSK	100	0	23.11	23.11	23.23	23.5	1.0
20	16QAM	1	1	24.22	24.02	24.25	24.5	0.0
20	16QAM	1	53	24.07	23.97	23.87		
20	16QAM	1	104	23.85	23.81	24.03		
20	16QAM	50	0	23.09	23.25	23.30	23.5	1.0
20	16QAM	50	28	23.02	22.85	23.27		
20	16QAM	50	56	23.13	23.24	22.88		
20	16QAM	100	0	23.03	22.80	22.85	23.5	1.0
20	64QAM	1	1	24.12	24.21	23.99	24.5	0.0
20	64QAM	1	53	24.24	24.27	24.28		
20	64QAM	1	104	24.18	24.28	24.12		
20	64QAM	50	0	23.13	22.90	22.94	23.5	1.0
20	64QAM	50	28	23.13	22.87	22.81		
20	64QAM	50	56	23.25	23.06	23.27		
20	64QAM	100	0	23.11	23.14	23.14	23.5	1.0
20	256QAM	1	1	23.86	23.96	24.07	24.5	0.0
20	256QAM	1	53	23.87	24.21	23.98		
20	256QAM	1	104	24.16	23.96	24.24		
20	256QAM	50	0	22.88	23.26	22.96	23.5	1.0
20	256QAM	50	28	22.86	22.87	22.95		
20	256QAM	50	56	22.93	22.99	23.28		
20	256QAM	100	0	22.81	22.95	22.87	23.5	1.0
Channel				500700	518601	536500	Tune-up limit	MPR
Frequency (MHz)				2503.5	2593	2682.5	(dBm)	(dB)
15	PI/2 BPSK	1	1	24.29	24.08	24.15	24.5	0.0
Channel				500200	518601	537000	Tune-up limit	MPR
Frequency (MHz)				2501	2593	2685	(dBm)	(dB)
10	PI/2 BPSK	1	1	24.19	23.83	24.02	24.5	0.0
Channel				499700	518601	537500	Tune-up limit	MPR
Frequency (MHz)				2498.5	2593	2687.5	(dBm)	(dB)
5	PI/2 BPSK	1	1	23.86	23.93	24.18	24.5	0.0

<n41 PC2 Ant8>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low	Power Middle	Power High	Tune-up limit	MPR
				Ch. / Freq.	Ch. / Freq.	Ch. / Freq.	(dBm)	(dB)
Channel				501200	518601	536000	Tune-up limit	MPR
Frequency (MHz)				2506	2593	2680	(dBm)	(dB)
20	PI/2 BPSK	1	1	26.75	27.14	26.98	27.5	0.0
20	PI/2 BPSK	1	53	27.03	27.20	27.11		
20	PI/2 BPSK	1	104	27.12	26.81	27.03		
20	PI/2 BPSK	50	0	25.72	25.78	25.89	26.5	1.0
20	PI/2 BPSK	50	28	26.18	25.74	26.02		
20	PI/2 BPSK	50	56	25.83	26.09	25.87		
20	PI/2 BPSK	100	0	26.09	26.17	26.05	26.5	1.0
20	QPSK	1	1	27.15	26.90	27.16	27.5	0.0
20	QPSK	1	53	26.72	27.00	26.94		
20	QPSK	1	104	27.08	26.88	26.83		
20	QPSK	50	0	26.08	25.89	25.87	26.5	1.0
20	QPSK	50	28	26.17	25.74	25.75		
20	QPSK	50	56	26.02	25.72	26.04		
20	QPSK	100	0	25.94	26.02	26.09	26.5	1.0
20	16QAM	1	1	26.89	27.05	26.96	27.5	0.0
20	16QAM	1	53	27.19	27.06	27.15		
20	16QAM	1	104	26.88	26.86	27.09		
20	16QAM	50	0	25.79	25.91	26.15	26.5	1.0
20	16QAM	50	28	25.99	26.09	25.78		
20	16QAM	50	56	25.77	26.07	26.18		
20	16QAM	100	0	25.97	25.89	26.17	26.5	1.0
20	64QAM	1	1	26.84	26.88	27.14	27.5	0.0
20	64QAM	1	53	26.89	26.80	26.85		
20	64QAM	1	104	27.07	27.16	26.88		
20	64QAM	50	0	25.84	25.97	25.72	26.5	1.0
20	64QAM	50	28	25.90	25.72	26.16		
20	64QAM	50	56	25.85	26.08	26.09		
20	64QAM	100	0	26.07	25.82	26.04	26.5	1.0
20	256QAM	1	1	27.09	26.76	26.74	27.5	0.0
20	256QAM	1	53	26.80	26.94	27.07		
20	256QAM	1	104	26.93	26.91	27.00		
20	256QAM	50	0	25.72	25.80	25.91	26.5	1.0
20	256QAM	50	28	26.14	25.71	25.75		
20	256QAM	50	56	25.93	26.06	25.92		
20	256QAM	100	0	26.11	25.83	26.07	26.5	1.0
Channel				500700	518601	536500	Tune-up limit	MPR
Frequency (MHz)				2503.5	2593	2682.5	(dBm)	(dB)
15	PI/2 BPSK	1	1	27.17	26.93	27.10	27.5	0.0
Channel				500200	518601	537000	Tune-up limit	MPR
Frequency (MHz)				2501	2593	2685	(dBm)	(dB)
10	PI/2 BPSK	1	1	27.00	27.03	26.89	27.5	0.0
Channel				499700	518601	537500	Tune-up limit	MPR
Frequency (MHz)				2498.5	2593	2687.5	(dBm)	(dB)
5	PI/2 BPSK	1	1	26.81	26.84	26.83	27.5	0.0

<n66 Ant0>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low	Power Middle	Power High	Tune-up limit	MPR
				Ch. / Freq.	Ch. / Freq.	Ch. / Freq.	(dBm)	(dB)
Channel				344000	349000	354000	Tune-up limit	MPR
Frequency (MHz)				1720	1745	1770	(dBm)	(dB)
20	PI/2 BPSK	1	1	23.76	23.96	23.86	24.5	0.0
20	PI/2 BPSK	1	53	24.08	24.20	24.16		
20	PI/2 BPSK	1	104	24.16	24.07	24.07		
20	PI/2 BPSK	50	0	23.18	22.85	23.10	23.5	1.0
20	PI/2 BPSK	50	28	22.76	22.80	23.14		
20	PI/2 BPSK	50	56	22.70	22.81	23.17		
20	PI/2 BPSK	100	0	22.81	23.03	22.97	23.5	1.0
20	QPSK	1	1	24.09	24.14	24.09	24.5	0.0
20	QPSK	1	53	23.81	24.05	23.96		
20	QPSK	1	104	24.08	23.91	24.07		
20	QPSK	50	0	22.94	22.78	23.10	23.5	1.0
20	QPSK	50	28	22.85	22.91	22.94		
20	QPSK	50	56	22.99	22.83	22.88		
20	QPSK	100	0	22.79	23.02	22.90	23.5	1.0
20	16QAM	1	1	23.86	23.93	24.04	24.5	0.0
20	16QAM	1	53	24.04	23.80	23.91		
20	16QAM	1	104	24.13	23.93	24.08		
20	16QAM	50	0	22.89	23.14	22.93	23.5	1.0
20	16QAM	50	28	22.80	22.85	23.07		
20	16QAM	50	56	22.80	22.74	22.94		
20	16QAM	100	0	22.96	22.85	22.98	23.5	1.0
20	64QAM	1	1	24.09	23.91	23.94	24.5	0.0
20	64QAM	1	53	23.96	23.71	24.01		
20	64QAM	1	104	23.98	23.82	23.95		
20	64QAM	50	0	23.10	22.75	22.78	23.5	1.0
20	64QAM	50	28	23.07	22.82	22.93		
20	64QAM	50	56	22.84	22.83	23.07		
20	64QAM	100	0	22.76	22.77	22.79	23.5	1.0
20	256QAM	1	1	23.90	24.06	23.95	24.5	0.0
20	256QAM	1	53	23.77	23.98	24.02		
20	256QAM	1	104	24.20	23.97	24.20		
20	256QAM	50	0	23.07	22.98	22.90	23.5	1.0
20	256QAM	50	28	23.11	23.17	23.18		
20	256QAM	50	56	22.90	23.14	22.91		
20	256QAM	100	0	22.92	22.98	22.75	23.5	1.0
Channel				343500	349000	354500	Tune-up limit	MPR
Frequency (MHz)				1717.5	1745	1772.5	(dBm)	(dB)
15	PI/2 BPSK	1	1	23.83	24.02	23.97	24.5	0.0
Channel				343000	349000	355000	Tune-up limit	MPR
Frequency (MHz)				1715	1745	1775	(dBm)	(dB)
10	PI/2 BPSK	1	1	23.90	23.75	24.20	24.5	0.0
Channel				342500	349000	355500	Tune-up limit	MPR
Frequency (MHz)				1712.5	1745	1777.5	(dBm)	(dB)
5	PI/2 BPSK	1	1	23.87	23.79	23.96	24.5	0.0

<n66 Ant8>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low	Power Middle	Power High	Tune-up limit	MPR
				Ch. / Freq.	Ch. / Freq.	Ch. / Freq.	(dBm)	(dB)
Channel				344000	349000	354000	Tune-up limit	MPR
Frequency (MHz)				1720	1745	1770	(dBm)	(dB)
20	PI/2 BPSK	1	1	20.55	20.74	20.92	21.0	0.0
20	PI/2 BPSK	1	53	20.89	20.95	20.76		
20	PI/2 BPSK	1	104	20.81	20.61	20.82		
20	PI/2 BPSK	50	0	19.58	19.72	19.72	20.0	1.0
20	PI/2 BPSK	50	28	19.76	19.69	19.98		
20	PI/2 BPSK	50	56	19.60	19.66	19.82		
20	PI/2 BPSK	100	0	19.68	19.75	19.81	20.0	1.0
20	QPSK	1	1	20.55	20.57	20.97	21.0	0.0
20	QPSK	1	53	20.55	20.90	20.77		
20	QPSK	1	104	20.64	20.76	20.89		
20	QPSK	50	0	19.76	19.54	19.73	20.0	1.0
20	QPSK	50	28	19.71	19.53	19.82		
20	QPSK	50	56	19.91	19.77	19.74		
20	QPSK	100	0	19.97	19.71	19.51	20.0	1.0
20	16QAM	1	1	20.71	20.97	20.87	21.0	0.0
20	16QAM	1	53	20.53	20.61	20.58		
20	16QAM	1	104	20.74	20.71	20.61		
20	16QAM	50	0	19.92	19.61	19.95	20.0	1.0
20	16QAM	50	28	19.89	19.79	19.80		
20	16QAM	50	56	19.78	19.51	19.98		
20	16QAM	100	0	19.54	19.97	19.97	20.0	1.0
20	64QAM	1	1	20.73	20.70	20.58	21.0	0.0
20	64QAM	1	53	20.92	20.71	20.97		
20	64QAM	1	104	20.95	20.61	20.93		
20	64QAM	50	0	19.80	19.97	19.88	20.0	1.0
20	64QAM	50	28	19.80	19.74	19.70		
20	64QAM	50	56	19.67	19.61	19.96		
20	64QAM	100	0	19.80	19.92	19.80	20.0	1.0
20	256QAM	1	1	20.62	20.79	20.57	21.0	0.0
20	256QAM	1	53	20.93	20.90	20.60		
20	256QAM	1	104	20.54	20.64	20.63		
20	256QAM	50	0	19.68	19.64	19.55	20.0	1.0
20	256QAM	50	28	19.96	19.76	19.71		
20	256QAM	50	56	19.88	19.81	19.54		
20	256QAM	100	0	19.70	19.99	19.64	20.0	1.0
Channel				343500	349000	354500	Tune-up limit	MPR
Frequency (MHz)				1717.5	1745	1772.5	(dBm)	(dB)
15	PI/2 BPSK	1	1	20.51	20.62	20.54	21.0	0.0
Channel				343000	349000	355000	Tune-up limit	MPR
Frequency (MHz)				1715	1745	1775	(dBm)	(dB)
10	PI/2 BPSK	1	1	20.58	20.76	20.56	21.0	0.0
Channel				342500	349000	355500	Tune-up limit	MPR
Frequency (MHz)				1712.5	1745	1777.5	(dBm)	(dB)
5	PI/2 BPSK	1	1	20.73	20.81	20.57	21.0	0.0

<n71 Ant0>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low	Power Middle	Power High	Tune-up limit	MPR
				Ch. / Freq.	Ch. / Freq.	Ch. / Freq.	(dBm)	(dB)
Channel				134600	136100	137600	Tune-up limit	MPR
Frequency (MHz)				673	680.5	688	(dBm)	(dB)
20	PI/2 BPSK	1	1	23.64	23.79	23.91	24.0	0.0
20	PI/2 BPSK	1	53	23.66	23.55	23.64		
20	PI/2 BPSK	1	104	23.74	23.54	23.73		
20	PI/2 BPSK	50	0	22.70	22.94	22.54	23.0	1.0
20	PI/2 BPSK	50	28	22.84	22.82	22.69		
20	PI/2 BPSK	50	56	22.95	22.58	22.85		
20	PI/2 BPSK	100	0	22.88	22.75	22.93	23.0	1.0
20	QPSK	1	1	23.96	23.55	23.57	24.0	0.0
20	QPSK	1	53	23.76	23.83	23.70		
20	QPSK	1	104	23.88	23.93	23.89		
20	QPSK	50	0	22.53	22.68	22.96	23.0	1.0
20	QPSK	50	28	22.61	22.82	22.59		
20	QPSK	50	56	22.74	22.86	22.90		
20	QPSK	100	0	22.74	22.99	22.89	23.0	1.0
20	16QAM	1	1	23.90	23.86	23.74	24.0	0.0
20	16QAM	1	53	23.80	23.62	23.70		
20	16QAM	1	104	23.60	23.87	23.93		
20	16QAM	50	0	22.79	22.68	22.68	23.0	1.0
20	16QAM	50	28	22.50	22.75	22.69		
20	16QAM	50	56	22.51	22.57	22.88		
20	16QAM	100	0	22.98	22.76	22.52	23.0	1.0
20	64QAM	1	1	23.54	23.52	23.88	24.0	0.0
20	64QAM	1	53	23.71	23.70	23.66		
20	64QAM	1	104	23.68	23.85	23.88		
20	64QAM	50	0	22.88	22.66	22.52	23.0	1.0
20	64QAM	50	28	22.95	22.60	22.71		
20	64QAM	50	56	22.83	22.84	22.54		
20	64QAM	100	0	22.83	22.94	22.94	23.0	1.0
20	256QAM	1	1	23.90	23.86	23.85	24.0	0.0
20	256QAM	1	53	24.00	23.86	23.88		
20	256QAM	1	104	23.64	23.53	23.92		
20	256QAM	50	0	22.79	22.83	22.95	23.0	1.0
20	256QAM	50	28	22.78	22.99	22.86		
20	256QAM	50	56	22.83	22.66	22.66		
20	256QAM	100	0	22.83	22.89	22.50	23.0	1.0
Channel				134100	136100	138100	Tune-up limit	MPR
Frequency (MHz)				670.5	680.5	690.5	(dBm)	(dB)
15	PI/2 BPSK	1	1	23.96	23.59	23.93	24.0	0.0
Channel				133600	136100	138600	Tune-up limit	MPR
Frequency (MHz)				668	680.5	693	(dBm)	(dB)
10	PI/2 BPSK	1	1	23.73	23.83	23.55	24.0	0.0
Channel				133100	136100	139100	Tune-up limit	MPR
Frequency (MHz)				665.5	680.5	685.5	(dBm)	(dB)
5	PI/2 BPSK	1	1	23.75	23.91	23.92	24.0	0.0

<n78 PC3 Ant4>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low	Power Middle	Power High	Tune-up limit	MPR
				Ch. / Freq.	Ch. / Freq.	Ch. / Freq.	(dBm)	(dB)
Channel				620666	636667	652666	Tune-up limit	MPR
Frequency (MHz)				3310	3550	3790	(dBm)	(dB)
20	PI/2 BPSK	1	1	23.86	24.26	24.06	24.5	0.0
20	PI/2 BPSK	1	53	24.22	24.30	24.14		
20	PI/2 BPSK	1	104	23.83	24.11	24.12		
20	PI/2 BPSK	50	0	22.95	23.06	22.87	23.5	1.0
20	PI/2 BPSK	50	28	23.21	22.88	23.27		
20	PI/2 BPSK	50	56	22.94	23.09	23.02		
20	PI/2 BPSK	100	0	23.24	23.02	23.00	23.5	1.0
20	QPSK	1	1	23.97	24.12	23.86	24.5	0.0
20	QPSK	1	53	24.11	23.95	24.28		
20	QPSK	1	104	24.10	23.85	24.11		
20	QPSK	50	0	23.01	23.05	23.26	23.5	1.0
20	QPSK	50	28	23.07	23.25	22.96		
20	QPSK	50	56	23.13	23.13	22.83		
20	QPSK	100	0	23.08	22.97	23.22	23.5	1.0
20	16QAM	1	1	24.08	24.02	24.14	24.5	0.0
20	16QAM	1	53	24.14	24.13	24.15		
20	16QAM	1	104	23.95	23.85	24.10		
20	16QAM	50	0	23.16	23.30	22.96	23.5	1.0
20	16QAM	50	28	23.29	22.95	23.15		
20	16QAM	50	56	22.92	22.86	23.20		
20	16QAM	100	0	23.05	23.08	23.00	23.5	1.0
20	64QAM	1	1	23.89	24.08	24.29	24.5	0.0
20	64QAM	1	53	24.11	23.81	24.03		
20	64QAM	1	104	24.13	23.95	24.11		
20	64QAM	50	0	23.12	23.21	23.15	23.5	1.0
20	64QAM	50	28	22.88	23.10	22.86		
20	64QAM	50	56	22.93	23.03	22.95		
20	64QAM	100	0	22.90	23.26	23.15	23.5	1.0
20	256QAM	1	1	24.27	24.11	23.89	24.5	0.0
20	256QAM	1	53	23.94	23.91	23.93		
20	256QAM	1	104	23.95	23.91	24.09		
20	256QAM	50	0	23.24	22.98	23.00	23.5	1.0
20	256QAM	50	28	23.19	23.00	23.10		
20	256QAM	50	56	23.04	22.93	23.02		
20	256QAM	100	0	23.23	23.01	23.28	23.5	1.0
Channel				620166	376000	653166	Tune-up limit	MPR
Frequency (MHz)				3307.5	1880	3792.5	(dBm)	(dB)
15	PI/2 BPSK	1	1	24.15	24.16	24.07	24.5	0.0
Channel				619666	376000	653666	Tune-up limit	MPR
Frequency (MHz)				3305	1880	3795	(dBm)	(dB)
10	PI/2 BPSK	1	1	24.00	23.99	23.91	24.5	0.0
Channel				619166	376000	654166	Tune-up limit	MPR
Frequency (MHz)				3302.5	1880	3797.5	(dBm)	(dB)
5	PI/2 BPSK	1	1	24.22	23.82	24.14	24.5	0.0

<n78 PC3 Ant6>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low	Power Middle	Power High	Tune-up limit	MPR
				Ch. / Freq.	Ch. / Freq.	Ch. / Freq.	(dBm)	(dB)
Channel				620666	636667	652666	Tune-up limit	MPR
Frequency (MHz)				3310	3550	3790	(dBm)	(dB)
20	PI/2 BPSK	1	1	21.38	21.24	21.11	21.5	0.0
20	PI/2 BPSK	1	53	21.28	21.08	21.29		
20	PI/2 BPSK	1	104	21.42	21.13	21.10		
20	PI/2 BPSK	50	0	20.32	20.00	20.24	20.5	1.0
20	PI/2 BPSK	50	28	20.04	20.26	20.13		
20	PI/2 BPSK	50	56	20.19	20.47	20.42		
20	PI/2 BPSK	100	0	20.13	20.35	20.40	20.5	1.0
20	QPSK	1	1	21.02	21.01	21.36	21.5	0.0
20	QPSK	1	53	21.44	21.19	21.25		
20	QPSK	1	104	21.17	21.44	21.33		
20	QPSK	50	0	20.19	20.46	20.02	20.5	1.0
20	QPSK	50	28	20.22	20.31	20.11		
20	QPSK	50	56	20.36	20.00	20.33		
20	QPSK	100	0	20.05	20.19	20.04	20.5	1.0
20	16QAM	1	1	21.49	21.21	21.47	21.5	0.0
20	16QAM	1	53	21.44	21.18	21.45		
20	16QAM	1	104	21.22	21.19	21.20		
20	16QAM	50	0	20.04	20.06	20.43	20.5	1.0
20	16QAM	50	28	20.43	20.20	20.04		
20	16QAM	50	56	20.01	20.40	20.40		
20	16QAM	100	0	20.20	20.29	20.15	20.5	1.0
20	64QAM	1	1	21.45	21.05	21.47	21.5	0.0
20	64QAM	1	53	21.25	21.08	21.42		
20	64QAM	1	104	21.04	21.06	21.44		
20	64QAM	50	0	20.38	20.48	20.45	20.5	1.0
20	64QAM	50	28	20.19	20.44	20.36		
20	64QAM	50	56	20.12	20.45	20.00		
20	64QAM	100	0	20.07	20.30	20.23	20.5	1.0
20	256QAM	1	1	21.37	21.05	21.09	21.5	0.0
20	256QAM	1	53	21.35	21.20	21.30		
20	256QAM	1	104	21.40	21.22	21.20		
20	256QAM	50	0	20.47	20.19	20.42	20.5	1.0
20	256QAM	50	28	20.21	20.47	20.45		
20	256QAM	50	56	20.15	20.34	20.32		
20	256QAM	100	0	20.02	20.31	20.34	20.5	1.0
Channel				620166	376000	653166	Tune-up limit	MPR
Frequency (MHz)				3307.5	1880	3792.5	(dBm)	(dB)
15	PI/2 BPSK	1	1	21.11	21.08	21.03	21.5	0.0
Channel				619666	376000	653666	Tune-up limit	MPR
Frequency (MHz)				3305	1880	3795	(dBm)	(dB)
10	PI/2 BPSK	1	1	21.26	21.41	21.08	21.5	0.0
Channel				619166	376000	654166	Tune-up limit	MPR
Frequency (MHz)				3302.5	1880	3797.5	(dBm)	(dB)
5	PI/2 BPSK	1	1	21.38	21.34	21.20	21.5	0.0



<n78 PC2 Ant4>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low	Power Middle	Power High	Tune-up limit	MPR
				Ch. / Freq.	Ch. / Freq.	Ch. / Freq.	(dBm)	(dB)
Channel				620666	636667	652666	Tune-up limit	MPR
Frequency (MHz)				3310	3550	3790	(dBm)	(dB)
20	PI/2 BPSK	1	1	25.67	25.67	25.68	26.0	0.0
20	PI/2 BPSK	1	53	25.78	25.90	25.61		
20	PI/2 BPSK	1	104	25.60	25.76	25.66		
20	PI/2 BPSK	50	0	24.56	24.52	24.66	25.0	1.0
20	PI/2 BPSK	50	28	24.67	24.88	24.60		
20	PI/2 BPSK	50	56	24.57	24.65	24.51		
20	PI/2 BPSK	100	0	24.76	24.80	24.48	25.0	1.0
20	QPSK	1	1	25.55	25.75	25.71	26.0	0.0
20	QPSK	1	53	25.53	25.74	25.67		
20	QPSK	1	104	25.81	25.40	25.85		
20	QPSK	50	0	24.47	24.48	24.88	25.0	1.0
20	QPSK	50	28	24.42	24.68	24.77		
20	QPSK	50	56	24.81	24.75	24.84		
20	QPSK	100	0	24.46	24.66	24.68	25.0	1.0
20	16QAM	1	1	25.63	25.58	25.41	26.0	0.0
20	16QAM	1	53	25.61	25.86	25.52		
20	16QAM	1	104	25.90	25.87	25.82		
20	16QAM	50	0	24.56	24.56	24.76	25.0	1.0
20	16QAM	50	28	24.50	24.77	24.74		
20	16QAM	50	56	24.61	24.59	24.55		
20	16QAM	100	0	24.78	24.41	24.45	25.0	1.0
20	64QAM	1	1	25.86	25.74	25.40	26.0	0.0
20	64QAM	1	53	25.63	25.73	25.67		
20	64QAM	1	104	25.61	25.58	25.75		
20	64QAM	50	0	24.50	24.82	24.63	25.0	1.0
20	64QAM	50	28	24.87	24.80	24.75		
20	64QAM	50	56	24.82	24.60	24.47		
20	64QAM	100	0	24.78	24.42	24.75	25.0	1.0
20	256QAM	1	1	25.54	25.62	25.78	26.0	0.0
20	256QAM	1	53	25.81	25.81	25.40		
20	256QAM	1	104	25.83	25.53	25.86		
20	256QAM	50	0	24.45	24.63	24.46	25.0	1.0
20	256QAM	50	28	24.76	24.75	24.62		
20	256QAM	50	56	24.76	24.41	24.86		
20	256QAM	100	0	24.89	24.47	24.87	25.0	1.0
Channel				620166	376000	653166	Tune-up limit	MPR
Frequency (MHz)				3307.5	1880	3792.5	(dBm)	(dB)
15	PI/2 BPSK	1	1	25.68	25.48	25.73	26.0	0.0
Channel				619666	376000	653666	Tune-up limit	MPR
Frequency (MHz)				3305	1880	3795	(dBm)	(dB)
10	PI/2 BPSK	1	1	25.73	25.83	25.49	26.0	0.0
Channel				619166	376000	654166	Tune-up limit	MPR
Frequency (MHz)				3302.5	1880	3797.5	(dBm)	(dB)
5	PI/2 BPSK	1	1	25.88	25.76	25.87	26.0	0.0

<n78 PC2 Ant6>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low	Power Middle	Power High	Tune-up limit	MPR
				Ch. / Freq.	Ch. / Freq.	Ch. / Freq.	(dBm)	(dB)
Channel				620666	636667	652666	Tune-up limit	MPR
Frequency (MHz)				3310	3550	3790	(dBm)	(dB)
20	PI/2 BPSK	1	1	22.62	22.87	22.61	23.0	0.0
20	PI/2 BPSK	1	53	22.57	22.51	22.52		
20	PI/2 BPSK	1	104	22.91	22.93	22.58		
20	PI/2 BPSK	50	0	21.54	21.60	21.90	22.0	1.0
20	PI/2 BPSK	50	28	21.56	21.55	21.86		
20	PI/2 BPSK	50	56	21.84	21.92	21.61		
20	PI/2 BPSK	100	0	21.52	21.68	21.81	22.0	1.0
20	QPSK	1	1	22.73	22.88	22.81	23.0	0.0
20	QPSK	1	53	22.77	22.57	22.55		
20	QPSK	1	104	22.70	22.96	22.80		
20	QPSK	50	0	21.58	21.87	21.77	22.0	1.0
20	QPSK	50	28	21.60	21.81	21.61		
20	QPSK	50	56	21.99	21.53	21.86		
20	QPSK	100	0	21.98	21.70	21.75	22.0	1.0
20	16QAM	1	1	22.94	22.94	22.58	23.0	0.0
20	16QAM	1	53	22.74	22.81	22.66		
20	16QAM	1	104	22.80	22.54	22.70		
20	16QAM	50	0	21.93	22.00	21.84	22.0	1.0
20	16QAM	50	28	21.50	21.66	22.00		
20	16QAM	50	56	21.69	21.57	21.59		
20	16QAM	100	0	21.59	21.98	21.91	22.0	1.0
20	64QAM	1	1	22.93	22.73	22.62	23.0	0.0
20	64QAM	1	53	22.63	22.74	22.82		
20	64QAM	1	104	22.70	22.88	22.84		
20	64QAM	50	0	21.69	21.80	21.98	22.0	1.0
20	64QAM	50	28	21.56	21.62	21.92		
20	64QAM	50	56	21.76	21.57	21.91		
20	64QAM	100	0	21.86	21.66	21.62	22.0	1.0
20	256QAM	1	1	22.63	22.72	22.57	23.0	0.0
20	256QAM	1	53	22.62	22.83	22.57		
20	256QAM	1	104	22.81	22.53	22.85		
20	256QAM	50	0	21.50	21.96	21.62	22.0	1.0
20	256QAM	50	28	21.96	21.93	21.96		
20	256QAM	50	56	21.53	21.65	21.87		
20	256QAM	100	0	21.89	21.80	21.93	22.0	1.0
Channel				620166	376000	653166	Tune-up limit	MPR
Frequency (MHz)				3307.5	1880	3792.5	(dBm)	(dB)
15	PI/2 BPSK	1	1	22.55	22.89	22.56	23.0	0.0
Channel				619666	376000	653666	Tune-up limit	MPR
Frequency (MHz)				3305	1880	3795	(dBm)	(dB)
10	PI/2 BPSK	1	1	22.71	22.59	22.73	23.0	0.0
Channel				619166	376000	654166	Tune-up limit	MPR
Frequency (MHz)				3302.5	1880	3797.5	(dBm)	(dB)
5	PI/2 BPSK	1	1	22.60	22.51	22.72	23.0	0.0

<n48 Ant4>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low	Power Middle	Power High	Tune-up limit	MPR
				Ch. / Freq.	Ch. / Freq.	Ch. / Freq.	(dBm)	(dB)
Channel				637333	643113	646000	Tune-up limit	MPR
Frequency (MHz)				3560	3625	3690	(dBm)	(dB)
20	PI/2 BPSK	1	1	21.30	21.37	21.14	21.5	0.0
20	PI/2 BPSK	1	53	21.44	21.18	21.16		
20	PI/2 BPSK	1	104	21.17	21.12	21.15		
20	PI/2 BPSK	50	0	20.27	20.31	20.17	20.5	1.0
20	PI/2 BPSK	50	28	20.32	20.09	20.34		
20	PI/2 BPSK	50	56	20.33	20.09	20.17		
20	PI/2 BPSK	100	0	20.20	20.27	20.42	20.5	1.0
20	QPSK	1	1	21.08	21.08	21.01	21.5	0.0
20	QPSK	1	53	21.03	21.45	21.31		
20	QPSK	1	104	21.35	21.36	21.17		
20	QPSK	50	0	20.31	20.08	20.08	20.5	1.0
20	QPSK	50	28	20.24	20.39	20.04		
20	QPSK	50	56	20.24	20.16	20.03		
20	QPSK	100	0	20.48	20.20	20.20	20.5	1.0
20	16QAM	1	1	21.25	21.31	21.35	21.5	0.0
20	16QAM	1	53	21.26	21.14	21.15		
20	16QAM	1	104	21.33	21.01	21.15		
20	16QAM	50	0	20.46	20.36	20.08	20.5	1.0
20	16QAM	50	28	20.16	20.48	20.39		
20	16QAM	50	56	20.25	20.04	20.03		
20	16QAM	100	0	20.26	20.43	20.02	20.5	1.0
20	64QAM	1	1	21.40	21.04	21.15	21.5	0.0
20	64QAM	1	53	21.01	21.33	21.50		
20	64QAM	1	104	21.35	21.30	21.22		
20	64QAM	50	0	20.30	20.00	20.13	20.5	1.0
20	64QAM	50	28	20.50	20.43	20.38		
20	64QAM	50	56	20.32	20.48	20.20		
20	64QAM	100	0	20.13	20.04	20.07	20.5	1.0
20	256QAM	1	1	21.22	21.29	21.10	21.5	0.0
20	256QAM	1	53	21.50	21.42	21.00		
20	256QAM	1	104	21.15	21.04	21.20		
20	256QAM	50	0	20.08	20.17	20.12	20.5	1.0
20	256QAM	50	28	20.22	20.46	20.34		
20	256QAM	50	56	20.21	20.14	20.05		
20	256QAM	100	0	20.12	20.25	20.12	20.5	1.0
Channel				636833	643113	646500	Tune-up limit	MPR
Frequency (MHz)				3557.5	3625	3692.5	(dBm)	(dB)
15	PI/2 BPSK	1	1	21.14	21.06	21.46	21.5	0.0
Channel				636333	643113	647000	Tune-up limit	MPR
Frequency (MHz)				3555	3625	3695	(dBm)	(dB)
10	PI/2 BPSK	1	1	21.16	21.32	21.17	21.5	0.0
Channel				635833	643113	647000	Tune-up limit	MPR
Frequency (MHz)				3552.5	3625	3697.5	(dBm)	(dB)
5	PI/2 BPSK	1	1	21.49	21.05	21.11	21.5	0.0

<n48 Ant6>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low	Power Middle	Power High	Tune-up limit	MPR
				Ch. / Freq.	Ch. / Freq.	Ch. / Freq.	(dBm)	(dB)
Channel				637333	643113	646000	Tune-up limit	MPR
Frequency (MHz)				3560	3625	3690	(dBm)	(dB)
20	PI/2 BPSK	1	1	18.39	18.09	18.18	18.5	0.0
20	PI/2 BPSK	1	53	18.17	18.48	18.18		
20	PI/2 BPSK	1	104	18.48	18.39	18.36		
20	PI/2 BPSK	50	0	17.44	17.35	17.46	17.5	1.0
20	PI/2 BPSK	50	28	17.29	17.48	17.44		
20	PI/2 BPSK	50	56	17.17	17.40	17.11		
20	PI/2 BPSK	100	0	17.07	17.02	17.49	17.5	1.0
20	QPSK	1	1	18.09	18.34	18.33	18.5	0.0
20	QPSK	1	53	18.49	18.17	18.44		
20	QPSK	1	104	18.10	18.12	18.20		
20	QPSK	50	0	17.31	17.32	17.46	17.5	1.0
20	QPSK	50	28	17.26	17.30	17.04		
20	QPSK	50	56	17.14	17.03	17.37		
20	QPSK	100	0	17.15	17.30	17.07	17.5	1.0
20	16QAM	1	1	18.08	18.05	18.24	18.5	0.0
20	16QAM	1	53	18.46	18.39	18.49		
20	16QAM	1	104	18.18	18.22	18.41		
20	16QAM	50	0	17.28	17.41	17.33	17.5	1.0
20	16QAM	50	28	17.44	17.28	17.25		
20	16QAM	50	56	17.11	17.49	17.02		
20	16QAM	100	0	17.05	17.39	17.35	17.5	1.0
20	64QAM	1	1	18.23	18.28	18.47	18.5	0.0
20	64QAM	1	53	18.13	18.30	18.42		
20	64QAM	1	104	18.10	18.47	18.37		
20	64QAM	50	0	17.10	17.15	17.40	17.5	1.0
20	64QAM	50	28	17.49	17.46	17.08		
20	64QAM	50	56	17.27	17.03	17.10		
20	64QAM	100	0	17.41	17.27	17.26	17.5	1.0
20	256QAM	1	1	18.22	18.46	18.39	18.5	0.0
20	256QAM	1	53	18.34	18.10	18.27		
20	256QAM	1	104	18.40	18.14	18.30		
20	256QAM	50	0	17.36	17.10	17.35	17.5	1.0
20	256QAM	50	28	17.02	17.38	17.45		
20	256QAM	50	56	17.11	17.49	17.00		
20	256QAM	100	0	17.43	17.10	17.03	17.5	1.0
Channel				636833	643113	646500	Tune-up limit	MPR
Frequency (MHz)				3557.5	3625	3692.5	(dBm)	(dB)
15	PI/2 BPSK	1	1	18.10	18.08	18.17	18.5	0.0
Channel				636333	643113	647000	Tune-up limit	MPR
Frequency (MHz)				3555	3625	3695	(dBm)	(dB)
10	PI/2 BPSK	1	1	18.35	18.44	18.49	18.5	0.0
Channel				635833	643113	647000	Tune-up limit	MPR
Frequency (MHz)				3552.5	3625	3697.5	(dBm)	(dB)
5	PI/2 BPSK	1	1	18.15	18.06	18.44	18.5	0.0

<n70 Ant8>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				N/A	340500	N/A	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				N/A	1702.5	N/A		
15	PI/2 BPSK	1	1	N/A	23.94	N/A	24.0	0.0
15	PI/2 BPSK	1	40	N/A	23.89	N/A		
15	PI/2 BPSK	1	78	N/A	23.75	N/A		
15	PI/2 BPSK	37	0	N/A	22.65	N/A	23.0	1.0
15	PI/2 BPSK	37	21	N/A	22.87	N/A		
15	PI/2 BPSK	37	42	N/A	22.87	N/A		
15	PI/2 BPSK	75	0	N/A	22.67	N/A	23.0	1.0
15	QPSK	1	1	N/A	23.96	N/A	24.0	0.0
15	QPSK	1	40	N/A	23.76	N/A		
15	QPSK	1	78	N/A	23.72	N/A		
15	QPSK	37	0	N/A	22.53	N/A	23.0	1.0
15	QPSK	37	21	N/A	22.60	N/A		
15	QPSK	37	42	N/A	22.77	N/A		
15	QPSK	75	0	N/A	22.97	N/A	23.0	1.0
15	16QAM	1	1	N/A	23.65	N/A	24.0	0.0
15	16QAM	1	40	N/A	23.52	N/A		
15	16QAM	1	78	N/A	23.55	N/A		
15	16QAM	37	0	N/A	22.58	N/A	23.0	1.0
15	16QAM	37	21	N/A	22.63	N/A		
15	16QAM	37	42	N/A	22.96	N/A		
15	16QAM	75	0	N/A	22.73	N/A	23.0	1.0
15	64QAM	1	1	N/A	23.56	N/A	24.0	0.0
15	64QAM	1	40	N/A	23.58	N/A		
15	64QAM	1	78	N/A	23.64	N/A		
15	64QAM	37	0	N/A	22.97	N/A	23.0	1.0
15	64QAM	37	21	N/A	22.65	N/A		
15	64QAM	37	42	N/A	22.54	N/A		
15	64QAM	75	0	N/A	22.66	N/A	23.0	1.0
15	256QAM	1	1	N/A	23.74	N/A	24.0	0.0
15	256QAM	1	40	N/A	23.70	N/A		
15	256QAM	1	78	N/A	23.59	N/A		
15	256QAM	37	0	N/A	22.82	N/A	23.0	1.0
15	256QAM	37	21	N/A	22.55	N/A		
15	256QAM	37	42	N/A	22.88	N/A		
15	256QAM	75	0	N/A	22.86	N/A	23.0	1.0
Channel				340000	340500	341000	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1700	1702.5	1705		
10	PI/2 BPSK	1	1	23.98	24.00	23.72	24.0	0.0
Channel				339500	340500	341500	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1697.5	1702.5	1707.5		
5	PI/2 BPSK	1	1	23.77	23.66	23.66	24.0	0.0

<n77 PC3 Ant4>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low	Power Middle	Power High	Tune-up limit	MPR
				Ch. / Freq.	Ch. / Freq.	Ch. / Freq.	(dBm)	(dB)
Channel				620666	646720	679333	Tune-up limit	MPR
Frequency (MHz)				3310	3750	4190	(dBm)	(dB)
20	PI/2 BPSK	1	1	24.06	24.49	24.08	24.5	0.0
20	PI/2 BPSK	1	53	24.42	24.14	24.28		
20	PI/2 BPSK	1	104	24.14	24.38	24.28		
20	PI/2 BPSK	50	0	23.48	23.19	23.02	23.5	1.0
20	PI/2 BPSK	50	28	23.49	23.31	23.05		
20	PI/2 BPSK	50	56	23.48	23.45	23.13		
20	PI/2 BPSK	100	0	23.28	23.50	23.04	23.5	1.0
20	QPSK	1	1	24.33	24.31	24.10	24.5	0.0
20	QPSK	1	53	24.14	24.43	24.18		
20	QPSK	1	104	24.48	24.08	24.11		
20	QPSK	50	0	23.09	23.06	23.07	23.5	1.0
20	QPSK	50	28	23.40	23.15	23.35		
20	QPSK	50	56	23.37	23.17	23.02		
20	QPSK	100	0	23.18	23.35	23.34	23.5	1.0
20	16QAM	1	1	24.40	24.43	24.34	24.5	0.0
20	16QAM	1	53	24.30	24.03	24.20		
20	16QAM	1	104	24.29	24.11	24.37		
20	16QAM	50	0	23.41	23.27	23.44	23.5	1.0
20	16QAM	50	28	23.08	23.16	23.19		
20	16QAM	50	56	23.45	23.47	23.34		
20	16QAM	100	0	23.49	23.07	23.08	23.5	1.0
20	64QAM	1	1	24.11	24.01	24.17	24.5	0.0
20	64QAM	1	53	24.36	24.12	24.13		
20	64QAM	1	104	24.22	24.15	24.15		
20	64QAM	50	0	23.30	23.10	23.34	23.5	1.0
20	64QAM	50	28	23.49	23.39	23.44		
20	64QAM	50	56	23.49	23.17	23.23		
20	64QAM	100	0	23.37	23.34	23.15	23.5	1.0
20	256QAM	1	1	24.19	24.31	24.27	24.5	0.0
20	256QAM	1	53	24.09	24.42	24.28		
20	256QAM	1	104	24.42	24.01	24.38		
20	256QAM	50	0	23.27	23.38	23.49	23.5	1.0
20	256QAM	50	28	23.31	23.00	23.29		
20	256QAM	50	56	23.47	23.27	23.27		
20	256QAM	100	0	23.06	23.13	23.31	23.5	1.0
Channel				620166	646720	679833	Tune-up limit	MPR
Frequency (MHz)				3307.5	3750	4192.5	(dBm)	(dB)
15	PI/2 BPSK	1	1	24.23	24.44	24.39	24.5	0.0
Channel				619666	646720	680333	Tune-up limit	MPR
Frequency (MHz)				3305	3750	4195	(dBm)	(dB)
10	PI/2 BPSK	1	1	24.01	24.01	24.04	24.5	0.0
Channel				619166	646720	680833	Tune-up limit	MPR
Frequency (MHz)				3302.5	3750	4197.5	(dBm)	(dB)
5	PI/2 BPSK	1	1	24.25	24.05	24.02	24.5	0.0

<n77 PC3 Ant6>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low	Power Middle	Power High	Tune-up limit	MPR
				Ch. / Freq.	Ch. / Freq.	Ch. / Freq.	(dBm)	(dB)
Channel				620666	646720	679333	Tune-up limit	MPR
Frequency (MHz)				3310	3750	4190	(dBm)	(dB)
20	PI/2 BPSK	1	1	21.45	21.22	21.49	21.5	0.0
20	PI/2 BPSK	1	53	21.40	21.05	21.28		
20	PI/2 BPSK	1	104	21.45	21.09	21.12		
20	PI/2 BPSK	50	0	20.28	20.38	20.25	20.5	1.0
20	PI/2 BPSK	50	28	20.37	20.06	20.16		
20	PI/2 BPSK	50	56	20.26	20.20	20.26		
20	PI/2 BPSK	100	0	20.34	20.26	20.05	20.5	1.0
20	QPSK	1	1	21.08	21.17	21.38	21.5	0.0
20	QPSK	1	53	21.04	21.40	21.24		
20	QPSK	1	104	21.44	21.35	21.30		
20	QPSK	50	0	20.21	20.24	20.17	20.5	1.0
20	QPSK	50	28	20.03	20.38	20.13		
20	QPSK	50	56	20.10	20.38	20.37		
20	QPSK	100	0	20.36	20.06	20.45	20.5	1.0
20	16QAM	1	1	21.47	21.41	21.21	21.5	0.0
20	16QAM	1	53	21.12	21.16	21.32		
20	16QAM	1	104	21.17	21.17	21.26		
20	16QAM	50	0	20.30	20.22	20.18	20.5	1.0
20	16QAM	50	28	20.43	20.10	20.22		
20	16QAM	50	56	20.21	20.02	20.04		
20	16QAM	100	0	20.32	20.03	20.05	20.5	1.0
20	64QAM	1	1	21.16	21.49	21.34	21.5	0.0
20	64QAM	1	53	21.31	21.32	21.07		
20	64QAM	1	104	21.06	21.47	21.24		
20	64QAM	50	0	20.10	20.48	20.12	20.5	1.0
20	64QAM	50	28	20.43	20.13	20.06		
20	64QAM	50	56	20.40	20.20	20.33		
20	64QAM	100	0	20.38	20.27	20.10	20.5	1.0
20	256QAM	1	1	21.11	21.42	21.02	21.5	0.0
20	256QAM	1	53	21.41	21.31	21.14		
20	256QAM	1	104	21.46	21.38	21.08		
20	256QAM	50	0	20.24	20.25	20.17	20.5	1.0
20	256QAM	50	28	20.34	20.11	20.49		
20	256QAM	50	56	20.21	20.02	20.48		
20	256QAM	100	0	20.30	20.07	20.14	20.5	1.0
Channel				620166	646720	679833	Tune-up limit	MPR
Frequency (MHz)				3307.5	3750	4192.5	(dBm)	(dB)
15	PI/2 BPSK	1	1	21.43	21.03	21.22	21.5	0.0
Channel				619666	646720	680333	Tune-up limit	MPR
Frequency (MHz)				3305	3750	4195	(dBm)	(dB)
10	PI/2 BPSK	1	1	21.05	21.09	21.03	21.5	0.0
Channel				619166	646720	680833	Tune-up limit	MPR
Frequency (MHz)				3302.5	3750	4197.5	(dBm)	(dB)
5	PI/2 BPSK	1	1	21.35	21.06	21.36	21.5	0.0

<n77 PC2 Ant4>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low	Power Middle	Power High	Tune-up limit	MPR
				Ch. / Freq.	Ch. / Freq.	Ch. / Freq.	(dBm)	(dB)
Channel				620666	646720	679333	Tune-up limit	MPR
Frequency (MHz)				3310	3750	4190	(dBm)	(dB)
20	PI/2 BPSK	1	1	25.74	25.57	25.92	26.0	0.0
20	PI/2 BPSK	1	53	25.77	25.80	25.98		
20	PI/2 BPSK	1	104	25.52	25.95	25.89		
20	PI/2 BPSK	50	0	24.84	24.57	24.78	25.0	1.0
20	PI/2 BPSK	50	28	24.62	24.94	24.83		
20	PI/2 BPSK	50	56	25.00	24.54	24.51		
20	PI/2 BPSK	100	0	24.53	24.64	24.80	25.0	1.0
20	QPSK	1	1	25.76	25.95	25.72	26.0	0.0
20	QPSK	1	53	25.87	25.90	25.79		
20	QPSK	1	104	25.75	25.99	25.56		
20	QPSK	50	0	24.89	24.78	24.99	25.0	1.0
20	QPSK	50	28	24.99	24.68	24.56		
20	QPSK	50	56	24.95	24.91	24.85		
20	QPSK	100	0	24.88	24.63	24.55	25.0	1.0
20	16QAM	1	1	25.66	25.64	25.95	26.0	0.0
20	16QAM	1	53	25.86	25.84	25.99		
20	16QAM	1	104	25.74	25.60	25.59		
20	16QAM	50	0	24.61	24.76	24.95	25.0	1.0
20	16QAM	50	28	24.85	24.71	24.79		
20	16QAM	50	56	24.72	24.69	24.67		
20	16QAM	100	0	24.68	24.57	24.58	25.0	1.0
20	64QAM	1	1	25.85	25.76	25.95	26.0	0.0
20	64QAM	1	53	25.75	25.70	25.67		
20	64QAM	1	104	25.79	25.89	25.77		
20	64QAM	50	0	24.55	24.90	24.87	25.0	1.0
20	64QAM	50	28	24.81	24.84	24.98		
20	64QAM	50	56	24.80	24.72	24.59		
20	64QAM	100	0	24.52	24.99	24.57	25.0	1.0
20	256QAM	1	1	25.52	25.63	25.55	26.0	0.0
20	256QAM	1	53	25.61	25.99	25.80		
20	256QAM	1	104	25.59	25.56	25.56		
20	256QAM	50	0	24.66	24.68	24.72	25.0	1.0
20	256QAM	50	28	24.71	24.63	24.95		
20	256QAM	50	56	24.63	24.53	24.55		
20	256QAM	100	0	24.92	24.85	24.51	25.0	1.0
Channel				620166	646720	679833	Tune-up limit	MPR
Frequency (MHz)				3307.5	3750	4192.5	(dBm)	(dB)
15	PI/2 BPSK	1	1	25.64	25.92	25.87	26.0	0.0
Channel				619666	646720	680333	Tune-up limit	MPR
Frequency (MHz)				3305	3750	4195	(dBm)	(dB)
10	PI/2 BPSK	1	1	25.70	25.95	25.65	26.0	0.0
Channel				619166	646720	680833	Tune-up limit	MPR
Frequency (MHz)				3302.5	3750	4197.5	(dBm)	(dB)
5	PI/2 BPSK	1	1	25.62	25.69	25.59	26.0	0.0



<n77 PC2 Ant6>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low	Power Middle	Power High	Tune-up limit	MPR
				Ch. / Freq.	Ch. / Freq.	Ch. / Freq.	(dBm)	(dB)
				620666	646720	679333	Tune-up limit	MPR
				3310	3750	4190	(dBm)	(dB)
20	PI/2 BPSK	1	1	22.94	22.90	22.70	23.0	0.0
20	PI/2 BPSK	1	53	22.76	22.94	22.66		
20	PI/2 BPSK	1	104	22.58	22.58	22.65		
20	PI/2 BPSK	50	0	21.86	21.94	21.51	22.0	1.0
20	PI/2 BPSK	50	28	21.76	21.63	21.64		
20	PI/2 BPSK	50	56	21.62	21.68	21.55		
20	PI/2 BPSK	100	0	21.59	21.51	21.71	22.0	1.0
20	QPSK	1	1	22.64	22.98	22.94	23.0	0.0
20	QPSK	1	53	22.55	22.92	22.91		
20	QPSK	1	104	22.68	22.75	22.53		
20	QPSK	50	0	21.65	21.95	21.59	22.0	1.0
20	QPSK	50	28	21.56	21.59	21.68		
20	QPSK	50	56	21.96	21.99	21.74		
20	QPSK	100	0	21.88	21.70	21.87	22.0	1.0
20	16QAM	1	1	22.77	22.74	22.55	23.0	0.0
20	16QAM	1	53	22.62	22.75	22.86		
20	16QAM	1	104	22.72	22.71	22.89		
20	16QAM	50	0	21.65	21.72	21.79	22.0	1.0
20	16QAM	50	28	21.85	21.93	21.88		
20	16QAM	50	56	21.98	21.96	21.78		
20	16QAM	100	0	21.61	21.81	21.92	22.0	1.0
20	64QAM	1	1	22.60	22.85	22.68	23.0	0.0
20	64QAM	1	53	22.76	22.94	22.80		
20	64QAM	1	104	22.55	22.64	22.72		
20	64QAM	50	0	21.80	21.91	21.53	22.0	1.0
20	64QAM	50	28	21.70	21.96	21.65		
20	64QAM	50	56	21.85	21.70	21.99		
20	64QAM	100	0	22.00	21.77	21.84	22.0	1.0
20	256QAM	1	1	22.50	22.71	22.80	23.0	0.0
20	256QAM	1	53	22.69	22.98	23.00		
20	256QAM	1	104	22.53	22.72	22.88		
20	256QAM	50	0	21.51	21.61	21.84	22.0	1.0
20	256QAM	50	28	21.76	21.67	21.90		
20	256QAM	50	56	21.93	21.57	21.57		
20	256QAM	100	0	21.70	21.66	21.99	22.0	1.0
				620166	646720	679833	Tune-up limit	MPR
				3307.5	3750	4192.5	(dBm)	(dB)
15	PI/2 BPSK	1	1	22.52	22.98	22.90	23.0	0.0
				619666	646720	680333	Tune-up limit	MPR
				3305	3750	4195	(dBm)	(dB)
10	PI/2 BPSK	1	1	22.85	22.97	22.88	23.0	0.0
				619166	646720	680833	Tune-up limit	MPR
				3302.5	3750	4197.5	(dBm)	(dB)
5	PI/2 BPSK	1	1	22.65	22.78	22.67	23.0	0.0

**Table 9.2 FR1 Backoff Power Measurements**

&lt;n2 Ant0&gt;

BW [MHz]	Modulation	RB Size	RB Offset	Power Low	Power Middle	Power High	Tune-up limit	MPR
				Ch. / Freq.	Ch. / Freq.	Ch. / Freq.	(dBm)	(dB)
				372000	376000	380000	Tune-up limit	MPR
				1860	1880	1900	(dBm)	(dB)
20	PI/2 BPSK	1	1	17.27	17.28	16.87	17.5	0.0
20	PI/2 BPSK	1	53	17.21	17.30	17.16		
20	PI/2 BPSK	1	104	16.90	17.07	17.14		
20	PI/2 BPSK	50	0	16.28	15.90	16.22	16.5	1.0
20	PI/2 BPSK	50	28	16.00	15.84	16.10		
20	PI/2 BPSK	50	56	15.98	15.83	15.90		
20	PI/2 BPSK	100	0	15.94	15.92	15.88	16.5	1.0
20	QPSK	1	1	17.09	17.12	16.81	17.5	0.0
20	QPSK	1	53	17.27	16.84	16.86		
20	QPSK	1	104	17.09	17.29	17.10		
20	QPSK	50	0	15.81	16.08	16.00	16.5	1.0
20	QPSK	50	28	16.11	16.14	15.91		
20	QPSK	50	56	15.81	15.81	16.28		
20	QPSK	100	0	16.11	15.86	15.92	16.5	1.0
20	16QAM	1	1	17.21	17.14	17.24	17.5	0.0
20	16QAM	1	53	17.01	16.86	17.10		
20	16QAM	1	104	17.10	17.02	17.12		
20	16QAM	50	0	16.09	15.81	16.25	16.5	1.0
20	16QAM	50	28	15.92	15.91	15.94		
20	16QAM	50	56	15.95	16.23	16.22		
20	16QAM	100	0	15.98	15.91	15.96	16.5	1.0
20	64QAM	1	1	16.86	16.91	16.96	17.5	0.0
20	64QAM	1	53	17.23	17.03	17.13		
20	64QAM	1	104	17.14	17.10	17.09		
20	64QAM	50	0	15.85	15.98	16.10	16.5	1.0
20	64QAM	50	28	15.96	15.80	16.22		
20	64QAM	50	56	16.28	15.87	16.16		
20	64QAM	100	0	16.29	15.96	16.20	16.5	1.0
20	256QAM	1	1	17.11	17.23	17.17	17.5	0.0
20	256QAM	1	53	17.14	17.12	16.84		
20	256QAM	1	104	16.85	16.82	17.00		
20	256QAM	50	0	15.91	16.00	15.96	16.5	1.0
20	256QAM	50	28	16.12	16.17	15.88		
20	256QAM	50	56	16.17	15.84	15.85		
20	256QAM	100	0	16.01	16.28	16.10	16.5	1.0
				371500	376000	380500	Tune-up limit	MPR
				1857.5	1880	1902.5	(dBm)	(dB)
15	PI/2 BPSK	1	1	16.89	16.96	16.99	17.5	0.0
				371000	376000	381000	Tune-up limit	MPR
				1855	1880	1905	(dBm)	(dB)
10	PI/2 BPSK	1	1	17.03	17.26	16.89	17.5	0.0
				370500	376000	381500	Tune-up limit	MPR
				1852.5	1880	1907.5	(dBm)	(dB)
5	PI/2 BPSK	1	1	17.04	16.96	16.98	17.5	0.0

<n2 Ant8>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low	Power Middle	Power High	Tune-up limit	MPR
				Ch. / Freq.	Ch. / Freq.	Ch. / Freq.	(dBm)	(dB)
Channel				372000	376000	380000	Tune-up limit	MPR
Frequency (MHz)				1860	1880	1900	(dBm)	(dB)
20	PI/2 BPSK	1	1	14.01	14.08	14.09	14.5	0.0
20	PI/2 BPSK	1	53	14.35	14.23	14.45		
20	PI/2 BPSK	1	104	14.20	14.12	14.20		
20	PI/2 BPSK	50	0	13.07	13.27	13.29	13.5	1.0
20	PI/2 BPSK	50	28	13.27	13.49	13.25		
20	PI/2 BPSK	50	56	13.24	13.04	13.00		
20	PI/2 BPSK	100	0	13.11	13.30	13.45	13.5	1.0
20	QPSK	1	1	14.07	14.47	14.07	14.5	0.0
20	QPSK	1	53	14.17	14.22	14.24		
20	QPSK	1	104	14.31	14.47	14.47		
20	QPSK	50	0	13.49	13.48	13.15	13.5	1.0
20	QPSK	50	28	13.28	13.26	13.05		
20	QPSK	50	56	13.11	13.35	13.43		
20	QPSK	100	0	13.17	13.34	13.13	13.5	1.0
20	16QAM	1	1	14.23	14.22	14.34	14.5	0.0
20	16QAM	1	53	14.01	14.40	14.42		
20	16QAM	1	104	14.19	14.20	14.37		
20	16QAM	50	0	13.17	13.12	13.29	13.5	1.0
20	16QAM	50	28	13.28	13.37	13.08		
20	16QAM	50	56	13.24	13.50	13.34		
20	16QAM	100	0	13.26	13.28	13.39	13.5	1.0
20	64QAM	1	1	14.33	14.44	14.33	14.5	0.0
20	64QAM	1	53	14.28	14.43	14.23		
20	64QAM	1	104	14.39	14.21	14.12		
20	64QAM	50	0	13.14	13.05	13.39	13.5	1.0
20	64QAM	50	28	13.14	13.17	13.12		
20	64QAM	50	56	13.37	13.17	13.48		
20	64QAM	100	0	13.36	13.00	13.42	13.5	1.0
20	256QAM	1	1	14.35	14.21	14.35	14.5	0.0
20	256QAM	1	53	14.27	14.13	14.32		
20	256QAM	1	104	14.12	14.09	14.00		
20	256QAM	50	0	13.02	13.35	13.12	13.5	1.0
20	256QAM	50	28	13.38	13.07	13.19		
20	256QAM	50	56	13.46	13.29	13.19		
20	256QAM	100	0	13.06	13.49	13.15	13.5	1.0
Channel				371500	376000	380500	Tune-up limit	MPR
Frequency (MHz)				1857.5	1880	1902.5	(dBm)	(dB)
15	PI/2 BPSK	1	1	14.21	14.00	14.08	14.5	0.0
Channel				371000	376000	381000	Tune-up limit	MPR
Frequency (MHz)				1855	1880	1905	(dBm)	(dB)
10	PI/2 BPSK	1	1	14.43	14.45	14.26	14.5	0.0
Channel				370500	376000	381500	Tune-up limit	MPR
Frequency (MHz)				1852.5	1880	1907.5	(dBm)	(dB)
5	PI/2 BPSK	1	1	14.09	14.31	14.01	14.5	0.0

<n7 Ant0>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low	Power Middle	Power High	Tune-up limit	MPR
				Ch. / Freq.	Ch. / Freq.	Ch. / Freq.	(dBm)	(dB)
Channel				502000	507000	512000	Tune-up limit	MPR
Frequency (MHz)				2510	2535	2560	(dBm)	(dB)
20	PI/2 BPSK	1	1	18.85	18.94	18.85	19.5	0.0
20	PI/2 BPSK	1	53	18.99	19.20	19.08		
20	PI/2 BPSK	1	104	18.87	18.75	19.19		
20	PI/2 BPSK	50	0	18.06	18.19	17.91	18.5	1.0
20	PI/2 BPSK	50	28	17.85	17.74	17.91		
20	PI/2 BPSK	50	56	18.15	17.87	17.96		
20	PI/2 BPSK	100	0	17.83	17.88	17.76	18.5	1.0
20	QPSK	1	1	19.01	19.05	18.88	19.5	0.0
20	QPSK	1	53	19.11	18.84	19.18		
20	QPSK	1	104	18.87	18.97	18.96		
20	QPSK	50	0	18.17	17.97	18.05	18.5	1.0
20	QPSK	50	28	17.78	17.72	18.03		
20	QPSK	50	56	18.14	17.70	17.75		
20	QPSK	100	0	18.16	17.97	18.13	18.5	1.0
20	16QAM	1	1	18.91	19.01	18.78	19.5	0.0
20	16QAM	1	53	19.16	18.94	19.07		
20	16QAM	1	104	19.17	18.93	18.71		
20	16QAM	50	0	18.01	18.14	17.86	18.5	1.0
20	16QAM	50	28	17.84	18.19	17.89		
20	16QAM	50	56	18.03	18.11	17.90		
20	16QAM	100	0	17.74	17.93	18.11	18.5	1.0
20	64QAM	1	1	18.83	19.08	19.05	19.5	0.0
20	64QAM	1	53	18.88	18.87	18.78		
20	64QAM	1	104	19.14	18.86	18.79		
20	64QAM	50	0	17.82	18.05	17.75	18.5	1.0
20	64QAM	50	28	18.02	18.13	17.93		
20	64QAM	50	56	18.15	18.04	18.18		
20	64QAM	100	0	18.08	17.88	17.91	18.5	1.0
20	256QAM	1	1	19.06	19.14	19.14	19.5	0.0
20	256QAM	1	53	19.18	19.06	19.17		
20	256QAM	1	104	19.06	18.78	18.94		
20	256QAM	50	0	18.18	18.09	17.91	18.5	1.0
20	256QAM	50	28	17.88	18.00	17.77		
20	256QAM	50	56	18.05	18.07	18.09		
20	256QAM	100	0	17.96	17.93	17.85	18.5	1.0
Channel				501500	507000	511500	Tune-up limit	MPR
Frequency (MHz)				2507.5	2535	2562.5	(dBm)	(dB)
15	PI/2 BPSK	1	1	18.73	18.73	18.97	19.5	0.0
Channel				501000	507000	511000	Tune-up limit	MPR
Frequency (MHz)				2505	2535	2565	(dBm)	(dB)
10	PI/2 BPSK	1	1	18.95	18.80	18.97	19.5	0.0
Channel				500500	507000	510500	Tune-up limit	MPR
Frequency (MHz)				2502.5	2535	2567.5	(dBm)	(dB)
5	PI/2 BPSK	1	1	19.02	18.82	19.03	19.5	0.0

<n25 Ant0>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low	Power Middle	Power High	Tune-up limit	MPR
				Ch. / Freq.	Ch. / Freq.	Ch. / Freq.	(dBm)	(dB)
Channel				372000	376500	381000	Tune-up limit	MPR
Frequency (MHz)				1860	1882.5	1905	(dBm)	(dB)
20	PI/2 BPSK	1	1	16.95	17.09	16.93	17.5	0.0
20	PI/2 BPSK	1	53	17.26	17.30	17.17		
20	PI/2 BPSK	1	104	17.27	16.86	17.25		
20	PI/2 BPSK	50	0	16.18	16.08	16.22	16.5	1.0
20	PI/2 BPSK	50	28	15.91	16.23	16.10		
20	PI/2 BPSK	50	56	16.25	16.27	16.28		
20	PI/2 BPSK	100	0	16.17	15.80	15.85	16.5	1.0
20	QPSK	1	1	16.86	16.90	17.15	17.5	0.0
20	QPSK	1	53	16.86	17.03	17.25		
20	QPSK	1	104	16.90	16.85	16.97		
20	QPSK	50	0	16.19	16.12	16.14	16.5	1.0
20	QPSK	50	28	15.81	16.04	16.24		
20	QPSK	50	56	16.26	16.02	15.82		
20	QPSK	100	0	15.84	16.21	16.25	16.5	1.0
20	16QAM	1	1	17.18	17.09	16.97	17.5	0.0
20	16QAM	1	53	17.09	16.95	17.12		
20	16QAM	1	104	16.86	16.85	17.12		
20	16QAM	50	0	16.13	16.10	15.84	16.5	1.0
20	16QAM	50	28	15.98	16.23	16.10		
20	16QAM	50	56	16.15	16.21	16.08		
20	16QAM	100	0	16.15	15.80	15.86	16.5	1.0
20	64QAM	1	1	17.14	17.29	17.06	17.5	0.0
20	64QAM	1	53	16.88	16.84	17.14		
20	64QAM	1	104	17.03	17.05	17.06		
20	64QAM	50	0	15.81	16.02	15.88	16.5	1.0
20	64QAM	50	28	16.06	16.06	15.97		
20	64QAM	50	56	15.91	15.81	16.06		
20	64QAM	100	0	15.98	15.97	16.24	16.5	1.0
20	256QAM	1	1	16.81	16.88	16.80	17.5	0.0
20	256QAM	1	53	16.83	17.17	16.82		
20	256QAM	1	104	16.97	17.06	16.97		
20	256QAM	50	0	16.16	16.19	16.21	16.5	1.0
20	256QAM	50	28	16.19	16.22	15.94		
20	256QAM	50	56	16.17	16.10	16.08		
20	256QAM	100	0	16.13	15.90	16.18	16.5	1.0
Channel				371500	376500	381500	Tune-up limit	MPR
Frequency (MHz)				1857.5	1882.5	1907.5	(dBm)	(dB)
15	PI/2 BPSK	1	1	17.21	17.28	17.05	17.5	0.0
Channel				371000	376500	382000	Tune-up limit	MPR
Frequency (MHz)				1855	1882.5	1910	(dBm)	(dB)
10	PI/2 BPSK	1	1	16.90	16.98	16.83	17.5	0.0
Channel				370500	376500	382500	Tune-up limit	MPR
Frequency (MHz)				1852.5	1882.5	1912.5	(dBm)	(dB)
5	PI/2 BPSK	1	1	16.82	17.26	17.06	17.5	0.0

<n38 Ant8>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low	Power Middle	Power High	Tune-up limit	MPR
				Ch. / Freq.	Ch. / Freq.	Ch. / Freq.	(dBm)	(dB)
Channel				516000	519000	522000	Tune-up limit	MPR
Frequency (MHz)				2580	2595	2610	(dBm)	(dB)
20	PI/2 BPSK	1	1	19.00	19.01	19.18	19.5	0.0
20	PI/2 BPSK	1	53	19.04	19.30	19.23		
20	PI/2 BPSK	1	104	19.18	19.12	18.90		
20	PI/2 BPSK	50	0	17.89	18.25	18.00	18.5	1.0
20	PI/2 BPSK	50	28	18.01	18.04	17.95		
20	PI/2 BPSK	50	56	17.96	18.04	18.26		
20	PI/2 BPSK	100	0	17.97	17.92	18.20	18.5	1.0
20	QPSK	1	1	18.87	19.16	19.01	19.5	0.0
20	QPSK	1	53	19.02	18.93	19.02		
20	QPSK	1	104	19.27	18.89	19.22		
20	QPSK	50	0	18.19	18.02	18.20	18.5	1.0
20	QPSK	50	28	18.22	18.09	17.85		
20	QPSK	50	56	17.88	17.81	18.22		
20	QPSK	100	0	18.22	17.85	18.07	18.5	1.0
20	16QAM	1	1	19.25	18.95	18.87	19.5	0.0
20	16QAM	1	53	19.01	19.05	18.88		
20	16QAM	1	104	19.18	18.93	19.25		
20	16QAM	50	0	17.87	18.30	18.03	18.5	1.0
20	16QAM	50	28	17.84	17.88	18.08		
20	16QAM	50	56	18.09	17.84	18.30		
20	16QAM	100	0	17.97	17.81	18.21	18.5	1.0
20	64QAM	1	1	19.22	19.22	19.18	19.5	0.0
20	64QAM	1	53	18.92	18.97	19.20		
20	64QAM	1	104	19.23	19.00	18.84		
20	64QAM	50	0	18.00	18.00	17.86	18.5	1.0
20	64QAM	50	28	18.06	18.13	17.88		
20	64QAM	50	56	18.15	17.93	18.04		
20	64QAM	100	0	18.29	17.85	18.01	18.5	1.0
20	256QAM	1	1	19.08	18.94	18.84	19.5	0.0
20	256QAM	1	53	19.16	18.92	19.06		
20	256QAM	1	104	18.89	18.83	18.99		
20	256QAM	50	0	17.94	18.24	17.98	18.5	1.0
20	256QAM	50	28	18.15	18.28	18.20		
20	256QAM	50	56	17.99	17.85	18.30		
20	256QAM	100	0	18.16	17.93	17.87	18.5	1.0
Channel				515500	519000	522500	Tune-up limit	MPR
Frequency (MHz)				2577.5	2595	2612.5	(dBm)	(dB)
15	PI/2 BPSK	1	1	18.88	18.90	18.96	19.5	0.0
Channel				515000	519000	523000	Tune-up limit	MPR
Frequency (MHz)				2575	2595	2615	(dBm)	(dB)
10	PI/2 BPSK	1	1	18.80	19.24	19.01	19.5	0.0
Channel				514500	519000	523500	Tune-up limit	MPR
Frequency (MHz)				2572.5	2595	2617.5	(dBm)	(dB)
5	PI/2 BPSK	1	1	18.97	19.22	19.02	19.5	0.0

<n41 PC2 & PC3 Ant8>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low	Power Middle	Power High	Tune-up limit	MPR
				Ch. / Freq.	Ch. / Freq.	Ch. / Freq.	(dBm)	(dB)
Channel				501200	518601	536000	Tune-up limit	MPR
Frequency (MHz)				2506	2593	2680	(dBm)	(dB)
20	PI/2 BPSK	1	1	19.09	19.12	19.04	19.5	0.0
20	PI/2 BPSK	1	53	19.00	19.20	19.16		
20	PI/2 BPSK	1	104	18.77	18.98	18.92		
20	PI/2 BPSK	50	0	17.86	18.08	17.72	18.5	1.0
20	PI/2 BPSK	50	28	17.79	17.75	18.13		
20	PI/2 BPSK	50	56	18.15	17.94	18.15		
20	PI/2 BPSK	100	0	18.05	18.01	18.02	18.5	1.0
20	QPSK	1	1	18.72	18.94	19.08	19.5	0.0
20	QPSK	1	53	19.18	19.16	18.86		
20	QPSK	1	104	18.70	18.89	18.79		
20	QPSK	50	0	17.86	17.94	17.96	18.5	1.0
20	QPSK	50	28	18.09	17.97	17.92		
20	QPSK	50	56	17.99	18.00	18.10		
20	QPSK	100	0	17.84	17.75	18.04	18.5	1.0
20	16QAM	1	1	18.71	18.83	18.76	19.5	0.0
20	16QAM	1	53	18.75	18.77	18.83		
20	16QAM	1	104	18.82	18.98	18.76		
20	16QAM	50	0	17.98	17.85	17.92	18.5	1.0
20	16QAM	50	28	18.05	17.70	18.02		
20	16QAM	50	56	17.93	17.90	17.91		
20	16QAM	100	0	18.08	17.79	18.06	18.5	1.0
20	64QAM	1	1	19.16	18.94	18.88	19.5	0.0
20	64QAM	1	53	19.18	18.73	18.77		
20	64QAM	1	104	18.71	18.84	18.93		
20	64QAM	50	0	18.18	17.87	17.76	18.5	1.0
20	64QAM	50	28	18.02	18.12	17.90		
20	64QAM	50	56	17.94	18.08	17.80		
20	64QAM	100	0	18.13	18.00	17.92	18.5	1.0
20	256QAM	1	1	19.00	19.05	18.71	19.5	0.0
20	256QAM	1	53	19.05	18.87	18.75		
20	256QAM	1	104	19.08	18.89	18.75		
20	256QAM	50	0	17.95	18.15	17.78	18.5	1.0
20	256QAM	50	28	18.15	17.73	17.84		
20	256QAM	50	56	17.87	18.04	17.78		
20	256QAM	100	0	17.98	17.82	18.05	18.5	1.0
Channel				500700	518601	536500	Tune-up limit	MPR
Frequency (MHz)				2503.5	2593	2682.5	(dBm)	(dB)
15	PI/2 BPSK	1	1	19.08	19.11	18.88	19.5	0.0
Channel				500200	518601	537000	Tune-up limit	MPR
Frequency (MHz)				2501	2593	2685	(dBm)	(dB)
10	PI/2 BPSK	1	1	18.97	19.01	19.09	19.5	0.0
Channel				499700	518601	537500	Tune-up limit	MPR
Frequency (MHz)				2498.5	2593	2687.5	(dBm)	(dB)
5	PI/2 BPSK	1	1	18.89	19.04	19.10	19.5	0.0

<n41 PC2 & PC3 Ant0>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low	Power Middle	Power High	Tune-up limit	MPR
				Ch. / Freq.	Ch. / Freq.	Ch. / Freq.	(dBm)	(dB)
Channel				501200	518601	536000	Tune-up limit	MPR
Frequency (MHz)				2506	2593	2680	(dBm)	(dB)
20	PI/2 BPSK	1	1	16.08	16.02	16.50	16.5	0.0
20	PI/2 BPSK	1	53	16.41	16.05	16.12		
20	PI/2 BPSK	1	104	16.02	16.42	16.10		
20	PI/2 BPSK	50	0	15.12	15.23	15.29	15.5	1.0
20	PI/2 BPSK	50	28	15.02	15.42	15.48		
20	PI/2 BPSK	50	56	15.04	15.26	15.34		
20	PI/2 BPSK	100	0	15.07	15.25	15.27	15.5	1.0
20	QPSK	1	1	16.46	16.45	16.25	16.5	0.0
20	QPSK	1	53	16.06	16.29	16.27		
20	QPSK	1	104	16.10	16.46	16.12		
20	QPSK	50	0	15.46	15.42	15.41	15.5	1.0
20	QPSK	50	28	15.04	15.41	15.07		
20	QPSK	50	56	15.41	15.33	15.16		
20	QPSK	100	0	15.48	15.30	15.10	15.5	1.0
20	16QAM	1	1	16.48	16.20	16.11	16.5	0.0
20	16QAM	1	53	16.33	16.32	16.04		
20	16QAM	1	104	16.06	16.31	16.45		
20	16QAM	50	0	15.41	15.29	15.42	15.5	1.0
20	16QAM	50	28	15.34	15.15	15.31		
20	16QAM	50	56	15.41	15.31	15.01		
20	16QAM	100	0	15.19	15.03	15.47	15.5	1.0
20	64QAM	1	1	16.31	16.34	16.06	16.5	0.0
20	64QAM	1	53	16.16	16.33	16.26		
20	64QAM	1	104	16.19	16.05	16.17		
20	64QAM	50	0	15.22	15.32	15.23	15.5	1.0
20	64QAM	50	28	15.34	15.29	15.31		
20	64QAM	50	56	15.30	15.27	15.38		
20	64QAM	100	0	15.49	15.01	15.08	15.5	1.0
20	256QAM	1	1	16.28	16.47	16.45	16.5	0.0
20	256QAM	1	53	16.43	16.23	16.37		
20	256QAM	1	104	16.50	16.30	16.09		
20	256QAM	50	0	15.29	15.10	15.35	15.5	1.0
20	256QAM	50	28	15.42	15.23	15.42		
20	256QAM	50	56	15.13	15.00	15.19		
20	256QAM	100	0	15.21	15.31	15.07	15.5	1.0
Channel				500700	518601	536500	Tune-up limit	MPR
Frequency (MHz)				2503.5	2593	2682.5	(dBm)	(dB)
15	PI/2 BPSK	1	1	16.27	16.36	16.27	16.5	0.0
Channel				500200	518601	537000	Tune-up limit	MPR
Frequency (MHz)				2501	2593	2685	(dBm)	(dB)
10	PI/2 BPSK	1	1	16.36	16.41	16.07	16.5	0.0
Channel				499700	518601	537500	Tune-up limit	MPR
Frequency (MHz)				2498.5	2593	2687.5	(dBm)	(dB)
5	PI/2 BPSK	1	1	16.32	16.01	16.26	16.5	0.0



<n66 Ant0>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low	Power Middle	Power High	Tune-up limit	MPR
				Ch. / Freq.	Ch. / Freq.	Ch. / Freq.	(dBm)	(dB)
Channel				344000	349000	354000	Tune-up limit	MPR
Frequency (MHz)				1720	1745	1770	(dBm)	(dB)
20	PI/2 BPSK	1	1	19.02	18.68	18.62	19.5	0.0
20	PI/2 BPSK	1	53	18.99	19.10	18.95		
20	PI/2 BPSK	1	104	18.96	18.72	18.69		
20	PI/2 BPSK	50	0	18.06	17.96	18.00	18.5	1.0
20	PI/2 BPSK	50	28	17.96	18.06	17.84		
20	PI/2 BPSK	50	56	17.85	17.88	17.78		
20	PI/2 BPSK	100	0	17.63	17.77	18.00	18.5	1.0
20	QPSK	1	1	19.05	18.95	18.77	19.5	0.0
20	QPSK	1	53	18.89	18.93	19.07		
20	QPSK	1	104	19.05	18.66	18.83		
20	QPSK	50	0	17.92	17.78	18.08	18.5	1.0
20	QPSK	50	28	17.72	18.01	17.90		
20	QPSK	50	56	17.75	17.99	17.74		
20	QPSK	100	0	17.63	17.91	17.94	18.5	1.0
20	16QAM	1	1	18.91	18.89	18.93	19.5	0.0
20	16QAM	1	53	18.71	18.67	18.99		
20	16QAM	1	104	19.04	19.07	19.03		
20	16QAM	50	0	17.72	17.99	17.85	18.5	1.0
20	16QAM	50	28	17.80	17.90	18.00		
20	16QAM	50	56	17.95	17.84	17.99		
20	16QAM	100	0	18.09	17.69	17.96	18.5	1.0
20	64QAM	1	1	19.03	18.91	19.05	19.5	0.0
20	64QAM	1	53	19.09	18.93	18.95		
20	64QAM	1	104	18.72	18.75	18.79		
20	64QAM	50	0	17.87	17.70	17.84	18.5	1.0
20	64QAM	50	28	17.89	17.69	17.72		
20	64QAM	50	56	18.03	17.82	18.09		
20	64QAM	100	0	17.96	17.66	17.82	18.5	1.0
20	256QAM	1	1	18.97	18.98	19.06	19.5	0.0
20	256QAM	1	53	19.09	19.00	19.01		
20	256QAM	1	104	18.99	18.85	18.91		
20	256QAM	50	0	17.64	17.89	18.10	18.5	1.0
20	256QAM	50	28	17.90	17.61	17.80		
20	256QAM	50	56	17.95	17.88	17.81		
20	256QAM	100	0	17.76	18.01	17.74	18.5	1.0
Channel				343500	349000	354500	Tune-up limit	MPR
Frequency (MHz)				1717.5	1745	1772.5	(dBm)	(dB)
15	PI/2 BPSK	1	1	18.77	19.05	18.97	19.5	0.0
Channel				343000	349000	355000	Tune-up limit	MPR
Frequency (MHz)				1715	1745	1775	(dBm)	(dB)
10	PI/2 BPSK	1	1	18.61	18.82	18.99	19.5	0.0
Channel				342500	349000	355500	Tune-up limit	MPR
Frequency (MHz)				1712.5	1745	1777.5	(dBm)	(dB)
5	PI/2 BPSK	1	1	18.63	18.68	19.08	19.5	0.0

<n66 Ant8>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low	Power Middle	Power High	Tune-up limit	MPR
				Ch. / Freq.	Ch. / Freq.	Ch. / Freq.	(dBm)	(dB)
Channel				344000	349000	354000	Tune-up limit	MPR
Frequency (MHz)				1720	1745	1770	(dBm)	(dB)
20	PI/2 BPSK	1	1	16.34	16.19	16.02	16.5	0.0
20	PI/2 BPSK	1	53	16.34	16.10	16.19		
20	PI/2 BPSK	1	104	16.16	16.23	16.33		
20	PI/2 BPSK	50	0	15.20	15.48	15.24	15.5	1.0
20	PI/2 BPSK	50	28	15.22	15.33	15.33		
20	PI/2 BPSK	50	56	15.09	15.45	15.33		
20	PI/2 BPSK	100	0	15.08	15.40	15.23	15.5	1.0
20	QPSK	1	1	16.29	16.17	16.03	16.5	0.0
20	QPSK	1	53	16.16	16.24	16.27		
20	QPSK	1	104	16.38	16.04	16.12		
20	QPSK	50	0	15.05	15.28	15.13	15.5	1.0
20	QPSK	50	28	15.37	15.25	15.13		
20	QPSK	50	56	15.37	15.04	15.12		
20	QPSK	100	0	15.43	15.19	15.46	15.5	1.0
20	16QAM	1	1	16.11	16.44	16.36	16.5	0.0
20	16QAM	1	53	16.22	16.05	16.22		
20	16QAM	1	104	16.32	16.44	16.37		
20	16QAM	50	0	15.27	15.34	15.17	15.5	1.0
20	16QAM	50	28	15.04	15.43	15.47		
20	16QAM	50	56	15.43	15.47	15.41		
20	16QAM	100	0	15.09	15.17	15.16	15.5	1.0
20	64QAM	1	1	16.00	16.40	16.26	16.5	0.0
20	64QAM	1	53	16.21	16.37	16.44		
20	64QAM	1	104	16.39	16.40	16.47		
20	64QAM	50	0	15.41	15.39	15.48	15.5	1.0
20	64QAM	50	28	15.38	15.01	15.35		
20	64QAM	50	56	15.38	15.46	15.15		
20	64QAM	100	0	15.44	15.21	15.42	15.5	1.0
20	256QAM	1	1	16.04	16.22	16.20	16.5	0.0
20	256QAM	1	53	16.13	16.13	16.07		
20	256QAM	1	104	16.03	16.23	16.25		
20	256QAM	50	0	15.30	15.18	15.38	15.5	1.0
20	256QAM	50	28	15.31	15.17	15.36		
20	256QAM	50	56	15.25	15.09	15.28		
20	256QAM	100	0	15.08	15.06	15.35	15.5	1.0
Channel				343500	349000	354500	Tune-up limit	MPR
Frequency (MHz)				1717.5	1745	1772.5	(dBm)	(dB)
15	PI/2 BPSK	1	1	16.19	16.30	16.27	16.5	0.0
Channel				343000	349000	355000	Tune-up limit	MPR
Frequency (MHz)				1715	1745	1775	(dBm)	(dB)
10	PI/2 BPSK	1	1	16.14	16.32	16.17	16.5	0.0
Channel				342500	349000	355500	Tune-up limit	MPR
Frequency (MHz)				1712.5	1745	1777.5	(dBm)	(dB)
5	PI/2 BPSK	1	1	16.10	16.35	16.28	16.5	0.0

<n78 PC2 & PC3 Ant4>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low	Power Middle	Power High	Tune-up limit	MPR
				Ch. / Freq.	Ch. / Freq.	Ch. / Freq.	(dBm)	(dB)
Channel				620666	636667	652666	Tune-up limit	MPR
Frequency (MHz)				3310	3550	3790	(dBm)	(dB)
20	PI/2 BPSK	1	1	20.88	20.84	20.81	21.5	0.0
20	PI/2 BPSK	1	53	21.10	21.30	21.02		
20	PI/2 BPSK	1	104	20.85	20.84	21.25		
20	PI/2 BPSK	50	0	20.00	20.17	20.15	20.5	1.0
20	PI/2 BPSK	50	28	19.95	20.18	19.92		
20	PI/2 BPSK	50	56	19.95	19.97	19.96		
20	PI/2 BPSK	100	0	20.24	20.13	19.94	20.5	1.0
20	QPSK	1	1	21.05	21.21	20.85	21.5	0.0
20	QPSK	1	53	20.89	20.85	21.10		
20	QPSK	1	104	21.30	21.00	20.85		
20	QPSK	50	0	19.95	20.08	19.87	20.5	1.0
20	QPSK	50	28	20.11	20.12	19.88		
20	QPSK	50	56	19.91	19.82	20.29		
20	QPSK	100	0	19.85	20.12	20.11	20.5	1.0
20	16QAM	1	1	21.06	21.28	21.30	21.5	0.0
20	16QAM	1	53	21.14	21.20	20.89		
20	16QAM	1	104	21.20	21.06	20.93		
20	16QAM	50	0	19.92	19.98	19.97	20.5	1.0
20	16QAM	50	28	19.98	20.22	19.98		
20	16QAM	50	56	19.94	19.95	20.09		
20	16QAM	100	0	19.80	20.08	19.90	20.5	1.0
20	64QAM	1	1	20.97	20.87	21.19	21.5	0.0
20	64QAM	1	53	21.21	21.17	21.30		
20	64QAM	1	104	20.85	21.00	20.94		
20	64QAM	50	0	19.82	19.86	20.26	20.5	1.0
20	64QAM	50	28	19.96	20.13	20.17		
20	64QAM	50	56	19.98	20.02	20.20		
20	64QAM	100	0	20.07	20.18	19.95	20.5	1.0
20	256QAM	1	1	21.11	21.16	20.98	21.5	0.0
20	256QAM	1	53	20.84	21.29	21.13		
20	256QAM	1	104	20.84	21.04	21.28		
20	256QAM	50	0	20.28	20.21	20.07	20.5	1.0
20	256QAM	50	28	19.85	20.23	19.95		
20	256QAM	50	56	19.85	19.81	19.80		
20	256QAM	100	0	20.29	19.94	20.26	20.5	1.0
Channel				620166	376000	653166	Tune-up limit	MPR
Frequency (MHz)				3307.5	1880	3792.5	(dBm)	(dB)
15	PI/2 BPSK	1	1	21.05	21.07	20.97	21.5	0.0
Channel				619666	376000	653666	Tune-up limit	MPR
Frequency (MHz)				3305	1880	3795	(dBm)	(dB)
10	PI/2 BPSK	1	1	20.97	20.96	20.93	21.5	0.0
Channel				619166	376000	654166	Tune-up limit	MPR
Frequency (MHz)				3302.5	1880	3797.5	(dBm)	(dB)
5	PI/2 BPSK	1	1	20.81	20.86	20.86	21.5	0.0

<n78 PC2 & PC3 Ant6>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low	Power Middle	Power High	Tune-up limit	MPR
				Ch. / Freq.	Ch. / Freq.	Ch. / Freq.	(dBm)	(dB)
Channel				620666	636667	652666	Tune-up limit	MPR
Frequency (MHz)				3310	3550	3790	(dBm)	(dB)
20	PI/2 BPSK	1	1	18.32	18.14	18.49	18.5	0.0
20	PI/2 BPSK	1	53	18.44	18.21	18.41		
20	PI/2 BPSK	1	104	18.00	18.07	18.07		
20	PI/2 BPSK	50	0	17.15	17.12	17.28	17.5	1.0
20	PI/2 BPSK	50	28	17.02	17.23	17.41		
20	PI/2 BPSK	50	56	17.40	17.23	17.07		
20	PI/2 BPSK	100	0	17.18	17.24	17.00	17.5	1.0
20	QPSK	1	1	18.50	18.09	18.20	18.5	0.0
20	QPSK	1	53	18.09	18.02	18.21		
20	QPSK	1	104	18.37	18.22	18.33		
20	QPSK	50	0	17.28	17.05	17.41	17.5	1.0
20	QPSK	50	28	17.23	17.32	17.13		
20	QPSK	50	56	17.18	17.38	17.35		
20	QPSK	100	0	17.12	17.50	17.05	17.5	1.0
20	16QAM	1	1	18.16	18.14	18.49	18.5	0.0
20	16QAM	1	53	18.49	18.04	18.40		
20	16QAM	1	104	18.47	18.06	18.43		
20	16QAM	50	0	17.19	17.41	17.46	17.5	1.0
20	16QAM	50	28	17.08	17.17	17.32		
20	16QAM	50	56	17.32	17.06	17.23		
20	16QAM	100	0	17.18	17.13	17.11	17.5	1.0
20	64QAM	1	1	18.01	18.26	18.34	18.5	0.0
20	64QAM	1	53	18.12	18.41	18.38		
20	64QAM	1	104	18.22	18.23	18.05		
20	64QAM	50	0	17.21	17.06	17.03	17.5	1.0
20	64QAM	50	28	17.09	17.20	17.22		
20	64QAM	50	56	17.48	17.12	17.47		
20	64QAM	100	0	17.49	17.22	17.35	17.5	1.0
20	256QAM	1	1	18.25	18.12	18.12	18.5	0.0
20	256QAM	1	53	18.34	18.10	18.01		
20	256QAM	1	104	18.06	18.10	18.19		
20	256QAM	50	0	17.09	17.19	17.11	17.5	1.0
20	256QAM	50	28	17.44	17.35	17.23		
20	256QAM	50	56	17.44	17.02	17.03		
20	256QAM	100	0	17.07	17.39	17.12	17.5	1.0
Channel				620166	376000	653166	Tune-up limit	MPR
Frequency (MHz)				3307.5	1880	3792.5	(dBm)	(dB)
15	PI/2 BPSK	1	1	18.35	18.19	18.43	18.5	0.0
Channel				619666	376000	653666	Tune-up limit	MPR
Frequency (MHz)				3305	1880	3795	(dBm)	(dB)
10	PI/2 BPSK	1	1	18.22	18.46	18.17	18.5	0.0
Channel				619166	376000	654166	Tune-up limit	MPR
Frequency (MHz)				3302.5	1880	3797.5	(dBm)	(dB)
5	PI/2 BPSK	1	1	18.15	18.00	18.22	18.5	0.0

<n77 PC2 & PC3 Ant4>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low	Power Middle	Power High	Tune-up limit	MPR
				Ch. / Freq.	Ch. / Freq.	Ch. / Freq.	(dBm)	(dB)
Channel				620666	646720	679333	Tune-up limit	MPR
Frequency (MHz)				3310	3750	4190	(dBm)	(dB)
20	PI/2 BPSK	1	1	21.13	21.05	21.34	21.5	0.0
20	PI/2 BPSK	1	53	21.02	21.40	21.34		
20	PI/2 BPSK	1	104	21.10	21.09	21.27		
20	PI/2 BPSK	50	0	20.42	20.44	20.20	20.5	1.0
20	PI/2 BPSK	50	28	20.07	20.46	20.15		
20	PI/2 BPSK	50	56	20.11	20.47	20.05		
20	PI/2 BPSK	100	0	20.26	20.04	20.23	20.5	1.0
20	QPSK	1	1	21.37	21.03	21.50	21.5	0.0
20	QPSK	1	53	21.06	21.13	21.28		
20	QPSK	1	104	21.08	21.35	21.49		
20	QPSK	50	0	20.08	20.18	20.02	20.5	1.0
20	QPSK	50	28	20.10	20.06	20.26		
20	QPSK	50	56	20.23	20.38	20.08		
20	QPSK	100	0	20.09	20.26	20.13	20.5	1.0
20	16QAM	1	1	21.42	21.03	21.30	21.5	0.0
20	16QAM	1	53	21.07	21.20	21.27		
20	16QAM	1	104	21.20	21.35	21.34		
20	16QAM	50	0	20.41	20.39	20.43	20.5	1.0
20	16QAM	50	28	20.18	20.34	20.29		
20	16QAM	50	56	20.13	20.04	20.10		
20	16QAM	100	0	20.13	20.47	20.32	20.5	1.0
20	64QAM	1	1	21.50	21.05	21.07	21.5	0.0
20	64QAM	1	53	21.17	21.02	21.30		
20	64QAM	1	104	21.36	21.38	21.41		
20	64QAM	50	0	20.45	20.41	20.11	20.5	1.0
20	64QAM	50	28	20.33	20.04	20.29		
20	64QAM	50	56	20.18	20.38	20.47		
20	64QAM	100	0	20.28	20.39	20.08	20.5	1.0
20	256QAM	1	1	21.02	21.16	21.04	21.5	0.0
20	256QAM	1	53	21.25	21.16	21.42		
20	256QAM	1	104	21.42	21.20	21.11		
20	256QAM	50	0	20.35	20.46	20.37	20.5	1.0
20	256QAM	50	28	20.05	20.41	20.05		
20	256QAM	50	56	20.38	20.28	20.03		
20	256QAM	100	0	20.12	20.04	20.10	20.5	1.0
Channel				620166	646720	679833	Tune-up limit	MPR
Frequency (MHz)				3307.5	3750	4192.5	(dBm)	(dB)
15	PI/2 BPSK	1	1	21.01	21.42	21.14	21.5	0.0
Channel				619666	646720	680333	Tune-up limit	MPR
Frequency (MHz)				3305	3750	4195	(dBm)	(dB)
10	PI/2 BPSK	1	1	21.42	21.08	21.07	21.5	0.0
Channel				619166	646720	680833	Tune-up limit	MPR
Frequency (MHz)				3302.5	3750	4197.5	(dBm)	(dB)
5	PI/2 BPSK	1	1	21.25	21.49	21.43	21.5	0.0

<n77 PC2 & PC3 Ant6>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low	Power Middle	Power High	Tune-up limit	MPR
				Ch. / Freq.	Ch. / Freq.	Ch. / Freq.	(dBm)	(dB)
Channel				620666	646720	679333	Tune-up limit	MPR
Frequency (MHz)				3310	3750	4190	(dBm)	(dB)
20	PI/2 BPSK	1	1	18.24	18.01	18.37	18.5	0.0
20	PI/2 BPSK	1	53	18.11	18.06	18.49		
20	PI/2 BPSK	1	104	18.28	18.28	18.35		
20	PI/2 BPSK	50	0	17.07	17.50	17.47	17.5	1.0
20	PI/2 BPSK	50	28	17.36	17.16	17.48		
20	PI/2 BPSK	50	56	17.09	17.09	17.39		
20	PI/2 BPSK	100	0	17.41	17.13	17.15	17.5	1.0
20	QPSK	1	1	18.12	18.01	18.47	18.5	0.0
20	QPSK	1	53	18.13	18.01	18.31		
20	QPSK	1	104	18.05	18.42	18.48		
20	QPSK	50	0	17.20	17.08	17.13	17.5	1.0
20	QPSK	50	28	17.33	17.09	17.01		
20	QPSK	50	56	17.07	17.20	17.32		
20	QPSK	100	0	17.34	17.26	17.15	17.5	1.0
20	16QAM	1	1	18.34	18.43	18.11	18.5	0.0
20	16QAM	1	53	18.01	18.30	18.14		
20	16QAM	1	104	18.28	18.10	18.19		
20	16QAM	50	0	17.15	17.19	17.45	17.5	1.0
20	16QAM	50	28	17.14	17.21	17.29		
20	16QAM	50	56	17.35	17.22	17.37		
20	16QAM	100	0	17.26	17.11	17.25	17.5	1.0
20	64QAM	1	1	18.44	18.47	18.38	18.5	0.0
20	64QAM	1	53	18.41	18.15	18.26		
20	64QAM	1	104	18.34	18.04	18.34		
20	64QAM	50	0	17.12	17.32	17.10	17.5	1.0
20	64QAM	50	28	17.27	17.05	17.02		
20	64QAM	50	56	17.48	17.20	17.30		
20	64QAM	100	0	17.17	17.35	17.35	17.5	1.0
20	256QAM	1	1	18.15	18.17	18.41	18.5	0.0
20	256QAM	1	53	18.35	18.41	18.16		
20	256QAM	1	104	18.13	18.49	18.15		
20	256QAM	50	0	17.46	17.43	17.33	17.5	1.0
20	256QAM	50	28	17.14	17.28	17.08		
20	256QAM	50	56	17.32	17.34	17.05		
20	256QAM	100	0	17.27	17.49	17.43	17.5	1.0
Channel				620166	646720	679833	Tune-up limit	MPR
Frequency (MHz)				3307.5	3750	4192.5	(dBm)	(dB)
15	PI/2 BPSK	1	1	18.14	18.03	18.40	18.5	0.0
Channel				619666	646720	680333	Tune-up limit	MPR
Frequency (MHz)				3305	3750	4195	(dBm)	(dB)
10	PI/2 BPSK	1	1	18.44	18.07	18.33	18.5	0.0
Channel				619166	646720	680833	Tune-up limit	MPR
Frequency (MHz)				3302.5	3750	4197.5	(dBm)	(dB)
5	PI/2 BPSK	1	1	18.15	18.14	18.14	18.5	0.0

## 9. SAR Test Results

### General Note:

1. Per KDB 447498 D01v06, the reported SAR is the measured SAR value adjusted for maximum tune-up tolerance.
  - a. Tune-up scaling Factor = tune-up limit power (mW) / EUT RF power (mW), where tune-up limit is the maximum rated power among all production units.
  - b. For SAR testing of WLAN signal with non-100% duty cycle, the measured SAR is scaled-up by the duty cycle scaling factor which is equal to "1/(duty cycle)"
  - c. For WWAN: Reported SAR(W/kg)= Measured SAR(W/kg)\*Tune-up Scaling Factor
2. Per KDB 447498 D01v06, for each exposure position, testing of other required channels within the operating mode of a frequency band is not required when the *reported* 1-g or 10-g SAR for the mid-band or highest output power channel is:
  - $\leq 0.8$  W/kg or 2.0 W/kg, for 1-g or 10-g respectively, when the transmission band is  $\leq 100$  MHz
  - $\leq 0.6$  W/kg or 1.5 W/kg, for 1-g or 10-g respectively, when the transmission band is between 100 MHz and 200 MHz
  - $\leq 0.4$  W/kg or 1.0 W/kg, for 1-g or 10-g respectively, when the transmission band is  $\geq 200$  MHz
3. Per KDB 865664 D01v01r04, for each frequency band, repeated SAR measurement is required only when the measured SAR is  $\geq 0.8$ W/kg.

### FR1 Note:

1. For 5G NR test procedure was following step similar FCC KDB 941225 D05:
  - a. SAR testing start with the largest channel bandwidth and measure SAR for PI/2 BPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
  - b. 50% RB allocation for PI/2 BPSK SAR testing follows 1RB PI/2 BPSK allocation procedure
  - c. PI/2 BPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are  $\leq 0.8$  W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is  $> 1.45$  W/kg, the remaining required test channels must also be tested.
  - d. QPSK/16QAM/64QAM/256QAM output powers are not  $\frac{1}{2}$  dB higher than the same configuration in PI/2 BPSK, also reported SAR for the PI/2 BPSK configuration is less than 1.45 W/kg, QPSK/16QAM/64QAM/256QAM SAR testing are not required.
  - e. Smaller bandwidth output power for each RB allocation configuration for this device will not  $\frac{1}{2}$  dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is  $\leq 1.45$  W/kg, smaller bandwidth SAR testing is not required for this device
  - f. For 5G FR1 n5/n12/n41/n71 the maximum bandwidth does not support three non-overlapping channels, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.
2. Due to test setup limitations, SAR testing for NR was performed using Factory Test Mode software to establish the connection and perform SAR with 100% duty cycle. The Qualcomm QRCT program was used to establish the connection.

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
1	FR1 Band 5_Ant 1	10M	BPSK	1	53	Side C	10mm	167300	836.5	20.66	21.00	0.436	0.47
2	FR1 Band 7_Ant 0	20M	BPSK	1	53	Side F	10mm	507000	2535	19.20	19.50	0.829	0.89
	FR1 Band 7_Ant 0	20M	BPSK	1	49	Side F	20mm	507000	2535	24.40	24.50	0.722	0.74
3	FR1 Band 12_Ant 0	15M	BPSK	1	53	Side A	10mm	141500	707.5	23.57	24.00	0.312	0.34
4	FR1 Band 25_Ant 0	20M	QPSK	1	53	Side F	10mm	376500	1882.5	17.30	17.50	0.791	0.83
	FR1 Band 25_Ant 0	20M	QPSK	50	28	Side F	20mm	376500	1882.5	24.30	24.50	0.722	0.76
5	FR1 Band 41_Ant 8	20M	BPSK	1	53	Side A	10mm	518601	2593	19.20	19.50	0.729	0.78
	FR1 Band 41_Ant 8	20M	BPSK	1	53	Side A	20mm	518601	2593	27.20	27.50	0.614	0.66
9	FR1 Band 48_Ant 4	20M	BPSK	1	53	Side A	10mm	641667	3625	21.18	21.50	0.811	0.87
6	FR1 Band 66_Ant 0	20M	BPSK	1	53	Side F	10mm	349000	1745	19.10	19.50	0.816	0.89
	FR1 Band 66_Ant 0	20M	BPSK	1	53	Side F	20mm	349000	1745	24.20	24.50	0.746	0.80
10	FR1 Band 70_Ant 8	20M	BPSK	1	53	Side D	10mm	340500	1702.	23.89	24.00	0.769	0.79
7	FR1 Band 71_Ant 0	20M	BPSK	1	53	Side A	10mm	136100	680.5	23.55	24.00	0.397	0.44
8	FR1 Band 77_Ant 4	20M	BPSK	1	53	Side B	10mm	636667	3550	21.30	21.50	0.705	0.74
	FR1 Band 77_Ant 4	20M	BPSK	1	53	Side B	20mm	636667	3550	25.90	26.00	0.709	0.73



## 10. Simultaneous Transmission Analysis

The 3G/4G/WiFi data are located in report number SAR.20221205. The data listed in the tables below was extracted from the reports filed with this report.

### Sim-Tx configuration

No.	Simultaneous Transmission Configuration	Exposure Positions
		Body
1	UMTS + 2.4 GHz Wifi 0 + 2.4 GHz WiFi 1	Yes
2	UMTS + 5 GHz Wifi 0 + 5 GHz WiFi 1	Yes
3	LTE + 2.4 GHz Wifi 0 + 2.4 GHz WiFi 1	Yes
4	LTE + 5 GHz Wifi 0 + 5 GHz WiFi 1	Yes
5	FR1 + 2.4 GHz Wifi 0 + 2.4 GHz WiFi 1	Yes
6	FR1 + 5 GHz Wifi 0 + 5 GHz WiFi 1	Yes

#### General Note:

1. The worst case WLAN reported SAR for each configuration was used for SAR summation, regardless of whether the WLAN channel has Hotspot capability. Therefore, the following summations represent the absolute worst cases for simultaneous transmission with WLAN.
2. The Scaled SAR summation is calculated based on the same configuration and test position.
3. Due to this report having only reference data measured, the simultaneous evaluation could not be done for the configurations. The WiFi configurations tested did not allow for an evaluation to be conducted as it was only tested on Side D and no testing for the cellular bands were tested on Side D.

## Body Exposure Conditions

WWAN Band	Exposure Position	1	2	3	4	5	1+2+3 Summed 1g SAR (W/kg)	1+4+5 Summed 1g SAR (W/kg)
		WWAN	2.4GHz Wi-Fi 0	2.4GHz Wi-Fi 1	5GHz Wi-Fi 0	5GHz Wi-Fi 1		
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)		
WCDMA II Ant 0	Side A	0.24	0.19	0.20	0.22	0.19	0.63	0.65
	Side B	0.01		0.09		0.21	0.10	0.22
	Side C	0.28	0.13	0.18	0.25	0.21	0.59	0.74
	Side D	0.16	0.21		0.26		0.37	0.42
	Side E		0.04		0.17		0.04	0.17
	Side F	0.87		0.07		0.17	0.94	1.04
WCDMA IV Ant 0	Side A	0.73	0.19	0.20	0.22	0.19	1.12	1.14
	Side B	0.09		0.09		0.21	0.18	0.30
	Side C	0.88	0.13	0.18	0.25	0.21	1.19	1.34
	Side D	0.03	0.21		0.26		0.24	0.29
	Side E		0.04		0.17		0.04	0.17
	Side F	0.60		0.07		0.17	0.67	0.77
WCDMA V Ant 0	Side A	0.88	0.19	0.20	0.22	0.19	1.27	1.29
	Side B	0.58		0.09		0.21	0.67	0.79
	Side C	0.87	0.13	0.18	0.25	0.21	1.18	1.33
	Side D	0.40	0.21		0.26		0.61	0.66
	Side E		0.04		0.17		0.04	0.17
	Side F	0.07		0.07		0.17	0.14	0.24
LTE Band 7 Ant 0	Side A	0.60	0.19	0.20	0.22	0.19	0.99	1.01
	Side B	0.03		0.09		0.21	0.12	0.24
	Side C	0.26	0.13	0.18	0.25	0.21	0.57	0.72
	Side D	0.10	0.21		0.26		0.31	0.36
	Side E		0.04		0.17		0.04	0.17
	Side F	0.84		0.07		0.17	0.91	1.01
LTE Band 12 Ant 0	Side A	0.17	0.19	0.20	0.22	0.19	0.56	0.58
	Side B	0.10		0.09		0.21	0.19	0.31
	Side C	0.16	0.13	0.18	0.25	0.21	0.47	0.62
	Side D	0.10	0.21		0.26		0.31	0.36
	Side E		0.04		0.17		0.04	0.17
	Side F	0.09		0.07		0.17	0.16	0.26
LTE Band 13 Ant 0	Side A	0.50	0.19	0.20	0.22	0.19	0.89	0.91
	Side B	0.35		0.09		0.21	0.44	0.56
	Side C	0.44	0.13	0.18	0.25	0.21	0.75	0.90
	Side D	0.24	0.21		0.26		0.45	0.50
	Side E		0.04		0.17		0.04	0.17
	Side F	0.06		0.07		0.17	0.13	0.23
LTE Band 25 Ant 0	Side A	0.20	0.19	0.20	0.22	0.19	0.59	0.61
	Side B	0.18		0.09		0.21	0.27	0.39
	Side C	0.40	0.13	0.18	0.25	0.21	0.71	0.86
	Side D	0.59	0.21		0.26		0.80	0.85
	Side E		0.04		0.17		0.04	0.17
	Side F	0.81		0.07		0.17	0.88	0.98
LTE Band 26 Ant 0	Side A	0.74	0.19	0.20	0.22	0.19	1.13	1.15
	Side B	0.46		0.09		0.21	0.55	0.67
	Side C	0.74	0.13	0.18	0.25	0.21	1.05	1.20
	Side D	0.35	0.21		0.26		0.56	0.61
	Side E		0.04		0.17		0.04	0.17
	Side F	0.08		0.07		0.17	0.15	0.25

WWAN Band	Exposure Position	1	2	3	4	5	1+2+3 Summed 1g SAR (W/kg)	1+4+5 Summed 1g SAR (W/kg)
		WWAN	2.4GHz Wi-Fi 0	2.4GHz Wi-Fi 1	5GHz Wi-Fi 0	5GHz Wi-Fi 1		
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)		
LTE Band 30 Ant 0	Side A	0.30	0.19	0.20	0.22	0.19	0.69	0.71
	Side B	0.02		0.09		0.21	0.11	0.23
	Side C	0.28	0.13	0.18	0.25	0.21	0.59	0.74
	Side D	0.74	0.21		0.26		0.95	1.00
	Side E		0.04		0.17		0.04	0.17
	Side F	0.33		0.07		0.17	0.40	0.50
LTE Band 41 Ant 0	Side A	0.59	0.19	0.20	0.22	0.19	0.98	1.00
	Side B	0.35		0.09		0.21	0.44	0.56
	Side C	0.58	0.13	0.18	0.25	0.21	0.89	1.04
	Side D	0.30	0.21		0.26		0.51	0.56
	Side E		0.04		0.17		0.04	0.17
	Side F	0.90		0.07		0.17	0.97	1.07
LTE Band 48 Ant 4	Side A	0.61	0.19	0.20	0.22	0.19	1.00	1.02
	Side B	0.14		0.09		0.21	0.23	0.35
	Side C	0.33	0.13	0.18	0.25	0.21	0.64	0.79
	Side D		0.21		0.26		0.21	0.26
	Side E		0.04		0.17		0.04	0.17
	Side F	0.66		0.07		0.17	0.71	0.81
LTE Band 66 Ant 0	Side A	0.52	0.19	0.20	0.22	0.19	0.91	0.93
	Side B	0.06		0.09		0.21	0.15	0.27
	Side C	0.66	0.13	0.18	0.25	0.21	0.97	1.12
	Side D	0.19	0.21		0.26		0.40	0.45
	Side E		0.04		0.17		0.04	0.17
	Side F	0.80		0.07		0.17	0.87	0.97
LTE Band 71 Ant 0	Side A	0.17	0.19	0.20	0.22	0.19	0.56	0.58
	Side B	0.08		0.09		0.21	0.17	0.29
	Side C	0.16	0.13	0.18	0.25	0.21	0.47	0.62
	Side D	0.11	0.21		0.26		0.32	0.37
	Side E		0.04		0.17		0.04	0.17
	Side F	0.02		0.07		0.17	0.09	0.19
FR1 Band n5 Ant 0	Side A	0.44	0.19	0.20	0.22	0.19	0.83	0.85
	Side B	0.35		0.09		0.21	0.44	0.56
	Side C	0.54	0.13	0.18	0.25	0.21	0.85	1.00
	Side D	0.23	0.21		0.26		0.44	0.49
	Side E		0.04		0.17		0.04	0.17
	Side F	0.04		0.07		0.17	0.11	0.21
FR1 Band n7 Ant 0	Side A	0.76	0.19	0.20	0.22	0.19	1.15	1.17
	Side B	0.12		0.09		0.21	0.21	0.33
	Side C	0.69	0.13	0.18	0.25	0.21	1.00	1.15
	Side D	0.11	0.21		0.26		0.32	0.37
	Side E		0.04		0.17		0.04	0.17
	Side F	0.89		0.07		0.17	0.96	1.06
FR1 Band n12 Ant 0	Side A	0.33	0.19	0.20	0.22	0.19	0.72	0.74
	Side B	0.16		0.09		0.21	0.25	0.37
	Side C	0.31	0.13	0.18	0.25	0.21	0.62	0.77
	Side D	0.18	0.21		0.26		0.39	0.44
	Side E		0.04		0.17		0.04	0.17
	Side F	0.02		0.07		0.17	0.09	0.19

WWAN Band	Exposure Position	1	2	3	4	5	1+2+3 Summed 1g SAR (W/kg)	1+4+5 Summed 1g SAR (W/kg)
		WWAN	2.4GHz Wi-Fi 0	2.4GHz Wi-Fi 1	5GHz Wi-Fi 0	5GHz Wi-Fi 1		
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)		
FR1 Band n25 Ant 0	Side A	0.31	0.19	0.20	0.22	0.19	0.70	0.72
	Side B	0.06		0.09		0.21	0.15	0.27
	Side C	0.32	0.13	0.18	0.25	0.21	0.63	0.78
	Side D	0.16	0.21		0.26		0.37	0.42
	Side E		0.04		0.17		0.04	0.17
	Side F	0.86		0.07		0.17	0.93	1.03
FR1 Band n41 Ant 0	Side A	0.75	0.19	0.20	0.22	0.19	1.14	1.16
	Side B			0.09		0.21	0.09	0.21
	Side C	0.28	0.13	0.18	0.25	0.21	0.59	0.74
	Side D	0.10	0.21		0.26		0.31	0.36
	Side E		0.04		0.17		0.04	0.17
	Side F			0.07		0.17	0.07	0.17
FR1 Band n48 Ant 4	Side A	0.59	0.19	0.20	0.22	0.19	1.29	1.31
	Side B	0.14		0.09		0.21	0.83	0.95
	Side C	0.33	0.13	0.18	0.25	0.21	0.70	0.85
	Side D		0.21		0.26		0.21	0.26
	Side E		0.04		0.17		0.04	0.17
	Side F	0.64		0.07		0.17	0.71	0.81
FR1 Band n66 Ant 0	Side A	0.68	0.19	0.20	0.22	0.19	1.07	1.09
	Side B	0.10		0.09		0.21	0.19	0.31
	Side C	0.83	0.13	0.18	0.25	0.21	1.14	1.29
	Side D	0.20	0.21		0.26		0.41	0.46
	Side E		0.04		0.17		0.04	0.17
	Side F	0.89		0.07		0.17	0.96	1.06
FR1 Band n70 Ant 8	Side A	0.77	0.19	0.20	0.22	0.19	1.16	1.18
	Side B	0.21		0.09		0.21	0.30	0.42
	Side C	0.87	0.13	0.18	0.25	0.21	1.18	1.33
	Side D		0.21		0.26		0.21	0.26
	Side E		0.04		0.17		0.04	0.17
	Side F			0.07		0.17	0.07	0.17
FR1 Band n71 Ant 0	Side A	0.41	0.19	0.20	0.22	0.19	0.80	0.82
	Side B	0.23		0.09		0.21	0.32	0.44
	Side C	0.39	0.13	0.18	0.25	0.21	0.70	0.85
	Side D	0.26	0.21		0.26		0.47	0.52
	Side E		0.04		0.17		0.04	0.17
	Side F	0.02		0.07		0.17	0.09	0.19
FR1 Band n77 Ant 4	Side A	0.69	0.19	0.20	0.22	0.19	1.08	1.10
	Side B	0.74		0.09		0.21	0.83	0.95
	Side C	0.34	0.13	0.18	0.25	0.21	0.65	0.80
	Side D		0.21		0.26		0.21	0.26
	Side E		0.04		0.17		0.04	0.17
	Side F	0.51		0.07		0.17	0.58	0.68

All UL ENDC-LTE configurations pass the simple sum of all transmitters at the highest SAR value. The highest value is 1.34 W/kg which passes the simultaneous evaluation.

LTE UL CA	SAR <sub>1</sub>	SAR <sub>2</sub>	WiFi Sum of Tx0 and Tx1	Total
2A-4A	0.14	0.31	0.47	0.92
2A-5A	0.14	0.38	0.47	0.99
2A-7A	0.14	0.60	0.47	1.21
2A-12A	0.14	0.17	0.47	0.78
2A-13A	0.33	0.26	0.47	1.06
2A-66A	0.14	0.32	0.47	0.93
4A-5A	0.37	0.38	0.47	1.22
4A-7A	0.37	0.60	0.47	1.44
4A-12A	0.37	0.17	0.47	1.01
4A-13A	0.31	0.26	0.47	1.04
5A-7A	0.38	0.60	0.47	1.45
5A-66A	0.38	0.35	0.47	1.20
12A-66A	0.17	0.32	0.47	0.96
13A-66A	0.26	0.32	0.47	1.05
48C	0.67		0.47	1.14

All UL ENDC-LTE configurations pass the simple sum of all transmitters at the highest SAR value. The highest value is 1.45 W/kg which passes the simultaneous evaluation.

FR1 UL ENDC-LTE (NSA)	SAR <sub>1</sub>	SAR <sub>2</sub>	WiFi Sum of Tx0 and Tx1	Total
4A-n2A	0.37	0.38	0.47	1.22
5A-n2A	0.38	0.38	0.47	1.23
7A-n2A	0.43	0.38	0.47	1.28
12A-n2A	0.08	0.38	0.47	0.93
66A-n2A	0.32	0.38	0.47	1.17
71A-n2A	0.18	0.38	0.47	1.03
2A-n5A	0.14	0.50	0.47	1.11
7A-n5A	0.43	0.50	0.47	1.40
12A-n5A	0.08	0.50	0.47	1.05
66A-n5A	0.32	0.50	0.47	1.29
7A-n25A	0.43	0.54	0.47	1.44
12A-n25A	0.08	0.54	0.47	1.09
26A-n25A	0.42	0.54	0.47	1.43
66A-n25A	0.32	0.54	0.47	1.33
2A-n41A	0.14	0.40	0.47	1.01
4A-n41A	0.37	0.40	0.47	1.24
12A-n41A	0.08	0.40	0.47	0.95
25A-n41A	0.41	0.40	0.47	1.28
26A-n41A	0.42	0.40	0.47	1.29
66A-n41A	0.32	0.40	0.47	1.19
71A-n41A	0.18	0.40	0.47	1.05
2A-n66A	0.14	0.41	0.47	1.02
5A-n66A	0.38	0.41	0.47	1.26
7A-n66A	0.43	0.41	0.47	1.31
12A-n66A	0.08	0.41	0.47	0.96
13A-n66A	0.26	0.41	0.47	1.14
71A-n66A	0.18	0.41	0.47	1.06
2A-n71A	0.33	0.41	0.47	1.21
7A-n71A	0.24	0.41	0.47	1.12
66A-n71A	0.32	0.41	0.47	1.20
66A-n71A	0.32	0.41	0.47	1.20
2A-n77A	0.14	0.37	0.47	0.98
7A-n77A	0.43	0.37	0.47	1.27
12A-n77A	0.08	0.37	0.47	0.92
66A-n77A	0.32	0.37	0.47	1.16
2A-n78A	0.14	0.37	0.47	0.98
4A-n78A	0.37	0.37	0.47	1.21
5A-n78A	0.35	0.37	0.47	1.19
7A-n78A	0.43	0.37	0.47	1.27
12A-n78A	0.08	0.37	0.47	0.92
25A-n78A	0.41	0.37	0.47	1.25
66A-n78A	0.32	0.37	0.47	1.16
71A-n78A	0.18	0.37	0.47	1.02

All UL ENDC-LTE configurations pass the simple sum of all transmitters at the highest SAR value. The highest value is 1.44 W/kg which passes the simultaneous evaluation.

# 11. Test Equipment List

**Table 11.1 Equipment Specifications**

Type	Calibration Due Date	Calibration Done Date	Serial Number
Staubli Robot TX60L	N/A	N/A	F07/55M6A1/A/01
Measurement Controller CS8c	N/A	N/A	1012
ELI5 Flat Phantom	N/A	N/A	1251
Device Holder	N/A	N/A	N/A
Data Acquisition Electronics 4	08/16/2023	08/16/2022	759
Data Acquisition Electronics 4	09/12/2024	09/12/2023	759
SPEAG E-Field Probe EX3DV4	08/28/2023	08/28/2022	3693
SPEAG E-Field Probe EX3DV4	09/13/2024	09/13/2023	3693
Speag Validation Dipole D750V2	06/04/2023	06/04/2021	1053
Speag Validation Dipole D900V2	06/04/2023	06/04/2021	1d128
Speag Validation Dipole D1750V2	06/03/2024	06/03/2021	1061
Speag Validation Dipole D1900V2	06/04/2023	06/04/2021	5d147
Speag Validation Dipole D2550V2	06/03/2023	06/03/2021	1003
Speag Validation Dipole D3500V2	04/13/2023	04/13/2021	1061
Speag Validation Dipole D3700V2	04/13/2024	04/13/2021	1024
Agilent N1911A Power Meter	03/16/2023	03/16/2022	GB45100254
Agilent N1922A Power Sensor	03/17/2023	03/17/2022	MY45240464
Agilent (HP) 8561E Spectrum Analyzer	03/17/2023	03/17/2022	31720068
Agilent (HP) 83752A Synthesized Sweeper	03/17/2023	03/17/2022	3610A01048
Agilent (HP) 8753C Vector Network Analyzer	03/17/2023	03/17/2022	3135A01724
Agilent (HP) 85047A S-Parameter Test Set	03/16/2023	03/16/2022	2904A00595
Agilent N1911A Power Meter	03/14/2024	03/14/2023	GB45100254
Agilent N1922A Power Sensor	03/13/2024	03/13/2023	MY45240464
Agilent (HP) 8596E Spectrum Analyzer	03/13/2024	03/13/2023	3826A01468
Agilent (HP) 83752A Synthesized Sweeper	03/14/2024	03/14/2023	3610A01048
Agilent (HP) 8753C Vector Network Analyzer	03/14/2024	03/14/2023	3135A01724
Agilent (HP) 85047A S-Parameter Test Set	03/14/2024	03/14/2023	2904A00595
Copper Mountain R140 Vector Reflectometer	03/13/2024	03/13/2023	21390004
Anritsu MT8821C	N/A	N/A	6201381721
Apral Dielectric Probe Assembly	N/A	N/A	0011
Head Equivalent Matter (600 MHz)	N/A	N/A	N/A
Head Equivalent Matter (750 MHz)	N/A	N/A	N/A
Head Equivalent Matter (900 MHz)	N/A	N/A	N/A
Head Equivalent Matter (1750 MHz)	N/A	N/A	N/A
Head Equivalent Matter (1900 MHz)	N/A	N/A	N/A
Head Equivalent Matter (2450 MHz)	N/A	N/A	N/A
Head Equivalent Matter (2550 MHz)	N/A	N/A	N/A
Head Equivalent Matter (3-6 GHz)	N/A	N/A	N/A

## 12. Conclusion

The SAR measurement indicates that the EUT complies with the RF radiation exposure limits of the FCC/IC. These measurements are taken to simulate the RF effects exposure under worst-case conditions. Precise laboratory measures were taken to assure repeatability of the tests. The tested device complies with the requirements in respect to all parameters subject to the test. The test results and statements relate only to the item(s) tested.

Please note that the absorption and distribution of electromagnetic energy in the body is a very complex phenomena that depends on the mass, shape, and size of the body; the orientation of the body with respect to the field vectors; and, the electrical properties of both the body and the environment. Other variables that may play a substantial role in possible biological effects are those that characterize the environment (e.g. ambient temperature, air velocity, relative humidity, and body insulation) and those that characterize the individual (e.g. age, gender, activity level, debilitation, or disease). Because innumerable factors may interact to determine the specific biological outcome of an exposure to electromagnetic fields, any protection guide shall consider maximal amplification of biological effects as a result of field-body interactions, environmental conditions, and physiological variables.



## 13. References

- [1] Federal Communications Commission, ET Docket 93-62, Guidelines for Evaluating the Environmental Effects of Radio Frequency Radiation, August 1996
- [2] ANSI/IEEE C95.1 – 1992, American National Standard Safety Levels with respect to Human Exposure to Radio Frequency Electromagnetic Fields, 300kHz to 100GHz, New York: IEEE, 1992.
- [3] ANSI/IEEE C95.3 – 1992, IEEE Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields – RF and Microwave, New York: IEEE, 1992.
- [4] International Electrotechnical Commission, IEC 62209-2 (Edition 1.0), Human Exposure to radio frequency fields from hand-held and body mounted wireless communication devices – Human models, instrumentation, and procedures – Part 2: Procedure to determine the specific absorption rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz), March 2010.
- [5] IEEE Standard 1528 – 2013, IEEE Recommended Practice for Determining the Peak-Spatial Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communication Devices: Measurement Techniques, June 2013.
- [6] Industry Canada, RSS – 102 Issue 5, Radio Frequency Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands), March 2015.
- [7] Health Canada, Safety Code 6, Limits of Human Exposure to Radiofrequency Electromagnetic Fields in the Frequency Range from 3kHz to 300 GHz, 2009.

# Appendix A – System Validation Plots and Data

\*\*\*\*\*

Test Result for UIM Dielectric Parameter

Tue 22/Nov/2022

Freq Frequency(GHz)

FCC\_eH Limits for Head Epsilon

FCC\_sH Limits for Head Sigma

Test\_e Epsilon of UIM

Test\_s Sigma of UIM

\*\*\*\*\*

Freq	FCC_eH	FCC_sH	Test_e	Test_s
0.5800	42.82	0.88	41.58	0.88
0.5900	42.77	0.88	41.52	0.89
0.6000	42.72	0.88	41.47	0.89
0.6100	42.67	0.88	41.42	0.90
0.6200	42.62	0.88	41.37	0.90
0.6300	42.56	0.88	41.30	0.90
0.6400	42.51	0.88	41.24	0.90
0.6500	42.46	0.88	41.18	0.90
0.6600	42.41	0.88	41.12	0.91
0.6700	42.36	0.89	41.06	0.91
0.6800	42.31	0.89	41.00	0.91
0.6805	42.307	0.89	40.997	0.911*
0.6900	42.25	0.89	40.94	0.92
0.7000	42.20	0.89	40.88	0.92

\* value interpolated

\*\*\*\*\*

Test Result for UIM Dielectric Parameter

Tue 22/Nov/2022

Freq Frequency(GHz)

FCC\_eH Limits for Head Epsilon

FCC\_sH Limits for Head Sigma

Test\_e Epsilon of UIM

Test\_s Sigma of UIM

\*\*\*\*\*

Freq	FCC_eH	FCC_sH	Test_e	Test_s
0.7000	42.20	0.89	41.49	0.88
0.7075	42.163	0.89	41.438	0.888*
0.7100	42.15	0.89	41.42	0.89
0.7200	42.10	0.89	41.37	0.90
0.7300	42.05	0.89	41.30	0.91
0.7400	41.99	0.89	41.24	0.91
0.7500	41.94	0.89	41.19	0.92
0.7600	41.89	0.89	41.13	0.93
0.7700	41.84	0.89	41.07	0.94
0.7800	41.79	0.90	41.01	0.94
0.7900	41.73	0.90	40.95	0.95
0.8000	41.68	0.90	40.91	0.95

\* value interpolated

\*\*\*\*\*

Test Result for UIM Dielectric Parameter  
Tue 22/Nov/2022  
Freq Frequency(GHz)  
eH Limits for Head Epsilon  
sH Limits for Head Sigma  
Test\_e Epsilon of UIM  
Test\_s Sigma of UIM

\*\*\*\*\*

Freq	eH	sH	Test_e	Test_s
0.8000	41.68	0.90	40.96	0.90
0.8100	41.63	0.90	40.91	0.91
0.8200	41.58	0.90	40.85	0.92
0.8300	41.53	0.90	40.90	0.92
0.8365	41.511	0.907	40.881	0.927*
0.8400	41.50	0.91	40.87	0.93
0.8500	41.50	0.92	40.85	0.94
0.8600	41.50	0.93	40.83	0.95
0.8700	41.50	0.94	40.81	0.96
0.8800	41.50	0.95	40.80	0.97
0.8900	41.50	0.96	40.79	0.98
0.9000	41.50	0.97	40.78	0.99
0.9100	41.50	0.98	40.77	1.00
0.9200	41.49	0.98	40.76	1.00

\* value interpolated

\*\*\*\*\*

Test Result for UIM Dielectric Parameter  
Mon 21/Nov/2022  
Freq Frequency(GHz)  
eH Limits for Head Epsilon  
sH Limits for Head Sigma  
Test\_e Epsilon of UIM  
Test\_s Sigma of UIM

\*\*\*\*\*

Freq	eH	sH	Test_e	Test_s
1.7000	40.16	1.34	39.45	1.34
1.7100	40.14	1.35	39.43	1.35
1.7200	40.13	1.35	39.41	1.36
1.7300	40.11	1.36	39.39	1.36
1.7400	40.09	1.37	39.37	1.37
1.7450	40.085	1.37	39.36	1.375*
1.7500	40.08	1.37	39.35	1.38
1.7600	40.06	1.38	39.33	1.39
1.7700	40.05	1.38	39.31	1.40
1.7800	40.03	1.39	39.29	1.40
1.7900	40.02	1.39	39.27	1.41

\* value interpolated

\*\*\*\*\*

Test Result for UIM Dielectric Parameter

Mon 21/Nov/2022

Freq Frequency(GHz)

eH Limits for Head Epsilon

sH Limits for Head Sigma

Test\_e Epsilon of UIM

Test\_s Sigma of UIM

\*\*\*\*\*

Freq	eH	sH	Test_e	Test_s
1.8500	40.00	1.40	39.54	1.41
1.8600	40.00	1.40	39.52	1.42
1.8700	40.00	1.40	39.50	1.42
1.8800	40.00	1.40	39.48	1.43
1.8825	40.00	1.40	39.475	1.43*
1.8900	40.00	1.40	39.46	1.43
1.9000	40.00	1.40	39.44	1.43
1.9100	40.00	1.40	39.42	1.44
1.9200	40.00	1.40	39.41	1.45

\* value interpolated

\*\*\*\*\*

Test Result for UIM Dielectric Parameter

Wed 23/Nov/2022

Freq Frequency(GHz)

FCC\_eH Limits for Head Epsilon

FCC\_sH Limits for Head Sigma

Test\_e Epsilon of UIM

Test\_s Sigma of UIM

\*\*\*\*\*

Freq	FCC_eH	FCC_sH	Test_e	Test_s
2.4900	39.15	1.84	39.02	1.86
2.5000	39.14	1.85	39.00	1.87
2.5100	39.12	1.87	38.97	1.88
2.5200	39.11	1.88	38.95	1.90
2.5300	39.10	1.89	38.93	1.91
2.5350	39.095	1.895	38.915	1.915*
2.5400	39.09	1.90	38.90	1.92
2.5500	39.07	1.91	38.88	1.94
2.5600	39.06	1.92	38.86	1.95
2.5700	39.05	1.93	38.83	1.96
2.5800	39.03	1.94	38.81	1.98
2.5900	39.02	1.95	38.78	1.99
2.5930	39.017	1.953	38.783	1.99*
2.6000	39.01	1.96	38.79	1.99
2.6100	39.00	1.97	38.77	2.00
2.6200	38.98	1.99	38.76	2.01
2.6300	38.97	2.00	38.74	2.02
2.6400	38.96	2.01	38.72	2.03
2.6500	38.95	2.02	38.70	2.04
2.6600	38.93	2.03	38.69	2.05
2.6700	38.92	2.04	38.67	2.06
2.6800	38.91	2.05	38.65	2.07
2.6900	38.89	2.06	38.63	2.08
2.7000	38.88	2.07	38.62	2.09

\* value interpolated

\*\*\*\*\*

Test Result for UIM Dielectric Parameter  
Wed 23/Nov/2022  
Freq Frequency(GHz)  
FCC\_eH Limits for Head Epsilon  
FCC\_sH Limits for Head Sigma  
Test\_e Epsilon of UIM  
Test\_s Sigma of UIM

\*\*\*\*\*

Freq	FCC_eH	FCC_sH	Test_e	Test_s
3.4000	38.05	2.80	37.79	2.85
3.4200	38.02	2.82	37.76	2.87
3.4400	38.00	2.85	37.74	2.90
3.4600	37.98	2.87	37.72	2.92
3.4800	37.95	2.89	37.69	2.94
3.5000	37.93	2.91	37.67	2.96
3.5200	37.91	2.93	37.65	2.98
3.5400	37.88	2.95	37.62	3.00
3.5500	37.87	2.96	37.61	3.01*
3.5600	37.86	2.97	37.60	3.02
3.5800	37.84	2.99	37.58	3.04
3.6000	37.81	3.02	37.55	3.07

\* value interpolated

\*\*\*\*\*

Test Result for UIM Dielectric Parameter  
Wed 04/Oct/2023  
Freq Frequency(GHz)  
eH Limits for Head Epsilon  
sH Limits for Head Sigma  
Test\_e Epsilon of UIM  
Test\_s Sigma of UIM

\*\*\*\*\*

Freq	eH	sH	Test_e	Test_s
1.6900	40.17	1.34	39.25	1.36
1.7000	40.16	1.34	39.23	1.37
1.7025	40.155	1.343	39.225	1.373*
1.7100	40.14	1.35	39.21	1.38
1.7200	40.13	1.35	39.19	1.39
1.7300	40.11	1.36	39.17	1.39
1.7400	40.09	1.37	39.15	1.40
1.7500	40.08	1.37	39.13	1.41
1.7600	40.06	1.38	39.11	1.42
1.7700	40.05	1.38	39.09	1.43
1.7800	40.03	1.39	39.07	1.43
1.7900	40.02	1.39	39.05	1.44

\* value interpolated

\*\*\*\*\*

Test Result for UIM Dielectric Parameter

Tue 03/Oct/2023

Freq Frequency(GHz)

FCC\_eH Limits for Head Epsilon

FCC\_sH Limits for Head Sigma

Test\_e Epsilon of UIM

Test\_s Sigma of UIM

\*\*\*\*\*

Freq	FCC_eH	FCC_sH	Test_e	Test_s
3.6000	37.81	3.02	37.10	3.04
3.6100	37.80	3.03	37.08	3.05
3.6200	37.79	3.04	37.07	3.06
3.6250	37.785	3.045	37.055	3.065*
3.6300	37.78	3.05	37.04	3.07
3.6400	37.77	3.06	37.01	3.08
3.6500	37.76	3.07	36.98	3.09
3.6600	37.75	3.08	36.96	3.10
3.6700	37.73	3.09	36.94	3.11
3.6800	37.72	3.10	36.92	3.12
3.6900	37.71	3.11	36.89	3.13
3.7000	37.70	3.12	36.87	3.14
3.7100	37.69	3.13	36.84	3.15
3.7200	37.68	3.14	36.82	3.16
3.7300	37.67	3.15	36.80	3.17
3.7400	37.65	3.16	36.78	3.18
3.7500	37.64	3.17	36.75	3.19

\* value interpolated

# RF Exposure Lab

## Plot 1

**DUT: Dipole 750 MHz D750V3; Type: D750V3; Serial: D750V3 - SN 1053**

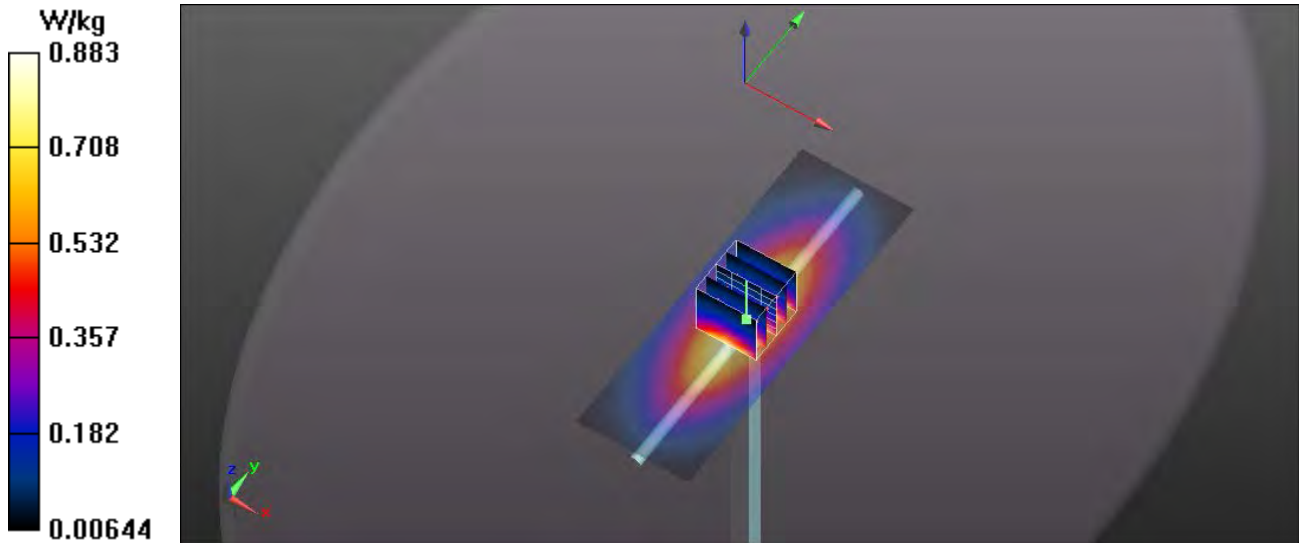
Communication System: CW; Frequency: 750 MHz; Duty Cycle: 1:1  
Medium: HSL750; Medium parameters used (interpolated):  $f = 750$  MHz;  $\sigma = 0.92$  S/m;  $\epsilon_r = 41.19$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
Phantom section: Flat Section

Test Date: Date: 11/22/2022; Ambient Temp: 23 °C; Tissue Temp: 21 °C  
Probe: EX3DV4 – SN3693; ConvF(10.46, 10.46, 10.46); Calibrated: 8/28/2022;  
Sensor-Surface: 2mm (Mechanical Surface Detection)  
Electronics: DAE4 Sn759; Calibrated: 8/16/2022  
Phantom: ELI v5.0; Type: QDOVA002AA; Serial: 1251  
Measurement SW: DASY52, Version 52.10 (0); SEMCAD X Version 14.6.10 (7417)

### Procedure Notes:

**750 MHz Head/Verification/Area Scan (41x121x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm  
Maximum value of SAR (interpolated) = 0.871 W/kg

**750 MHz Head/Verification /Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm  
Reference Value = 33.964 V/m; Power Drift = -0.03 dB  
Peak SAR (extrapolated) = 1.72 mW/g  
 $P_{in} = 100$  mW  
**SAR(1 g) = 0.861 mW/g; SAR(10 g) = 0.556 mW/g**  
Maximum value of SAR (measured) = 0.885 W/kg



# RF Exposure Lab

## Plot 2

**DUT: Dipole 900 MHz D900V2; Type: D900V2; Serial: D900V2 - SN:1d128**

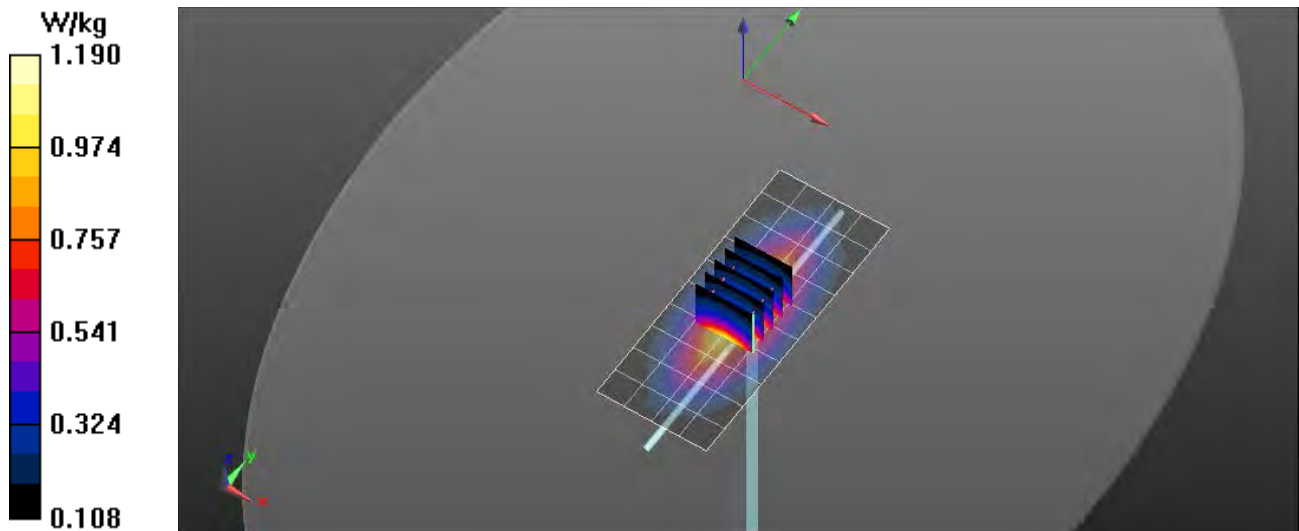
Communication System: CW; Frequency: 900 MHz; Duty Cycle: 1:1  
Medium: HSL900; Medium parameters used:  $f = 900$  MHz;  $\sigma = 0.99$  S/m;  $\epsilon_r = 40.78$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
Phantom section: Flat Section

Test Date: Date: 11/22/2022; Ambient Temp: 23 °C; Tissue Temp: 21 °C  
Probe: EX3DV4 – SN3693; ConvF(9.99, 9.99, 9.99); Calibrated: 8/28/2022;  
Sensor-Surface: 2mm (Mechanical Surface Detection)  
Electronics: DAE4 Sn759; Calibrated: 8/16/2022  
Phantom: ELI v5.0; Type: QDOVA002AA; Serial: 1251  
Measurement SW: DASY52, Version 52.10 (0); SEMCAD X Version 14.6.10 (7417)

### Procedure Notes:

**900 MHz Head/Verification/Area Scan (5x11x1):** Measurement grid: dx=15mm, dy=15mm  
Maximum value of SAR (measured) = 1.26 W/kg

**900 MHz Head/Verification/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm  
Reference Value = 30.579 V/m; Power Drift = -0.02 dB  
Peak SAR (extrapolated) = 1.51 W/kg  
 $P_{in} = 100$  mW  
**SAR(1 g) = 1.18 W/kg; SAR(10 g) = 0.723 W/kg**  
Maximum value of SAR (measured) = 1.21 W/kg





# RF Exposure Lab

## Plot 3

**DUT: Dipole 1750 MHz D1750V2; Type: D1750V2; Serial: D1750V2 - SN:1061**

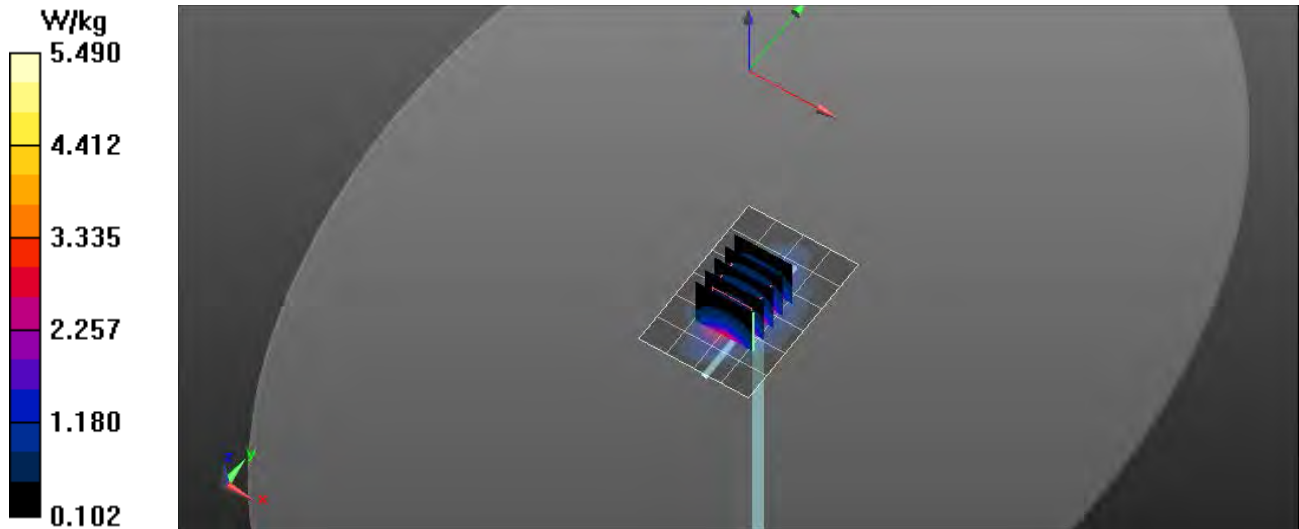
Communication System: CW; Frequency: 1750 MHz; Duty Cycle: 1:1  
 Medium: HSL1750; Medium parameters used:  $f = 1750$  MHz;  $\sigma = 1.38$  S/m;  $\epsilon_r = 39.35$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
 Phantom section: Flat Section

Test Date: Date: 11/21/2022; Ambient Temp: 23 °C; Tissue Temp: 21 °C  
 Probe: EX3DV4 – SN3693; ConvF(8.83, 8.83, 8.83); Calibrated: 8/28/2022;  
 Sensor-Surface: 2mm (Mechanical Surface Detection)  
 Electronics: DAE4 Sn759; Calibrated: 8/16/2022  
 Phantom: ELI v5.0; Type: QDOVA002AA; Serial: 1251  
 Measurement SW: DASY52, Version 52.10 (0); SEMCAD X Version 14.6.10 (7417)

### Procedure Notes:

**1750 MHz Head/Verification/Area Scan (5x7x1):** Measurement grid: dx=15mm, dy=15mm  
 Maximum value of SAR (measured) = 5.41 W/kg

**1750 MHz Head/Verification/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm  
 Reference Value = 34.269 V/m; Power Drift = -0.02 dB  
 Peak SAR (extrapolated) = 6.91 W/kg  
 $P_{in} = 100$  mW  
**SAR(1 g) = 3.82 W/kg; SAR(10 g) = 2.01 W/kg**  
 Maximum value of SAR (measured) = 5.49 W/kg



# RF Exposure Lab

## Plot 4

**DUT: Dipole 1900 MHz D1900V2; Type: D1900V2; Serial: D1900V2 - SN: 5d147**

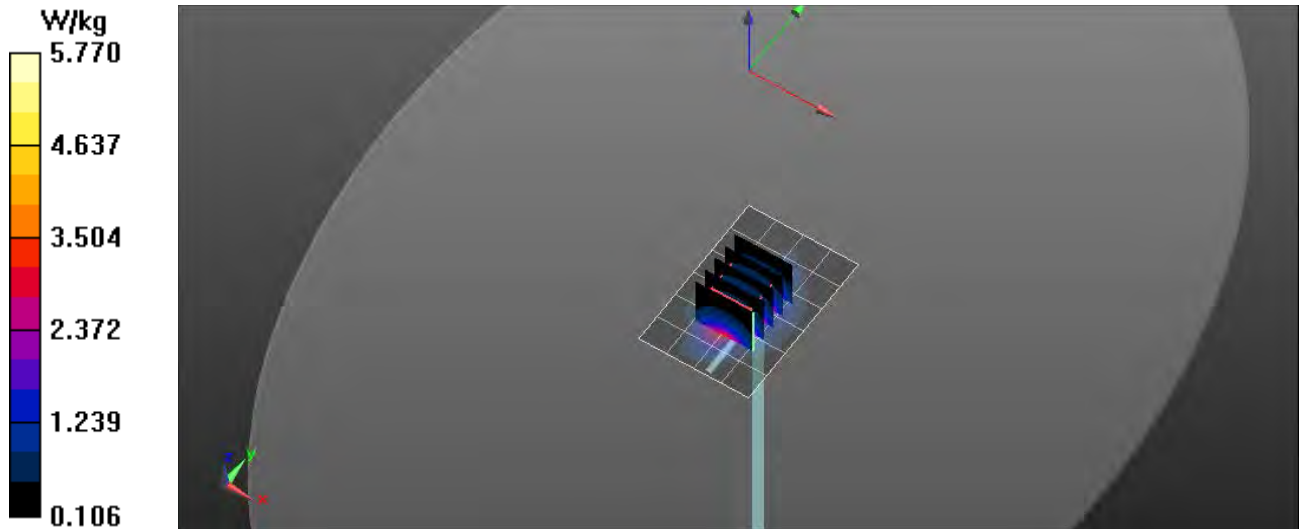
Communication System: CW; Frequency: 1900 MHz; Duty Cycle: 1:1  
Medium: HSL1900; Medium parameters used:  $f = 1900$  MHz;  $\sigma = 1.43$  S/m;  $\epsilon_r = 39.44$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
Phantom section: Flat Section

Test Date: Date: 11/21/2022; Ambient Temp: 23 °C; Tissue Temp: 21 °C  
Probe: EX3DV4 – SN3693; ConvF(8.43, 8.43, 8.43); Calibrated: 8/28/2022;  
Sensor-Surface: 2mm (Mechanical Surface Detection)  
Electronics: DAE4 Sn759; Calibrated: 8/16/2022  
Phantom: ELI v5.0; Type: QDOVA002AA; Serial: 1251  
Measurement SW: DASY52, Version 52.10 (0); SEMCAD X Version 14.6.10 (7417)

### Procedure Notes:

**1900 MHz Head/Verification/Area Scan (5x7x1):** Measurement grid: dx=15mm, dy=15mm  
Maximum value of SAR (measured) = 5.75 W/kg

**1900 MHz Head/Verification/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm  
Reference Value = 35.267 V/m; Power Drift = -0.03 dB  
Peak SAR (extrapolated) = 7.22 W/kg  
 $P_{in} = 100$  mW  
**SAR(1 g) = 4.15 W/kg; SAR(10 g) = 2.15 W/kg**  
Maximum value of SAR (measured) = 5.77 W/kg



# RF Exposure Lab

## Plot 5

**DUT: Dipole 2550 MHz D2550V2; Type: D2550V2; Serial: D2550V2 - SN:1003**

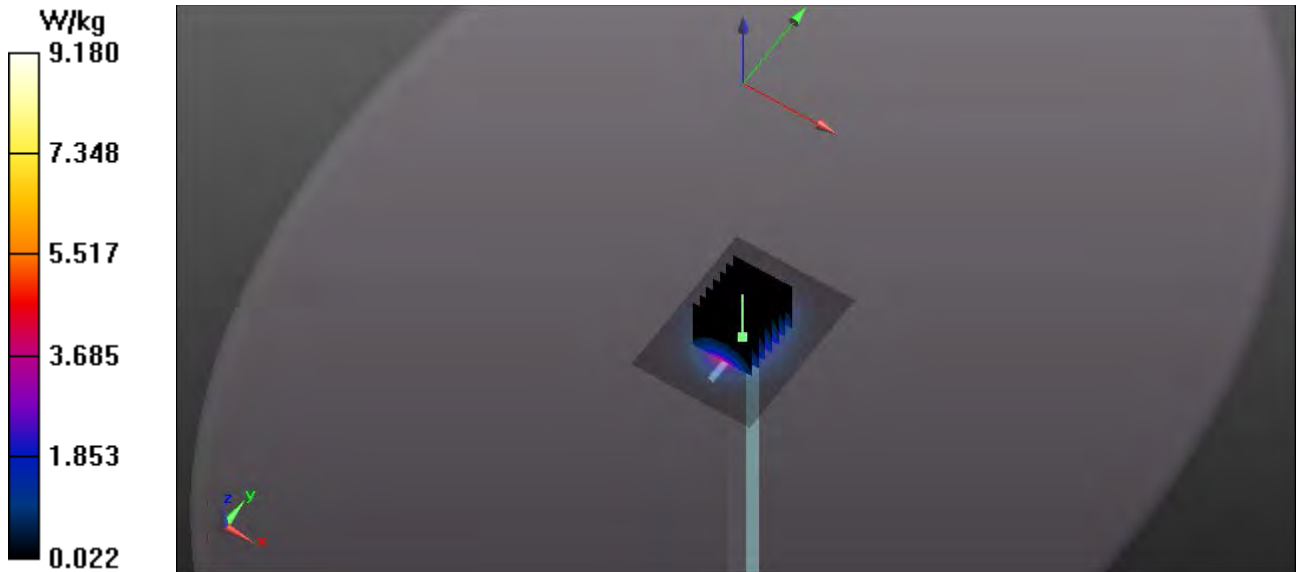
Communication System: CW; Frequency: 2550 MHz; Duty Cycle: 1:1  
Medium: HSL2550; Medium parameters used:  $f = 2550$  MHz;  $\sigma = 1.94$  S/m;  $\epsilon_r = 38.88$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
Phantom section: Flat Section

Test Date: Date: 11/23/2022; Ambient Temp: 23 °C; Tissue Temp: 21 °C  
Probe: EX3DV4 – SN3693; ConvF(7.71, 7.71, 7.71); Calibrated: 8/28/2022;  
Sensor-Surface: 2mm (Mechanical Surface Detection)  
Electronics: DAE4 Sn759; Calibrated: 8/16/2022  
Phantom: ELI v5.0; Type: QDOVA002AA; Serial: 1251  
Measurement SW: DASY52, Version 52.10 (0); SEMCAD X Version 14.6.10 (7417)

### Procedure Notes:

**2550 MHz Head/Verification/Area Scan (61x81x1):** Interpolated grid: dx=1.000 mm, dy=1.000 mm  
Maximum value of SAR (interpolated) = 9.16 W/kg

**2550 MHz Head/Verification/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm  
Reference Value = 56.394 V/m; Power Drift = -0.02 dB  
Peak SAR (extrapolated) = 11.9 W/kg  
 $P_{in} = 100$  mW  
**SAR(1 g) = 5.69 W/kg; SAR(10 g) = 2.48 W/kg**  
Maximum value of SAR (measured) = 9.17 W/kg



# RF Exposure Lab

## Plot 6

**DUT: Dipole D3500V2; Type: D3500V2; Serial: D3500V2 - SN: 1061**

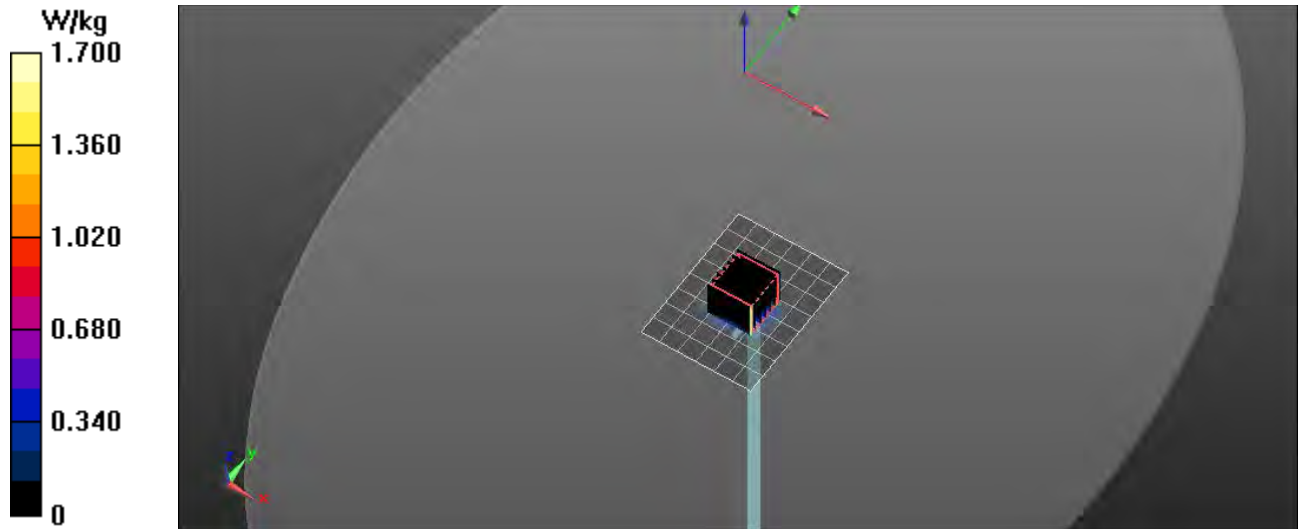
Communication System: CW; Frequency: 3500 MHz; Duty Cycle: 1:1  
Medium: HSL 3-6 GHz; Medium parameters used:  $f = 3500$  MHz;  $\sigma = 2.96$  S/m;  $\epsilon_r = 37.67$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
Phantom section: Flat Section

Test Date: Date: 11/23/2022; Ambient Temp: 23 °C; Tissue Temp: 21 °C  
Probe: EX3DV4 – SN3693; ConvF(6.98, 6.98, 6.98); Calibrated: 8/28/2022;  
Sensor-Surface: 2mm (Mechanical Surface Detection)  
Electronics: DAE4 Sn759; Calibrated: 8/16/2022  
Phantom: ELI v5.0; Type: QDOVA002AA; Serial: 1251  
Measurement SW: DASY52, Version 52.10 (0); SEMCAD X Version 14.6.10 (7417)

### Procedure Notes:

**3500 MHz Head/Verification/Area Scan (7x9x1):** Measurement grid: dx=10mm, dy=10mm  
Maximum value of SAR (measured) = 1.68 W/kg

**3500 MHz Head/Verification/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=4mm  
Reference Value = 22.773 V/m; Power Drift = -0.01 dB  
Peak SAR (extrapolated) = 3.74 W/kg  
 $P_{in} = 10$  mW  
**SAR(1 g) = 0.694 W/kg; SAR(10 g) = 0.263 W/kg**  
Maximum value of SAR (measured) = 1.71 W/kg



# RF Exposure Lab

## Plot 7

**DUT: Dipole 1750 MHz D1750V2; Type: D1750V2; Serial: D1750V2 - SN:1061**

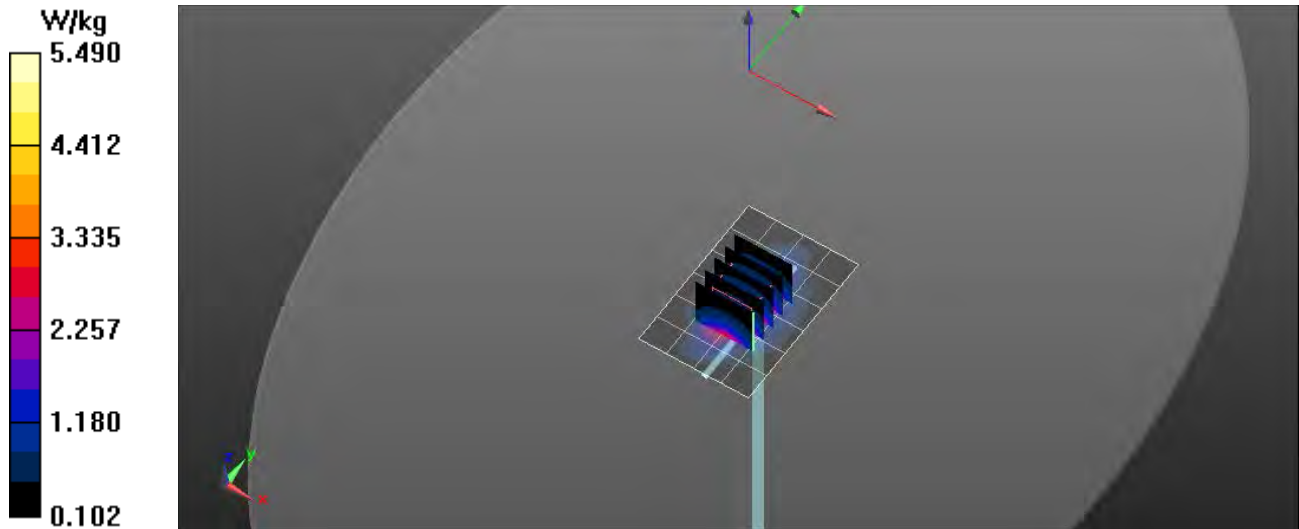
Communication System: CW; Frequency: 1750 MHz; Duty Cycle: 1:1  
Medium: HSL1750; Medium parameters used:  $f = 1750$  MHz;  $\sigma = 1.41$  S/m;  $\epsilon_r = 39.13$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
Phantom section: Flat Section

Test Date: Date: 10/4/2023; Ambient Temp: 23 °C; Tissue Temp: 21 °C  
Probe: EX3DV4 – SN3693; ConvF(7.72, 8.54, 7.93); Calibrated: 9/13/2023;  
Sensor-Surface: 2mm (Mechanical Surface Detection)  
Electronics: DAE4 Sn759; Calibrated: 9/12/2023  
Phantom: ELI v5.0; Type: QDOVA002AA; Serial: 1251  
Measurement SW: DASY52, Version 52.10 (0); SEMCAD X Version 14.6.10 (7417)

### Procedure Notes:

**1750 MHz Head/Verification/Area Scan (5x7x1):** Measurement grid: dx=15mm, dy=15mm  
Maximum value of SAR (measured) = 5.26 W/kg

**1750 MHz Head/Verification/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm  
Reference Value = 34.967 V/m; Power Drift = -0.03 dB  
Peak SAR (extrapolated) = 7.12 W/kg  
 $P_{in} = 100$  mW  
**SAR(1 g) = 3.88 W/kg; SAR(10 g) = 2.04 W/kg**  
Maximum value of SAR (measured) = 5.51 W/kg



# RF Exposure Lab

## Plot 8

**DUT: Dipole D3700V2; Type: D3700V2; Serial: D3700V2 - SN: 1024**

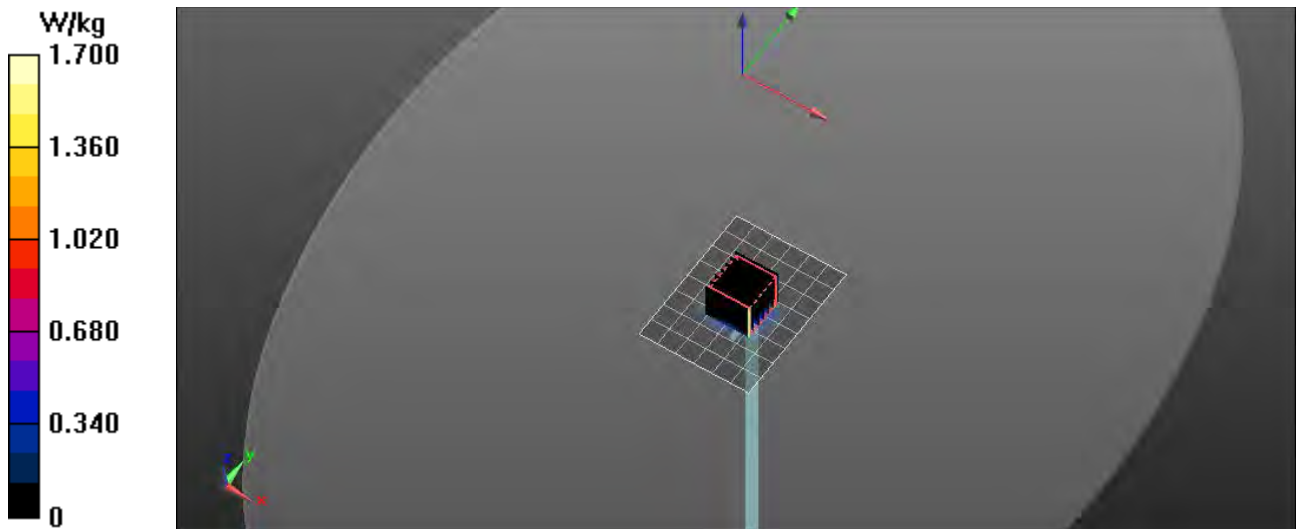
Communication System: CW; Frequency: 3700 MHz; Duty Cycle: 1:1  
Medium: HSL3700; Medium parameters used:  $f = 3700$  MHz;  $\sigma = 3.14$  S/m;  $\epsilon_r = 36.87$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
Phantom section: Flat Section

Test Date: Date: 10/3/2023; Ambient Temp: 23 °C; Tissue Temp: 21 °C  
Probe: EX3DV4 – SN3693; ConvF(6.66, 7.15, 6.69); Calibrated: 9/13/2023;  
Sensor-Surface: 2mm (Mechanical Surface Detection)  
Electronics: DAE4 Sn759; Calibrated: 9/12/2023  
Phantom: ELI v5.0; Type: QDOVA002AA; Serial: 1251  
Measurement SW: DASY52, Version 52.10 (0); SEMCAD X Version 14.6.10 (7417)

### Procedure Notes:

**3700 MHz Head/Verification/Area Scan (7x9x1):** Measurement grid: dx=10mm, dy=10mm  
Maximum value of SAR (measured) = 1.68 W/kg

**3700 MHz Head/Verification/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=4mm  
Reference Value = 22.773 V/m; Power Drift = -0.01 dB  
Peak SAR (extrapolated) = 3.74 W/kg  
 $P_{in} = 10$  mW  
**SAR(1 g) = 0.694 W/kg; SAR(10 g) = 0.253 W/kg**  
Maximum value of SAR (measured) = 1.71 W/kg



## Appendix B – SAR Test Data Plots

# RF Exposure Lab

## Plot 1

**DUT: M3000D; Type: Hotspot; IMEI: 990018850002639**

Communication System: FR1 (NR, 1 RB, 20 MHz, BPSK); Frequency: 836.5 MHz; Duty Cycle: 1:1  
Medium: HSL750; Medium parameters used (extrapolated):  $f = 836.5 \text{ MHz}$ ;  $\sigma = 0.927 \text{ S/m}$ ;  $\epsilon_r = 40.881$ ;  $\rho = 1000 \text{ kg/m}^3$   
Phantom section: Flat Section

Test Date: Date: 11/22/2022; Ambient Temp: 23 °C; Tissue Temp: 21 °C

Probe: EX3DV4 - SN3693; ConvF(9.99, 9.99, 9.99); Calibrated: 8/28/2022  
Sensor-Surface: 2mm (Mechanical Surface Detection)  
Electronics: DAE4 Sn759; Calibrated: 8/16/2022  
Phantom: ELI v5.0; Type: QDOVA002AA; Serial: 1251  
Measurement SW: DASY52, Version 52.10 (0); SEMCAD X Version 14.6.10 (7417)

### Procedure Notes:

**Band n5 FR1/Side C 1 RB 49 Offset Ant 0 Mid/Area Scan (7x15x1):** Measurement grid: dx=15mm, dy=15mm

[Info: Extrapolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.646 W/kg

**Band n5 FR1/Side C 1 RB 49 Offset Ant 0 Mid/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

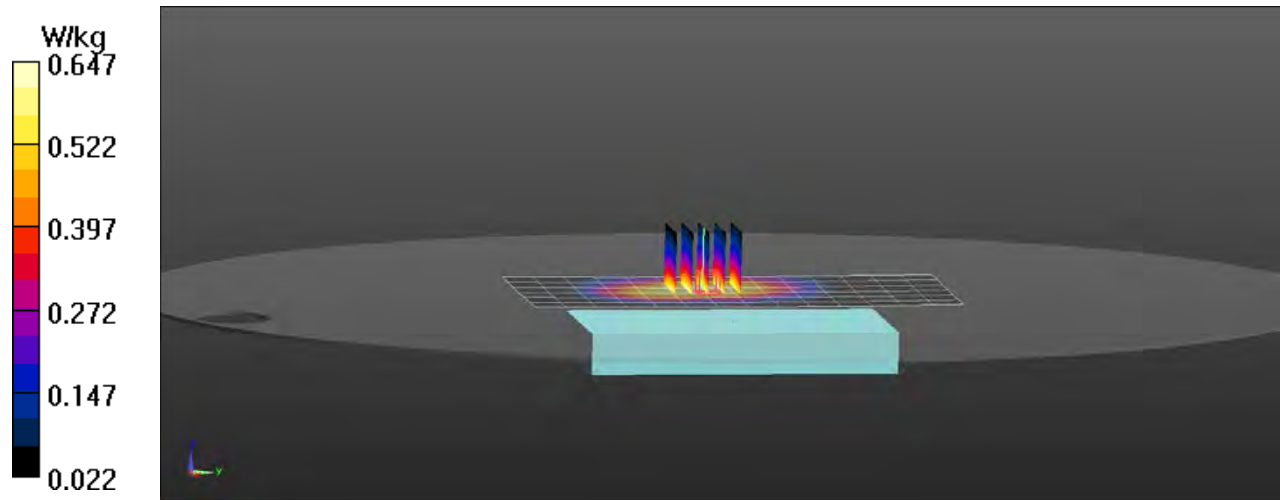
Reference Value = 19.06 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 0.785 W/kg

**SAR(1 g) = 0.436 W/kg**

[Info: Extrapolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.647 W/kg





# RF Exposure Lab

## Plot 2

**DUT: M3000D; Type: Hotspot; IMEI: 990018850002639**

Communication System: FR1 (NR, 1 RB, 20 MHz, BPSK); Frequency: 2535 MHz; Duty Cycle: 1:1  
Medium: HSL2550; Medium parameters used (interpolated):  $f = 2535$  MHz;  $\sigma = 1.915$  S/m;  $\epsilon_r = 38.915$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
Phantom section: Flat Section

Test Date: Date: 11/23/2022; Ambient Temp: 23 °C; Tissue Temp: 21 °C

Probe: EX3DV4 - SN3693; ConvF(7.71, 7.71, 7.71); Calibrated: 8/28/2022  
Sensor-Surface: 2mm (Mechanical Surface Detection)  
Electronics: DAE4 Sn759; Calibrated: 8/16/2022  
Phantom: ELI v5.0; Type: QDOVA002AA; Serial: 1251  
Measurement SW: DASY52, Version 52.10 (0); SEMCAD X Version 14.6.10 (7417)

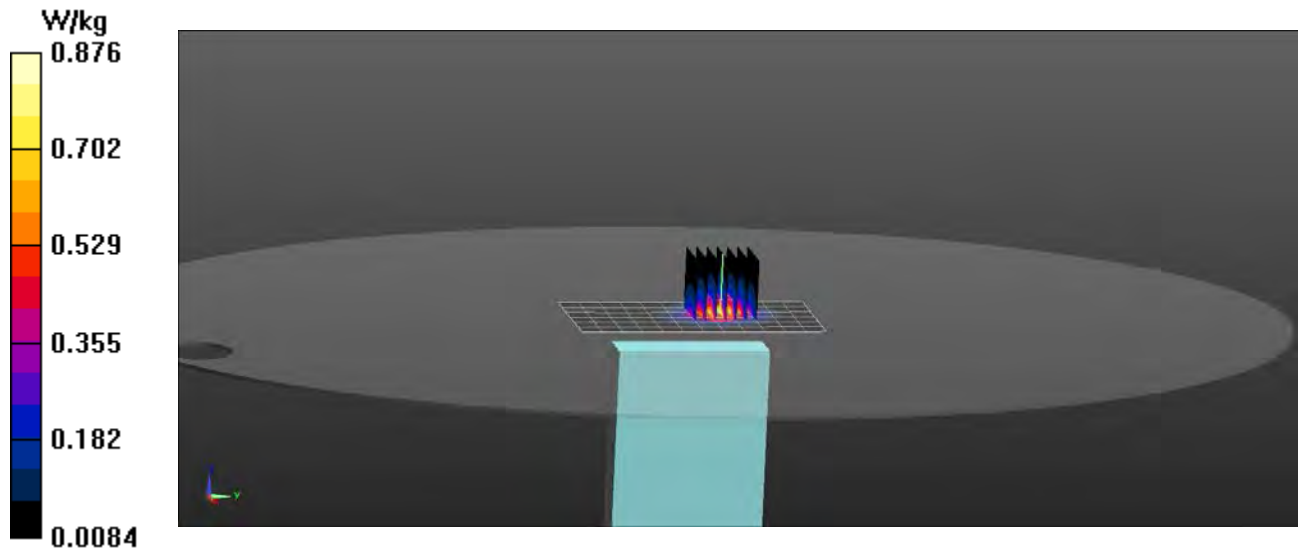
### Procedure Notes:

**Band n7 FR1/Side F 1 RB 49 Offset Ant 0 Mid/Area Scan (7x13x1):** Measurement grid: dx=10mm, dy=10mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)  
Maximum value of SAR (measured) = 1.09 W/kg

**Band n7 FR1/Side F 1 RB 49 Offset Ant 0 Mid/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm  
Reference Value = 16.45 V/m; Power Drift = 0.04 dB  
Peak SAR (extrapolated) = 1.71 W/kg  
**SAR(1 g) = 0.829 W/kg**

[Info: Interpolated medium parameters used for SAR evaluation.](#)  
Maximum value of SAR (measured) = 0.876 W/kg



# RF Exposure Lab

## Plot 3

**DUT: M3000D; Type: Hotspot; IMEI: 990018850002639**

Communication System: FR1 (NR, 1 RB, 15 MHz, BPSK); Frequency: 707.5 MHz; Duty Cycle: 1:1  
Medium: HSL750; Medium parameters used (interpolated):  $f = 707.5$  MHz;  $\sigma = 0.888$  S/m;  $\epsilon_r = 41.438$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
Phantom section: Flat Section

Test Date: Date: 11/22/2022; Ambient Temp: 23 °C; Tissue Temp: 21 °C

Probe: EX3DV4 - SN3693; ConvF(10.46, 10.46, 10.46); Calibrated: 8/28/2022  
Sensor-Surface: 2mm (Mechanical Surface Detection)  
Electronics: DAE4 Sn759; Calibrated: 8/16/2022  
Phantom: ELI v5.0; Type: QDOVA002AA; Serial: 1251  
Measurement SW: DASY52, Version 52.10 (0); SEMCAD X Version 14.6.10 (7417)

### Procedure Notes:

**Band n12 FR1/Side A 1 RB 37 Offset Ant 0 Mid/Area Scan (7x15x1):** Measurement grid: dx=15mm, dy=15mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.389 W/kg

**Band n12 FR1/Side A 1 RB 37 Offset Ant 0 Mid/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

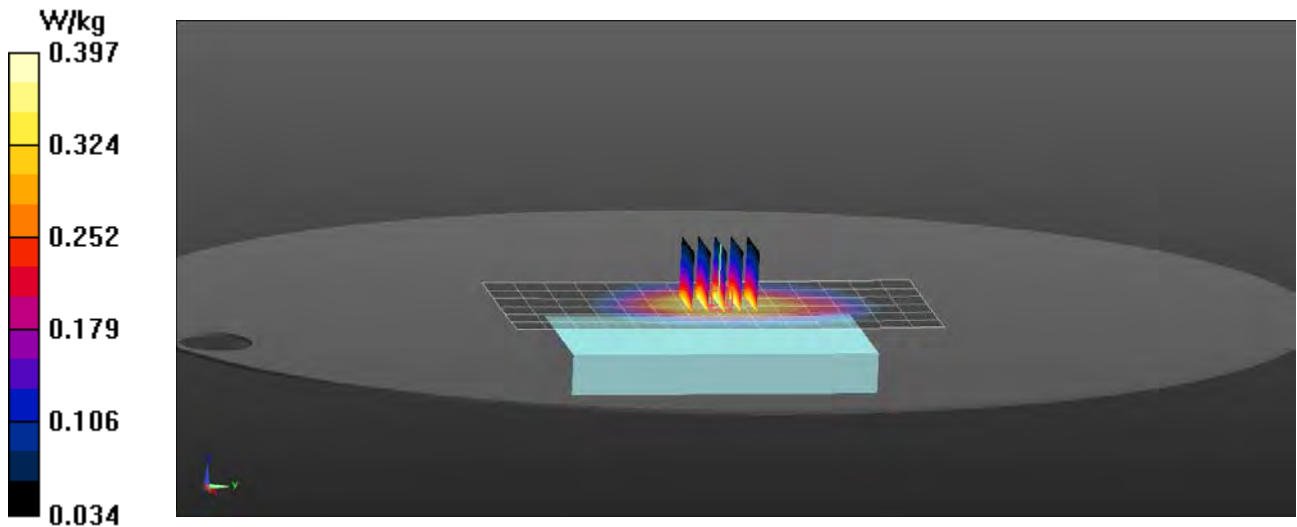
Reference Value = 24.00 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 0.447 W/kg

**SAR(1 g) = 0.312 W/kg**

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.397 W/kg



# RF Exposure Lab

## Plot 4

**DUT: M3000D; Type: Hotspot; IMEI: 990018850002639**

Communication System: FR1 (NR, 1 RB, 20 MHz, BPSK); Frequency: 1882.5 MHz; Duty Cycle: 1:1  
Medium: HSL1900; Medium parameters used (interpolated):  $f = 1882.5$  MHz;  $\sigma = 1.43$  S/m;  $\epsilon_r = 39.475$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
Phantom section: Flat Section

Test Date: Date: 11/21/2022; Ambient Temp: 23 °C; Tissue Temp: 21 °C

Probe: EX3DV4 - SN3693; ConvF(8.43, 8.43, 8.43); Calibrated: 8/28/2022  
Sensor-Surface: 2mm (Mechanical Surface Detection)  
Electronics: DAE4 Sn759; Calibrated: 8/16/2022  
Phantom: ELI v5.0; Type: QDOVA002AA; Serial: 1251  
Measurement SW: DASY52, Version 52.10 (0); SEMCAD X Version 14.6.10 (7417)

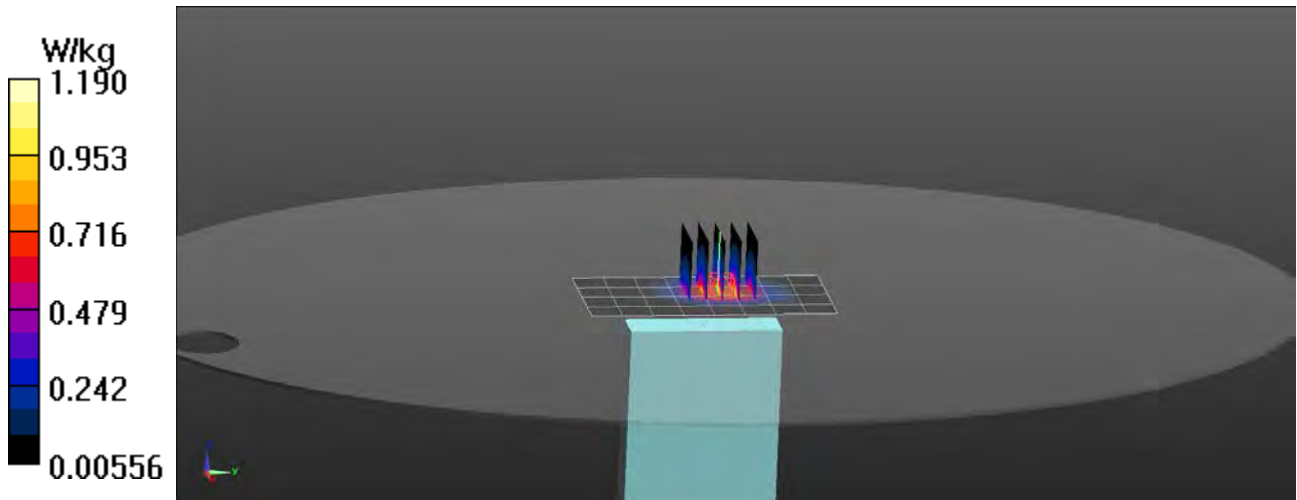
### Procedure Notes:

**Band n25 FR1/Side F 1 RB 49 Offset Ant 0 Mid/Area Scan (5x9x1):** Measurement grid: dx=15mm, dy=15mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)  
Maximum value of SAR (measured) = 1.10 W/kg

**Band n25 FR1/Side F 1 RB 49 Offset Ant 0 Mid/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm  
Reference Value = 21.31 V/m; Power Drift = 0.05 dB  
Peak SAR (extrapolated) = 1.72 W/kg  
**SAR(1 g) = 0.791 W/kg**

[Info: Interpolated medium parameters used for SAR evaluation.](#)  
Maximum value of SAR (measured) = 1.19 W/kg



# RF Exposure Lab

## Plot 5

**DUT: M3000D; Type: Hotspot; IMEI: 990018850002639**

Communication System: FR1 (NR, 1 RB, 20 MHz, BPSK); Frequency: 2593 MHz; Duty Cycle: 1:1  
Medium: HSL2550; Medium parameters used (interpolated):  $f = 2593$  MHz;  $\sigma = 1.99$  S/m;  $\epsilon_r = 38.783$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
Phantom section: Flat Section

Test Date: Date: 11/23/2022; Ambient Temp: 23 °C; Tissue Temp: 21 °C

Probe: EX3DV4 - SN3693; ConvF(7.71, 7.71, 7.71); Calibrated: 8/28/2022  
Sensor-Surface: 2mm (Mechanical Surface Detection)  
Electronics: DAE4 Sn759; Calibrated: 8/16/2022  
Phantom: ELI v5.0; Type: QDOVA002AA; Serial: 1251  
Measurement SW: DASY52, Version 52.10 (0); SEMCAD X Version 14.6.10 (7417)

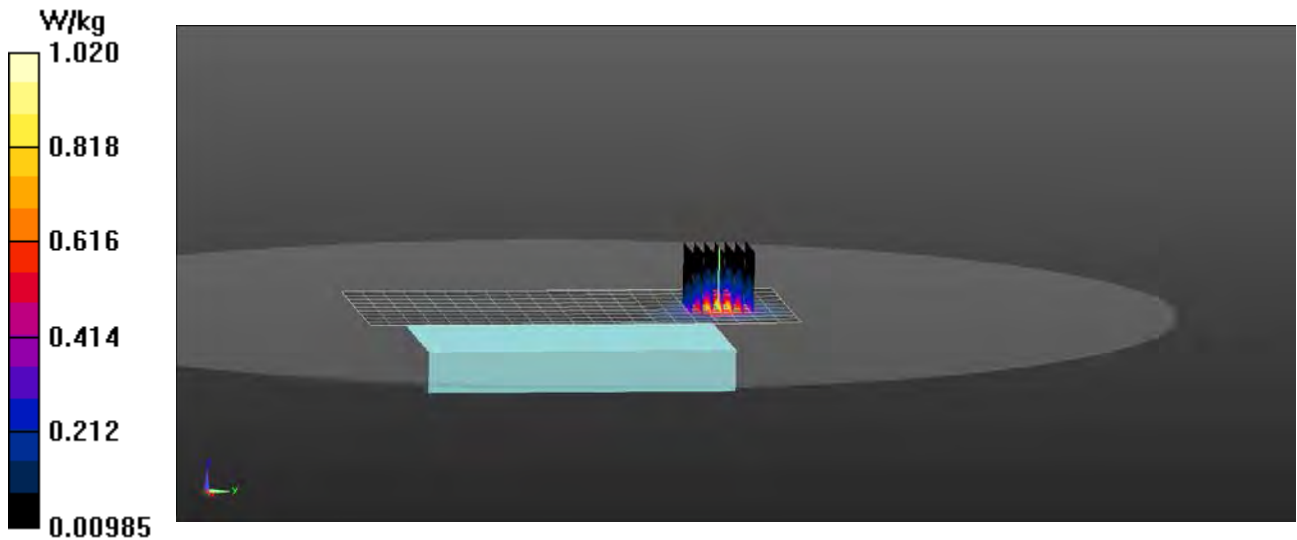
### Procedure Notes:

**Band n41 FR1/Side A 1 RB 49 Offset Ant 0 Mid/Area Scan (10x22x1):** Measurement grid: dx=10mm, dy=10mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)  
Maximum value of SAR (measured) = 0.999 W/kg

**Band n41 FR1/Side A 1 RB 49 Offset Ant 0 Mid/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm  
Reference Value = 2.556 V/m; Power Drift = 0.01 dB  
Peak SAR (extrapolated) = 1.33 W/kg  
**SAR(1 g) = 0.729 W/kg**

[Info: Interpolated medium parameters used for SAR evaluation.](#)  
Maximum value of SAR (measured) = 1.02 W/kg



# RF Exposure Lab

## Plot 6

**DUT: M3000D; Type: Hotspot; IMEI: 990018850002639**

Communication System: FR1 (NR, 1 RB, 20 MHz, BPSK); Frequency: 1745 MHz; Duty Cycle: 1:1  
Medium: HSL1750; Medium parameters used (interpolated):  $f = 1745$  MHz;  $\sigma = 1.375$  S/m;  $\epsilon_r = 39.36$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
Phantom section: Flat Section

Test Date: Date: 11/21/2022; Ambient Temp: 23 °C; Tissue Temp: 21 °C

Probe: EX3DV4 - SN3693; ConvF(8.83, 8.83, 8.83); Calibrated: 8/28/2022  
Sensor-Surface: 2mm (Mechanical Surface Detection)  
Electronics: DAE4 Sn759; Calibrated: 8/16/2022  
Phantom: ELI v5.0; Type: QDOVA002AA; Serial: 1251  
Measurement SW: DASY52, Version 52.10 (0); SEMCAD X Version 14.6.10 (7417)

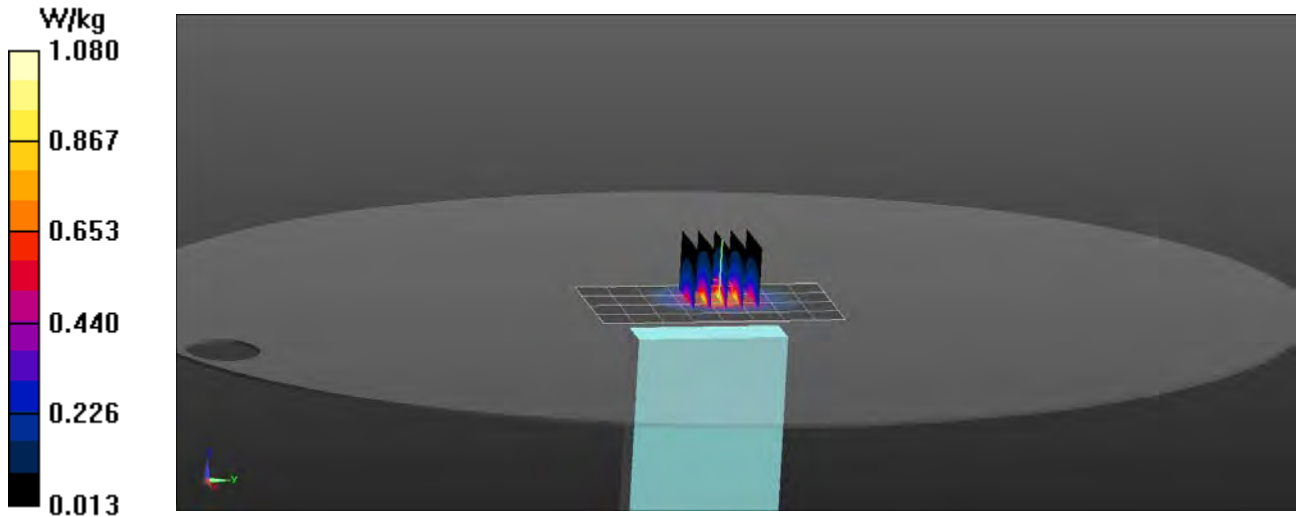
### Procedure Notes:

**Band n66 FR1/Side F 1 RB 49 Offset Ant 0 Mid/Area Scan (5x9x1):** Measurement grid: dx=15mm, dy=15mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)  
Maximum value of SAR (measured) = 1.11 W/kg

**Band n66 FR1/Side F 1 RB 49 Offset Ant 0 Mid/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm  
Reference Value = 31.68 V/m; Power Drift = -0.04 dB  
Peak SAR (extrapolated) = 1.75 W/kg  
**SAR(1 g) = 0.816 W/kg**

[Info: Interpolated medium parameters used for SAR evaluation.](#)  
Maximum value of SAR (measured) = 1.08 W/kg



# RF Exposure Lab

## Plot 7

**DUT: M3000D; Type: Hotspot; IMEI: 990018850002639**

Communication System: FR1 (NR, 1 RB, 20 MHz, BPSK); Frequency: 680.5 MHz; Duty Cycle: 1:1  
Medium: HSL600; Medium parameters used (interpolated):  $f = 680.5$  MHz;  $\sigma = 0.911$  S/m;  $\epsilon_r = 40.997$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
Phantom section: Flat Section

Test Date: Date: 11/22/2022; Ambient Temp: 23 °C; Tissue Temp: 21 °C

Probe: EX3DV4 - SN3693; ConvF(10.46, 10.46, 10.46); Calibrated: 8/28/2022  
Sensor-Surface: 2mm (Mechanical Surface Detection)  
Electronics: DAE4 Sn759; Calibrated: 8/16/2022  
Phantom: ELI v5.0; Type: QDOVA002AA; Serial: 1251  
Measurement SW: DASY52, Version 52.10 (0); SEMCAD X Version 14.6.10 (7417)

### Procedure Notes:

**Band n71 FR1/Side A 1 RB 49 Offset Ant 0 Mid/Area Scan (7x15x1):** Measurement grid: dx=15mm, dy=15mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.367 W/kg

**Band n71 FR1/Side A 1 RB 49 Offset Ant 0 Mid/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

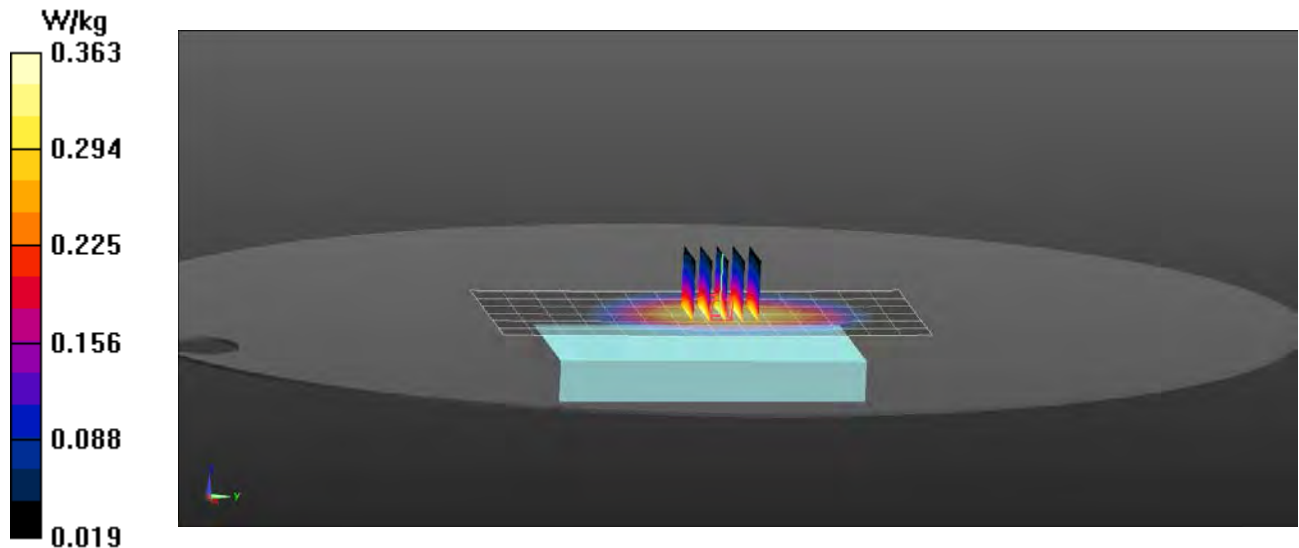
Reference Value = 24.28 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 0.473 W/kg

**SAR(1 g) = 0.397 W/kg**

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.363 W/kg



# RF Exposure Lab

## Plot 8

**DUT: M3000D; Type: Hotspot; IMEI: 990018850002639**

Communication System: FR1 (NR, 1 RB, 20 MHz, BPSK); Frequency: 3500 MHz; Duty Cycle: 1:1  
 Medium: HSL3-6GHz; Medium parameters used (interpolated):  $f = 3550$  MHz;  $\sigma = 3.01$  S/m;  $\epsilon_r = 37.61$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
 Phantom section: Flat Section

Test Date: Date: 11/23/2022; Ambient Temp: 23 °C; Tissue Temp: 21 °C

Probe: EX3DV4 – SN3693; ConvF(6.98, 6.98, 6.98); Calibrated: 8/28/2022  
 Sensor-Surface: 2mm (Mechanical Surface Detection)  
 Electronics: DAE4 Sn759; Calibrated: 8/16/2022  
 Phantom: ELI v5.0; Type: QDOVA002AA; Serial: 1251  
 Measurement SW: DASY52, Version 52.10 (0); SEMCAD X Version 14.6.10 (7417)

### Procedure Notes:

**Band n78 FR1/Side B 1 RB 49 Offset Ant 4 Mid/Area Scan (7x22x1):** Measurement grid: dx=10mm, dy=10mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 1.59 W/kg

**Band n78 FR1/Side B 1 RB 49 Offset Ant 4 Mid/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=4mm

Reference Value = 9.619 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 2.77 W/kg

**SAR(1 g) = 0.722 W/kg**

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 1.52 W/kg

**Band n78 FR1/Side B 1 RB 49 Offset Ant 4 Mid/Zoom Scan (7x7x7)/Cube 1:** Measurement grid: dx=4mm, dy=4mm, dz=4mm

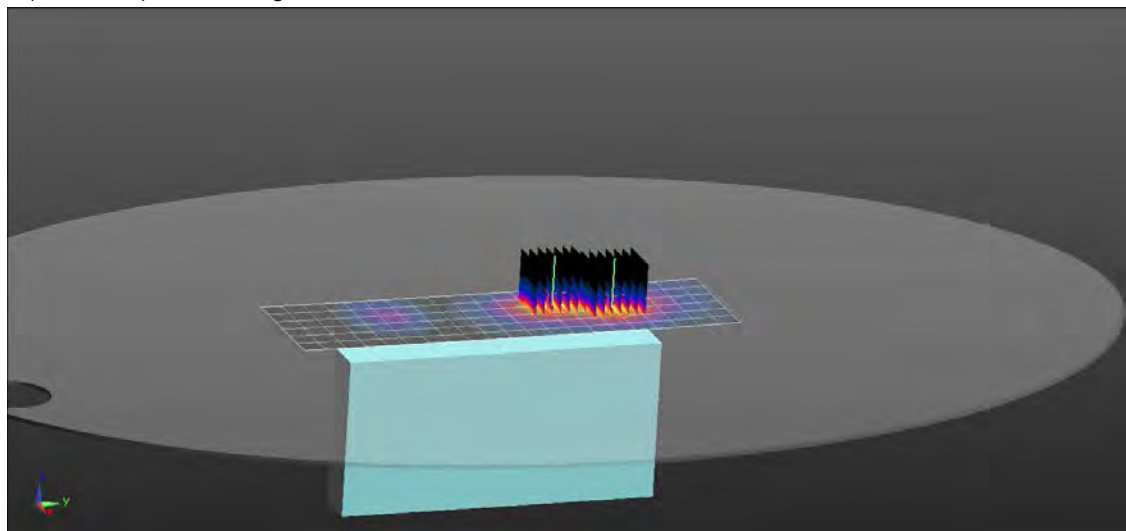
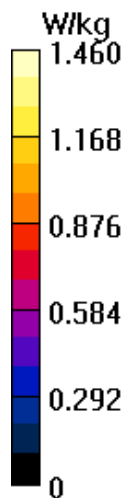
Reference Value = 9.619 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 2.52 W/kg

**SAR(1 g) = 0.705 W/kg**

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 1.46 W/kg



# RF Exposure Lab

## Plot 9

**DUT: M3000D; Type: Hotspot; Serial: 990018850001268**

Communication System: LTE (SC-FDMA, 1 RB, 20 MHz, QPSK); Frequency: 3603.3 MHz; Duty Cycle: 1:1  
Medium: HSL3-6GHz; Medium parameters used (interpolated):  $f = 3625$  MHz;  $\sigma = 3.065$  S/m;  $\epsilon_r = 37.055$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
Phantom section: Flat Section

Test Date: Date: 10/3/2023; Ambient Temp: 23 °C; Tissue Temp: 21 °C

Probe: EX3DV4 - SN3693; ConvF(6.66, 7.15, 6.69); Calibrated: 9/13/2023  
Sensor-Surface: 2mm (Mechanical Surface Detection)  
Electronics: DAE4 Sn759; Calibrated: 9/12/2023  
Phantom: ELI v5.0; Type: QDOVA002AA; Serial: 1251  
Measurement SW: DASY52, Version 52.10 (0); SEMCAD X Version 14.6.10 (7417)

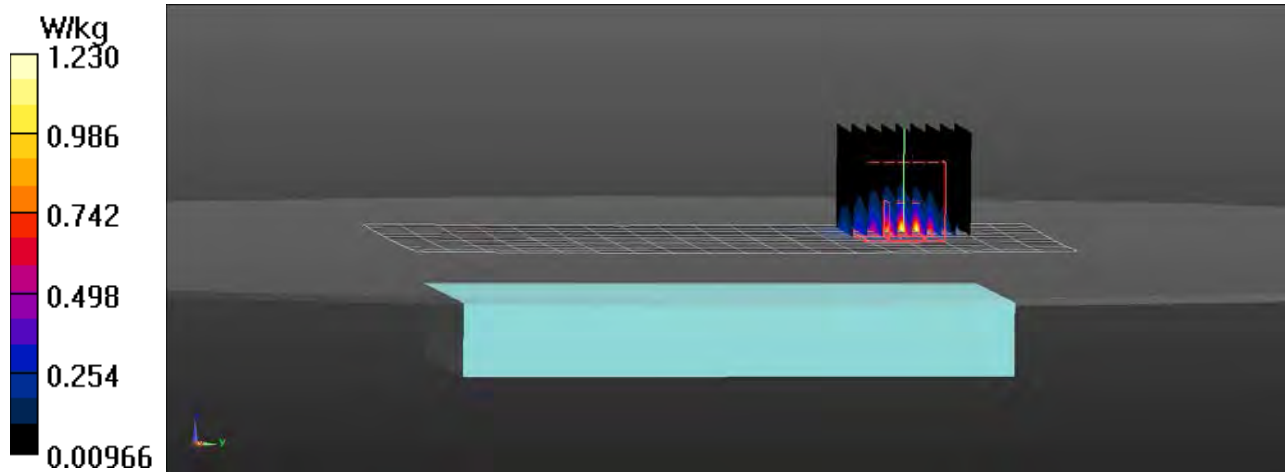
### Procedure Notes:

**n48 LTE/Side A Ant 4 Mid1 1 RB 49 Offset/Area Scan (11x19x1):** Measurement grid: dx=10mm, dy=10mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)  
Maximum value of SAR (measured) = 1.22 W/kg

**n48 LTE/Side A Ant 4 Mid1 1 RB 49 Offset/Zoom Scan (9x9x16)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=2mm  
Reference Value = 3.187 V/m; Power Drift = 0.09 dB  
Peak SAR (extrapolated) = 1.60 W/kg  
**SAR(1 g) = 0.811 W/kg; SAR(10 g) = 0.413 W/kg**

[Info: Interpolated medium parameters used for SAR evaluation.](#)  
Maximum value of SAR (measured) = 1.23 W/kg





# RF Exposure Lab

## Plot 10

**DUT: M3000D; Type: Hotspot; Serial: 990018850001268**

Communication System: LTE (SC-FDMA, 1 RB, 20 MHz, QPSK); Frequency: 1702.5 MHz; Duty Cycle: 1:1  
Medium: HSL1750; Medium parameters used (interpolated):  $f = 1702.5$  MHz;  $\sigma = 1.373$  S/m;  $\epsilon_r = 39.225$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
Phantom section: Flat Section

Test Date: Date: 10/4/2023; Ambient Temp: 23 °C; Tissue Temp: 21 °C

Probe: EX3DV4 - SN3693; ConvF(7.72, 8.54, 7.93); Calibrated: 9/13/2023  
Sensor-Surface: 2mm (Mechanical Surface Detection)  
Electronics: DAE4 Sn759; Calibrated: 9/12/2023  
Phantom: ELI v5.0; Type: QDOVA002AA; Serial: 1251  
Measurement SW: DASY52, Version 52.10 (0); SEMCAD X Version 14.6.10 (7417)

### Procedure Notes:

**n70 LTE/Side C Ant 8 Mid 1 RB 49 Offset/Area Scan (9x13x1):** Measurement grid: dx=15mm, dy=15mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.979 W/kg

**n70 LTE/Side C Ant 8 Mid 1 RB 49 Offset/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

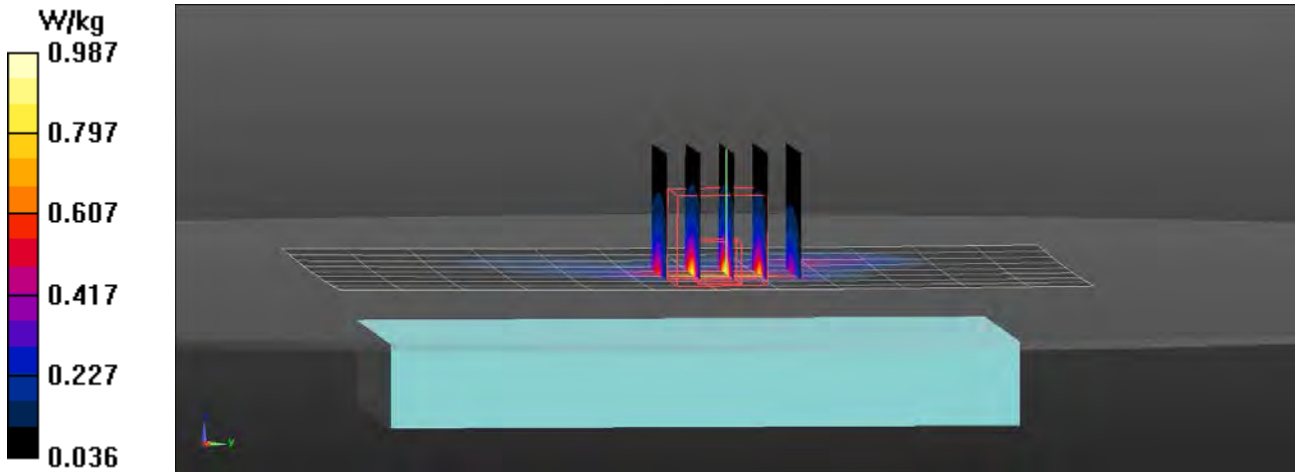
Reference Value = 11.32 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 1.19 W/kg

**SAR(1 g) = 0.769 W/kg; SAR(10 g) = 0.496 W/kg**

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.987 W/kg



**Appendix C – SAR Test Setup Photos**



**Test Position Side A 10 mm Gap**



**Test Position Side B 10 mm Gap**



**Test Position Side C 10 mm Gap**



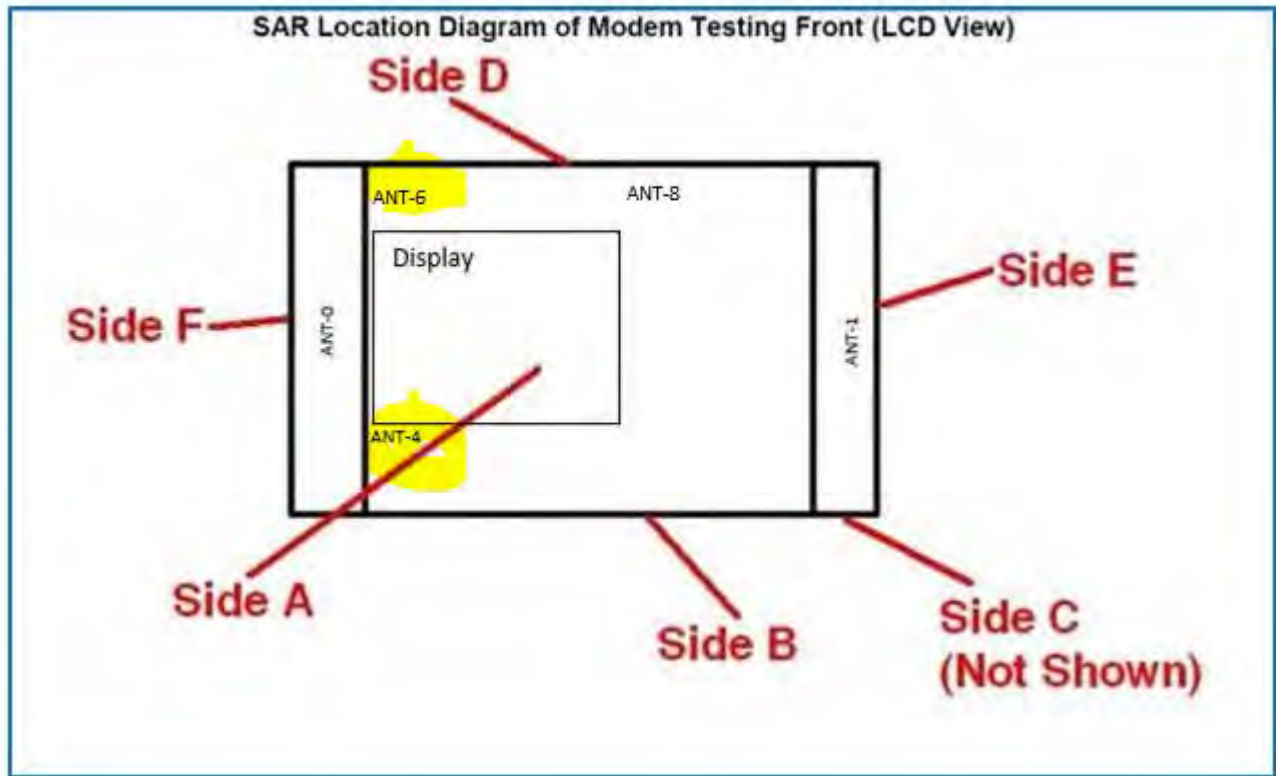
**Test Position Side D 10 mm Gap**



**Test Position Side E 10 mm Gap**



**Test Position Side F 10 mm Gap**



**Test Positions**



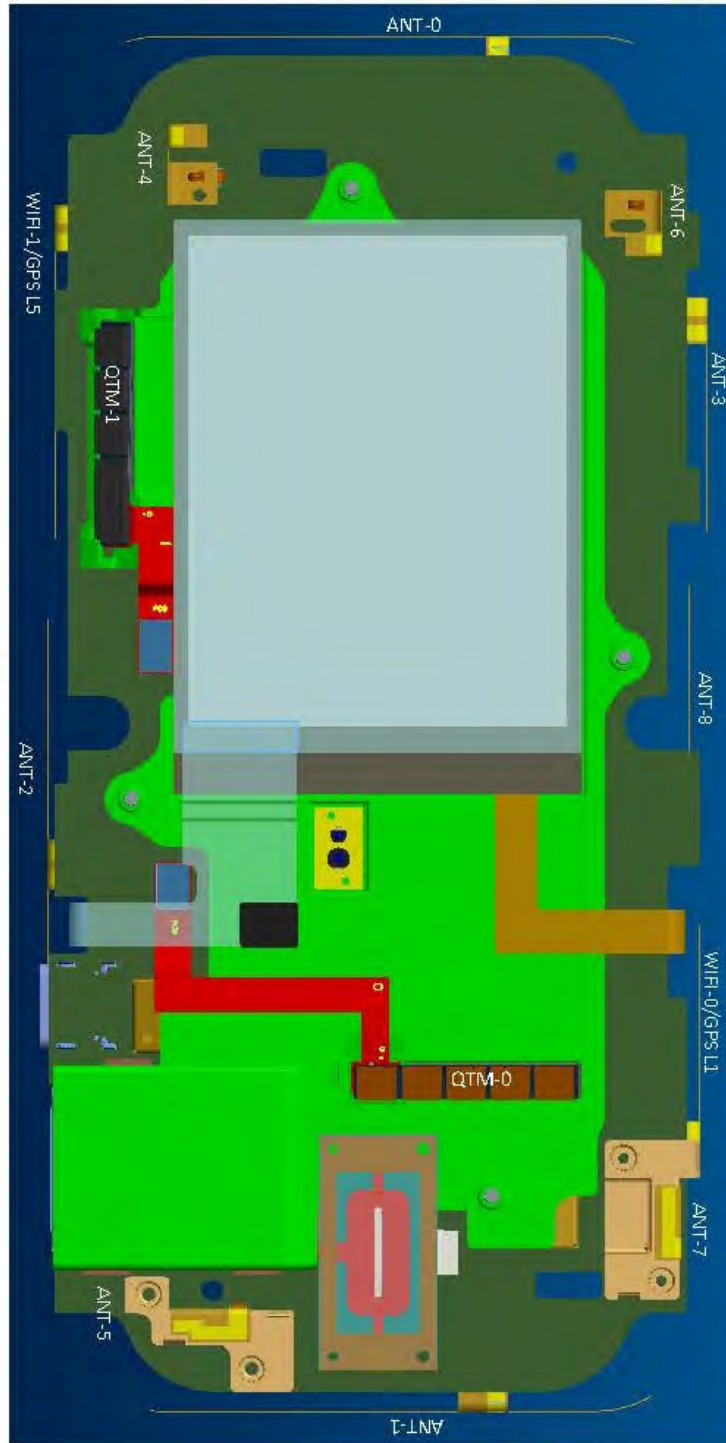
**Side C Not Shown**

**Side F**

**Side B**

**Side D**

**Side A Shown**



**Side E**

**Antenna Locations**



**Front of Device**



**Back of Device**