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CERTIFICATE OF COMPLIANCE
SAR EVALUATION

Inseego	Dates of Test:	May 27-June 10, 2022
9645 Scranton Road, Suite 205	Test Report Number:	SAR.20220611
San Diego, CA 92121		Revision D

FCC ID:	PKRISGM3000A
IC Certificate:	3229A-M3000A
HVIN/Model(s):	M3000A
Product Market Number (PMN):	M3000
Test Sample:	Engineering Unit Same as Production
Serial Number:	BW170122E00018
Equipment Type:	Portable Router (Hotspot)
Classification:	Portable Transmitter Next to Body
TX Frequency Range:	663 – 698 MHz, 699 – 716 MHz, 777 – 787 MHz, 788 – 798 MHz, 814 – 849 MHz, 1710 – 1780 MHz, 1850 – 1915 MHz, 2305 – 2315 MHz, 2496 – 2690 MHz, 3300 – 4200 MHz, 3550 – 3700 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, 2300 MHz (FR1) – 23.0 dBm, 2550 MHz (FR1) – 27.5 dBm, 3600 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:	0.90 W/kg Reported
Max. Simultaneous Value:	1.48 W/kg Reported
Max. Simultaneous Value:	0.79 Ratio
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

ACCREDITED
Testing Cert. # 2387.01

Table of Contents

Comment/Revision	Date
Original Release	June 17, 2022
Revision A – Add FR2 simultaneous to simultaneous Tx table, correct table title for FR2 EN-DC, correct simultaneous calculations for all combinations, add test setup photos for 20 mm testing and add drawing showing all antenna locations.	June 27, 2022
Revision B – Add sensor data to report and SRS exclusion table	July 6, 2022
Revision C & D – Add TDD evaluation mode	July 21, 2022

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 M3000A FCC ID: PKRISGM3000A with FCC Part 2, 1093, ET Docket 93-62 Rules for mobile and portable devices and IC Certificate: 3229A-M3000A with RSS102 Issue 5 & Safety Code 6. The FCC has adopted the guidelines for evaluating the environmental effects of radio frequency radiation in ET Docket 93-62 on August 6, 1996 to protect the public and workers from the potential hazards of RF emissions due to FCC regulated portable devices. [1], [6]

The test results recorded herein are based on a single type test of Inseego Model M3000A 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 M3000A 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 n13 – 750 MHz	FR1	Full	23.0	23.0	+1.0/-1.3	21.7	24.0
Band n14 – 750 MHz	FR1	Full	23.0	23.0	+1.0/-1.3	21.7	24.0
Band n5 & n26 – 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 n30 – 2300 MHz	FR1	Full	22.0	22.0	+1.0/-1.3	20.7	23.0
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	27.0
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

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	+2.5/-3.0	15.0	20.5
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
5A-n2A	LTE+FR1	3	23.0	+1.5/-1.3	21.7	24.5
13A-n2A	LTE+FR1	3	23.0	+1.5/-1.3	21.7	24.5
66A-n2A	LTE+FR1	3	23.0	+1.5/-1.3	21.7	24.5
2A-n5A	LTE+FR1	3	23.0	+1.5/-1.3	21.7	24.5
48A-n5A	LTE+FR1	3	20.0	+1.5/-1.3	17.0	21.5
66A-n5A	LTE+FR1	3	23.0	+1.5/-1.3	21.7	24.5
2A-n66A	LTE+FR1	3	23.0	+1.5/-1.3	21.7	24.5
5A-n66A	LTE+FR1	3	23.0	+1.5/-1.3	21.7	24.5
7A-n66A	LTE+FR1	3	23.0	+1.5/-1.3	21.7	24.5
12A-n66A	LTE+FR1	3	23.0	+1.5/-1.3	21.7	24.5
13A-n66A	LTE+FR1	3	23.0	+1.5/-1.3	21.7	24.5
48A-n66A	LTE+FR1	3	20.0	+1.5/-1.3	17.0	21.5
2A-n71A	LTE+FR1	3	23.0	+1.0/-1.3	21.7	24.0
7A-n71A	LTE+FR1	3	23.0	+1.0/-1.3	21.7	24.0
66A-n71A	LTE+FR1	3	23.0	+1.5/-1.3	21.7	24.5
2A-n77A	LTE+FR1	3	23.0	+1.5/-1.3	21.7	24.5
5A-n77A	LTE+FR1	3	23.0	+1.0/-1.3	21.7	24.0
7A-n77A	LTE+FR1	3	23.0	+1.0/-1.3	21.7	24.0
12A-n77A	LTE+FR1	3	23.0	+1.0/-1.3	21.7	24.0
13A-n77A	LTE+FR1	3	23.0	+1.0/-1.3	21.7	24.0
14A-n77A	LTE+FR1	3	23.0	+1.0/-1.3	21.7	24.0
25A-n77A	LTE+FR1	3	23.0	+1.0/-1.3	21.7	24.0
66A-n77A	LTE+FR1	3	23.0	+1.5/-1.3	21.7	24.5
2A-n78A	LTE+FR1	3	23.0	+1.5/-1.3	21.7	24.5
5A-n78A	LTE+FR1	3	23.0	+1.0/-1.3	21.7	24.0
7A-n78A	LTE+FR1	3	23.0	+1.0/-1.3	21.7	24.0
12A-n78A	LTE+FR1	3	23.0	+1.0/-1.3	21.7	24.0
25A-n78A	LTE+FR1	3	23.0	+1.0/-1.3	21.7	24.0
66A-n78A	LTE+FR1	3	23.0	+1.5/-1.3	21.7	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 (ρ).

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

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

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

where:

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

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.

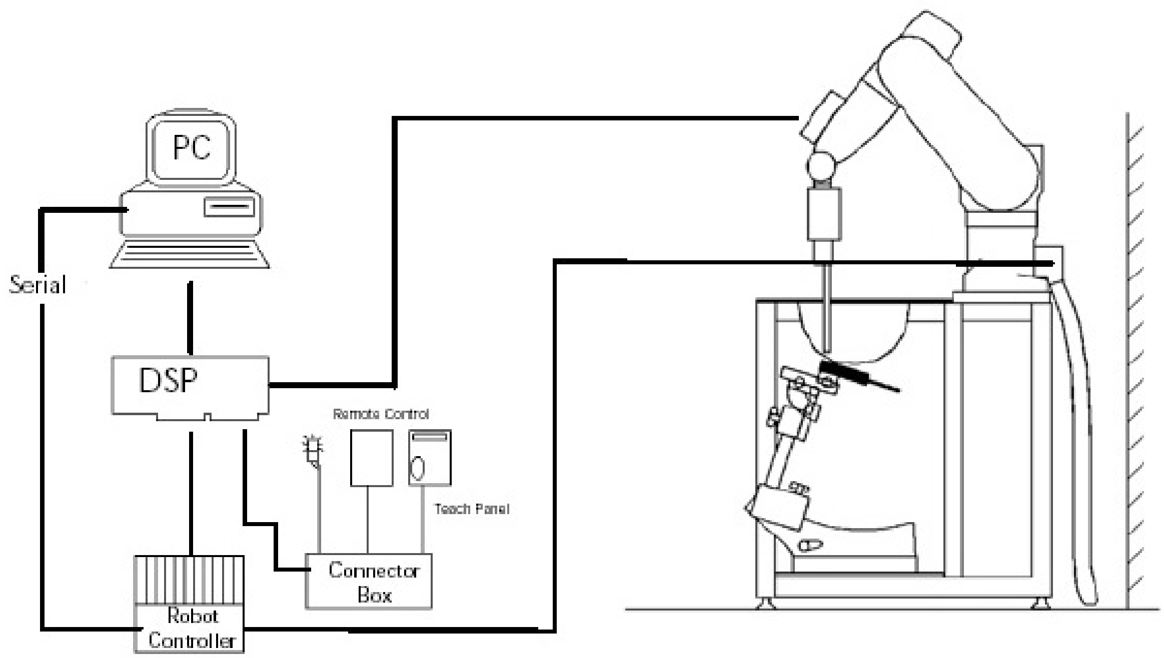


Figure 2.1 SAR Measurement System Setup

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

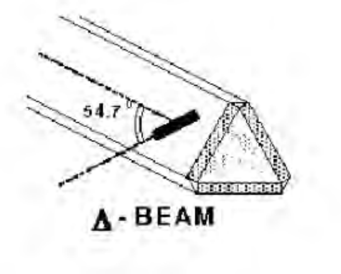


Figure 2.2 Triangular Probe Configurations

Frequency: 10 MHz to 6 GHz

Linearity: ±0.2dB (30 MHz to 6 GHz)

Dynamic: 10 mW/kg to 100 W/kg

Range: Linearity: ±0.2dB

Dimensions: Overall length: 330 mm

Tip length: 20 mm

Body diameter: 12 mm

Tip diameter: 2.5 mm

Distance from probe tip to sensor center: 1 mm

Figure 2.3 Probe Thick-Film Technique

Application: SAR Dosimetry Testing
Compliance tests of wireless device

Probe Calibration Process

Dosimetric Assessment Procedure

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

Free Space Assessment

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

Temperature Assessment *

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

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

where:

Δt = exposure time (30 seconds),

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

ΔT = temperature increase due to RF exposure.

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

where:

σ = simulated tissue conductivity,

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

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

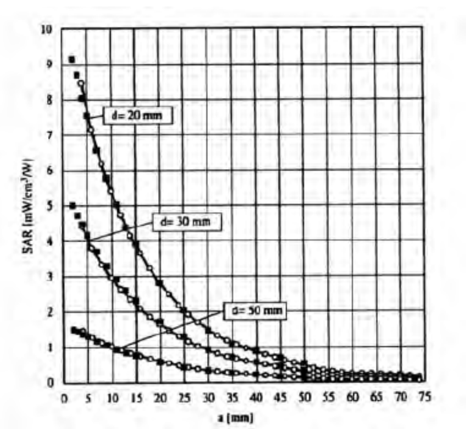


Figure 2.4 E-Field and Temperature Measurements at 900MHz

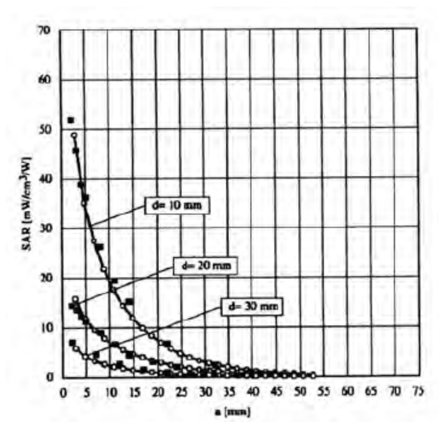


Figure 2.5 E-Field and Temperature Measurements at 1800MHz

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
σ = conductivity in [mho/m] or [Siemens/m]
ρ = equivalent tissue density in g/cm^3

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

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

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

Scanning procedure

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

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

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

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

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

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

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

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

DASY is also able to perform repeated zoom scans if more than 1 peak is found during area scan. In this document, the evaluated peak 1g and 10g averaged SAR values are shown in the 2D-graphics in annex B. Test 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 ± 0.2 mm

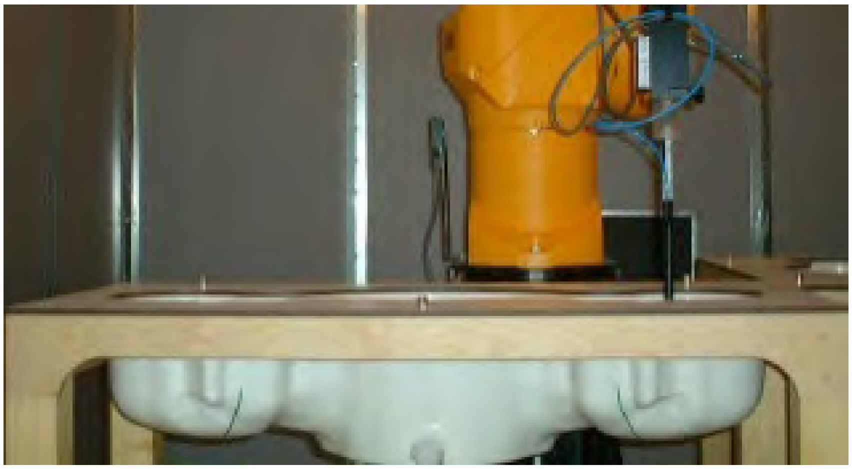


Figure 2.6 SAM Twin Phantom

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	2300 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	39.47
Conductivity (S/m)	Target	0.88	0.89	0.97	1.37	1.40	1.67

Ingredients		Simulating Tissue				
		2550 MHz Head	3500 MHz Head	3700 MHz Head	3900 MHz Head	4200 MHz Head
Mixing Percentage						
Water		Proprietary Purchased From Speag				
Sugar						
Salt						
HEC						
Bactericide						
DGBE						
Dielectric Constant	Target	39.07	37.93	37.70	37.47	36.55
Conductivity (S/m)	Target	1.91	2.91	3.12	3.34	3.68

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[1] Head	1.60	8.00
SPATIAL AVERAGE SAR[2] Whole Body	0.08	0.40
SPATIAL PEAK SAR[3] Hands, Feet, Ankles, Wrists	4.00	20.00

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

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 ≥ 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)		Jun. 9, 2022		Jun. 9, 2022		Jun. 8, 2022	
Liquid Temperature (˚C)	20.0	Target	Measured	Target	Measured	Target	Measured
Dielectric Constant: ε		42.72	41.96	41.94	40.97	41.50	40.96
Conductivity: σ		0.88	0.90	0.89	0.93	0.97	1.01
		1750 MHz Head		1900 MHz Head		2300 MHz Head	
Date(s)		May 31, 2022		May 27, 2022		Jun. 3, 2022	
Liquid Temperature (˚C)	20.0	Target	Measured	Target	Measured	Target	Measured
Dielectric Constant: ε		40.08	39.06	40.00	39.55	39.47	38.69
Conductivity: σ		1.37	1.39	1.40	1.42	1.67	1.70
		2550 MHz Head		3300 MHz Head		3500 MHz Head	
Date(s)		Jun. 1, 2022		Jun. 5, 2022		Jun. 5, 2022	
Liquid Temperature (˚C)	20.0	Target	Measured	Target	Measured	Target	Measured
Dielectric Constant: ε		39.07	38.74	38.16	37.59	37.93	37.36
Conductivity: σ		1.91	1.92	2.70	2.73	2.91	2.94
		3700 MHz Head		3900 MHz Head		4200 MHz Head	
Date(s)		Jun. 5, 2022		Jun. 5, 2022		Jun. 5, 2022	
Liquid Temperature (˚C)	20.0	Target	Measured	Target	Measured	Target	Measured
Dielectric Constant: ε		37.70	37.13	37.47	36.90	37.12	36.55
Conductivity: σ		3.12	3.15	3.34	3.37	3.65	3.68

See Appendix A for data printout.

Test System Verification

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

Table 7.2 System Dipole Validation Target & Measured

	Test Frequency	Targeted SAR_{1g} (W/kg)	Measure SAR_{1g} (W/kg)	Tissue Used for Verification	Deviation (%)	Plot Number
09-Jun-2022	750 MHz	8.57	8.66	Head	+ 1.05	1
08-Jun-2022	900 MHz	11.20	11.60	Head	+ 3.57	2
31-May-2022	1750 MHz	37.70	38.10	Head	+ 1.06	3
27-May-2022	1900 MHz	40.40	41.20	Head	+ 1.98	4
03-Jun-2022	2300 MHz	49.60	50.10	Head	+ 1.01	5
01-Jun-2022	2550 MHz	55.30	56.60	Head	+ 2.35	6
05-Jun-2022	3300 MHz	64.90	65.90	Head	+ 1.54	7
05-Jun-2022	3500 MHz	67.00	68.20	Head	+ 1.79	8
05-Jun-2022	3700 MHz	68.30	69.80	Head	+ 2.20	9
05-Jun-2022	3900 MHz	69.90	70.90	Head	+ 1.43	10
05-Jun-2022	4200 MHz	66.30	67.40	Head	+ 1.66	11

See Appendix A for data plots.

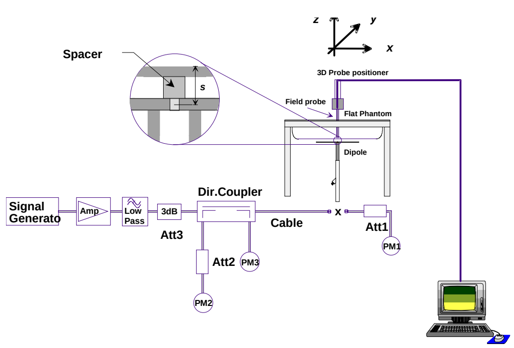


Figure 7.1 Dipole Validation Test Setup

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 ((end/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

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.

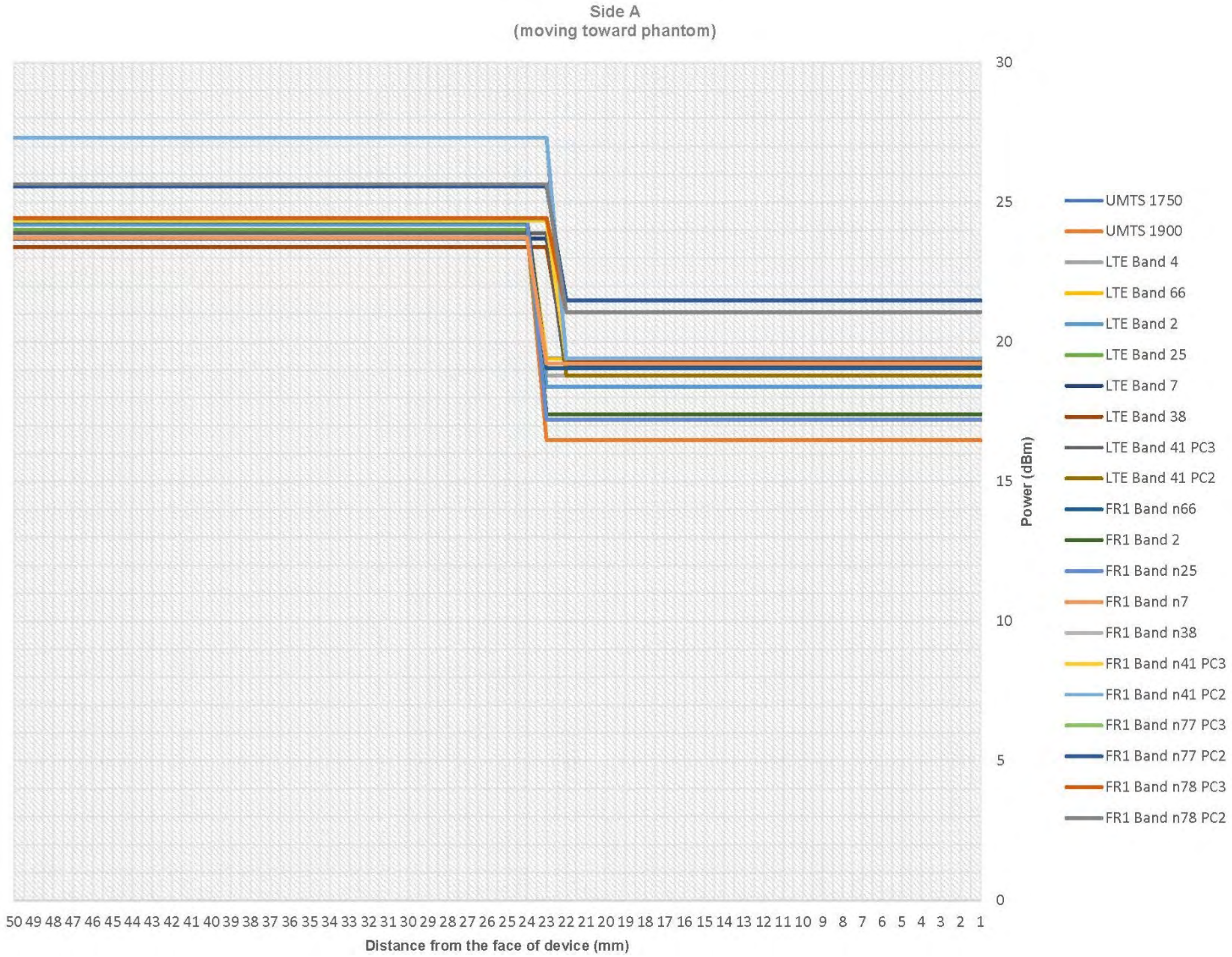
9.3 WWAN Antenna Verification Summary

Table 9.1
Power Measurement Verification for WWAN Antenna

Mechanism	Mode/Band	Conducted Power (dBm)	
1st		Un-triggered (Max)	Mechanism #1 (Reduced)
Capacitive	UMTS 1750	23.93	19.42
	UMTS 1900	23.98	16.48
	LTE FDD Band 4	24.20	18.80
	LTE FDD Band 66	24.40	19.40
	LTE FDD Band 2	24.20	18.40
	LTE FDD Band 25	24.00	17.40
	LTE FDD Band 7	23.70	19.20
	LTE TDD Band 38	23.40	19.30
	LTE TDD Band 41 (PC3)	23.90	18.80
	LTE TDD Band 41 (PC2)	27.30	18.80
	FR1 FDD Band n66	24.37	19.06
	FR1 FDD Band n2	24.32	17.41
	FR1 FDD Band n25	24.41	17.21
	FR1 FDD Band n7	23.73	19.23
	FR1 TDD Band n38	24.40	19.40
	FR1 TDD Band n41 (PC3)	24.35	19.41
	FR1 TDD Band n41 (PC2)	27.31	19.41
	FR1 TDD Band n77 (PC3)	24.40	21.48
	FR1 TDD Band n77 (PC2)	25.56	21.48
	FR1 TDD Band n78 (PC3)	24.43	21.07
	FR1 TDD Band n78 (PC2)	25.65	21.07

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	23	21	20
	Side C	Mid	25	22	20
	Side D	Mid	24	23	20
	Side F	Mid	22	21	20
	Side A	High	22	21	20
	Side C	High	24	23	20
	Side D	High	23	22	20
	Side F	High	25	24	20


Side A
(moving toward phantom)
Power (dBm)
Distance from the face of device (mm)
UMTS 1750
UMTS 1900
LTE Band 4
LTE Band 66
LTE Band 2
LTE Band 25
LTE Band 7
LTE Band 38
LTE Band 41 PC3
LTE Band 41 PC2
FR1 Band n66
FR1 Band 2
FR1 Band n25
FR1 Band n7
FR1 Band n38
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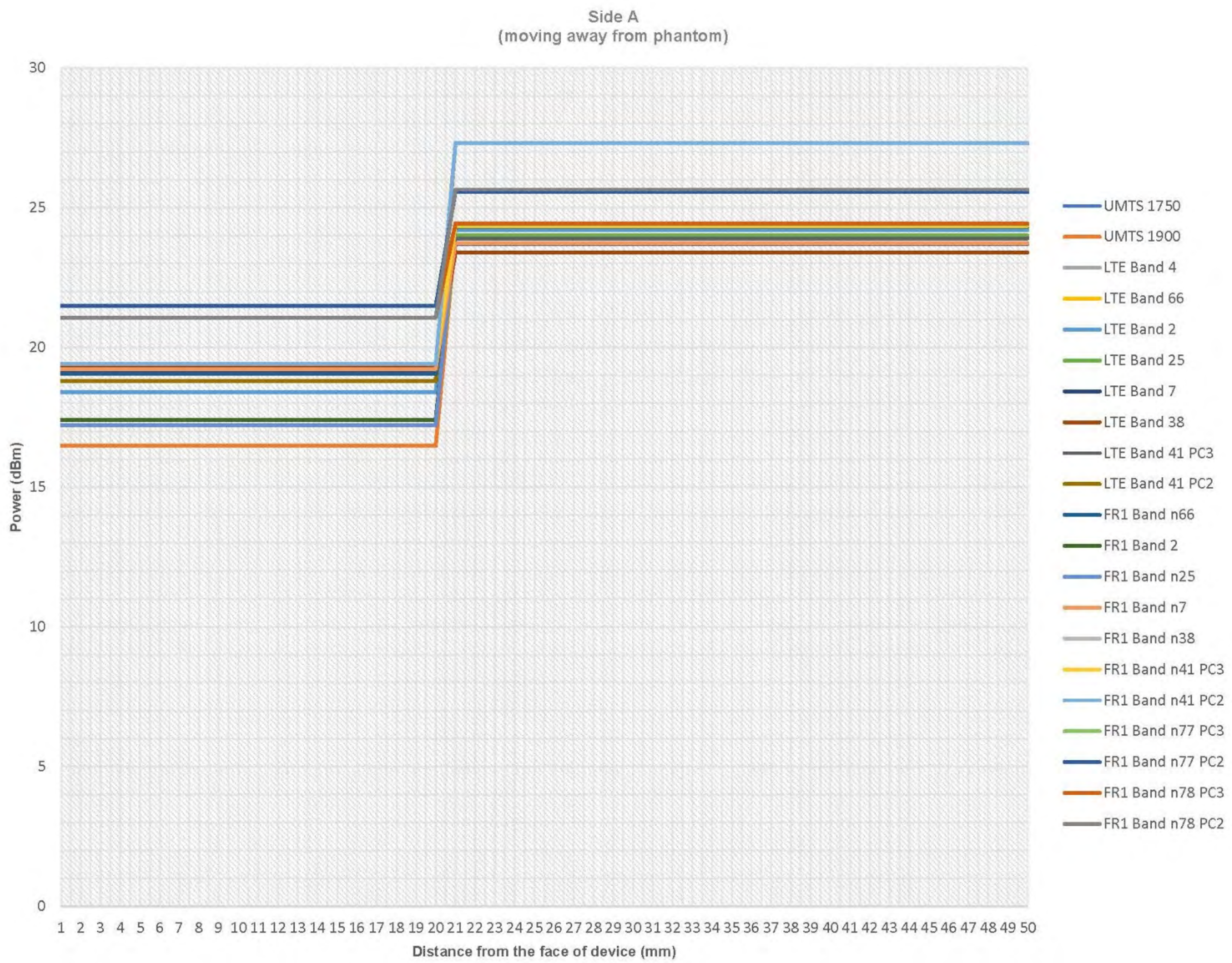
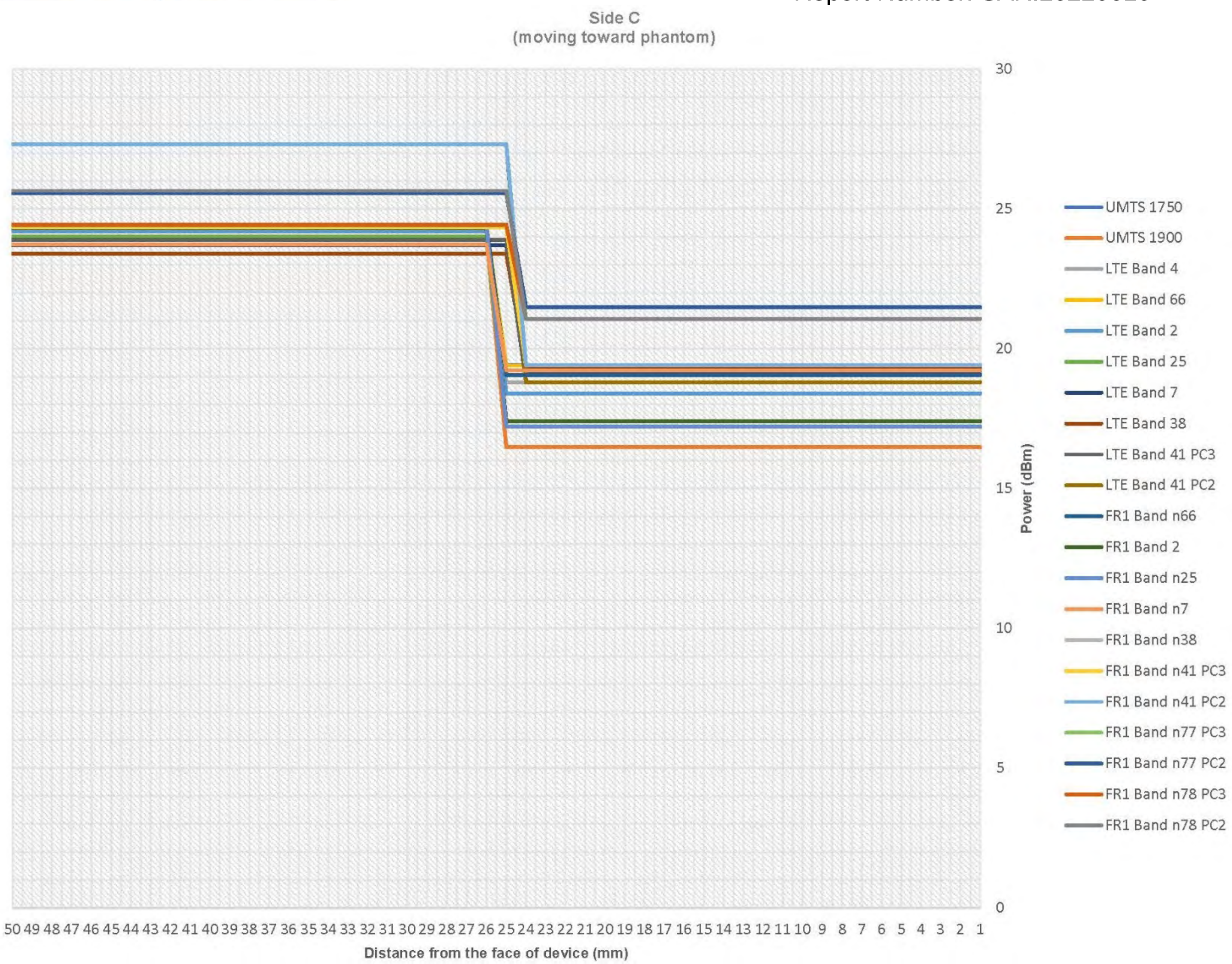
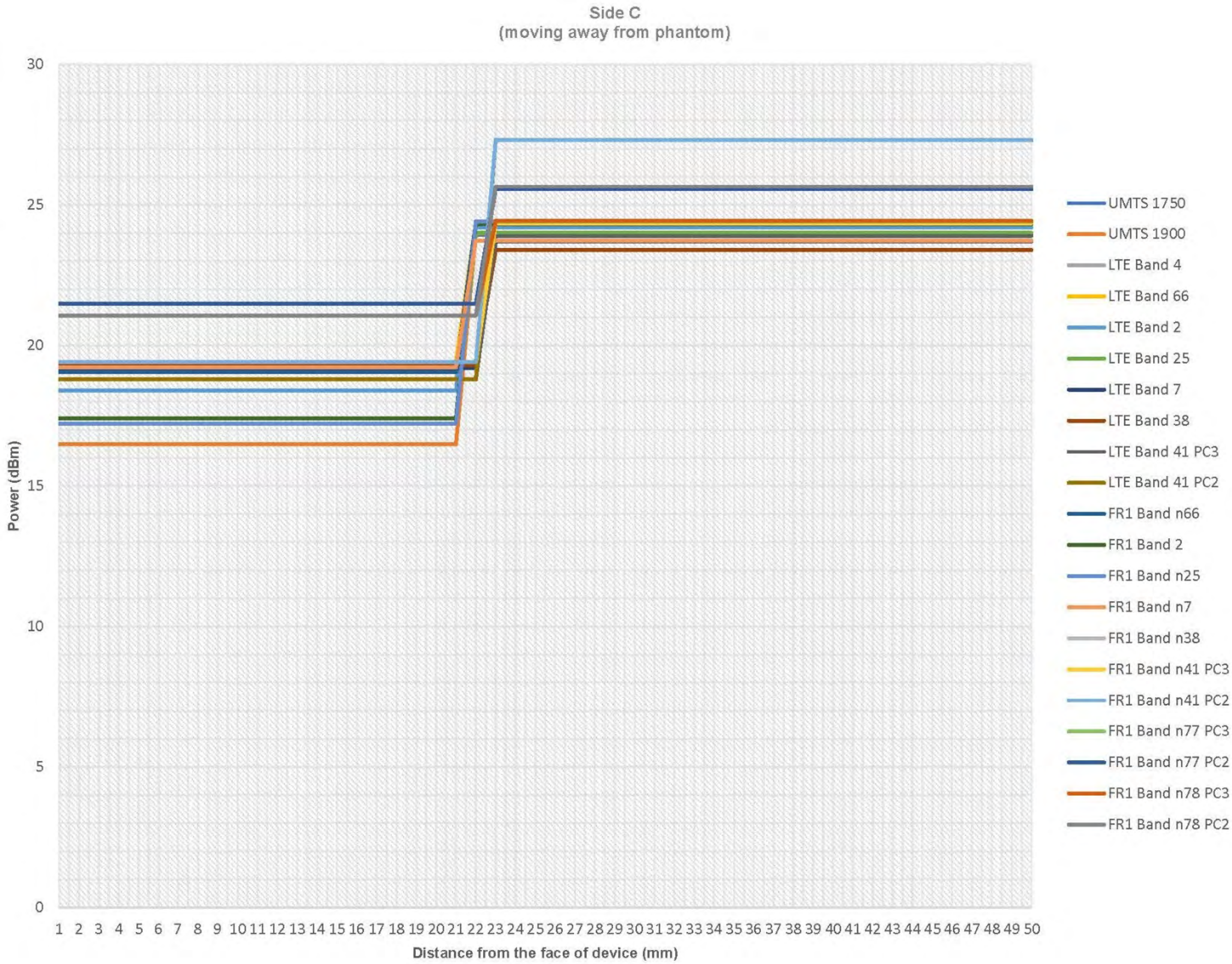
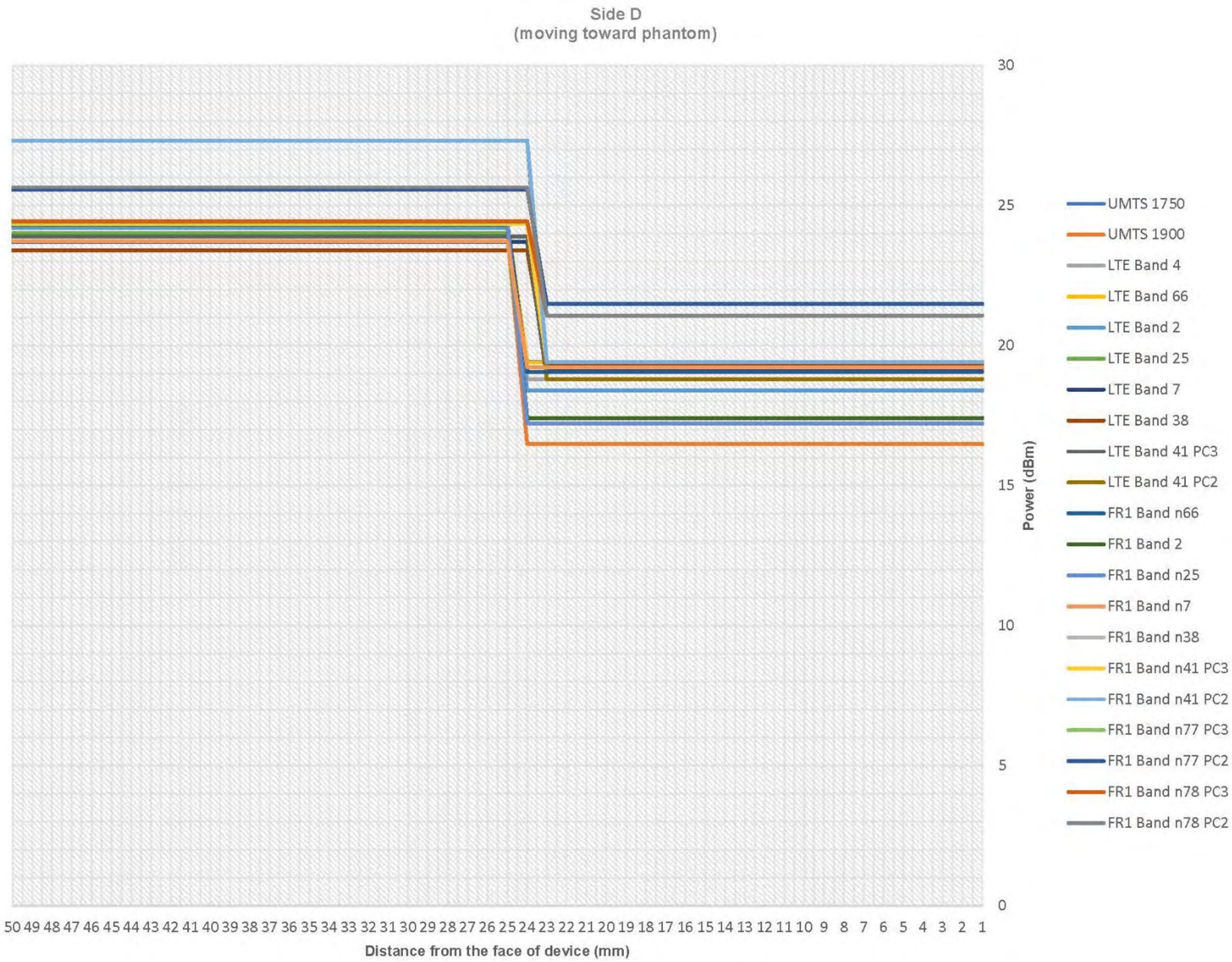
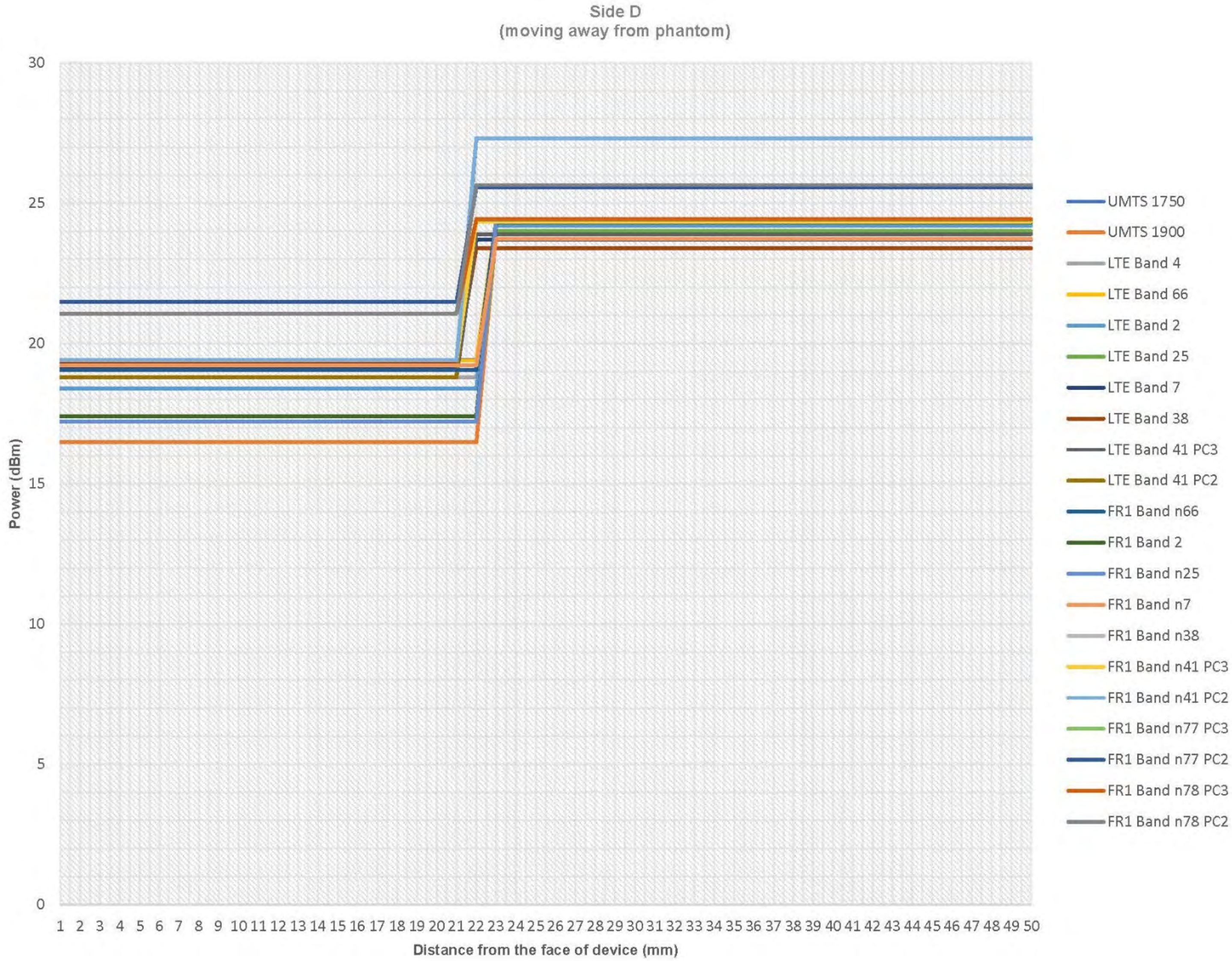
FR1 Band n41 PC2
FR1 Band n77 PC3
FR1 Band n77 PC2
FR1 Band n78 PC3
FR1 Band n78 PC2


Side A
(moving away from phantom)
Power (dBm)
30
25
20
15
10
5
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50
Distance from the face of device (mm)
UMTS 1750
UMTS 1900
LTE Band 4
LTE Band 66
LTE Band 2
LTE Band 25
LTE Band 7
LTE Band 38
LTE Band 41 PC3
LTE Band 41 PC2
FR1 Band n66
FR1 Band 2
FR1 Band n25
FR1 Band n7
FR1 Band n38
FR1 Band n41 PC3
FR1 Band n41 PC2
FR1 Band n77 PC3
FR1 Band n77 PC2
FR1 Band n78 PC3
FR1 Band n78 PC2


Side C
(moving toward phantom)
30
25
20
15
10
5
0
Power (dBm)
50 49 48 47 46 45 44 43 42 41 40 39 38 37 36 35 34 33 32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1
Distance from the face of device (mm)
UMTS 1750
UMTS 1900
LTE Band 4
LTE Band 66
LTE Band 2
LTE Band 25
LTE Band 7
LTE Band 38
LTE Band 41 PC3
LTE Band 41 PC2
FR1 Band n66
FR1 Band 2
FR1 Band n25
FR1 Band n7
FR1 Band n38
FR1 Band n41 PC3
FR1 Band n41 PC2
FR1 Band n77 PC3
FR1 Band n77 PC2
FR1 Band n78 PC3
FR1 Band n78 PC2


Side C
(moving away from phantom)
Power (dBm)
30
25
20
15
10
5
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50
Distance from the face of device (mm)
UMTS 1750
UMTS 1900
LTE Band 4
LTE Band 66
LTE Band 2
LTE Band 25
LTE Band 7
LTE Band 38
LTE Band 41 PC3
LTE Band 41 PC2
FR1 Band n66
FR1 Band 2
FR1 Band n25
FR1 Band n7
FR1 Band n38
FR1 Band n41 PC3
FR1 Band n41 PC2
FR1 Band n77 PC3
FR1 Band n77 PC2
FR1 Band n78 PC3
FR1 Band n78 PC2


Side D
(moving toward phantom)
Power (dBm)
30
25
20
15
10
5
0
50 49 48 47 46 45 44 43 42 41 40 39 38 37 36 35 34 33 32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1
Distance from the face of device (mm)
UMTS 1750
UMTS 1900
LTE Band 4
LTE Band 66
LTE Band 2
LTE Band 25
LTE Band 7
LTE Band 38
LTE Band 41 PC3
LTE Band 41 PC2
FR1 Band n66
FR1 Band 2
FR1 Band n25
FR1 Band n7
FR1 Band n38
FR1 Band n41 PC3
FR1 Band n41 PC2
FR1 Band n77 PC3
FR1 Band n77 PC2
FR1 Band n78 PC3
FR1 Band n78 PC2


Side D
(moving away from phantom)
Power (dBm)
Distance from the face of device (mm)
UMTS 1750
UMTS 1900
LTE Band 4
LTE Band 66
LTE Band 2
LTE Band 25
LTE Band 7
LTE Band 38
LTE Band 41 PC3
LTE Band 41 PC2
FR1 Band n66
FR1 Band 2
FR1 Band n25
FR1 Band n7
FR1 Band n38
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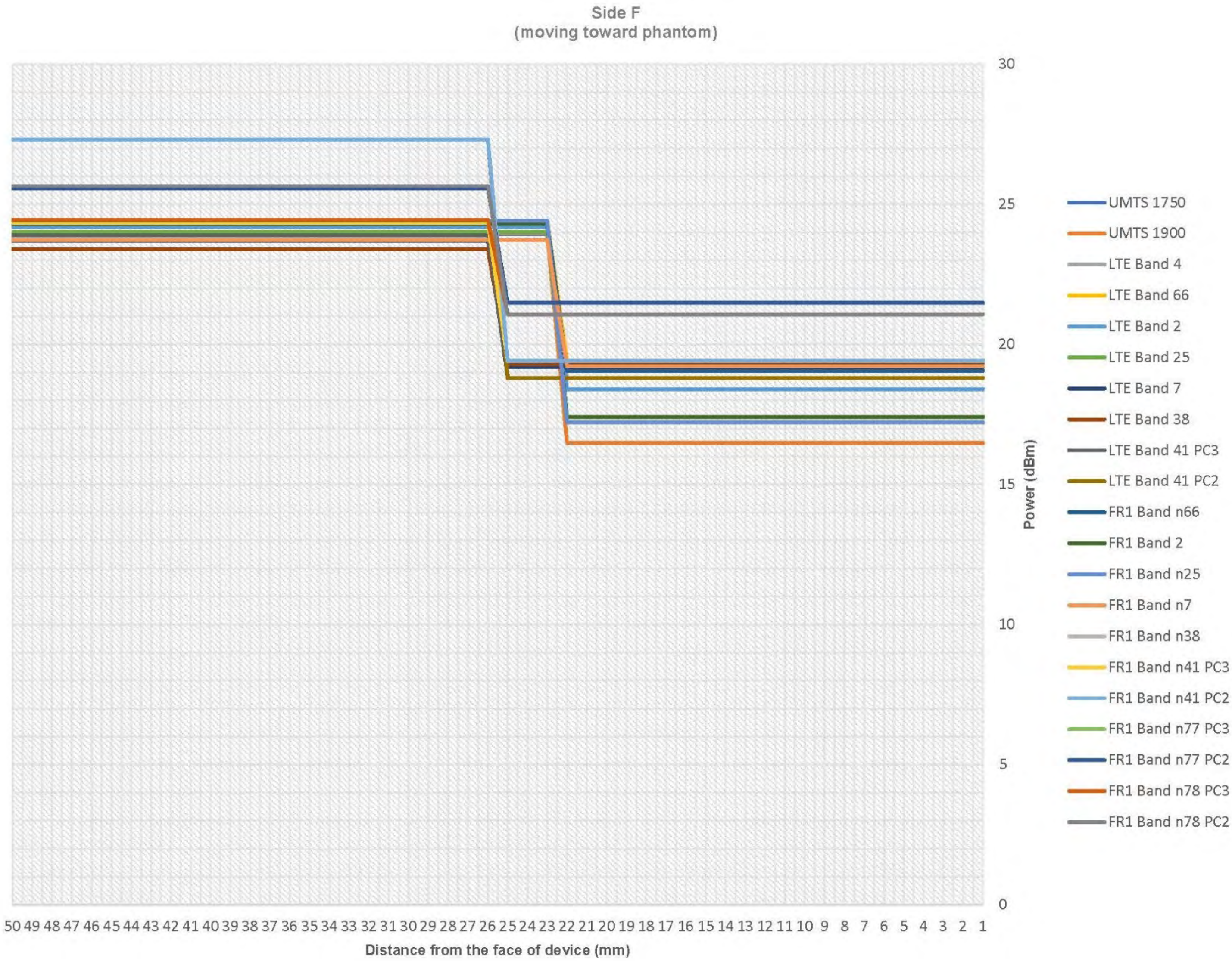
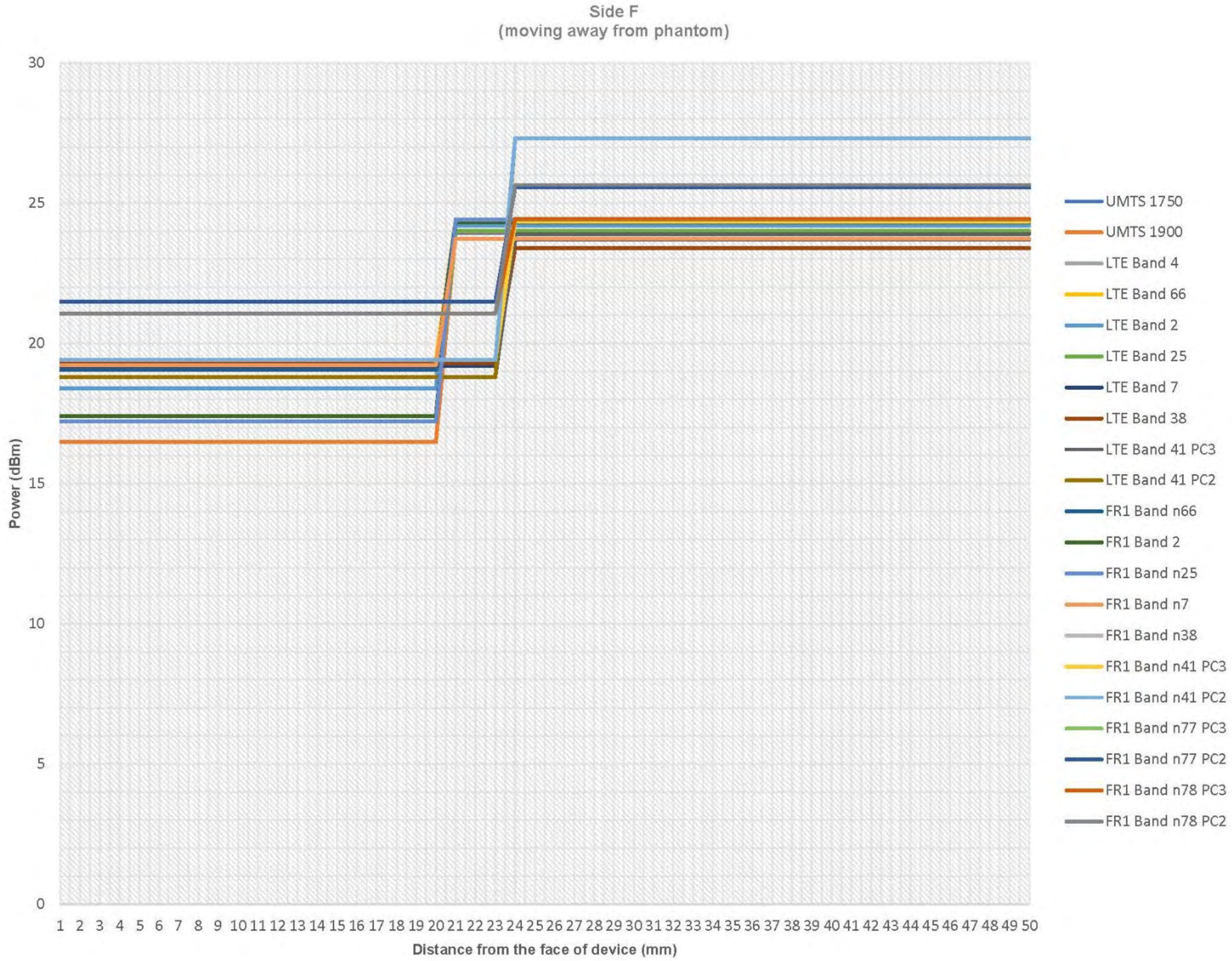
FR1 Band n41 PC2
FR1 Band n77 PC3
FR1 Band n77 PC2
FR1 Band n78 PC3
FR1 Band n78 PC2


Side F
(moving toward phantom)
Power (dBm)
Distance from the face of device (mm)
UMTS 1750
UMTS 1900
LTE Band 4
LTE Band 66
LTE Band 2
LTE Band 25
LTE Band 7
LTE Band 38
LTE Band 41 PC3
LTE Band 41 PC2
FR1 Band n66
FR1 Band 2
FR1 Band n25
FR1 Band n7
FR1 Band n38
FR1 Band n41 PC3
FR1 Band n41 PC2
FR1 Band n77 PC3
FR1 Band n77 PC2
FR1 Band n78 PC3
FR1 Band n78 PC2


Side F
(moving away from phantom)
Power (dBm)
Distance from the face of device (mm)
UMTS 1750
UMTS 1900
LTE Band 4
LTE Band 66
LTE Band 2
LTE Band 25
LTE Band 7
LTE Band 38
LTE Band 41 PC3
LTE Band 41 PC2
FR1 Band n66
FR1 Band 2
FR1 Band n25
FR1 Band n7
FR1 Band n38
FR1 Band n41 PC3
FR1 Band n41 PC2
FR1 Band n77 PC3
FR1 Band n77 PC2
FR1 Band n78 PC3
FR1 Band n78 PC2

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[1]	≤ 1.2[1]	≤ 0.2[1]
		≤ 0.5[2]	≤ 0.5[2]	0[2]
	QPSK	≤ 1		0
	16 QAM	≤ 2		≤ 1
	64 QAM	≤ 2.5		
	256 QAM	≤ 4.5		
CP-OFDM	QPSK	≤ 3		≤ 1.5
	16 QAM	≤ 3		≤ 2
	64 QAM	≤ 3.5		
	256 QAM	≤ 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	≤ 2.5	
	256 QAM	≤ 4.5		
CP-OFDM	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

<n2 Ant0>

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				372000	376000	380000	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1860	1880	1900		
20	PI/2 BPSK	1	1	24.11	24.01	24.35	24.5	0.0
20	PI/2 BPSK	1	53	24.40	24.32	24.04		
20	PI/2 BPSK	1	104	24.18	24.26	24.11		
20	PI/2 BPSK	50	0	23.46	23.05	23.49	23.5	1.0
20	PI/2 BPSK	50	28	23.35	23.30	23.47		
20	PI/2 BPSK	50	56	23.26	23.39	23.04		
20	PI/2 BPSK	100	0	23.16	23.34	23.29	23.5	1.0
20	QPSK	1	1	24.44	24.42	24.01	24.5	0.0
20	QPSK	1	53	24.06	24.29	24.25		
20	QPSK	1	104	24.44	24.46	24.44		
20	QPSK	50	0	23.40	23.36	23.11	23.5	1.0
20	QPSK	50	28	23.26	23.10	23.47		
20	QPSK	50	56	23.32	23.19	23.27		
20	QPSK	100	0	23.32	23.22	23.15	23.5	1.0
20	16QAM	1	1	24.50	24.26	24.05	24.5	0.0
20	16QAM	1	53	24.23	24.14	24.13		
20	16QAM	1	104	24.03	24.09	24.00		
20	16QAM	50	0	23.46	23.33	23.50	23.5	1.0
20	16QAM	50	28	23.32	23.22	23.21		
20	16QAM	50	56	23.14	23.32	23.36		
20	16QAM	100	0	23.41	23.25	23.12	23.5	1.0
20	64QAM	1	1	24.12	24.02	24.31	24.5	0.0
20	64QAM	1	53	24.16	24.31	24.01		
20	64QAM	1	104	24.48	24.49	24.01		
20	64QAM	50	0	23.13	23.05	23.27	23.5	1.0
20	64QAM	50	28	23.03	23.46	23.36		
20	64QAM	50	56	23.49	23.36	23.08		
20	64QAM	100	0	23.09	23.18	23.05	23.5	1.0
20	256QAM	1	1	24.03	24.26	24.03	24.5	0.0
20	256QAM	1	53	24.02	24.48	24.42		
20	256QAM	1	104	24.35	24.06	24.46		
20	256QAM	50	0	23.01	23.28	23.36	23.5	1.0
20	256QAM	50	28	23.20	23.31	23.23		
20	256QAM	50	56	23.39	23.11	23.38		
20	256QAM	100	0	23.06	23.05	23.19	23.5	1.0
Channel				371500	376000	380500	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1880	1902.5		
15	PI/2 BPSK	1	1	24.18	24.28	24.08	24.5	0.0
Channel				371000	376000	381000	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1905		
10	PI/2 BPSK	1	1	24.40	24.11	24.17	24.5	0.0
Channel				370500	376000	381500	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1907.5		
5	PI/2 BPSK	1	1	24.39	24.08	24.06	24.5	0.0

<n2 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				372000	376000	380000	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1860	1880	1900		
20	PI/2 BPSK	1	1	20.79	20.92	20.58	21.0	0.0
20	PI/2 BPSK	1	53	20.88	20.99	20.84		
20	PI/2 BPSK	1	104	20.55	20.63	20.79		
20	PI/2 BPSK	50	0	19.86	19.51	19.55	20.0	1.0
20	PI/2 BPSK	50	28	19.85	19.90	19.62		
20	PI/2 BPSK	50	56	19.82	19.93	19.59		
20	PI/2 BPSK	100	0	19.82	19.91	19.78	20.0	1.0
20	QPSK	1	1	20.72	20.82	20.83	21.0	0.0
20	QPSK	1	53	20.90	20.83	21.00		
20	QPSK	1	104	20.95	20.63	20.83		
20	QPSK	50	0	19.88	19.99	19.83	20.0	1.0
20	QPSK	50	28	19.75	19.61	19.69		
20	QPSK	50	56	19.55	19.95	19.61		
20	QPSK	100	0	19.94	19.58	19.76	20.0	1.0
20	16QAM	1	1	20.72	20.81	20.78	21.0	0.0
20	16QAM	1	53	20.85	20.92	20.52		
20	16QAM	1	104	20.73	20.78	20.69		
20	16QAM	50	0	19.72	19.63	19.58	20.0	1.0
20	16QAM	50	28	19.62	19.51	19.94		
20	16QAM	50	56	19.81	19.60	19.86		
20	16QAM	100	0	19.73	19.95	19.82	20.0	1.0
20	64QAM	1	1	20.76	20.78	20.63	21.0	0.0
20	64QAM	1	53	20.80	20.87	20.65		
20	64QAM	1	104	20.85	20.78	20.64		
20	64QAM	50	0	19.95	19.62	19.88	20.0	1.0
20	64QAM	50	28	19.58	19.55	19.91		
20	64QAM	50	56	19.77	19.63	19.80		
20	64QAM	100	0	19.68	19.74	19.78	20.0	1.0
20	256QAM	1	1	20.62	20.83	20.85	21.0	0.0
20	256QAM	1	53	20.97	20.55	20.70		
20	256QAM	1	104	20.56	20.87	20.53		
20	256QAM	50	0	19.62	19.60	19.84	20.0	1.0
20	256QAM	50	28	19.74	19.78	19.52		
20	256QAM	50	56	19.69	19.62	19.95		
20	256QAM	100	0	19.71	19.57	19.57	20.0	1.0
Channel				371500	376000	380500	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1880	1902.5		
15	PI/2 BPSK	1	1	20.69	20.73	20.75	21.0	0.0
Channel				371000	376000	381000	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1905		
10	PI/2 BPSK	1	1	20.86	20.68	20.60	21.0	0.0
Channel				370500	376000	381500	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1907.5		
5	PI/2 BPSK	1	1	20.61	20.83	20.58	21.0	0.0

<n5 Ant0>

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				166800	167300	167300	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				834	836.5	839		
20	PI/2 BPSK	1	1	23.65	23.68	23.93	24.0	0.0
20	PI/2 BPSK	1	53	23.58	23.59	23.61		
20	PI/2 BPSK	1	104	23.99	23.60	23.96		
20	PI/2 BPSK	50	0	22.67	22.73	22.86	23.0	1.0
20	PI/2 BPSK	50	28	22.65	22.96	22.84		
20	PI/2 BPSK	50	56	22.97	22.65	22.92		
20	PI/2 BPSK	100	0	22.95	22.54	22.82	23.0	1.0
20	QPSK	1	1	23.80	23.64	23.96	24.0	0.0
20	QPSK	1	53	23.63	23.90	23.85		
20	QPSK	1	104	23.83	23.58	23.89		
20	QPSK	50	0	22.94	22.87	22.94	23.0	1.0
20	QPSK	50	28	22.78	22.53	22.58		
20	QPSK	50	56	22.56	22.77	22.85		
20	QPSK	100	0	22.79	22.90	22.90	23.0	1.0
20	16QAM	1	1	23.74	23.70	23.94	24.0	0.0
20	16QAM	1	53	23.77	23.83	23.57		
20	16QAM	1	104	23.53	23.55	23.56		
20	16QAM	50	0	22.89	22.72	22.80	23.0	1.0
20	16QAM	50	28	22.72	22.68	22.73		
20	16QAM	50	56	22.52	22.53	22.83		
20	16QAM	100	0	22.85	22.71	22.75	23.0	1.0
20	64QAM	1	1	23.87	23.73	23.77	24.0	0.0
20	64QAM	1	53	23.80	23.74	23.61		
20	64QAM	1	104	23.73	23.88	23.58		
20	64QAM	50	0	22.71	22.61	22.97	23.0	1.0
20	64QAM	50	28	22.62	22.73	23.00		
20	64QAM	50	56	22.78	22.62	22.58		
20	64QAM	100	0	22.50	22.98	22.58	23.0	1.0
20	256QAM	1	1	23.50	23.58	23.67	24.0	0.0
20	256QAM	1	53	23.99	23.78	23.58		
20	256QAM	1	104	23.96	23.88	23.98		
20	256QAM	50	0	22.56	22.64	22.93	23.0	1.0
20	256QAM	50	28	22.84	22.91	23.00		
20	256QAM	50	56	22.63	22.99	22.64		
20	256QAM	100	0	22.57	22.66	22.51	23.0	1.0
Channel				166300	167300	167800	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				831.5	836.5	841.5		
15	PI/2 BPSK	1	1	23.91	23.65	23.77	24.0	0.0
Channel				165800	167300	168200	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				829	836.5	844		
10	PI/2 BPSK	1	1	23.78	23.84	23.75	24.0	0.0
Channel				165300	167300	168700	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				826.5	836.5	846.5		
5	PI/2 BPSK	1	1	23.52	23.58	23.77	24.0	0.0

<n5 Ant1>

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				166800	167300	167300	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				834	836.5	839		
20	PI/2 BPSK	1	1	20.79	20.59	20.68		
20	PI/2 BPSK	1	53	20.78	20.89	20.51	21.0	0.0
20	PI/2 BPSK	1	104	20.72	20.72	20.76		
20	PI/2 BPSK	50	0	19.92	19.75	19.85		
20	PI/2 BPSK	50	28	19.65	19.59	19.53	20.0	1.0
20	PI/2 BPSK	50	56	19.94	19.69	19.87		
20	PI/2 BPSK	100	0	19.86	19.78	19.95	20.0	1.0
20	QPSK	1	1	20.70	20.88	20.98		
20	QPSK	1	53	20.62	20.78	20.52	21.0	0.0
20	QPSK	1	104	20.57	20.80	20.99		
20	QPSK	50	0	19.55	19.71	19.62		
20	QPSK	50	28	19.59	19.88	19.68	20.0	1.0
20	QPSK	50	56	19.68	19.59	19.65		
20	QPSK	100	0	19.62	19.64	19.99	20.0	1.0
20	16QAM	1	1	20.57	20.86	20.85		
20	16QAM	1	53	20.55	20.78	20.95	21.0	0.0
20	16QAM	1	104	20.58	20.71	20.81		
20	16QAM	50	0	19.63	19.65	19.76		
20	16QAM	50	28	19.76	19.53	19.63	20.0	1.0
20	16QAM	50	56	19.80	19.93	19.95		
20	16QAM	100	0	19.73	19.62	19.56	20.0	1.0
20	64QAM	1	1	20.88	20.55	20.70		
20	64QAM	1	53	20.63	20.70	20.69	21.0	0.0
20	64QAM	1	104	20.82	20.58	20.62		
20	64QAM	50	0	19.93	19.61	19.79		
20	64QAM	50	28	19.52	19.90	19.64	20.0	1.0
20	64QAM	50	56	19.71	19.92	19.91		
20	64QAM	100	0	19.83	19.85	19.79	20.0	1.0
20	256QAM	1	1	20.81	20.67	20.89		
20	256QAM	1	53	20.88	20.52	20.85	21.0	0.0
20	256QAM	1	104	20.60	20.65	20.82		
20	256QAM	50	0	19.94	19.52	19.99		
20	256QAM	50	28	19.57	19.88	19.55	20.0	1.0
20	256QAM	50	56	19.94	19.79	19.94		
20	256QAM	100	0	19.86	19.73	19.50	20.0	1.0
Channel				166300	167300	167800	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				831.5	836.5	841.5		
15	PI/2 BPSK	1	1	20.68	20.55	20.87	21.0	0.0
Channel				165800	167300	168200	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				829	836.5	844		
10	PI/2 BPSK	1	1	20.71	20.68	20.69	21.0	0.0
Channel				165300	167300	168700	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				826.5	836.5	846.5		
5	PI/2 BPSK	1	1	20.53	20.89	20.86	21.0	0.0

<n7 Ant0>

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				502000	507000	512000	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2510	2535	2560		
20	PI/2 BPSK	1	1	23.84	23.76	23.86	24.0	0.0
20	PI/2 BPSK	1	53	23.81	23.73	23.76		
20	PI/2 BPSK	1	104	23.57	23.83	23.94		
20	PI/2 BPSK	50	0	22.77	22.54	22.92	23.0	1.0
20	PI/2 BPSK	50	28	22.87	22.88	22.66		
20	PI/2 BPSK	50	56	22.52	22.81	22.89		
20	PI/2 BPSK	100	0	22.66	22.91	22.88	23.0	1.0
20	QPSK	1	1	23.67	23.92	23.57	24.0	0.0
20	QPSK	1	53	23.84	23.55	23.84		
20	QPSK	1	104	23.83	23.67	23.66		
20	QPSK	50	0	22.58	22.97	22.56	23.0	1.0
20	QPSK	50	28	22.58	22.85	22.99		
20	QPSK	50	56	22.59	22.66	22.98		
20	QPSK	100	0	22.52	22.75	22.75	23.0	1.0
20	16QAM	1	1	23.53	23.53	23.93	24.0	0.0
20	16QAM	1	53	23.85	23.68	23.90		
20	16QAM	1	104	23.99	23.87	23.84		
20	16QAM	50	0	22.83	22.83	22.83	23.0	1.0
20	16QAM	50	28	22.70	22.50	22.55		
20	16QAM	50	56	22.67	22.94	22.68		
20	16QAM	100	0	22.56	22.63	22.61	23.0	1.0
20	64QAM	1	1	23.97	23.58	23.52	24.0	0.0
20	64QAM	1	53	23.73	23.95	23.99		
20	64QAM	1	104	23.81	23.79	23.62		
20	64QAM	50	0	22.80	22.92	22.77	23.0	1.0
20	64QAM	50	28	22.92	22.83	22.53		
20	64QAM	50	56	22.57	22.83	22.59		
20	64QAM	100	0	22.84	22.98	22.67	23.0	1.0
20	256QAM	1	1	23.58	23.58	23.70	24.0	0.0
20	256QAM	1	53	23.81	23.83	23.54		
20	256QAM	1	104	23.91	23.77	23.64		
20	256QAM	50	0	22.84	22.72	22.84	23.0	1.0
20	256QAM	50	28	22.70	22.75	22.67		
20	256QAM	50	56	22.76	22.69	22.78		
20	256QAM	100	0	22.56	22.85	22.55	23.0	1.0
Channel				501500	507000	511500	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2507.5	2535	2562.5		
15	PI/2 BPSK	1	1	23.78	23.59	23.65	24.0	0.0
Channel				501000	507000	511000	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2505	2535	2565		
10	PI/2 BPSK	1	1	23.85	23.66	23.93	24.0	0.0
Channel				500500	507000	510500	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2502.5	2535	2567.5		
5	PI/2 BPSK	1	1	23.75	23.77	23.74	24.0	0.0

<n12 Ant0>

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				141300	141500	141700	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				706.5	707.5	708.5		
15	PI/2 BPSK	1	1	23.66	23.82	23.92	24.0	0.0
15	PI/2 BPSK	1	40	23.57	23.57	23.61		
15	PI/2 BPSK	1	78	23.80	23.66	23.65		
15	PI/2 BPSK	37	0	22.90	22.93	22.53	23.0	1.0
15	PI/2 BPSK	37	21	22.69	22.63	22.57		
15	PI/2 BPSK	37	42	22.74	22.56	22.87		
15	PI/2 BPSK	75	0	22.91	22.63	22.94	23.0	1.0
15	QPSK	1	1	23.58	23.73	23.63	24.0	0.0
15	QPSK	1	40	23.75	23.75	23.98		
15	QPSK	1	78	23.54	23.57	23.83		
15	QPSK	37	0	22.67	22.87	22.84	23.0	1.0
15	QPSK	37	21	22.64	22.95	22.94		
15	QPSK	37	42	22.98	22.62	22.60		
15	QPSK	75	0	22.65	22.78	22.93	23.0	1.0
15	16QAM	1	1	23.67	23.74	23.97	24.0	0.0
15	16QAM	1	40	23.84	23.74	24.00		
15	16QAM	1	78	23.79	23.55	23.80		
15	16QAM	37	0	22.75	22.87	22.69	23.0	1.0
15	16QAM	37	21	22.72	22.64	22.60		
15	16QAM	37	42	22.85	22.82	22.68		
15	16QAM	75	0	22.81	22.81	22.89	23.0	1.0
15	64QAM	1	1	23.89	23.71	23.52	24.0	0.0
15	64QAM	1	40	23.85	23.61	23.83		
15	64QAM	1	78	23.64	23.80	23.96		
15	64QAM	37	0	22.68	22.62	22.94	23.0	1.0
15	64QAM	37	21	22.85	22.82	22.52		
15	64QAM	37	42	22.71	22.81	22.57		
15	64QAM	75	0	22.74	22.63	22.69	23.0	1.0
15	256QAM	1	1	23.78	23.81	23.72	24.0	0.0
15	256QAM	1	40	23.97	23.85	23.97		
15	256QAM	1	78	23.54	23.87	23.86		
15	256QAM	37	0	22.58	22.80	22.78	23.0	1.0
15	256QAM	37	21	22.54	22.73	22.58		
15	256QAM	37	42	22.96	22.51	22.50		
15	256QAM	75	0	22.60	22.74	22.72	23.0	1.0
Channel				140920	141500	142080	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				704.6	707.5	710.4		
10	PI/2 BPSK	1	1	23.53	23.82	23.66	24.0	0.0
Channel				140560	141500	142440	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				702.8	707.5	712.2		
5	PI/2 BPSK	1	1	23.89	23.60	23.89	24.0	0.0

<n13 Ant0>

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	156400	N/A	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				N/A	782	N/A		
10	PI/2 BPSK	1	1	N/A	23.98	N/A	24.0	0.0
10	PI/2 BPSK	1	26	N/A	23.61	N/A		
10	PI/2 BPSK	1	52	N/A	23.91	N/A		
10	PI/2 BPSK	25	0	N/A	22.74	N/A	23.0	1.0
10	PI/2 BPSK	25	14	N/A	22.59	N/A		
10	PI/2 BPSK	25	28	N/A	22.59	N/A		
10	PI/2 BPSK	50	0	N/A	22.87	N/A	23.0	1.0
10	QPSK	1	1	N/A	23.53	N/A	24.0	0.0
10	QPSK	1	26	N/A	23.86	N/A		
10	QPSK	1	52	N/A	23.60	N/A		
10	QPSK	25	0	N/A	22.79	N/A	23.0	1.0
10	QPSK	25	14	N/A	22.92	N/A		
10	QPSK	25	28	N/A	22.88	N/A		
10	QPSK	50	0	N/A	22.84	N/A	23.0	1.0
10	16QAM	1	1	N/A	23.88	N/A	24.0	0.0
10	16QAM	1	26	N/A	23.56	N/A		
10	16QAM	1	52	N/A	23.98	N/A		
10	16QAM	25	0	N/A	22.85	N/A	23.0	1.0
10	16QAM	25	14	N/A	22.78	N/A		
10	16QAM	25	28	N/A	22.59	N/A		
10	16QAM	50	0	N/A	22.60	N/A	23.0	1.0
10	64QAM	1	1	N/A	23.91	N/A	24.0	0.0
10	64QAM	1	26	N/A	23.88	N/A		
10	64QAM	1	52	N/A	23.80	N/A		
10	64QAM	25	0	N/A	22.60	N/A	23.0	1.0
10	64QAM	25	14	N/A	22.81	N/A		
10	64QAM	25	28	N/A	22.82	N/A		
10	64QAM	50	0	N/A	22.61	N/A	23.0	1.0
10	256QAM	1	1	N/A	23.57	N/A	24.0	0.0
10	256QAM	1	26	N/A	23.82	N/A		
10	256QAM	1	52	N/A	23.60	N/A		
10	256QAM	25	0	N/A	22.56	N/A	23.0	1.0
10	256QAM	25	14	N/A	22.56	N/A		
10	256QAM	25	28	N/A	22.88	N/A		
10	256QAM	50	0	N/A	22.77	N/A	23.0	1.0
Channel				155900	156400	156900	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				779.5	782	784.5		
5	PI/2 BPSK	1	1	23.71	23.54	23.94	24.0	0.0

<n14 Ant0>

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	158600	N/A	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				N/A	793	N/A		
10	PI/2 BPSK	1	1	N/A	23.84	N/A	24.0	0.0
10	PI/2 BPSK	1	26	N/A	23.78	N/A		
10	PI/2 BPSK	1	52	N/A	23.95	N/A		
10	PI/2 BPSK	25	0	N/A	22.58	N/A	23.0	1.0
10	PI/2 BPSK	25	14	N/A	22.62	N/A		
10	PI/2 BPSK	25	28	N/A	22.74	N/A		
10	PI/2 BPSK	50	0	N/A	22.86	N/A	23.0	1.0
10	QPSK	1	1	N/A	23.85	N/A	24.0	0.0
10	QPSK	1	26	N/A	23.66	N/A		
10	QPSK	1	52	N/A	23.84	N/A		
10	QPSK	25	0	N/A	22.77	N/A	23.0	1.0
10	QPSK	25	14	N/A	22.82	N/A		
10	QPSK	25	28	N/A	22.83	N/A		
10	QPSK	50	0	N/A	22.82	N/A	23.0	1.0
10	16QAM	1	1	N/A	23.50	N/A	24.0	0.0
10	16QAM	1	26	N/A	23.83	N/A		
10	16QAM	1	52	N/A	23.96	N/A		
10	16QAM	25	0	N/A	22.82	N/A	23.0	1.0
10	16QAM	25	14	N/A	22.62	N/A		
10	16QAM	25	28	N/A	22.85	N/A		
10	16QAM	50	0	N/A	22.72	N/A	23.0	1.0
10	64QAM	1	1	N/A	23.73	N/A	24.0	0.0
10	64QAM	1	26	N/A	23.74	N/A		
10	64QAM	1	52	N/A	23.82	N/A		
10	64QAM	25	0	N/A	22.98	N/A	23.0	1.0
10	64QAM	25	14	N/A	22.71	N/A		
10	64QAM	25	28	N/A	22.84	N/A		
10	64QAM	50	0	N/A	22.94	N/A	23.0	1.0
10	256QAM	1	1	N/A	23.91	N/A	24.0	0.0
10	256QAM	1	26	N/A	23.72	N/A		
10	256QAM	1	52	N/A	23.94	N/A		
10	256QAM	25	0	N/A	22.51	N/A	23.0	1.0
10	256QAM	25	14	N/A	22.95	N/A		
10	256QAM	25	28	N/A	22.51	N/A		
10	256QAM	50	0	N/A	22.91	N/A	23.0	1.0
Channel				158100	158600	159100	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				790.5	793	795.5		
5	PI/2 BPSK	1	1	23.66	23.73	23.64	24.0	0.0

<n25 Ant0>

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				372000	376500	381000	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1860	1882.5	1905		
20	PI/2 BPSK	1	1	24.39	24.46	24.28	24.5	0.0
20	PI/2 BPSK	1	53	24.30	24.41	24.01		
20	PI/2 BPSK	1	104	24.20	24.03	24.24		
20	PI/2 BPSK	50	0	23.36	23.07	23.02	23.5	1.0
20	PI/2 BPSK	50	28	23.20	23.02	23.14		
20	PI/2 BPSK	50	56	23.09	23.37	23.06		
20	PI/2 BPSK	100	0	23.50	23.35	23.04	23.5	1.0
20	QPSK	1	1	24.27	24.46	24.30	24.5	0.0
20	QPSK	1	53	24.31	24.14	24.42		
20	QPSK	1	104	24.01	24.05	24.48		
20	QPSK	50	0	23.03	23.19	23.25	23.5	1.0
20	QPSK	50	28	23.44	23.40	23.50		
20	QPSK	50	56	23.41	23.45	23.37		
20	QPSK	100	0	23.44	23.36	23.26	23.5	1.0
20	16QAM	1	1	24.02	24.45	24.10	24.5	0.0
20	16QAM	1	53	24.46	24.06	24.39		
20	16QAM	1	104	24.41	24.31	24.03		
20	16QAM	50	0	23.48	23.03	23.39	23.5	1.0
20	16QAM	50	28	23.38	23.19	23.11		
20	16QAM	50	56	23.26	23.27	23.46		
20	16QAM	100	0	23.10	23.17	23.38	23.5	1.0
20	64QAM	1	1	24.19	24.37	24.22	24.5	0.0
20	64QAM	1	53	24.39	24.21	24.26		
20	64QAM	1	104	24.42	24.32	24.38		
20	64QAM	50	0	23.49	23.23	23.48	23.5	1.0
20	64QAM	50	28	23.41	23.39	23.28		
20	64QAM	50	56	23.38	23.31	23.42		
20	64QAM	100	0	23.17	23.38	23.06	23.5	1.0
20	256QAM	1	1	24.45	24.32	24.41	24.5	0.0
20	256QAM	1	53	24.19	24.24	24.39		
20	256QAM	1	104	24.14	24.38	24.40		
20	256QAM	50	0	23.22	23.22	23.44	23.5	1.0
20	256QAM	50	28	23.30	23.42	23.33		
20	256QAM	50	56	23.04	23.27	23.38		
20	256QAM	100	0	23.21	23.47	23.07	23.5	1.0
Channel				371500	376500	381500	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1882.5	1907.5		
15	PI/2 BPSK	1	1	24.06	24.15	24.04	24.5	0.0
Channel				371000	376500	382000	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1882.5	1910		
10	PI/2 BPSK	1	1	24.27	24.00	24.01	24.5	0.0
Channel				370500	376500	382500	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1882.5	1912.5		
5	PI/2 BPSK	1	1	24.35	24.42	24.33	24.5	0.0

<n26 Ant0>

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				164800	166300	167800	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				824	831.5	839		
20	PI/2 BPSK	1	1	23.60	23.71	23.86	24.0	0.0
20	PI/2 BPSK	1	53	23.95	23.83	23.66		
20	PI/2 BPSK	1	104	23.93	23.83	23.68		
20	PI/2 BPSK	50	0	22.62	22.79	22.88	23.0	1.0
20	PI/2 BPSK	50	28	22.64	22.98	22.98		
20	PI/2 BPSK	50	56	22.99	22.53	22.84		
20	PI/2 BPSK	100	0	22.52	22.81	22.98	23.0	1.0
20	QPSK	1	1	23.58	23.72	23.96	24.0	0.0
20	QPSK	1	53	23.74	23.78	23.53		
20	QPSK	1	104	23.90	23.55	23.52		
20	QPSK	50	0	22.63	22.55	22.88	23.0	1.0
20	QPSK	50	28	22.70	22.56	22.90		
20	QPSK	50	56	22.62	22.69	22.96		
20	QPSK	100	0	22.78	22.88	22.83	23.0	1.0
20	16QAM	1	1	23.71	23.55	23.56	24.0	0.0
20	16QAM	1	53	23.61	23.61	23.75		
20	16QAM	1	104	23.52	23.87	23.60		
20	16QAM	50	0	22.81	22.97	22.54	23.0	1.0
20	16QAM	50	28	22.89	22.68	22.65		
20	16QAM	50	56	22.53	22.76	22.63		
20	16QAM	100	0	22.86	22.72	22.97	23.0	1.0
20	64QAM	1	1	23.99	23.83	23.62	24.0	0.0
20	64QAM	1	53	23.68	23.51	23.93		
20	64QAM	1	104	23.97	23.94	23.82		
20	64QAM	50	0	23.00	22.56	22.54	23.0	1.0
20	64QAM	50	28	22.78	22.53	22.87		
20	64QAM	50	56	22.88	22.78	22.81		
20	64QAM	100	0	22.54	22.88	22.61	23.0	1.0
20	256QAM	1	1	23.95	23.60	23.75	24.0	0.0
20	256QAM	1	53	24.00	23.68	23.94		
20	256QAM	1	104	23.53	23.86	23.76		
20	256QAM	50	0	22.92	22.77	22.57	23.0	1.0
20	256QAM	50	28	22.71	22.71	22.67		
20	256QAM	50	56	22.62	22.87	22.77		
20	256QAM	100	0	22.64	22.82	22.86	23.0	1.0
Channel				164300	166300	168300	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				821.5	831.5	841.5		
15	PI/2 BPSK	1	1	23.74	23.91	23.58	24.0	0.0
Channel				163800	166300	168800	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				819	831.5	844		
10	PI/2 BPSK	1	1	23.63	23.94	23.71	24.0	0.0
Channel				163300	166300	169300	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				816.5	831.5	846.5		
5	PI/2 BPSK	1	1	23.60	23.83	23.80	24.0	0.0

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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	462000	N/A	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				N/A	2310	N/A		
10	PI/2 BPSK	1	1	N/A	22.64	N/A	23.0	0.0
10	PI/2 BPSK	1	26	N/A	22.94	N/A		
10	PI/2 BPSK	1	52	N/A	22.86	N/A		
10	PI/2 BPSK	25	0	N/A	21.77	N/A	22.0	1.0
10	PI/2 BPSK	25	14	N/A	21.64	N/A		
10	PI/2 BPSK	25	28	N/A	21.63	N/A		
10	PI/2 BPSK	50	0	N/A	21.61	N/A	22.0	1.0
10	QPSK	1	1	N/A	22.96	N/A	23.0	0.0
10	QPSK	1	26	N/A	22.82	N/A		
10	QPSK	1	52	N/A	22.61	N/A		
10	QPSK	25	0	N/A	21.65	N/A	22.0	1.0
10	QPSK	25	14	N/A	21.69	N/A		
10	QPSK	25	28	N/A	21.52	N/A		
10	QPSK	50	0	N/A	21.63	N/A	22.0	1.0
10	16QAM	1	1	N/A	22.91	N/A	23.0	0.0
10	16QAM	1	26	N/A	22.65	N/A		
10	16QAM	1	52	N/A	22.85	N/A		
10	16QAM	25	0	N/A	21.91	N/A	22.0	1.0
10	16QAM	25	14	N/A	21.83	N/A		
10	16QAM	25	28	N/A	21.65	N/A		
10	16QAM	50	0	N/A	21.86	N/A	22.0	1.0
10	64QAM	1	1	N/A	22.78	N/A	23.0	0.0
10	64QAM	1	26	N/A	22.62	N/A		
10	64QAM	1	52	N/A	22.75	N/A		
10	64QAM	25	0	N/A	21.72	N/A	22.0	1.0
10	64QAM	25	14	N/A	21.84	N/A		
10	64QAM	25	28	N/A	21.93	N/A		
10	64QAM	50	0	N/A	21.90	N/A	22.0	1.0
10	256QAM	1	1	N/A	22.63	N/A	23.0	0.0
10	256QAM	1	26	N/A	22.97	N/A		
10	256QAM	1	52	N/A	22.92	N/A		
10	256QAM	25	0	N/A	21.78	N/A	22.0	1.0
10	256QAM	25	14	N/A	21.74	N/A		
10	256QAM	25	28	N/A	21.56	N/A		
10	256QAM	50	0	N/A	21.73	N/A	22.0	1.0
Channel				461500	462000	462500	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2307.5	2310	2312.5		
5	PI/2 BPSK	1	1	22.72	22.92	22.91	23.0	0.0

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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				516000	519000	522000	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2580	2595	2610		
20	PI/2 BPSK	1	1	24.01	24.09	24.24		
20	PI/2 BPSK	1	53	24.33	24.40	24.38	24.5	0.0
20	PI/2 BPSK	1	104	24.34	24.01	24.37		
20	PI/2 BPSK	50	0	23.23	23.25	23.28		
20	PI/2 BPSK	50	28	23.20	23.18	23.18	23.5	1.0
20	PI/2 BPSK	50	56	23.08	23.07	23.37		
20	PI/2 BPSK	100	0	23.16	23.36	23.43	23.5	1.0
20	QPSK	1	1	24.21	24.45	24.49		
20	QPSK	1	53	24.18	24.09	24.17	24.5	0.0
20	QPSK	1	104	24.04	24.05	24.29		
20	QPSK	50	0	23.19	23.05	23.25		
20	QPSK	50	28	23.24	23.45	23.09	23.5	1.0
20	QPSK	50	56	23.38	23.12	23.25		
20	QPSK	100	0	23.01	23.16	23.06	23.5	1.0
20	16QAM	1	1	24.13	24.19	24.15		
20	16QAM	1	53	24.14	24.09	24.32	24.5	0.0
20	16QAM	1	104	24.05	24.01	24.46		
20	16QAM	50	0	23.43	23.35	23.33		
20	16QAM	50	28	23.25	23.27	23.48	23.5	1.0
20	16QAM	50	56	23.12	23.35	23.31		
20	16QAM	100	0	23.34	23.35	23.34	23.5	1.0
20	64QAM	1	1	24.07	24.23	24.21		
20	64QAM	1	53	24.01	24.07	24.13	24.5	0.0
20	64QAM	1	104	24.49	24.27	24.10		
20	64QAM	50	0	23.44	23.18	23.49		
20	64QAM	50	28	23.22	23.18	23.28	23.5	1.0
20	64QAM	50	56	23.48	23.08	23.43		
20	64QAM	100	0	23.26	23.24	23.18	23.5	1.0
20	256QAM	1	1	24.26	24.07	24.48		
20	256QAM	1	53	24.27	24.08	24.10	24.5	0.0
20	256QAM	1	104	24.19	24.18	24.25		
20	256QAM	50	0	23.49	23.50	23.22		
20	256QAM	50	28	23.29	23.49	23.49	23.5	1.0
20	256QAM	50	56	23.27	23.10	23.01		
20	256QAM	100	0	23.18	23.04	23.29	23.5	1.0
Channel				515500	519000	522500	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2577.5	2595	2612.5		
15	PI/2 BPSK	1	1	24.20	24.13	24.44	24.5	0.0
Channel				515000	519000	523000	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2575	2595	2615		
10	PI/2 BPSK	1	1	24.01	24.34	24.17	24.5	0.0
Channel				514500	519000	523500	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2572.5	2595	2617.5		
5	PI/2 BPSK	1	1	24.38	24.10	24.49	24.5	0.0

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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				501200	518601	536000	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2506	2593	2680		
20	PI/2 BPSK	1	1	24.50	24.35	24.34		
20	PI/2 BPSK	1	53	24.21	24.26	24.00	24.5	0.0
20	PI/2 BPSK	1	104	24.21	24.28	24.02		
20	PI/2 BPSK	50	0	23.13	23.27	23.38		
20	PI/2 BPSK	50	28	23.17	23.29	23.15	23.5	1.0
20	PI/2 BPSK	50	56	23.47	23.39	23.42		
20	PI/2 BPSK	100	0	23.26	23.10	23.18	23.5	1.0
20	QPSK	1	1	24.46	24.13	24.31		
20	QPSK	1	53	24.20	24.04	24.19	24.5	0.0
20	QPSK	1	104	24.32	24.08	24.30		
20	QPSK	50	0	23.03	23.35	23.09		
20	QPSK	50	28	23.08	23.40	23.24	23.5	1.0
20	QPSK	50	56	23.08	23.38	23.22		
20	QPSK	100	0	23.44	23.01	23.07	23.5	1.0
20	16QAM	1	1	24.39	24.00	24.24		
20	16QAM	1	53	24.38	24.44	24.21	24.5	0.0
20	16QAM	1	104	24.44	24.08	24.08		
20	16QAM	50	0	23.05	23.10	23.08		
20	16QAM	50	28	23.10	23.42	23.31	23.5	1.0
20	16QAM	50	56	23.39	23.18	23.25		
20	16QAM	100	0	23.14	23.03	23.47	23.5	1.0
20	64QAM	1	1	24.19	24.05	24.30		
20	64QAM	1	53	24.14	24.15	24.20	24.5	0.0
20	64QAM	1	104	24.39	24.37	24.13		
20	64QAM	50	0	23.29	23.21	23.03		
20	64QAM	50	28	23.13	23.21	23.03	23.5	1.0
20	64QAM	50	56	23.41	23.20	23.47		
20	64QAM	100	0	23.32	23.01	23.06	23.5	1.0
20	256QAM	1	1	24.34	24.30	24.29		
20	256QAM	1	53	24.13	24.12	24.28	24.5	0.0
20	256QAM	1	104	24.15	24.33	24.44		
20	256QAM	50	0	23.05	23.08	23.35		
20	256QAM	50	28	23.38	23.40	23.36	23.5	1.0
20	256QAM	50	56	23.40	23.24	23.20		
20	256QAM	100	0	23.22	23.27	23.22	23.5	1.0
Channel				500700	518601	536500	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2503.5	2593	2682.5		
15	PI/2 BPSK	1	1	24.21	24.09	24.43	24.5	0.0
Channel				500200	518601	537000	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2501	2593	2685		
10	PI/2 BPSK	1	1	24.36	24.47	24.41	24.5	0.0
Channel				499700	518601	537500	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2498.5	2593	2687.5		
5	PI/2 BPSK	1	1	24.00	24.31	24.43	24.5	0.0

<n41 PC2 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				501200	518601	536000	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2506	2593	2680		
20	PI/2 BPSK	1	1	27.47	27.38	27.10	27.5	0.0
20	PI/2 BPSK	1	53	27.48	27.31	27.36		
20	PI/2 BPSK	1	104	27.23	27.37	27.25		
20	PI/2 BPSK	50	0	26.11	26.44	26.20	26.5	1.0
20	PI/2 BPSK	50	28	26.02	26.00	26.24		
20	PI/2 BPSK	50	56	26.00	26.15	26.09		
20	PI/2 BPSK	100	0	26.00	26.06	26.35	26.5	1.0
20	QPSK	1	1	27.22	27.02	27.46	27.5	0.0
20	QPSK	1	53	27.40	27.23	27.14		
20	QPSK	1	104	27.06	27.35	27.08		
20	QPSK	50	0	26.23	26.11	26.48	26.5	1.0
20	QPSK	50	28	26.05	26.41	26.50		
20	QPSK	50	56	26.01	26.14	26.46		
20	QPSK	100	0	26.46	26.36	26.35	26.5	1.0
20	16QAM	1	1	27.05	27.24	27.45	27.5	0.0
20	16QAM	1	53	27.07	27.37	27.09		
20	16QAM	1	104	27.21	27.45	27.48		
20	16QAM	50	0	26.43	26.21	26.21	26.5	1.0
20	16QAM	50	28	26.38	26.37	26.12		
20	16QAM	50	56	26.42	26.12	26.44		
20	16QAM	100	0	26.39	26.09	26.09	26.5	1.0
20	64QAM	1	1	27.35	27.40	27.41	27.5	0.0
20	64QAM	1	53	27.01	27.40	27.40		
20	64QAM	1	104	27.41	27.29	27.23		
20	64QAM	50	0	26.14	26.13	26.07	26.5	1.0
20	64QAM	50	28	26.01	26.37	26.21		
20	64QAM	50	56	26.49	26.08	26.02		
20	64QAM	100	0	26.48	26.06	26.07	26.5	1.0
20	256QAM	1	1	27.38	27.36	27.49	27.5	0.0
20	256QAM	1	53	27.18	27.07	27.45		
20	256QAM	1	104	27.15	27.15	27.29		
20	256QAM	50	0	26.08	26.04	26.34	26.5	1.0
20	256QAM	50	28	26.11	26.17	26.16		
20	256QAM	50	56	26.20	26.50	26.10		
20	256QAM	100	0	26.39	26.08	26.08	26.5	1.0
Channel				500700	518601	536500	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2503.5	2593	2682.5		
15	PI/2 BPSK	1	1	27.15	27.17	27.41	27.5	0.0
Channel				500200	518601	537000	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2501	2593	2685		
10	PI/2 BPSK	1	1	27.38	27.08	27.42	27.5	0.0
Channel				499700	518601	537500	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2498.5	2593	2687.5		
5	PI/2 BPSK	1	1	27.46	27.49	27.19	27.5	0.0

<n48 Ant4>

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				637333	643113	646000	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				3560	3625	3690		
20	PI/2 BPSK	1	1	21.05	21.08	21.36		
20	PI/2 BPSK	1	53	21.06	21.19	21.17	21.5	0.0
20	PI/2 BPSK	1	104	21.13	21.09	21.31		
20	PI/2 BPSK	50	0	20.37	20.02	20.23		
20	PI/2 BPSK	50	28	20.22	20.10	20.28	20.5	1.0
20	PI/2 BPSK	50	56	20.42	20.43	20.39		
20	PI/2 BPSK	100	0	20.14	20.43	20.05	20.5	1.0
20	QPSK	1	1	21.46	21.31	21.32		
20	QPSK	1	53	21.07	21.22	21.18	21.5	0.0
20	QPSK	1	104	21.27	21.21	21.47		
20	QPSK	50	0	20.13	20.46	20.47		
20	QPSK	50	28	20.13	20.33	20.45	20.5	1.0
20	QPSK	50	56	20.10	20.06	20.44		
20	QPSK	100	0	20.34	20.03	20.03	20.5	1.0
20	16QAM	1	1	21.38	21.32	21.03		
20	16QAM	1	53	21.22	21.27	21.40	21.5	0.0
20	16QAM	1	104	21.45	21.04	21.35		
20	16QAM	50	0	20.22	20.18	20.38		
20	16QAM	50	28	20.40	20.11	20.48	20.5	1.0
20	16QAM	50	56	20.40	20.03	20.39		
20	16QAM	100	0	20.18	20.22	20.26	20.5	1.0
20	64QAM	1	1	21.46	21.34	21.29		
20	64QAM	1	53	21.24	21.40	21.31	21.5	0.0
20	64QAM	1	104	21.00	21.22	21.17		
20	64QAM	50	0	20.19	20.13	20.03		
20	64QAM	50	28	20.02	20.36	20.47	20.5	1.0
20	64QAM	50	56	20.36	20.07	20.11		
20	64QAM	100	0	20.17	20.21	20.07	20.5	1.0
20	256QAM	1	1	21.21	21.37	21.45		
20	256QAM	1	53	21.49	21.28	21.49	21.5	0.0
20	256QAM	1	104	21.46	21.28	21.39		
20	256QAM	50	0	20.29	20.14	20.04		
20	256QAM	50	28	20.21	20.43	20.00	20.5	1.0
20	256QAM	50	56	20.26	20.47	20.24		
20	256QAM	100	0	20.02	20.07	20.10	20.5	1.0
Channel				636833	643113	646500	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				3557.5	3625	3692.5		
15	PI/2 BPSK	1	1	21.16	21.27	21.10	21.5	0.0
Channel				636333	643113	647000	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				3555	3625	3695		
10	PI/2 BPSK	1	1	21.12	21.41	21.39	21.5	0.0
Channel				635833	643113	647000	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				3552.5	3625	3697.5		
5	PI/2 BPSK	1	1	21.25	21.35	21.26	21.5	0.0

<n48 Ant6>

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				637333	643113	646000	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				3560	3625	3690		
20	PI/2 BPSK	1	1	18.05	18.15	18.30	18.5	0.0
20	PI/2 BPSK	1	53	18.34	18.28	18.14		
20	PI/2 BPSK	1	104	18.11	18.07	18.31		
20	PI/2 BPSK	50	0	17.42	17.01	17.24	17.5	1.0
20	PI/2 BPSK	50	28	17.21	17.42	17.32		
20	PI/2 BPSK	50	56	17.02	17.38	17.30		
20	PI/2 BPSK	100	0	17.41	17.06	17.18	17.5	1.0
20	QPSK	1	1	18.30	18.39	18.38	18.5	0.0
20	QPSK	1	53	18.02	18.42	18.04		
20	QPSK	1	104	18.22	18.01	18.32		
20	QPSK	50	0	17.16	17.23	17.45	17.5	1.0
20	QPSK	50	28	17.44	17.13	17.41		
20	QPSK	50	56	17.41	17.46	17.10		
20	QPSK	100	0	17.19	17.26	17.46	17.5	1.0
20	16QAM	1	1	18.10	18.49	18.31	18.5	0.0
20	16QAM	1	53	18.06	18.08	18.06		
20	16QAM	1	104	18.45	18.09	18.24		
20	16QAM	50	0	17.11	17.44	17.19	17.5	1.0
20	16QAM	50	28	17.43	17.03	17.42		
20	16QAM	50	56	17.36	17.25	17.23		
20	16QAM	100	0	17.48	17.14	17.10	17.5	1.0
20	64QAM	1	1	18.41	18.39	18.23	18.5	0.0
20	64QAM	1	53	18.35	18.03	18.17		
20	64QAM	1	104	18.13	18.41	18.34		
20	64QAM	50	0	17.49	17.40	17.03	17.5	1.0
20	64QAM	50	28	17.04	17.45	17.01		
20	64QAM	50	56	17.41	17.09	17.43		
20	64QAM	100	0	17.31	17.17	17.22	17.5	1.0
20	256QAM	1	1	18.36	18.05	18.24	18.5	0.0
20	256QAM	1	53	18.20	18.29	18.35		
20	256QAM	1	104	18.31	18.34	18.49		
20	256QAM	50	0	17.27	17.38	17.15	17.5	1.0
20	256QAM	50	28	17.41	17.17	17.17		
20	256QAM	50	56	17.45	17.23	17.30		
20	256QAM	100	0	17.48	17.25	17.19	17.5	1.0
Channel				636833	643113	646500	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				3557.5	3625	3692.5		
15	PI/2 BPSK	1	1	18.48	18.46	18.43	18.5	0.0
Channel				636333	643113	647000	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				3555	3625	3695		
10	PI/2 BPSK	1	1	18.34	18.25	18.10	18.5	0.0
Channel				635833	643113	647000	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				3552.5	3625	3697.5		
5	PI/2 BPSK	1	1	18.18	18.03	18.34	18.5	0.0

<n66 Ant0>

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				344000	349000	354000	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1720	1745	1770		
20	PI/2 BPSK	1	1	24.42	24.49	24.32	24.5	0.0
20	PI/2 BPSK	1	53	24.13	24.37	24.33		
20	PI/2 BPSK	1	104	24.22	24.34	24.34		
20	PI/2 BPSK	50	0	23.14	23.14	23.42	23.5	1.0
20	PI/2 BPSK	50	28	23.25	23.05	23.40		
20	PI/2 BPSK	50	56	23.28	23.01	23.26		
20	PI/2 BPSK	100	0	23.34	23.49	23.32	23.5	1.0
20	QPSK	1	1	24.16	24.29	24.05	24.5	0.0
20	QPSK	1	53	24.27	24.46	24.08		
20	QPSK	1	104	24.04	24.26	24.17		
20	QPSK	50	0	23.47	23.13	23.14	23.5	1.0
20	QPSK	50	28	23.21	23.13	23.42		
20	QPSK	50	56	23.32	23.23	23.34		
20	QPSK	100	0	23.22	23.24	23.32	23.5	1.0
20	16QAM	1	1	24.45	24.31	24.04	24.5	0.0
20	16QAM	1	53	24.14	24.11	24.24		
20	16QAM	1	104	24.30	24.50	24.35		
20	16QAM	50	0	23.29	23.41	23.23	23.5	1.0
20	16QAM	50	28	23.01	23.08	23.46		
20	16QAM	50	56	23.21	23.30	23.02		
20	16QAM	100	0	23.37	23.47	23.12	23.5	1.0
20	64QAM	1	1	24.04	24.05	24.05	24.5	0.0
20	64QAM	1	53	24.41	24.44	24.48		
20	64QAM	1	104	24.01	24.39	24.46		
20	64QAM	50	0	23.13	23.34	23.14	23.5	1.0
20	64QAM	50	28	23.50	23.43	23.20		
20	64QAM	50	56	23.18	23.27	23.42		
20	64QAM	100	0	23.10	23.11	23.48	23.5	1.0
20	256QAM	1	1	24.26	24.01	24.18	24.5	0.0
20	256QAM	1	53	24.34	24.30	24.41		
20	256QAM	1	104	24.40	24.03	24.44		
20	256QAM	50	0	23.15	23.21	23.40	23.5	1.0
20	256QAM	50	28	23.29	23.08	23.05		
20	256QAM	50	56	23.32	23.01	23.28		
20	256QAM	100	0	23.25	23.47	23.00	23.5	1.0
Channel				343500	349000	354500	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1717.5	1745	1772.5		
15	PI/2 BPSK	1	1	24.14	24.14	24.36	24.5	0.0
Channel				343000	349000	355000	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1745	1775		
10	PI/2 BPSK	1	1	24.19	24.38	24.27	24.5	0.0
Channel				342500	349000	355500	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1745	1777.5		
5	PI/2 BPSK	1	1	24.44	24.40	24.02	24.5	0.0