Radio Testing of the

Nextivity Inc.
Industrial Signal Booster
Model: Quatra RED
F42-67ENU (NU)
F41-8XCU (CU)
In accordance with

FCC CFR 47 Part 24, 27
RSS-133 issue 6 Amendment 1 (January 2018)
RSS-130 issue 2 (February 2019)
RSS-131 issue 3 (May 2017)

Product Service

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Nextivity Inc.
16550 West Bernardo Drive, Bldg 5, Suite 550,
San Diego, CA 92127, USA

Date: June 2020
Document Number: 72153689A Issue 01 | Version Number: 01

RESPONSIBLE FOR	NAME	DATE	SIGNATURE
Authorized Signatory	Ferdinand S. Custodio	June 11, 2020	

Signatures in this approval box have checked this document in line with the requirements of TÜV SÜD Product Service document control rules.

EXECUTIVE SUMMARY
Test reports and supporting documents of this product was reviewed and the EUT in general was confirmed to be in compliance with FCC CFR 47 Part 24, 27, RSS-133 issue 6 Amendment 1 (January 2018), RSS-130 issue 2 (February 2019) and RSS-131 issue 3 (May 2017).

A2LA Cert. No. 2955.13

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Our A2LA Accreditation does not cover opinions and interpretations and any expressed are outside the scope of our A2LA Accreditation.

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REPORT ON	Radio Testing of the Nextivity Inc. Quatra RED Industrial Signal Booster
TEST REPORT NUMBER	72153689A
REPORT DATE	June 2020
PREPARED FOR	Nextivity Inc. 16550 West Bernardo Drive, Bldg 5, Suite 550, San Diego, CA 92127, USA
CONTACT PERSON	CK Li Sr. Principal Engineer, Regulatory (858) 485-9422 CLi@NextivityInc.com
PREPARED BY	Xiaoying Zhang **Name** Authorized Signatory Title: EMC/Wireless Test Engineer

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Revision History

72153689A
Nextivity Inc.
Quatra RED Industrial Signal Booster

DATE	OLD REVISION	NEW REVISION	REASON	PAGES AFFECTED	APPROVED BY
06/11/2020	—	Initial Release			Ferdinand S. Custodio

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TÜV SÜD AMERICA INC 10040 Mesa Rim Road San Diego, CA 92121-2912 Phone: 858 678 1400 FAX: 858 546 0364

SECTION 1

REPORT SUMMARY

Radio Testing of the
Nextivity Inc.
Quatra RED Industrial Signal Booster

TÜV SÜD AMERICA INC 10040 Mesa Rim Road San Diego, CA 92121-2912 Phone: 858 678 1400 FAX: 858 546 0364

1.1 INTRODUCTION

The information contained in this report is intended to show verification of the Nextivity Inc. Quatra RED to the requirements of FCC CFR 47 Part 24, 27, RSS-133 issue 6 Amendment 1 (January 2018), RSS-130 issue 2 (February 2019) and RSS-131 issue 3 (May 2017).

Objective	To perform Radio Testing to determine the Equipment Under Test's (EUT's) compliance with the Test Specification, for the series of tests carried out.
Manufacturer	Nextivity Inc.
Model Name	Quatra RED
Model Number(s)	F42-67ENU (NU) F41-8XCU (CU)
EUT	Industrial Signal Booster
FCC ID	NU: YETF42-67ENU CU: YETF41-8XCU
IC ID	NU: 9298A-F4267ENU CU: 9298A-F418XCU
Serial Number(s)	444002000024 (NU) and 247002000034 (CU)
Number of Samples Tested	2
Date sample(s) received	January 31, 2020
Test Specification/Issue/Date	• FCC CFR 47 Part 24, 27 (October 1, 2019) • RSS-133 - 2 GHz Personal Communications Services (issue 6, Amendment 1, January 2018) • RSS-130 - Equipment Operating in the Frequency Bands 617-652 MHz, 663-698 MHz, 698-756 MHz and 777-787 MHz (issue 2, February 2019) • RSS-131 – Zone Enhancers (issue 3, Updated May 2017) • SRSP-510 - Technical Requirements for Personal Communications Services (PCS) in the bands 1850-1915 MHz and 1930-1995 MHz (issue 5, Feb. 2009) • SRSP-518 - Technical Requirements in the Bands 617-652 MHz, 663-698 MHz, 698-756 MHz and 777-787 MHz (Issue 2, February 2019). • RSS-Gen - General Requirements for Compliance of Radio Apparatus (Issue 5, November 2019 Amendment 1). • ANSI C63.26-2015: American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services

Start of Test	February 03, 2020
Finish of Test	February 17, 2020
Name of Engineer(s)	Xiaoying Zhang
Related Document(s)	• KDB971168 D01 Power Meas License Digital Systems v03r01 (Measurement Guidance For Certification of Licensed Digital Transmitters) • KDB412172 D01 Determining ERP and EIRP v01r01 (Guidelines for Determining the Effective Radiated Power (ERP) and Equivalent Isotropically Radiated Power (EIRP) of a RF Transmitting System) • Supporting documents for EUT certification are separate exhibits.

1.2 BRIEF SUMMARY OF RESULTS

A brief summary of the tests carried out in accordance with FCC CFR 47 Part 24, 27 is shown below:

Section	Part 2	Part 24/27/90	RSS-133	RSS-130	Test Description	Result
2.1	2.1046	-	-	-	Transmitter Conducted Output Power	Compliant
2.2	-	24.232(a)(2) 27.50 (h)(1)	6.4	-	Equivalent Isotropic Radiated Power	Compliant
2.3	-	27.50 (c)(3) 90.542 (a)(3)	-	4.6.3	Equivalent Radiated Power	Compliant
2.4	2.1049	-	RSS-GEN 6.7		Occupied Bandwidth	Compliant
2.5	-	24.232(d) 27.50 (d)(5)	6.4	4.6.1	Peak-Average Ratio	Compliant
2.6	2.1051	24.238(a)(b) 27.53 (h)(1)(3) 27.53 (g) 90.543 (e)(1)(3)	6.5	4.7	Band Edge	Compliant
2.7	2.1051	24.238(a)(b) 27.53 (h)(1)(3) 27.53 (g) 90.543 (e)(1)(3)(f)	6.5	4.7	Conducted Spurious Emissions	Compliant
2.8	2.1053	24.238(a) 27.53 (h)(1)(3) 27.53 (g) 90.543 (e)(1)(3)(f)	6.5	4.7	Field Strength of Spurious Radiation	Compliant
2.9	2.1055	24.235 27.54 90.539(b)	6.3	4.5	Frequency Stability	Compliant
-	-	-	RSS-Gen 7.1		Receiver Spurious Emissions	N/A

N/A Not required as per RSS-GEN 5.3. EUT is not a Stand-alone receiver.

Section	Spec Clause			Test Description	Result
	FCC Part 20	KDB 935210 D05	RSS-131		
2.10	20.21 (c)	3.2	-	AGC Threshold Level	Compliant
2.11		3.3	5.2.1	Out-of-Band rejection	Compliant
2.12		3.4	5.2.2	Input-versus-Output Signal Comparison	Compliant
2.13		3.5	5.2.3	Mean Output Power and Amplifier/Booster Gain	Compliant
2.14		3.6	-	Out-of-band/out-of-block (Intermodulation) and Spurious Emissions	Compliant
-		3.7	-	Frequency Stability	Refer to Section 2.9
-		3.8	-	Spurious Emissions Radiated Measurement	Compliant

1.3 PRODUCT INFORMATION

1.3.1 Technical Description

The Equipment Under Test (EUT) was a Nextivity Inc. Quatra RED Industrial Signal Booster. The EUT is designed to enhance in-building LTE/Public Safety coverage for public safety use. Quatra RED contains a high gain, high power band-selective Bi-Directional Amplifier that has been specifically designed for UL2524 In-building 2-Way Emergency Radio Communication Enhancement Systems Standard.

The System consists of RF amplifier (NU/CU), monitor and Battery Backup Unit (MBU), EPO Switch and Remote Annunciator.

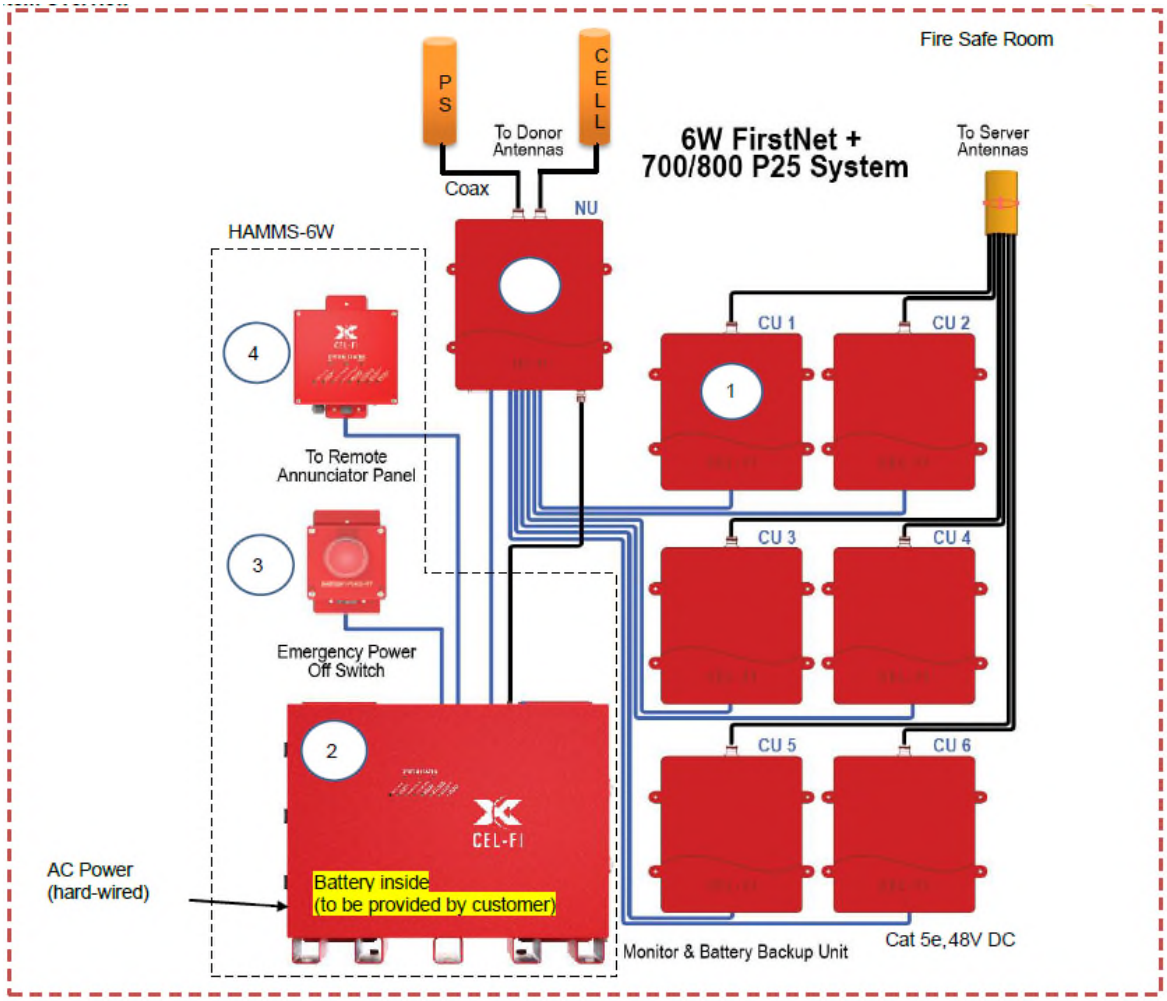

Figure 1: System Overview

1.3.2 EUT General Description

EUT Description	Industrial Signal Booster
Trade Name	Cel-Fi™
Model Name	Quatra RED
Model Number(s)	F42-67ENU (NU) F41-8XCU (CU)
Rated Voltage	NU: 48V DC from monitor and Battery Backup Unit (MBU) CU: 48V DC, powered from NU via Ethernet cable
Mode Verified	LTE Band 2, 4, 12
Frequency Bands	LTE Band 2: Uplink: 1850 - 1910 MHz Downlink: 1930 - 1990 MHz LTE Band 4 (FCC Market only) Uplink: 1710 - 1755 MHz Downlink: 2110 - 2155 MHz LTE Band 12: Uplink: 699 - 716 MHz Downlink: 729 - 746 MHz

Product Specifications

Signal Bandwidth (MHz)	Band 2,4		Band 12	
	DL (dB)	UL (dB)	DL (dB)	UL (dB)
10	N/A	N/A	Max. 24	Max. 23
20	Max. 24	Max. 23	N/A	N/A

Capability	LTE (Band 2, 4, 12, 14, 700MHz Narrowband Public Safety and 800MHz/NPSPAC Public Safety)
Primary Unit (EUT)	☐ Production ☒ Pre-Production ☐ Engineering
Environment	Fixed, Indoor
Manufacturer Declared Temperature Range	-20°C to 50°C
Antenna Type	External Antenna
Antenna Model	Refer to the Antenna information supplied by the manufacture
Antenna gain	Refer to the Antenna information supplied by the manufacture

Maximum Antenna System (Antenna + Cable) Gain

Radio	Uplink (Donor)	Downlink (Server)
LTE Band 2	12.36 dBi	3.8 dBi
LTE Band 4	12.42 dBi	3.8 dBi
LTE Band 12	11.0 dBi	2.5 dBi

1.3.3 Transmit Frequency Table

Mode	Channel Bandwidth (MHz)	Tx Frequency (MHz)	Emission Designator	EIRP		ERP	
				Max. Power Avg (dBm)	Max. Power Avg (W)	Max. Power Avg (dBm)	Max. Power Avg (W)
LTE Band 2 Downlink	20	1930 - 1995	17M8F9W	27.54	0.57	-	-
LTE Band 2 Uplink	20	1850 - 1915	17M8F9W	34.66	2.92	-	-
LTE Band 4 Downlink	20	2110 - 2155	17M9F9W	28.08	0.64	-	-
LTE Band 4 Uplink	20	1710 - 1755	17M8F9W	37.18	5.22	-	-
LTE Band 12 Downlink	10	729 - 746	8M94F9W	-	-	24.48	0.28
LTE Band 12 Uplink	10	699 - 716	8M88F9W	-	-	33.04	2.01

1.4 EUT TEST CONFIGURATION

1.4.1 Test Configuration Description

Test Configuration	Description
A	Downlink. Input signal is applied to the antenna port of Donor (NU). Output is monitored from the antenna port of Server (CU).
B	Uplink. Input signal is applied to the antenna port of Server (CU). Output is monitored from the antenna port of Donor (NU).
C	Radiated test setup. Downlink. Input signal is applied to the antenna port of Donor (NU). The antenna port of Server (CU) is terminated with a 50Ω load or Signal Generator.
D	Radiated test setup. Uplink. Input signal is applied to the antenna port of Server (CU). The antenna port of Donor (NU) is terminated with a 50Ω load or Signal Generator.

1.4.2 EUT Exercise Software

Manufacturer provided Nextivity Chart Interface v1.60 running from a support laptop where both NU and CU are connected via USB.

1.4.3 Support Equipment and I/O cables

Manufacturer	Equipment/Cable	Description
Dell	Support Laptop	M/N: Latitude D630 PP18L, S/N 5SBJBG1
Dell	Support Laptop AC Adapter	M/N: PA-1900-02D S/N 5SBJBG1
Nextivity	Support USB cable x 2	Custom 1.0 meter shielded USB Type A to Micro B cable
Nextivity	Support USB cable x 1	Custom 1.0 meter shielded USB Type A to Micro A cable
Nextivity	Support Ethernet cable x 1	Custom 2.0 meter unshielded CAT 5e Ethernent Cables
Nextivity	Cel-Fi QUATRA RED Battery Backup and Monitor Unit (MBBU) - small	M/N: F42-10S-100
Agilent	ESG Vector Signal Generator	M/N: E4438C, S/N MY49071335
Ramsey	Support Shielded Test Enclosure	With custom USB cable

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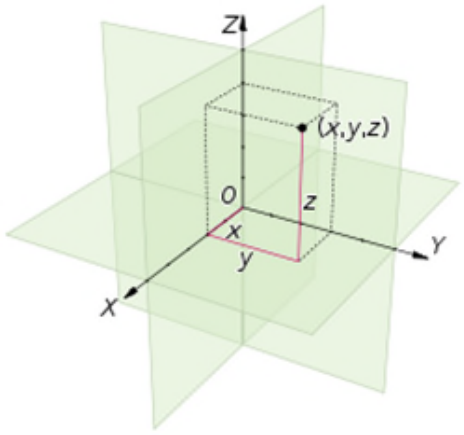
1.4.4 Worst Case Configuration

Worst-case configuration used in this test report per Transmitter Conducted Output Power (Section 2.1 of this test report). This is for single channel verification, otherwise all three channels (Low, Middle and High) are verified:

Mode	Bandwidth	Channel No.	Frequency
LTE Band 2 Downlink	20MHz	Low Channel 700	1940 MHz
LTE Band 2 Uplink	20MHz	High Channel 19100	1900 MHz
LTE Band 4 Downlink	20MHz	Low Channel 2050	2120 MHz
LTE Band 4 Uplink	20MHz	Low Channel 20050	1720 MHz
LTE Band 12 Downlink	10MHz	Middle Channel 5095	737.5 MHz
LTE Band 12 Uplink	10MHz	Middle Channel 23095	707.5 MHz

Final installation position is unknown at the time of verification. For radiated measurements X and Z orientations were verified since the EUT won't work on Y orientation. No major variation in emissions observed between the three (3) orientations. Verifications performed using "X" configuration.



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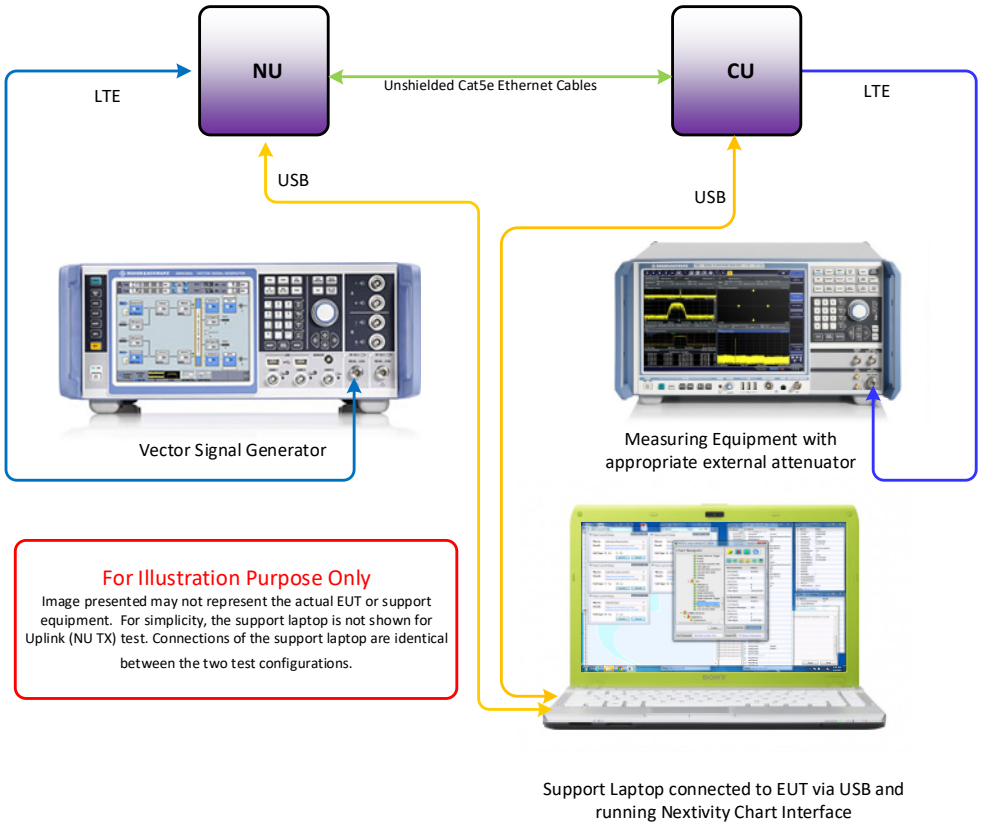
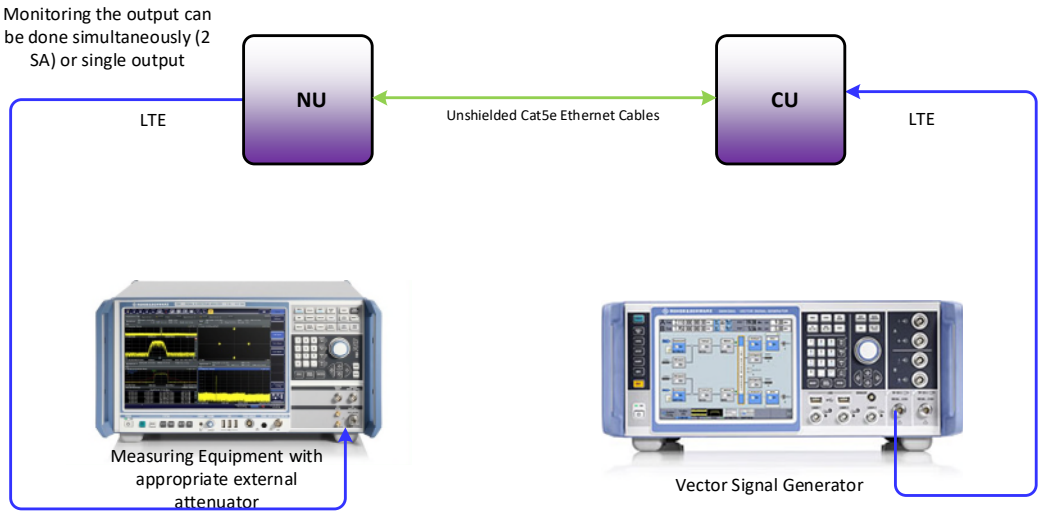
1.4.5 Simplified Test Configuration Diagram

Downlink (CU Tx) Conducted Test



Support Laptop connected to EUT via USB and running Nextivity Chart Interface

Uplink (NU Tx) Conducted Test



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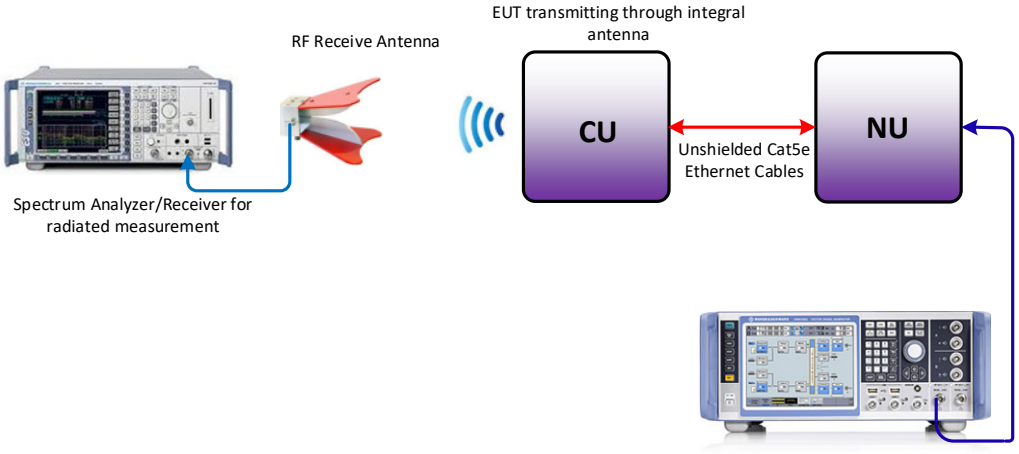
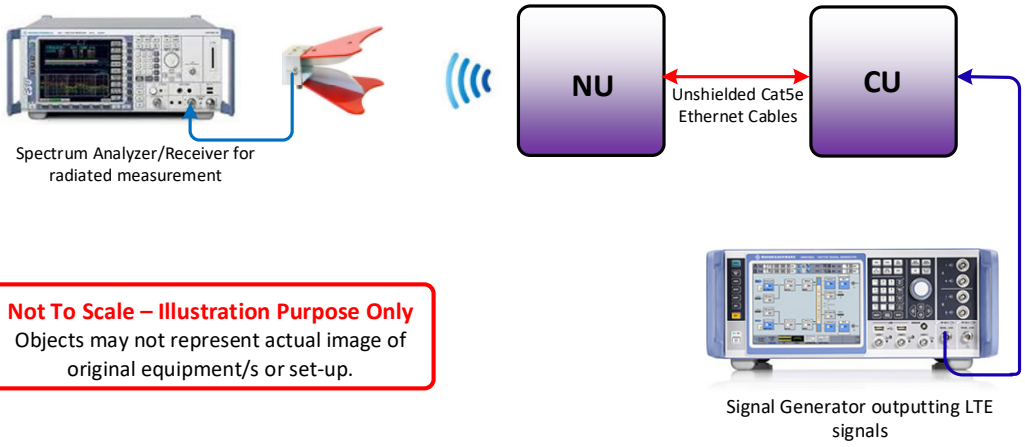
Radiated Testing (Downlink)



Radiated Testing (Uplink)



Not To Scale – Illustration Purpose Only
Objects may not represent actual image of original equipment/s or set-up.

1.5 DEVIATIONS FROM THE STANDARD

No deviations from the applicable test standards or test plan were made during testing.

1.6 MODIFICATION RECORD

Description of Modification	Modification Fitted By	Date Modification Fitted
Serial Number: 444002000024 (NU) and 247002000034 (CU)		
None	-	-

The table above details modifications made to the EUT during the test program. The modifications incorporated during each test (if relevant) are recorded on the appropriate test pages.

1.7 TEST METHODOLOGY

All measurements contained in this report were conducted with ANSI C63.26 2015, American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services

For conducted (if applicable) and radiated emissions the equipment under test (EUT) was configured to measure its highest possible emission level. This level was based on the maximized cable configuration from exploratory testing per ANSI C63.26-2015. The test modes were adapted according to the Operating Instructions provided by the manufacturer/client.

1.8 TEST FACILITY LOCATION

1.8.1 TÜV SÜD America Inc. (Mira Mesa)

10040 Mesa Rim Road, San Diego, CA 92121-2912 (32.901268,-117.177681). Phone: (858) 678 1400 Fax: (858) 546 0364.

1.8.2 TÜV SÜD America Inc. (Rancho Bernardo)

16936 Via Del Campo, San Diego, CA 92127-1708 (33.018644,-117.092409). Phone: (858) 678 1400 Fax: (858) 546 0364.

1.9 TEST FACILITY REGISTRATION

1.9.1 FCC – Designation No.: US1146

TÜV SÜD America Inc. (San Diego), is an accredited test facility with the site description report on file and has met all the requirements specified in §2.948 of the FCC rules. The acceptance letter from the FCC is maintained in our files and the Designation is US1146.

1.9.2 Innovation, Science and Economic Development Canada (IC) Registration No.: 3067A-1 & 22806-1

The 10m Semi-anechoic chamber of TUV SUD America Inc. (San Diego Rancho Bernardo) has been registered by Certification and Engineering Bureau of Innovation, Science and Economic Development Canada for radio equipment testing with Registration No. 3067A-1.

The 3m Semi-anechoic chamber of TUV SUD America Inc. (San Diego Mira Mesa) has been registered by Certification and Engineering Bureau of Innovation, Science and Economic Development Canada for radio equipment testing with Registration No. 22806-1.

1.9.3 BSMI – Laboratory Code: SL2-IN-E-028R (US0102)

TUV Product Service Inc. (San Diego) is a recognized EMC testing laboratory by the BSMI under the MRA (Mutual Recognition Arrangement) with the United States. Accreditation includes CNS 13438 up to 6GHz.

1.9.4 NCC (National Communications Commission - US0102)

TUV SUD America Inc. (San Diego) is listed as a Foreign Recognized Telecommunication Equipment Testing Laboratory and is accredited to ISO/IEC 17025 (A2LA Certificate No.2955.13) which under APEC TEL MRA Phase 1 was designated as a Conformity Assessment Body competent to perform testing of equipment subject to the Technical Regulations covered under its scope of accreditation including RTTE01, PLMN01 and PLMN08 for TTE type of testing and LP002 for Low-Power RF Device type of testing.

1.9.5 VCCI – Registration No. A-0280 and A-0281

TUV SUD America Inc. (San Diego) is a VCCI registered measurement facility which includes radiated field strength measurement, radiated field strength measurement above 1GHz, mains port interference measurement and telecommunication port interference measurement.

1.9.6 RRA – Identification No. US0102

TUV SUD America Inc. (San Diego) is National Radio Research Agency (RRA) recognized laboratory under Phase I of the APEC Tel MRA.

1.9.7 OFCA – U.S. Identification No. US0102

TUV SUD America Inc. (San Diego) is recognized by Office of the Communications Authority (OFCA) under Appendix B, Phase I of the APEC Tel MRA.

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SECTION 2

TEST DETAILS

Radio Test of the
Nextivity Inc.
Quatra RED Industrial Signal Booster

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2.1 TRANSMITTER CONDUCTED OUTPUT POWER

2.1.1 Specification Reference

FCC 47 CFR Part 2, Clause 2.1046

2.1.2 Standard Applicable

The conducted power mesurements were made in accordance to FCC Part 2 Clasue 2.1046:
(a) For transmitters other than single sideband, independent sideband and controlled carrier radiotelephone, power output shall be measured at the RF output terminals when the transmitter is adjusted in accordance with the tune-up procedure to give the values of current and voltage on the circuit elements specified in §2.1033(c)(8). The electrical characteristics of the radio frequency load attached to the output terminals when this test is made shall be stated.
(c) For measurements conducted pursuant to paragraphs (a) and (b) of this section, all calculations and methods used by the applicant for determining carrier power or peak envelope power, as appropriate, on the basis of measured power in the radio frequency load attached to the transmitter output terminals shall be shown. Under the test conditions specified, no components of the emission spectrum shall exceed the limits specified in the applicable rule parts as necessary for meeting occupied bandwidth or emission limitations.

2.1.3 Equipment Under Test and Modification State

Serial No: 444002000024 (NU) and 247002000034 (CU) / Test Configuration A and B

2.1.4 Date of Test/Initial of test personnel who performed the test

Febraury 03, 04, 10 and 11, 2020 / XYZ

2.1.5 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.1.6 Environmental Conditions/ Test Location

Test performed at TÜV SÜD America Inc. Rancho Bernardo facility

Ambient Temperature	21.2 – 23.4°C
Relative Humidity	23.2 – 43.3%
ATM Pressure	98.6 – 99.4kPa

2.1.7 Additional Observations

- This is a conducted test using power meter.
- The path loss was measured and entered as a level offset.
- Both Peak and Average measurements presented.
- LTE Band 2, 4 support 20 MHz bandwidth, and LTE Band 12 supports 10 MHz bandwidth.
- Low, Middle and High channels for supporting bandwidths were verified and reported.

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2.1.8 Test Results

LTE Band 2 Downlink				
Bandwidth (MHz)	**Channels**	**Frequency (MHz)**	**Average Power (dBm)**	**Peak Power (dBm)**
20 MHz	**700**	**1940.0**	**23.74**	**31.13**
	900	1960.0	23.50	31.11
	1100	1980.0	23.42	31.46

LTE Band 2 Uplink				
Bandwidth (MHz)	**Channels**	**Frequency (MHz)**	**Average Power (dBm)**	**Peak Power (dBm)**
20 MHz	18700	1860.0	22.15	32.05
	18900	1880.0	22.27	30.77
	19100	**1900.0**	**22.30**	**30.24**

LTE Band 4 Downlink (FCC Market only)				
Bandwidth (MHz)	**Channel**	**Frequency (MHz)**	**Average Power (dBm)**	**PK Power (dBm)**
20	**2050**	**2120.0**	**24.28**	**31.13**
	2175	2132.5	23.82	31.31
	2300	2145.0	24.03	32.05

LTE Band 4 Uplink (FCC Market only)				
Bandwidth (MHz)	**Channel**	**Frequency (MHz)**	**Average Power (dBm)**	**PK Power (dBm)**
20	**20050**	**1720.0**	**24.76**	**32.89**
	20175	1732.5	24.49	32.90
	20300	1745.0	24.19	32.43

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LTE Band 12 Downlink				
Bandwidth (MHz)	**Channel**	**Frequency (MHz)**	**Average Power (dBm)**	**PK Power (dBm)**
10	5060	734.0	23.90	31.78
	5095	**737.5**	**24.13**	**32.03**
	5130	741.0	23.95	31.84

LTE Band 12 Uplink				
Bandwidth (MHz)	**Channel**	**Frequency (MHz)**	**Average Power (dBm)**	**PK Power (dBm)**
10	23060	704.0	24.08	34.59
	23095	**707.5**	**24.19**	**34.79**
	23130	711.0	24.06	34.75

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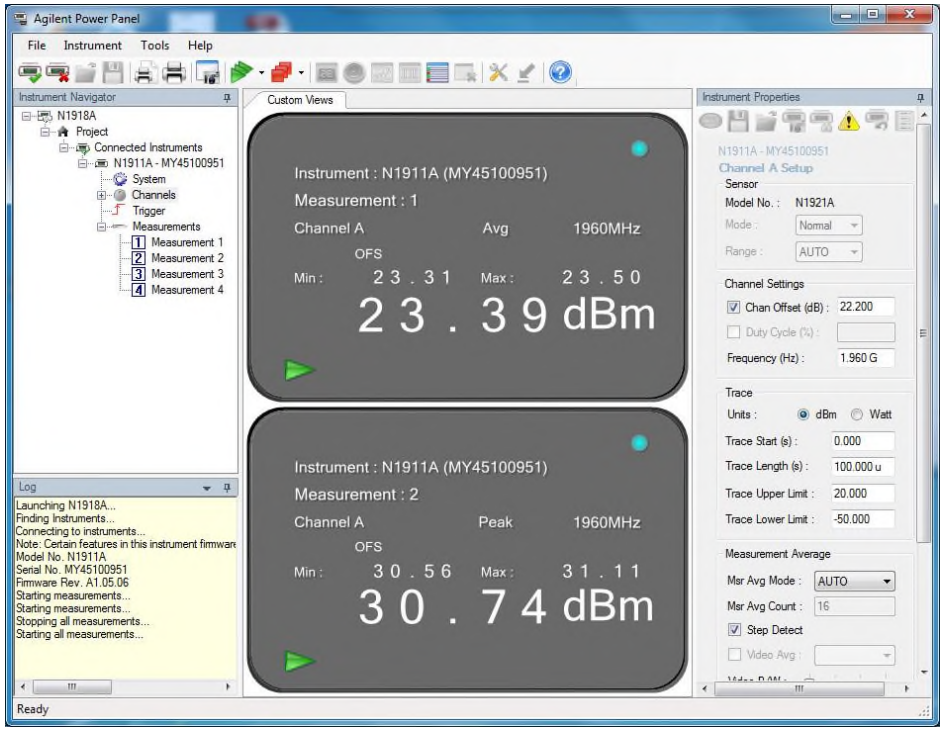
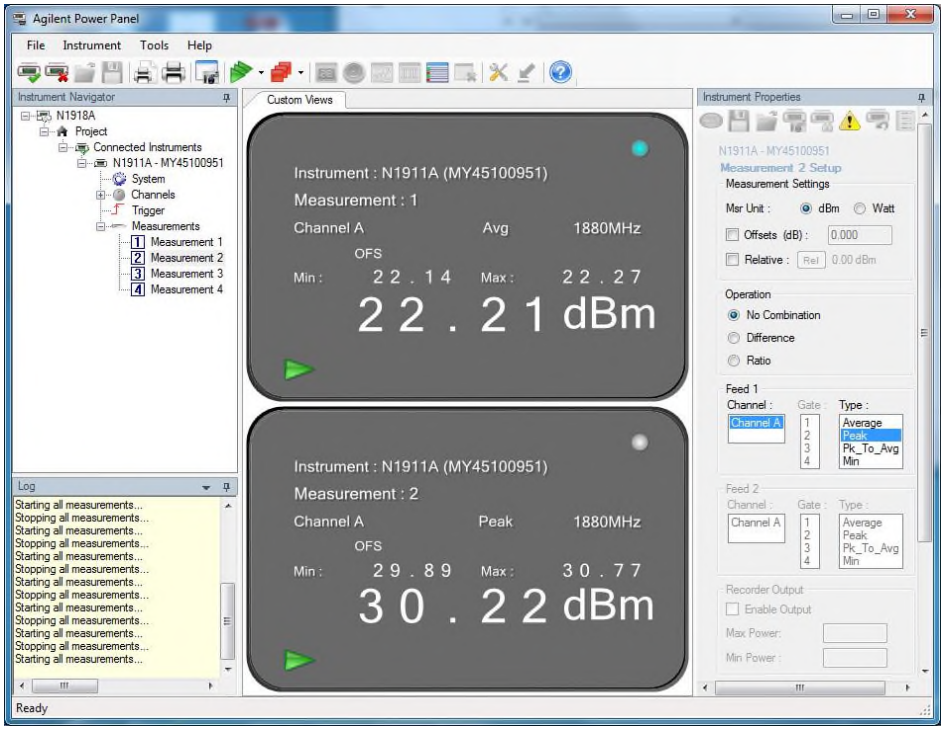
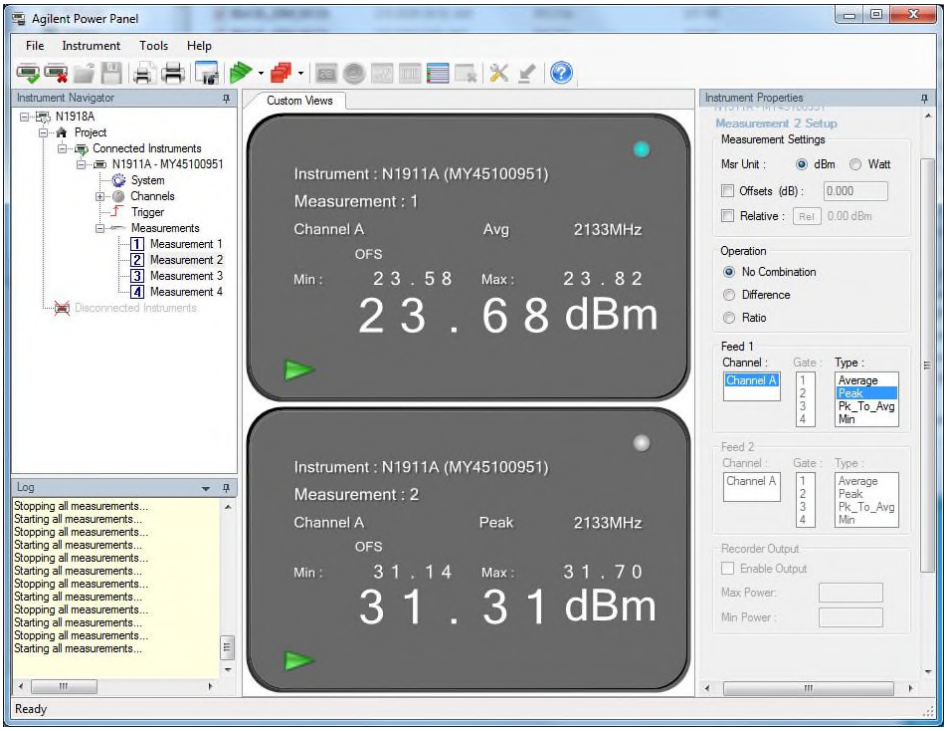
2.1.9 Sample Test Plot



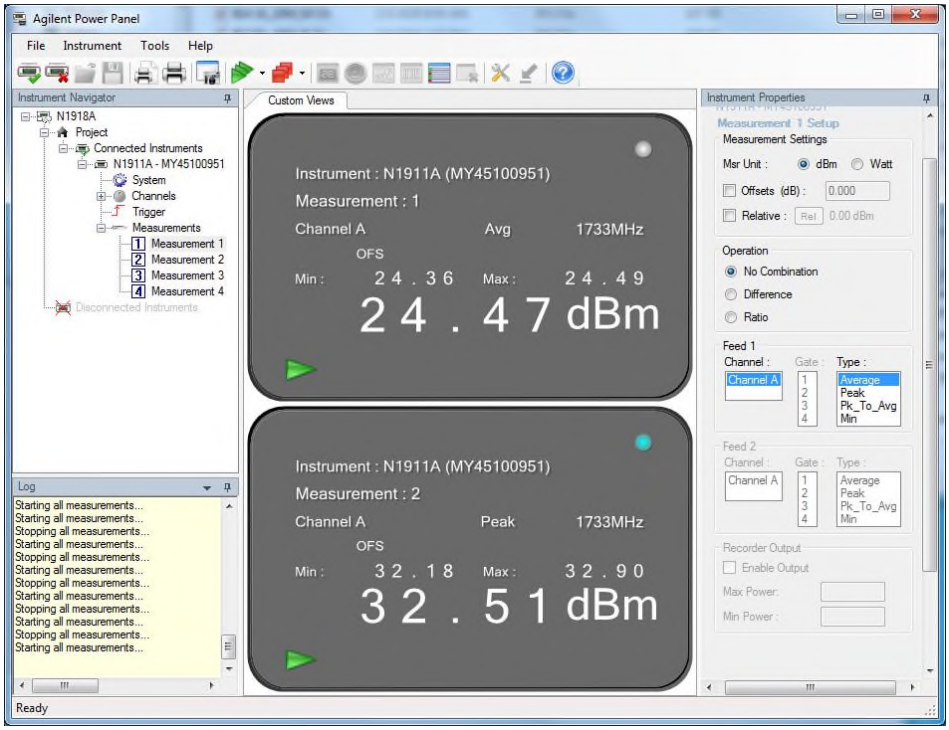
LTE Band 2 DL 20 MHz Bandwidth Middle Channel



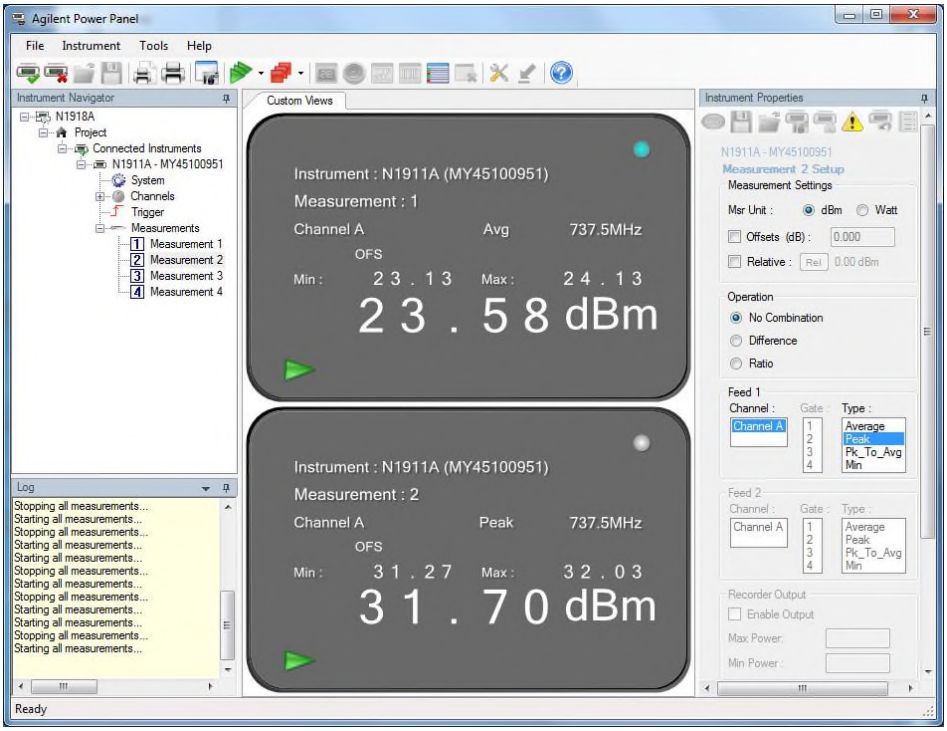
LTE Band 2 UL 20 MHz Bandwidth Middle Channel



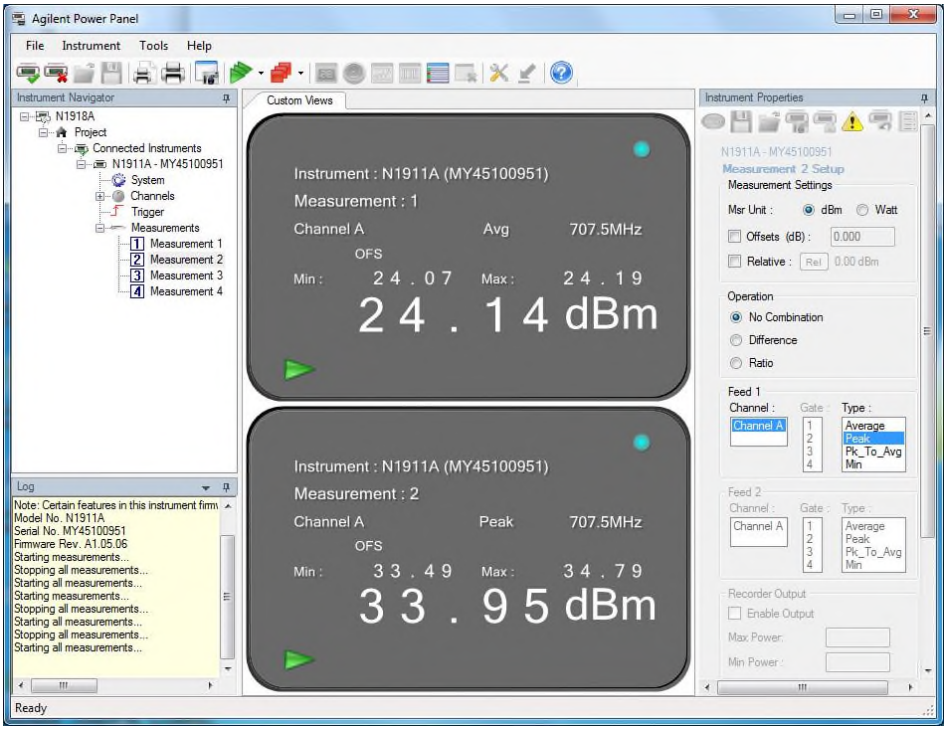
LTE Band 4 DL 20 MHz Bandwidth Middle Channel



LTE Band 4 UL 20 MHz Bandwidth Middle Channel



LTE Band 12 DL 10 MHz Bandwidth Middle Channel



LTE Band 12 UL 10 MHz Bandwidth Middle Channel

2.2 EFFECTIVE ISOTROPIC RADIATED POWER

2.2.1 Specification Reference

FCC 47 CFR Part 24, Clause 24.232(a)(2)
FCC 47 CFR Part 27, Clause 27.50(h)(1)
RSS-133 issue 6, Clause 6.4

2.2.2 Standard Applicable

FCC 47 CFR Part 24, Clause 24.232(a)
(2) Base stations with an emission bandwidth greater than 1 MHz are limited to 1640 watts/MHz equivalent isotropically radiated power (EIRP) with an antenna height up to 300 meters HAAT, except as described in paragraph (b).

FCC 47 CFR Part 27, Clause 27.50 (h):
(1) Main, booster and base stations. (i) The maximum EIRP of a main, booster or base station shall not exceed 33 dBW + 10log(X/Y) dBW, where X is the actual channel width in MHz and Y is either 6 MHz if prior to transition or the station is in the MBS following transition or 5.5 MHz if the station is in the LBS and UBS following transition, except as provided in paragraph (h)(1)(ii) of this section.

(ii) If a main or booster station sectorizes or otherwise uses one or more transmitting antennas with a non-omnidirectional horizontal plane radiation pattern, the maximum EIRP in dBW in a given direction shall be determined by the following formula: EIRP = 33 dBW + 10 log(X/Y) dBW + 10 log(360/beamwidth) dBW, where X is the actual channel width in MHz, Y is either (i) 6 MHz if prior to transition or the station is in the MBS following transition or (ii) 5.5 MHz if the station is in the LBS and UBS following transition, and beamwidth is the total horizontal plane beamwidth of the individual transmitting antenna for the station or any sector measured at the half-power points.

RSS-133, Clause 6.4:
The equivalent isotropically radiated power (e.i.r.p.) for transmitters shall not exceed the limits given in SRSP-510.

2.2.3 Equipment Under Test and Modification State

Serial No: 444002000024 (NU) and 247002000034 (CU) (Calculation only)

2.2.4 Date of Test/Initial of test personnel who performed the test

February 10 and 11, 2020 / XYZ

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2.2.5 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.2.6 Environmental Conditions/ Test Location

Test performed at TÜV SÜD America Inc. Rancho Bernardo facility

Ambient Temperature	22.1 – 23.2°C
Relative Humidity	32.0 – 43.3%
ATM Pressure	98.6 – 99.0kPa

2.2.7 Additional Observations

- EIRP was calculated as per Section 1.3 of KDB412172 D01 (Determining ERP and EIRP v01).
- Calculation formula in logarithmic terms:

$$\mathbf{EIRP = P_T + G_T - L_C}$$

Where:

$\mathbf{P_T}$ = transmitter conducted output power dBm (Section 2.1 of this test report)
$\mathbf{G_T}$ = gain of the transmitting antenna, in dBi (EIRP);
$\mathbf{L_C}$ = signal attenuation in the connecting cable between the transmitter and antenna, in dB.

2.2.8 Sample Computation

EIRP $= P_T + G_T - L_C$
$= 29.87$ (Peak) $+ 0.13$ (max. gain) $- 3.84$ (cable loss)
$= 26.16$ dBm

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2.2.9 Test Results

LTE Band 2 Downlink					
Bandwidth (MHz)	**Frequency (MHz)**	**Max Power Average (dBm)**	**Antenna System Gain (dBi)**	**EIRP (dBm)**	**Limit (dBm)**
20	**1940.0**	**23.74**	**3.8**	**27.54**	**62.1**
	1960.0	23.50	3.8	27.30	62.1
	1980.0	23.42	3.8	27.22	62.1

LTE Band 2 Uplink					
Bandwidth (MHz)	**Frequency (MHz)**	**Max Power Average (dBm)**	**Antenna System Gain (dBi)**	**EIRP (dBm)**	**Limit (dBm)**
20	1860.0	22.15	12.36	34.51	62.1
	1880.0	22.27	12.36	34.63	62.1
	1900.0	**22.30**	**12.36**	**34.66**	**62.1**

LTE Band 4 Downlink (FCC Market only)					
Bandwidth (MHz)	**Frequency (MHz)**	**Max Power Average (dBm)**	**Antenna System Gain (dBi)**	**EIRP (dBm)**	**Limit (dBm)**
20	**2120.0**	**24.28**	**3.8**	**28.08**	**68.2**
	2132.5	23.82	3.8	27.62	68.2
	2145.0	24.03	3.8	27.83	68.2

LTE Band 4 Uplink (FCC Market only)					
Bandwidth (MHz)	**Frequency (MHz)**	**Max Power Average (dBm)**	**Antenna System Gain (dBi)**	**EIRP (dBm)**	**Limit (dBm)**
20	**1720.0**	**24.76**	**12.42**	**37.18**	**68.2**
	1732.5	24.49	12.42	36.91	68.2
	1745.0	24.19	12.42	36.61	68.2

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2.3 EFFECTIVE RADIATED POWER

2.3.1 Specification Reference

FCC 47 CFR Part 27, Clause 27.50(c)(3)
RSS-130 issue 2, Clause 4.6.3

2.3.2 Standard Applicable

FCC 47 CFR Part 27, Clause 27.50 (c):
(3) Fixed and base stations transmitting a signal within an emission bandwidth greater than 1 MHz must not exceed an ERP of 1000 watts/MHz and an antenna height of 305 m HAAT, except that antenna height greater than 305 m HAAT ar permited if power levels are reduced below 1000 watts/MHz ERP in accordance with Table 3 of this section.

TABLE 3 TO § 27.50—PERMISSIBLE POWER AND ANTENNA HEIGHTS FOR BASE AND FIXED STATIONS IN THE 600 MHZ, 698–757 MHZ, 758–763 MHZ, 776–787 MHZ AND 788–793 MHZ BANDS TRANSMITTING A SIGNAL WITH AN EMISSION BANDWIDTH GREATER THAN 1 MHZ

Antenna height (AAT) in meters (feet)	Effective radiated power (ERP) per MHz (watts/MHz)
Above 1372 (4500)	65
Above 1220 (4000) To 1372 (4500)	70
Above 1067 (3500) To 1220 (4000)	75
Above 915 (3000) To 1067 (3500)	100
Above 763 (2500) To 915 (3000)	140
Above 610 (2000) To 763 (2500)	200
Above 458 (1500) To 610 (2000)	350
Above 305 (1000) To 458 (1500)	600
Up to 305 (1000)	1000

RSS-130:
Clause 4.6.3 Frequency bands 698-756 MHz and 777-787 MHz
The e.r.p. shall not exceed 30 watts for mobile equipment and outdoor fixed subscriber equipment. The e.r.p. shall not exceed 3 watts for portable equipment and indoor fixed subscriber equipment.

For base and fixed equipment other than fixed subscriber equipment, refer to SRSP-518 for the e.i.r.p. limits.

2.3.3 Equipment Under Test and Modification State

Serial No: 444002000024 (NU) and 247002000034 (CU) (Calculation only)

2.3.4 Date of Test/Initial of test personnel who performed the test

February 03 to 04, 2020 / XYZ

2.3.5 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.3.6 Environmental Conditions/ Test Location

Test performed at TÜV SÜD America Inc. Rancho Bernardo facility

Ambient Temperature	21.2 – 23.4°C
Relative Humidity	23.2 – 30.9%
ATM Pressure	98.6 – 99.4kPa

2.3.7 Additional Observations

- ERP and EIRP were calculated as per Section 1.2 and 1.3 of KDB412172 D01 (Determining ERP and EIRP v01).
- Calculation formula in logarithmic terms:

$$\textbf{ERP or EIRP} = P_T + G_T - L_C$$

Where:

P_T = transmitter output power, expressed in dBm (Section 2.1 of this test report)
G_T = gain of the transmitting antenna, in dBd (ERP) or dBi (EIRP);
$G_T(dBd) = G_T(dBi) - 2.15$ dB
L_C = signal attenuation in the connecting cable between the transmitter and antenna, in dB.

2.3.8 Sample Computation

ERP = $P_T + G_T - L_C$ - 2.15dB
= 29.87 (Peak) + 0.13 (max. gain) – 3.84 (cable loss) -2.15
= 24.01 dBm

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2.3.9 Test Results

LTE Band 12 Downlink					
Bandwidth (MHz)	**Frequency (MHz)**	**Max Power Average (dBm)**	**Antenna System Gain (dBi)**	**ERP (dBm)**	**Limit (dBm)**
10	734.0	23.90	2.5	24.25	44.77
	737.5	**24.13**	**2.5**	**24.48**	**44.77**
	741.0	23.95	2.5	24.30	44.77

LTE Band 12 Uplink					
Bandwidth (MHz)	**Frequency (MHz)**	**Max Power Average (dBm)**	**Antenna System Gain (dBi)**	**ERP (dBm)**	**Limit (dBm)**
10	704.0	24.08	11.0	32.93	44.77
	707.5	**24.19**	**11.0**	**33.04**	**44.77**
	711.0	24.06	11.0	32.91	44.77

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2.4 OCCUPIED BANDWIDTH

2.4.1 Specification Reference

FCC 47 CFR Part 2. Clause 2.1049
RSS-GEN Issue 5, Clause 6.7

2.4.2 Standard Applicable

The transmitted signal bandwidth shall be reported as the 99% emission bandwidth, that is the frequency bandwidth suuch that, below its lower and above its upper frequency limits, the mean powers radiated are eqch equal to 0.5 percent of the total mean power radiated by a give emission.

26dB Bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated by at least 26 dB below the transmitter power.

Using the occupied bandwidth meansurement function in the spectrum analyzer, the 99% occupied bandwith was measured.

In addition, the 26dB bandwidth was measured in accorance with FCC KDB 971168 D01 V0202 Clause 4.1 using the ndB measurement function in the spectrum analyzer.

- The transmitter shall be operated at its maximum carrier power measured under normal test conditions.
- The span of the analyzer shall be set to capture all products of the modulation process, including the emission skirts.
- The resolution bandwidth (RBW) shall be in the range of 1% to 5% of the occupied bandwidth (OBW) and video bandwidth (VBW) shall be at least 3x RBW.

2.4.3 Equipment Under Test and Modification State

Serial No: 444002000024 (NU) and 247002000034 (CU) / Test Configuration A and B

2.4.4 Date of Test/Initial of test personnel who performed the test

February 03, 04, 10 and 11, 2020 / XYZ

2.4.5 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.4.6 Environmental Conditions/ Test Location

Test performed at TÜV SÜD America Inc. Rancho Bernardo facility

Ambient Temperature	21.2 – 23.4°C
Relative Humidity	23.2 – 43.3%
ATM Pressure	98.6 – 99.4kPa

2.4.7 Additional Observations

- This is a conducted test. Both 26dB bandwidth and 99% bandwidth presented.
- Using the occupied bandwidth meansurement function in the spectrum analyzer, the 99% occupied bandwith was measured.
- The 26dB bandwidth was measured in accorance with ANSI C63.26 clause 5.4.3 using the ndB measurement function in the spectrum analyzer.
- The transmitter shall be operated at its maximum carrier power measured under normal test conditions.
- The span of the analyzer shall be set to capture all products of the modulation process, including the emission skirts.
- The RBW is set to 1% of the OBW while the VBW is ≥3X RBW.
- The detector is peak and the trace mode is max hold.
- All low, middle and high channels were verified. Only test plots for middle channel presented in this test report as the representative configuration.

2.4.8 Test Results and Sample Test Plot

LTE Band 2 Downlink				
Bandwidth (MHz)	**Channel**	**Frequency (MHz)**	**OBW (MHz)**	**-26dB BW (MHz)**
20	8140	1940.0	17.68	19.05
	8365	1962.5	17.76	19.47
	8590	1985.0	17.73	19.11

LTE Band 2 Uplink				
Bandwidth (MHz)	**Channel**	**Frequency (MHz)**	**OBW (MHz)**	**-26dB BW (MHz)**
20	18700	1860.0	17.77	18.96
	18900	1880.0	17.78	19.02
	19100	1900.0	17.75	19.23

LTE Band 4 Downlink (FCC Market only)				
Bandwidth (MHz)	**Channel**	**Frequency (MHz)**	**OBW (MHz)**	**-26dB BW (MHz)**
20	2050	2120.0	17.88	19.26
	2175	2132.5	17.71	19.05
	2300	2145.0	17.88	19.20

LTE Band 4 Uplink (FCC Market only)				
Bandwidth (MHz)	**Channel**	**Frequency (MHz)**	**OBW (MHz)**	**-26dB BW (MHz)**
20	20050	1720.0	17.72	19.02
	20175	1732.5	17.76	19.02
	20300	1745.0	17.79	19.05

LTE Band 12 Downlink				
Bandwidth (MHz)	**Channel**	**Frequency (MHz)**	**OBW (MHz)**	**-26dB BW (MHz)**
10	5060	734.0	8.94	9.64
	5095	737.5	8.93	9.66
	5130	741.0	8.88	9.51

LTE Band 12 Uplink				
Bandwidth (MHz)	**Channel**	**Frequency (MHz)**	**OBW (MHz)**	**-26dB BW (MHz)**
10	23060	704.0	8.87	9.46
	23095	707.5	8.88	9.46
	23130	711.0	8.87	9.53

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LTE Band 2 Downlink (20 MHz BW) / Middle Channel 1960.0 MHz / 99%OBW
 13:15:33 11.02.2020
LTE Band 2 Downlink (20 MHz BW) / Middle Channel 1960.0 MHz / 26dB BW
 13:16:51 11.02.2020

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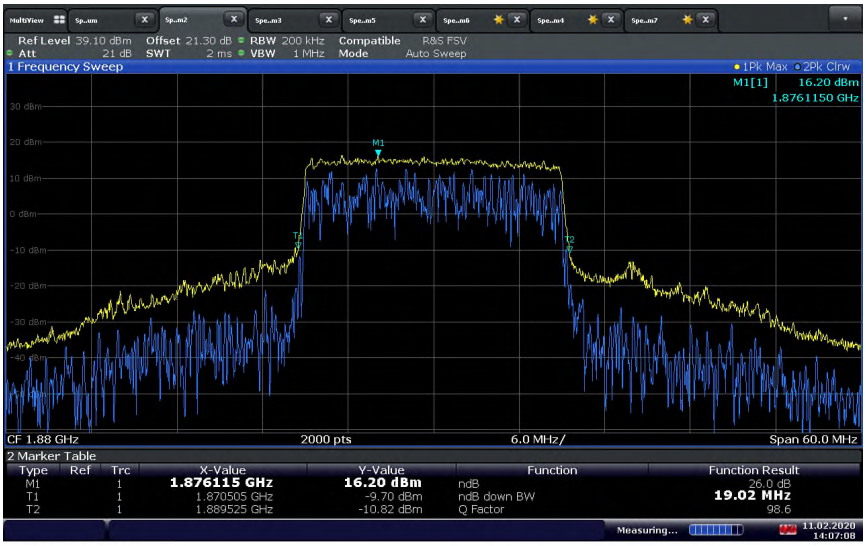
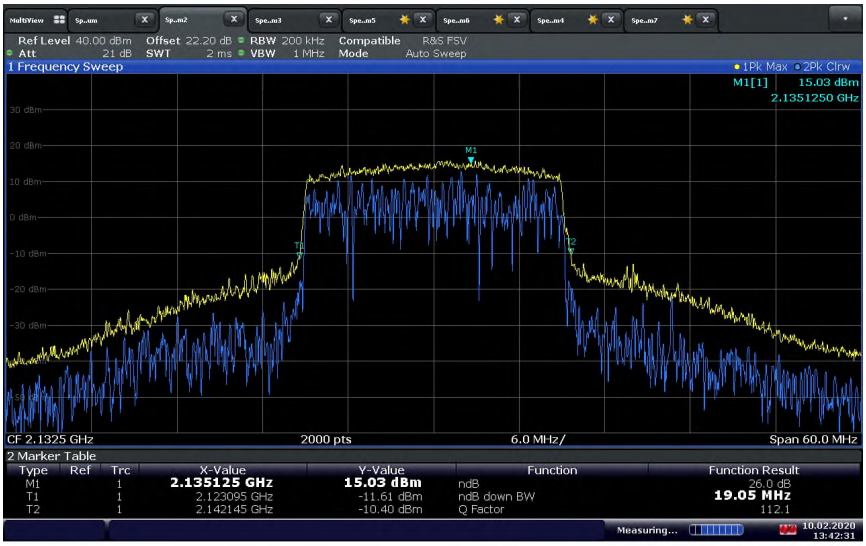
LTE Band 2 Uplink (20 MHz BW) / Middle Channel 1880.0 MHz / 99%OBW
 14:06:16 11.02.2020
LTE Band 2 Uplink (20 MHz BW) / Middle Channel 1880.0 MHz / 26dB BW
 14:07:08 11.02.2020

LTE Band 4 Downlink (20 MHz BW) / Middle Channel 2132.5 MHz / 99%OBW
 13:41:52 10.02.2020
LTE Band 4 Downlink (20 MHz BW) / Middle Channel 2132.5 MHz / 26dB BW
 13:42:32 10.02.2020

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LTE Band 4 Uplink (20 MHz BW) / Middle Channel 1732.5 MHz / 99%OBW

11:48:52 10.02.2020

LTE Band 4 Uplink (20 MHz BW) / Middle Channel 1732.5 MHz / 26dB BW

11:50:18 10.02.2020

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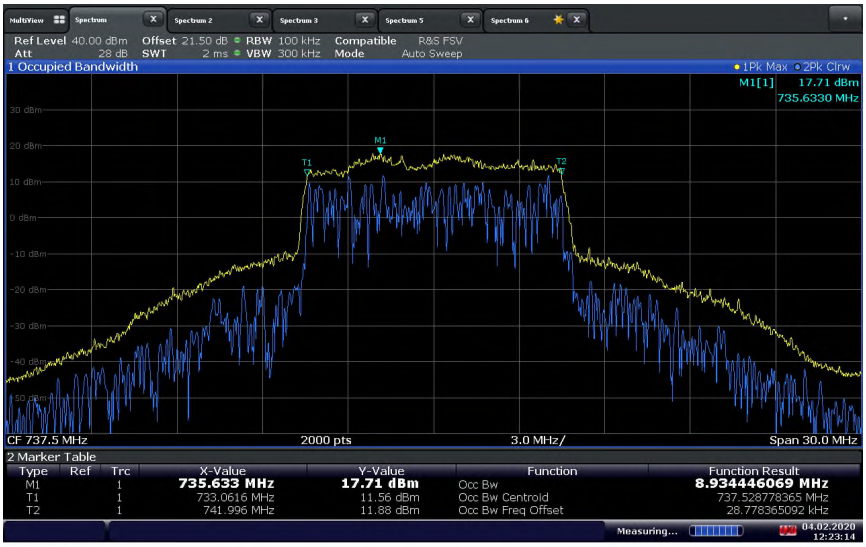
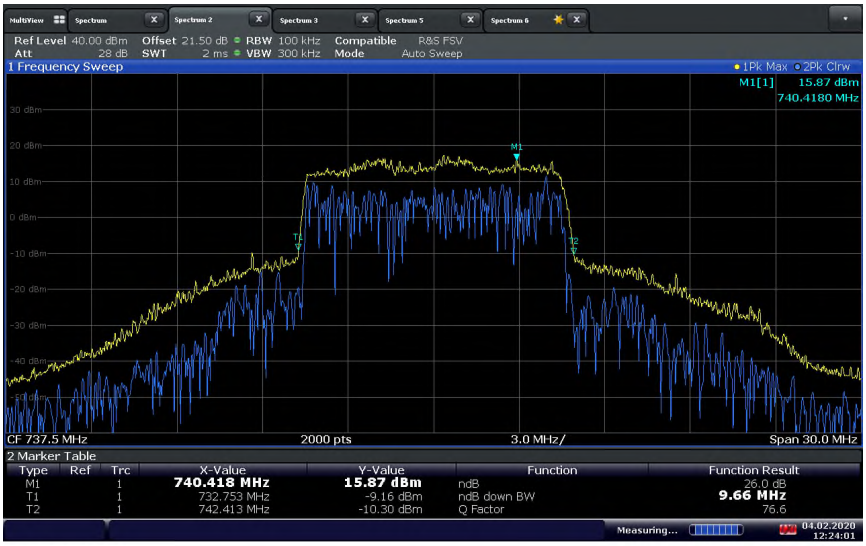
LTE Band 12 Downlink (10 MHz BW) / Middle Channel 737.5 MHz / 99%OBW


12:23:15 04.02.2020

LTE Band 12 Downlink (10 MHz BW) / Middle Channel 737.5 MHz / 26dB BW


12:24:02 04.02.2020

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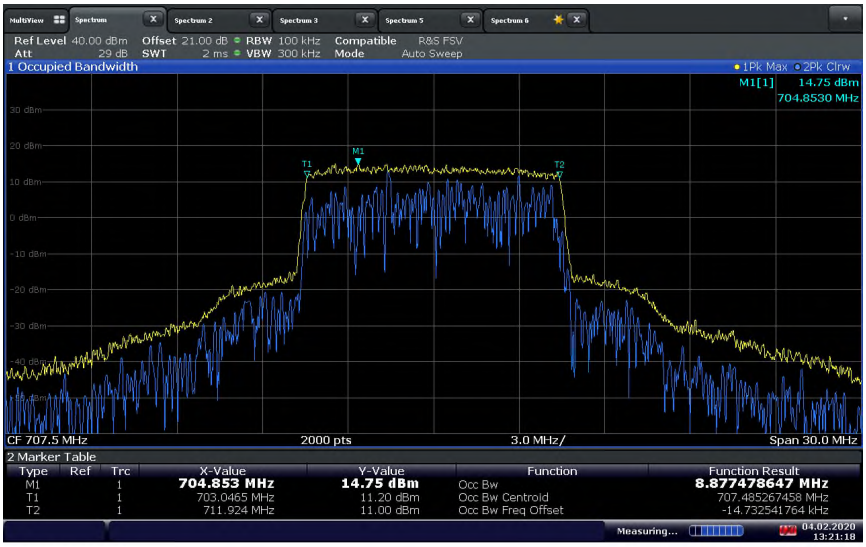
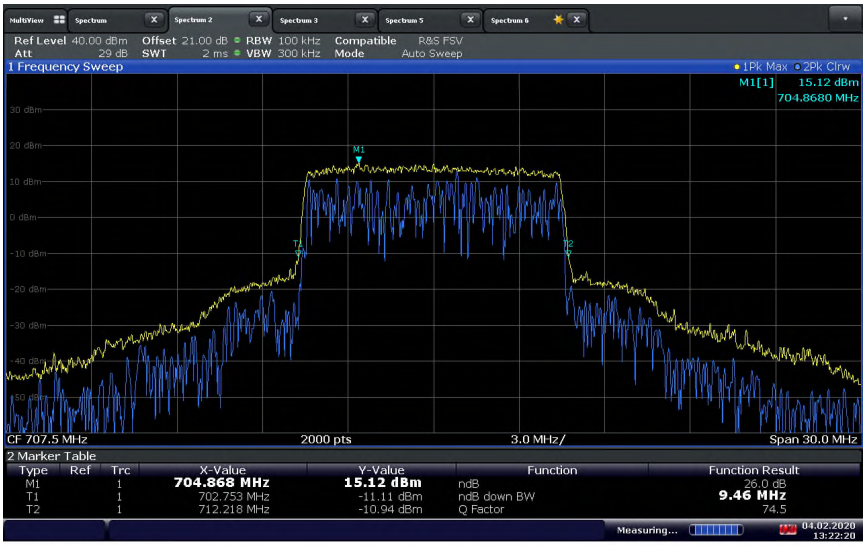
LTE Band 12 Uplink (10 MHz BW) / Middle Channel 707.5 MHz / 99%OBW



13:21:19 04.02.2020

LTE Band 12 Uplink (10 MHz BW) / Middle Channel 707.5 MHz / 26dB BW



13:22:20 04.02.2020

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2.5 PEAK-AVERAGE RATIO

2.5.1 Specification Reference

FCC 47 CFR Part 24, Clause 24.232(d)
FCC 47 CFR Part 27, Clause 27.50(d)(5)
RSS-133 issue 6, Clause 6.4
RSS-130 issue 2, Clause 4.6.1

2.5.2 Standard Applicable

The peak-to-average power ratio (PAPR) of the transmitter shall not exceed 13 dB for more than 0.1% of the time and shall use a signal corresponding to the highest PAPR during periods of continuous transmission.

2.5.3 Equipment Under Test and Modification State

Serial No: 444002000024 (NU) and 247002000034 (CU) / Test Configuration A and B

2.5.4 Date of Test/Initial of test personnel who performed the test

February 03, 04, 10 and 11, 2020 / XYZ

2.5.5 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.5.6 Environmental Conditions/ Test Location

Test performed at TÜV SÜD America Inc. Rancho Bernardo facility

Ambient Temperature	21.2 – 23.4°C
Relative Humidity	23.2 – 43.3%
ATM Pressure	98.6 – 99.4kPa

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2.5.7 Additional Observations

- This is a conducted test.
- Test procedure is per FCC KDB 971168 D01 v03r01 clause 5.7, the PAPR was measured in accorance with ANSI C63.26 clause 5.2.3.4.
- Measurement was done using the Spectrum Analyzer's Complementary Cumulative Distribution Function (CCDF) measurement profile. The built-in function is used to determine the largest deviation between the average and the peak power of the EUT in a given bandwidth (crest factor or peak-to-average ratio) A CCDF curve depicts the probability of the peak signal amplitude exceeding the average power level. Most contemporary measurement instrumentation include the capability to produce CCDF curves for an input signal provided that the instrument's resolution bandwidth can be set wide enough to accommodate the entire input signal bandwidth.
- RBW was set to maximum the SA can support.
- There are no measured PAR levels greater than 13dB.
- Low, Middle and High channels for all supporting bandwidths were verified.
- Only test plots for middle channel were presented as the representative configuration.

2.5.8 Test Results

LTE Band 2 Downlink			
Bandwidth (MHz)	**Channels**	**Frequency (MHz)**	**PAR (dB)**
20 MHz	700	1940.0	7.26
	900	1960.0	7.62
	1100	1980.0	8.04

LTE Band 2 Uplink			
Bandwidth (MHz)	**Channels**	**Frequency (MHz)**	**PAR (dB)**
20 MHz	18700	1860.0	10.33
	18900	1880.0	8.66
	19100	1900.0	7.92

LTE Band 4 Downlink (FCC Market only)			
Bandwidth (MHz)	**Channels**	**Frequency (MHz)**	**PAR (dB)**
20 MHz	2050	2120.0	7.14
	2175	2132.5	7.93
	2300	2145.0	8.10

LTE Band 4 Uplink (FCC Market only)			
Bandwidth (MHz)	**Channels**	**Frequency (MHz)**	**PAR (dB)**
20 MHz	20050	1720.0	8.16
	20175	1732.5	8.49
	20300	1745.0	8.32

LTE Band 12 Downlink			
Bandwidth (MHz)	**Channels**	**Frequency (MHz)**	**PAR (dB)**
10 MHz	5060	734.0	7.65
	5095	737.5	8.69
	5130	741.0	8.51

LTE Band 12 Uplink			
Bandwidth (MHz)	**Channels**	**Frequency (MHz)**	**PAR (dB)**
10 MHz	23060	704.0	10.38
	23095	707.5	10.67
	23130	711.0	10.57

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2.5.9 Sample Test Plot

LTE Band 2 Downlink (20 MHz BW) / Middle Channel 1960.0 MHz

13:19:04 11.02.2020

LTE Band 2 Uplink (20 MHz BW) / Middle Channel 1880.0 MHz

14:08:21 11.02.2020

LTE Band 4 Downlink (20 MHz BW) / Middle Channel 2132.5 MHz
 13:42:59 10.02.2020
LTE Band 4 Uplink (20 MHz BW) / Middle Channel 1732.5 MHz
 11:51:10 10.02.2020

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LTE Band 12 Downlink (10 MHz BW) / Middle Channel 737.5 MHz
 12:24:40 04.02.2020
LTE Band 12 Uplink (10 MHz BW) / Middle Channel 707.5 MHz
 13:20:19 04.02.2020

2.6 BAND EDGE

2.6.1 Specification Reference

FCC 47 CFR Part 2, Clause 2.1051
FCC 47 CFR Part 24, Clause 24.238(a)(b)
FCC 47 CFR Part 27, Clause 27.53(h)(1)(3)
FCC 47 CFR Part 27, Clause 27.53(g)
RSS-133, Clause 6.5
RSS-130, Clause 4.7

2.6.2 Standard Applicable

FCC 47 CFR Part 27, Clause 24.238:
(a) Out of band emissions. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10log(P) dB.

FCC 47 CFR Part 27, Clause 27.53:
(h) AWS emission limits – (1) General protection levels. Except as otherwise specified below, for operatios in the 1695-1710 MHz, 1710-1755 MHz, 1755-1780 MHz, 1915-1920 MHz, 1995-2000 MHz, 2000-2020 MHz, 2110-2155 MHz, 2155-2180 MHz, and 2180-2200 MHz bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least 43 + 10 log10 (P) dB.
(g) For operations in the 600 MHz band and the 698–746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least 43 + 10 log (P) dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kilohertz or greater. However, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.

RSS-133, Clause 6.5:
Equipment shall comply with the limits in (i) and (ii) below.
i. In the 1.0 MHz bands immediately outside and adjacent to the equipment's operating frequency block, the emission power per any 1% of the emission bandwidth shall be attenuated (in dB) below the transmitter output power P (dBW) by at least 43 + 10 log10p(watts).
ii. After the first 1.0 MHz, the emission power in any 1 MHz bandwidth shall be attenuated (in dB) below the transmitter output power P (dBW) by at least 43 + 10 log10p(watts). If the measurement is performed using 1% of the emission bandwidth, power integration over 1.0 MHz is required.

RSS-130:
4.7.1 General unwanted emissions limits
The unwanted emissions in any 100 kHz bandwidth on any frequency outside the low frequency edge and the high frequency edge of each frequency block range(s), shall be attenuated below the transmitter power, P (dBW), by at least 43 + 10 log10 p (watts), dB. However, in the 100 kHz band immediately outside of the equipment's frequency block range, a resolution bandwidth of 30 kHz may be employed.

2.6.3 Equipment Under Test and Modification State

Serial No: 444002000024 (NU) and 247002000034 (CU) / Test Configuration A and B

2.6.4 Date of Test/Initial of test personnel who performed the test

Febraury 03, 04, 10 and 11, 2020 / XYZ

2.6.5 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.6.6 Environmental Conditions/ Test Location

Test performed at TÜV SÜD America Inc. Rancho Bernardo facility

Ambient Temperature	21.2 – 23.4°C
Relative Humidity	23.2 – 43.3%
ATM Pressure	98.6 – 99.4kPa

2.6.7 Additional Observations

- This is a conducted test. Test guidance is per Section 6.1 of KDB971168 (D01 Power Meas License Digital Systems v03r01).
- The path loss was measured and entered as a level offset.
- For LTE Band 12, RBW was set to 30 kHz and the limit for emissions 100 kHz outside of the low frequency edge and the high frequency edge of each frequency block range(s), was set to:

  Limit = -13dBm + 10lg(30/100) = -18.23 dBm

- For LTE Band 2 and 4, RBW was set to 50 kHz,
  limit for emissions 1MHz adjacent to the low frequency edge and the high frequency edge of each frequency block range(s), was set to:

  Limit = -13dBm + 10(RBW_{used} /1% OBW)

  limit for emissions 1MHz outside of the low frequency edge and the high frequency edge of each frequency block range(s), was set to:

  Limit = -13dBm + 10(RBW_{used}/1MHz)

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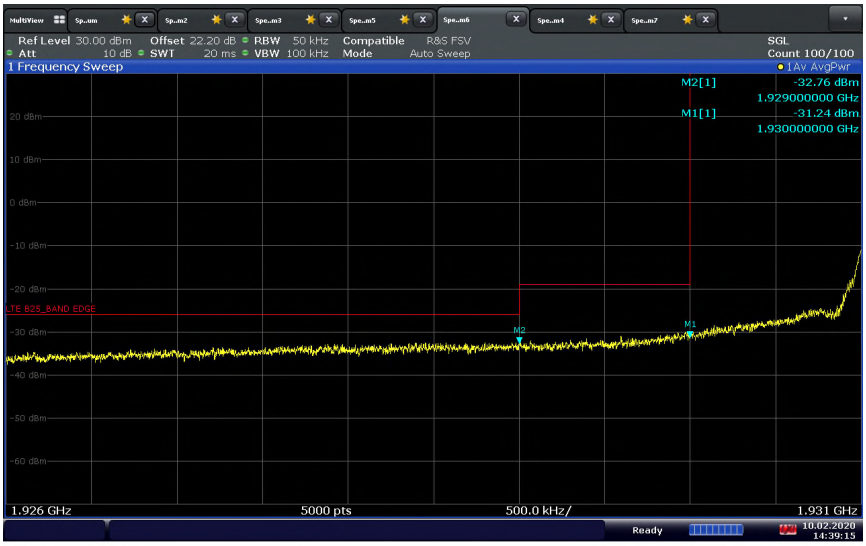
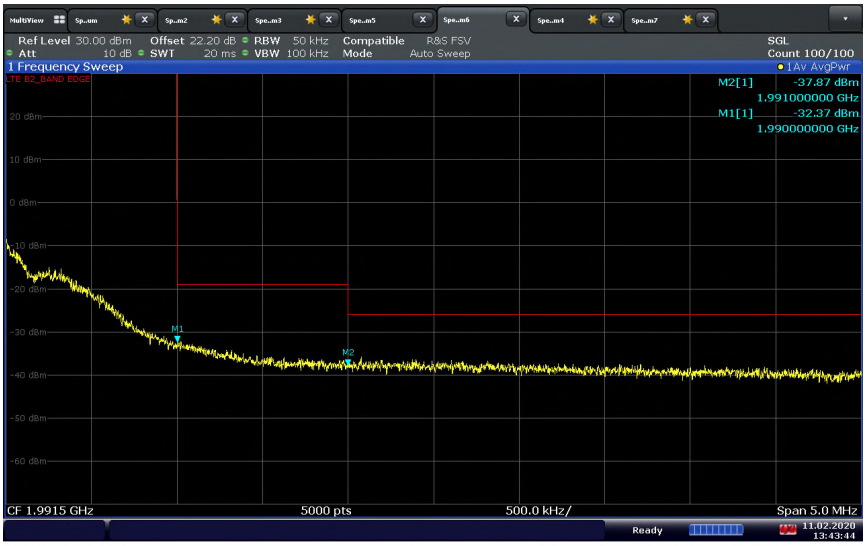
2.6.8 Test Results

LTE Band 2 Downlink 20MHz Bandwidth Low Channel Band Edge



14:39:16 10.02.2020

LTE Band 2 Downlink 20MHz Bandwidth High Channel Band Edge



13:43:45 11.02.2020

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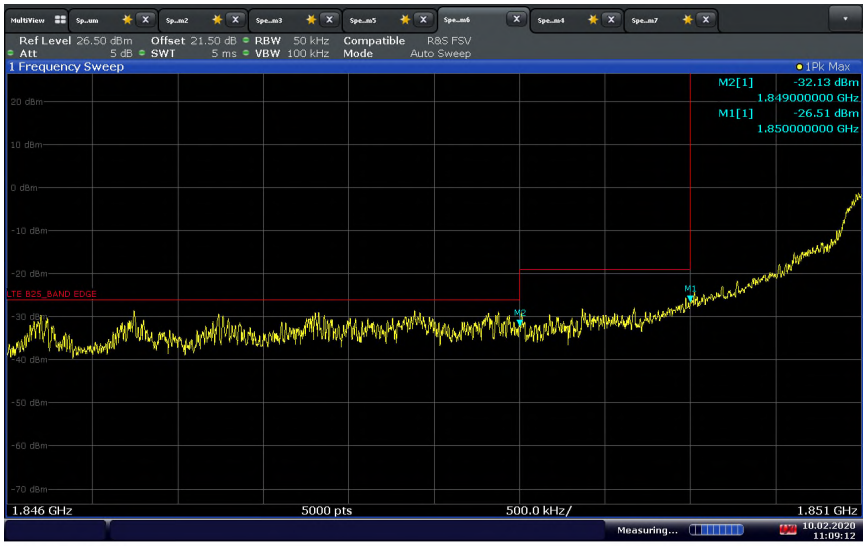
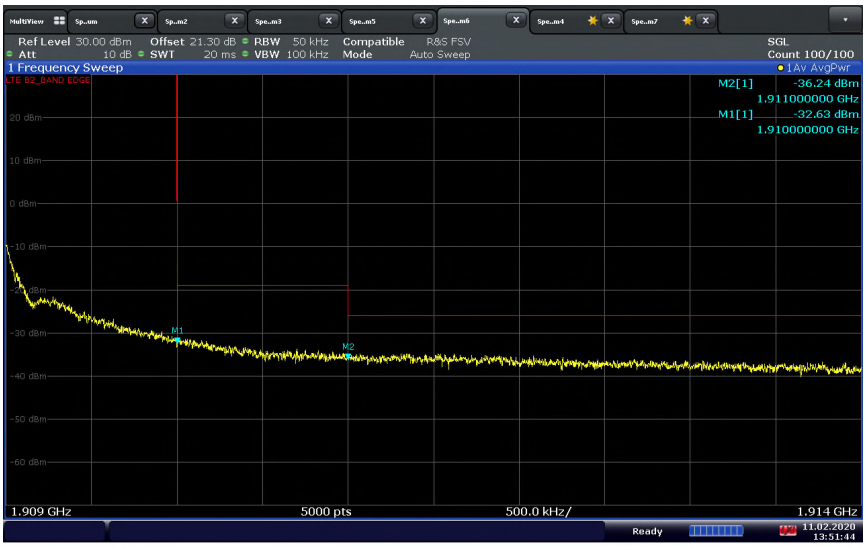
LTE Band 2 Uplink 20MHz Bandwidth Low Channel Band Edge
 11:09:13 10.02.2020
LTE Band 2 Uplink 20MHz Bandwidth High Channel Band Edge
 13:51:45 11.02.2020

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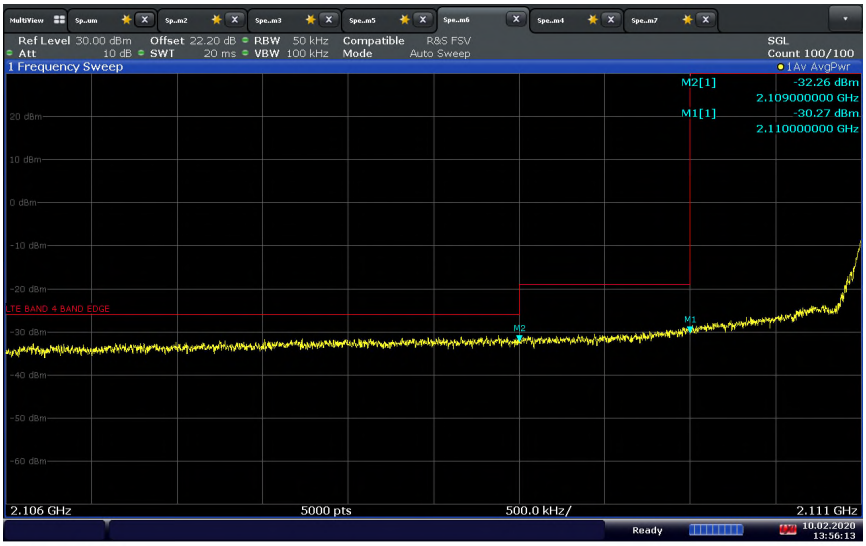
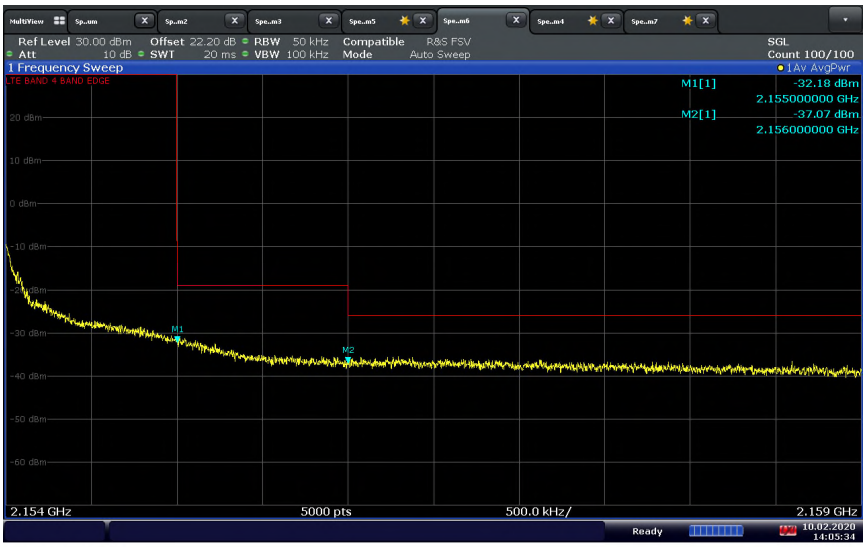
LTE Band 4 Downlink 20MHz Bandwidth Low Channel Band Edge



13:56:13 10.02.2020

LTE Band 4 Downlink 20MHz Bandwidth High Channel Band Edge



14:05:35 10.02.2020

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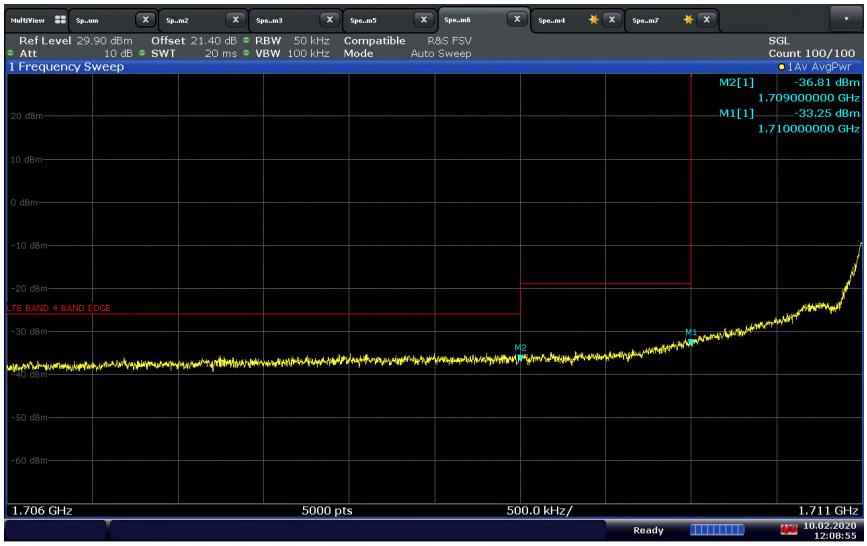
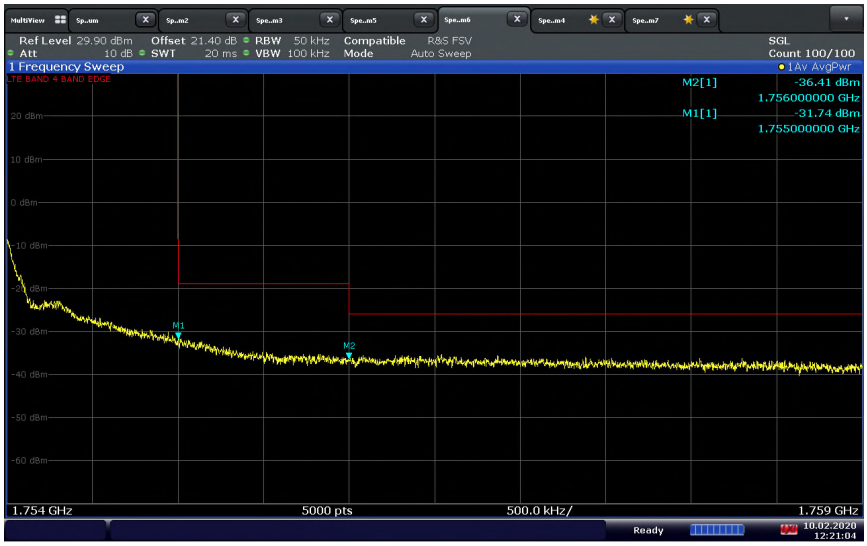


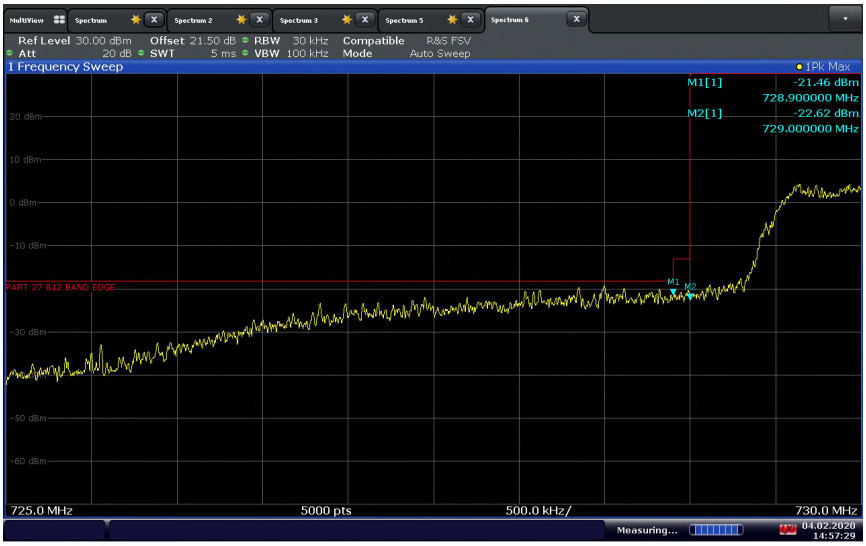
12:08:56 10.02.2020

LTE Band 4 Uplink 20MHz Bandwidth High Channel Band Edge



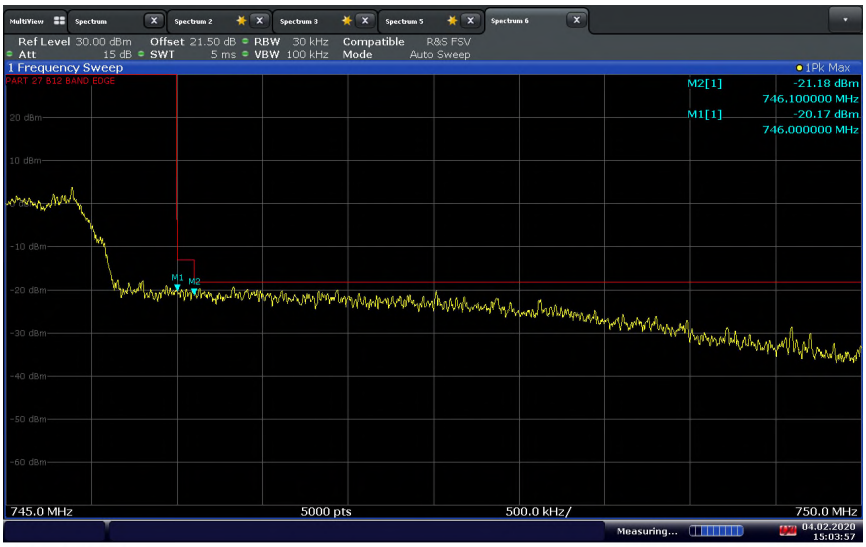
12:21:05 10.02.2020

LTE Band 12 Downlink 10MHz Bandwidth Low Channel Band Edge



14:57:29 04.02.2020

LTE Band 12 Downlink 10MHz Bandwidth High Channel Band Edge



15:03:57 04.02.2020

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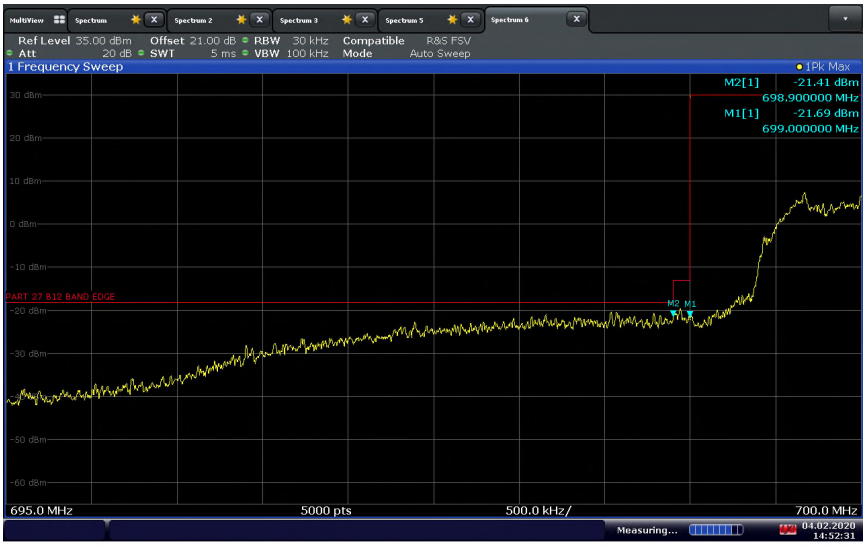
LTE Band 12 Uplink 10MHz Bandwidth Low Channel Band Edge
 14:52:32 04.02.2020
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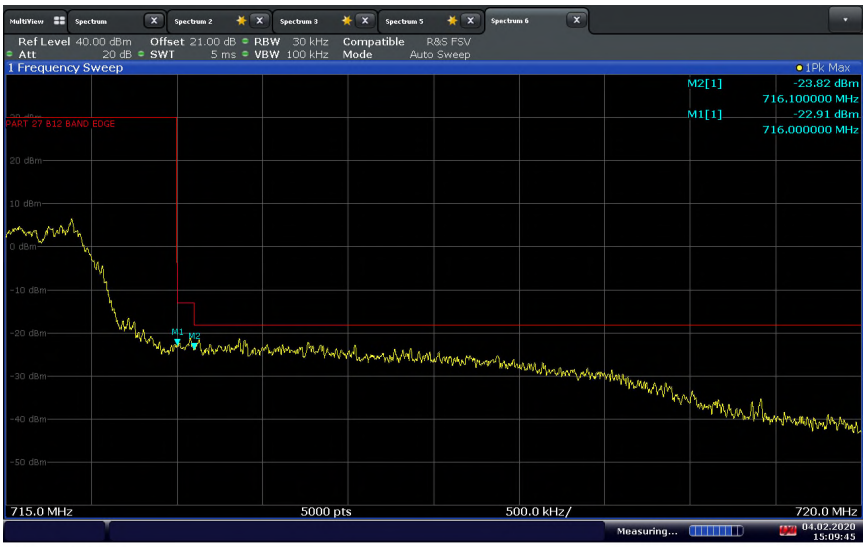 15:09:46 04.02.2020

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2.7 CONDUCTED SPURIOUS EMISSIONS

2.7.1 Specification Reference

FCC 47 CFR Part 2, Clause 2.1051
FCC 47 CFR Part 24, Clause 24.238(a)(b)
FCC 47 CFR Part 27, Clause 27.53(h)(1)(3)
FCC 47 CFR Part 27, Clause 27.53(g)
RSS-133, Clause 6.5
RSS-130, Clause 4.7

2.7.2 Standard Applicable

FCC 47 CFR Part 27, Clause 24.238:
(a) Out of band emissions. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10log(P) dB.

FCC 47 CFR Part 27, Clause 27.53:
(h) AWS emission limits – (1) General protection levels. Except as otherwise specified below, for operatios in the 1695-1710 MHz, 1710-1755 MHz, 1755-1780 MHz, 1915-1920 MHz, 1995-2000 MHz, 2000-2020 MHz, 2110-2155 MHz, 2155-2180 MHz, and 2180-2200 MHz bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least 43 + 10 log10 (P) dB.
(g) For operations in the 600 MHz band and the 698–746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least 43 + 10 log (P) dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kilohertz or greater. However, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.

RSS-133, Clause 6.5:
Equipment shall comply with the limits in (i) and (ii) below.
i. In the 1.0 MHz bands immediately outside and adjacent to the equipment's operating frequency block, the emission power per any 1% of the emission bandwidth shall be attenuated (in dB) below the transmitter output power P (dBW) by at least 43 + 10 log10p(watts).
ii. After the first 1.0 MHz, the emission power in any 1 MHz bandwidth shall be attenuated (in dB) below the transmitter output power P (dBW) by at least 43 + 10 log10p(watts). If the measurement is performed using 1% of the emission bandwidth, power integration over 1.0 MHz is required.

RSS-130:
4.7.1 General unwanted emissions limits
The unwanted emissions in any 100 kHz bandwidth on any frequency outside the low frequency edge and the high frequency edge of each frequency block range(s), shall be attenuated below the transmitter power, P (dBW), by at least 43 + 10 log10 p (watts), dB. However, in the 100 kHz band immediately outside of the equipment's frequency block range, a resolution bandwidth of 30 kHz may be employed.

2.7.3 Equipment Under Test and Modification State

Serial No: 444002000024 (NU) and 247002000034 (CU) / Test Configuration A and B

2.7.4 Date of Test/Initial of test personnel who performed the test

Febraury 03. 04, 05, 10, and 11, 2020 / XYZ

2.7.5 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.7.6 Environmental Conditions/ Test Location

Test performed at TÜV SÜD America Inc. Rancho Bernardo facility

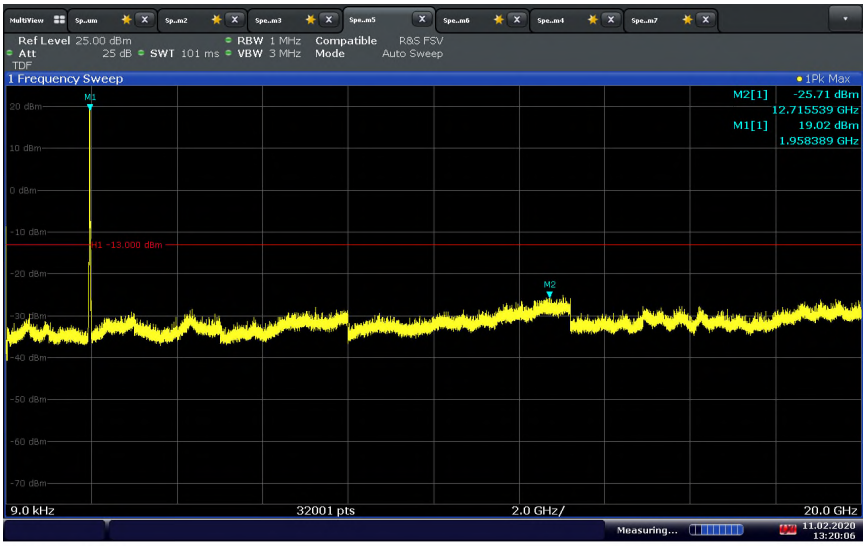
Ambient Temperature	21.2 – 23.4°C
Relative Humidity	23.2 – 43.3%
ATM Pressure	98.6 – 99.4kPa

2.7.7 Additional Observations

- This is a conducted test. Test guidance is per Section 6.1 of KDB971168 (D01 Power Meas License Digital Systems v03r01).
- The transducer factor (TDF) used is from the external attenuators and cables used.
- Detector is peak and trace is set to max hold as the worst case setting.
- The spectrum was searched from 9 kHz to up to the 10th harmonic
- All low, middle and high channels for all supporting bandwidths were verified and only middle channel presented in this test report as representative configuration.

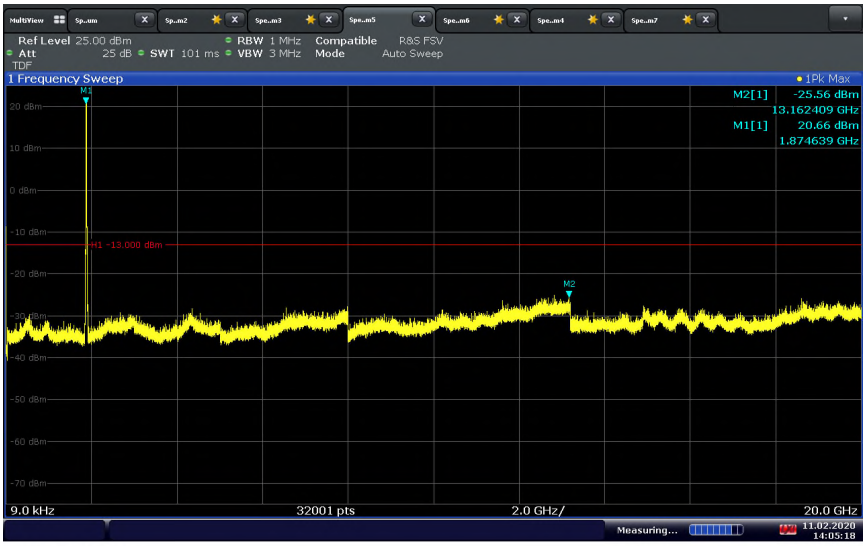
2.7.8 Test Results

LTE Band 2 Downlink 20MHz Bandwidth Middle Channel Conducted Spurious Emissions

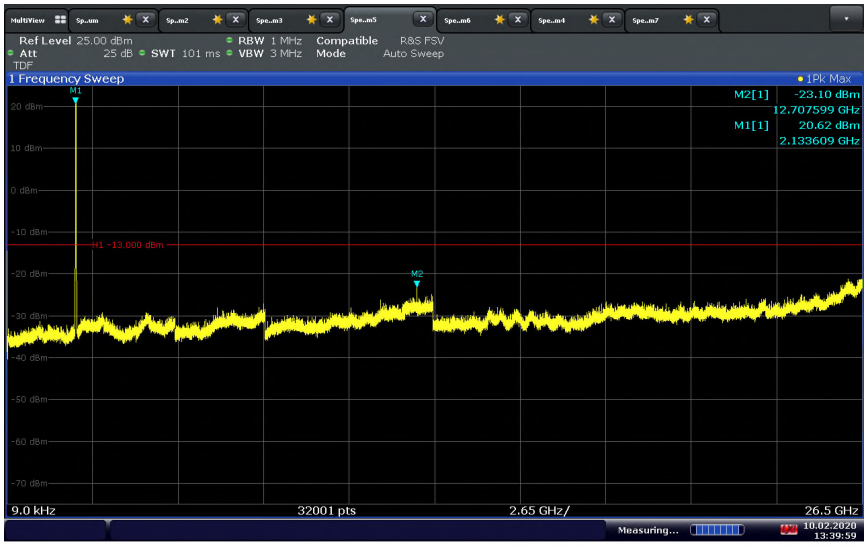


13:20:06 11.02.2020

LTE Band 2 Uplink 20MHz Bandwidth Middle Channel Conducted Spurious Emissions



14:05:19 11.02.2020

LTE Band 4 Downlink 20MHz Bandwidth Middle Channel Conducted Spurious Emissions
 13:40:00 10.02.2020
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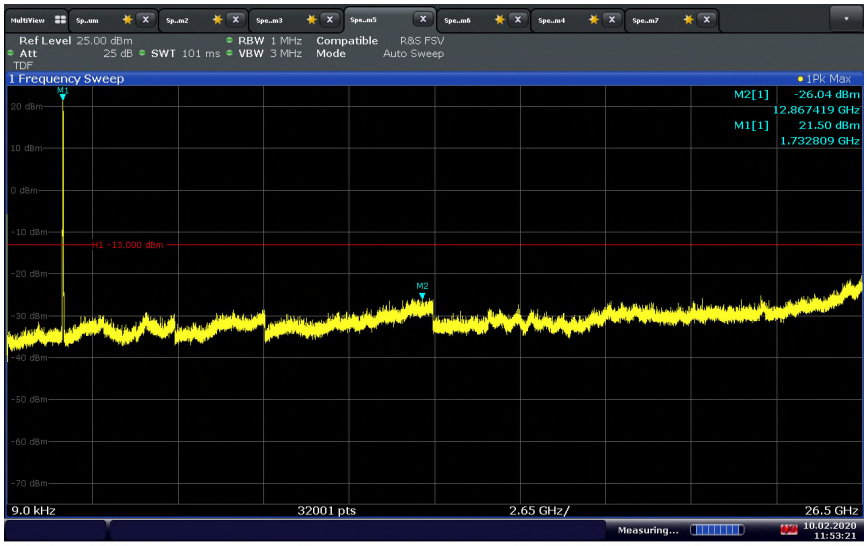
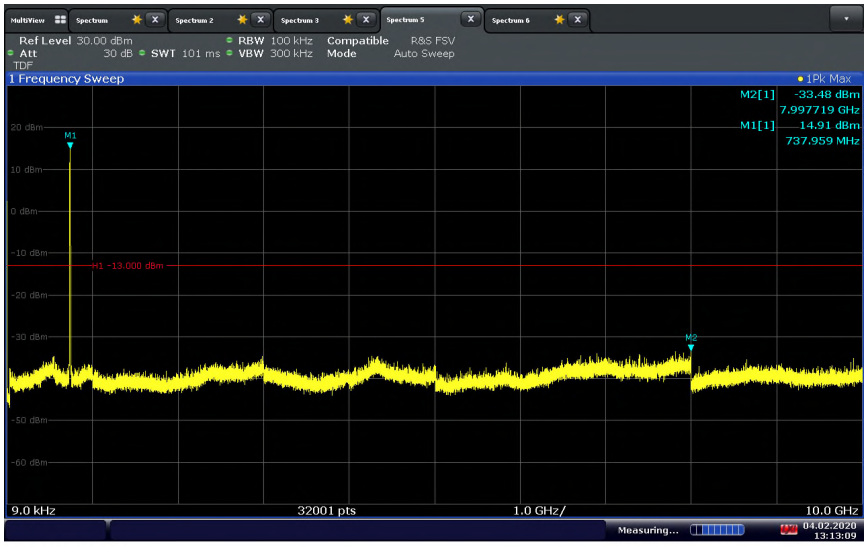
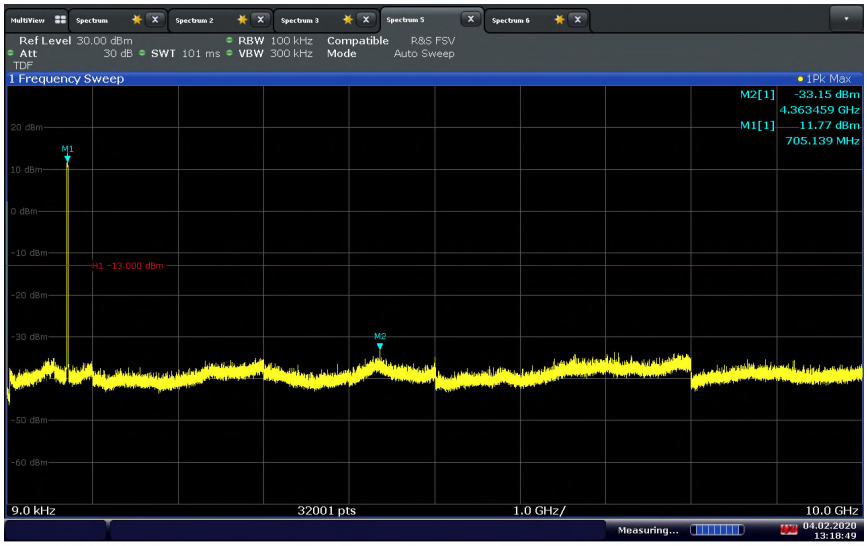
 11:53:21 10.02.2020

LTE Band 12 Downlink 10MHz Bandwidth Middle Channel Conducted Spurious Emissions
 13:13:09 04.02.2020
LTE Band 12 Uplink 10MHz Bandwidth Middle Channel Conducted Spurious Emissions
 13:18:49 04.02.2020

2.8 FIELD STRENGTH OF SPURIOUS RADIATION

2.8.1 Specification Reference

FCC 47 CFR Part 2, Clause 2.1053
FCC 47 CFR Part 24, Clause 238(a)
FCC 47 CFR Part 27, Clause 27.53 (h)(1)(3)
FCC 47 CFR Part 27, Clause 27.53 (g)
RSS-133, Clause 6.5
RSS-130, Clause 4.7

2.8.2 Standard Applicable

FCC 47 CFR Part 27, Clause 24.238:
(a) Out of band emissions. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10log(P) dB.

FCC 47 CFR Part 27, Clause 27.53:
(h) AWS emission limits – (1) General protection levels. Except as otherwise specified below, for operatios in the 1695-1710 MHz, 1710-1755 MHz, 1755-1780 MHz, 1915-1920 MHz, 1995-2000 MHz, 2000-2020 MHz, 2110-2155 MHz, 2155-2180 MHz, and 2180-2200 MHz bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least 43 + 10 log10 (P) dB.
(g) For operations in the 600 MHz band and the 698–746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least 43 + 10 log (P) dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kilohertz or greater. However, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.

RSS-133, Clause 6.5:
Equipment shall comply with the limits in (i) and (ii) below.
i. In the 1.0 MHz bands immediately outside and adjacent to the equipment's operating frequency block, the emission power per any 1% of the emission bandwidth shall be attenuated (in dB) below the transmitter output power P (dBW) by at least 43 + 10 log10p(watts).
ii. After the first 1.0 MHz, the emission power in any 1 MHz bandwidth shall be attenuated (in dB) below the transmitter output power P (dBW) by at least 43 + 10 log10p(watts). If the measurement is performed using 1% of the emission bandwidth, power integration over 1.0 MHz is required.

RSS-130:
4.7.1 General unwanted emissions limits
The unwanted emissions in any 100 kHz bandwidth on any frequency outside the low frequency edge and the high frequency edge of each frequency block range(s), shall be attenuated below the transmitter power, P (dBW), by at least 43 + 10 log10 p (watts), dB. However, in the 100 kHz band immediately outside of the equipment's frequency block range, a resolution bandwidth of 30 kHz may be employed.

2.8.3 Equipment Under Test and Modification State

Serial No: 444002000024 (NU) and 247002000034 (CU) / Test Configuration A and B

2.8.4 Date of Test/Initial of test personnel who performed the test

February 13 and 14, 2020 / XYZ

2.8.5 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.8.6 Environmental Conditions/ Test Location

Test performed at TÜV SÜD America Inc. Rancho Bernardo facility

Ambient Temperature	23.4 - 26.0°C
Relative Humidity	30.9 - 52.3%
ATM Pressure	98.6 - 98.9kPa

2.8.7 Additional Observations

- This is a radiated test using the Direct Radiated Field Strength method of C63.26 2015.
- This is cabinet spurious emissions testing. Main antenna port was terminated during the test. Fundamental frequency measurement will be ignored for this test.
- Only the worst case configuration presented in this test report.
- Measurement was done using EMC32 automated software. Reported level is the actual level with all the correction factors factored in. Correction Factor column is for informational purposes only.

2.8.8 Test Results

Compliant. See attached plots.

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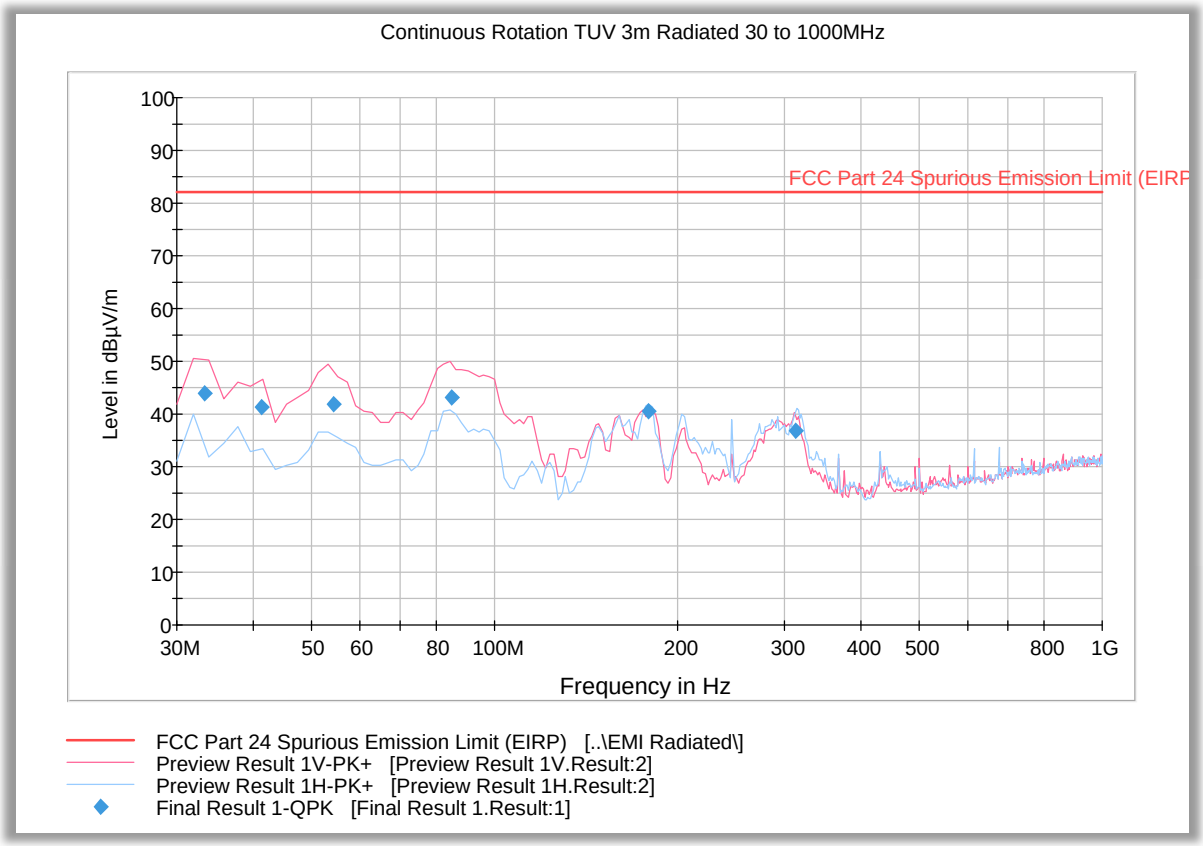
2.8.9 Test Results Below 1GHz (LTE Band 2 Downlink Worst Case Configuration) - 20MHz Bandwidth Low Channel



Quasi Peak Data

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
33.280000	43.8	1000.0	120.000	100.0	V	18.0	-8.8	38.4	82.2
41.343327	41.3	1000.0	120.000	100.0	V	235.0	-11.9	40.9	82.2
54.446653	41.9	1000.0	120.000	133.0	V	89.0	-15.3	40.4	82.2
85.028858	43.1	1000.0	120.000	115.0	V	221.0	-15.5	39.2	82.2
179.679359	40.5	1000.0	120.000	184.0	H	62.0	-11.3	41.8	82.2
313.447615	36.9	1000.0	120.000	200.0	H	350.0	-6.6	45.3	82.2

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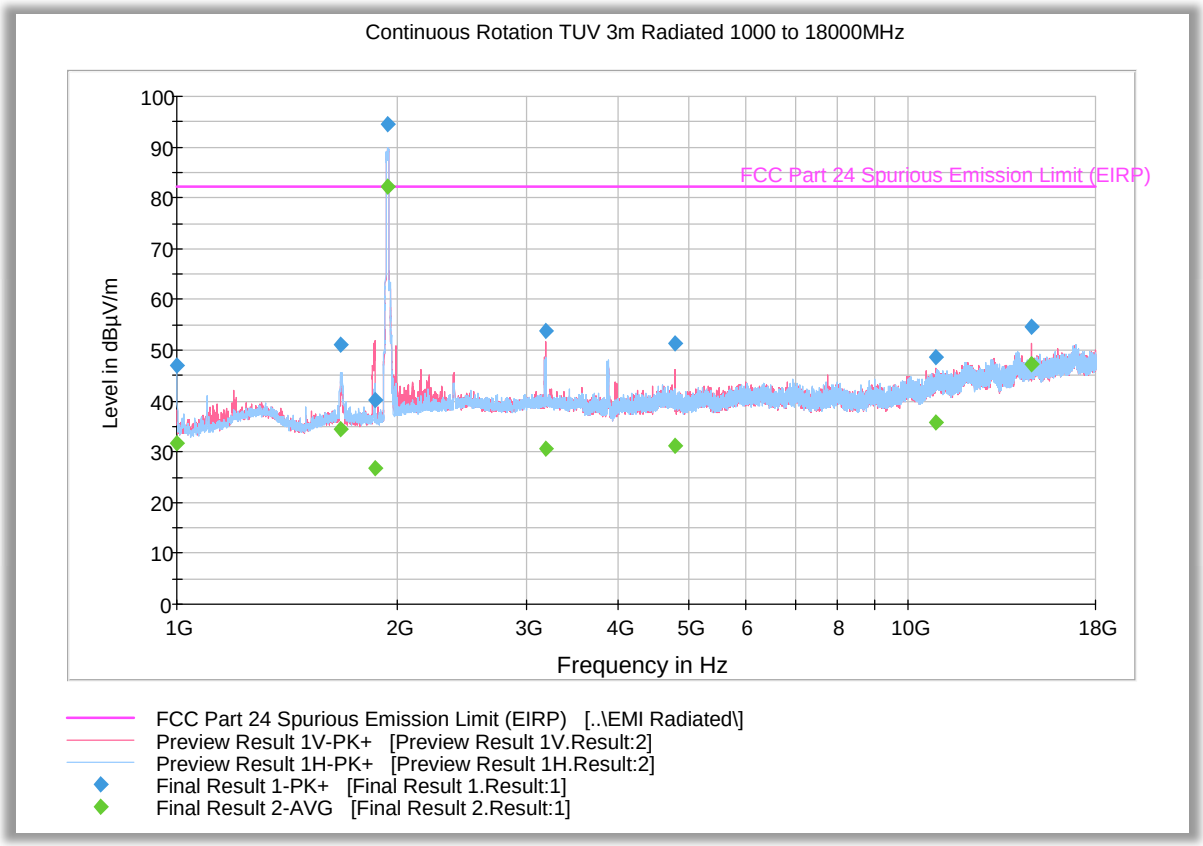
2.8.10 Test Results Above 1GHz (LTE Band 2 Downlink Worst Case Configuration) - 20MHz Bandwidth Low Channel



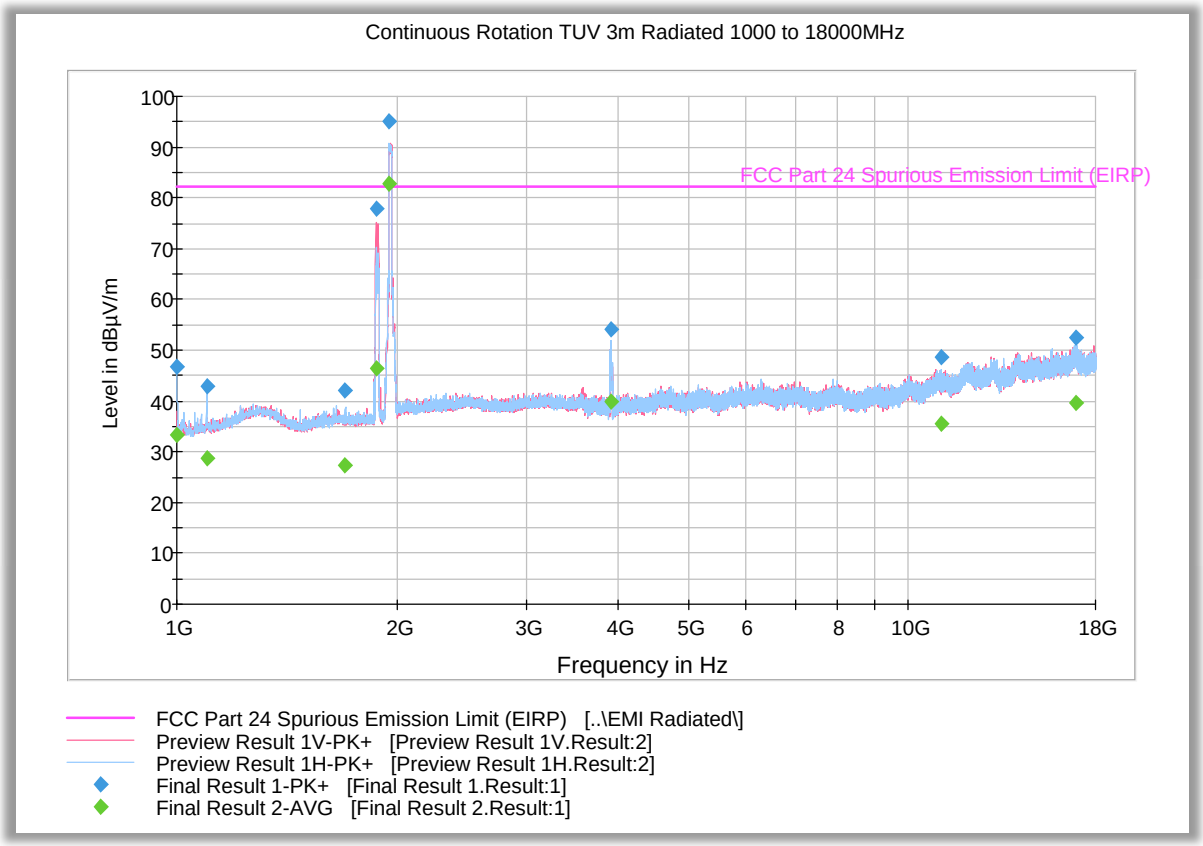
Peak Data

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1000.400000	47.1	1000.0	1000.000	131.7	H	189.0	-6.9	35.1	82.2
1674.700000	51.0	1000.0	1000.000	194.5	H	49.0	-5.1	31.3	82.2
1863.833333	40.1	1000.0	1000.000	203.5	V	352.0	-2.8	42.2	82.2
1944.266667	94.4	1000.0	1000.000	139.7	H	228.0	-2.4	Fundamental Carrier	
3199.233333	53.9	1000.0	1000.000	198.5	V	183.0	1.1	28.3	82.2
4784.733333	51.4	1000.0	1000.000	217.4	V	182.0	3.7	30.8	82.2
10897.23333	48.6	1000.0	1000.000	103.7	V	300.0	11.9	33.6	82.2
14745.43333	54.7	1000.0	1000.000	230.4	V	97.0	15.5	27.6	82.2

Average Data

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1000.400000	31.8	1000.0	1000.000	131.7	H	189.0	-6.9	50.5	82.2
1674.700000	34.3	1000.0	1000.000	194.5	H	49.0	-5.1	47.9	82.2
1863.833333	26.7	1000.0	1000.000	203.5	V	352.0	-2.8	55.5	82.2
1944.266667	82.3	1000.0	1000.000	139.7	H	228.0	-2.4	Fundamental Carrier	
3199.233333	30.7	1000.0	1000.000	198.5	V	183.0	1.1	51.5	82.2
4784.733333	31.2	1000.0	1000.000	217.4	V	182.0	3.7	51.0	82.2
10897.23333	35.8	1000.0	1000.000	103.7	V	300.0	11.9	46.4	82.2
14745.43333	47.4	1000.0	1000.000	230.4	V	97.0	15.5	34.9	82.2

2.8.11 Test Results Above 1GHz (LTE Band 2 Downlink Worst Case Configuration) - 20MHz Bandwidth Middle Channel



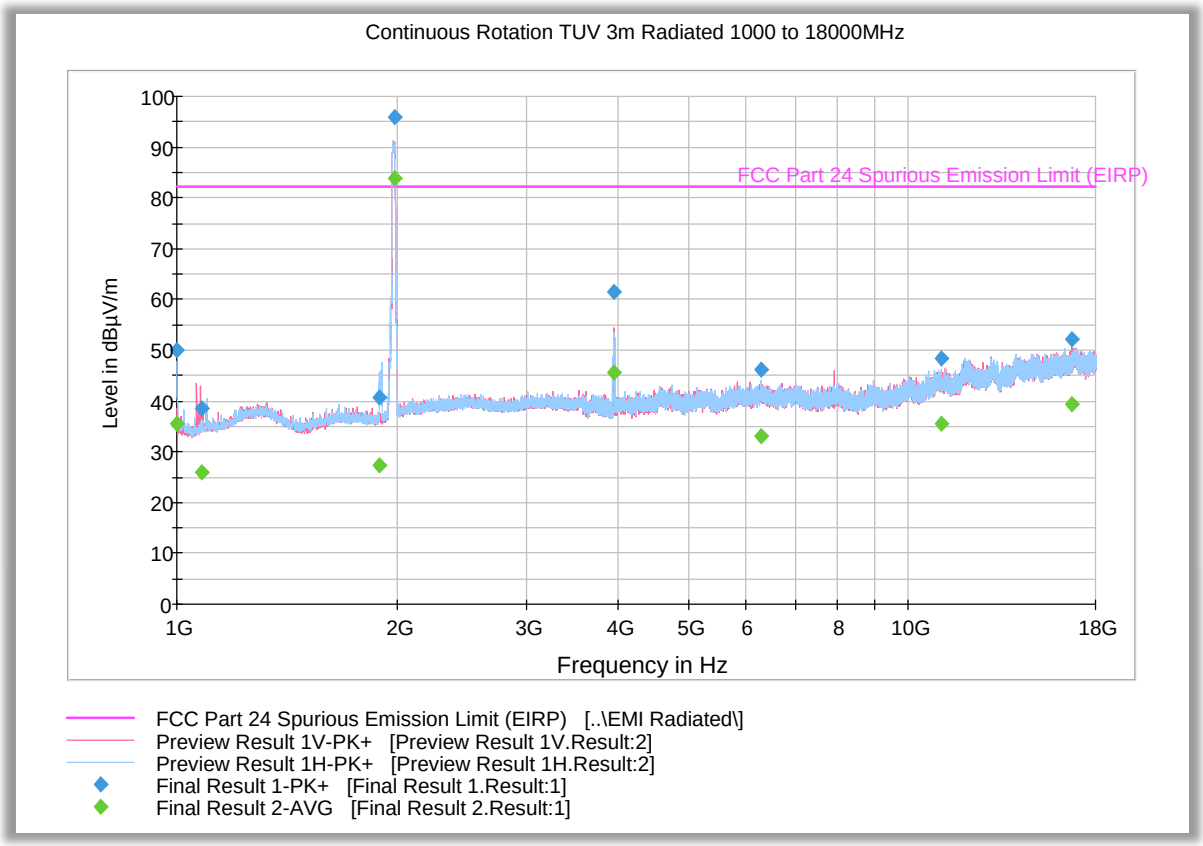
Peak Data

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1000.000000	46.7	1000.0	1000.000	142.7	H	-9.0	-6.9	35.6	82.2
1099.400000	43.0	1000.0	1000.000	120.7	H	261.0	-6.9	39.2	82.2
1699.633333	42.0	1000.0	1000.000	275.3	H	104.0	-5.0	40.3	82.2
1871.533333	77.9	1000.0	1000.000	203.5	V	78.0	-2.8	4.4	82.2
1953.933333	95.1	1000.0	1000.000	303.2	H	218.0	-2.4	Fundamental Carrier	
3923.966667	54.2	1000.0	1000.000	303.2	H	216.0	2.2	28.1	82.2
11072.73333	48.6	1000.0	1000.000	103.7	H	251.0	12.1	33.6	82.2
16920.30000	52.4	1000.0	1000.000	343.1	H	303.0	18.0	29.8	82.2

Average Data

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1000.000000	33.3	1000.0	1000.000	142.7	H	-9.0	-6.9	48.9	82.2
1099.400000	28.7	1000.0	1000.000	120.7	H	261.0	-6.9	53.6	82.2
1699.633333	27.3	1000.0	1000.000	275.3	H	104.0	-5.0	54.9	82.2
1871.533333	46.5	1000.0	1000.000	203.5	V	78.0	-2.8	35.7	82.2
1953.933333	82.9	1000.0	1000.000	303.2	H	218.0	-2.4	Fundamental Carrier	
3923.966667	40.0	1000.0	1000.000	303.2	H	216.0	2.2	42.3	82.2
11072.73333	35.4	1000.0	1000.000	103.7	H	251.0	12.1	46.8	82.2
16920.30000	39.5	1000.0	1000.000	343.1	H	303.0	18.0	42.7	82.2

2.8.12 Test Results Above 1GHz (LTE Band 2 Downlink Worst Case Configuration) - 20MHz Bandwidth High Channel



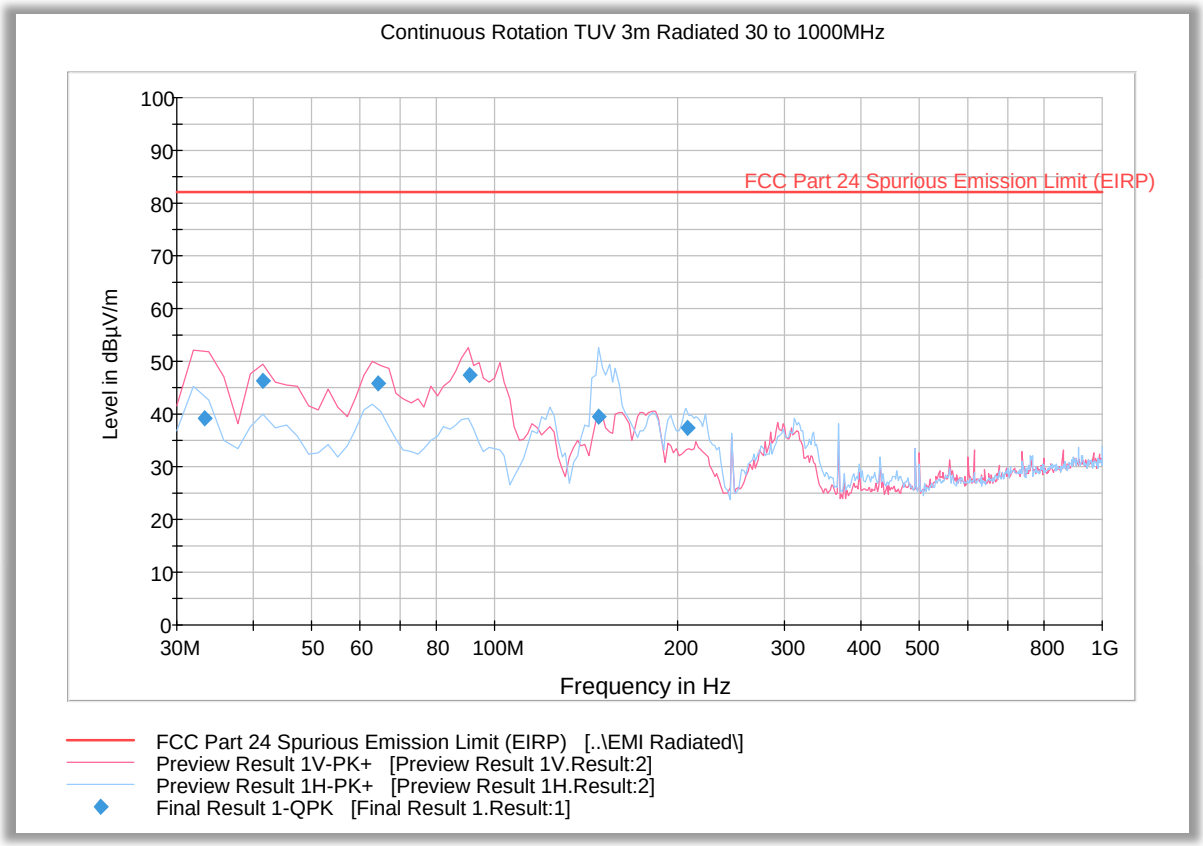
Peak Data

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1000.400000	49.9	1000.0	1000.000	130.7	H	178.0	-6.9	32.3	82.2
1079.566667	38.5	1000.0	1000.000	139.7	V	-13.0	-7.3	43.7	82.2
1895.333333	40.6	1000.0	1000.000	265.3	H	13.0	-2.6	41.7	82.2
1980.533333	95.9	1000.0	1000.000	290.2	H	221.0	-2.3	Fundamental Carrier	
3956.166667	61.4	1000.0	1000.000	295.2	V	181.0	2.2	20.8	82.2
6273.933333	46.2	1000.0	1000.000	128.7	H	314.0	6.3	36.0	82.2
11071.16666	48.4	1000.0	1000.000	122.7	H	54.0	12.0	33.9	82.2
16705.53333	52.2	1000.0	1000.000	300.2	V	-7.0	17.7	30.0	82.2

Average Data

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1000.400000	35.6	1000.0	1000.000	130.7	H	178.0	-6.9	46.7	82.2
1079.566667	25.9	1000.0	1000.000	139.7	V	-13.0	-7.3	56.3	82.2
1895.333333	27.3	1000.0	1000.000	265.3	H	13.0	-2.6	54.9	82.2
1980.533333	83.8	1000.0	1000.000	290.2	H	221.0	-2.3	Fundamental Carrier	
3956.166667	45.7	1000.0	1000.000	295.2	V	181.0	2.2	36.5	82.2
6273.933333	33.1	1000.0	1000.000	128.7	H	314.0	6.3	49.1	82.2
11071.16666	35.4	1000.0	1000.000	122.7	H	54.0	12.0	46.8	82.2
16705.53333	39.4	1000.0	1000.000	300.2	V	-7.0	17.7	42.8	82.2

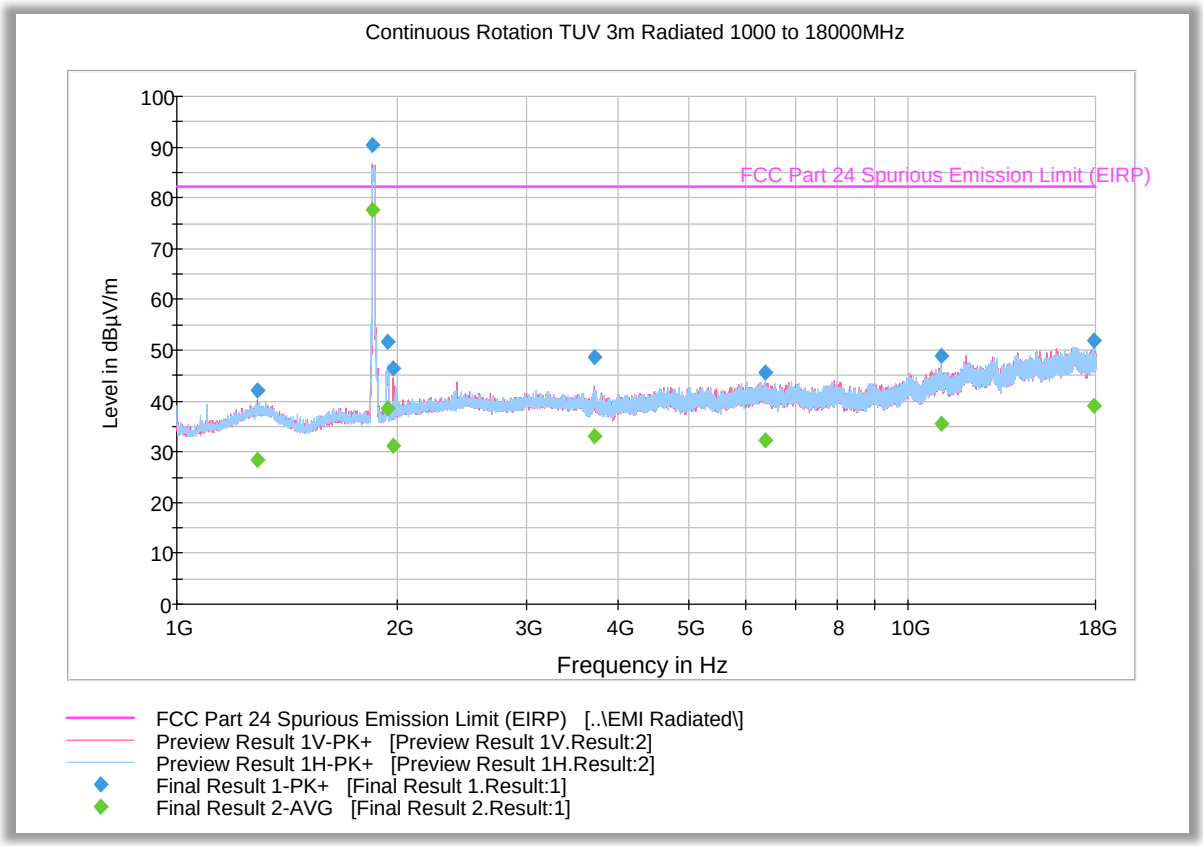
2.8.13 Test Results Below 1GHz (LTE Band 2 Uplink Worst Case Configuration) - 20MHz Bandwidth High Channel



Quasi Peak Data

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
33.280000	39.3	1000.0	120.000	100.0	V	-12.0	-8.8	42.9	82.2
41.607214	46.4	1000.0	120.000	100.0	V	15.0	-12.0	35.8	82.2
64.406092	45.7	1000.0	120.000	150.0	V	145.0	-16.1	36.5	82.2
90.740521	47.5	1000.0	120.000	100.0	V	229.0	-14.4	34.7	82.2
148.257154	39.5	1000.0	120.000	225.0	H	236.0	-13.0	42.8	82.2
207.573788	37.5	1000.0	120.000	150.0	H	268.0	-9.8	44.8	82.2

2.8.14 Test Results Above 1GHz (LTE Band 2 Uplink Worst Case Configuration) - 20MHz Bandwidth Low Channel



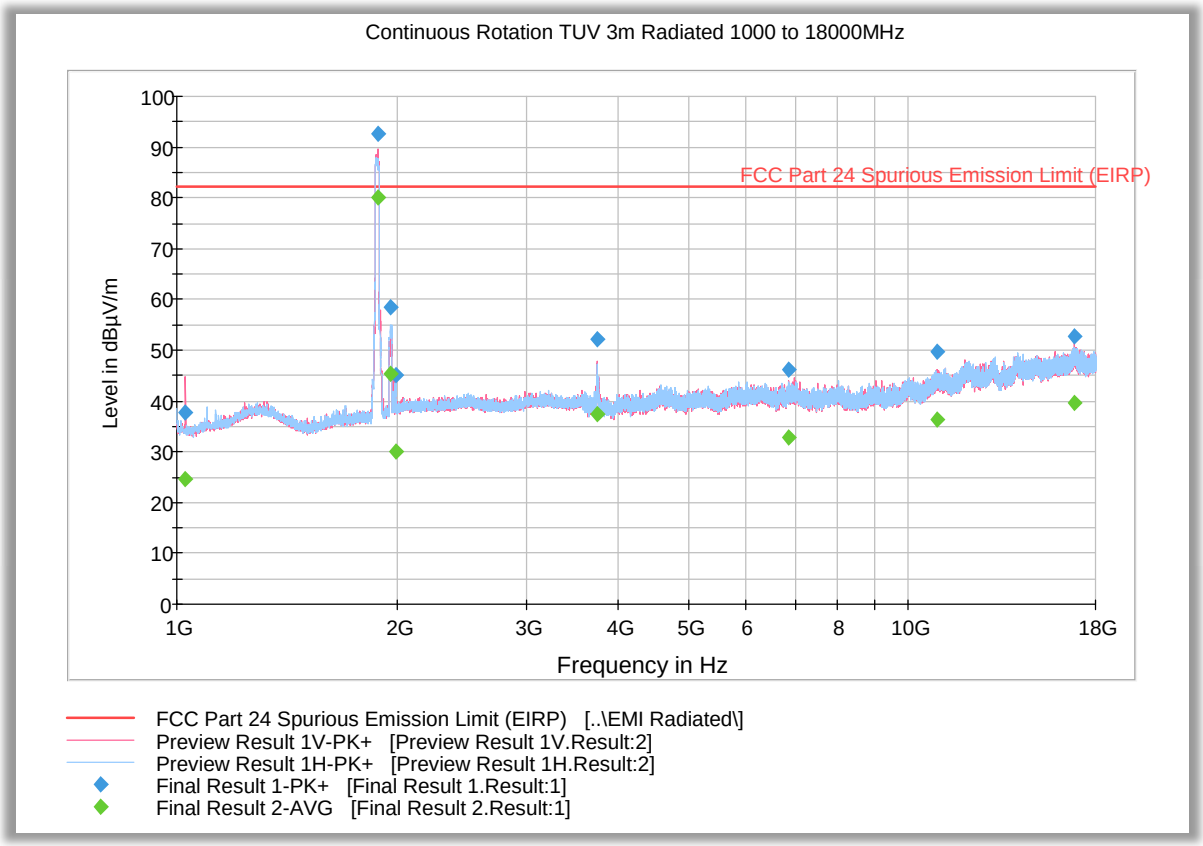
Peak Data

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1289.566667	42.0	1000.0	1000.000	143.7	V	233.0	-5.3	40.2	82.2
1852.666667	90.5	1000.0	1000.000	120.7	V	194.0	-2.9	Fundamental Carrier	
1943.333333	51.7	1000.0	1000.000	152.2	H	232.0	-2.4	30.6	82.2
1975.933333	46.5	1000.0	1000.000	103.7	V	159.0	-2.3	35.7	82.2
3724.933333	48.5	1000.0	1000.000	198.5	V	161.0	2.1	33.7	82.2
6373.833333	45.7	1000.0	1000.000	270.3	H	171.0	6.5	36.6	82.2
11074.96666	48.9	1000.0	1000.000	352.7	H	294.0	12.1	33.3	82.2
17886.46666	51.9	1000.0	1000.000	214.4	H	0.0	17.8	30.3	82.2

Average Data

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1289.566667	28.4	1000.0	1000.000	143.7	V	233.0	-5.3	53.9	82.2
1852.666667	77.7	1000.0	1000.000	120.7	V	194.0	-2.9	Fundamental Carrier	
1943.333333	38.6	1000.0	1000.000	152.2	H	232.0	-2.4	43.6	82.2
1975.933333	31.2	1000.0	1000.000	103.7	V	159.0	-2.3	51.1	82.2
3724.933333	33.2	1000.0	1000.000	198.5	V	161.0	2.1	49.1	82.2
6373.833333	32.3	1000.0	1000.000	270.3	H	171.0	6.5	49.9	82.2
11074.96666	35.6	1000.0	1000.000	352.7	H	294.0	12.1	46.7	82.2
17886.46666	39.0	1000.0	1000.000	214.4	H	0.0	17.8	43.2	82.2

2.8.15 Test Results Above 1GHz (LTE Band 2 Uplink Worst Case Configuration) - 20MHz Bandwidth Middle Channel



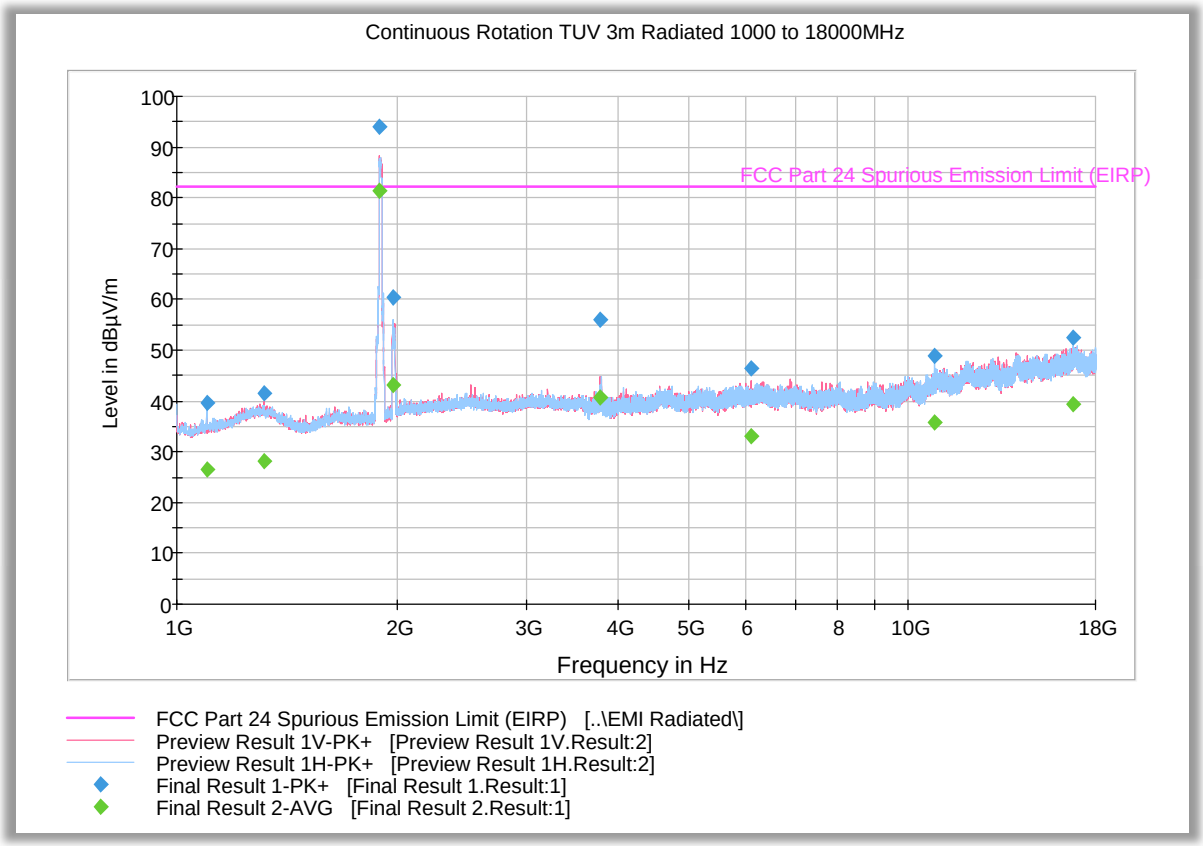
Peak Data

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1027.333333	37.7	1000.0	1000.000	270.3	V	12.0	-7.4	44.5	82.2
1880.433333	92.7	1000.0	1000.000	152.7	V	197.0	-2.7	Fundamental Carrier	
1962.733333	58.6	1000.0	1000.000	182.6	V	242.0	-2.3	23.7	82.2
1991.100000	45.2	1000.0	1000.000	116.7	V	1.0	-2.2	37.0	82.2
3761.800000	52.2	1000.0	1000.000	202.5	V	195.0	2.0	30.0	82.2
6852.733333	46.2	1000.0	1000.000	252.4	V	69.0	6.6	36.0	82.2
10949.90000	49.6	1000.0	1000.000	252.4	V	301.0	11.9	32.6	82.2
16895.20000	52.7	1000.0	1000.000	404.1	V	150.0	18.0	29.5	82.2

Average Data

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1027.333333	24.6	1000.0	1000.000	270.3	V	12.0	-7.4	57.7	82.2
1880.433333	80.2	1000.0	1000.000	152.7	V	197.0	-2.7	Fundamental Carrier	
1962.733333	45.3	1000.0	1000.000	182.6	V	242.0	-2.3	36.9	82.2
1991.100000	30.2	1000.0	1000.000	116.7	V	1.0	-2.2	52.0	82.2
3761.800000	37.3	1000.0	1000.000	202.5	V	195.0	2.0	44.9	82.2
6852.733333	32.8	1000.0	1000.000	252.4	V	69.0	6.6	49.4	82.2
10949.90000	36.2	1000.0	1000.000	252.4	V	301.0	11.9	46.0	82.2
16895.20000	39.7	1000.0	1000.000	404.1	V	150.0	18.0	42.5	82.2

2.8.16 Test Results Above 1GHz (LTE Band 2 Uplink Worst Case Configuration) - 20MHz Bandwidth High Channel



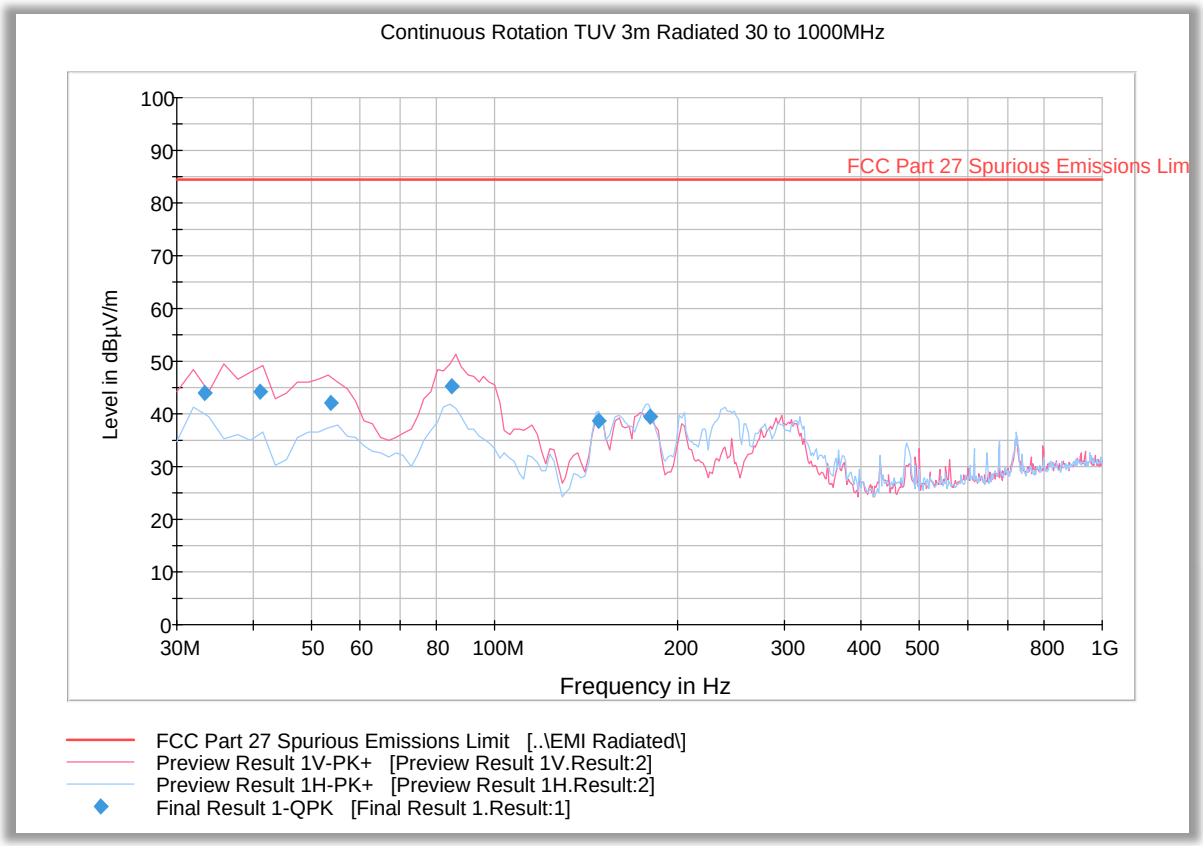
Peak Data

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1099.933333	39.7	1000.0	1000.000	115.7	H	15.0	-6.9	42.6	82.2
1318.300000	41.5	1000.0	1000.000	116.7	V	181.0	-5.1	40.8	82.2
1893.833333	93.9	1000.0	1000.000	161.6	V	201.0	-2.6	Fundamental Carrier	
1977.933333	60.4	1000.0	1000.000	190.5	H	169.0	-2.3	21.9	82.2
3793.300000	56.1	1000.0	1000.000	152.2	V	175.0	2.1	26.2	82.2
6087.566667	46.4	1000.0	1000.000	139.7	V	192.0	6.0	35.8	82.2
10867.20000	49.0	1000.0	1000.000	207.5	H	98.0	11.9	33.3	82.2
16755.60000	52.6	1000.0	1000.000	352.7	H	92.0	17.8	29.6	82.2

Average Data

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1099.933333	26.5	1000.0	1000.000	115.7	H	15.0	-6.9	55.7	82.2
1318.300000	28.2	1000.0	1000.000	116.7	V	181.0	-5.1	54.1	82.2
1893.833333	81.3	1000.0	1000.000	161.6	V	201.0	-2.6	Fundamental Carrier	
1977.933333	43.3	1000.0	1000.000	190.5	H	169.0	-2.3	39.0	82.2
3793.300000	40.7	1000.0	1000.000	152.2	V	175.0	2.1	41.5	82.2
6087.566667	33.1	1000.0	1000.000	139.7	V	192.0	6.0	49.1	82.2
10867.20000	35.7	1000.0	1000.000	207.5	H	98.0	11.9	46.5	82.2
16755.60000	39.4	1000.0	1000.000	352.7	H	92.0	17.8	42.8	82.2

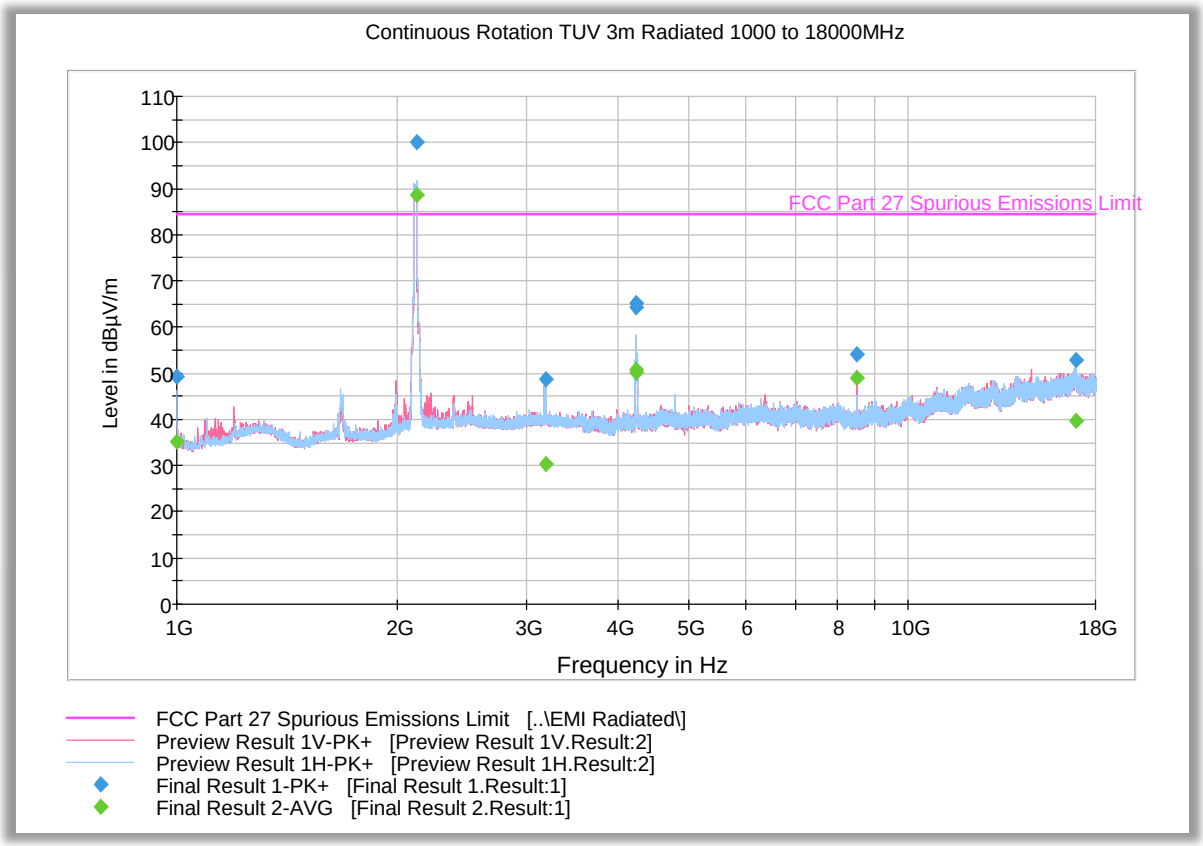
2.8.17 Test Results Below 1GHz (LTE Band 4 Downlink Worst Case Configuration) - 20MHz Bandwidth Low Channel



Quasi Peak Data

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
33.271663	43.9	1000.0	120.000	100.0	V	-12.0	-8.8	40.5	84.4
41.223327	44.2	1000.0	120.000	116.0	V	266.0	-11.9	40.2	84.4
53.646653	42.2	1000.0	120.000	100.0	V	260.0	-15.2	42.3	84.4
85.172745	45.3	1000.0	120.000	141.0	V	226.0	-15.5	39.1	84.4
148.657154	38.8	1000.0	120.000	227.0	H	204.0	-12.9	45.6	84.4
180.279359	39.6	1000.0	120.000	183.0	H	53.0	-11.2	44.8	84.4

2.8.18 Test Results Above 1GHz (LTE Band 4 Downlink Worst Case Configuration) - 20MHz Bandwidth Low Channel



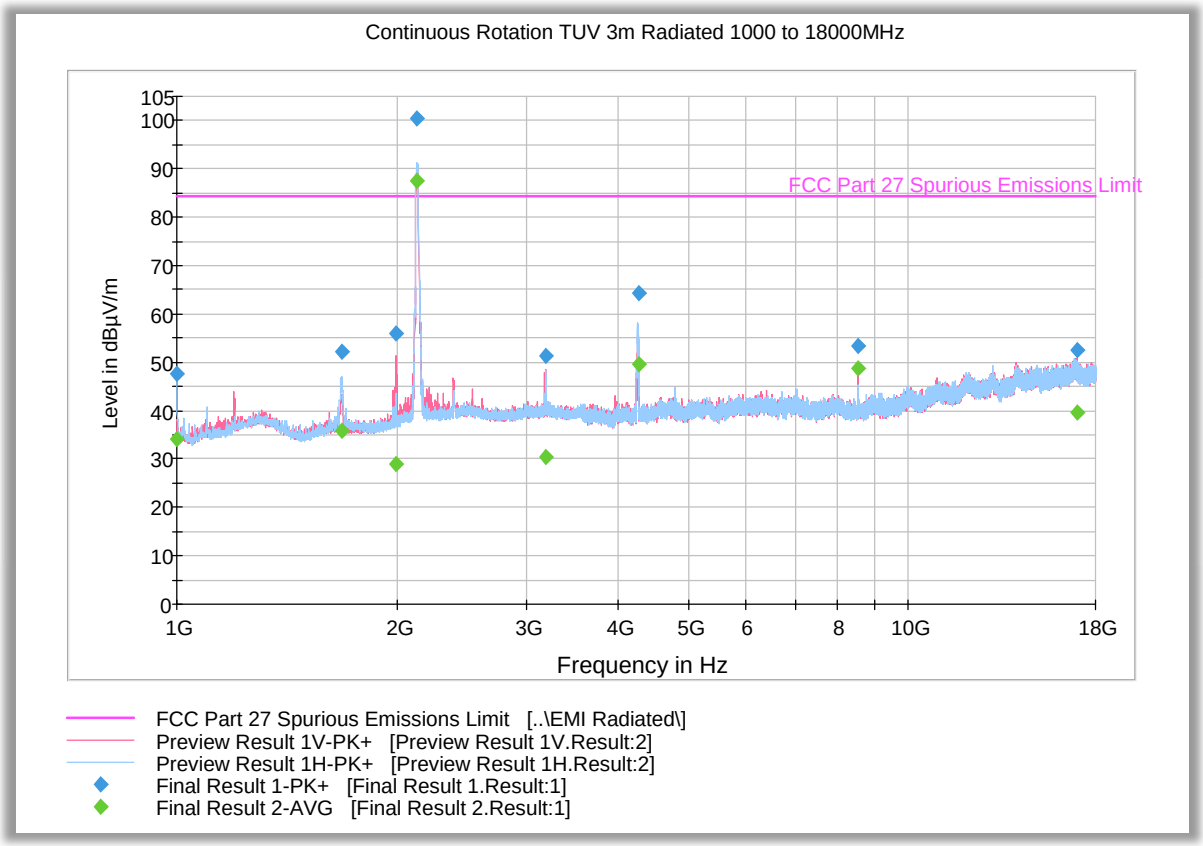
Peak Data

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1000.400000	49.2	1000.0	1000.000	112.7	H	189.0	-6.9	35.2	84.4
2128.033333	100.2	1000.0	1000.000	151.6	H	223.0	-2.2	Fundamental Carrier	
3191.700000	48.7	1000.0	1000.000	327.2	H	241.0	1.0	35.7	84.4
4238.533333	64.2	1000.0	1000.000	199.5	H	216.0	2.9	20.2	84.4
4246.966667	65.1	1000.0	1000.000	200.5	H	218.0	2.9	19.3	84.4
8480.200000	54.1	1000.0	1000.000	108.7	V	50.0	6.9	30.3	84.4
16924.46666	52.8	1000.0	1000.000	252.3	H	212.0	18.0	31.6	84.4

Average Data

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1000.400000	35.1	1000.0	1000.000	112.7	H	189.0	-6.9	49.3	84.4
2128.033333	88.6	1000.0	1000.000	151.6	H	223.0	-2.2	-4.2	84.4
3191.700000	30.4	1000.0	1000.000	327.2	H	241.0	1.0	54.0	84.4
4238.533333	50.2	1000.0	1000.000	199.5	H	216.0	2.9	34.2	84.4
4246.966667	50.9	1000.0	1000.000	200.5	H	218.0	2.9	33.5	84.4
8480.200000	48.9	1000.0	1000.000	108.7	V	50.0	6.9	35.5	84.4
16924.46666	39.7	1000.0	1000.000	252.3	H	212.0	18.0	44.7	84.4

2.8.19 Test Results Above 1GHz (LTE Band 4 Downlink Worst Case Configuration) - 20MHz Bandwidth Middle Channel



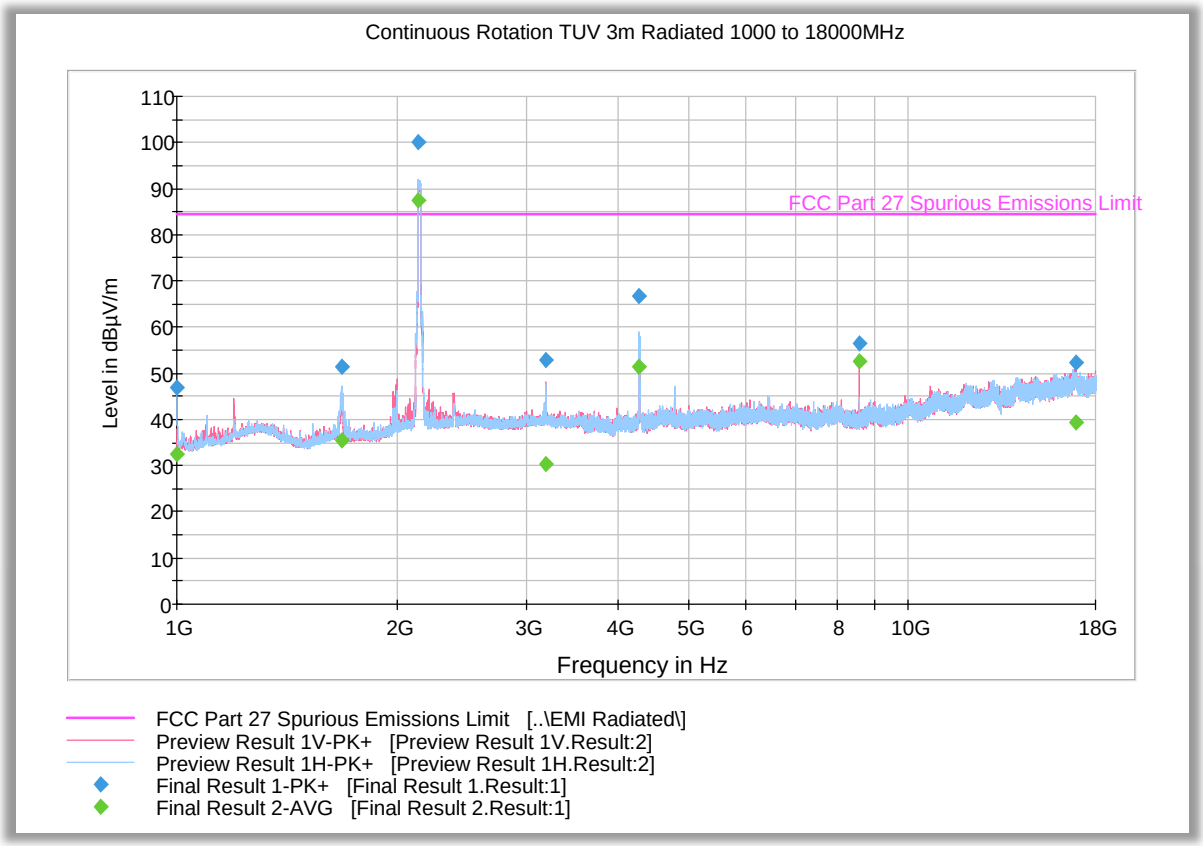
Peak Data

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1000.000000	47.6	1000.0	1000.000	120.7	H	187.0	-6.9	36.8	84.4
1678.666667	52.1	1000.0	1000.000	186.5	H	47.0	-5.1	32.3	84.4
1995.066667	55.8	1000.0	1000.000	103.7	V	218.0	-2.2	28.6	84.4
2130.866667	100.3	1000.0	1000.000	151.6	H	224.0	-2.2	Fundamental Carrier	
3196.766667	51.4	1000.0	1000.000	252.3	V	172.0	1.1	33.0	84.4
4270.833333	64.2	1000.0	1000.000	151.6	H	236.0	2.8	20.2	84.4
8530.066667	53.5	1000.0	1000.000	116.7	V	48.0	6.9	30.9	84.4
16975.03333	52.6	1000.0	1000.000	143.7	V	108.0	17.9	31.8	84.4

Average Data

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1000.000000	34.2	1000.0	1000.000	120.7	H	187.0	-6.9	50.2	84.4
1678.666667	35.9	1000.0	1000.000	186.5	H	47.0	-5.1	48.5	84.4
1995.066667	29.1	1000.0	1000.000	103.7	V	218.0	-2.2	55.3	84.4
2130.866667	87.6	1000.0	1000.000	151.6	H	224.0	-2.2	Fundamental Carrier	
3196.766667	30.3	1000.0	1000.000	252.3	V	172.0	1.1	54.1	84.4
4270.833333	49.5	1000.0	1000.000	151.6	H	236.0	2.8	34.9	84.4
8530.066667	48.8	1000.0	1000.000	116.7	V	48.0	6.9	35.6	84.4
16975.03333	39.6	1000.0	1000.000	143.7	V	108.0	17.9	44.8	84.4

2.8.20 Test Results Above 1GHz (LTE Band 4 Downlink Worst Case Configuration) - 20MHz Bandwidth High Channel



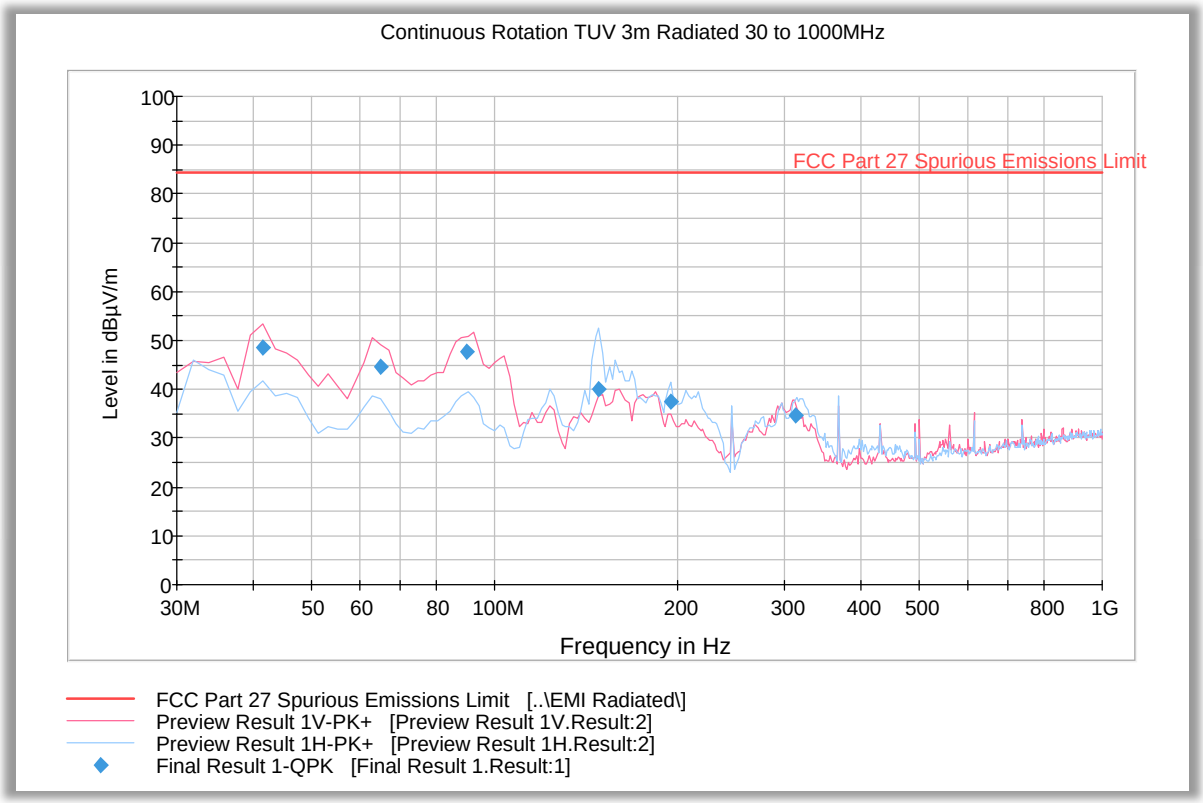
Peak Data

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1000.400000	46.9	1000.0	1000.000	152.2	H	76.0	-6.9	37.5	84.4
1678.133333	51.5	1000.0	1000.000	285.3	H	63.0	-5.1	32.9	84.4
2137.266667	100.1	1000.0	1000.000	203.5	V	203.0	-2.2	Fundamental Carrier	
3195.633333	52.8	1000.0	1000.000	199.5	V	182.0	1.1	31.6	84.4
4280.800000	66.7	1000.0	1000.000	151.6	H	225.0	2.8	17.7	84.4
8579.933333	56.6	1000.0	1000.000	120.7	V	49.0	7.2	27.8	84.4
16969.06666	52.3	1000.0	1000.000	285.3	V	251.0	17.9	32.1	84.4

Average Data

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1000.400000	32.6	1000.0	1000.000	152.2	H	76.0	-6.9	51.8	84.4
1678.133333	35.4	1000.0	1000.000	285.3	H	63.0	-5.1	49.0	84.4
2137.266667	87.6	1000.0	1000.000	203.5	V	203.0	-2.2	Fundamental Carrier	
3195.633333	30.5	1000.0	1000.000	199.5	V	182.0	1.1	53.9	84.4
4280.800000	51.3	1000.0	1000.000	151.6	H	225.0	2.8	33.1	84.4
8579.933333	52.6	1000.0	1000.000	120.7	V	49.0	7.2	31.8	84.4
16969.06666	39.3	1000.0	1000.000	285.3	V	251.0	17.9	45.1	84.4

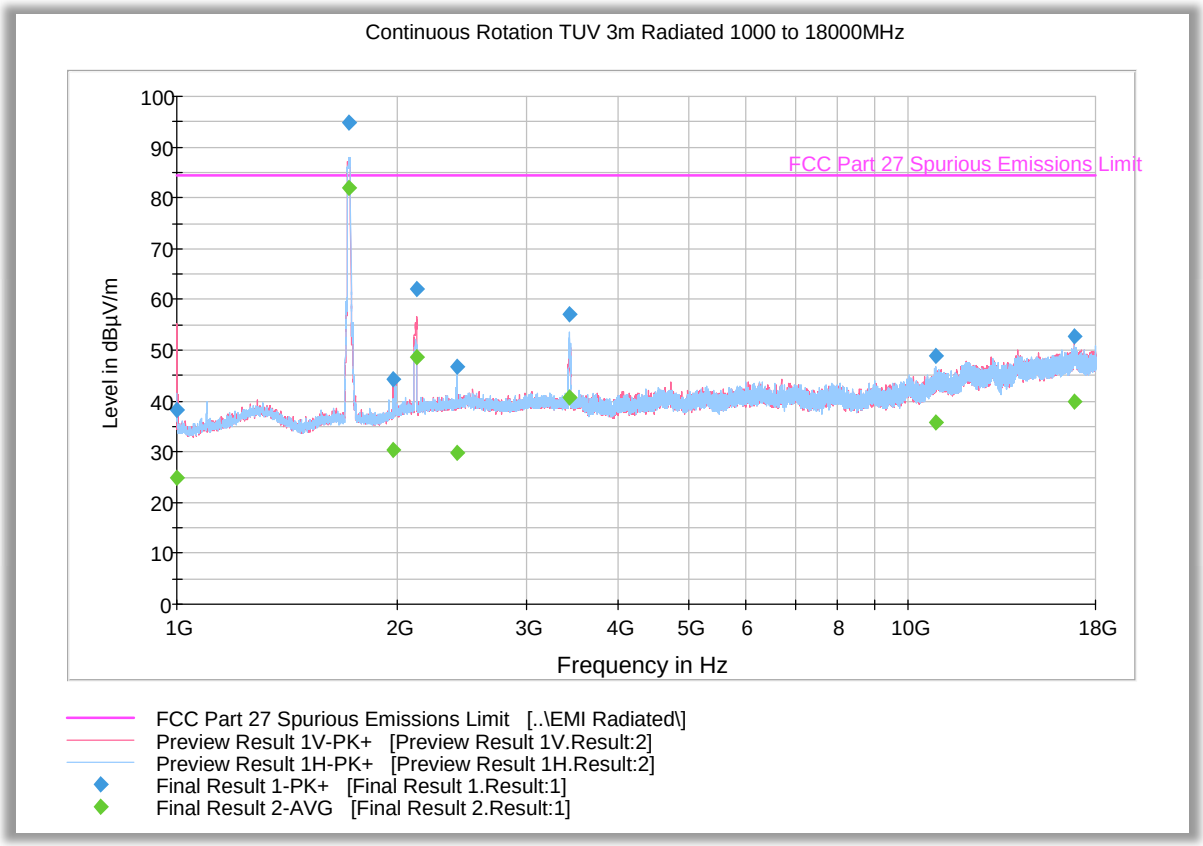
2.8.21 Test Results Below 1GHz (LTE Band 4 Uplink Worst Case Configuration) – 20 MHz Bandwidth Low Channel



Quasi Peak Data

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
41.623327	48.7	1000.0	120.000	100.0	V	269.0	-12.0	35.7	84.4
64.886092	44.7	1000.0	120.000	100.0	V	163.0	-16.1	39.7	84.4
89.924409	47.7	1000.0	120.000	100.0	V	232.0	-14.6	36.7	84.4
148.657154	39.9	1000.0	120.000	226.0	H	22.0	-12.9	44.5	84.4
195.270461	37.5	1000.0	120.000	127.0	H	252.0	-10.8	46.9	84.4
313.039840	34.8	1000.0	120.000	145.0	H	154.0	-6.6	49.6	84.4

2.8.22 Test Results Above 1GHz (LTE Band 4 Uplink Worst Case Configuration) – 20 MHz Bandwidth Low Channel



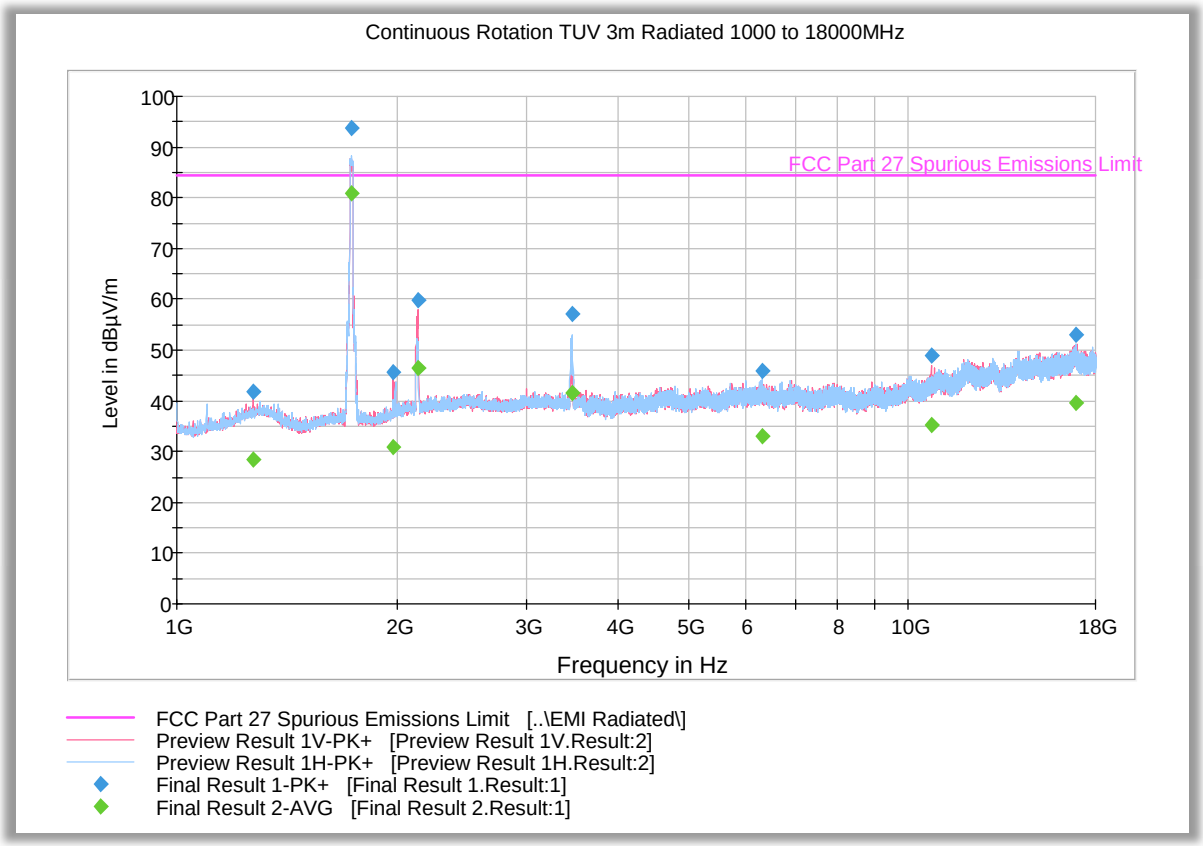
Peak Data

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1001.733333	38.4	1000.0	1000.000	135.7	V	-13.0	-6.9	46.1	84.4
1721.500000	94.8	1000.0	1000.000	151.6	H	225.0	-4.7	Fundamental Carrier	
1976.166667	44.3	1000.0	1000.000	103.7	V	204.0	-2.3	40.1	84.4
2127.100000	62.1	1000.0	1000.000	200.5	V	212.0	-2.2	22.3	84.4
2413.233333	46.8	1000.0	1000.000	239.4	H	178.0	-1.0	37.6	84.4
3437.066667	57.1	1000.0	1000.000	207.5	H	238.0	1.0	27.3	84.4
10900.83333	49.0	1000.0	1000.000	152.2	H	294.0	11.9	35.4	84.4
16885.16666	52.7	1000.0	1000.000	152.2	V	222.0	18.0	31.7	84.4

Average Data

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1001.733333	25.0	1000.0	1000.000	135.7	V	-13.0	-6.9	59.4	84.4
1721.500000	81.9	1000.0	1000.000	151.6	H	225.0	-4.7	Fundamental Carrier	
1976.166667	30.2	1000.0	1000.000	103.7	V	204.0	-2.3	54.2	84.4
2127.100000	48.7	1000.0	1000.000	200.5	V	212.0	-2.2	35.7	84.4
2413.233333	29.7	1000.0	1000.000	239.4	H	178.0	-1.0	54.7	84.4
3437.066667	40.7	1000.0	1000.000	207.5	H	238.0	1.0	43.7	84.4
10900.83333	35.7	1000.0	1000.000	152.2	H	294.0	11.9	48.7	84.4
16885.16666	39.8	1000.0	1000.000	152.2	V	222.0	18.0	44.6	84.4

2.8.23 Test Results Above 1GHz (LTE Band 4 Uplink Worst Case Configuration) – 20 MHz Bandwidth Middle Channel



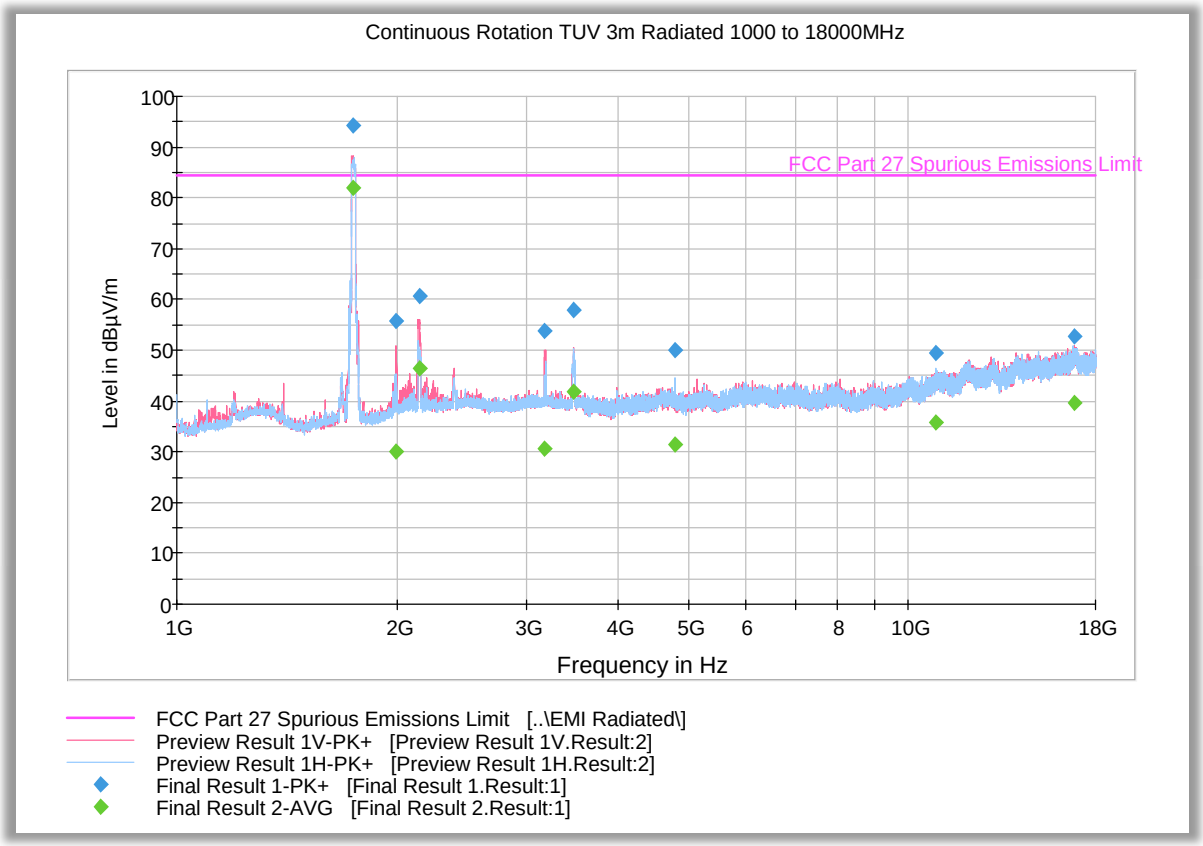
Peak Data

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1270.533333	41.7	1000.0	1000.000	285.3	V	118.0	-5.4	42.7	84.4
1731.133333	93.6	1000.0	1000.000	200.5	H	222.0	-4.6	Fundamental Carrier	
1975.800000	45.8	1000.0	1000.000	103.7	V	129.0	-2.3	38.6	84.4
2133.866667	60.0	1000.0	1000.000	186.5	V	213.0	-2.2	24.4	84.4
3463.300000	57.1	1000.0	1000.000	199.5	H	225.0	1.1	27.3	84.4
6306.633333	45.9	1000.0	1000.000	250.5	H	310.0	6.2	38.5	84.4
10730.26666	48.9	1000.0	1000.000	326.2	V	234.0	11.6	35.5	84.4
16912.20000	53.0	1000.0	1000.000	220.4	V	263.0	18.0	31.4	84.4

Average Data

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1270.533333	28.3	1000.0	1000.000	285.3	V	118.0	-5.4	56.1	84.4
1731.133333	81.0	1000.0	1000.000	200.5	H	222.0	-4.6	Fundamental Carrier	
1975.800000	30.8	1000.0	1000.000	103.7	V	129.0	-2.3	53.6	84.4
2133.866667	46.5	1000.0	1000.000	186.5	V	213.0	-2.2	37.9	84.4
3463.300000	41.5	1000.0	1000.000	199.5	H	225.0	1.1	42.9	84.4
6306.633333	33.0	1000.0	1000.000	250.5	H	310.0	6.2	51.4	84.4
10730.26666	35.1	1000.0	1000.000	326.2	V	234.0	11.6	49.3	84.4
16912.20000	39.7	1000.0	1000.000	220.4	V	263.0	18.0	44.7	84.4

2.8.24 Test Results Above 1GHz (LTE Band 4 Uplink Worst Case Configuration) – 20 MHz Bandwidth High Channel



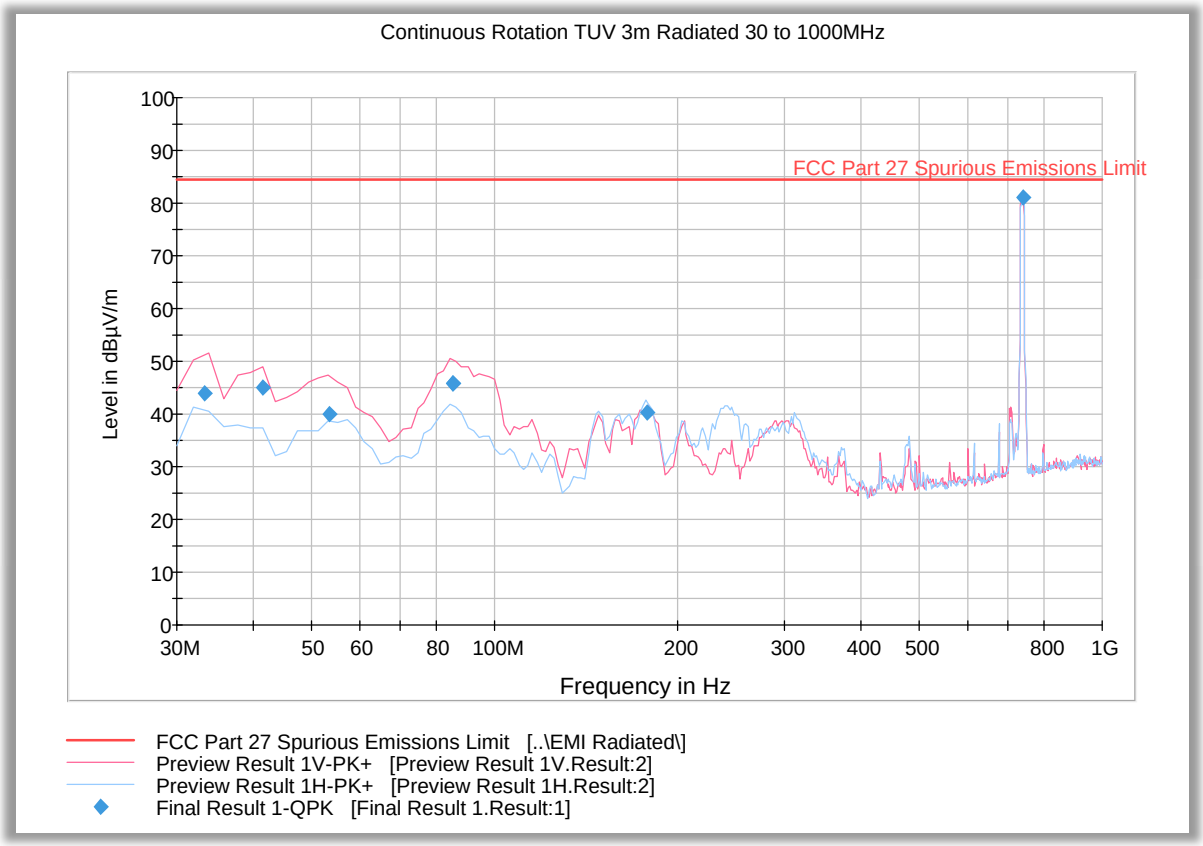
Peak Data

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1741.000000	94.2	1000.0	1000.000	250.5	V	208.0	-4.5	Fundamental Carrier	
1991.466667	55.6	1000.0	1000.000	194.5	V	5.0	-2.2	28.8	84.4
2142.766667	60.6	1000.0	1000.000	186.5	V	212.0	-2.2	23.8	84.4
3186.066667	53.8	1000.0	1000.000	194.5	V	194.0	1.0	30.6	84.4
3483.133333	58.0	1000.0	1000.000	250.5	V	208.0	1.2	26.4	84.4
4790.233333	49.9	1000.0	1000.000	135.7	H	272.0	3.7	34.5	84.4
10901.76666	49.4	1000.0	1000.000	102.7	H	93.0	11.9	35.0	84.4
16855.70000	52.8	1000.0	1000.000	295.2	V	340.0	18.0	31.6	84.4

Average Data

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1741.000000	82.0	1000.0	1000.000	250.5	V	208.0	-4.5	Fundamental Carrier	
1991.466667	30.2	1000.0	1000.000	194.5	V	5.0	-2.2	54.2	84.4
2142.766667	46.5	1000.0	1000.000	186.5	V	212.0	-2.2	37.9	84.4
3186.066667	30.6	1000.0	1000.000	194.5	V	194.0	1.0	53.8	84.4
3483.133333	41.7	1000.0	1000.000	250.5	V	208.0	1.2	42.7	84.4
4790.233333	31.3	1000.0	1000.000	135.7	H	272.0	3.7	53.1	84.4
10901.76666	35.8	1000.0	1000.000	102.7	H	93.0	11.9	48.6	84.4
16855.70000	39.7	1000.0	1000.000	295.2	V	340.0	18.0	44.7	84.4

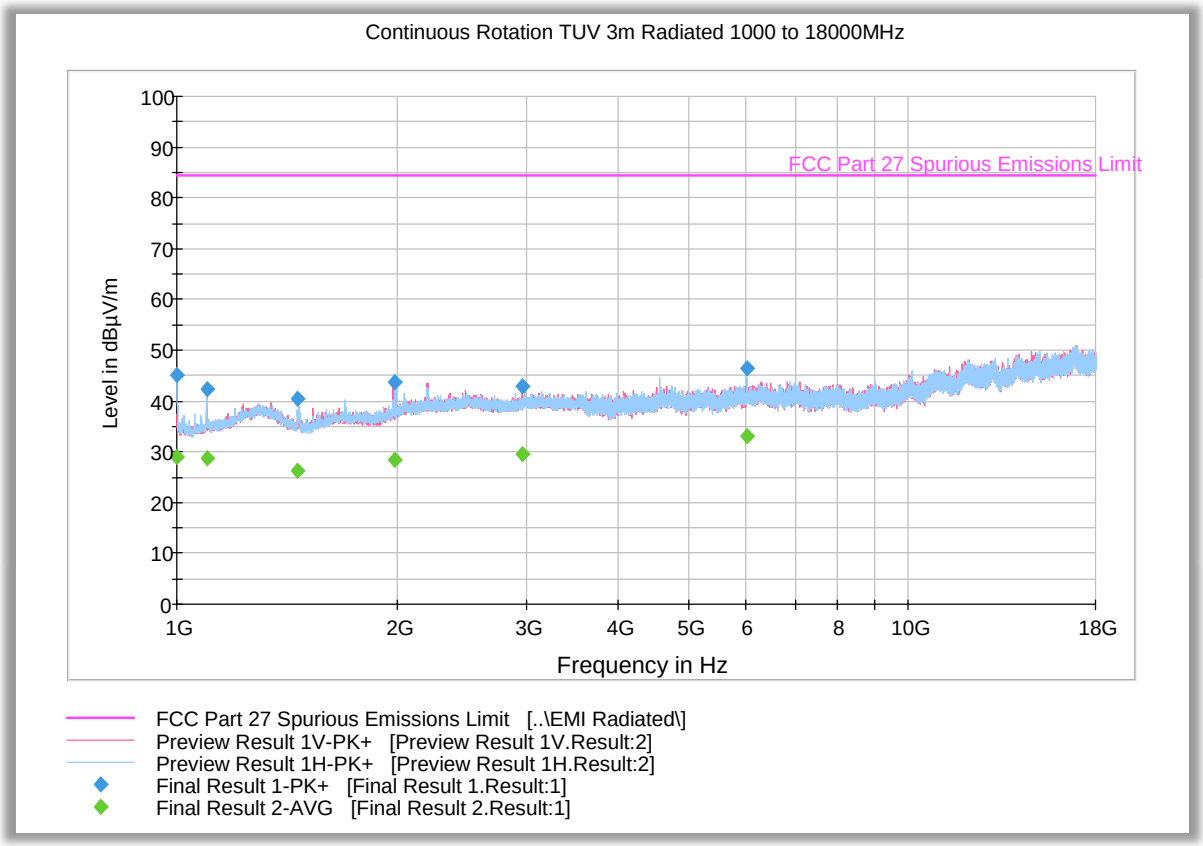
2.8.25 Test Results Below 1GHz (LTE Band 12 Downlink Worst Case Configuration) - 10MHz Bandwidth Middle Channel



Quasi Peak Data

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
33.247776	43.9	1000.0	120.000	100.0	V	18.0	-8.8	40.5	84.4
41.583327	45.0	1000.0	120.000	100.0	V	258.0	-12.0	39.4	84.4
53.406653	40.0	1000.0	120.000	100.0	V	319.0	-15.2	44.4	84.4
85.388858	45.9	1000.0	120.000	100.0	V	236.0	-15.4	38.5	84.4
85.612745	45.7	1000.0	120.000	150.0	V	240.0	-15.4	38.7	84.4
177.935471	40.3	1000.0	120.000	250.0	H	182.0	-11.3	44.1	84.4
740.399038	81.2	1000.0	120.000	127.0	V	165.0	2.8	Fundamental Carrier	

2.8.26 Test Results Above 1GHz (LTE Band 12 Downlink Worst Case Configuration) – 10 MHz Bandwidth Low Channel



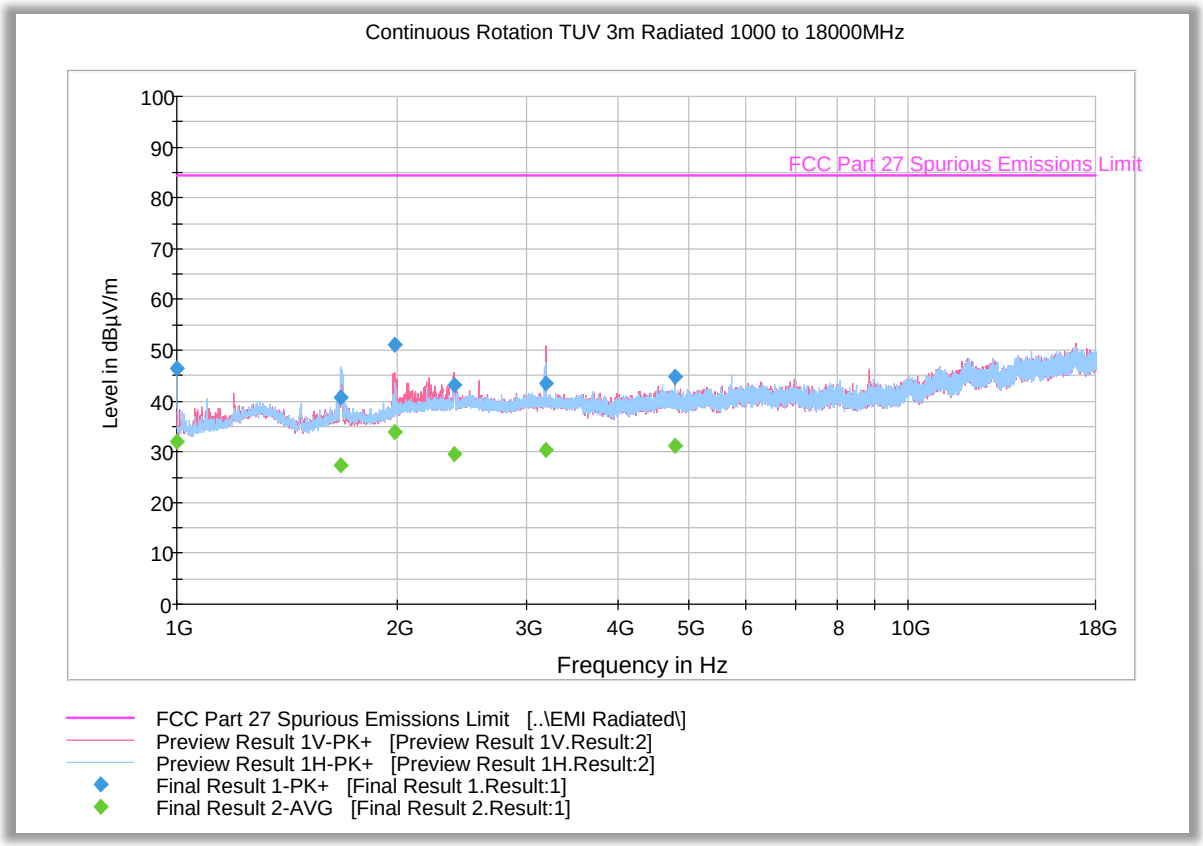
Peak Data

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1000.900000	45.1	1000.0	1000.000	147.7	H	189.0	-6.9	39.3	84.4
1100.300000	42.3	1000.0	1000.000	113.7	H	309.0	-6.9	42.1	84.4
1463.000000	40.4	1000.0	1000.000	160.6	H	109.0	-6.0	44.0	84.4
1986.600000	43.6	1000.0	1000.000	280.2	H	75.0	-2.3	40.8	84.4
2960.066667	42.8	1000.0	1000.000	124.7	V	224.0	0.4	41.6	84.4
6016.500000	46.4	1000.0	1000.000	352.7	H	98.0	5.8	38.0	84.4

Average Data

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1000.900000	28.9	1000.0	1000.000	147.7	H	189.0	-6.9	55.5	84.4
1100.300000	28.8	1000.0	1000.000	113.7	H	309.0	-6.9	55.6	84.4
1463.000000	26.2	1000.0	1000.000	160.6	H	109.0	-6.0	58.2	84.4
1986.600000	28.6	1000.0	1000.000	280.2	H	75.0	-2.3	55.8	84.4
2960.066667	29.5	1000.0	1000.000	124.7	V	224.0	0.4	54.9	84.4
6016.500000	33.0	1000.0	1000.000	352.7	H	98.0	5.8	51.4	84.4

2.8.27 Test Results Above 1GHz (LTE Band 12 Downlink Worst Case Configuration) – 10 MHz Bandwidth Middle Channel



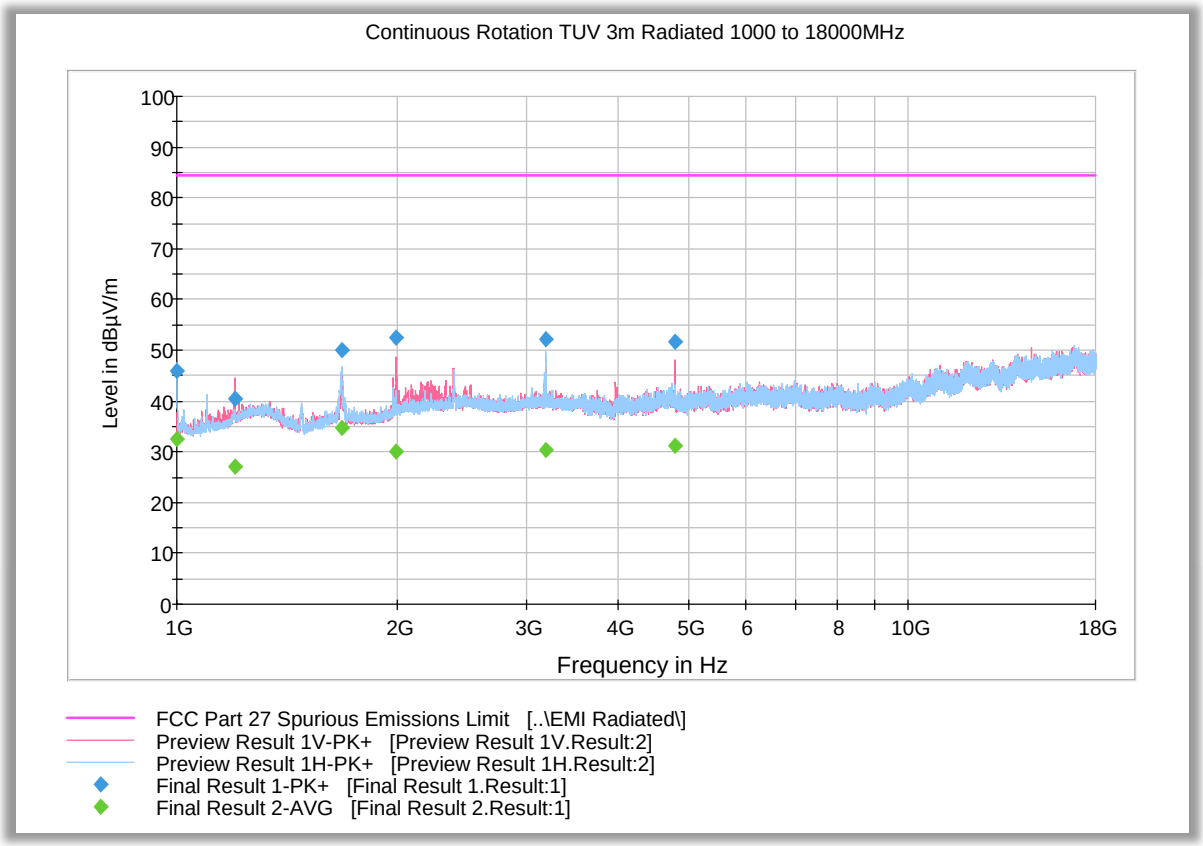
Peak Data

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1000.400000	46.3	1000.0	1000.000	152.2	H	188.0	-6.9	38.1	84.4
1676.433333	40.8	1000.0	1000.000	169.6	H	73.0	-5.1	43.6	84.4
1988.233333	51.1	1000.0	1000.000	128.7	V	350.0	-2.3	33.3	84.4
2390.033333	43.3	1000.0	1000.000	152.2	V	203.0	-1.0	41.1	84.4
3199.466667	43.4	1000.0	1000.000	236.4	V	163.0	1.1	41.0	84.4
4790.866667	44.7	1000.0	1000.000	169.6	V	246.0	3.7	39.7	84.4

Average Data

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1000.400000	32.1	1000.0	1000.000	152.2	H	188.0	-6.9	52.3	84.4
1676.433333	27.3	1000.0	1000.000	169.6	H	73.0	-5.1	57.1	84.4
1988.233333	33.8	1000.0	1000.000	128.7	V	350.0	-2.3	50.6	84.4
2390.033333	29.5	1000.0	1000.000	152.2	V	203.0	-1.0	54.9	84.4
3199.466667	30.3	1000.0	1000.000	236.4	V	163.0	1.1	54.1	84.4
4790.866667	31.2	1000.0	1000.000	169.6	V	246.0	3.7	53.2	84.4

2.8.28 Test Results Above 1GHz (LTE Band 12 Downlink Worst Case Configuration) - 10MHz Bandwidth High Channel



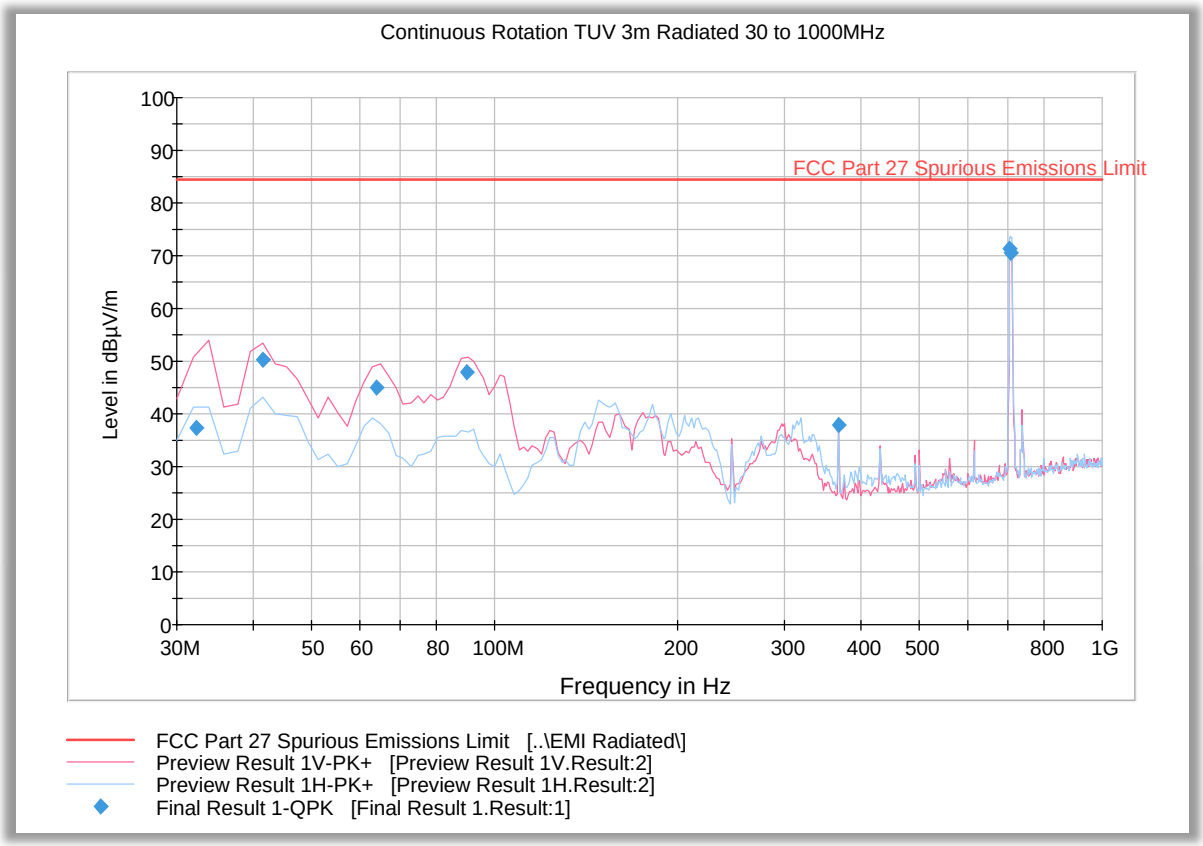
Peak Data

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1000.000000	45.9	1000.0	1000.000	151.2	H	189.0	-6.9	38.5	84.4
1199.100000	40.4	1000.0	1000.000	151.6	V	-13.0	-6.4	44.0	84.4
1680.233333	49.9	1000.0	1000.000	203.5	V	31.0	-5.1	34.5	84.4
1994.133333	52.6	1000.0	1000.000	186.5	V	-1.0	-2.2	31.8	84.4
3198.633333	52.2	1000.0	1000.000	169.6	H	217.0	1.1	32.2	84.4
4799.166667	51.6	1000.0	1000.000	177.6	V	203.0	3.7	32.8	84.4

Average Data

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1000.000000	32.5	1000.0	1000.000	151.2	H	189.0	-6.9	51.9	84.4
1199.100000	27.1	1000.0	1000.000	151.6	V	-13.0	-6.4	57.3	84.4
1680.233333	34.6	1000.0	1000.000	203.5	V	31.0	-5.1	49.8	84.4
1994.133333	29.9	1000.0	1000.000	186.5	V	-1.0	-2.2	54.5	84.4
3198.633333	30.4	1000.0	1000.000	169.6	H	217.0	1.1	54.0	84.4
4799.166667	31.3	1000.0	1000.000	177.6	V	203.0	3.7	53.1	84.4

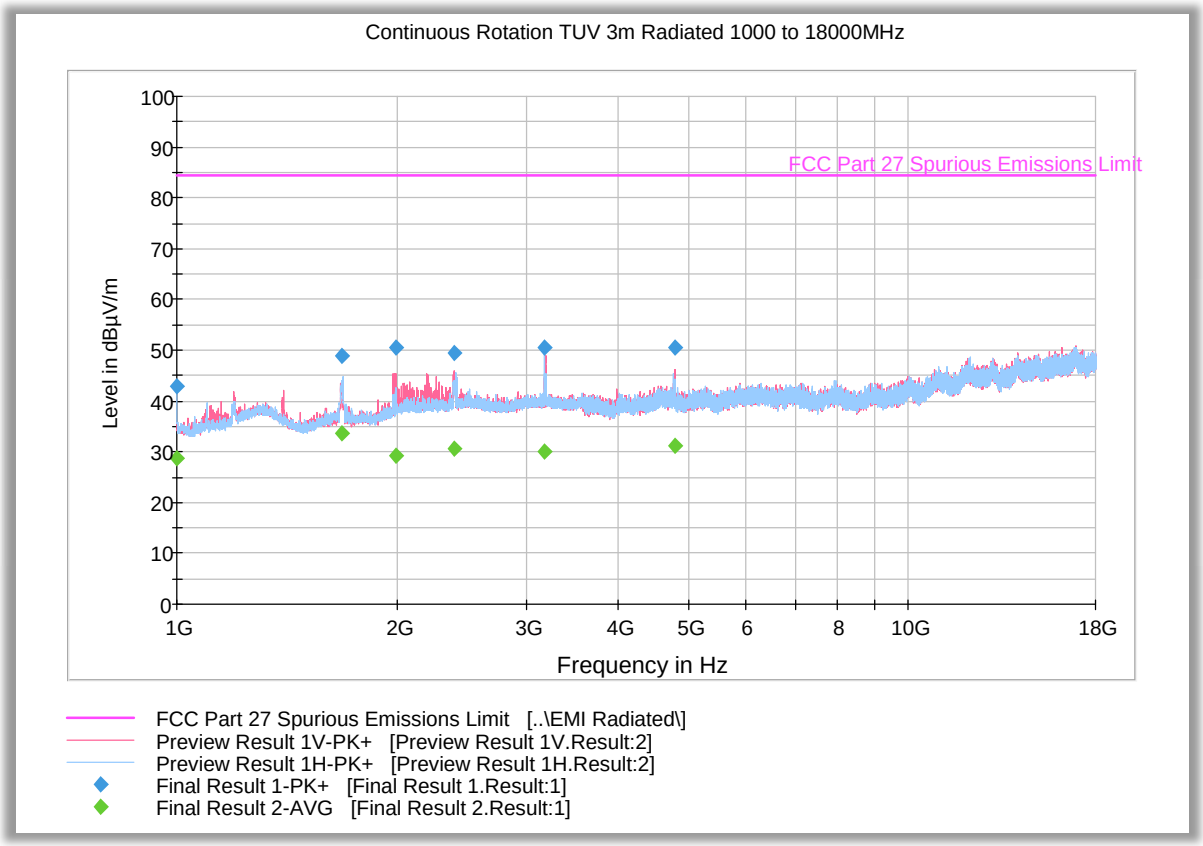
2.8.29 Test Results Below 1GHz (LTE Band 12 Uplink Worst Case Configuration) - 10MHz Bandwidth Middle Channel



Quasi Peak Data

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
32.367776	37.5	1000.0	120.000	100.0	V	-6.0	-8.4	46.9	84.4
41.567214	50.3	1000.0	120.000	100.0	V	205.0	-12.0	34.1	84.4
64.069980	44.9	1000.0	120.000	150.0	V	138.0	-16.1	39.5	84.4
89.860521	47.9	1000.0	120.000	100.0	V	246.0	-14.7	36.5	84.4
368.636473	38.0	1000.0	120.000	100.0	H	188.0	-4.1	46.4	84.4
704.865170	71.4	1000.0	120.000	105.0	H	14.0	2.9	13.0	84.4
707.552946	70.6	1000.0	120.000	100.0	H	10.0	2.9	Fundamental Carrier	

2.8.30 Test Results Above 1GHz (LTE Band 12 Uplink Worst Case Configuration) - 10MHz Bandwidth Low Channel



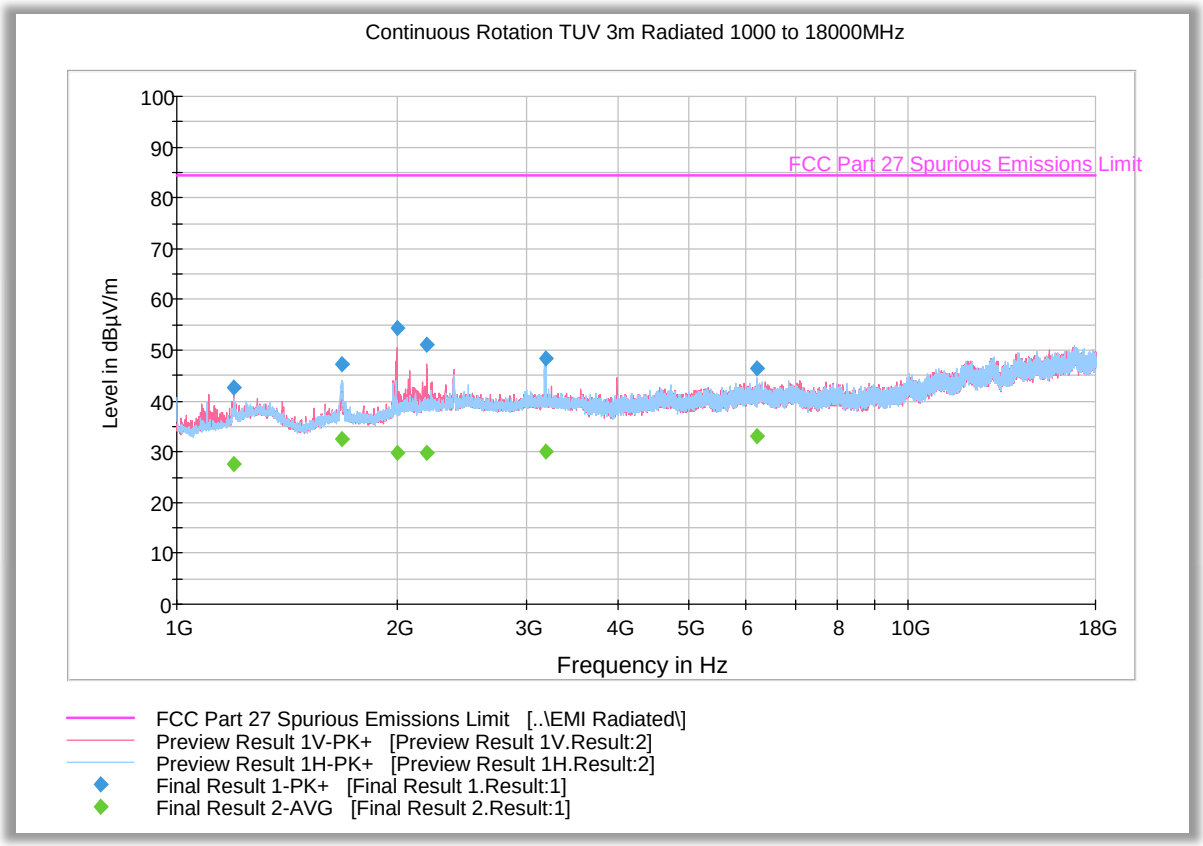
Peak Data

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1000.400000	42.8	1000.0	1000.000	131.7	H	154.0	-6.9	41.6	84.4
1679.833333	48.9	1000.0	1000.000	139.7	H	282.0	-5.1	35.5	84.4
1991.233333	50.5	1000.0	1000.000	143.7	V	176.0	-2.2	33.9	84.4
2393.566667	49.4	1000.0	1000.000	103.7	V	178.0	-1.0	35.0	84.4
3185.833333	50.5	1000.0	1000.000	195.5	H	75.0	1.0	33.9	84.4
4784.900000	50.7	1000.0	1000.000	151.6	V	172.0	3.7	33.7	84.4

Average Data

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1000.400000	28.6	1000.0	1000.000	131.7	H	154.0	-6.9	55.8	84.4
1679.833333	33.5	1000.0	1000.000	139.7	H	282.0	-5.1	50.9	84.4
1991.233333	29.2	1000.0	1000.000	143.7	V	176.0	-2.2	55.2	84.4
2393.566667	30.6	1000.0	1000.000	103.7	V	178.0	-1.0	53.8	84.4
3185.833333	30.1	1000.0	1000.000	195.5	H	75.0	1.0	54.3	84.4
4784.900000	31.3	1000.0	1000.000	151.6	V	172.0	3.7	53.1	84.4

2.8.31 Test Results Above 1GHz (LTE Band 12 Uplink Worst Case Configuration) - 10MHz Bandwidth Middle Channel



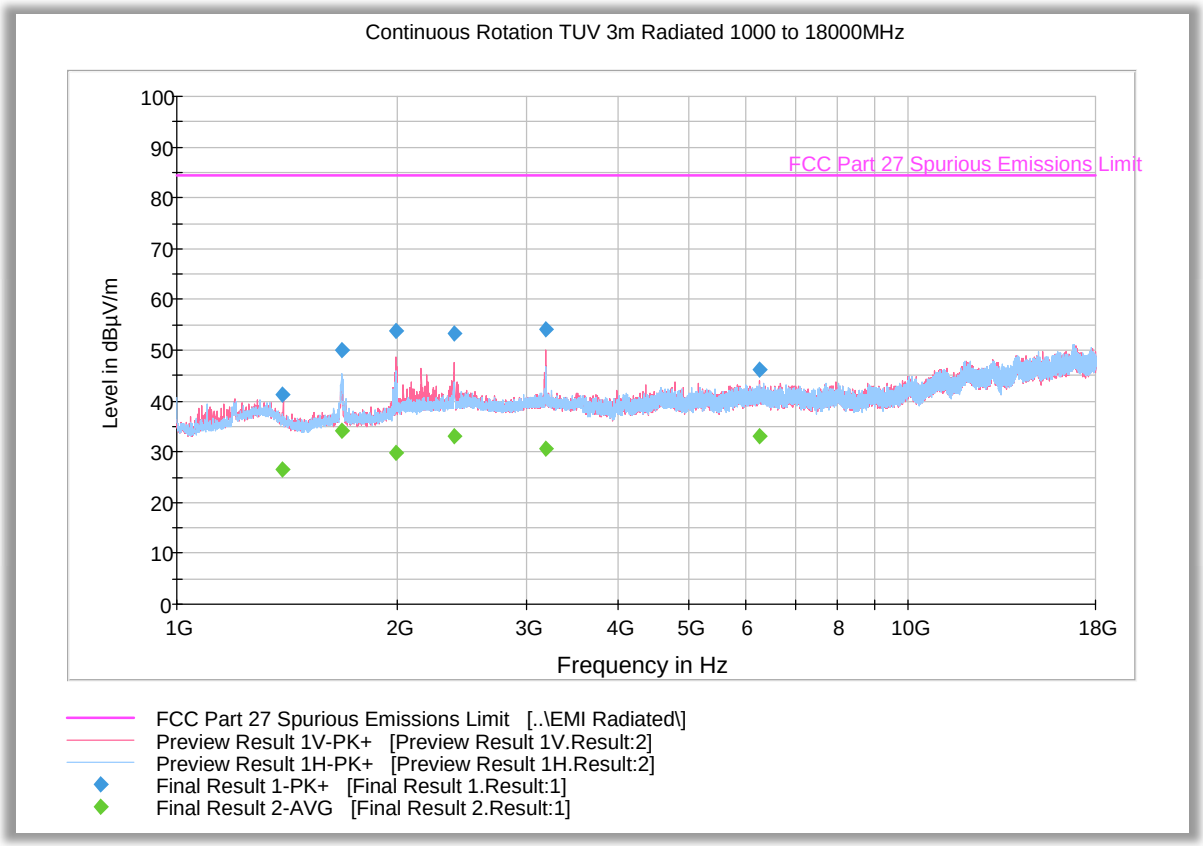
Peak Data

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1194.733333	42.7	1000.0	1000.000	131.7	V	-6.0	-6.5	41.7	84.4
1683.200000	47.4	1000.0	1000.000	131.7	H	284.0	-5.1	37.0	84.4
1998.900000	54.3	1000.0	1000.000	204.5	V	5.0	-2.2	30.1	84.4
2198.700000	51.2	1000.0	1000.000	203.5	V	333.0	-1.6	33.2	84.4
3192.066667	48.5	1000.0	1000.000	173.6	V	164.0	1.0	35.9	84.4
6215.800000	46.6	1000.0	1000.000	270.3	H	147.0	6.2	37.8	84.4

Average Data

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1194.733333	27.6	1000.0	1000.000	131.7	V	-6.0	-6.5	56.8	84.4
1683.200000	32.4	1000.0	1000.000	131.7	H	284.0	-5.1	52.0	84.4
1998.900000	29.8	1000.0	1000.000	204.5	V	5.0	-2.2	54.6	84.4
2198.700000	29.8	1000.0	1000.000	203.5	V	333.0	-1.6	54.6	84.4
3192.066667	30.2	1000.0	1000.000	173.6	V	164.0	1.0	54.2	84.4
6215.800000	33.0	1000.0	1000.000	270.3	H	147.0	6.2	51.4	84.4

2.8.32 Test Results Above 1GHz (LTE Band 12 Uplink Worst Case Configuration) - 10MHz Bandwidth High Channel



Peak Data

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1395.666667	41.2	1000.0	1000.000	139.7	V	220.0	-5.6	43.2	84.4
1682.500000	50.0	1000.0	1000.000	111.7	H	285.0	-5.1	34.4	84.4
1994.633333	53.8	1000.0	1000.000	146.7	V	218.0	-2.2	30.6	84.4
2397.833333	53.3	1000.0	1000.000	173.6	V	192.0	-1.1	31.1	84.4
3189.833333	54.0	1000.0	1000.000	190.5	V	190.0	1.0	30.4	84.4
6259.600000	46.2	1000.0	1000.000	352.7	V	248.0	6.3	38.2	84.4

Average Data

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1395.666667	26.5	1000.0	1000.000	139.7	V	220.0	-5.6	57.9	84.4
1682.500000	34.2	1000.0	1000.000	111.7	H	285.0	-5.1	50.2	84.4
1994.633333	29.7	1000.0	1000.000	146.7	V	218.0	-2.2	54.7	84.4
2397.833333	33.0	1000.0	1000.000	173.6	V	192.0	-1.1	51.4	84.4
3189.833333	30.6	1000.0	1000.000	190.5	V	190.0	1.0	53.8	84.4
6259.600000	33.1	1000.0	1000.000	352.7	V	248.0	6.3	51.3	84.4

2.9 FREQUENCY STABILITY

2.9.1 Specification Reference

FCC 47 CFR Part 2, Clause 2.1055
FCC 47 CFR Part 24, Clause 24.235
FCC 47 CFR Part 27, Clause 27.54
RSS-133, Clause 6.3
RSS-130, Clause 4.5

2.9.2 Standard Applicable

FCC 47 CFR Part 22, Clause 24.235 and Part 27, Clause 27.54:
The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

RSS-133, Clause 6.3 and RSS-130, Clause 4.5:
The frequency stability shall be sufficient to ensure that the occupied bandwidth stays within the operating frequency block when tested to the tmperature and supply voltage variations specified in RSS-Gen.

2.9.3 Equipment Under Test and Modification State

2.9.4 Equipment Under Test and Modification State

Serial No: 444002000024 (NU) and 247002000034 (CU) / Test Configuration A and B

2.9.5 Date of Test/Initial of test personnel who performed the test

February 03, 2020 / XYZ

2.9.6 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.9.7 Environmental Conditions/ Test Location

Test performed at TÜV SÜD America Inc. Rancho Bernardo facility

Ambient Temperature	23.4°C
Relative Humidity	30.9%
ATM Pressure	98.6kPa

TÜV SÜD AMERICA INC 10040 Mesa Rim Road San Diego, CA 92121-2912 Phone: 858 678 1400 FAX: 858 546 0364

2.9.8 Additional Observations

- This is a conducted test.
- The EUT was operated at 120.0VAC nominal voltage and was placed in the temperature chamber for the series of evaluations performed.
- Input Type "Tones" was selected and the EUT was injected a CW signal from a Signal Generator and maximum frequency error was monitored using the spectrum analyzer.
- The Temperature was reduced to -30°C and allowed to sit for 1 hour to allow the equipment and chamber temperature to stabilize. The measurements on both downlink and uplink were then performed. The temperature was then increased by 10°C steps and allowed to settle before taking the next set of measurements. The EUT was tested over the temperature -30°C to +50°C.
- Voltage variation was also performed at 85% and 115% of the nominal voltage.

TÜV SÜD AMERICA INC 10040 Mesa Rim Road San Diego, CA 92121-2912 Phone: 858 678 1400 FAX: 858 546 0364

2.9.9 Test Results Summary

LTE B2 Downlink – 20 MHz BW Middle Channel 1960 MHz				
Voltage (VDC)	**Temperature (°C)**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Limit (ppm)**
120	-30	0	0	-
	-20	0	0	-
	-10	0	0	-
	0	0	0	-
	+10	0	0	-
	+20	0	0	-
	+30	0	0	-
	+40	0	0	-
	+50	0	0	-
102	+20	0	0	-
138		0	0	-

LTE B2 Uplink – 20 MHz BW Middle Channel 1880 MHz				
Voltage (VDC)	**Temperature (°C)**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Limit (ppm)**
120	-30	0	0	-
	-20	0	0	-
	-10	0	0	-
	0	0	0	-
	+10	0	0	-
	+20	0	0	-
	+30	0	0	-
	+40	0	0	-
	+50	0	0	-
102	+20	0	0	-
138		0	0	-

The frequency stability of the EUT is sufficient to keep it within the authorised frequency ranges at any temperature interval and voltage variations across the measured range.

LTE B4 Downlink – 20 MHz BW Middle Channel 2132.5 MHz				
Voltage (VDC)	**Temperature (°C)**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Limit (ppm)**
120	-30	0	0	-
	-20	0	0	-
	-10	0	0	-
	0	0	0	-
	+10	0	0	-
	+20	0	0	-
	+30	0	0	-
	+40	0	0	-
	+50	0	0	-
102	+20	0	0	-
138		0	0	-

LTE B4 Uplink – 20 MHz BW Middle Channel 1732.5 MHz				
Voltage (VDC)	**Temperature (°C)**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Limit (ppm)**
120	-30	0	0	-
	-20	0	0	-
	-10	0	0	-
	0	0	0	-
	+10	0	0	-
	+20	0	0	-
	+30	0	0	-
	+40	0	0	-
	+50	0	0	-
102	+20	0	0	-
138		0	0	-

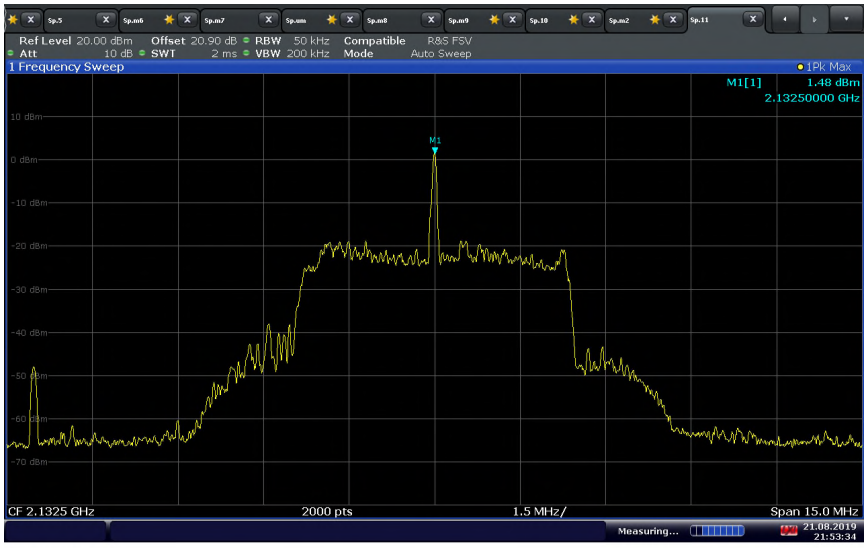
The frequency stability of the EUT is sufficient to keep it within the authorised frequency ranges at any temperature interval and voltage variations across the measured range.

LTE B12 Downlink – 5 MHz BW Middle Channel 737.5 MHz				
Voltage (VDC)	**Temperature (°C)**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Limit (ppm)**
120	-30	0	0	-
	-20	0	0	-
	-10	0	0	-
	0	0	0	-
	+10	0	0	-
	+20	0	0	-
	+30	0	0	-
	+40	0	0	-
	+50	0	0	-
102	+20	0	0	-
138		0	0	-

LTE B12 Uplink – 5 MHz BW Middle Channel 707.5 MHz				
Voltage (VDC)	**Temperature (°C)**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Limit (ppm)**
120	-30	0	0	-
	-20	0	0	-
	-10	0	0	-
	0	0	0	-
	+10	0	0	-
	+20	0	0	-
	+30	0	0	-
	+40	0	0	-
	+50	0	0	-
102	+20	0	0	-
138		0	0	-

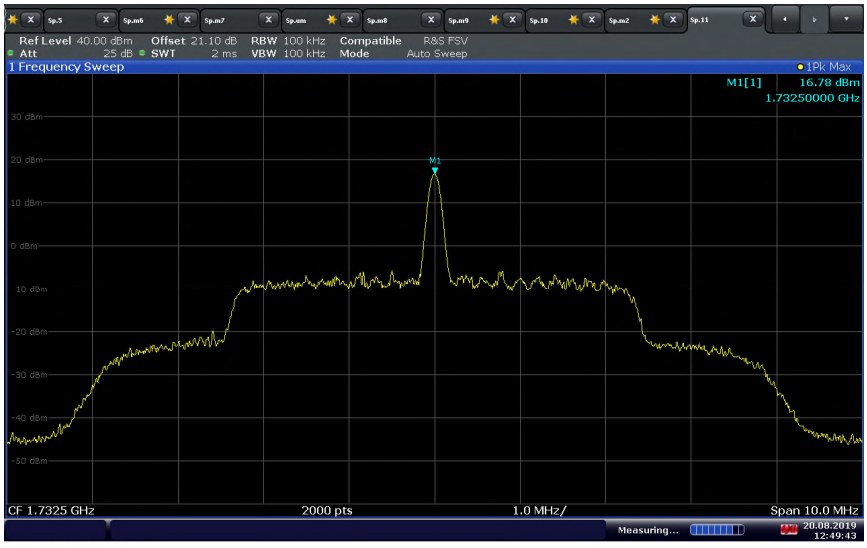
The frequency stability of the EUT is sufficient to keep it within the authorised frequency ranges at any temperature interval and voltage variations across the measured range.

2.9.10 Sample Test Plots



21:53:35 21.08.2019

LTE Band 4 Downlink Middle Channel 120VAC @ 20°C



12:49:44 20.08.2019

LTE Band 4 Uplink Middle Channel 120VAC @ 20°C