Test Report Serial Number:	45461653 R1.0
Test Report Date:	11 May 2021
Project Number:	1534

EMC Test Report - New Filing

Applicant:

Telcosat Inc.
#116, 1919 - 27 Ave N.E.
Calgary, AB, T2E 7E4
Canada

FCC ID:	IC Registration Number
UDIRPT700	**5842A-RPT700**
Product Model Number / HVIN	Product Name / PMN
RPT700	**RPT700**

In Accordance With:

FCC 47 CFR Part 27

Miscellaneous Wireless Communications Services

RSS-GEN, RSS-130 Issue 2

Equipment Operating in the Frequency Bands 617-652 MHz, 663-698 MHz, 698-756 MHz and 777-787 M

Approved By:

Ben Hewson, President
Celltech Labs Inc.
21-364 Lougheed Rd.
Kelowna, BC, V1X 7R8
Canada

Test Lab Certificate: 2470.01 **IC Registration 3874A-1** **FCC Registration: CA3874**

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1.0 DOCUMENT CONTROL

Revision History					
Samples Tested By:		Art Voss, P.Eng.	**Date(s) of Evaluation:**		15 Mar - 10 April, 2021
Report Prepared By:		Art Voss, P.Eng.	**Report Reviewed By:**		Ben Hewson
Report Revision	**Description of Revision**		**Revised Section**	**Revised By**	**Revision Date**
0.1	Draft Release		n/a	Art Voss	14 April 2021
0.2	Finalized Data		n/a	Art Voss	16 April 2021
1.0	Initial Release		n/a	Art Voss	24 April 2021
2.0	Revised DUT Info, Highlighted Max Power		2, 11	Art Voss	11 May 2021

2.0 CLIENT AND DUT INFORMATION

Client Information		
Applicant Name (FCC)	**Telcosat Inc.**	
Applicant Address (FCC)	#116, 1919 - 27 Ave N.E.	
	Calgary, AB, T2E 7E4	
	Canada	
Applicant Name (ISED)	**Telcosat Inc.**	
Applicant Address (ISED)	#116, 1919 - 27 Ave N.E.	
	Calgary, AB, T2E 7E4	
	Canada	
DUT Information		
Device Identifier(s):	FCC ID:	**UDIRPT700**
	IC ID:	**5842A-RPT700**
Device Type:	LTE Industrial Repeater / Zone Enhancer	
Device Model(s) / HVIN:	RPT700	
Device Marketing Name / PMN:	-	
Firmware Version ID Number / FVIN:	-	
Host Marketing Name / HMN:	-	
Test Sample Serial No.:	T/A Sample - Identical Prototype	
Equipment Class (FCC):	B2I - Part 20 Industrial Booster (CMRS) Part 27	
Equipment Class (ISED):	Amplifier and/or Band Translator	
Transmit Frequency Range:	699-716MHz, 729-746MHz, 746-756MHz, 777-787MHz	
Test Channels:	n/a	
Manuf. Max. Rated Output Power:	26dBm, 400mW	
Manuf. Max. Rated BW/Data Rate:	n/a	
Antenna Type and Gain:	14dBd	
Modulation:	n/a	
Mode:	n/a	
Emission Designator:	See Section 8.0	
DUT Power Source:	120VAC	
DUT Dimensions [HxWxD] (mm)	H x W x D: 450mm x 406mm x 305	
Deviation(s) from standard/procedure:	None	
Modification of DUT:	None	

3.0 SCOPE

Preface:

This Certification Report was prepared on behalf of:

Telcosat Inc.

,(the '*Applicant*"), in accordance with the applicable Federal Communications Commission (FCC) CFR 47 and Innovation, Scientific and Economic Development (ISED) Canada rules parts and regulations (the '*Rules*'). The scope of this investigation was limited to only the equipment, devices and accessories (the '*Equipment*') supplied by the *Applicant*. The tests and measurements performed on this *Equipment* were only those set forth in the applicable *Rules* and/or the Test and Measurement Standards they reference. The *Rules* applied and the Test and Measurement Standards used during this evaluation appear in the Normative References section of this report. The limits set forth in the technical requirements of the applicable *Rules* were applied to the measurement results obtained during this evaluation and ,unless otherwise noted, these limits were used as the Pass/Fail criteria. The Pass/Fail statements made in this report apply to only the tests and measurements performed on only the *Equipment* tested during this evaluation. Where applicable and permissible, information including test and measurement data and/or results from previous evaluations of same or similar equipment, devices and/or accessories may be cited in this report.

Device:

The PRT700 is an Industrial (Non-Consumer) LTE Signal Booster / Zone Enhancer. The RPT700 operates in the LTE Bands 12 and 13 Downlink and Uplink. The RPT700 must be professionally installed.

Requirement:

This *Equipment* is required to be evaluated to FCC 47 CFR §27 and ISED RSS-130. As a Signal Booster / Zone Enhancer, it must also be evaluated to FCC KDB 935210 D05 (Industrial) and ISED RSS-131. As per FCC 47 CFR §2.1091 an RF Exposure (MPE) evaluation is required for this *Equipment* and the results of the RF Exposure (SAR) evaluation appear in this report.

Application:

This is an application for a new certification.

4.0 TEST SUMMARY

TEST SUMMARY						
Section	**Description of Test**	**Procedure Reference**	**Applicable Rule Part(s) FCC**	**Applicable Rule Part(s) ISED**	**Test Date**	**Result**
8.0	Occupied Bandw idth	ANSI C63.26-2015	§2.1049	RSS-Gen	10 Apr 2021	Pass
9.0	Out-Of-Band Rejection	ANSI C63.26-2015 FCC KDB 935210 D05 (3.3) ISED RSS-131 (5.2.1)	n/a	n/a	10 Apr 2021	Pass
10.0	AGC Threshold	ANSI C63.26-2015 FCC KDB 935210 D05 (3.2) ISED RSS-131 (5.2)	n/a	n/a	16 Mar 2021	Pass
11.0	Mean Output Pow er	ANSI C63.26-2015 FCC KDB 935210 D05 (3.5) ISED RSS-131 (5.2.3)	§27.50(b)(2) §27.50(c)(3)	RSS-130 (4.6.3) SRSP-518 (5.1.21)	26 Mar 2021	Pass
12.0	I / O Comparison	ANSI C63.26-2015 FCC KDB 935210 D05 (3.4) ISED RSS-131 (5.2.2)	n/a	n/a	26 Mar 2021	Pass
13.0	Out-Of-Band Emissions Band Edge	ANSI C63.26-2015 FCC KDB 935210 D05 (3.6)	§27.50(c) §27.50(g)	RSS-130 (4.7)	26 Mar 2021	Pass
14.0	Conducted Spurious Emissions	ANSI C63.26-2015 FCC KDB 935210 D05 (3.6)	§27.50(c) §27.50(g)	RSS-130 (4.7)	26 Mar 2021	Pass
15.0	Peak-To-Average Pow er Ration PAPR	ANSI C63.26-2015		RSS-130 (4.6)	29 Mar 2021	Pass
16.0	Radiated Rx Spurious Emissions	ANSI C63.4: 2014	§2.1053	RSS-Gen	31 Mar 2021	Pass
17.0	Pow er Line Conducted Emissions	ANSI C63.4: 2014	§2.1053	RSS-Gen	1 Apr 2021	Pass
18.0	Frequency Stability	ANSI C63.26-2015	§2.1055	RSS-Gen	30 Mar 2021	Pass

Test Station Day Log

Date	Ambient Temp (°C)	Relative Humidity (%)	Barometric Pressure (kPa)	Test Station	Tests Performed Section(s)
15 Mar 2021	22.8	16	102.0	**EMC**	**9**
16 Mar 2021	20.7	17	102.4	**EMC**	**9, 10, 11**
17 Mar 2021	19.9	17	102.2	**EMC**	**12, 14**
22 Mar 2021	22.4	16	101.3	**EMC**	**14**
23 Mar 2021	20.2	17	103.1	**EMC**	**14**
24 Mar 2021	22.0	16	100.8	**EMC**	**8, 11, 12, 13, 14,**
25 Mar 2021	22.0	16	101.0	**EMC**	**9**
26 Mar 2021	20.8	17	101.8	**EMC**	**9, 11, 12, 13, 14**
29 Mar 2021	22.8	20	102.1	**EMC**	**8, 15**
30 Mar 2021	22.2	19	102.6	**TC**	**18**
31 Mar 2021	4.0	61	103.0	**OATS**	**16**
1 Apr 2021	22.2	16	101.0	**LISN**	**17**
10 Apr 2021	21.9	17	102.4	**EMC**	**8, 9**

EMC - EMC Test Bench
OATS - Open Area Test Site
LISN - LISN Test Area
IMM - Immunity Test Area
SAC - Semi-Anechoic Chamber
TC - Temperature Chamber
ESD - ESD Test Bench
RI - Radiated Immunity Chamber

I attest that the data reported herein is true and accurate within the tolerance of the Measurement Instrument Uncertainty; that all tests and measurements were performed in accordance with accepted practices or procedures; and that all tests and measurements were performed by me or by trained personnel under my direct supervision. The results of this investigation are based solely on the test sample(s) provided by the client which were not adjusted, modified or altered in any manner whatsoever, except as required to carry out specific tests or measurements. This test report has been completed in accordance with ISO/IEC 17025.	Art Voss, P.Eng. Technical Manager Celltech Labs Inc. 24 April 2021 Date PROFESSIONAL ENGINEER, PROVINCE OF BRITISH COLUMBIA, A. F. VOSS # 31327

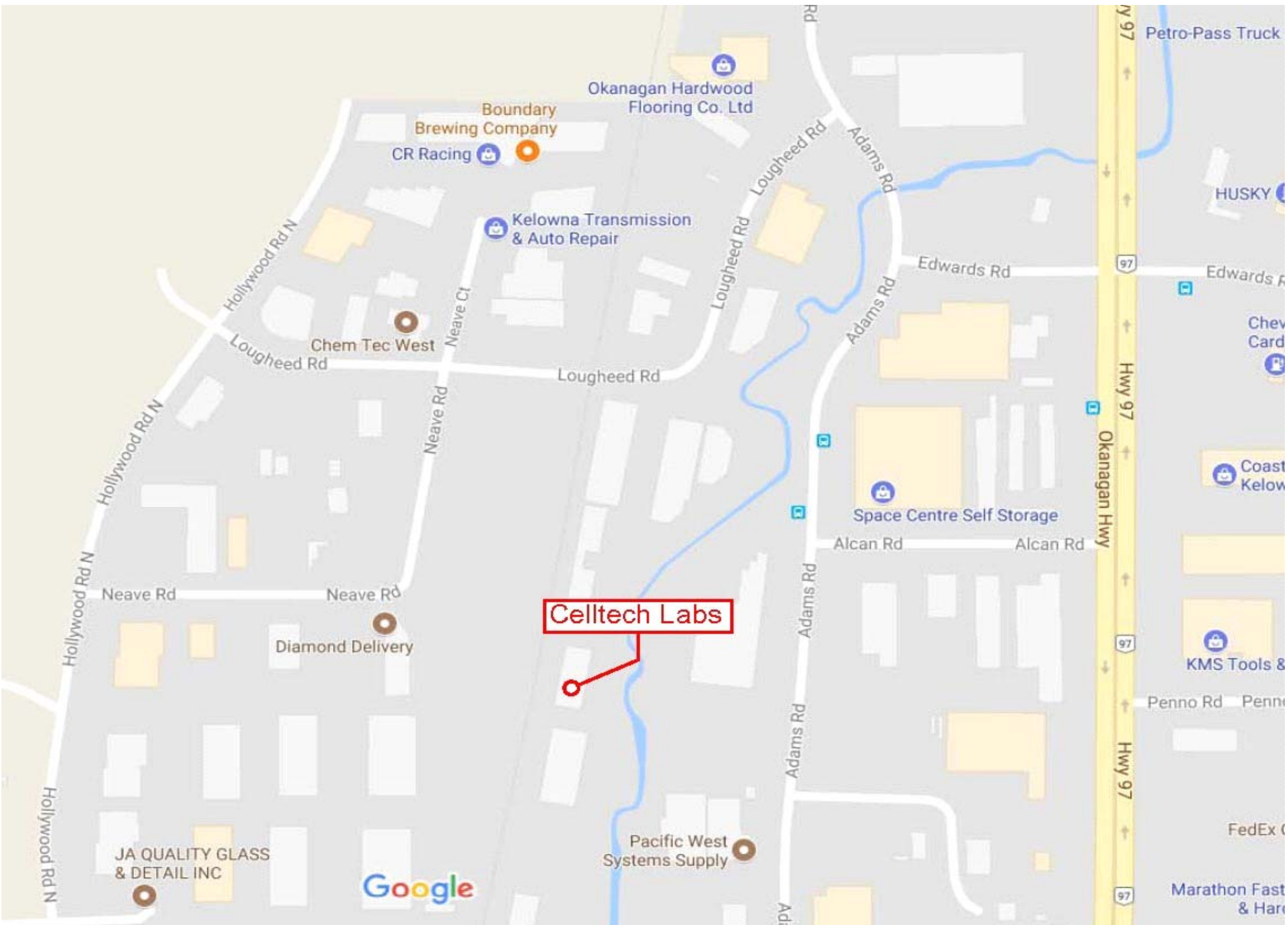
5.0 NORMATIVE REFERENCES

Normative References	
ISO/IEC 17025:2017	General requirements for the competence of testing and calibration laboratories
ANSI C63.10-2013	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices
CFR Title 47: Part 2:	Code of Federal Regulations Telecommunication Frequency Allocations and Radio Treaty Matters; General Rules and Regulations
CFR Title 47: Part 27:	Code of Federal Regulations Telecommunication Miscellaneous Wireless Communications Services
FCC KDB	Knowledge Data Base 935210 D05 Measurement Guidance for Industrial and Non-Consumer Signal Booster, Repeater and Amplifier Devices
ISED RSS-Gen Issue 5: March	Innovation, Science and Economic Development Canada Spectrum Management and Telecommunications Radio Standards Specification General Requirements and Information for the Certification of Radiocommunication Equipment
ISED RSS-130 Issue 2: February 2019	Innovation, Science and Economic Development Canada Spectrum Management and Telecommunications Radio Standards Specification Mobile EaEquipment Operating in the Frequency Bands 617-652 MHz, 663-698 MHz, 698-756 MHz and 777-787 MHz
ISED RSS-131 Issue 3: January 2017, May 2017	Innovation, Science and Economic Development Canada Spectrum Management and Telecommunications Radio Standards Specification Mobile EaEquipment Operating in the Frequency Bands 617-652 MHz, 663-698 MHz, 698-756 MHz and 777-787 MHz
ISED SRSP-218 Issue 2 February 2019	Innovation, Science and Economic Development Canada Spectrum Management and Telecommunications Radio Standards Specification Technical Requirements in the Bands 617-652 MHz, 663-698 MHz, 698-756 MHz and 777-787 MHz

6.0 FACILITIES AND ACCREDITATIONS

Facility and Accreditation:

The facilities used to evaluate this device outlined in this report are located at 21-364 Lougheed Road, Kelowna, British Columbia, Canada V1X 7R8. The radiated emissions site (OATS) conforms to the requirements set forth in ANSI C63.4 and is filed and listed with the FCC under Test Firm Registration Number CA3874 and Innovation, Science and Economic Development Canada under Test Site File Number ISED 3874A-1. Celltech is accredited to ISO 17025, through accrediting body A2LA and with certificate 2470.01.



7.0 EQUIPMENT REQUIREMENTS

In accordance with FCC KDB 935210 D05, the following is the requirement for the signal generator (SG) used during the evaluation:

2.2 Signal generator
Several of the technical requirements are expressed such that one or more input signals are required when collecting the data necessary to demonstrate compliance (e.g., intermodulation tests). Thus, the capability to generate a minimum of two separate signal paths may be required (two independent signal generators or one signal generator with separately-controlled dual outputs). The signal generator(s) must have the following minimum capabilities:
a) Tuning range that completely encompasses the operational frequency ranges of the amplifier/booster (e.g., 100 kHz to 3 GHz),

b) Nominal output power range of −103 dBm to +20 dBm,

c) Ability to replicate CMRS signal types GSM, CDMA, W-CDMA (LTE is optional) with a pseudo-random symbol pattern,

d) Ability to replicate PLMRS signal types (e.g., P25 Phase 1, P25 Phase 2, TETRA),

e) Ability to generate CW tones and band-limited AWGN.

A Keysight AT/N5182B-503;Q was used throughout this investigation and meets these requirements.

8.0 OCCUPIED BANDWIDTH

Test Procedure	
Normative References	**FCC 47 CFR §2.1049, RSS-Gen (6.7)**
	ANSI C63.26 (5.4.4)
Requirement / Limits	
47 CFR §2.1049	**§ 2.1049 Measurements required: Occupied Bandwidth.** The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission shall be measured…
RSS-Gen (6.7)	**6.7 Occupied bandwidth (or 99% emission bandwidth) and x dB bandwidth** The occupied bandwidth or the "99% emission bandwidth" is defined as the frequency range between two points, one above and the other below the carrier frequency, within which 99% of the total transmitted power of the fundamental transmitted emission is contained. The occupied bandwidth shall be reported for all equipment in addition to the specified bandwidth required in the applicable RSSs.
General Procedure	
C63.26 (5.4.4)	**5.4.4 Occupied bandwidth—Power bandwidth (99%) measurement procedure** The OBW is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers are each equal to 0.5% of the total mean power of the given emission. The following procedure shall be used for measuring (99%) power bandwidth: a) The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The frequency span for the spectrum analyzer shall be set wide enough to capture all modulation products including the emission skirts (typically a span of 1.5 × OBW is sufficient). b) The nominal IF filter 3 dB bandwidth (RBW) shall be in the range of 1% to 5% of the anticipated OBW, and the VBW shall be ≥ 3 × RBW. c) Set the reference level of the instrument as required to prevent the signal amplitude from exceeding the maximum spectrum analyzer input mixer level for linear operation. d) Set the trace mode to max-hold. e) Use the 99% power bandwidth function of the instrument (if available) and report the measured bandwidth.
Test Setup	**Appendix A - Figure A.1**
Measurement Procedure	
The SG was configured for a single 5MHz BW signal and an aggregated 10MHz channel at the Pre-AGC level. The SG frequency was set to the low, mid and high channels of each UL and DL channels. The DUT was connected to the SA via a 30dB attenuator and the SA was configured as described above using the 99% Occupied Bandwidth function. The output power of the DUT was set to the manufacturer's highest output power setting at the nominal transmit frequency. The 99% Occupied Bandwidth was measured and recorded.	

Table 8.1 – Summary of Occupied Bandwidth Measurements, LTE B12 DL

See Appendix D for Measurement Plots

Occupied Bandwidth Measurement Results				
Channel Frequency (MHz)	LTE Band	Nominal Channel BW (MHz)	Measured Occupied Bandwidth (MHz)	Emission Designator
731.5	12 DL	5	4.48	4M48D1D
737.5			4.48	4M48D1D
743.5			4.50	4M50D1D
734		10	9.44	9M44D1D
737.5			9.48	9M48D1D
741			9.44	9M44D1D
				Complies

Table 8.2 – Summary of Occupied Bandwidth Measurements, LTE B12 UL

See Appendix D for Measurement Plots

Occupied Bandwidth Measurement Results				
Channel Frequency (MHz)	LTE Band	Nominal Channel BW (MHz)	Measured Occupied Bandwidth (MHz)	Emission Designator
701.5	12 UL	5	4.52	4M52D1D
707.5			4.60	4M60D1D
713.5			4.56	4M56D1D
704		10	9.48	9M48D1D
707.5			9.52	9M52D1D
711			9.52	9M52D1D
				Complies

Table 8.3 – Summary of Occupied Bandwidth Measurements, LTE B13 DL

See Appendix D for Measurement Plots

Occupied Bandwidth Measurement Results				
Channel Frequency (MHz)	LTE Band	Nominal Channel BW (MHz)	Measured Occupied Bandwidth (MHz)	Emission Designator
748.5	13 DL	5	4.50	4M50D1D
751			4.48	4M48D1D
753.5			4.48	4M48D1D
751		10	9.44	9M44D1D
				Complies

Table 8.4 – Summary of Occupied Bandwidth Measurements, LTE B13 UL

See Appendix D for Measurement Plots

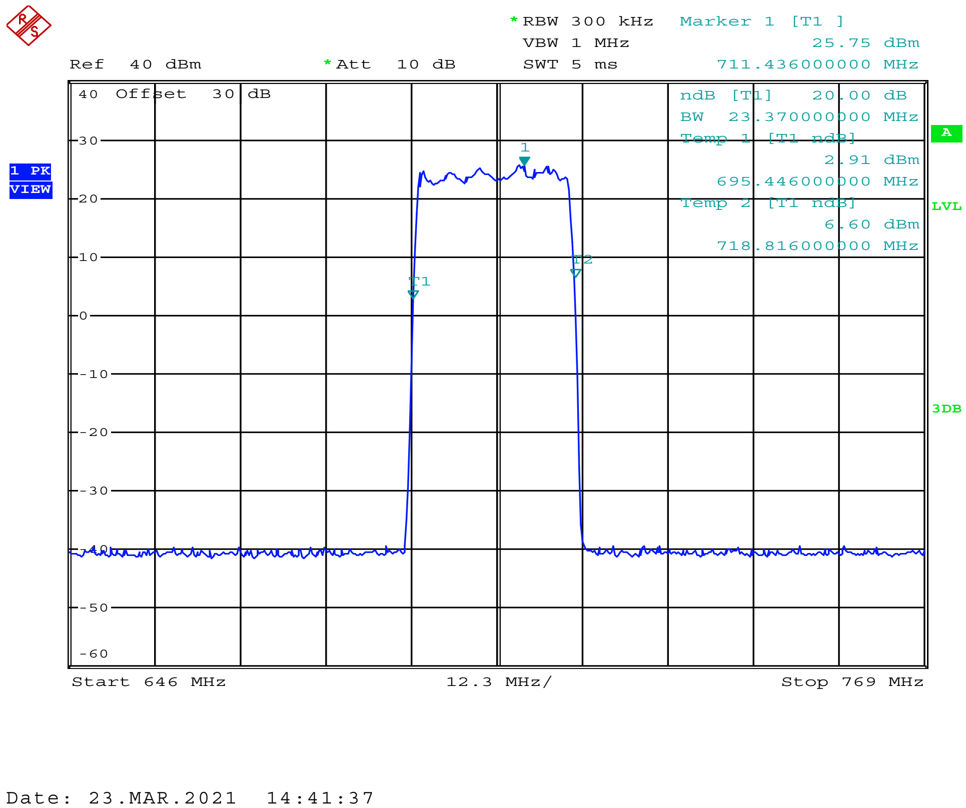
Occupied Bandwidth Measurement Results				
Channel Frequency (MHz)	LTE Band	Nominal Channel BW (MHz)	Measured Occupied Bandwidth (MHz)	Emission Designator
779.5	13 UL	5	4.52	4M52D1D
782			4.56	4M56D1D
785.4			4.56	4M56D1D
782		10	9.52	9M52D1D
				Complies

9.0 OUT-OF-BAND REJECTION

Test Procedure	
Normative References	FCC KDB 935210 D02 (3.3), RSS-131 (5.2.1)
	ANSI C63.26 As Applicable
Requirement / Limits	
FCC KDB 935210 D05	**3.3 Out-of-Band Rejection** A signal booster shall reject amplification of other signals outside of its passband.
RSS-131 (5.2.1)	**5.2.1 Out-of-band rejection** The gain-versus-frequency response and the 20 dB bandwidth of the zone enhancer shall be reported. The zone enhancer shall reject amplification of other signals outside the passband of the zone enhancer.
General Procedure	
FCC KDB 935210 D05 (3.3)	Adjust the internal gain control of the EUT (if so equipped) to the maximum gain for which equipment certification is sought. a) Connect a signal generator to the input of the EUT. b) Configure a swept CW signal with the following parameters: 1) Frequency range = ± 250 % of the passband, 2) Level = a sufficient level to affirm that the out-of-band rejection is > 20 dB above the noise floor and will not engage the AGC during the entire sweep. 3) Dwell time = approximately 10 ms. 4) Number of points = SPAN/(RBW/2). c) Connect a spectrum analyzer to the output of the EUT using appropriate attenuation. d) Set the span of the spectrum analyzer to the same as the frequency range of the signal generator. e) Set the resolution bandwidth (RBW) of the spectrum analyzer to be 1 % to 5 % of the EUT passband, and the video bandwidth (VBW) shall be set to ≥ 3 × RBW. f) Set the detector to Peak Max-Hold and wait for the spectrum analyzer's spectral display to g) Place a marker to the peak of the frequency response and record this frequency as f_0. h) Place two markers, one at the lowest and the other at the highest frequency of the envelope of the spectral display, such that each marker is at or slightly below the −20 dB down amplitude, to determine the 20 dB bandwidth. i) Capture the frequency response of the EUT. j) Repeat for all frequency bands applicable for use by the EUT.
Test Setup	**Appendix A - Figure A.1**
Measurement Procedure	
The SG and SA were configured as indicated above and the output of the DUT was connected to the SA via a 30dB attenuator. The OOB rejection was evaluated on the LTE Bands 12 and 13 UL channels. Since the LTE Bands 12 and 13 DL channels are adjacent, the OOB rejection was evaluated on the entire Pass Band. The SA 20dB BW function was employed to determine the 20dB BW.	

Plot 9.1 – OOB Rejection, LTE B12 UL

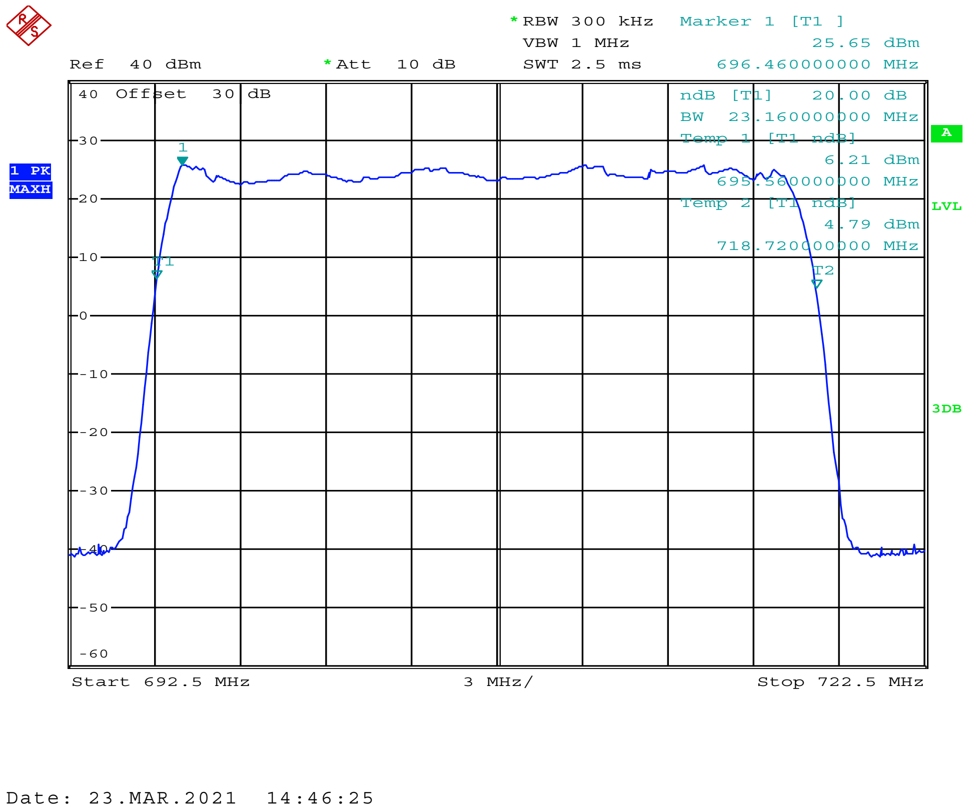
Out-Of-Band Rejection



LTE Band:	Frequency Range:	
12 UL	**646 - 769** MHz	

Plot 9.2 – OOB Rejection, LTE B12 UL

Out-Of-Band Rejection



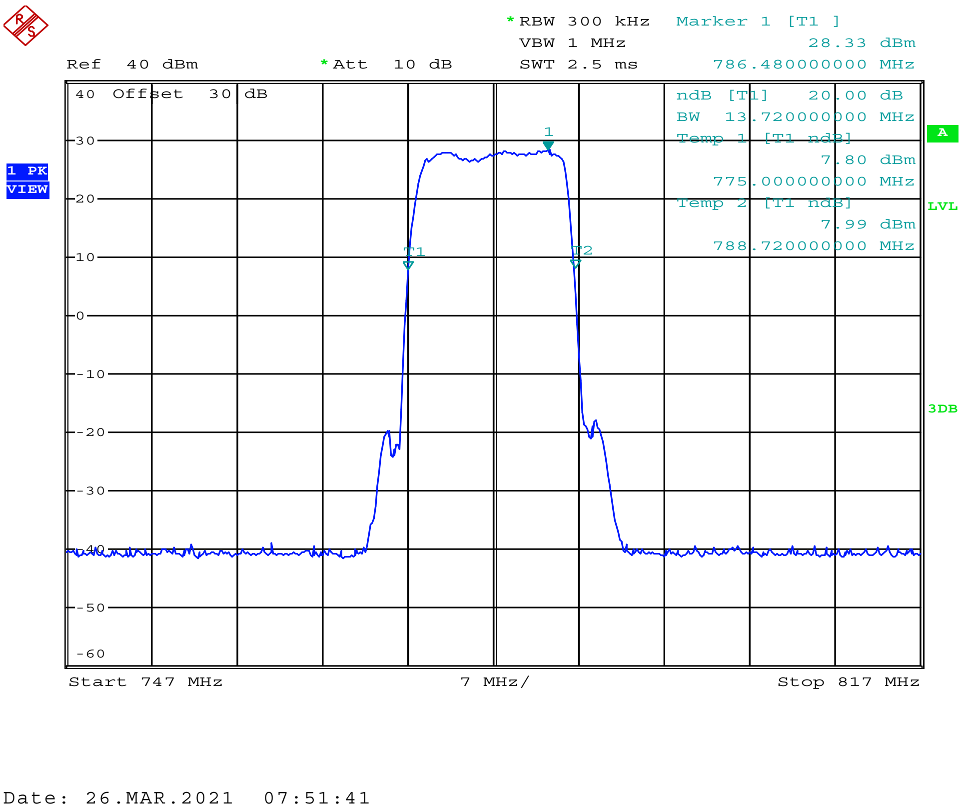
LTE Band:	Frequency Range:	Measured 20dB BW:
12 UL	**707.50** MHz	**23.16** MHz

Table 9.1 – Summary of Out-Of-Band Rejection, LTE Band 12 UL

OOB Rejection Results		
Measurement Frequency Range (MHz)	**LTE Band**	**Measured 20dB Bandwidth (MHz)**
707.5	12 UL	23.2
		Complies

Plot 9.3 – OOB Rejection, LTE B13 UL

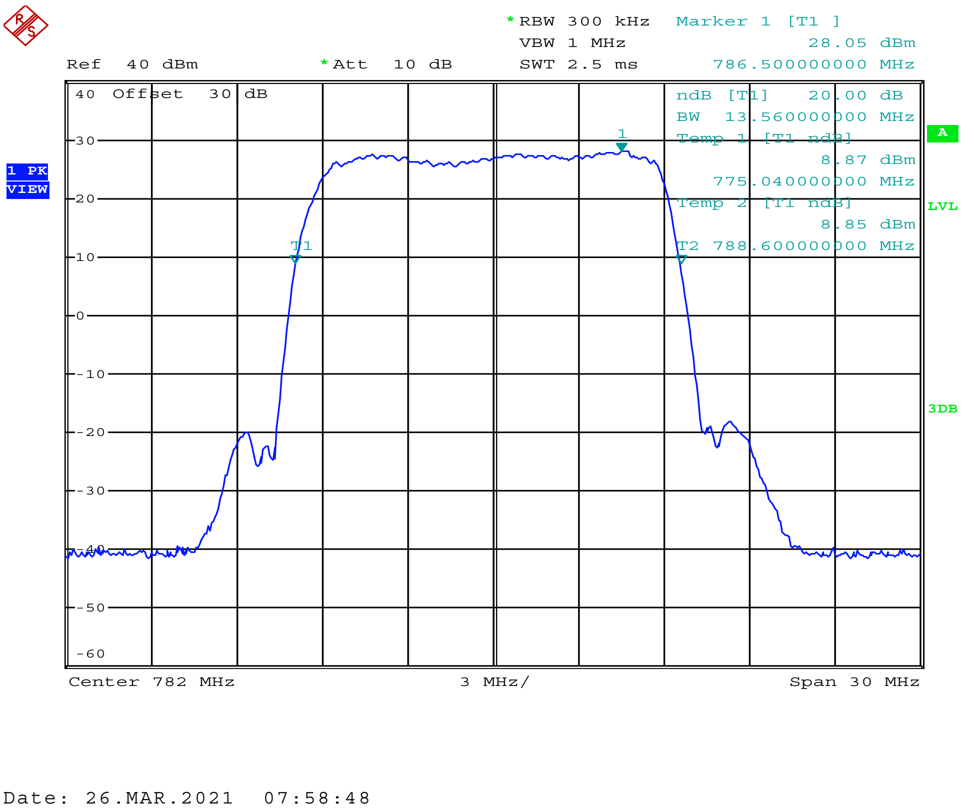
Out-Of-Band Rejection



LTE Band:	Frequency Range:	
13 UL	**747 - 817** MHz	

Plot 9.4 – OOB Rejection, LTE B13 UL

Out-Of-Band Rejection



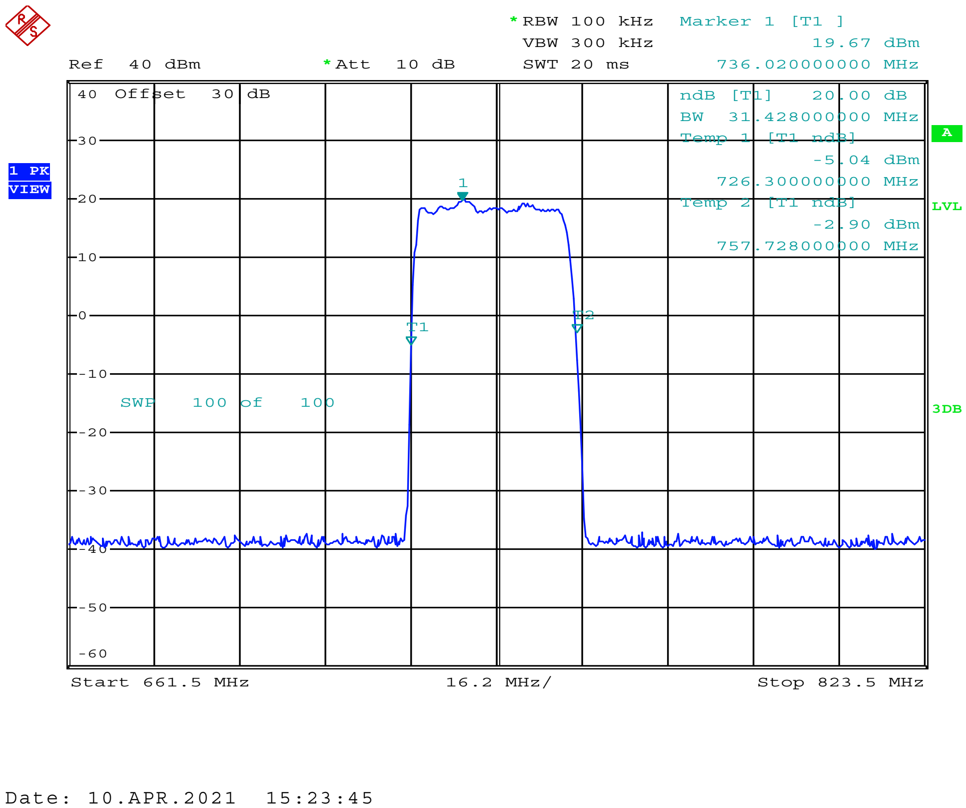
LTE Band:	Frequency Range:	Measured 20dB BW:
13 UL	**782.00** MHz	**13.56** MHz

Table 9.2 – Summary of Out-Of-Band Rejection, LTE Band 13 UL

OOB Rejection Results		
Measurement Frequency Range (MHz)	**LTE Band**	**Measured 20dB Bandwidth (MHz)**
782	13 UL	13.6
		Complies

Plot 9.5 – OOB Rejection, LTE B12 & B13 DL Passband

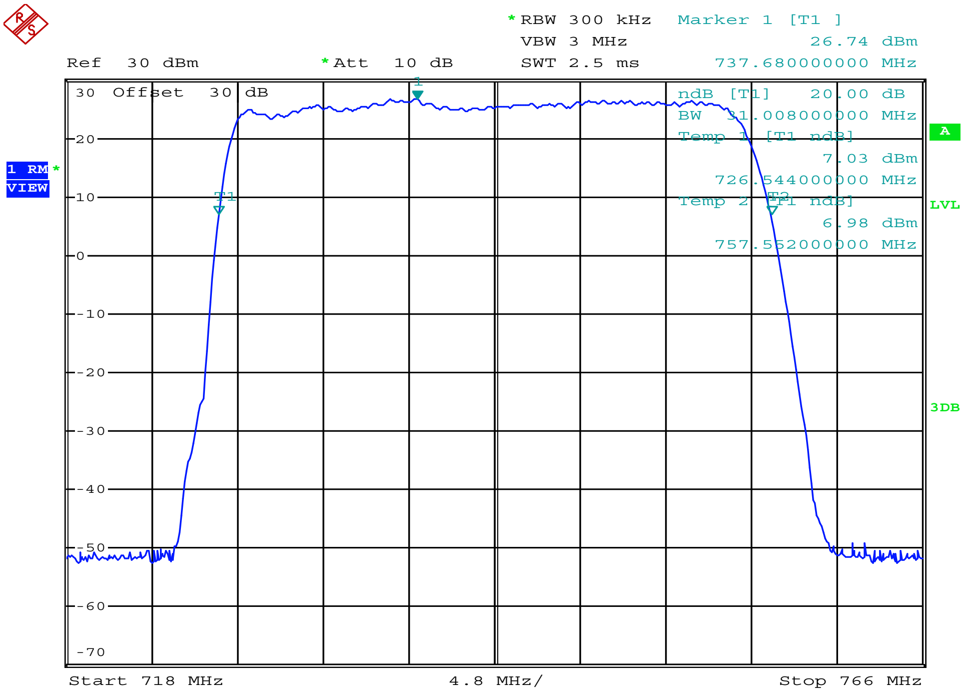
Out-Of-Band Rejection



LTE Band:	Frequency Range:	
12 & 13 DL	**661.5 - 823.5** MHz	

Plot 9.6 – OOB Rejection, LTE B12 & B13 DL Passband

Out-Of-Band Rejection



LTE Band:	Frequency Range:	Measured 20dB BW:
12 & 13 DL	**742.00** MHz	**31.00** MHz

Table 9.3 – Summary of Out-Of-Band Rejection, LTE Band 12 & 13 DL

OOB Rejection Results		
Measurement Frequency Range (MHz)	**LTE Band**	**Measured 20dB Bandwidth (MHz)**
742	12 & 13 DL	31.0
		Complies

10.0 AGC THRESHOLD

Table 10.1 – Summary AGC Threshold

AGC Threshold Results						
LTE Band		Channel Frequency (MHz)	Nominal Channel BW (MHz)	AGC Threshold [P_{AGC}] (dBm)	Pre-AGC [(1)] Threshold (dBm)	Post-AGC [(2)] Threshold (dBm)
12	UL	700.5	5	-72.77	-72.97	-69.58
			10	-72.60	-72.80	-69.40
13	UL	737	5	-66.53	-66.73	-63.22
			10	-66.36	-66.56	-63.30
12/13	DL	782	5	-67.05	-67.35	-63.72
			10	-67.26	-67.56	-63.90
				Result:	Complies	

Pre-AGC = P_{AGC} - 0dB ≤ P_{AGC} ≤ P_{AGC} - 0.5dB

Post-AGC = P_{AGC} + 3dB

11.0 ANTENNA PORT CONDUCTED POWER

Test Procedure	
Normative References	FCC KDB 935210 D02 (3.5), RSS-131 (5.2.3), FCC §27.50, RSS-130, SRSP-518 ANSI C63.26 As Applicable

Requirement / Limits	
FCC §27.50(b)(2)	**§27.50 Power limits and duty cycle.** (b) The following power and antenna height limits apply to transmitters operating in the 746-758 MHz, 775-788 MHz and 805-806 MHz bands: (2) Fixed and base stations transmitting a signal in the 746-757 MHz and 776-787 MHz bands with an emission bandwidth of 1 MHz or less must not exceed an ERP of 1000 watts and an antenna height of 305 m HAAT, except that antenna heights greater than 305 m HAAT are permitted if power levels are reduced below 1000 watts ERP in accordance with Table 1 of this section.
FCC §27.50(c)(3)	**§27.50 Power limits and duty cycle.** (c) The following power and antenna height requirements apply to stations transmitting in the 600 MHz band and the 698 - 746 MHz band: (3) Fixed and base stations transmitting a signal with an emission bandwidth greater than 1 MHz must not exceed an ERP of 1000 watts/MHz and an antenna height of 305 m HAAT,...
RSS-131 (5.2.3)	**5.2.3 Mean output power and zone enhancer gain** The zone enhancer gain shall not exceed the nominal gain by more than 1.0 dB. Outside of the 20 dB bandwidth, the gain shall not exceed the gain at the 20 dB point.
RSS-130 (4.6.3)	**4.6 Transmitter output power and effective radiated power (e.r.p.)** **4.6.3 Frequency bands 698-756 MHz and 777-787 MHz** For base and fixed equipment other than fixed subscriber equipment, refer to SRSP-518 for the e.i.r.p. limits.
SRSP-518 (5.1.21)	**5.1 Radiated power and antenna height limits for fixed and base stations** 21. For fixed and base stations transmitting in accordance with section 4, the maximum permissible equivalent isotropically radiated power (e.i.r.p.) is 1640 watts and 1640 watts/MHz for a channel bandwidth less than or equal to 1 MHz and greater than 1 MHz, respectively. These e.i.r.p. limits apply for stations with an antenna height above average terrain (HAAT)[2] up to 305 metres.

General Procedure	
FCC KDB 935210 D05 (3.5)	**3.5 Mean output power and amplifier/booster gain** **3.5.1 General** a) Adjust the internal gain control of the EUT to the maximum gain for which the equipment certification is being sought. Any EUT attenuation settings shall be set to their minimum value. b) Input power levels (uplink and downlink) should be set to maximum input ratings while confirming that the device is not capable of operating in saturation (non-linear mode) at the rated input levels, including during the performance of the input/output power measurements.
	3.5.2 Measuring the EUT mean input and output power a) Connect a signal generator to the input of the EUT. b) Configure to generate the AWGN (broadband) test signal. c) The frequency of the signal generator shall be set to the frequency f_0 as determined from 3.3. d) Connect a spectrum analyzer or power meter to the output of the EUT using appropriate attenuation as necessary. e) Set the signal generator output power to a level that produces an EUT output level that is just below the AGC threshold (see 3.2), but not more than 0.5 dB below. f) Measure and record the output power of the EUT; use 3.5.3 or 3.5.4 for power measurement. g) Remove the EUT from the measurement setup. Using the same signal generator settings, repeat the power measurement at the signal generator port, which was used as the input signal to the EUT, and record as the input power. EUT gain may be calculated as described in 3.5.5. h) Repeat steps f) and g) with input signal amplitude set to 3 dB above the AGC threshold level. i) Repeat steps e) to h) with the narrowband test signal. j) Repeat steps e) to i) for all frequency bands authorized for use by the EUT.
	3.5.3 Power measurement Method 1: using a spectrum or signal analyzer Guidance for performing input/output power measurements using a spectrum or signal analyzer is provided in KDB Publication 971168

Test Setup	Appendix A - Figure A.1

Measurement Procedure

The SG and SA were configured as indicated above and the output of the DUT was connected to the SA via a 30dB attenuator. The DUT Gain was set to its maximum. The power of both the DUT and SG were measured using the procedures of FCC KDB 971168 5.2.2 and ANSI C63.26 5.2.4.4.1 (RMS power averaged over 100 traces using the SA channel power function). The output power of the DUT and the SG were measured and recorded.

Table 11.1 – Summary of Conducted Power Measurements, LTE Band 12 UL

See Appendix E for Measurement Plots

Conducted Power Measurement Results (FCC)

Channel Frequency (MHz)	LTE Band	Nominal Channel BW [BW_{Ch}] (MHz)	SG Mode	Measured SG Power [P_{SG}] (dBm)	Measured DUT Power [P_{DUT}] (dBm)	DUT Antenna Gain [G_A] [dBd]	e.r.p. (dBm)	e.r.p. (W)	Limit (W)	Limit (dBm)	Margin (dB)	DUT Gain [G_{DUT}] (dB)
700.5	12 UL	5	Pre-AGC	-72.97	22.59	14.00	36.59	4.56	1000.0	60.0	23.4	95.6
			Post-AGC	-69.58	22.64		36.64	4.61			23.4	92.2
703		10	Pre-AGC	-72.80	23.15		37.15	5.19			22.9	96.0
			Post-AGC	-69.40	23.28		37.28	5.35			22.7	92.7
											Complies	

e.r.p. (dBm) = $P_{DUT} + G_A$
Margin = Limit - e.r.p. in dB
$G_{DUT} = P_{DUT} - P_{SG}$

Conducted Power Measurement Results (ISED)

Channel Frequency (MHz)	LTE Band	Nominal Channel BW [BW_{Ch}] (MHz)	SG Mode	Measured SG Power [P_{SG}] (dBm)	Measured DUT Power [P_{DUT}] (dBm)	DUT Antenna Gain [G_A] [dBd]	e.r.p. (dBm/MHz)	e.r.p. (W/MHz)	Limit (W/MHz)	Limit (dBm/MHz)	Margin (dB)	DUT Gain [G_{DUT}] (dB)
700.5	12 UL	5	Pre-AGC	-72.97	22.59	14.00	29.89	0.97	1640.0	62.1	32.2	95.6
			Post-AGC	-69.58	22.64		29.94	0.99			32.2	92.2
703		10	Pre-AGC	-72.80	23.15		30.45	1.11			31.7	96.0
			Post-AGC	-69.40	23.28		30.58	1.14			31.5	92.7
											Complies	

e.r.p. (dBm/MHz) = $P_{DUT} + G_A - BW_{Corr}$
$BW_{Corr} = 10Log(BW_{Ch}/BW_{Req})$ where Required Bandwidth (BW_{Req}) = 1MHz, = 6.7 for 5MHz Channel BW, = 10 for 10MHz Channel BW
BW_{Corr} = 6.7 for 5MHz Channel BW, = 10 for 10MHz Channel BW
Margin = Limit - e.r.p. in dB
$G_{DUT} = P_{DUT} - P_{SG}$

Table 11.2 – Summary of Conducted Power Measurements, LTE Band 13 UL

See Appendix E for Measurement Plots

Conducted Power Measurement Results (FCC)												
Channel Frequency (MHz)	LTE Band	Nominal Channel BW [BW_{Ch}] (MHz)	SG Mode	Measured SG Power [P_{SG}] (dBm)	Measured DUT Power [P_{DUT}] (dBm)	DUT Antenna Gain [G_A] [dBd]	e.r.p. (dBm)	e.r.p. (W)	Limit (W)	Limit (dBm)	Margin (dB)	DUT Gain [G_{DUT}] (dB)
782	13 UL	5	Pre-AGC	-66.73	24.51	14.00	38.51	7.10	1000.0	60.0	21.5	91.2
			Post-AGC	-63.22	25.26		39.26	8.43			20.7	88.5
		10	Pre-AGC	-66.56	24.83		38.83	7.64			21.2	91.4
			Post-AGC	-63.30	25.93		39.93	9.84			20.1	89.2
											Complies	

e.r.p. (dBm) = P_{DUT} + G_A
Margin = Limit - e.r.p. in dB
G_{DUT} = P_{DUT} - P_{SG}

Conducted Power Measurement Results (ISED)												
Channel Frequency (MHz)	LTE Band	Nominal Channel BW [BW_{Ch}] (MHz)	SG Mode	Measured SG Power [P_{SG}] (dBm)	Measured DUT Power [P_{DUT}] (dBm)	DUT Antenna Gain [G_A] [dBd]	e.r.p. (dBm/MHz)	e.r.p. (W/MHz)	Limit (W/MHz)	Limit (dBm/MHz)	Margin (dB)	DUT Gain [G_{DUT}] (dB)
782	13 UL	5	Pre-AGC	-66.73	24.51	14.00	31.81	1.52	1640.0	62.1	30.3	91.2
		5	Post-AGC	-63.22	25.26		32.56	1.80			29.5	88.5
		10	Pre-AGC	-66.56	24.83		32.13	1.63			30.0	91.4
		10	Post-AGC	-63.30	25.93		33.23	2.10			28.9	89.2
											Complies	

e.r.p. (dBm/MHz) = P_{DUT} + G_A - BW_{Corr}
BW_{Corr} = 10Log(BW_{Ch}/BW_{Req}) where Required Bandwidth (BW_{Req}) = 1MHz, = 6.7 for 5MHz Channel BW, = 10 for 10MHz Channel BW
BW_{Corr} = 6.7 for 5MHz Channel BW, = 10 for 10MHz Channel BW
Margin = Limit - e.r.p. in dB
G_{DUT} = P_{DUT} - P_{SG}

Table 11.3 – Summary of Conducted Power Measurements, LTE Band 12 & 13 DL

See Appendix E for Measurement Plots

Conducted Power Results (FCC)												
Channel Frequency (MHz)	LTE Band	Nominal Channel BW $[BW_{Ch}]$ (MHz)	SG Mode	Measured SG Power $[P_{SG}]$ (dBm)	Measured DUT Power $[P_{DUT}]$ (dBm)	DUT Antenna Gain $[G_A]$ [dBd]	e.r.p. (dBm)	e.r.p. (W)	Limit (W)	Limit (dBm)	Margin (dB)	DUT Gain $[G_{DUT}]$ (dB)
737	12 & 13 DL	5	Pre-AGC	-67.35	24.81	14.00	38.81	7.60	1000.0	60.0	21.2	92.2
			Post-AGC	-63.72	25.09		39.09	8.11			20.9	88.8
734.52		10	Pre-AGC	-67.56	25.06		39.06	8.05			20.9	92.6
			Post-AGC	-63.90	25.55		39.55	9.02			20.5	89.5
											Complies	

e.r.p. (dBm) = $P_{DUT} + G_A$
Margin = Limit - e.r.p. in dB
$G_{DUT} = P_{DUT} - P_{SG}$

Conducted Power (ISED)												
Channel Frequency (MHz)	LTE Band	Nominal Channel BW $[BW_{Ch}]$ (MHz)	SG Mode	Measured SG Power $[P_{SG}]$ (dBm)	Measured DUT Power $[P_{DUT}]$ (dBm)	DUT Antenna Gain $[G_A]$ [dBd]	e.r.p. (dBm/MHz)	e.r.p. (W/MHz)	Limit (W/MHz)	Limit (dBm/MHz)	Margin (dB)	DUT Gain $[G_{DUT}]$ (dB)
782	13 DL	5	Pre-AGC	-67.35	24.81	14.00	32.11	1.63	1640.0	62.1	30.0	92.2
			Post-AGC	-63.72	25.09		32.39	1.73			29.7	88.8
		10	Pre-AGC	-67.56	25.06		32.36	1.72			29.7	92.6
			Post-AGC	-63.90	25.55		32.85	1.93			29.3	89.5
											Complies	

e.r.p. (dBm/MHz) = $P_{DUT} + G_A - BW_{Corr}$
$BW_{Corr} = 10Log(BW_{Ch}/BW_{Req})$ where Required Bandwidth (BW_{Req}) = 1MHz, = 6.7 for 5MHz Channel BW, = 10 for 10MHz Channel BW
BW_{Corr} = 6.7 for 5MHz Channel BW, = 10 for 10MHz Channel BW
Margin = Limit - e.r.p. in dB
$G_{DUT} = P_{DUT} - P_{SG}$

12.0 INPUT / OUTPUT COMPARISON

Test Procedure	
Normative References	FCC KDB 935210 D02 (3.4), RSS-131 (5.2.2)
	ANSI C63.26 As Applicable

Requirement / Limits	
FCC KDB 935210 D05 (3.4)	**3.4 Input-versus-output signal comparison** A 26 dB bandwidth measurement shall be performed on the input signal and the output signal; alternatively, the 99% OBW can be measured and used.
RSS-131 (5.2.2)	**5.2.2 Input-versus-output spectrum** The spectral growth of the 26 dB bandwidth of the output signal shall be less than 5% of the input signal spectrum.

General Procedure	
FCC KDB 935210 D05 (3.4)	**3.4 Input-versus-output signal comparison** a) Connect a signal generator to the input of the EUT. b) Configure the signal generator to transmit the AWGN signal. c) Configure the signal amplitude to be just below the AGC threshold level (see 3.2), but not more than 0.5 dB below. d) Connect a spectrum analyzer to the output of the EUT using appropriate attenuation. e) Set the spectrum analyzer center frequency to the center frequency of the operational band under test. The span range of the spectrum analyzer shall be between 2 × to 5 × the emission bandwidth (EBW) or alternatively, the OBW. f) The nominal RBW shall be in the range of 1 % to 5 % of the anticipated OBW, and the VBW shall be ≥ 3 × RBW. g) Set the reference level of the instrument as required to preclude the signal from exceeding the maximum spectrum analyzer input mixer level for linear operation. In general, the peak of the spectral envelope must be more than [10 log (OBW / RBW)] below the reference level. Steps f) and g) may require iteration to enable adjustments within the specified tolerances. h) The noise floor of the spectrum analyzer at the selected RBW shall be at least 36 dB below the reference level. i) Set spectrum analyzer detection function to positive peak. j) Set the trace mode to max hold. k) Determine the reference value: Allow the trace to stabilize. Set the spectrum analyzer marker to the highest amplitude level of the displayed trace (this is the reference value) and record the associated frequency.

General Procedure	(Continued)
FCC KDB 935210 D05 (3.4)	**3.4 Input-versus-output signal comparison** l) Place two markers, one at the lowest and the other at the highest frequency of the envelope of the spectral display, such that each marker is at or slightly below the −26 dB down amplitude. The 26 dB EBW (alternatively OBW) is the positive frequency difference between the two markers. If the spectral envelope crosses the −26 dB down amplitude at multiple points, the lowest or highest frequency shall be selected as the frequencies that are the furthest removed from the center frequency at which the spectral envelope crosses the −26 dB down amplitude point. m) Repeat steps e) to l) with the input signal connected directly to the spectrum analyzer (i.e., input signal measurement). n) Compare the spectral plot of the input signal (determined from step m) to the output signal (determined from step l) to affirm that they are similar (in passband and rolloff characteristic features and relative spectral locations), and include plot(s) and descriptions in test report. o) Repeat the procedure [steps e) to n)] with the input signal amplitude set to 3 dB above the AGC threshold. p) Repeat steps e) to o) with the signal generator set to the narrowband signal. q) Repeat steps e) to p) for all frequency bands authorized for use by the EUT.

Test Setup	Appendix A - Figure A.1

Measurement Procedure
The SG and SA were configured as indicated above and the output of the DUT was connected to the SA via a 30dB attenuator. The DUT Gain was set to its maximum. The bandwidth of both the DUT and SG were measured using the procedures of FCC KDB 971168 4.2 and ANSI C63.26 5.4.3. Where applicable, the SA XdB function was used. The bandwidth of the DUT and the SG were measured and recorded. Where the 26dB BW of the SG could not be ascertained, the 6dB and 20dB BW of both the SG and DUT were measured for comparison.

Table 11.2 – Summary of Input / Output Comparison, LTE B12 UL

See Appendix F for Measurement Plots

Conducted Power Measurement Results (FCC)

Channel Frequency (MHz)	LTE Band	Nominal Channel BW [BW_{Ch}] (MHz)	SG Mode	Measured SG Power [P_{SG}] (dBm)	Measured DUT Power [P_{DUT}] (dBm)	DUT Antenna Gain [G_A] [dBd]	e.r.p. (dBm)	e.r.p. (W)	Limit (W)	Limit (dBm)	Margin (dB)	DUT Gain [G_{DUT}] (dB)
700.5	12 UL	5	Pre-AGC	-72.97	22.59	14.00	36.59	4.56	1000.0	60.0	23.4	95.6
			Post-AGC	-69.58	22.64		36.64	4.61			23.4	92.2
703		10	Pre-AGC	-72.80	23.15		37.15	5.19			22.9	96.0
			Post-AGC	-69.40	23.28		37.28	5.35			22.7	92.7
											Complies	

e.r.p. (dBm) = P_{DUT} + G_A
Margin = Limit - e.r.p. in dB
G_{DUT} = P_{DUT} - P_{SG}

Conducted Power Measurement Results (ISED)

Channel Frequency (MHz)	LTE Band	Nominal Channel BW [BW_{Ch}] (MHz)	SG Mode	Measured SG Power [P_{SG}] (dBm)	Measured DUT Power [P_{DUT}] (dBm)	DUT Antenna Gain [G_A] [dBd]	e.r.p. (dBm/MHz)	e.r.p. (W/MHz)	Limit (W/MHz)	Limit (dBm/MHz)	Margin (dB)	DUT Gain [G_{DUT}] (dB)
700.5	12 UL	5	Pre-AGC	-72.97	22.59	14.00	29.89	0.97	1640.0	62.1	32.2	95.6
			Post-AGC	-69.58	22.64		29.94	0.99			32.2	92.2
703		10	Pre-AGC	-72.80	23.15		30.45	1.11			31.7	96.0
			Post-AGC	-69.40	23.28		30.58	1.14			31.5	92.7
											Complies	

e.r.p. (dBm/MHz) = P_{DUT} + G_A - BW_{Corr}
BW_{Corr} = 10Log(BW_{Ch}/BW_{Req}) where Required Bandwidth (BW_{Req}) = 1MHz, = 6.7 for 5MHz Channel BW, = 10 for 10MHz Channel BW
BW_{Corr} = 6.7 for 5MHz Channel BW, = 10 for 10MHz Channel BW
Margin = Limit - e.r.p. in dB
G_{DUT} = P_{DUT} - P_{SG}

Table 12.2 – Summary of Input / Output Comparison, LTE B13 UL

See Appendix F for Measurement Plots

Conducted Power Measurement Results (FCC)

Channel Frequency (MHz)	LTE Band		Nominal Channel BW [BW_{Ch}] (MHz)	SG Mode	Measured SG Power [P_{SG}] (dBm)	Measured DUT Power [P_{DUT}] (dBm)	DUT Antenna Gain [G_A] [dBd]	e.r.p. (dBm)	e.r.p. (W)	Limit (W)	Limit (dBm)	Margin (dB)	DUT Gain [G_{DUT}] (dB)
782	13	UL	5	Pre-AGC	-66.73	24.51	14.00	38.51	7.10	1000.0	60.0	21.5	91.2
				Post-AGC	-63.22	25.26		39.26	8.43			20.7	88.5
			10	Pre-AGC	-66.56	24.83		38.83	7.64			21.2	91.4
				Post-AGC	-63.30	25.93		39.93	9.84			20.1	89.2
												Complies	

e.r.p. (dBm) = $P_{DUT} + G_A$
Margin = Limit - e.r.p. in dB
$G_{DUT} = P_{DUT} - P_{SG}$

Conducted Power Measurement Results (ISED)

Channel Frequency (MHz)	LTE Band		Nominal Channel BW [BW_{Ch}] (MHz)	SG Mode	Measured SG Power [P_{SG}] (dBm)	Measured DUT Power [P_{DUT}] (dBm)	DUT Antenna Gain [G_A] [dBd]	e.r.p. (dBm/MHz)	e.r.p. (W/MHz)	Limit (W/MHz)	Limit (dBm/MHz)	Margin (dB)	DUT Gain [G_{DUT}] (dB)
782	13	UL	5	Pre-AGC	-66.73	24.51	14.00	31.81	1.52	1640.0	62.1	30.3	91.2
			5	Post-AGC	-63.22	25.26		32.56	1.80			29.5	88.5
			10	Pre-AGC	-66.56	24.83		32.13	1.63			30.0	91.4
			10	Post-AGC	-63.30	25.93		33.23	2.10			28.9	89.2
												Complies	

e.r.p. (dBm/MHz) = $P_{DUT} + G_A - BW_{Corr}$
$BW_{Corr} = 10Log(BW_{Ch}/BW_{Req})$ where Required Bandwidth (BW_{Req}) = 1MHz, = 6.7 for 5MHz Channel BW, = 10 for 10MHz Channel BW
BW_{Corr} = 6.7 for 5MHz Channel BW, = 10 for 10MHz Channel BW
Margin = Limit - e.r.p. in dB
$G_{DUT} = P_{DUT} - P_{SG}$

Table 12.3 – Summary of Input / Output Comparison, LTE B12 & 13 DL

See Appendix F for Measurement Plots

Conducted Power Results (FCC)													
Channel Frequency (MHz)	LTE Band		Nominal Channel BW [BW_{Ch}] (MHz)	SG Mode	Measured SG Power [P_{SG}] (dBm)	Measured DUT Power [P_{DUT}] (dBm)	DUT Antenna Gain [G_A] [dBd]	e.r.p. (dBm)	e.r.p. (W)	Limit (W)	Limit (dBm)	Margin (dB)	DUT Gain [G_{DUT}] (dB)
737	12 & 13	DL	5	Pre-AGC	-67.35	24.81	14.00	38.81	7.60	1000.0	60.0	21.2	92.2
				Post-AGC	-63.72	25.09		39.09	8.11			20.9	88.8
734.52			10	Pre-AGC	-67.56	25.06		39.06	8.05			20.9	92.6
				Post-AGC	-63.90	25.55		39.55	9.02			20.5	89.5
												Complies	

e.r.p. (dBm) = $P_{DUT} + G_A$
Margin = Limit - e.r.p. in dB
$G_{DUT} = P_{DUT} - P_{SG}$

Conducted Power (ISED)													
Channel Frequency (MHz)	LTE Band		Nominal Channel BW [BW_{Ch}] (MHz)	SG Mode	Measured SG Power [P_{SG}] (dBm)	Measured DUT Power [P_{DUT}] (dBm)	DUT Antenna Gain [G_A] [dBd]	e.r.p. (dBm/MHz)	e.r.p. (W/MHz)	Limit (W/MHz)	Limit (dBm/MHz)	Margin (dB)	DUT Gain [G_{DUT}] (dB)
782	13	DL	5	Pre-AGC	-67.35	24.81	14.00	32.11	1.63	1640.0	62.1	30.0	92.2
				Post-AGC	-63.72	25.09		32.39	1.73			29.7	88.8
			10	Pre-AGC	-67.56	25.06		32.36	1.72			29.7	92.6
				Post-AGC	-63.90	25.55		32.85	1.93			29.3	89.5
												Complies	

e.r.p. (dBm/MHz) = $P_{DUT} + G_A - BW_{Corr}$
$BW_{Corr} = 10Log(BW_{Ch}/BW_{Req})$ where Required Bandwidth (BW_{Req}) = 1MHz, = 6.7 for 5MHz Channel BW, = 10 for 10MHz Channel BW
BW_{Corr} = 6.7 for 5MHz Channel BW, = 10 for 10MHz Channel BW
Margin = Limit - e.r.p. in dB
$G_{DUT} = P_{DUT} - P_{SG}$

13.0 OUT-OF-BAND / BLOCK EMISSIONS, BAND EDGE

Test Procedure	
Normative References	FCC KDB 935210 D02 (3.6), FCC §27.53, RSS-130 ANSI C63.26 As Applicable
Requirement / Limits	
FCC §27.53(c)	**§27.53 Emission limits.** (c) For operations in the 746-758 MHz band and the 776-788 MHz band, the power of any emission outside the 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, in accordance with the following: (1) On any frequency outside the 746-758 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least 43 + 10 log (P) dB; (2) On any frequency outside the 776-788 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least 43 + 10 log (P) dB;
FCC §27.53(g)	(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-130 (4.7)	**4.7 Transmitter unwanted emissions** **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.
General Procedure	
FCC KDB 935210 D05 (3.6)	**3.6 Measuring out-of-band/out-of-block (including intermodulation) emissions and spurious emissions** **3.6.1 General** Spurious emissions shall be measured using a single test signal sequentially tuned to the low, middle, and high channels or frequencies within each authorized frequency band of operation. Out-of-band/out-of-block emissions (including intermodulation products) shall be measured under each of the following two stimulus conditions: a) two adjacent test signals sequentially tuned to the lower and upper frequency band/block edges; b) a single test signal, sequentially tuned to the lowest and highest frequencies or channels within the frequency band/block under examination.

General Procedure	(Continued)
	3.6.2 Out-of-band/out-of-block emissions conducted measurements a) Connect a signal generator to the input of the EUT. b) Set the signal generator to produce two AWGN signals as previously described (e.g., 4.1 MHz OBW). Set the signal generator amplitudes so that the power from each into the EUT is equivalent. c) Set the center frequencies such that the AWGN signals occupy adjacent channels, as defined by industry standards such as 3GPP or 3GPP2, at the upper edge of the frequency band or block under test. d) Set the composite power levels such that the input signal is just below the AGC threshold (see 3.2), but not more than 0.5 dB below. The composite power can be measured using the procedures provided in KDB Publication 971168 [R8], but it will be necessary to expand the power integration bandwidth so as to include both of the transmit channels. e) Connect a spectrum analyzer to the output of the EUT using appropriate attenuation as necessary. f) Set the RBW = reference bandwidth in the applicable rule section for the supported frequency band (typically 1 % of the EBW or 100 kHz or 1 MHz) g) Set the VBW = 3 × RBW. h) Set the detector to power averaging (rms) detector. i) Set the Sweep time = auto-couple. j) Set the spectrum analyzer start frequency to the upper block edge frequency, and the stop frequency to the upper block edge frequency plus 300 kHz or 3 MHz, for frequencies below and above 1 GHz, respectively. k) Trace average at least 100 traces in power averaging (rms) mode. l) Use the marker function to find the maximum power level. m) Capture the spectrum analyzer trace of the power level for inclusion in the test report. n) Repeat steps k) to m) with the composite input power level set to 3 dB above the AGC threshold. o) Reset the frequencies of the input signals to the lower edge of the frequency block or band under test. p) Reset the spectrum analyzer start frequency to the lower block edge frequency minus 300 kHz or 3 MHz, for frequencies below and above 1 GHz, respectively, and the stop frequency to the lower band or block edge frequency. q) Repeat steps k) to n). r) Repeat steps a) to q) with the signal generator configured for a single test signal tuned as close as possible to the block edges. s) Repeat steps a) to r) with the narrowband test signal. t) Repeat steps a) to s) for all authorized frequency bands or blocks used by the EUT.

Test Setup	Appendix A - Figure A.1

Measurement Procedure
The SG and SA were configured as indicated above and the output of the DUT was connected to the SA via a 30dB attenuator. The DUT Gain was set to its maximum. The SG was configured for a single channel and two aggregated channels set to the low and high frequencies in each UL and DL block. The amplitude of the SG was configured for both Pre-ACG and Post-AGC. The Band / Block edges were investigated and recorded.

Table 13.1 – Summary of OOB Emissions, Band Edge, LTE Band 12 UL

See Appendix G for Measurement Plots

Summary of Out-Of-Band Emissions							
Channel Frequency (MHz)	LTE Band	SG Mode	Nominal Channel BW (MHz)	Band Edge	Measured OOB Emission (dBm)	Emission Limit (dB)	Margin (dB)
701.5	12 UL	Pre-AGC	5	Lower	-26.94	-13.0	13.9
		Post-AGC			-18.99		6.0
713.5		Pre-AGC		Upper	-20.37		7.4
		Post-AGC			-21.18		8.2
704		Pre-AGC	10	Lower	-21.73		8.7
		Post-AGC			-21.52		8.5
711		Pre-AGC		Upper	-22.44		9.4
		Post-AGC			-25.03		12.0
						Complies	

Margin = Emission Limit - Measure OOB Emission

Table 13.2 – Summary of OOB Emissions, Band Edge, LTE Band 12 DL

See Appendix G for Measurement Plots

Summary of Out-Of-Band Emissions							
Channel Frequency (MHz)	LTE Band	SG Mode	Nominal Channel BW (MHz)	Band Edge	Measured OOB Emission (dBm)	Emission Limit (dB)	Margin (dB)
731.5	12 DL	Pre-AGC	5	Lower	-33.70	-13.0	20.7
		Post-AGC			-35.68		22.7
743.5		Pre-AGC		Upper	-34.82		21.8
		Post-AGC			-37.95		25.0
734		Pre-AGC	10	Lower	-34.23		21.2
		Post-AGC			-34.73		21.7
741		Pre-AGC		Upper	-32.95		20.0
		Post-AGC			-33.63		20.6
						Complies	

Margin = Emission Limit - Measure OOB Emission

Table 13.3 – Summary of OOB Emissions, Band Edge, LTE Band 13 UL

See Appendix G for Measurement Plots

Summary of Out-Of-Band Emissions							
Channel Frequency (MHz)	LTE Band	SG Mode	Nominal Channel BW (MHz)	Band Edge	Measured OOB Emission (dBm)	Emission Limit (dB)	Margin (dB)
779.5	13 UL	Pre-AGC	5	Lower	-19.26	-13.0	6.3
		Post-AGC			-17.83		4.8
784.5		Pre-AGC		Upper	-17.18		4.2
		Post-AGC			-17.18		4.2
782		Pre-AGC	10	Lower	-20.82		7.8
		Post-AGC			-20.06		7.1
782		Pre-AGC		Upper	-18.83		5.8
		Post-AGC			-18.20		5.2
						Complies	

Margin = Emission Limit - Measure OOB Emission

Table 13.4 – Summary of OOB Emissions, Band Edge, LTE Band 13 DL

See Appendix G for Measurement Plots

Summary of Out-Of-Band Emissions							
Channel Frequency (MHz)	LTE Band	SG Mode	Nominal Channel BW (MHz)	Band Edge	Measured OOB Emission (dBm)	Emission Limit (dB)	Margin (dB)
748.5	13 DL	Pre-AGC	5	Lower	-31.87	-13.0	18.9
		Post-AGC			-33.94		20.9
753.5		Pre-AGC		Upper	-38.92		25.9
		Post-AGC			-41.32		28.3
751		Pre-AGC	10	Lower	-35.86		22.9
		Post-AGC			-36.08		23.1
751		Pre-AGC		Upper	-35.08		22.1
		Post-AGC			-36.06		23.1
						Complies	

Margin = Emission Limit - Measure OOB Emission

14.0 CONDUCTED SPURIOUS EMISSIONS

Test Procedure	
Normative References	FCC KDB 935210 D02 (3.6), FCC §27.53, RSS-130 ANSI C63.26 As Applicable

Requirement / Limits	
FCC §27.53(c)	**§27.53 Emission limits.** (c) For operations in the 746-758 MHz band and the 776-788 MHz band, the power of any emission outside the 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, in accordance with the following: (1) On any frequency outside the 746-758 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least 43 + 10 log (P) dB; (2) On any frequency outside the 776-788 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least 43 + 10 log (P) dB; (3) On all frequencies between 763-775 MHz and 793-805 MHz, by a factor not less than 76 + 10 log (P) dB in a 6.25 kHz band segment, for base and fixed stations;
FCC §27.53(g)	(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-130 (4.7)	**4.7 Transmitter unwanted emissions** **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. **4.7.2 Additional unwanted emissions limits** In addition to the limit outlined in section 4.7.1 above, equipment operating in the frequency bands 746-756 MHz and 777-787 MHz shall also comply with the following restrictions: a) The power of any unwanted emissions in any 6.25 kHz bandwidth for all frequencies between 763-775 MHz and 793-806 MHz shall be attenuated below the transmitter power, P (dBW), by at least: (i) 76 + 10 log10 p (watts), dB, for base and fixed equipment

General Procedure	
FCC KDB 935210 D05 (3.6)	**3.6 Measuring out-of-band/out-of-block (including intermodulation) emissions and spurious emissions** **3.6.1 General** Spurious emissions shall be measured using a single test signal sequentially tuned to the low, middle, and high channels or frequencies within each authorized frequency band of operation.

General Procedure	(Continued)
	3.6.2 Out-of-band/out-of-block emissions conducted measurements a) Connect a signal generator to the input of the EUT. b) Set the signal generator to produce two AWGN signals as previously described (e.g., 4.1 MHz OBW). Set the signal generator amplitudes so that the power from each into the EUT is equivalent. c) Set the center frequencies such that the AWGN signals occupy adjacent channels, as defined by industry standards such as 3GPP or 3GPP2, at the upper edge of the frequency band or block under test. d) Set the composite power levels such that the input signal is just below the AGC threshold (see 3.2), but not more than 0.5 dB below. The composite power can be measured using the procedures provided in KDB Publication 971168 [R8], but it will be necessary to expand the power integration bandwidth so as to include both of the transmit channels. e) Connect a spectrum analyzer to the output of the EUT using appropriate attenuation as necessary. f) Set the RBW = reference bandwidth in the applicable rule section for the supported frequency band (typically 1 % of the EBW or 100 kHz or 1 MHz) g) Set the VBW = 3 × RBW. h) Set the Sweep time = auto-couple. i) Set the spectrum analyzer start frequency to the lowest RF signal generated in the equipment, The number of measurement points in each sweep must be ≥ (2 × span/RBW), which may require that the measurement range defined by the start and stop frequencies be subdivided, depending on the available number of measurement points provided by the spectrum analyzer.4without going below 9 kHz, and the stop frequency to the lower band/block edge frequency minus 100 kHz or 1 MHz, as specified in the applicable rule part. j) Select the power averaging (rms) detector function. k) Trace average at least 10 traces in power averaging (rms) mode. l) Use the peak marker function to identify the highest amplitude level over each measured frequency range. Record the frequency and amplitude and capture a plot for inclusion in the test report. m) Reset the spectrum analyzer start frequency to the upper band/block edge frequency plus 100 kHz or 1 MHz, as specified in the applicable rule part, and the spectrum analyzer stop frequency to 10 × the highest frequency of the fundamental emission (see Section 2.1057). The number of measurement points in each sweep must be ≥ (2 × span/RBW), which may require that the measurement range defined by the start and stop frequencies be subdivided, depending on the available number of measurement points provided by the spectrum analyzer. n) Trace average at least 10 traces in power averaging (rms) mode. o) Use the peak marker function to identify the highest amplitude level over each of the measured frequency ranges. Record the frequency and amplitude and capture a plot for inclusion in the test report; also provide tabular data, if required. p) Repeat steps i) to o) with the input test signals firstly tuned to a middle band/block frequency/channel, and then tuned to a high band/block frequency/channel. q) Repeat steps c) to p) with the narrowband test signal. r) Repeat steps b) to q) for all authorized frequency bands/blocks used by the EUT.
Test Setup	**Appendix A - Figure A.1**

Measurement Procedure
The SG and SA were configured as indicated above and the output of the DUT was connected to the SA via a 30dB attenuator. The DUT Gain was set to its maximum. The SG was configured for a single channel and two aggregated channels set to the low, mid and high frequencies in each UL and DL block. The SA was configured for 8001 Points. The spurious emission were investigated to the 10th harmonic and recorded.

Table 14.1 – Summary of Conducted Spurious Emissions, B12 UL, 5MHz Channel Width

See Appendix H for Measurement Plots

Summary of Out-Of-Band Emissions (5MHz Channel Width)							
Channel Frequency (MHz)	LTE Band	Test Frequency Range	Nominal Channel BW (MHz)	Emission Frequency	Measured Emission (dBm)	Emission Limit (dB)	Margin (dB)
701.5	12 UL	30 - 430 MHz	5	321.30 MHz	-47.36	-13.0	34.4
		430 - 698.9 MHz		697.32 MHz	-21.88		8.9
		716.1 - 1000 MHz		716.31 MHz	-23.24		10.2
		1 - 3 GHz		1.40 GHz	-42.63		29.6
		3 - 7 GHz		3.63 GHz	-42.52		29.5
		7 - 8 GHz		7.14 GHz	-43.38		30.4
		1.4 GHz		1.40 GHz	-42.26		29.3
707.5		30 - 430 MHz		302.80 MHz	-47.48		34.5
		430 - 698.9 MHz		697.02 MHz	-21.53		8.5
		716.1 - 1000 MHz		716.20 MHz	-23.58		10.6
		1 - 3 GHz		1.41 GHz	-42.62		29.6
		3 - 7 GHz		3.12 GHz	-42.34		29.3
		7 - 8 GHz		7.90 GHz	-43.38		30.4
		1.4 GHz		1.41 GHz	-41.90		28.9
713.5		30 - 430 MHz		149.40 MHz	-47.05		34.1
		430 - 698.9 MHz		697.40 MHz	-23.46		10.5
		716.1 - 1000 MHz		716.10 MHz	-21.10		8.1
		1 - 3 GHz		1.42 GHz	-42.30		29.3
		3 - 7 GHz		3.64 GHz	-42.39		29.4
		7 - 8 GHz		7.04 GHz	-43.02		30.0
		1.4 GHz		1.43 GHz	-42.54		29.5
						Complies	

Margin = Emission Limit - Measure Emission

Table 14.2 – Summary of Conducted Spurious Emissions, B12 UL, 10MHz Channel Width

See Appendix H for Measurement Plots

Summary of Out-Of-Band Emissions (10MHz Channel Width)							
Channel Frequency (MHz)	LTE Band	Test Frequency Range	Nominal Channel BW (MHz)	Emission Frequency	Measured Emission (dBm)	Emission Limit (dB)	Margin (dB)
704	12 UL	30 - 430 MHz	10	374.90 MHz	-47.20	-13.0	34.2
		430 - 698.9 MHz		697.56 MHz	-21.22		8.2
		716.1 - 1000 MHz		716.42 MHz	-22.48		9.5
		1 - 3 GHz		1.41 GHz	-42.39		29.4
		3 - 7 GHz		3.60 GHz	-42.16		29.2
		7 - 8 GHz		7.02 GHz	-42.70		29.7
		1.4 GHz		1.40 GHz	-42.24		29.2
707.5		30 - 430 MHz		320.40 MHz	-47.46		34.5
		430 - 698.9 MHz		697.40 MHz	-21.76		8.8
		716.1 - 1000 MHz		716.24 MHz	-19.34		6.3
		1 - 3 GHz		1.42 GHz	-41.73		28.7
		3 - 7 GHz		3.60 GHz	-42.40		29.4
		7 - 8 GHz		7.01 GHz	-43.22		30.2
		1.4 GHz		1.41 GHz	-41.89		28.9
711		30 - 430 MHz		313.15 MHz	-46.91		33.9
		430 - 698.9 MHz		697.45 MHz	-21.77		8.8
		716.1 - 1000 MHz		716.42 MHz	-19.25		6.3
		1 - 3 GHz		1.42 GHz	-42.78		29.8
		3 - 7 GHz		3.61 GHz	-42.50		29.5
		7 - 8 GHz		7.07 GHz	-43.00		30.0
		1.4 GHz		1.42 GHz	-42.63		29.6
						Complies	

Margin = Emission Limit - Measure Emission

Table 14.3 – Summary of Conducted Spurious Emissions, B12 DL, 5MHz Channel Width

See Appendix H for Measurement Plots

Summary of Out-Of-Band Emissions (5MHz Channel Width)							
Channel Frequency (MHz)	LTE Band	Test Frequency Range	Nominal Channel BW (MHz)	Emission Frequency	Measured Emission (dBm)	Emission Limit (dB)	Margin (dB)
731.5	12 DL	30 - 430 MHz	5	204.60 MHz	-47.17	-13.0	34.2
		430 - 728.9 MHz		728.86 MHz	-25.65		12.7
		746.1 - 1000 MHz		749.59 MHz	-23.25		10.3
		1 - 3 GHz		1.46 GHz	-42.21		29.2
		3 - 7 GHz		3.14 GHz	-42.58		29.6
		7 - 8 GHz		7.17 GHz	-43.07		30.1
		1.46 GHz		1.46 GHz	-41.35		28.4
		2.19 GHz		2.19 GHz	-45.77		32.8
737.5		30 - 430 MHz		318.20 MHz	-46.93		33.9
		430 - 728.9 MHz		728.08 MHz	-25.82		12.8
		746.1 - 1000 MHz		754.35 MHz	-24.44		11.4
		1 - 3 GHz		1.48 GHz	-41.81		28.8
		3 - 7 GHz		3.13 GHz	-42.49		29.5
		7 - 8 GHz		7.12 GHz	-43.36		30.4
		1.48 GHz		1.48 GHz	-41.66		28.7
		2.12 GHz		2.12 GHz	-44.81		31.8
743.5		30 - 430 MHz		103.65 MHz	-46.34		33.3
		430 - 728.9 MHz		727.70 MHz	-25.86		12.9
		746.1 - 1000 MHz		749.43 MHz	-23.17		10.2
		1 - 3 GHz		1.49 GHz	-41.15		28.2
		3 - 7 GHz		3.60 GHz	-42.18		29.2
		7 - 8 GHz		7.04 GHz	-43.41		30.4
		1.49 GHz		1.49 GHz	-41.54		28.5
		2.35 GHz		2.23 GHz	-43.90		30.9
						Complies	

Margin = Emission Limit - Measure Emission

Table 14.4 – Summary of Conducted Spurious Emissions, B12 DL, 10MHz Channel Width

See Appendix H for Measurement Plots

Summary of Out-Of-Band Emissions (10MHz Channel Width)							
Channel Frequency (MHz)	LTE Band	Test Frequency Range	Nominal Channel BW (MHz)	Emission Frequency	Measured Emission (dBm)	Emission Limit (dB)	Margin (dB)
734	12 DL	30 - 430 MHz	10	30.00 MHz	-48.83	-13.0	35.8
		430 - 728.9 MHz		727.80 MHz	-25.24		12.2
		746.1 - 1000 MHz		749.60 MHz	-24.98		12.0
		1 - 3 GHz		1.47 GHz	-42.13		29.1
		3 - 7 GHz		3.11 GHz	-36.26		23.3
		7 - 8 GHz		7.37 GHz	-73.63		60.6
		1.47 GHz		1.47 GHz	-40.70		27.7
		2.2 GHz		2.20 GHz	-44.96		32.0
737.5		30 - 430 MHz		263.40 MHz	-48.13		35.1
		430 - 728.9 MHz		728.26 MHz	-25.09		12.1
		746.1 - 1000 MHz		749.24 MHz	-23.08		10.1
		1 - 3 GHz		1.48 GHz	-41.73		28.7
		3 - 7 GHz		3.60 GHz	-42.59		29.6
		7 - 8 GHz		7.04 GHz	-43.61		30.6
		1.48 GHz		1.48 GHz	-40.68		27.7
		2.21 GHz		2.21 GHz	-44.11		31.1
741		30 - 430 MHz		252.40 MHz	-47.85		34.9
		430 - 728.9 MHz		727.82 MHz	-25.76		12.8
		746.1 - 1000 MHz		746.10 MHz	-26.44		13.4
		1 - 3 GHz		1.48 GHz	-41.01		28.0
		3 - 7 GHz		3.14 GHz	-42.71		29.7
		7 - 8 GHz		7.86 GHz	-43.68		30.7
		1.49 GHz		1.48 GHz	-40.05		27.1
		2.23 GHz		2.23 GHz	-42.80		29.8
						Complies	

Margin = Emission Limit - Measure Emission

Table 14.5 – Summary of Conducted Spurious Emissions, B13 UL, 5MHz Channel Width

See Appendix H for Measurement Plots

Summary of Out-Of-Band Emissions (5MHz Channel Width)							
Channel Frequency (MHz)	LTE Band	Test Frequency Range	Nominal Channel BW (MHz)	Emission Frequency	Measured Emission (dBm)	Emission Limit (dB)	Margin (dB)
779.5	13 UL	30 - 430 MHz	5	86.10 MHz	-45.49	-13.0	32.5
		430 - 776.9 MHz		776.47 MHz	-21.43		8.4
		787.1 - 1000 MHz		787.15 MHz	-21.90		8.9
		1 - 3 GHz		2.34 GHz	-37.89		24.9
		3 - 7 GHz		3.11 GHz	-36.26		23.3
		7 - 8 GHz		7.37 GHz	-37.63		24.6
		1.56 GHz		1.56 GHz	-38.10		25.1
		2.34 GHz		2.34 GHz	-38.75		25.8
782		30 - 430 MHz		105.95 MHz	-45.24		32.2
		430 - 776.9 MHz		776.77 MHz	-24.30		11.3
		787.1 - 1000 MHz		787.20 MHz	-21.05		8.1
		1 - 3 GHz		2.34 GHz	-37.29		24.3
		3 - 7 GHz		3.11 GHz	-35.94		22.9
		7 - 8 GHz		7.02 GHz	-37.70		24.7
		1.56 GHz		1.56 GHz	-37.85		24.9
		2.35 GHz		2.35 GHz	-37.86		24.9
784.5		30 - 430 MHz		299.60 MHz	-45.44		32.4
		430 - 776.9 MHz		776.55 MHz	-26.04		13.0
		787.1 - 1000 MHz		787.18 MHz	-18.62		5.6
		1 - 3 GHz		2.35 GHz	-35.81		22.8
		3 - 7 GHz		3.15 GHz	-36.23		23.2
		7 - 8 GHz		7.15 GHz	-38.10		25.1
		1.57 GHz		1.57 GHz	-36.95		24.0
		2.35 GHz		2.35 GHz	-36.12		23.1
						Complies	

Margin = Emission Limit - Measure Emission

Table 14.6 – Summary of Conducted Spurious Emissions, B13 UL, 10MHz Channel Width

See Appendix H for Measurement Plots

Summary of Out-Of-Band Emissions (10MHz Channel Width)							
Channel Frequency (MHz)	LTE Band	Test Frequency Range	Nominal Channel BW (MHz)	Emission Frequency	Measured Emission (dBm)	Emission Limit (dB)	Margin (dB)
782	13 UL	30 - 430 MHz	10	281.45 MHz	-45.56	-13.0	32.6
		430 - 776.9 MHz		776.29 MHz	-21.62		8.6
		787.1 - 1000 MHz		787.37 MHz	-19.96		7.0
		1 - 3 GHz		2.35 GHz	-37.28		24.3
		3 - 7 GHz		3.08 GHz	-35.98		23.0
		7 - 8 GHz		7.16 GHz	-37.86		24.9
		1.56 GHz		1.56 GHz	-37.94		24.9
		2.35 GHz		2.35 GHz	-36.90		23.9
						Complies	

Margin = Emission Limit - Measure Emission

Table 14.7 – Summary of Conducted Spurious Emissions, B13 DL, 5MHz Channel Width

See Appendix H for Measurement Plots

Summary of Out-Of-Band Emissions (5MHz Channel Width)							
Channel Frequency (MHz)	LTE Band	Test Frequency Range	Nominal Channel BW (MHz)	Emission Frequency	Measured Emission (dBm)	Emission Limit (dB)	Margin (dB)
748.5	13 DL	30 - 430 MHz	5	321.00 MHz	-47.36	-13.0	34.4
		430 - 745.9 MHz		731.60 MHz	-23.15		10.2
		756.1 - 1000 MHz		756.10 MHz	-30.43		17.4
		1 - 3 GHz		1.50 GHz	-43.92		30.9
		3 - 7 GHz		3.63 GHz	-42.52		29.5
		7 - 8 GHz		7.15 GHz	-43.38		30.4
		1.50 GHz		1.50 GHz	-42.45		29.5
		2.24 GHz		2.24 GHz	-43.92		30.9
751		30 - 430 MHz		302.70 MHz	-47.48		34.5
		430 - 745.9 MHz		737.00 MHz	-22.79		9.8
		756.1 - 1000 MHz		756.10 MHz	-30.44		17.4
		1 - 3 GHz		1.50 GHz	-40.85		27.9
		3 - 7 GHz		3.12 GHz	-42.36		29.4
		7 - 8 GHz		7.90 GHz	-43.38		30.4
		1.5 GHz		1.50 GHz	-41.16		28.2
		2.35 GHz		2.24 GHz	-41.99		29.0
753.5		30 - 430 MHz		30.00 MHz	-48.83		35.8
		430 - 745.9 MHz		736.20 MHz	-23.29		10.3
		756.1 - 1000 MHz		756.16 MHz	-27.73		14.7
		1 - 3 GHz		1.50 GHz	-41.06		28.1
		3 - 7 GHz		3.64 GHz	-42.39		29.4
		7 - 8 GHz		7.04 GHz	-43.02		30.0
		1.51 GHz		1.51 GHz	-41.06		28.1
		2.26 GHz		2.26 GHz	-41.98		29.0
						Complies	

Margin = Emission Limit - Measure Emission

Table 14.8 – Summary of Conducted Spurious Emissions, B13 DL, 10MHz Channel Width

See Appendix H for Measurement Plots

Summary of Out-Of-Band Emissions (10MHz Channel Width)							
Channel Frequency (MHz)	LTE Band	Test Frequency Range	Nominal Channel BW (MHz)	Emission Frequency	Measured Emission (dBm)	Emission Limit (dB)	Margin (dB)
751	13 DL	30 - 430 MHz	10	252.40 MHz	-47.85	-13.0	34.9
		430 - 745.9 MHz		735.50 MHz	-22.27		9.3
		756.1 - 1000 MHz		756.10 MHz	-27.46		14.5
		1 - 3 GHz		2.25 GHz	-40.30		27.3
		3 - 7 GHz		3.60 GHz	-42.59		29.6
		7 - 8 GHz		7.04 GHz	-43.61		30.6
		1.50 GHz		1.50 GHz	-40.69		27.7
		2.25 GHz		2.25 GHz	-40.84		27.8
						Complies	

Margin = Emission Limit - Measure Emission

Table 14.9 – Summary of Conducted Spurious Emissions, §27.53(c)(3)

See Appendix H for Measurement Plots

Summary of Out-Of-Band Emissions (5MHz Channel Width)							
Channel Frequency (MHz)	LTE Band	Test Frequency Range	Nominal Channel BW (MHz)	Emission Frequency	Measured Emission (dBm)	Emission Limit (dB)	Margin (dB)
751	13 DL	763-775 MHz	5	767.94 MHz	-49.48	-46.0	3.5
782	13 UL	793-806 MHz		798.39 MHz	-49.52		3.5
						Complies	

Margin = Emission Limit - Measure Emission

15.0 PEAK-TO-AVERAGE POWER RATIO

Test Procedure	
Normative References	RSS-130
	ANSI C63.26 (5.2.3.4)
Requirement / Limits	
RSS-130 4.6	**4.6 Transmitter output power and effective radiated power (e.r.p.)** **4.6.1 General** The transmitter output power shall be measured in terms of average power. In addition, 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.
General Procedure	
C63.26 (5.2.3.4)	**5.2.3.4 Measurement of peak power in a broadband noise-like signal using CCDF** a) Set resolution/Measurement bandwidth ≥ OBW or specified reference bandwidth. b) Set the number of counts to a value that stabilizes the measured CCDF curve. c) Set the measurement interval as follows: 1) For continuous transmissions, set to the greater of [10 × (number of points in sweep) × (transmission symbol period)] or 1 ms. d) Record the maximum PAPR level associated with a probability of 0.1%.
Test Setup	**Appendix A - Figure A.1**
Measurement Procedure	
The SG was configured for a single 5MHz BW signal and an aggregated 10MHz channel at the Pre-AGC level. The SG frequency was set to the mid channels of each UL and DL channels. The DUT was connected to the SA via a 30dB attenuator and the SA was configured as described above using the CCDF function. The output power of the DUT was set to the manufacturer's highest output power setting at the nominal transmit frequency. 0.1% PAPR was measured and recorded.	

Note: To demonstrate compliance to RSS-130 (4.6), the Peak-To-Average Power Ratio (PAPR) was evaluated on this equipment. It should be noted that since this equipment does not generate a carrier or modulated signal of any sort, the PAPR is dominated by the signal the equipment was presented.

Table 15.1 – Summary of PAPR Measurements

See Appendix I for Measurement Plots

Summary of Out-Of-Band Emissions							
Channel Frequency (MHz)	LTE Band		SG Mode	Nominal Channel BW (MHz)	Measured PAPR Emission (dBm)	PAPR Limit (dB)	Margin (dB)
707.5	12	UL	Pre-AGC	5	7.96	13.0	5.0
				10	9.28		3.7
737.5	12	DL		5	8.60		4.4
				10	10.28		2.7
782	13	UL		5	7.88		5.1
				10	9.76		3.2
751	13	DL		5	8.88		4.1
				10	10.28		2.7
						Complies	

Margin = PAPR Limit - Measure PAPR Emission

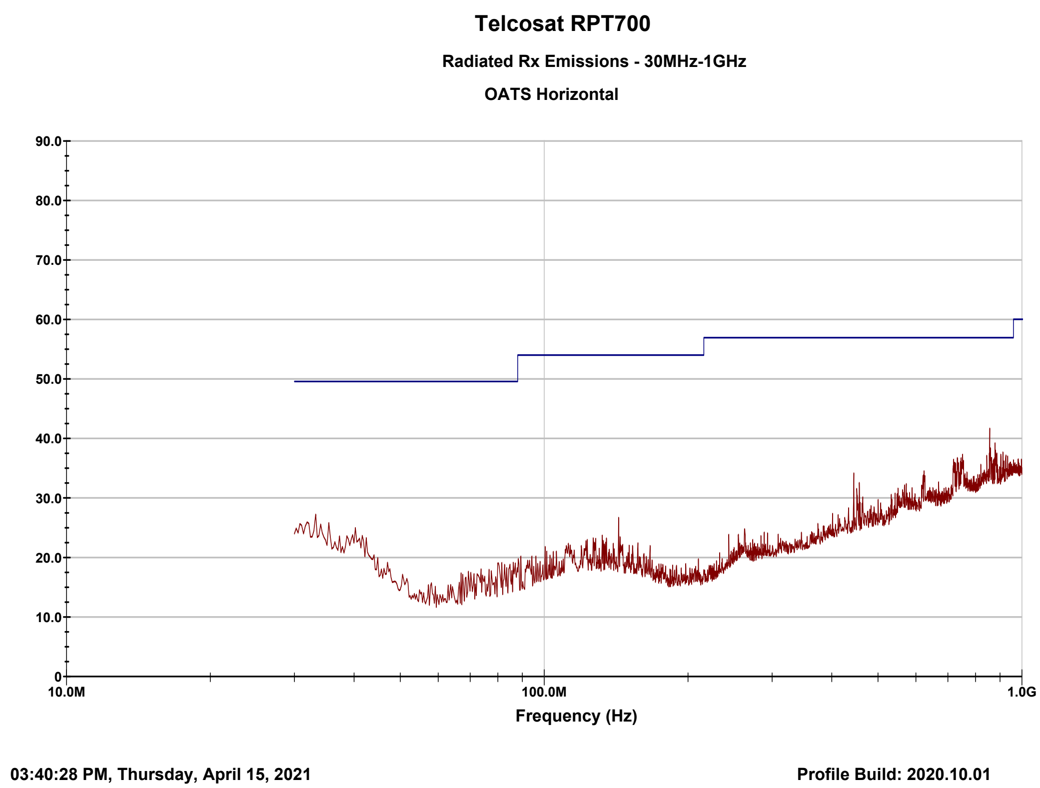
16.0 RADIATED RX EMISSIONS

Test Procedure		
Normative Reference	FCC 47 CFR §15.109, ICES-003(6.2) ANSI C63.4-2014	
Limits		
47 CFR §15.109	(b) The field strength of radiated emissions from a Class A digital device, as determined at a distance of 10 meters, shall not exceed the following:	
	30-88MHz: 39.1dBuV/m	30-88MHz: 49.6dBuV/m @ 3m
	88-216MHz: 43.5dBuV/m	88-216MHz: 54.0dBuV/m @ 3m
	216-960MHz: 46.4dBuV/m	216-960MHz: 56.9dBuV/m @ 3m
	> 960MHz: 49.5dBuV/m	> 960MHz: 60.0dBuV/m @ 3m
ICES-003(6.2.1)	6.2.1 - Radiated Emissions Limits Below 1 GHz Class A: ITE that meets the conditions for Class A operation defined in Section 2.2 shall comply with the Class A radiated limits set out in Table 4 determined at a distance of 10 metres.	
	30-88MHz: 39.1dBuV/m	30-88MHz: 49.6dBuV/m @ 3m
	88-216MHz: 43.5dBuV/m	88-216MHz: 54.0dBuV/m @ 3m
	216-960MHz: 46.4dBuV/m	216-960MHz: 56.9dBuV/m @ 3m
	> 960MHz: 49.5dBuV/m	> 960MHz: 60.0dBuV/m @ 3m
Test Setup	**Appendix A**	**Figure A.1**

Measurement Procedure
The DUT was set up as per ANSI C63.4:2014. Emissions were scanned between 30MHz and 1000MHz. The turntable was rotated 360 degrees and the antenna was elevated to 4m to optimize the measured emissions.

Plot 16.1 – Radiated RX Emissions, 30 – 1000MHz, Horizontal

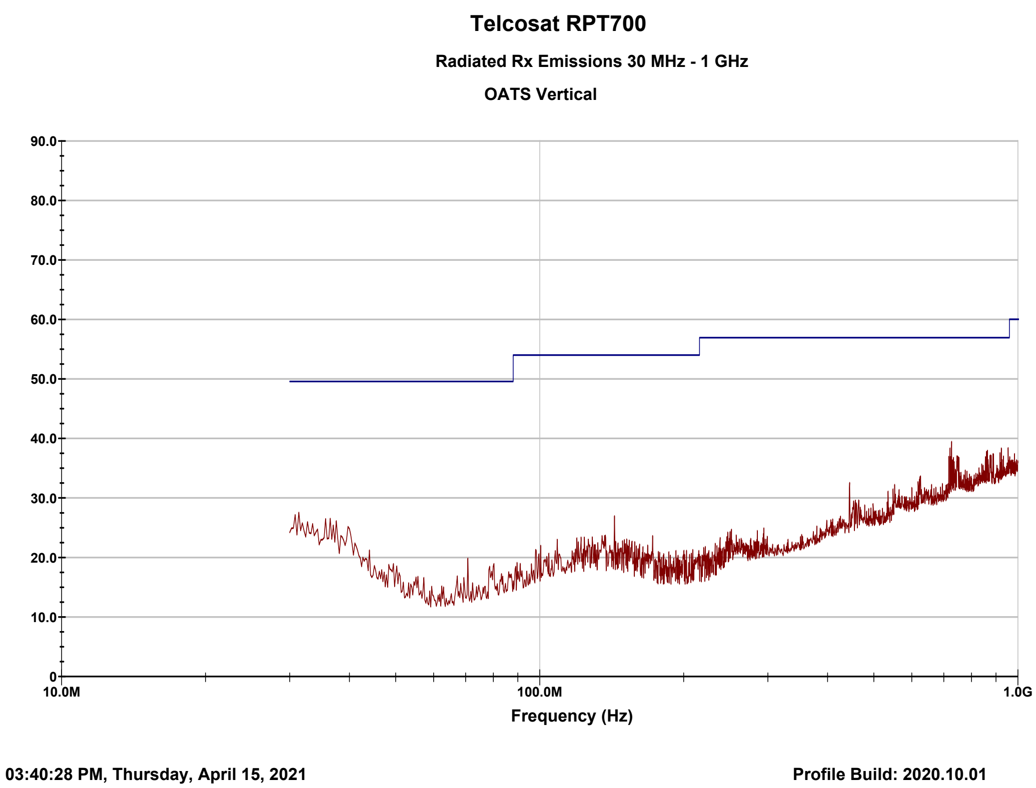
Radiated Emissions



Frequency Range:	Antenna Polarization:	Measured Emission:
30 - 1000 MHz	**Horizontal**	**41.7** dBuV/m
		Emission Frequency
		856.5 MHz

Plot 16.2 – Radiated RX Emissions, 30 – 1000MHz, Vertical

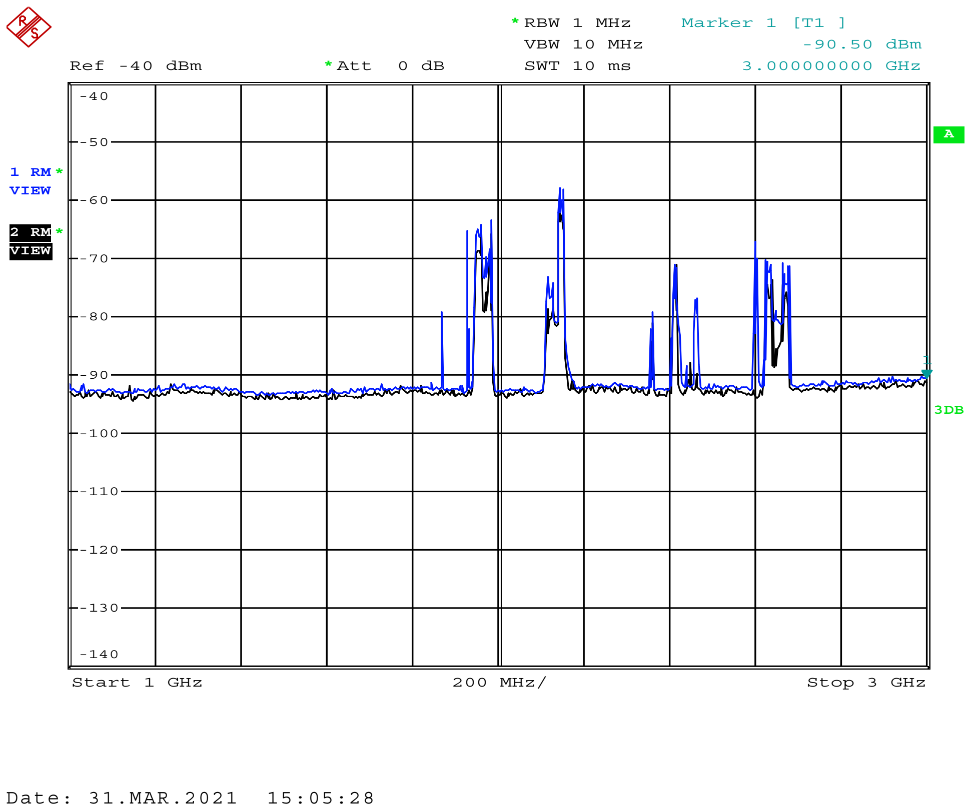
Radiated Emissions



Frequency Range:	Antenna Polarization:	Measured Emission:
30 -1000 MHz	**Vertical**	**39.5** dBuV/m
		Emission Frequency
		727.0 MHz

Plot 16.3 – Radiated RX Emissions, 1 – 3 GHz, Horizontal

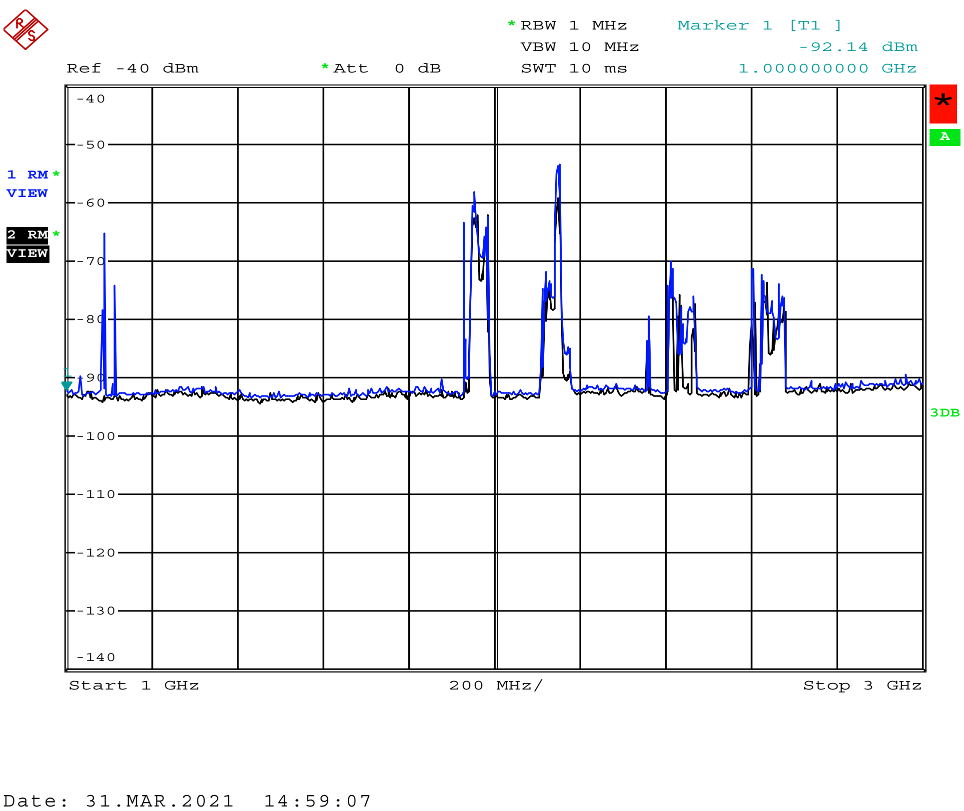
Radiated Emissions



Frequency Range: **1-3** GHz	Antenna Polarization: **Horizontal**	Measured Emission: **ND** dBuV/m
Trace 1: **Ambient**	Trace 2: **DUT + Ambient**	Emission Frequency - GHz

Plot 16.4 – Radiated RX Emissions, 1 – 3 GHz, Vertical

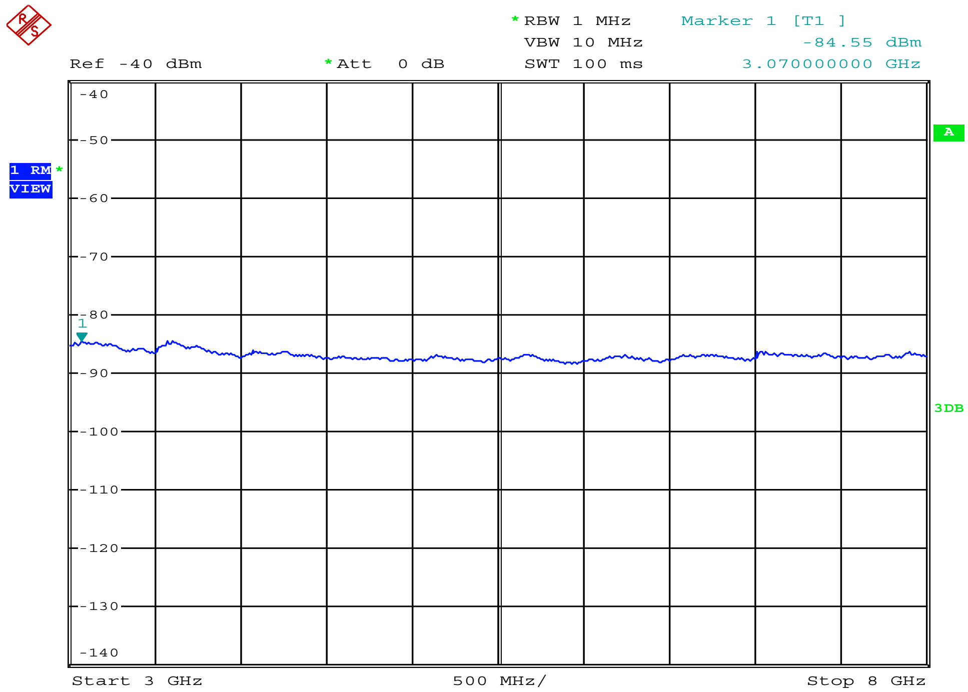
Radiated Emissions



Frequency Range:	Antenna Polarization:	Measured Emission:
1-3 GHz	**Vertical**	**ND** dBuV/m
Trace 1: **Ambient**	Trace 2: **DUT + Ambient**	Emission Frequency **-** GHz

Plot 16.5 – Radiated RX Emissions, 3 - 8 GHz, Horizontal

Radiated Emissions

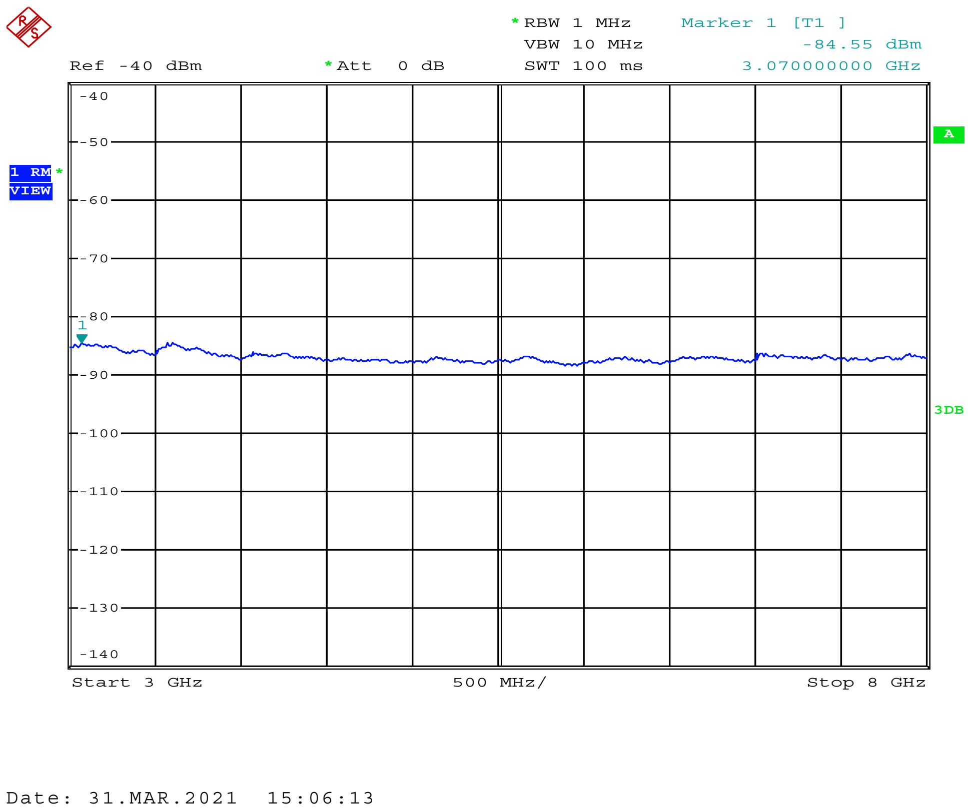


Date: 31.MAR.2021 15:06:13

Frequency Range:	Antenna Polarization:	Measured Emission:
3-8 GHz	**Horizontal**	**ND** dBuV/m
		Emission Frequency
		- GHz

Plot 16.6 – Radiated RX Emissions, 3 - 8 GHz, Vertical

Radiated Emissions



Frequency Range:	Antenna Polarization:	Measured Emission:
3-8 GHz	**Horizontal**	**ND** dBuV/m
		Emission Frequency
		- GHz

Table 16.1 – Summary of Radiated RX Emissions Measurements

§15.109, ICES-003 (6.2)							
Emission Frequency (MHz)	Antenna Polarization	Measured Emission [E_{Meas}] (dBuV)	Cable Loss [L_C] (dB)	Antenna Correction [ACF] (dB)	Corrected Emission [E_{Corr}] (W)	Limit @3m [Limit] (dBuV/m)	Margin [Margin] (dB)
* 856.5 MHz	Horizontal	41.66			41.66	56.9	**15.2**
* 727.0 MHz	Vertical	39.45			39.45	56.9	**17.5**
- GHz	Horizontal	ND			-	60.0	-
- GHz	Vertical	ND			-	60.0	-
** 3-18 GHz	Horizontal	ND			-	60.0	-
** 3-18 GHz	Vertical	ND			-	60.0	-
					Results:	Complies	

* Measurement Compensated for Cable Loss and Antenna Correction Factor

$E_{Corr} = E_{Meas} + L_C + AFC$

Margin = Limit - E_{Corr}

** Emissions Shown are Noise Floor

ND = None Detected

17.0 POWER-LINE CONDUCTED EMISSIONS

Test Procedure	
Normative Reference	**FCC 47 CFR §15.107, ICES-003(6.1)** **ANSI C63.4-2014**

Limits	
47 CFR §15.107	(b) For a Class A digital device that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 μH/50 ohms LISN. Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges. 0.15 - 0.5 MHz: 79 dBuV Quasi Peak, 66 dBuV Average 0.5 - 30.0 MHz: 73 dBuV Quasi Peak, 60 dBuV Average
ICES-003(6.1)	6.1 - AC Power Line Conducted Emissions Limits Class A: ITE that meets the conditions for Class A operation defined in Section 2.2 shall comply with the Class A conducted limits set out below in Table 1. 0.15 - 0.5 MHz: 79 dBuV Quasi Peak, 66 dBuV Average 0.5 - 30.0 MHz: 73 dBuV Quasi Peak, 60 dBuV Average

Test Setup	Appendix A	Figure A.1

Measurement Procedure

The device was connected to the LISN as shown in Appendix A. The input power supply was connected to a 120VAC, 1PH power source. The AC Line Conducted emissions were measured from 150kHz to 30MHz on both Lines L1 and L2 while the DUT was set to maximum output power.

Table 17.1 – Summary of Power-Line Conducted Emissions

See Appendix J for Measurement Plots

§15.107, ICES-003 (6.1)										
	Emission Frequency	LISN Port	Measurement Detector	DUT Mode	Measured Emission [E_{Meas}] (dBuV)	Cable Loss [L_C] (dB)	Antenna Correction [ACF] (dB)	Corrected Emission [E_{Corr}] (W)	Limit @3m [Limit] (dBuV/m)	Margin [Margin] (dB)
*	3.77 MHz	L1	Quasi-Peak	LTE B12 UL	47.64			47.64	73.0	**25.4**
*	3.78 MHz	L2			40.34			40.34		**32.7**
*	3.49 MHz	L1		LTE B13 UL	47.64			47.64		**25.4**
*	3.51 MHz	L2			40.44			40.44		**32.6**
*	3.79 MHz	L1		LTE B12 & B13 DL	45.54			45.54		**27.5**
*	3.79 MHz	L2			37.14			37.14		**35.9**
*	3.85 MHz	L1	Average	LTE B12 UL	41.14			41.14	60.0	**18.9**
*	3.78 MHz	L2			33.84			33.84		**26.2**
*	3.77 MHz	L1		LTE B13 UL	39.34			39.34		**20.7**
*	3.50 MHz	L2			33.34			33.34		**26.7**
*	3.96 MHz	L1		LTE B12 & B13 DL	39.14			39.14		**20.9**
*	3.76 MHz	L2			30.54			30.54		**29.5**
								Results:	**Complies**	

* Measurement Compensated for Cable Loss and Antenna Correction Factor

$E_{Corr} = E_{Meas} + L_C + AFC$

Margin = Limit - E_{Corr}

18.0 FREQUENCY STABILITY

Test Conditions	
Normative Reference	FCC 47 CFR §2.1055, §25.202(d), RSS-Gen, RSS-170 (5.2)

Limits	
47 CFR §27.54	**§27.54 Frequency stability.** The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.
RSS-130	**4.5 Transmitter frequency stability** The frequency stability shall be sufficient to ensure that the occupied bandwidth remains within each frequency block range when tested at the temperature and supply voltage variations specified in RSS-Gen.
RSS-131	**5.2.4 Frequency stability** Industrial zone enhancers shall comply with the frequency stability given in the RSS that applies to the equipment with which the zone enhancer is to be used. In cases where the frequency stability limit is not given in the applicable RSS, the equipment shall comply with a frequency stability of ± 1.5 ppm.

Measurement Procedure	
47 CFR §2.1055	**Frequency Stability** (a) The frequency stability shall be measured with variation of ambient temperature as follows: (1) From -30° to +50° centigrade for all equipment except that specified in paragraphs (a) (2) and (3) of this section. (b) Frequency measurements shall be made at the extremes of the specified temperature range and at intervals of not more than 10° centigrade through the range. A period of time sufficient to stabilize all of the components of the oscillator circuit at each temperature level shall be allowed prior to frequency measurement. (d) The frequency stability shall be measured with variation of primary supply voltage as follows: (1) Vary primary supply voltage from 85 to 115 percent of the nominal value for other than hand carried battery equipment. The DUT was connected to a variable AC transformer (Variac) and adjusted to 85%, 100% and 115% of nominal input voltage. The SG was configured for a CW signal centered on each of the DUT's passbands. Frequency stability was evaluated as indicated above on each of the passbands.

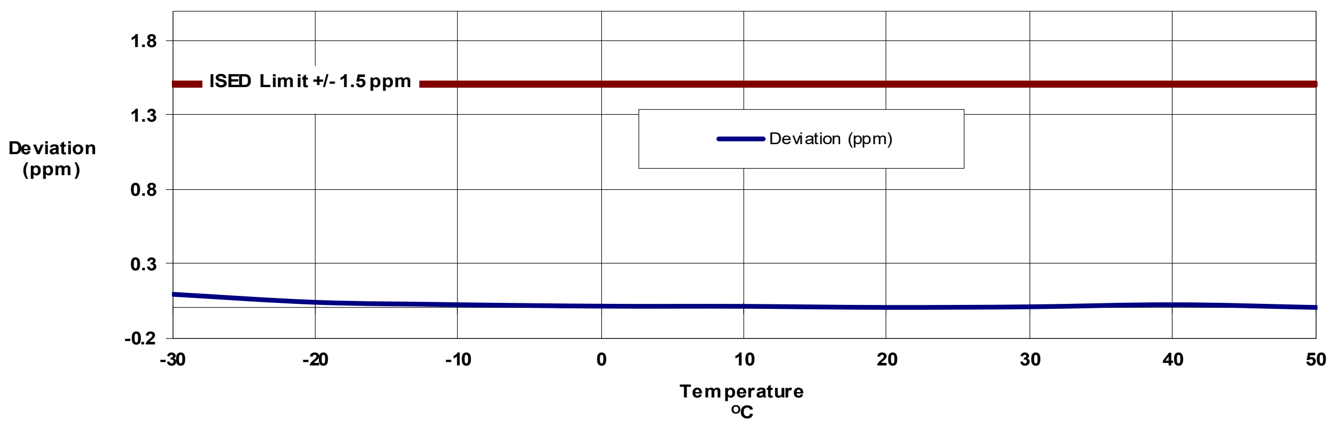
Test Setup	Appendix A	Figure A.4

Note: This equipment does not perform signal processing on the DUT inputs. It should be understood that the frequency stability measurements are predominantly influenced by the stability of the Signal Generator. The Frequency Deviation base on the Mean of the measured data.

Table 18.1 – Summary of Frequency Stability Measurement, LTE B12 UL

Frequency Stability

Nominal Frequency (MHz):	707.5
Nominal Channel BW (KHz):	CW
Nominal Voltage (VAC):	120
Nominal Temperature (°C):	20



Frequency Stability Measurements (Temperature)

Temp (°C)	Assigned Frequency (MHz)	Measured Frequency (MHz)	Deviation (Hz)	Deviation [Absolute] (ppm)
-30	707.501086	707.501019	-67	0.09
-20		707.501060	-26	0.04
-10		707.501072	-14	0.02
0		707.501080	-6	0.01
10		707.501091	5	0.01
20		707.501086	0	0.00
30		707.501089	3	0.00
40		707.501100	14	0.02
50		707.501086	0	0.00
			Maximum Deviation:	0.09
			Maximum Limit:	+/- 1.5
			Result:	Complies

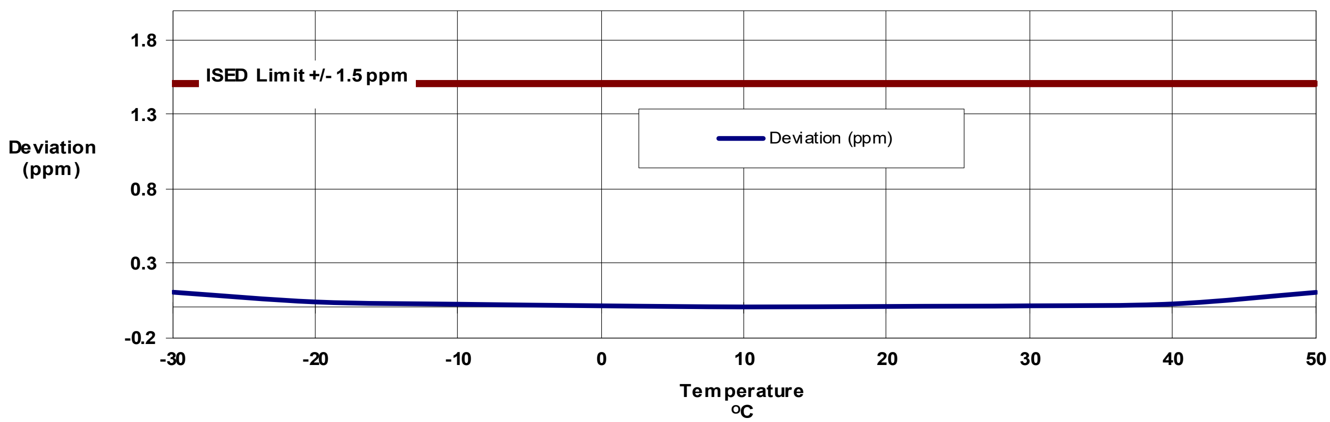
Frequency Stability Measurements (Voltage)

Voltage (VAC)	Assigned Frequency (MHz)	Measured Frequency (MHz)	Deviation (Hz)	Deviation [Absolute] (ppm)
138 (115%)	707.501086	707.501087	1	0.00
120 (100%)		707.501086	0	0.00
102 (85%)		707.501090	4	0.01
			Maximum Deviation:	0.01
			Maximum Limit:	+/- 1.5
			Result:	Complies

Table 18.2 – Summary of Frequency Stability Measurement, LTE B13 UL

Frequency Stability

Nominal Frequency (MHz):	782
Nominal Channel BW (KHz):	CW
Nominal Voltage (VAC):	120
Nominal Temperature (°C):	20



Frequency Stability Measurements (Temperature)

Temp (°C)	Assigned Frequency (MHz)	Measured Frequency (MHz)	Deviation (Hz)	Deviation [Absolute] (ppm)
-30	782.001198	782.001115	-83	0.11
-20		782.001170	-28	0.04
-10		782.001183	-15	0.02
0		782.001192	-6	0.01
10		782.001198	0	0.00
20		782.001201	3	0.00
30		782.001204	6	0.01
40		782.001215	17	0.02
50		782.001115	-83	0.11
			Maximum Deviation:	0.11
			Maximum Limit:	+/- 1.5
			Result:	Complies

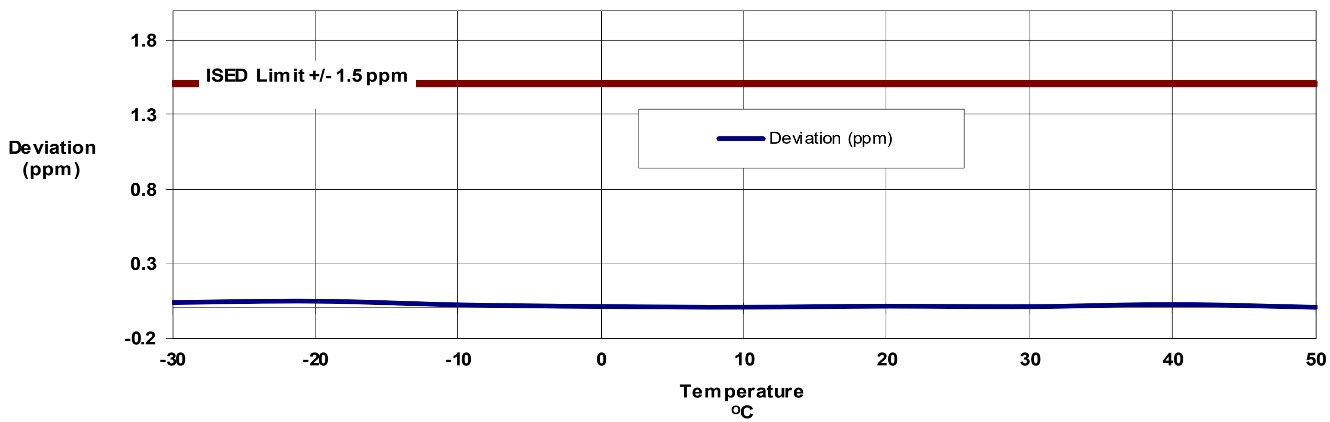
Frequency Stability Measurements (Voltage)

Voltage (VAC)	Assigned Frequency (MHz)	Measured Frequency (MHz)	Deviation (Hz)	Deviation [Absolute] (ppm)
138 (115%)	782.001198	782.001199	1	0.00
120 (100%)		782.001201	3	0.00
102 (85%)		782.001203	5	0.01
			Maximum Deviation:	0.01
			Maximum Limit:	+/- 1.5
			Result:	Complies

Table 18.3 – Summary of Frequency Stability Measurement, LTE B12 & B13 DL

Frequency Stability

Nominal Frequency (MHz):	742.5
Nominal Channel BW (KHz):	CW
Nominal Voltage (VAC):	120
Nominal Temperature (°C):	20



Frequency Stability Measurements (Temperature)

Temp (°C)	Assigned Frequency (MHz)	Measured Frequency (MHz)	Deviation (Hz)	Deviation [Absolute] (ppm)
-30	742.501138	742.501109	-29	0.04
-20		742.501101	-37	0.05
-10		742.501123	-15	0.02
0		742.501133	-5	0.01
10		742.501139	1	0.00
20		742.501145	7	0.01
30		742.501142	4	0.01
40		742.501155	17	0.02
50		742.501138	0	0.00
			Maximum Deviation:	0.05
			Maximum Limit:	+/- 1.5
			Result:	**Complies**

Frequency Stability Measurements (Voltage)

Voltage (VAC)	Assigned Frequency (MHz)	Measured Frequency (MHz)	Deviation (Hz)	Deviation [Absolute] (ppm)
138 (115%)	742.501138	742.501140	2	0.00
120 (100%)		742.501145	7	0.01
102 (85%)		742.501149	11	0.01
			Maximum Deviation:	0.01
			Maximum Limit:	+/- 1.5
			Result:	**Complies**

APPENDIX A – TEST SETUP DRAWINGS AND EQUIPMENT

Table A.1 – Setup – Conducted Measurements

Equipment List				
Asset Number	Manufacturer	Model Number	Serial Number	Description
00241	R&S	FSU40	100500	Spectrum Analyzer
00263	Koaxis	KP10-1.00M-TD	263	1m Armoured Cable
Rented Equipment				
1235462	Keysight	AT/N518B-503Q	MY59100337	Vector Signal Generator

NCR: No Calibration Required
COU: Calibrate On Use

Figure A.1 – Test Setup – Conducted Measurements

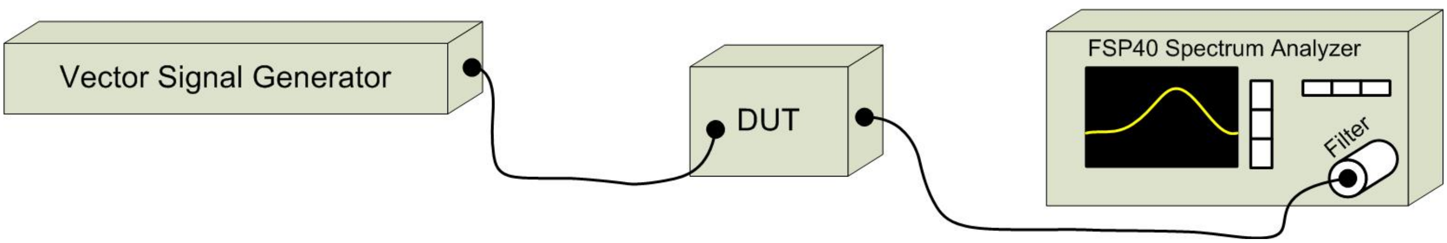


Table A.2 – Radiated Emissions Measurement Equipment

Equipment List				
Asset Number	Manufacturer	Model Number	Serial Number	Description
00050	Chase	CBL-6111A	1607	Bilog Antenna
00034	ETS	3115	6267	Double Ridged Guide Horn
00035	ETS	3115	6276	Double Ridged Guide Horn
00085	EMCO	6502	9203-2724	Loop Antenna
00161	Waveline Inc.	889		Standard Gain Horn 18-26GHz
00162	Waveline Inc.	889		Standard Gain Horn 18-26GHz
00165	Waveline Inc.	801-KF		Waveguide Adapter 18-26GHz
00166	Waveline Inc.	801-KF		Waveguide Adapter 18-26GHz
00333	HP	85685A	3010A01095	RF Preselector
00049	HP	85650A	2043A00162	Quasi-peak Adapter
00051	HP	8566B	2747A05510	Spectrum Analyzer
00241	R&S	FSU40	100500	Spectrum Analyzer
00265	Miteq	JS32-00104000-58-5P	1939850	Microwave L/N Amplifier
00071	EMCO	2090	9912-1484	Multi-Device Controller
00072	EMCO	2075	0001-2277	Mini-mast
00073	EMCO	2080	0002-1002	Turn Table
00263	Koaxis	KP10-1.00M-TD	263	1m Armoured Cable
00263B	Koaxis	KP10-1.00M-TD	263B	1m Armoured Cable
00275	TMS	LMR400	n/a	25m Cable
00278	TILE	34G3	n/a	TILE Test Software

Figure A.2 – Test Setup Radiated Measurements 30MHz – 1GHz

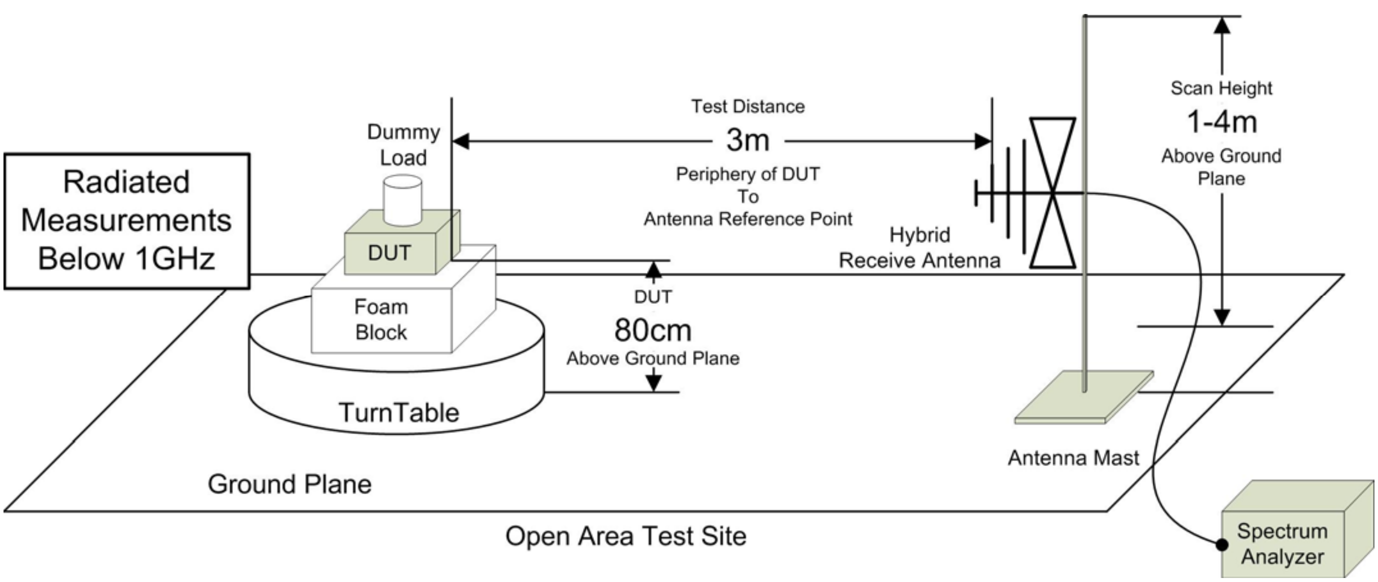


Figure A.3 – Test Setup Radiated Measurements 30MHz – 1GHz, Signal Substitution

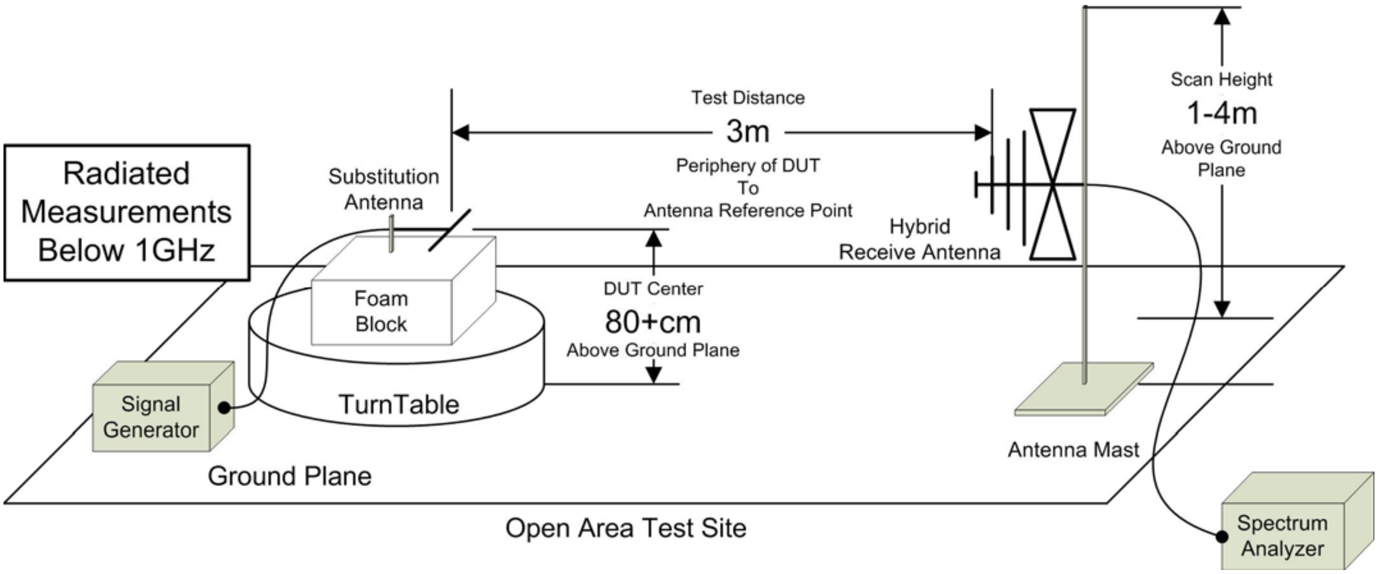


Figure A.4 – Test Setup Radiated Measurements 1 – 18GHz,

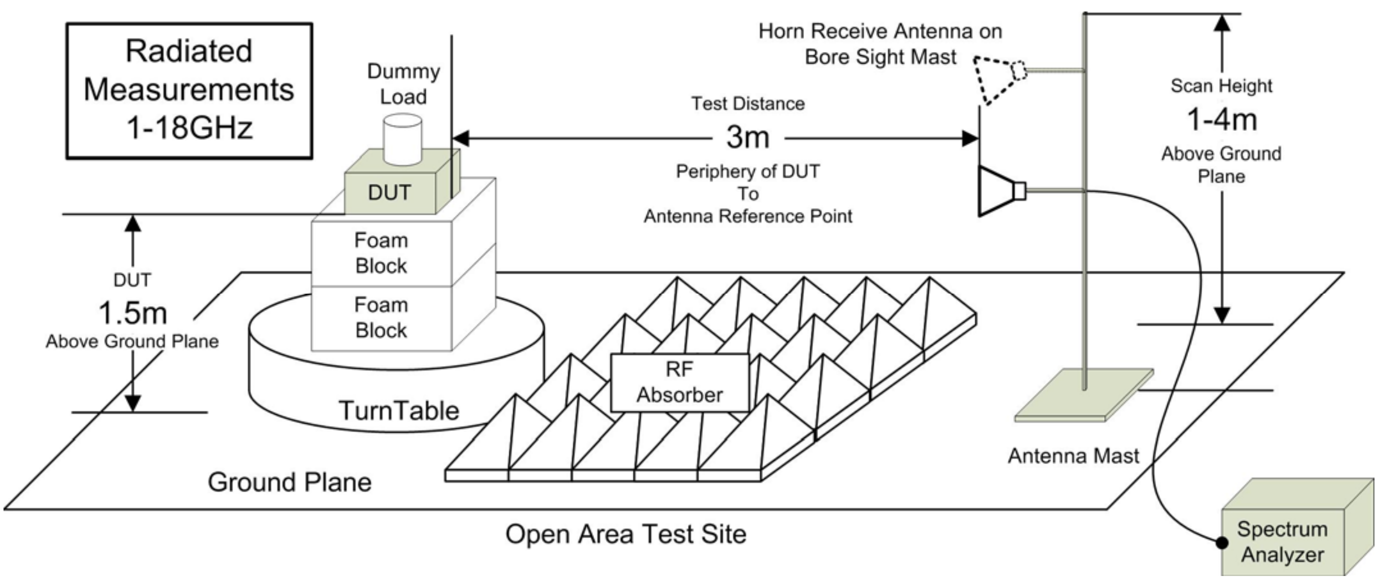


Table A.3 – Setup – Conducted Emissions Equipment List

Equipment List				
Asset Number	Manufacturer	Model Number	Serial Number	Description
00333	HP	85685A	3010A01095	RF Preselector
00049	HP	85650A	2043A00162	Quasi-peak Adapter
00051	HP	8566B	2747A05510	Spectrum Analyzer
00223	HP	8901A	3749A07154	Modulation Analyzer
00257	Com-Power	LI-215A	191934	LISN
00276	TMS	LMR400	n/a	4m Cable

Figure A.5 – Test Setup Power-Line Conducted Emissions Measurements

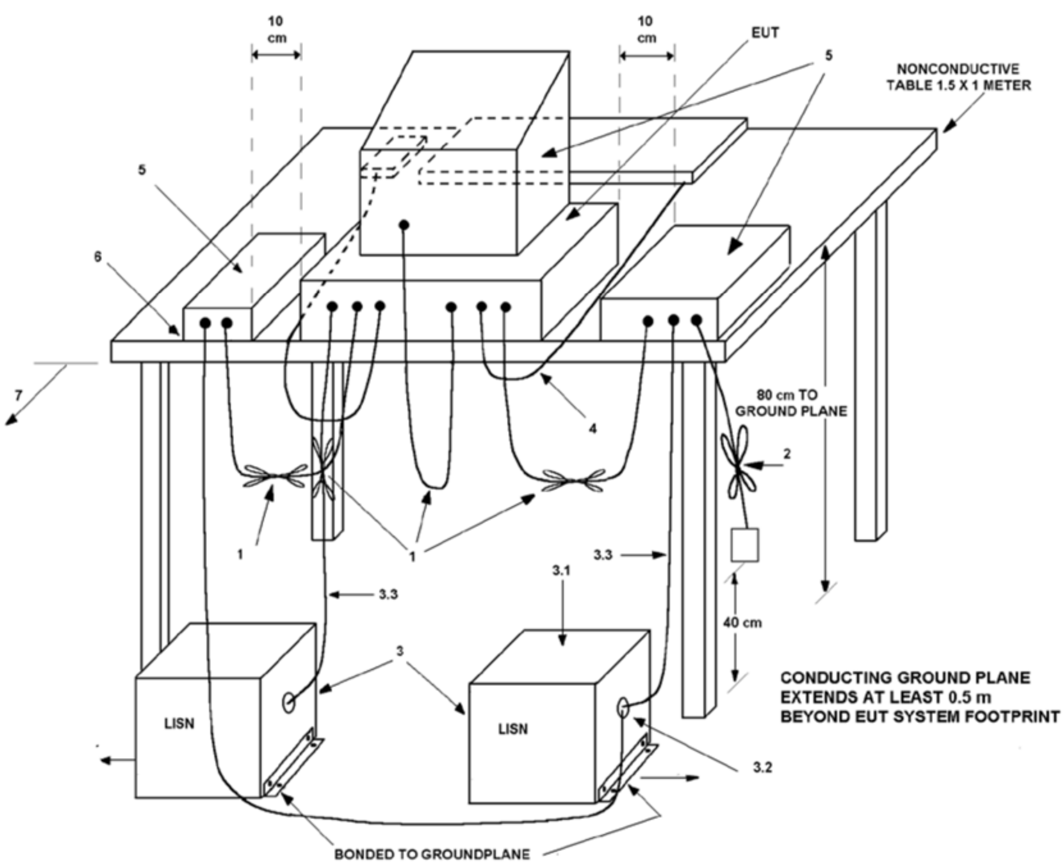
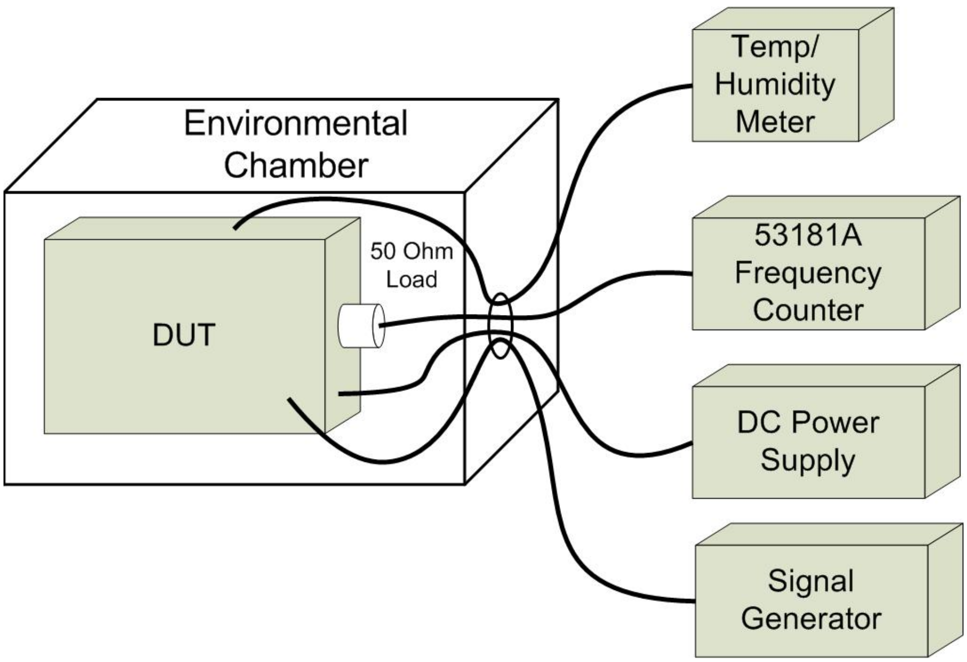


Table A.4 – Setup – Frequency Stability

Equipment List				
Asset Number	Manufacturer	Model Number	Serial Number	Description
00005	HP	8648D	3847A00611	Signal Generator
00003	HP	53181A	3736A05175	Frequency Counter
00081	ESPEC	ECT-2	0510154-B	Environmental Chamber
00234	VWR	61161-378	140320430	Temp/Humidity Meter

Figure A.6 – Test Setup Power – Frequency Stability



APPENDIX B – EQUIPMENT LIST AND CALIBRATION

Equipment List							
Asset Number	Manufacturer	Model Number	Serial Number	Description	Last Calibrated	Calibration Interval	Calibration Due
00050	Chase	CBL-6111A	1607	Bilog Antenna	3 Jan 2019	Triennial	3 Jan 2022
00034	ETS	3115	6267	Double Ridged Guide Horn	26 Nov 2018	Triennial	26 Nov 2021
00333	HP	85685A	3010A01095	RF Preselector	23 Jun 2020	Triennial	30 Jun 2023
00049	HP	85650A	2043A00162	Quasi-peak Adapter	23 Jun 2020	Triennial	23 Jun 2023
00051	HP	8566B	2747A05510	Spectrum Analyzer	23 Jun 2020	Triennial	23 Jun 2023
00241	R&S	FSU40	100500	Spectrum Analyzer	15 May 2018	Triennial	15 May 2021
00005	HP	8648D	3847A00611	Signal Generator	23 Jun 2020	Triennial	23 Jun 2023
00003	HP	53181A	3736A05175	Frequency Counter	23 Jun 2020	Triennial	23 Jun 2023
00257	Com-Power	LI-215A	191934	LISN	5 May 2018	Triennial	5 May 2021
00250	Circuit Test	DMR-1800	TE182	Digital Multi-Meter - DVM	23 Jun 2020	Triennial	23 Jun 2023
00071	EMCO	2090	9912-1484	Multi-Device Controller	n/a	n/a	n/a
00072	EMCO	2075	0001-2277	Mini-mast	n/a	n/a	n/a
00073	EMCO	2080	0002-1002	Turn Table	n/a	n/a	n/a
00081	ESPEC	ECT-2	0510154-B	Environmental Chamber	NCR	n/a	CNR
00234	VWR	61161-378	140320430	Temp/Humidity Meter	New	Triennial	New
00263	Koaxis	KP10-1.00M-TD	263	1m Armoured Cable	COU	n/a	COU
00263B	Koaxis	KP10-1.00M-TD	263B	1m Armoured Cable	COU	n/a	COU
00264	Koaxis	KP10-7.00M-TD	264	7m Armoured Cable	COU	n/a	COU
00275	TMS	LMR400	n/a	25m Cable	COU	n/a	COU
00276	TMS	LMR400	n/a	4m Cable	COU	n/a	COU
00278	TILE	34G3	n/a	TILE Test Software	NCR	n/a	NCR
Rented Equipment							
1235462	Keysight	AT/N518B-503Q	MY59100337	Vector Signal Generator		Bi-Annual	29 Jul 2022

NCR: No Calibration Required

COU: Calibrate On Use

APPENDIX C – MEASUREMENT INSTRUMENT UNCERTAINTY

CISPR 16-4 Measurement Uncertainty (U_{LAB})	
This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence interval using a coverage factor of k=2	
Radiated Emissions 30MHz - 200MHz	
U_{LAB} = 5.14dB U_{CISPR} = 6.3dB	
Radiated Emissions 200MHz - 1000MHz	
U_{LAB} = 5.90dB U_{CISPR} = 6.3dB	
Radiated Emissions 1GHz - 6GHz	
U_{LAB} = 4.80dB U_{CISPR} = 5.2dB	
Radiated Emissions 6GHz - 18GHz	
U_{LAB} = 5.1dB U_{CISPR} = 5.5dB	
Power Line Conducted Emissions 9kHz to 150kHz	
U_{LAB} = 2.96dB U_{CISPR} = 3.8dB	
Power Line Conducted Emissions 150kHz to 30MHz	
U_{LAB} = 3.12dB U_{CISPR} = 3.4dB	
If the calculated uncertainty **U_{lab}** is **less** than **U_{CISPR}** then:	
1	Compliance is deemed to occur if **NO** measured disturbance exceeds the disturbance limit
2	Non-Compliance is deemed to occur if **ANY** measured disturbance **EXCEEDS** the disturbance limit
If the calculated uncertainty **U_{lab}** is **greater** than **U_{CISPR}** then:	
3	Compliance is deemed to occur if **NO** measured disturbance, increased by (**U_{lab} - U_{CISPR}**), exceeds the disturbance limit
4	Non-Compliance is deemed to occur if **ANY** measured disturbance, increased by (**U_{lab} - U_{CISPR}**), **EXCEEDS** the disturbance limit

Other Measurement Uncertainties (U_{LAB})
RF Conducted Emissions 9kHz - 40GHz
U_{LAB} = 1.0dB U_{CISPR} = n/a
Frequency/Bandwidth 9kHz - 40GHz
U_{LAB} = 0.1ppm U_{CISPR} = n/a
Temperature
U_{LAB} = 1^{O}C U_{CISPR} = n/a

END OF REPORT

APPENDIX D – OCCUPIED BANDWIDTH MEASUREMENT PLOTS

APPENDIX E – MEAN POWER MEASUREMENT PLOTS

APPENDIX F – I/O COMPARISON MEASUREMENT PLOTS

APPENDIX G – OOB EMISSIONS / BAND EDGE MEASUREMENT PLOTS

APPENDIX H – CONDUCTED SPURIOUS MEASUREMENT PLOTS

APPENDIX I – PEAK-TO-AVERAGE MEASUREMENT PLOTS

APPENDIX J – POWER LINE CONDUCTED MEASUREMENT PLOTS

