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Report On

FCC and IC Testing of the
Ericsson RD 2242 B4 (2110-2155 MHz) WCDMA/LTE Base Station In
accordance with FCC CFR 47 Part 2, FCC CFR 47 Part 27, Industry
Canada RSS-GEN and Industry Canada RSS-139

COMMERCIAL-IN-CONFIDENCE

FCC TA8BKRY901309-1:
IC 287AB-AS9013091:

PREPARED BY

Mohamed Toubella
Engineer

APPROVED BY

Nic Forsyth
Authorised Signatory

DATED

29 September 2016

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September 2016

CONTENTS

Section	Page No
1	REPORT INFORMATION 2
1.1	Report Details 3
1.2	Brief Summary of Results 4
1.3	Configuration Description 5
1.4	Declaration of Build Status 7
2	MAIN EUT 7
1.5	Product Information 8
1.6	Test Setup 9
1.7	Test Conditions 10
1.8	Deviation From The Standard 10
1.9	Modification Record 10
1.10	Alternative Test Site 10
1.11	Additional Information 10
3	TEST DETAILS 11
2.1	Maximum Peak Output Power and Peak to Average Ratio - Conducted 12
2.2	Occupied Bandwidth 21
2.3	Band Edge 29
2.4	Transmitter Spurious Emissions 39
2.5	Frequency Stability 76
4	TEST EQUIPMENT USED 78
3.1	Test Equipment Used 79
3.2	Measurement Uncertainty 81
5	ACCREDITATION, DISCLAIMERS AND COPYRIGHT 82
4.1	Accreditation, Disclaimers and Copyright 83
ANNEX A	Module Lists A.2



Product Service

SECTION 1

REPORT INFORMATION

1.1 REPORT DETAILS

Manufacturer	Ericsson
Address	349 Terry Fox Drive Ottawa Ontario K2K 2V6
Product RD 2242 B4	RD 2242 B4
Product Number	KRY 901 309/1
IC Model	AS9013091
Serial Number	C828676641
Software	CXP9013268/14 R64DC04
Hardware	R2A
Test Specification/Issue/Date	FCC CFR 47 Part 2: 2016 FCC CFR 47 Part 27: 2016 Industry Canada RSS-GEN: Issue 4: 2014 Industry Canada RSS-139: Issue 3: 2015
Start of Test	13 September 2016
Finish of Test	16 September 2016
Name of Engineer(s)	Mohamed Toubella
Related Document(s)	KDB 971168 D01

1.2 BRIEF SUMMARY OF RESULTS

A brief summary of results for each configuration, in accordance with FCC CFR 47 Part 2, FCC CFR 47 Part 27, Industry Canada RSS-GEN and Industry Canada RSS-139 is shown below.

Section	Specification Clause				Test Description	Result
	FCC CFR 47 Part 2	FCC CFR 47 Part 27	RSS-GEN	RSS-139		
2.1	2.1046	27.50	-	6.5	Maximum Peak Output Power and Peak to Average Ratio - Conducted	Pass
2.2	2.1049	27.53	6.6	-	Occupied Bandwidth	Pass
2.3	2.1051	27.53 (h)	-	6.6	Band Edge	Pass
2.4	2.1051	27.53 (h)	-	6.6	Transmitter Spurious Emissions	Pass
2.5	2.1055	27.54	-	6.4	Frequency Stability	Pass
-	2.1051	27.53(h)	-	6.6	Transmitter radiated Emissions	Pass*
-	-	-	7.1	-	Receiver Spurious Emissions	Pass*

* -Reference Nemko Canada Inc. EMC Test Report: Reference Number 3155861-1TRFEMC

Nemko Canada Inc.
 303 River Road
 Ottawa, Ontario, K1V 1H2
 Canada

Accreditations

Nemko Canada Inc, a test laboratory, is accredited by the Standards Council of Canada. The tests included in this report are within the scope of this accreditation.

1.3 CONFIGURATION DESCRIPTION

The RD 2242 B4 / KRY 901 309/1 supports Single, Multi Carrier and Mixed Mode operation from either a single or dual port configuration.

The RD 2242 B4 supports LTE Test Models E-TM1.1, E-TM3.1, E-TM3.2 and WCDMA Test Models TM1, TM5 and TM6 in Band 4 (2110-2155 MHz).

The WCDMA Test Models (as defined in 3GPP TS 25.141) TM1, TM5 and TM6 were used to represent QPSK, 16QAM and 64QAM modulation respectively.

The RD 2242 B4 has been tested and authorized for LTE and WCDMA SC, MC and MM transmission. The Test Model used, unless otherwise stated, for LTE was E-TM1.1 and WCDMA TM5.

TX test cases: Maximum Conducted Output Power, Spurious Emissions at Antenna Terminals (± 1 MHz) and Conducted Spurious Emissions, measurements were performed on both RF Ports using a test limit accounting for MIMO operation with 2 ports. All RF ports were tested for RF Carrier Power and results recorded using the Measure and Sum approach to account for MIMO operation. The test limits shown are representative of the worst case. All testing was performed with the EUT transmitting at maximum RF power unless otherwise stated.

The EUT was powered via POE (Power Over Ethernet) from the IRU 2242 using a -48V DC Power supply.

WCDMA B4 (2110 MHz – 2155 MHz) Channel Configurations

All tests except MC Band Edge Emissions

Configuration	RAT	No. of Carriers	Carrier Bandwidth (MHz)	Carrier Frequency Configuration (MHz)		
				Bottom (BRFBW)	Middle (MRFBW)	Top (TRFBW)
1	W	1	5 / 4.2	2112.4	2132.6	2152.6
2	W	2	5	2112.4 + 2147.6	2115 + 2150	2117.6 + 2152.6
3	W	4	5	2112.4 + 2117.4 + 2142.6 + 2147.6	2115 + 2120 + 2145 + 2150	2117.6 + 2122.6 + 2147.6 + 2152.6

Table 1

WCDMA B4 Band Edge Emissions

Configuration	RAT	No. of Carriers	Carrier Bandwidth (MHz)	Carrier Frequency Configuration (MHz)	
				BRFBW (Bottom Edge)	TRFBW (Top Edge)
1 (BE)	W	1	5	2112.4 MHz	2152.6 MHz
2 (BE)	W	2	5	2112.4 + 2117.4 MHz	2147.6 + 2152.6 MHz

Table 2

WCDMA/LTE (MM) B4 (2110 MHz – 2155 MHz) Channel Configurations

All tests except Band Edge Emissions

Configuration	RAT	No. of Carriers	Carrier Bandwidth (MHz)	Carrier Frequency Configuration (MHz)		
				BRFBW	MRFBW	TRFBW
6	W + L	2	5 + 15	-	2112.4 (W) + 2142.5 (L)	-
7	W + W + L	3	5 + 5 + 5		2112.4 (W) + 2117.4 (W) + 2147.5 (L)	
8	W + W + W + W + L + L	6	5 + 5 + 5 + 5 + 10 + 10	-	2115 (W) + 2120 (W) + 2125 (W) + 2130 (W) + 2137.5 (L) + 2147.5 (L)	-

Table 3

Band Edge Emissions

Configuration	RAT	No. of Carriers	Carrier Bandwidth (MHz)	Carrier Frequency Configuration (MHz)	
				BRFBW (Bottom Edge)	TRFBW (Top Edge)
6 (BE)	W + L	2	5 + 5	2112.4 (W) + 2117.4 (L)	2147.6 (L) + 2152.6

Table 4

1.4 DECLARATION OF BUILD STATUS

MAIN EUT	
MANUFACTURING DESCRIPTION	Radio DOT (Multi-standard)
MANUFACTURER	Ericsson
PRODUCT NAME	Remote Radio Unit
PART NUMBER	KRY 901 309/1
SERIAL NUMBER	C828676641
HARDWARE VERSION	R2A
SOFTWARE VERSION	CXP9013268/14 R64DC04
TRANSMITTER OPERATING RANGE	2110MHz – 2155MHz
RECEIVER OPERATING RANGE	1710MHz – 1755MHz
COUNTRY OF ORIGIN	Sweden
INTERMEDIATE FREQUENCIES	DL: 110 – 150MHz, UL: 40 – 80MHz
EMISSION DESIGNATOR(S): (i.e. G1D, GXW)	LTE 5M00 F9W 10M0 F9W 15M0 F9W 20M0 F9W WCDMA 5M00 F9W
MODULATION TYPES: (i.e. GMSK, QPSK)	LTE: QPSK, 16QAM, 64QAM WCDMA: QPSK, 16QAM, 64QAM
OUTPUT POWER (W or dBm)	SC, MC, MM: 2 x 0.5W (17dBm)
FCC ID	TA8BKRY901309-1
INDUSTRY CANADA ID	287AB-AS9013091
IC HVIN	AS9013091
TECHNICAL DESCRIPTION (a brief description of the intended use and operation)	The RD 2242 B4 (KRY 901 309/1) is a Remote Radio Unit forming part of the Ericsson Radio Base Station (RBS) equipment. The RD provides radio access for mobile and fixed devices and is intended for the indoor environment. The radio operates over 2 Transmit ports in MRO; Single, Multi-Carrier, and MIMO transmission with a maximum rated RF Output of 0.05W per port over an operational temperature of +5°C to +40°C. The unit is designed to be ceiling mounted.

Signature:

David Bolzon

.....

David Bolzon

Date: 15 September 2016

Declaration of Build Status Serial C828676641

No responsibility will be accepted by TÜV SÜD Product Service UK Limited as to the accuracy of the information declared in this document by the manufacturer.

1.5 PRODUCT INFORMATION

1.5.1 Technical Description

The RD 2242 B4 (KRY 901 309/1) is a multi-standard Remote Radio Unit (RRU) forming part of the Ericsson Radio Base Station (RBS) equipment. The RD (Radio DOT) provides radio access for mobile and fixed devices and is intended for the indoor environment.

RBS communications is supported via the RDI (Radio DOT Interface) cable providing power, control and an IF link between the RBS IRU (Indoor Radio Unit) and the RD 2242. The typical RDI for the RD 2242 is via a 100 meter CAT6 cable.

The RD 2242 B4 supports (2) Transmit/Receive ports at a Downlink (transmit) frequency from 2110MHz to 2155MHz and an Uplink (receive) frequency from 1710MHz to 1755MHz. The radio operates in FDD (Frequency Division Duplex) with a duplex spacing of 400MHz and supports Multi Radio Access Standards (RATS) at transmit bandwidths up to 20MHz.

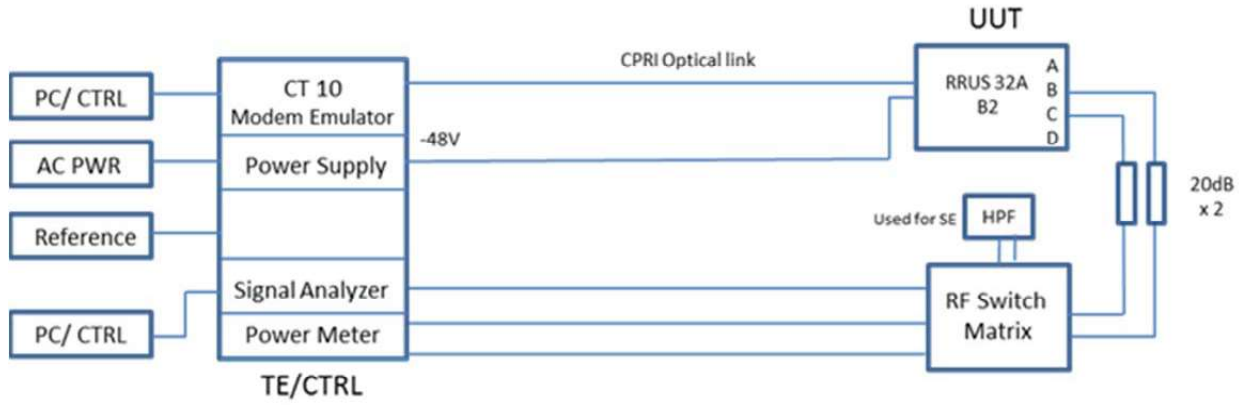
The radio operates in MRO; Single, Multi-Carrier, and MIMO transmission with a maximum rated RF Output of 50mW per port over an operational temperature of +5°C to +40°C. The unit is designed to be ceiling mounted.

A full technical description can be found in the Manufacturers CPI (Customer Product Information) documentation.

Configuration A

Product	Product Number	R-State	Serial No.
RD 2242 B4	KRY 901 309/1	R2A	C828676641
SUP:			
RBS 6601	BFL 901 009/1	R3B	BR81278870
IRU 2242	KRC 161 444/2	R2B	C829886796

1.6 TEST SETUP



RD 2242 RU Radio Compliance Set-Up

1.7 TEST CONDITIONS

For all tests the EUT was set up in accordance with the relevant test standard and to represent typical operating conditions. Tests were applied with the EUT situated in a shielded enclosure, test laboratories or a chamber as appropriate.

The EUT was powered from a -48V DC supply.

1.8 DEVIATION FROM THE STANDARD

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

1.9 MODIFICATION RECORD

No modifications were made to the EUT during testing.

1.10 ALTERNATIVE TEST SITE

Under our group UKAS Accreditation, TÜV SÜD Product Service conducted the following tests at Ericsson in Ottawa, Canada.

Test Name	Name of Engineer(s)
Maximum Peak Output Power and Peak to Average Ratio - Conducted	Mohamed Toubella
Occupied Bandwidth	Mohamed Toubella
Band Edge	Mohamed Toubella
Transmitter Spurious Emissions	Mohamed Toubella
Frequency Stability	Mohamed Toubella

1.11 ADDITIONAL INFORMATION

Testing performed in the presence of Mr Denis Lalonde & Mr Jophin Joseph and Mr Gavin Gan.



Product Service

SECTION 2

TEST DETAILS

2.1 MAXIMUM PEAK OUTPUT POWER AND PEAK TO AVERAGE RATIO - CONDUCTED

2.1.1 Specification Reference

FCC CFR 47 Part 2, Clause 2.1046
FCC CFR 47 Part 27, Clause 27.50
Industry Canada RSS-139, Clause 6.5

2.1.2 Date of Test and Modification State

14 and 15 September 2016 - Modification State 0

2.1.3 Test Equipment Used

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

2.1.4 Environmental Conditions

Ambient Temperature	25°C
Relative Humidity	42.5%

2.1.5 Test Method

The EUT was connected to a Signal Analyser via 20dB of attenuation and an RF switch. The path loss between the EUT and the Analyser was measured using a Network Analyser and entered as a Reference Level Offset.

The EUT was set to transmit at its maximum rated output power in the configurations described below.

Measurements were performed with the Analyser Band Power measurement function in accordance with FCC KDB 662911 D01. The detector was set to RMS with a RBW of at least 1% of the theoretical signal bandwidth and a VBW of 3 times the RBW. The detection bandwidth was configured to be wider than the total bandwidth of the carrier or combinations of carriers, (multi-carrier). The sweep time was set to Auto and 200 averages were performed before the result was recorded. Prior to testing, comparative measurements were made with an Average Power sensor and Power Meter to confirm correlation with the method used.

Due to Average measurements being recorded, an additional Peak to Average measurement was made in all single carrier configurations. This was achieved using the CCDF function of the Analyser with the RBW being set to 80MHz (In this case 40MHz was the maximum total RF Bandwidth in single and multi-carrier mode). A comparison was made with a wide band Power Meter capable of measuring Peak to Average ratio to confirm correlation with the method used.

In order to confirm the Average Equivalent Isotropically Radiated Power (EIRP) an Average Power Spectral Density (PSD) measurement was made using a 1MHz bandwidth in accordance with FCC KDB 662911 D01.

Testing was performed on both ports.

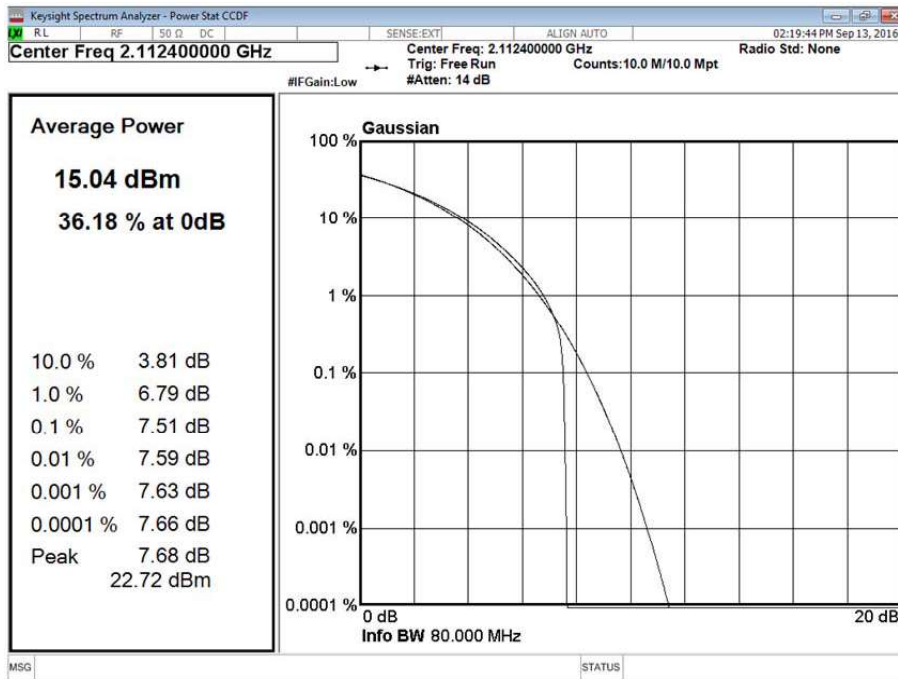
2.1.6 Test Results

Configuration1

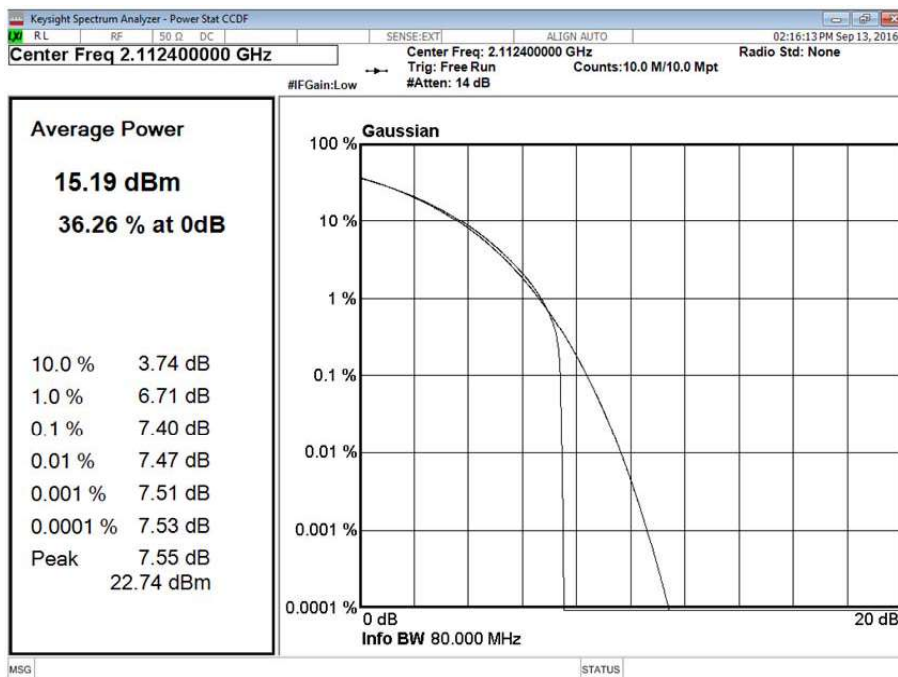
Maximum Output Power 17 dBm

Modulation	Carrier Bandwidth (MHz)	Antenna	Peak to Average Ratio (PAR) / Output Power						
			Channel Position B						
			PAR (dB)	Average Power		Average EIRP			
				dBm	dBm/MHz	dBm	dBm/MHz	W	W/MHz
16QAM	5.0 MHz	A	7.51	14.96	9.63	17.96	12.63	0.0625	0.0183
		B	7.40	15.16	10.16	18.16	13.16	0.0655	0.0207
Total			-	18.07	12.91	21.07	15.91	0.1280	0.0390

Channel Position B - Bandwidth 5.0 MHz - Antenna A



Channel Position B - Bandwidth 5.0 MHz - Antenna B

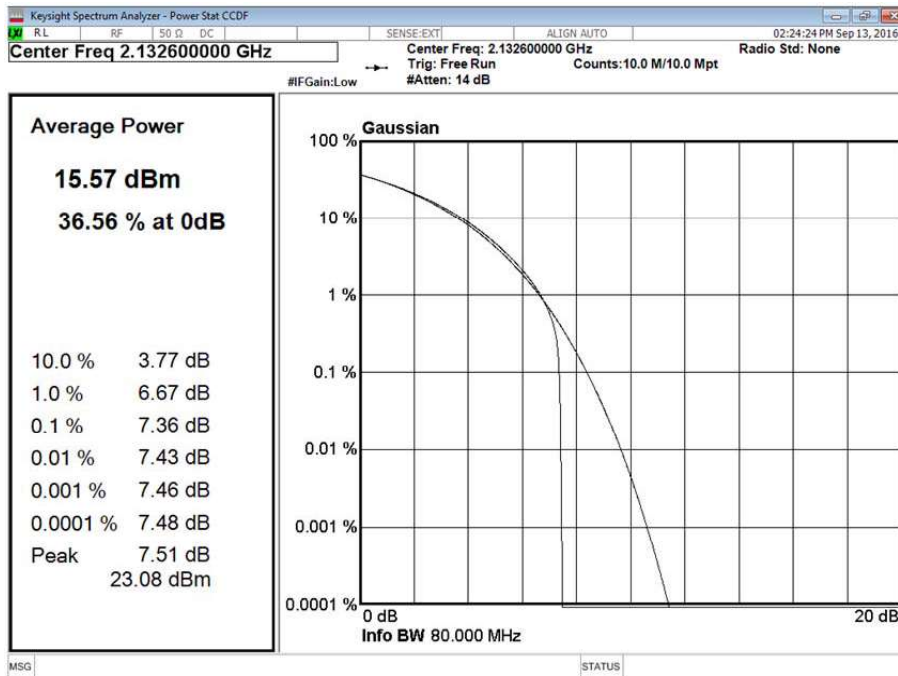


Configuration1

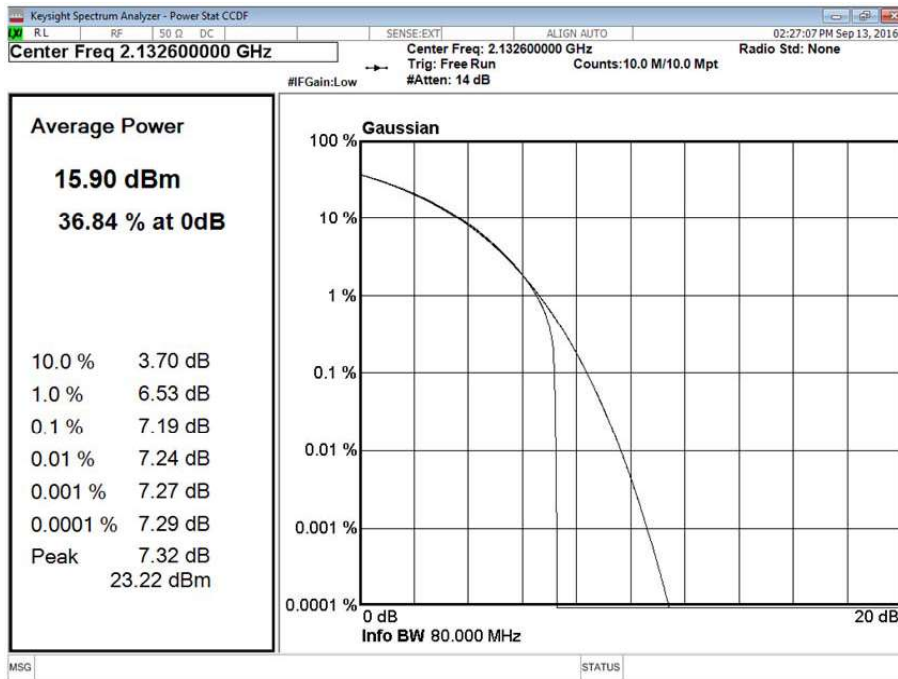
Maximum Output Power 17 dBm

Modulation	Carrier Bandwidth (MHz)	Antenna	Peak to Average Ratio (PAR) / Output Power						
			Channel Position M						
			PAR (dB)	Average Power		Average EIRP			
dBm	dBm/MHz	dBm		dBm/MHz	W	W/MHz			
16QAM	5.0 MHz	A	7.36	15.51	10.35	18.51	13.35	0.0710	0.0216
		B	7.19	15.84	10.85	18.84	13.85	0.0766	0.0243
Total			-	18.69	13.62	21.69	16.62	0.1475	0.0459

Channel Position M - Bandwidth 5.0 MHz - Antenna A



Channel Position M - Bandwidth 5.0 MHz - Antenna B

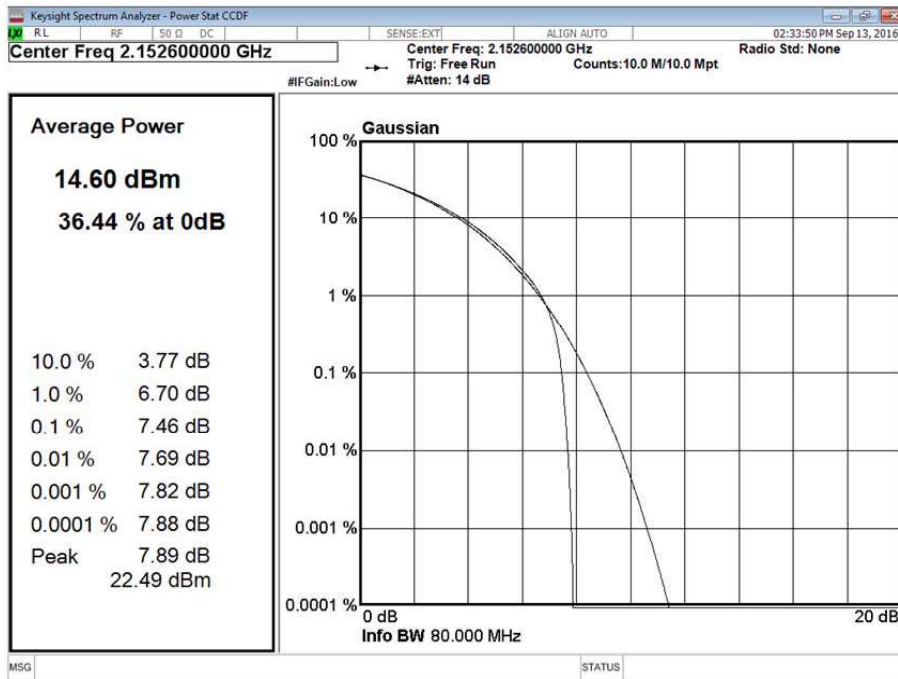


Configuration1

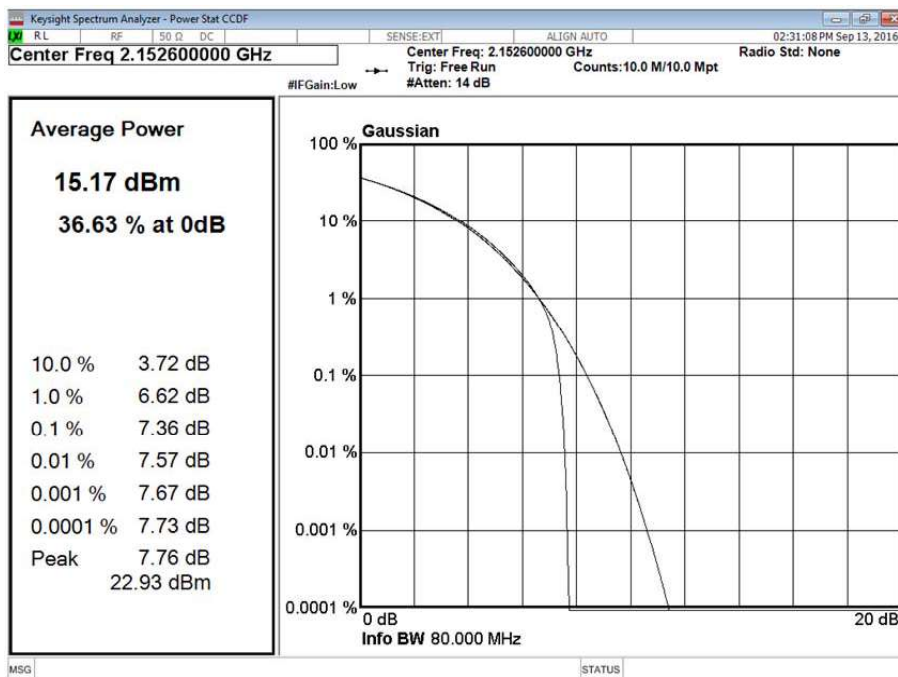
Maximum Output Power 17 dBm

Modulation	Carrier Bandwidth (MHz)	Antenna	Peak to Average Ratio (PAR) / Output Power						
			Channel Position T						
			PAR (dB)	Average Power		Average EIRP			
dBm	dBm/MHz	dBm		dBm/MHz	W	W/MHz			
16QAM	5.0 MHz	A	7.46	14.52	9.73	17.52	12.73	0.0565	0.0187
		B	7.36	15.13	10.61	18.13	13.61	0.0650	0.0230
Total			-	17.85	13.20	20.85	16.20	0.1215	0.0417

Channel Position T - Bandwidth 5.0 MHz - Antenna A



Channel Position T - Bandwidth 5.0 MHz - Antenna B



Configuration 2

Maximum Output Power 17 dBm

Modulation	Carrier Bandwidth (MHz)	Antenna	Output Power					
			Channel Position B					
			Average Power		Average EIRP			
			dBm	dBm/MHz	dBm	dBm/MHz	W	W/MHz
16QAM	5.0 MHz	A	14.76	6.82	17.76	9.82	0.0597	0.0096
		B	15.24	7.85	18.24	10.85	0.0667	0.0122
Total			18.02	10.38	21.02	13.38	0.1264	0.0218

Configuration 2

Maximum Output Power 17 dBm

Modulation	Carrier Bandwidth (MHz)	Antenna	Output Power					
			Channel Position M					
			Average Power		Average EIRP			
			dBm	dBm/MHz	dBm	dBm/MHz	W	W/MHz
16QAM	5.0 MHz	A	14.81	7.30	17.81	10.30	0.0604	0.0107
		B	15.72	7.17	18.72	10.17	0.0745	0.0104
Total			18.30	10.25	21.30	13.25	0.1349	0.0211

Configuration 2

Maximum Output Power 17 dBm

Modulation	Carrier Bandwidth (MHz)	Antenna	Output Power					
			Channel Position T					
			Average Power		Average EIRP			
			dBm	dBm/MHz	dBm	dBm/MHz	W	W/MHz
16QAM	5.0 MHz	A	15.01	7.49	18.01	10.49	0.0632	0.0112
		B	15.45	7.43	18.45	10.43	0.0700	0.0110
Total			18.25	10.47	21.25	13.47	0.1332	0.0222

Configuration 3

99

Modulation	Carrier Bandwidth (MHz)	Antenna	Output Power					
			Channel Position B					
			Average Power		Average EIRP			
			dBm	dBm/MHz	dBm	dBm/MHz	W	W/MHz
16QAM	5.0 MHz	A	15.38	4.21	18.38	7.21	0.0689	0.0053
		B	15.41	5.13	18.41	8.13	0.0693	0.0065
Total			18.41	7.70	21.41	10.70	0.1382	0.0118

Configuration 3

Maximum Output Power 17 dBm

Modulation	Carrier Bandwidth (MHz)	Antenna	Output Power					
			Channel Position M					
			Average Power			Average EIRP		
			dBm	dBm/MHz	dBm	dBm/MHz	W	W/MHz
16QAM	5.0 MHz	A	15.12	4.27	18.12	7.27	0.0649	0.0053
		B	15.80	5.59	18.80	8.59	0.0759	0.0072
Total			18.48	7.99	21.48	10.99	0.1407	0.0126

Configuration 3

Maximum Output Power 17 dBm

Modulation	Carrier Bandwidth (MHz)	Antenna	Output Power					
			Channel Position T					
			Average Power			Average EIRP		
			dBm	dBm/MHz	dBm	dBm/MHz	W	W/MHz
16QAM	5.0 MHz	A	15.27	4.26	18.27	7.26	0.0671	0.0053
		B	15.59	5.35	18.59	8.35	0.0723	0.0068
Total			18.44	7.85	21.44	10.85	0.1394	0.0122

Configuration 6

Maximum Output Power 17 dBm

WCDMA Modulation	LTE Bandwidth (MHz)	Antenna	Peak to Average Ratio (PAR) / Output Power					
			Channel Position M _{RFBW}					
			Average Power			Average EIRP		
			dBm	dBm/MHz	dBm	dBm/MHz	W	W/MHz
16QAM	5.0 MHz	A	14.71	7.01	17.71	10.01	0.0590	0.0100
		B	15.21	6.94	18.21	9.94	0.0662	0.0099
Total			17.98	9.99	20.98	12.99	0.1252	0.0199

Configuration 8

Maximum Output Power 17 dBm

WCDMA Modulation	LTE Bandwidth (MHz)	Antenna	Peak to Average Ratio (PAR) / Output Power					
			Channel Position M _{RFBW}					
			Average Power			Average EIRP		
			dBm	dBm/MHz	dBm	dBm/MHz	W	W/MHz
16QAM	5.0 MHz	A	15.23	2.66	18.23	5.66	0.0665	0.0037
		B	15.92	3.23	18.92	6.23	0.0780	0.0042
Total			18.60	5.96	21.60	8.96	0.1445	0.0079

Remarks

Antenna Gain = 3dBi.

Limit	
Peak Power	≤ 1640 W/MHz or $\leq +62$ dBm/MHz
Peak to Average Ratio	13 dB

2.2 OCCUPIED BANDWIDTH

2.2.1 Specification Reference

FCC CFR 47 Part 2, Clause 2.1049
 FCC CFR 47 Part 27, Clause 27.53
 Industry Canada RSS-GEN, Clause 6.6

2.2.2 Date of Test and Modification State

13 September 2016 - Modification State 0

2.2.3 Test Equipment Used

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

2.2.4 Environmental Conditions

Ambient Temperature 25°C
 Relative Humidity 42.5%

2.2.5 Test Method

The EUT was connected to a Signal Analyser via 20dB of attenuation and an RF switch. The path loss between the EUT and the Analyser was measured using a Network Analyser and entered as a Reference Level Offset.

The EUT was set to transmit at its maximum rated output power in the configurations described below.

Measurements were performed using the Analyser Occupied Bandwidth measurement mode function in accordance with FCC KDB 971168 D01 v02r02.

The Analyser RBW was configured to be at least 1% of the channel bandwidth of the carrier to be measured.

Testing was performed on both ports.

The results are shown in the plots below.

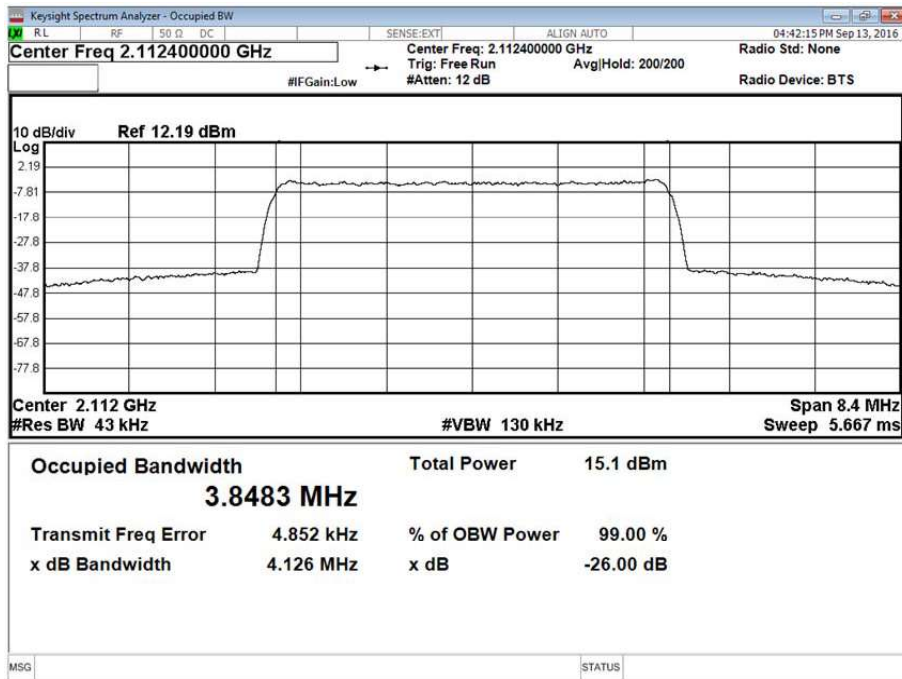
2.2.6

Configuration 1

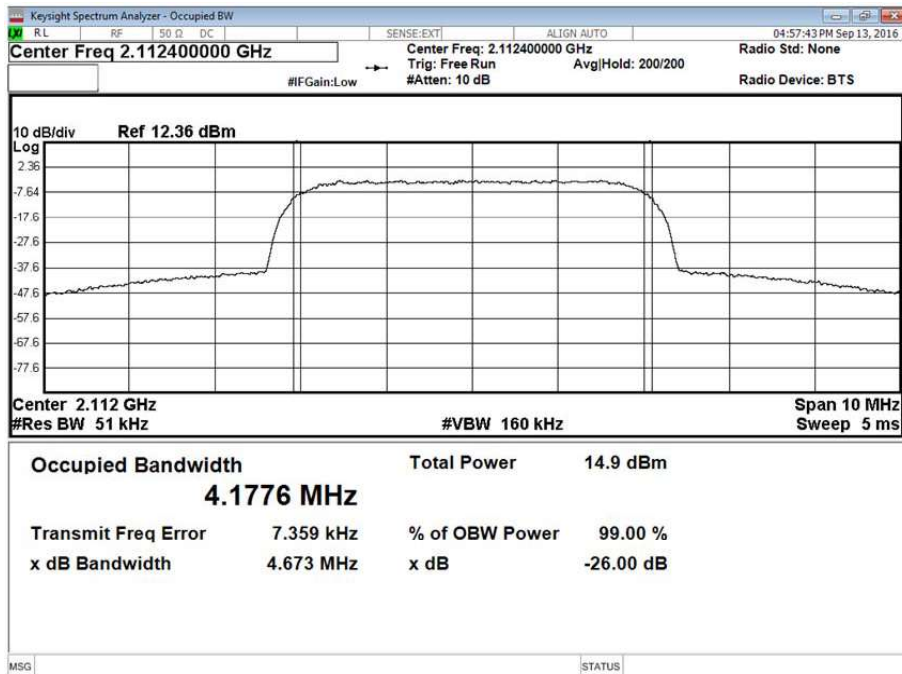
Maximum Output Power 17 dBm

Carrier Bandwidth / Modulation	Result (KHz)					
	Channel Position B		Channel Position M		Channel Position T	
	Occupied Bandwidth	-26 dB Bandwidth	Occupied Bandwidth	-26 dB Bandwidth	Occupied Bandwidth	-26 dB Bandwidth
4.2 MHz / QPSK	3,848.26	4,125.54	3,846.87	4,127.37	3,844.05	4,118.66
5.0 MHz / QPSK	4,177.64	4,673.43	4,173.47	4,670.66	4,154.89	4,662.59

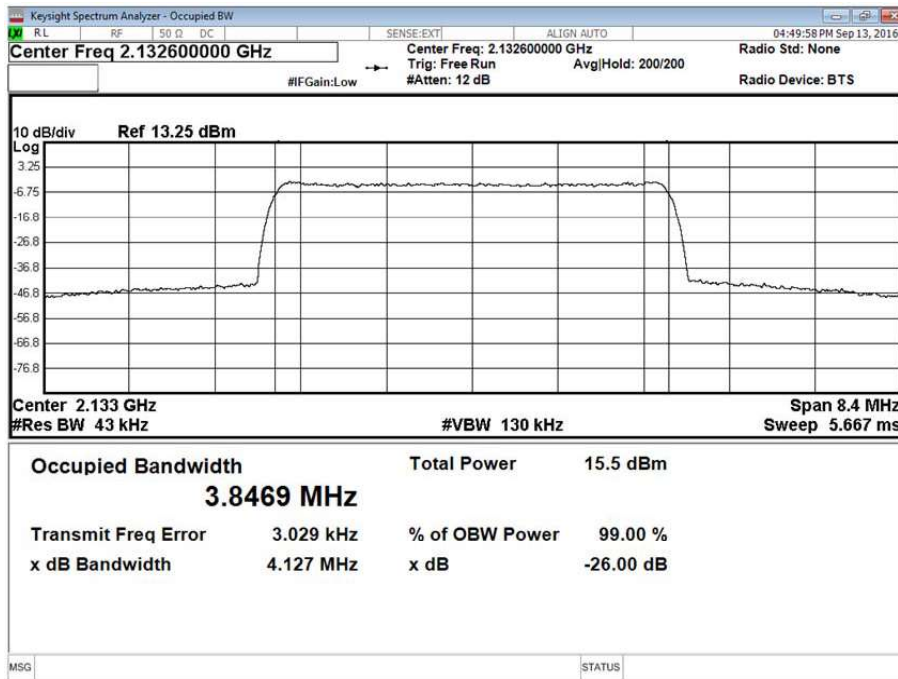
Channel Position B - Bandwidth 4.2 MHz - Antenna A



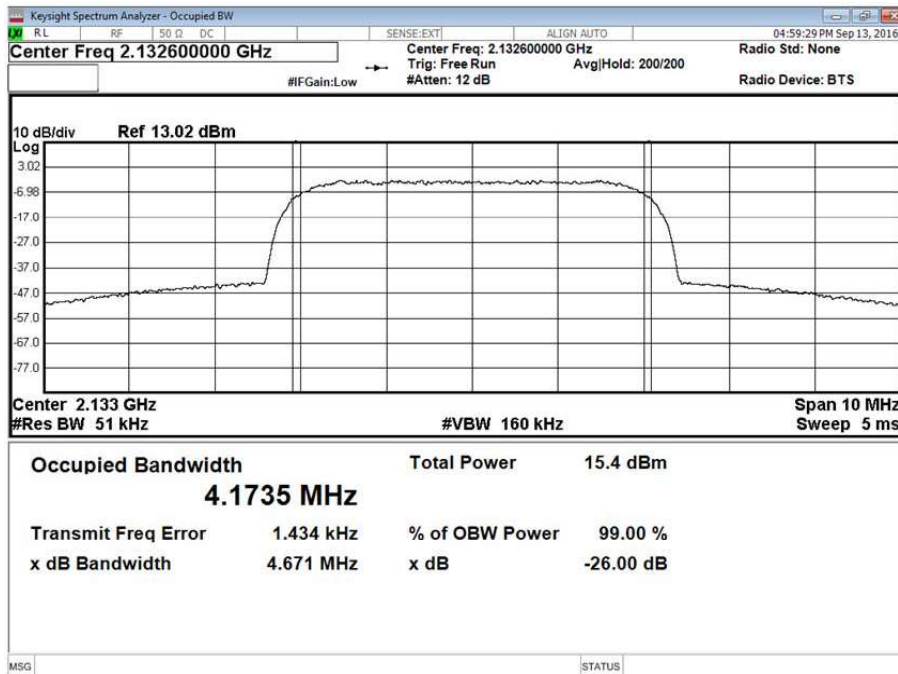
Channel Position B - Bandwidth 5.0 MHz - Antenna A



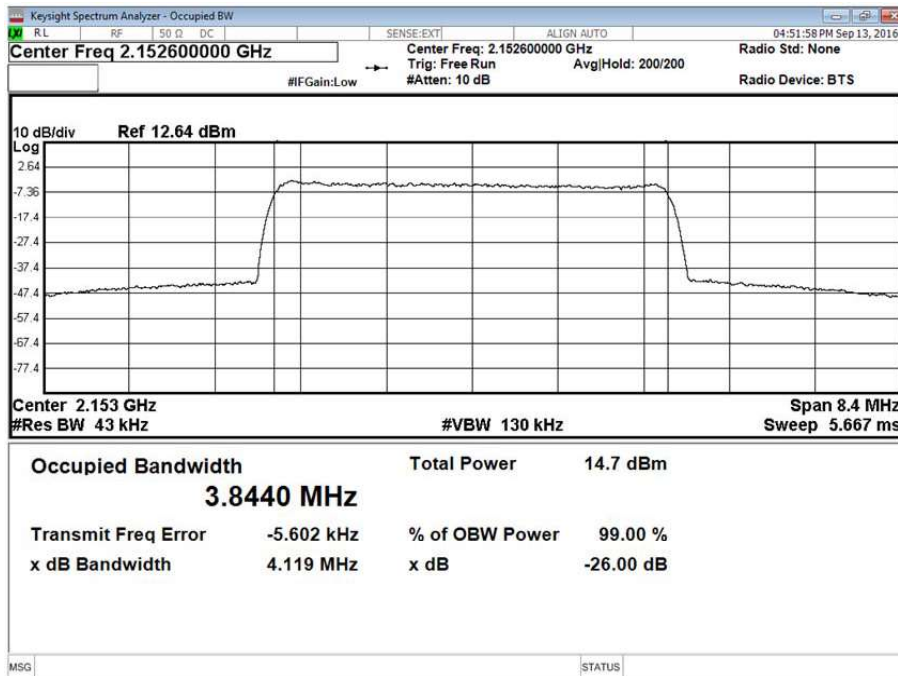
Channel Position M - Bandwidth 4.2 MHz - Antenna A



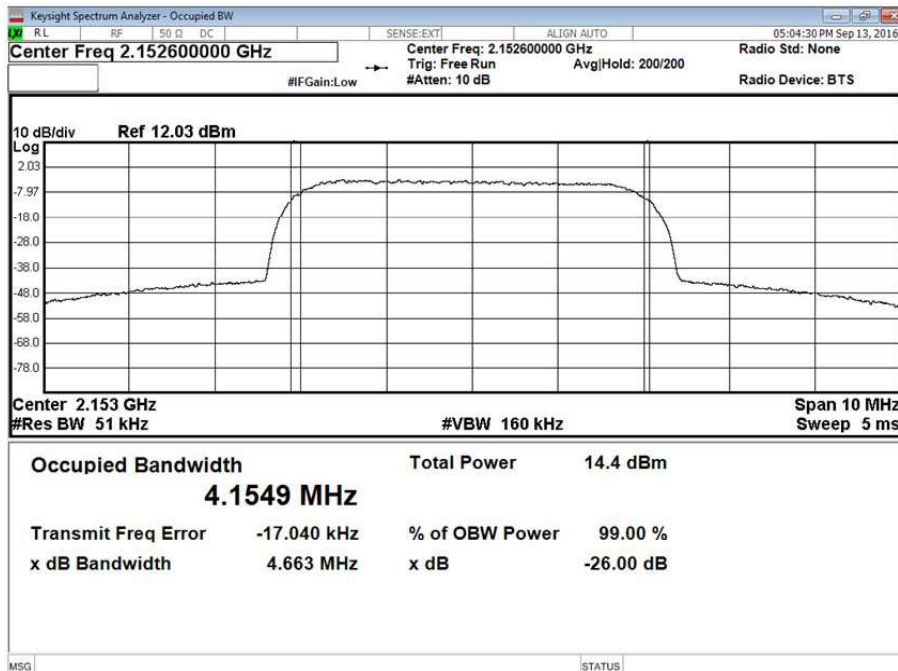
Channel Position M - Bandwidth 5.0 MHz - Antenna A



Channel Position T - Bandwidth 4.2 MHz - Antenna A



Channel Position T - Bandwidth 5.0 MHz - Antenna A

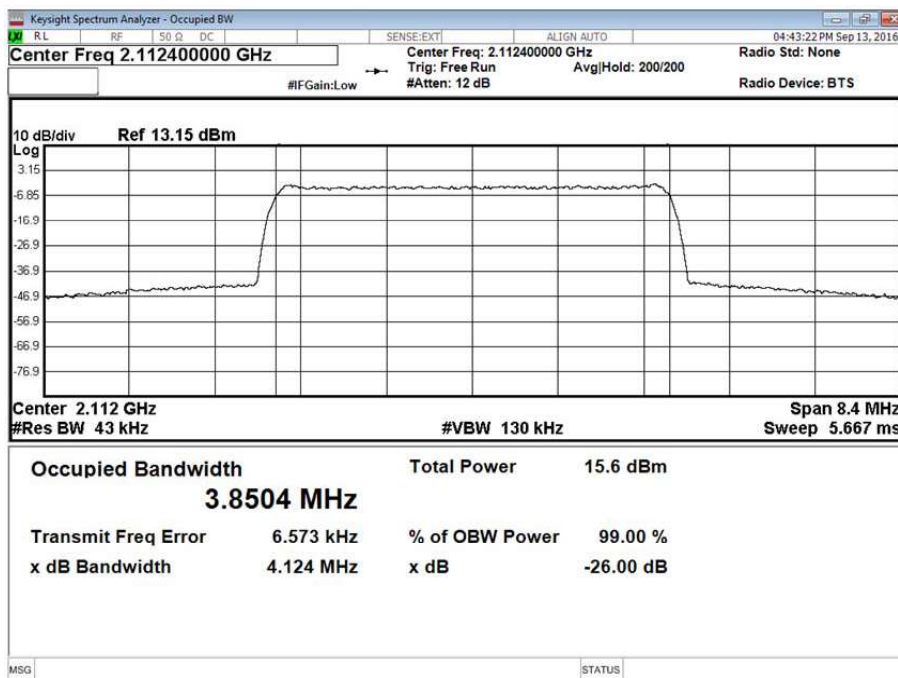


Configuration 1

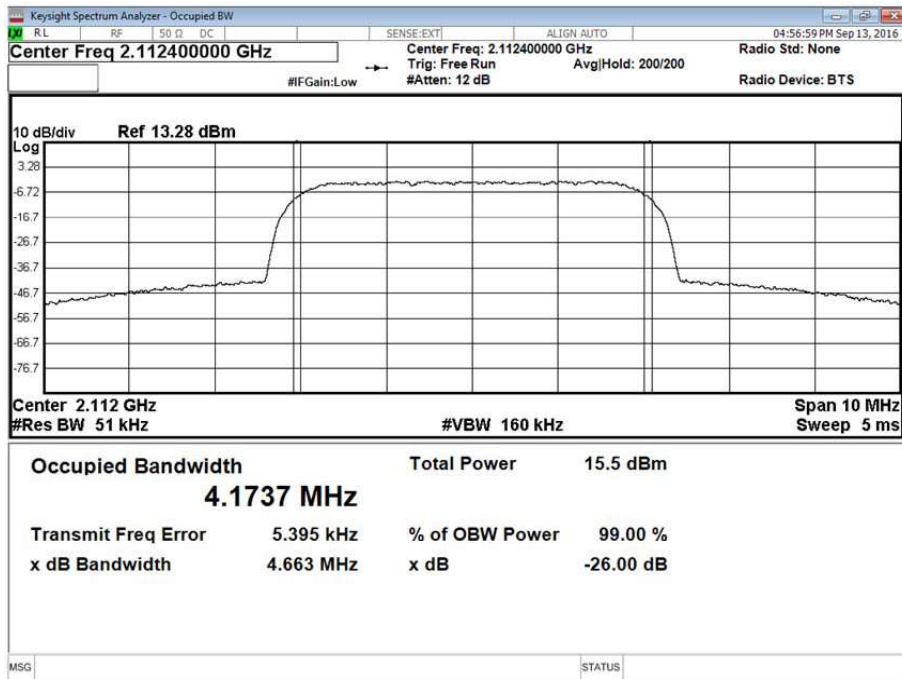
Maximum Output Power 17 dBm

Carrier Bandwidth / Modulation	Result (KHz)					
	Channel Position B		Channel Position M		Channel Position T	
	Occupied Bandwidth	-26 dB Bandwidth	Occupied Bandwidth	-26 dB Bandwidth	Occupied Bandwidth	-26 dB Bandwidth
4.2 MHz / QPSK	3,850.37	4,123.68	3,850.87	4,121.53	3,847.99	4,116.14
5.0 MHz / QPSK	4,173.73	4,663.33	4,167.62	4,662.69	4,154.08	4,653.28

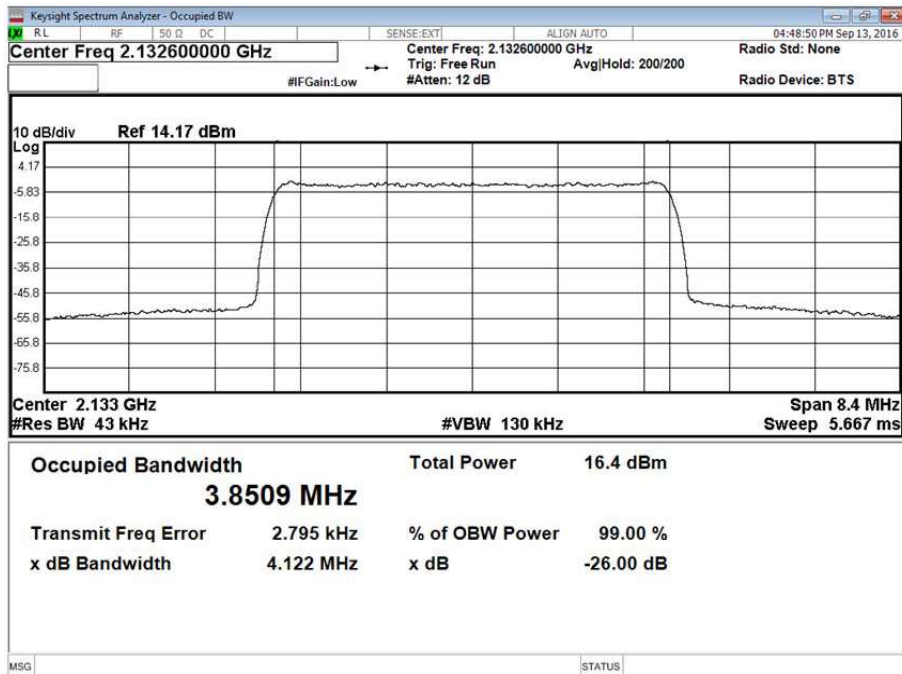
Channel Position B - Bandwidth 4.2 MHz - Antenna B



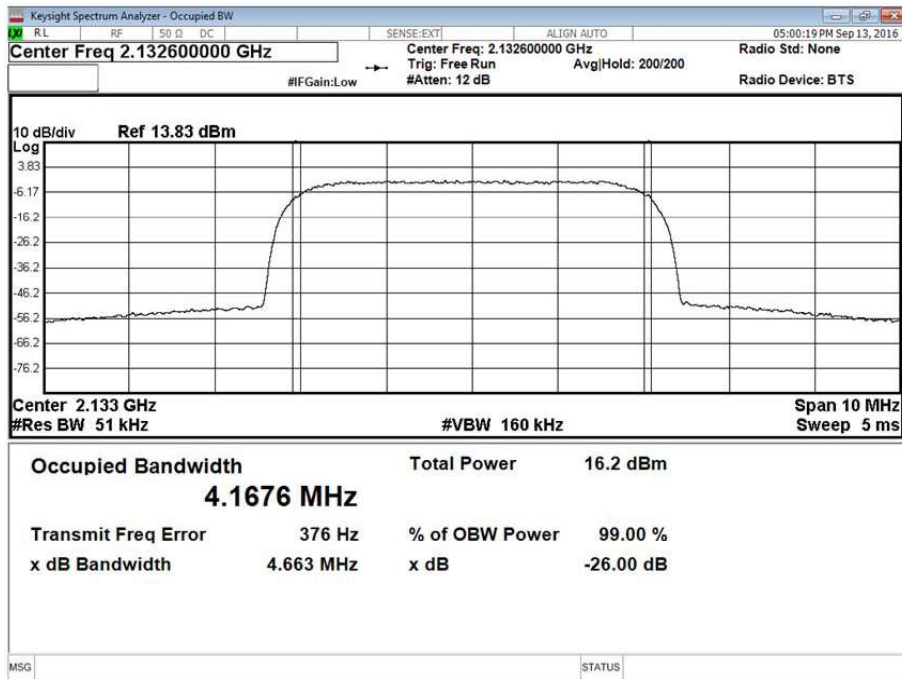
Channel Position B - Bandwidth 5.0 MHz - Antenna B



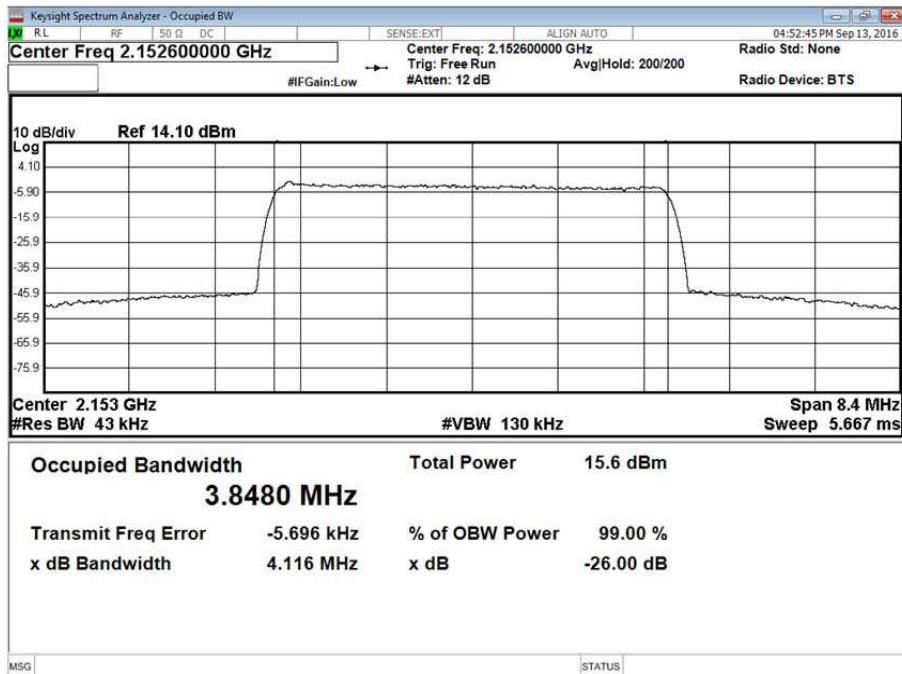
Channel Position M - Bandwidth 4.2 MHz - Antenna B



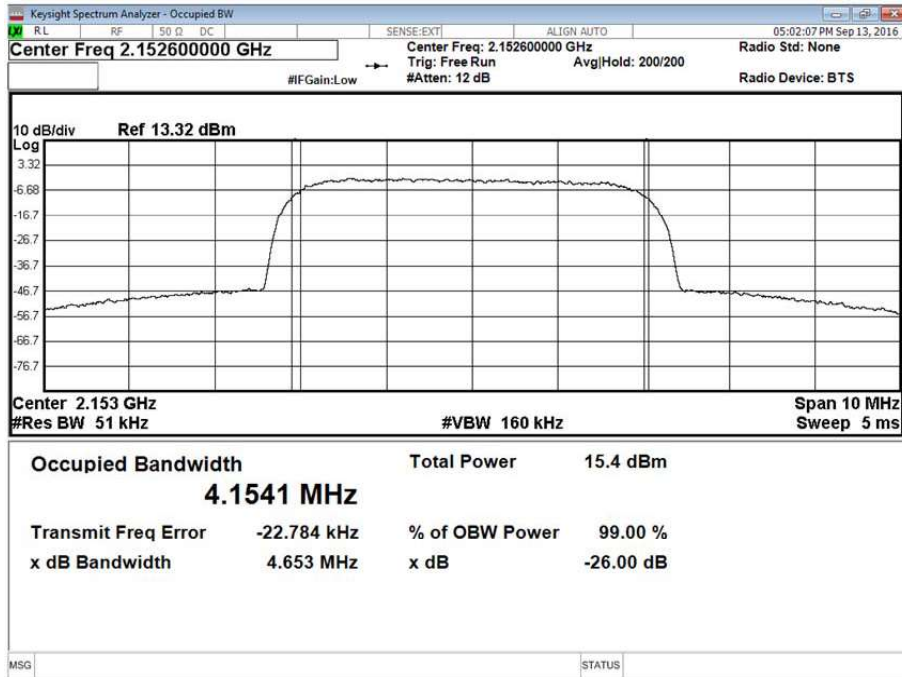
Channel Position M - Bandwidth 5.0 MHz - Antenna B



Channel Position T - Bandwidth 4.2 MHz - Antenna B



Channel Position T - Bandwidth 5.0 MHz - Antenna B



2.3 BAND EDGE

2.3.1 Specification Reference

FCC CFR 47 Part 2, Clause 2.1051
 FCC CFR 47 Part 27, Clause 27.53 (h)
 Industry Canada RSS-139, Clause 6.6

2.3.2 Date of Test and Modification State

13 and 15 September 2016 - Modification State 0

2.3.3 Test Equipment Used

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

2.3.4 Environmental Conditions

Ambient Temperature 24.5 - 25.1°C
 Relative Humidity 44.9 - 50.4%

2.3.5 Test Method

The EUT was connected to a Signal Analyser via 20dB of attenuation and an RF switch. The path loss between the EUT and the Analyser was measured using a Network Analyser and entered as a Reference Level Offset.

The EUT was set to transmit at its maximum rated output power in the configurations described in the tables below. The Band Power function of the Analyser with an RMS detector was used to make measurements at the Top and Bottom of the band using an RBW which was at least 1% of the measured 26dB bandwidth. The test limits were set to a worst case value of -16dBm (MIMO).

Testing was performed on both ports.

The results are shown in the plots below.

All measurements were made in accordance with FCC KDB 971168 D01.

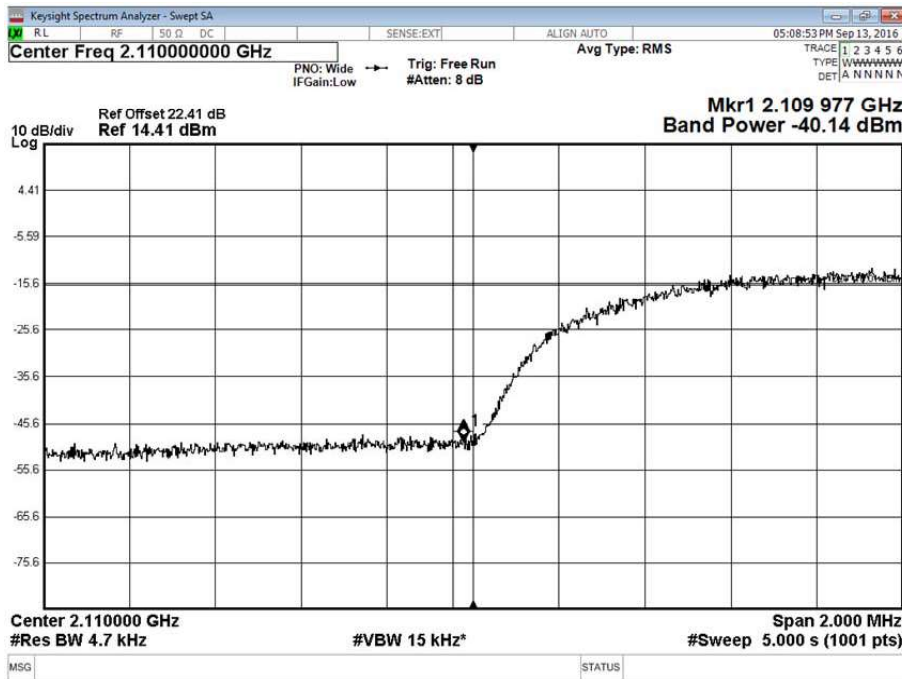
2.3.6 Test Results

Configuration 1

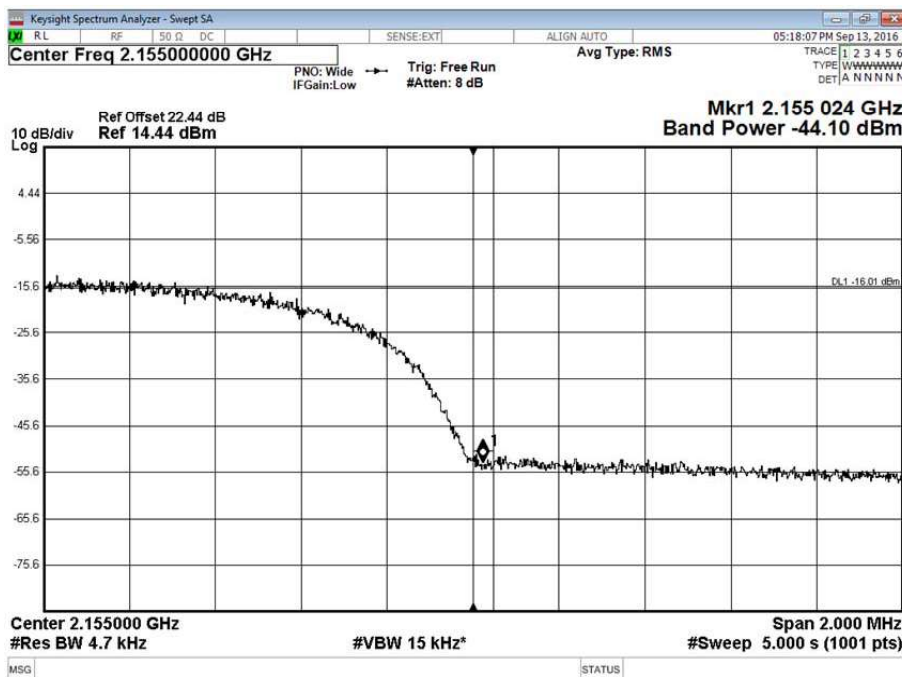
Maximum Output Power 17 dBm

Modulation	Band Edge (MHz)	
	Channel Position B	Channel Position T
16QAM	2,112.40	2,152.60

Channel Position B - Bandwidth 5.0 MHz - Antenna A



Channel Position T - Bandwidth 5.0 MHz - Antenna A

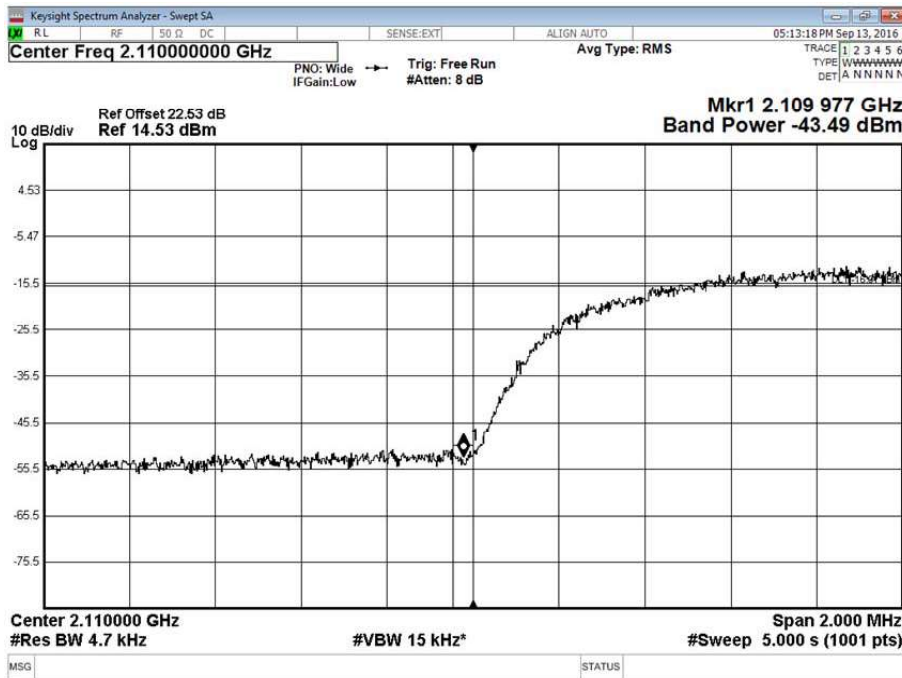


Configuration 1

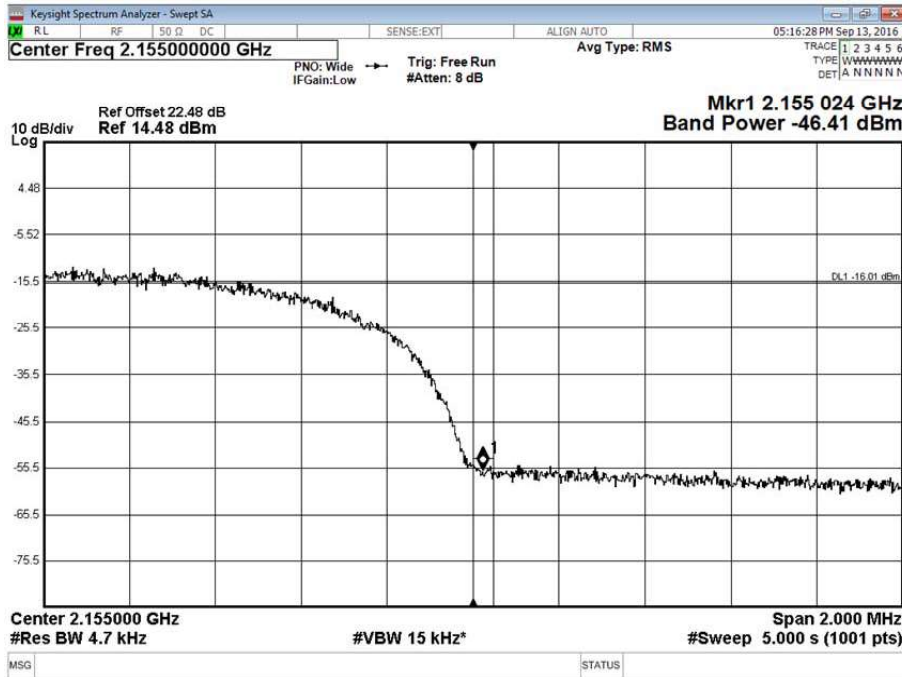
Maximum Output Power 17 dBm

Modulation	Band Edge (MHz)	
	Channel Position B	Channel Position T
16QAM	2,112.40	2,152.60

Channel Position B - Bandwidth 5.0 MHz - Antenna B



Channel Position T - Bandwidth 5.0 MHz - Antenna B

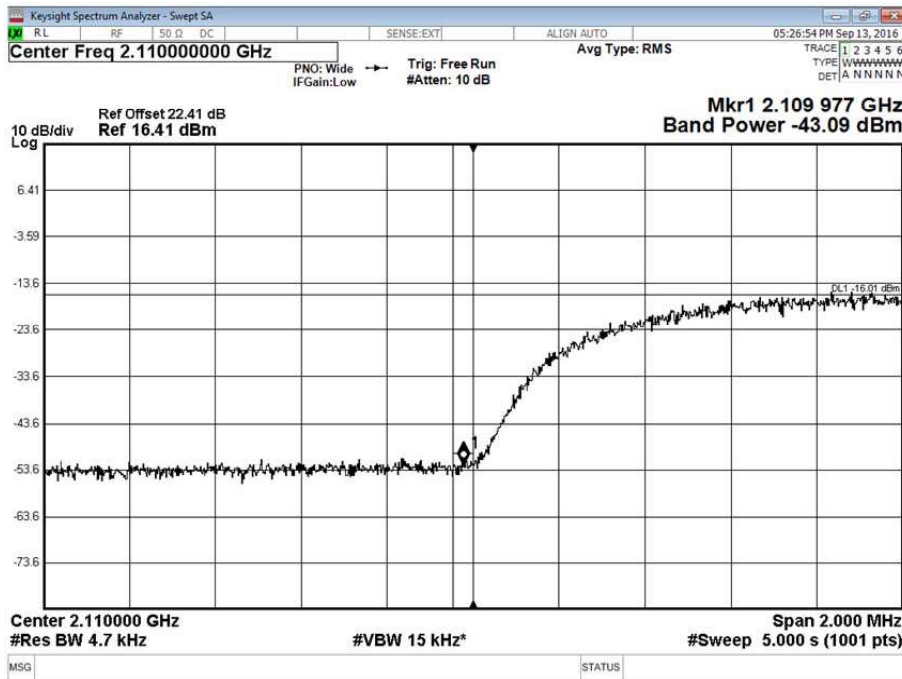


Configuration 2

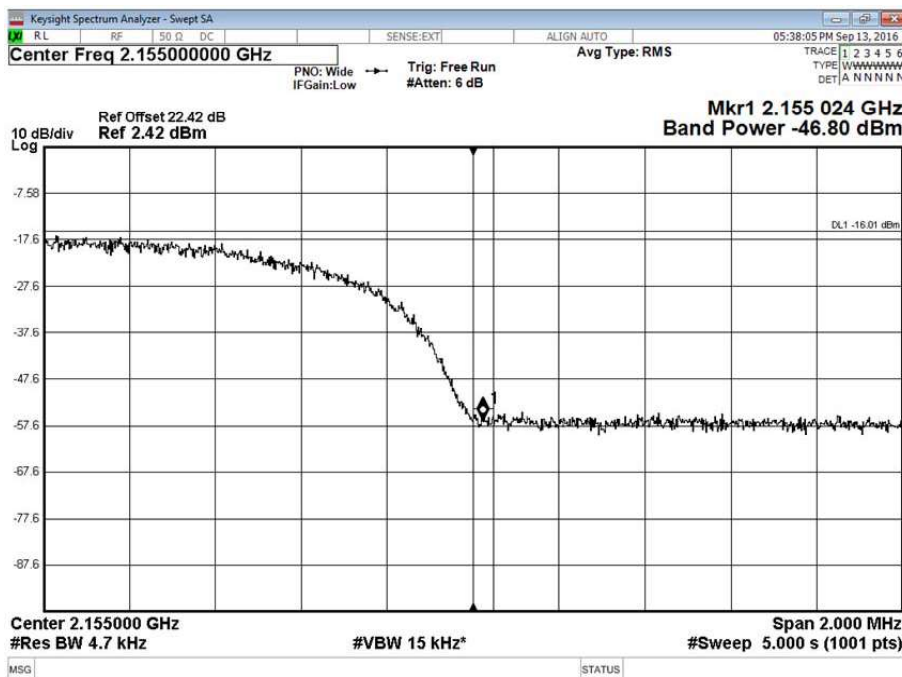
Maximum Output Power 17 dBm

Modulation	Band Edge (MHz)	
	Channel Position B	Channel Position T
16QAM	2112.4 + 2117.4	2147.6 + 2152.6

Channel Position B - Bandwidth 5.0 MHz - Antenna A



Channel Position T - Bandwidth 5.0 MHz - Antenna A



Configuration 2

Maximum Output Power 17 dBm

Modulation	Band Edge (MHz)	
	Channel Position B	Channel Position T
16QAM	2112.4 + 2117.4	2147.6 + 2152.6

Channel Position B - Bandwidth 5.0 MHz - Antenna B



Channel Position T - Bandwidth 5.0 MHz - Antenna B



Configuration 6

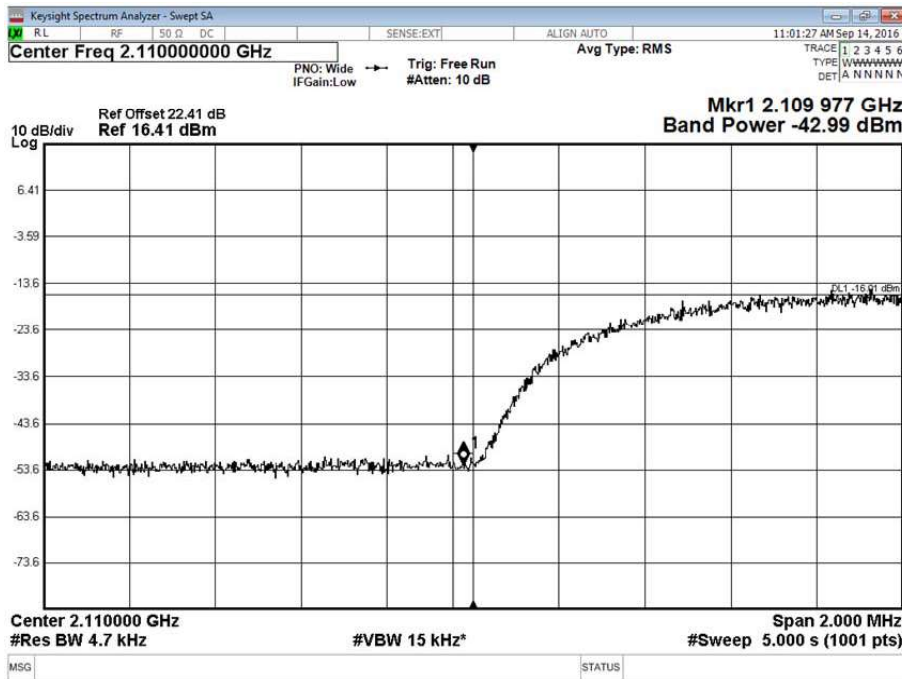
Maximum Output Power 17 dBm

WCDMA Modulation / LTE Bandwidth	Band Edge (MHz)	
	Channel Position BRFBW	Channel Position TRFBW
16QAM / 5.0 MHz	2112.4 + 2117.4	2147.6 + 2152.6

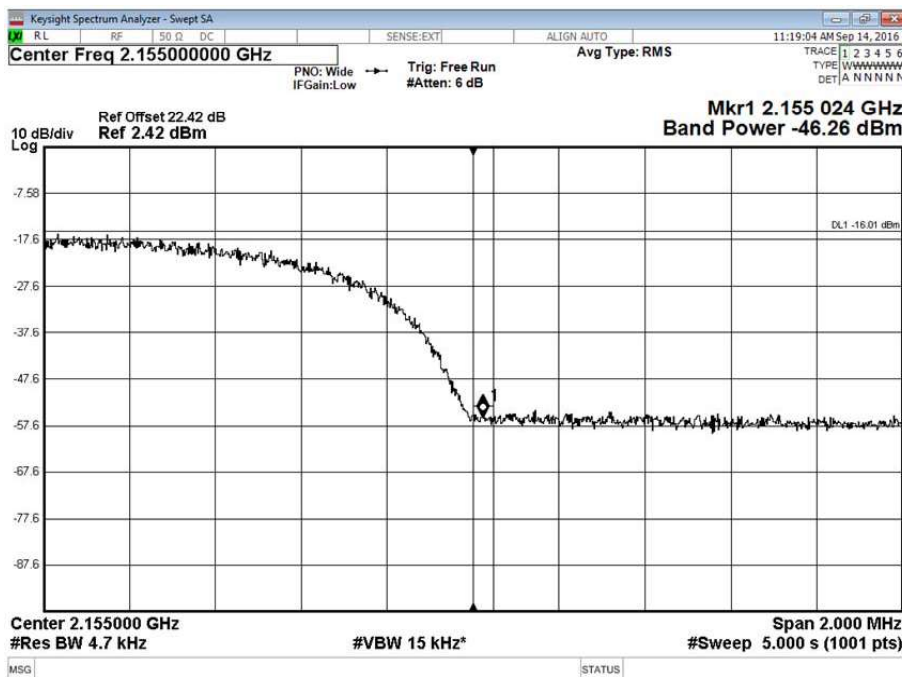
Remarks

LTE Modulation = QPSK

Channel Position BRFBW - Bandwidth 5.0 MHz - Antenna A



Channel Position TRFBW - Bandwidth 5.0 MHz - Antenna A

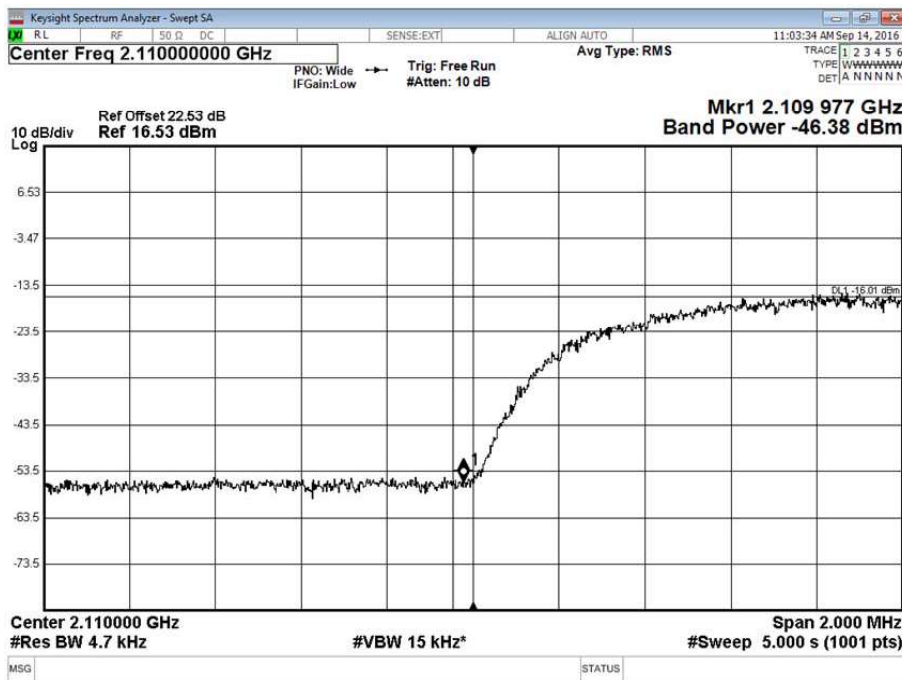


Configuration 6

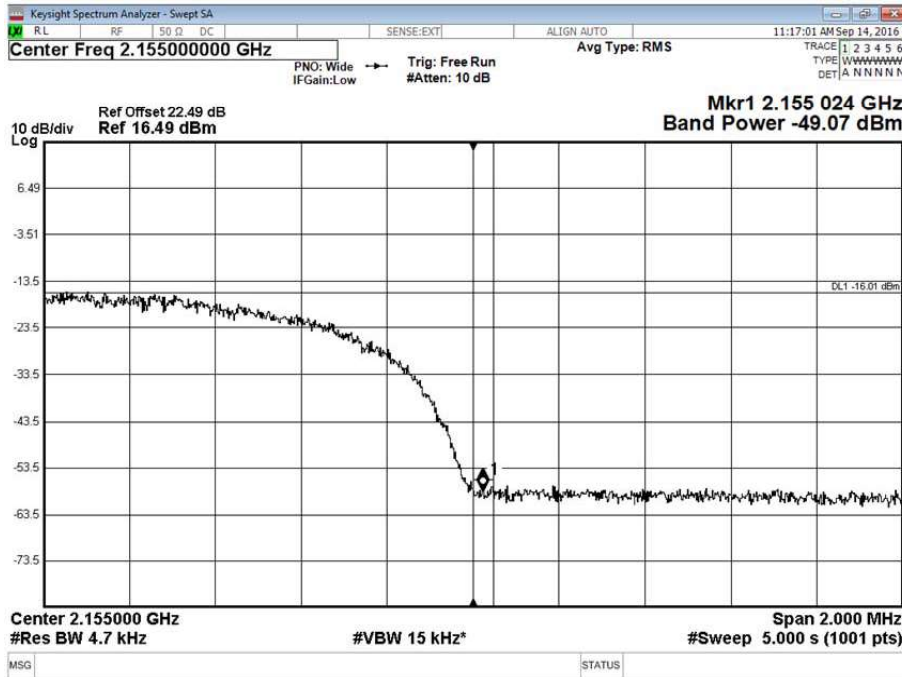
Maximum Output Power 17 dBm

WCDMA Modulation / LTE Bandwidth	Band Edge (MHz)	
	Channel Position BRFBW	Channel Position TRFBW
16QAM / 5.0 MHz	2112.4 + 2117.4	2147.6 + 2152.6

Channel Position BRFBW - Bandwidth 5.0 MHz - Antenna B



Channel Position TRFBW - Bandwidth 5.0 MHz - Antenna B



Limit	-16 dBm
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2.4 TRANSMITTER SPURIOUS EMISSIONS

2.4.1 Specification Reference

FCC CFR 47 Part 2, Clause 2.1051
FCC CFR 47 Part 27, Clause 27.53 (h)
Industry Canada RSS-139, Clause 6.6

2.4.2 Date of Test and Modification State

13 and 15 September 2016 - Modification State 0

2.4.3 Test Equipment Used

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

2.4.4 Environmental Conditions

Ambient Temperature	25°C
Relative Humidity	42.5%

2.4.5 Test Method

All measurements were made in accordance with FCC KDB 971168 D01.

The EUT was connected to a Signal Analyser via 20dB of attenuation and an RF switch for measurements from 9KHz to 22GHz .

The path loss between the EUT and the Analyser was measured using a Network Analyser and entered as a Reference Level Offset.

The EUT was set to transmit at its maximum rated output power in the configurations described below.

The analyser was set to measure with RBW/VBW at 1MHz and 3MHz respectively using an RMS detector and trace Max Hold.

The test limits were set to a worst case value of -16dBm.

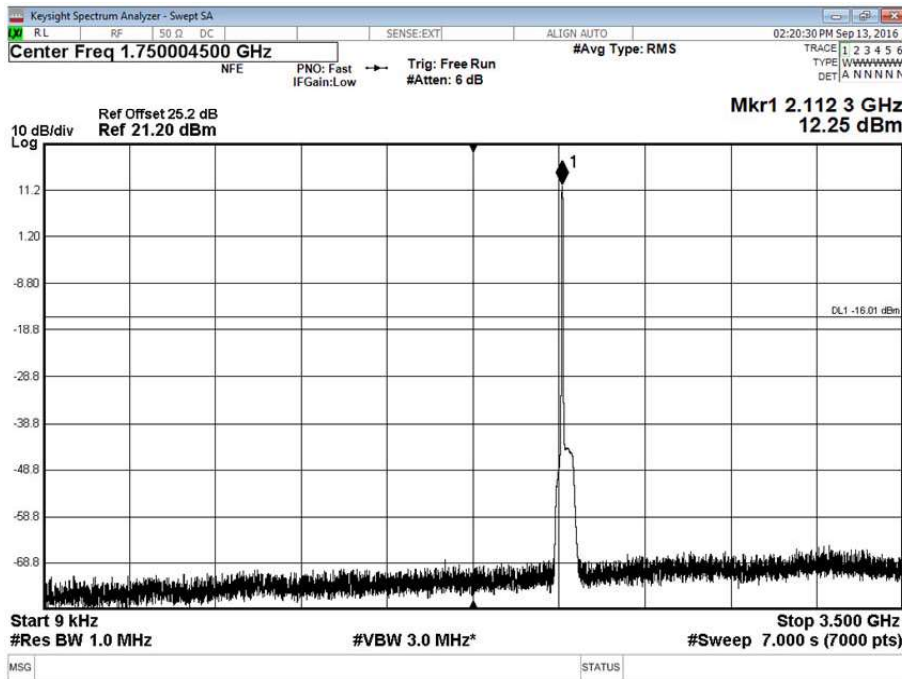
The results are shown in the plots below.

2.4.6 Test Results

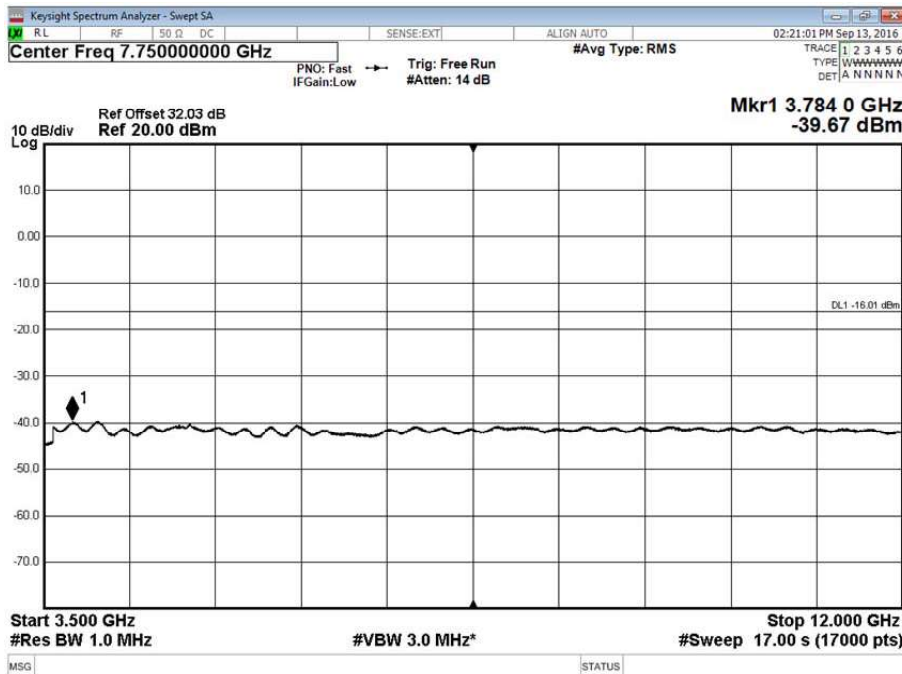
Configuration 1

Maximum Output Power 17 dBm

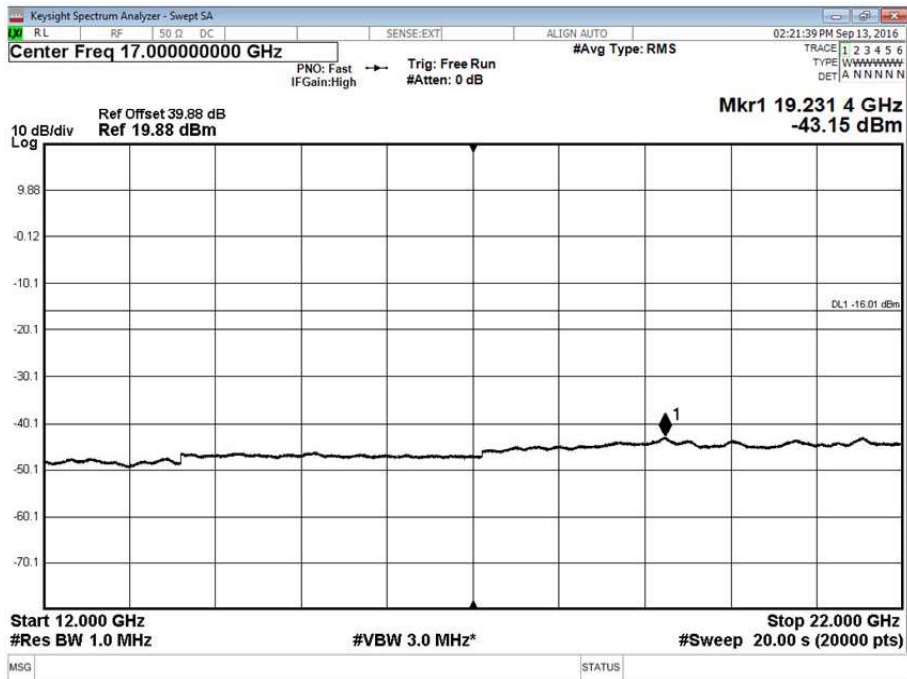
Channel Position B - Bandwidth 5.0 MHz - Antenna A



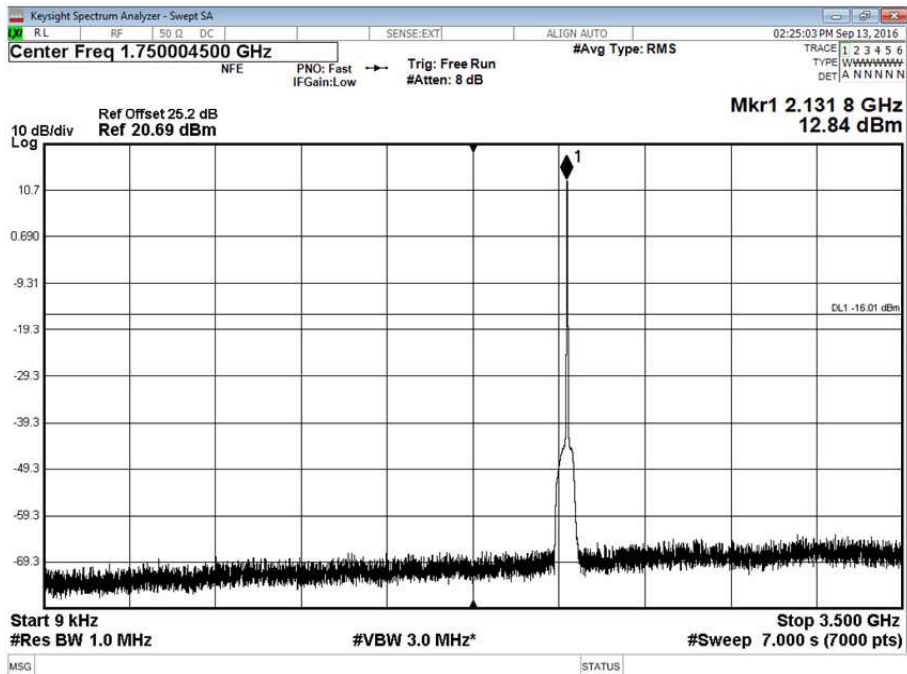
Channel Position B - Bandwidth 5.0 MHz - Antenna A



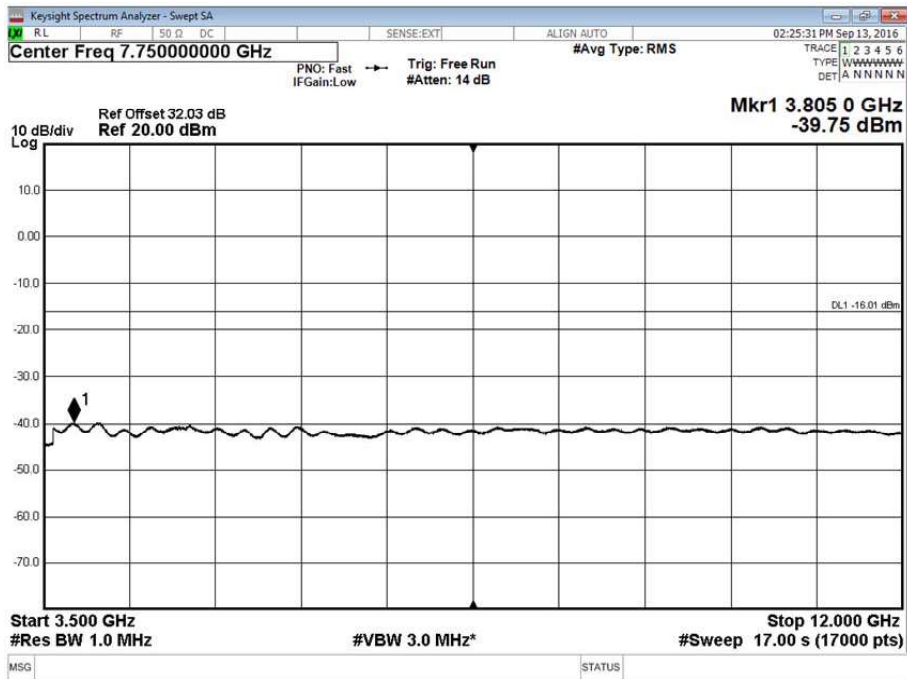
Channel Position B - Bandwidth 5.0 MHz - Antenna A



Channel Position M - Bandwidth 5.0 MHz - Antenna A



Channel Position M - Bandwidth 5.0 MHz - Antenna A



Channel Position M - Bandwidth 5.0 MHz - Antenna A

