Product Service

Choose certainty.
Add value.

Report On

FCC and IC Testing of the
Ericsson AB (850MHz) Radio 2217 B5 KRC 161 566/1 and KRC 161 566/2 Remote Radio Unit In accordance with FCC CFR 47 Part 22 and Industry Canada RSS-132

COMMERCIAL-IN-CONFIDENCE

FCC ID: TA8AKRC161566
IC: 287AB-AS161566

PREPARED BY	APPROVED BY	DATED
Zhao Lei		01 February 2016
Lei Zhao Project Engineer	Steve Scarfe Authorised Signatory	

Document 75933160 Report 03 Issue 1 February 2016

CONTENTS

SECTION 1

REPORT INFORMATION

1.1 REPORT DETAILS

The information contained in this report is intended to show verification of the Ericsson Radio 2217 B5 KRC 161 566/1 and KRC 161 566/2 Remote Radio Unit to the requirements of FCC CFR 47 Part 22 and Industry Canada RSS-132.

Testing was carried out in support of an application for Grant of Radio 2217 B5 KRC 161 566/1 and KRC 161 566/2 in WCDMA / LTE / WCDMA & LTE MSR mode.

Manufacturer	Ericsson AB
Address	Isafjordsgatan 10 SE-164 80 Stockholm 16480 Sweden
Product Name	Radio 2217 B5
Product Number	KRC 161 566/2
HVIN	AS1615662
Serial Number(s)	D822618359
Software Version	CXP9017316/2 Rev R62DM
Hardware Version	R1B
Test Specification/Issue/Date	FCC CFR 47 Part 22: 2015 Industry Canada RSS-132 Issue 3: 2013
Start of Test	13 January 2016
Finish of Test	27 January 2016
Name of Engineer(s)	Lei Zhao
Related Document(s)	ANSI C63.4: 2014 ANSI/TIA-603-C-2004 FCC CFR 47 Part 2: 2014 Industry Canada RSS-GEN Issue 4: 2014 Industry Canada SRSP-503 Issue 7: 2008 KDB 971168 D01 v02r02 KDB 662911 D01 v02r01

1.2 BRIEF SUMMARY OF RESULTS

A brief summary of results for each configuration, in accordance with FCC CFR 47 Part 2, Part 22 and Industry Canada RSS-132 is shown below.

Section	Spec Clause			Test Description	Result
	Part 2	Part 22	RSS 132		
2.1	2.1046	22.913(a)	5.4	Maximum Output Power and Peak to Average Ratio – Conducted	Pass
	2.1046	22.913(a)	5.4	Effective Radiated Power (ERP)	N/A[1]
2.2	2.1049(h)	22.917(b)	RSS-Gen 6.6	Occupied Bandwidth	Pass
2.3	2.1051	22.917(b)	5.5	Spurious Emissions at Band Edge	Pass
2.4	2.1053	22.917(a)	5.5	Radiated Spurious Emissions	Pass
2.5	2.1051	22.917(a)	5.5	Conducted Spurious Emissions	Pass
2.6	2.1055	22.355	5.3	Frequency Stability	Pass
	-	-	5.6	Receiver Spurious Emission	N/A

N/A[1] – Not Applicable, due to no integral antenna
N/A – Not Applicable

1.3 CONFIGURATION DESCRIPTION

Configuration Code	Carrier(s)	Configuration Description
W-SC	1C	WCDMA Single Antenna, Single Carrier
W-MC 1	2C	WCDMA Single Antenna, Multi Carrier x2
W-MC 2	5C	WCDMA Single Antenna, Multi Carrier x5
W-MIMO-SC	1C	WCDMA MIMO, Single Carrier
W-MIMO-MC 1	2C	WCDMA MIMO, Multi Carrier x2
W-MIMO-MC 2	5C	WCDMA MIMO, Multi Carrier x5
W-MIMO-MC 3	3C	WCDMA MIMO, Multi Carrier x3
L-MIMO-SC	1C	LTE MIMO, Single Carrier
L-MIMO-MC 1	2C	LTE MIMO, Multi Carrier x2
L-MIMO-MC 2	3C	LTE MIMO, Multi Carrier x3
W+L-MC 1	1W+1L	WCDMA+LTE Single Antenna, One Tx, 1WCDMA+1LTE
W+L-MC 2	4W+3L	WCDMA+LTE Single Antenna, One Tx, 4WCDMA+3LTE
W+L-MC 3	3W+3L	WCDMA+LTE Single Antenna, One Tx, 3WCDMA+3LTE
W+L-MC 4	3W+2L	WCDMA+LTE Single Antenna, One Tx, 3WCDMA+2LTE
W+L-MC 5	3W+1L	WCDMA+LTE Single Antenna, One Tx, 3WCDMA+1LTE
W+L-MC 6	2W+1L	WCDMA+LTE Single Antenna, One Tx, 2WCDMA+1LTE
W+L-MIMO-MC 1	1W+1L	WCDMA+LTE MIMO, 1WCDMA+1LTE
W+L-MIMO-MC 2	4W+3L	WCDMA+LTE MIMO, 4WCDMA+3LTE
W+L-MIMO-MC 3	3W+3L	WCDMA+LTE MIMO, 3WCDMA+3LTE
W+L-MIMO-MC 4	3W+2L	WCDMA+LTE MIMO, 3WCDMA+2LTE
W+L-MIMO-MC 5	3W+1L	WCDMA+LTE MIMO, 3WCDMA+1LTE
W+L-MIMO-MC 6	2W+1L	WCDMA+LTE MIMO, 2WCDMA+1LTE

The settings below were deemed representative for all traffic scenarios when settings with different modulations, channel bandwidths, number for carriers and RF configurations have been tested to find the worst case setting. The settings below were used for all measurements unless otherwise noted:

WCDMA:
Non-MIMO:
Single carrier TM1: 64 DPCHs at 30ksps (SF=128)
Multi carrier TM1 (x2): 32 DPCHs at 30ksps (SF=128) in each carrier

MIMO:
Single carrier TM5: 30 DPCHs at 30ksps (SF=128) and 8 HS-PDSCHs at 240 ksps (SF16)
Multi carrier TM5 (x2): 30 DPCHs at 30ksps (SF=128) and 8 HS-PDSCHs at 240 ksps (SF16)

MIMO:
Single carrier TM6: 30 DPCHs at 30ksps (SF=128) and 8 HS-PDSCHs at 240 ksps (SF16)
Multi carrier TM6 (x2): 30 DPCHs at 30ksps (SF=128) and 8 HS-PDSCHs at 240 ksps (SF16)

LTE:
MIMO mode single carrier: E-TM1.1
MIMO mode multi carrier (x2): E-TM1.1
MIMO mode multi carrier (x3): E-TM1.1

MIMO mode single carrier: E-TM3.2
MIMO mode multi carrier (x2): E-TM3.2
MIMO mode multi carrier (x3): E-TM3.2

MIMO mode single carrier: E-TM3.1
MIMO mode multi carrier (x2): E-TM3.1
MIMO mode multi carrier (x3): E-TM3.1

MIMO mode single carrier: E-TM3.1A
MIMO mode multi carrier (x2): E-TM3.1A
MIMO mode multi carrier (x3): E-TM3.1A

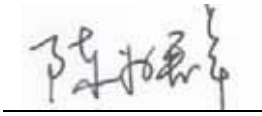
The EUT includes two TX/RX ports and it can be configured to transmit in MIMO mode for WCDMA or LTE carriers, and MIMO mode for WCDMA or LTE was used for measurements as the worst configuration.

The complete testing was performed with the EUT transmiting at maximum RF power unless otherwise stated.

For WCDMA or LTE single RAT (Radio Access Technology) MIMO mode, the maximum output power was tested on all TX/RX output connector RF A and B. All the other TX measurements of WCDMA or LTE single RAT MIMO mode and all the measurements of other Non-MIMO mode, were performed on the combined TX/RX output connector RF A of the EUT as the representative port.

1.4 DECLARATION OF BUILD STATUS

MAIN EUT	
MANUFACTURING DESCRIPTION	Remote Radio Unit
MANUFACTURER	Ericsson AB
PRODUCT NAME	Radio 2217 B5
PRODUCT NUMBER	KRC 161 566/1 KRC 161 566/2
HVIN	AS1615661 AS1615662
TRANSMITTER OPERATING RANGE	TX: 869 MHz - 894 MHz RX: 824 MHz - 849 MHz
MODULATIONS	WCDMA: QPSK, 16QAM, 64QAM LTE: QPSK, 16QAM, 64QAM, 256QAM
DESIGNATION OF EMISSION	WCDMA: 5M00F9W LTE: 1M40F9W, 3M00F9W, 5M00F9W, 10M0F9W
NUMBER OF CARRIERS	WCDMA: Maximum 5 carriers LTE: Maximum 3 carriers WCDMA&LTE MSR: Maximum 7 carriers
SUPPORTED CHANNEL BANDWIDTH CONFIGURATION	WCDMA: 4.2MHz to 5MHz (configurable in steps of 100/200kHz) LTE: 1.4MHz, 3MHz, 5MHz, 10MHz
OUTPUT POWER (RMS) (W or dBm)	Maximum 46.0dBm (40W) per port for all modes, but only Maximum 43.0dBm (20W) per port for LTE 1.4MHz and 3MHz
OUTPUT POWER TOLERANCE	± 2.0dB
INSTANTANEOUS BANDWIDTH	25MHz for all modes, but only 20MHz for LTE single RAT with 1.4MHz and 3MHz channel bandwidth, 20MHz for LTE carrier(s) with 1.4MHz and 3MHz channel bandwidth in WCDMA&LTE MSR modes
NUMBER OF ANTENNA PORTS	2 TX/RX ports
FCC ID	TA8AKRC161566
IC ID	287AB-AS161566
Power source	-48V DC
TECHNICAL DESCRIPTION (a brief description of the intended use and operation)	The equipment is the Remote Radio Part of WCDMA / LTE / WCDMA & LTE MSR Base Station.

Signature 

Date 13 January 2016

D of B S Serial No 75933160/01

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

1.5 PRODUCT INFORMATION

1.5.1 Technical Description

The Equipment Under Test (EUT) Radio 2217 B5 KRC 161 566/2 is an Ericsson Remote Radio Unit working in the public mobile service 850MHz band which provides communication connections to 850MHz network in WCDMA / LTE modes and WCDMA & LTE MSR modes. The Radio 2217 B5 KRC 161 566/2 operates from a -48V DC supply.

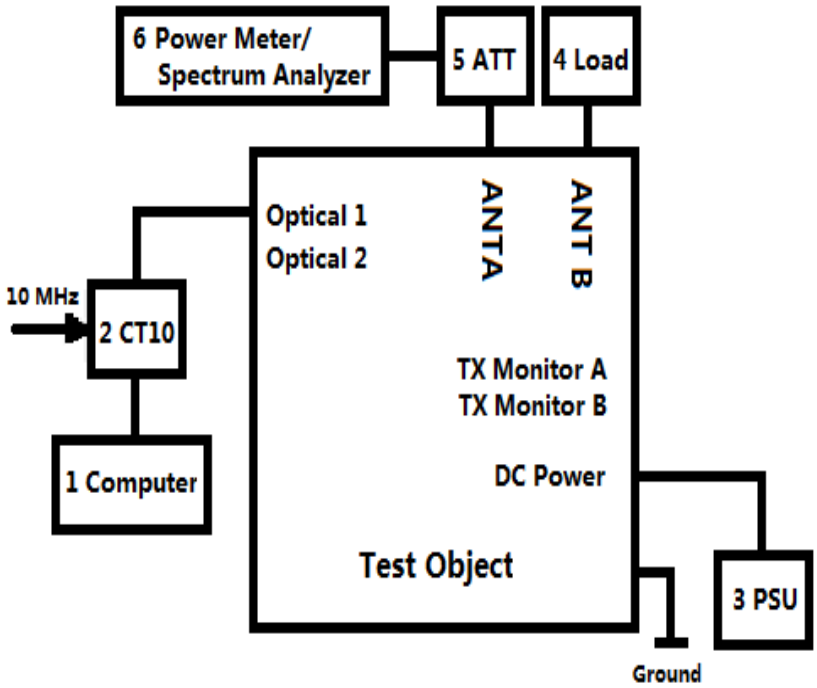
The only difference between KRC 161 566/1 and KRC 161 566/2 was that KRC 161 566/2 has two TX monitor ports, which has no influence to the radio frequency. Therefore, all the measurements were performed on the Radio 2217 B5 KRC 161 566/2.

The Equipment Under Test (EUT) is shown in the photograph below. A full technical description can be found in the Manufacturer's documentation.

Equipment Under Test

1.6 TEST SETUP

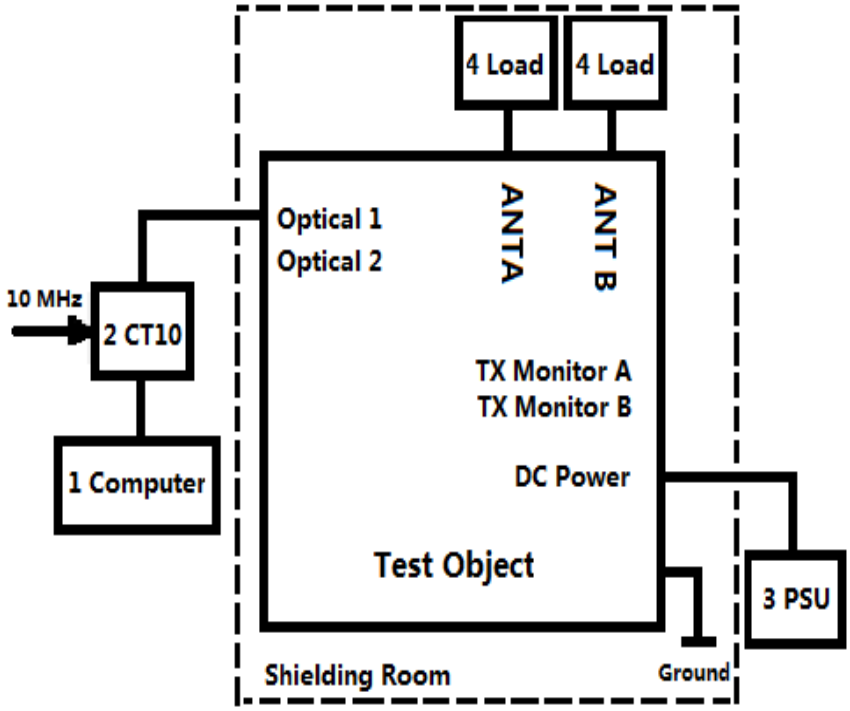
Test Setup, Conducted Measurement:



Product Name	Product Number	Version	Serial Number
Radio 2217 B5	KRC 161 566/2	R1B	D822618359

No.	Auxiliary Equipment	Part Number / Model Type	Version	Serial Number
1	Computer	HP EliteBook 8540w	--	CND1234694
2	CT10	LPC 102 487/1	R1C	T01F392862
3	Power Supply	DH1716-5D	--	BAMS-1001129716
4	Load	TF150	--	11081907
5	40dB Attenuator	66-40-33	--	CD4016
6	Spectrum Analyzer	N9030A	--	MY54490394
	Power Meter	NRP2	--	104221
	Power Sensor	NRP-Z11	--	121216
	Power Sensor	NRP-Z51		102309

Test Setup, Radiated Measurement:



Product Name	Product Number	Version	Serial Number
Radio 2217 B5	KRC 161 566/2	R1B	D822618359

No.	Auxiliary Equipment	Part Number / Model Type	Version	Serial Number
1	Computer	HP EliteBook 8540w	--	CND1234694
2	CT10	LPC 102 487/1	R1C	T01F392862
3	Power Supply	DH1716-5D	--	BAMS-1001129716
4	Load	TF150	--	11081907
	Load	TF100	--	09121635

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.

All test case were tested with the EUT supplied with -48 V DC by an external power 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

Modification State 0 - 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 Beijing, China:

- Maximum Output Power and Peak to Average Ratio – Conducted
- Occupied Bandwidth
- Band Edge
- Conducted Spurious Emissions
- Frequency Stability

Only Radiated Spurious Emissions testing has been performed under the following site registrations:

FCC Accreditation 910917:
The State Radio Monitoring Centre, No.80 Beilishi Road, Xicheng District, Beijing, China

Industry Canada Accreditation 7308A-1:
The State Radio Monitoring Centre, No.80 Beilishi Road, Xicheng District, Beijing, China

SECTION 2

TEST DETAILS

2.1 MAXIMUM 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 22, Clause 22.913 (a)
Industry Canada RSS-132, Clause 5.4

2.1.2 Equipment Under Test

Radio 2217 B5, KRC 161 566/2, S/N: D822618359

2.1.3 Date of Test and Modification State

13, 14 and 15 January 2016 - Modification State 0

2.1.4 Test Equipment Used

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

2.1.5 Environmental Conditions

Ambient Temperature	23.9 - 25.6°C
Relative Humidity	28.0 - 30.0%

2.1.6 Test Method

The test was applied in accordance with the test method requirements of FCC Part 22 and Industry Canada RSS-132.

Using a power meter and attenuator(s), the output power of the EUT was measured at the antenna terminal. The path loss between the EUT and the power sensor was measured and recorded for the test band. The path loss was entered as an offset into the Power Meter and Spectrum Analyzer.

The EUT was configured to transmit on maximum power on the configurations defined in the tables below. In case of the EUT was configured to MIMO mode, since the EUT transmits on four antennas simultaneously in the same frequency range for MIMO devices, i.e., TX MIMO mode, using the Measure-and-Sum approach, the output power at both antennas were tested, and the total output power were then summed mathematically in linear power units according to FCC KDB 662911 D01.

A peak to average ratio measurement is performed at the conducted ports of the EUT for single carrier for single RAT mode. The spectrum analyzers Complementary Cumulative Distribution Function (CCDF) was used and 0.1% probability value recorded.

The RMS Power and Peak to Average Ratio was measured and recorded with the results being compared with the limits.

2.1.7 Test Results

Configuration W-SC

Maximum Output Power 46.0dBm per port

Antenna	Modulation / Carrier Bandwidth (MHz)	RMS Output Power / Peak to Average Ratio (PAR)								
		Channel Position B 871.4MHz			Channel Position M 881.4MHz			Channel Position T 891.6MHz		
		Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)
A	QPSK / 5.0 MHz	46.17	-	7.23	46.14	-	7.20	46.07	-	7.31

Configuration W-MC 1 (2C)

Maximum Output Power 46.0dBm per port

Antenna	Modulation / Carrier Bandwidth (MHz)	RMS Output Power / Peak to Average Ratio (PAR)								
		Channel Position B_{RFBW} 871.4MHz + 891.4MHz			Channel Position M_{RFBW} 871.4MHz + 891.6MHz			Channel Position T_{RFBW} 871.6MHz + 891.6MHz		
		Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)
A	QPSK / 5.0 MHz	45.96	-	-	45.95	-	-	45.96	-	-

Configuration W-MC 2 (5C)

Maximum Output Power 46.0dBm per port

Antenna	Modulation / Carrier Bandwidth (MHz)	RMS Output Power / Peak to Average Ratio (PAR)								
		Channel Position B_{RFBW} 871.4MHz + 876.4MHz + 881.4MHz + 886.4MHz + 891.4MHz			Channel Position M_{RFBW} -			Channel Position T_{RFBW} 871.6Hz + 876.6MHz + 881.6MHz + 886.6MHz + 891.6MHz		
		Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)
A	QPSK / 5.0 MHz	46.23	-	-	-	-	-	46.22	-	-

Configuration W-MIMO-SC

Maximum Output Power 46.0dBm per port

Antenna	Modulation / Carrier Bandwidth (MHz)	RMS Output Power / Peak to Average Ratio (PAR)								
		Channel Position B 871.4MHz			Channel Position M 881.4MHz			Channel Position T 891.6MHz		
		Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)
A	16QAM / 5.0 MHz	46.28	-	7.19	46.22	-	7.17	46.15	-	7.24
B		46.27	-	7.18	46.26	-	7.17	46.18	-	7.24
Total		49.29	-	-	49.25	-	-	49.18	-	-

Antenna	Modulation / Carrier Bandwidth (MHz)	RMS Output Power / Peak to Average Ratio (PAR)								
		Channel Position B 871.4MHz			Channel Position M 881.4MHz			Channel Position T 891.6MHz		
		Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)
A	64QAM / 5.0 MHz	46.29	-	7.19	46.23	-	7.17	46.17	-	7.24
B		46.30	-	7.19	46.27	-	7.17	46.19	-	7.24
Total		49.26	-	-	49.24	-	-	49.19	-	-

Configuration W-MIMO-MC 1 (2C)

Maximum Output Power 46.0dBm per port

Antenna	Modulation / Carrier Bandwidth (MHz)	RMS Output Power / Peak to Average Ratio (PAR)								
		Channel Position B_{RFBW} 871.4MHz + 891.4MHz			Channel Position M_{RFBW} 871.4MHz + 891.6MHz			Channel Position T_{RFBW} 871.6MHz + 891.6MHz		
		Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)
A	16QAM / 5.0 MHz	45.97	-	-	45.97	-	-	45.97	-	-
B		45.96	-	-	45.94	-	-	45.94	-	-
Total		48.98	-	-	48.97	-	-	48.97	-	-

Antenna	Modulation / Carrier Bandwidth (MHz)	RMS Output Power / Peak to Average Ratio (PAR)								
		Channel Position B_{RFBW} 871.4MHz + 891.4MHz			Channel Position M_{RFBW} 871.4MHz + 891.6MHz			Channel Position T_{RFBW} 871.6MHz + 891.6MHz		
		Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)
A	64QAM / 5.0 MHz	46.00	-	-	45.96	-	-	45.98	-	-
B		45.98	-	-	45.95	-	-	45.95	-	-
Total		49.00	-	-	48.97	-	-	48.98	-	-

Configuration W-MIMO-MC 2 (5C)

Maximum Output Power 46.0dBm per port

Antenna	Modulation / Carrier Bandwidth (MHz)	RMS Output Power / Peak to Average Ratio (PAR)								
		Channel Position B_{RFBW} 871.4MHz + 876.4MHz + 881.4MHz + 886.4MHz + 891.4MHz			Channel Position M_{RFBW} -			Channel Position T_{RFBW} 871.6Hz + 876.6MHz + 881.6MHz + 886.6MHz + 891.6MHz		
		Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)
A	16QAM / 5.0 MHz	46.23	-	-	-	-	-	46.22	-	-
B		46.22	-	-	-	-	-	46.21	-	-
Total		49.24	-	-	-	-	-	49.23	-	-

Antenna	Modulation / Carrier Bandwidth (MHz)	RMS Output Power / Peak to Average Ratio (PAR)								
		Channel Position B_{RFBW} 871.4MHz + 876.4MHz + 881.4MHz + 886.4MHz + 891.4MHz			Channel Position M_{RFBW} -			Channel Position T_{RFBW} 871.6Hz + 876.6MHz + 881.6MHz + 886.6MHz + 891.6MHz		
		Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)
A	64QAM / 5.0 MHz	46.23	-	-	-	-	-	46.22	-	-
B		46.21	-	-	-	-	-	46.20	-	-
Total		49.23	-	-	-	-	-	49.22	-	-

Configuration L-MIMO-SC

Maximum Output Power 43.0dBm per port for 1.4MHz and 3.0MHz bandwidth.
Maximum Output Power 46.0dBm per port for 5.0MHz and 10.0MHz bandwidth.

Antenna	Modulation / Carrier Bandwidth (MHz)	RMS Output Power / Peak to Average Ratio (PAR)								
		Channel Position B 869.7MHz			Channel Position M 881.5MHz			Channel Position T 893.3MHz		
		Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)
A	QPSK / 1.4 MHz	43.14	-	8.28	43.17	-	8.26	42.87	-	8.30
B		43.13	-	8.19	43.17	-	8.21	42.94	-	8.22
Total		46.15	-	-	46.18	-	-	45.92	-	-

Antenna	Modulation / Carrier Bandwidth (MHz)	RMS Output Power / Peak to Average Ratio (PAR)								
		Channel Position B 869.7MHz			Channel Position M 881.5MHz			Channel Position T 893.3MHz		
		Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)
A	16QAM / 1.4 MHz	-	-	-	43.23	-	8.31	-	-	-
B		-	-	-	43.14	-	8.23	-	-	-
Total		-	-	-	46.14	-	-	-	-	-

Antenna	Modulation / Carrier Bandwidth (MHz)	RMS Output Power / Peak to Average Ratio (PAR)								
		Channel Position B 869.7MHz			Channel Position M 881.5MHz			Channel Position T 893.3MHz		
		Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)
A	64QAM / 1.4 MHz	-	-	-	43.18	-	8.25	-	-	-
B		-	-	-	43.18	-	8.15	-	-	-
Total		-	-	-	46.19	-	-	-	-	-

Antenna	Modulation / Carrier Bandwidth (MHz)	RMS Output Power / Peak to Average Ratio (PAR)								
		Channel Position B 869.7MHz			Channel Position M 881.5MHz			Channel Position T 893.3MHz		
		Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)
A	256QAM / 1.4 MHz	-	-	-	43.21	-	8.25	-	-	-
B		-	-	-	43.17	-	8.11	-	-	-
Total		-	-	-	46.20	-	-	-	-	-

Antenna	Modulation / Carrier Bandwidth (MHz)	RMS Output Power / Peak to Average Ratio (PAR)								
		Channel Position B 870.5MHz			Channel Position M 881.5MHz			Channel Position T 892.5MHz		
		Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)
A	QPSK / 3.0 MHz	-	-	-	43.23		8.28	-	-	-
B		-	-	-	43.19		8.16	-	-	-
Total		-	-	-	46.22	-	-	-	-	-

Antenna	Modulation / Carrier Bandwidth (MHz)	RMS Output Power / Peak to Average Ratio (PAR)								
		Channel Position B 870.5MHz			Channel Position M 881.5MHz			Channel Position T 892.5MHz		
		Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)
A	16QAM / 3.0 MHz	-	-	-	43.25	-	8.25	-	-	-
B		-	-	-	43.25	-	8.19	-	-	-
Total		-	-	-	46.26	-	-	-	-	-

Antenna	Modulation / Carrier Bandwidth (MHz)	RMS Output Power / Peak to Average Ratio (PAR)								
		Channel Position B 870.5MHz			Channel Position M 881.5MHz			Channel Position T 892.5MHz		
		Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)
A	64QAM / 3.0 MHz	-	-	-	43.25	-	8.20	-	-	-
B		-	-	-	43.24	-	8.31	-	-	-
Total		-	-	-	46.26	-	-	-	-	-

Antenna	Modulation / Carrier Bandwidth (MHz)	RMS Output Power / Peak to Average Ratio (PAR)								
		Channel Position B 870.5MHz			Channel Position M 881.5MHz			Channel Position T 892.5MHz		
		Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)
A	256QAM / 3.0 MHz	-	-	-	43.24	-	8.25	-	-	-
B		-	-	-	43.22	-	8.21	-	-	-
Total		-	-	-	46.24	-	-	-	-	-

Antenna	Modulation / Carrier Bandwidth (MHz)	RMS Output Power / Peak to Average Ratio (PAR)								
		Channel Position B 871.5MHz			Channel Position M 881.5MHz			Channel Position T 891.5MHz		
		Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)
A	QPSK / 5.0 MHz	-	-	-	46.13	-	7.08	-	-	-
B		-	-	-	46.09	-	7.10	-	-	-
Total		-	-	-	49.12	-	-	-	-	-

Antenna	Modulation / Carrier Bandwidth (MHz)	RMS Output Power / Peak to Average Ratio (PAR)								
		Channel Position B 871.5MHz			Channel Position M 881.5MHz			Channel Position T 891.5MHz		
		Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)
A	16QAM / 5.0 MHz	-	-	-	46.18	-	7.09	-	-	-
B		-	-	-	46.16	-	7.09	-	-	-
Total		-	-	-	46.18	-	-	-	-	-

Antenna	Modulation / Carrier Bandwidth (MHz)	RMS Output Power / Peak to Average Ratio (PAR)								
		Channel Position B 871.5MHz			Channel Position M 881.5MHz			Channel Position T 891.5MHz		
		Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)
A	64QAM / 5.0 MHz	-	-	-	46.16	-	7.08	-	-	-
B		-	-	-	46.14	-	7.09	-	-	-
Total		-	-	-	49.16	-	-	-	-	-

Antenna	Modulation / Carrier Bandwidth (MHz)	RMS Output Power / Peak to Average Ratio (PAR)								
		Channel Position B 871.5MHz			Channel Position M 881.5MHz			Channel Position T 891.5MHz		
		Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)
A	256QAM / 5.0 MHz	-	-		46.12	-	7.11	-	-	-
B		-	-	-	46.12	-	7.10	-	-	-
Total		-	-	-	49.13	-	-	-	-	-

Antenna	Modulation / Carrier Bandwidth (MHz)	RMS Output Power / Peak to Average Ratio (PAR)								
		Channel Position B 874.0MHz			Channel Position M 881.5MHz			Channel Position T 889.0MHz		
		Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)
A	QPSK / 10.0 MHz	46.17	-	7.18	46.14	-	7.09	46.12	-	7.29
B		46.17	-	7.20	46.12	-	7.09	46.12	-	7.29
Total		49.18	-	-	49.14	-	-	49.13	-	-

Antenna	Modulation / Carrier Bandwidth (MHz)	RMS Output Power / Peak to Average Ratio (PAR)								
		Channel Position B 874.0MHz			Channel Position M 881.5MHz			Channel Position T 889.0MHz		
		Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)
A	16QAM / 10.0 MHz	-	-	-	46.16	-	7.09	-	-	-
B		-	-	-	46.17	-	7.09	-	-	-
Total		-	-	-	49.18	-	-	-	-	-

Antenna	Modulation / Carrier Bandwidth (MHz)	RMS Output Power / Peak to Average Ratio (PAR)								
		Channel Position B 874.0MHz			Channel Position M 881.5MHz			Channel Position T 889.0MHz		
		Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)
A	64QAM / 10.0 MHz	-	-	-	46.17	-	7.09	-	-	-
B		-	-	-	46.18	-	7.09	-	-	-
Total		-	-	-	49.19	-	-	-	-	-

Antenna	Modulation / Carrier Bandwidth (MHz)	RMS Output Power / Peak to Average Ratio (PAR)								
		Channel Position B 874.0MHz			Channel Position M 881.5MHz			Channel Position T 889.0MHz		
		Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)
A	256QAM / 10.0 MHz	-	-	-	46.16	-	7.09	-	-	-
B		-	-	-	46.17	-	7.10	-	-	-
Total		-	-	-	49.18	-	-	-	-	-

Configuration L-MIMO-MC 1 (2C)

Maximum Output Power 43.0dBm per port for 1.4MHz and 3.0MHz bandwidth.
Maximum Output Power 46.0dBm per port for 5.0MHz and 10.0MHz bandwidth.

Antenna	Modulation / Carrier Bandwidth (MHz)	RMS Output Power / Peak to Average Ratio (PAR)								
		Channel Position B_{RFBW} 869.7MHz + 888.3MHz			Channel Position M_{RFBW} 872.2MHz + 890.8MHz			Channel Position T_{RFBW} 874.7MHz + 893.3MHz		
		Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)
A	QPSK / 1.4 MHz	42.95	-	-	42.98	-	-	42.79	-	-
B		42.94	-	-	42.97	-	-	42.78	-	-
Total		45.96	-	-	45.99	-	-	45.80	-	-

Antenna	Modulation / Carrier Bandwidth (MHz)	RMS Output Power / Peak to Average Ratio (PAR)								
		Channel Position B_{RFBW} 869.7MHz + 888.3MHz			Channel Position M_{RFBW} 872.2MHz + 890.8MHz			Channel Position T_{RFBW} 874.7MHz + 893.3MHz		
		Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)
A	16QAM / 1.4 MHz	-	-	-	43.01	-	-	-	-	-
B		-	-	-	43.01	-	-	-	-	-
Total		-	-	-	46.02	-	-	-	-	-

Antenna	Modulation / Carrier Bandwidth (MHz)	RMS Output Power / Peak to Average Ratio (PAR)								
		Channel Position B_{RFBW} 869.7MHz + 888.3MHz			Channel Position M_{RFBW} 872.2MHz + 890.8MHz			Channel Position T_{RFBW} 874.7MHz + 893.3MHz		
		Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)
A	64QAM / 1.4 MHz	-	-	-	42.98	-	-	-	-	-
B		-	-	-	42.98	-	-	-	-	-
Total		-	-	-	45.99	-	-	-	-	-

Antenna	Modulation / Carrier Bandwidth (MHz)	RMS Output Power / Peak to Average Ratio (PAR)								
		Channel Position B_{RFBW} 869.7MHz + 888.3MHz			Channel Position M_{RFBW} 872.2MHz + 890.8MHz			Channel Position T_{RFBW} 874.7MHz + 893.3MHz		
		Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)
A	256QAM / 1.4 MHz	-	-	-	42.97	-	-	-	-	-
B		-	-	-	42.99	-	-	-	-	-
Total		-	-	-	45.99	-	-	-	-	-

Antenna	Modulation / Carrier Bandwidth (MHz)	RMS Output Power / Peak to Average Ratio (PAR)								
		Channel Position B_{RFBW} 870.5MHz + 887.5MHz			Channel Position M_{RFBW} 873.0MHz + 890.0MHz			Channel Position T_{RFBW} 875.5MHz + 892.5MHz		
		Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)
A	QPSK / 3.0 MHz	-	-	-	43.05	-	-	-	-	-
B		-	-	-	43.04	-	-	-	-	-
Total		-	-	-	46.06	-	-	-	-	-

Antenna	Modulation / Carrier Bandwidth (MHz)	RMS Output Power / Peak to Average Ratio (PAR)								
		Channel Position B_{RFBW} 870.5MHz + 887.5MHz			Channel Position M_{RFBW} 873.0MHz + 890.0MHz			Channel Position T_{RFBW} 875.5MHz + 892.5MHz		
		Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)
A	16QAM / 3.0 MHz	-	-	-	43.07	-	-	-	-	-
B		-	-	-	43.08	-	-	-	-	-
Total		-	-	-	46.09	-	-	-	-	-

Antenna	Modulation / Carrier Bandwidth (MHz)	RMS Output Power / Peak to Average Ratio (PAR)								
		Channel Position B_{RFBW} 870.5MHz + 887.5MHz			Channel Position M_{RFBW} 873.0MHz + 890.0MHz			Channel Position T_{RFBW} 875.5MHz + 892.5MHz		
		Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)
A	64QAM / 3.0 MHz	-	-	-	43.06	-	-	-	-	-
B		-	-	-	43.07	-	-	-	-	-
Total		-	-	-	46.08	-	-	-	-	-

Antenna	Modulation / Carrier Bandwidth (MHz)	RMS Output Power / Peak to Average Ratio (PAR)								
		Channel Position B_{RFBW} 870.5MHz + 887.5MHz			Channel Position M_{RFBW} 873.0MHz + 890.0MHz			Channel Position T_{RFBW} 875.5MHz + 892.5MHz		
		Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)
A	256QAM / 3.0 MHz	-	-	-	42.97	-	-	-	-	-
B		-	-	-	42.99	-	-	-	-	-
Total		-	-	-	45.99	-	-	-	-	-

Antenna	Modulation / Carrier Bandwidth (MHz)	RMS Output Power / Peak to Average Ratio (PAR)								
		Channel Position B_{RFBW} -			Channel Position M_{RFBW} 871.5MHz + 891.5MHz			Channel Position T_{RFBW} -		
		Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)
A	QPSK / 5.0 MHz	-	-	-	45.85	-	-	-	-	-
B		-	-	-	45.84	-	-	-	-	-
Total		-	-	-	48.86	-	-	-	-	-

Antenna	Modulation / Carrier Bandwidth (MHz)	RMS Output Power / Peak to Average Ratio (PAR)								
		Channel Position B_{RFBW} -			Channel Position M_{RFBW} 871.5MHz + 891.5MHz			Channel Position T_{RFBW} -		
		Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)
A	16QAM / 5.0 MHz	-	-	-	45.87	-	-	-	-	-
B		-	-	-	45.87	-	-	-	-	-
Total		-	-	-	48.88	-	-	-	-	-

Antenna	Modulation / Carrier Bandwidth (MHz)	RMS Output Power / Peak to Average Ratio (PAR)								
		Channel Position B_{RFBW} -			Channel Position M_{RFBW} 871.5MHz + 891.5MHz			Channel Position T_{RFBW} -		
		Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)
A	64QAM / 5.0 MHz	-	-	-	45.86	-	-	-	-	-
B		-	-	-	45.88	-	-	-	-	-
Total		-	-	-	48.88	-	-	-	-	-

Antenna	Modulation / Carrier Bandwidth (MHz)	RMS Output Power / Peak to Average Ratio (PAR)								
		Channel Position B_{RFBW} -			Channel Position M_{RFBW} 871.5MHz + 891.5MHz			Channel Position T_{RFBW} -		
		Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)
A	256QAM / 5.0 MHz	-	-	-	45.85	-	-	-	-	-
B		-	-	-	45.87	-	-	-	-	-
Total		-	-	-	48.87	-	-	-	-	-

Antenna	Modulation / Carrier Bandwidth (MHz)	RMS Output Power / Peak to Average Ratio (PAR)								
		Channel Position B_{RFBW} -			Channel Position M_{RFBW} 874.0MHz + 889.0MHz			Channel Position T_{RFBW} -		
		Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)
A	QPSK / 10.0 MHz	-	-	-	46.00	-	-	-	-	-
B		-	-	-	45.98	-	-	-	-	-
Total		-	-	-	49.00	-	-	-	-	-

Antenna	Modulation / Carrier Bandwidth (MHz)	RMS Output Power / Peak to Average Ratio (PAR)								
		Channel Position B_{RFBW} -			Channel Position M_{RFBW} 874.0MHz + 889.0MHz			Channel Position T_{RFBW} -		
		Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)
A	16QAM / 10.0 MHz	-	-	-	46.04	-	-	-	-	-
B		-	-	-	46.03	-	-	-	-	-
Total		-	-	-	49.05	-	-	-	-	-

Antenna	Modulation / Carrier Bandwidth (MHz)	RMS Output Power / Peak to Average Ratio (PAR)								
		Channel Position B_{RFBW} -			Channel Position M_{RFBW} 874.0MHz + 889.0MHz			Channel Position T_{RFBW} -		
		Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)
A	64QAM / 10.0 MHz	-	-	-	46.02	-	-	-	-	-
B		-	-	-	46.01	-	-	-	-	-
Total		-	-	-	49.03	-	-	-	-	-

Antenna	Modulation / Carrier Bandwidth (MHz)	RMS Output Power / Peak to Average Ratio (PAR)								
		Channel Position B_{RFBW} -			Channel Position M_{RFBW} 874.0MHz + 889.0MHz			Channel Position T_{RFBW} -		
		Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)
A	256QAM / 10.0 MHz	-	-	-	46.00	-	-	-	-	-
B		-	-	-	46.01	-	-	-	-	-
Total		-	-	-	49.02	-	-	-	-	-

Configuration L-MIMO-MC 2 (3C)

Maximum Output Power 43.0dBm per port for 1.4MHz and 3.0MHz bandwidth.
Maximum Output Power 46.0dBm per port for 5.0MHz and 10.0MHz bandwidth.

Antenna	Modulation / Carrier Bandwidth (MHz)	RMS Output Power / Peak to Average Ratio (PAR)								
		Channel Position B_{RFBW} 869.7MHz + 886.9MHz + 888.3MHz			Channel Position M_{RFBW} 872.2MHz + 889.4MHz + 890.8MHz			Channel Position T_{RFBW} 874.7MHz + 891.9MHz + 893.3MHz		
		Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)
A	QPSK / 1.4 MHz	43.03	-	-	43.03	-	-	42.79	-	-
B		43.02	-	-	43.04	-	-	42.79	-	-
Total		46.04	-	-	46.05	-	-	45.80	-	-

Antenna	Modulation / Carrier Bandwidth (MHz)	RMS Output Power / Peak to Average Ratio (PAR)								
		Channel Position B_{RFBW} 869.7MHz + 886.9MHz + 888.3MHz			Channel Position M_{RFBW} 872.2MHz + 889.4MHz + 890.8MHz			Channel Position T_{RFBW} 874.7MHz + 891.9MHz + 893.3MHz		
		Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)
A	16QAM / 1.4 MHz	-	-	-	43.08	-	-	-	-	-
B		-	-	-	43.09	-	-	-	-	-
Total		-	-	-	46.10	-	-	-	-	-

Antenna	Modulation / Carrier Bandwidth (MHz)	RMS Output Power / Peak to Average Ratio (PAR)								
		Channel Position B_{RFBW} 869.7MHz + 886.9MHz + 888.3MHz			Channel Position M_{RFBW} 872.2MHz + 889.4MHz + 890.8MHz			Channel Position T_{RFBW} 874.7MHz + 891.9MHz + 893.3MHz		
		Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)
A	64QAM / 1.4 MHz	-	-	-	43.05	-	-	-	-	-
B		-	-	-	43.07	-	-	-	-	-
Total		-	-	-	46.07	-	-	-	-	-

Antenna	Modulation / Carrier Bandwidth (MHz)	RMS Output Power / Peak to Average Ratio (PAR)								
		Channel Position B_{RFBW} 869.7MHz + 886.9MHz + 888.3MHz			Channel Position M_{RFBW} 872.2MHz + 889.4MHz + 890.8MHz			Channel Position T_{RFBW} 874.7MHz + 891.9MHz + 893.3MHz		
		Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)
A	256QAM / 1.4 MHz	-	-	-	43.04	-	-	-	-	-
B		-	-	-	43.07	-	-	-	-	-
Total		-	-	-	46.07	-	-	-	-	-

Antenna	Modulation / Carrier Bandwidth (MHz)	RMS Output Power / Peak to Average Ratio (PAR)								
		Channel Position B_{RFBW} 870.5MHz + 884.5MHz + 887.5MHz			Channel Position M_{RFBW} 873.0MHz + 887.0MHz + 890.0MHz			Channel Position T_{RFBW} 875.5MHz + 889.5MHz + 892.5MHz		
		Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)
A	QPSK / 3.0 MHz	-	-	-	43.09	-	-	-	-	-
B		-	-	-	43.07	-	-	-	-	-
Total		-	-	-	46.09	-	-	-	-	-

Antenna	Modulation / Carrier Bandwidth (MHz)	RMS Output Power / Peak to Average Ratio (PAR)								
		Channel Position B_{RFBW} 870.5MHz + 884.5MHz + 887.5MHz			Channel Position M_{RFBW} 873.0MHz + 887.0MHz + 890.0MHz			Channel Position T_{RFBW} 875.5MHz + 889.5MHz + 892.5MHz		
		Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)
A	16QAM / 3.0 MHz	-	-	-	43.12	-	-	-	-	-
B		-	-	-	43.12	-	-	-	-	-
Total		-	-	-	46.13	-	-	-	-	-

Antenna	Modulation / Carrier Bandwidth (MHz)	RMS Output Power / Peak to Average Ratio (PAR)								
		Channel Position B_{RFBW} 870.5MHz + 884.5MHz + 887.5MHz			Channel Position M_{RFBW} 873.0MHz + 887.0MHz + 890.0MHz			Channel Position T_{RFBW} 875.5MHz + 889.5MHz + 892.5MHz		
		Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)
A	64QAM / 3.0 MHz	-	-	-	43.11	-	-	-	-	-
B		-	-	-	43.11	-	-	-	-	-
Total		-	-	-	46.12	-	-	-	-	-

Antenna	Modulation / Carrier Bandwidth (MHz)	RMS Output Power / Peak to Average Ratio (PAR)								
		Channel Position B_{RFBW} 870.5MHz + 884.5MHz + 887.5MHz			Channel Position M_{RFBW} 873.0MHz + 887.0MHz + 890.0MHz			Channel Position T_{RFBW} 875.5MHz + 889.5MHz + 892.5MHz		
		Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)
A	256QAM / 3.0 MHz	-	-	-	43.11	-	-	-	-	-
B		-	-	-	43.09	-	-	-	-	-
Total		-	-	-	46.11	-	-	-	-	-

Antenna	Modulation / Carrier Bandwidth (MHz)	RMS Output Power / Peak to Average Ratio (PAR)								
		Channel Position B_{RFBW} -			Channel Position M_{RFBW} 871.5MHz + 886.5MHz + 891.5MHz			Channel Position T_{RFBW} -		
		Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)
A	QPSK / 5.0 MHz	-	-	-	45.91	-	-	-	-	-
B		-	-	-	45.90	-	-	-	-	-
Total		-	-	-	48.92	-	-	-	-	-

Antenna	Modulation / Carrier Bandwidth (MHz)	RMS Output Power / Peak to Average Ratio (PAR)								
		Channel Position B_{RFBW} -			Channel Position M_{RFBW} 871.5MHz + 886.5MHz + 891.5MHz			Channel Position T_{RFBW} -		
		Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)
A	16QAM / 5.0 MHz	-	-	-	45.93	-	-	-	-	-
B		-	-	-	45.93	-	-	-	-	-
Total		-	-	-	48.94	-	-	-	-	-

Antenna	Modulation / Carrier Bandwidth (MHz)	RMS Output Power / Peak to Average Ratio (PAR)								
		Channel Position B_{RFBW} -			Channel Position M_{RFBW} 871.5MHz + 886.5MHz + 891.5MHz			Channel Position T_{RFBW} -		
		Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)
A	64QAM / 5.0 MHz	-	-	-	45.92	-	-	-	-	-
B		-	-	-	45.92	-	-	-	-	-
Total		-	-	-	48.93	-	-	-	-	-

Antenna	Modulation / Carrier Bandwidth (MHz)	RMS Output Power / Peak to Average Ratio (PAR)								
		Channel Position B_{RFBW} -			Channel Position M_{RFBW} 871.5MHz + 886.5MHz + 891.5MHz			Channel Position T_{RFBW} -		
		Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)
A	256QAM / 5.0 MHz	-	-	-	45.89	-	-	-	-	-
B		-	-	-	45.92	-	-	-	-	-
Total		-	-	-	48.92	-	-	-	-	-

Configuration W+L-MC 1 (1W+1L)

Maximum Output Power 46.0dBm per port

Antenna	WCDMA Modulation / LTE Modulation Bandwidth	RMS Output Power / Peak to Average Ratio (PAR)								
		Channel Position B_{RFBW} -			Channel Position M_{RFBW} (W) 871.4MHz + (L) 893.3MHz			Channel Position T_{RFBW} -		
		Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)
A	QPSK / QPSK 1.4 MHz	-	-	-	45.65	-	-	-	-	-

Antenna	WCDMA Modulation / LTE Modulation Bandwidth	RMS Output Power / Peak to Average Ratio (PAR)								
		Channel Position B_{RFBW} -			Channel Position M_{RFBW} (W) 871.4MHz + (L) 892.5MHz			Channel Position T_{RFBW} -		
		Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)
A	QPSK / QPSK 3.0 MHz	-	-	-	45.79	-	-	-	-	-

Antenna	WCDMA Modulation / LTE Modulation Bandwidth	RMS Output Power / Peak to Average Ratio (PAR)								
		Channel Position B_{RFBW} -			Channel Position M_{RFBW} (W) 871.4MHz + (L) 891.5MHz			Channel Position T_{RFBW} -		
		Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)
A	QPSK / QPSK 5.0 MHz	-	-	-	45.88	-	-	-	-	-

Antenna	WCDMA Modulation / LTE Modulation Bandwidth	RMS Output Power / Peak to Average Ratio (PAR)								
		Channel Position B_{RFBW} -			Channel Position M_{RFBW} (W) 871.4MHz + (L) 889.0MHz			Channel Position T_{RFBW} -		
		Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)
A	QPSK / QPSK 10.0 MHz	-	-	-	45.96	-	-	-	-	-

Configuration W+L-MC 2 (4W+3L)

Maximum Output Power 46.0dBm per port

Antenna	WCDMA Modulation / LTE Modulation Bandwidth	RMS Output Power / Peak to Average Ratio (PAR)								
		Channel Position B_{RFBW} -			Channel Position M_{RFBW} (W) 871.4MHz + (W) 876.4MHz + (W) 881.4MHz + (W) 886.4MHz + (L) 890.5MHz + (L) 891.9MHz + (L) 893.3MHz			Channel Position T_{RFBW} -		
		Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)
A	QPSK / QPSK 1.4 MHz	-	-	-	45.61	-	-	-	-	-

Configuration W+L-MC 3 (3W+3L)

Maximum Output Power 46.0dBm per port

Antenna	WCDMA Modulation / LTE Modulation Bandwidth	RMS Output Power / Peak to Average Ratio (PAR)								
		Channel Position B_{RFBW} -			Channel Position M_{RFBW} (W) 871.4MHz + (W) 876.4MHz + (W) 881.4MHz + (L) 886.5MHz + (L) 889.5MHz + (L) 892.5MHz			Channel Position T_{RFBW} -		
		Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)
A	QPSK / QPSK 3.0 MHz	-	-	-	45.72	-	-	-	-	-

Configuration W+L-MC 4 (3W+2L)

Maximum Output Power 46.0dBm per port

Antenna	WCDMA Modulation / LTE Modulation Bandwidth	RMS Output Power / Peak to Average Ratio (PAR)								
		Channel Position B_{RFBW} -			Channel Position M_{RFBW} (W) 871.4MHz + (W) 876.4MHz + (W) 881.4MHz + (L) 886.5MHz + (L) 891.5MHz			Channel Position T_{RFBW} -		
		Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)
A	QPSK / QPSK 5.0 MHz	-	-	-	45.79	-	-	-	-	-

Configuration W+L-MC 5 (3W+1L)

Maximum Output Power 46.0dBm per port

Antenna	WCDMA Modulation / LTE Modulation Bandwidth	RMS Output Power / Peak to Average Ratio (PAR)								
		Channel Position B_{RFBW} -			Channel Position M_{RFBW} (W) 871.4MHz + (W) 876.4MHz + (W) 881.4MHz + (L) 889.0MHz			Channel Position T_{RFBW} -		
		Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)
A	QPSK / QPSK 10.0 MHz	-	-	-	45.85	-	-	-	-	-

Configuration W+L-MIMO-MC 1 (1W+1L)

Maximum Output Power 46.0dBm per port

Antenna	WCDMA Modulation / LTE Modulation Bandwidth	RMS Output Power / Peak to Average Ratio (PAR)								
		Channel Position B_{RFBW} -			Channel Position M_{RFBW} (W) 871.4MHz + (L) 893.3MHz			Channel Position T_{RFBW} -		
		Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)
A	16QAM / QPSK 1.4 MHz	-	-	-	45.67	-	-	-	-	-
B		-	-	-	45.69	-	-	-	-	-
Total		-	-	-	48.69	-	-		-	-

Antenna	WCDMA Modulation / LTE Modulation Bandwidth	RMS Output Power / Peak to Average Ratio (PAR)								
		Channel Position B_{RFBW} -			Channel Position M_{RFBW} (W) 871.4MHz + (L) 892.5MHz			Channel Position T_{RFBW} -		
		Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)
A	16QAM / QPSK 3.0 MHz	-	-	-	45.77	-	-	-	-	-
B		-	-	-	45.77	-	-	-	-	-
Total		-	-	-	48.78		-	-	-	-

Antenna	WCDMA Modulation / LTE Modulation Bandwidth	RMS Output Power / Peak to Average Ratio (PAR)								
		Channel Position B_{RFBW} -			Channel Position M_{RFBW} (W) 871.4MHz + (L) 891.5MHz			Channel Position T_{RFBW} -		
		Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)
A	16QAM / QPSK 5.0 MHz	-	-	-	45.88	-	-	-	-	-
B		-	-	-	45.87	-	-	-	-	-
Total		-	-	-	48.89	-	-	-	-	-

Antenna	WCDMA Modulation / LTE Modulation Bandwidth	RMS Output Power / Peak to Average Ratio (PAR)								
		Channel Position B_{RFBW} -			Channel Position M_{RFBW} (W) 871.4MHz + (L) 889.0MHz			Channel Position T_{RFBW} -		
		Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)
A	16QAM / QPSK 10.0 MHz	-	-	-	45.96	-	-	-	-	-
B		-	-	-	45.96	-	-	-	-	-
Total		-	-	-	48.97	-	-	-	-	-

Configuration W+L-MIMO-MC 2 (4W+3L)

Maximum Output Power 46.0dBm per port

Antenna	WCDMA Modulation / LTE Modulation Bandwidth	RMS Output Power / Peak to Average Ratio (PAR)								
		Channel Position B_{RFBW} -			Channel Position M_{RFBW} (W) 871.4MHz + (W) 876.4MHz + (W) 881.4MHz + (W) 886.4MHz + (L) 890.5MHz + (L) 891.9MHz + (L) 893.3MHz			Channel Position T_{RFBW} -		
		Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)
A	16QAM / QPSK 1.4 MHz	-	-	-	45.61	-	-	-	-	-
B		-	-	-	45.60	-	-	-	-	-
Total		-	-	-	48.62	-	-	-	-	-

Configuration W+L-MIMO-MC 3 (3W+3L)

Maximum Output Power 46.0dBm per port

Antenna	WCDMA Modulation / LTE Modulation Bandwidth	RMS Output Power / Peak to Average Ratio (PAR)								
		Channel Position B_{RFBW} -			Channel Position M_{RFBW} (W) 871.4MHz + (W) 876.4MHz + (W) 881.4MHz + (L) 886.5MHz + (L) 889.5MHz + (L) 892.5MHz			Channel Position T_{RFBW} -		
		Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)
A	16QAM / QPSK 3.0 MHz	-	-	-	45.72	-	-	-	-	-
B		-	-	-	45.70	-	-	-	-	-
Total		-	-	-	48.72	-	-	-	-	-

Configuration W+L-MIMO-MC 4 (3W+2L)

Maximum Output Power 46.0dBm per port

Antenna	WCDMA Modulation / LTE Modulation Bandwidth	RMS Output Power / Peak to Average Ratio (PAR)								
		Channel Position B_{RFBW} -			Channel Position M_{RFBW} (W) 871.4MHz + (W) 876.4MHz + (W) 881.4MHz + (L) 886.5MHz + (L) 891.5MHz			Channel Position T_{RFBW} -		
		Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)
A	16QAM / QPSK 5.0 MHz	-	-	-	45.77	-	-	-	-	-
B		-	-	-	45.76	-	-	-	-	-
Total		-	-	-	48.78	-	-	-	-	-

Configuration W+L-MIMO-MC 5 (3W+1L)

Maximum Output Power 46.0dBm per port

Antenna	WCDMA Modulation / LTE Modulation Bandwidth	RMS Output Power / Peak to Average Ratio (PAR)								
		Channel Position B_{RFBW} -			Channel Position M_{RFBW} (W) 871.4MHz + (W) 876.4MHz + (W) 881.4MHz + (L) 889.0MHz			Channel Position T_{RFBW} -		
		Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)
A	16QAM / QPSK 10.0 MHz	-	-	-	45.85	-	-	-	-	-
B		-	-	-	45.85	-	-	-	-	-
Total		-	-	-	48.86	-	-	-	-	-

Note :

This unit is tested without antenna. ERP/EIRP compliance is addressed at the time of licensing, as required by the responsible FCC/IC Bureau(s). Licensees are required to take into account maximum allowed antenna gain used in combination with above power settings to prevent the radiated output power to exceed the limits.

Limit	
Output Power	FCC: (ERP) 500 W or 57.00 dBm IC: (e.i.r.p) 1640 W or 62.15 dBm
Peak to Average Ratio	13 dB

Remarks

The maximum output power of the EUT is sufficient to keep it within the range of the rated transmitter power that the manufacture declared and the requirements of FCC and IC standards. The peak to average ratio is under the limit of 13dB.

2.2 OCCUPIED BANDWIDTH

2.2.1 Specification Reference

FCC CFR 47 Part 2, Clause 2.1049(h)
FCC CFR 47 Part 22, Clause 22.917 (b)
Industry Canada RSS-GEN, Clause 6.6

2.2.2 Equipment Under Test

Radio 2217 B5, KRC 161 566/2, S/N: D822618359

2.2.3 Date of Test and Modification State

14, 15 and 18 January 2016 - Modification State 0

2.2.4 Test Equipment Used

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

2.2.5 Environmental Conditions

Ambient Temperature	23.6 - 24.9°C
Relative Humidity	27.0 - 29.0%

2.2.6 Test Method

The test was applied in accordance with the test method requirements of FCC Part 22 and Industry Canada RSS-GEN.

The EUT was set to transmit at maximum power and testing was carried out on bottom, middle and top channels. Using the Occupied Bandwidth measurement function in the spectrum analyser, the 26dB bandwidth was measured in accordance with FCC KDB 971168 D01 Power Meas License Digital Systems v02r02 Clause 4.2. In addition, measurements of 99% occupied bandwidths were made in accordance with Industry Canada RSS-GEN Clause 6.6. The RBW was configured to 1% of the theoretical channel bandwidth, meeting the requirement of being between 1 to 5% of the Occupied Bandwidth described in the KDB aforementioned.

The results are shown in the plots below.

2.2.7 Test Results

Configuration W-SC

Maximum Output Power 46.0dBm per port

-26dBc Occupied Bandwidth for FCC requirement

Modulation / Bandwidth	Occupied Bandwidth (MHz)		
	Channel Position B 871.4MHz	Channel Position M 881.4MHz	Channel Position T 891.6MHz
QPSK / 5.0 MHz	4.642	4.667	4.659

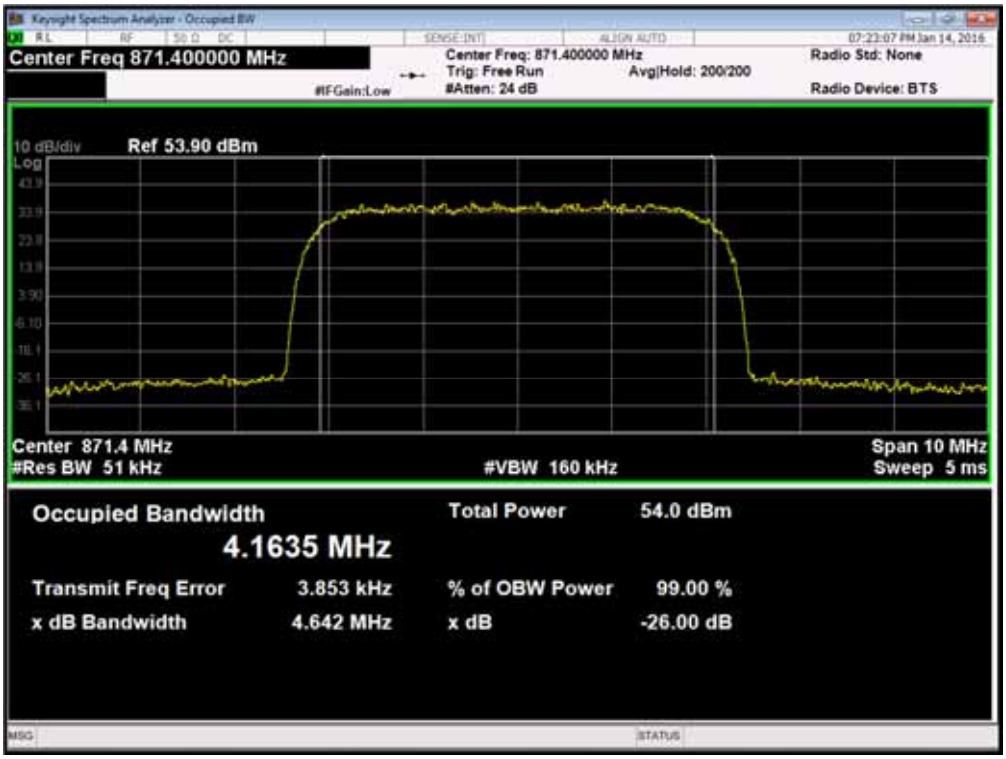
Modulation / Bandwidth	Occupied Bandwidth (MHz)		
	Channel Position B 871.4MHz	Channel Position M 881.4MHz	Channel Position T 891.6MHz
QPSK / 4.2 MHz	4.121	4.123	4.119

99% Occupied Bandwidth for IC requirement

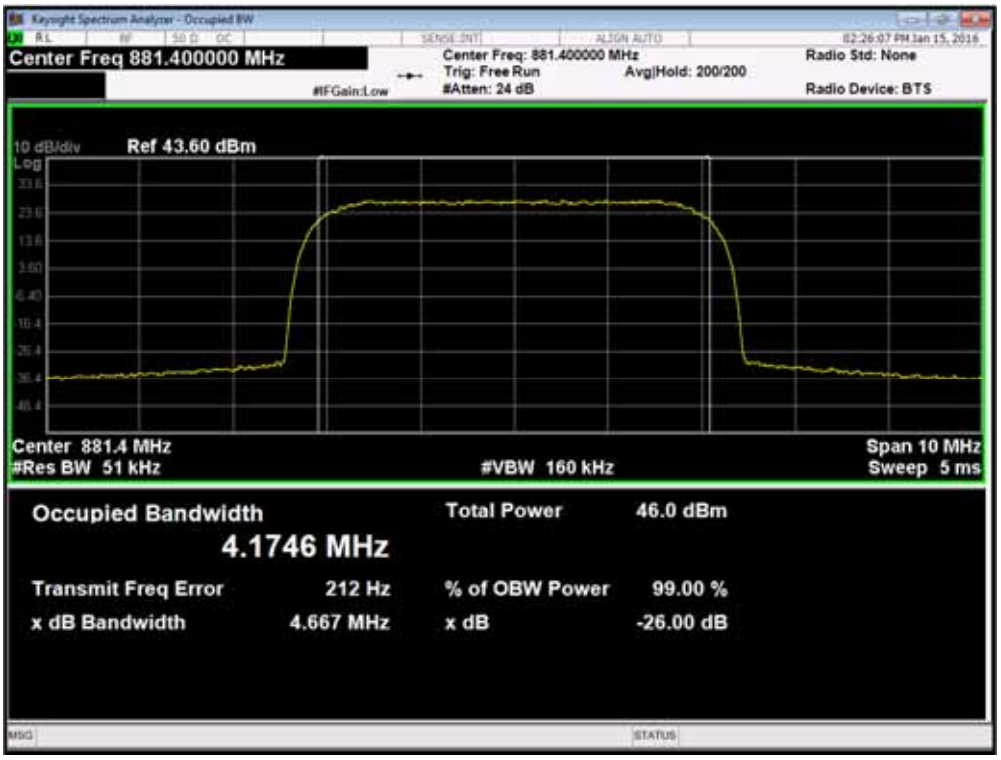
Modulation / Bandwidth	Occupied Bandwidth (MHz)		
	Channel Position B 871.4MHz	Channel Position M 881.4MHz	Channel Position T 891.6MHz
QPSK / 5.0 MHz	4.164	4.175	4.161

Modulation / Bandwidth	Occupied Bandwidth (MHz)		
	Channel Position B 871.4MHz	Channel Position M 881.4MHz	Channel Position T 891.6MHz
QPSK / 4.2 MHz	3.844	3.844	3.840

Channel Position B - QPSK / Bandwidth 5.0 MHz

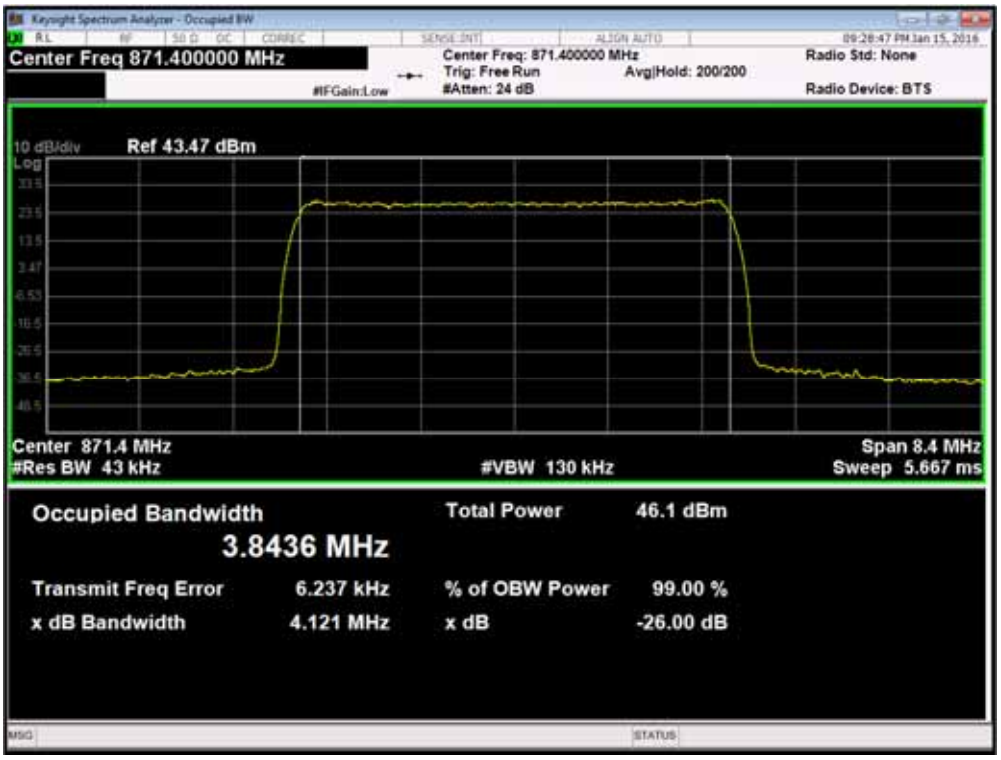


Channel Position M - QPSK / Bandwidth 5.0 MHz

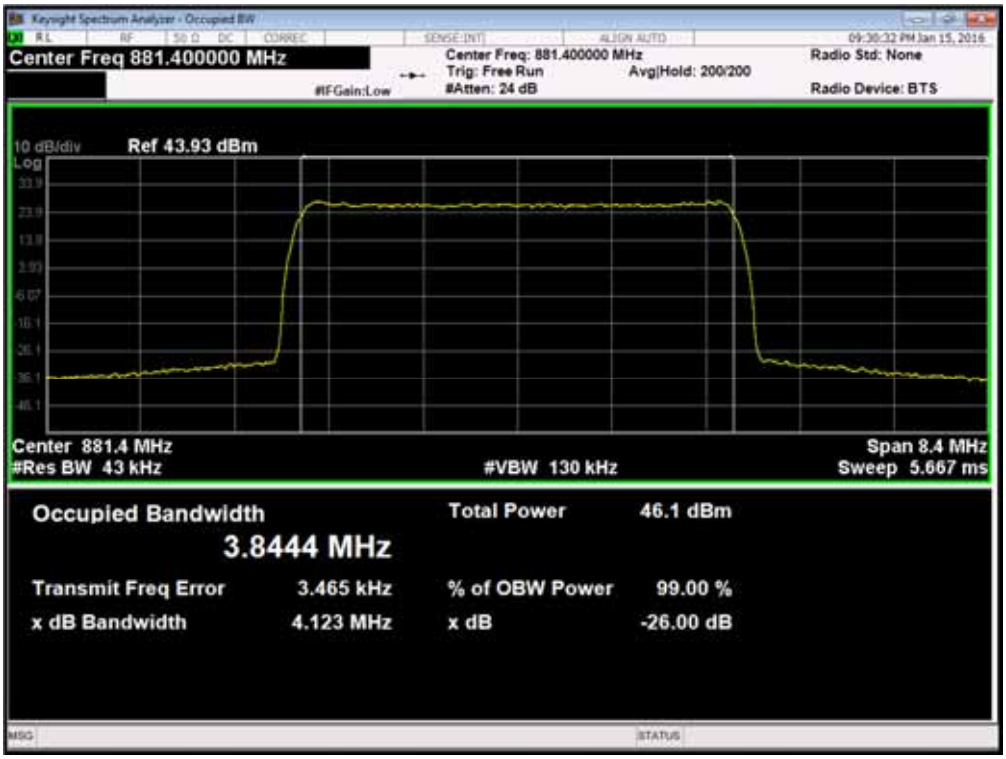


Channel Position T - QPSK / Bandwidth 5.0 MHz

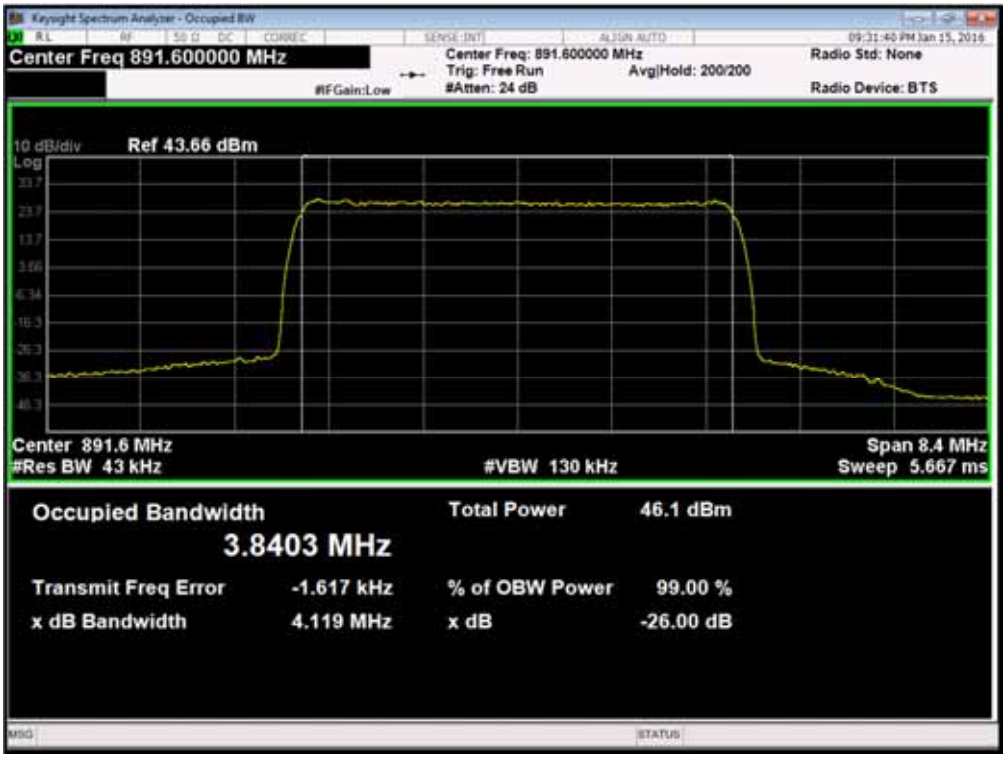
Channel Position B - QPSK / Bandwidth 4.2 MHz



Channel Position M - QPSK / Bandwidth 4.2 MHz



Channel Position T - QPSK / Bandwidth 4.2 MHz



Configuration W-MIMO-SC

Maximum Output Power 46.0dBm per port

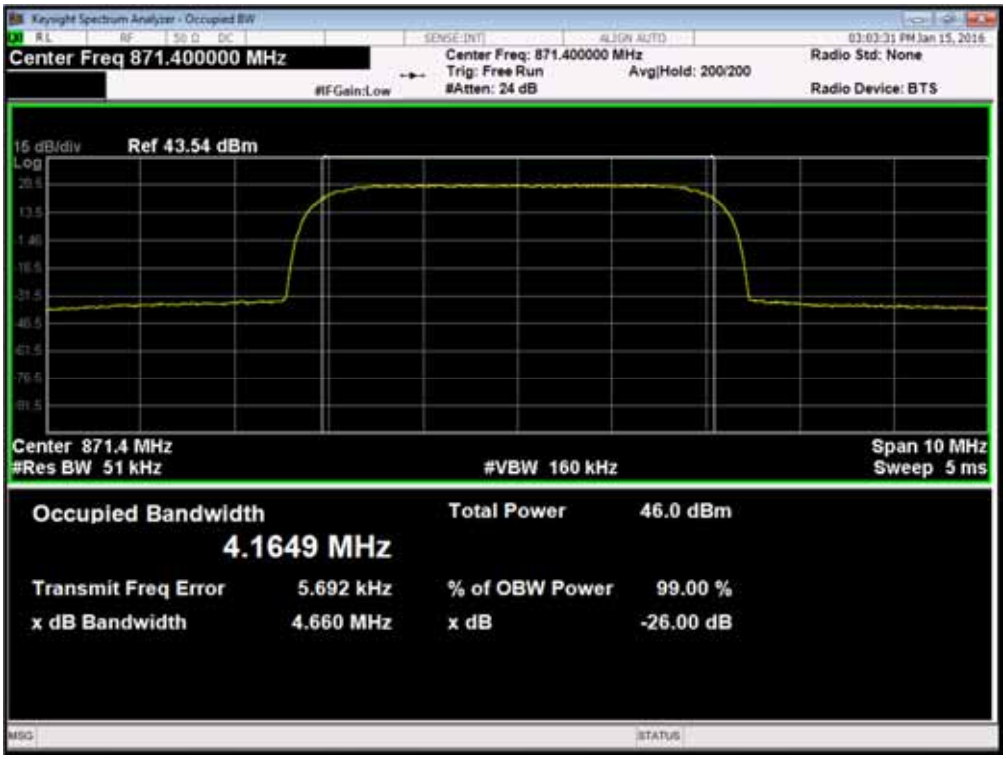
-26dBc Occupied Bandwidth for FCC requirement

Modulation / Bandwidth	Occupied Bandwidth (MHz)		
	Channel Position B 871.4MHz	Channel Position M 881.4MHz	Channel Position T 891.6MHz
16QAM / 5.0 MHz	4.660	4.666	4.653
64QAM / 5.0 MHz	4.659	4.663	4.655

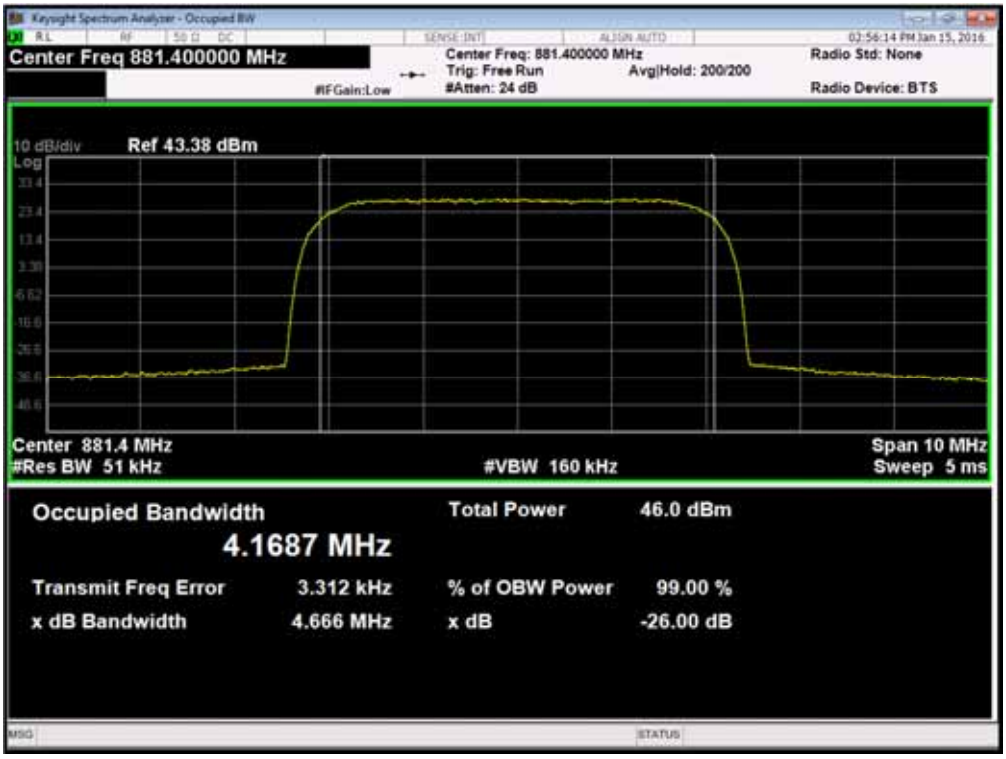
99% Occupied Bandwidth for IC requirement

Modulation / Bandwidth	Occupied Bandwidth (MHz)		
	Channel Position B 871.4MHz	Channel Position M 881.4MHz	Channel Position T 891.6MHz
16QAM / 5.0 MHz	4.165	4.169	4.157
64QAM / 5.0 MHz	4.169	4.170	4.159

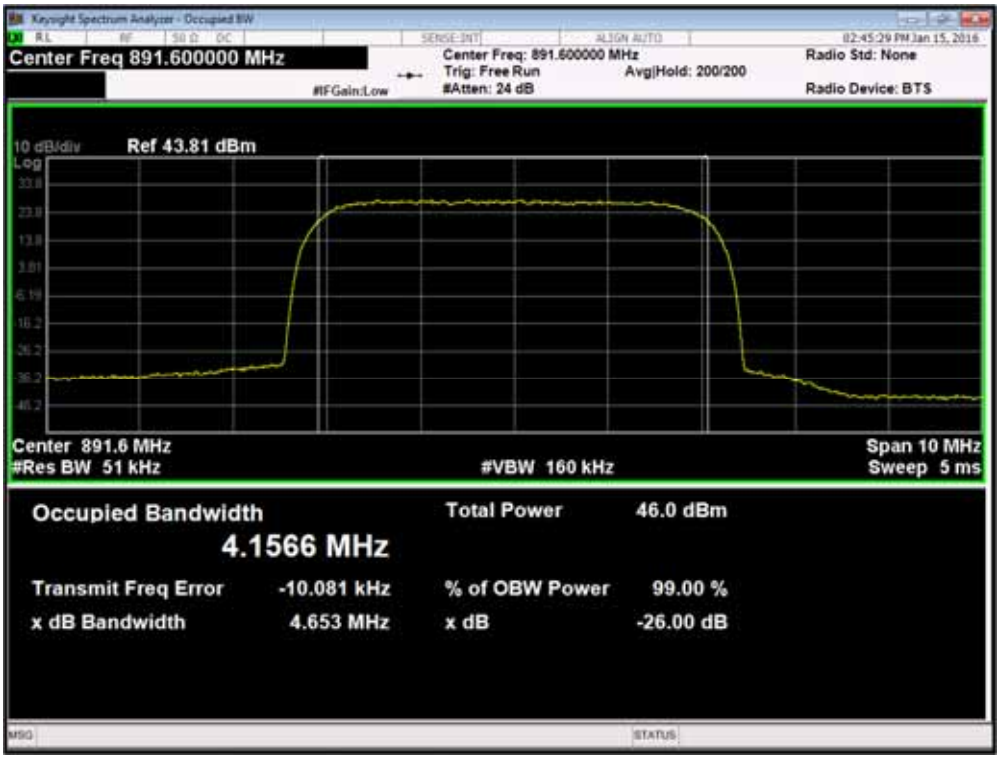
Channel Position B - 16QAM / Bandwidth 5.0 MHz



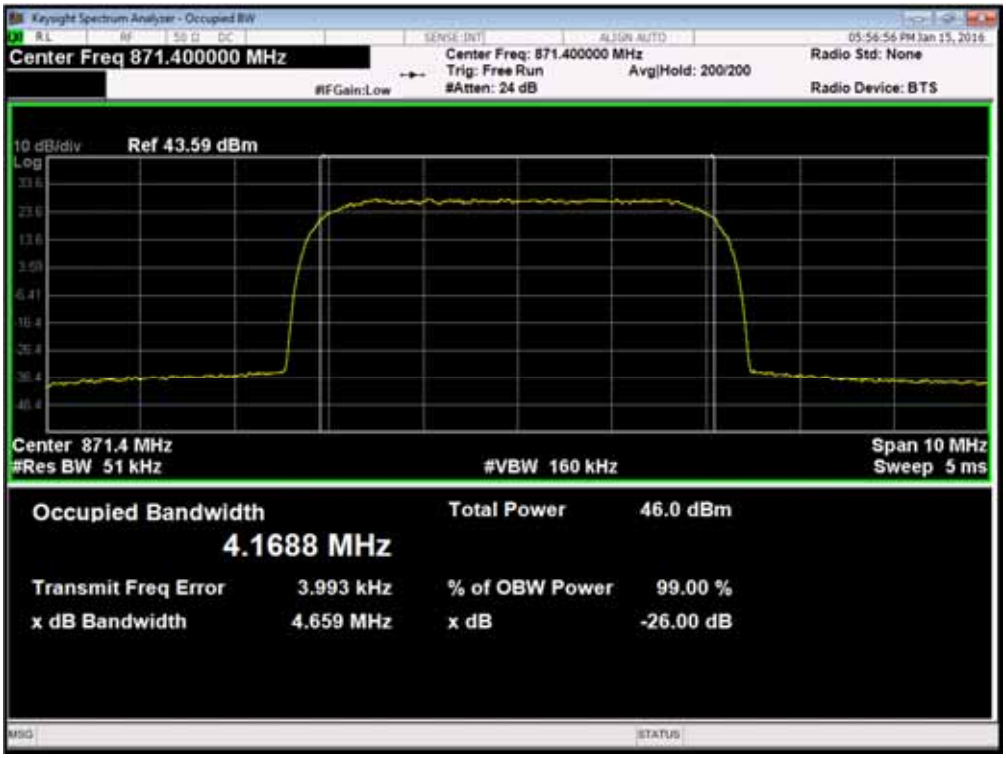
Channel Position M - 16QAM / Bandwidth 5.0 MHz



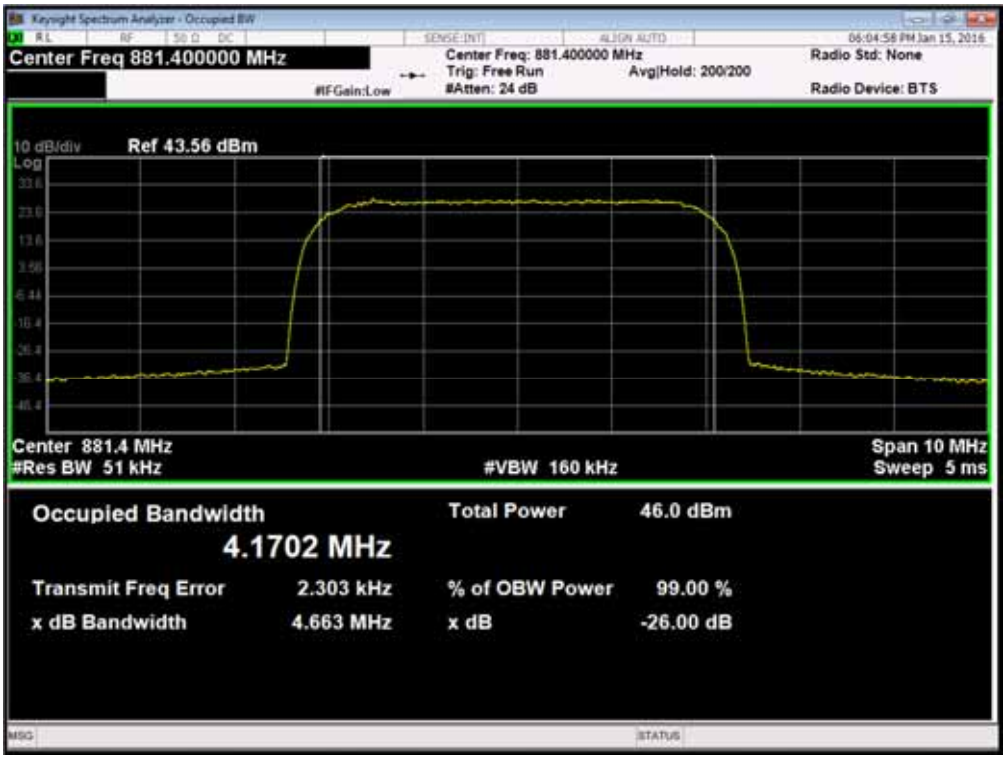
Channel Position T - 16QAM / Bandwidth 5.0 MHz



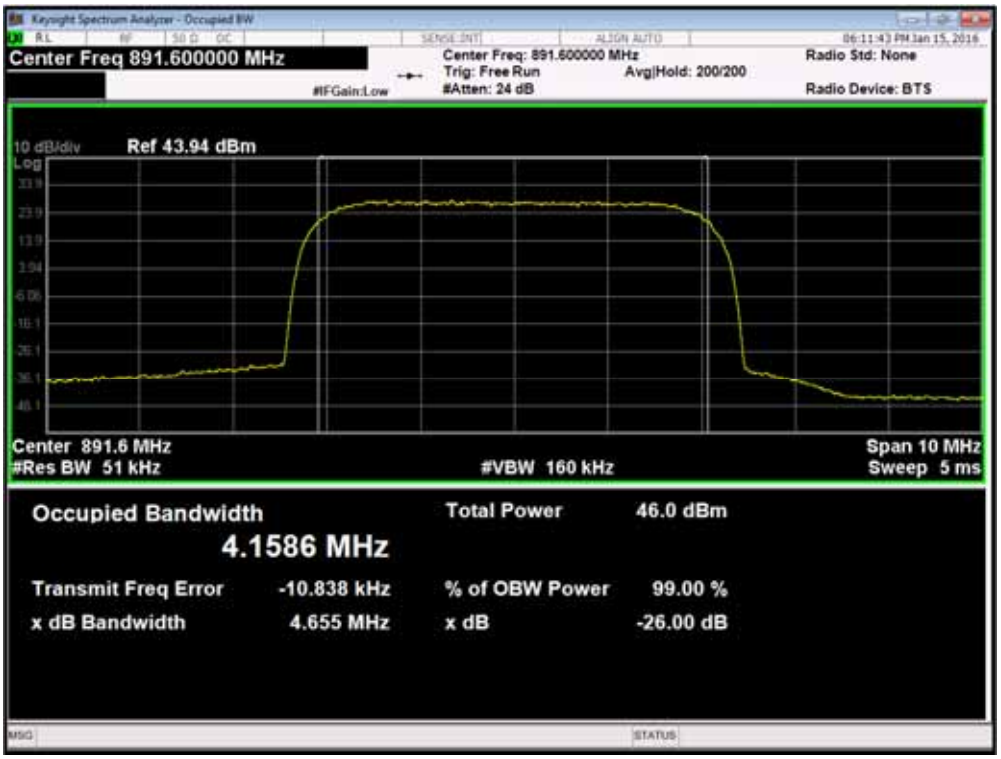
Channel Position B - 64QAM / Bandwidth 5.0 MHz



Channel Position M - 64QAM / Bandwidth 5.0 MHz



Channel Position T - 64QAM / Bandwidth 5.0 MHz



Configuration L-MIMO-SC

Maximum Output Power 43.0dBm per port for 1.4MHz and 3.0MHz bandwidth.
Maximum Output Power 46.0dBm per port for 5.0MHz and 10.0MHz bandwidth.

-26dBc Occupied Bandwidth for FCC requirement

Modulation / Bandwidth	Occupied Bandwidth (MHz)		
	Channel Position B 869.7MHz	Channel Position M 881.5MHz	Channel Position T 893.3MHz
QPSK / 1.4 MHz	1.242	1.234	1.237
16QAM / 1.4 MHz	-	1.262	-
64QAM / 1.4 MHz	-	1.250	-
256QAM / 1.4 MHz	-	1.248	-

Modulation / Bandwidth	Occupied Bandwidth (MHz)		
	Channel Position B 870.5MHz	Channel Position M 881.5MHz	Channel Position T 892.5MHz
QPSK / 3.0 MHz	-	2.858	-
16QAM / 3.0 MHz	-	2.903	-
64QAM / 3.0 MHz	-	2.894	-
256QAM / 3.0 MHz	-	2.895	-

Modulation / Bandwidth	Occupied Bandwidth (MHz)		
	Channel Position B 871.5MHz	Channel Position M 881.5MHz	Channel Position T 891.5MHz
QPSK / 5.0 MHz	-	4.738	-
16QAM / 5.0 MHz	-	4.793	-
64QAM / 5.0 MHz	-	4.794	-
256QAM / 5.0 MHz	-	4.804	-

Modulation / Bandwidth	Occupied Bandwidth (MHz)		
	Channel Position B 874.0MHz	Channel Position M 881.5MHz	Channel Position T 889.0MHz
QPSK / 10.0 MHz	9.289	9.303	9.289
16QAM / 10.0 MHz	-	9.373	-
64QAM / 10.0 MHz	-	9.363	-
256QAM / 10.0 MHz	-	9.331	-

99% Occupied Bandwidth for IC requirement

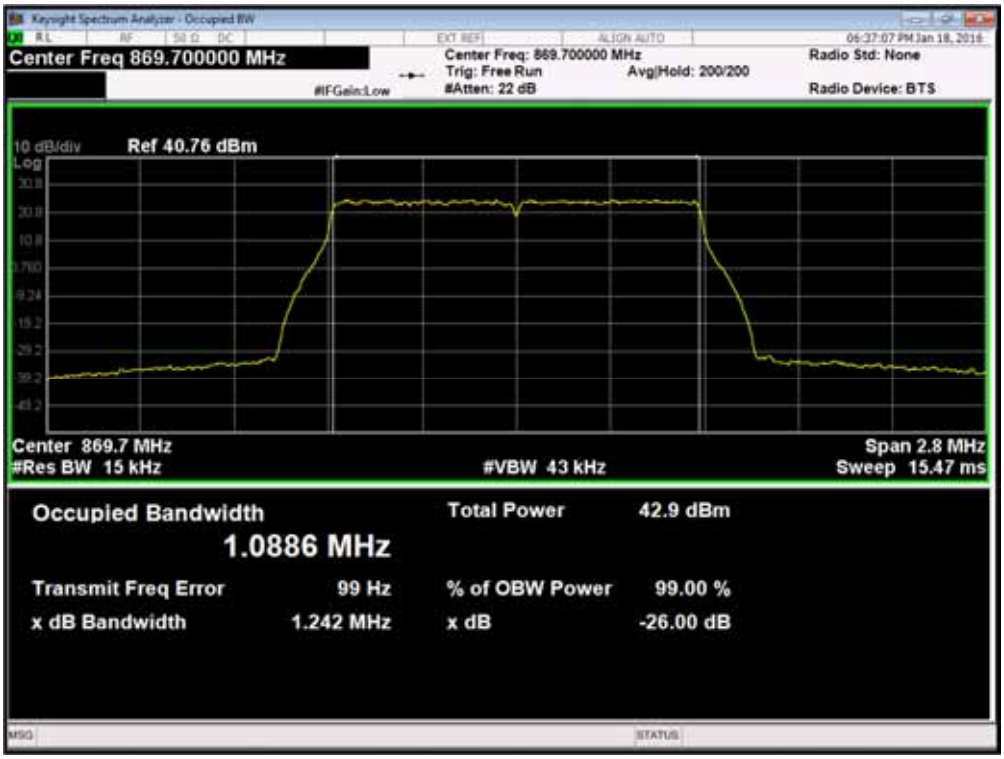
Modulation / Bandwidth	Occupied Bandwidth (MHz)		
	Channel Position B 869.7MHz	Channel Position M 881.5MHz	Channel Position T 893.3MHz
QPSK / 1.4 MHz	1.089	1.089	1.089
16QAM / 1.4 MHz	-	1.093	-
64QAM / 1.4 MHz	-	1.096	-
256QAM / 1.4 MHz	-	1.090	-

Modulation / Bandwidth	Occupied Bandwidth (MHz)		
	Channel Position B 870.5MHz	Channel Position M 881.5MHz	Channel Position T 892.5MHz
QPSK / 3.0 MHz	-	2.693	-
16QAM / 3.0 MHz	-	2.693	-
64QAM / 3.0 MHz	-	2.695	-
256QAM / 3.0 MHz	-	2.696	-

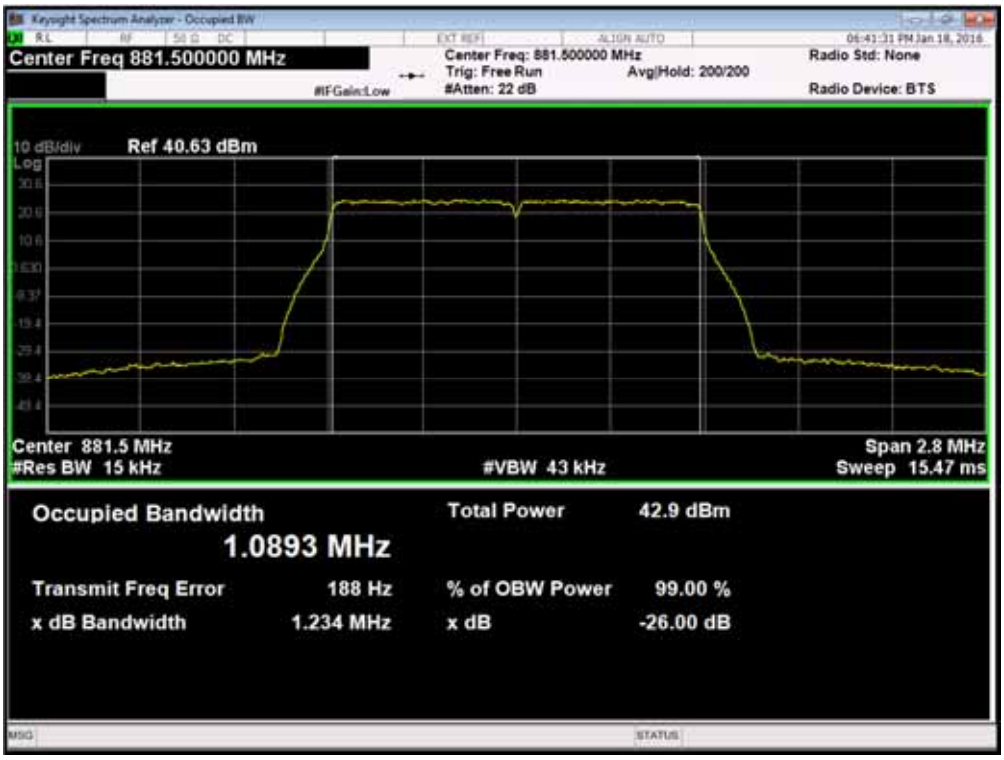
Modulation / Bandwidth	Occupied Bandwidth (MHz)		
	Channel Position B 871.5MHz	Channel Position M 881.5MHz	Channel Position T 891.5MHz
QPSK / 5.0 MHz	-	4.479	-
16QAM / 5.0 MHz	-	4.473	-
64QAM / 5.0 MHz	-	4.489	-
256QAM / 5.0 MHz	-	4.488	-

Modulation / Bandwidth	Occupied Bandwidth (MHz)		
	Channel Position B 874.0MHz	Channel Position M 881.5MHz	Channel Position T 889.0MHz
QPSK / 10.0 MHz	8.936	8.933	8.931
16QAM / 10.0 MHz	-	8.957	-
64QAM / 10.0 MHz	-	8.951	-
256QAM / 10.0 MHz	-	8.951	-

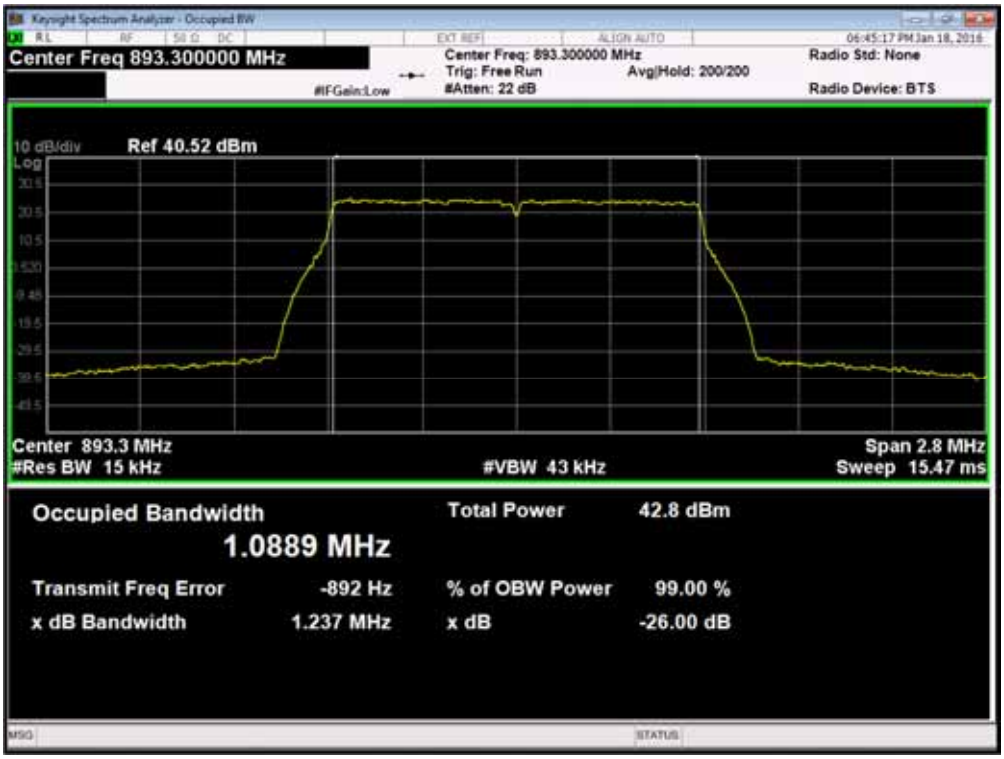
Channel Position B - QPSK / Bandwidth 1.4 MHz



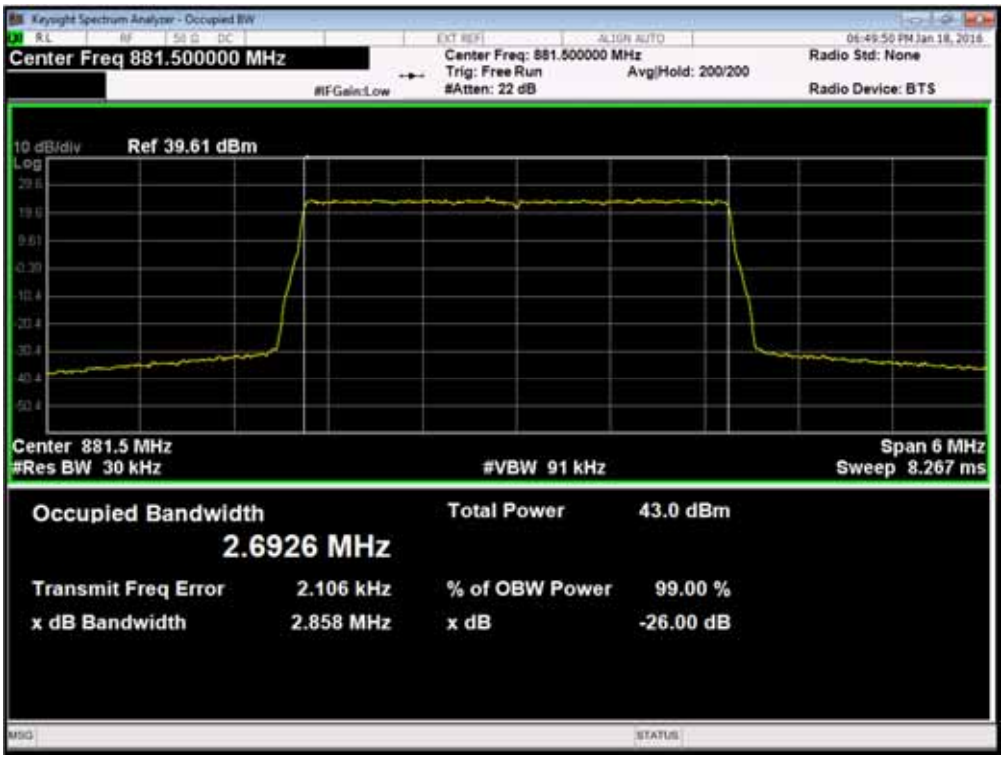
Channel Position M - QPSK / Bandwidth 1.4 MHz



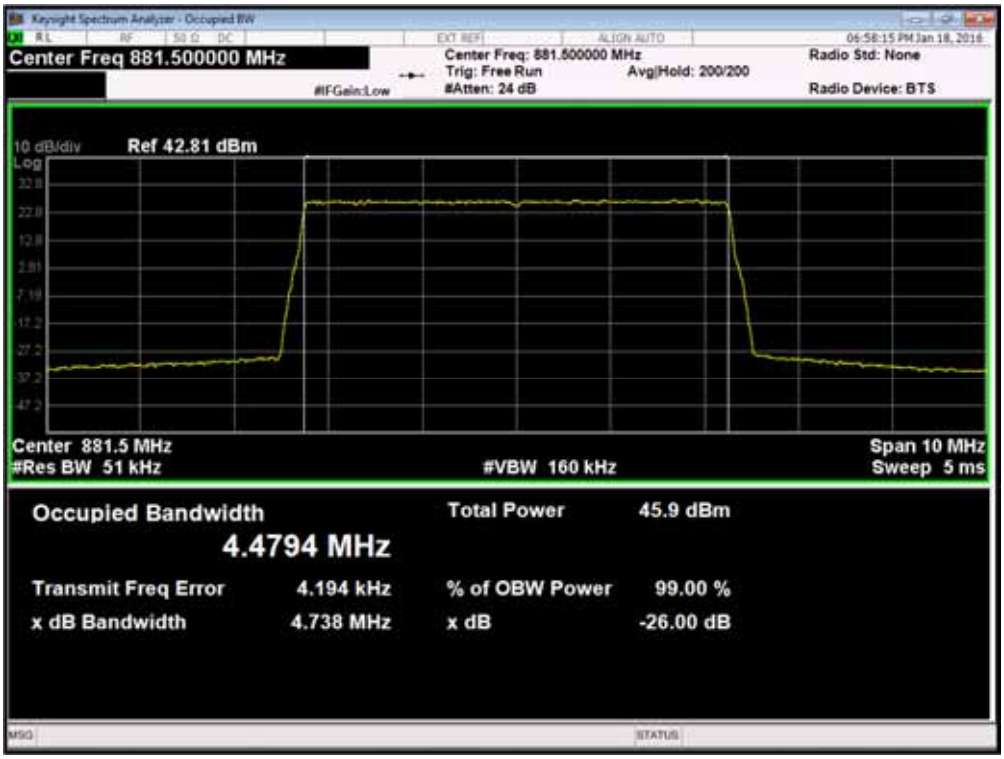
Channel Position T - QPSK / Bandwidth 1.4 MHz



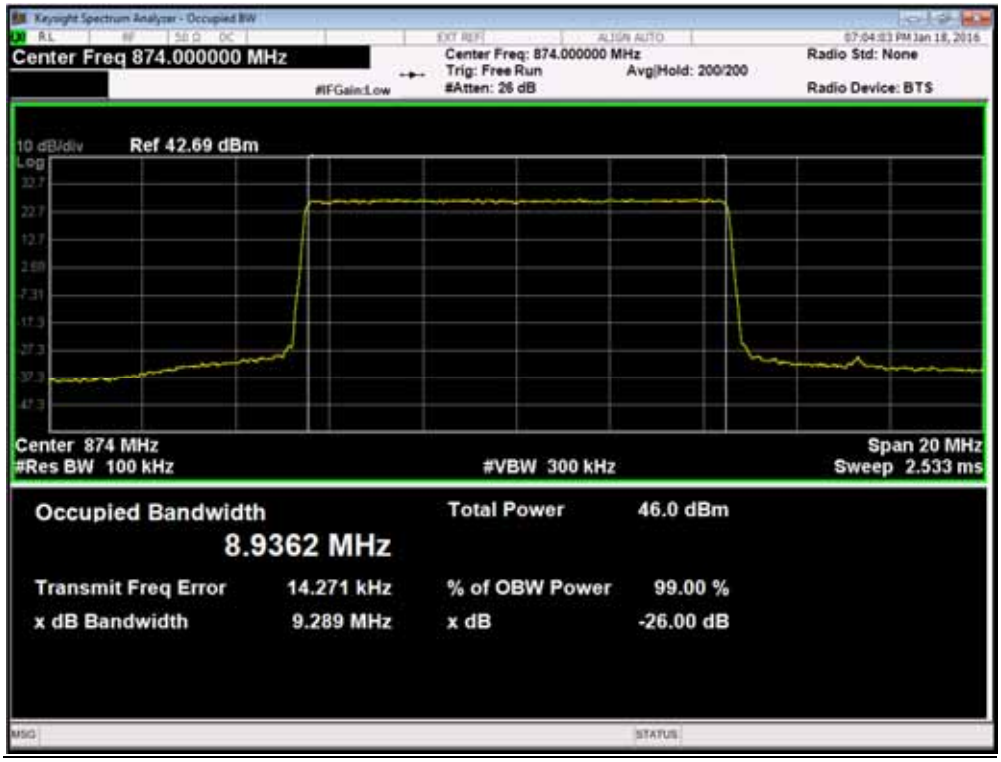
Channel Position M - QPSK / Bandwidth 3.0 MHz



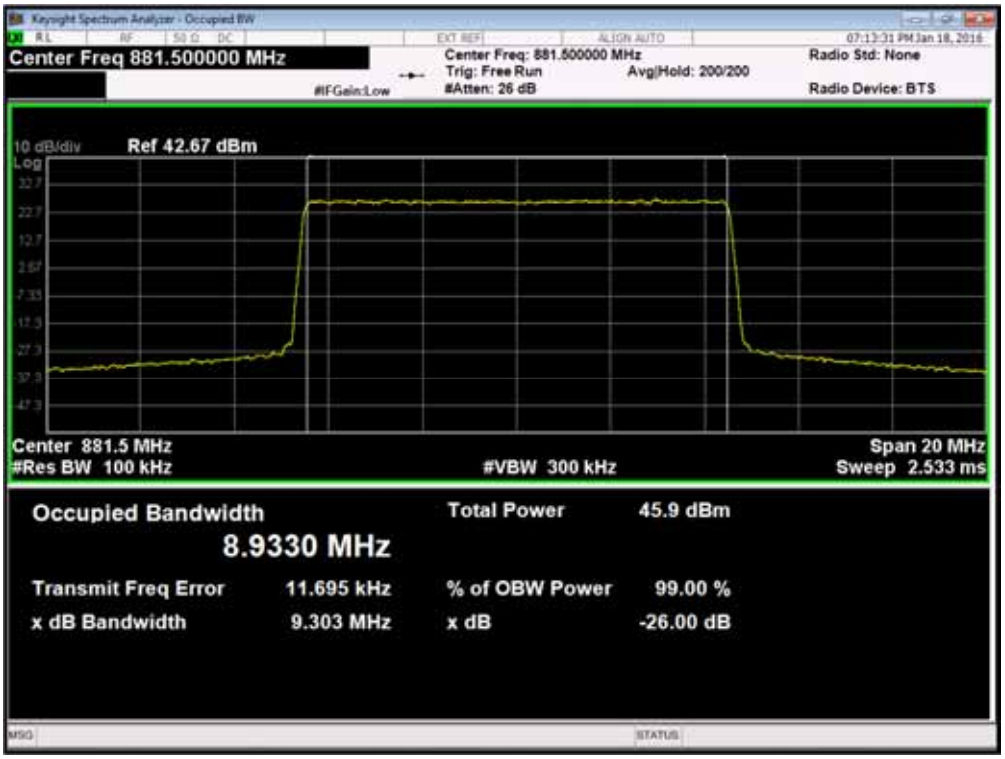
Channel Position M - QPSK / Bandwidth 5.0 MHz



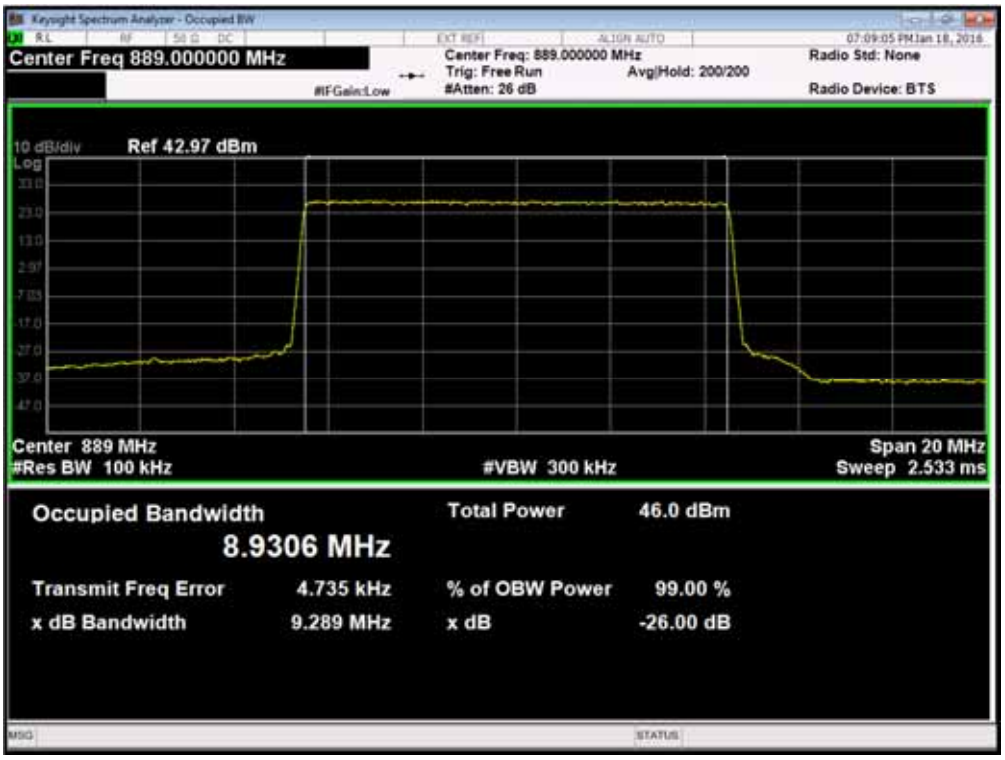
Channel Position B - QPSK / Bandwidth 10.0 MHz



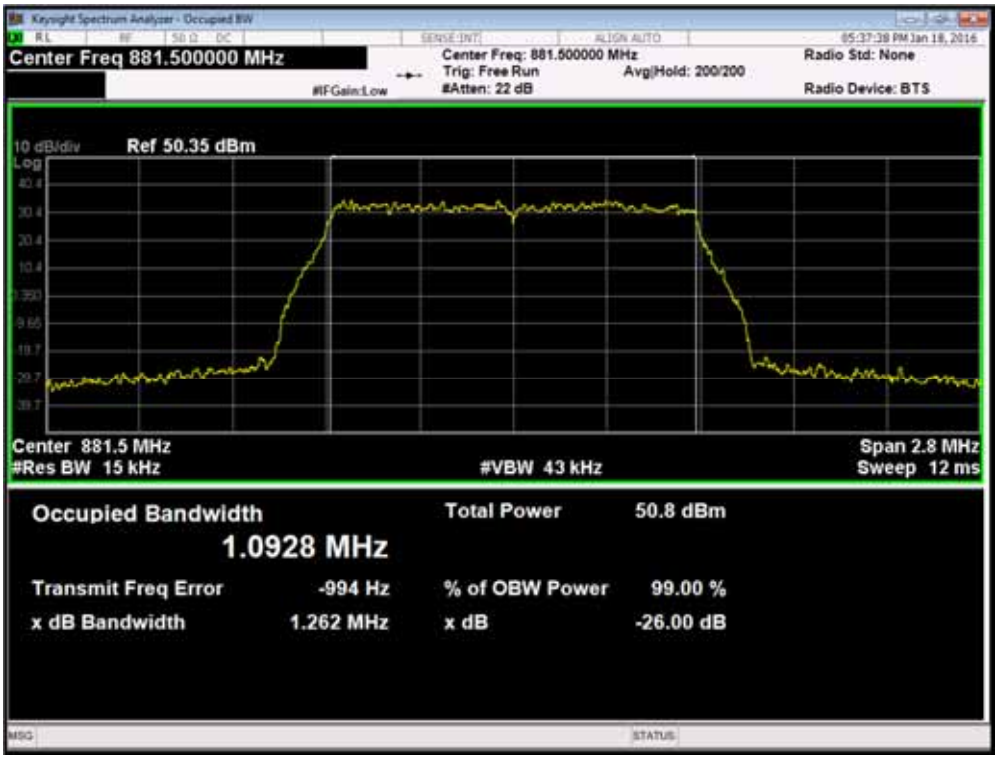
Channel Position M - QPSK / Bandwidth 10.0 MHz



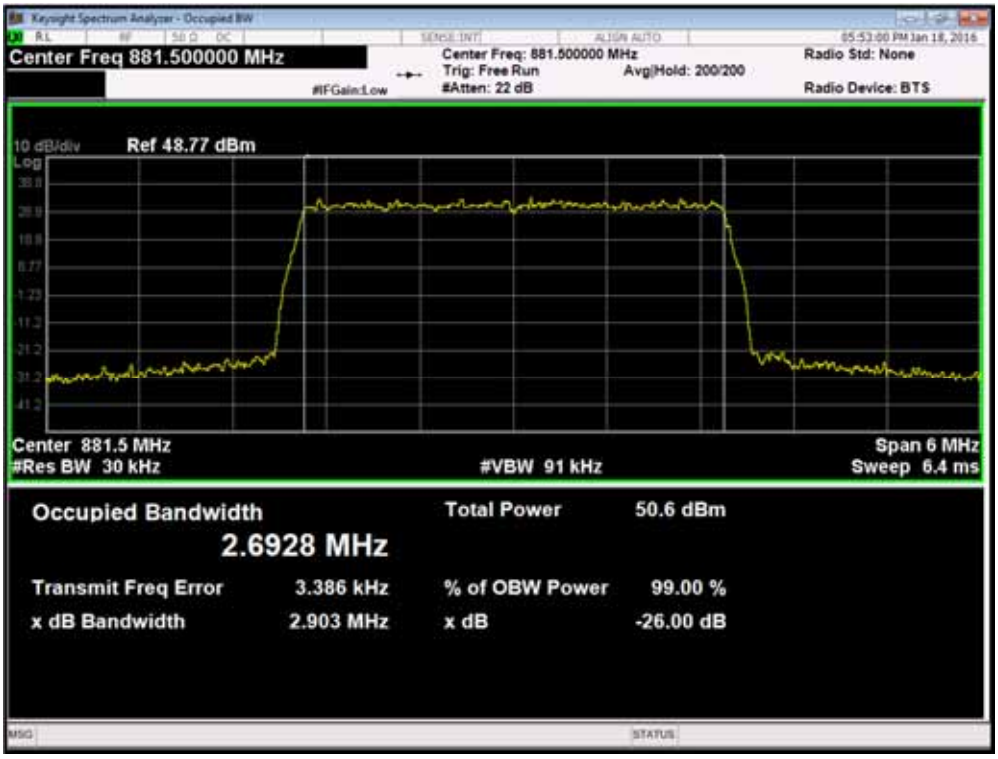
Channel Position T - QPSK / Bandwidth 10.0 MHz



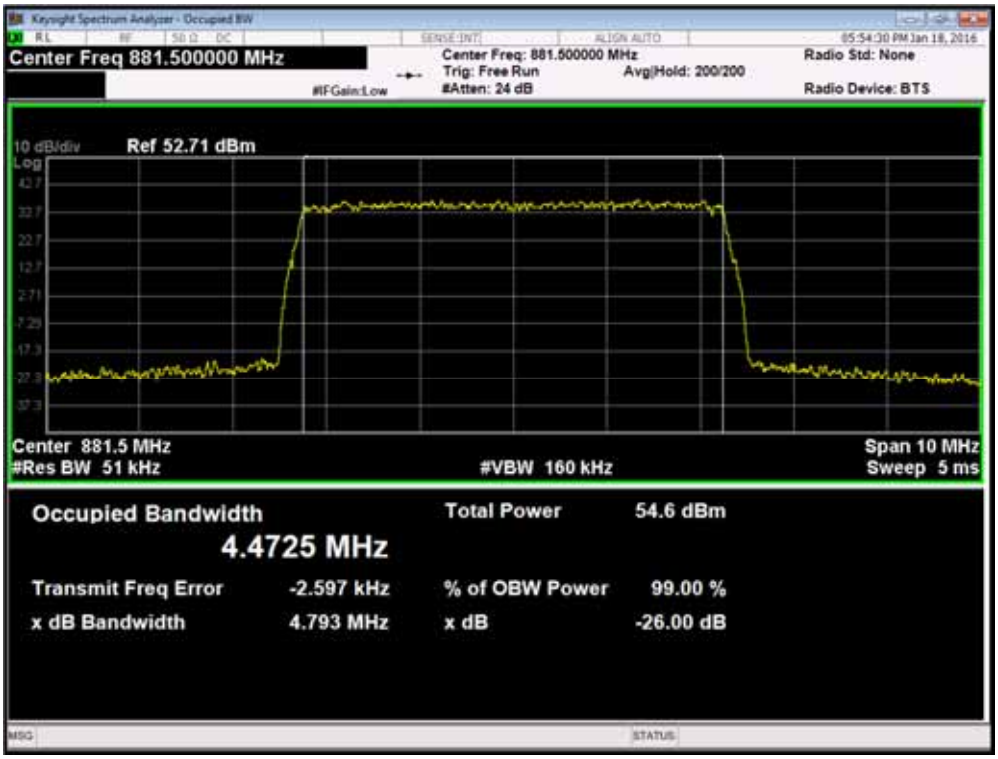
Channel Position M - 16QAM / Bandwidth 1.4 MHz



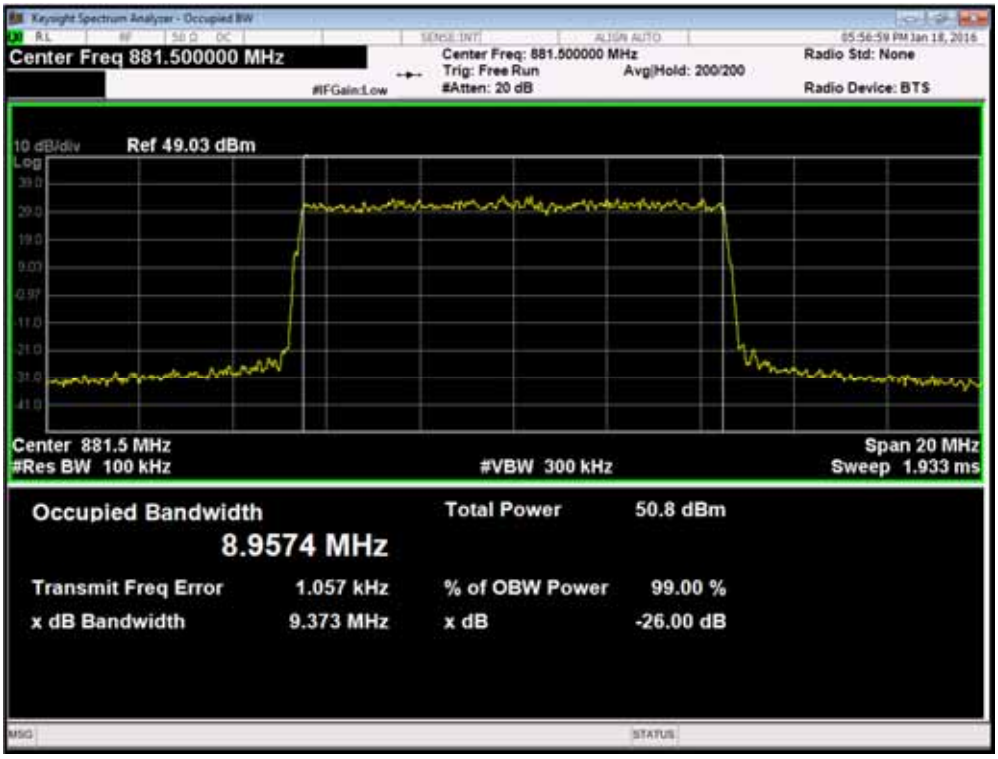
Channel Position M - 16QAM / Bandwidth 3.0 MHz



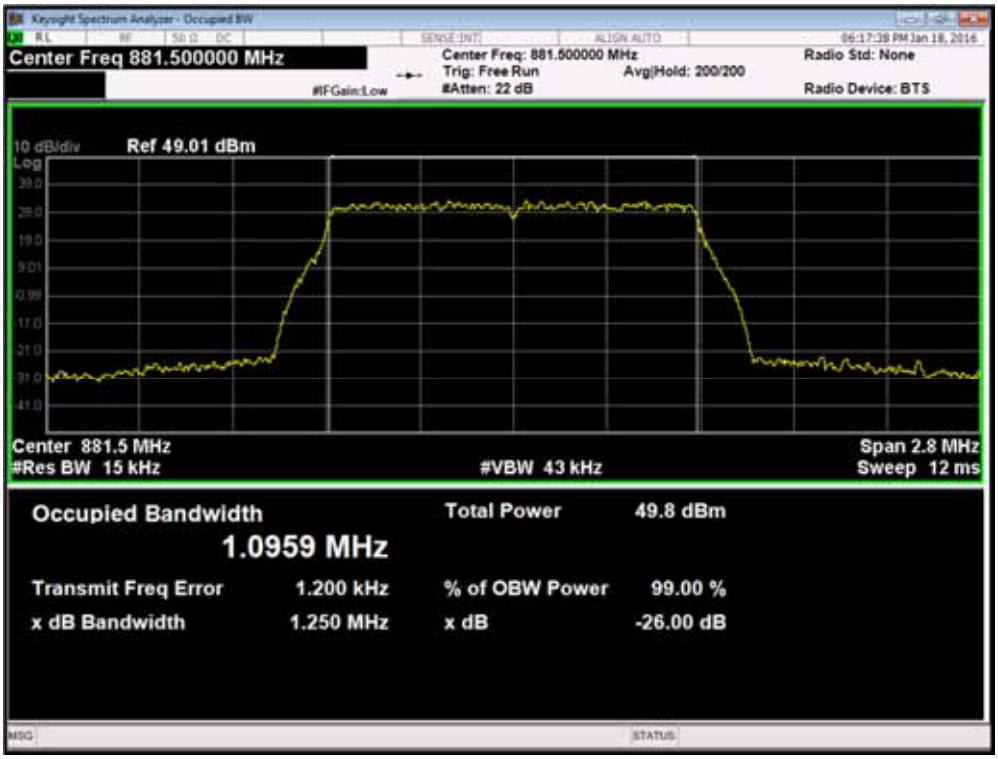
Channel Position M - 16QAM / Bandwidth 5.0 MHz



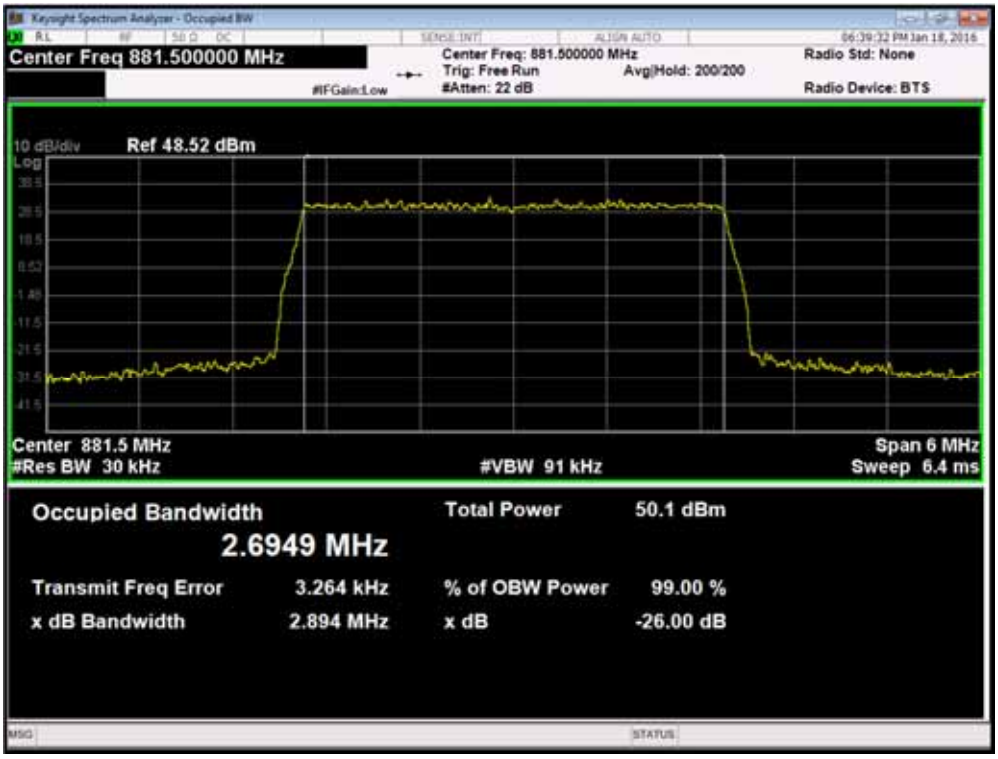
Channel Position M - 16QAM / Bandwidth 10.0 MHz



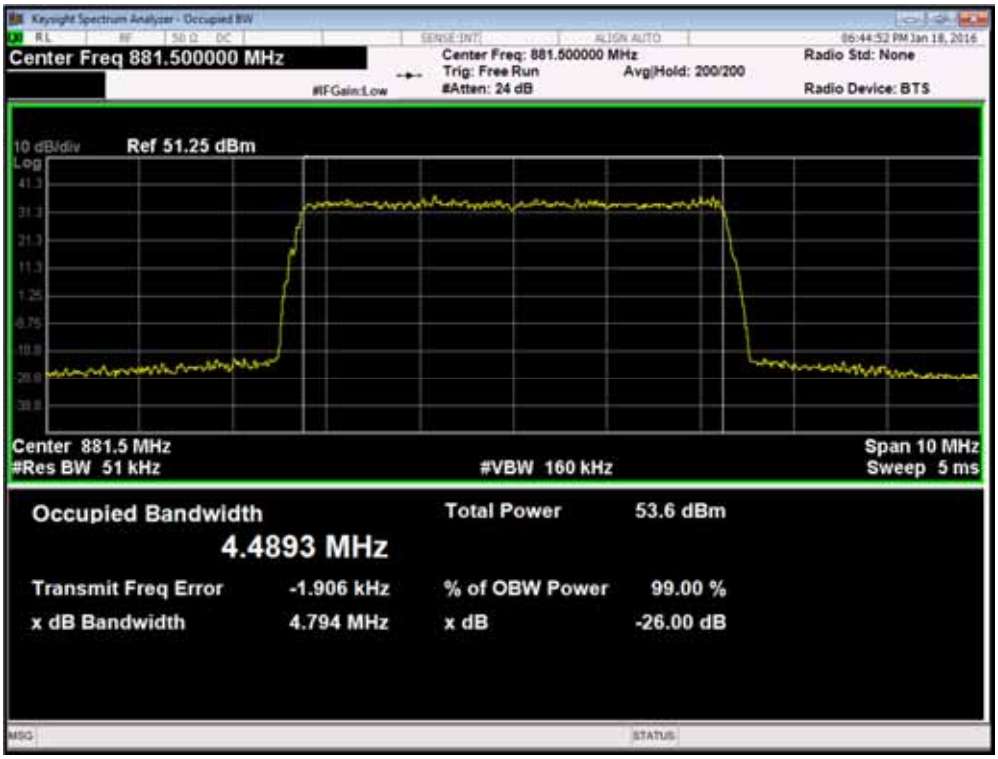
Channel Position M - 64QAM / Bandwidth 1.4 MHz



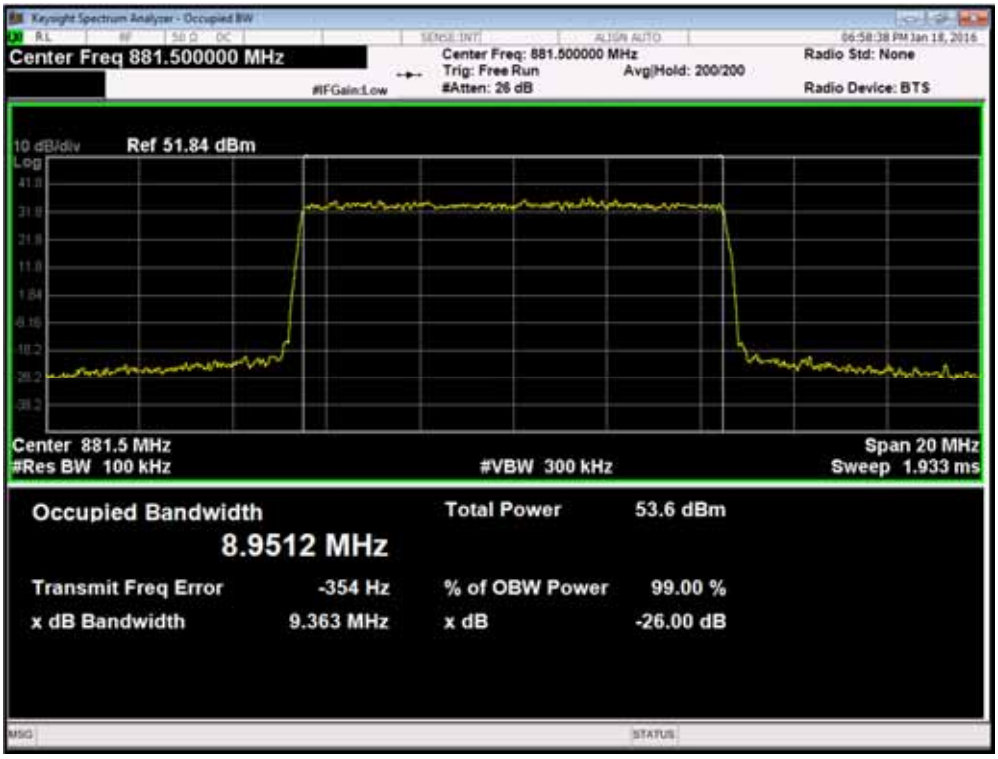
Channel Position M - 64QAM / Bandwidth 3.0 MHz



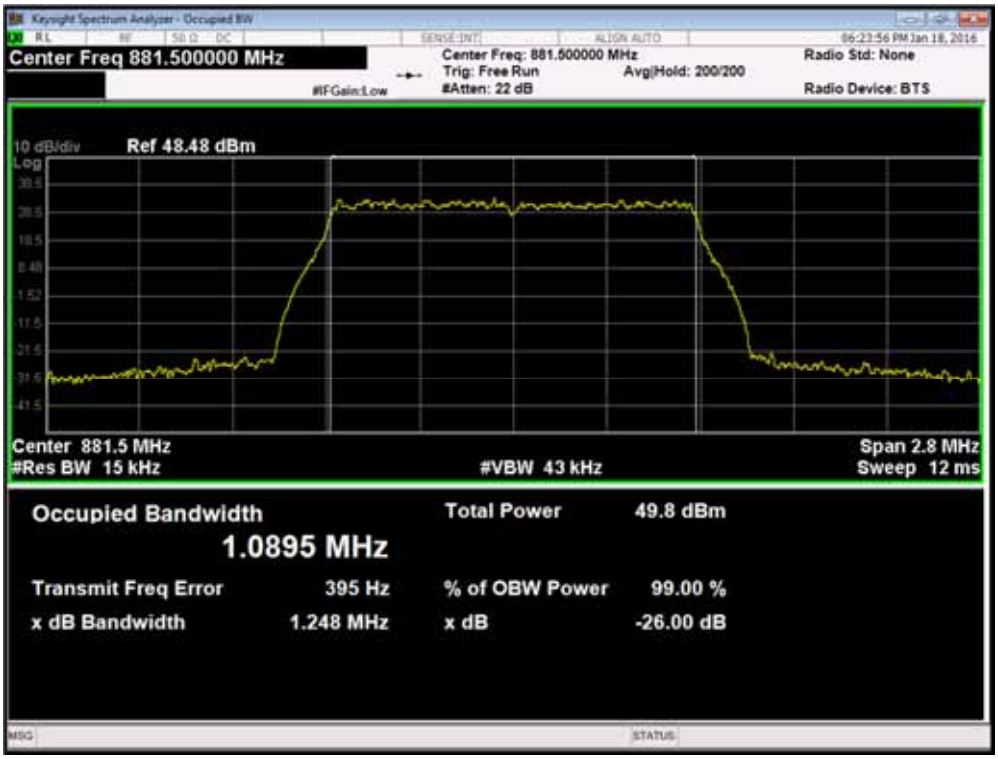
Channel Position M - 64QAM / Bandwidth 5.0 MHz



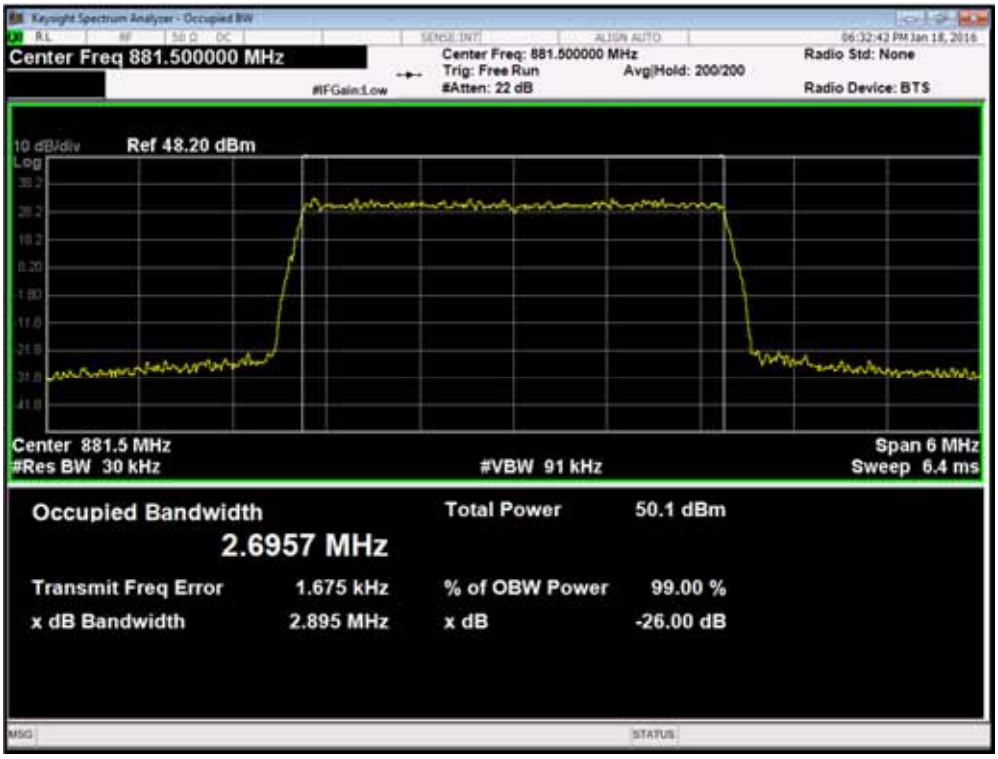
Channel Position M - 64QAM / Bandwidth 10.0 MHz



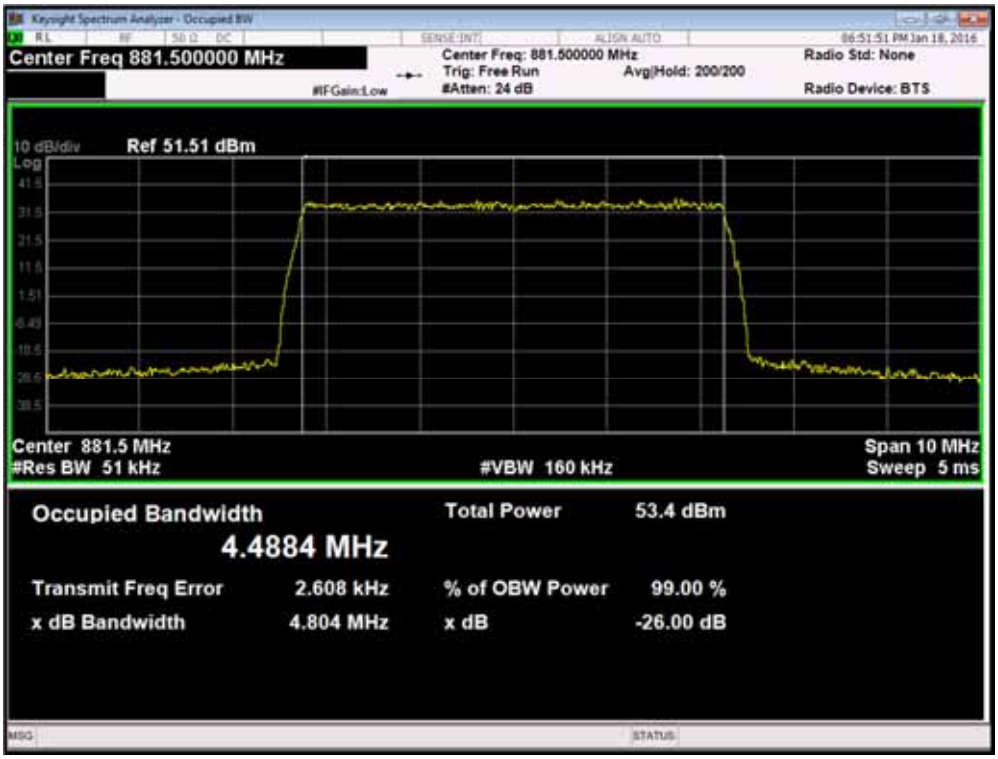
Channel Position M - 256QAM / Bandwidth 1.4 MHz



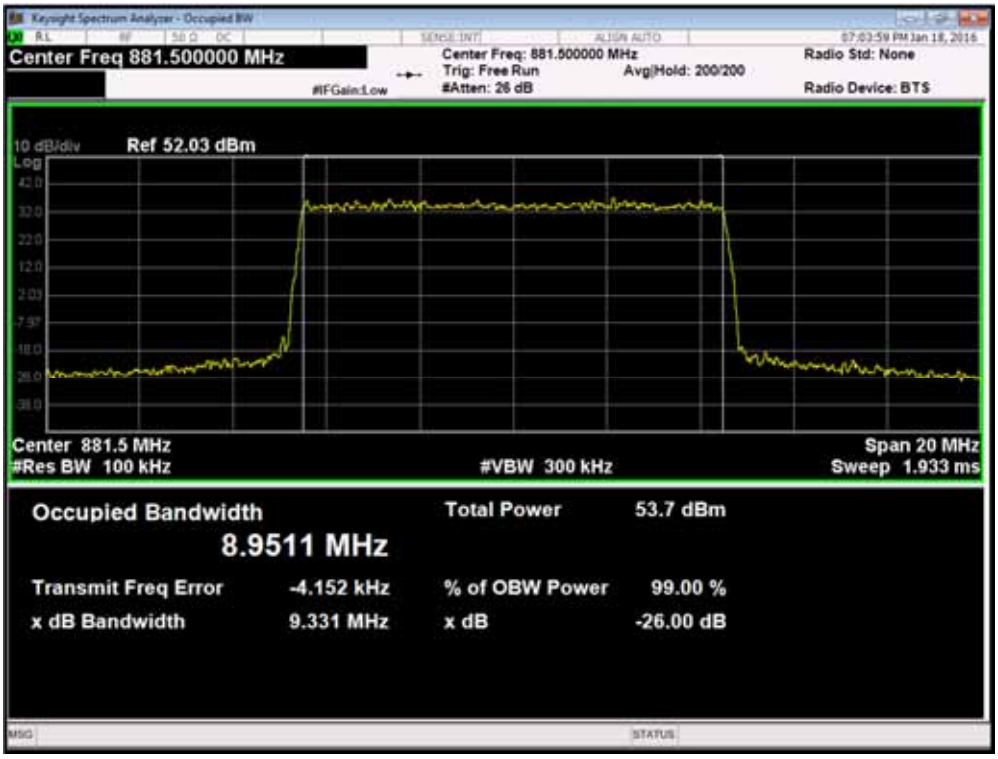
Channel Position M - 256QAM / Bandwidth 3.0 MHz



Channel Position M - 256QAM / Bandwidth 5.0 MHz



Channel Position M - 256QAM / Bandwidth 10.0 MHz



2.3 SPURIOUS EMISSION AT BAND EDGE

2.3.1 Specification Reference

FCC CFR 47 Part 2, Clause 2.1051
FCC CFR 47 Part 22, Clause 22.917 (b)
Industry Canada RSS-132, Clause 5.5

2.3.2 Equipment Under Test

Radio 2217 B5, KRC 161 566/2, S/N: D822618359

2.3.3 Date of Test and Modification State

14, 15, 18 and 19 January 2016 - Modification State 0

2.3.4 Test Equipment Used

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

2.3.5 Environmental Conditions

Ambient Temperature	23.6 - 24.9°C
Relative Humidity	27.0 - 29.0%

2.3.6 Test Method

The test was applied in accordance with the test method requirements of FCC Part 22 and Industry Canada RSS-132.

In accordance with FCC CFR 47 Part 22, Clause 22.917(b), the power of any emissions outside of the block edges shall be attenuated below the transmitter power (P) with the licensed band(s) of operation, measured in watts, by at least 43 + 10 log (P) dB. At least 1% of the emission bandwith was used for the resolution bandwidths up to 1MHz away from the block edge.

For MIMO mode configurations, the limit was adjusted with a correction of -3.01dB [10Log(2)] by using the Measure and Add 10Log(2) dB technique according to FCC KDB 662911 D01 Multiple Transmitter Output v02r01 accounting for simultaneous transmission from antennas port RF A and RF B.

As the FCC rules specify a RBW of 100kHz for measurements of emissions > 1MHz away from the band edges, the limit was adjusted with -3.01dB [10Log(50/100)] to compensate for the reduce mesurement bandwidth. For MIMO mode, the limit of -19.02dBm was used for emission > 1MHz away from the band edges. For Non-MIMO mode, the limit of -16.01dBm was used for emission > 1MHz away from the band edges. Spectrum analyser detector was set as RMS.

The limits and RBW applied to the measurement of emissions in the 1MHz immediately outside and adjacent to the frequency block were shown in the test results for each test configuration.

The path loss measured 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 measurements were made at the bottom and top of the band with all channel bandwidth.

2.3.7 Test Results

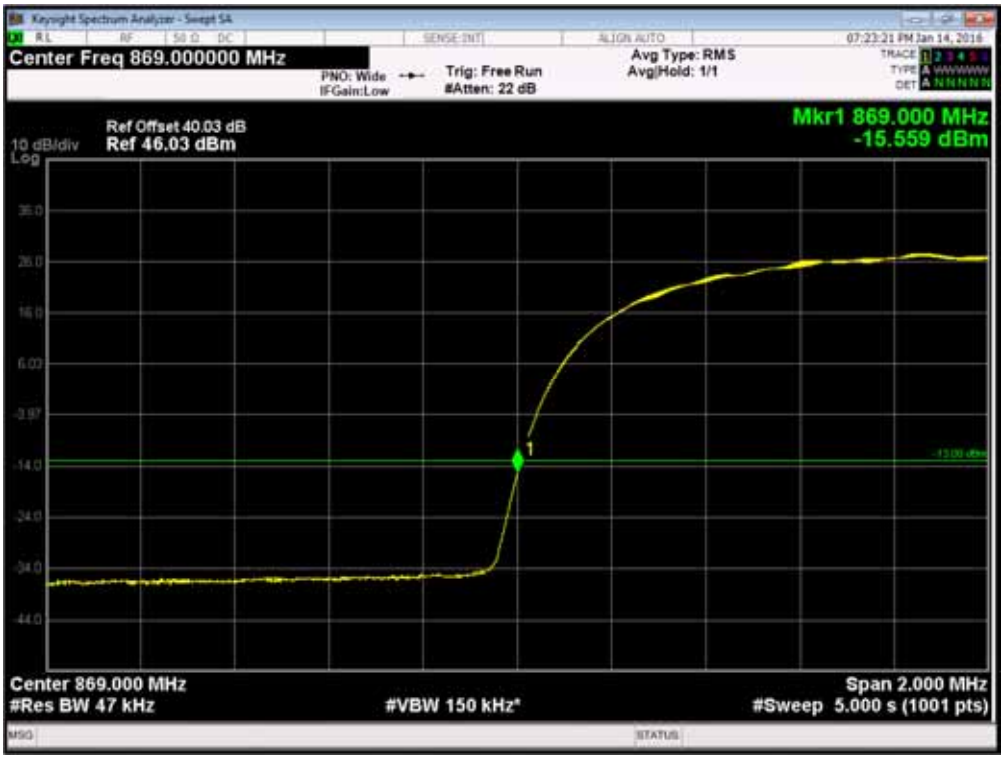
Configuration W-SC

Maximum Output Power 46.0dBm per port

Band Edge Frequency	Channel Bandwidth	Edge Test with modulation QPSK Channel Frequencies	RBW (kHz)	Limit (dBm)
Channel Position B 869.0 MHz	5.0 MHz	871.4MHz	47	-13.00
Channel Position T 894.0 MHz	5.0 MHz	891.6MHz	47	-13.00

Note 1: The channels shown in the table above are the minimum and maximum channels that can be used in the authorised frequency ranges to maintain compliance. Channels outside of the ranges shown in the above tables shall not be available to the end user.

Channel Position B - QPSK / Bandwidth 5.0 MHz



Channel Position T - QPSK / Bandwidth 5.0 MHz

Configuration W-MC 1 (2C)

Maximum Output Power 46.0dBm per port

Band Edge Frequency	Channel Bandwidth	Edge Test with modulation QPSK Channel Frequencies	RBW (kHz)	Limit (dBm)
Channel Position B_{RFBW} 869.0 MHz	5.0 MHz	871.4MHz + 876.4MHz	47	-13.00
Channel Position T_{RFBW} 894.0 MHz	5.0 MHz	886.6MHz + 891.6MHz	47	-13.00

Note 1: The channels shown in the table above are the minimum and maximum channels that can be used in the authorised frequency ranges to maintain compliance. Channels outside of the ranges shown in the above tables shall not be made available to the end user.

Channel Position B_{RFBW} - QPSK / Bandwidth 5.0 MHz

Channel Position T_{RFBW} – QPSK / Bandwidth 5.0 MHz

Configuration W-MIMO-SC

Maximum Output Power 46.0dBm per port

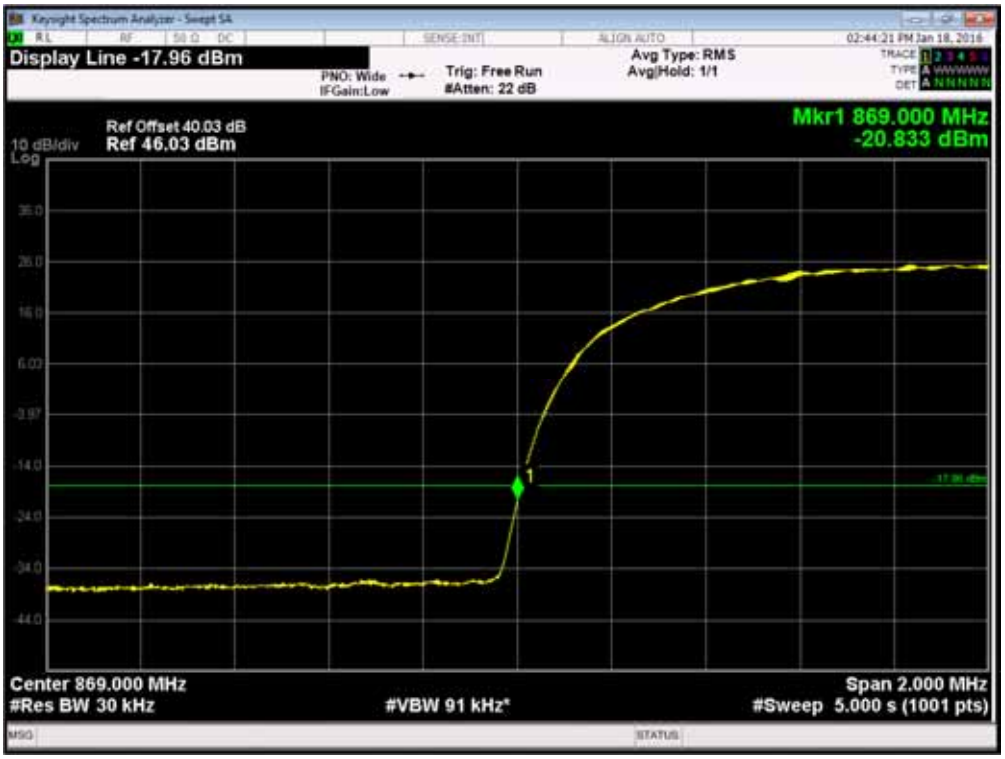
Band Edge Frequency	Channel Bandwidth	Edge Test with modulation 16QAM Channel Frequencies	RBW (kHz)	Limit (dBm)
Channel Position B 869.0 MHz	5.0 MHz	871.4MHz	30	-17.96
Channel Position T 894.0 MHz	5.0 MHz	891.6MHz	30	-17.96

Band Edge Frequency	Channel Bandwidth	Edge Test with modulation 64QAM Channel Frequencies	RBW (kHz)	Limit (dBm)
Channel Position B 869.0 MHz	5.0 MHz	871.4MHz	30	-17.96
Channel Position T 894.0 MHz	5.0 MHz	891.6MHz	30	-17.96

Note 1: For MIMO mode configurations, the limit was adjusted with a correction of -3.01dB [10Log(2)] to -13dBm. For the measurement of 1MHz immediately outside and adjacent to the frequency band edge, a resolution bandwidth of 30kHz was used, and 30kHz is < 47kHz (1% of nominal bandwidth). To compensate for the reduced measurement bandwidth, the limit was adjusted with a correction of -1.95dB [10Log(30/47)] to -16.01dBm. The test results should be compare to a limit of -17.96dBm.

Note 2: The channels shown in the table above are the minimum and maximum channels that can be used in the authorised frequency ranges to maintain compliance. Channels outside of the ranges shown in the above tables shall not be available to the end user.

Channel Position B - 16QAM / Bandwidth 5.0 MHz



Channel Position T - 16QAM / Bandwidth 5.0 MHz

Channel Position B - 64QAM / Bandwidth 5.0 MHz

Channel Position T - 64QAM / Bandwidth 5.0 MHz

Configuration W-MIMO-MC 1 (2C)

Maximum Output Power 46.0dBm per port

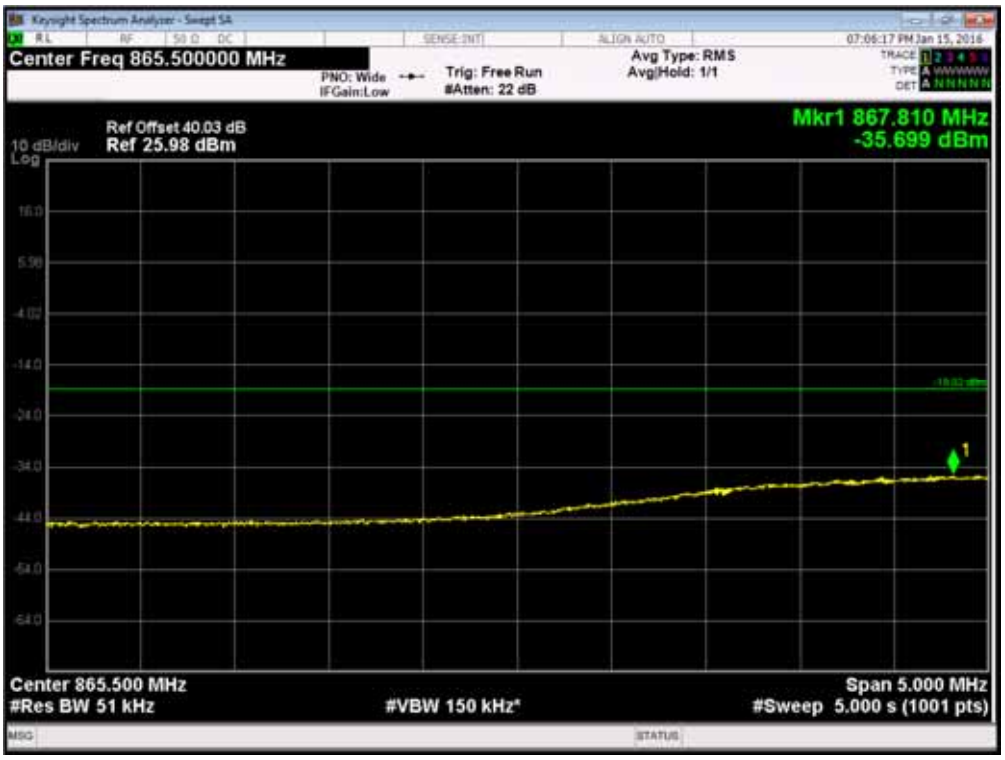
Band Edge Frequency	Channel Bandwidth	Edge Test with modulation 16QAM Channel Frequencies	RBW (kHz)	Limit (dBm)
Channel Position B_{RFBW} 869.0 MHz	5.0 MHz	871.4MHz + 876.4MHz	47	-16.01
Channel Position T_{RFBW} 894.0 MHz	5.0 MHz	886.6MHz + 891.6MHz	47	-16.01

Band Edge Frequency	Channel Bandwidth	Edge Test with modulation 64QAM Channel Frequencies	RBW (kHz)	Limit (dBm)
Channel Position B_{RFBW} 869.0 MHz	5.0 MHz	871.4MHz + 876.4MHz	47	-16.01
Channel Position T_{RFBW} 894.0 MHz	5.0 MHz	886.6MHz + 891.6MHz	47	-16.01

Note 1: For MIMO mode configurations, the limit was adjusted with a correction of -3.01dB [10Log(2)] to -13dBm. The test results should be compare to a limit of -16.01dBm.

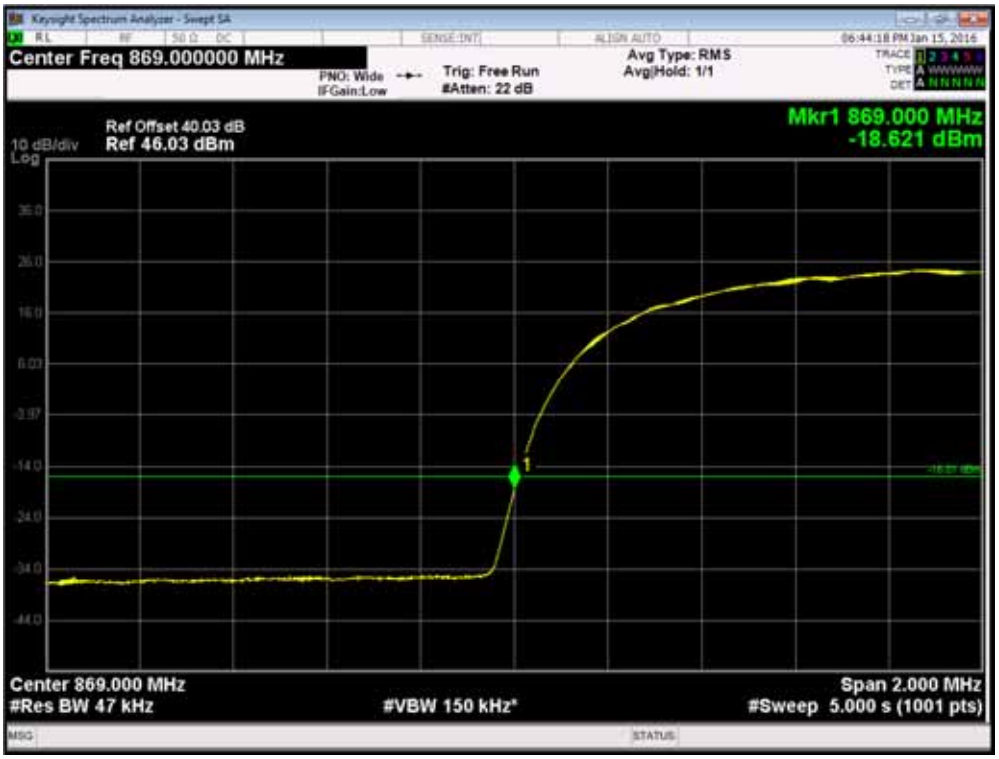
Note 2: The channels shown in the table above are the minimum and maximum channels that can be used in the authorised frequency ranges to maintain compliance. Channels outside of the ranges shown in the above tables shall not be available to the end user.

Channel Position B_{RFBW} - 16QAM / Bandwidth 5.0 MHz



Channel Position T_{RFBW} - 16QAM / Bandwidth 5.0 MHz

Channel Position B_{RFBW} - 64QAM / Bandwidth 5.0 MHz



Channel Position T_{RFBW} - 64QAM / Bandwidth 5.0 MHz

Configuration L-MIMO-SC

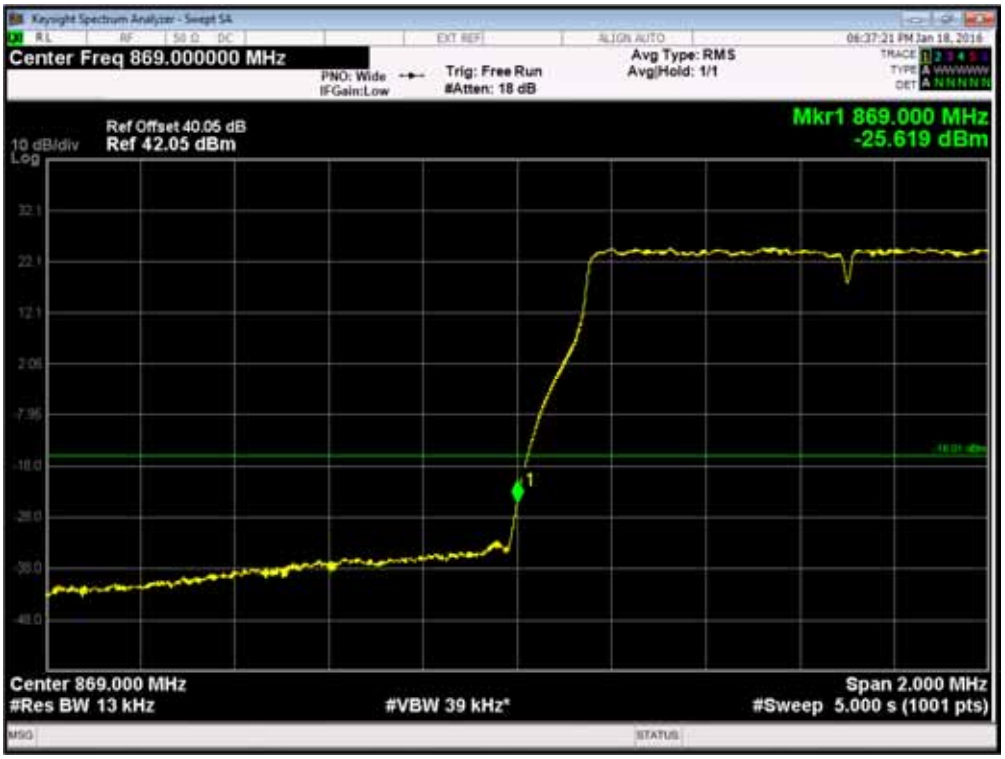
Maximum Output Power 43.0dBm per port for 1.4MHz and 3.0MHz bandwidth.
Maximum Output Power 46.0dBm per port for 5.0MHz and 10.0MHz bandwidth.

Band Edge Frequency	Channel Bandwidth	Edge Test with modulation QPSK Channel Frequencies	RBW (kHz)	Limit (dBm)
Channel Position B 869.0 MHz	1.4 MHz	869.7MHz	13	-16.01
	3.0 MHz	870.5MHz	30	-16.01
	5.0 MHz	871.5MHz	51	-16.01
	10.0 MHz	874.0MHz	100	-16.01
Channel Position T 894.0 MHz	1.4 MHz	893.3MHz	13	-16.01
	3.0 MHz	892.5MHz	30	-16.01
	5.0 MHz	891.5MHz	51	-16.01
	10.0 MHz	889.0MHz	100	-16.01

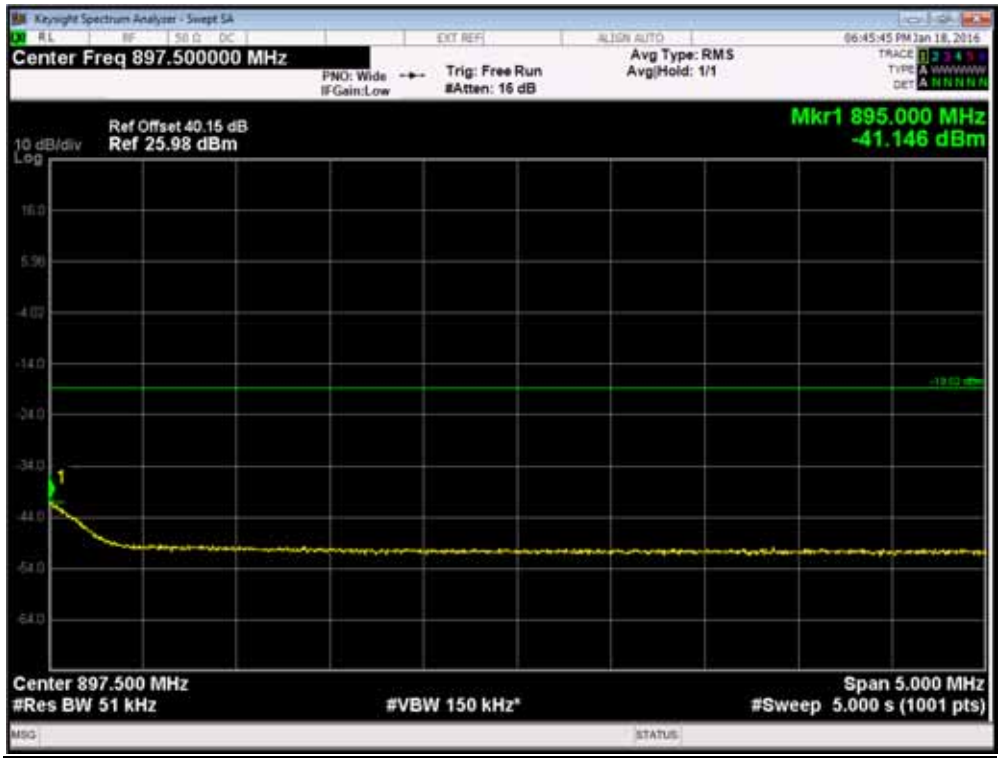
Note 1: For MIMO mode configurations, the limit was adjusted with a correction of -3.01dB [10Log(2)] to -13dBm. The test results should be compare to a limit of -16.01dBm.

Note 2: The channels shown in the table above are the minimum and maximum channels that can be used in the authorised frequency ranges to maintain compliance. Channels outside of the ranges shown in the above tables shall not be made available to the end user.

Channel Position B - QPSK / Bandwidth 1.4 MHz



Channel Position T - QPSK / Bandwidth 1.4 MHz



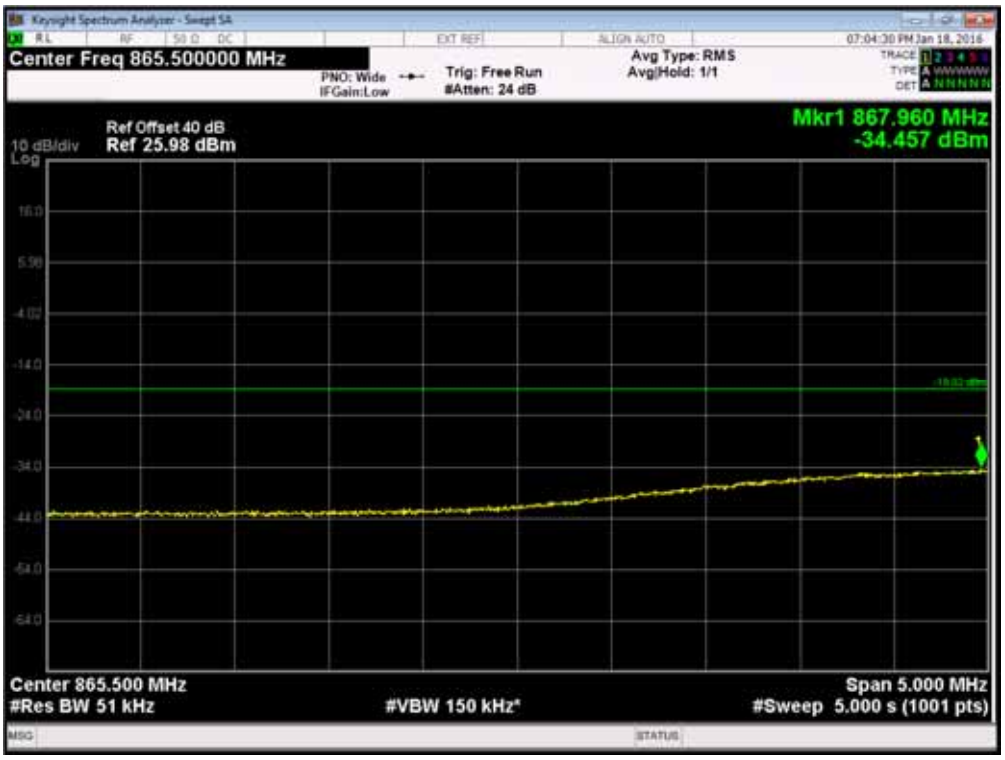
Channel Position B - QPSK / Bandwidth 3.0 MHz

Channel Position T - QPSK / Bandwidth 3.0 MHz

Channel Position B - QPSK / Bandwidth 5.0 MHz

Channel Position T - QPSK / Bandwidth 5.0 MHz

Channel Position B - QPSK / Bandwidth 10.0 MHz



Channel Position T - QPSK / Bandwidth 10.0 MHz

Configuration L-MIMO-MC 1 (2C)

Maximum Output Power 43.0dBm per port for 1.4MHz and 3.0MHz bandwidth.
Maximum Output Power 46.0dBm per port for 5.0MHz and 10.0MHz bandwidth.

Band Edge Frequency	Channel Bandwidth	Edge Test with modulation QPSK Channel Frequencies	RBW (kHz)	Limit (dBm)
Channel Position B 869.0 MHz	1.4 MHz	869.7MHz + 871.1MHz	13	-16.01
	3.0 MHz	870.5MHz + 873.5MHz	30	-16.01
	5.0 MHz	871.5MHz + 876.5MHz	51	-16.01
	10.0 MHz	874.0MHz + 884.0MHz	100	-16.01
Channel Position T 894.0 MHz	1.4 MHz	891.9MHz + 893.3MHz	13	-16.01
	3.0 MHz	889.5MHz + 892.5MHz	30	-16.01
	5.0 MHz	886.5MHz + 891.5MHz	51	-16.01
	10.0 MHz	879.0MHz + 889.0MHz	100	-16.01

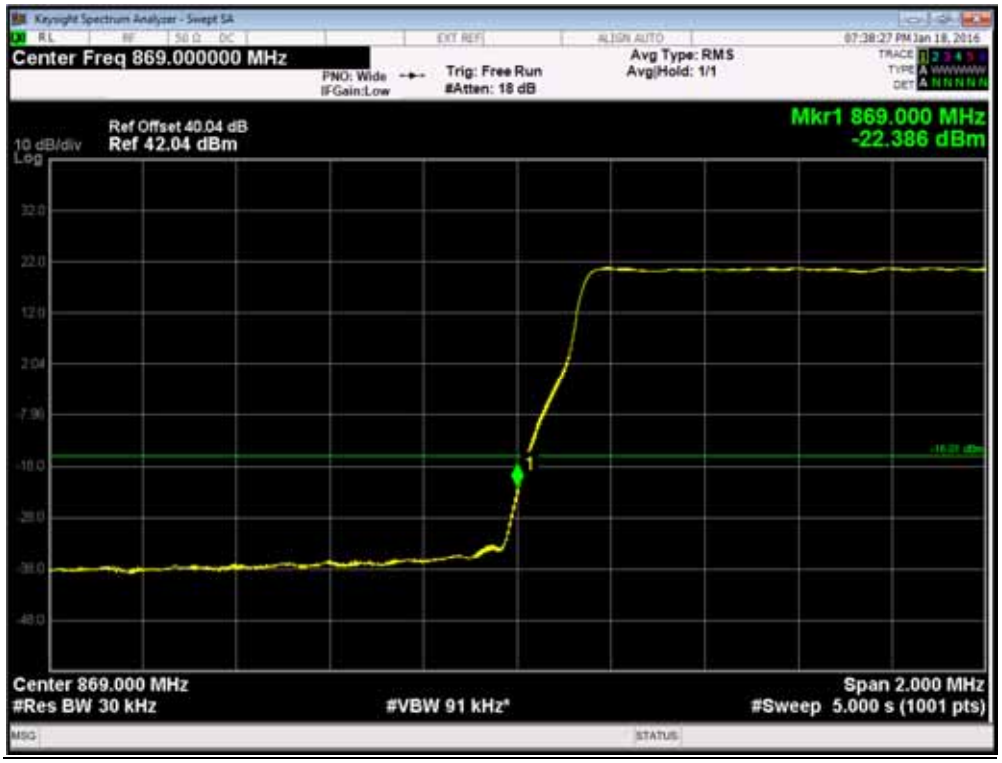
Note 1: For MIMO mode configurations, the limit was adjusted with a correction of -3.01dB [10Log(2)] to -13dBm. The test results should be compare to a limit of -16.01dBm.

Note 2: The channels shown in the table above are the minimum and maximum channels that can be used in the authorised frequency ranges to maintain compliance. Channels outside of the ranges shown in the above tables shall not be available to the end user.

Channel Position B_{RFBW} - QPSK / Bandwidth 1.4 MHz

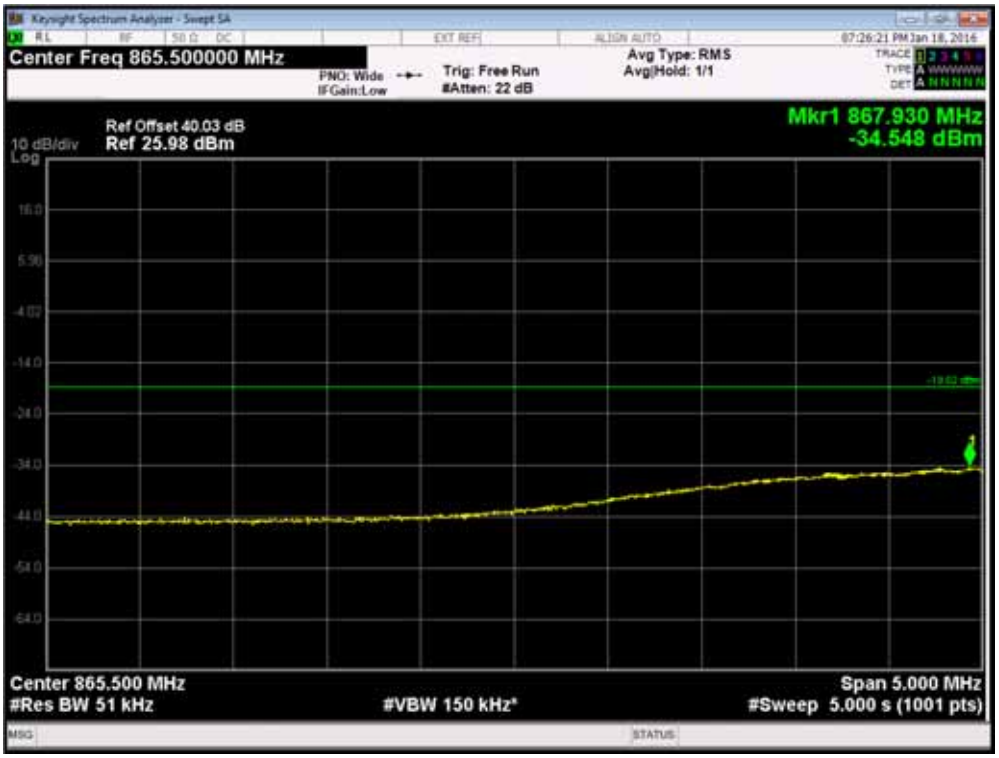
Channel Position T_{RFBW} - QPSK / Bandwidth 1.4 MHz

Channel Position B_{RFBW} - QPSK / Bandwidth 3.0 MHz



Channel Position T_{RFBW} - QPSK / Bandwidth 3.0 MHz

Channel Position B_{RFBW} - QPSK / Bandwidth 5.0 MHz



Channel Position T_{RFBW} - QPSK / Bandwidth 5.0 MHz

Channel Position B_{RFBW} - QPSK / Bandwidth 10.0 MHz

Channel Position T_{RFBW} - QPSK / Bandwidth 10.0 MHz

Configuration W+L-MIMO-MC 1 (1W+1L)

Maximum Output Power 46.0dBm per port

Band Edge Frequency	Channel Bandwidth	Edge Test with modulation (W)16QAM + (L) QPSK Channel Frequencies	RBW (kHz)	Limit (dBm)
Channel Position B_{RFBW} 869.0 MHz	W: 5.0 MHz L: 1.4 MHz	(L) 869.7MHz + (W) 873.0MHz	13	-16.01
Channel Position T_{RFBW} 894.0 MHz	W: 5.0 MHz L: 1.4 MHz	(W) 890.0MHz + (L) 893.3MHz	13	-16.01

Band Edge Frequency	Channel Bandwidth	Edge Test with modulation (W)16QAM + (L) QPSK Channel Frequencies	RBW (kHz)	Limit (dBm)
Channel Position B_{RFBW} 869.0 MHz	W: 5.0 MHz L: 3.0 MHz	(L) 870.5MHz + (W) 874.6MHz	30	-16.01
Channel Position T_{RFBW} 894.0 MHz	W: 5.0 MHz L: 3.0 MHz	(W) 888.4MHz + (L) 892.5MHz	30	-16.01

Band Edge Frequency	Channel Bandwidth	Edge Test with modulation (W)16QAM + (L) QPSK Channel Frequencies	RBW (kHz)	Limit (dBm)
Channel Position B_{RFBW} 869.0 MHz	W: 5.0 MHz L: 5.0 MHz	(W) 871.4MHz + (L) 876.4MHz	47	-16.01
Channel Position T_{RFBW} 894.0 MHz	W: 5.0 MHz L: 5.0 MHz	(L) 886.6MHz + (W) 891.6MHz	47	-16.01

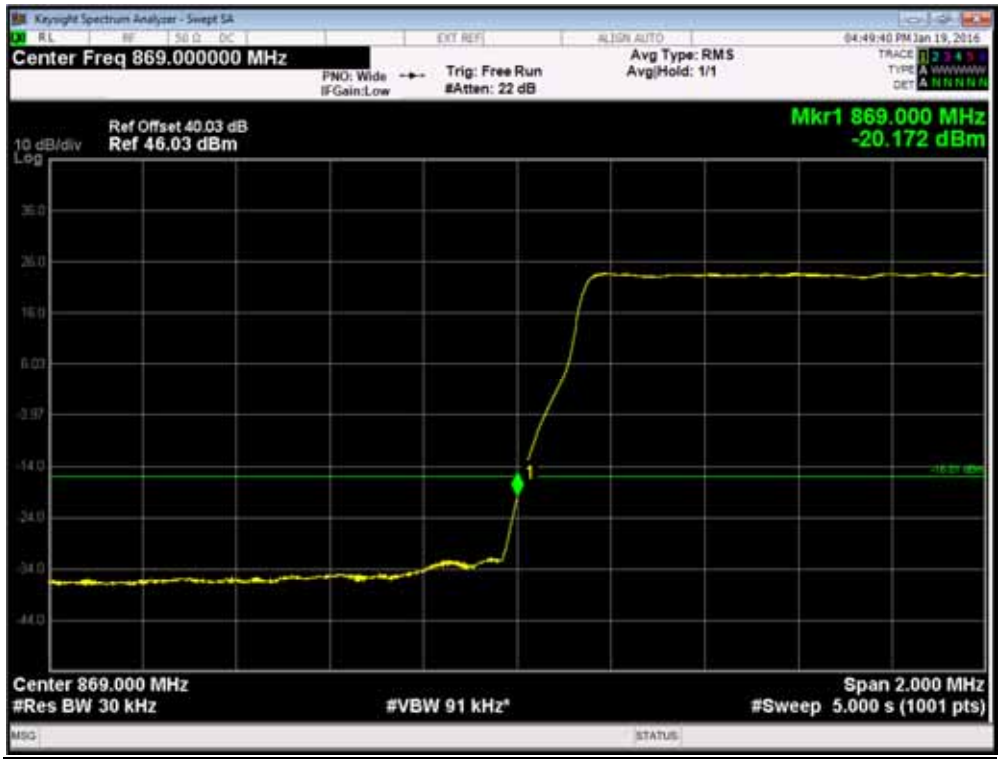
Band Edge Frequency	Channel Bandwidth	Edge Test with modulation (W)16QAM + (L) QPSK Channel Frequencies	RBW (kHz)	Limit (dBm)
Channel Position B_{RFBW} 869.0 MHz	W: 5.0 MHz L: 10.0 MHz	(W) 871.4MHz + (L) 878.9MHz	47	-16.01
Channel Position T_{RFBW} 894.0 MHz	W: 5.0 MHz L: 10.0 MHz	(L) 884.1MHz + (W) 891.6MHz	47	-16.01

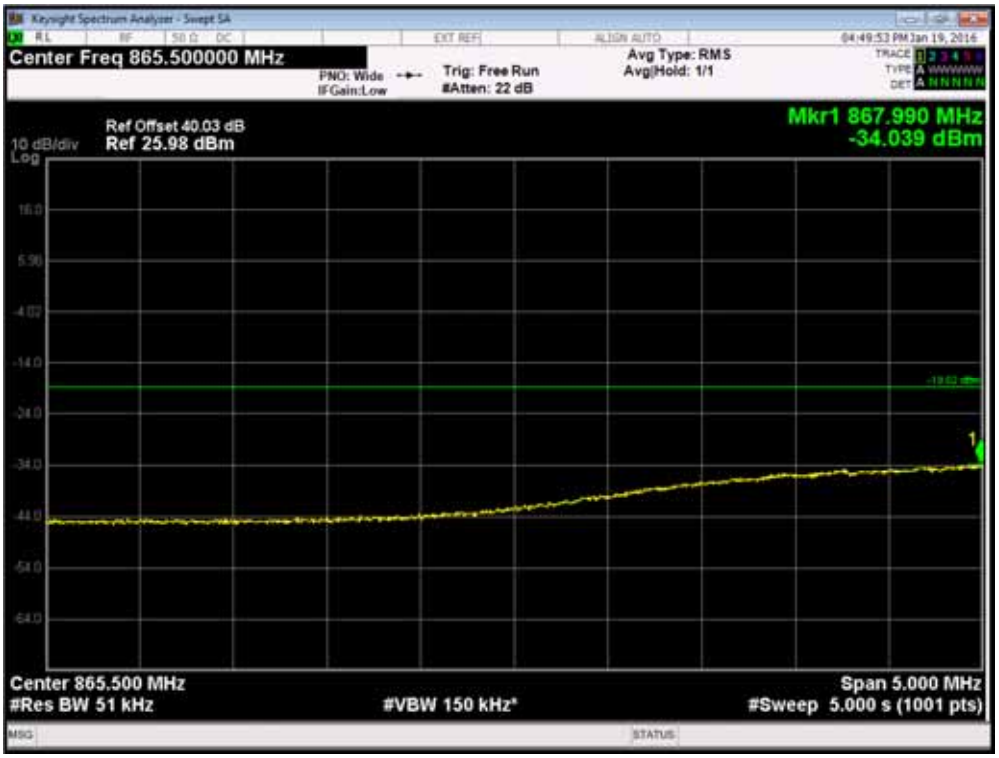
Note: For MIMO mode configurations, the limit was adjusted with a correction of -3.01dB [10Log(2)] to -13dBm.

Channel Position B_{RFBW} - WCDMA 16QAM / LTE QPSK: Bandwidth 1.4 MHz

Channel Position T_{RFBW} - WCDMA 16QAM / LTE QPSK: Bandwidth 1.4 MHz

Channel Position B_{RFBW} - WCDMA 16QAM / LTE QPSK: Bandwidth 3.0 MHz





Channel Position T_{RFBW} - WCDMA 16QAM / LTE QPSK: Bandwidth 3.0 MHz

Channel Position B_{RFBW} - WCDMA 16QAM / LTE QPSK: Bandwidth 5.0 MHz

Channel Position T_{RFBW} - WCDMA 16QAM / LTE QPSK: Bandwidth 5.0 MHz

Channel Position B_{RFBW} - WCDMA 16QAM / LTE QPSK: Bandwidth 10.0 MHz

Channel Position T_{RFBW} - WCDMA 16QAM / LTE QPSK: Bandwidth 10.0 MHz

Configuration W+L-MIMO-MC 6 (2W+1L)

Maximum Output Power 46.0dBm per port

Band Edge Frequency	Channel Bandwidth	Edge Test with modulation (W)16QAM + (L) QPSK Channel Frequencies	RBW (kHz)	Limit (dBm)
Channel Position B_{RFBW} 869.0 MHz	W: 5.0 MHz L: 1.4 MHz	(L) 869.7MHz + (W) 873.0MHz + (W) 878.0MHz	13	-16.01
Channel Position T_{RFBW} 894.0 MHz	W: 5.0 MHz L: 1.4 MHz	(W) 885.0MHz + (W) 890.0MHz + (L) 893.3MHz	13	-16.01

Band Edge Frequency	Channel Bandwidth	Edge Test with modulation (W)16QAM + (L) QPSK Channel Frequencies	RBW (kHz)	Limit (dBm)
Channel Position B_{RFBW} 869.0 MHz	W: 5.0 MHz L: 3.0 MHz	(L) 870.5MHz + (W) 874.6MHz + (W) 879.6MHz	30	-16.01
Channel Position T_{RFBW} 894.0 MHz	W: 5.0 MHz L: 3.0 MHz	(W) 883.4MHz + (W) 888.4MHz + (L) 892.5MHz	30	-16.01

Band Edge Frequency	Channel Bandwidth	Edge Test with modulation (W)16QAM + (L) QPSK Channel Frequencies	RBW (kHz)	Limit (dBm)
Channel Position B_{RFBW} 869.0 MHz	W: 5.0 MHz L: 5.0 MHz	(W) 871.4MHz + (W) 876.4MHz + (L) 881.4MHz	47	-16.01
Channel Position T_{RFBW} 894.0 MHz	W: 5.0 MHz L: 5.0 MHz	(L) 881.6MHz + (W) 886.6MHz + (W) 891.6MHz	47	-16.01

Band Edge Frequency	Channel Bandwidth	Edge Test with modulation (W)16QAM + (L) QPSK Channel Frequencies	RBW (kHz)	Limit (dBm)
Channel Position B_{RFBW} 869.0 MHz	W: 5.0 MHz L: 10.0 MHz	(W) 871.4MHz + (W) 876.4MHz + (L) 883.9MHz	47	-16.01
Channel Position T_{RFBW} 894.0 MHz	W: 5.0 MHz L: 10.0 MHz	(L) 879.1MHz + (W) 886.6MHz + (W) 891.6MHz	47	-16.01

Note: For MIMO mode configurations, the limit was adjusted with a correction of -3.01dB [10Log(2)] to -13dBm. The test results should be compare to a limit of -16.01dBm.

Channel Position B_{RFBW} - WCDMA 16QAM / LTE QPSK: Bandwidth 1.4 MHz