TEST REPORT

No. I19Z60509-WMD02

for

Ericsson AB (1900MHz) AIR 4455 B2/B25 B66A KRD 901 145/1

Remote Radio Unit

FCC ID: TA8AKRD901145-1

IC: 287AB-AS9011451

In accordance with FCC CFR 47 Part 27 and

ISED RSS-139: Issue 3

Issued Date: 2019-06-28

TESTING
NVLAP LAB CODE 600118-0

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Test Laboratory:

CTTL, Telecommunication Technology Labs, CAICT

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REPORT HISTORY

Report Number	Revision	Description	Issue Date
I19Z60509-WMD02	Rev.0	1st edition	2019-06-28

CONTENTS

1. Test Laboratory

1.1. Introduction & Accreditation

Telecommunication Technology Labs, CAICT is an ISO/IEC 17025:2005 accredited test laboratory under NATIONAL VOLUNTARY LABORATORY ACCREDITATION PROGRAM (NVLAP) with lab code 600118-0, and is also an FCC accredited test laboratory (CN5017), and ISED accredited test laboratory (CN0066). The detail accreditation scope can be found on NVLAP website.

1.2. Testing Location

Location 1: CTTL(huayuan North Road)

Address: No. 52, Huayuan North Road, Haidian District, Beijing, P. R. China 100191

Location 2: CTTL(Shouxiang)

Address: No. 51 Shouxiang Science Building, Xueyuan Road, Haidian District, Beijing, P. R. China 100191

1.3. Project date

Testing Start Date: 2019-05-14

Testing End Date: 2019-06-28

1.4. Signature

Dong Yuan

(Prepared this test report)

Zhou Yu

(Reviewed this test report)

Liu Baodian

(Approved this test report)

2. Client Information

2.1. Applicant Information

Company Name:	Ericsson (China) Communications Company Ltd.
Address /Post:	Ericsson Tower, Lize East Street, Chaoyang District, Beijing 100102, P.R.China
Contact:	Hua Yang
Email:	Hua.yang@ericsson.com
Telephone:	+86 10 8476 7133

2.2. Manufacturer Information

Company Name:	Ericsson AB
Address /Post:	Isafjordsgatan 10, 164 80 Stockholm Sweden
Contact:	/
Email:	/
Telephone:	/

3. Equipment Under Test (EUT)

3.1. About EUT

Description	Remote Radio Unit
Product Name	AIR 4455 B2/B25 B66A
Product Number	KRD 901 145/1
FCC ID	TA8AKRD901145-1
IC	287AB-AS9011451
HVIN	AS9011451
Integrated Antenna	KRE 105 289/1
Antenna Gain	B2/B25: 14.3dBi, B66: 14.2dBi
Output power	Maximum 46.02 dBm (40W) per port for multi band. Maximum 44.77 dBm (30W) per port for single band.
Power source	100-250V AC
Serial Number	D828845385
Hardware Version	R1A
Software Version	PIS: CXP 901 7316%7_R78HF
Frequency range	B2: Rx: 1850-1910 MHz, Tx: 1930-1990 MHz B25: Rx: 1850-1915 MHz, Tx: 1930-1995 MHz B66A: RX: 1710-1780 MHz, TX: 2110-2180 MHz (LTE) RX: 1710-1755 MHz, TX: 2110-2155 MHz (WCDMA)
TX/RX configuration	4 TX / 4 RX
Maximum RF bandwidth (IBW)	20 MHz: GSM (B2) and NB-IoT Standalone 60 MHz: B2 65 MHz: B25 70 MHz: B66A(LTE) 45 MHz: B66A(WCDMA)
Total number of supported carriers per port	Maximum 6 carriers per port for all configuration (maximum 4 carriers for GSM, maximum 2 carriers for NB-IoT stand alone).
Supported modulations	GSM: GMSK, AQPSK, 8PSK WCDMA: QPSK, 16QAM, 64QAM LTE: QPSK, 16QAM, 64QAM, 256QAM NB-IoT: QPSK
Date of receipt	2019-05-14

3.2. General Description

The Equipment Under Test (EUT) is an Ericsson Antenna Integrated Radio Unit working in the public mobile service 1900MHz band and wireless communications services 2100MHz which provides communication connections to network in GSM / WCDMA / LTE / NB-IoT modes and MSR modes. The AIR 4455 B2/B25 B66A KRD 901 145/1 operates from a 120V AC supply.

The EUT includes 4 TX/RX ports and it can be configured to transmit in MIMO mode for WCDMA and LTE carriers, and MIMO mode was used for measurements as the worst configuration. The complete testing was performed with the EUT transmitting at maximum RF power unless otherwise stated.

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

3.3. Configuration Description

The following settings were used to 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

Configuration	Carrier	Carrier Frequency Configuration (MHz)		
		Bottom	Middle	Top
WCDMA-1C	1 Carrier	2112.4	2132.4	2152.6
WCDMA-2C	2 Carriers	-	2112.4 + 2152.6	-
WCDMA-3C	3 Carriers	-	2112.4 + 2117.4 + 2152.6	-
WCDMA-6C	6 Carriers	-	2112.4 + 2117.4 + 2122.4 + 2142.6 + 2147.6 + 2152.6	-
WCDMA-1C-BE	1 Carrier	2112.4	N/A	2152.6
WCDMA-2C-BE	2 Carriers	2112.4+2117.4	N/A	2147.6 + 2152.6

LTE

Configuration	Carrier	Carrier Bandwidth	Carrier Frequency Configuration (MHz)		
			Bottom	Middle	Top
LTE-MIMO-1C	1 Carrier	5MHz	2112.5	2145.0	2177.5
		10MHz	2115.0	2145.0	2175.0
		15MHz	2117.5	2145.0	2172.5
		20MHz	2120.0	2145.0	2170.0
LTE-MIMO-2C	2 Carriers	5MHz	-	2112.5 + 2177.5	-
		10MHz	-	2115 + 2175	-
		15MHz	-	2117.5 + 2172.5	-
		20MHz	-	2120 + 2170	-
LTE-MIMO-3C	3 Carriers	5MHz	-	2112.5 + 2117.5 + 2177.5	-
		10MHz	-	2115 + 2125 + 2175	-
		15MHz	-	2117.5 + 2132.5 + 2172.5	-
		20MHz	-	2120 + 2140 + 2170	-
LTE-MIMO-4C	4 Carriers	15MHz	-	2117.5 + 2132.5 + 2157.5 + 2172.5	-
LTE-MIMO-6C	6 Carriers	5MHz	-	2112.5 + 2117.5 + 2122.5 + 2167.5 + 2172.5 + 2177.5	-
		10MHz	-	2115 + 2125 + 2135 + 2155 + 2165 + 2175	-
LTE-MIMO-1C-BE	1 Carriers	5MHz	2112.5	N/A	2177.5
		10MHz	2115.0	N/A	2175.0
		15MHz	2117.5	N/A	2172.5
		20MHz	2120.0	N/A	2170.0
LTE-MIMO-2C-BE	2 Carriers	5MHz	2112.5+2117.5	N/A	2172.5+2177.5
		10MHz	2115+2125	N/A	2165+2175
		15MHz	2117.5+2132.5	N/A	2157.5+2172.5
		20MHz	2120+2140	N/A	2150+2170

NB-IoT

Configuration	Carrier	Carrier Bandwidth (MHz)	Carrier Frequency Configuration (MHz)		
			Bottom	Middle	Top
NB-IoT-InBand-1C	1 Carrier	5MHz	2112.5	2145.0	2177.5
		10MHz	2115.0	2145.0	2175.0
		15MHz	2117.5	2145.0	2172.5
		20MHz	2120.0	2145.0	2170.0
NB-IoT-Inband-1C-BE	1 Carrier	5MHz	2112.5	2145.0	2177.5
		10MHz	2115.0	2145.0	2175.0
		15MHz	2117.5	2145.0	2172.5
		20MHz	2120.0	2145.0	2170.0

Configuration	Carrier	Carrier Bandwidth (MHz)	Carrier Frequency Configuration (MHz)		
			Bottom	Middle	Top
NB-IoT-GuardBand-1C	1 Carrier	10MHz	2115.0	2145.0	2175.0
		15MHz	2117.5	2145.0	2172.5
		20MHz	2120.0	2145.0	2170.0
NB-IoT-GuardBand-1C-BE	1 Carrier	10MHz	2115.0	2145.0	2175.0
		15MHz	2117.5	2145.0	2172.5
		20MHz	2120.0	2145.0	2170.0

Configuration	Carrier	Carrier Frequency Configuration (MHz)		
		Bottom	Middle	Top
NB-IoT-Standalone-1C	1 Carrier	2110.3	2145.0	2179.8
NB-IoT-Standalone-2C	2 Carrier	2110.3 + 2129.8	2135.2 + 2154.8	2160.2 + 2179.8
NB-IoT-Standalone-1C-BE	1 Carrier	2110.3	N/A	2179.8
NB-IoT-Standalone-2C-BE	2 Carrier	2110.3 + 2111.9	N/A	2178.2 + 2179.8

WCDMA+LTE

Configuration	Carrier	LTE Carrier Bandwidth	Carrier Frequency Configuration (MHz)		
			Bottom	Middle	Top
WCDMA+LTE-MIMO-MC-1	1W+1L	5MHz	-	(W)2112.4 + (L)2177.5	-
		10MHz	-	(W)2112.4 + (L)2175	-
		15MHz	-	(W)2112.4 + (L)2172.5	-
		20MHz	-	(W)2112.4 + (L)2170	-
WCDMA+LTE-MIMO-MC-2	2W+1L	5MHz	-	(W)2112.4 + 2117.4 + (L)2177.5	-
		10MHz	-	(W)2112.4 + 2117.4 + (L)2175	-
		15MHz	-	(W)2112.4 + 2117.4 + (L)2172.5	-
		20MHz	-	(W)2112.4 + 2117.4 + (L)2170	-
WCDMA+LTE-MIMO-MC-3	3W+3L	5MHz	-	(W)2112.4 + 2117.4 + 2122.4 + (L)2167.5 + 2172.5 + 2177.5	-
		10MHz	-	(W)2112.4 + 2117.4 + 2122.4 + (L)2155 + 2165 + 2175	-
		15MHz	-	(W)2112.4 + 2117.4 + 2122.4 + (L)2142.5 + 2157.5 + 2172.5	-
WCDMA+LTE-MIMO-MC-4	2W+3L	20MHz	-	(W)2112.4 + 2117.4 + (L)2130 + 2150 + 2170	-
WCDMA+LTE-MIMO-MC-2-BE	1W+1L	5MHz	(W)2112.4+(L)2117.5	N/A	(L)2147.5 + (W)2152.6
		10MHz	(W)2112.4 + (L)2120	N/A	(L)2145 + (W)2152.6
		15MHz	(W)2112.4 + (L)2122.5	N/A	(L)2142.5 + (W)2152.6
		20MHz	(W)2112.4 + (L)2125	N/A	(L)2140 + (W)2152.6
WCDMA+LTE-MIMO-MC-3-BE	2W+1L	5MHz	(W)2112.4+2117.4+(L)2122.5	N/A	(L)2142.5 + (W)2147.6 + 2152.6
		10MHz	(W)2112.4+2117.4+(L)2125	N/A	(L)2140 + (W)2147.6 + 2152.6
		15MHz	(W)2112.4+2117.4+(L)2127.5	N/A	(L)2137.5 + (W)2147.6 + 2152.6
		20MHz	(W)2112.4+2117.4+(L)2130	N/A	(L)2135 + (W)2147.6 + 2152.6

WCDMA+NB-IoT

Configuration	Carrier	Carrier Frequency Configuration (MHz)		
		Bottom	Middle	Top
WCDMA+NB-IoT-MC-1	1W+1SA	-	(W)2112.4 + (NB)2179.8	-
WCDMA+NB-IoT-MC-2	1W+2SA	(NB)2112.5+(W)2117.4	(NB)2122.7+(W)2132.4+(NB)2142.3	(NB)2135.2+(W)2145+(NB)2154.8
WCDMA+NB-IoT-MC-3	3W+2SA	(NB)2112.5+(W)2117.4+2122.4	(NB)2122.7+(W)2127.4+2132.4+2137.4+(NB)2142.3	(NB)2135.2+(W)2145+(NB)2154.8
WCDMA+NB-IoT-MC-4	4W+2SA	-	(W)2112.4+2117.4+2122.4+2127.4+(NB)2179.2+2179.8	-
WCDMA+NB-IoT-MC-3-BE	1W+1SA	(NB)2110.3+(W)2113	N/A	(W)2152.2 + (NB)2154.8
WCDMA+NB-IoT-MC-4-BE	1W+2SA	(NB)2110.3+2111.9+(W)2114.6	N/A	(W)2150.6+ (NB)2153.2+2154.8

LTE+NB-IoT

Configuration	Carrier	LTE Carrier Bandwidth	Carrier Frequency Configuration (MHz)		
			Bottom	Middle	Top
LTE+NB-IoT-MC-1	1L+1SA	5MHz	-	(NB)2110.3+(L)2177.5	-
		10MHz	-	(NB)2110.3+(L)2175	-
		15MHz	-	(NB)2110.3+(L)2172.5	-
		20MHz	-	(NB)2110.3+(L)2170	-
LTE+NB-IoT-MC-2	1L+2SA	5MHz	(NB)2110.3+(L)2120+(NB)2129.8	(NB)2135.2+(L)2145+(NB)2154.8	(NB)2160.2+(L)2170+(NB)2179.8
		10MHz	(NB)2110.3+(L)2120+(NB)2129.8	(NB)2135.2+(L)2145+(NB)2154.8	(NB)2160.2+(L)2170+(NB)2179.8
		15MHz	(NB)2110.3+(L)2120+(NB)2129.8	(NB)2135.2+(L)2145+(NB)2154.8	(NB)2160.2+(L)2170+(NB)2179.8
		20MHz	-	(NB)2110.3+2115.8+(L)2170	-
LTE+NB-IoT-MC-3	3L+2SA	5MHz	(NB)2110.3+(L)2115+2120+2125+(NB)2129.8	(NB)2135.2+(L)2140+2145+2150+(NB)2154.8	(NB)2160.2+(L)2165+2170+2175+(NB)2179.8
LTE+NB-IoT-MC-4	4L+2SA	10MHz	-	(NB)2110.3+2115.8+(L)2145+2155+2165+2175	-
		15MHz	-	(NB)2110.3+2115.8+(L)2127.5+2142.5+2157.5+2172.5	-
LTE+NB-IoT-MC-5	3L+2SA	20MHz	-	(NB)2110.3+2115.8+(L)2130+2150+2170	-
LTE+NB-IoT-MC-3-BE	1L+1SA	5MHz	(NB)2110.3 + (L)2113	N/A	(L)2177.1 + (NB)2179.8
		10MHz	(NB)2110.3 + (L)2115.5	N/A	(L)2174.6 + (NB)2179.8
		15MHz	(NB)2110.3 + (L)2118	N/A	(L)2172.1 + (NB)2179.8
		20MHz	(NB)2110.3 + (L)2120.5	N/A	(L)2169.6 + (NB)2179.8
LTE+NB-IoT-MC-4-BE	1L+2SA	5MHz	(NB)2110.3+2110.9+(L)2113.6	N/A	(L)2176.5+(NB)2179.2+2179.8
		10MHz	(NB)2110.3+2110.9+(L)2116.1	N/A	(L)2174+(NB)2179.2+2179.8
		15MHz	(NB)2110.3+2110.9+(L)2118.6	N/A	(L)2171.5+(NB)2179.2+2179.8
		20MHz	(NB)2110.3+2110.9+(L)2121.1	N/A	(L)2169+(NB)2179.2+2179.8

WCDMA+LTE+NB-IoT

Configuration	Carrier	LTE Carrier Bandwidth	Carrier Frequency Configuration (MHz)		
			Bottom	Middle	Top
WCDMA+LTE+NB-IoT-MC-1	1W+1L+1SA	5MHz	-	(NB)2110.3 + (W)2145 + (L)2177.5	-
		10MHz	-	(NB)2110.3 + (W)2145 + (L)2175	-
		15MHz	-	(NB)2110.3 + (W)2145 + (L)2172.5	-
		20MHz	-	(NB)2110.3 + (W)2145 + (L)2170	-
WCDMA+LTE+NB-IoT-MC-2	1W+1L+2SA	5MHz	(NB)2110.3+(W)2117.4+(L)2122.5+(NB)2129.8	(NB)2122.7+(W)2130+(L)2135+(NB)2142.3	(NB)2135.2+(W)2142.4+(L)2147.5+(NB)2154.8
		10MHz	(NB)2110.3+(W)2115+(L)2122.5+(NB)2129.8	(NB)2122.7+(W)2127.4+(L)2135+(NB)2142.3	(NB)2135.2+(W)2140+(L)2147.5+(NB)2154.8
		15MHz	-	(NB)2110.3+2110.9 + (W)2145 + (L)2172.5	-
		20MHz	-	(NB)2110.3+2110.9 + (W)2145 + (L)2170	-
WCDMA+LTE+NB-IoT-MC-3	2W+1L+2SA	5MHz	(NB)2110.3+(W)2115+2120+(L)2125+(NB)2129.8	(NB)2122.7+(W)2127.4+2132.4+(L)2137.5+(NB)2142.3	(NB)2135.2+(W)2140+2145+(L)2150+(NB)2154.8
WCDMA+LTE+NB-IoT-MC-4	2W+2L+2SA	5MHz	-	(NB)2110.3+2110.9 + (W)2142.4 + 2147.4 + (L)2172.5 + 2177.5	-
		10MHz	-	(NB)2110.3+2110.9 + (W)2142.4 + 2147.4 + (L)2165 + 2175	-
		15MHz	-	(NB)2110.3+2110.9 + (W)2142.4 + 2147.4 + (L)2157.5 + 2172.5	-
		20MHz	-	(NB)2110.3+2110.9 + (W)2142.4 + 2147.4 + (L)2150 + 2170	-

Configuration	Carrier	LTE Carrier Bandwidth	Carrier Frequency Configuration (MHz)		
			Bottom	Middle	Top
WCDMA+LTE+NB-IoT-MC-3-BE	1W+1L+1SA	5MHz	(NB)2110.3+(W)2113+(L)2118	N/A	(L)2147.1 + (W)2152.2 + (NB)2154.8
		10MHz	(NB)2110.3+(W)2113+(L)2120.5	N/A	(L)2144.6 + (W)2152.2 + (NB)2154.8
		15MHz	(NB)2110.3+(W)2113+(L)2123	N/A	(L)2142.1 + (W)2152.2 + (NB)2154.8
		20MHz	(NB)2110.3+(W)2113+(L)2125.5	N/A	(L)2139.6 + (W)2152.2 + (NB)2154.8
WCDMA+LTE+NB-IoT-MC-5-BE	1W+1L+2SA	5MHz	(NB)2110.3+2111.9+(W)2114.6+(L)2119.6	N/A	(L)2145.5 + (W)2150.6 + (NB)2153.2 + 2154.8
		10MHz	(NB)2110.3+2111.9+(W)2114.6+(L)2122.1	N/A	(L)2143 + (W)2150.6 + (NB)2153.2 + 2154.8
		15MHz	(NB)2110.3+2111.9+(W)2114.6+(L)2124.6	N/A	(L)2140.5 + (W)2150.6 + (NB)2153.2 + 2154.8
		20MHz	(NB)2110.3+2111.9+(W)2114.6+(L)2127.1	N/A	(L)2138 + (W)2150.6 + (NB)2153.2 + 2154.8

N/A – Not Applicable

4. Reference Documents

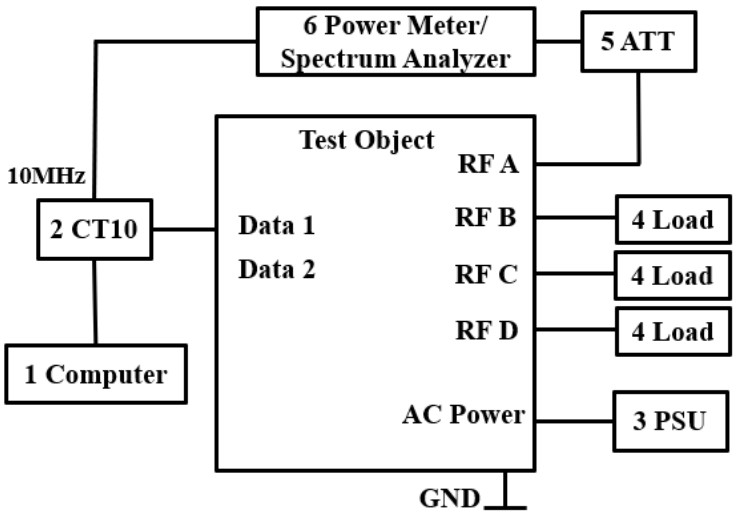
4.1. Reference Documents for testing

The following documents listed in this section are referred for testing.

Reference	Title	Version
FCC Part 27	MISCELLANEOUS WIRELESS COMMUNICATIONS SERVICES	10-1-18 Edition
FCC Part 2	FREQUENCY ALLOCATIONS AND RADIO TREATY MATTERS; GENERAL RULES AND REGULATIONS	10-1-18 Edition
ANSI/TIA-603-E	Land Mobile FM or PM Communications Equipment Measurement and Performance Standards	2016
ANSI C63.4	Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 KHz to 40 GHz	2014
ANSI 63.26	IEEE/ANSI Standard for Compliance Testing of Transmitters Used in Licensed Radio Services	2015
TIA 102.CAAA-E	Project 25 Digital C4FM/CQPSK Transceiver Measurement Methods	2016
KDB 971168 D01	MEASUREMENT GUIDANCE FOR CERTIFICATION OF LICENSED DIGITAL TRANSMITTERS	v03r01
KDB 662911 D01	Emissions Testing of Transmitters with Multiple Outputs in the Same Band	v02r01
RSS-GEN	General Requirements for Compliance of Radio Apparatus	Issue 5
RSS 139	Advanced Wireless Services (AWS) Equipment Operating in the Bands 1710-1780 MHz and 2110-2180 MHz	Issue 3 2015

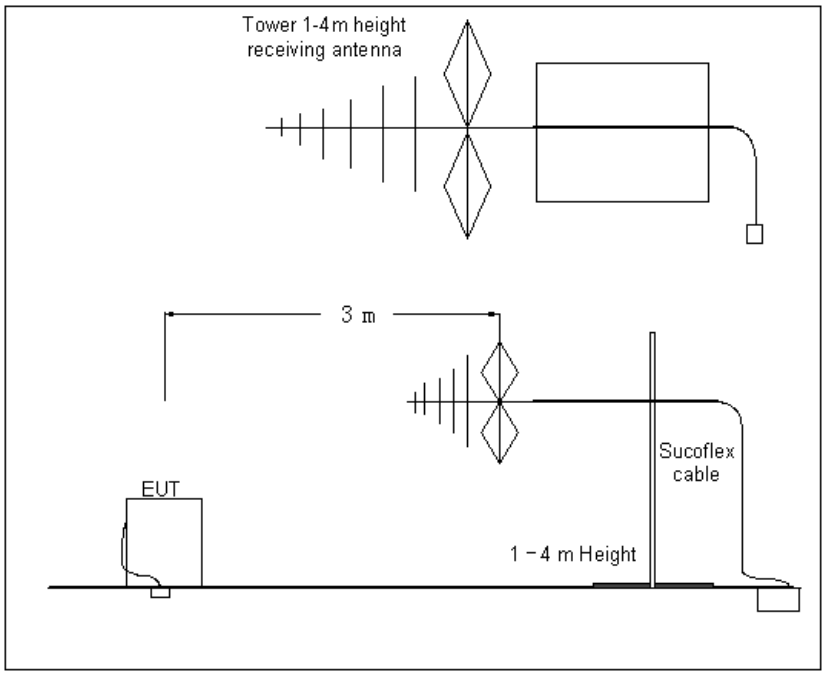
5. TEST SETUP

Test Setup, Conducted Measurement:



No.	Auxilliary Equipment	Model Type	Version
1	Computer	HP EliteBook 8540w	-
2	CT10	LPC 102 487/1	R1C
3	Power supply unit	-	-
4	Load	TF150	-
5	40dB Attenuator	Aeroflex / Weinschel	-

Test Setup, Radiated Measurement:



6. LABORATORY ENVIRONMENT

Control room / conducted chamber did not exceed following limits along the EMC testing:

Temperature	Min. = 15 ˚C, Max. = 35 ˚C
Relative humidity	Min. =20 %, Max. = 80 %
Shielding effectiveness	> 110 dB
Electrical insulation	>2 MΩ
Ground system resistance	< 0.5 Ω

Semi-anechoic chamber (10 meters×6.7 meters×6.15 meters) did not exceed following limits along the EMC testing:

Temperature	Min. = 15 ˚C, Max. = 30 ˚C
Relative humidity	Min. = 35 %, Max. = 60 %
Shielding effectiveness	> 100 dB
Electrical insulation	>2 MΩ
Ground system resistance	< 0.5 Ω
Normalised site attenuation (NSA)	<±3.5 dB, 3 m distance
Site voltage standing-wave ratio (S_{VSWR})	Between 0 and 6 dB, from 1GHz to 18GHz
Uniformity of field strength	Between 0 and 6 dB, from 80 to 3000 MHz

7. SUMMARY OF TEST RESULTS

Items	Test Name	Clause in FCC rules	Clause in ISED rules	Verdict
1	Maximum Output Power and Peak-to-Average Power Ratio	27.50(d)	RSS-139 4.1, 6.5	Pass[1]
2	Equivalent Isotropically Radiated Power (EIRP)	-	-	N/A^1
3	Occupied Bandwidth	27.53(h), 2.1049	RSS-GEN 6.7	Pass[1]
4	Spurious Emissions at Band Edge	27.53(h)	RSS-139 6.6	Pass[1]
5	Conducted Spurious Emission	27.53(h)	RSS-139 6.6	Pass[1]
6	Radiated Spurious Emission	27.53(h)	RSS-139 6.6	Pass[1]
7	Frequency Stability	27.54	RSS-139 6.4	Pass[1]
8	Receiver Spurious Emission	-	-	N/A

N/A^1 - Not Applicable, due to no integrated antenna

N/A – Not Applicable

Pass[1] – Re-use test data

7.1. Explanation of re-use of test data

The Equipment Under Test (EUT) AIR 4455 B2/B25 B66A has the same RF design as product of Radio 4455 B2/B25 B66A (FCC ID: TA8AKRC161823-1) except AIR 4455 B2/B25 B66A has the integrated antenna according to the declaration provided by the applicant. Spot check measurements were performed on this device and the spot check test results are consistent with basic model. Test results are derived from test report I19Z60510-WMD02.

8. Test Equipments Utilized

NO.	Description	TYPE	series number	MANUFACTURE	CAL DUE DATE
1	Power Supply	AFV-P-2500	F118060012	Preen	2020-02-22
2	40dB Attenuator	66-40-33	CD4019	Aeroflex / Weinschel	-
3	40dB Attenuator	TSG150R-4-40N11	1511040001	Nanjing Jiexi Technologies	-
4	Spectrum Analyzer	N9030	MY57142378	Keysight	2020-02-02
9	EMI Antenna	3115	00167250	ETS-LINDGREN	2020-05-21
10	EMI Antenna	3116	2661	ETS-LINDGREN	2020-07-27
11	EMI Antenna	VULB 9163	9163-514	SCHWARZBECK	2021-01-03
12	Test Receiver	ESU26	100376	Rohde & Schwarz	2019-11-27
13	Climate Chamber	KTHG-415TBS	7353K	QINGSHENG	2020-01-14

9. MEASUREMENT UNCERTAINTY

For a 95% confidence level, the measurement uncertainties for defined systems are:

Test Discipline	Measurement Uncertainty
Conducted Maximum Peak Output Power	0.5dB
Occupied Bandwidth	1.1Hz
Conducted Spurious Emissions	2.3dB
Band Edge	2.3dB
Radiated Spurious Emissions	5.4dB
Frequency Stability	$<\pm 1 \times 10^{-7}$

ANNEX A: MEASUREMENT RESULS

A.1 Maximum Output Power and Peak-to-Average Power Ratio

A.1.1 Reference

FCC CFR 47 Part 27, Clause 27.50(d)
RSS-Gen, Clause 6.12, RSS-139, Clause 4.1, Clause 6.5

A.1.2 Method of Measurements

During the process of testing, the EUT was configured to transmit on maximum power and proper modulation. In case of the EUT was configured to MIMO mode, since the EUT transmits on all antennas simultaneously in the same frequency range, using the Measure-and-Sum approach, the output power at all 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.

A.1.3 Limit

Output Power:

(EIRP) 1640 W(62.15dBm) or 3280W(65.16dBm) for emission bandwidth ≤ 1MHz

1640 W/MHz(62.15dBm/MHz) or 3280W/MHz(65.16dBm/MHz) for emission bandwidth > 1MHz

Peak to Average Ratio: 13 dB

A.1.4 Measurement result

Configuration WCDMA-1C

Maximum Output Power 44.8dBm per port

		Output Power / Peak to Average Ratio (PAR)								
		Channel position B			Channel position M			Channel position T		
	Antenna	POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR(db)
QPSK	A	44.60	37.69	7.32	44.74	37.77	7.39	44.90	37.81	7.34
	B	44.81	37.82	7.36	44.87	37.90	7.33	44.83	37.83	7.37
	C	44.74	37.77	7.33	44.72	37.55	7.36	44.73	37.66	7.33
	D	44.72	37.78	7.33	44.85	37.74	7.34	44.82	37.87	7.33
Total		50.74	43.79	-	50.82	43.76	-	50.84	43.81	-
Total Power+14.2 dBi		64.94	57.99	-	65.02	57.96	-	65.04	58.01	-

		Output Power / Peak to Average Ratio (PAR)								
		Channel position B			Channel position M			Channel position T		
	Antenna	POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR(db)
	A	44.58	37.66	7.29	44.76	37.73	7.36	44.85	37.77	7.29
	B	44.80	37.77	7.33	44.84	37.88	7.30	44.82	37.81	7.34
	C	44.88	37.75	7.30	44.70	37.57	7.33	44.74	37.69	7.31
16QAM	D	44.80	37.71	7.30	44.87	37.76	7.31	44.88	37.89	7.29
Total		50.79	43.74	-	50.81	43.76	-	50.84	43.81	-
Total Power+14.2 dBi		64.99	57.94	-	65.01	57.96	-	65.04	58.01	-

		Output Power / Peak to Average Ratio (PAR)								
		Channel position B			Channel position M			Channel position T		
	Antenna	POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR(db)
	A	44.60	37.61	7.29	44.78	37.68	7.35	44.88	37.72	7.30
	B	44.82	37.82	7.34	44.85	37.84	7.31	44.83	37.84	7.35
	C	44.85	37.73	7.30	44.77	37.59	7.33	44.72	37.61	7.30
64QAM	D	44.82	37.62	7.29	44.88	37.78	7.30	44.91	37.79	7.29
Total		50.79	43.72	-	50.84	43.74	-	50.86	43.76	-
Total Power+14.2 dBi		64.99	57.92	-	65.04	57.94	-	65.06	57.96	-

Configuration WCDMA-2C

Maximum Output Power 44.8dBm per port

		Output Power / Peak to Average Ratio (PAR)								
		Channel position B			Channel position M			Channel position T		
Antenna	Modulation	POWER (dBm)	POWER (dBm/MHz)	PAR(db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR(db)
A	64QAM	-	-	-	44.85	-	-	-	-	-
B	64QAM	-	-	-	44.82	-	-	-	-	-
C	64QAM	-	-	-	44.71	-	-	-	-	-
D	64QAM	-	-	-	44.87	-	-	-	-	-
Total		-	-	-	50.83	-	-	-	-	-
Total Power+14.2 dBi		-	-	-	65.03	-	-	-	-	-

Configuration WCDMA-6C

Maximum Output Power 44.8dBm per port

Antenna	Modulation	Output Power / Peak to Average Ratio (PAR)								
		Channel position B			Channel position M			Channel position T		
		POWER (dBm)	POWER (dBm/MHz)	PAR(db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR(db)
A	64QAM	-	-	-	44.70	-	-	-	-	-
B	64QAM	-	-	-	44.81	-	-	-	-	-
C	64QAM	-	-	-	44.64	-	-	-	-	-
D	64QAM	-	-	-	44.80	-	-	-	-	-
Total		-	-	-	50.76	-	-	-	-	-
Total Power+14.2 dBi		-	-	-	64.96	-	-	-	-	-

Configuration LTE-MIMO-1C

Maximum Output Power 44.8dBm per port

Antenna	Modulation/ Carrier Bandwidth (MHz)	Output Power / Peak to Average Ratio (PAR)								
		Channel position B			Channel position M			Channel position T		
		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	44.61	37.62	7.29	44.67	37.65	7.53	44.76	37.65	7.31
B		44.84	37.86	7.34	44.95	37.86	7.56	44.92	37.97	7.34
C		44.72	37.69	7.31	44.63	37.57	7.55	44.67	37.67	7.37
D		44.76	37.71	7.30	44.84	37.75	7.53	44.82	37.78	7.31
Total		50.75	43.74	-	50.80	43.73	-	50.81	43.79	-
Total Power+14.2 dBi		64.95	57.94	-	65	57.93	-	65.01	57.99	-

Antenna	Modulation/ Carrier Bandwidth (MHz)	Output Power / Peak to Average Ratio (PAR)								
		Channel position B			Channel position M			Channel position T		
		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	-	-	-	44.63	37.67	-	-	-	-
B		-	-	-	44.94	37.90	-	-	-	-
C		-	-	-	44.67	37.66	-	-	-	-
D		-	-	-	44.83	37.75	-	-	-	-
Total		-	-	-	50.79	43.77	-	-	-	-
Total Power+14.2 dBi		-	-	-	64.99	57.97	-	-	-	-

Antenna	Modulation/ Carrier Bandwidth (MHz)	Output Power / Peak to Average Ratio (PAR)								
		Channel position B			Channel position M			Channel position T		
		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	-	-	-	44.70	37.72	-	-	-	-
B		-	-	-	44.98	37.89	-	-	-	-
C		-	-	-	44.72	37.65	-	-	-	-
D		-	-	-	44.84	37.79	-	-	-	-
Total		-	-	-	50.83	43.78	-	-	-	-
Total Power+14.2 dBi		-	-	-	65.03	57.98	-	-	-	-

Antenna	Modulation/ Carrier Bandwidth (MHz)	Output Power / Peak to Average Ratio (PAR)								
		Channel position B			Channel position M			Channel position T		
		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	-	-	-	44.60	37.66	7.53	-	-	-
B		-	-	-	44.96	37.87	7.56	-	-	-
C		-	-	-	44.74	37.62	7.55	-	-	-
D		-	-	-	44.90	37.83	7.52	-	-	-
Total		-	-	-	50.82	43.77	-	-	-	-
Total Power+14.2 dBi		-	-	-	65.02	57.97	-	-	-	-

Maximum Output Power 44.8dBm per port

Antenna	Modulation/ Carrier Bandwidth (MHz)	Output Power / Peak to Average Ratio (PAR)								
		Channel position B			Channel position M			Channel position T		
		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	44.75	34.75	7.33	44.74	34.67	7.53	44.79	34.74	7.38
B		44.94	34.78	7.37	44.98	34.81	7.54	44.95	34.83	7.41
C		44.71	34.75	7.36	44.63	34.66	7.55	44.62	34.74	7.42
D		44.76	34.78	7.32	44.81	34.73	7.54	44.92	34.85	7.38
Total		50.81	40.79	-	50.81	40.74	-	50.84	40.81	-
Total Power+14.2 dBi		65.01	54.99	-	65.01	54.94	-	65.04	55.01	-

Antenna	Modulation/ Carrier Bandwidth (MHz)	Output Power / Peak to Average Ratio (PAR)								
		Channel position B			Channel position M			Channel position T		
		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	-	-	-	44.69	34.71	7.53	-	-	-
B		-	-	-	44.92	34.78	7.54	-	-	-
C		-	-	-	44.67	34.66	7.54	-	-	-
D		-	-	-	44.88	34.77	7.53	-	-	-
Total		-	-	-	50.81	40.75	-	-	-	-
Total Power+14.2 dBi		-	-	-	65.01	54.95	-	-	-	-

Antenna	Modulation/ Carrier Bandwidth (MHz)	Output Power / Peak to Average Ratio (PAR)								
		Channel position B			Channel position M			Channel position T		
		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	-	-	-	44.64	34.65	7.54	-	-	-
B		-	-	-	44.91	34.79	7.53	-	-	-
C		-	-	-	44.65	34.62	7.56	-	-	-
D		-	-	-	44.88	34.78	7.55	-	-	-
Total		-	-	-	50.79	40.73	-	-	-	-
Total Power+14.2 dBi		-	-	-	64.99	54.93	-	-	-	-

Antenna	Modulation/ Carrier Bandwidth (MHz)	Output Power / Peak to Average Ratio (PAR)								
		Channel position B			Channel position M			Channel position T		
		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	-	-	-	44.62	34.64	7.54	-	-	-
B		-	-	-	44.92	34.74	7.53	-	-	-
C		-	-	-	44.62	34.67	7.58	-	-	-
D		-	-	-	44.87	34.77	7.55	-	-	-
Total		-	-	-	50.78	40.73	-	-	-	-
Total Power+14.2 dBi		-	-	-	64.98	54.93	-	-	-	-

Maximum Output Power 44.8dBm per port

Antenna	Modulation/ Carrier Bandwidth (MHz)	Output Power / Peak to Average Ratio (PAR)								
		Channel position B			Channel position M			Channel position T		
		POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)
A	QPSK/ 15.0	44.78	32.96	7.39	44.67	32.92	7.55	44.72	32.96	7.46
B		44.83	32.98	7.42	44.85	33.05	7.55	44.92	33.10	7.47
C		44.75	32.89	7.45	44.60	32.89	7.56	44.65	32.86	7.48
D		44.89	32.99	7.38	44.87	33.06	7.55	44.87	33.01	7.45
Total		50.83	38.98	-	50.77	39.00	-	50.81	39.00	-
Total Power+14.2 dBi		65.03	53.18	-	64.97	53.2	-	65.01	53.2	-

Antenna	Modulation/ Carrier Bandwidth (MHz)	Output Power / Peak to Average Ratio (PAR)								
		Channel position B			Channel position M			Channel position T		
		POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)
A	16QAM/ 15.0	-	-	-	44.66	32.87	7.54	-	-	-
B		-	-	-	44.85	33.03	7.55	-	-	-
C		-	-	-	44.62	32.88	7.56	-	-	-
D		-	-	-	44.88	33.01	7.54	-	-	-
Total		-	-	-	50.77	38.97	-	-	-	-
Total Power+14.2 dBi		-	-	-	64.97	53.17	-	-	-	-

Antenna	Modulation/ Carrier Bandwidth (MHz)	Output Power / Peak to Average Ratio (PAR)								
		Channel position B			Channel position M			Channel position T		
		POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)
A	64QAM/ 15.0	-	-	-	44.66	32.88	7.56	-	-	-
B		-	-	-	44.88	33.02	7.55	-	-	-
C		-	-	-	44.61	32.86	7.57	-	-	-
D		-	-	-	44.87	32.97	7.55	-	-	-
Total		-	-	-	50.78	38.95	-	-	-	-
Total Power+14.2 dBi		-	-	-	64.98	53.15	-	-	-	-

Antenna	Modulation/ Carrier Bandwidth (MHz)	Output Power / Peak to Average Ratio (PAR)								
		Channel position B			Channel position M			Channel position T		
		POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)
A	256QAM /15.0	-	-	-	44.64	32.91	7.55	-	-	-
B		-	-	-	44.87	33.07	7.55	-	-	-
C		-	-	-	44.62	32.88	7.56	-	-	-
D		-	-	-	44.82	33.00	7.56	-	-	-
Total		-	-	-	50.76	38.99	-	-	-	-
Total Power+14.2 dBi		-	-	-	64.96	53.19	-	-	-	-

Maximum Output Power 44.8dBm per port

Antenna	Modulation/ Carrier Bandwidth (MHz)	Output Power / Peak to Average Ratio (PAR)								
		Channel position B			Channel position M			Channel position T		
		POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)
A	QPSK/ 20.0	44.69	31.71	7.45	44.70	31.71	7.56	44.74	31.72	7.49
B		44.84	31.76	7.45	44.86	31.84	7.55	44.92	31.89	7.51
C		44.70	31.72	7.48	44.65	31.63	7.56	44.72	31.70	7.51
D		44.85	31.84	7.44	44.85	31.84	7.55	44.88	31.90	7.47
Total		50.79	37.78	-	50.79	37.78	-	50.84	37.82	-
Total Power+14.2 dBi		64.99	51.98	-	64.99	51.98	-	65.04	52.02	-

Antenna	Modulation/ Carrier Bandwidth (MHz)	Output Power / Peak to Average Ratio (PAR)								
		Channel position B			Channel position M			Channel position T		
		POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)
A	16QAM/ 20.0	-	-	-	44.69	31.65	7.55	-	-	-
B		-	-	-	44.85	31.78	7.54	-	-	-
C		-	-	-	44.67	31.63	7.56	-	-	-
D		-	-	-	44.87	31.81	7.55	-	-	-
Total		-	-	-	50.79	37.74	-	-	-	-
Total Power+14.2 dBi		-	-	-	64.99	51.94	-	-	-	-

Antenna	Modulation/ Carrier Bandwidth (MHz)	Output Power / Peak to Average Ratio (PAR)								
		Channel position B			Channel position M			Channel position T		
		POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)
A	64QAM/ 20.0	-	-	-	44.68	31.66	7.57	-	-	-
B		-	-	-	44.85	31.78	7.55	-	-	-
C		-	-	-	44.64	31.59	7.57	-	-	-
D		-	-	-	44.87	31.75	7.56	-	-	-
Total		-	-	-	50.78	37.72	-	-	-	-
Total Power+14.2 dBi		-	-	-	64.98	51.92	-	-	-	-

Antenna	Modulation/ Carrier Bandwidth (MHz)	Output Power / Peak to Average Ratio (PAR)								
		Channel position B			Channel position M			Channel position T		
		POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)
A	256QAM /20.0	-	-	-	44.69	31.67	7.57	-	-	-
B		-	-	-	44.85	31.82	7.56	-	-	-
C		-	-	-	44.68	31.66	7.57	-	-	-
D		-	-	-	44.87	31.80	7.56	-	-	-
Total		-	-	-	50.79	37.76	-	-	-	-
Total Power+14.2 dBi		-	-	-	64.99	51.96	-	-	-	-

Configuration LTE-MIMO-2C

Maximum Output Power 44.8dBm per port

Antenna	Modulation/ Carrier Bandwidth (MHz)	Output Power / Peak to Average Ratio (PAR)								
		Channel position B			Channel position M			Channel position T		
		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	-	-	-	44.35	-	-	-	-	-
B		-	-	-	44.56	-	-	-	-	-
C		-	-	-	44.43	-	-	-	-	-
D		-	-	-	44.45	-	-	-	-	-
Total		-	-	-	50.47	-	-	-	-	-
Total Power+14.2 dBi		-	-	-	64.67	-	-	-	-	-

Antenna	Modulation/ Carrier Bandwidth (MHz)	Output Power / Peak to Average Ratio (PAR)								
		Channel position B			Channel position M			Channel position T		
		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	-	-	-	44.38	-	-	-	-	-
B		-	-	-	44.59	-	-	-	-	-
C		-	-	-	44.41	-	-	-	-	-
D		-	-	-	44.46	-	-	-	-	-
Total		-	-	-	50.48	-	-	-	-	-
Total Power+14.2 dBi		-	-	-	64.68	-	-	-	-	-

Antenna	Modulation/ Carrier Bandwidth (MHz)	Output Power / Peak to Average Ratio (PAR)								
		Channel position B			Channel position M			Channel position T		
		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	-	-	-	44.37	-	-	-	-	-
B		-	-	-	44.57	-	-	-	-	-
C		-	-	-	44.51	-	-	-	-	-
D		-	-	-	44.45	-	-	-	-	-
Total		-	-	-	50.50	-	-	-	-	-
Total Power+14.2 dBi		-	-	-	64.7	-	-	-	-	-

Antenna	Modulation/ Carrier Bandwidth (MHz)	Output Power / Peak to Average Ratio (PAR)								
		Channel position B			Channel position M			Channel position T		
		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	-	-	-	44.35	-	-	-	-	-
B		-	-	-	44.56	-	-	-	-	-
C		-	-	-	44.42	-	-	-	-	-
D		-	-	-	44.45	-	-	-	-	-
Total		-	-	-	50.47	-	-	-	-	-
Total Power+14.2 dBi		-	-	-	64.67	-	-	-	-	-

Maximum Output Power 44.8dBm per port

Antenna	Modulation/ Carrier Bandwidth (MHz)	Output Power / Peak to Average Ratio (PAR)								
		Channel position B			Channel position M			Channel position T		
		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	-	-	-	44.47	-	-	-	-	-
B		-	-	-	44.66	-	-	-	-	-
C		-	-	-	44.50	-	-	-	-	-
D		-	-	-	44.54	-	-	-	-	-
Total		-	-	-	50.56	-	-	-	-	-
Total Power+14.2 dBi		-	-	-	64.76	-	-	-	-	-

Antenna	Modulation/ Carrier Bandwidth (MHz)	Output Power / Peak to Average Ratio (PAR)								
		Channel position B			Channel position M			Channel position T		
		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	-	-	-	44.49	-	-	-	-	-
B		-	-	-	44.68	-	-	-	-	-
C		-	-	-	44.54	-	-	-	-	-
D		-	-	-	44.57	-	-	-	-	-
Total		-	-	-	50.59	-	-	-	-	-
Total Power+14.2 dBi		-	-	-	64.79	-	-	-	-	-

Antenna	Modulation/ Carrier Bandwidth (MHz)	Output Power / Peak to Average Ratio (PAR)								
		Channel position B			Channel position M			Channel position T		
		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	-	-	-	44.48	-	-	-	-	-
B		-	-	-	44.67	-	-	-	-	-
C		-	-	-	44.51	-	-	-	-	-
D		-	-	-	44.55	-	-	-	-	-
Total		-	-	-	50.57	-	-	-	-	-
Total Power+14.2 dBi		-	-	-	64.77	-	-	-	-	-

Antenna	Modulation/ Carrier Bandwidth (MHz)	Output Power / Peak to Average Ratio (PAR)								
		Channel position B			Channel position M			Channel position T		
		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	-	-	-	44.49	-	-	-	-	-
B		-	-	-	44.66	-	-	-	-	-
C		-	-	-	44.49	-	-	-	-	-
D		-	-	-	44.54	-	-	-	-	-
Total		-	-	-	50.57	-	-	-	-	-
Total Power+14.2 dBi		-	-	-	64.77	-	-	-	-	-

Maximum Output Power 44.8dBm per port

Antenna	Modulation/ Carrier Bandwidth (MHz)	Output Power / Peak to Average Ratio (PAR)								
		Channel position B			Channel position M			Channel position T		
		POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)
A	QPSK/ 15.0	-	-	-	44.57	-	-	-	-	-
B		-	-	-	44.69	-	-	-	-	-
C		-	-	-	44.53	-	-	-	-	-
D		-	-	-	44.64	-	-	-	-	-
Total		-	-	-	50.63	-	-	-	-	-
Total Power+14.2 dBi		-	-	-	64.83	-	-	-	-	-

Antenna	Modulation/ Carrier Bandwidth (MHz)	Output Power / Peak to Average Ratio (PAR)								
		Channel position B			Channel position M			Channel position T		
		POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)
A	16QAM/ 15.0	-	-	-	44.58	-	-	-	-	-
B		-	-	-	44.67	-	-	-	-	-
C		-	-	-	44.54	-	-	-	-	-
D		-	-	-	44.62	-	-	-	-	-
Total		-	-	-	50.62	-	-	-	-	-
Total Power+14.2 dBi		-	-	-	64.82	-	-	-	-	-

Antenna	Modulation/ Carrier Bandwidth (MHz)	Output Power / Peak to Average Ratio (PAR)								
		Channel position B			Channel position M			Channel position T		
		POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)
A	64QAM/ 15.0	-	-	-	44.60	-	-	-	-	-
B		-	-	-	44.72	-	-	-	-	-
C		-	-	-	44.59	-	-	-	-	-
D		-	-	-	44.67	-	-	-	-	-
Total		-	-	-	50.67	-	-	-	-	-
Total Power+14.2 dBi		-	-	-	64.87	-	-	-	-	-

Antenna	Modulation/ Carrier Bandwidth (MHz)	Output Power / Peak to Average Ratio (PAR)								
		Channel position B			Channel position M			Channel position T		
		POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)
A	256QAM /15.0	-	-	-	44.59	-	-	-	-	-
B		-	-	-	44.70	-	-	-	-	-
C		-	-	-	44.56	-	-	-	-	-
D		-	-	-	44.64	-	-	-	-	-
Total		-	-	-	50.64	-	-	-	-	-
Total Power+14.2 dBi		-	-	-	64.84	-	-	-	-	-

Maximum Output Power 44.8dBm per port

Antenna	Modulation/ Carrier Bandwidth (MHz)	Output Power / Peak to Average Ratio (PAR)								
		Channel position B			Channel position M			Channel position T		
		POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)
A	QPSK/ 20.0	-	-	-	44.64	-	-	-	-	-
B		-	-	-	44.74	-	-	-	-	-
C		-	-	-	44.62	-	-	-	-	-
D		-	-	-	44.71	-	-	-	-	-
Total		-	-	-	50.70	-	-	-	-	-
Total Power+14.2 dBi		-	-	-	64.9	-	-	-	-	-

Antenna	Modulation/ Carrier Bandwidth (MHz)	Output Power / Peak to Average Ratio (PAR)								
		Channel position B			Channel position M			Channel position T		
		POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)
A	16QAM/ 20.0	-	-	-	44.63	-	-	-	-	-
B		-	-	-	44.73	-	-	-	-	-
C		-	-	-	44.60	-	-	-	-	-
D		-	-	-	44.67	-	-	-	-	-
Total		-	-	-	50.68	-	-	-	-	-
Total Power+14.2 dBi		-	-	-	64.88	-	-	-	-	-

Antenna	Modulation/ Carrier Bandwidth (MHz)	Output Power / Peak to Average Ratio (PAR)								
		Channel position B			Channel position M			Channel position T		
		POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)
A	64QAM/ 20.0	-	-	-	44.61	-	-	-	-	-
B		-	-	-	44.72	-	-	-	-	-
C		-	-	-	44.57	-	-	-	-	-
D		-	-	-	44.67	-	-	-	-	-
Total		-	-	-	50.66	-	-	-	-	-
Total Power+14.2 dBi		-	-	-	64.86	-	-	-	-	-

Antenna	Modulation/ Carrier Bandwidth (MHz)	Output Power / Peak to Average Ratio (PAR)								
		Channel position B			Channel position M			Channel position T		
		POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)
A	256QAM /20.0	-	-	-	44.61	-	-	-	-	-
B		-	-	-	44.72	-	-	-	-	-
C		-	-	-	44.57	-	-	-	-	-
D		-	-	-	44.65	-	-	-	-	-
Total		-	-	-	50.66	-	-	-	-	-
Total Power+14.2 dBi		-	-	-	64.86	-	-	-	-	-

Configuration LTE-MIMO-6C

Maximum Output Power 44.8dBm per port

Antenna	Modulation/ Carrier Bandwidth (MHz)	Output Power / Peak to Average Ratio (PAR)								
		Channel position B			Channel position M			Channel position T		
		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	-	-	-	44.21	-	-	-	-	-
B		-	-	-	44.32	-	-	-	-	-
C		-	-	-	44.18	-	-	-	-	-
D		-	-	-	44.27	-	-	-	-	-
Total		-	-	-	50.27	-	-	-	-	-
Total Power+14.2 dBi		-	-	-	64.47	-	-	-	-	-

Antenna	Modulation/ Carrier Bandwidth (MHz)	Output Power / Peak to Average Ratio (PAR)								
		Channel position B			Channel position M			Channel position T		
		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	-	-	-	44.20	-	-	-	-	-
B		-	-	-	44.31	-	-	-	-	-
C		-	-	-	44.17	-	-	-	-	-
D		-	-	-	44.25	-	-	-	-	-
Total		-	-	-	50.25	-	-	-	-	-
Total Power+14.2 dBi		-	-	-	64.45	-	-	-	-	-

Antenna	Modulation/ Carrier Bandwidth (MHz)	Output Power / Peak to Average Ratio (PAR)								
		Channel position B			Channel position M			Channel position T		
		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	-	-	-	44.18	-	-	-	-	-
B		-	-	-	44.29	-	-	-	-	-
C		-	-	-	44.17	-	-	-	-	-
D		-	-	-	44.24	-	-	-	-	-
Total		-	-	-	50.24	-	-	-	-	-
Total Power+14.2 dBi		-	-	-	64.44	-	-	-	-	-

Antenna	Modulation/ Carrier Bandwidth (MHz)	Output Power / Peak to Average Ratio (PAR)								
		Channel position B			Channel position M			Channel position T		
		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	-	-	-	44.17	-	-	-	-	-
B		-	-	-	44.28	-	-	-	-	-
C		-	-	-	44.18	-	-	-	-	-
D		-	-	-	44.26	-	-	-	-	-
Total		-	-	-	50.24	-	-	-	-	-
Total Power+14.2 dBi		-	-	-	64.44	-	-	-	-	-

Maximum Output Power 44.8dBm per port

Antenna	Modulation/ Carrier Bandwidth (MHz)	Output Power / Peak to Average Ratio (PAR)								
		Channel position B			Channel position M			Channel position T		
		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	-	-	-	44.63	-	-	-	-	-
B		-	-	-	44.73	-	-	-	-	-
C		-	-	-	44.60	-	-	-	-	-
D		-	-	-	44.68	-	-	-	-	-
Total		-	-	-	50.68	-	-	-	-	-
Total Power+14.2 dBi		-	-	-	64.88	-	-	-	-	-

Antenna	Modulation/ Carrier Bandwidth (MHz)	Output Power / Peak to Average Ratio (PAR)								
		Channel position B			Channel position M			Channel position T		
		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	-	-	-	44.61	-	-	-	-	-
B		-	-	-	44.72	-	-	-	-	-
C		-	-	-	44.55	-	-	-	-	-
D		-	-	-	44.65	-	-	-	-	-
Total		-	-	-	50.65	-	-	-	-	-
Total Power+14.2 dBi		-	-	-	64.85	-	-	-	-	-

Antenna	Modulation/ Carrier Bandwidth (MHz)	Output Power / Peak to Average Ratio (PAR)								
		Channel position B			Channel position M			Channel position T		
		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	-	-	-	44.57	-	-	-	-	-
B		-	-	-	44.68	-	-	-	-	-
C		-	-	-	44.52	-	-	-	-	-
D		-	-	-	44.62	-	-	-	-	-
Total		-	-	-	50.62	-	-	-	-	-
Total Power+14.2 dBi		-	-	-	64.82	-	-	-	-	-

Antenna	Modulation/ Carrier Bandwidth (MHz)	Output Power / Peak to Average Ratio (PAR)								
		Channel position B			Channel position M			Channel position T		
		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	-	-	-	44.55	-	-	-	-	-
B		-	-	-	44.65	-	-	-	-	-
C		-	-	-	44.52	-	-	-	-	-
D		-	-	-	44.61	-	-	-	-	-
Total		-	-	-	50.60	-	-	-	-	-
Total Power+14.2 dBi		-	-	-	64.8	-	-	-	-	-

Configuration LTE-MIMO-4C

Maximum Output Power 44.8dBm per port

Antenna	Modulation/ Carrier Bandwidth (MHz)	Output Power / Peak to Average Ratio (PAR)								
		Channel position B			Channel position M			Channel position T		
		POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)
A	QPSK/ 15.0	-	-	-	44.59	-	-	-	-	-
B		-	-	-	44.69	-	-	-	-	-
C		-	-	-	44.49	-	-	-	-	-
D		-	-	-	44.62	-	-	-	-	-
Total		-	-	-	50.62	-	-	-	-	-
Total Power+14.2 dBi		-	-	-	64.82	-	-	-	-	-

Antenna	Modulation/ Carrier Bandwidth (MHz)	Output Power / Peak to Average Ratio (PAR)								
		Channel position B			Channel position M			Channel position T		
		POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)
A	16QAM/ 15.0	-	-	-	44.60	-	-	-	-	-
B		-	-	-	44.69	-	-	-	-	-
C		-	-	-	44.61	-	-	-	-	-
D		-	-	-	44.70	-	-	-	-	-
Total		-	-	-	50.67	-	-	-	-	-
Total Power+14.2 dBi		-	-	-	64.87	-	-	-	-	-

Antenna	Modulation/ Carrier Bandwidth (MHz)	Output Power / Peak to Average Ratio (PAR)								
		Channel position B			Channel position M			Channel position T		
		POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)
A	64QAM/ 15.0	-	-	-	44.57	-	-	-	-	-
B		-	-	-	44.67	-	-	-	-	-
C		-	-	-	44.56	-	-	-	-	-
D		-	-	-	44.67	-	-	-	-	-
Total		-	-	-	50.64	-	-	-	-	-
Total Power+14.2 dBi		-	-	-	64.84	-	-	-	-	-

Antenna	Modulation/ Carrier Bandwidth (MHz)	Output Power / Peak to Average Ratio (PAR)								
		Channel position B			Channel position M			Channel position T		
		POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)
A	256QAM /15.0	-	-	-	44.56	-	-	-	-	-
B		-	-	-	44.66	-	-	-	-	-
C		-	-	-	44.55	-	-	-	-	-
D		-	-	-	44.65	-	-	-	-	-
Total		-	-	-	50.63	-	-	-	-	-
Total Power+14.2 dBi		-	-	-	64.83	-	-	-	-	-

Configuration NB-IoT-InBand-1C

Maximum Output Power 44.8dBm per port

Antenna	Modulation/ Carrier Bandwidth (MHz)	Output Power / Peak to Average Ratio (PAR)								
		Channel position B			Channel position M			Channel position T		
		POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)
B	QPSK/5.0	44.72	37.72	7.32	44.73	37.70	7.55	44.76	37.74	7.32
	QPSK/10.0	44.73	34.78	7.37	44.72	34.70	7.54	44.74	34.73	7.40
	QPSK/15.0	44.73	32.92	7.42	44.68	32.93	7.56	44.72	32.91	7.47
	QPSK/20.0	44.72	31.72	7.45	44.70	31.67	7.56	44.69	31.67	7.52

Configuration NB-IoT-GuardBand-1C

Maximum Output Power 44.8dBm per port

Antenna	Modulation/ Carrier Bandwidth (MHz)	Output Power / Peak to Average Ratio (PAR)								
		Channel position B			Channel position M			Channel position T		
		POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)
B	QPSK/10.0	44.69	34.61	7.47	44.58	34.59	7.64	44.68	34.60	7.50
	QPSK/15.0	44.65	32.92	7.48	44.62	32.86	7.61	44.68	32.90	7.53
	QPSK/20.0	44.64	31.65	7.52	44.64	31.60	7.62	44.62	31.62	7.58

Configuration NB-IoT-StandAlone-1C

Maximum Output Power 43.0dBm per port

Antenna	Modulation/ Carrier Bandwidth (KHz)	Output Power / Peak to Average Ratio (PAR)								
		Channel position B			Channel position M			Channel position T		
		POWER (dBm)	POWER (dBm/MHz)	PAR(db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR(db)
B	QPSK/ 250.0	42.55	-	4.65	42.35	-	4.63	42.40	-	4.64

Configuration NB-IoT-StandAlone-2C

Maximum Output Power 44.8dBm per port

Antenna	Modulation/ Carrier Bandwidth (KHz)	Output Power / Peak to Average Ratio (PAR)								
		Channel position B			Channel position M			Channel position T		
		POWER (dBm)	POWER (dBm/MHz)	PAR(db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR(db)
B	QPSK/ 250.0	43.34	-	-	43.45	-	-	43.34	-	-

Configuration WCDMA+LTE-MIMO-MC-1 (1WCDMA +1LTE)

Maximum Output Power 44.8dBm per port

Antenna	WCDMA Mod./ LTE Mod. Bandwidth (MHz)	Output Power / Peak to Average Ratio (PAR)								
		Channel position B			Channel position M			Channel position T		
		POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)
A	64QAM/ QPSK 5.0	-	-	-	43.92	-	-	-	-	-
B	64QAM/ QPSK 5.0	-	-	-	44.14	-	-	-	-	-
C	64QAM/ QPSK 5.0	-	-	-	44.05	-	-	-	-	-
D	64QAM/ QPSK 5.0	-	-	-	44.07	-	-	-	-	-
Total		-	-	-	50.07	-	-	-	-	-
Total Power+14.2 dBi		-	-	-	64.27	-	-	-	-	-

Antenna	WCDMA Mod./ LTE Mod. Bandwidth (MHz)	Output Power / Peak to Average Ratio (PAR)								
		Channel position B			Channel position M			Channel position T		
		POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)
A	64QAM/ QPSK 10	-	-	-	44.02	-	-	-	-	-
B	64QAM/ QPSK 10	-	-	-	44.22	-	-	-	-	-
C	64QAM/ QPSK 10	-	-	-	44.12	-	-	-	-	-
D	64QAM/ QPSK 10	-	-	-	44.16	-	-	-	-	-
Total		-	-	-	50.15	-	-	-	-	-
Total Power+14.2 dBi		-	-	-	64.35	-	-	-	-	-

Antenna	WCDMA Mod./ LTE Mod. Bandwidth (MHz)	Output Power / Peak to Average Ratio (PAR)								
		Channel position B			Channel position M			Channel position T		
		POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)
A	64QAM/ QPSK 15	-	-	-	44.01	-	-	-	-	-
B	64QAM/ QPSK 15	-	-	-	44.21	-	-	-	-	-
C	64QAM/ QPSK 15	-	-	-	44.08	-	-	-	-	-
D	64QAM/ QPSK 15	-	-	-	44.10	-	-	-	-	-
Total		-	-	-	50.12	-	-	-	-	-
Total Power+14.2 dBi		-	-	-	64.32	-	-	-	-	-

Antenna	WCDMA Mod./ LTE Mod. Bandwidth (MHz)	Output Power / Peak to Average Ratio (PAR)								
		Channel position B			Channel position M			Channel position T		
		POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)
A	64QAM/ QPSK 20	-	-	-	44.04	-	-	-	-	-
B	64QAM/ QPSK 20	-	-	-	44.24	-	-	-	-	-
C	64QAM/ QPSK 20	-	-	-	44.10	-	-	-	-	-
D	64QAM/ QPSK 20	-	-	-	44.15	-	-	-	-	-
Total		-	-	-	50.15	-	-	-	-	-
Total Power+14.2 dBi		-	-	-	64.35	-	-	-	-	-

Configuration WCDMA+LTE-MIMO-MC-3 (3WCDMA+3LTE)

Maximum Output Power 44.8dBm per port

Antenna	WCDMA Mod./ LTE Mod. Bandwidth (MHz)	Output Power / Peak to Average Ratio (PAR)								
		Channel position B			Channel position M			Channel position T		
		POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)
A	64QAM QPSK 5.0	-	-	-	44.05	-	-	-	-	-
B	64QAM QPSK 5.0	-	-	-	44.15	-	-	-	-	-
C	64QAM QPSK 5.0	-	-	-	44.02	-	-	-	-	-
D	64QAM QPSK 5.0	-	-	-	44.14	-	-	-	-	-
Total		-	-	-	50.11	-	-	-	-	-
Total Power+14.2 dBi		-	-	-	64.31	-	-	-	-	-

Antenna	WCDMA Mod./ LTE Mod. Bandwidth (MHz)	Output Power / Peak to Average Ratio (PAR)								
		Channel position B			Channel position M			Channel position T		
		POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)
A	64QAM QPSK 10	-	-	-	44.17	-	-	-	-	-
B	64QAM QPSK 10	-	-	-	44.27	-	-	-	-	-
C	64QAM QPSK 10	-	-	-	44.13	-	-	-	-	-
D	64QAM QPSK 10	-	-	-	44.24	-	-	-	-	-
Total		-	-	-	50.22	-	-	-	-	-
Total Power+14.2 dBi		-	-	-	64.42	-	-	-	-	-

Antenna	WCDMA Mod./ LTE Mod. Bandwidth (MHz)	Output Power / Peak to Average Ratio (PAR)								
		Channel position B			Channel position M			Channel position T		
		POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)
A	64QAM QPSK 15	-	-	-	44.19	-	-	-	-	-
B	64QAM QPSK 15	-	-	-	44.30	-	-	-	-	-
C	64QAM QPSK 15	-	-	-	44.14	-	-	-	-	-
D	64QAM QPSK 15	-	-	-	44.21	-	-	-	-	-
Total		-	-	-	50.23	-	-	-	-	-
Total Power+14.2 dBi		-	-	-	64.43	-	-	-	-	-

Configuration WCDMA+LTE-MIMO-MC-4 (2WCDMA+3LTE)

Maximum Output Power 44.8dBm per port

Antenna	WCDMA Mod./ LTE Mod. Bandwidth (MHz)	Output Power / Peak to Average Ratio (PAR)								
		Channel position B			Channel position M			Channel position T		
		POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)
A	64QAM/ QPSK 20.0	-	-	-	44.15	-	-	-	-	-
B	64QAM/ QPSK 20.0	-	-	-	44.29	-	-	-	-	-
C	64QAM/ QPSK 20.0	-	-	-	44.09	-	-	-	-	-
D	64QAM/ QPSK 20.0	-	-	-	44.18	-	-	-	-	-
Total		-	-	-	50.20	-	-	-	-	-
Total Power+14.2 dBi		-	-	-	64.4	-	-	-	-	-

Configuration WCDMA+NB-IoT-MC-1 (1WCDMA+1SA)

Maximum Output Power 44.8dBm per port

Antenna	WCDMA Mod./SA Mod.	Output Power / Peak to Average Ratio (PAR)								
		Channel position B			Channel position M			Channel position T		
		POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)
A	64QAM/QPSK	-	-	-	43.94	-	-	-	-	-
B	64QAM/QPSK	-	-	-	44.16	-	-	-	-	-
C	64QAM/QPSK	-	-	-	43.98	-	-	-	-	-
D	64QAM/QPSK	-	-	-	44.04	-	-	-	-	-
Total		-	-	-	50.05	-	-	-	-	-
Total Power+14.2 dBi		-	-	-	64.25	-	-	-	-	-

Configuration WCDMA+NB-IoT-MC-3 (3WCDMA+2SA)

Maximum Output Power 44.8dBm per port

Antenna	WCDMA Mod./SA Mod.	Output Power / Peak to Average Ratio (PAR)								
		Channel position B			Channel position M			Channel position T		
		POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)
A	64QAM/QPSK	43.85	-	-	43.98	-	-	43.97	-	-
B	64QAM/QPSK	43.91	-	-	44.01	-	-	44.04	-	-
C	64QAM/QPSK	43.82	-	-	43.85	-	-	43.82	-	-
D	64QAM/QPSK	43.78	-	-	43.97	-	-	43.97	-	-
Total		49.86	-	-	49.97	-	-	49.97	-	-
Total Power+14.2 dBi		64.06	-	-	64.17	-	-	64.17	-	-

Configuration WCDMA+NB-IoT-MC-4 (4WCDMA+2SA)

Maximum Output Power 44.8dBm per port

Antenna	WCDMA Mod./SA Mod.	Output Power / Peak to Average Ratio (PAR)								
		Channel position B			Channel position M			Channel position T		
		POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)
A	64QAM/QPSK	-	-	-	43.72	-	-	-	-	-
B	64QAM/QPSK	-	-	-	43.85	-	-	-	-	-
C	64QAM/QPSK	-	-	-	43.67	-	-	-	-	-
D	64QAM/QPSK	-	-	-	43.71	-	-	-	-	-
Total		-	-	-	49.76	-	-	-	-	-
Total Power+14.2 dBi		-	-	-	63.96	-	-	-	-	-

Configuration LTE+NB-IoT-MC-1 (1LTE+1SA)

Maximum Output Power 44.8dBm per port

Antenna	LTE Mod. Bandwidth (MHz)/ SA Mod.	Output Power / Peak to Average Ratio (PAR)								
		Channel position B			Channel position M			Channel position T		
		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 /QPSK	-	-	-	44.08	-	-	-	-	-
B	QPSK 5.0 /QPSK	-	-	-	44.15	-	-	-	-	-
C	QPSK 5.0 /QPSK	-	-	-	43.99	-	-	-	-	-
D	QPSK 5.0 /QPSK	-	-	-	44.12	-	-	-	-	-
Total		-	-	-	50.11	-	-	-	-	-
Total Power+14.2 dBi		-	-	-	64.31	-	-	-	-	-

Antenna	LTE Mod. Bandwidth (MHz)/ SA Mod.	Output Power / Peak to Average Ratio (PAR)								
		Channel position B			Channel position M			Channel position T		
		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 /QPSK	-	-	-	44.03	-	-	-	-	-
B	QPSK 10.0 /QPSK	-	-	-	44.11	-	-	-	-	-
C	QPSK 10.0 /QPSK	-	-	-	43.97	-	-	-	-	-
D	QPSK 10.0 /QPSK	-	-	-	44.08	-	-	-	-	-
Total		-	-	-	50.07	-	-	-	-	-
Total Power+14.2 dBi		-	-	-	64.27	-	-	-	-	-

Antenna	LTE Mod. Bandwidth (MHz)/ SA Mod.	Output Power / Peak to Average Ratio (PAR)								
		Channel position B			Channel position M			Channel position T		
		POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)
A	QPSK 15.0 /QPSK	-	-	-	44.03	-	-	-	-	-
B	QPSK 15.0 /QPSK	-	-	-	44.10	-	-	-	-	-
C	QPSK 15.0 /QPSK	-	-	-	44.02	-	-	-	-	-
D	QPSK 15.0 /QPSK	-	-	-	44.12	-	-	-	-	-
Total		-	-	-	50.09	-	-	-	-	-
Total Power+14.2 dBi		-	-	-	64.29	-	-	-	-	-

Antenna	LTE Mod. Bandwidth (MHz)/ SA Mod.	Output Power / Peak to Average Ratio (PAR)								
		Channel position B			Channel position M			Channel position T		
		POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)
A	QPSK 20.0 /QPSK	-	-	-	44.16	-	-	-	-	-
B	QPSK 20.0 /QPSK	-	-	-	44.24	-	-	-	-	-
C	QPSK 20.0 /QPSK	-	-	-	44.14	-	-	-	-	-
D	QPSK 20.0 /QPSK	-	-	-	44.16	-	-	-	-	-
Total		-	-	-	50.20	-	-	-	-	-
Total Power+14.2 dBi		-	-	-	64.4	-	-	-	-	-

Configuration LTE+NB-IoT-MC-3 (3LTE+2SA)

Maximum Output Power 44.8dBm per port

Antenna	LTE Mod. Bandwidth (MHz)/ SA Mod.	Output Power / Peak to Average Ratio (PAR)								
		Channel position B			Channel position M			Channel position T		
		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 /QPSK	44.45	-	-	44.54	-	-	44.53	-	-
B	QPSK 5.0 /QPSK	44.57	-	-	44.64	-	-	44.67	-	-
C	QPSK 5.0 /QPSK	44.45	-	-	44.40	-	-	44.43	-	-
D	QPSK 5.0 /QPSK	44.52	-	-	44.54	-	-	44.53	-	-
Total		50.52	-	-	50.55	-	-	50.56	-	-
Total Power+14.2 dBi		64.72	-	-	64.75	-	-	64.76	-	-

Configuration LTE+NB-IoT-MC-4 (4LTE+2SA)

Maximum Output Power 44.8dBm per port

Antenna	LTE Mod. Bandwidth (MHz)/ SA Mod.	Output Power / Peak to Average Ratio (PAR)								
		Channel position B			Channel position M			Channel position T		
		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 /QPSK	-	-	-	44.46	-	-	-	-	-
B	QPSK 10.0 /QPSK	-	-	-	44.63	-	-	-	-	-
C	QPSK 10.0 /QPSK	-	-	-	44.43	-	-	-	-	-
D	QPSK 10.0 /QPSK	-	-	-	44.52	-	-	-	-	-
Total		-	-	-	50.53	-	-	-	-	-
Total Power+14.2 dBi		-	-	-	64.73	-	-	-	-	-

Antenna	LTE Mod. Bandwidth (MHz)/ SA Mod.	Output Power / Peak to Average Ratio (PAR)								
		Channel position B			Channel position M			Channel position T		
		POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)
A	QPSK 15.0 /QPSK	-	-	-	44.53	-	-	-	-	-
B	QPSK 15.0 /QPSK	-	-	-	44.71	-	-	-	-	-
C	QPSK 15.0 /QPSK	-	-	-	44.56	-	-	-	-	-
D	QPSK 15.0 /QPSK	-	-	-	44.60	-	-	-	-	-
Total		-	-	-	50.62	-	-	-	-	-
Total Power+14.2 dBi		-	-	-	64.82	-	-	-	-	-

Configuration LTE+NB-IoT-MC-5 (3LTE+2SA)

Maximum Output Power 44.8dBm per port

Antenna	LTE Mod. Bandwidth (MHz)/ SA Mod.	Output Power / Peak to Average Ratio (PAR)								
		Channel position B			Channel position M			Channel position T		
		POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)
A	QPSK 20.0 /QPSK	-	-	-	44.46	-	-	-	-	-
B	QPSK 20.0 /QPSK	-	-	-	44.60	-	-	-	-	-
C	QPSK 20.0 /QPSK	-	-	-	44.43	-	-	-	-	-
D	QPSK 20.0 /QPSK	-	-	-	44.51	-	-	-	-	-
Total		-	-	-	50.52	-	-	-	-	-
Total Power+14.2 dBi		-	-	-	64.72	-	-	-	-	-

Configuration WCDMA+LTE+NB-IoT-MC-1(1WCDMA+1LTE+1SA)

Maximum Output Power 44.8dBm per port

Antenna	WCDMA Mod/. LTE Mod. BW(MHz)/ SA Mod.	Output Power / Peak to Average Ratio (PAR)								
		Channel position B			Channel position M			Channel position T		
		POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)
A	64QAM/ QPSK 5.0/ QPSK	-	-	-	43.80	-	-	-	-	-
B	64QAM/ QPSK 5.0/ QPSK	-	-	-	43.96	-	-	-	-	-
C	64QAM/ QPSK 5.0/ QPSK	-	-	-	43.82	-	-	-	-	-
D	64QAM/ QPSK 5.0/ QPSK	-	-	-	43.84	-	-	-	-	-
Total		-	-	-	49.88	-	-	-	-	-
Total Power+14.2 dBi		-	-	-	64.08	-	-	-	-	-

Antenna	WCDMA Mod/. LTE Mod. BW (MHz)/ SA Mod.	Output Power / Peak to Average Ratio (PAR)								
		Channel position B			Channel position M			Channel position T		
		POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)
A	64QAM/ QPSK 10.0/ QPSK	-	-	-	43.81	-	-	-	-	-
B	64QAM/ QPSK 10.0/ QPSK	-	-	-	43.97	-	-	-	-	-
C	64QAM/ QPSK 10.0/ QPSK	-	-	-	43.91	-	-	-	-	-
D	64QAM/ QPSK 10.0/ QPSK	-	-	-	43.93	-	-	-	-	-
Total		-	-	-	49.93	-	-	-	-	-
Total Power+14.2 dBi		-	-	-	64.13	-	-	-	-	-

Antenna	WCDMA Mod/. LTE Mod. BW (MHz)/ SA Mod.	Output Power / Peak to Average Ratio (PAR)								
		Channel position B			Channel position M			Channel position T		
		POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)
A	64QAM/ QPSK 15.0/ QPSK	-	-	-	43.85	-	-	-	-	-
B	64QAM/ QPSK 15.0/ QPSK	-	-	-	44.02	-	-	-	-	-
C	64QAM/ QPSK 15.0/ QPSK	-	-	-	43.91	-	-	-	-	-
D	64QAM/ QPSK 15.0/ QPSK	-	-	-	43.99	-	-	-	-	-
Total		-	-	-	49.96	-	-	-	-	-
Total Power+14.2 dBi		-	-	-	64.16	-	-	-	-	-

Antenna	WCDMA Mod./ LTE Mod. BW(MHz)/ SA Mod.	Output Power / Peak to Average Ratio (PAR)								
		Channel position B			Channel position M			Channel position T		
		POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)
A	64QAM/ QPSK 20.0/ QPSK	-	-	-	43.81	-	-	-	-	-
B	64QAM/ QPSK 20.0/ QPSK	-	-	-	44.03	-	-	-	-	-
C	64QAM/ QPSK 20.0/ QPSK	-	-	-	43.85	-	-	-	-	-
D	64QAM/ QPSK 20.0/ QPSK	-	-	-	43.92	-	-	-	-	-
Total		-	-	-	49.92	-	-	-	-	-
Total Power+14.2 dBi		-	-	-	64.12	-	-	-	-	-

Configuration WCDMA+LTE+NB-IoT-MC-3(2WCDMA+2LTE+2SA)

Maximum Output Power 44.8dBm per port

Antenna	WCDMA Mod./ LTE Mod. BW (MHz)/ SA Mod.	Output Power / Peak to Average Ratio (PAR)								
		Channel position B			Channel position M			Channel position T		
		POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)
A	64QAM/ QPSK 5.0/ QPSK	-	-	-	43.66	-	-	-	-	-
B	64QAM/ QPSK 5.0/ QPSK	-	-	-	43.81	-	-	-	-	-
C	64QAM/ QPSK 5.0/ QPSK	-	-	-	43.68	-	-	-	-	-
D	64QAM/ QPSK 5.0/ QPSK	-	-	-	43.75	-	-	-	-	-
Total		-	-	-	49.75	-	-	-	-	-
Total Power+14.2 dBi		-	-	-	63.95	-	-	-	-	-

Antenna	WCDMA Mod/. LTE Mod. BW (MHz)/ SA Mod.	Output Power / Peak to Average Ratio (PAR)								
		Channel position B			Channel position M			Channel position T		
		POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)
A	64QAM/ QPSK 10.0/ QPSK	-	-	-	43.67	-	-	-	-	-
B	64QAM/ QPSK 10.0/ QPSK	-	-	-	43.82	-	-	-	-	-
C	64QAM/ QPSK 10.0/ QPSK	-	-	-	43.66	-	-	-	-	-
D	64QAM/ QPSK 10.0/ QPSK	-	-	-	43.73	-	-	-	-	-
Total		-	-	-	49.74	-	-	-	-	-
Total Power+14.2 dBi		-	-	-	63.94	-	-	-	-	-

Antenna	WCDMA Mod/. LTE Mod. BW (MHz)/ SA Mod.	Output Power / Peak to Average Ratio (PAR)								
		Channel position B			Channel position M			Channel position T		
		POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)
A	64QAM/ QPSK 15.0/ QPSK	-	-	-	43.70	-	-	-	-	-
B	64QAM/ QPSK 15.0/ QPSK	-	-	-	43.86	-	-	-	-	-
C	64QAM/ QPSK 15.0/ QPSK	-	-	-	43.69	-	-	-	-	-
D	64QAM/ QPSK 15.0/ QPSK	-	-	-	43.72	-	-	-	-	-
Total		-	-	-	49.76	-	-	-	-	-
Total Power+14.2 dBi		-	-	-	63.96	-	-	-	-	-

Antenna	WCDMA Mod/. LTE Mod. BW (MHz)/ SA Mod.	Output Power / Peak to Average Ratio (PAR)								
		Channel position B			Channel position M			Channel position T		
		POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)
A	64QAM/ QPSK 20.0/ QPSK	-	-	-	43.65	-	-	-	-	-
B	64QAM/ QPSK 20.0/ QPSK	-	-	-	43.82	-	-	-	-	-
C	64QAM/ QPSK 20.0/ QPSK	-	-	-	43.68	-	-	-	-	-
D	64QAM/ QPSK 20.0/ QPSK	-	-	-	43.74	-	-	-	-	-
Total		-	-	-	49.74	-	-	-	-	-
Total Power+14.2 dBi		-	-	-	63.94	-	-	-	-	-

NOTE:
The DUT is tested without antenna. ERP/EIRP compliance is addressed at the time of licensing and is based on the geographic area, operational bandwidth and mode of the operation in combination with antenna and propagation gains. Licensees are required to consider all necessary operational parameters to maintain compliance with EIRP limits.

A.2 Occupied Bandwidth

A.2.1 Reference

FCC CFR 47 Part 2, Clause 2.1049
FCC CFR 47 Part 27, Clause 27.53 (h)
RSS-GEN, Clause 6.7

A.2.2 Method of Measurements

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 Clause 4.2. In addition, measurements of 99% occupied bandwidths were made in accordance with RSS-GEN Clause 6.7.

The measurement method is from KDB 971168 4.2:
a) The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The frequency span for the spectrum analyzer shall be set wide enough to capture all modulation products including the emission skirts (i.e., two to five times the OBW).
b) The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1 to 5 % of the anticipated OBW, and the VBW shall be at least 3 times the RBW.
c) Set the reference level of the instrument as required to keep the signal from exceeding the maximum input mixer level for linear operation. In general, the peak of the spectral envelope must be at least 10log (OBW / RBW) below the reference level.
d) Set the detection mode to peak, and the trace mode to max hold.
e) Use the 99 % power bandwidth function of the spectrum analyzer and report the measured bandwidth.

A.2.3 Measurement result

Configuration WCDMA-1C

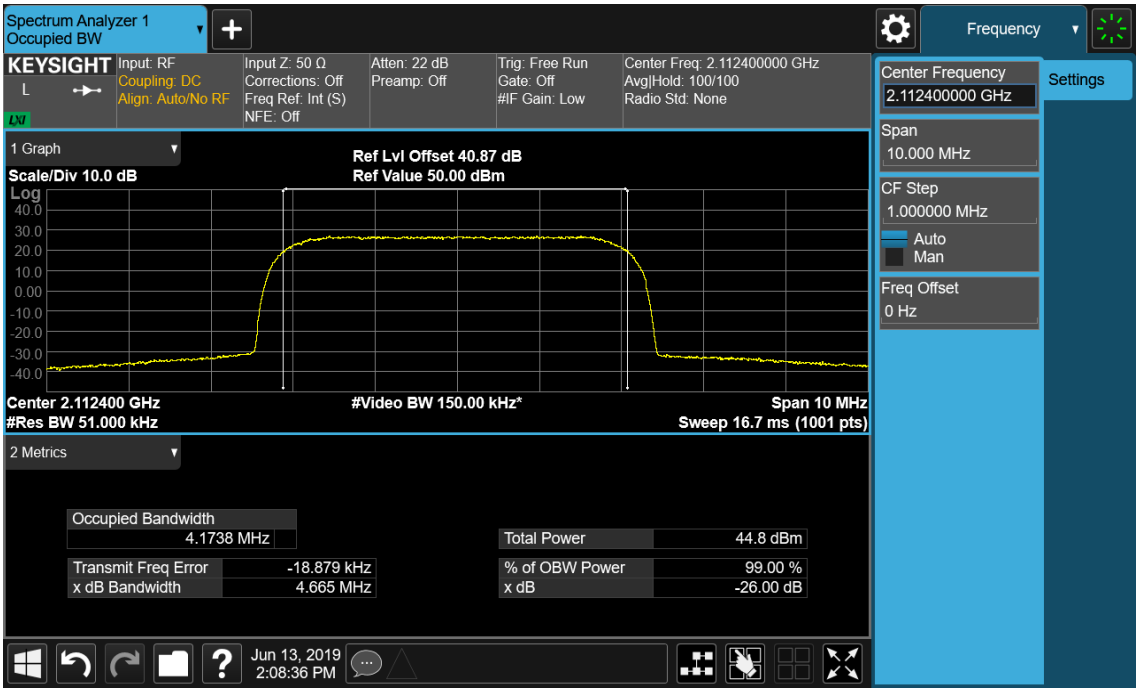
-26dBc Occupied Bandwidth

Modulation/ Bandwidth	Occupied Bandwidth (MHz)		
	Channel position B	Channel position M	Channel position T
64QAM/3.8MHz	3.749	3.749	3.749
QPSK/5.0MHz	4.665	4.667	4.666
16QAM/5.0MHz	4.658	4.658	4.659
64QAM/5.0MHz	4.663	4.662	4.662

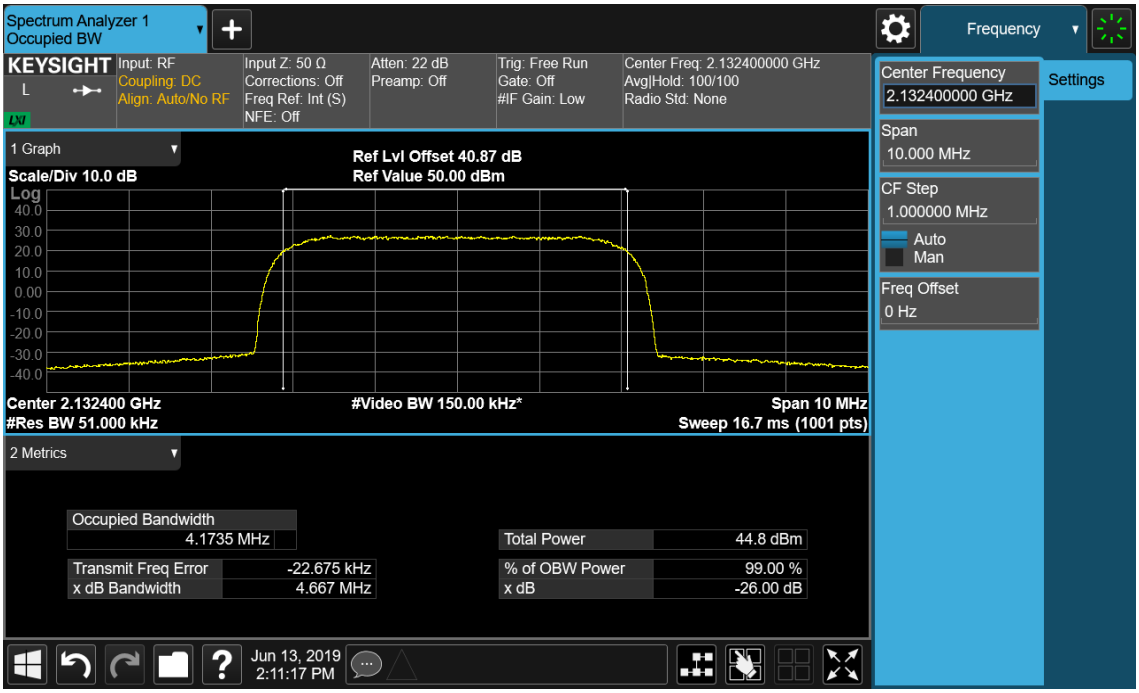
99% Occupied Bandwidth

Modulation/ Bandwidth	Occupied Bandwidth (MHz)		
	Channel position B	Channel position M	Channel position B
64QAM/3.8MHz	3.5695	3.5689	3.5680
QPSK/5.0MHz	4.1738	4.1735	4.1723
16QAM/5.0MHz	4.1731	4.1647	4.1656
64QAM/5.0MHz	4.1802	4.1698	4.1706

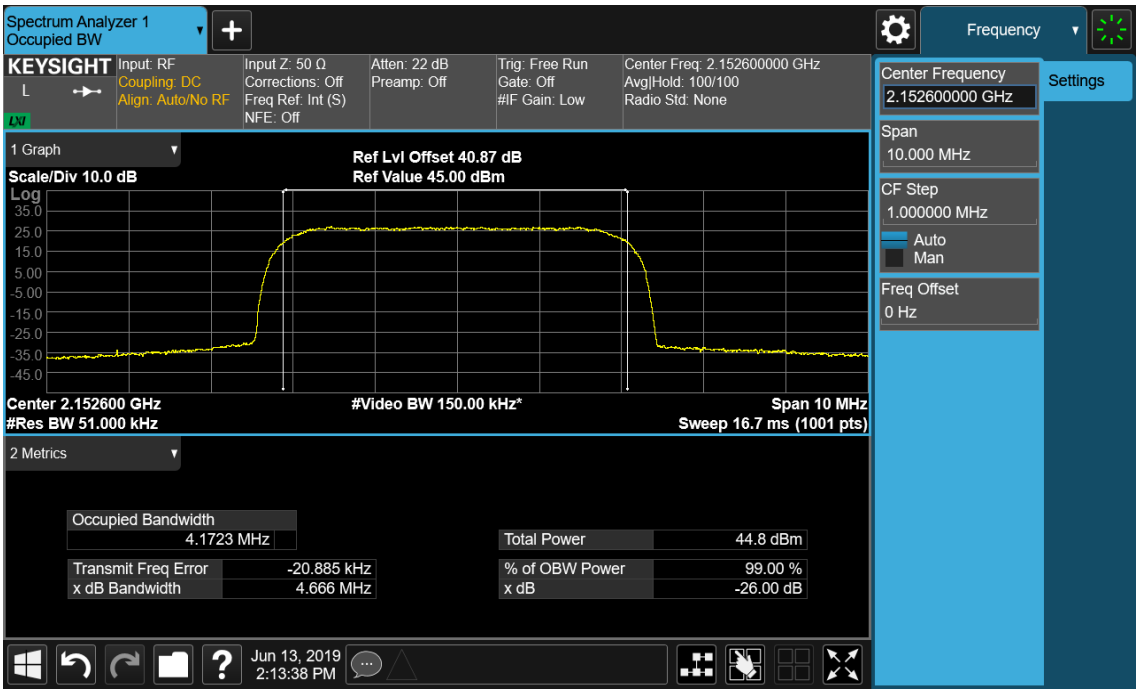
Port B, QPSK/5.0MHz Channel Position B



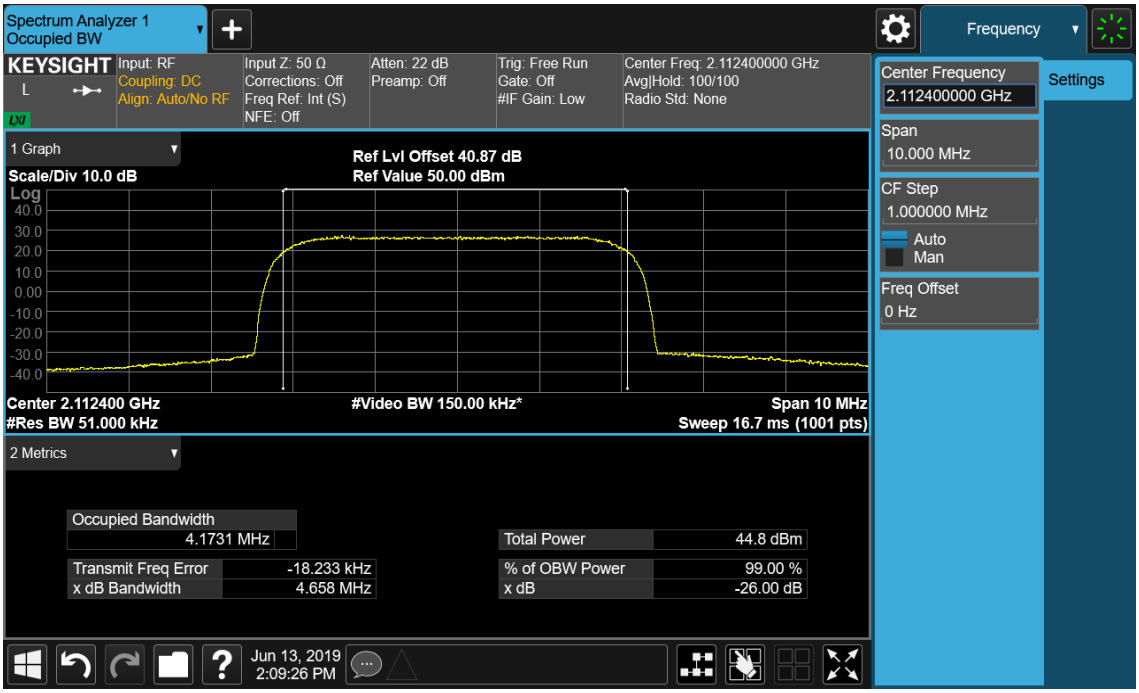
Port B, QPSK/5.0MHz Channel Position M



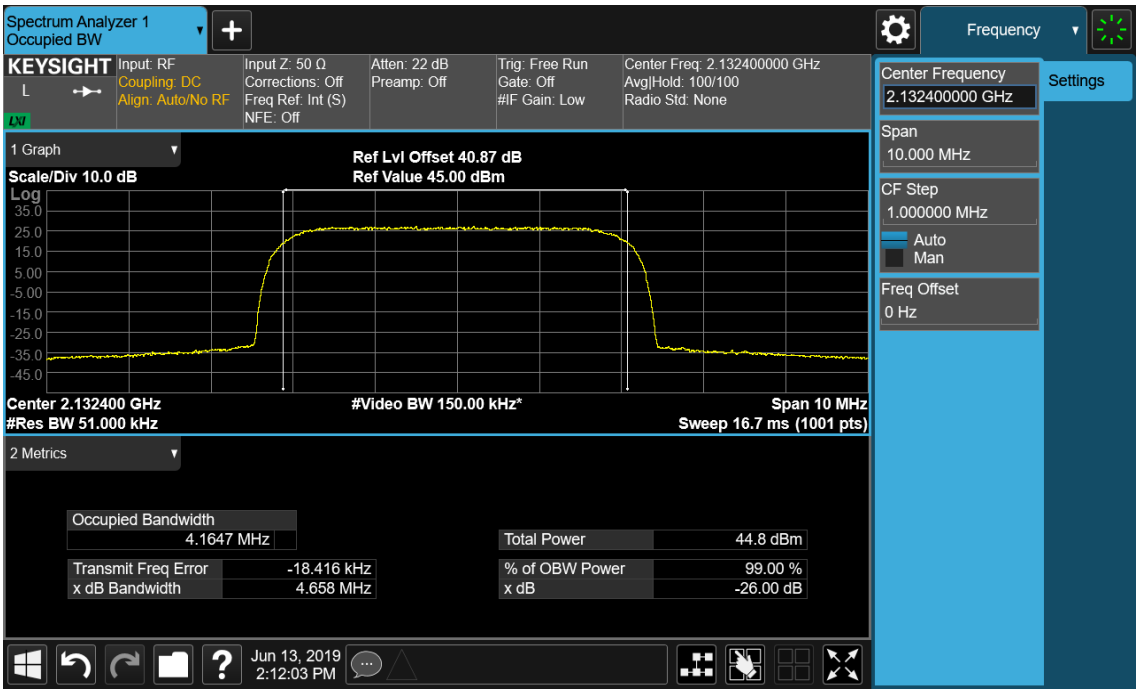
Port B, QPSK/5.0MHz Channel Position T



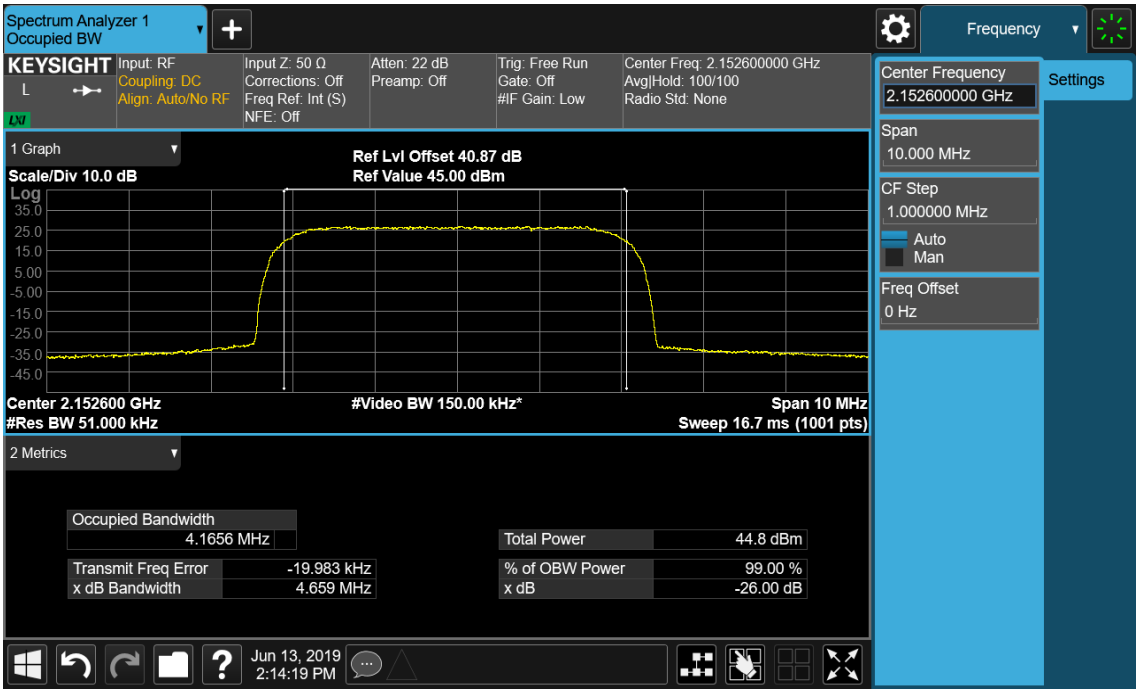
Port B, 16QAM/5.0MHz Channel Position B



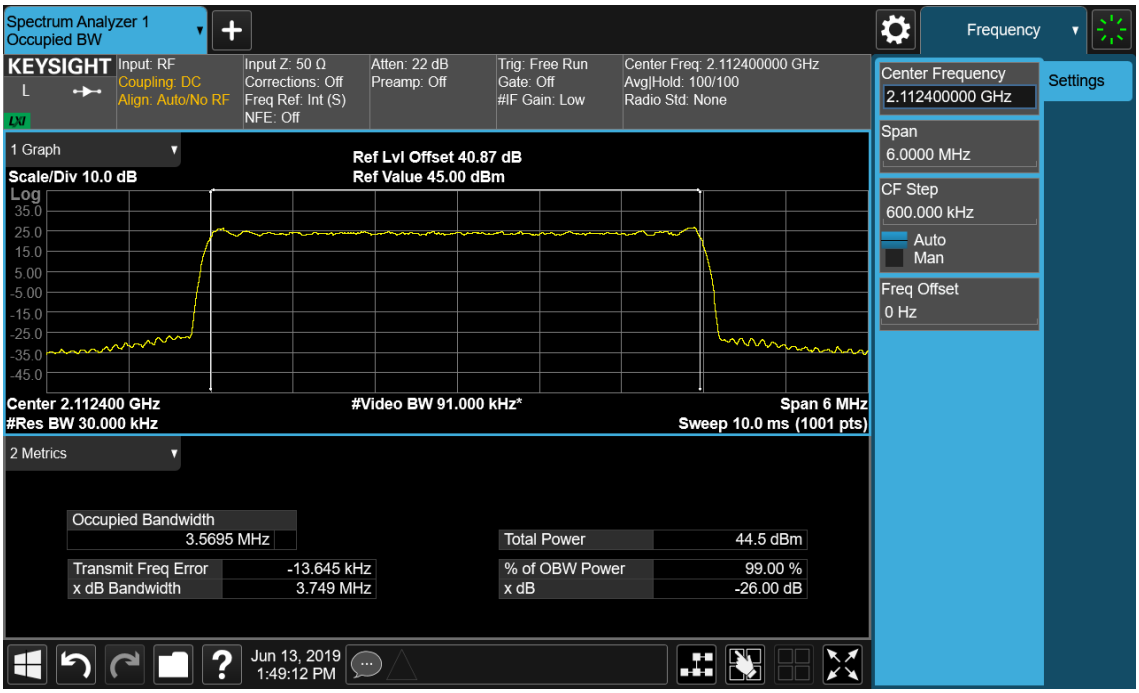
Port B, 16QAM/5.0MHz Channel Position M



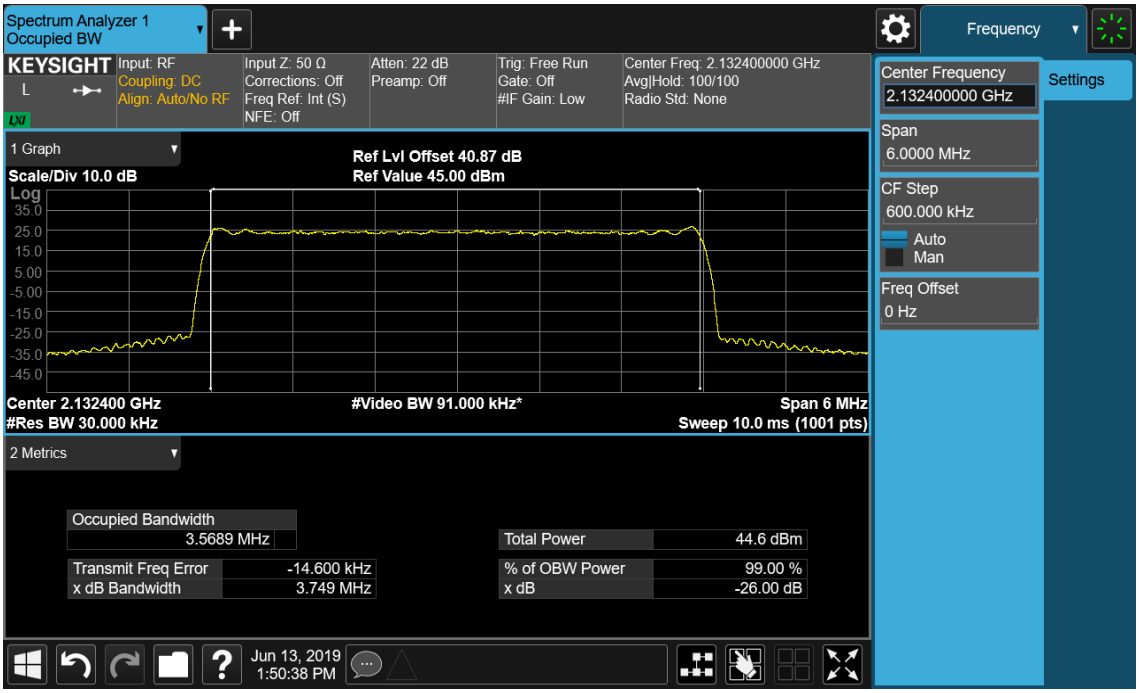
Port B, 16QAM/5.0MHz Channel Position T



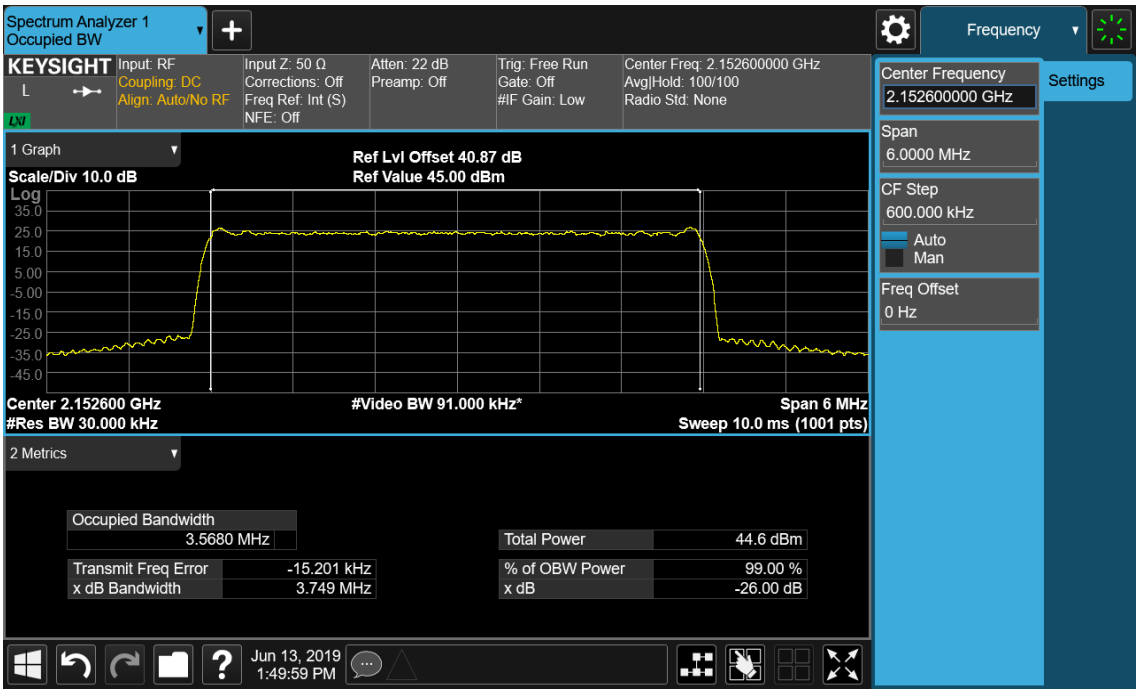
Port B, 64QAM/3.8MHz Channel Position B



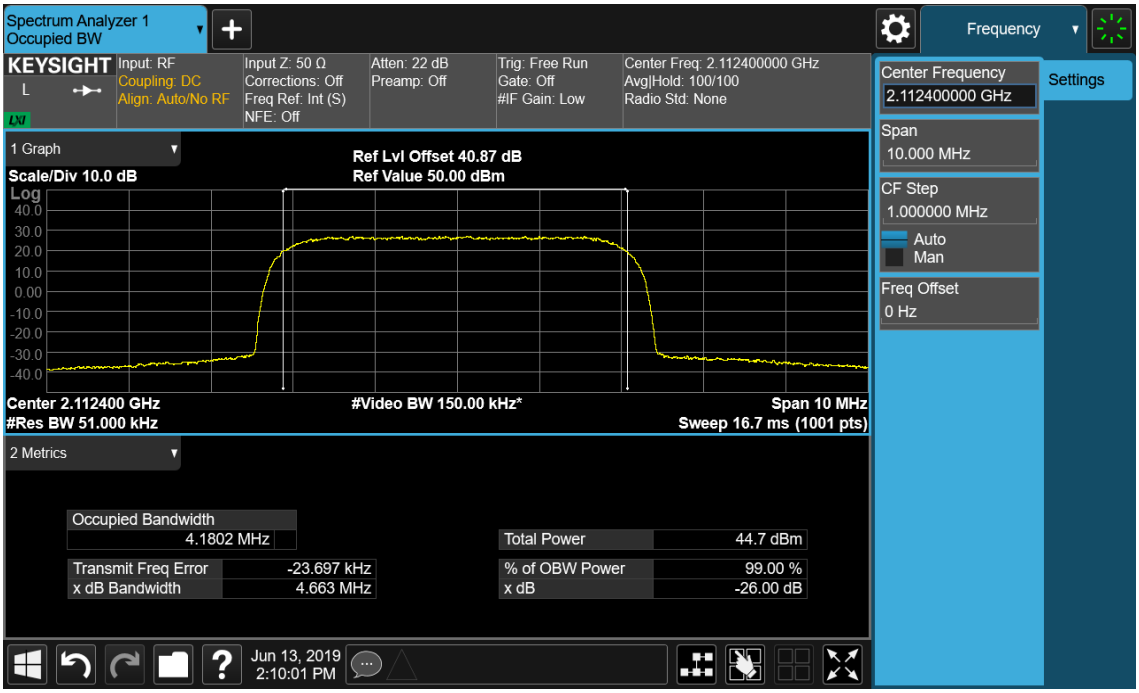
Port B, 64QAM/3.8MHz Channel Position M



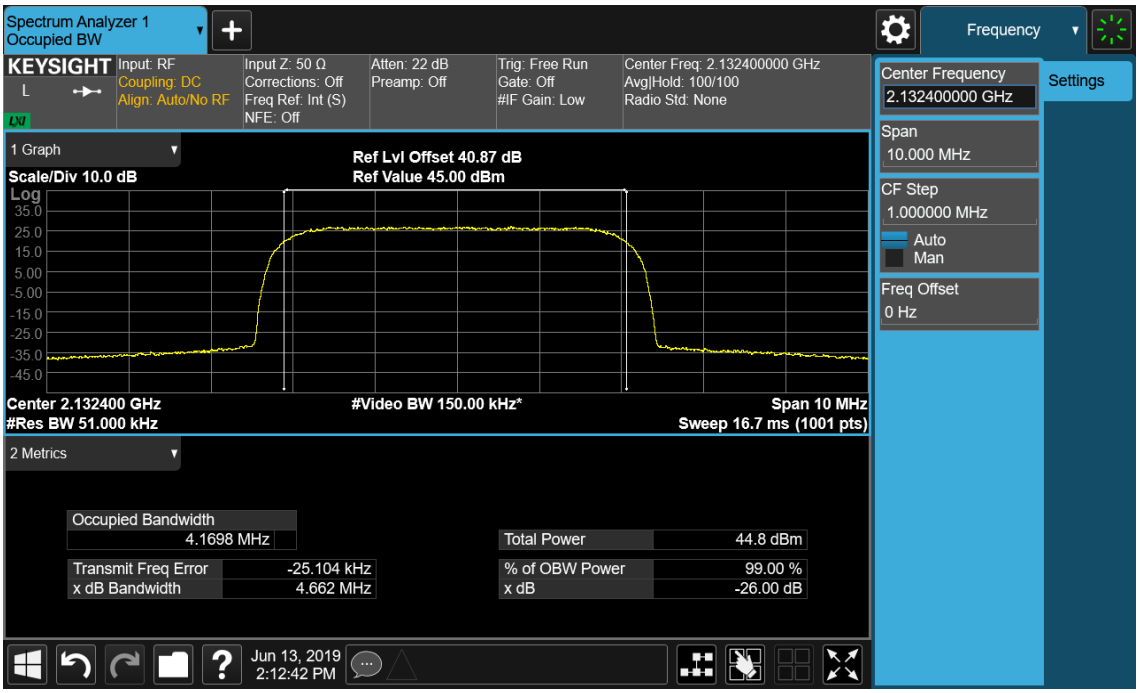
Port B, 64QAM/3.8MHz Channel Position T



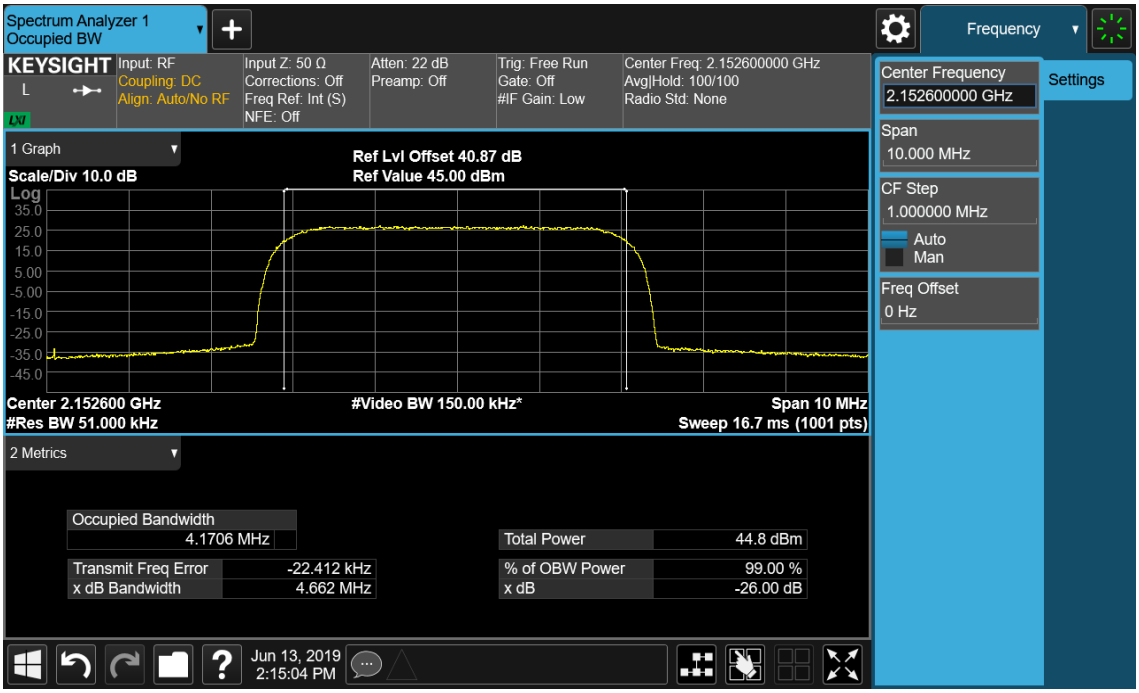
Port B, 64QAM/5.0MHz Channel Position B



Port B, 64QAM/5.0MHz Channel Position M



Port B, 64QAM/5.0MHz Channel Position T



Configuration LTE-MIMO-1C

-26dBc Occupied Bandwidth

Modulation/ Bandwidth	Occupied Bandwidth (MHz)		
	Channel position B	Channel position M	Channel position T
QPSK/ 5.0MHz	4.740	4.737	4.742
QPSK/ 10.0MHz	9.385	9.366	9.375
QPSK/ 15.0MHz	14.00	13.99	13.93
QPSK/ 20.0MHz	18.59	18.59	18.57

99% Occupied Bandwidth

Modulation/ Bandwidth	Occupied Bandwidth (MHz)		
	Channel position B	Channel position M	Channel position T
QPSK/ 5.0MHz	4.4783	4.4767	4.4780
QPSK/ 10.0MHz	8.9372	8.9369	8.9397
QPSK/ 15.0MHz	13.399	13.394	13.410
QPSK/ 20.0MHz	17.856	17.851	17.860

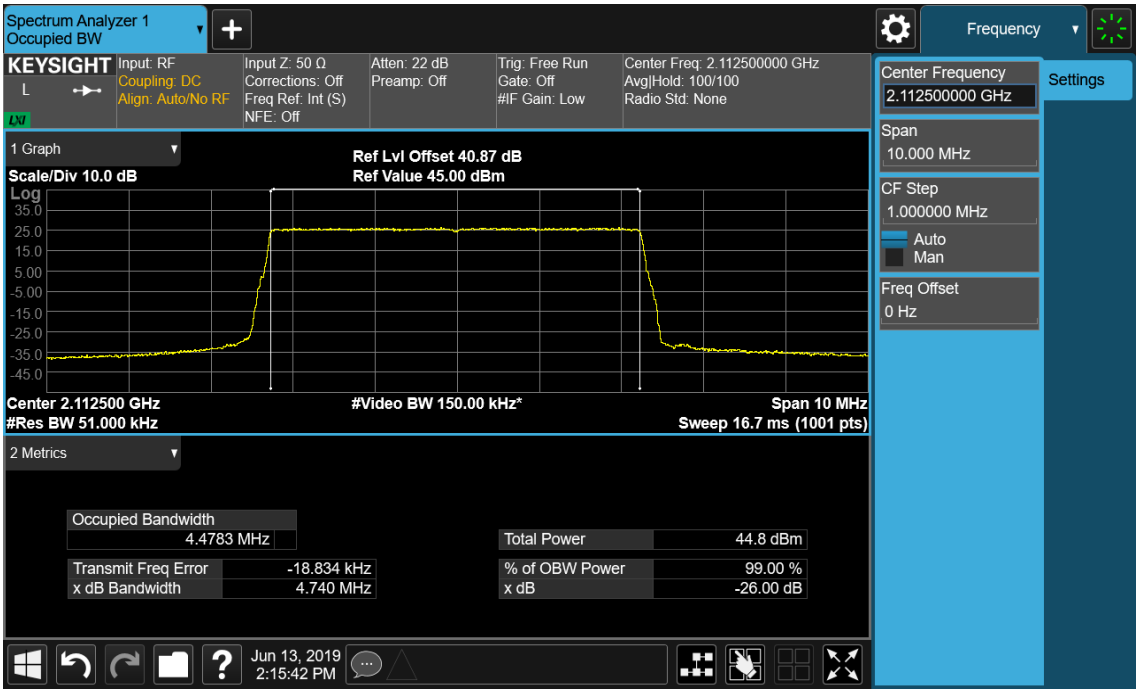
-26dBc Occupied Bandwidth

Bandwidth	Occupied Bandwidth (MHz)		
	Modulation 16QAM/ Channel position M	Modulation 64QAM/ Channel position M	Modulation 256QAM/ Channel position M
5.0MHz	4.706	4.732	4.725
10.0MHz	9.323	9.361	9.349
15.0MHz	13.96	13.97	13.97
20.0MHz	18.61	18.58	18.60

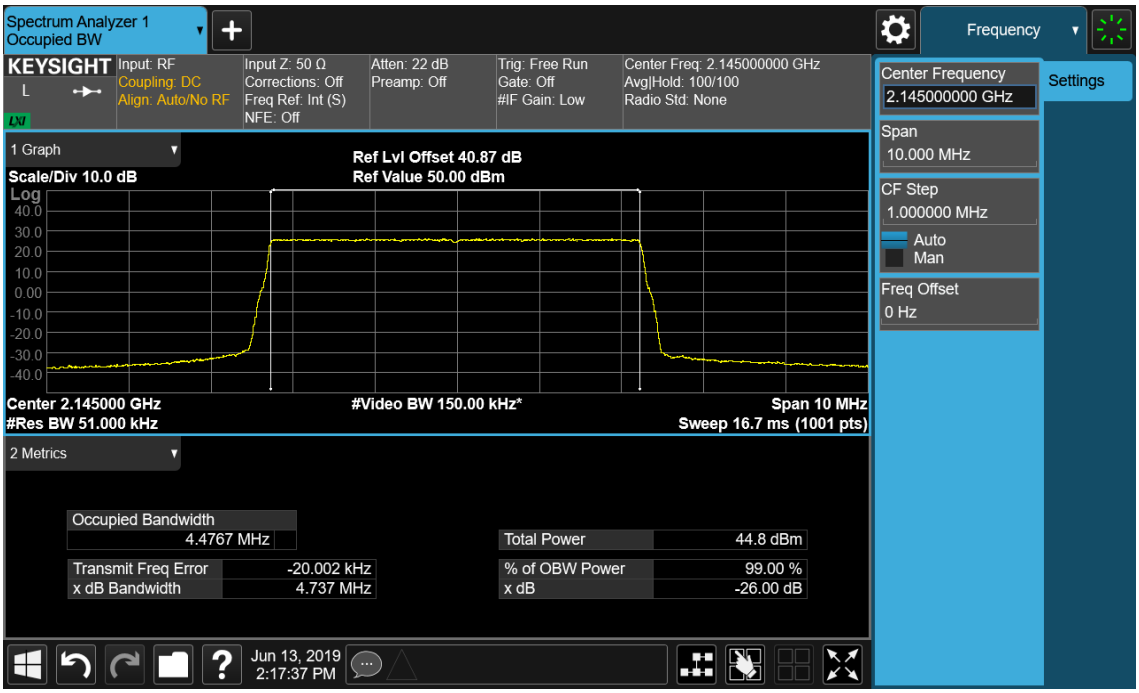
99% Occupied Bandwidth

Bandwidth	Occupied Bandwidth (MHz)		
	Modulation 16QAM/ Channel position M	Modulation 64QAM/ Channel position M	Modulation 256QAM/ Channel position M
5.0MHz	4.4613	4.4786	4.4771
10.0MHz	8.9300	8.9367	8.9419
15.0MHz	13.390	13.402	13.393
20.0MHz	17.826	17.857	17.843

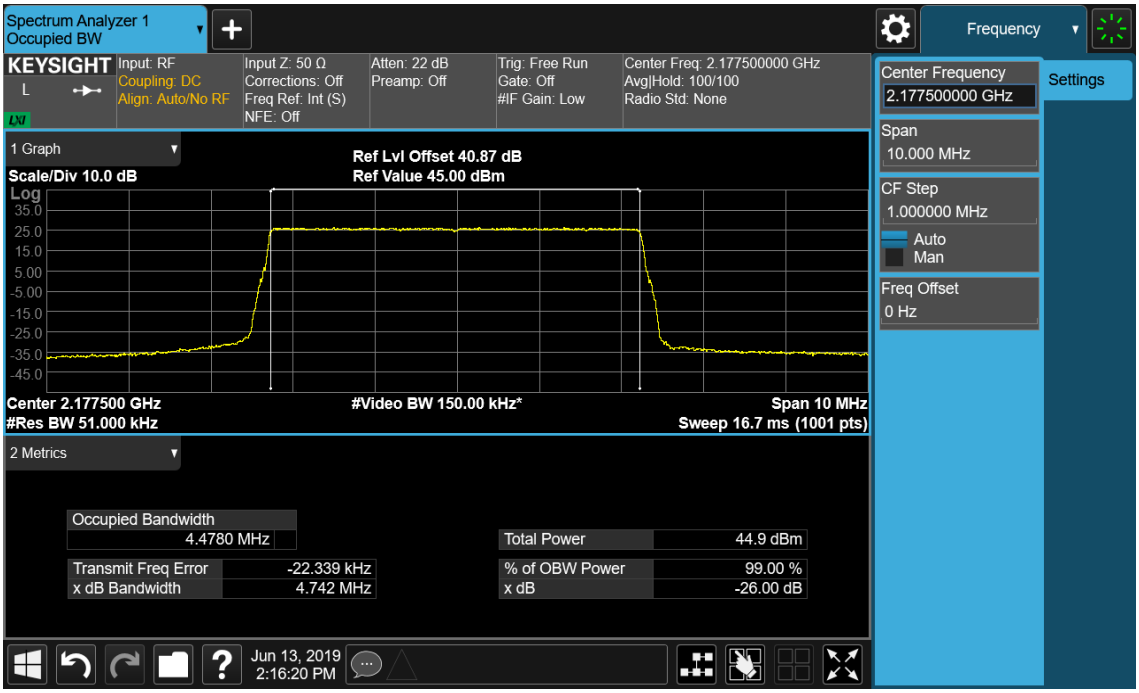
Port B, QPSK/5.0MHz Channel Position B



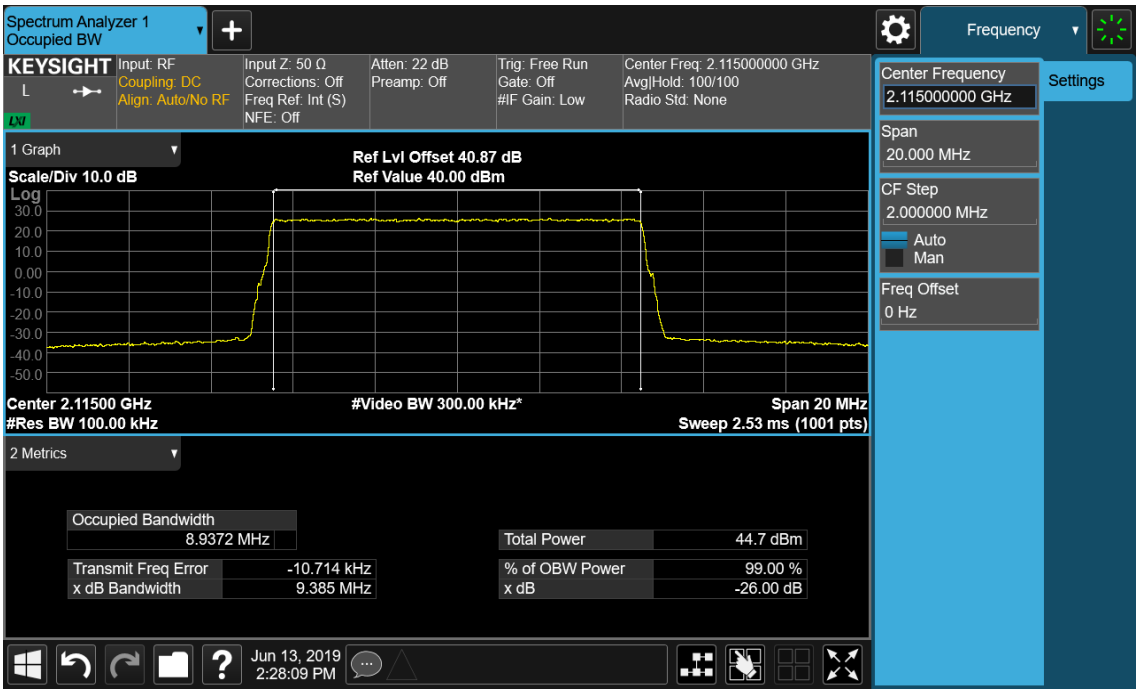
Port B, QPSK/5.0MHz Channel Position M



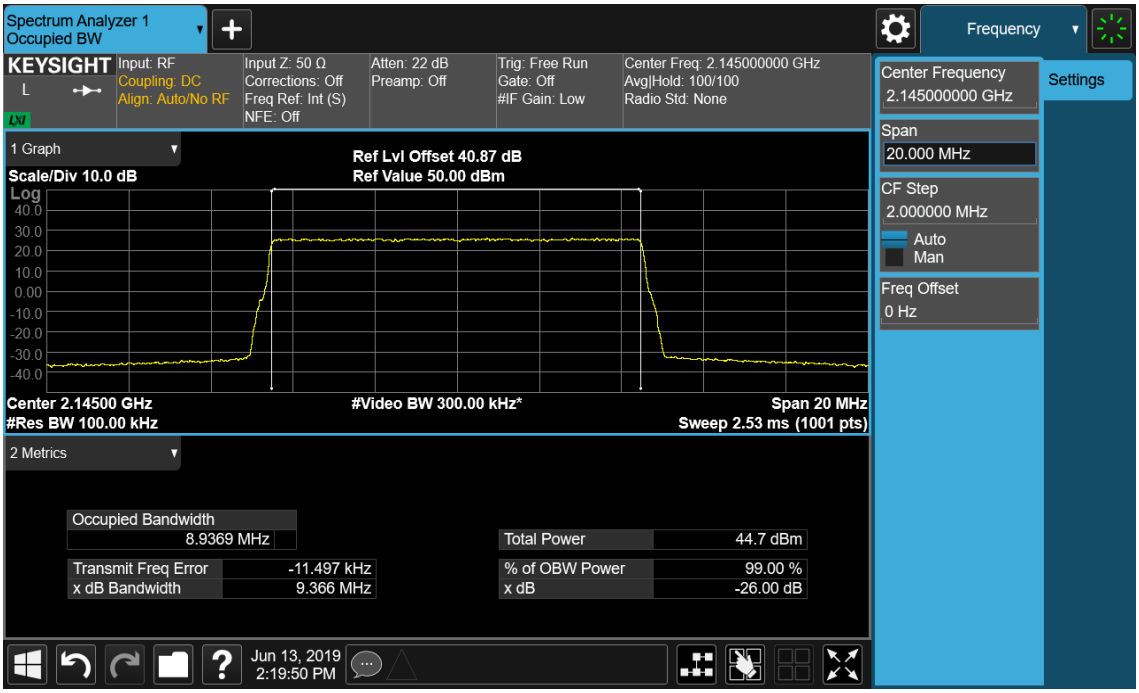
Port B, QPSK/5.0MHz Channel Position T



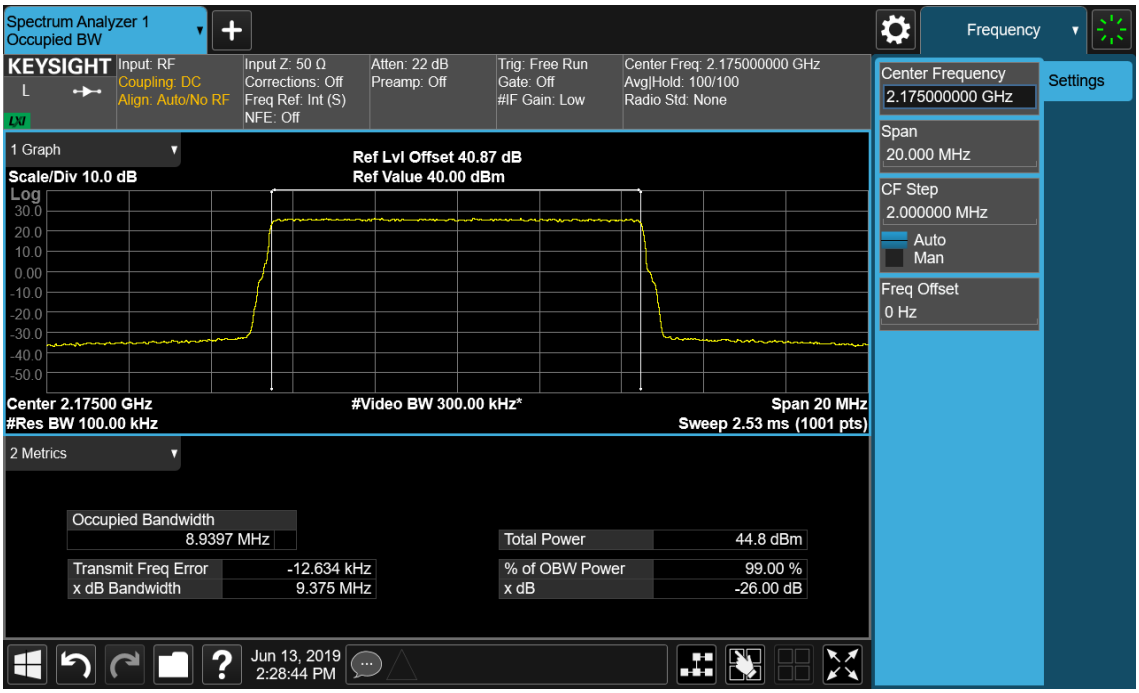
Port B, QPSK/10.0MHz Channel Position B



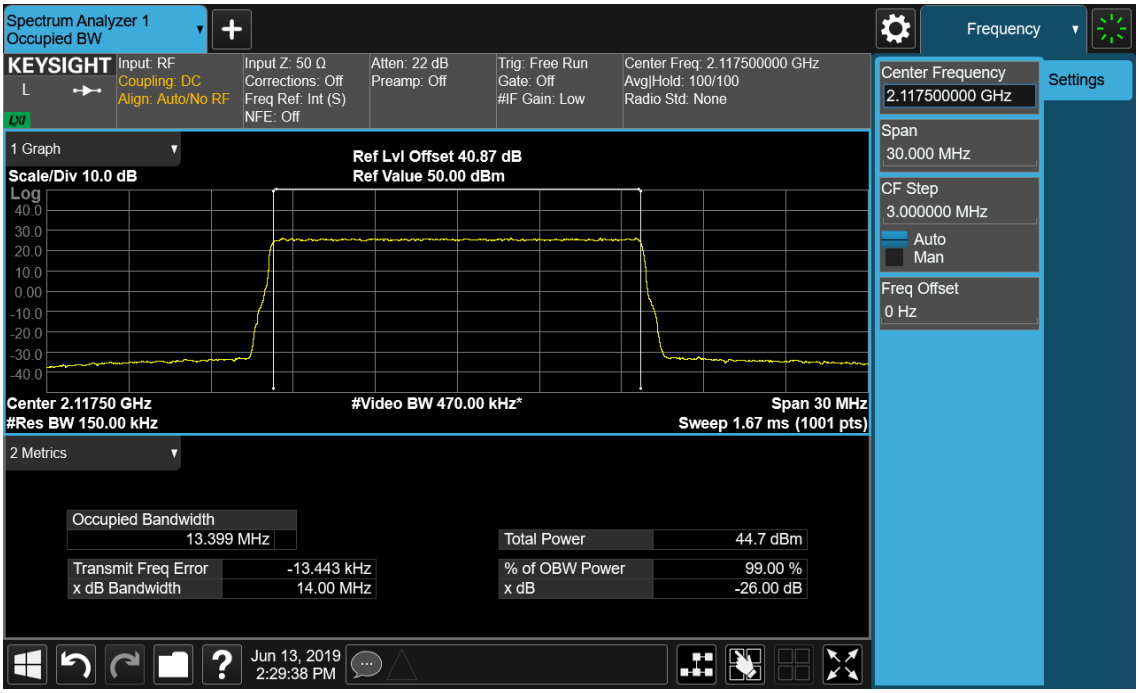
Port B, QPSK/10.0MHz Channel Position M



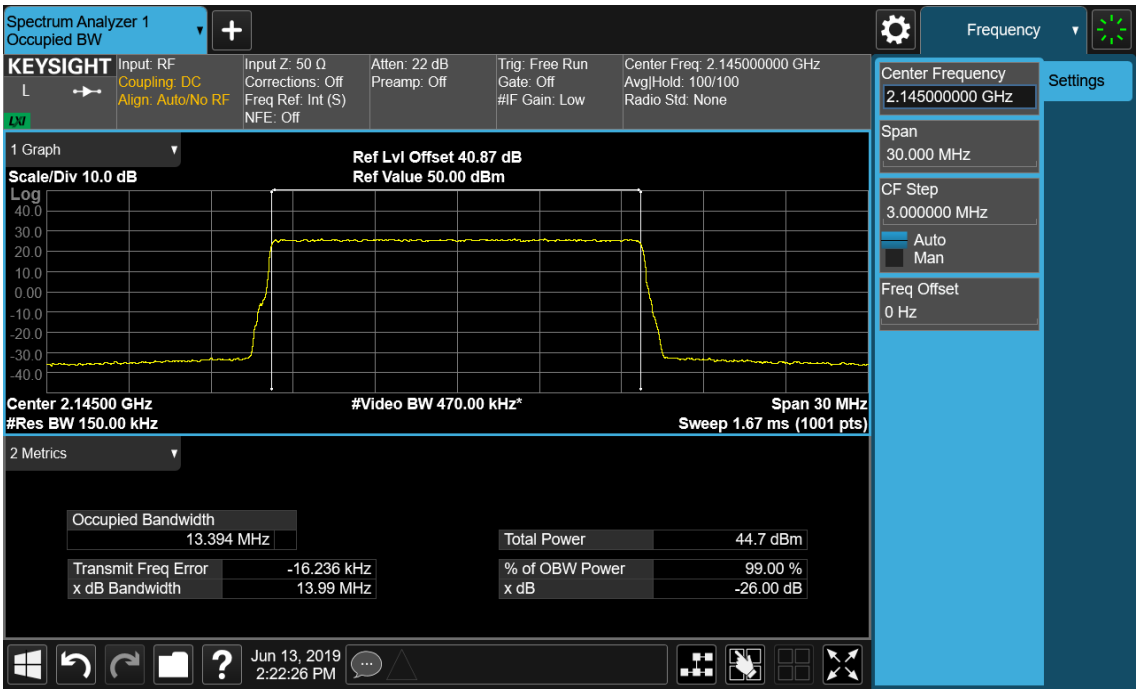
Port B, QPSK/10.0MHz Channel Position T



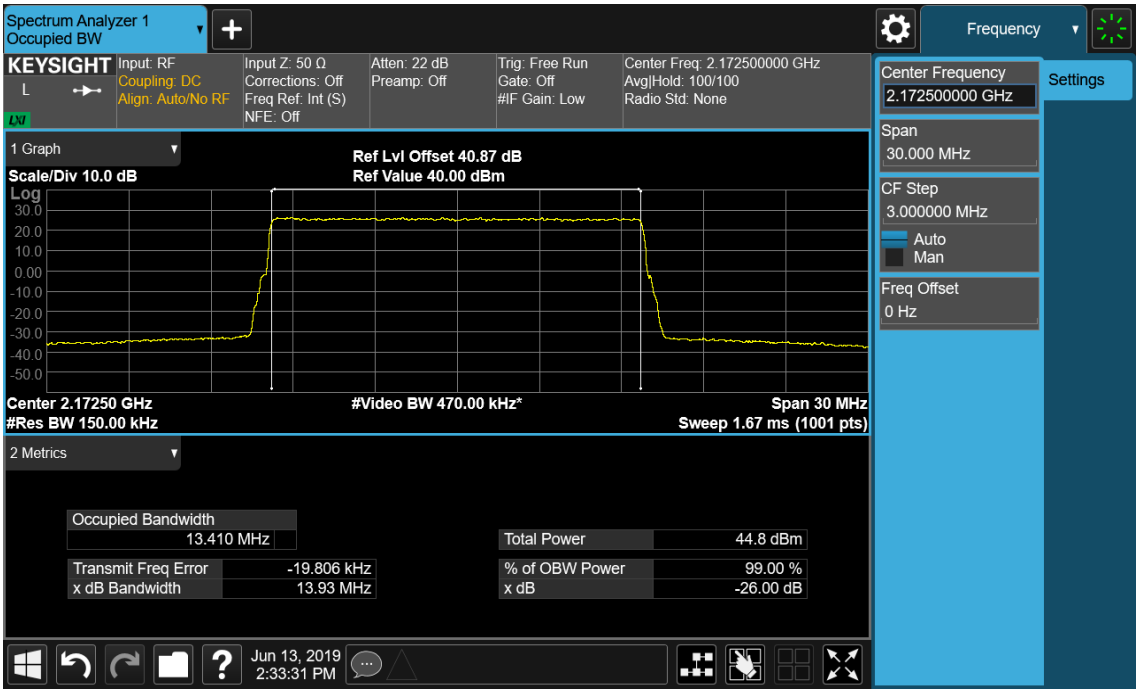
Port B, QPSK/15.0MHz Channel Position B



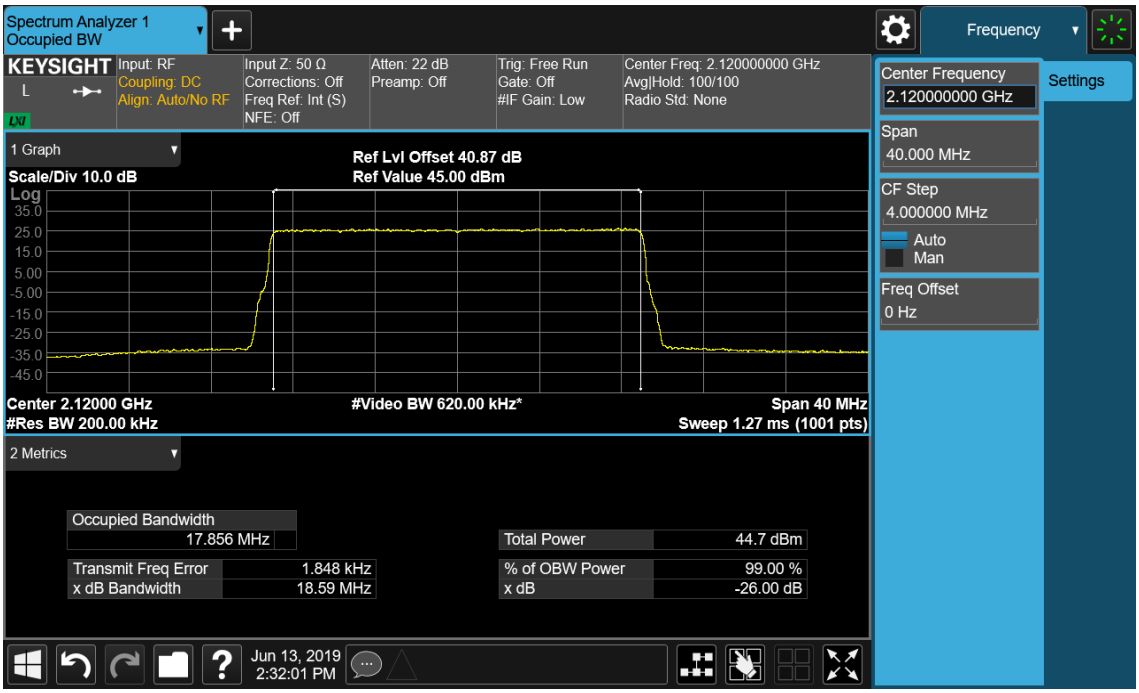
Port B, QPSK/15.0MHz Channel Position M



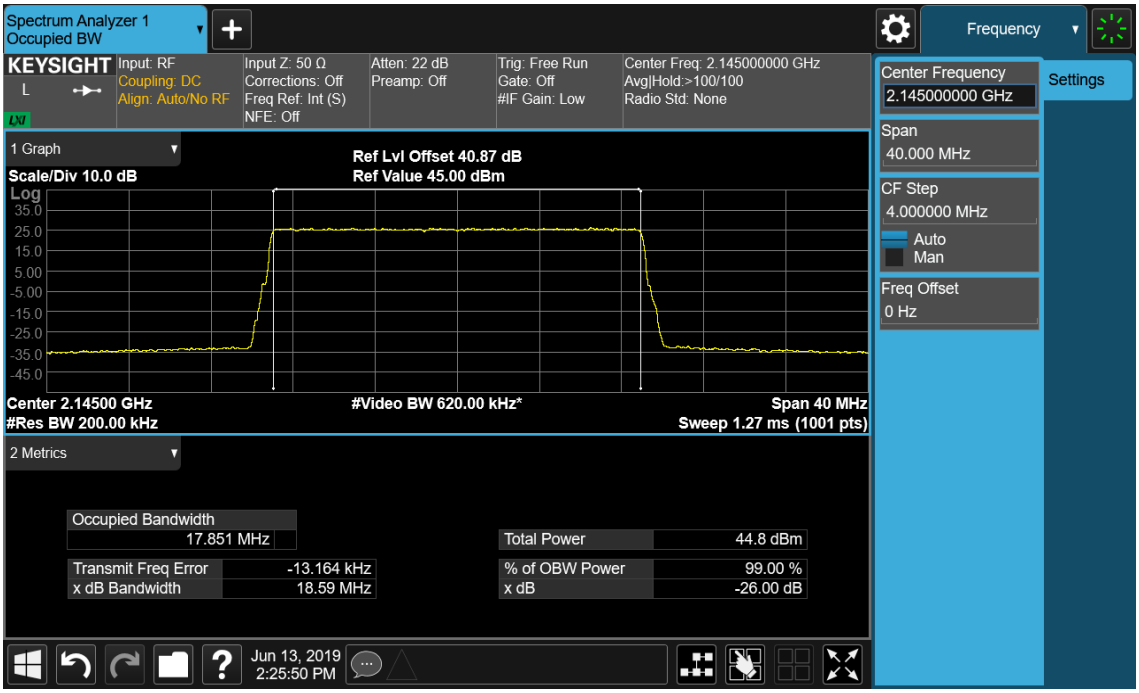
Port B, QPSK/15.0MHz Channel Position T



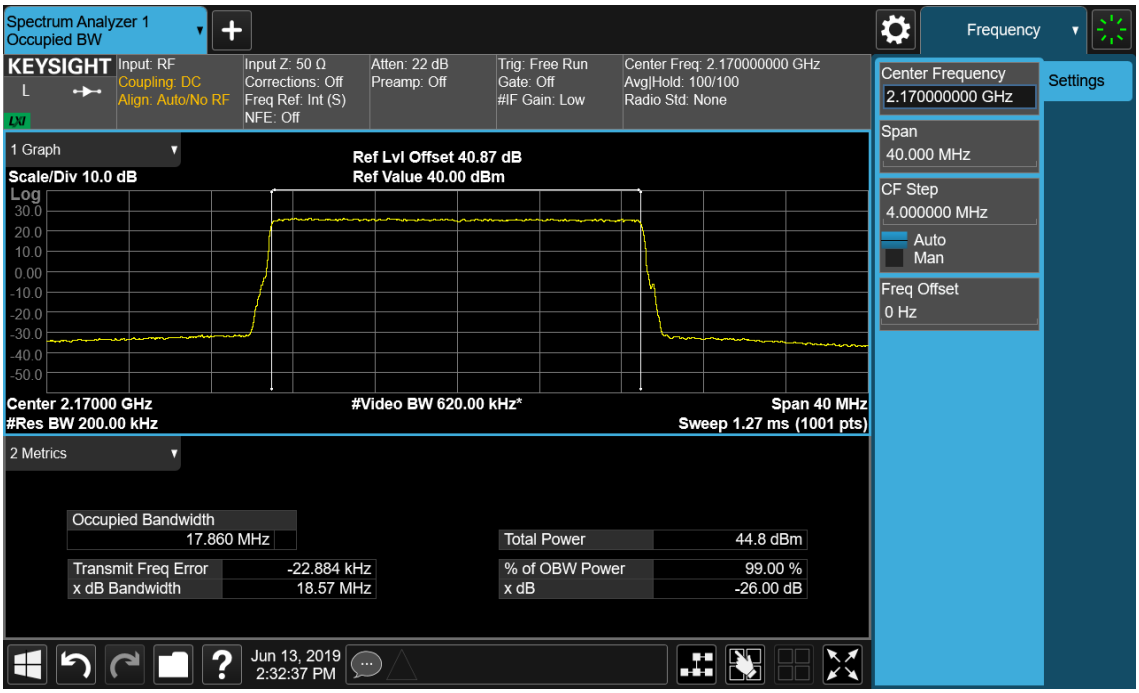
Port B, QPSK/20.0MHz Channel Position B



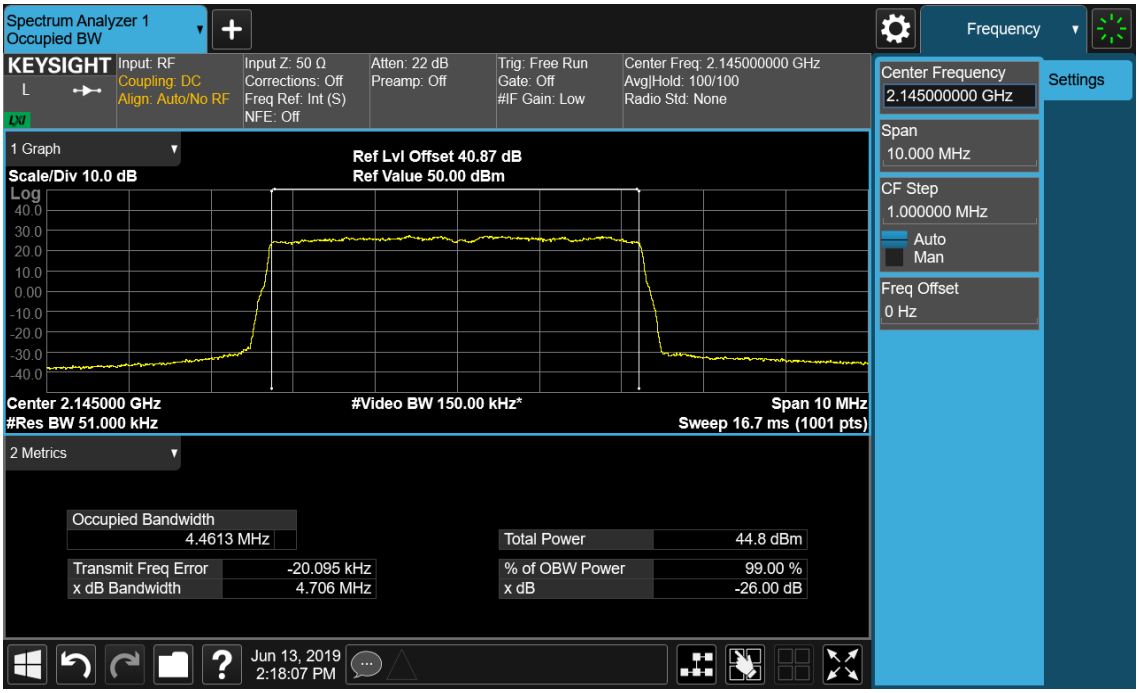
Port B, QPSK/20.0MHz Channel Position M



Port B, QPSK/20.0MHz Channel Position T

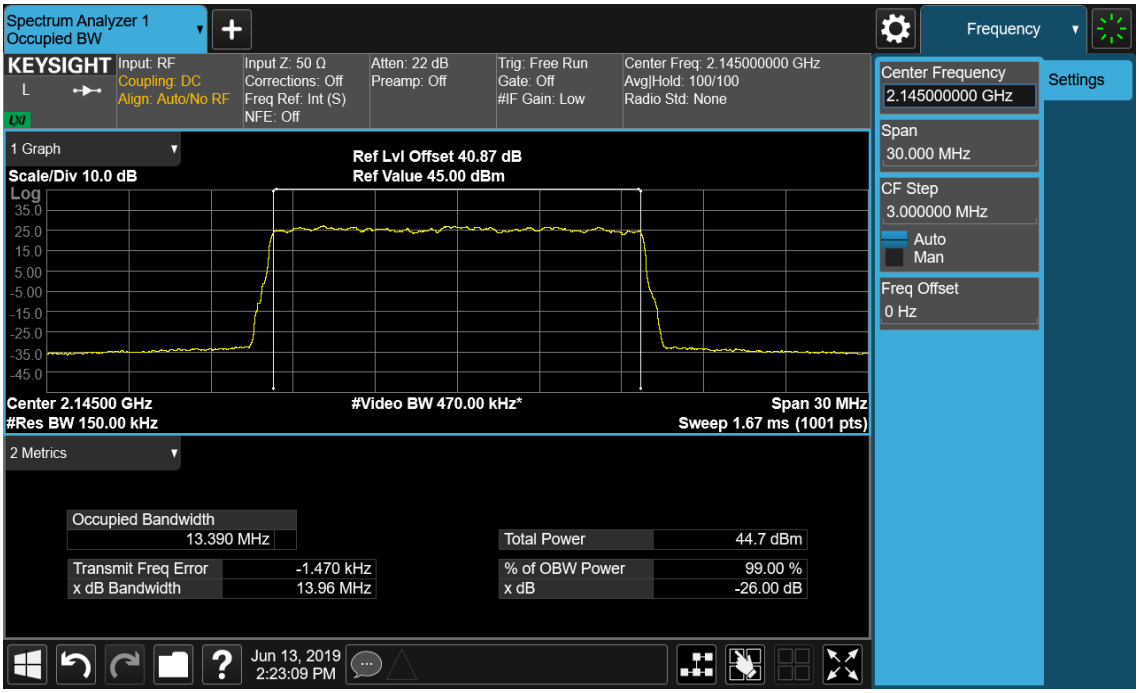


Port B, 16QAM/5.0MHz Channel Position M

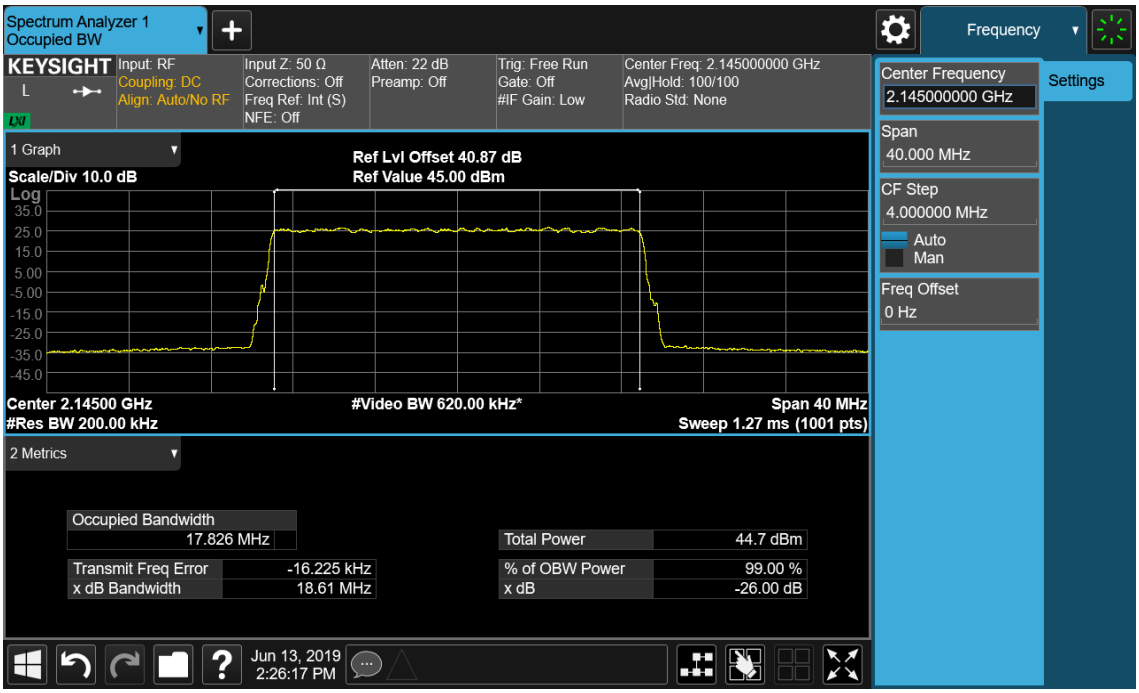


Port B, 16QAM/10.0MHz Channel Position M

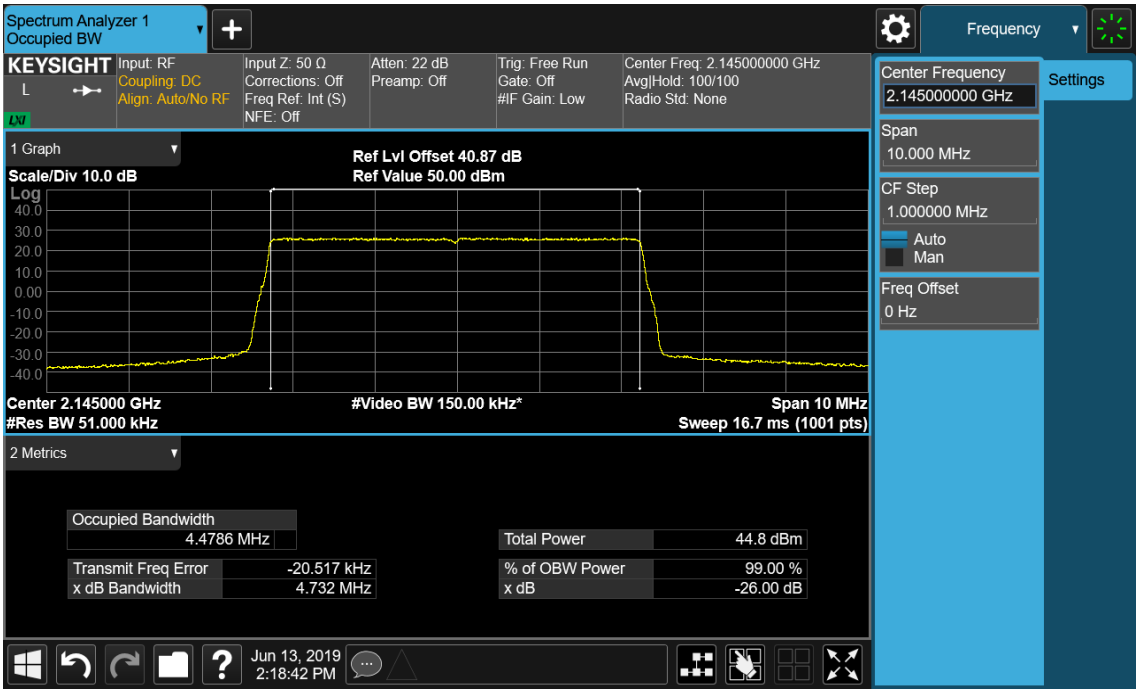
Port B, 16QAM/15.0MHz Channel Position M



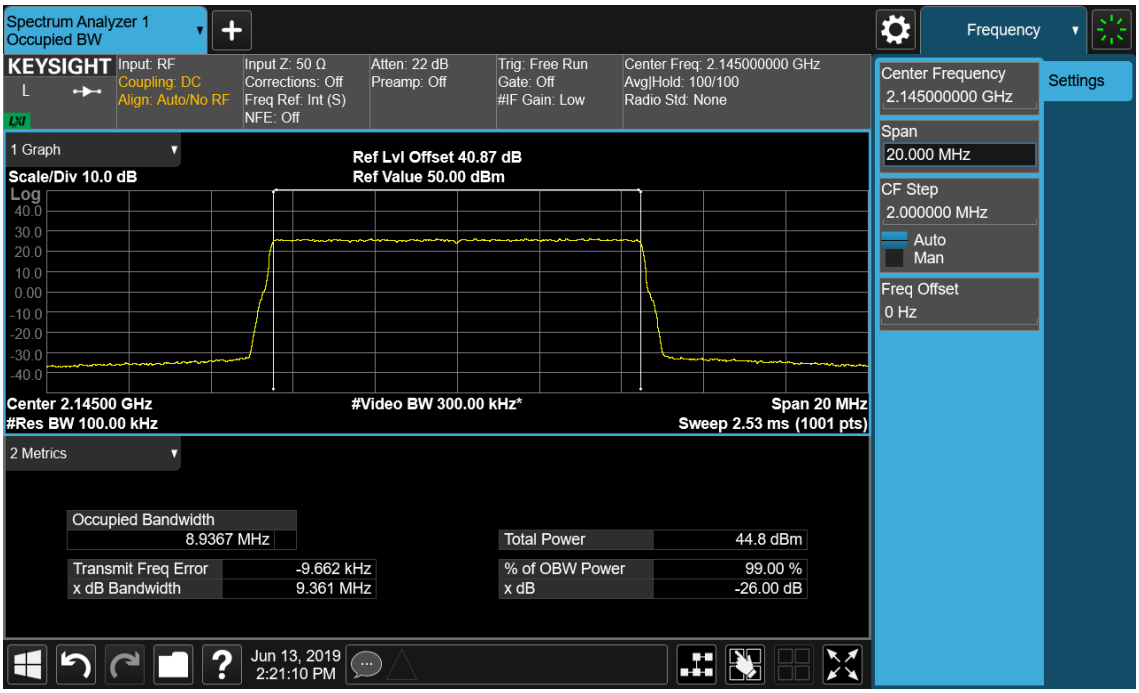
Port B, 16QAM/20.0MHz Channel Position M



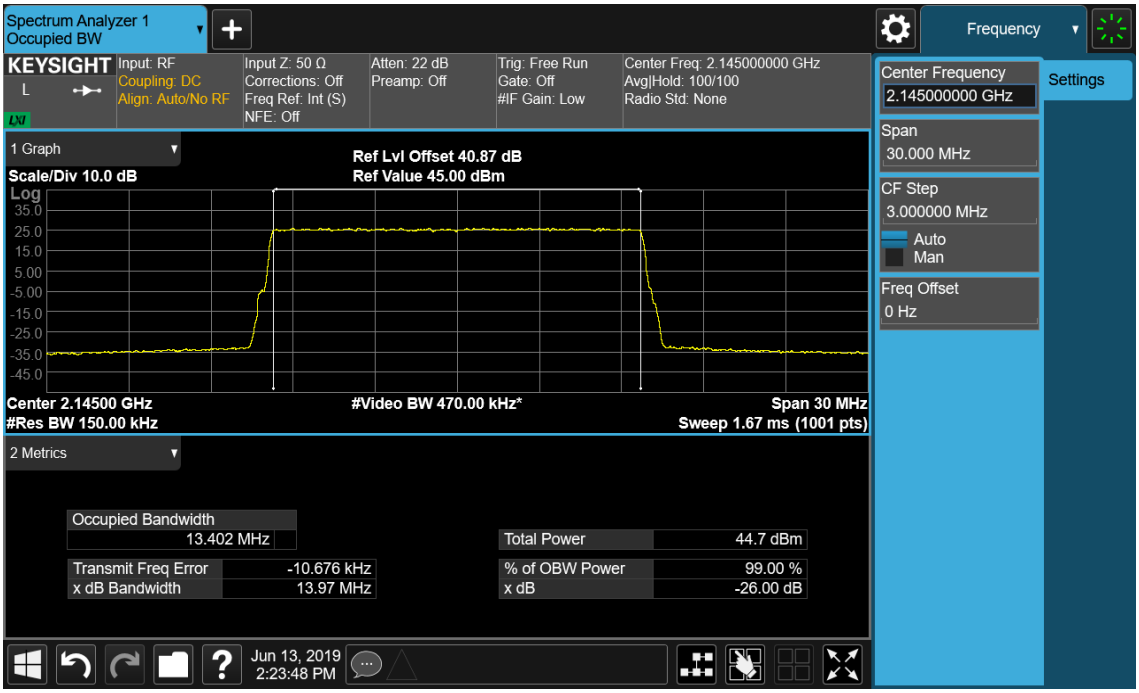
Port B, 64QAM/5.0MHz Channel Position M



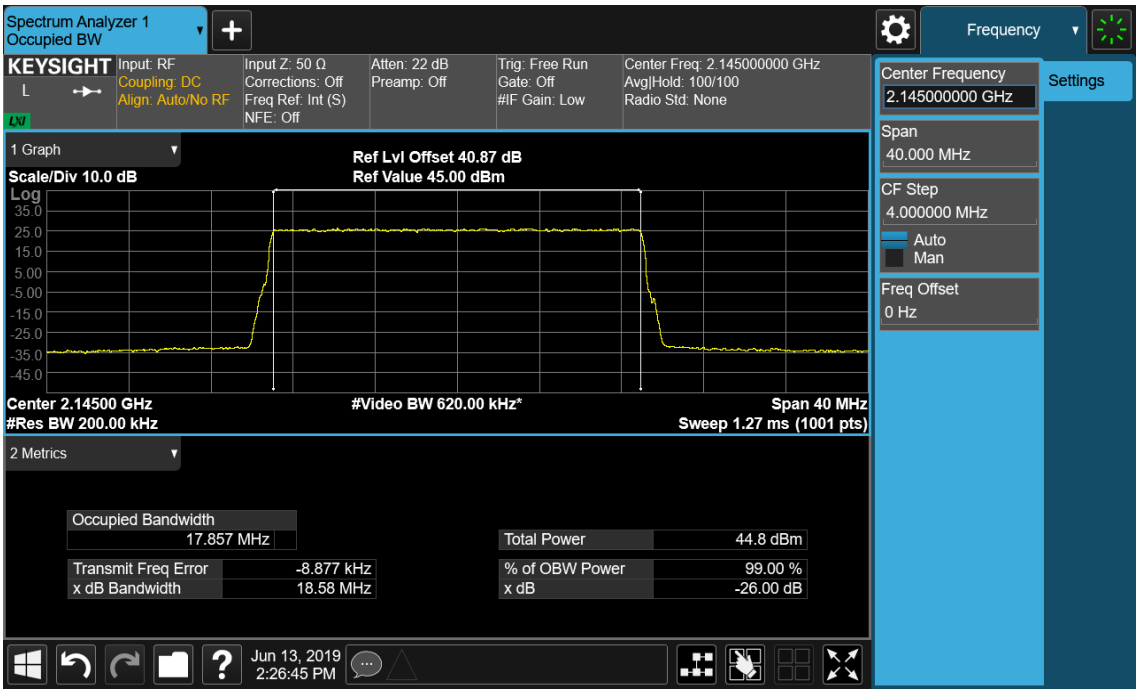
Port B, 64QAM/10.0MHz Channel Position M



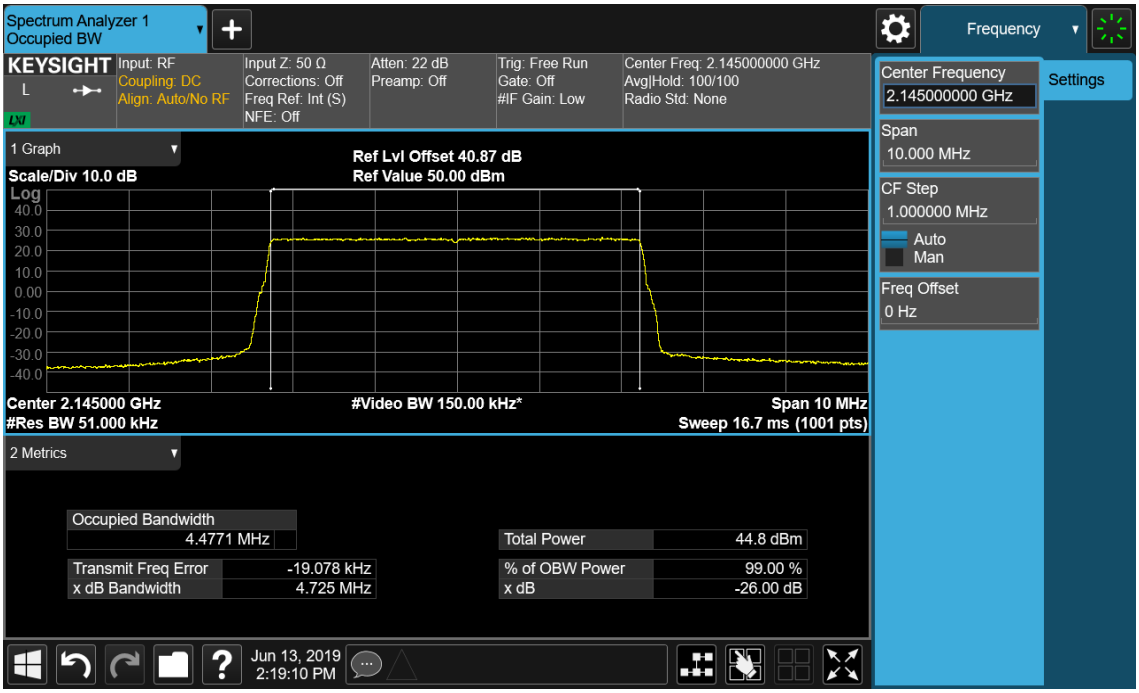
Port B, 64QAM/15.0MHz Channel Position M



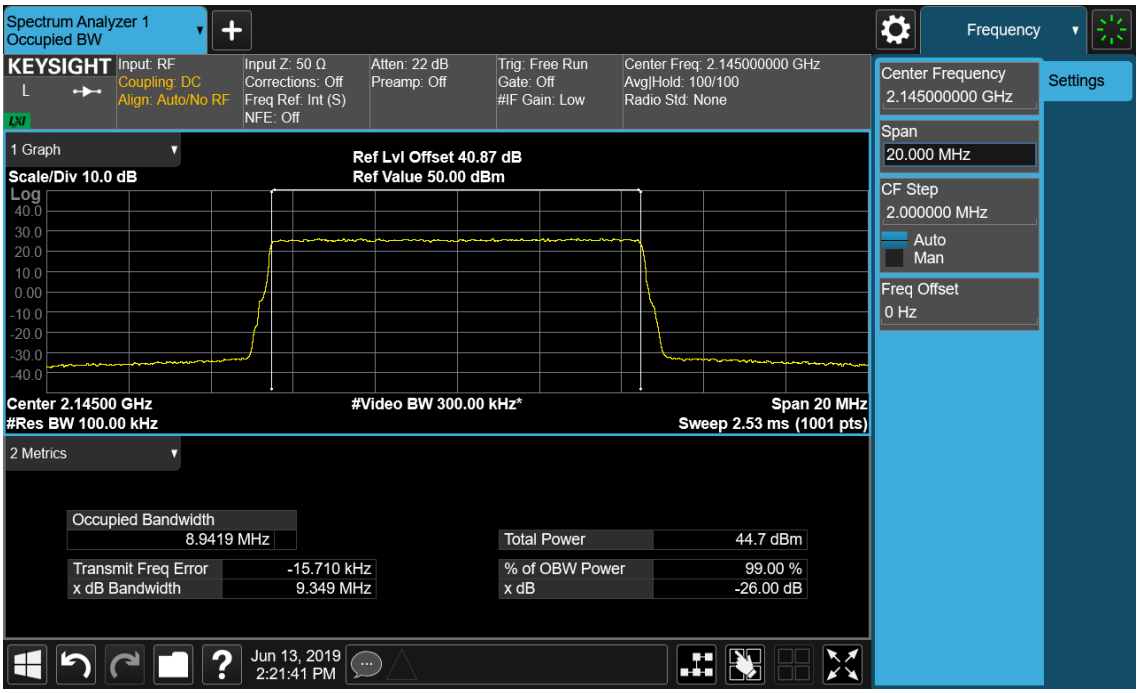
Port B, 64QAM/20.0MHz Channel Position M



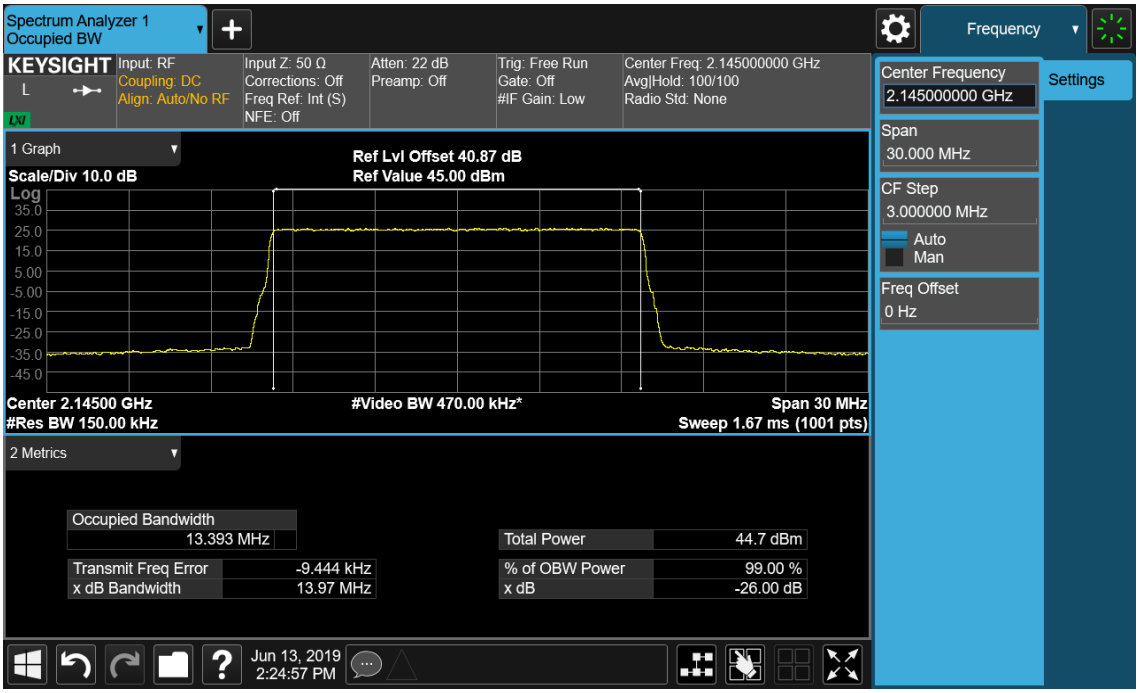
Port B, 256QAM/5.0MHz Channel Position M



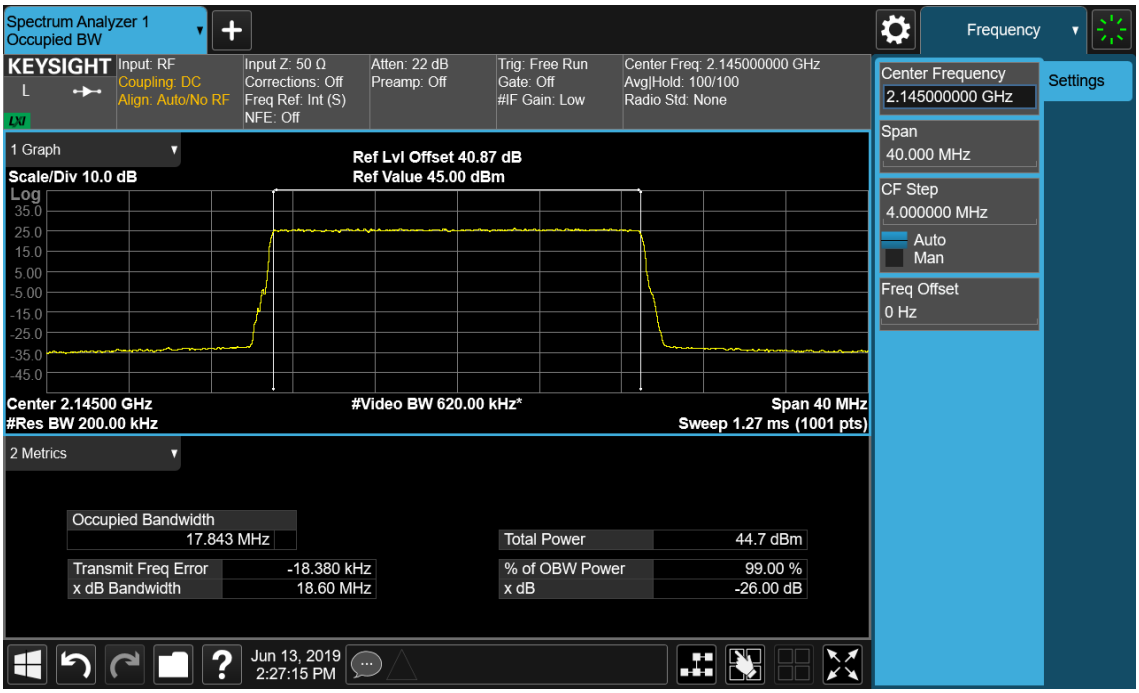
Port B, 256QAM/10.0MHz Channel Position M



Port B, 256QAM/15.0MHz Channel Position M



Port B, 256QAM/20.0MHz Channel Position M



Configuration NB-IoT-Standalone-1C

-26dBc Occupied Bandwidth

Modulation	Occupied Bandwidth (KHz)		
	Channel position B	Channel position M	Channel position T
QPSK	267.2	315.6	305.5

99% Occupied Bandwidth

Modulation	Occupied Bandwidth (KHz)		
	Channel position B	Channel position M	Channel position B
QPSK	193.25	203.64	203.36

Port B, QPSK Channel Position B

Port B, QPSK Channel Position M

Port B, QPSK Channel Position T

Configuration NB-IoT-InBand-1C

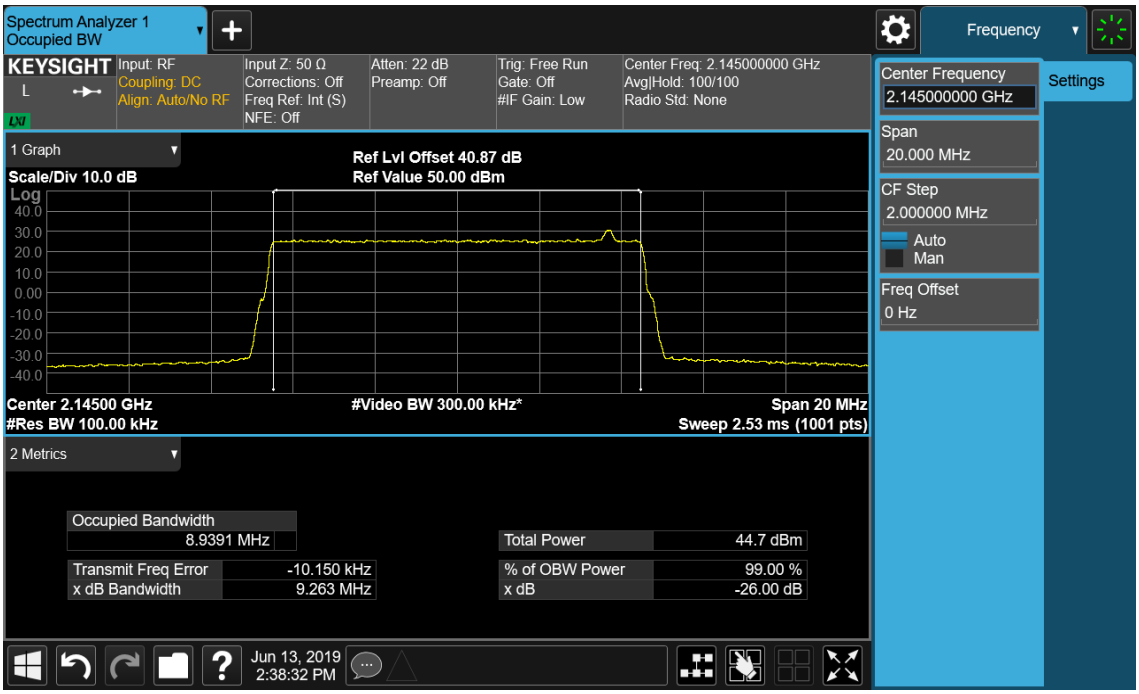
-26dBc Occupied Bandwidth

Modulation	Occupied Bandwidth (MHz)		
	Channel position B	Channel position M	Channel position T
QPSK	-	9.263	-

99% Occupied Bandwidth

Modulation	Occupied Bandwidth (MHz)		
	Channel position B	Channel position M	Channel position B
QPSK	-	8.9391	-

Port B, QPSK/10.0MHz Channel Position M



Configuration NB-IoT-GuardBand-1C

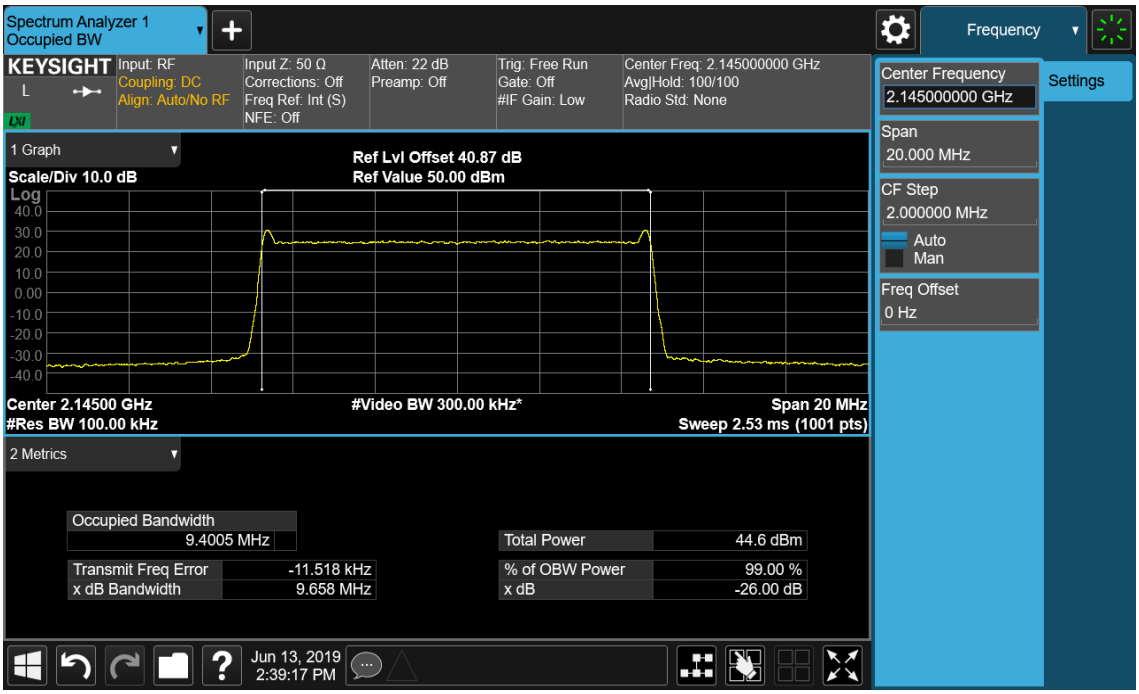
-26dBc Occupied Bandwidth

Modulation	Occupied Bandwidth (MHz)		
	Channel position B	Channel position M	Channel position T
QPSK	-	9.658	-

99% Occupied Bandwidth

Modulation	Occupied Bandwidth (MHz)		
	Channel position B	Channel position M	Channel position B
QPSK	-	9.4005	-

Port B, QPSK/10.0MHz Channel Position M



A.3 Spurious Emissions at Band Edge

A.3.1 Reference

FCC CFR 47 Part 27, Clause 27.53(h)
RSS-139, Clause 6.6

A.3.2 Method of measurement

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10log(P) dB.

For MIMO mode configurations, the limit was adjusted with a correction of -6.02dB [10Log4] by using the Measure and Add 10Log(N) dB technique according to FCC KDB 662911 D01 Multiple Transmitter Output accounting for simultaneous transmission from antenna ports RF A,B,C and D.

According to FCC rules, in the 1 MHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed and a RBW of 1MHz for measurements of emissions > 1MHz away from the band edges. The limit was adjusted with -13.01dB [10Log(50/1000)] to compensate for the reduce measurement bandwidth 50KHz for emission more than 1MHz away from the band edges. For MIMO mode, the limit of -32.03dBm was used for emission more than 1MHz away from the band edges. For Non-MIMO mode, the limit of -26.01dBm was used for emission more than 1MHz away from the band edges. Spectrum analyser detector was set as RMS.

A.3.3 Measurement limit

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10log(P) dB.

A.3.4 Measurement result

Configuration WCDMA-1C-BE, 64QAM

Modulation	Band Edge Frequency	Channel Bandwidth	RBW (KHz)	Limit (dBm)
64QAM	Channel Position B 2110MHz	5.0MHz	51	-19.02
	Channel Position T 2155MHz	5.0MHz	51	-19.02

Port B , Channel Position B, 64QAM