



TEST REPORT

APPLICANT : Reliance Communications LLC

PRODUCT NAME : Orbic Tab8 5G

MODEL NAME : R8L5TS6

BRAND NAME : Orbic

FCC ID : 2ABGH-R8L5TS6

STANDARD(S) : 47 CFR Part 24, Subpart E
47 CFR Part 27, Subpart F&L
47 CFR Part 96, Subpart A

RECEIPT DATE : 2022-06-14

TEST DATE : 2022-06-17 to 2022-06-22

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Approved by: Shen Junsheng
Shen Junsheng (Supervisor)

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Change History		
Version	Date	Reason for change
1.0	2022-07-05	First edition



1. Technical Information

Note: Provide by applicant.

1.1. Applicant and Manufacturer Information

Applicant:	Reliance Communications LLC
Applicant Address:	91 Colin Drive, Unit 1, HOLBROOK, New York 11741, United States
Manufacturer:	ZJY RIGHT SOURCE INDIA PRIVATE LIMITED
Manufacturer Address:	MIDC industrial Area, Shiravane, Nerul, India

1.2. Equipment Under Test (EUT) Description

Product Name:	Orbic Tab8 5G	
Hardware Version:	V1.1	
Software Version:	ORB8L5T_v1.0.01_NART	
IMEI:	354753170002070	
Modulation Type:	QPSK, 16QAM, 64QAM, 256QAM	
Operation Band:	Uplink: CA_13A-66A; CA_2A-13A; CA_4A-13A; CA_48C	
Frequency Range:	LTE Band 2	Tx: 1850 MHz – 1910 MHz
		Rx: 1930 MHz – 1990 MHz
	LTE Band 4	Tx: 1710 MHz – 1755 MHz
		Rx: 2110 MHz – 2155 MHz
	LTE Band 13	Tx: 777 MHz – 787 MHz
		Rx: 746 MHz – 756 MHz
	LTE Band 66	Tx: 1710 MHz – 1780 MHz
		Rx: 2110 MHz – 2200 MHz
LTE Band 48	Tx: 3550 MHz – 3700 MHz	
	Rx: 3550 MHz – 3700 MHz	



Channel Bandwidth:	LTE Band 2	1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz
	LTE Band 4	1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz
	LTE Band 13	5MHz, 10MHz
	LTE Band 48	5MHz, 10MHz, 15MHz, 20MHz
	LTE Band 66	1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz
Antenna Type:	Fixed Internal Antenna	
Antenna Gain:	LTE Band 2	-2.00 dBi
	LTE Band 4	-2.60 dBi
	LTE Band 13	-1.50 dBi
	LTE Band 48	1.80 dBi
	LTE Band 66	-2.10 dBi

Note 1: For a more detailed description, please refer to Specification or User’s Manual supplied by the applicant and/or manufacturer.



1.3. Maximum ERP/EIRP and Emission Designator

Channel bandwidth	Maximum ERP/EIRP (W)			
	QPSK	16QAM	64QAM	256QAM
CA_48C	QPSK	16QAM	64QAM	256QAM
20+20	0.277	/	/	/
CA_2A-13A	QPSK	16QAM	64QAM	256QAM
20+10	0.022	/	/	/
CA_4A-13A	QPSK	16QAM	64QAM	256QAM
20+10	0.047	/	/	/
CA_13A-66A	QPSK	16QAM	64QAM	256QAM
10+20	0.109	/	/	/



Channel bandwidth	Emission Designator (99%OBW)		
	QPSK	16QAM	64QAM
LTE 48C			
5+20	22M6G7D	22M8W7D	22M7D7W
10+20	27M6G7D	27M5W7D	27M6D7W
15+20	32M5G7D	32M4W7D	32M4D7W
20+5	22M8G7D	22M8W7D	22M8D7W
20+10	27M8G7D	27M7W7D	27M7D7W
20+15	32M6G7D	32M5W7D	32M5D7W
20+20	37M3G7D	37M3W7D	37M3D7W



1.4. Test Standards and Results

The objective of the report is to perform testing according to Part 2, Part 24, Part 27 and Part 96 for the EUT FCC ID Certification:

No	Identity	Document Title
1	47 CFR Part 2	Frequency Allocations and Radio Treaty Matters; General Rules and Regulations
2	47 CFR Part 24	Personal Communications Services
3	47 CFR Part 27	Miscellaneous Wireless Communications Services
4	47 CFR Part 96	Citizens Broadband Radio Service



Test detailed items/section required by FCC rules and results are as below:

Section	Description	Test Date	Test Engineer	Result	Method Determination /Remark
2.1046, 24.232(c), 27.50(b)(10), 27.50(d)(4), 96.41(b)	Transmitter Conducted Output Power and ERP/EIRP	Jul 8 to Jul 23, 2021	Chen Haiju/ Li Hanbin	PASS	No deviation
2.1049	Occupied Bandwidth	Aug 10 to Aug 13, 2021	Chen Haiju/ Li Hanbin	PASS	No deviation
2.1055, 24.235, 27.54	Frequency Stability	Jul 25 to Aug 15 , 2021	Chen Haiju/ Li Hanbin	PASS	No deviation
2.1051, 24.238, 27.53(c)(2), 27.53(h), 96.41	Conducted Spurious Emissions	Aug 19 to Aug 24, 2021	Chen Haiju/ Li Hanbin	PASS	No deviation
2.1051, 24.238, 27.53(c)(2)(5), 27.53(h), 96.41(e)	Band Edge	Aug 27 to Sep 23, 2021	Chen Haiju/ Li Hanbin	PASS	No deviation
2.1053, 24.238, 27.53, 96.41(e)	Radiated Spurious Emissions	Aug 10 to Sep 23, 2021	Yang Jie/ Yi Xiaogang	PASS	No deviation

Note 1: The tests were performed according to the method of measurements prescribed in KDB971168 D01 v03 and ANSI/TIA-603-E-2016.

Note 2: The path loss during the RF test is calibrated to correct the results by the offset setting in the test equipments. The ref offset 8dB contains two parts that cable loss 5dB and Attenuator 3dB.



1.5. Environmental Conditions

During the measurement, the environmental conditions were within the listed ranges:

Temperature (°C):	15 - 35
Relative Humidity (%):	30 - 60
Atmospheric Pressure (kPa):	86 - 106



2.47 CFR Part 2, 24E, 27F&L and 96A Requirements

2.1. Transmitter Conducted Output Power And ERP/EIRP

2.1.1. Requirement

According to FCC section 2.1046(a) for transmitters other than single sideband, independent sideband and controlled carrier radiotelephone, power output shall be measured at the RF output terminals when the transmitter is adjusted in accordance with the tune-up procedure to give the values of current and voltage on the circuit elements specified in FCC section 2.1033(c)(8).

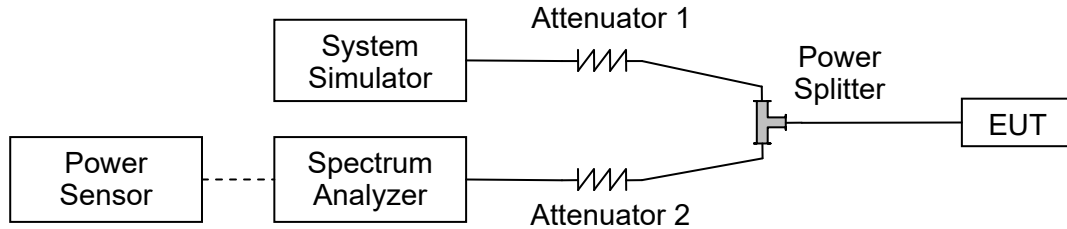
According to FCC section 24.232(c) for LTE Band 2, Mobile and portable stations are limited to 2 watts EIRP and the equipment must employ a means for limiting power to the minimum necessary for successful communications.

According to FCC section 27.50(b)(10) for LTE Band 13, Portable stations (hand-held devices) transmitting in the 746-757 MHz, 776-788 MHz, and 805-806 MHz bands are limited to 3 watts ERP.

According to FCC section 27.50(d)(4) for LTE Band 4 and 66, mobile and portable (hand-held) stations operating in the 1710-1755 MHz band and mobile and portable stations operating in the 1695-1710 MHz and 1755-1780 MHz bands are limited to 1 watt EIRP.

According to FCC section 96.41(b) for LTE Band 48, the EIRP of any CBSD and End User Device must not exceed 23dBm/10MHz.

2.1.1. Test Description



The EUT is coupled to the Spectrum Analyzer (SA) and the System Simulator (SS) with Attenuators through the Power Splitter; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading. The EUT is commanded by the SS to operate at the maximum output power. A call is established between the EUT and the SS.

2.1.2. Test procedure

KDB 971168 D01v03 Section 5.2 and ANSI/TIA-603-E-2016.

$EIRP \text{ (dBm)} = \text{Conducted Output Power (dBm)} + \text{Antenna Gain (dBi)}$

$ERP \text{ (dBm)} = EIPR \text{ (dBm)} - 2.15$



2.1.3. Result

Conducted Output Power

CA_48C								
Combination:20MHz+20MHz(100RB+100RB)								
PCC Channel (3GPP)	SCC Channel	Modulation	PCC		SCC		Total RB Size	Measured Power(dBm)
			RB Size	RB Offset	RB Size	RB Offset		
55340	55538	QPSK	1	0	0	0	1	22.62
55891	56089	QPSK	1	0	0	0	1	22.51
56442	56640	QPSK	1	0	0	0	1	22.64
55340	55538	16QAM	1	0	0	0	1	/
55891	56089	16QAM	1	0	0	0	1	/
56442	56640	16QAM	1	0	0	0	1	/
55340	55538	64QAM	1	0	0	0	1	/
55891	56089	64QAM	1	0	0	0	1	/
56442	56640	64QAM	1	0	0	0	1	/
55340	55538	QPSK	50	0	0	0	1	/
55891	56089	QPSK	50	0	0	0	1	/
56442	56640	QPSK	50	0	0	0	1	/



Configure	CA Configuration	PCC				
		Band	BW (MHz)	UL Channel	UL Fre. (MHz)	UL Mode (Modulation/RB/Offset)
	CA_2A-13A	2	20	19100	1900	QPSK/1#0
	CA_4A-13A	4	20	20050	1720	QPSK/1#0
	CA_13A-66A	13	10	23230	782	QPSK/1#0

SCC				Measured Power(dBm)
Band	BW (MHz)	UL Channel	UL Fre. (MHz)	
13	10	23230	782	15.44
13	10	23230	780	19.41
66	20	132572	1770	24.03

**Effective Radiated Power and Effective Isotropic Radiated Power**

CA_48C									
Combination:20MHz+20MHz(100RB+100RB)									
PCC Channel	SCC Channel	Modulation	PCC		SCC		Total RB Size	Measured Power(dBm)	Measured EIRP(W)
			RB Size	RB Offset	RB Size	RB Offset			
55340	55538	QPSK	1	0	0	0	1	24.42	0.276
55891	56089	QPSK	1	0	0	0	1	24.31	0.269
56442	56640	QPSK	1	0	0	0	1	24.44	0.277
55340	55538	16QAM	1	0	0	0	1	/	/
55891	56089	16QAM	1	0	0	0	1	/	/
56442	56640	16QAM	1	0	0	0	1	/	/
55340	55538	64QAM	1	0	0	0	1	/	/
55891	56089	64QAM	1	0	0	0	1	/	/
56442	56640	64QAM	1	0	0	0	1	/	/
55340	55538	QPSK	50	0	0	0	1	/	/
55891	56089	QPSK	50	0	0	0	1	/	/
56442	56640	QPSK	50	0	0	0	1	/	/



Configure	CA Configuration	PCC				
		Band	BW (MHz)	UL Channel	UL Fre. (MHz)	UL Mode (Modulation/RB/Offset)
	CA_2A-13A	2	20	19100	1900	QPSK/1#0
	CA_4A-13A	4	20	20050	1720	QPSK/1#0
CA_13A-66A	13	10	23230	782	QPSK/1#0	

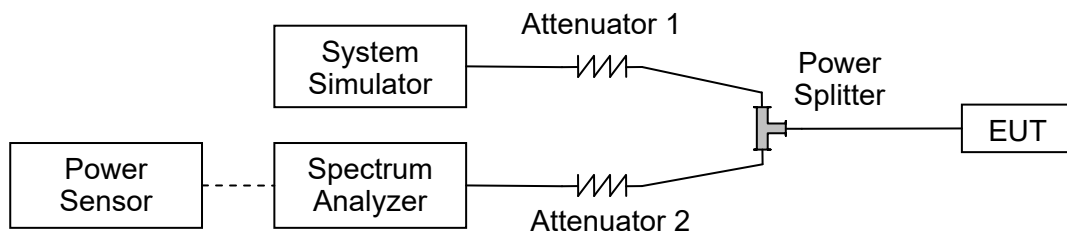
SCC				Measured Power(dBm)	Measured EIRP/ERP(W)
Band	BW (MHz)	UL Channel	UL Fre. (MHz)		
13	10	23230	782	13.44	0.022
13	10	23230	780	16.81	0.047
66	20	132572	1770	20.38	0.109

2.2. Occupied Bandwidth

2.2.1. Requirement

According to FCC section 2.1049, the occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission. Occupied bandwidth is also known as the 99% emission bandwidth.

2.2.2. Test Description



The EUT is coupled to the Spectrum Analyzer (SA) and the System Simulator (SS) with Attenuators through the Power Splitter; the RF load attached to the EUT antenna terminal is 50 Ohm; the path loss as the factor is calibrated to correct the reading. The EUT is commanded by the SS to operate at the maximum output power. A call is established between the EUT and the SS.

2.2.3. Test procedure

KDB 971168 D01v03 Section 4.1 and ANSI/TIA-603-E-2016.

2.2.4. Test Result



LTE Band 48C				
BW(MHz)	Channel Level	Modulation	99% BW(MHz)	26dB BW(MHz)
5M+20MHz	Low	QPSK	22.54	23.49
	Low	16QAM	22.50	23.45
	Low	64QAM	22.74	23.46
	Mid	QPSK	22.66	23.49
	Mid	16QAM	22.81	23.49
	Mid	64QAM	22.56	23.45
	High	QPSK	22.64	23.50
	High	16QAM	22.76	23.45
	High	64QAM	22.67	23.49
10M+20MHz	Low	QPSK	27.54	28.51
	Low	16QAM	27.58	28.54
	Low	64QAM	27.52	28.48
	Mid	QPSK	27.40	28.43
	Mid	16QAM	27.54	28.50
	Mid	64QAM	27.61	28.46
	High	QPSK	27.60	28.47
	High	16QAM	27.50	28.51
	High	64QAM	27.52	28.52
15M+20MHz	Low	QPSK	32.37	33.61
	Low	16QAM	32.36	33.60
	Low	64QAM	32.44	33.58
	Mid	QPSK	32.32	33.58
	Mid	16QAM	32.27	33.68
	Mid	64QAM	32.31	33.56
	High	QPSK	32.51	33.56
	High	16QAM	32.40	33.61
	High	64QAM	32.46	33.62
20M+5MHz	Low	QPSK	22.80	23.59
	Low	16QAM	22.76	23.56
	Low	64QAM	22.79	23.53
	Mid	QPSK	22.86	23.62
	Mid	16QAM	22.83	23.55
	Mid	64QAM	22.73	23.57
	High	QPSK	22.68	23.59
	High	16QAM	22.67	23.54
	High	64QAM	22.81	23.61

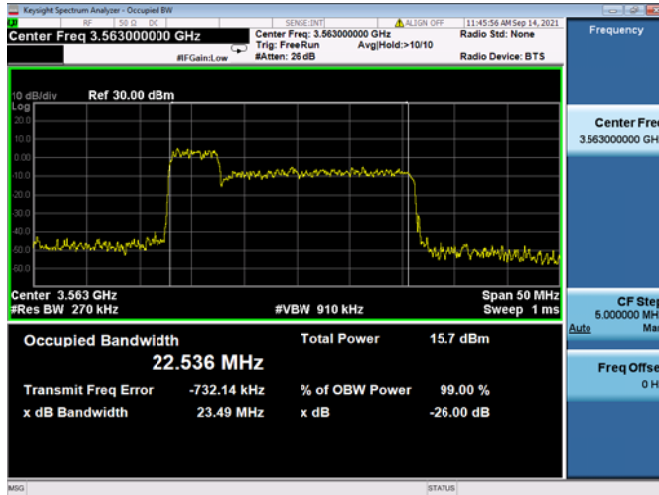


20M+10MHz	Low	QPSK	27.69	28.58
	Low	16QAM	27.71	28.61
	Low	64QAM	27.71	28.60
	Mid	QPSK	27.80	28.59
	Mid	16QAM	27.60	28.55
	Mid	64QAM	27.71	28.71
	High	QPSK	27.64	28.57
	High	16QAM	27.70	28.63
	High	64QAM	27.53	28.55
20M+15MHz	Low	QPSK	32.64	33.65
	Low	16QAM	32.48	33.62
	Low	64QAM	32.52	33.57
	Mid	QPSK	32.55	33.59
	Mid	16QAM	32.39	33.59
	Mid	64QAM	32.45	33.60
	High	QPSK	32.40	33.40
	High	16QAM	32.53	33.74
	High	64QAM	32.51	33.61
20M+20MHz	Low	QPSK	37.23	38.67
	Low	16QAM	37.36	38.68
	Low	64QAM	37.26	38.65
	Mid	QPSK	37.22	38.70
	Mid	16QAM	37.39	38.67
	Mid	64QAM	37.31	38.73
	High	QPSK	37.30	38.75
	High	16QAM	37.34	38.70
	High	64QAM	37.34	38.70

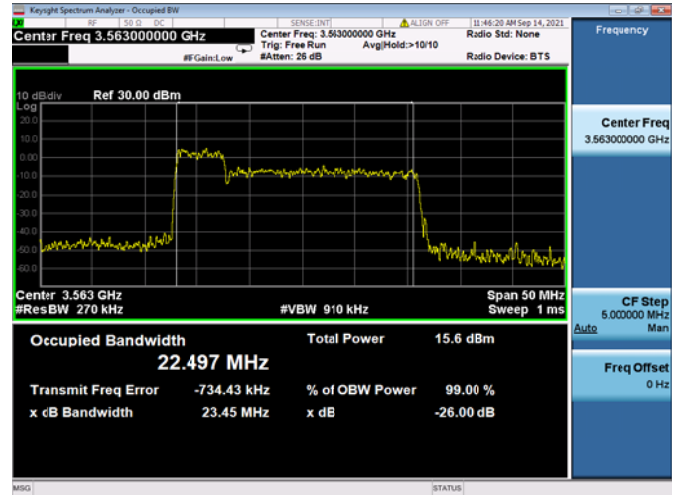


LTE Band 48C

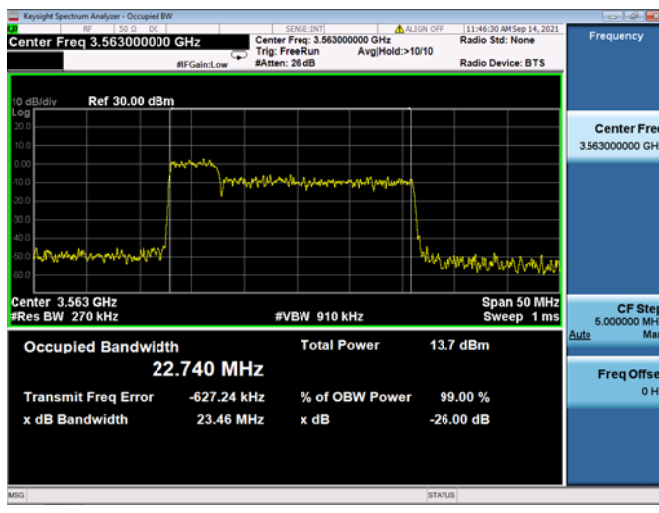
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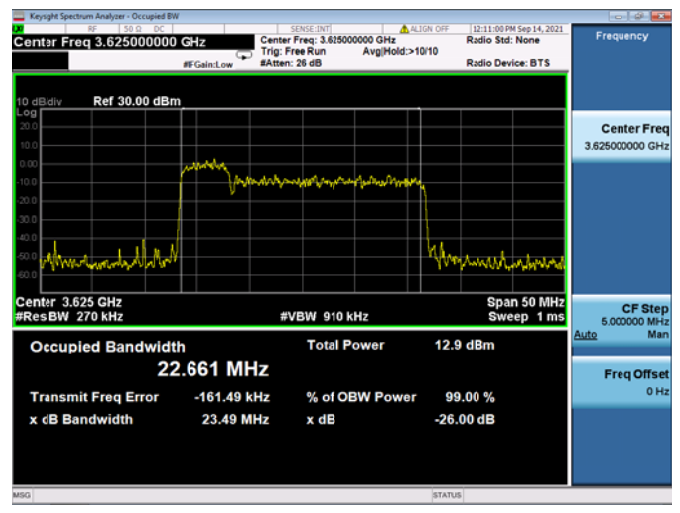
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5MHz+20MHz / / L64QAMCH

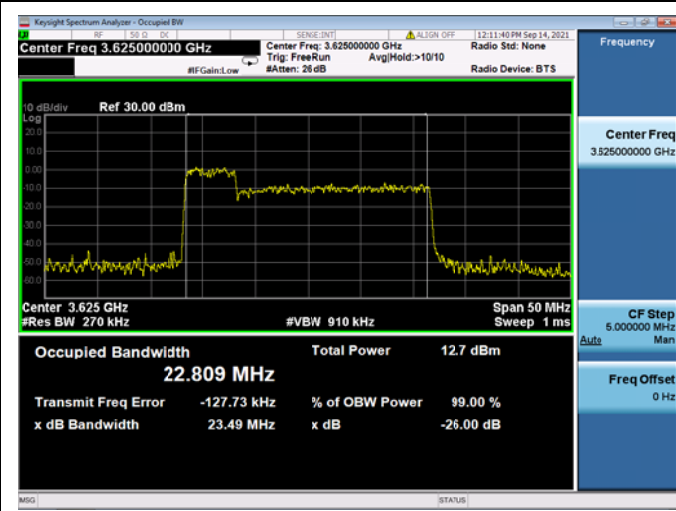


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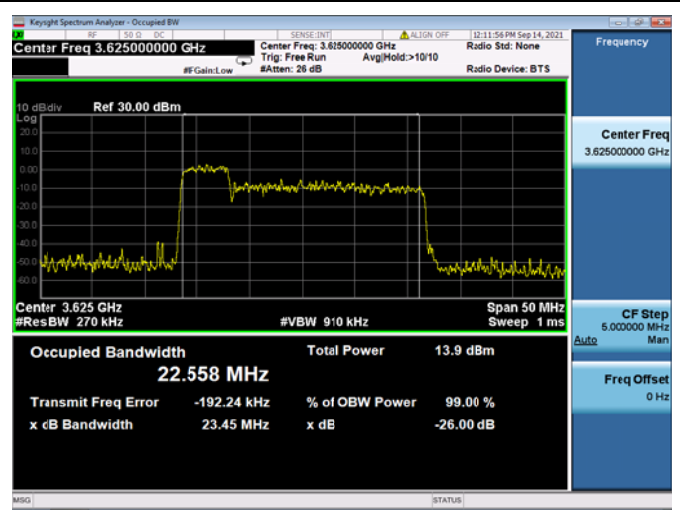




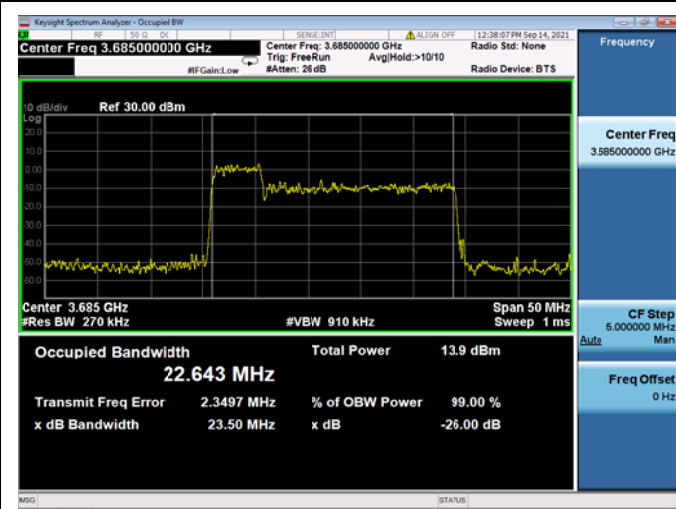
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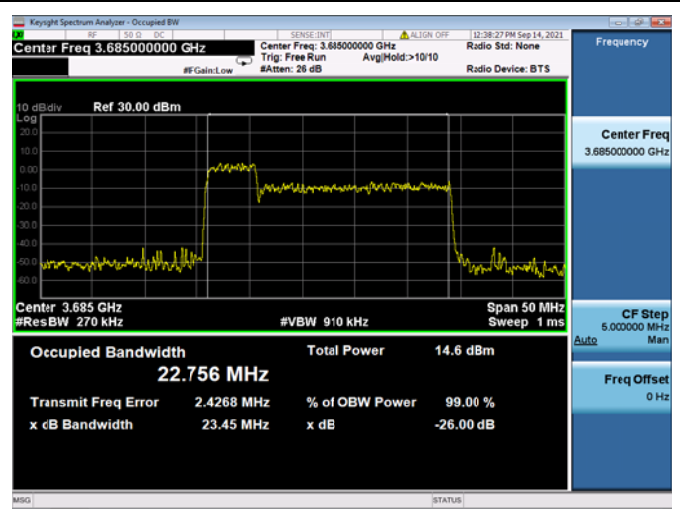
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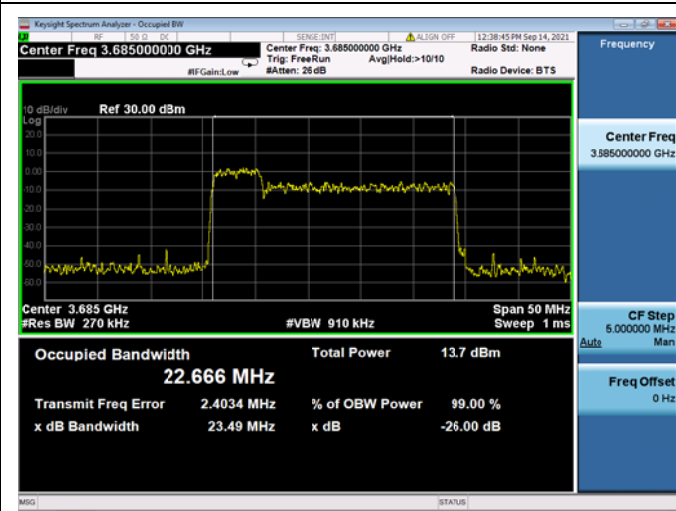
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5MHz+20MHz / 16QAM / HCH



5MHz+20MHz / 64QAM / HCH

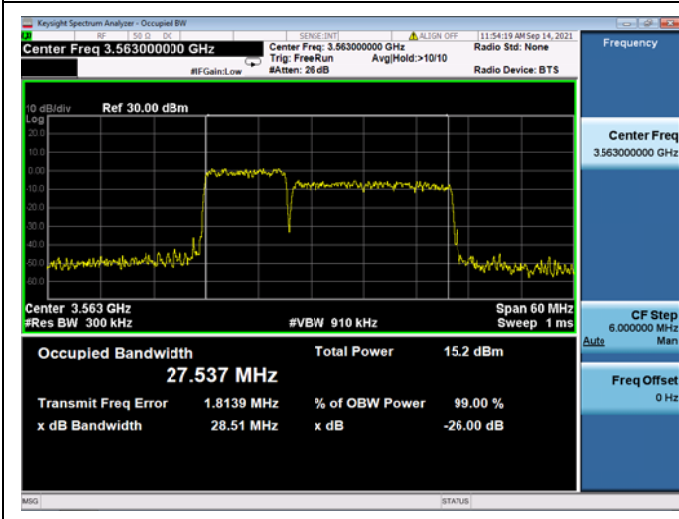


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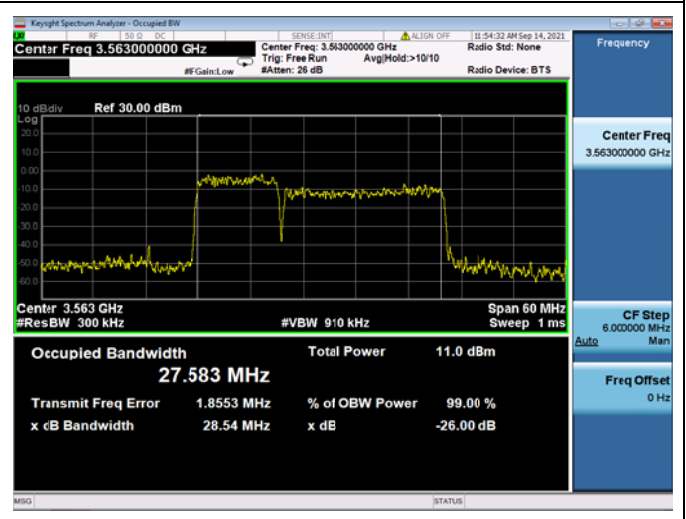


LTE Band 48C

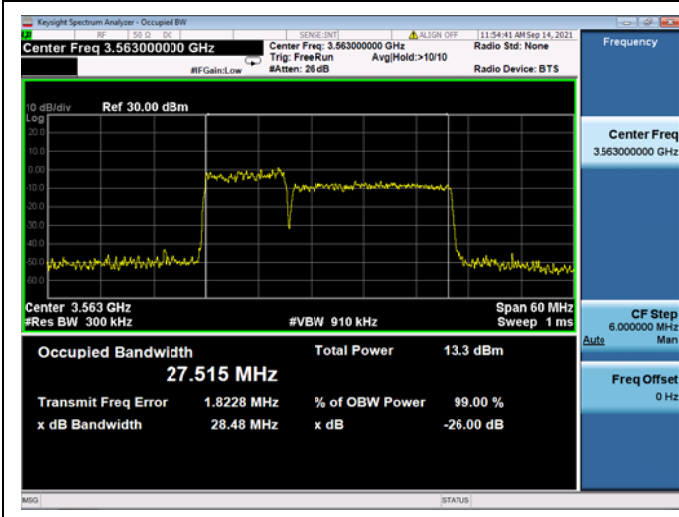
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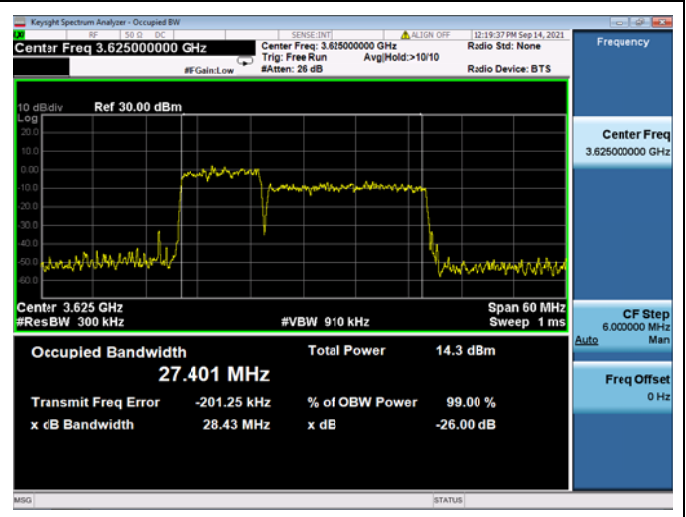
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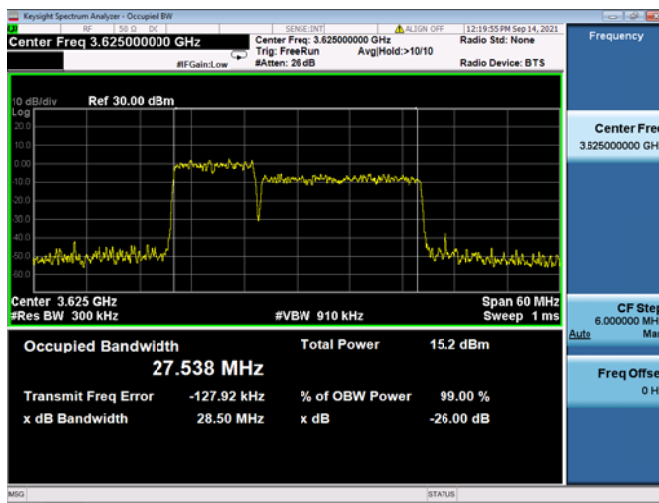


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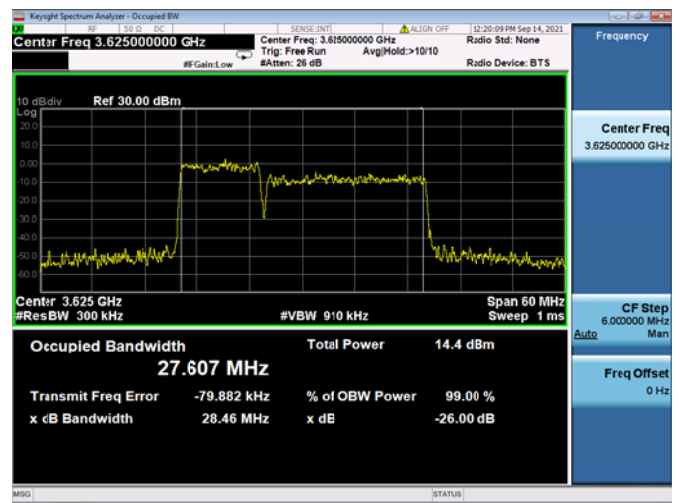




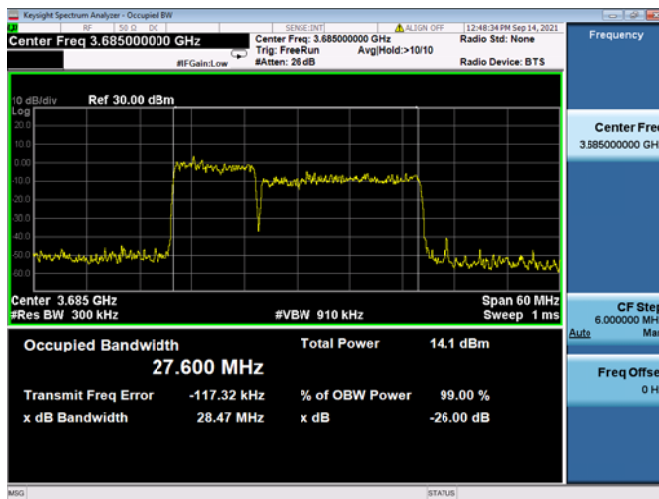
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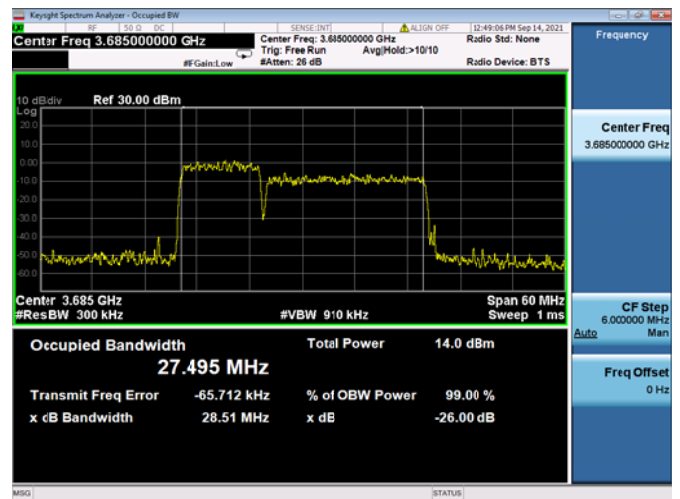
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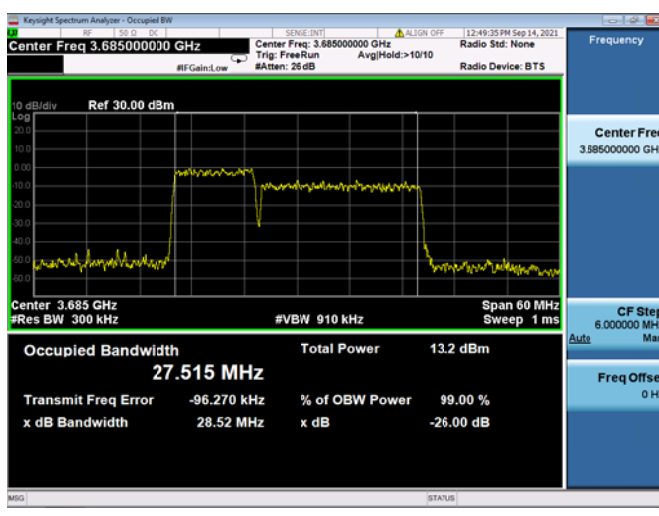
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10MHz+20MHz / 16QAM / HCH



10MHz+20MHz / 64QAM / HCH

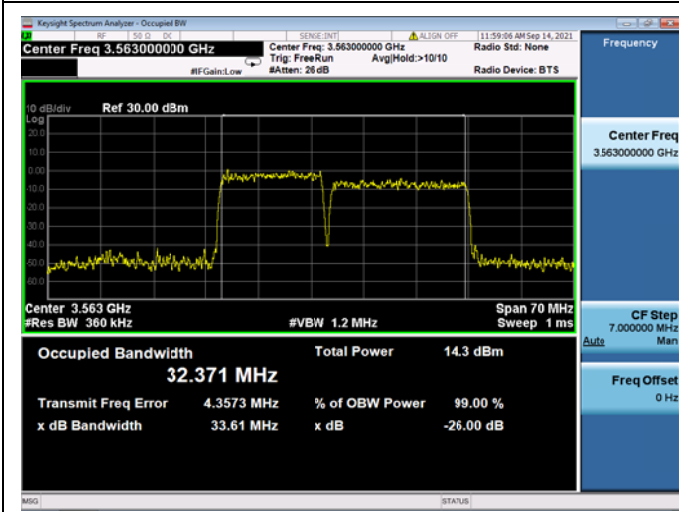


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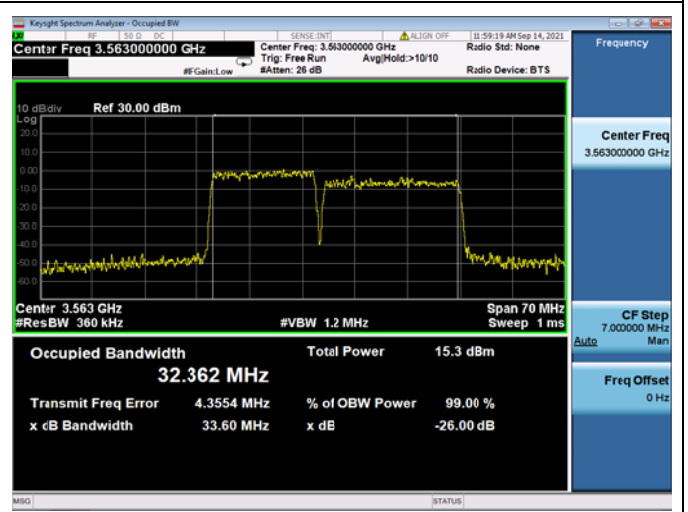


LTE Band 48C

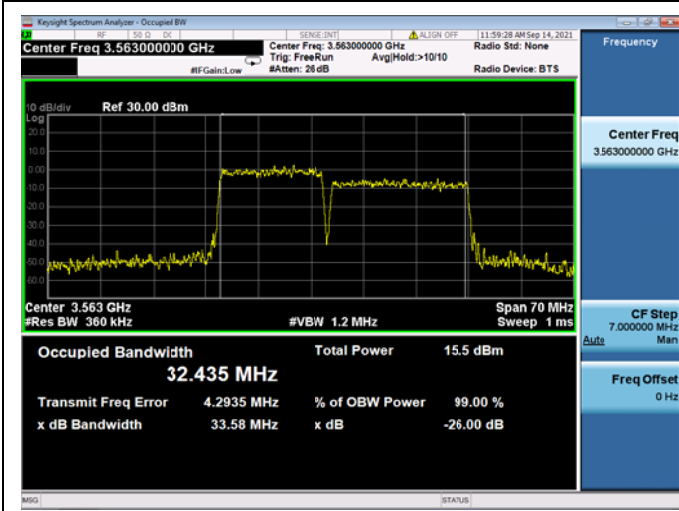
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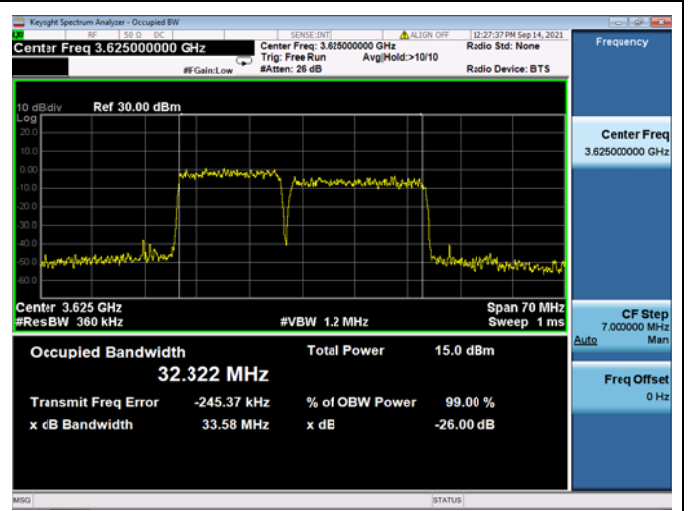
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15MHz+20MHz / 64QAM/ LCH

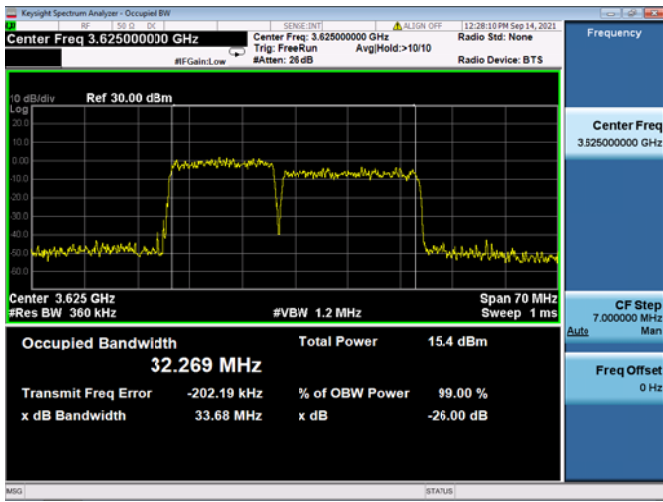


15MHz+20MHz / QPSK /MCH

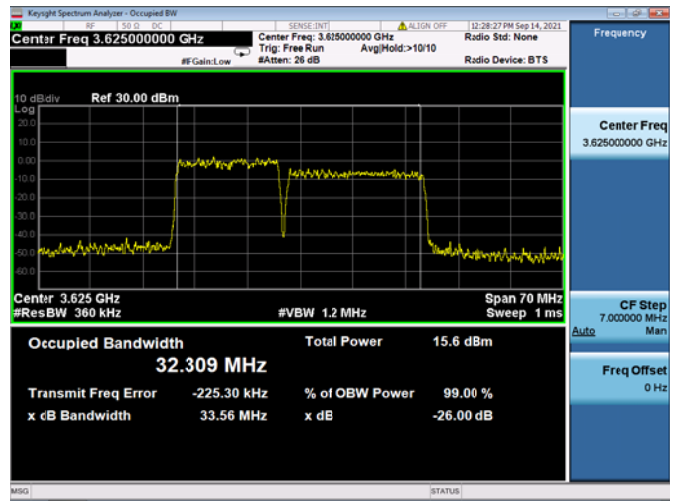




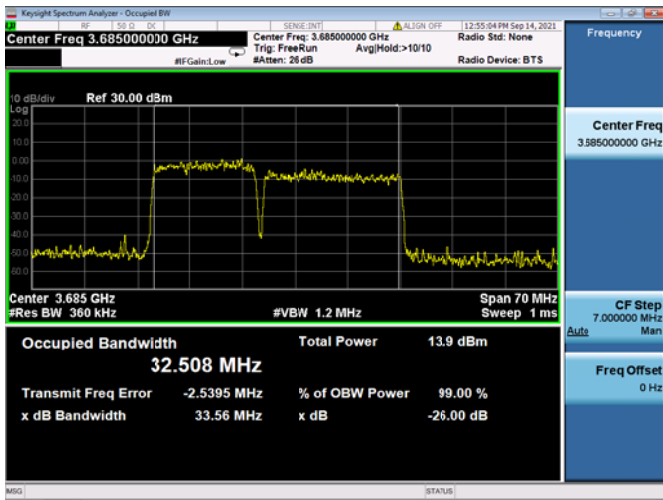
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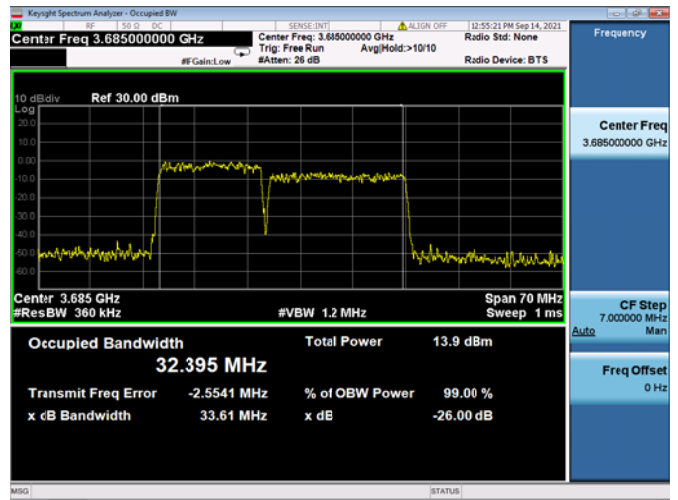
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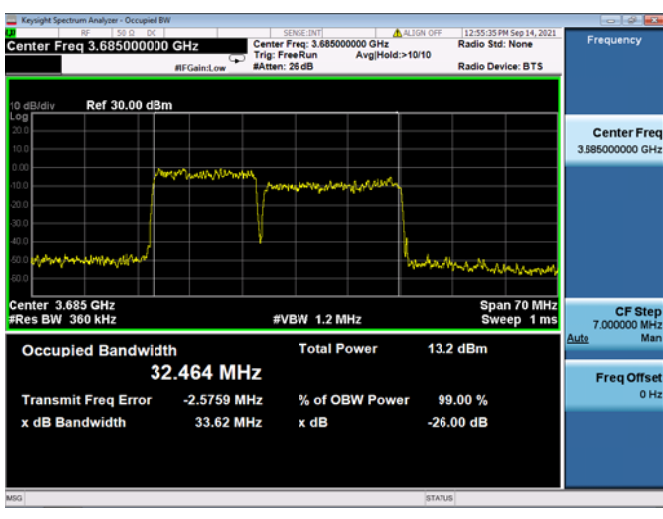
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15MHz+20MHz / 16QAM / HCH



15MHz+20MHz / 64QAM / HCH

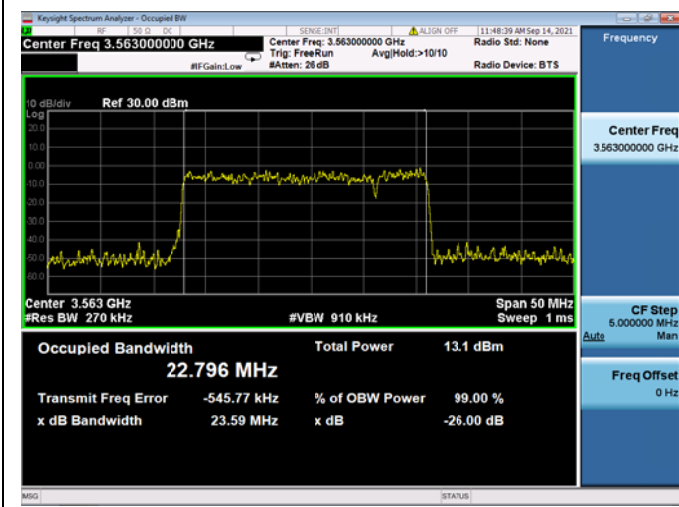


N/A

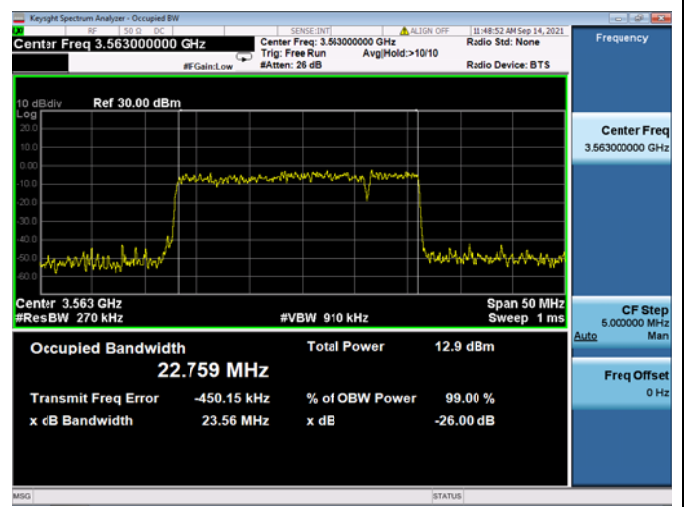


LTE Band 48C

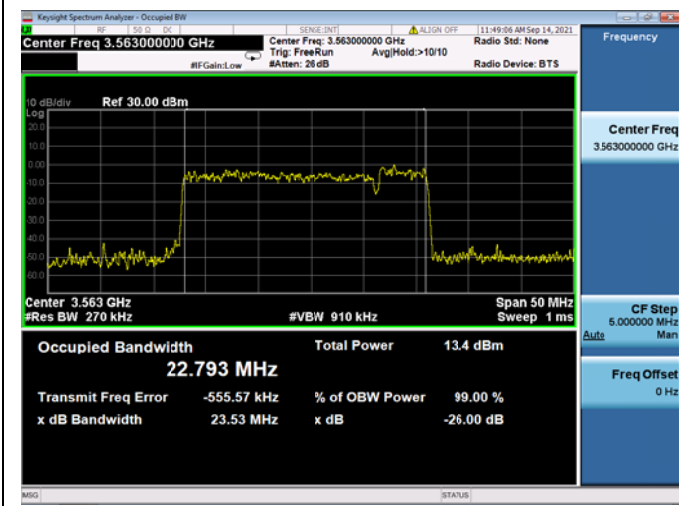
20MHz+5MHz /QPSK / LCH



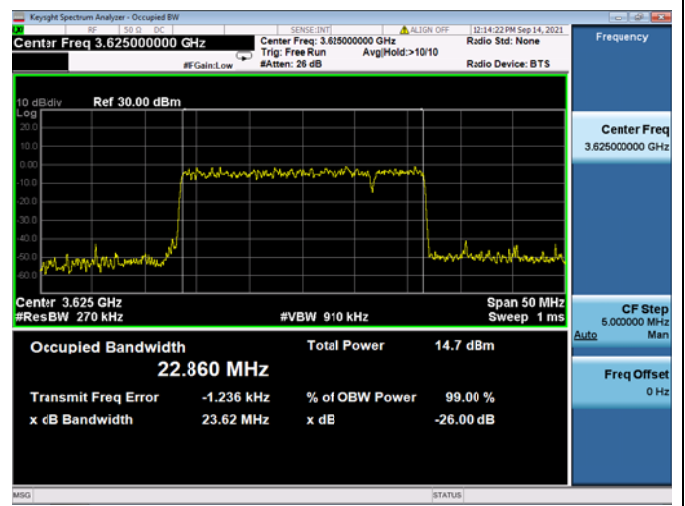
20MHz+5MHz / 16QAM / LCH



20MHz+5MHz /64QAM / LCH

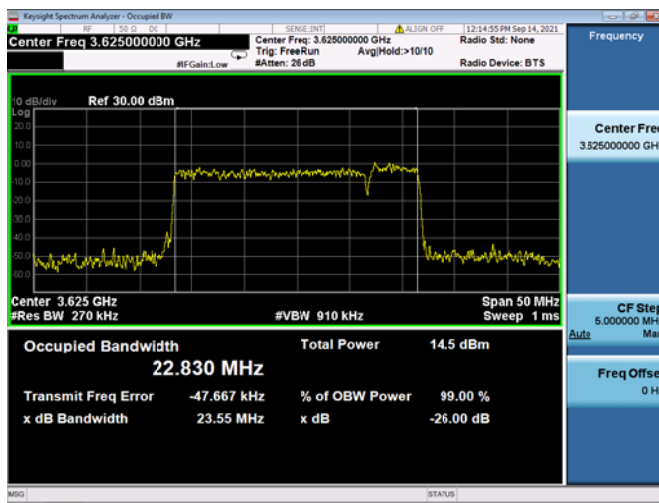


20MHz+5MHz / QPSK / MCH

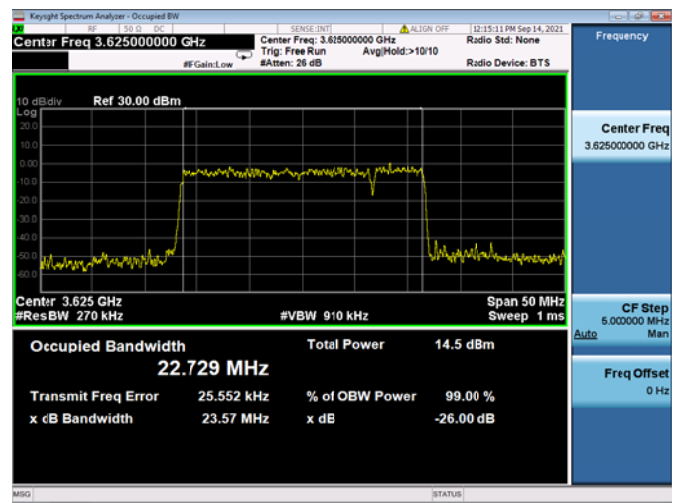




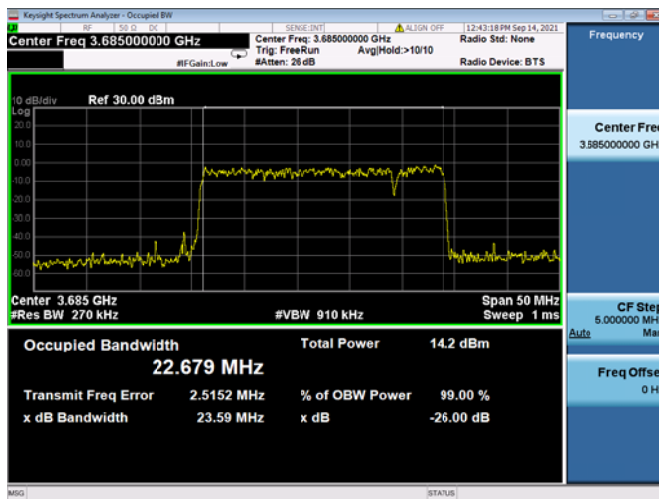
20MHz+5MHz / 16QAM / MCH



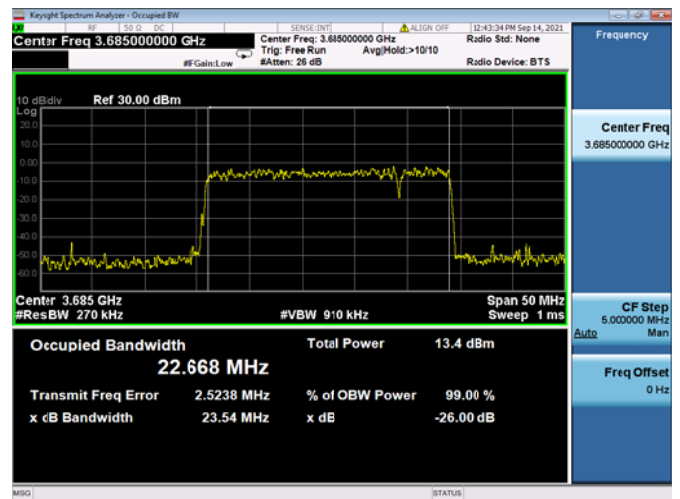
20MHz+5MHz / 64QAM / MCH



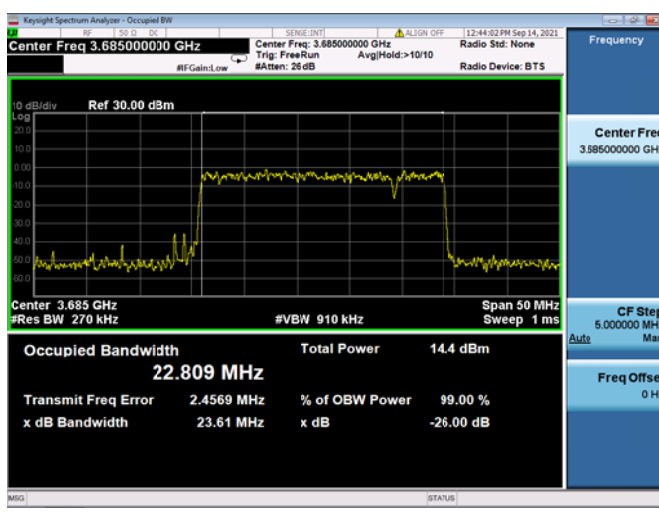
20MHz+5MHz / QPSK / HCH



20MHz+5MHz / 16QAM / HCH



20MHz+5MHz / 64QAM / HCH

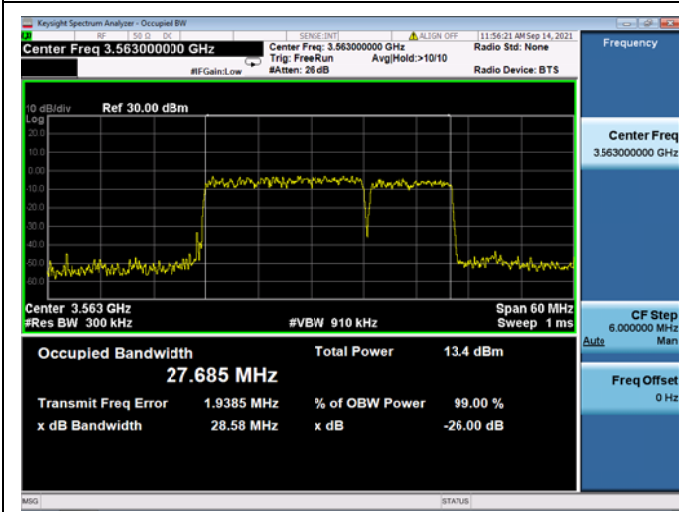


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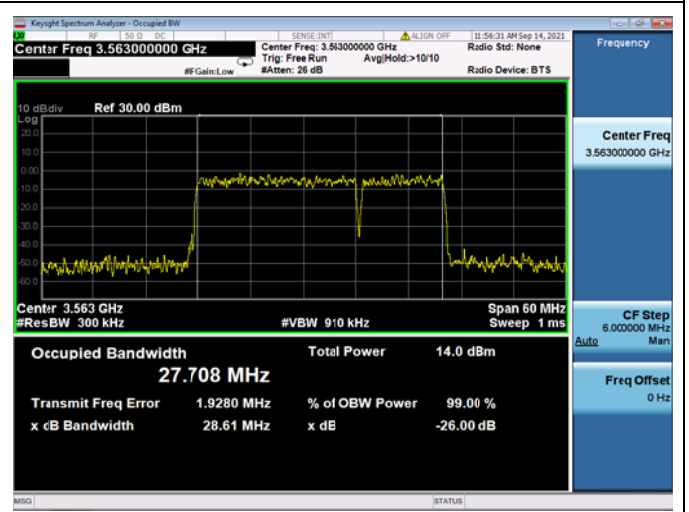


LTE Band 48C

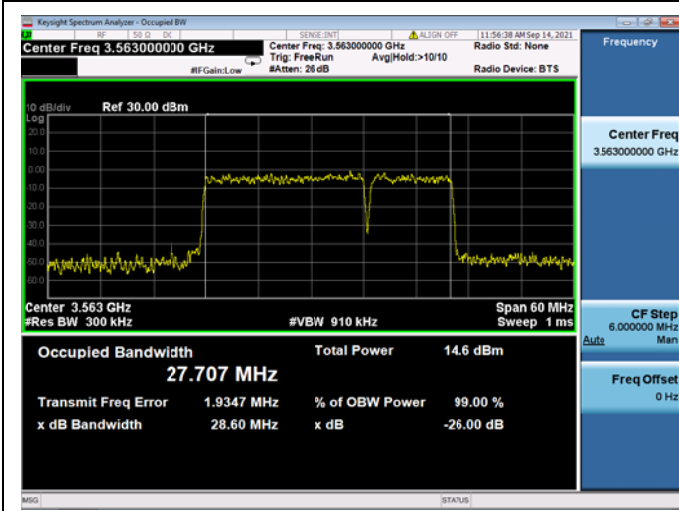
20MHz+10MHz /QPSK / LCH



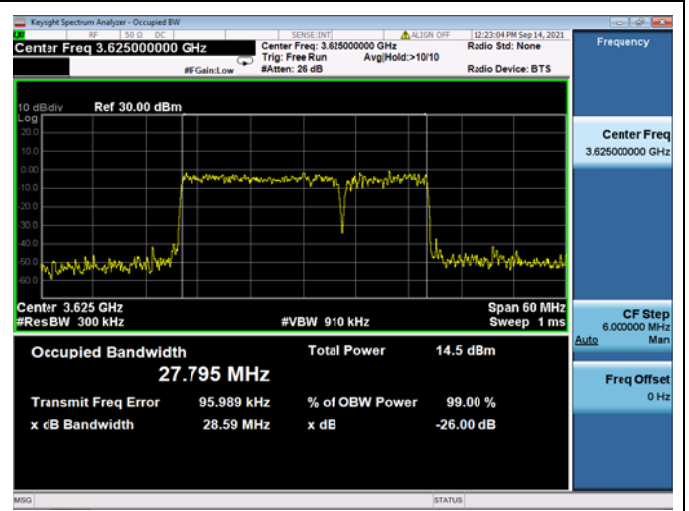
20MHz+10MHz / 16QAM / LCH



20MHz+10MHz / 64QAM / LCH

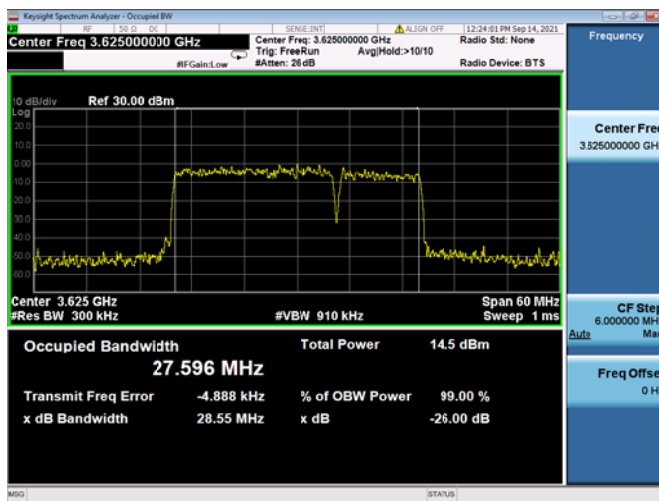


20MHz+10MHz / QPSK / MCH

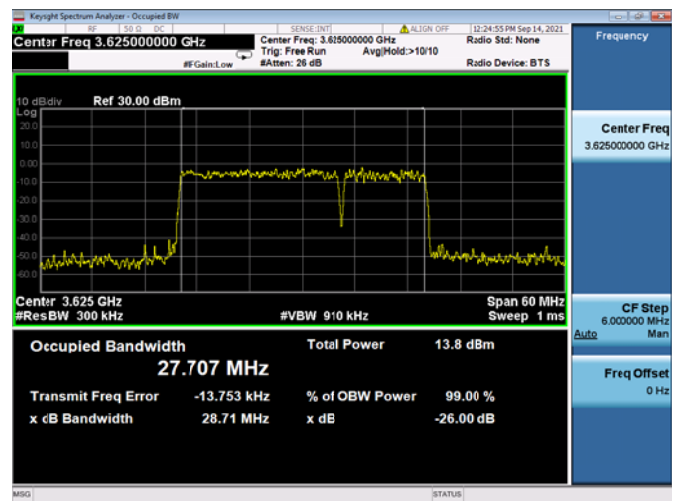




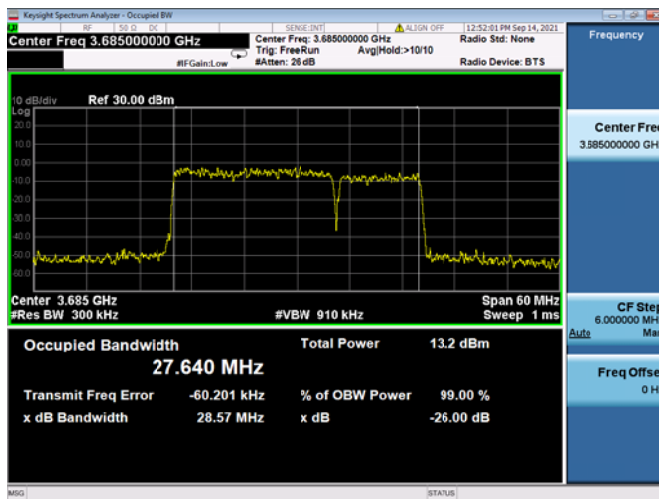
20MHz+10MHz / 16QAM / MCH



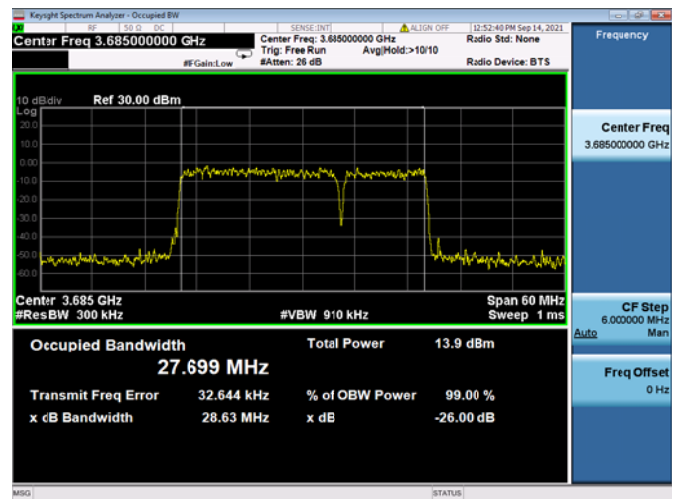
20MHz+10MHz / 64QAM / MCH



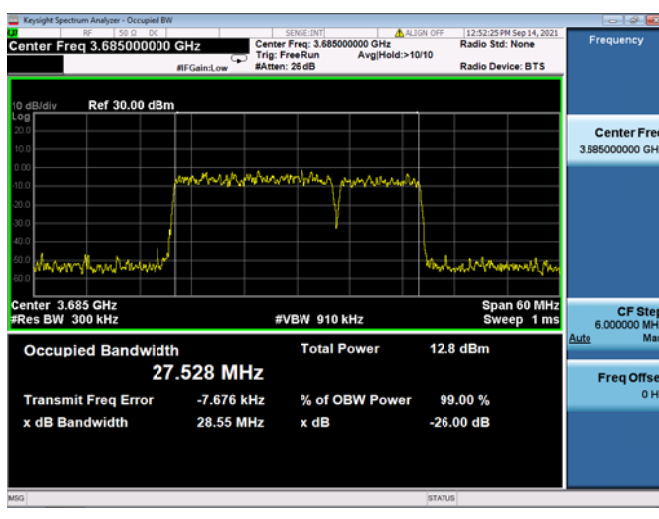
20MHz+10MHz / QPSK / HCH



20MHz+10MHz / 16QAM / HCH



20MHz+10MHz / 64QAM / HCH

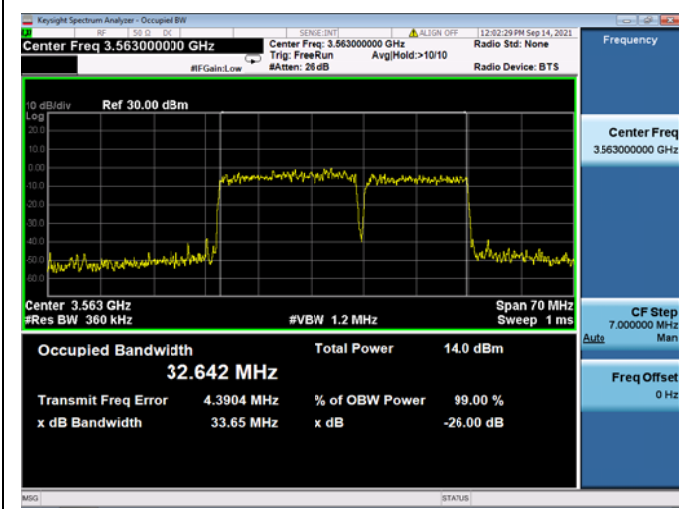


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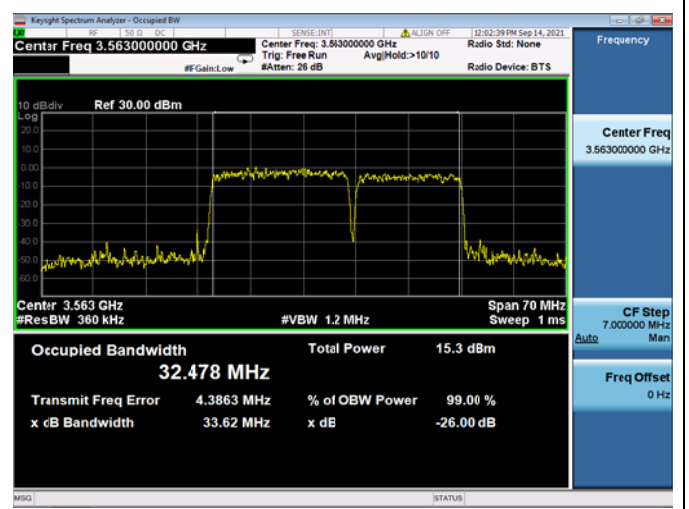


LTE Band 48C

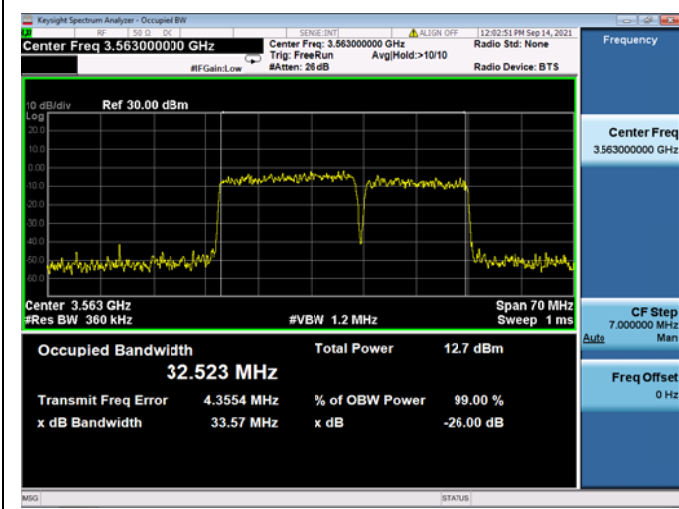
20MHz+15MHz /QPSK / LCH



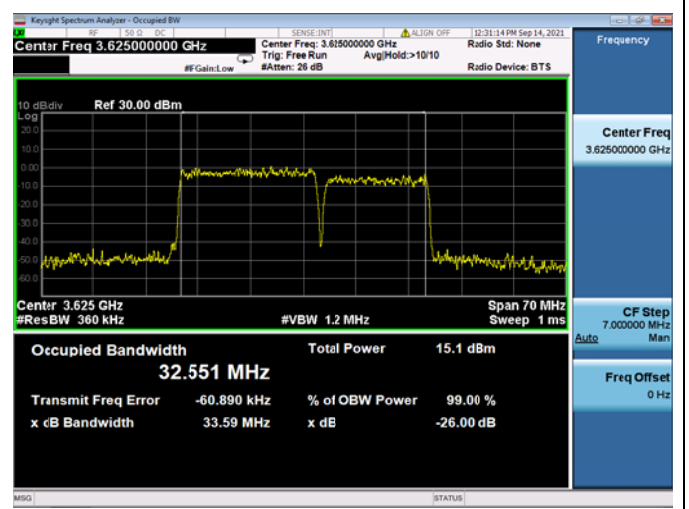
20MHz+15MHz / 16QAM / LCH



20MHz+15MHz / 64QAM / LCH

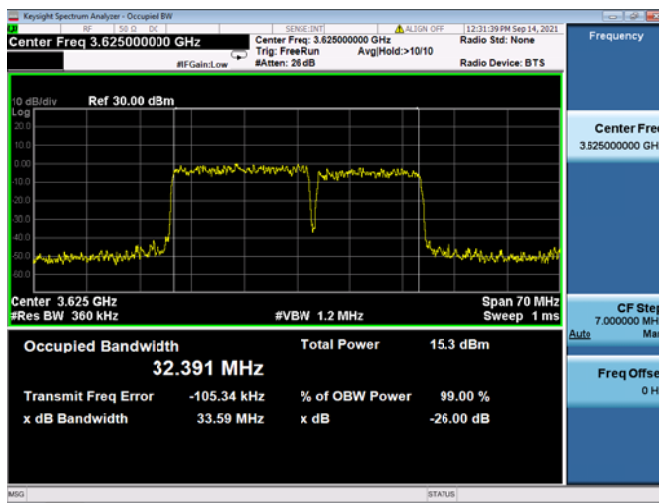


20MHz+15MHz / QPSK / MCH

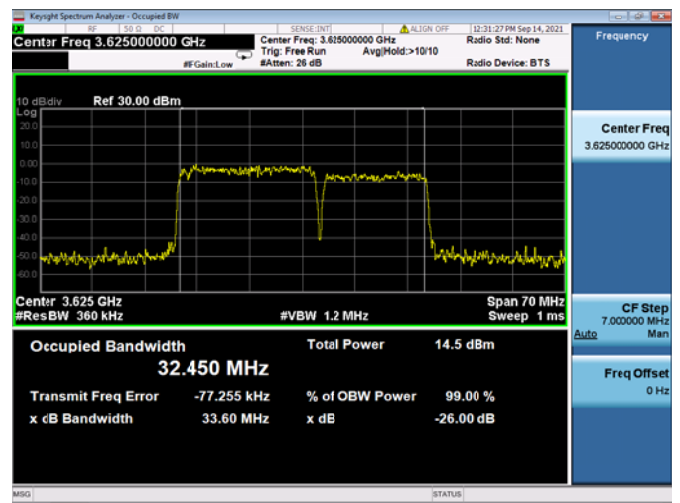




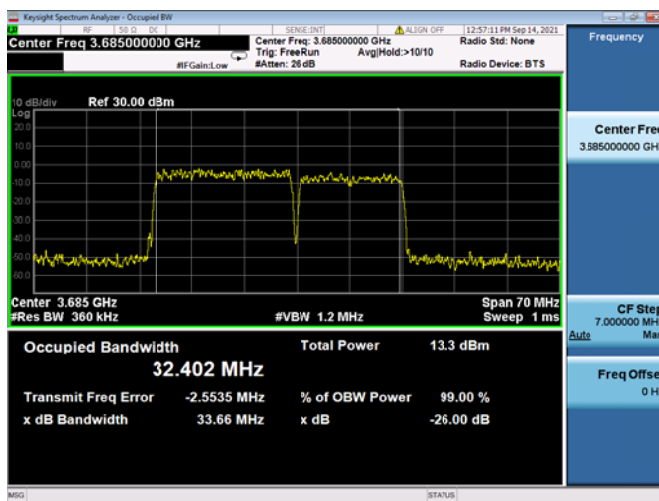
20MHz+15MHz / 16QAM / MCH



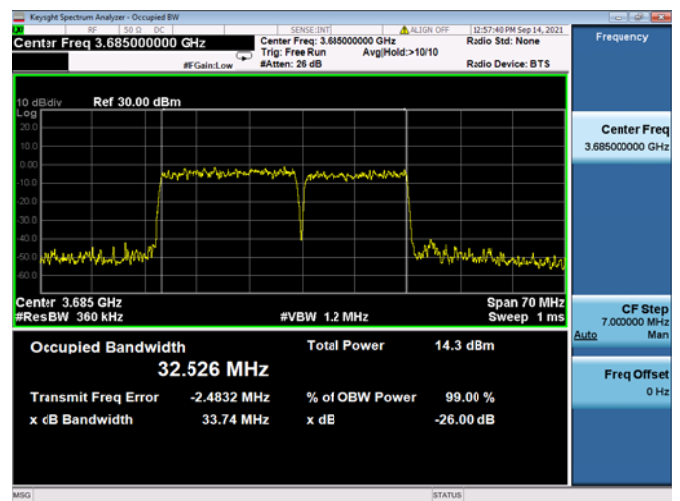
20MHz+15MHz / 64QAM / MCH



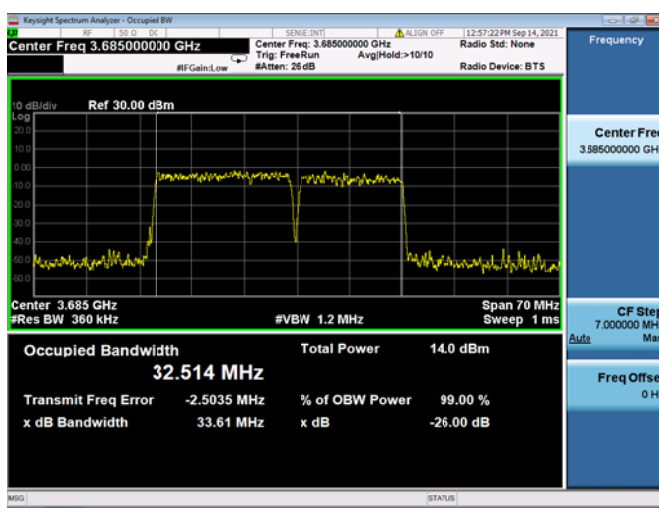
20MHz+15MHz / QPSK / HCH



20MHz+15MHz / 16QAM / HCH



20MHz+15MHz / 64QAM / HCH

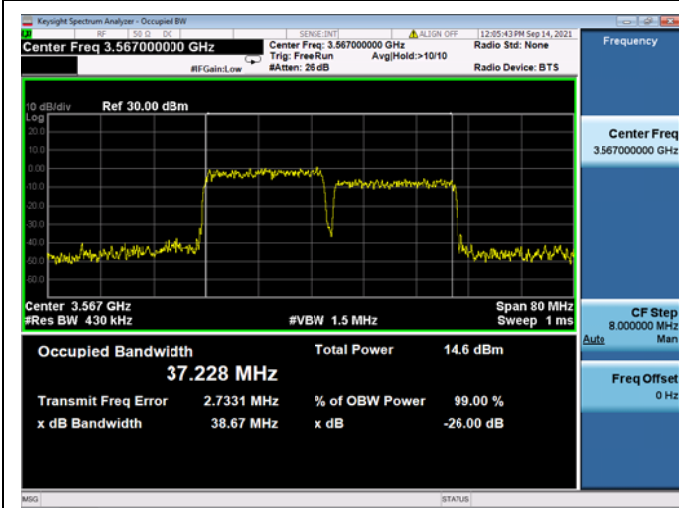


N/A

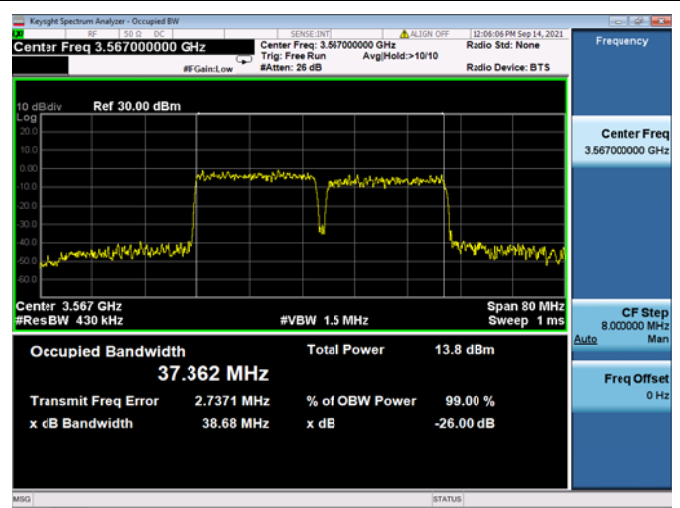


LTE Band 48C

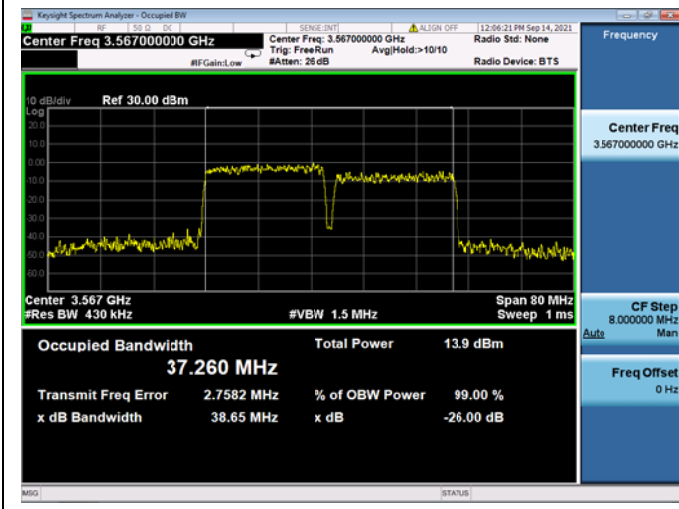
20MHz+20MHz / QPSK / LCH



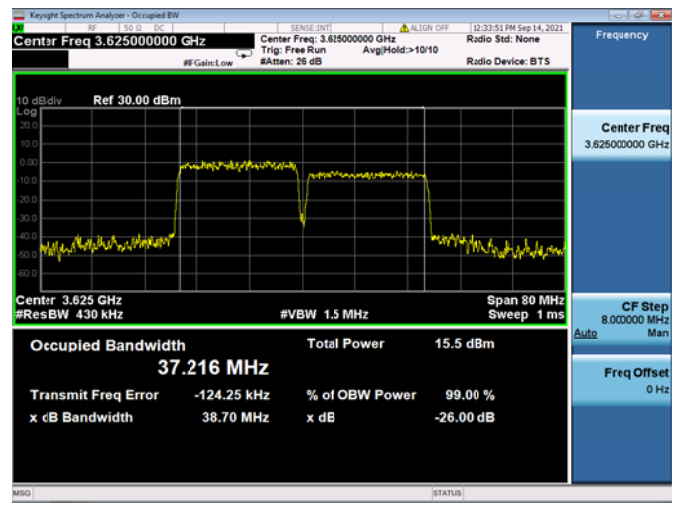
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20MHz+20MHz / 64QAM / LCH

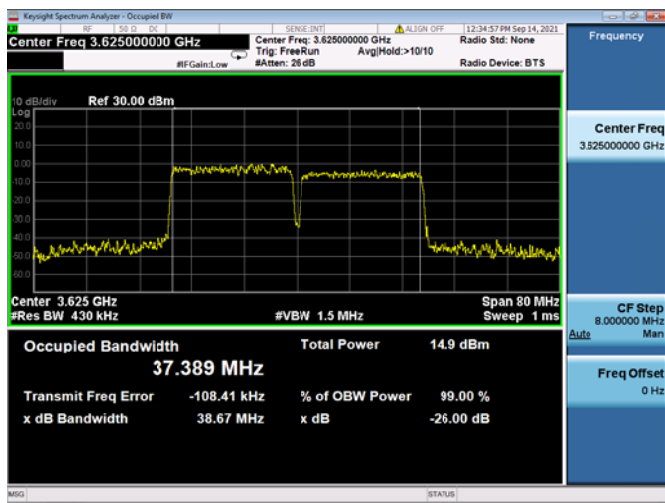


20MHz+20MHz / QPSK / MCH

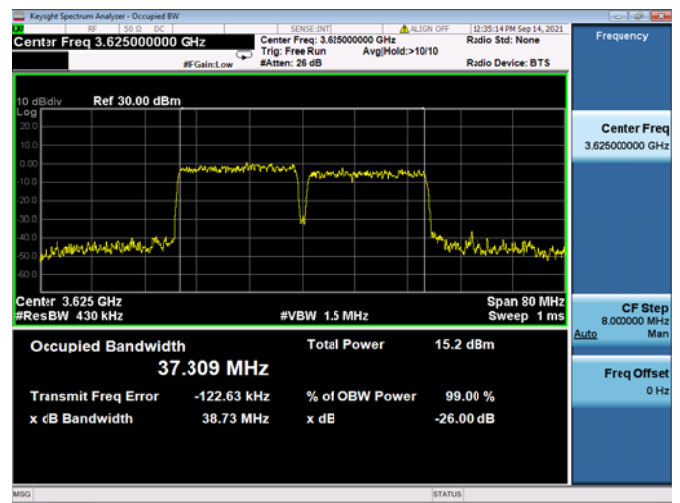




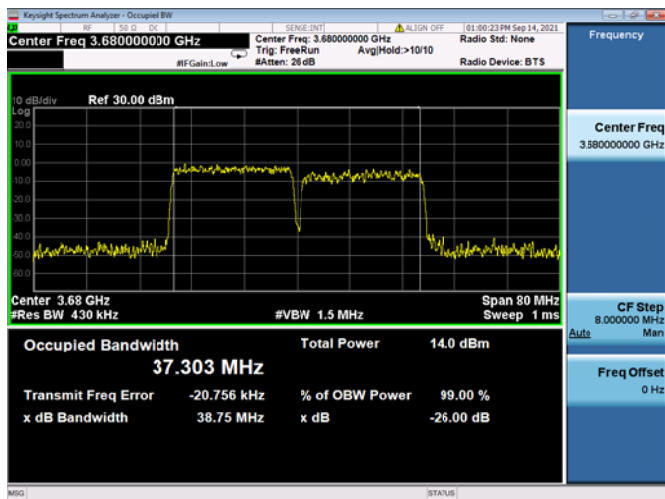
20MHz+20MHz / 16QAM / MCH



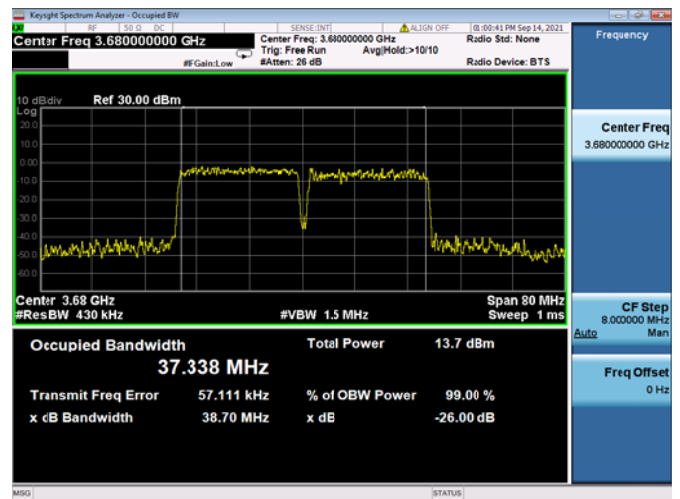
20MHz+20MHz / 64QAM / MCH



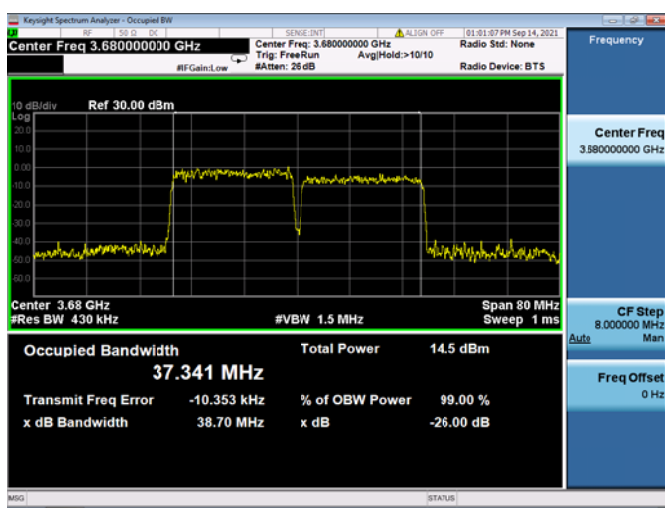
20MHz+20MHz / QPSK / HCH



20MHz+20MHz / 16QAM / HCH



20MHz+20MHz / 64QAM/HCH



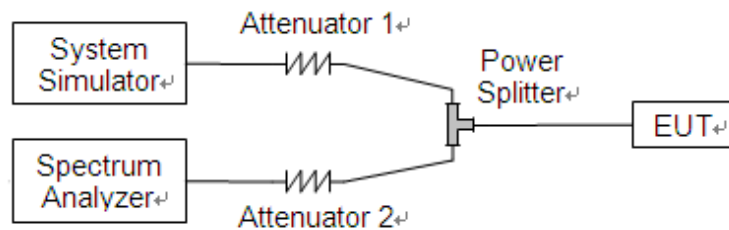
N/A

2.3. Conducted Spurious Emissions

2.3.1. Requirement

According to FCC section 2.1051, 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 $43+10*\log(P)$ dB. This calculated to be -13dBm.

2.3.2. Test Description



The EUT is coupled to the Spectrum Analyzer (SA) and the System Simulator (SS) with Attenuators through the Power Splitter; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading. The EUT is commanded by the SS to operate at the maximum output power. A call is established between the EUT and the SS.

2.3.3. Test procedure

KDB 971168 D01v03 Section 6.0 and ANSI/TIA-603-E-2016.

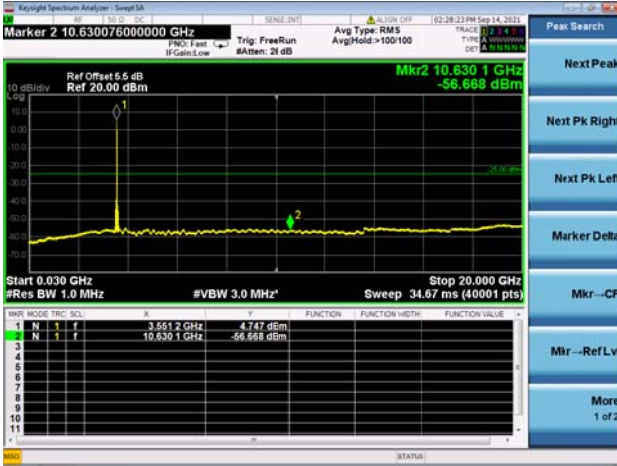
2.3.4. Test Result



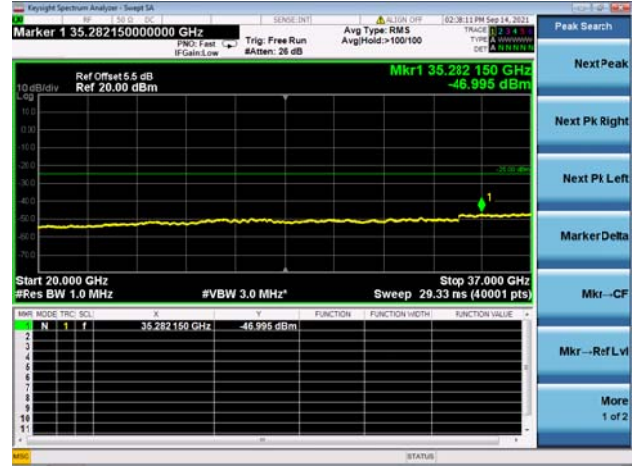
LTE Band 48C CSE

Channel Bandwidth: 5MHz+20MHz

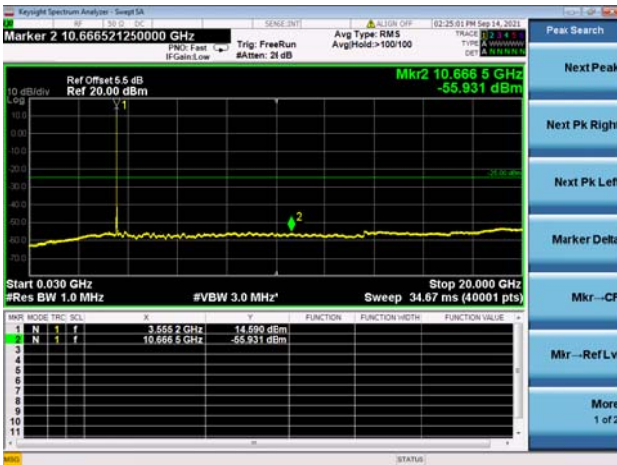
LOW CH/QPSK/1RB0 and 1RB99



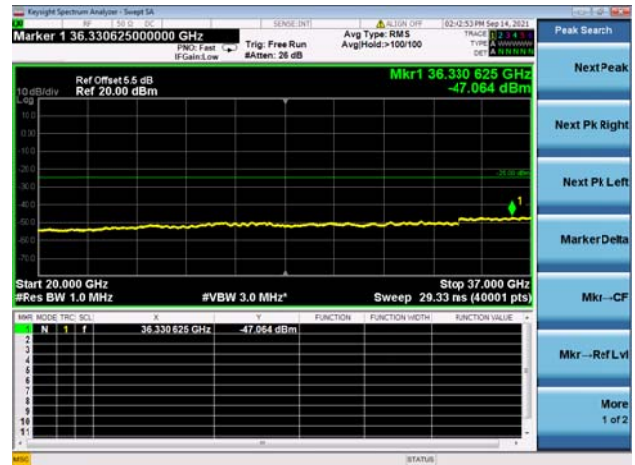
LOW CH/QPSK/1RB0 and 1RB99



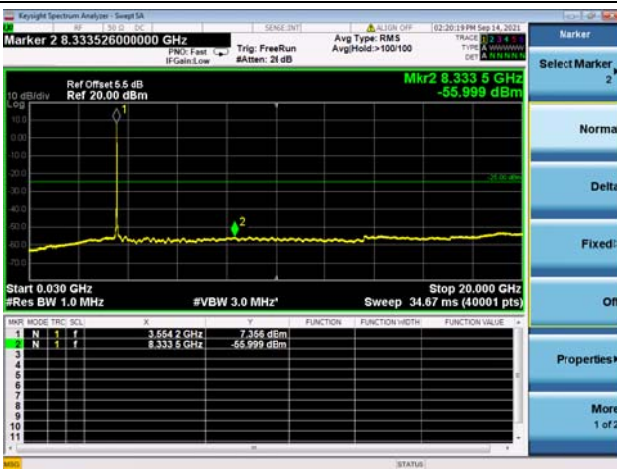
LOW CH/QPSK/1RB24 and 1RB0



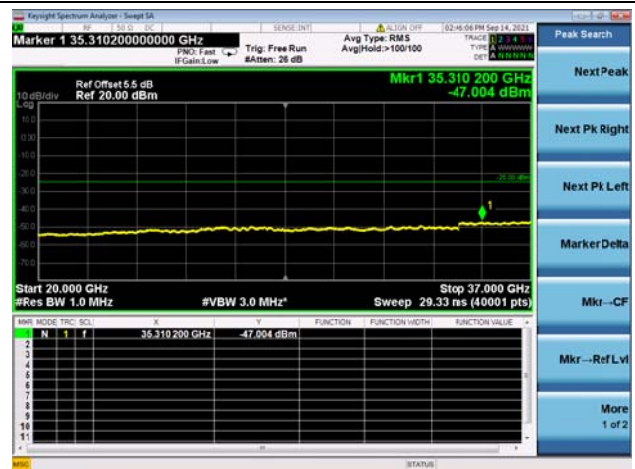
LOW CH/QPSK/1RB24 and 1RB0



LOW CH/QPSK/FULL RB

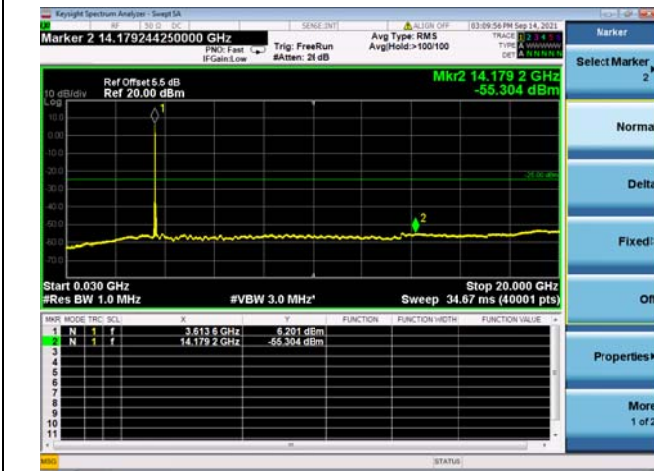


LOW CH/QPSK/FULL RB





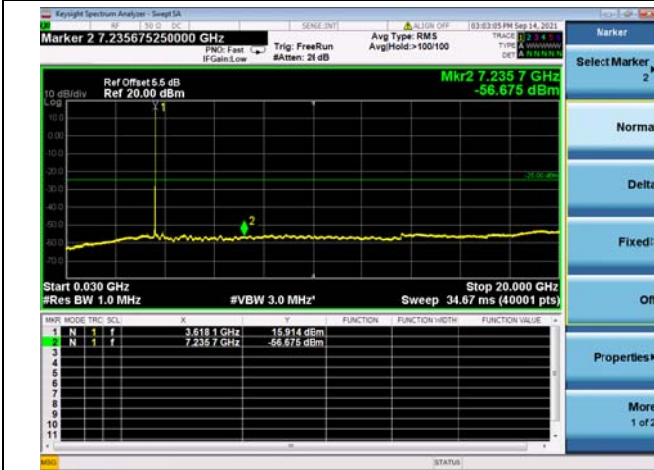
Mid CH/QPSK/1RB0 and 1RB99



Mid CH/QPSK/1RB0 and 1RB99



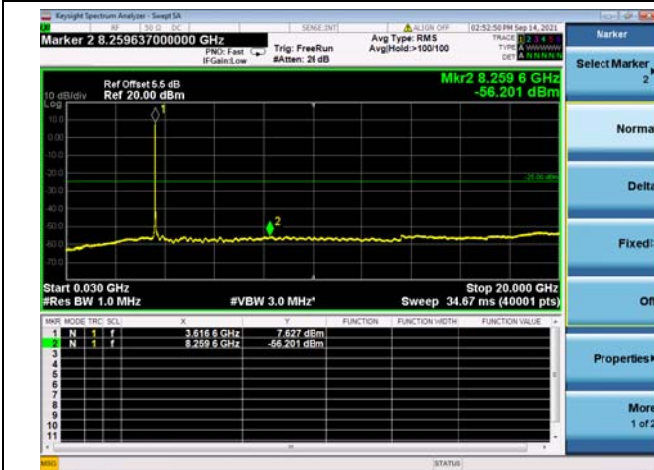
Mid CH/QPSK/1RB24 and 1RB0



Mid CH/QPSK/1RB24 and 1RB0



Mid CH/QPSK/FULL RB



Mid CH/QPSK/FULL RB

