ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT

Testing Laboratory 3702

Applicant:	ASUSTeK COMPUTER INC. 1F., No. 15, Lide Rd., Beitou Dist., Taipei City 112, Taiwan
Product Name:	ASUS Phone (Mobile Phone)
Brand Name:	ASUS
Model No.:	ASUS_I006D
Model Difference:	N/A
Report Number:	ER/2021/20011
FCC ID	MSQI006D
FCC Rule Part:	2 , 27 O
Issue Date:	April 14, 2021
Date of Test:	January 26, 2021 - April 14, 2021
Date of EUT Received:	January 26, 2021

We hereby certify that:

The above equipment was tested by SGS Taiwan Ltd. Central RF Lab The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.26-2015 and the energy emitted by the sample EUT tested as described in this report is in compliance with conducted and radiated emission limits.

The test results of this report relate only to the tested sample identified in this report.

Approved By: _____

Blue Yang / Asst. Manager

Revision History				
Report Number	**Revision**	**Description**	**Issue Date**	**Revised By**
ER/2021/2001	Rev.00	Original.	April 14, 2021	Tiffany Kao

Note:

1、Antenna information is provided by the applicant, test results of this report are applicable to the sample EUT received.

Contents

1 GENERAL PRODUCT INFORMATION

1.1 Product Description

Product Name:	ASUS Phone (Mobile Phone)
Brand Name:	ASUS
Model No.:	ASUS_I006D
Model Difference:	N/A
Hardware Version:	V4
Software Version:	Android 11
Power Supply:	3.87 Vdc from Rechargeable Li-Polymer Battery or 5 / 9 / 12 / 15 / 20 V from AC/DC Adapter
IMEI:	004400152020000

1.2 Operation Frequency Range

5G NR Band	BW (MHz)	Operation Frequency (MHz)		
n77	20	3710.01	-	3970.02
	30	3715.02	-	3965.01
	40	3720	-	3960
	60	3730.02	-	3950.01
	80	3740.01	-	3940.02
	100	3750	-	3930

1.3 Antenna Designation

Antenna Type	Antenna Model No.	Antenna No.
PIFA	ZS590KS	Ant2
		Ant4
		Ant5
		Ant6
Note: The EUT equipped with multiple antennas, however, transmission of 5G NR bands are available by above antenna no.		

Operating Frequency (MHz)			Ant 2 Peak Gain (dBi)	Ant 4 Peak Gain (dBi)	Ant 5 Peak Gain (dBi)	Ant 6 Peak Gain (dBi)
NR Band 77	3700 ~	3980	-5.98	-3.52	-4.15	-4.53

1.4 Type of Emission & Max ERP/EIRP Power Measurement Result:

5GNR Band	BW		Mod	EIRP(dBm/10MHz)	(W/10MHz)	99%	Type of Emission
n77	40	DFT	BPSK	16.98	0.050	35.713	35M7G7D
	40		QPSK	16.97	0.050	35.759	35M8G7D
	40		16QAM	16.89	0.049	35.750	35M8D7W
	20	CP	QPSK	16.89	0.049	17.986	18M0G7D
	20		16QAM	16.82	0.048	17.992	18M0D7W
5GNR Band	BW		Mod	EIRP(dBm/10MHz)	(W/10MHz)	99%	Type of Emission
n77	100	DFT	BPSK	16.82	0.048	96.336	96M3G7D
			QPSK	16.84	0.048	96.341	96M3G7D
			16QAM	16.44	0.044	96.337	96M3D7W
		CP	QPSK	16.08	0.041	96.341	96M3G7D
			16QAM	16	0.040	96.337	96M3D7W

1.5 Test Methodology of Applied Standards

FCC 47 CFR Part 2, 27O,.
ANSI C63.26-2015
KDB971168 D01 Power Meas license Digital System v03r01
KDB412172 D01 Determining ERP and EIRP v01r01

1.6 Test Facility

Laboratory	Test Site Address	Test Site Name	FCC Designation number	IC CAB identifier
SGS Taiwan Ltd. Central RF Lab. (TAF code 3702)	No.134, Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan.	SAC 1	TW0027	TW3702
		SAC 3		
		Conduction 1		
		Conducted 1		
		Conducted 2		
		Conducted 3		
		Conducted 4		
		Conducted 5		
		Conducted 6		
	No.2, Keji 1st Rd., Guishan District, Taoyuan City, Taiwan 333	Conduction A	TW0028	
		SAC C		
		SAC D		
		SAC G		
		Conducted A		
		Conducted B		
		Conducted C		
		Conducted D		
		Conducted E		
		Conducted F		
		Conducted G		
Note: Test site name is remarked on the equipment list in each section of this report as an indication where measurements occurred in specific test site and address.				

1.7 Special Accessories

No special accessories were used during testing.

1.8 Equipment Modifications

There was no modifications incorporated into the EUT.

1.9 Radiated Emission Test Sites For Measurements From 9 kHz To 30 MHz

Radiated emission below 30MHz is measured in a 9m*9m*6m semi-anechoic chamber, the measurements correspond to those obtained at an open-field test site.
There is a comparison data of both open-field test site and semi-Anechoic chamber, and the result came out very similar.

2 SYSTEM TEST CONFIGURATION

2.1 EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

2.2 EUT Exercise

The EUT (Transmitter) was operated in the continuous transmission mode employed with the simulator of the Base Station that fixates at test default channels to fix the Tx frequency which was for the purpose of the measurements.

2.3 Test Procedure

2.3.1 Conducted Measurement at Antenna Port

The EUT is placed on a table which is 0.8 m above ground plane. A low loss of RF cable was used to connect the antenna port of EUT to measurement equipment.

2.3.2 Radiated Emissions (ERP/EIRP)

The EUT is placed on a turn table, for emission measurements below 1 GHz is 0.8 m above ground plane, for emission measurements above 1 GHz, the table height shall be 1.5 m. The turn table shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both Horizontal and Vertical. In order to find out the max. emission, the relative positions of this hand-held transmitter (EUT) was rotated through three orthogonal axes and measurement procedures for electric field radiated emissions above 1 GHz the EUT measurement is to be made “while keeping the antenna in the ‘cone of radiation’ from that area and pointed at the area both in azimuth and elevation, with polarization oriented for maximum response.” is still within the 3dB illumination BW of the measurement antenna.

2.4 Measurement Results Explanation Example

For all conducted test items:
The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuation factor between EUT conducted port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly EUT RF output level.
Note:
The spectrum analyzer offset is derived from RF cable loss and attenuator factor.
Following shows an offset computation in physical test.

	RF cable loss (dB)	Attenuation factor(dB)	offset(dB)
LB(1GHz below)	4.17	10	14.17
MB(1GHz - 2GHz)	4.43	10	14.43
HB(2GHz - 3GHz)	4.9	10	14.9
UHB(3GHz - 4GHz)	5.36	10	15.36

2.5 Final Amplifier Voltage and Current Information:

Test Mode	DC voltage (V)	DC current (mA)
Band n77	3.87	590

2.6 Configuration of Tested System

Fig. 2-1 Configuration of Tested System (Fixed Channel-Conducted)

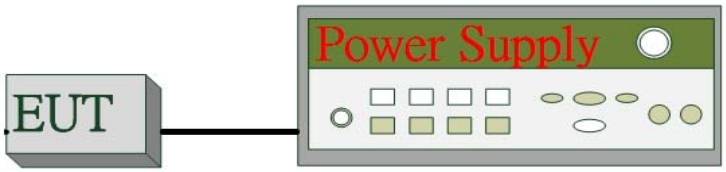


Fig. 2-2 Configuration of Tested System (Fixed Channel-Radiated)

Table 2-1 Equipment Used in

Item	Equipment	Mfr/Brand	Model/ Type No.	Series No.	Data Cable	Power Cord
1.	DC Power Supply	Agilent	E3640A	MY52410006	shielded	Un-shielded

3 SUMMARY OF TEST RESULTS

FCC Rules	Description Of Test	Result
§2.1046(a)	RF Power Output	Compliant
§27.50(j)(3)	EIRP measurement	Compliant
§2.1049(h)	99% & 26dB Occuupied Bandwidth	Compliant
§2.1051 §27.53(l)(2)	Out of Band Emissions at Antenna Terminals and Band Edge / Emission mask requirements	Compliant
§2.1053 §27.53(l)(2)	Field Strength of Spurious Radiation	Compliant
§27.50(j)(4)	Peak to Average Ratio	Compliant
§2.1055(a)(1) §27.54	Frequency Stability	Compliant

4 DESCRIPTION OF TEST MODES

4.1 The Worst Test Modes and Channel Details

1. The EUT has been tested under operating condition.
2. Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, X(E1)Y(E2)Z(H) axis and antenna ports. The worst case was found as listed below. Following channel(s) was (were) selected for the final test as listed below:

BAND	PLAN			Available Antennas				Worst Case Antenna			
	H	E1	E2	Ant2	Ant4	Ant5	Ant6	Ant2	Ant4	Ant5	Ant6
n77	V			V	V	V	V			V	

BAND	H PLAN	E1 PLAN	E2 PLAN
LTE Band 7A+n77	V		
LTE Band 40A+n77	V		
LTE Band 41A+n77	V		

4.2 Measurement Configuration

1. The worst case scenarios are determined by single uplink configuration that generate the highest output power.
2. Frequnecy Stability and CCDF are investigated and only present configurations with worst case scenario in this report.

Test Items	Band	Test Channel			Bandwidth (MHz)											Modulation DFT-OFDM					Modulation CP-OFDM				RB #					
		L	M	H	5	10	15	20	30	40	50	60	80	90	100	BPSK	QPSK	16QAM	64QAM	256QAM	QPSK	16QAM	64QAM	256QAM	Edge_1RB_Left	Edge_1RB_Right	Inner_1RB_Left	Inner_1RB_Right	Inner_Full	Outer_Full
Conducted Power	77	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	-	-	v	v	v	v
Freqency Stability		-	v	-	-	-	-	-	-	-	-	-	-	-	v	-	-	-	-	-	v	-	-	-	-	-	-	-	-	v
20dB and 99% Bandwidth		v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	-	-	-	-	-	-	-	-	-	v
Mask		v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	-	-	-	-	v	-	-	-	v	v	-	-	-	v
Conducted Emission		v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	-	-	-	-	-	-	-	-	-	-	v	-	-	-
CCDF		v	v	v	v	v	v	v	v	v	v	v	v	v	v	-	-	-	-	-	-	-	-	v	-	-	-	-	-	v

Radiated Emission

E-UTRA Band	SCS	Test Channel	Channel Bandwidth (MHz)	Modulation	Resource Block Allocation	
					RBs allocated	RB Start
n77A	30K	66400	40	DFT-S-OFDM Pi/2 BPSK	1	1

ENDC Radiated Emission

E-UTRA Band	SCS	Test Channel	Channel Bandwidth (MHz)	Modulation	Resource Block Allocation	
					RBs allocated	RB Start
7A_n77A	30K	21100_66400	10_40	DFT-S-OFDM Pi/2 BPSK	1	1
40A_n77A	30K	39150_66400	20_40	DFT-S-OFDM Pi/2 BPSK	1	1
41A_n77A	30K	40185_66400	20_40	DFT-S-OFDM Pi/2 BPSK	1	1

Note: List of frequency bands mentioned in the measurement configuration, for comparison with 3GPP, please refer to the following table.

Band	3GPP inter-EN-DC configuration in FR1
7A_n77A	DC_7A_n77A
40A_n77A	DC_40A_n77A
41A_n77A	DC_41A_n77A

5 MEASUREMENT UNCERTAINTY

Test Items	Uncertainty
RF Power Output	+/- 1 dB
ERP/ EIRP measurement	Vertical Polarization = +/- 3dB Horizontal Polarization =+/- 3dB
99% Occupied Bandwidth	+/- 1.54 Hz
Out of Band Emissions at Antenna Terminals and Band Edge	+/- 1.69 dB
Peak to Average Ratio	+/- 1 dB
Frequency Stability vs. Temperature	+/- 1.54 Hz
Frequency Stability vs. Voltage	+/- 1.54 Hz
Temperature	+/- 0.4 °C
Humidity	+/- 3.5 %
DC / AC Power Source	DC= +/- 1%, AC=+/- 1%

Radiated Spurious Emission Measurement Uncertainty			
Polarization: Vertical	+/- 2.64	dB	9kHz~30MHz: +-2.3dB
	+/- 4.93	dB	30MHz - 1000MHz: +/- 3.37dB
	+/- 4.81	dB	1GHz - 18GHz: +/- 4.04dB
	+/- 4.52	dB	18GHz - 40GHz: +/- 4.04dB
Polarization: Horizontal	+/- 2.64	dB	9kHz~30MHz: +-2.3dB
	+/- 4.45	dB	30MHz - 1000MHz: +/- 4.22dB
	+/- 4.81	dB	1GHz - 18GHz: +/- 4.08dB
	+/- 4.52	dB	18GHz - 40GHz: +/- 4.08dB

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

6 MAXMUM OUTPUT POWER

6.1 Standard Applicable

A base station simulator was used to establish communication with the EUT. Its parameters were set to transmit the maximum power on the EUT. The measured power in the radio frequency on the transmitter output terminals.

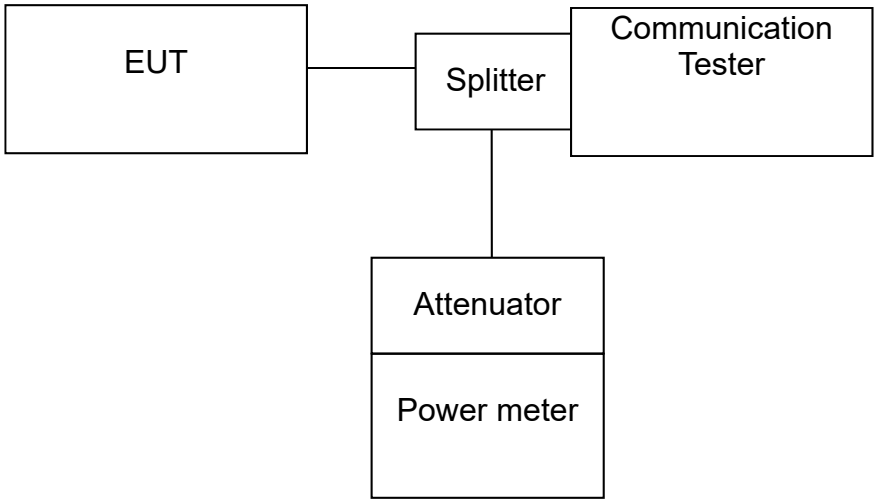
6.2 EIRP LIMIT

According to FCC §2.1046

FCC 27.50(j)(3)

(3) Mobile and portable stations are limited to 1 Watt EIRP. Mobile and portable stations operating in these bands must employ a means for limiting power to the minimum necessary for successful communications.

6.3 Test Set-up



Note: *Measurement setup for testing on Antenna connector*

6.4 Output Power Measurement Applicable Guideance

The transmitter output was connected to a calibrated attenuator, the other end of which was connected to a power meter. Transmitter output was read off the power meter in dBm. The power output at the transmitter antenna port was determined by adding the value of the attenuator to the power meter reading.

6.5 Determining ERP and/or EIRP from conducted RF output power measurements

According to KDB 412172 D01 Power Approach,

EIRP = P_T+G_T-L_C,

ERP= EIRP-2.15,

Where:

ERP or EIRP = effective radiated power or equivalent isotropically radiated power (expressed in the same units as PT, typically dBW, dBm, or power spectral density (PSD)2), relative to either a dipole antenna (ERP) or an isotropic antenna (EIRP);

P_T = transmitter output power, expressed in dBW, dBm, or PSD;

G_T = gain of the transmitting antenna, in dBd (ERP) or dBi (EIRP);

L_C = signal attenuation in the connecting cable between the transmitter and antenna, in dB.

6.6 Measurement Equipment Used

Conducted Emission Test Site: Conducted 3					
EQUIPMENT TYPE	**MFR**	**MODEL NUMBER**	**SERIAL NUMBER**	**LAST CAL.**	**CAL DUE.**
Spectrum Analyzer	KEYSIGHT	N9010A	MY53400256	11/19/2020	11/18/2021
UXM 5G	KEYSIGHT	E7515B	MY59321561	12/22/2020	12/21/2021
DC Power Supply	Agilent	E3640A	MY52410006	12/17/2020	12/16/2021
Attenuator	Mini-Circuit	BW-S10W2+	2	12/16/2020	12/15/2021
DC Block	Mini-Circuits	BLK-18-S+	1	12/16/2020	12/15/2021
Power Divider	RF-LAMBDA	RFLT2W1G18G	18112200202	12/16/2020	12/15/2021

6.7 Measurement Results:

Antenna gain : -4.15

n77 Maximum Average Power (dBm)								EIRP (dBm)			EIRP Limit
BW(MHz)	SCS(kHz)	Mod	RB Size	RB Offset	Low	Mid	High	Low	Mid	High	
			Channel		647334	656000	664668	647334	656000	664668	
			Fequency (MHz)		3710.01	3840	3970.02	3710.01	3840	3970.02	
20	30	DFT-s PI/2 BPSK	1	1	20.92	20.97	20.96	16.77	16.82	16.81	30
			1	49	20.82	20.94	20.95	16.67	16.79	16.8	
			25	12	20.75	20.93	21.01	16.6	16.78	16.86	
			50	0	19.71	20.03	19.81	15.56	15.88	15.66	
		DFT-s QPSK	1	1	20.84	20.94	20.8	16.69	16.79	16.65	
			1	49	20.76	20.95	20.68	16.61	16.8	16.53	
			25	12	20.73	20.99	20.76	16.58	16.84	16.61	
			50	0	19.77	19.91	19.78	15.62	15.76	15.63	
		DFT-s 16QAM	1	1	20.89	20.99	20.73	16.74	16.84	16.58	
		DFT-s 64QAM	1	1	19.95	20.34	19.75	15.8	16.19	15.6	
		DFT-s 256QAM	1	1	18.72	18.51	18.06	14.57	14.36	13.91	
		CP QPSK	1	1	20.65	21.04	20.73	16.5	16.89	16.58	
		CP 16QAM	1	1	20.42	20.97	20.43	16.27	16.82	16.28	
		CP 64QAM	1	1	19.87	20.12	19.63	15.72	15.97	15.48	
		CP 256QAM	1	1	18.44	18.56	18.16	14.29	14.41	14.01	

n77 Maximum Average Power (dBm)								EIRP (dBm)			EIRP Limit
BW(MHz)	SCS(kHz)	Mod	RB Size	RB Offset	Low	Mid	High	Low	Mid	High	
			Channel		647668	656000	664334	647668	656000	664334	
			Fequency (MHz)		3715.02	3840	3965.01	3715.02	3840	3965.01	
30	30	DFT-s PI/2 BPSK	1	1	20.99	20.98	20.08	16.84	16.83	15.93	30
			1	76	20.91	20.84	20.95	16.76	16.69	16.8	
			36	18	20.95	20.88	20.86	16.8	16.73	16.71	
			75	0	20.15	19.94	20.19	16	15.79	16.04	
		DFT-s QPSK	1	1	20.86	20.91	20.88	16.71	16.76	16.73	
			1	76	20.79	20.72	20.81	16.64	16.57	16.66	
			36	18	20.61	20.8	20.68	16.46	16.65	16.53	
			75	0	20.08	19.65	19.89	15.93	15.5	15.74	
		DFT-s 16QAM	1	1	20.42	20.41	20.33	16.27	16.26	16.18	
		DFT-s 64QAM	1	1	19.38	19.55	19.43	15.23	15.4	15.28	
		DFT-s 256QAM	1	1	18.28	18.08	18.12	14.13	13.93	13.97	
		CP QPSK	1	1	20.31	20.42	20.35	16.16	16.27	16.2	
		CP 16QAM	1	1	20.06	20.17	20.28	15.91	16.02	16.13	
		CP 64QAM	1	1	19.35	19.17	19.09	15.2	15.02	14.94	
		CP 256QAM	1	1	17.35	17.43	17.21	13.2	13.28	13.06	

n77 Maximum Average Power (dBm)								EIRP (dBm)			EIRP Limit
BW(MHz)	SCS(kHz)	Mod	RB Size	RB Offset	Low	Mid	High	Low	Mid	High	
			Channel		648000	656000	664000	648000	656000	664000	
			Fequency (MHz)		3720	3840	3960	3720	3840	3960	
40	30	DFT-s PI/2 BPSK	1	1	20.79	21.05	21.13	16.64	16.9	16.98	30
			1	104	20.8	20.85	21.07	16.65	16.7	16.92	
			50	25	20.68	20.89	20.47	16.53	16.74	16.32	
			100	0	19.77	19.91	19.54	15.62	15.76	15.39	
		DFT-s QPSK	1	1	20.65	20.95	21.12	16.5	16.8	16.97	
			1	104	20.79	20.8	21.05	16.64	16.65	16.9	
			50	25	20.7	20.95	20.51	16.55	16.8	16.36	
			100	0	19.73	19.91	19.57	15.58	15.76	15.42	
		DFT-s 16QAM	1	1	20.81	21.04	20.11	16.66	16.89	15.96	
		DFT-s 64QAM	1	1	19.8	20.28	19.4	15.65	16.13	15.25	
		DFT-s 256QAM	1	1	18.38	18.69	17.32	14.23	14.54	13.17	
		CP QPSK	1	1	20.42	20.83	20.16	16.27	16.68	16.01	
		CP 16QAM	1	1	20.28	20.64	20.14	16.13	16.49	15.99	
		CP 64QAM	1	1	19.94	19.79	19.15	15.79	15.64	15	
		CP 256QAM	1	1	18.12	18.46	17.59	13.97	14.31	13.44	

n77 Maximum Average Power (dBm)								EIRP (dBm)			EIRP Limit
BW(MHz)	SCS(kHz)	Mod	RB Size	RB Offset	Low	Mid	High	Low	Mid	High	
			Channel		648668	656000	663334	648668	656000	663334	
			Fequency (MHz)		3730.02	3840	3950.01	3730.02	3840	3950.01	
60	30	DFT-s PI/2 BPSK	1	1	20.26	20.5	20.89	16.11	16.35	16.74	30
			1	160	20.14	20.07	20.73	15.99	15.92	16.58	
			81	40	20.37	20.45	20.72	16.22	16.3	16.57	
			162	0	19.38	19.46	19.94	15.23	15.31	15.79	
		DFT-s QPSK	1	1	20.29	20.47	20.36	16.14	16.32	16.21	
			1	160	20.15	19.98	20.72	16	15.83	16.57	
			81	40	20.32	20.5	20.89	16.17	16.35	16.74	
			162	0	19.33	19.46	20.01	15.18	15.31	15.86	
		DFT-s 16QAM	1	1	20.22	20.43	20.31	16.07	16.28	16.16	
		DFT-s 64QAM	1	1	19.19	19.46	19.47	15.04	15.31	15.32	
		DFT-s 256QAM	1	1	17.91	18.19	17.96	13.76	14.04	13.81	
		CP QPSK	1	1	20.27	20.49	20.36	16.12	16.34	16.21	
		CP 16QAM	1	1	20.16	20.45	20.29	16.01	16.3	16.14	
		CP 64QAM	1	1	19.15	19.53	19.28	15	15.38	15.13	
		CP 256QAM	1	1	17.91	17.87	17.92	13.76	13.72	13.77	

n77 Maximum Average Power (dBm)								EIRP (dBm)			EIRP Limit
BW(MHz)	SCS(kHz)	Mod	RB Size	RB Offset	Low	Mid	High	Low	Mid	High	
			Channel		649334	656000	662668	649334	656000	662668	
			Fequency (MHz)		3740.01	3840	3940.02	3740.01	3840	3940.02	
80	30	DFT-s PI/2 BPSK	1	1	20.38	20.51	20.87	16.23	16.36	16.72	30
			1	215	20.35	20.42	20.94	16.2	16.27	16.79	
			108	54	20.33	20.46	20.78	16.18	16.31	16.63	
			216	0	19.3	19.41	19.75	15.15	15.26	15.6	
		DFT-s QPSK	1	1	20.33	20.48	20.48	16.18	16.33	16.33	
			1	215	20.09	19.83	20.96	15.94	15.68	16.81	
			108	54	20.28	20.45	20.78	16.13	16.3	16.63	
			216	0	19.27	19.44	19.81	15.12	15.29	15.66	
		DFT-s 16QAM	1	1	20.35	20.47	20.52	16.2	16.32	16.37	
		DFT-s 64QAM	1	1	19.15	19.37	19.64	15	15.22	15.49	
		DFT-s 256QAM	1	1	17.84	17.98	18	13.69	13.83	13.85	
		CP QPSK	1	1	20.28	20.31	20.17	16.13	16.16	16.02	
		CP 16QAM	1	1	20.15	20.28	19.83	16	16.13	15.68	
		CP 64QAM	1	1	19.06	19.42	19.47	14.91	15.27	15.32	
		CP 256QAM	1	1	18.02	17.98	17.73	13.87	13.83	13.58	

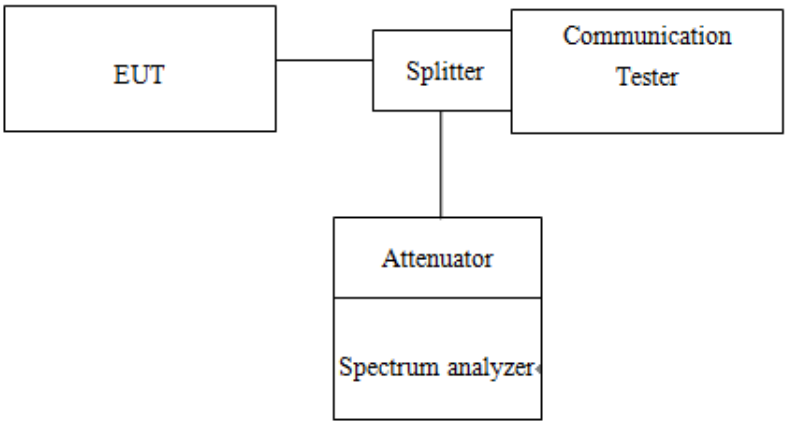
n77 Maximum Average Power (dBm)								EIRP (dBm)			EIRP Limit
BW(MHz)	SCS(kHz)	Mod	RB Size	RB Offset	Low	Mid	High	Low	Mid	High	
			Channel		650000	656000	662000	650000	656000	662000	
			Fequency (MHz)		3750	3840	3930	3750	3840	3930	
100	30	DFT-s PI/2 BPSK	1	1	20.26	20.4	20.6	16.11	16.25	16.45	30
			1	271	20.16	20.26	20.97	16.01	16.11	16.82	
			135	67	20.26	20.43	20.66	16.11	16.28	16.51	
			270	0	19.21	19.33	19.66	15.06	15.18	15.51	
		DFT-s QPSK	1	1	20.21	20.4	20.63	16.06	16.25	16.48	
			1	271	20.21	19.66	20.99	16.06	15.51	16.84	
			135	67	20.27	20.43	20.67	16.12	16.28	16.52	
			270	0	19.27	19.33	19.68	15.12	15.18	15.53	
		DFT-s 16QAM	1	1	20.23	20.39	20.59	16.08	16.24	16.44	
		DFT-s 64QAM	1	1	19.23	19.4	19.69	15.08	15.25	15.54	
		DFT-s 256QAM	1	1	17.72	17.89	18.38	13.57	13.74	14.23	
		CP QPSK	1	1	20.15	20.13	20.23	16	15.98	16.08	
		CP 16QAM	1	1	19.86	20.03	20.15	15.71	15.88	16	
		CP 64QAM	1	1	18.83	18.42	19.18	14.68	14.27	15.03	
		CP 256QAM	1	1	18.03	17.71	18.17	13.88	13.56	14.02	

7 OCCUPIED BANDWIDTH MEASUREMENT

7.1 Standard Applicable

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.

7.2 Test Set-up



7.3 Measurement Procedure

99% &26dB Bandwidth with detector peak

The EUT's output RF connector was connected with a short cable to the spectrum analyzer, RBW was set to about 1% of emission BW, VBW= 3 times RBW, -26dBc display line was placed on the screen (or 26dB bandwidth), the occupied bandwidth is the delta frequency between the two points where the display line intersects the signal trace. Then set RBW to 99% bandwidth, RBW= 1%, VBW= 3 RBW, with span > 2 * Signal BW, set % Power = 99%.

7.4 Measurement Equipment Used

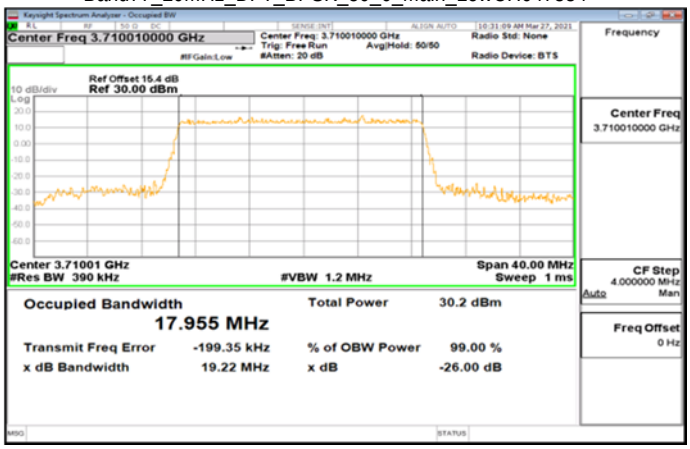
Conducted Emission Test Site: Conducted 3					
EQUIPMENT TYPE	**MFR**	**MODEL NUMBER**	**SERIAL NUMBER**	**LAST CAL.**	**CAL DUE.**
Spectrum Analyzer	KEYSIGHT	N9010A	MY53400256	11/19/2020	11/18/2021
UXM 5G	KEYSIGHT	E7515B	MY59321561	12/22/2020	12/21/2021
Temperature Chamber	TERCHY	MHG-120LF	911009	05/20/2020	05/19/2021
DC Power Supply	Agilent	E3640A	MY52410006	12/17/2020	12/16/2021
Attenuator	Mini-Circuit	BW-S10W2+	2	12/16/2020	12/15/2021
DC Block	Mini-Circuits	BLK-18-S+	1	12/16/2020	12/15/2021
Power Divider	RF-LAMBDA	RFLT2W1G18G	18112200202	12/16/2020	12/15/2021

7.5 Measurement Result

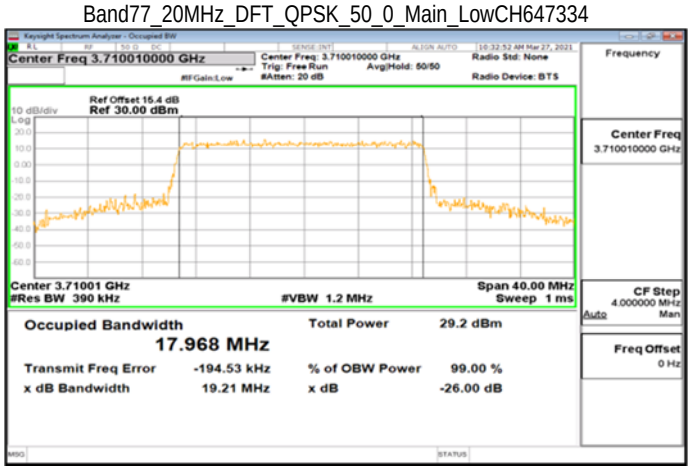
NR BAND 77 Channel bandwidth: 20MHz											
DFT-S-OFDM_SCS 30 kHz											
Freq. (MHz)	CH	99% BW (MHz)					26 dB BW (MHz)				
		BPSK	QPSK	16QAM	64QAM	256QAM	BPSK	QPSK	16QAM	64QAM	256QAM
3710.01	647334	17.955	17.968	17.9920	17.9540	17.9580	19.220	19.210	19.320	19.030	18.940
3840.00	656000	17.968	17.986	17.9310	19.2600	17.9700	19.160	19.210	19.010	17.968	18.950
3970.02	664668	17.976	17.979	17.9200	17.9770	17.9500	19.520	19.030	19.110	19.250	19.100
NR BAND 77 Channel bandwidth: 30MHz											
DFT-S-OFDM_SCS 30 kHz											
Freq. (MHz)	CH	99% BW (MHz)					26 dB BW (MHz)				
		BPSK	QPSK	16QAM	64QAM	256QAM	BPSK	QPSK	16QAM	64QAM	256QAM
3715.02	647668	26.784	26.803	26.8090	26.7940	26.8080	28.330	28.280	28.060	27.830	28.160
3840.00	656000	26.738	26.805	26.7970	26.7860	26.7790	28.030	28.240	28.290	28.320	28.010
3965.01	664334	26.778	26.786	26.7940	26.8250	26.7900	28.200	28.230	28.150	28.220	28.000
NR BAND 77 Channel bandwidth: 40MHz											
DFT-S-OFDM_SCS 30 kHz											
Freq. (MHz)	CH	99% BW (MHz)					26 dB BW (MHz)				
		BPSK	QPSK	16QAM	64QAM	256QAM	BPSK	QPSK	16QAM	64QAM	256QAM
3720.00	648000	35.713	35.652	35.725	35.763	35.773	37.06	37.21	37.25	37.29	37.34
3840.00	656000	15.741	35.726	35.745	35.726	35.720	37.18	37.41	37.51	36.98	37.28
3960.00	664000	35.694	35.759	35.750	35.739	35.707	37.50	37.17	37.40	37.01	37.11
NR BAND 77 Channel bandwidth: 60MHz											
DFT-S-OFDM_SCS 30 kHz											
Freq. (MHz)	CH	99% BW (MHz)					26 dB BW (MHz)				
		BPSK	QPSK	16QAM	64QAM	256QAM	BPSK	QPSK	16QAM	64QAM	256QAM
3730.02	648668	57.806	57.768	57.854	57.727	57.866	60.10	60.08	59.81	59.99	59.84
3840.00	656000	57.749	57.749	57.885	58.025	57.779	60.16	60.16	60.18	59.87	59.90
3950.01	663334	57.887	57.863	57.784	57.940	57.828	59.85	59.83	59.86	59.86	59.83
NR BAND 77 Channel bandwidth: 80MHz											
DFT-S-OFDM_SCS 30 kHz											
Freq. (MHz)	CH	99% BW (MHz)					26 dB BW (MHz)				
		BPSK	QPSK	16QAM	64QAM	256QAM	BPSK	QPSK	16QAM	64QAM	256QAM
3740.01	649334	77.126	76.996	77.012	77.017	77.104	79.58	79.73	79.72	79.63	79.70
3840.00	656000	77.105	77.086	76.982	77.016	77.040	79.74	79.60	79.76	79.69	79.62
3940.02	662668	77.064	77.125	76.969	77.009	77.112	79.67	79.71	79.80	79.66	79.88

NR BAND 77 Channel bandwidth: 100MHz											
DFT-S-OFDM_SCS 30 kHz											
Freq. (MHz)	CH	99% BW (MHz)					26 dB BW (MHz)				
		BPSK	QPSK	16QAM	64QAM	256QAM	BPSK	QPSK	16QAM	64QAM	256QAM
3750.00	650000	96.189	96.245	96.178	96.439	96.186	99.53	99.40	99.51	99.44	99.54
3840.00	656000	96.096	96.262	96.256	96.280	96.177	99.51	99.54	99.51	99.39	99.57
3930.00	662000	96.336	96.341	96.337	96.270	96.371	99.57	99.56	99.55	99.50	99.44

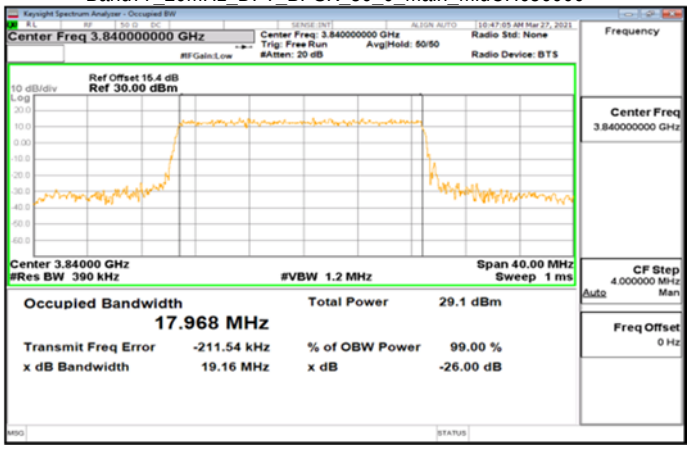
Band77_20MHz_DFT_BPSK_50_0_Main_LowCH647334



Band77_20MHz_DFT_QPSK_50_0_Main_LowCH647334



Band77_20MHz_DFT_BPSK_50_0_Main_MidCH656000



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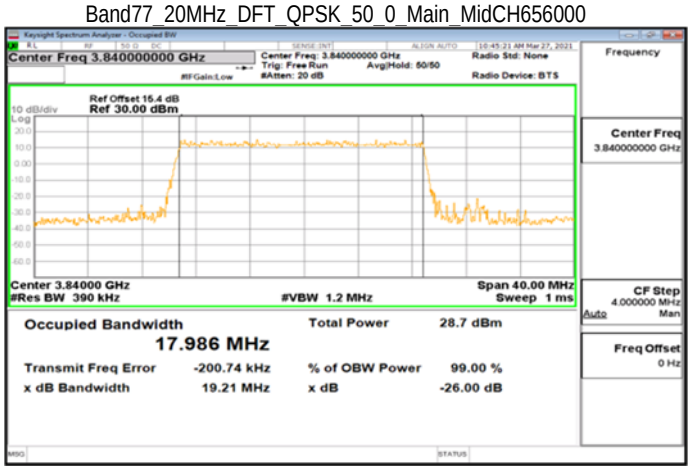
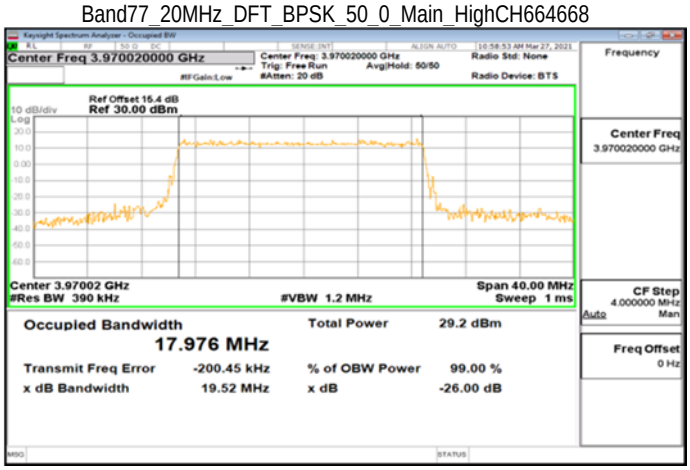


Band77_20MHz_DFT_BPSK_50_0_Main_HighCH664668



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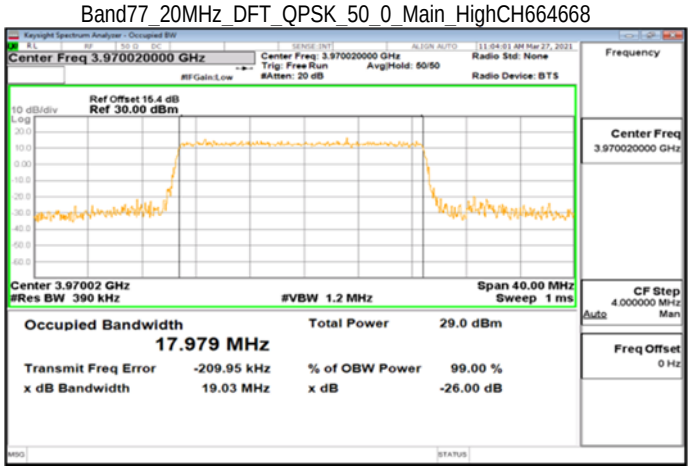
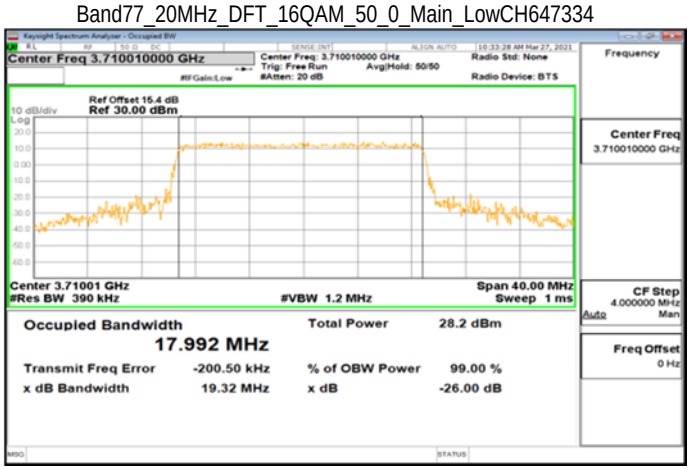
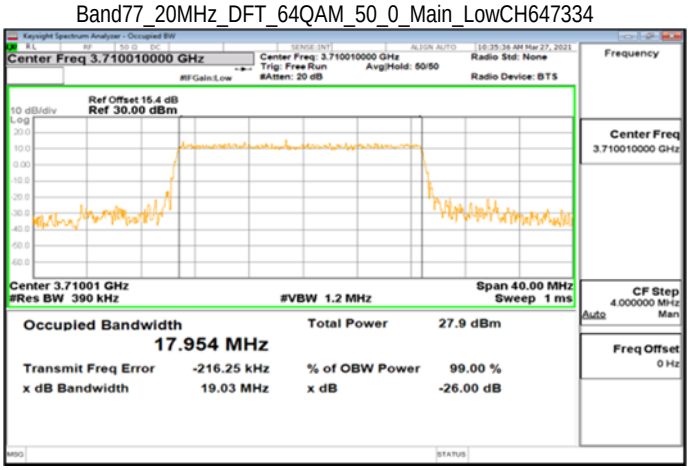


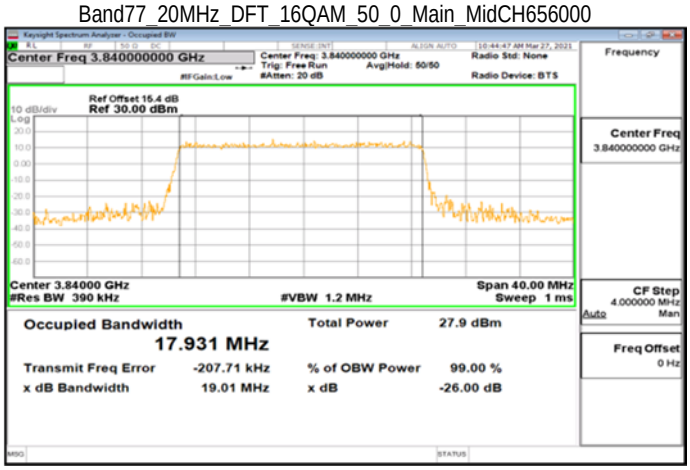
Band77_20MHz_DFT_16QAM_50_0_Main_LowCH647334



Band77_20MHz_DFT_64QAM_50_0_Main_LowCH647334



Band77_20MHz_DFT_16QAM_50_0_Main_MidCH656000



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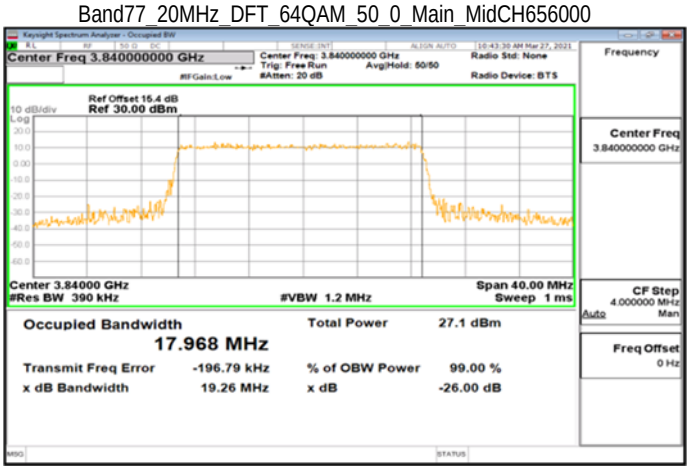

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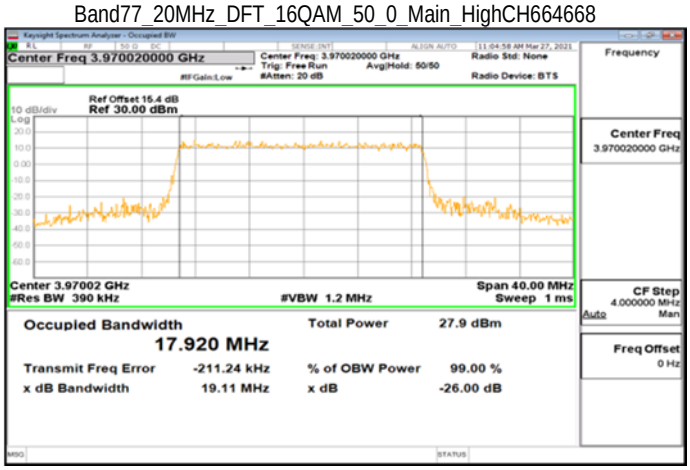
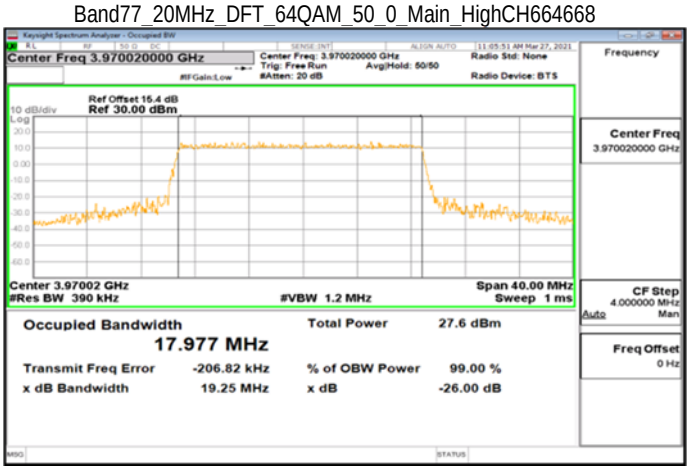
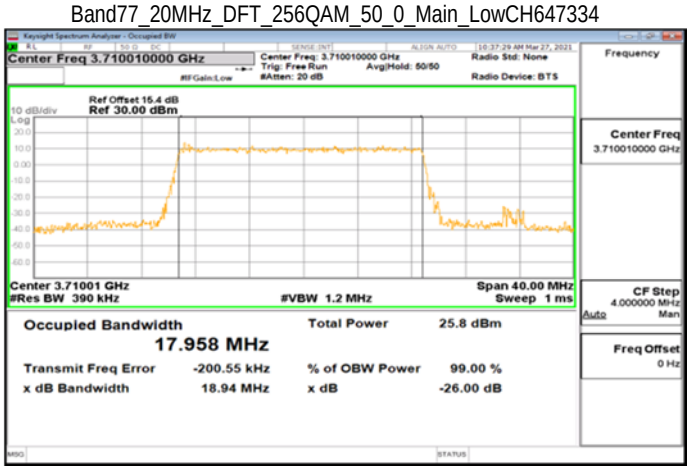


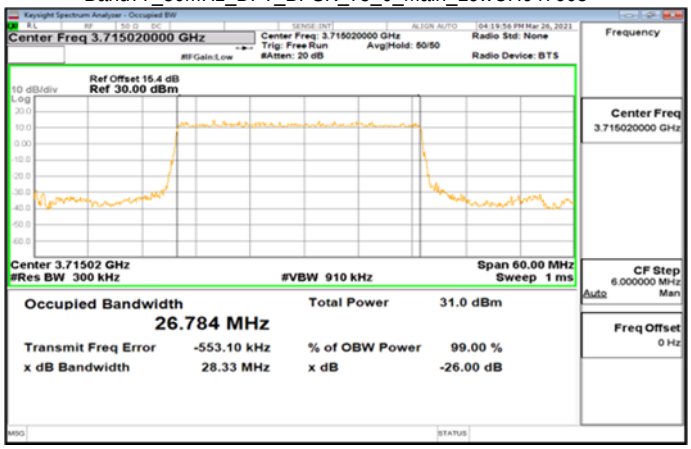
Band77_20MHz_DFT_64QAM_50_0_Main_HighCH664668



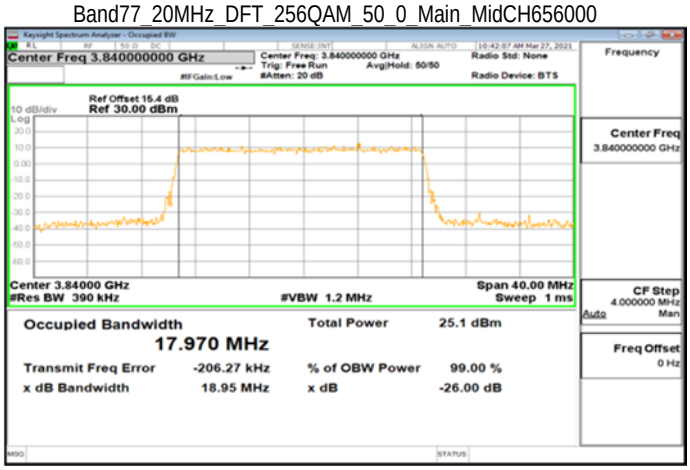
Band77_20MHz_DFT_256QAM_50_0_Main_LowCH647334



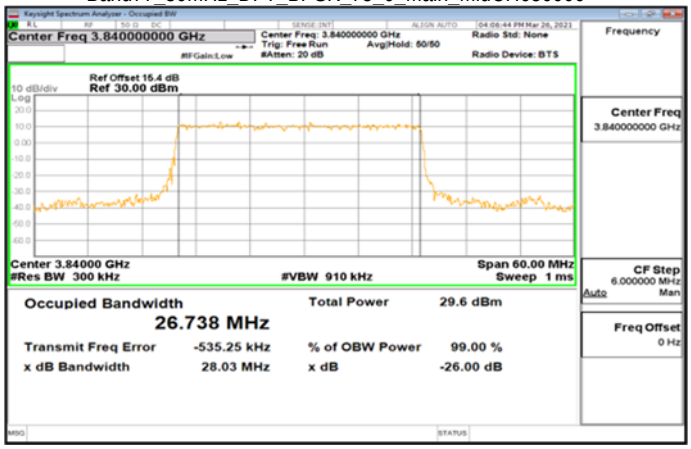
Band77_30MHz_DFT_BPSK_75_0_Main_LowCH647668



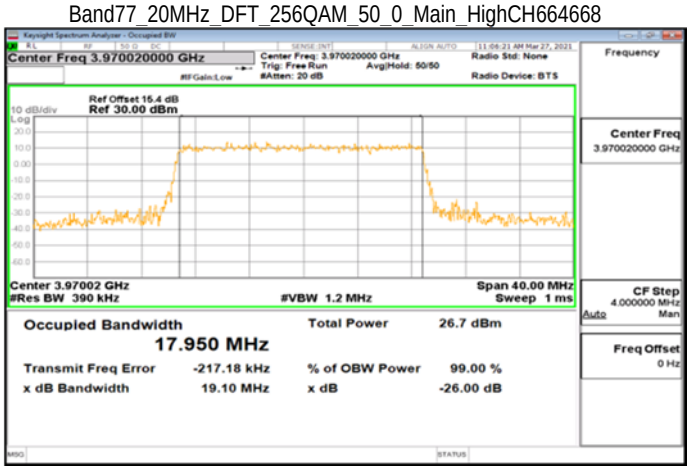
Band77_20MHz_DFT_256QAM_50_0_Main_MidCH656000



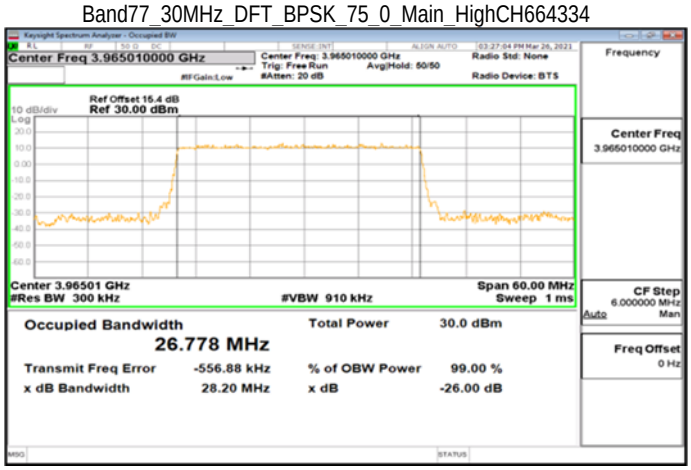
Band77_30MHz_DFT_BPSK_75_0_Main_MidCH656000



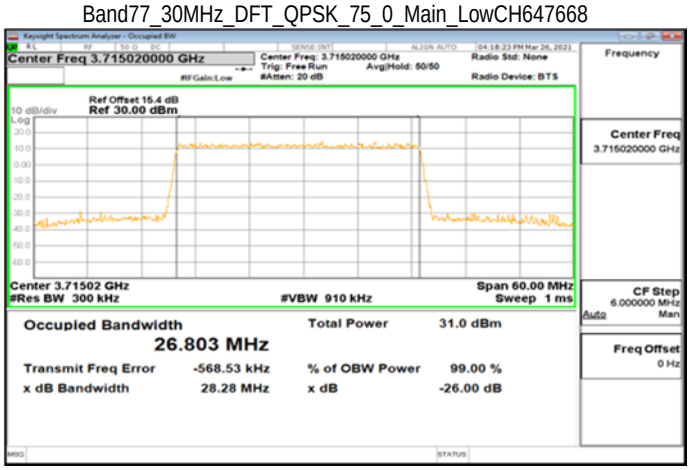
Band77_20MHz_DFT_256QAM_50_0_Main_HighCH664668



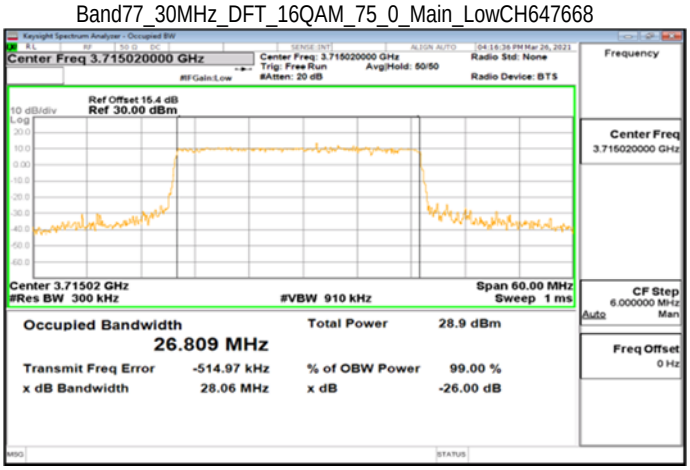
Band77_30MHz_DFT_BPSK_75_0_Main_HighCH664334



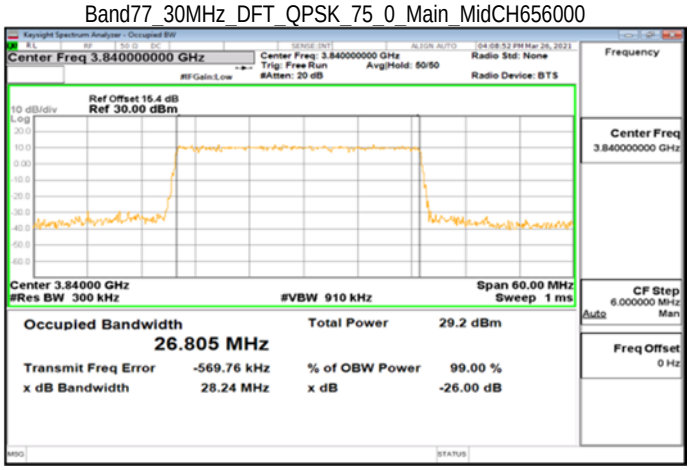
Band77_30MHz_DFT_QPSK_75_0_Main_LowCH647668



Band77_30MHz_DFT_16QAM_75_0_Main_LowCH647668



Band77_30MHz_DFT_QPSK_75_0_Main_MidCH656000



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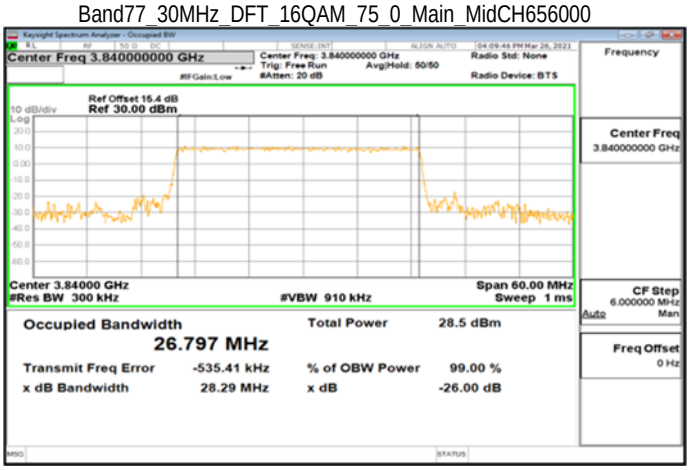
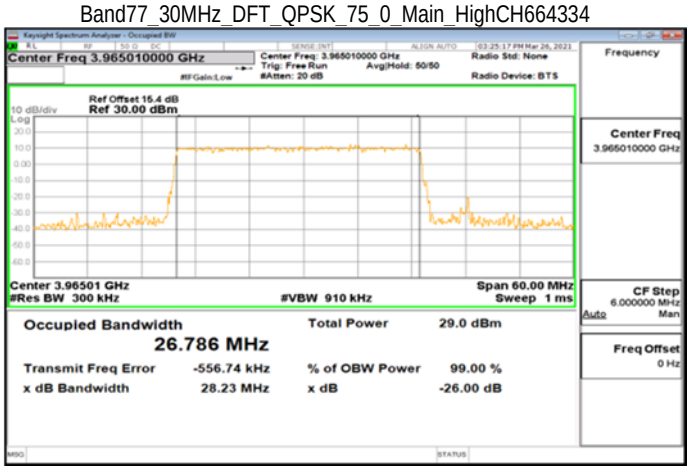
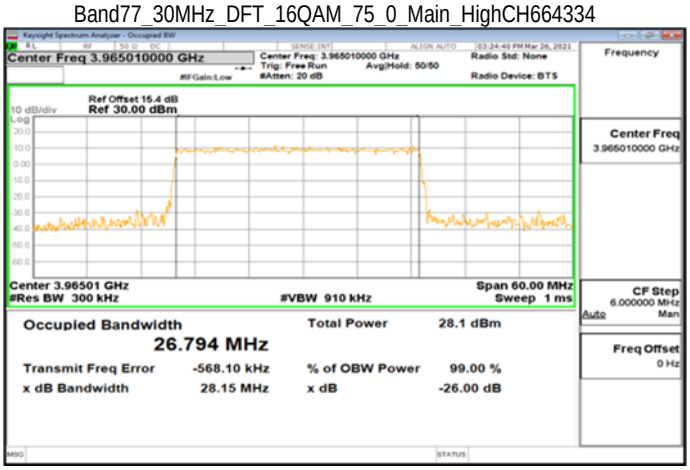


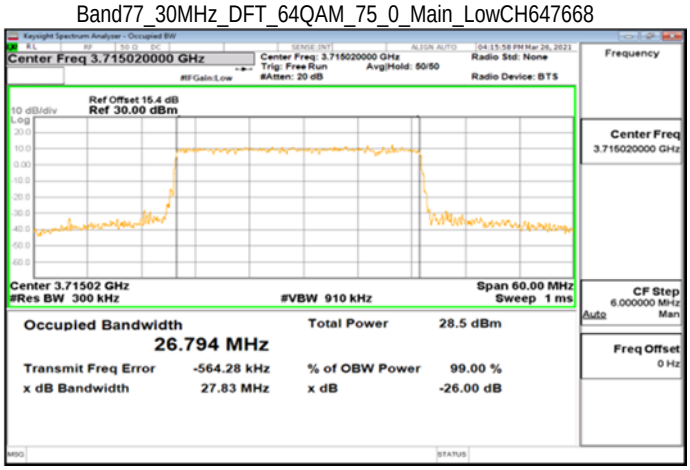
Band77_30MHz_DFT_QPSK_75_0_Main_HighCH664334



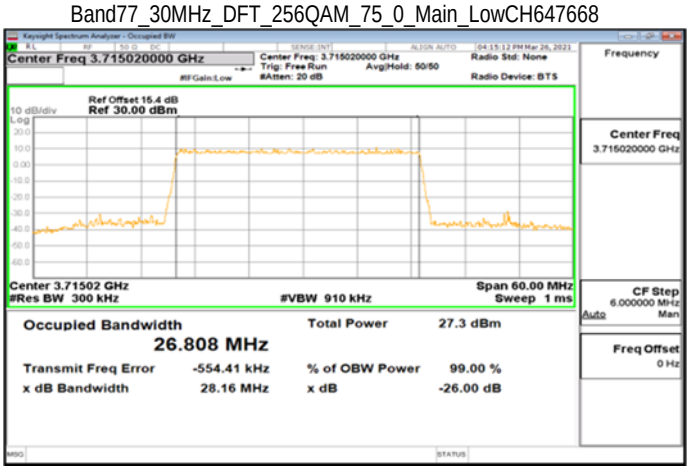
Band77_30MHz_DFT_16QAM_75_0_Main_HighCH664334



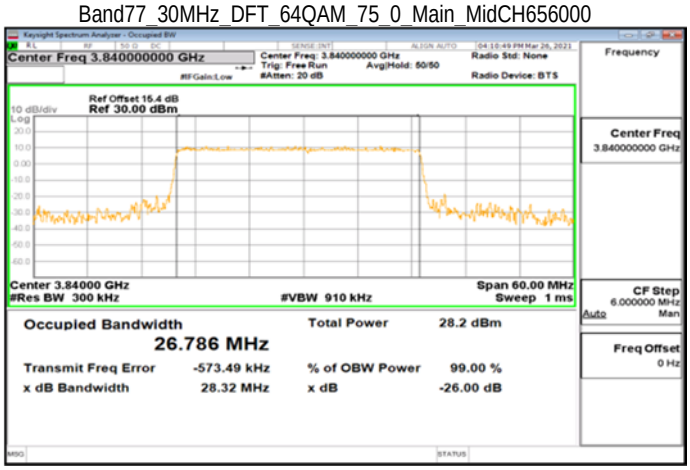
Band77_30MHz_DFT_64QAM_75_0_Main_LowCH647668



Band77_30MHz_DFT_256QAM_75_0_Main_LowCH647668



Band77_30MHz_DFT_64QAM_75_0_Main_MidCH656000



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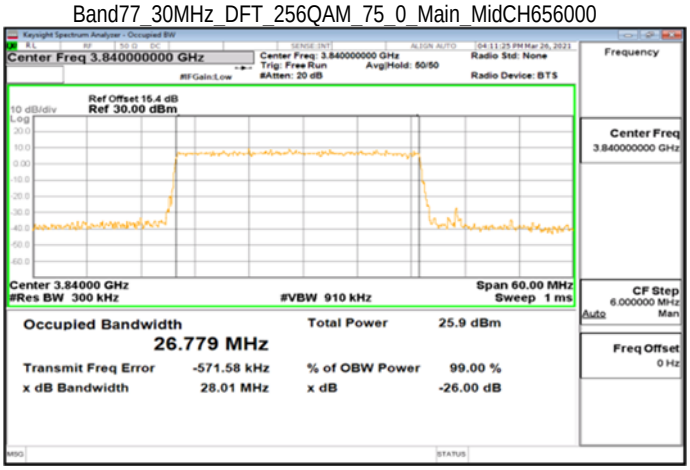

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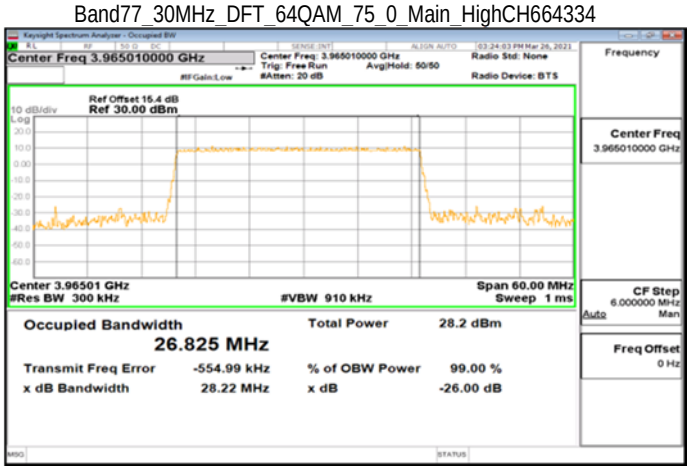
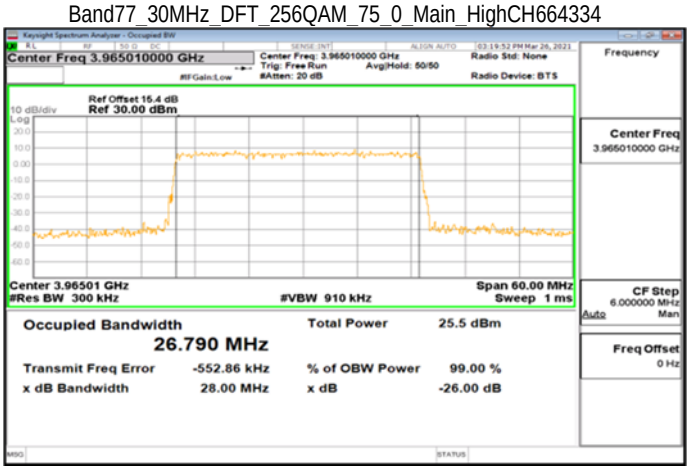
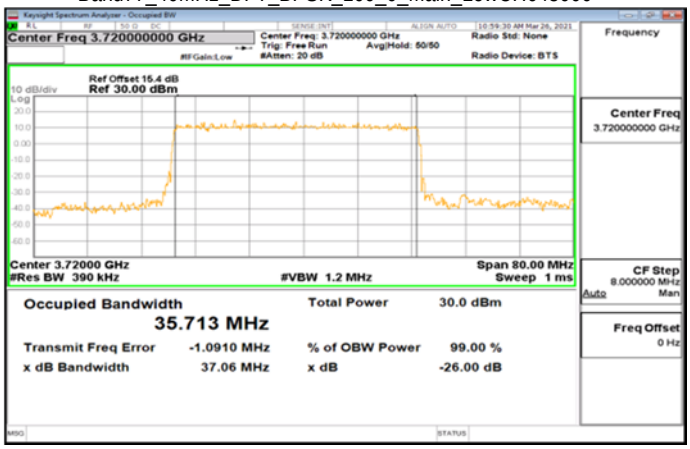


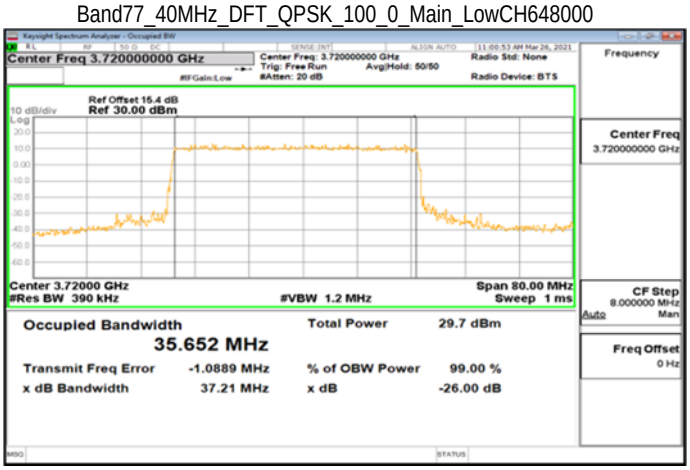
Band77_30MHz_DFT_256QAM_75_0_Main_HighCH664334



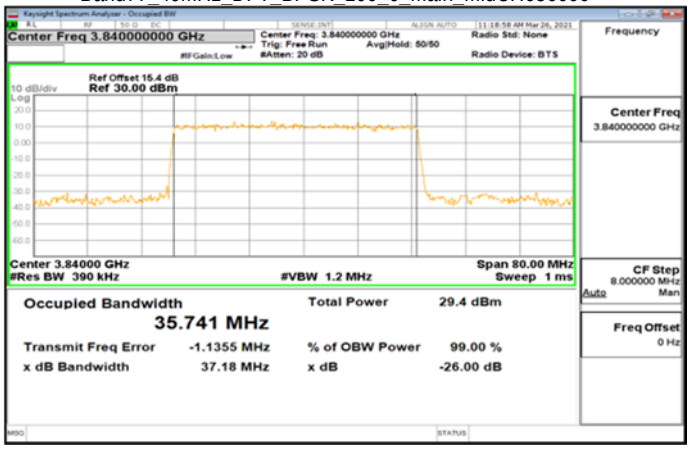
Band77_40MHz_DFT_BPSK_100_0_Main_LowCH648000



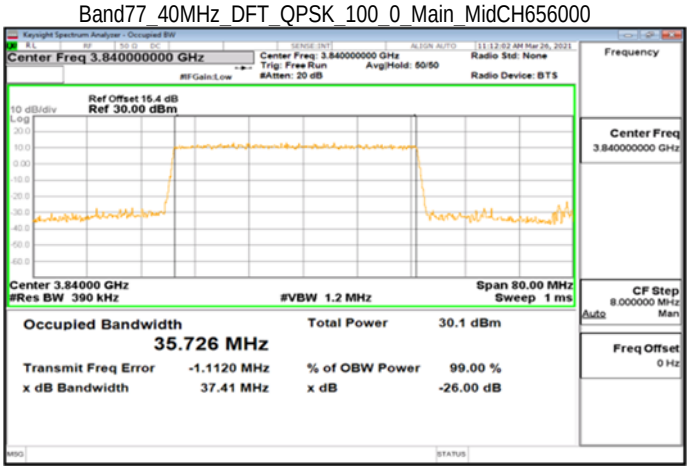
Band77_40MHz_DFT_QPSK_100_0_Main_LowCH648000



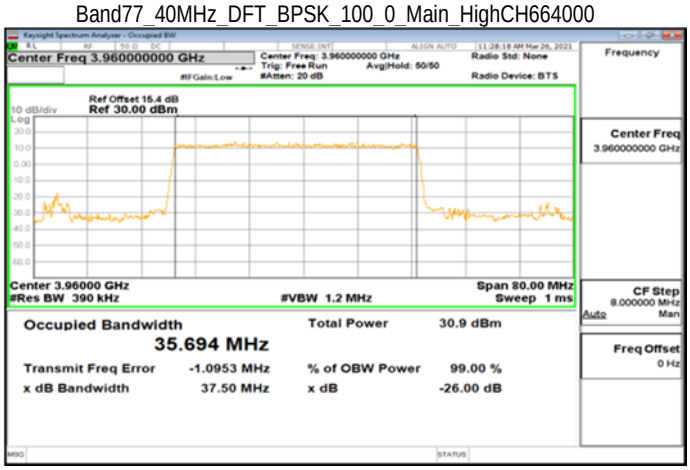
Band77_40MHz_DFT_BPSK_100_0_Main_MidCH656000



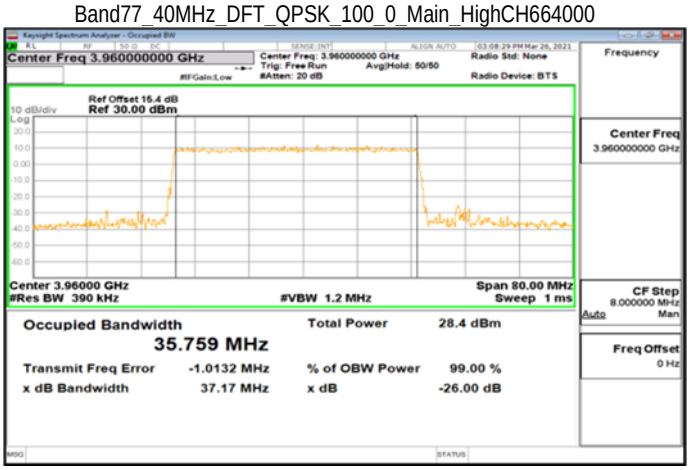
Band77_40MHz_DFT_QPSK_100_0_Main_MidCH656000



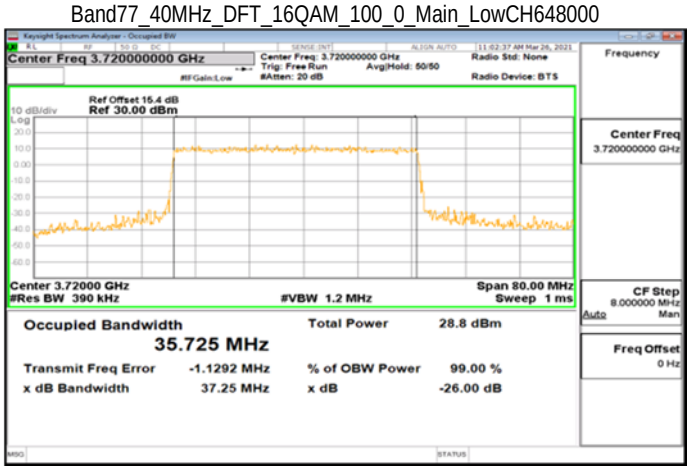
Band77_40MHz_DFT_BPSK_100_0_Main_HighCH664000



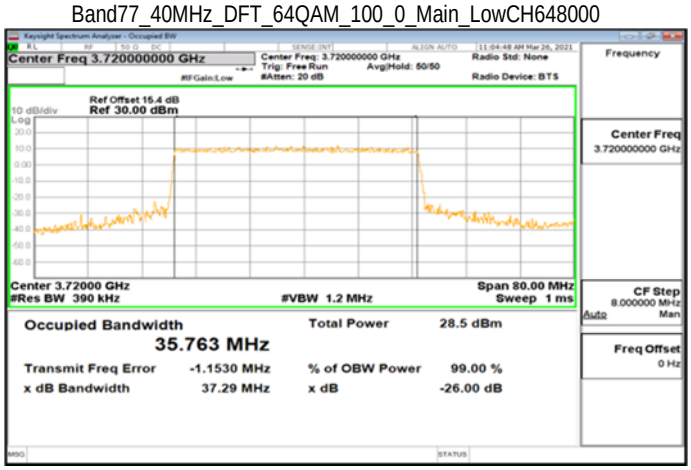
Band77_40MHz_DFT_QPSK_100_0_Main_HighCH664000



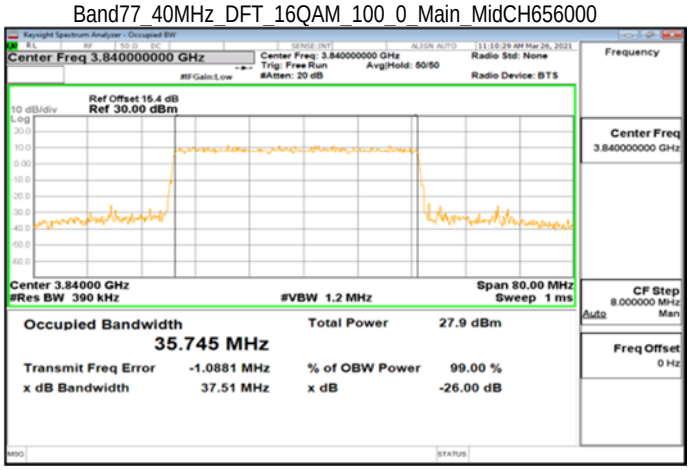
Band77_40MHz_DFT_16QAM_100_0_Main_LowCH648000



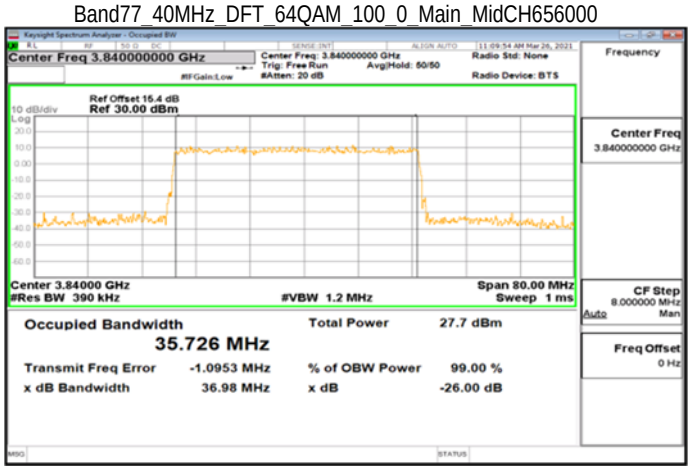
Band77_40MHz_DFT_64QAM_100_0_Main_LowCH648000



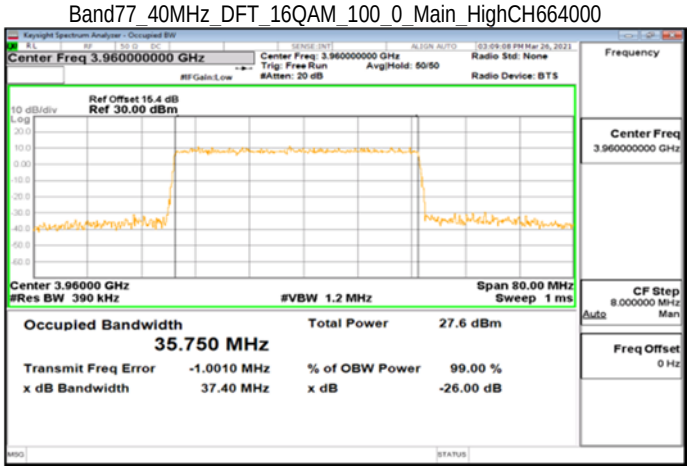
Band77_40MHz_DFT_16QAM_100_0_Main_MidCH656000



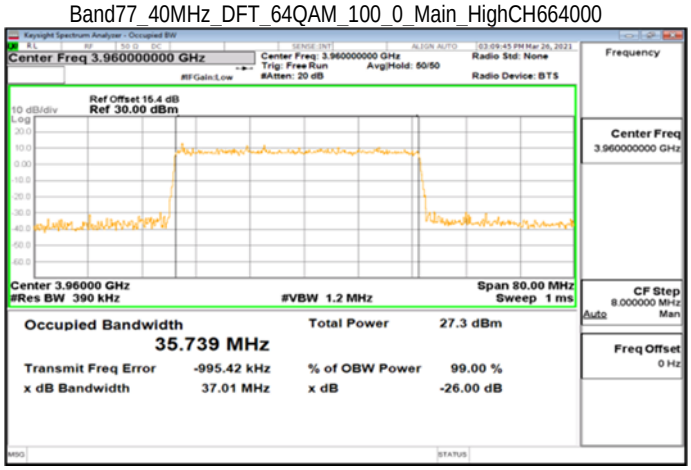
Band77_40MHz_DFT_64QAM_100_0_Main_MidCH656000



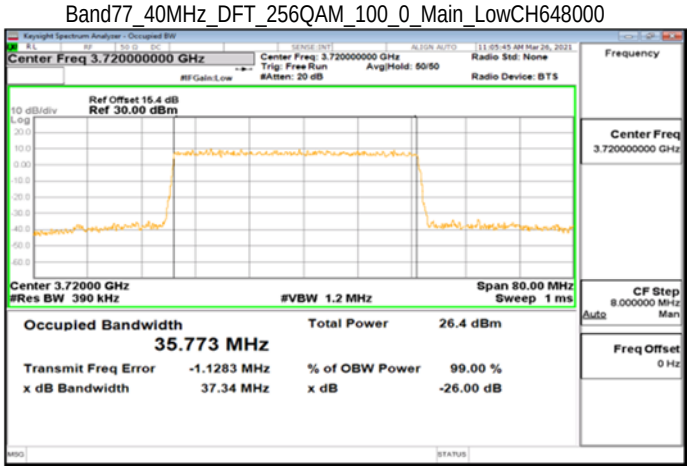
Band77_40MHz_DFT_16QAM_100_0_Main_HighCH664000



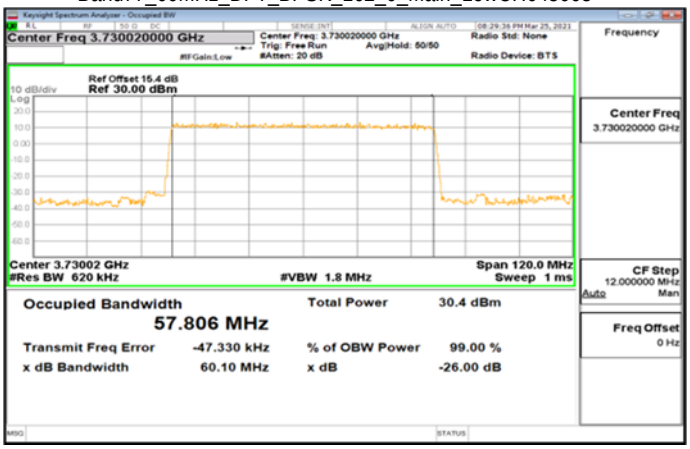
Band77_40MHz_DFT_64QAM_100_0_Main_HighCH664000



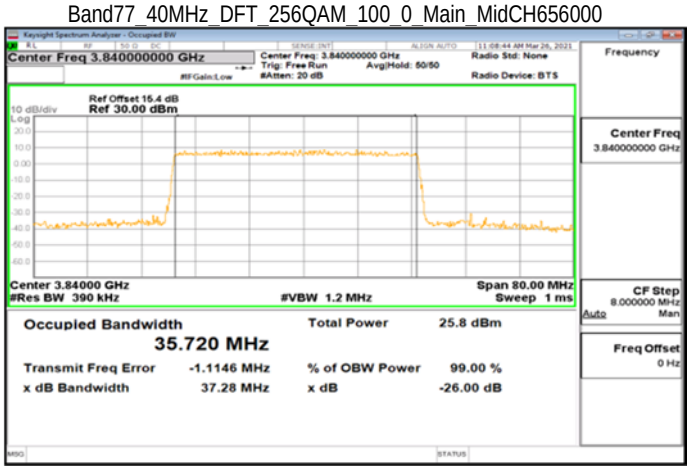
Band77_40MHz_DFT_256QAM_100_0_Main_LowCH648000



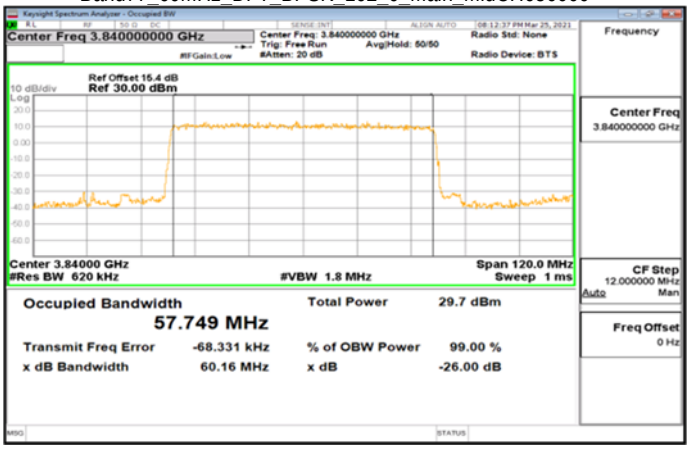
Band77_60MHz_DFT_BPSK_162_0_Main_LowCH648668



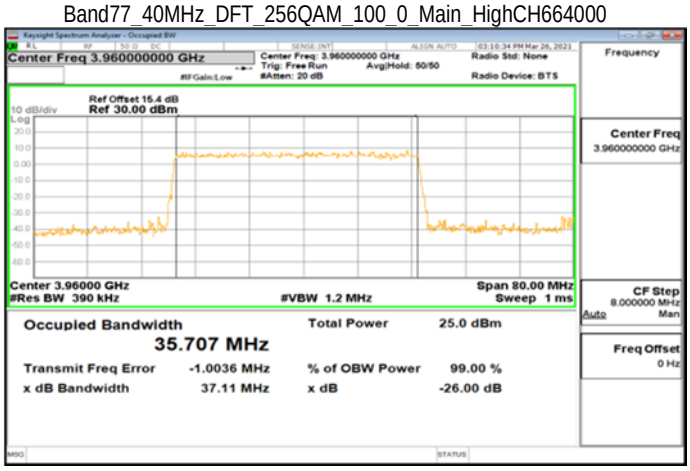
Band77_40MHz_DFT_256QAM_100_0_Main_MidCH656000



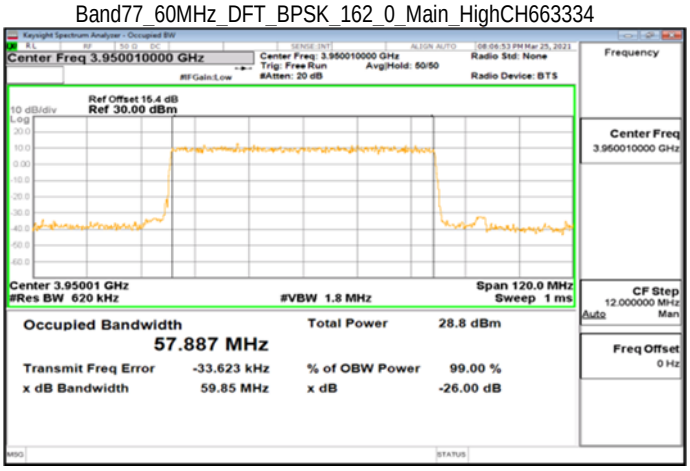
Band77_60MHz_DFT_BPSK_162_0_Main_MidCH656000



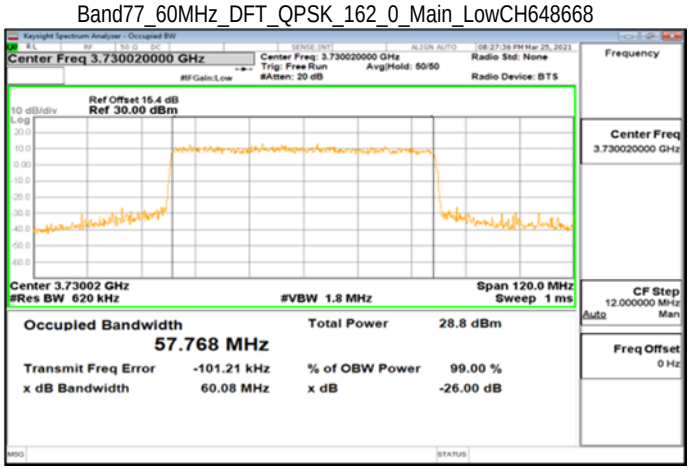
Band77_40MHz_DFT_256QAM_100_0_Main_HighCH664000



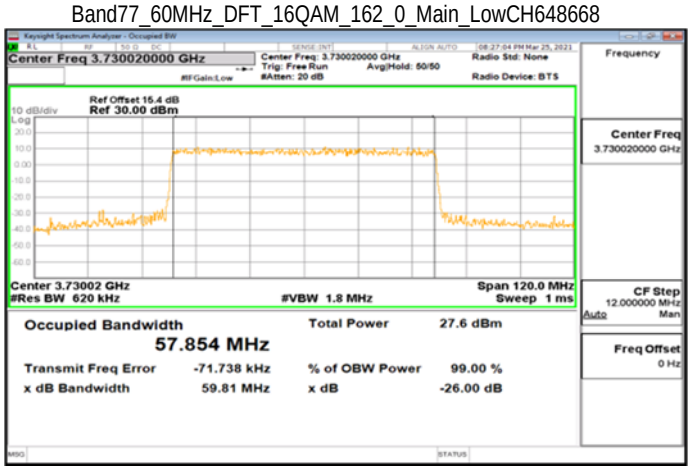
Band77_60MHz_DFT_BPSK_162_0_Main_HighCH663334



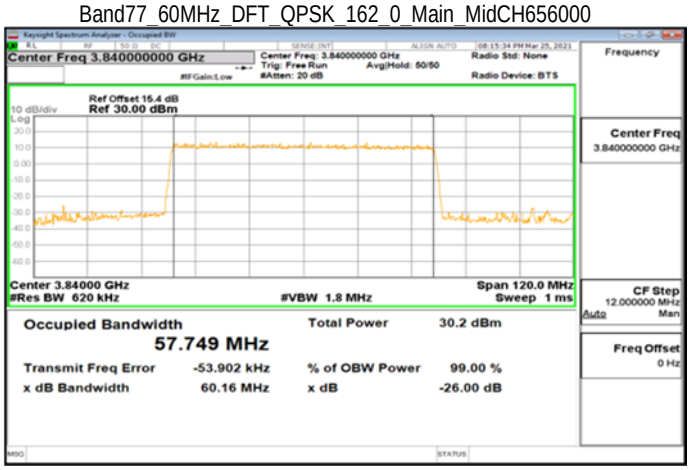
Band77_60MHz_DFT_QPSK_162_0_Main_LowCH648668



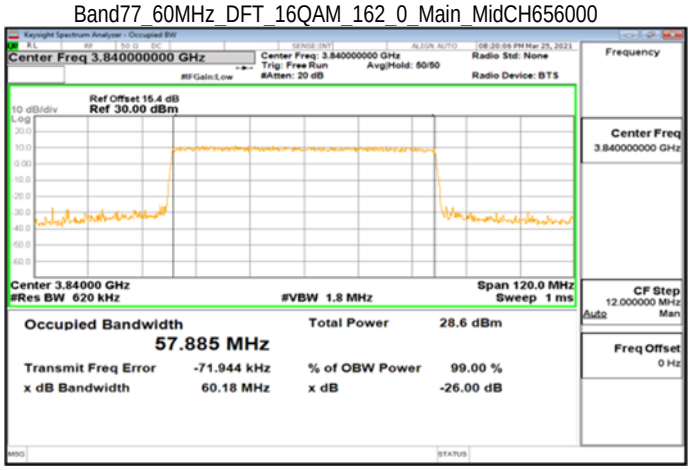
Band77_60MHz_DFT_16QAM_162_0_Main_LowCH648668



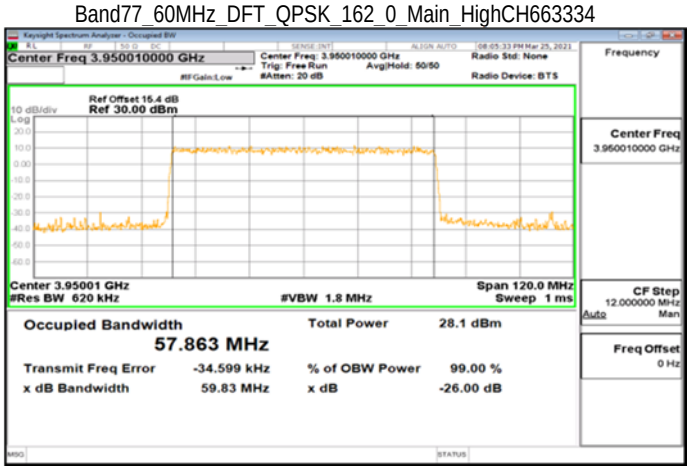
Band77_60MHz_DFT_QPSK_162_0_Main_MidCH656000



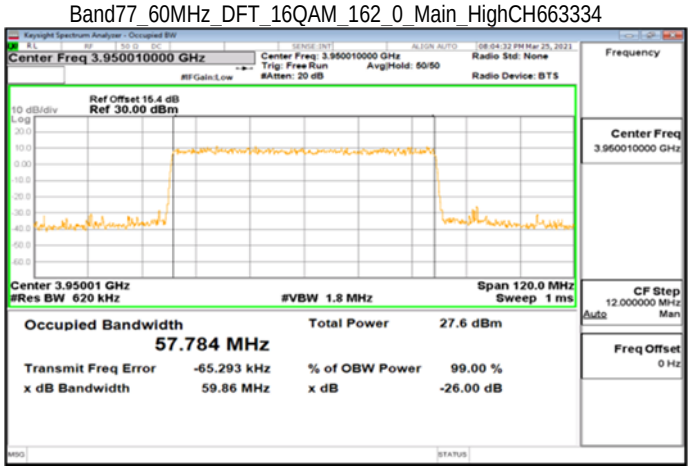
Band77_60MHz_DFT_16QAM_162_0_Main_MidCH656000



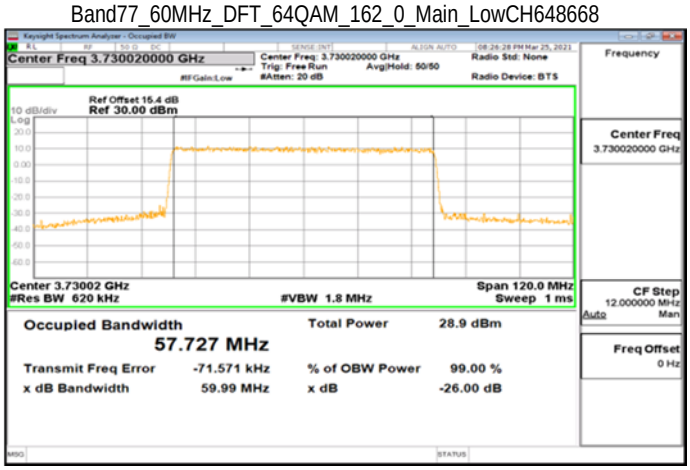
Band77_60MHz_DFT_QPSK_162_0_Main_HighCH663334



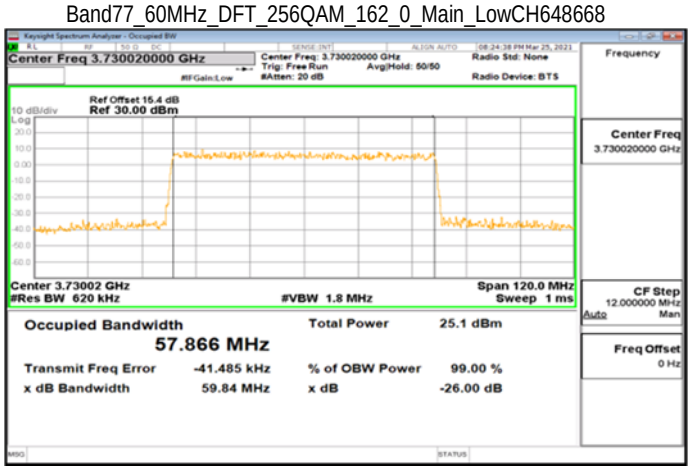
Band77_60MHz_DFT_16QAM_162_0_Main_HighCH663334



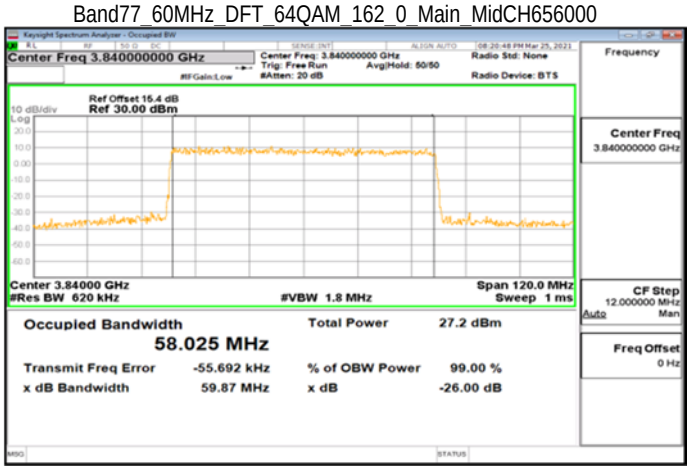
Band77_60MHz_DFT_64QAM_162_0_Main_LowCH648668



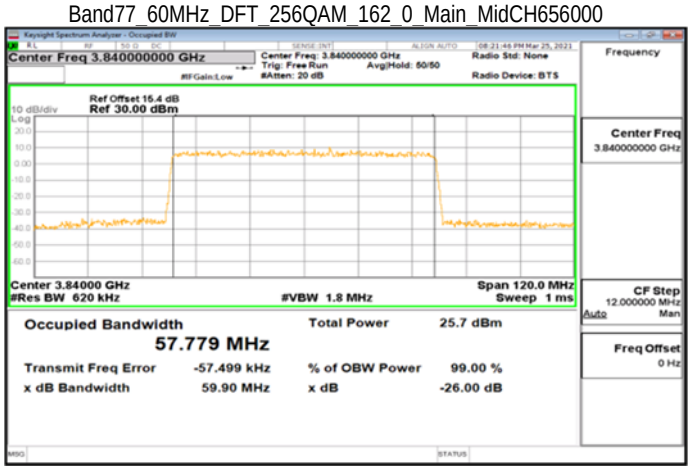
Band77_60MHz_DFT_256QAM_162_0_Main_LowCH648668



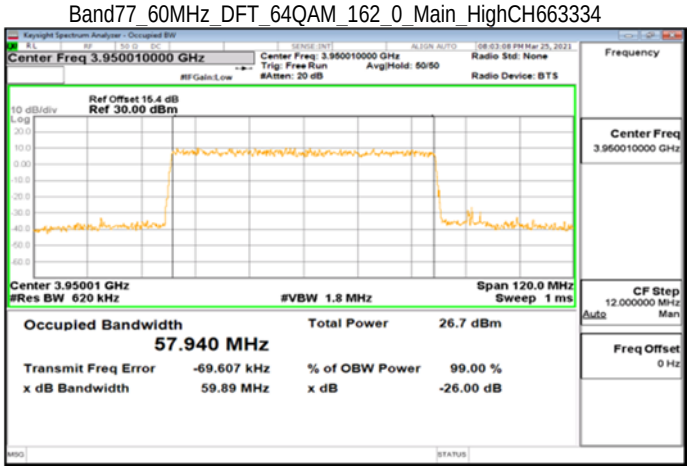
Band77_60MHz_DFT_64QAM_162_0_Main_MidCH656000



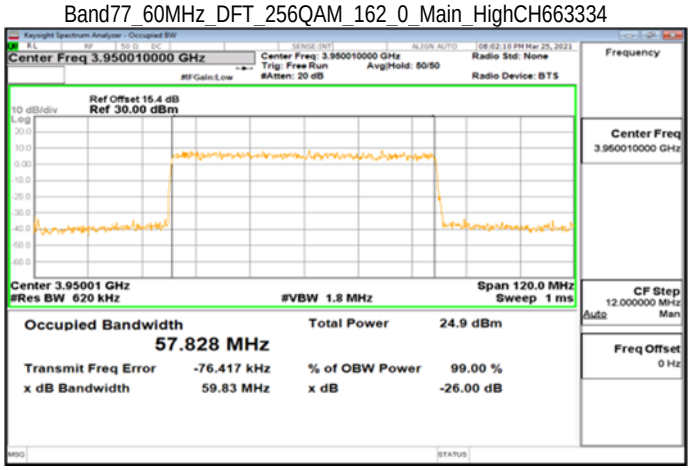
Band77_60MHz_DFT_256QAM_162_0_Main_MidCH656000



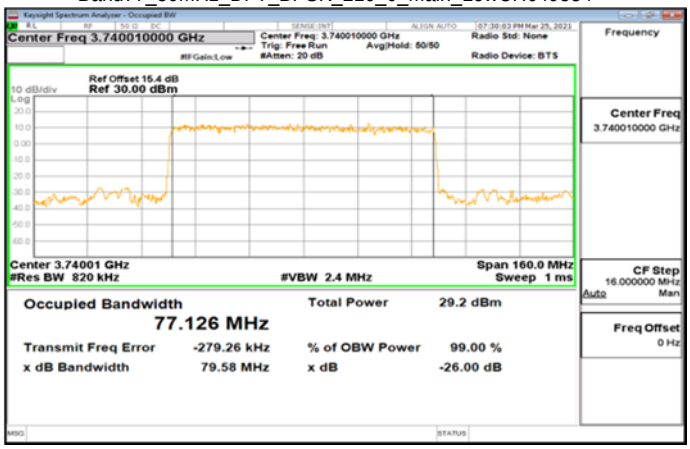
Band77_60MHz_DFT_64QAM_162_0_Main_HighCH663334



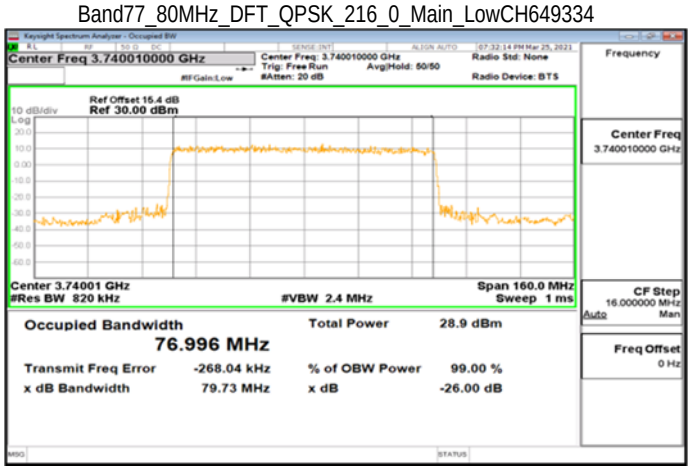
Band77_60MHz_DFT_256QAM_162_0_Main_HighCH663334



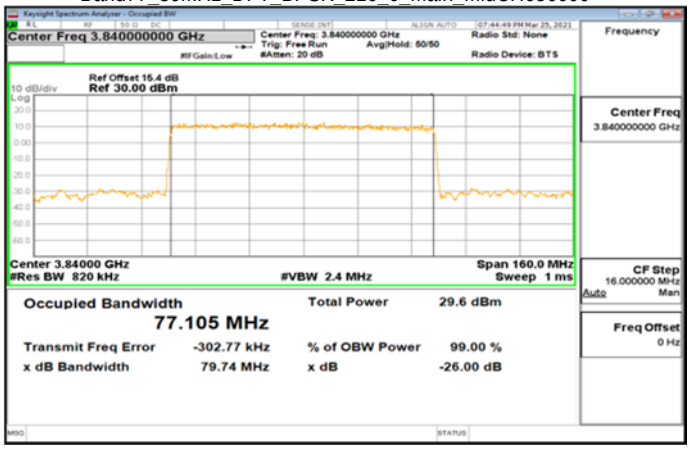
Band77_80MHz_DFT_BPSK_216_0_Main_LowCH649334



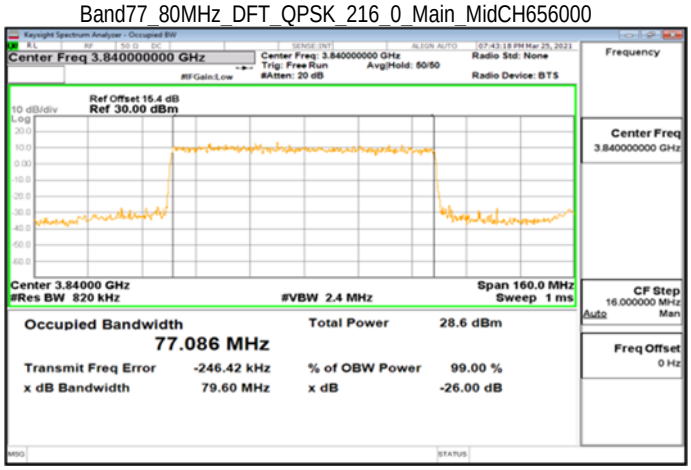
Band77_80MHz_DFT_QPSK_216_0_Main_LowCH649334



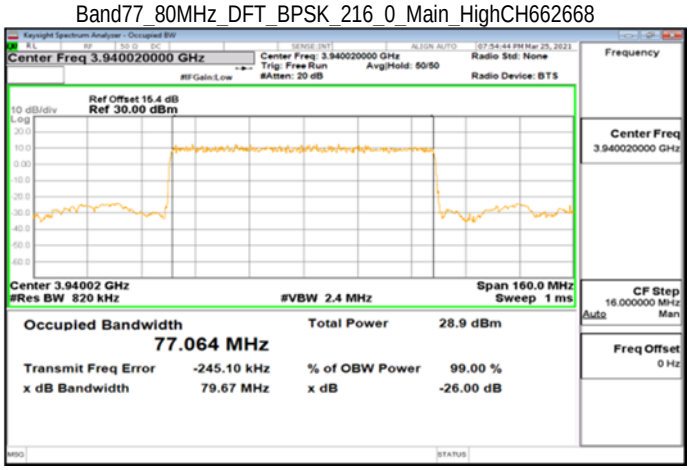
Band77_80MHz_DFT_BPSK_216_0_Main_MidCH656000



Band77_80MHz_DFT_QPSK_216_0_Main_MidCH656000



Band77_80MHz_DFT_BPSK_216_0_Main_HighCH662668



Band77_80MHz_DFT_QPSK_216_0_Main_HighCH662668