TEST REPORT

REPORT NUMBER: I22W00076-CAT-M RF-FCC_Rev2

ON

Type of Equipment:	IoT Module
Type of Designation:	L710
Brand Name：	LYNQ
Manufacturer:	Shanghai MobileTek Communication Ltd.
FCC ID:	2AK9D-L710G

ACCORDING TO

FCC CFR Part 2, FREQUENCY ALLOCATIONS AND RADIO TREATY MATTERS; GENERAL RULES AND REGULATIONS，e-CFR
PART 22, PUBLIC MOBILE SERVICES，e-CFR
PART 24, PERSONAL COMMUNICATIONS SERVICES，e-CFR
PART 27,MISCELLANEOUS WIRELESS COMMUNICATIONS SERVICES，e-CFR
PART 90,PRIVATE LAND MOBILE RADIO SERVICES，e-CFR
ANSI C63.26-2015 American National Standard for Complicance Testing of Transmitters Used in Licensed Radio Services

Chongqing Academy of Information and Communications Technology

Month date, year
Dec, 28, 2022
Signature

Xiang Luoyong
Director

Note:
The test results in this test report relate only to the devices specified in this report. This report shall not be reproduced except in full without the written approval of Chongqing Academy of Information and Communications Technology.

Revision Version

Report Number	Revision	Date	Memo
I22W00076-CAT-M RF-FCC	00	2022-12-14	Initial creation of test report
I22W00076-CAT-M RF-FCC_Rev1	01	2022-12-26	--
I22W00076-CAT-M RF-FCC_Rev2	02	2022-12-28	--

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1. Test Laboratory

1.1. Testing Location

Name:	Chongqing Academy of Information and Communications Technology
Designation Number:	CN1239
Address:	Building C, Technology Innovation Center, No.8, Yuma Road, Chayuan New Area, Nan'an District, Chongqing, People's Republic of China
Postal Code:	401336
Telephone:	0086-23-88069965
Fax:	0086-23-88608777

1.2. Testing Environment

Normal Temperature:	15-35℃
Relative Humidity:	30-60%

1.3. Project data

Testing Start Date:	2022-10-28
Testing End Date:	2022-12-28

1.4. Signature

张清皓	2022-12-28
Zhang qinghao (Prepared this test report)	**Date**
李旭	2022-12-28
Li Xu (Reviewed this test report)	**Date**
向罗勇	2022-12-28
Xiang Luoyong Director of the laboratory (Approved this test report)	**Date**

2. Client Information

2.1. Applicant Information

Company Name:	Shanghai MobileTek Communication Ltd.
Address /Post:	Free Trade Zone No. 33, No. 17 building 6H3 Xiya Road China (Shanghai)
City:	Shanghai
Country:	China
Telephone:	15821966417
Fax:	--
Email:	qh.zhang@mobiletek.cn
Contact Person:	Qinghua Zhang

2.2. Manufacturer Information

Company Name:	Shanghai MobileTek Communication Ltd.
Address /Post:	Free Trade Zone No. 33, No. 17 building 6H3 Xiya Road China (Shanghai)
City:	Shanghai
Country:	China
Telephone:	15821966417
Fax:	--
Email:	qh.zhang@mobiletek.cn
Contact Person:	Qinghua Zhang

3. Equipment under Test (EUT) and Ancillary Equipment (AE)

3.1. About EUT

EUT Description	IoT Module
Model name	L710
Brand name	LYNQ
CAT-M Frequency Band	2/4/5/12/13/26
Type of modulation	QPSK/16QAM
Nominal Voltage	3.8
Extreme High Voltage	4.2
Extreme Low Voltage	3.4

Note: Photographs of EUT are shown in ANNEX A of this test report.
Note: High and low voltage values in extreme condition test are given by manufacturer.

3.2. Internal Identification of EUT used during the test

EUT ID	SN or IMEI	HW Version	SW Version	Date of receipt
S1	IMEI:866884049909633	V4.0	L710v09.01b01G_FGP.01	2022-10-27
S4	IMEI:866884049909625	V4.0	L710v09.01b01G_FGP.01	2022-10-27

*EUT ID: is used to identify the test sample in the lab internally.

3.3. Outline of Equipment under Test

Technology	Band	UL Freq.(MHz)	DL Freq.(MHz)	Note
CAT-M	Band2	1850 – 1910	1930 – 1990	--
	Band4	1710 – 1755	2110 – 2155	--
	Band5	824 – 849	869 – 894	Covered by Band26 (Band5 is a subset of Band26. Both Bands share the same hardware and have the same radio performance. Separate measurement in Band5 is not required.)
	Band12	699 – 716	729 – 746	--
	Band13	777 – 787	746 – 756	--
	Band26	814 – 849	859 – 894	--

3.4. Internal Identification of AE used during the test

*AE ID: is used to identify the test sample in the lab internally.

AE ID*	Description	Manufacturer	Model
AE1	SUB	Shanghai Mobiletek Communication Ltd.	L710 EPI
AE2	EVB	Shanghai Mobiletek Communication Ltd.	L506 EVB
AE3	Antenna	Shanghai Jesoncom Communication Engineering Co., Ltd.	5J002B

AE info are provided customer.

Frequency Band	AntennaGain (dBi)	AntennaGain (dBd)
NB-IoT Band2/CAT-M Band2	2	-0.15
NB-IoT Band4/CAT-M Band4	4	1.85
NB-IoT Band5/CAT-M Band5	3	0.85
NB-IoT Band12/CAT-M Band12	4	1.85
NB-IoT Band13/CAT-M Band13	4	1.85
NB-IoT Band26/CAT-M Band26 （814MHz-824MHz）	4	1.85
NB-IoT Band26/CAT-M Band26 （824MHz-849MHz）	3	0.85

4. Reference Documents

4.1. Documents supplied by applicant

PICS/PIXIT, referring to Annex B for detailed information, is supplied by the client or manufacturer, which is the basis of testing.

4.2. Reference Documents for testing

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

Reference	Title	Version
FCC CFR Part 2	FREQUENCY ALLOCATIONS AND RADIO TREATY MATTERS; GENERAL RULES AND REGULATIONS，e-CFR	--
PART 22	PUBLIC MOBILE SERVICES	--
PART 24	PERSONAL COMMUNICATIONS SERVICES,e-CFR,	--
PART 27	,MISCELLANEOUS WIRELESS OMMUNICATIONS SERVICES，e-CFR,	--
PART 90	PRIVATE LAND MOBILE RADIO SERVICES	--
ANSI C63.26-2015	--	2015

5. Test Equipments Utilized

5.1. RF Test System

No.	Equipment	Model	SN	HW Version	SW Version	Manufacture	Cal.Due Date
1	spectrum analyzer	FSQ 26	201137/026	--	--	R&S	2023-06-29
2	Universal Radio Communication Tester	CMW500	152395	--	--	R&S	2023-06-29
3	Universal Radio Communication Tester	CMW500	164483	--	--	R&S	2023-06-29
4	spectrum analyzer	N9020A	MY50200376	--	--	Agilent	2023-06-29
5	DC Power Supply	N6705B	MY50000919	--	--	Agilent	2023-06-29
6	DC source	EY3010ET	478620	--	--	ELECALL	2023-06-29

5.2. RSE Test System

No.	Equipment	Model	SN	HW Version	SW Version	Manufacture	Cal.Due Date
1	Test Receiver	ESU26	100367	01	4.43 SP3	R&S	2023-06-29
2	Ultra-wideband Log Periodic Antenna	VULB 9163	01392	--	--	Schwarzbeck	2024-05-04
3	Double Ridged Guide Antenna	HF907	100357	--	--	R&S	2023-02-10
4	Universal Radio Communication Tester	CMW500	109616	--	--	R&S	2023-06-29
5	Double Ridged Guide Antenna	HF907	100356	--	--	R&S	2023-07-07
6	Generator	SMU 200A	104517	--	--	R&S	2023-06-29
7	Ultra-wideband Log Periodic Antenna	VULB 9163	00995	--	--	R&S	2023-04-03
8	Amplifier1	150A	1429	--	--	Beehive	2023-06-18
9	Amplifier2	SCU 18	10141	--	--	R&S	--

5.3. Climate Chamber

No.	Name	Type	SN	Manufacture	Cal.Due Date
1	Climate chamber	SH-241	92010759	ESPEC	2023-06-29
2	Fully-Anechoic Chamber	FACT3-2	--	ETS	2023-06-25

5.4. Vibration table

No.	Name	Type	SN	Manufacture	Cal.Due Date
--	--	--	--	--	--

5.5. Test software

No.	Name	version	SN	Manufacture
1	EMC32	V 8.51.00	--	R&S

6. Test Results

6.1. Summary of Test Results

A brief summary of the tests carried out is shown as following.

FCC Rules	Name of Test	Result
2.1046,22.913(a),24.232(c),27.50,90.635(b)	Conducted RF Power Output	Pass
2.1046,22.913(a),24.232(c),27.50,90.635(b)	ERP and EIRP	Pass
2.1049,22.917(b), 24.238(b),90.209	Occupied Bandwidth	--
2.1051,24.238,2.1053,22.917, 27.53,90.691	Conducted spurious emissions	Pass
2.1051,24.238,2.1053,22.917, 27.53,90.691	Radiated Spurious Emission	Pass
2.1051,24.238, 2.1053, 22.917, 27.53,90.691	Band Edge	Pass
2.1055, 22.355,24.235, 27.54,90.213	Frequency Stability over Temperature Variation	Pass
2.1055, 22.355,24.235, 27.54,90.213	Frequency Stability over Voltage Variation	Pass
24.232, 27.50	Peak to Average Ratio	Pass
Note 1: No applicable performance criteria.		

6.2. Conducted RF Power Output

Specifications:	FCC Part 2.1046,22.913(a),24.232(c),27.50,90.635(b)
DUT Serial Number:	866884049909625
Test conditions:	Ambient Temperature:15℃-35℃ Relative Humidity:30%-60% Air pressure: 86-106kPa
Test Results:	Pass

Limit Level Construction:

According to Part 22.913(a), the ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.

According to Part24.232(c), 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 Part 27.50(c), portable stations (hand-held devices) in the 600 MHz uplink Band and the 698-746 MHz Band, and fixed and mobile stations in the 600 MHz uplink Band are limited to 3 watts ERP.

According to Part 27.50(d), fixed, 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.

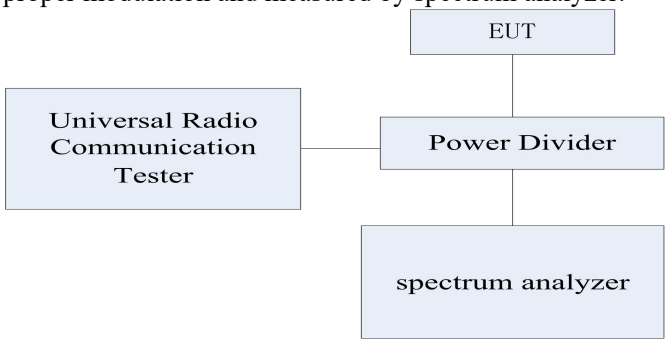
According to Part 90.635 (b),The maximum output power of the transmitter for mobile stations is 100 watts (20 dBw).

Measurement Uncertainty:

Item	Uncertainty
Expanded Uncertainty	0.62 dB (k=2)

Test Setup:

During the test, the EUT was controlled via the Wireless Telecommunications Test Set to ensure max power transmission and proper modulation and measured by spectrum analyzer.



Test Method:

1) The EUT was coupled to the spectrum analyzer and the Wireless Telecommunications Test Set through a power divider. The loss of the RF cables of the test system is calibrated to correct the readings.

2) For RMS power test, the spectrum analyzer was set to RMS Detector function and Maximum hold mode.

3) For Peak power test, the spectrum analyzer was set to Maxpeak Detector function and Maximum hold mode.

4) The resolution Bandwidth of the spectrum analyzer was comparable to the emission Bandwidth.

Note: The full RB test result of 16QAM of CAT-M is configured as 5@0.

6.2.1 CAT-M B2 Conducted RF Power Output Results

Mode	Bandwidth	Channel	RB	Index	Conducted Power	
					QPSK	16QAM
Band2	1.4MHz	18607	1#0	0	24.26	23.42
			6#0	0	22.02	22.15
		18900	1#0	0	23.79	22.98
			6#0	0	21.85	21.64
		19193	1#5	0	24.17	23.47
			6#0	0	21.88	22.36
	3MHz	18615	1#0	0	24.21	23.48
			6#0	0	22.07	22.11
		18900	1#0	0	23.91	23.19
			6#0	0	22.00	22.05
		19185	1#5	1	24.42	23.65
			6#0	1	23.65	22.23
	5MHz	18625	1#0	0	24.23	24.22
			6#0	0	22.99	23.34
		18900	1#0	0	23.86	24.39
			6#0	0	22.59	23.17
		19175	1#5	3	24.26	24.48
			6#0	3	23.00	23.45

	10MHz	18650	1#0	0	24.19	24.36
			6#0	0	24.01	24.12
		18900	1#0	0	23.97	23.35
			6#0	0	22.11	22.07
		19150	1#5	7	24.44	23.69
			6#0	7	23.43	22.18
	15MHz	18675	1#0	0	24.31	23.59
			6#0	0	22.47	22.54
		18900	1#0	0	23.56	23.49
			6#0	0	22.05	22.14
		19125	1#5	0	24.39	23.78
			6#0	0	23.79	22.28
	20MHz	18700	1#0	0	23.91	23.19
			6#0	0	22.00	22.05
		18900	1#0	0	24.49	23.67
			6#0	0	23.43	22.13
		19100	1#5	0	24.48	23.69
			6#0	0	23.75	22.63

6.2.2 CAT-M B4 Conducted RF Power Output Results

Mode	Bandwidth	Channel	RB	Index	Conducted Power	
					QPSK	16QAM
Band4	1.4MHz	19957	1#0	0	22.29	21.44
			6#0	0	20.07	20.18
		20175	1#0	0	21.74	20.91
			6#0	0	19.88	19.63
		20393	1#5	0	22.12	21.48
			6#0	0	19.87	20.37
	3MHz	19965	1#0	0	22.41	21.38
			6#0	0	20.57	20.41
		20175	1#0	0	21.81	21.49
			6#0	0	20.40	20.75
		20385	1#5	1	22.12	21.25
			6#0	1	21.15	20.43
	5MHz	19975	1#0	0	22.24	22.21
			6#0	0	20.93	21.37
		20175	1#0	0	21.84	22.37
			6#0	0	20.58	21.13
		20375	1#5	3	22.24	22.42
			6#0	3	21.08	21.49

	10MHz	20000	1#0	0	22.31	22.46
			6#0	0	21.41	21.32
		20175	1#0	0	21.77	21.85
			6#0	0	20.91	20.17
		20350	1#5	7	22.54	21.49
			6#0	7	21.13	20.88
	15MHz	20025	1#0	0	22.39	21.53
			6#0	0	20.44	20.57
		20175	1#0	0	21.59	21.46
			6#0	0	20.04	20.15
		20325	1#5	0	22.38	21.79
			6#0	0	21.77	20.25
	20MHz	20050	1#0	0	21.31	21.69
			6#0	0	20.05	20.08
		20175	1#0	0	22.37	21.47
			6#0	0	21.23	20.17
		20300	1#5	0	22.34	21.99
			6#0	0	21.85	20.93

6.2.3 CAT-M B12 Conducted RF Power Output Results

Mode	Bandwidth	Channel	RB	Index	Conducted Power	
					QPSK	16QAM
Band12	1.4MHz	23017	1#0	0	22.27	21.49
			6#0	0	20.06	20.18
		23095	1#0	0	21.73	20.94
			6#0	0	19.89	19.62
		23173	1#5	0	21.69	20.41
			6#0	0	19.94	19.90
	3MHz	23025	1#0	0	22.31	21.48
			6#0	0	20.97	20.51
		23095	1#0	0	21.71	21.59
			6#0	0	20.43	20.25
		23165	1#5	1	21.89	20.64
			6#0	1	19.83	19.88
	5MHz	23035	1#0	0	22.26	22.24
			6#0	0	20.91	21.38
		23095	1#0	0	21.82	22.37
			6#0	0	20.57	21.11
		23155	1#5	3	21.70	21.59
			6#0	3	20.80	20.84
	10MHz	23060	1#0	0	22.49	22.55
			6#0	0	21.43	21.42
		23095	1#0	0	21.47	21.88
			6#0	0	20.92	20.14
		23130	1#5	7	21.90	21.81
			6#0	7	20.60	21.72

6.2.4 CAT-M B13 Conducted RF Power Output Results

Mode	Bandwidth	Channel	RB	Index	Conducted Power	
					QPSK	16QAM
Band13	5MHz	23205	1#0	0	22.46	22.64
			6#0	0	20.41	21.28
		23230	1#0	0	21.92	22.67
			6#0	3	20.17	21.74
		23255	1#5	3	22.38	22.25
			6#0	3	21.49	21.28
	10MHz	23230	1#0	0	22.41	22.35
			6#0	0	21.13	21.22
		23230	1#0	0	21.49	21.87
			6#0	0	20.32	20.44
		23230	1#5	7	22.38	21.96
			6#0	7	21.33	20.92

6.2.5 CAT-M B26 Conducted RF Power Output Results (824MHz-849MHz)

Mode	Bandwidth	Channel	RB	Index	Conducted Power	
					QPSK	16QAM
Band26	1.4MHz	26797	1#0	0	22.27	21.49
			6#0	0	20.06	20.18
		26915	1#0	0	21.73	20.94
			6#0	0	19.89	19.62
		27033	1#5	0	22.11	21.43
			6#0	0	19.84	20.35
	3MHz	26805	1#0	0	22.31	21.48
			6#0	0	20.97	20.51
		26915	1#0	0	21.71	21.59
			6#0	0	20.43	20.25
		27025	1#5	1	22.52	21.35
			6#0	1	21.25	20.47
	5MHz	26815	1#0	0	22.26	22.24
			6#0	0	20.91	21.38
		26915	1#0	0	21.82	22.37
			6#0	0	20.57	21.11
		27015	1#5	3	22.28	22.45
			6#0	3	21.09	21.79
	10MHz	26840	1#0	0	22.49	22.55
			6#0	0	21.43	21.42
		26915	1#0	0	21.47	21.88
			6#0	0	20.92	20.14
		26990	1#5	7	22.34	21.46
			6#0	7	21.53	20.98

(814MHz-824MHz)

Mode	Bandwidth	Channel	RB	Index	Conducted Power	
					QPSK	16QAM
Band26	1.4MHz	26697	1#0	0	22.32	21.46
			6#0	0	20.45	20.63
		26740	1#0	0	21.12	20.45
			6#0	0	19.67	19.55
		26783	1#5	0	22.37	21.61
			6#0	0	19.76	20.85
	3MHz	26705	1#0	0	22.29	21.64
			6#0	0	20.37	20.24
		26740	1#0	0	21.68	21.43
			6#0	0	20.12	20.23
		26775	1#5	1	22.38	21.72
			6#0	1	21.61	20.81
	5MHz	26715	1#0	0	22.51	22.43
			6#0	0	20.88	21.92
		26740	1#0	0	21.75	22.26
			6#0	0	20.49	21.30
		26765	1#5	3	22.39	22.26
			6#0	3	21.39	21.63
	10MHz	26740	1#0	0	22.19	22.25
			6#0	0	21.35	21.22
		26740	1#0	0	21.12	21.52
			6#0	0	20.53	20.67
		26740	1#5	7	22.46	21.68
			6#0	7	21.73	20.34

6.3. ERP and EIRP

This is the test for the maximum radiated power from the EUT.

According to Part 22.913(a), the ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.

According to Part24.232(c), 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 Part 27.50(c), portable stations (hand-held devices) in the 600 MHz uplink Band and the 698-746 MHz Band, and fixed and mobile stations in the 600 MHz uplink Band are limited to 3 watts ERP.

According to Part 27.50(d), fixed, 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 22.913(a), The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts."

Note: The full RB test result of 16QAM of CAT-M is configured as 5@0.

Conducted RF Power+Antenna Gain(dBi)=EIRP
Conducted RF Power+Antenna Gain(dBd)=ERP
Antenna Gain(dBd)= Antenna Gain(dBi)-2.15

Frequency Band	AntennaGain (dBi)	AntennaGain (dBd)
NB-IoT Band2/CAT-M Band2	2	N/A
NB-IoT Band4/CAT-M Band4	4	N/A
NB-IoT Band5/CAT-M Band5	N/A	0.85
NB-IoT Band12/CAT-M Band12	N/A	1.85
NB-IoT Band13/CAT-M Band13	N/A	1.85
NB-IoT Band26/CAT-M Band26 （814MHz-824MHz）	N/A	1.85
NB-IoT Band26/CAT-M Band26 （824MHz-849MHz）	3	0.85

6.3.1 CAT-M Band 2 ERP and EIRP

Mode	Bandwidth	Channel	RB	Index	EIRP(Limits 33.0 dBm) Max EIRP: 26.49dBm	
					QPSK	16QAM
Band2	1.4MHz	18607	1#0	0	26.26	25.42
			6#0	0	24.02	24.15
		18900	1#0	0	25.79	24.98
			6#0	0	23.85	23.64
		19193	1#5	0	26.17	25.47
			6#0	0	23.88	24.36
	3MHz	18615	1#0	0	26.21	25.48
			6#0	0	24.07	24.11
		18900	1#0	0	25.91	25.19
			6#0	0	24.00	24.05
		19185	1#5	1	26.42	25.65
			6#0	1	25.65	24.23
	5MHz	18625	1#0	0	26.23	26.22
			6#0	0	24.99	25.34
		18900	1#0	0	25.86	26.39
			6#0	0	24.59	25.17
		19175	1#5	3	26.26	26.48
			6#0	3	25.00	25.45

	10MHz	18650	1#0	0	26.19	26.36
			4#0	0	26.01	26.12
		18900	1#0	0	25.97	25.35
			4#0	0	24.11	24.07
		19150	1#5	7	26.44	25.69
			4#2	7	25.43	24.18
	15MHz	18675	1#0	0	26.31	25.59
			6#0	0	24.47	24.54
		18900	1#0	0	25.56	25.49
			6#0	0	24.05	24.14
		19125	1#5	0	26.39	25.78
			6#0	0	25.79	24.28
	20MHz	18700	1#0	0	25.91	25.19
			6#0	0	24.00	24.05
		18900	1#0	0	26.49	25.67
			6#0	0	25.43	24.13
		19100	1#5	0	26.48	25.69
			6#0	0	25.75	24.63

6.3.2 CAT-M Band 4 ERP and EIRP

Mode	Bandwidth	Channel	RB	Index	EIRP(Limits 30.0 dBm) MAX EIRP:26.54dBm	
					QPSK	16QAM
Band4	1.4MHz	19957	1#0	0	26.29	25.44
			6#0	0	24.07	24.18
		20175	1#0	0	25.74	24.91
			6#0	0	23.88	23.63
		20393	1#5	0	26.12	25.48
			6#0	0	23.87	24.37
	3MHz	19965	1#0	0	26.41	25.38
			6#0	0	24.57	24.41
		20175	1#0	0	25.81	25.49
			6#0	0	24.40	24.75
		20385	1#5	1	26.12	25.25
			6#0	1	25.15	24.43
	5MHz	19975	1#0	0	26.24	26.21
			6#0	0	24.93	25.37
		20175	1#0	0	25.84	26.37
			6#0	0	24.58	25.13
		20375	1#5	3	26.24	26.42
			6#0	3	25.08	25.49

	10MHz	20000	1#0	0	26.31	26.46
			4#0	0	25.41	25.32
		20175	1#0	0	25.77	25.85
			4#0	0	24.91	24.17
		20350	1#5	7	26.54	25.49
			4#2	7	25.13	24.88
	15MHz	20025	1#0	0	26.39	25.53
			6#0	0	24.44	24.57
		20175	1#0	0	25.59	25.46
			6#0	0	24.04	24.15
		20325	1#5	0	26.38	25.79
			6#0	0	25.77	24.25
	20MHz	20050	1#0	0	25.31	25.69
			6#0	0	24.05	24.08
		20175	1#0	0	26.37	25.47
			6#0	0	25.23	24.17
		20300	1#5	0	26.34	25.99
			6#0	0	25.85	24.93

6.3.3 CAT-M Band 12 ERP and EIRP

Mode	Bandwidth	Channel	RB	Index	ERP（Limits 34.8dBm ）MAX ERP: 24.40 dBm	
					QPSK	16QAM
Band12	1.4MHz	23017	1#0	0	24.12	23.34
			6#0	0	21.91	22.03
		23095	1#0	0	23.58	22.79
			6#0	0	21.74	21.47
		23173	1#5	0	23.54	22.26
			6#0	0	21.79	21.75
	3MHz	23025	1#0	0	24.16	23.33
			6#0	0	22.82	22.36
		23095	1#0	0	23.56	23.44
			6#0	0	22.28	22.10
		23165	1#5	1	23.74	22.49
			6#0	1	21.68	21.73
	5MHz	23035	1#0	0	24.11	24.09
			6#0	0	22.76	23.23
		23095	1#0	0	23.67	24.22
			6#0	0	22.42	22.96
		23155	1#5	3	23.55	23.44
			6#0	3	22.65	22.69
	10MHz	23060	1#0	0	24.34	24.40
			4#0	0	23.28	23.27
		23095	1#0	0	23.32	23.73
			4#0	0	22.77	21.99
		23130	1#5	7	23.75	23.66
			4#2	7	22.45	23.57

6.3.4 CAT-M Band 13 ERP and EIRP

Mode	Bandwidth	Channel	RB	Index	ERP（Limits 34.8dBm）MAX ERP: 24.52dBm	
					QPSK	16QAM
Band13	5MHz	23205	1#0	0	24.31	24.49
			6#0	0	22.26	23.13
		23230	1#0	0	23.77	24.52
			6#0	3	22.02	23.59
		23255	1#5	3	24.23	24.10
			6#0	3	23.34	23.13
	10MHz	23230	1#0	0	24.26	24.20
			6#0	0	22.98	23.07
		23230	1#0	0	23.34	23.72
			6#0	0	22.17	22.29
		23230	1#5	7	24.23	23.81
			4#2	7	23.18	22.77

6.3.5 CAT-M Band 26 ERP and EIRP

(824MHz-849MHz)

Mode	Bandwidth	Channel	RB	Index	ERP（Limits 38.5dBm ） MAX ERP: 23.40dBm	
					QPSK	16QAM
Band26	1.4MHz	26797	1#0	0	23.12	22.34
			6#0	0	20.91	21.03
		26915	1#0	0	22.58	21.79
			6#0	0	20.74	20.47
		27033	1#5	0	22.96	22.28
			6#0	0	20.69	21.20
	3MHz	26805	1#0	0	23.16	22.33
			6#0	0	21.82	21.36
		26915	1#0	0	22.56	22.44
			6#0	0	21.28	21.10
		27025	1#5	1	23.37	22.20
			6#0	1	22.10	21.32
	5MHz	26815	1#0	0	23.11	23.09
			6#0	0	21.76	22.23
		26915	1#0	0	22.67	23.22
			6#0	0	21.42	21.96
		27015	1#5	3	23.13	23.30
			6#0	3	21.94	22.64
	10MHz	26840	1#0	0	23.34	23.40
			4#0	0	22.28	22.27
		26915	1#0	0	22.32	22.73
			4#0	0	21.77	20.99
		26990	1#5	7	23.19	22.31
			4#2	7	22.38	21.83

(814MHz-824MHz)

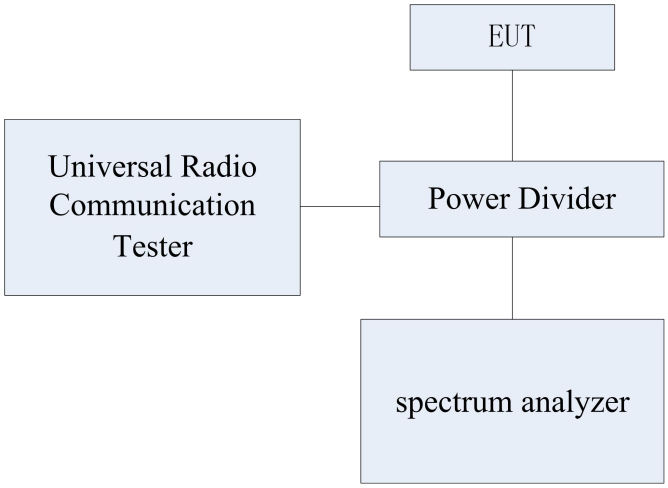
Mode	Bandwidth	Channel	RB	Index	ERP（Limits 51.5dBm ） MAX ERP: 24.36dBm	
					QPSK	16QAM
Band26	1.4MHz	26697	1#0	0	24.17	23.31
			6#0	0	22.30	22.48
		26740	1#0	0	22.97	22.30
			6#0	0	21.52	21.40
		26783	1#5	0	24.22	23.46
			6#0	0	21.61	22.70
	3MHz	26705	1#0	0	24.14	23.49
			6#0	0	22.22	22.09
		26740	1#0	0	23.53	23.28
			6#0	0	21.97	22.08
		26775	1#5	1	24.23	23.57
			6#0	1	23.46	22.66
	5MHz	26715	1#0	0	24.36	24.28
			6#0	0	22.73	23.77
		26740	1#0	0	23.60	24.11
			6#0	0	22.34	23.15
		26765	1#5	3	24.24	24.11
			6#0	3	23.24	23.48
	10MHz	26740	1#0	0	24.04	24.10
			4#0	0	23.20	23.07

6.4. Occupied Bandwidth

Specifications:	FCC Part 2.1049,22.917(b), 24.238(b),90.209
DUT Serial Number:	865456056939661
Test conditions:	Ambient Temperature:15℃-35℃ Relative Humidity:30%-60% Air pressure: 86-106kPa
Test Results:	--

Test Setup

During the test, the EUT was controlled via the Wireless Communications Test Set to ensure max power transmission and proper modulation and measured by spectrum analyzer.



Measurement Uncertainty:

Item	Uncertainty
Expanded Uncertainty	500 kHz (k=2)

Test Method

The 99% occupied Bandwidth was calculated from the spectrum analyzer. Markers in the spectrum analyzer were then placed between the calculated frequencies to show the calculated 99% power Band. The 26dB Bandwidth was also measured and recorded.

Note: --

6.4.1 CAT-M B2 Mode Occupied Bandwidth Results

Bandwidth	Modulation	Channel/Ferquency（MHz）	RB	Index	Occupied Bandwidth 99%（MHz）	Occupied Bandwidth 26dB（MHz）
1.4MHz	QPSK	18900/1880	6@0	0	1.083	1.277
	16QAM	18900/1880	5@0		0.913	1.226
3MHz	QPSK	18900/1880	6@0	0	1.093	1.308
	16QAM	18900/1880	5@0		0.932	1.189
5MHz	QPSK	18900/1880	6@0	0	1.132	1.655
	16QAM	18900/1880	5@0		1.005	1.724
10MHz	QPSK	18900/1880	6@0	0	1.127	1.356
	16QAM	18900/1880	5@0		1.203	2.209
15MHz	QPSK	18900/1880	6@0	0	1.198	2.033
	16QAM	18900/1880	5@0		1.030	1.739
20MHz	QPSK	18900/1880	6@0	0	1.190	2.081
	16QAM	18900/1880	5@0		1.223	2.305

6.4.2 CAT-M B4 Mode Occupied Bandwidth Results

Bandwidth	Modulation	Channel/Ferquency（MHz）	RB	Index	Occupied Bandwidth 99%（MHz）	Occupied Bandwidth 26dB（MHz）
1.4MHz	QPSK	20175/1732.5	6@0	0	1.088	1.264
	16QAM	20175/1732.5	5@0		0.913	1.141
3MHz	QPSK	20175/1732.5	6@0	0	1.095	1.296
	16QAM	20175/1732.5	5@0		0.933	1.153
5MHz	QPSK	20175/1732.5	6@0	0	1.131	1.384
	16QAM	20175/1732.5	5@0		0.994	1.669
10MHz	QPSK	20175/1732.5	6@0	0	1.124	1.336
	16QAM	20175/1732.5	5@0		1.134	2.200
15MHz	QPSK	20175/1732.5	6@0	0	1.159	2.020
	16QAM	20175/1732.5	5@0		1.116	2.069
20MHz	QPSK	20175/1732.5	6@0	0	1.164	2.001
	16QAM	20175/1732.5	5@0		1.094	2.191

6.4.3 CAT-M B12 Mode Occupied Bandwidth Results

Bandwidth	Modulation	Channel/Ferquency (MHz)	RB	Index	Occupied Bandwidth 99% (MHz)	Occupied Bandwidth 26dB (MHz)
1.4MHz	QPSK	23095/707.5	6@0	0	1.085	1.268
	16QAM	23095/707.5	5@0		0.924	1.126
3MHz	QPSK	23095/707.5	6@0	0	1.083	1.256
	16QAM	23095/707.5	5@0		0.915	1.096
5MHz	QPSK	23095/707.5	6@0	0	1.090	1.284
	16QAM	23095/707.5	5@0		0.923	1.143
10MHz	QPSK	23095/707.5	6@0	0	1.092	1.279
	16QAM	23095/707.5	5@0		0.933	1.167

6.4.4 CAT-M B13 Mode Occupied Bandwidth Results

Bandwidth	Modulation	Channel/Ferquency (MHz)	RB	Index	Occupied Bandwidth 99% (MHz)	Occupied Bandwidth 26dB (MHz)
5MHz	QPSK	23230/782	6@0	0	1.124	1.331
	16QAM	23230/782	5@0		0.954	1.294
10MHz	QPSK	23230/782	6@0	0	1.114	1.321
	16QAM	23230/782	5@0		0.976	1.236

6.4.5 CAT-M B26 Mode Occupied Bandwidth Results

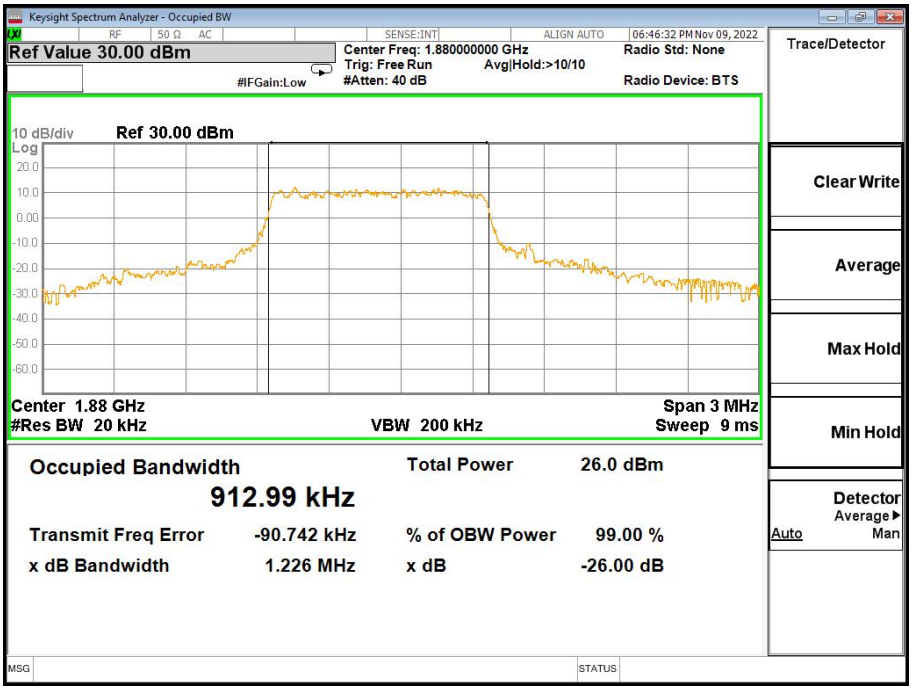
(814 MHz ~824MHz)

Bandwidth	Modulation	Channel/Ferquency（MHz）	RB	Index	Occupied Bandwidth 99%（MHz）	Occupied Bandwidth 26dB（MHz）
1.4MHz	QPSK	26740/819	6@0	0	1.086	1.256
	16QAM	26740/819	5@0		0.911	1.080
3MHz	QPSK	26740/819	6@0	0	1.094	1.271
	16QAM	26740/819	5@0		0.928	1.136
5MHz	QPSK	26740/819	6@0	0	1.125	1.337
	16QAM	26740/819	5@0		0.965	1.196
10MHz	QPSK	26740/819	6@0	0	1.116	1.322
	16QAM	26740/819	5@0		0.971	1.244

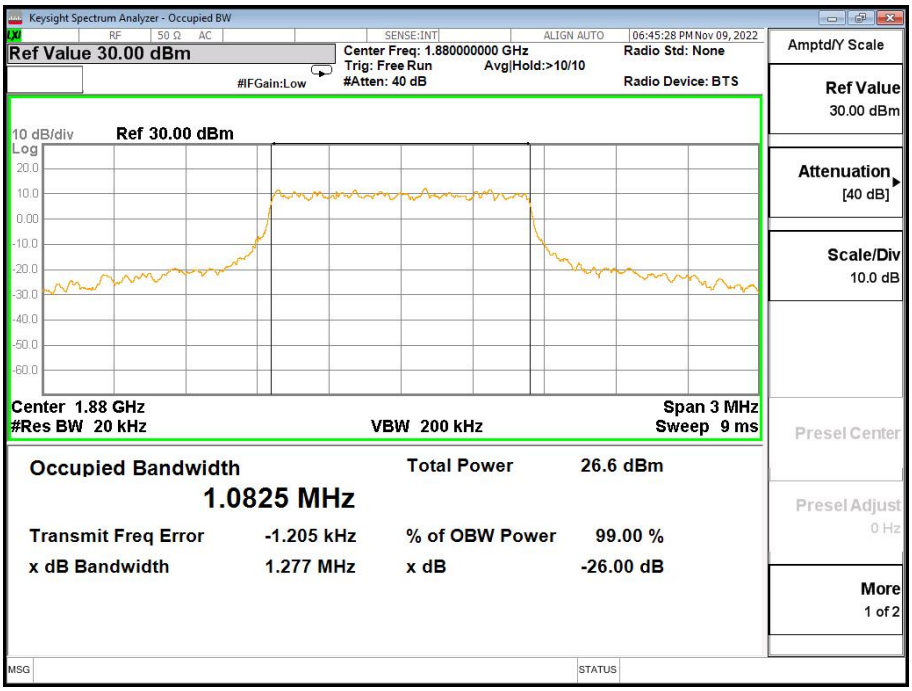
(824 MHz ~849MHz)

Bandwidth	Modulation	Channel/Ferquency（MHz）	RB	Index	Occupied Bandwidth 99%（MHz）	Occupied Bandwidth 26dB（MHz）
1.4MHz	QPSK	26915/836.5	6@0	0	1.082	1.249
	16QAM	26915/836.5	5@0		0.909	1.081
3MHz	QPSK	26915/836.5	6@0	0	1.094	1.273
	16QAM	26915/836.5	5@0		0.929	1.128
5MHz	QPSK	26915/836.5	6@0	0	1.123	1.332
	16QAM	26915/836.5	5@0		0.959	1.201
10MHz	QPSK	26915/836.5	6@0	0	1.119	1.343
	16QAM	26915/836.5	5@0		0.956	1.205

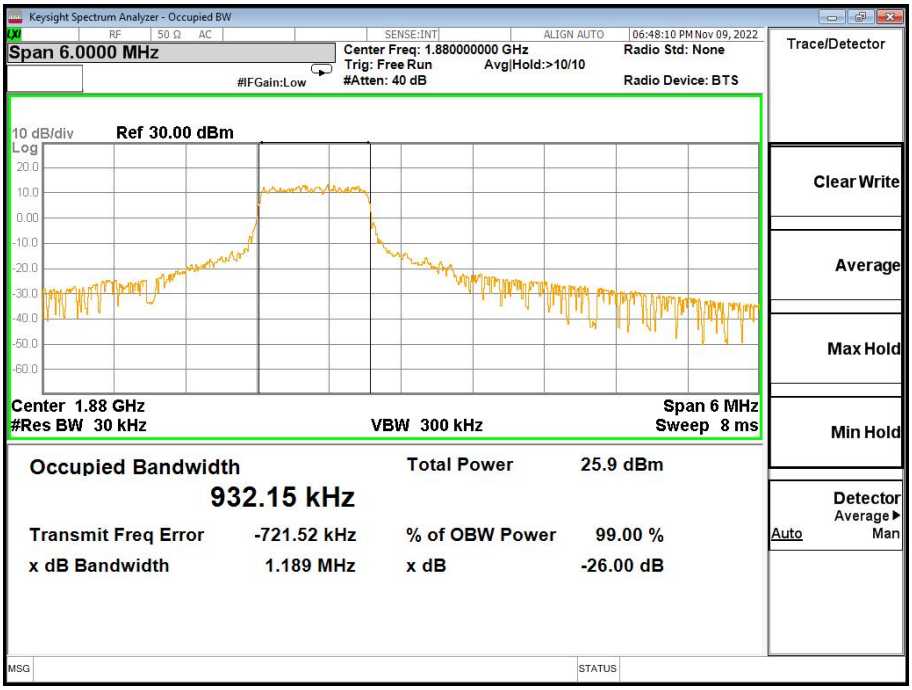
Graphical results for CAT-M:



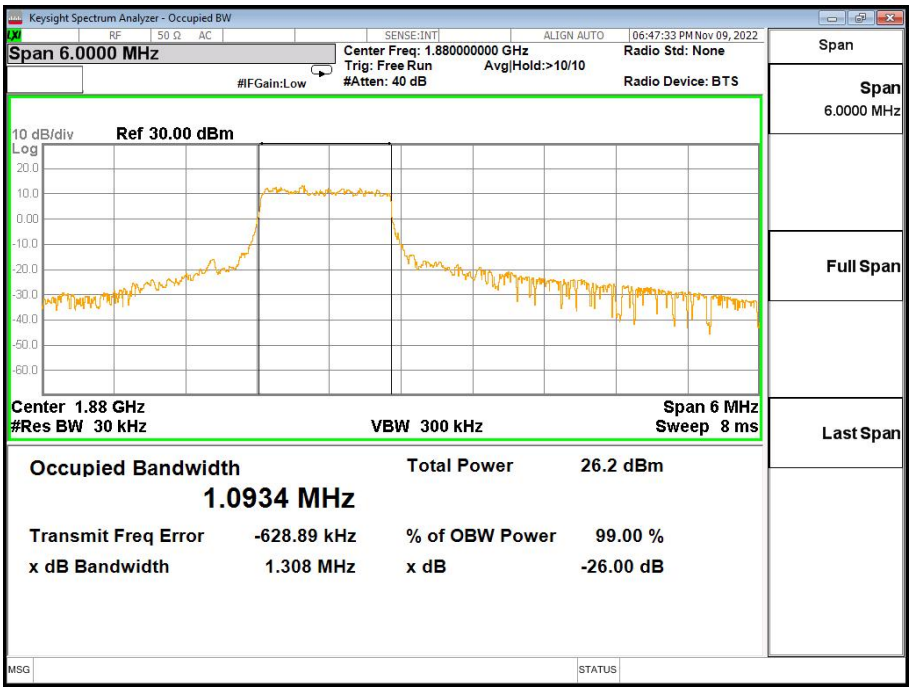
Band2-1.4MHz Bandwidth-16QAM



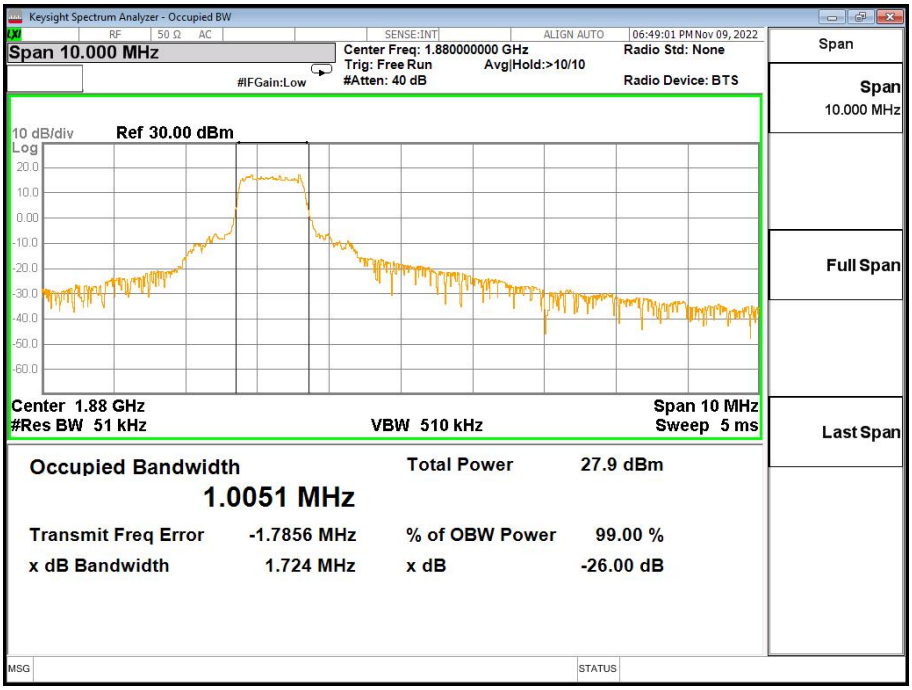
Band2-1.4MHz Bandwidth-QPSK



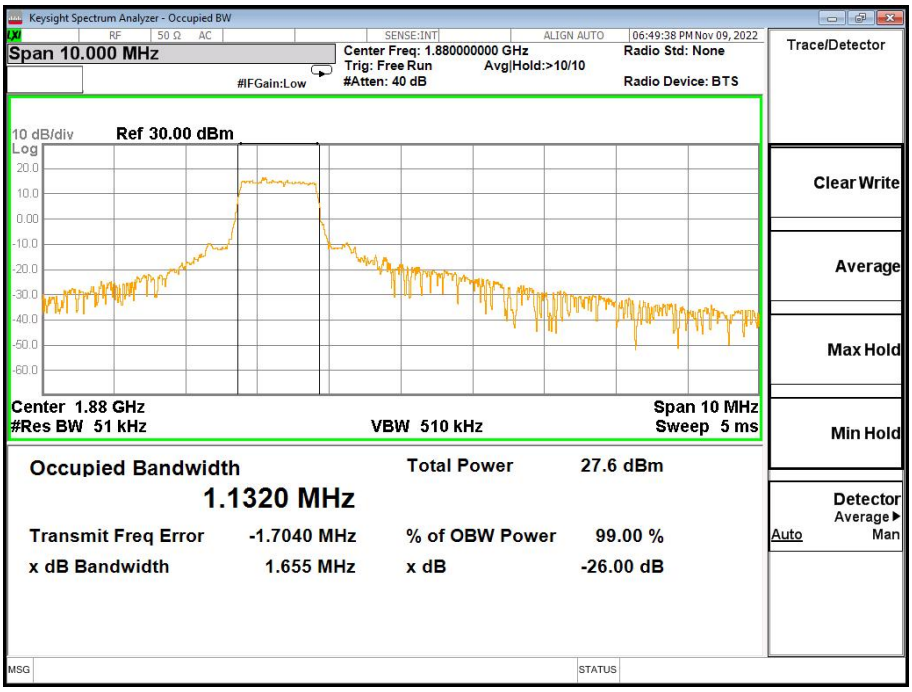
Band2-3MHz Bandwidth-16QAM



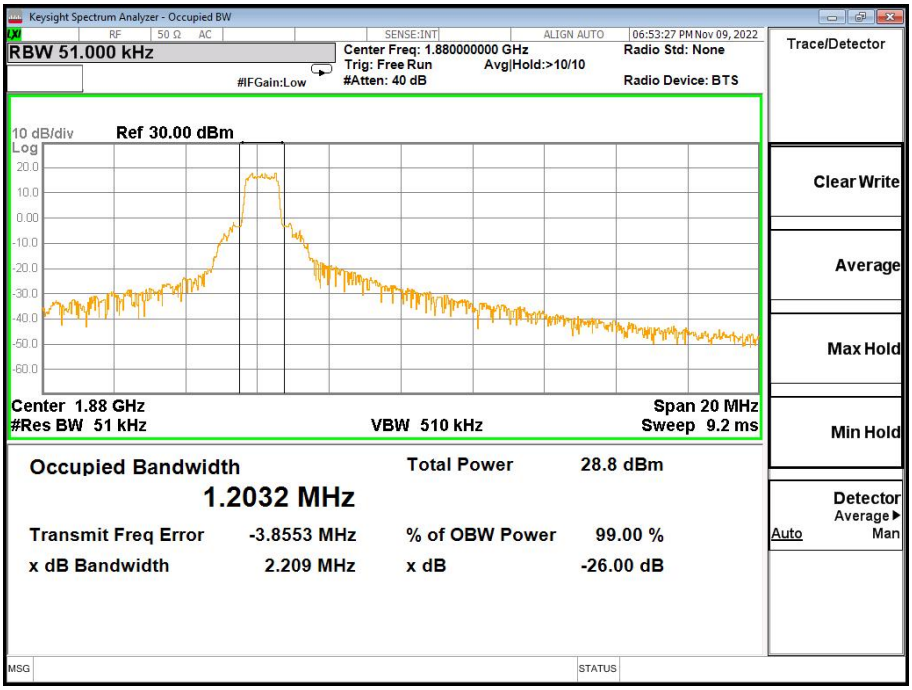
Band2-3MHz Bandwidth-QPSK



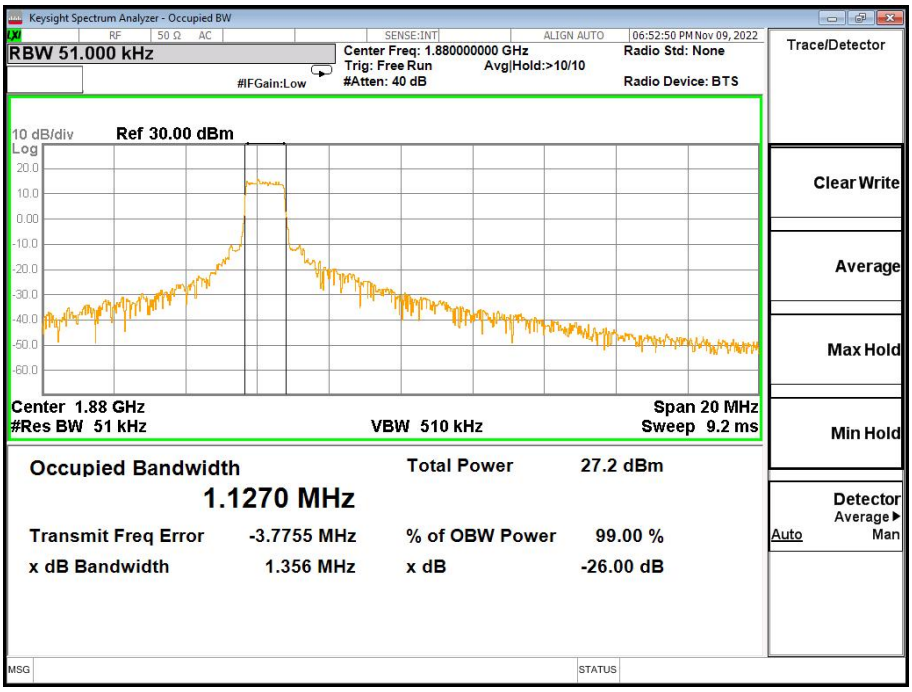
Band2-5MHz Bandwidth-16QAM



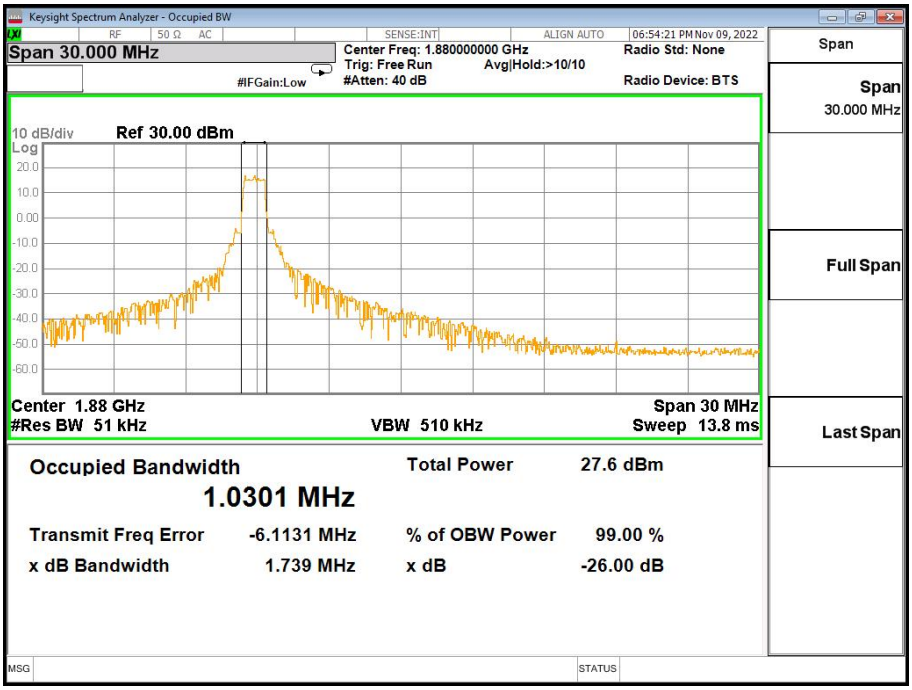
Band2-5MHz Bandwidth-QPSK



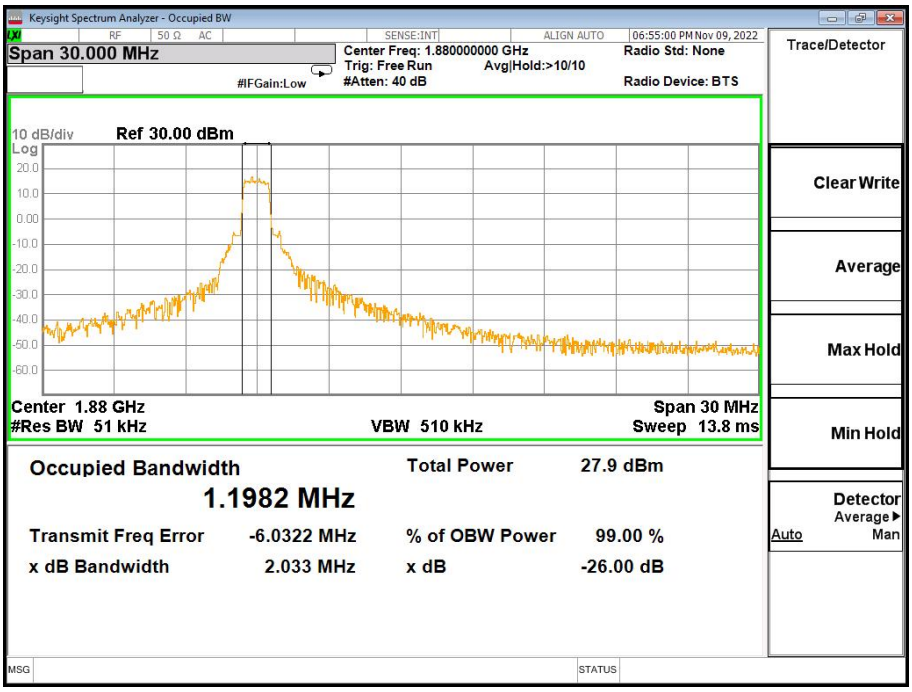
Band2-10MHz Bandwidth-16QAM



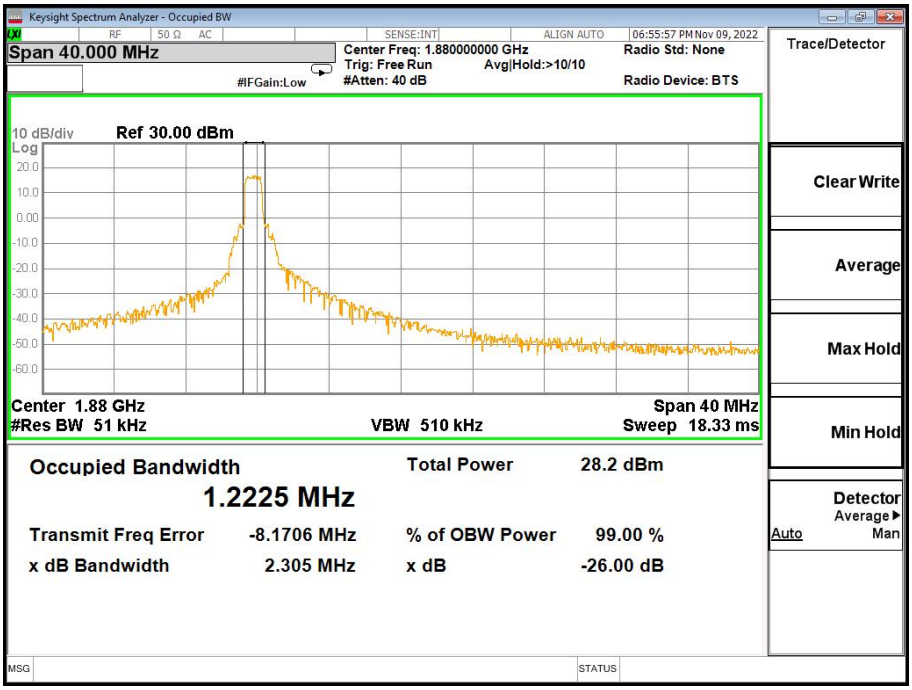
Band2-10MHz Bandwidth-QPSK



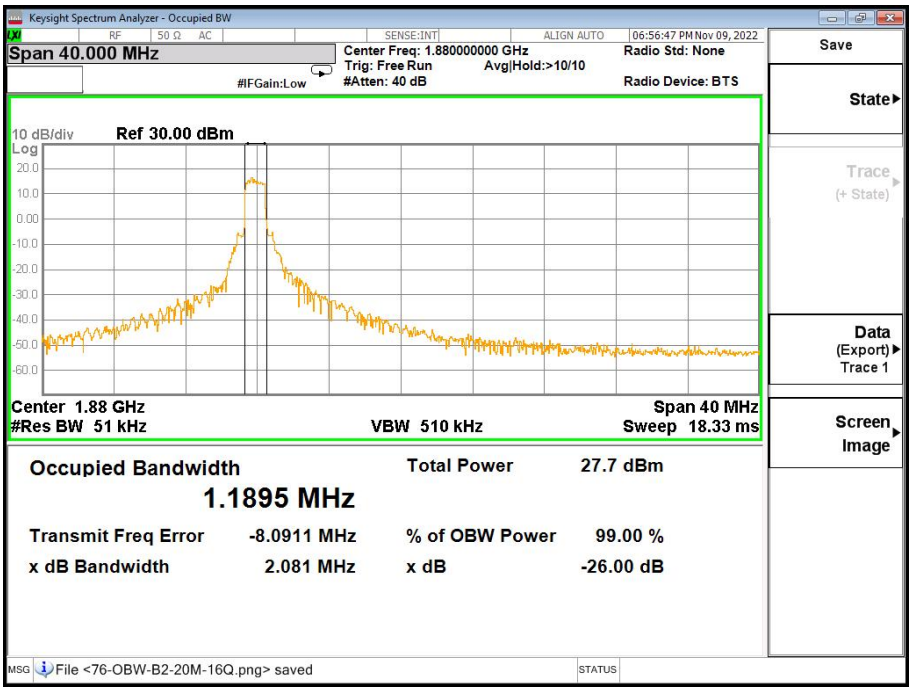
Band2-15MHz Bandwidth-16QAM



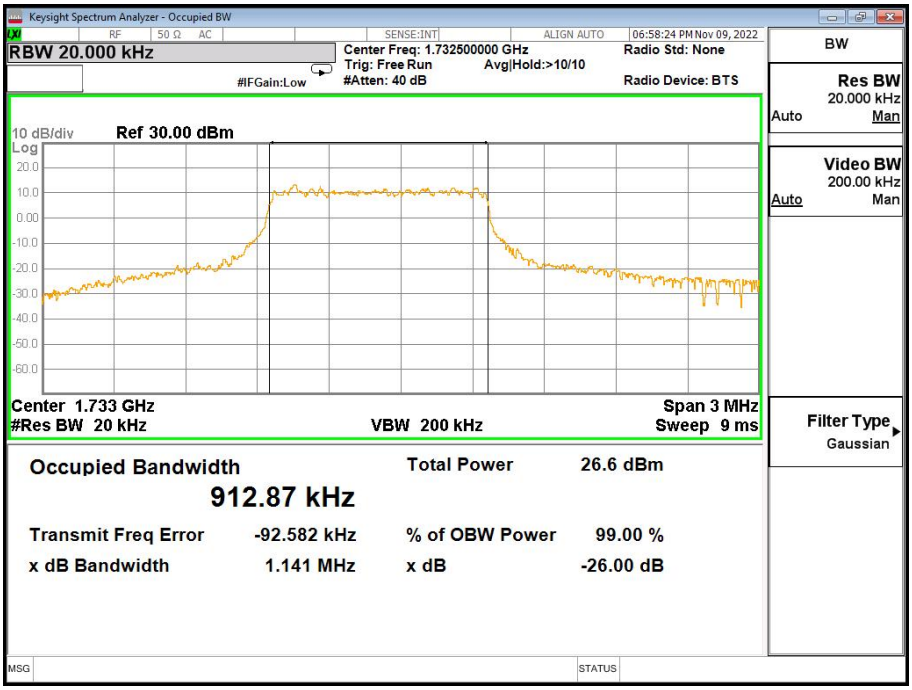
Band2-15MHz Bandwidth-QPSK



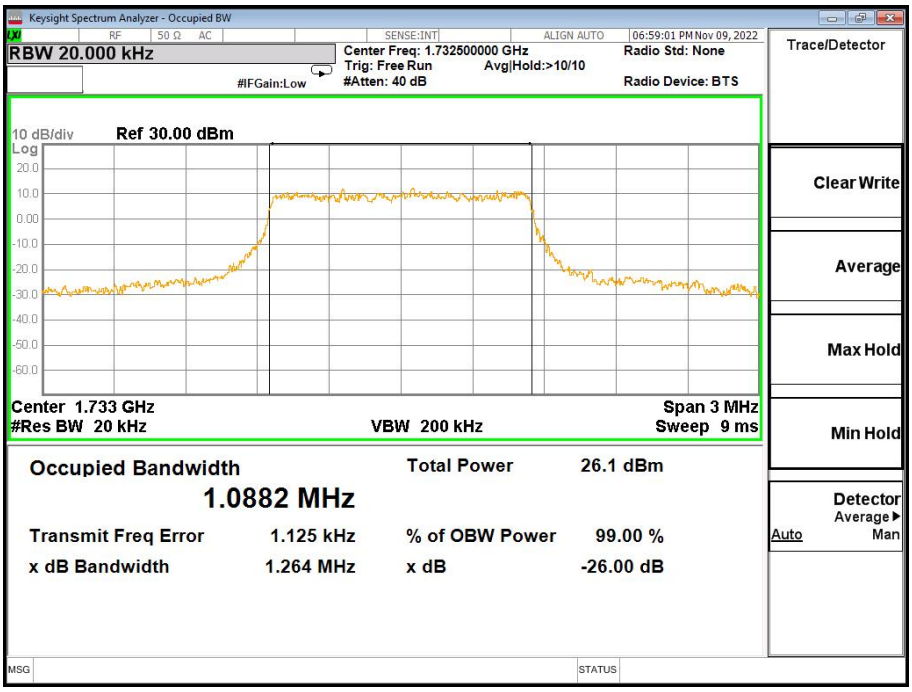
Band2-20MHz Bandwidth-16QAM



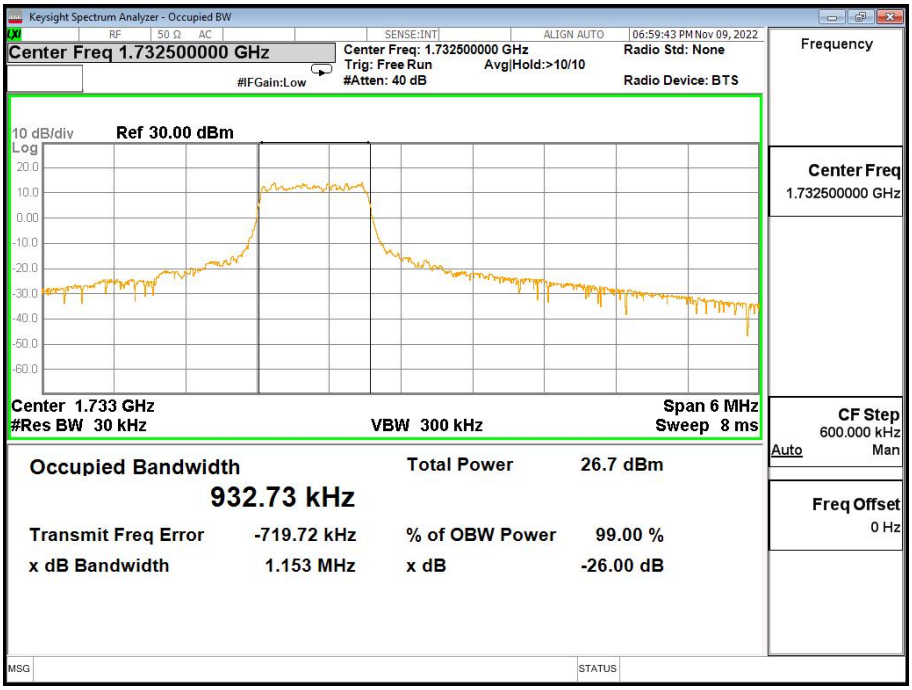
Band2-20MHz Bandwidth-QPSK



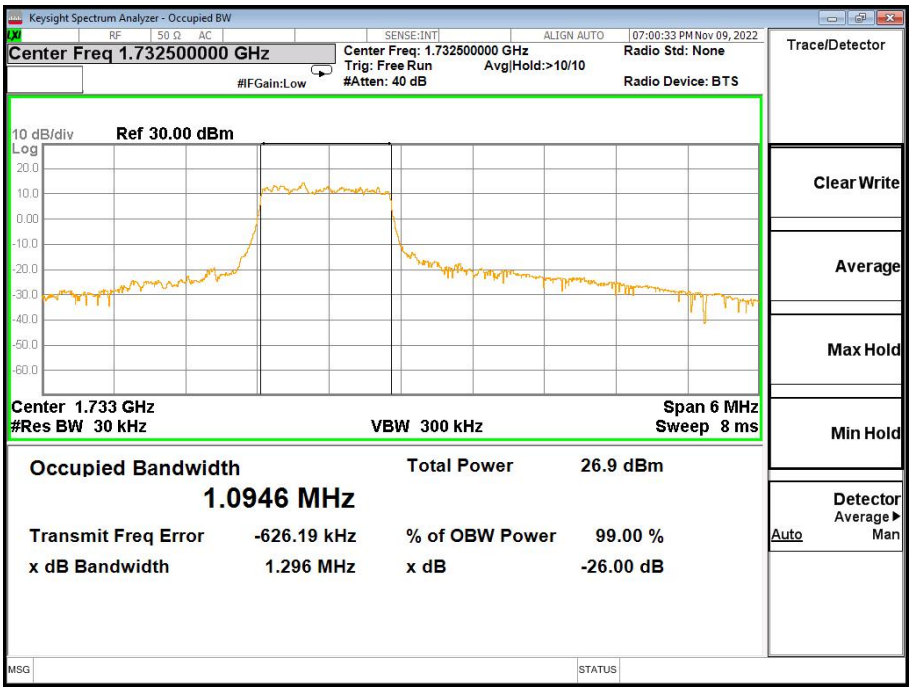
Band4-1.4MHz Bandwidth-16QAM



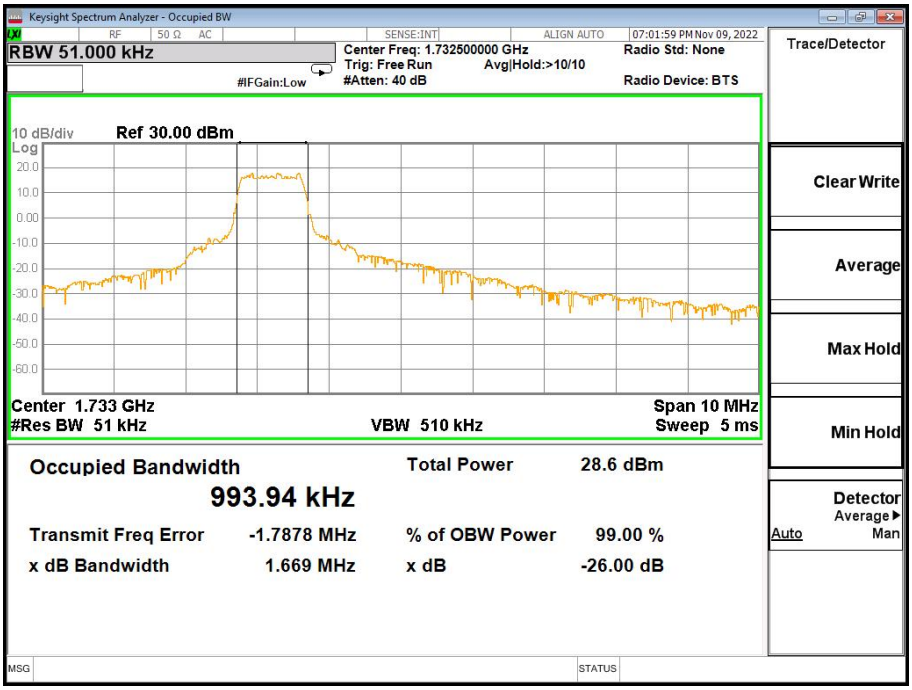
Band4-1.4MHz Bandwidth-QPSK



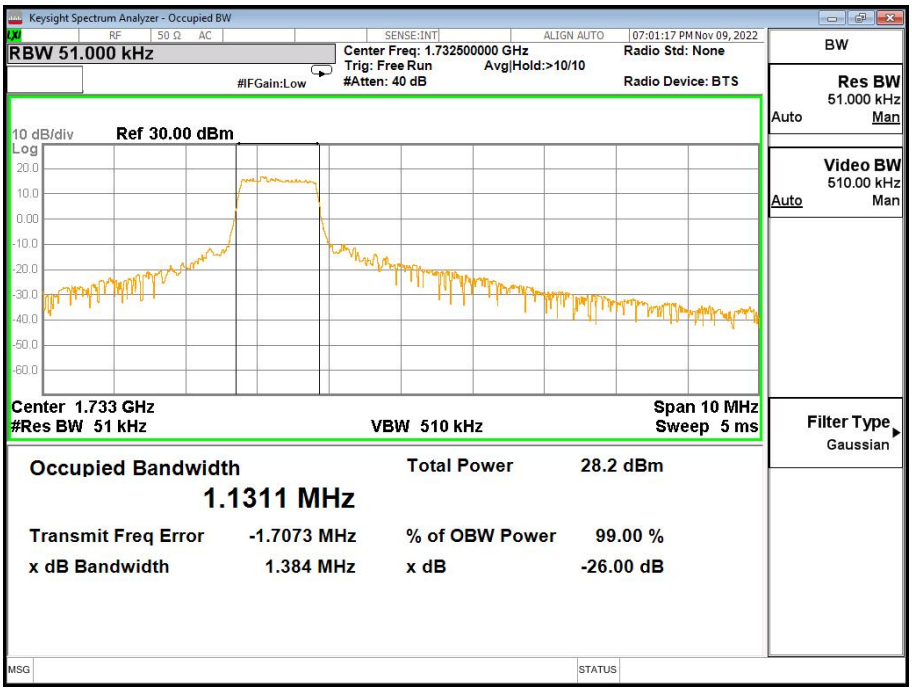
Band4-3MHz Bandwidth-16QAM



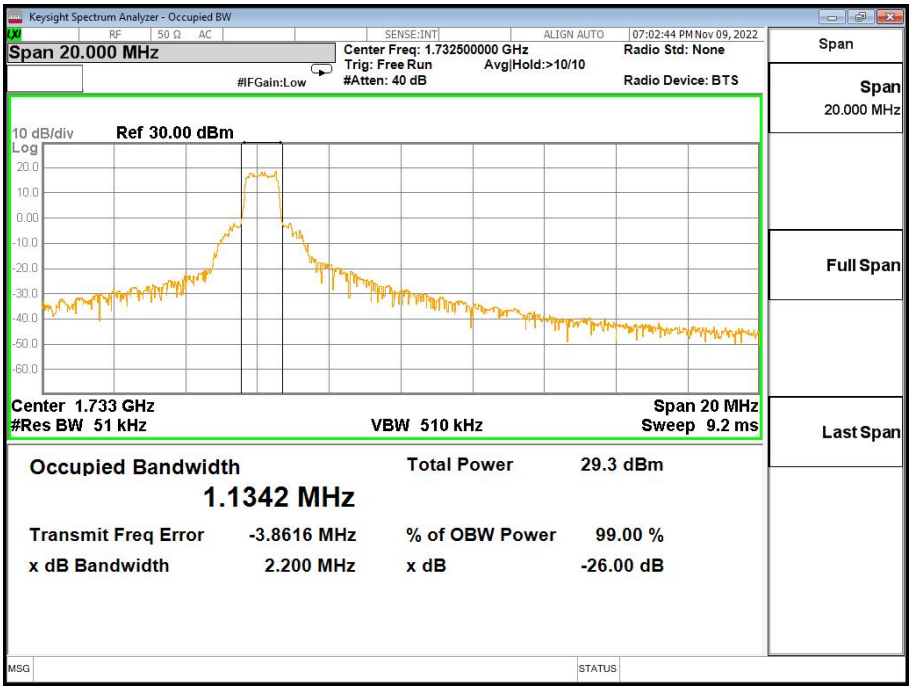
Band4-3MHz Bandwidth-QPSK



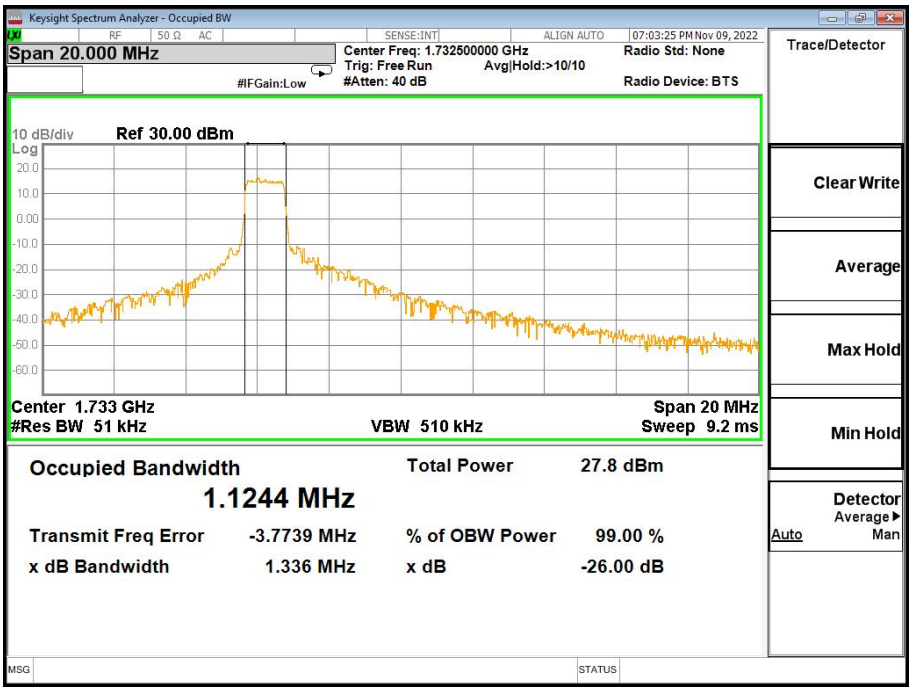
Band4-5MHz Bandwidth-16QAM



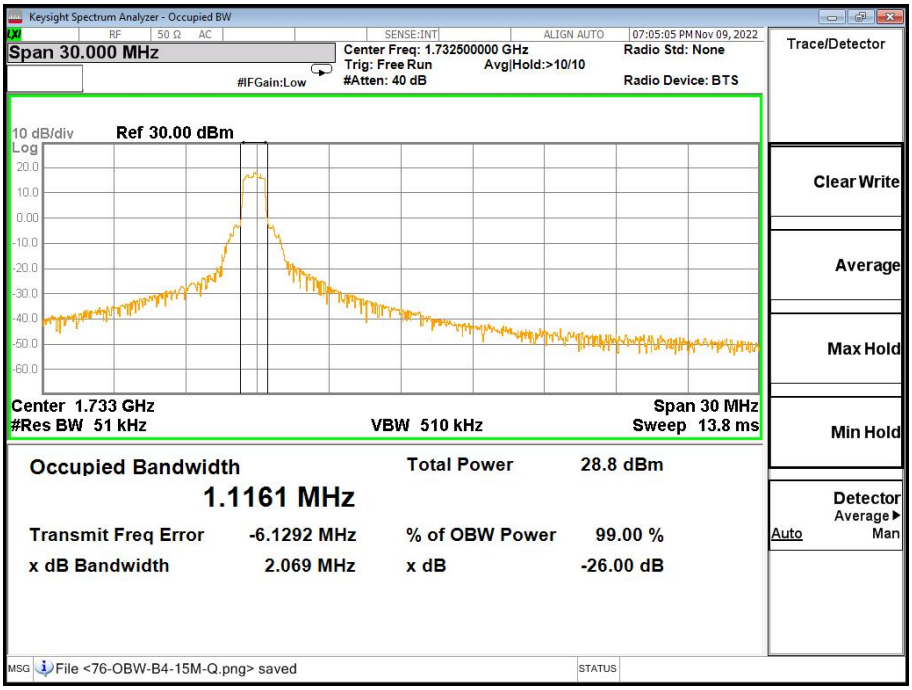
Band4-5MHz Bandwidth-QPSK



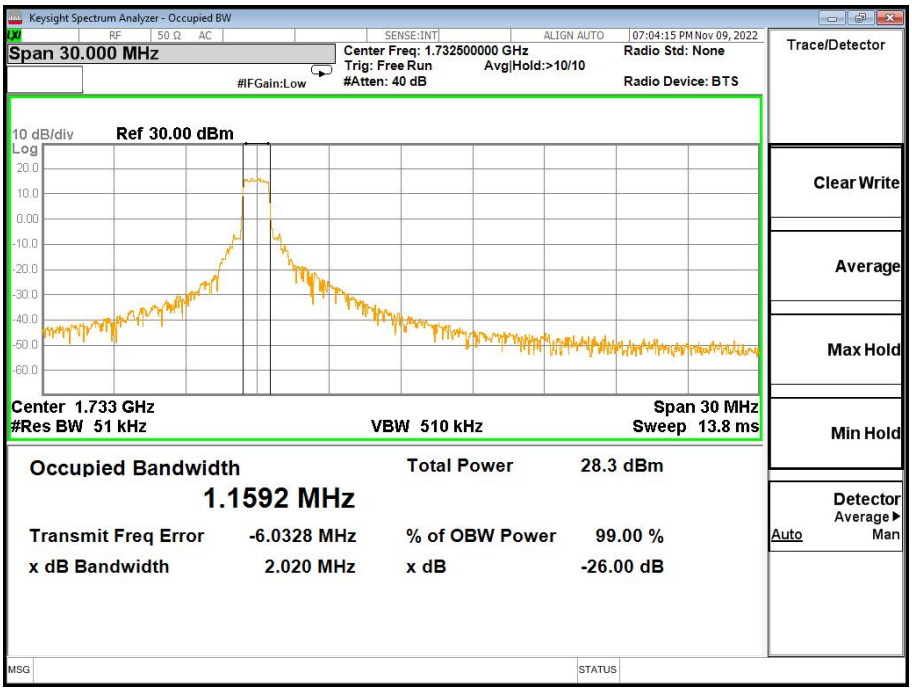
Band4-10MHz Bandwidth-16QAM



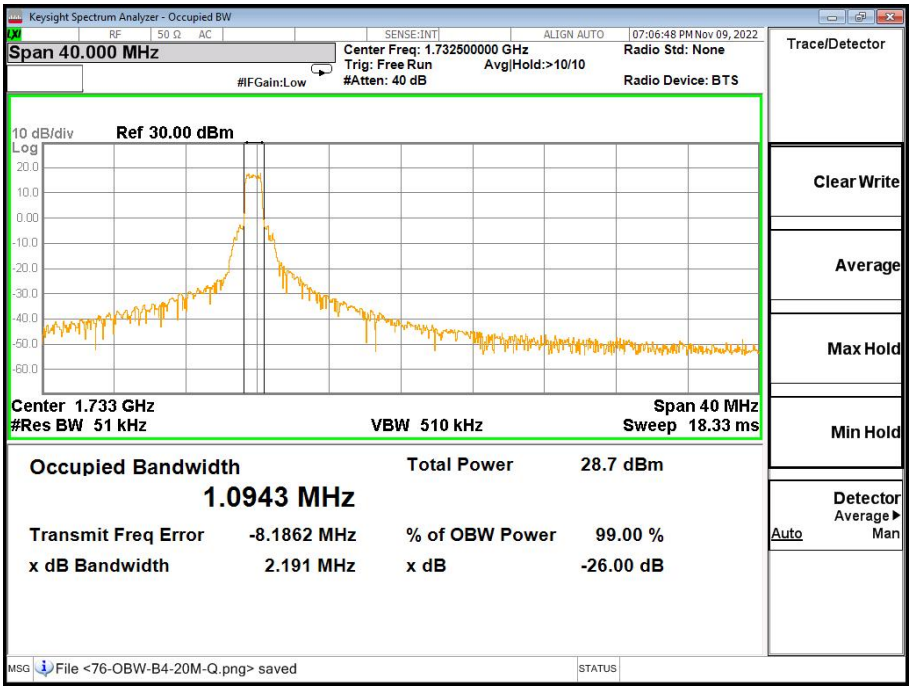
Band4-10MHz Bandwidth-QPSK



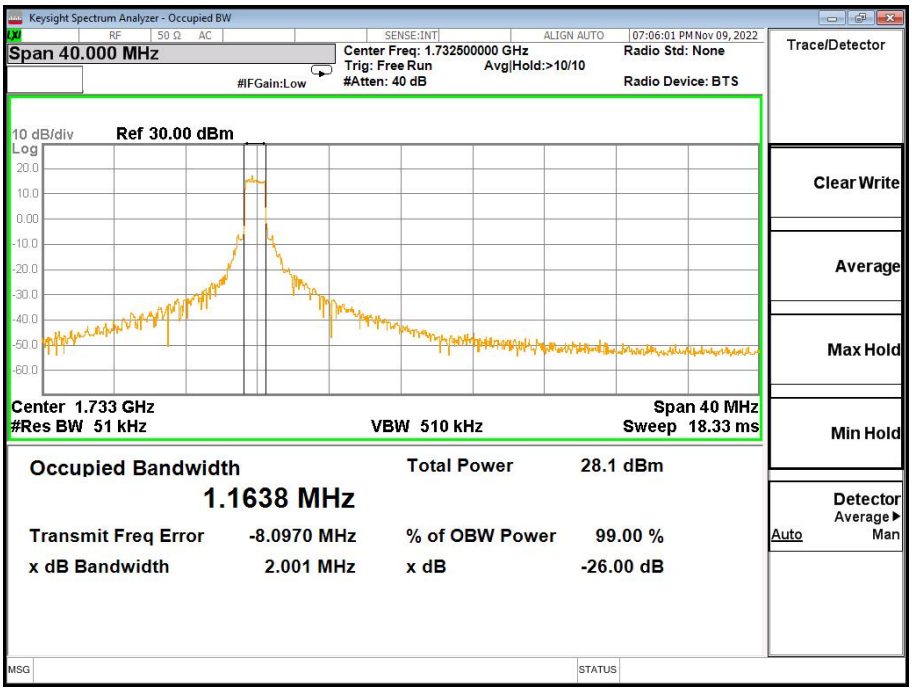
Band4-15MHz Bandwidth-16QAM



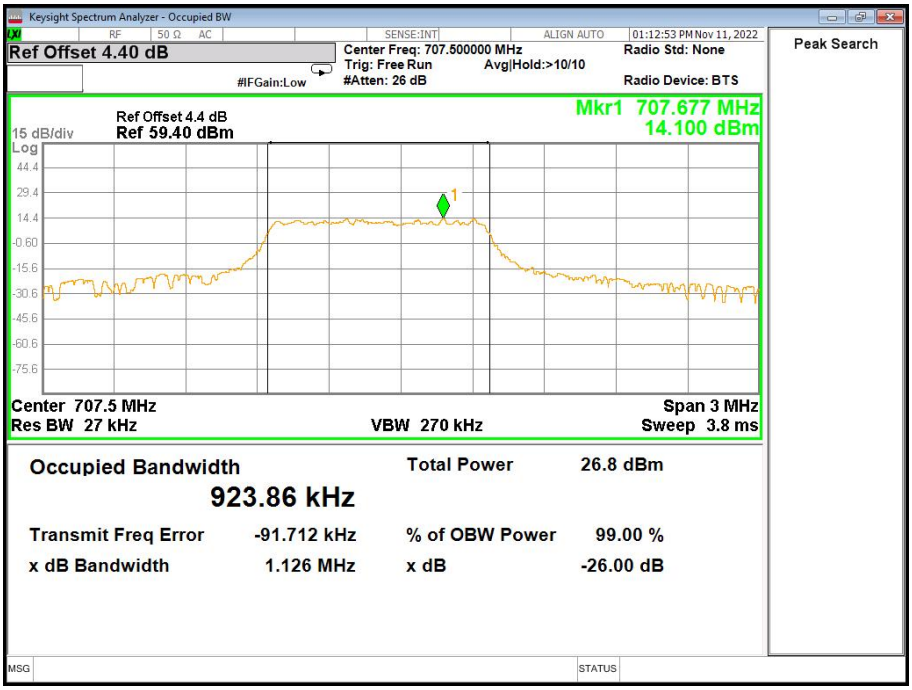
Band4-15MHz Bandwidth-QPSK



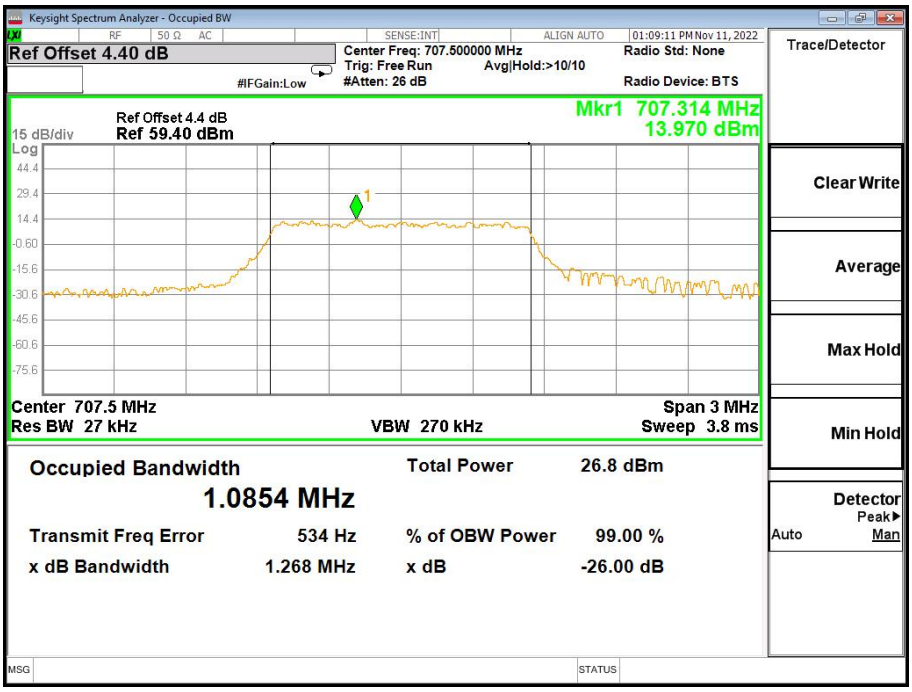
Band4-20MHz Bandwidth-16QAM



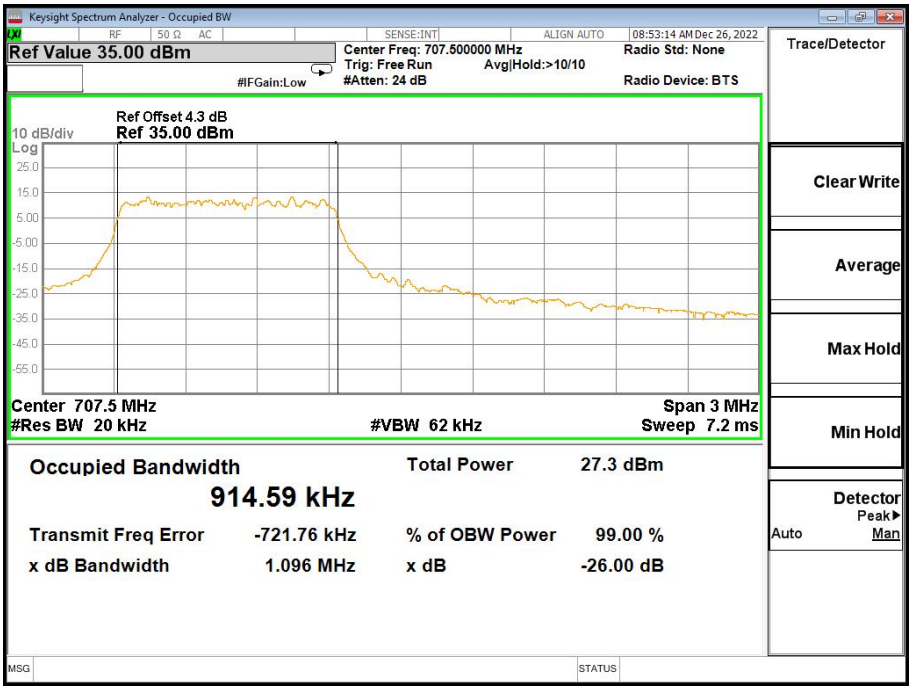
Band4-20MHz Bandwidth-QPSK



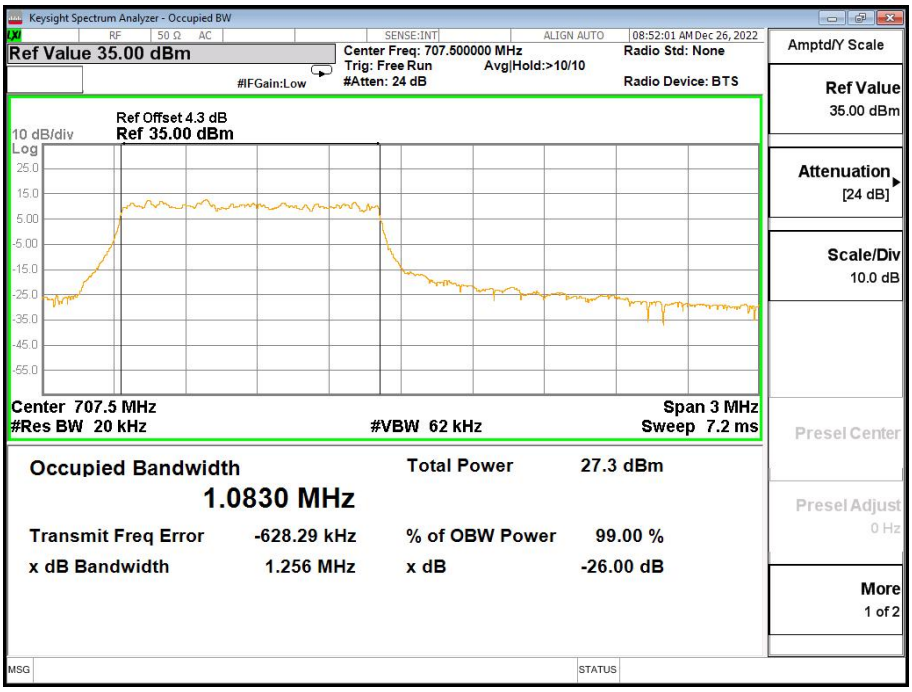
Band12-1.4MHz Bandwidth-16QAM



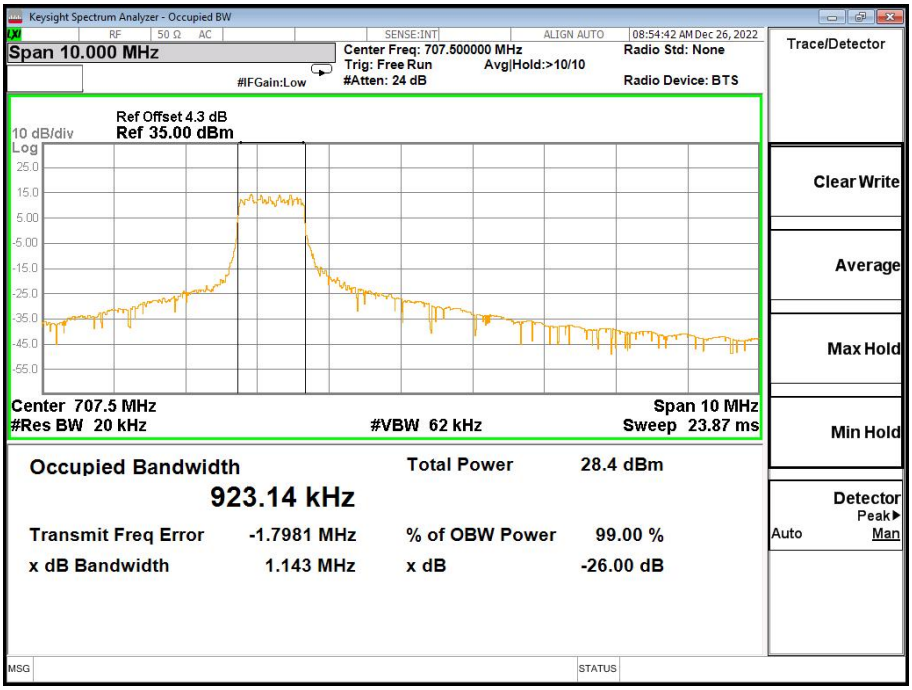
Band12-1.4MHz Bandwidth-QPSK



Band12-3MHz Bandwidth-16QAM

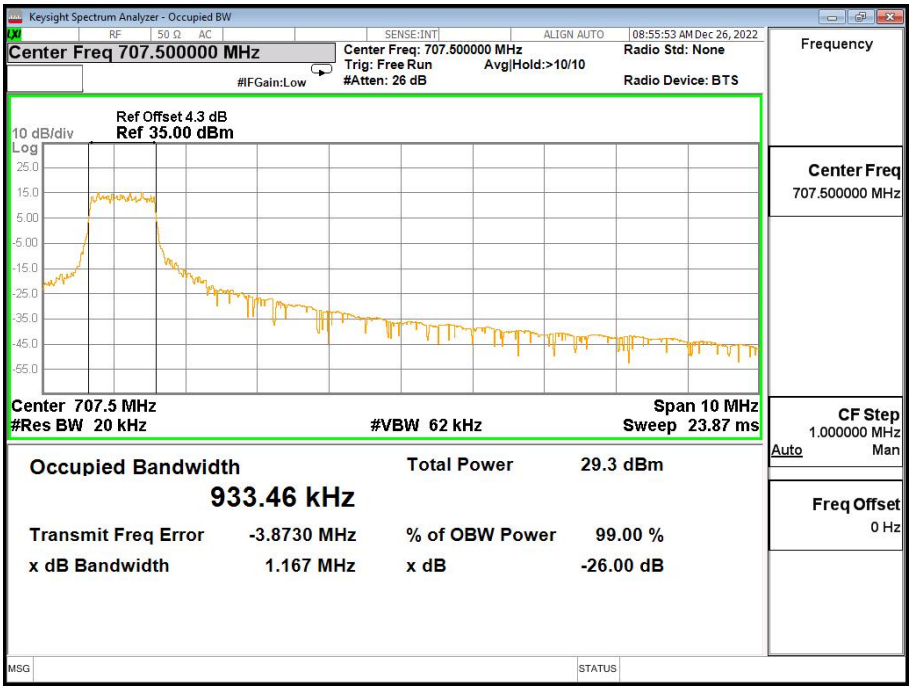


Band12-3MHz Bandwidth-QPSK

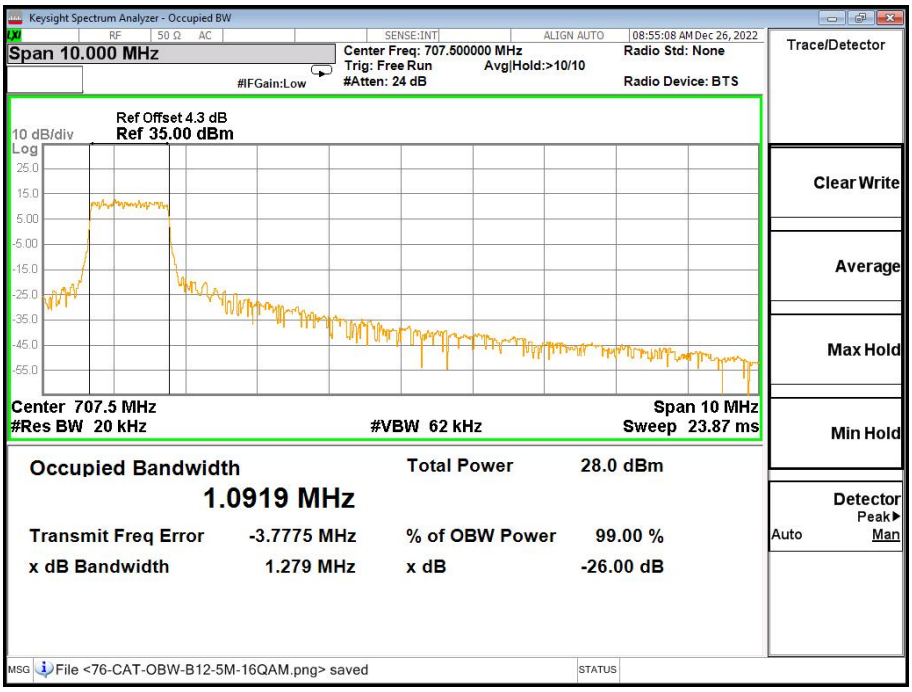


Band12-5MHz Bandwidth-16QAM

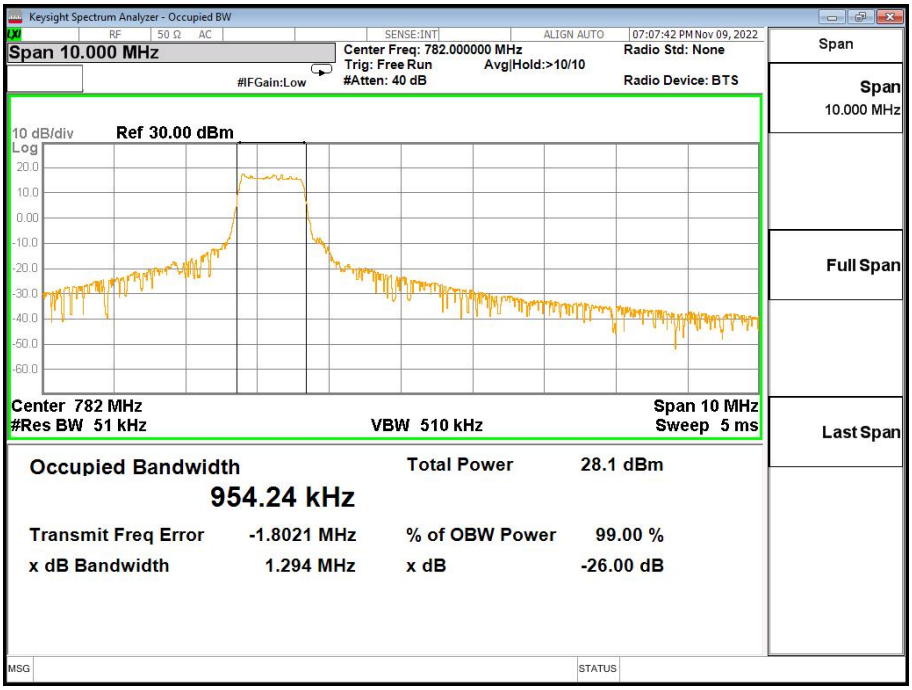
Band12-5MHz Bandwidth-QPSK



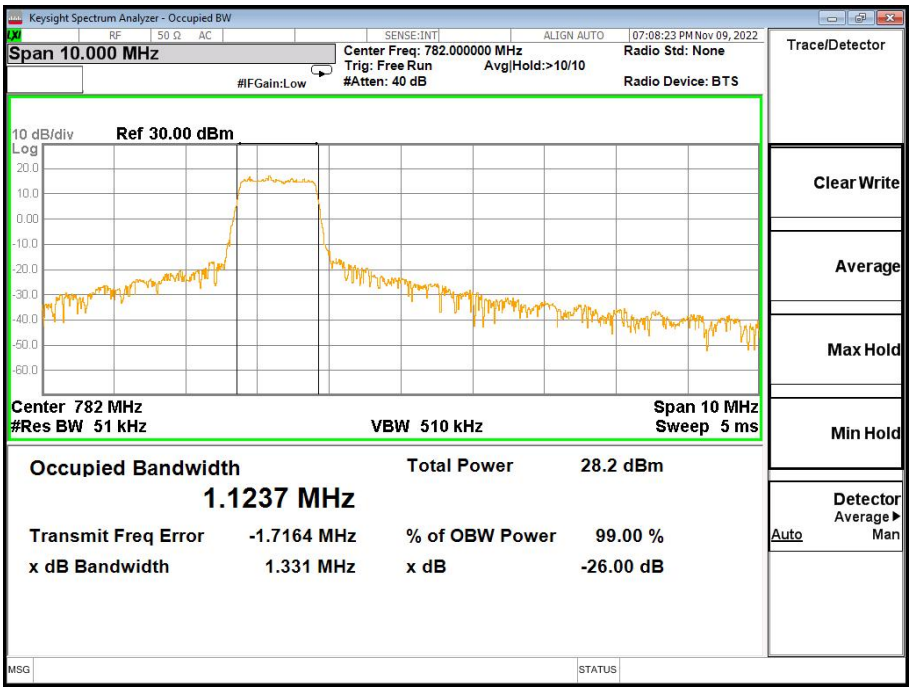
Band12-10MHz Bandwidth-16QAM



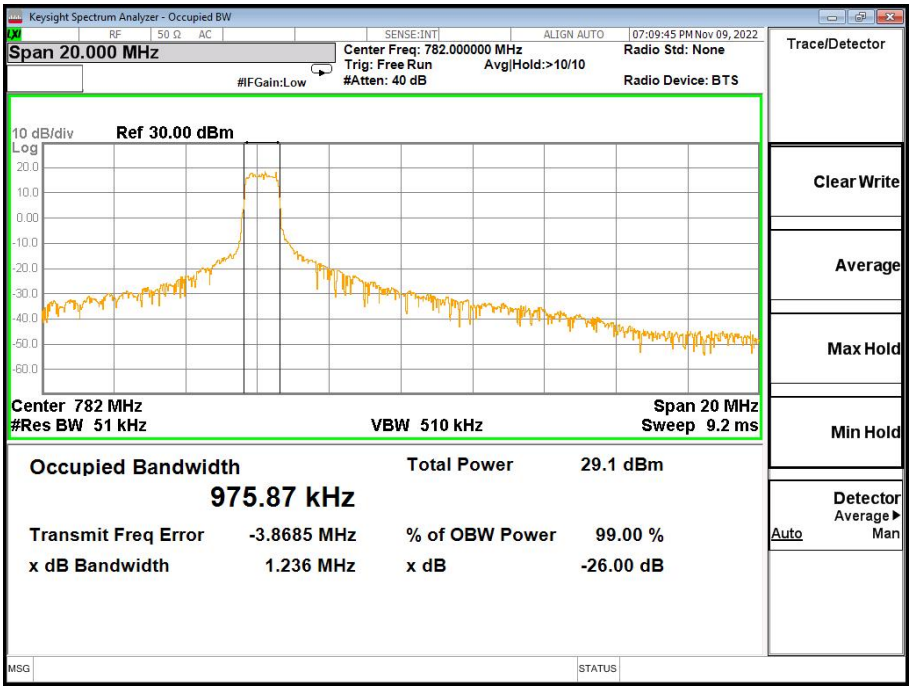
Band12-10MHz Bandwidth-QPSK



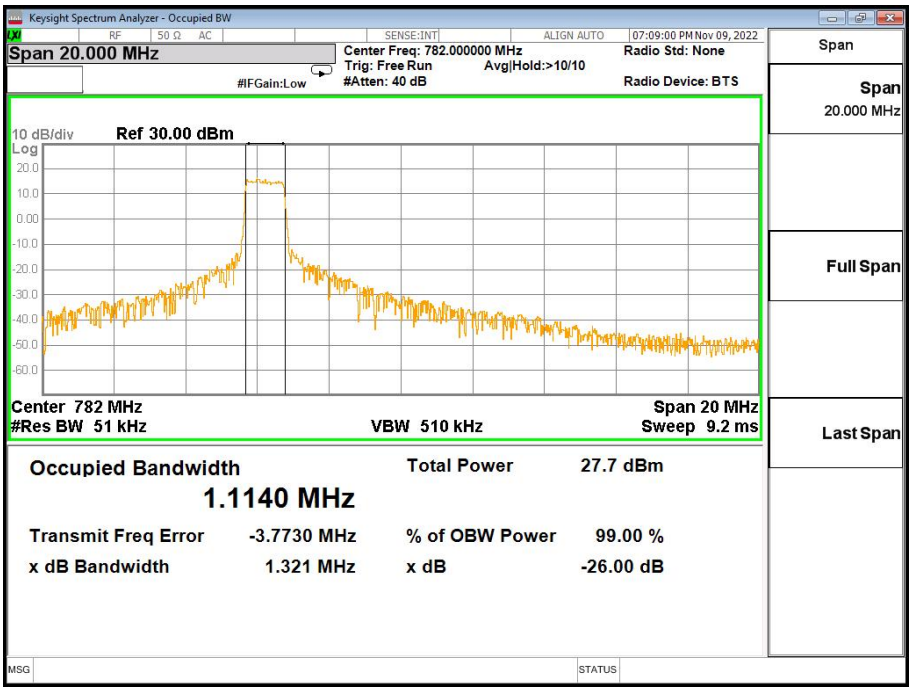
Band13-5MHz Bandwidth-16QAM



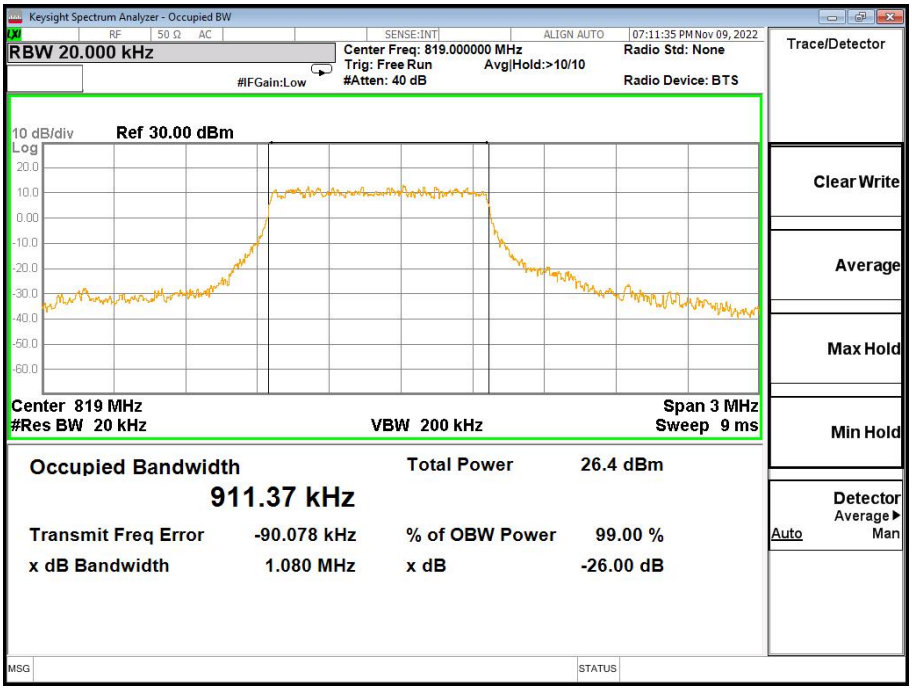
Band13-MHz Bandwidth-QPSK



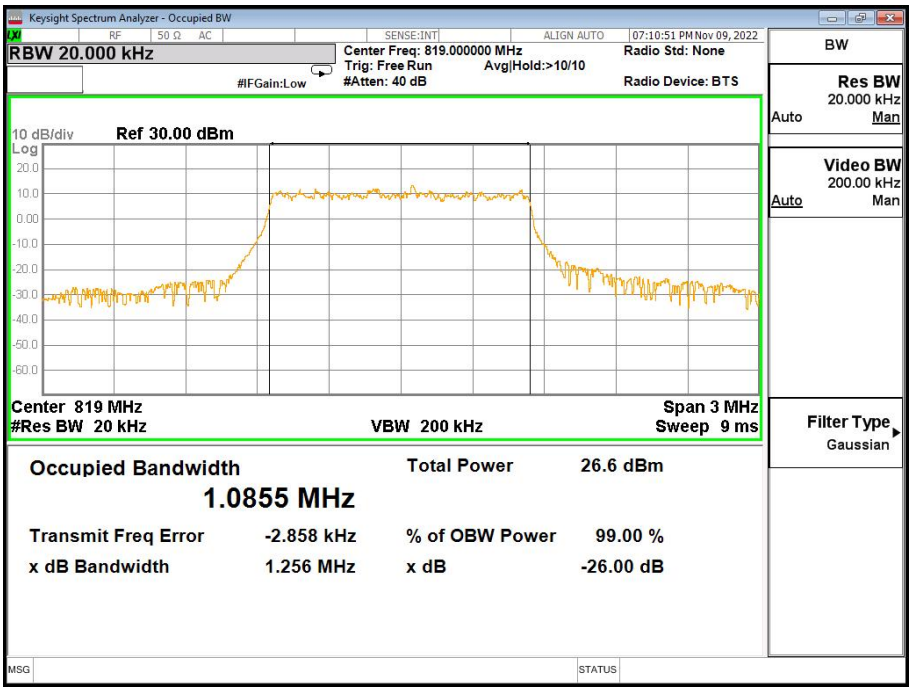
Band13-10MHz Bandwidth-16QAM



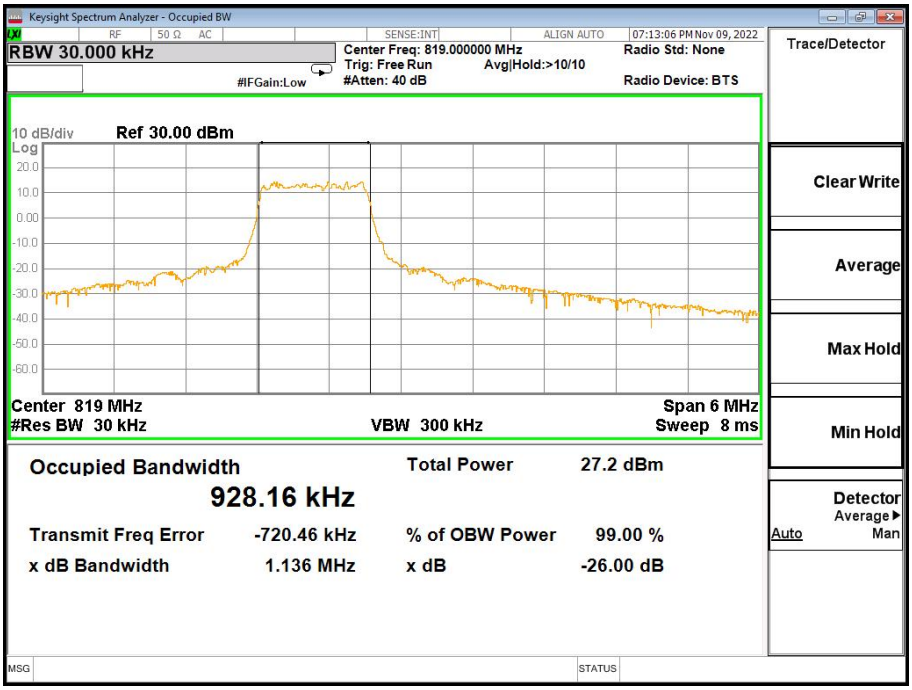
Band13-10MHz Bandwidth-QPSK



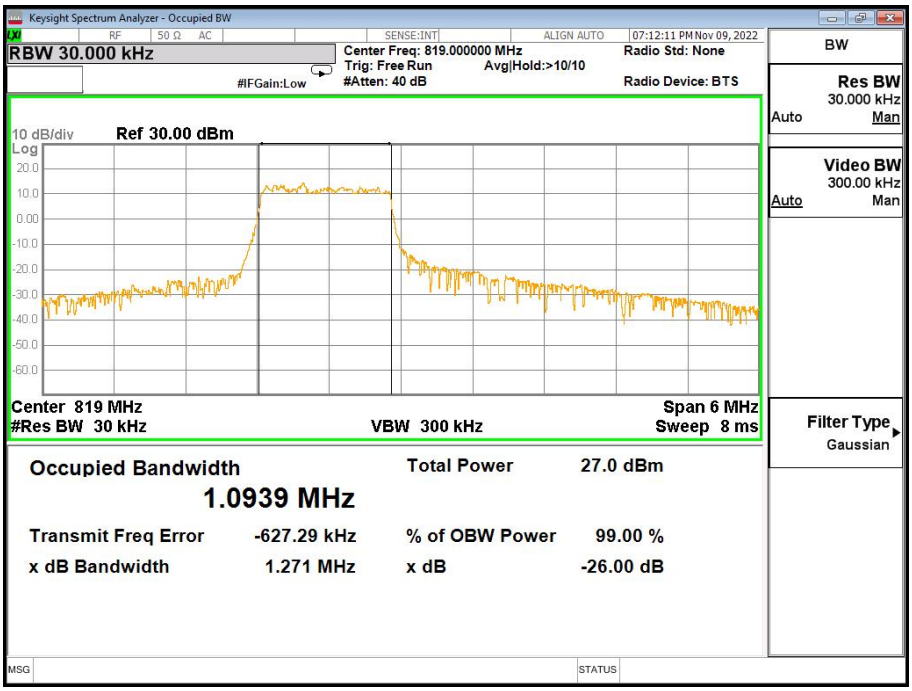
Band26-26dB OBW-26740 Channel-1.4MHz Bandwidth-16QAM



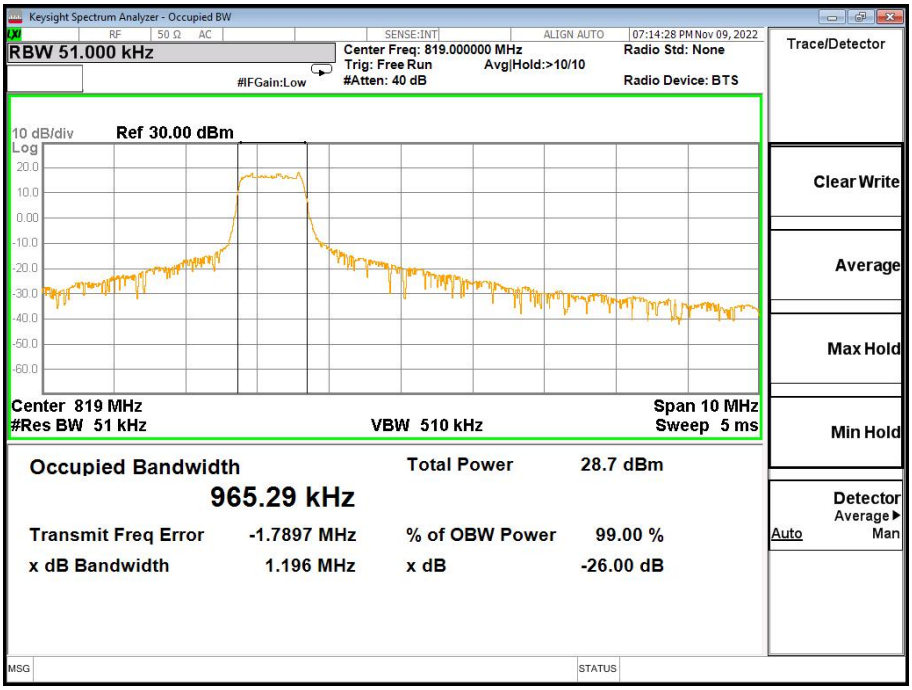
Band26-99% OBW-26740 Channel-1.4MHz Bandwidth-QPSK



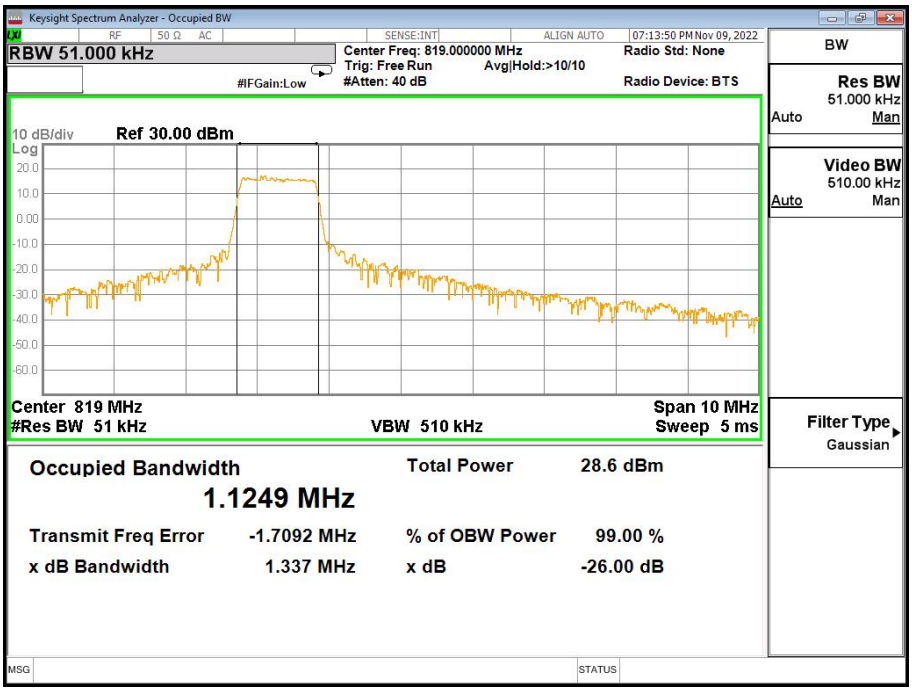
Band26-26dB OBW-26740 Channel-3MHz Bandwidth-16QAM



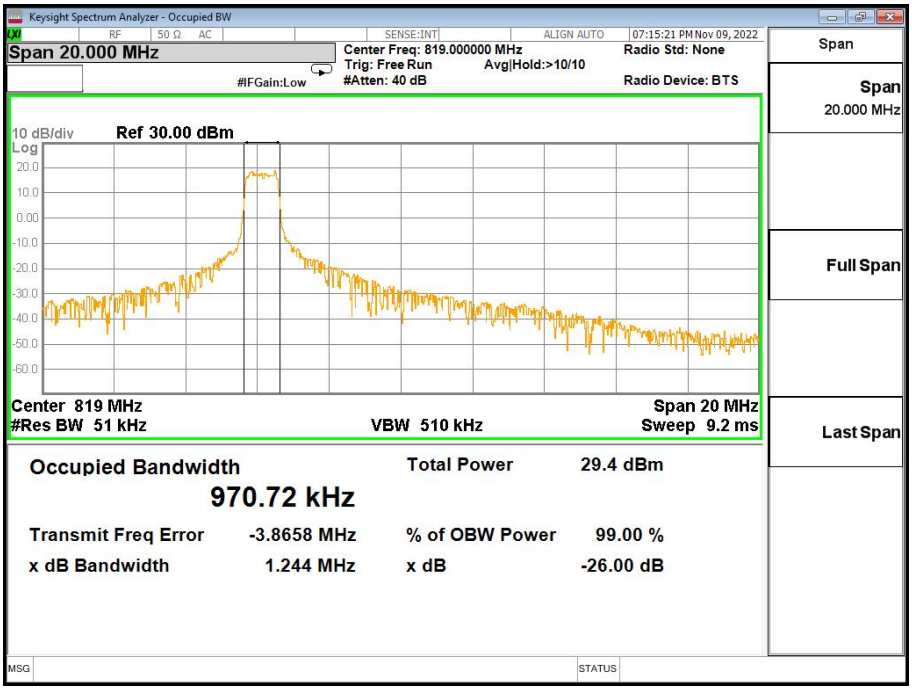
Band26-99% OBW-26740 Channel-3MHz Bandwidth-QPSK



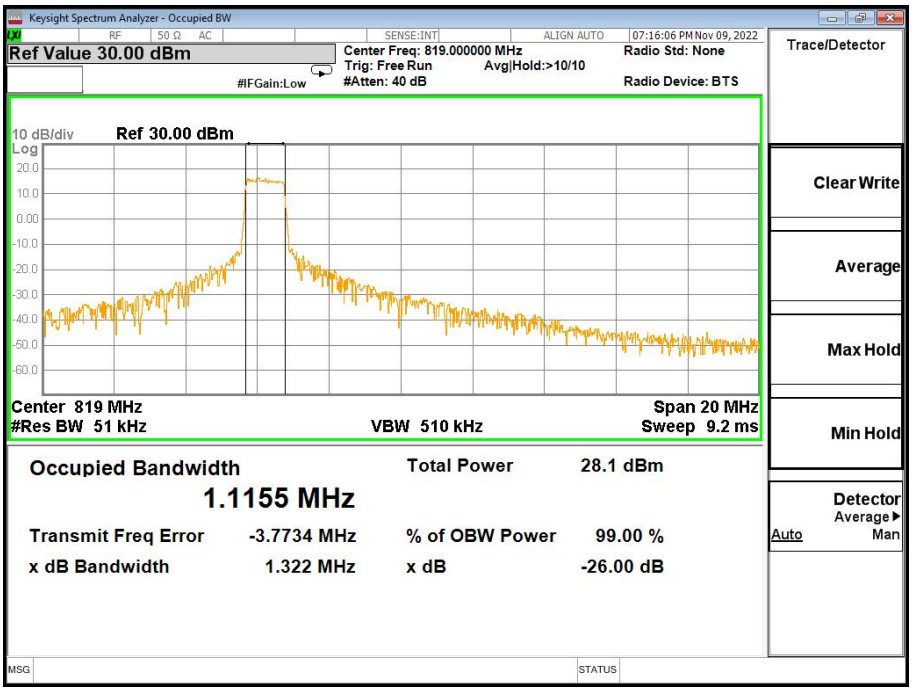
Band26-26dB OBW-26740 Channel-5MHz Bandwidth-16QAM



Band26-99% OBW-26740 Channel-5MHz Bandwidth-QPSK



Band26-26dB OBW-26740 Channel-10MHz Bandwidth-16QAM



Band26-26dB OBW-26740 Channel-10MHz Bandwidth-QPSK