VARIANT FCC TEST REPORT

(PART 90)

Applicant:	COOSEA GROUP (HK) COMPANY LIMITED
Address:	UNIT 5-6 16/F MULTIFIELD PLAZA 3-7A PRAT AVENUE TSIMSHATSUI KL, HONG KONG, CHINA

Manufacturer or Supplier	COOSEA GROUP (HK) COMPANY LIMITED
Address	UNIT 5-6 16/F MULTIFIELD PLAZA 3-7A PRAT AVENUE TSIMSHATSUI KL, HONG KONG, CHINA
Product	LTE Smartphone
Brand Name	Cricket
Model Name	SL100EA
FCC ID	2A28USL100EA
Date of tests	Oct. 27, 2021 ~ Jun. 08, 2022

The tests have been carried out according to the requirements of the following standard:

☒ **FCC Part 90, Subpart R, S** ☒ **ANSI/TIA/EIA-603- D**
☒ **FCC Part 2** ☒ **ANSI/TIA/EIA-603-E** ☒ **ANSI C63.26-2015**

CONCLUSION: The submitted sample was found to COMPLY with the test requirement

Prepared by Simon Wang Engineer / Mobile Department	Approved by Luke Lu Manager / Mobile Department
Simon Date: Jun. 08, 2022	Luke Lu Date: Jun. 08, 2022

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
W7L-P21100025RF07	Original release	Dec. 24, 2021
W7L-220503W001RF07	Based on the original report W7L-P21100025RF07 changing SW version and adding 3G function. Verify the RSE, Power worst case.	Jun. 08, 2022

1 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC Part 90 & Part 2			
STANDARD SECTION	TEST TYPE AND LIMIT	RESULT	REMARK
§2.1046	Conducted Output Power	PASS	Meet the requirement of limit.
§90.635(b)	Maximum Peak Output Power	PASS	Meet the requirement of limit.
§2.1055 §90.213	Frequency Stability	PASS	Meet the requirement of limit.
§2.1049	Occupied Bandwidth	PASS	Meet the requirement of limit.
§2.1051 §90.691	Emission Masks	PASS	Meet the requirement of limit.
§2.1051 §90.691	Conducted Spurious Emissions	PASS	Meet the requirement of limit.
§2.1053 §90.691	Radiated Spurious Emissions	PASS	Meet the requirement of limit.

Note: Except the data of RSE and power, other data please refer to APPENDIX A

1.1 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

MEASUREMENT	FREQUENCY	UNCERTAINTY
Conducted emissions	9kHz~30MHz	2.66dB
Radiated emissions	9KHz ~ 30MHz	2.68dB
	30MHz ~ 1GMHz	3.26dB
	1GHz ~ 18GHz	4.48dB
	18GHz ~ 40GHz	4.12dB

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

1.2 TEST SITE AND INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
MXE EMI Receiver	KEYSIGHT	N9038A-544	MY54450026	Apr. 22,21	Apr. 21,22
MXE EMI Receiver	KEYSIGHT	N9038A-544	MY54450026	Apr. 21,22	Apr. 20,23
EXA Signal Analyzer	KEYSIGHT	N9010A-544	MY54510355	Jun. 03,21	Jun. 02,22
EXA Signal Analyzer	KEYSIGHT	N9010A-544	MY54510355	Jun. 02,22	Jun. 01,23
Loop Antenna	Schwarzbeck	FMZB 1519B	1519B-051	Feb. 14.20	Feb. 13.23
Bilog Antenna	ETS-LINDGREN	3143B	00161965	Mar. 05,21	Mar. 04,22
Bilog Antenna	ETS-LINDGREN	3143B	00161965	Mar. 04,22	Mar. 03,23
Horn Antenna	ETS-LINDGREN	3117	00168692	Apr. 02,21	Apr. 01,22
Horn Antenna	ETS-LINDGREN	3117	00168692	Apr. 01,22	Mar. 31,23
Horn Antenna (18GHz-40GHz)	N/A	QWH-SL-18-40-K-SG/QMS-00361	15433	Aug. 25, 21	Aug. 24, 22
Radio Communication Analyzer	ANRITSU	MT8820C	6201465426	Feb. 25,21	Feb. 24,22
Radio Communication Analyzer	ANRITSU	MT8820C	6201465426	Feb. 24,22	Feb. 23,23
Signal Pre-Amplifier	EMSI	EMC 9135	980249	Jun. 02,21	Jun. 01,22
Signal Pre-Amplifier	EMSI	EMC 9135	980249	Jun. 01,22	May. 31,23
Signal Pre-Amplifier	EMSI	EMC 012645B	980257	Jun. 03,21	Jun. 02,22
Signal Pre-Amplifier	EMSI	EMC 012645B	980257	Jun. 02,22	Jun. 01,23
Signal Pre-Amplifier	EMSI	EMC 184045B	980259	Apr. 22,21	Apr. 21,22
Signal Pre-Amplifier	EMSI	EMC 184045B	980259	Apr. 21,22	Apr. 20,23
3m Semi-anechoic Chamber	ETS-LINDGREN	9m*6m*6m	Euroshieldpn-CT0001143-1216	May. 19,20	May. 18,23
Test Software	E3	V 9.160323	N/A	N/A	N/A
Test Software	ADT	ADT_Radiated_V 7.6.15.9.2	N/A	N/A	N/A
10dB Attenuator	JFW/USA	50HF-010-SMA	1505	Jun. 03,21	Jun. 02,22
10dB Attenuator	JFW/USA	50HF-010-SMA	1505	Jun. 02,22	Jun. 01,23
Power Meter	Anritsu	ML2495A	1506002	Apr. 07,21	Apr. 06,22
Power Meter	Anritsu	ML2495A	1506002	Apr. 06,22	Apr. 05,23
Power Sensor	Anritsu	MA2411B	1339352	May. 07,21	May. 06,22
Power Sensor	Anritsu	MA2411B	1339352	May. 06,22	May. 05,23
Temperature Chamber	ESPEC	SH-242	93000855	Jun. 02,21	Jun. 01,22
Temperature Chamber	ESPEC	SH-242	93000855	Jun. 01,22	May. 31,23
MXG Analog Microvave Signal Generator	KEYSIGHT	N5183A	MY50143024	Mar. 05,21	Mar. 04,22
MXG Analog Microvave Signal Generator	KEYSIGHT	N5183A	MY50143024	Mar. 04,22	Mar. 03,23
Power Divider	MCLI/USA	PS2-15	24880	N/A	N/A

NOTE: 1. The calibration interval of the above test instruments is 12 months or 36 months and the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.

2. The test was performed in 3m Semi-anechoic Chamber and RF Oven Room.

3. The horn antenna is used only for the measurement of emission frequency above 1GHz if tested.

4. The FCC Site Registration No. is 525120.

2 GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

PRODUCT	LTE Smartphone	
BRAND NAME	Cricket	
MODEL NAME	SL100EA	
NOMINAL VOLTAGE	5.0Vdc(adapter or host equipment) 3.85Vdc (Li-ion, battery)	
MODULATION TECHNOLOGY	**LTE**	QPSK, 16QAM, 64QAM
FREQUENCY RANGE	**LTE Band 14 Channel Bandwidth: 5MHz**	790.5MHz ~ 795.5MHz
	LTE Band 14 Channel Bandwidth: 10MHz	793MHz
EMISSION DESIGNATOR	**LTE Band 14 Channel Bandwidth: 5MHz**	QPSK: 4M59G7D
		16QAM: 4M60W7D
		64QAM: 4M58W7D
	LTE Band 14 Channel Bandwidth: 10MHz	QPSK: 9M10G7D
		16QAM: 9M08W7D
		64QAM: 9M09W7D
MAX. EIRP POWER	**LTE Band 14 Channel Bandwidth: 5MHz**	95.06mW
	LTE Band 14 Channel Bandwidth: 10MHz	95.28mW
ANTENNA TYPE	PIFA Antenna with -1.9dBi gain for LTE B14	
HW VERSION	1.0	
SW VERSION	SL100EAC20101	
I/O PORTS	Refer to user's manual	
CABLE SUPPLIED	USB cable: unshielded without ferrite, 1.0meter	
EXTREME TEMPERATURE	-10-55 ℃	
EXTREME VOLTAGE	3.6V - 4.4V	

NOTE:

1. For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.

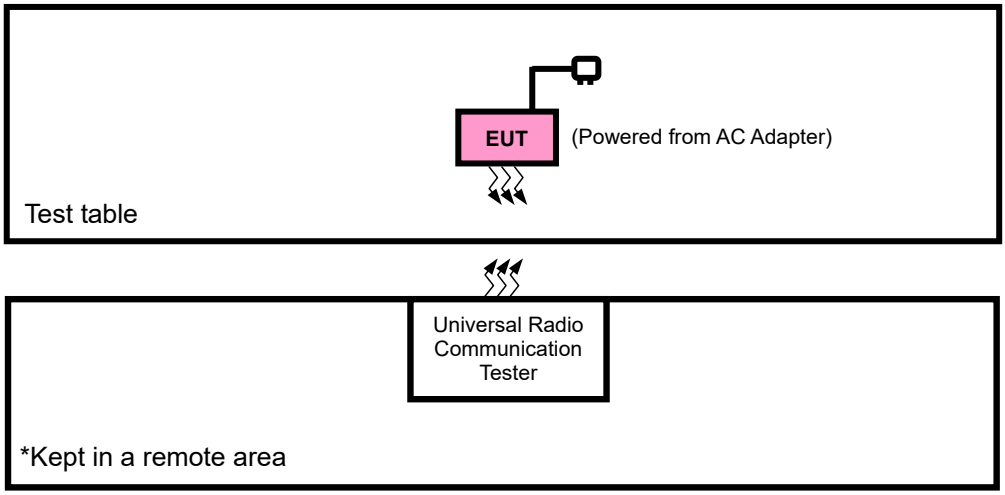
2. For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.

List of Accessory:

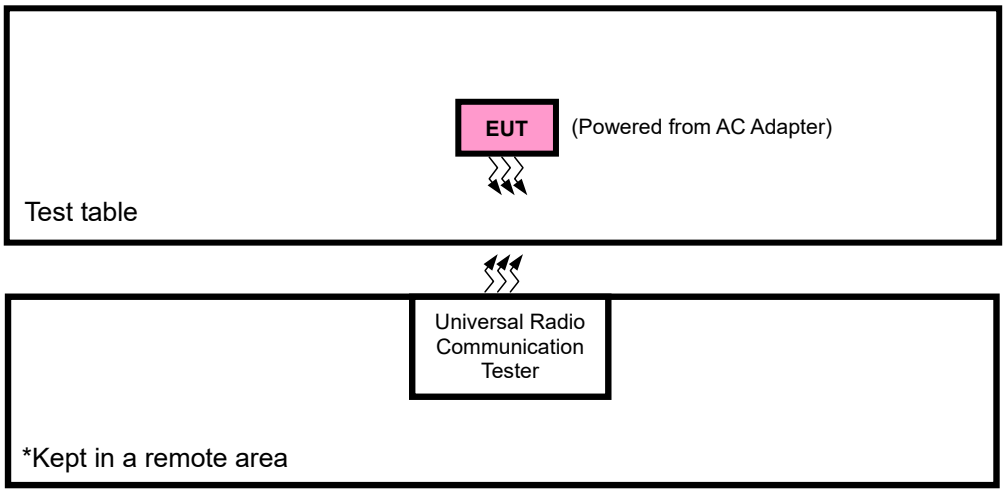
ACCESSORIES	BRAND	MANUFACTURER	MODEL	SPECIFICATION
Battery	COOSEA	ZHONGSHAN TIANMAO BATTERY CO., LTD	BL-A32CT	Capacity：3.85 Vdc, 3450mAh
AC Adapter	COOSEA	Guangdong Beicom Electronics Co., Ltd.	U312E0A050200	I/P:100-240V,50/60Hz,0.35A, O/P: 5.0V,2.0A 10.0W
USB Cable	COOSEA	Wivtak	TP-C0028-B3	Signal Line, 1.0meter

2.2 CONFIGURATION OF SYSTEM UNDER TEST

FOR RADIATION EMISSION TEST



FOR CONDUCTED & E.R.P./E.I.R.P TEST



2.3 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	DC source	LONG WEI	PS-6403D	010934269	N/A

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	DC Line: Unshielded, Detachable 1.0m

2.4 DESCRIPTION OF TEST MODES

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis and antenna ports The worst case in ERP/EIRP and radiated emission was found when positioned on X-plane for LTE. Following channel(s) was (were) selected for the final test as listed below:

DESCRIPTION
EUT + Adapter + USB Cable + with LTE link

LTE BAND 14 MODE

TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	CHANNEL BANDWIDTH	MODULATION	MODE
ERP	23305 to 23355	23305, 23330, 23355	5MHz	QPSK,16QAM,64QAM	1 RB / 0 RB Offset
	23330	23330	10MHz	QPSK,16QAM,64QAM	1 RB / 0 RB Offset
FREQUENCY STABILITY	23305 to 23355	23305, 23355	5MHz	QPSK,16QAM,64QAM	1 RB / 0 RB Offset
	23330	23330	10MHz	QPSK,16QAM,64QAM	1 RB / 0 RB Offset
OCCUPIED BANDWIDTH	23305 to 23355	23305, 23330, 23355	5MHz	QPSK,16QAM,64QAM	25 RB / 0 RB Offset
	23330	23330	10MHz	QPSK,16QAM,64QAM	50 RB / 0 RB Offset
BAND EDGE	23305 to 23355	23305	5MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset
					25 RB / 0 RB Offset
		23355	5MHz	QPSK,16QAM, 64QAM	1 RB / 24 RB Offset
					25 RB / 0 RB Offset
	23300	23330	10MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset
					50 RB / 0 RB Offset
		/	10MHz	QPSK,16QAM, 64QAM	1 RB / 49 RB Offset
					50 RB / 0 RB Offset
CONDCUDETED EMISSION	23305 to 23355	23305, 23330, 23355	5MHz	QPSK,16QAM,64QAM	1 RB / 0 RB Offset
	23330	23330	10MHz	QPSK,16QAM,64QAM	1 RB / 0 RB Offset
RADIATED EMISSION	23305 to 23355	23305, 23330, 23355	5MHz	QPSK	1 RB / 0 RB Offset
	23330	23330	10MHz	QPSK	1 RB / 0 RB Offset

Note: This device was tested under all bandwidths, RB configurations and modulations. The worst case was found in QPSK modulation.

TEST CONDITION:

TEST ITEM	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
EIRP(ERP)	24deg. C, 60%RH	DC 5V By Adapter	Star Le
FREQUENCY STABILITY	24deg. C, 61%RH	3.5/3.85/4.4V By Battery	Jaems Fu
OCCUPIED BANDWIDTH	24deg. C, 61%RH	DC5V By Adapter	Jaems Fu
BAND EDGE	24deg. C, 61%RH	DC 5V By Adapter	Jaems Fu
CONDCUDETED EMISSION	24deg. C, 61%RH	DC5V By Adapter	Jaems Fu
RADIATED EMISSION	23deg. C, 70%RH	DC5V By Adapter	Star Le

2.5 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a RF product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

FCC 47 CFR Part 2

FCC 47 CFR Part 90

ANSI/TIA/EIA-603-D

ANSI/TIA/EIA-603-E

ANSI C63.26-2015

NOTE: All test items have been performed and recorded as per the above standards.

3 TEST TYPES AND RESULTS

3.1 OUTPUT POWER MEASUREMENT

3.1.1 LIMITS OF OUTPUT POWER MEASUREMENT

Per FCC Part 90.635(a)(b)

The maximum output power of the transmitter for mobile stations is 100 watts (20 dBw).

3.1.2 TEST PROCEDURES

EIRP / ERP MEASUREMENT:

a. The EUT was set up for the maximum power with LTE link data modulation. The power was measured with R&S Spectrum Analyzer. All measurements were done at 3 channels (low, middle and high operational frequency range). RBW and VBW is 10MHz for LTE.

b. E.I.R.P power measurement. In the semi-anechoic chamber, EUT placed on the 0.8m height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum polar radiated power. The “Read Value” is the spectrum reading the maximum power value.

c. The substitution horn antenna is substituted for EUT at the same position and signals generator export the CW signal to the substitution antenna via a TX cable. Rotated the Turn Table and moved receiving antenna to find the maximum radiation power. Adjust output power level of S.G to get a Value of spectrum reading equal to “Read Value” of step a. Record the power level of S.G

d. EIRP = Output power level of S.G – TX cable loss + Antenna gain of substitution horn

Per KDB 971168 D01 Power Meas License Digital Systems v03r01 or subclause 5.2.5.5 of ANSI C63.26-2015, the relevant equation for determing the ERP or EIRP from the conducted RF output power measured using the guidance provided above is:

ERP or EIRP = $P_{Meas} + G_T - L_C$

Where:

ERP or EIRP = effective radiated power or equivalent isotropically radiated power, respectively (expressed in the same units as P_{Meas}, typically dBW or dBm);

P_{Meas} = measured transmitter output power or PSD, in dBm or dBW;

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.

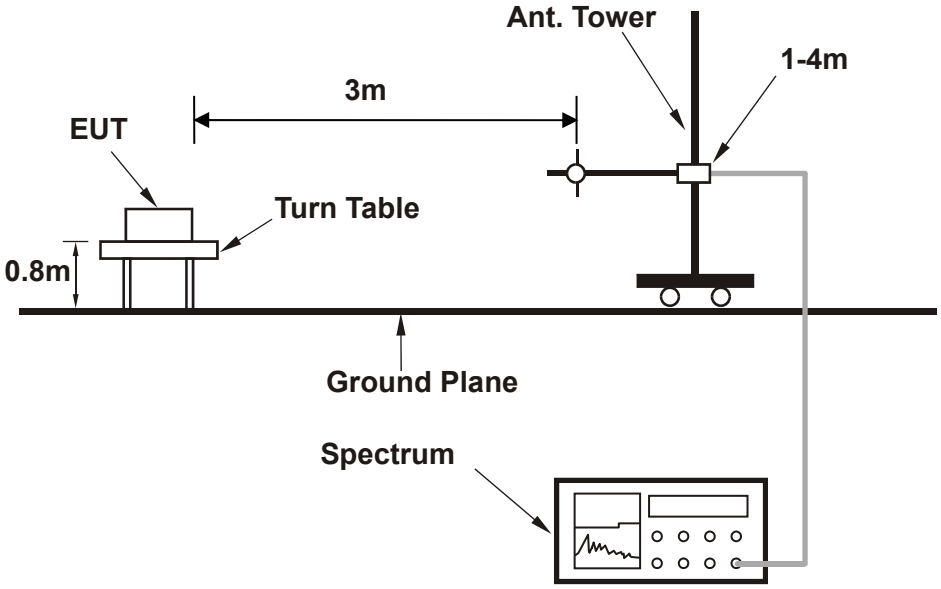
e. E.R.P = E.I.R.P- 2.15 dB

CONDUCTED POWER MEASUREMENT:

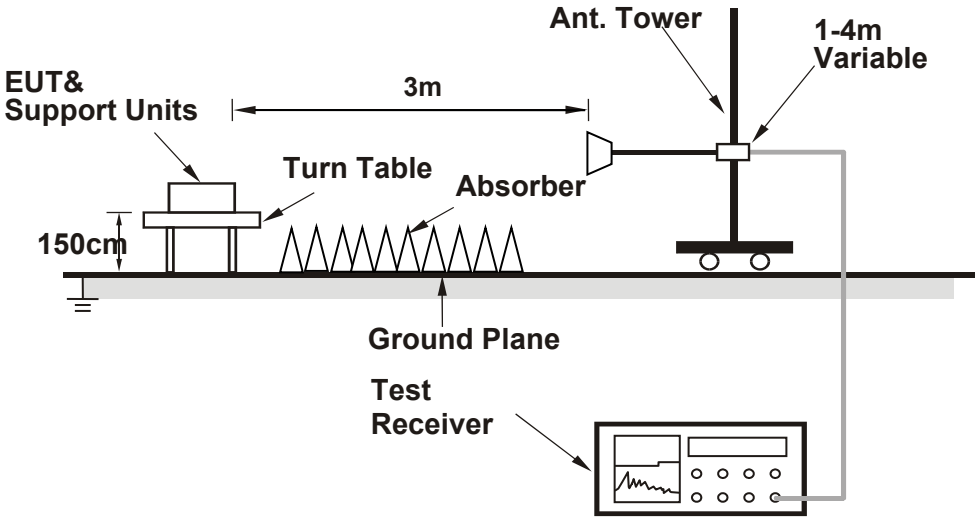
a. The EUT was set up for the maximum power with LTE link data modulation and link up with simulator.
b. Set the EUT to transmit under low, middle and high channel and record the power level shown on simulator.

3.1.3 TEST SETUP

ERP MEASUREMENT:

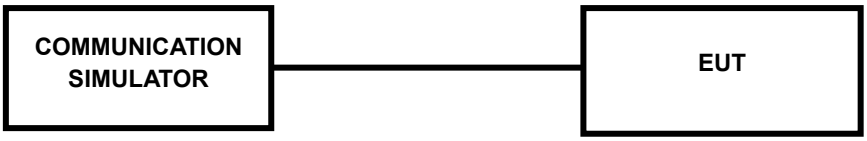


EIRP MEASUREMENT:



For the actual test configuration, please refer to the attached file (Test Setup Photo).

CONDUCTED POWER MEASUREMENT:



For the actual test configuration, please refer to the attached file (Test Setup Photo).

3.1.4 TEST RESULTS

AVERAGE CONDUCTED OUTPUT POWER (dBm)

LTE Band 14

Band/BW	Modulation	RB Size	RB Offset	Low CH 23305 Frequency 790.5 MHz	Mid CH 23330 Frequency 793 MHz	High CH 23355 Frequency 795.5 MHz	MPR
14/ 5	QPSK	1	0	23.54	23.61	23.57	0
		1	12	23.80	23.79	23.83	0
		1	24	23.61	23.65	23.62	0
		12	0	22.58	22.60	22.63	1
		12	6	22.53	22.59	22.56	1
		12	13	22.56	22.50	22.56	1
		25	0	22.55	22.57	22.55	1
	16QAM	1	0	22.52	22.56	22.52	1
		1	12	22.72	22.74	22.77	1
		1	24	23.58	23.57	23.59	1
		12	0	21.69	21.71	21.74	2
		12	6	21.62	21.68	21.64	2
		12	13	21.59	21.66	21.65	2
		25	0	21.67	21.66	21.63	2
	64QAM	1	0	21.35	21.42	21.41	2
		1	12	21.64	21.63	21.60	2
		1	24	21.49	21.53	21.52	2
		12	0	20.68	20.70	20.73	3
		12	6	20.60	20.66	20.63	3
		12	13	20.69	20.63	20.69	3
		25	0	20.73	20.75	20.73	3

Band/BW	Modulation	RB Size	RB Offset		Mid CH 23330 Frequency 793 MHz		MPR
14/ 10	QPSK	1	0		23.62		0
		1	24		**23.84**		0
		1	49		23.67		0
		25	0		22.65		1
		25	12		22.61		1
		25	25		22.58		1
		50	0		22.63		1
	16QAM	1	0		22.58		1
		1	24		22.79		1
		1	49		23.64		1
		25	0		21.76		2
		25	12		21.70		2
		25	25		21.67		2
		50	0		21.71		2
	64QAM	1	0		21.43		2
		1	24		21.68		2
		1	49		21.55		2
		25	0		20.75		3
		25	12		20.68		3
		25	25		20.71		3
		50	0		20.81		3

ERP

LTE BAND 14

CHANNEL BANDWIDTH: 5MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G_T-L_C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
23305	790.5	23.8	-1.9	19.75	94.41	3
23330	793	23.79	-1.9	19.74	94.19	3
23355	795.5	23.83	-1.9	19.78	95.06	3

CHANNEL BANDWIDTH: 5MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G_T-L_C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
23305	790.5	23.58	-1.9	19.53	89.74	3
23330	793	23.57	-1.9	19.52	89.54	3
23355	795.5	23.59	-1.9	19.54	89.95	3

CHANNEL BANDWIDTH: 5MHz 64QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G_T-L_C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
23305	790.5	21.64	-1.9	17.59	57.41	3
23330	793	21.63	-1.9	17.58	57.28	3
23355	795.5	21.6	-1.9	17.55	56.89	3

CHANNEL BANDWIDTH: 10MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G_T-L_C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
-	-	-	-	-	-	-
23330	793	23.84	-1.9	19.79	95.28	3
-	-	-	-	-	-	-

CHANNEL BANDWIDTH: 10MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G_T-L_C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
-	-	-	-	-	-	-
23330	793	23.64	-1.9	19.59	90.99	3
-	-	-	-	-	-	-

CHANNEL BANDWIDTH: 10MHz 64QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G_T-L_C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
-	-	-	-	-	-	-
23330	793	21.68	-1.9	17.63	57.94	3
-	-	-	-	-	-	-

REMARKS: ERP Output Power (dBm) = ERP (dBm) -2.15(dB).

3.2 FREQUENCY STABILITY MEASUREMENT

3.2.1 LIMITS OF FREQUENCY STABILIITY MEASUREMENT

The frequency stability of mobile, portable and control transmitters operating in the wideband segment must be 1.25 parts per million or better when AFC is locked to a base station, and 5 parts per million or better when AFC is not locked

3.2.2 TEST PROCEDURE

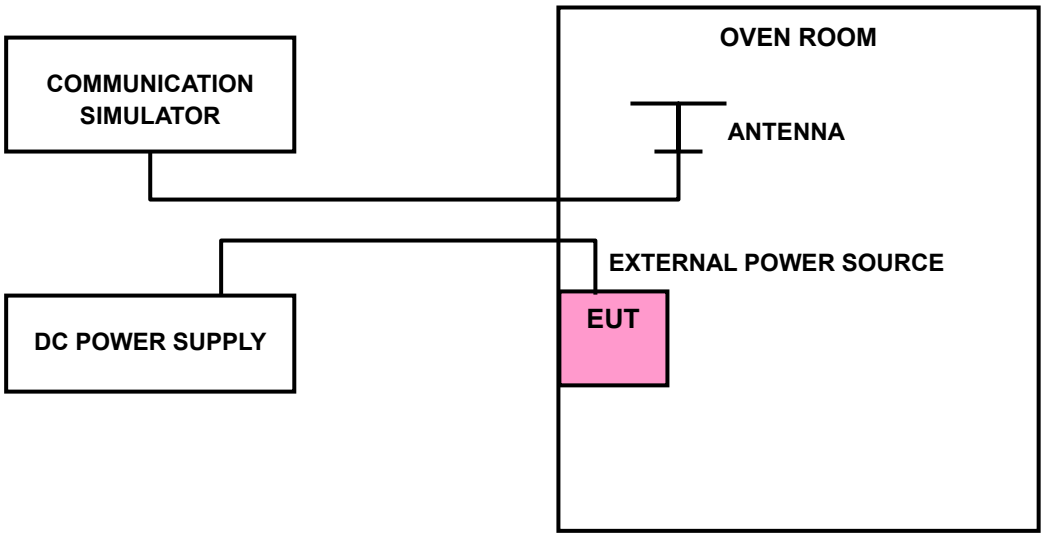
a. Device is placed at the oven room. The oven room could control the temperatures and humidity. Power warm up is at least 15 min and power applied should perform before recording frequency error.

b. EUT is connected the external power supply to control the DC input power. The test voltage range is from minimum to maximum working voltage. Each step shall be record the frequency error rate.

c. The temperature range step is 10 degrees in this test items. All temperature levels shall be hold the ±0.5℃ during the measurement testing. The each temperature step shall be at least 0.5 hours, consider the EUT could be test under the stability condition.

NOTE: The frequency error was recorded frequency error from the communication simulator.

3.2.3 TEST SETUP



3.2.4 TEST RESULTS

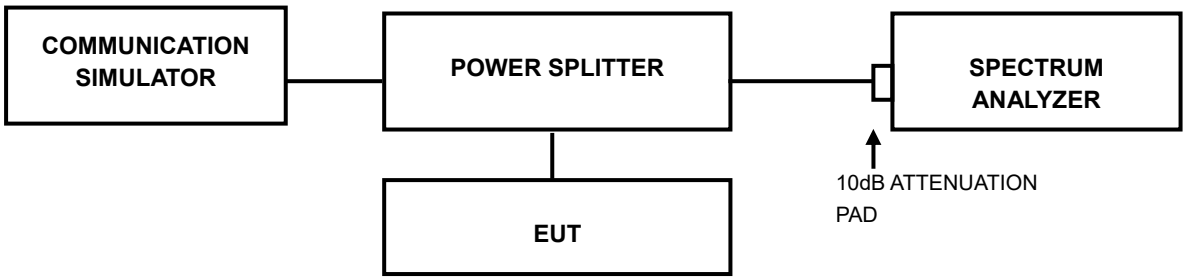
Please Refer to Appendix A Of this test report.

3.3 OCCUPIED BANDWIDTH MEASUREMENT

3.3.1 LIMITS OF OCCUPIED BANDWIDTH MEASUREMENT

The width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5 %of the total mean power of a given emission.

3.3.2 TEST SETUP



3.3.3 TEST PROCEDURES

a. The conducted occupied bandwidth used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer.

b. Use OBW measurement function of Spectrum analyzer to measure 99 % occupied bandwidth.

3.3.4 TEST RESULTS

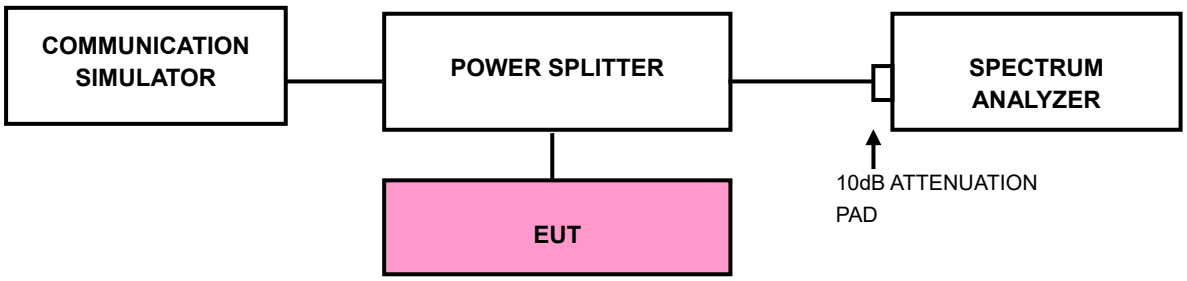
Please Refer to Appendix A Of this test report.

3.4 EMISSION MASK MEASUREMENT

3.4.1 LIMITS OF EMISSION MASK MEASUREMENT

According to FCC part 90.691 shall be tested the emission mask. For any frequency removed from the EA licensee's frequency block by up to and including 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least 116 Log10(f/6.1) decibels or 50 + 10 Log10(P) decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 12.5 kHz.

3.4.2 TEST SETUP



3.4.3 TEST PROCEDURES

a. All measurements were done at low and high operational frequency range.

b. The center frequency of spectrum is the band edge frequency and span is 1~5 MHz.

c. RBW of the spectrum is 10kHz and VBW of the spectrum is 30kHz (GSM/GPRS/ EDGE/LTE bandwidth for (1.4M/3M/5M/10M/15M/20M)1RB/0RB&1RB/MAXRB).

d. The center frequency of spectrum is the band edge frequency and span is 10MHz. RBW of the spectrum is 100kHz and VBW of the spectrum is 300kHz (WCDMA).

e. The center frequency of spectrum is the band edge frequency and span is 1~5 MHz. RBW of the spectrum is ≥1%*EBW kHz and VBW of the spectrum is 3*RBW kHz. (LTE bandwidth 1.4M/3M/5M/10M/15M/20MHz).

f. Record the max trace plot into the test report.

3.4.4 TEST RESULTS

Please Refer to Appendix A Of this test report.

3.5 CONDUCTED SPURIOUS EMISSIONS

3.5.1 LIMITS OF CONDUCTED SPURIOUS EMISSIONS MEASUREMENT

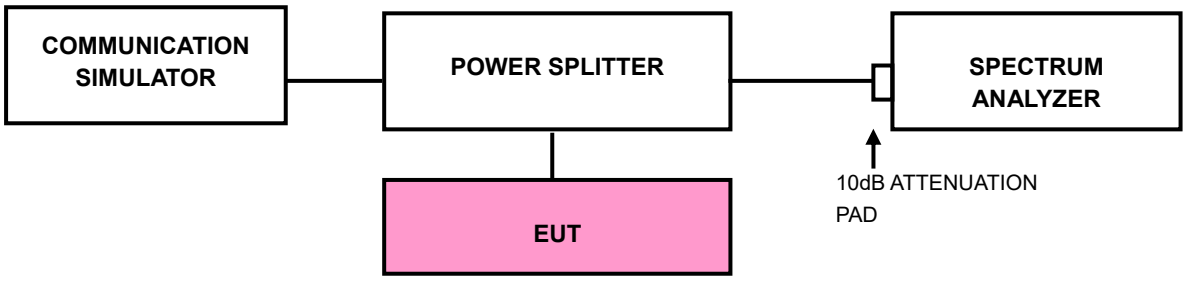
The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least 43 +10 log10(P) dB. The limit of emission equal to –13dBm

3.5.2 TEST PROCEDURE

a. The EUT makes a phone call to the communication simulator. All measurements were done at middle operational frequency range.

b. Measuring frequency range is from 9kHz up to a frequency including its 10th harmonic. 10dB attenuation pad is connected with spectrum. RBW=1MHz and VBW=3MHz are used for conducted emission measurement.

3.5.3 TEST SETUP



3.5.4 TEST RESULTS

NOTE ：The 9K~30MHz amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required in the report.

Please Refer to Appendix A Of this test report.

3.6 RADIATED EMISSION MEASUREMENT

3.6.1 LIMITS OF RADIATED EMISSION MEASUREMENT

(1)The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least 43 +10 log10(P) dB. The limit of emission equal to –13dBm

(2) For operations in the 763–775 MHz and 793–805 MHz bands, all emissions including harmonics in the band 1559– 1610 MHz shall be limited to -70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and -80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth. For the purpose of equipment authorization, a transmitter shall be tested with an antenna that is representative of the type that will be used with the equipment in normal operation.

3.6.2 TEST PROCEDURES

a. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8m height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum polar radiated power. The “Read Value” is the spectrum reading the maximum power value.

b. The substitution horn antenna is substituted for EUT at the same position and signals generator export the CW signal to the substitution antenna via a TX cable. Rotated the Turn Table and moved receiving antenna to find the maximum radiation power. Adjust output power level of S.G to get a Value of spectrum reading equal to “Read Value” of step a. Record the power level of S.G

c. EIRP = Output power level of S.G – TX cable loss + Antenna gain of substitution horn.

d. E.R.P power can be calculated form E.I.R.P power by subtracting the gain of dipole, E.R.P power = E.I.P.R power - 2.15dBi.

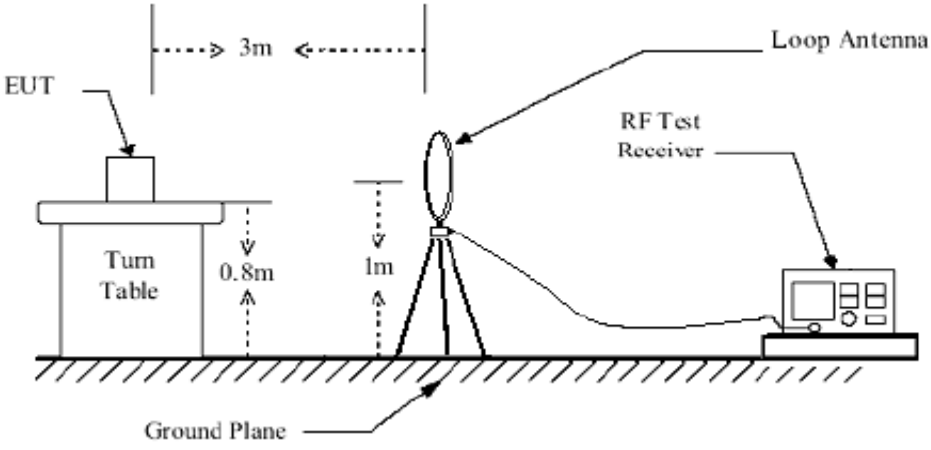
NOTE: The resolution bandwidth of spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz.

3.6.3 DEVIATION FROM TEST STANDARD

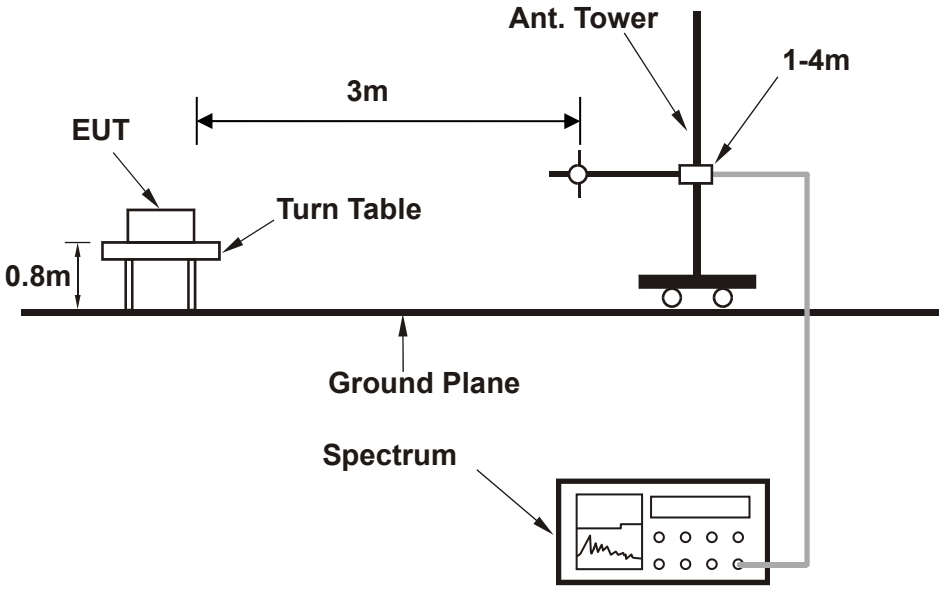
No deviation

3.6.4 TEST SETUP

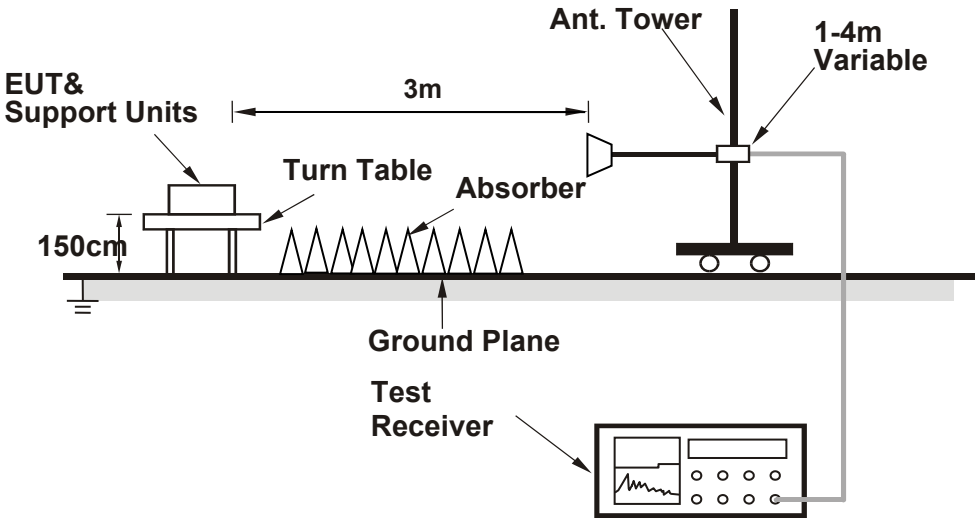
<Below 30MHz>



< Frequency Range 30MHz~1GHz >



< Frequency Range above 1GHz >



For the actual test configuration, please refer to the attached file (Test Setup Photo).

3.6.5 TEST RESULTS

NOTE ：The 9K~30MHz amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required in the report.

BELOW 1GHz WORST-CASE DATA

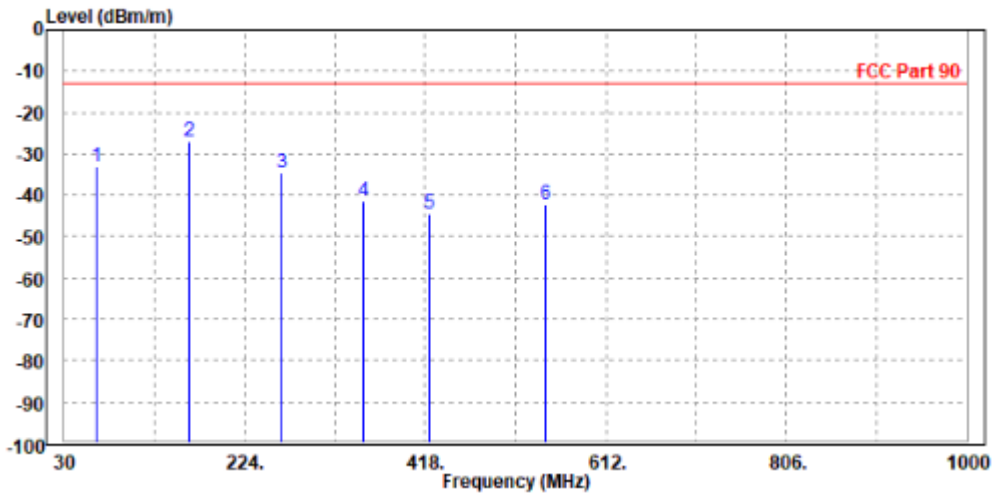
30 MHz – 1GHz data:

LTE Band 14:

CHANNEL BANDWIDTH: 5MHz / QPSK

MODE	TX channel 23330	**FREQUENCY RANGE**	Below 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	AC120V/60Hz
TESTED BY	Jace HU		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

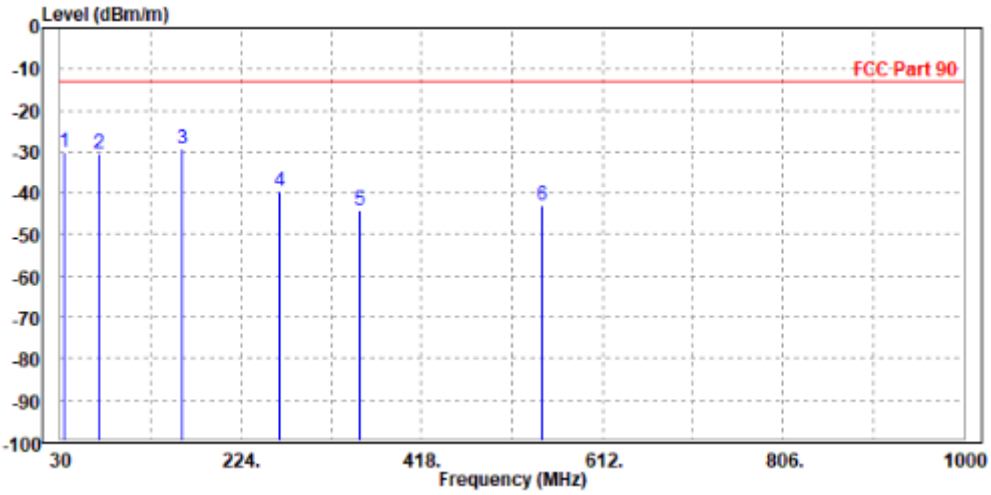
		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1		63.950	-33.23	-41.84	-13.00	-20.23	8.61	Peak	Horizontal
2	PP	164.830	-26.81	-37.83	-13.00	-13.81	11.02	Peak	Horizontal
3		263.770	-34.72	-48.36	-13.00	-21.72	13.64	Peak	Horizontal
4		352.040	-41.41	-56.55	-13.00	-28.41	15.14	Peak	Horizontal
5		422.850	-44.67	-61.30	-13.00	-31.67	16.63	Peak	Horizontal
6		547.010	-42.37	-61.22	-13.00	-29.37	18.85	Peak	Horizontal



c

MODE	TX channel 23330	FREQUENCY RANGE	Below 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC120V/60Hz
TESTED BY	Jace HU		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1		33.880	-29.85	-48.21	-13.00	-16.85	18.36	Peak	Vertical
2		70.740	-30.38	-38.44	-13.00	-17.38	8.06	Peak	Vertical
3	PP	159.980	-29.19	-40.09	-13.00	-16.19	10.90	Peak	Vertical
4		264.740	-39.47	-52.48	-13.00	-26.47	13.01	Peak	Vertical
5		352.040	-43.97	-59.17	-13.00	-30.97	15.20	Peak	Vertical
6		547.010	-43.06	-61.60	-13.00	-30.06	18.54	Peak	Vertical



ABOVE 1GHz

Note: For higher frequency, the emission is too low to be detected.

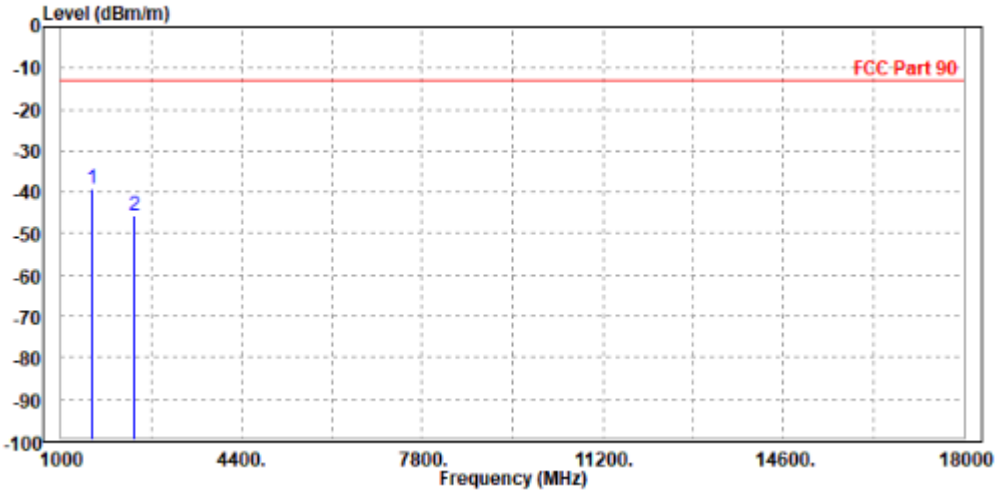
LTE B14

CHANNEL BANDWIDTH: 5MHz / QPSK

CH23305

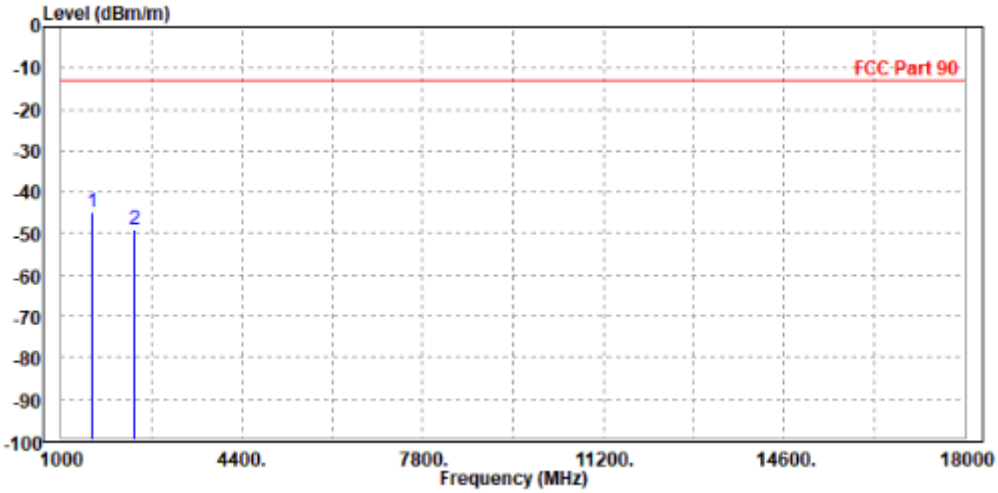
MODE	TX channel 23305	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	AC120V/60Hz
TESTED BY	Star Le		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1 PP	1578.000	-39.26	-41.66	-13.00	-26.26	2.40	Peak	Horizontal
2	2371.500	-45.63	-53.55	-13.00	-32.63	7.92	Peak	Horizontal



MODE	TX channel 23305	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC120V/60Hz
TESTED BY	Star Le		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

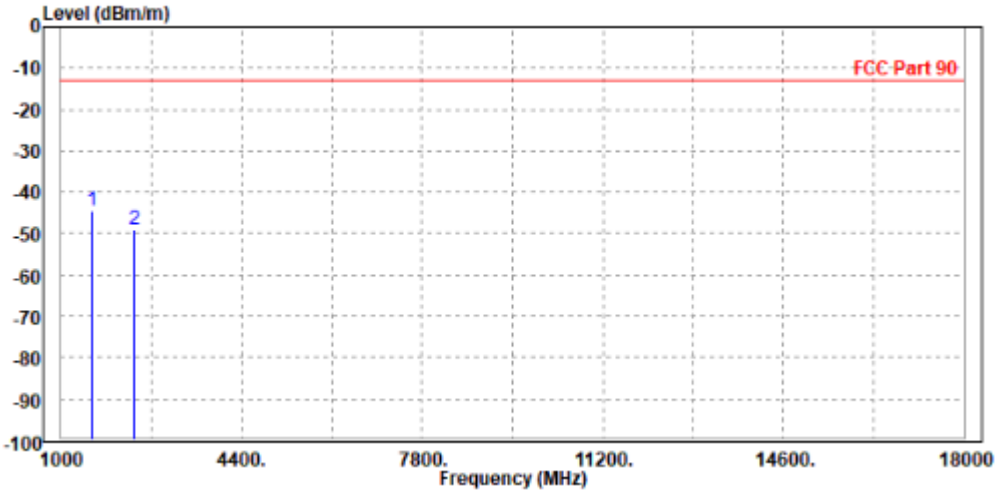
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1 PP	1578.000	-45.01	-47.76	-13.00	-32.01	2.75	Peak	Vertical
2	2371.500	-48.92	-55.86	-13.00	-35.92	6.94	Peak	Vertical



CH23330

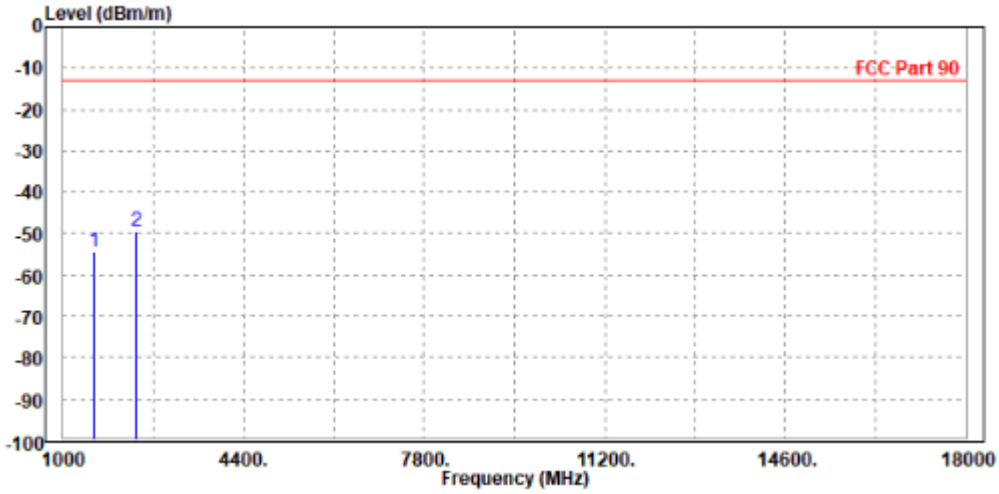
MODE	TX channel 23330	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	AC120V/60Hz
TESTED BY	Star Le		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP	1578.000	-44.48	-46.88	-13.00	-31.48	2.40	Peak	Horizontal
2		2379.000	-49.22	-57.15	-13.00	-36.22	7.93	Peak	Horizontal



MODE	TX channel 23330	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC120V/60Hz
TESTED BY	Star Le		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

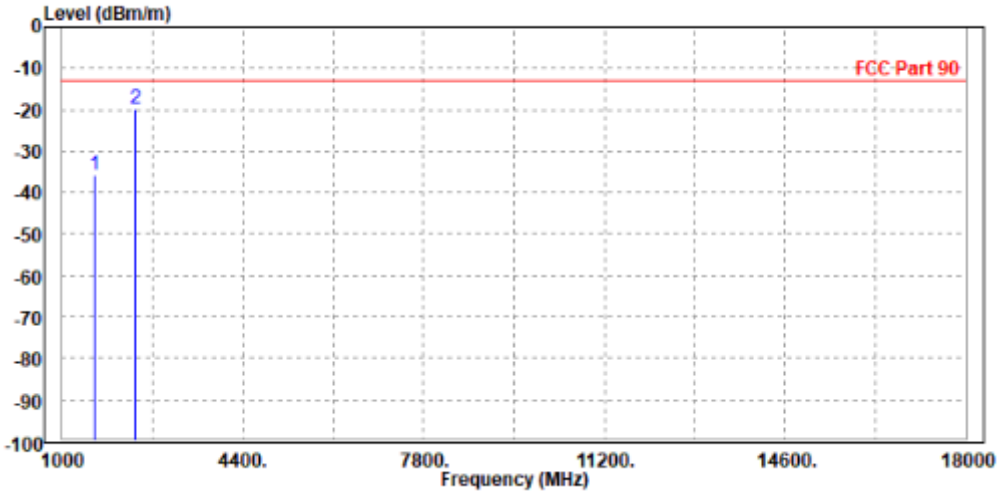
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1578.000	-54.22	-56.97	-13.00	-41.22	2.75	Peak	Vertical
2 PP	2379.000	-49.58	-56.52	-13.00	-36.58	6.94	Peak	Vertical



CH23355

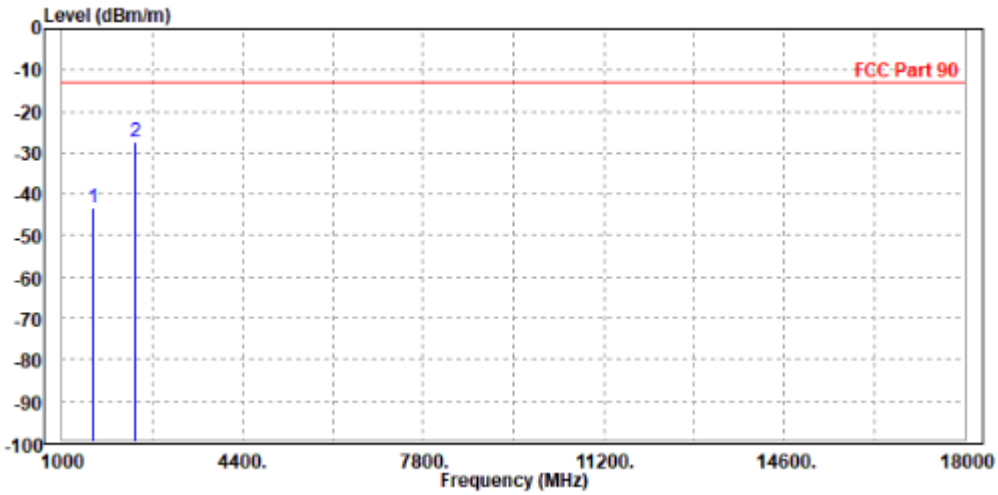
MODE	TX channel 23355	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	AC120V/60Hz
TESTED BY	Star Le		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1		1595.000	-35.58	-38.18	-13.00	-22.58	2.60	Peak	Horizontal
2	PP	2386.500	-19.94	-27.88	-13.00	-6.94	7.94	Peak	Horizontal



MODE	TX channel 23355	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC120V/60Hz
TESTED BY	Star Le		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1		1591.000	-43.19	-46.06	-13.00	-30.19	2.87	Peak	Vertical
2	PP	2386.500	-27.28	-34.23	-13.00	-14.28	6.95	Peak	Vertical

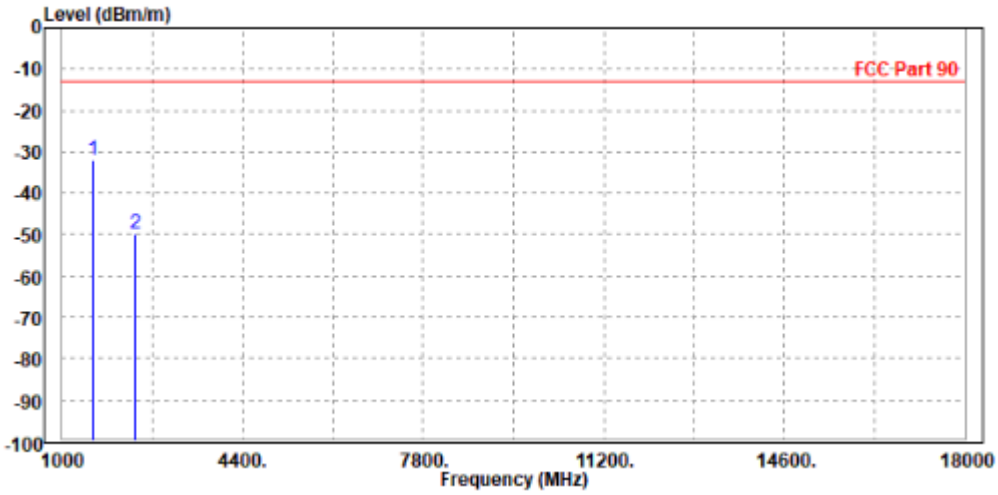


CHANNEL BANDWIDTH: 10MHz / QPSK

CH23330

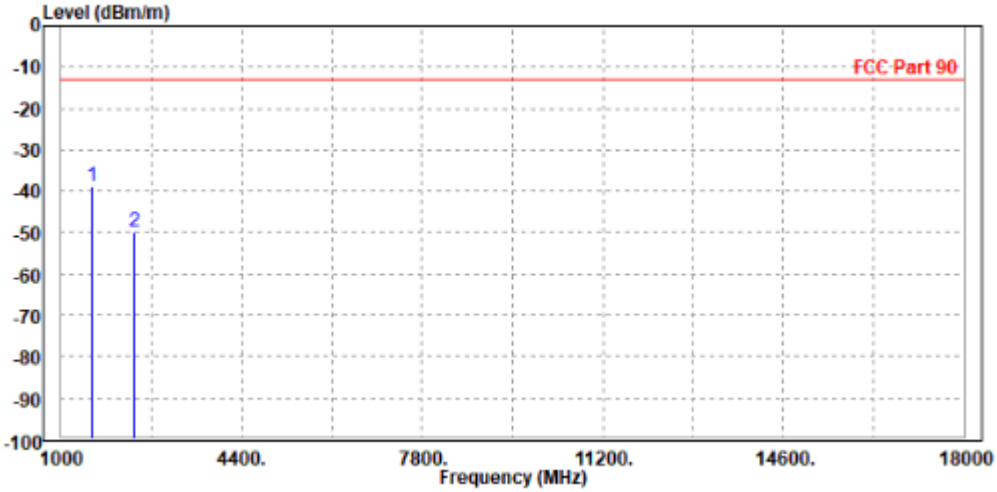
MODE	TX channel 23330	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	AC120V/60Hz
TESTED BY	Star Le		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP	1578.000	-31.81	-34.21	-13.00	-18.81	2.40	Peak	Horizontal
2		2379.000	-49.69	-57.62	-13.00	-36.69	7.93	Peak	Horizontal



MODE	TX channel 23330	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC120V/60Hz
TESTED BY	Star Le		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1 PP	1578.000	-38.92	-41.67	-13.00	-25.92	2.75	Peak	Vertical
2	2379.000	-49.83	-56.77	-13.00	-36.83	6.94	Peak	Vertical

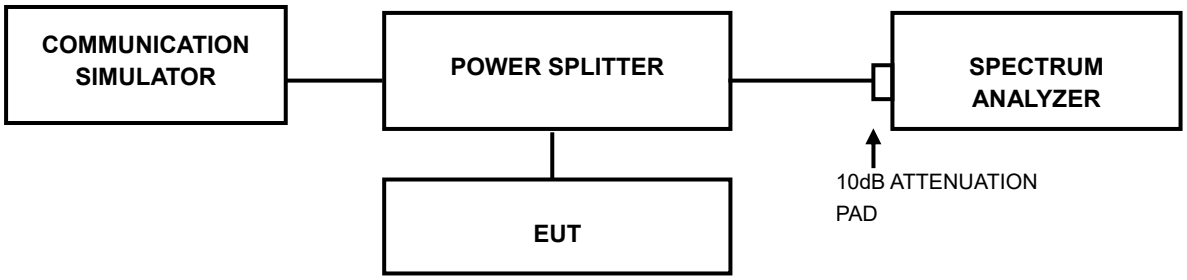


3.7 PEAK TO AVERAGE RATIO

3.7.1 LIMITS OF PEAK TO AVERAGE RATIO MEASUREMENT

In measuring transmissions in this band using an average power technique, the peak to-average ratio (PAR) of the transmission may not exceed 13 dB

3.7.2 TEST SETUP



3.7.3 TEST PROCEDURES

1. Set resolution/measurement bandwidth ≥ signal's occupied bandwidth;
2. Set the number of counts to a value that stabilizes the measured CCDF curve;
3. Record the maximum PAPR level associated with a probability of 0.1%.

3.7.4 TEST RESULTS

Please Refer to Appendix A Of this test report.

4 INFORMATION ON THE TESTING LABORATORIES

We, BV 7LAYERS COMMUNICATIONS TECHNOLOGY (SHENZHEN) CO. LTD., were founded in 2015 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

Shenzhen EMC/RF Lab:
Tel: +86-755-88696566
Fax: +86-755-88696577

Email: customerservice.sw@bureauveritas.com
Web Site: www.adt.com.tw

The address and road map of all our labs can be found in our web site also.

5 MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

No modifications were made to the EUT by the lab during the test.

APPENDIX A

LTE Band14

Frequency Stability

B14_5MHz

Test Result

Band: 14 / Bandwidth: 5MHz									
Modulation	Frequency (MHz)	RB Allocation		Temp. (°C)	Voltage (VDC)	Freq. Error (Hz)	Freq. vs. Rated (ppm)		Verdict
		Size	Offset				Result	Limit	
QPSK	790.5	25	0	20	3.27	-8.17	-0.01	-2.5 to 2.5	Pass
					3.85	-9.21	-0.01	-2.5 to 2.5	Pass
					4.43	-5.95	-0.01	-2.5 to 2.5	Pass
				-10	3.85	-5.81	-0.01	-2.5 to 2.5	Pass
				0	3.85	-5.51	-0.01	-2.5 to 2.5	Pass
				10	3.85	-4.55	-0.01	-2.5 to 2.5	Pass
				30	3.85	-7.00	-0.01	-2.5 to 2.5	Pass
				40	3.85	-6.68	-0.01	-2.5 to 2.5	Pass
				50	3.85	-6.94	-0.01	-2.5 to 2.5	Pass
	793	25	0	20	3.27	-4.86	-0.01	-2.5 to 2.5	Pass
					3.85	-10.39	-0.01	-2.5 to 2.5	Pass
					4.43	-8.00	-0.01	-2.5 to 2.5	Pass
				-10	3.85	-5.46	-0.01	-2.5 to 2.5	Pass
				0	3.85	-4.22	-0.01	-2.5 to 2.5	Pass
				10	3.85	-3.45	-0.00	-2.5 to 2.5	Pass
				30	3.85	-2.69	-0.00	-2.5 to 2.5	Pass
				40	3.85	-4.39	-0.01	-2.5 to 2.5	Pass
				50	3.85	-4.92	-0.01	-2.5 to 2.5	Pass
	795.5	25	0	20	3.27	-1.86	-0.00	-2.5 to 2.5	Pass
					3.85	-6.39	-0.01	-2.5 to 2.5	Pass
					4.43	-9.96	-0.01	-2.5 to 2.5	Pass
				-10	3.85	-5.04	-0.01	-2.5 to 2.5	Pass
				0	3.85	-4.89	-0.01	-2.5 to 2.5	Pass
				10	3.85	-4.76	-0.01	-2.5 to 2.5	Pass
				30	3.85	-3.03	-0.00	-2.5 to 2.5	Pass
				40	3.85	-3.12	-0.00	-2.5 to 2.5	Pass
				50	3.85	-4.88	-0.01	-2.5 to 2.5	Pass
16QAM	790.5	25	0	20	3.27	-4.93	-0.01	-2.5 to 2.5	Pass
					3.85	-5.78	-0.01	-2.5 to 2.5	Pass
					4.43	-7.14	-0.01	-2.5 to 2.5	Pass
				-10	3.85	-7.40	-0.01	-2.5 to 2.5	Pass
				0	3.85	-7.62	-0.01	-2.5 to 2.5	Pass
				10	3.85	-5.78	-0.01	-2.5 to 2.5	Pass
				30	3.85	-3.06	-0.00	-2.5 to 2.5	Pass
				40	3.85	-5.19	-0.01	-2.5 to 2.5	Pass
				50	3.85	-3.19	-0.00	-2.5 to 2.5	Pass
	793	25	0	20	3.27	-5.54	-0.01	-2.5 to 2.5	Pass
					3.85	-3.71	-0.00	-2.5 to 2.5	Pass

					4.43	-8.07	-0.01	-2.5 to 2.5	Pass
				-10	3.85	-4.03	-0.01	-2.5 to 2.5	Pass
				0	3.85	-3.16	-0.00	-2.5 to 2.5	Pass
				10	3.85	-4.39	-0.01	-2.5 to 2.5	Pass
				30	3.85	-4.25	-0.01	-2.5 to 2.5	Pass
				40	3.85	-9.46	-0.01	-2.5 to 2.5	Pass
				50	3.85	-2.69	-0.00	-2.5 to 2.5	Pass
	795.5	25	0	20	3.27	-5.15	-0.01	-2.5 to 2.5	Pass
					3.85	-6.28	-0.01	-2.5 to 2.5	Pass
					4.43	-7.62	-0.01	-2.5 to 2.5	Pass
				-10	3.85	-6.25	-0.01	-2.5 to 2.5	Pass
				0	3.85	-1.93	-0.00	-2.5 to 2.5	Pass
				10	3.85	-4.22	-0.01	-2.5 to 2.5	Pass
				30	3.85	-4.91	-0.01	-2.5 to 2.5	Pass
				40	3.85	-3.83	-0.00	-2.5 to 2.5	Pass
				50	3.85	-3.15	-0.00	-2.5 to 2.5	Pass
64QAM	790.5	25	0	20	3.27	-5.74	-0.01	-2.5 to 2.5	Pass
					3.85	-8.21	-0.01	-2.5 to 2.5	Pass
					4.43	-6.05	-0.01	-2.5 to 2.5	Pass
				-10	3.85	-6.77	-0.01	-2.5 to 2.5	Pass
				0	3.85	-5.49	-0.01	-2.5 to 2.5	Pass
				10	3.85	-5.31	-0.01	-2.5 to 2.5	Pass
				30	3.85	-1.56	-0.00	-2.5 to 2.5	Pass
				40	3.85	-5.24	-0.01	-2.5 to 2.5	Pass
				50	3.85	-7.24	-0.01	-2.5 to 2.5	Pass
	793	25	0	20	3.27	-6.01	-0.01	-2.5 to 2.5	Pass
					3.85	-4.35	-0.01	-2.5 to 2.5	Pass
					4.43	-5.19	-0.01	-2.5 to 2.5	Pass
				-10	3.85	-6.47	-0.01	-2.5 to 2.5	Pass
				0	3.85	-6.92	-0.01	-2.5 to 2.5	Pass
				10	3.85	-8.15	-0.01	-2.5 to 2.5	Pass
				30	3.85	-6.39	-0.01	-2.5 to 2.5	Pass
				40	3.85	-1.96	-0.00	-2.5 to 2.5	Pass
				50	3.85	-6.48	-0.01	-2.5 to 2.5	Pass
	795.5	25	0	20	3.27	-5.87	-0.01	-2.5 to 2.5	Pass
					3.85	-5.46	-0.01	-2.5 to 2.5	Pass
					4.43	-6.05	-0.01	-2.5 to 2.5	Pass
				-10	3.85	-8.55	-0.01	-2.5 to 2.5	Pass
				0	3.85	-4.08	-0.01	-2.5 to 2.5	Pass
				10	3.85	-4.29	-0.01	-2.5 to 2.5	Pass
				30	3.85	-10.03	-0.01	-2.5 to 2.5	Pass
				40	3.85	-3.50	-0.00	-2.5 to 2.5	Pass
				50	3.85	-3.39	-0.00	-2.5 to 2.5	Pass

B14_10MHz

Test Result

Band: 14 / Bandwidth: 10MHz									
Modulation	Frequency (MHz)	RB Allocation		Temp. (°C)	Voltage (VDC)	Freq. Error (Hz)	Freq. vs. Rated (ppm)		Verdict
		Size	Offset				Result	Limit	
QPSK	793	50	0	20	3.27	-9.20	-0.01	-2.5 to 2.5	Pass

					3.85	-6.07	-0.01	-2.5 to 2.5	Pass
					4.43	-6.42	-0.01	-2.5 to 2.5	Pass
				-10	3.85	-6.94	-0.01	-2.5 to 2.5	Pass
				0	3.85	-4.05	-0.01	-2.5 to 2.5	Pass
				10	3.85	-7.34	-0.01	-2.5 to 2.5	Pass
				30	3.85	-8.60	-0.01	-2.5 to 2.5	Pass
				40	3.85	-5.96	-0.01	-2.5 to 2.5	Pass
				50	3.85	-8.91	-0.01	-2.5 to 2.5	Pass
16QAM	793	50	0	20	3.27	-6.35	-0.01	-2.5 to 2.5	Pass
					3.85	-8.27	-0.01	-2.5 to 2.5	Pass
					4.43	-6.91	-0.01	-2.5 to 2.5	Pass
				-10	3.85	-7.84	-0.01	-2.5 to 2.5	Pass
				0	3.85	-6.15	-0.01	-2.5 to 2.5	Pass
				10	3.85	-4.99	-0.01	-2.5 to 2.5	Pass
				30	3.85	-7.67	-0.01	-2.5 to 2.5	Pass
				40	3.85	-8.83	-0.01	-2.5 to 2.5	Pass
				50	3.85	-7.51	-0.01	-2.5 to 2.5	Pass
64QAM	793	50	0	20	3.27	-5.72	-0.01	-2.5 to 2.5	Pass
					3.85	-7.47	-0.01	-2.5 to 2.5	Pass
					4.43	-4.41	-0.01	-2.5 to 2.5	Pass
				-10	3.85	-7.77	-0.01	-2.5 to 2.5	Pass
				0	3.85	-7.94	-0.01	-2.5 to 2.5	Pass
				10	3.85	-5.14	-0.01	-2.5 to 2.5	Pass
				30	3.85	-10.11	-0.01	-2.5 to 2.5	Pass
				40	3.85	-8.67	-0.01	-2.5 to 2.5	Pass
				50	3.85	-9.04	-0.01	-2.5 to 2.5	Pass

99% & 26dB Bandwidth

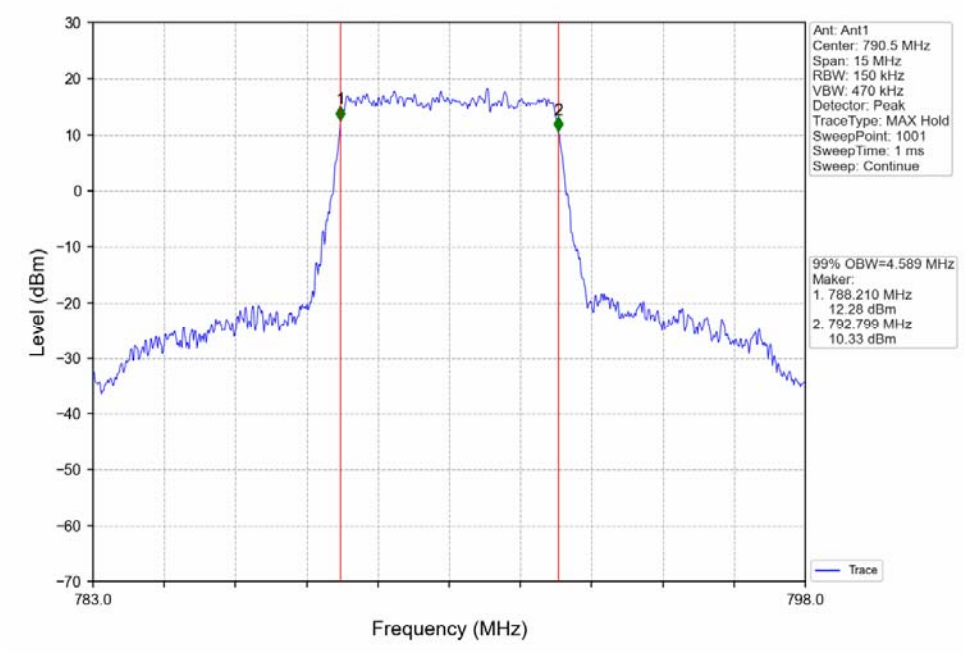
99%_OBW

Test Result

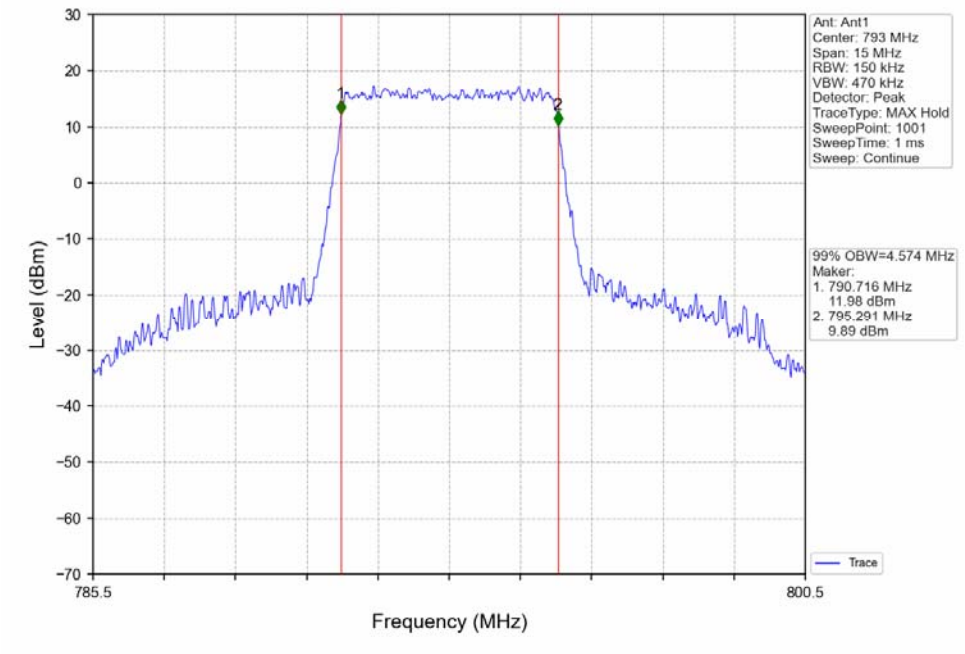
Band: 14 / NTNV						
Bandwidth (MHz)	Modulation	Frequency (MHz)	RB Allocation		99% Occupied Bandwidth (MHz)	Verdict
			Size	Offset	Result	
5	QPSK	790.5	25	0	4.589	Pass
		793	25	0	4.574	Pass
		795.5	25	0	4.558	Pass
	16QAM	790.5	25	0	4.560	Pass
		793	25	0	4.589	Pass
		795.5	25	0	4.598	Pass
	64QAM	790.5	25	0	4.561	Pass
		793	25	0	4.583	Pass
		795.5	25	0	4.569	Pass
10	QPSK	/	/	/	/	Pass
		793	50	0	9.101	Pass
		/	/	/	/	Pass
	16QAM	/	/	/	/	Pass
		793	50	0	9.075	Pass
		/	/	/	/	Pass
	64QAM	/	/	/	/	Pass
		793	50	0	9.089	Pass
		/	/	/	/	Pass

Test Graph

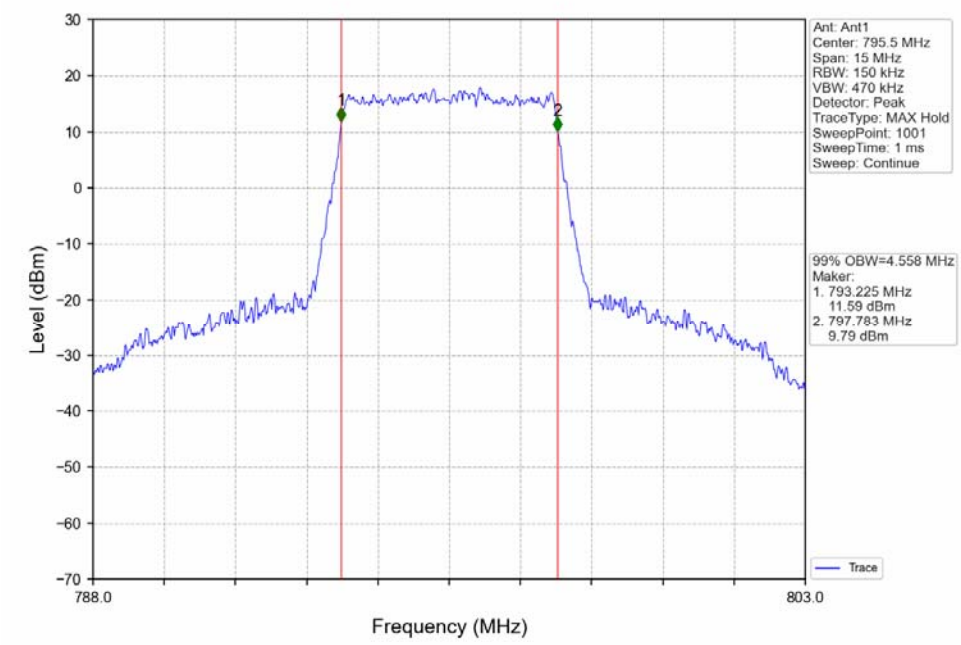
Band14_5MHz_QPSK_LCH_790.5MHz_RB_25_0_NTNV



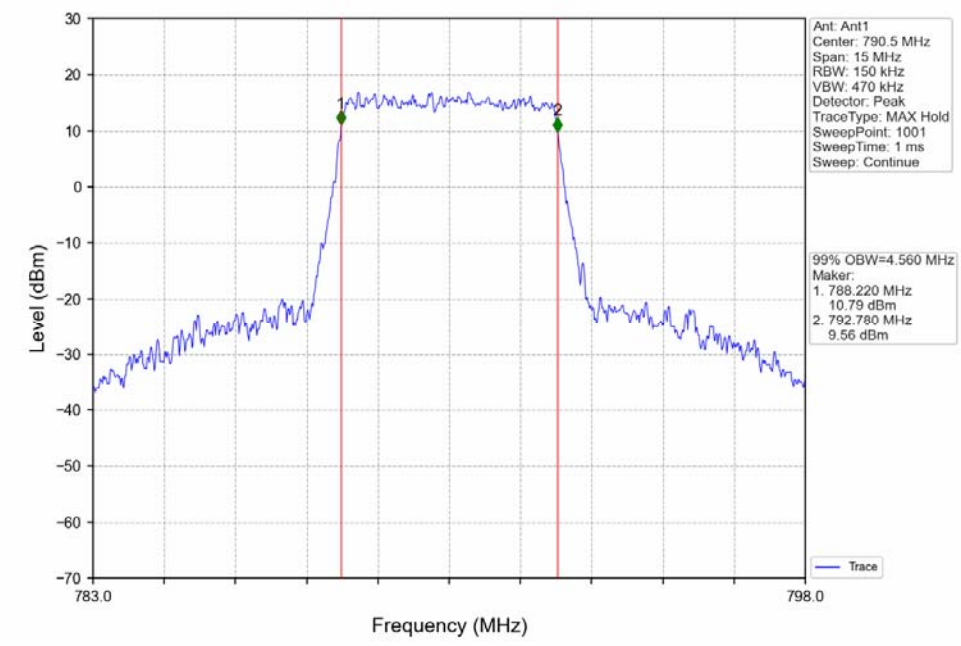
Band14_5MHz_QPSK_MCH_793MHz_RB_25_0_NTNV



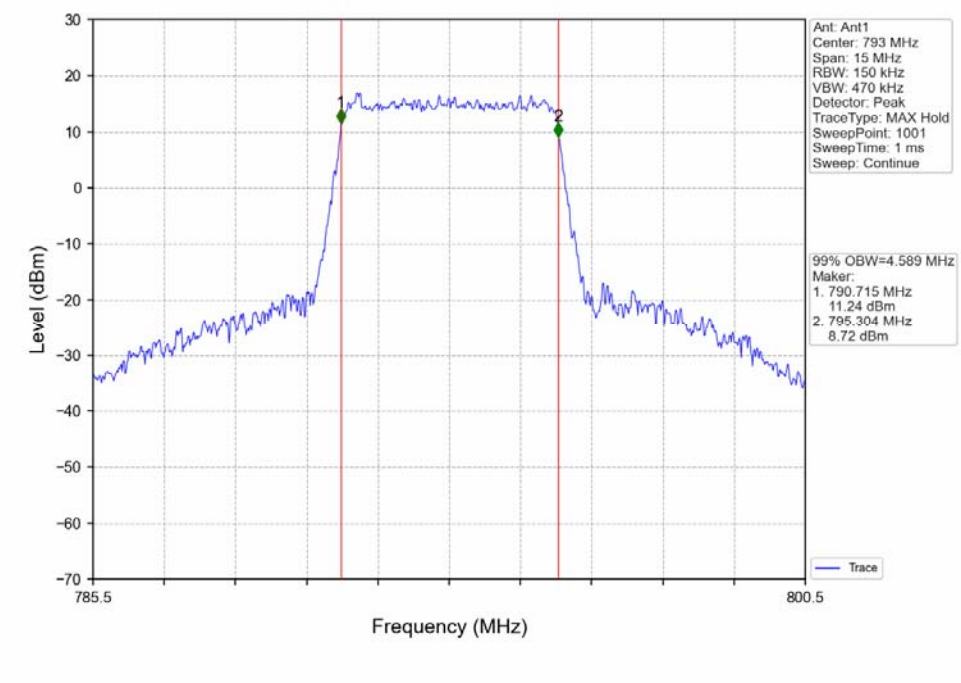
Band14_5MHz_QPSK_HCH_795.5MHz_RB_25_0_NTNV



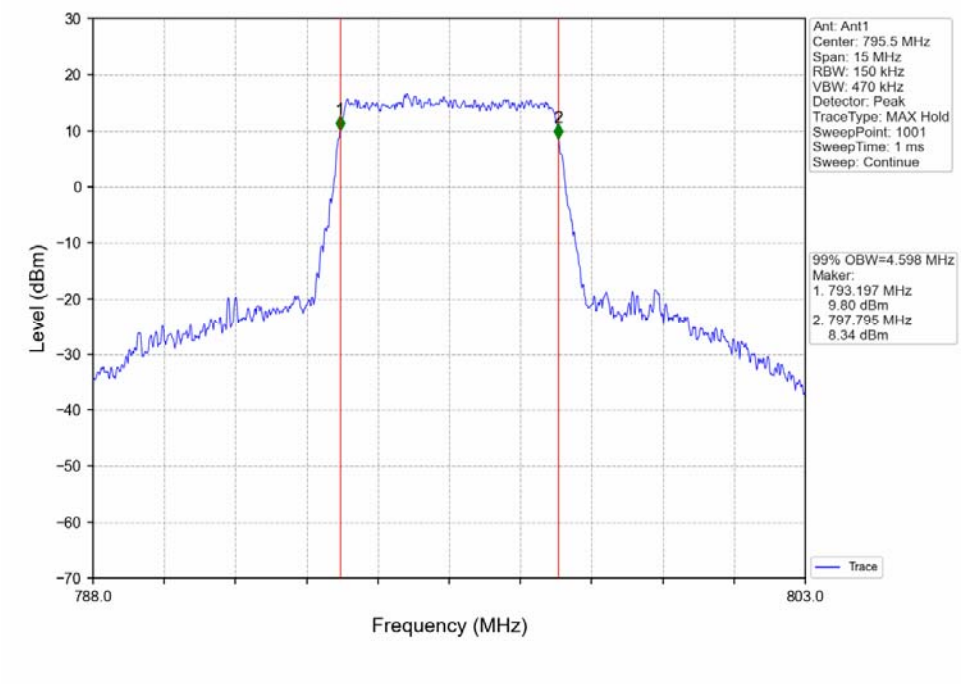
Band14_5MHz_16QAM_LCH_790.5MHz_RB_25_0_NTNV



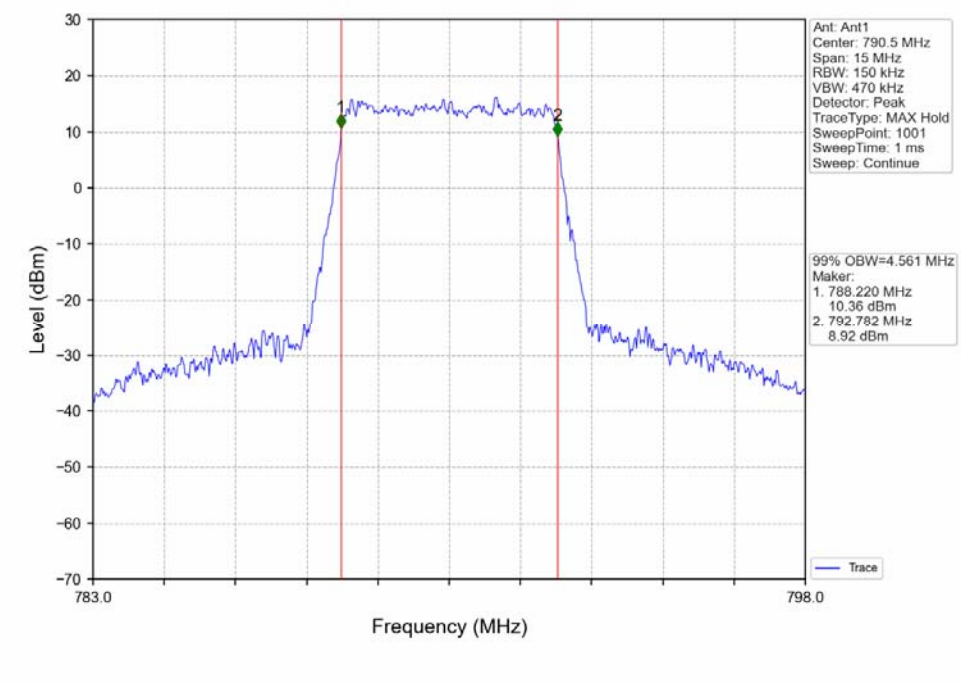
Band14_5MHz_16QAM_MCH_793MHz_RB_25_0_NTNV



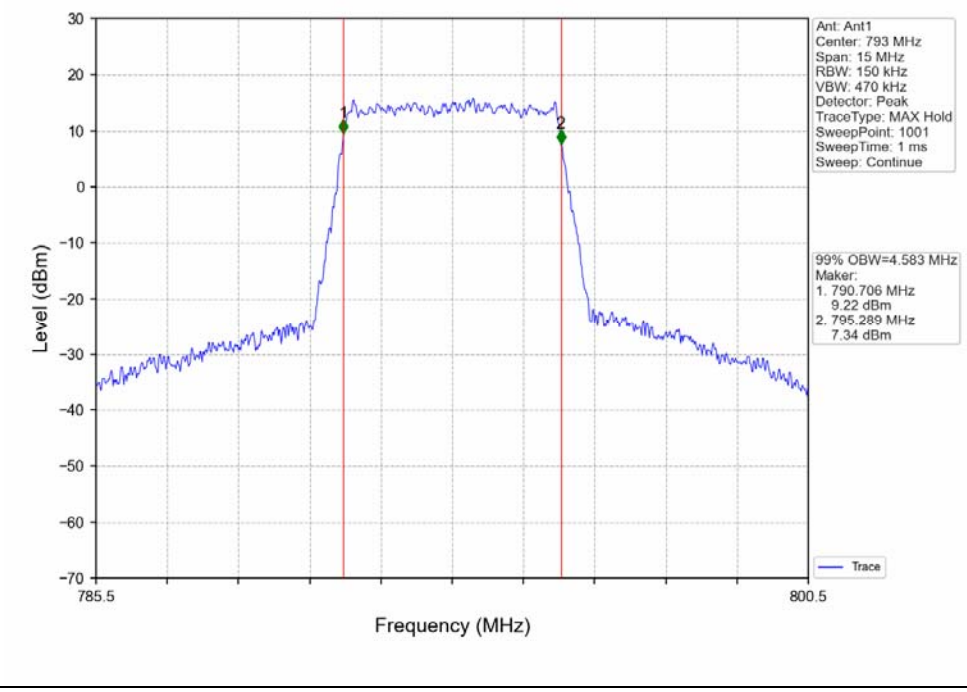
Band14_5MHz_16QAM_HCH_795.5MHz_RB_25_0_NTNV



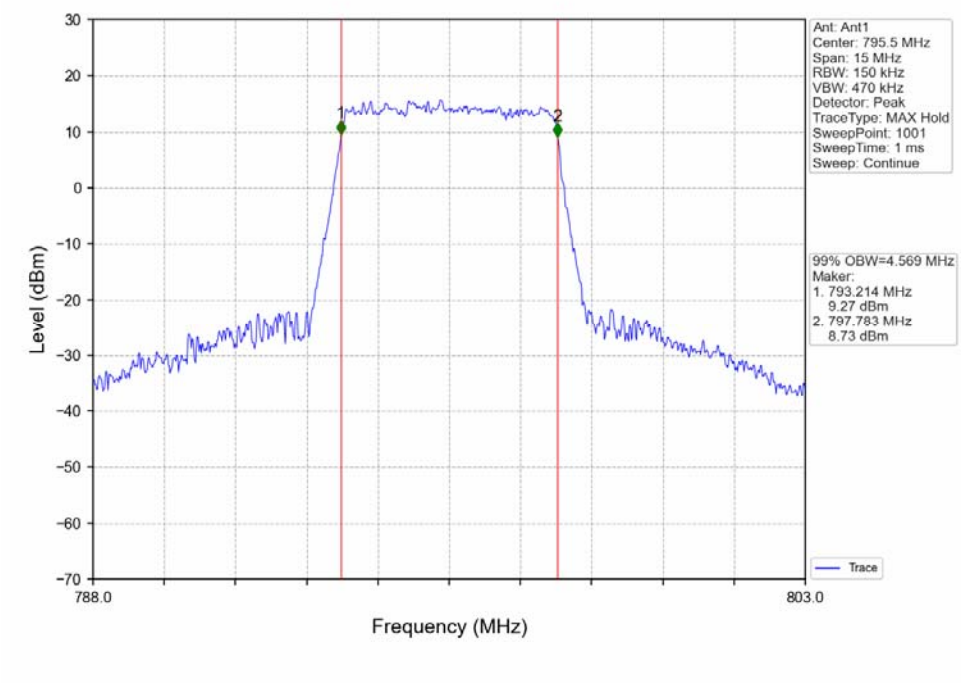
Band14_5MHz_64QAM_LCH_790.5MHz_RB_25_0_NTNV



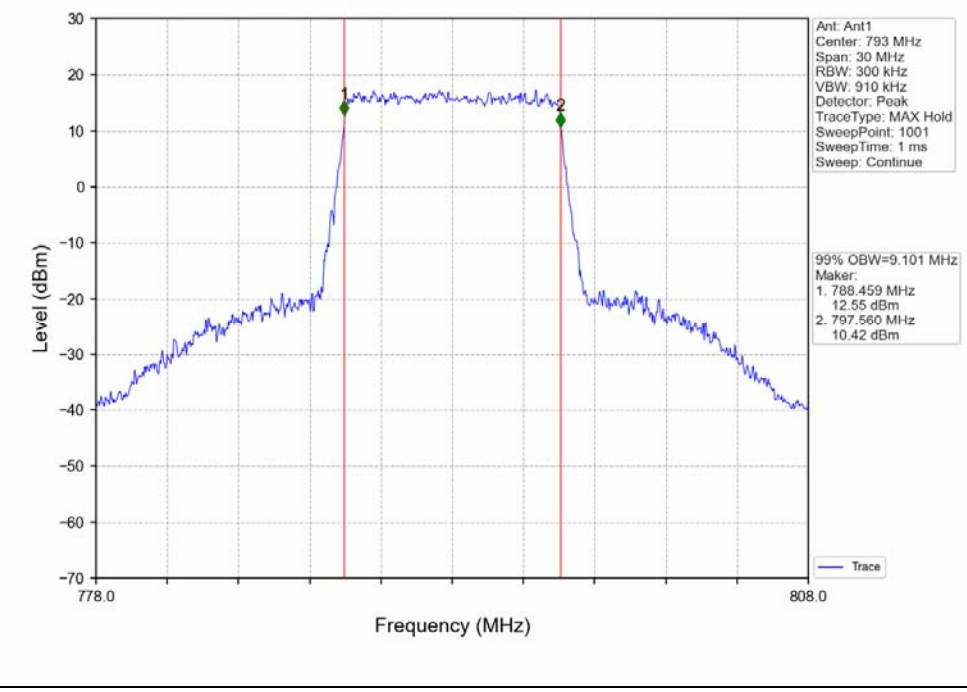
Band14_5MHz_64QAM_MCH_793MHz_RB_25_0_NTNV



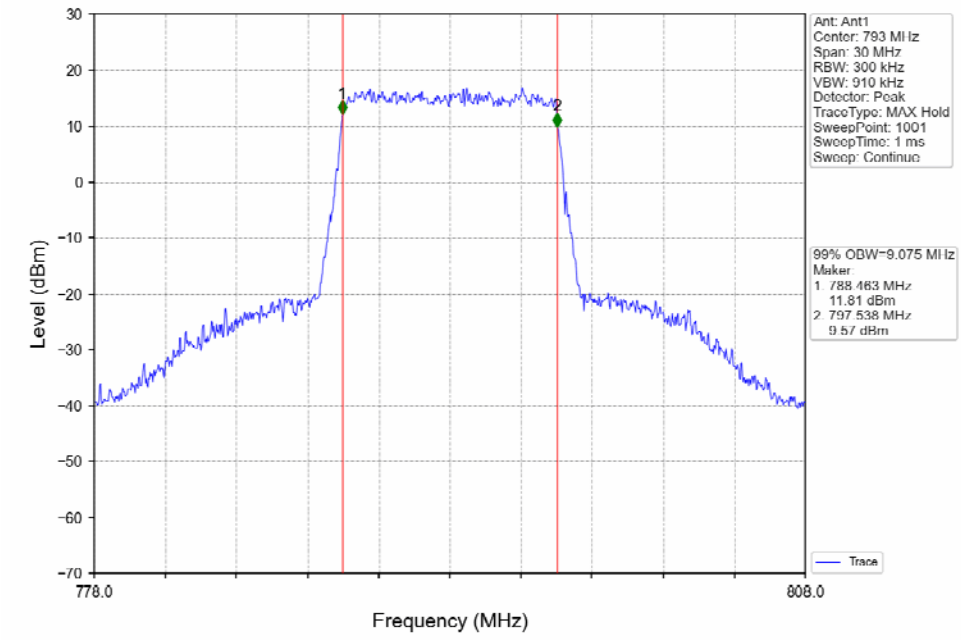
Band14_5MHz_64QAM_HCH_795.5MHz_RB_25_0_NTNV



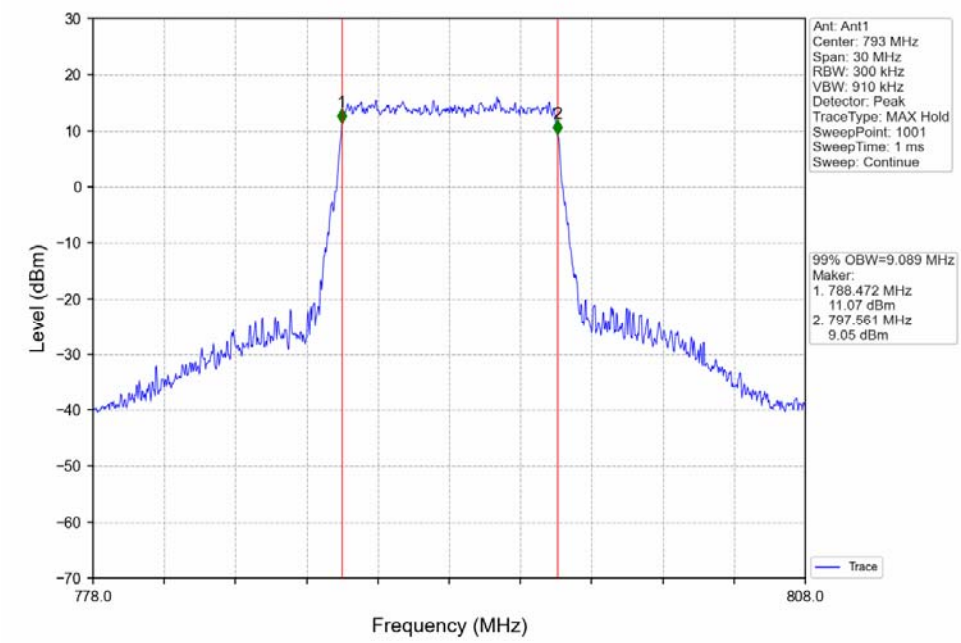
Band14_10MHz_QPSK_MCH_793MHz_RB_50_0_NTNV



Band14_10MHz_16QAM_MCH_793MHz_RB_50_0_NTNV



Band14_10MHz_64QAM_MCH_793MHz_RB_50_0_NTNV



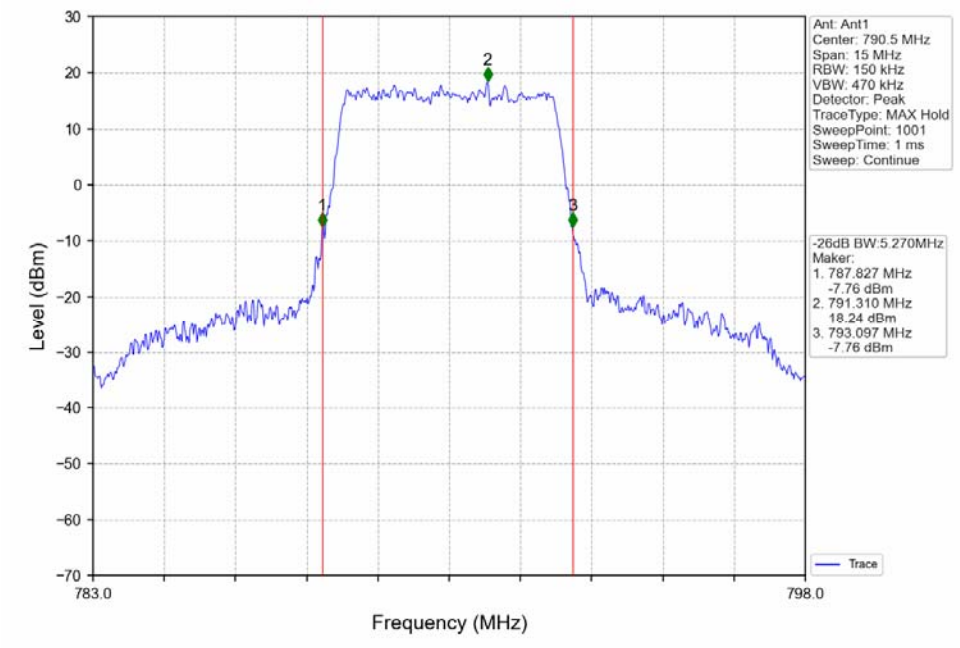
26DB_BW

Test Result

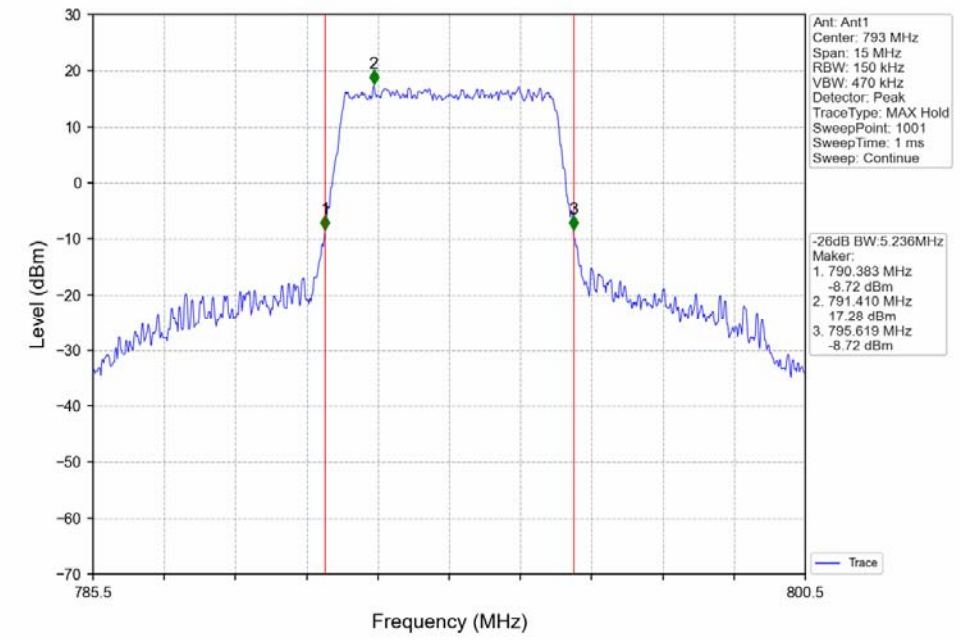
Band: 14 / NTNV						
Bandwidth (MHz)	Modulation	Frequency (MHz)	RB Allocation		26dB Bandwidth (MHz)	Verdict
			Size	Offset	Result	
5	QPSK	790.5	25	0	5.270	Pass
		793	25	0	5.236	Pass
		795.5	25	0	5.267	Pass
	16QAM	790.5	25	0	5.237	Pass
		793	25	0	5.261	Pass
		795.5	25	0	5.289	Pass
	64QAM	790.5	25	0	5.289	Pass
		793	25	0	5.309	Pass
		795.5	25	0	5.256	Pass
10	QPSK	/	/	/	/	Pass
		793	50	0	10.317	Pass
		/	/	/	/	Pass
	16QAM	/	/	/	/	Pass
		793	50	0	10.271	Pass
		/	/	/	/	Pass
	64QAM	/	/	/	/	Pass
		793	50	0	10.215	Pass
		/	/	/	/	Pass

Test Graph

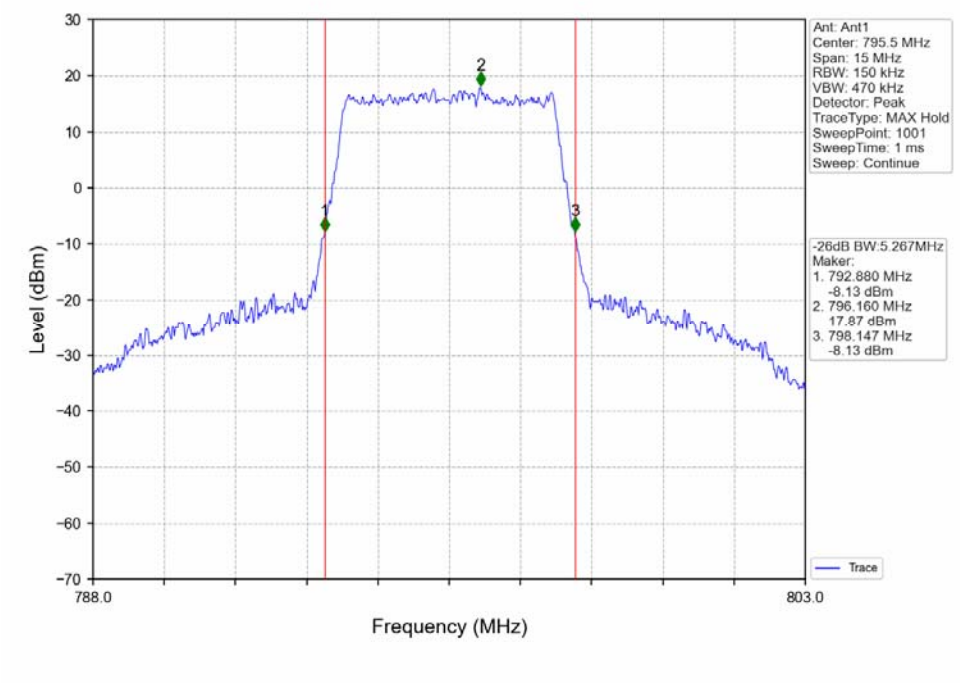
Band14_5MHz_QPSK_LCH_790.5MHz_RB_25_0_NTNV



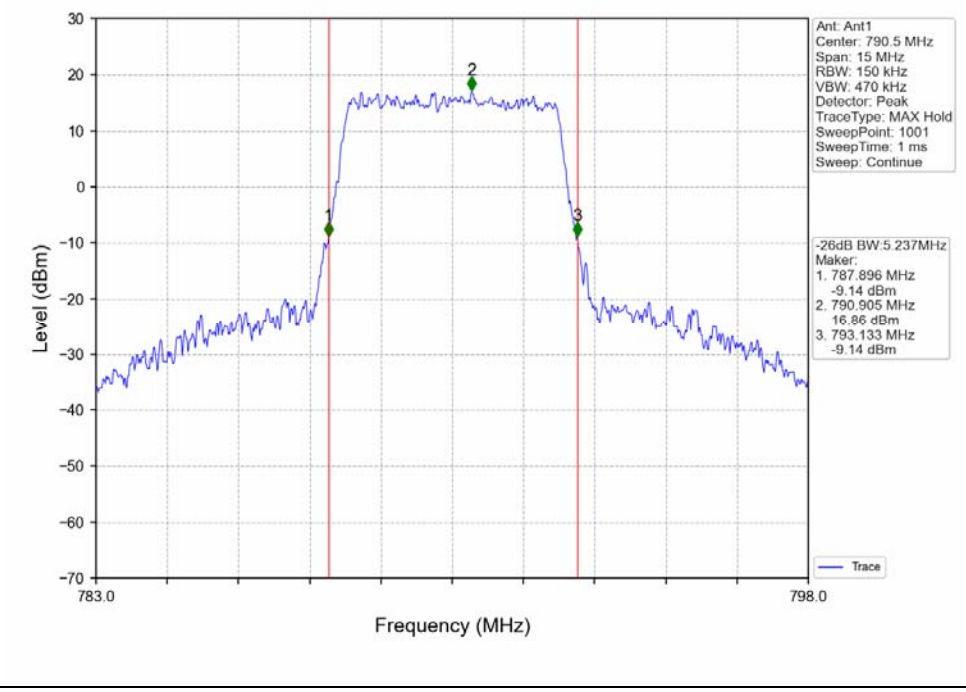
Band14_5MHz_QPSK_MCH_793MHz_RB_25_0_NTNV



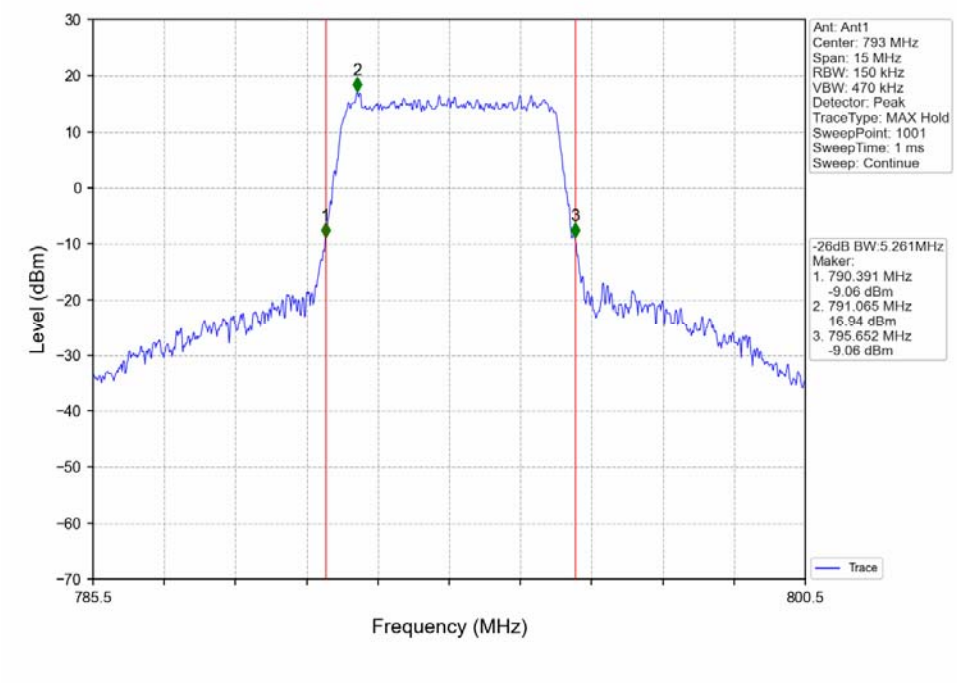
Band14_5MHz_QPSK_HCH_795.5MHz_RB_25_0_NTNV



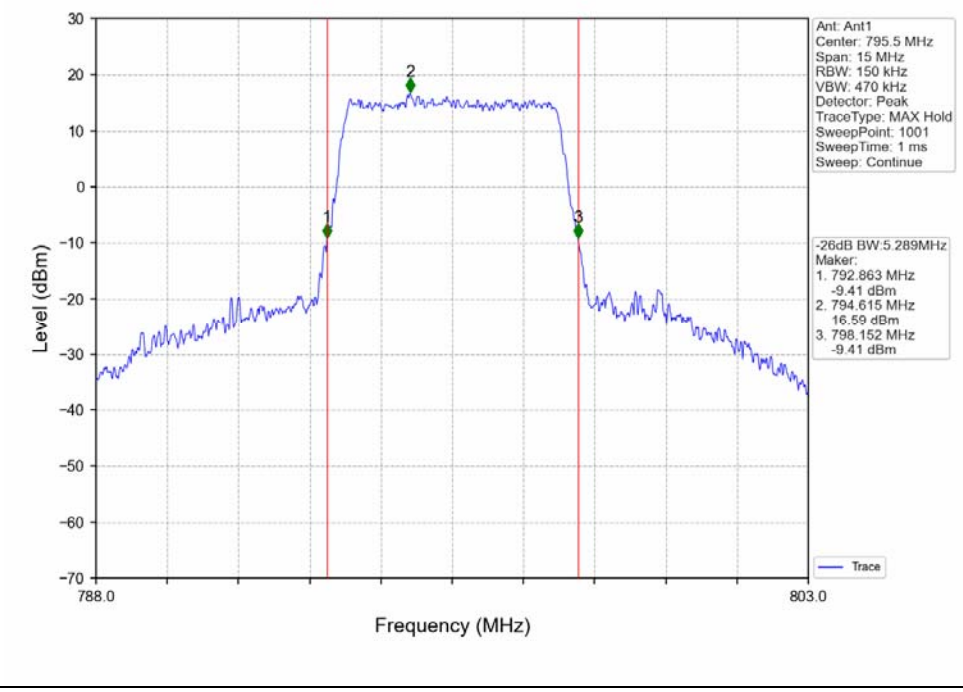
Band14_5MHz_16QAM_LCH_790.5MHz_RB_25_0_NTNV



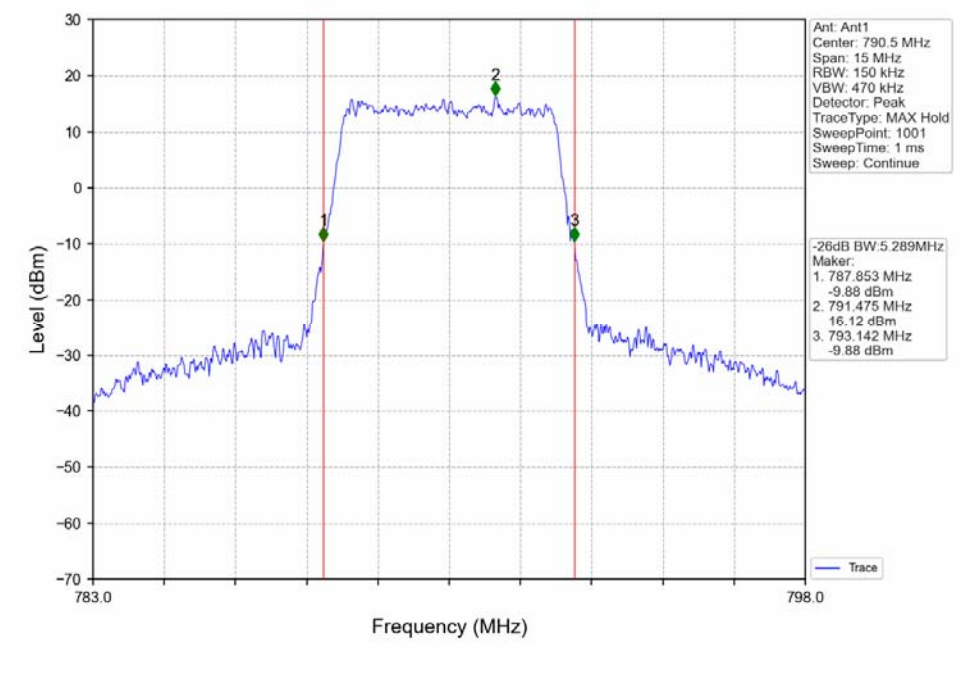
Band14_5MHz_16QAM_MCH_793MHz_RB_25_0_NTNV



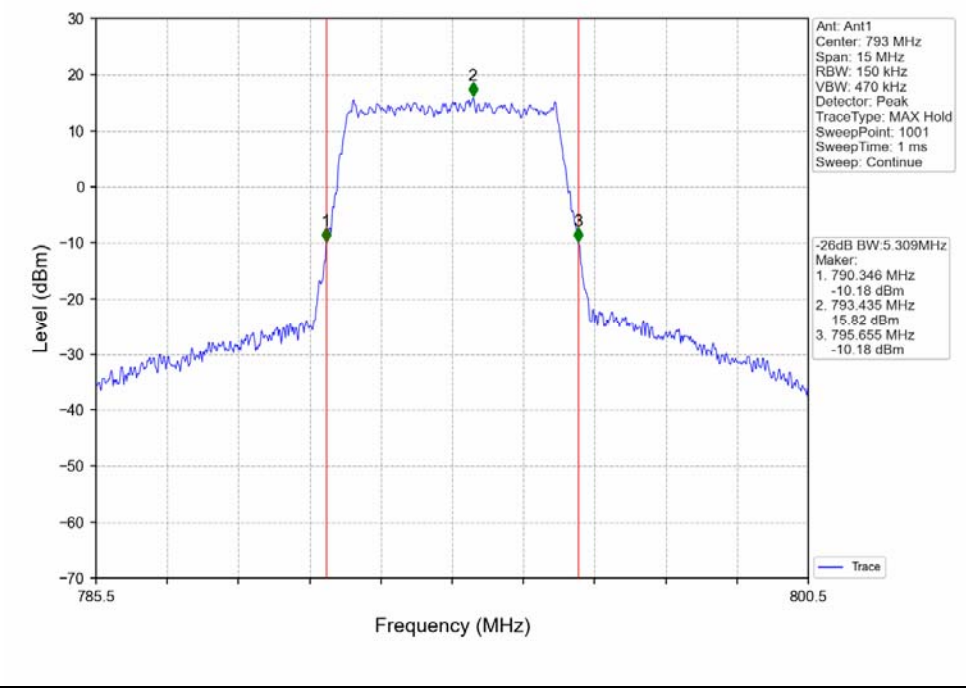
Band14_5MHz_16QAM_HCH_795.5MHz_RB_25_0_NTNV



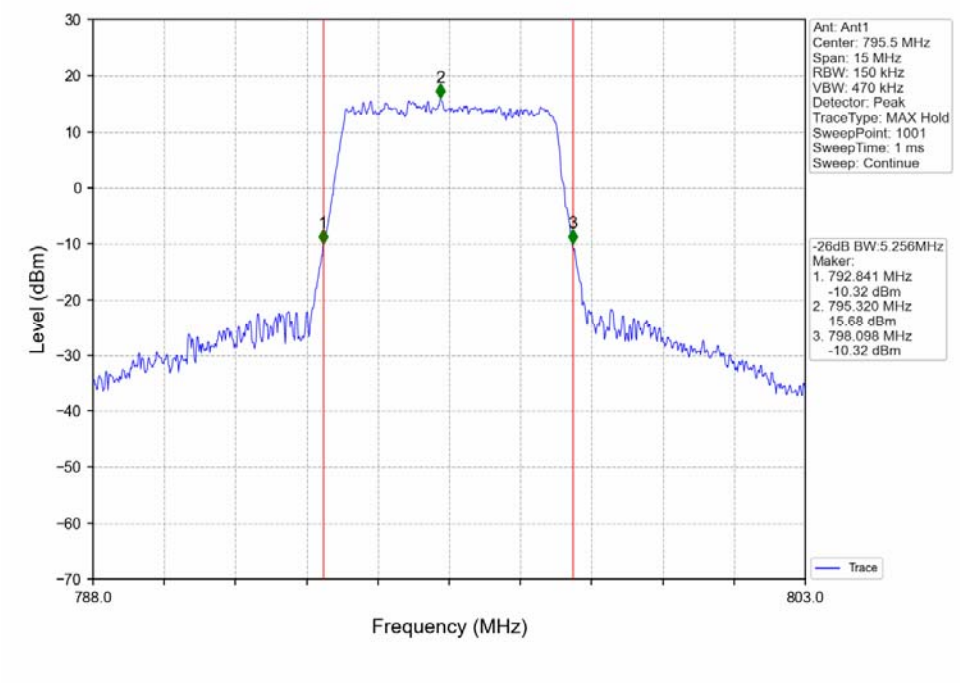
Band14_5MHz_64QAM_LCH_790.5MHz_RB_25_0_NTNV



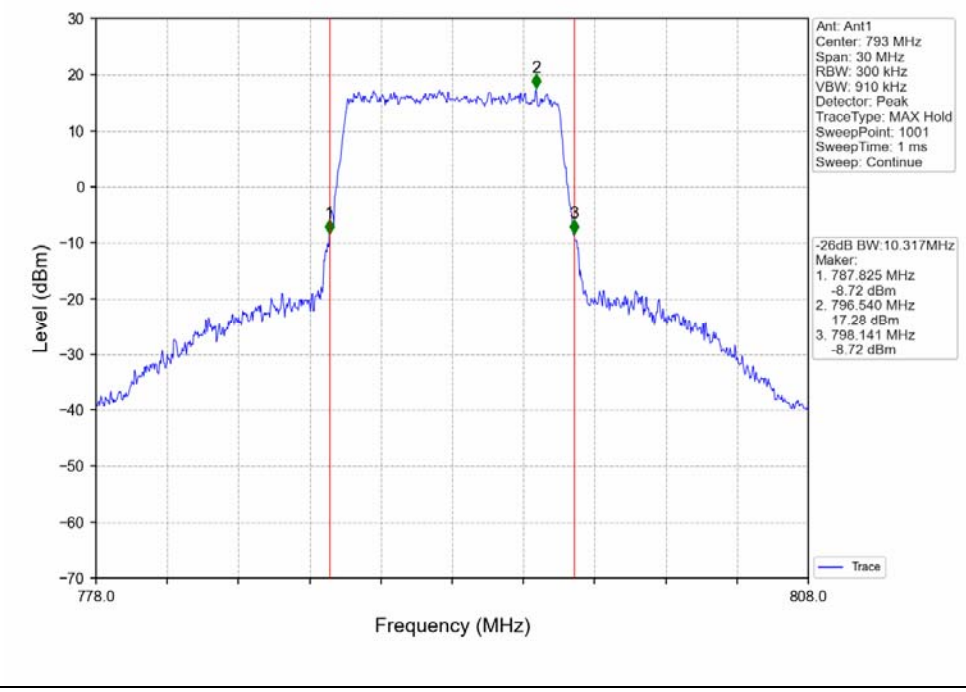
Band14_5MHz_64QAM_MCH_793MHz_RB_25_0_NTNV



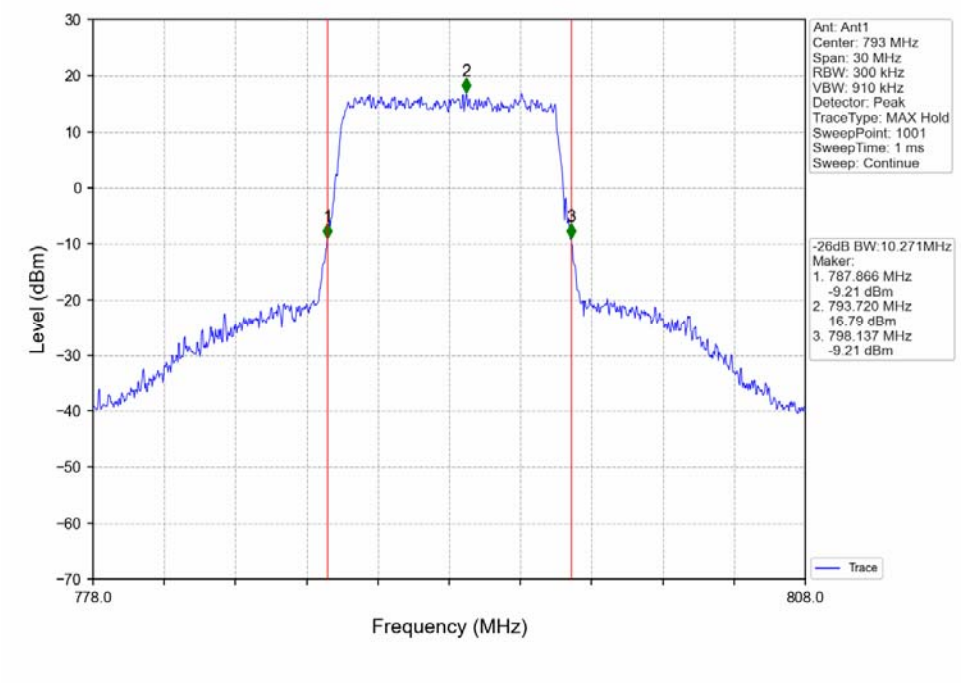
Band14_5MHz_64QAM_HCH_795.5MHz_RB_25_0_NTNV



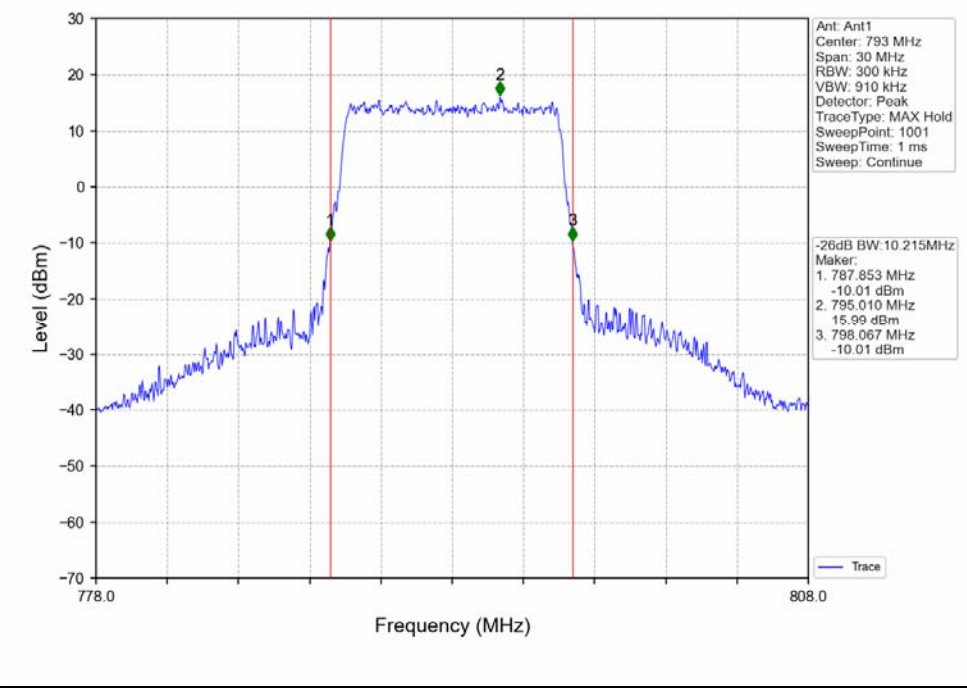
Band14_10MHz_QPSK_MCH_793MHz_RB_50_0_NTNV



Band14_10MHz_16QAM_MCH_793MHz_RB_50_0_NTNV



Band14_10MHz_64QAM_MCH_793MHz_RB_50_0_NTNV



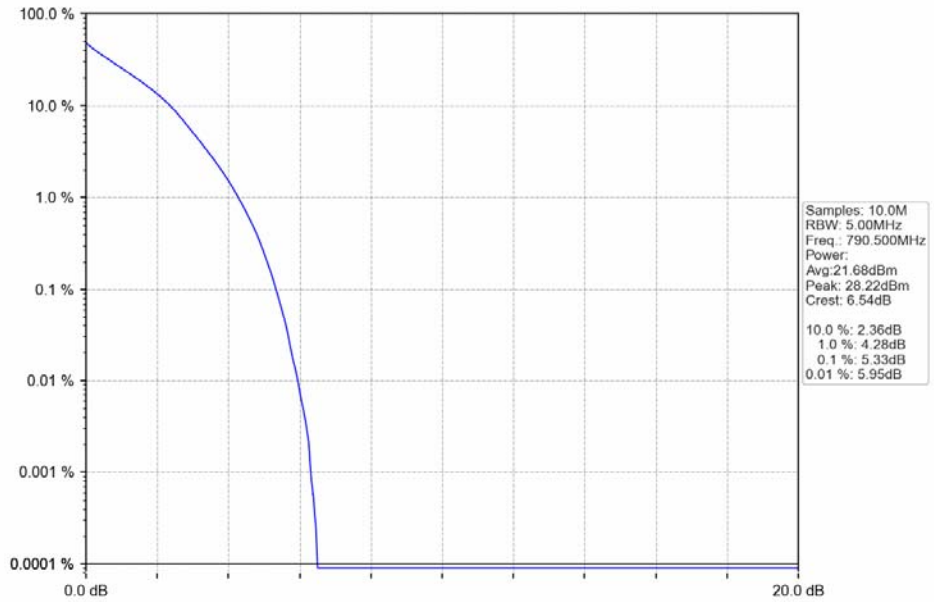
Peak-Average Ratio

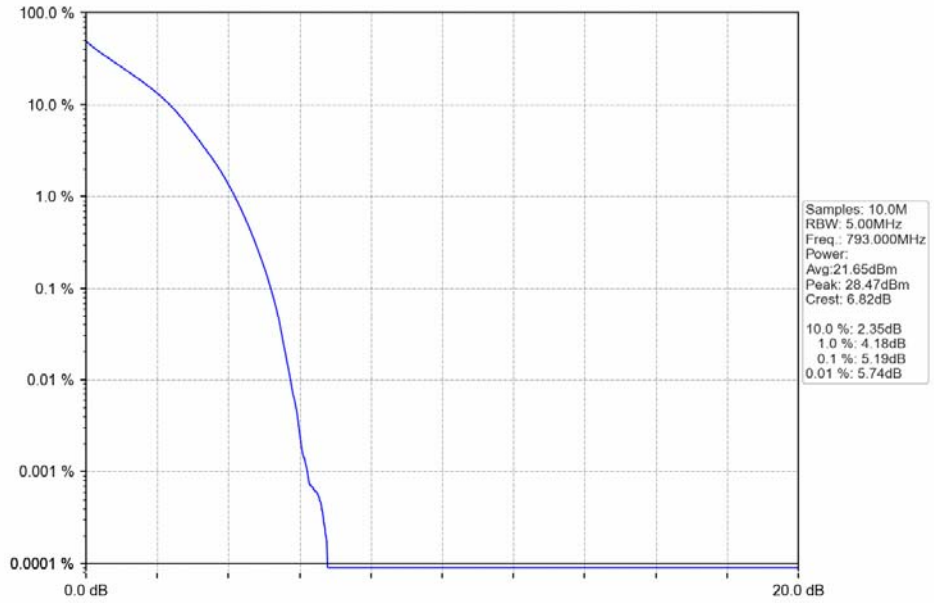
B14_5MHz

Test Result

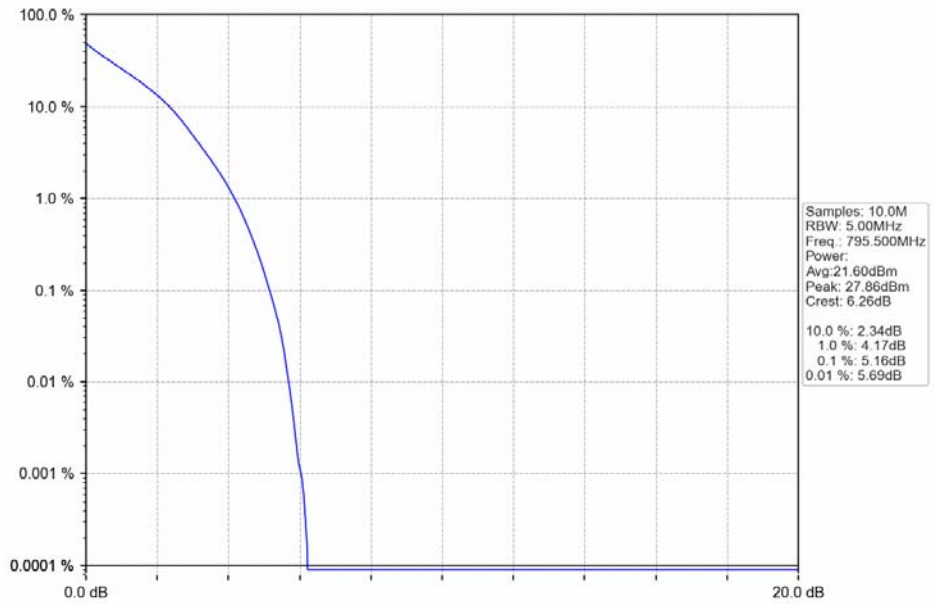
Band: 14 / Bandwidth: 5MHz / NTNV						
Modulation	Frequency (MHz)	RB Allocation		Peak-Average Ratio (dB)		Verdict
		Size	Offset	Result	Limit	
QPSK	790.5	25	0	5.33	<=13	Pass
	793	25	0	5.19	<=13	Pass
	795.5	25	0	5.16	<=13	Pass
16QAM	790.5	25	0	6.01	<=13	Pass
	793	25	0	5.89	<=13	Pass
	795.5	25	0	5.88	<=13	Pass
64QAM	790.5	25	0	6.37	<=13	Pass
	793	25	0	6.26	<=13	Pass
	795.5	25	0	6.26	<=13	Pass

Test Graph

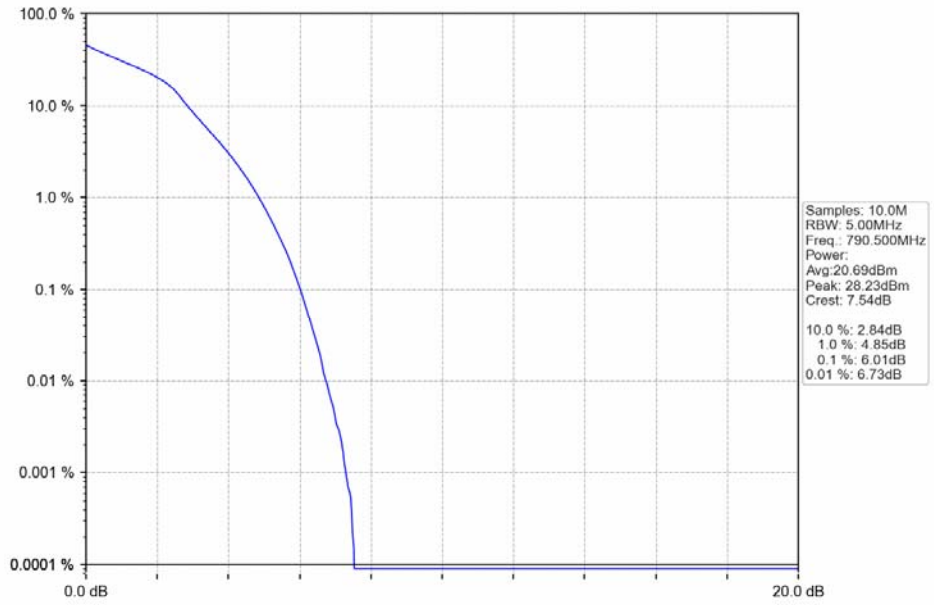
Band14_5MHz_QPSK_LCH_790.5MHz_RB_25_0_NTNV


Band14_5MHz_QPSK_MCH_793MHz_RB_25_0_NTNV


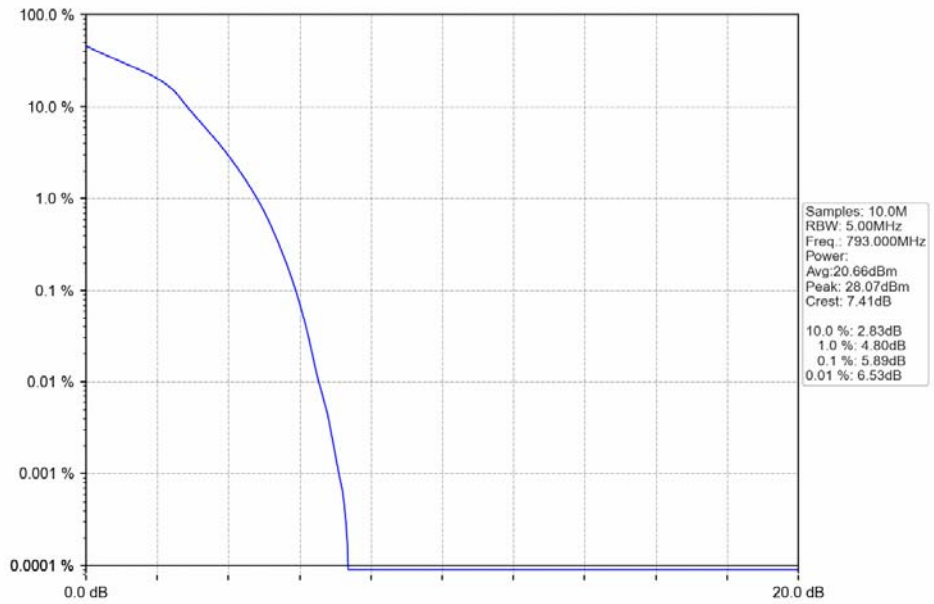
Band14_5MHz_QPSK_HCH_795.5MHz_RB_25_0_NTNV



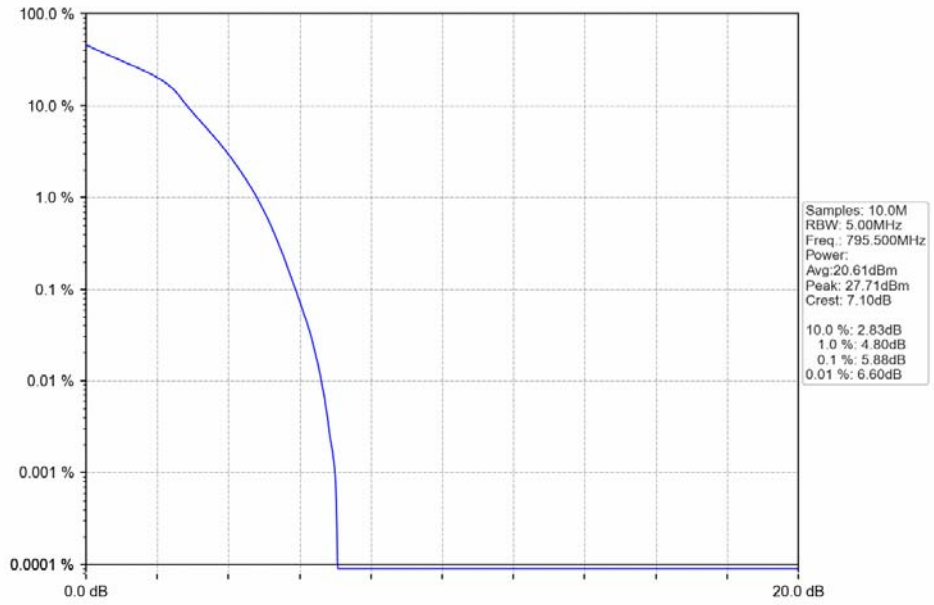
Band14_5MHz_16QAM_LCH_790.5MHz_RB_25_0_NTNV



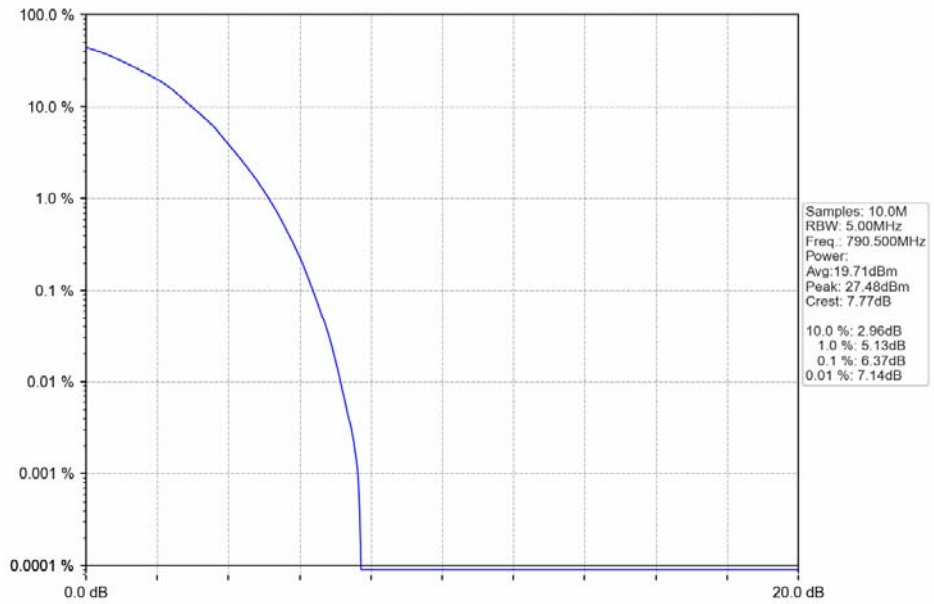
Band14_5MHz_16QAM_MCH_793MHz_RB_25_0_NTNV



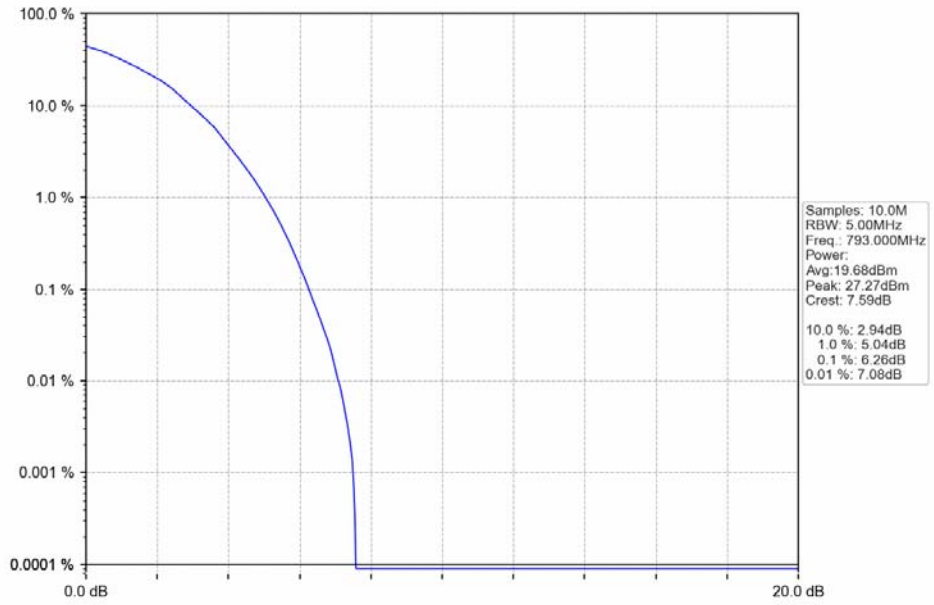
Band14_5MHz_16QAM_HCH_795.5MHz_RB_25_0_NTNV



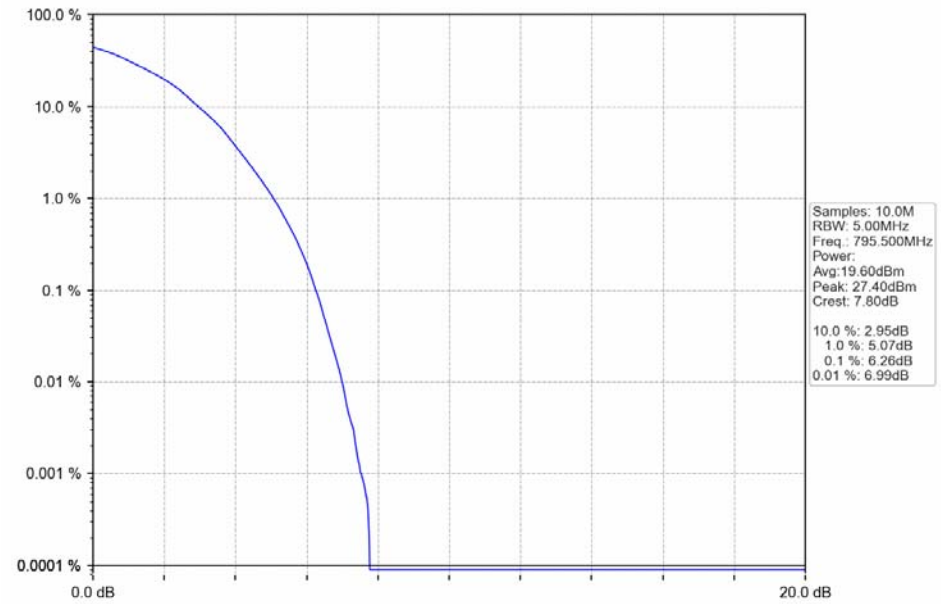
Band14_5MHz_64QAM_LCH_790.5MHz_RB_25_0_NTNV



Band14_5MHz_64QAM_MCH_793MHz_RB_25_0_NTNV



Band14_5MHz_64QAM_HCH_795.5MHz_RB_25_0_NTNV

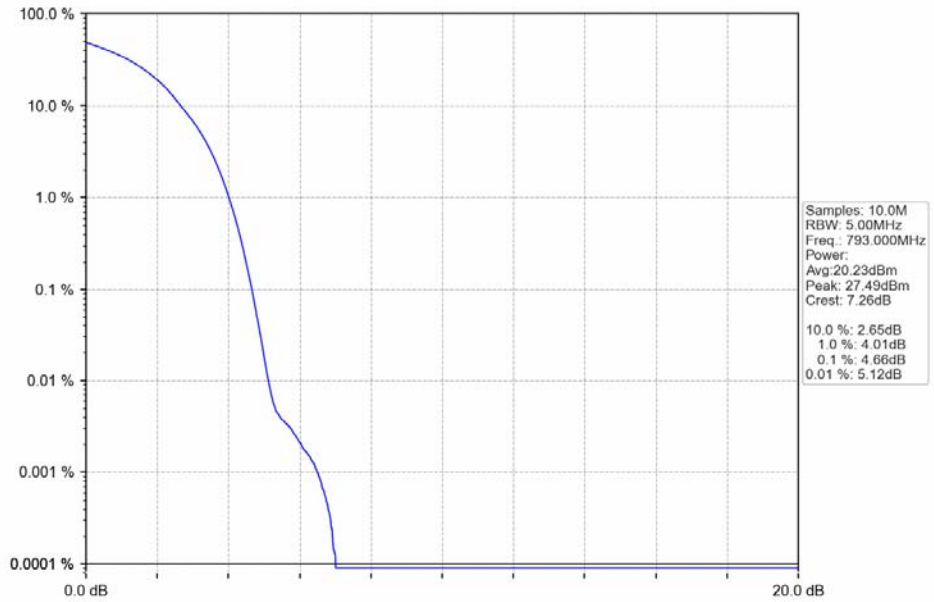


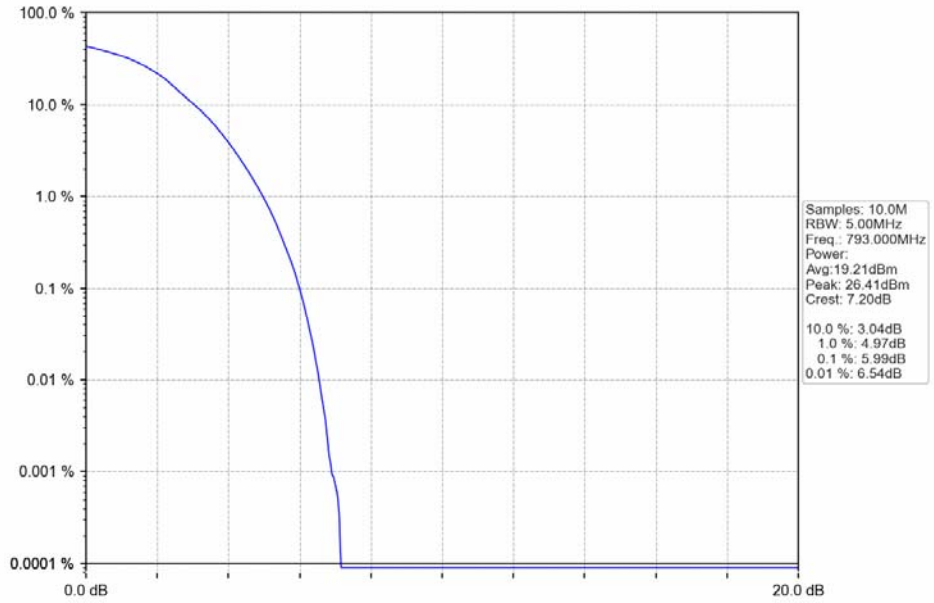
B14_10MHz

Test Result

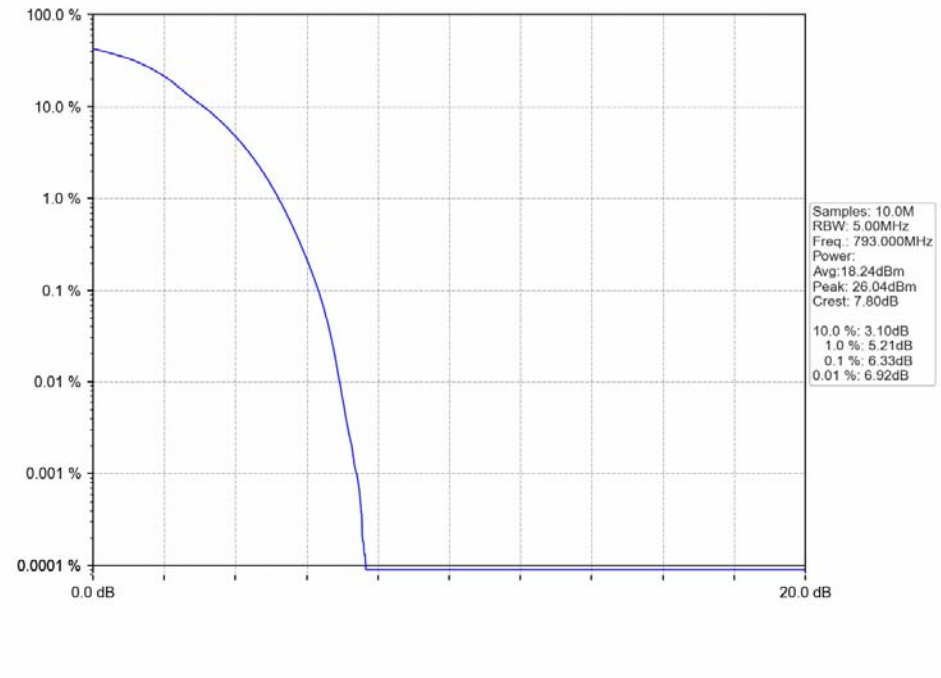
Band: 14 / Bandwidth: 10MHz / NTNV						
Modulation	Frequency (MHz)	RB Allocation		Peak-Average Ratio (dB)		Verdict
		Size	Offset	Result	Limit	
QPSK	793	/	/	/	<=13	Pass
	793	50	0	4.66	<=13	Pass
	793	/	/	/	<=13	Pass
16QAM	793	/	/	/	<=13	Pass
	793	50	0	5.99	<=13	Pass
	793	/	/	/	<=13	Pass
64QAM	793	/	/	/	<=13	Pass
	793	50	0	6.33	<=13	Pass
	793	/	/	/	<=13	Pass

Test Graph

Band14_10MHz_QPSK_MCH_793MHz_RB_50_0_NTNV


Band14_10MHz_16QAM_MCH_793MHz_RB_50_0_NTNV


Band14_10MHz_64QAM_MCH_793MHz_RB_50_0_NTNV



Spurious Emission

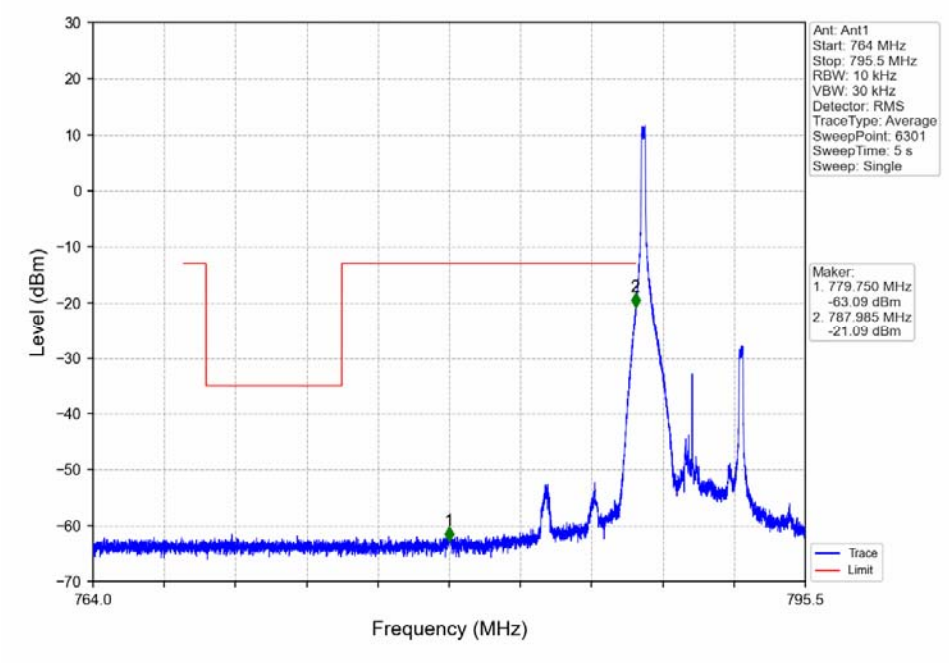
B14_5MHz

Test Result

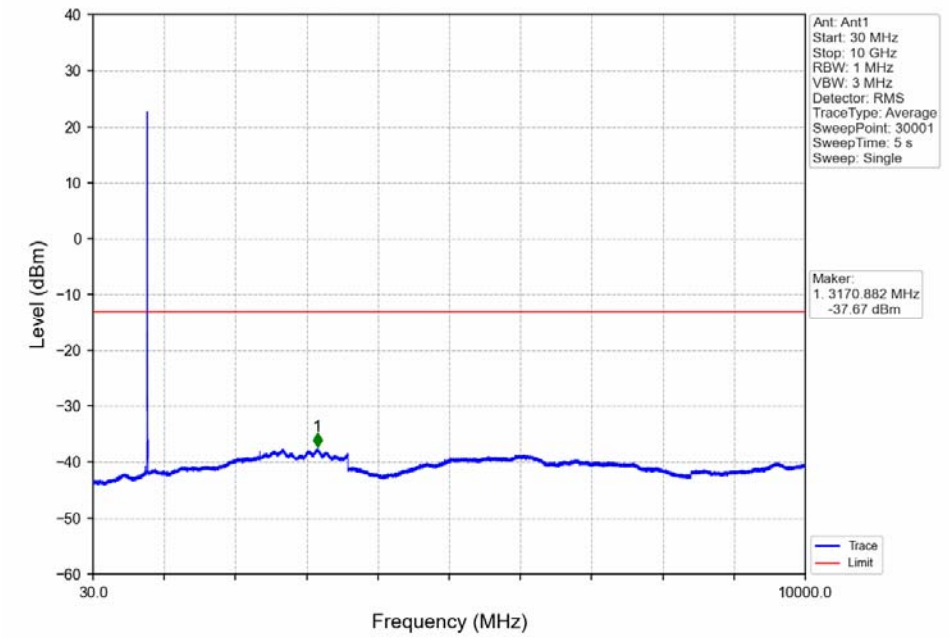
Band: 14 / Bandwidth: 5MHz / NTNV						
Modulation	Frequency (MHz)	RB Allocation		Spurious Emission		Verdict
		Size	Offset	Result	Limit	
QPSK	790.5	1	0	Refer To Test Graph		Pass
		25	0	Refer To Test Graph		Pass
	793	1	0	Refer To Test Graph		Pass
	795.5	1	0	Refer To Test Graph		Pass
			24	Refer To Test Graph		Pass
		25	0	Refer To Test Graph		**Pass**
16QAM	790.5	1	0	Refer To Test Graph		Pass
		25	0	Refer To Test Graph		Pass
	793	1	0	Refer To Test Graph		Pass
	795.5	1	0	Refer To Test Graph		Pass
			24	Refer To Test Graph		Pass
		25	0	Refer To Test Graph		Pass
64QAM	790.5	1	0	Refer To Test Graph		Pass
		25	0	Refer To Test Graph		Pass
	793	1	0	Refer To Test Graph		Pass
	795.5	1	0	Refer To Test Graph		Pass
			24	Refer To Test Graph		Pass
		25	0	Refer To Test Graph		Pass

Test Graph

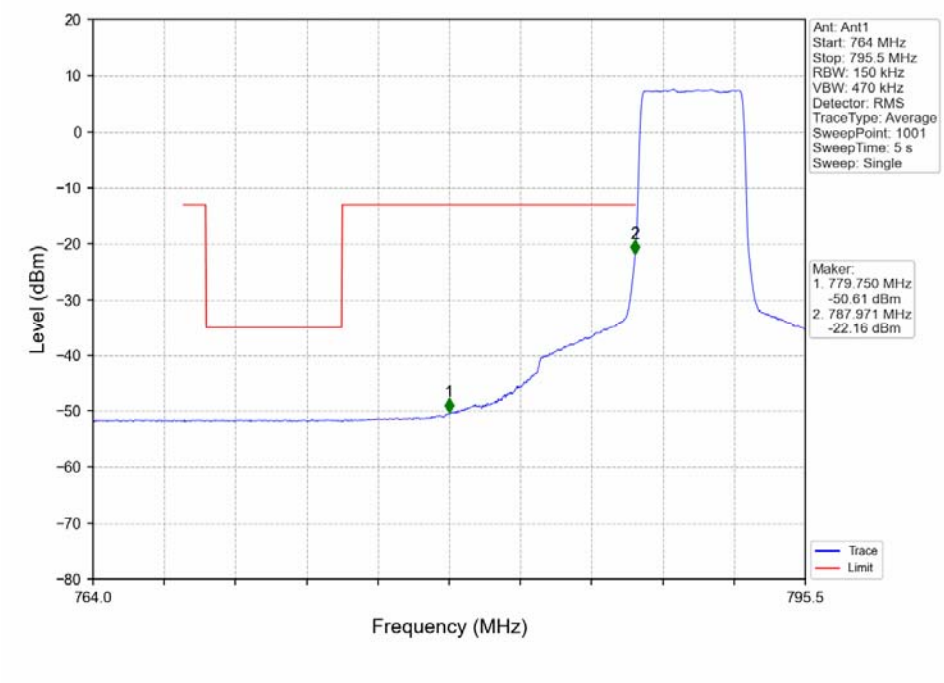
Band14_5MHz_QPSK_LCH_790.5MHz_RB_1_0_NTNV



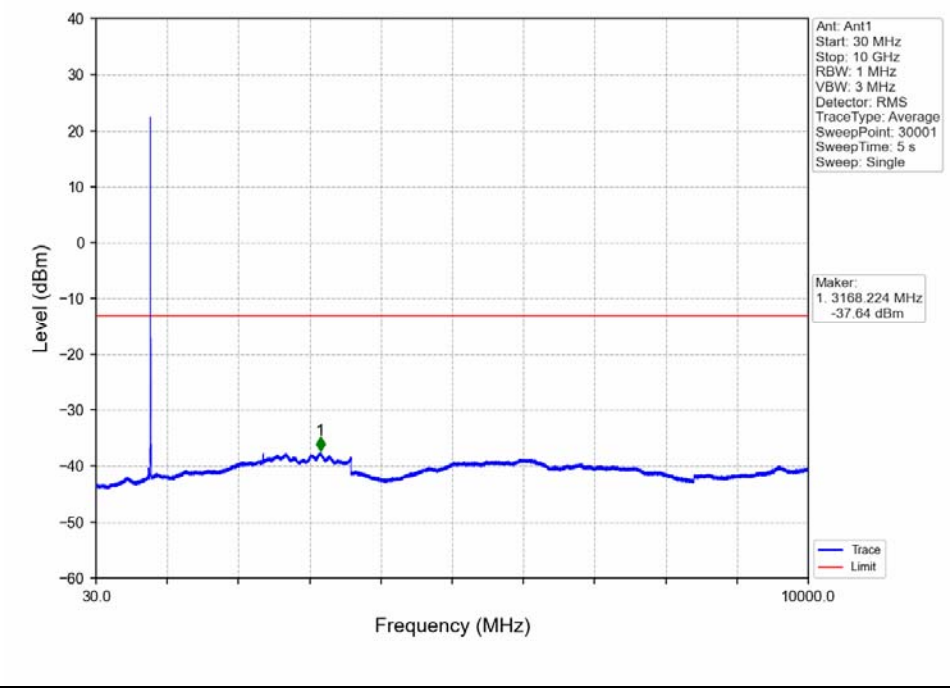
Band14_5MHz_QPSK_LCH_790.5MHz_RB_1_0_NTNV



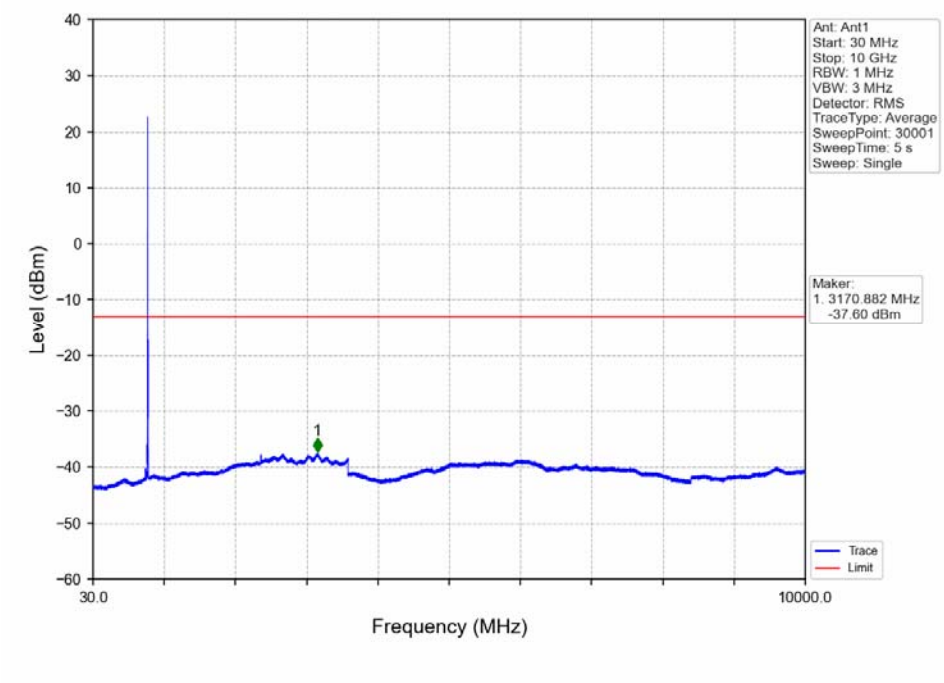
Band14_5MHz_QPSK_LCH_790.5MHz_RB_25_0_NTNV



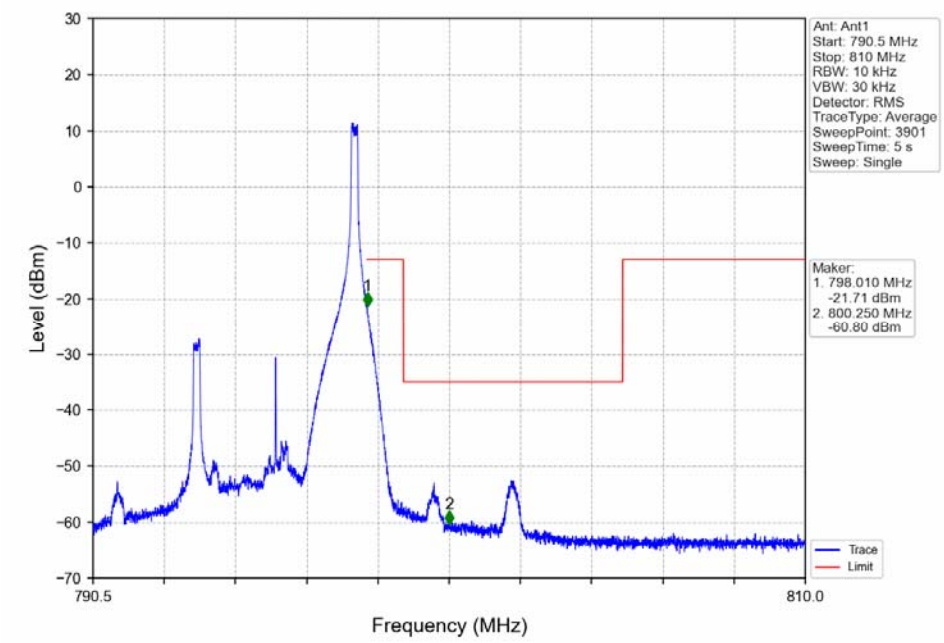
Band14_5MHz_QPSK_MCH_793MHz_RB_1_0_NTNV



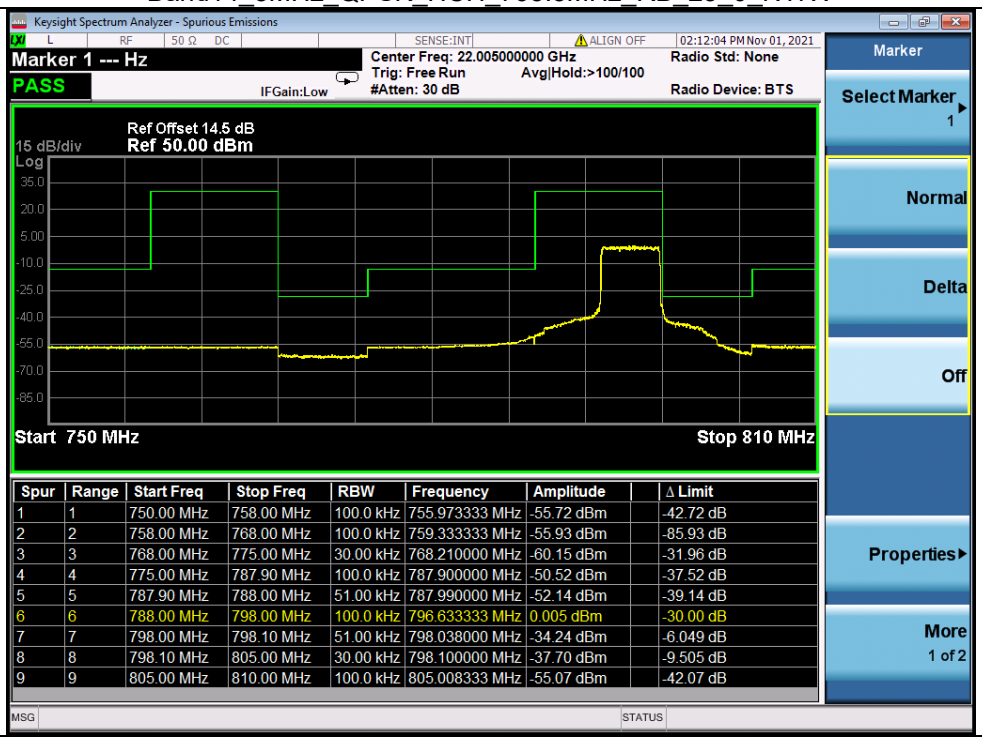
Band14_5MHz_QPSK_HCH_795.5MHz_RB_1_0_NTNV



Band14_5MHz_QPSK_HCH_795.5MHz_RB_1_24_NTNV

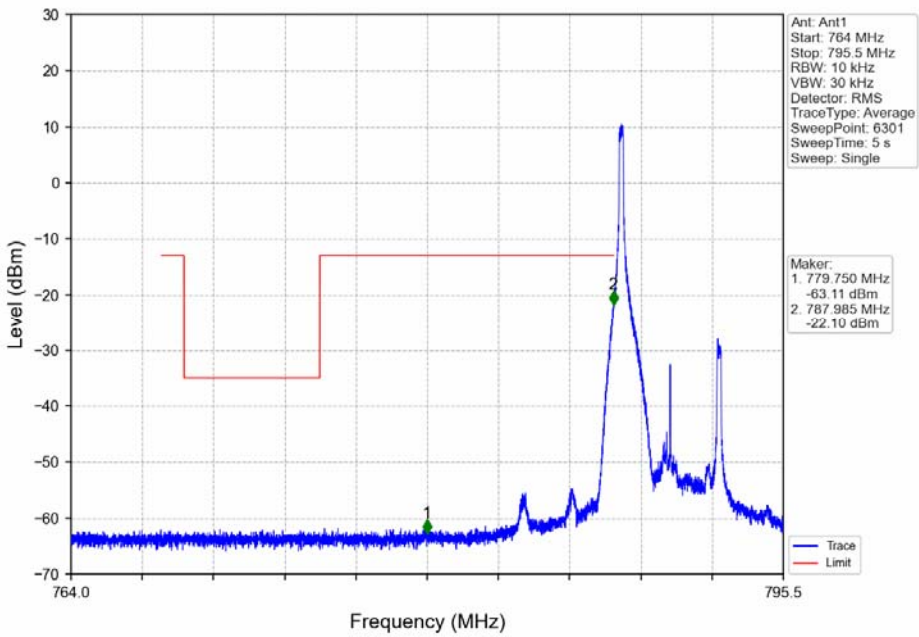


Band14_5MHz_QPSK_HCH_795.5MHz_RB_25_0_NTNV

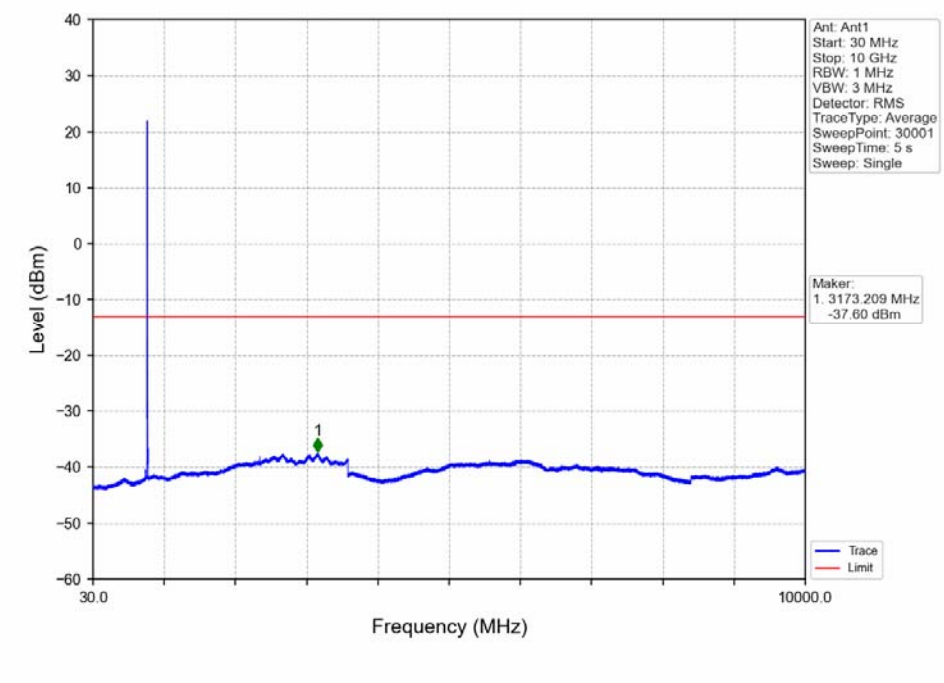


Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	750.00 MHz	758.00 MHz	100.0 kHz	755.973333 MHz	-55.72 dBm	-42.72 dB
2	2	758.00 MHz	768.00 MHz	100.0 kHz	759.333333 MHz	-55.93 dBm	-85.93 dB
3	3	768.00 MHz	775.00 MHz	30.00 kHz	768.210000 MHz	-60.15 dBm	-31.96 dB
4	4	775.00 MHz	787.90 MHz	100.0 kHz	787.900000 MHz	-50.52 dBm	-37.52 dB
5	5	787.90 MHz	788.00 MHz	51.00 kHz	787.990000 MHz	-52.14 dBm	-39.14 dB
6	6	788.00 MHz	798.00 MHz	100.0 kHz	796.633333 MHz	0.005 dBm	-30.00 dB
7	7	798.00 MHz	798.10 MHz	51.00 kHz	798.038000 MHz	-34.24 dBm	-6.049 dB
8	8	798.10 MHz	805.00 MHz	30.00 kHz	798.100000 MHz	-37.70 dBm	-9.505 dB
9	9	805.00 MHz	810.00 MHz	100.0 kHz	805.008333 MHz	-55.07 dBm	-42.07 dB

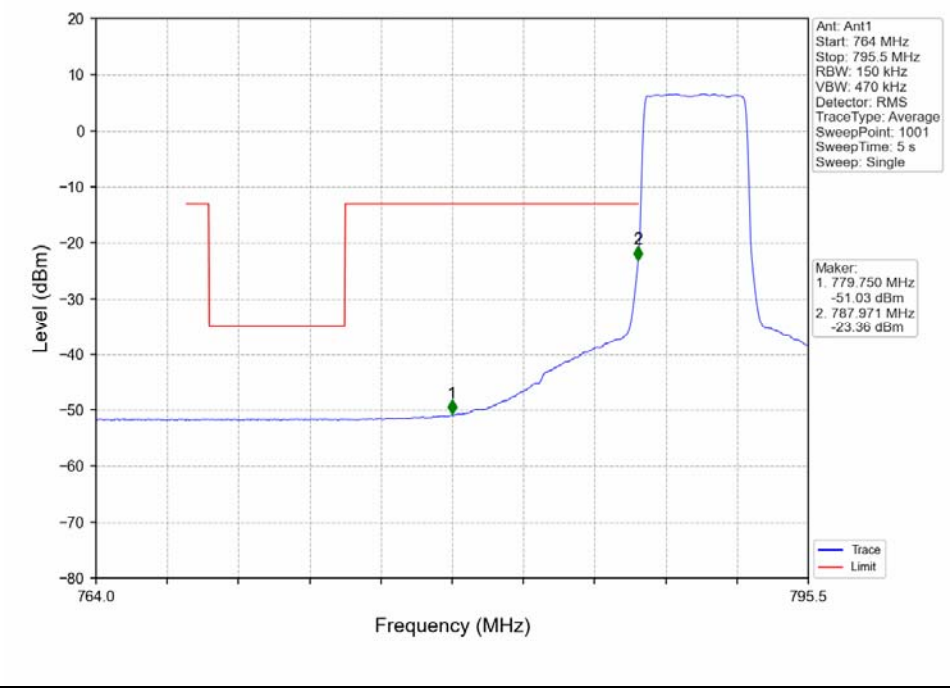
Band14_5MHz_16QAM_LCH_790.5MHz_RB_1_0_NTNV



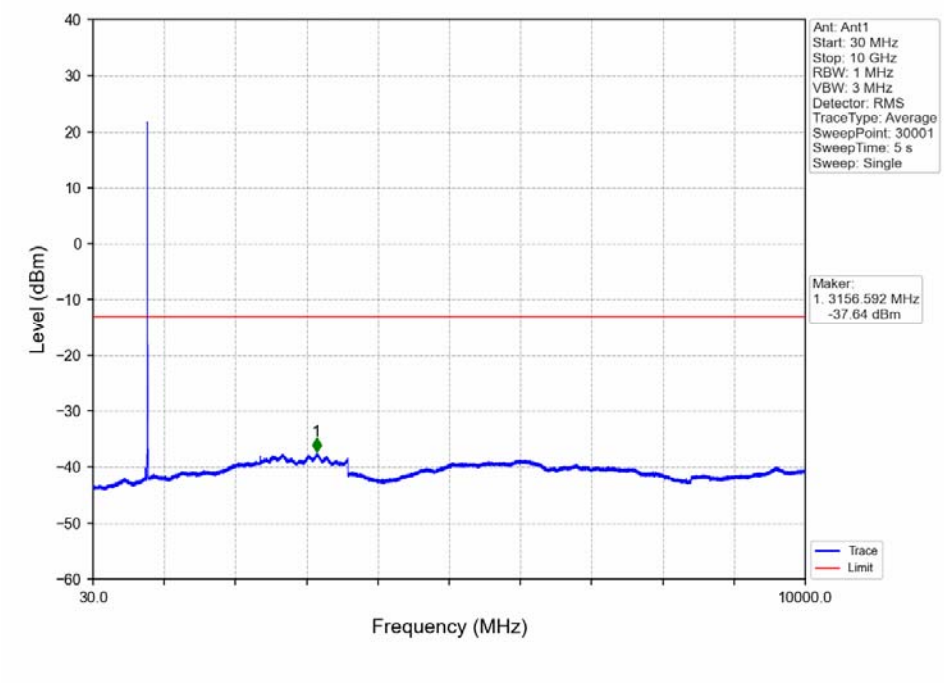
Band14_5MHz_16QAM_LCH_790.5MHz_RB_1_0_NTNV



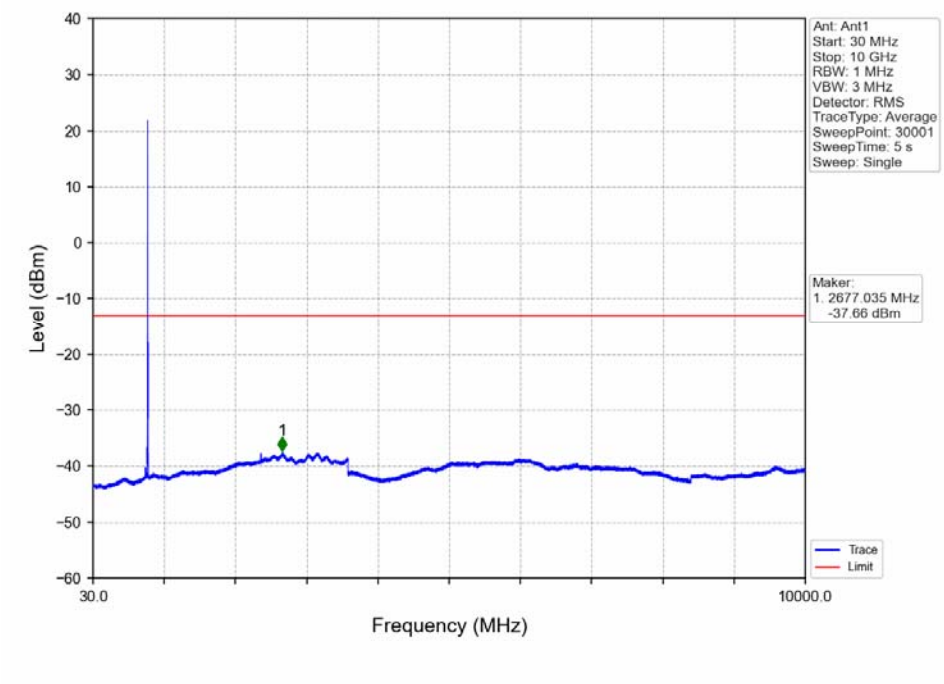
Band14_5MHz_16QAM_LCH_790.5MHz_RB_25_0_NTNV



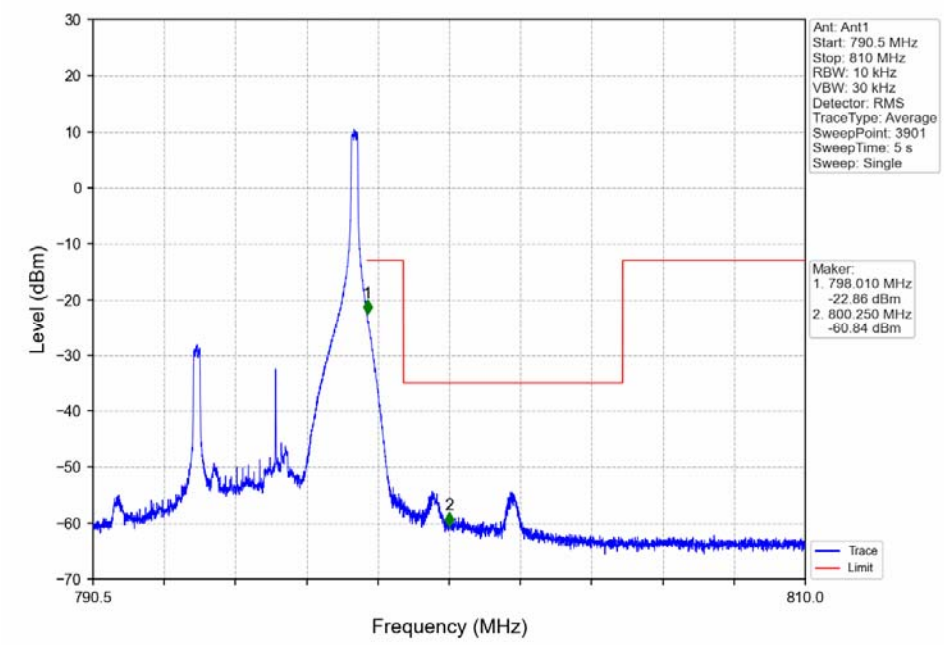
Band14_5MHz_16QAM_MCH_793MHz_RB_1_0_NTNV



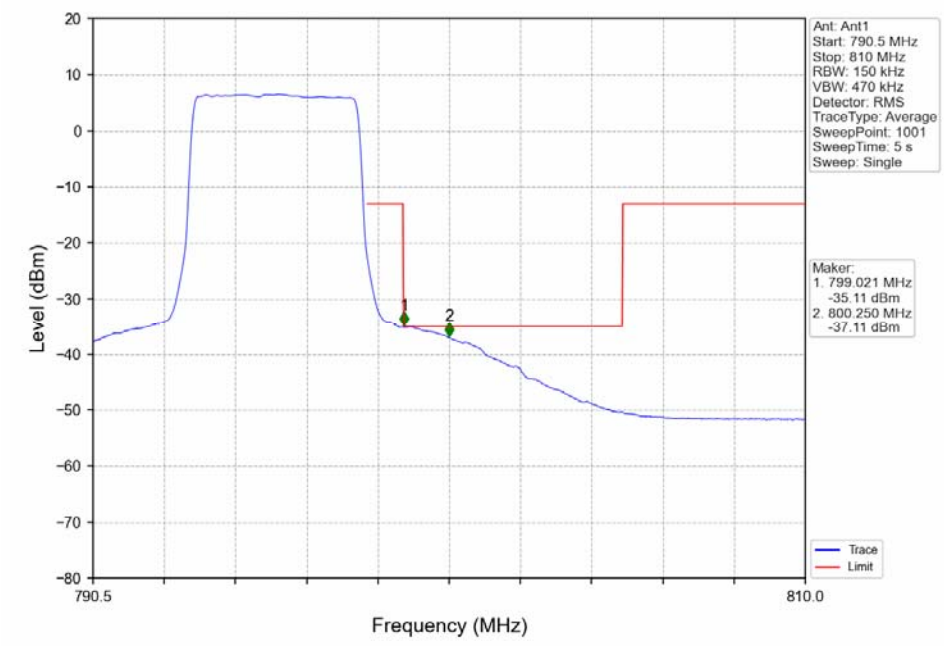
Band14_5MHz_16QAM_HCH_795.5MHz_RB_1_0_NTNV



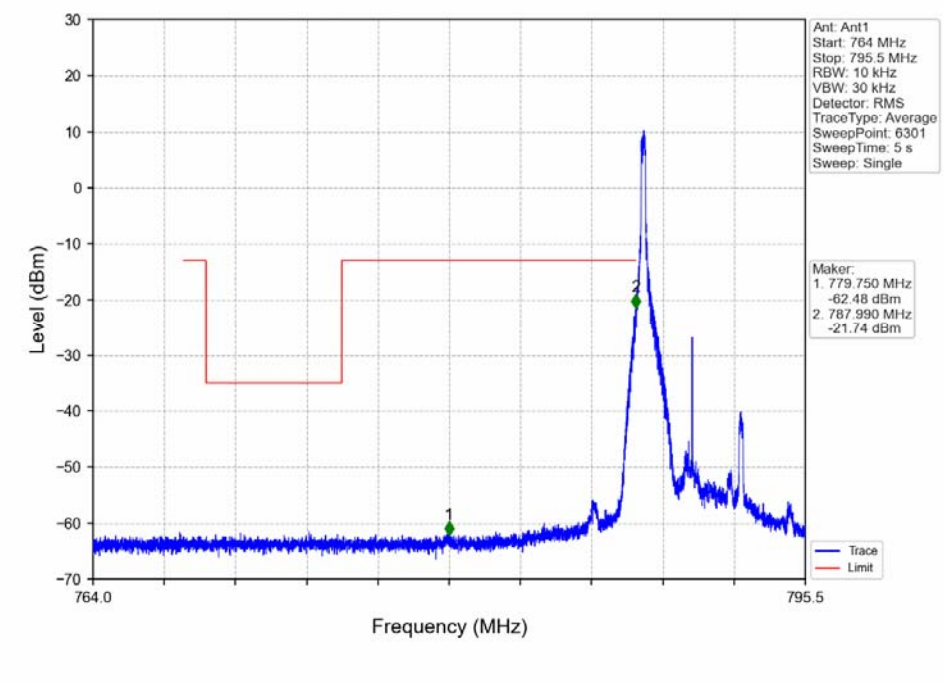
Band14_5MHz_16QAM_HCH_795.5MHz_RB_1_24_NTNV



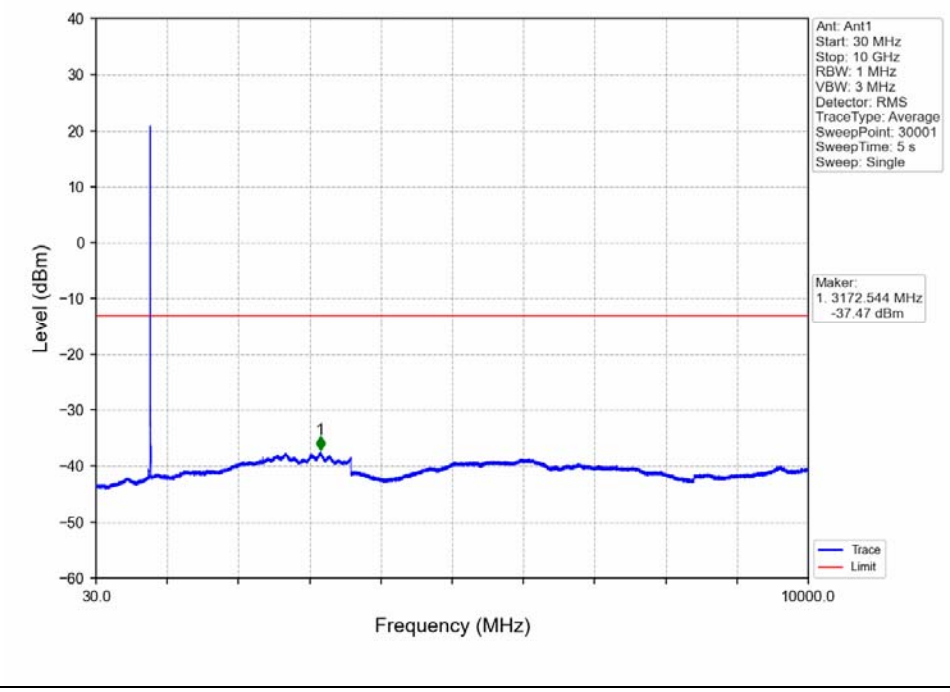
Band14_5MHz_16QAM_HCH_795.5MHz_RB_25_0_NTNV



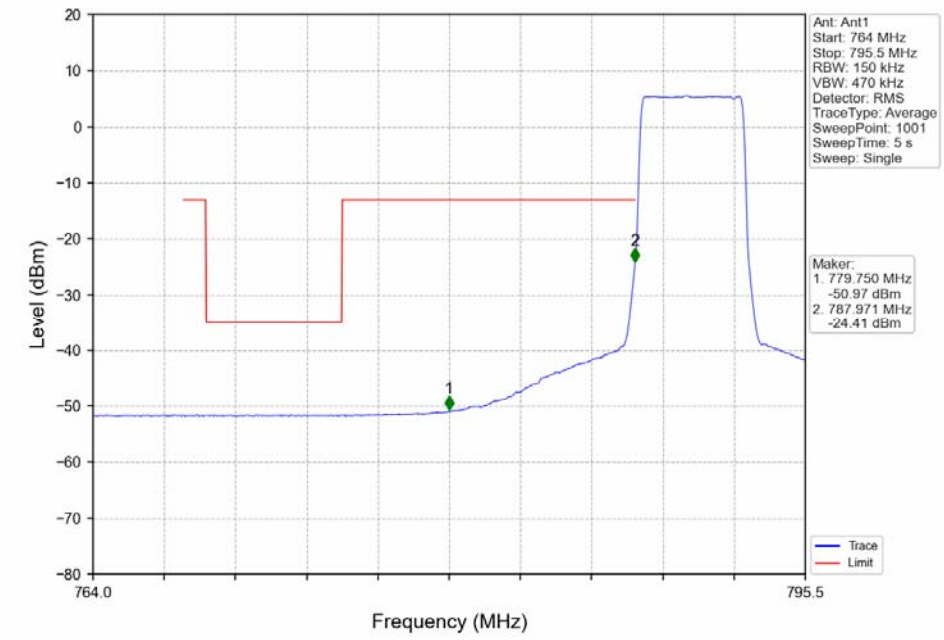
Band14_5MHz_64QAM_LCH_790.5MHz_RB_1_0_NTNV



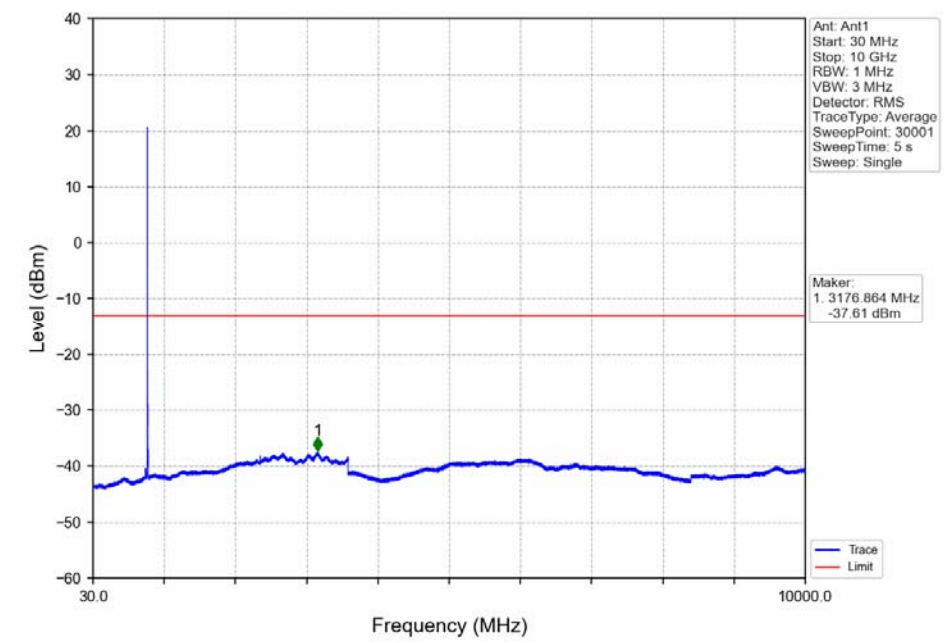
Band14_5MHz_64QAM_LCH_790.5MHz_RB_1_0_NTNV



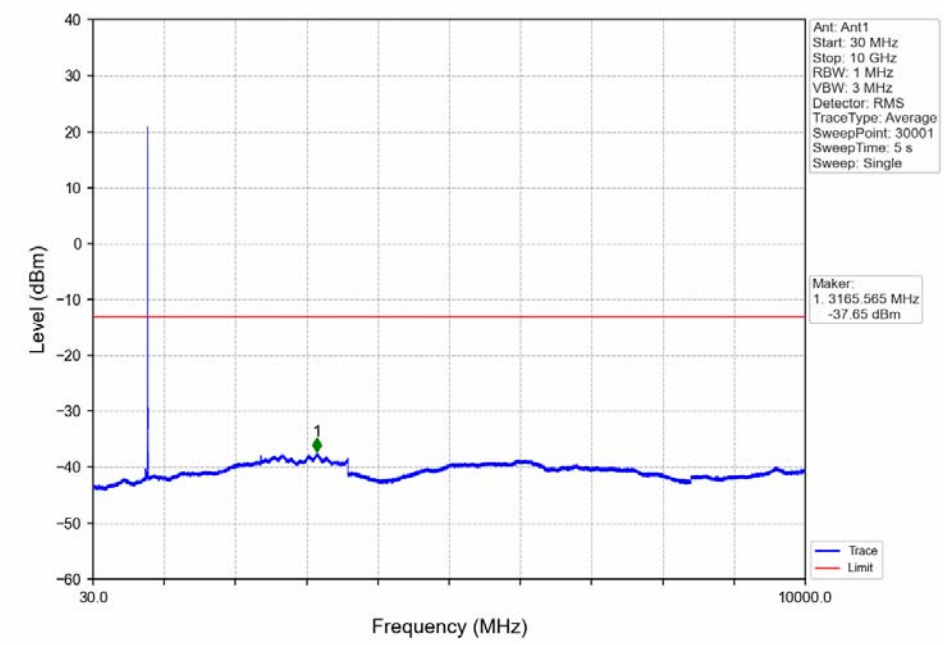
Band14_5MHz_64QAM_LCH_790.5MHz_RB_25_0_NTNV



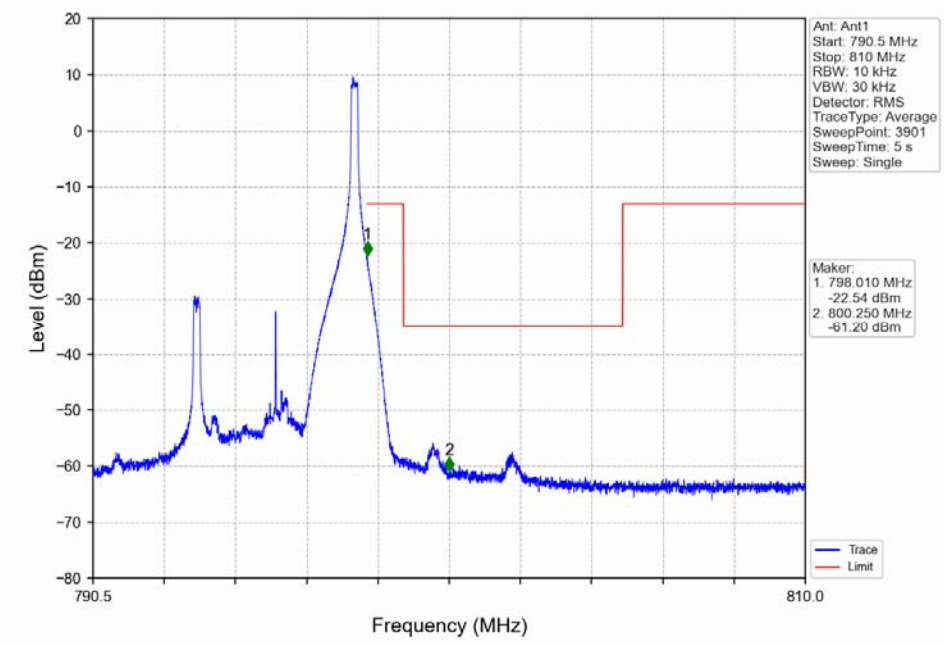
Band14_5MHz_64QAM_MCH_793MHz_RB_1_0_NTNV



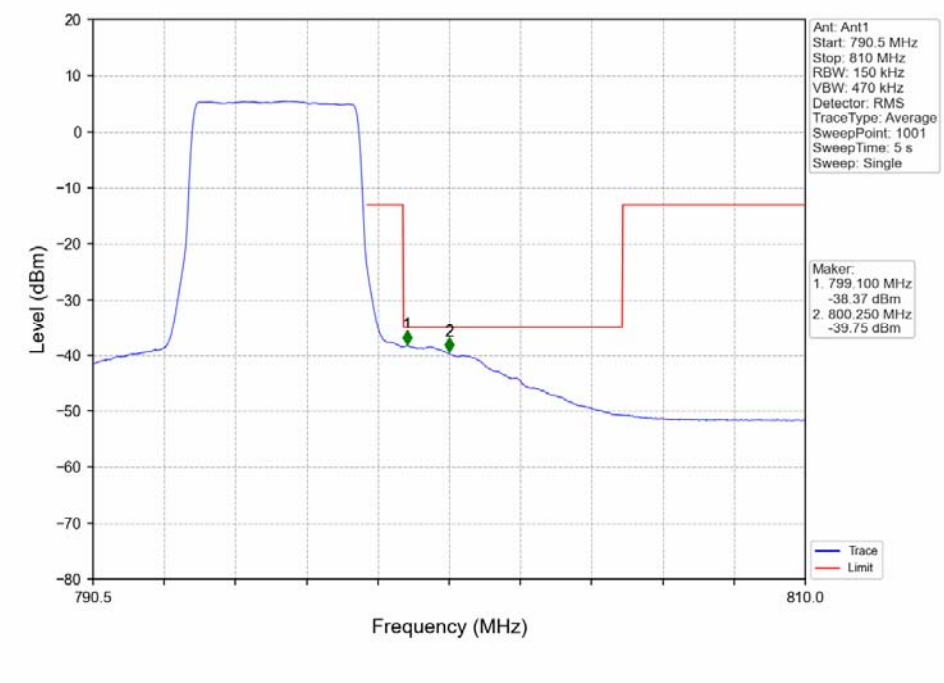
Band14_5MHz_64QAM_HCH_795.5MHz_RB_1_0_NTNV



Band14_5MHz_64QAM_HCH_795.5MHz_RB_1_24_NTNV



Band14_5MHz_64QAM_HCH_795.5MHz_RB_25_0_NTNV



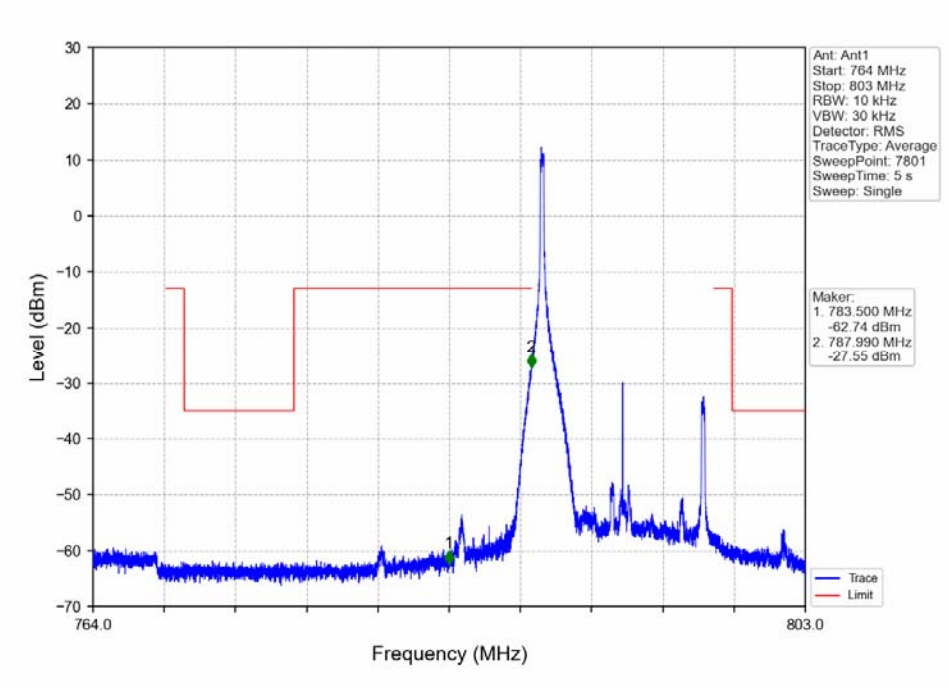
B14_10MHz

Test Result

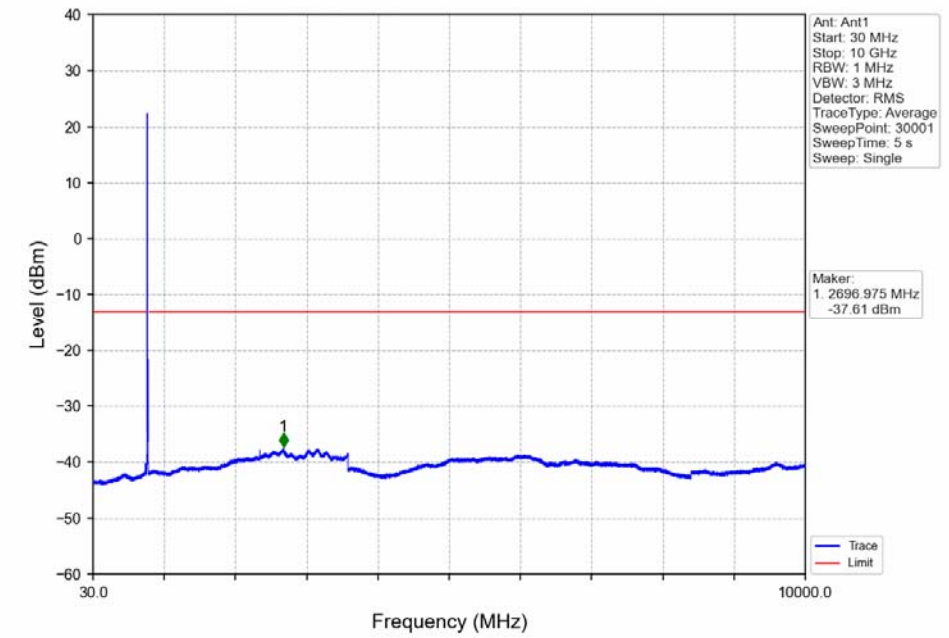
Band: 14 / Bandwidth: 10MHz / NTNV						
Modulation	Frequency (MHz)	RB Allocation		Spurious Emission		Verdict
		Size	Offset	Result	Limit	
QPSK	793	1	0	Refer To Test Graph		Pass
			49	Refer To Test Graph		Pass
		50	0	Refer To Test Graph		Pass
16QAM	793	1	0	Refer To Test Graph		Pass
			49	Refer To Test Graph		Pass
		50	0	Refer To Test Graph		Pass
64QAM	793	1	0	Refer To Test Graph		Pass
			49	Refer To Test Graph		Pass
		50	0	Refer To Test Graph		Pass

Test Graph

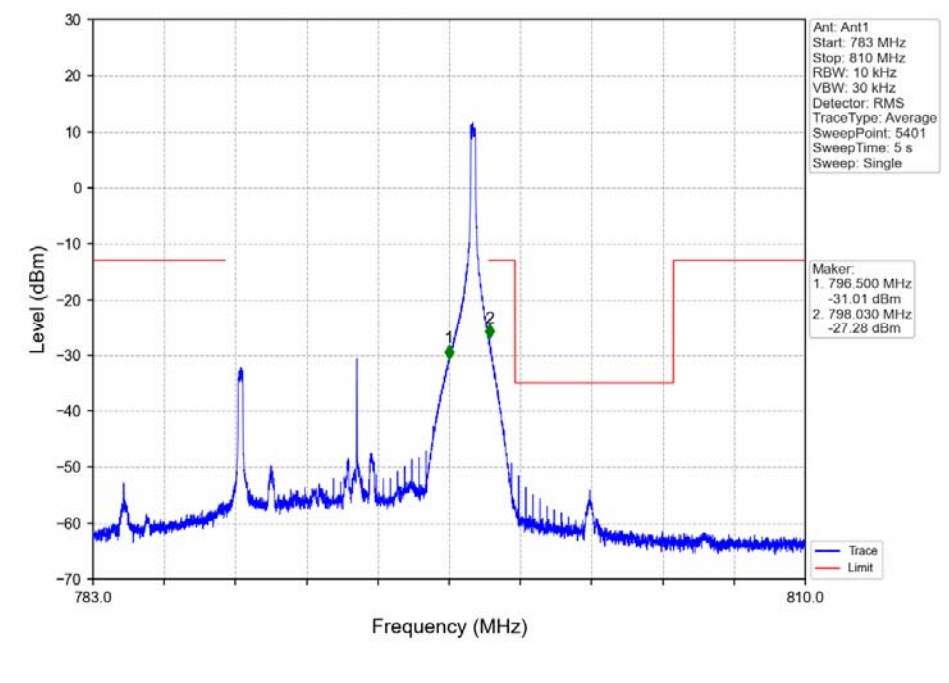
Band14_10MHz_QPSK_MCH_793MHz_RB_1_0_NTNV



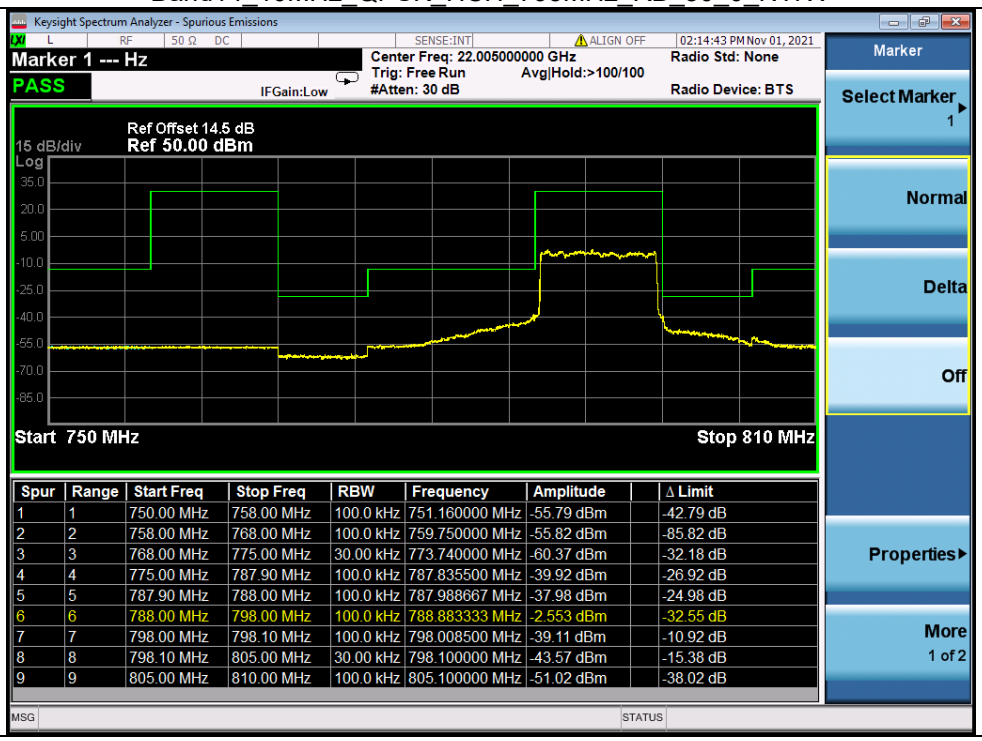
Band14_10MHz_QPSK_MCH_793MHz_RB_1_0_NTNV



Band14_10MHz_QPSK_HCH_793MHz_RB_1_49_NTNV

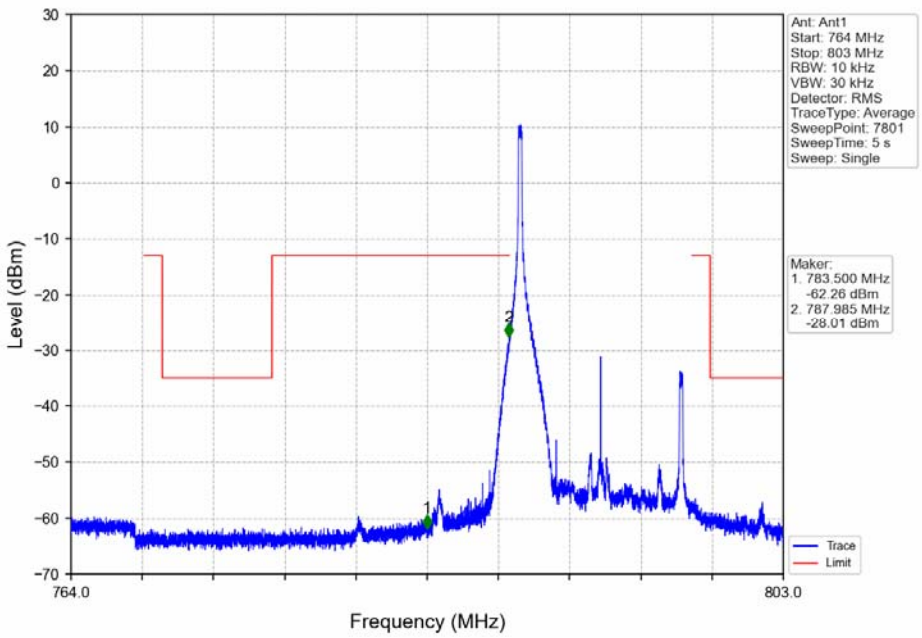


Band14_10MHz_QPSK_HCH_793MHz_RB_50_0_NTNV

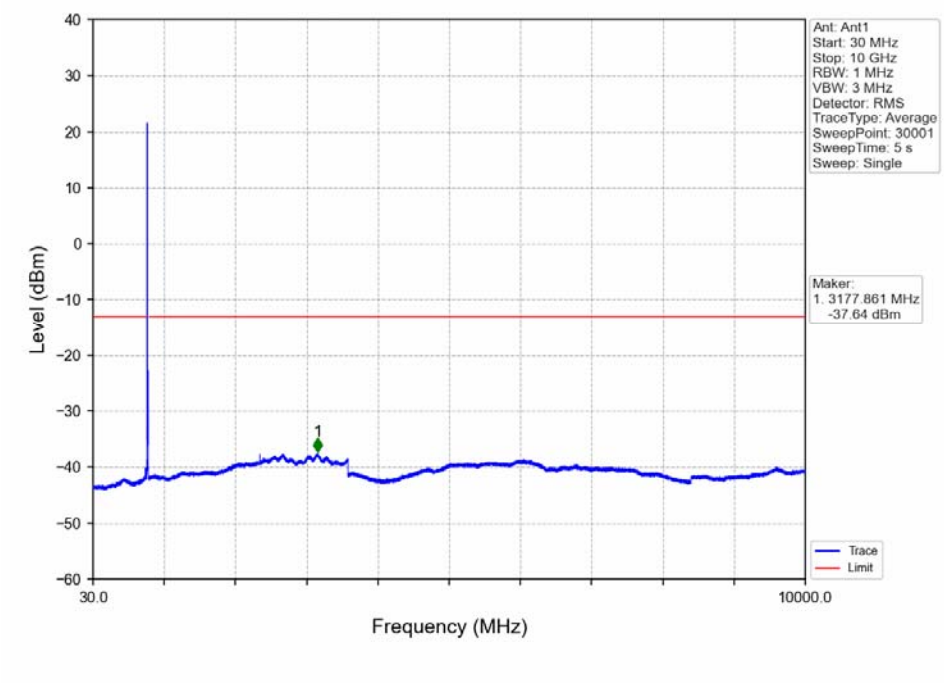


Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	750.00 MHz	758.00 MHz	100.0 kHz	751.160000 MHz	-55.79 dBm	-42.79 dB
2	2	758.00 MHz	768.00 MHz	100.0 kHz	759.750000 MHz	-55.82 dBm	-85.82 dB
3	3	768.00 MHz	775.00 MHz	30.00 kHz	773.740000 MHz	-60.37 dBm	-32.18 dB
4	4	775.00 MHz	787.90 MHz	100.0 kHz	787.835500 MHz	-39.92 dBm	-26.92 dB
5	5	787.90 MHz	788.00 MHz	100.0 kHz	787.988667 MHz	-37.98 dBm	-24.98 dB
6	6	788.00 MHz	798.00 MHz	100.0 kHz	788.883333 MHz	-2.553 dBm	-32.55 dB
7	7	798.00 MHz	798.10 MHz	100.0 kHz	798.008500 MHz	-39.11 dBm	-10.92 dB
8	8	798.10 MHz	805.00 MHz	30.00 kHz	798.100000 MHz	-43.57 dBm	-15.38 dB
9	9	805.00 MHz	810.00 MHz	100.0 kHz	805.100000 MHz	-51.02 dBm	-38.02 dB

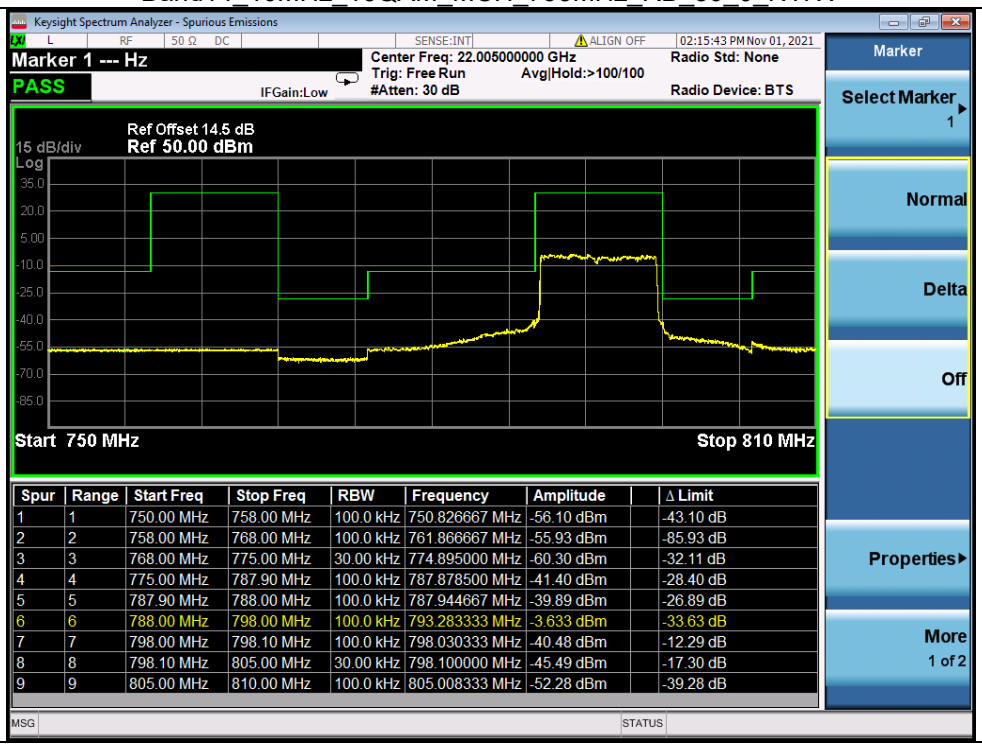
Band14_10MHz_16QAM_MCH_793MHz_RB_1_0_NTNV



Band14_10MHz_16QAM_MCH_793MHz_RB_1_0_NTNV

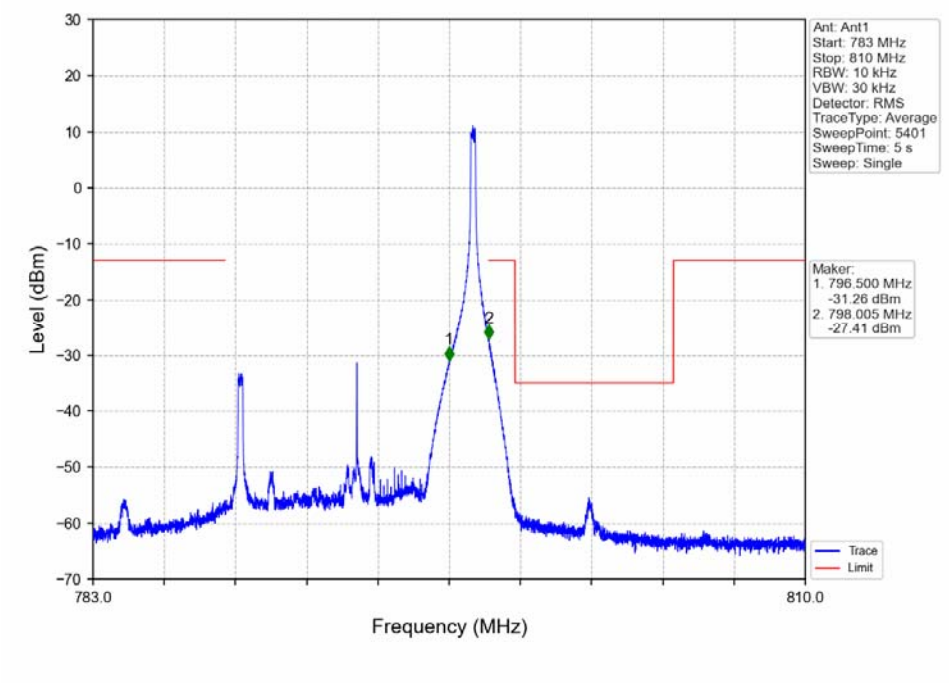


Band14_10MHz_16QAM_MCH_793MHz_RB_50_0_NTNV

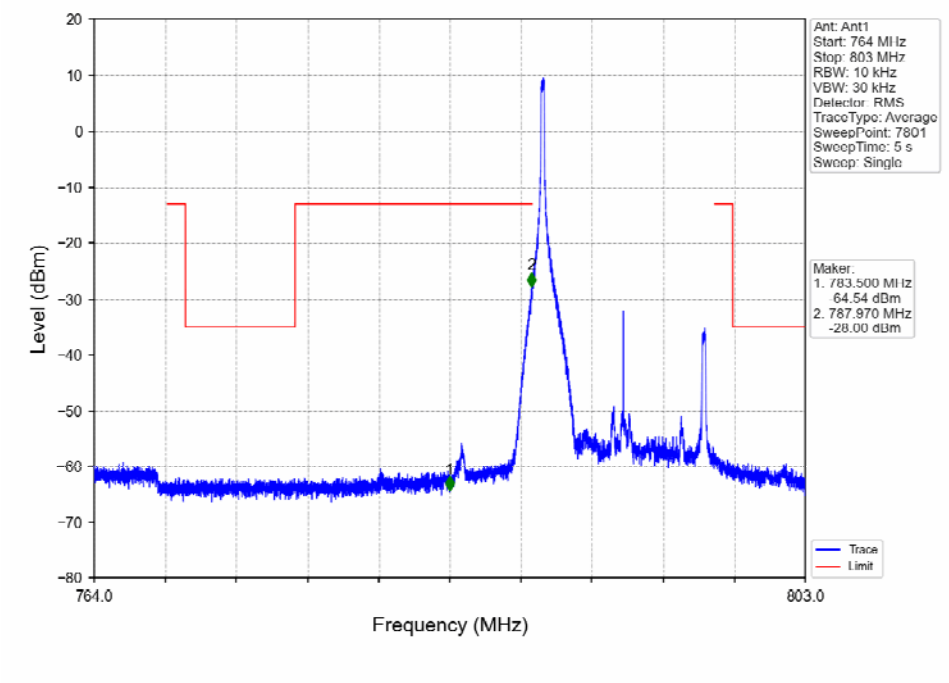


Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	750.00 MHz	758.00 MHz	100.0 kHz	750.826667 MHz	-56.10 dBm	-43.10 dB
2	2	758.00 MHz	768.00 MHz	100.0 kHz	761.866667 MHz	-55.93 dBm	-85.93 dB
3	3	768.00 MHz	775.00 MHz	30.00 kHz	774.895000 MHz	-60.30 dBm	-32.11 dB
4	4	775.00 MHz	787.90 MHz	100.0 kHz	787.878500 MHz	-41.40 dBm	-28.40 dB
5	5	787.90 MHz	788.00 MHz	100.0 kHz	787.944667 MHz	-39.89 dBm	-26.89 dB
6	6	788.00 MHz	798.00 MHz	100.0 kHz	793.283333 MHz	-3.633 dBm	-33.63 dB
7	7	798.00 MHz	798.10 MHz	100.0 kHz	798.030333 MHz	-40.48 dBm	-12.29 dB
8	8	798.10 MHz	805.00 MHz	30.00 kHz	798.100000 MHz	-45.49 dBm	-17.30 dB
9	9	805.00 MHz	810.00 MHz	100.0 kHz	805.008333 MHz	-52.28 dBm	-39.28 dB

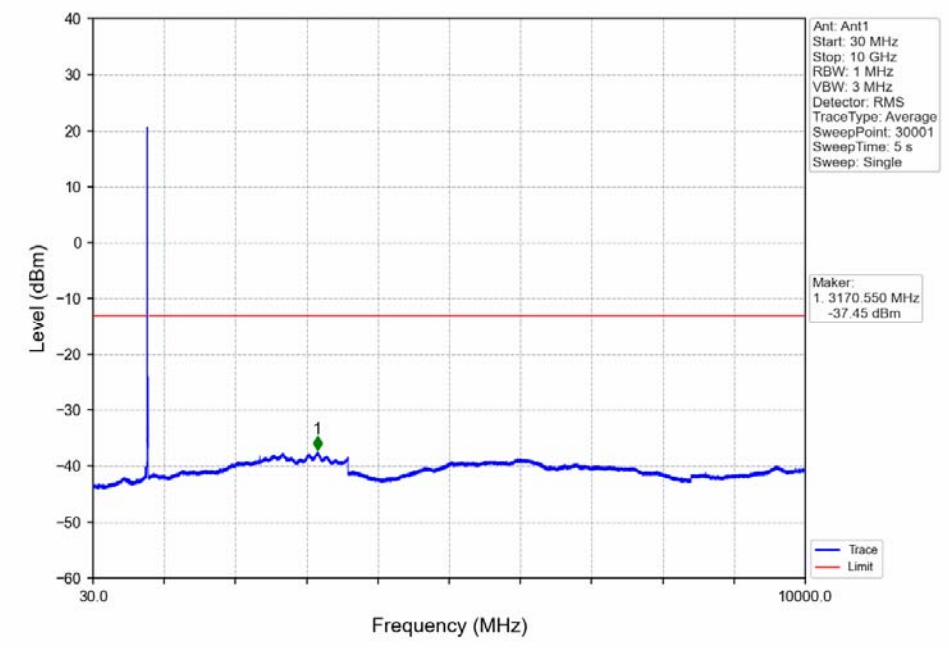
Band14_10MHz_16QAM_MCH_793MHz_RB_1_49_NTNV



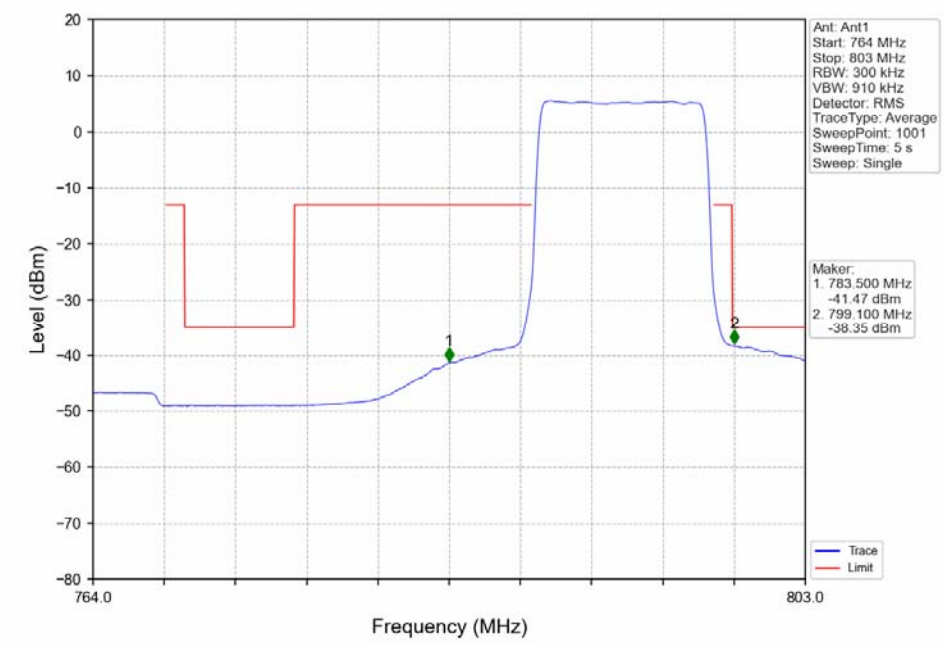
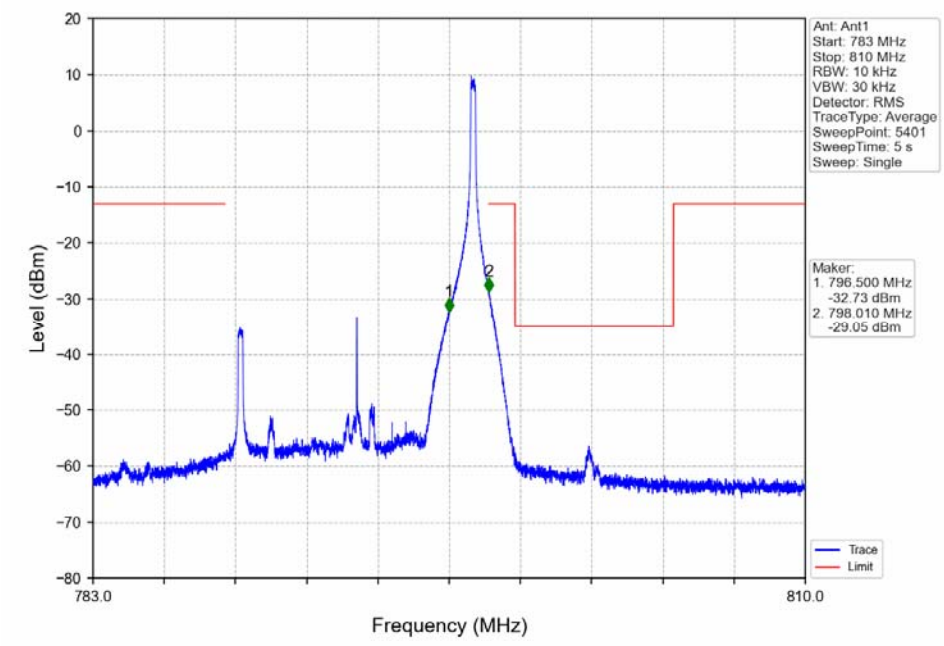
Band14_10MHz_64QAM_MCH_793MHz_RB_1_0_NTNV



Band14_10MHz_64QAM_MCH_793MHz_RB_1_0_NTNV



Band14_10MHz_64QAM_MCH_793MHz_RB_50_0_NTNV



Band14_10MHz_64QAM_MCH_793MHz_RB_1_49_NTNV