

TEST REPORT

Reference No...... : WTS20S05031125W001
FCC ID : 2AG32EG2013BM11
Applicant..... : Baicells Technologies Co., Ltd.
Address..... : 9-10F, 1stBldg., No.81 Beiqing Road, Haidian District, Beijing, China
Manufacturer : Baicells Technologies Co., Ltd.
Address..... : 9-10F, 1stBldg., No.81 Beiqing Road, Haidian District, Beijing, China
Product..... : LTE Indoor CPE
Model(s) : EG2013B-M11, EG3013B-M11
Brand Name : BaiCells
Standards..... : FCC CFR Title 47 Part 2
FCC CFR Title 47 Part 96
Date of Receipt sample : 2020-05-26
Date of Test : 2020-05-27 to 2020-06-25
Date of Issue..... : 2020-06-29
Test Result..... : **Pass**

Remarks:

The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

Prepared By:

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3 Revision History

Test report No.	Date of Receipt sample	Date of Test	Date of Issue	Purpose	Comment	Approved
WTS20S05031 125W001	2020-05-26	2020-05-27 to 2020-06-25	2020-06-29	original	-	Valid

4 General Information

4.1 General Description of E.U.T.

Product:	LTE Indoor CPE
Model(s):	EG2013B-M11, EG3013B-M11
Model Description:	Only different for the model names.
Storage Location:	Internal Storage
Category of CBSD:	Category A

4.2 Details of E.U.T.

Operation Frequency:	LTE Band 48:3550MHz-3700MHz
Type of Modulation:	LTE: Uplink: QPSK, 16QAM; Downlink: QPSK, 16QAM, 64QAM
Antenna installation:	LTE: Internal antenna
Antenna Gain:	6.5dBi
Ratings:	DC 5V 2.0A

4.3 Channel List

Normal

10MHz		15MHz	
Channel	Frequency (MHz)	Channel	Frequency (MHz)
Low	3555	Low	3557.5
Middle	3625	Middle	3625
High	3695	High	3692.5
20MHz			
Channel	Frequency (MHz)		
Low	3560		
Middle	3625		
High	3690		

4.4 Test Mode

All test mode(s) and condition(s) mentioned were considered and evaluated respectively by performing full tests, the worst data were recorded and reported.

Test Mode	Description
Data Mode (QPSK)	Keep the EUT in data communicating mode (QPSK). (10MHz, 15MHz, 20MHz)
Data Mode (16QAM)	Keep the EUT in data communicating mode (16QAM). (10MHz, 15MHz, 20MHz)

4.5 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:

47 CFR FCC Part 96
 KDB 971168 D01 Power Meas License Digital Systems v03r01
 KDB 940660 D01 Part 96 CBRS Equipment v01
 ANSI/TIA/EIA-603-E 2016
 ANSI C63.26-2015

4.6 Test Facility

The test facility has a test site registered with the following organizations:

ISED CAB identifier: CN0013. Test Firm Registration No.: 7760A.

Waltek Services(Shenzhen) Co., Ltd. Has been registered and fully described in a report filed with the Industry Canada. The acceptance letter from the Industry Canada is maintained in our files.

Registration number 7760A, October 15, 2016.

FCC Designation No.: CN1201. Test Firm Registration No.: 523476.

Waltek Services(Shenzhen) Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration number 523476, September 10, 2019.

5 Test Summary

Test Items	Available Channel (MHz)	Tested Channel (MHz)	Channel Bandwidth	Modulation
EIRP	3555 to 3695	3555 to 3695	10MHz	QPSK, 16QAM
	3557.5 to 3692.5	3557.5 to 3692.5	15MHz	QPSK, 16QAM
	3560 to 3690	3560 to 3690	20MHz	QPSK, 16QAM
PSD	3555 to 3695	3555 to 3695	10MHz	QPSK, 16QAM
	3557.5 to 3692.5	3557.5 to 3692.5	15MHz	QPSK, 16QAM
	3560 to 3690	3560 to 3690	20MHz	QPSK, 16QAM
Frequency stability	3555 to 3695	3625	10MHz	QPSK
	3557.5 to 3692.5	3625	15MHz	QPSK
	3560 to 3690	3625	20MHz	QPSK
Occupied Bandwidth	3555 to 3695	3555, 3625, 3695	10MHz	QPSK, 16QAM
	3557.5 to 3692.5	3557.5, 3625, 3692.5	15MHz	QPSK, 16QAM
	3560 to 3690	3560, 3625, 3690	20MHz	QPSK, 16QAM
Peak to Average Ratio	3555 to 3695	3555, 3625, 3695	10MHz	QPSK
	3557.5 to 3692.5	3557.5, 3625, 3692.5	15MHz	QPSK
	3560 to 3690	3560, 3625, 3690	20MHz	QPSK
Radiated Emission	3555 to 3695	3555, 3625, 3695	10MHz	QPSK
	3557.5 to 3692.5	3557.5, 3625, 3692.5	15MHz	QPSK
	3560 to 3690	3560, 3625, 3690	20MHz	QPSK
Conducted Emission	3555 to 3695	3555, 3625, 3695	10MHz	QPSK
	3557.5 to 3692.5	3557.5, 3625, 3692.5	15MHz	QPSK
	3560 to 3690	3560, 3625, 3690	20MHz	QPSK

NOTE 1: All supported modulation types were evaluated. The Worst case of QPSK was selected. Therefore, the Frequency Stability, Peak to Average Ratio, Conducted Emission and Radiated Emission were presented under QPSK mode only.

NOTE 2: The duty cycle correction= $10 \log(1/\text{duty cycle})=10 \log(1/(1.98/5.01))=4(\text{dB})$

Offset factory= $\text{ATT loss}+\text{Cable loss}+\text{Duty cycle correction}=3.5+0.5+4=8(\text{dB})$

6 Equipment Used during Test

6.1 Equipments List

3m Semi-anechoic Chamber for Radiation Emissions Test site 1#						
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Calibration Date	Calibration Due Date
1	Test Receiver	R&S	ESCI	101296	2020-04-20	2021-04-19
2	Trilog Broadband Antenna	SCHWARZBECK	VULB9160	9160-3325	2020-04-25	2021-04-24
3	Cable	HUBER+SUHNER	CBL2	525178	2020-04-20	2021-04-19
4	Amplifier	ANRITSU	MH648A	M43381	2020-04-20	2021-04-19
5	Universal Radio Communication Tester	R&S	CMW500	116543	2019-09-17	2020-09-16
3m Semi-anechoic Chamber for Radiation Emissions Test site 2#						
Item	Equipment	Manufacturer	Model No.	Serial No	Last Calibration Date	Calibration Due Date
1	Spectrum Analyzer	R&S	FSP40	100501	2019-09-17	2020-09-16
2	Broad-band Horn Antenna	SCHWARZBECK	BBHA 9120 D	667	2020-04-25	2021-04-24
3	Broadband Preamplifier	COMPLIANCE DIRECTION	PAP-1G18	2004	2020-04-20	2021-04-19
4	Coaxial Cable	ZT26-NJ-NJ-8M/FA	1GHz-18GHz	NA	2020-04-20	2021-04-19
5	Broad-band Horn Antenna	SCHWARZBECK	BBV 9721	100472	2019-09-17	2020-09-16
6	Coaxial Cable	ZT40-2.92J-2.92J-2.0M	10MHz-40GHz	17100919	2020-04-27	2021-04-26
5	Universal Radio Communication Tester	R&S	CMW500	116543	2019-09-17	2020-09-16
RF Conducted Testing						
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Calibration Date	Calibration Due Date
1.	EXA Signal Analyzer	Malaysia Keysight	N9010A	MY50520207	2020-04-20	2021-04-19
2.	Spectrum Analyzer	R&S	FSP40	100501	2019-09-17	2020-09-16
5	Universal Radio Communication Tester	R&S	CMW500	116543	2019-09-17	2020-09-16

6.2 Measurement Uncertainty

Parameter	Uncertainty
Conducted Emission	± 3.64 dB(AC mains 150KHz~30MHz)
Radiated Spurious Emissions	± 5.08 dB (Bilog antenna 30M~1000MHz)
	± 5.47 dB (Horn antenna 1000M~25000MHz)
Radio Frequency	± 1 x 10 ⁻⁷ Hz
RF Power	± 0.42 dB
RF Power Density	± 0.7dB
Conducted Spurious Emissions	± 2.76 dB (9kHz~26500MHz)
Confidence interval: 95%. Confidence factor:k=2	

6.3 Test Equipment Calibration

All the test equipments used are valid and calibrated by CEPREI Certification Body that address is No.110 Dongguan Zhuang RD. Guangzhou, P.R.China.

7 Max EIRP and maximum spectral density

Test Requirement:	FCC part96.41(b)
Test Method:	ANSI/TIA-603-E:2016, ANSI C63.26:2015
Test Mode:	Data communicating mode
Limit:	

Device	Maximum EIRP(dBm/10MHz)	Maximum PSD(dBm/MHz)
End User Device	23	n/a
Category A CBSD	30	20
Category B CBSD	47	37

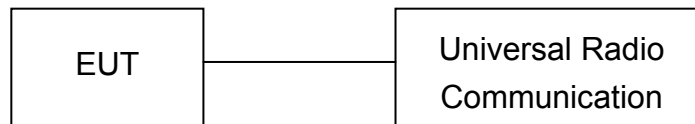
7.1 EUT Operation

Operating Environment :	
Temperature:	22.4 °C
Humidity:	52.2 % RH
Atmospheric Pressure:	101.3kPa

7.2 Test Procedure

Conducted method for 10M, 15M&20M bandwidth:

The RF output of the transmitter was connected to the wireless test set and the spectrum analyzer through sufficient attenuation.



For Maximum EIRP

1. Connect the transmitter to the spectrum analyzer via coaxial cable while ensuring proper impedance matching.
 2. Set span to 2 × to 3 × the OBW.
 3. Set RBW = 1% to 5% of the OBW.
 4. Set VBW ≥ 3 × RBW.
 5. Set number of measurement points in sweep ≥ 2 × span / RBW.
 6. Sweep time:
 - 1) Set = auto-couple, or
 - 2) Set ≥ [10 × (number of points in sweep) × (transmission symbol period)] for single sweep (automation-compatible) measurement.
 7. Detector = power averaging (rms).
 8. Set sweep trigger to “free run.”
 9. Trace average at least 100 traces in power averaging (rms) mode if sweep is set to auto-couple. To accurately determine the average power over the on and off time of the transmitter, it can be necessary to increase the number of traces to be averaged above 100, or if using a manually
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<http://www.waltek.com.cn>

configured sweep time, increase the sweep time.

10. Compute power by integrating the spectrum across the OBW(10MHz) of the signal using the instrument's band or channel power measurement function with band/channel limits set equal to the OBW(10MHz) band edges.

11. Add 10 log (1/duty cycle) to the measured power level to compute the average power during continuous transmission.

12. EIRP = P_{Meas} + GT.

P_{Meas} measured transmitter output power or PSD.

GT gain of the transmitting antenna.

For Maximum PSD

The PSD is measured following the same procedures described for measuring the maximum EIRP but with the RBW set to the reference bandwidth specified(eg.1MHz) by the applicable regulatory requirement, and by using the marker function to identify the maximum PSD instead of summing the power across the OBW.

7.3 Test Result

Transmit Output Power								
Bandwidth (MHz)	Modulation	Test Channel	Port1 Output Power (dBm/10MHz)	Port2 Output Power (dBm/10MHz)	Total Output Power (dBm/10MHz)	Antenna Gain (dBi)	EIRP (dBm/10MHz)	EIRP Limit (dBm/10MHz)
10	QPSK	Low	20.36	20.00	23.19	6.5	29.69	30
		Middle	19.97	19.62	22.81	6.5	29.31	
		High	19.82	19.40	22.63	6.5	29.13	
	16QAM	Low	20.16	20.20	23.19	6.5	29.69	
		Middle	19.89	19.61	22.76	6.5	29.26	
		High	19.61	19.32	22.48	6.5	28.98	

Transmit Output Power								
Bandwidth (MHz)	Modulation	Test Channel	Port1 Output Power (dBm/10MHz)	Port2 Output Power (dBm/10MHz)	Total Output Power (dBm/10MHz)	Antenna Gain (dBi)	EIRP (dBm/10MHz)	EIRP Limit (dBm/10MHz)
15	QPSK	Low	19.41	19.55	22.49	6.5	28.99	30
		Middle	18.97	18.79	21.89	6.5	28.39	
		High	18.87	18.61	21.75	6.5	28.25	
	16QAM	Low	19.30	19.50	22.41	6.5	28.91	
		Middle	18.88	18.35	21.63	6.5	28.13	
		High	18.61	17.94	21.30	6.5	27.80	

Transmit Output Power								
Bandwidth (MHz)	Modulation	Test Channel	Port1 Output Power (dBm/20MHz)	Port2 Output Power (dBm/15MHz)	Total Output Power (dBm/15MHz)	Antenna Gain (dBi)	EIRP (dBm/15MHz)	EIRP Limit (dBm/15MHz)
15 Full Transmit	QPSK	Low	20.84	20.49	23.68	6.5	30.18	
		Middle	20.64	19.08	22.94	6.5	29.44	
		High	19.94	19.02	22.51	6.5	29.01	
	16QAM	Low	20.74	20.8	23.78	6.5	30.28	
		Middle	20.3	19.38	22.87	6.5	29.37	
		High	19.75	19	22.40	6.5	28.90	

Transmit Output Power								
Bandwidth (MHz)	Modulation	Test Channel	Port1 Output Power (dBm/10MHz)	Port2 Output Power (dBm/10MHz)	Total Output Power (dBm/10MHz)	Antenna Gain (dBi)	EIRP (dBm/10MHz)	EIRP Limit (dBm/10MHz)
20	QPSK	Low	19.28	19.08	22.19	6.5	28.69	30
		Middle	18.99	18.02	21.54	6.5	28.04	
		High	18.23	18.01	21.13	6.5	27.63	
	16QAM	Low	19.13	18.53	21.85	6.5	28.35	
		Middle	17.90	17.70	20.81	6.5	27.31	
		High	18.00	18.13	21.08	6.5	27.58	

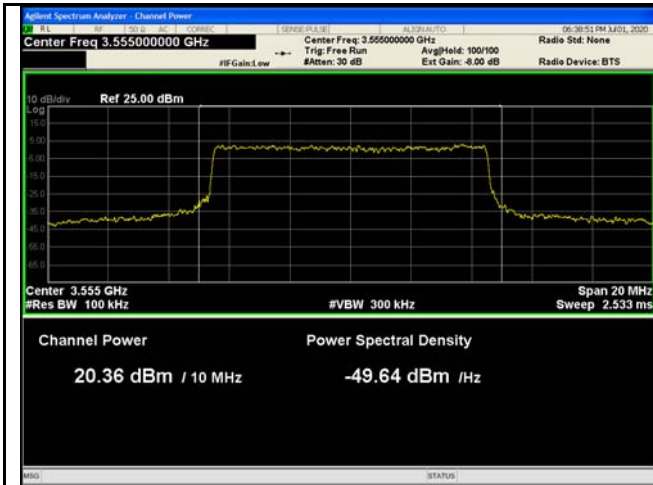
Transmit Output Power								
Bandwidth (MHz)	Modulation	Test Channel	Port1 Output Power (dBm/20MHz)	Port2 Output Power (dBm/20MHz)	Total Output Power (dBm/20MHz)	Antenna Gain (dBi)	EIRP (dBm/20MHz)	EIRP Limit (dBm/20MHz)
20 Full Transmit	QPSK	Low	20.82	20.18	23.52	6.5	30.02	
		Middle	19.62	19.04	22.35	6.5	28.85	
		High	19.51	19.55	22.54	6.5	29.04	
	16QAM	Low	20.44	20.42	23.44	6.5	29.94	
		Middle	19.56	19.03	22.31	6.5	28.81	
		High	19.31	19.15	22.24	6.5	28.74	

PSD								
Bandwidth (MHz)	Modulation	Test Channel	Port 1 PSD (dBm/MHz)	Port 2 PSD (dBm/MHz)	Total PSD (dBm/MHz)	Antenna Gain (dBi)	EIRP density (dBm/MHz)	EIRP density Limit (dBm/MHz)
10	QPSK	Low	10.566	9.957	13.282	6.5	19.782	20
		Middle	10.742	9.715	13.269	6.5	19.769	
		High	10.491	9.736	13.140	6.5	19.640	
	16QAM	Low	10.222	10.354	13.299	6.5	19.799	
		Middle	10.296	9.79	13.061	6.5	19.561	
		High	10.366	9.707	13.059	6.5	19.559	

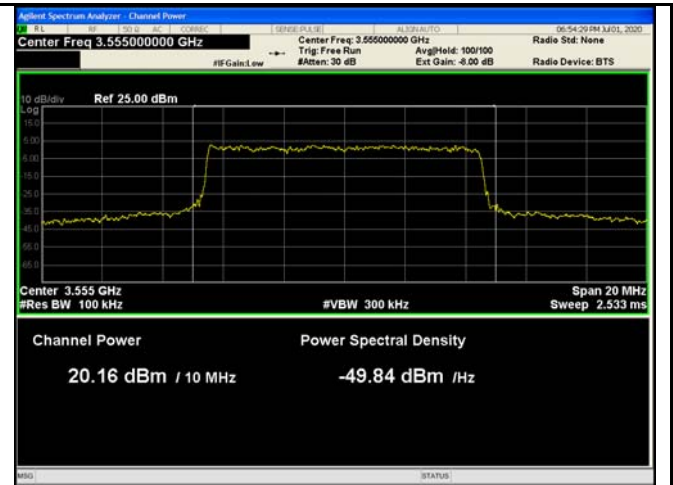
PSD								
Bandwidth (MHz)	Modulation	Test Channel	Port 1 PSD (dBm/MHz)	Port 2 PSD (dBm/MHz)	Total PSD (dBm/MHz)	Antenna Gain (dBi)	EIRP density (dBm/MHz)	EIRP density Limit (dBm/MHz)
15	QPSK	Low	9.283	9.421	12.363	6.5	18.863	20
		Middle	8.845	8.759	11.813	6.5	18.313	
		High	9.216	9.048	12.143	6.5	18.643	
	16QAM	Low	8.922	9.148	12.047	6.5	18.547	
		Middle	8.849	8.581	11.727	6.5	18.227	
		High	8.792	8.562	11.689	6.5	18.189	

PSD								
Bandwidth (MHz)	Modulation	Test Channel	Port 1 PSD (dBm/MHz)	Port 2 PSD (dBm/MHz)	Total PSD (dBm/MHz)	Antenna Gain (dBi)	EIRP density (dBm/MHz)	EIRP density Limit (dBm/MHz)
20	QPSK	Low	7.832	7.853	10.853	6.5	17.353	20
		Middle	7.675	7.514	10.606	6.5	17.106	
		High	7.948	7.739	10.855	6.5	17.355	
	16QAM	Low	7.772	7.73	10.761	6.5	17.261	
		Middle	7.83	7.721	10.786	6.5	17.286	
		High	7.722	7.989	10.868	6.5	17.368	

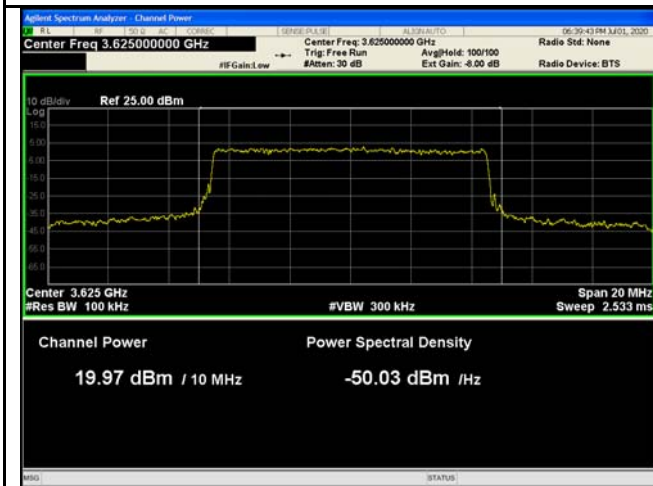
**Transmit Output Power Test Plots
Port1**



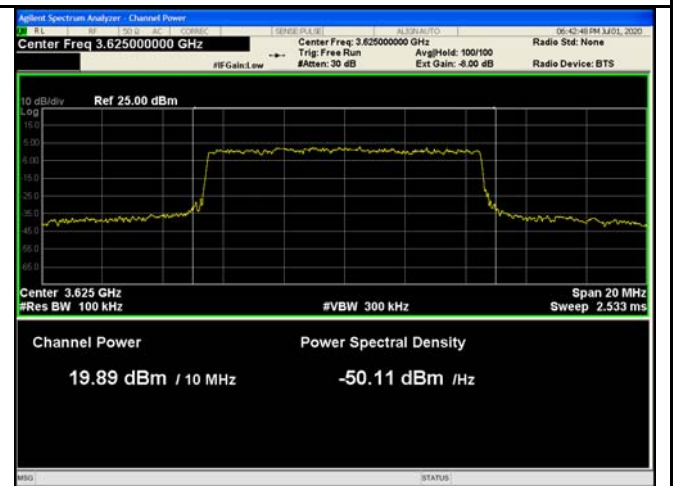
10MHz - Low CH QPSK



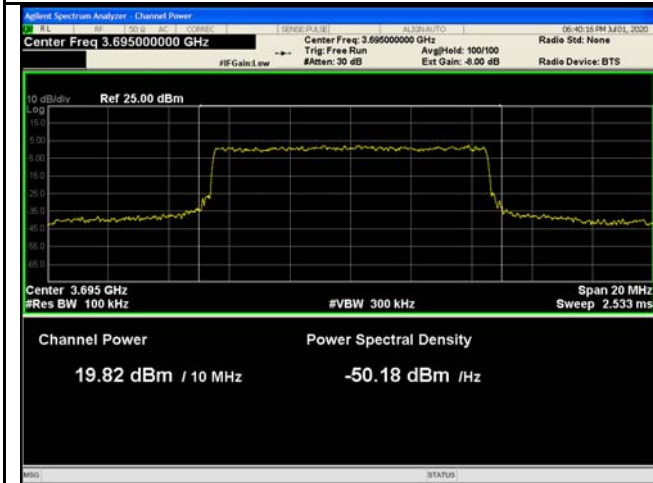
10MHz - Low CH 16QAM



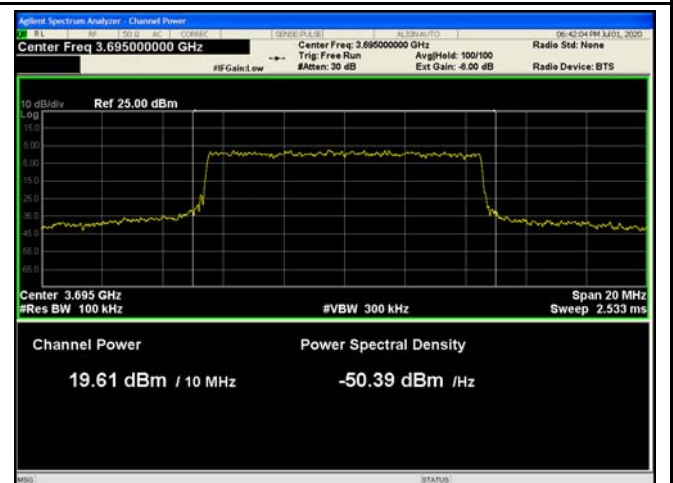
10MHz - Middle CH QPSK



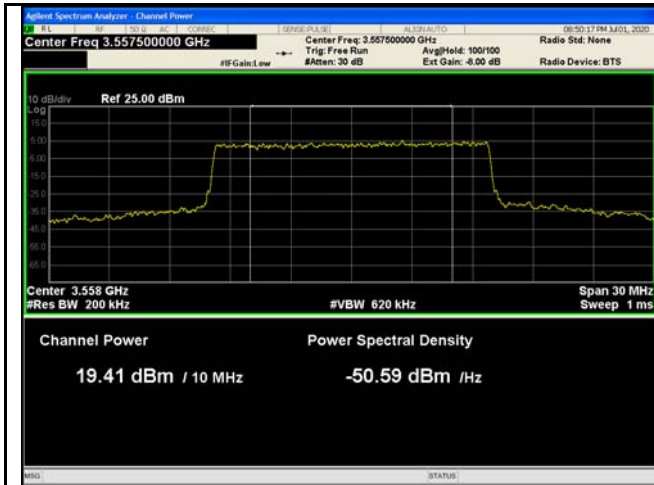
10MHz - Middle CH 16QAM



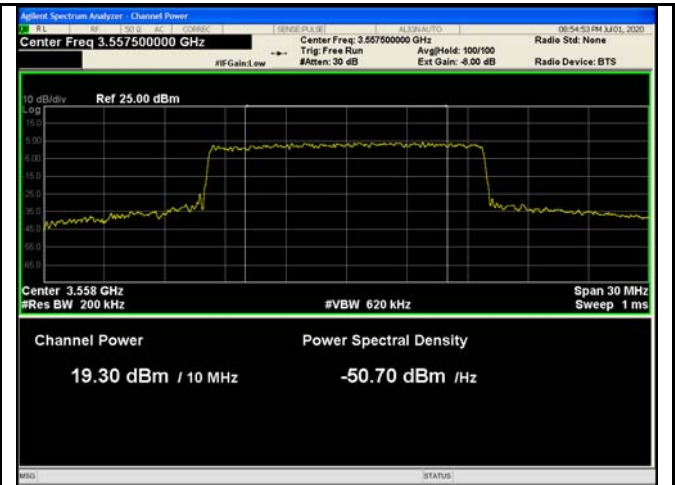
10MHz - High CH QPSK



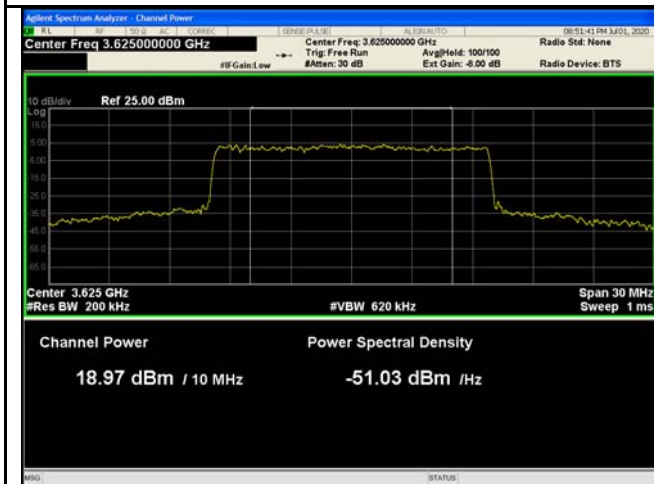
10MHz - High CH 16QAM



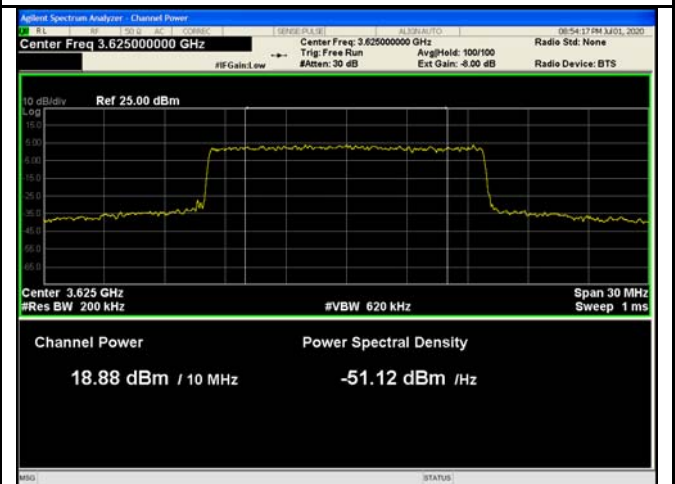
15MHz - Low CH QPSK



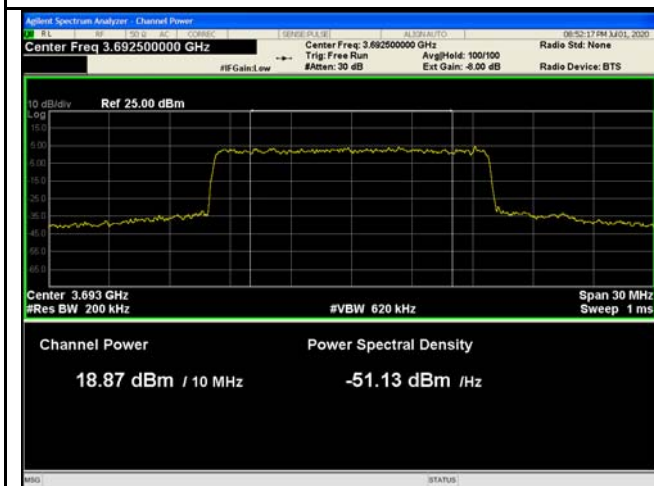
15MHz - Low CH 16QAM



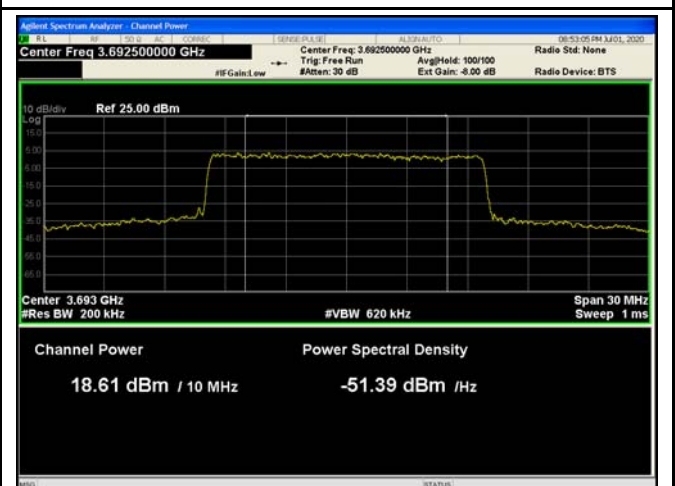
15MHz - Middle CH QPSK



15MHz - Middle CH 16QAM

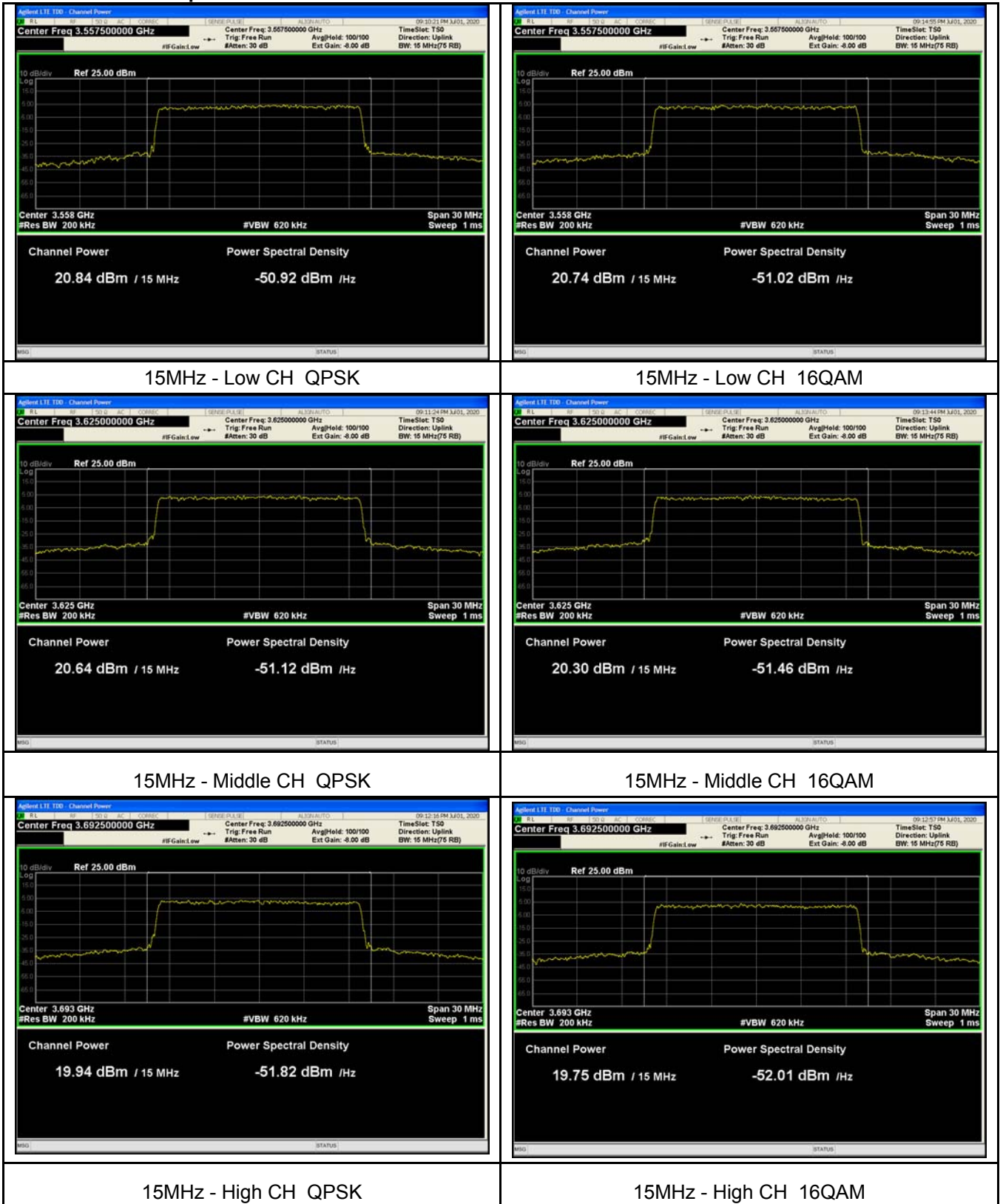


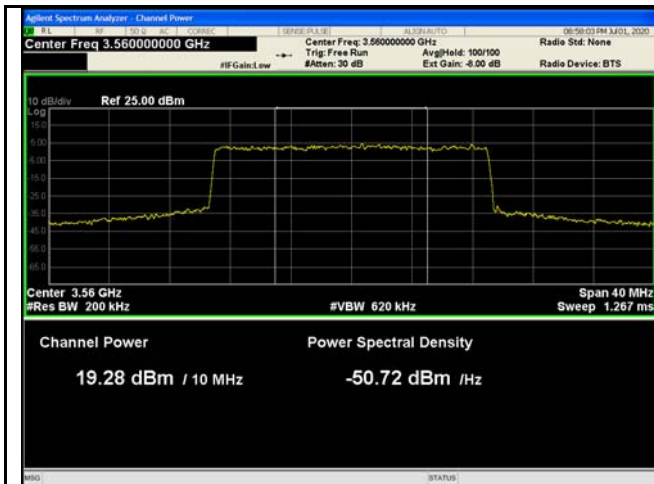
15MHz - High CH QPSK



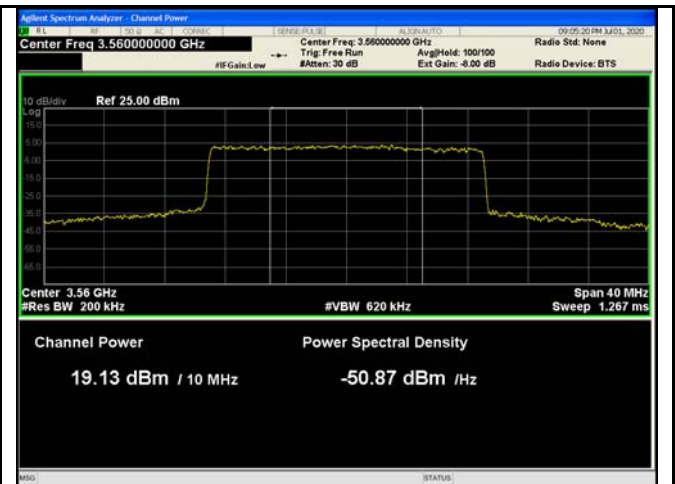
15MHz - High CH 16QAM

Full Transmit Output Power

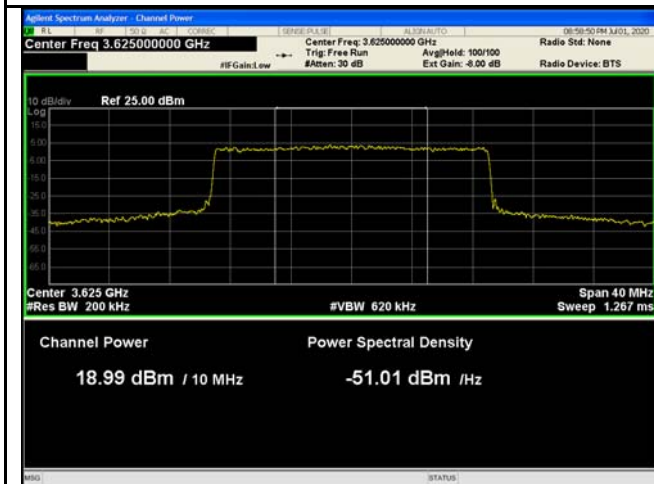




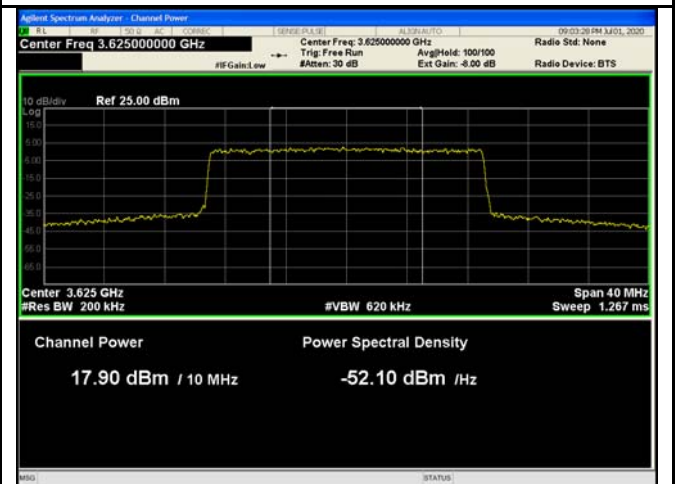
20MHz - Low CH QPSK



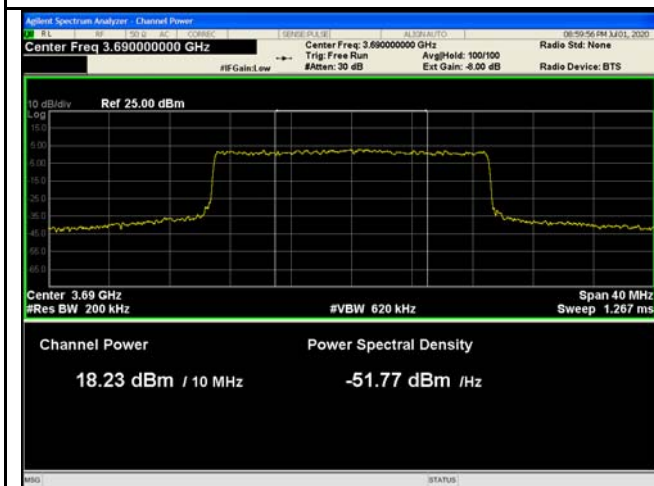
20MHz - Low CH 16QAM



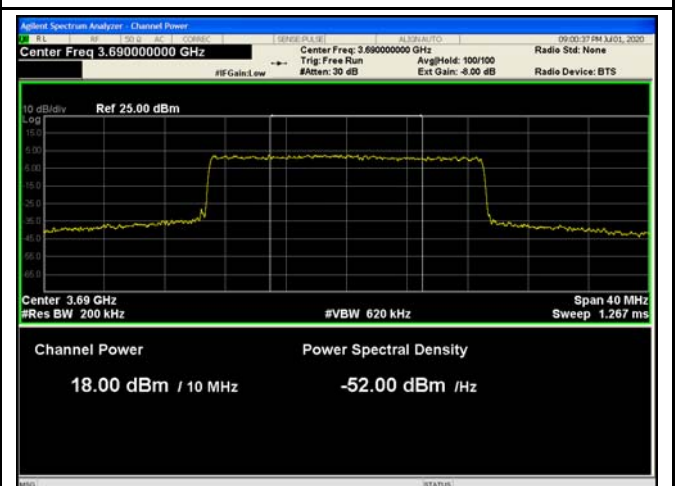
20MHz - Middle CH QPSK



20MHz - Middle CH 16QAM

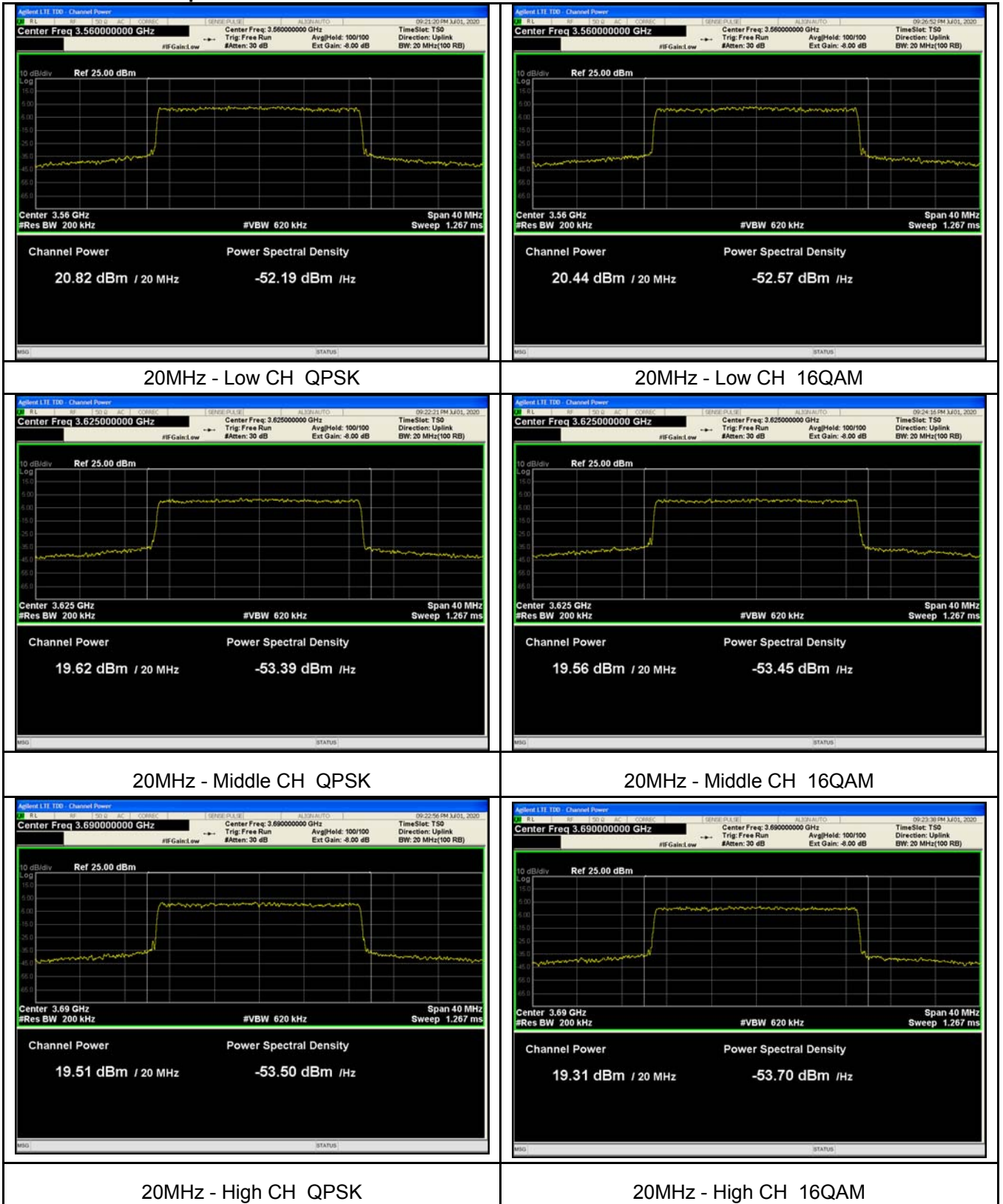


20MHz - High CH QPSK

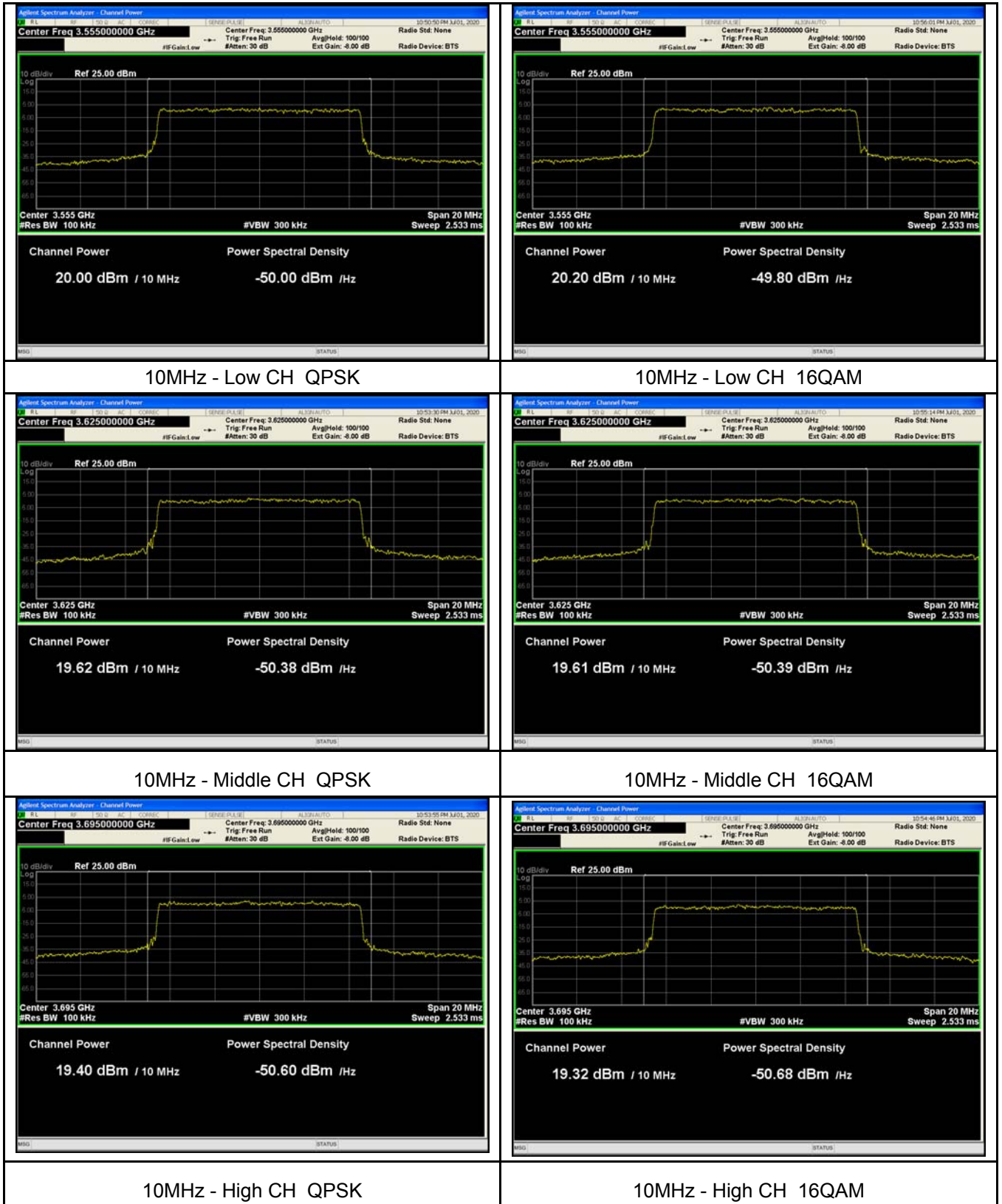


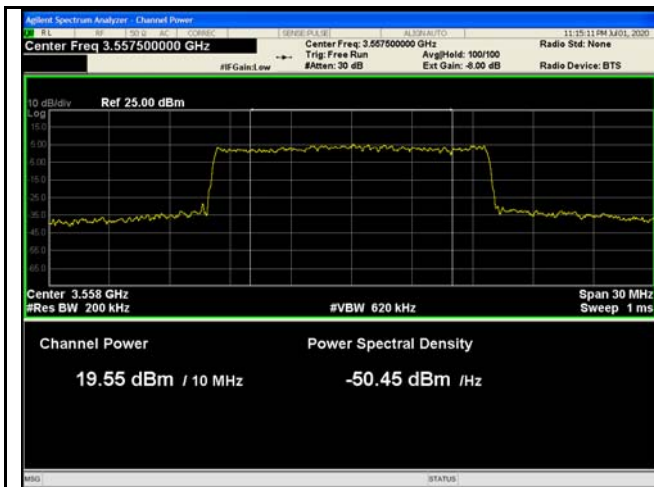
20MHz - High CH 16QAM

Full Transmit Output Power

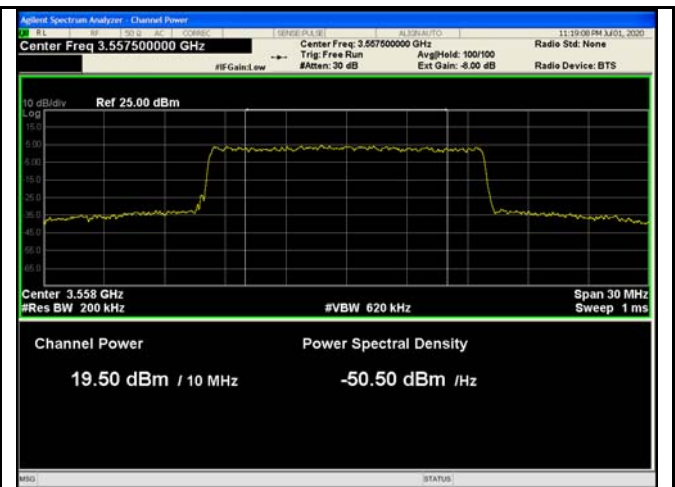


Port2

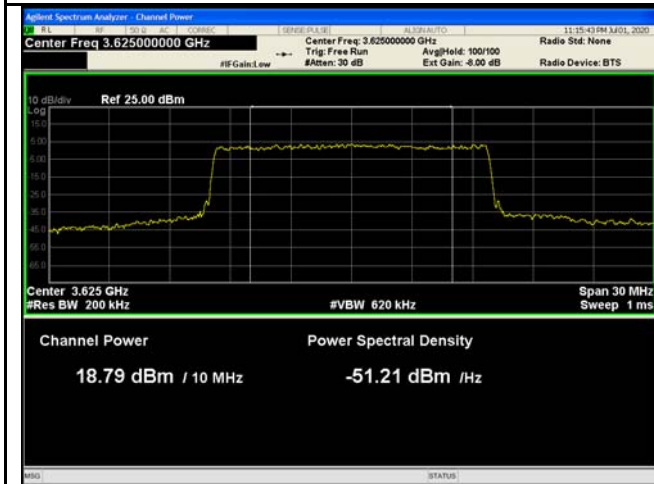




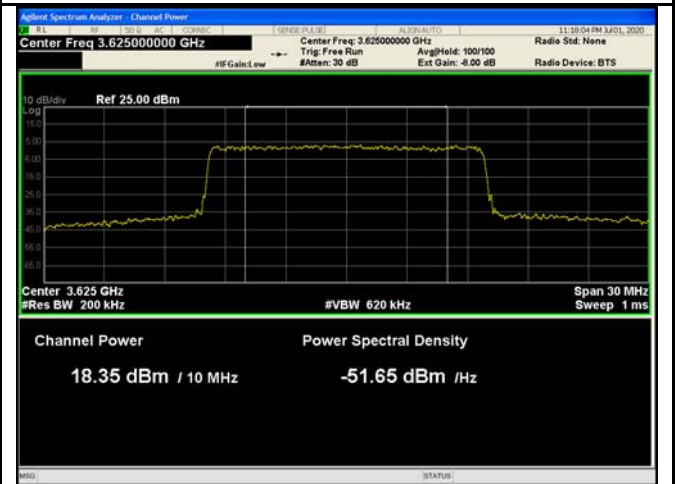
15MHz - Low CH QPSK



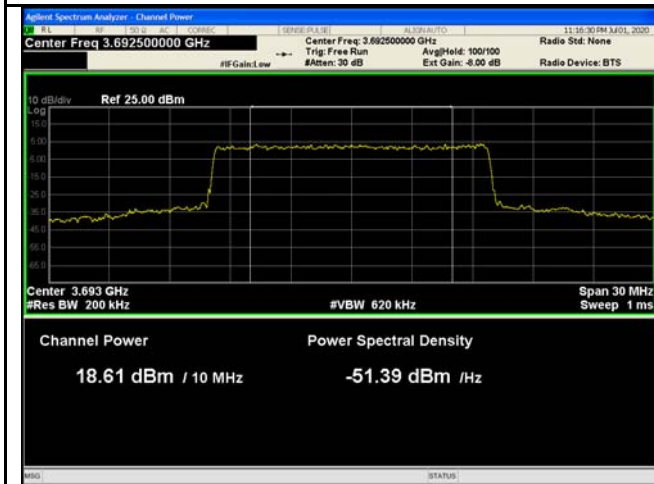
15MHz - Low CH 16QAM



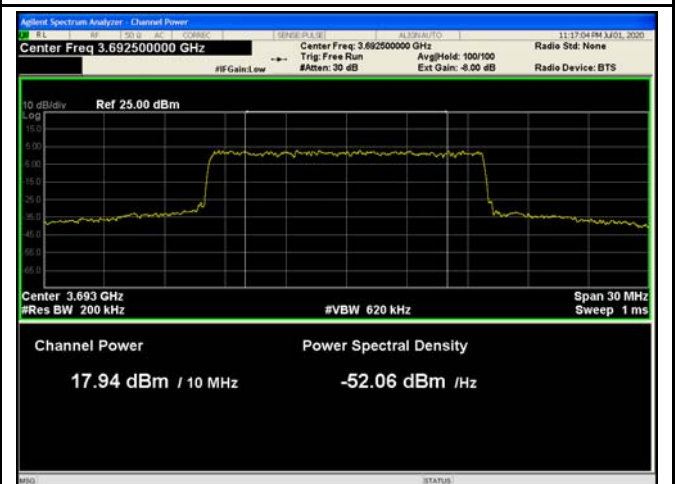
15MHz - Middle CH QPSK



15MHz - Middle CH 16QAM

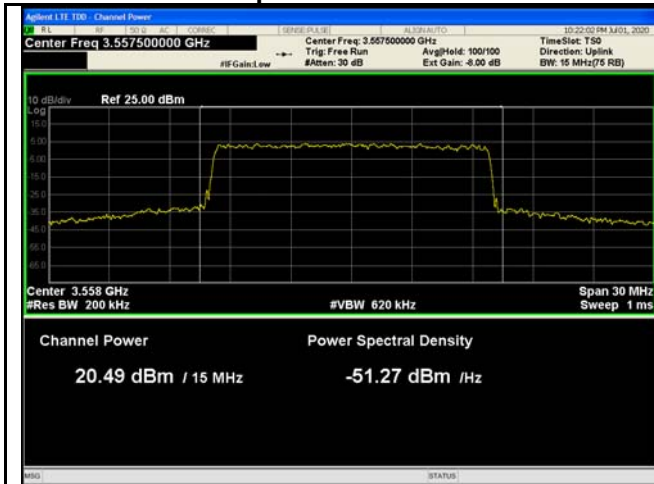


15MHz - High CH QPSK

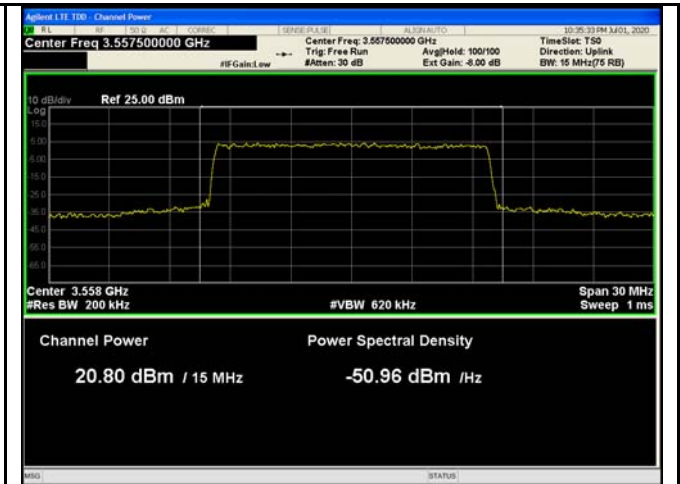


15MHz - High CH 16QAM

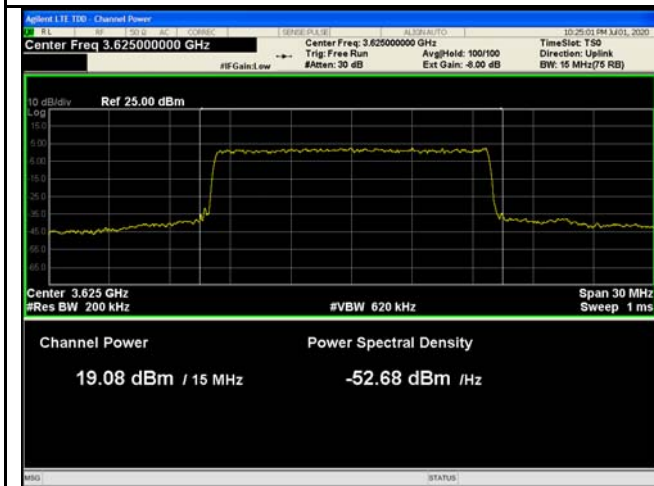
Full Transmit Output Power



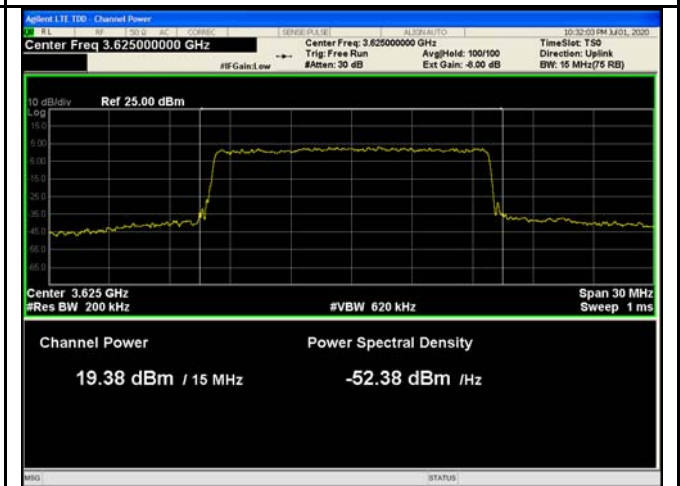
15MHz - Low CH QPSK



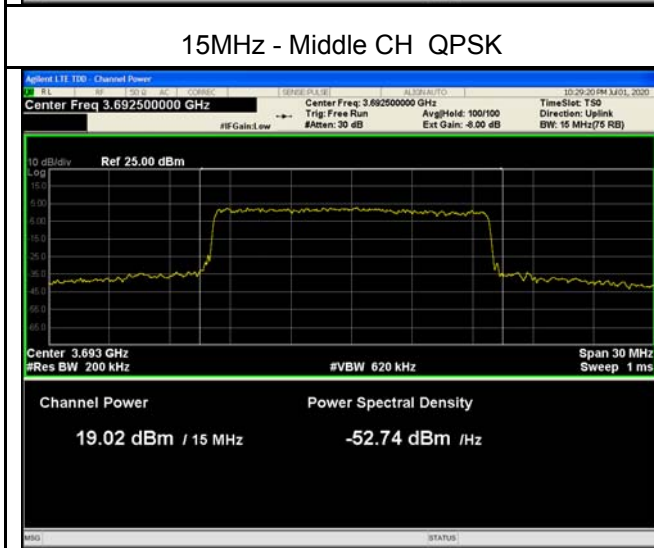
15MHz - Low CH 16QAM



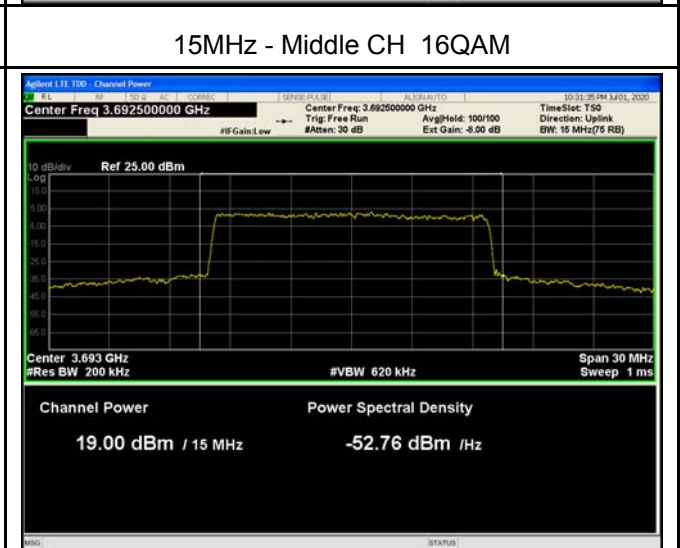
15MHz - Middle CH QPSK



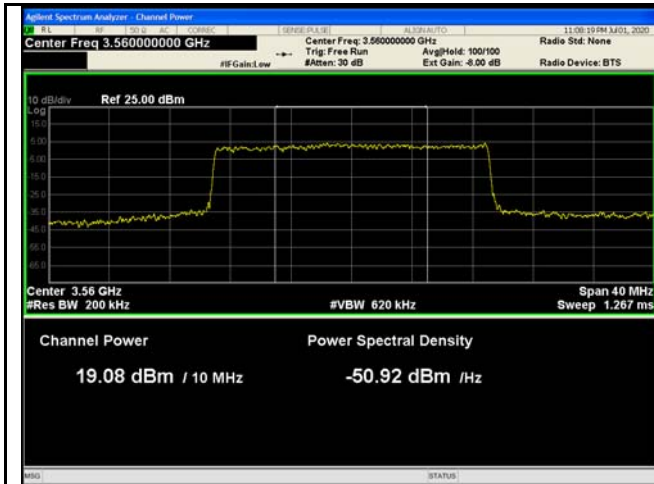
15MHz - Middle CH 16QAM



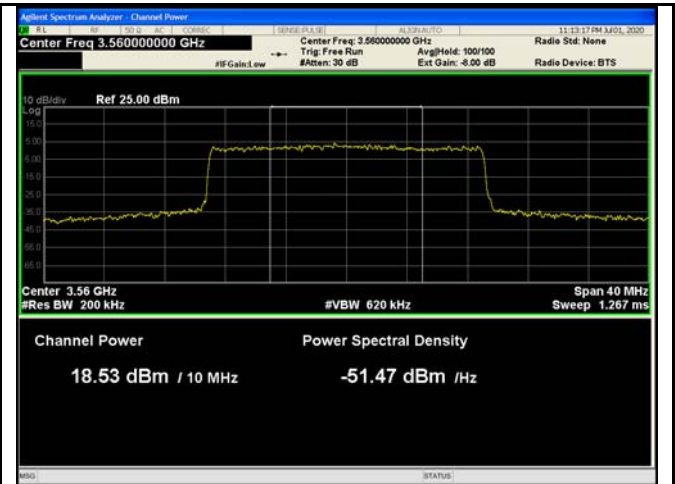
15MHz - High CH QPSK



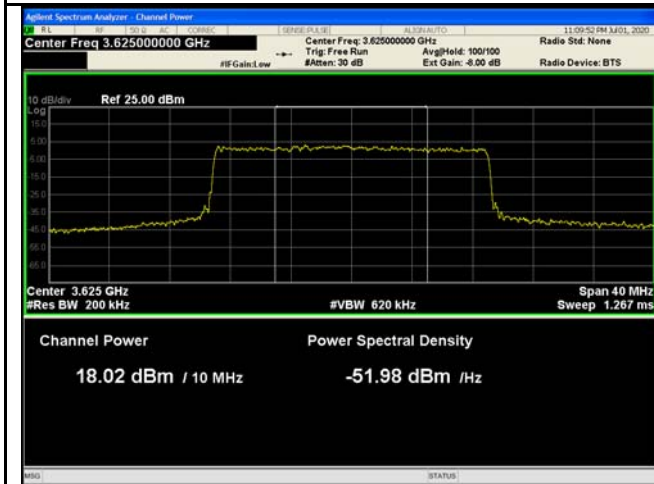
15MHz - High CH 16QAM



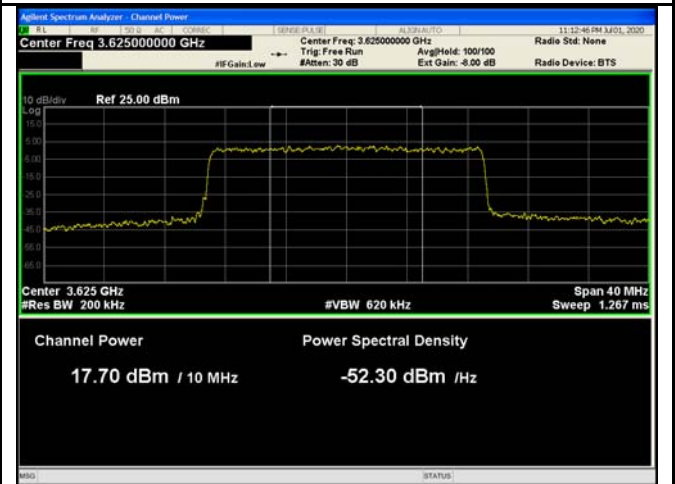
20MHz - Low CH QPSK



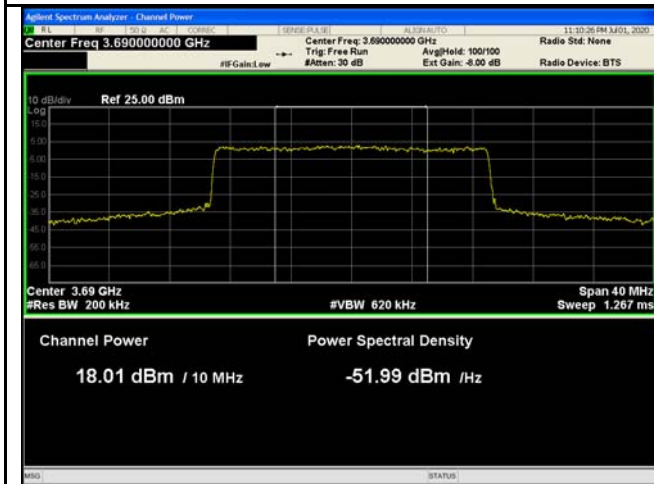
20MHz - Low CH 16QAM



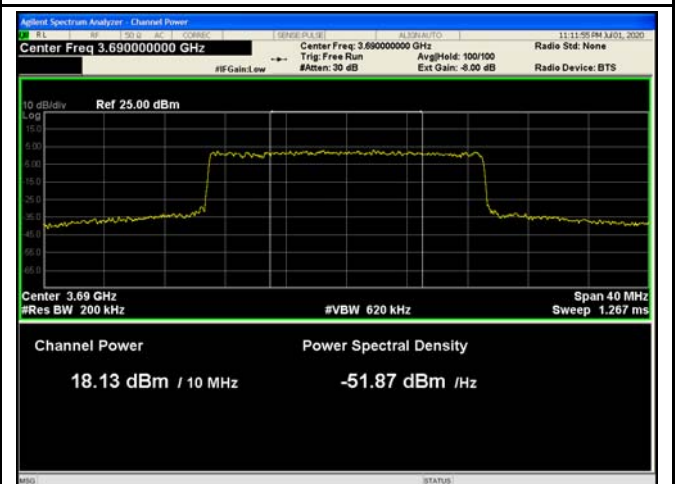
20MHz - Middle CH QPSK



20MHz - Middle CH 16QAM

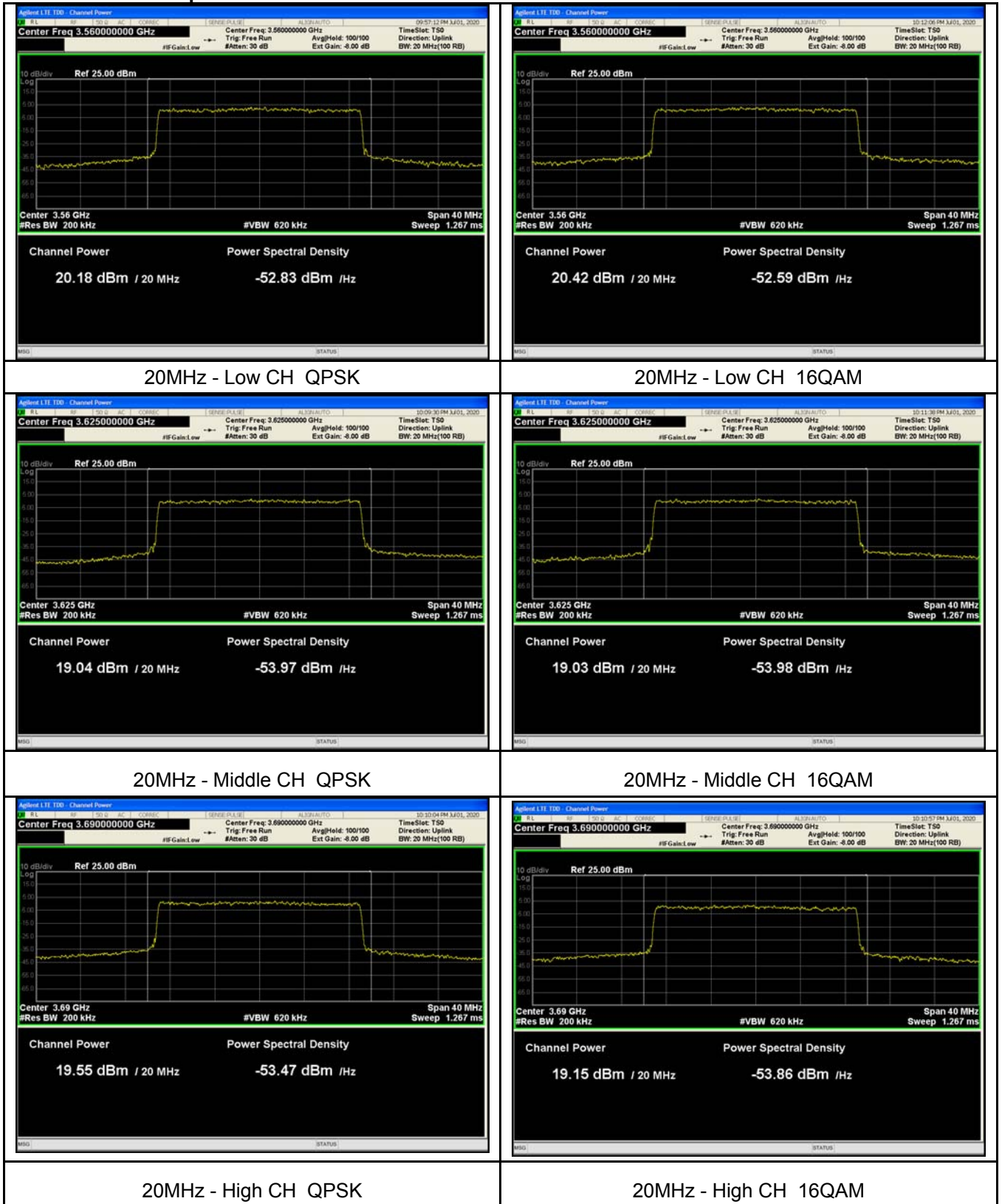


20MHz - High CH QPSK

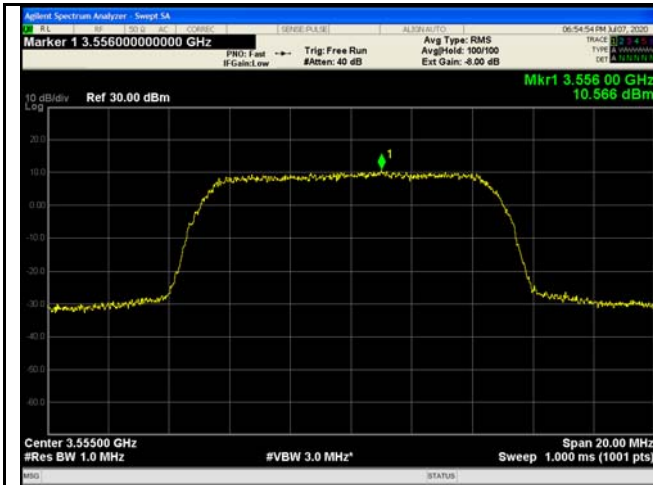


20MHz - High CH 16QAM

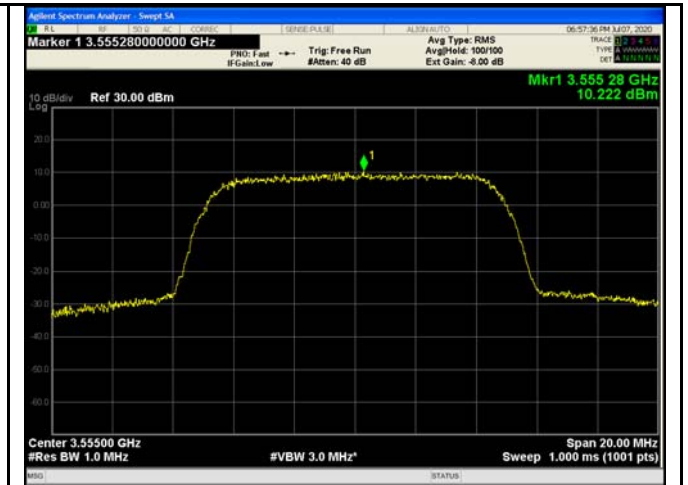
Full Transmit Output Power



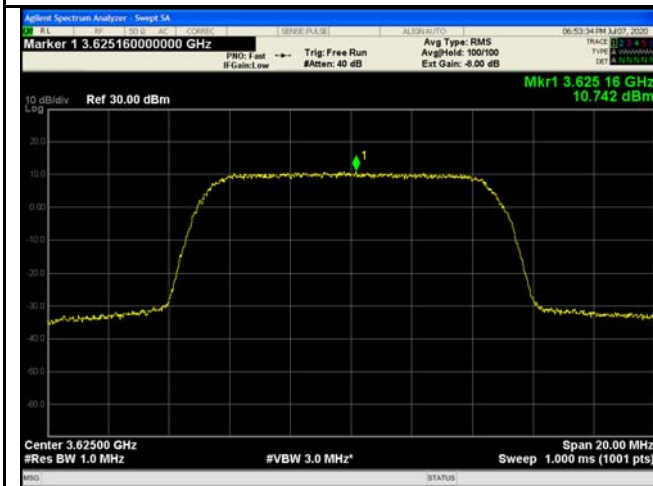
PSD Test Plots
Port1



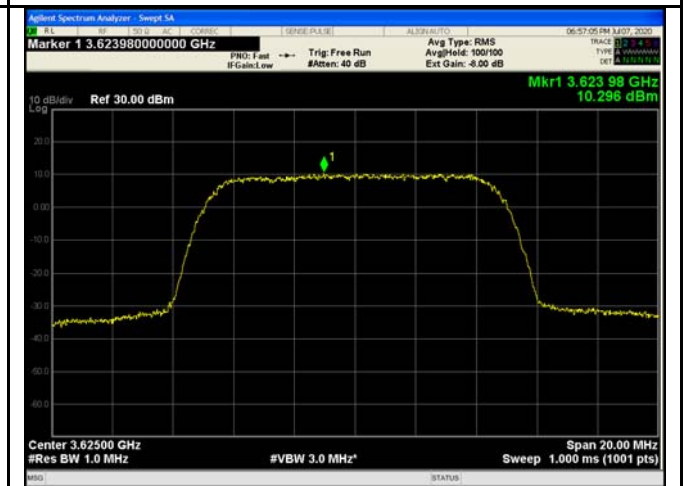
10MHz - Low CH QPSK



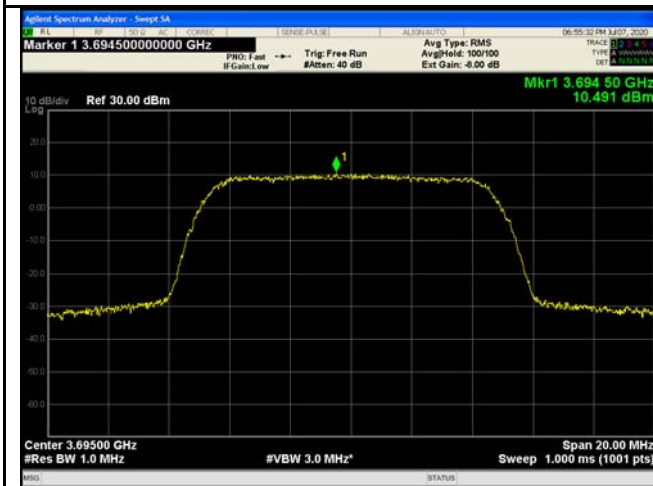
10MHz - Low CH 16QAM



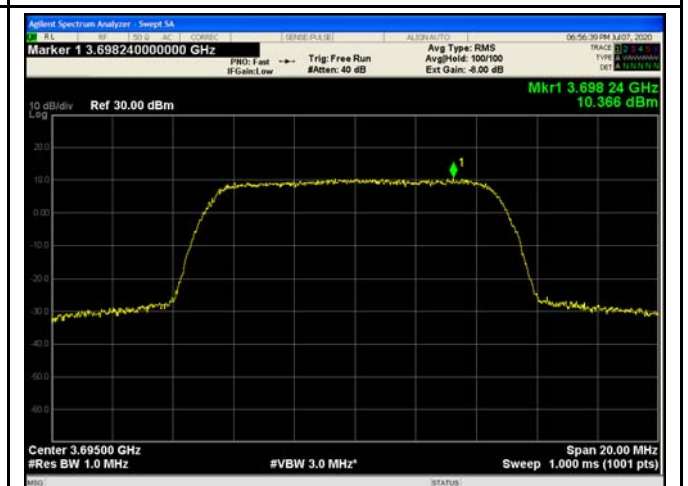
10MHz - Middle CH QPSK



10MHz - Middle CH 16QAM



10MHz - High CH QPSK



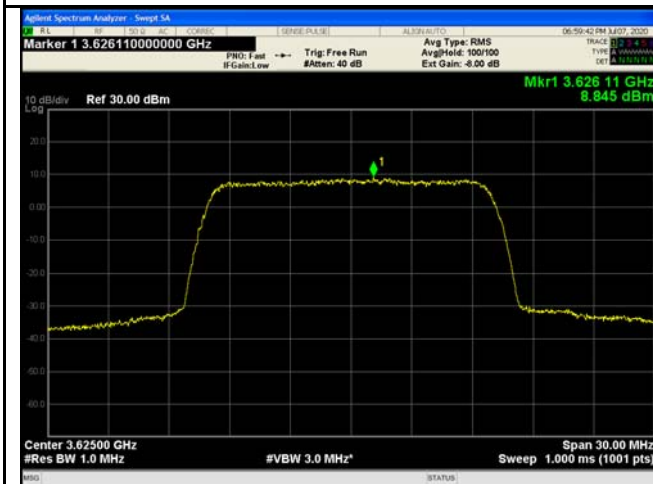
10MHz - High CH 16QAM



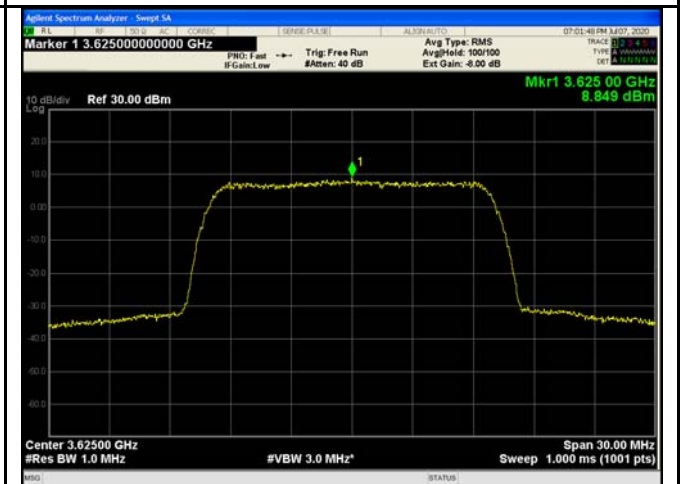
15MHz - Low CH QPSK



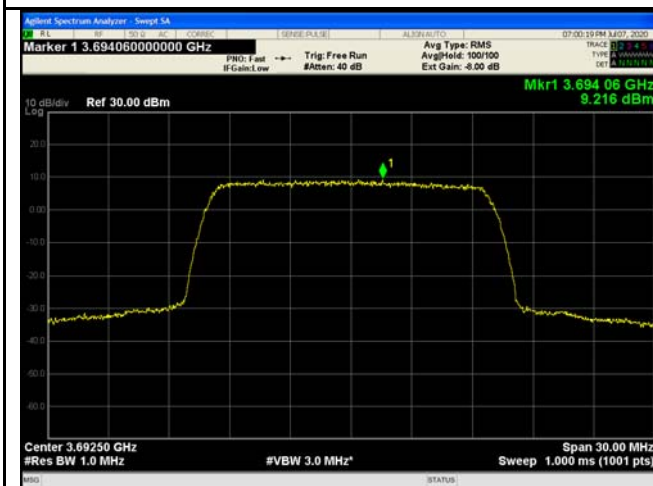
15MHz - Low CH 16QAM



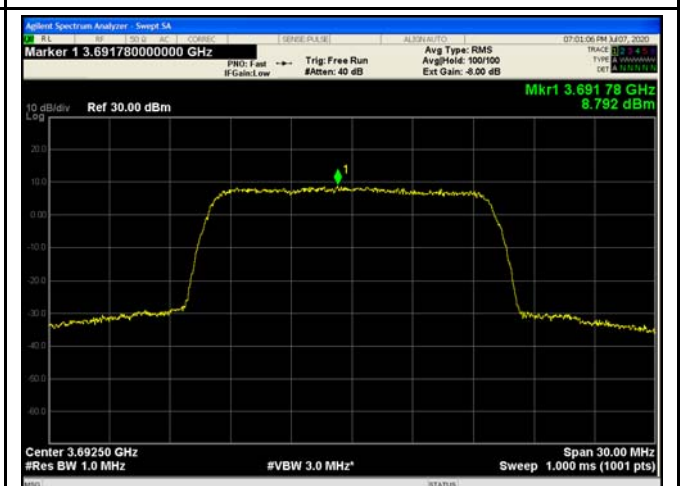
15MHz - Middle CH QPSK



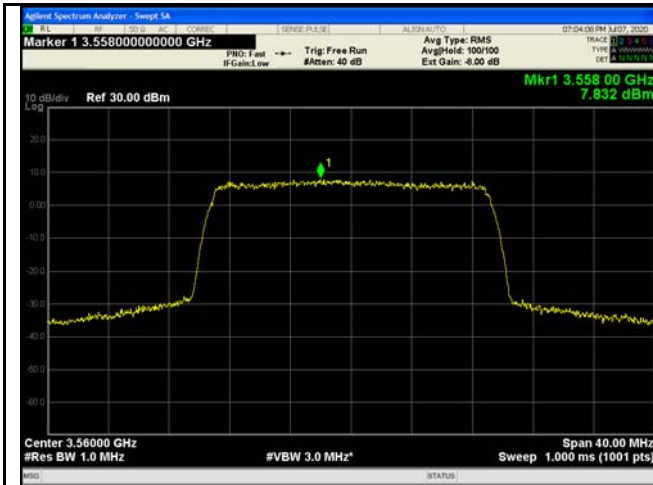
15MHz - Middle CH 16QAM



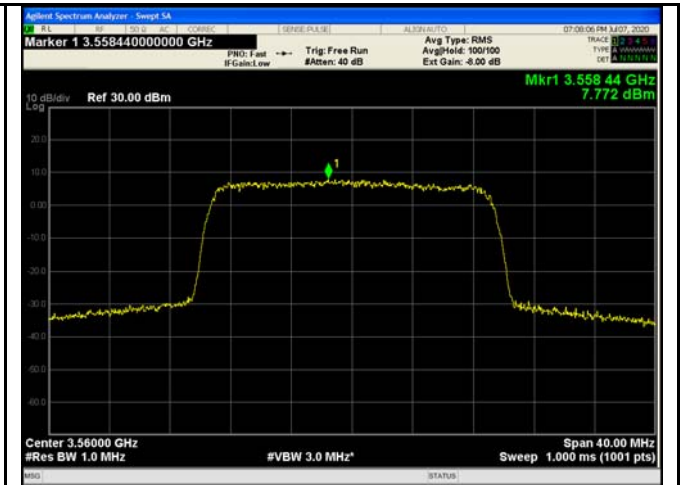
15MHz - High CH QPSK



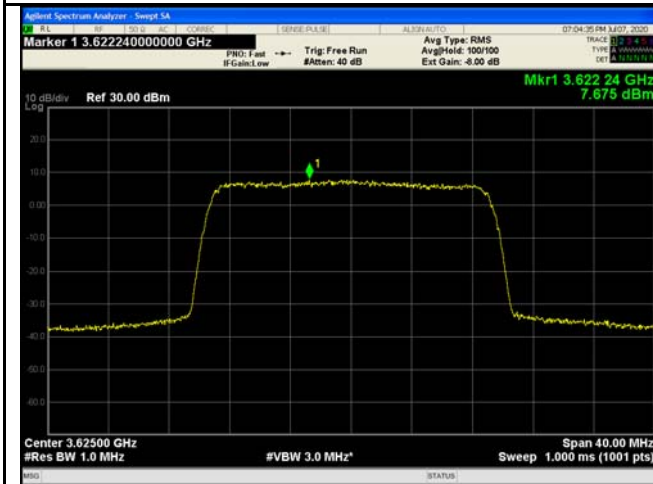
15MHz - High CH 16QAM



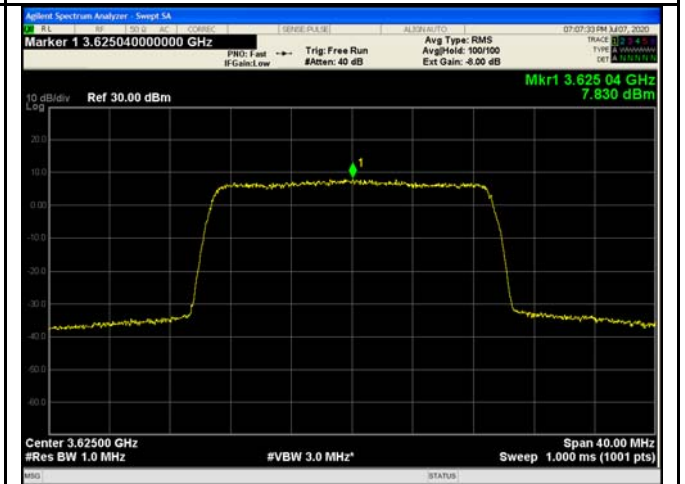
20MHz - Low CH QPSK



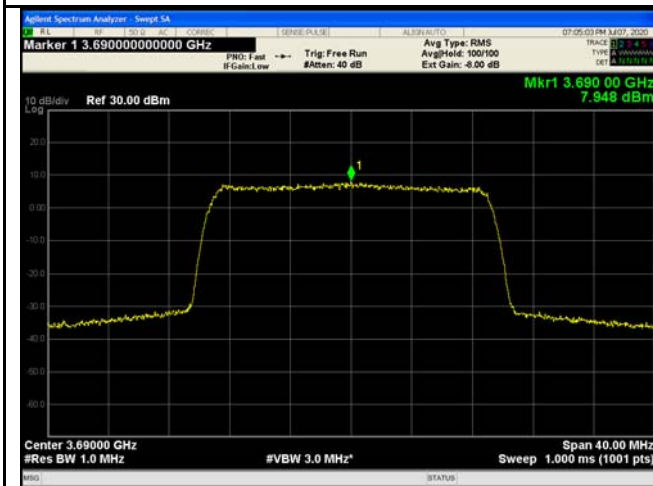
20MHz - Low CH 16QAM



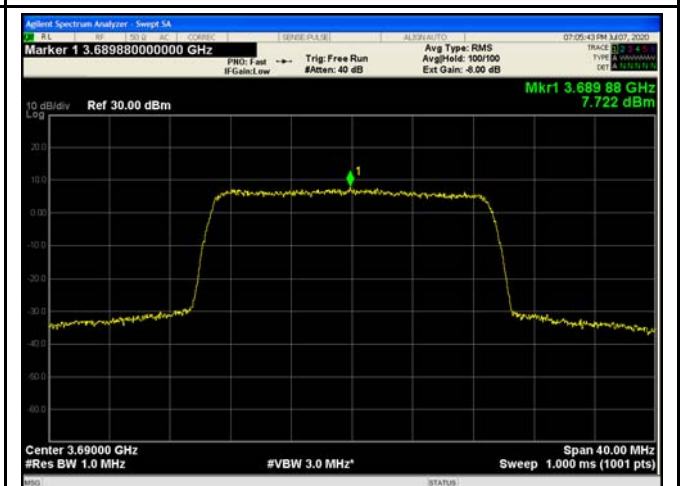
20MHz - Middle CH QPSK



20MHz - Middle CH 16QAM

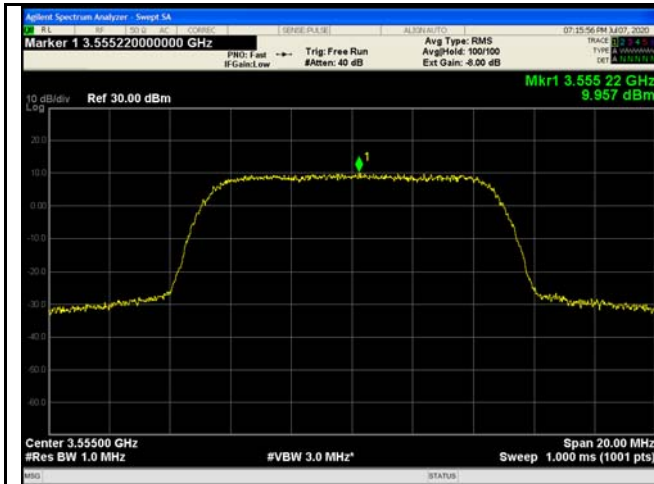


20MHz - High CH QPSK

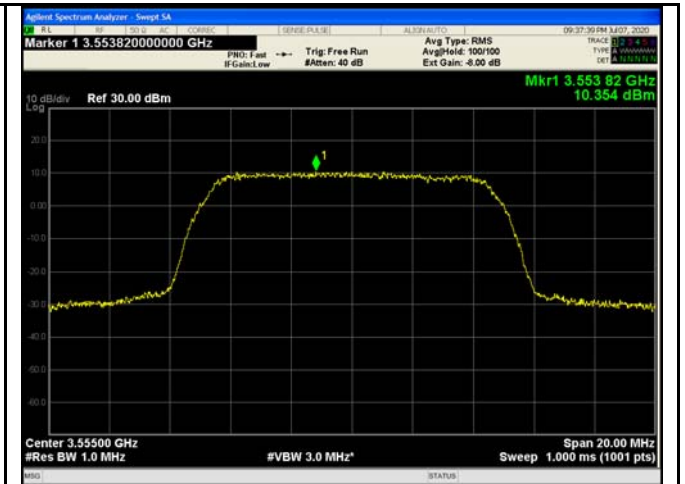


20MHz - High CH 16QAM

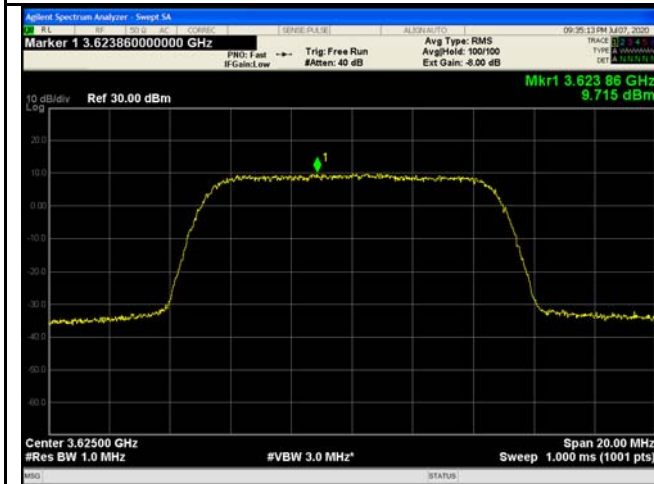
Port12



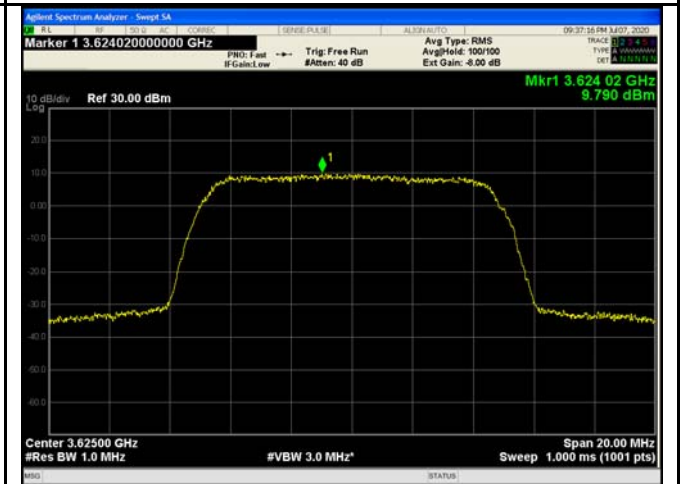
10MHz - Low CH QPSK



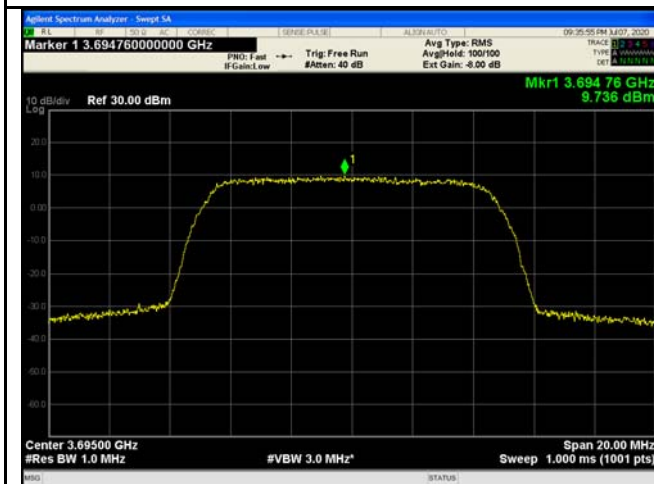
10MHz - Low CH 16QAM



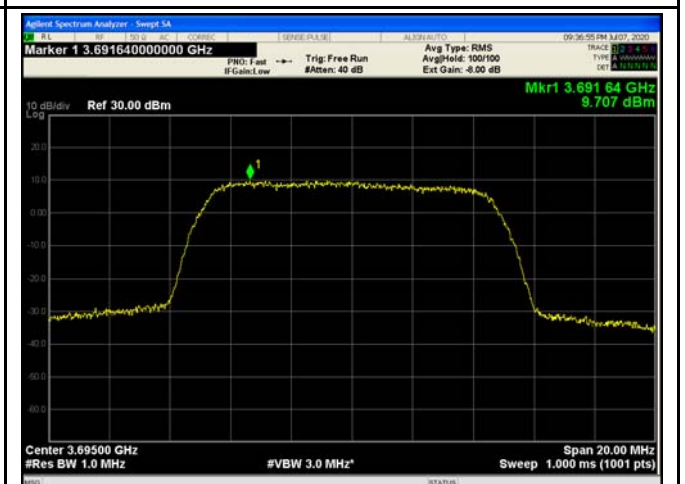
10MHz - Middle CH QPSK



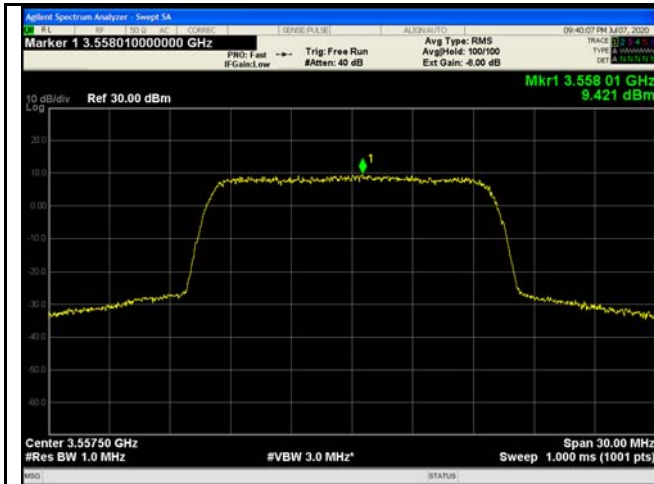
10MHz - Middle CH 16QAM



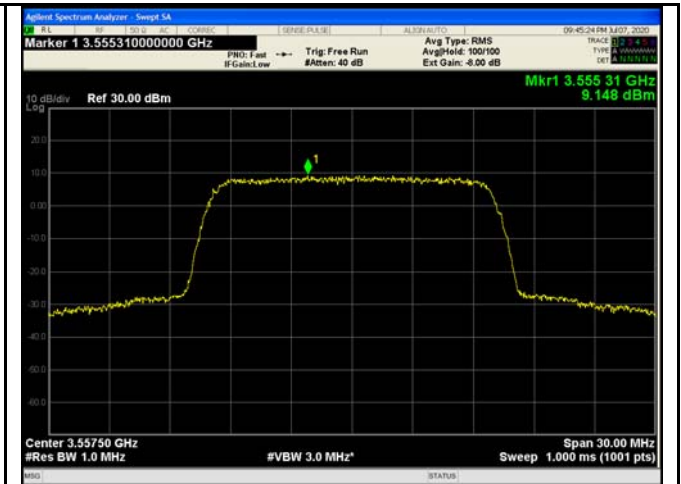
10MHz - High CH QPSK



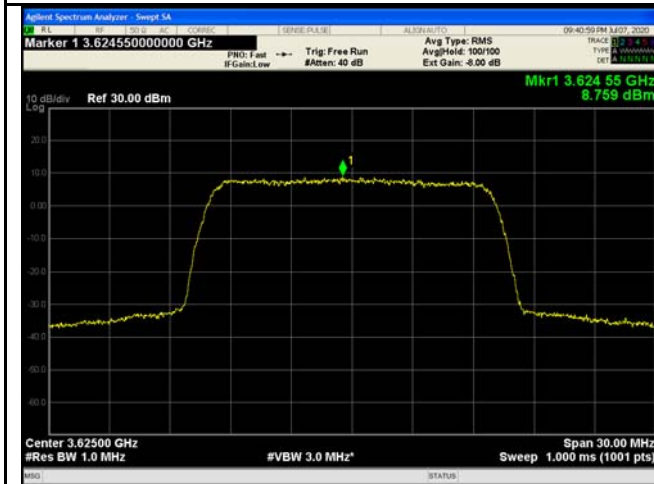
10MHz - High CH 16QAM



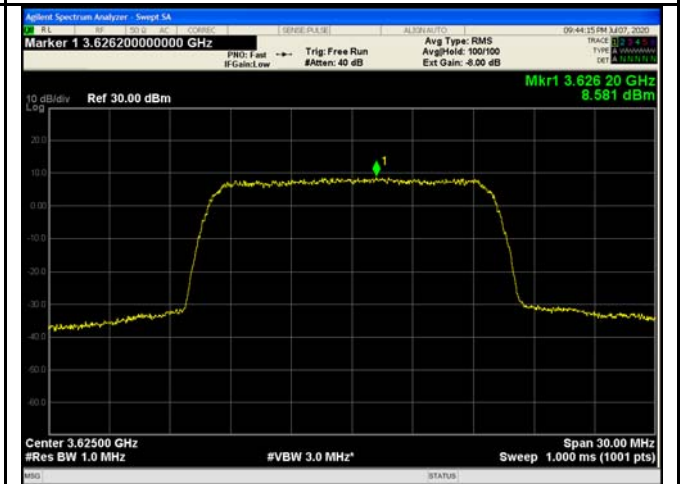
15MHz - Low CH QPSK



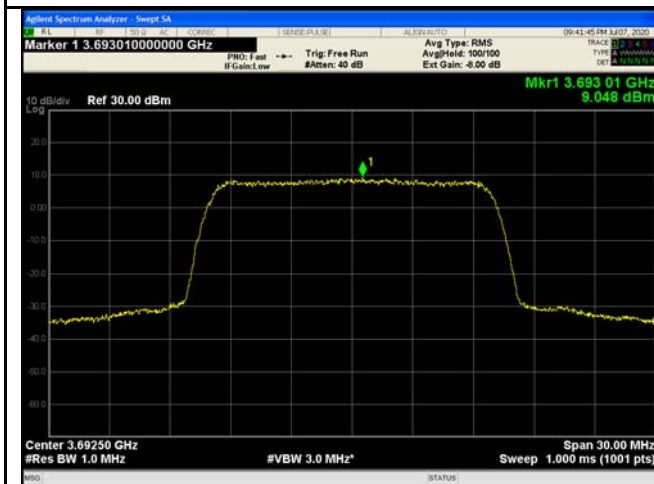
15MHz - Low CH 16QAM



15MHz - Middle CH QPSK



15MHz - Middle CH 16QAM



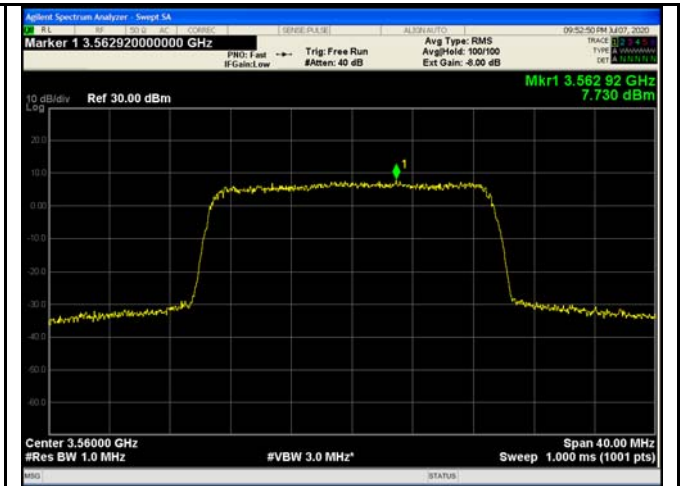
15MHz - High CH QPSK



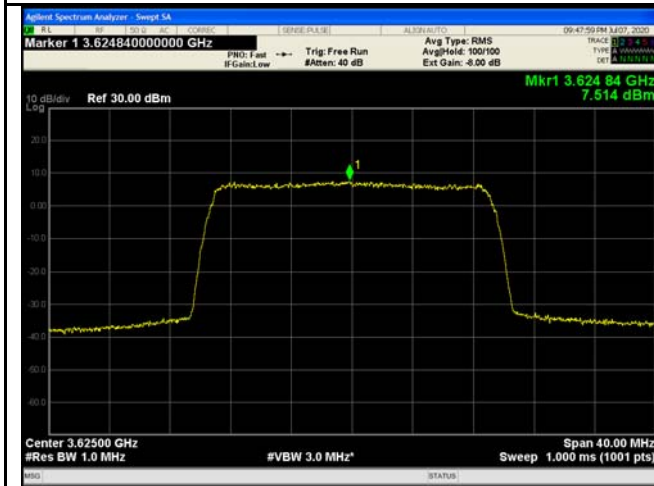
15MHz - High CH 16QAM



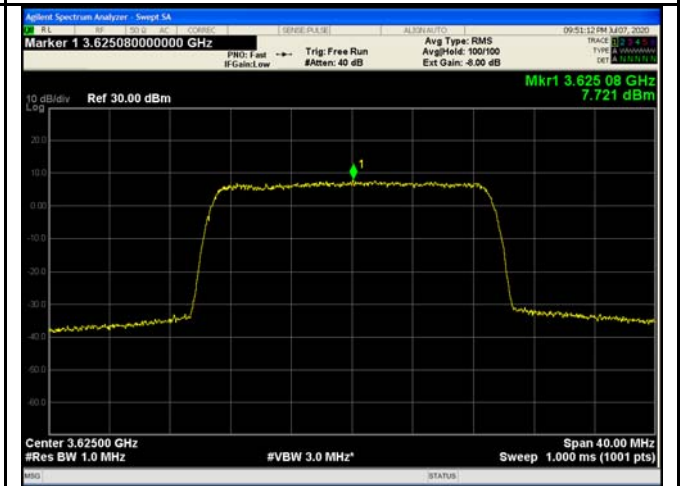
20MHz - Low CH QPSK



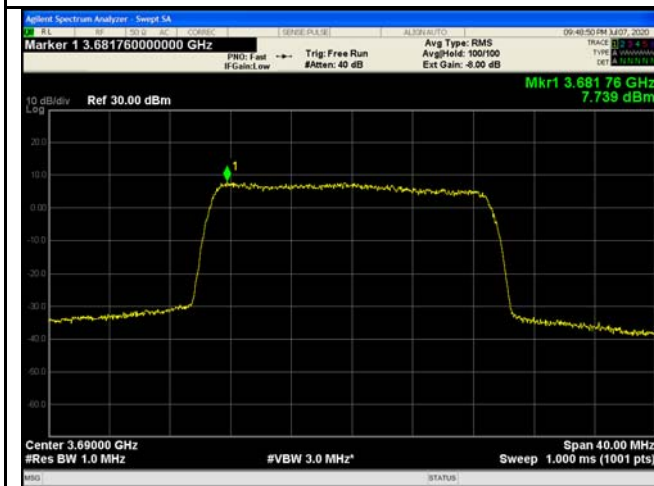
20MHz - Low CH 16QAM



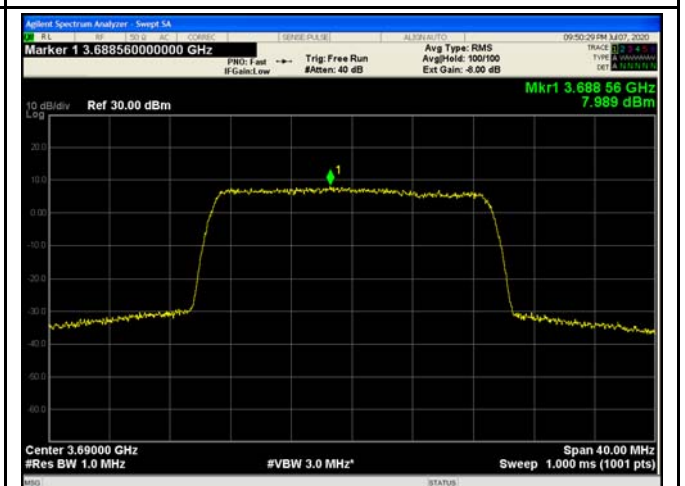
20MHz - Middle CH QPSK



20MHz - Middle CH 16QAM



20MHz - High CH QPSK



20MHz - High CH 16QAM

8 Peak-to-average power ratio

Test Requirement:	FCC part96.41(g)
Test Method:	ANSI/TIA-603-E:2016, ANSI C63.26:2015
Test Mode:	Data communicating mode
Limit:	

Probability, %	dB
0.1	13

8.1 EUT Operation

Operating Environment :

Temperature:	22.5 °C
Humidity:	52.1 % RH
Atmospheric Pressure:	102.3kPa

Note: Data that only reflects the worst mode is reported

8.2 Test Procedure

1. The EUT was connected to spectrum analyzer and system simulator via a power divider.
2. Set EUT to transmit at maximum output power.
3. When the duty cycle is less than 98%, then signal gating will be implemented on the spectrum analyzer by triggering from the system simulator.
4. Set the CCDF (Complementary Cumulative Distribution Function) option of the spectrum analyzer. Record the maximum PAPR level associated with a probability of 0.1%.

8.3 Test Result

Port1:

10MHz bandwidth

Mode	QPSK			Limit (dB)	
	Channel	Low	Middle		High
Peak-to-Average Ratio (dB)		9.29	9.24	9.53	13

15MHz bandwidth

Mode	QPSK			Limit (dB)	
	Channel	Low	Middle		High
Peak-to-Average Ratio (dB)		9.50	9.47	9.86	13

20MHz bandwidth

Mode	QPSK			Limit (dB)
Channel	Low	Middle	High	
Peak-to-Average Ratio (dB)	9.10	9.13	9.50	13

Port2:

10MHz bandwidth

Mode	QPSK			Limit (dB)
Channel	Low	Middle	High	
Peak-to-Average Ratio (dB)	9.31	9.20	9.78	13

15MHz bandwidth

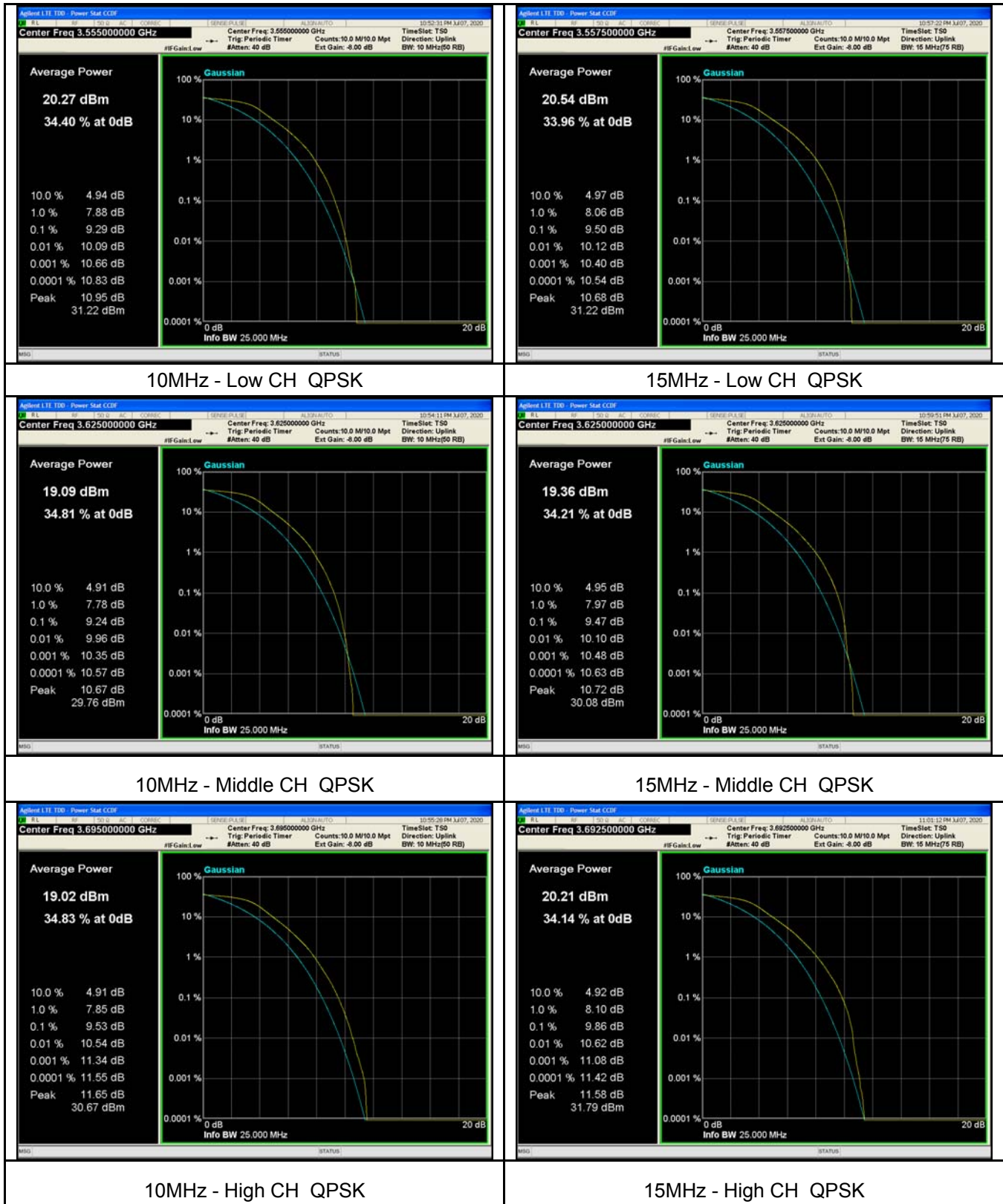
Mode	QPSK			Limit (dB)
Channel	Low	Middle	High	
Peak-to-Average Ratio (dB)	9.51	9.46	9.91	13

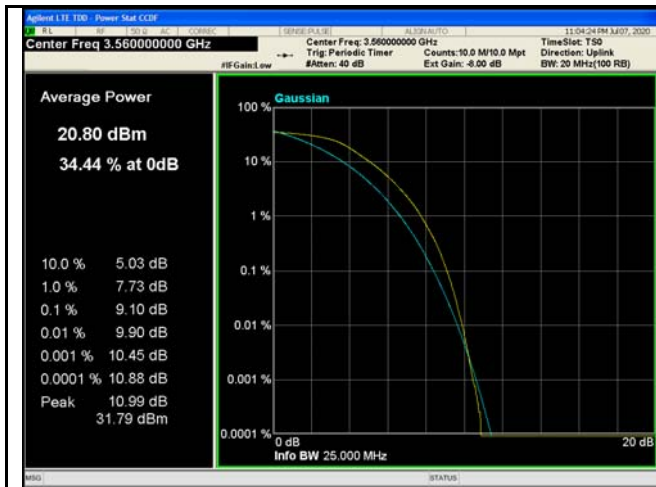
20MHz bandwidth

Mode	QPSK			Limit (dB)
Channel	Low	Middle	High	
Peak-to-Average Ratio (dB)	9.88	9.30	9.51	13

Test Plots

Port1:





20MHz - Low CH QPSK



20MHz - Middle CH QPSK



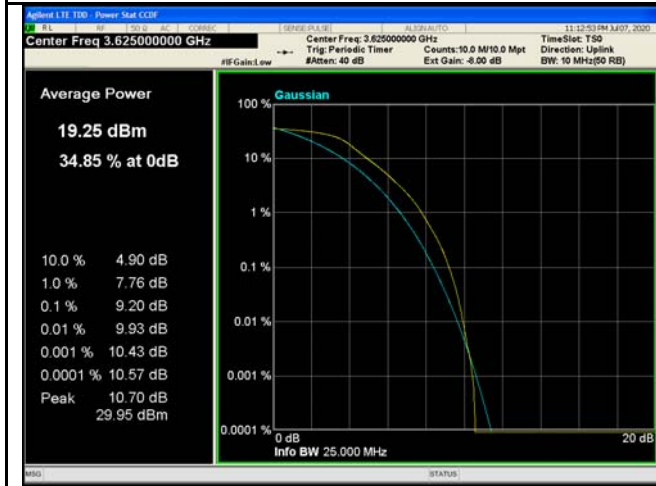
20MHz - High CH QPSK

Port2:



10MHz - Low CH QPSK

15MHz - Low CH QPSK



10MHz - Middle CH QPSK

15MHz - Middle CH QPSK



10MHz - High CH QPSK

15MHz - High CH QPSK



20MHz - Low CH QPSK



20MHz - Middle CH QPSK



20MHz - High CH QPSK

9 Occupy Bandwidth

Test Requirement:	FCC part 2.1049
Test Method:	ANSI/TIA-603-E:2016, ANSI C63.26:2015
Test Mode:	Data communicating mode

9.1 EUT Operation

Operating Environment :	
Temperature:	22.6 °C
Humidity:	52.4 % RH
Atmospheric Pressure:	103.3kPa

9.2 Test Procedure

1. The EUT's output RF connector was connected with a short cable to the spectrum analyzer.
2. The transmitter shall be operated at its maximum carrier power measured under normal test conditions.
3. The span of the analyzer shall be set to capture all products of the modulation process, including the emission skirts.
4. The resolution bandwidth (RBW) shall be in the range of 1% to 5% of the occupied bandwidth (OBW) and video bandwidth (VBW) shall be approximately 3x RBW.

9.3 Test Result

Port1:

Bandwidth (MHz)	Modulation	Test Channel	26dB Down Bandwith	99% Occupy bandwidth (MHz)
10	QPSK	Low	9.320	8.9010
		Middle	9.314	8.9049
		High	9.287	8.8993
	16QAM	Low	9.302	8.9164
		Middle	9.354	8.9364
		High	9.299	8.9333
Bandwidth (MHz)	Modulation	Test Channel	26dB Down Bandwith	99% Occupy bandwidth (MHz)
15	QPSK	Low	14.03	13.403
		Middle	14.06	13.416
		High	14.07	13.404
	16QAM	Low	14.00	13.433
		Middle	13.97	13.360
		High	14.03	13.381
Bandwidth (MHz)	Modulation	Test Channel	26dB Down Bandwith	99% Occupy bandwidth (MHz)
20	QPSK	Low	18.51	17.878
		Middle	18.55	17.792
		High	18.53	17.860
	16QAM	Low	18.48	17.900
		Middle	18.52	17.782
		High	18.50	17.847

Port1:

Bandwidth (MHz)	Modulation	Test Channel	26dB Down Bandwith	99% Occupy bandwidth (MHz)
10	QPSK	Low	9.309	8.9270
		Middle	9.282	8.9050
		High	9.359	8.9242
	16QAM	Low	9.352	8.9201
		Middle	9.285	8.9113
		High	9.343	8.9204
Bandwidth (MHz)	Modulation	Test Channel	26dB Down Bandwith	99% Occupy bandwidth (MHz)
15	QPSK	Low	14.00	13.414
		Middle	14.02	13.430
		High	14.00	13.391
	16QAM	Low	14.03	13.412
		Middle	13.99	13.398
		High	14.07	13.410
Bandwidth (MHz)	Modulation	Test Channel	26dB Down Bandwith	99% Occupy bandwidth (MHz)
20	QPSK	Low	18.54	17.901
		Middle	18.52	17.844
		High	18.51	17.868
	16QAM	Low	18.48	17.826
		Middle	18.49	17.823
		High	18.49	17.866