

APPENDIX A – TEST DATA OF CONDUCTED EMISSION

LTE Band 12

1 RF Power Output

Test result:

Antenna Gain: 1.44dBi

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted Average (dBm)	ERP Average(dBm)
QPSK	699.7	23017	1.4	1	0	23.1	22.39
				1	5	23.2	22.49
				3	2	23.1	22.39
				6	0	22.2	21.49
	707.5	23095		1	0	23.1	22.39
				1	5	23.2	22.49
				3	2	23.1	22.39
				6	0	22.2	21.49
	715.3	23173		1	0	23.1	22.39
				1	5	23.2	22.49
				3	2	23.1	22.39
				6	0	22.2	21.49

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted Average (dBm)	ERP Average(dBm)
16QAM	699.7	23017	1.4	1	0	22.7	21.99
				1	5	22.7	21.99
				3	2	22.3	21.59
				6	0	21.4	20.69
	707.5	23095		1	0	22.7	21.99
				1	5	22.7	21.99
				3	2	22.3	21.59
				6	0	21.4	20.69
	715.3	23173		1	0	22.7	21.99
				1	5	22.7	21.99
				3	2	22.3	21.59
				6	0	21.4	20.69

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted Average (dBm)	ERP Average(dBm)
64QAM	699.7	23017	1.4	1	0	22.7	21.99
				1	5	22.8	22.09
				3	2	22.3	21.59
				6	0	21.2	20.49
	707.5	23095		1	0	22.7	21.99
				1	5	22.8	22.09
				3	2	22.3	21.59
				6	0	21.2	20.49
	715.3	23173		1	0	22.7	21.99
				1	5	22.8	22.09
				3	2	22.3	21.59
				6	0	21.2	20.49

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted Average (dBm)	ERP Average(dBm)
QPSK	700.5	23025	3	1	0	23.2	22.49
				1	14	23.3	22.59
				8	4	22.3	21.59
				15	0	22.3	21.59
	707.5	23095		1	0	23.2	22.49
				1	14	23.3	22.59
				8	4	22.3	21.59
				15	0	22.3	21.59
	714.5	23165		1	0	23.2	22.49
				1	14	23.3	22.59
				8	4	22.3	21.59
				15	0	22.3	21.59

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted Average (dBm)	ERP Average(dBm)
16QAM	700.5	23025	3	1	0	22.7	21.99
				1	14	22.8	22.09
				8	4	21.4	20.69
				15	0	21.3	20.59
	707.5	23095		1	0	22.7	21.99
				1	14	22.8	22.09
				8	4	21.4	20.69
				15	0	21.3	20.59
	714.5	23165		1	0	22.7	21.99
				1	14	22.8	22.09
				8	4	21.4	20.69
				15	0	21.3	20.59

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted Average (dBm)	ERP Average(dBm)
64QAM	700.5	23025	3	1	0	22.8	22.09
				1	14	22.9	22.19
				8	4	21.4	20.69
				15	0	21.3	20.59
	707.5	23095		1	0	22.8	22.09
				1	14	22.9	22.19
				8	4	21.4	20.69
				15	0	21.3	20.59
	714.5	23165		1	0	22.8	22.09
				1	14	22.9	22.19
				8	4	21.4	20.69
				15	0	21.3	20.59

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted Average (dBm)	ERP Average(dBm)
QPSK	701.5	23035	5	1	0	23.2	22.49
				1	24	23.3	22.59
				12	6	22.3	21.59
				25	0	22.3	21.59
	707.5	23095		1	0	23.2	22.49
				1	24	23.3	22.59
				12	6	22.3	21.59
				25	0	22.3	21.59
	713.5	23155		1	0	23.2	22.49
				1	24	23.3	22.59
				12	6	22.3	21.59
				25	0	22.3	21.59

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted Average (dBm)	ERP Average(dBm)
16QAM	701.5	23035	5	1	0	22.7	21.99
				1	24	22.8	22.09
				12	6	21.4	20.69
				25	0	21.3	20.59
	707.5	23095		1	0	22.7	21.99
				1	24	22.8	22.09
				12	6	21.4	20.69
				25	0	21.3	20.59
	713.5	23155		1	0	22.7	21.99
				1	24	22.8	22.09
				12	6	21.4	20.69
				25	0	21.3	20.59

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted Average (dBm)	ERP Average(dBm)
64QAM	701.5	23035	5	1	0	22.8	22.09
				1	24	22.9	22.19
				12	6	21.3	20.59
				25	0	21.2	20.49
	707.5	23095		1	0	22.8	22.09
				1	24	22.9	22.19
				12	6	21.3	20.59
				25	0	21.2	20.49
	713.5	23155		1	0	22.8	22.09
				1	24	22.9	22.19
				12	6	21.3	20.59
				25	0	21.2	20.49

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted Average (dBm)	ERP Average(dBm)
QPSK	704	23060	10	1	0	23.5	22.79
				1	49	23.4	22.69
				24	12	22.3	21.59
				50	0	22.3	21.59
	707.5	23095		1	0	23.5	22.79
				1	49	23.4	22.69
				24	12	22.3	21.59
				50	0	22.3	21.59
	711	23130		1	0	23.5	22.79
				1	49	23.4	22.69
				24	12	22.3	21.59
				50	0	22.3	21.59

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted Average (dBm)	ERP Average(dBm)
16QAM	704	23060	10	1	0	22.8	22.09
				1	49	22.9	22.19
				24	12	21.2	20.49
				50	0	21.3	20.59
	707.5	23095		1	0	22.8	22.09
				1	49	22.9	22.19
				24	12	21.2	20.49
				50	0	21.3	20.59
	711	23130		1	0	22.8	22.09
				1	49	22.9	22.19
				24	12	21.2	20.49
				50	0	21.3	20.59

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted Average (dBm)	ERP Average(dBm)
64QAM	704	23060	10	1	0	22.8	22.09
				1	49	23.0	22.29
				24	12	21.2	20.49
				50	0	21.2	20.49
	707.5	23095		1	0	22.8	22.09
				1	49	23.0	22.29
				24	12	21.2	20.49
				50	0	21.2	20.49
	711	23130		1	0	22.8	22.09
				1	49	23.0	22.29
				24	12	21.2	20.49
				50	0	21.2	20.49

2 Occupied Bandwidth

Test result

Band	Carrier frequency (MHz)	Channel(Low)	BW	RB Size	RB Offset	Bandwidth of 99% Power (MHz)					
						QPSK		16-QAM		64-QAM	
12	699.7	23017	1.4	6	0	1.103	Fig.1	1.101	Fig.2	1.103	Fig.3
12	707.5	23095	1.4	6	0	1.100	Fig.4	1.104	Fig.5	1.100	Fig.6
12	715.3	23173	1.4	6	0	1.092	Fig.7	1.105	Fig.8	1.097	Fig.9

Band	Carrier frequency (MHz)	Channel(Low)	BW	RB Size	RB Offset	Bandwidth of -26dB transmitter power (MHz)					
						QPSK		16-QAM		64-QAM	
12	699.7	23017	1.4	6	0	1.219	Fig.1	1.223	Fig.2	1.214	Fig.3
12	707.5	23095	1.4	6	0	1.224	Fig.4	1.223	Fig.5	1.208	Fig.6
12	715.3	23173	1.4	6	0	1.214	Fig.7	1.221	Fig.8	1.206	Fig.9

Fig.1

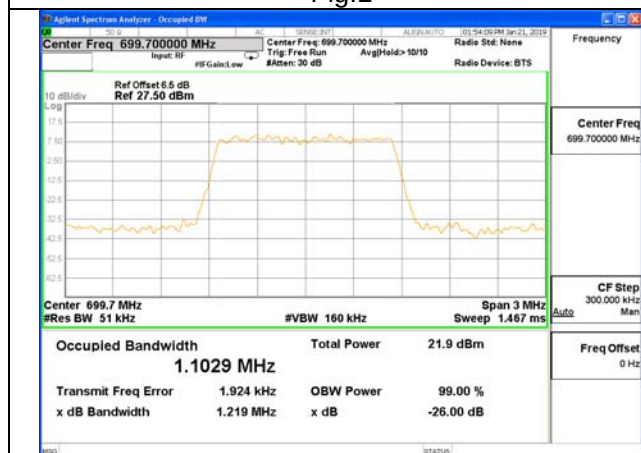


Fig.2

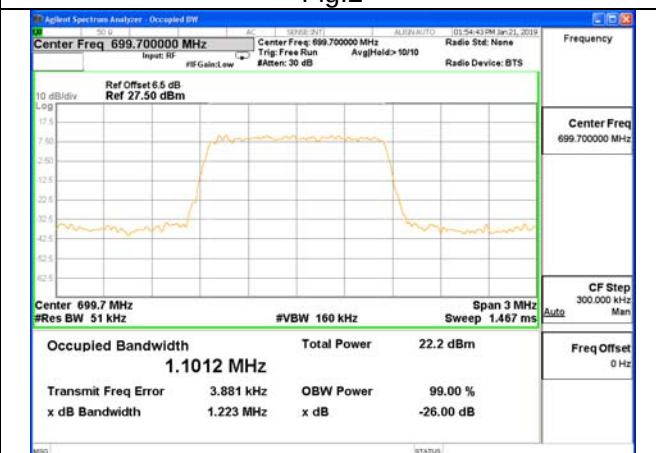


Fig.3

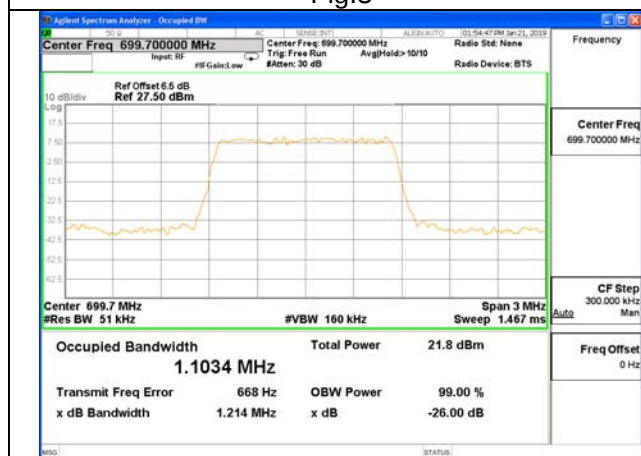


Fig.4

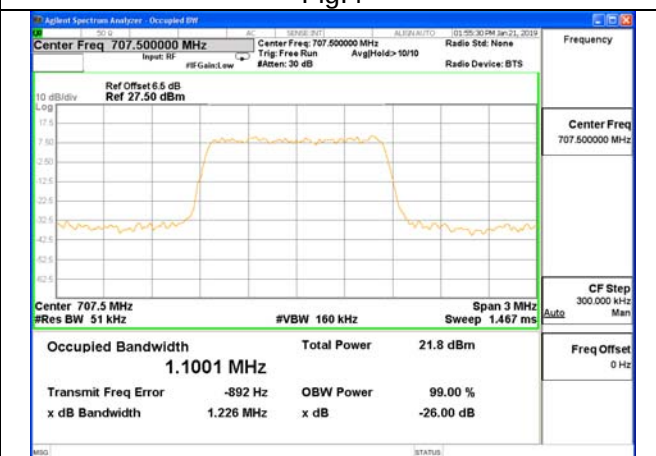


Fig.5

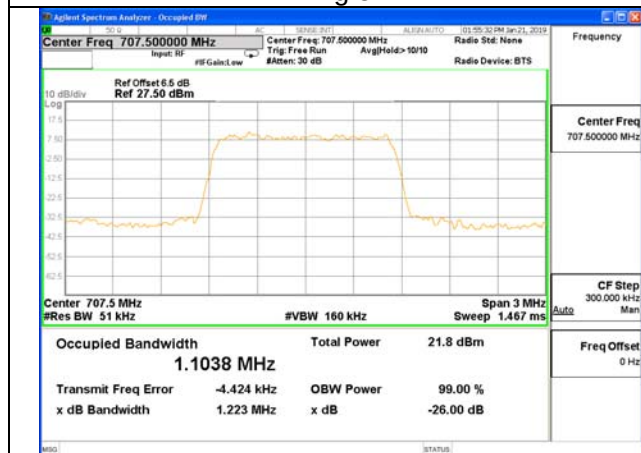


Fig.6

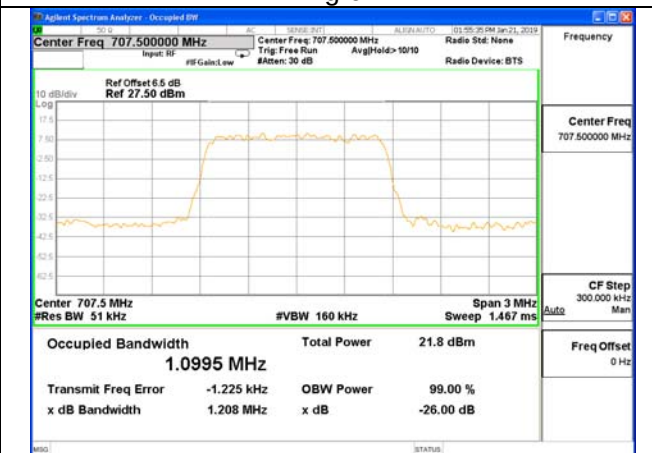


Fig.7

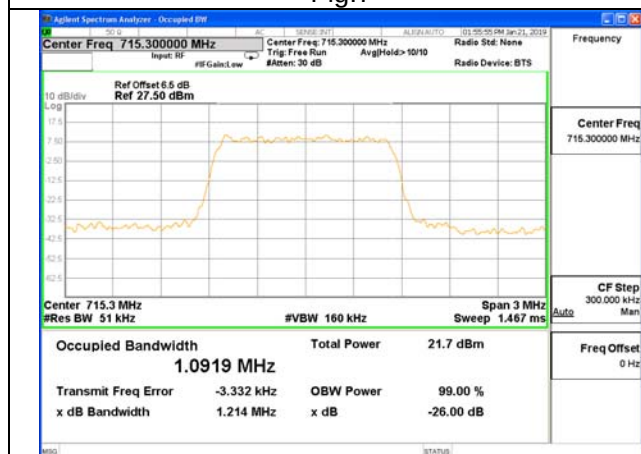


Fig.8

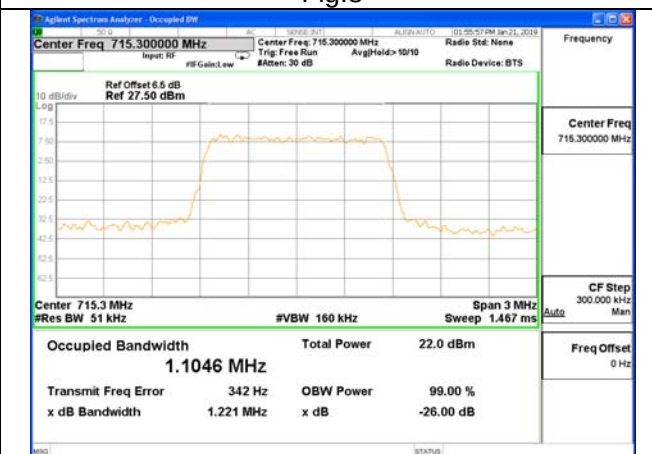
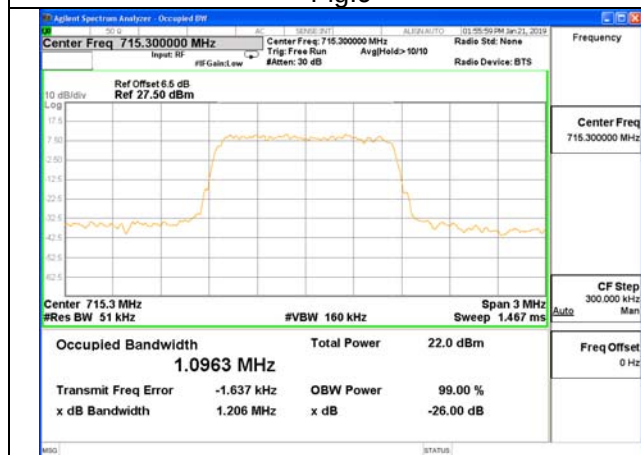


Fig.9



Band	Carrier frequency (MHz)	Channel(Low)	BW	RB Size	RB Offset	Bandwidth of 99% Power (MHz)					
						QPSK		16-QAM		64-QAM	
12	700.5	23025	3	15	0	2.710	Fig.1	2.713	Fig.2	2.731	Fig.3
12	707.5	23095	3	15	0	2.699	Fig.4	2.699	Fig.5	2.716	Fig.6
12	714.5	23165	3	15	0	2.720	Fig.7	2.714	Fig.8	2.718	Fig.9

Band	Carrier frequency (MHz)	Channel(Low)	BW	RB Size	RB Offset	Bandwidth of -26dB transmitter power (MHz)					
						QPSK		16-QAM		64-QAM	
12	700.5	23025	3	15	0	2.973	Fig.1	2.999	Fig.2	2.959	Fig.3
12	707.5	23095	3	15	0	2.944	Fig.4	2.938	Fig.5	2.936	Fig.6
12	714.5	23165	3	15	0	2.933	Fig.7	2.953	Fig.8	2.980	Fig.9

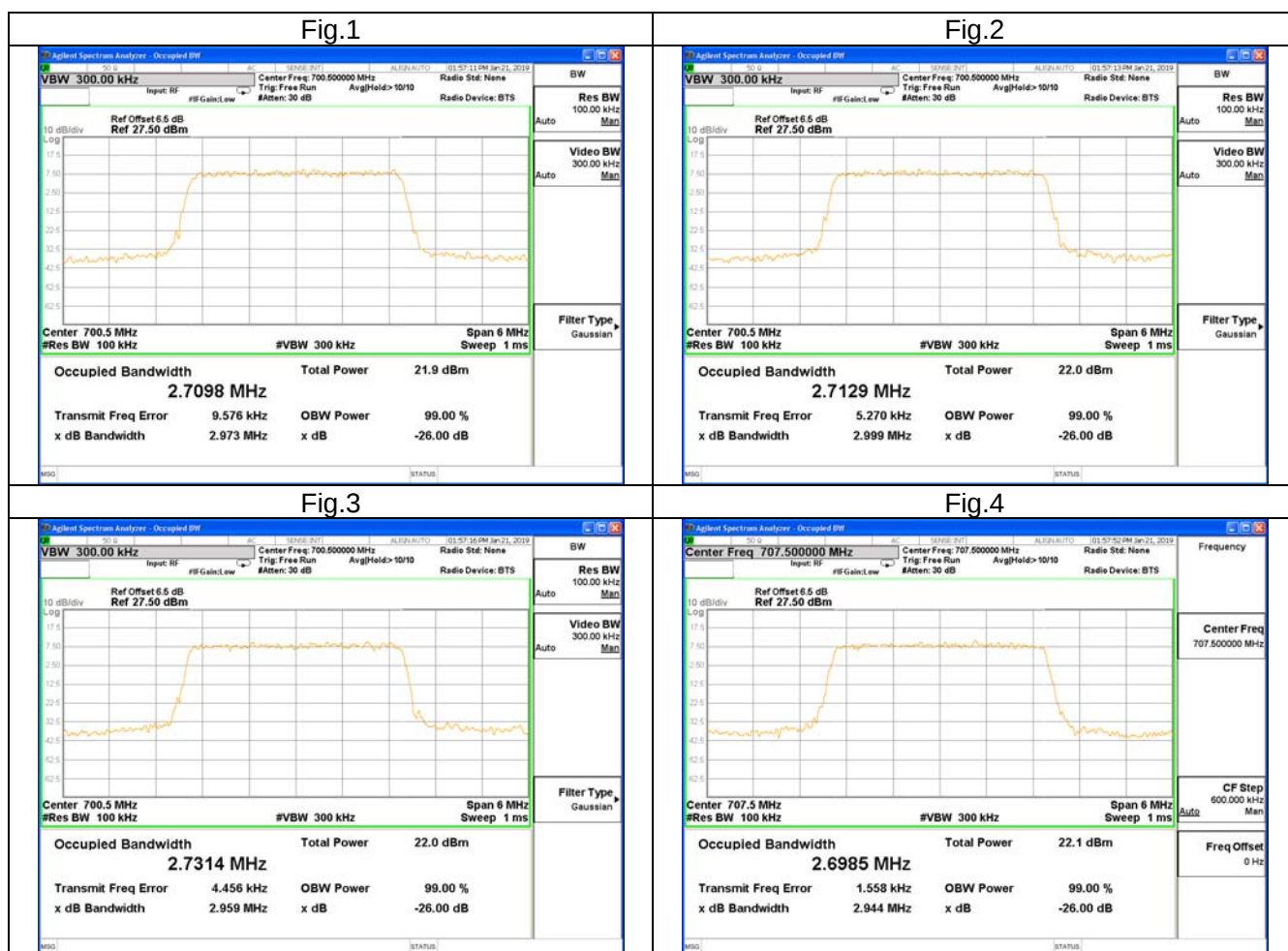


Fig.5

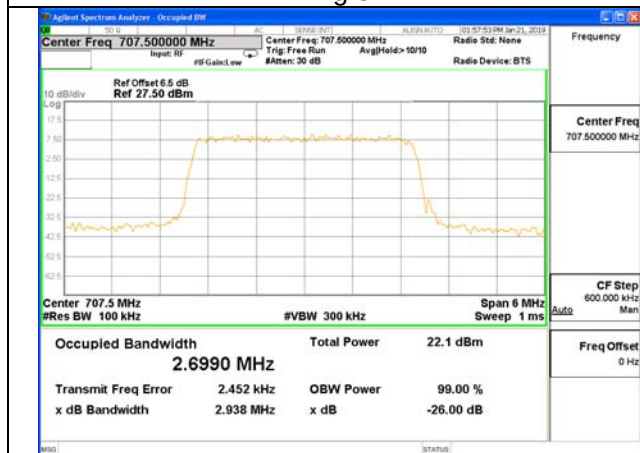


Fig.6

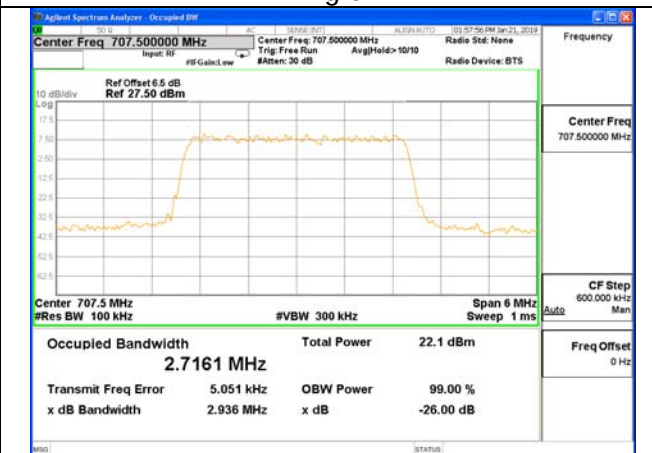


Fig.7

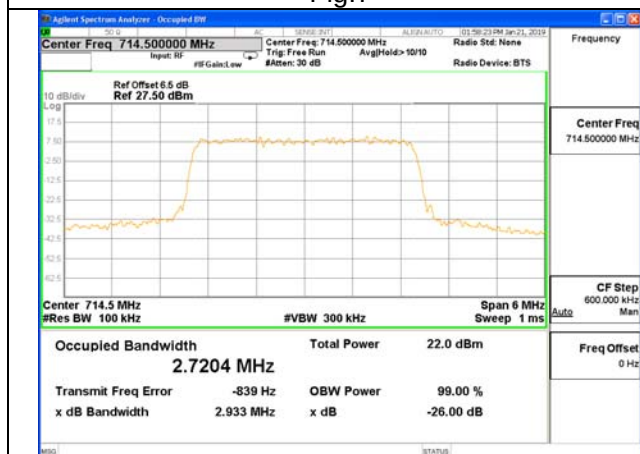


Fig.8

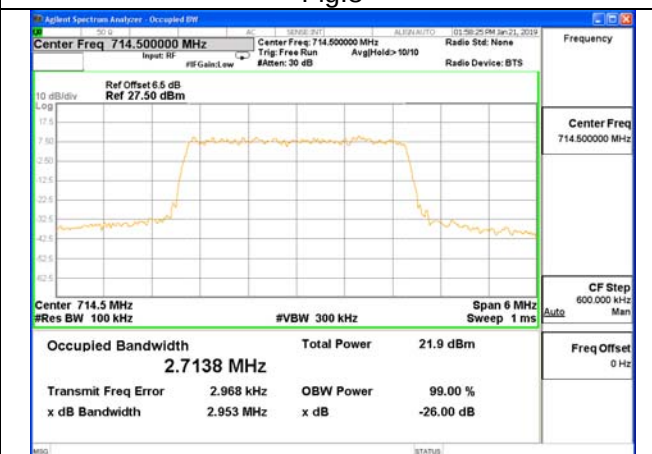
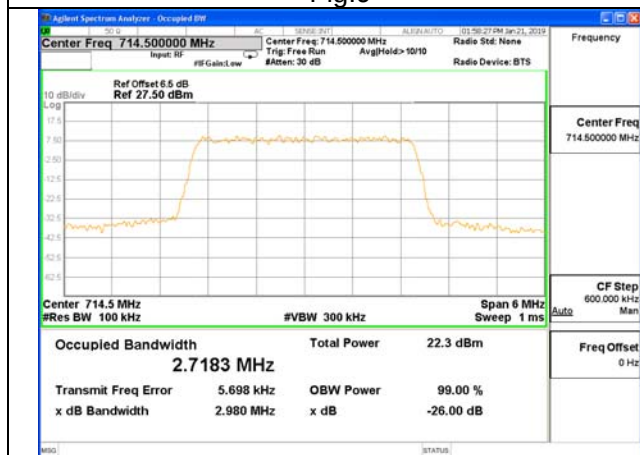


Fig.9



Band	Carrier frequency (MHz)	Channel(Low)	BW	RB Size	RB Offset	Bandwidth of 99% Power (MHz)					
						QPSK		16-QAM		64-QAM	
12	701.5	23035	5	25	0	4.479	Fig.1	4.497	Fig.2	4.496	Fig.3
12	707.5	23095	5	25	0	4.479	Fig.4	4.483	Fig.5	4.478	Fig.6
12	713.5	23155	5	25	0	4.485	Fig.7	4.481	Fig.8	4.478	Fig.9

Band	Carrier frequency (MHz)	Channel(Low)	BW	RB Size	RB Offset	Bandwidth of -26dB transmitter power (MHz)					
						QPSK		16-QAM		64-QAM	
12	701.5	23035	5	25	0	4.737	Fig.1	4.758	Fig.2	4.821	Fig.3
12	707.5	23095	5	25	0	4.745	Fig.4	4.768	Fig.5	4.756	Fig.6
12	713.5	23155	5	25	0	4.736	Fig.7	4.749	Fig.8	4.775	Fig.9

Fig.1

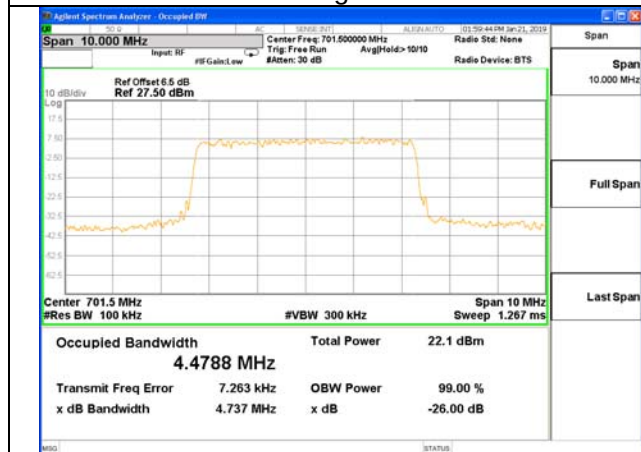


Fig.2

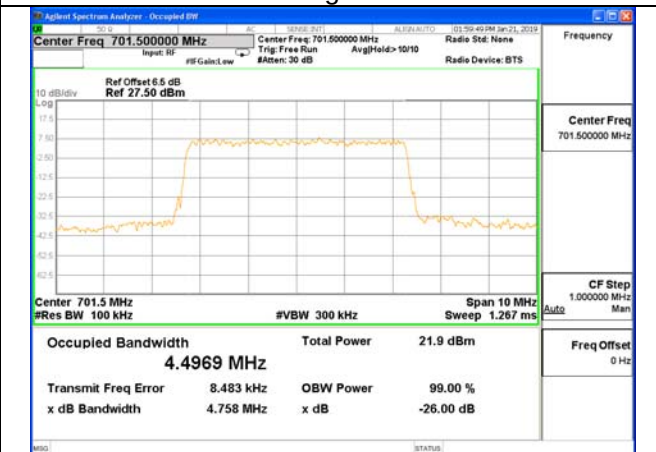


Fig.3

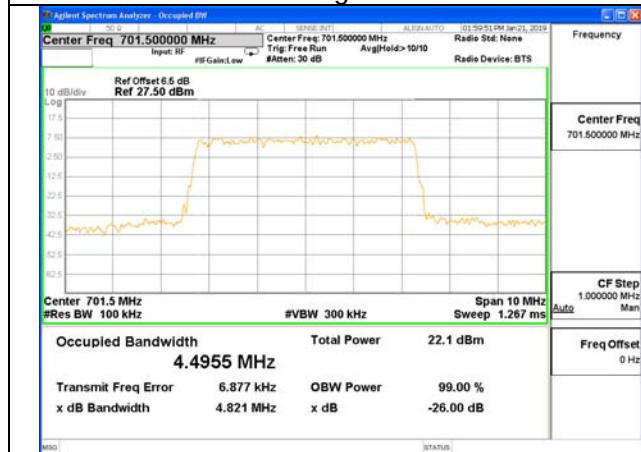


Fig.4

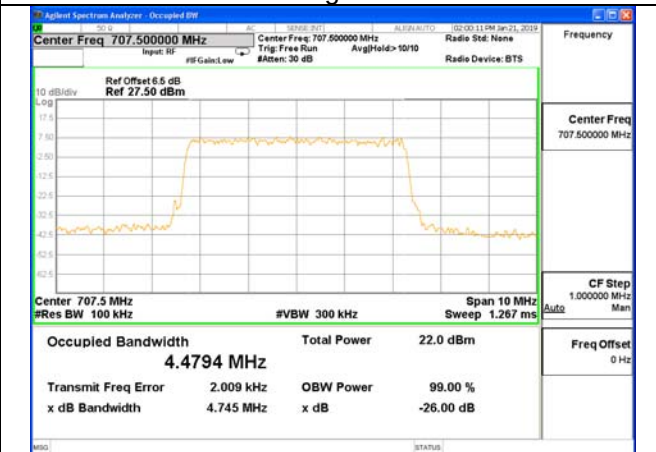


Fig.5

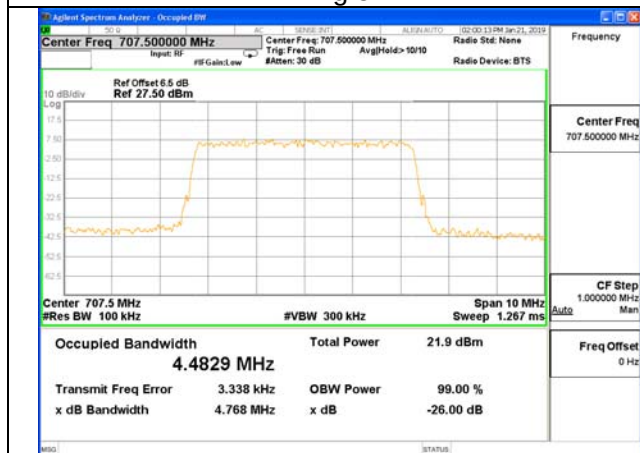


Fig.6

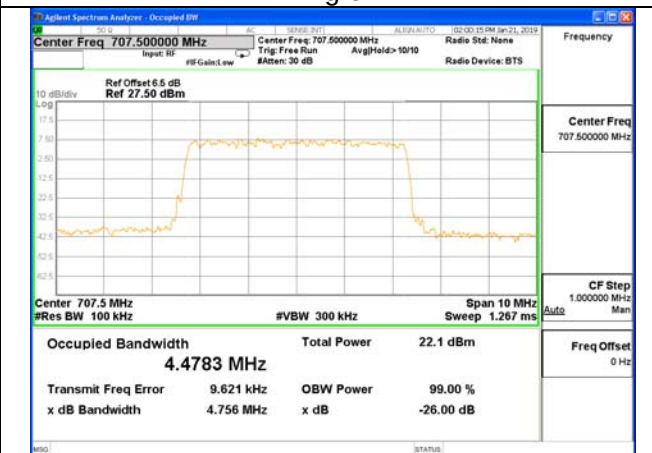


Fig.7

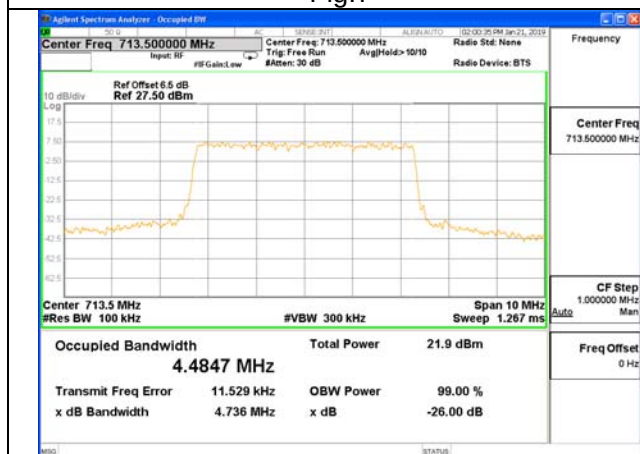


Fig.8

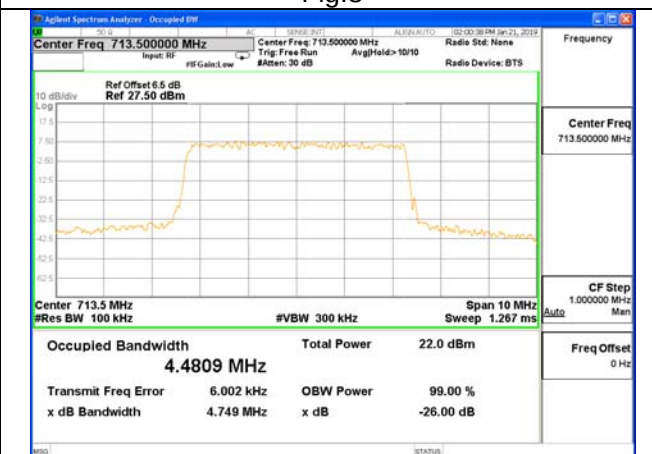
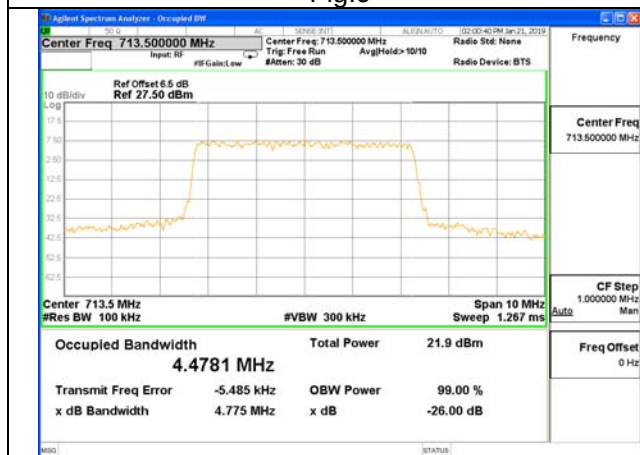


Fig.9



Band	Carrier frequency (MHz)	Channel(Low)	BW	RB Size	RB Offset	Bandwidth of 99% Power (MHz)					
						QPSK		16-QAM		64-QAM	
12	704	23060	10	50	0	8.994	Fig.1	9.004	Fig.2	9.044	Fig.3
12	707.5	23095	10	50	0	8.995	Fig.4	9.033	Fig.5	9.004	Fig.6
12	711	23130	10	50	0	9.027	Fig.7	9.033	Fig.8	9.017	Fig.9

Band	Carrier frequency (MHz)	Channel(Low)	BW	RB Size	RB Offset	Bandwidth of -26dB transmitter power (MHz)					
						QPSK		16-QAM		64-QAM	
12	704	23060	10	50	0	9.671	Fig.1	9.642	Fig.2	9.677	Fig.3
12	707.5	23095	10	50	0	9.674	Fig.4	9.632	Fig.5	9.629	Fig.6
12	711	23130	10	50	0	9.647	Fig.7	9.674	Fig.8	9.651	Fig.9

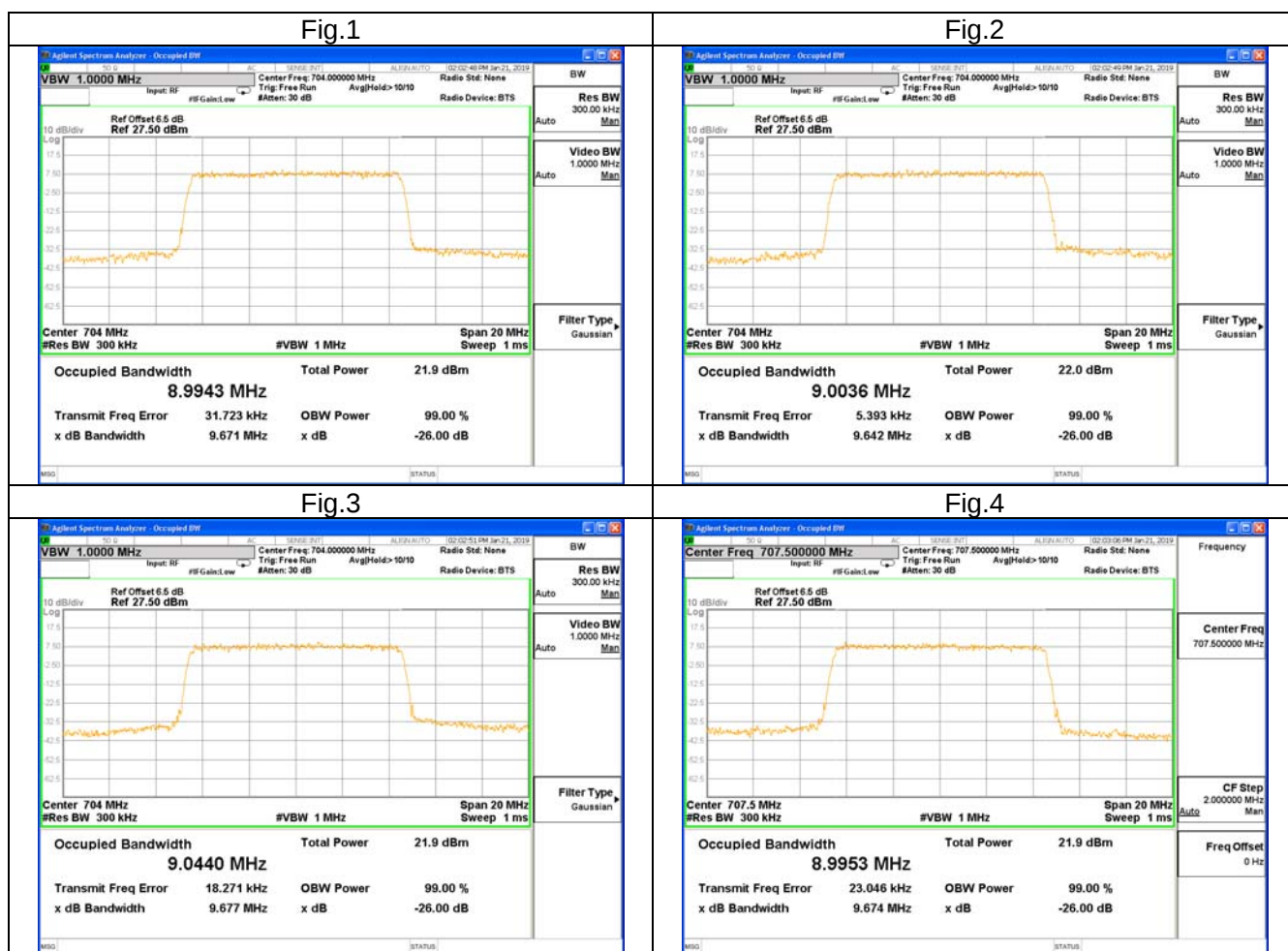


Fig.5

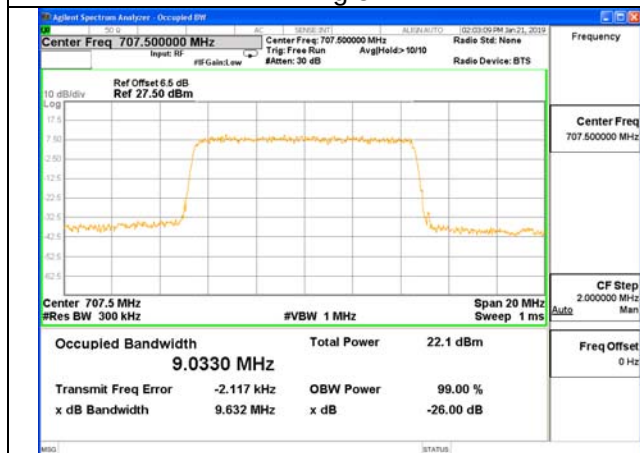


Fig.6

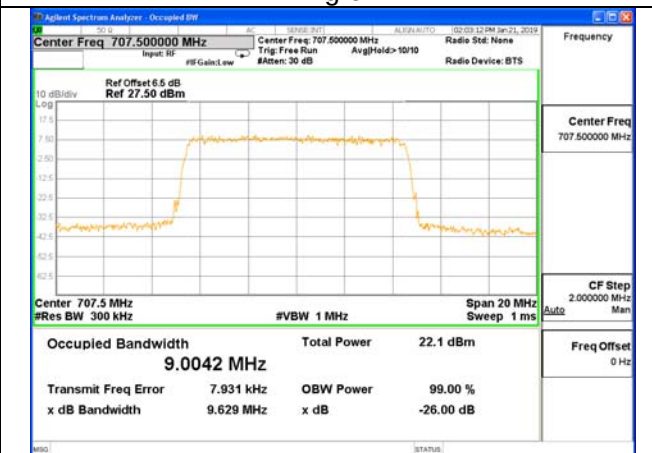


Fig.7

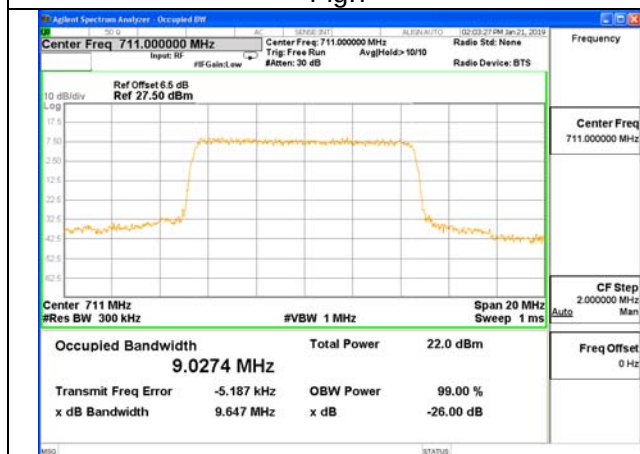


Fig.8

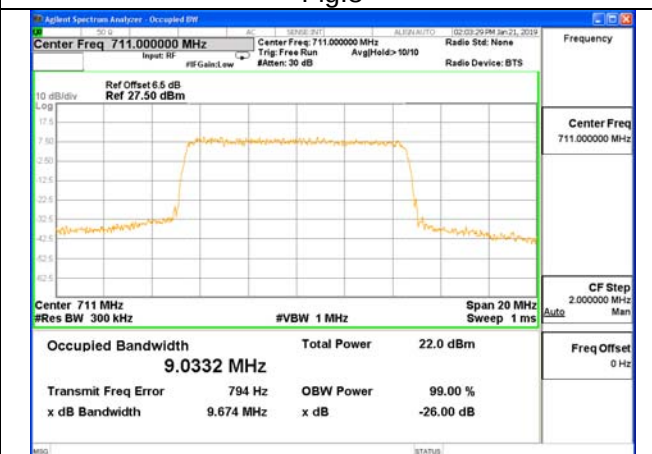
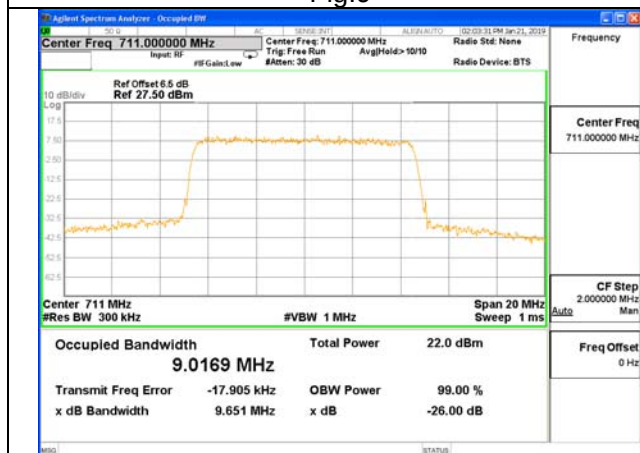
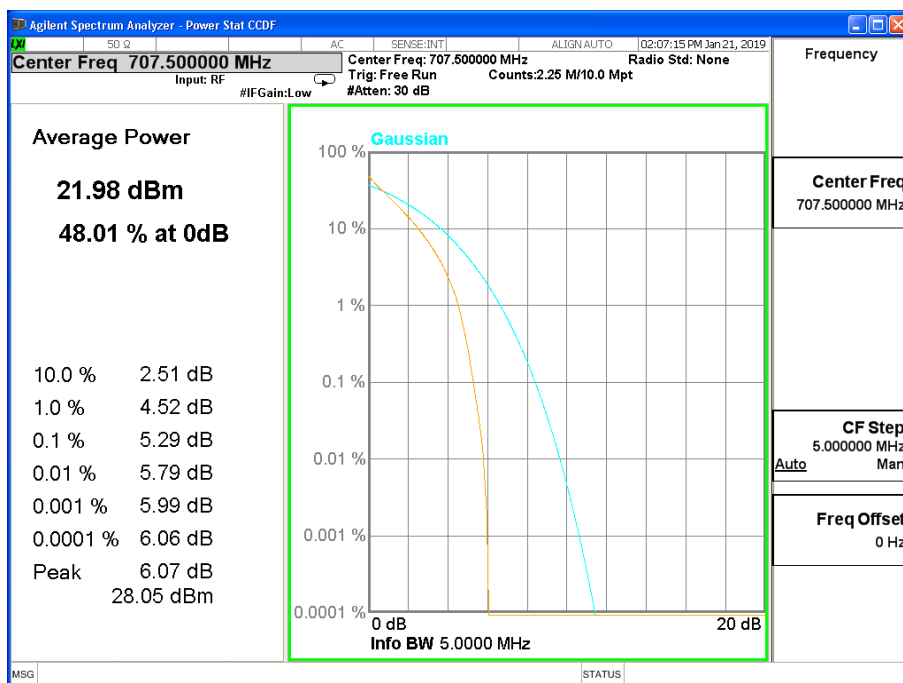


Fig.9

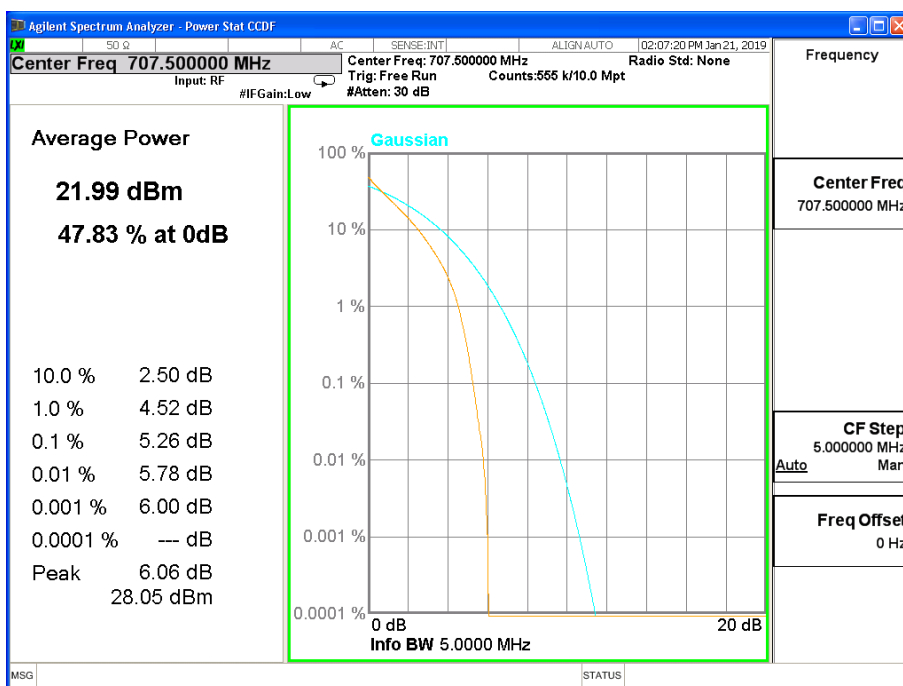


4 Peak-Average Ratio

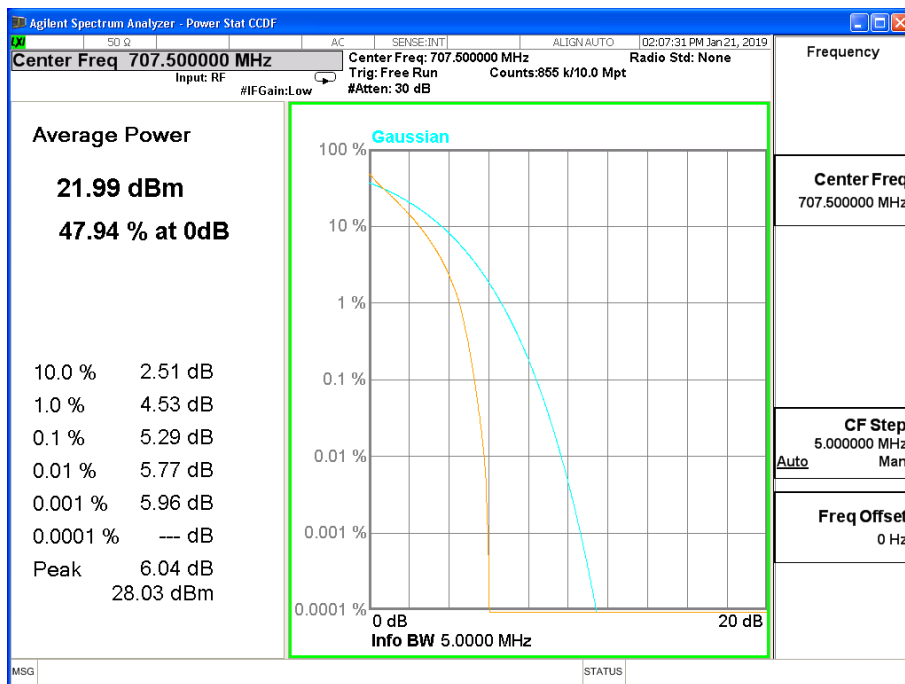
Test result:



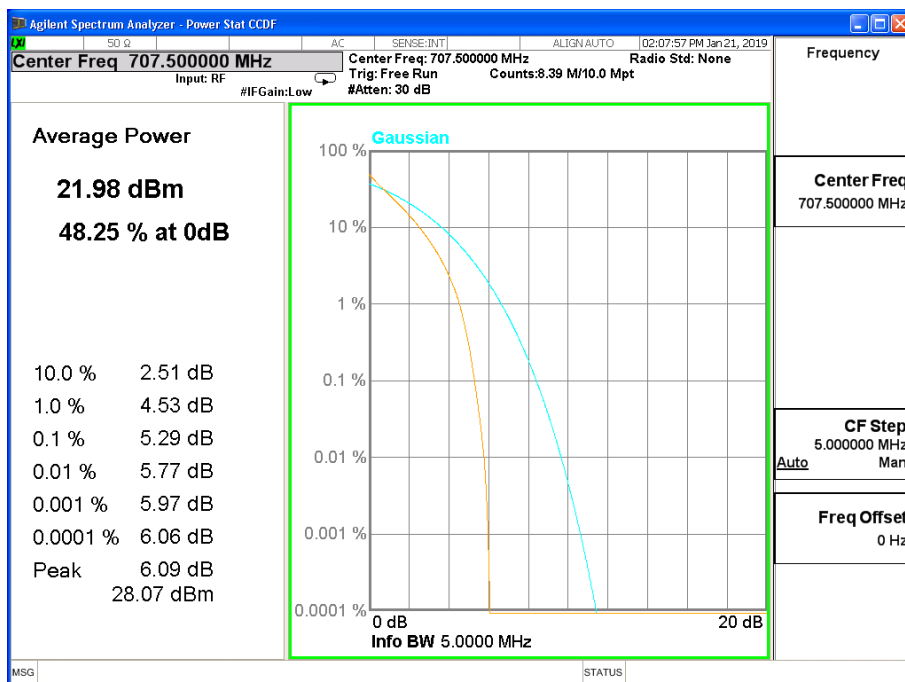
Peak-Average Ratio Plot(1.4MHz BW,QPSK,Band 12-mid Channel)



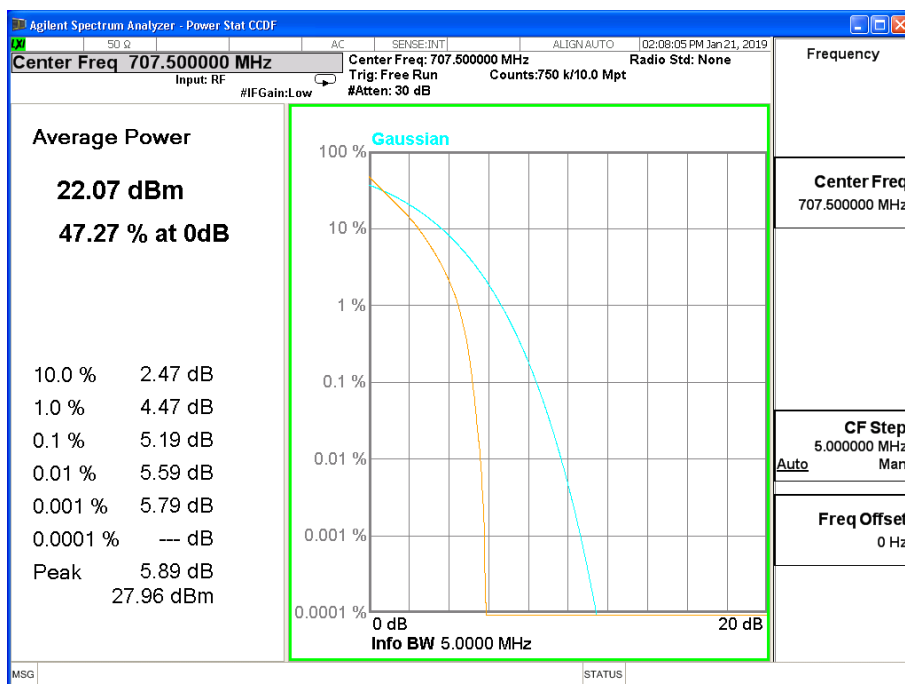
Peak-Average Ratio Plot(1.4MHz BW,16QAM,Band 12-mid Channel)



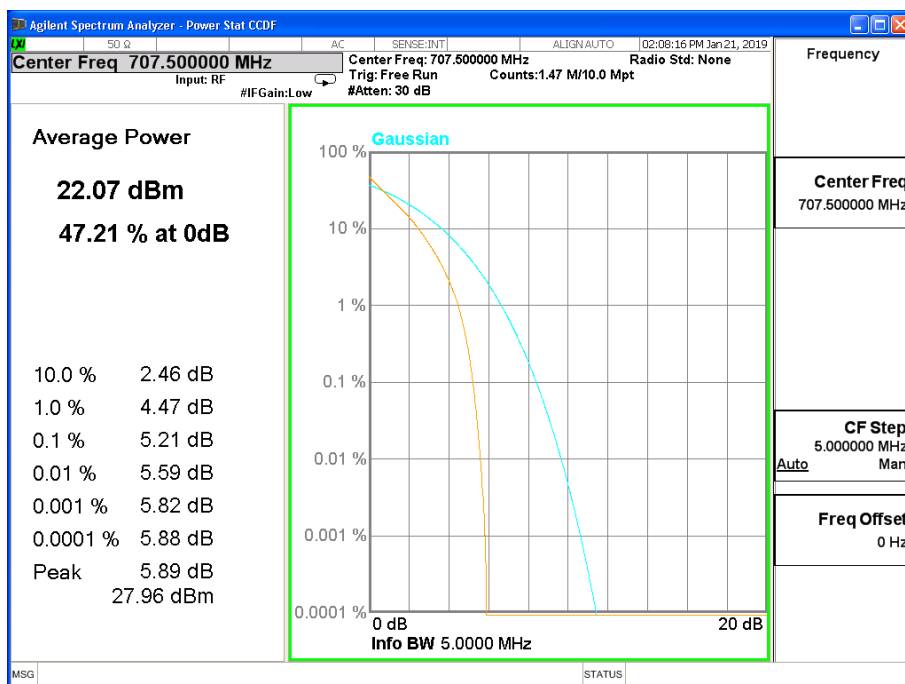
Peak-Average Ratio Plot(1.4MHz BW,64QAM,Band 12-mid Channel)



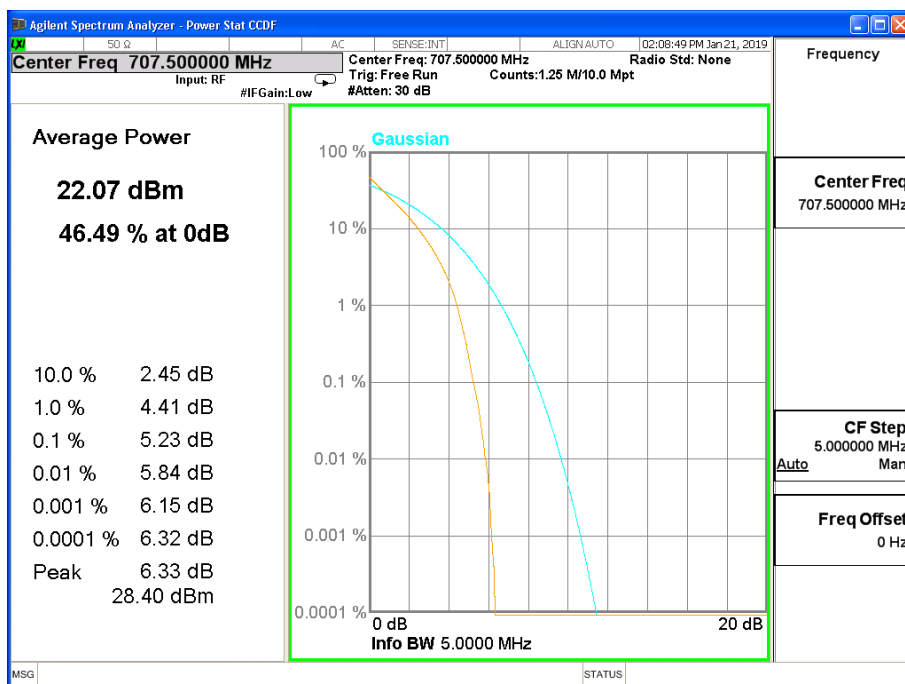
Peak-Average Ratio Plot(3MHz BW,QPSK,Band 12-mid Channel)



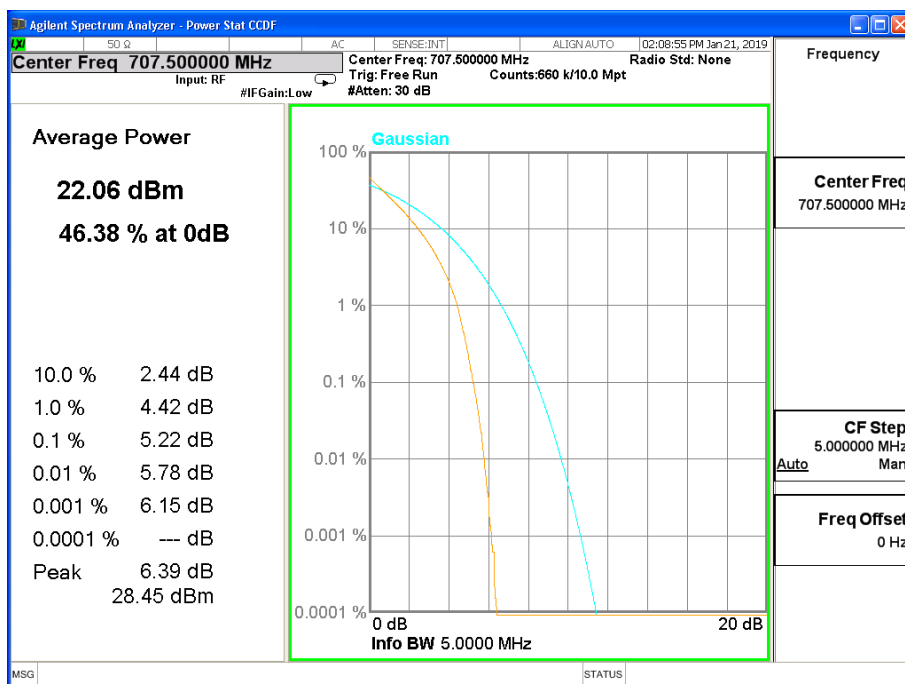
Peak-Average Ratio Plot(3MHz BW,16QAM,Band 12-mid Channel)



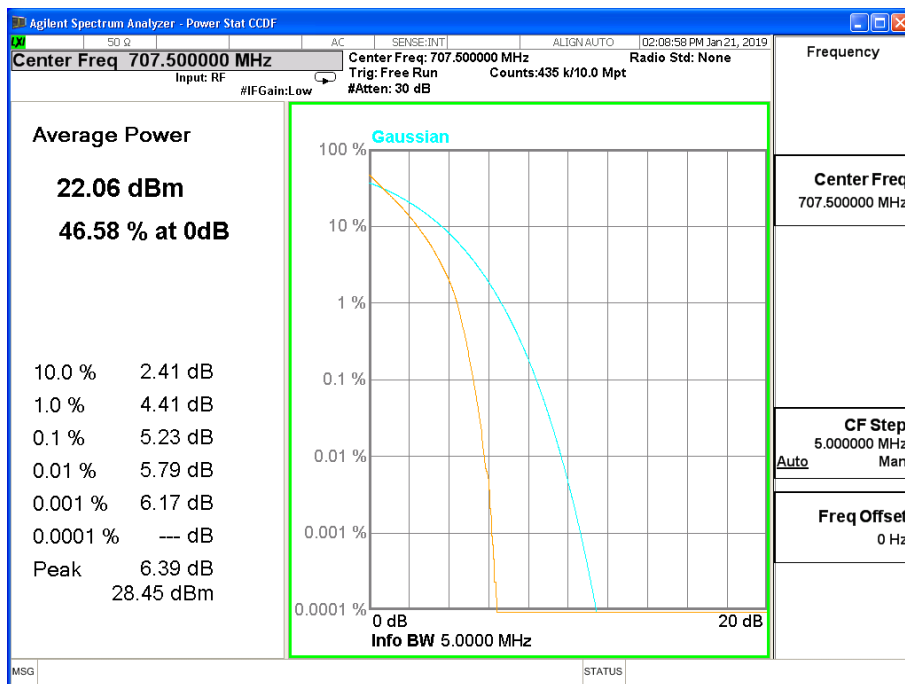
Peak-Average Ratio Plot(3MHz BW,64QAM,Band 12-mid Channel)



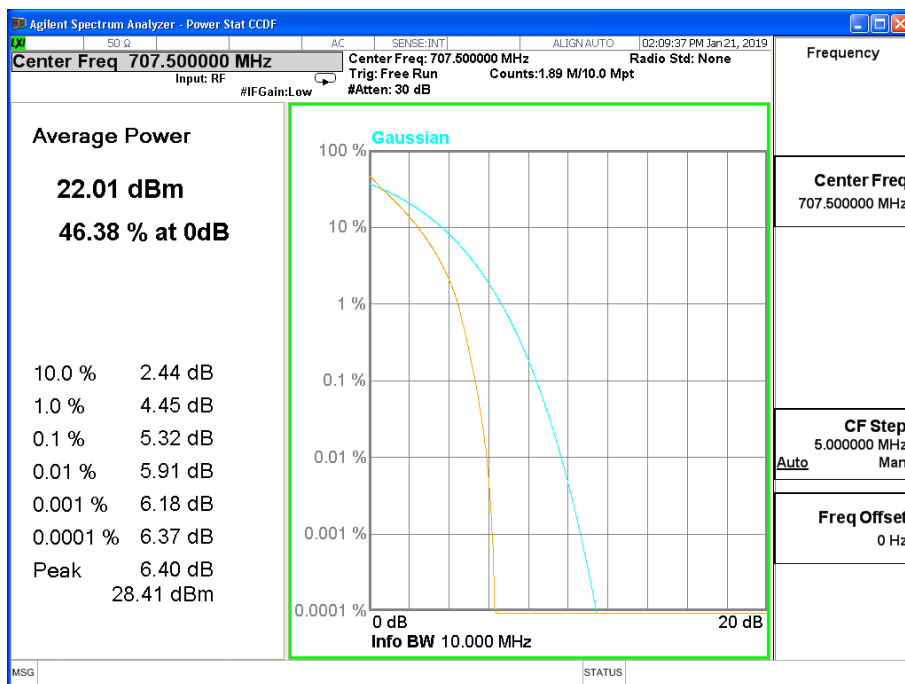
Peak-Average Ratio Plot(5MHz BW,QPSK,Band 12-mid Channel)



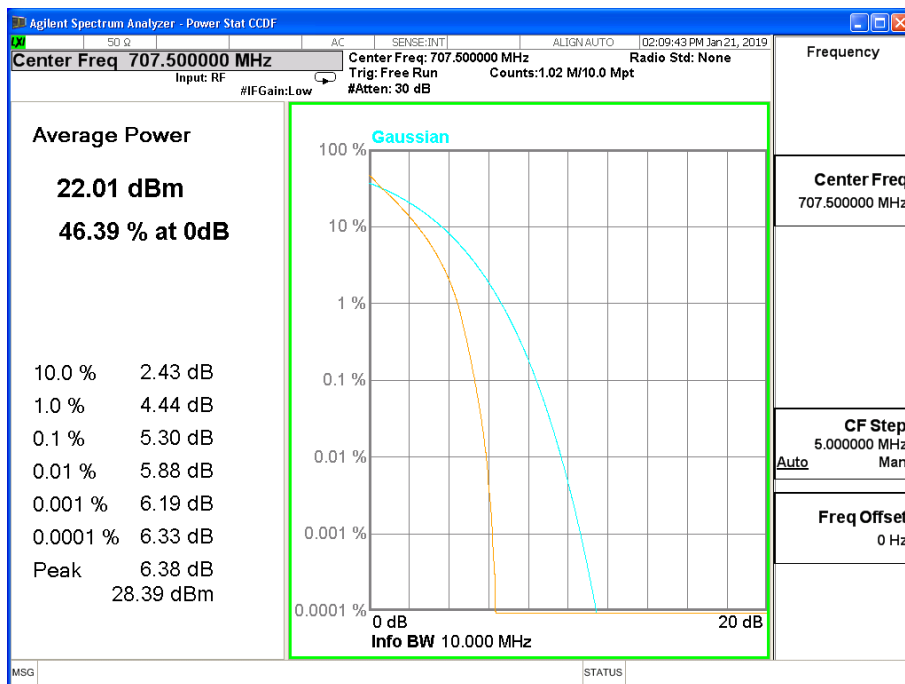
Peak-Average Ratio Plot(5MHz BW,16QAM,Band 12-mid Channel)



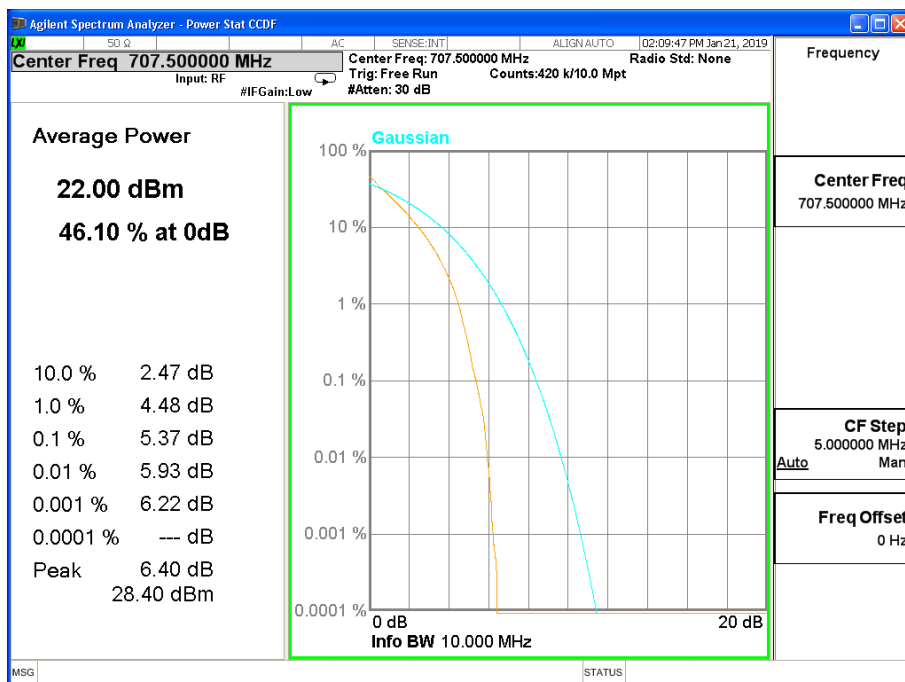
Peak-Average Ratio Plot(5MHz BW,64QAM,Band 12-mid Channel)



Peak-Average Ratio Plot(10MHz BW,QPSK,Band 12-mid Channel)



Peak-Average Ratio Plot(10MHz BW,16QAM,Band 12-mid Channel)



Peak-Average Ratio Plot(10MHz BW,64QAM,Band 12-mid Channel)

5 Spurious Emissions at antenna terminal

Test result

Band	Carrier frequency (MHz)	Channel(Low)	BW	RB Size	RB Offset	Conducted Spurious Plot
						QPSK
12	704	23060	10	1	0	Fig.1

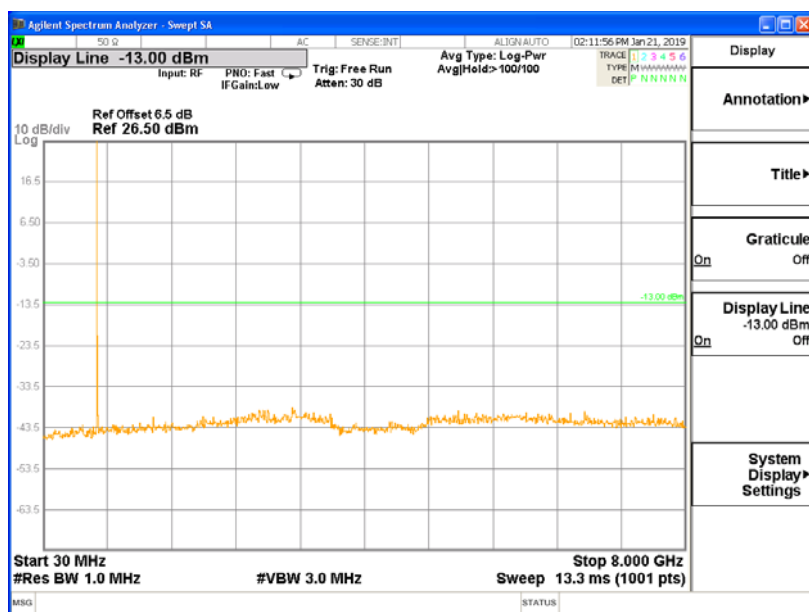


Fig.1

Band	Carrier frequency (MHz)	Channel(Mid)	BW	RB Size	RB Offset	Conducted Spurious Plot
						QPSK
12	707.5	23095	10	1	0	Fig.1

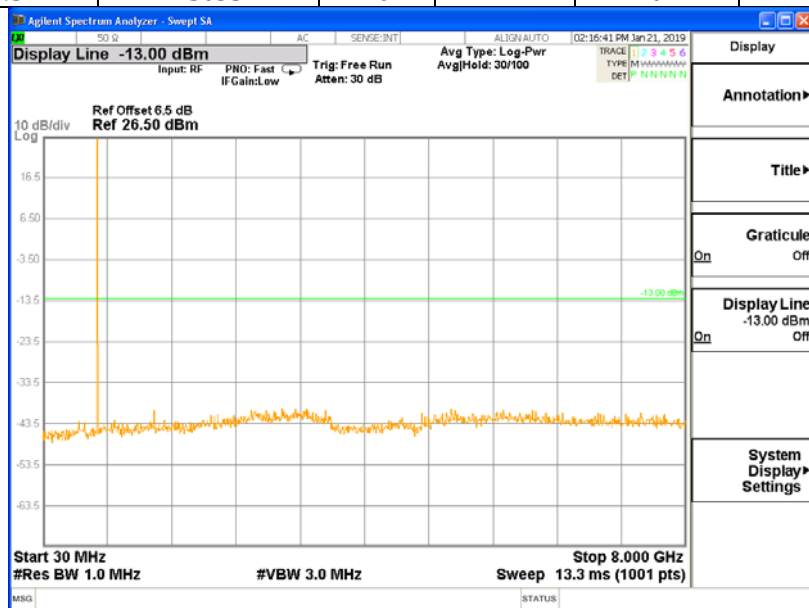


Fig.1

Band	Carrier frequency (MHz)	Channel (High)	BW	RB Size	RB Offset	Conducted Spurious Plot	
						QPSK	16-QAM
12	711	23130	10	1	0	Fig.1	Fig.8

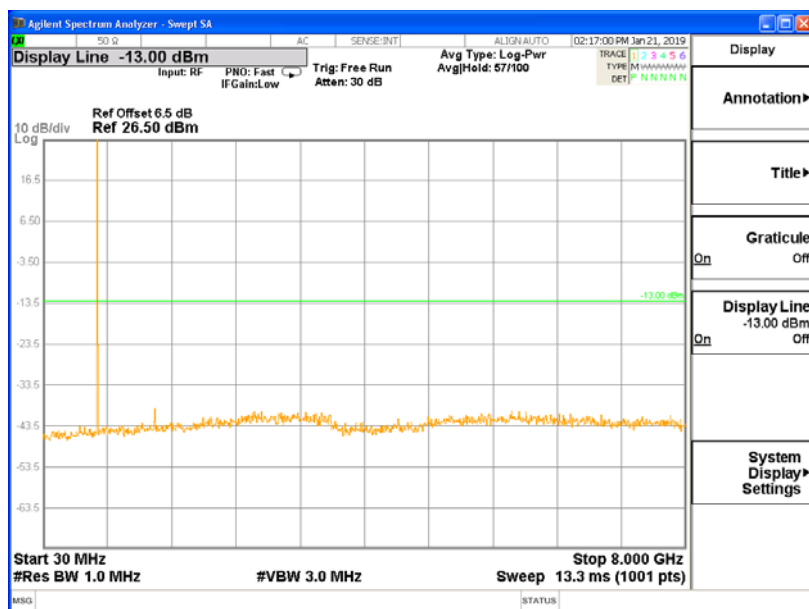


Fig.1

6 Band Edges Compliance

Test result

Band	Carrier frequency (MHz)	Channel (Low)	BW	RB Size	RB Offset	Band EdgesPlot
						QPSK
12	699.7	23017	1.4	1	0	Fig.1
				6	0	Fig.4

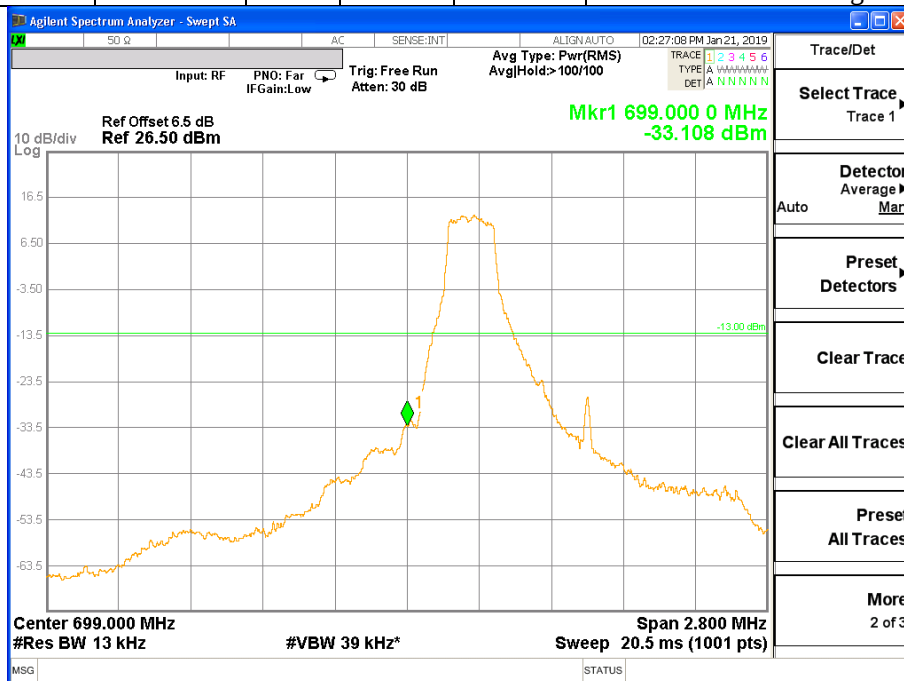


Fig.1

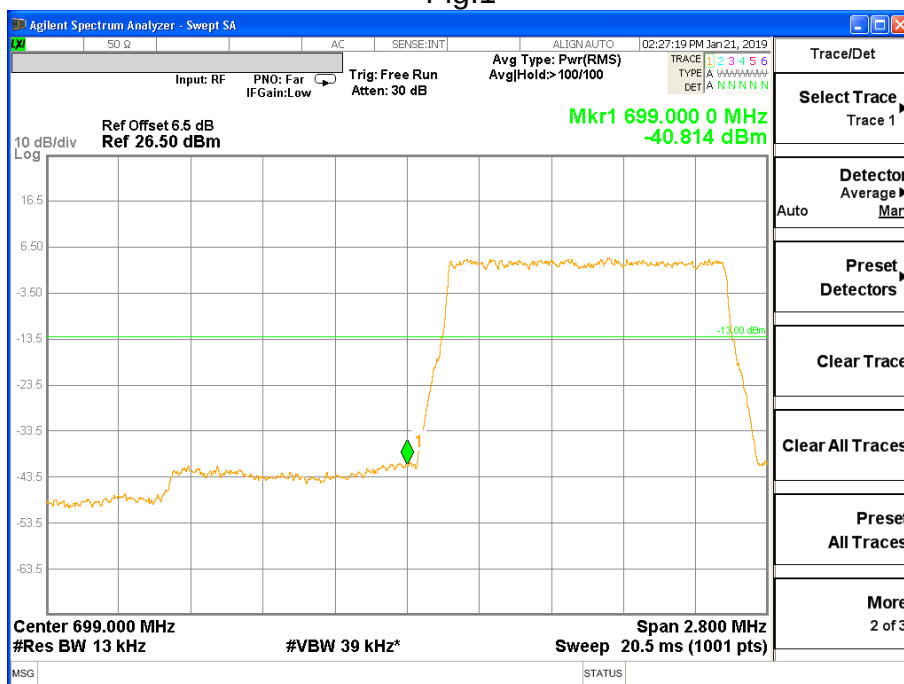


Fig.4

Band	Carrier frequency (MHz)	Channel (High)	BW	RB Size	RB Offset	Band EdgesPlot
						QPSK
12	715.3	23173	1.4	1	0	Fig.1
				6	0	Fig.4

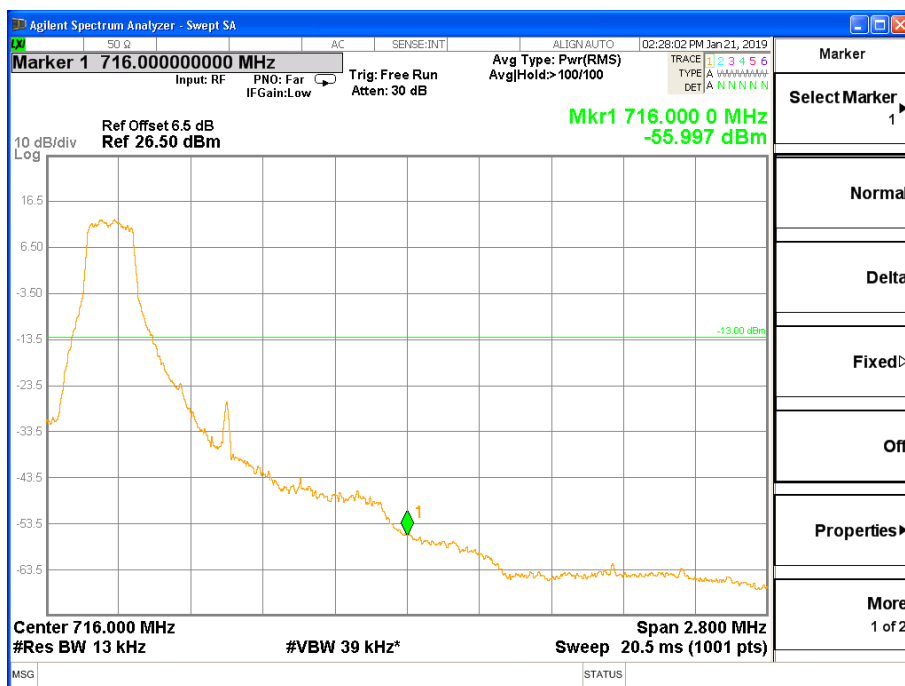


Fig.1

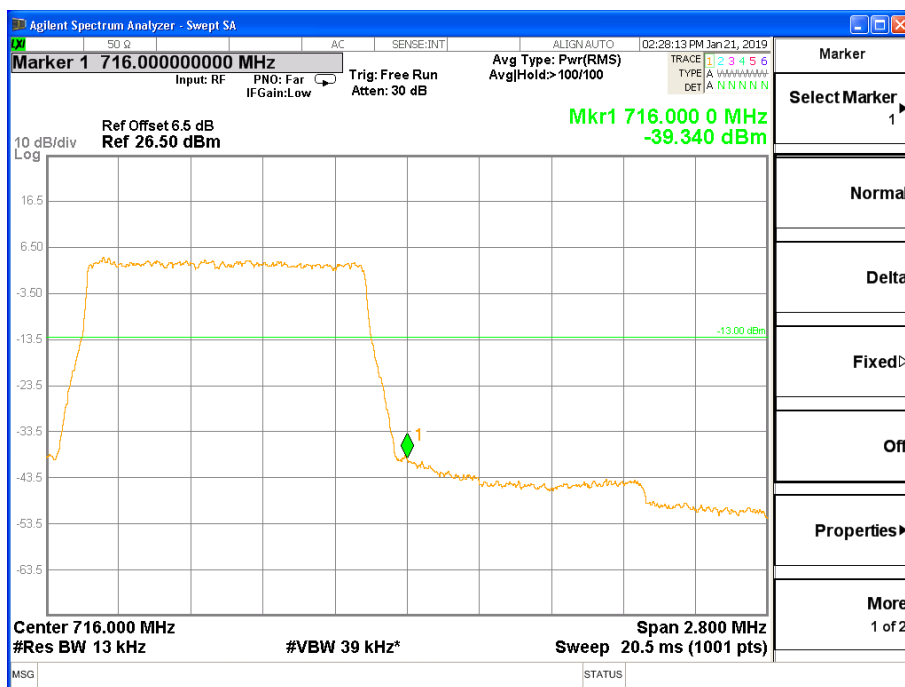


Fig.4

Band	Carrier frequency (MHz)	Channel (Low)	BW	RB Size	RB Offset	Band EdgesPlot
						QPSK
12	700.5	23025	3	1	0	Fig.1
				6	0	Fig.4

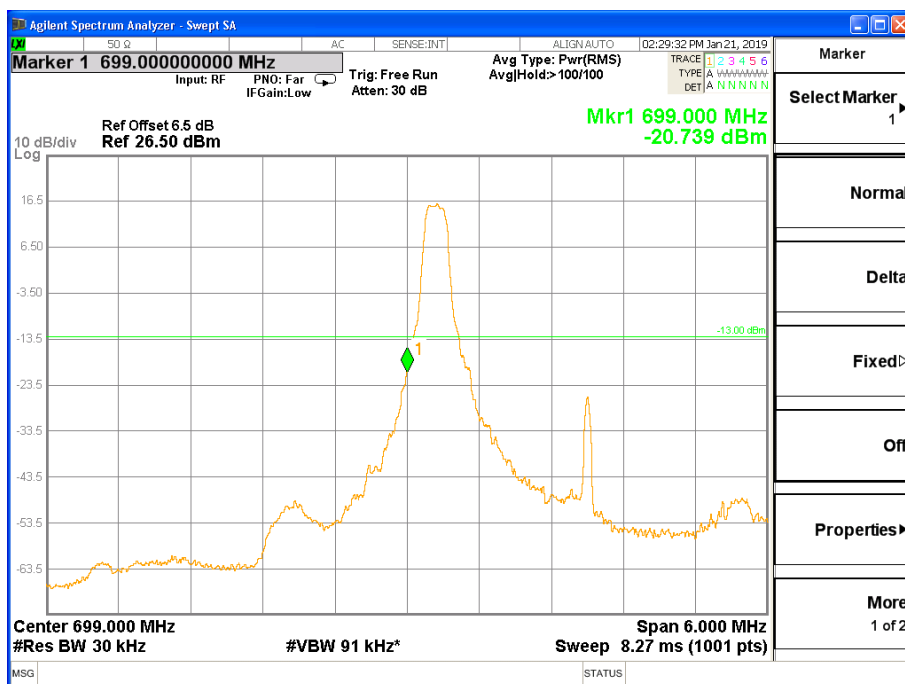


Fig.1

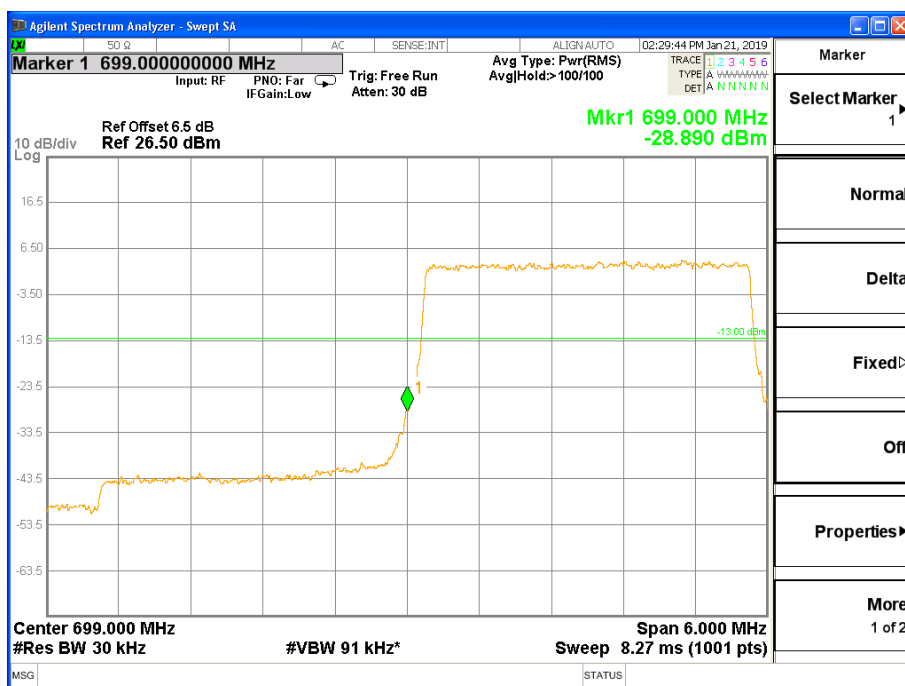


Fig.4

Band	Carrier frequency (MHz)	Channel (High)	BW	RB Size	RB Offset	Band EdgesPlot
						QPSK
12	714.5	23165	3	1	0	Fig.1
				6	0	Fig.4

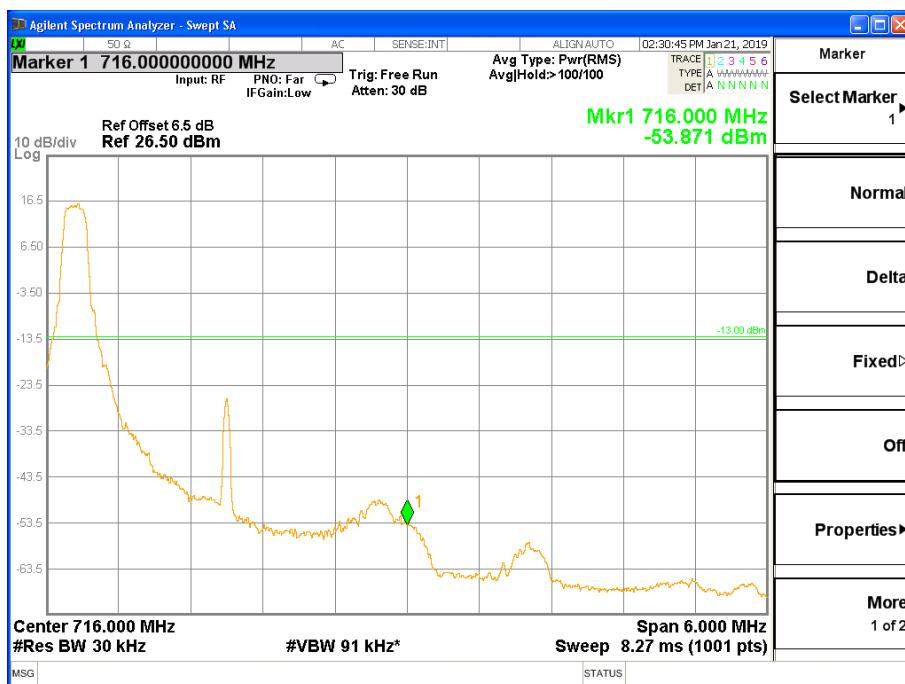


Fig.1

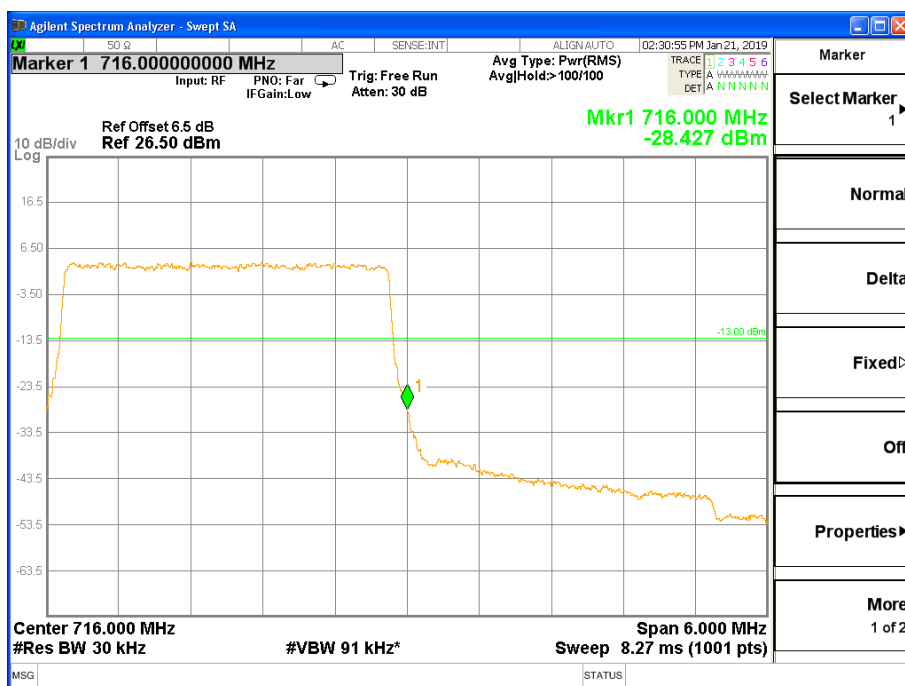


Fig.4

Band	Carrier frequency (MHz)	Channel (Low)	BW	RB Size	RB Offset	Band EdgesPlot
						QPSK
12	701.5	23035	5	1	0	Fig.1
				25	0	Fig.4

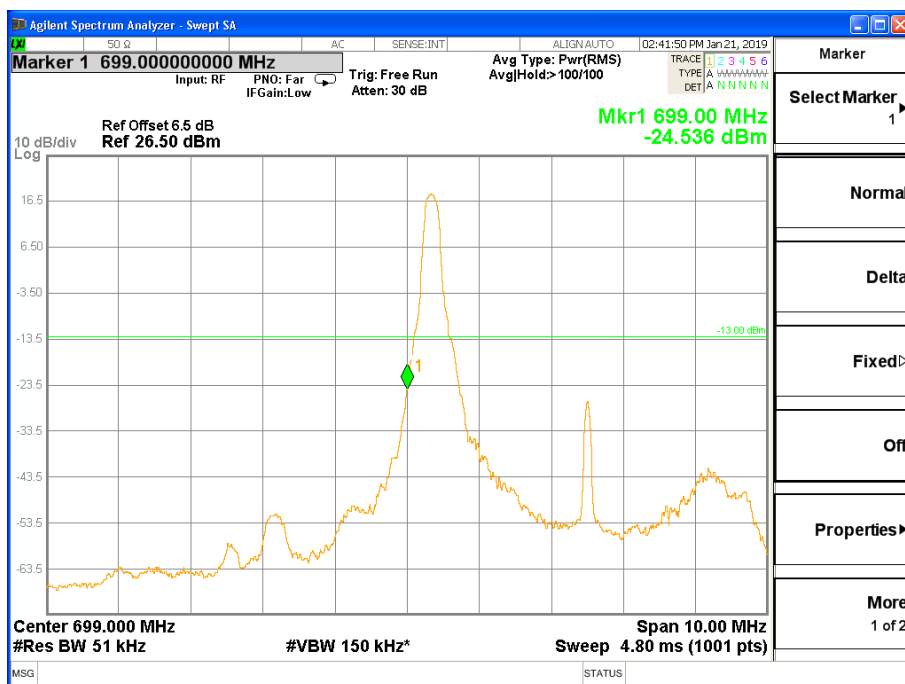


Fig.1

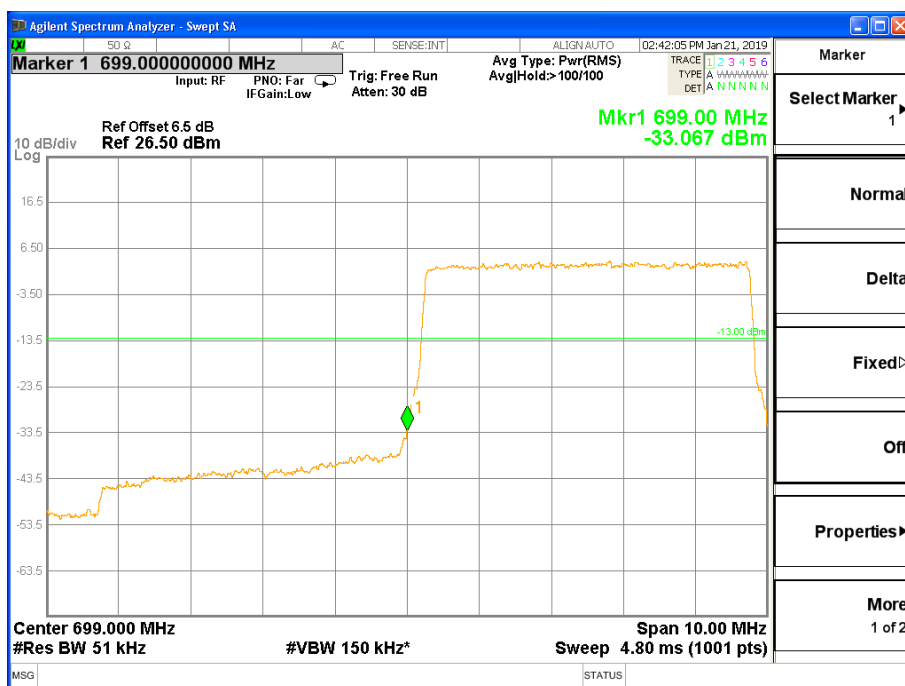


Fig.4

Band	Carrier frequency (MHz)	Channel (High)	BW	RB Size	RB Offset	Band EdgesPlot
						QPSK
12	713.5	23155	5	1	0	Fig.1
				25	0	Fig.4

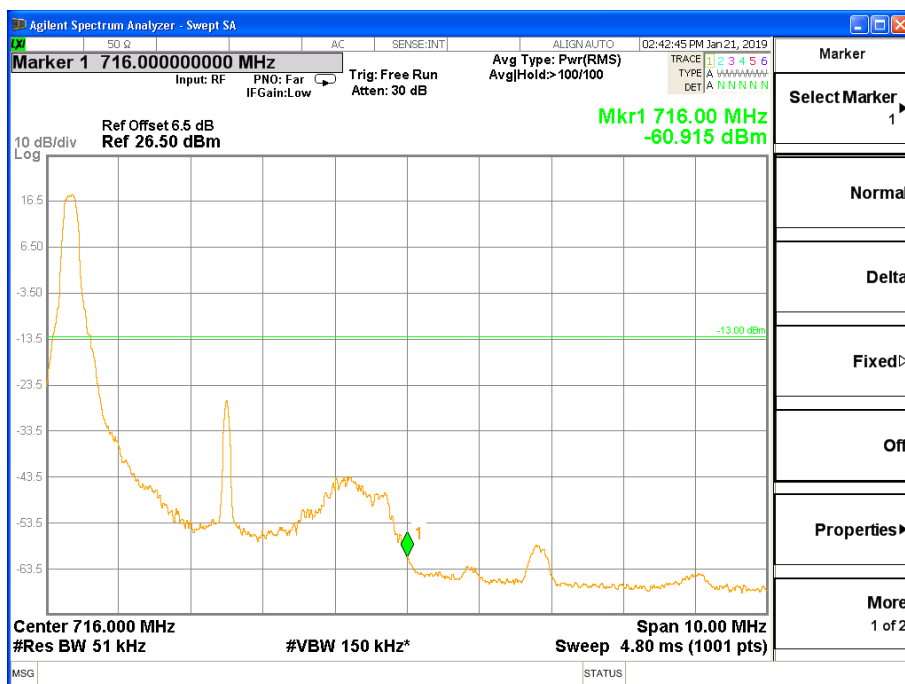


Fig.1

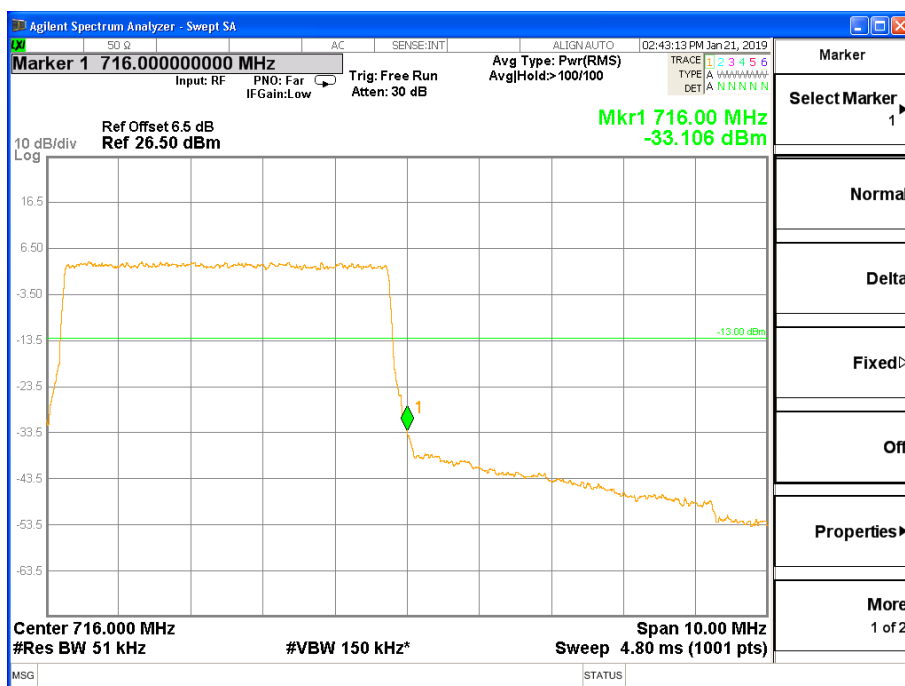


Fig.4

Band	Carrier frequency (MHz)	Channel (Low)	BW	RB Size	RB Offset	Band EdgesPlot
						QPSK
12	704	23060	10	1	0	Fig.1
				50	0	Fig.4

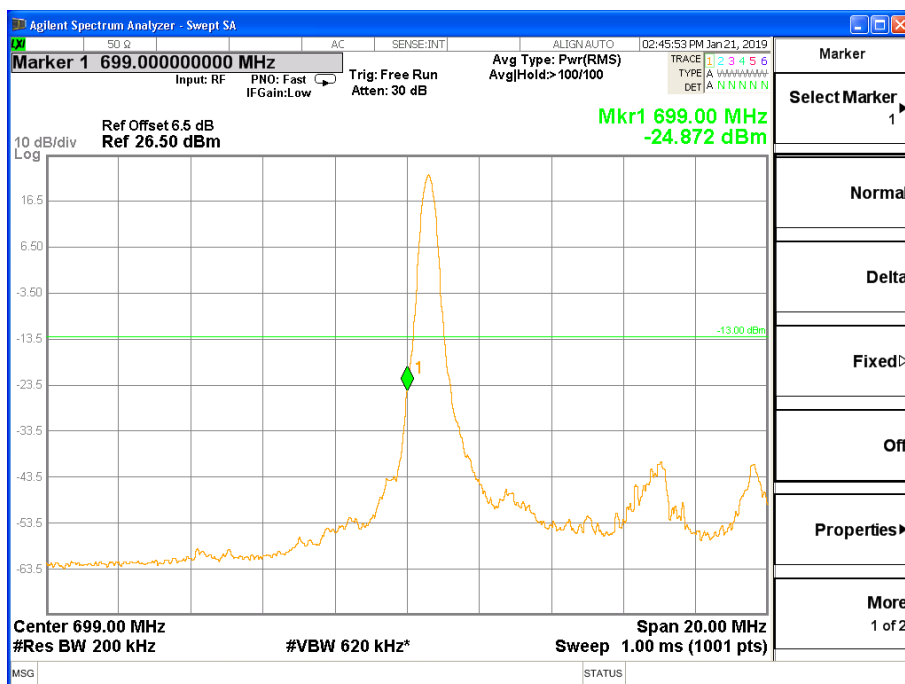


Fig.1

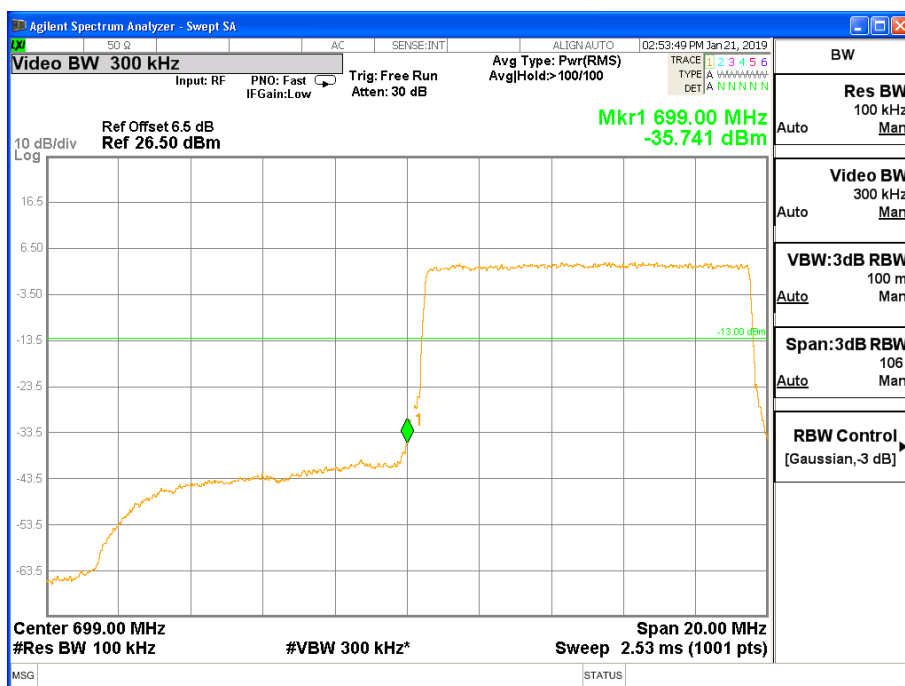


Fig.4

Band	Carrier frequency (MHz)	Channel (High)	BW	RB Size	RB Offset	Band EdgesPlot
						QPSK
12	711	23130	10	1	0	Fig.1
				50	0	Fig.4

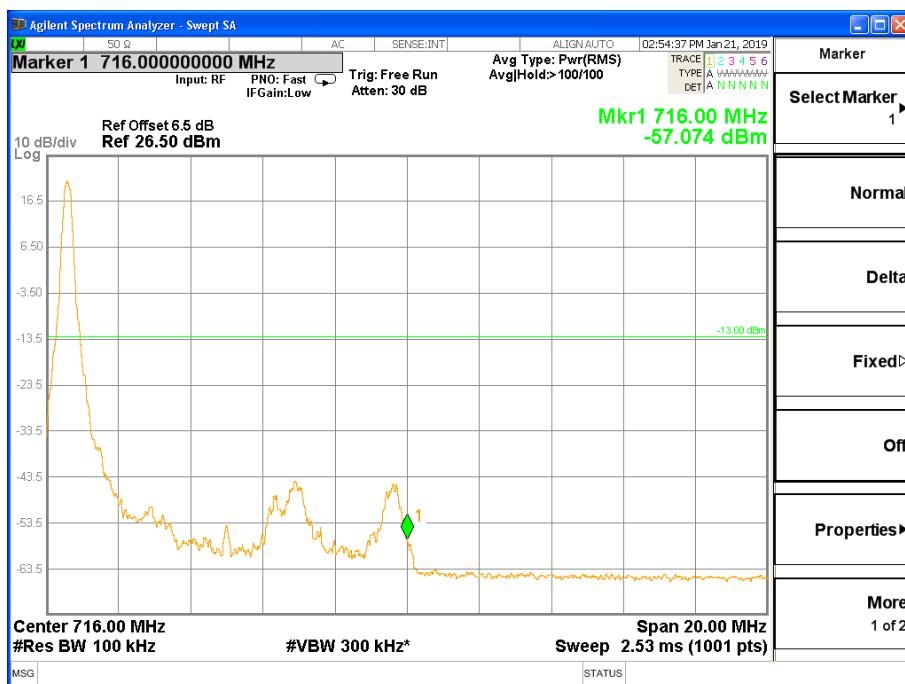


Fig.1

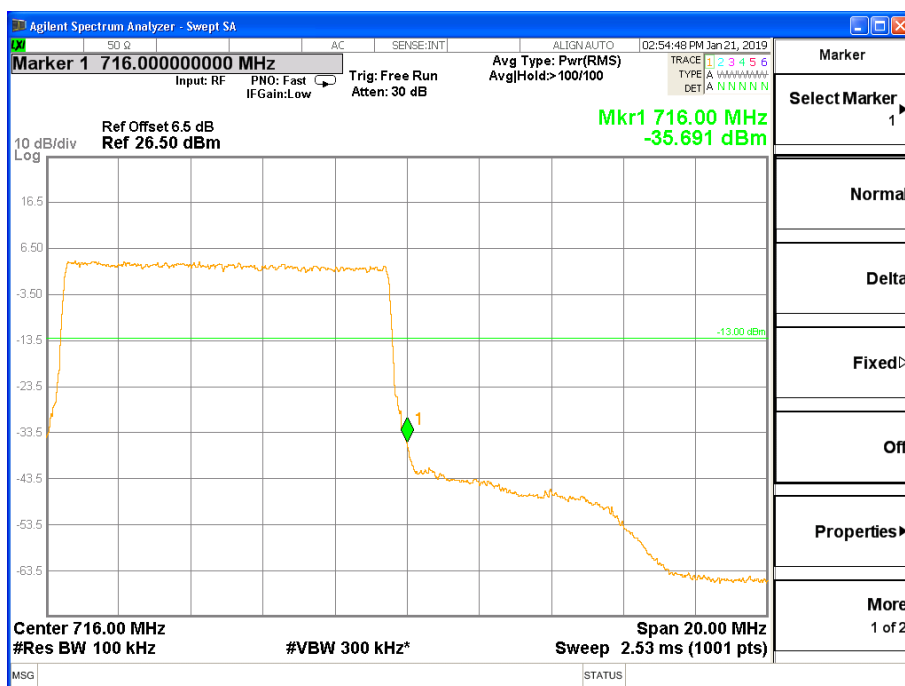


Fig.4

7 Frequency Stability

Test result:

Temperature(°C)	Voltage	Test Result (ppm) Band12 Low Channel			
		1.4M	3M	5M	10M
-10	NV	0.009	0.008	0.008	0.019
0	NV	0.010	0.015	-0.005	0.004
+10	NV	0.018	-0.009	0.006	0.002
+20	NV	-0.011	0.010	0.011	0.003
+30	NV	0.009	0.008	0.008	0.019
+40	NV	0.020	0.006	0.017	-0.001
+50	NV	0.017	0.001	0.017	0.003
+55	NV	0.010	0.003	-0.017	0.011
+20	LV	0.005	-0.008	0.006	0.006
+20	HV	0.013	0.019	-0.013	0.001

Temperature(°C)	Voltage	Test Result (ppm) Band12 High Channel			
		1.4M	3M	5M	10M
-10	NV	0.009	0.008	0.008	0.019
0	NV	0.009	0.003	0.020	0.004
+10	NV	0.009	-0.018	-0.017	0.001
+20	NV	0.009	0.015	0.007	0.010
+30	NV	-0.005	0.009	-0.019	-0.015
+40	NV	0.001	0.016	0.020	0.006
+50	NV	0.001	0.025	0.016	0.005
+55	NV	0.011	0.009	-0.009	-0.010
+20	LV	0.015	0.001	0.012	0.001
+20	HV	0.010	-0.003	0.006	-0.008