FCC Test Report

(Part 24&27)

Product Name : Module

Model No : HL7648

FCC ID : N7NHL7648

Applicant : Sierra Wireless Inc.

Address : 13811 Wireless Way, Richmond, BC, V6V 3A4 Canada

Date of Receipt : 2016/10/04

Issued Date : 2016/10/19

Report No. : 16A0092R-HPUSP45V00

Report Version : V1.0

Test Report

Issued Date : 2016/10/19
Report No.: 16A0092R-HPUSP45V00

Product Name	:	Module
Applicant	:	Sierra Wireless Inc.
Address	:	13811 Wireless Way, Richmond, BC, V6V 3A4 Canada
Manufacturer	:	Sierra Wireless Inc.
Trade Name	:	AirPrime
Model No.	:	HL7648
EUT Rated Voltage	:	DC 3.2-4.5V
EUT Test Voltage	:	DC 3.7V
Measurement Standard	:	FCC CFR Title 47 Part 24 27
Measurement Reference	:	TIA/EIA 603-C
Test Result	:	Complied

Documented By : Anny Chou
(Senior Adm. Specialist / Anny Chou)

Tested By : Vorana Chen
(Senior Engineer / Vorana Chen)

Approved By :
(Director /Vincent Lin)

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1. GENERAL INFORMATION

1.1. EUT Description

Product Name	Module
Model No.	HL7648
Trade Name	AirPrime
IMEI No.	014697000023926
FCC ID	N7NHL7648
Modulation	LTE Band 2 : QPSK/16-QAM
	LTE Band 4 : QPSK/16-QAM
	LTE Band 12 : QPSK/16-QAM
TX Frequency	LTE Band 2: 1850~1910MHz
	LTE Band 4 : 1710MHz~1755MHz
	LTE Band 12 : 699MHz~716MHz
Rx Frequency	LTE Band 2: 1930~1990MHz
	LTE Band 4: 2110~2155MHz
	LTE Band 12 : 729MHz ~746MHz
Bandwidth	LTE Band 2: 1.4MHz/3MHz/5MHz/10MHz/15MHz/20MHz
	LTE Band 4: 1.4MHz/3MHz/5MHz/10MHz/15MHz/20MHz
	LTE Band 12 : 1.4MHz/3MHz/5MHz/10MHz
HW Version	1.0
SW Version	AHL7648.A.2.0.
Antenna Type	Dipole

1.2. Antenna List

No.	Manufacturer	Part No.	Peak Gain
1	Pulse	SPDA24700/2700	2dBi

1.3. Operational Description

The information contained within this report is intended to show verification of compliance of the 700/1700/1900MHz to the requirements of FCC 47 CFR Part 24 and 27.

The EUT provide all functions described as above. The EUT is tested with maximum rated TX power via the Base Station simulator.

QuieTek has verified the construction and function in typical operation. All the test modes were carried out with the EUT in normal operation, which was shown in this test report and defined as:

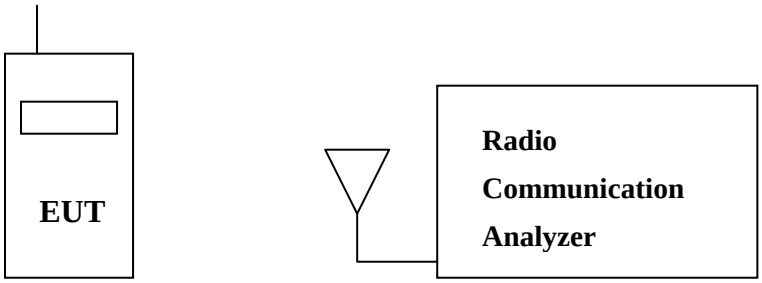
Test Mode:	LTE Band 2 (1.4M)-QPSK/16QAM
	LTE Band 2 (3M)-QPSK/16QAM
	LTE Band 2 (5M)-QPSK/16QAM
	LTE Band 2 (10M)-QPSK/16QAM
	LTE Band 2 (15M)-QPSK/16QAM
	LTE Band 2 (20M)-QPSK/16QAM
	LTE Band 4 (1.4M)-QPSK/16QAM
	LTE Band 4 (3M)-QPSK/16QAM
	LTE Band 4 (5M)-QPSK/16QAM
	LTE Band 4 (10M)-QPSK/16QAM
	LTE Band 4 (15M)-QPSK/16QAM
	LTE Band 4 (20M)-QPSK/16QAM
	LTE Band 12 (1.4M)-QPSK/16QAM
	LTE Band 12 (3M)-QPSK/16QAM
	LTE Band 12 (5M)-QPSK/16QAM
	LTE Band 12 (10M)-QPSK/16QAM

Note :

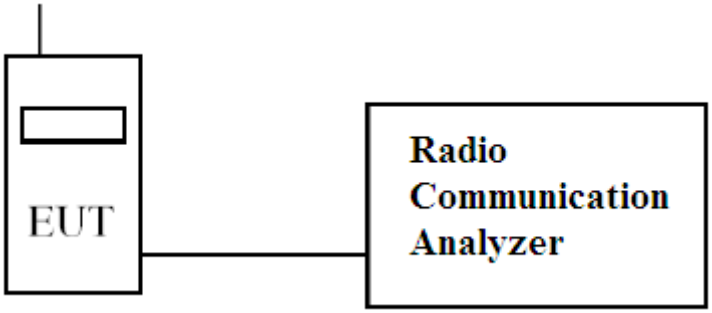
The maximum power levels are chosen in the LTE Band 2/4/12, only these modes were used for all tests.

1.4. Configuration of tested System

(a) Configuration of Radiated measurement



(b) Configuration of Conducted measurement



1.5. EUT Setup Procedures

(1) Setup the EUT and simulators as shown on 1.3
(2) Turn on the power of all equipments.
(3) The EUT was set to communicate with MT8820C.
(4) Repeat the above procedure (3).

1.6. Test Facility

Ambient conditions in the laboratory:

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	23
Humidity (%RH)	25-75	51
Barometric pressure (mbar)	860-1060	988

Site Description: File on
Federal Communications Commission
FCC Engineering Laboratory
7435 Oakland Mills Road
Columbia, MD 21046
FCC Registration Number :92195

Site Name: Quie Tek Corporation

LinKou Testing Laboratory:
No.5-22, Ruishukeng, Linkou Dist.,
New Taipei City 24451,
Taiwan, R.O.C.
TEL : 886-2-8601-3788 / FAX : 886-2-8601-3789
E-Mail : service@quietek.com

FCC Accreditation Number: TW1014

1.7. Type of Emission

Band	Bandwidth (MHz)	Modulation	
		QPSK	16QAM
2	1.4	1M10G7D	1M10W7D
2	3	2M74G7D	2M72W7D
2	5	4M51G7D	4M48W7D
2	10	9M08G7D	9M08W7D
2	15	13M5G7D	13M5W7D
2	20	18M7G7D	18M5W7D
4	1.4	1M10G7D	1M10W7D
4	3	2M74G7D	2M73W7D
4	5	4M50G7D	4M48W7D
4	10	9M07G7D	9M08W7D
4	15	13M5G7D	13M5W7D
4	20	18M5G7D	18M5W7D
12	1.4	1M10G7D	1M10W7D
12	3	2M74G7D	2M73W7D
12	5	4M51G7D	4M49W7D
12	10	9M09G7D	9M09W7D

1.8. Voltages and DC currents

LTE Band 2 (1.4M)	EUT Transmitting (in maximum power)	:	DC voltage : 3.7V , DC current : 0.49A
	EUT Standby	:	DC voltage : 3.7V , DC current : 0.01A
LTE Band 2 (3M)	EUT Transmitting (in maximum power)	:	DC voltage : 3.7V , DC current : 0.51A
	EUT Standby	:	DC voltage : 3.7V , DC current : 0.01A
LTE Band 2 (5M)	EUT Transmitting (in maximum power)	:	DC voltage : 3.7V , DC current : 0.52A
	EUT Standby	:	DC voltage : 3.7V , DC current : 0.01A
LTE Band 2 (10M)	EUT Transmitting (in maximum power)	:	DC voltage : 3.7V , DC current : 0.54A
	EUT Standby	:	DC voltage : 3.7V , DC current : 0.01A
LTE Band 2 (15M)	EUT Transmitting (in maximum power)	:	DC voltage : 3.7V , DC current : 0.58A
	EUT Standby	:	DC voltage : 3.7V , DC current : 0.01A
LTE Band 2 (20M)	EUT Transmitting (in maximum power)	:	DC voltage : 3.7V , DC current : 0.58A
	EUT Standby	:	DC voltage : 3.7V , DC current : 0.01A
LTE Band 4 (1.4M)	EUT Transmitting (in maximum power)	:	DC voltage : 3.7V , DC current : 0.56A
	EUT Standby	:	DC voltage : 3.7V , DC current : 0.01A
LTE Band 4 (3M)	EUT Transmitting (in maximum power)	:	DC voltage : 3.7V , DC current : 0.57A
	EUT Standby	:	DC voltage : 3.7V , DC current : 0.01A
LTE Band 4 (5M)	EUT Transmitting (in maximum power)	:	DC voltage : 3.7V , DC current : 0.58A
	EUT Standby	:	DC voltage : 3.7V , DC current : 0.01A
LTE Band 4 (10M)	EUT Transmitting (in maximum power)	:	DC voltage : 3.7V , DC current : 0.60A
	EUT Standby	:	DC voltage : 3.7V , DC current : 0.01A
LTE Band 4 (15M)	EUT Transmitting (in maximum power)	:	DC voltage : 3.7V , DC current : 0.63A
	EUT Standby	:	DC voltage : 3.7V , DC current : 0.01A
LTE Band 4 (20M)	EUT Transmitting (in maximum power)	:	DC voltage : 3.7V , DC current : 0.64A
	EUT Standby	:	DC voltage : 3.7V , DC current : 0.01A
LTE Band 12 (1.4M)	EUT Transmitting (in maximum power)	:	DC voltage : 3.7V , DC current : 0.48A
	EUT Standby	:	DC voltage : 3.7V , DC current : 0.01A
LTE Band 12 (3M)	EUT Transmitting (in maximum power)	:	DC voltage : 3.7V , DC current : 0.50A
	EUT Standby	:	DC voltage : 3.7V , DC current : 0.01A
LTE Band 12 (5M)	EUT Transmitting (in maximum power)	:	DC voltage : 3.7V , DC current : 0.51A
	EUT Standby	:	DC voltage : 3.7V , DC current : 0.01A
LTE Band 12 (10M)	EUT Transmitting (in maximum power)	:	DC voltage : 3.7V , DC current : 0.53A
	EUT Standby	:	DC voltage : 3.7V , DC current : 0.01A

2. Technical Test

2.1. Summary of test result

Standard	Test Item	Result	Note
2.1046	Conducted Output Power	Pass	
24.232(c)			
27.5			
2.1049	Occupied Bandwidth	Pass	
24.238(b)			
27.53(g)			
2.1051	Spurious Emission at Antenna Terminals	Pass	
24.238(a)			
27.53(g)			
2.1051	Conducted Emission	Pass	
24.238(a)			
27.53(g)			
2.1053	Field Strength of Spurious Radiation	Pass	
24.238(a)			
27.53(g)			
2.1055	Frequency Stability for Temperature & Voltage	Pass	
24.235			
27.54			
27.50(a)	Peak to Average Ratio	Pass	

2.2. List of test Equipment

Conducted /CTR

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
Spectrum Analyzer	Agilent	N9010A	MY52220597	2016/02/18
Directional coupler	Agilent	87300C	MY44300353	2015/10/30
Directional coupler	Agilent	778D-012	50550	2015/10/30
Standard Temperature & Humidity Chamber	WIT	TH-1S-B	EQ-201-00146	2016/10/01
DC power supply	Agilent	E3610A	MY40009845	2016/07/14
Communication Tester	Agilent	8820C	6201465467	2016/06/21

Radiated / Site3

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
Bilog Antenna	Schaffner Chase	CBL6112B	2707	2016/06/11
Horn Antenna	R&S	9120D	556	2016/01/11
Pre-Amplifier	Agilent	87405C	MY47010653	2016/08/11
Spectrum Analyzer	Agilent	N9010A	MY52220597	2016/02/18
DC power supply	Agilent	E3610A	MY40009845	2016/07/14
Communication Tester	Agilent	8820C	6201465467	2016/06/21

2.3. Measurement Uncertainty

Conducted Emission

The measurement uncertainty of confidence of 95% is evaluated as ± 1.52 dB

Radiated Emission (Below 1GHz)

The measurement uncertainty of confidence of 95% is evaluated as ± 3.44 dB .

Radiated Emission (Above 1GHz)

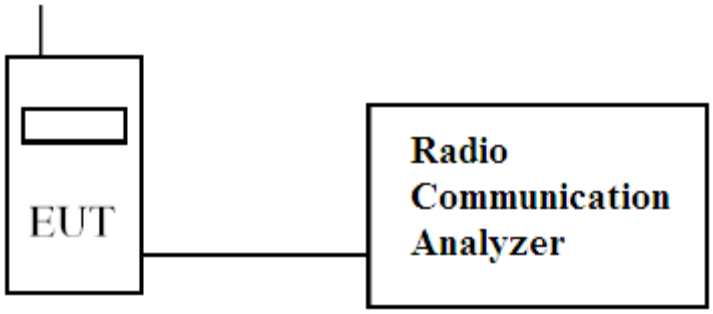
The measurement uncertainty of confidence of 95% is evaluated as ± 4.08 dB

3. Conducted Output Power Measurment

3.1. Test Specification

According to Part 2.1046, 24.232, 27.50

3.2. Test Setup



3.3. Limits

Band	Limit
LTE Band 2/1900	<2W
LTE Band 4/1700	<1W
LTE Band 12/700	<3W

3.4. Test Procedure

The EUT is tested with maximum rated TX power via the Base Station simulator, and the output power was measured at the antenna terminals of the EUT.

3.5. Test Result of Maximum Power Output

Band	Channel	Modula-tion	RB No.	RB Offset	MPR	Max Power (dBm)	Max Power (W)
Band 2 (1900MHz)/1.4MHz	18607	QPSK	1	#0	0	**23.39**	**0.218**
			1	#Mid	0	23.37	0.217
			1	#Max	0	23.27	0.212
			50%	#0	0	22.27	0.169
			50%	#Mid	0	22.23	0.167
			50%	#Max	0	22.16	0.164
			100%	--	1	22.20	0.166
		16QAM	1	#0	1	**22.03**	**0.160**
			1	#Mid	1	21.95	0.157
			1	#Max	1	21.84	0.153
			50%	#0	1	21.29	0.135
			50%	#Mid	1	21.29	0.135
			50%	#Max	1	21.27	0.134
			100%	--	2	21.25	0.133
	18900	QPSK	1	#0	0	**23.47**	**0.222**
			1	#Mid	0	23.42	0.220
			1	#Max	0	23.43	0.220
			50%	#0	0	22.30	0.170
			50%	#Mid	0	22.25	0.168
			50%	#Max	0	22.33	0.171
			100%	--	1	22.29	0.169
		16QAM	1	#0	1	**22.15**	**0.164**
			1	#Mid	1	22.05	0.160
			1	#Max	1	22.04	0.160
			50%	#0	1	21.35	0.136
			50%	#Mid	1	21.33	0.136
			50%	#Max	1	21.38	0.137
			100%	--	2	21.37	0.137
	19193	QPSK	1	#0	0	23.36	0.217
			1	#Mid	0	**23.47**	**0.222**
			1	#Max	0	23.45	0.221
			50%	#0	0	22.31	0.170
			50%	#Mid	0	22.32	0.171
			50%	#Max	0	22.35	0.172
			100%	--	1	22.34	0.171
		16QAM	1	#0	1	22.01	0.159
			1	#Mid	1	**22.19**	**0.166**
			1	#Max	1	22.08	0.161
			50%	#0	1	21.33	0.136
			50%	#Mid	1	21.38	0.137
			50%	#Max	1	21.41	0.138
			100%	--	2	21.39	0.138

Band	Channel	Modula-tion	RB No.	RB Offset	MPR	Max Power (Conducted)	Max Power (W)
Band 2 (1900MHz)/3MHz	19615	QPSK	1	#0	0	**22.96**	**0.198**
			1	#Mid	0	22.89	0.195
			1	#Max	0	22.90	0.195
			50%	#0	1	21.70	0.148
			50%	#Mid	1	21.67	0.147
			50%	#Max	1	21.66	0.147
			100%	--	1	21.67	0.147
		16QAM	1	#0	1	**21.76**	**0.150**
			1	#Mid	1	21.62	0.145
			1	#Max	1	21.64	0.146
			50%	#0	2	20.77	0.119
			50%	#Mid	2	20.69	0.117
			50%	#Max	2	20.67	0.117
			100%	--	2	20.74	0.119
	18900	QPSK	1	#0	0	23.12	0.205
			1	#Mid	0	23.12	0.205
			1	#Max	0	**23.15**	**0.207**
			50%	#0	1	21.92	0.156
			50%	#Mid	1	21.90	0.155
			50%	#Max	1	21.90	0.155
			100%	--	1	21.96	0.157
		16QAM	1	#0	1	21.66	0.147
			1	#Mid	1	**21.68**	**0.147**
			1	#Max	1	21.62	0.145
			50%	#0	2	21.02	0.126
			50%	#Mid	2	21.00	0.126
			50%	#Max	2	20.99	0.126
			100%	--	2	21.00	0.126
	19185	QPSK	1	#0	0	**23.62**	**0.230**
			1	#Mid	0	23.48	0.223
			1	#Max	0	23.43	0.220
			50%	#0	1	22.36	0.172
			50%	#Mid	1	22.33	0.171
			50%	#Max	1	22.30	0.170
			100%	--	1	22.37	0.173
		16QAM	1	#0	1	22.01	0.159
			1	#Mid	1	**22.09**	**0.162**
			1	#Max	1	21.97	0.157
			50%	#0	2	21.36	0.137
			50%	#Mid	2	21.25	0.133
			50%	#Max	2	21.32	0.136
			100%	--	2	21.49	0.141

Band	Channel	Modula-tion	RB No.	RB Offset	MPR	Max Power (Conducted)	Max Power (W)
Band 2 (1900MHz)/5MHz	18625	QPSK	1	#0	0	**23.01**	**0.200**
			1	#Mid	0	22.91	0.195
			1	#Max	0	22.88	0.194
			50%	#0	1	21.71	0.148
			50%	#Mid	1	21.68	0.147
			50%	#Max	1	21.64	0.146
			100%	--	1	21.63	0.146
		16QAM	1	#0	1	**21.64**	**0.146**
			1	#Mid	1	21.46	0.140
			1	#Max	1	21.54	0.143
			50%	#0	2	20.74	0.119
			50%	#Mid	2	20.65	0.116
			50%	#Max	2	20.63	0.116
			100%	--	2	20.70	0.117
	18900	QPSK	1	#0	0	23.22	0.210
			1	#Mid	0	**23.23**	**0.210**
			1	#Max	0	23.21	0.209
			50%	#0	1	21.95	0.157
			50%	#Mid	1	21.91	0.155
			50%	#Max	1	21.93	0.156
			100%	--	1	21.95	0.157
		16QAM	1	#0	1	21.84	0.153
			1	#Mid	1	**21.85**	**0.153**
			1	#Max	1	21.82	0.152
			50%	#0	2	21.06	0.128
			50%	#Mid	2	20.98	0.125
			50%	#Max	2	20.95	0.124
			100%	--	2	20.93	0.124
	19175	QPSK	1	#0	0	**23.68**	**0.233**
			1	#Mid	0	23.49	0.223
			1	#Max	0	23.45	0.221
			50%	#0	1	22.41	0.174
			50%	#Mid	1	22.33	0.171
			50%	#Max	1	22.27	0.169
			100%	--	1	22.34	0.171
		16QAM	1	#0	1	**22.32**	**0.171**
			1	#Mid	1	22.26	0.168
			1	#Max	1	22.12	0.163
			50%	#0	2	21.43	0.139
			50%	#Mid	2	21.41	0.138
			50%	#Max	2	21.35	0.136
			100%	--	2	21.42	0.139

Band	Channel	Modula-tion	RB No.	RB Offset	MPR	Max Power (Conducted)	Max Power (W)
Band 2 (1900MHz)/10MHz	18650	QPSK	1	#0	0	**23.22**	**0.210**
			1	#Mid	0	22.89	0.195
			1	#Max	0	22.88	0.194
			50%	#0	1	21.76	0.150
			50%	#Mid	1	21.64	0.146
			50%	#Max	1	21.66	0.147
			100%	--	1	21.71	0.148
		16QAM	1	#0	1	**21.78**	**0.151**
			1	#Mid	1	21.52	0.142
			1	#Max	1	21.49	0.141
			50%	#0	2	20.86	0.122
			50%	#Mid	2	20.74	0.119
			50%	#Max	2	20.64	0.116
			100%	--	2	20.78	0.120
	18900	QPSK	1	#0	0	**23.33**	**0.215**
			1	#Mid	0	23.13	0.206
			1	#Max	0	23.20	0.209
			50%	#0	1	21.99	0.158
			50%	#Mid	1	21.91	0.155
			50%	#Max	1	21.93	0.156
			100%	--	1	21.98	0.158
		16QAM	1	#0	1	**21.91**	**0.155**
			1	#Mid	1	21.74	0.149
			1	#Max	1	21.77	0.150
			50%	#0	2	21.06	0.128
			50%	#Mid	2	20.93	0.124
			50%	#Max	2	20.99	0.126
			100%	--	2	21.02	0.126
	19150	QPSK	1	#0	0	**23.79**	**0.239**
			1	#Mid	0	23.57	0.228
			1	#Max	0	23.52	0.225
			50%	#0	1	22.42	0.175
			50%	#Mid	1	22.34	0.171
			50%	#Max	1	22.31	0.170
			100%	--	1	22.39	0.173
		16QAM	1	#0	1	**22.32**	**0.171**
			1	#Mid	1	22.08	0.161
			1	#Max	1	21.90	0.155
			50%	#0	2	21.49	0.141
			50%	#Mid	2	21.37	0.137
			50%	#Max	2	21.35	0.136
			100%	--	2	21.44	0.139

Band	Channel	Modula-tion	RB No.	RB Offset	MPR	Max Power (Conducted)	Max Power (W)
Band 2 (1900MHz)/15MHz	18675	QPSK	1	#0	0	**23.41**	**0.219**
			1	#Mid	0	22.82	0.191
			1	#Max	0	22.87	0.194
			50%	#0	1	21.94	0.156
			50%	#Mid	1	21.69	0.148
			50%	#Max	1	21.67	0.147
			100%	--	1	21.80	0.151
		16QAM	1	#0	1	**22.04**	**0.160**
			1	#Mid	1	21.47	0.140
			1	#Max	1	21.46	0.140
			50%	#0	2	20.96	0.125
			50%	#Mid	2	20.70	0.117
			50%	#Max	2	20.66	0.116
			100%	--	2	20.78	0.120
	18900	QPSK	1	#0	0	**23.48**	**0.223**
			1	#Mid	0	23.14	0.206
			1	#Max	0	23.34	0.216
			50%	#0	1	22.14	0.164
			50%	#Mid	1	21.98	0.158
			50%	#Max	1	21.98	0.158
			100%	--	1	22.04	0.160
		16QAM	1	#0	1	**22.04**	**0.160**
			1	#Mid	1	21.66	0.147
			1	#Max	1	21.88	0.154
			50%	#0	2	21.14	0.130
			50%	#Mid	2	20.98	0.125
			50%	#Max	2	20.97	0.125
			100%	--	2	21.05	0.127
	19125	QPSK	1	#0	0	**23.86**	**0.243**
			1	#Mid	0	23.45	0.221
			1	#Max	0	23.45	0.221
			50%	#0	1	22.55	0.180
			50%	#Mid	1	22.34	0.171
			50%	#Max	1	22.32	0.171
			100%	--	1	22.43	0.175
		16QAM	1	#0	1	**22.46**	**0.176**
			1	#Mid	1	22.05	0.160
			1	#Max	1	21.96	0.157
			50%	#0	2	21.53	0.142
			50%	#Mid	2	21.38	0.137
			50%	#Max	2	21.33	0.136
			100%	--	2	21.45	0.140

Band	Channel	Modula-tion	RB No.	RB Offset	MPR	Max Power (Conducted)	Max Power (W)
Band 2 (1900MHz)/20MHz	18700	QPSK	1	#0	0	**23.35**	**0.216**
			1	#Mid	0	22.75	0.188
			1	#Max	0	22.65	0.184
			50%	#0	1	21.94	0.156
			50%	#Mid	1	21.67	0.147
			50%	#Max	1	21.66	0.147
			100%	--	1	21.80	0.151
		16QAM	1	#0	1	**21.87**	**0.154**
			1	#Mid	1	21.26	0.134
			1	#Max	1	21.23	0.133
			50%	#0	2	21.03	0.127
			50%	#Mid	2	20.72	0.118
			50%	#Max	2	20.65	0.116
			100%	--	2	20.81	0.121
	18900	QPSK	1	#0	0	**23.37**	**0.217**
			1	#Mid	0	22.99	0.199
			1	#Max	0	23.00	0.200
			50%	#0	1	22.09	0.162
			50%	#Mid	1	21.88	0.154
			50%	#Max	1	21.93	0.156
			100%	--	1	22.06	0.161
		16QAM	1	#0	1	**21.89**	**0.155**
			1	#Mid	1	21.56	0.143
			1	#Max	1	21.57	0.144
			50%	#0	2	21.09	0.129
			50%	#Mid	2	20.86	0.122
			50%	#Max	2	20.89	0.123
			100%	--	2	21.00	0.126
	19100	QPSK	1	#0	0	**23.69**	**0.234**
			1	#Mid	0	23.27	0.212
			1	#Max	0	23.22	0.210
			50%	#0	1	22.47	0.177
			50%	#Mid	1	22.24	0.167
			50%	#Max	1	22.23	0.167
			100%	--	1	22.34	0.171
		16QAM	1	#0	1	**22.33**	**0.171**
			1	#Mid	1	21.84	0.153
			1	#Max	1	21.86	0.153
			50%	#0	2	21.52	0.142
			50%	#Mid	2	21.25	0.133
			50%	#Max	2	21.28	0.134
			100%	--	2	21.36	0.137

Band	Channel	Modula-tion	RB No.	RB Offset	MPR	Max Power (dBm)	Max Power (W)
Band 4 (1700MHz)/1.4MHz	19957	QPSK	1	#0	0	23.04	0.201
			1	#Mid	0	23.06	0.202
			1	#Max	0	23.04	0.201
			50%	#0	0	23.09	0.204
			50%	#Mid	0	**23.14**	**0.206**
			50%	#Max	0	23.14	0.206
			100%	--	1	21.85	0.153
		16QAM	1	#0	1	**21.80**	**0.151**
			1	#Mid	1	21.76	0.150
			1	#Max	1	21.68	0.147
			50%	#0	1	21.41	0.138
			50%	#Mid	1	21.35	0.136
			50%	#Max	1	21.41	0.138
			100%	--	2	20.90	0.123
	20175	QPSK	1	#0	0	**23.32**	**0.215**
			1	#Mid	0	23.30	0.214
			1	#Max	0	23.29	0.213
			50%	#0	0	23.30	0.214
			50%	#Mid	0	23.21	0.209
			50%	#Max	0	23.23	0.210
			100%	--	1	21.94	0.156
		16QAM	1	#0	1	**21.73**	**0.149**
			1	#Mid	1	21.71	0.148
			1	#Max	1	21.64	0.146
			50%	#0	1	21.56	0.143
			50%	#Mid	1	21.56	0.143
			50%	#Max	1	21.52	0.142
			100%	--	2	21.06	0.128
	20393	QPSK	1	#0	0	23.23	0.210
			1	#Mid	0	23.18	0.208
			1	#Max	0	23.23	0.210
			50%	#0	0	**23.24**	**0.211**
			50%	#Mid	0	23.23	0.210
			50%	#Max	0	23.21	0.209
			100%	--	1	21.90	0.155
		16QAM	1	#0	1	21.62	0.145
			1	#Mid	1	21.59	0.144
			1	#Max	1	**21.66**	**0.147**
			50%	#0	1	21.50	0.141
			50%	#Mid	1	21.51	0.142
			50%	#Max	1	21.52	0.142
			100%	--	2	21.09	0.129

Band	Channel	Modula-tion	RB No.	RB Offset	MPR	Max Power (Conducted)	Max Power (W)
Band 4 (1700MHz)/3MHz	19965	QPSK	1	#0	0	23.12	0.205
			1	#Mid	0	23.14	0.206
			1	#Max	0	**23.15**	**0.207**
			50%	#0	1	21.90	0.155
			50%	#Mid	1	21.81	0.152
			50%	#Max	1	21.84	0.153
			100%	--	1	21.80	0.151
		16QAM	1	#0	1	21.59	0.144
			1	#Mid	1	**21.60**	**0.145**
			1	#Max	1	21.54	0.143
			50%	#0	2	20.95	0.124
			50%	#Mid	2	20.90	0.123
			50%	#Max	2	20.94	0.124
			100%	--	2	20.86	0.122
	20175	QPSK	1	#0	0	**23.35**	**0.216**
			1	#Mid	0	23.29	0.213
			1	#Max	0	23.25	0.211
			50%	#0	1	22.06	0.161
			50%	#Mid	1	22.05	0.160
			50%	#Max	1	21.95	0.157
			100%	--	1	21.96	0.157
		16QAM	1	#0	1	**21.91**	**0.155**
			1	#Mid	1	21.76	0.150
			1	#Max	1	21.65	0.146
			50%	#0	2	21.16	0.131
			50%	#Mid	2	21.07	0.128
			50%	#Max	2	21.08	0.128
			100%	--	2	21.02	0.126
	20385	QPSK	1	#0	0	**23.24**	**0.211**
			1	#Mid	0	23.23	0.210
			1	#Max	0	23.13	0.206
			50%	#0	1	21.89	0.155
			50%	#Mid	1	21.86	0.153
			50%	#Max	1	21.89	0.155
			100%	--	1	21.92	0.156
		16QAM	1	#0	1	**21.78**	**0.151**
			1	#Mid	1	21.64	0.146
			1	#Max	1	21.46	0.140
			50%	#0	2	21.10	0.129
			50%	#Mid	2	21.06	0.128
			50%	#Max	2	21.06	0.128
			100%	--	2	21.21	0.132

Band	Channel	Modula-tion	RB No.	RB Offset	MPR	Max Power (Conducted)	Max Power (W)
Band 4 (1700MHz)/5MHz	19975	QPSK	1	#0	0	**23.16**	**0.207**
			1	#Mid	0	23.11	0.205
			1	#Max	0	23.05	0.202
			50%	#0	1	21.91	0.155
			50%	#Mid	1	21.90	0.155
			50%	#Max	1	21.91	0.155
			100%	--	1	21.91	0.155
		16QAM	1	#0	1	**21.32**	**0.136**
			1	#Mid	1	21.32	0.136
			1	#Max	1	21.30	0.135
			50%	#0	2	20.95	0.124
			50%	#Mid	2	20.93	0.124
			50%	#Max	2	20.89	0.123
			100%	--	2	20.92	0.124
	20175	QPSK	1	#0	0	**23.27**	**0.212**
			1	#Mid	0	23.16	0.207
			1	#Max	0	23.10	0.204
			50%	#0	1	22.04	0.160
			50%	#Mid	1	21.97	0.157
			50%	#Max	1	21.95	0.157
			100%	--	1	21.95	0.157
		16QAM	1	#0	1	**21.64**	**0.146**
			1	#Mid	1	21.37	0.137
			1	#Max	1	21.40	0.138
			50%	#0	2	21.13	0.130
			50%	#Mid	2	21.06	0.128
			50%	#Max	2	21.02	0.126
			100%	--	2	21.09	0.129
	20375	QPSK	1	#0	0	**23.21**	**0.209**
			1	#Mid	0	23.21	0.209
			1	#Max	0	23.14	0.206
			50%	#0	1	21.97	0.157
			50%	#Mid	1	21.85	0.153
			50%	#Max	1	21.81	0.152
			100%	--	1	21.81	0.152
		16QAM	1	#0	1	**21.60**	**0.145**
			1	#Mid	1	21.50	0.141
			1	#Max	1	21.47	0.140
			50%	#0	2	21.02	0.126
			50%	#Mid	2	20.97	0.125
			50%	#Max	2	20.95	0.124
			100%	--	2	20.99	0.126

Band	Channel	Modula-tion	RB No.	RB Offset	MPR	Max Power (Conducted)	Max Power (W)
Band 4 (1700MHz)/10MHz	20000	QPSK	1	#0	0	**23.28**	**0.213**
			1	#Mid	0	23.12	0.205
			1	#Max	0	23.14	0.206
			50%	#0	1	21.96	0.157
			50%	#Mid	1	21.90	0.155
			50%	#Max	1	21.90	0.155
			100%	--	1	21.95	0.157
		16QAM	1	#0	1	**21.81**	**0.152**
			1	#Mid	1	21.68	0.147
			1	#Max	1	21.64	0.146
			50%	#0	2	21.00	0.126
			50%	#Mid	2	20.91	0.123
			50%	#Max	2	20.94	0.124
			100%	--	2	21.00	0.126
	20175	QPSK	1	#0	0	**23.50**	**0.224**
			1	#Mid	0	23.16	0.207
			1	#Max	0	23.13	0.206
			50%	#0	1	22.09	0.162
			50%	#Mid	1	21.92	0.156
			50%	#Max	1	21.83	0.152
			100%	--	1	21.95	0.157
		16QAM	1	#0	1	**22.11**	**0.163**
			1	#Mid	1	21.75	0.150
			1	#Max	1	21.53	0.142
			50%	#0	2	21.21	0.132
			50%	#Mid	2	21.05	0.127
			50%	#Max	2	20.97	0.125
			100%	--	2	21.05	0.127
	20350	QPSK	1	#0	0	**23.46**	**0.222**
			1	#Mid	0	23.12	0.205
			1	#Max	0	23.12	0.205
			50%	#0	1	22.00	0.158
			50%	#Mid	1	21.87	0.154
			50%	#Max	1	21.85	0.153
			100%	--	1	21.89	0.155
		16QAM	1	#0	1	**21.89**	**0.155**
			1	#Mid	1	21.69	0.148
			1	#Max	1	21.60	0.145
			50%	#0	2	21.03	0.127
			50%	#Mid	2	20.93	0.124
			50%	#Max	2	20.93	0.124
			100%	--	2	21.02	0.126

Band	Channel	Modula-tion	RB No.	RB Offset	MPR	Max Power (Conducted)	Max Power (W)
Band 4 (1700MHz)/15MHz	20025	QPSK	1	#0	0	**23.50**	**0.224**
			1	#Mid	0	23.21	0.209
			1	#Max	0	23.23	0.210
			50%	#0	1	22.11	0.163
			50%	#Mid	1	21.97	0.157
			50%	#Max	1	21.93	0.156
			100%	--	1	21.98	0.158
		16QAM	1	#0	1	**21.99**	**0.158**
			1	#Mid	1	21.76	0.150
			1	#Max	1	21.69	0.148
			50%	#0	2	21.20	0.132
			50%	#Mid	2	21.05	0.127
			50%	#Max	2	21.02	0.126
			100%	--	2	21.11	0.129
	20175	QPSK	1	#0	0	**23.56**	**0.227**
			1	#Mid	0	23.08	0.203
			1	#Max	0	22.90	0.195
			50%	#0	1	22.17	0.165
			50%	#Mid	1	21.97	0.157
			50%	#Max	1	21.85	0.153
			100%	--	1	21.97	0.157
		16QAM	1	#0	1	**22.27**	**0.169**
			1	#Mid	1	21.76	0.150
			1	#Max	1	21.45	0.140
			50%	#0	2	21.26	0.134
			50%	#Mid	2	21.03	0.127
			50%	#Max	2	20.95	0.124
			100%	--	2	21.08	0.128
	20325	QPSK	1	#0	0	**23.50**	**0.224**
			1	#Mid	0	22.95	0.197
			1	#Max	0	23.02	0.200
			50%	#0	1	22.13	0.163
			50%	#Mid	1	21.88	0.154
			50%	#Max	1	21.85	0.153
			100%	--	1	22.01	0.159
		16QAM	1	#0	1	**22.12**	**0.163**
			1	#Mid	1	21.68	0.147
			1	#Max	1	21.76	0.150
			50%	#0	2	21.20	0.132
			50%	#Mid	2	20.95	0.124
			50%	#Max	2	20.94	0.124
			100%	--	2	21.05	0.127

Band	Channel	Modula-tion	RB No.	RB Offset	MPR	Max Power (Conducted)	Max Power (W)
Band 4 (1700MHz)/20MHz	20050	QPSK	1	#0	0	**23.40**	**0.219**
			1	#Mid	0	23.09	0.204
			1	#Max	0	22.86	0.193
			50%	#0	1	22.10	0.162
			50%	#Mid	1	21.87	0.154
			50%	#Max	1	21.80	0.151
			100%	--	1	21.94	0.156
		16QAM	1	#0	1	**21.89**	**0.155**
			1	#Mid	1	21.58	0.144
			1	#Max	1	21.34	0.136
			50%	#0	2	21.18	0.131
			50%	#Mid	2	20.94	0.124
			50%	#Max	2	20.93	0.124
			100%	--	2	21.03	0.127
	20175	QPSK	1	#0	0	**23.51**	**0.224**
			1	#Mid	0	22.98	0.199
			1	#Max	0	22.69	0.186
			50%	#0	1	22.22	0.167
			50%	#Mid	1	21.87	0.154
			50%	#Max	1	21.77	0.150
			100%	--	1	22.00	0.158
		16QAM	1	#0	1	**22.20**	**0.166**
			1	#Mid	1	21.61	0.145
			1	#Max	1	21.24	0.133
			50%	#0	2	21.32	0.136
			50%	#Mid	2	21.01	0.126
			50%	#Max	2	20.93	0.124
			100%	--	2	21.07	0.128
	20300	QPSK	1	#0	0	**23.40**	**0.219**
			1	#Mid	0	22.86	0.193
			1	#Max	0	22.63	0.183
			50%	#0	1	22.09	0.162
			50%	#Mid	1	21.76	0.150
			50%	#Max	1	21.71	0.148
			100%	--	1	21.90	0.155
		16QAM	1	#0	1	**21.99**	**0.158**
			1	#Mid	1	21.44	0.139
			1	#Max	1	21.29	0.135
			50%	#0	2	21.18	0.131
			50%	#Mid	2	20.81	0.121
			50%	#Max	2	20.76	0.119
			100%	--	2	20.96	0.125

Band	Channel	Modula-tion	RB No.	RB Offset	MPR	Max Power (Conducted)	Max Power (W)
Band 12 (700MHz)/1.4MHz	23017	QPSK	1	#0	0	**23.61**	**0.230**
			1	#Mid	0	23.60	0.229
			1	#Max	0	23.60	0.229
			50%	#0	0	23.60	0.229
			50%	#Mid	0	23.56	0.227
			50%	#Max	0	23.58	0.228
			100%	--	1	22.36	0.172
		16QAM	1	#0	1	**22.34**	**0.171**
			1	#Mid	1	22.33	0.171
			1	#Max	1	22.31	0.170
			50%	#0	1	21.94	0.156
			50%	#Mid	1	21.94	0.156
			50%	#Max	1	21.93	0.156
			100%	--	2	21.48	0.141
	23095	QPSK	1	#0	0	23.44	0.221
			1	#Mid	0	23.45	0.221
			1	#Max	0	23.41	0.219
			50%	#0	0	23.47	0.222
			50%	#Mid	0	23.49	0.223
			50%	#Max	0	**23.50**	**0.224**
			100%	--	1	22.29	0.169
		16QAM	1	#0	1	22.13	0.163
			1	#Mid	1	**22.19**	**0.166**
			1	#Max	1	22.18	0.165
			50%	#0	1	21.86	0.153
			50%	#Mid	1	21.86	0.153
			50%	#Max	1	21.84	0.153
			100%	--	2	21.28	0.134
	23173	QPSK	1	#0	0	23.50	0.224
			1	#Mid	0	23.48	0.223
			1	#Max	0	23.54	0.226
			50%	#0	0	**23.59**	**0.229**
			50%	#Mid	0	23.55	0.226
			50%	#Max	0	23.54	0.226
			100%	--	1	22.34	0.171
		16QAM	1	#0	1	22.27	0.169
			1	#Mid	1	**22.30**	**0.170**
			1	#Max	1	22.30	0.170
			50%	#0	1	22.01	0.159
			50%	#Mid	1	21.97	0.157
			50%	#Max	1	21.96	0.157
			100%	--	2	21.43	0.139

Band	Channel	Modula-tion	RB No.	RB Offset	MPR	Max Power (Conducted)	Max Power (W)
Band 12 (700MHz)/3MHz	23025	QPSK	1	#0	0	**23.52**	**0.225**
			1	#Mid	0	23.51	0.224
			1	#Max	0	23.43	0.220
			50%	#0	1	22.37	0.173
			50%	#Mid	1	22.38	0.173
			50%	#Max	1	22.32	0.171
			100%	--	1	22.34	0.171
		16QAM	1	#0	1	**21.90**	**0.155**
			1	#Mid	1	21.85	0.153
			1	#Max	1	21.77	0.150
			50%	#0	2	21.44	0.139
			50%	#Mid	2	21.50	0.141
			50%	#Max	2	21.40	0.138
			100%	--	2	21.48	0.141
	23095	QPSK	1	#0	0	23.36	0.217
			1	#Mid	0	23.36	0.217
			1	#Max	0	**23.41**	**0.219**
			50%	#0	1	22.28	0.169
			50%	#Mid	1	22.31	0.170
			50%	#Max	1	22.28	0.169
			100%	--	1	22.28	0.169
		16QAM	1	#0	1	21.67	0.147
			1	#Mid	1	**21.79**	**0.151**
			1	#Max	1	21.70	0.148
			50%	#0	2	21.37	0.137
			50%	#Mid	2	21.39	0.138
			50%	#Max	2	21.35	0.136
			100%	--	2	21.35	0.136
	23165	QPSK	1	#0	0	23.52	0.225
			1	#Mid	0	**23.53**	**0.225**
			1	#Max	0	23.52	0.225
			50%	#0	1	22.35	0.172
			50%	#Mid	1	22.38	0.173
			50%	#Max	1	22.34	0.171
			100%	--	1	22.32	0.171
		16QAM	1	#0	1	21.93	0.156
			1	#Mid	1	**21.95**	**0.157**
			1	#Max	1	21.92	0.156
			50%	#0	2	21.31	0.135
			50%	#Mid	2	21.34	0.136
			50%	#Max	2	21.35	0.136
			100%	--	2	21.34	0.136

Band	Channel	Modula-tion	RB No.	RB Offset	MPR	Max Power (Conducted)	Max Power (W)
Band 12 (700MHz)/5MHz	23035	QPSK	1	#0	0	**23.48**	**0.223**
			1	#Mid	0	23.39	0.218
			1	#Max	0	23.30	0.214
			50%	#0	1	22.38	0.173
			50%	#Mid	1	22.33	0.171
			50%	#Max	1	22.26	0.168
			100%	--	1	22.32	0.171
		16QAM	1	#0	1	**22.16**	**0.164**
			1	#Mid	1	22.14	0.164
			1	#Max	1	21.92	0.156
			50%	#0	2	21.57	0.144
			50%	#Mid	2	21.49	0.141
			50%	#Max	2	21.37	0.137
			100%	--	2	21.35	0.136
	23095	QPSK	1	#0	0	23.36	0.217
			1	#Mid	0	23.36	0.217
			1	#Max	0	**23.40**	**0.219**
			50%	#0	1	22.24	0.167
			50%	#Mid	1	22.22	0.167
			50%	#Max	1	22.25	0.168
			100%	--	1	22.26	0.168
		16QAM	1	#0	1	22.04	0.160
			1	#Mid	1	**22.19**	**0.166**
			1	#Max	1	22.15	0.164
			50%	#0	2	21.28	0.134
			50%	#Mid	2	21.32	0.136
			50%	#Max	2	21.32	0.136
			100%	--	2	21.26	0.134
	23155	QPSK	1	#0	0	23.43	0.220
			1	#Mid	0	**23.50**	**0.224**
			1	#Max	0	23.44	0.221
			50%	#0	1	22.35	0.172
			50%	#Mid	1	22.35	0.172
			50%	#Max	1	22.37	0.173
			100%	--	1	22.33	0.171
		16QAM	1	#0	1	22.25	0.168
			1	#Mid	1	**22.32**	**0.171**
			1	#Max	1	22.30	0.170
			50%	#0	2	21.38	0.137
			50%	#Mid	2	21.34	0.136
			50%	#Max	2	21.37	0.137
			100%	--	2	21.46	0.140

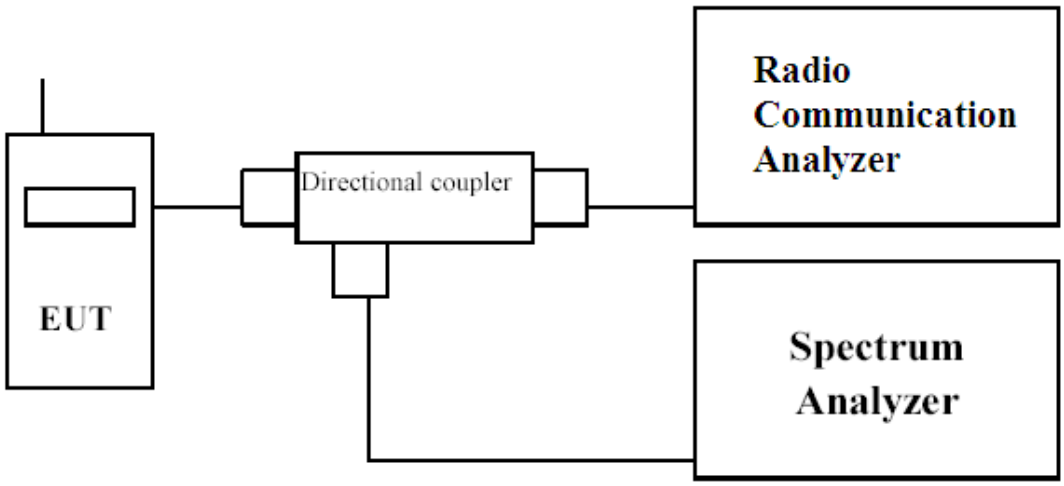
Band	Channel	Modula-tion	RB No.	RB Offset	MPR	Max Power (Conducted)	Max Power (W)
Band 12 (700MHz)/10MHz	23060	QPSK	1	#0	0	**23.39**	**0.218**
			1	#Mid	0	23.37	0.217
			1	#Max	0	23.27	0.212
			50%	#0	1	22.27	0.169
			50%	#Mid	1	22.23	0.167
			50%	#Max	1	22.16	0.164
			100%	--	1	22.20	0.166
		16QAM	1	#0	1	**22.03**	**0.160**
			1	#Mid	1	21.95	0.157
			1	#Max	1	21.84	0.153
			50%	#0	2	21.29	0.135
			50%	#Mid	2	21.29	0.135
			50%	#Max	2	21.27	0.134
			100%	--	2	21.25	0.133
	23095	QPSK	1	#0	0	23.43	0.220
			1	#Mid	0	23.42	0.220
			1	#Max	0	**23.46**	**0.222**
			50%	#0	1	22.30	0.170
			50%	#Mid	1	22.25	0.168
			50%	#Max	1	22.33	0.171
			100%	--	1	22.29	0.169
		16QAM	1	#0	1	22.05	0.160
			1	#Mid	1	**22.15**	**0.164**
			1	#Max	1	22.04	0.160
			50%	#0	2	21.35	0.136
			50%	#Mid	2	21.33	0.136
			50%	#Max	2	21.38	0.137
			100%	--	2	21.37	0.137
	23130	QPSK	1	#0	0	23.36	0.217
			1	#Mid	0	**23.47**	**0.222**
			1	#Max	0	23.45	0.221
			50%	#0	1	22.31	0.170
			50%	#Mid	1	22.32	0.171
			50%	#Max	1	22.35	0.172
			100%	--	1	22.34	0.171
		16QAM	1	#0	1	22.01	0.159
			1	#Mid	1	**22.19**	**0.166**
			1	#Max	1	22.08	0.161
			50%	#0	2	21.33	0.136
			50%	#Mid	2	21.38	0.137
			50%	#Max	2	21.41	0.138
			100%	--	2	21.39	0.138

4. Occupied Bandwidth

4.1. Test Secification

According to Part 2.1049, 24.238, 27.53.

4.2. Test Setup



4.3. Test Procedure

The EUT is tested with maximum rated TX power via the Base Station simulator, and the occupied bandwidth was measured at the antenna terminals of the EUT.

The Resolution BW of the analyzer is set to 1 %~5% of the emission bandwidth. The EUT's occupied bandwidth is measured as the width of the signal between two points, one below the carrier center frequency and one above the carrier frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

The plots below show the resultant display from the Spectrum Analyser.

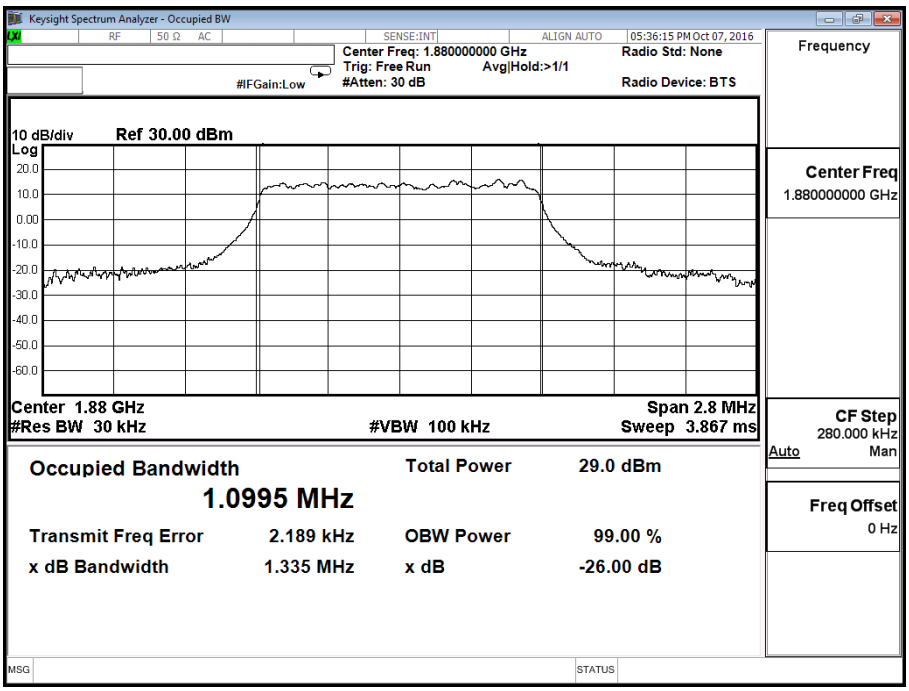
4.4. Test Result of Occupied Bandwidth

Product	Module
Test Mode	Occupied Bandwidth
Test Site	CTR

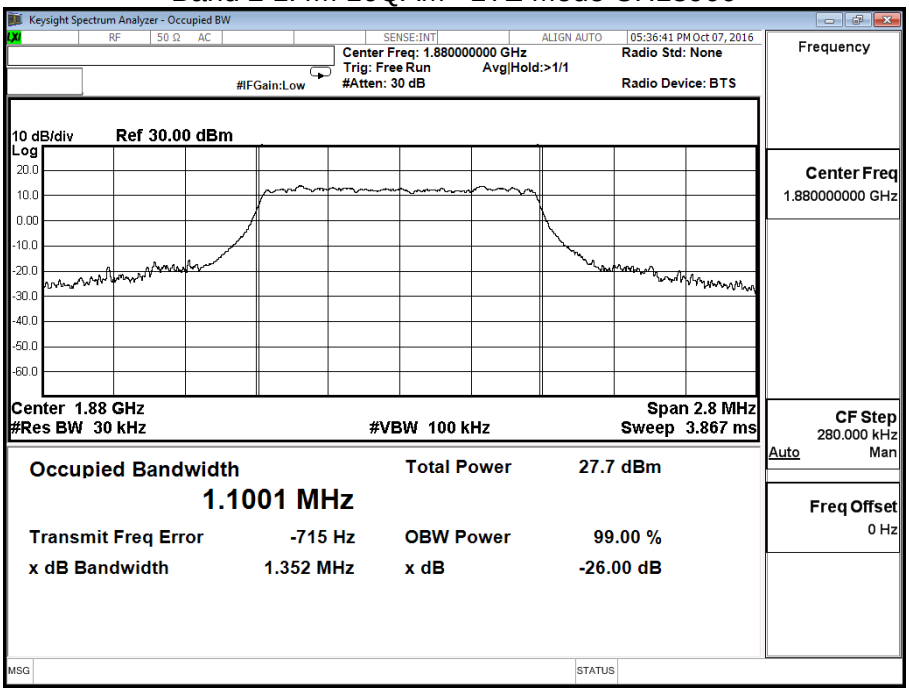
Test Mode	Channel	TX Frequency (MHz)	99% Occupied Bandwidth (MHz)	26 dB bandwidth (MHz)	Result
Band 2 1.4M QPSK	18900	1880	1.0995	1.335	Pass
Band 2 1.4M 16QAM	18900	1880	1.1001	1.352	Pass
Band 2 3M QPSK	18900	1880	2.7359	3.225	Pass
Band 2 3M 16QAM	18900	1880	2.7232	3.071	Pass
Band 2 5M QPSK	18900	1880	4.5095	5.054	Pass
Band 2 5M 16QAM	18900	1880	4.4830	4.989	Pass
Band 2 10M QPSK	18900	1880	9.0812	10.49	Pass
Band 2 10M 16QAM	18900	1880	9.0760	10.51	Pass
Band 2 15M QPSK	18900	1880	13.523	15.99	Pass
Band 2 15M 16QAM	18900	1880	13.511	15.80	Pass
Band 2 20M QPSK	18900	1880	18.680	21.81	Pass
Band 2 20M 16QAM	18900	1880	18.545	21.14	Pass
Band 4 1.4M QPSK	20175	1732.5	1.0993	1.332	Pass
Band 4 1.4M 16QAM	20175	1732.5	1.1002	1.365	Pass
Band 4 3M QPSK	20175	1732.5	2.7352	3.316	Pass
Band 4 3M 16QAM	20175	1732.5	2.7260	3.079	Pass
Band 4 5M QPSK	20175	1732.5	4.4999	5.079	Pass
Band 4 5M 16QAM	20175	1732.5	4.4839	5.030	Pass
Band 4 10M QPSK	20175	1732.5	9.0744	10.50	Pass
Band 4 10M 16QAM	20175	1732.5	9.0761	10.47	Pass
Band 4 15M QPSK	20175	1732.5	13.498	15.69	Pass
Band 4 15M 16QAM	20175	1732.5	13.521	15.91	Pass
Band 4 20M QPSK	20175	1732.5	18.499	21.35	Pass
Band 4 20M 16QAM	20175	1732.5	18.484	21.03	Pass
Band 12 1.4M QPSK	23095	707.5	1.0978	1.337	Pass
Band 12 1.4M 16QAM	23095	707.5	1.0999	1.346	Pass
Band 12 3M QPSK	23095	707.5	2.7354	3.151	Pass
Band 12 3M 16QAM	23095	707.5	2.7275	3.109	Pass
Band 12 5M QPSK	23095	707.5	4.5132	5.103	Pass
Band 12 5M 16QAM	23095	707.5	4.4881	5.046	Pass
Band 12 10M QPSK	23095	707.5	9.0893	10.53	Pass
Band 12 10M 16QAM	23095	707.5	9.0935	10.52	Pass

Product	Module		
Test Mode	Occupied Bandwidth		
Date of Test	2016/10/07	Test Site	CTR
Test Condition	Band 2 1.4M		

Band 2 1.4M QPSK - LTE Mode CH18900

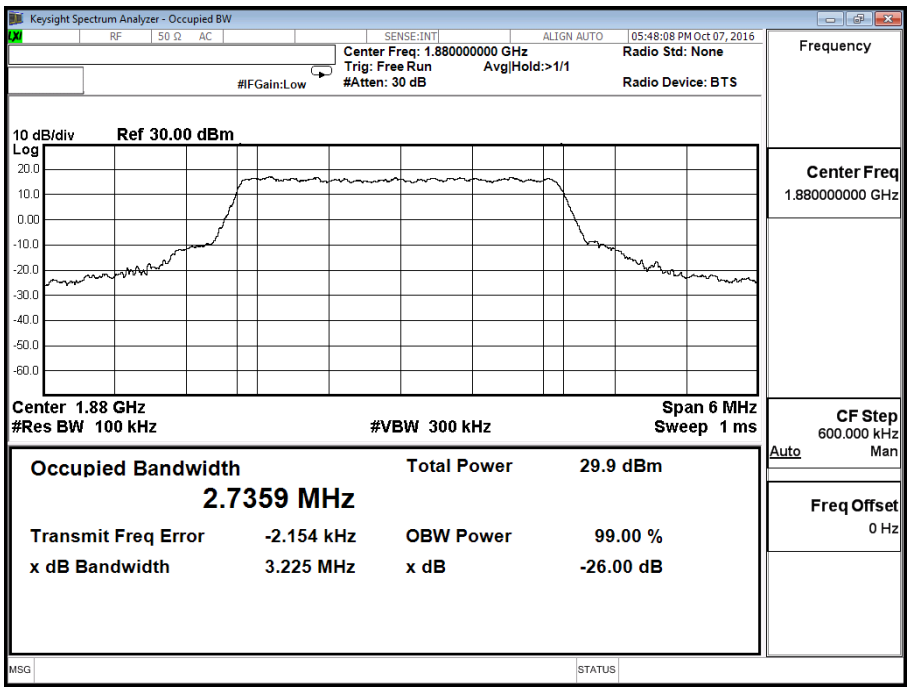


Band 2 1.4M 16QAM - LTE Mode CH18900

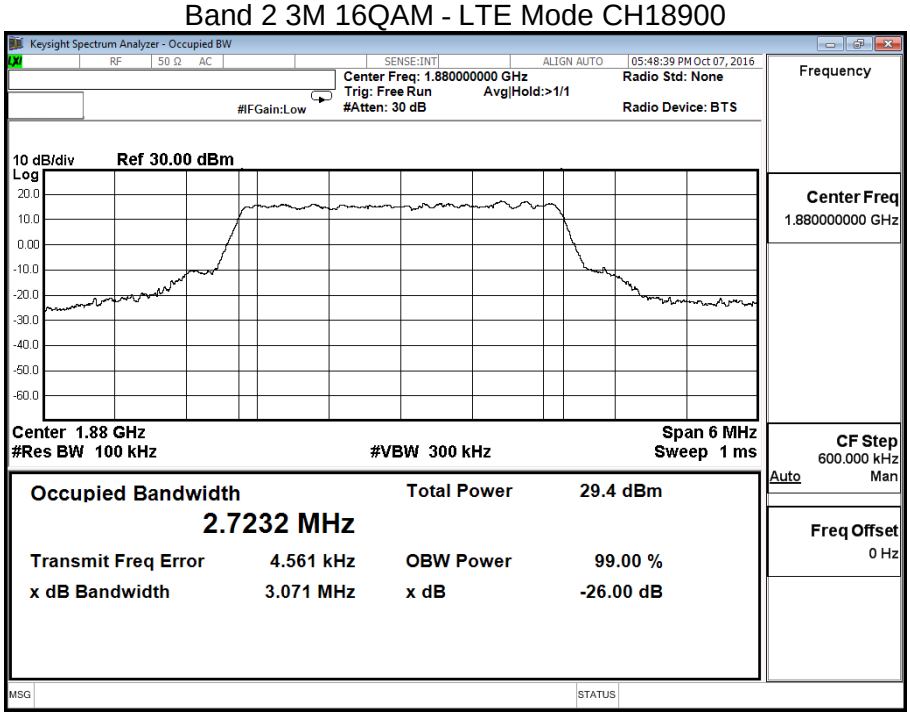


Product	Module		
Test Mode	Occupied Bandwidth		
Date of Test	2016/10/07	Test Site	CTR
Test Condition	Band 2 3M		

Band 2 3M QPSK - LTE Mode CH18900

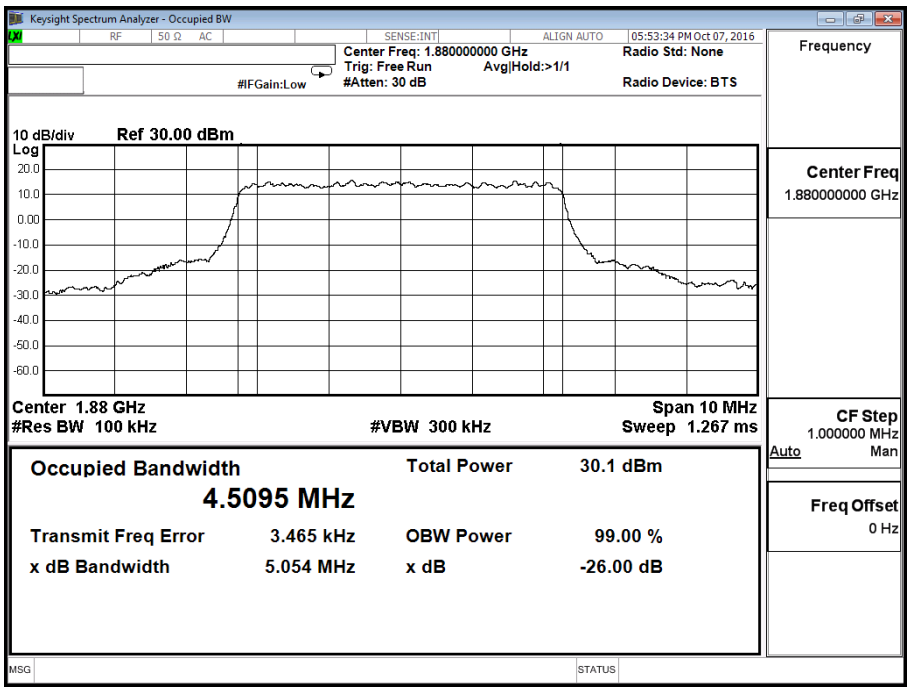


Band 2 3M 16QAM - LTE Mode CH18900

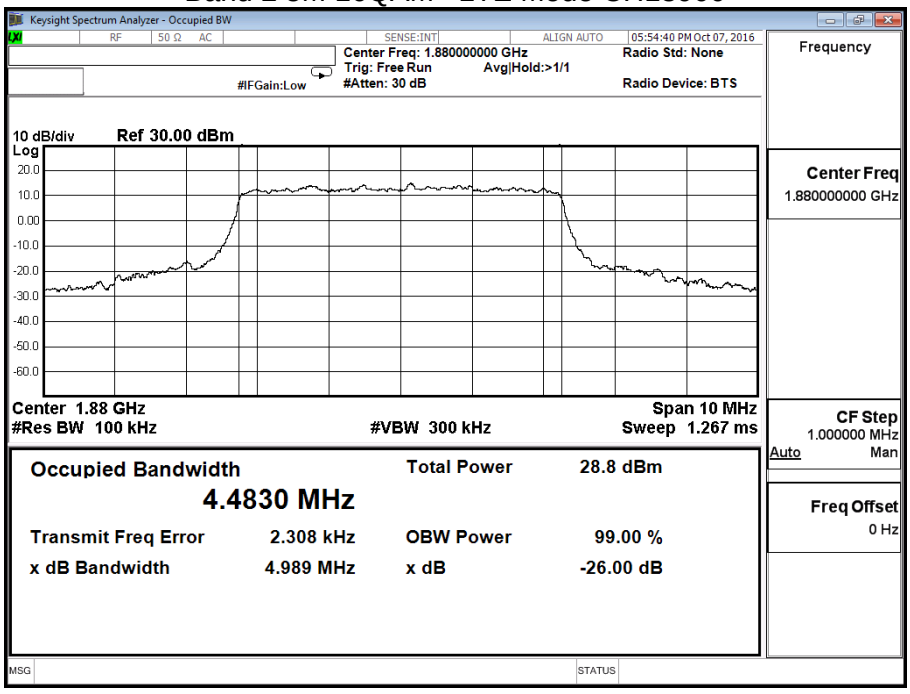


Product	Module		
Test Mode	Occupied Bandwidth		
Date of Test	2016/10/07	Test Site	CTR
Test Condition	Band 2 5M		

Band 2 5M QPSK - LTE Mode CH18900

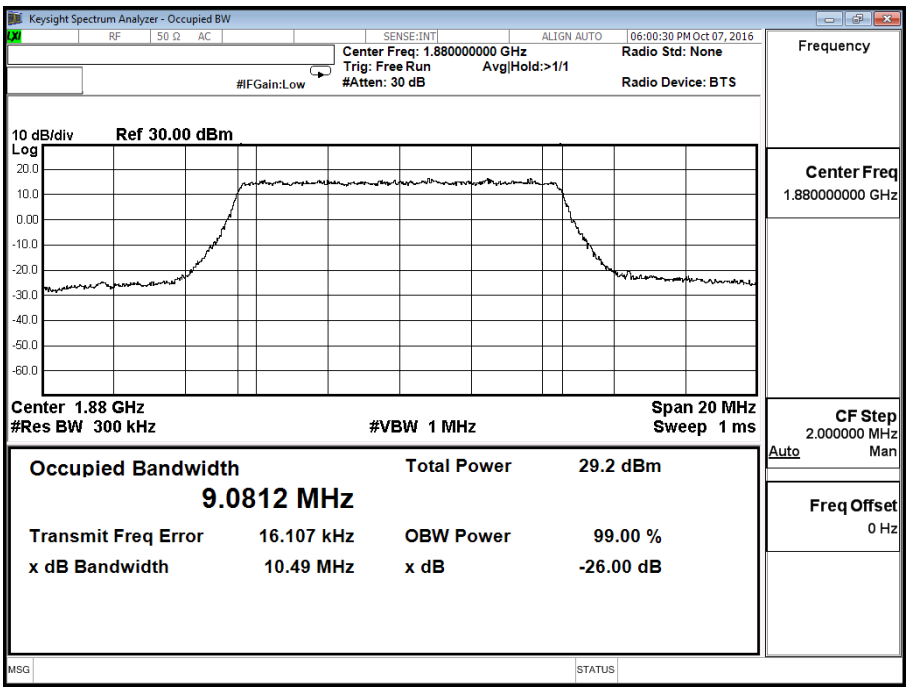


Band 2 5M 16QAM - LTE Mode CH18900

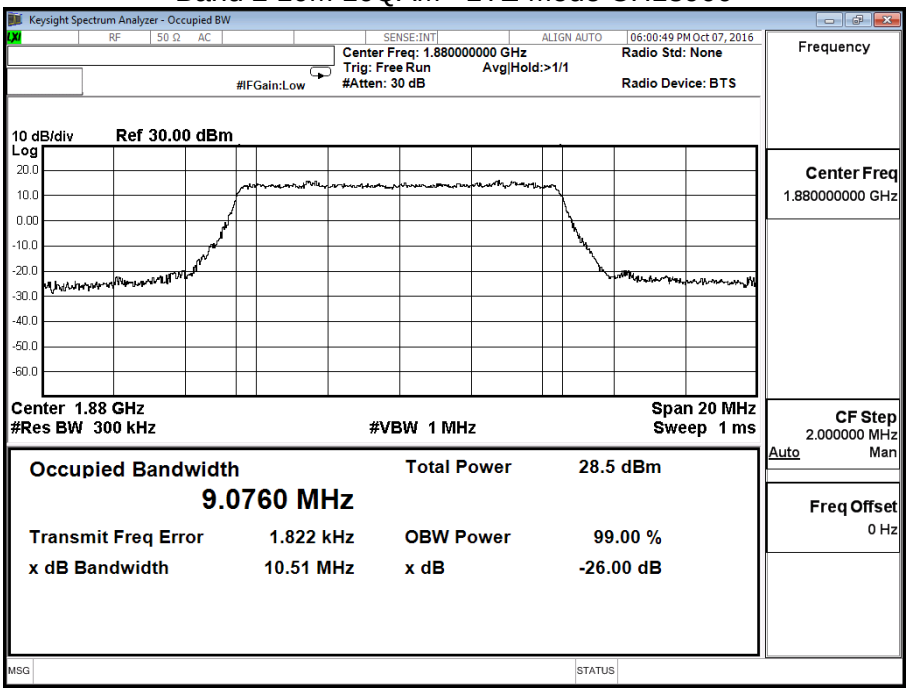


Product	Module		
Test Mode	Occupied Bandwidth		
Date of Test	2016/10/07	Test Site	CTR
Test Condition	Band 2 10M		

Band 2 10M QPSK - LTE Mode CH18900

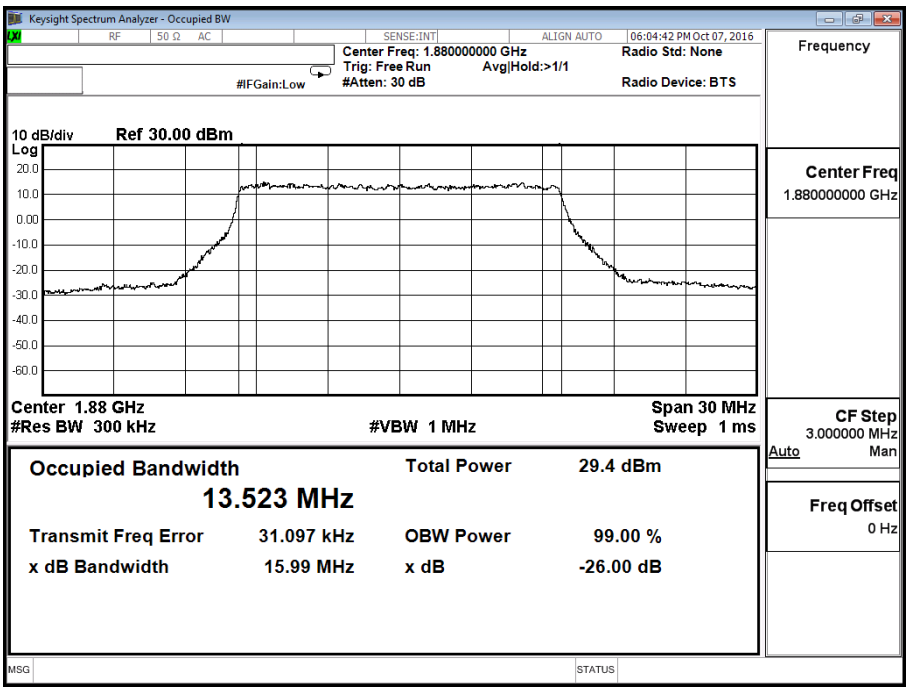


Band 2 10M 16QAM - LTE Mode CH18900

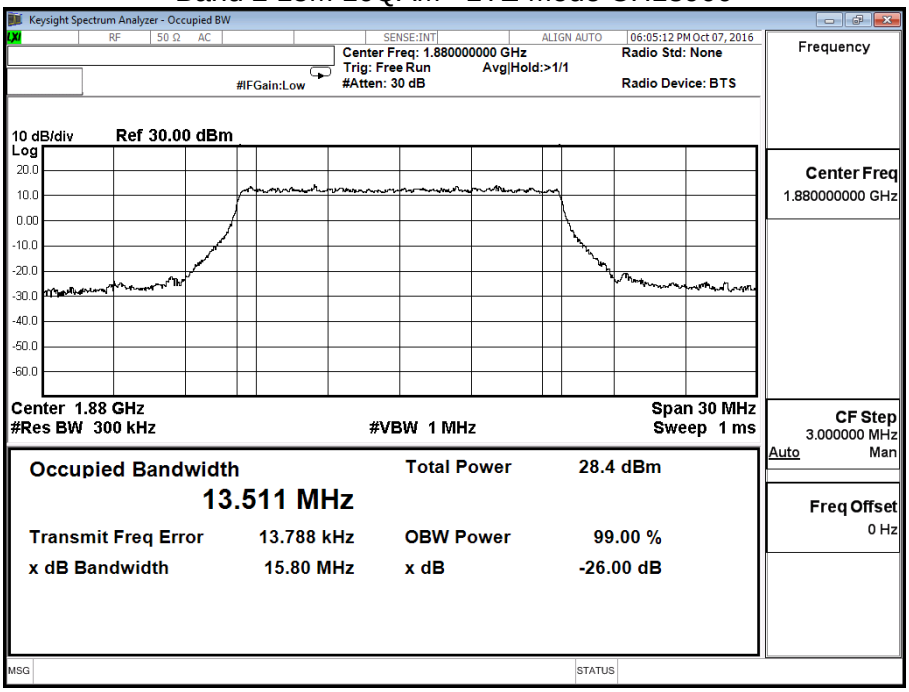


Product	Module		
Test Mode	Occupied Bandwidth		
Date of Test	2016/10/07	Test Site	CTR
Test Condition	Band 2 15M		

Band 2 15M QPSK - LTE Mode CH18900

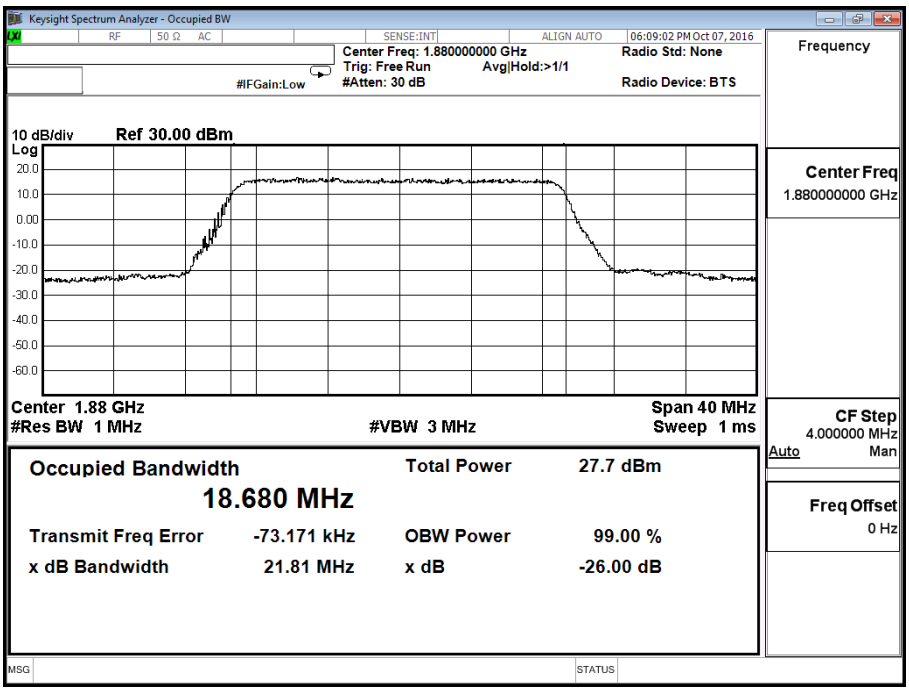


Band 2 15M 16QAM - LTE Mode CH18900

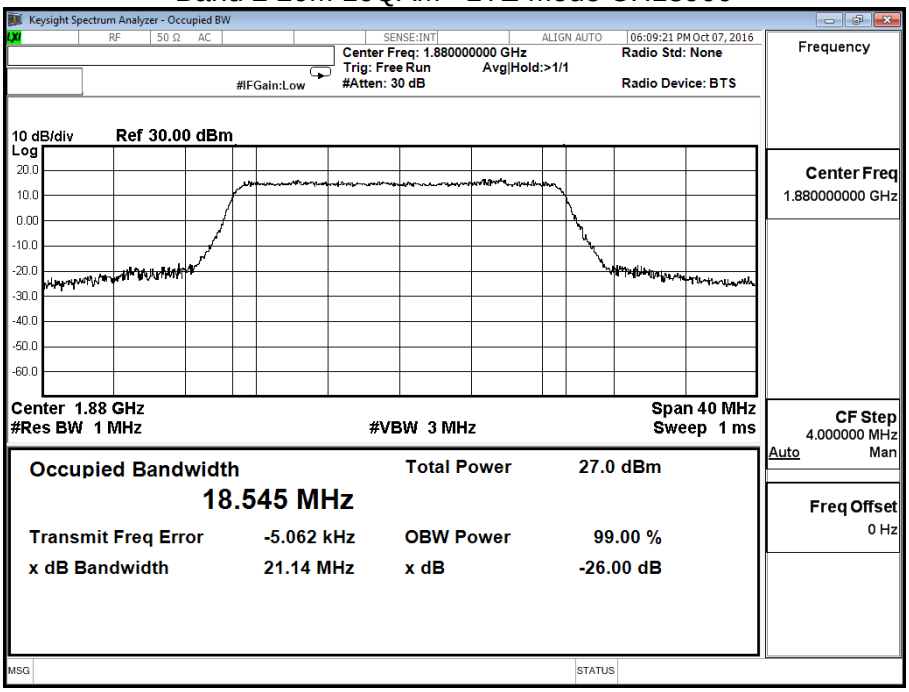


Product	Module		
Test Mode	Occupied Bandwidth		
Date of Test	2016/10/07	Test Site	CTR
Test Condition	Band 2 20M		

Band 2 20M QPSK - LTE Mode CH18900

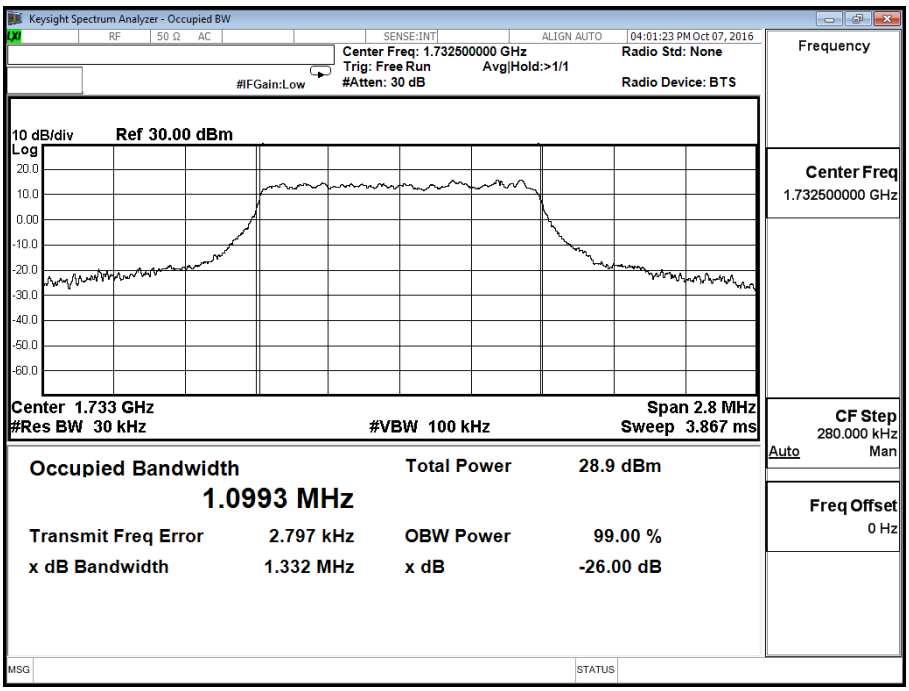


Band 2 20M 16QAM - LTE Mode CH18900

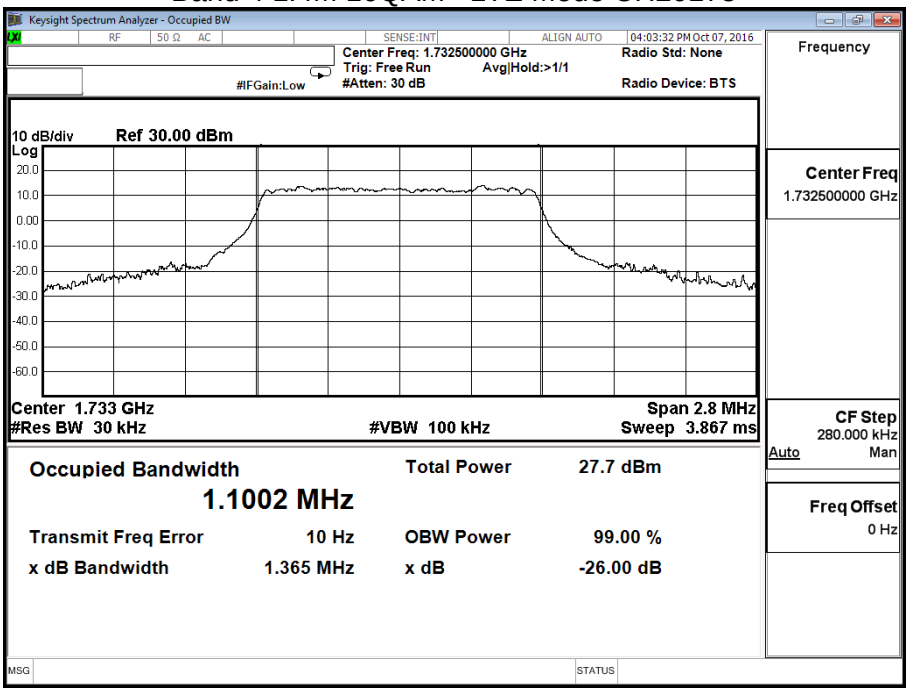


Product	Module		
Test Mode	Occupied Bandwidth		
Date of Test	2016/10/07	Test Site	CTR
Test Condition	Band 4 1.4M		

Band 4 1.4M QPSK - LTE Mode CH 20175

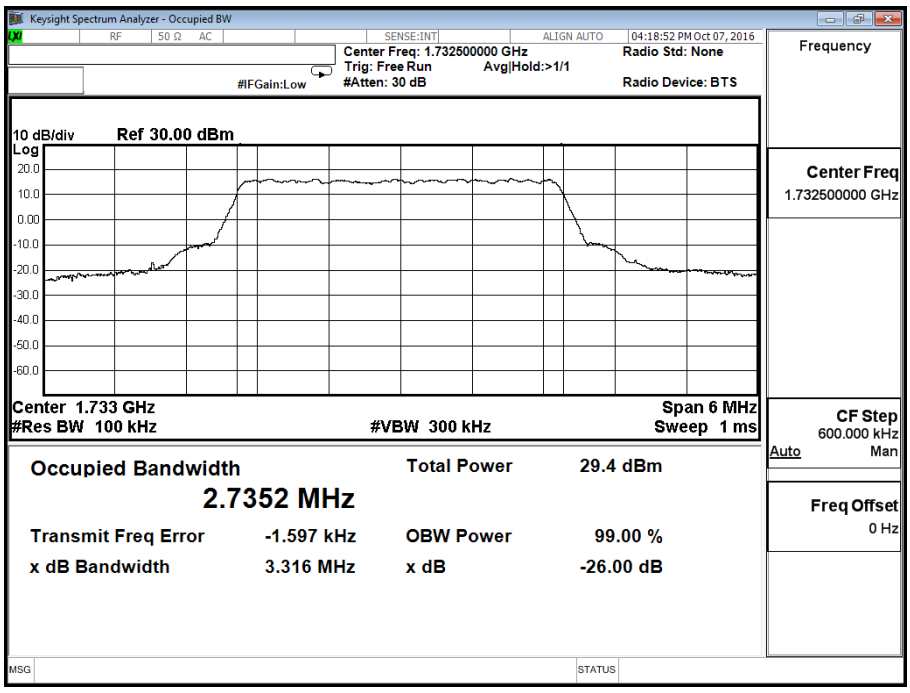


Band 4 1.4M 16QAM - LTE Mode CH20175

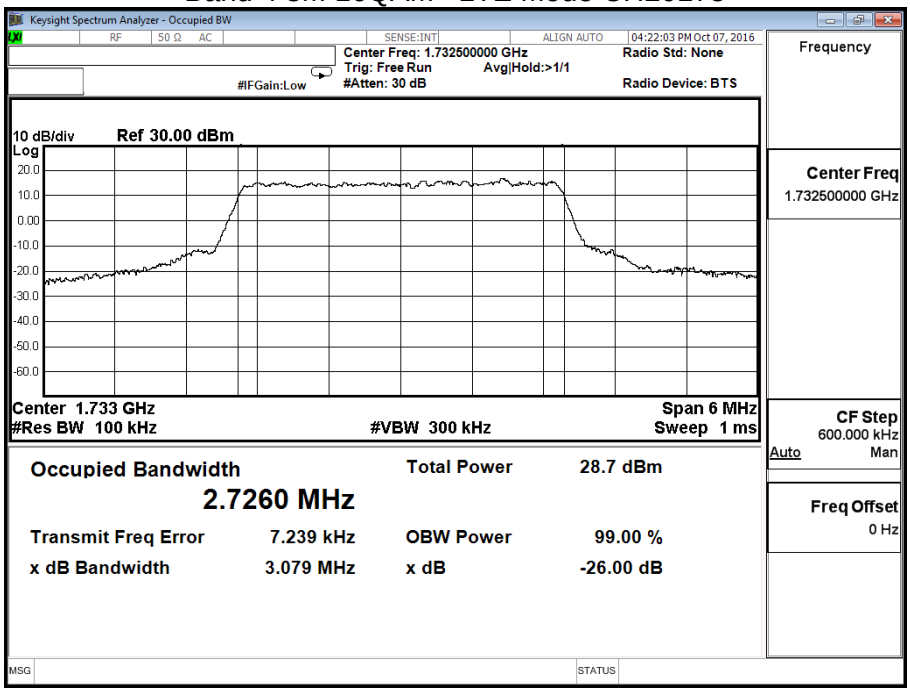


Product	Module		
Test Mode	Occupied Bandwidth		
Date of Test	2016/10/07	Test Site	CTR
Test Condition	Band 4 3M		

Band 4 3M QPSK - LTE Mode CH20175

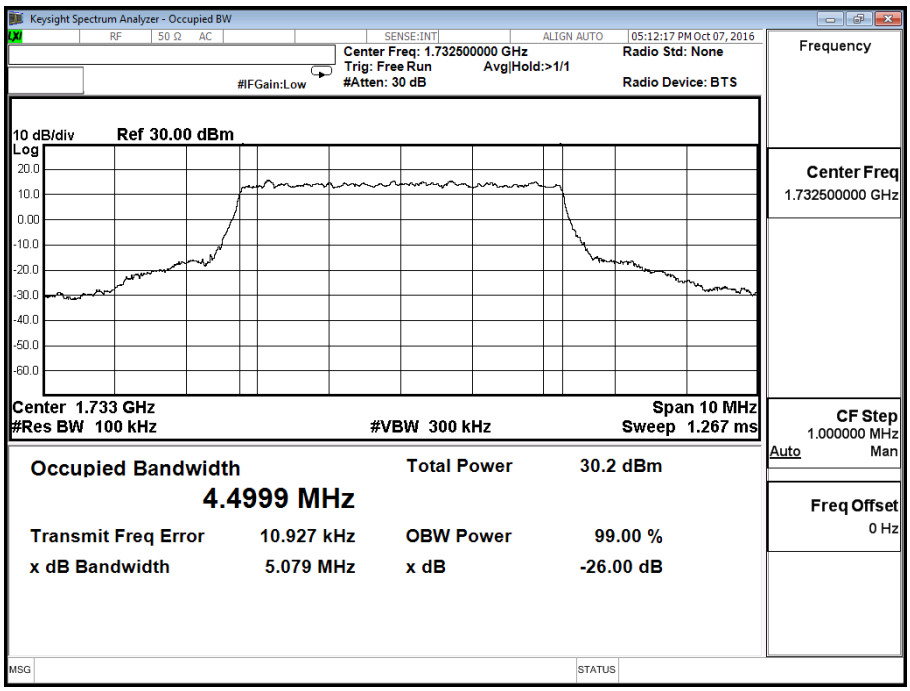


Band 4 3M 16QAM - LTE Mode CH20175

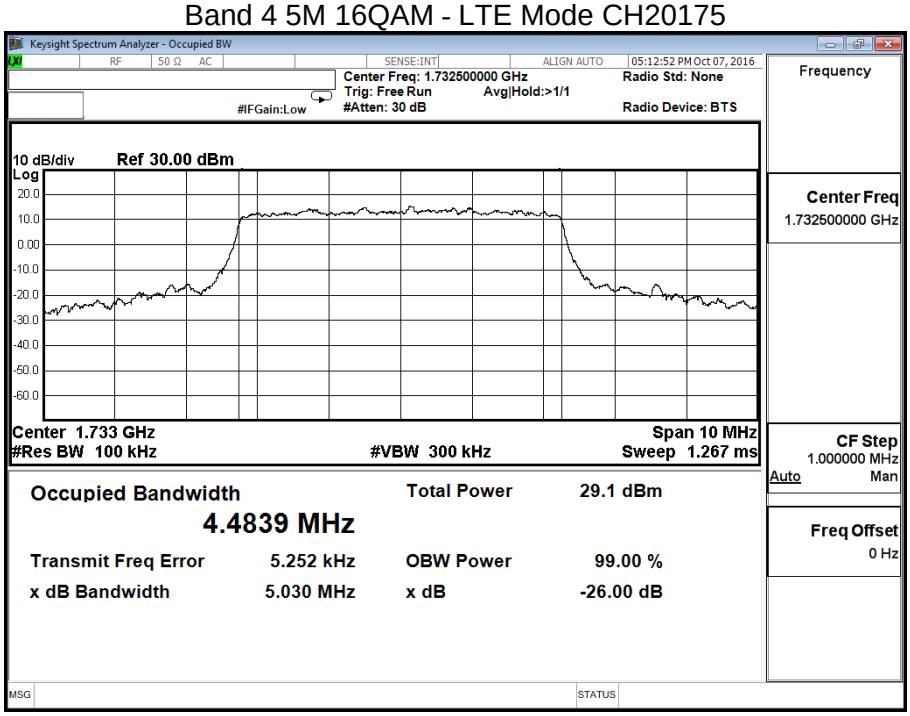


Product	Module		
Test Mode	Occupied Bandwidth		
Date of Test	2016/10/07	Test Site	CTR
Test Condition	Band 4 5M		

Band 4 5M QPSK - LTE Mode CH20175

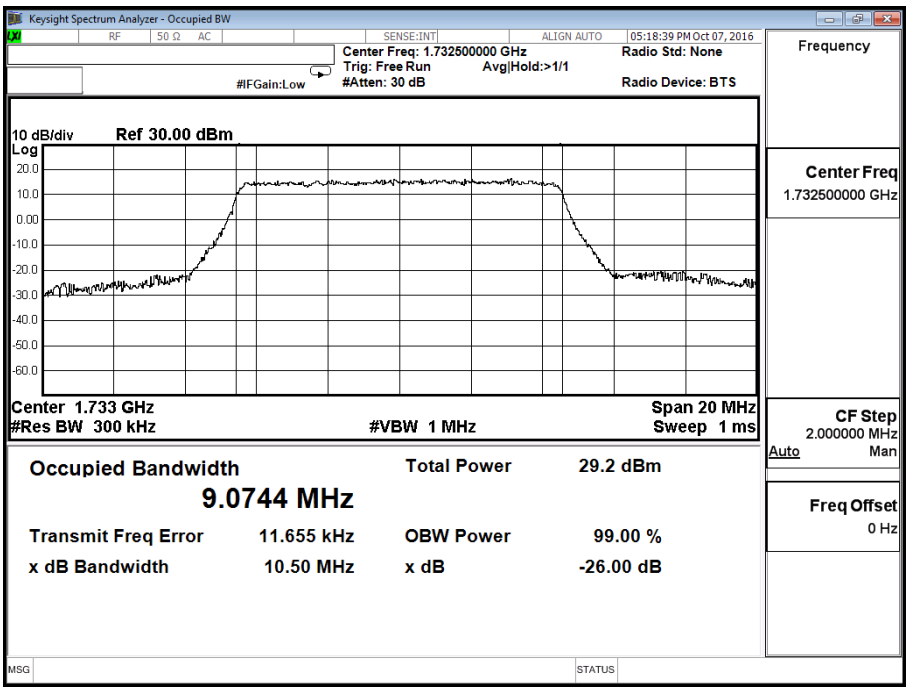


Band 4 5M 16QAM - LTE Mode CH20175

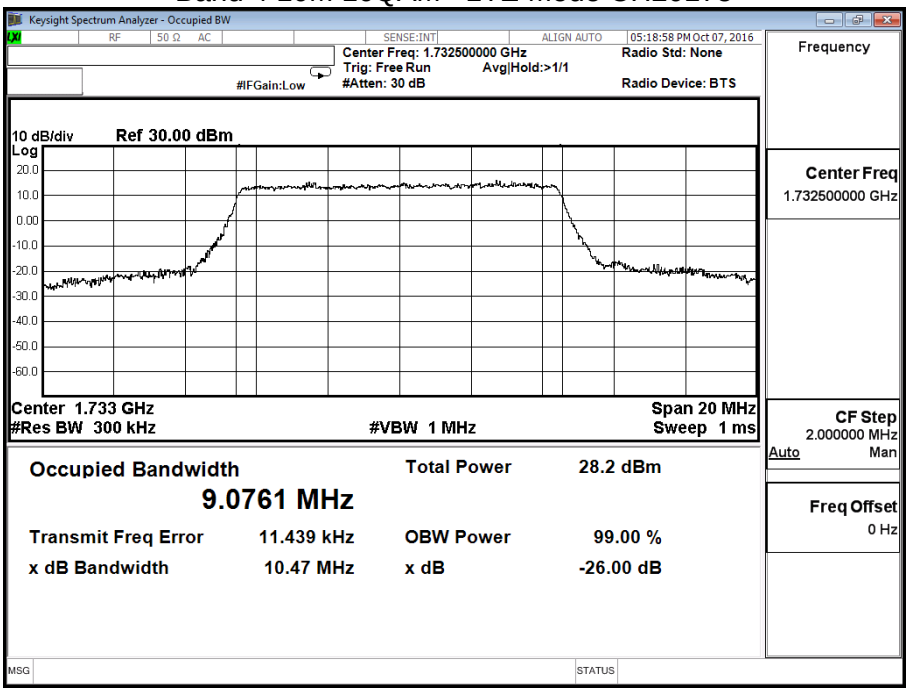


Product	Module		
Test Mode	Occupied Bandwidth		
Date of Test	2016/10/07	Test Site	CTR
Test Condition	Band 4 10M		

Band 4 10M QPSK - LTE Mode CH20175

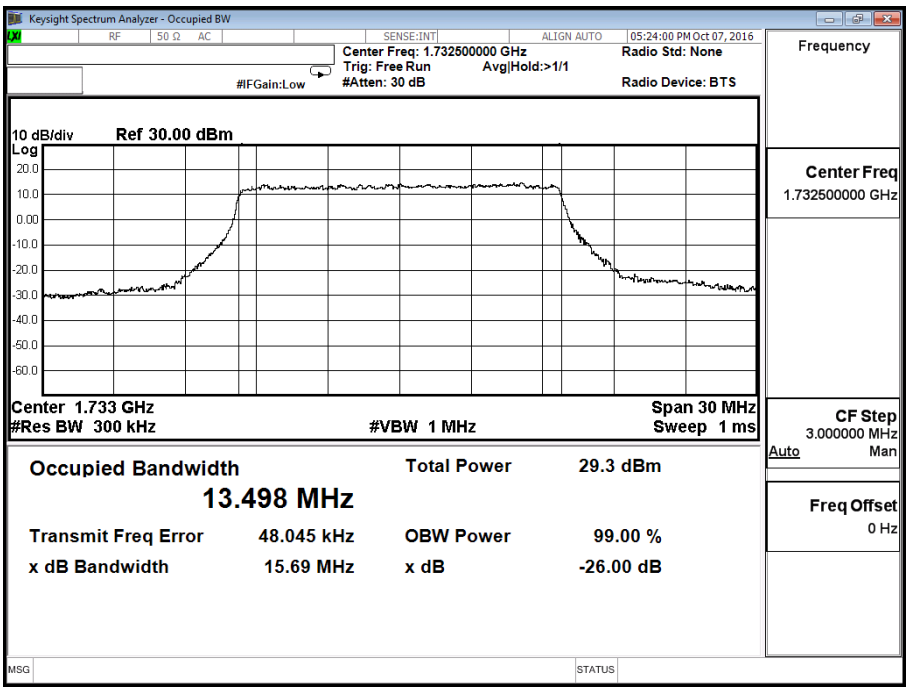


Band 4 10M 16QAM - LTE Mode CH20175

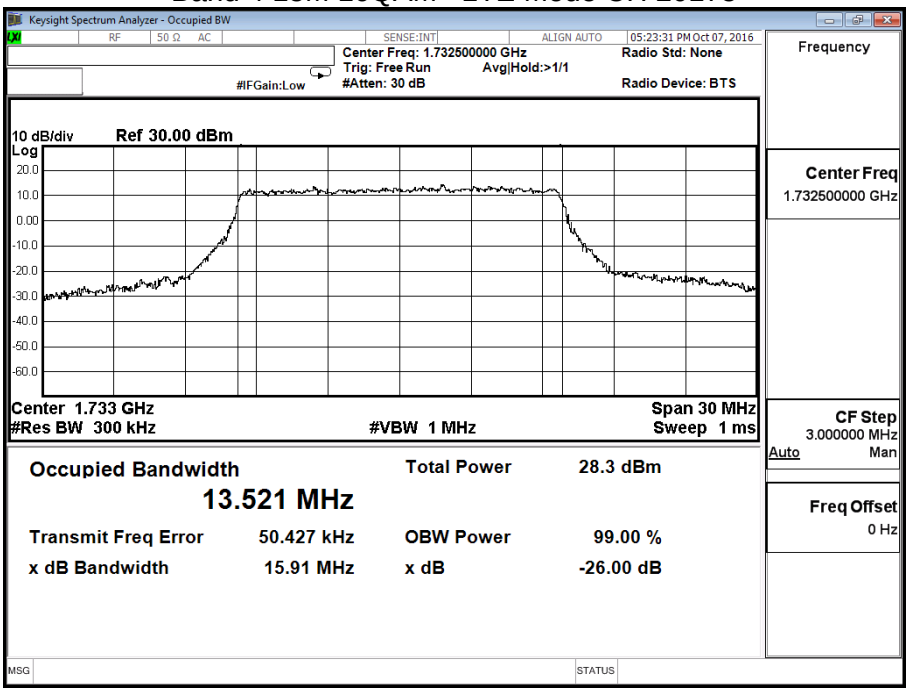


Product	Module		
Test Mode	Occupied Bandwidth		
Date of Test	2016/10/07	Test Site	CTR
Test Condition	Band 4 15M		

Band 4 15M QPSK - LTE Mode CH20175

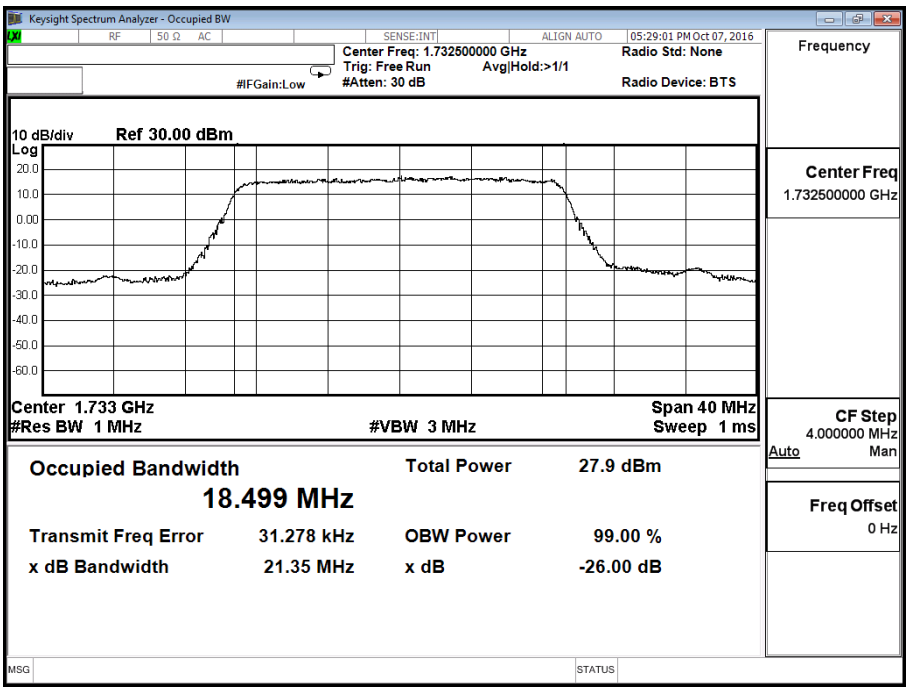


Band 4 15M 16QAM - LTE Mode CH 20175

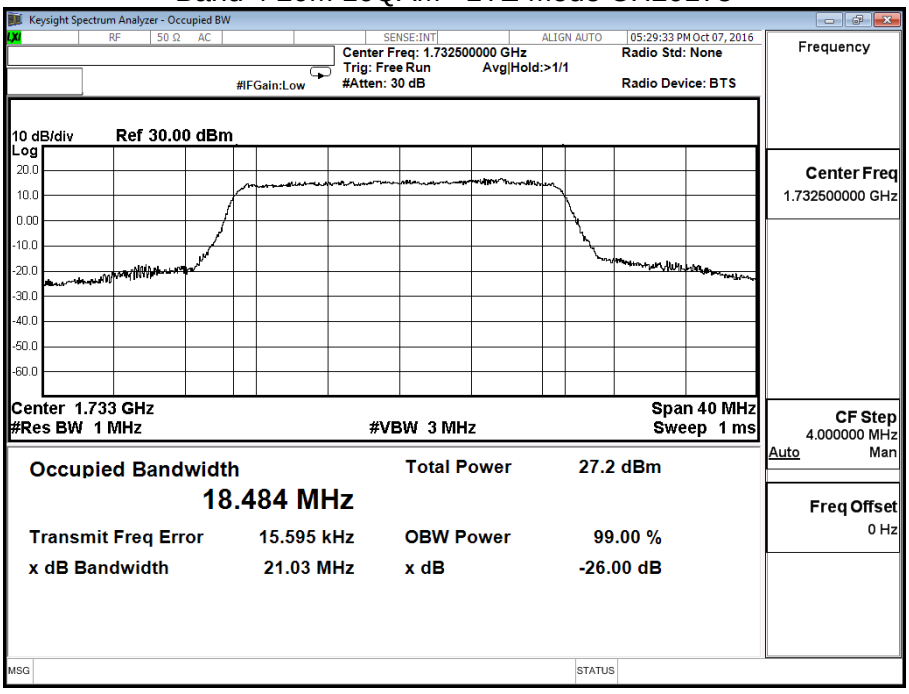


Product	Module		
Test Mode	Occupied Bandwidth		
Date of Test	2016/10/07	Test Site	CTR
Test Condition	Band 4 20M		

Band 4 20M QPSK - LTE Mode CH20175

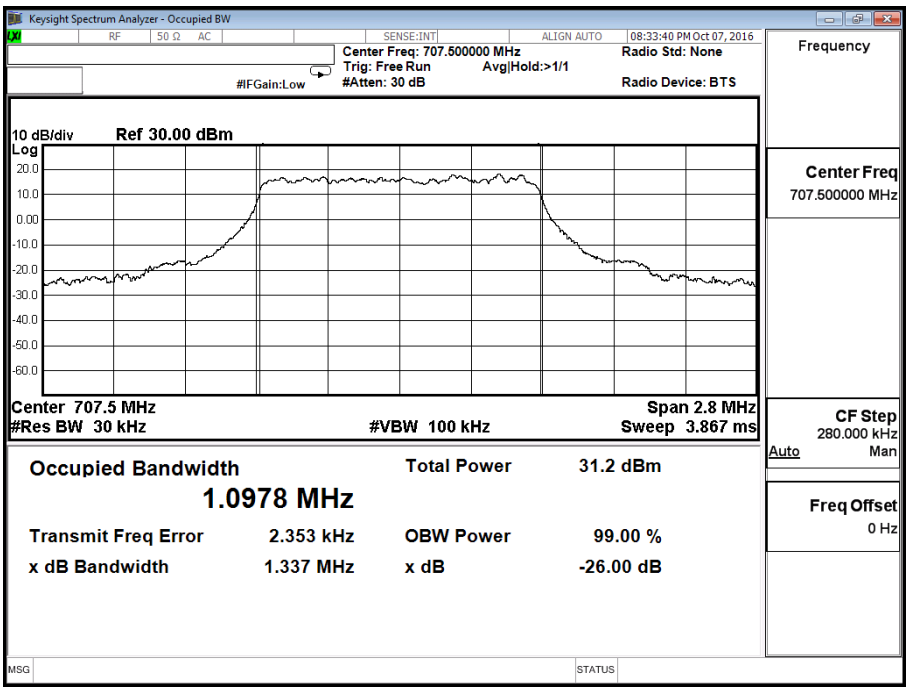


Band 4 20M 16QAM - LTE Mode CH20175

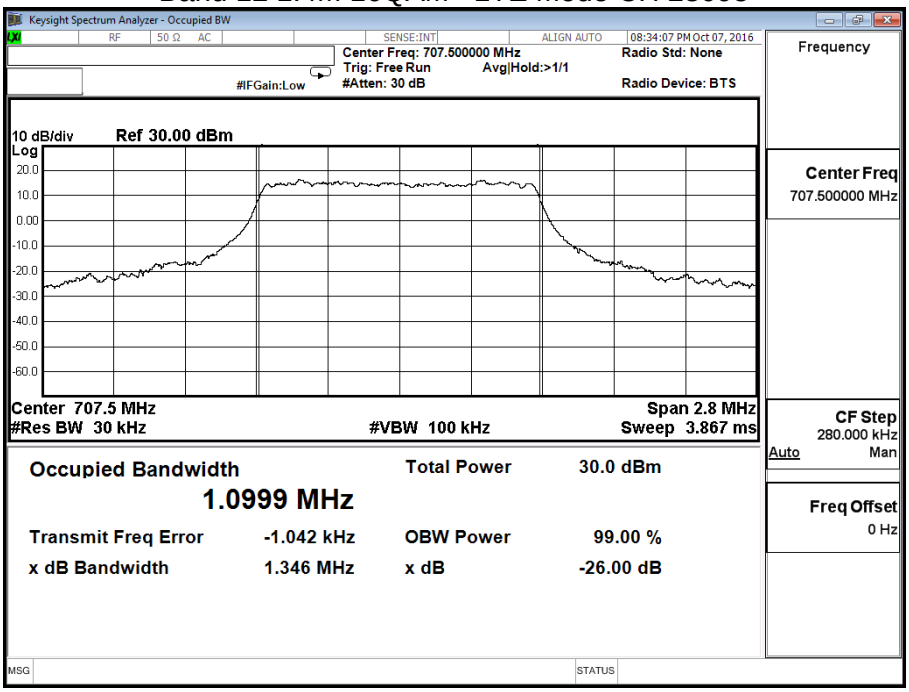


Product	Module		
Test Mode	Occupied Bandwidth		
Date of Test	2016/10/07	Test Site	CTR
Test Condition	Band 12 1.4M		

Band 12 1.4M QPSK - LTE Mode CH23095

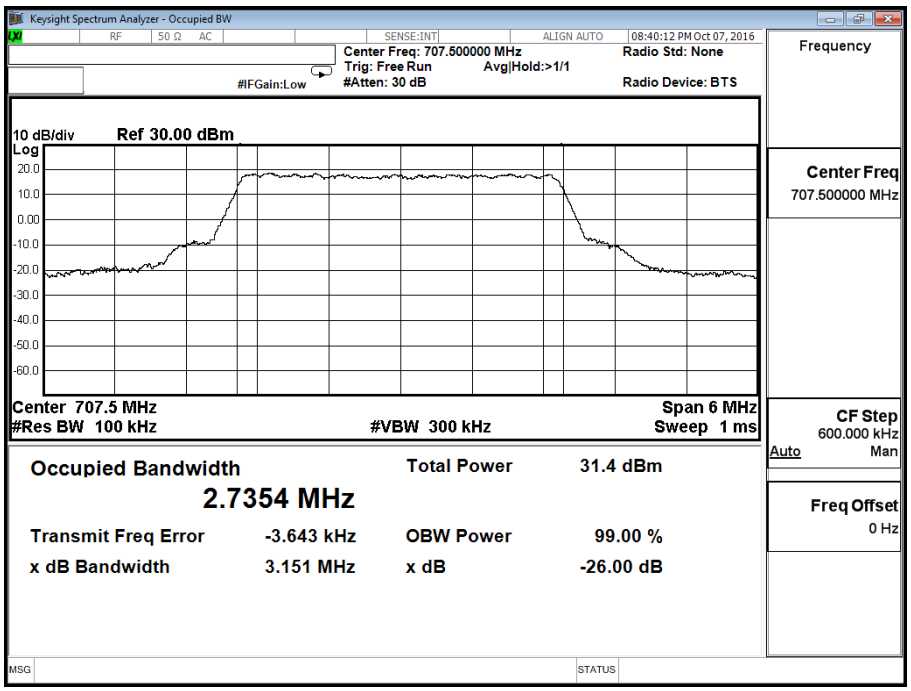


Band 12 1.4M 16QAM - LTE Mode CH 23095

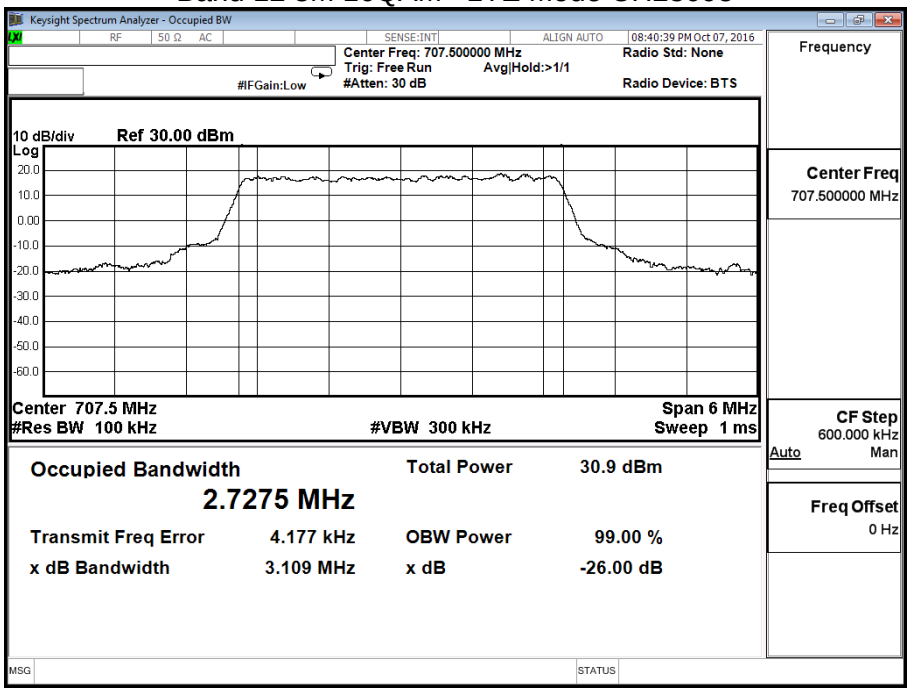


Product	Module		
Test Mode	Occupied Bandwidth		
Date of Test	2016/10/07	Test Site	CTR
Test Condition	Band 12 3M		

Band 12 3M QPSK - LTE Mode CH 23095

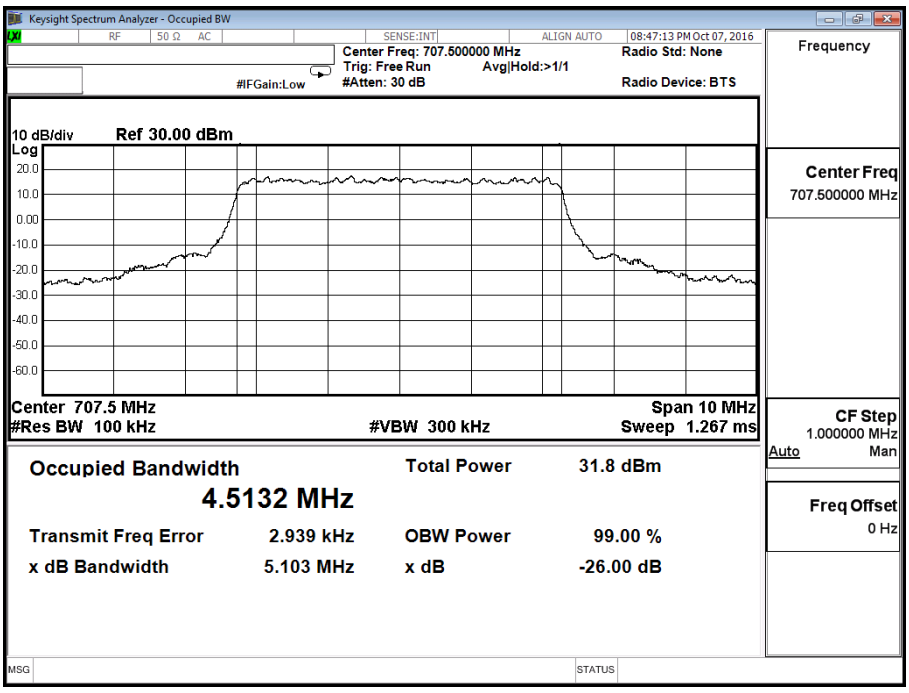


Band 12 3M 16QAM - LTE Mode CH23095

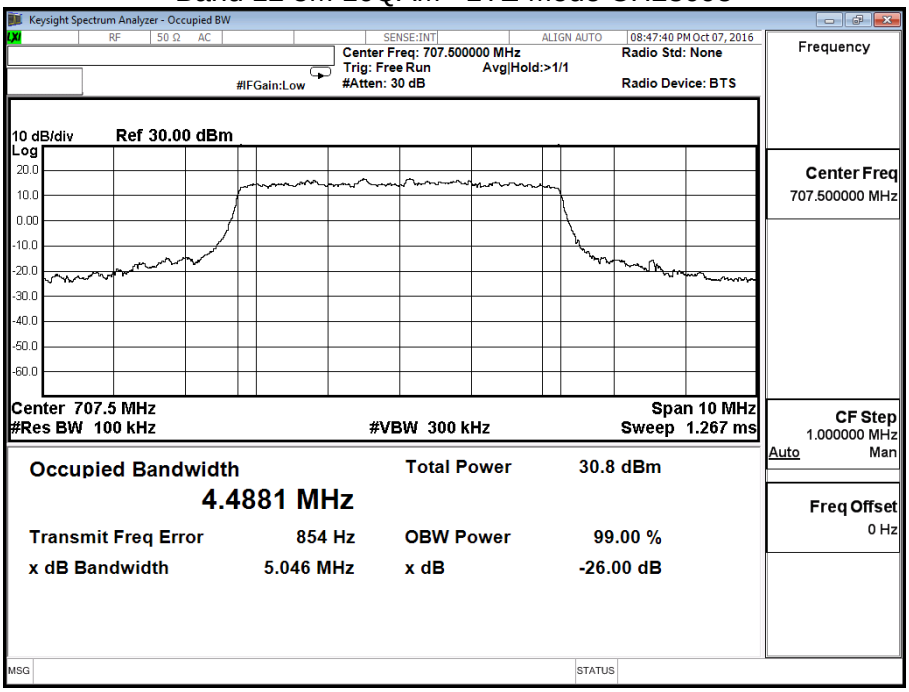


Product	Module		
Test Mode	Occupied Bandwidth		
Date of Test	2016/10/07	Test Site	CTR
Test Condition	Band 12 5M		

Band 12 5M QPSK - LTE Mode CH 23095

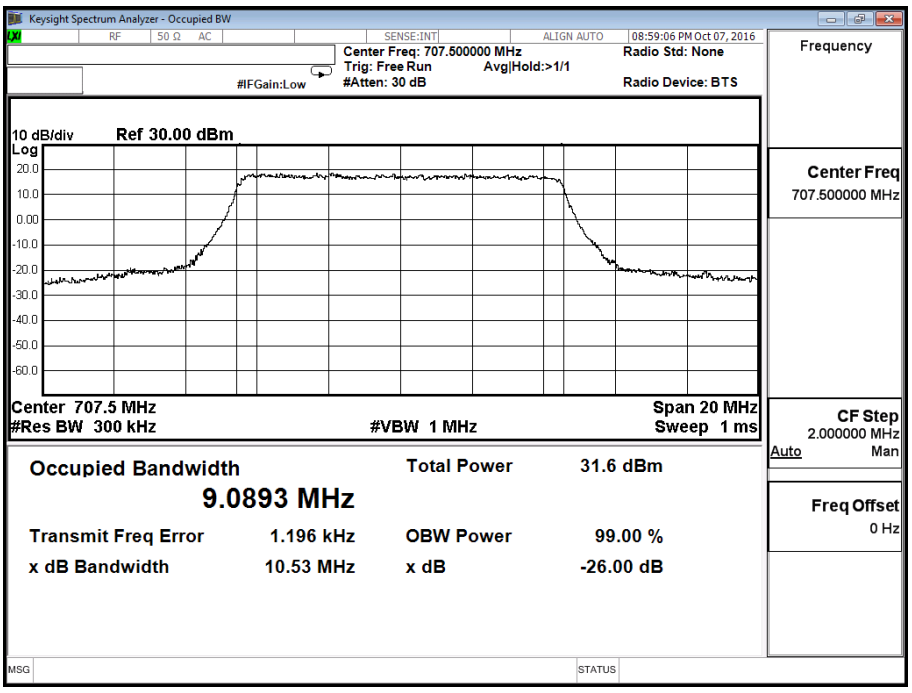


Band 12 5M 16QAM - LTE Mode CH23095

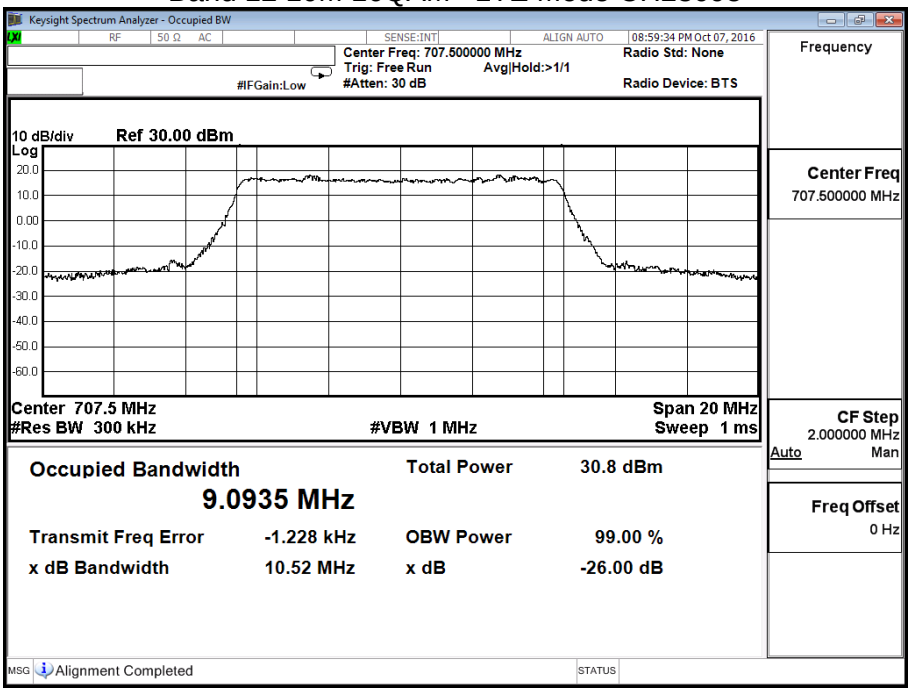


Product	Module		
Test Mode	Occupied Bandwidth		
Date of Test	2016/10/07	Test Site	CTR
Test Condition	Band 12 10M		

Band 12 10M QPSK - LTE Mode CH 23095



Band 12 10M 16QAM - LTE Mode CH23095

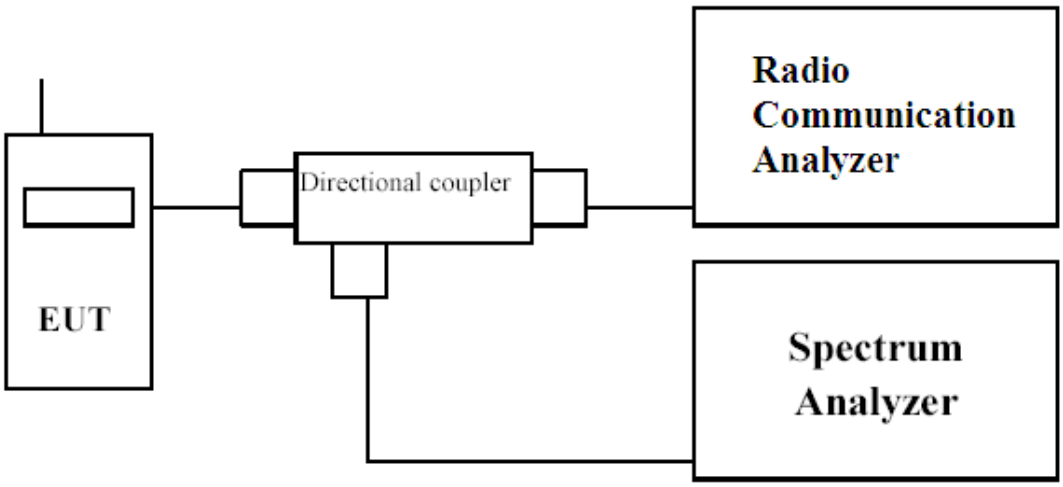


5. Spurious Emission At Antenna Terminals (+/-1MHz)

5.1. Test Specification

According to Part 2.1049, 24.238, 27.53

5.2. Setup



5.3. Limits

The spurious (unwanted) emission limits specified in the individual FCC rule parts applicable to licensed digital transmitters (typically referred to under the heading ‘emission limits’) normally apply to any and all emissions that are present outside of the authorized frequency band/block and apply to emissions in both the out-of-band and spurious domains. unwanted emissions are required by the licensed rule parts to be attenuated below the transmitter power by a factor of at least 43+ 10log(P) dB, where P represents the transmitter power expressed in watts

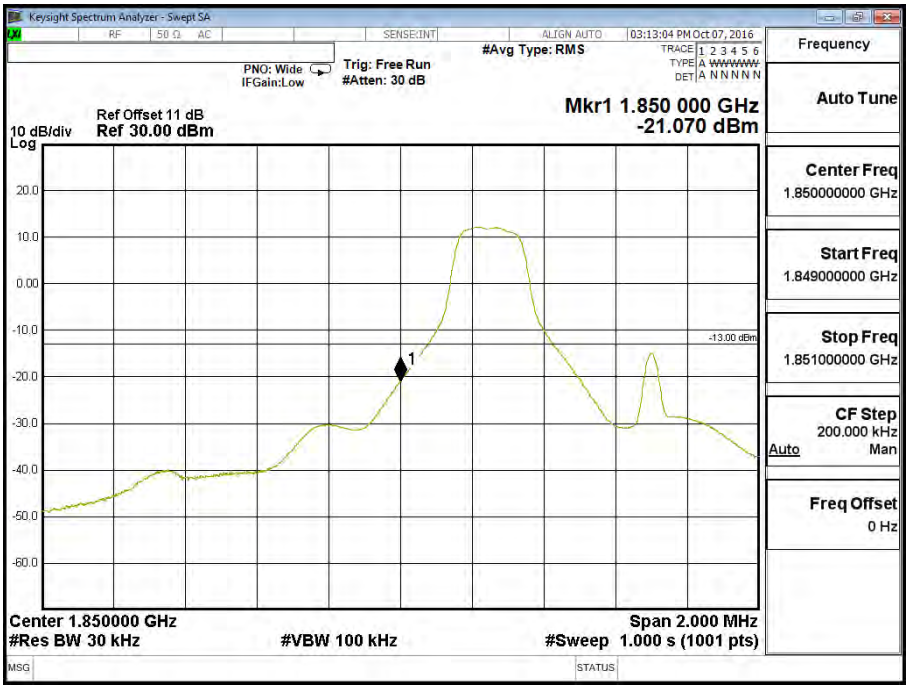
5.4. Test Procedure

In accordance with Part 24.238, 27.53, at least 1% of the emission bandwidth was used for the resolution and video bandwidths up to 1MHz away from the Block Edge. At greater than 1MHz, the resolution and video bandwidth were increased to 1MHz/3MHz.
The reference power and path losses of all channels used for testing in each frequency block were measured.

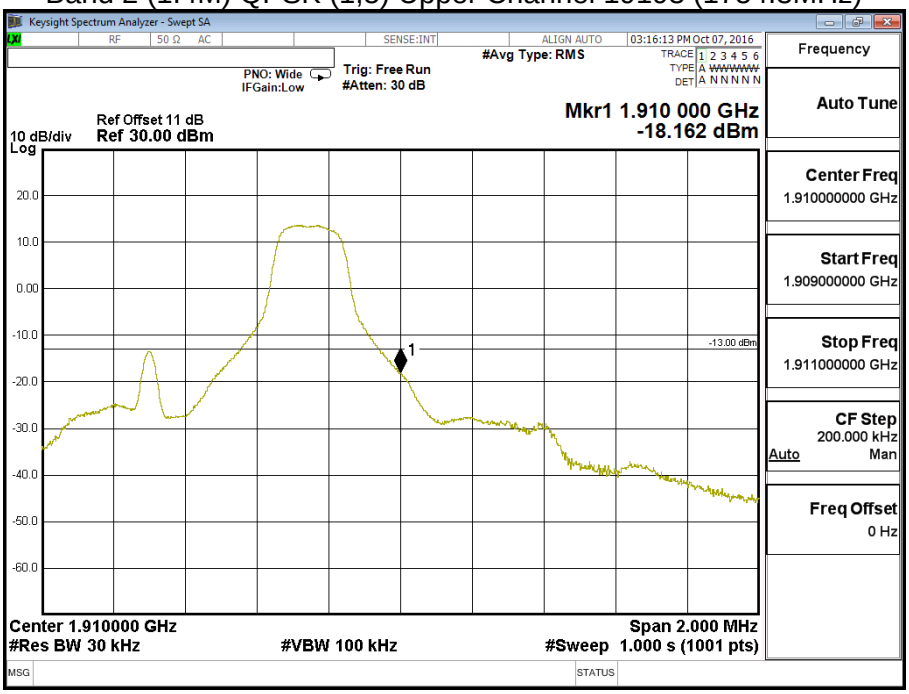
5.5. Test Result of Spurious Emission At Antenna Terminals (+/-1MHz)

Product	Module		
Test Mode	Spurious Emission At Antenna Terminals (+/-1MHz)		
Date of Test	2016/10/07	Test Site	CTR
Test Condition	Block Edge Test (Band 2 (1.4M))		

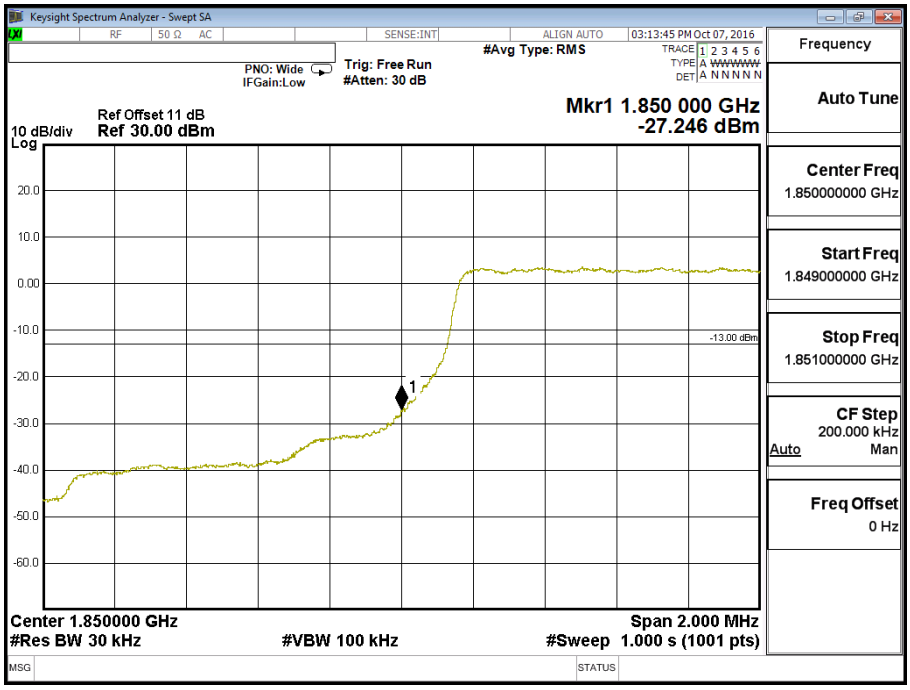
Band 2 (1.4M) QPSK (1,0) Lower Channel 18607 (1850.7MHz)



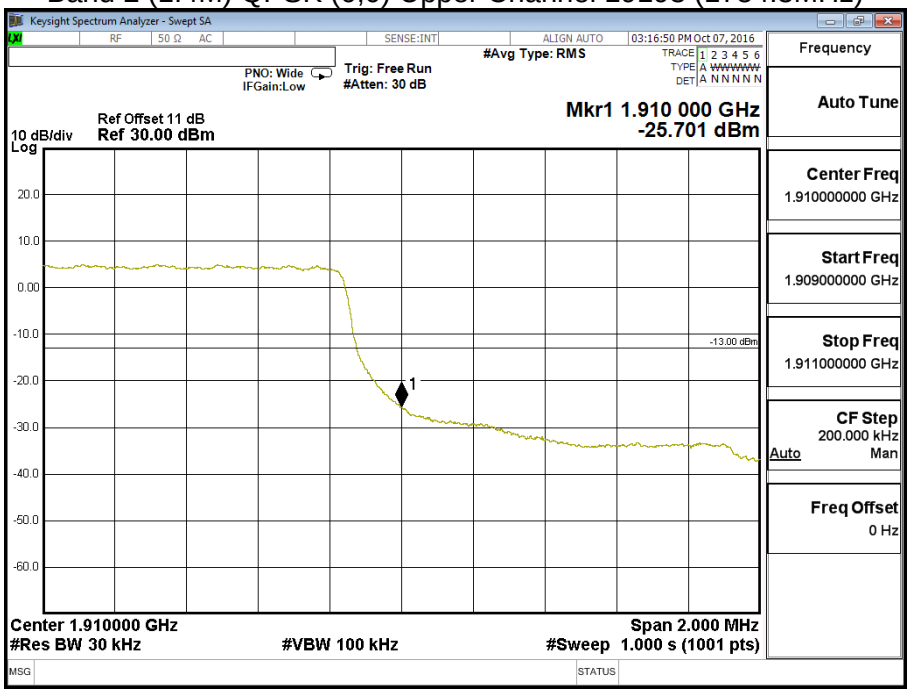
Band 2 (1.4M) QPSK (1,5) Upper Channel 19193 (1754.3MHz)



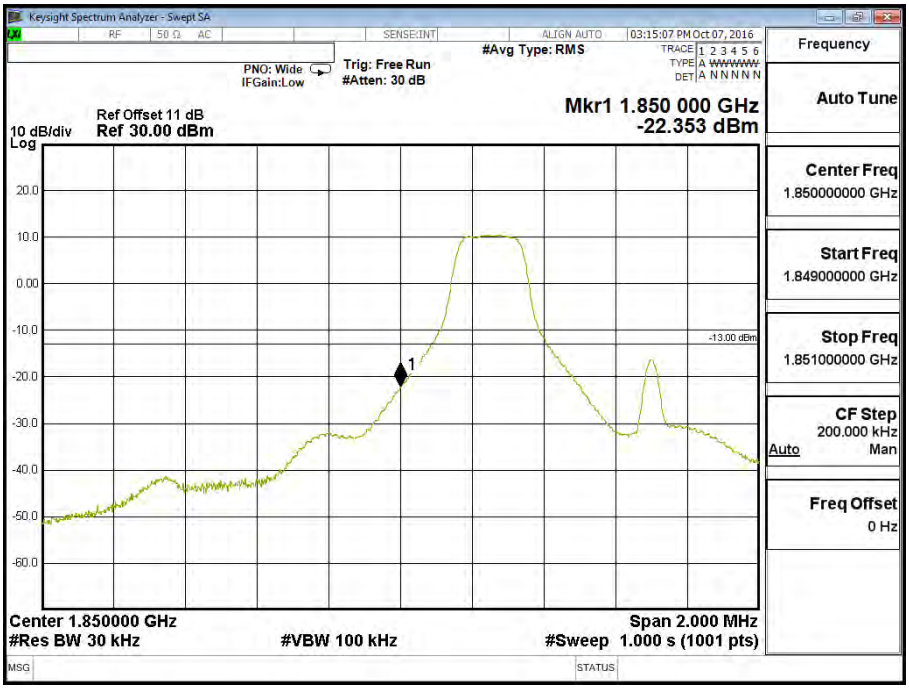
Band 2 (1.4M) QPSK (6,0) Lower Channel 18607 (1850.7MHz)



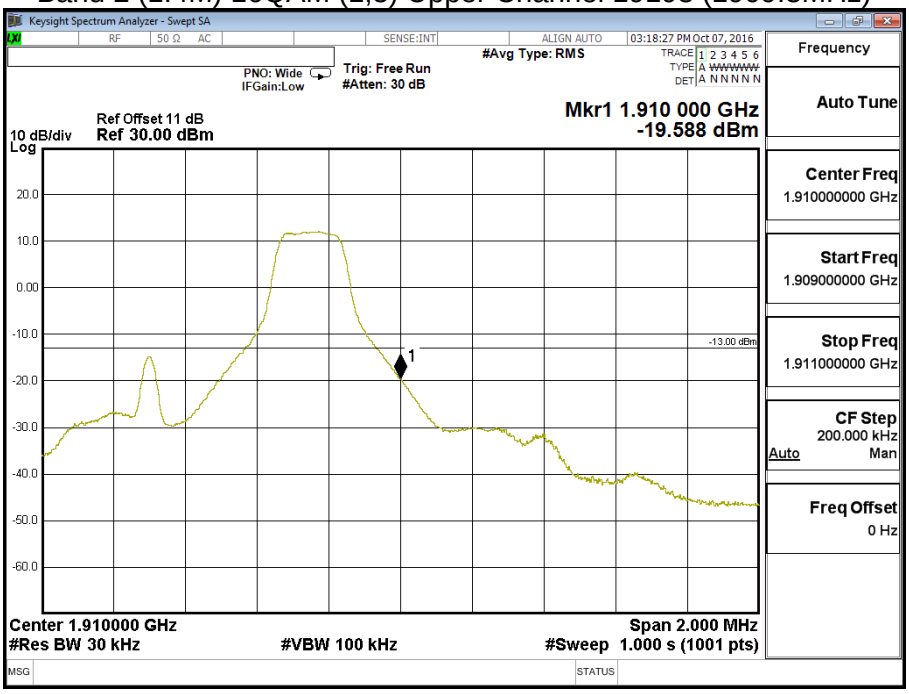
Band 2 (1.4M) QPSK (6,0) Upper Channel 19193 (1754.3MHz)



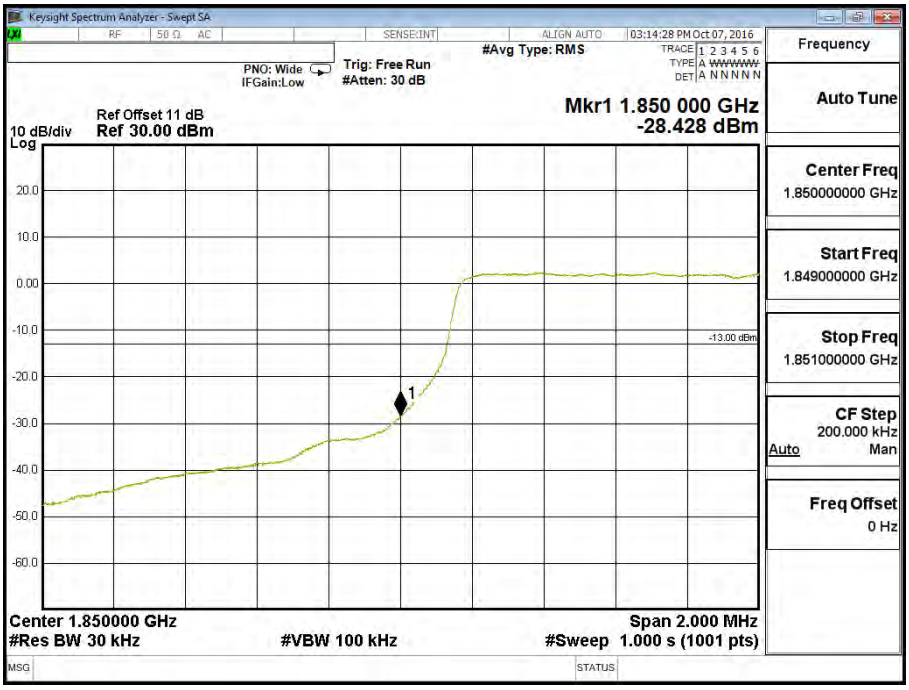
Band 2 (1.4M) 16QAM (1,0) Lower Channel 18607 (1850.7MHz)



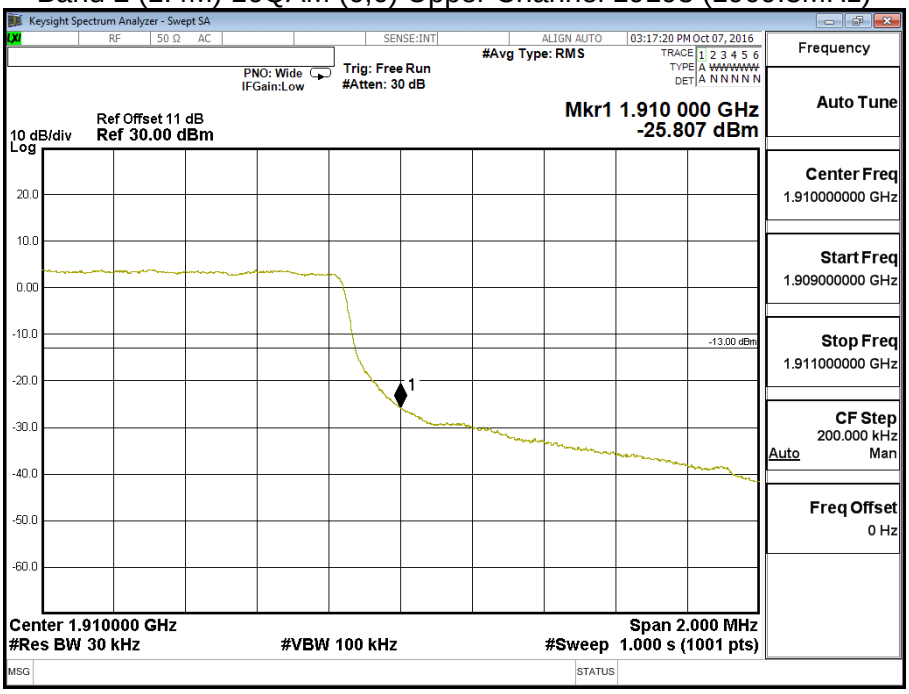
Band 2 (1.4M) 16QAM (1,5) Upper Channel 19193 (1909.3MHz)



Band 2 (1.4M) 16QAM (6,0) Lower Channel 18607 (1850.7MHz)

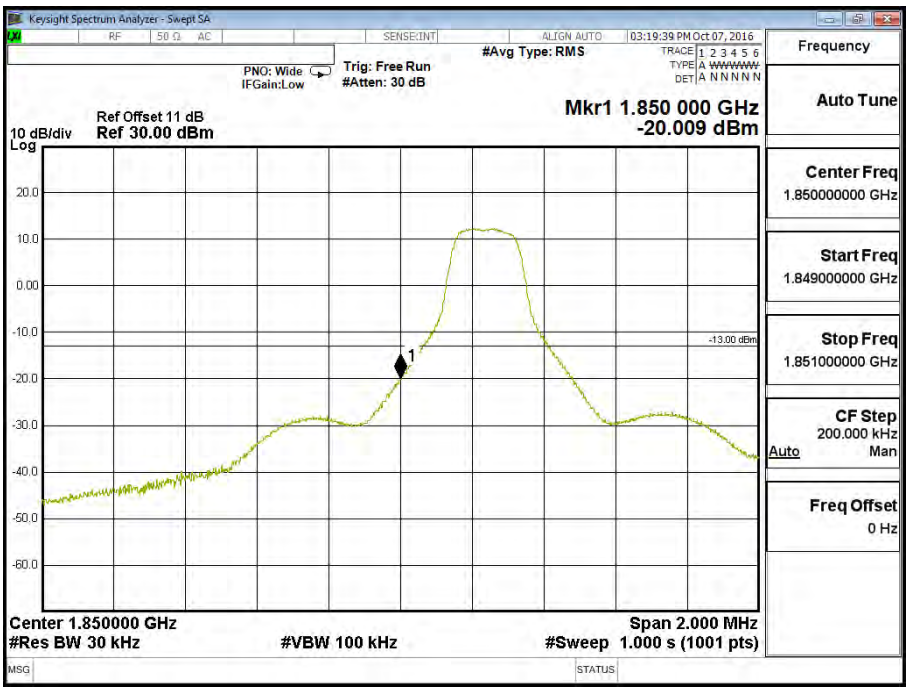


Band 2 (1.4M) 16QAM (6,0) Upper Channel 19193 (1909.3MHz)

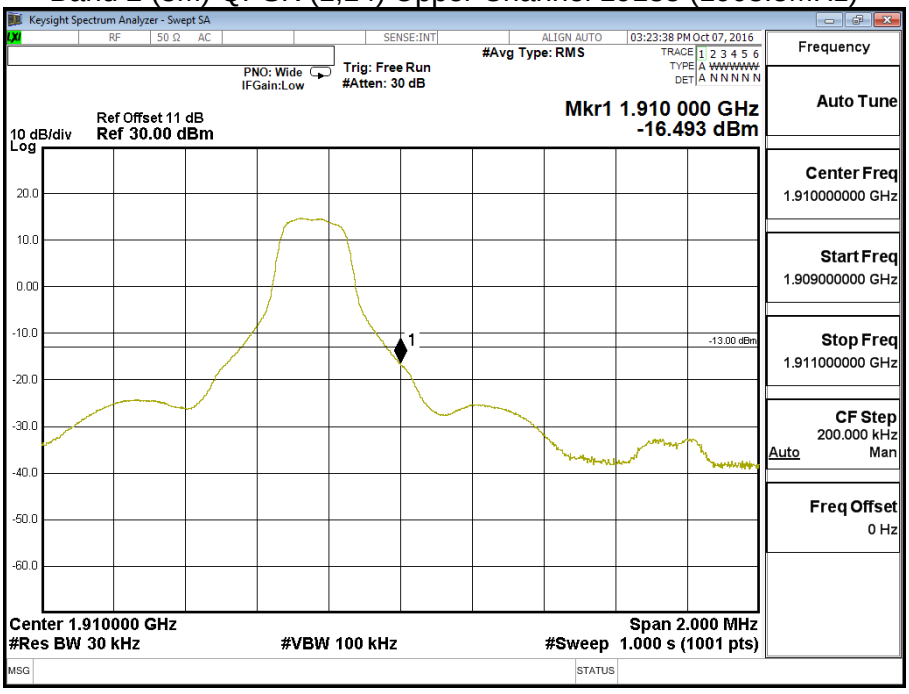


Product	Module		
Test Mode	Spurious Emission At Antenna Terminals (+/-1MHz)		
Date of Test	2016/10/07	Test Site	CTR
Test Condition	Block Edge Test (Band 2 (3M))		

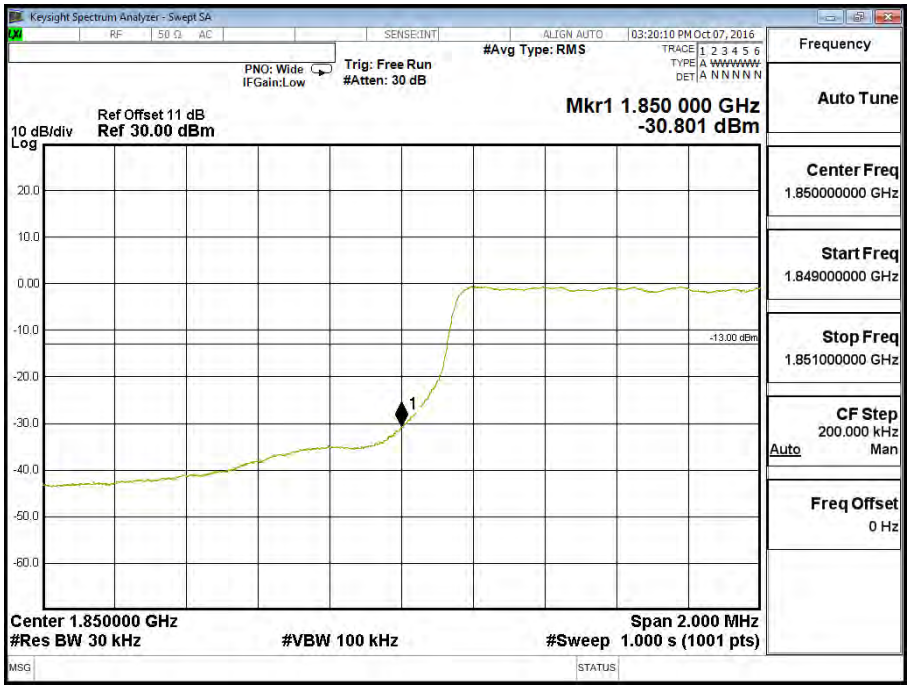
Band 2 (3M) QPSK (1,0) Lower Channel 18615 (1851.5MHz)



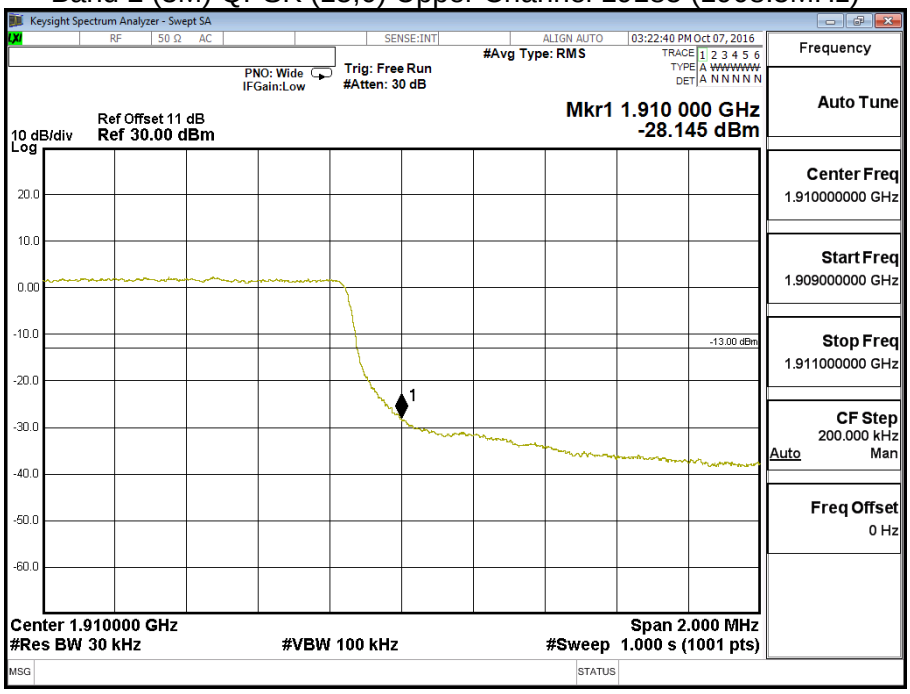
Band 2 (3M) QPSK (1,14) Upper Channel 19185 (1908.5MHz)



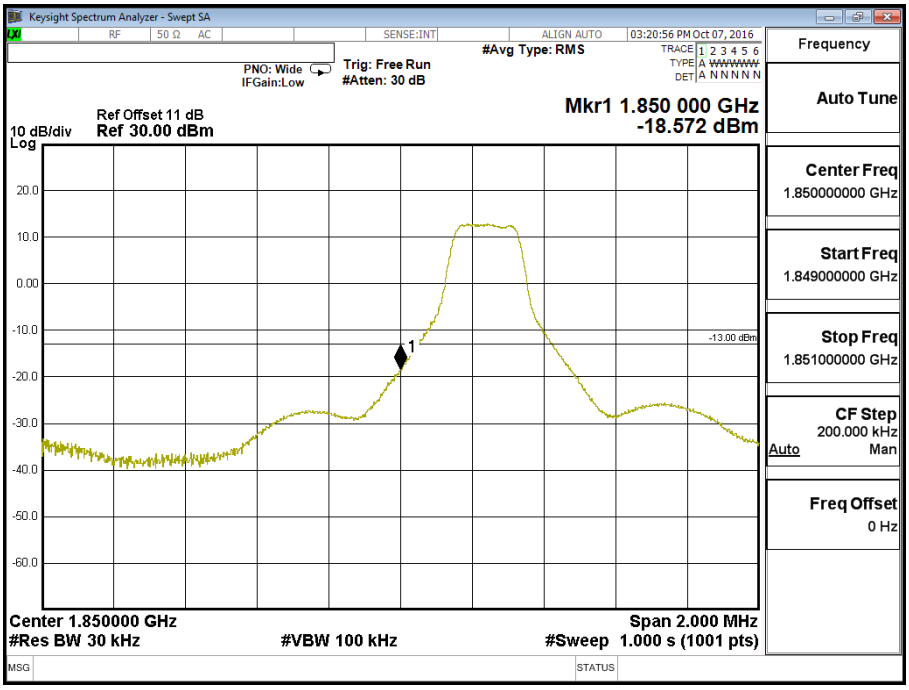
Band 2 (3M) QPSK (15,0) Lower Channel 18615 (1851.5MHz)



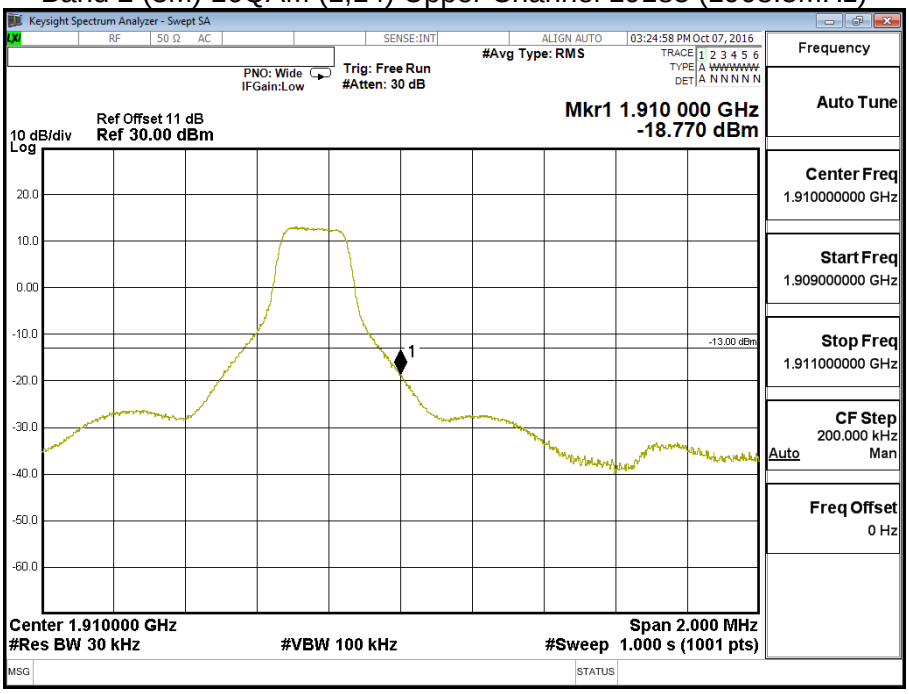
Band 2 (3M) QPSK (15,0) Upper Channel 19185 (1908.5MHz)



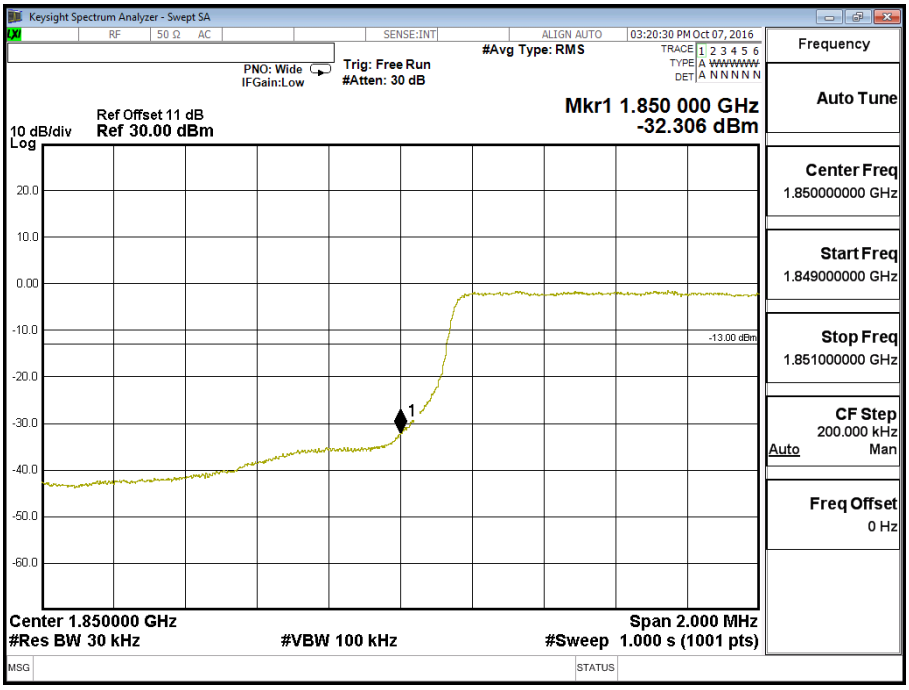
Band 2 (3M) 16QAM (1,0) Lower Channel 18615 (1851.5MHz)



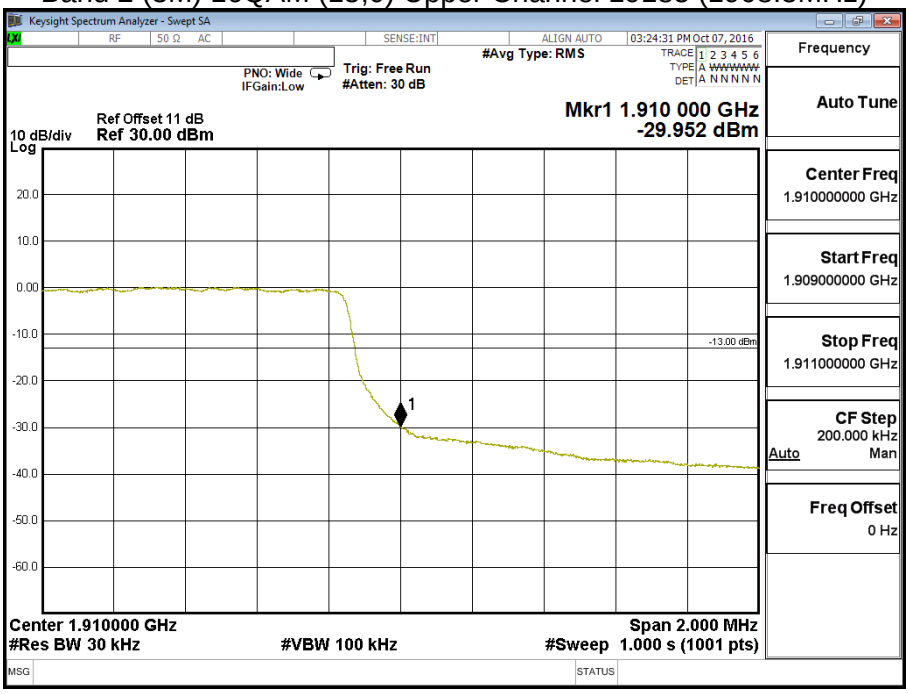
Band 2 (3M) 16QAM (1,14) Upper Channel 19185 (1908.5MHz)



Band 2 (3M) 16QAM (15,0) Lower Channel 18615 (1851.5MHz)

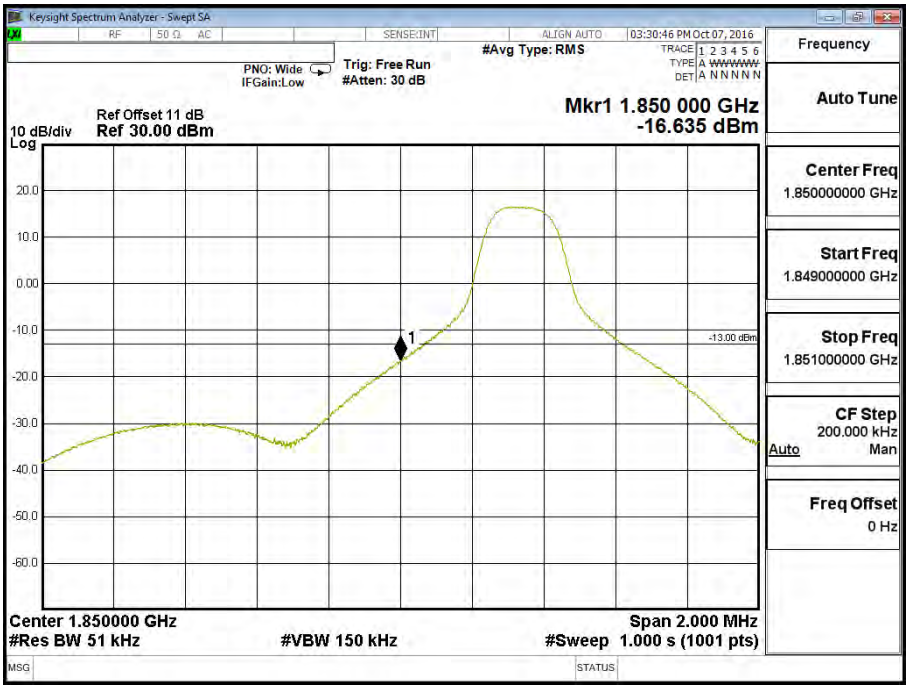


Band 2 (3M) 16QAM (15,0) Upper Channel 19185 (1908.5MHz)

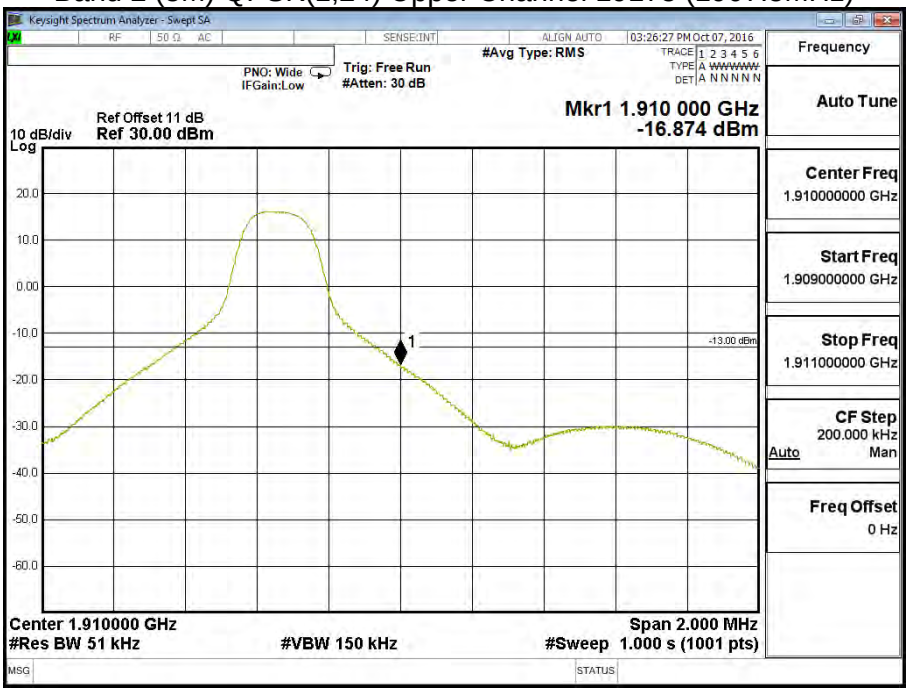


Product	Module		
Test Mode	Spurious Emission At Antenna Terminals (+/-1MHz)		
Date of Test	2016/10/07	Test Site	CTR
Test Condition	Block Edge Test (Band 2 (5M))		

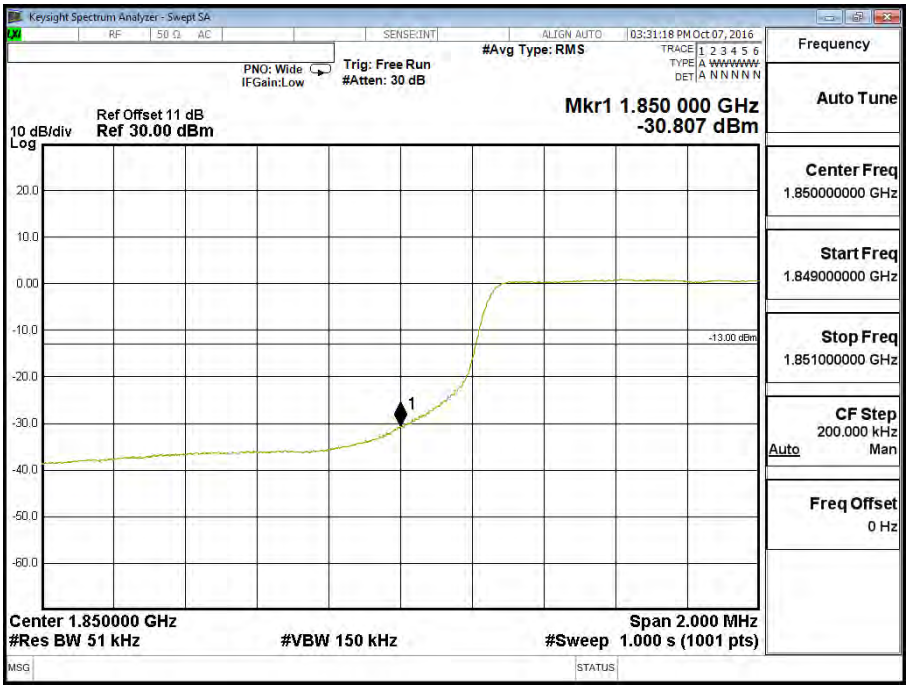
Band 2 (5M) QPSK(1,0) Lower Channel 18625 (1852.5MHz)



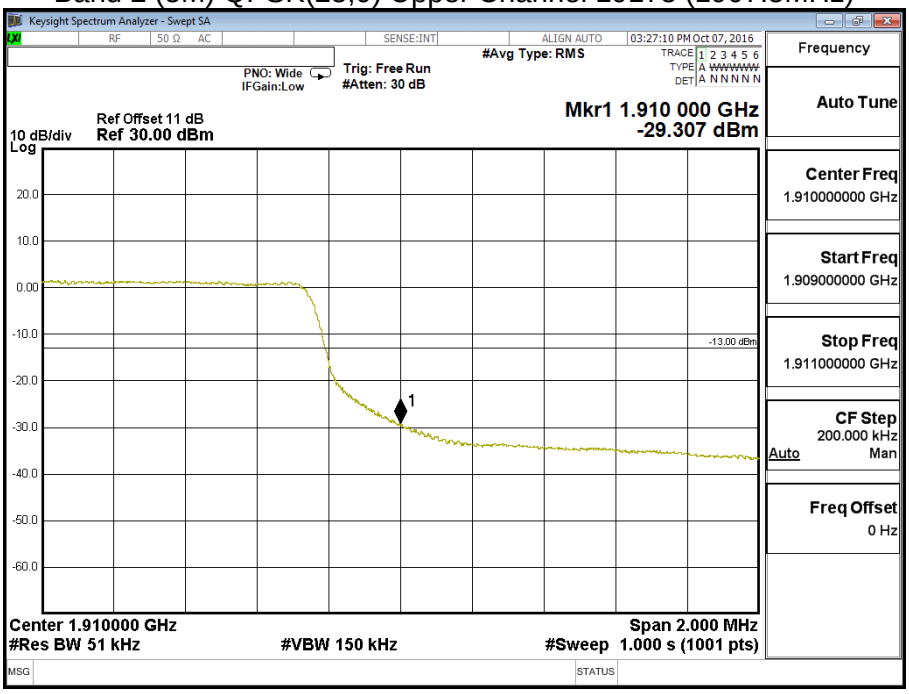
Band 2 (5M) QPSK(1,24) Upper Channel 19175 (1907.5MHz)



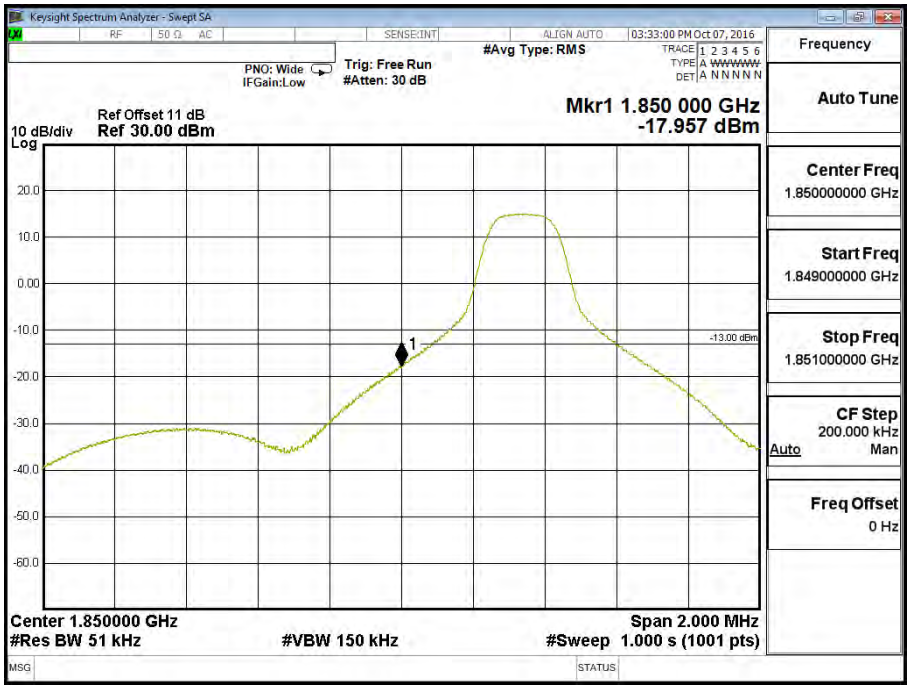
Band 2 (5M) QPSK(25,0) Lower Channel 18625 (1852.5MHz)



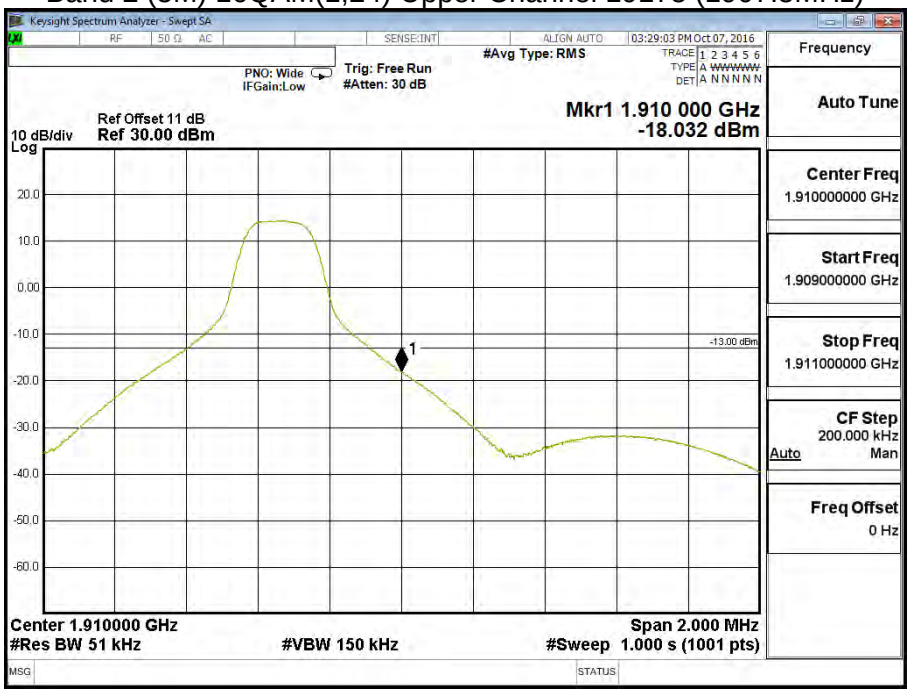
Band 2 (5M) QPSK(25,0) Upper Channel 19175 (1907.5MHz)



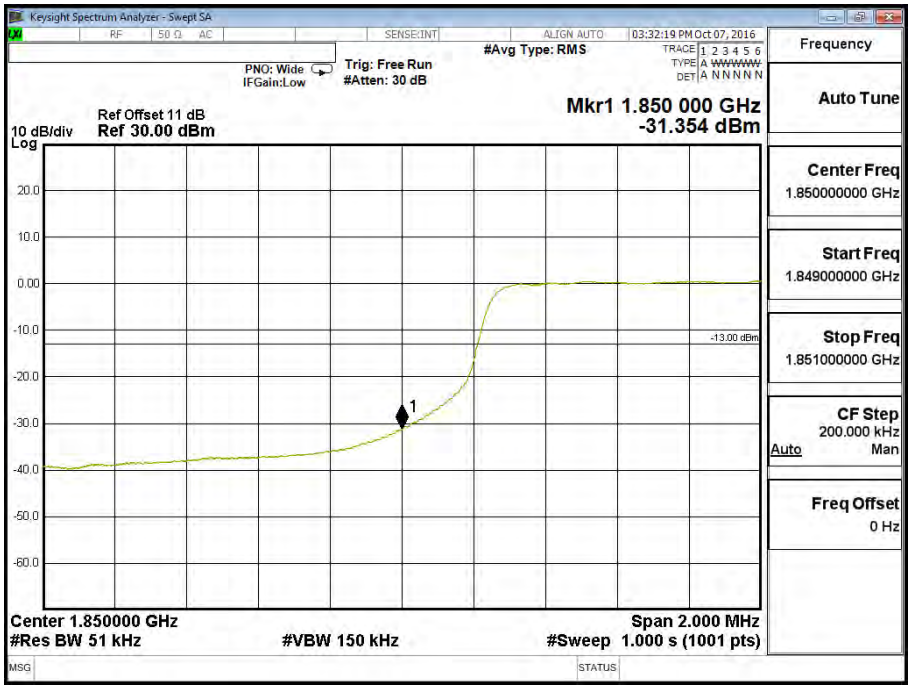
Band 2 (5M) 16QAM(1,0) Lower Channel 18625 (1852.5MHz)



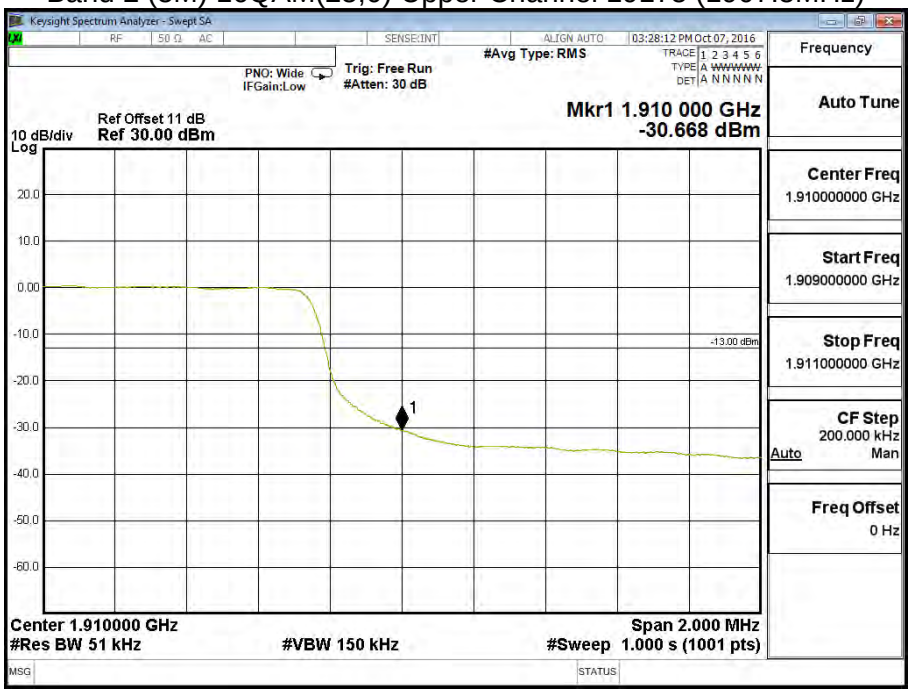
Band 2 (5M) 16QAM(1,24) Upper Channel 19175 (1907.5MHz)



Band 2 (5M) 16QAM(25,0) Lower Channel 18625 (1852.5MHz)

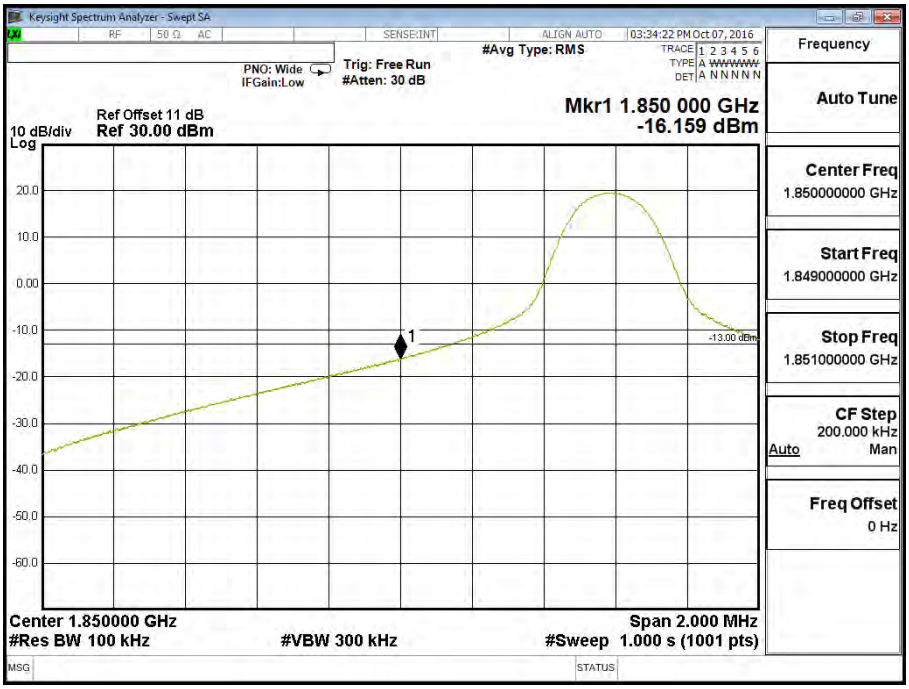


Band 2 (5M) 16QAM(25,0) Upper Channel 19175 (1907.5MHz)

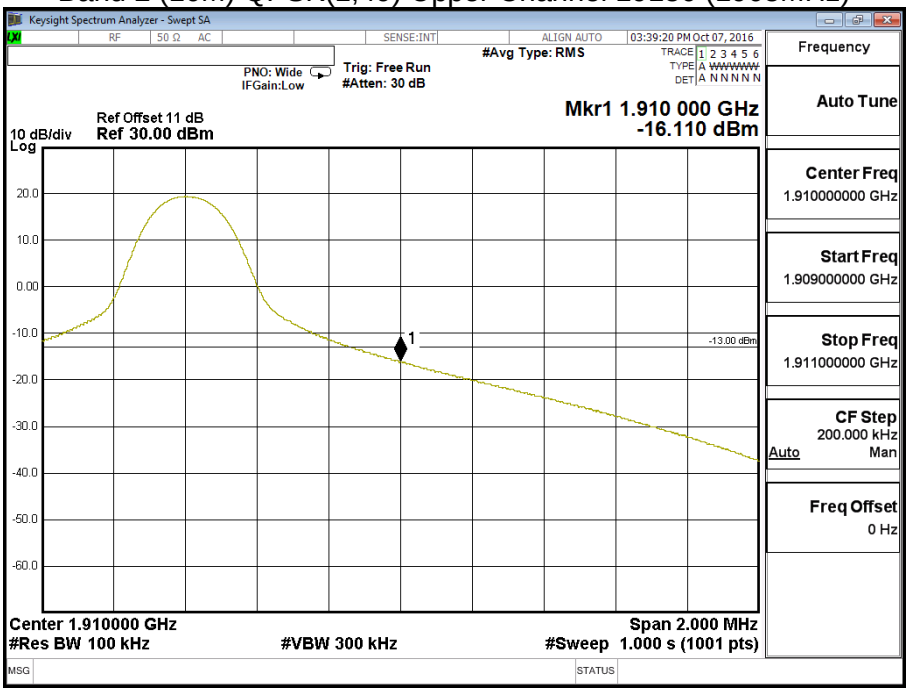


Product	Module		
Test Mode	Spurious Emission At Antenna Terminals (+/-1MHz)		
Date of Test	2016/10/07	Test Site	CTR
Test Condition	Block Edge Test (Band 2 (10M))		

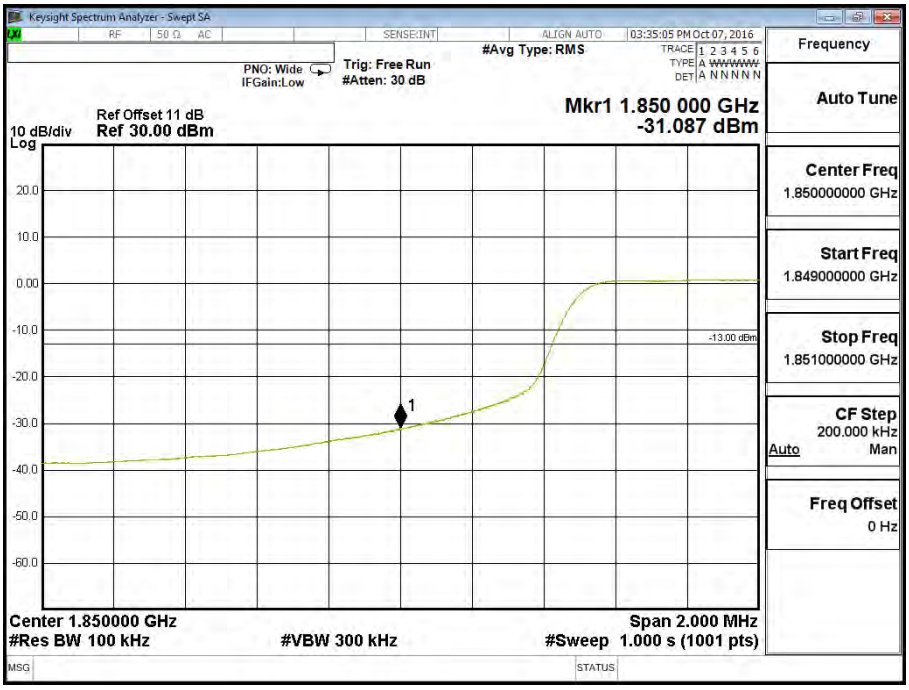
Band 2 (10M) QPSK(1,0) Lower Channel 18650 (1855MHz)



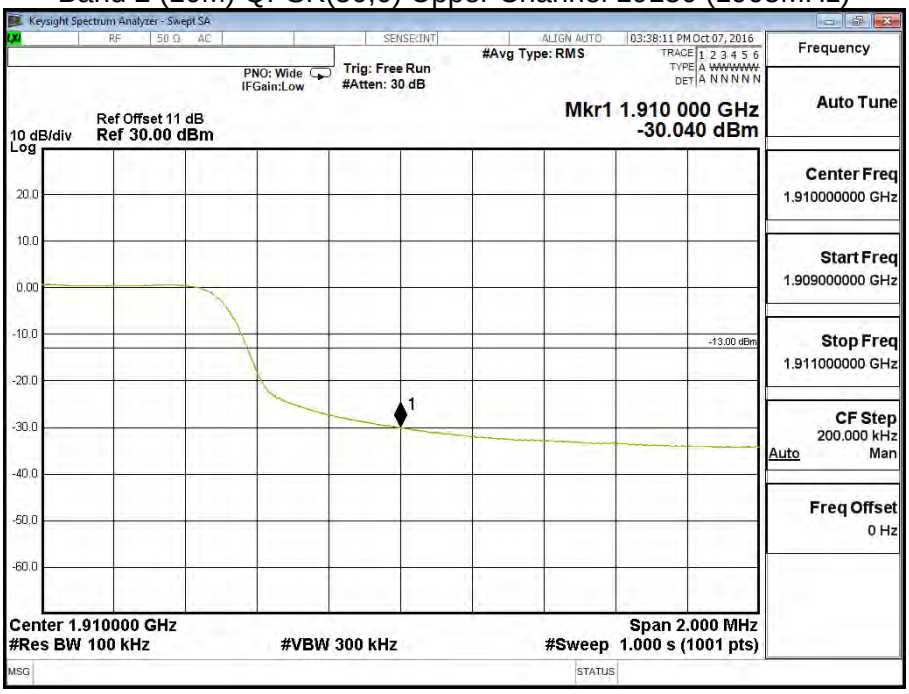
Band 2 (10M) QPSK(1,49) Upper Channel 19150 (1905MHz)



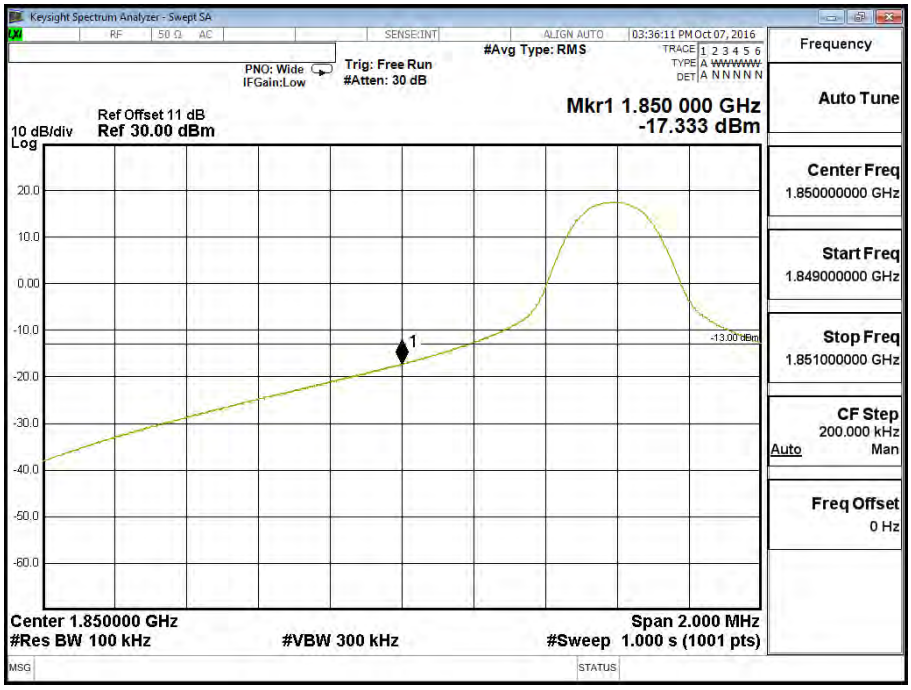
Band 2 (10M) QPSK(50,0) Lower Channel 18650 (1855MHz)



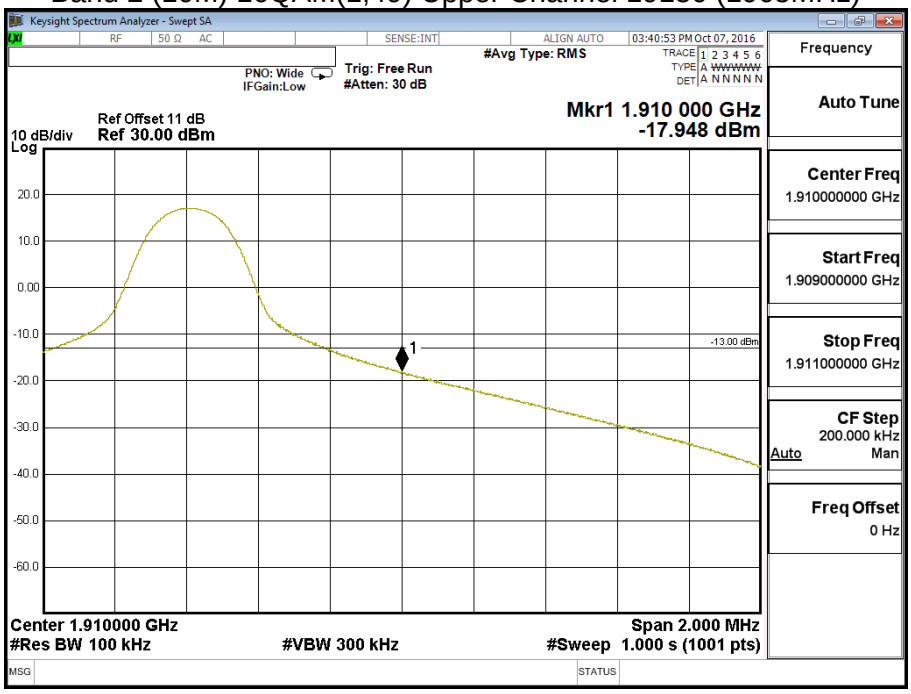
Band 2 (10M) QPSK(50,0) Upper Channel 19150 (1905MHz)



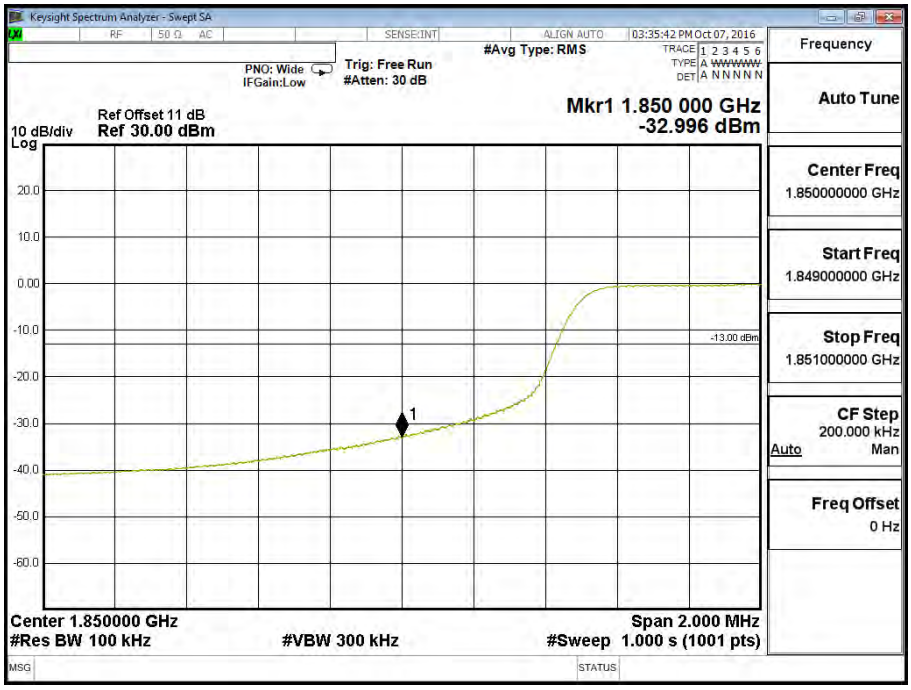
Band 2 (10M) 16QAM(1,0) Lower Channel 18650 (1855MHz)



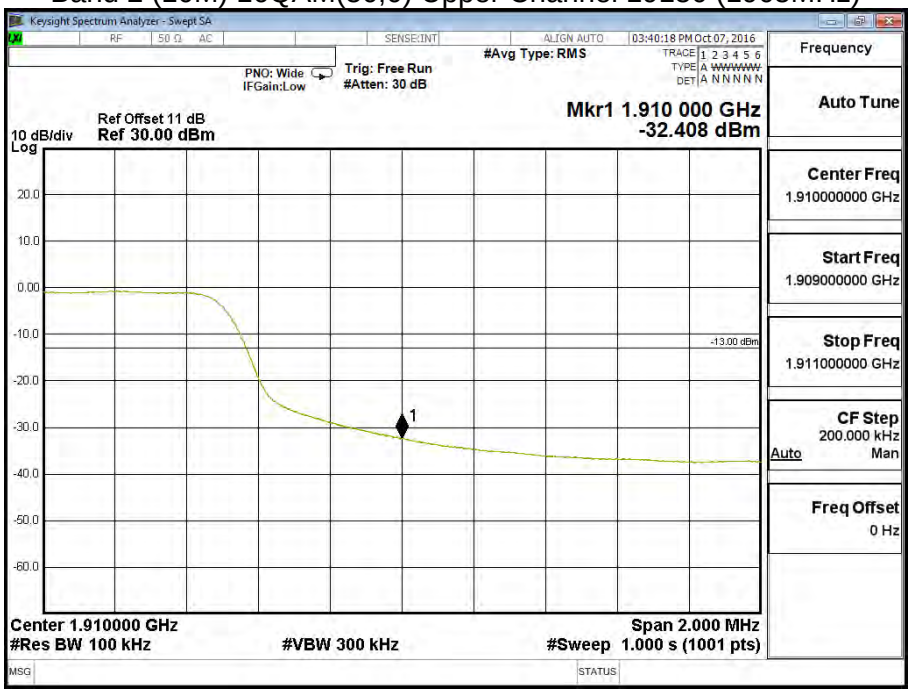
Band 2 (10M) 16QAM(1,49) Upper Channel 19150 (1905MHz)



Band 2 (10M) 16QAM(50,0) Lower Channel 18650 (1855MHz)

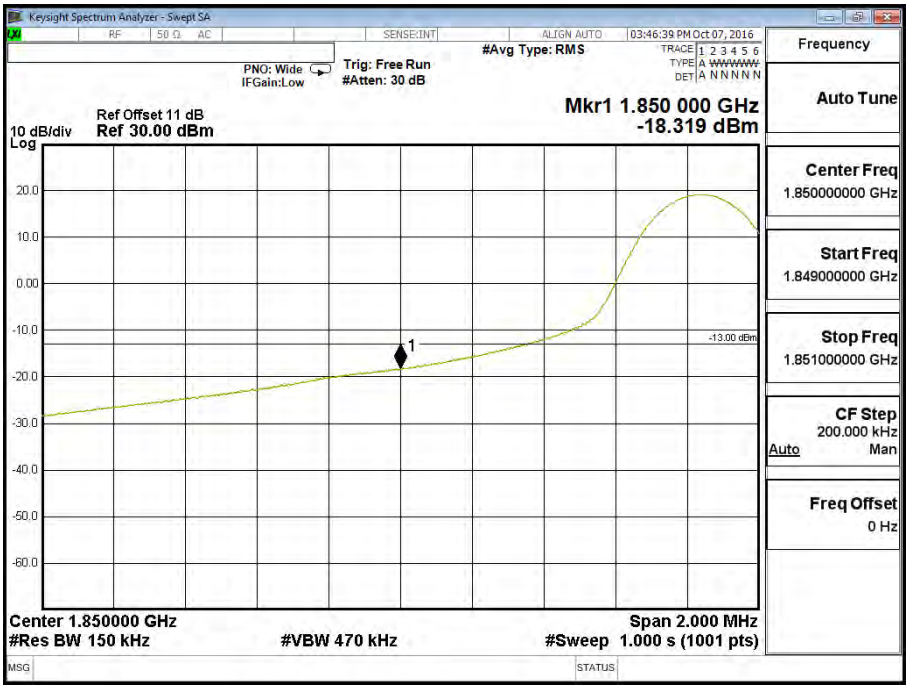


Band 2 (10M) 16QAM(50,0) Upper Channel 19150 (1905MHz)

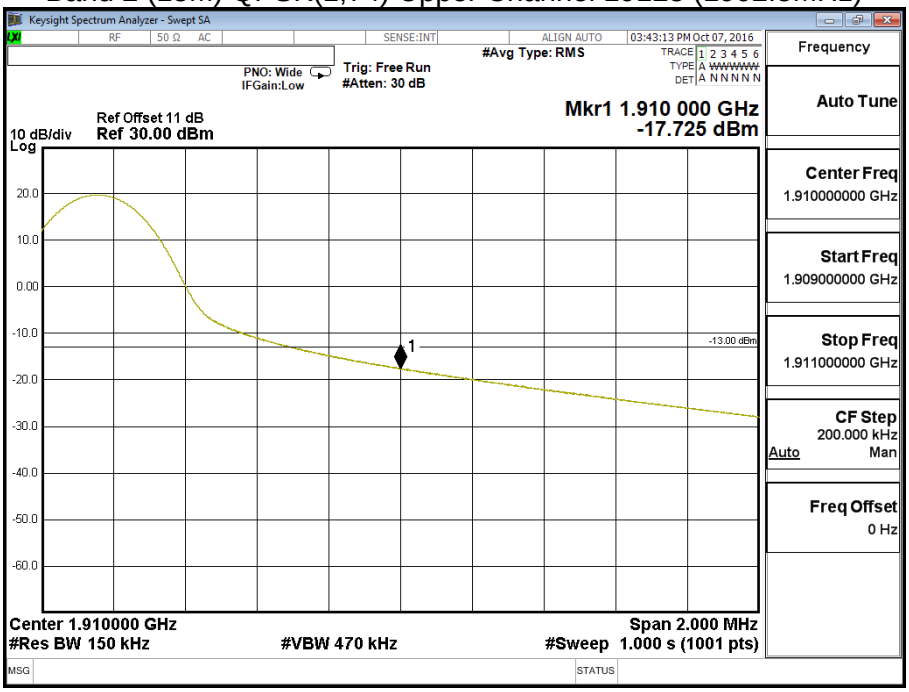


Product	Module		
Test Mode	Spurious Emission At Antenna Terminals (+/-1MHz)		
Date of Test	2016/10/07	Test Site	CTR
Test Condition	Block Edge Test (Band 2 (15M))		

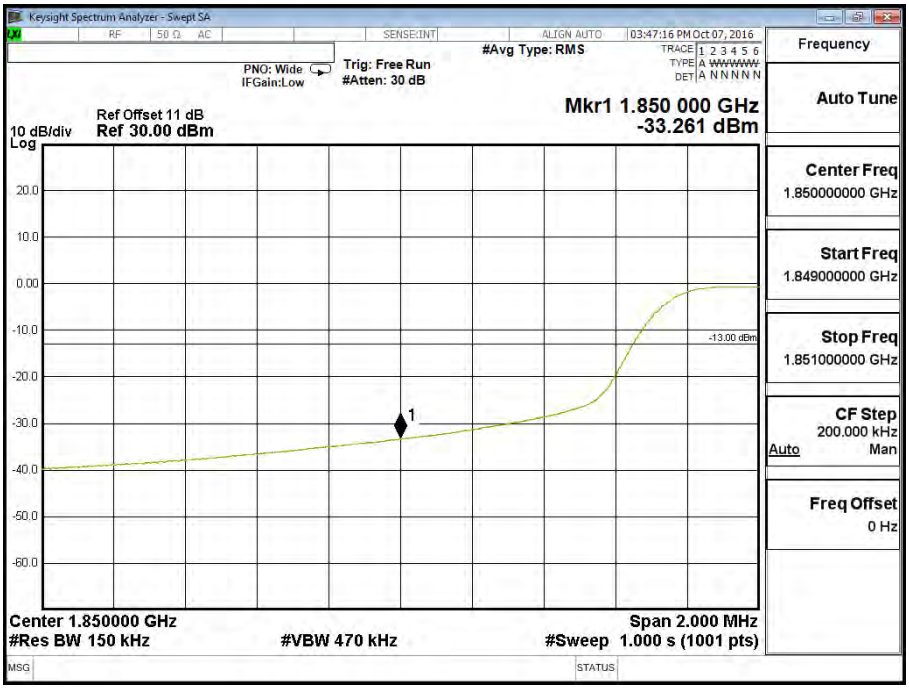
Band 2 (15M)QPSK(1,0) Lower Channel 18675 (1857.5MHz)



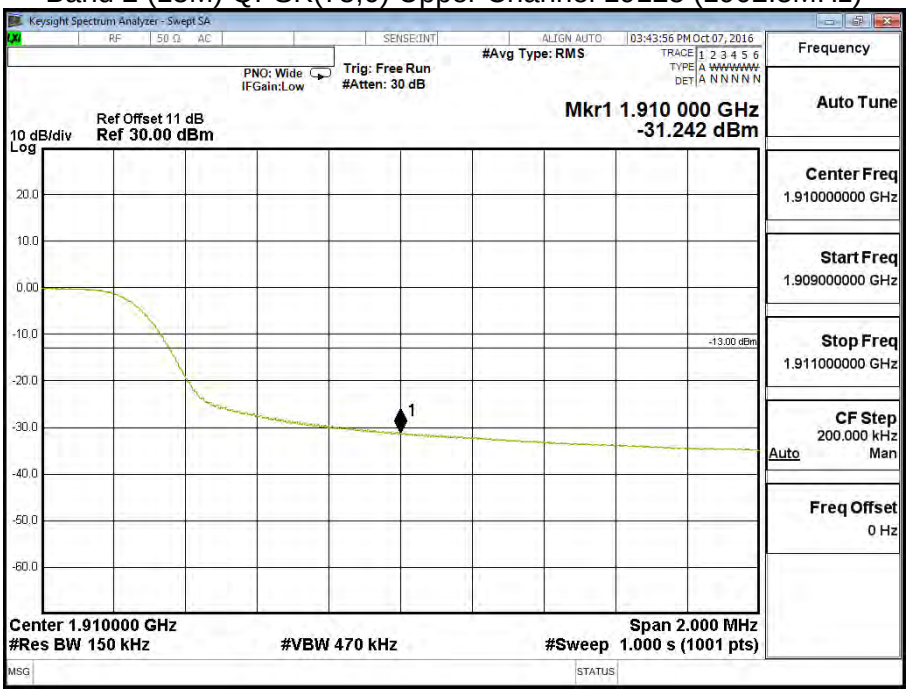
Band 2 (15M) QPSK(1,74) Upper Channel 19125 (1902.5MHz)



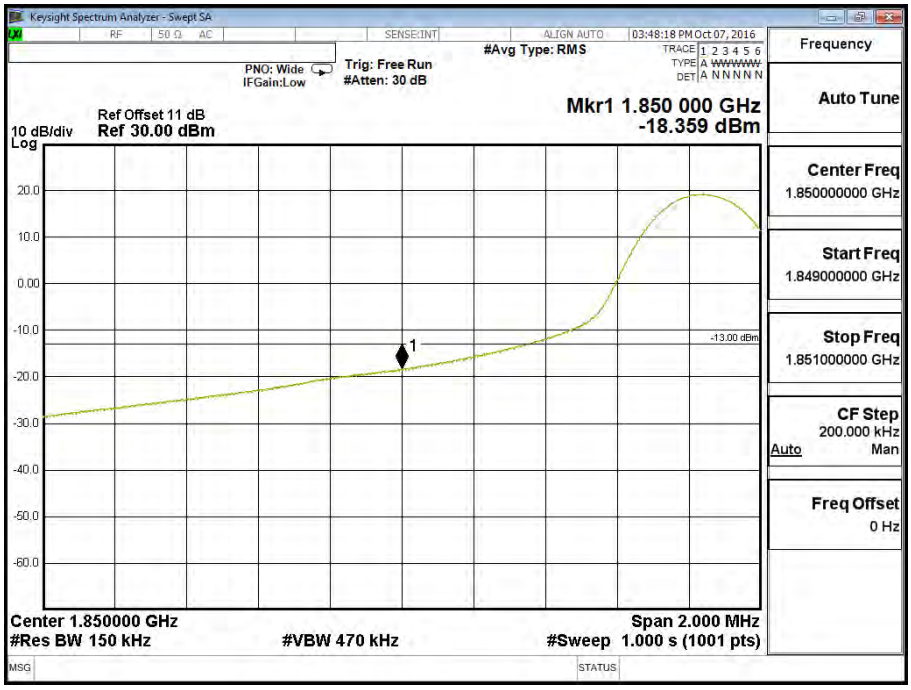
Band 2 (15M) QPSK(75,0) Lower Channel 18675 (1857.5MHz)



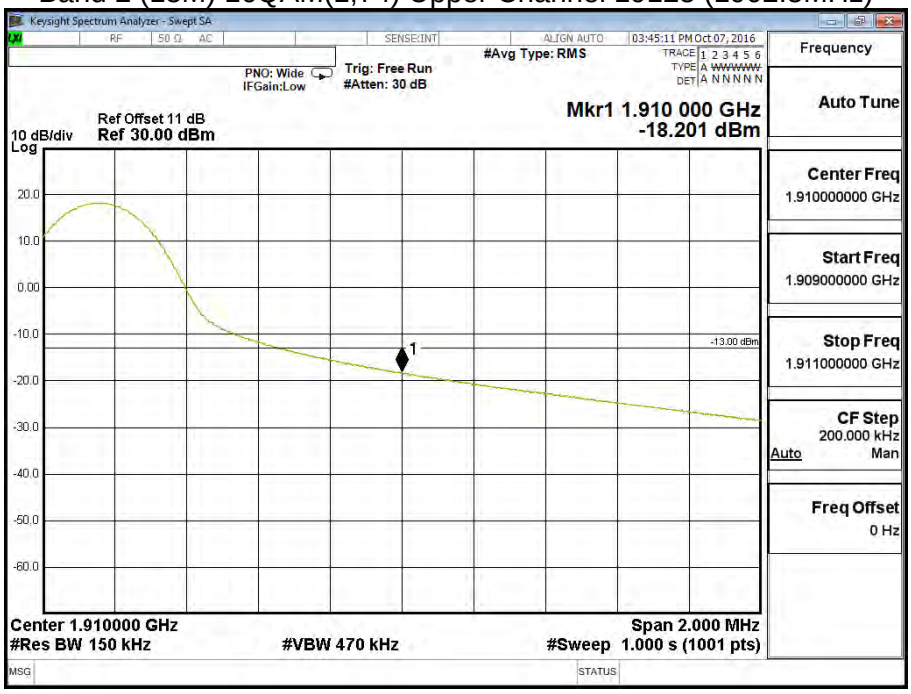
Band 2 (15M) QPSK(75,0) Upper Channel 19125 (1902.5MHz)



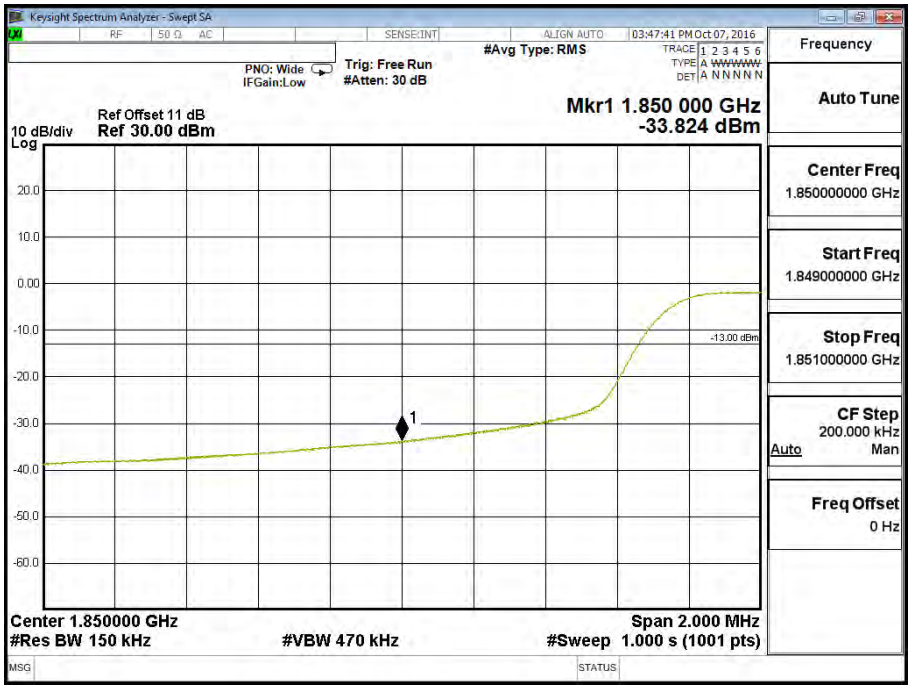
Band 2 (15M) 16QAM(1,0) Lower Channel 18675 (1857.5MHz)



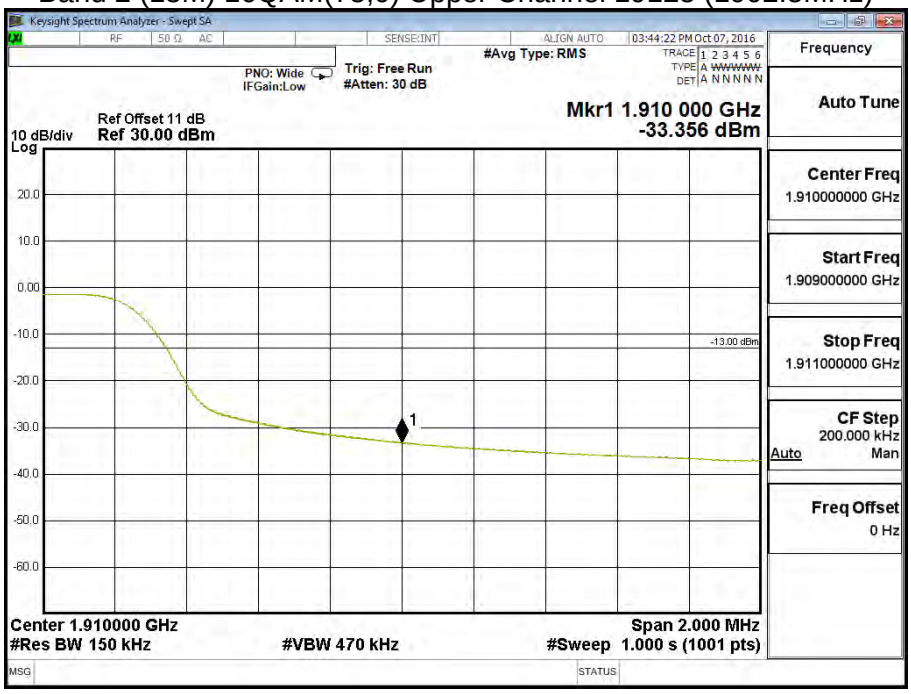
Band 2 (15M) 16QAM(1,74) Upper Channel 19125 (1902.5MHz)



Band 2 (15M) 16QAM(75,0) Lower Channel 18675 (1857.5MHz)

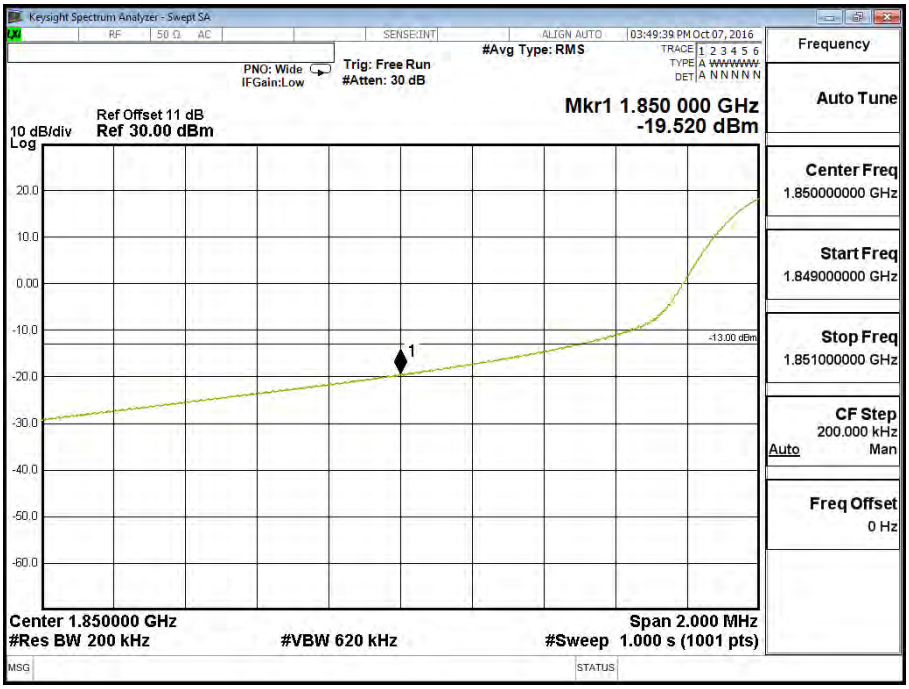


Band 2 (15M) 16QAM(75,0) Upper Channel 19125 (1902.5MHz)

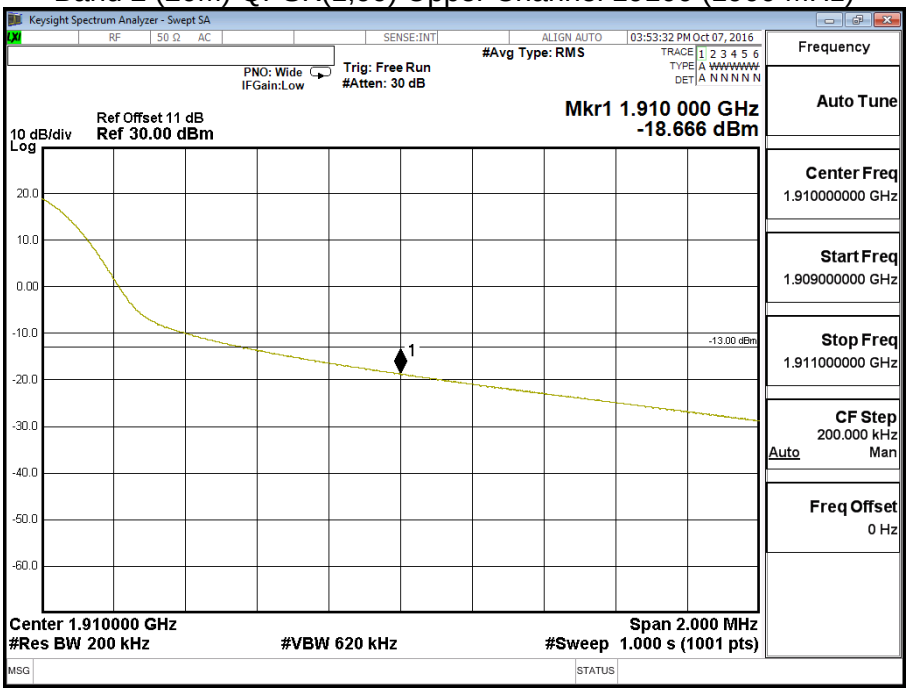


Product	Module		
Test Mode	Spurious Emission At Antenna Terminals (+/-1MHz)		
Date of Test	2016/10/07	Test Site	CTR
Test Condition	Block Edge Test (Band 2 (20M))		

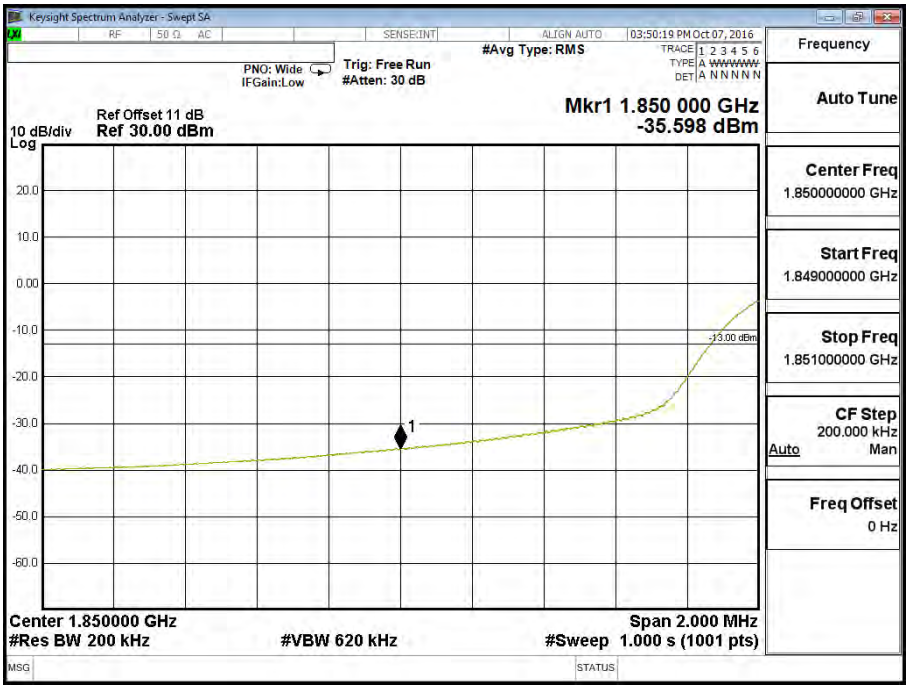
Band 2 (20M) QPSK(1,0) Lower Channel 18700 (1860MHz)



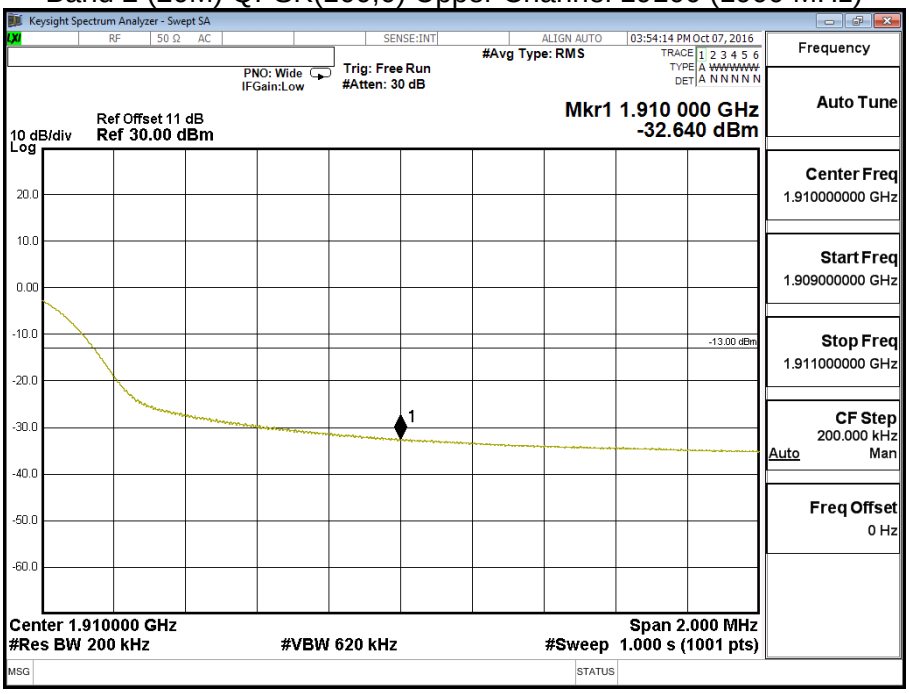
Band 2 (20M) QPSK(1,99) Upper Channel 19100 (1900 MHz)



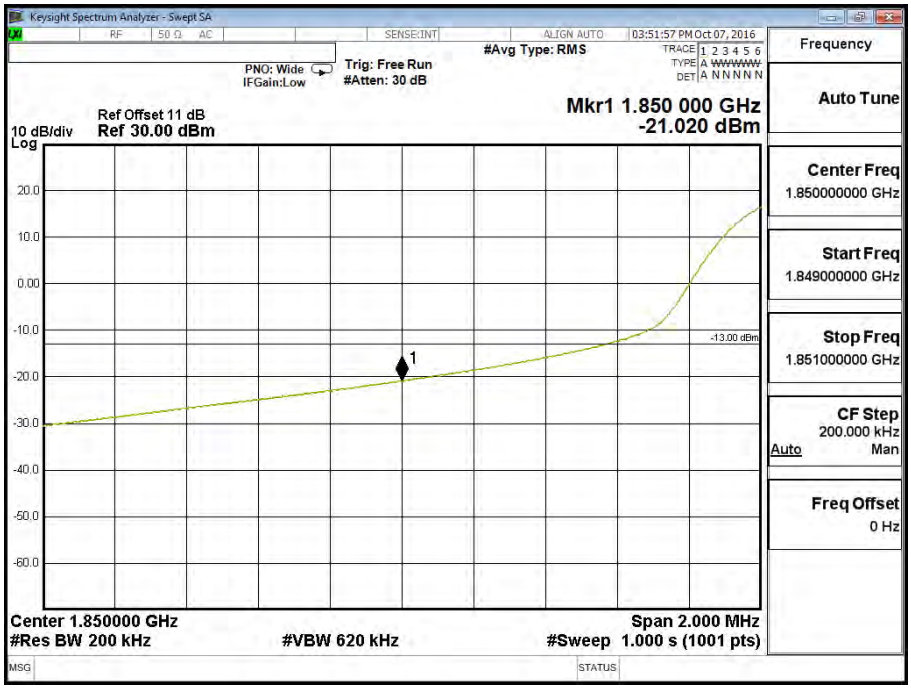
Band 2 (20M) QPSK(100,0) Lower Channel 18700 (1860MHz)



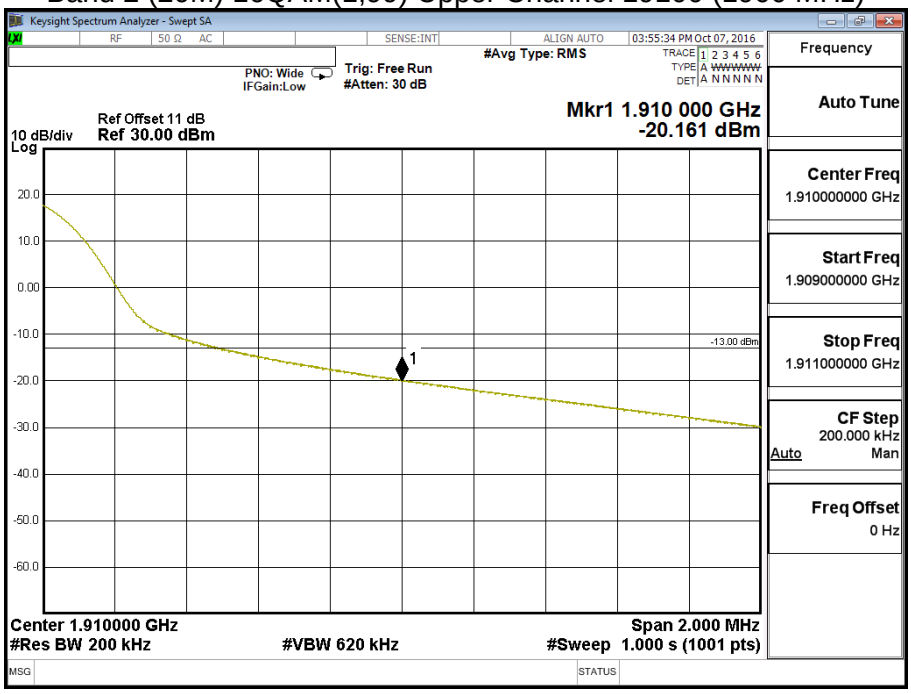
Band 2 (20M) QPSK(100,0) Upper Channel 19100 (1900 MHz)



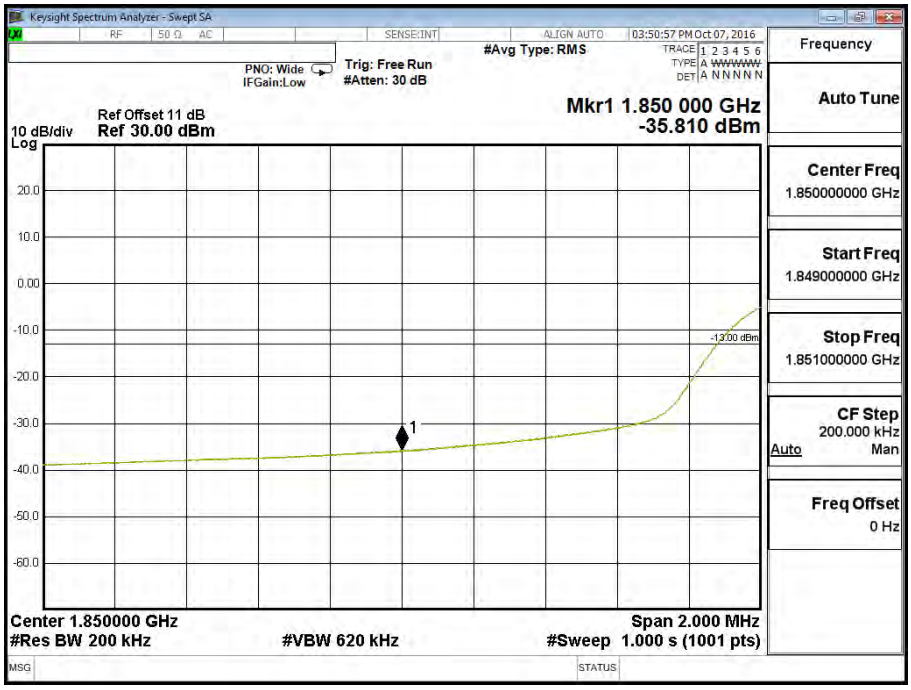
Band 2 (20M) 16QAM(1,0) Lower Channel 18700 (1860MHz)



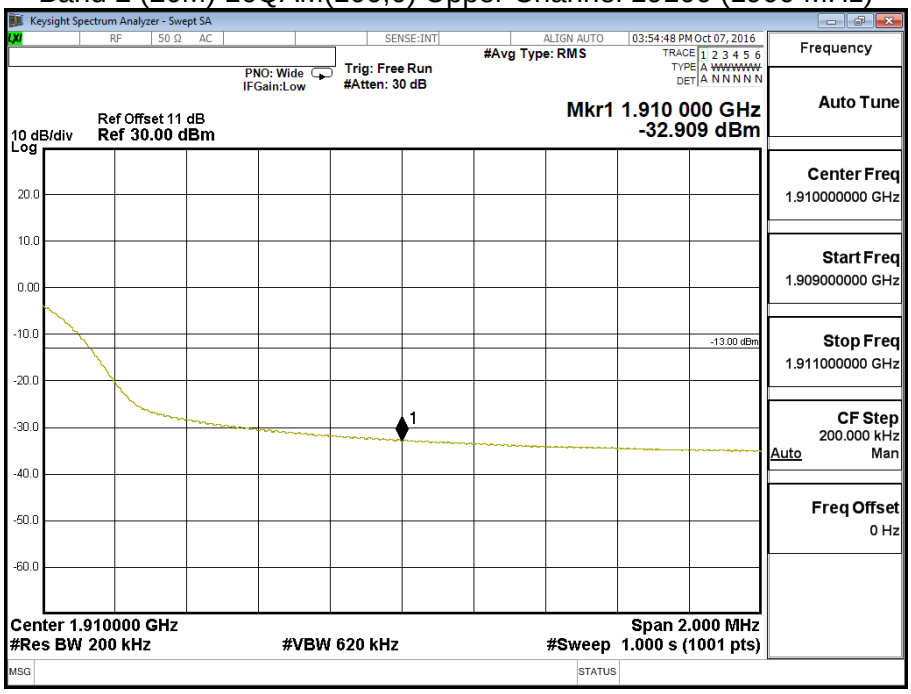
Band 2 (20M) 16QAM(1,99) Upper Channel 19100 (1900 MHz)



Band 2 (20M) 16QAM(100,0) Lower Channel 18700 (1860MHz)

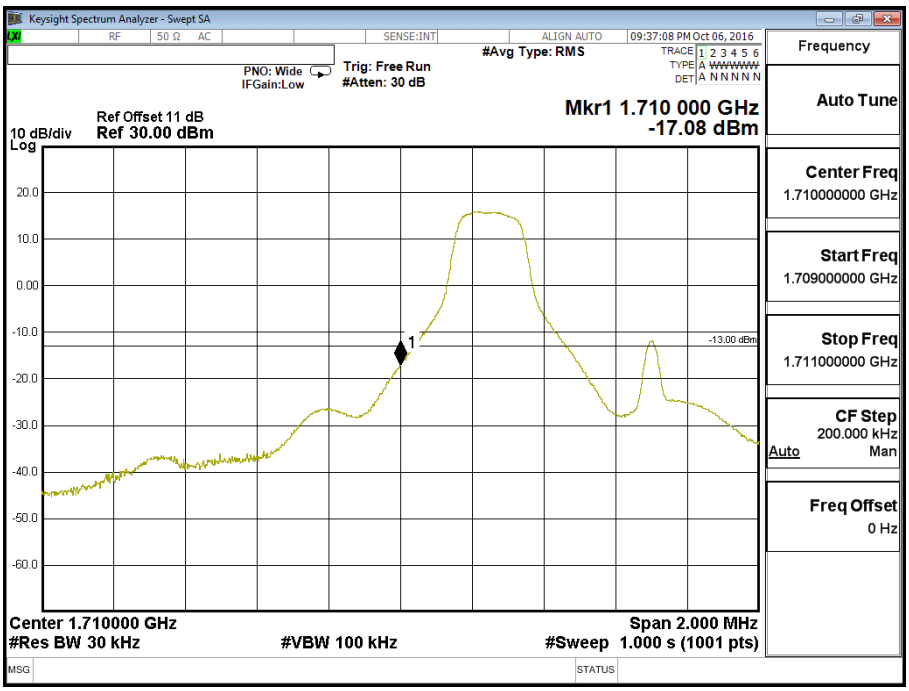


Band 2 (20M) 16QAM(100,0) Upper Channel 19100 (1900 MHz)

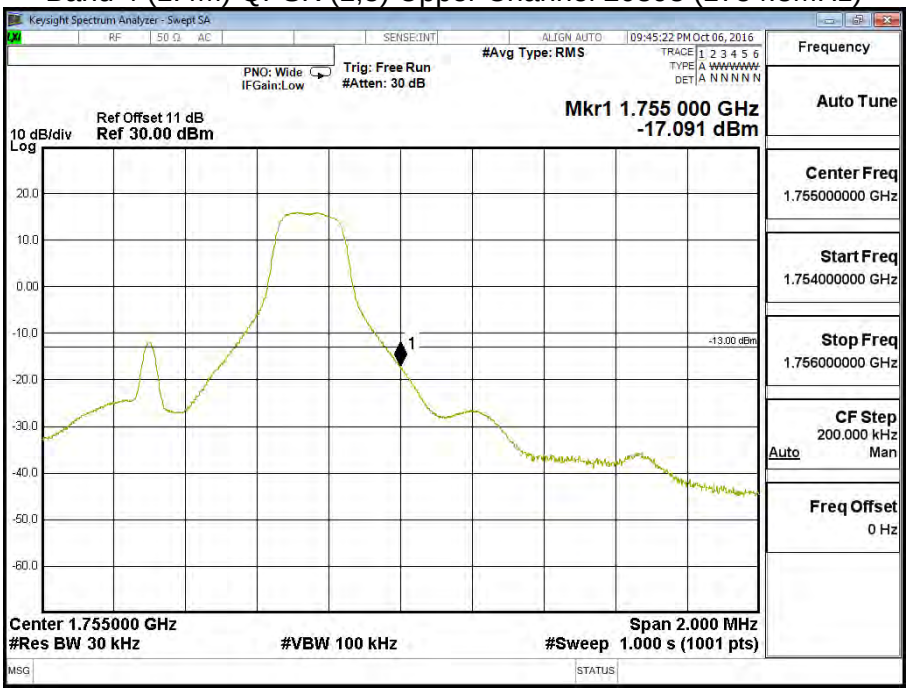


Product	Module		
Test Mode	Spurious Emission At Antenna Terminals (+/-1MHz)		
Date of Test	2016/10/07	Test Site	CTR
Test Condition	Block Edge Test (Band 4 (1.4M))		

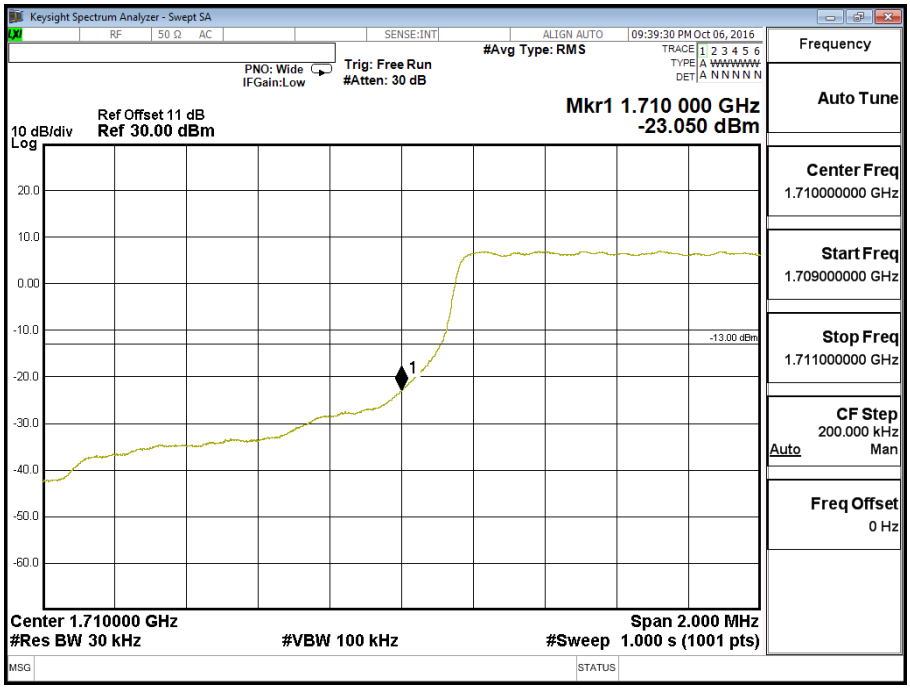
Band 4 (1.4M) QPSK (1,0) Lower Channel 19957 (1710.7MHz)



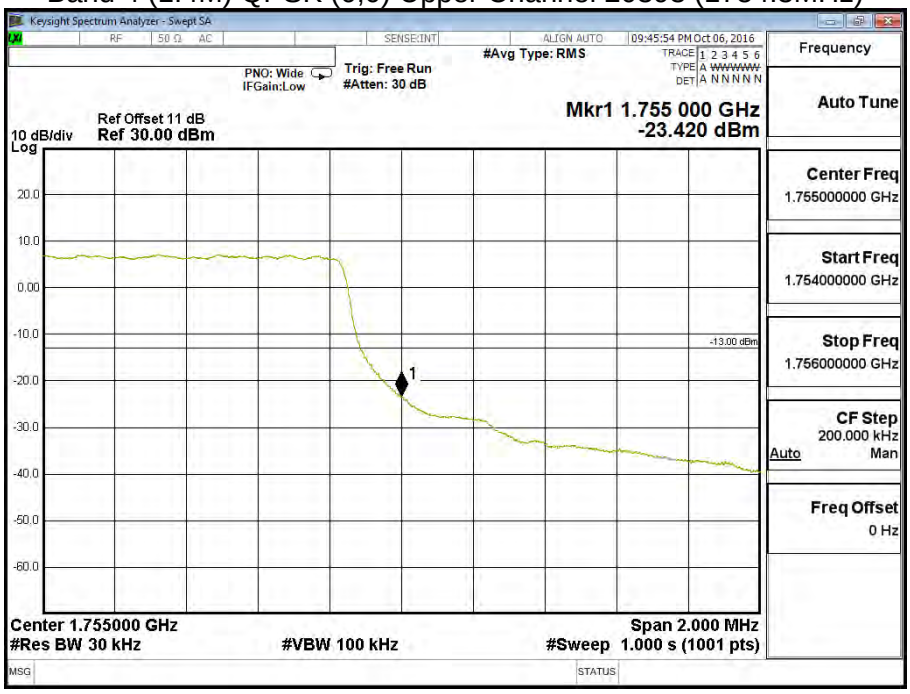
Band 4 (1.4M) QPSK (1,5) Upper Channel 20393 (1754.3MHz)



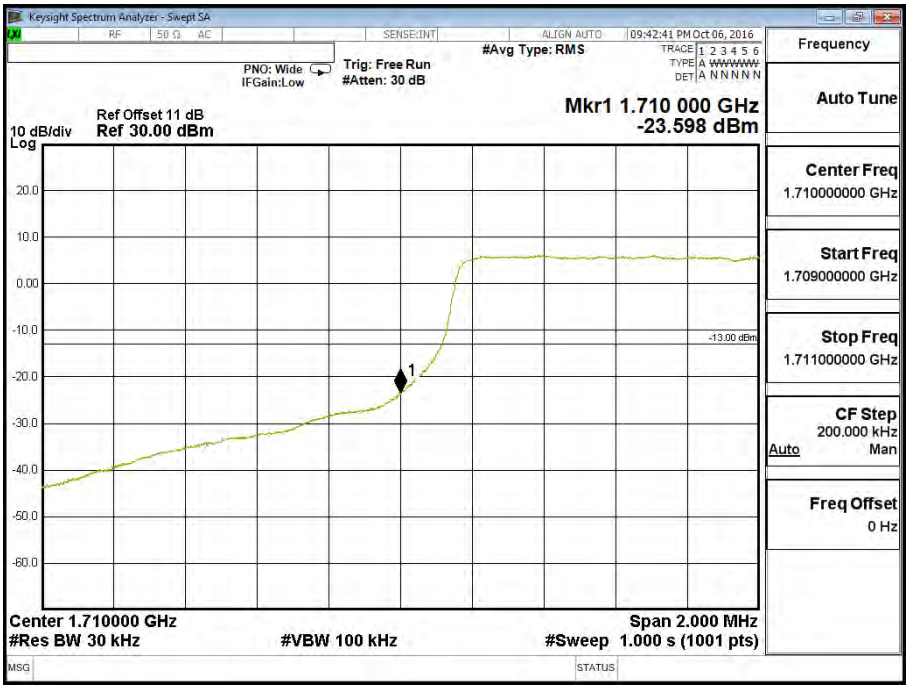
Band 4 (1.4M) QPSK (6,0) Lower Channel 19957 (1710.7MHz)



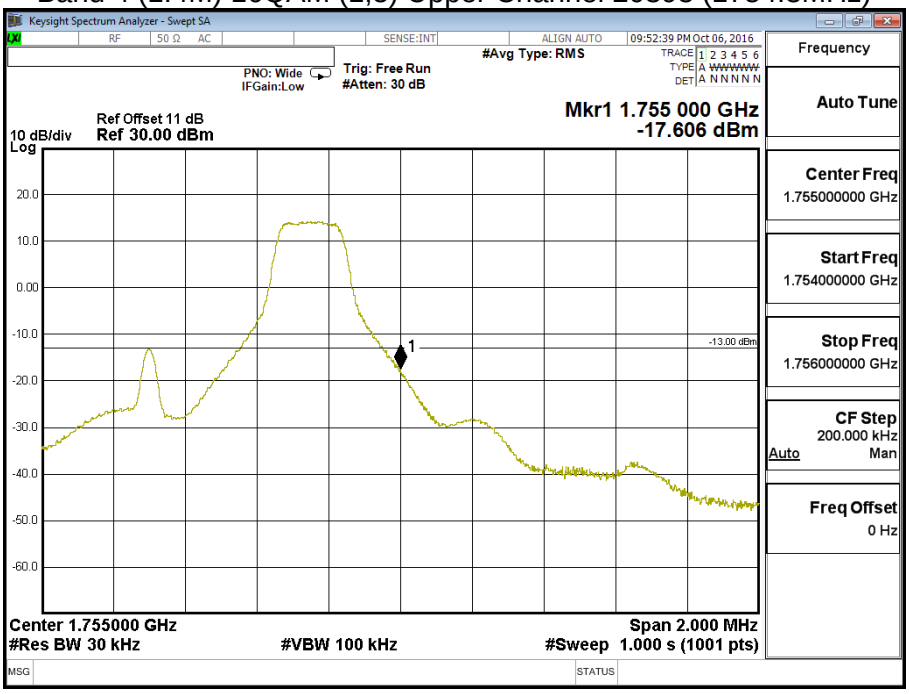
Band 4 (1.4M) QPSK (6,0) Upper Channel 20393 (1754.3MHz)



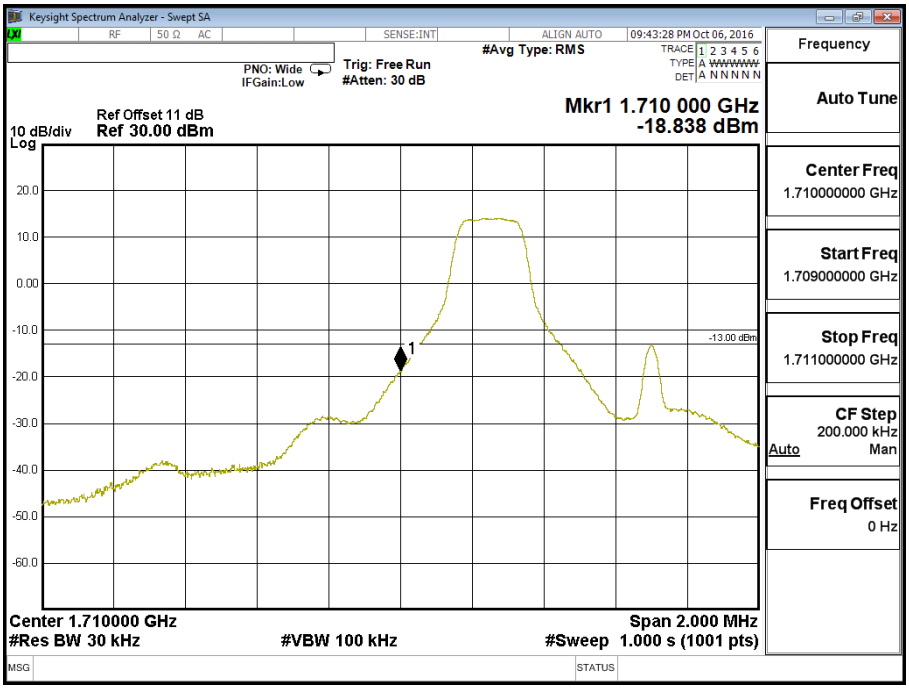
Band 4 (1.4M) 16QAM (1,0) Lower Channel 19957 (1710.7MHz)



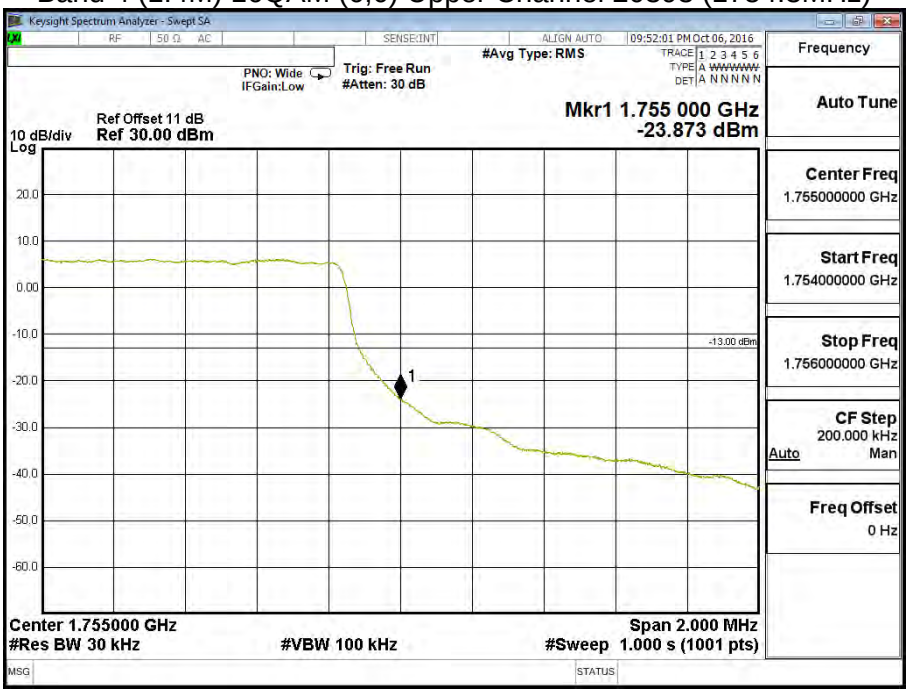
Band 4 (1.4M) 16QAM (1,5) Upper Channel 20393 (1754.3MHz)



Band 4 (1.4M) 16QAM (6,0) Lower Channel 19957 (1710.7MHz)

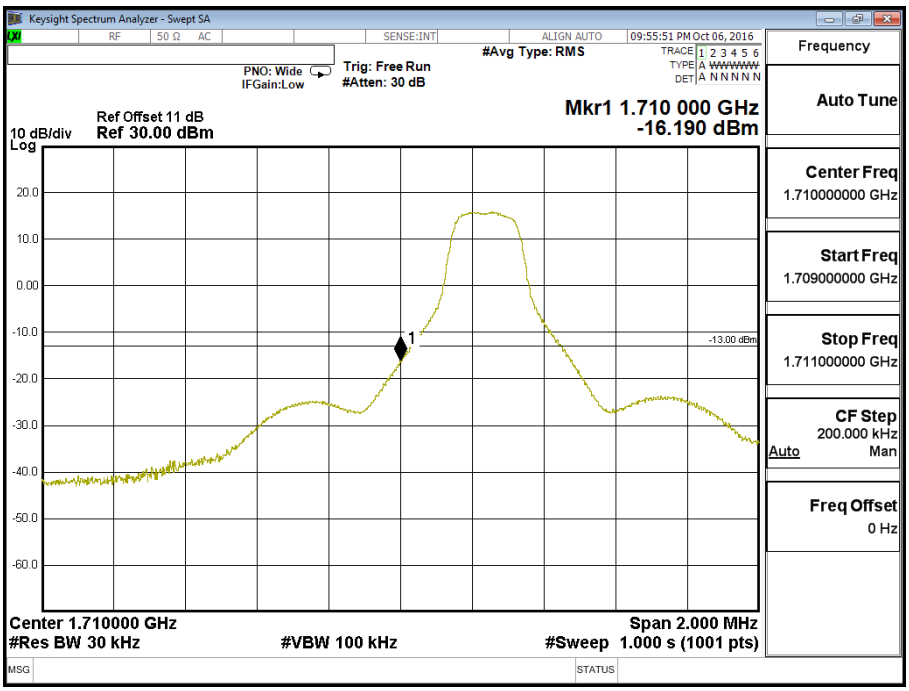


Band 4 (1.4M) 16QAM (6,0) Upper Channel 20393 (1754.3MHz)

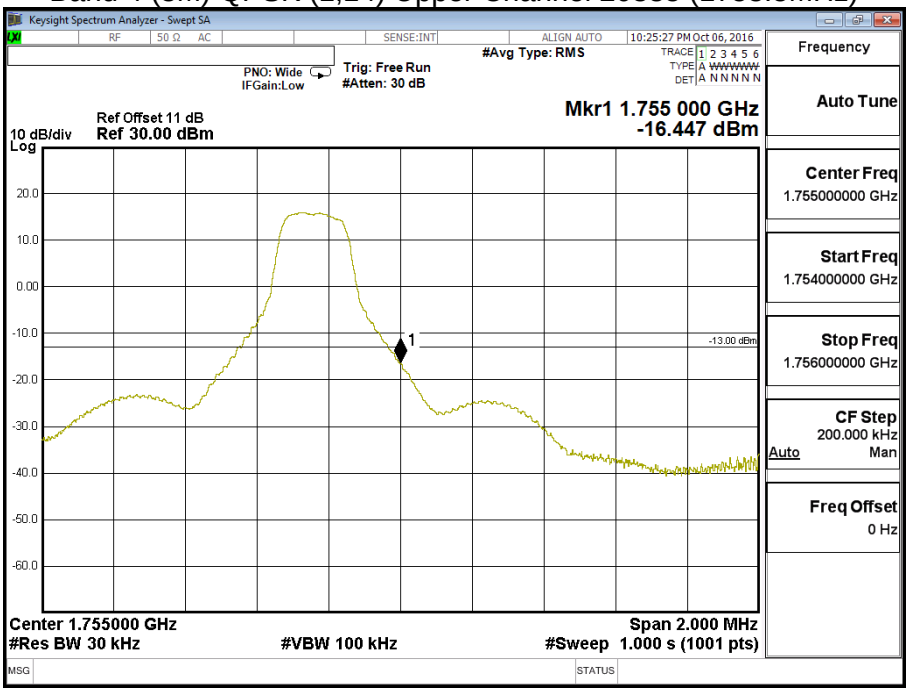


Product	Module		
Test Mode	Spurious Emission At Antenna Terminals (+/-1MHz)		
Date of Test	2016/10/07	Test Site	CTR
Test Condition	Block Edge Test (Band 4 (3M))		

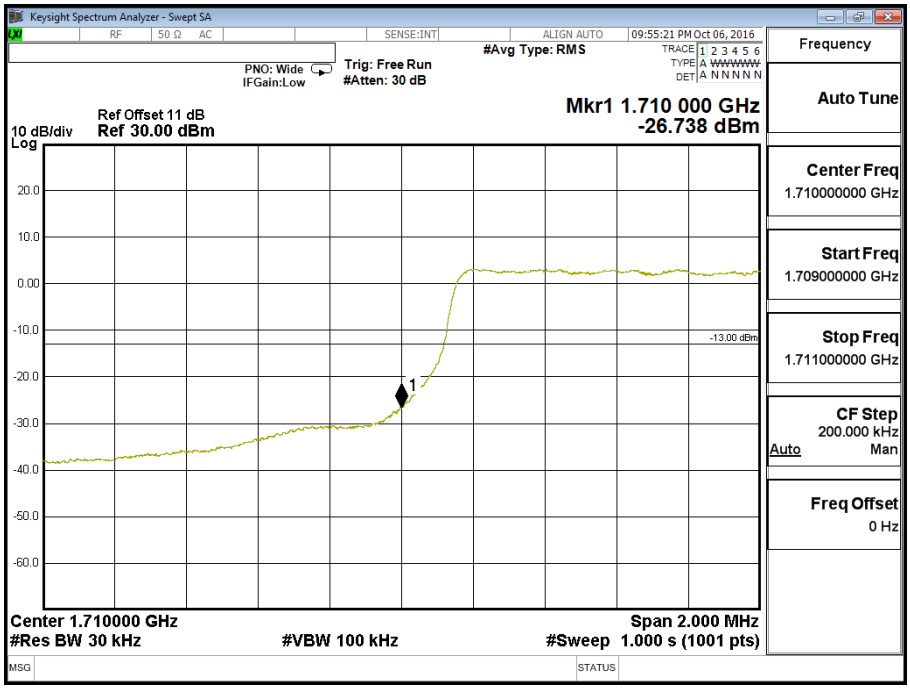
Band 4 (3M) QPSK (1,0) Lower Channel 19965 (1711.5MHz)



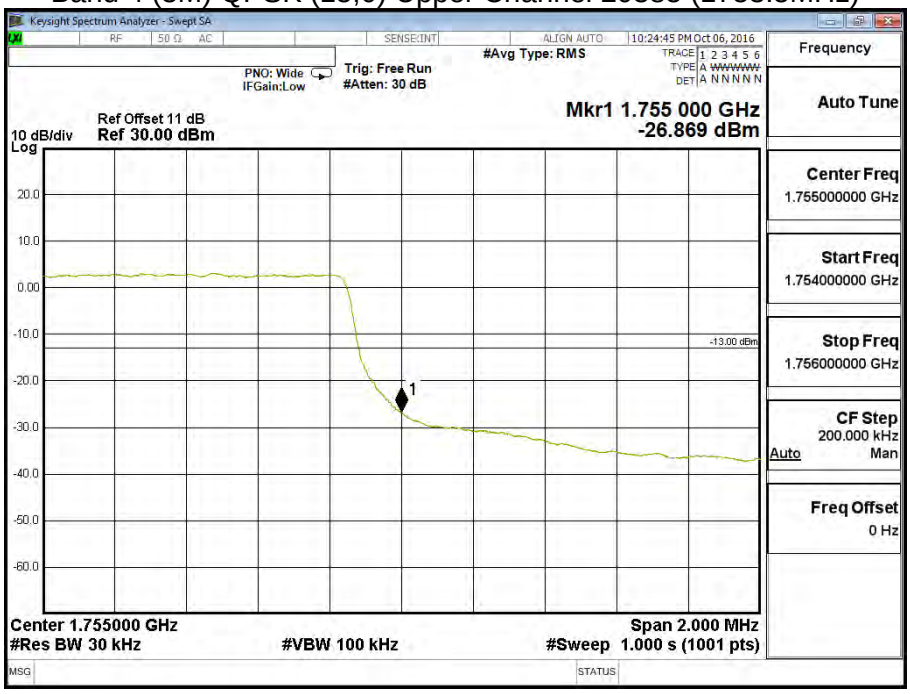
Band 4 (3M) QPSK (1,14) Upper Channel 20385 (1753.5MHz)



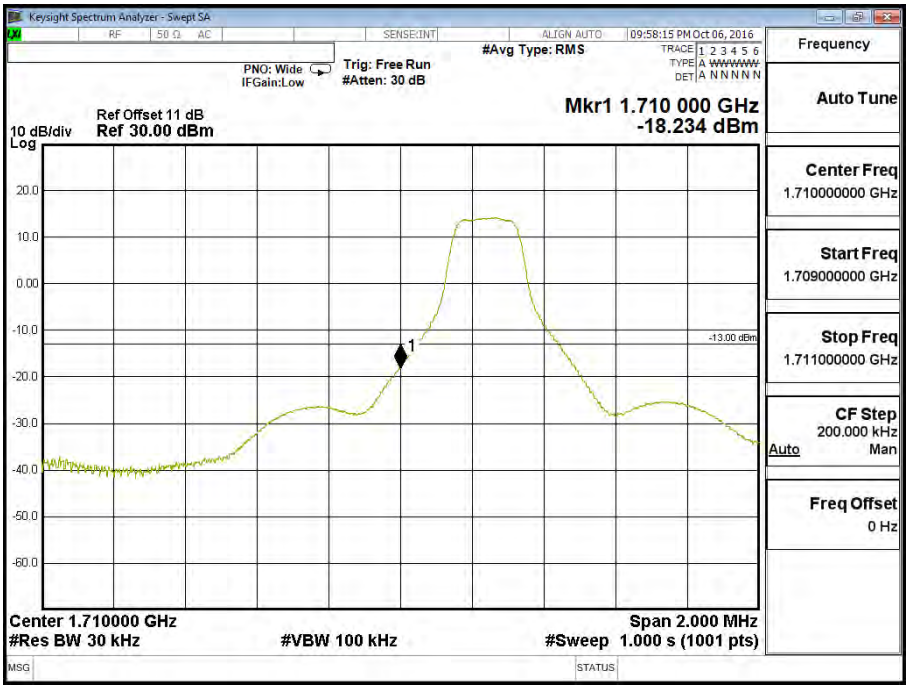
Band 4 (3M) QPSK (15,0) Lower Channel 19965 (1711.5MHz)



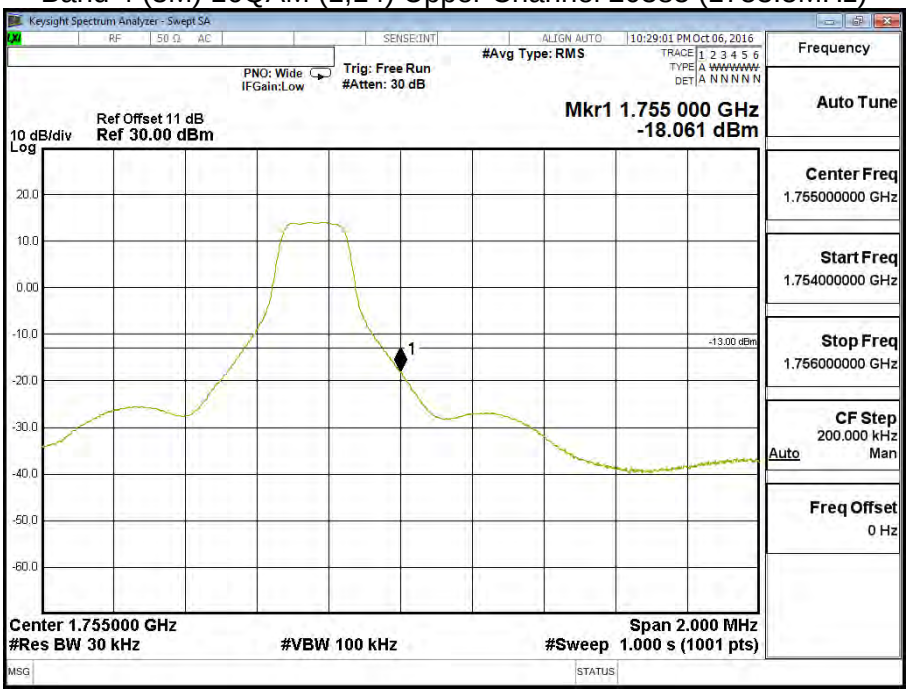
Band 4 (3M) QPSK (15,0) Upper Channel 20385 (1753.5MHz)



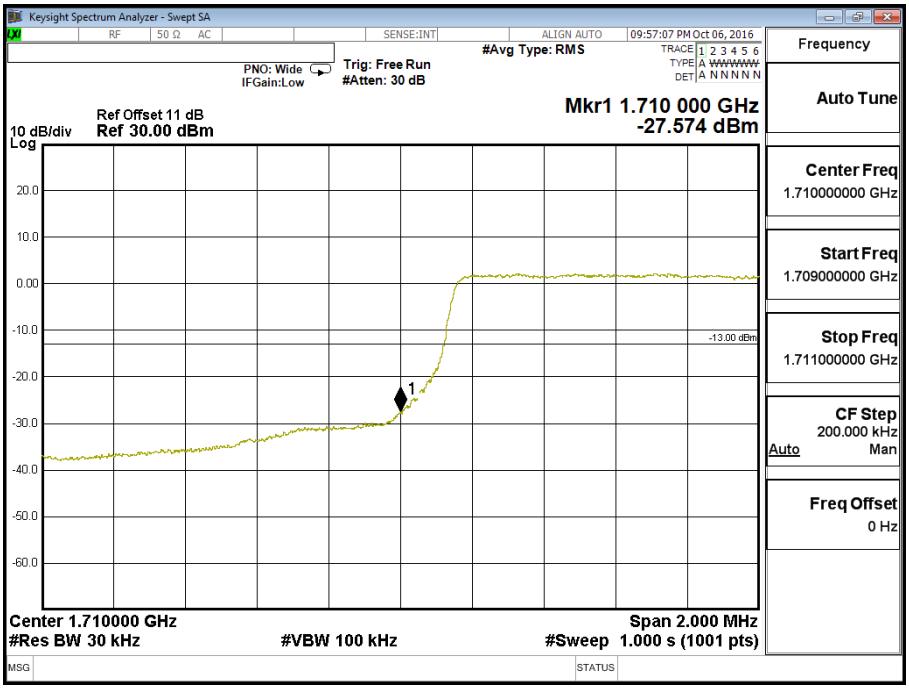
Band 4 (3M) 16QAM (1,0) Lower Channel 19965 (1711.5MHz)



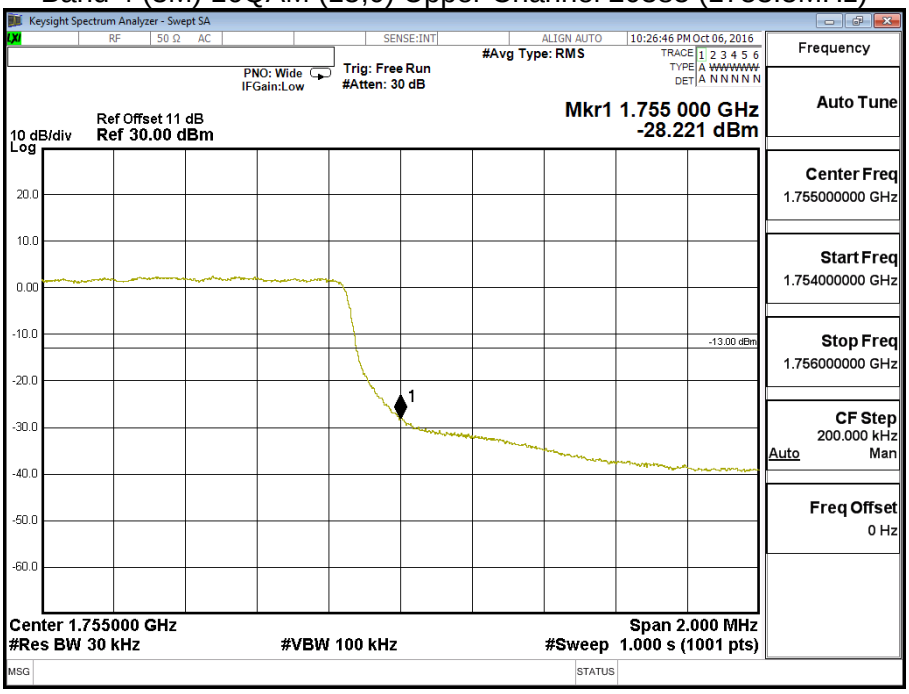
Band 4 (3M) 16QAM (1,14) Upper Channel 20385 (1753.5MHz)



Band 4 (3M) 16QAM (15,0) Lower Channel 19965 (1711.5MHz)

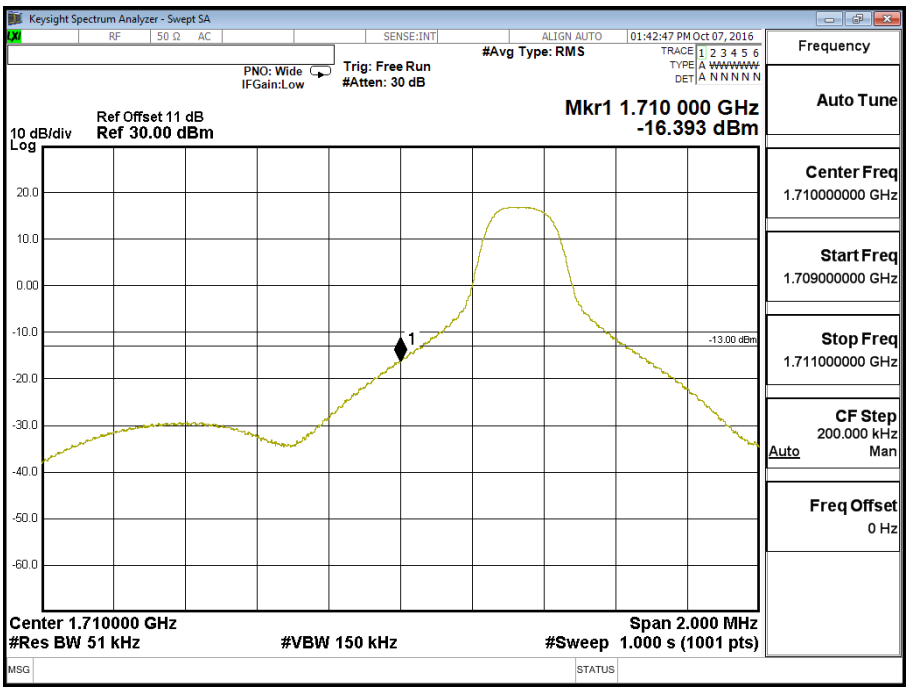


Band 4 (3M) 16QAM (15,0) Upper Channel 20385 (1753.5MHz)

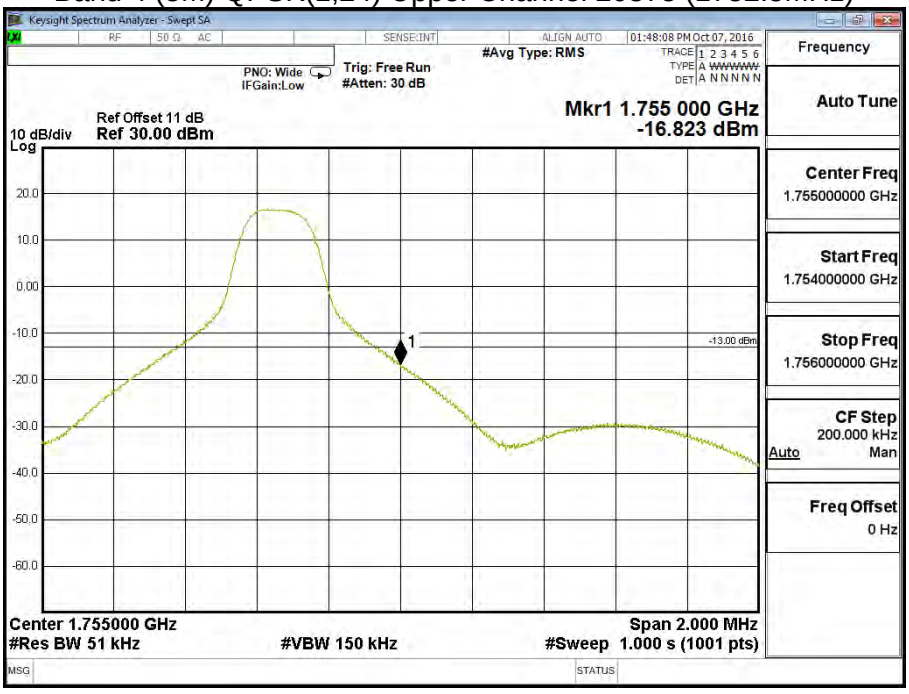


Product	Module		
Test Mode	Spurious Emission At Antenna Terminals (+/-1MHz)		
Date of Test	2016/10/07	Test Site	CTR
Test Condition	Block Edge Test (Band 4 (5M))		

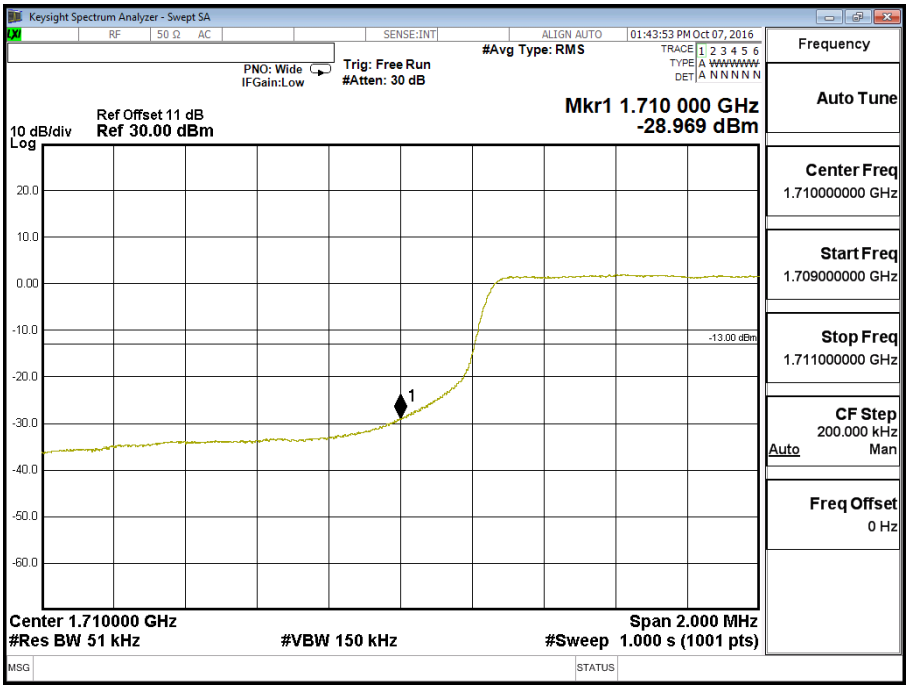
Band 4 (5M) QPSK(1,0) Lower Channel 19975 (1712.5MHz)



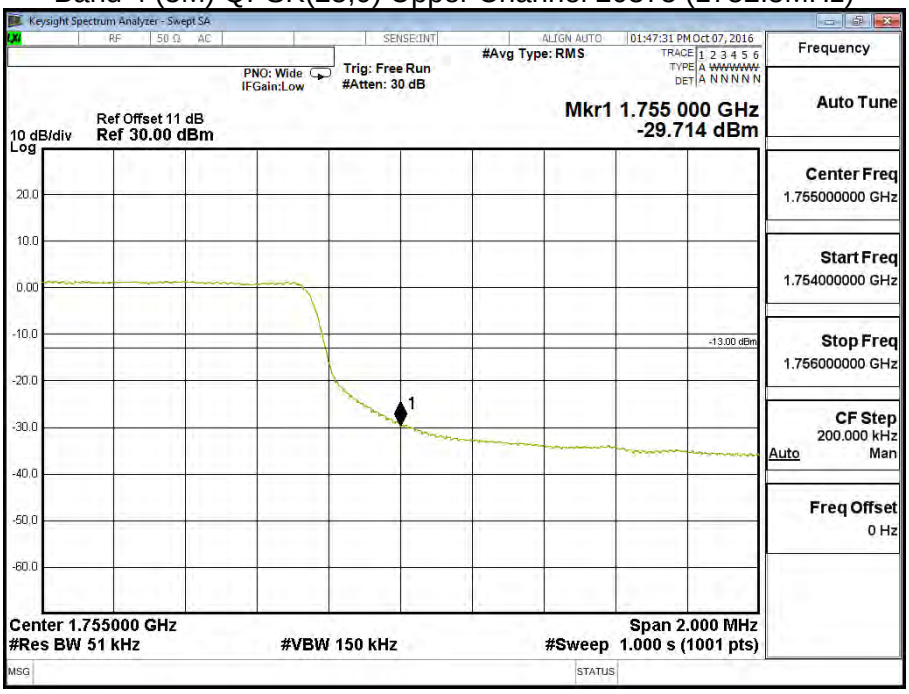
Band 4 (5M) QPSK(1,24) Upper Channel 20375 (1752.5MHz)



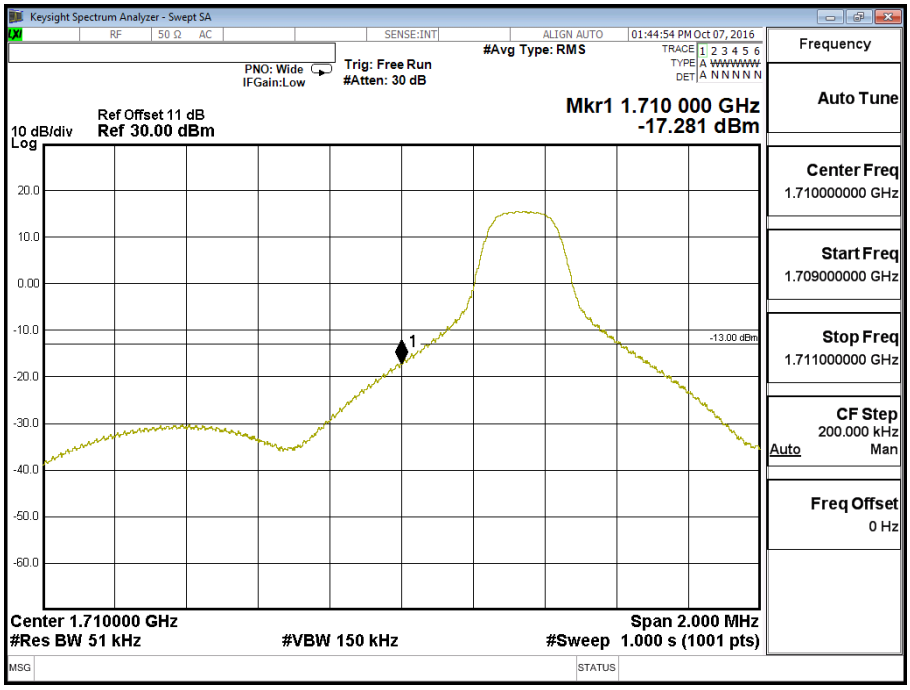
Band 4 (5M) QPSK(25,0) Lower Channel 19975 (1712.5MHz)



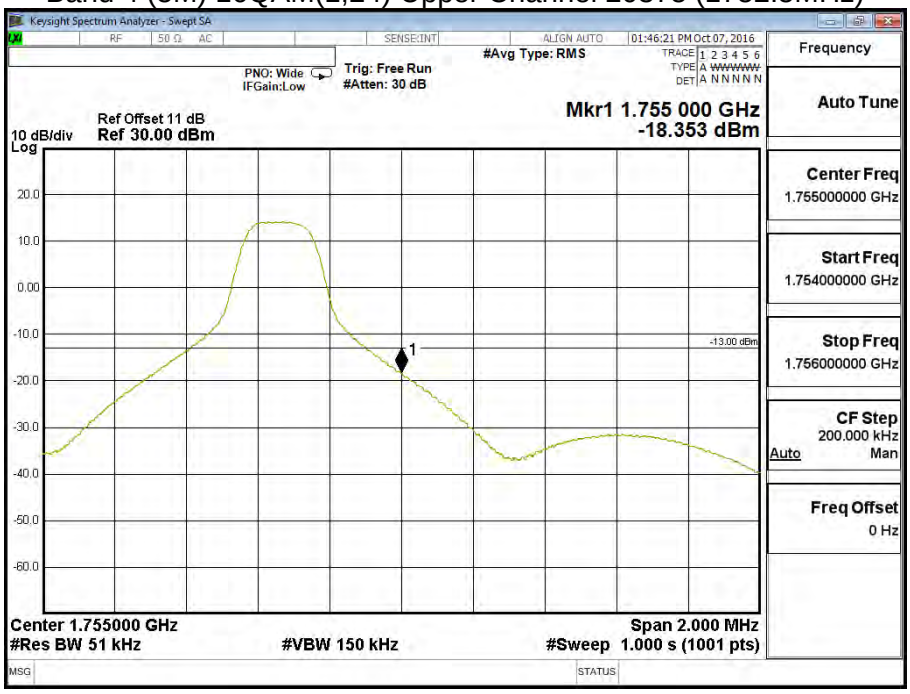
Band 4 (5M) QPSK(25,0) Upper Channel 20375 (1752.5MHz)



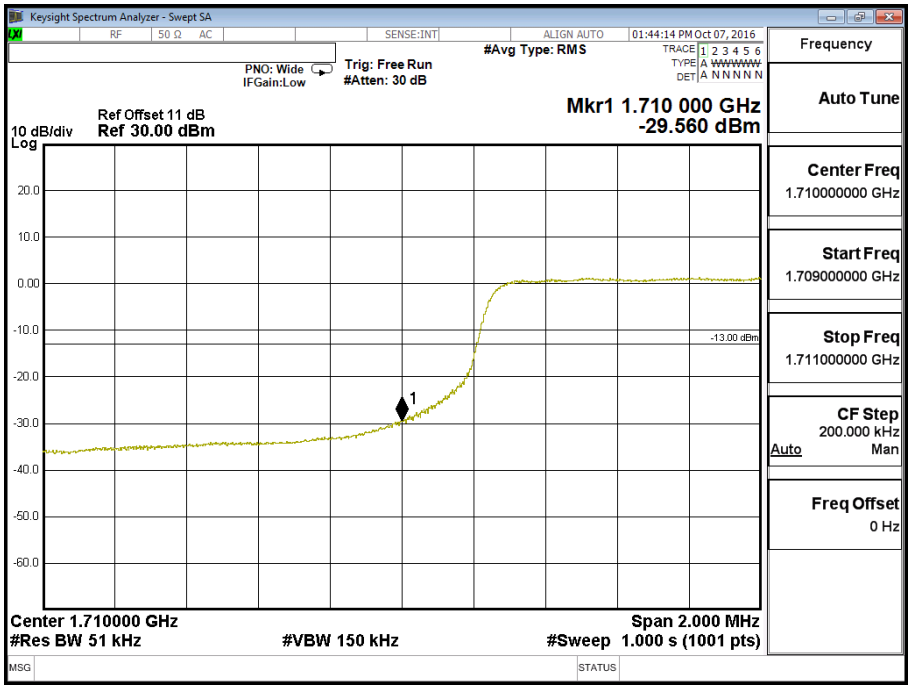
Band 4 (5M) 16QAM(1,0) Lower Channel 19975 (1712.5MHz)



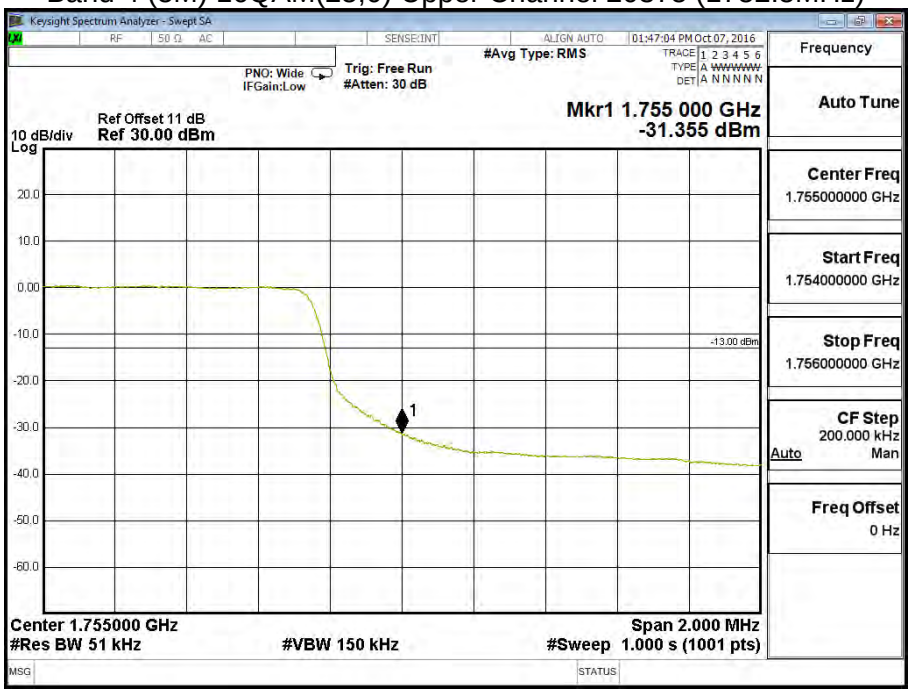
Band 4 (5M) 16QAM(1,24) Upper Channel 20375 (1752.5MHz)



Band 4 (5M) 16QAM(25,0) Lower Channel 19975 (1712.5MHz)

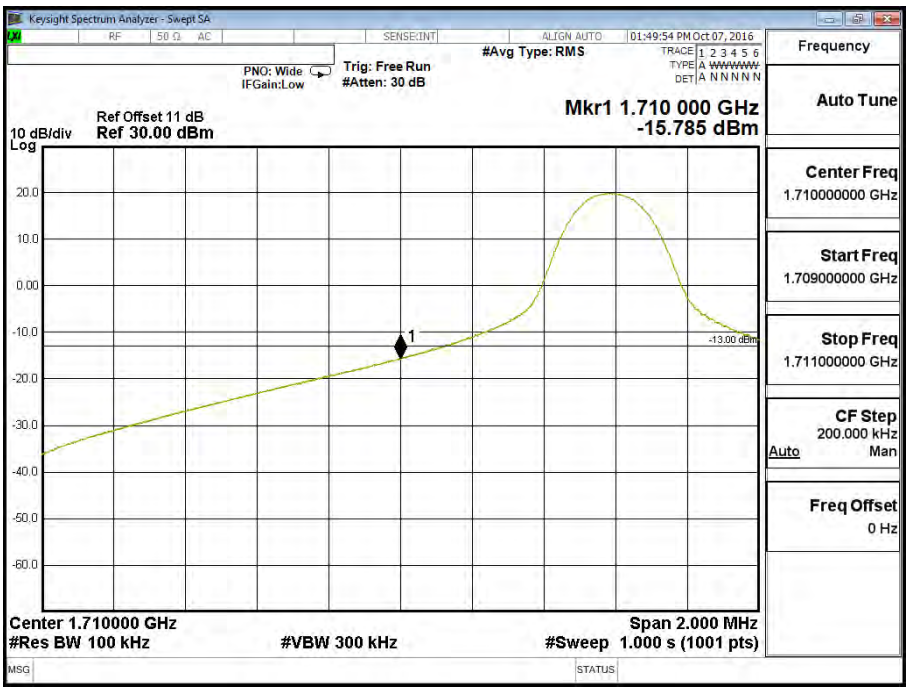


Band 4 (5M) 16QAM(25,0) Upper Channel 20375 (1752.5MHz)

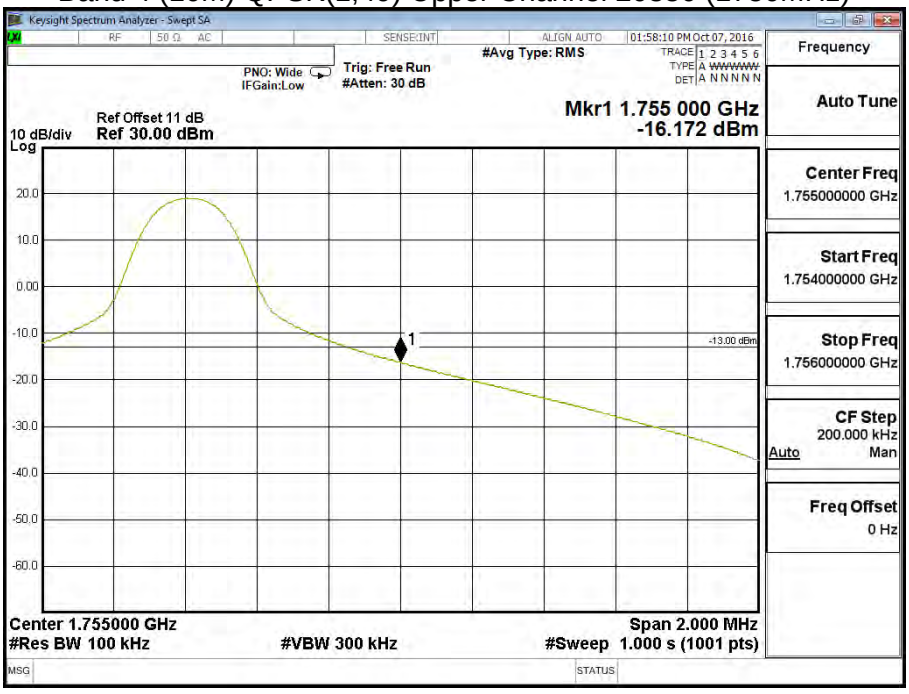


Product	Module		
Test Mode	Spurious Emission At Antenna Terminals (+/-1MHz)		
Date of Test	2016/10/07	Test Site	CTR
Test Condition	Block Edge Test (Band 4 (10M))		

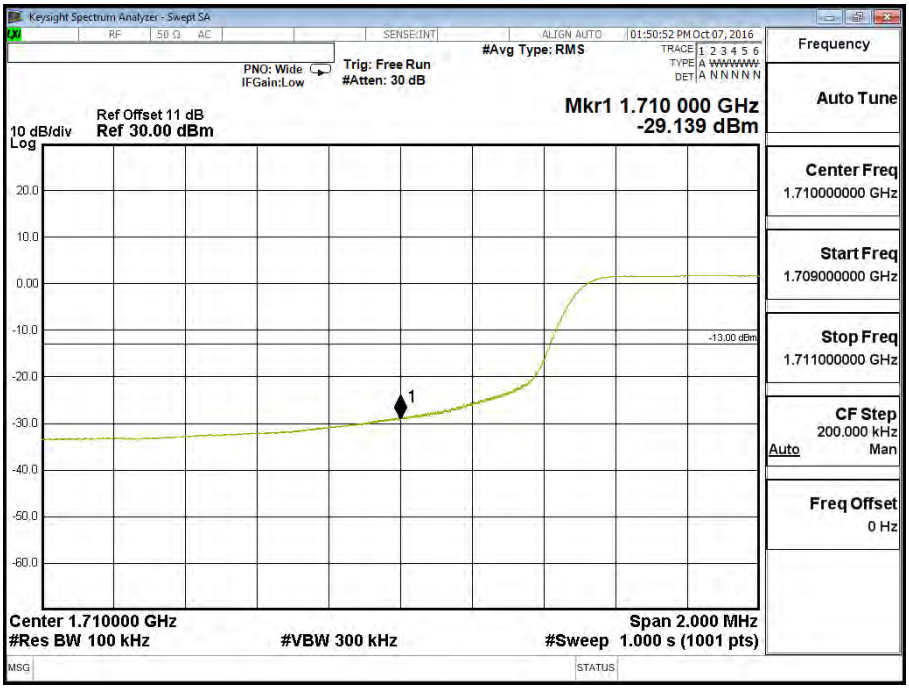
Band 4 (10M) QPSK(1,0) Lower Channel 20000 (1715MHz)



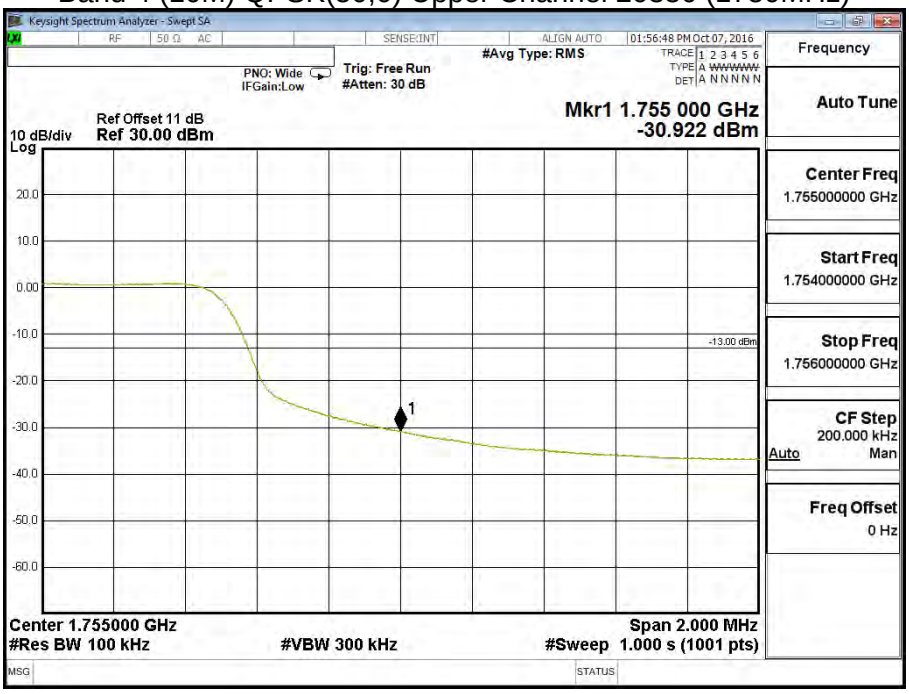
Band 4 (10M) QPSK(1,49) Upper Channel 20350 (1750MHz)



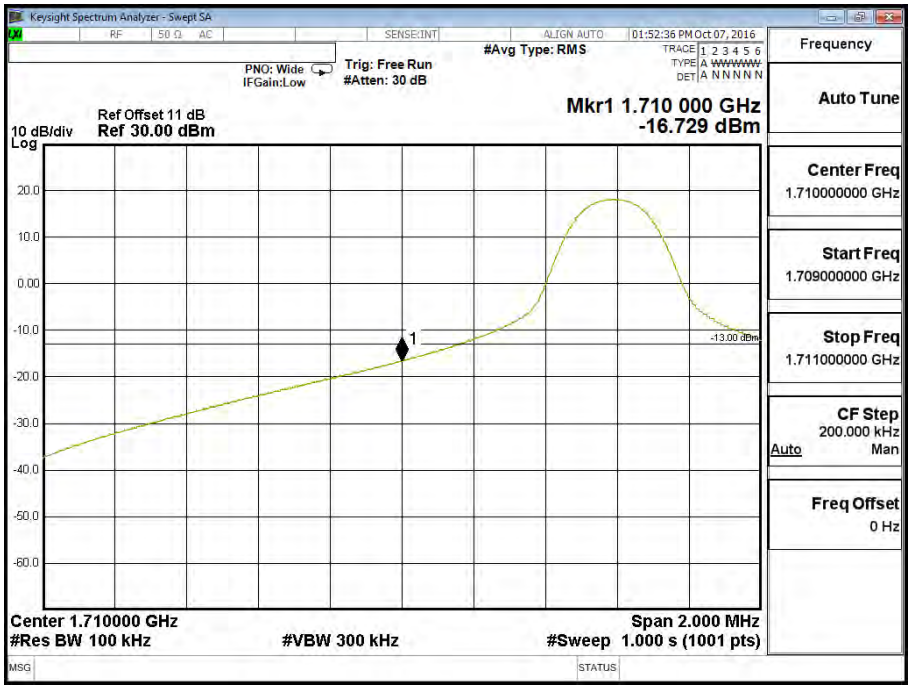
Band 4 (10M) QPSK(50,0) Lower Channel 20000 (1715MHz)



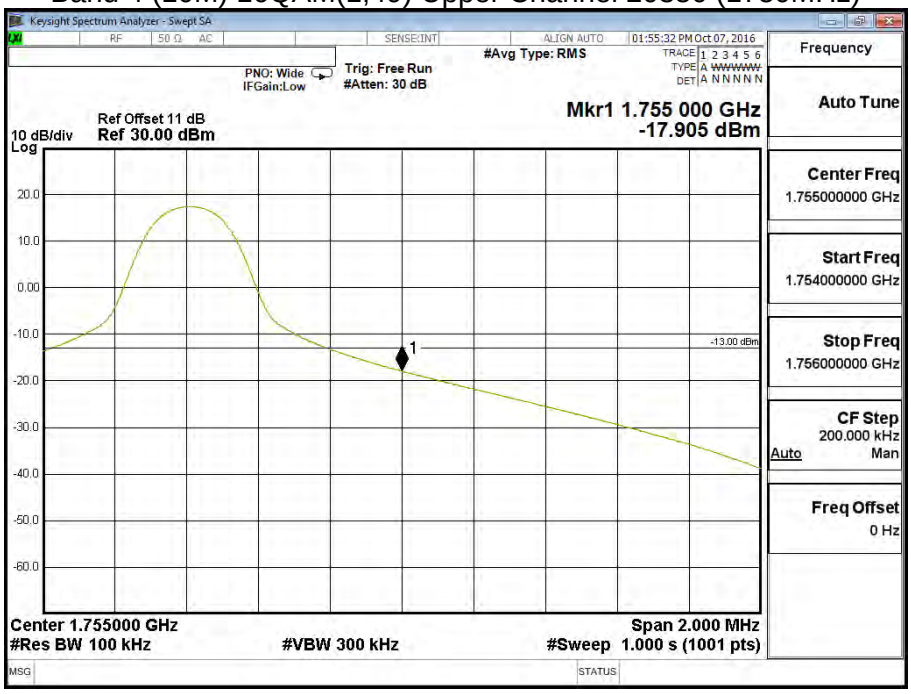
Band 4 (10M) QPSK(50,0) Upper Channel 20350 (1750MHz)



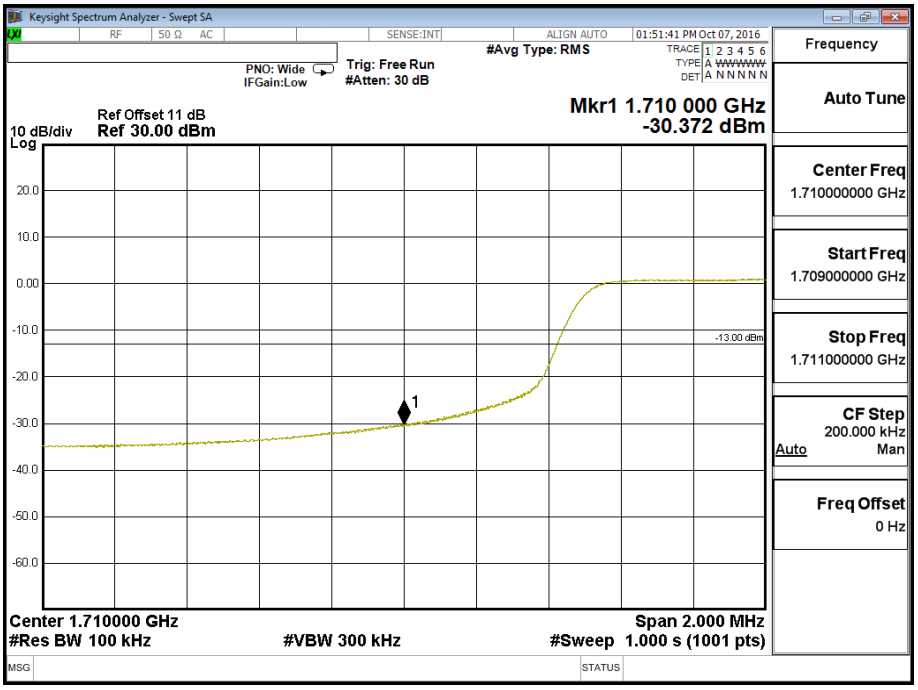
Band 4 (10M) 16QAM(1,0) Lower Channel 20000 (1715MHz)



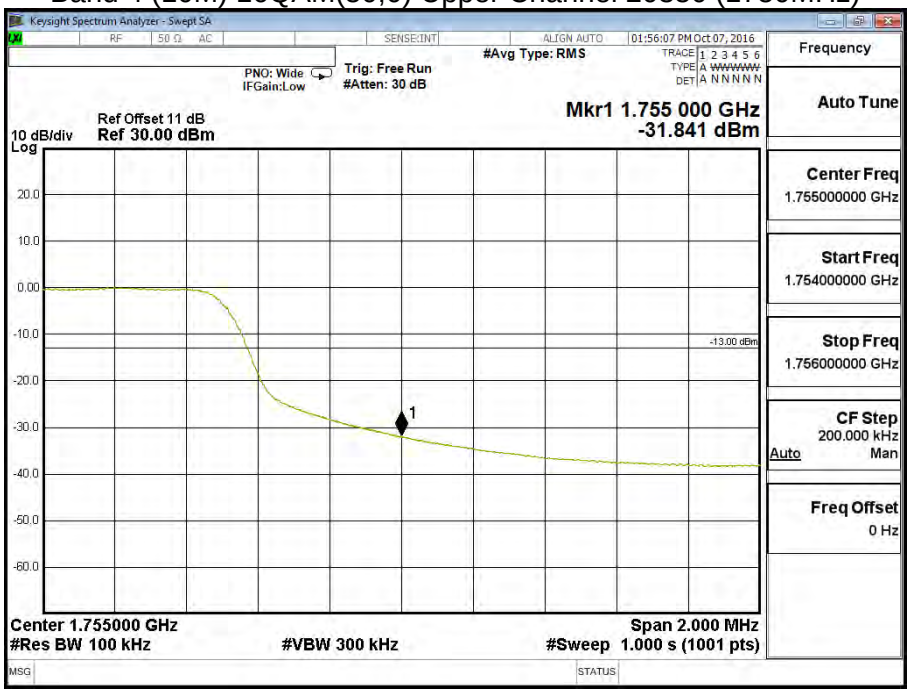
Band 4 (10M) 16QAM(1,49) Upper Channel 20350 (1750MHz)



Band 4 (10M) 16QAM(50,0) Lower Channel 20000 (1715MHz)

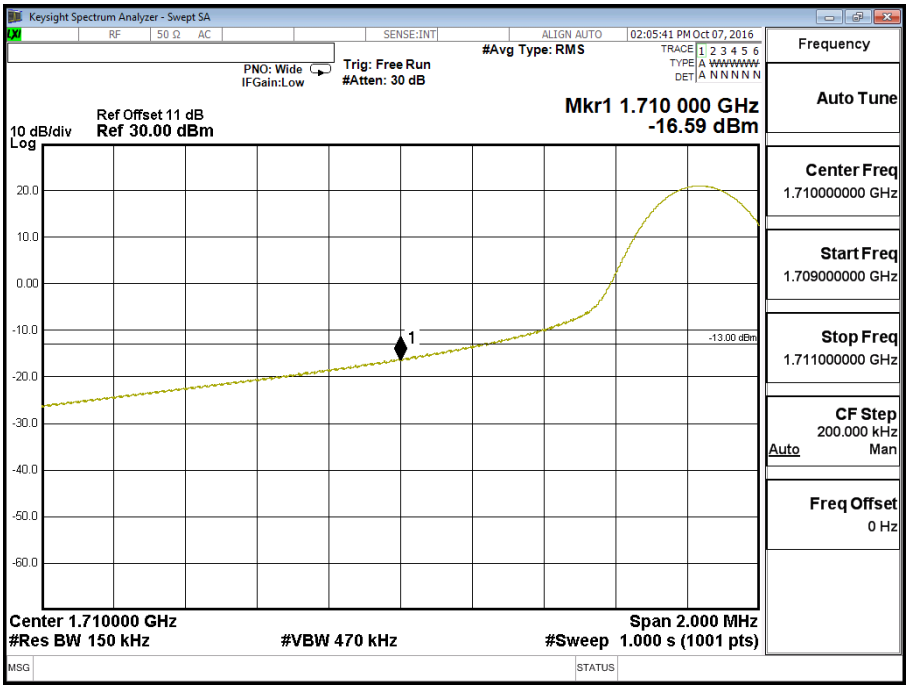


Band 4 (10M) 16QAM(50,0) Upper Channel 20350 (1750MHz)



Product	Module		
Test Mode	Spurious Emission At Antenna Terminals (+/-1MHz)		
Date of Test	2016/10/07	Test Site	CTR
Test Condition	Block Edge Test (Band 4 (15M))		

Band 4 (15M)QPSK(1,0) Lower Channel 20025 (1717.5MHz)



Band 4 (15M) QPSK(1,74) Upper Channel 20325 (1747.5MHz)