FCC Test Report

(Part 24&27)

Product Name : LTE Router

Model No : WLD71-T3

FCC ID : NKR-WLD71-T3A

Applicant : Wistron NeWeb Corporation

Address : 20 Park Avenue II, Hsinchu Science Park, Hsinchu 308, Taiwan, R.O.C.

Date of Receipt : 2016/10/28

Issued Date : 2017/03/07

Report No. : 1720437R-HPUSP40V00

Report Version : V1.0

Testing Laboratory

3023

The test results relate only to the samples tested.
The test results shown in the test report are traceable to the national/international standard through the calibration of the equipment and evaluated measurement uncertainty herein.
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Test Report

Issued Date : 2017/03/07
Report No.: 1720437R-HPUSP40V00

Product Name	:	LTE Router
Applicant	:	Wistron NeWeb Corporation
Address	:	20 Park Avenue II, Hsinchu Science Park, Hsinchu 308, Taiwan, R.O.C.
Manufacturer	:	WNC
Trade Name	:	WNC
Model No.	:	WLD71-T3
EUT Rated Voltage	:	DC 12V
EUT Test Voltage	:	AC 120V/60Hz
Measurement Standard	:	FCC CFR Title 47 Part 2 24 27
Measurement Reference	:	TIA/EIA 603-D 2010
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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Attachment 1: EUT Test Photographs
Attachment 2: EUT Detailed Photographs

1. GENERAL INFORMATION

1.1. EUT Description

Product Name	LTE Router
Model No.	WLD71-T3
Trade Name	WNC
IMEI No.	35526808
FCC ID	NKR-WLD71-T3A
Modulation	LTE Band 2 : QPSK/16-QAM
	LTE Band 4 : QPSK/16-QAM
TX Frequency	LTE Band 2: 1850 MHz ~1910 MHz
	LTE Band 4: 1710 MHz ~1755 MHz
Rx Frequency	LTE Band 2: 1930 MHz ~1990 MHz
	LTE Band 4: 2110 MHz ~2155 MHz
Bandwidth	LTE Band 2: 1.4MHz/3MHz/5MHz/10MHz/15MHz/20MHz
	LTE Band 4: 1.4MHz/3MHz/5MHz/10MHz/15MHz/20MHz
HW Version	48WLD711.0GAPAL
SW Version	AR_WLD71-T3_v2.0 MPSS:M18QW_v07.05
Antenna Type	Inverted-F Antenna (Internal Antenna) Dipole Antenna (External Antenna)

1.2. Antenna List

No	Manufacturer	Part No	Antenna Type	Peak Gain
1	WNC	3AWLD7501S1-111 (WWAN Main)	Inverted-F Antenna (Internal Antenna)	3.10 dBi for 1710-2170 MHz
2	WNC	3AWLD7501S1-111 (WWAN Diversity)	Inverted-F Antenna (Internal Antenna)	3.00 dBi for 1710-2170 MHz
3	WIESON	GY115HT0330-027 (WWAN Main)	Dipole Antenna (External Antenna)	2.16 dBi for 1710-2170 MHz
4	WIESON	GY115HT0330-027 (WWAN Diversity)	Dipole Antenna (External Antenna)	2.16 dBi for 1710-2170 MHz

1.3. Operational Description

The information contained within this report is intended to show verification of compliance of the 1700/1900MHz to the requirements of FCC 47 CFR Part 2, 24, 27

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

DEKRA 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:

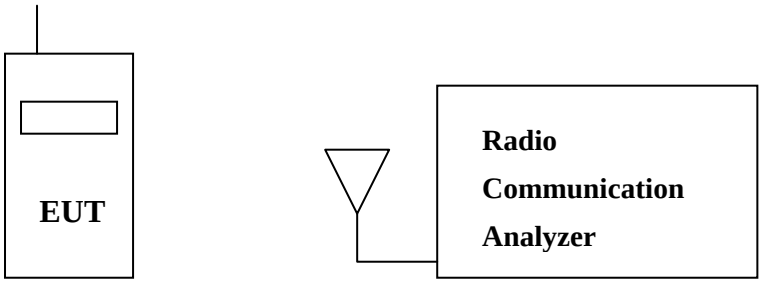
Test Mode:	LTE Band 2 (1.4M)-QPSK/16QAM
	LTE Band 2 (3M)-QPSK/16QAM
	LTE Band 2 (5M)-QPSK/16QAM
	LTE Band 2 (10M)-QPSK/16QAM
	LTE Band 2 (15M)-QPSK/16QAM
	LTE Band 2 (20M)-QPSK/16QAM
	LTE Band 4 (1.4M)-QPSK/16QAM
	LTE Band 4 (3M)-QPSK/16QAM
	LTE Band 4 (5M)-QPSK/16QAM
	LTE Band 4 (10M)-QPSK/16QAM
	LTE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

Note :

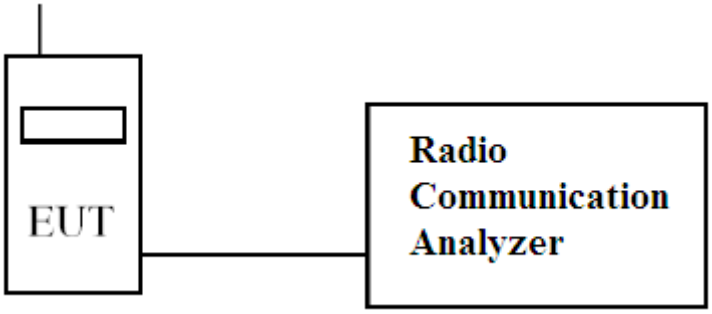
The maximum power levels are chosen in the LTE Band 2/4, only these modes were used for all tests.

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	22.7
Humidity (%RH)	25-75	48
Barometric pressure (mbar)	860-1060	982

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

Site Name: DEKRA Testing and Certification Co., Ltd

Lin Kou 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 : info.tw@dekra.com

FCC Accreditation Number: TW1014

1.7. Type of Emission

Band	Bandwidth (MHz)	Modulation	
		QPSK	16QAM
2	1.4	1M10G7D	1M09W7D
2	3	2M73G7D	2M72W7D
2	5	4M51G7D	4M49W7D
2	10	9M01G7D	9M01W7D
2	15	13M4G7D	13M4W7D
2	20	18M4G7D	18M4W7D
4	1.4	1M10G7D	1M09W7D
4	3	2M73G7D	2M72W7D
4	5	4M50G7D	4M49W7D
4	10	9M03G7D	9M02W7D
4	15	13M4G7D	13M4W7D
4	20	18M5G7D	18M4W7D

1.8. Voltages and DC currents

LTE Band 2 (1.4M)	EUT Transmitting (in maximum power) :	AC voltage : 120V , AC current : 0.078A
	EUT Standby :	AC voltage : 120V , AC current : 0.030A
LTE Band 2 (3M)	EUT Transmitting (in maximum power) :	AC voltage : 120V , AC current : 0.079A
	EUT Standby :	AC voltage : 120V , AC current : 0.031A
LTE Band 2 (5M)	EUT Transmitting (in maximum power) :	AC voltage : 120V , AC current : 0.080A
	EUT Standby :	AC voltage : 120V , AC current : 0.031A
LTE Band 2 (10M)	EUT Transmitting (in maximum power) :	AC voltage : 120V , AC current : 0.082A
	EUT Standby :	AC voltage : 120V , AC current : 0.032A
LTE Band 2 (15M)	EUT Transmitting (in maximum power) :	AC voltage : 120V , AC current : 0.092A
	EUT Standby :	AC voltage : 120V , AC current : 0.030A
LTE Band 2 (20M)	EUT Transmitting (in maximum power) :	AC voltage : 120V , AC current : 0.091A
	EUT Standby :	AC voltage : 120V , AC current : 0.032A
LTE Band 4 (1.4M)	EUT Transmitting (in maximum power) :	AC voltage : 120V , AC current : 0.079A
	EUT Standby :	AC voltage : 120V , AC current : 0.031A
LTE Band 4 (3M)	EUT Transmitting (in maximum power) :	AC voltage : 120V , AC current : 0.082A
	EUT Standby :	AC voltage : 120V , AC current : 0.030A
LTE Band 4 (5M)	EUT Transmitting (in maximum power) :	AC voltage : 120V , AC current : 0.083A
	EUT Standby :	AC voltage : 120V , AC current : 0.033A
LTE Band 4 (10M)	EUT Transmitting (in maximum power) :	AC voltage : 120V , AC current : 0.082A
	EUT Standby :	AC voltage : 120V , AC current : 0.032A
LTE Band 4 (15M)	EUT Transmitting (in maximum power) :	AC voltage : 120V , AC current : 0.090A
	EUT Standby :	AC voltage : 120V , AC current : 0.030A
LTE Band 4 (20M)	EUT Transmitting (in maximum power) :	AC voltage : 120V , AC current : 0.089A
	EUT Standby :	AC voltage : 120V , AC current : 0.030A

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	2016/12/04
Directional coupler	Agilent	778D-012	50550	2016/11/08
Standard Temperature & Humidity Chamber	WIT	TH-1S-B	EQ-201-00146	2016/11/28
DC power supply	Agilent	E3610A	MY40009845	2016/07/14
Communication Tester	R&S	CMU200	104846	2016/07/07

Radiated / Site3

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
Bilog Antenna	Schaffner Chase	CBL6112B	2707	2016/05/25
Horn Antenna	R&S	9120D	867	2016/04/14
Pre-Amplifier	Agilent	87405C	MY47010653	2016/08/11
Spectrum Analyzer	Agilent	N9010A	MY54510357	2016/04/13
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)

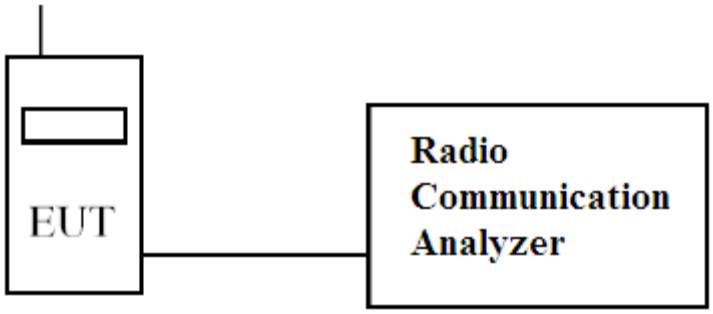
The measurement uncertainty of confidence of 95% is evaluated as ± 4.08 dB

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

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)	Antenna Gain (dBi)	EIRP Power (W)
Band 2 (1900MHz)/1.4MHz	18607	QPSK	1	#0	0	23.17	3.1	0.424
			1	#Mid	0	**23.26**	3.1	**0.433**
			1	#Max	0	23.19	3.1	0.426
			50%	#0	0	23.16	3.1	0.423
			50%	#Mid	0	23.22	3.1	0.429
			50%	#Max	0	23.24	3.1	0.431
			100%	--	1	22.21	3.1	0.340
		16QAM	1	#0	1	22.24	3.1	0.342
			1	#Mid	1	22.15	3.1	0.335
			1	#Max	1	22.10	3.1	0.331
			50%	#0	1	22.23	3.1	0.341
			50%	#Mid	1	22.34	3.1	0.350
			50%	#Max	1	**22.44**	3.1	**0.358**
			100%	--	2	21.31	3.1	0.276
	18900	QPSK	1	#0	0	23.02	3.1	0.409
			1	#Mid	0	23.11	3.1	0.418
			1	#Max	0	23.02	3.1	0.409
			50%	#0	0	**23.12**	3.1	**0.419**
			50%	#Mid	0	23.08	3.1	0.415
			50%	#Max	0	23.12	3.1	0.419
			100%	--	1	22.06	3.1	0.328
		16QAM	1	#0	1	22.04	3.1	0.327
			1	#Mid	1	21.97	3.1	0.321
			1	#Max	1	22.06	3.1	0.328
			50%	#0	1	22.07	3.1	0.329
			50%	#Mid	1	22.13	3.1	**0.333**
			50%	#Max	1	22.08	3.1	0.330
			100%	--	2	20.96	3.1	0.255
	19193	QPSK	1	#0	0	23.15	3.1	0.422
			1	#Mid	0	**23.23**	3.1	**0.430**
			1	#Max	0	22.94	3.1	0.402
			50%	#0	0	23.20	3.1	0.427
			50%	#Mid	0	23.11	3.1	0.418
			50%	#Max	0	23.16	3.1	0.423
			100%	--	1	22.15	3.1	0.335
		16QAM	1	#0	1	22.13	3.1	0.333
			1	#Mid	1	22.10	3.1	0.331
			1	#Max	1	22.12	3.1	0.333
			50%	#0	1	22.13	3.1	0.333
			50%	#Mid	1	22.10	3.1	0.331
			50%	#Max	1	**22.17**	3.1	**0.337**
			100%	--	2	21.01	3.1	0.258

EIRP Power(W)= Conducted Power + Antenna Gain

Band	Channel	Modula-tion	RB No.	RB Offset	MPR	Max Power (Conducted)	Antenna Gain (dBi)	EIRP Power (W)
Band 2 (1900MHz)/3MHz	18615	QPSK	1	#0	0	22.81	3.1	0.390
			1	#Mid	0	23.07	3.1	0.414
			1	#Max	0	**23.24**	3.1	**0.431**
			50%	#0	1	22.21	3.1	0.340
			50%	#Mid	1	22.30	3.1	0.347
			50%	#Max	1	22.39	3.1	0.354
			100%	--	1	22.40	3.1	0.355
		16QAM	1	#0	1	**22.43**	3.1	**0.357**
			1	#Mid	1	22.42	3.1	0.356
			1	#Max	1	22.38	3.1	0.353
			50%	#0	2	21.04	3.1	0.259
			50%	#Mid	2	21.05	3.1	0.260
			50%	#Max	2	21.13	3.1	0.265
			100%	--	2	21.06	3.1	0.261
	18900	QPSK	1	#0	0	22.98	3.1	0.406
			1	#Mid	0	**23.12**	3.1	**0.419**
			1	#Max	0	23.08	3.1	0.415
			50%	#0	1	22.09	3.1	0.330
			50%	#Mid	1	22.17	3.1	0.337
			50%	#Max	1	22.10	3.1	0.331
			100%	--	1	22.07	3.1	0.329
		16QAM	1	#0	1	21.90	3.1	0.316
			1	#Mid	1	**22.34**	3.1	**0.350**
			1	#Max	1	22.04	3.1	0.327
			50%	#0	2	20.95	3.1	0.254
			50%	#Mid	2	21.14	3.1	0.265
			50%	#Max	2	20.98	3.1	0.256
			100%	--	2	21.02	3.1	0.258
	19185	QPSK	1	#0	0	22.98	3.1	0.406
			1	#Mid	0	**23.22**	3.1	**0.429**
			1	#Max	0	22.85	3.1	0.394
			50%	#0	1	22.16	3.1	0.336
			50%	#Mid	1	22.24	3.1	0.342
			50%	#Max	1	22.19	3.1	0.338
			100%	--	1	22.20	3.1	0.339
		16QAM	1	#0	1	**22.12**	3.1	**0.333**
			1	#Mid	1	21.72	3.1	0.303
			1	#Max	1	22.06	3.1	0.328
			50%	#0	2	21.15	3.1	0.266
			50%	#Mid	2	21.08	3.1	0.262
			50%	#Max	2	21.31	3.1	0.276
			100%	--	2	21.00	3.1	0.257
EIRP Power(W)= Conducted Power + Antenna Gain								

Band	Channel	Modula-tion	RB No.	RB Offset	MPR	Max Power (Conducted)	Antenna Gain (dBi)	EIRP Power (W)
Band 2 (1900MHz)/5MHz	18625	QPSK	1	#0	0	23.13	3.1	0.420
			1	#Mid	0	**23.35**	3.1	**0.442**
			1	#Max	0	22.87	3.1	0.395
			50%	#0	1	22.18	3.1	0.337
			50%	#Mid	1	22.32	3.1	0.348
			50%	#Max	1	22.21	3.1	0.340
			100%	--	1	22.18	3.1	0.337
		16QAM	1	#0	1	21.95	3.1	0.320
			1	#Mid	1	**22.14**	3.1	**0.334**
			1	#Max	1	21.97	3.1	0.321
			50%	#0	2	21.36	3.1	0.279
			50%	#Mid	2	21.14	3.1	0.265
			50%	#Max	2	21.32	3.1	0.277
			100%	--	2	21.28	3.1	0.274
	18900	QPSK	1	#0	0	23.09	3.1	0.416
			1	#Mid	0	**23.15**	3.1	**0.422**
			1	#Max	0	23.01	3.1	0.408
			50%	#0	1	22.16	3.1	0.336
			50%	#Mid	1	22.27	3.1	0.344
			50%	#Max	1	22.11	3.1	0.332
			100%	--	1	22.08	3.1	0.330
		16QAM	1	#0	1	21.90	3.1	0.316
			1	#Mid	1	**22.19**	3.1	**0.338**
			1	#Max	1	21.76	3.1	0.306
			50%	#0	2	20.89	3.1	0.251
			50%	#Mid	2	20.91	3.1	0.252
			50%	#Max	2	21.08	3.1	0.262
			100%	--	2	21.02	3.1	0.258
	19175	QPSK	1	#0	0	22.78	3.1	0.387
			1	#Mid	0	**23.29**	3.1	**0.436**
			1	#Max	0	22.65	3.1	0.376
			50%	#0	1	22.10	3.1	0.331
			50%	#Mid	1	22.06	3.1	0.328
			50%	#Max	1	21.99	3.1	0.323
			100%	--	1	22.00	3.1	0.324
		16QAM	1	#0	1	**21.86**	3.1	**0.313**
			1	#Mid	1	21.70	3.1	0.302
			1	#Max	1	21.49	3.1	0.288
			50%	#0	2	20.77	3.1	0.244
			50%	#Mid	2	21.03	3.1	0.259
			50%	#Max	2	20.88	3.1	0.250
			100%	--	2	20.86	3.1	0.249
EIRP Power(W)= Conducted Power + Antenna Gain								

Band	Channel	Modula-tion	RB No.	RB Offset	MPR	Max Power (Conducted)	Antenna Gain (dBi)	EIRP Power (W)
Band 2 (1900MHz)/10MHz	18650	QPSK	1	#0	0	22.92	3.1	0.400
			1	#Mid	0	**23.26**	3.1	**0.433**
			1	#Max	0	22.92	3.1	0.400
			50%	#0	1	22.30	3.1	0.347
			50%	#Mid	1	22.28	3.1	0.345
			50%	#Max	1	22.08	3.1	0.330
			100%	--	1	22.13	3.1	0.333
		16QAM	1	#0	1	21.61	3.1	0.296
			1	#Mid	1	**22.15**	3.1	**0.335**
			1	#Max	1	21.94	3.1	0.319
			50%	#0	2	21.27	3.1	0.274
			50%	#Mid	2	21.27	3.1	0.274
			50%	#Max	2	21.21	3.1	0.270
			100%	--	2	21.31	3.1	0.276
	18900	QPSK	1	#0	0	22.85	3.1	0.394
			1	#Mid	0	**23.19**	3.1	**0.426**
			1	#Max	0	23.03	3.1	0.410
			50%	#0	1	22.25	3.1	0.343
			50%	#Mid	1	22.25	3.1	0.343
			50%	#Max	1	22.04	3.1	0.327
			100%	--	1	22.14	3.1	0.334
		16QAM	1	#0	1	22.03	3.1	0.326
			1	#Mid	1	**22.21**	3.1	**0.340**
			1	#Max	1	21.89	3.1	0.316
			50%	#0	2	21.07	3.1	0.261
			50%	#Mid	2	21.24	3.1	0.272
			50%	#Max	2	21.07	3.1	0.261
			100%	--	2	21.04	3.1	0.259
	19150	QPSK	1	#0	0	23.01	3.1	0.408
			1	#Mid	0	**23.09**	3.1	**0.416**
			1	#Max	0	22.90	3.1	0.398
			50%	#0	1	22.10	3.1	0.331
			50%	#Mid	1	22.13	3.1	0.333
			50%	#Max	1	22.05	3.1	0.327
			100%	--	1	22.08	3.1	0.330
		16QAM	1	#0	1	21.65	3.1	0.299
			1	#Mid	1	**22.04**	3.1	**0.327**
			1	#Max	1	21.84	3.1	0.312
			50%	#0	2	21.23	3.1	0.271
			50%	#Mid	2	21.25	3.1	0.272
			50%	#Max	2	21.10	3.1	0.263
			100%	--	2	21.22	3.1	0.270
EIRP Power(W)= Conducted Power + Antenna Gain								

Band	Channel	Modula-tion	RB No.	RB Offset	MPR	Max Power (Conducted)	Antenna Gain (dBi)	EIRP Power (W)
Band 2 (1900MHz)/15MHz	18675	QPSK	1	#0	0	**23.22**	3.1	**0.429**
			1	#Mid	0	23.09	3.1	0.416
			1	#Max	0	22.85	3.1	0.394
			50%	#0	1	22.27	3.1	0.344
			50%	#Mid	1	22.02	3.1	0.325
			50%	#Max	1	22.15	3.1	0.335
			100%	--	1	22.23	3.1	0.341
		16QAM	1	#0	1	**22.09**	3.1	**0.330**
			1	#Mid	1	21.97	3.1	0.321
			1	#Max	1	21.81	3.1	0.310
			50%	#0	2	21.23	3.1	0.271
			50%	#Mid	2	20.98	3.1	0.256
			50%	#Max	2	20.96	3.1	0.255
			100%	--	2	21.21	3.1	0.270
	18900	QPSK	1	#0	0	22.80	3.1	0.389
			1	#Mid	0	**22.95**	3.1	**0.403**
			1	#Max	0	22.93	3.1	0.401
			50%	#0	1	22.16	3.1	0.336
			50%	#Mid	1	22.14	3.1	0.334
			50%	#Max	1	22.27	3.1	0.344
			100%	--	1	22.22	3.1	0.340
		16QAM	1	#0	1	21.79	3.1	0.308
			1	#Mid	1	21.69	3.1	0.301
			1	#Max	1	**21.80**	3.1	**0.309**
			50%	#0	2	21.02	3.1	0.258
			50%	#Mid	2	21.04	3.1	0.259
			50%	#Max	2	21.10	3.1	0.263
			100%	--	2	21.24	3.1	0.272
	19125	QPSK	1	#0	0	22.94	3.1	0.402
			1	#Mid	0	**23.09**	3.1	**0.416**
			1	#Max	0	22.85	3.1	0.394
			50%	#0	1	22.00	3.1	0.324
			50%	#Mid	1	22.06	3.1	0.328
			50%	#Max	1	21.97	3.1	0.321
			100%	--	1	21.90	3.1	0.316
		16QAM	1	#0	1	21.69	3.1	0.301
			1	#Mid	1	21.85	3.1	0.313
			1	#Max	1	**21.94**	3.1	**0.319**
			50%	#0	2	20.92	3.1	0.252
			50%	#Mid	2	20.98	3.1	0.256
			50%	#Max	2	20.92	3.1	0.252
			100%	--	2	20.92	3.1	0.252
EIRP Power(W)= Conducted Power + Antenna Gain								

Band	Channel	Modula-tion	RB No.	RB Offset	MPR	Max Power (Conducted)	Antenna Gain (dBi)	EIRP Power (W)
Band 2 (1900MHz)/20MHz	18700	QPSK	1	#0	0	23.07	3.1	0.414
			1	#Mid	0	**23.09**	3.1	**0.416**
			1	#Max	0	22.76	3.1	0.385
			50%	#0	1	22.09	3.1	0.330
			50%	#Mid	1	22.02	3.1	0.325
			50%	#Max	1	22.04	3.1	0.327
			100%	--	1	22.13	3.1	0.333
		16QAM	1	#0	1	22.02	3.1	0.325
			1	#Mid	1	**22.06**	3.1	**0.328**
			1	#Max	1	21.89	3.1	0.316
			50%	#0	2	21.23	3.1	0.271
			50%	#Mid	2	20.99	3.1	0.256
			50%	#Max	2	21.12	3.1	0.264
			100%	--	2	21.12	3.1	0.264
	18900	QPSK	1	#0	0	23.01	3.1	0.408
			1	#Mid	0	**23.26**	3.1	**0.433**
			1	#Max	0	22.96	3.1	0.404
			50%	#0	1	21.98	3.1	0.322
			50%	#Mid	1	22.00	3.1	0.324
			50%	#Max	1	22.03	3.1	0.326
			100%	--	1	22.11	3.1	0.332
		16QAM	1	#0	1	21.95	3.1	0.320
			1	#Mid	1	**22.02**	3.1	**0.325**
			1	#Max	1	21.76	3.1	0.306
			50%	#0	2	21.03	3.1	0.259
			50%	#Mid	2	21.03	3.1	0.259
			50%	#Max	2	21.07	3.1	0.261
			100%	--	2	21.07	3.1	0.261
	19100	QPSK	1	#0	0	22.80	3.1	0.389
			1	#Mid	0	**23.14**	3.1	**0.421**
			1	#Max	0	22.69	3.1	0.379
			50%	#0	1	21.96	3.1	0.321
			50%	#Mid	1	21.90	3.1	0.316
			50%	#Max	1	21.86	3.1	0.313
			100%	--	1	21.92	3.1	0.318
		16QAM	1	#0	1	21.73	3.1	0.304
			1	#Mid	1	**22.05**	3.1	**0.327**
			1	#Max	1	21.71	3.1	0.303
			50%	#0	2	20.80	3.1	0.245
			50%	#Mid	2	20.93	3.1	0.253
			50%	#Max	2	20.79	3.1	0.245
			100%	--	2	20.85	3.1	0.248
EIRP Power(W)= Conducted Power + Antenna Gain								

Band	Channel	Modula-tion	RB No.	RB Offset	MPR	Max Power (dBm)	Antenna Gain (dBi)	EIRP Power (W)
Band 4 (1700MHz)/1.4MHz	19957	QPSK	1	#0	0	23.48	3.1	0.455
			1	#Mid	0	**23.64**	3.1	**0.472**
			1	#Max	0	23.47	3.1	0.454
			50%	#0	0	23.60	3.1	0.468
			50%	#Mid	0	23.58	3.1	0.466
			50%	#Max	0	23.60	3.1	0.468
			100%	--	1	22.59	3.1	0.371
		16QAM	1	#0	1	22.76	3.1	0.385
			1	#Mid	1	**22.90**	3.1	**0.398**
			1	#Max	1	22.69	3.1	0.379
			50%	#0	1	22.63	3.1	0.374
			50%	#Mid	1	22.60	3.1	0.372
			50%	#Max	1	22.59	3.1	0.371
			100%	--	2	21.48	3.1	0.287
	20175	QPSK	1	#0	0	23.47	3.1	0.454
			1	#Mid	0	**23.50**	3.1	**0.457**
			1	#Max	0	23.29	3.1	0.436
			50%	#0	0	23.40	3.1	0.447
			50%	#Mid	0	23.38	3.1	0.445
			50%	#Max	0	23.41	3.1	0.448
			100%	--	1	22.31	3.1	0.348
		16QAM	1	#0	1	22.08	3.1	0.330
			1	#Mid	1	22.13	3.1	0.333
			1	#Max	1	21.93	3.1	0.318
			50%	#0	1	**22.26**	3.1	**0.344**
			50%	#Mid	1	22.10	3.1	0.331
			50%	#Max	1	21.93	3.1	0.318
			100%	--	2	21.10	3.1	0.263
	20393	QPSK	1	#0	0	23.06	3.1	0.413
			1	#Mid	0	23.18	3.1	0.425
			1	#Max	0	22.97	3.1	0.405
			50%	#0	0	**23.39**	3.1	**0.446**
			50%	#Mid	0	23.22	3.1	0.429
			50%	#Max	0	23.25	3.1	0.432
			100%	--	1	22.20	3.1	0.339
		16QAM	1	#0	1	22.28	3.1	0.345
			1	#Mid	1	22.33	3.1	0.349
			1	#Max	1	22.16	3.1	0.336
			50%	#0	1	22.30	3.1	0.347
			50%	#Mid	1	22.40	3.1	0.355
			50%	#Max	1	**22.46**	3.1	**0.360**
			100%	--	2	21.11	3.1	0.264
EIRP Power(W)= Conducted Power + Antenna Gain								

Band	Channel	Modula-tion	RB No.	RB Offset	MPR	Max Power (Conducted)	Antenna Gain (dBi)	EIRP Power (W)
Band 4 (1700MHz)/3MHz	19965	QPSK	1	#0	0	**23.80**	3.1	**0.490**
			1	#Mid	0	23.55	3.1	0.462
			1	#Max	0	23.66	3.1	0.474
			50%	#0	1	22.75	3.1	0.385
			50%	#Mid	1	22.72	3.1	0.382
			50%	#Max	1	22.70	3.1	0.380
			100%	--	1	22.65	3.1	0.376
		16QAM	1	#0	1	**22.78**	3.1	**0.387**
			1	#Mid	1	22.58	3.1	0.370
			1	#Max	1	22.68	3.1	0.378
			50%	#0	2	21.45	3.1	0.285
			50%	#Mid	2	21.42	3.1	0.283
			50%	#Max	2	21.41	3.1	0.282
			100%	--	2	21.54	3.1	0.291
	20175	QPSK	1	#0	0	**23.43**	3.1	**0.450**
			1	#Mid	0	23.36	3.1	0.443
			1	#Max	0	23.25	3.1	0.432
			50%	#0	1	22.55	3.1	0.367
			50%	#Mid	1	22.45	3.1	0.359
			50%	#Max	1	22.37	3.1	0.352
			100%	--	1	22.50	3.1	0.363
		16QAM	1	#0	1	**22.86**	3.1	**0.394**
			1	#Mid	1	22.56	3.1	0.368
			1	#Max	1	22.18	3.1	0.337
			50%	#0	2	21.20	3.1	0.269
			50%	#Mid	2	21.28	3.1	0.274
			50%	#Max	2	21.12	3.1	0.264
			100%	--	2	21.38	3.1	0.281
	20385	QPSK	1	#0	0	**23.51**	3.1	**0.458**
			1	#Mid	0	23.24	3.1	0.431
			1	#Max	0	23.23	3.1	0.430
			50%	#0	1	22.17	3.1	0.337
			50%	#Mid	1	22.27	3.1	0.344
			50%	#Max	1	22.29	3.1	0.346
			100%	--	1	22.22	3.1	0.340
		16QAM	1	#0	1	21.94	3.1	0.319
			1	#Mid	1	21.60	3.1	0.295
			1	#Max	1	**21.97**	3.1	**0.321**
			50%	#0	2	21.16	3.1	0.267
			50%	#Mid	2	21.16	3.1	0.267
			50%	#Max	2	21.27	3.1	0.274
			100%	--	2	21.27	3.1	0.274
EIRP Power(W)= Conducted Power + Antenna Gain								

Band	Channel	Modula-tion	RB No.	RB Offset	MPR	Max Power (Conducted)	Antenna Gain (dBi)	EIRP Power (W)
Band 4 (1700MHz)/5MHz	19975	QPSK	1	#0	0	**23.58**	3.1	**0.466**
			1	#Mid	0	23.42	3.1	0.449
			1	#Max	0	23.56	3.1	0.463
			50%	#0	1	22.56	3.1	0.368
			50%	#Mid	1	22.46	3.1	0.360
			50%	#Max	1	22.54	3.1	0.366
			100%	--	1	22.47	3.1	0.361
		16QAM	1	#0	1	**22.55**	3.1	**0.367**
			1	#Mid	1	22.27	3.1	0.344
			1	#Max	1	22.27	3.1	0.344
			50%	#0	2	21.43	3.1	0.284
			50%	#Mid	2	21.34	3.1	0.278
			50%	#Max	2	21.43	3.1	0.284
			100%	--	2	21.58	3.1	0.294
	20175	QPSK	1	#0	0	**23.28**	3.1	**0.435**
			1	#Mid	0	23.14	3.1	0.421
			1	#Max	0	23.01	3.1	0.408
			50%	#0	1	22.25	3.1	0.343
			50%	#Mid	1	22.26	3.1	0.344
			50%	#Max	1	22.12	3.1	0.333
			100%	--	1	22.28	3.1	0.345
		16QAM	1	#0	1	22.11	3.1	0.332
			1	#Mid	1	21.79	3.1	0.308
			1	#Max	1	**22.14**	3.1	**0.334**
			50%	#0	2	21.16	3.1	0.267
			50%	#Mid	2	21.10	3.1	0.263
			50%	#Max	2	21.04	3.1	0.259
			100%	--	2	21.10	3.1	0.263
	20375	QPSK	1	#0	0	**23.13**	3.1	**0.420**
			1	#Mid	0	23.07	3.1	0.414
			1	#Max	0	23.04	3.1	0.411
			50%	#0	1	22.02	3.1	0.325
			50%	#Mid	1	22.04	3.1	0.327
			50%	#Max	1	21.99	3.1	0.323
			100%	--	1	22.04	3.1	0.327
		16QAM	1	#0	1	21.87	3.1	0.314
			1	#Mid	1	21.80	3.1	0.309
			1	#Max	1	**21.90**	3.1	**0.316**
			50%	#0	2	21.16	3.1	0.267
			50%	#Mid	2	20.78	3.1	0.244
			50%	#Max	2	20.83	3.1	0.247
			100%	--	2	20.91	3.1	0.252

EIRP Power(W)= Conducted Power + Antenna Gain

Band	Channel	Modula-tion	RB No.	RB Offset	MPR	Max Power (Conducted)	Antenna Gain (dBi)	EIRP Power (W)
Band 4 (1700MHz)/10MHz	20000	QPSK	1	#0	0	23.25	3.1	0.432
			1	#Mid	0	**23.36**	3.1	**0.443**
			1	#Max	0	23.14	3.1	0.421
			50%	#0	1	22.41	3.1	0.356
			50%	#Mid	1	22.36	3.1	0.352
			50%	#Max	1	22.27	3.1	0.344
			100%	--	1	22.38	3.1	0.353
		16QAM	1	#0	1	22.16	3.1	0.336
			1	#Mid	1	**22.30**	3.1	**0.347**
			1	#Max	1	21.84	3.1	0.312
			50%	#0	2	21.31	3.1	0.276
			50%	#Mid	2	21.26	3.1	0.273
			50%	#Max	2	21.26	3.1	0.273
			100%	--	2	21.17	3.1	0.267
	20175	QPSK	1	#0	0	22.96	3.1	0.404
			1	#Mid	0	**23.08**	3.1	**0.415**
			1	#Max	0	22.94	3.1	0.402
			50%	#0	1	22.18	3.1	0.337
			50%	#Mid	1	22.03	3.1	0.326
			50%	#Max	1	22.05	3.1	0.327
			100%	--	1	22.06	3.1	0.328
		16QAM	1	#0	1	21.99	3.1	0.323
			1	#Mid	1	**22.15**	3.1	**0.335**
			1	#Max	1	21.81	3.1	0.310
			50%	#0	2	21.01	3.1	0.258
			50%	#Mid	2	21.15	3.1	0.266
			50%	#Max	2	21.08	3.1	0.262
			100%	--	2	21.00	3.1	0.257
	20350	QPSK	1	#0	0	22.95	3.1	0.403
			1	#Mid	0	**23.03**	3.1	**0.410**
			1	#Max	0	22.89	3.1	0.397
			50%	#0	1	22.01	3.1	0.324
			50%	#Mid	1	22.00	3.1	0.324
			50%	#Max	1	21.94	3.1	0.319
			100%	--	1	22.02	3.1	0.325
		16QAM	1	#0	1	21.85	3.1	0.313
			1	#Mid	1	**22.14**	3.1	**0.334**
			1	#Max	1	21.94	3.1	0.319
			50%	#0	2	21.04	3.1	0.259
			50%	#Mid	2	20.86	3.1	0.249
			50%	#Max	2	20.77	3.1	0.244
			100%	--	2	20.97	3.1	0.255
EIRP Power(W)= Conducted Power + Antenna Gain								

Band	Channel	Modula-tion	RB No.	RB Offset	MPR	Max Power (Conducted)	Antenna Gain (dBi)	EIRP Power (W)
Band 4 (1700MHz)/15MHz	20025	QPSK	1	#0	0	**23.43**	3.1	**0.450**
			1	#Mid	0	23.28	3.1	0.435
			1	#Max	0	23.24	3.1	0.431
			50%	#0	1	22.40	3.1	0.355
			50%	#Mid	1	22.22	3.1	0.340
			50%	#Max	1	22.16	3.1	0.336
			100%	--	1	22.26	3.1	0.344
		16QAM	1	#0	1	**22.30**	3.1	**0.347**
			1	#Mid	1	22.02	3.1	0.325
			1	#Max	1	22.01	3.1	0.324
			50%	#0	2	21.36	3.1	0.279
			50%	#Mid	2	21.19	3.1	0.269
			50%	#Max	2	21.14	3.1	0.265
			100%	--	2	21.24	3.1	0.272
	20175	QPSK	1	#0	0	**23.31**	3.1	**0.438**
			1	#Mid	0	23.15	3.1	0.422
			1	#Max	0	22.93	3.1	0.401
			50%	#0	1	22.15	3.1	0.335
			50%	#Mid	1	22.07	3.1	0.329
			50%	#Max	1	22.18	3.1	0.337
			100%	--	1	22.16	3.1	0.336
		16QAM	1	#0	1	**22.07**	3.1	**0.329**
			1	#Mid	1	21.82	3.1	0.310
			1	#Max	1	21.65	3.1	0.299
			50%	#0	2	21.05	3.1	0.260
			50%	#Mid	2	20.98	3.1	0.256
			50%	#Max	2	20.90	3.1	0.251
			100%	--	2	21.00	3.1	0.257
	20325	QPSK	1	#0	0	**23.04**	3.1	**0.411**
			1	#Mid	0	22.90	3.1	0.398
			1	#Max	0	22.98	3.1	0.406
			50%	#0	1	21.98	3.1	0.322
			50%	#Mid	1	21.83	3.1	0.311
			50%	#Max	1	21.90	3.1	0.316
			100%	--	1	21.97	3.1	0.321
		16QAM	1	#0	1	**21.91**	3.1	**0.317**
			1	#Mid	1	21.63	3.1	0.297
			1	#Max	1	21.80	3.1	0.309
			50%	#0	2	21.01	3.1	0.258
			50%	#Mid	2	20.87	3.1	0.249
			50%	#Max	2	20.85	3.1	0.248
			100%	--	2	20.80	3.1	0.245
EIRP Power(W)= Conducted Power + Antenna Gain								

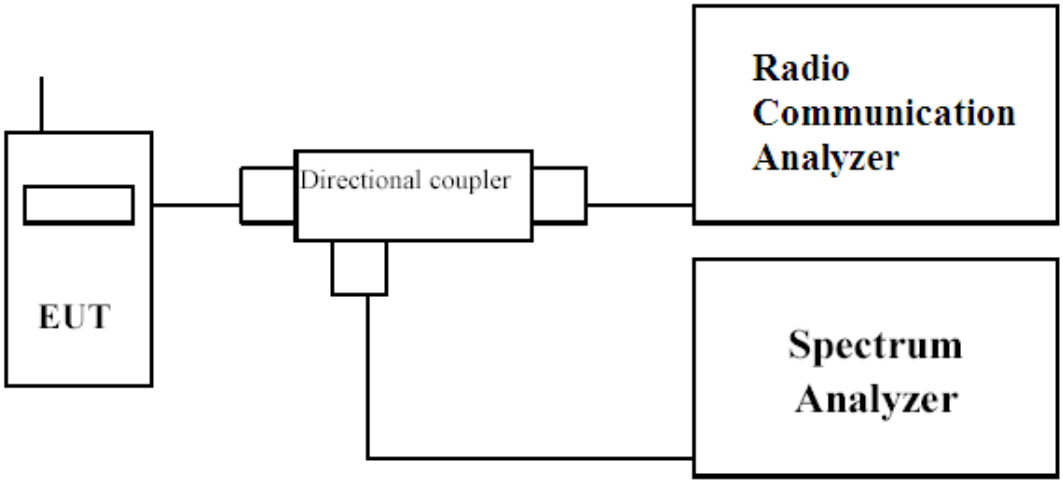
Band	Channel	Modula-tion	RB No.	RB Offset	MPR	Max Power (Conducted)	Antenna Gain (dBi)	EIRP Power (W)
Band 4 (1700MHz)/20MHz	20050	QPSK	1	#0	0	23.20	3.1	0.427
			1	#Mid	0	**23.31**	3.1	**0.438**
			1	#Max	0	23.04	3.1	0.411
			50%	#0	1	22.42	3.1	0.356
			50%	#Mid	1	22.41	3.1	0.356
			50%	#Max	1	22.26	3.1	0.344
			100%	--	1	22.36	3.1	0.352
		16QAM	1	#0	1	**22.26**	3.1	**0.344**
			1	#Mid	1	22.07	3.1	0.329
			1	#Max	1	21.91	3.1	0.317
			50%	#0	2	21.40	3.1	0.282
			50%	#Mid	2	21.29	3.1	0.275
			50%	#Max	2	21.26	3.1	0.273
			100%	--	2	21.26	3.1	0.273
	20175	QPSK	1	#0	0	23.28	3.1	0.435
			1	#Mid	0	**23.30**	3.1	**0.437**
			1	#Max	0	22.76	3.1	0.385
			50%	#0	1	22.26	3.1	0.344
			50%	#Mid	1	22.13	3.1	0.333
			50%	#Max	1	21.98	3.1	0.322
			100%	--	1	22.16	3.1	0.336
		16QAM	1	#0	1	**22.27**	3.1	**0.344**
			1	#Mid	1	21.95	3.1	0.320
			1	#Max	1	21.62	3.1	0.296
			50%	#0	2	20.98	3.1	0.256
			50%	#Mid	2	20.97	3.1	0.255
			50%	#Max	2	21.00	3.1	0.257
			100%	--	2	21.06	3.1	0.261
	20300	QPSK	1	#0	0	**23.27**	3.1	**0.434**
			1	#Mid	0	23.13	3.1	0.420
			1	#Max	0	22.62	3.1	0.373
			50%	#0	1	22.03	3.1	0.326
			50%	#Mid	1	21.85	3.1	0.313
			50%	#Max	1	21.91	3.1	0.317
			100%	--	1	21.96	3.1	0.321
		16QAM	1	#0	1	**22.08**	3.1	**0.330**
			1	#Mid	1	21.89	3.1	0.316
			1	#Max	1	21.71	3.1	0.303
			50%	#0	2	21.05	3.1	0.260
			50%	#Mid	2	20.86	3.1	0.249
			50%	#Max	2	20.76	3.1	0.243
			100%	--	2	20.88	3.1	0.250
EIRP Power(W)= Conducted Power + Antenna Gain								

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.

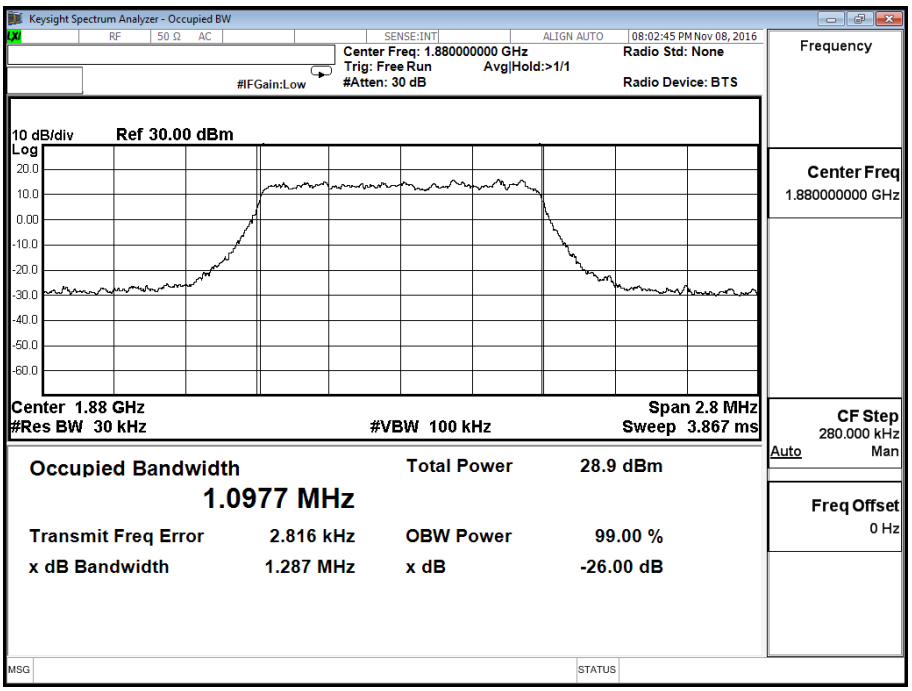
4.4. Test Result of Occupied Bandwidth

Product	LTE Router
Test Mode	Occupied Bandwidth
Test Site	CTR

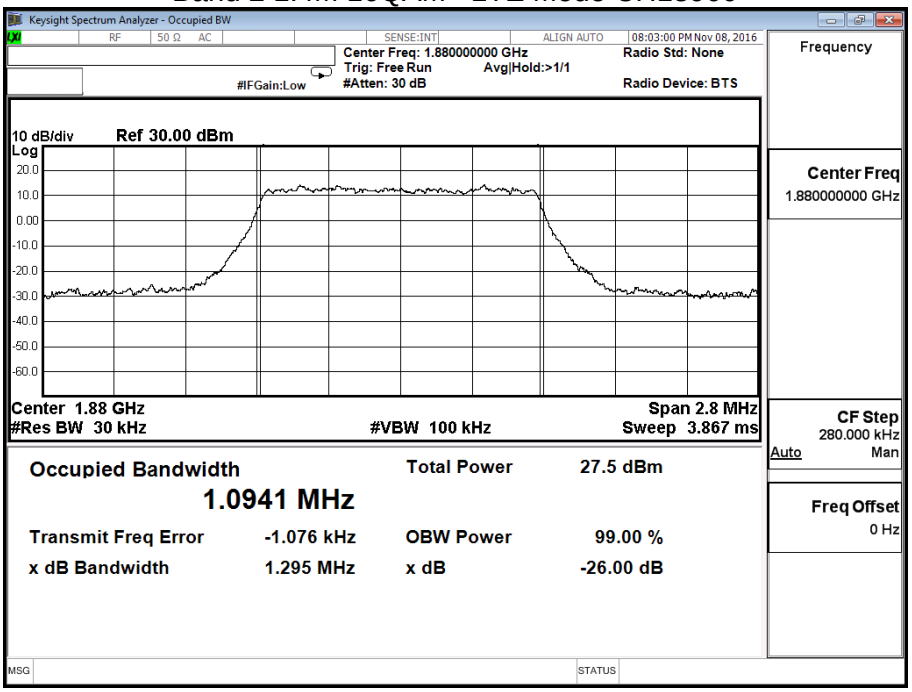
Test Mode	Channel	TX Frequency (MHz)	99% Occupied Bandwidth (MHz)	26 dB bandwidth (MHz)	Result
Band 2 1.4M QPSK	18900	1880	1.0977	1.287	Pass
Band 2 1.4M 16QAM	18900	1880	1.0941	1.295	Pass
Band 2 3M QPSK	18900	1880	2.7284	3.058	Pass
Band 2 3M 16QAM	18900	1880	2.7171	3.039	Pass
Band 2 5M QPSK	18900	1880	4.5141	5.008	Pass
Band 2 5M 16QAM	18900	1880	4.4862	4.959	Pass
Band 2 10M QPSK	18900	1880	9.0126	10.03	Pass
Band 2 10M 16QAM	18900	1880	9.0083	9.995	Pass
Band 2 15M QPSK	18900	1880	13.428	14.66	Pass
Band 2 15M 16QAM	18900	1880	13.412	14.64	Pass
Band 2 20M QPSK	18900	1880	18.378	20.36	Pass
Band 2 20M 16QAM	18900	1880	18.375	20.27	Pass
Band 4 1.4M QPSK	20175	1732.5	1.0979	1.294	Pass
Band 4 1.4M 16QAM	20175	1732.5	1.0945	1.300	Pass
Band 4 3M QPSK	20175	1732.5	2.7343	3.068	Pass
Band 4 3M 16QAM	20175	1732.5	2.7200	3.045	Pass
Band 4 5M QPSK	20175	1732.5	4.5034	5.006	Pass
Band 4 5M 16QAM	20175	1732.5	4.4868	4.966	Pass
Band 4 10M QPSK	20175	1732.5	9.0272	10.04	Pass
Band 4 10M 16QAM	20175	1732.5	9.0212	10.01	Pass
Band 4 15M QPSK	20175	1732.5	13.429	14.71	Pass
Band 4 15M 16QAM	20175	1732.5	13.418	14.66	Pass
Band 4 20M QPSK	20175	1732.5	18.509	20.64	Pass
Band 4 20M 16QAM	20175	1732.5	18.418	20.35	Pass

Product	LTE Router		
Test Mode	Occupied Bandwidth		
Date of Test	2016/12/04	Test Site	CTR
Test Condition	Band 2 1.4M		

Band 2 1.4M QPSK - LTE Mode CH18900

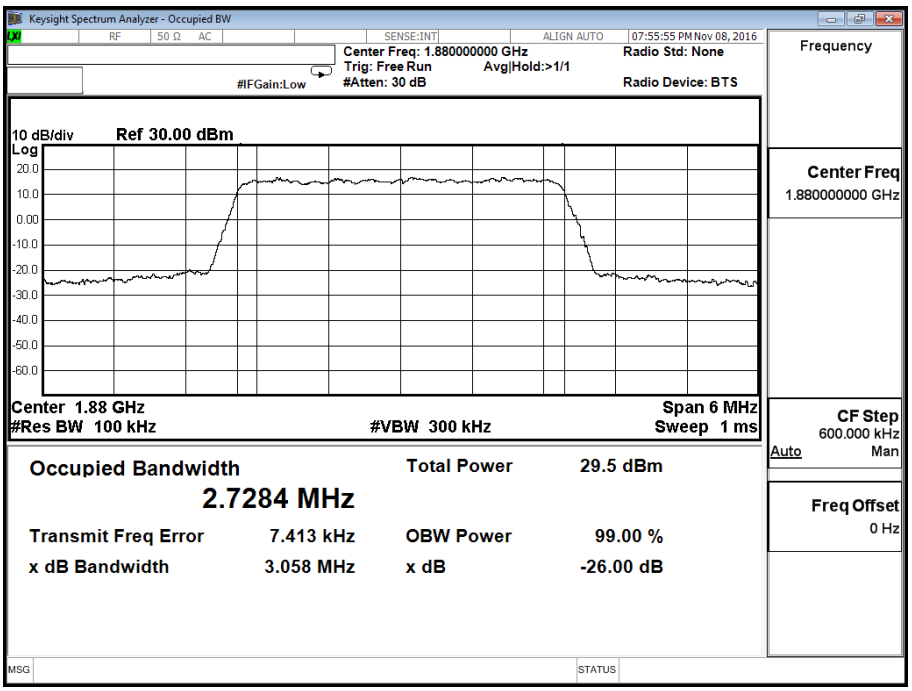


Band 2 1.4M 16QAM - LTE Mode CH18900

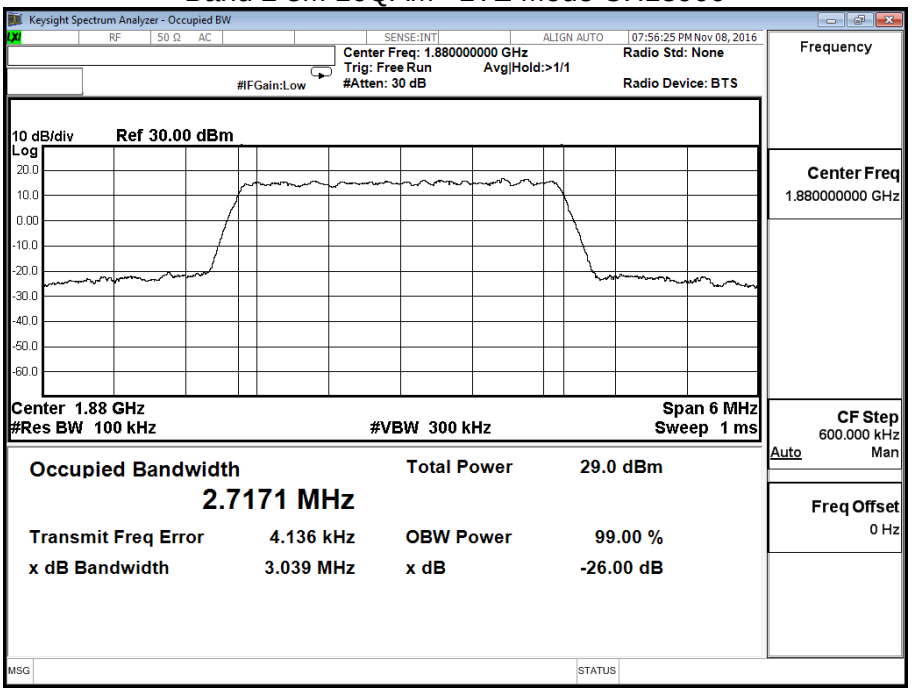


Product	LTE Router		
Test Mode	Occupied Bandwidth		
Date of Test	2016/12/04	Test Site	CTR
Test Condition	Band 2 3M		

Band 2 3M QPSK - LTE Mode CH18900

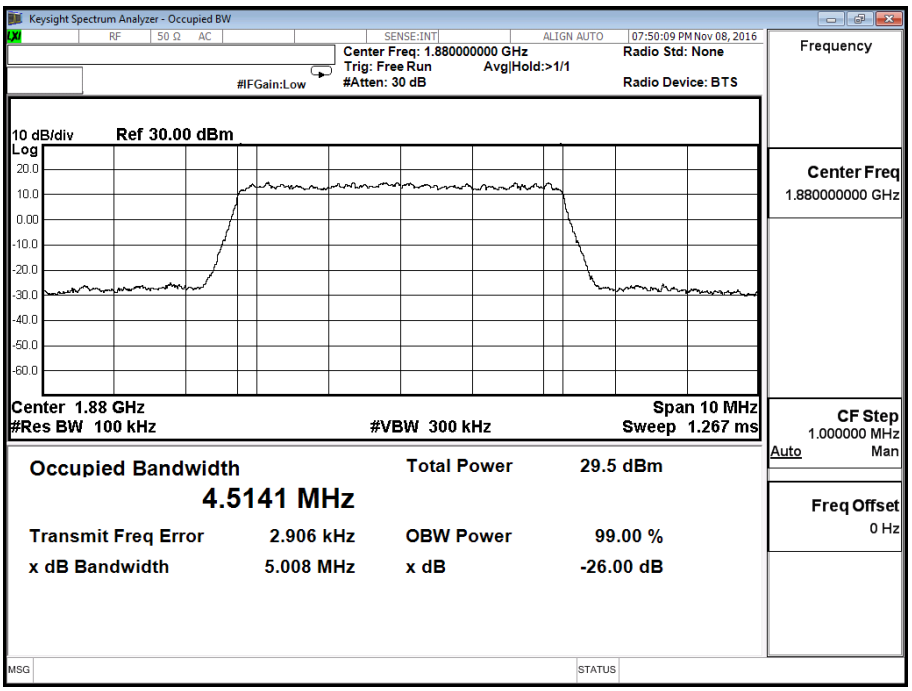


Band 2 3M 16QAM - LTE Mode CH18900

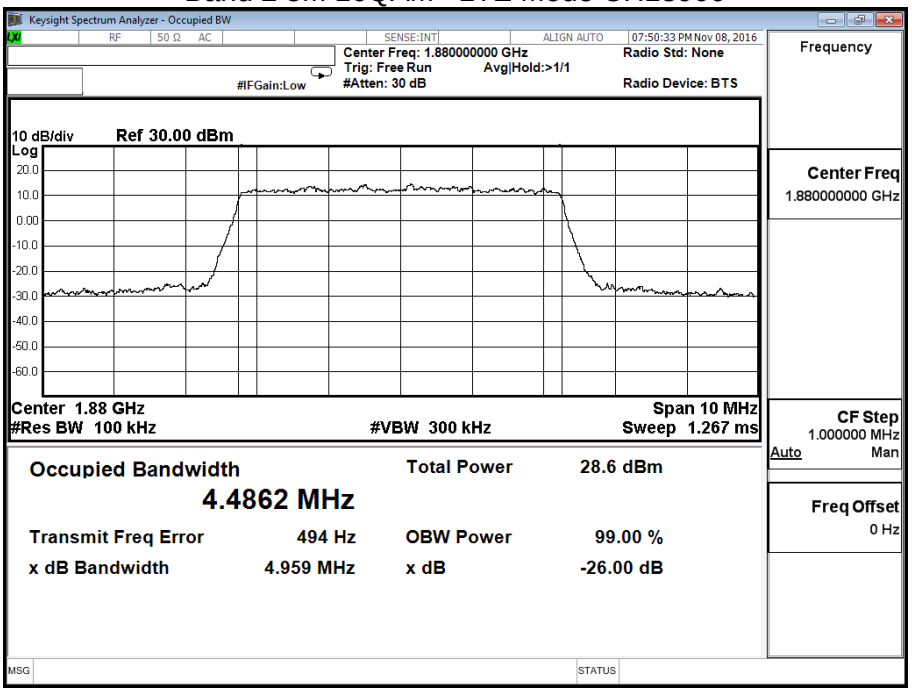


Product	LTE Router		
Test Mode	Occupied Bandwidth		
Date of Test	2016/12/04	Test Site	CTR
Test Condition	Band 2 5M		

Band 2 5M QPSK - LTE Mode CH18900

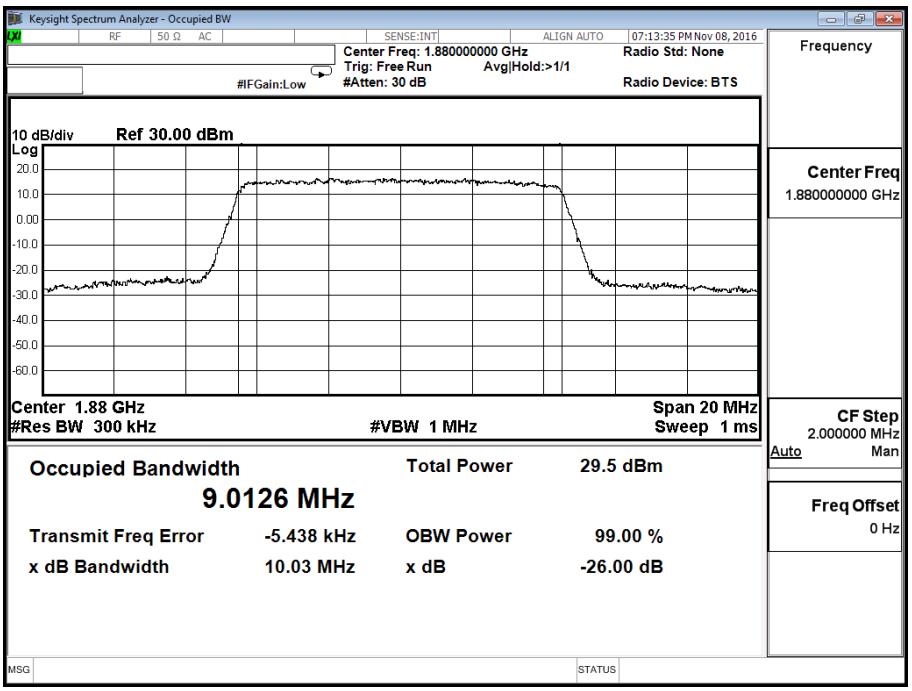


Band 2 5M 16QAM - LTE Mode CH18900

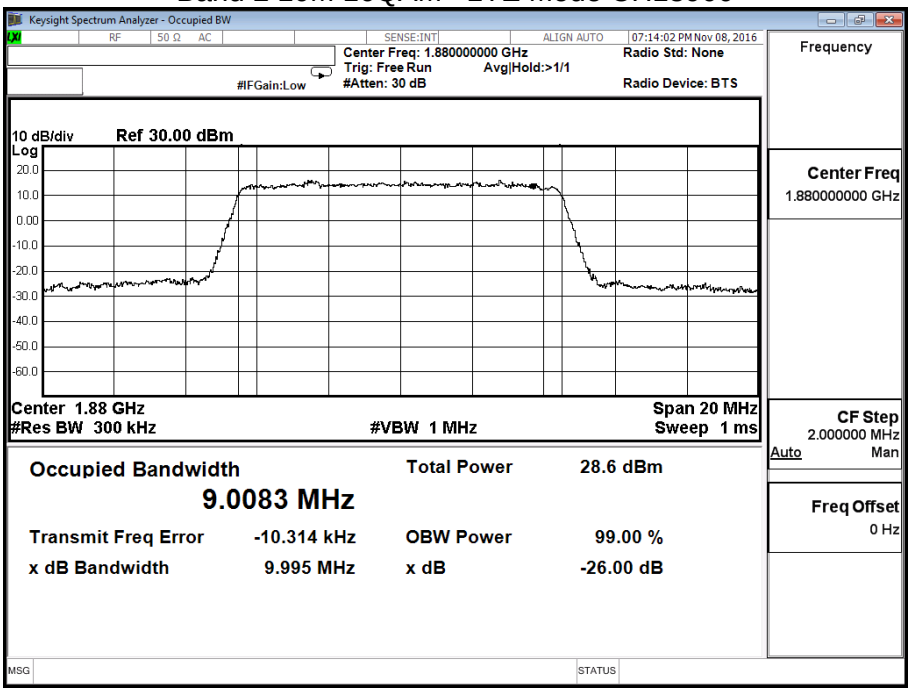


Product	LTE Router		
Test Mode	Occupied Bandwidth		
Date of Test	2016/12/04	Test Site	CTR
Test Condition	Band 2 10M		

Band 2 10M QPSK - LTE Mode CH18900

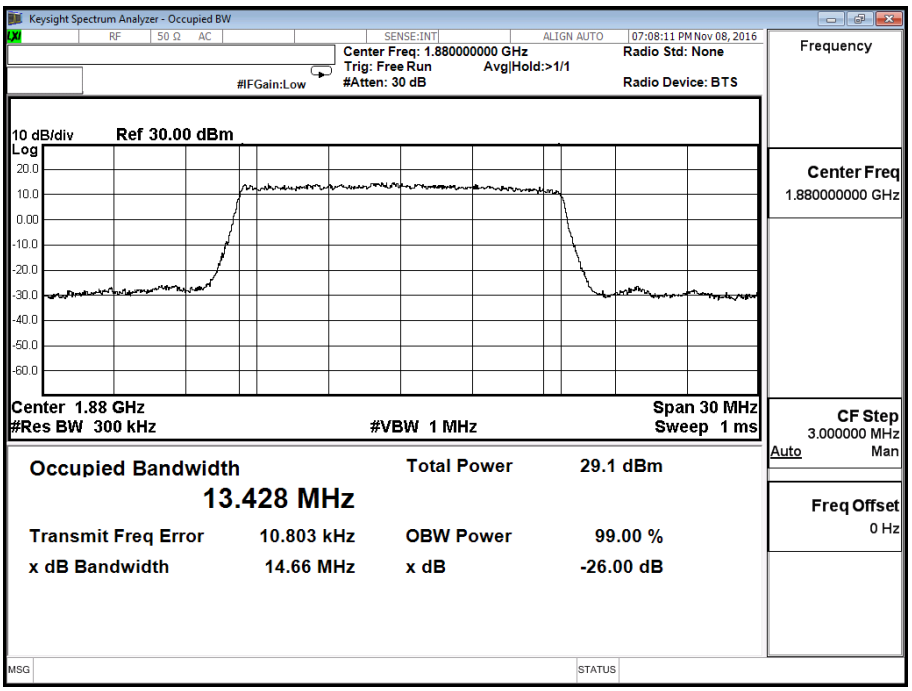


Band 2 10M 16QAM - LTE Mode CH18900

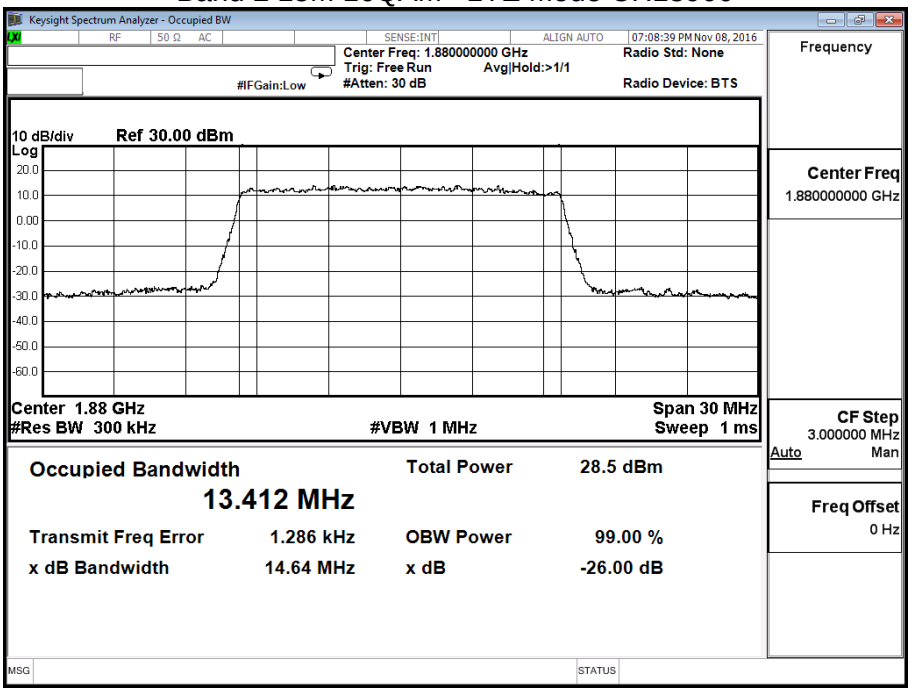


Product	LTE Router		
Test Mode	Occupied Bandwidth		
Date of Test	2016/12/04	Test Site	CTR
Test Condition	Band 2 15M		

Band 2 15M QPSK - LTE Mode CH18900

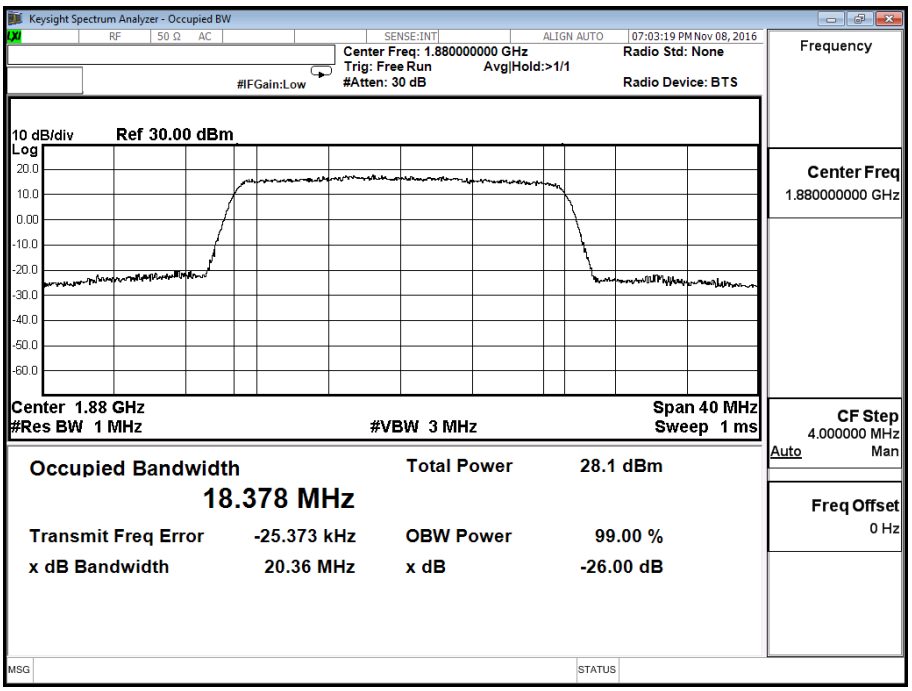


Band 2 15M 16QAM - LTE Mode CH18900

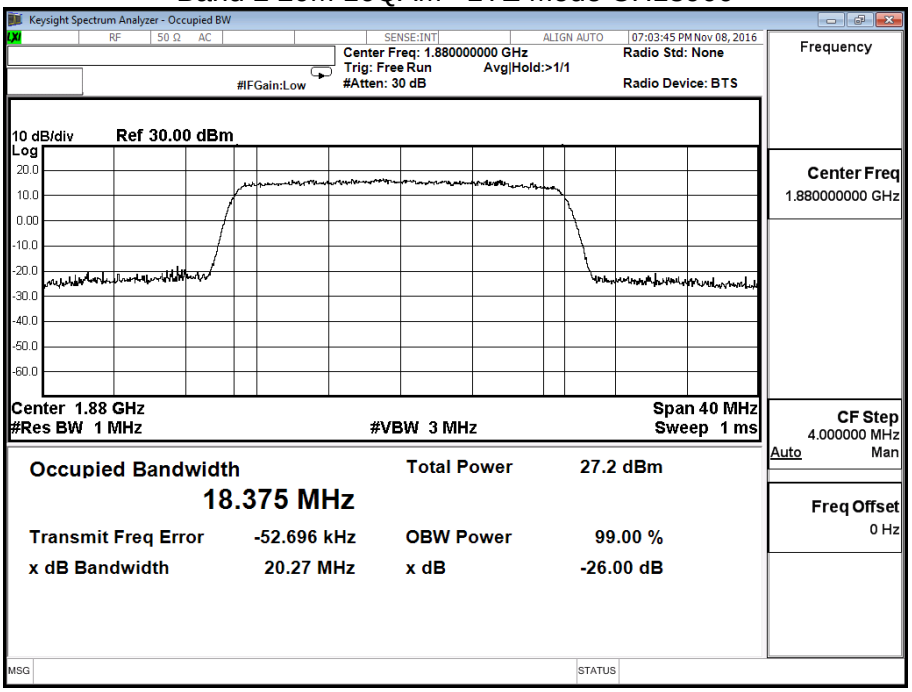


Product	LTE Router		
Test Mode	Occupied Bandwidth		
Date of Test	2016/12/04	Test Site	CTR
Test Condition	Band 2 20M		

Band 2 20M QPSK - LTE Mode CH18900

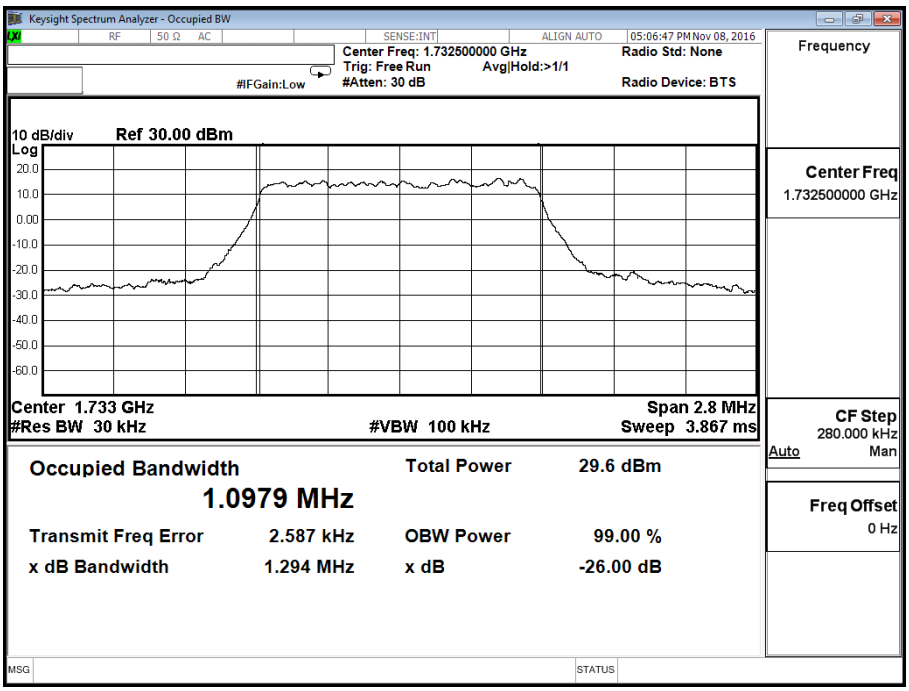


Band 2 20M 16QAM - LTE Mode CH18900

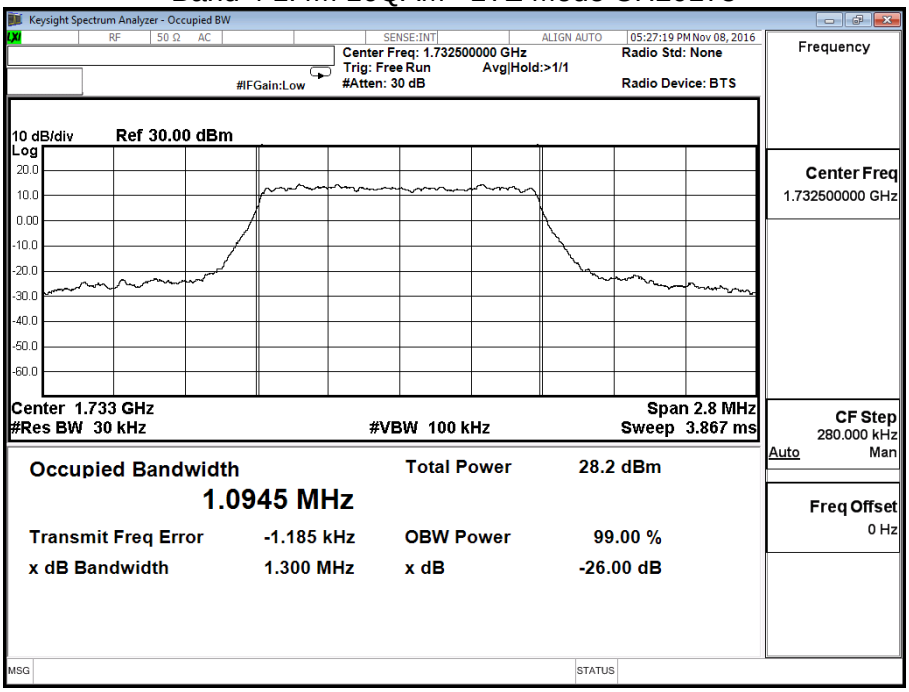


Product	LTE Router		
Test Mode	Occupied Bandwidth		
Date of Test	2016/12/04	Test Site	CTR
Test Condition	Band 4 1.4M		

Band 4 1.4M QPSK - LTE Mode CH 20175

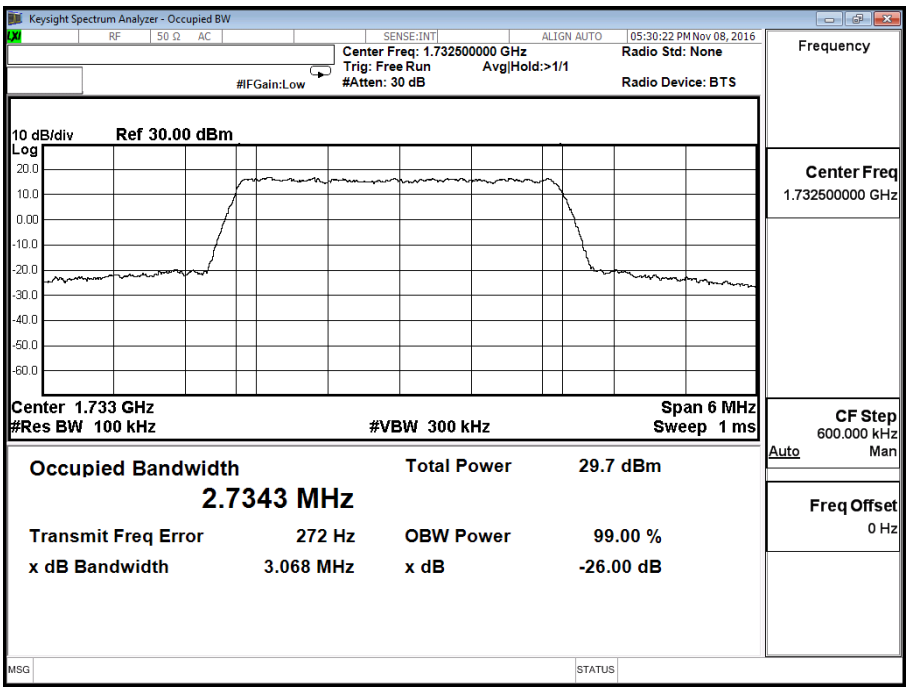


Band 4 1.4M 16QAM - LTE Mode CH20175

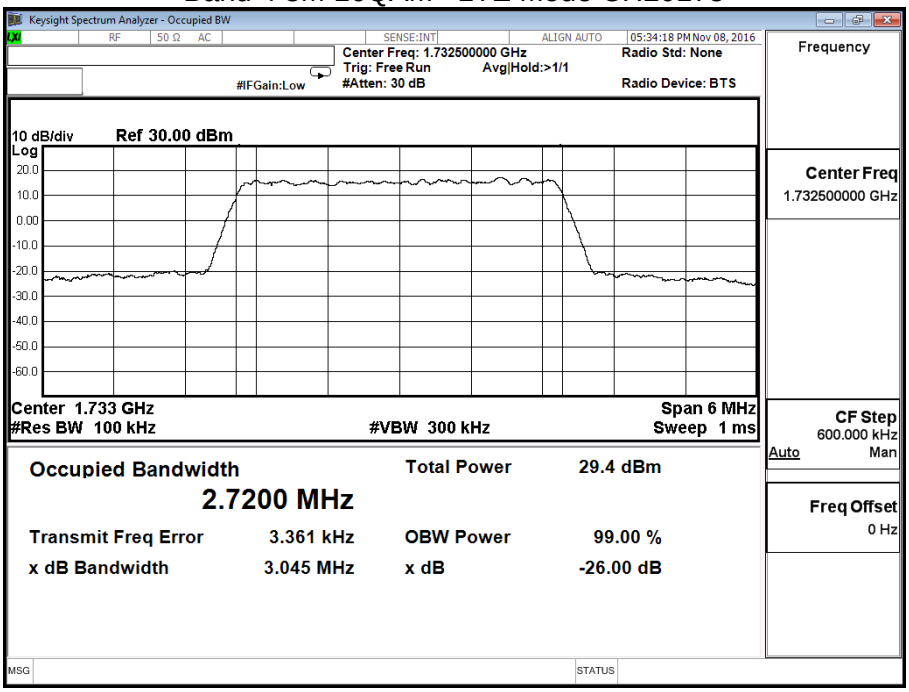


Product	LTE Router		
Test Mode	Occupied Bandwidth		
Date of Test	2016/12/04	Test Site	CTR
Test Condition	Band 4 3M		

Band 4 3M QPSK - LTE Mode CH20175

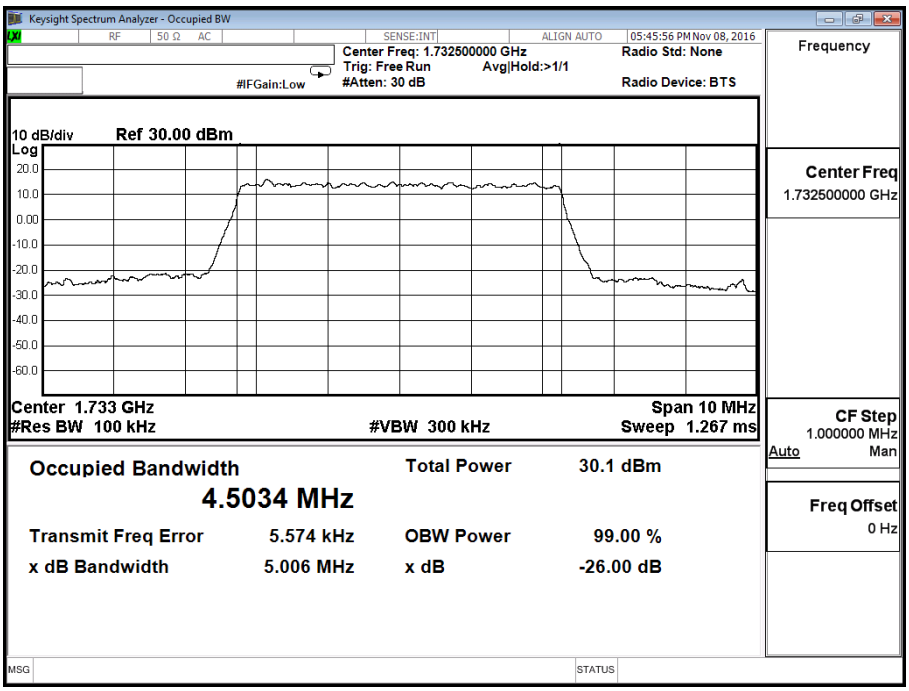


Band 4 3M 16QAM - LTE Mode CH20175

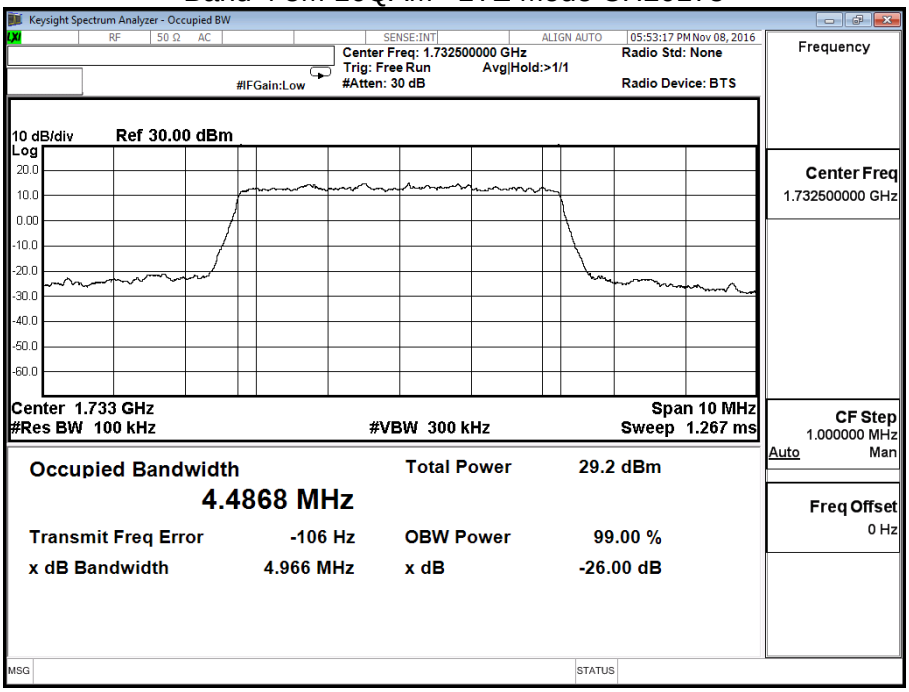


Product	LTE Router		
Test Mode	Occupied Bandwidth		
Date of Test	2016/12/04	Test Site	CTR
Test Condition	Band 4 5M		

Band 4 5M QPSK - LTE Mode CH20175

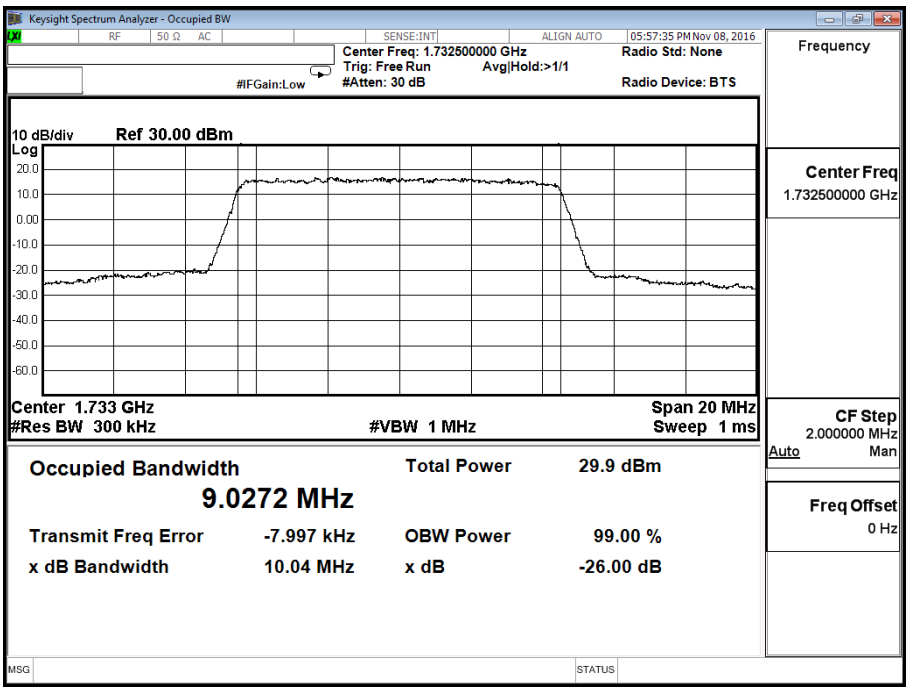


Band 4 5M 16QAM - LTE Mode CH20175

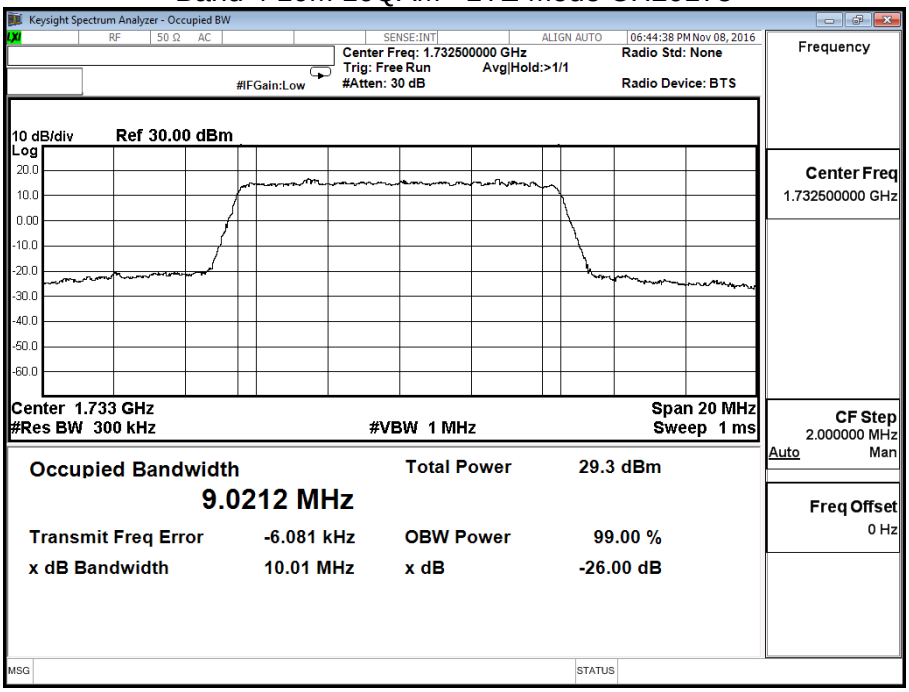


Product	LTE Router		
Test Mode	Occupied Bandwidth		
Date of Test	2016/12/04	Test Site	CTR
Test Condition	Band 4 10M		

Band 4 10M QPSK - LTE Mode CH20175

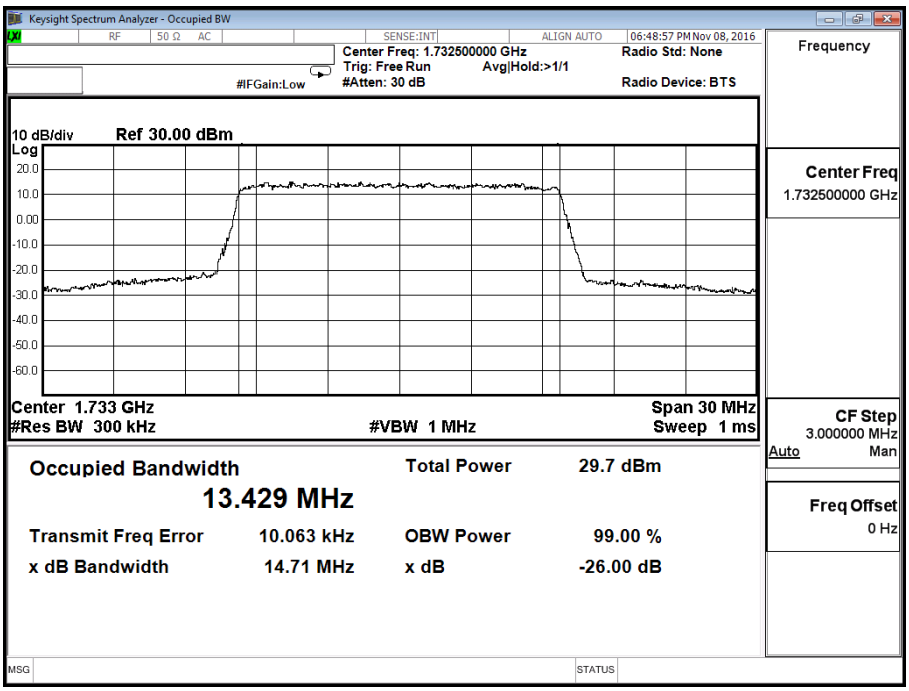


Band 4 10M 16QAM - LTE Mode CH20175

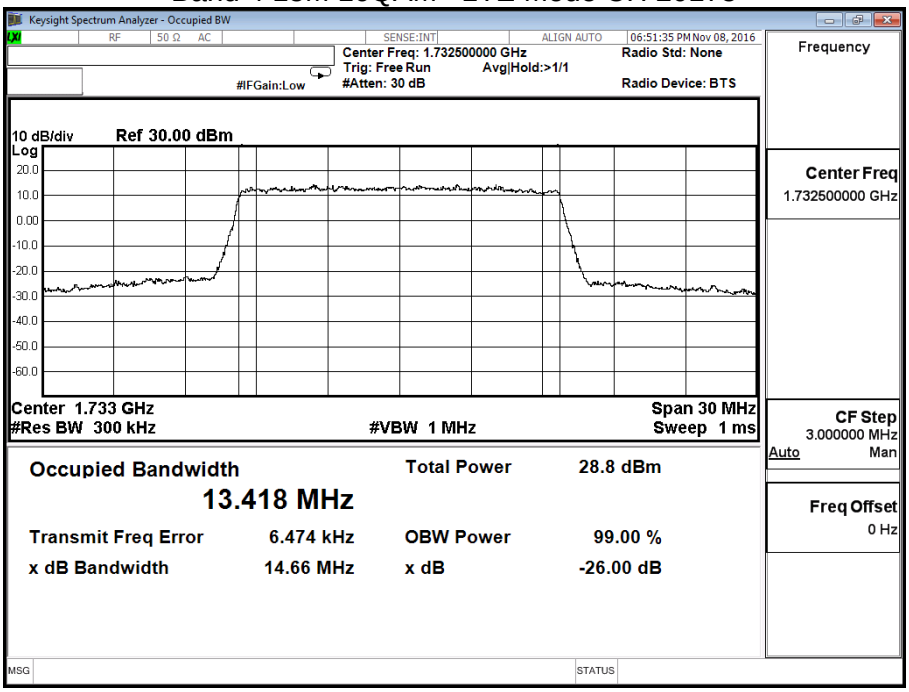


Product	LTE Router		
Test Mode	Occupied Bandwidth		
Date of Test	2016/12/04	Test Site	CTR
Test Condition	Band 4 15M		

Band 4 15M QPSK - LTE Mode CH20175

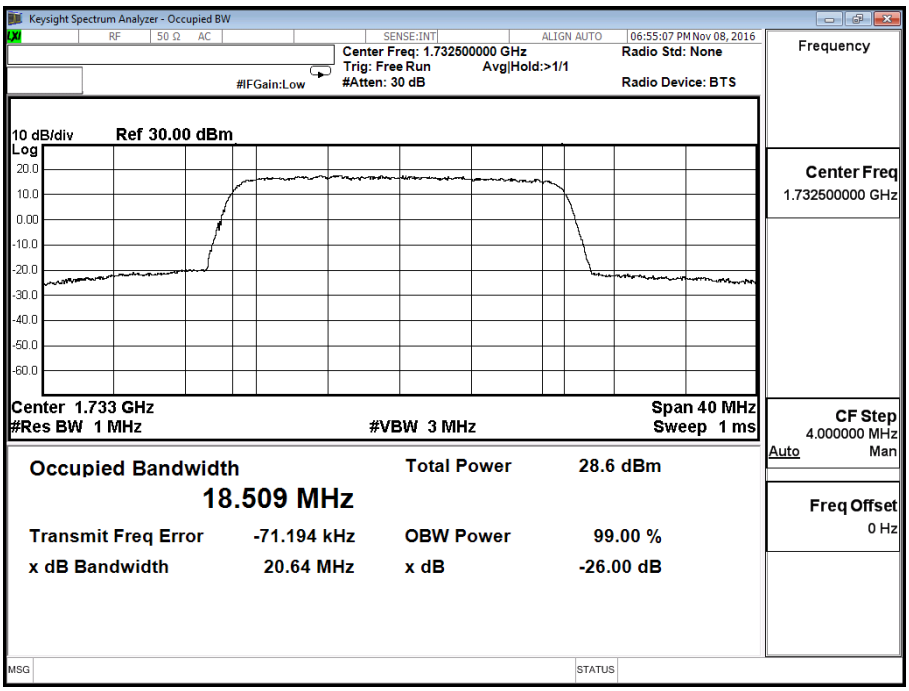


Band 4 15M 16QAM - LTE Mode CH 20175

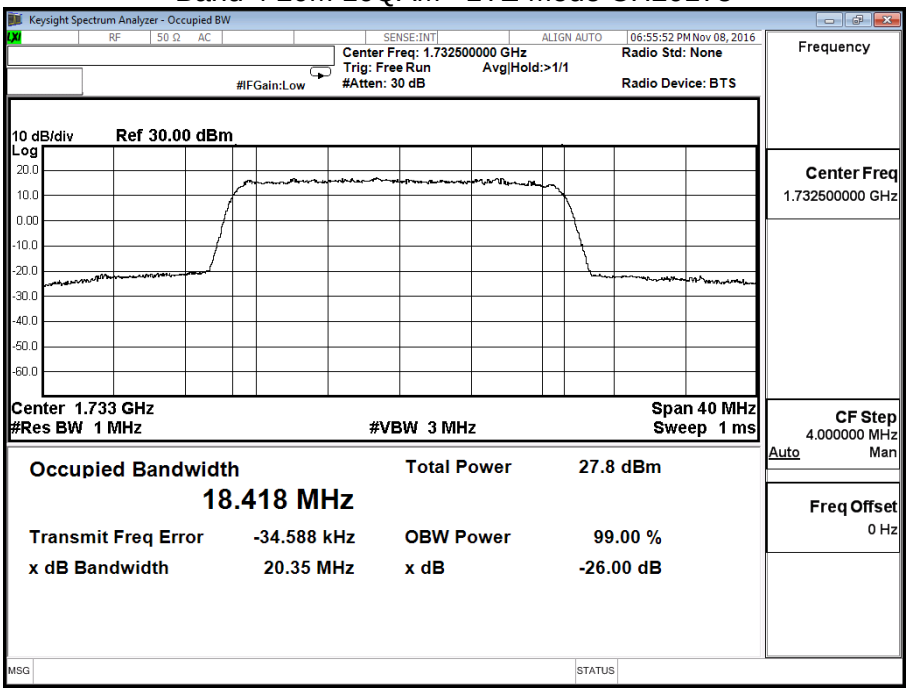


Product	LTE Router		
Test Mode	Occupied Bandwidth		
Date of Test	2016/12/04	Test Site	CTR
Test Condition	Band 4 20M		

Band 4 20M QPSK - LTE Mode CH20175



Band 4 20M 16QAM - LTE Mode CH20175

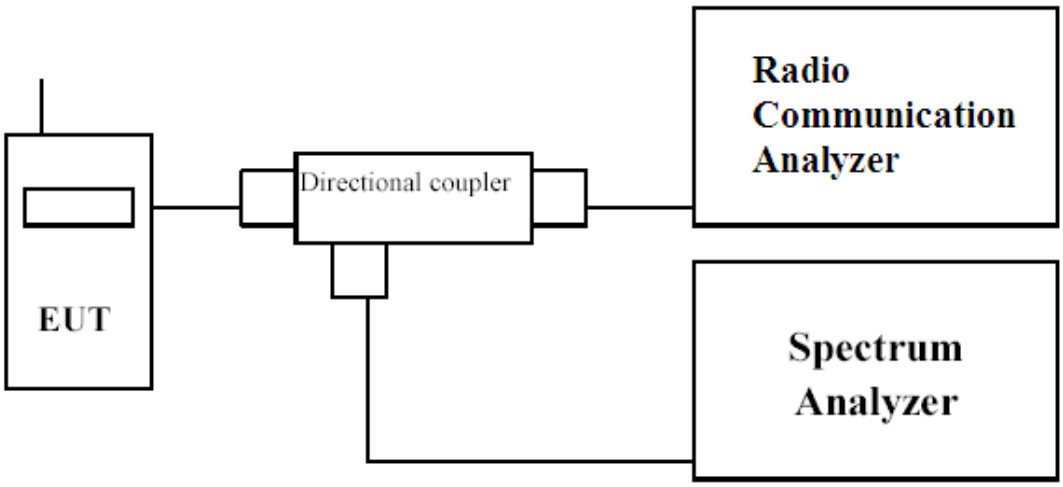


5. Spurious Emission At Antenna Terminals (+/-1MHz)

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

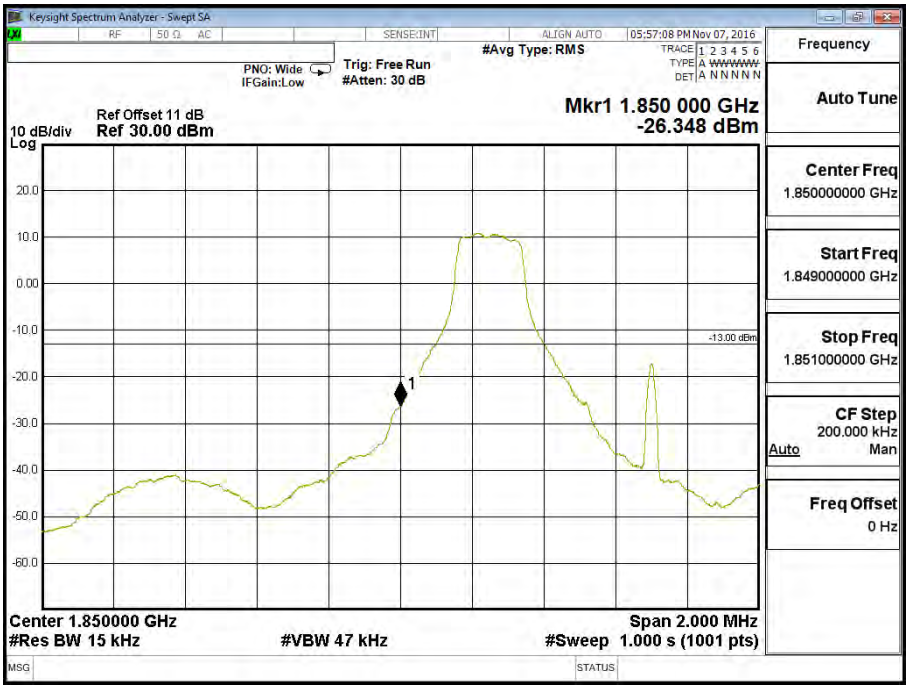
5.4. Test Procedure

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.

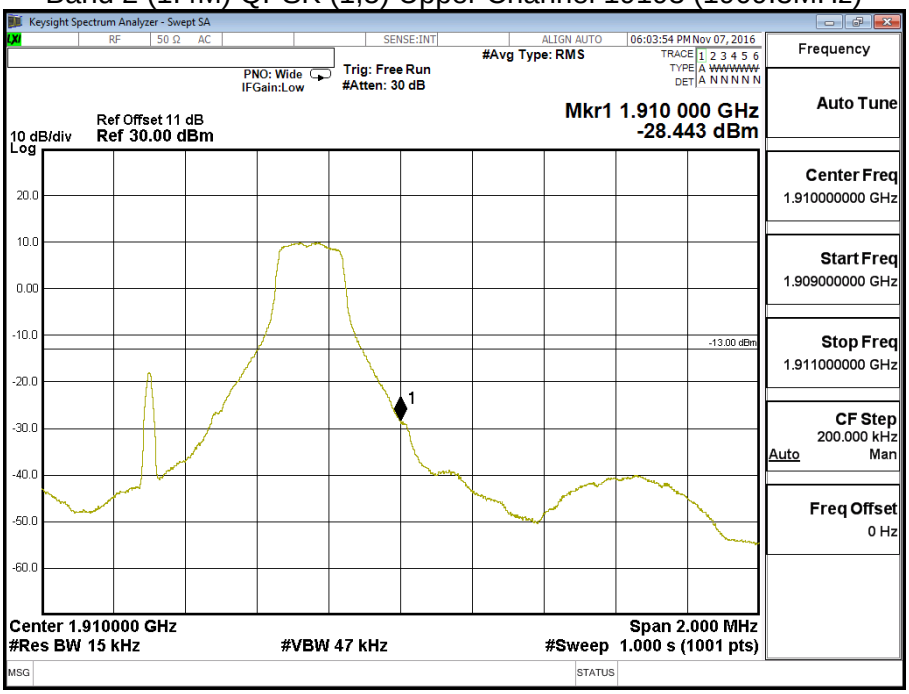
5.5. Test Result of Spurious Emission At Antenna Terminals (+/-1MHz)

Product	LTE Router		
Test Mode	Spurious Emission At Antenna Terminals (+/-1MHz)		
Date of Test	2016/12/04	Test Site	CTR
Test Condition	Block Edge Test (Band 2 (1.4M))		

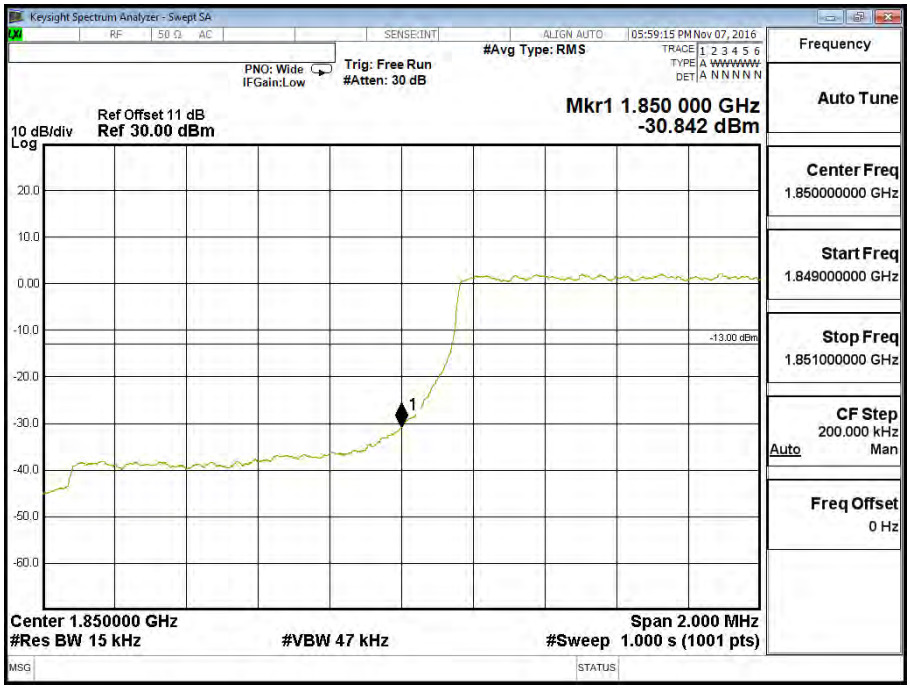
Band 2 (1.4M) QPSK (1,0) Lower Channel 18607 (1850.7MHz)



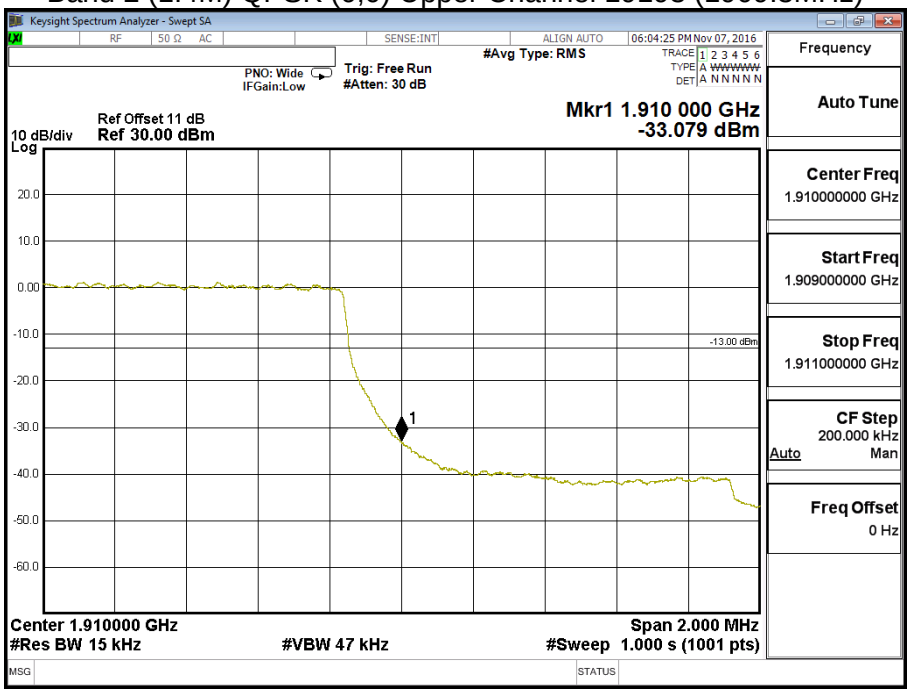
Band 2 (1.4M) QPSK (1,5) Upper Channel 19193 (1909.3MHz)



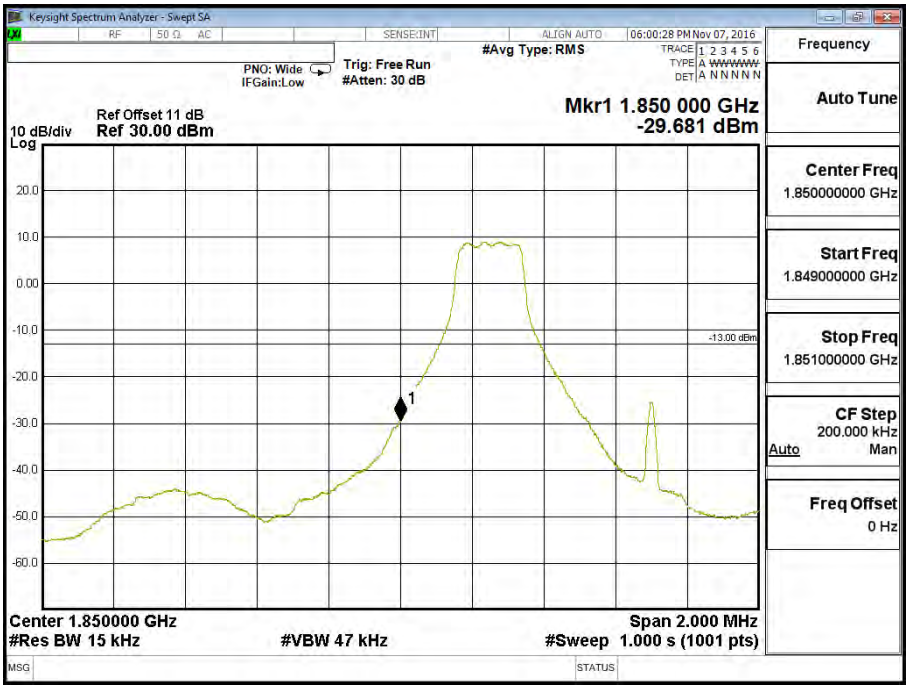
Band 2 (1.4M) QPSK (6,0) Lower Channel 18607 (1850.7MHz)



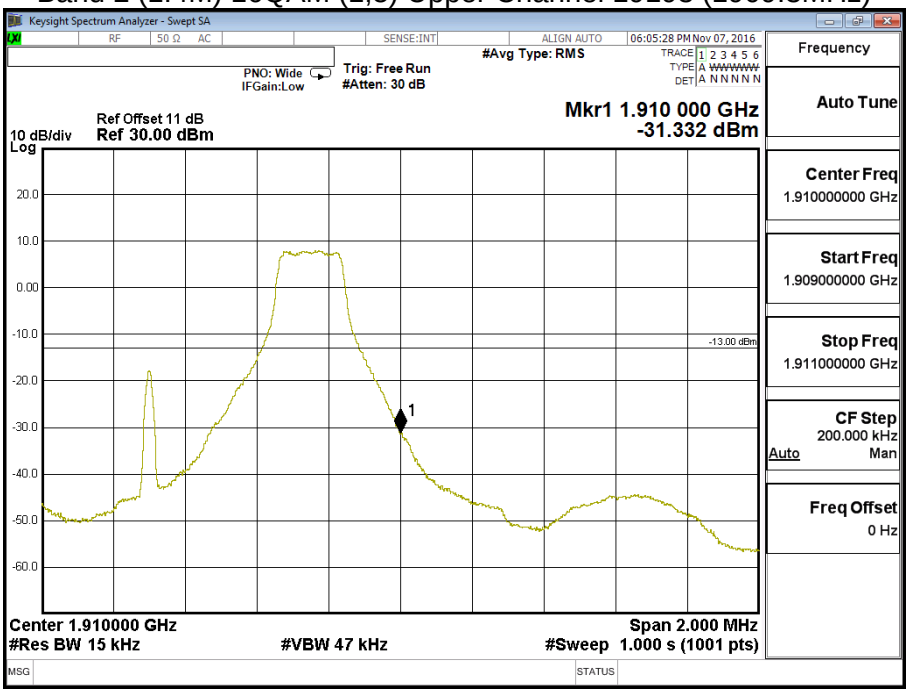
Band 2 (1.4M) QPSK (6,0) Upper Channel 19193 (1909.3MHz)



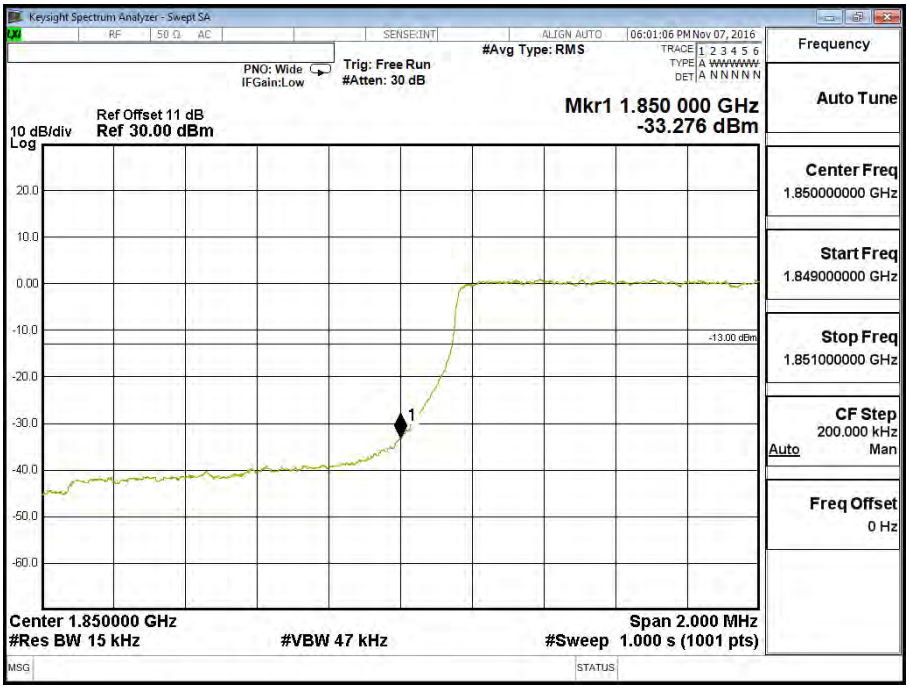
Band 2 (1.4M) 16QAM (1,0) Lower Channel 18607 (1850.7MHz)



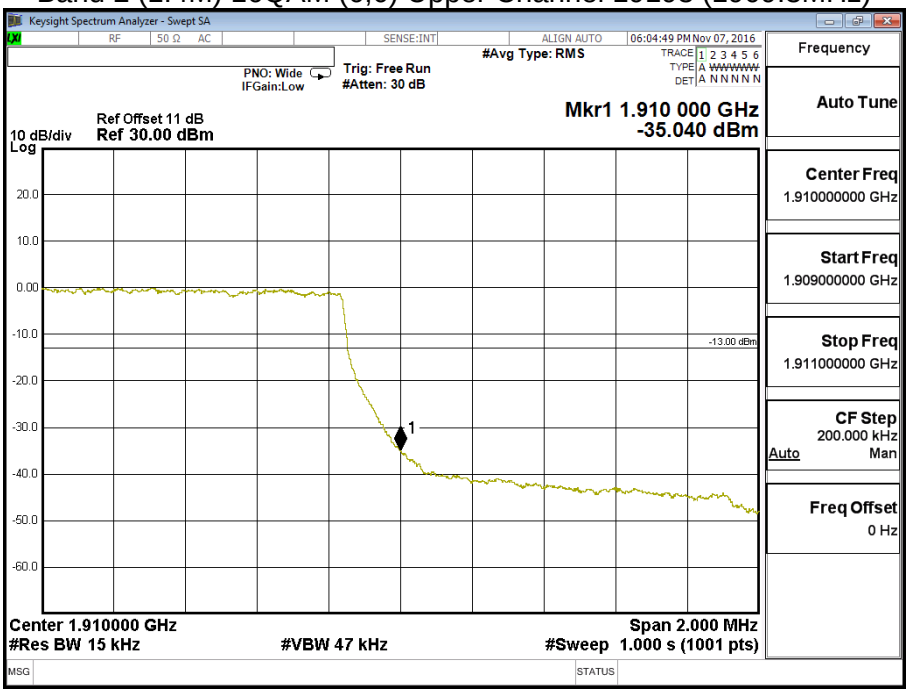
Band 2 (1.4M) 16QAM (1,5) Upper Channel 19193 (1909.3MHz)



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

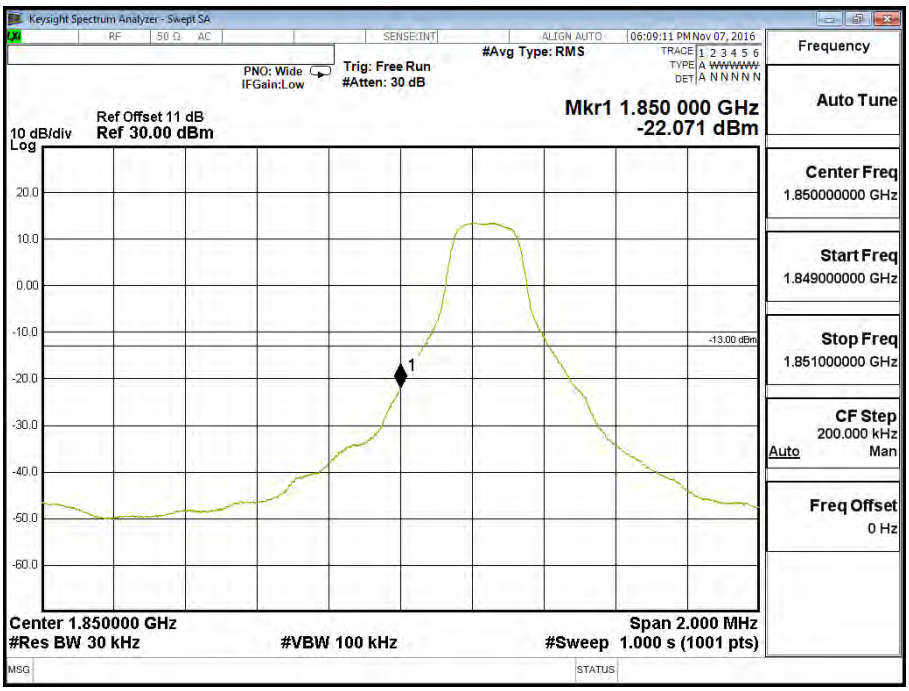


Band 2 (1.4M) 16QAM (6,0) Upper Channel 19193 (1909.3MHz)

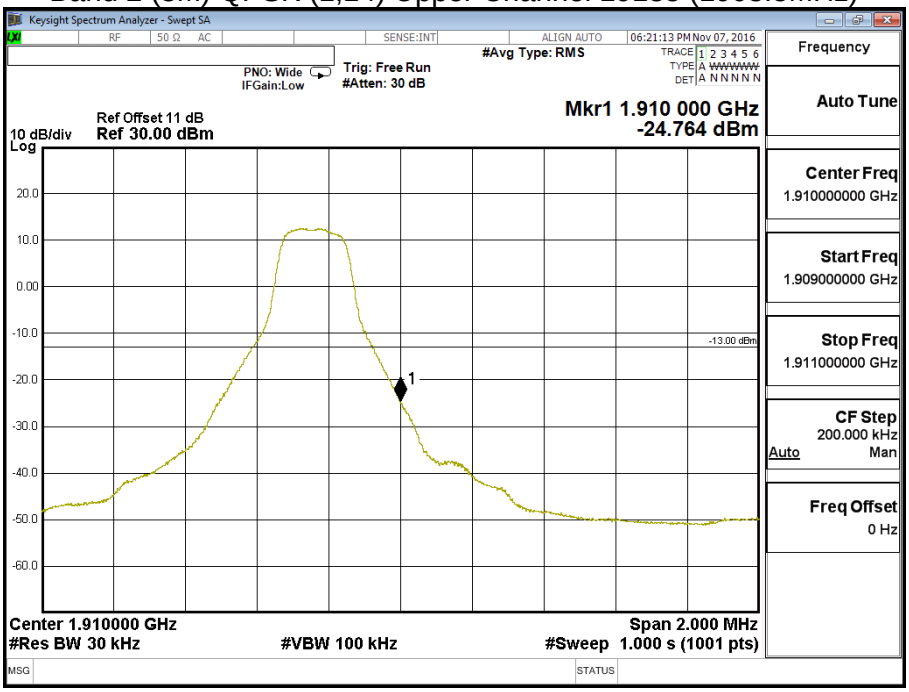


Product	LTE Router		
Test Mode	Spurious Emission At Antenna Terminals (+/-1MHz)		
Date of Test	2016/12/04	Test Site	CTR
Test Condition	Block Edge Test (Band 2 (3M))		

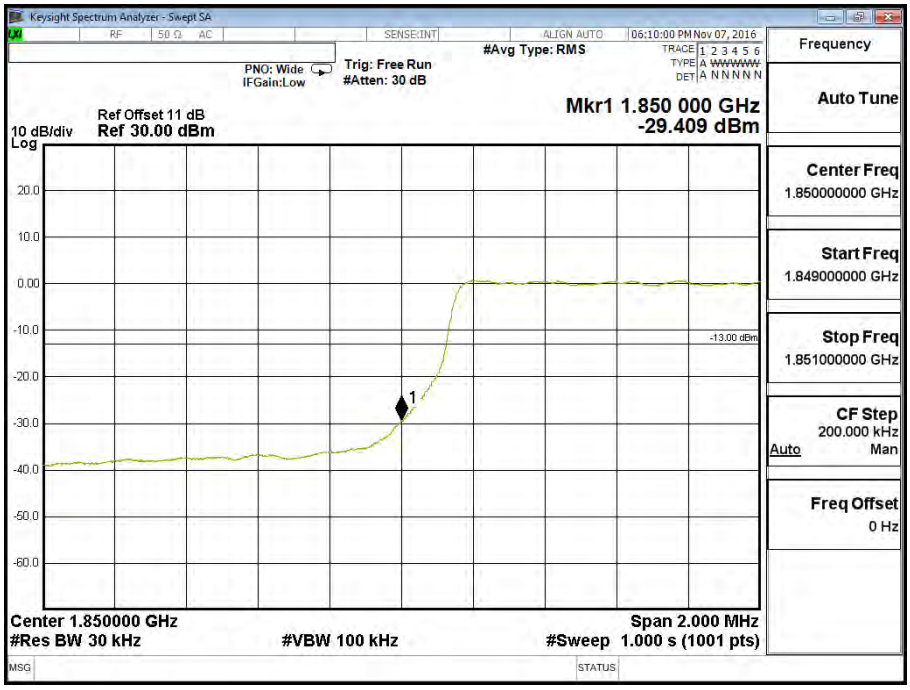
Band 2 (3M) QPSK (1,0) Lower Channel 18615 (1851.5MHz)



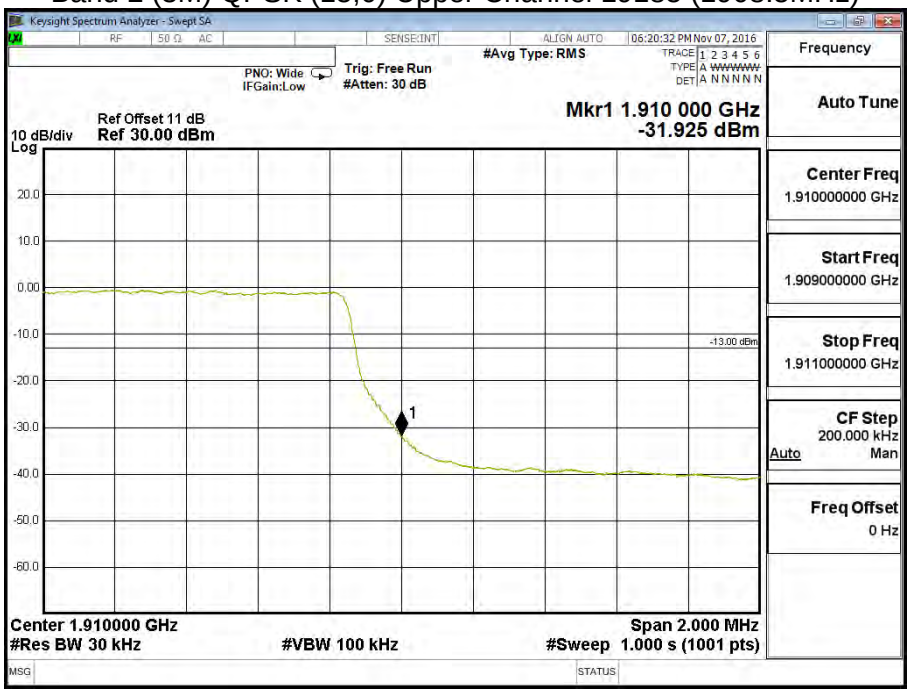
Band 2 (3M) QPSK (1,14) Upper Channel 19185 (1908.5MHz)



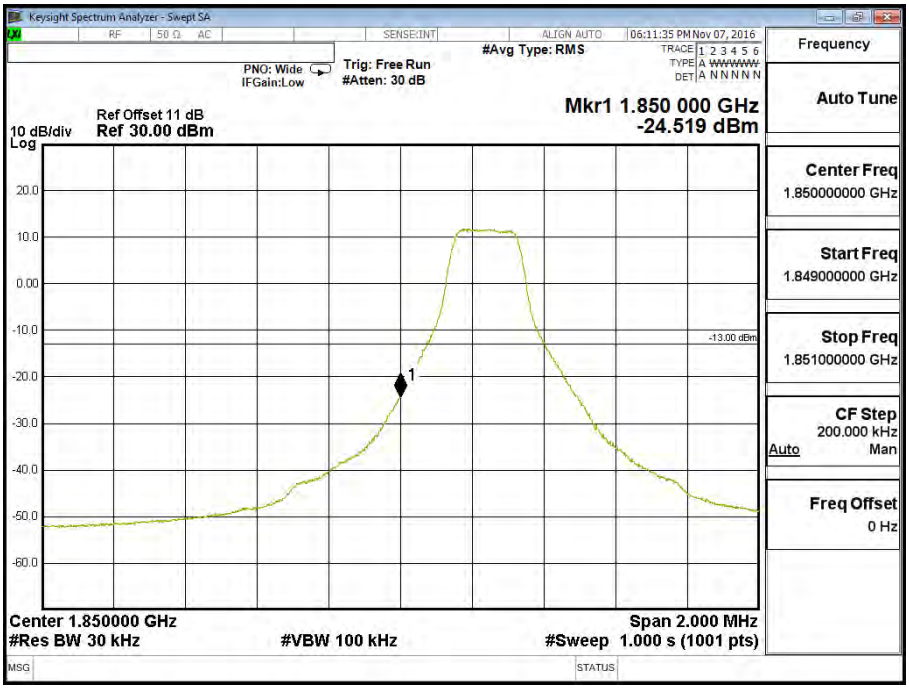
Band 2 (3M) QPSK (15,0) Lower Channel 18615 (1851.5MHz)



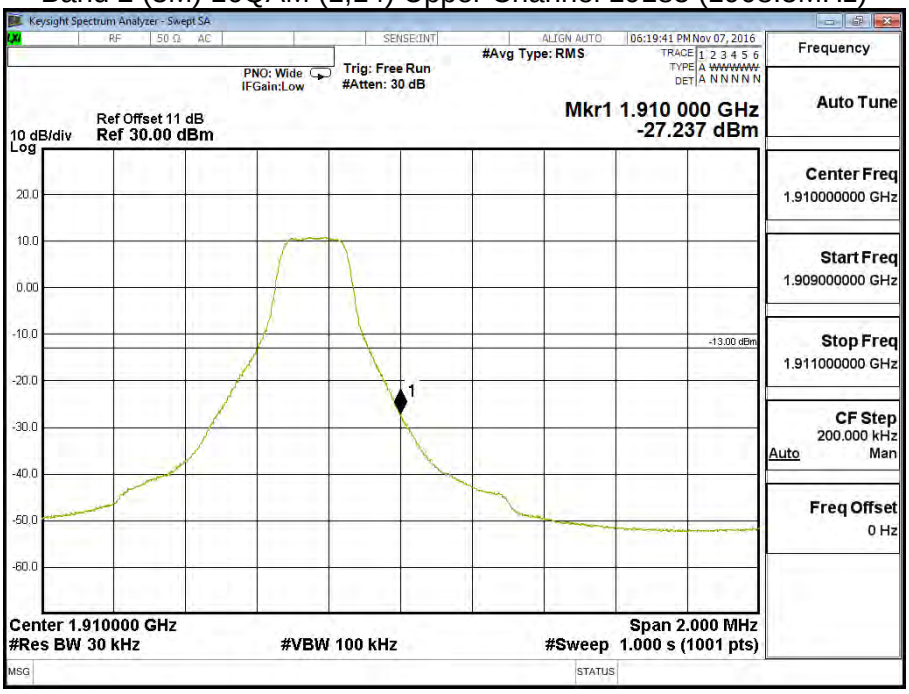
Band 2 (3M) QPSK (15,0) Upper Channel 19185 (1908.5MHz)



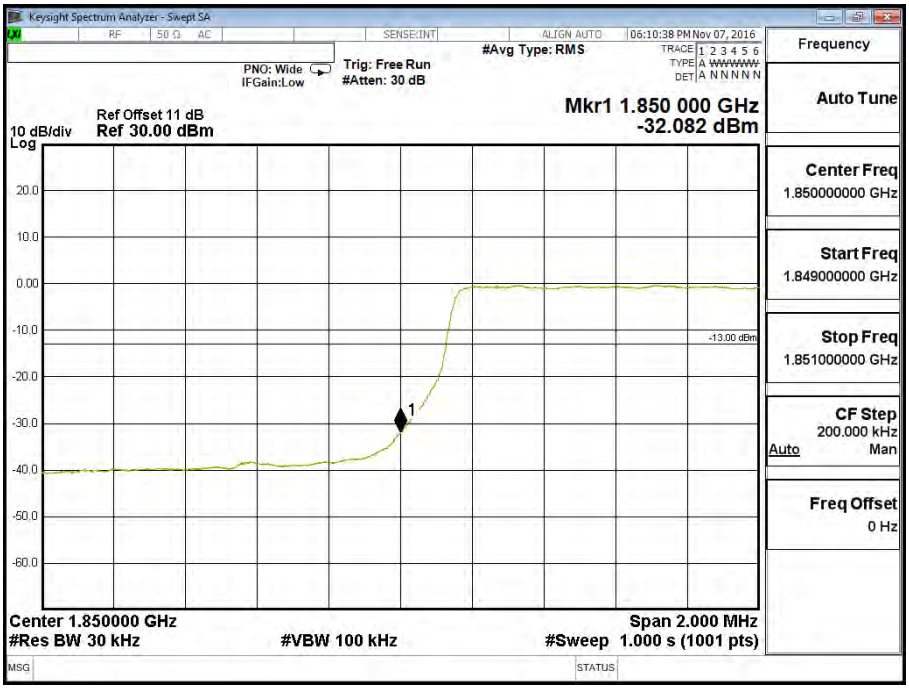
Band 2 (3M) 16QAM (1,0) Lower Channel 18615 (1851.5MHz)



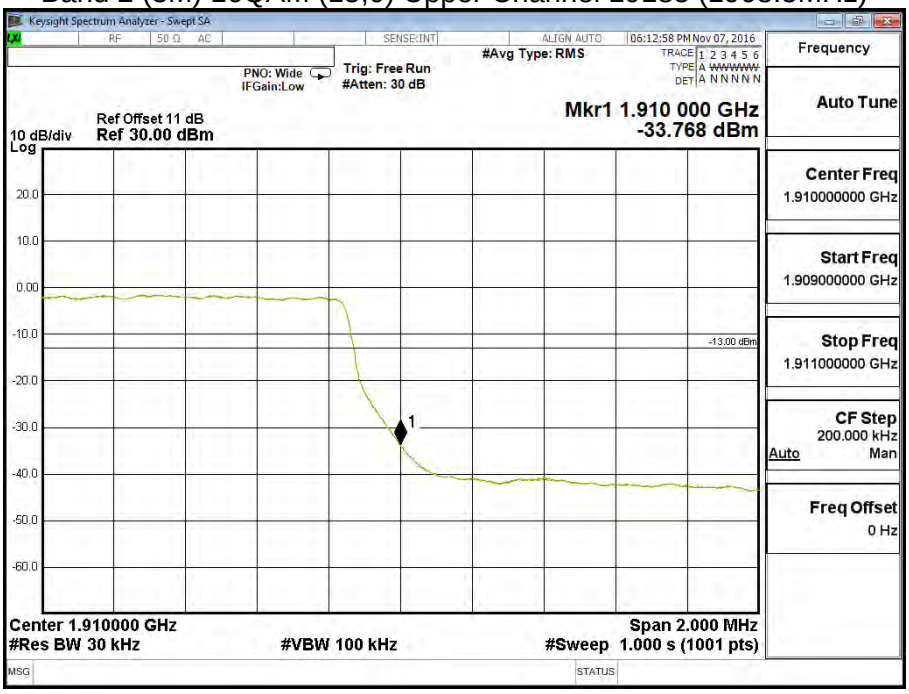
Band 2 (3M) 16QAM (1,14) Upper Channel 19185 (1908.5MHz)



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

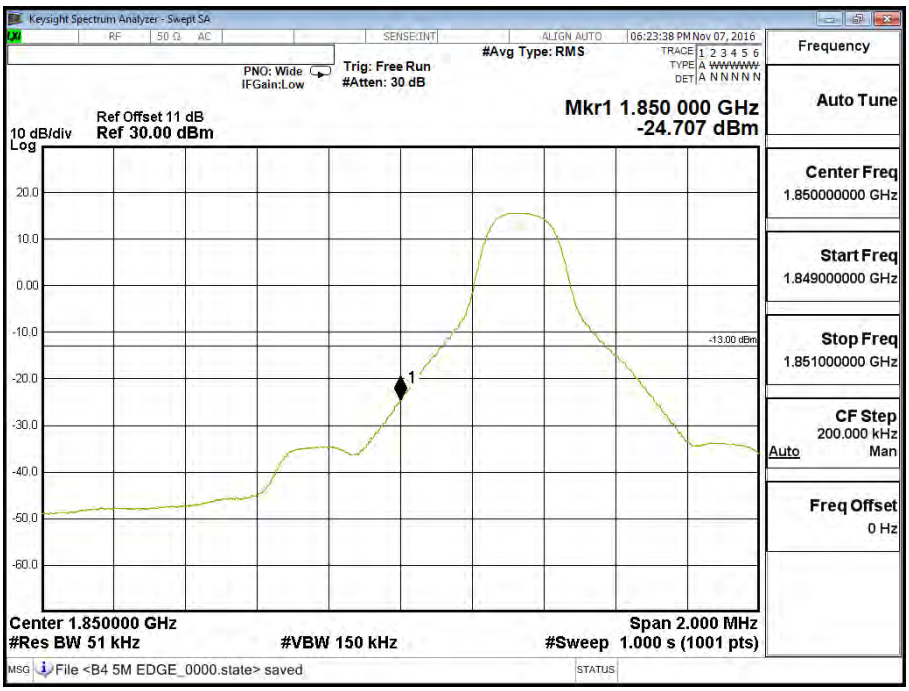


Band 2 (3M) 16QAM (15,0) Upper Channel 19185 (1908.5MHz)

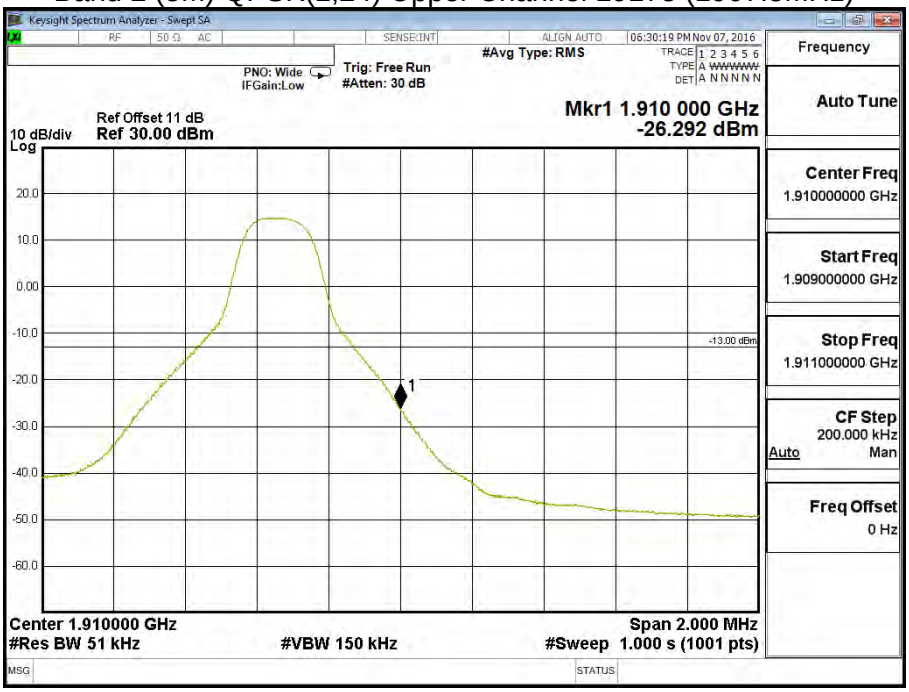


Product	LTE Router		
Test Mode	Spurious Emission At Antenna Terminals (+/-1MHz)		
Date of Test	2016/12/04	Test Site	CTR
Test Condition	Block Edge Test (Band 2 (5M))		

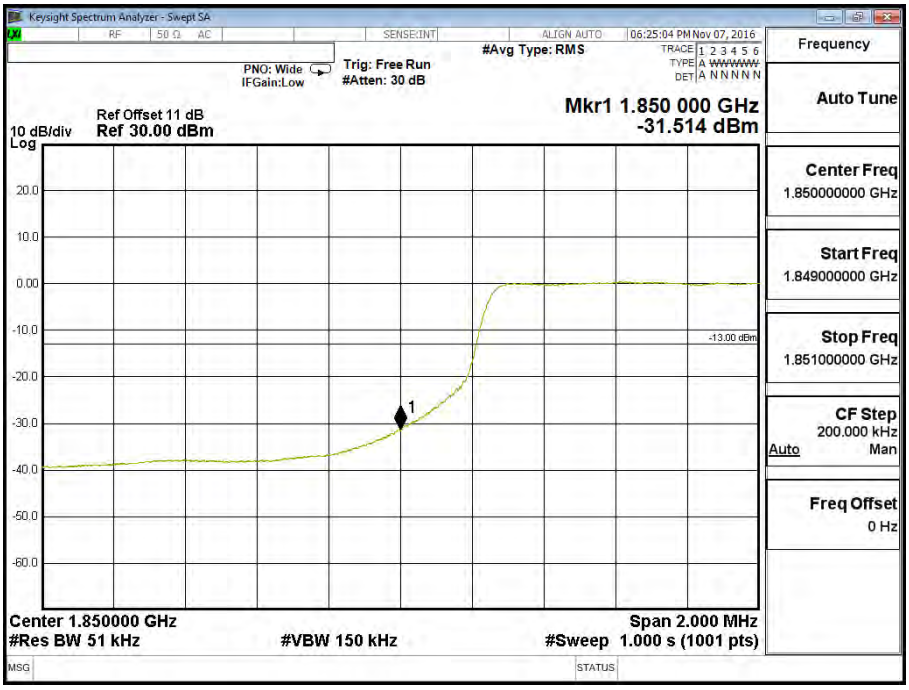
Band 2 (5M) QPSK(1,0) Lower Channel 18625 (1852.5MHz)



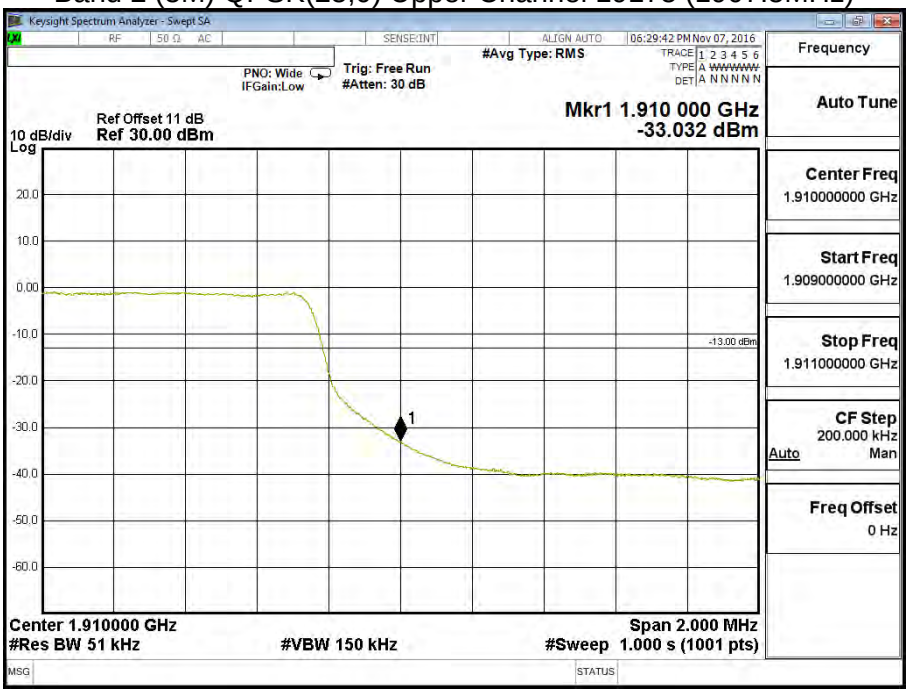
Band 2 (5M) QPSK(1,24) Upper Channel 19175 (1907.5MHz)



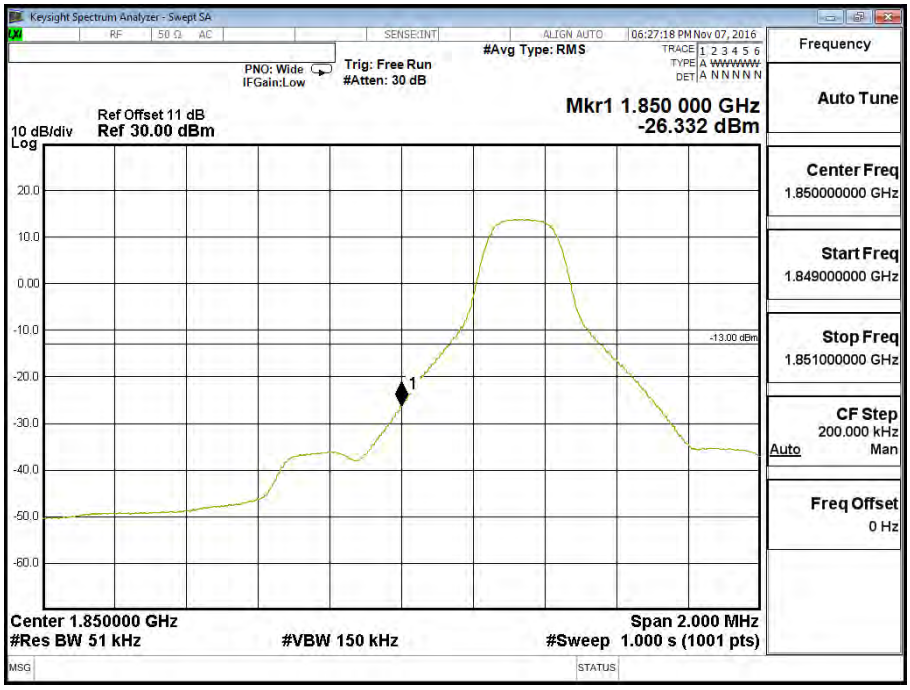
Band 2 (5M) QPSK(25,0) Lower Channel 18625 (1852.5MHz)



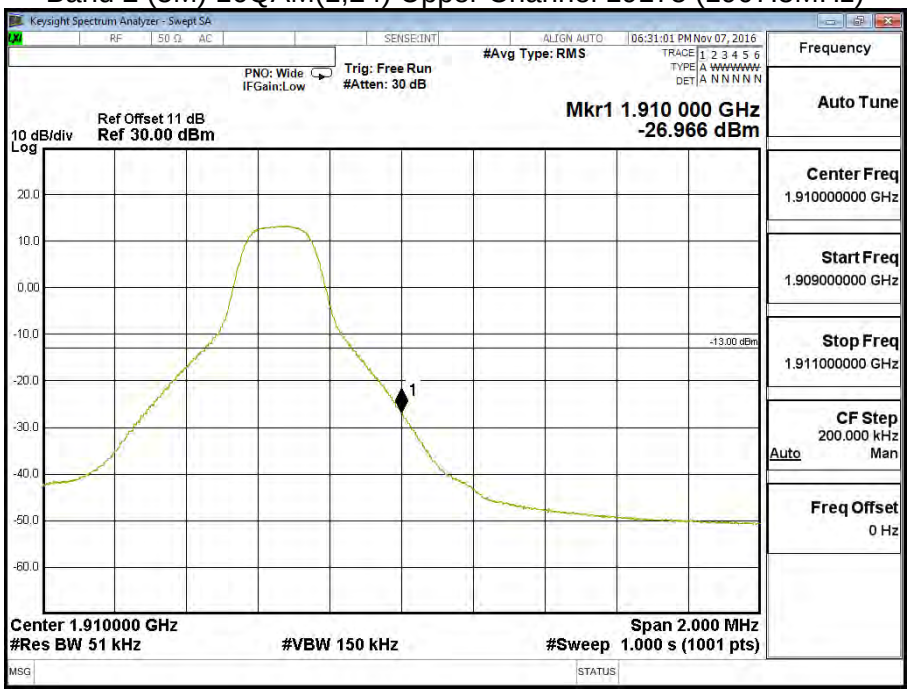
Band 2 (5M) QPSK(25,0) Upper Channel 19175 (1907.5MHz)



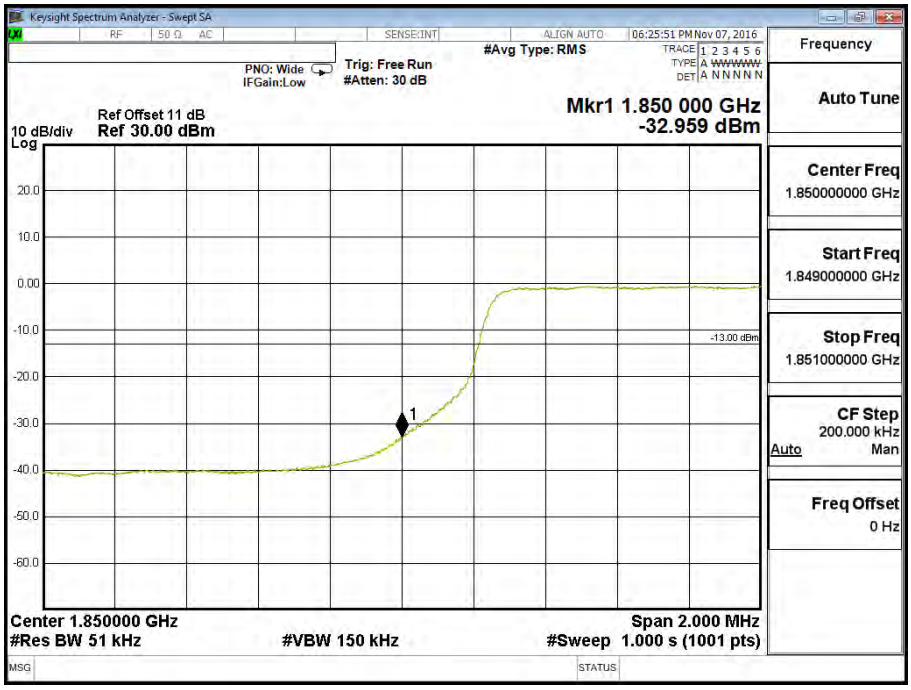
Band 2 (5M) 16QAM(1,0) Lower Channel 18625 (1852.5MHz)



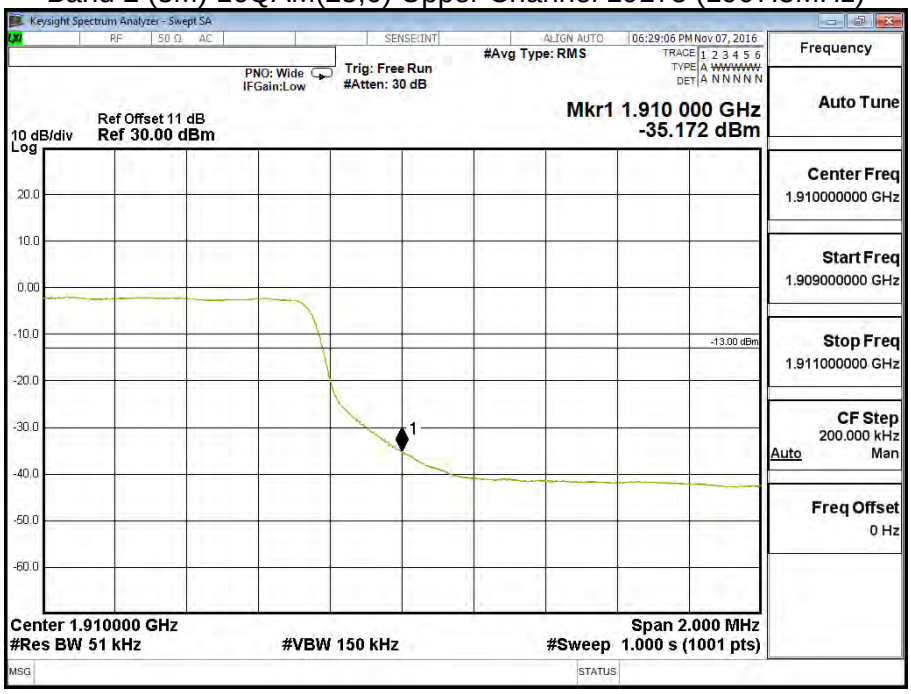
Band 2 (5M) 16QAM(1,24) Upper Channel 19175 (1907.5MHz)



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

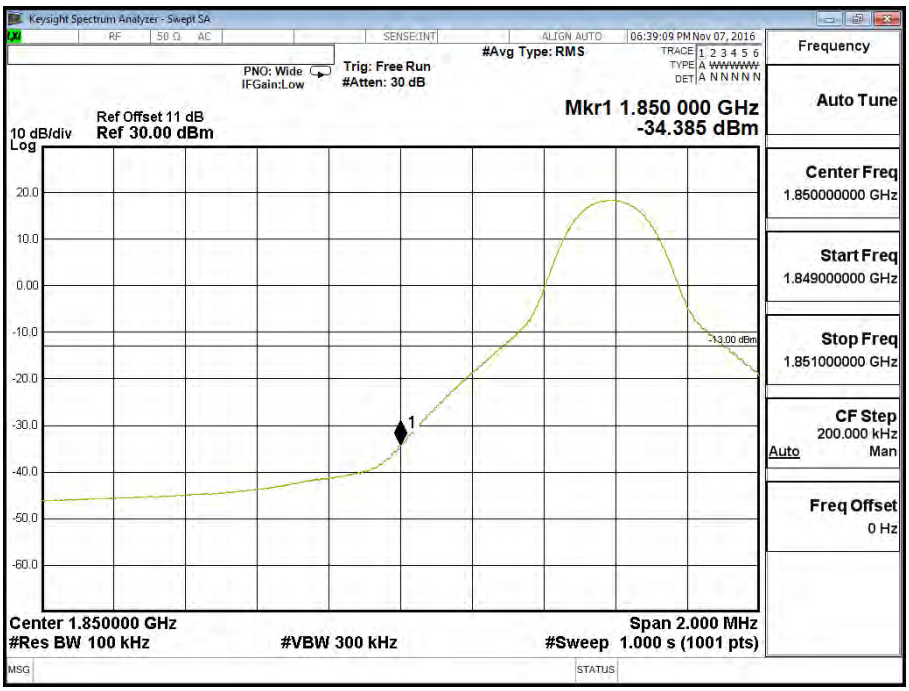


Band 2 (5M) 16QAM(25,0) Upper Channel 19175 (1907.5MHz)

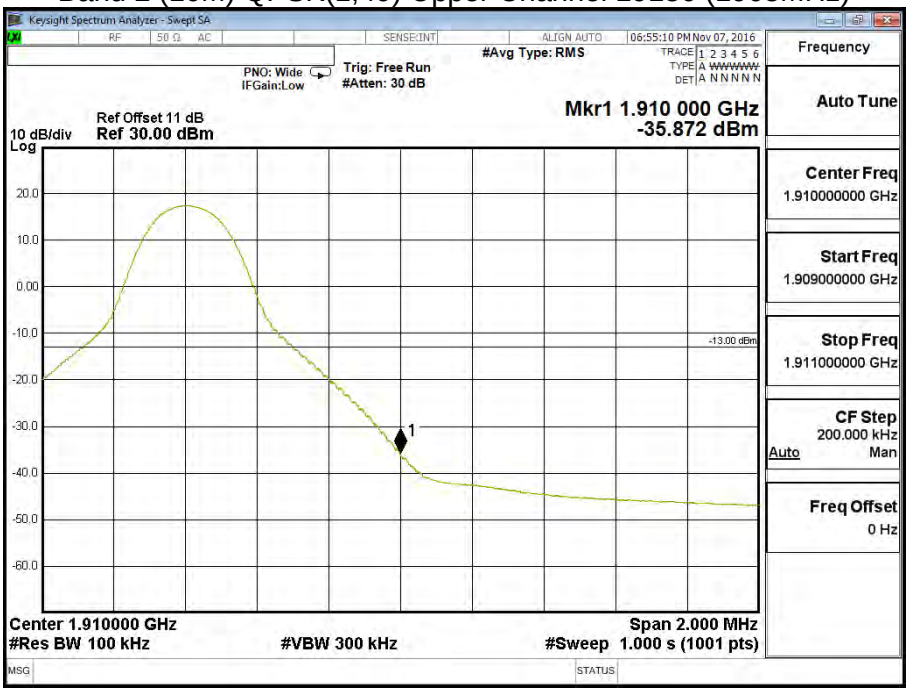


Product	LTE Router		
Test Mode	Spurious Emission At Antenna Terminals (+/-1MHz)		
Date of Test	2016/12/04	Test Site	CTR
Test Condition	Block Edge Test (Band 2 (10M))		

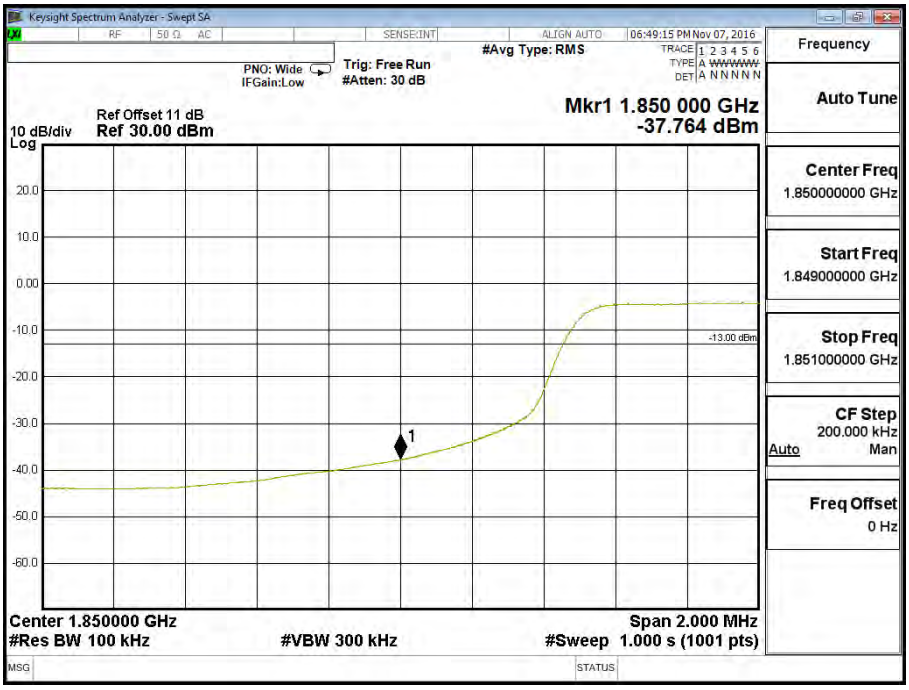
Band 2 (10M) QPSK(1,0) Lower Channel 18650 (1855MHz)



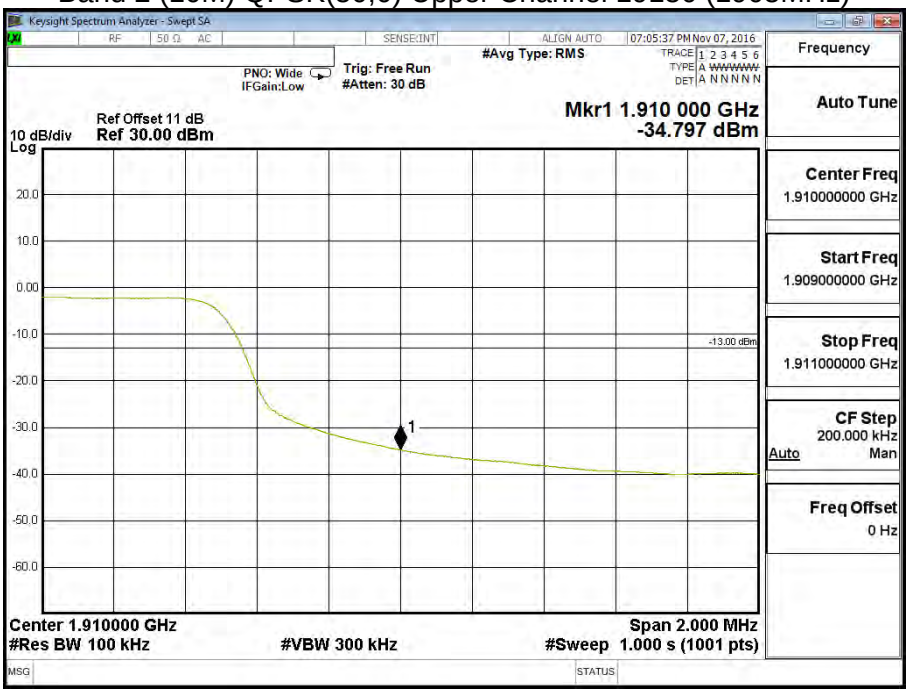
Band 2 (10M) QPSK(1,49) Upper Channel 19150 (1905MHz)



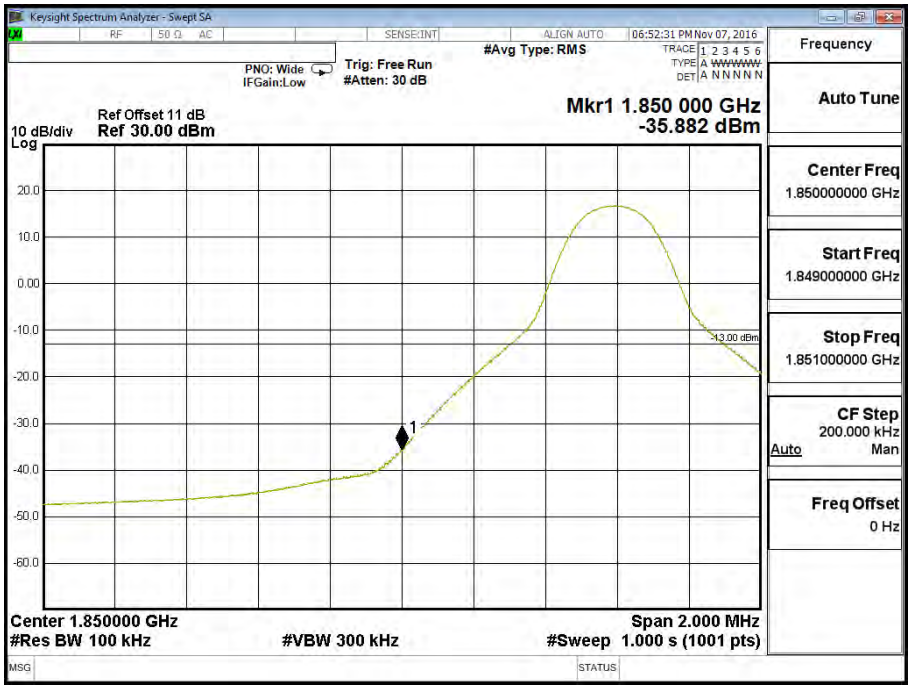
Band 2 (10M) QPSK(50,0) Lower Channel 18650 (1855MHz)



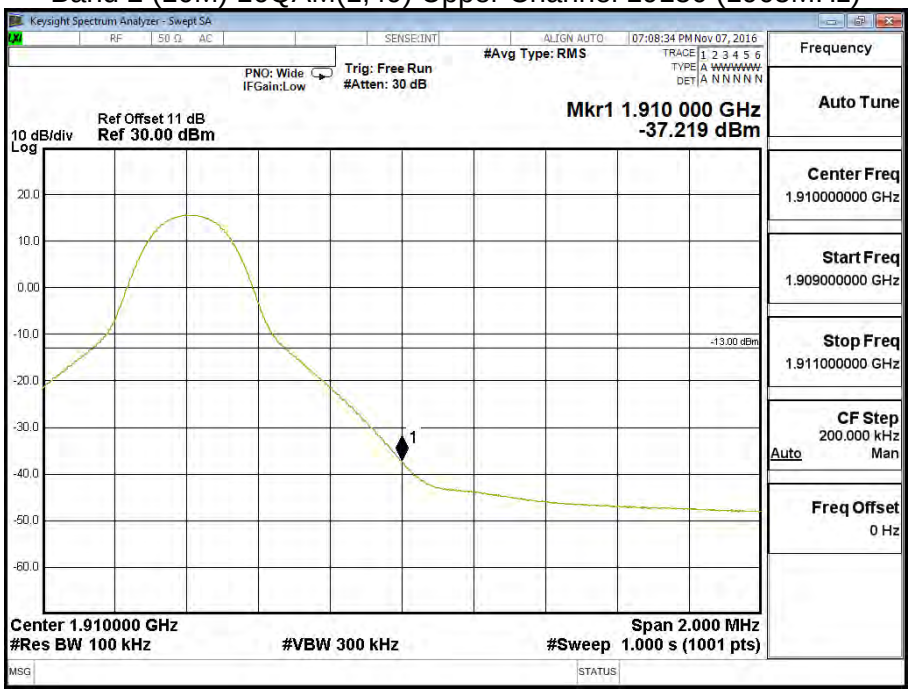
Band 2 (10M) QPSK(50,0) Upper Channel 19150 (1905MHz)



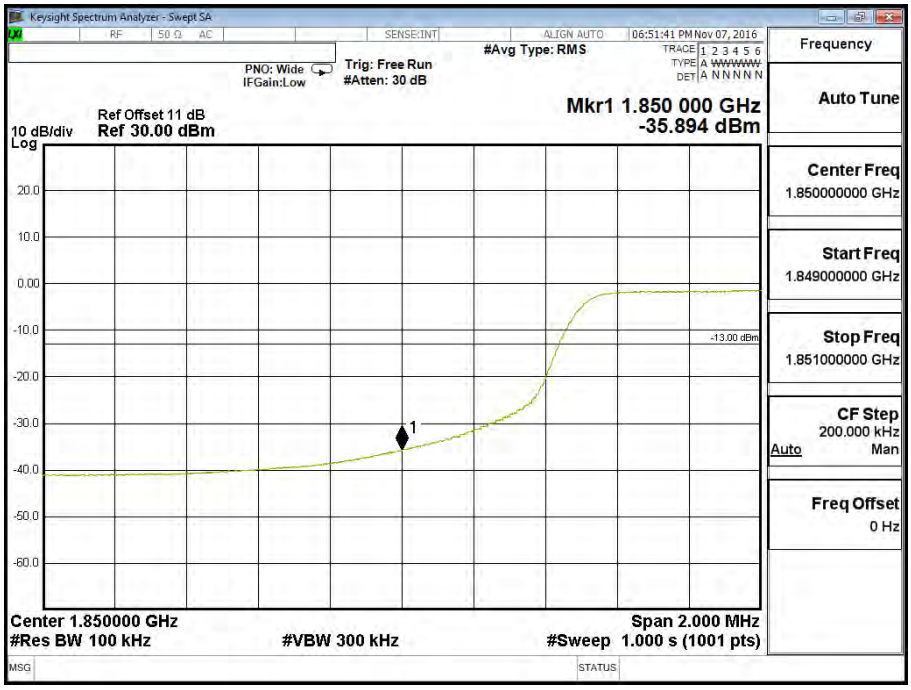
Band 2 (10M) 16QAM(1,0) Lower Channel 18650 (1855MHz)



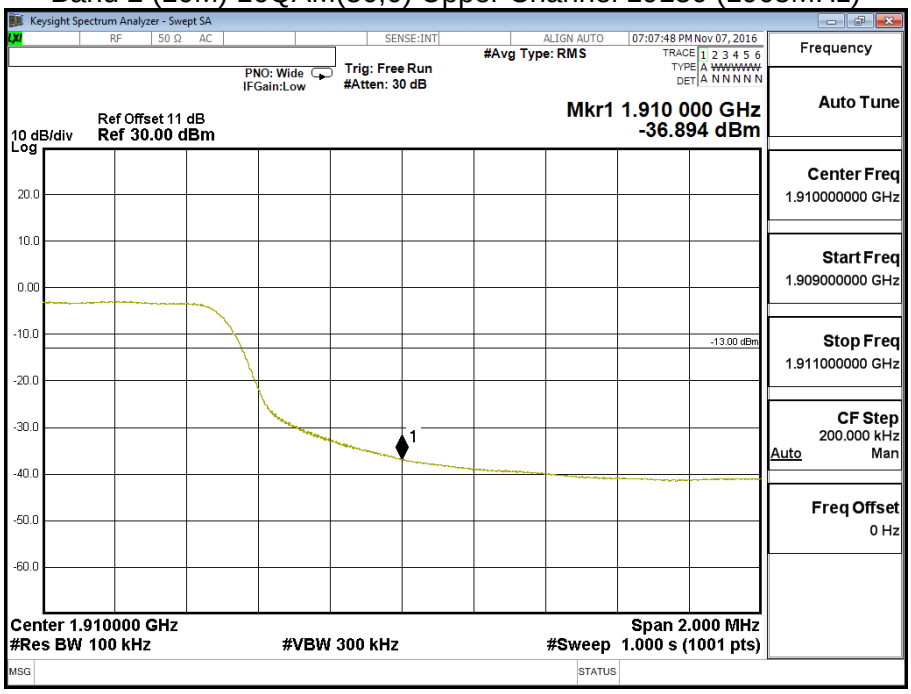
Band 2 (10M) 16QAM(1,49) Upper Channel 19150 (1905MHz)



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

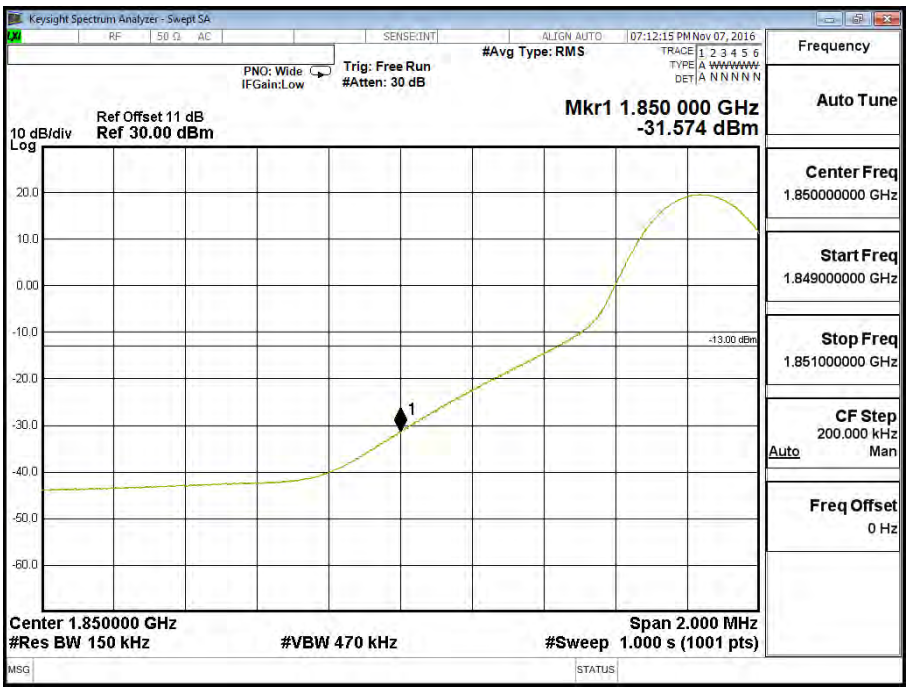


Band 2 (10M) 16QAM(50,0) Upper Channel 19150 (1905MHz)

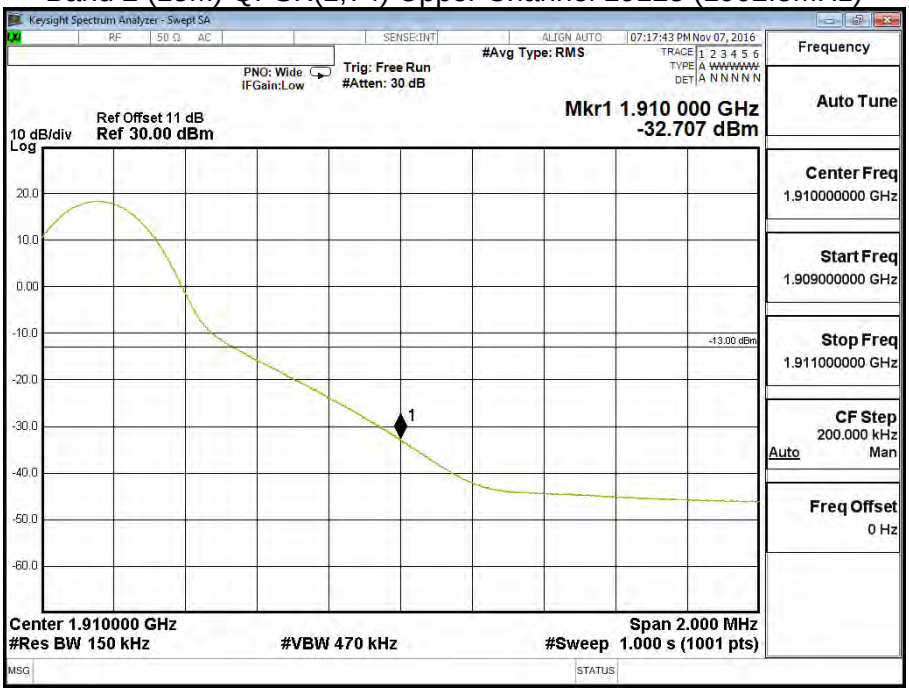


Product	LTE Router		
Test Mode	Spurious Emission At Antenna Terminals (+/-1MHz)		
Date of Test	2016/12/04	Test Site	CTR
Test Condition	Block Edge Test (Band 2 (15M))		

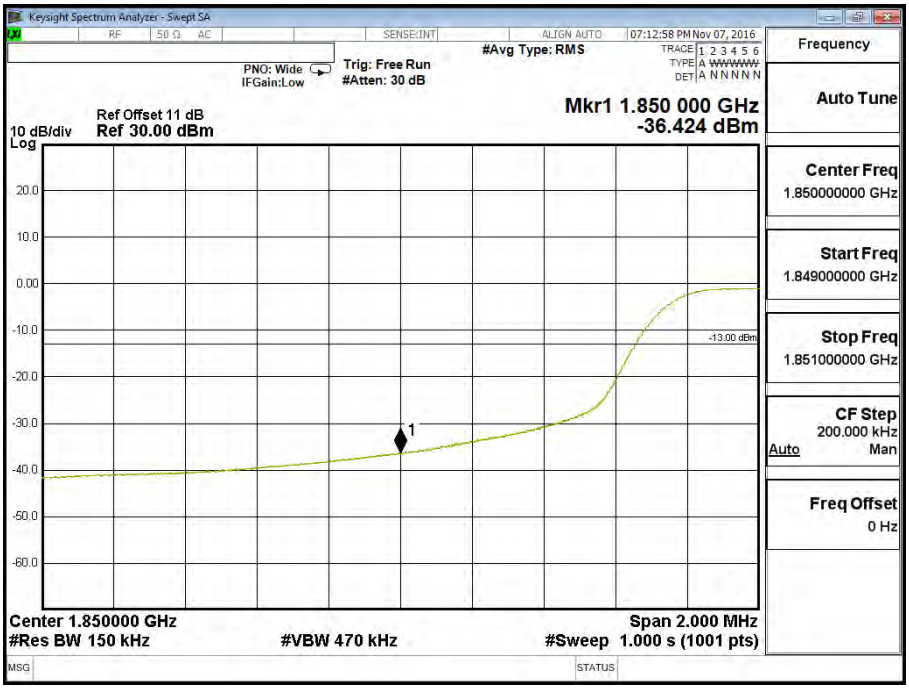
Band 2 (15M)QPSK(1,0) Lower Channel 18675 (1857.5MHz)



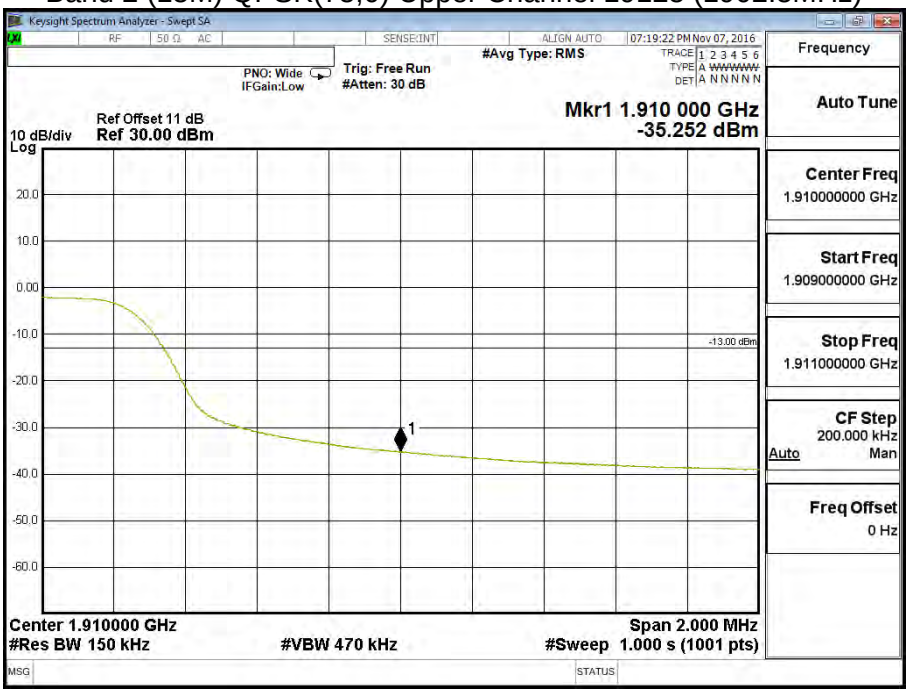
Band 2 (15M) QPSK(1,74) Upper Channel 19125 (1902.5MHz)



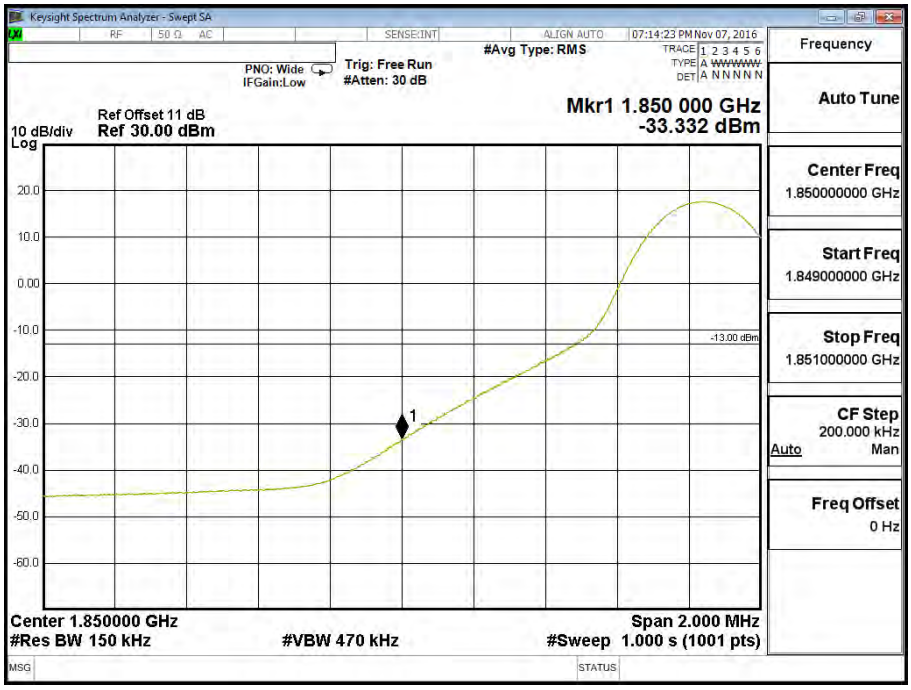
Band 2 (15M) QPSK(75,0) Lower Channel 18675 (1857.5MHz)



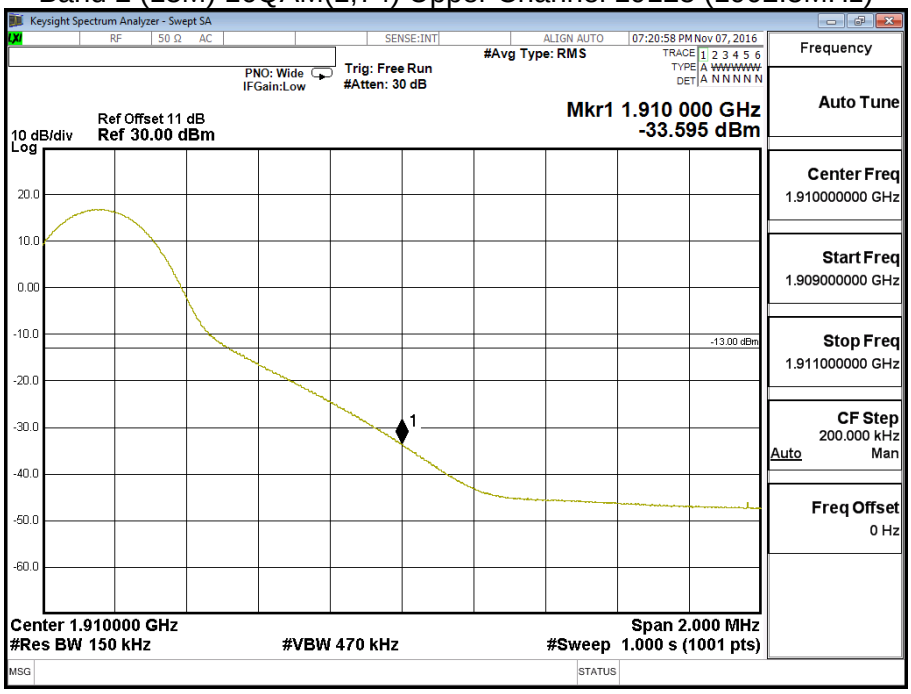
Band 2 (15M) QPSK(75,0) Upper Channel 19125 (1902.5MHz)



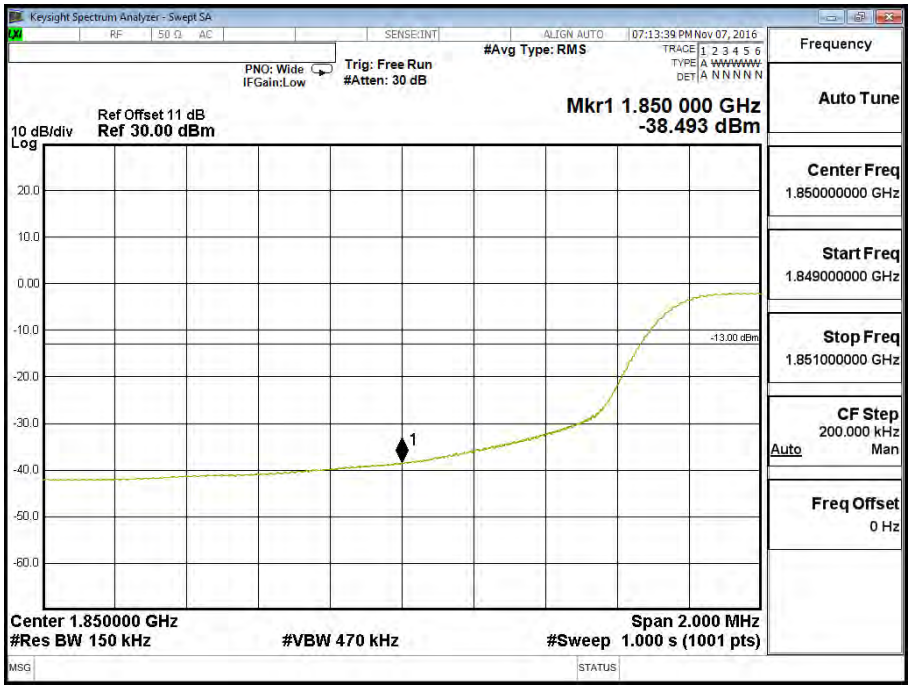
Band 2 (15M) 16QAM(1,0) Lower Channel 18675 (1857.5MHz)



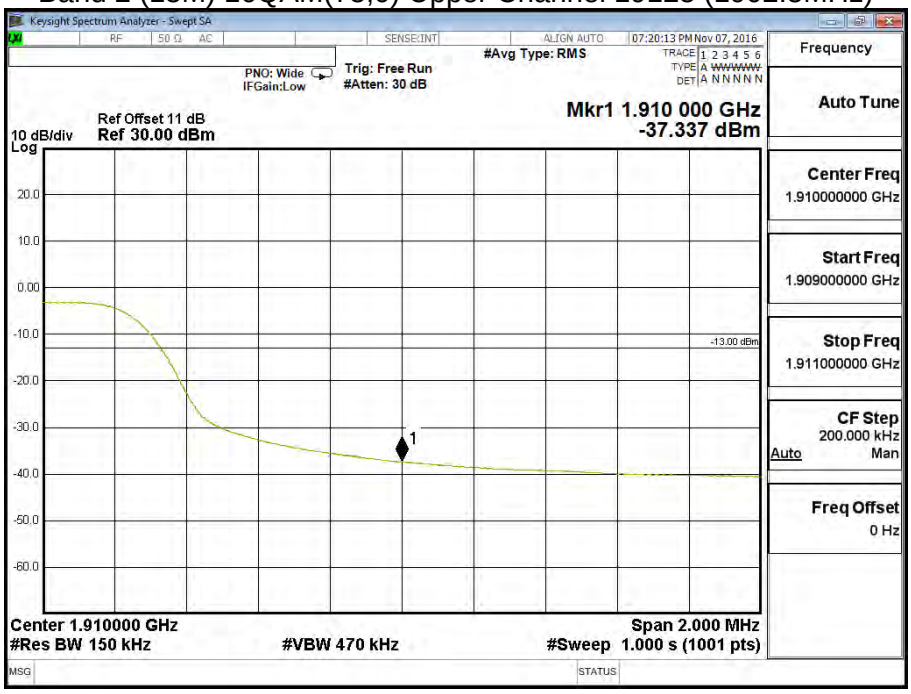
Band 2 (15M) 16QAM(1,74) Upper Channel 19125 (1902.5MHz)



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

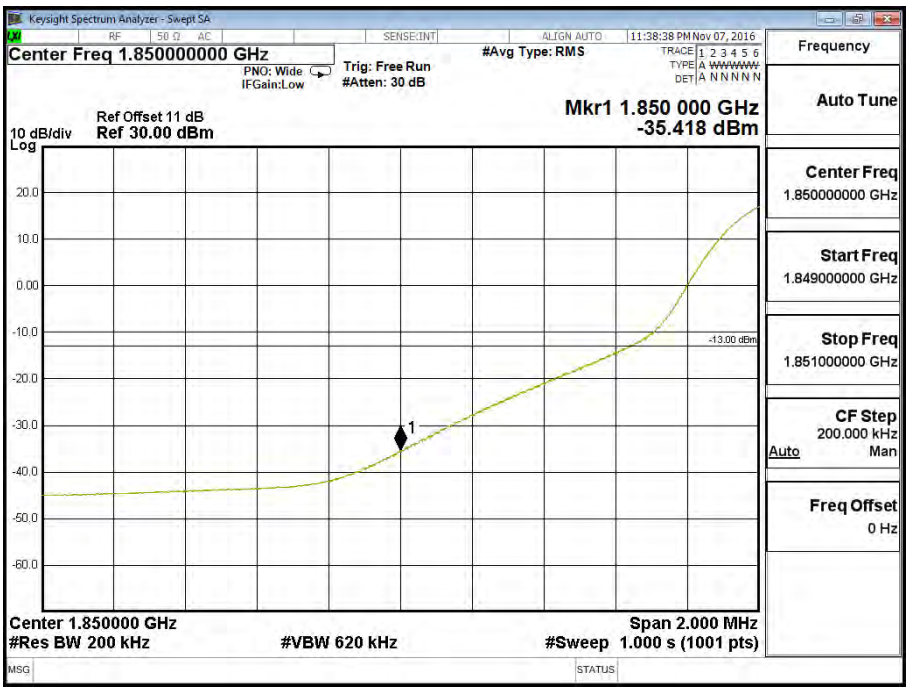


Band 2 (15M) 16QAM(75,0) Upper Channel 19125 (1902.5MHz)

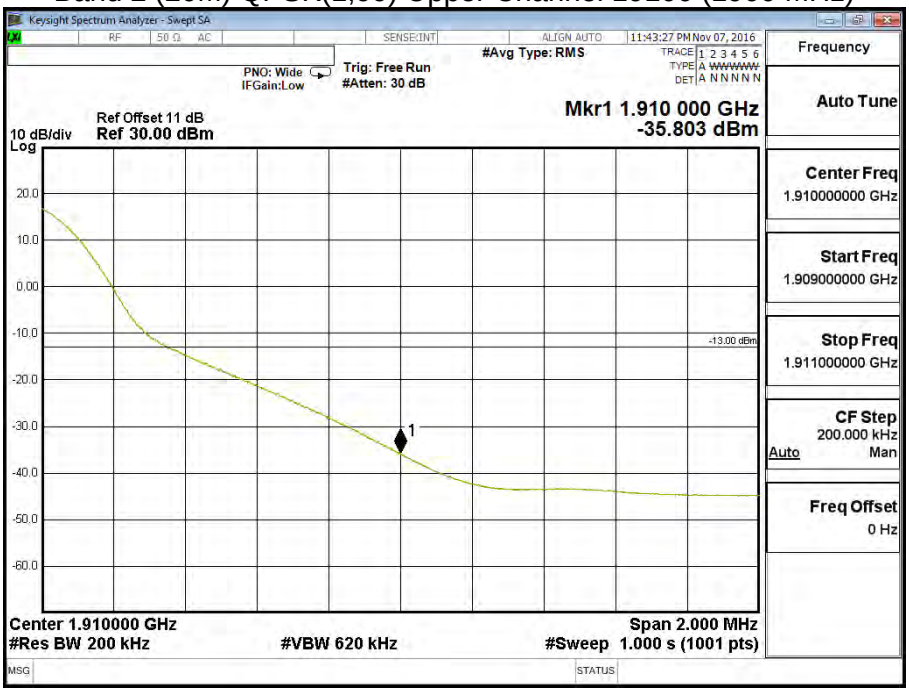


Product	LTE Router		
Test Mode	Spurious Emission At Antenna Terminals (+/-1MHz)		
Date of Test	2016/12/04	Test Site	CTR
Test Condition	Block Edge Test (Band 2 (20M))		

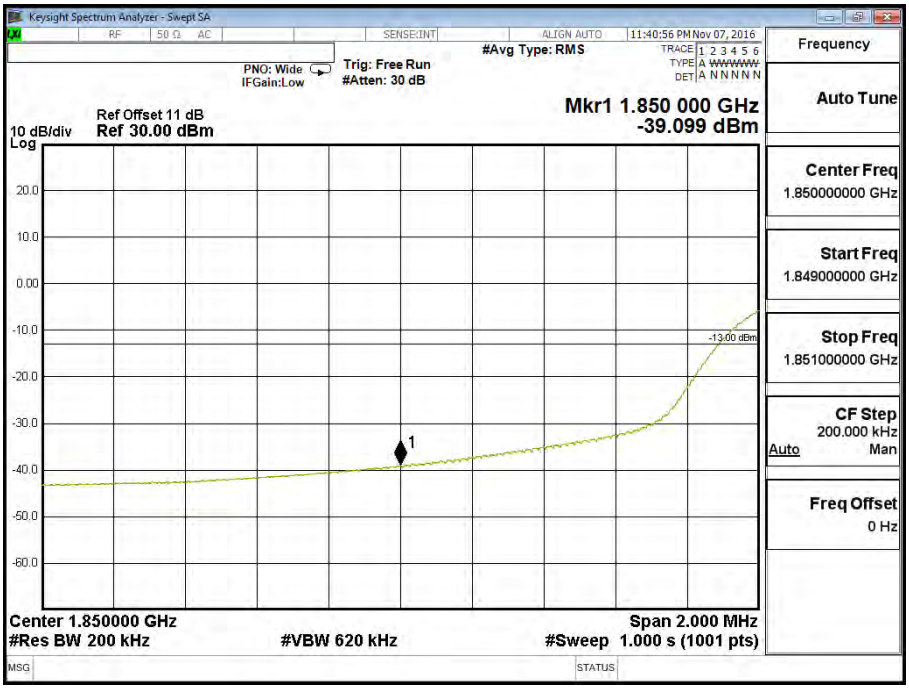
Band 2 (20M) QPSK(1,0) Lower Channel 18700 (1860MHz)



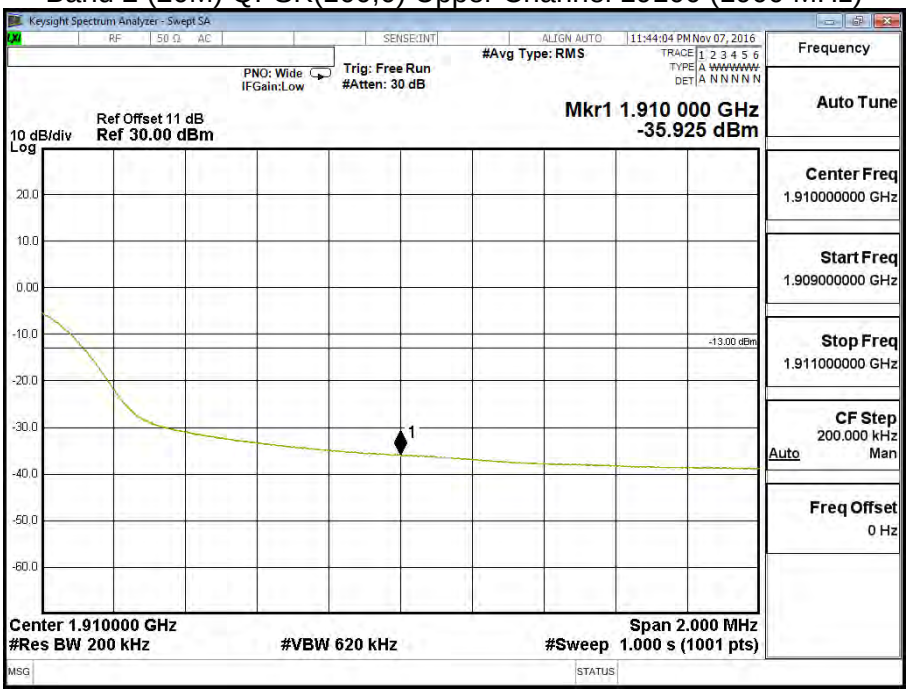
Band 2 (20M) QPSK(1,99) Upper Channel 19100 (1900 MHz)



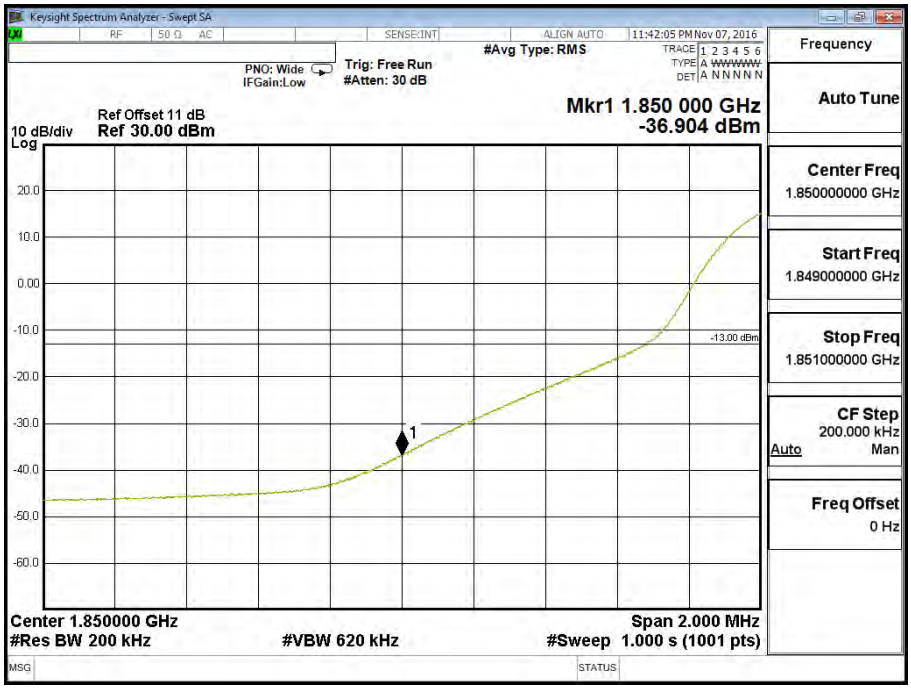
Band 2 (20M) QPSK(100,0) Lower Channel 18700 (1860MHz)



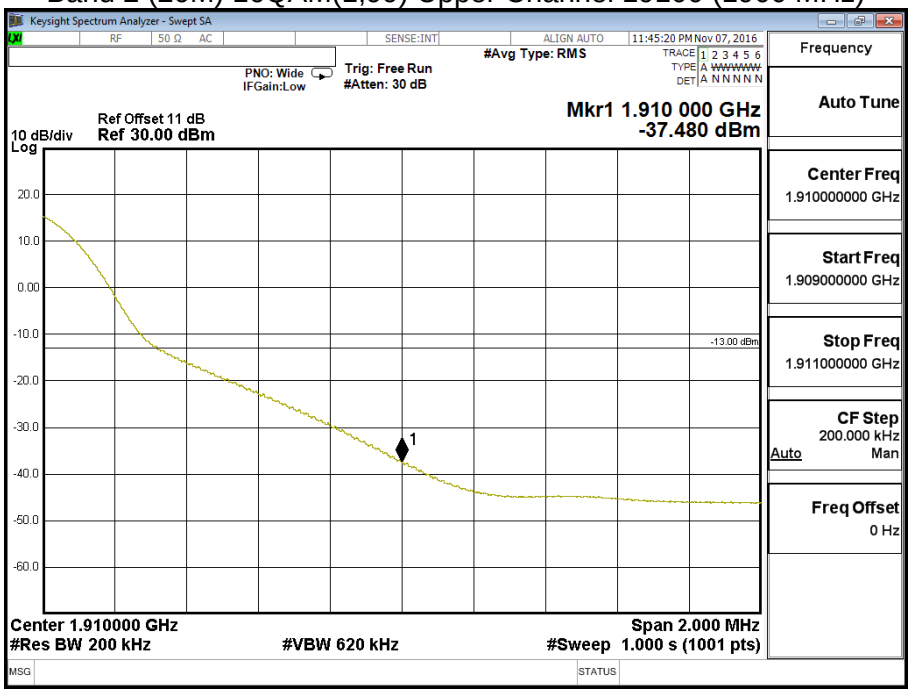
Band 2 (20M) QPSK(100,0) Upper Channel 19100 (1900 MHz)



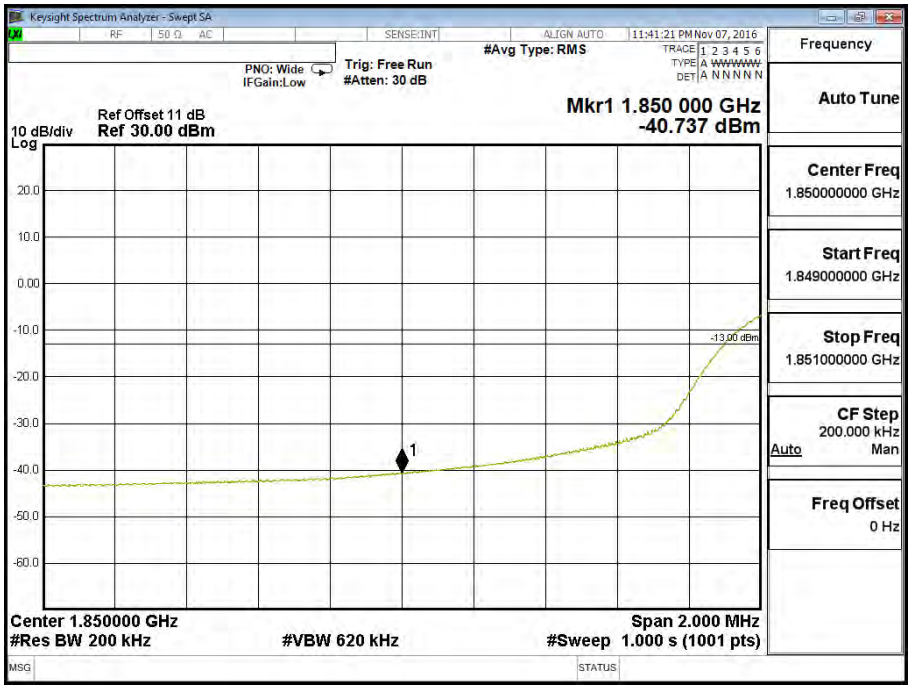
Band 2 (20M) 16QAM(1,0) Lower Channel 18700 (1860MHz)



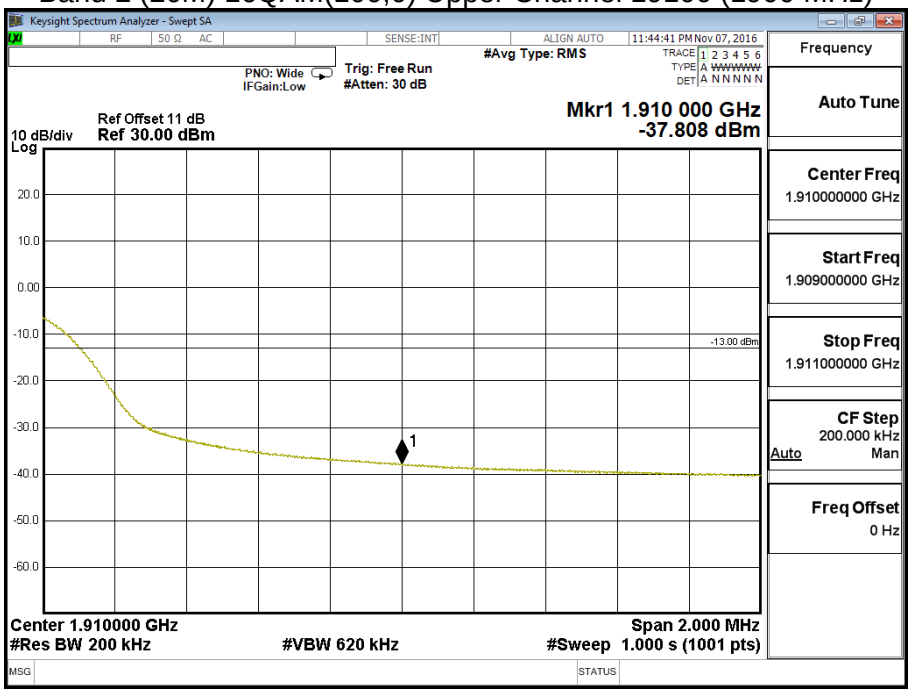
Band 2 (20M) 16QAM(1,99) Upper Channel 19100 (1900 MHz)



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

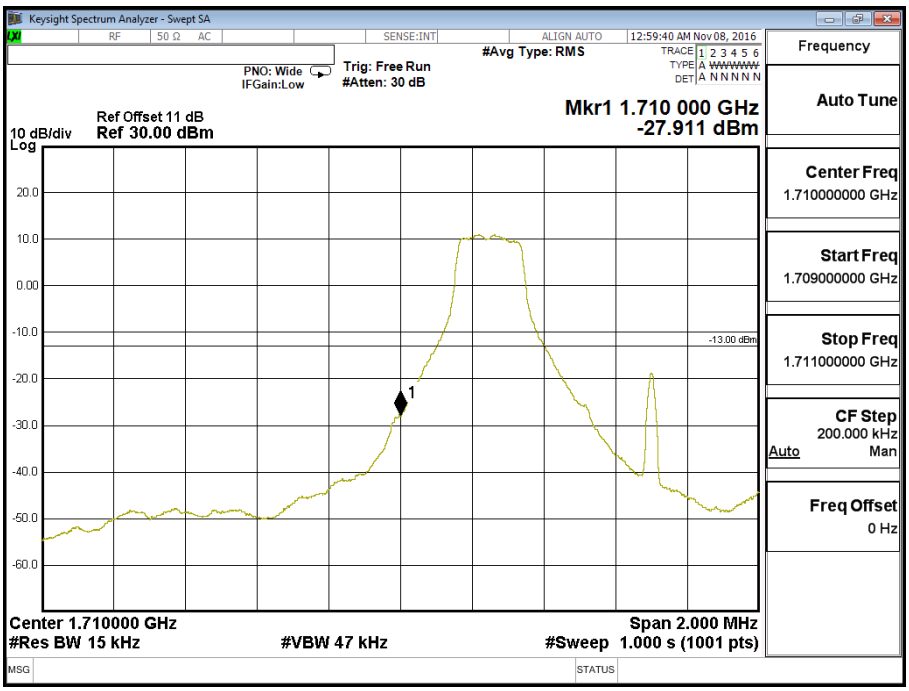


Band 2 (20M) 16QAM(100,0) Upper Channel 19100 (1900 MHz)

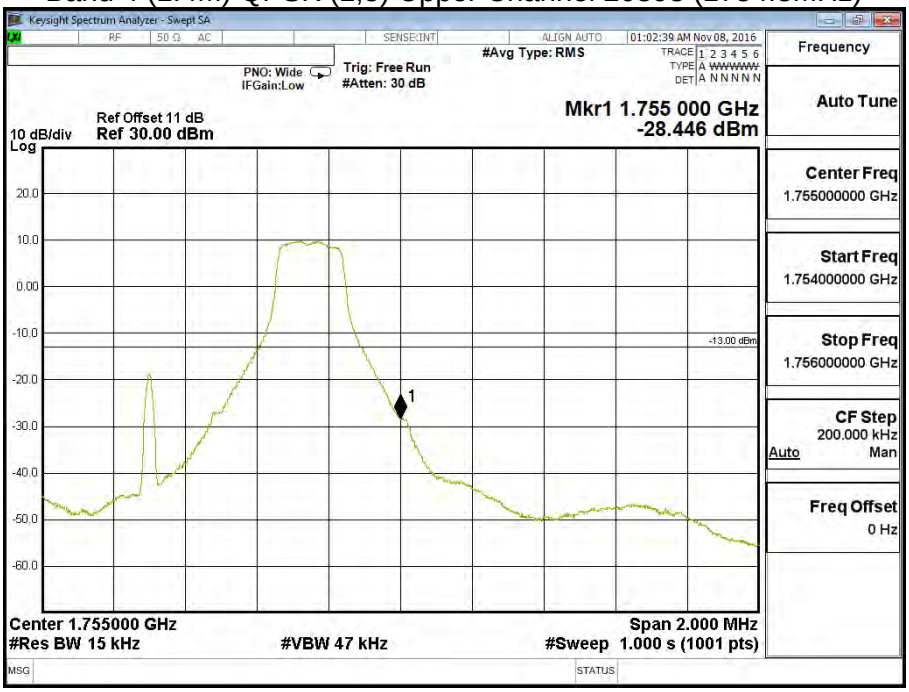


Product	LTE Router		
Test Mode	Spurious Emission At Antenna Terminals (+/-1MHz)		
Date of Test	2016/12/04	Test Site	CTR
Test Condition	Block Edge Test (Band 4 (1.4M))		

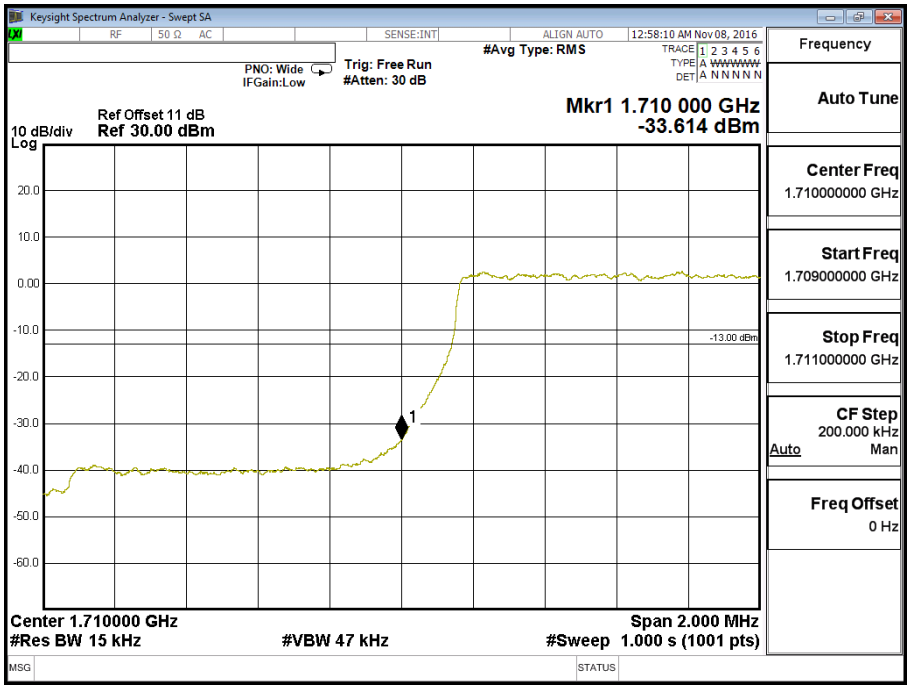
Band 4 (1.4M) QPSK (1,0) Lower Channel 19957 (1710.7MHz)



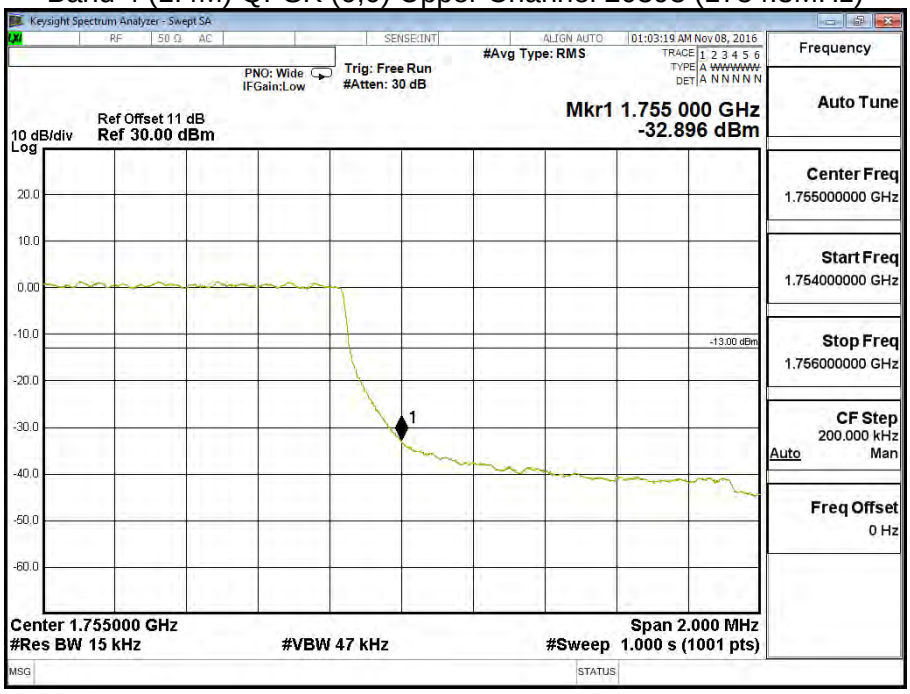
Band 4 (1.4M) QPSK (1,5) Upper Channel 20393 (1754.3MHz)



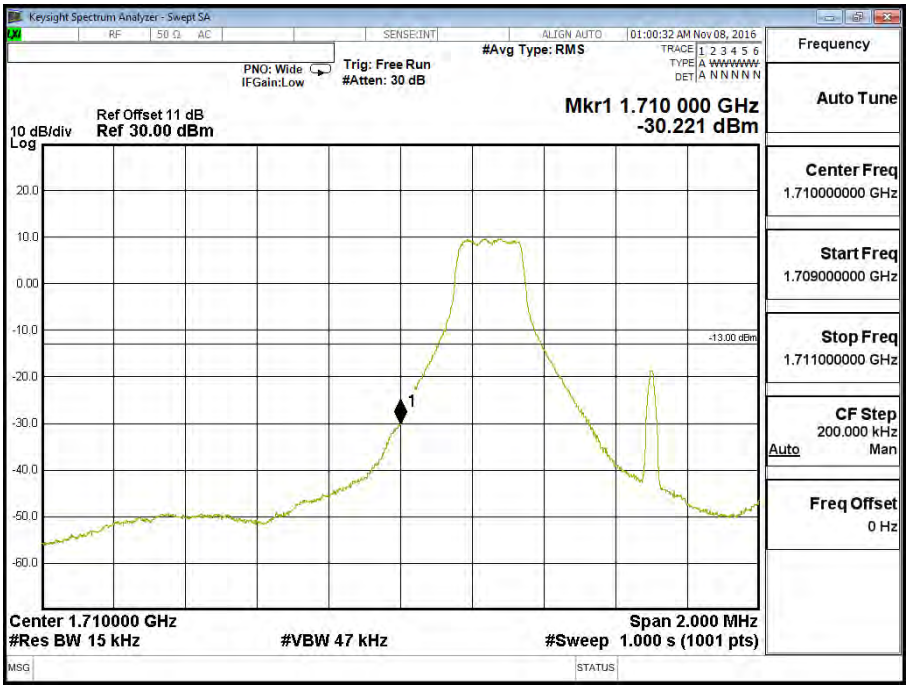
Band 4 (1.4M) QPSK (6,0) Lower Channel 19957 (1710.7MHz)



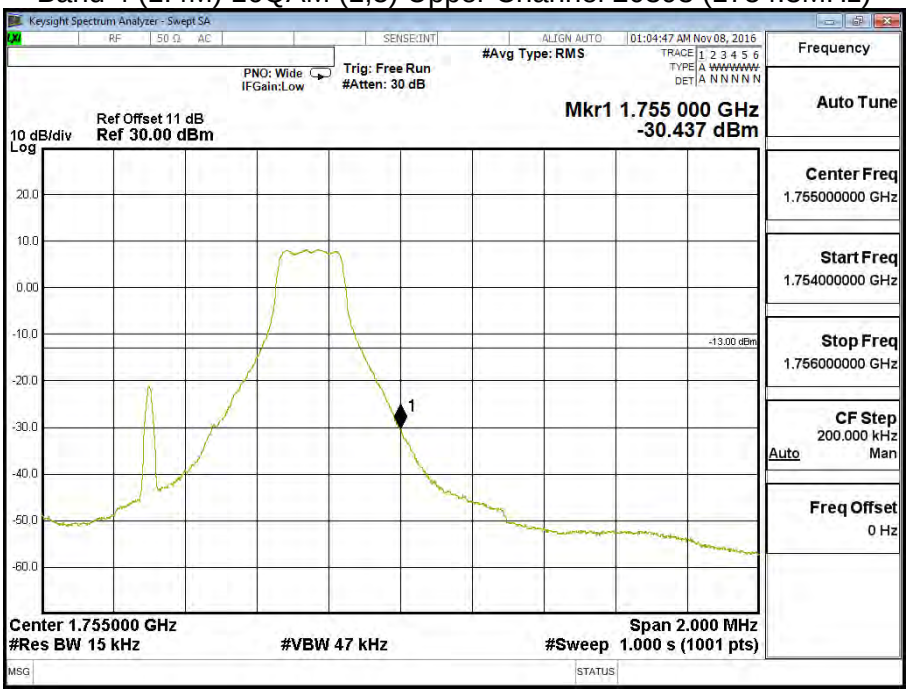
Band 4 (1.4M) QPSK (6,0) Upper Channel 20393 (1754.3MHz)



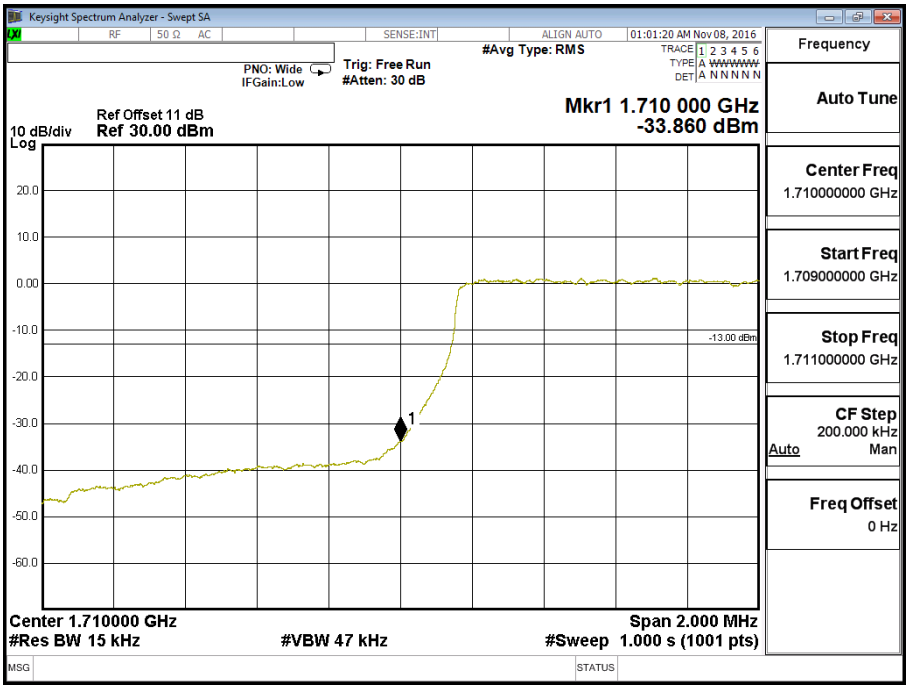
Band 4 (1.4M) 16QAM (1,0) Lower Channel 19957 (1710.7MHz)



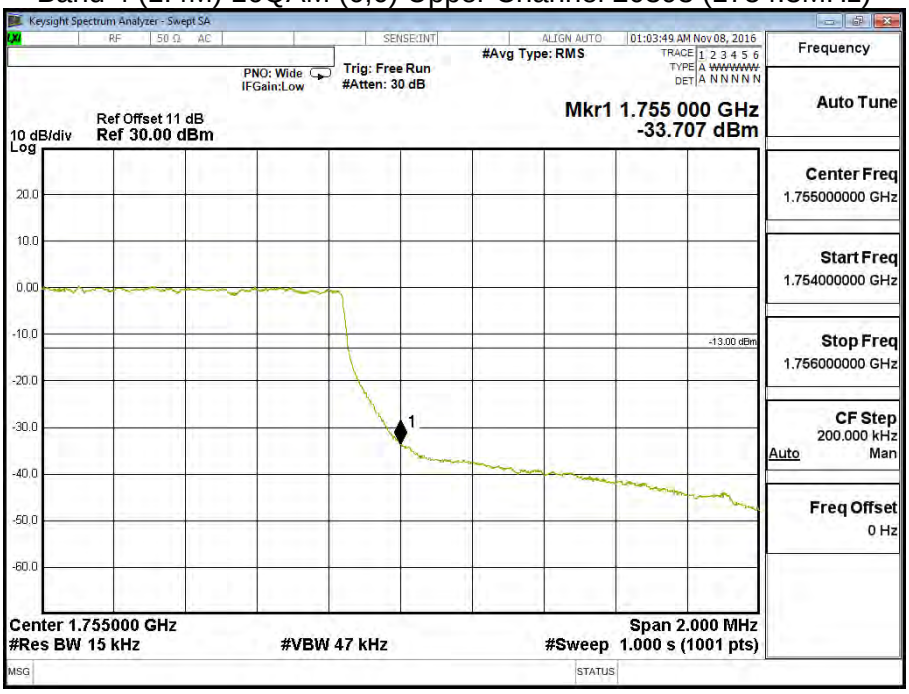
Band 4 (1.4M) 16QAM (1,5) Upper Channel 20393 (1754.3MHz)



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

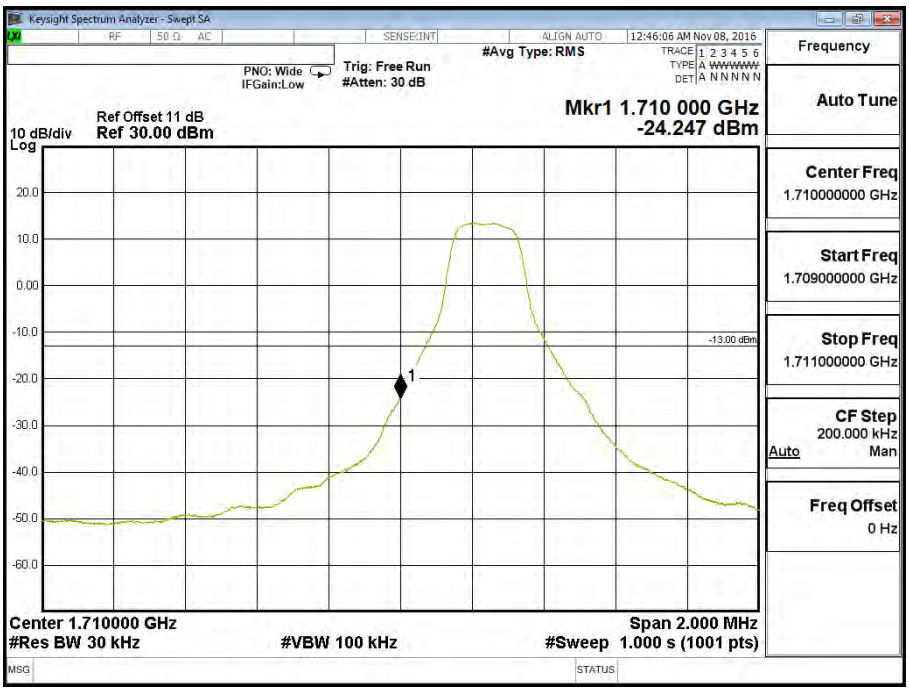


Band 4 (1.4M) 16QAM (6,0) Upper Channel 20393 (1754.3MHz)

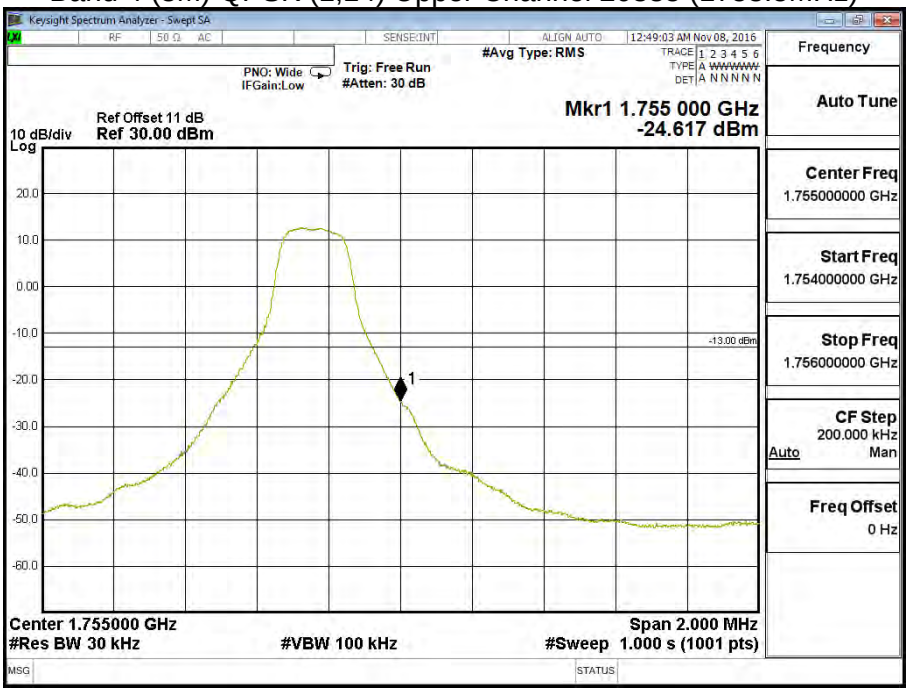


Product	LTE Router		
Test Mode	Spurious Emission At Antenna Terminals (+/-1MHz)		
Date of Test	2016/12/04	Test Site	CTR
Test Condition	Block Edge Test (Band 4 (3M))		

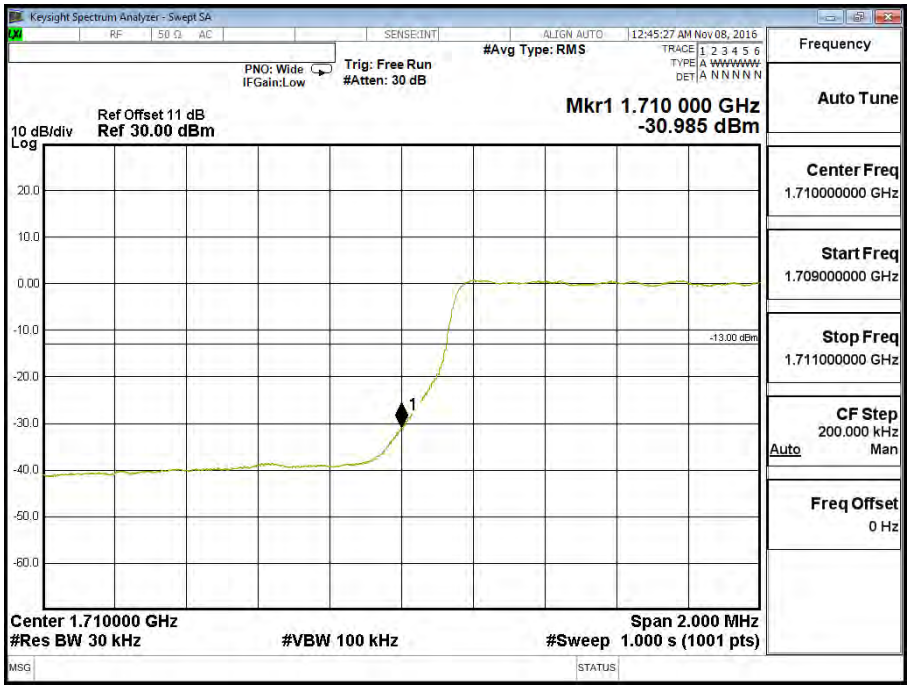
Band 4 (3M) QPSK (1,0) Lower Channel 19965 (1711.5MHz)



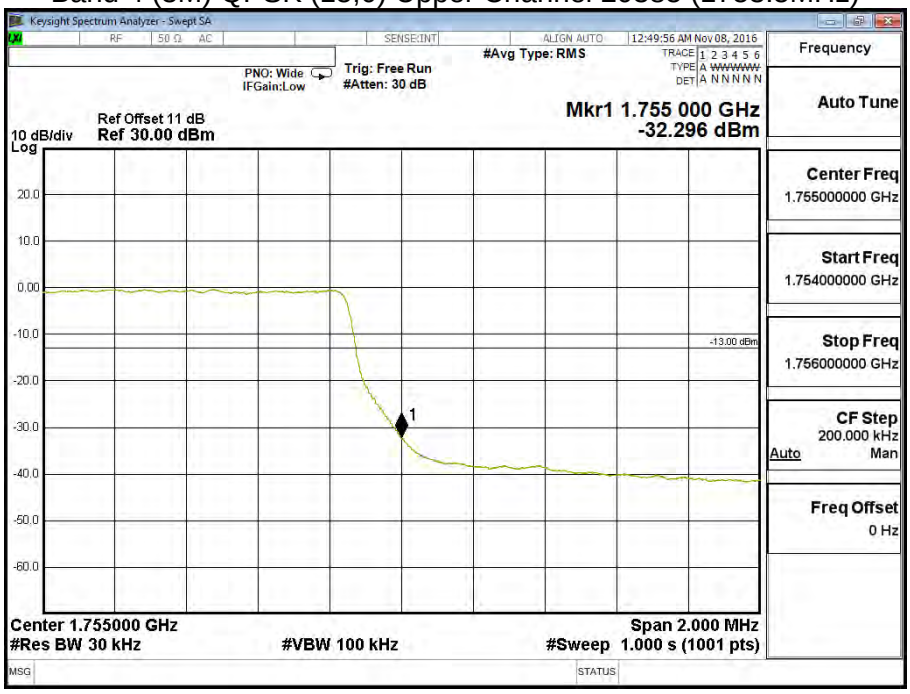
Band 4 (3M) QPSK (1,14) Upper Channel 20385 (1753.5MHz)



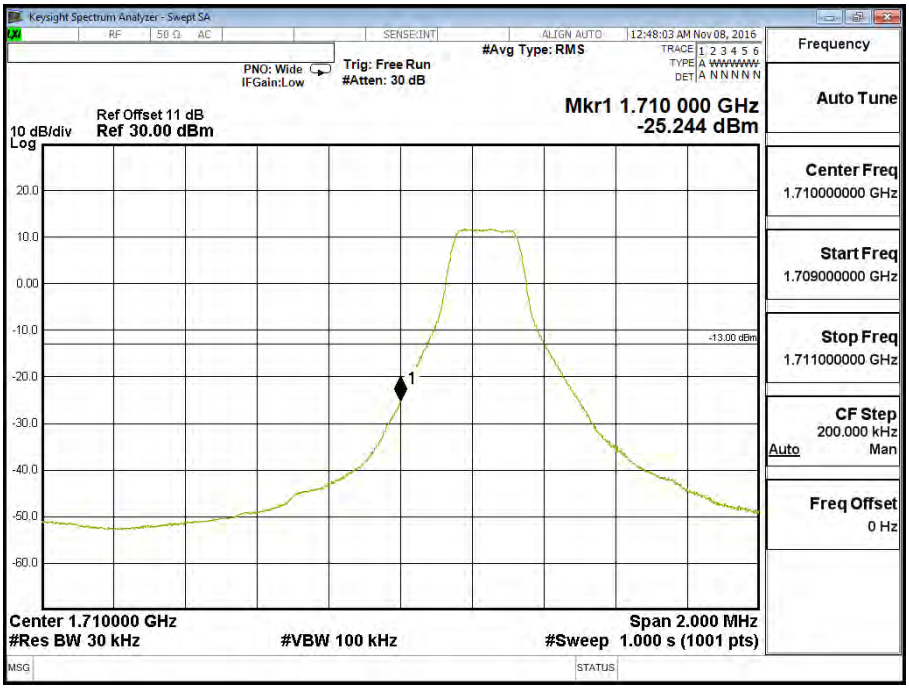
Band 4 (3M) QPSK (15,0) Lower Channel 19965 (1711.5MHz)



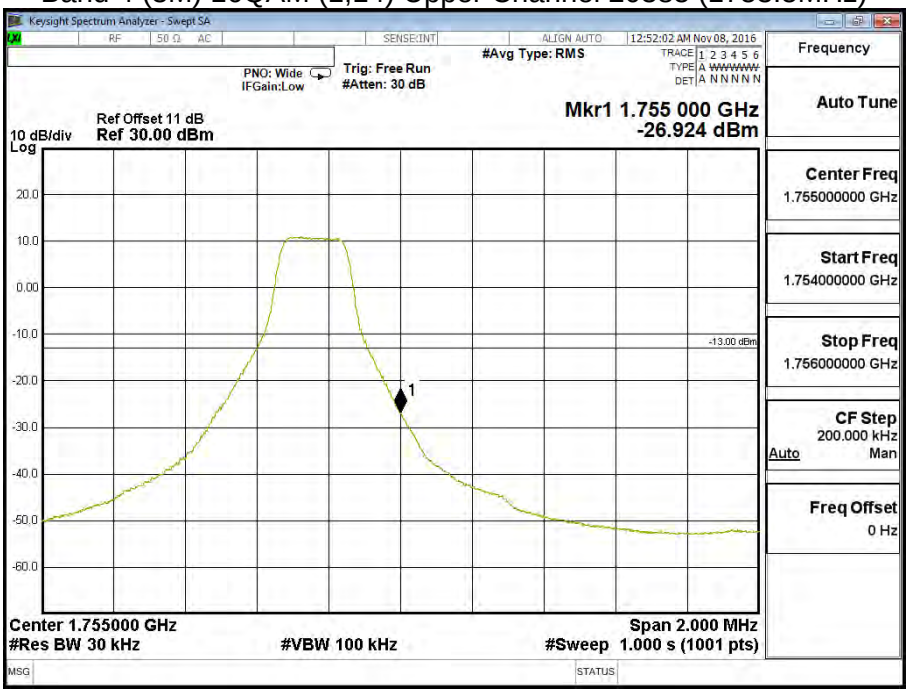
Band 4 (3M) QPSK (15,0) Upper Channel 20385 (1753.5MHz)



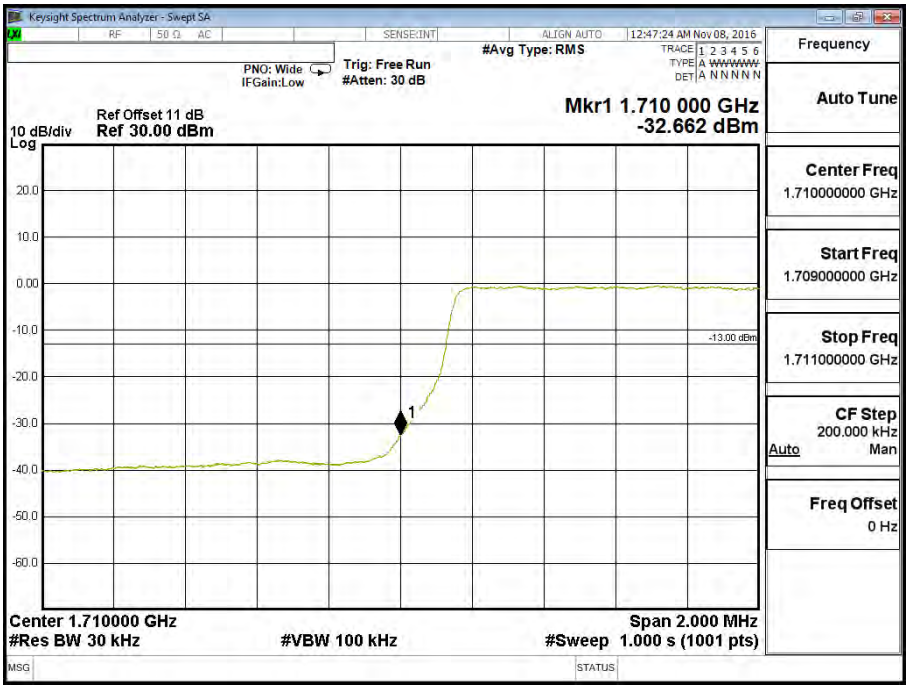
Band 4 (3M) 16QAM (1,0) Lower Channel 19965 (1711.5MHz)



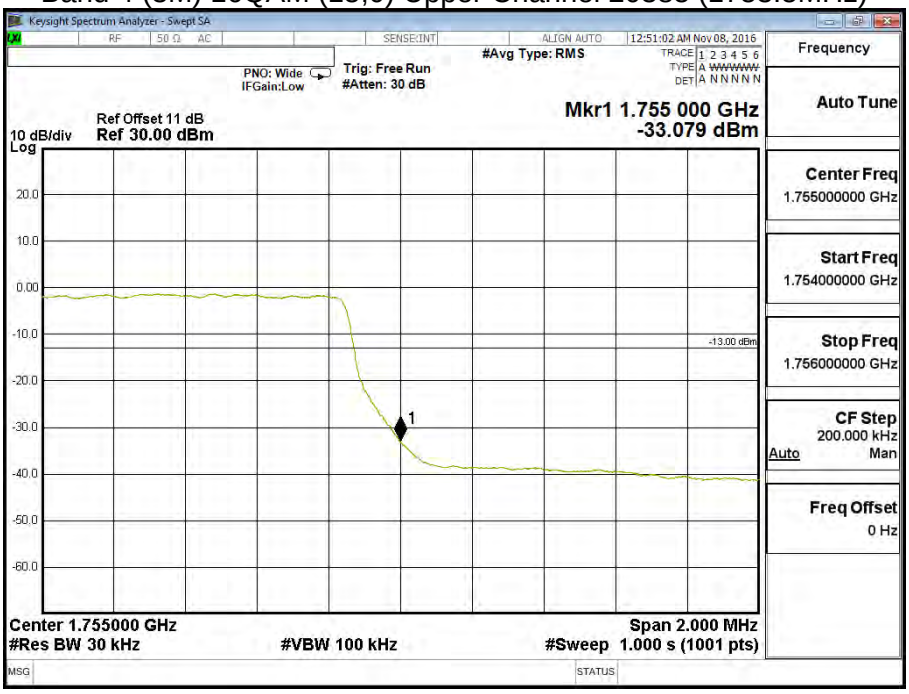
Band 4 (3M) 16QAM (1,14) Upper Channel 20385 (1753.5MHz)



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

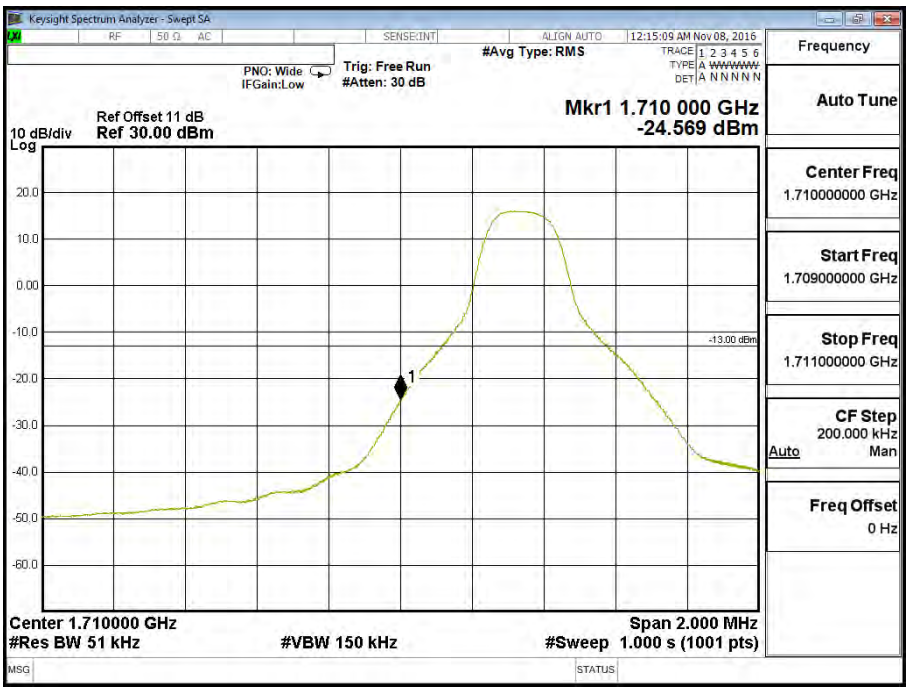


Band 4 (3M) 16QAM (15,0) Upper Channel 20385 (1753.5MHz)

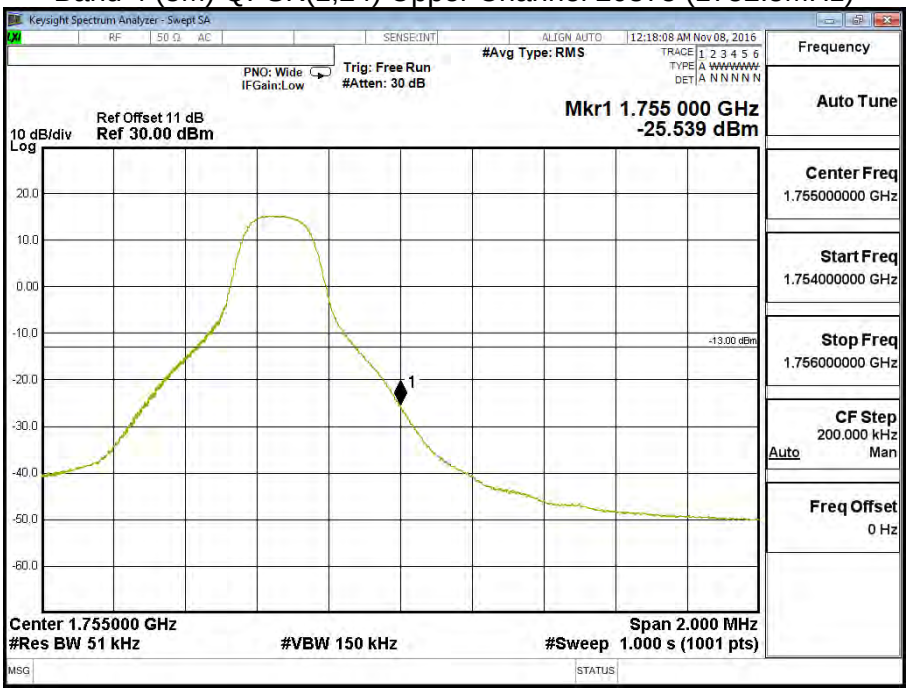


Product	LTE Router		
Test Mode	Spurious Emission At Antenna Terminals (+/-1MHz)		
Date of Test	2016/12/04	Test Site	CTR
Test Condition	Block Edge Test (Band 4 (5M))		

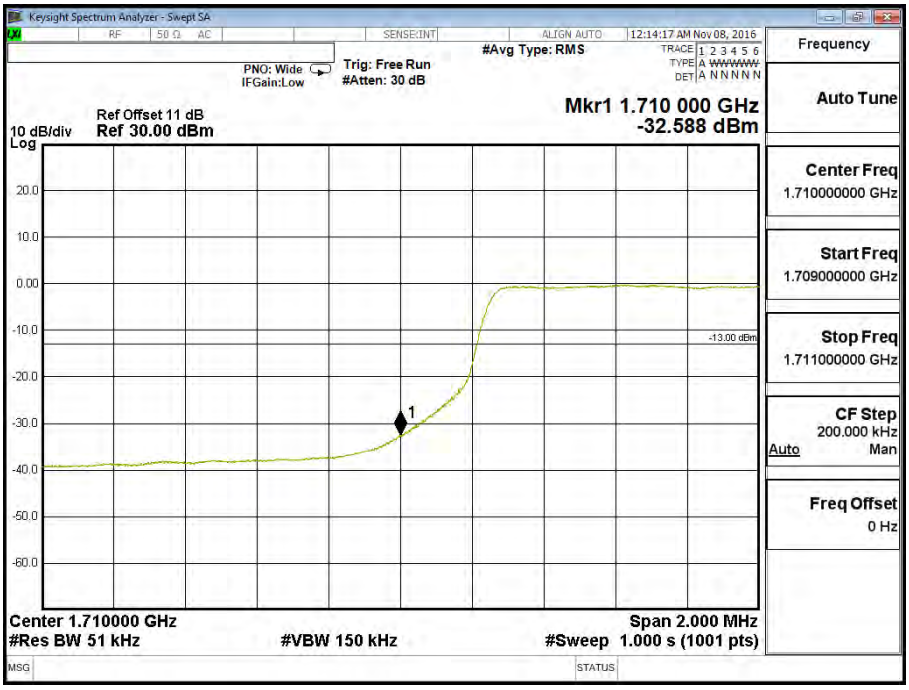
Band 4 (5M) QPSK(1,0) Lower Channel 19975 (1712.5MHz)



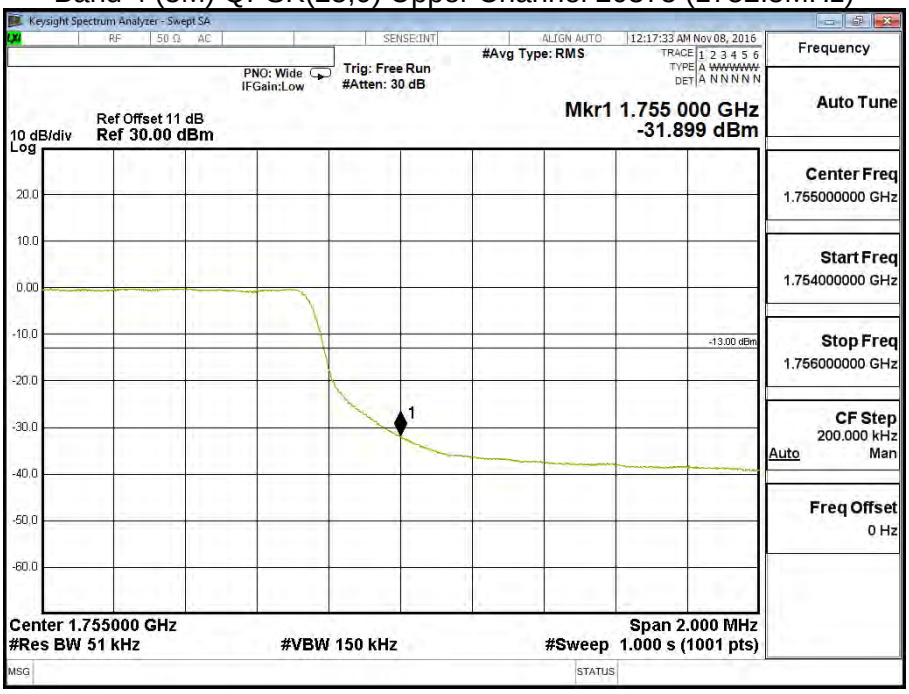
Band 4 (5M) QPSK(1,24) Upper Channel 20375 (1752.5MHz)



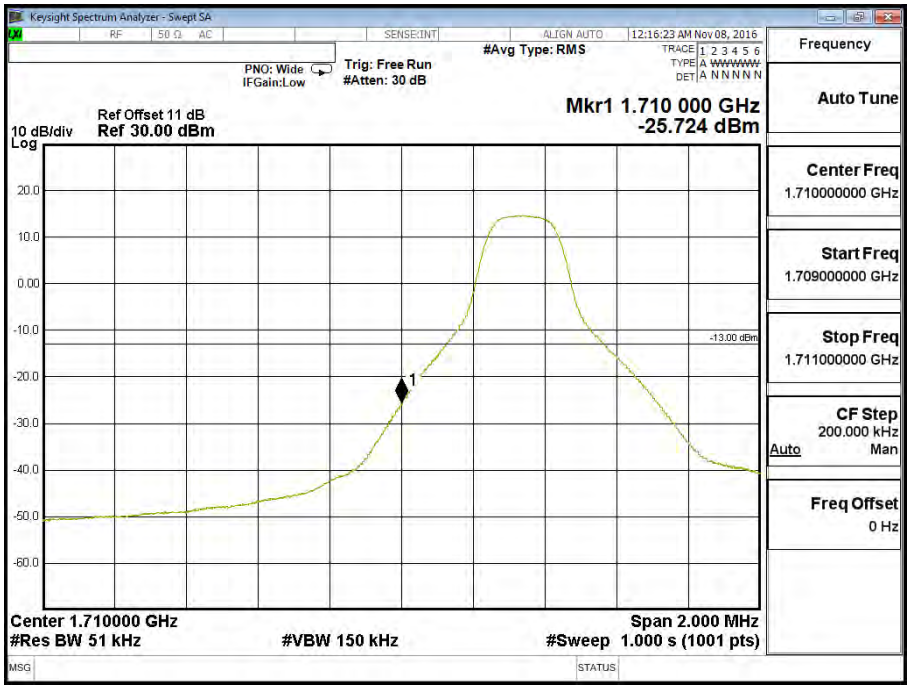
Band 4 (5M) QPSK(25,0) Lower Channel 19975 (1712.5MHz)



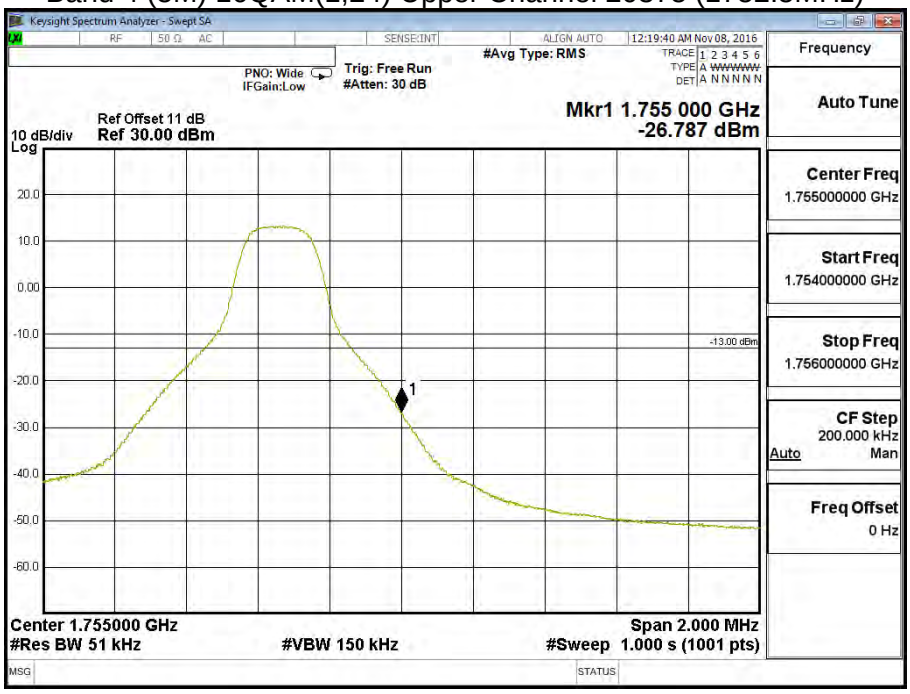
Band 4 (5M) QPSK(25,0) Upper Channel 20375 (1752.5MHz)



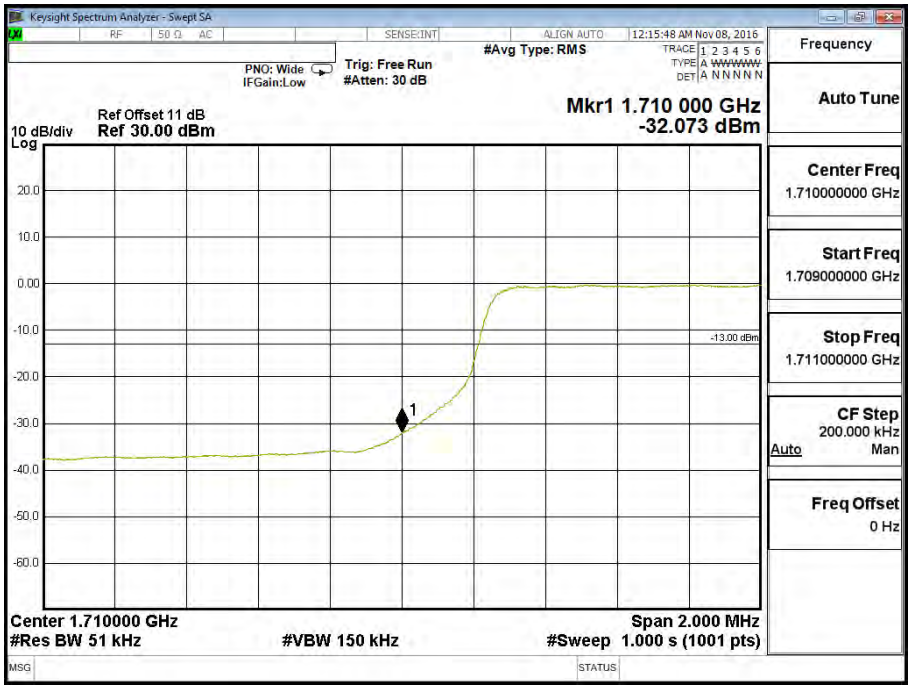
Band 4 (5M) 16QAM(1,0) Lower Channel 19975 (1712.5MHz)



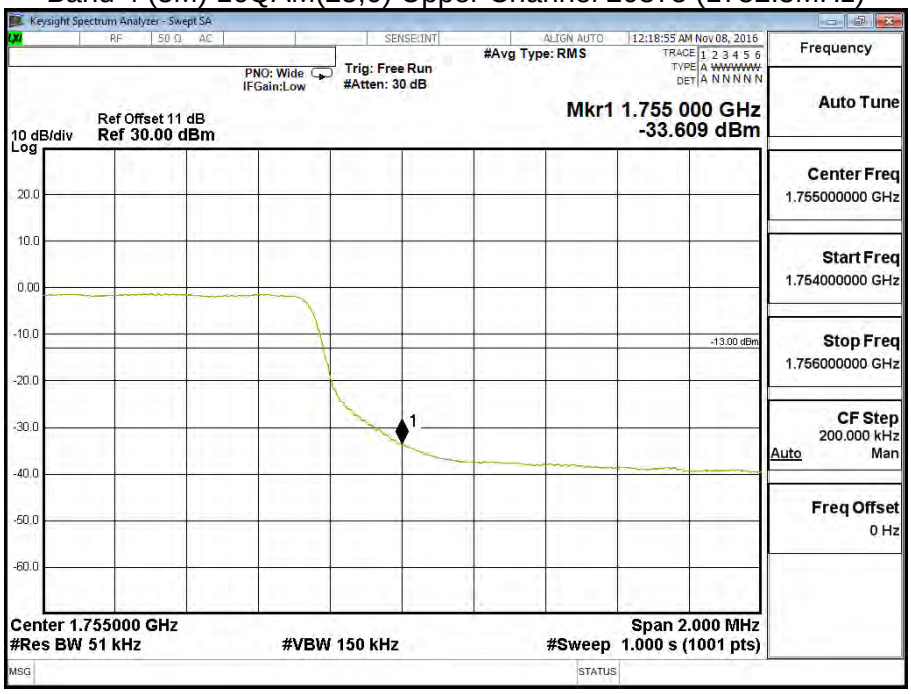
Band 4 (5M) 16QAM(1,24) Upper Channel 20375 (1752.5MHz)



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

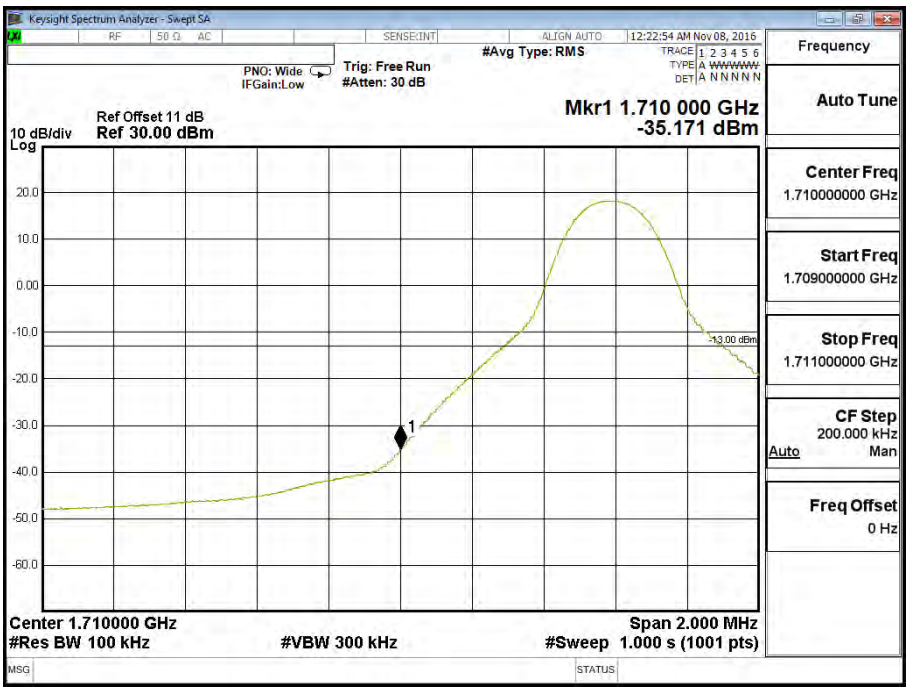


Band 4 (5M) 16QAM(25,0) Upper Channel 20375 (1752.5MHz)

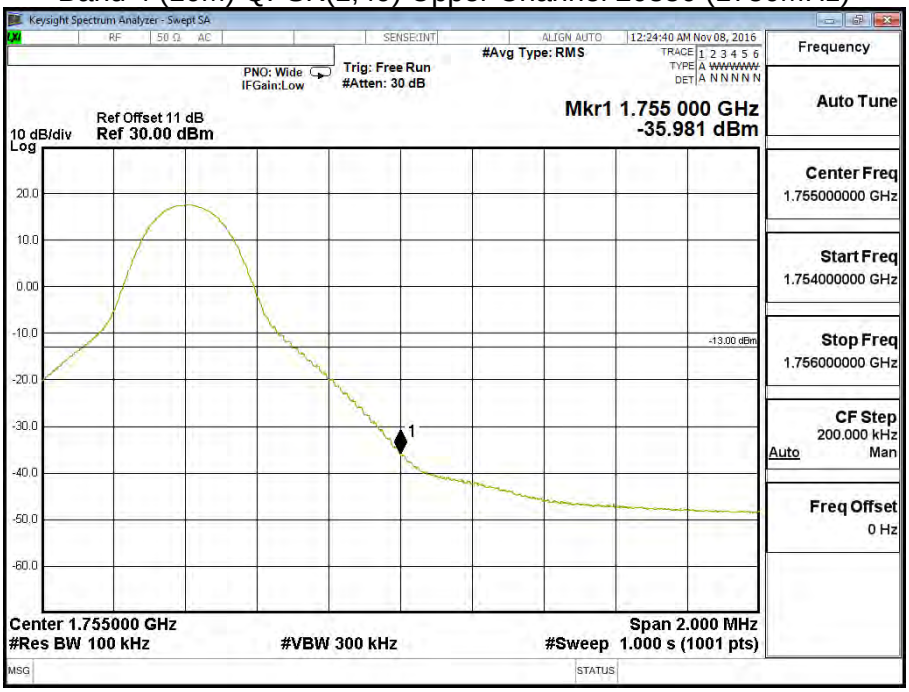


Product	LTE Router		
Test Mode	Spurious Emission At Antenna Terminals (+/-1MHz)		
Date of Test	2016/12/04	Test Site	CTR
Test Condition	Block Edge Test (Band 4 (10M))		

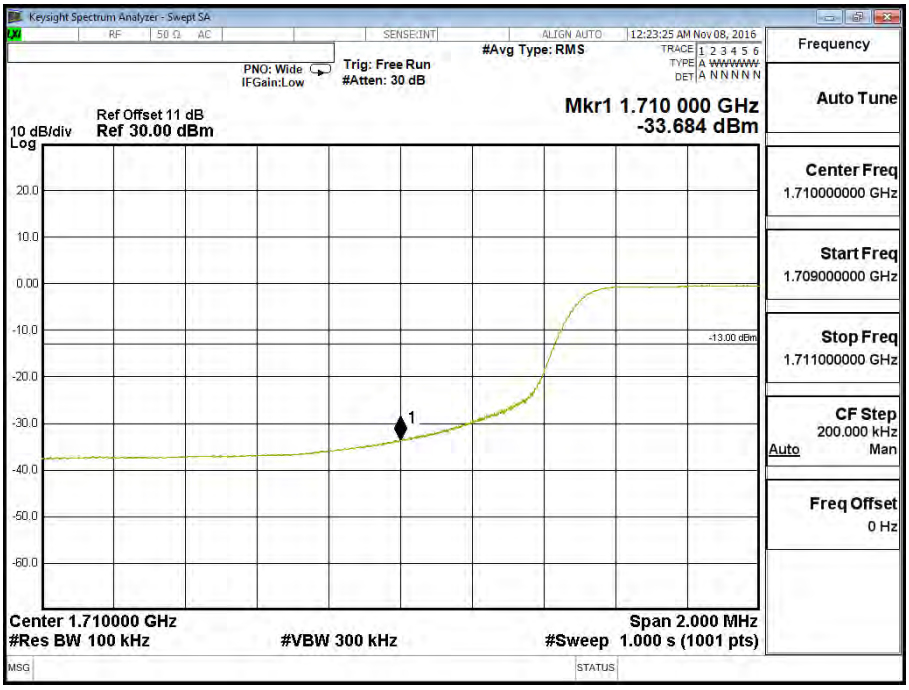
Band 4 (10M) QPSK(1,0) Lower Channel 20000 (1715MHz)



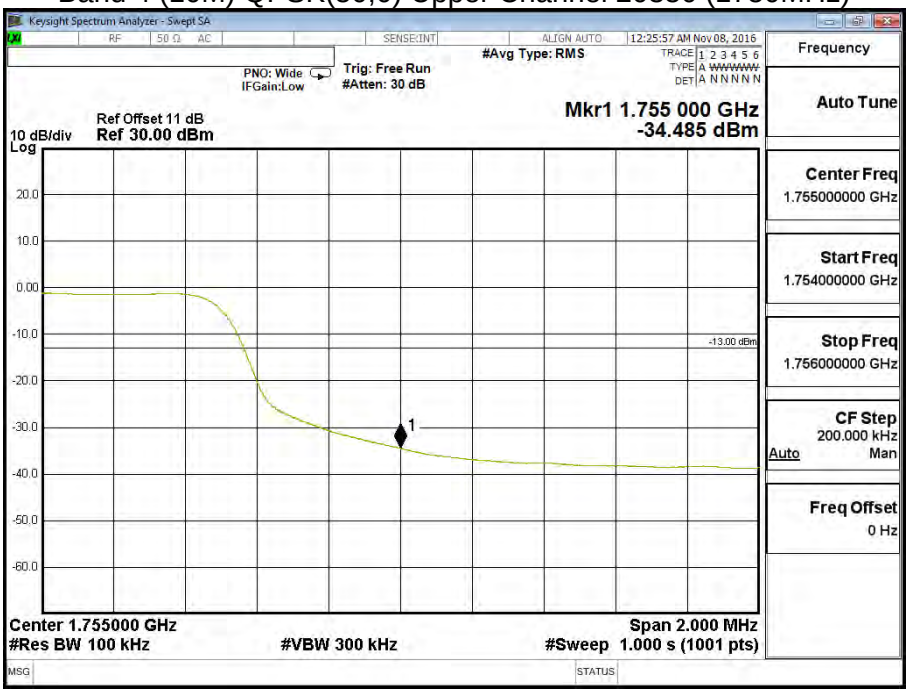
Band 4 (10M) QPSK(1,49) Upper Channel 20350 (1750MHz)



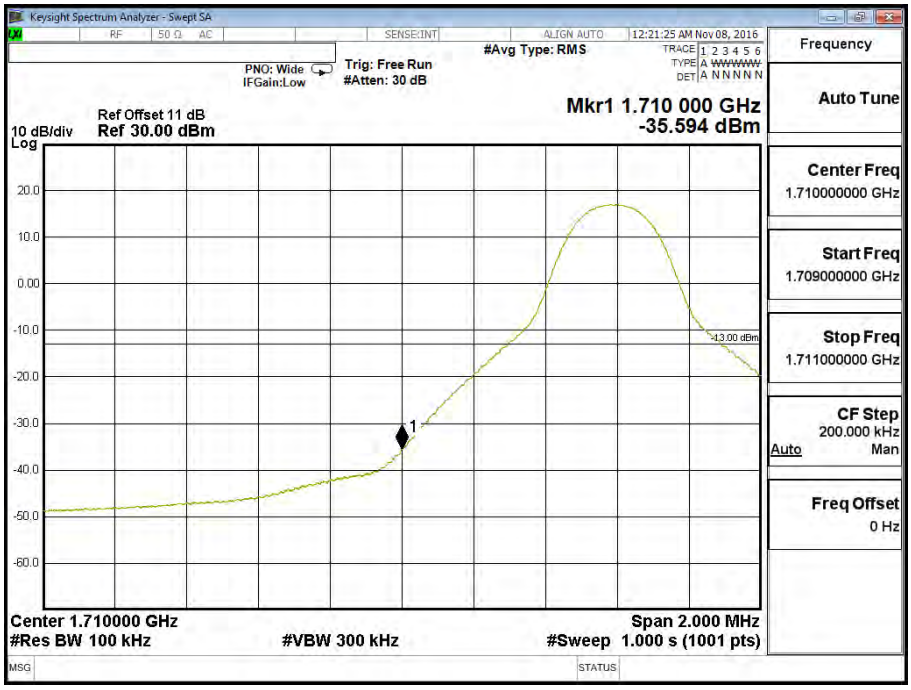
Band 4 (10M) QPSK(50,0) Lower Channel 20000 (1715MHz)



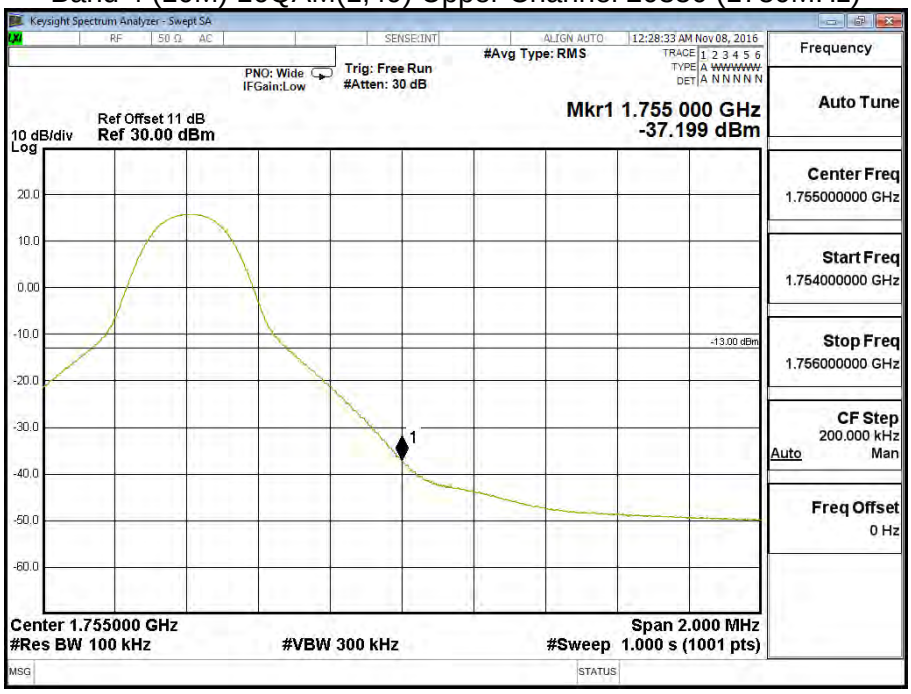
Band 4 (10M) QPSK(50,0) Upper Channel 20350 (1750MHz)



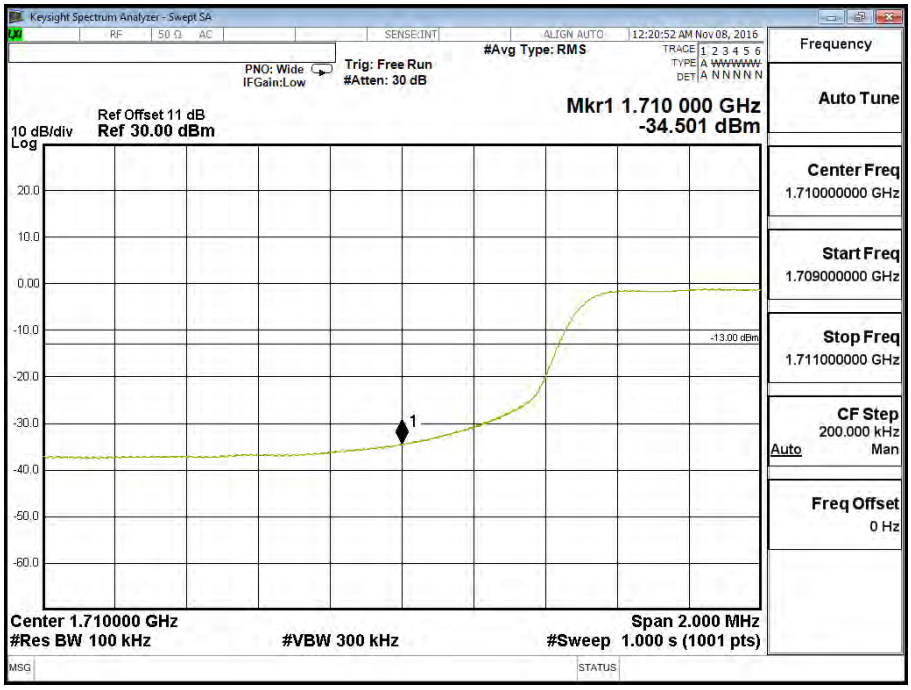
Band 4 (10M) 16QAM(1,0) Lower Channel 20000 (1715MHz)



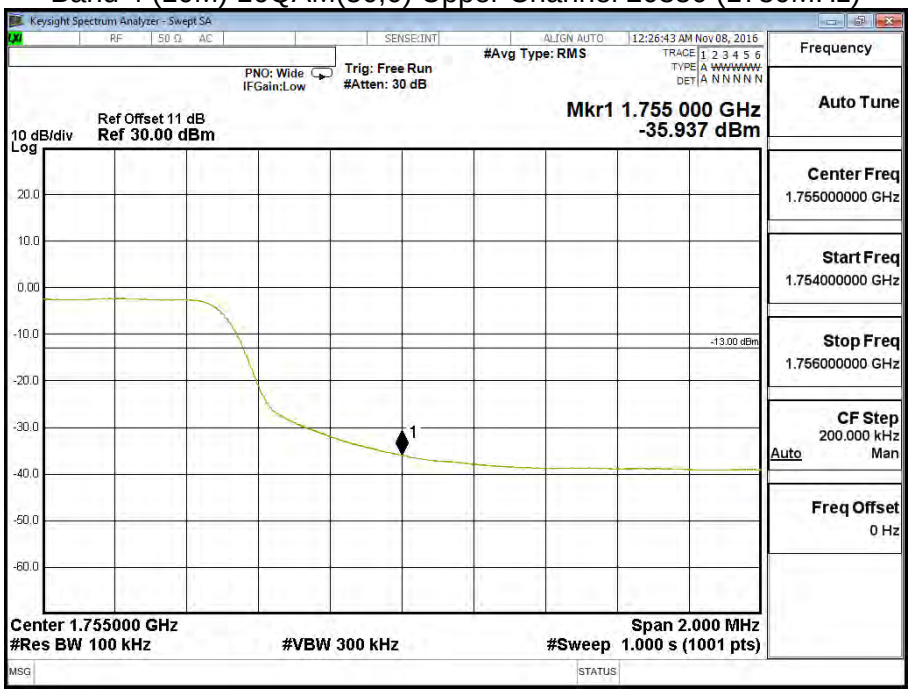
Band 4 (10M) 16QAM(1,49) Upper Channel 20350 (1750MHz)



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

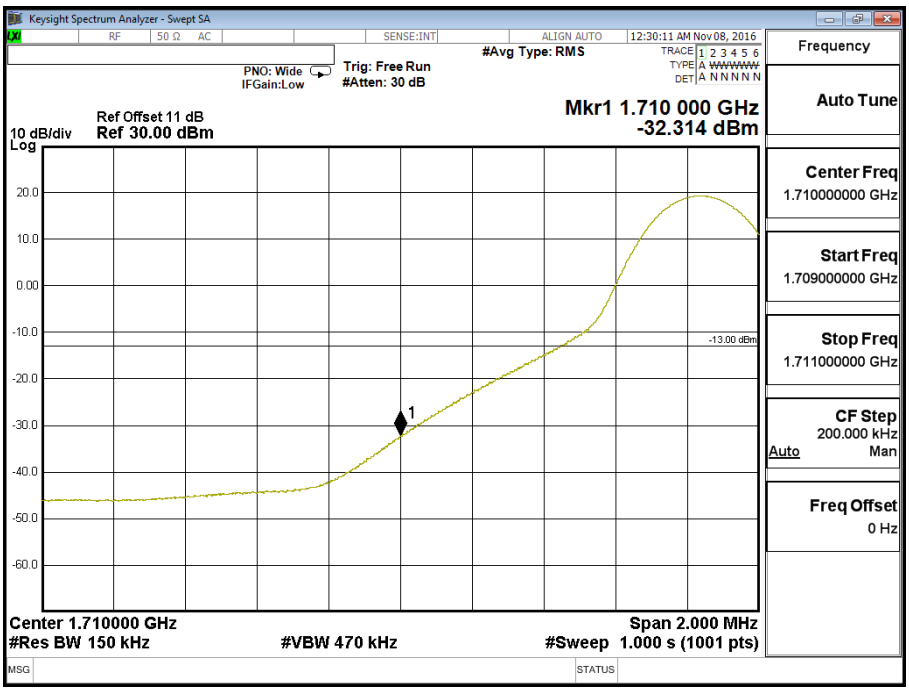


Band 4 (10M) 16QAM(50,0) Upper Channel 20350 (1750MHz)

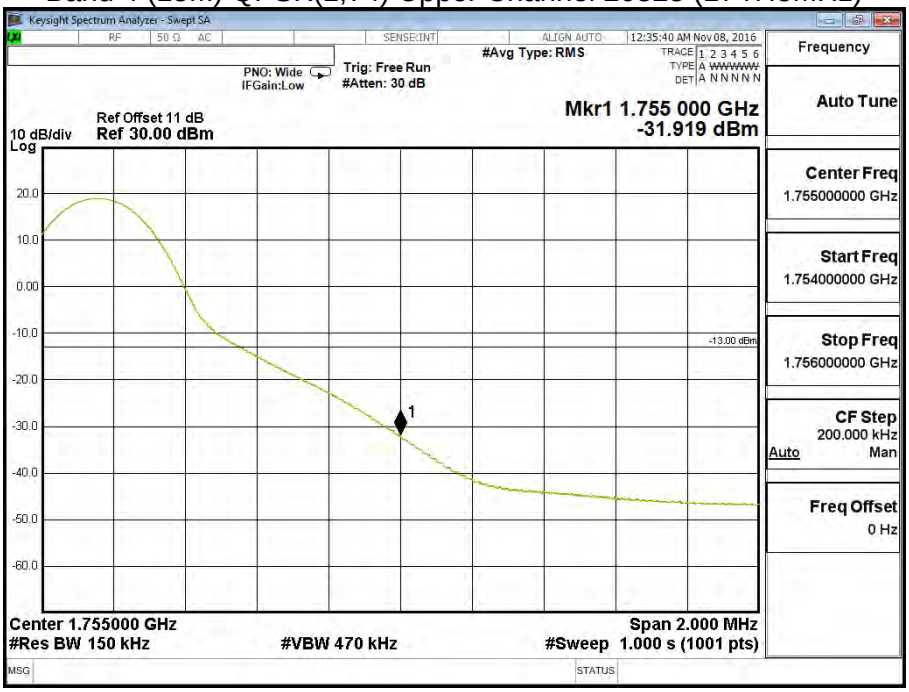


Product	LTE Router		
Test Mode	Spurious Emission At Antenna Terminals (+/-1MHz)		
Date of Test	2016/12/04	Test Site	CTR
Test Condition	Block Edge Test (Band 4 (15M))		

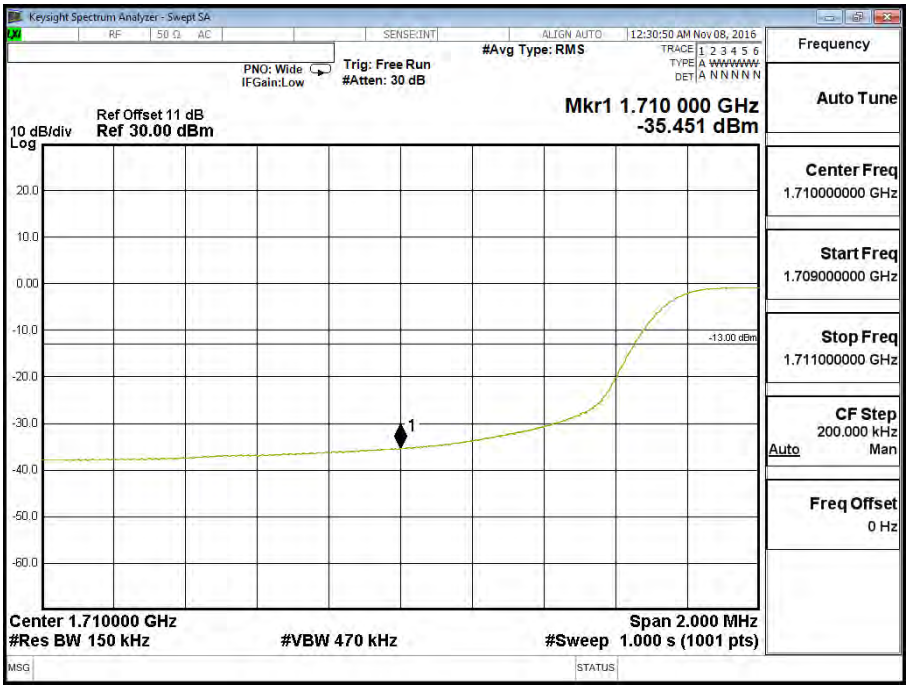
Band 4 (15M)QPSK(1,0) Lower Channel 20025 (1717.5MHz)



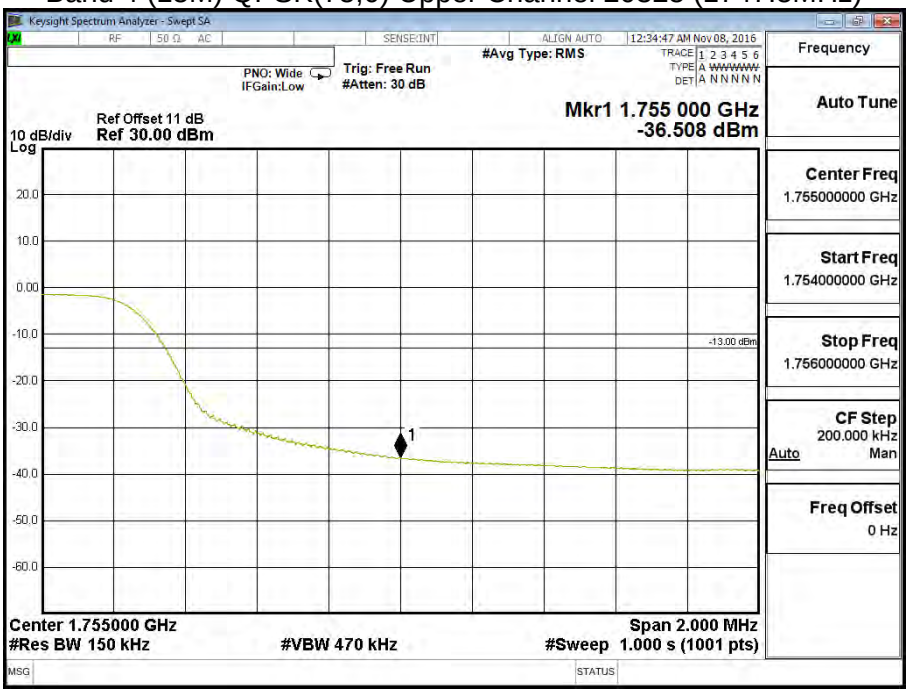
Band 4 (15M) QPSK(1,74) Upper Channel 20325 (1747.5MHz)



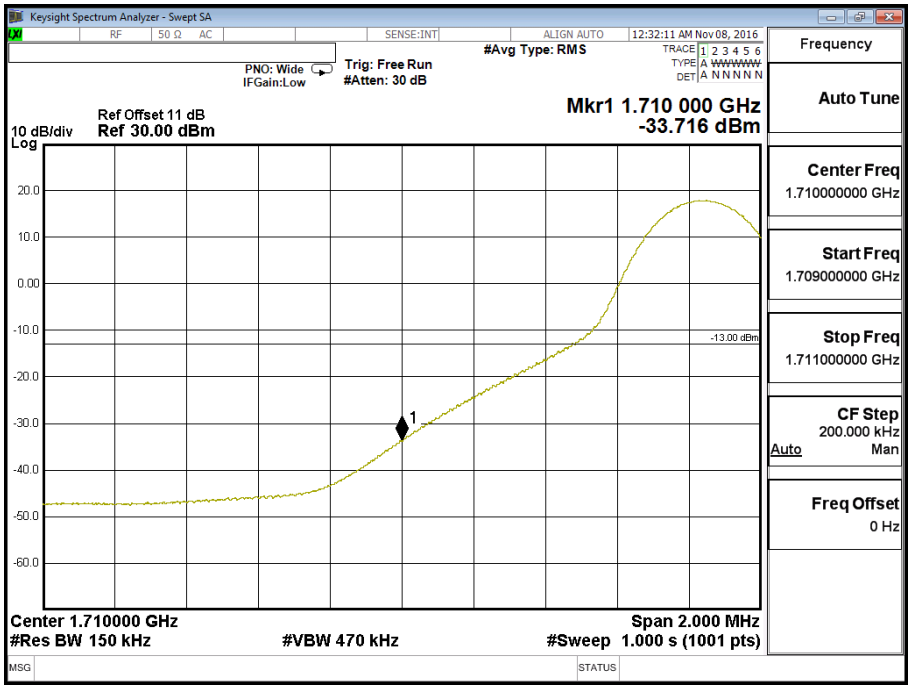
Band 4 (15M) QPSK(75,0) Lower Channel 20025 (1717.5MHz)



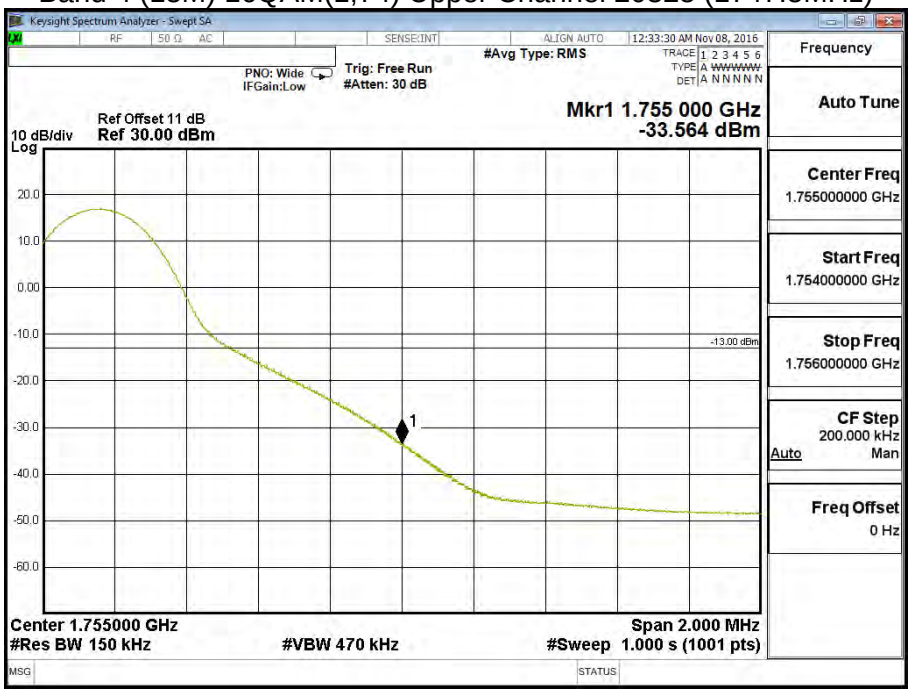
Band 4 (15M) QPSK(75,0) Upper Channel 20325 (1747.5MHz)



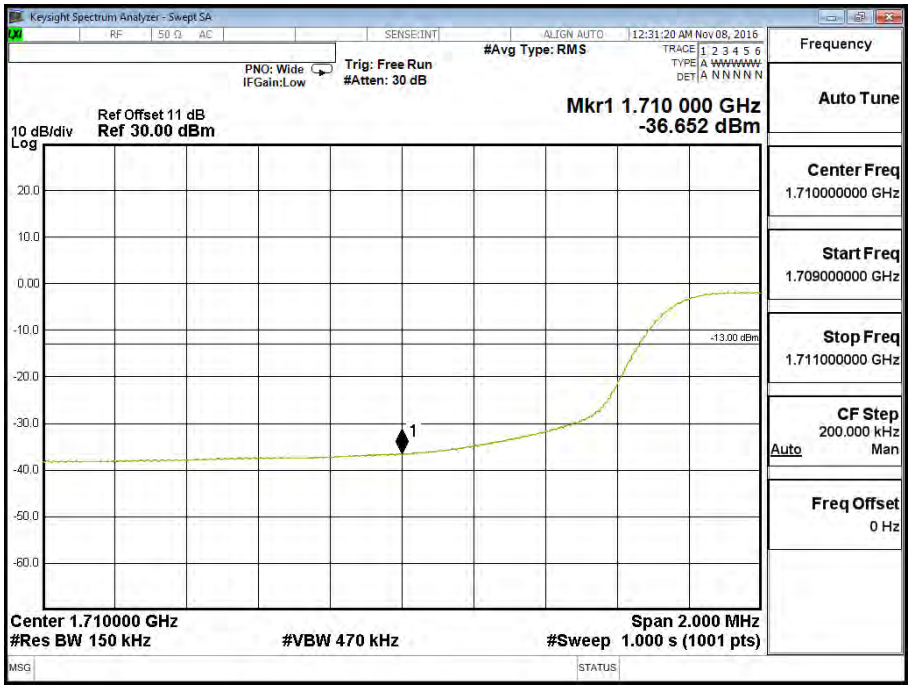
Band 4 (15M) 16QAM(1,0) Lower Channel 20025 (1717.5MHz)



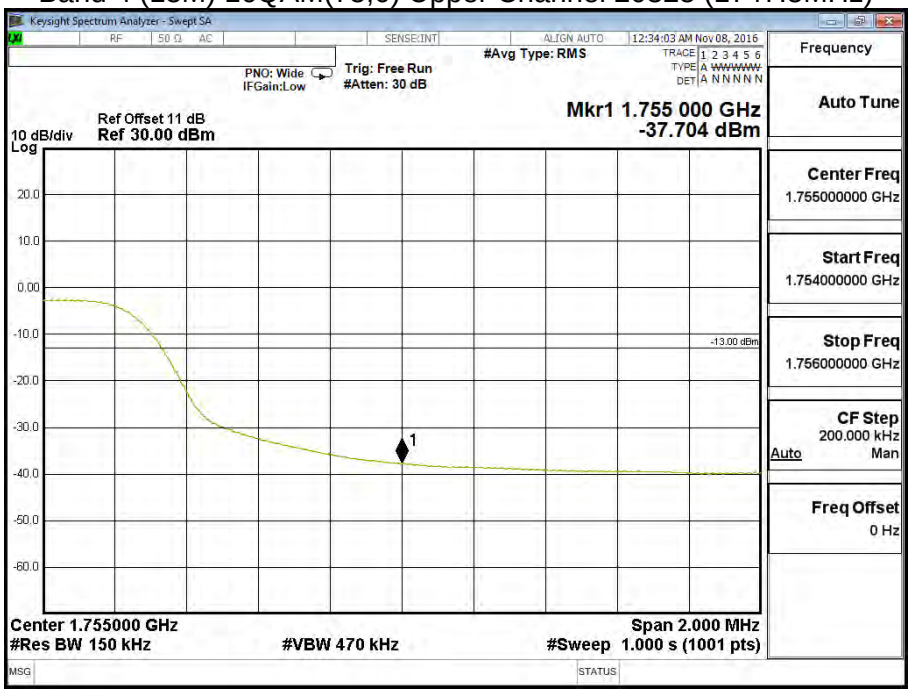
Band 4 (15M) 16QAM(1,74) Upper Channel 20325 (1747.5MHz)



Band 4 (15M) 16QAM(75,0) Lower Channel 20025 (1717.5MHz)

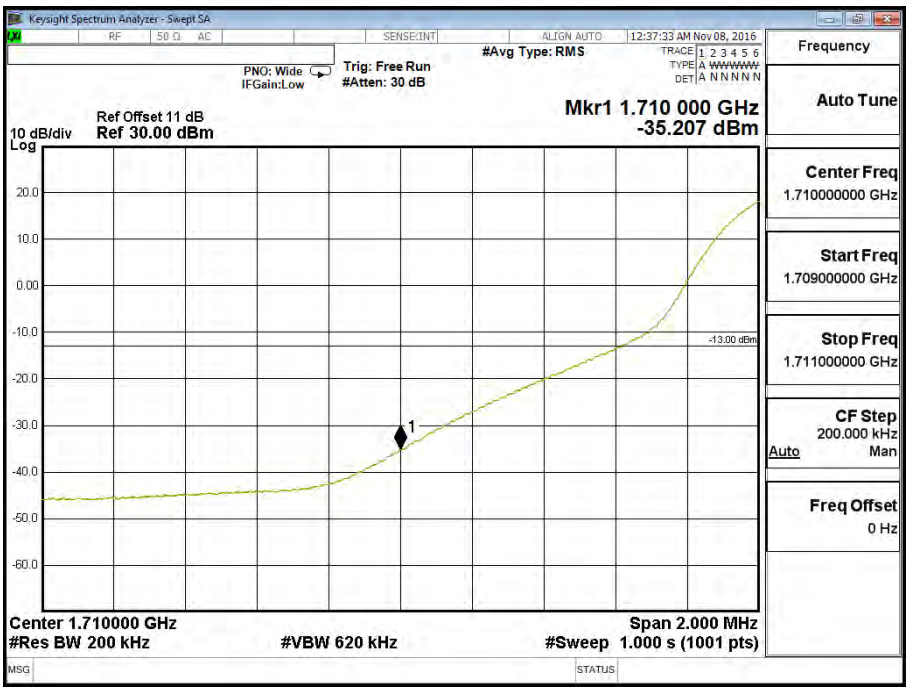


Band 4 (15M) 16QAM(75,0) Upper Channel 20325 (1747.5MHz)

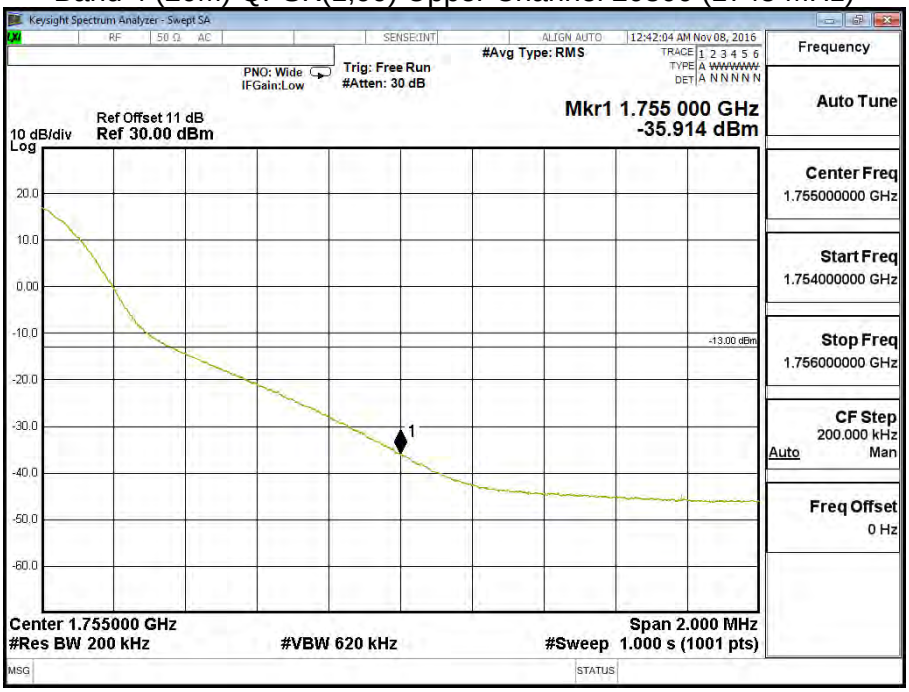


Product	LTE Router		
Test Mode	Spurious Emission At Antenna Terminals (+/-1MHz)		
Date of Test	2016/12/04	Test Site	CTR
Test Condition	Block Edge Test (Band 4 (20M))		

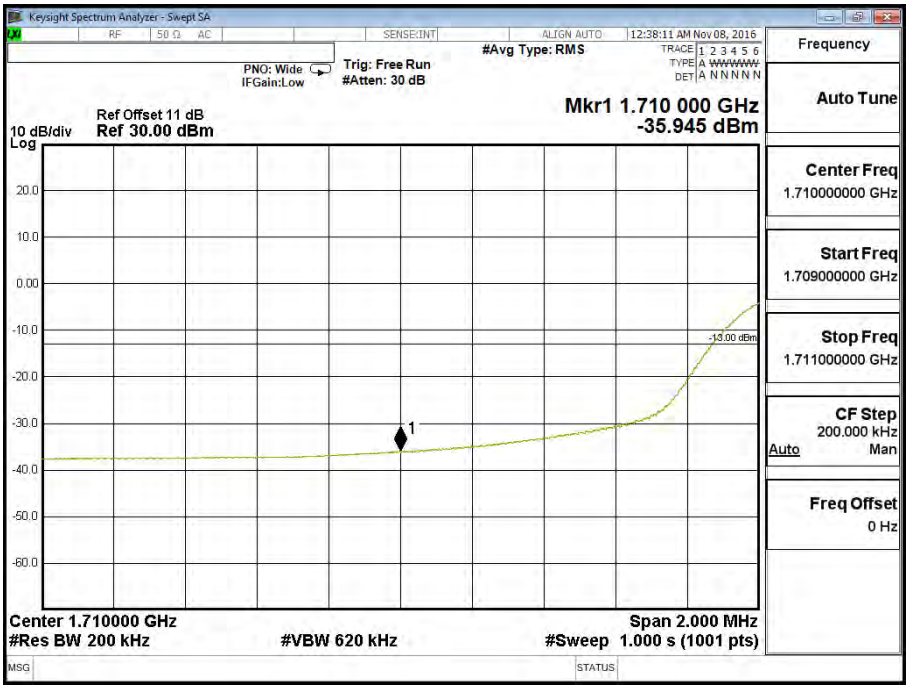
Band 4 (20M) QPSK(1,0) Lower Channel 20050 (1720MHz)



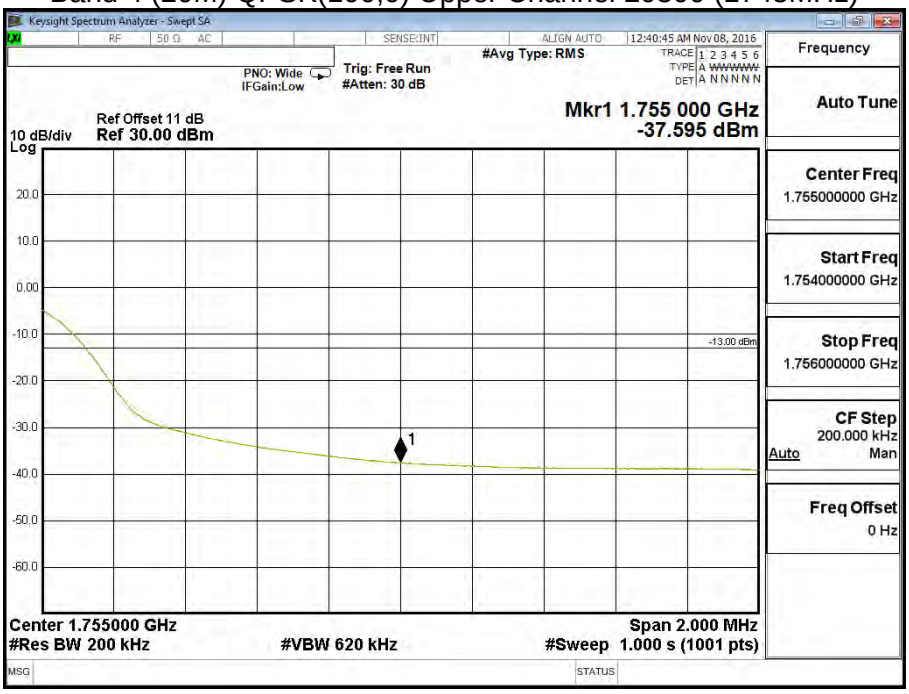
Band 4 (20M) QPSK(1,99) Upper Channel 20300 (1745 MHz)



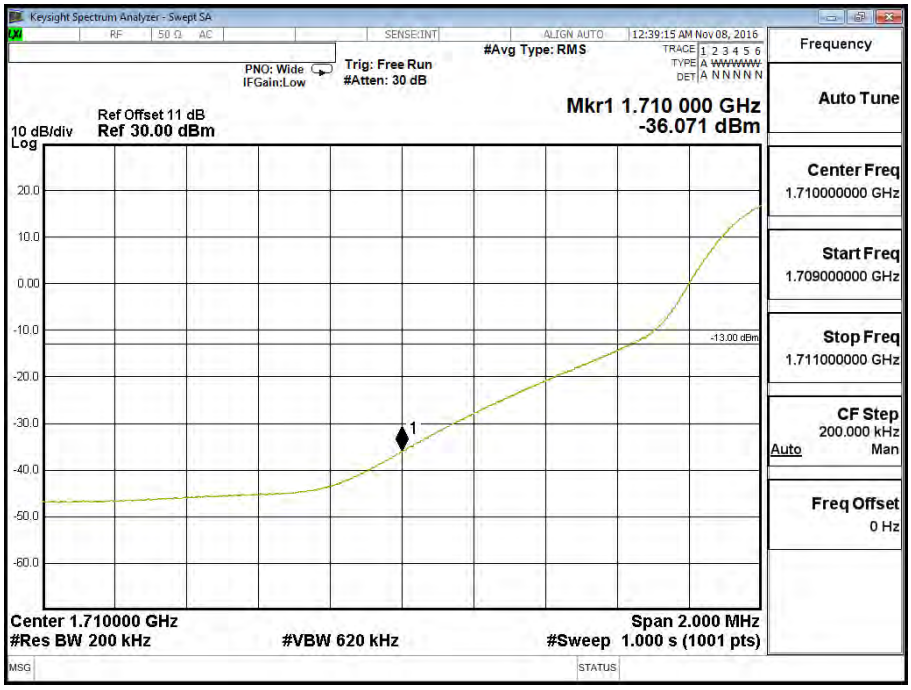
Band 4 (20M) QPSK(100,0) Lower Channel 20050 (1720MHz)



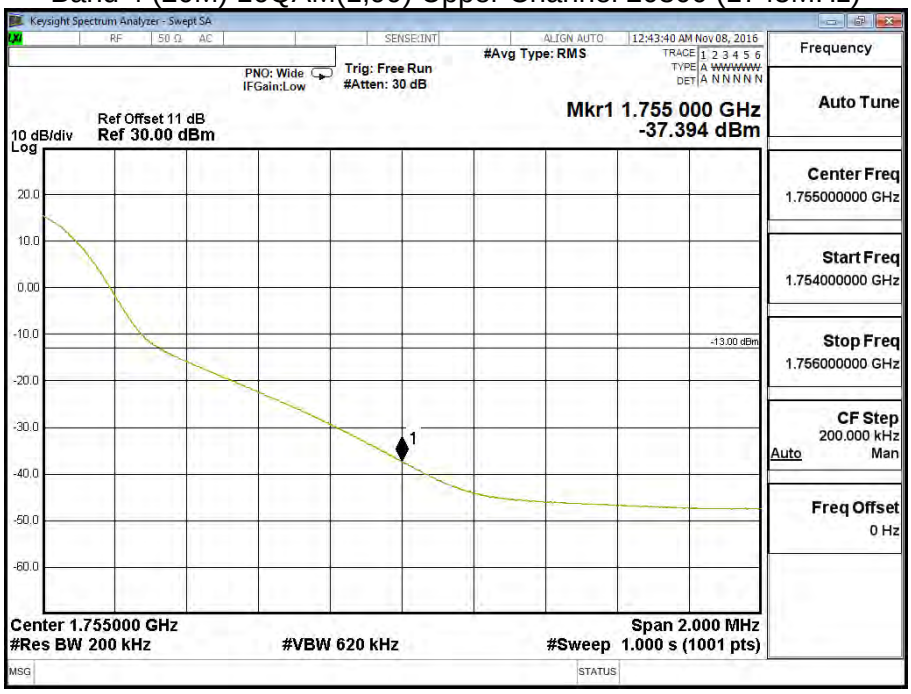
Band 4 (20M) QPSK(100,0) Upper Channel 20300 (1745MHz)



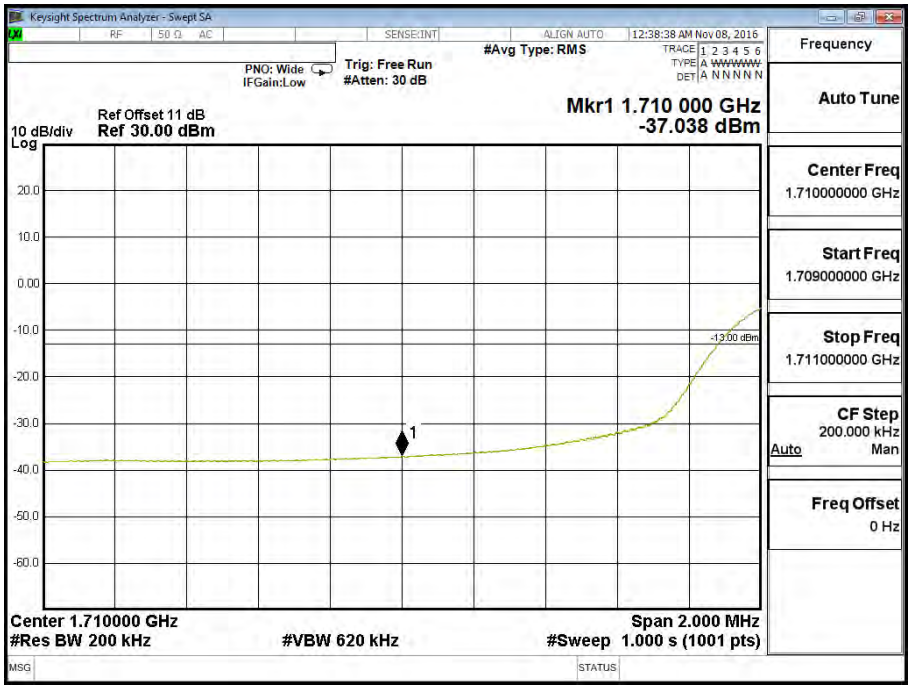
Band 4 (20M) 16QAM(1,0) Lower Channel 20050 (1720MHz)



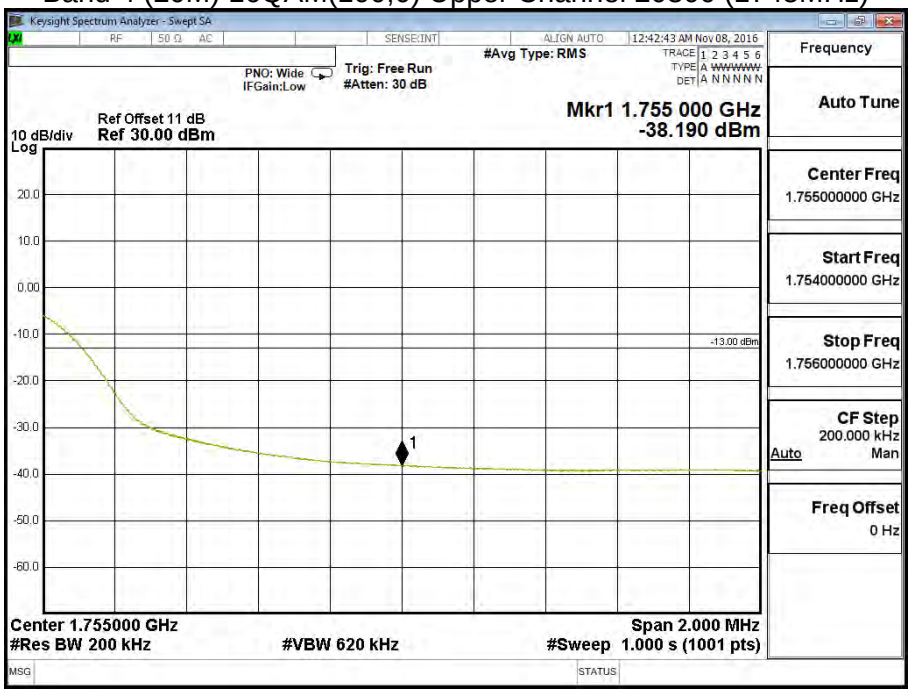
Band 4 (20M) 16QAM(1,99) Upper Channel 20300 (1745MHz)



Band 4 (20M) 16QAM(100,0) Lower Channel 20050 (1720MHz)



Band 4 (20M) 16QAM(100,0) Upper Channel 20300 (1745MHz)



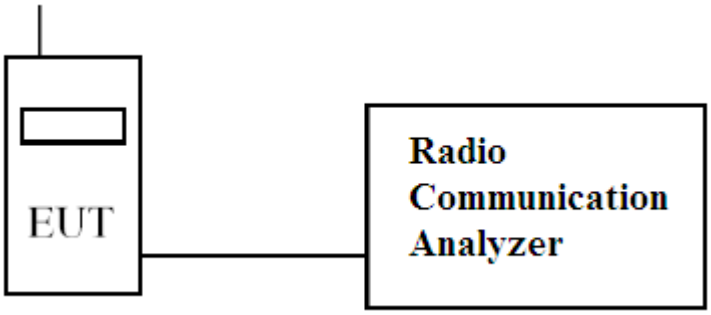
6. Spurious Emission

6.1. Test Specification

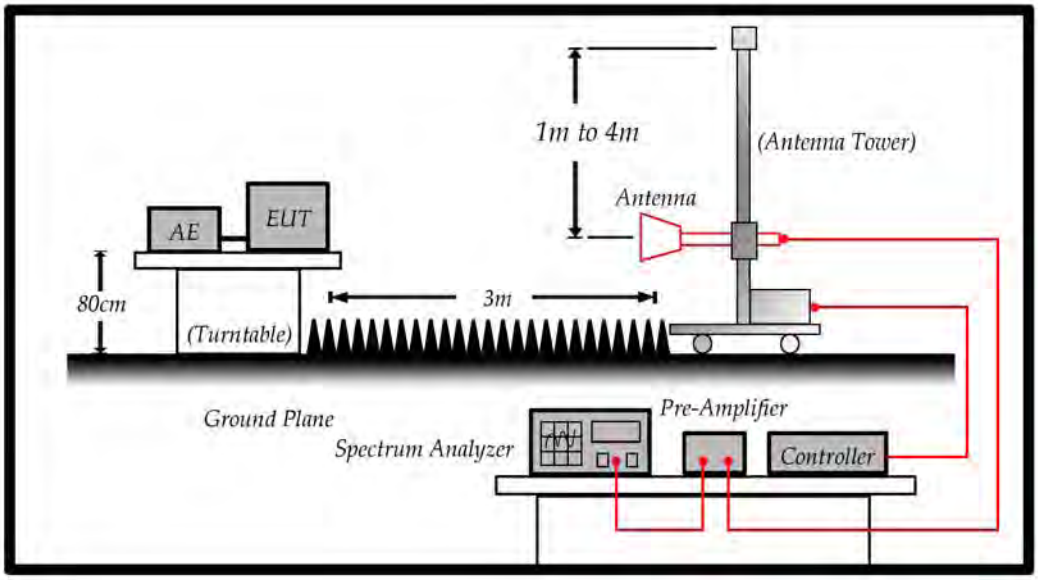
According to Part 2.1051, 2.1053, 24.238(a), 27.53.

6.2. Test Setup

6.2.1 Spurious emissions at antenna terminals.



6.2.2 Field strength of spurious radiation.



6.3. Limits

Limit	<-13dBm

43 + 10Log(P) down on the carrier where P is the power in Watts.

6.4. Test Procedure

In accordance with Part 2.1051, 2.1053, 24.238(a), 27.53., the spurious emissions from the antenna terminal were measured. The transmitter output power was attenuated using a combination of filters and attenuators and the frequency spectrum investigated from 30MHz to 20GHz. The EUT was set to transmit on full power. The EUT was tested on Low, middle and High channels for both power levels. The resolution and video bandwidth was set to 1MHz/3MHz in accordance with Part 2.1051, 2.1053, 24.238(a), 27.53. The spectrum analyzer detector was set to Max Hold. In addition, measurements were made up to the 10th harmonic of the fundamental. The device was then replaced with a substitution antenna, which input signal was adjusted until the received level matched that of the previously detected emission.

(1) The EUT is tested with maximum rated TX power via the Base Station simulator.

(2) The EUT is tested in three orthogonal planes, The worst case was showing in this report.

The EUT is placed on a turn table which is 1.5 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.

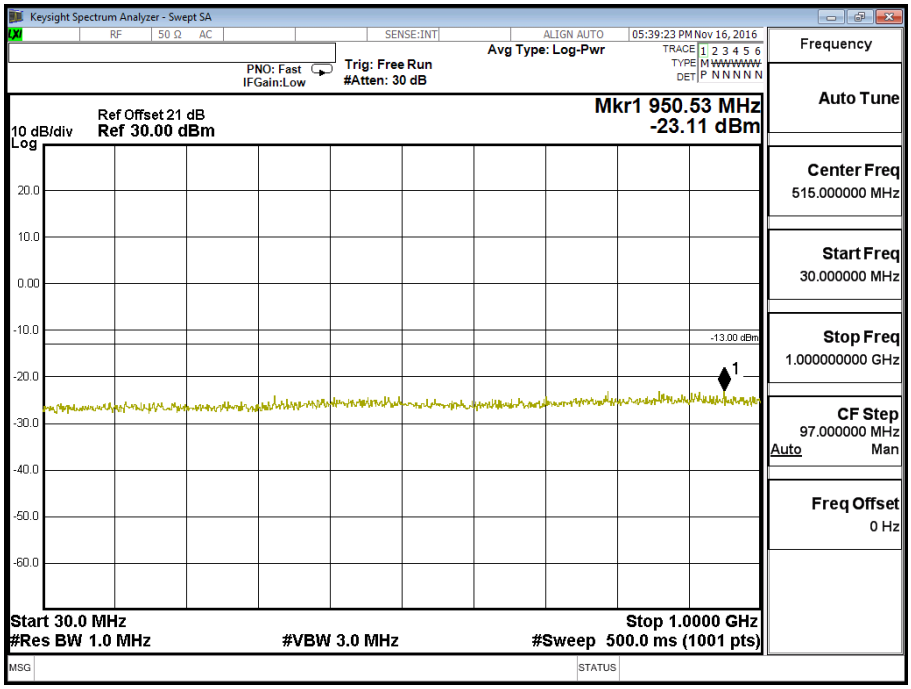
Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to TIA/EIA 603-C on radiated measurement.

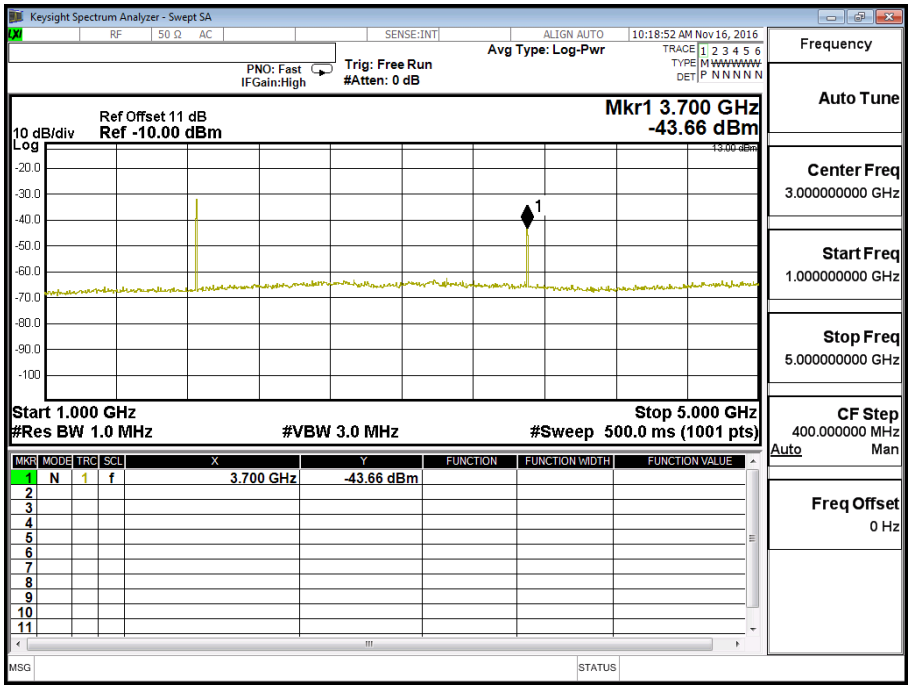
6.5. Test Result of Spurious Emission

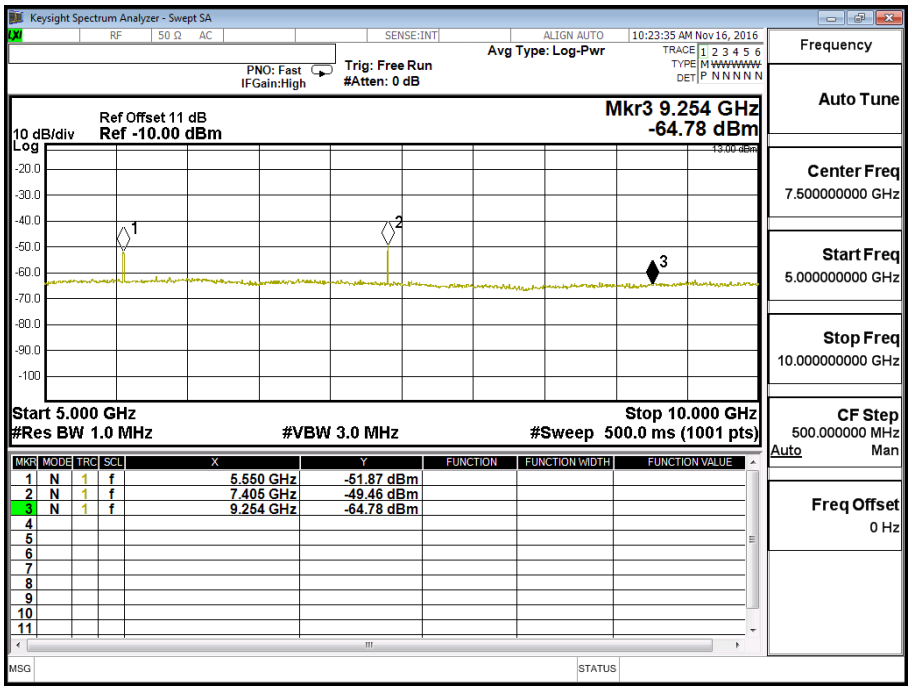
Product	LTE Router		
Test Mode	Spurious Emission (Conducted)		
Date of Test	2016/12/04	Test Site	CTR
Test Condition	LTE-Band 2 (1.4M)	Test Range	30MHz~20GHz

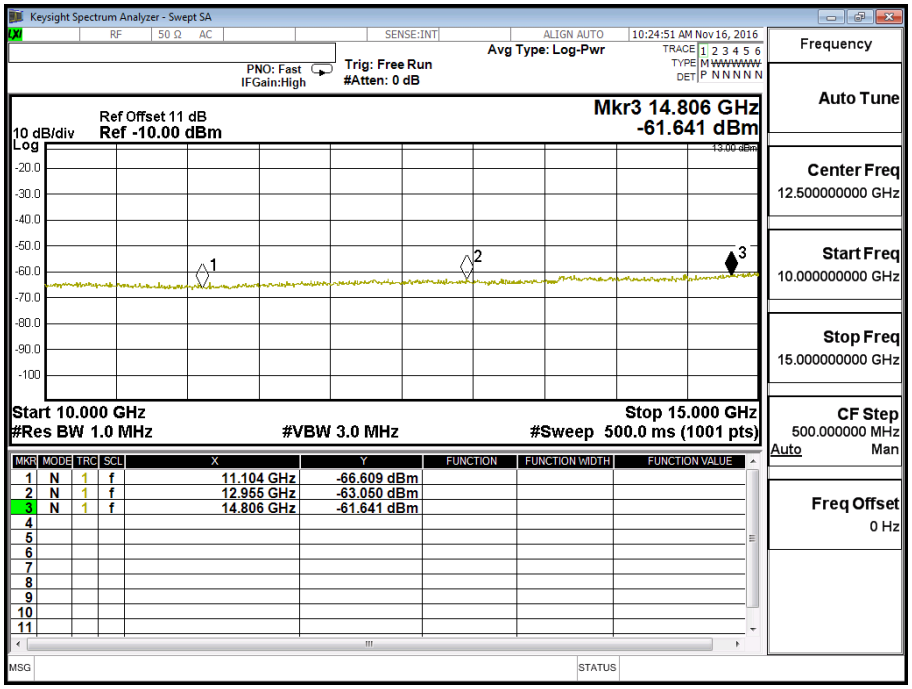
LTE-Band 2 (1.4M) QPSK(1,3) CH18607

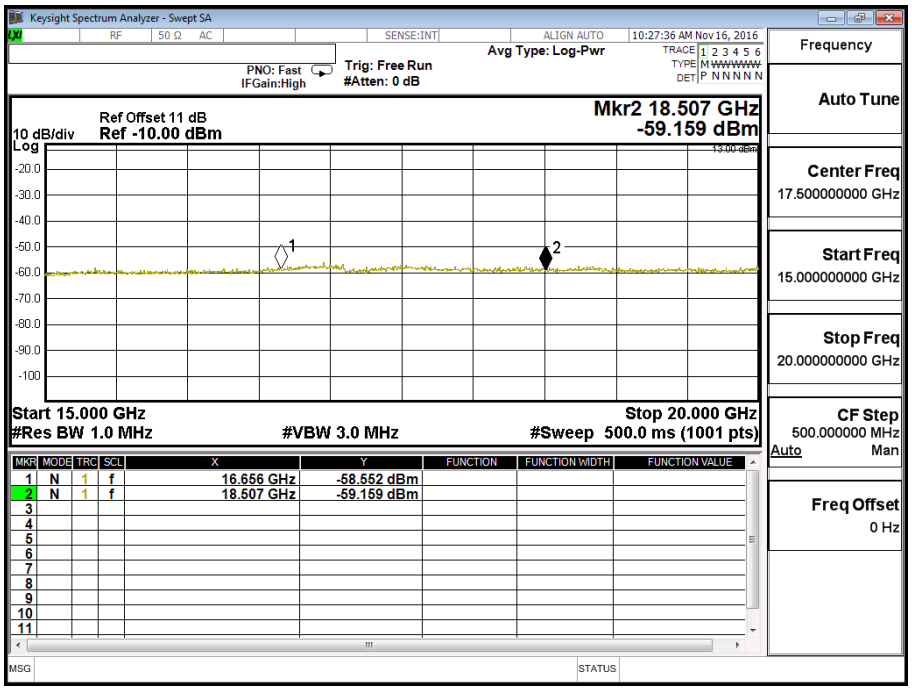
Frequency (MHz)	Reading Level (dBm)	Path Loss (dB)	Emission Level (dBm)	Limit (dBm)
3700	-43.660	1.1	-42.560	-13
5550	-51.870	1.23	-50.640	-13
7405	-49.460	1.59	-47.870	-13
9254	-64.780	1.89	-62.890	-13
11104	-66.609	2.07	-64.539	-13
12955	-63.050	2.26	-60.790	-13
14806	-61.641	2.64	-59.001	-13
16656	-58.552	3.5	-55.052	-13
18507	-59.159	3.7	-55.459	-13




Keysight Spectrum Analyzer - Swept SA
RF 50 Ω AC
SENSE:INT
ALIGN AUTO
10:18:52 AM Nov 16, 2016
Avg Type: Log-Pwr
PNO: Fast
IFGain:High
Trig: Free Run
#Atten: 0 dB
Ref Offset 11 dB
10 dB/div Ref -10.00 dBm
Mkr1 3.700 GHz
-43.66 dBm
Start 1.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 5.000 GHz
#Sweep 500.0 ms (1001 pts)
Frequency
Auto Tune
Center Freq
3.000000000 GHz
Start Freq
1.000000000 GHz
Stop Freq
5.000000000 GHz
CF Step
400.000000 MHz
Auto Man
Freq Offset
0 Hz
1 N 1 f 3.700 GHz -43.66 dBm


Keysight Spectrum Analyzer - Swept SA
RF 50 Ω AC
SENSE:INT
ALIGN AUTO
10:23:35 AM Nov 16, 2016
Avg Type: Log-Pwr
PNO: Fast
IFGain:High
Trig: Free Run
#Atten: 0 dB
Ref Offset 11 dB
10 dB/div Ref -10.00 dBm
Mkr3 9.254 GHz
-64.78 dBm
Start 5.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 10.000 GHz
#Sweep 500.0 ms (1001 pts)
Frequency
Auto Tune
Center Freq
7.500000000 GHz
Start Freq
5.000000000 GHz
Stop Freq
10.000000000 GHz
CF Step
500.000000 MHz
Auto Man
Freq Offset
0 Hz
1 N 1 f 5.550 GHz -51.87 dBm
2 N 1 f 7.405 GHz -49.46 dBm
3 N 1 f 9.254 GHz -64.78 dBm

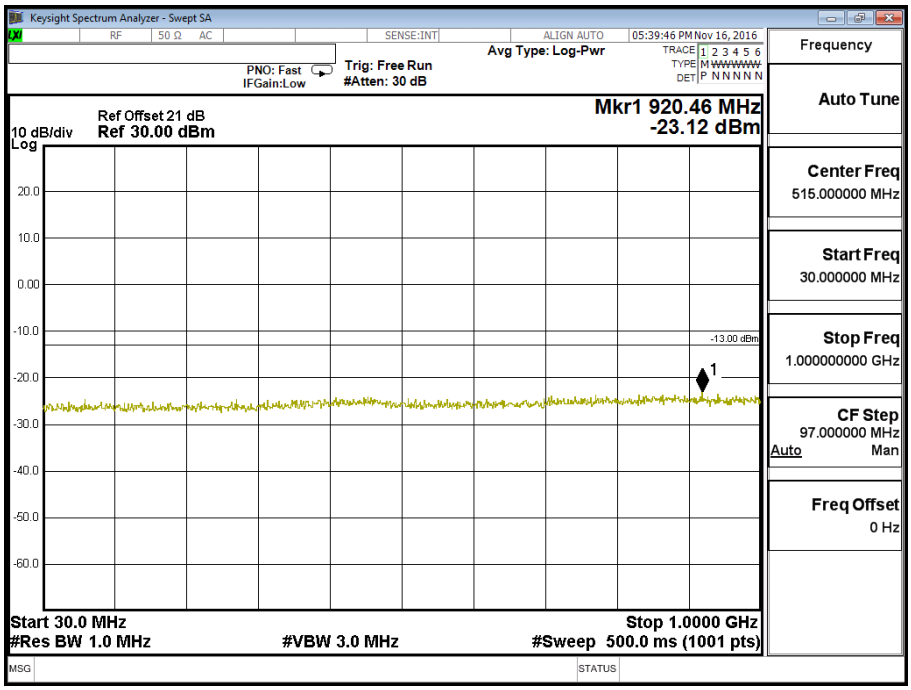

Keysight Spectrum Analyzer - Swept SA
RF 50 Ω AC
SENSE:INT
ALIGN AUTO
10:24:51 AM Nov 16, 2016
Avg Type: Log-Pwr
TRACE 1 2 3 4 5 6
TYPE M WWWWWW
DET P N N N N N
PNO: Fast
IFGain:High
Trig: Free Run
#Atten: 0 dB
Ref Offset 11 dB
10 dB/div Ref -10.00 dBm
Log
Mkr3 14.806 GHz
-61.641 dBm
13.00 dBm
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100
Start 10.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 15.000 GHz
#Sweep 500.0 ms (1001 pts)
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N 1 f 11.104 GHz -66.609 dBm
2 N 1 f 12.955 GHz -63.050 dBm
3 N 1 f 14.806 GHz -61.641 dBm
MSG
STATUS
Frequency
Auto Tune
Center Freq
12.500000000 GHz
Start Freq
10.000000000 GHz
Stop Freq
15.000000000 GHz
CF Step
500.000000 MHz
Auto Man
Freq Offset
0 Hz

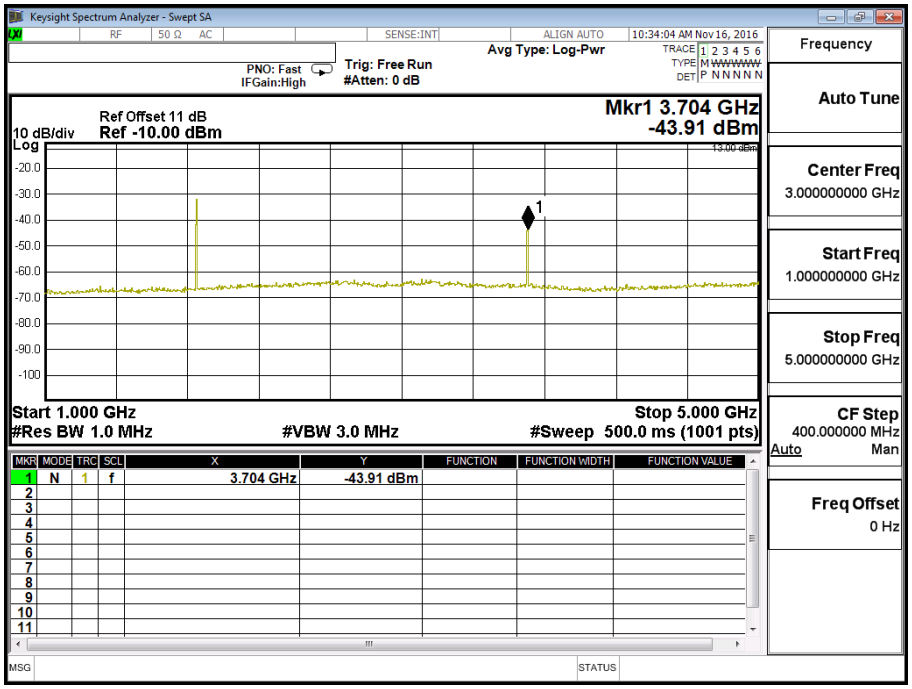

Keysight Spectrum Analyzer - Swept SA
RF 50 Ω AC
SENSE:INT
ALIGN AUTO
10:27:36 AM Nov 16, 2016
Avg Type: Log-Pwr
TRACE 1 2 3 4 5 6
TYPE M WWWWWW
DET P N N N N N
PNO: Fast
IFGain:High
Trig: Free Run
#Atten: 0 dB
Ref Offset 11 dB
10 dB/div Ref -10.00 dBm
Log
Mkr2 18.507 GHz
-59.159 dBm
13.00 dBm
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100
Start 15.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 20.000 GHz
#Sweep 500.0 ms (1001 pts)
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N 1 f 16.656 GHz -58.552 dBm
2 N 1 f 18.507 GHz -59.159 dBm
MSG
STATUS
Frequency
Auto Tune
Center Freq
17.500000000 GHz
Start Freq
15.000000000 GHz
Stop Freq
20.000000000 GHz
CF Step
500.000000 MHz
Auto Man
Freq Offset
0 Hz

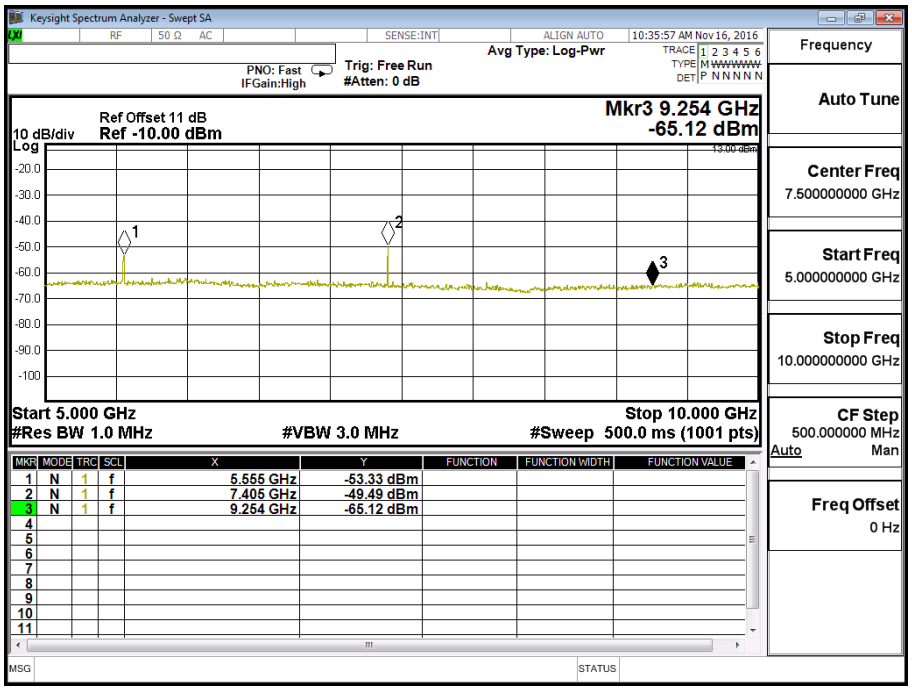
Product	LTE Router		
Test Mode	Spurious Emission (Conducted)		
Date of Test	2016/12/04	Test Site	CTR
Test Condition	LTE-Band 2 (1.4M)	Test Range	30MHz~20GHz

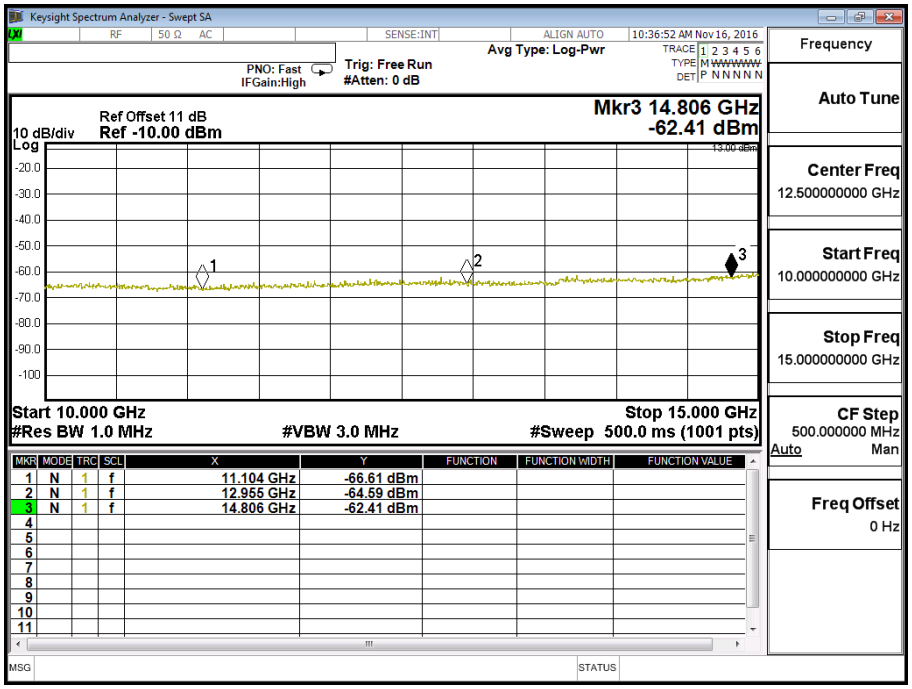
LTE-Band 2 (1.4M) 16QAM(3,3) CH18607

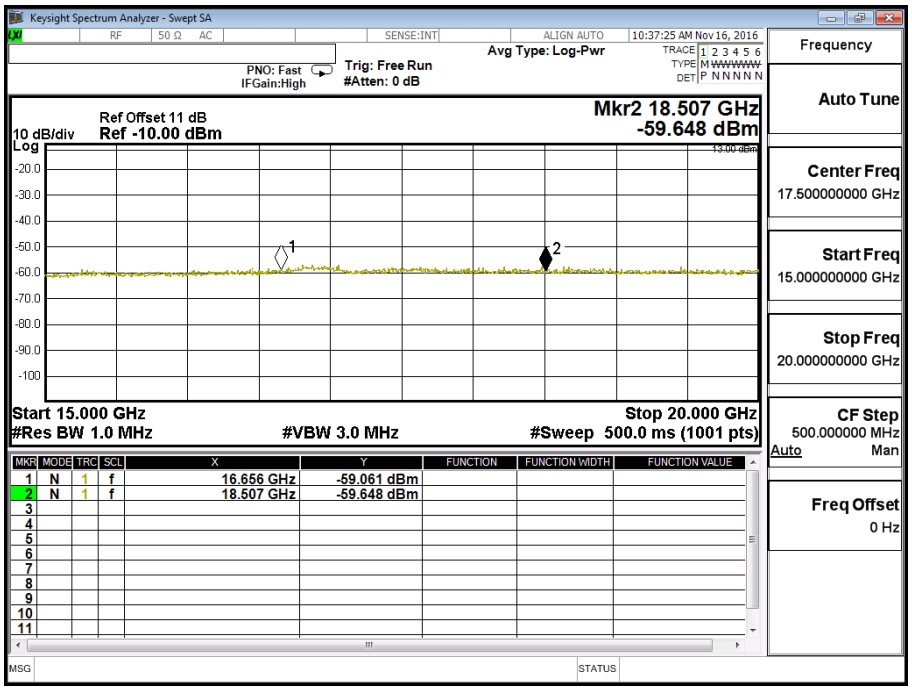
Frequency (MHz)	Reading Level (dBm)	Path Loss (dB)	Emission Level (dBm)	Limit (dBm)
3704	-43.910	1.1	-42.810	-13
5555	-53.330	1.23	-52.100	-13
7405	-49.490	1.59	-47.900	-13
9254	-65.120	1.89	-63.230	-13
11104	-66.610	2.07	-64.540	-13
12955	-64.590	2.26	-62.330	-13
14806	-62.410	2.64	-59.770	-13
16656	-59.061	3.5	-55.561	-13
18507	-59.648	3.7	-55.948	-13




Keysight Spectrum Analyzer - Swept SA
RF 50 Ω AC
SENSE:INT
ALIGN AUTO
10:34:04 AM Nov 16, 2016
Avg Type: Log-Pwr
TRACE 1 2 3 4 5 6
TYPE M WWWWWW
DET P N N N N N
PNO: Fast
IFGain:High
Trig: Free Run
#Atten: 0 dB
Ref Offset 11 dB
10 dB/div Ref -10.00 dBm
Log
Mkr1 3.704 GHz
-43.91 dBm
13.00 dBm
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100
Start 1.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 5.000 GHz
#Sweep 500.0 ms (1001 pts)
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N 1 f 3.704 GHz -43.91 dBm
Frequency
Auto Tune
Center Freq
3.000000000 GHz
Start Freq
1.000000000 GHz
Stop Freq
5.000000000 GHz
CF Step
400.000000 MHz
Auto Man
Freq Offset
0 Hz
MSG
STATUS


Keysight Spectrum Analyzer - Swept SA
RF 50 Ω AC
SENSE:INT
ALIGN AUTO
10:35:57 AM Nov 16, 2016
Avg Type: Log-Pwr
TRACE 1 2 3 4 5 6
TYPE M WWWWWW
DET P N N N N N
PNO: Fast
IFGain:High
Trig: Free Run
#Atten: 0 dB
Ref Offset 11 dB
10 dB/div Ref -10.00 dBm
Log
Mkr3 9.254 GHz
-65.12 dBm
13.00 dBm
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100
Start 5.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 10.000 GHz
#Sweep 500.0 ms (1001 pts)
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N 1 f 5.555 GHz -53.33 dBm
2 N 1 f 7.405 GHz -49.49 dBm
3 N 1 f 9.254 GHz -65.12 dBm
Frequency
Auto Tune
Center Freq
7.500000000 GHz
Start Freq
5.000000000 GHz
Stop Freq
10.000000000 GHz
CF Step
500.000000 MHz
Auto Man
Freq Offset
0 Hz
MSG
STATUS

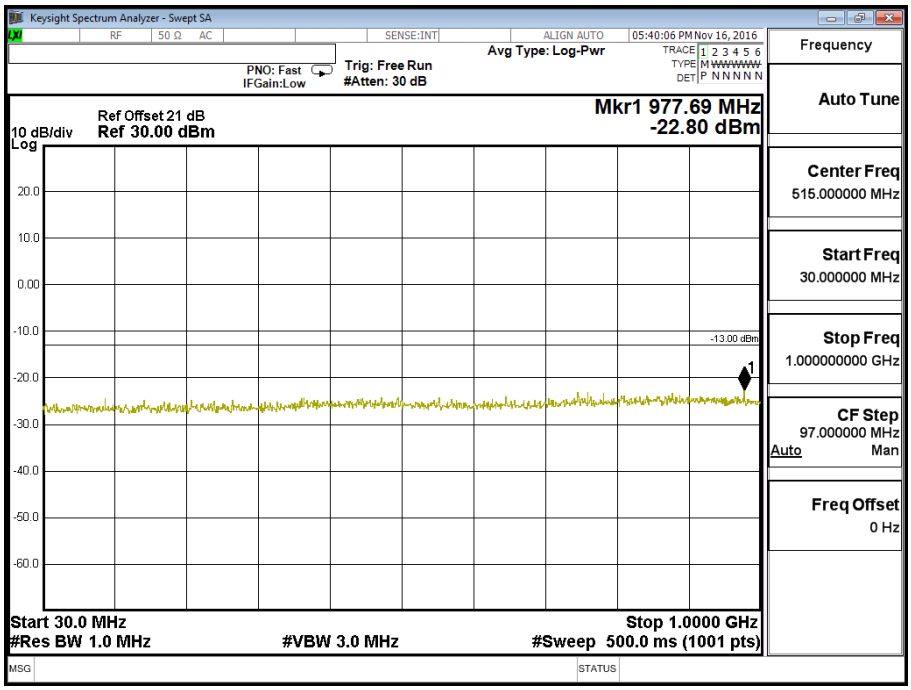

Keysight Spectrum Analyzer - Swept SA
RF 50 Ω AC
SENSE:INT
ALIGN AUTO
10:36:52 AM Nov 16, 2016
Avg Type: Log-Pwr
TRACE 1 2 3 4 5 6
TYPE M WWWWWW
DET P N N N N N
PNO: Fast
IFGain:High
Trig: Free Run
#Atten: 0 dB
Mkr3 14.806 GHz
-62.41 dBm
Ref Offset 11 dB
10 dB/div
Ref -10.00 dBm
Log
13.00 dBm
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100
Start 10.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 15.000 GHz
#Sweep 500.0 ms (1001 pts)
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N 1 f 11.104 GHz -66.61 dBm
2 N 1 f 12.955 GHz -64.59 dBm
3 N 1 f 14.806 GHz -62.41 dBm
Frequency
Auto Tune
Center Freq
12.500000000 GHz
Start Freq
10.000000000 GHz
Stop Freq
15.000000000 GHz
CF Step
500.000000 MHz
Auto Man
Freq Offset
0 Hz
MSG
STATUS

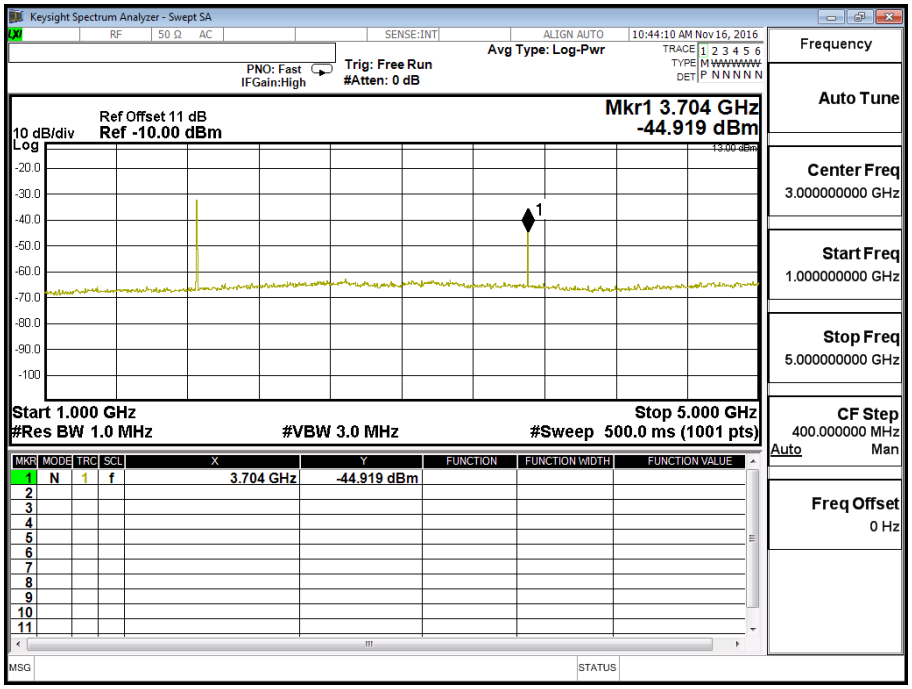

Keysight Spectrum Analyzer - Swept SA
RF 50 Ω AC
SENSE:INT
ALIGN AUTO
10:37:25 AM Nov 16, 2016
Avg Type: Log-Pwr
TRACE 1 2 3 4 5 6
TYPE M WWWWWW
DET P N N N N N
PNO: Fast
IFGain:High
Trig: Free Run
#Atten: 0 dB
Mkr2 18.507 GHz
-59.648 dBm
Ref Offset 11 dB
10 dB/div
Ref -10.00 dBm
Log
13.00 dBm
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100
Start 15.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 20.000 GHz
#Sweep 500.0 ms (1001 pts)
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N 1 f 16.656 GHz -59.061 dBm
2 N 1 f 18.507 GHz -59.648 dBm
Frequency
Auto Tune
Center Freq
17.500000000 GHz
Start Freq
15.000000000 GHz
Stop Freq
20.000000000 GHz
CF Step
500.000000 MHz
Auto Man
Freq Offset
0 Hz
MSG
STATUS

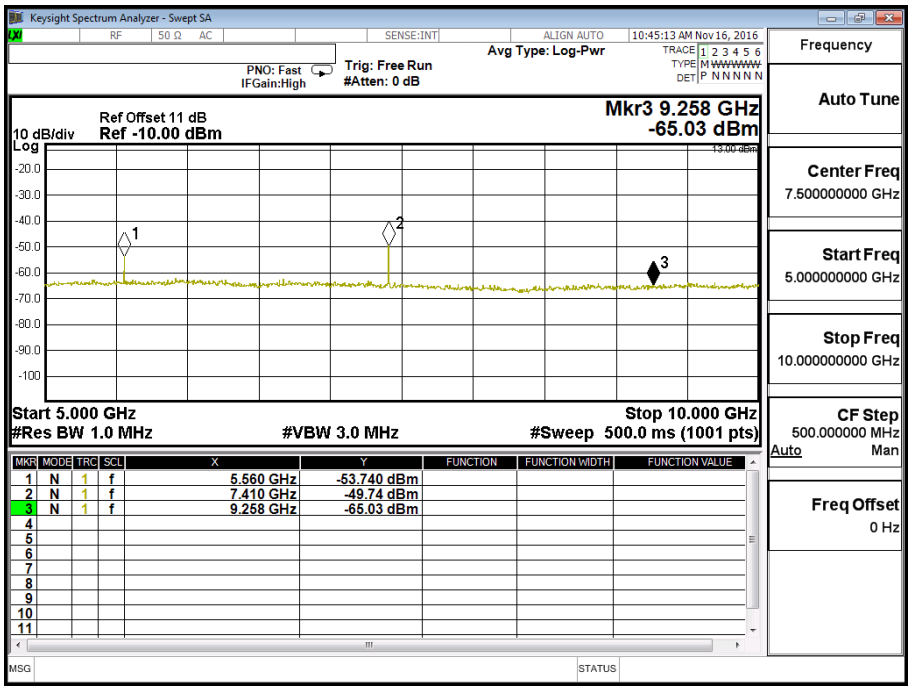
Product	LTE Router		
Test Mode	Spurious Emission (Conducted)		
Date of Test	2016/12/04	Test Site	CTR
Test Condition	LTE-Band 2 (3M)	Test Range	30MHz~20GHz

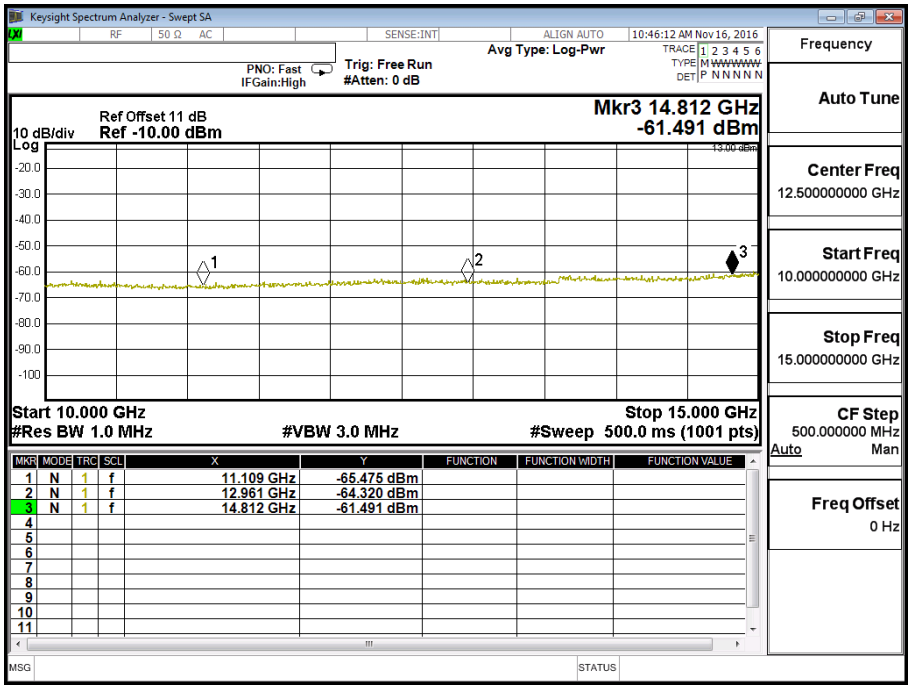
LTE-Band 2 (3M) QPSK(1,14) CH18615

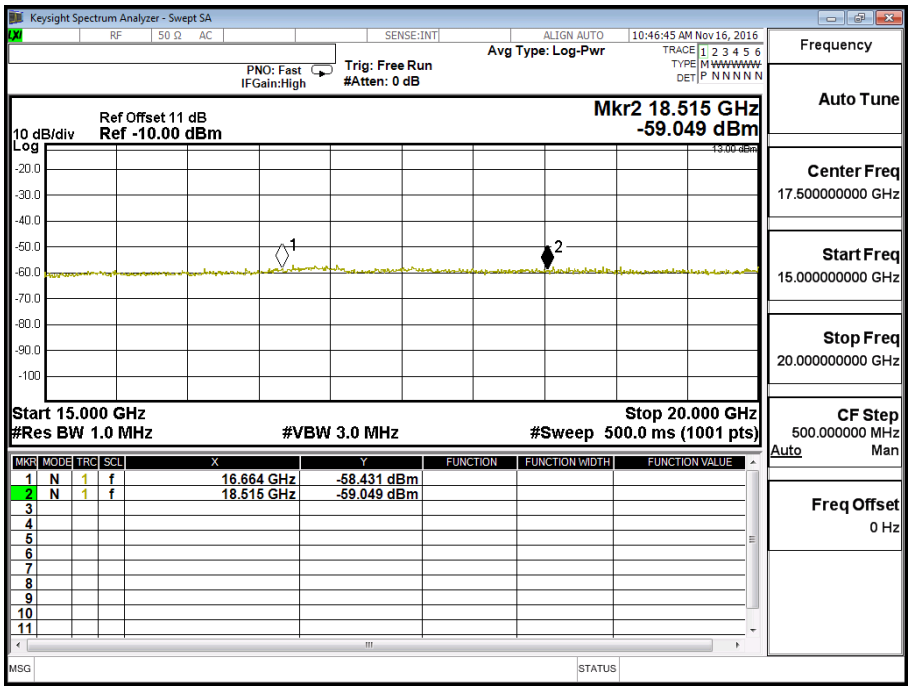
Frequency (MHz)	Reading Level (dBm)	Path Loss (dB)	Emission Level (dBm)	Limit (dBm)
3704	-44.919	1.1	-43.819	-13
5560	-53.740	1.23	-52.510	-13
7410	-49.740	1.59	-48.150	-13
9258	-65.030	1.89	-63.140	-13
11109	-65.475	2.07	-63.405	-13
12961	-64.320	2.26	-62.060	-13
14812	-61.491	2.64	-58.851	-13
16664	-58.431	3.5	-54.931	-13
18515	-59.049	3.7	-55.349	-13




Keysight Spectrum Analyzer - Swept SA
RF 50 Ω AC
SENSE:INT
ALIGN AUTO
10:44:10 AM Nov 16, 2016
Avg Type: Log-Pwr
TRACE 1 2 3 4 5 6
TYPE M WWWWWW
DET P N N N N N
PNO: Fast
IFGain:High
Trig: Free Run
#Atten: 0 dB
Ref Offset 11 dB
10 dB/div Ref -10.00 dBm
Log
Mkr1 3.704 GHz
-44.919 dBm
13.00 dBm
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100
Start 1.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 5.000 GHz
#Sweep 500.0 ms (1001 pts)
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N 1 f 3.704 GHz -44.919 dBm
Frequency
Auto Tune
Center Freq
3.000000000 GHz
Start Freq
1.000000000 GHz
Stop Freq
5.000000000 GHz
CF Step
400.000000 MHz
Auto Man
Freq Offset
0 Hz
MSG
STATUS


Keysight Spectrum Analyzer - Swept SA
RF 50 Ω AC
SENSE:INT
ALIGN AUTO
10:45:13 AM Nov 16, 2016
Avg Type: Log-Pwr
TRACE 1 2 3 4 5 6
TYPE M WWWWWW
DET P N N N N N
PNO: Fast
IFGain:High
Trig: Free Run
#Atten: 0 dB
Ref Offset 11 dB
10 dB/div Ref -10.00 dBm
Log
Mkr3 9.258 GHz
-65.03 dBm
13.00 dBm
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100
Start 5.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 10.000 GHz
#Sweep 500.0 ms (1001 pts)
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N 1 f 5.560 GHz -53.740 dBm
2 N 1 f 7.410 GHz -49.74 dBm
3 N 1 f 9.258 GHz -65.03 dBm
Frequency
Auto Tune
Center Freq
7.500000000 GHz
Start Freq
5.000000000 GHz
Stop Freq
10.000000000 GHz
CF Step
500.000000 MHz
Auto Man
Freq Offset
0 Hz
MSG
STATUS

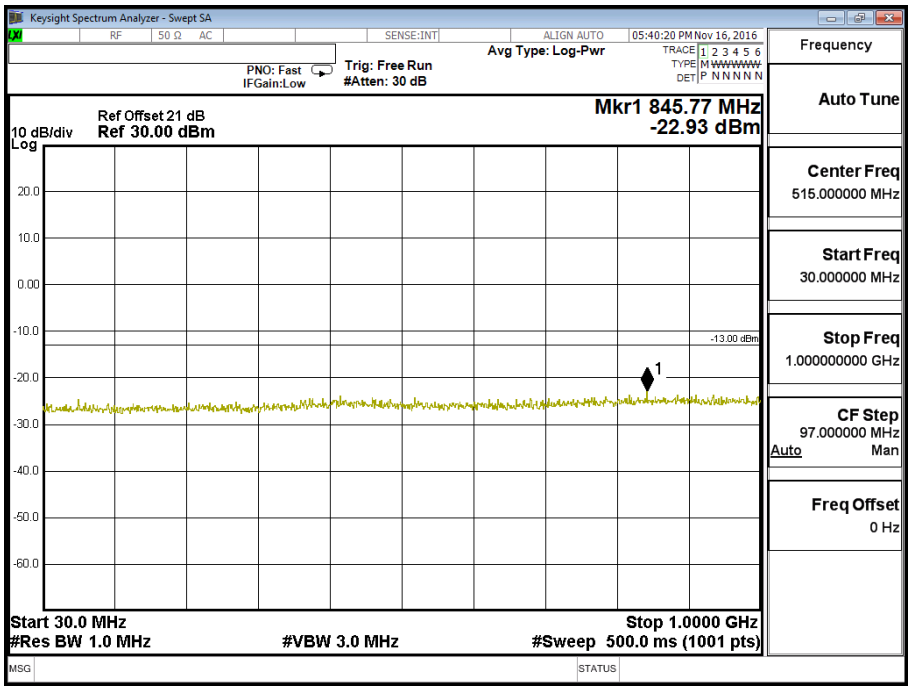

Keysight Spectrum Analyzer - Swept SA
RF 50 Ω AC
SENSE:INT
ALIGN AUTO
10:46:12 AM Nov 16, 2016
Avg Type: Log-Pwr
TRACE 1 2 3 4 5 6
TYPE M WWWWWW
DET P N N N N N
PNO: Fast
IFGain:High
Trig: Free Run
#Atten: 0 dB
Ref Offset 11 dB
10 dB/div Ref -10.00 dBm
Log
Mkr3 14.812 GHz
-61.491 dBm
13.00 dBm
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100
Start 10.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 15.000 GHz
#Sweep 500.0 ms (1001 pts)
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N 1 f 11.109 GHz -65.475 dBm
2 N 1 f 12.961 GHz -64.320 dBm
3 N 1 f 14.812 GHz -61.491 dBm
Frequency
Auto Tune
Center Freq
12.500000000 GHz
Start Freq
10.000000000 GHz
Stop Freq
15.000000000 GHz
CF Step
500.000000 MHz
Auto Man
Freq Offset
0 Hz
MSG
STATUS

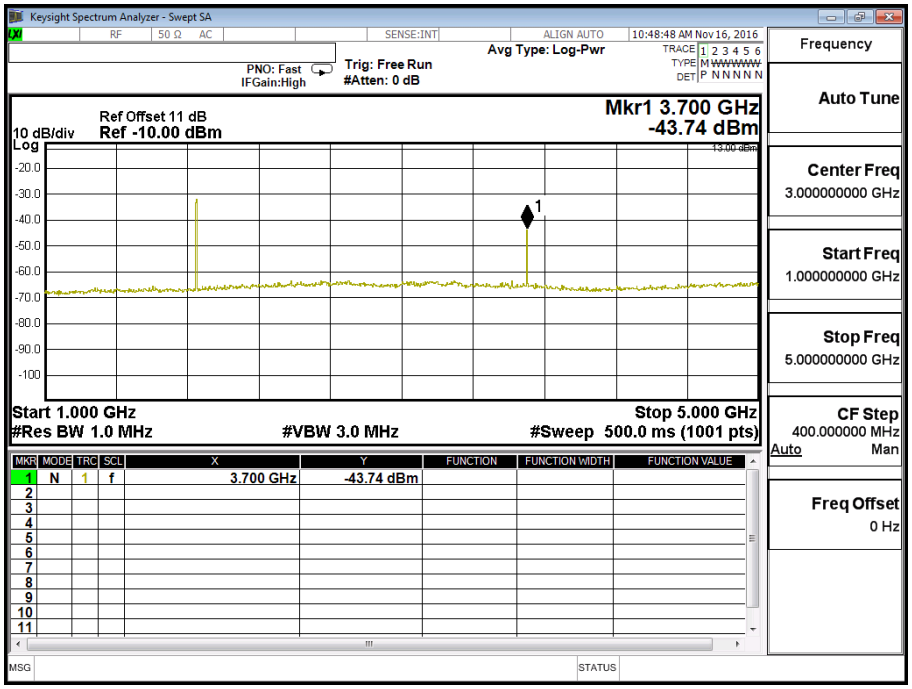

Keysight Spectrum Analyzer - Swept SA
RF 50 Ω AC
SENSE:INT
ALIGN AUTO
10:46:45 AM Nov 16, 2016
Avg Type: Log-Pwr
TRACE 1 2 3 4 5 6
TYPE M WWWWWW
DET P N N N N N
PNO: Fast
IFGain:High
Trig: Free Run
#Atten: 0 dB
Ref Offset 11 dB
10 dB/div Ref -10.00 dBm
Log
Mkr2 18.515 GHz
-59.049 dBm
13.00 dBm
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100
Start 15.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 20.000 GHz
#Sweep 500.0 ms (1001 pts)
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N 1 f 16.664 GHz -58.431 dBm
2 N 1 f 18.515 GHz -59.049 dBm
Frequency
Auto Tune
Center Freq
17.500000000 GHz
Start Freq
15.000000000 GHz
Stop Freq
20.000000000 GHz
CF Step
500.000000 MHz
Auto Man
Freq Offset
0 Hz
MSG
STATUS

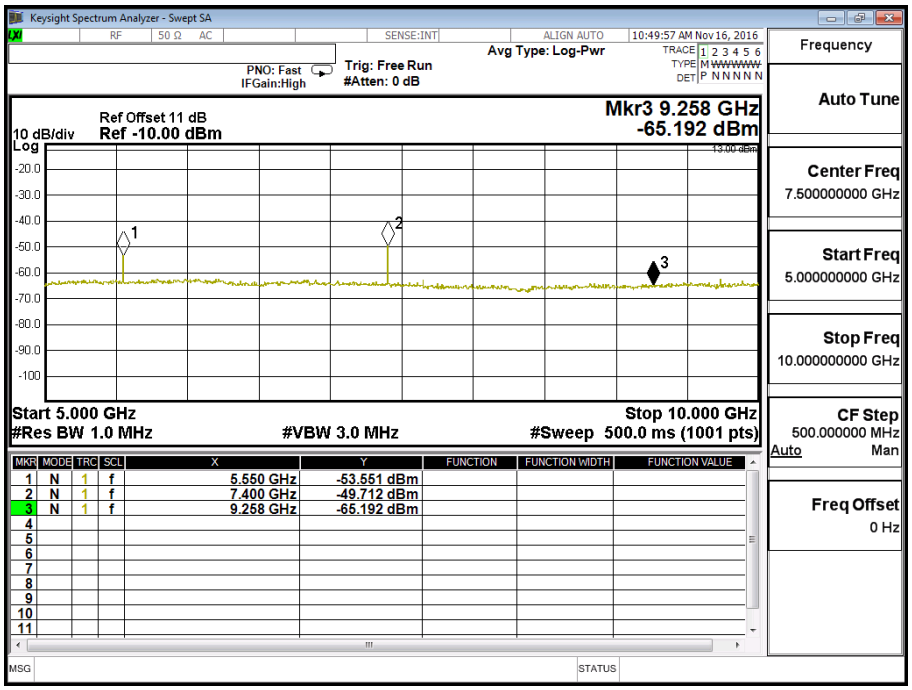
Product	LTE Router		
Test Mode	Spurious Emission (Conducted)		
Date of Test	2016/12/04	Test Site	CTR
Test Condition	LTE-Band 2 (3M)	Test Range	30MHz~20GHz

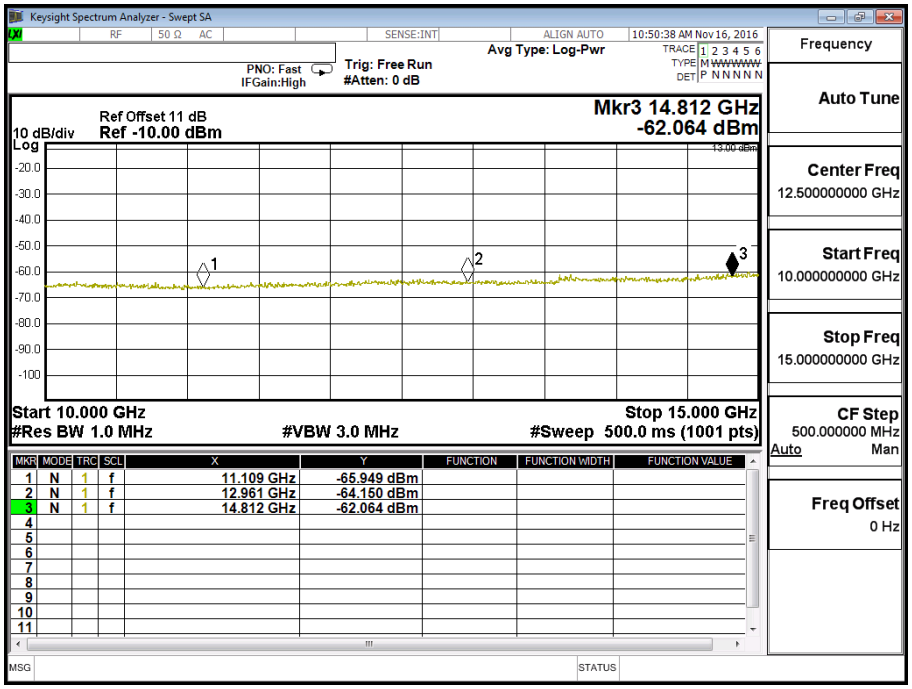
LTE-Band 2 (3M) 16QAM(1,0) CH18615

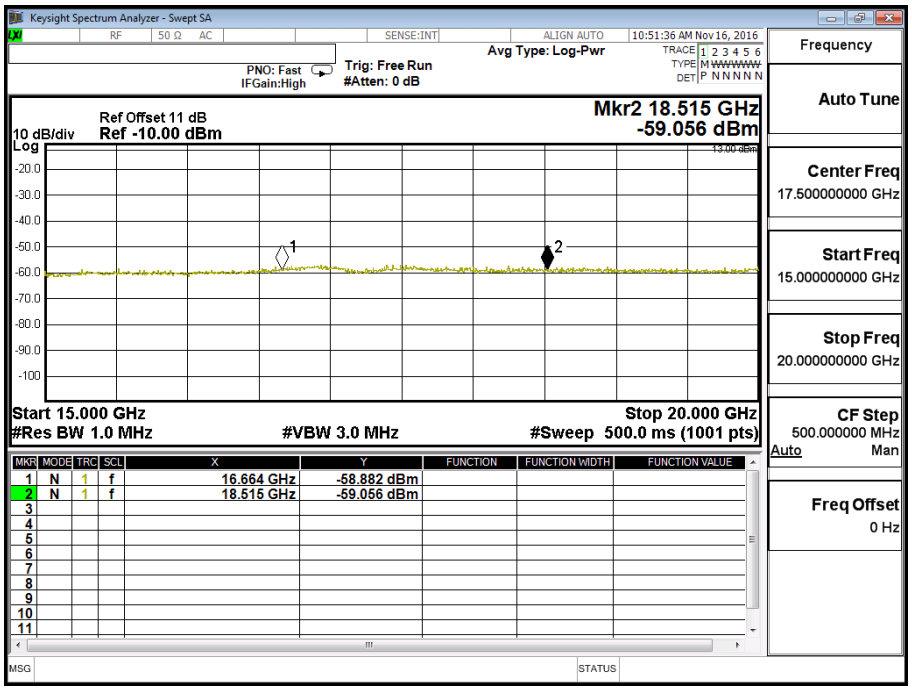
Frequency (MHz)	Reading Level (dBm)	Path Loss (dB)	Emission Level (dBm)	Limit (dBm)
3700	-43.740	1.1	-42.640	-13
5550	-53.551	1.23	-52.321	-13
7400	-49.712	1.59	-48.122	-13
9258	-65.192	1.89	-63.302	-13
11109	-65.949	2.07	-63.879	-13
12961	-64.150	2.26	-61.890	-13
14812	-62.064	2.64	-59.424	-13
16664	-58.882	3.5	-55.382	-13
18515	-59.056	3.7	-55.356	-13




Keysight Spectrum Analyzer - Swept SA
RF 50 Ω AC
SENSE:INT
ALIGN AUTO
10:48:48 AM Nov 16, 2016
Avg Type: Log-Pwr
PNO: Fast
IFGain:High
Trig: Free Run
#Atten: 0 dB
Ref Offset 11 dB
10 dB/div Ref -10.00 dBm
Mkr1 3.700 GHz
-43.74 dBm
Start 1.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 5.000 GHz
#Sweep 500.0 ms (1001 pts)
Frequency
Auto Tune
Center Freq
3.000000000 GHz
Start Freq
1.000000000 GHz
Stop Freq
5.000000000 GHz
CF Step
400.000000 MHz
Auto Man
Freq Offset
0 Hz
1 N 1 f 3.700 GHz -43.74 dBm


Keysight Spectrum Analyzer - Swept SA
RF 50 Ω AC
SENSE:INT
ALIGN AUTO
10:49:57 AM Nov 16, 2016
Avg Type: Log-Pwr
PNO: Fast
IFGain:High
Trig: Free Run
#Atten: 0 dB
Ref Offset 11 dB
10 dB/div Ref -10.00 dBm
Mkr3 9.258 GHz
-65.192 dBm
Start 5.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 10.000 GHz
#Sweep 500.0 ms (1001 pts)
Frequency
Auto Tune
Center Freq
7.500000000 GHz
Start Freq
5.000000000 GHz
Stop Freq
10.000000000 GHz
CF Step
500.000000 MHz
Auto Man
Freq Offset
0 Hz
1 N 1 f 5.550 GHz -53.551 dBm
2 N 1 f 7.400 GHz -49.712 dBm
3 N 1 f 9.258 GHz -65.192 dBm


Keysight Spectrum Analyzer - Swept SA
RF 50 Ω AC
SENSE:INT
ALIGN AUTO
10:50:38 AM Nov 16, 2016
Avg Type: Log-Pwr
TRACE 1 2 3 4 5 6
TYPE M WWWWWW
DET P N N N N N
PNO: Fast
IFGain:High
Trig: Free Run
#Atten: 0 dB
Ref Offset 11 dB
10 dB/div Ref -10.00 dBm
Log
Mkr3 14.812 GHz
-62.064 dBm
13.00 dBm
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100
Start 10.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 15.000 GHz
#Sweep 500.0 ms (1001 pts)
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N 1 f 11.109 GHz -65.949 dBm
2 N 1 f 12.961 GHz -64.150 dBm
3 N 1 f 14.812 GHz -62.064 dBm
Frequency
Auto Tune
Center Freq
12.500000000 GHz
Start Freq
10.000000000 GHz
Stop Freq
15.000000000 GHz
CF Step
500.000000 MHz
Auto Man
Freq Offset
0 Hz
MSG
STATUS


Keysight Spectrum Analyzer - Swept SA
RF 50 Ω AC
SENSE:INT
ALIGN AUTO
10:51:36 AM Nov 16, 2016
Avg Type: Log-Pwr
TRACE 1 2 3 4 5 6
TYPE M WWWWWW
DET P N N N N N
PNO: Fast
IFGain:High
Trig: Free Run
#Atten: 0 dB
Ref Offset 11 dB
10 dB/div Ref -10.00 dBm
Log
Mkr2 18.515 GHz
-59.056 dBm
13.00 dBm
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100
Start 15.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 20.000 GHz
#Sweep 500.0 ms (1001 pts)
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N 1 f 16.664 GHz -58.882 dBm
2 N 1 f 18.515 GHz -59.056 dBm
Frequency
Auto Tune
Center Freq
17.500000000 GHz
Start Freq
15.000000000 GHz
Stop Freq
20.000000000 GHz
CF Step
500.000000 MHz
Auto Man
Freq Offset
0 Hz
MSG
STATUS