

FCC&ISED Test Report

(Part 27&RSS130&139)

Product Name : LTE Cellular Alarm Communicators

Model No : LT9080

FCC ID : R17LE910SV

IC ID : 5131A-LE910SV

Applicant : DIGITAL SECURITY CONTROLS, A DIV. OF TYCO
SAFTEY PRODUCTS CANAD LTD.

Address : 3301 Langstaff Rd., Concord, ON L4K4L2 Canada

Date of Receipt : 2017/05/16

Issued Date : 2017/06/22

Report No. : 1750379R-HPUSP50V00-C

Report Version : V1.0



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

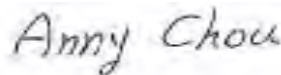
Issued Date : 2017/06/22

Report No.: 1750379R-HPUSP50V00-C



Product Name : LTE Cellular Alarm Communicators
Applicant : DIGITAL SECURITY CONTROLS, A DIV. OF TYCO SAFTEY PRODUCTS CANAD LTD.
Address : 3301 Langstaff Rd., Concord, ON L4K4L2 Canada
Manufacturer : DIGITAL SECURITY CONTROLS, A DIV. OF TYCO SAFTEY PRODUCTS CANAD LTD.
Trade Name : DSC
Model No. : LT9080
EUT Rated Voltage : DC 24V
EUT Test Voltage : DC 24V
Measurement Standard : FCC CFR Title 47 Part 2 27
RSS GEN Issue 4, RSS-130 Issue 1, RSS-139 Issue 3
Measurement Reference : TIA/EIA 603-D
Test Result : Complied

Documented By :



(Senior Adm. Specialist / Anny Chou)

Tested By :



(Senior Engineer / Vorana Chen)

Approved By :



(Director / Vincent Lin)

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1. GENERAL INFORMATION

1.1. EUT Description

Product Name	LTE Cellular Alarm Communicators
Model No.	LT9080
Trade Name	DSC
IMEI No.	35323806
FCC ID	R17LE910SV
IC ID	5131A-LE910SV
Modulation	LTE Band 4: QPSK/16-QAM
	LTE Band 13: QPSK/16-QAM
TX Frequency	LTE Band 4: 1710MHz~1755MHz
	LTE Band 13: 777~787MHz
Rx Frequency	LTE Band 4: 2110~2155MHz
	LTE Band 13: 746~756MHz
Bandwidth	LTE Band 4: 1.4MHz/3MHz/5MHz/10MHz/15MHz/20MHz
	LTE Band 13: 5MHz/10MHz
HW Version	UA716 Rev.02
SW Version	1.0
Antenna Type	Dipole Antenna

1.2. Antenna List

No	Manufacturer	Part No	Antenna Type	Peak Gain
1	Antetec Technologies Ltd	1010490101	Dipole Antenna	4.40dBi for 698-798MHz 2.98dBi for 1710-1990MHz

1.3. Operational Description

The information contained within this report is intended to show verification of compliance of the 700/1700MHz to the requirements of FCC 47 CFR Part 2, 27 & RSS GEN, RSS 130, RSS 139.

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:

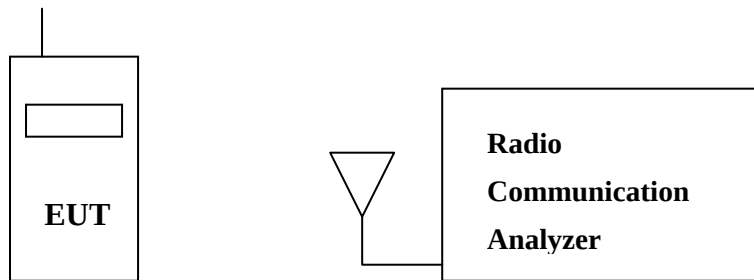
Test Mode:	LTE Band 4 (1.4M)-QPSK/16QAM
	LTE Band 4 (3M)-QPSK/16QAM
	LTE Band 4 (5M)-QPSK/16QAM
	LTE Band 4 (10M)-QPSK/16QAM
	LTE Band 4 (15M)-QPSK/16QAM
	LTE Band 4 (20M)-QPSK/16QAM
	LTE Band 13 (5M)-QPSK/16QAM
	LTE Band 13 (10M)-QPSK/16QAM

Note:

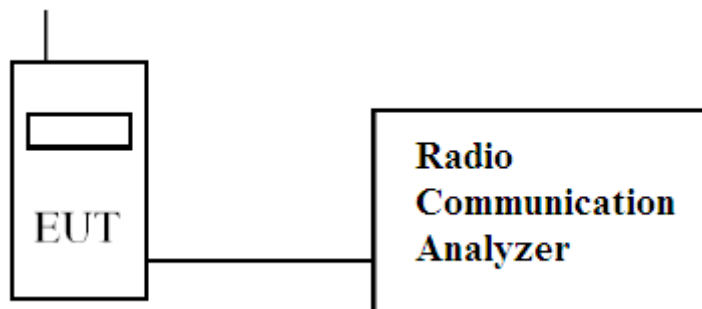
All operation modes has been verified and the report shows the worst case mode.

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	22.5
Humidity (%RH)	25-75	52
Barometric pressure (mbar)	860-1060	985

The related certificate for our laboratories about the test site and management system can be downloaded from DEKRA Testing and Certification Co., Ltd. Web Site:

<http://www.dekra.com.tw/english/about/certificates.aspx?bval=5>

The address and introduction of DEKRA Testing and Certification Co., Ltd. laboratories can be founded in our Web site: http://www.dekra.com.tw/index_en.aspx

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

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Site Address: 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
4	1.4	1M10G7D	1M09W7D
4	3	2M74G7D	2M73W7D
4	5	4M51G7D	4M49W7D
4	10	9M03G7D	9M04W7D
4	15	13M5G7D	13M5W7D
4	20	18M5G7D	18M5W7D
13	5	4M51G7D	4M49W7D
13	10	9M05G7D	9M04W7D

1.8. Voltages and DC currents

LTE Band 4 (1.4M)	EUT Transmitting (in maximum power) :	DC voltage : 24V , DC current : 0.19A
	EUT Standby :	DC voltage : 24V , DC current : 0.10A
LTE Band 4 (3M)	EUT Transmitting (in maximum power) :	DC voltage : 24V , DC current : 0.19A
	EUT Standby :	DC voltage : 24V , DC current : 0.10A
LTE Band 4 (5M)	EUT Transmitting (in maximum power) :	DC voltage : 24V , DC current : 0.19A
	EUT Standby :	DC voltage : 24V , DC current : 0.10A
LTE Band 4 (10M)	EUT Transmitting (in maximum power) :	DC voltage : 24V , DC current : 0.19A
	EUT Standby :	DC voltage : 24V , DC current : 0.10A
LTE Band 4 (15M)	EUT Transmitting (in maximum power) :	DC voltage : 24V , DC current : 0.20A
	EUT Standby :	DC voltage : 24V , DC current : 0.10A
LTE Band 4 (20M)	EUT Transmitting (in maximum power) :	DC voltage : 24V , DC current : 0.21A
	EUT Standby :	DC voltage : 24V , DC current : 0.10A
LTE Band 13 (5M)	EUT Transmitting (in maximum power) :	DC voltage : 24V , DC current : 0.19A
	EUT Standby :	DC voltage : 24V , DC current : 0.10A
LTE Band 13 (10M)	EUT Transmitting (in maximum power) :	DC voltage : 24V , DC current : 0.19A
	EUT Standby :	DC voltage : 24V , DC current : 0.10A

2. Technical Test

2.1. Summary of test result

FCC Standard	IC Standard	Test Item	Result	Note
2.1046	RSS GEN	Conducted Output Power	Pass	
27.5	RSS 130/RSS 139			
2.1049	RSS GEN	Occupied Bandwidth	Pass	
27.53 (g, h)	RSS 130/RSS 139			
2.1051	RSS GEN	Spurious Emission at Antenna Terminals	Pass	
27.53 (g, h)	RSS 130/RSS 139			
2.1051	RSS GEN	Conducted Emission	Pass	
27.53 (g, h)	RSS 130/RSS 139			
2.1053	RSS GEN	Field Strength of Spurious Radiation	Pass	
27.53 (g, h)	RSS 130/RSS 139			
2.1055	RSS GEN	Frequency Stability for Temperature & Voltage	Pass	
27.54	RSS 130/RSS 139			
27.50(a)	RSS 130/RSS 139	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	MY54510357	2017/04/26
Directional coupler	Agilent	87300C	MY44300353	2016/11/04
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	Agilent	MT8820C	6201091166	2017/03/28

Radiated / Site3

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
Bilog Antenna	Schaffner Chase	CBL6112B	2707	2016/07/21
Horn Antenna	R&S	9120D	867	2017/04/28
Pre-Amplifier	Agilent	87405C	MY47010653	2016/08/11
Spectrum Analyzer	Agilent	N9010A	MY54510357	2017/04/26
Communication Tester	Agilent	MT8820C	6201091166	2017/03/28

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

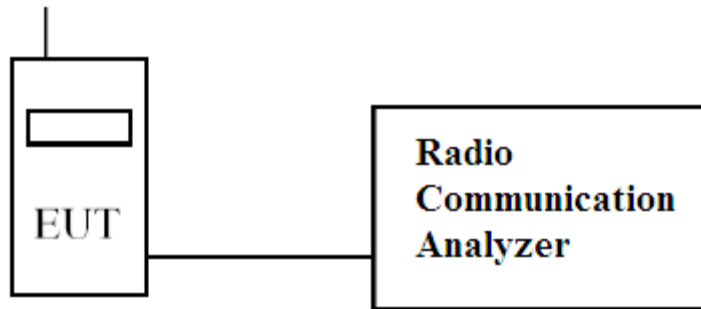
3. Conducted Output Power Measurement

3.1. Test Specification

According to FCC Part 2.1046, 27.50

RSS GEN, RSS 130, RSS 139

3.2. Test Setup



3.3. Limits

Band	Limit
LTE Band 4/1700	<1W
LTE Band 13/700	<3W

3.4. Test Procedure

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

3.5. Test Result of Maximum Power Output

Band	Channel	Modulation	RB No.	RB Offset	MPR	Max Power (dBm)	Max Power (W)
Band 4 (1700MHz)/1.4MHz	19957 1710.7MHz	QPSK	1	#0	0	21.01	0.1262
			1	#Mid	0	21.09	0.1285
			1	#Max	0	21.06	0.1276
			50%	#0	1	21.06	0.1276
			50%	#Mid	1	21.07	0.1279
			50%	#Max	1	21.03	0.1268
			100%	--	1	20.00	0.1000
		16QAM	1	#0	1	20.02	0.1005
			1	#Mid	1	20.09	0.1021
			1	#Max	1	20.05	0.1012
			50%	#0	2	20.07	0.1016
			50%	#Mid	2	20.08	0.1019
			50%	#Max	2	20.04	0.1009
			100%	--	2	19.08	0.0809
	20175 1732.5MHz	QPSK	1	#0	0	22.53	0.1791
			1	#Mid	0	22.57	0.1807
			1	#Max	0	22.50	0.1778
			50%	#0	1	22.55	0.1799
			50%	#Mid	1	22.51	0.1782
			50%	#Max	1	22.47	0.1766
			100%	--	1	21.59	0.1442
		16QAM	1	#0	1	21.62	0.1452
			1	#Mid	1	21.53	0.1422
			1	#Max	1	21.39	0.1377
			50%	#0	2	21.60	0.1445
			50%	#Mid	2	21.56	0.1432
			50%	#Max	2	21.60	0.1445
			100%	--	2	20.60	0.1148
	20393 1754.3MHz	QPSK	1	#0	0	21.60	0.1445
			1	#Mid	0	21.71	0.1483
			1	#Max	0	21.81	0.1517
			50%	#0	1	21.80	0.1514
			50%	#Mid	1	21.78	0.1507
			50%	#Max	1	21.72	0.1486
			100%	--	1	20.83	0.1211
		16QAM	1	#0	1	20.70	0.1175
			1	#Mid	1	20.77	0.1194
			1	#Max	1	20.75	0.1189
			50%	#0	2	20.85	0.1216
			50%	#Mid	2	20.80	0.1202
			50%	#Max	2	20.82	0.1208
			100%	--	2	19.83	0.0962

Band	Channel	Modulation	RB No.	RB Offset	MPR	Max Power (Conducted)	Max Power (W)
Band 4 (1700MHz)/3MHz	19965 1711.5MHz	QPSK	1	#0	0	21.27	0.1340
			1	#Mid	0	21.19	0.1315
			1	#Max	0	21.16	0.1306
			50%	#0	1	20.27	0.1064
			50%	#Mid	1	20.11	0.1026
			50%	#Max	1	20.18	0.1042
			100%	--	1	20.11	0.1026
		16QAM	1	#0	1	20.19	0.1045
			1	#Mid	1	20.19	0.1045
			1	#Max	1	20.11	0.1026
			50%	#0	2	19.15	0.0822
			50%	#Mid	2	19.10	0.0813
			50%	#Max	2	19.07	0.0807
			100%	--	2	19.09	0.0811
	20175 1732.5MHz	QPSK	1	#0	0	22.69	0.1858
			1	#Mid	0	22.61	0.1824
			1	#Max	0	22.70	0.1862
			50%	#0	1	21.73	0.1489
			50%	#Mid	1	21.71	0.1483
			50%	#Max	1	21.71	0.1483
			100%	--	1	21.66	0.1466
		16QAM	1	#0	1	21.76	0.1500
			1	#Mid	1	21.69	0.1476
			1	#Max	1	21.71	0.1483
			50%	#0	2	20.68	0.1169
			50%	#Mid	2	20.62	0.1153
			50%	#Max	2	20.63	0.1156
			100%	--	2	20.63	0.1156
	20385 1753.5MHz	QPSK	1	#0	0	21.61	0.1449
			1	#Mid	0	21.81	0.1517
			1	#Max	0	21.95	0.1567
			50%	#0	1	20.73	0.1183
			50%	#Mid	1	20.79	0.1199
			50%	#Max	1	20.98	0.1253
			100%	--	1	20.88	0.1225
		16QAM	1	#0	1	20.68	0.1169
			1	#Mid	1	20.83	0.1211
			1	#Max	1	20.93	0.1239
			50%	#0	2	19.70	0.0933
			50%	#Mid	2	19.78	0.0951
			50%	#Max	2	19.86	0.0968
			100%	--	2	19.88	0.0973

Band	Channel	Modulation	RB No.	RB Offset	MPR	Max Power (Conducted)	Max Power (W)
Band 4 (1700MHz)/5MHz	19975 1712.5MHz	QPSK	1	#0	0	21.41	0.1384
			1	#Mid	0	21.36	0.1368
			1	#Max	0	21.66	0.1466
			50%	#0	1	20.35	0.1084
			50%	#Mid	1	20.29	0.1069
			50%	#Max	1	20.39	0.1094
			100%	--	1	20.25	0.1059
		16QAM	1	#0	1	20.43	0.1104
			1	#Mid	1	20.36	0.1086
			1	#Max	1	20.57	0.1140
			50%	#0	2	19.40	0.0871
			50%	#Mid	2	19.33	0.0857
			50%	#Max	2	19.43	0.0877
			100%	--	2	19.23	0.0838
	20175 1732.5MHz	QPSK	1	#0	0	22.81	0.1910
			1	#Mid	0	22.82	0.1914
			1	#Max	0	22.86	0.1932
			50%	#0	1	21.90	0.1549
			50%	#Mid	1	21.89	0.1545
			50%	#Max	1	21.92	0.1556
			100%	--	1	21.83	0.1524
		16QAM	1	#0	1	21.90	0.1549
			1	#Mid	1	21.97	0.1574
			1	#Max	1	21.95	0.1567
			50%	#0	2	20.92	0.1236
			50%	#Mid	2	20.88	0.1225
			50%	#Max	2	20.85	0.1216
			100%	--	2	20.79	0.1199
	20375 1752.5MHz	QPSK	1	#0	0	21.86	0.1535
			1	#Mid	0	21.87	0.1538
			1	#Max	0	22.15	0.1641
			50%	#0	1	20.86	0.1219
			50%	#Mid	1	20.84	0.1213
			50%	#Max	1	21.01	0.1262
			100%	--	1	20.82	0.1208
		16QAM	1	#0	1	20.83	0.1211
			1	#Mid	1	20.96	0.1247
			1	#Max	1	21.18	0.1312
			50%	#0	2	19.87	0.0971
			50%	#Mid	2	19.85	0.0966
			50%	#Max	2	20.03	0.1007
			100%	--	2	19.84	0.0964

Band	Channel	Modulation	RB No.	RB Offset	MPR	Max Power (Conducted)	Max Power (W)
Band 4 (1700MHz)/10MHz	20000 1715MHz	QPSK	1	#0	0	21.27	0.1340
			1	#Mid	0	21.42	0.1387
			1	#Max	0	22.06	0.1607
			50%	#0	1	20.05	0.1012
			50%	#Mid	1	20.29	0.1069
			50%	#Max	1	20.74	0.1186
			100%	--	1	20.30	0.1072
		16QAM	1	#0	1	20.32	0.1076
			1	#Mid	1	20.40	0.1096
			1	#Max	1	21.14	0.1300
			50%	#0	2	19.08	0.0809
			50%	#Mid	2	19.33	0.0857
			50%	#Max	2	19.68	0.0929
			100%	--	2	19.35	0.0861
	20175 1732.5MHz	QPSK	1	#0	0	22.64	0.1837
			1	#Mid	0	22.69	0.1858
			1	#Max	0	22.67	0.1849
			50%	#0	1	21.66	0.1466
			50%	#Mid	1	21.74	0.1493
			50%	#Max	1	21.75	0.1496
			100%	--	1	21.57	0.1435
		16QAM	1	#0	1	21.63	0.1455
			1	#Mid	1	21.69	0.1476
			1	#Max	1	21.71	0.1483
			50%	#0	2	20.63	0.1156
			50%	#Mid	2	20.63	0.1156
			50%	#Max	2	20.70	0.1175
			100%	--	2	20.58	0.1143
	20350 1750MHz	QPSK	1	#0	0	21.81	0.1517
			1	#Mid	0	21.64	0.1459
			1	#Max	0	21.84	0.1528
			50%	#0	1	20.51	0.1125
			50%	#Mid	1	20.46	0.1112
			50%	#Max	1	20.55	0.1135
			100%	--	1	20.48	0.1117
		16QAM	1	#0	1	20.81	0.1205
			1	#Mid	1	20.73	0.1183
			1	#Max	1	20.95	0.1245
			50%	#0	2	19.54	0.0899
			50%	#Mid	2	19.50	0.0891
			50%	#Max	2	19.58	0.0908
			100%	--	2	19.51	0.0893

Band	Channel	Modulation	RB No.	RB Offset	MPR	Max Power (Conducted)	Max Power (W)
Band 4 (1700MHz)/15MHz	20025 1717.5MHz	QPSK	1	#0	0	21.25	0.1334
			1	#Mid	0	21.83	0.1524
			1	#Max	0	22.23	0.1671
			50%	#0	1	20.20	0.1047
			50%	#Mid	1	20.72	0.1180
			50%	#Max	1	21.02	0.1265
			100%	--	1	20.49	0.1119
		16QAM	1	#0	1	20.26	0.1062
			1	#Mid	1	20.80	0.1202
			1	#Max	1	21.29	0.1346
			50%	#0	2	19.24	0.0839
			50%	#Mid	2	19.71	0.0935
			50%	#Max	2	20.11	0.1026
			100%	--	2	19.55	0.0902
	20175 1732.5MHz	QPSK	1	#0	0	22.41	0.1742
			1	#Mid	0	22.69	0.1858
			1	#Max	0	22.56	0.1803
			50%	#0	1	21.51	0.1416
			50%	#Mid	1	21.58	0.1439
			50%	#Max	1	21.49	0.1409
			100%	--	1	21.48	0.1406
		16QAM	1	#0	1	21.43	0.1390
			1	#Mid	1	21.64	0.1459
			1	#Max	1	21.66	0.1466
			50%	#0	2	20.54	0.1132
			50%	#Mid	2	20.61	0.1151
			50%	#Max	2	20.53	0.1130
			100%	--	2	20.45	0.1109
	20325 1747.5MHz	QPSK	1	#0	0	22.54	0.1795
			1	#Mid	0	21.72	0.1486
			1	#Max	0	21.93	0.1560
			50%	#0	1	21.01	0.1262
			50%	#Mid	1	20.56	0.1138
			50%	#Max	1	20.53	0.1130
			100%	--	1	20.73	0.1183
		16QAM	1	#0	1	21.59	0.1442
			1	#Mid	1	20.69	0.1172
			1	#Max	1	20.95	0.1245
			50%	#0	2	20.03	0.1007
			50%	#Mid	2	19.59	0.0910
			50%	#Max	2	19.58	0.0908
			100%	--	2	19.87	0.0971

Band	Channel	Modulation	RB No.	RB Offset	MPR	Max Power (Conducted)	Max Power (W)
Band 4 (1700MHz)/20MHz	20050 1720MHz	QPSK	1	#0	0	21.38	0.1374
			1	#Mid	0	22.11	0.1626
			1	#Max	0	22.63	0.1832
			50%	#0	1	20.52	0.1127
			50%	#Mid	1	21.00	0.1259
			50%	#Max	1	21.16	0.1306
			100%	--	1	20.95	0.1245
		16QAM	1	#0	1	20.35	0.1084
			1	#Mid	1	21.18	0.1312
			1	#Max	1	21.64	0.1459
			50%	#0	2	19.58	0.0908
			50%	#Mid	2	19.96	0.0991
			50%	#Max	2	20.19	0.1045
			100%	--	2	19.94	0.0986
	20175 1732.5MHz	QPSK	1	#0	0	22.37	0.1726
			1	#Mid	0	22.74	0.1879
			1	#Max	0	22.43	0.1750
			50%	#0	1	21.58	0.1439
			50%	#Mid	1	21.65	0.1462
			50%	#Max	1	21.62	0.1452
			100%	--	1	21.52	0.1419
		16QAM	1	#0	1	21.47	0.1403
			1	#Mid	1	21.70	0.1479
			1	#Max	1	21.54	0.1426
			50%	#0	2	20.55	0.1135
			50%	#Mid	2	20.60	0.1148
			50%	#Max	2	20.64	0.1159
			100%	--	2	20.57	0.1140
	20300 1745MHz	QPSK	1	#0	0	22.77	0.1892
			1	#Mid	0	21.92	0.1556
			1	#Max	0	21.80	0.1514
			50%	#0	1	21.24	0.1330
			50%	#Mid	1	20.85	0.1216
			50%	#Max	1	20.62	0.1153
			100%	--	1	21.06	0.1276
		16QAM	1	#0	1	22.02	0.1592
			1	#Mid	1	21.13	0.1297
			1	#Max	1	21.02	0.1265
			50%	#0	2	20.33	0.1079
			50%	#Mid	2	19.98	0.0995
			50%	#Max	2	19.55	0.0902
			100%	--	2	20.06	0.1014

Band	Channel	Modulation	RB No.	RB Offset	MPR	Max Power (Conducted)	Max Power (W)
Band 13 (700MHz)/5MHz	23205 779.5MHz	QPSK	1	#0	0	23.07	0.2028
			1	#Mid	0	22.66	0.1845
			1	#Max	0	22.72	0.1871
			50%	#0	1	21.86	0.1535
			50%	#Mid	1	21.82	0.1521
			50%	#Max	1	21.78	0.1507
			100%	--	1	21.68	0.1472
		16QAM	1	#0	1	22.20	0.1660
			1	#Mid	1	21.85	0.1531
			1	#Max	1	21.80	0.1514
			50%	#0	2	20.81	0.1205
			50%	#Mid	2	20.82	0.1208
			50%	#Max	2	20.75	0.1189
			100%	--	2	20.52	0.1127
	23230 782MHz	QPSK	1	#0	0	22.54	0.1795
			1	#Mid	0	22.50	0.1778
			1	#Max	0	22.92	0.1959
			50%	#0	1	21.64	0.1459
			50%	#Mid	1	21.55	0.1429
			50%	#Max	1	21.83	0.1524
			100%	--	1	21.58	0.1439
		16QAM	1	#0	1	21.58	0.1439
			1	#Mid	1	21.62	0.1452
			1	#Max	1	21.95	0.1567
			50%	#0	2	20.61	0.1151
			50%	#Mid	2	20.60	0.1148
			50%	#Max	2	20.80	0.1202
			100%	--	2	20.53	0.1130
	23255 784.5MHz	QPSK	1	#0	0	22.61	0.1824
			1	#Mid	0	23.01	0.2000
			1	#Max	0	23.23	0.2104
			50%	#0	1	21.86	0.1535
			50%	#Mid	1	21.95	0.1567
			50%	#Max	1	22.09	0.1618
			100%	--	1	21.82	0.1521
		16QAM	1	#0	1	21.70	0.1479
			1	#Mid	1	21.96	0.1570
			1	#Max	1	22.23	0.1671
			50%	#0	2	20.86	0.1219
			50%	#Mid	2	20.98	0.1253
			50%	#Max	2	21.11	0.1291
			100%	--	2	20.82	0.1208

Band	Channel	Modulation	RB No.	RB Offset	MPR	Max Power (Conducted)	Max Power (W)
Band 13 (700MHz)/10MHz	23230 782MHz	QPSK	1	#0	0	22.91	0.1954
			1	#Mid	0	22.54	0.1795
			1	#Max	0	23.14	0.2061
			50%	#0	1	21.61	0.1449
			50%	#Mid	1	21.57	0.1435
			50%	#Max	1	21.77	0.1503
			100%	--	1	21.50	0.1413
		16QAM	1	#0	1	21.91	0.1552
			1	#Mid	1	21.56	0.1432
			1	#Max	1	22.20	0.1660
			50%	#0	2	20.49	0.1119
			50%	#Mid	2	20.48	0.1117
			50%	#Max	2	20.78	0.1197
			100%	--	2	20.46	0.1112

3.6. Maximum Conducted Power and ERP/EIRP Power

According to KDB 412172 D01 Section 1.2 Power Approach

$$\text{EIRP} = P_T + G_T - L_C = \text{ERP} + 2.15 \text{ dB}, \text{ERP} = \text{EIRP} - 2.15 \text{ dB}$$

P_T = transmitter output power in dBm

G_T = gain of the transmitting antenna in dBi

L_C = signal attenuation in the connecting cable between the transmitter and antenna in dB

LTE Band	BW	Modulation	Conducted Peak Power (dBm)	Conducted Peak Power (W)	Antenna Gain (dBi)	Maximum ERP (W)	Maximum ERP Limit (W)
4	1.4M	QPSK	22.57	0.181	2.98	0.359	1
		16QAM	21.62	0.145	2.98	0.288	1
	3M	QPSK	22.70	0.186	2.98	0.370	1
		16QAM	21.76	0.150	2.98	0.298	1
	5M	QPSK	22.86	0.193	2.98	0.384	1
		16QAM	21.97	0.157	2.98	0.313	1
	10M	QPSK	22.69	0.186	2.98	0.369	1
		16QAM	21.71	0.148	2.98	0.294	1
	15M	QPSK	22.69	0.186	2.98	0.369	1
		16QAM	21.66	0.147	2.98	0.291	1
	20M	QPSK	22.77	0.189	2.98	0.376	1
		16QAM	22.02	0.159	2.98	0.316	1

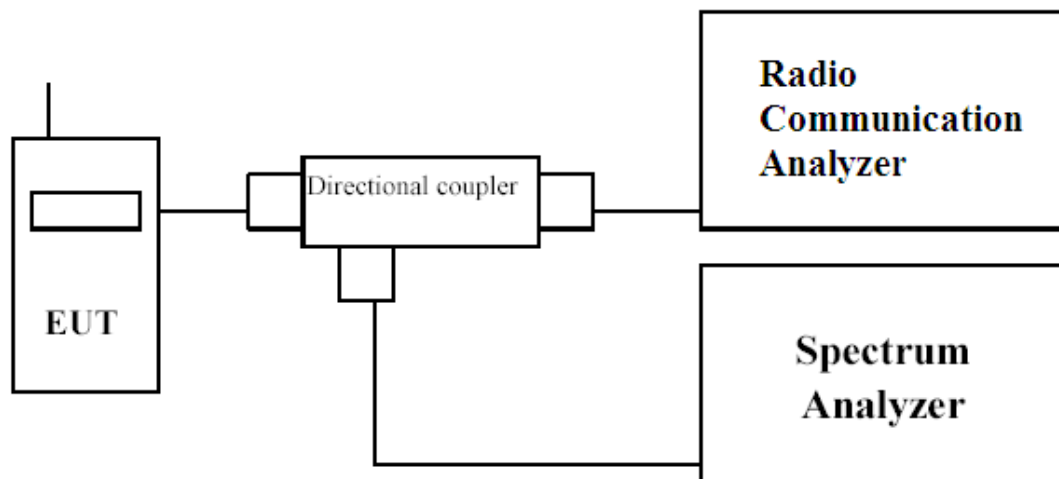
LTE Band	BW	Modulation	Conducted Peak Power (dBm)	Conducted Peak Power (W)	Antenna Gain (dBi)	Maximum ERP (W)	Maximum ERP Limit (W)
13	5M	QPSK	23.23	0.210	4.4	0.353	3
		16QAM	22.23	0.167	4.4	0.281	3
	10M	QPSK	23.14	0.206	4.4	0.346	3
		16QAM	22.20	0.166	4.4	0.279	3

4. Occupied Bandwidth

4.1. Test Secification

According to FCC Part 2.1049, 27.53
RSS GEN, RSS 130, RSS 139

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.

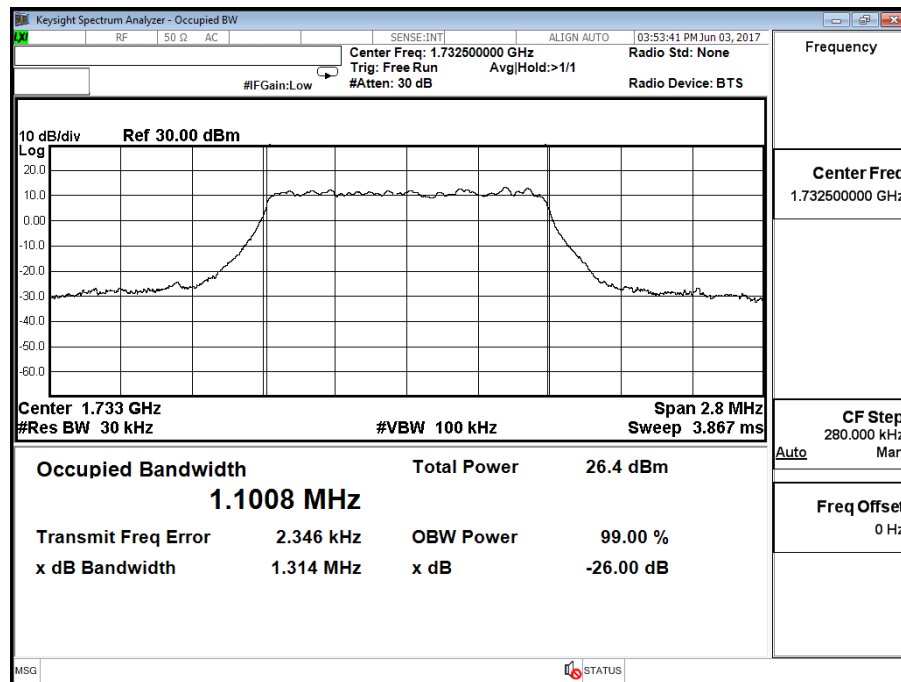
4.4. Test Result of Occupied Bandwidth

Product	LTE Cellular Alarm Communicators
Test Mode	Occupied Bandwidth
Test Site	CTR

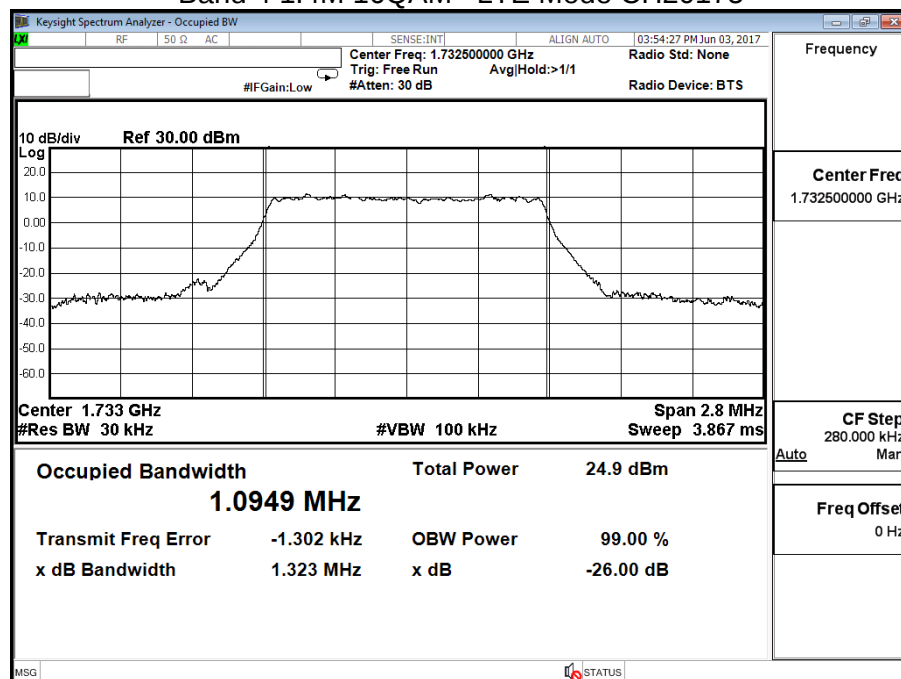
Test Mode	Channel	TX Frequency (MHz)	99% Occupied Bandwidth (MHz)	26 dB bandwidth (MHz)	Result
Band 4 1.4M QPSK	20175	1732.5	1.1008	1.314	Pass
Band 4 1.4M 16QAM	20175	1732.5	1.0949	1.323	Pass
Band 4 3M QPSK	20175	1732.5	2.7426	3.144	Pass
Band 4 3M 16QAM	20175	1732.5	2.7254	3.101	Pass
Band 4 5M QPSK	20175	1732.5	4.5072	5.099	Pass
Band 4 5M 16QAM	20175	1732.5	4.4858	5.033	Pass
Band 4 10M QPSK	20175	1732.5	9.0325	10.110	Pass
Band 4 10M 16QAM	20175	1732.5	9.0402	10.100	Pass
Band 4 15M QPSK	20175	1732.5	13.454	14.89	Pass
Band 4 15M 16QAM	20175	1732.5	13.455	14.87	Pass
Band 4 20M QPSK	20175	1732.5	18.533	20.78	Pass
Band 4 20M 16QAM	20175	1732.5	18.452	20.46	Pass
Band 13 5M QPSK	23230	782	4.5149	5.125	Pass
Band 13 5M 16QAM	23230	782	4.4933	5.064	Pass
Band 13 10M QPSK	23230	782	9.0509	10.140	Pass
Band 13 10M 16QAM	23230	782	9.0400	10.090	Pass

Product	LTE Cellular Alarm Communicators		
Test Mode	Occupied Bandwidth		
Date of Test	2017/06/03	Test Site	CTR
Test Condition	Band 4 1.4M		

Band 4 1.4M QPSK - LTE Mode CH 20175

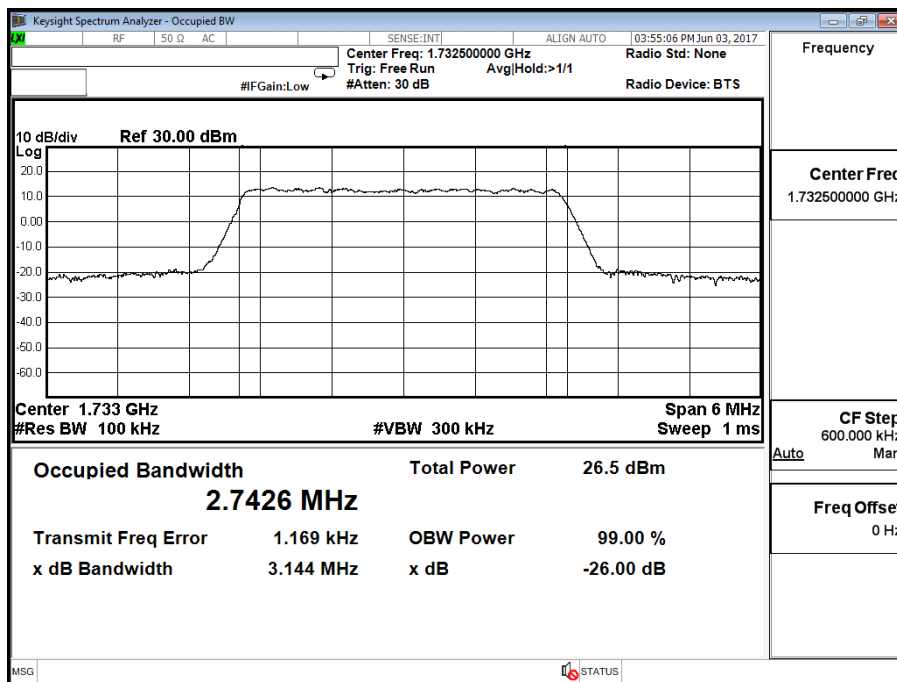


Band 4 1.4M 16QAM - LTE Mode CH20175

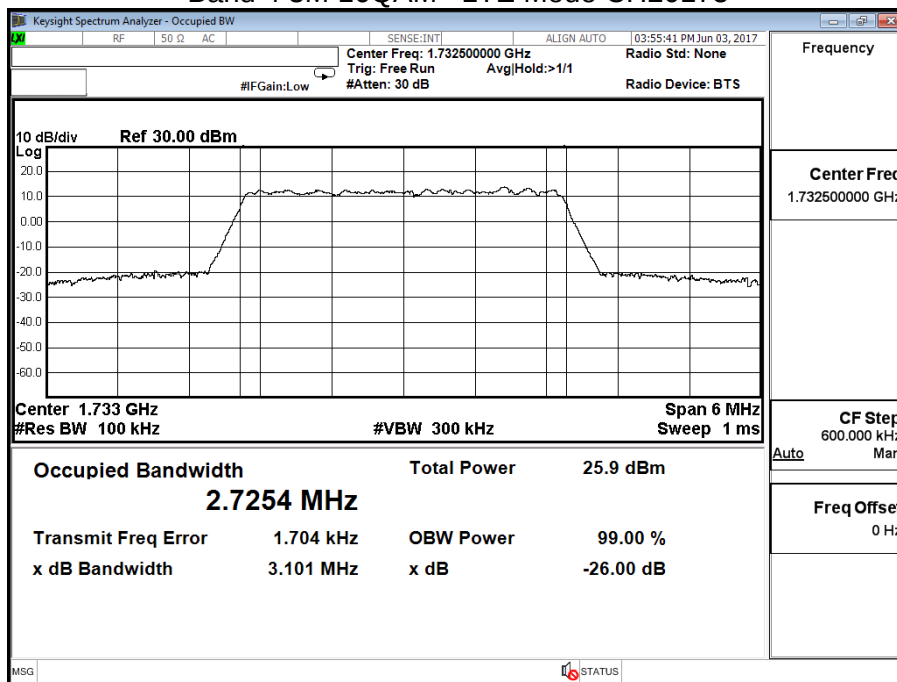


Product	LTE Cellular Alarm Communicators		
Test Mode	Occupied Bandwidth		
Date of Test	2017/06/03	Test Site	CTR
Test Condition	Band 4 3M		

Band 4 3M QPSK - LTE Mode CH20175

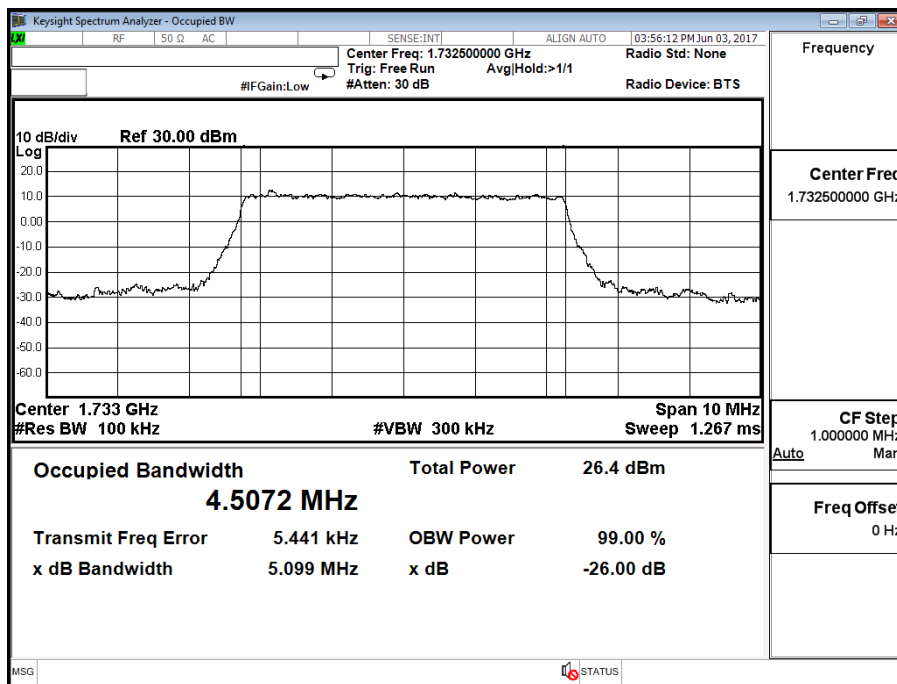


Band 4 3M 16QAM - LTE Mode CH20175

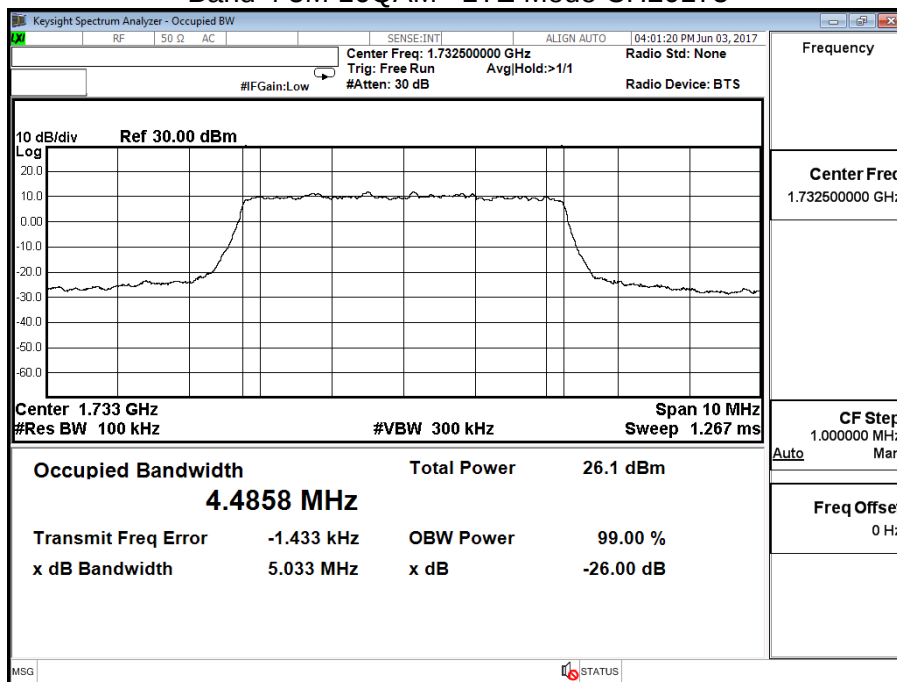


Product	LTE Cellular Alarm Communicators		
Test Mode	Occupied Bandwidth		
Date of Test	2017/06/03	Test Site	CTR
Test Condition	Band 4 5M		

Band 4 5M QPSK - LTE Mode CH20175

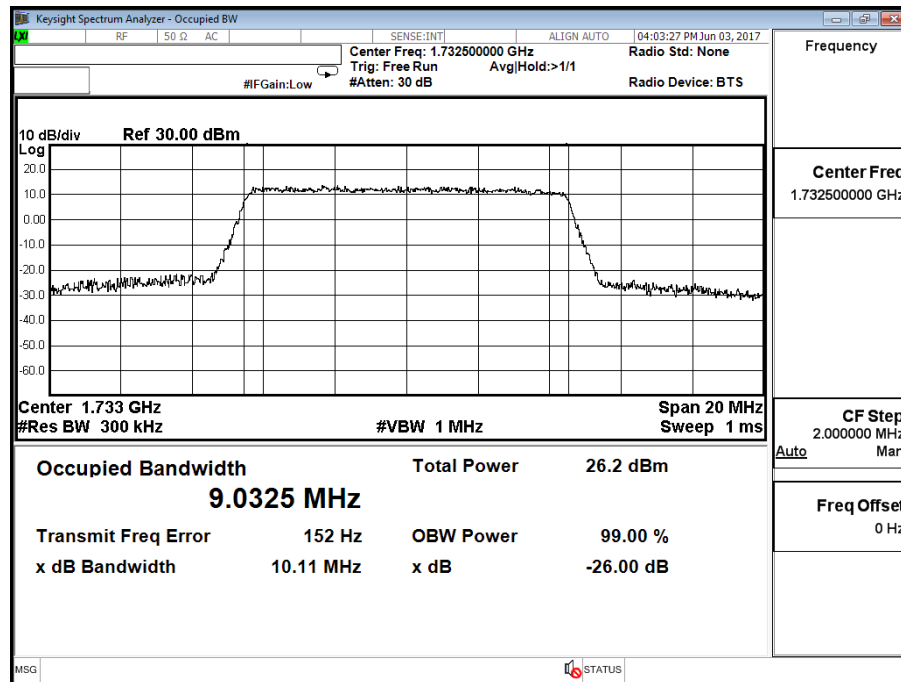


Band 4 5M 16QAM - LTE Mode CH20175

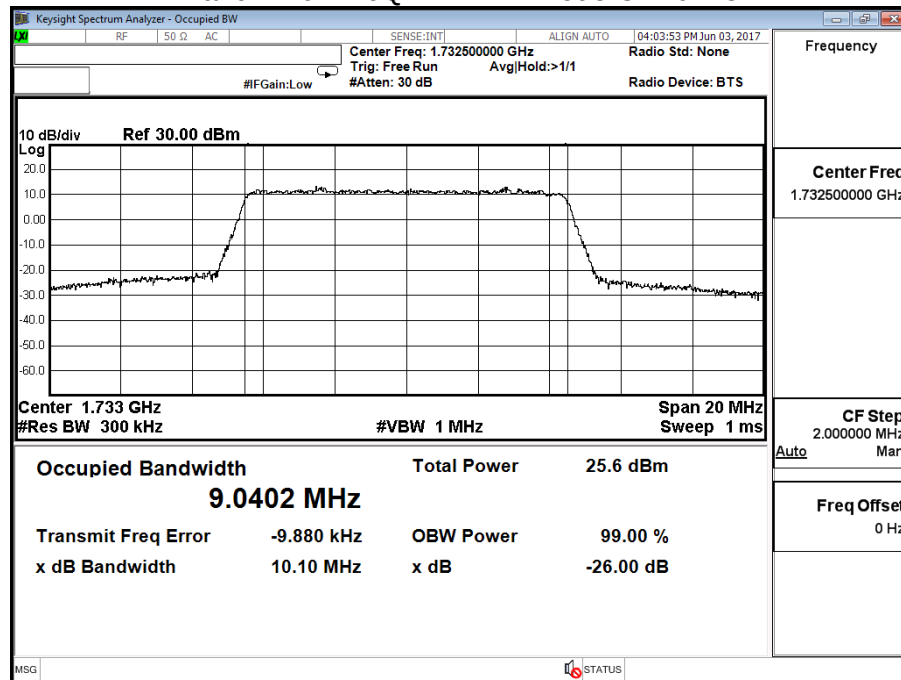


Product	LTE Cellular Alarm Communicators		
Test Mode	Occupied Bandwidth		
Date of Test	2017/06/03	Test Site	CTR
Test Condition	Band 4 10M		

Band 4 10M QPSK - LTE Mode CH20175

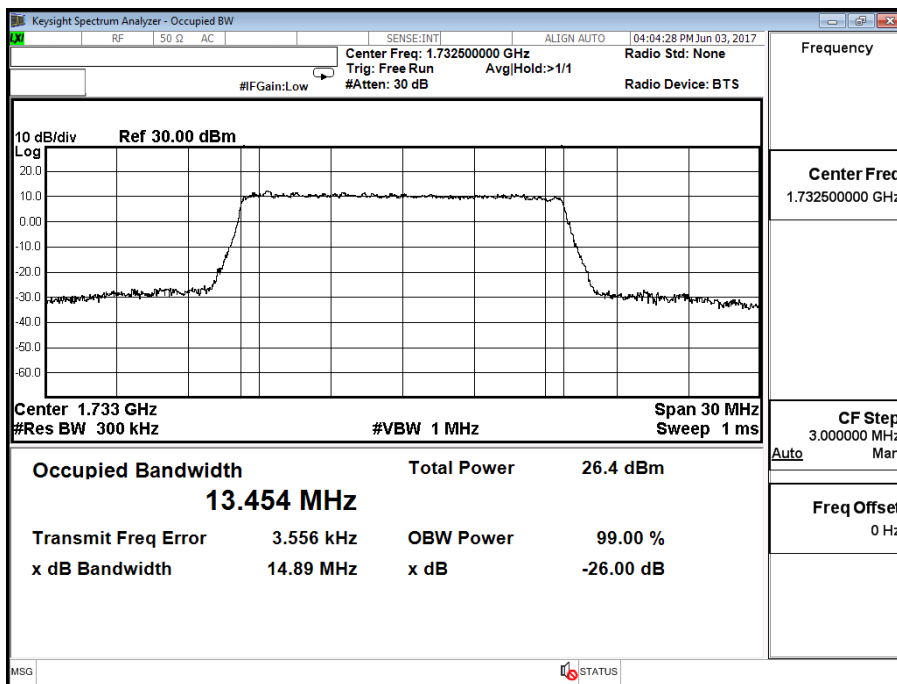


Band 4 10M 16QAM - LTE Mode CH20175

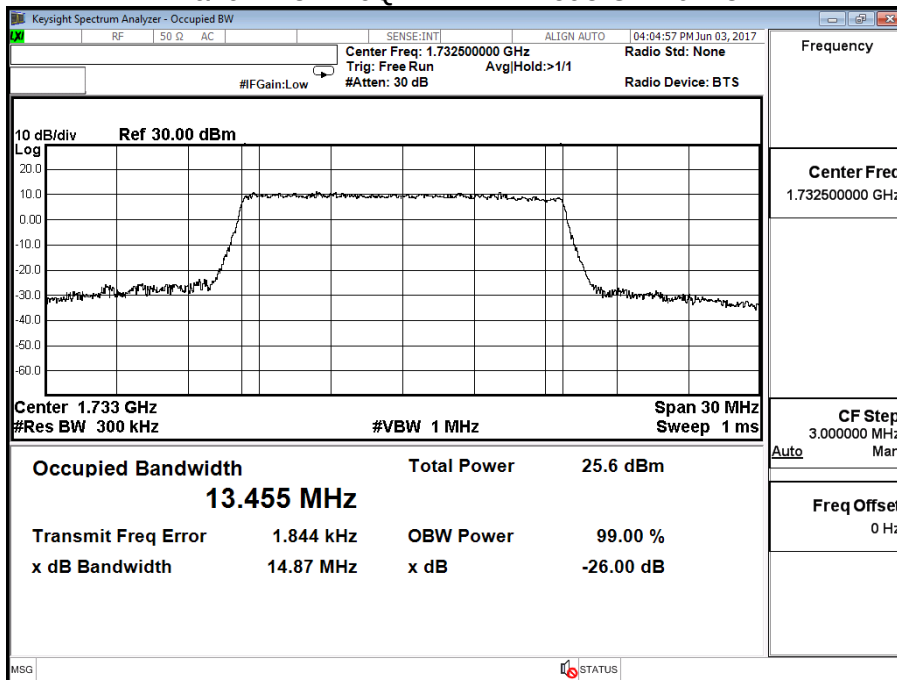


Product	LTE Cellular Alarm Communicators		
Test Mode	Occupied Bandwidth		
Date of Test	2017/06/03	Test Site	CTR
Test Condition	Band 4 15M		

Band 4 15M QPSK - LTE Mode CH20175

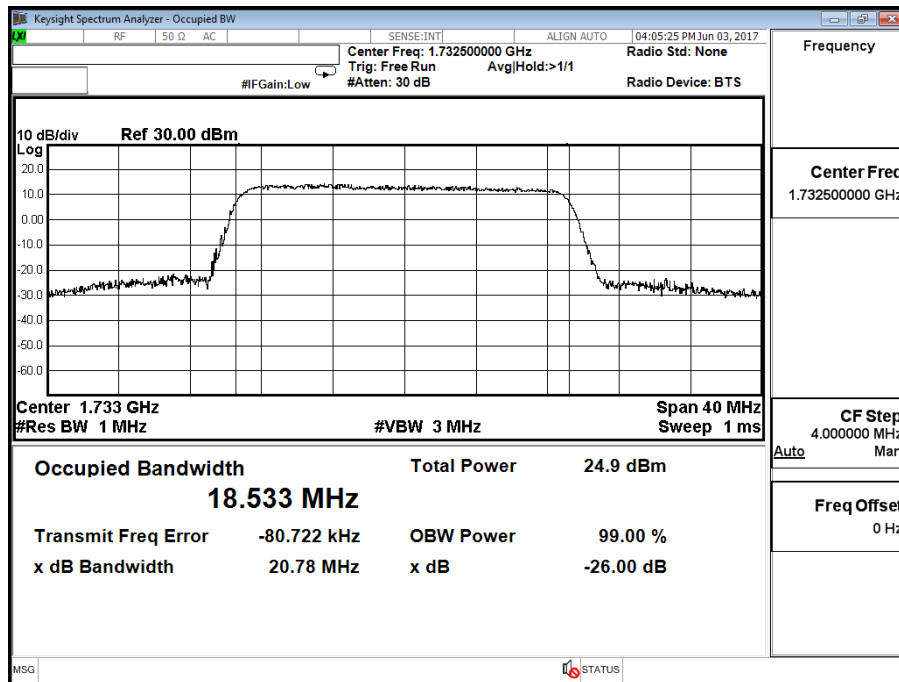


Band 4 15M 16QAM - LTE Mode CH 20175

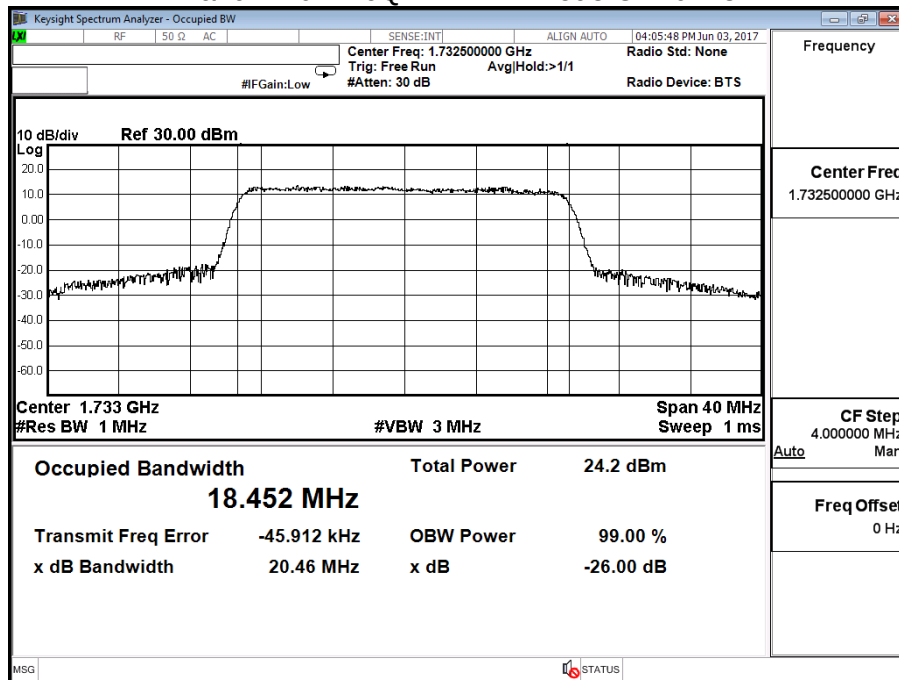


Product	LTE Cellular Alarm Communicators		
Test Mode	Occupied Bandwidth		
Date of Test	2017/06/03	Test Site	CTR
Test Condition	Band 4 20M		

Band 4 20M QPSK - LTE Mode CH20175

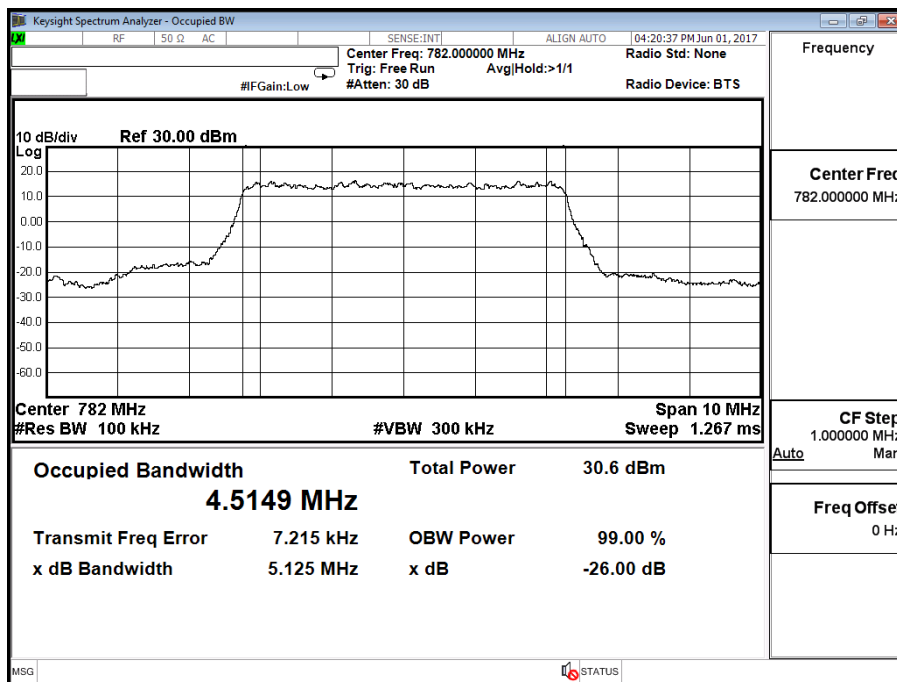


Band 4 20M 16QAM - LTE Mode CH20175

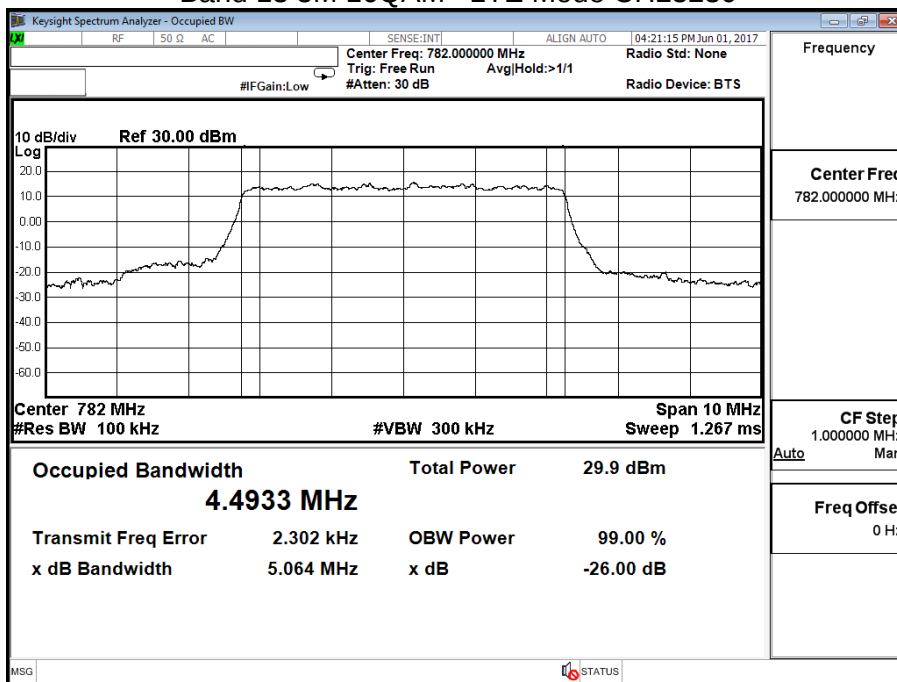


Product	LTE Cellular Alarm Communicators		
Test Mode	Occupied Bandwidth		
Date of Test	2017/06/03	Test Site	CTR
Test Condition	Band 13 5M		

Band 13 5M QPSK - LTE Mode CH 23230

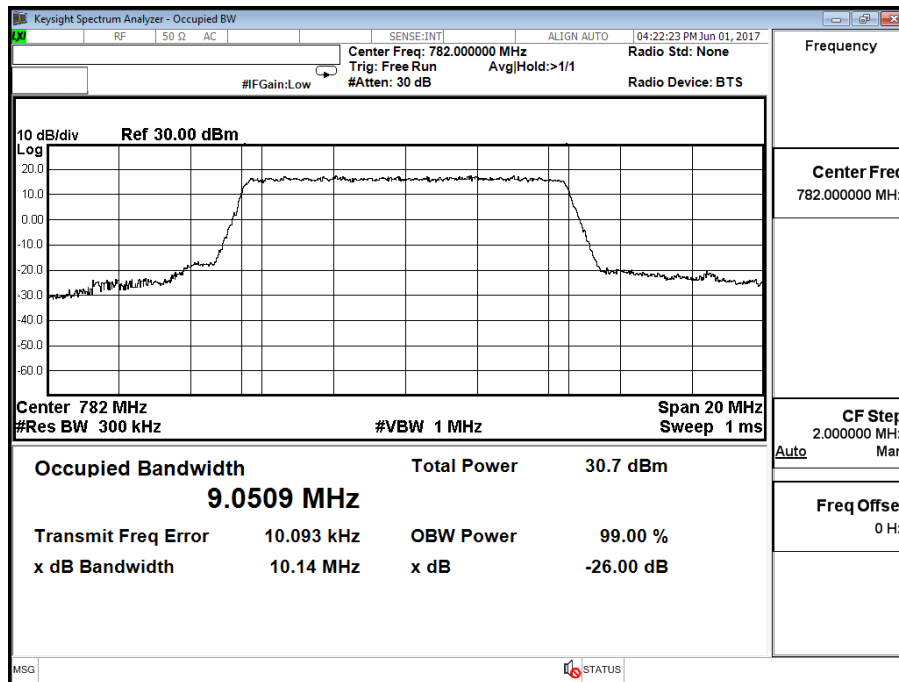


Band 13 5M 16QAM - LTE Mode CH23230

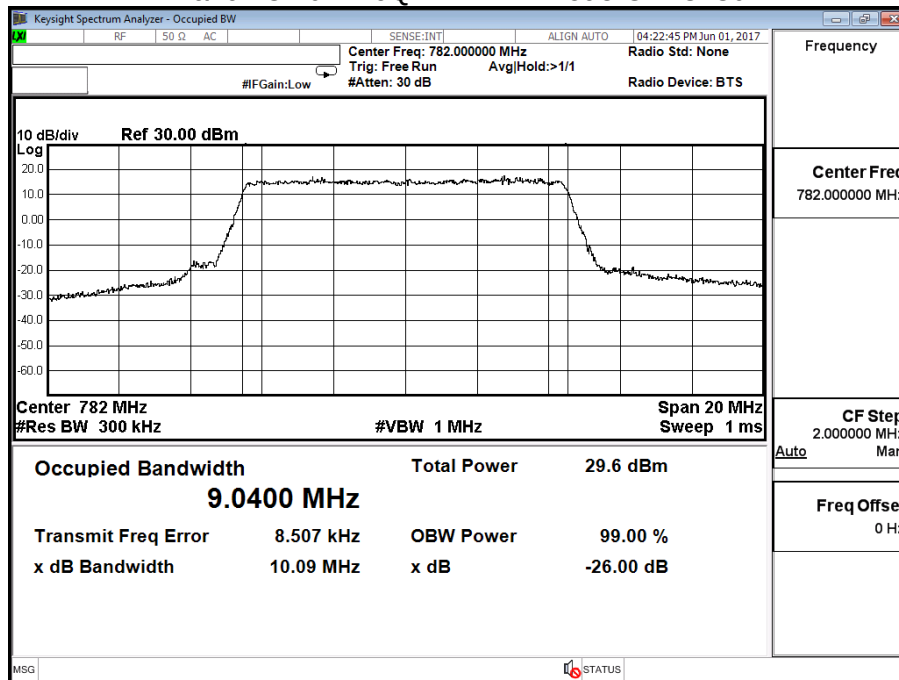


Product	LTE Cellular Alarm Communicators		
Test Mode	Occupied Bandwidth		
Date of Test	2017/06/03	Test Site	CTR
Test Condition	Band 13 10M		

Band 13 10M QPSK - LTE Mode CH 23230



Band 13 10M 16QAM - LTE Mode CH23230



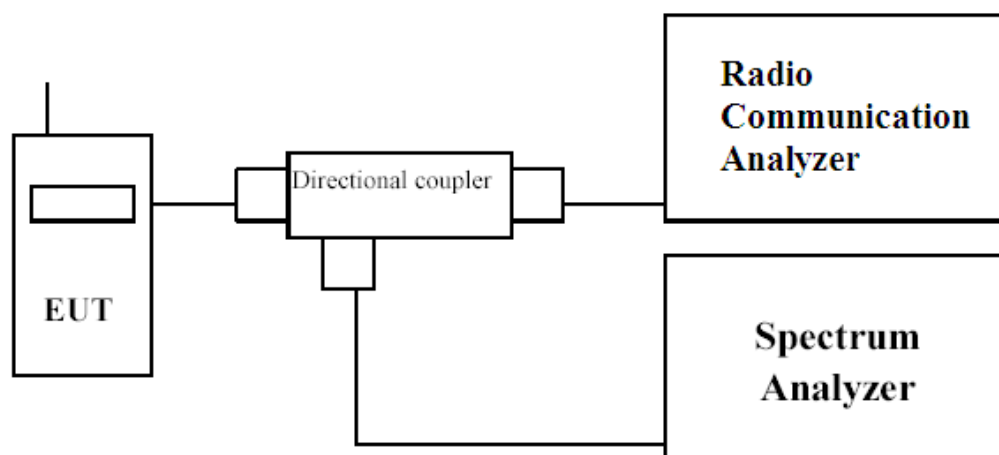
5. Spurious Emission At Antenna Terminals (+/-1MHz)

5.1. Test Specification

According to Part 2.1051, 27.53

RSS GEN, RSS 130, RSS 139

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 $43 + 10\log(P)$ dB, where P represents the transmitter power expressed in watts

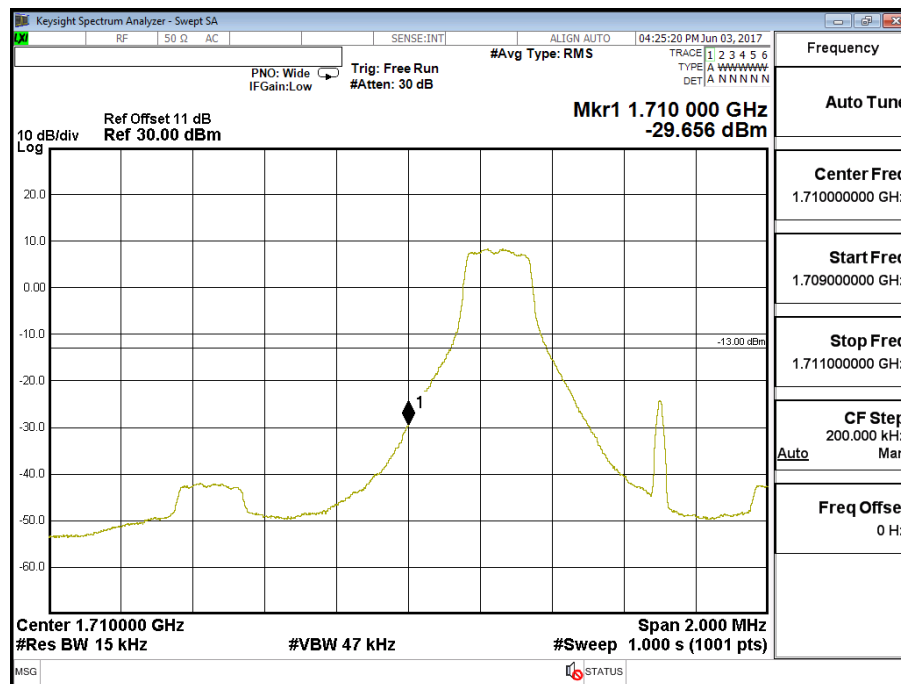
5.4. Test Procedure

In accordance with Part 27.53, RSS 130, RSS 139 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.

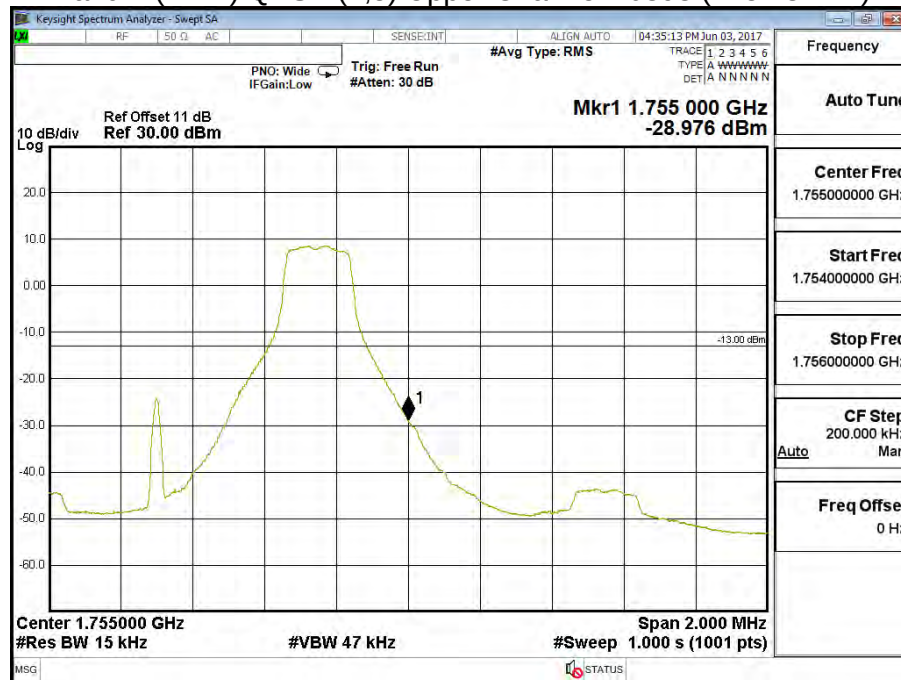
5.5. Test Result of Spurious Emission At Antenna Terminals (+/-1MHz)

Product	LTE Cellular Alarm Communicators		
Test Mode	Spurious Emission At Antenna Terminals (+/-1MHz)		
Date of Test	2017/06/01	Test Site	CTR
Test Condition	Block Edge Test (Band 4 (1.4M))		

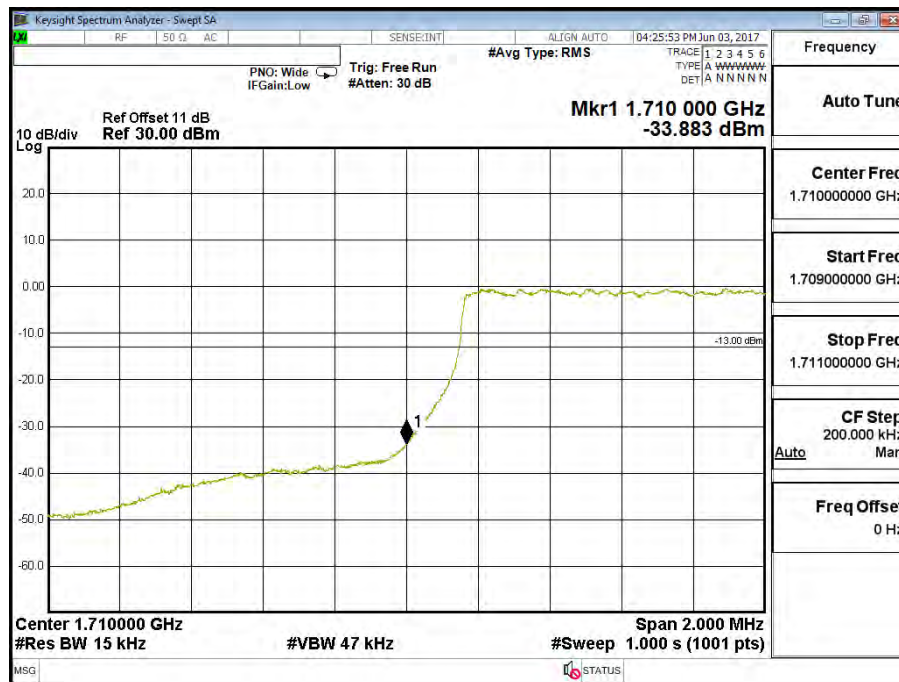
Band 4 (1.4M) QPSK (1,0) Lower Channel 19957 (1710.7MHz)



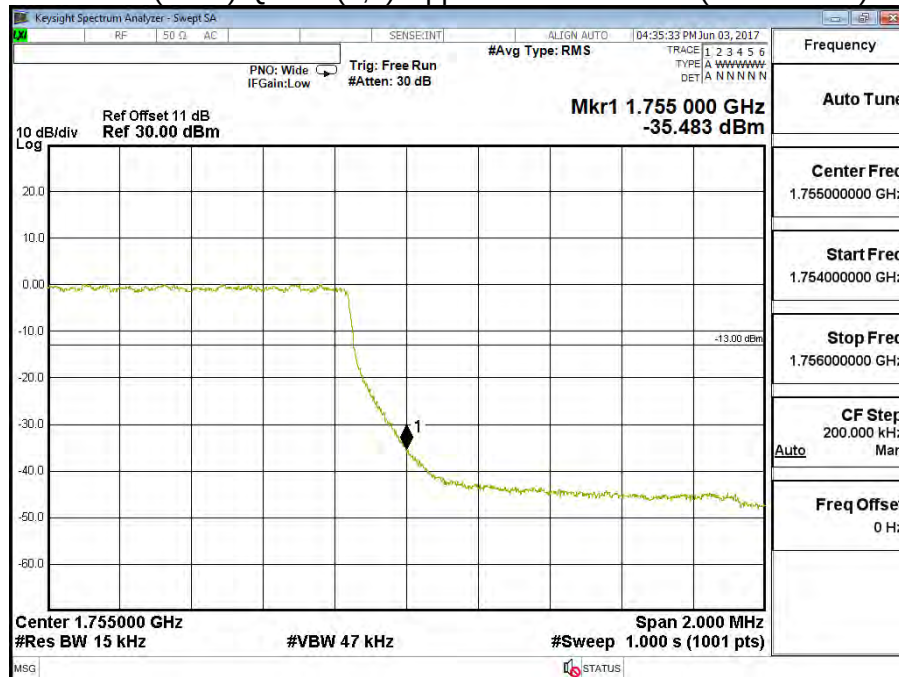
Band 4 (1.4M) QPSK (1,5) Upper Channel 20393 (1754.3MHz)



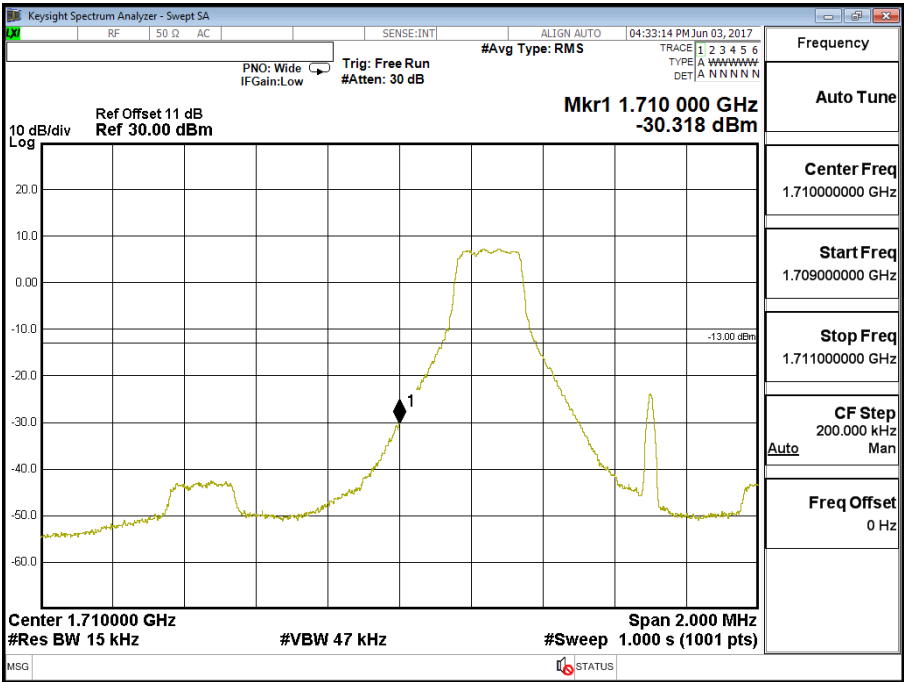
Band 4 (1.4M) QPSK (6,0) Lower Channel 19957 (1710.7MHz)



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



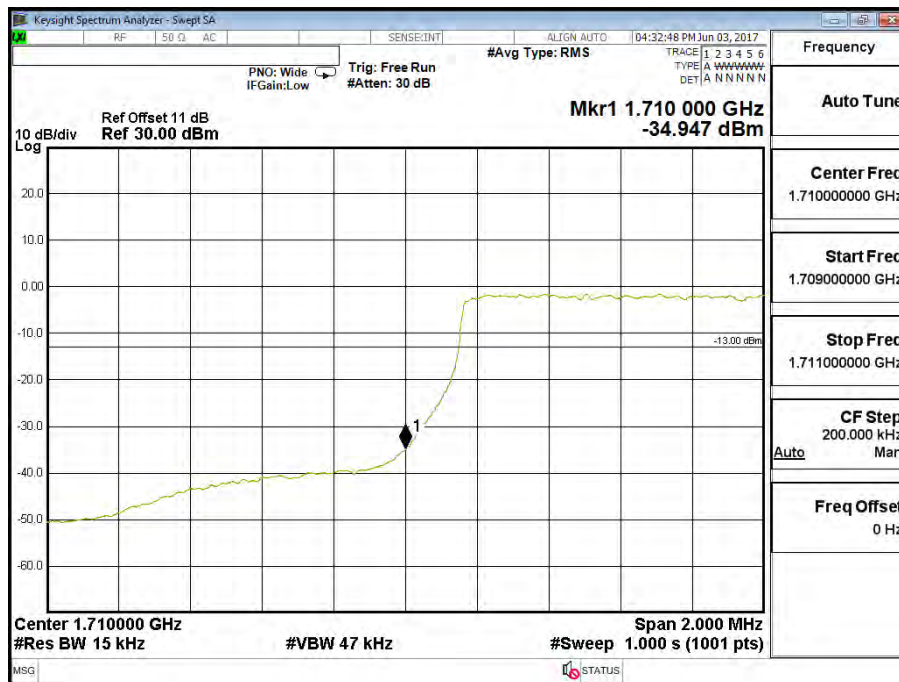
Band 4 (1.4M) 16QAM (1,0) Lower Channel 19957 (1710.7MHz)



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



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

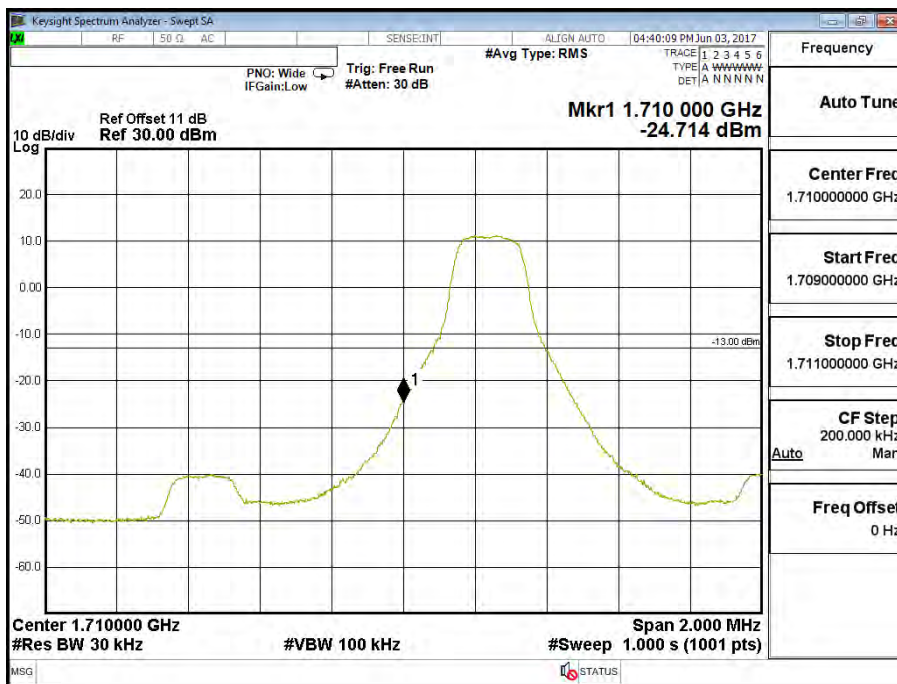


Band 4 (1.4M) 16QAM (6,0) Upper Channel 20393 (1754.3MHz)

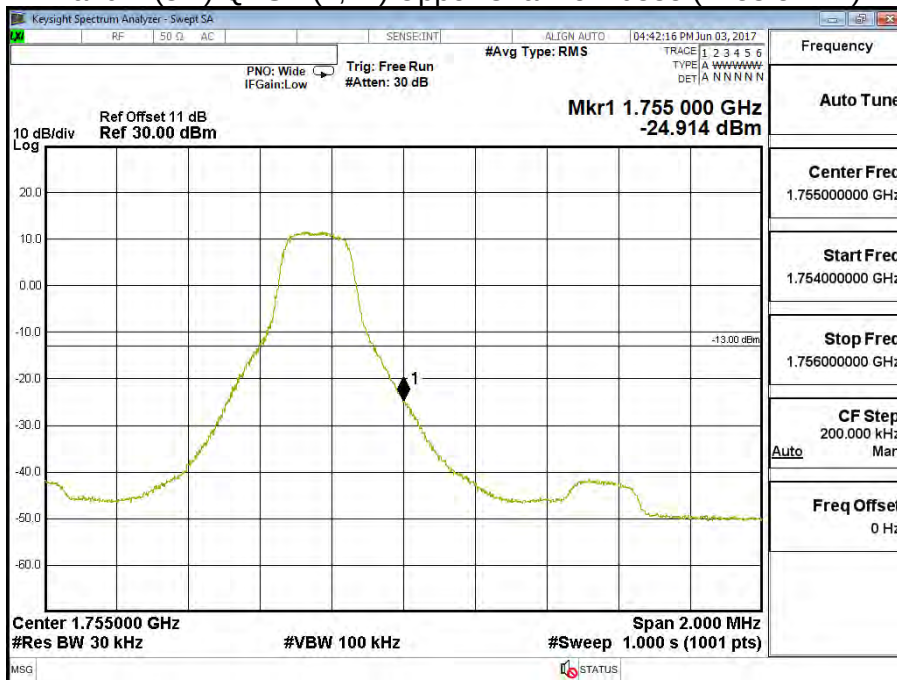


Product	LTE Cellular Alarm Communicators		
Test Mode	Spurious Emission At Antenna Terminals (+/-1MHz)		
Date of Test	2017/06/01	Test Site	CTR
Test Condition	Block Edge Test (Band 4 (3M))		

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



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



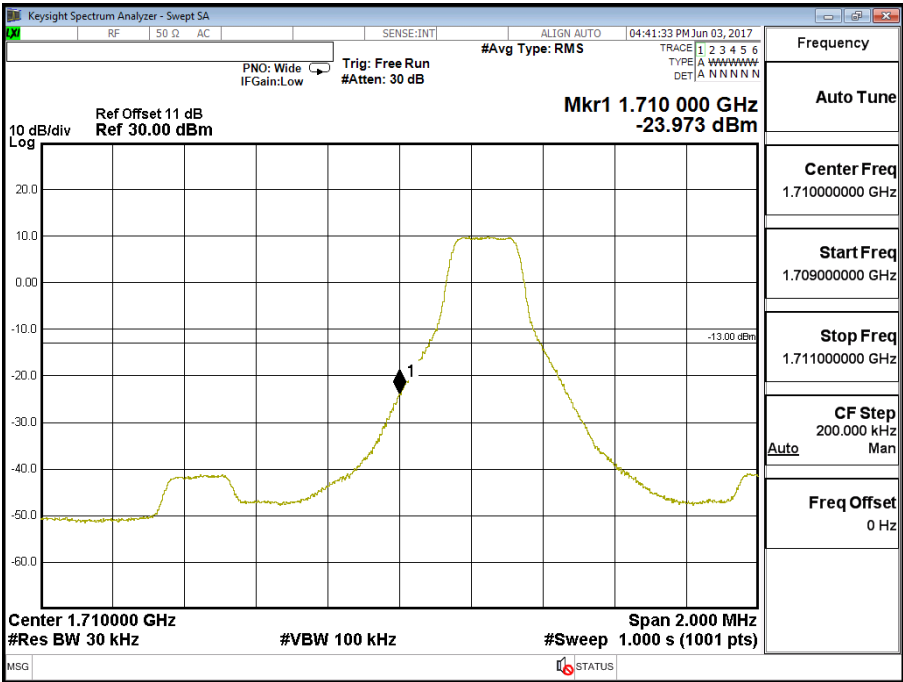
Band 4 (3M) QPSK (15,0) Lower Channel 19965 (1711.5MHz)



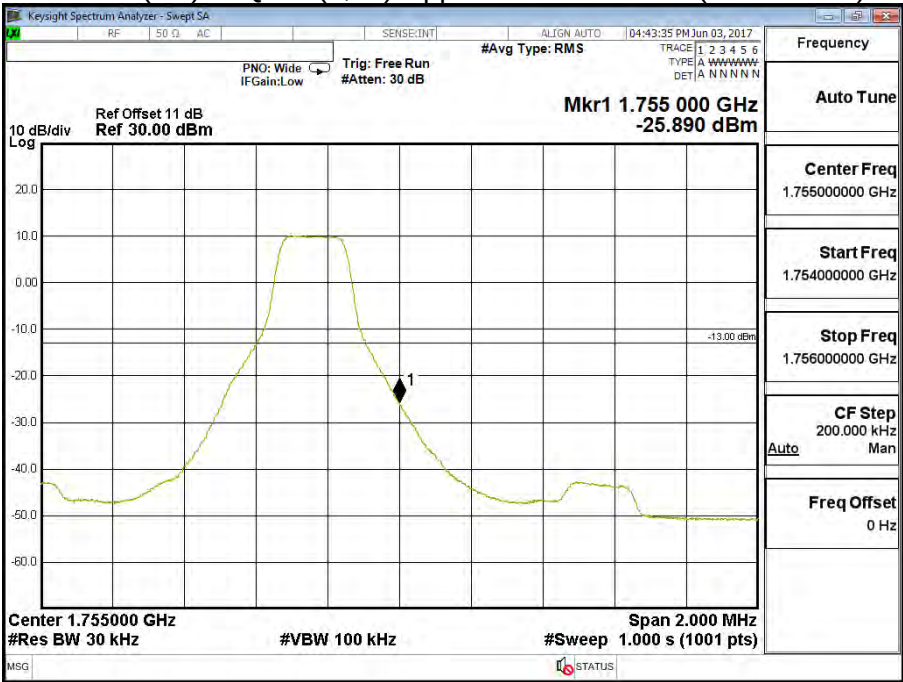
Band 4 (3M) QPSK (15,0) Upper Channel 20385 (1753.5MHz)



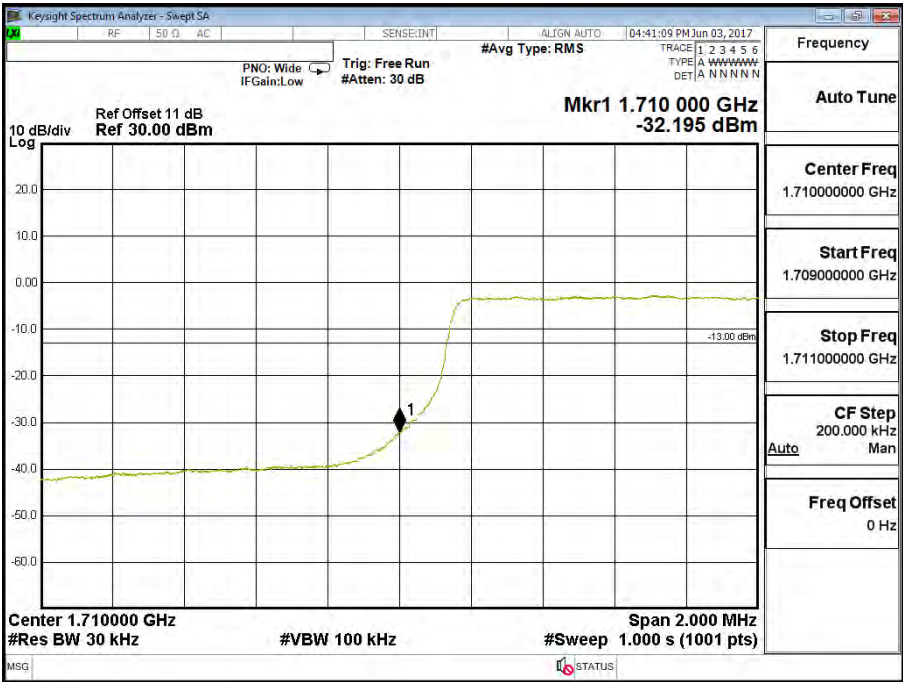
Band 4 (3M) 16QAM (1,0) Lower Channel 19965 (1711.5MHz)



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)

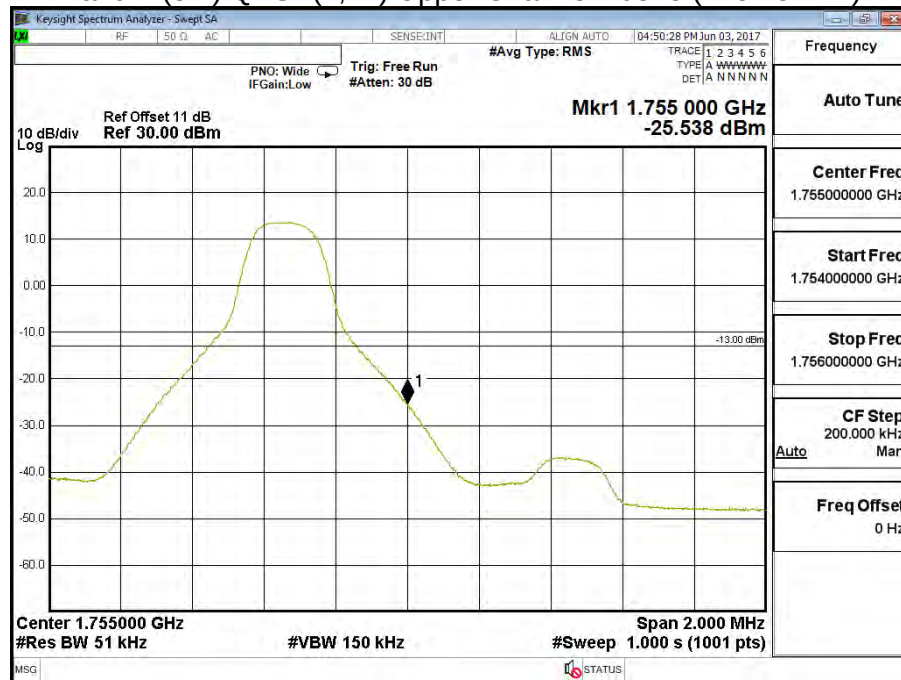


Product	LTE Cellular Alarm Communicators		
Test Mode	Spurious Emission At Antenna Terminals (+/-1MHz)		
Date of Test	2017/06/01	Test Site	CTR
Test Condition	Block Edge Test (Band 4 (5M))		

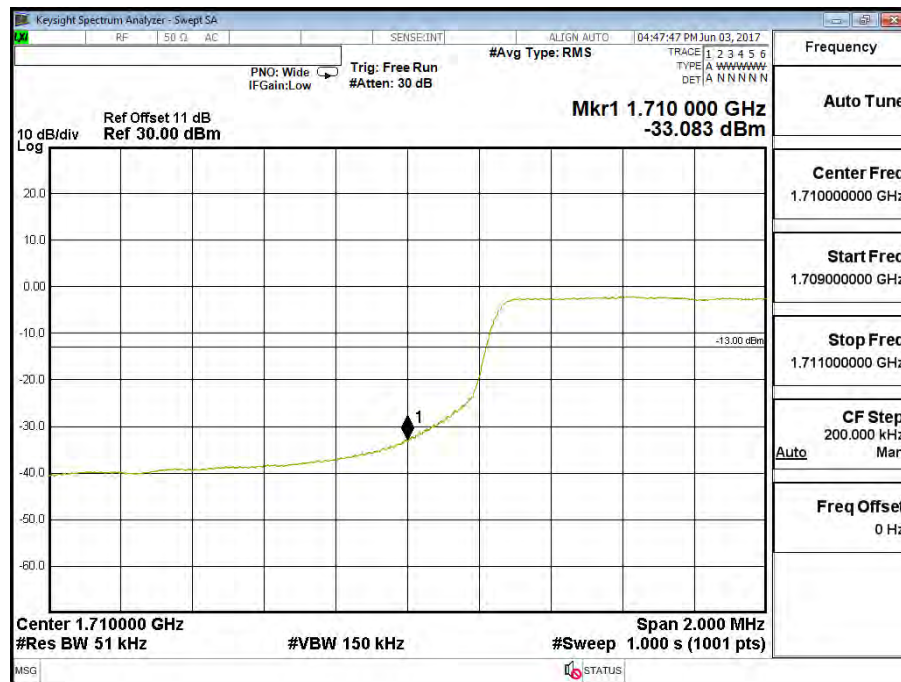
Band 4 (5M) QPSK(1,0) Lower Channel 19975 (1712.5MHz)



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



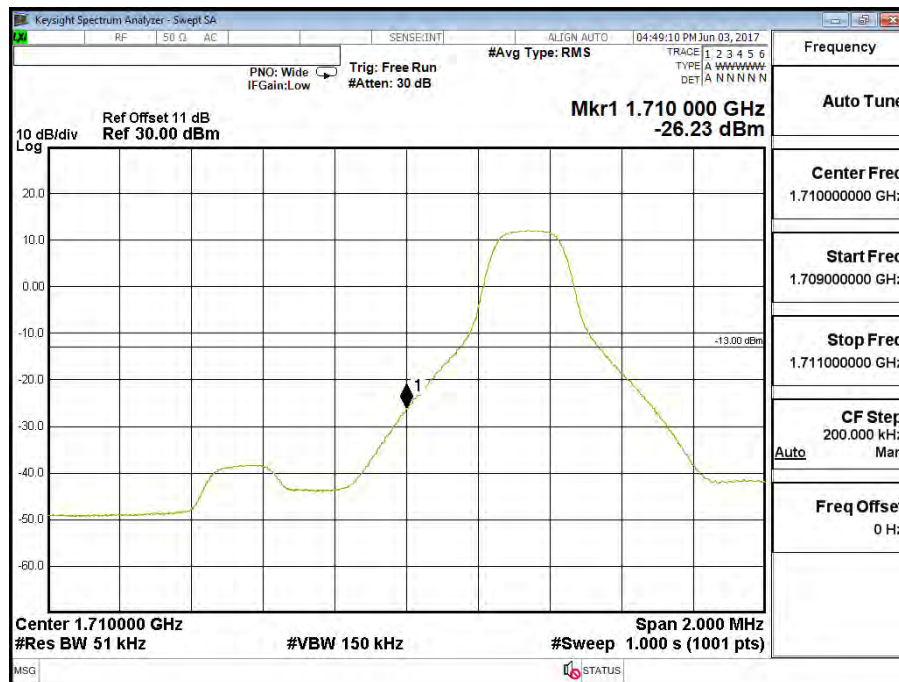
Band 4 (5M) QPSK(25,0) Lower Channel 19975 (1712.5MHz)



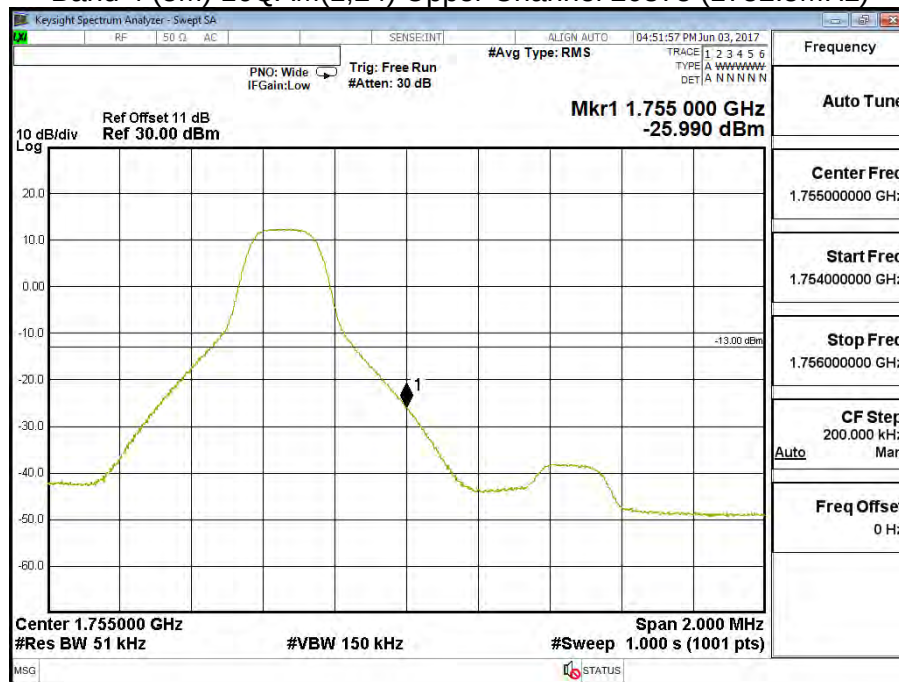
Band 4 (5M) QPSK(25,0) Upper Channel 20375 (1752.5MHz)



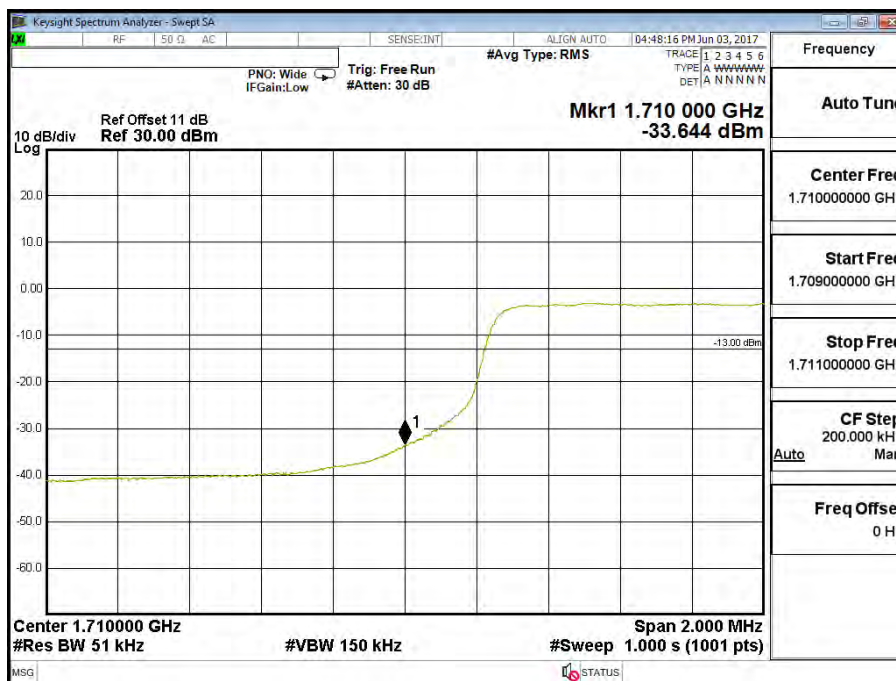
Band 4 (5M) 16QAM(1,0) Lower Channel 19975 (1712.5MHz)



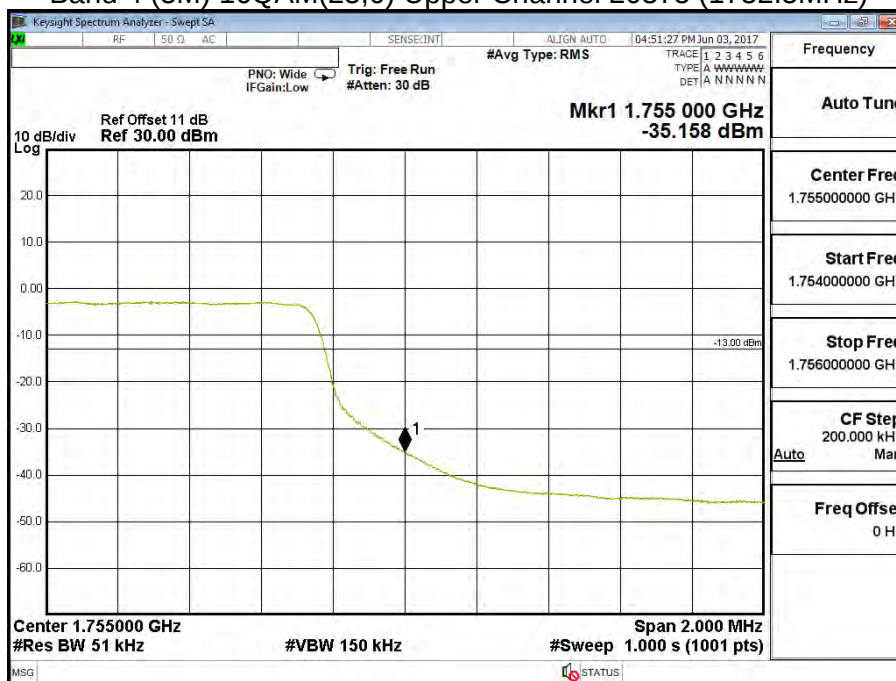
Band 4 (5M) 16QAM(1,24) Upper Channel 20375 (1752.5MHz)



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

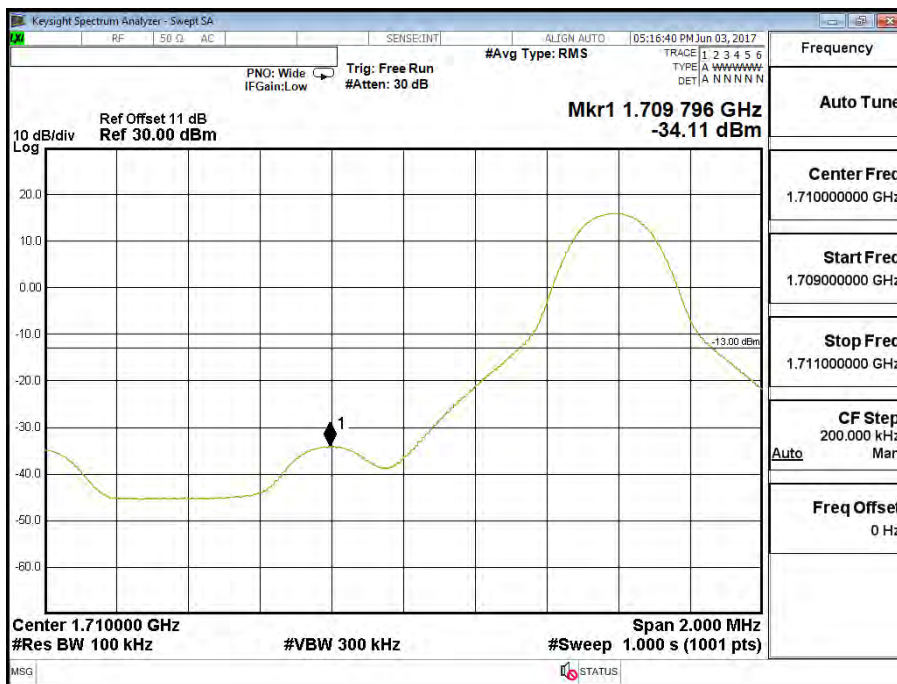


Band 4 (5M) 16QAM(25,0) Upper Channel 20375 (1752.5MHz)

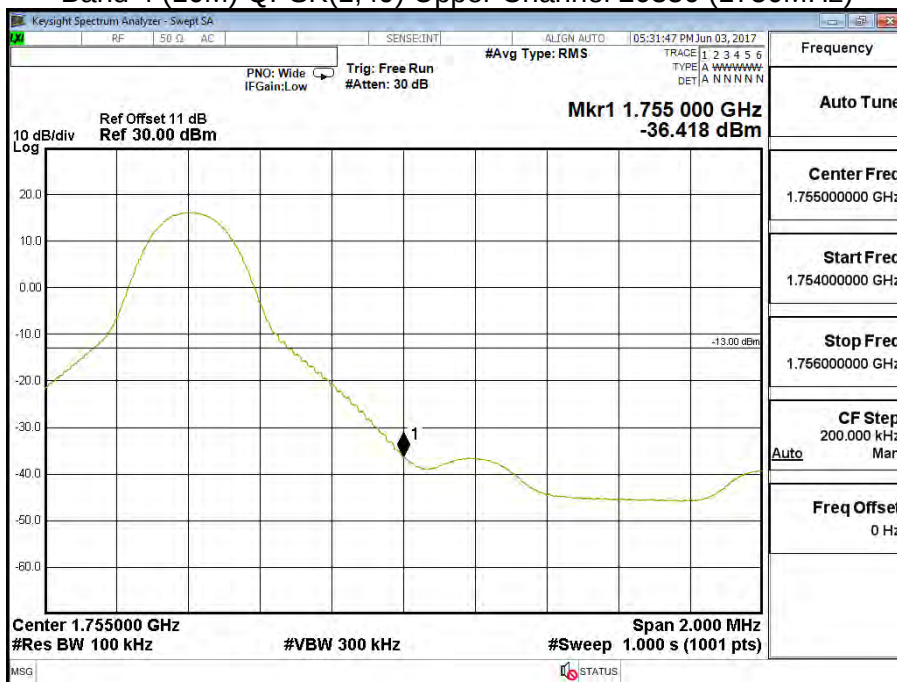


Product	LTE Cellular Alarm Communicators		
Test Mode	Spurious Emission At Antenna Terminals (+/-1MHz)		
Date of Test	2017/06/01	Test Site	CTR
Test Condition	Block Edge Test (Band 4 (10M))		

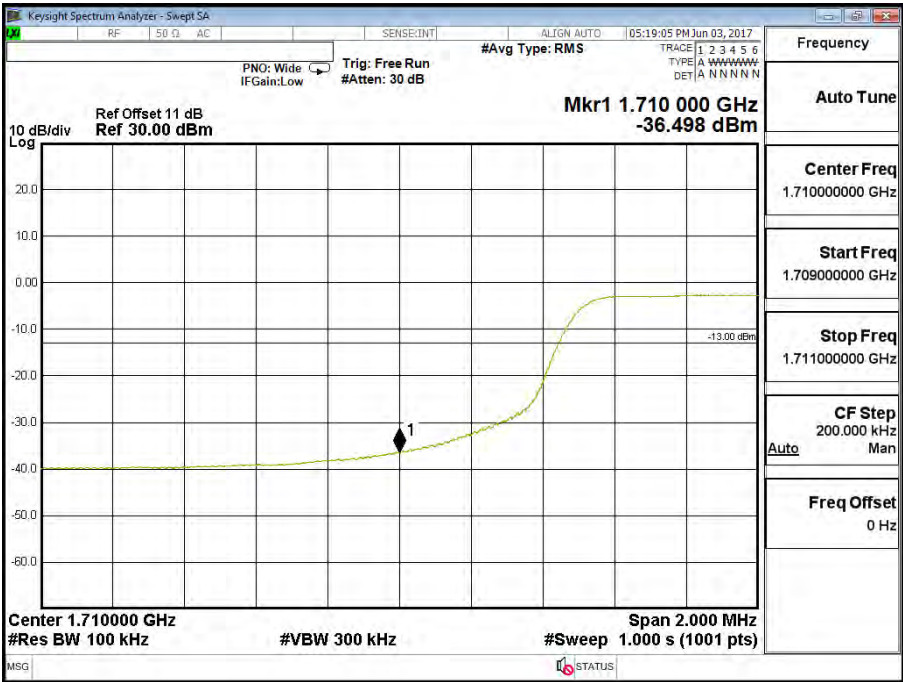
Band 4 (10M) QPSK(1,0) Lower Channel 20000 (1715MHz)



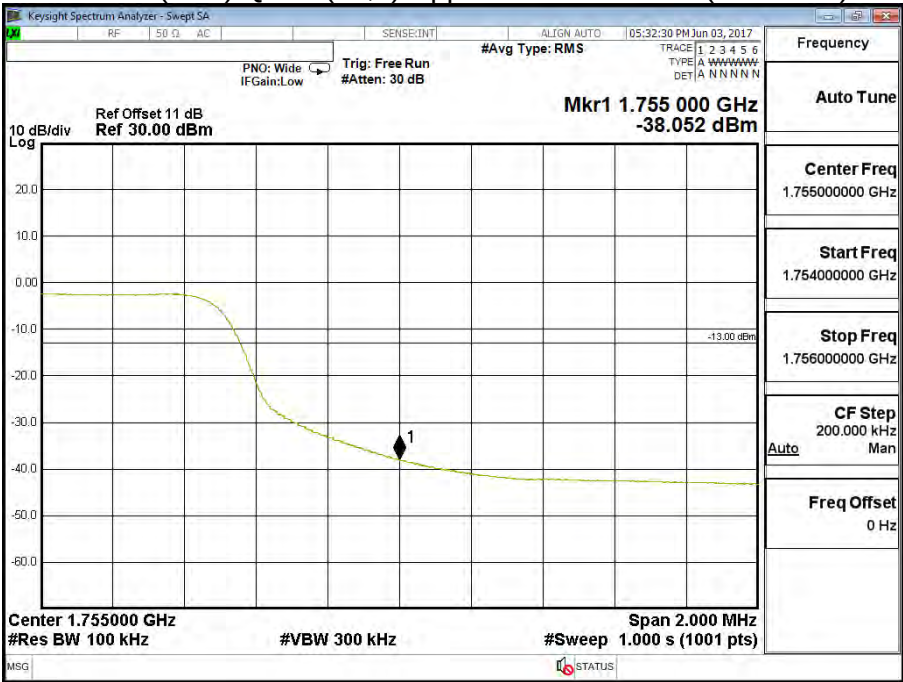
Band 4 (10M) QPSK(1,49) Upper Channel 20350 (1750MHz)



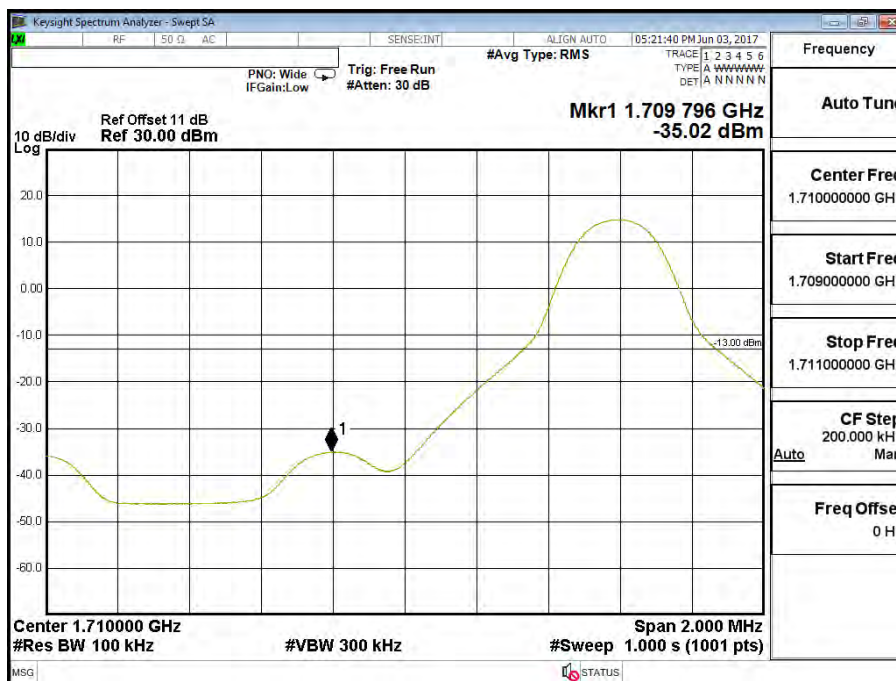
Band 4 (10M) QPSK(50,0) Lower Channel 20000 (1715MHz)



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



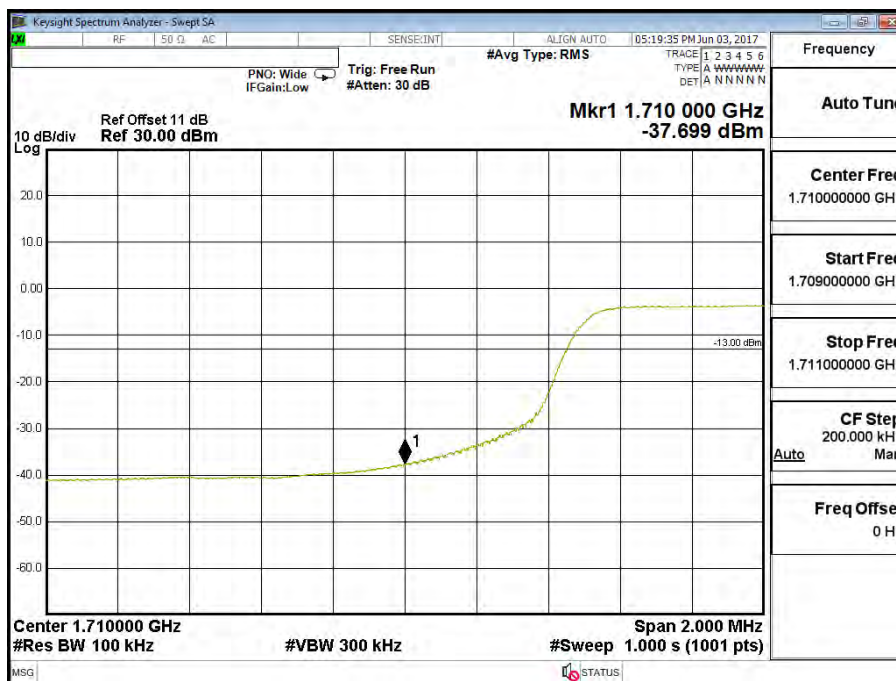
Band 4 (10M) 16QAM(1,0) Lower Channel 20000 (1715MHz)



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



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

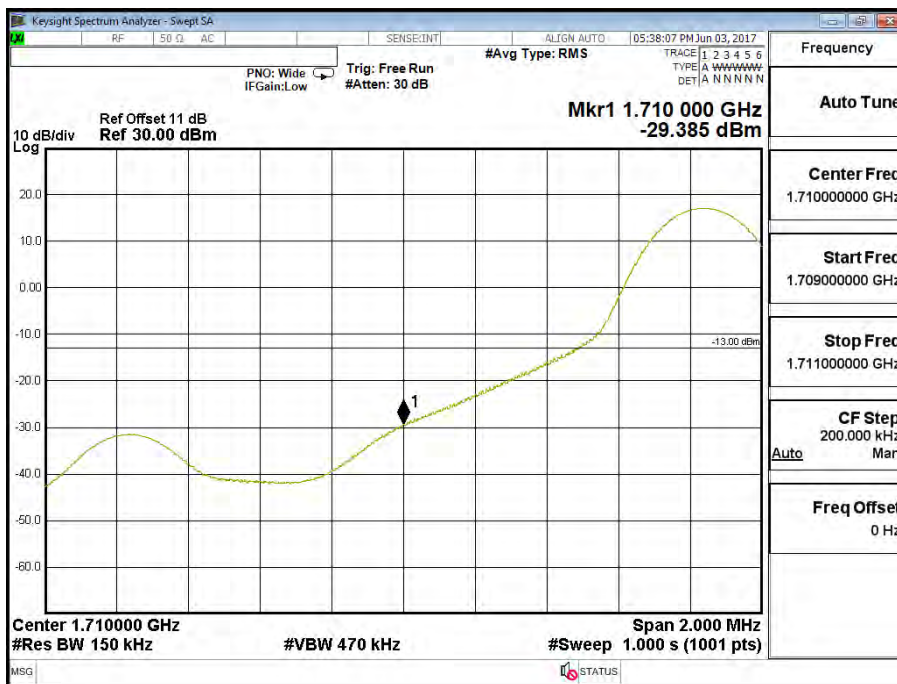


Band 4 (10M) 16QAM(50,0) Upper Channel 20350 (1750MHz)



Product	LTE Cellular Alarm Communicators		
Test Mode	Spurious Emission At Antenna Terminals (+/-1MHz)		
Date of Test	2017/06/01	Test Site	CTR
Test Condition	Block Edge Test (Band 4 (15M))		

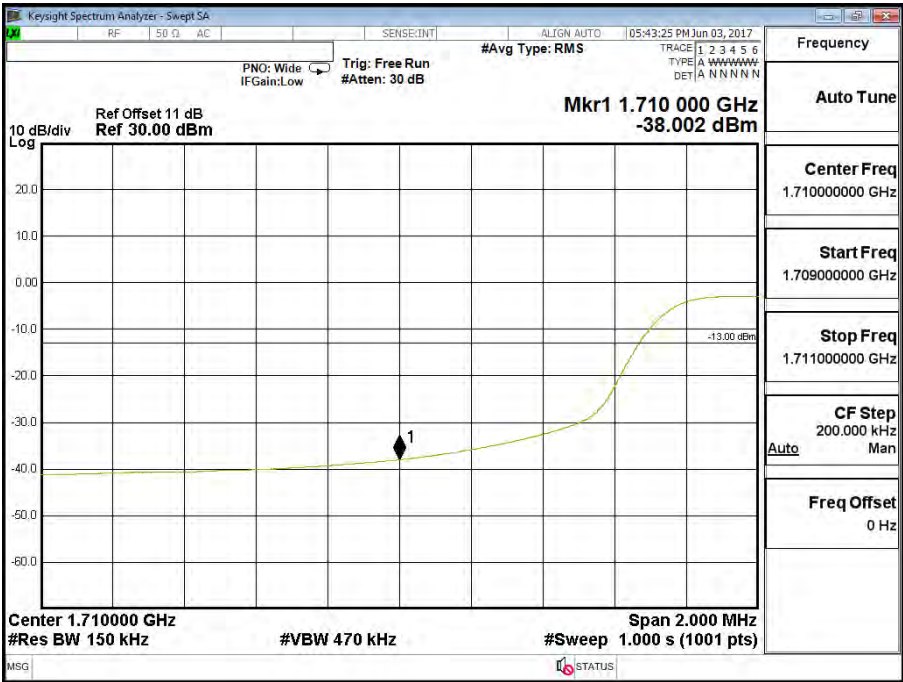
Band 4 (15M)QPSK(1,0) Lower Channel 20025 (1717.5MHz)



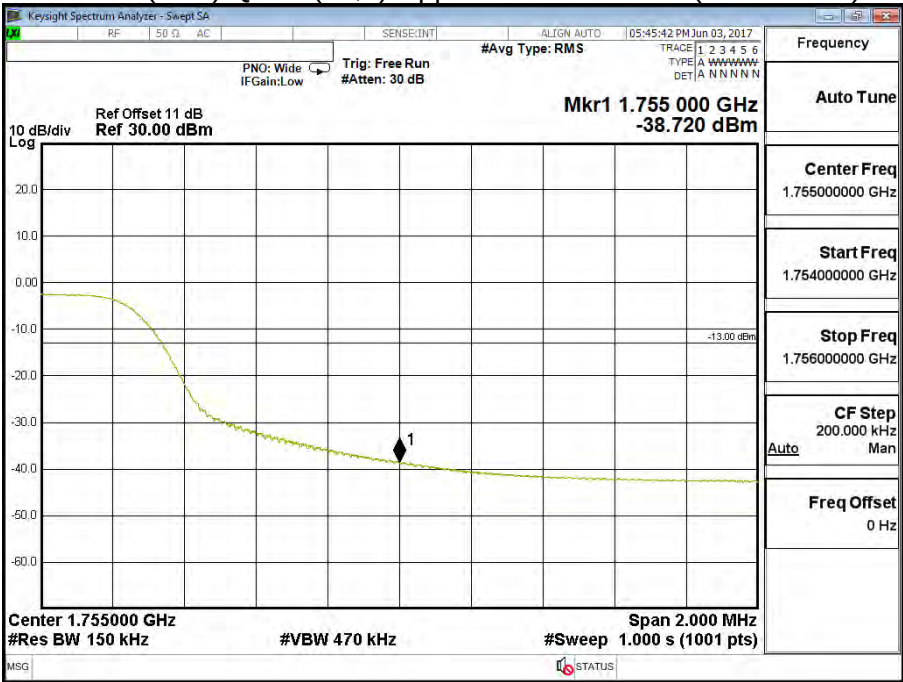
Band 4 (15M) QPSK(1,74) Upper Channel 20325 (1747.5MHz)



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



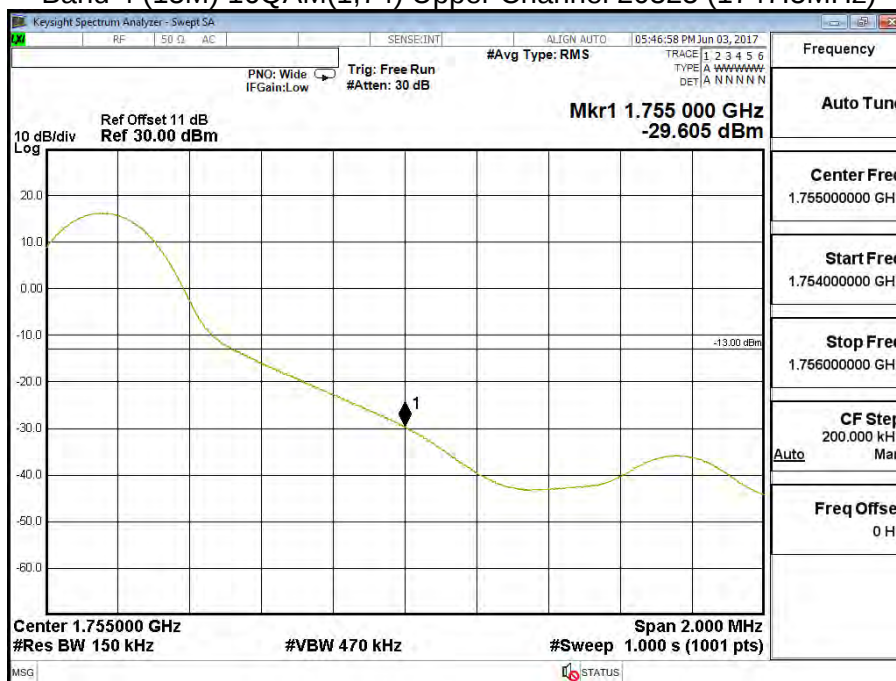
Band 4 (15M) QPSK(75,0) Upper Channel 20325 (1747.5MHz)



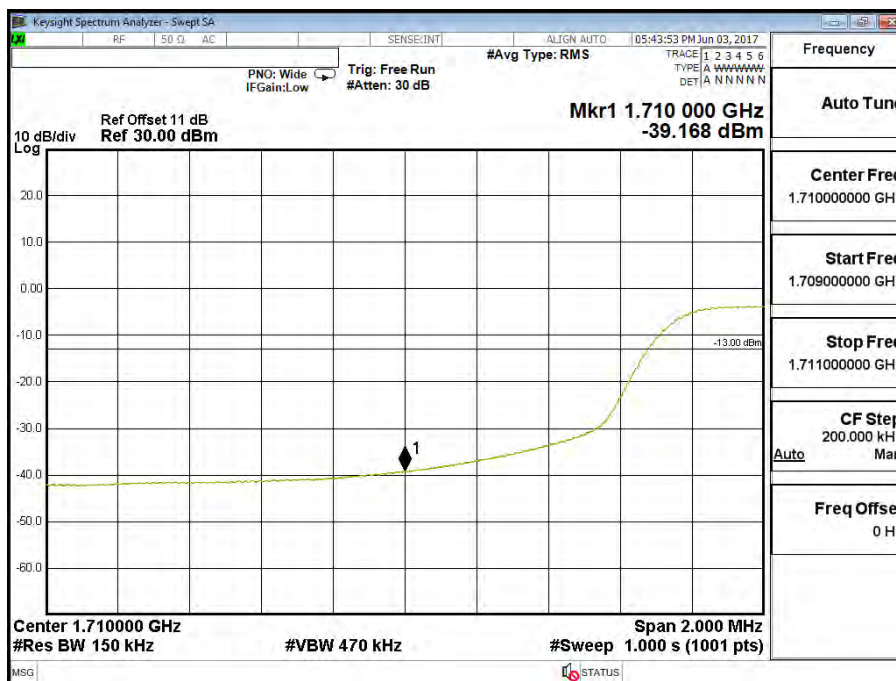
Band 4 (15M) 16QAM(1,0) Lower Channel 20025 (1717.5MHz)



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



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

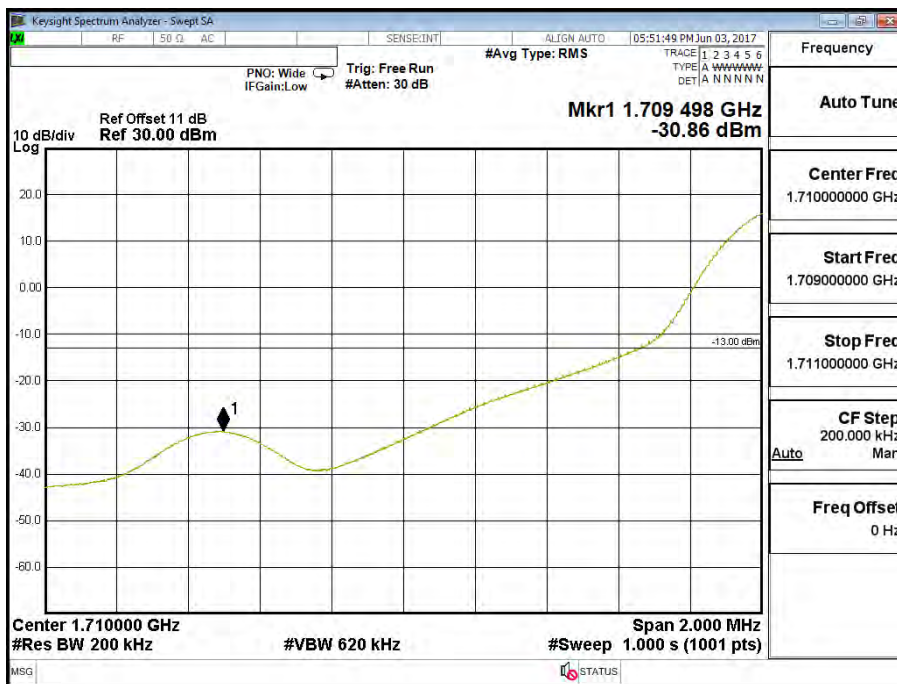


Band 4 (15M) 16QAM(75,0) Upper Channel 20325 (1747.5MHz)

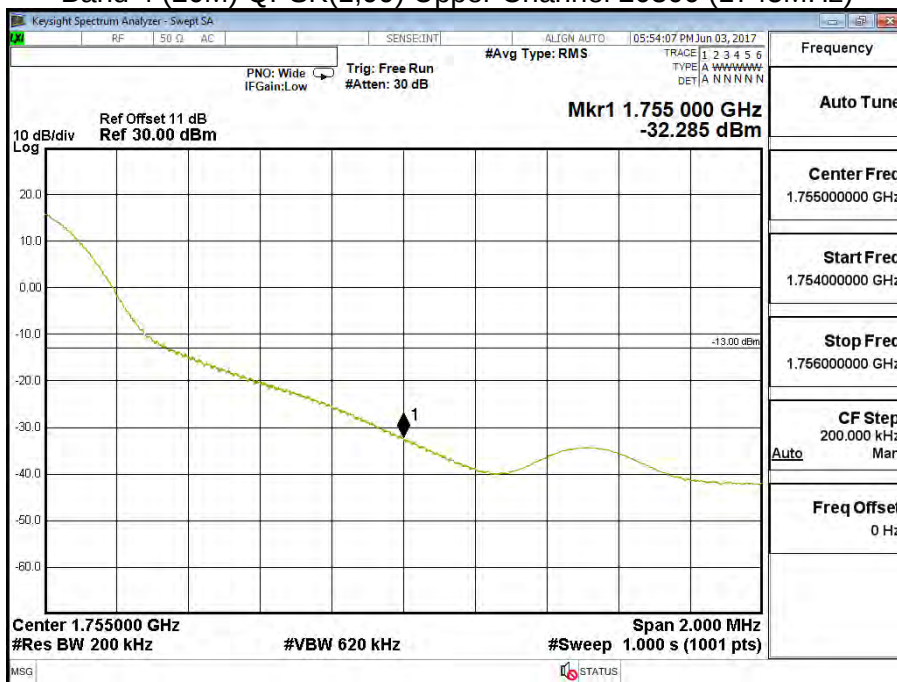


Product	LTE Cellular Alarm Communicators		
Test Mode	Spurious Emission At Antenna Terminals (+/-1MHz)		
Date of Test	2017/06/01	Test Site	CTR
Test Condition	Block Edge Test (Band 4 (20M))		

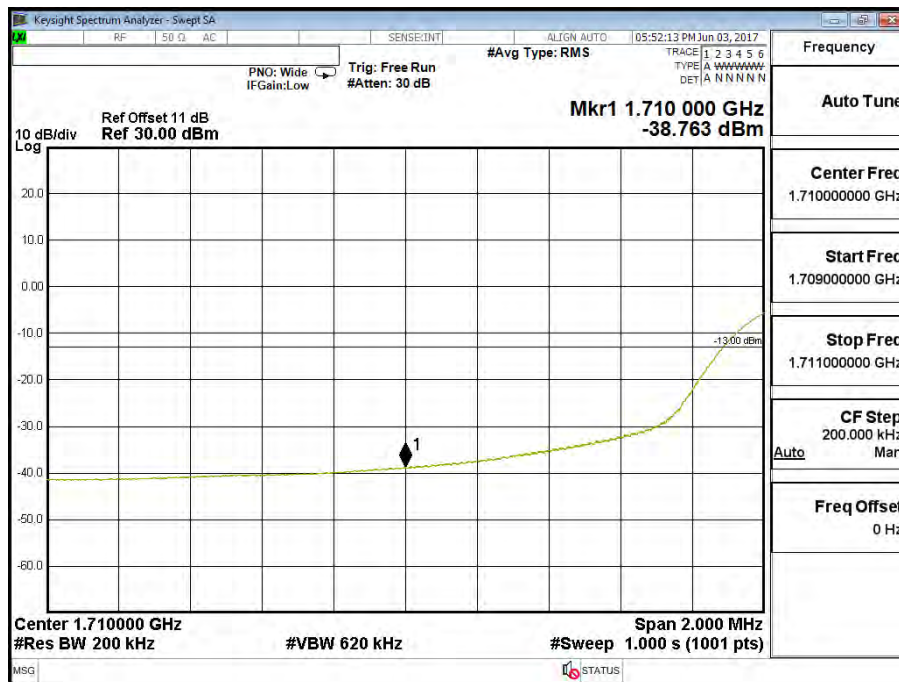
Band 4 (20M) QPSK(1,0) Lower Channel 20050 (1720MHz)



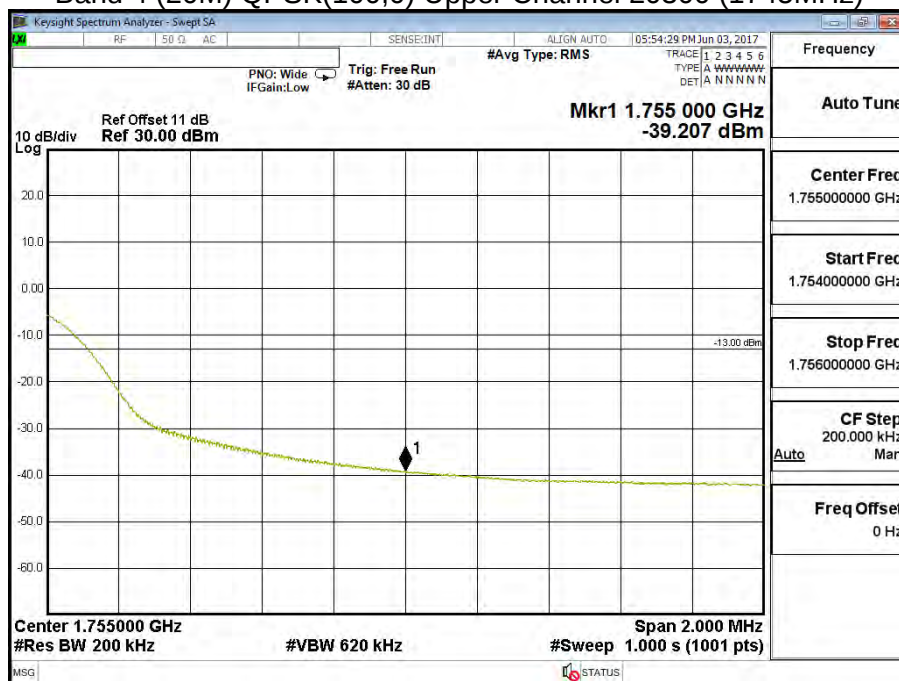
Band 4 (20M) QPSK(1,99) Upper Channel 20300 (1745MHz)



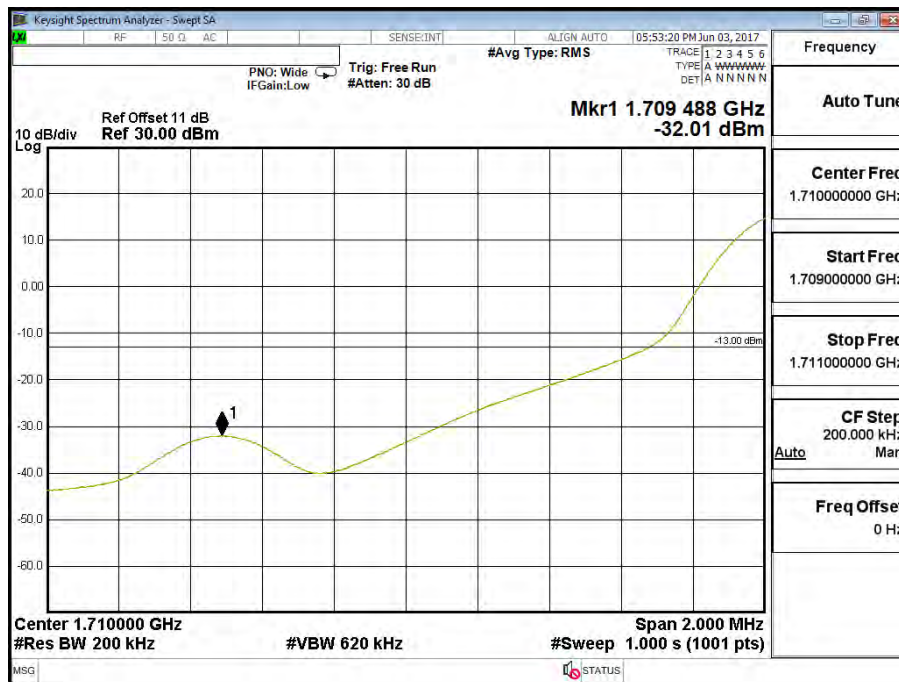
Band 4 (20M) QPSK(100,0) Lower Channel 20050 (1720MHz)



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



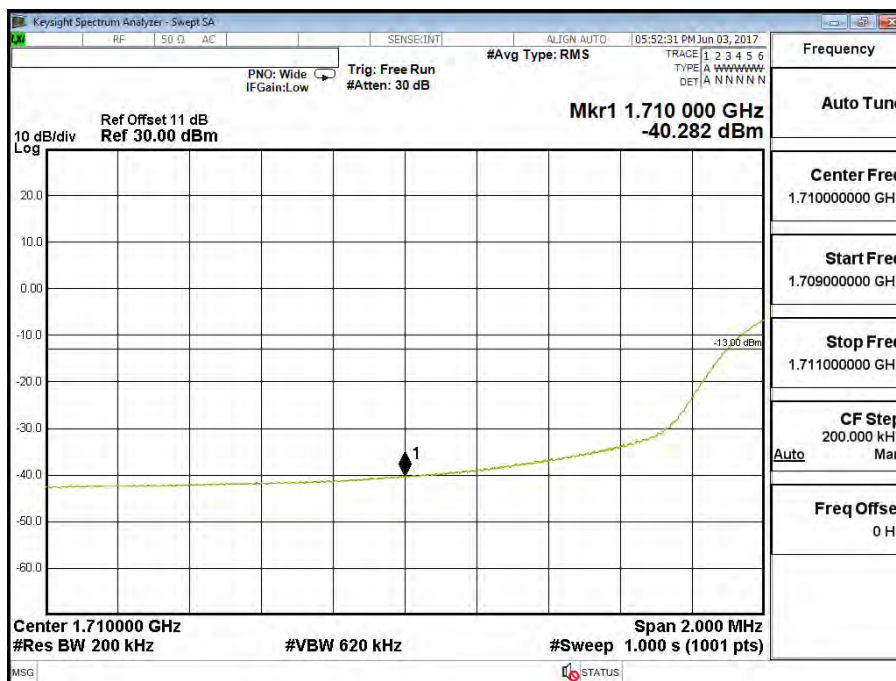
Band 4 (20M) 16QAM(1,0) Lower Channel 20050 (1720MHz)



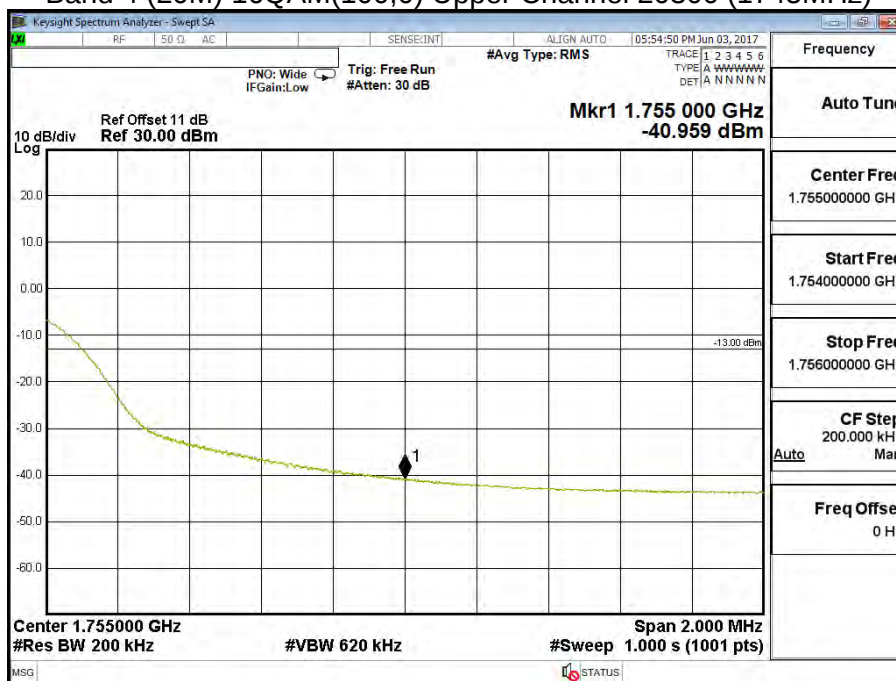
Band 4 (20M) 16QAM(1,99) Upper Channel 20300 (1745MHz)



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

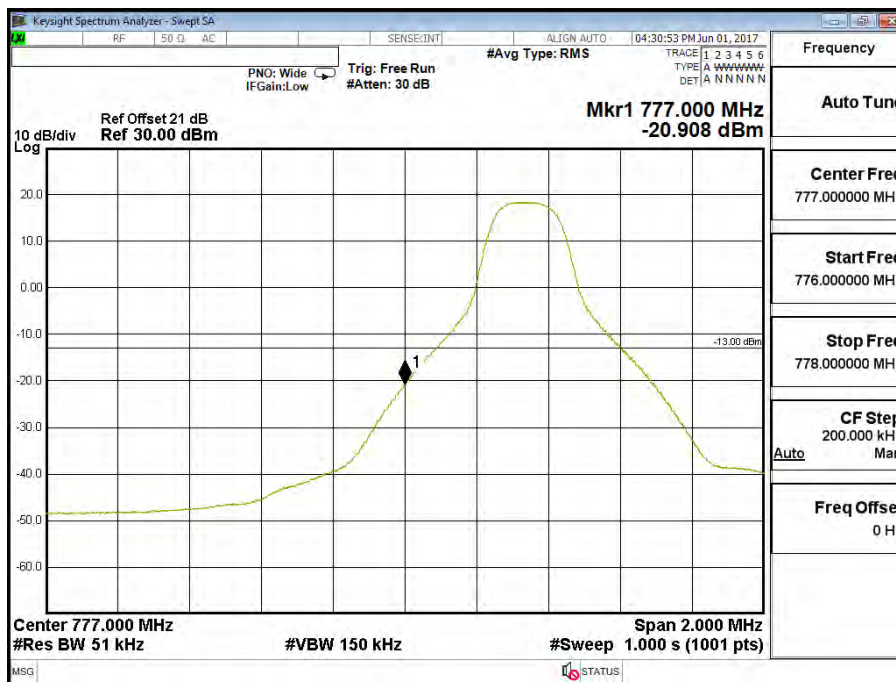


Band 4 (20M) 16QAM(100,0) Upper Channel 20300 (1745MHz)

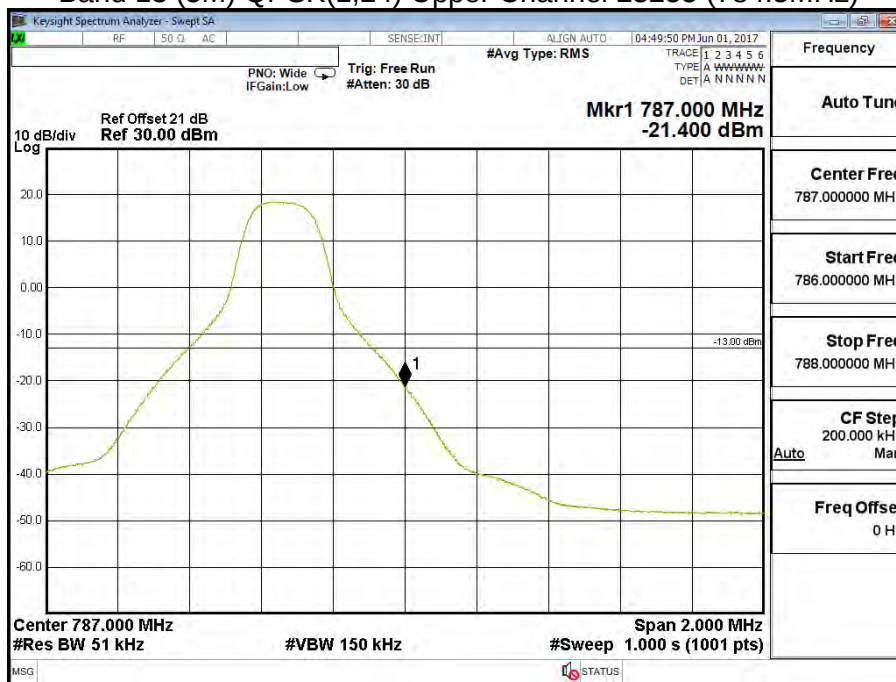


Product	LTE Cellular Alarm Communicators		
Test Mode	Spurious Emission At Antenna Terminals (+/-1MHz)		
Date of Test	2017/06/01	Test Site	CTR
Test Condition	Block Edge Test (Band 13 (5M))		

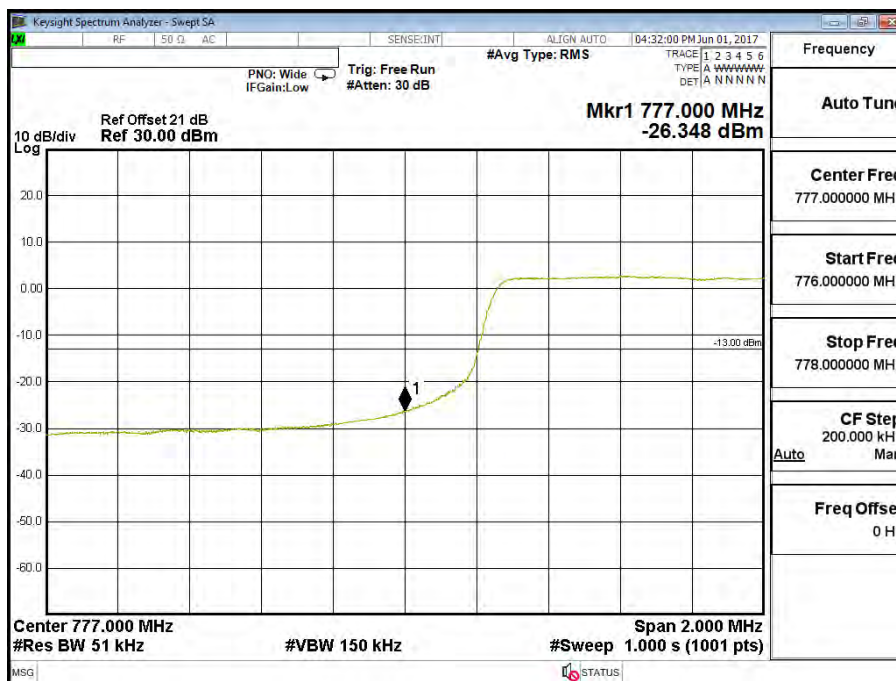
Band 13 (5M) QPSK(1,0) Lower Channel 23205 (779.5MHz)



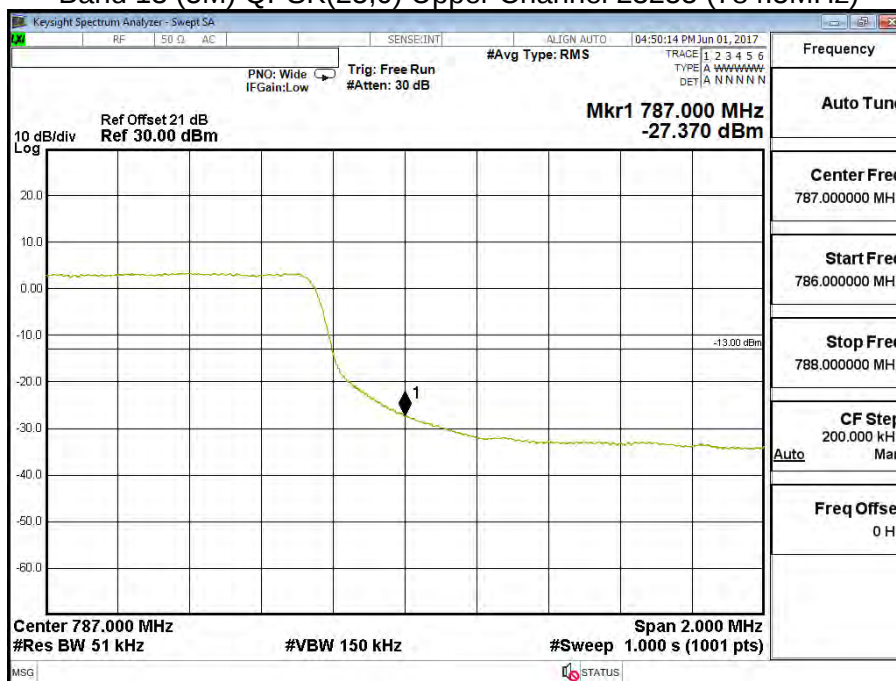
Band 13 (5M) QPSK(1,24) Upper Channel 23255 (784.5MHz)



Band 13 (5M) QPSK(25,0) Lower Channel 23205 (779.5MHz)



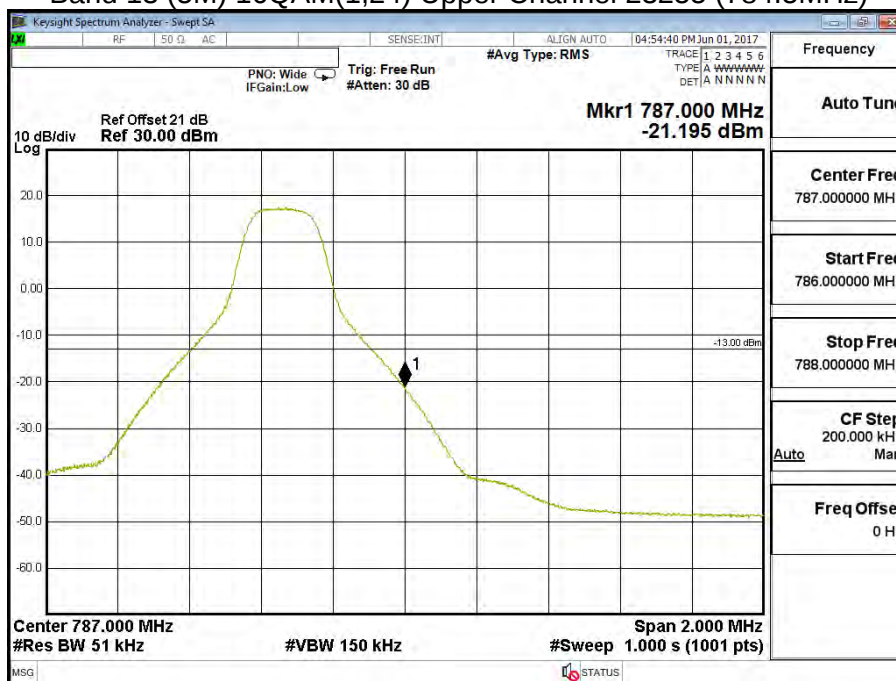
Band 13 (5M) QPSK(25,0) Upper Channel 23255 (784.5MHz)



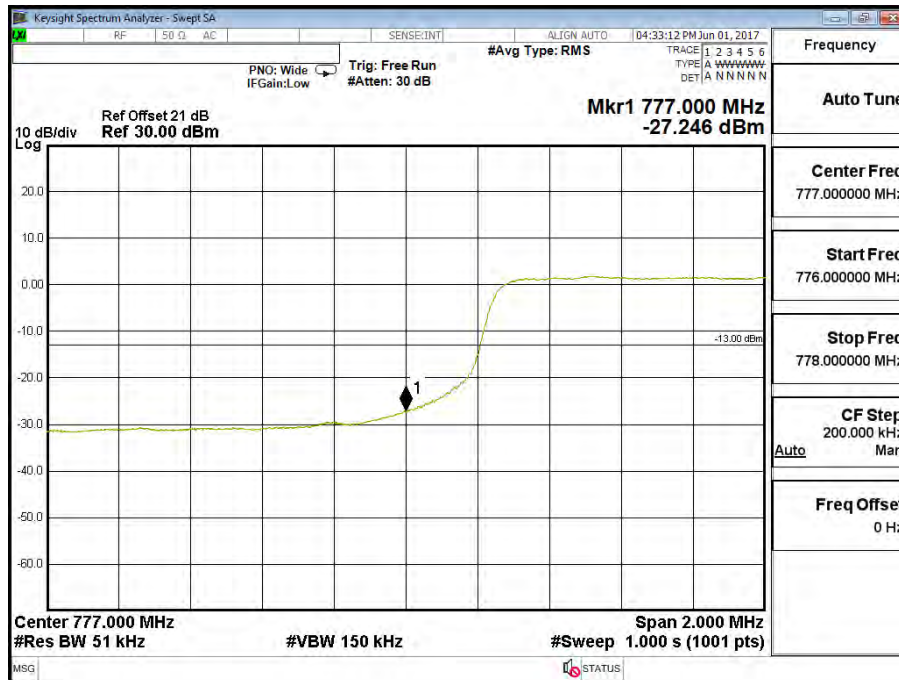
Band 13 (5M) 16QAM(1,0) Lower Channel 23205 (779.5MHz)



Band 13 (5M) 16QAM(1,24) Upper Channel 23255 (784.5MHz)



Band 13 (5M) 16QAM(25,0) Lower Channel 23205 (779.5MHz)

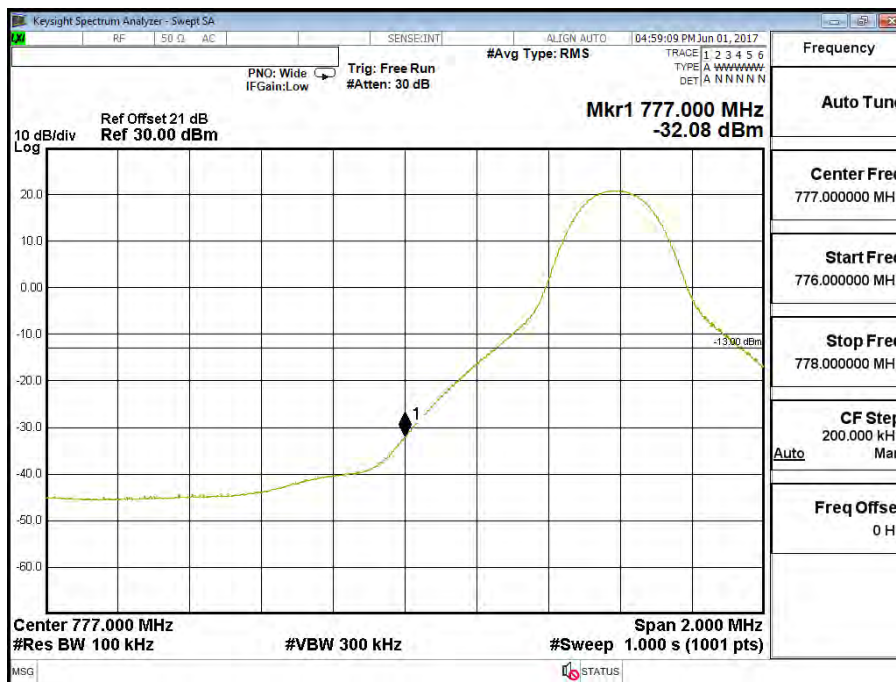


Band 13 (5M) 16QAM(25,0) Upper Channel 23255 (784.5MHz)

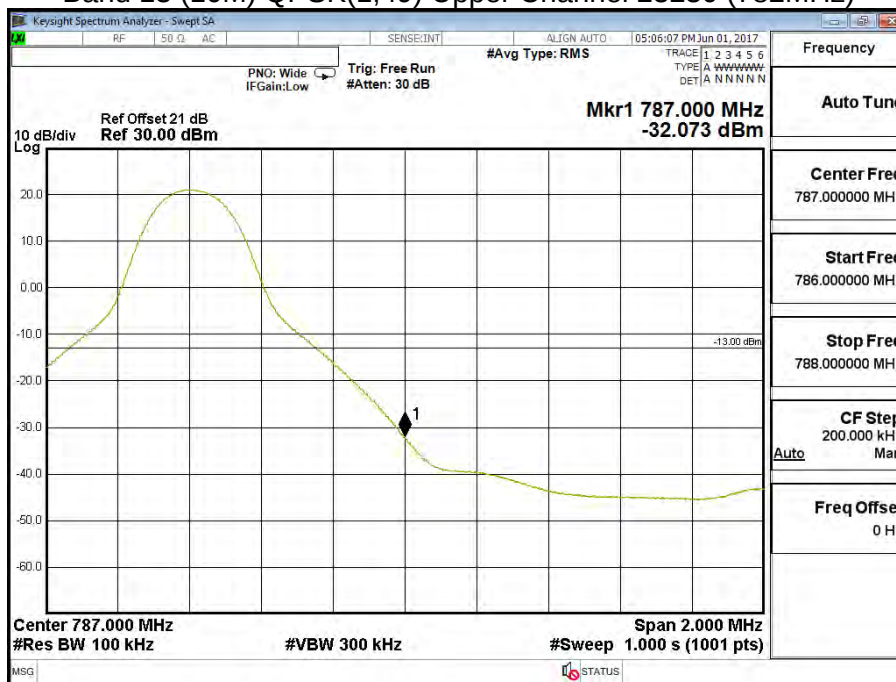


Product	LTE Cellular Alarm Communicators		
Test Mode	Spurious Emission At Antenna Terminals (+/-1MHz)		
Date of Test	2017/06/01	Test Site	CTR
Test Condition	Block Edge Test (Band 13 (10M))		

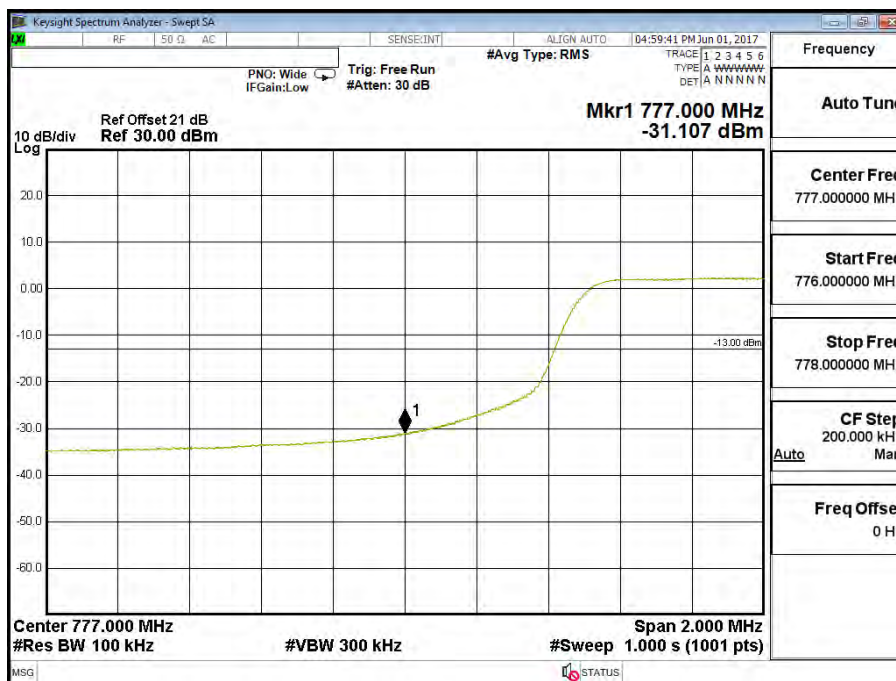
Band 13 (10M) QPSK(1,0) Lower Channel 23230 (782MHz)



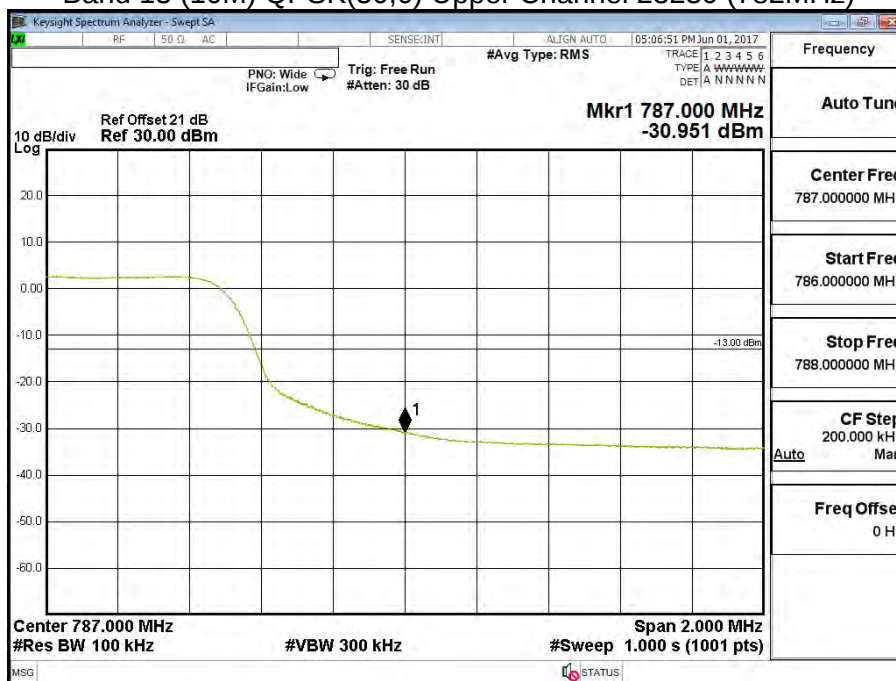
Band 13 (10M) QPSK(1,49) Upper Channel 23230 (782MHz)



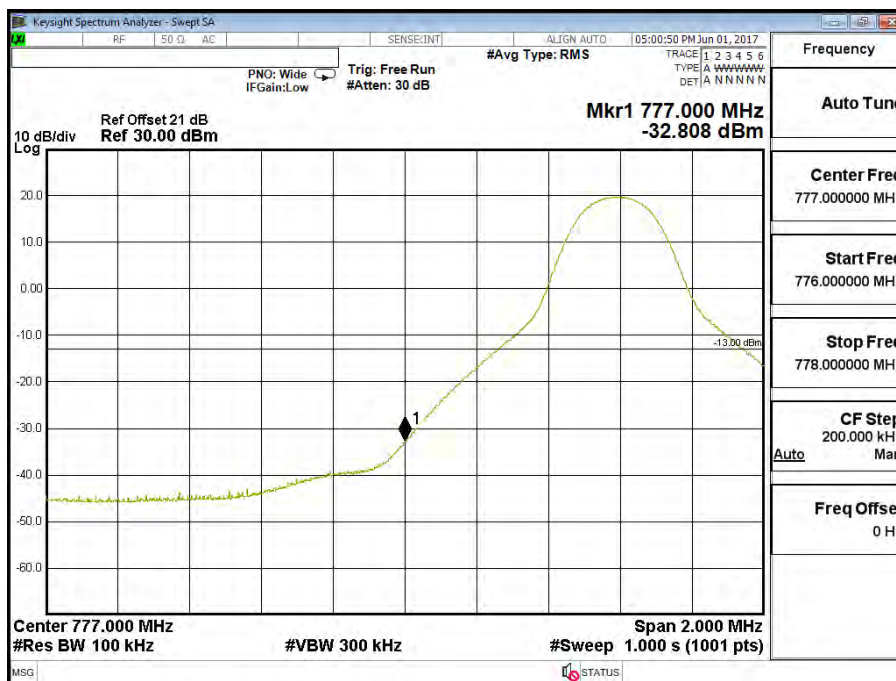
Band 13 (10M) QPSK(50,0) Lower Channel 23230 (782MHz)



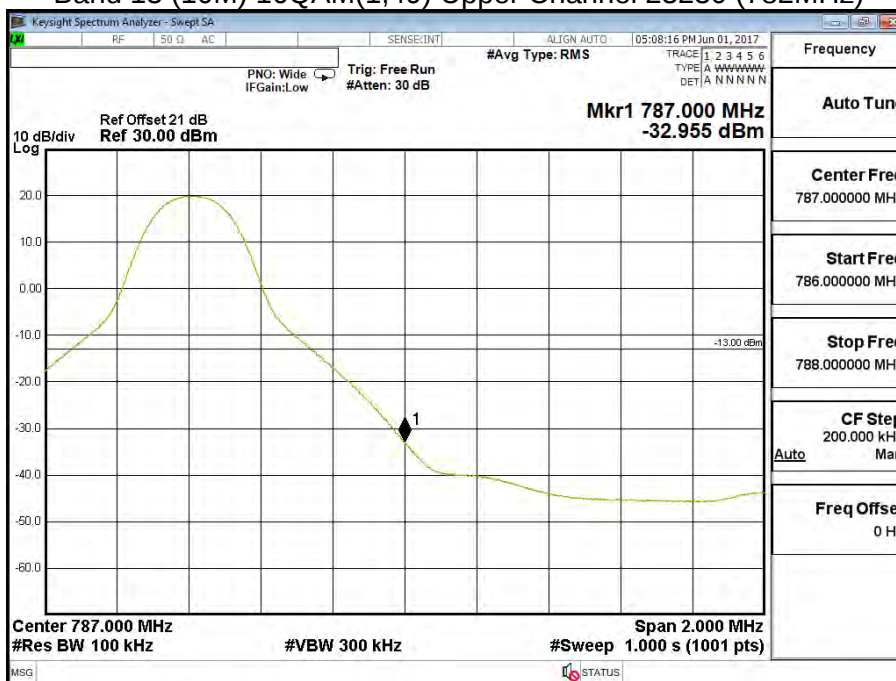
Band 13 (10M) QPSK(50,0) Upper Channel 23230 (782MHz)



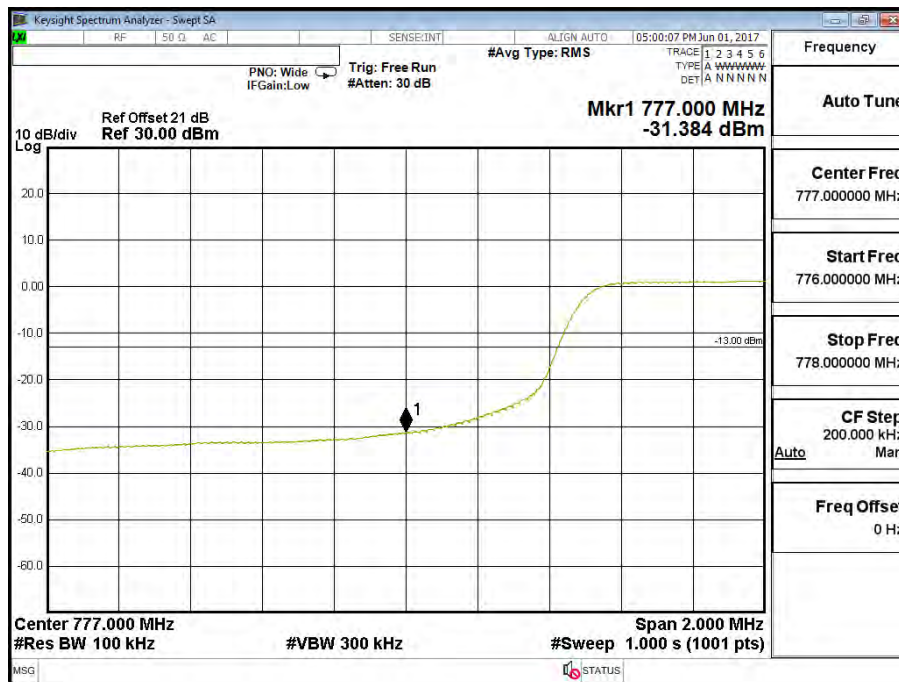
Band 13 (10M) 16QAM(1,0) Lower Channel 23230 (782MHz)



Band 13 (10M) 16QAM(1,49) Upper Channel 23230 (782MHz)



Band 13 (10M) 16QAM(50,0) Lower Channel 23230 (782MHz)



Band 13 (10M) 16QAM(50,0) Upper Channel 23230 (782MHz)

