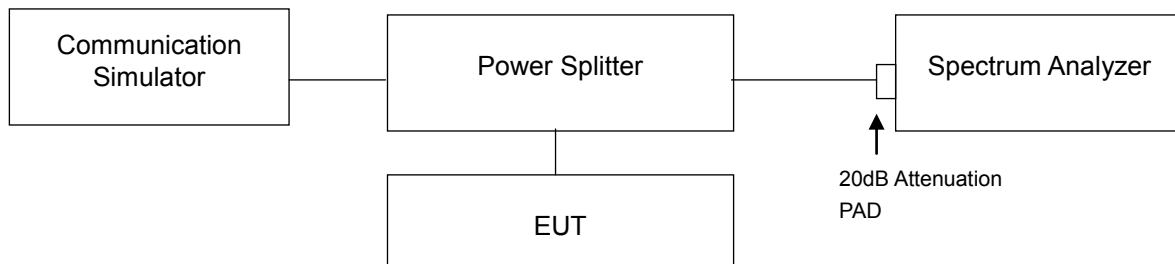


4.6 Conducted Spurious Emissions

4.6.1 Limits of Conducted Spurious Emissions Measurement

The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least $55 + 10 \log_{10}(P)$ dB. The limit of emission is equal to -25 dBm.

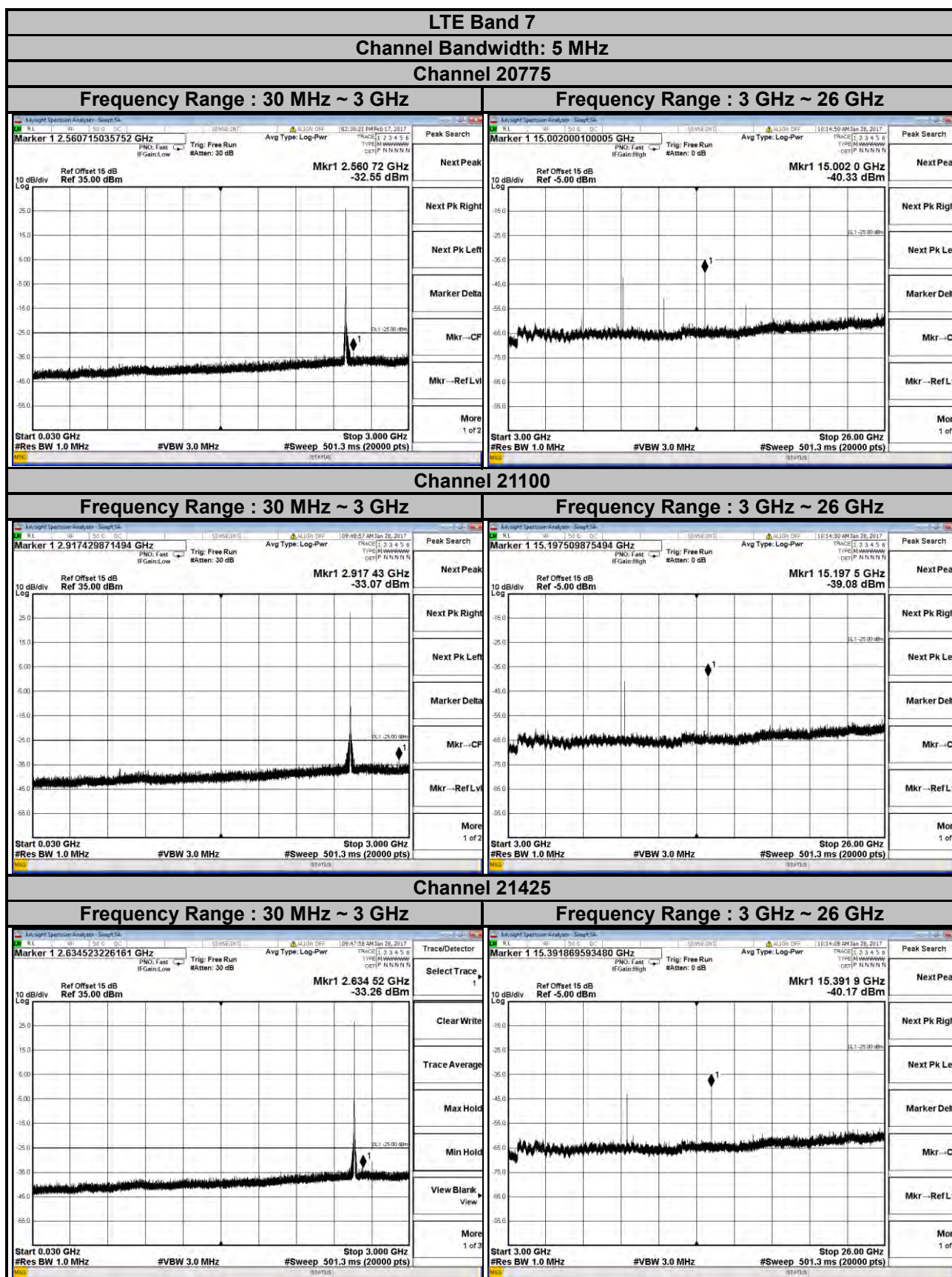
4.6.2 Test Setup



4.6.3 Test Procedure

- The EUT makes a phone call to the communication simulator. All measurements were done at low, middle and high operational frequency range.
- Measuring frequency range is from 30 MHz to 26 GHz for LTE Band 7 and from 30 MHz to 27 GHz for LTE Band 41. 10dB attenuation pad is connected with spectrum. RBW=1MHz and VBW=3MHz are used for conducted emission measurement.

4.6.4 Test Results



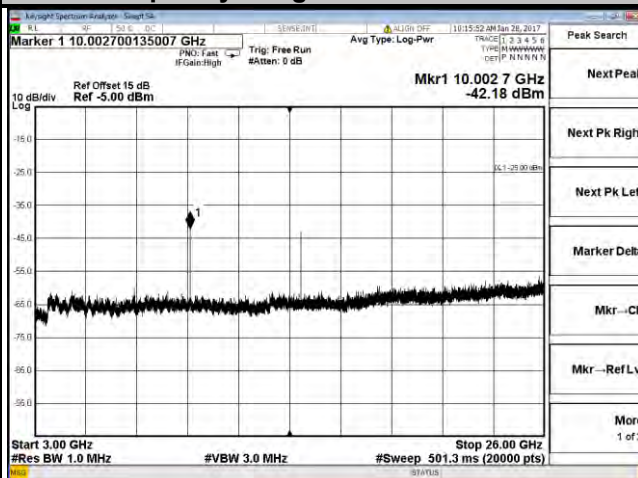
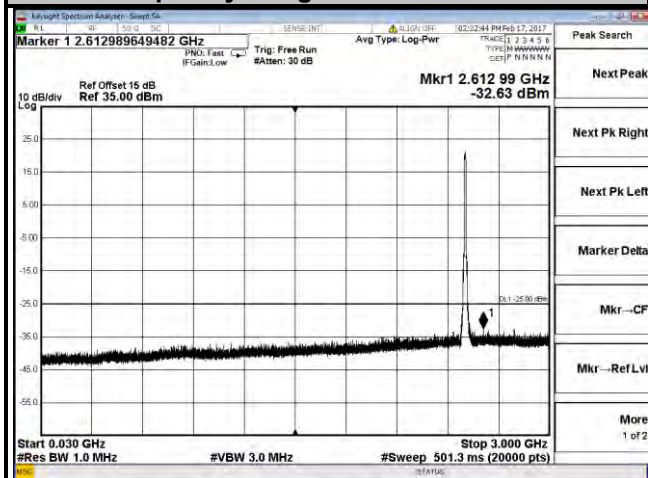
LTE Band 7

Channel Bandwidth: 10 MHz

Channel 20800

Frequency Range : 30 MHz ~ 3 GHz

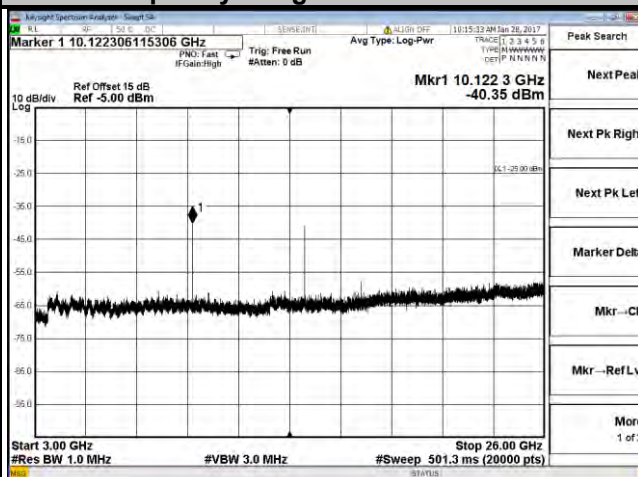
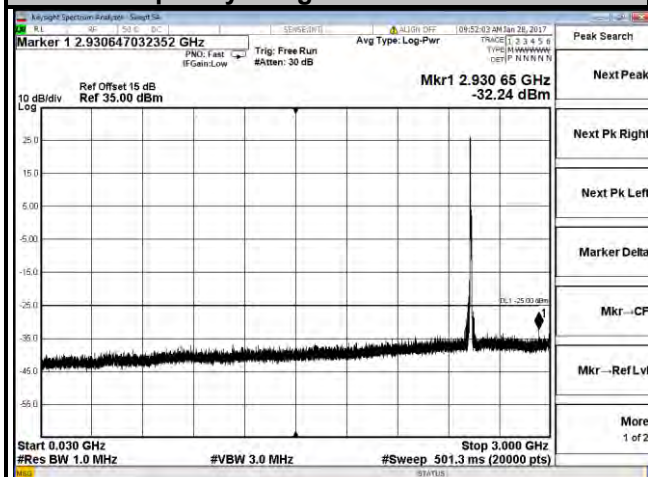
Frequency Range : 3 GHz ~ 26 GHz



Channel 21100

Frequency Range : 30 MHz ~ 3 GHz

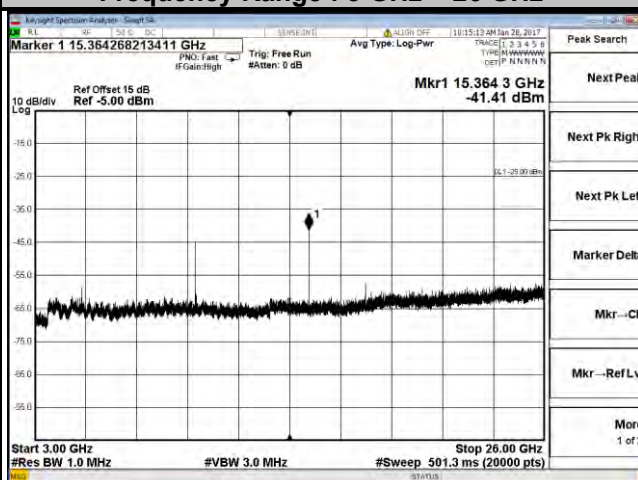
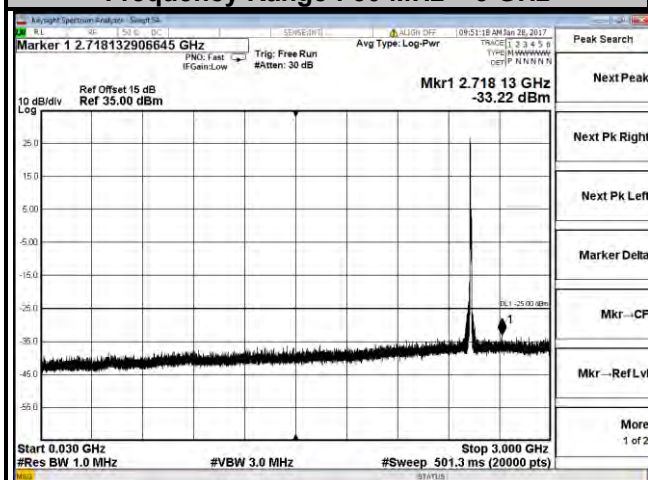
Frequency Range : 3 GHz ~ 26 GHz



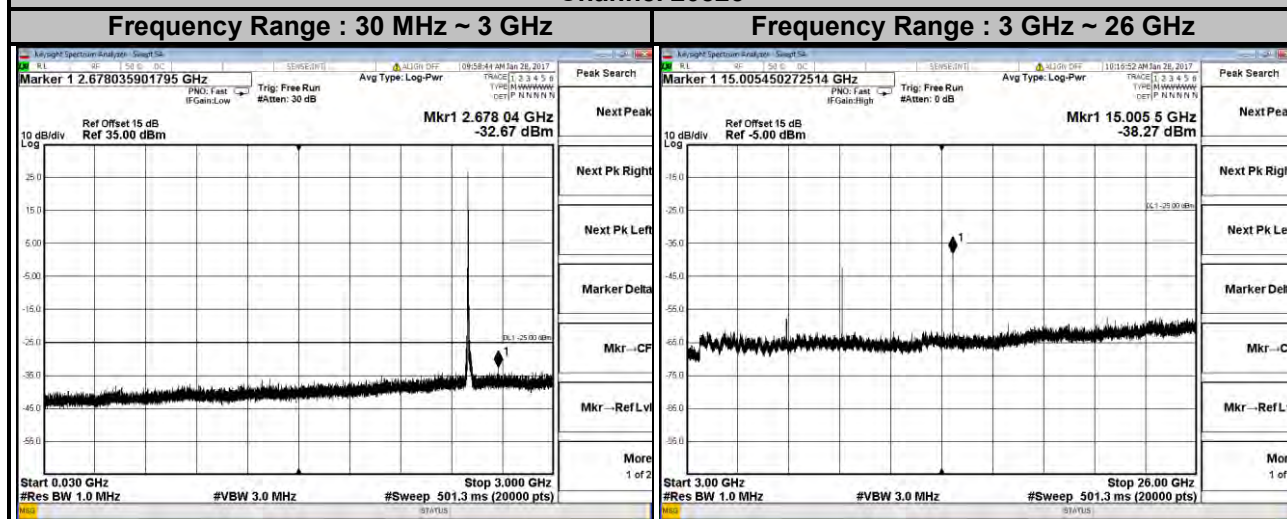
Channel 21400

Frequency Range : 30 MHz ~ 3 GHz

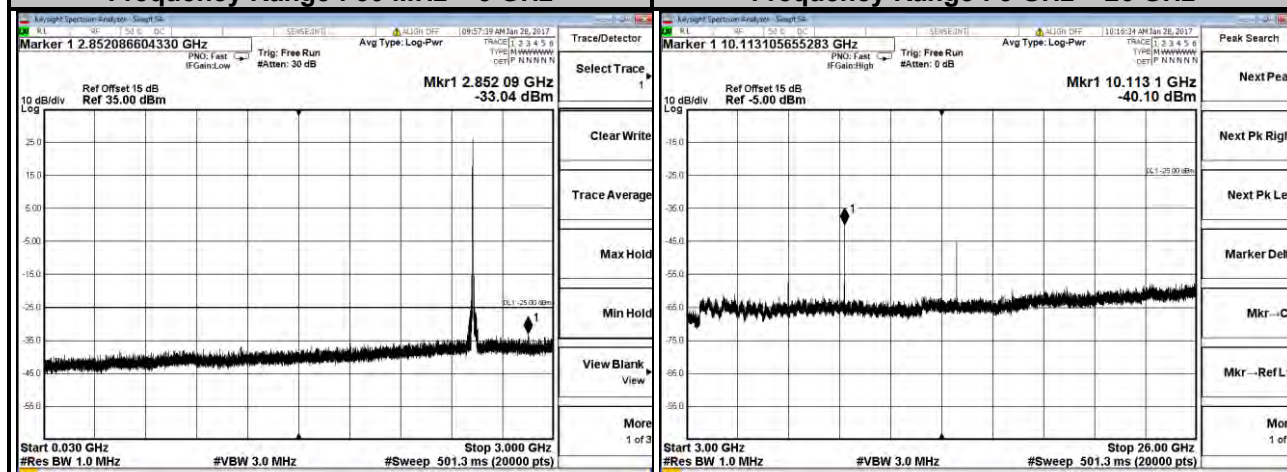
Frequency Range : 3 GHz ~ 26 GHz



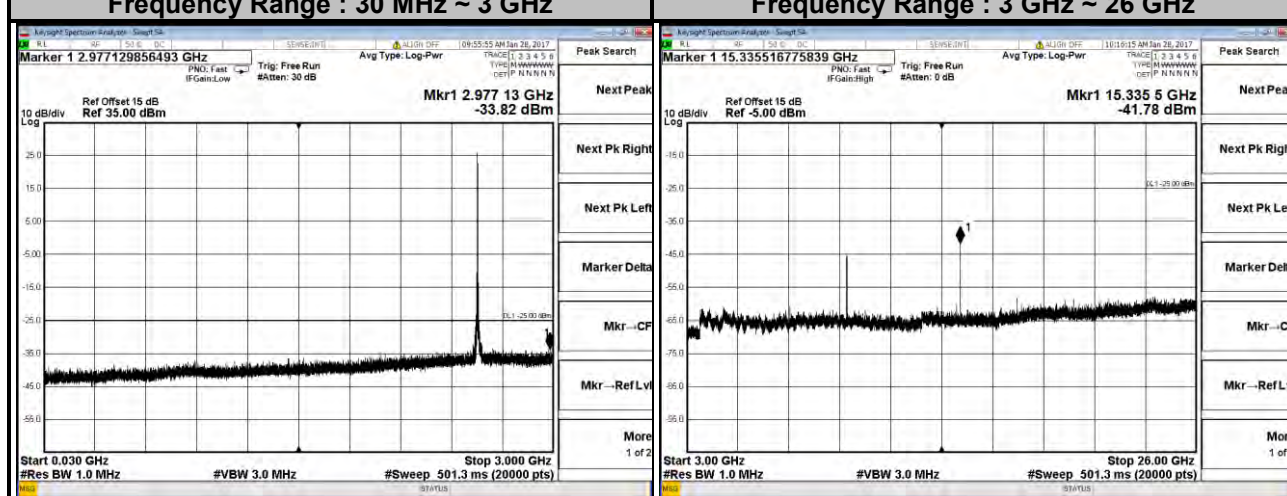
LTE Band 7
Channel Bandwidth: 15 MHz
Channel 20825



Channel 21100



Channel 21375



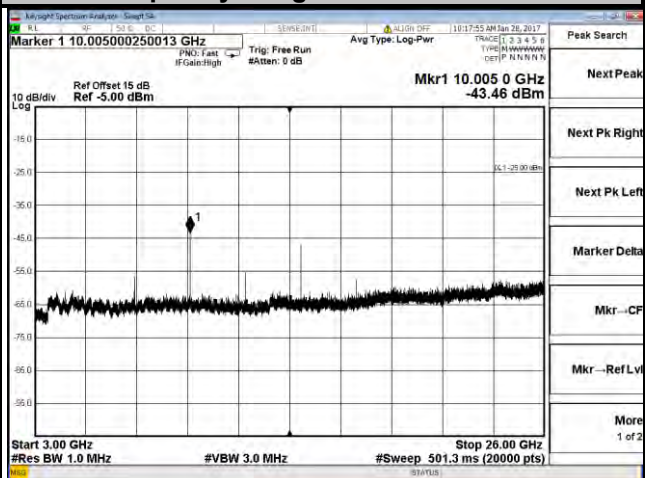
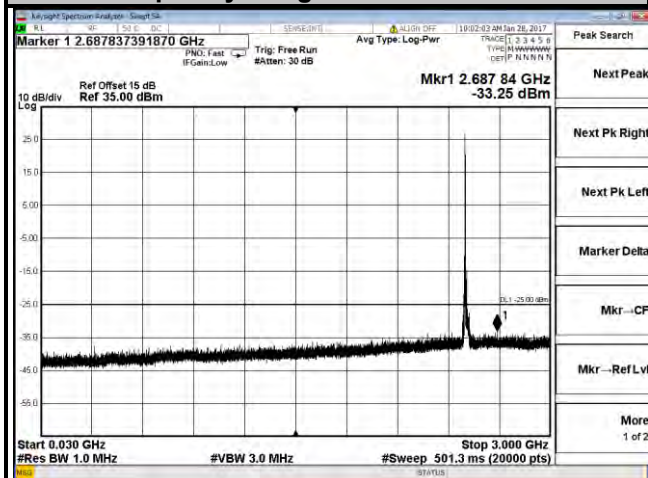
LTE Band 7

Channel Bandwidth: 20 MHz

Channel 20850

Frequency Range : 30 MHz ~ 3 GHz

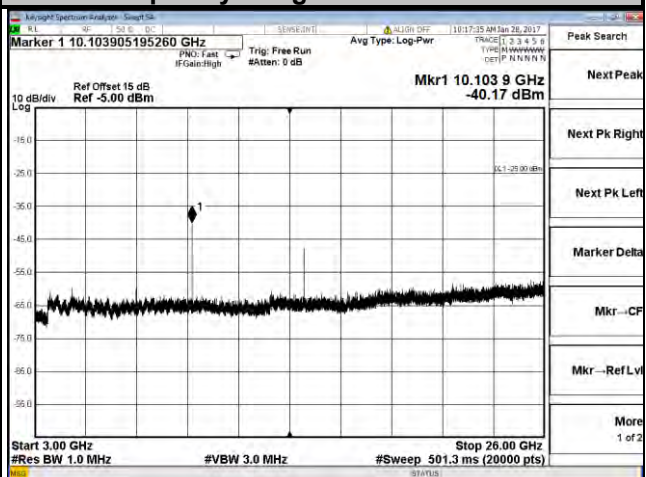
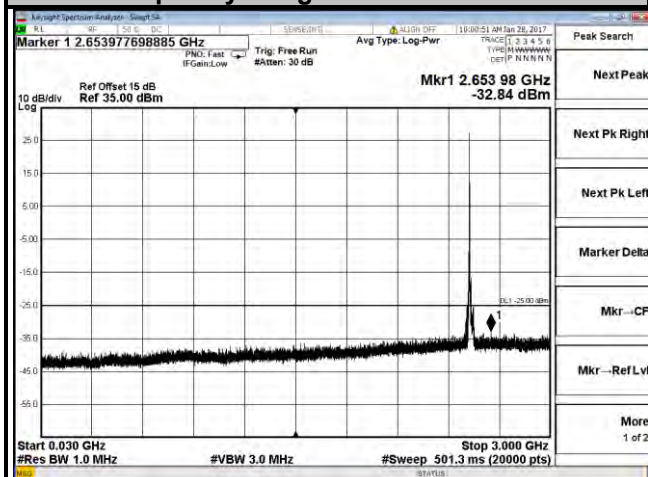
Frequency Range : 3 GHz ~ 26 GHz



Channel 21100

Frequency Range : 30 MHz ~ 3 GHz

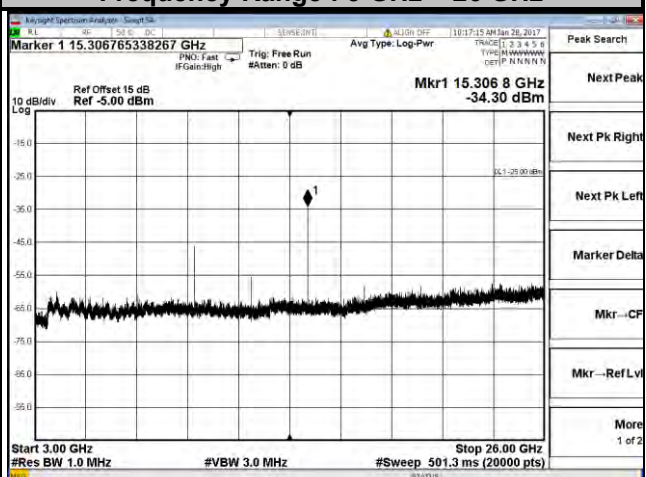
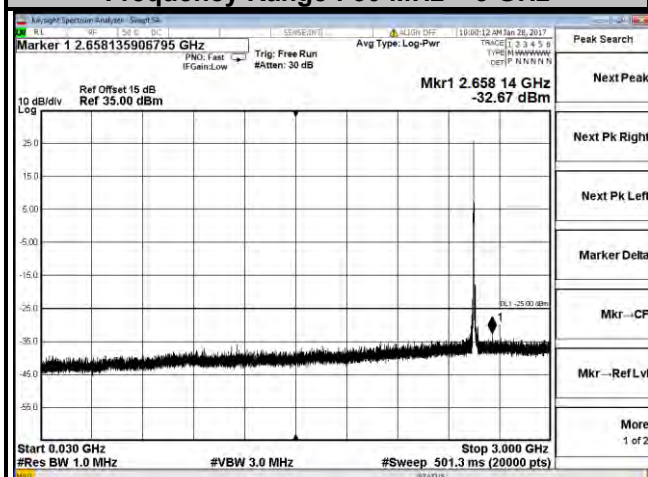
Frequency Range : 3 GHz ~ 26 GHz



Channel 21350

Frequency Range : 30 MHz ~ 3 GHz

Frequency Range : 3 GHz ~ 26 GHz



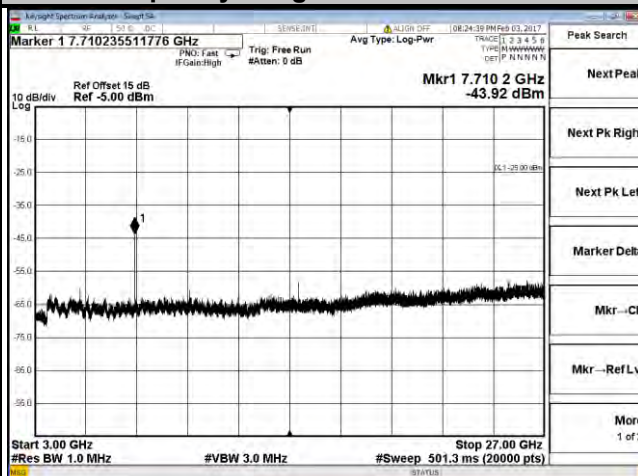
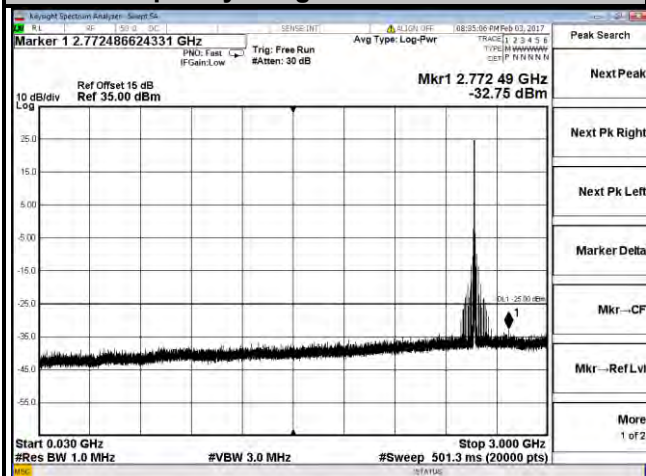
LTE Band 38

Channel Bandwidth: 5 MHz

Channel 37775

Frequency Range : 30 MHz ~ 3 GHz

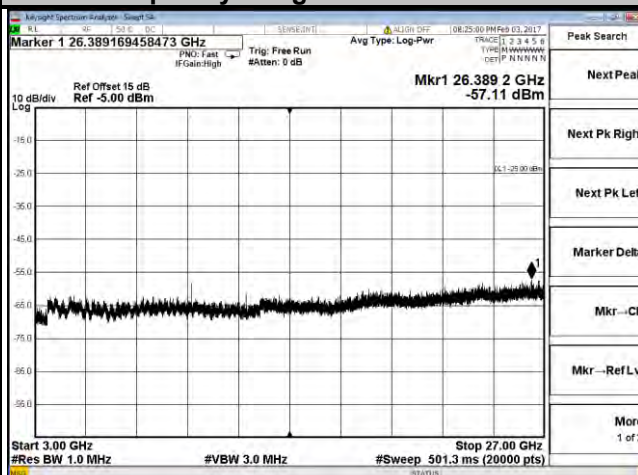
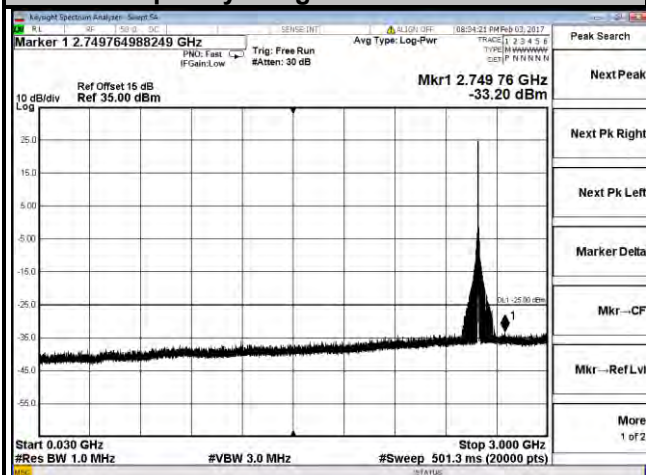
Frequency Range : 3 GHz ~ 27 GHz



Channel 38000

Frequency Range : 30 MHz ~ 3 GHz

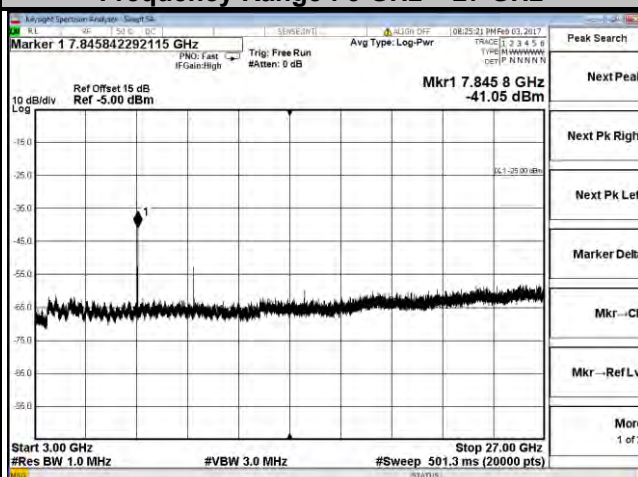
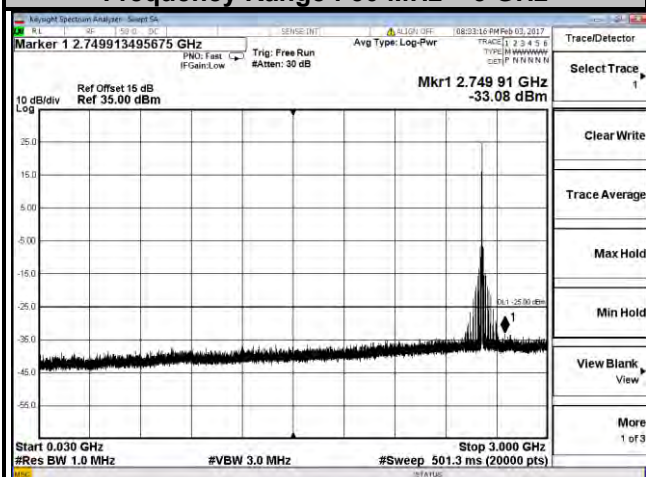
Frequency Range : 3 GHz ~ 27 GHz



Channel 38225

Frequency Range : 30 MHz ~ 3 GHz

Frequency Range : 3 GHz ~ 27 GHz



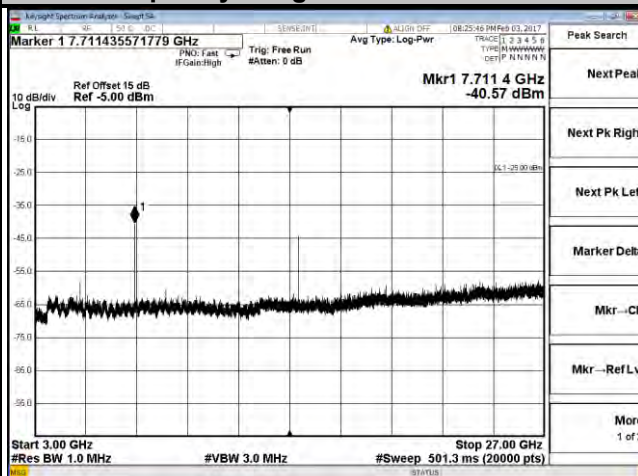
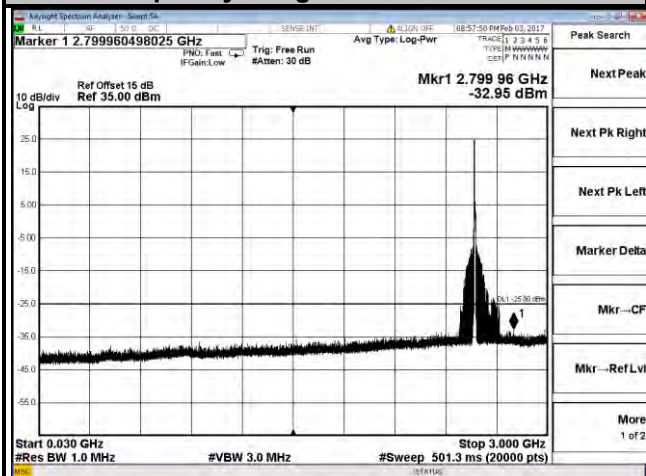
LTE Band 38

Channel Bandwidth: 10 MHz

Channel 37800

Frequency Range : 30 MHz ~ 3 GHz

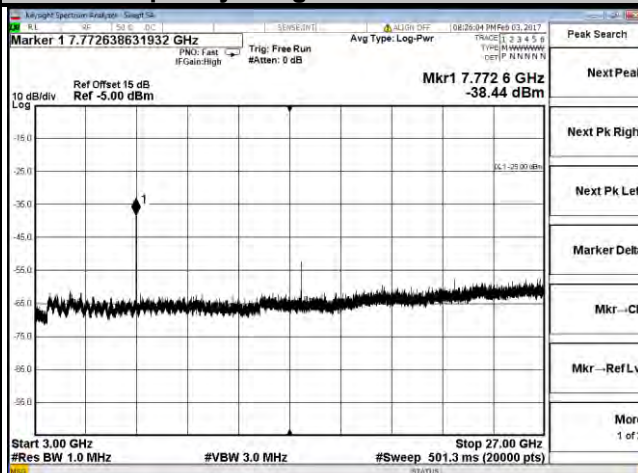
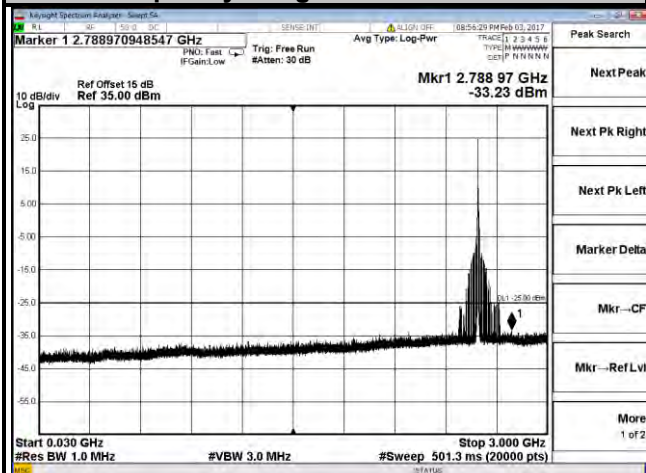
Frequency Range : 3 GHz ~ 27 GHz



Channel 38000

Frequency Range : 30 MHz ~ 3 GHz

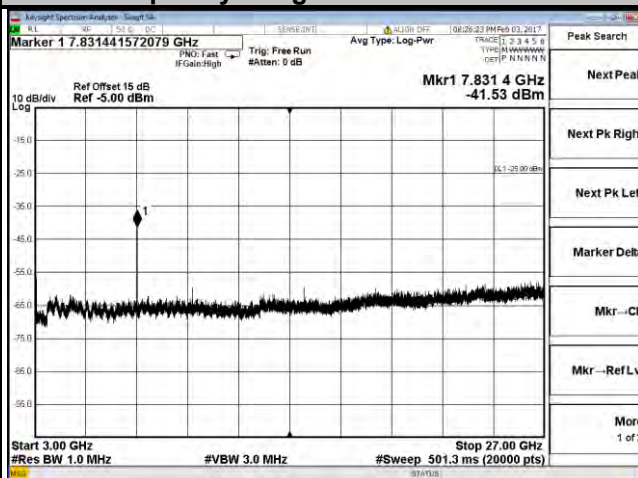
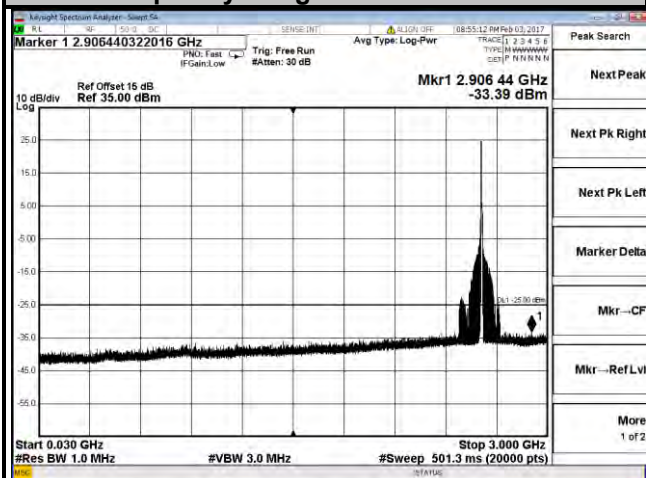
Frequency Range : 3 GHz ~ 27 GHz



Channel 38200

Frequency Range : 30 MHz ~ 3 GHz

Frequency Range : 3 GHz ~ 27 GHz



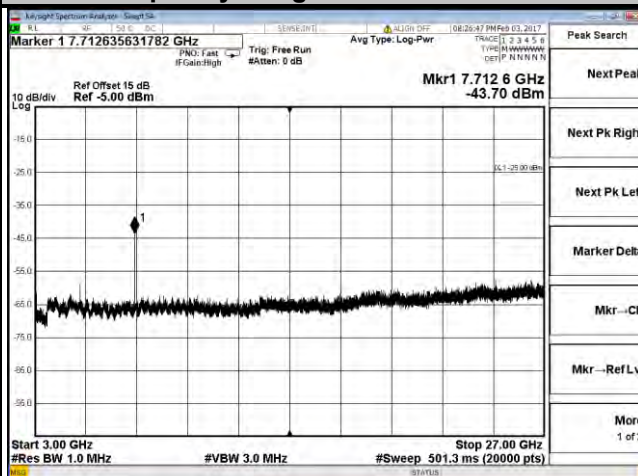
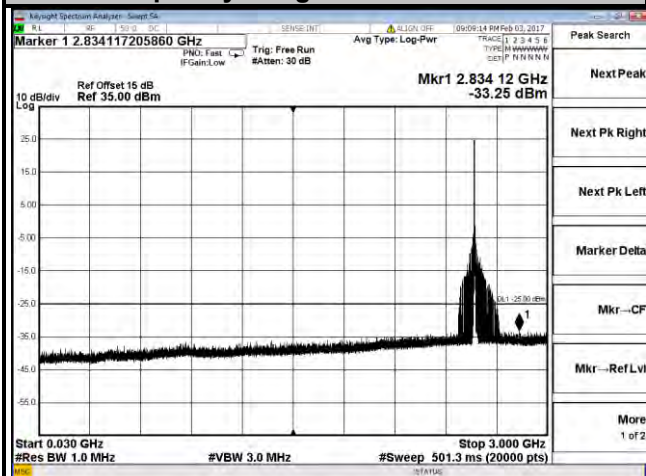
LTE Band 38

Channel Bandwidth: 15 MHz

Channel 37825

Frequency Range : 30 MHz ~ 3 GHz

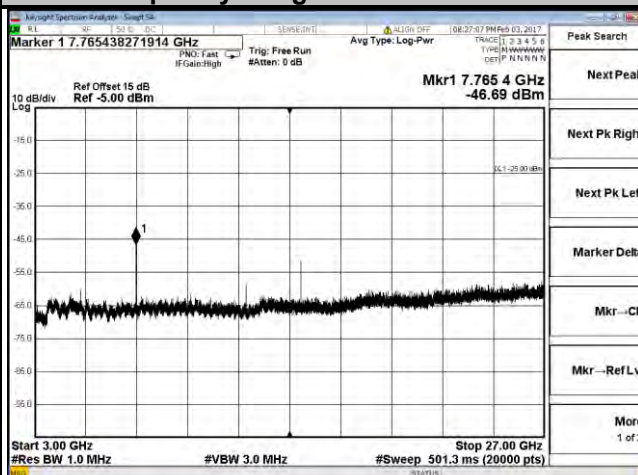
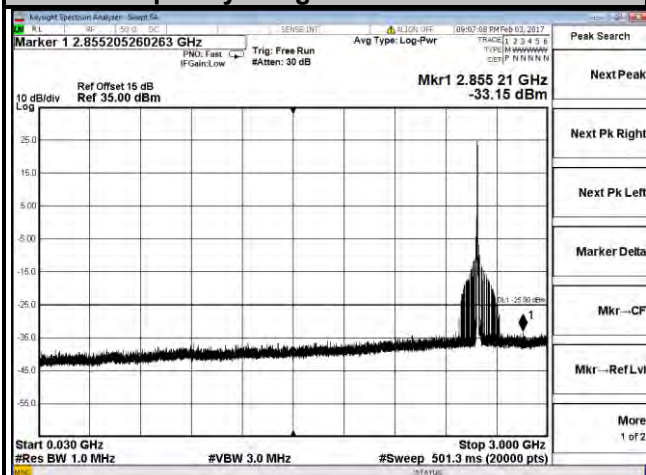
Frequency Range : 3 GHz ~ 27 GHz



Channel 38000

Frequency Range : 30 MHz ~ 3 GHz

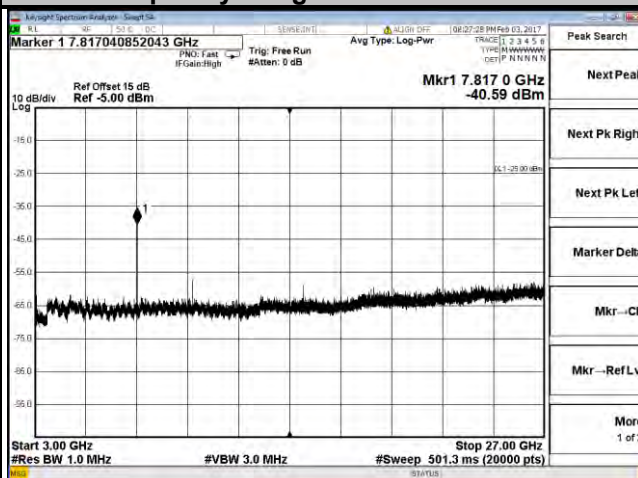
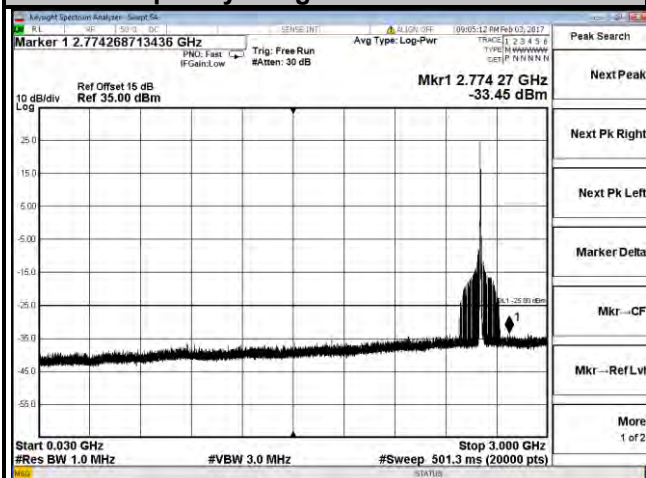
Frequency Range : 3 GHz ~ 27 GHz



Channel 38175

Frequency Range : 30 MHz ~ 3 GHz

Frequency Range : 3 GHz ~ 27 GHz



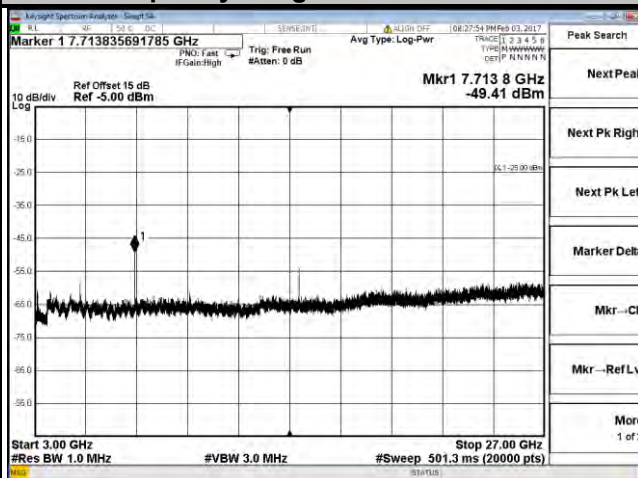
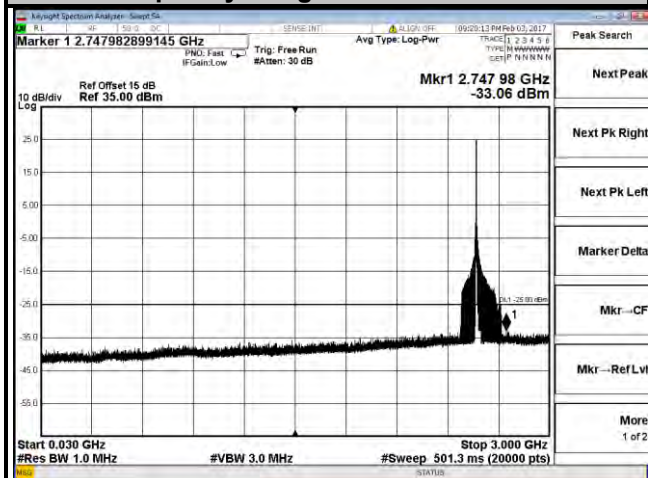
LTE Band 38

Channel Bandwidth: 20 MHz

Channel 37850

Frequency Range : 30 MHz ~ 3 GHz

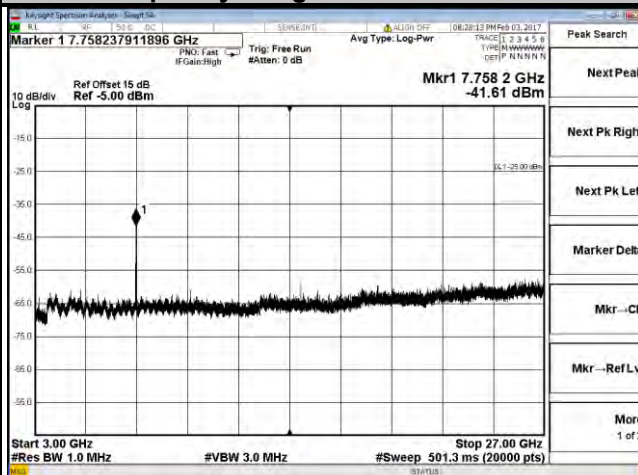
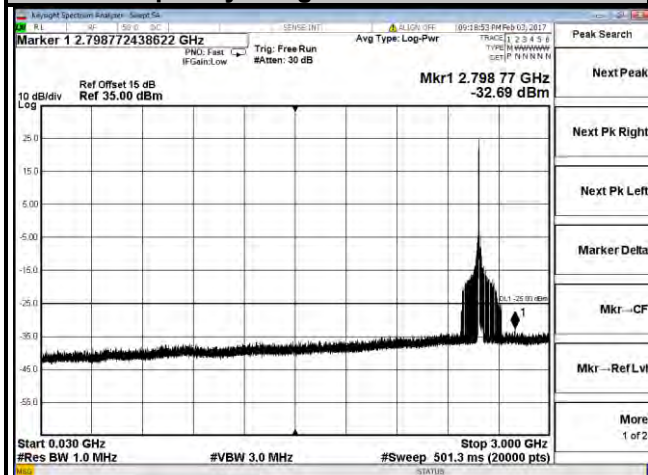
Frequency Range : 3 GHz ~ 27 GHz



Channel 38000

Frequency Range : 30 MHz ~ 3 GHz

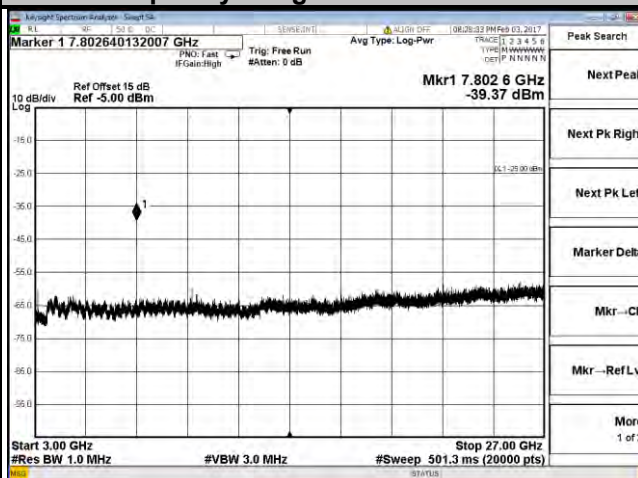
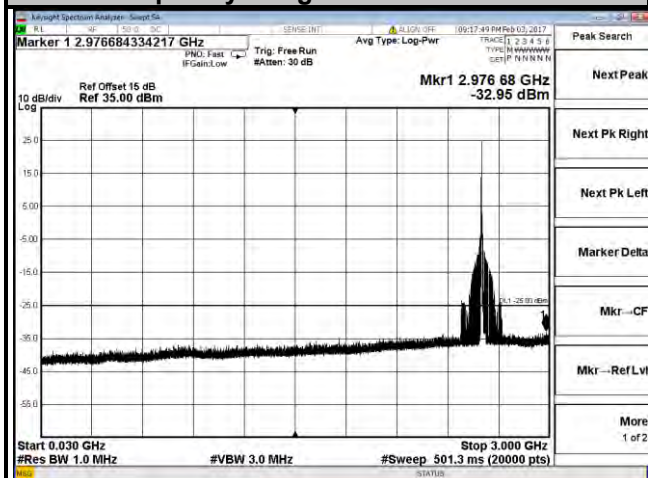
Frequency Range : 3 GHz ~ 27 GHz



Channel 38150

Frequency Range : 30 MHz ~ 3 GHz

Frequency Range : 3 GHz ~ 27 GHz



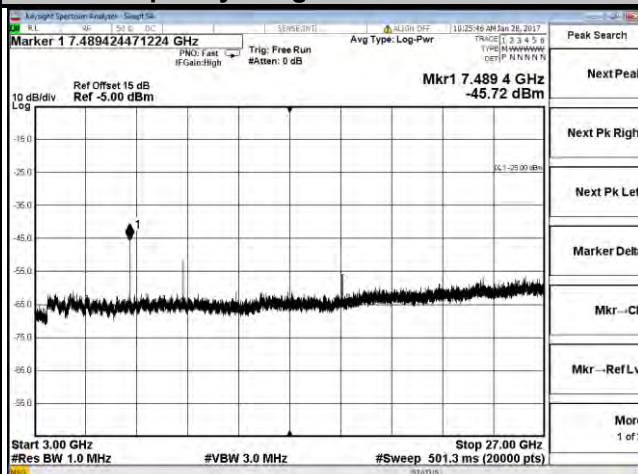
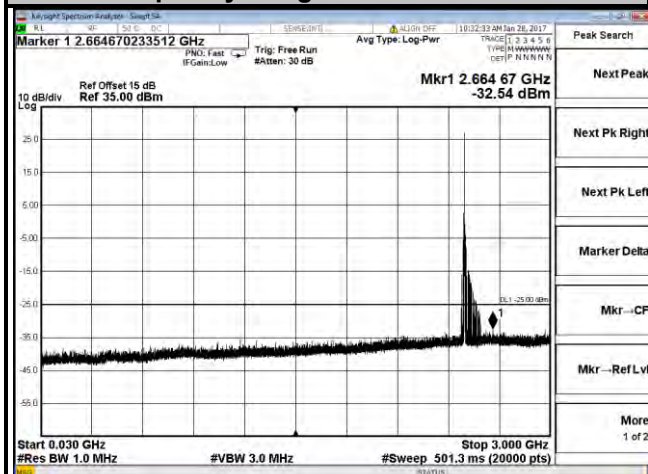
LTE Band 41

Channel Bandwidth: 5 MHz

Channel 39675

Frequency Range : 30 MHz ~ 3 GHz

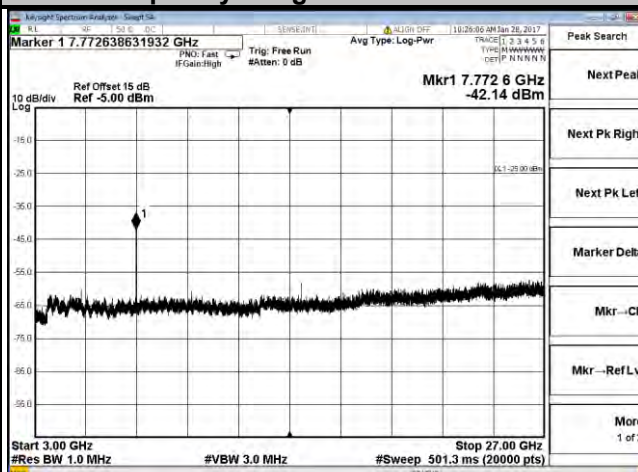
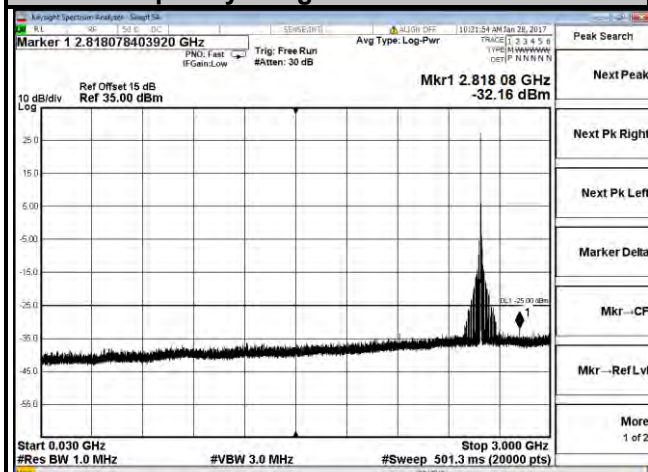
Frequency Range : 3 GHz ~ 27 GHz



Channel 40620

Frequency Range : 30 MHz ~ 3 GHz

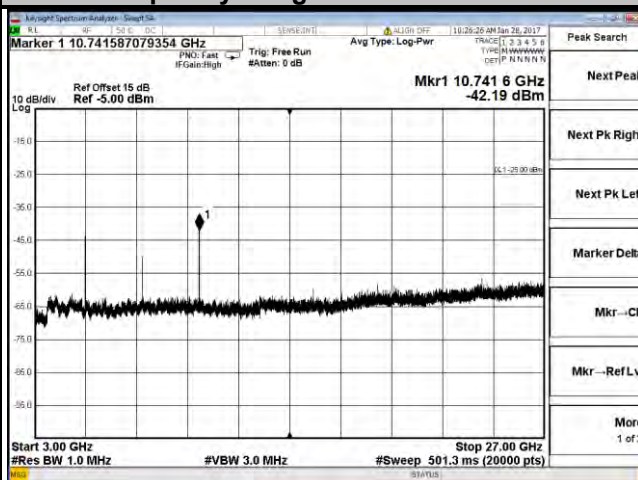
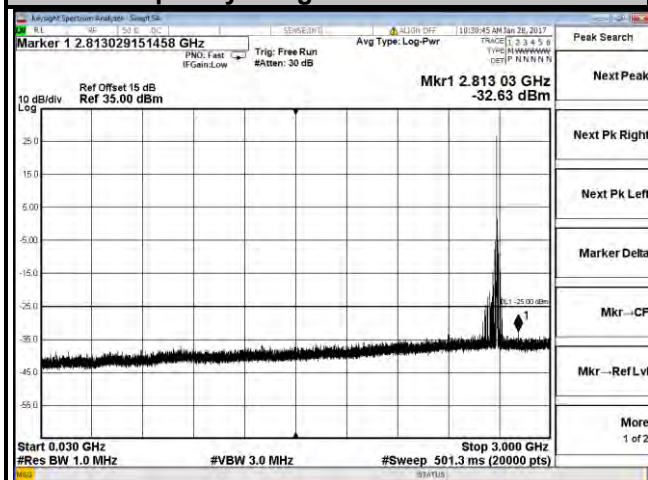
Frequency Range : 3 GHz ~ 27 GHz



Channel 41565

Frequency Range : 30 MHz ~ 3 GHz

Frequency Range : 3 GHz ~ 27 GHz



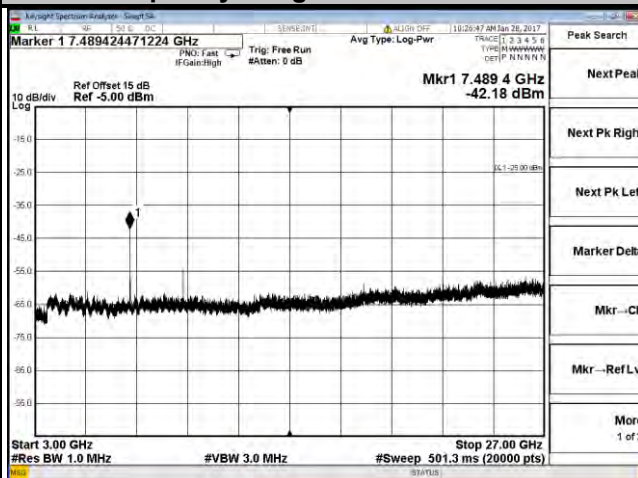
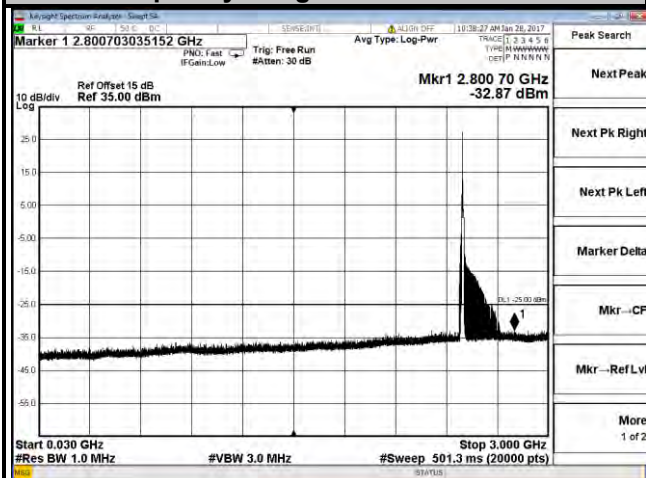
LTE Band 41

Channel Bandwidth: 10 MHz

Channel 39700

Frequency Range : 30 MHz ~ 3 GHz

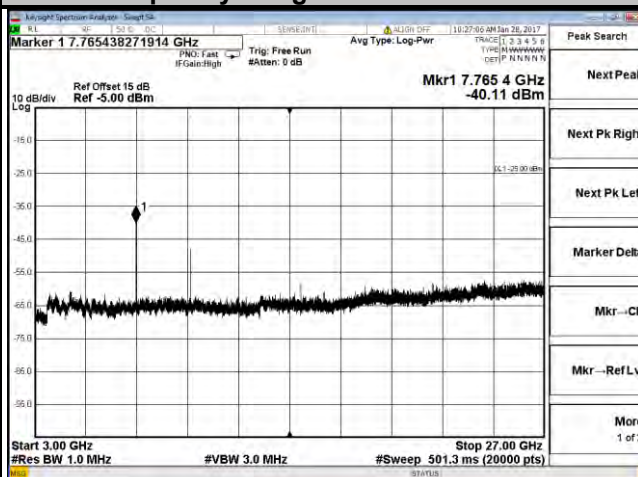
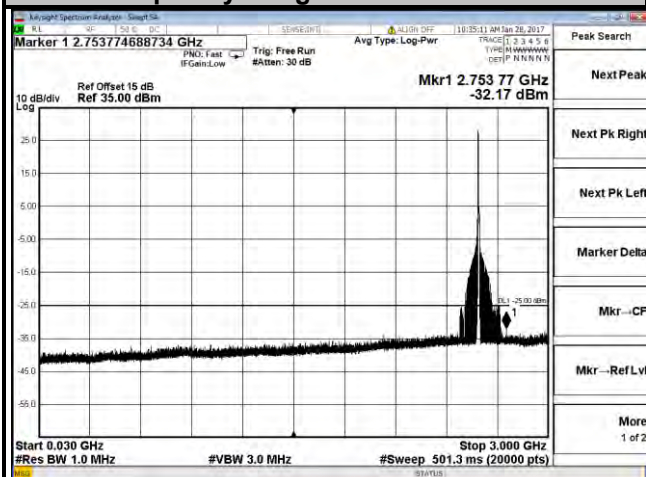
Frequency Range : 3 GHz ~ 27 GHz



Channel 40620

Frequency Range : 30 MHz ~ 3 GHz

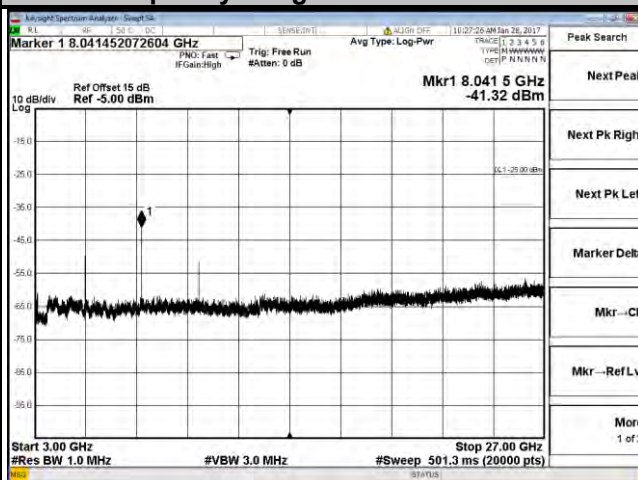
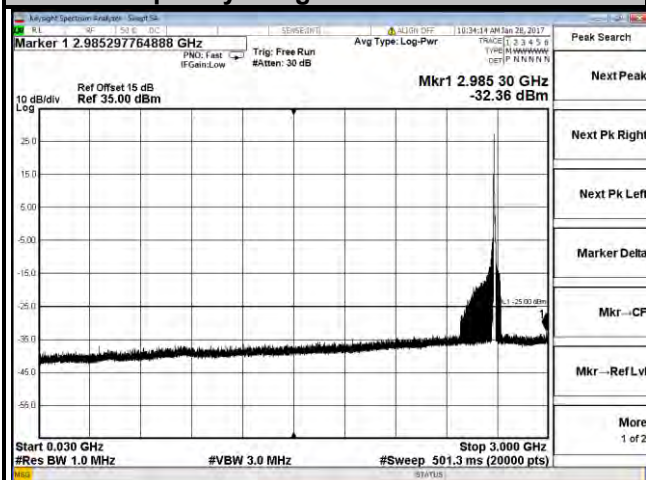
Frequency Range : 3 GHz ~ 27 GHz



Channel 41540

Frequency Range : 30 MHz ~ 3 GHz

Frequency Range : 3 GHz ~ 27 GHz



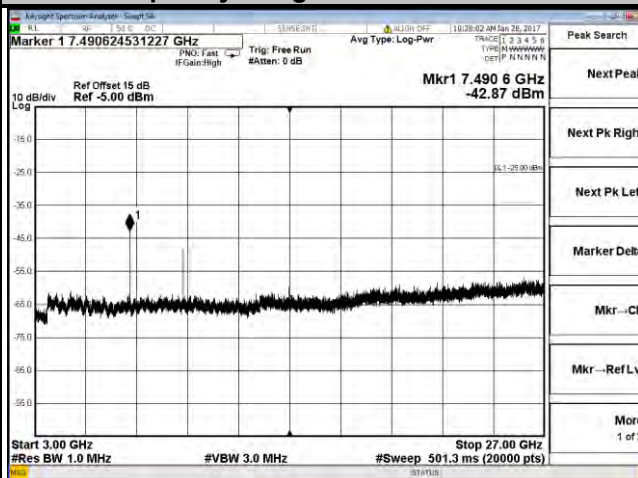
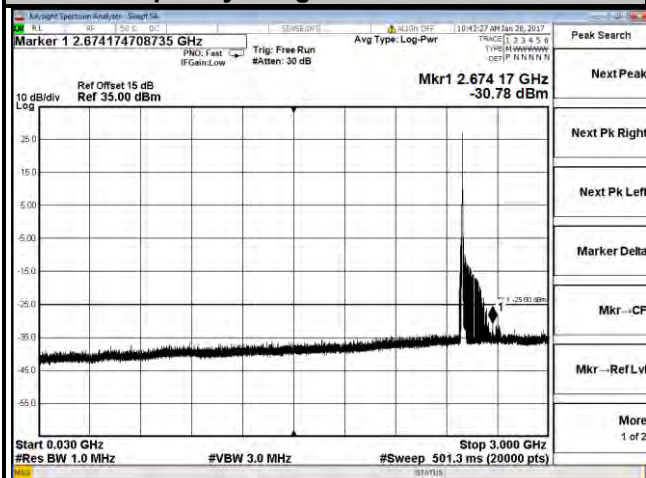
LTE Band 41

Channel Bandwidth: 15 MHz

Channel 39725

Frequency Range : 30 MHz ~ 3 GHz

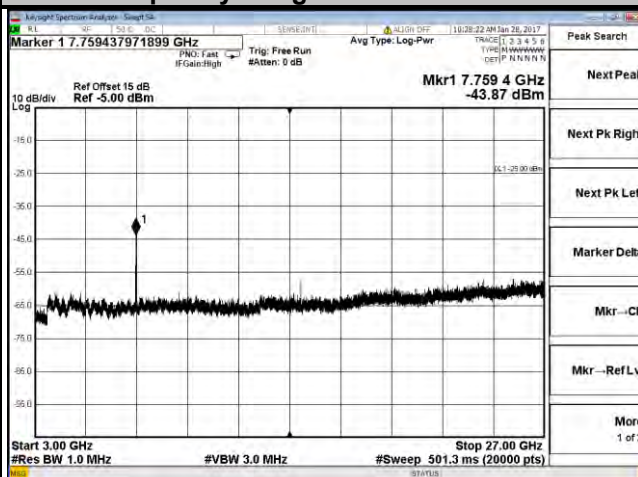
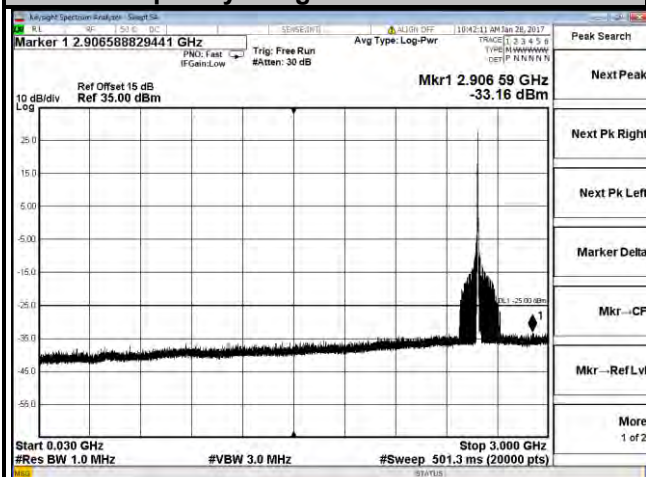
Frequency Range : 3 GHz ~ 27 GHz



Channel 40620

Frequency Range : 30 MHz ~ 3 GHz

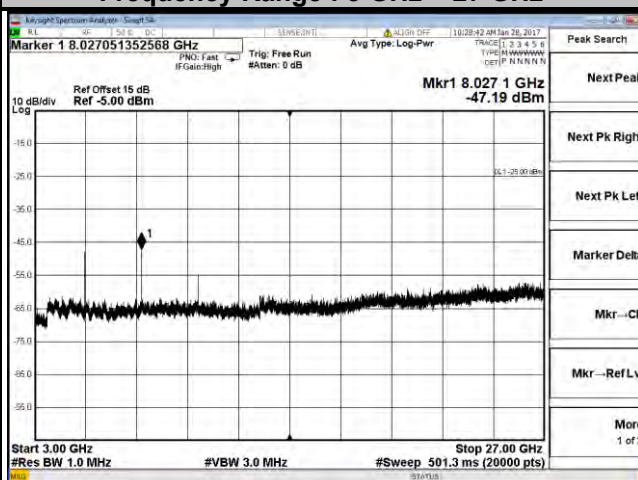
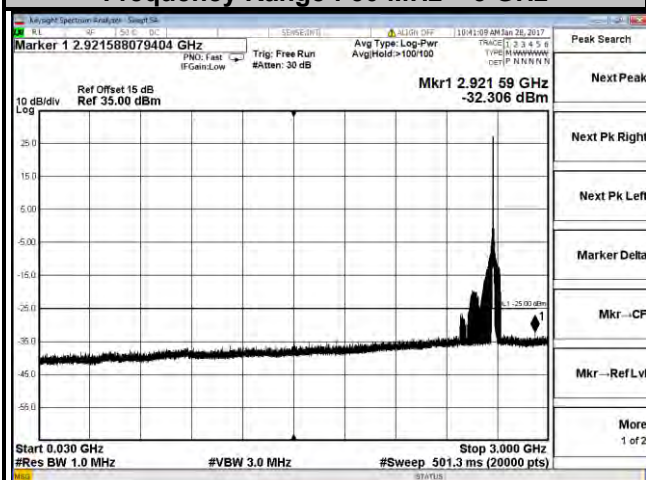
Frequency Range : 3 GHz ~ 27 GHz



Channel 41515

Frequency Range : 30 MHz ~ 3 GHz

Frequency Range : 3 GHz ~ 27 GHz



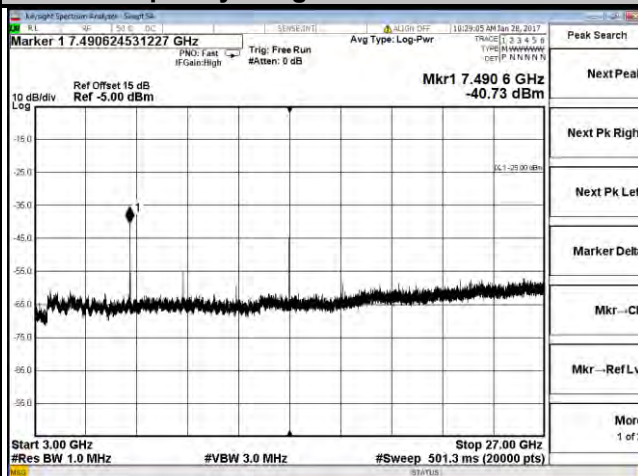
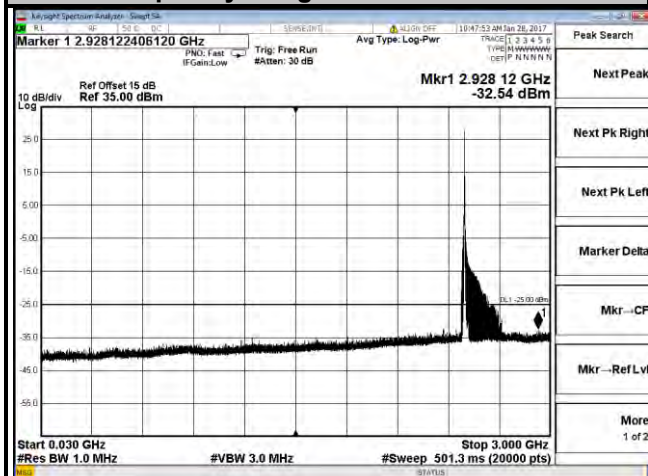
LTE Band 41

Channel Bandwidth: 20 MHz

Channel 39750

Frequency Range : 30 MHz ~ 3 GHz

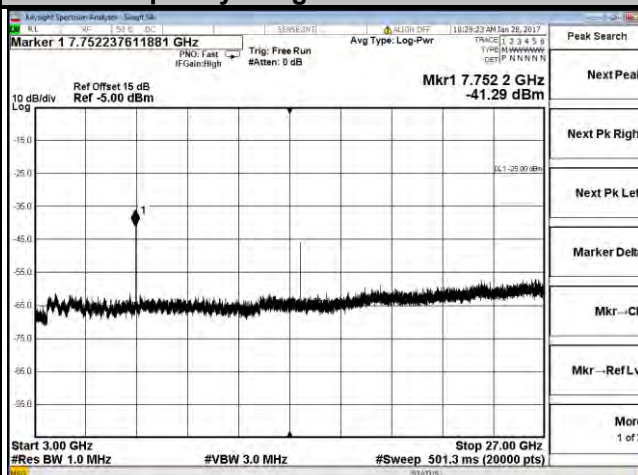
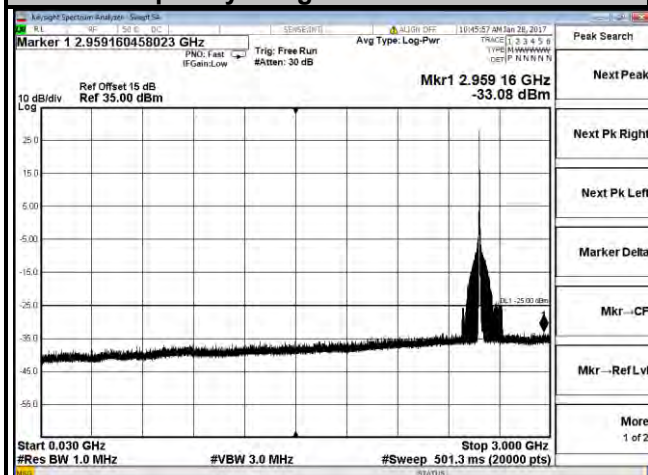
Frequency Range : 3 GHz ~ 27 GHz



Channel 40620

Frequency Range : 30 MHz ~ 3 GHz

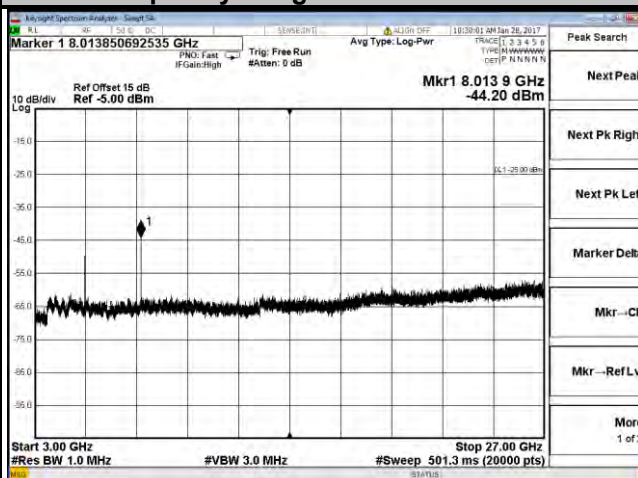
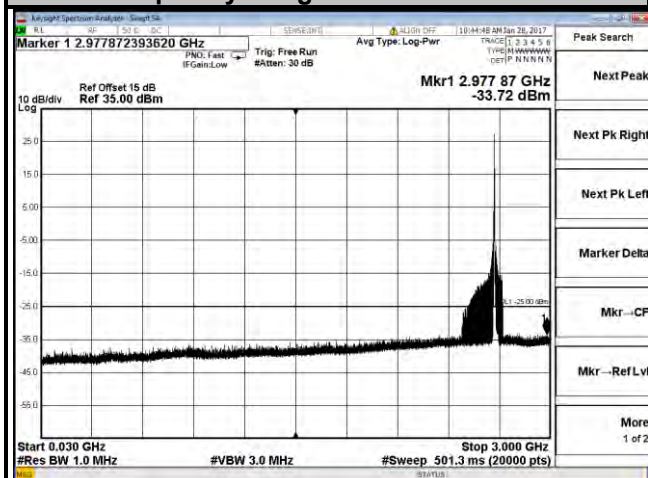
Frequency Range : 3 GHz ~ 27 GHz



Channel 41490

Frequency Range : 30 MHz ~ 3 GHz

Frequency Range : 3 GHz ~ 27 GHz



4.7 Radiated Emission Measurement

4.7.1 Limits of Radiated Emission Measurement

The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least $55 + 10 \log_{10}(P)$ dB. The limit of emission is equal to -25 dBm.

4.7.2 Test Procedure

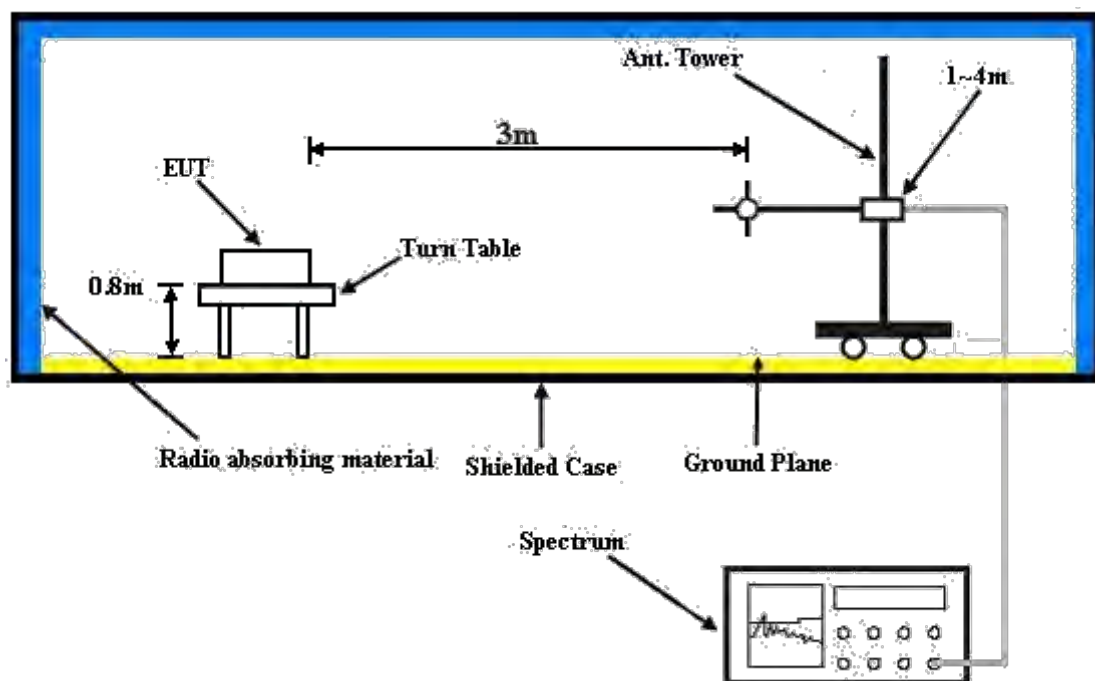
- Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8 m height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1 m to 4 m to find the maximum polar radiated power. The "Read Value" is the spectrum reading the maximum power value.
- The substitution horn antenna is substituted for EUT at the same position and signals generator export the CW signal to the substitution antenna via a TX cable. Rotated the Turn Table and moved receiving antenna to find the maximum radiation power. Adjust output power level of S.G to get a Value of spectrum reading equal to "Read Value" of step a. Record the power level of S.G.
- EIRP = Output power level of S.G – TX cable loss + Antenna gain of substitution horn.
- E.R.P power can be calculated form E.I.R.P power by subtracting the gain of dipole, E.R.P power = E.I.P.R power - 2.15 dBi.

NOTE: The resolution bandwidth of spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz.

4.7.3 Deviation from Test Standard

No deviation.

4.7.4 Test Setup



For the actual test configuration, please refer to the attached file (Test Setup Photo).

4.7.5 Test Results

LTE Band 7

Channel Bandwidth: 20 MHz / QPSK

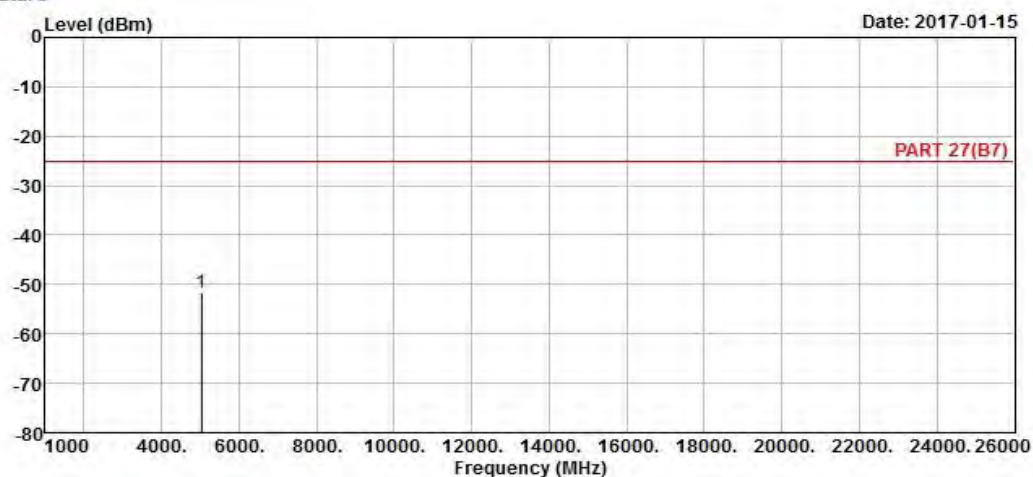
Low Channel



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 5



Site : 966 Chamber 5

Condition: PART 27(B7) HORIZONTAL

Remak : LTE Band 7 QPSK_20M_L-CH Link

Tested by: Gavin Wu

		Read	Limit	Over		
Freq	Level	Level	Line	Limit	Factor	Remark
MHz	dBm	dBm	dBm	dB	dB	
1 pp 5020.00	-51.76	-48.53	-25.00	-26.76	-3.23	Peak

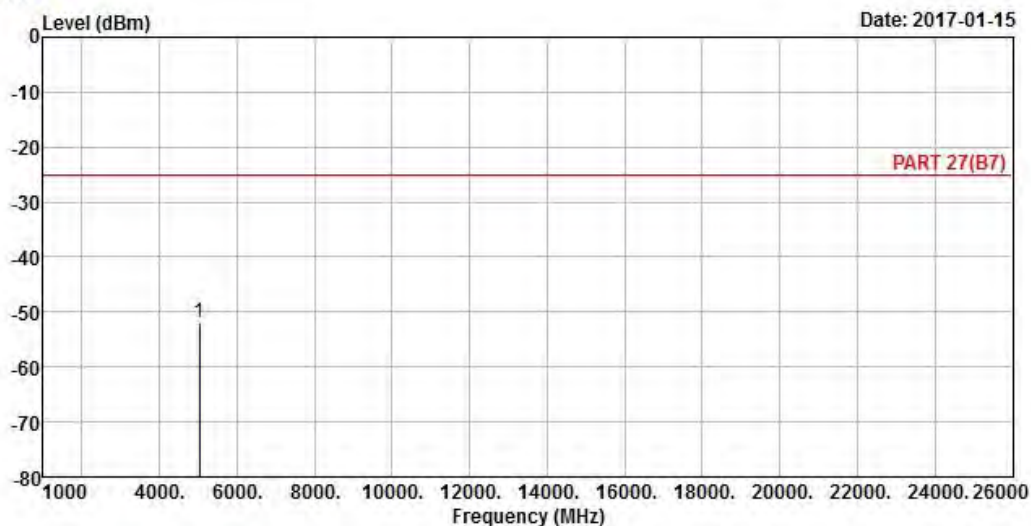


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 6

Date: 2017-01-15



Site : 966 Chamber 5

Condition: PART 27(B7) VERTICAL

Remak : LTE Band 7 QPSK_20M_L-CH Link

Tested by: Gavin Wu

Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
MHz	dBm	dBm	dBm	dB	dB	
1 pp 5020.00	-51.96	-48.73	-25.00	-26.96	-3.23	Peak

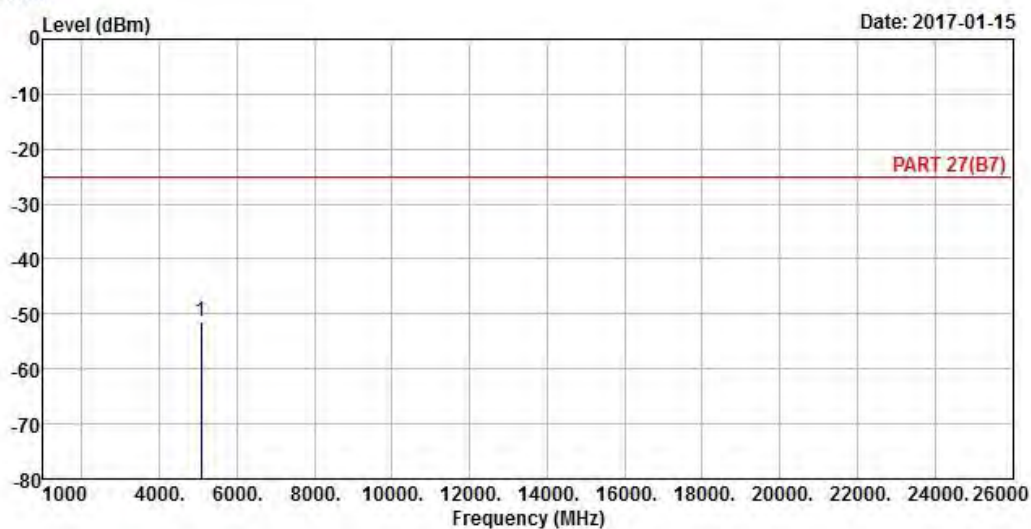
Middle Channel



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 5



Site : 966 Chamber 5

Condition: PART 27(B7) HORIZONTAL

Remak : LTE Band 7 QPSK_20M_M-CH Link

Tested by: Gavin Wu

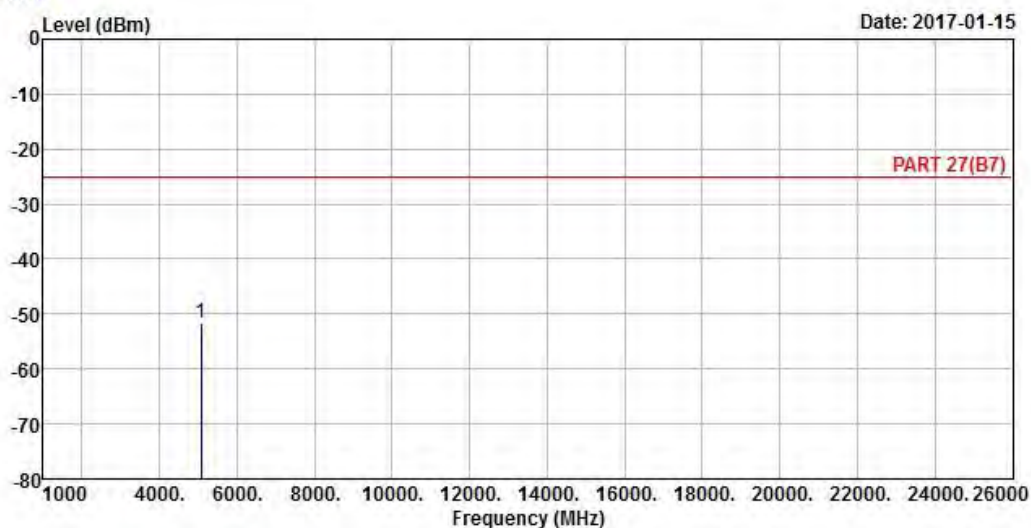
		Read	Limit	Over		
Freq	Level	Level	Line	Limit	Factor	Remark
MHz	dBm	dBm	dBm	dB	dB	
1 pp 5070.00	-51.28	-48.16	-25.00	-26.28	-3.12	Peak



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 6



Site : 966 Chamber 5

Condition: PART 27(B7) VERTICAL

Remak : LTE Band 7 QPSK_20M_M-CH Link

Tested by: Gavin Wu

Freq	Level	Read	Limit	Over	Factor	Remark
		Level	Line	Limit		
MHz	dBm	dBm	dBm	dB	dB	
1 pp 5070.00	-51.61	-48.49	-25.00	-26.61	-3.12	Peak

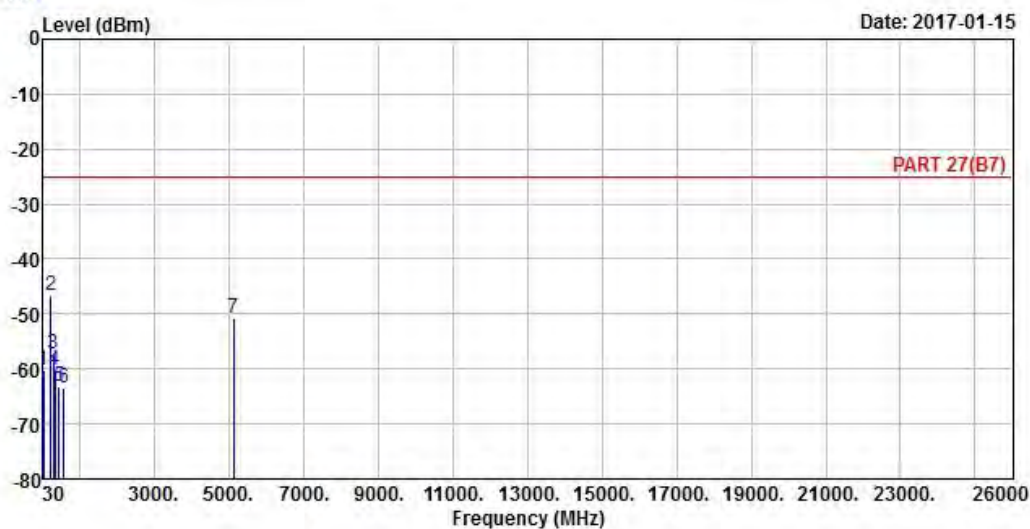
High Channel



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 7



Site : 966 Chamber 5
Condition: PART 27(B7) HORIZONTAL
Remak : LTE Band 7 QPSK_20M_H-CH Link
Tested by: Gavin Wu

			Read	Limit	Over		
	Freq	Level	Level	Line	Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	42.61	-60.13	-59.19	-25.00	-35.13	-0.94	Peak
2 pp	235.64	-46.61	-40.03	-25.00	-21.61	-6.58	Peak
3	300.63	-57.33	-50.33	-25.00	-32.33	-7.00	Peak
4	338.46	-60.20	-53.78	-25.00	-35.20	-6.42	Peak
5	448.07	-63.26	-57.69	-25.00	-38.26	-5.57	Peak
6	576.11	-63.32	-61.56	-25.00	-38.32	-1.76	Peak
7	5120.00	-50.68	-47.67	-25.00	-25.68	-3.01	Peak

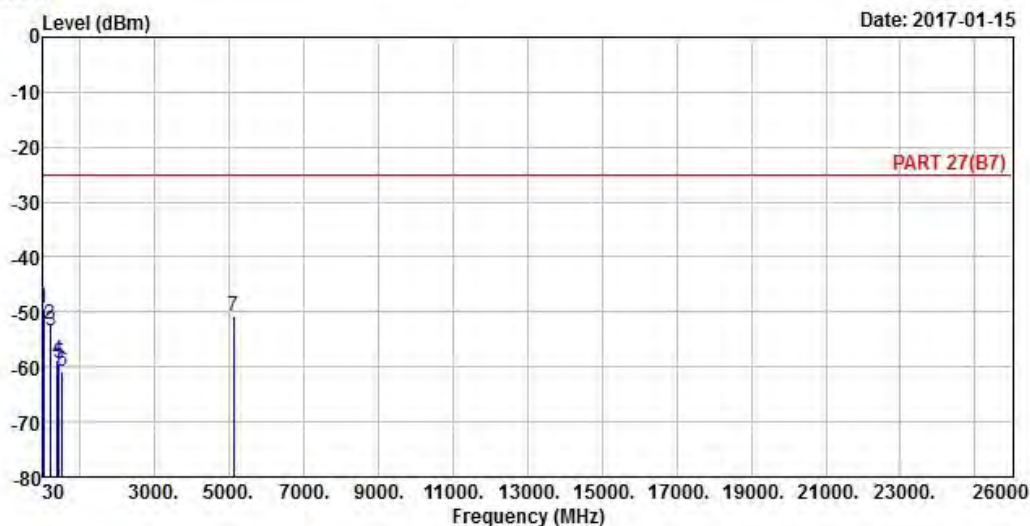


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 8

Date: 2017-01-15



Site : 966 Chamber 5

Condition: PART 27(B7) VERTICAL

Remak : LTE Band 7 QPSK_20M_H-CH Link

Tested by: Gavin Wu

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	41.64	-49.29	-48.88	-25.00	-24.29	-0.41	Peak
2	207.51	-52.18	-44.47	-25.00	-27.18	-7.71	Peak
3	232.73	-53.43	-46.73	-25.00	-28.43	-6.70	Peak
4	402.48	-58.65	-52.72	-25.00	-33.65	-5.93	Peak
5	460.68	-59.43	-54.08	-25.00	-34.43	-5.35	Peak
6	546.04	-60.76	-57.77	-25.00	-35.76	-2.99	Peak
7	5120.00	-50.63	-47.62	-25.00	-25.63	-3.01	Peak

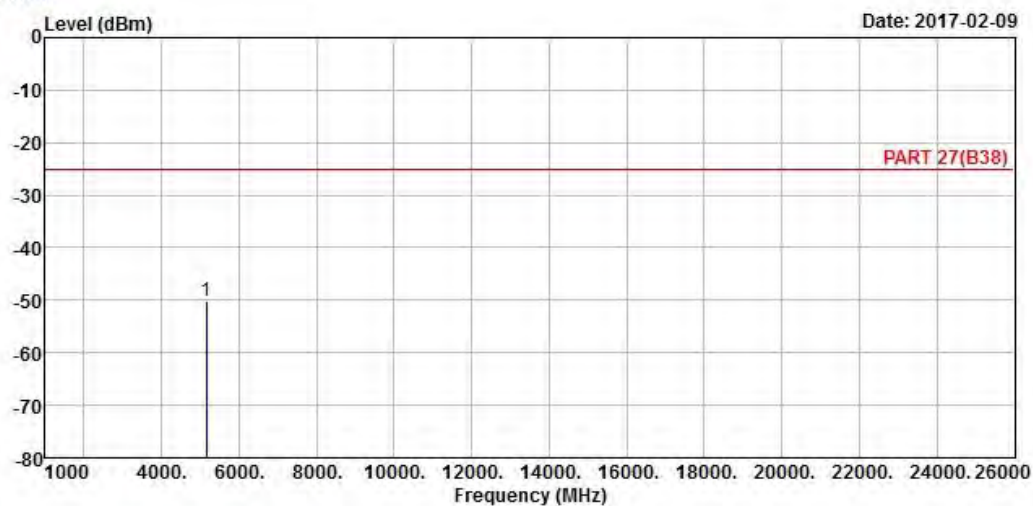
LTE Band 38
Channel Bandwidth: 20 MHz / QPSK
Low Channel



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 5



Site : 966 Chamber 5
Condition: PART 27(B38) HORIZONTAL
Remak : LTE Band 38 QPSK_20M_L-CH Link
Tested by: Getaz Yang

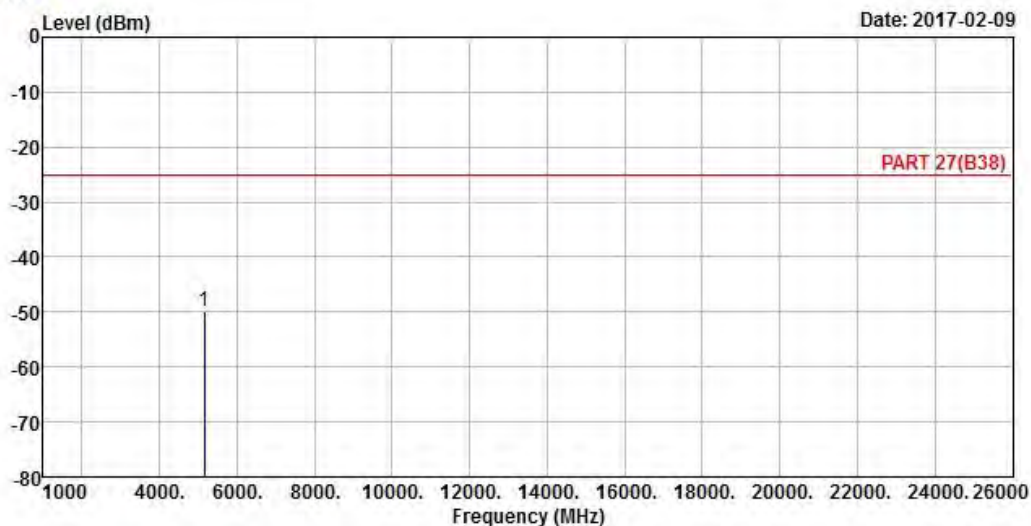
Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
MHz	dBm	dBm	dBm	dB	dB	
1 pp 5160.00	-50.11	-47.18	-25.00	-25.11	-2.93	Peak



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 6



Site : 966 Chamber 5
Condition: PART 27(B38) VERTICAL
Remak : LTE Band 38 QPSK_20M_L-CH Link
Tested by: Getaz Yang

		Read	Limit	Over		
Freq	Level	Level	Line	Limit	Factor	Remark
MHz	dBm	dBm	dBm	dB	dB	
1 pp 5160.00	-49.87	-46.94	-25.00	-24.87	-2.93	Peak

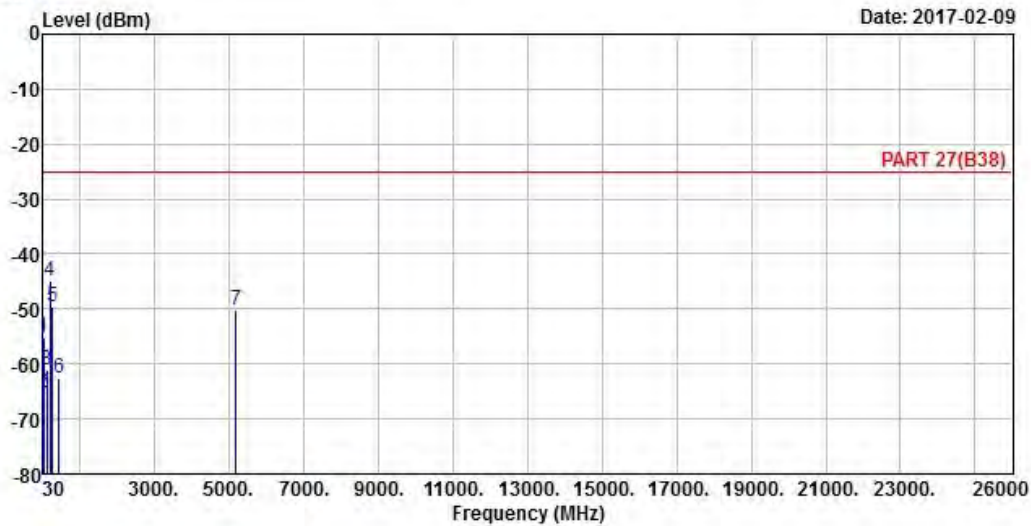
Middle Channel



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 7



Site : 966 Chamber 5

Condition: PART 27(B38) HORIZONTAL

Remak : LTE Band 38 QPSK_20M_M-CH Link

Tested by: Getaz Yang

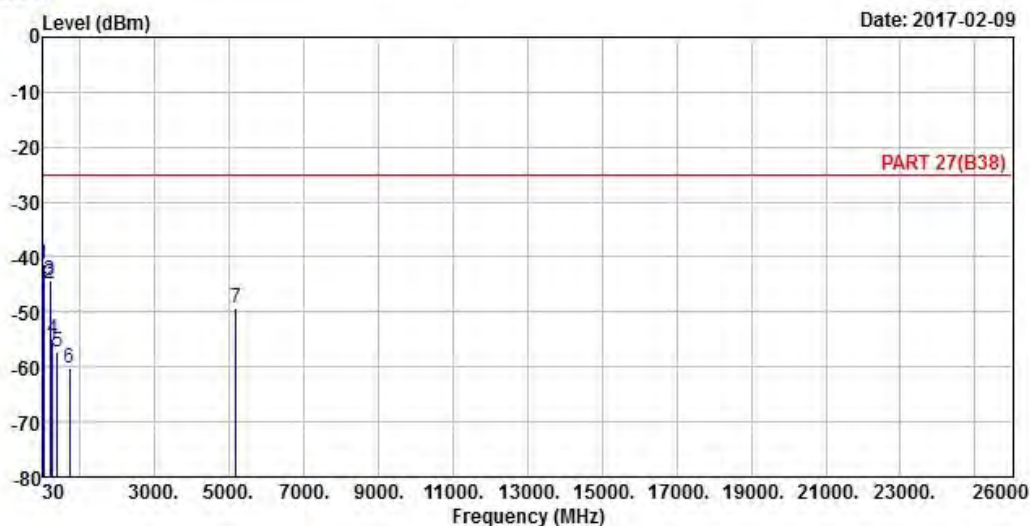
			Read	Limit	Over		
	Freq	Level	Level	Line	Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	41.64	-55.33	-54.92	-13.00	-42.33	-0.41	Peak
2	46.49	-65.31	-62.31	-13.00	-52.31	-3.00	Peak
3	114.39	-61.02	-50.91	-13.00	-48.02	-10.11	Peak
4	221.09	-45.01	-37.85	-13.00	-32.01	-7.16	Peak
5	269.59	-49.60	-43.21	-13.00	-36.60	-6.39	Peak
6	444.19	-62.55	-56.95	-13.00	-49.55	-5.60	Peak
7 pp	5190.00	-50.22	-47.36	-25.00	-25.22	-2.86	Peak



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 8



Site : 966 Chamber 5

Condition: PART 27(B38) VERTICAL

Remak : LTE Band 38 QPSK_20M_M-CH Link

Tested by: Getaz Yang

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	46.49	-41.41	-38.41	-13.00	-28.41	-3.00	Peak
2	206.54	-44.74	-36.99	-13.00	-31.74	-7.75	Peak
3	215.27	-44.38	-36.98	-13.00	-31.38	-7.40	Peak
4	271.53	-54.99	-48.56	-13.00	-41.99	-6.43	Peak
5	402.48	-57.27	-51.34	-13.00	-44.27	-5.93	Peak
6	733.25	-60.36	-60.91	-13.00	-47.36	0.55	Peak
7 pp	5190.00	-49.43	-46.57	-25.00	-24.43	-2.86	Peak

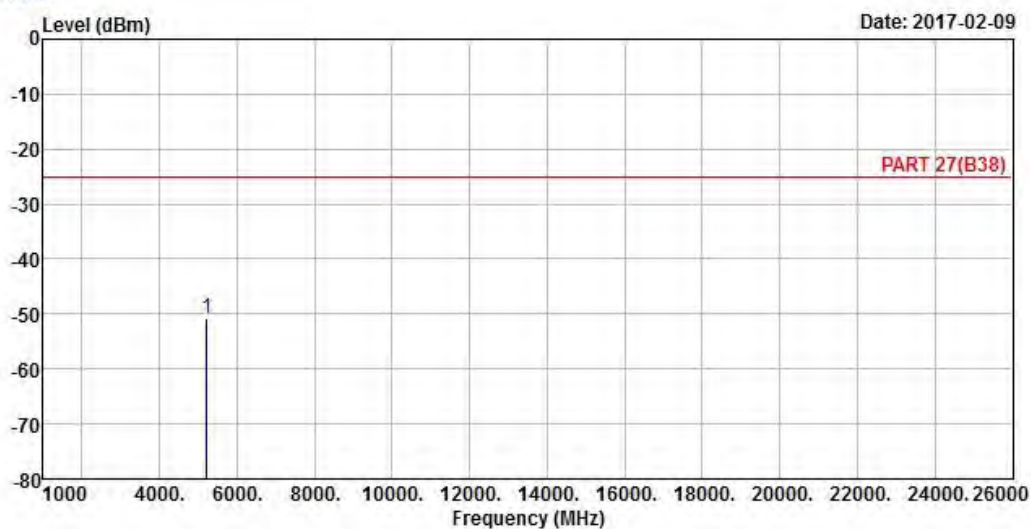
High Channel



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 5



Site : 966 Chamber 5
 Condition: PART 27(B38) HORIZONTAL
 Remak : LTE Band 38 QPSK_20M_H-CH Link
 Tested by: Getaz Yang

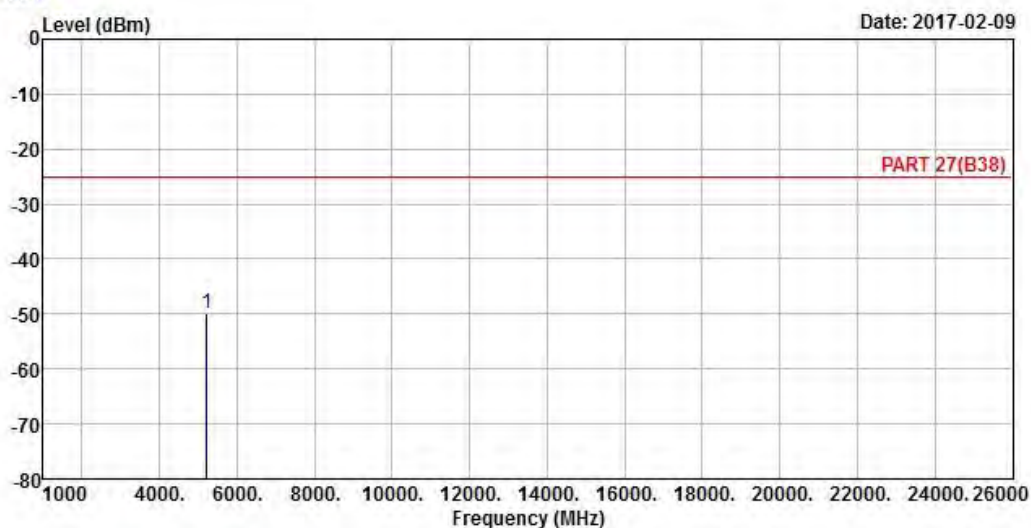
		Read	Limit	Over		
Freq	Level	Level	Line	Limit	Factor	Remark
MHz	dBm	dBm	dBm	dB	dB	
1 pp 5220.00	-50.76	-48.00	-25.00	-25.76	-2.76	Peak



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 6



Site : 966 Chamber 5

Condition: PART 27(B38) VERTICAL

Remak : LTE Band 38 QPSK_20M_H-CH Link

Tested by: Getaz Yang

Freq	Level	Read	Limit	Over	Factor	Remark
		Level	Line	Limit		
MHz	dBm	dBm	dBm	dB	dB	
1 pp 5220.00	-49.88	-47.12	-25.00	-24.88	-2.76	Peak

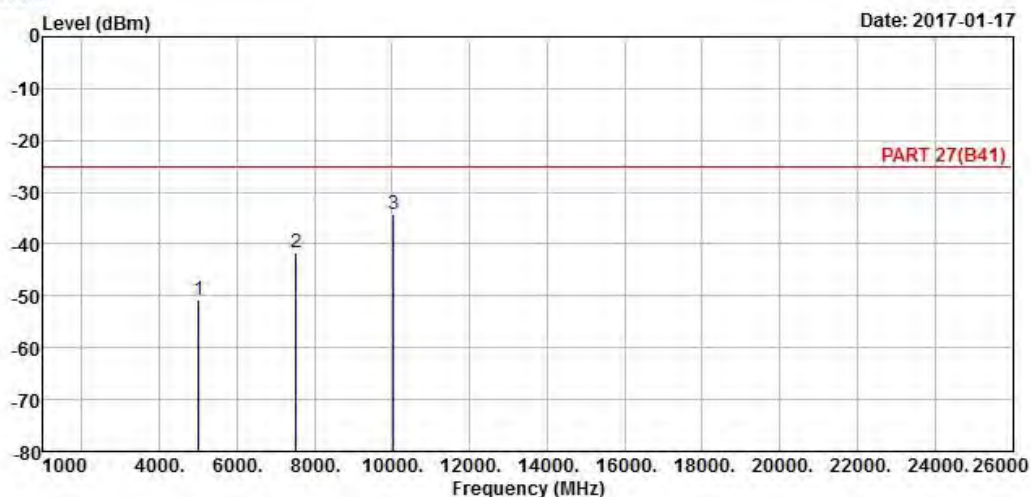
LTE Band 41
Channel Bandwidth: 20 MHz / QPSK
Low Channel



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 5



Site : 966 Chamber 5
Condition: PART 27(B41) HORIZONTAL
Remak : LTE Band 41 QPSK_20M_L-CH Link
Tested by: Getaz Yang

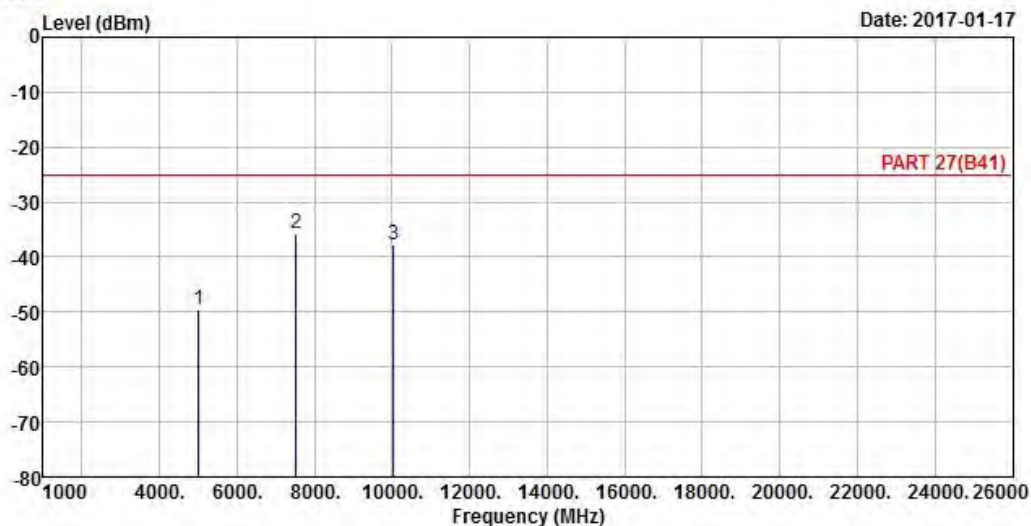
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	5012.00	-50.71	-47.48	-25.00	-25.71	-3.23	Peak
2	7518.00	-41.73	-47.32	-25.00	-16.73	5.59	Peak
3 pp	10024.00	-34.20	-43.13	-25.00	-9.20	8.93	Peak



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 6



Site : 966 Chamber 5

Condition: PART 27(B41) VERTICAL

Remak : LTE Band 41 QPSK_20M_L-CH Link

Tested by: Getaz Yang

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	5012.00	-49.47	-46.24	-25.00	-24.47	-3.23	Peak
2 pp	7518.00	-35.84	-41.43	-25.00	-10.84	5.59	Peak
3	10024.00	-37.77	-46.70	-25.00	-12.77	8.93	Peak

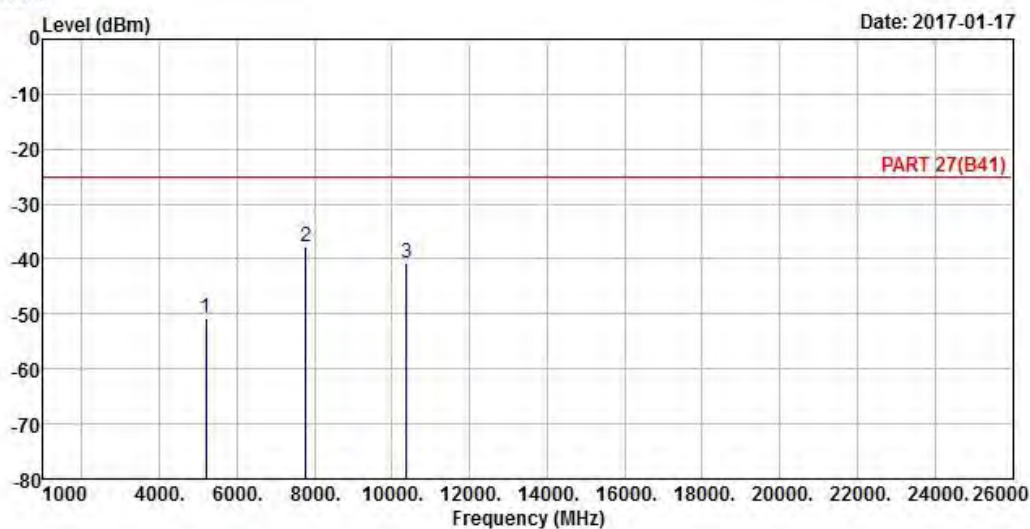
Middle Channel



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 5



Site : 966 Chamber 5

Condition: PART 27(B41) HORIZONTAL

Remak : LTE Band 41 QPSK_20M_M-CH Link

Tested by: Getaz Yang

			Read	Limit	Over		
	Freq	Level	Level	Line	Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	5186.00	-50.79	-47.93	-25.00	-25.79	-2.86	Peak
2 pp	7779.00	-37.82	-42.94	-25.00	-12.82	5.12	Peak
3	10372.00	-40.84	-49.17	-25.00	-15.84	8.33	Peak

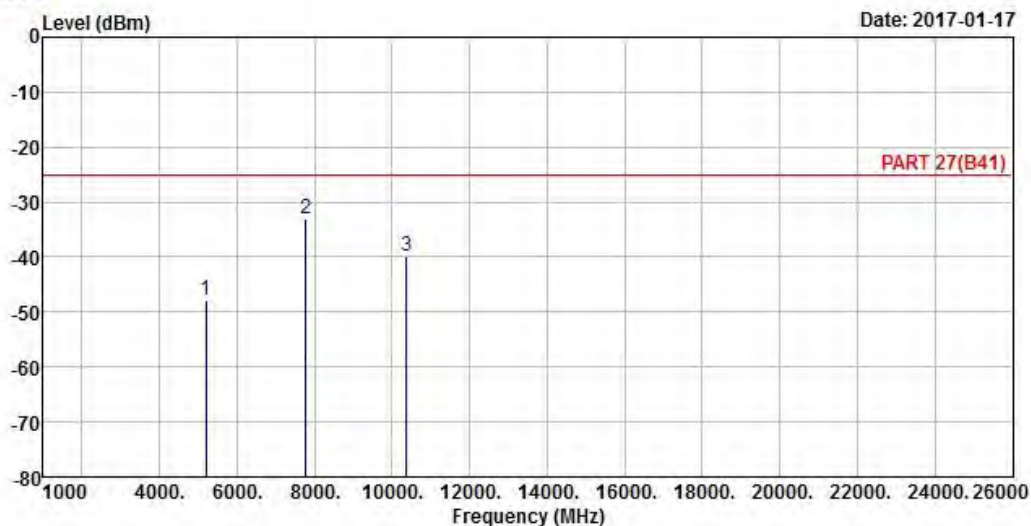


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 6

Date: 2017-01-17



Site : 966 Chamber 5

Condition: PART 27(B41) VERTICAL

Remak : LTE Band 41 QPSK_20M_M-CH Link

Tested by: Getaz Yang

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	5186.00	-47.95	-45.09	-25.00	-22.95	-2.86	Peak
2 pp	7779.00	-33.08	-38.20	-25.00	-8.08	5.12	Peak
3	10372.00	-39.99	-48.32	-25.00	-14.99	8.33	Peak

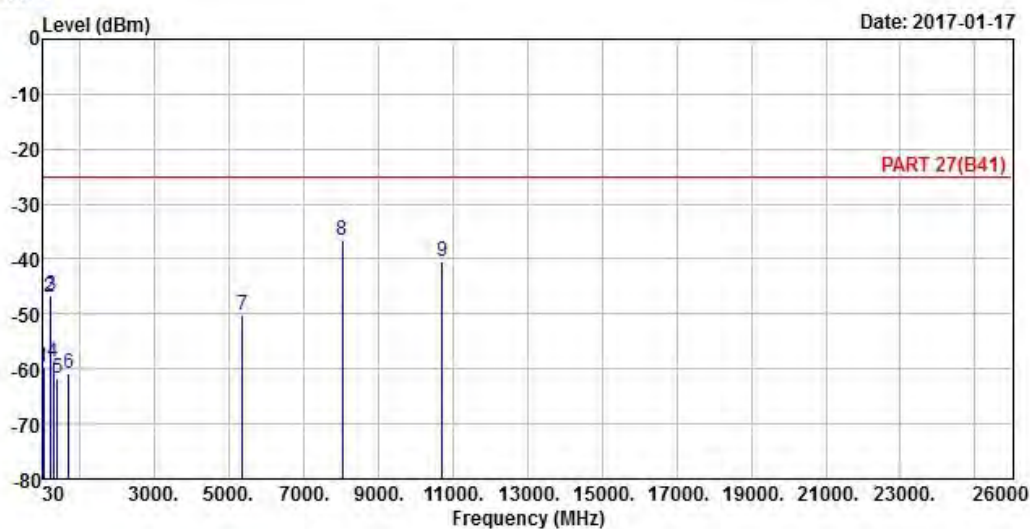
High Channel



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 9



Site : 966 Chamber 5
Condition: PART 27(B41) HORIZONTAL
Remak : LTE Band 41 QPSK_20M_H-CH Link
Tested by: Getaz Yang

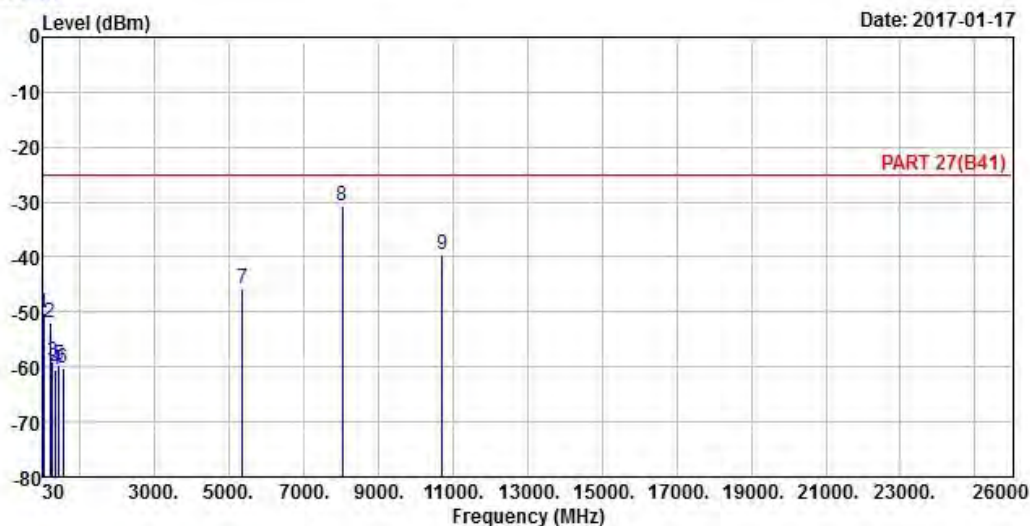
			Read	Limit	Over		
	Freq	Level	Level	Line	Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	40.80	-59.65	-59.77	-25.00	-34.65	0.12	Peak
2	206.58	-46.97	-39.22	-25.00	-21.97	-7.75	Peak
3	234.12	-46.55	-39.89	-25.00	-21.55	-6.66	Peak
4	304.20	-58.73	-51.79	-25.00	-33.73	-6.94	Peak
5	400.10	-61.78	-55.84	-25.00	-36.78	-5.94	Peak
6	707.40	-60.96	-61.00	-25.00	-35.96	0.04	Peak
7	5360.00	-50.19	-48.19	-25.00	-25.19	-2.00	Peak
8 pp	8040.00	-36.46	-42.36	-25.00	-11.46	5.90	Peak
9	10720.00	-40.46	-48.64	-25.00	-15.46	8.18	Peak



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 10



Site : 966 Chamber 5
Condition: PART 27(B41) VERTICAL
Remak : LTE Band 41 QPSK_20M_H-CH Link
Tested by: Getaz Yang

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	41.34	-50.10	-49.69	-25.00	-25.10	-0.41	Peak
2	206.85	-51.92	-44.17	-25.00	-26.92	-7.75	Peak
3	265.44	-59.07	-52.76	-25.00	-34.07	-6.31	Peak
4	365.80	-60.40	-54.25	-25.00	-35.40	-6.15	Peak
5	455.40	-59.63	-54.19	-25.00	-34.63	-5.44	Peak
6	554.80	-60.30	-57.65	-25.00	-35.30	-2.65	Peak
7	5360.00	-45.88	-43.88	-25.00	-20.88	-2.00	Peak
8 pp	8040.00	-30.68	-36.58	-25.00	-5.68	5.90	Peak
9	10720.00	-39.56	-47.74	-25.00	-14.56	8.18	Peak

5 Pictures of Test Arrangements

Please refer to the attached file (Test Setup Photo).

Appendix – Information on the Testing Laboratories

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

Linko EMC/RF Lab

Tel: 886-2-26052180

Fax: 886-2-26051924

Hsin Chu EMC/RF/Telecom Lab

Tel: 886-3-6668565

Fax: 886-3-6668323

Hwa Ya EMC/RF/Safety

Tel: 886-3-3183232

Fax: 886-3-3270892

Email: service.adt@tw.bureauveritas.com

Web Site: www.bureauveritas-adt.com

The address and road map of all our labs can be found in our web site also.

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