FCC Part 27 Test Report

Product Name : 4G/LTE Industrial M2M Router

Trade Name : BEC, Billion

Model No. : MX-230 M1

FCC ID : QI3BIL-MX230M1

Applicant : Billion Electric Co., Ltd.

Address : 8F., No.192, Sec. 2, Zhongxing Rd., Xindian Dist., New Taipei City 231, Taiwan (R.O.C.)

Date of Receipt : Jul. 03, 2018

Issued Date : Jul. 27, 2018

Report No. : 1870018R-HPUSP40V00

Report Version : V1.0

Testing Laboratory

3024

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Test Report Certification

Issued Date : Jul. 27, 2018
Report No. : 1870018R-HPUSP40V00

Product Name	:	4G/LTE Industrial M2M Router
Applicant	:	Billion Electric Co., Ltd.
Address	:	8F., No.192, Sec. 2, Zhongxing Rd., Xindian Dist., New Taipei City 231, Taiwan (R.O.C.)
Manufacturer	:	Billion Electric Co., Ltd.
Model No.	:	MX-230 M1
FCC ID	:	QI3BIL-MX230M1
EUT Voltage	:	Input: 100-240Vac, 50-60Hz Output: 12Vdc, 1.2A, 14.4W
Testing Voltage	:	AC 120V/60Hz
Trade Name	:	BEC, Billion
Applicable Standard	:	FCC CFR Title 47 Part 27 Subpart F ANSI C63.26-2015 KDB 971168 D01 Power Meas License Digital Systems v03
Test Lab	:	Hsin Chu Laboratory
Address	:	No.372-2, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County 310, Taiwan, R.O.C. TEL: +886-3-582-8001 / FAX: +886-3-582-8958
Test Result	:	Complied

Documented By : Dei-Chang

(Demi Chang / Senior Engineering Adm. Specialist)

Tested By : Max Chang

(Max Chang / Engineer)

Approved By : Roy Wang

(Roy Wang / Director)

Revision History

Report No.	Version	Description	Issued Date
1870018R-HPUSP40V00	V1.0	Initial issue of report	Jul. 27, 2018

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1. General Information

1.1. EUT Description

Product Name	4G/LTE Industrial M2M Router
Model No.	MX-230 M1
Trade Name	BEC, Billion
Tx Frequency Range	LTE Band 13: 777MHz~787MHz
Rx Frequency Range	LTE Band 13: 746MHz~756MHz
Modulation	QPSK/16QAM
HW Version	1.011
SW Version	1.04.1.248
IMEI No.	866425030420964

Accessories Information	
Power Adapter	Billion, PA1015-120HUB120 I/P : 100-240V, 50/60Hz, 0.4A O/P : 12V ⎓ 1.2A Cable Out: Non-Shielded, 2 m
Antenna	1 Pcs

Antenna Information	
MFR. / Model No.	Cortec / AN0727-64DP5BSM
Antenna Type	Dipole
Antenna Gain	0.28dBi

Note:

1. This 4G/LTE Industrial M2M Router support LTE Cat-M1 with Band 13.
2. Regarding frequency band operation, the lowest, middle and highest frequency of channel were selected to perform the test, and the details were shown on this report.

1.2. Mode of Operation

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
Mode 1: LTE_CAT-M1_Band 13_QPSK_Link Mode 2: LTE_CAT-M1_Band 13_16-QAM_Link

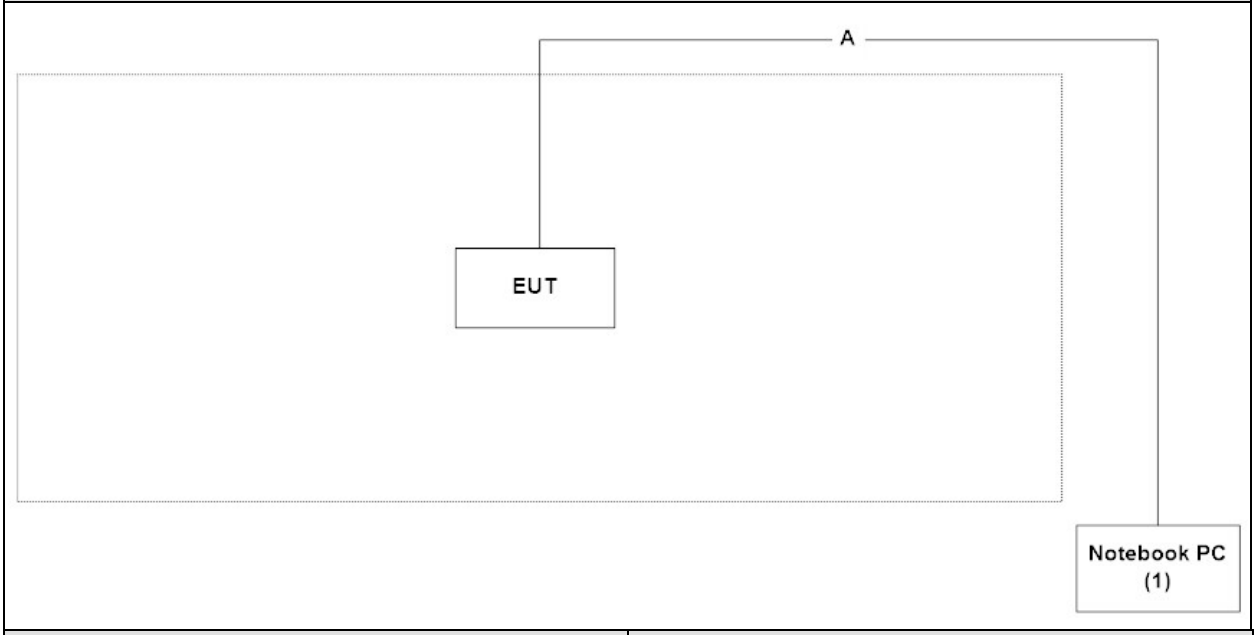
1.3. Tested System Details

The types for all equipment, plus descriptions of all cables used in the tested system (including inserted cards) are:

Product		Manufacturer	Model No.	Serial No.	Power Cord
1	Notebook PC	HP	NX6320	CNU62D1F5Y	Non-Shielded, 1.8m

1.4. Configuration of Tested System

Connection Diagram



Signal Cable Type		Signal cable Description
A	LAN Cable	Non-Shielded, 1m.

1.5. EUT Exercise Software

1	Setup the EUT and simulators as shown on 1.4.
2	Turn on the power of all equipment.
3	The EUT will continue receive the signal from LTE Cat-M1 function.
4	Repeat the above procedure (3)

2. Technical Test

2.1. Summary of Test Result

☒ No deviations from the test standards

☐ Deviations from the test standards as below description:

FCC CFR Title 47 Part 27 Subpart F

Performed Item	FCC Rule	Limit	Result	Test Site
RF Output Power	§2.1033 §2.1046 §27.50	3 Watts(ERP)	Pass	3
Occupied Bandwidth	§2.1049	N/A	Pass	3
Peak To Average Ratio	§27.50	< 13 dB	Pass	3
Spurious Emission	§2.1053 §27.53	< -13 dBm	Pass	2/3
Conducted Band Edge Emission	§27.53	< -13 dBm	Pass	3
Frequency Stability Under Temperature & Voltage Variations	§2.1055 §27.54	< ±2.5 ppm	Pass	3

Note: Test site information refers to Laboratory Information.

2.2. Test Environment

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	23
Humidity (%RH)	25-75	52
Barometric pressure (mbar)	860-1060	950-1000

Note: Test site information refers to Laboratory Information.

USA	**:**	**FCC Registration Number: TW3024**

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

If you have any comments, Please don't hesitate to contact us. Our test sites as below:

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2.3. List of Test Equipment

RF Output Power / SR10-H

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
High Speed Peak Power Meter Dual Input	Anritsu	ML2496A	1602004	2018/01/02	2019/01/01
Pulse Power Sensor	Anritsu	MA2411B	1531043	2018/01/02	2019/01/01
Pulse Power Sensor	Anritsu	MA2411B	1531044	2018/01/02	2019/01/01
Wideband Radio Communication Tester	R&S	CMW500	150246	2018/03/30	2019/03/29
Directional Coupler	Agilent	778D	20402	2017/09/25	2018/09/24

Occupied Bandwidth / SR10-H

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
Signal Analyzer	R&S	FSVA40	101455	2017/11/21	2018/11/20
Wideband Radio Communication Tester	R&S	CMW500	150246	2018/03/30	2019/03/29
Directional Coupler	Agilent	778D	20402	2017/09/25	2018/09/24

Peak To Average Ratio / SR10-H

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
Signal Analyzer	R&S	FSVA40	101455	2017/11/21	2018/11/20
Wideband Radio Communication Tester	R&S	CMW500	150246	2018/03/30	2019/03/29
Directional Coupler	Agilent	778D	20402	2017/09/25	2018/09/24

Conducted Spurious Emissions / SR10-H

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
Signal Analyzer	R&S	FSVA40	101455	2017/11/21	2018/11/20
Wideband Radio Communication Tester	R&S	CMW500	150246	2018/03/30	2019/03/29
Directional Coupler	Agilent	778D	20402	2017/09/25	2018/09/24

Radiated Spurious Emissions / CB4-H

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
Signal Analyzer	R&S	FSVA40	101455	2017/11/21	2018/11/20
Spectrum Analyzer	R&S	FSV40	101049	2018/01/10	2019/01/09
EXA Signal Analyzer	Keysight	N9010A	MY51440132	2018/03/05	2019/03/04
Bilog Antenna	Teseq	CBL6112D	23191	2018/06/26	2019/06/25
Horn Antenna	Schwarzbeck	BBHA 9120D	639	2018/06/01	2019/05/31
Horn Antenna	Schwarzbeck	BBHA 9170	202	2018/01/31	2019/01/30
Pre-Amplifier	DEKRA.	AP-025C	201801235	2018/03/12	2019/03/11
Pre-Amplifier	EMCI	EMCI 1830I	980366	2018/01/08	2019/01/07
Pre-Amplifier	Dekra	AP-400C	201801231	2017/12/13	2018/12/12

Conducted Band Edge Emission / SR10-H

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
Signal Analyzer	R&S	FSVA40	101455	2017/11/21	2018/11/20
Wideband Radio Communication Tester	R&S	CMW500	150246	2018/03/30	2019/03/29
Directional Coupler	Agilent	778D	20402	2017/09/25	2018/09/24

Frequency Stability Under Temperature & Voltage Variations / SR10-H

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
Signal Analyzer	R&S	FSVA40	101455	2017/11/21	2018/11/20
Wideband Radio Communication Tester	R&S	CMW500	150246	2018/03/30	2019/03/29
Temperature & Humidity Chamber	WIT	TH-1S-B	1082101	2018/01/23	2019/01/22

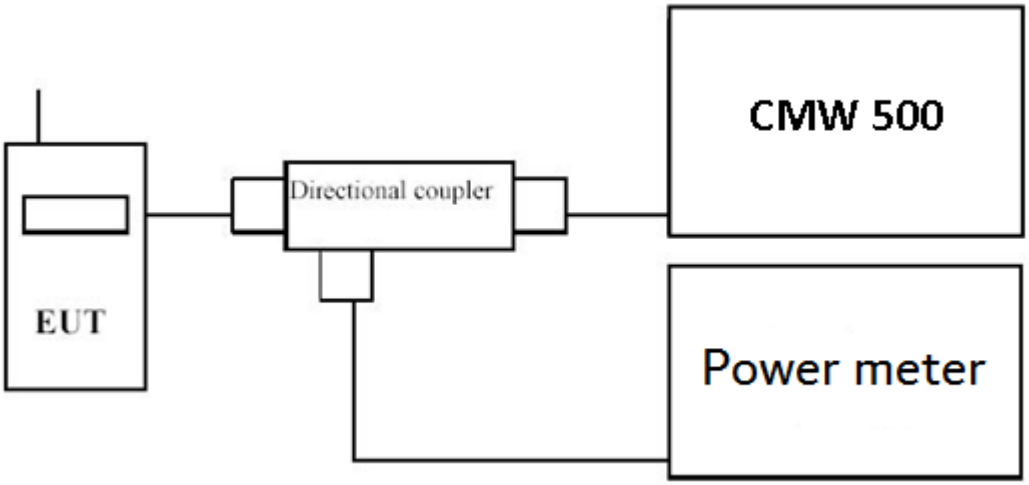
Note: All equipment upon which need to calibrated are with calibration period of 1 year.

2.4. Measurement Uncertainty

Test Item	Uncertainty
RF Output Power	± 1.27dB.
Occupied Bandwidth	± 10 Hz
Peak To Average Ratio	In measuring transmissions in this band using an average power technique, the peak to-average ratio (PAR) of the transmission may not exceed 13dB.
Conducted Spurious Emissions	The measurement uncertainty is defined as ± 1.27 dB for Conducted Measurement.
Radiated Spurious Emissions	The measurement uncertainty is defined as ± 3.2 dB for Radiated Measurement.
Conducted Band Edge Emission	± 3.2dB
Frequency Stability	± 10 Hz

3. RF Output Power

3.1. Test Setup



3.2. Test Procedure

a) The RF output of the transmitter was connected to base station simulator.
b) The RF output of EUT was connected to the power meter by RF cable and attenuator. The path loss was compensated to the results for each measurement.
c) Set EUT at maximum average power by base station emulator.
d) Measure lowest, middle, and highest channels for each bandwidth and different modulation.

Effective Isotropic Radiated Power= Conducted Power(dBm) + Antenna Gain(dBi)
Effective Radiated Power= Conducted Power(dBm) + Antenna Gain(dBi)-2.15dB

3.3. Test Method

KDB 971168 D01 Power Meas License Digital Systems v03 sub-clause5.2.4
ANSI C63.26-2015 Sub-clause 5.2.4.2

3.4. Test Result

Product	4G/LTE Industrial M2M Router		
Test Item	RF Power Output		
Test Mode	Mode 1: LTE_CAT-M1_Band 13_QPSK_Link Mode 2: LTE_CAT-M1_Band 13_16-QAM_Link		
Date of Test	2018/07/09	Test Site	SR10-H

LTE_Band 13_5M_QPSK_1RB0_Link					
Frequency (MHz)	Average Power				Limit (W) ERP
	Reading Level (dBm)	Antenna Gain (dBi) (Note 2)	Measure Level (dBm) ERP	Measure Level (W) ERP	
779.5	23.73	0.28	21.86	0.15	3
782	23.82	0.28	21.95	0.16	3
784.5	23.55	0.28	21.68	0.15	3

LTE_Band 13_5M_QPSK_6RB0_Link					
Frequency (MHz)	Average Power				Limit (W) ERP
	Reading Level (dBm)	Antenna Gain (dBi) (Note 2)	Measure Level (dBm) ERP	Measure Level (W) ERP	
779.5	23.81	0.28	21.94	0.16	3
782	23.59	0.28	21.72	0.15	3
784.5	23.64	0.28	21.77	0.15	3

Note:

1. Measure Level (ERP) = Reading Level (dBm) + Antenna Gain (dBi) - 2.15dB
2. The usable maximum antenna gain is 0.28dBi.

LTE_Band 13_5M_16-QAM_1RB0_Link					
Frequency (MHz)	Average Power				Limit (W) ERP
	Reading Level (dBm)	Antenna Gain (dBi) (Note 2)	Measure Level (dBm) ERP	Measure Level (W) ERP	
779.5	23.63	0.28	21.76	0.15	3
782	23.72	0.28	21.85	0.15	3
784.5	23.58	0.28	21.71	0.15	3

LTE_Band 13_5M_16-QAM_1RB5_Link					
Frequency (MHz)	Average Power				Limit (W) ERP
	Reading Level (dBm)	Antenna Gain (dBi) (Note 2)	Measure Level (dBm) ERP	Measure Level (W) ERP	
779.5	23.58	0.28	21.71	0.15	3
782	23.51	0.28	21.64	0.15	3
784.5	23.56	0.28	21.69	0.15	3

LTE_Band 13_5M_16-QAM_5RB0_Link					
Frequency (MHz)	Average Power				Limit (W) ERP
	Reading Level (dBm)	Antenna Gain (dBi) (Note 2)	Measure Level (dBm) ERP	Measure Level (W) ERP	
779.5	23.91	0.28	22.04	0.16	3
782	23.72	0.28	21.85	0.15	3
784.5	23.71	0.28	21.84	0.15	3

LTE_Band 13_5M_16-QAM_5RB1_Link					
Frequency (MHz)	Average Power				Limit (W) ERP
	Reading Level (dBm)	Antenna Gain (dBi) (Note 2)	Measure Level (dBm) ERP	Measure Level (W) ERP	
779.5	23.90	0.28	22.03	0.16	3
782	23.73	0.28	21.86	0.15	3
784.5	23.72	0.28	21.85	0.15	3

Note:

1. Measure Level (ERP) = Reading Level (dBm) + Antenna Gain (dBi) - 2.15dB
2. The usable maximum antenna gain is 0.28dBi.

LTE_Band 13_10M_QPSK_1RB0_Link					
Frequency (MHz)	Average Power				Limit (W) ERP
	Reading Level (dBm)	Antenna Gain (dBi) (Note 2)	Measure Level (dBm) ERP	Measure Level (W) ERP	
782	23.67	0.28	21.8	0.15	3

LTE_Band 13_10M_QPSK_6RB0_Link					
Frequency (MHz)	Average Power				Limit (W) ERP
	Reading Level (dBm)	Antenna Gain (dBi) (Note 2)	Measure Level (dBm) ERP	Measure Level (W) ERP	
782	23.66	0.28	21.79	0.15	3

Note:

1. Measure Level (ERP) = Reading Level (dBm) + Antenna Gain (dBi) - 2.15dB
2. The usable maximum antenna gain is 0.28dBi.

LTE_Band 13_10M_16-QAM_3RB0_Link					
Frequency (MHz)	Average Power				Limit (W) ERP
	Reading Level (dBm)	Antenna Gain (dBi) (Note 2)	Measure Level (dBm) ERP	Measure Level (W) ERP	
782	23.75	0.28	21.88	0.15	3

LTE_Band 13_10M_16-QAM_3RB3_Link					
Frequency (MHz)	Average Power				Limit (W) ERP
	Reading Level (dBm)	Antenna Gain (dBi) (Note 2)	Measure Level (dBm) ERP	Measure Level (W) ERP	
782	23.80	0.28	21.93	0.16	3

LTE_Band 13_10M_16-QAM_5RB0_Link					
Frequency (MHz)	Average Power				Limit (W) ERP
	Reading Level (dBm)	Antenna Gain (dBi) (Note 2)	Measure Level (dBm) ERP	Measure Level (W) ERP	
782	24.08	0.28	22.21	0.17	3

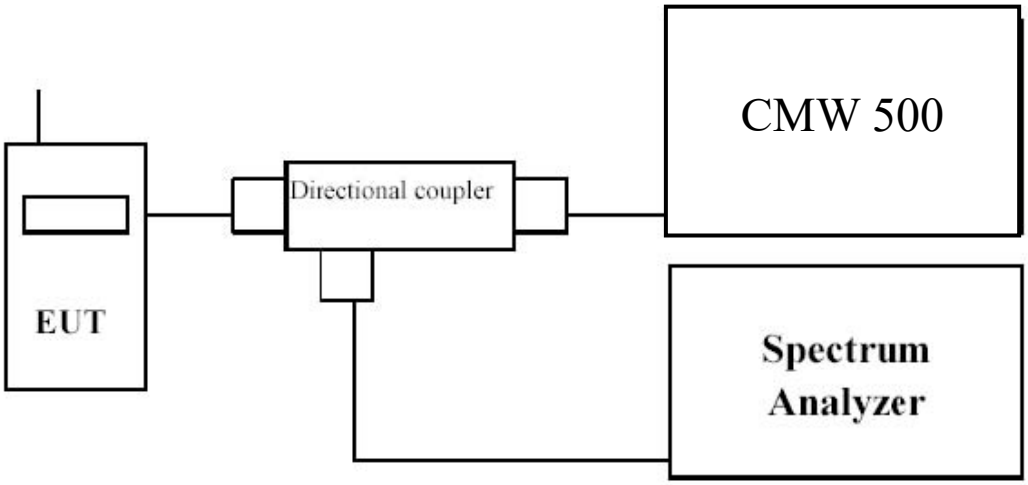
LTE_Band 13_10M_16-QAM_5RB1_Link					
Frequency (MHz)	Average Power				Limit (W) ERP
	Reading Level (dBm)	Antenna Gain (dBi) (Note 2)	Measure Level (dBm) ERP	Measure Level (W) ERP	
782	23.99	0.28	22.12	0.16	3

Note:

1. Measure Level (ERP) = Reading Level (dBm) + Antenna Gain (dBi) - 2.15dB
2. The usable maximum antenna gain is 0.28dBi.

4. Occupied Bandwidth

4.1. Test Setup



4.2. Test Procedure

1. The EUT was connected to Spectrum Analyzer and Base Station via power divider.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. The 26 dB bandwidth and 99% occupied bandwidth of the low & middle & high channel for the highest RF powers were measured.

4.3. Test Method

KDB 971168 D01 Power Meas License Digital Systems v03 sub-clause4.2 & 4.3
ANSI C63.26-2015 Sub-clause 5.4.3 & 5.4.4

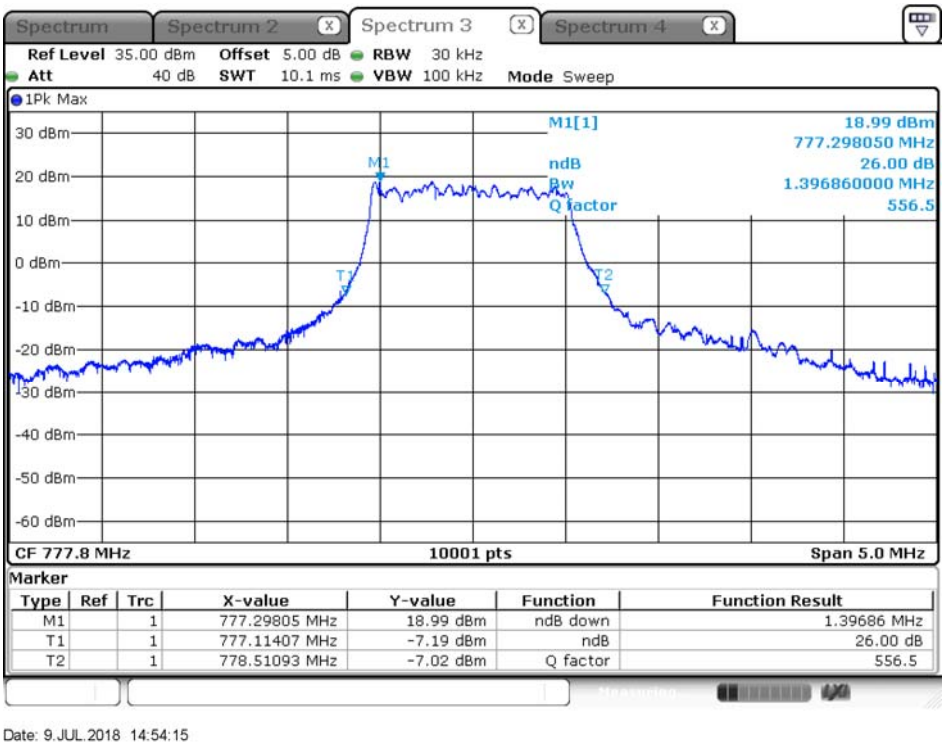
4.4. Test Result

Product	4G/LTE Industrial M2M Router		
Test Item	-26 dB & 99% bandwidth		
Test Mode	Mode 1: LTE_CAT-M1_Band 13_QPSK_Link		
Date of Test	2018/07/09	Test Site	SR10-H

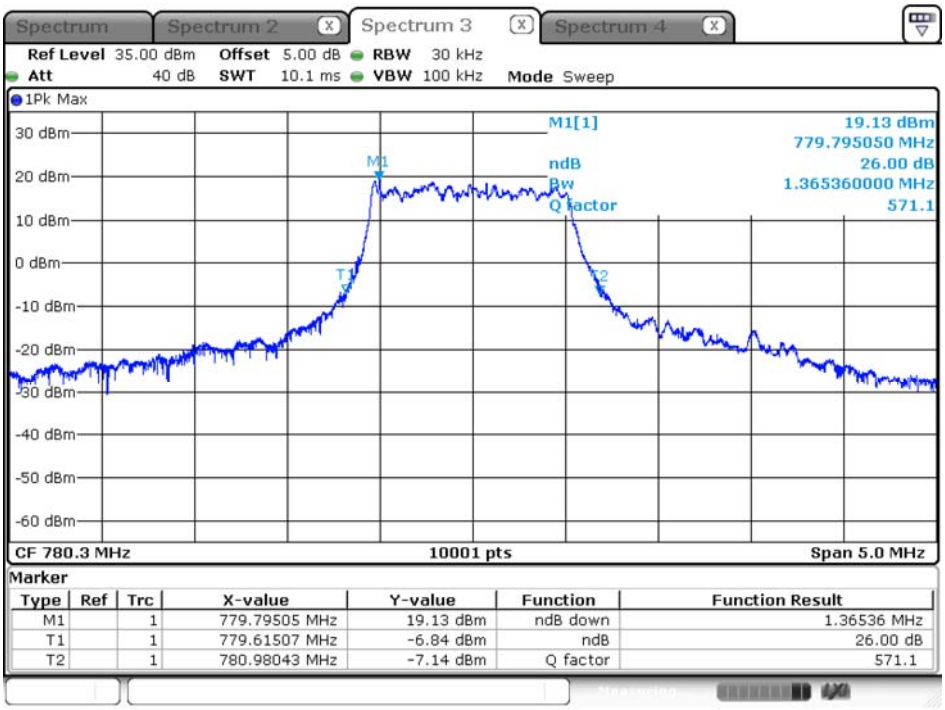
CAT_M1_Band13_5M_QPSK

Frequency (MHz)	-26dB BW Measure Level (MHz)	99% BW Measure Level (MHz)	Limit (MHz)
779.5	1.397	1.118	N/A
782.0	1.366	1.113	N/A
784.5	1.363	1.117	N/A

779.5 MHz_QPSK_(-26dB BW)



782.0 MHz_QPSK_(-26dB BW)



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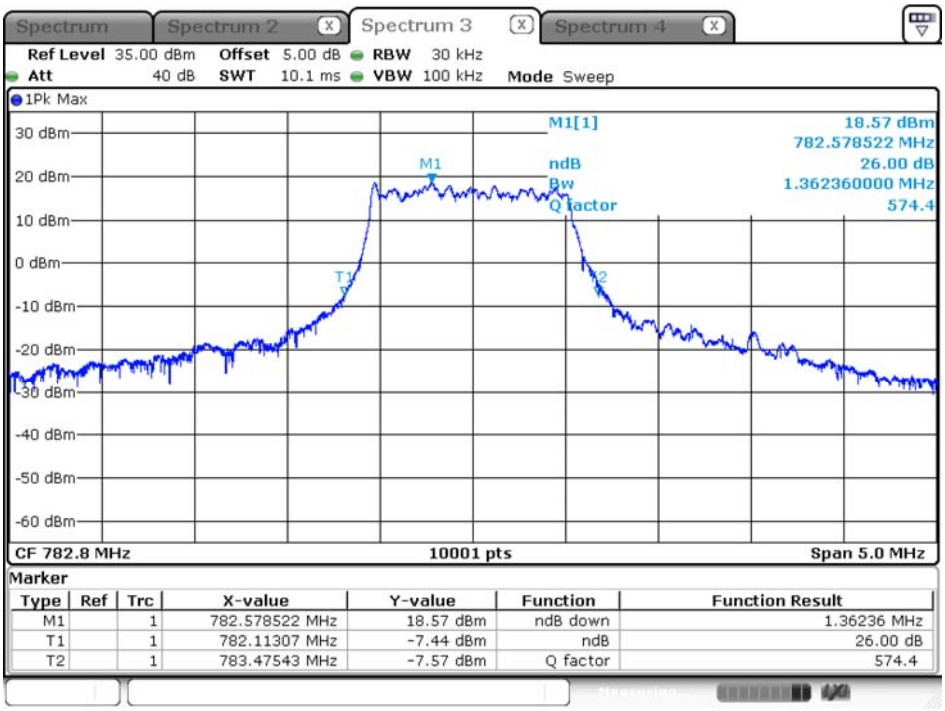
784.5 MHz_QPSK_(-26dB BW)



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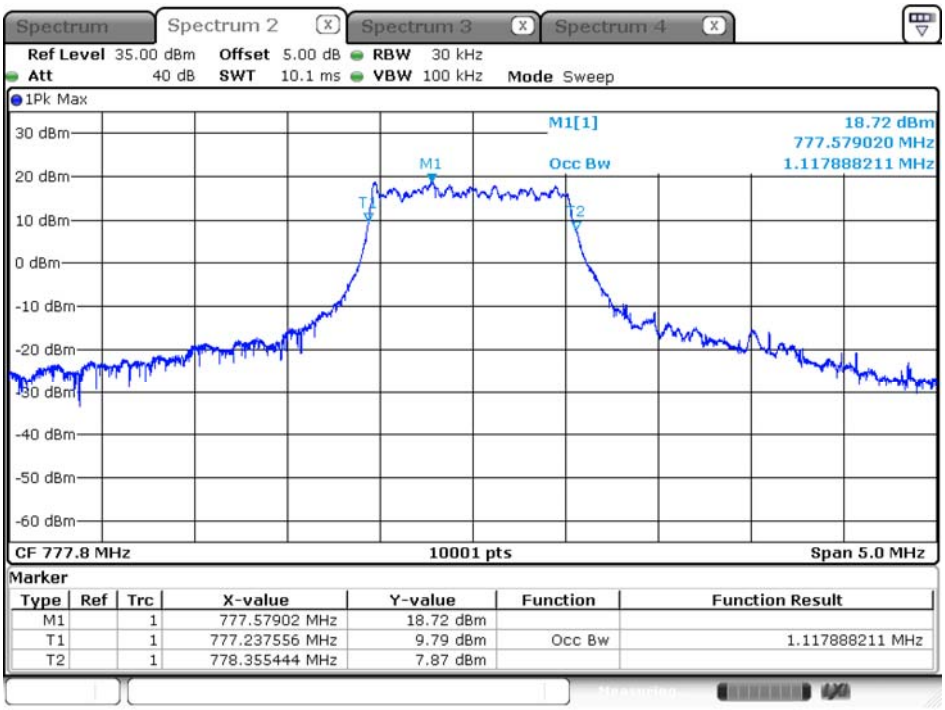
779.5 MHz_QPSK_(99% BW)



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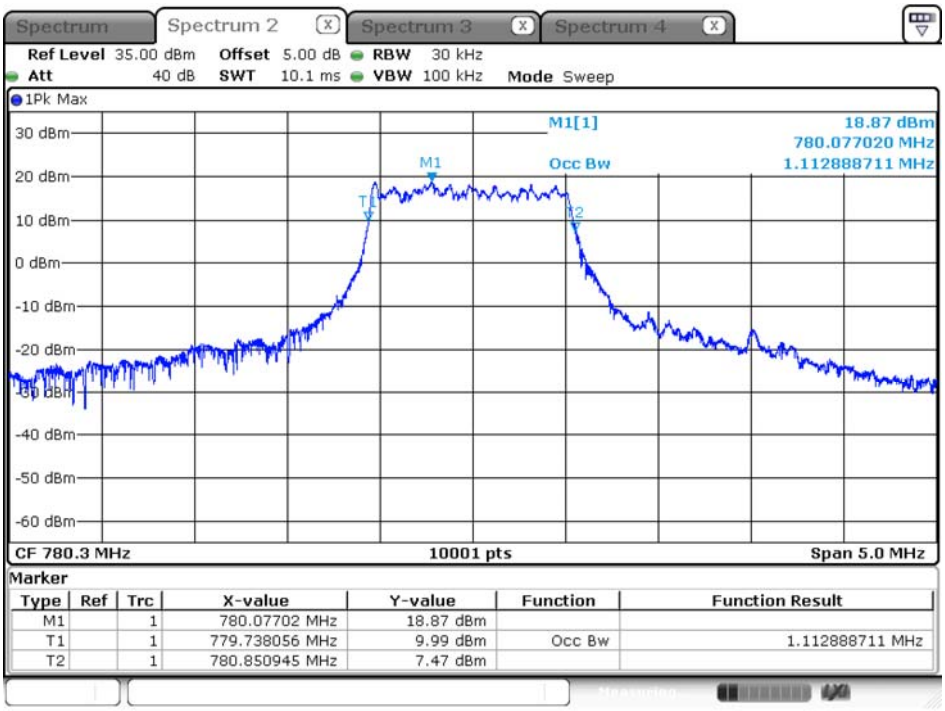
782.0 MHz_QPSK_(99% BW)



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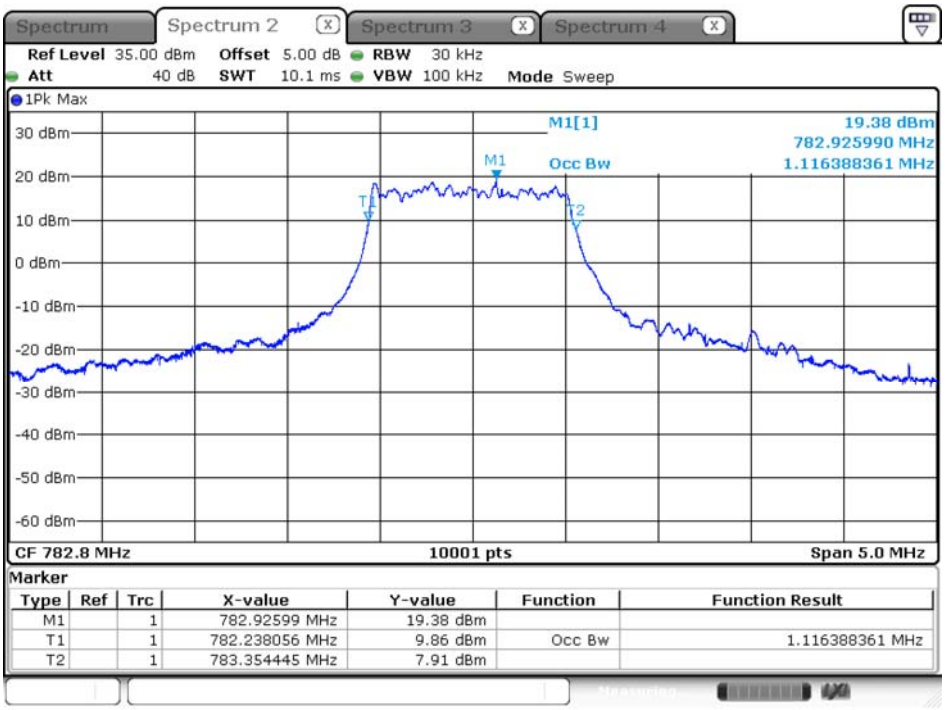
784.5 MHz_QPSK_(99% BW)

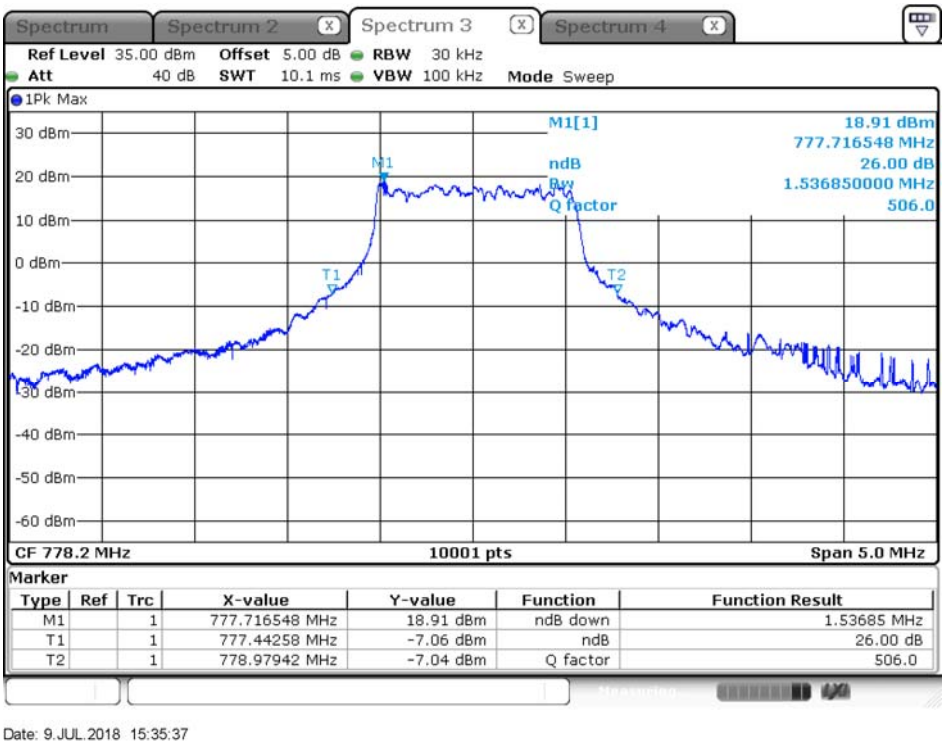


Product	4G/LTE Industrial M2M Router		
Test Item	-26 dB & 99% bandwidth		
Test Mode	Mode 1: LTE_CAT-M1_Band 13_QPSK_Link		
Date of Test	2018/07/09	Test Site	SR10-H

CAT_M1_Band13_10M_QPSK

Frequency (MHz)	-26dB BW Measure Level (MHz)	99% BW Measure Level (MHz)	Limit (MHz)
782	1.537	1.108	N/A

782 MHz_QPSK_(-26dB BW)



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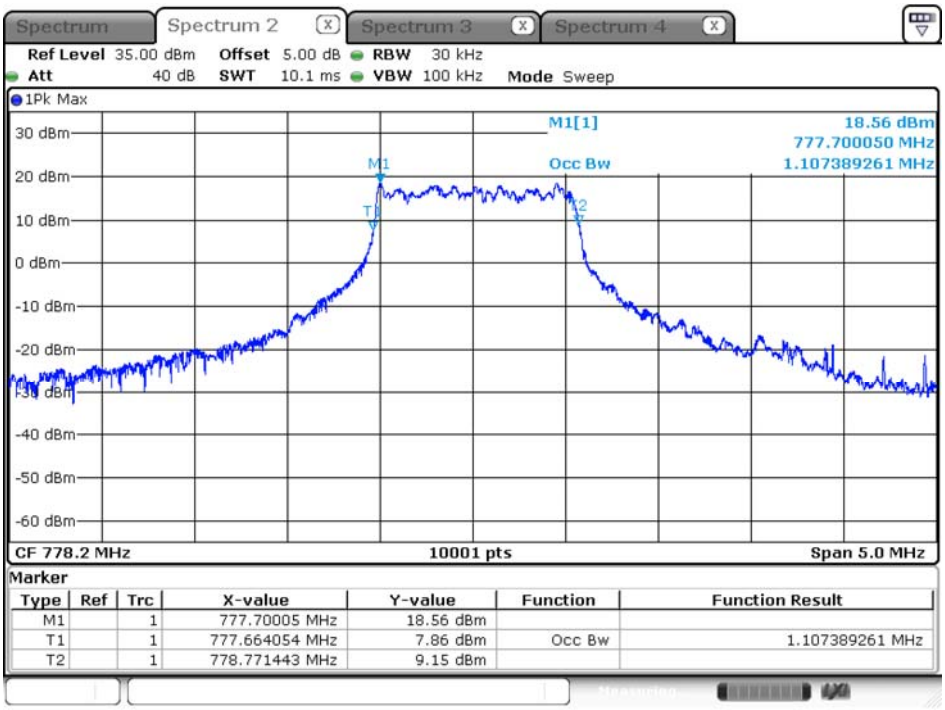
782 MHz_QPSK_(99% BW)



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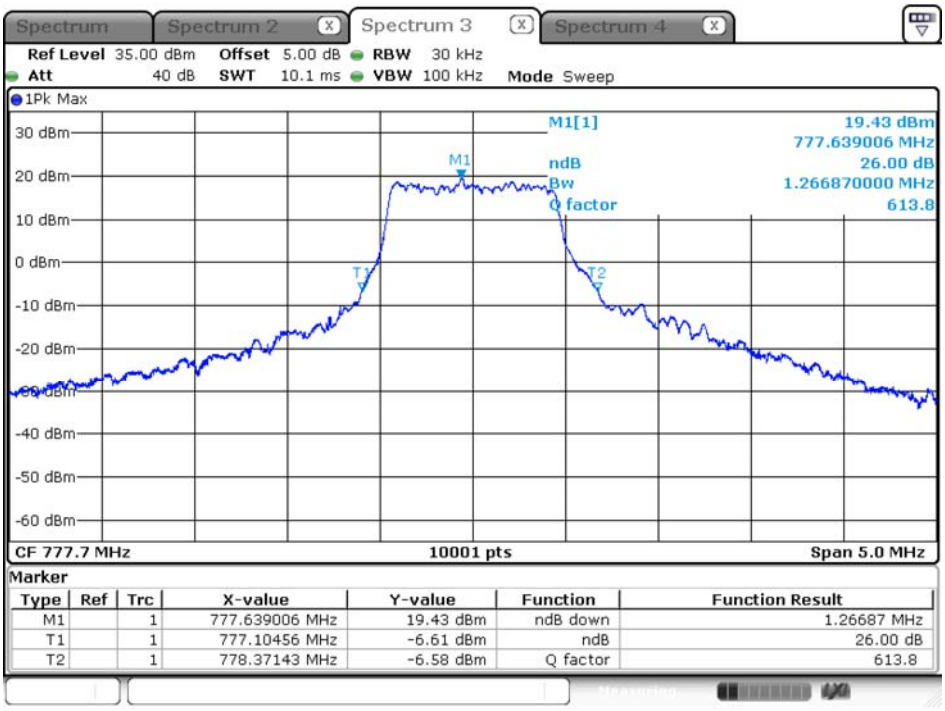
Product	4G/LTE Industrial M2M Router		
Test Item	-26 dB & 99% bandwidth		
Test Mode	Mode 2: LTE_CAT-M1_Band 13_16-QAM_Link		
Date of Test	2018/07/09	Test Site	SR10-H

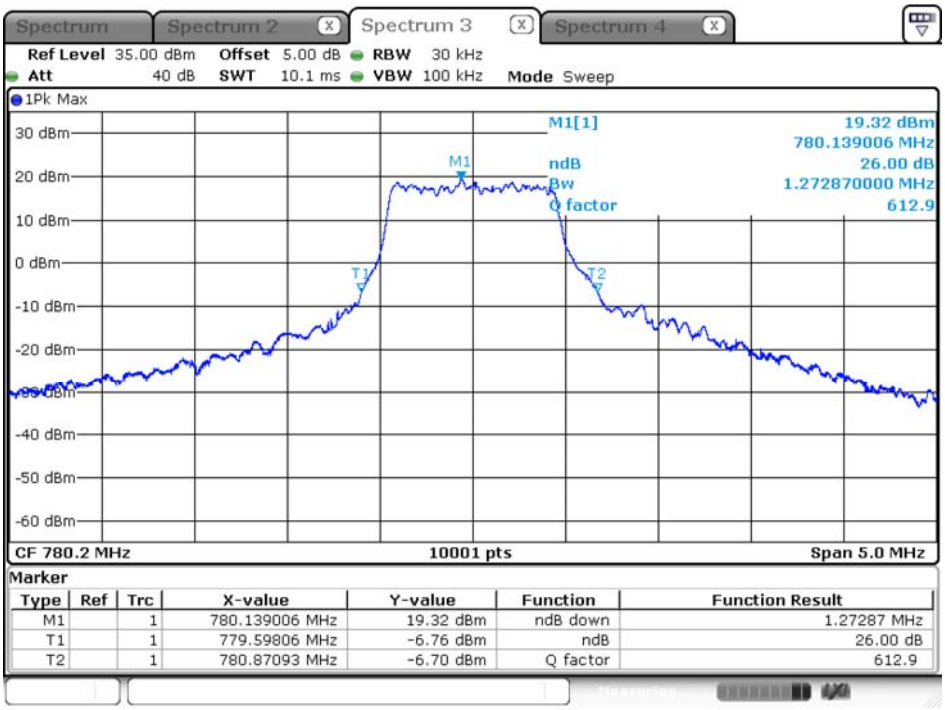
CAT_M1_Band13_5M_16-QAM

Frequency (MHz)	-26dB BW Measure Level (MHz)	99% BW Measure Level (MHz)	Limit (MHz)
779.5	1.267	0.948	N/A
782.0	1.273	0.947	N/A
784.5	1.244	0.950	N/A

779.5 MHz_16-QAM _(-26dB BW)

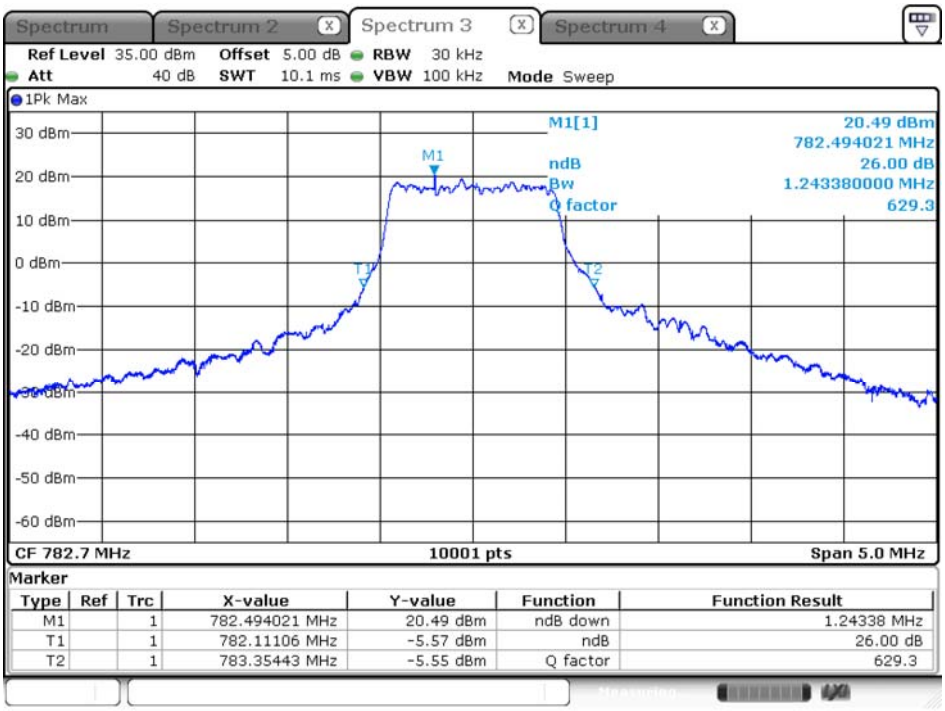


782.0 MHz_16-QAM_(-26dB BW)



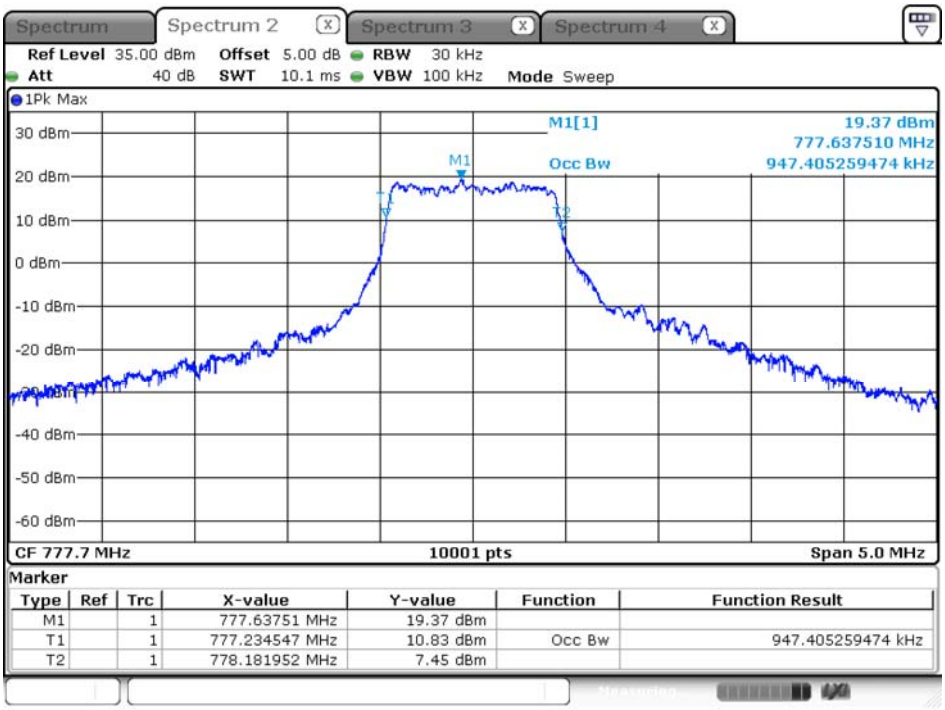
Date: 9.JUL.2018 15:03:21

784.5 MHz_16-QAM_(-26dB BW)



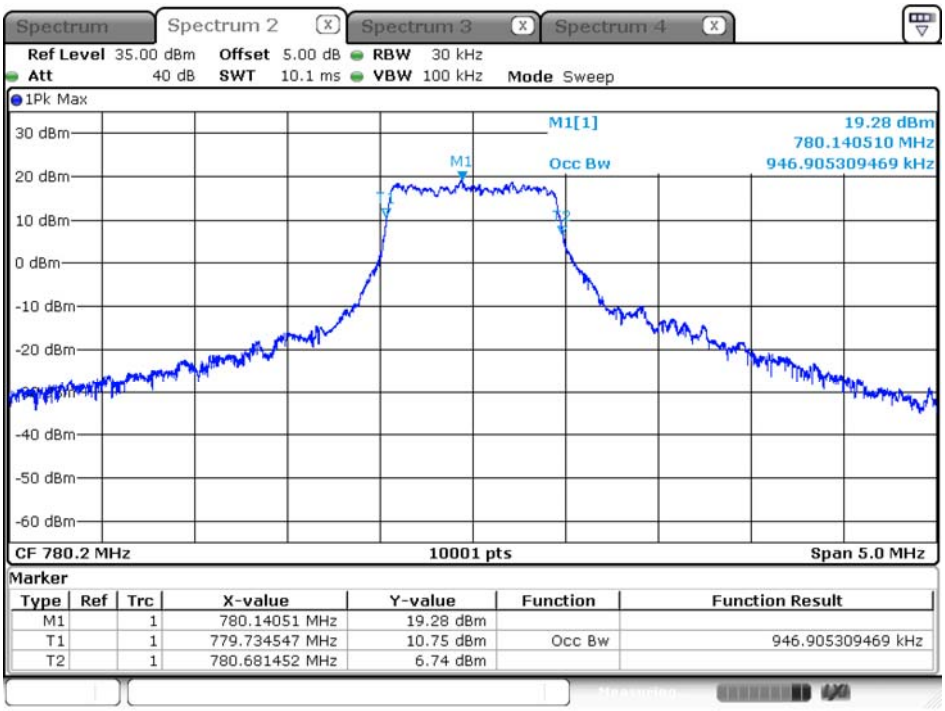
Date: 9.JUL.2018 15:22:27

779.5 MHz_16-QAM_(99% BW)



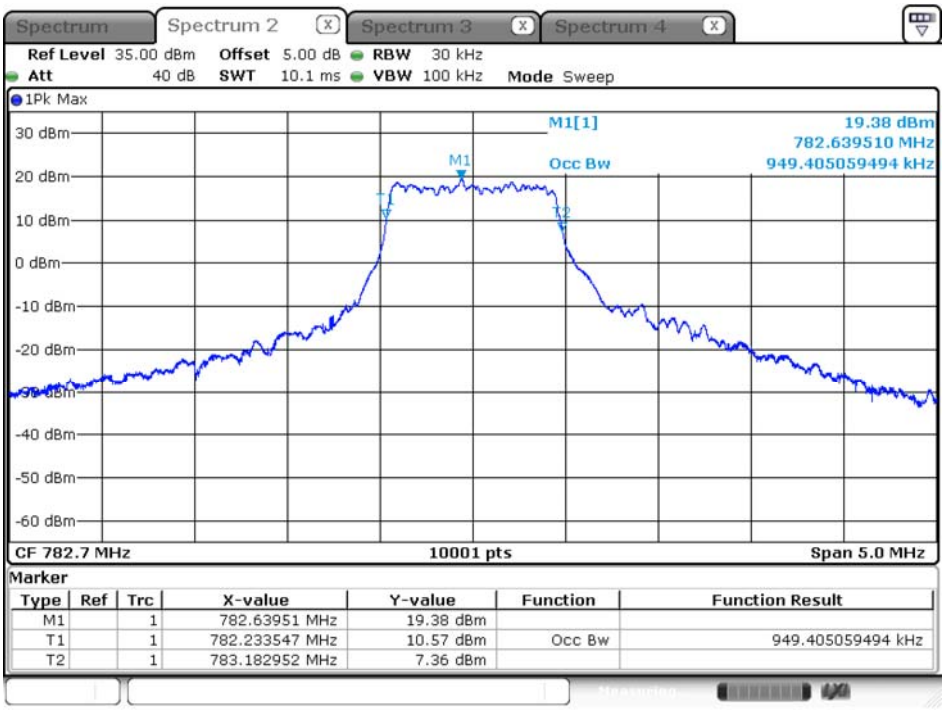
Date: 9.JUL.2018 15:13:10

782.0 MHz_16-QAM_(99% BW)



Date: 9.JUL.2018 14:59:31

784.5 MHz_16-QAM_(99% BW)



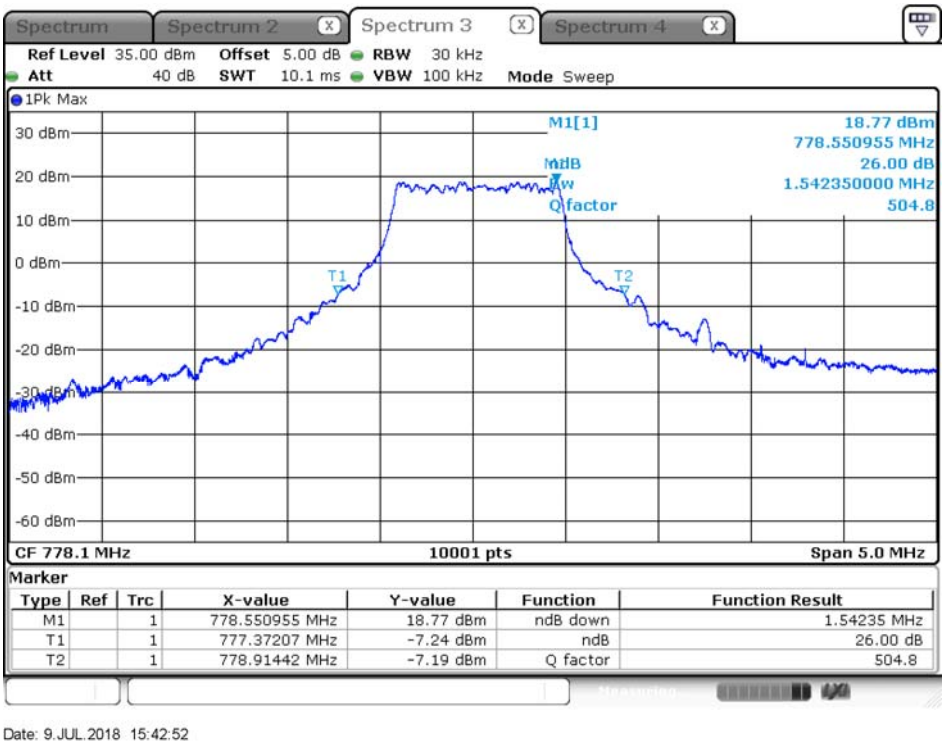
Date: 9.JUL.2018 15:18:05

Product	4G/LTE Industrial M2M Router		
Test Item	-26 dB & 99% bandwidth		
Test Mode	Mode 2: LTE_CAT-M1_Band 13_16-QAM_Link		
Date of Test	2018/07/09	Test Site	SR10-H

CAT_M1_Band13_10M_16-QAM

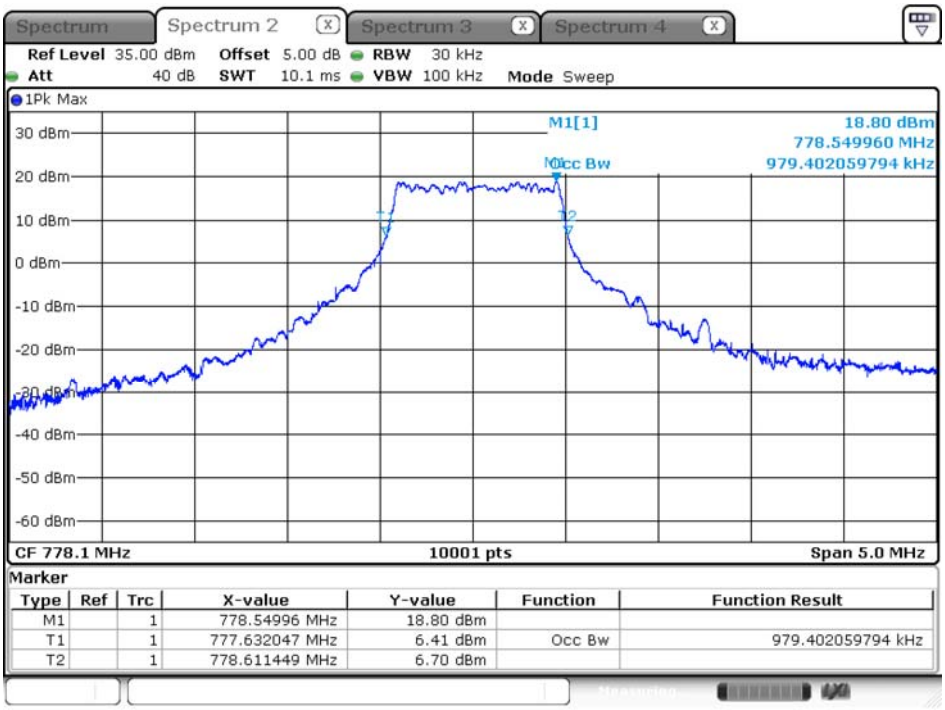
Frequency (MHz)	-26dB BW Measure Level (MHz)	99% BW Measure Level (MHz)	Limit (MHz)
782	1.543	0.980	N/A

782 MHz_16-QAM _(-26dB BW)



Date: 9.JUL.2018 15:42:52

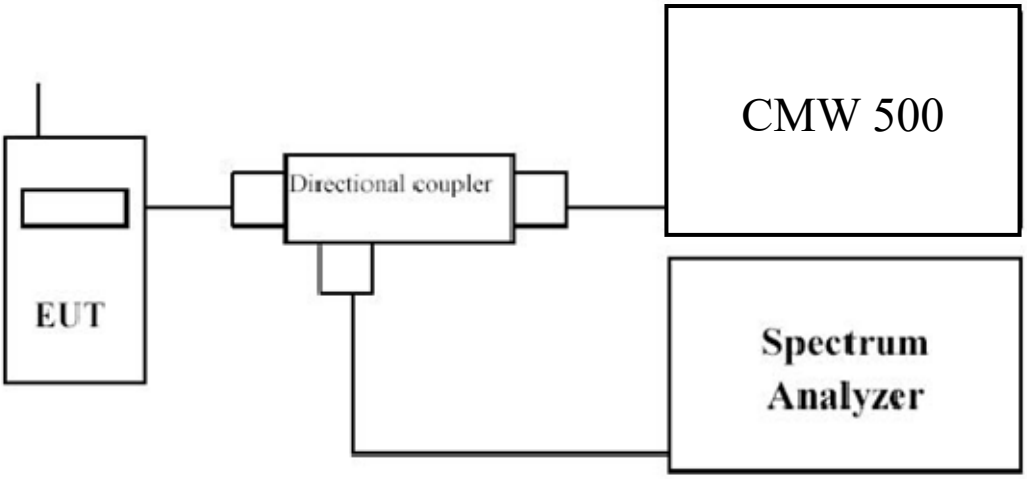
782 MHz_16-QAM_(99% BW)



Date: 9.JUL.2018 15:39:15

5. Peak To Average Ratio

5.1. Test Setup



5.2. Test Procedure

1. Set resolution/mea**surement bandwidth ≥ signal's occupied bandwidth.**
2. **Set the number of counts to a value that stabilizes the measured CCDF curve.**
3. **Record the maximum PAPR level associated with a probability of 0.1 %.**

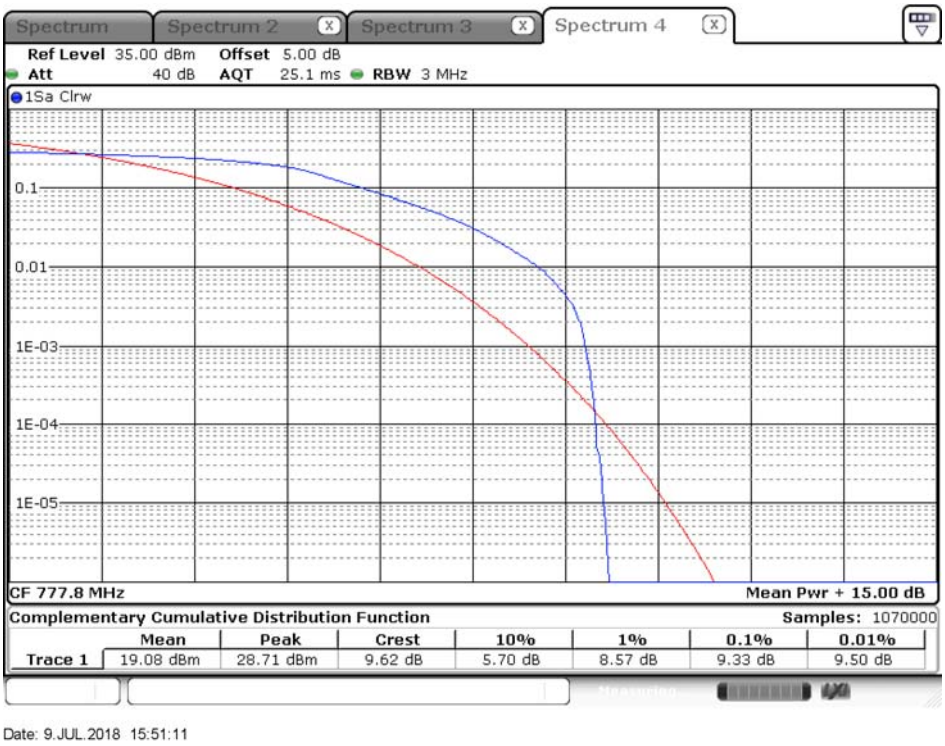
5.3. Test Method

KDB 971168 D01 Power Meas License Digital Systems v03 sub-clause5.7.2
ANSI C63.26-2015 Sub-clause 5.2.3.4

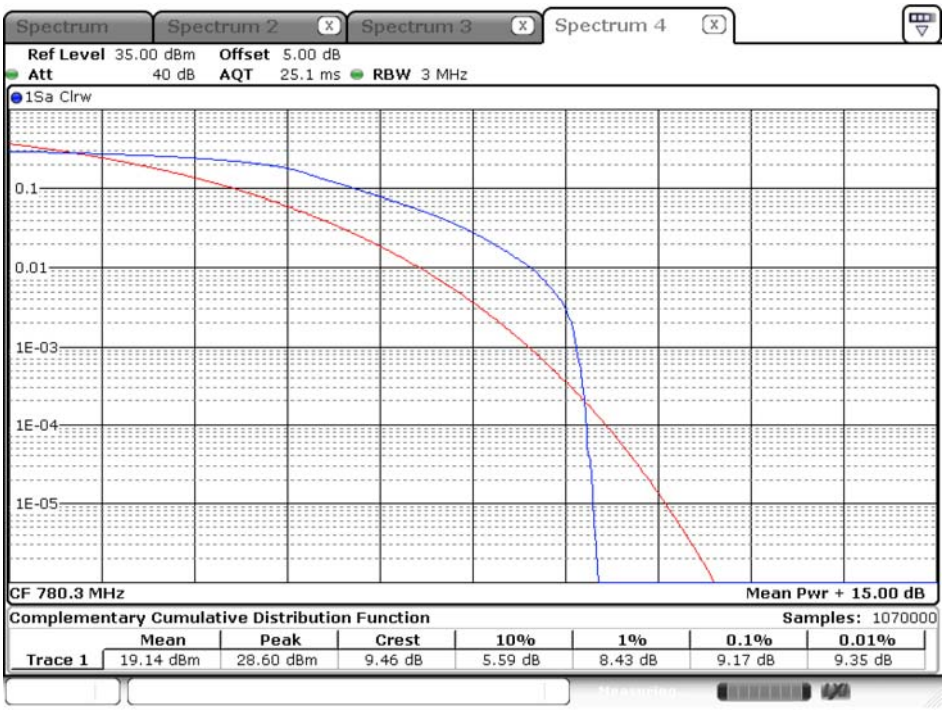
5.4. Test Result

Product	4G/LTE Industrial M2M Router		
Test Item	Peak To Average Ratio		
Test Mode	Mode 1: LTE_CAT-M1_Band 13_QPSK_Link		
Date of Test	2018/07/09	Test Site	SR10-H

779.5 MHz_5M_QPSK

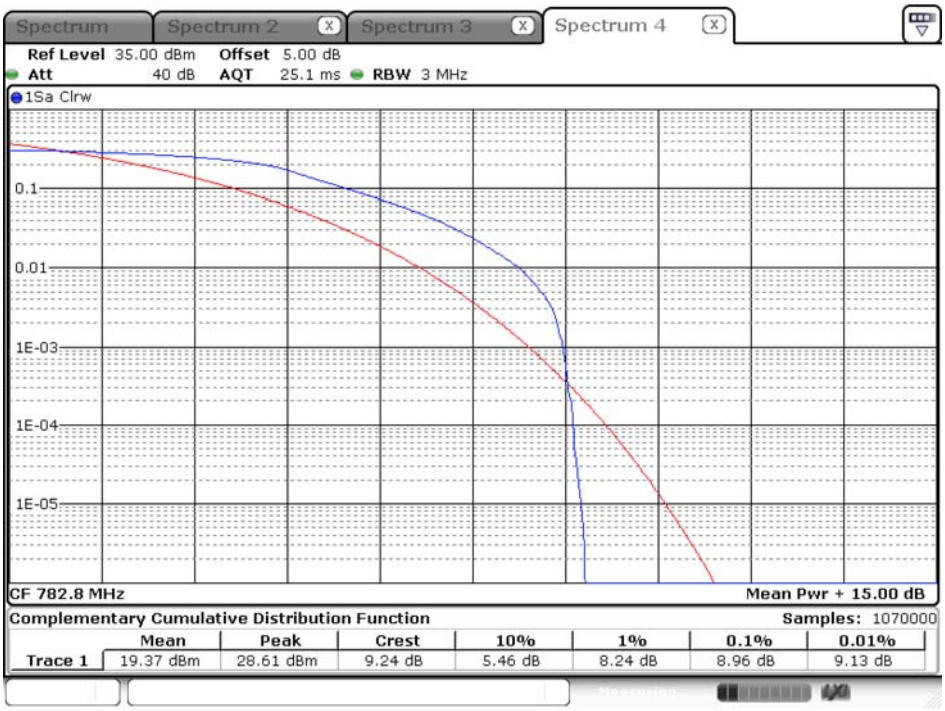


782.0 MHz_5M_QPSK



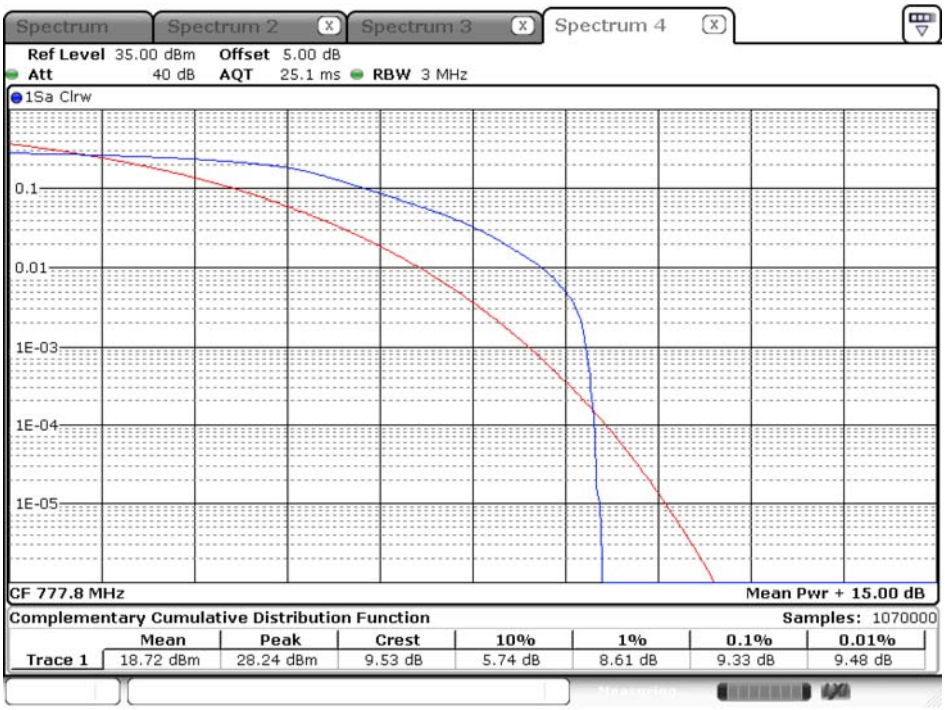
Date: 9.JUL.2018 15:53:51

784.5 MHz_5M_QPSK



Date: 9.JUL.2018 15:54:58

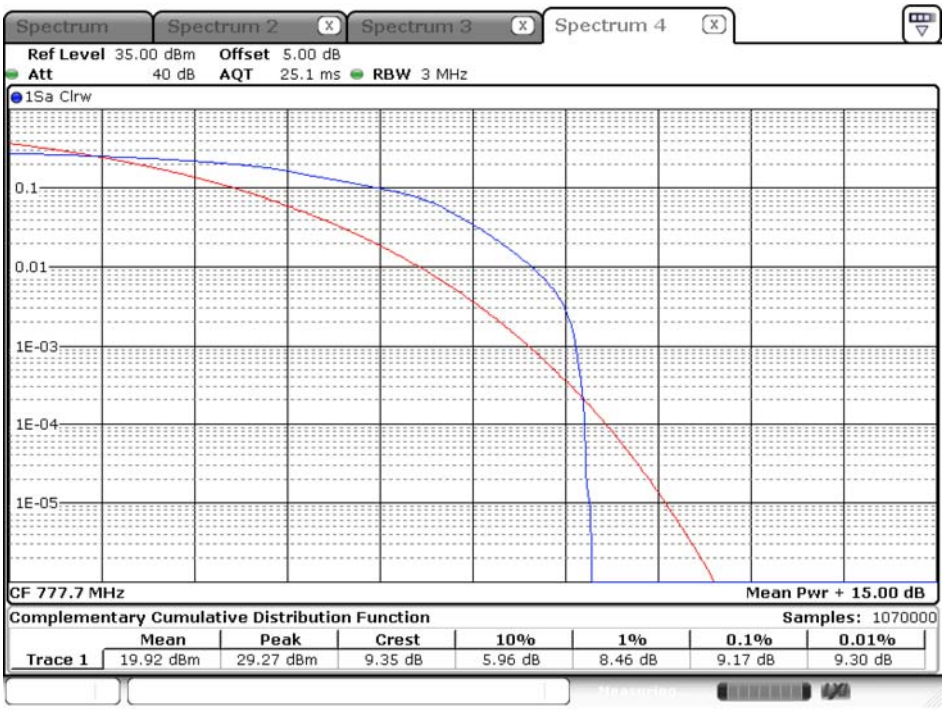
782 MHz_10M_QPSK



Date: 9.JUL.2018 15:46:23

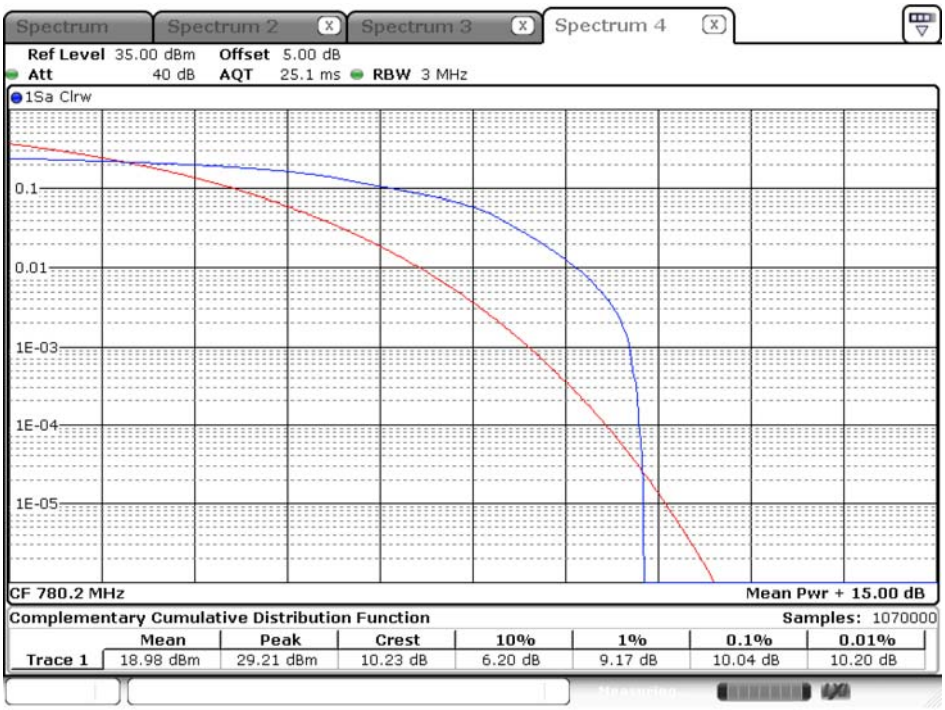
Product	4G/LTE Industrial M2M Router		
Test Item	Peak To Average Ratio		
Test Mode	Mode 2: LTE_CAT-M1_Band 13_16-QAM_Link		
Date of Test	2018/07/09	Test Site	SR10-H

779.5 MHz_5M_16-QAM



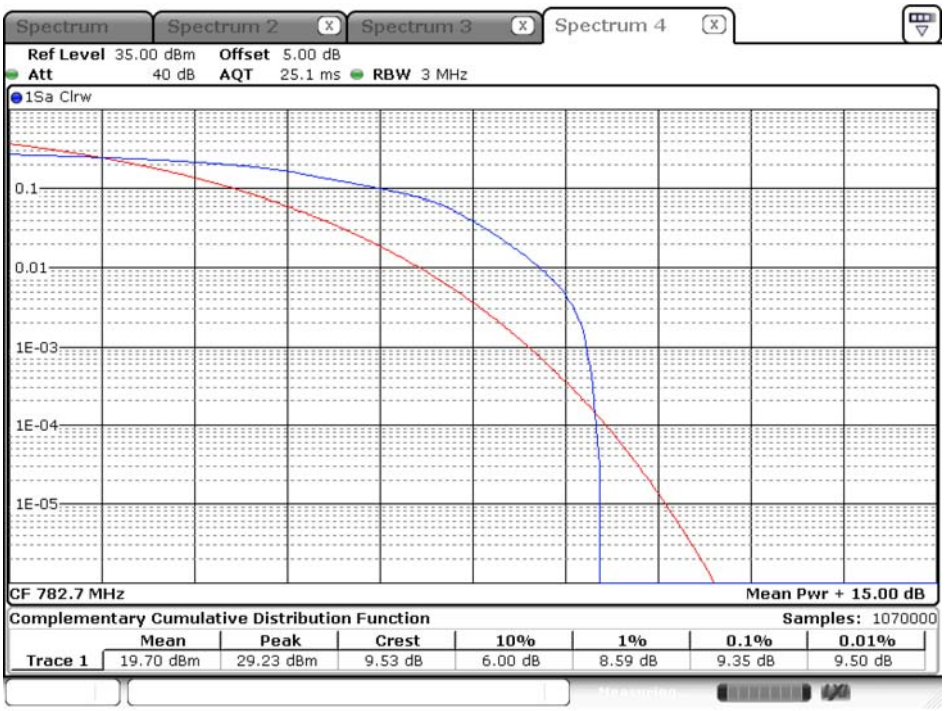
Date: 9.JUL.2018 15:51:59

782.0 MHz_5M_16-QAM



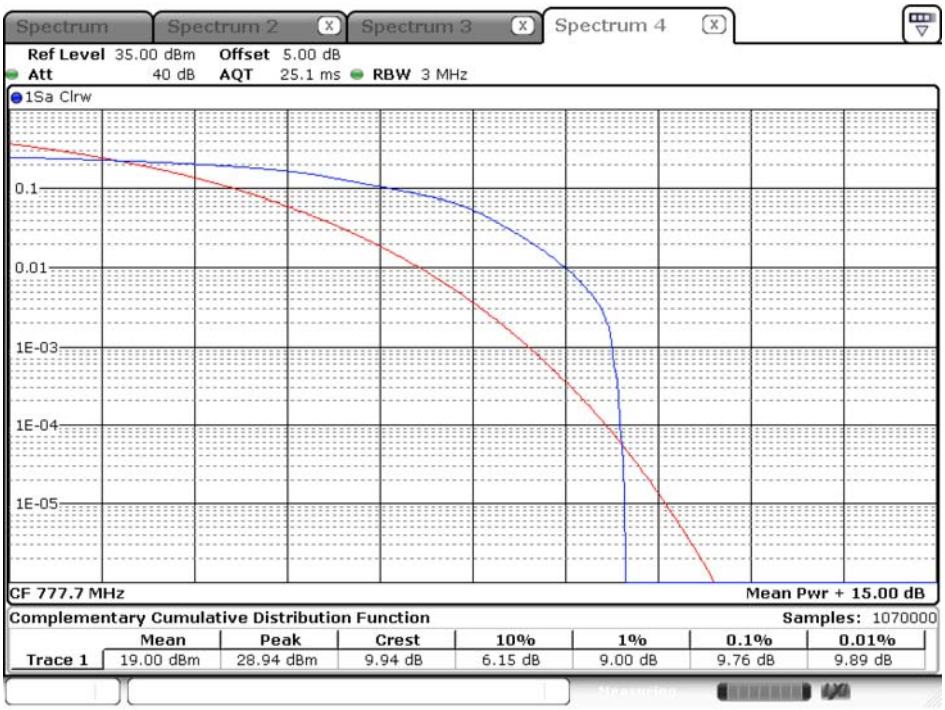
Date: 9.JUL.2018 15:52:47

784.5 MHz_5M_16-QAM



Date: 9.JUL.2018 15:55:32

782 MHz_10M_16-QAM

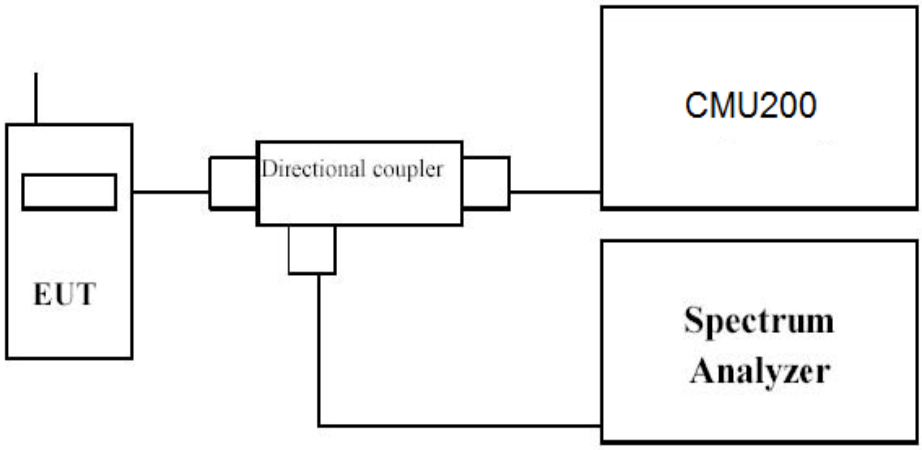


Date: 9.JUL.2018 15:48:14

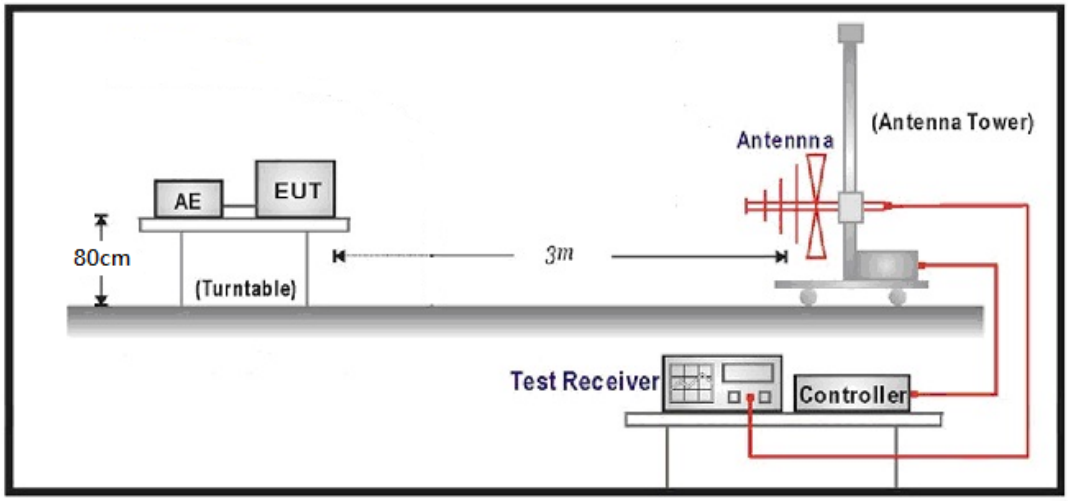
6. Spurious Emissions

6.1. Test Setup

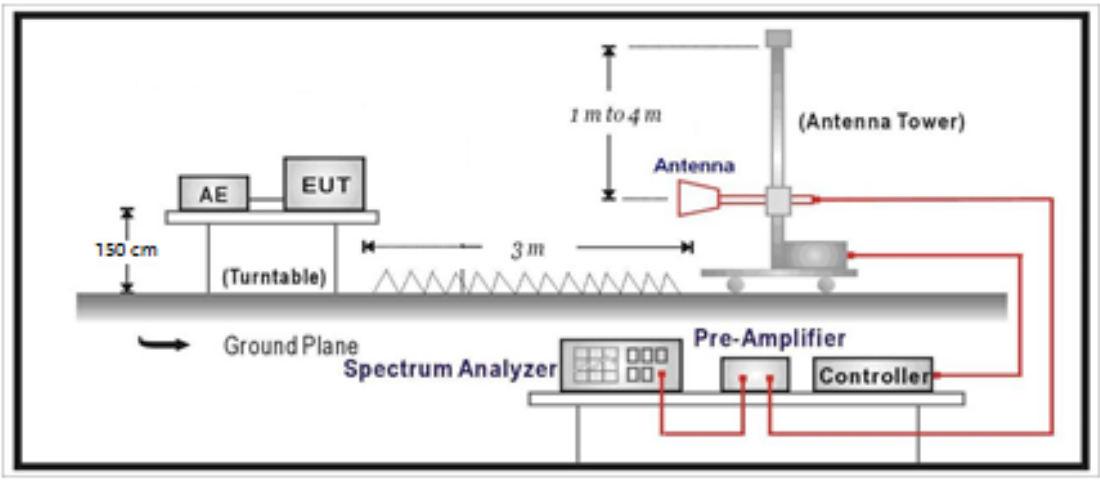
Conducted Spurious Measurement: below 1GHz



Radiated Spurious Measurement: below 1GHz



Radiated Spurious Measurement: above 1GHz



6.2. Test Procedure

Conducted Spurious Measurement:

a) Place the EUT on a bench and set it in transmitting mode.
b) Connect a low loss RF cable from the antenna port to a spectrum analyzer and CMW500 by a Directional Couple.
c) EUT Communicate with CMW500, then select a channel for testing.
d) Add a correction factor to the display of spectrum, and then test.
e) The resolution bandwidth of the spectrum analyzer was set at 1 MHz, sufficient scans were taken to show the out of band Emission if any up to 10th harmonic.

Radiated Spurious Measurement:

a) The EUT was placed on a rotatable wooden table with 1.5 meter above ground.
b) The EUT was set 3 meters from the receiving antenna, which was mounted on the antenna tower.
c) The table was rotated 360 degrees to determine the position of the highest spurious emission.
d) The height of the receiving antenna is varied between one meter and four meters to search the maximum spurious emission for both horizontal and vertical polarizations.
e) Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 1MHz, Sweep 500ms, Taking the record of maximum spurious emission.
f) A horn antenna was substituted in place of the EUT and was driven by a signal generator.
g) Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.
h) Taking the record of output power at antenna port
i) Repeat step 7 to step 8 for another polarization.
j) EIRP = SG - Cable loss + Antenna Gain

6.3. Test Method

Conducted Spurious Measurement:

KDB 971168 D01 Power Meas License Digital Systems v03 sub-clause6.1
ANSI C63.26-2015 Sub-clause 5.7

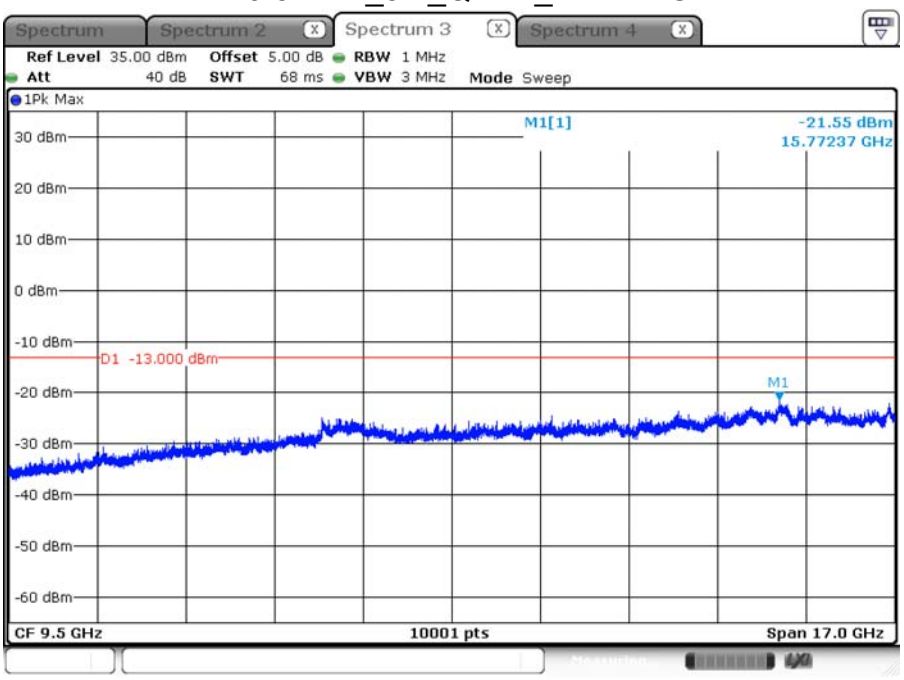
Radiated Spurious Measurement:

KDB 971168 D01 Power Meas License Digital Systems v03 sub-clause5.8
ANSI C63.26-2015 Sub-clause 5.5.3.2

6.4. Test Result

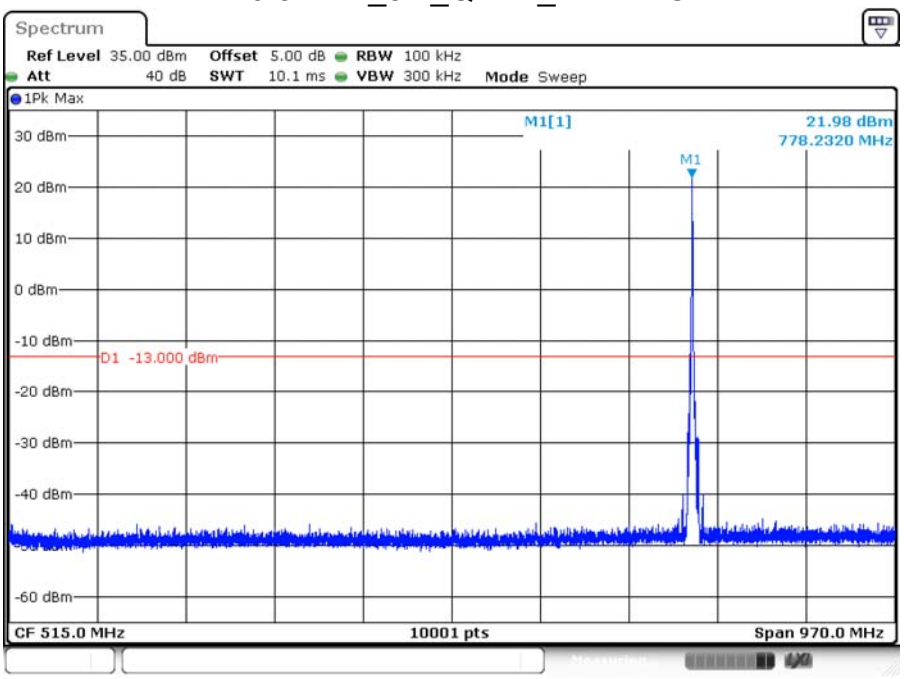
Product	4G/LTE Industrial M2M Router		
Test Item	Conducted Spurious Emission		
Test Mode	Mode 1: LTE_CAT-M1_Band 13_QPSK_Link		
Date of Test	2018/07/10	Test Site	SR10-H

779.5 MHz_5M_QPSK_above 1G



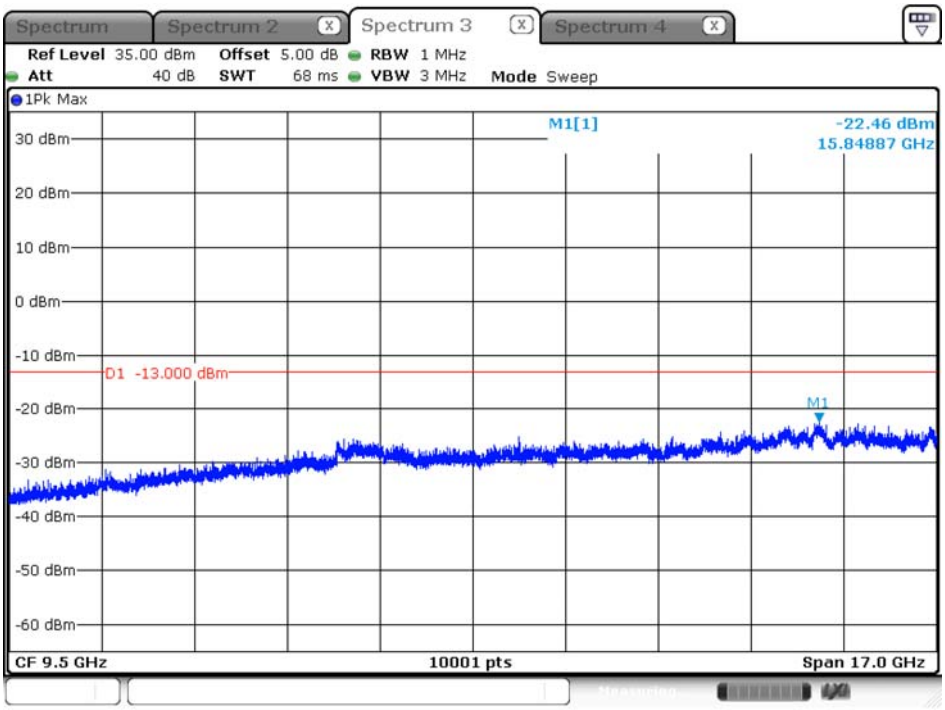
Date: 10.JUL.2018 09:55:21

779.5 MHz_5M_QPSK_under 1G



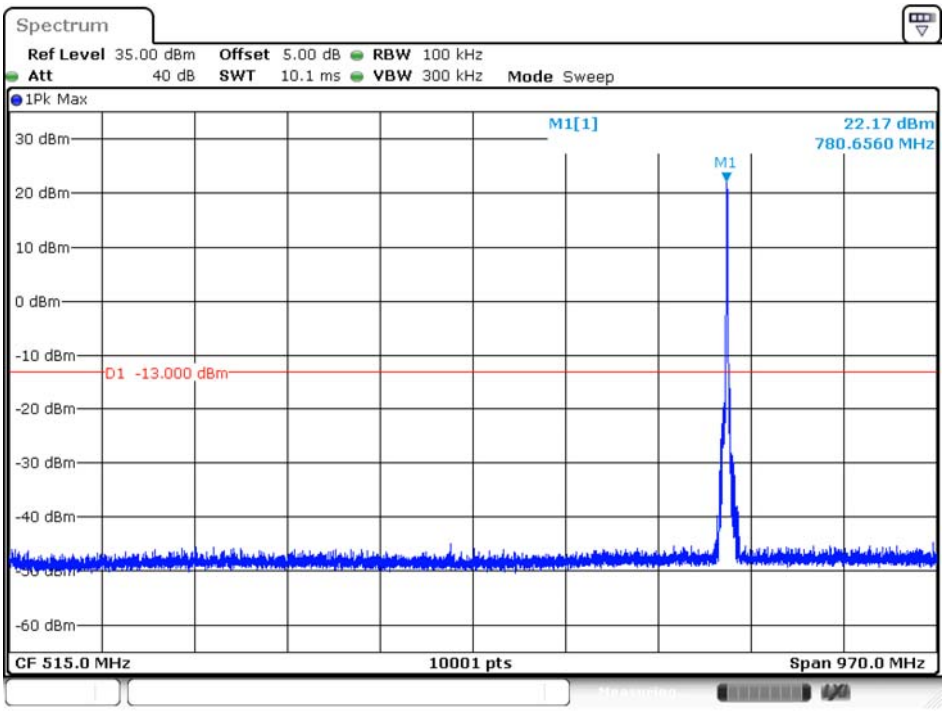
Date: 9.JUL.2018 16:46:54

782.0 MHz_5M_QPSK_above 1G



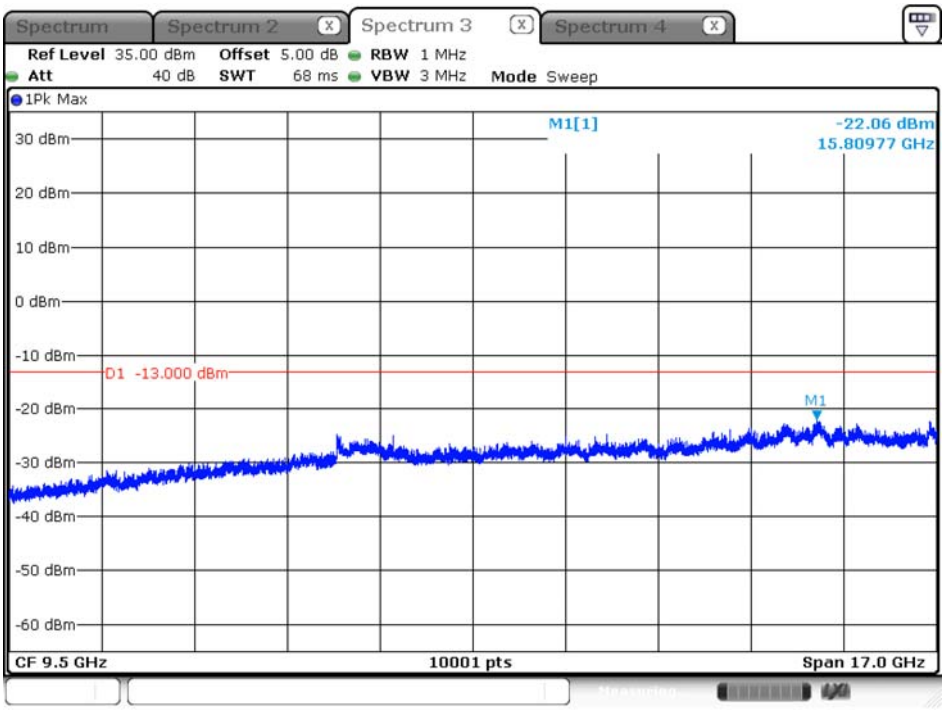
Date: 10.JUL.2018 09:59:36

782.0 MHz_5M_QPSK_under 1G



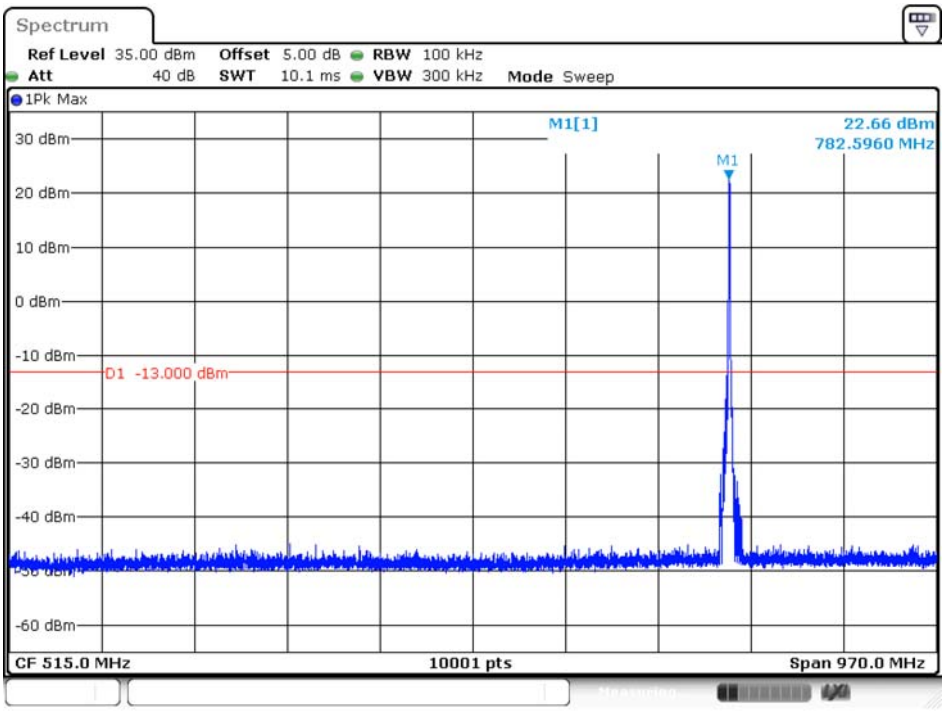
Date: 9.JUL.2018 16:49:54

784.5 MHz_5M_QPSK_above 1G



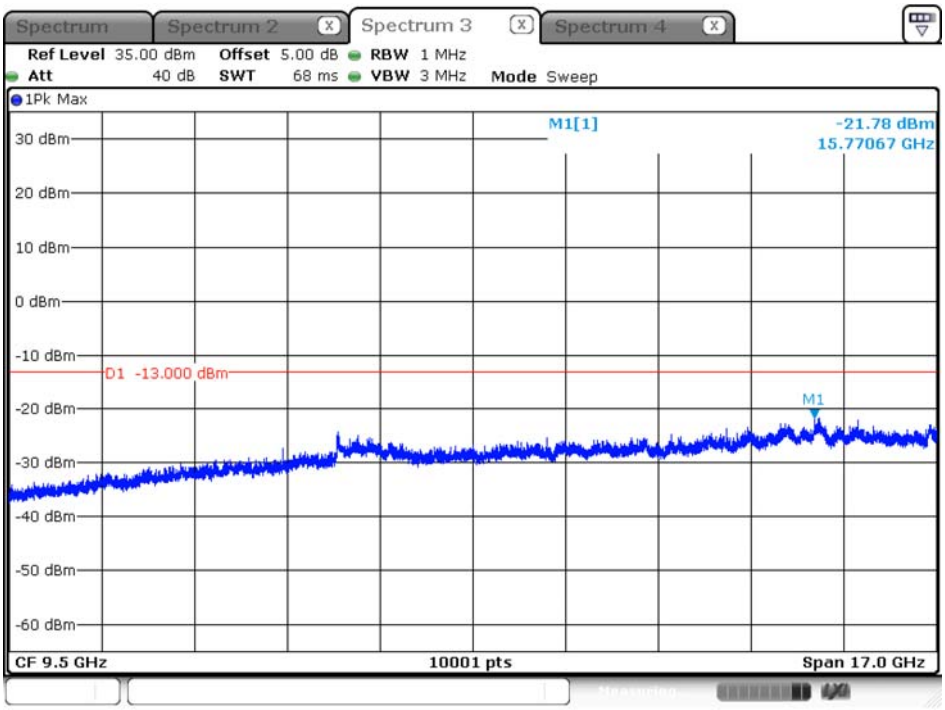
Date: 10.JUL.2018 10:02:58

784.5 MHz_5M_QPSK_under 1G



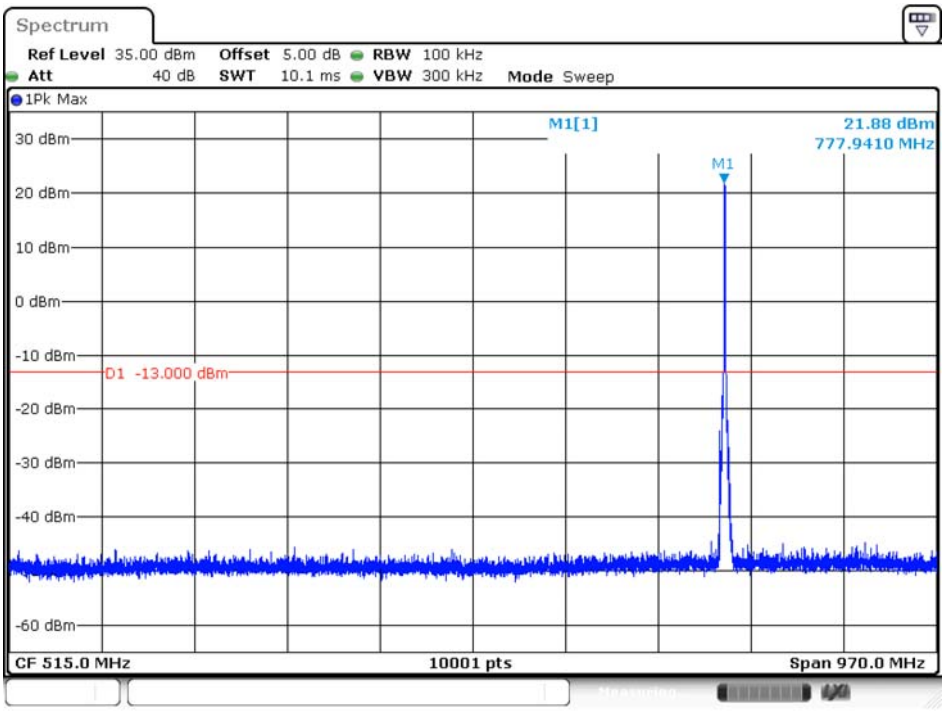
Date: 9.JUL.2018 16:50:49

782 MHz_10M_QPSK_above 1G



Date: 10.JUL.2018 10:11:26

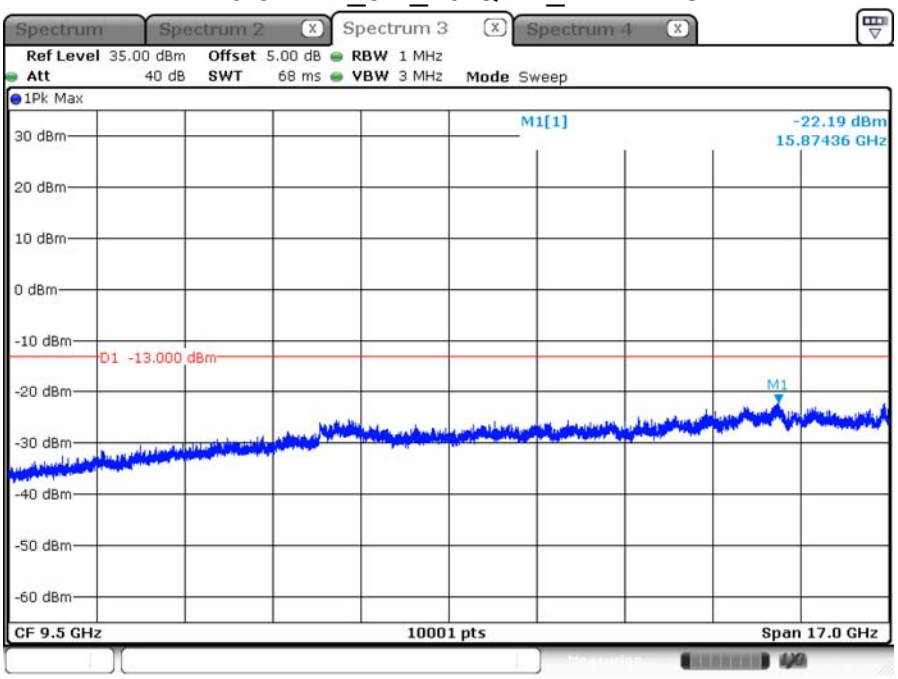
782 MHz_10M_QPSK_under 1G



Date: 9.JUL.2018 16:44:11

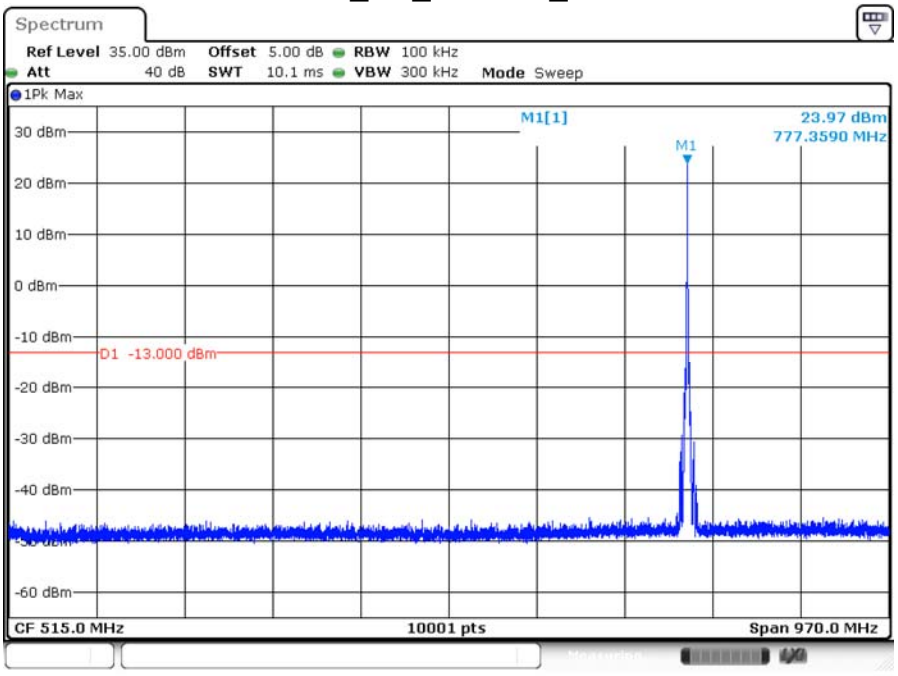
Product	4G/LTE Industrial M2M Router		
Test Item	Conducted Spurious Emission		
Test Mode	Mode 2: LTE_CAT-M1_Band 13_16-QAM_Link		
Date of Test	2018/07/10	Test Site	SR10-H

779.5 MHz_5M_16-QAM_above 1G



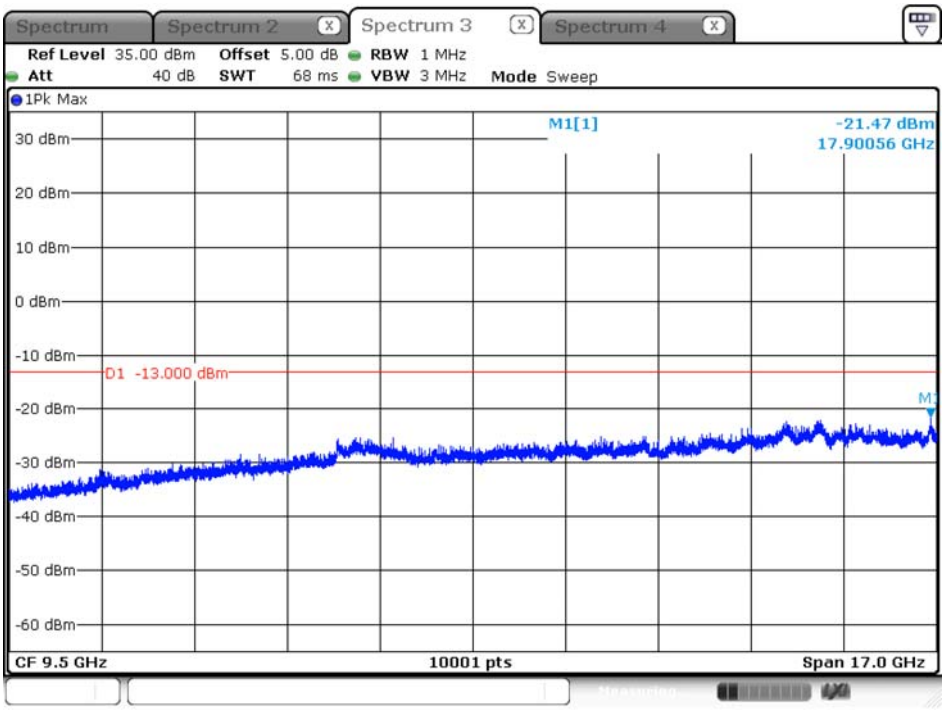
Date: 10.JUL.2018 09:56:46

779.5 MHz_5M_16-QAM_under 1G



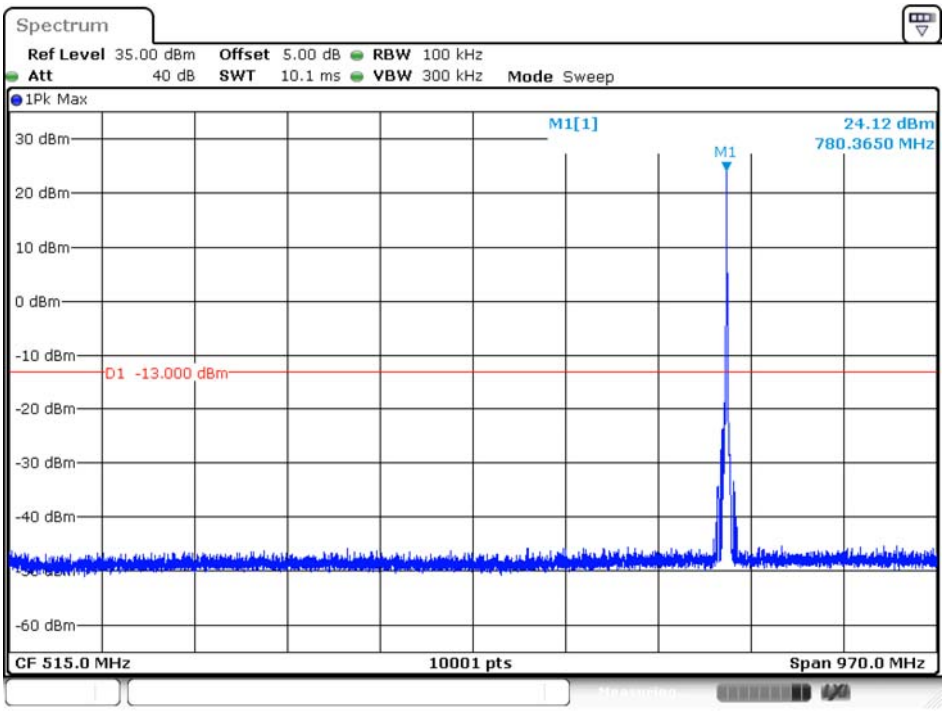
Date: 9.JUL.2018 16:47:52

782.0 MHz_5M_16-QAM_above 1G



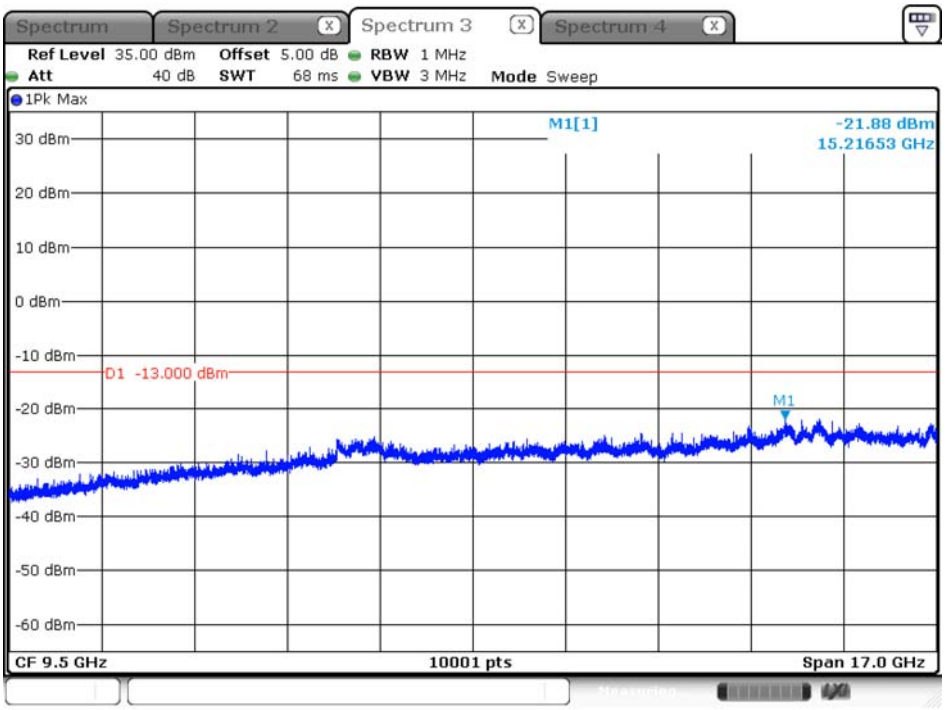
Date: 10.JUL.2018 09:58:04

782.0 MHz_5M_16-QAM_under 1G



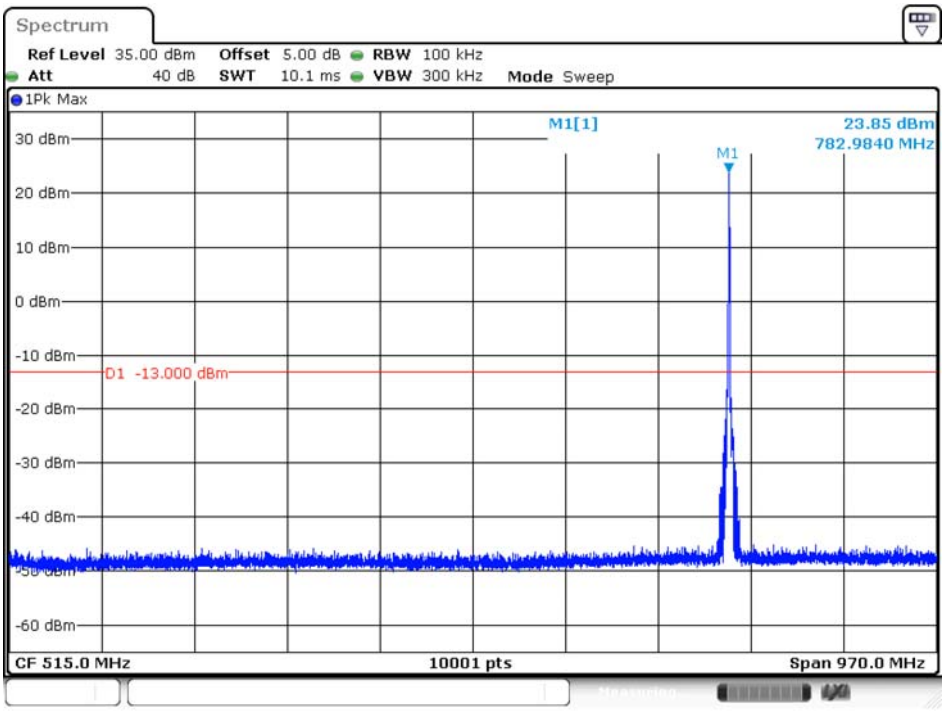
Date: 9.JUL.2018 16:48:45

784.5 MHz_5M_16-QAM_above 1G



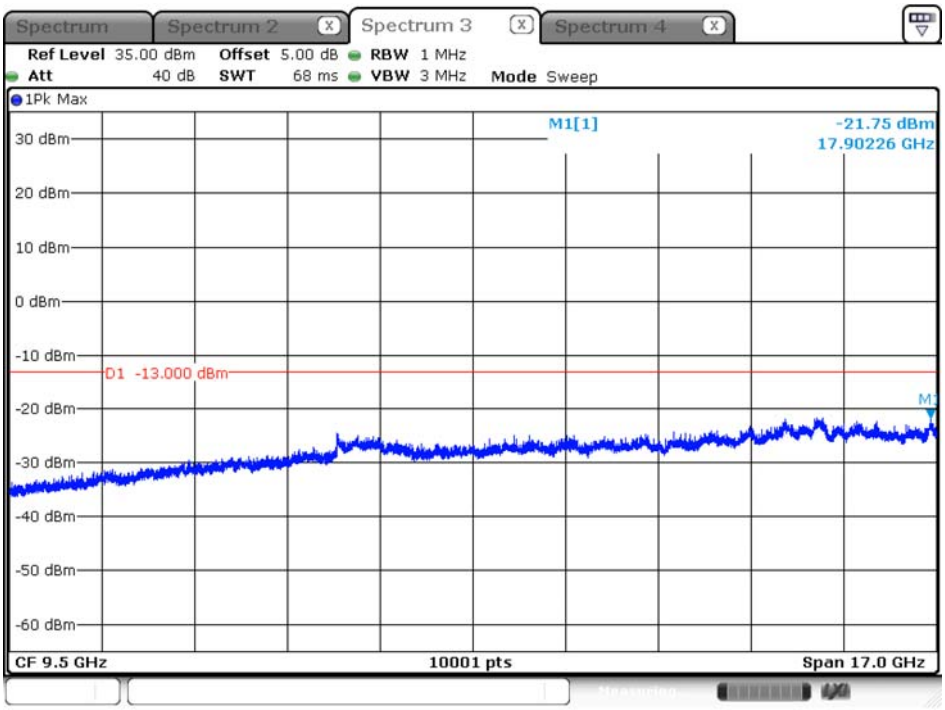
Date: 10.JUL.2018 10:04:26

784.5 MHz_5M_16-QAM_under 1G



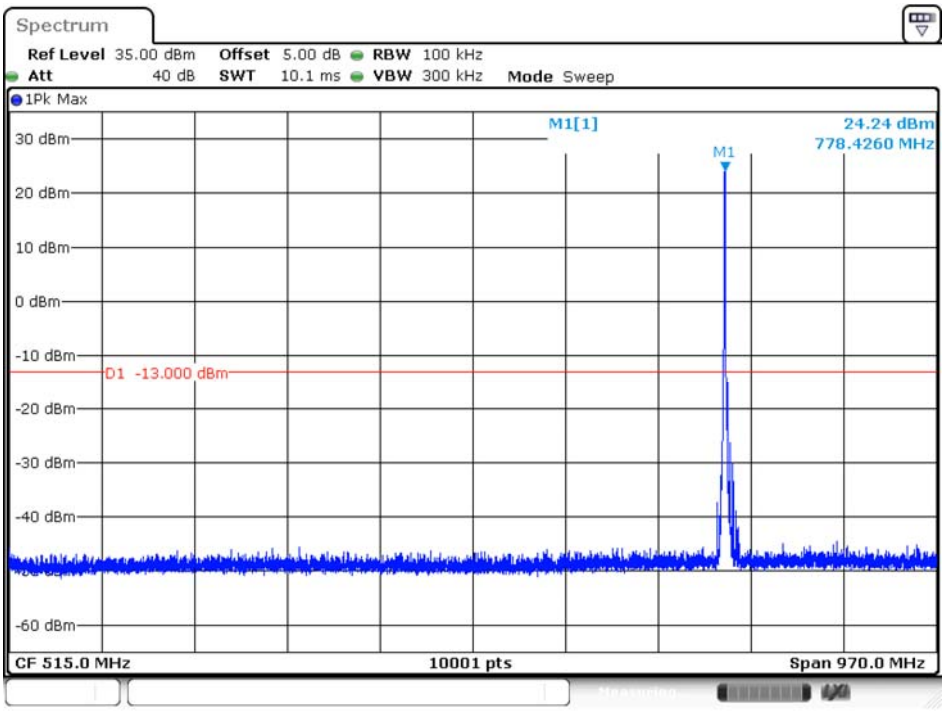
Date: 9.JUL.2018 16:52:01

782 MHz_10M_16-QAM_above 1G



Date: 10.JUL.2018 10:10:02

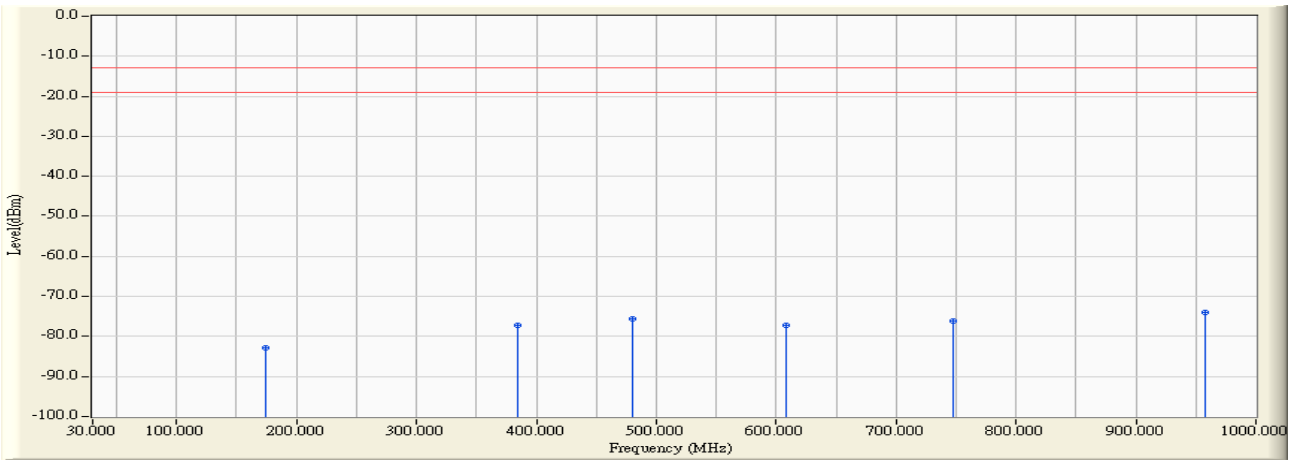
782 MHz_10M_16-QAM_under 1G



Date: 9.JUL.2018 16:44:46

30MHz-1GHz Spurious:

Site : CB4-H	**Time : 2018/07/09**
Limit : FCC_Part27_00M_00M_PK	**Margin : 6**
Probe : CB4_CE_Sub_S2_30M-1GHz_1116 - HORIZONTAL	**Power : AC 120V / 60Hz**
EUT : 4G/LTE Industrial M2M Router	**Note : Mode 1: LTE_CAT-M1_Band 13_QPSK_Link CH23230_5M_QPSK_6RB0**

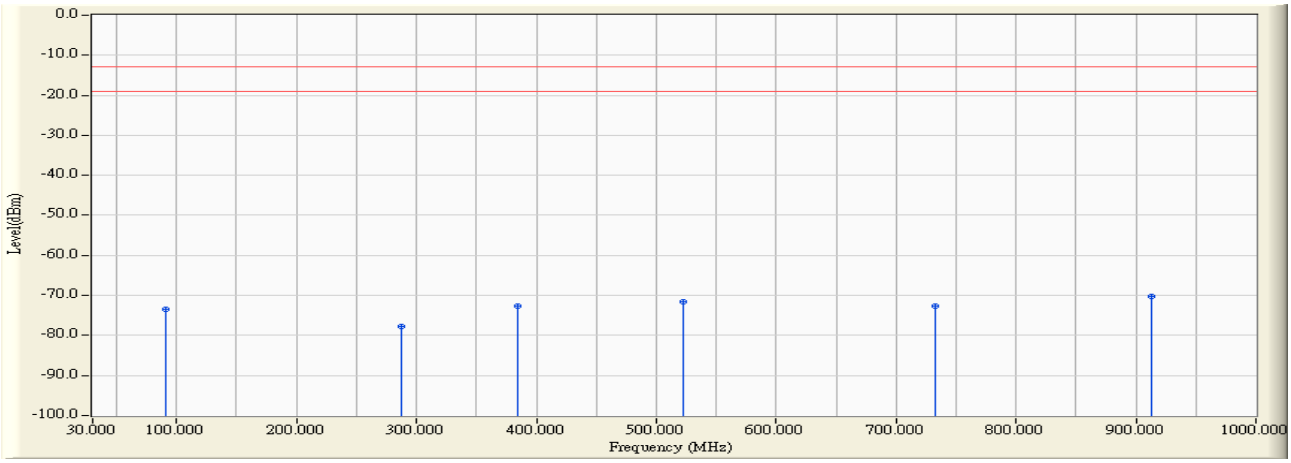


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm)	Margin (dB)	Limit (dBm)	Detector Type
1		173.754	-25.507	-57.462	-82.969	-69.969	-13.000	PEAK
2		383.953	-16.816	-60.386	-77.203	-64.203	-13.000	PEAK
3		479.983	-14.203	-61.521	-75.724	-62.724	-13.000	PEAK
4		608.314	-11.974	-65.193	-77.166	-64.166	-13.000	PEAK
5		747.800	-11.185	-65.051	-76.236	-63.236	-13.000	PEAK
6	*	958.290	-8.363	-65.561	-73.924	-60.924	-13.000	PEAK

Note:

1. All Reading Levels is Peak value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor
4. The Emission under 30MHz were not included is because their levels are too low.

Site : CB4-H	**Time : 2018/07/09**
Limit : FCC_Part27_00M_00M_PK	**Margin : 6**
Probe : CB4_CE_Sub_S2_30M-1GHz_1116 - VERTICAL	**Power : AC 120V / 60Hz**
EUT : 4G/LTE Industrial M2M Router	**Note : Mode 1: LTE_CAT-M1_Band 13_QPSK_Link CH23230_5M_QPSK_6RB0**

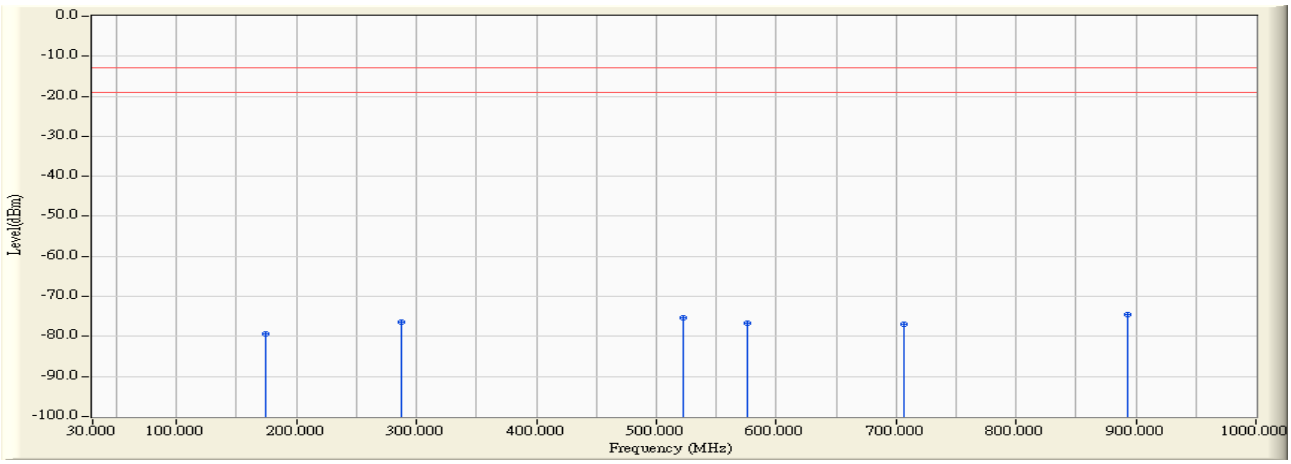


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm)	Margin (dB)	Limit (dBm)	Detector Type
1		90.334	-20.780	-52.608	-73.389	-60.389	-13.000	PEAK
2		287.438	-20.428	-57.258	-77.686	-64.686	-13.000	PEAK
3		383.953	-17.040	-55.729	-72.770	-59.770	-13.000	PEAK
4		521.887	-12.950	-58.761	-71.711	-58.711	-13.000	PEAK
5		732.377	-9.991	-62.783	-72.773	-59.773	-13.000	PEAK
6	*	913.282	-9.946	-60.169	-70.115	-57.115	-13.000	PEAK

Note:

1. All Reading Levels is Peak value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor
4. The Emission under 30MHz were not included is because their levels are too low.

Site : CB4-H	**Time : 2018/07/09**
Limit : FCC_Part27_00M_00M_PK	**Margin : 6**
Probe : CB4_CE_Sub_S2_30M-1GHz_1116 - HORIZONTAL	**Power : AC 120V / 60Hz**
EUT : 4G/LTE Industrial M2M Router	**Note : Mode 1: LTE_CAT-M1_Band 13_QPSK_Link CH23230_10M_QPSK_6RB0**

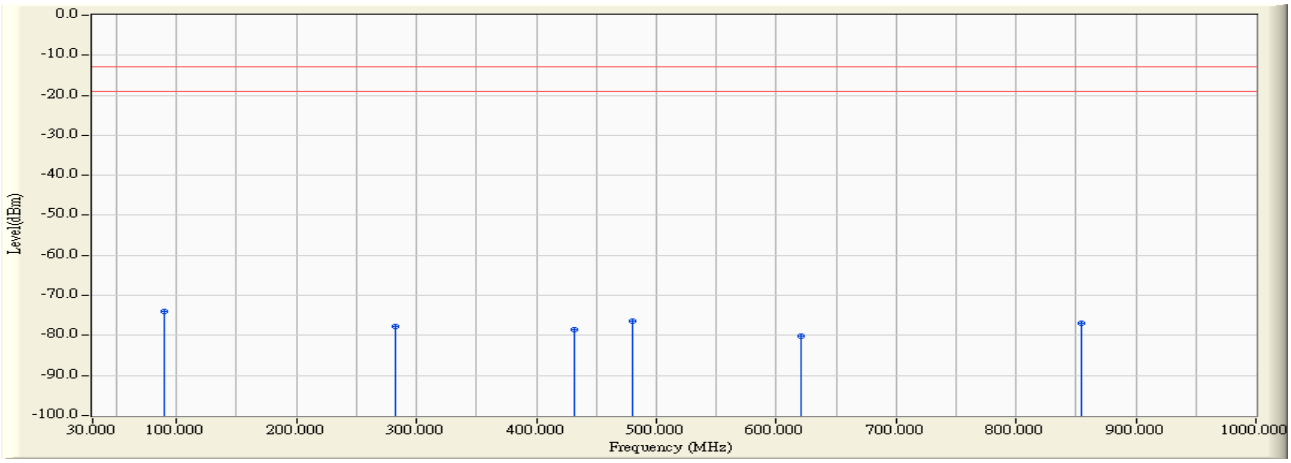


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm)	Margin (dB)	Limit (dBm)	Detector Type
1		173.754	-25.507	-53.785	-79.292	-66.292	-13.000	PEAK
2		288.020	-21.014	-55.341	-76.355	-63.355	-13.000	PEAK
3		522.081	-13.532	-61.818	-75.350	-62.350	-13.000	PEAK
4		576.013	-12.502	-64.262	-76.764	-63.764	-13.000	PEAK
5		706.672	-12.356	-64.547	-76.903	-63.903	-13.000	PEAK
6	*	893.106	-8.904	-65.731	-74.635	-61.635	-13.000	PEAK

Note:

1. All Reading Levels is Peak value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor
4. The Emission under 30MHz were not included is because their levels are too low.

Site : CB4-H	**Time : 2018/07/09**
Limit : FCC_Part27_00M_00M_PK	**Margin : 6**
Probe : CB4_CE_Sub_S2_30M-1GHz_1116 - VERTICAL	**Power : AC 120V / 60Hz**
EUT : 4G/LTE Industrial M2M Router	**Note : Mode 1: LTE_CAT-M1_Band 13_QPSK_Link CH23230_10M_QPSK_6RB0**

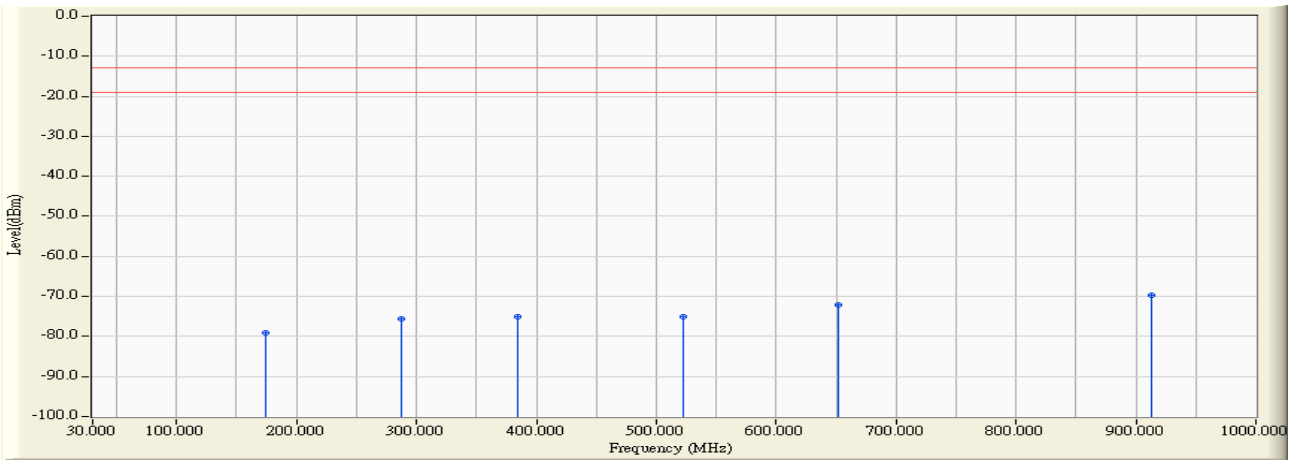


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm)	Margin (dB)	Limit (dBm)	Detector Type
1	*	89.170	-20.940	-53.121	-74.061	-61.061	-13.000	PEAK
2		282.491	-20.898	-56.734	-77.632	-64.632	-13.000	PEAK
3		431.968	-16.008	-62.547	-78.556	-65.556	-13.000	PEAK
4		479.983	-13.892	-62.411	-76.303	-63.303	-13.000	PEAK
5		621.215	-12.586	-67.527	-80.113	-67.113	-13.000	PEAK
6		854.306	-10.245	-66.705	-76.951	-63.951	-13.000	PEAK

Note:

1. All Reading Levels is Peak value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor
4. The Emission under 30MHz were not included is because their levels are too low.

Site : CB4-H	**Time : 2018/07/09**
Limit : FCC_Part27_00M_00M_PK	**Margin : 6**
Probe : CB4_CE_Sub_S2_30M-1GHz_1116 - HORIZONTAL	**Power : AC 120V / 60Hz**
EUT : 4G/LTE Industrial M2M Router	**Note : Mode 2: LTE_CAT-M1_Band 13_16-QAM_Link CH23230_5M_16-QAM_5RB0**

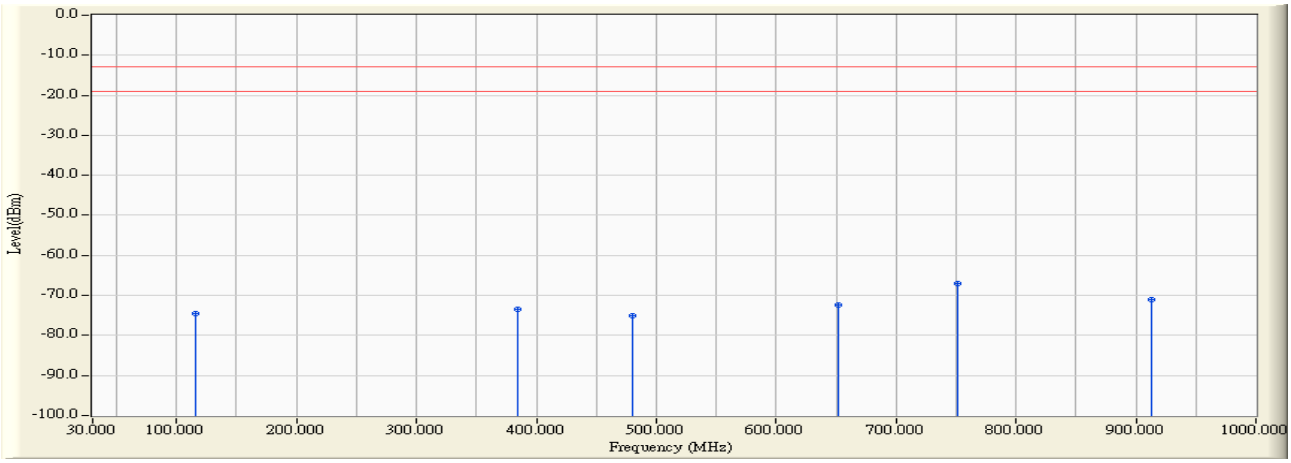


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm)	Margin (dB)	Limit (dBm)	Detector Type
1		174.142	-25.482	-53.665	-79.147	-66.147	-13.000	PEAK
2		287.438	-20.907	-54.827	-75.734	-62.734	-13.000	PEAK
3		383.953	-16.816	-58.138	-74.955	-61.955	-13.000	PEAK
4		521.887	-13.403	-61.688	-75.091	-62.091	-13.000	PEAK
5		652.352	-13.200	-58.810	-72.011	-59.011	-13.000	PEAK
6	*	913.282	-9.873	-59.866	-69.739	-56.739	-13.000	PEAK

Note:

1. All Reading Levels is Peak value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor
4. The Emission under 30MHz were not included is because their levels are too low.

Site : CB4-H	**Time : 2018/07/09**
Limit : FCC_Part27_00M_00M_PK	**Margin : 6**
Probe : CB4_CE_Sub_S2_30M-1GHz_1116 - VERTICAL	**Power : AC 120V / 60Hz**
EUT : 4G/LTE Industrial M2M Router	**Note : Mode 2: LTE_CAT-M1_Band 13_16-QAM_Link CH23230_5M_16-QAM_5RB0**

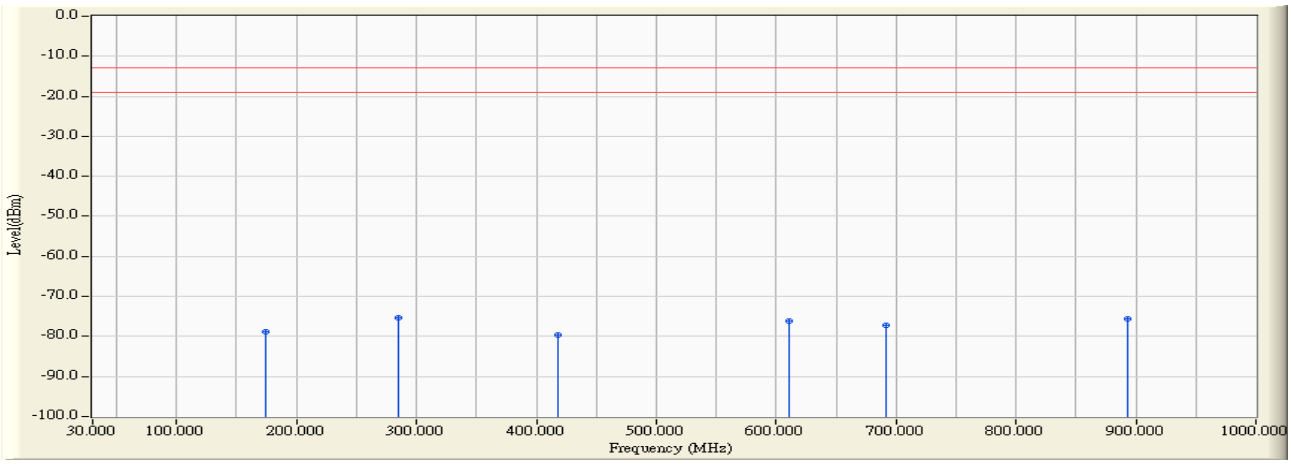


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm)	Margin (dB)	Limit (dBm)	Detector Type
1		116.039	-20.862	-53.559	-74.422	-61.422	-13.000	PEAK
2		384.050	-17.067	-56.438	-73.505	-60.505	-13.000	PEAK
3		479.983	-13.892	-61.070	-74.962	-61.962	-13.000	PEAK
4		652.352	-12.687	-59.707	-72.395	-59.395	-13.000	PEAK
5	*	751.195	-11.143	-55.795	-66.937	-53.937	-13.000	PEAK
6		913.282	-9.946	-60.973	-70.919	-57.919	-13.000	PEAK

Note:

1. All Reading Levels is Peak value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor
4. The Emission under 30MHz were not included is because their levels are too low.

Site : CB4-H	**Time : 2018/07/09**
Limit : FCC_Part27_00M_00M_PK	**Margin : 6**
Probe : CB4_CE_Sub_S2_30M-1GHz_1116 - HORIZONTAL	**Power : AC 120V / 60Hz**
EUT : 4G/LTE Industrial M2M Router	**Note : Mode 2: LTE_CAT-M1_Band 13_16-QAM_Link CH23230_10M_16-QAM_5RB0**

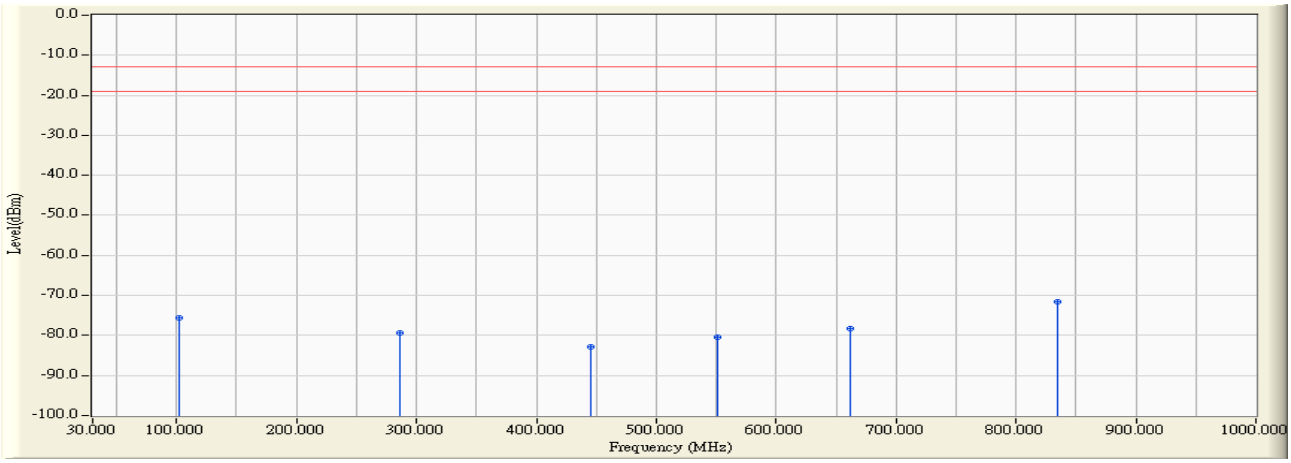


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm)	Margin (dB)	Limit (dBm)	Detector Type
1		174.336	-25.470	-53.419	-78.889	-65.889	-13.000	PEAK
2	*	285.013	-21.606	-53.725	-75.331	-62.331	-13.000	PEAK
3		418.291	-15.448	-64.303	-79.751	-66.751	-13.000	PEAK
4		610.351	-12.288	-63.818	-76.105	-63.105	-13.000	PEAK
5		691.152	-12.326	-64.942	-77.268	-64.268	-13.000	PEAK
6		892.718	-9.001	-66.691	-75.692	-62.692	-13.000	PEAK

Note:

1. All Reading Levels is Peak value.
2. “ * ”, means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor
4. The Emission under 30MHz were not included is because their levels are too low.

Site : CB4-H	**Time : 2018/07/09**
Limit : FCC_Part27_00M_00M_PK	**Margin : 6**
Probe : CB4_CE_Sub_S2_30M-1GHz_1116 - VERTICAL	**Power : AC 120V / 60Hz**
EUT : 4G/LTE Industrial M2M Router	**Note : Mode 2: LTE_CAT-M1_Band 13_16-QAM_Link CH23230_10M_16-QAM_5RB0**



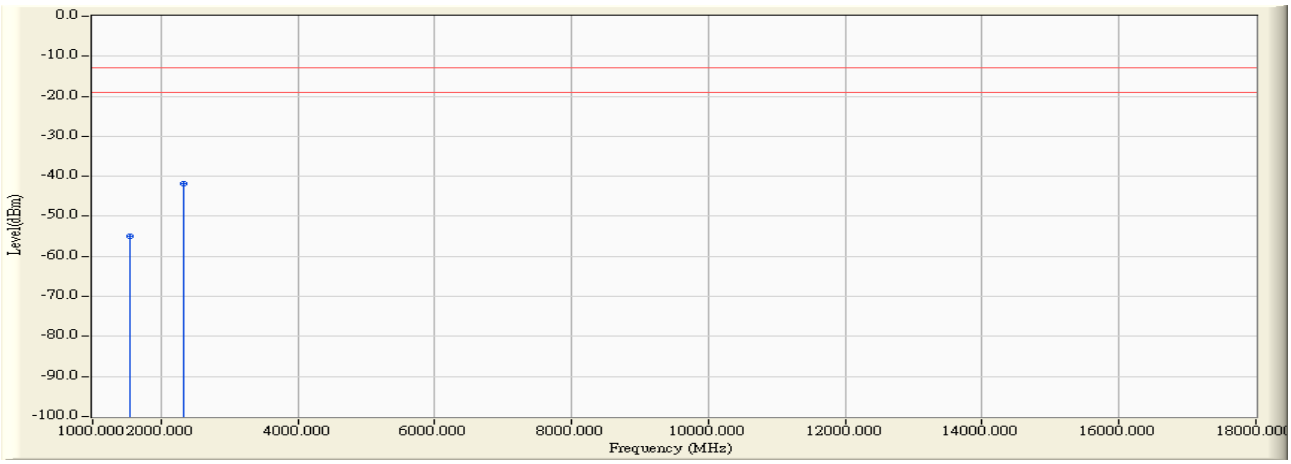
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm)	Margin (dB)	Limit (dBm)	Detector Type
1		102.459	-18.583	-56.932	-75.515	-62.515	-13.000	PEAK
2		286.662	-20.446	-58.795	-79.241	-66.241	-13.000	PEAK
3		444.772	-15.712	-67.012	-82.723	-69.723	-13.000	PEAK
4		550.502	-13.291	-67.017	-80.308	-67.308	-13.000	PEAK
5		661.179	-11.526	-66.788	-78.314	-65.314	-13.000	PEAK
6	*	834.227	-10.293	-61.164	-71.456	-58.456	-13.000	PEAK

Note:

1. All Reading Levels is Peak value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor
4. The Emission under 30MHz were not included is because their levels are too low.

Harmonic & Spurious:

Site : CB4-H	**Time : 2018/07/09**
Limit : FCC_Part27_00M_00M_PK	**Margin : 6**
Probe : CB4_CE_Sub_B432_1-18GHz_3M_1116 - HORIZONTAL	**Power : AC 120V / 60Hz**
EUT : 4G/LTE Industrial M2M Router	**Note : Mode 1: LTE_CAT-M1_Band 13_QPSK_Link CH23205_5M_QPSK_1RB0**

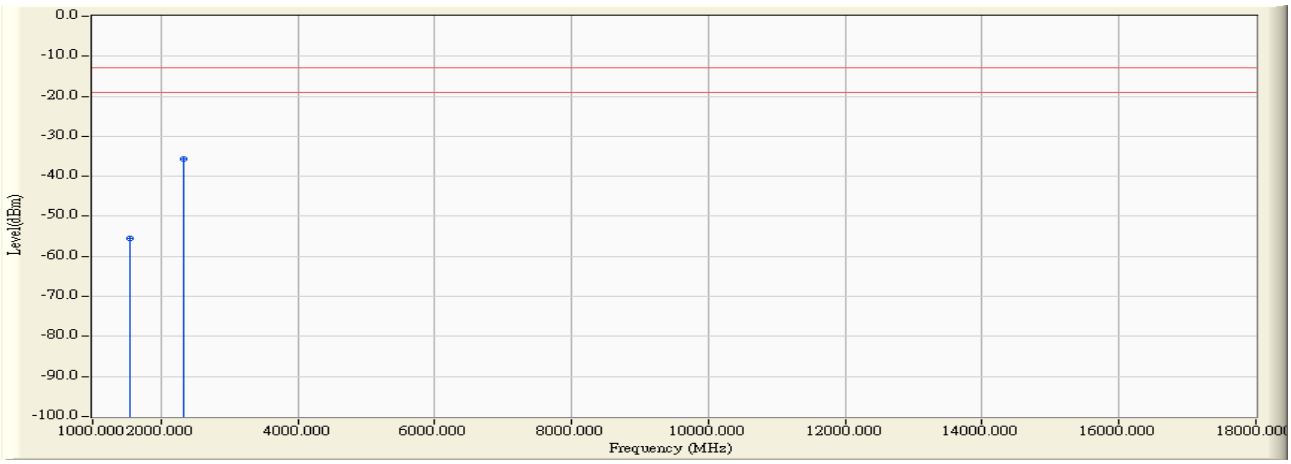


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm)	Margin (dB)	Limit (dBm)	Detector Type
1		1554.000	10.743	-65.800	-55.057	-42.057	-13.000	PEAK
2	*	2331.000	16.016	-57.830	-41.814	-28.814	-13.000	PEAK

Note:

1. All reading above 1GHz is performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB4-H	**Time : 2018/07/09**
Limit : FCC_Part27_00M_00M_PK	**Margin : 6**
Probe : CB4_CE_Sub_B432_1-18GHz_3M_1116 - VERTICAL	**Power : AC 120V / 60Hz**
EUT : 4G/LTE Industrial M2M Router	**Note : Mode 1: LTE_CAT-M1_Band 13_QPSK_Link CH23205_5M_QPSK_1RB0**

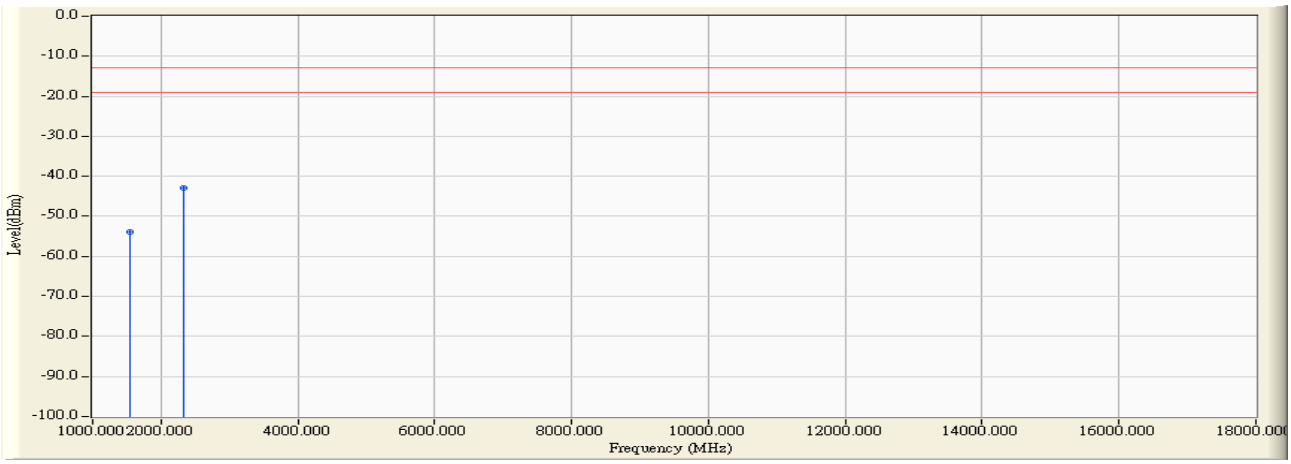


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm)	Margin (dB)	Limit (dBm)	Detector Type
1		1554.000	11.089	-66.670	-55.581	-42.581	-13.000	PEAK
2	*	2331.000	16.046	-51.710	-35.664	-22.664	-13.000	PEAK

Note:

1. All reading above 1GHz is performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB4-H	**Time : 2018/07/09**
Limit : FCC_Part27_00M_00M_PK	**Margin : 6**
Probe : CB4_CE_Sub_B432_1-18GHz_3M_1116 - HORIZONTAL	**Power : AC 120V / 60Hz**
EUT : 4G/LTE Industrial M2M Router	**Note : Mode 1: LTE_CAT-M1_Band 13_QPSK_Link CH23205_5M_QPSK_6RB0**

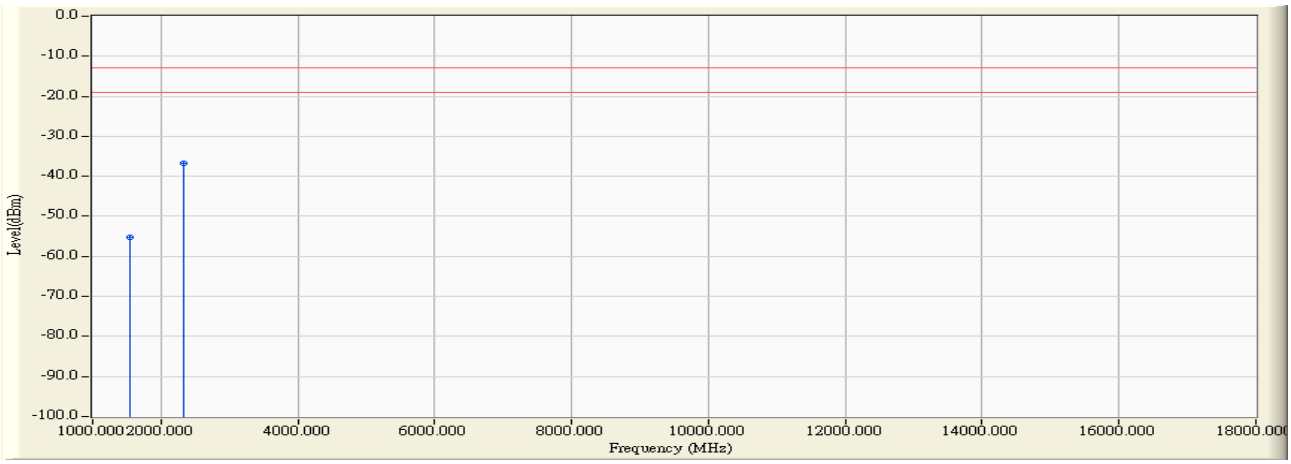


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm)	Margin (dB)	Limit (dBm)	Detector Type
1		1554.000	10.743	-64.660	-53.917	-40.917	-13.000	PEAK
2	*	2331.000	16.016	-58.950	-42.934	-29.934	-13.000	PEAK

Note:

1. All reading above 1GHz is performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB4-H	**Time : 2018/07/09**
Limit : FCC_Part27_00M_00M_PK	**Margin : 6**
Probe : CB4_CE_Sub_B432_1-18GHz_3M_1116 - VERTICAL	**Power : AC 120V / 60Hz**
EUT : 4G/LTE Industrial M2M Router	**Note : Mode 1: LTE_CAT-M1_Band 13_QPSK_Link CH23205_5M_QPSK_6RB0**

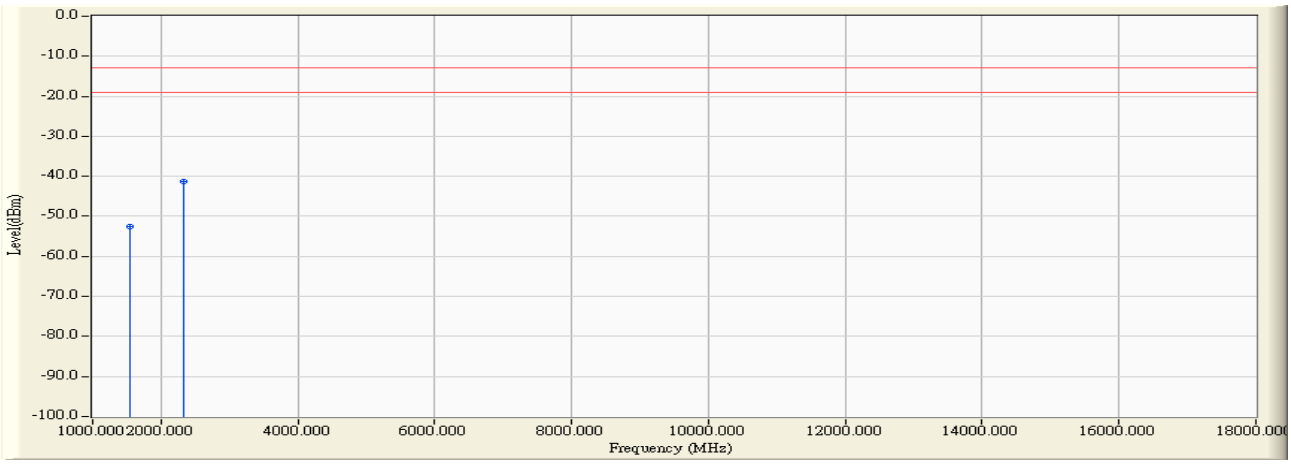


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm)	Margin (dB)	Limit (dBm)	Detector Type
1		1554.000	11.089	-66.370	-55.281	-42.281	-13.000	PEAK
2	*	2331.000	16.046	-52.840	-36.794	-23.794	-13.000	PEAK

Note:

1. All reading above 1GHz is performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB4-H	**Time : 2018/07/09**
Limit : FCC_Part27_00M_00M_PK	**Margin : 6**
Probe : CB4_CE_Sub_B432_1-18GHz_3M_1116 - HORIZONTAL	**Power : AC 120V / 60Hz**
EUT : 4G/LTE Industrial M2M Router	**Note : Mode 2: LTE_CAT-M1_Band 13_16-QAM_Link CH23205_5M_16-QAM_1RB0**

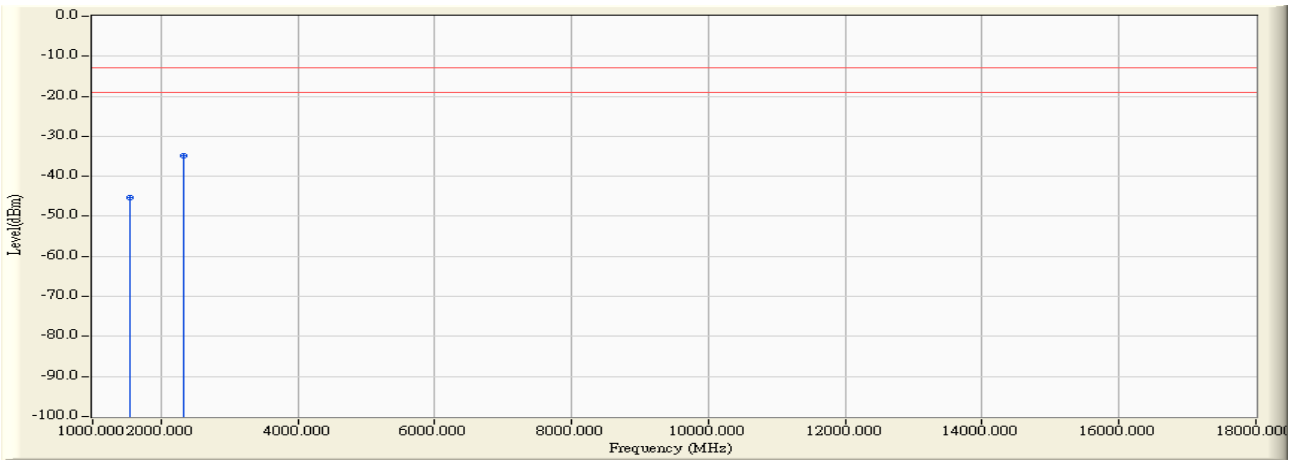


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm)	Margin (dB)	Limit (dBm)	Detector Type
1		1554.000	10.743	-63.370	-52.627	-39.627	-13.000	PEAK
2	*	2331.000	16.016	-57.270	-41.254	-28.254	-13.000	PEAK

Note:

1. All reading above 1GHz is performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB4-H	**Time : 2018/07/09**
Limit : FCC_Part27_00M_00M_PK	**Margin : 6**
Probe : CB4_CE_Sub_B432_1-18GHz_3M_1116 - VERTICAL	**Power : AC 120V / 60Hz**
EUT : 4G/LTE Industrial M2M Router	**Note : Mode 2: LTE_CAT-M1_Band 13_16-QAM_Link CH23205_5M_16-QAM_1RB0**

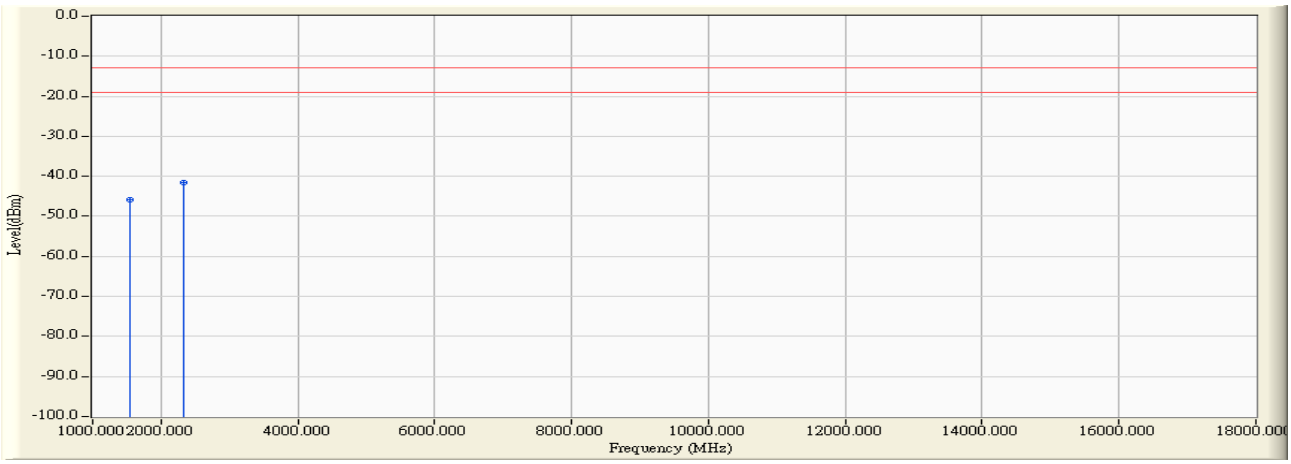


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm)	Margin (dB)	Limit (dBm)	Detector Type
1		1554.000	11.089	-56.460	-45.371	-32.371	-13.000	PEAK
2	*	2331.000	16.046	-50.870	-34.824	-21.824	-13.000	PEAK

Note:

1. All reading above 1GHz is performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB4-H	**Time : 2018/07/09**
Limit : FCC_Part27_00M_00M_PK	**Margin : 6**
Probe : CB4_CE_Sub_B432_1-18GHz_3M_1116 - HORIZONTAL	**Power : AC 120V / 60Hz**
EUT : 4G/LTE Industrial M2M Router	**Note : Mode 2: LTE_CAT-M1_Band 13_16-QAM_Link CH23205_5M_16-QAM_1RB5**

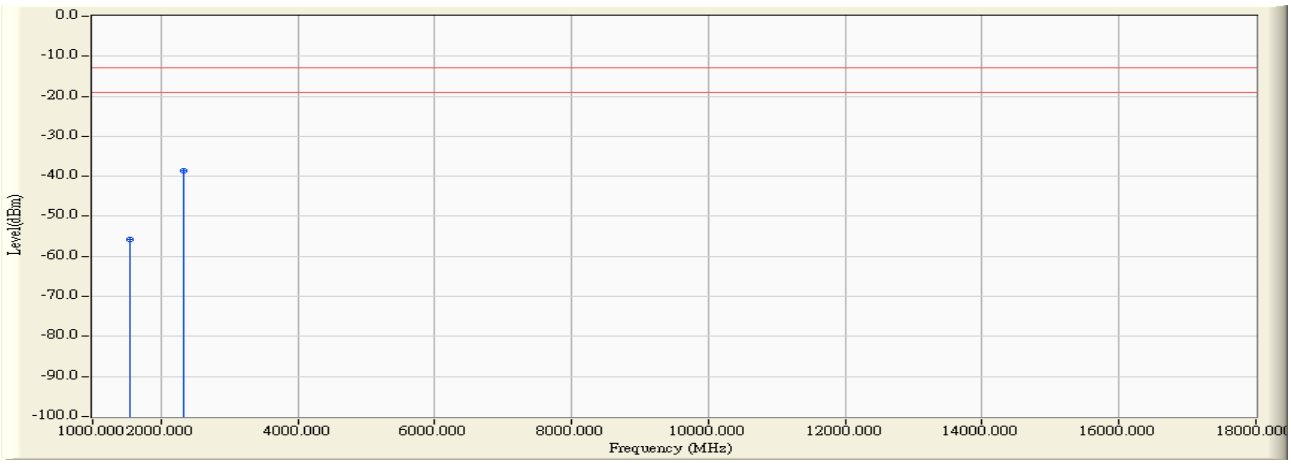


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm)	Margin (dB)	Limit (dBm)	Detector Type
1		1554.000	10.743	-56.650	-45.907	-32.907	-13.000	PEAK
2	*	2331.000	16.016	-57.490	-41.474	-28.474	-13.000	PEAK

Note:

1. All reading above 1GHz is performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB4-H	**Time : 2018/07/09**
Limit : FCC_Part27_00M_00M_PK	**Margin : 6**
Probe : CB4_CE_Sub_B432_1-18GHz_3M_1116 - VERTICAL	**Power : AC 120V / 60Hz**
EUT : 4G/LTE Industrial M2M Router	**Note : Mode 2: LTE_CAT-M1_Band 13_16-QAM_Link CH23205_5M_16-QAM_1RB5**

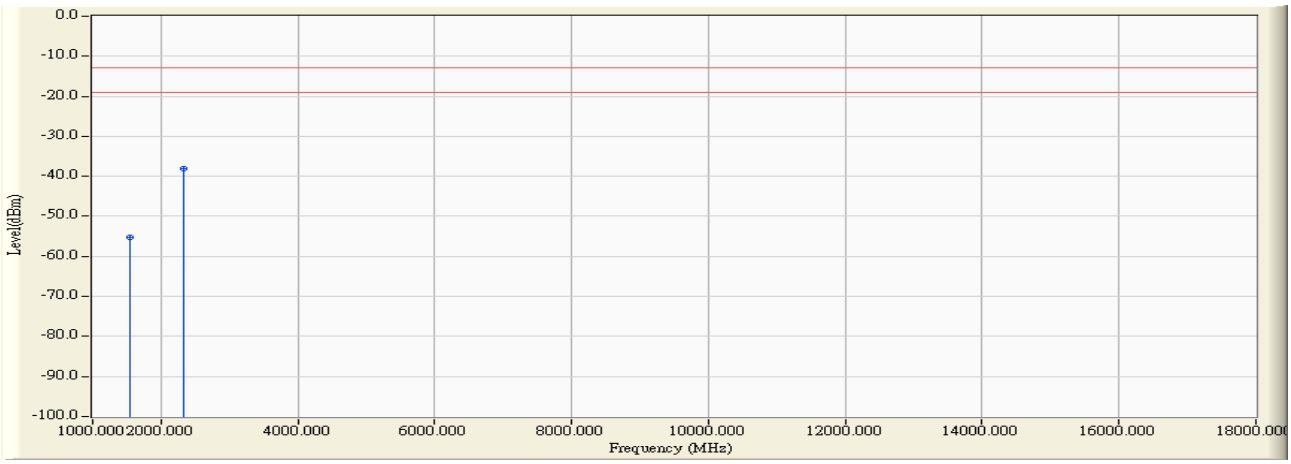


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm)	Margin (dB)	Limit (dBm)	Detector Type
1		1554.000	11.089	-66.930	-55.841	-42.841	-13.000	PEAK
2	*	2331.000	16.046	-54.700	-38.654	-25.654	-13.000	PEAK

Note:

1. All reading above 1GHz is performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB4-H	**Time : 2018/07/09**
Limit : FCC_Part27_00M_00M_PK	**Margin : 6**
Probe : CB4_CE_Sub_B432_1-18GHz_3M_1116 - HORIZONTAL	**Power : AC 120V / 60Hz**
EUT : 4G/LTE Industrial M2M Router	**Note : Mode 2: LTE_CAT-M1_Band 13_16-QAM_Link CH23205_5M_16-QAM_5RB0**

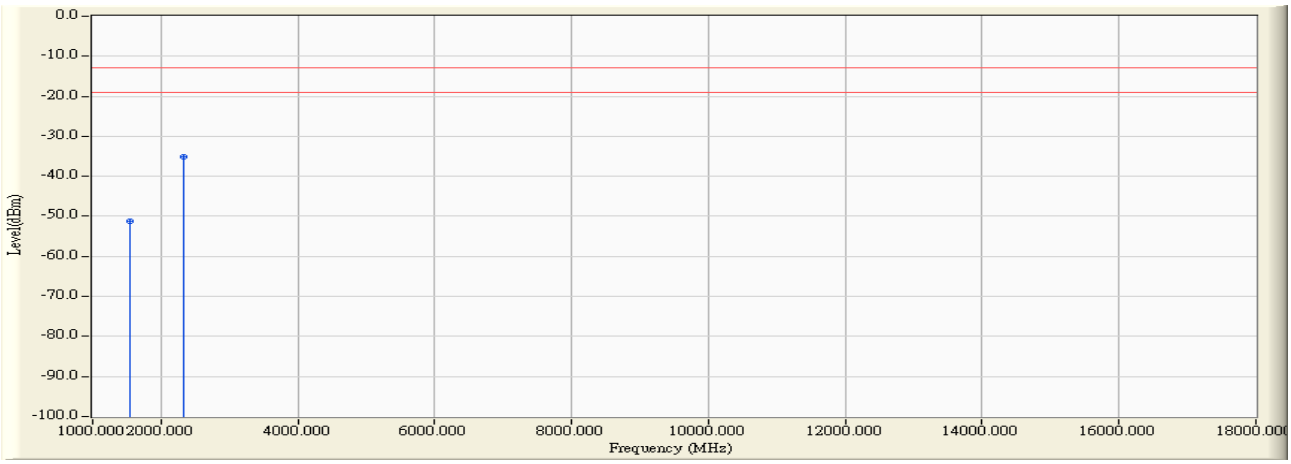


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm)	Margin (dB)	Limit (dBm)	Detector Type
1		1554.000	10.743	-65.960	-55.217	-42.217	-13.000	PEAK
2	*	2331.000	16.016	-54.130	-38.114	-25.114	-13.000	PEAK

Note:

1. All reading above 1GHz is performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB4-H	**Time : 2018/07/09**
Limit : FCC_Part27_00M_00M_PK	**Margin : 6**
Probe : CB4_CE_Sub_B432_1-18GHz_3M_1116 - VERTICAL	**Power : AC 120V / 60Hz**
EUT : 4G/LTE Industrial M2M Router	**Note : Mode 2: LTE_CAT-M1_Band 13_16-QAM_Link CH23205_5M_16-QAM_5RB0**

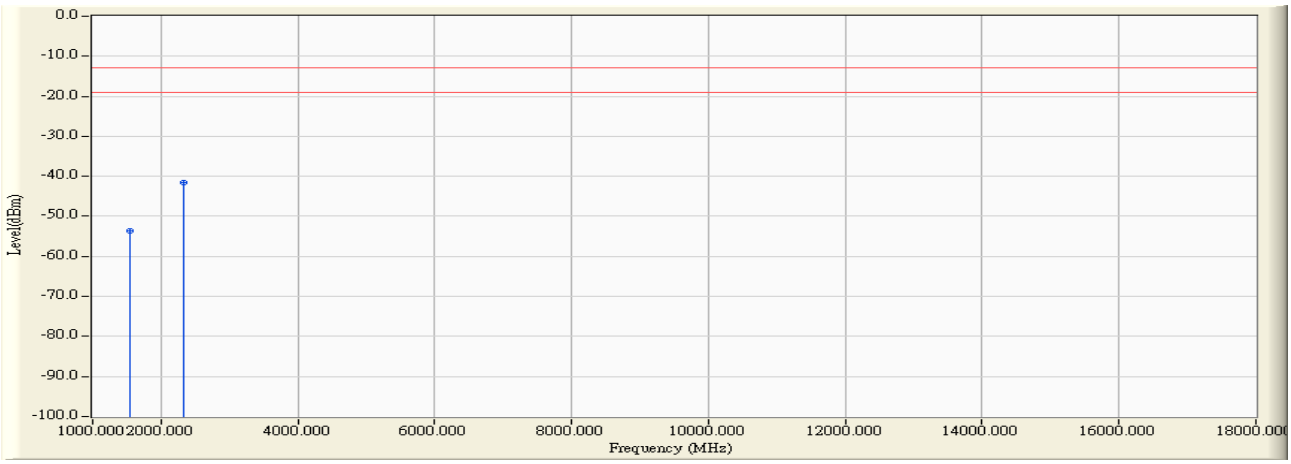


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm)	Margin (dB)	Limit (dBm)	Detector Type
1		1554.000	11.089	-62.330	-51.241	-38.241	-13.000	PEAK
2	*	2331.000	16.046	-51.040	-34.994	-21.994	-13.000	PEAK

Note:

1. All reading above 1GHz is performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB4-H	**Time : 2018/07/09**
Limit : FCC_Part27_00M_00M_PK	**Margin : 6**
Probe : CB4_CE_Sub_B432_1-18GHz_3M_1116 - HORIZONTAL	**Power : AC 120V / 60Hz**
EUT : 4G/LTE Industrial M2M Router	**Note : Mode 2: LTE_CAT-M1_Band 13_16-QAM_Link CH23205_5M_16-QAM_5RB1**

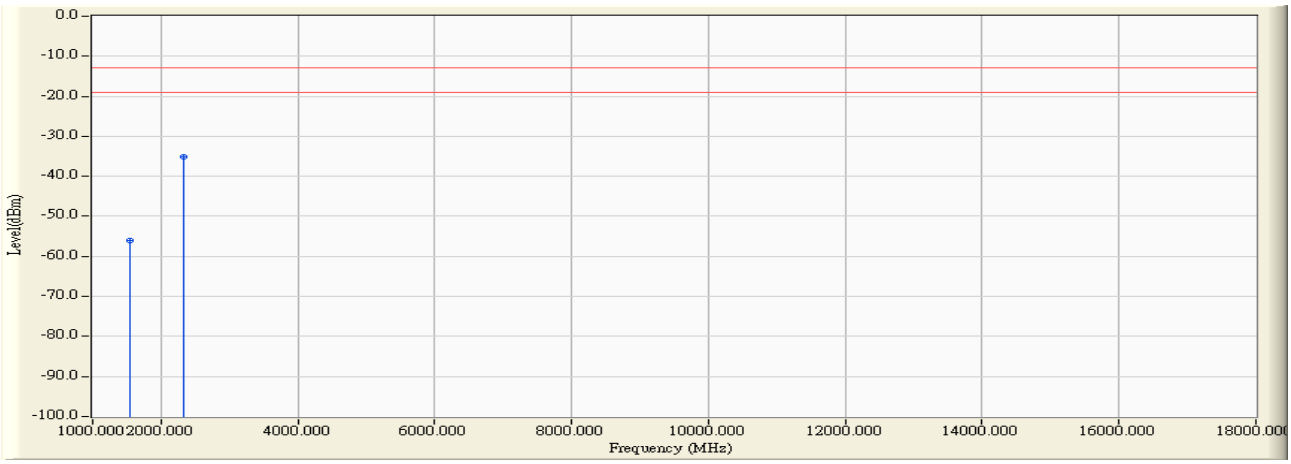


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm)	Margin (dB)	Limit (dBm)	Detector Type
1		1554.000	10.743	-64.470	-53.727	-40.727	-13.000	PEAK
2	*	2331.000	16.016	-57.610	-41.594	-28.594	-13.000	PEAK

Note:

1. All reading above 1GHz is performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB4-H	**Time : 2018/07/09**
Limit : FCC_Part27_00M_00M_PK	**Margin : 6**
Probe : CB4_CE_Sub_B432_1-18GHz_3M_1116 - VERTICAL	**Power : AC 120V / 60Hz**
EUT : 4G/LTE Industrial M2M Router	**Note : Mode 2: LTE_CAT-M1_Band 13_16-QAM_Link CH23205_5M_16-QAM_5RB1**

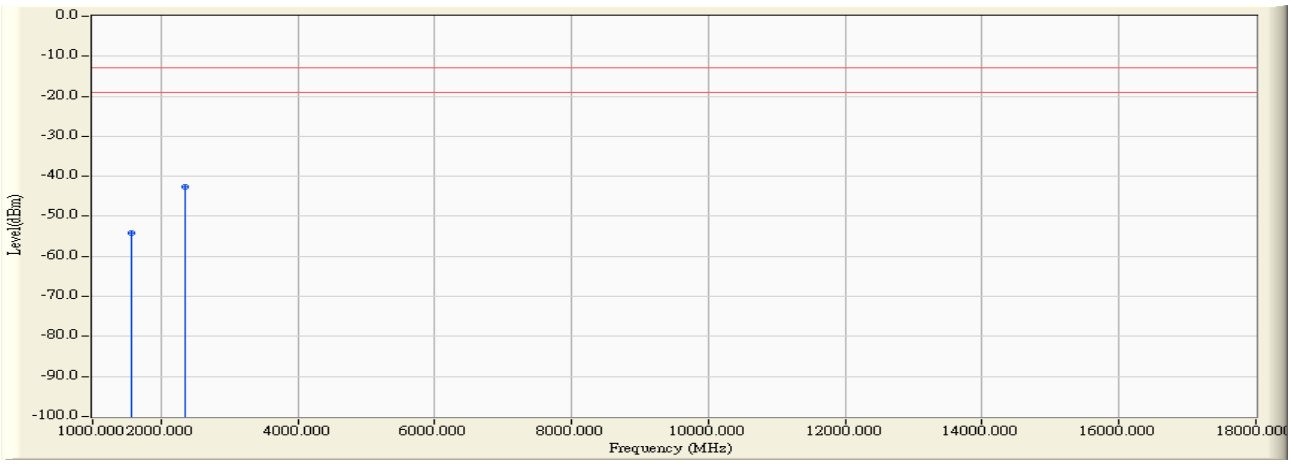


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm)	Margin (dB)	Limit (dBm)	Detector Type
1		1554.000	11.089	-67.030	-55.941	-42.941	-13.000	PEAK
2	*	2331.000	16.046	-51.240	-35.194	-22.194	-13.000	PEAK

Note:

1. All reading above 1GHz is performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB4-H	**Time : 2018/07/09**
Limit : FCC_Part27_00M_00M_PK	**Margin : 6**
Probe : CB4_CE_Sub_B432_1-18GHz_3M_1116 - HORIZONTAL	**Power : AC 120V / 60Hz**
EUT : 4G/LTE Industrial M2M Router	**Note : Mode 1: LTE_CAT-M1_Band 13_QPSK_Link CH23230_5M_QPSK_1RB0**

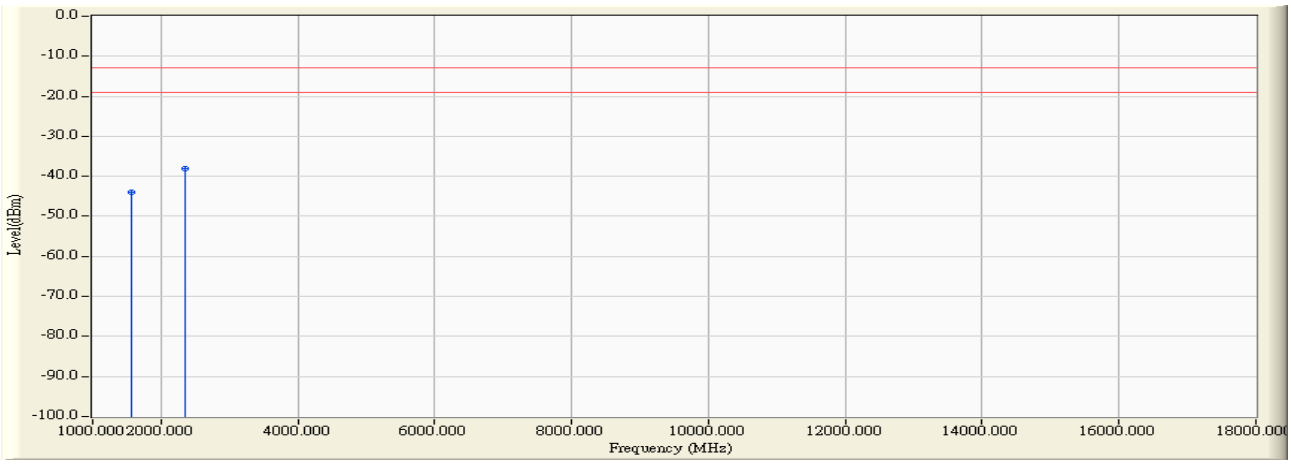


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm)	Margin (dB)	Limit (dBm)	Detector Type
1		1564.000	10.748	-64.880	-54.131	-41.131	-13.000	PEAK
2	*	2346.000	15.948	-58.700	-42.752	-29.752	-13.000	PEAK

Note:

1. All reading above 1GHz is performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB4-H	**Time : 2018/07/09**
Limit : FCC_Part27_00M_00M_PK	**Margin : 6**
Probe : CB4_CE_Sub_B432_1-18GHz_3M_1116 - VERTICAL	**Power : AC 120V / 60Hz**
EUT : 4G/LTE Industrial M2M Router	**Note : Mode 1: LTE_CAT-M1_Band 13_QPSK_Link CH23230_5M_QPSK_1RB0**

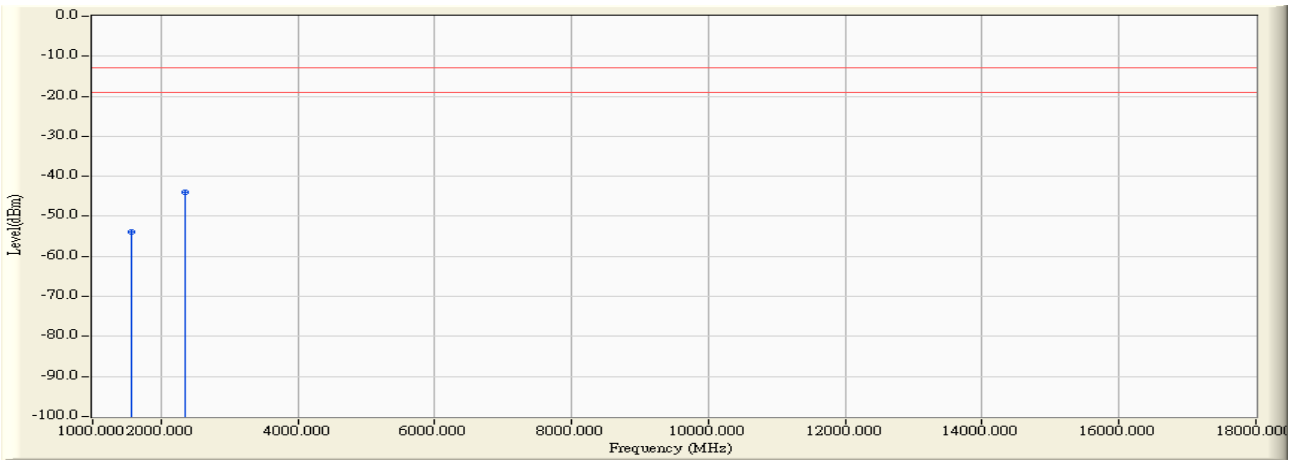


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm)	Margin (dB)	Limit (dBm)	Detector Type
1		1564.000	11.113	-55.090	-43.976	-30.976	-13.000	PEAK
2	*	2346.000	16.010	-53.950	-37.940	-24.940	-13.000	PEAK

Note:

1. All reading above 1GHz is performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB4-H	**Time : 2018/07/09**
Limit : FCC_Part27_00M_00M_PK	**Margin : 6**
Probe : CB4_CE_Sub_B432_1-18GHz_3M_1116 - HORIZONTAL	**Power : AC 120V / 60Hz**
EUT : 4G/LTE Industrial M2M Router	**Note : Mode 1: LTE_CAT-M1_Band 13_QPSK_Link CH23230_5M_QPSK_6RB0**

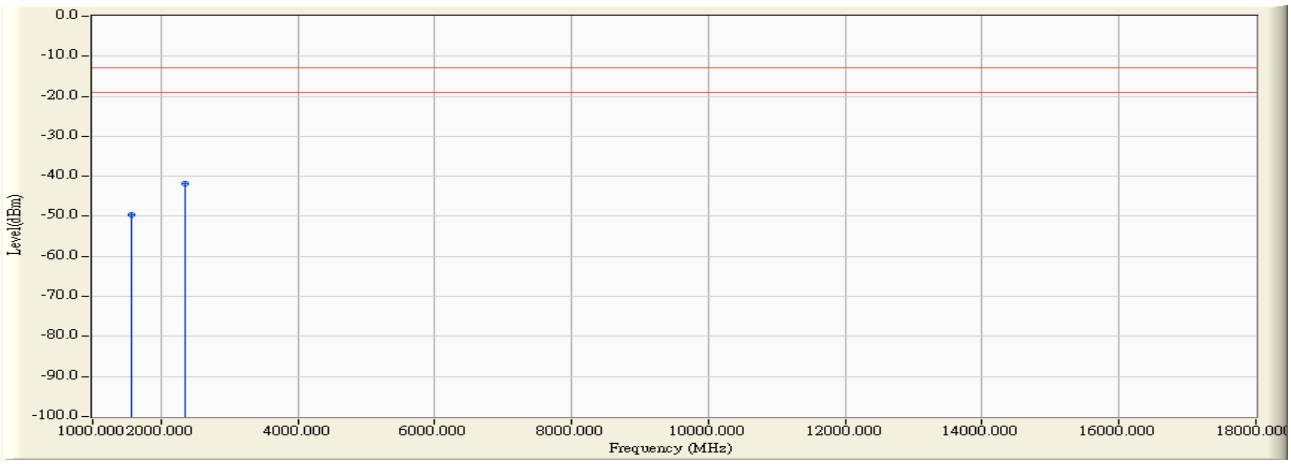


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm)	Margin (dB)	Limit (dBm)	Detector Type
1		1564.000	10.748	-64.560	-53.811	-40.811	-13.000	PEAK
2	*	2346.000	15.948	-60.010	-44.062	-31.062	-13.000	PEAK

Note:

1. All reading above 1GHz is performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB4-H	**Time : 2018/07/09**
Limit : FCC_Part27_00M_00M_PK	**Margin : 6**
Probe : CB4_CE_Sub_B432_1-18GHz_3M_1116 - VERTICAL	**Power : AC 120V / 60Hz**
EUT : 4G/LTE Industrial M2M Router	**Note : Mode 1: LTE_CAT-M1_Band 13_QPSK_Link CH23230_5M_QPSK_6RB0**

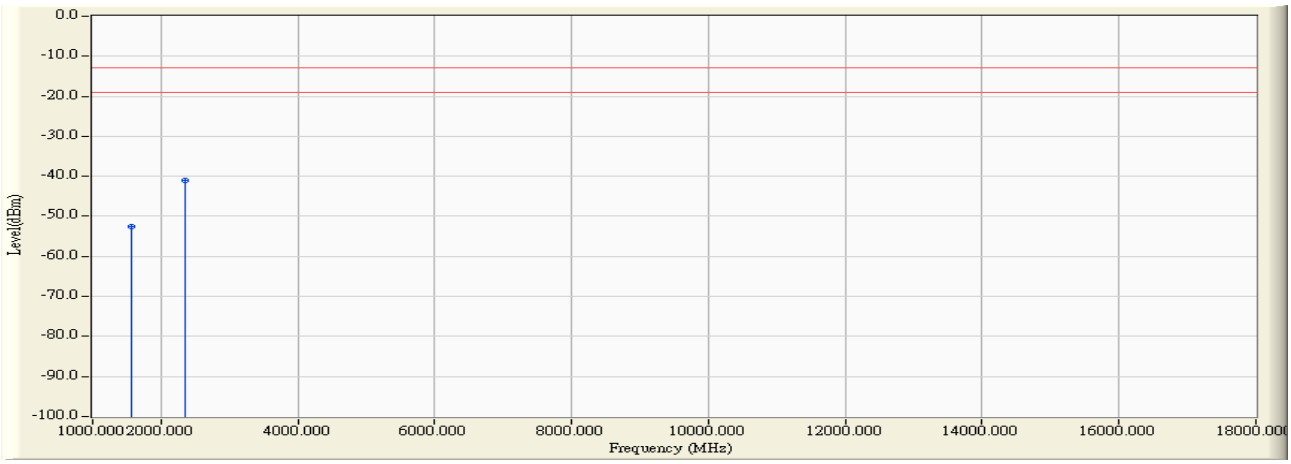


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm)	Margin (dB)	Limit (dBm)	Detector Type
1		1564.000	11.113	-60.840	-49.726	-36.726	-13.000	PEAK
2	*	2346.000	16.010	-57.830	-41.820	-28.820	-13.000	PEAK

Note:

1. All reading above 1GHz is performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB4-H	**Time : 2018/07/09**
Limit : FCC_Part27_00M_00M_PK	**Margin : 6**
Probe : CB4_CE_Sub_B432_1-18GHz_3M_1116 - HORIZONTAL	**Power : AC 120V / 60Hz**
EUT : 4G/LTE Industrial M2M Router	**Note : Mode 2: LTE_CAT-M1_Band 13_16-QAM_Link CH23230_5M_16-QAM_1RB0**

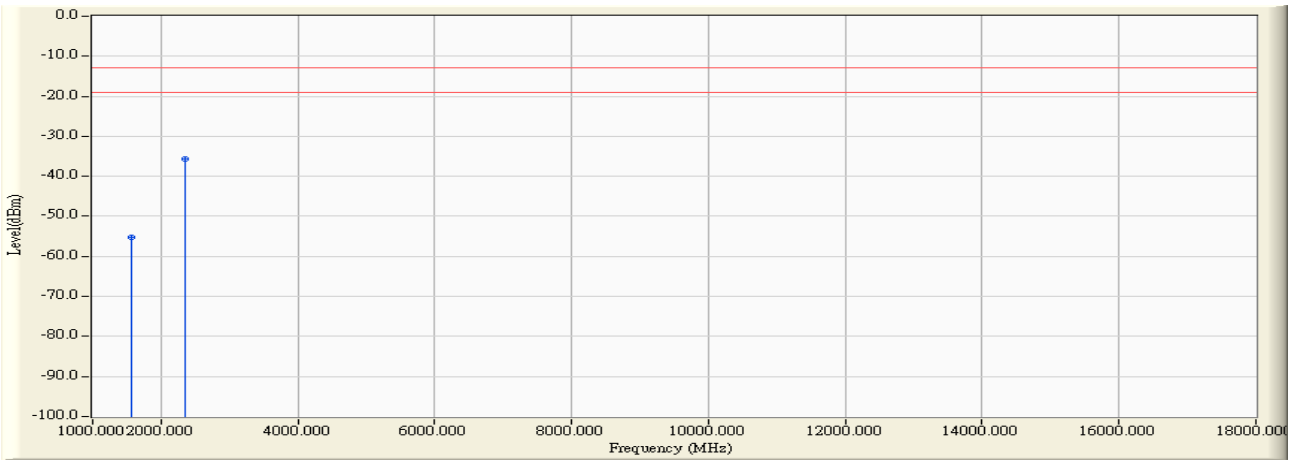


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm)	Margin (dB)	Limit (dBm)	Detector Type
1		1564.000	10.748	-63.420	-52.671	-39.671	-13.000	PEAK
2	*	2346.000	15.948	-57.060	-41.112	-28.112	-13.000	PEAK

Note:

1. All reading above 1GHz is performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB4-H	**Time : 2018/07/09**
Limit : FCC_Part27_00M_00M_PK	**Margin : 6**
Probe : CB4_CE_Sub_B432_1-18GHz_3M_1116 - VERTICAL	**Power : AC 120V / 60Hz**
EUT : 4G/LTE Industrial M2M Router	**Note : Mode 2: LTE_CAT-M1_Band 13_16-QAM_Link CH23230_5M_16-QAM_1RB0**

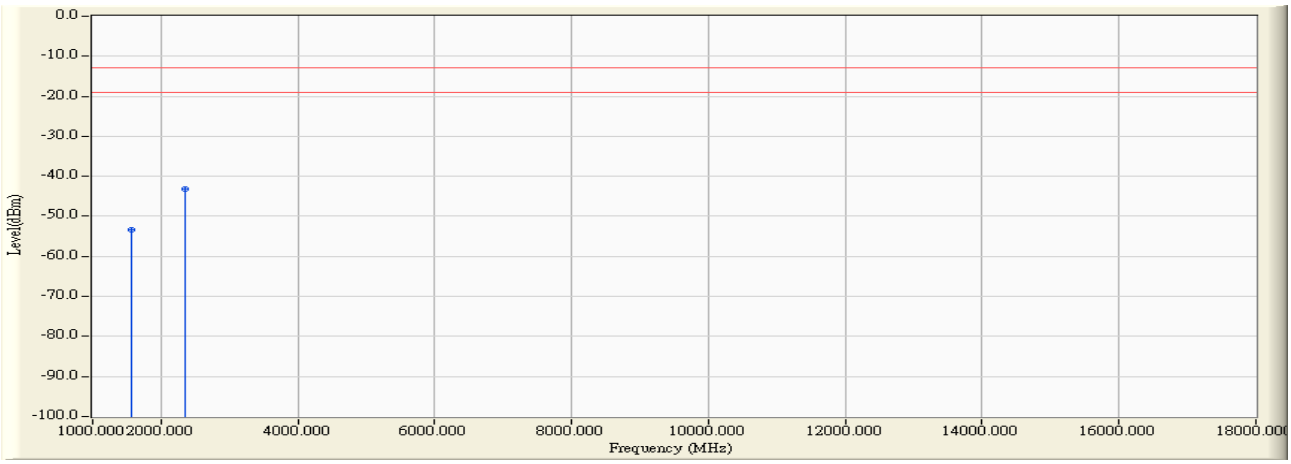


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm)	Margin (dB)	Limit (dBm)	Detector Type
1		1564.000	11.113	-66.390	-55.276	-42.276	-13.000	PEAK
2	*	2346.000	16.010	-51.540	-35.530	-22.530	-13.000	PEAK

Note:

1. All reading above 1GHz is performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB4-H	**Time : 2018/07/09**
Limit : FCC_Part27_00M_00M_PK	**Margin : 6**
Probe : CB4_CE_Sub_B432_1-18GHz_3M_1116 - HORIZONTAL	**Power : AC 120V / 60Hz**
EUT : 4G/LTE Industrial M2M Router	**Note : Mode 2: LTE_CAT-M1_Band 13_16-QAM_Link CH23230_5M_16-QAM_1RB5**

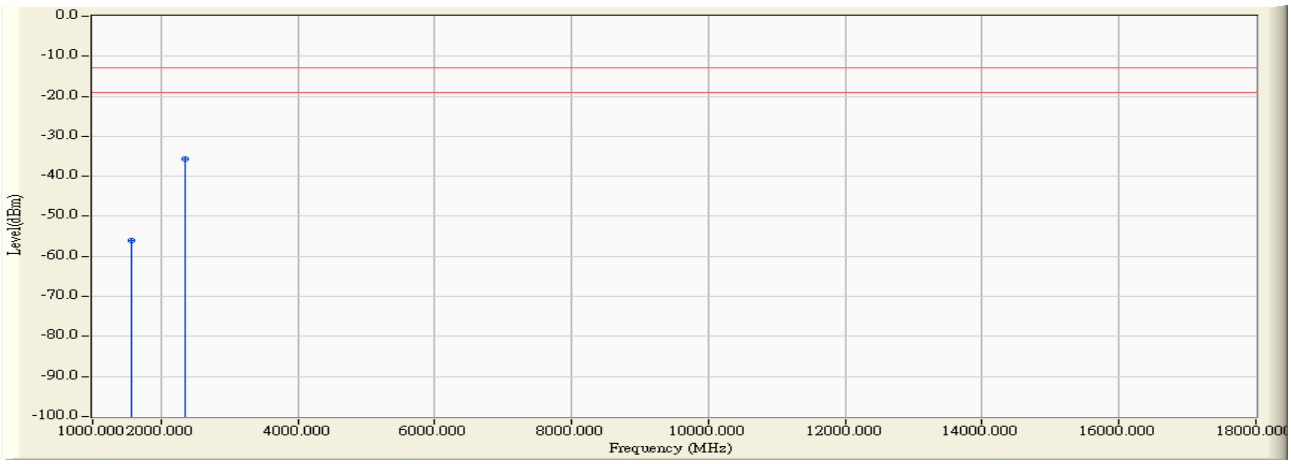


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm)	Margin (dB)	Limit (dBm)	Detector Type
1		1564.000	10.748	-64.220	-53.471	-40.471	-13.000	PEAK
2	*	2346.000	15.948	-59.170	-43.222	-30.222	-13.000	PEAK

Note:

1. All reading above 1GHz is performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB4-H	**Time : 2018/07/09**
Limit : FCC_Part27_00M_00M_PK	**Margin : 6**
Probe : CB4_CE_Sub_B432_1-18GHz_3M_1116 - VERTICAL	**Power : AC 120V / 60Hz**
EUT : 4G/LTE Industrial M2M Router	**Note : Mode 2: LTE_CAT-M1_Band 13_16-QAM_Link CH23230_5M_16-QAM_1RB5**

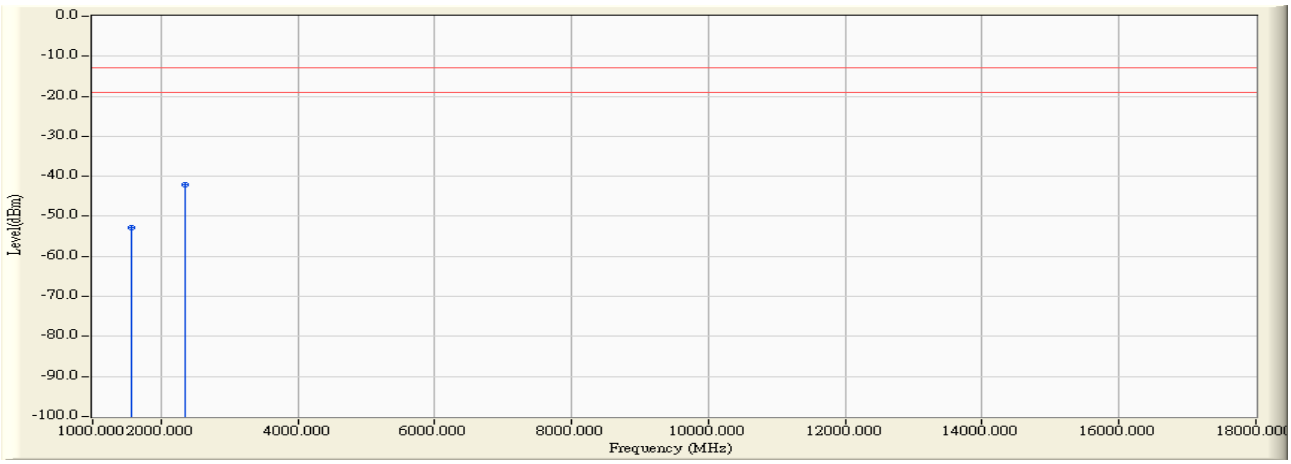


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm)	Margin (dB)	Limit (dBm)	Detector Type
1		1564.000	11.113	-67.230	-56.116	-43.116	-13.000	PEAK
2	*	2346.000	16.010	-51.690	-35.680	-22.680	-13.000	PEAK

Note:

1. All reading above 1GHz is performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB4-H	**Time : 2018/07/09**
Limit : FCC_Part27_00M_00M_PK	**Margin : 6**
Probe : CB4_CE_Sub_B432_1-18GHz_3M_1116 - HORIZONTAL	**Power : AC 120V / 60Hz**
EUT : 4G/LTE Industrial M2M Router	**Note : Mode 2: LTE_CAT-M1_Band 13_16-QAM_Link CH23230_5M_16-QAM_5RB0**

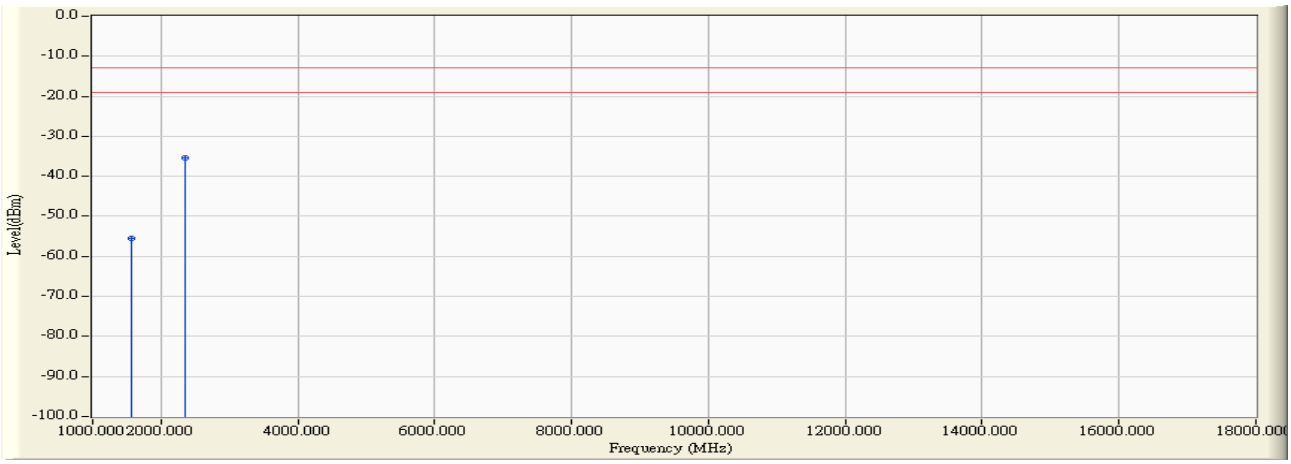


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm)	Margin (dB)	Limit (dBm)	Detector Type
1		1564.000	10.748	-63.640	-52.891	-39.891	-13.000	PEAK
2	*	2346.000	15.948	-58.040	-42.092	-29.092	-13.000	PEAK

Note:

1. All reading above 1GHz is performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB4-H	**Time : 2018/07/09**
Limit : FCC_Part27_00M_00M_PK	**Margin : 6**
Probe : CB4_CE_Sub_B432_1-18GHz_3M_1116 - VERTICAL	**Power : AC 120V / 60Hz**
EUT : 4G/LTE Industrial M2M Router	**Note : Mode 2: LTE_CAT-M1_Band 13_16-QAM_Link CH23230_5M_16-QAM_5RB0**

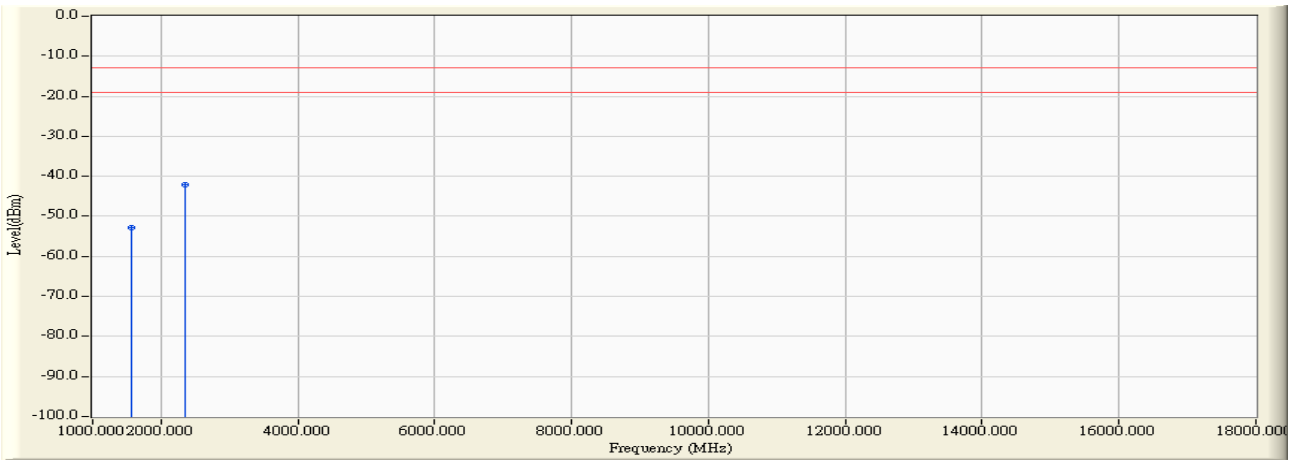


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm)	Margin (dB)	Limit (dBm)	Detector Type
1		1564.000	11.113	-66.730	-55.616	-42.616	-13.000	PEAK
2	*	2346.000	16.010	-51.520	-35.510	-22.510	-13.000	PEAK

Note:

1. All reading above 1GHz is performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB4-H	**Time : 2018/07/09**
Limit : FCC_Part27_00M_00M_PK	**Margin : 6**
Probe : CB4_CE_Sub_B432_1-18GHz_3M_1116 - HORIZONTAL	**Power : AC 120V / 60Hz**
EUT : 4G/LTE Industrial M2M Router	**Note : Mode 2: LTE_CAT-M1_Band 13_16-QAM_Link CH23230_5M_16-QAM_5RB1**

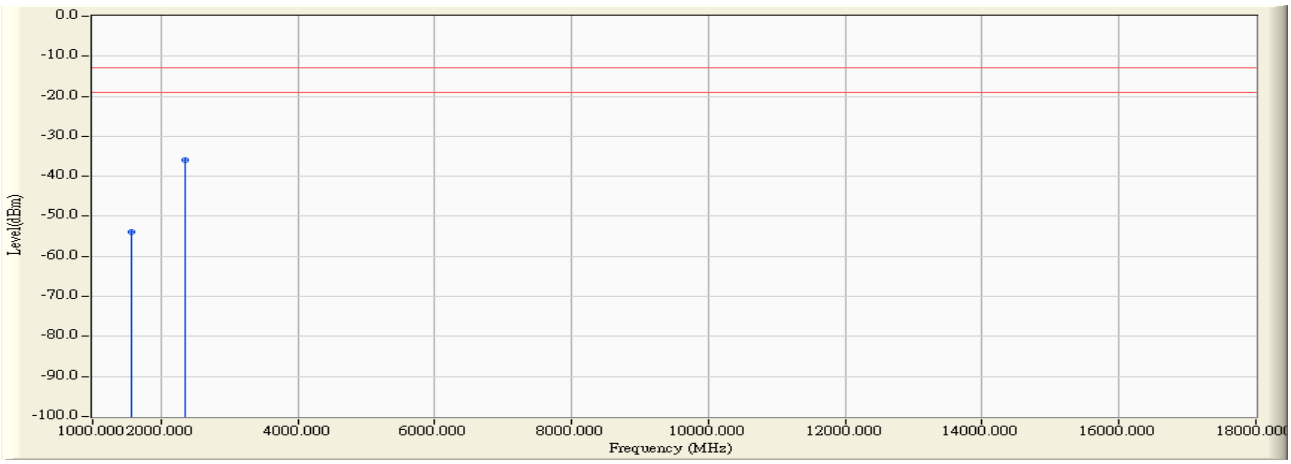


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm)	Margin (dB)	Limit (dBm)	Detector Type
1		1564.000	10.748	-63.630	-52.881	-39.881	-13.000	PEAK
2	*	2346.000	15.948	-58.150	-42.202	-29.202	-13.000	PEAK

Note:

1. All reading above 1GHz is performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB4-H	**Time : 2018/07/09**
Limit : FCC_Part27_00M_00M_PK	**Margin : 6**
Probe : CB4_CE_Sub_B432_1-18GHz_3M_1116 - VERTICAL	**Power : AC 120V / 60Hz**
EUT : 4G/LTE Industrial M2M Router	**Note : Mode 2: LTE_CAT-M1_Band 13_16-QAM_Link CH23230_5M_16-QAM_5RB1**

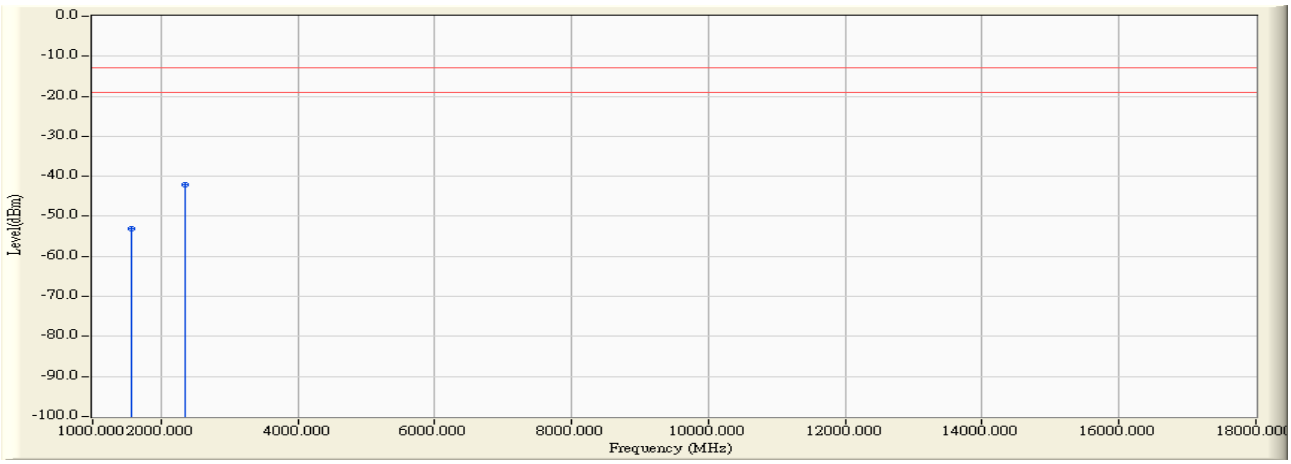


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm)	Margin (dB)	Limit (dBm)	Detector Type
1		1564.000	11.113	-64.900	-53.786	-40.786	-13.000	PEAK
2	*	2346.000	16.010	-51.910	-35.900	-22.900	-13.000	PEAK

Note:

1. All reading above 1GHz is performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB4-H	**Time : 2018/07/09**
Limit : FCC_Part27_00M_00M_PK	**Margin : 6**
Probe : CB4_CE_Sub_B432_1-18GHz_3M_1116 - HORIZONTAL	**Power : AC 120V / 60Hz**
EUT : 4G/LTE Industrial M2M Router	**Note : Mode 1: LTE_CAT-M1_Band 13_QPSK_Link CH23230_10M_QPSK_1RB0**

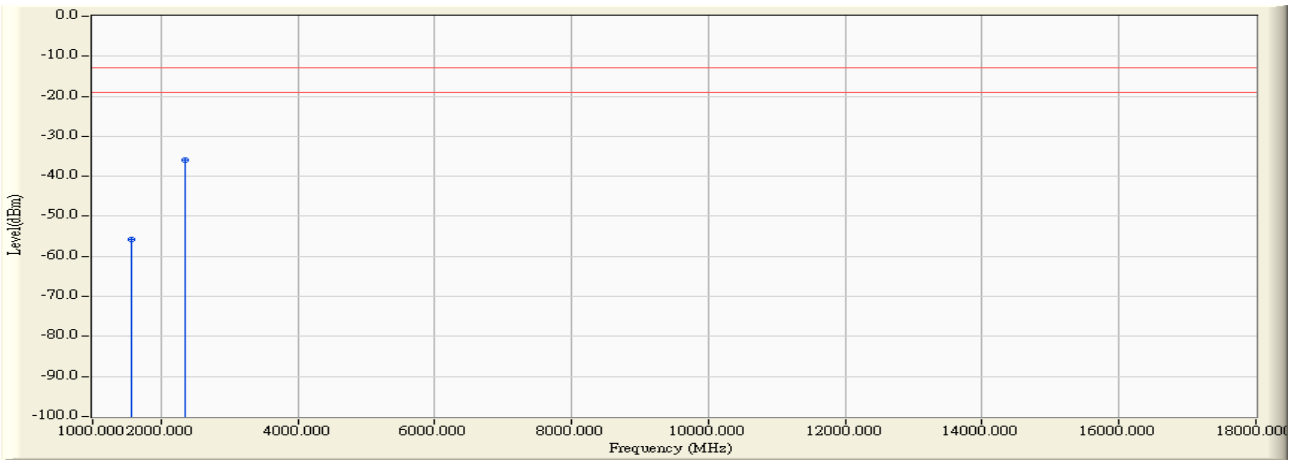


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm)	Margin (dB)	Limit (dBm)	Detector Type
1		1564.000	10.748	-63.840	-53.091	-40.091	-13.000	PEAK
2	*	2346.000	15.948	-58.010	-42.062	-29.062	-13.000	PEAK

Note:

1. All reading above 1GHz is performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB4-H	**Time : 2018/07/09**
Limit : FCC_Part27_00M_00M_PK	**Margin : 6**
Probe : CB4_CE_Sub_B432_1-18GHz_3M_1116 - VERTICAL	**Power : AC 120V / 60Hz**
EUT : 4G/LTE Industrial M2M Router	**Note : Mode 1: LTE_CAT-M1_Band 13_QPSK_Link CH23230_10M_QPSK_1RB0**

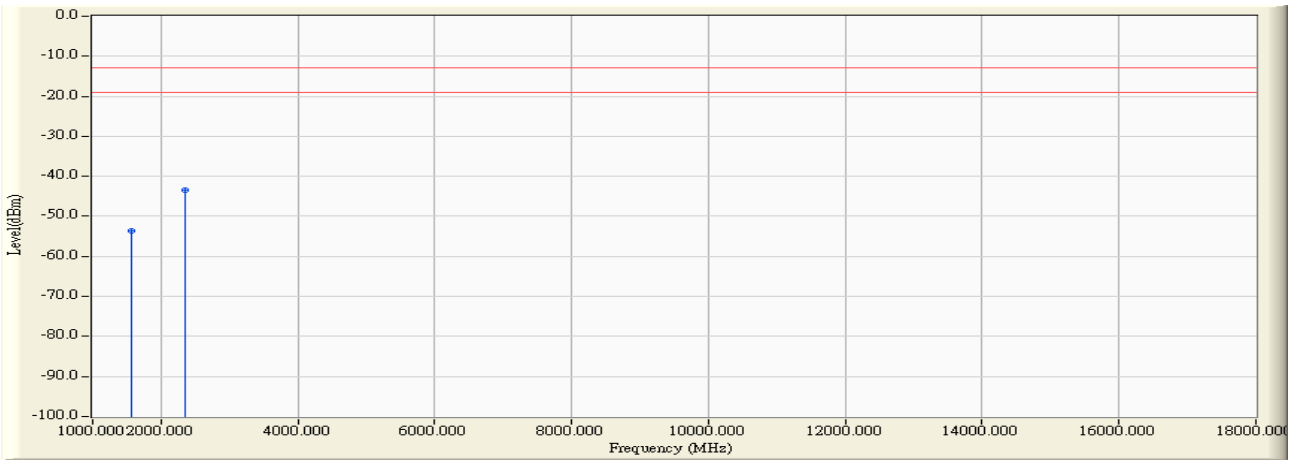


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm)	Margin (dB)	Limit (dBm)	Detector Type
1		1564.000	11.113	-66.860	-55.746	-42.746	-13.000	PEAK
2	*	2346.000	16.010	-51.810	-35.800	-22.800	-13.000	PEAK

Note:

1. All reading above 1GHz is performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB4-H	**Time : 2018/07/09**
Limit : FCC_Part27_00M_00M_PK	**Margin : 6**
Probe : CB4_CE_Sub_B432_1-18GHz_3M_1116 - HORIZONTAL	**Power : AC 120V / 60Hz**
EUT : 4G/LTE Industrial M2M Router	**Note : Mode 1: LTE_CAT-M1_Band 13_QPSK_Link CH23230_10M_QPSK_6RB0**

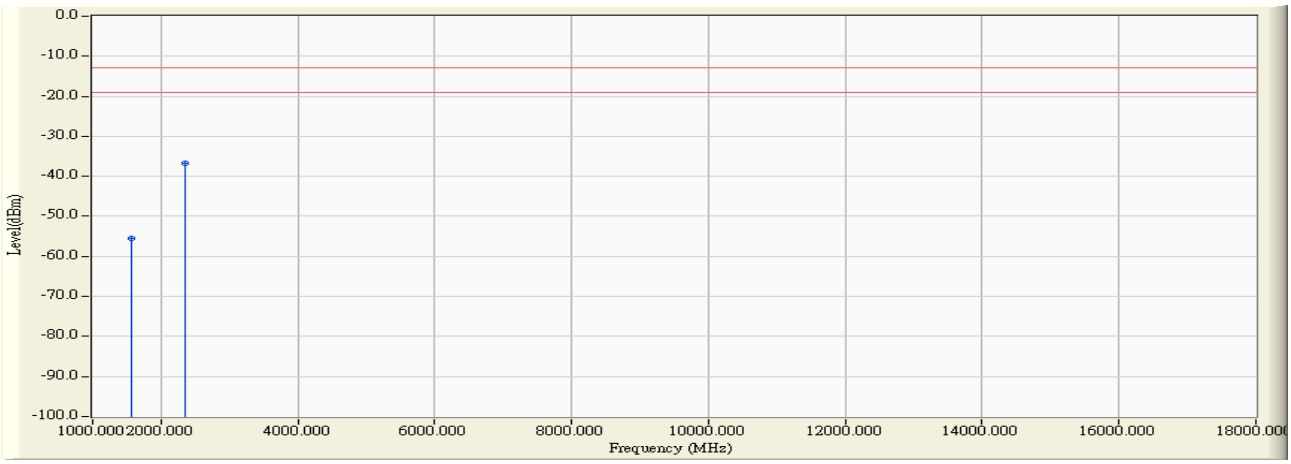


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm)	Margin (dB)	Limit (dBm)	Detector Type
1		1564.000	10.748	-64.320	-53.571	-40.571	-13.000	PEAK
2	*	2346.000	15.948	-59.330	-43.382	-30.382	-13.000	PEAK

Note:

1. All reading above 1GHz is performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB4-H	**Time : 2018/07/09**
Limit : FCC_Part27_00M_00M_PK	**Margin : 6**
Probe : CB4_CE_Sub_B432_1-18GHz_3M_1116 - VERTICAL	**Power : AC 120V / 60Hz**
EUT : 4G/LTE Industrial M2M Router	**Note : Mode 1: LTE_CAT-M1_Band 13_QPSK_Link CH23230_10M_QPSK_6RB0**

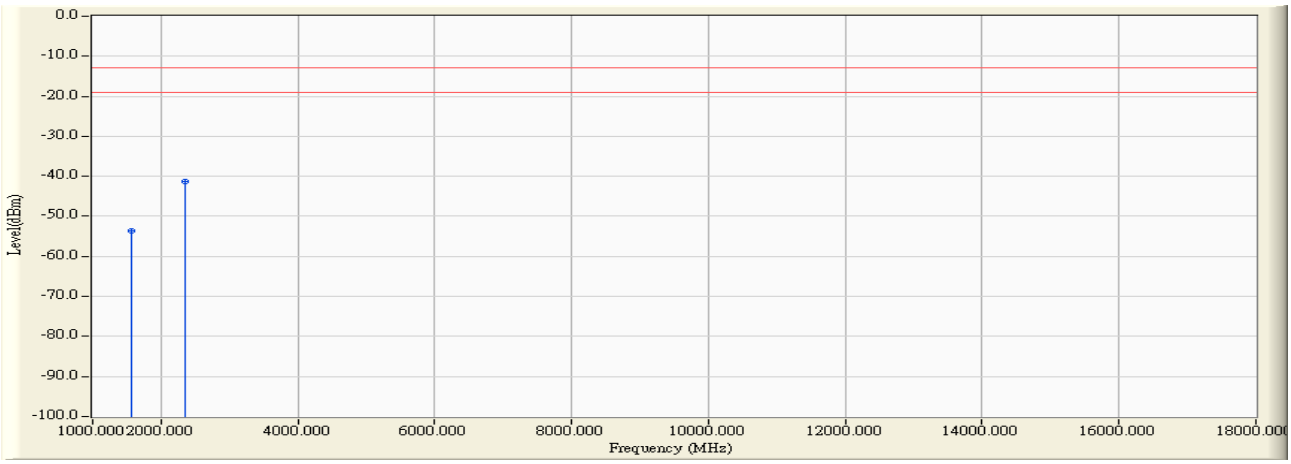


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm)	Margin (dB)	Limit (dBm)	Detector Type
1		1564.000	11.113	-66.620	-55.506	-42.506	-13.000	PEAK
2	*	2346.000	16.010	-52.810	-36.800	-23.800	-13.000	PEAK

Note:

1. All reading above 1GHz is performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB4-H	**Time : 2018/07/09**
Limit : FCC_Part27_00M_00M_PK	**Margin : 6**
Probe : CB4_CE_Sub_B432_1-18GHz_3M_1116 - HORIZONTAL	**Power : AC 120V / 60Hz**
EUT : 4G/LTE Industrial M2M Router	**Note : Mode 2: LTE_CAT-M1_Band 13_16-QAM_Link CH23230_10M_16-QAM_3RB0**

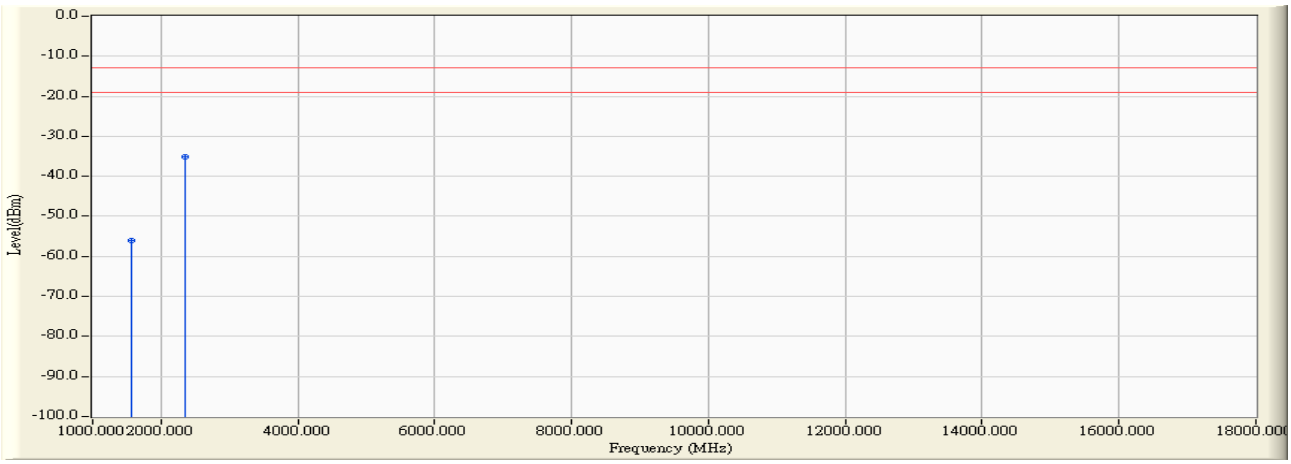


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm)	Margin (dB)	Limit (dBm)	Detector Type
1		1564.000	10.748	-64.290	-53.541	-40.541	-13.000	PEAK
2	*	2346.000	15.948	-57.340	-41.392	-28.392	-13.000	PEAK

Note:

1. All reading above 1GHz is performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB4-H	**Time : 2018/07/09**
Limit : FCC_Part27_00M_00M_PK	**Margin : 6**
Probe : CB4_CE_Sub_B432_1-18GHz_3M_1116 - VERTICAL	**Power : AC 120V / 60Hz**
EUT : 4G/LTE Industrial M2M Router	**Note : Mode 2: LTE_CAT-M1_Band 13_16-QAM_Link CH23230_10M_16-QAM_3RB0**

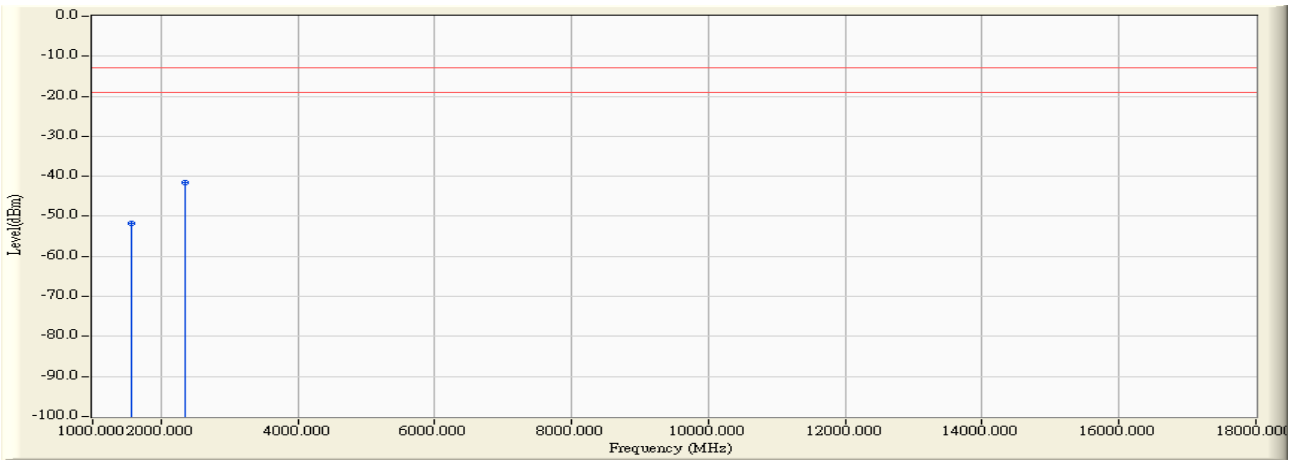


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm)	Margin (dB)	Limit (dBm)	Detector Type
1		1564.000	11.113	-67.220	-56.106	-43.106	-13.000	PEAK
2	*	2346.000	16.010	-51.030	-35.020	-22.020	-13.000	PEAK

Note:

1. All reading above 1GHz is performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB4-H	**Time : 2018/07/09**
Limit : FCC_Part27_00M_00M_PK	**Margin : 6**
Probe : CB4_CE_Sub_B432_1-18GHz_3M_1116 - HORIZONTAL	**Power : AC 120V / 60Hz**
EUT : 4G/LTE Industrial M2M Router	**Note : Mode 2: LTE_CAT-M1_Band 13_16-QAM_Link CH23230_10M_16-QAM_3RB3**

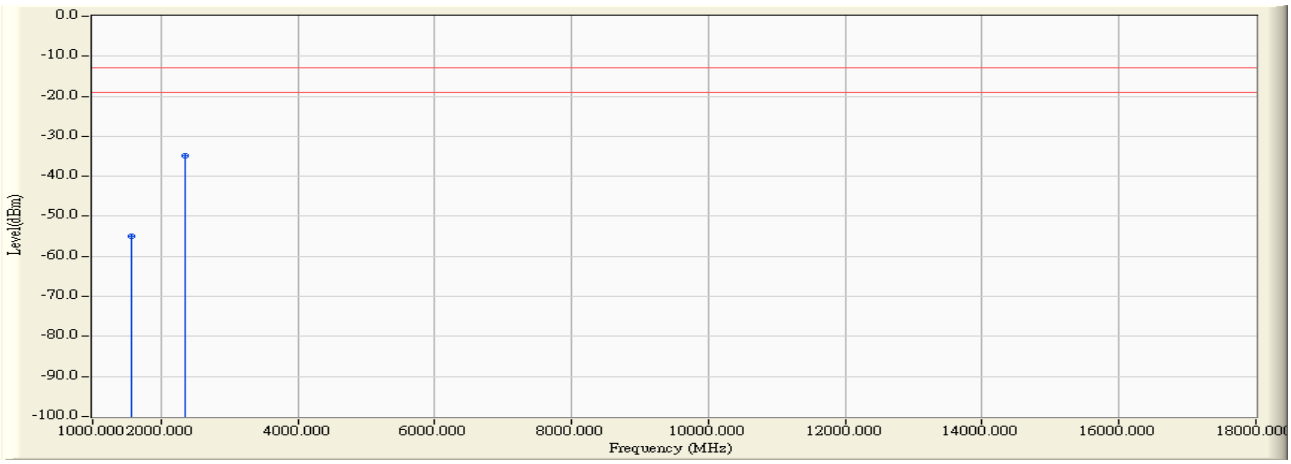


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm)	Margin (dB)	Limit (dBm)	Detector Type
1		1564.000	10.748	-62.530	-51.781	-38.781	-13.000	PEAK
2	*	2346.000	15.948	-57.600	-41.652	-28.652	-13.000	PEAK

Note:

1. All reading above 1GHz is performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB4-H	**Time : 2018/07/09**
Limit : FCC_Part27_00M_00M_PK	**Margin : 6**
Probe : CB4_CE_Sub_B432_1-18GHz_3M_1116 - VERTICAL	**Power : AC 120V / 60Hz**
EUT : 4G/LTE Industrial M2M Router	**Note : Mode 2: LTE_CAT-M1_Band 13_16-QAM_Link CH23230_10M_16-QAM_3RB3**

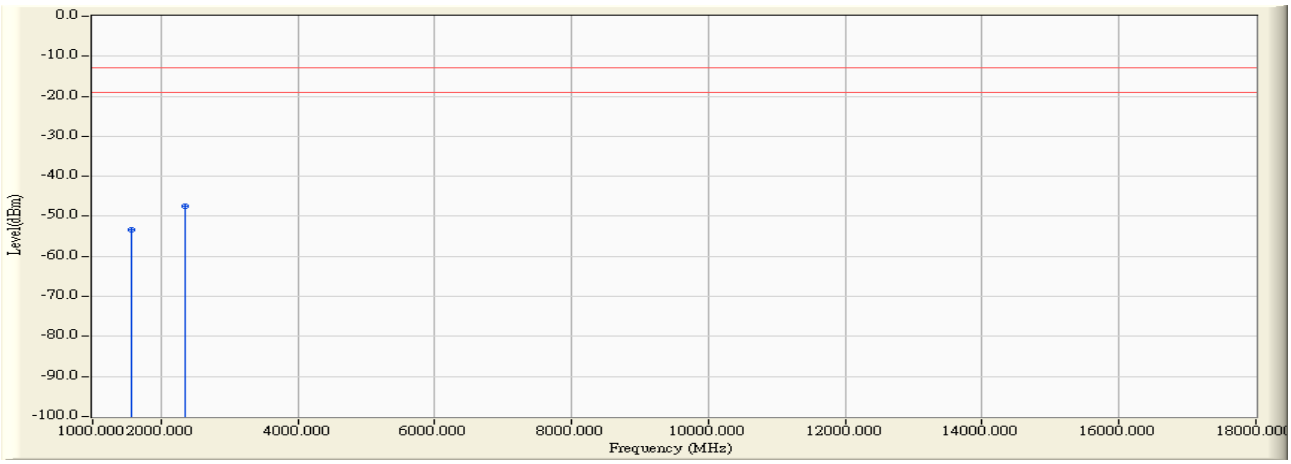


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm)	Margin (dB)	Limit (dBm)	Detector Type
1		1564.000	11.113	-66.090	-54.976	-41.976	-13.000	PEAK
2	*	2346.000	16.010	-50.900	-34.890	-21.890	-13.000	PEAK

Note:

1. All reading above 1GHz is performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB4-H	**Time : 2018/07/09**
Limit : FCC_Part27_00M_00M_PK	**Margin : 6**
Probe : CB4_CE_Sub_B432_1-18GHz_3M_1116 - HORIZONTAL	**Power : AC 120V / 60Hz**
EUT : 4G/LTE Industrial M2M Router	**Note : Mode 2: LTE_CAT-M1_Band 13_16-QAM_Link CH23230_10M_16-QAM_5RB0**

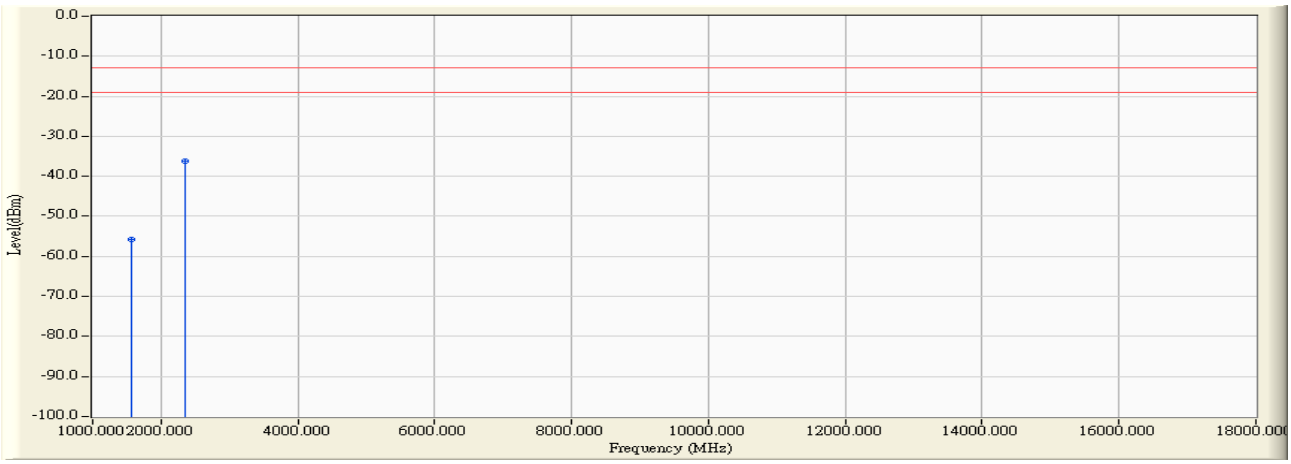


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm)	Margin (dB)	Limit (dBm)	Detector Type
1		1564.000	10.748	-64.120	-53.371	-40.371	-13.000	PEAK
2	*	2346.000	15.948	-63.330	-47.382	-34.382	-13.000	PEAK

Note:

1. All reading above 1GHz is performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB4-H	**Time : 2018/07/09**
Limit : FCC_Part27_00M_00M_PK	**Margin : 6**
Probe : CB4_CE_Sub_B432_1-18GHz_3M_1116 - VERTICAL	**Power : AC 120V / 60Hz**
EUT : 4G/LTE Industrial M2M Router	**Note : Mode 2: LTE_CAT-M1_Band 13_16-QAM_Link CH23230_10M_16-QAM_5RB0**

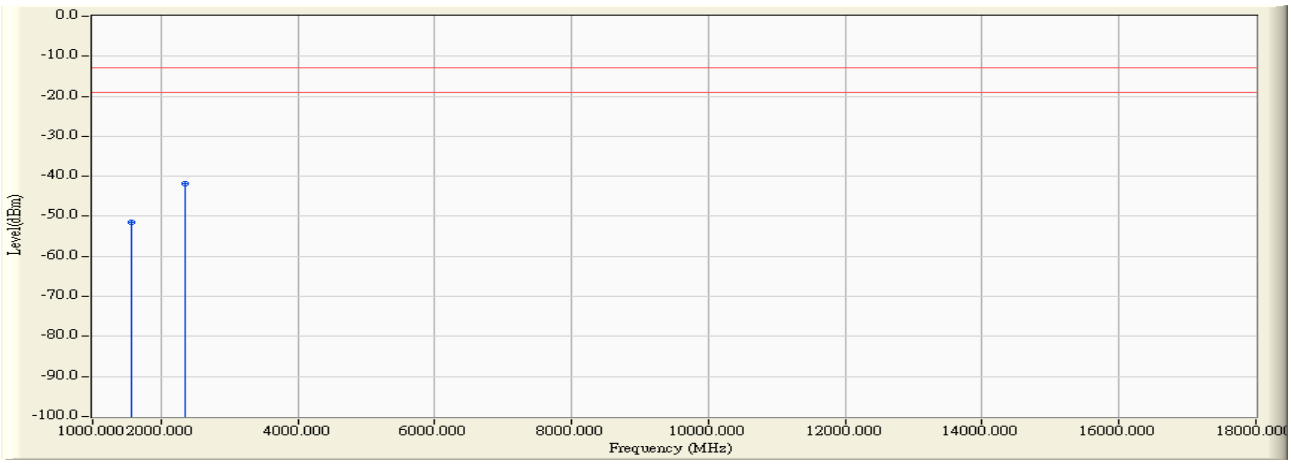


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm)	Margin (dB)	Limit (dBm)	Detector Type
1		1564.000	11.113	-66.900	-55.786	-42.786	-13.000	PEAK
2	*	2346.000	16.010	-52.290	-36.280	-23.280	-13.000	PEAK

Note:

1. All reading above 1GHz is performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB4-H	**Time : 2018/07/09**
Limit : FCC_Part27_00M_00M_PK	**Margin : 6**
Probe : CB4_CE_Sub_B432_1-18GHz_3M_1116 - HORIZONTAL	**Power : AC 120V / 60Hz**
EUT : 4G/LTE Industrial M2M Router	**Note : Mode 2: LTE_CAT-M1_Band 13_16-QAM_Link CH23230_10M_16-QAM_5RB1**

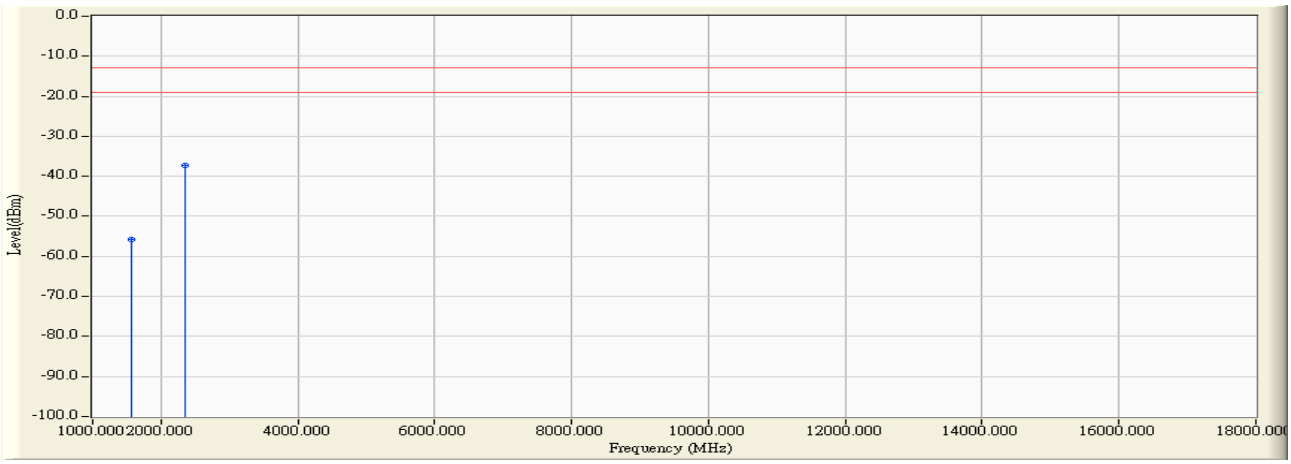


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm)	Margin (dB)	Limit (dBm)	Detector Type
1		1564.000	10.748	-62.220	-51.471	-38.471	-13.000	PEAK
2	*	2346.000	15.948	-57.720	-41.772	-28.772	-13.000	PEAK

Note:

1. All reading above 1GHz is performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB4-H	**Time : 2018/07/09**
Limit : FCC_Part27_00M_00M_PK	**Margin : 6**
Probe : CB4_CE_Sub_B432_1-18GHz_3M_1116 - VERTICAL	**Power : AC 120V / 60Hz**
EUT : 4G/LTE Industrial M2M Router	**Note : Mode 2: LTE_CAT-M1_Band 13_16-QAM_Link CH23230_10M_16-QAM_5RB1**

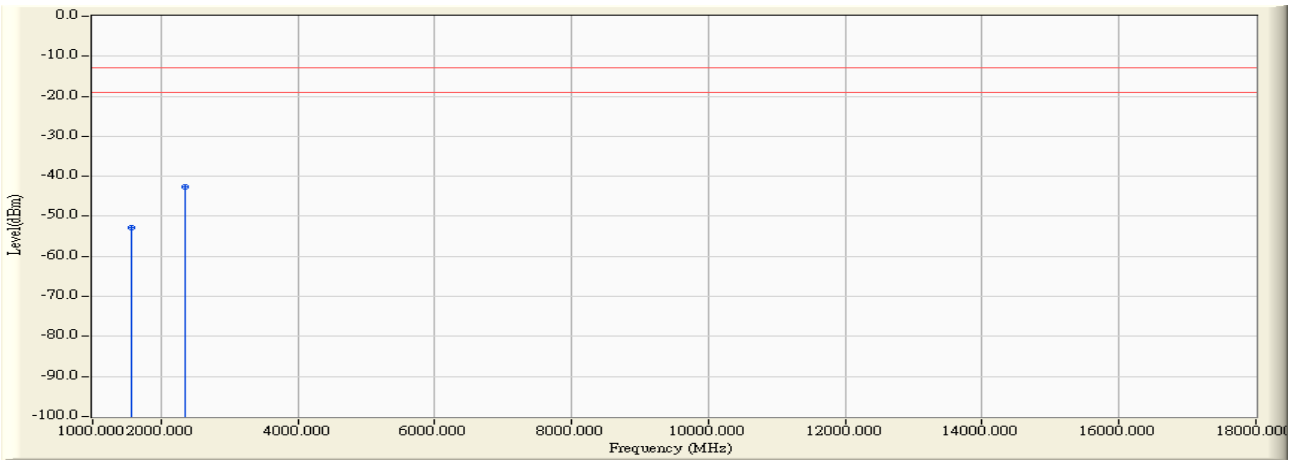


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm)	Margin (dB)	Limit (dBm)	Detector Type
1		1564.000	11.113	-66.800	-55.686	-42.686	-13.000	PEAK
2	*	2346.000	16.010	-53.310	-37.300	-24.300	-13.000	PEAK

Note:

1. All reading above 1GHz is performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB4-H	**Time : 2018/07/09**
Limit : FCC_Part27_00M_00M_PK	**Margin : 6**
Probe : CB4_CE_Sub_B432_1-18GHz_3M_1116 - HORIZONTAL	**Power : AC 120V / 60Hz**
EUT : 4G/LTE Industrial M2M Router	**Note : Mode 1: LTE_CAT-M1_Band 13_QPSK_Link CH23255_5M_QPSK_1RB0**

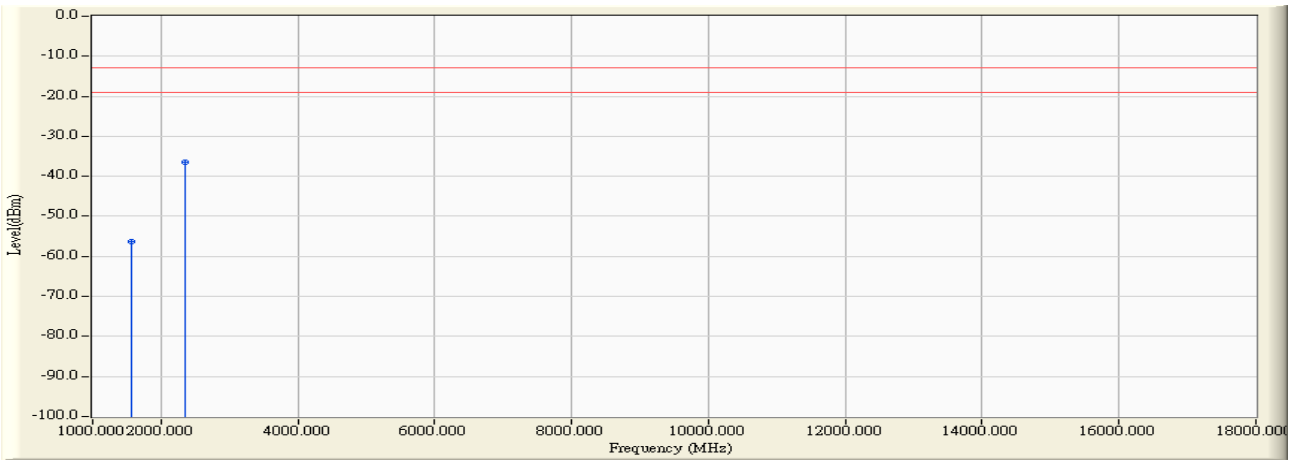


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm)	Margin (dB)	Limit (dBm)	Detector Type
1		1569.000	10.710	-63.580	-52.869	-39.869	-13.000	PEAK
2	*	2353.500	15.914	-58.580	-42.665	-29.665	-13.000	PEAK

Note:

1. All reading above 1GHz is performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB4-H	**Time : 2018/07/09**
Limit : FCC_Part27_00M_00M_PK	**Margin : 6**
Probe : CB4_CE_Sub_B432_1-18GHz_3M_1116 - VERTICAL	**Power : AC 120V / 60Hz**
EUT : 4G/LTE Industrial M2M Router	**Note : Mode 1: LTE_CAT-M1_Band 13_QPSK_Link CH23255_5M_QPSK_1RB0**

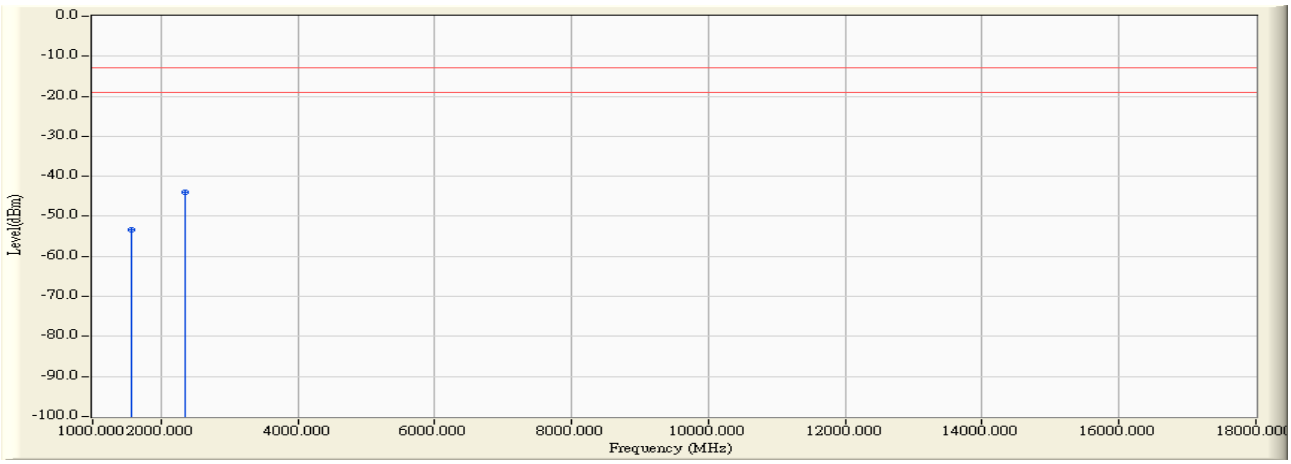


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm)	Margin (dB)	Limit (dBm)	Detector Type
1		1569.000	11.084	-67.410	-56.325	-43.325	-13.000	PEAK
2	*	2353.500	15.993	-52.460	-36.467	-23.467	-13.000	PEAK

Note:

1. All reading above 1GHz is performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB4-H	**Time : 2018/07/09**
Limit : FCC_Part27_00M_00M_PK	**Margin : 6**
Probe : CB4_CE_Sub_B432_1-18GHz_3M_1116 - HORIZONTAL	**Power : AC 120V / 60Hz**
EUT : 4G/LTE Industrial M2M Router	**Note : Mode 1: LTE_CAT-M1_Band 13_QPSK_Link CH23255_5M_QPSK_6RB0**

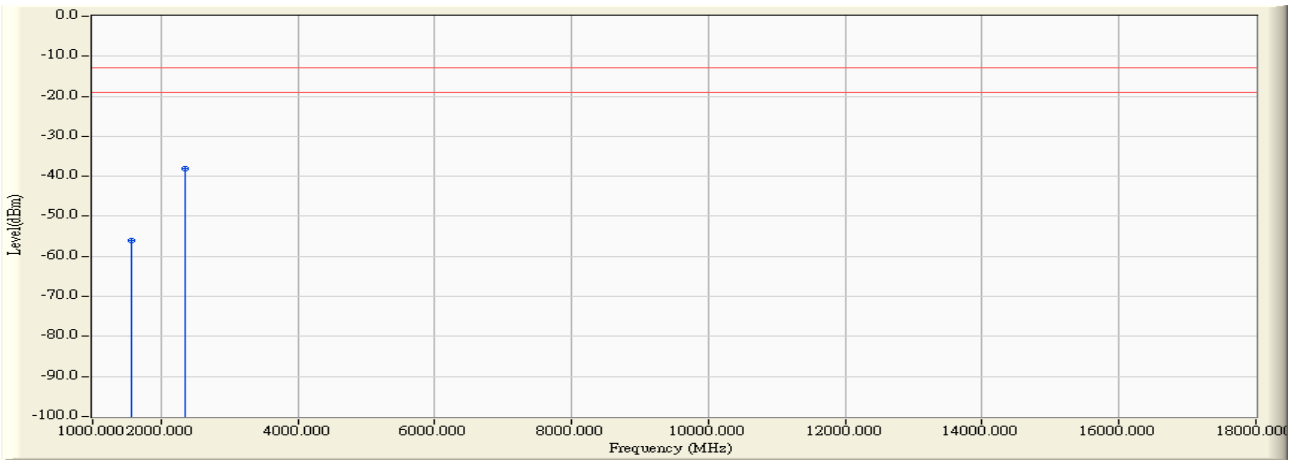


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm)	Margin (dB)	Limit (dBm)	Detector Type
1		1569.000	10.710	-64.040	-53.329	-40.329	-13.000	PEAK
2	*	2353.500	15.914	-59.800	-43.885	-30.885	-13.000	PEAK

Note:

1. All reading above 1GHz is performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB4-H	**Time : 2018/07/09**
Limit : FCC_Part27_00M_00M_PK	**Margin : 6**
Probe : CB4_CE_Sub_B432_1-18GHz_3M_1116 - VERTICAL	**Power : AC 120V / 60Hz**
EUT : 4G/LTE Industrial M2M Router	**Note : Mode 1: LTE_CAT-M1_Band 13_QPSK_Link CH23255_5M_QPSK_6RB0**

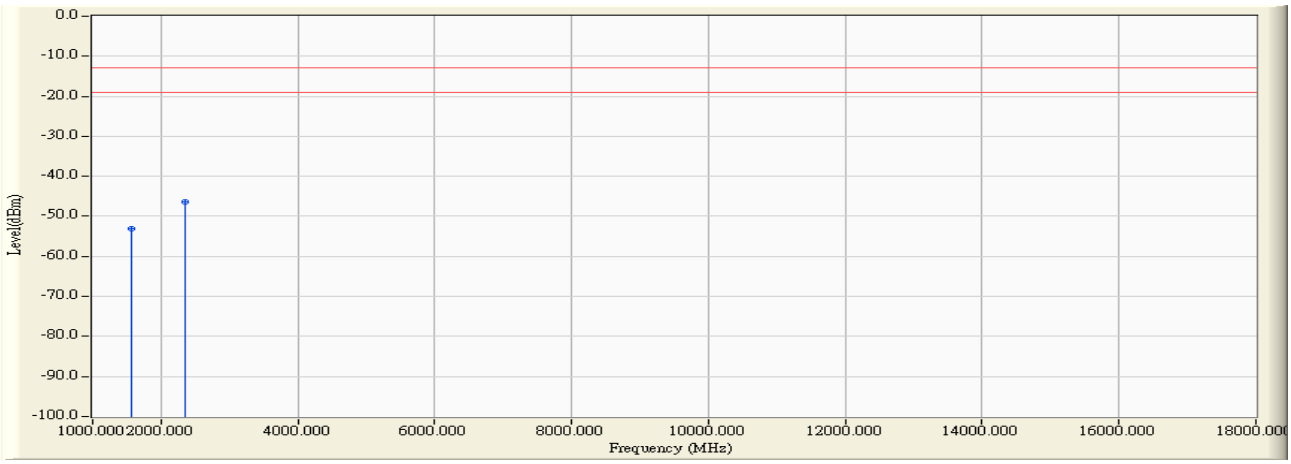


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm)	Margin (dB)	Limit (dBm)	Detector Type
1		1569.000	11.084	-67.110	-56.025	-43.025	-13.000	PEAK
2	*	2353.500	15.993	-54.020	-38.027	-25.027	-13.000	PEAK

Note:

1. All reading above 1GHz is performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB4-H	**Time : 2018/07/09**
Limit : FCC_Part27_00M_00M_PK	**Margin : 6**
Probe : CB4_CE_Sub_B432_1-18GHz_3M_1116 - HORIZONTAL	**Power : AC 120V / 60Hz**
EUT : 4G/LTE Industrial M2M Router	**Note : Mode 2: LTE_CAT-M1_Band 13_16-QAM_Link CH23255_5M_16-QAM_1RB0**

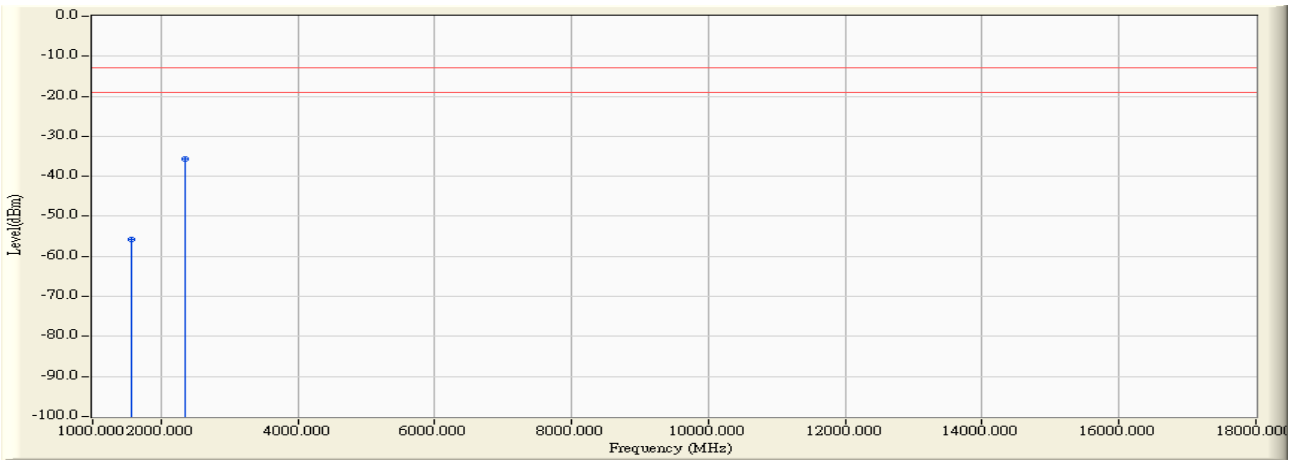


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm)	Margin (dB)	Limit (dBm)	Detector Type
1		1569.000	10.710	-63.840	-53.129	-40.129	-13.000	PEAK
2	*	2353.500	15.914	-62.200	-46.285	-33.285	-13.000	PEAK

Note:

1. All reading above 1GHz is performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB4-H	**Time : 2018/07/09**
Limit : FCC_Part27_00M_00M_PK	**Margin : 6**
Probe : CB4_CE_Sub_B432_1-18GHz_3M_1116 - VERTICAL	**Power : AC 120V / 60Hz**
EUT : 4G/LTE Industrial M2M Router	**Note : Mode 2: LTE_CAT-M1_Band 13_16-QAM_Link CH23255_5M_16-QAM_1RB0**

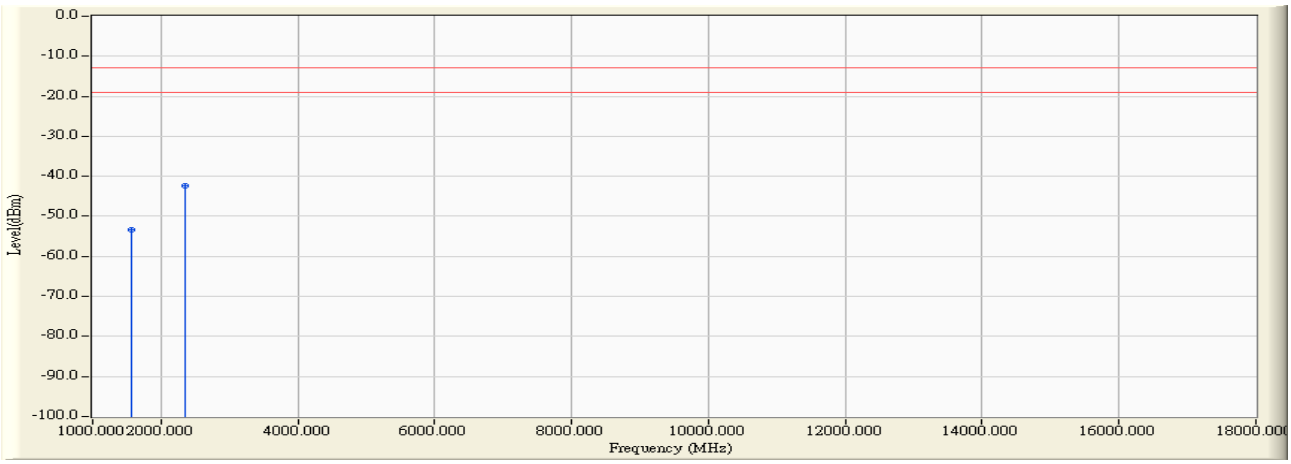


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm)	Margin (dB)	Limit (dBm)	Detector Type
1		1569.000	11.084	-66.720	-55.635	-42.635	-13.000	PEAK
2	*	2353.500	15.993	-51.630	-35.637	-22.637	-13.000	PEAK

Note:

1. All reading above 1GHz is performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB4-H	**Time : 2018/07/09**
Limit : FCC_Part27_00M_00M_PK	**Margin : 6**
Probe : CB4_CE_Sub_B432_1-18GHz_3M_1116 - HORIZONTAL	**Power : AC 120V / 60Hz**
EUT : 4G/LTE Industrial M2M Router	**Note : Mode 2: LTE_CAT-M1_Band 13_16-QAM_Link CH23255_5M_16-QAM_1RB5**

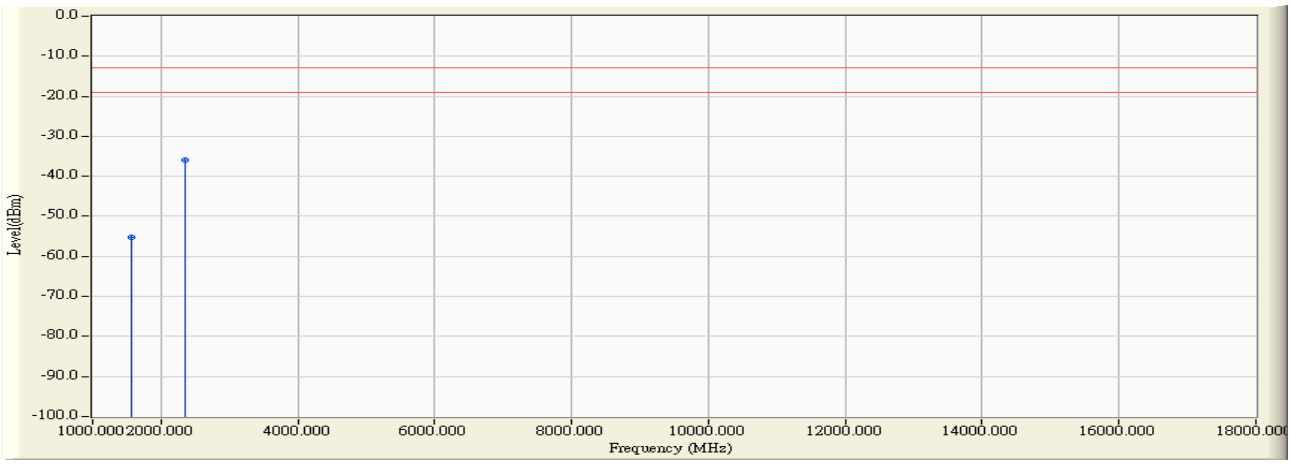


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm)	Margin (dB)	Limit (dBm)	Detector Type
1		1569.000	10.710	-64.150	-53.439	-40.439	-13.000	PEAK
2	*	2353.500	15.914	-58.360	-42.445	-29.445	-13.000	PEAK

Note:

1. All reading above 1GHz is performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB4-H	**Time : 2018/07/09**
Limit : FCC_Part27_00M_00M_PK	**Margin : 6**
Probe : CB4_CE_Sub_B432_1-18GHz_3M_1116 - VERTICAL	**Power : AC 120V / 60Hz**
EUT : 4G/LTE Industrial M2M Router	**Note : Mode 2: LTE_CAT-M1_Band 13_16-QAM_Link CH23255_5M_16-QAM_1RB5**

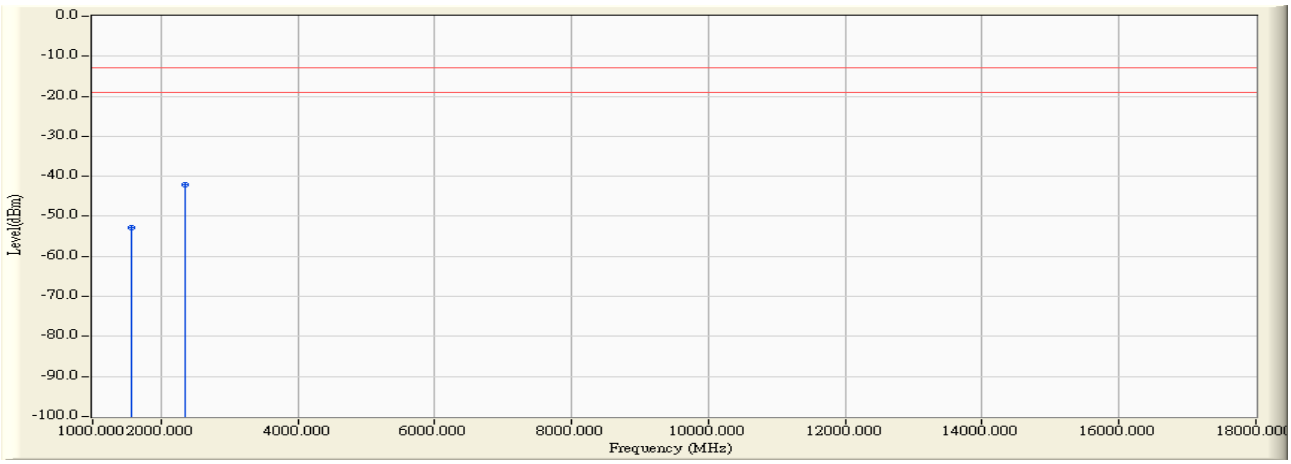


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm)	Margin (dB)	Limit (dBm)	Detector Type
1		1569.000	11.084	-66.370	-55.285	-42.285	-13.000	PEAK
2	*	2353.500	15.993	-51.980	-35.987	-22.987	-13.000	PEAK

Note:

1. All reading above 1GHz is performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB4-H	**Time : 2018/07/09**
Limit : FCC_Part27_00M_00M_PK	**Margin : 6**
Probe : CB4_CE_Sub_B432_1-18GHz_3M_1116 - HORIZONTAL	**Power : AC 120V / 60Hz**
EUT : 4G/LTE Industrial M2M Router	**Note : Mode 2: LTE_CAT-M1_Band 13_16-QAM_Link CH23255_5M_16-QAM_5RB0**

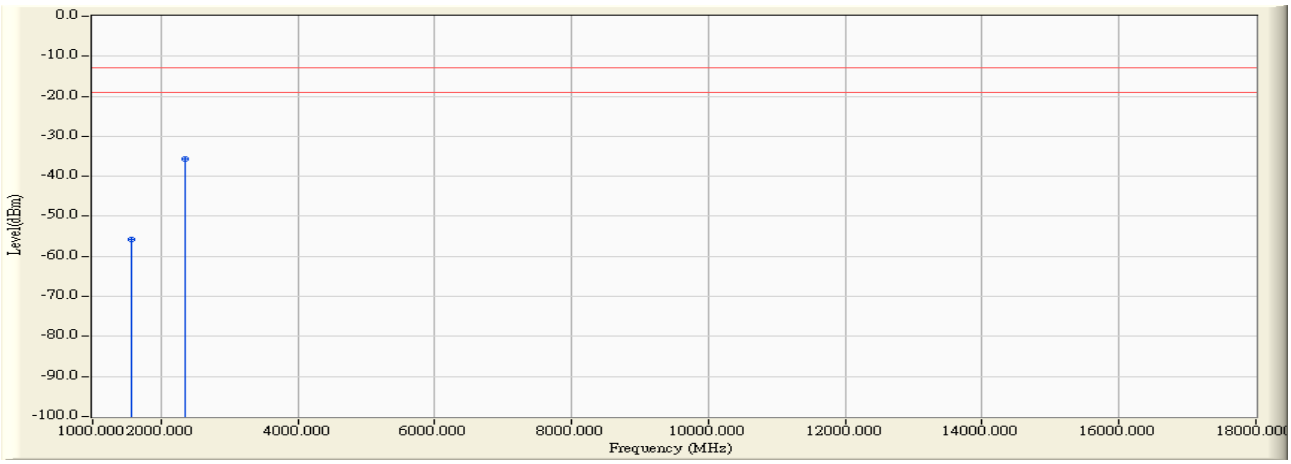


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm)	Margin (dB)	Limit (dBm)	Detector Type
1		1569.000	10.710	-63.510	-52.799	-39.799	-13.000	PEAK
2	*	2353.500	15.914	-58.080	-42.165	-29.165	-13.000	PEAK

Note:

1. All reading above 1GHz is performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB4-H	**Time : 2018/07/09**
Limit : FCC_Part27_00M_00M_PK	**Margin : 6**
Probe : CB4_CE_Sub_B432_1-18GHz_3M_1116 - VERTICAL	**Power : AC 120V / 60Hz**
EUT : 4G/LTE Industrial M2M Router	**Note : Mode 2: LTE_CAT-M1_Band 13_16-QAM_Link CH23255_5M_16-QAM_5RB0**

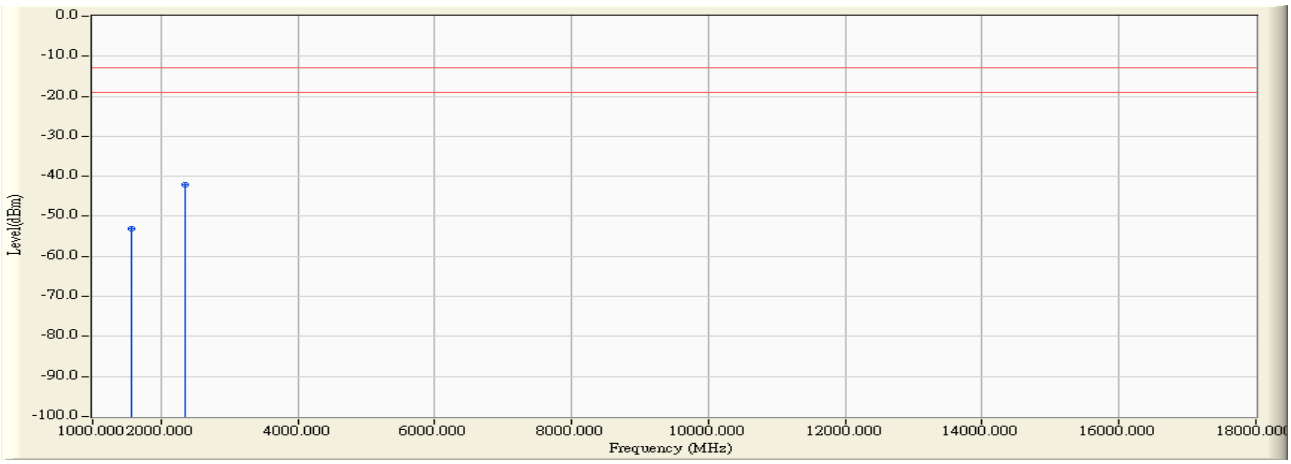


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm)	Margin (dB)	Limit (dBm)	Detector Type
1		1569.000	11.084	-66.830	-55.745	-42.745	-13.000	PEAK
2	*	2353.500	15.993	-51.590	-35.597	-22.597	-13.000	PEAK

Note:

1. All reading above 1GHz is performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB4-H	**Time : 2018/07/09**
Limit : FCC_Part27_00M_00M_PK	**Margin : 6**
Probe : CB4_CE_Sub_B432_1-18GHz_3M_1116 - HORIZONTAL	**Power : AC 120V / 60Hz**
EUT : 4G/LTE Industrial M2M Router	**Note : Mode 2: LTE_CAT-M1_Band 13_16-QAM_Link CH23255_5M_16-QAM_5RB1**

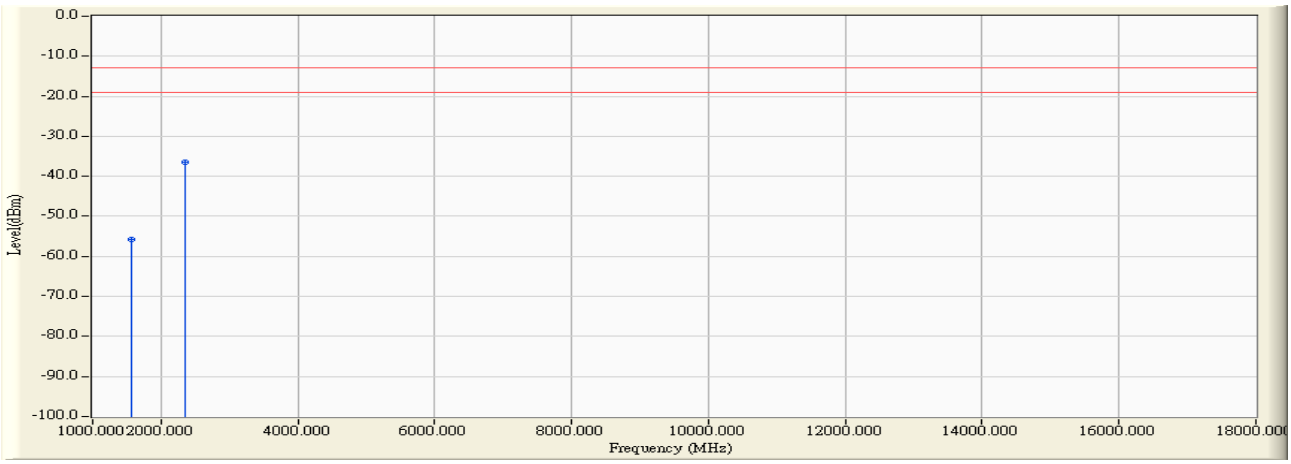


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm)	Margin (dB)	Limit (dBm)	Detector Type
1		1569.000	10.710	-63.800	-53.089	-40.089	-13.000	PEAK
2	*	2353.500	15.914	-58.070	-42.155	-29.155	-13.000	PEAK

Note:

1. All reading above 1GHz is performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB4-H	**Time : 2018/07/09**
Limit : FCC_Part27_00M_00M_PK	**Margin : 6**
Probe : CB4_CE_Sub_B432_1-18GHz_3M_1116 - VERTICAL	**Power : AC 120V / 60Hz**
EUT : 4G/LTE Industrial M2M Router	**Note : Mode 2: LTE_CAT-M1_Band 13_16-QAM_Link CH23255_5M_16-QAM_5RB1**



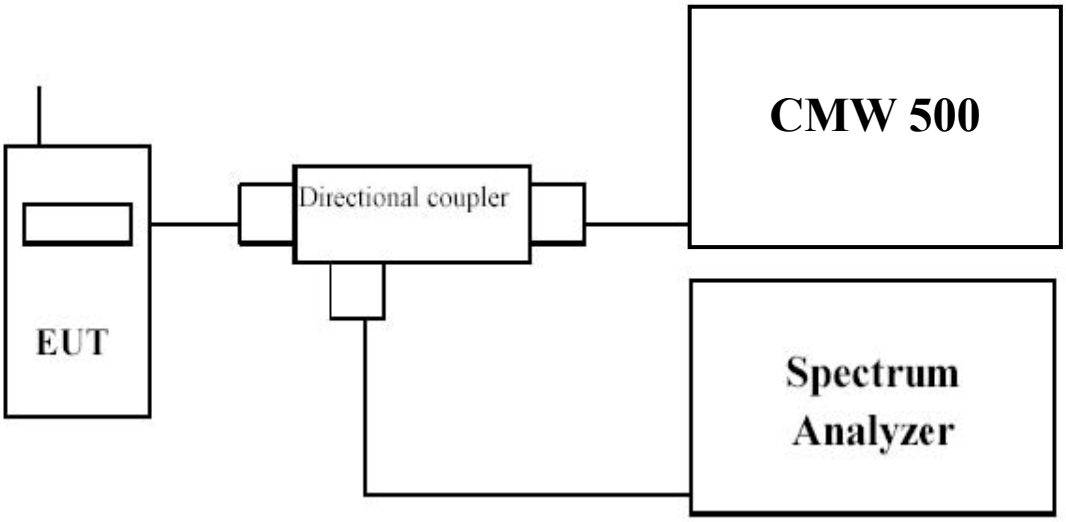
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm)	Margin (dB)	Limit (dBm)	Detector Type
1		1569.000	11.084	-66.760	-55.675	-42.675	-13.000	PEAK
2	*	2353.500	15.993	-52.560	-36.567	-23.567	-13.000	PEAK

Note:

1. All reading above 1GHz is performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

7. Conducted Band Edge Emission

7.1. Test Setup



7.2. Test Procedure

a) Place the EUT on a bench and set it in transmitting mode.
b) Connect a low loss RF cable from the antenna port to a spectrum analyzer and CMW500 by a Directional Couple.
c) EUT Communicate with CMW500 then selects a channel for testing.
d) Add a correction factor to the display of spectrum, and then test.
e) The resolution bandwidth of the spectrum analyzer was set at 1 MHz, sufficient scans were taken to show the out of band Emission if any up to 10th harmonic.

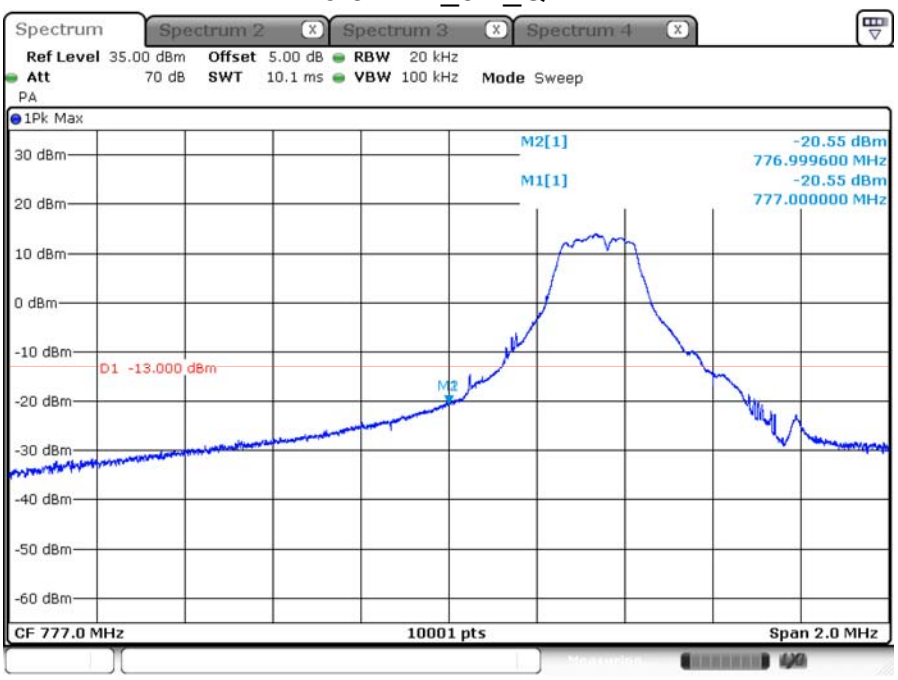
7.3. Test Method

KDB 971168 D01 Power Meas License Digital Systems v03 sub-clause 6.1
ANSI C63.26-2015 Sub-clause 5.7

7.4. Test Result

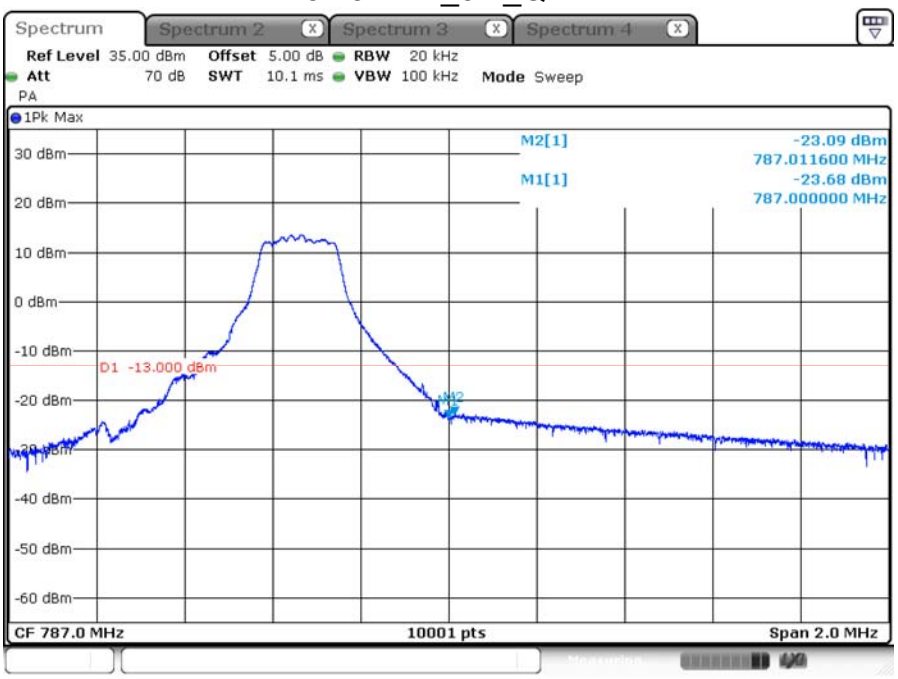
Product	4G/LTE Industrial M2M Router		
Test Item	Conducted Band Edge Emission		
Test Mode	Mode 1: LTE_CAT-M1_Band 13_QPSK_Link		
Date of Test	2018/07/09	Test Site	SR10-H

779.5 MHz_5M_QPSK



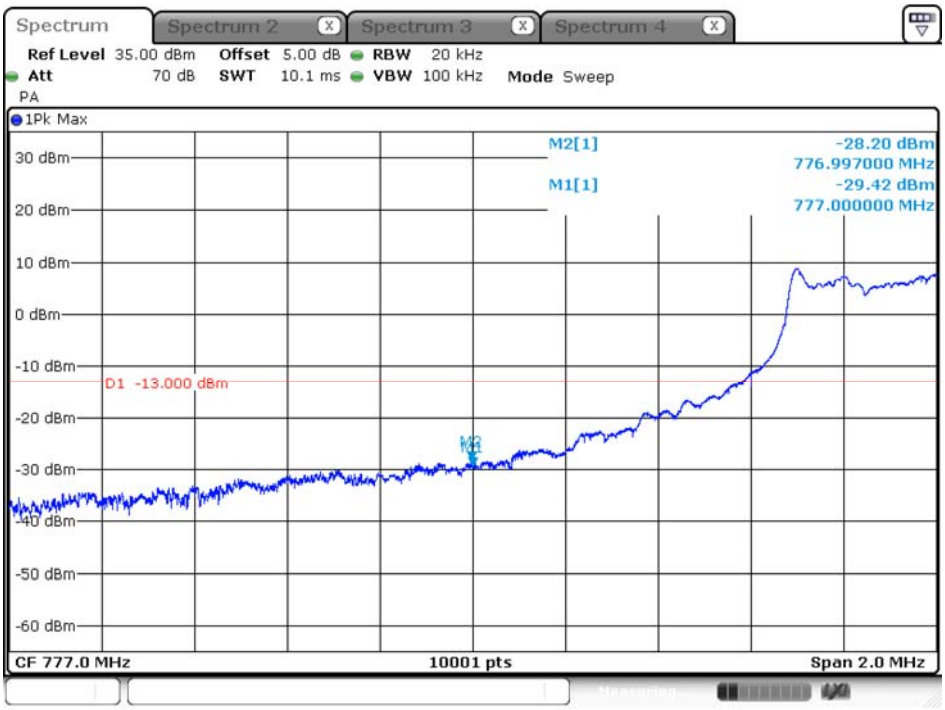
Date: 9.JUL.2018 16:16:15

784.5 MHz_5M_QPSK



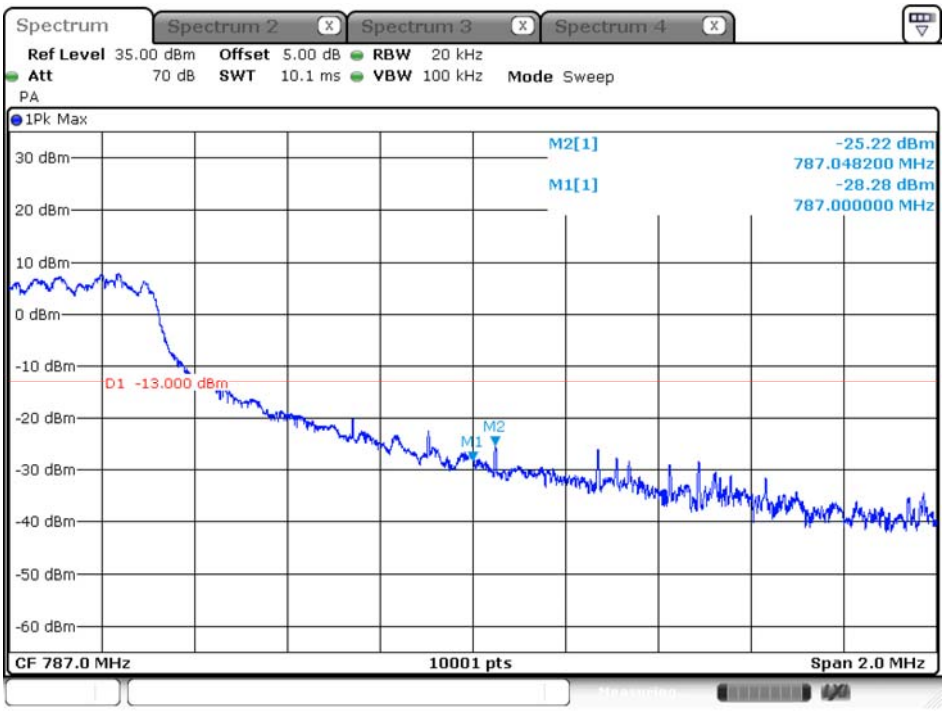
Date: 9.JUL.2018 16:02:30

777 MHz_10M_QPSK



Date: 9.JUL.2018 16:24:38

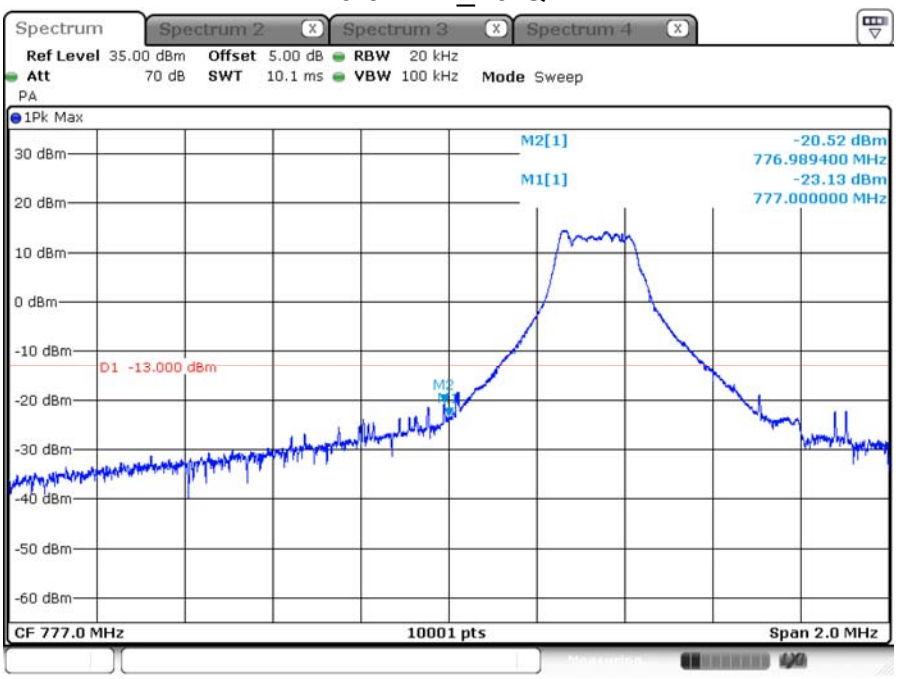
787 MHz_10M_QPSK



Date: 9.JUL.2018 16:26:33

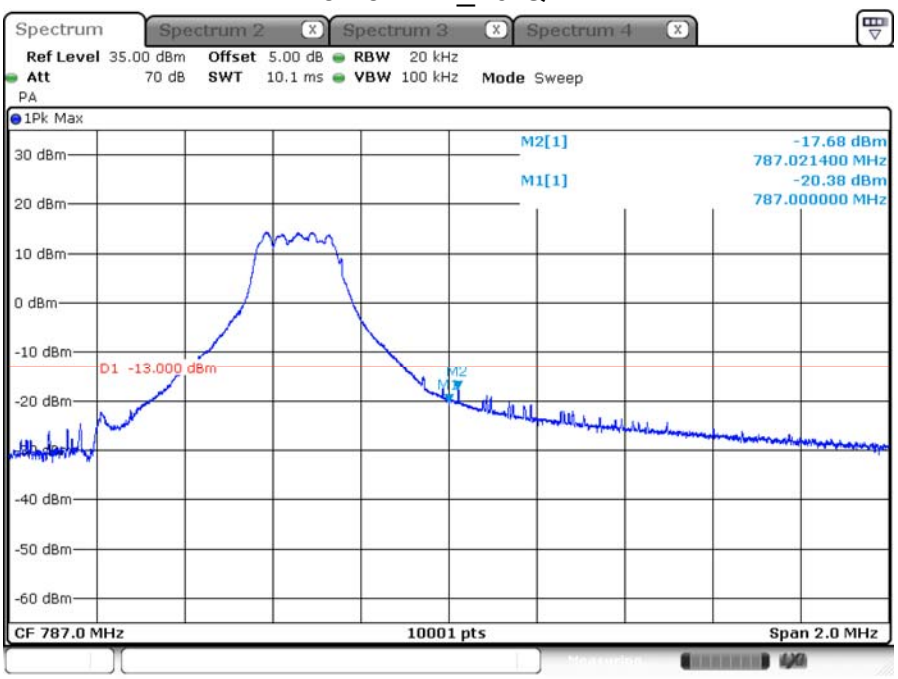
Product	4G/LTE Industrial M2M Router		
Test Item	Conducted Band Edge Emission		
Test Mode	Mode 2: LTE_CAT-M1_Band 13_16-QAM_Link		
Date of Test	2018/07/09	Test Site	SR10-H

779.5 MHz_16-QAM



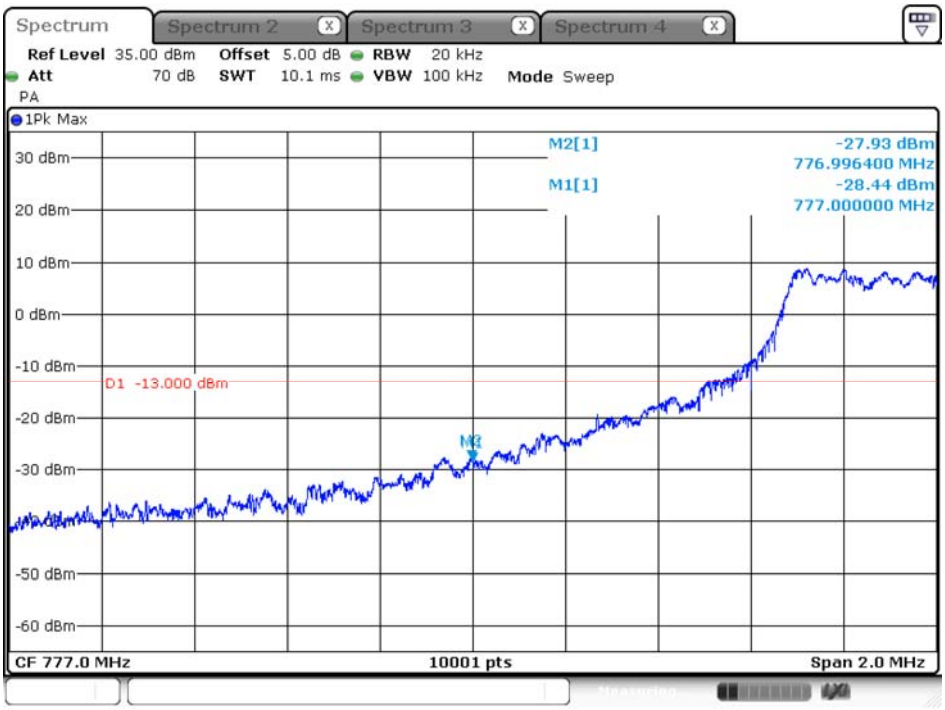
Date: 9.JUL.2018 16:07:48

784.5 MHz_16-QAM



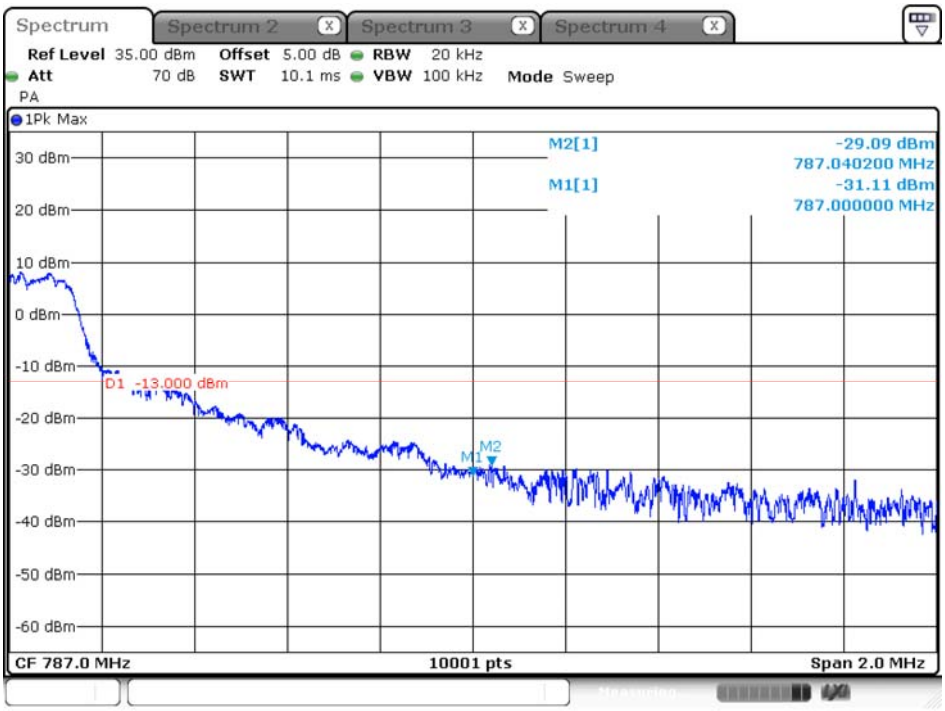
Date: 9.JUL.2018 16:05:43

777 MHz_16-QAM



Date: 9.JUL.2018 16:28:45

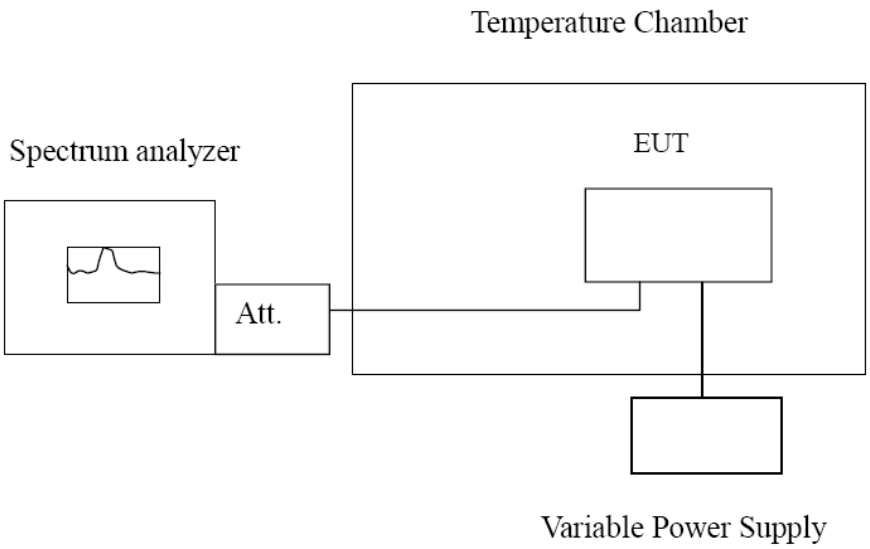
787 MHz_16-QAM



Date: 9.JUL.2018 16:27:17

8. Frequency Stability

8.1. Test Setup



8.2. Test Procedure

Frequency Stability Under Temperature Variations:

The equipment under test was connected to an external AC or DC power supply and input rated voltage. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators. The EUT was placed inside the temperature chamber. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 20℃ operating frequency as reference frequency. Turn EUT off and set the chamber temperature to -30℃. After the temperature stabilized for approximately 30 minutes recorded the frequency. Repeat step measure with 10℃ increased per stage until the highest temperature of +50℃ reached.

Frequency Stability Under Voltage Variations:

Set chamber temperature to 20℃. Use a variable AC power supply / DC power source to power the EUT and set the voltage to rated voltage. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and recorded the frequency.
Reduce the input voltage to specify extreme voltage variation (±15%) and endpoint, record the maximum frequency change.

8.3. Test Method

KDB 971168 D01 Power Meas License Digital Systems v03 sub-clause 9
ANSI C63.26-2015 Sub-clause 5.6

8.4. Test Result

Product	4G/LTE Industrial M2M Router		
Test Item	Frequency Stability		
Test Mode	Mode 1: LTE_CAT-M1_Band 13_QPSK_Link		
Date of Test	2018/07/09	Test Site	SR10-H

CAT_M1_Band13_779.5MHz_5M_QPSK

Voltage

Voltage (VDC)	Frequency Error(Hz)	Frequency Error(ppm)
132	-21	0.0114
120	-7	0.0040
108	7	-0.0037

Temperature

TEMPERATURE	Frequency Error(Hz)	Frequency Error (ppm)
-30	-7	0.0039
-20	-6	0.0034
-10	-4	0.0021
0	4	-0.0021
+10	6	-0.0031
+20	7	-0.0040
+30	9	-0.0051
+40	10	-0.0053
+50	8	-0.0043

Product	4G/LTE Industrial M2M Router		
Test Item	Frequency Stability		
Test Mode	Mode 1: LTE_CAT-M1_Band 13_QPSK_Link		
Date of Test	2018/07/09	Test Site	SR10-H

CAT_M1_Band13_782MHz_5M_QPSK

Voltage

Voltage (VDC)	Frequency Error(Hz)	Frequency Error(ppm)
132	-5	0.0024
120	5	-0.0026
108	-3	0.0018

Temperature

TEMPERATURE	Frequency Error(Hz)	Frequency Error (ppm)
-30	-4	0.0020
-20	-4	0.0023
-10	-4	0.0023
0	-5	0.0025
+10	-6	0.0033
+20	-4	0.0022
+30	-5	0.0029
+40	7	-0.0038
+50	-4	0.0019

Product	4G/LTE Industrial M2M Router		
Test Item	Frequency Stability		
Test Mode	Mode 1: LTE_CAT-M1_Band 13_QPSK_Link		
Date of Test	2018/07/09	Test Site	SR10-H

CAT_M1_Band13_784.5MHz_5M_QPSK

Voltage

Voltage (VDC)	Frequency Error(Hz)	Frequency Error(ppm)
132	-7	0.0039
120	-11	0.0060
108	-10	0.0050

Temperature

TEMPERATURE	Frequency Error(Hz)	Frequency Error (ppm)
-30	-4	0.0019
-20	-4	0.0019
-10	-4	0.0021
0	-6	0.0033
+10	-8	0.0040
+20	-9	0.0049
+30	-12	0.0060
+40	-11	0.0055
+50	-10	0.0051

Product	4G/LTE Industrial M2M Router		
Test Item	Frequency Stability		
Test Mode	Mode 1: LTE_CAT-M1_Band 13_QPSK_Link		
Date of Test	2018/07/09	Test Site	SR10-H

CAT_M1_Band13_782MHz_10M_QPSK

Voltage

Voltage (VDC)	Frequency Error(Hz)	Frequency Error(ppm)
132	-11	0.0065
120	-3	0.0016
108	5	-0.0031

Temperature

TEMPERATURE	Frequency Error(Hz)	Frequency Error (ppm)
-30	-4	0.0021
-20	-3	0.0019
-10	-3	0.0020
0	8	-0.0045
+10	-7	0.0043
+20	22	-0.0127
+30	-20	0.0115
+40	-4	0.0025
+50	20	-0.0118