



FCC ID: 2ARCQ-EM7565
Report No.: T180821D09-RP4

Page: 1 / 122
Rev.: 01

FCC 47 CFR PART 27 SUBPART C, L

For

Nodegrid

Model No.: SR

Trade Name: ZPE

Issued to

ZPE Systems, Inc.
46757 Fremont Blvd., Fremont, CA 94538, USA

Issued by

Compliance Certification Services Inc.
Wugu Laboratory
No.11, Wugong 6th Rd., Wugu Dist.,
New Taipei City 24891, Taiwan. (R.O.C.)
Issued Date: November 29, 2018

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.
除非另有說明，此報告結果僅對測試之樣品負責，同時此樣品僅保留90天。本報告未經本公司書面許可，不可部分複製。

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at www.sgs.com/terms_and_conditions.htm and for electronic format documents, subject to Terms and Conditions for Electronic Documents at www.sgs.com/terms_e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.



Report No.: T180821D09-RP4

Page: 2 / 122
Rev.: 01

Revision History

Rev.	Issue Date	Revisions	Effect Page	Revised By
00	November 29, 2018	Initial Issue	ALL	Allison Chen
01	December 21, 2018	1. Revised description of test modes of LTE Band 4 and test mode in section 4.1. 2. Revised test condition in section 4.2. 3. Revised frequency range and note in section 2.	P.5-8, P.10, 12-13	Allison Chen



Report No.: T180821D09-RP4

Page: 3 / 122
Rev.: 01

TABLE OF CONTENTS

1.	TEST RESULT CERTIFICATION	4
2.	EUT DESCRIPTION	5
3.	TEST SUMMARY	9
4.	TEST METHODOLOGY	10
4.1	DESCRIPTION OF TEST TYPE	10
4.2	TEST WORST MODE OF MEASUREMENT	13
5.	INSTRUMENT CALIBRATION.....	14
5.1	MEASURING INSTRUMENT CALIBRATION	14
5.2	MEASUREMENT EQUIPMENT USED	14
5.3	MEASUREMENT UNCERTAINTY	15
6.	FACILITIES AND ACCREDITATIONS	16
6.1	FACILITIES	16
6.2	EQUIPMENT	16
7.	SETUP OF EQUIPMENT UNDER TEST	17
7.1	SETUP CONFIGURATION OF EUT	17
7.2	SUPPORT EQUIPMENT	17
8.	TEST PROCEDURE AND RESULT	18
8.1	ERP & EIRP MEASUREMENT	18
8.2	RADIATED EMISSION MEASUREMENT	32
	APPENDIX -A PHOTOGRAPHS OF TEST SETUP	A-1



Report No.: T180821D09-RP4

Page: 4 / 122
Rev.: 01

1. TEST RESULT CERTIFICATION

Applicant: ZPE Systems, Inc.
46757 Fremont Blvd., Fremont, CA 94538, USA

Manufacturer: ZPE Systems, Inc.
46757 Fremont Blvd., Fremont, CA 94538, USA

Equipment Under Test: Nodegrid

Trade Name: ZPE

Model: SR

Date of Test: September 28 ~ October 2, 2018

APPLICABLE STANDARDS	
Standard	TEST RESULT
FCC Part 27, Subpart C, L, FCC Part 2	No non-compliance noted

The above equipment has been tested by Compliance Certification Services Inc., and found compliance with the requirements set forth in the technical standards mentioned above. The results of testing in this report apply only to the product/system, which was tested. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

Approved by:

Tested by:

Sam Chuang
Manager
Compliance Certification Services Inc.

Jerry Chuang
Engineer
Compliance Certification Services Inc.

2. EUT DESCRIPTION

Product	Nodegrid	
Model No.	SR	
Model Discrepancy	N/A	
Trade Name	ZPE	
Received Date	August 21, 2018	
Power Supply	Power from AC adapter or internal Power Supply	
Modulation Technology	LTE Band 4	QPSK, 16QAM
	LTE Band 7	QPSK, 16QAM
	LTE Band 12	QPSK, 16QAM
	LTE Band 13	QPSK, 16QAM
	LTE Band 41	QPSK, 16QAM
	LTE Band 66	QPSK, 16QAM
Frequency Range	LTE Band 4 Channel Bandwidth: 1.4MHz	1710.7MHz ~1754.2MHz
	LTE Band 4 Channel Bandwidth: 3MHz	1711.5MHz ~ 1753.4MHz
	LTE Band 4 Channel Bandwidth: 5MHz	1712.5MHz ~1752.5MHz
	LTE Band 4 Channel Bandwidth: 10MHz	1715.0MHz ~1750.0MHz
	LTE Band 4 Channel Bandwidth: 15MHz	1717.5MHz ~ 1747.5MHz
	LTE Band 4 Channel Bandwidth: 20MHz	1720MHz ~1745MHz
	LTE Band 7 Channel Bandwidth: 5MHz	2502.5MHz ~2567.5MHz
	LTE Band 7 Channel Bandwidth: 10MHz	2505.0MHz ~2565.0MHz
	LTE Band 7 Channel Bandwidth: 15MHz	2507.5MHz ~2562.5MHz
	LTE Band 7 Channel Bandwidth: 20MHz	2510.0MHz ~2560.0MHz

Frequency Range	LTE Band 12 Channel Bandwidth: 1.4MHz	669.7MHz ~ 715.3MHz
	LTE Band 12 Channel Bandwidth: 3MHz	700.5MHz ~ 714.5MHz
	LTE Band 12 Channel Bandwidth: 5MHz	701.5MHz ~ 713.5MHz
	LTE Band 12 Channel Bandwidth: 10MHz	704MHz ~ 711MHz
	LTE Band 13 Channel Bandwidth: 5MHz	779.5MHz ~ 784.5MHz
	LTE Band 13 Channel Bandwidth: 10MHz	782MHz
	LTE Band 41 Channel Bandwidth: 5MHz	2498.5MHz ~ 2687.5MHz
	LTE Band 41 Channel Bandwidth: 10MHz	2501MHz ~ 2685MHz
	LTE Band 41 Channel Bandwidth: 15MHz	2503.5MHz ~ 2682.5MHz
	LTE Band 41 Channel Bandwidth: 20MHz	2506MHz ~ 2680MHz
	LTE Band 66 Channel Bandwidth: 1.4MHz	1710.7MHz ~ 1779.3MHz
	LTE Band 66 Channel Bandwidth: 3MHz	1711.5MHz ~ 1778.5MHz
	LTE Band 66 Channel Bandwidth: 5MHz	1712.5MHz ~ 1777.5MHz
	LTE Band 66 Channel Bandwidth: 10MHz	1715MHz ~ 1775MHz
	LTE Band 66 Channel Bandwidth: 15MHz	1717.5MHz ~ 1772.5MHz
	LTE Band 66 Channel Bandwidth: 20MHz	1720MHz ~ 1770MHz
Transmit Power (EIRP Power)	LTE Band 4 Channel Bandwidth: 1.4MHz	QPSK: 28.97 dBm 16QAM: 28.83 dBm
	LTE Band 4 Channel Bandwidth: 3MHz	QPSK: 28.89 dBm 16QAM: 28.89 dBm
	LTE Band 4 Channel Bandwidth: 5MHz	QPSK: 28.83 dBm 16QAM: 28.74 dBm
	LTE Band 4 Channel Bandwidth: 10MHz	QPSK: 28.62 dBm 16QAM: 28.61 dBm
	LTE Band 4 Channel Bandwidth: 15MHz	QPSK: 28.60 dBm 16QAM: 28.63 dBm
	LTE Band 4 Channel Bandwidth: 20MHz	QPSK: 28.48 dBm 16QAM: 28.55 dBm

Transmit Power (ERP & EIRP Power)	LTE Band 7 Channel Bandwidth: 5MHz	QPSK	31.25	dBm
		16QAM	31.38	dBm
	LTE Band 7 Channel Bandwidth: 10MHz	QPSK	31.55	dBm
		16QAM	31.46	dBm
	LTE Band 7 Channel Bandwidth: 15MHz	QPSK	31.64	dBm
		16QAM	31.60	dBm
	LTE Band 7 Channel Bandwidth: 20MHz	QPSK	31.76	dBm
		16QAM	31.80	dBm
	LTE Band 12 Channel Bandwidth: 1.4MHz	QPSK:	26.63	dBm
		16QAM:	26.89	dBm
	LTE Band 12 Channel Bandwidth: 3MHz	QPSK:	27.00	dBm
		16QAM:	27.10	dBm
	LTE Band 12 Channel Bandwidth: 5MHz	QPSK:	26.13	dBm
		16QAM:	26.54	dBm
	LTE Band 12 Channel Bandwidth: 10MHz	QPSK:	26.40	dBm
		16QAM:	26.58	dBm
	LTE Band 13 Channel Bandwidth: 5MHz	QPSK:	30.07	dBm
		16QAM:	30.62	dBm
	LTE Band 13 Channel Bandwidth: 10MHz	QPSK:	28.92	dBm
		16QAM:	29.59	dBm
	LTE Band 41 Channel Bandwidth: 5MHz	QPSK	31.01	dBm
		16QAM	30.24	dBm
	LTE Band 41 Channel Bandwidth: 10MHz	QPSK	30.54	dBm
		16QAM	30.64	dBm
	LTE Band 41 Channel Bandwidth: 15MHz	QPSK	31.15	dBm
		16QAM	30.48	dBm
	LTE Band 41 Channel Bandwidth: 20MHz	QPSK	31.02	dBm
		16QAM	30.91	dBm
	LTE Band 66 Channel Bandwidth: 5MHz	QPSK	29.17	dBm
		16QAM	29.76	dBm
	LTE Band 66 Channel Bandwidth: 10MHz	QPSK	29.36	dBm
		16QAM	29.81	dBm
	LTE Band 66 Channel Bandwidth: 15MHz	QPSK	29.45	dBm
		16QAM	29.81	dBm
	LTE Band 66 Channel Bandwidth: 20MHz	QPSK	29.59	dBm
		16QAM	29.69	dBm



Report No.: T180821D09-RP4

Page: 8 / 122
Rev.: 01

Antenna Specification	External Antenna LTE Band 4: 2.1 dBi LTE Band 7: 5.1 dBi LTE Band 12: 2.6 dBi LTE Band 13: 2.6 dBi LTE Band 41: 5.1 dBi LTE Band 66: 2.8 dBi
------------------------------	--

- Note:** 1. The above EUT information was declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or User's Manual.
2. For frequency range of channel bandwidth 1.4, 3, 5, 10, 15, 20MHz in LTE Band 66 was support. The worst case were 5, 10, 15, 20MHz in this test report.



Report No.: T180821D09-RP4

Page: 9 / 122
Rev.: 01

3. TEST SUMMARY

FCC Standard Section	Report Section	Test Item	Result
-	2	Antenna Requirement	Pass
2.1046	-	Output Power measurement	N/A
27.50(c), 27.50(d), 27.50(b)	8.1	ERP and EIRP Measurement	Pass
2.1055, 27.54	-	Frequency Stability v.s. temperature measurement	N/A
2.1049	-	Occupied Bandwidth Measurement	N/A
27.50(d)	-	Peak to Average Ratio	N/A
27.53(c), 27.53(g), 27.53(h)	-	Conducted Band Edge	N/A
27.53(c), 27.53(g), 27.53(h)	-	Conducted Spurious Emission	N/A
27.53(c), 27.53(g), 27.53(h)	8.2	Spurious Radiation Measurement	Pass

4. TEST METHODOLOGY

4.1 DESCRIPTION OF TEST TYPE

The EUT had been tested under operating condition.

TIA-603-E and KDB 971168 D01 Power Meas License Digital Systems

Software used to control the EUT for staying in continuous transmitting mode was programmed.

LTE Band 4: 1710MHz ~ 1755MHz

Three channels had been tested for each channel bandwidth.

Channel Bandwidth	1.4MHz		3MHz		5MHz	
	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
Low CH	19957	1710.7	19965	1711.5	19975	1712.5
Middle CH	20175	1732.5	20175	1732.5	20175	1732.5
High CH	20393	1754.3	20384	1753.4	20375	1752.5
Channel Bandwidth	10MHz		15MHz		20MHz	
	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
Low CH	20000	1715.0	20025	1717.5	20050	1720.0
Middle CH	20175	1732.5	20175	1732.5	20175	1732.5
High CH	20350	1750.0	20325	1747.5	20350	1750.0

LTE Band 7: 2500MHz ~ 2570MHz

Three channels had been tested for each channel bandwidth.

Channel Bandwidth	5MHz		10MHz		15MHz		20MHz	
	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
Low CH	20775	2502.5	20800	2505	20825	2507.5	20850	2510
Middle CH	21100	2535	21100	2535	21100	2535	21100	2535
High CH	21425	2567.5	21400	2565	21375	2562.5	21350	2560

LTE Band 12: 699 MHz ~ 716 MHz

Three channels had been tested for each channel bandwidth.

Channel Bandwidth	1.4MHz		3MHz		5MHz		10MHz	
	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
Low CH	23017	699.7	23025	700.5	23035	701.5	23060	704
Middle CH	23095	707.5	23095	707.5	23095	707.5	23095	707.5
High CH	23173	715.3	23165	714.5	23155	713.5	23130	711

LTE Band 13: 777 MHz ~ 787 MHz

Three channels had been tested for each channel bandwidth.

Channel Bandwidth	5MHz		10MHz	
	Channel	Frequency(MHz)	Channel	Frequency(MHz)
Low CH	23205	779.5	-	-
Middle CH	23230	752.0	23230	782.0
High CH	23255	784.5	-	-

LTE Band 41: 2500MHz ~ 2690MHz

Three channels had been tested for each channel bandwidth.

Channel Bandwidth	5MHz		10MHz		15MHz		20MHz	
	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
Low CH	39675	2498.5	39700	2501	39725	2503.5	39750	2506
Middle CH	40620	2593	40620	2593	40620	2593	40620	2593
High CH	41565	2687.5	41540	2685	41515	2682.5	41490	2680

LTE Band 66: 1710MHz ~ 1780MHz

Three channels had been tested for each channel bandwidth.

Channel Bandwidth	1.4MHz		3MHz		5MHz	
	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
Low CH	131979	1710.7	131987	1711.5	131997	1712.5
Middle CH	132322	1745	132322	1745	132322	1745
High CH	132665	1779.3	132657	1778.5	132647	1777.5
Channel Bandwidth	10MHz		15MHz		20MHz	
	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
Low CH	132022	1715	132047	1717.5	132072	1720
Middle CH	132322	1745	132322	1745	132322	1745
High CH	132622	1775	132597	1772.5	132572	1770



Report No.: T180821D09-RP4

Page: 12 / 122

Rev.: 01

For test mode:

The conducted power be measured in 1, 50% and 100% RB allocation, offset to upper edge, centered and lower edge of the channel bandwidth of each required channel.

	QPSK	Worst Mode	16QAM	Worst Mode
Band4	1.4M	1 RB ALLOCATED AT THE LOWER EDGE	1.4M	1 RB ALLOCATED AT THE LOWER EDGE
	3M	1 RB ALLOCATED AT THE LOWER EDGE	3M	1 RB ALLOCATED AT THE LOWER EDGE
	5M	1 RB ALLOCATED AT THE LOWER EDGE	5M	1 RB ALLOCATED AT THE LOWER EDGE
	10M	1 RB ALLOCATED AT THE LOWER EDGE	10M	1 RB ALLOCATED AT THE LOWER EDGE
	15M	1 RB ALLOCATED AT THE LOWER EDGE	15M	1 RB ALLOCATED AT THE LOWER EDGE
	20M	1 RB ALLOCATED AT THE LOWER EDGE	20M	1 RB ALLOCATED AT THE LOWER EDGE
Band 7	5M	1 RB ALLOCATED AT THE LOWER EDGE	5M	1 RB ALLOCATED AT THE LOWER EDGE
	10M	1 RB ALLOCATED AT THE LOWER EDGE	10M	1 RB ALLOCATED AT THE LOWER EDGE
	15M	1 RB ALLOCATED AT THE LOWER EDGE	15M	1 RB ALLOCATED AT THE LOWER EDGE
	20M	1 RB ALLOCATED AT THE LOWER EDGE	20M	1 RB ALLOCATED AT THE LOWER EDGE
Band12	1.4M	1 RB ALLOCATED AT THE LOWER EDGE	1.4M	1 RB ALLOCATED AT THE LOWER EDGE
	3M	1 RB ALLOCATED AT THE LOWER EDGE	3M	1 RB ALLOCATED AT THE LOWER EDGE
	5M	1 RB ALLOCATED AT THE LOWER EDGE	5M	1 RB ALLOCATED AT THE LOWER EDGE
	10M	1 RB ALLOCATED AT THE LOWER EDGE	10M	1 RB ALLOCATED AT THE LOWER EDGE
Band13	5M	1 RB ALLOCATED AT THE LOWER EDGE	5M	1 RB ALLOCATED AT THE LOWER EDGE
	10M	1 RB ALLOCATED AT THE LOWER EDGE	10M	1 RB ALLOCATED AT THE LOWER EDGE
Band 41	5M	1 RB ALLOCATED AT THE LOWER EDGE	5M	1 RB ALLOCATED AT THE LOWER EDGE
	10M	1 RB ALLOCATED AT THE LOWER EDGE	10M	1 RB ALLOCATED AT THE LOWER EDGE
	15M	1 RB ALLOCATED AT THE LOWER EDGE	15M	1 RB ALLOCATED AT THE LOWER EDGE
	20M	1 RB ALLOCATED AT THE LOWER EDGE	20M	1 RB ALLOCATED AT THE LOWER EDGE
Band 66	1.4M	1 RB ALLOCATED AT THE LOWER EDGE	1.4M	1 RB ALLOCATED AT THE LOWER EDGE
	3M	1 RB ALLOCATED AT THE LOWER EDGE	3M	1 RB ALLOCATED AT THE LOWER EDGE
	5M	1 RB ALLOCATED AT THE LOWER EDGE	5M	1 RB ALLOCATED AT THE LOWER EDGE
	10M	1 RB ALLOCATED AT THE LOWER EDGE	10M	1 RB ALLOCATED AT THE LOWER EDGE
	15M	1 RB ALLOCATED AT THE LOWER EDGE	15M	1 RB ALLOCATED AT THE LOWER EDGE
	20M	1 RB ALLOCATED AT THE LOWER EDGE	20M	1 RB ALLOCATED AT THE LOWER EDGE

4.2 Test worst mode of measurement

Radiated Emission Measurement	
Test Condition	Emission for Unwanted and Fundamental
Power supply Mode	Mode 1: EUT Power by adapter.
Worst Mode	☒ Mode 1 ☐ Mode 2 ☐ Mode 3 ☐ Mode 4
Position	☐ Placed in fixed position. ☒ Placed in fixed position at X-Plane (E2-Plane) ☐ Placed in fixed position at Y-Plane (E1-Plane) ☐ Placed in fixed position at Z-Plane (H-Plane)

Remark:

1. The worst mode was record in this test report.
2. The EUT pre-scanned in three axis ,X,Y, Z and two polarity, Horizontal and Vertical for radiated measurement. The worst case (X-Plane) were recorded in this report.



Report No.: T180821D09-RP4

Page: 14 / 122
Rev.: 01

5. INSTRUMENT CALIBRATION

5.1 MEASURING INSTRUMENT CALIBRATION

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipment, which is traceable to recognized national standards.

5.2 MEASUREMENT EQUIPMENT USED

Equipment Used for Emissions Measurement

Wugu Fully Chamber					
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
Bilog Antenna	Sunol Sciences	JB1	A052609	03/14/2018	03/13/2019
Cable	HUBER SUHNER	SUCOFLEX 104PEA	23452	06/29/2018	06/28/2019
Cable	HUBER SUHNER	SUCOFLEX 104PEA	33960	06/29/2018	06/28/2019
Digital Radio Communication Tester	R&S	CMU200	116604	07/19/2018	07/18/2019
Digital Thermo-Hygro Meter	WISEWIND	1110	D06	02/08/2018	02/07/2019
Horn Antenna	SCHWARZBECK	BBHA 9120D	779	03/14/2018	03/13/2019
Pre-Amplifier	Anritsu	MH648A	M89145	06/29/2018	06/28/2019
Pre-Amplifier	EMEC	EM01G26G	060570	06/29/2018	06/28/2019
Signal Analyzer	Agilent	N9010A	MY52220817	03/22/2018	03/21/2019
Wideband Radio Communication Tester	R&S	CMW 500	116875	04/20/2018	04/19/2019
Antenna Tower	CCS	CC-A-1F	N/A	N.C.R	N.C.R
Controller	CCS	CC-C-1F	N/A	N.C.R	N.C.R
Turn Table	CCS	CC-T-1F	N/A	N.C.R	N.C.R
Software	EZ-EMC (CCS-3A1RE)				



Report No.: T180821D09-RP4

Page: 15 / 122
Rev.: 01

5.3 MEASUREMENT UNCERTAINTY

PARAMETER	UNCERTAINTY
Powerline Conducted Emission	N/A
3M Semi Anechoic Chamber / 30M~200M	+/- 4.0138
3M Semi Anechoic Chamber / 200M~1000M	+/- 3.9483
3M Semi Anechoic Chamber / 1G~8G	+/- 2.5975
3M Semi Anechoic Chamber / 8G~18G	+/- 2.6112
3M Semi Anechoic Chamber / 18G~26G	+/- 2.7389
3M Semi Anechoic Chamber / 26G~40G	+/- 2.9683

Remark: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k=2$.



Report No.: T180821D09-RP4

Page: 16 / 122
Rev.: 01

6. FACILITIES AND ACCREDITATIONS

6.1 FACILITIES

All measurement facilities used to collect the measurement data are located at

- ☐ No.199, Chunghsen Road, Hsintien City, Taipei Hsien, Taiwan, R.O.C.
- ☒ No.11, Wugong 6th Rd., Wugu Dist., New Taipei City 24891, Taiwan, R.O.C

6.2 EQUIPMENT

Radiated emissions are measured with one or more of the following types of linearly polarized antennas: tuned dipole, biconical, log periodic, bi-log, and/or ridged waveguide, horn. Spectrum analyzers with pre-selectors and quasi-peak detectors are used to perform radiated measurements.

Calibrated wideband preamplifiers, coaxial cables, and coaxial attenuators are also used for making measurements.

All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."



Report No.: T180821D09-RP4

Page: 17 / 122
Rev.: 01

7. SETUP OF EQUIPMENT UNDER TEST

7.1 SETUP CONFIGURATION OF EUT

See test photographs attached in Appendix I for the actual connections between EUT and support equipment.

7.2 SUPPORT EQUIPMENT

No	Equipment	Brand	Model	Series No.	FCC ID	Data Cable
	N/A					

Remark:

1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

8. TEST PROCEDURE AND RESULT

8.1 ERP & EIRP MEASUREMENT

LIMIT

According to FCC §2.1046

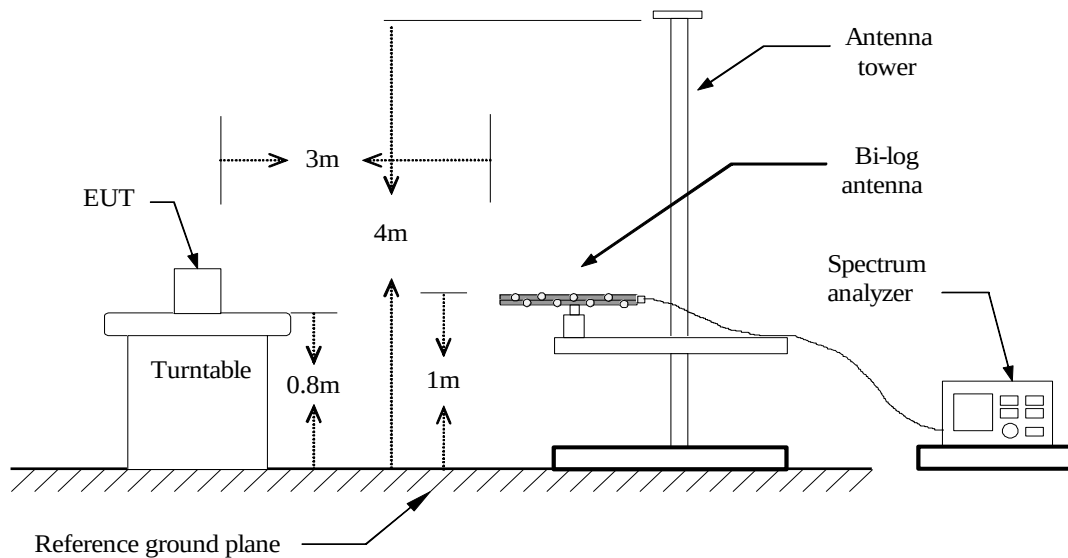
FCC 27.50 (c) (10): The portable stations (hand-held devices) in the 600MHz uplink band and the 698-746MHz band, and fixed and mobile stations in the 600MHz uplink band are limited to 3 Watts ERP.

FCC 27.50 (d) (4): Fixed, mobile, and portable (handheld) stations operating in the 1710-1755MHz band and mobile and portable stations operating in the 1695-1710MHz and 1755-1780MHz bands are limited to 1 watt EIRP.

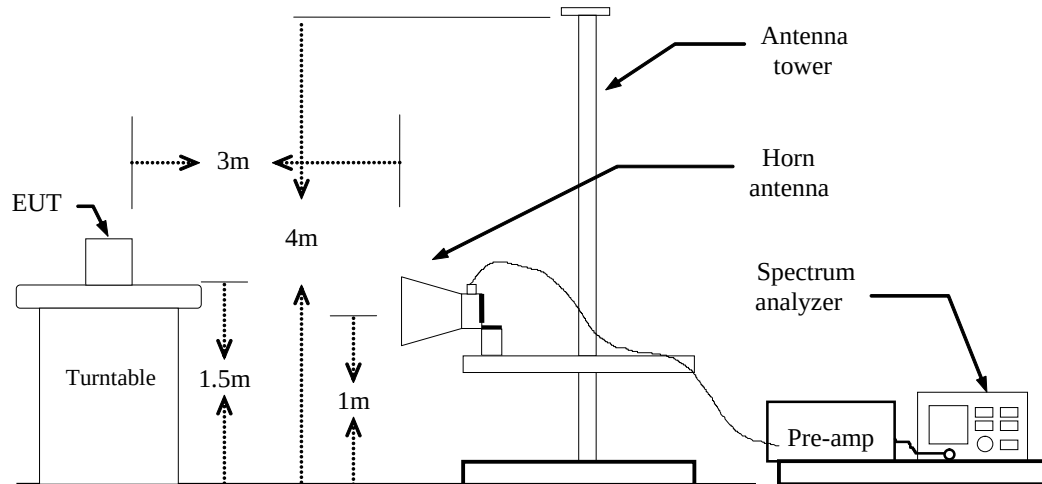
FCC 27.50 (b) (10): Portable stations (hand-held devices) transmitting in the 746-757 MHz, 776-788 MHz, and 805-806 MHz bands are limited to 3 watts ERP.

Test Configuration

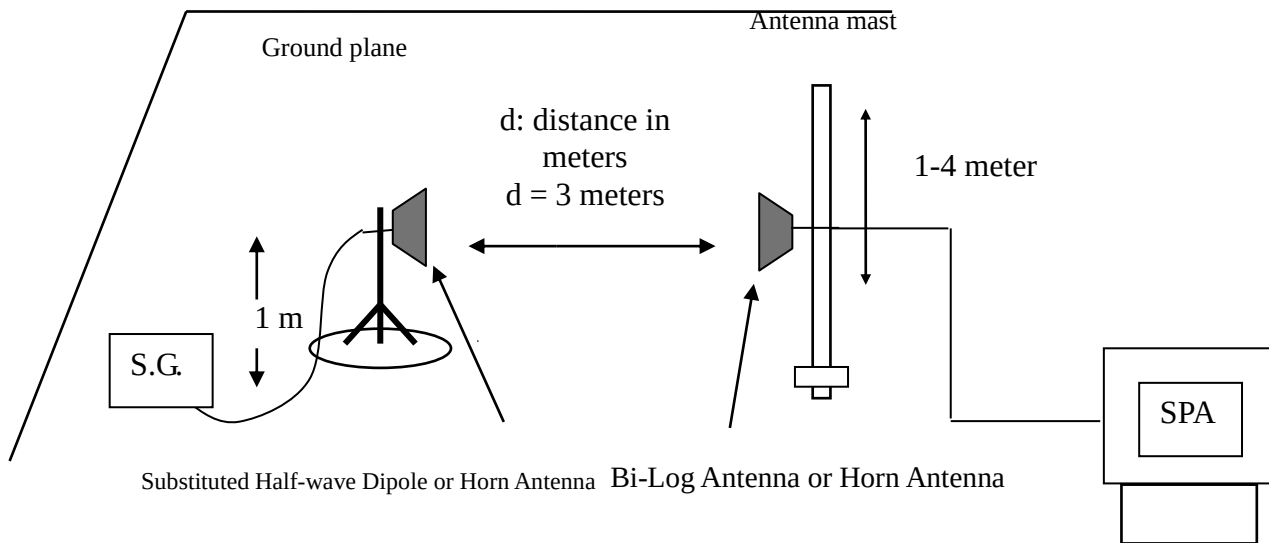
Below 1 GHz



Above 1 GHz



For Substituted Method Test Set-UP



TEST PROCEDURE

1. The EUT was placed on a non-conductive rotating platform (0.8m for below 1G and 1.5m for above 1G) in a semi-chamber. The radiated emission at the fundamental frequency was measured at 3m and SA with RMS detector per photograph 5, KDB 971168 D01 Power Meas License Digital Systems.
2. During the measurement, the call box parameters were set to get the maximum output power of the EUT. The maximum emission was recorded from spectrum analyzer power level (LVL) from 360 degrees rotation of turntable and the test antenna raised and lowered over a range from 1m to 4m in both horizontally and vertically polarized orientations.
3. EIRP was measured method according to TIA-603-E. The EUT was replaced by the substitution antenna at same location, and then record the maximum Analyzer reading through raised and lowered the test antenna.

$ERP = \text{S.G. output (dBm)} + \text{Antenna Gain (dBi)} - \text{Cable (dB)} - 2.15$

$EIRP = \text{S.G. output (dBm)} + \text{Antenna Gain (dBi)} - \text{Cable (dB)}$

TEST RESULTS

No non-compliance noted.

EIRP POWER

LTE Band 4

BW: 1.4MHz / RB=1, RB Offset=0

Band	BW (MHz)	Channel	Mode	UL RB Allocation	UL RB offset	Vertical		Horizontal	
						EIRP (dBm)	EIRP (W)	EIRP (dBm)	EIRP (W)
4	1.4	Lowest	QPSK	1	0	11.24	0.0133	28.74	0.7482
		Middle		1	0	13.10	0.0204	28.55	0.7161
		Highest		1	0	13.77	0.0238	28.97	0.7889
		Lowest	16 QAM	1	0	11.56	0.0143	28.80	0.7586
		Middle		1	0	12.85	0.0193	28.47	0.7031
		Highest		1	0	13.92	0.0247	28.83	0.7638

BW: 3MHz / RB=1, RB Offset=0

Band	BW (MHz)	Channel	Mode	UL RB Allocation	UL RB offset	Vertical		Horizontal	
						EIRP (dBm)	EIRP (W)	EIRP (dBm)	EIRP (W)
4	3	Lowest	QPSK	1	0	11.20	0.0132	28.57	0.7194
		Middle		1	0	12.71	0.0187	28.43	0.6966
		Highest		1	0	13.82	0.0241	28.89	0.7745
		Lowest	16 QAM	1	0	11.23	0.0133	28.52	0.7112
		Middle		1	0	12.75	0.0188	28.48	0.7047
		Highest		1	0	13.99	0.0251	28.89	0.7745

BW: 5MHz / RB=1, RB Offset=0

Band	BW (MHz)	Channel	Mode	UL RB Allocation	UL RB offset	Vertical		Horizontal	
						EIRP (dBm)	EIRP (W)	EIRP (dBm)	EIRP (W)
4	5	Lowest	QPSK	1	0	11.27	0.0134	28.67	0.7362
		Middle		1	0	12.72	0.0187	28.45	0.6998
		Highest		1	0	14.05	0.0254	28.83	0.7638
		Lowest	16 QAM	1	0	11.31	0.0135	28.54	0.7145
		Middle		1	0	12.59	0.0182	28.34	0.6823
		Highest		1	0	13.95	0.0248	28.74	0.7482

BW: 10MHz / RB=1, RB Offset=0

Band	BW (MHz)	Channel	Mode	UL RB Allocation	UL RB offset	Vertical		Horizontal	
						EIRP (dBm)	EIRP (W)	EIRP (dBm)	EIRP (W)
4	10	Lowest	QPSK	1	0	11.24	0.0133	28.62	0.7278
		Middle		1	0	12.22	0.0167	28.39	0.6902
		Highest		1	0	14.06	0.0255	28.39	0.6902
		Lowest	16 QAM	1	0	11.23	0.0133	28.61	0.7261
		Middle		1	0	12.17	0.0165	28.28	0.6730
		Highest		1	0	13.89	0.0245	28.31	0.6776

BW: 15MHz / RB=1, RB Offset=0

Band	BW (MHz)	Channel	Mode	UL RB Allocation	UL RB offset	Vertical		Horizontal	
						EIRP (dBm)	EIRP (W)	EIRP (dBm)	EIRP (W)
4	15	Lowest	QPSK	1	0	11.32	0.0136	28.60	0.7244
		Middle		1	0	11.98	0.0158	28.36	0.6855
		Highest		1	0	13.55	0.0226	28.29	0.6745
		Lowest	16 QAM	1	0	11.30	0.0135	28.63	0.7295
		Middle		1	0	11.81	0.0152	28.22	0.6637
		Highest		1	0	13.50	0.0224	28.27	0.6714

BW: 20MHz / RB=1, RB Offset=0

Band	BW (MHz)	Channel	Mode	UL RB Allocation	UL RB offset	Vertical		Horizontal	
						EIRP (dBm)	EIRP (W)	EIRP (dBm)	EIRP (W)
4	20	Lowest	QPSK	1	0	11.28	0.0134	28.48	0.7047
		Middle		1	0	11.50	0.0141	28.25	0.6683
		Highest		1	0	13.40	0.0219	28.46	0.7015
		Lowest	16 QAM	1	0	11.23	0.0133	28.55	0.7161
		Middle		1	0	11.45	0.0140	28.19	0.6592
		Highest		1	0	13.42	0.0220	28.47	0.7031

EIRP POWER

LTE Band 7

BW: 5MHz / RB=1, RB Offset=0

Band	BW (MHz)	Channel	Mode	UL RB Allocation	UL RB offset	Vertical		Horizontal	
						EIRP (dBm)	EIRP (W)	EIRP (dBm)	EIRP (W)
7	5	Lowest	QPSK	1	0	14.58	0.0287	29.49	0.8892
		Middle		1	0	15.10	0.0324	31.13	1.2972
		Highest		1	0	15.46	0.0352	31.25	1.3335
		Lowest	16 QAM	1	0	14.13	0.0259	29.57	0.9057
		Middle		1	0	15.56	0.0360	31.38	1.3740
		Highest		1	0	15.34	0.0342	31.36	1.3677

BW: 10MHz / RB=1, RB Offset=0

Band	BW (MHz)	Channel	Mode	UL RB Allocation	UL RB offset	Vertical		Horizontal	
						EIRP (dBm)	EIRP (W)	EIRP (dBm)	EIRP (W)
7	10	Lowest	QPSK	1	0	14.34	0.0272	29.49	0.8892
		Middle		1	0	15.62	0.0365	31.43	1.3900
		Highest		1	0	15.54	0.0358	31.55	1.4289
		Lowest	16 QAM	1	0	14.08	0.0256	29.19	0.8299
		Middle		1	0	15.65	0.0367	31.23	1.3274
		Highest		1	0	15.62	0.0365	31.46	1.3996

BW: 15MHz / RB=1, RB Offset=0

Band	BW (MHz)	Channel	Mode	UL RB Allocation	UL RB offset	Vertical		Horizontal	
						EIRP (dBm)	EIRP (W)	EIRP (dBm)	EIRP (W)
7	15	Lowest	QPSK	1	0	14.38	0.0274	29.44	0.8790
		Middle		1	0	15.69	0.0371	31.21	1.3213
		Highest		1	0	15.56	0.0360	31.64	1.4588
		Lowest	16 QAM	1	0	14.02	0.0252	29.22	0.8356
		Middle		1	0	15.58	0.0361	31.28	1.3428
		Highest		1	0	15.52	0.0356	31.60	1.4454



Report No.: T180821D09-RP4

Page: 24 / 122

Rev.: 01

BW: 20MHz / RB=1, RB Offset=0

Band	BW (MHz)	Channel	Mode	UL RB Allocation	UL RB offset	Vertical		Horizontal	
						EIRP (dBm)	EIRP (W)	EIRP (dBm)	EIRP (W)
7	20	Lowest	QPSK	1	0	14.30	0.0269	29.25	0.8414
		Middle		1	0	15.59	0.0362	31.38	1.3740
		Highest		1	0	15.44	0.0350	31.76	1.4997
		Lowest	16 QAM	1	0	14.13	0.0259	29.32	0.8551
		Middle		1	0	15.49	0.0354	31.19	1.3152
		Highest		1	0	15.51	0.0356	31.80	1.5136

ERP POWER

LTE Band 12

BW: 1.4MHz / RB=1, RB Offset=0

Band	BW (MHz)	Channel	Mode	UL RB Allocation	UL RB offset	Vertical		Horizontal	
						ERP (dBm)	ERP (W)	ERP (dBm)	ERP (W)
12	1.4	Lowest	QPSK	1	0	12.09	0.0162	26.17	0.4140
		Middle		1	0	9.94	0.0099	26.60	0.4571
		Highest		1	0	7.78	0.0060	26.63	0.4603
		Lowest	16 QAM	1	0	6.29	0.0043	26.02	0.3999
		Middle		1	0	7.12	0.0052	25.88	0.3873
		Highest		1	0	11.23	0.0133	26.89	0.4887

BW: 3MHz / RB=1, RB Offset=0

Band	BW (MHz)	Channel	Mode	UL RB Allocation	UL RB offset	Vertical		Horizontal	
						ERP (dBm)	ERP (W)	ERP (dBm)	ERP (W)
12	3	Lowest	QPSK	1	0	12.04	0.0160	26.22	0.4188
		Middle		1	0	10.70	0.0117	26.24	0.4207
		Highest		1	0	8.89	0.0077	27.00	0.5012
		Lowest	16 QAM	1	0	6.49	0.0045	26.21	0.4178
		Middle		1	0	6.46	0.0044	25.98	0.3963
		Highest		1	0	10.87	0.0122	27.10	0.5129

BW: 5MHz / RB=1, RB Offset=0

Band	BW (MHz)	Channel	Mode	UL RB Allocation	UL RB offset	Vertical		Horizontal	
						ERP (dBm)	ERP (W)	ERP (dBm)	ERP (W)
12	5	Lowest	QPSK	1	0	7.11	0.0051	25.99	0.3972
		Middle		1	0	7.74	0.0059	25.86	0.3855
		Highest		1	0	9.57	0.0091	26.13	0.4102
		Lowest	16 QAM	1	0	6.10	0.0041	26.54	0.4508
		Middle		1	0	6.17	0.0041	25.99	0.3972
		Highest		1	0	9.57	0.0091	26.20	0.4169



Report No.: T180821D09-RP4

Page: 26 / 122

Rev.: 01

BW: 10MHz / RB=1, RB Offset=0

Band	BW (MHz)	Channel	Mode	UL RB Allocation	UL RB offset	Vertical		Horizontal	
						ERP (dBm)	ERP (W)	ERP (dBm)	ERP (W)
12	10	Lowest	QPSK	1	0	5.72	0.0037	26.40	0.4365
		Middle		1	0	6.39	0.0044	26.18	0.4150
		Highest		1	0	6.23	0.0042	25.80	0.3802
		Lowest	16 QAM	1	0	6.33	0.0043	26.58	0.4550
		Middle		1	0	6.32	0.0043	26.32	0.4285
		Highest		1	0	6.80	0.0048	26.04	0.4018

ERP POWER

LTE Band 13

BW: 5MHz / RB=1, RB Offset=0

Band	BW (MHz)	Channel	Mode	UL RB Allocation	UL RB offset	Vertical		Horizontal	
						ERP (dBm)	ERP (W)	ERP (dBm)	ERP (W)
13	5	Lowest	QPSK	1	0	5.54	0.0036	29.15	0.8222
		Middle		1	0	12.04	0.0160	29.77	0.9484
		Highest		1	0	8.91	0.0078	30.07	1.0162
		Lowest	16 QAM	1	0	9.10	0.0081	29.50	0.8913
		Middle		1	0	9.70	0.0093	30.42	1.1015
		Highest		1	0	9.04	0.0080	30.62	1.1535

BW: 10MHz / RB=1, RB Offset=0

Band	BW (MHz)	Channel	Mode	UL RB Allocation	UL RB offset	Vertical		Horizontal	
						ERP (dBm)	ERP (W)	ERP (dBm)	ERP (W)
13	10	Middle	QPSK	1	0	9.29	0.0085	28.92	0.7798
		Middle	16 QAM	1	0	9.25	0.0084	29.59	0.9099

EIRP POWER**LTE Band 41****BW: 5MHz / RB=1, RB Offset=0**

Band	BW (MHz)	Channel	Mode	UL RB Allocation	UL RB offset	Vertical		Horizontal	
						EIRP (dBm)	EIRP (W)	EIRP (dBm)	EIRP (W)
41	5	Lowest	QPSK	1	0	13.61	0.0230	31.01	1.2618
		Middle		1	0	13.02	0.0200	29.82	0.9594
		Highest		1	0	13.92	0.0247	28.75	0.7499
		Lowest	16 QAM	1	0	14.70	0.0295	30.24	1.0568
		Middle		1	0	14.11	0.0258	30.22	1.0520
		Highest		1	0	13.50	0.0224	28.59	0.7228

BW: 10MHz / RB=1, RB Offset=0

Band	BW (MHz)	Channel	Mode	UL RB Allocation	UL RB offset	Vertical		Horizontal	
						EIRP (dBm)	EIRP (W)	EIRP (dBm)	EIRP (W)
41	10	Lowest	QPSK	1	0	13.93	0.0247	30.54	1.1324
		Middle		1	0	13.56	0.0227	30.00	1.0000
		Highest		1	0	14.16	0.0261	28.84	0.7656
		Lowest	16 QAM	1	0	14.97	0.0314	30.64	1.1588
		Middle		1	0	13.88	0.0244	30.07	1.0162
		Highest		1	0	14.51	0.0282	28.61	0.7261

BW: 15MHz / RB=1, RB Offset=0

Band	BW (MHz)	Channel	Mode	UL RB Allocation	UL RB offset	Vertical		Horizontal	
						EIRP (dBm)	EIRP (W)	EIRP (dBm)	EIRP (W)
41	15	Lowest	QPSK	1	0	14.92	0.0310	31.15	1.3032
		Middle		1	0	13.53	0.0225	29.88	0.9727
		Highest		1	0	14.07	0.0255	28.83	0.7638
		Lowest	16 QAM	1	0	13.67	0.0233	30.48	1.1169
		Middle		1	0	14.59	0.0288	29.78	0.9506
		Highest		1	0	13.97	0.0249	28.40	0.6918



Report No.: T180821D09-RP4

Page: 29 / 122

Rev.: 01

BW: 20MHz / RB=1, RB Offset=0

Band	BW (MHz)	Channel	Mode	UL RB Allocation	UL RB offset	Vertical		Horizontal	
						EIRP (dBm)	EIRP (W)	EIRP (dBm)	EIRP (W)
41	20	Lowest	QPSK	1	0	14.10	0.0257	31.02	1.2647
		Middle		1	0	13.79	0.0239	29.97	0.9931
		Highest		1	0	14.73	0.0297	29.86	0.9683
		Lowest	16 QAM	1	0	14.85	0.0305	30.91	1.2331
		Middle		1	0	14.88	0.0308	30.11	1.0257
		Highest		1	0	14.89	0.0308	30.14	1.0328

EIRP POWER

LTE Band 66

BW: 5MHz / RB=1, RB Offset=0

Band	BW (MHz)	Channel	Mode	UL RB Allocation	UL RB offset	Vertical		Horizontal	
						EIRP (dBm)	EIRP (W)	EIRP (dBm)	EIRP (W)
66	5	Lowest	QPSK	1	0	11.89	0.0155	29.08	0.8091
		Middle		1	0	15.51	0.0356	28.68	0.7379
		Highest		1	0	15.73	0.0374	29.17	0.8260
		Lowest	16 QAM	1	0	11.36	0.0137	29.76	0.9462
		Middle		1	0	13.47	0.0222	29.60	0.9120
		Highest		1	0	14.08	0.0256	29.67	0.9268

BW: 10MHz / RB=1, RB Offset=0

Band	BW (MHz)	Channel	Mode	UL RB Allocation	UL RB offset	Vertical		Horizontal	
						EIRP (dBm)	EIRP (W)	EIRP (dBm)	EIRP (W)
66	10	Lowest	QPSK	1	0	11.00	0.0126	29.36	0.8630
		Middle		1	0	13.56	0.0227	28.88	0.7727
		Highest		1	0	13.29	0.0213	28.60	0.7244
		Lowest	16 QAM	1	0	11.34	0.0136	29.81	0.9572
		Middle		1	0	13.72	0.0236	29.15	0.8222
		Highest		1	0	13.39	0.0218	28.92	0.7798

BW: 15MHz / RB=1, RB Offset=0

Band	BW (MHz)	Channel	Mode	UL RB Allocation	UL RB offset	Vertical		Horizontal	
						EIRP (dBm)	EIRP (W)	EIRP (dBm)	EIRP (W)
66	15	Lowest	QPSK	1	0	10.82	0.0121	29.45	0.8810
		Middle		1	0	13.35	0.0216	28.76	0.7516
		Highest		1	0	13.44	0.0221	28.81	0.7603
		Lowest	16 QAM	1	0	11.37	0.0137	29.81	0.9572
		Middle		1	0	13.48	0.0223	29.31	0.8531
		Highest		1	0	13.28	0.0213	29.16	0.8241



Report No.: T180821D09-RP4

Page: 31 / 122

Rev.: 01

BW: 20MHz / RB=1, RB Offset=0

Band	BW (MHz)	Channel	Mode	UL RB Allocation	UL RB offset	Vertical		Horizontal	
						EIRP (dBm)	EIRP (W)	EIRP (dBm)	EIRP (W)
66	20	Lowest	QPSK	1	0	10.87	0.0122	29.59	0.9099
		Middle		1	0	12.97	0.0198	28.87	0.7709
		Highest		1	0	13.33	0.0215	29.08	0.8091
		Lowest	16 QAM	1	0	11.21	0.0132	29.69	0.9311
		Middle		1	0	13.63	0.0231	29.16	0.8241
		Highest		1	0	13.33	0.0215	29.08	0.8091

8.2 RADIATED EMISSION MEASUREMENT

LIMITS

FCC §27.53(h), Band 4 & Band 7 & Band 41 & Band 66

General protection levels. Except as otherwise specified below, for operations in the 1710-1755MHz bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \log_{10}(P)$ dB.

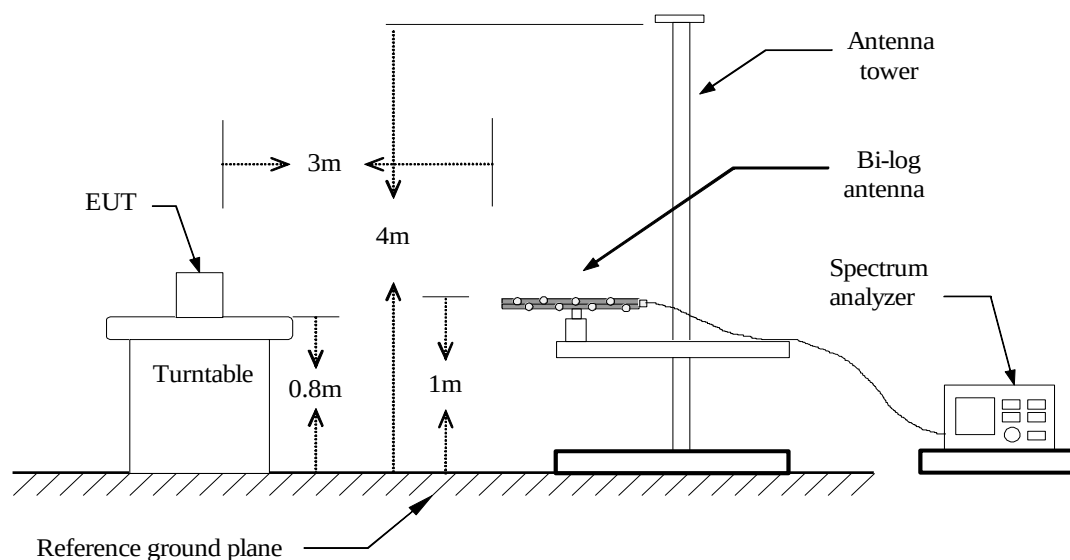
27.53(c)(2), Band 12 & Band 13

For operations in the 600 MHz band and the 698-746MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least $43 + 10 \log(P)$ dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kilohertz or greater. However, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.

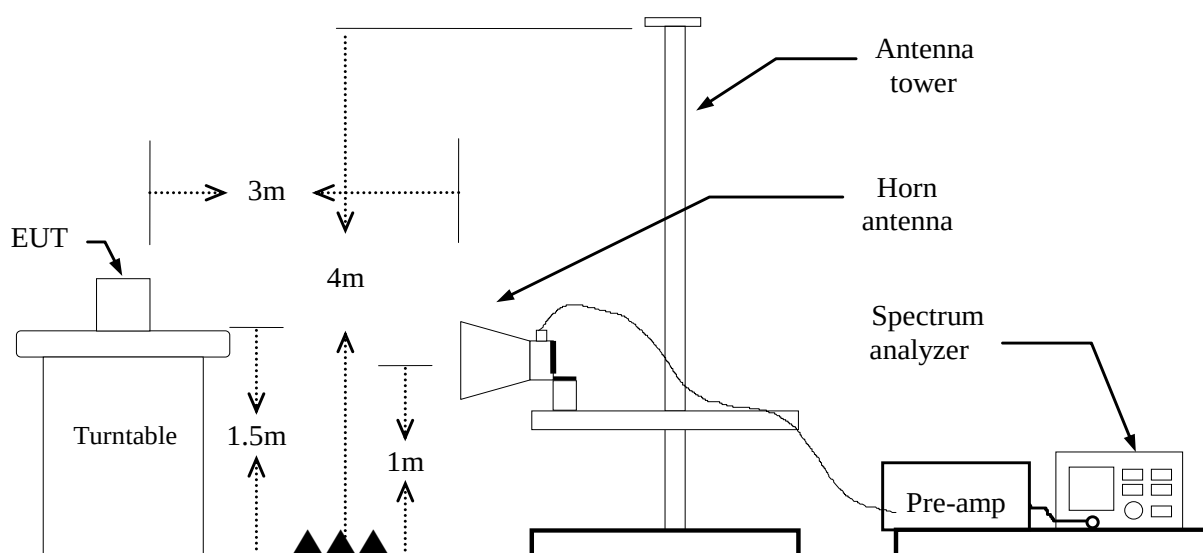
Limit Line: -13dBm

Test Configuration

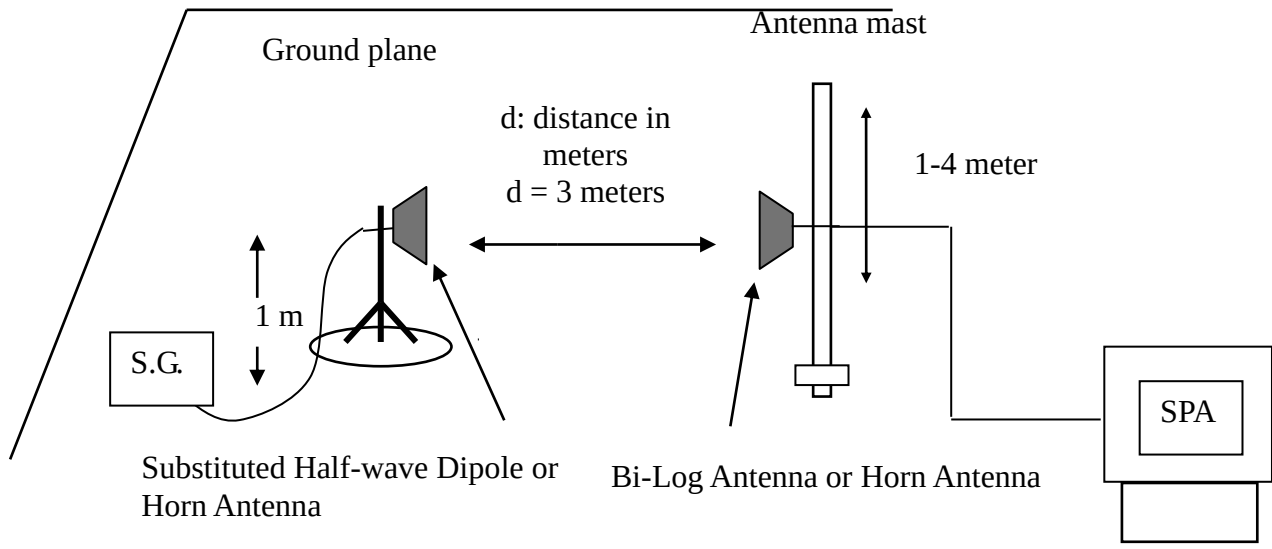
Below 1 GHz



Above 1 GHz



Substituted Method Test Set-up



TEST PROCEDURES

1. According to KDB 971168 D01 Power Meas License Digital Systems and TIA-603-E.
2. The EUT was placed on a turntable
 - (1) Below 1G : 0.8m
 - (2) Above 1G : 0.8m
 - (3) EUT set 3m from the receiving antenna
 - (4) The table was rotated 360 degrees of the highest spurious emission to determine the position.
3. Set the spectrum analyzer , RBW=1MHz, VBW=3MHz.
4. A horn antenna was driven by a signal generator.
5. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission

$$ERP = \text{S.G. output (dBm)} + \text{Antenna Gain (dBi)} - \text{Cable (dB)} - 2.15$$

$$EIRP = \text{S.G. output (dBm)} + \text{Antenna Gain (dBi)} - \text{Cable (dB)}$$



Report No.: T180821D09-RP4

Page: 35 / 122
Rev.: 01

Test Results

Below 1GHz

LTE Band 4 / BW: 20MHz / QPSK / RB =1, RB Offset = 0

Operation Mode: Tx / Mid CH

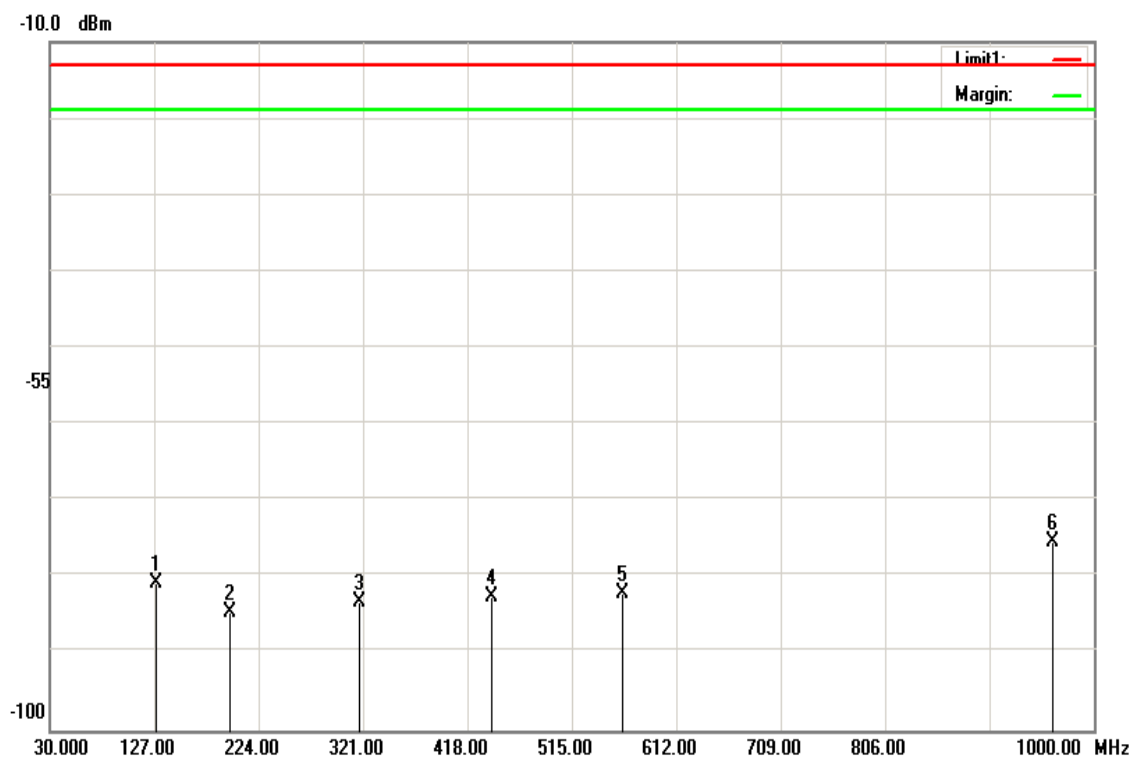
Test Date: September 28, 2018

Temperature: 23°C

Tested by: Jerry Chuang

Humidity: 41 %RH

Polarity: Ver.



Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
128.9400	-79.6	1.13	-80.73	-13.00	-67.73	V
197.8100	-83.12	1.39	-84.51	-13.00	-71.51	V
317.6050	-81.56	1.78	-83.34	-13.00	-70.34	V
440.7950	-80.56	2.11	-82.67	-13.00	-69.67	V
562.5300	-79.61	2.39	-82.00	-13.00	-69.00	V
961.2000	-72.14	3.16	-75.30	-13.00	-62.30	V



Report No.: T180821D09-RP4

Page: 36 / 122
Rev.: 01

Operation Mode: Tx / Mid CH

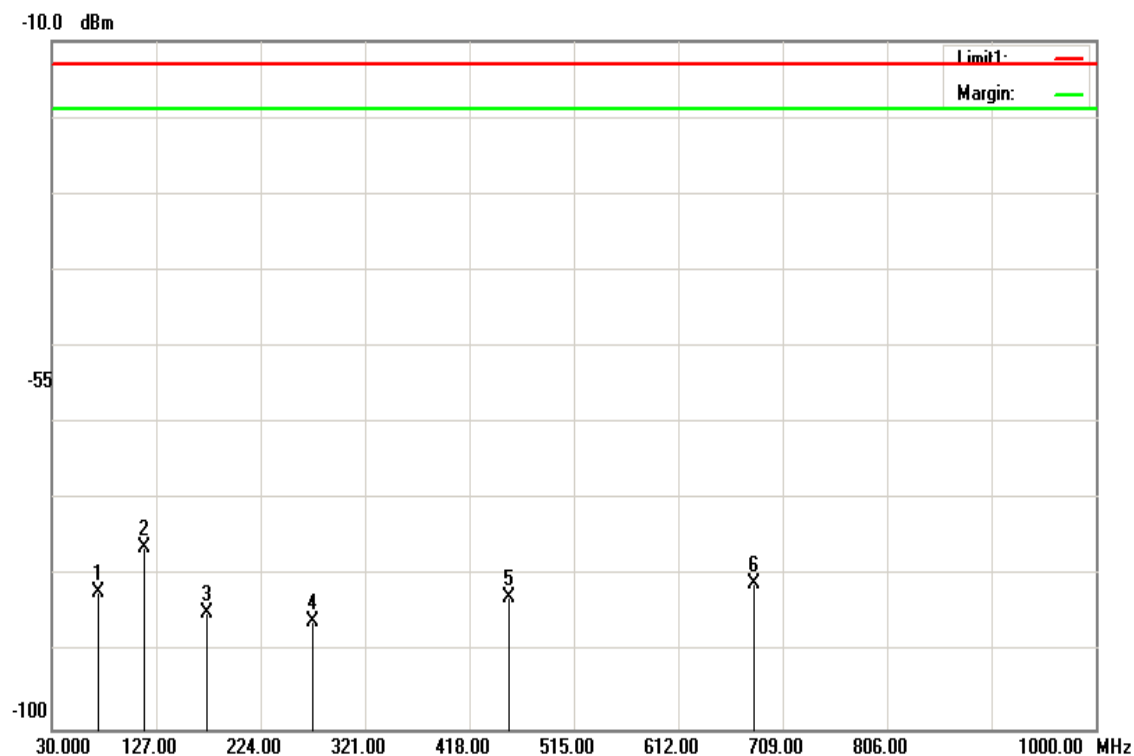
Test Date: September 28, 2018

Temperature: 23°C

Tested by: Jerry Chuang

Humidity: 41 %RH

Polarity: Hor.



Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
74.1350	-81.18	0.85	-82.03	-13.00	-69.03	H
116.8150	-75.2	1.07	-76.27	-13.00	-63.27	H
173.5600	-83.48	1.3	-84.78	-13.00	-71.78	H
272.5000	-84.22	1.64	-85.86	-13.00	-72.86	H
455.3450	-80.66	2.14	-82.80	-13.00	-69.80	H
681.8400	-78.33	2.64	-80.97	-13.00	-67.97	H

Report No.: T180821D09-RP4

LTE Band 4 / BW: 20MHz / 16QAM / RB =1, RB Offset = 0
Operation Mode: Tx / Mid CH

Test Date:

September 28, 2018

Temperature: 23°C

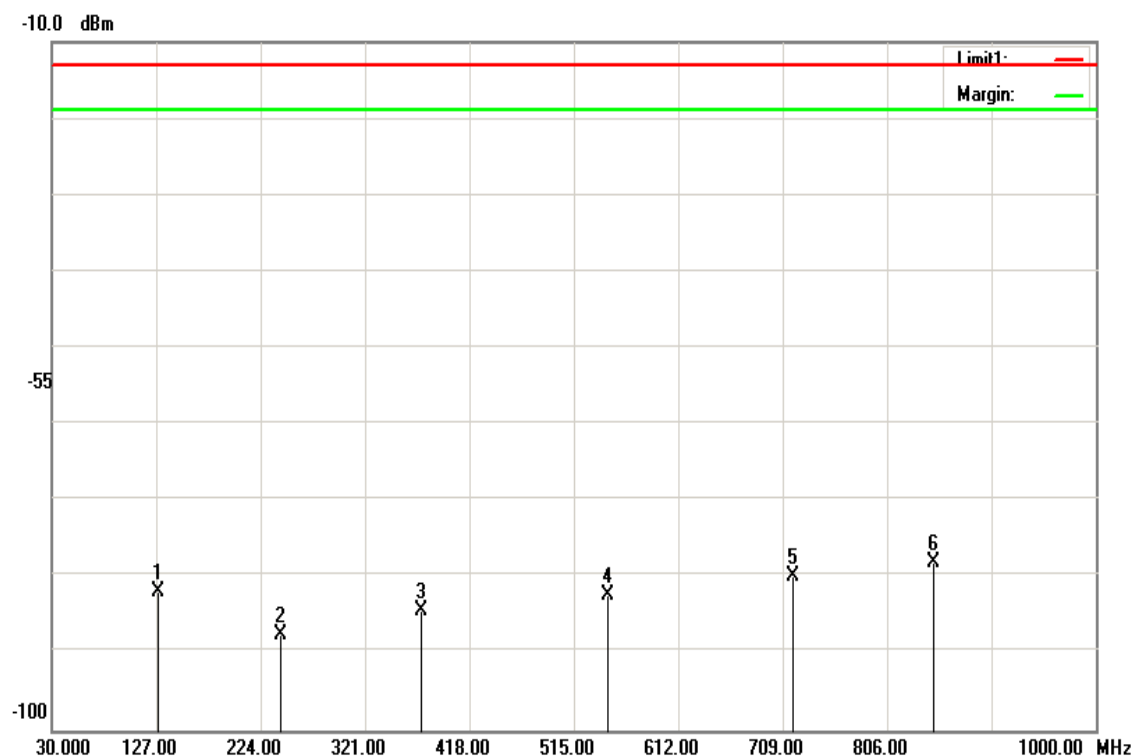
Tested by:

Jerry Chuang

Humidity: 41 %RH

Polarity:

Ver.



Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
128.9400	-80.76	1.13	-81.89	-13.00	-68.89	V
242.9150	-86.02	1.54	-87.56	-13.00	-74.56	V
373.3800	-82.49	1.94	-84.43	-13.00	-71.43	V
546.5250	-79.98	2.35	-82.33	-13.00	-69.33	V
718.7000	-77.05	2.72	-79.77	-13.00	-66.77	V
848.6800	-75.09	2.97	-78.06	-13.00	-65.06	V



Report No.: T180821D09-RP4

Page: 38 / 122
Rev.: 01

Operation Mode: Tx / Mid CH

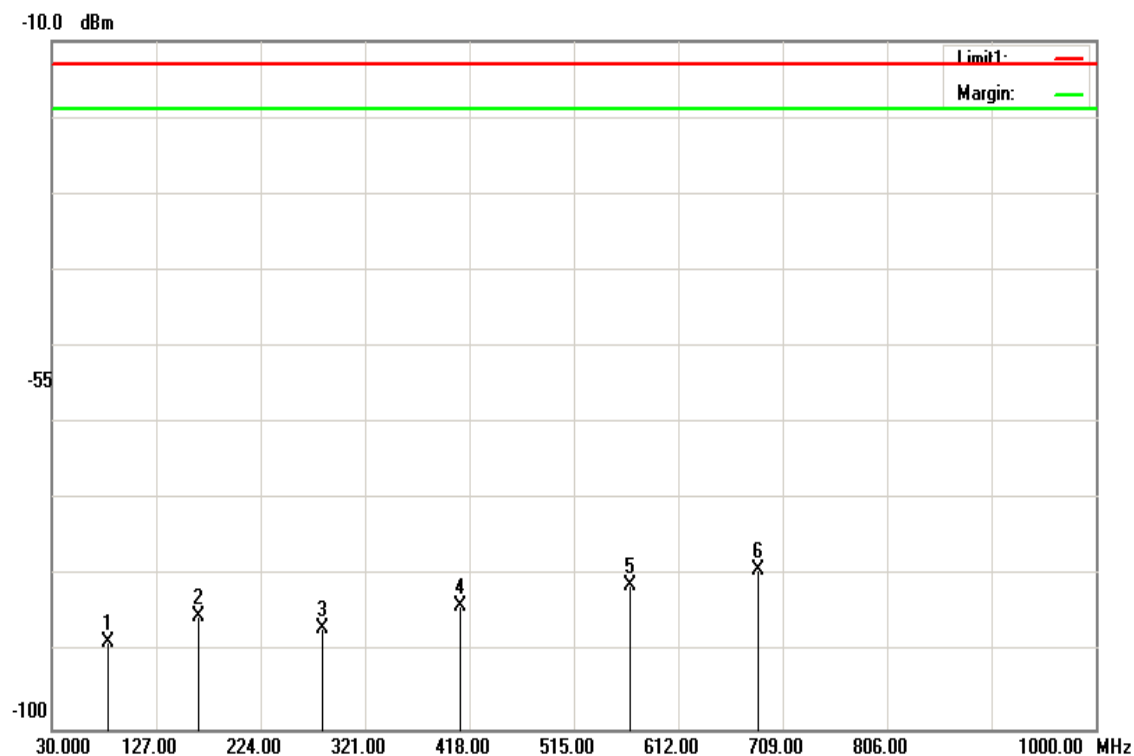
Test Date: September 28, 2018

Temperature: 23°C

Tested by: Jerry Chuang

Humidity: 41 %RH

Polarity: Hor.



Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
82.3800	-87.77	0.89	-88.66	-13.00	-75.66	H
167.2550	-83.89	1.28	-85.17	-13.00	-72.17	H
281.2300	-85.23	1.66	-86.89	-13.00	-73.89	H
409.2700	-81.87	2.03	-83.90	-13.00	-70.90	H
567.8650	-78.9	2.4	-81.30	-13.00	-68.30	H
686.6900	-76.55	2.65	-79.20	-13.00	-66.20	H



Report No.: T180821D09-RP4

Page: 39 / 122

Rev.: 01

Above 1GHz

LTE Band 4 / BW: 20MHz / QPSK RB =1, RB Offset = 0

Operation Mode: Tx / Low CH

Test Date:

September 28, 2018

Temperature: 23°C

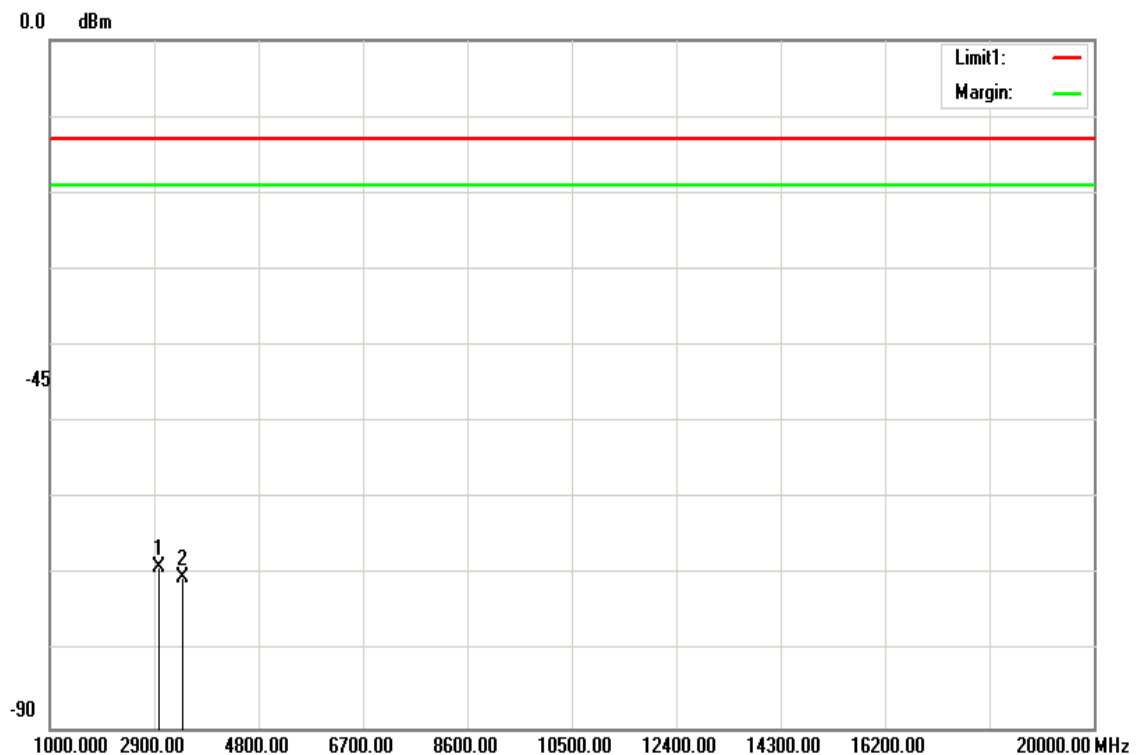
Tested by:

Jerry Chuang

Humidity: 41 %RH

Polarity:

Ver.



Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
2998.500	-63.11	5.91	-69.02	-13.00	-56.02	V
3422.000	-64.01	6.35	-70.36	-13.00	-57.36	V
N/A						

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

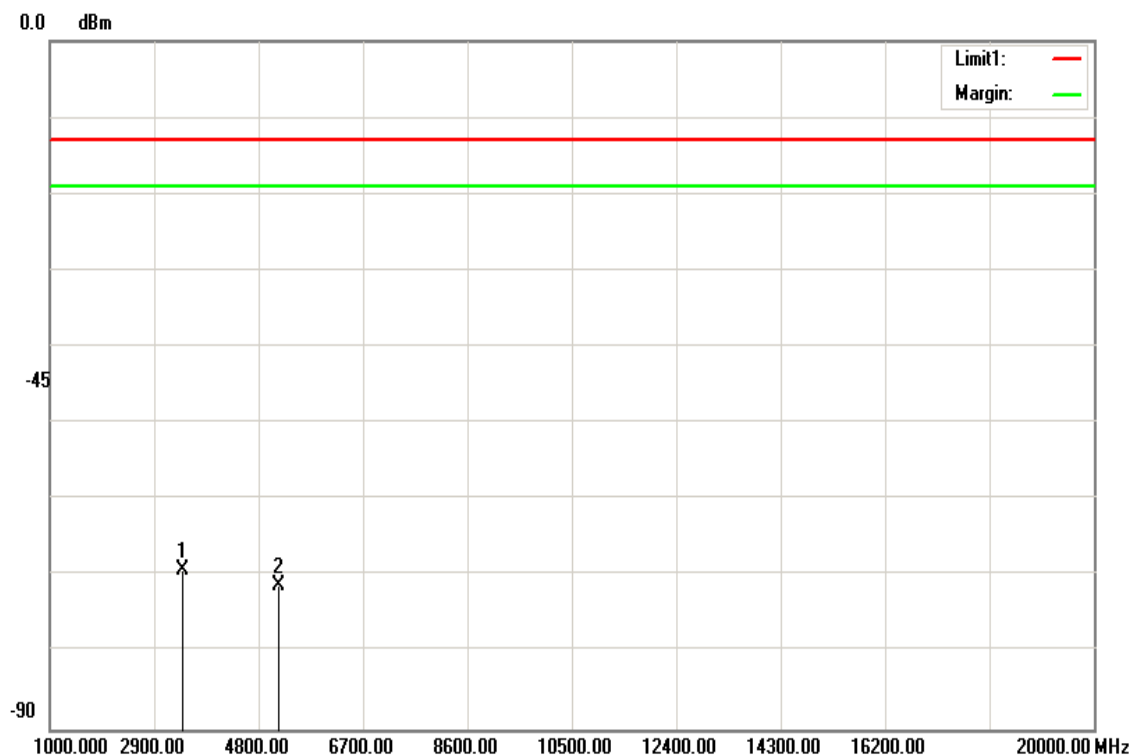


Report No.: T180821D09-RP4

Page: 40 / 122
Rev.: 01

Operation Mode: Tx / Low CH
Temperature: 23°C
Humidity: 41 %RH

Test Date: September 28, 2018
Tested by: Jerry Chuang
Polarity: Hor.



Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
3422.000	-62.95	6.35	-69.30	-13.00	-56.30	H
5160.000	-63.36	7.95	-71.31	-13.00	-58.31	H
N/A						

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

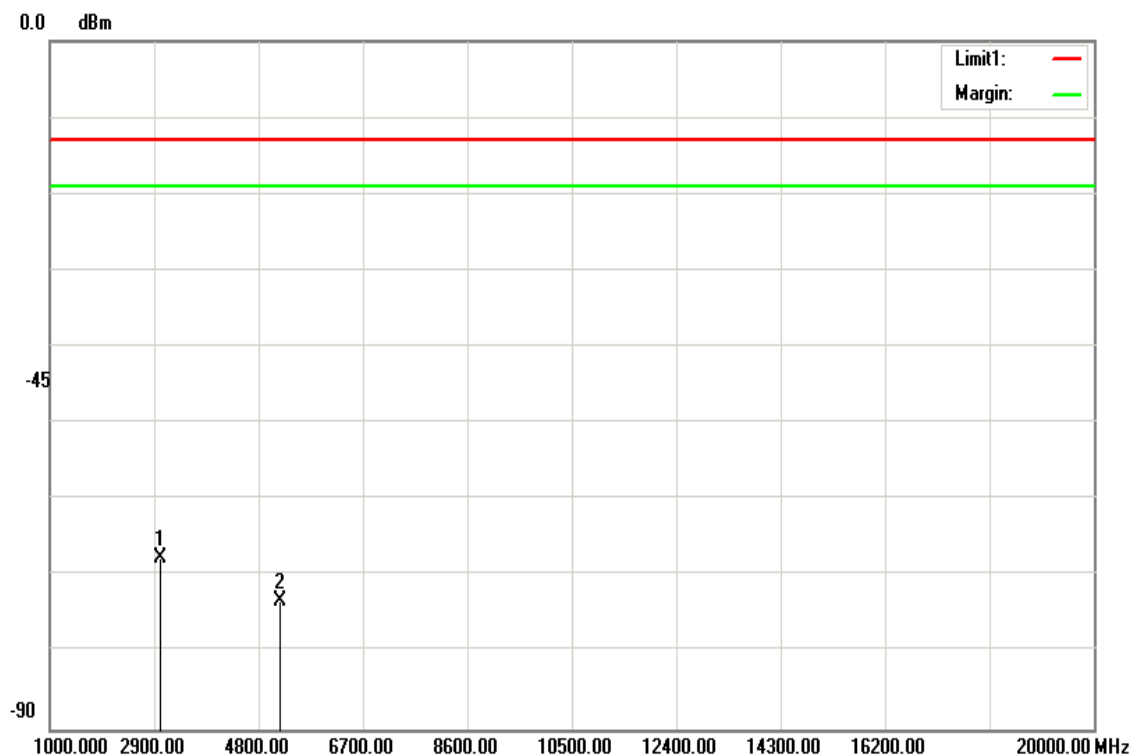


Report No.: T180821D09-RP4

Page: 41 / 122
Rev.: 01

Operation Mode: Tx / Mid CH
Temperature: 23°C
Humidity: 41 %RH

Test Date: September 28, 2018
Tested by: Jerry Chuang
Polarity: Ver.



Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
3002.000	-61.77	5.91	-67.68	-13.00	-54.68	V
5197.500	-65.27	7.98	-73.25	-13.00	-60.25	V
N/A						

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.



Report No.: T180821D09-RP4

Page: 42 / 122

Rev.: 01

Operation Mode: Tx / Mid CH

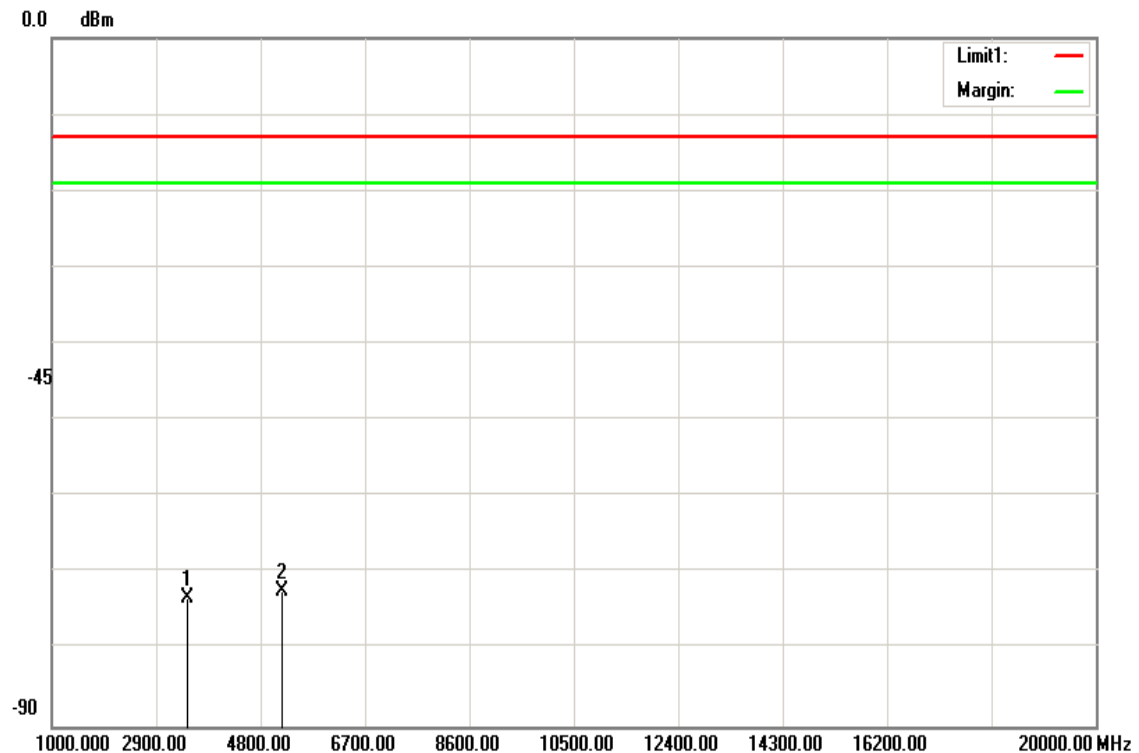
Test Date: September 28, 2018

Temperature: 23°C

Tested by: Jerry Chuang

Humidity: 41 %RH

Polarity: Hor.



Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
3465.000	-66.83	6.39	-73.22	-13.00	-60.22	H
5197.500	-64.26	7.98	-72.24	-13.00	-59.24	H
N/A						

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

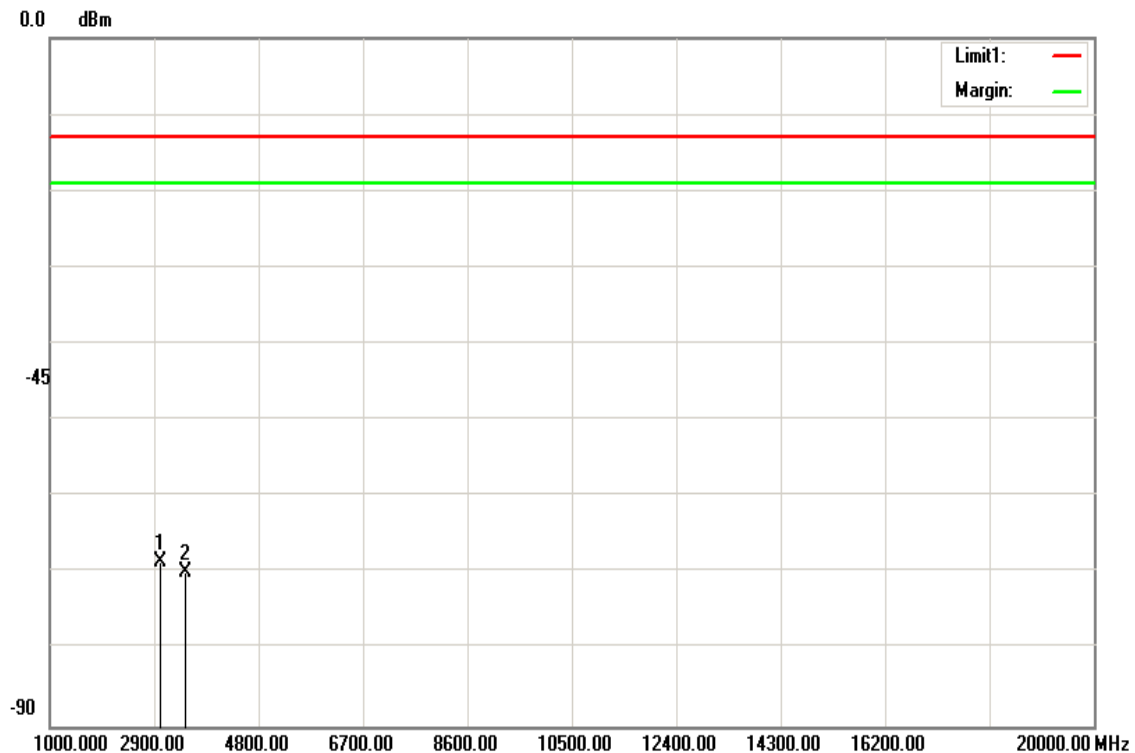


Report No.: T180821D09-RP4

Page: 43 / 122
Rev.: 01

Operation Mode: Tx / High CH
Temperature: 23°C
Humidity: 41 %RH

Test Date: September 28, 2018
Tested by: Jerry Chuang
Polarity: Ver.



Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
3002.000	-62.62	5.91	-68.53	-13.00	-55.53	V
3471.000	-63.45	6.4	-69.85	-13.00	-56.85	V
N/A						

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.



Report No.: T180821D09-RP4

Page: 44 / 122
Rev.: 01

Operation Mode: Tx / High CH

Test Date:

September 28, 2018

Temperature: 23°C

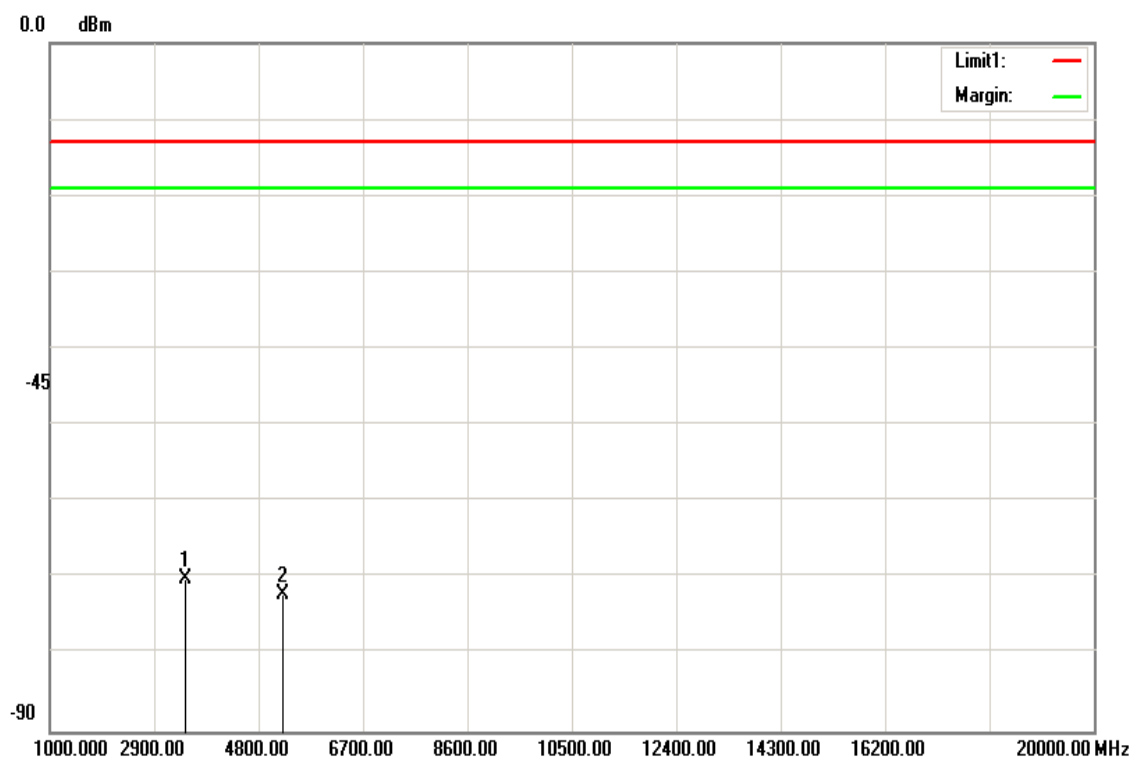
Tested by:

Jerry Chuang

Humidity: 41 %RH

Polarity:

Hor.



Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
3471.000	-63.68	6.4	-70.08	-13.00	-57.08	H
5235.000	-64.11	8.01	-72.12	-13.00	-59.12	H
N/A						

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

Report No.: T180821D09-RP4

LTE Band 4 / BW: 20MHz / 16QAM / RB =1, RB Offset = 0

Operation Mode: Tx / Low CH

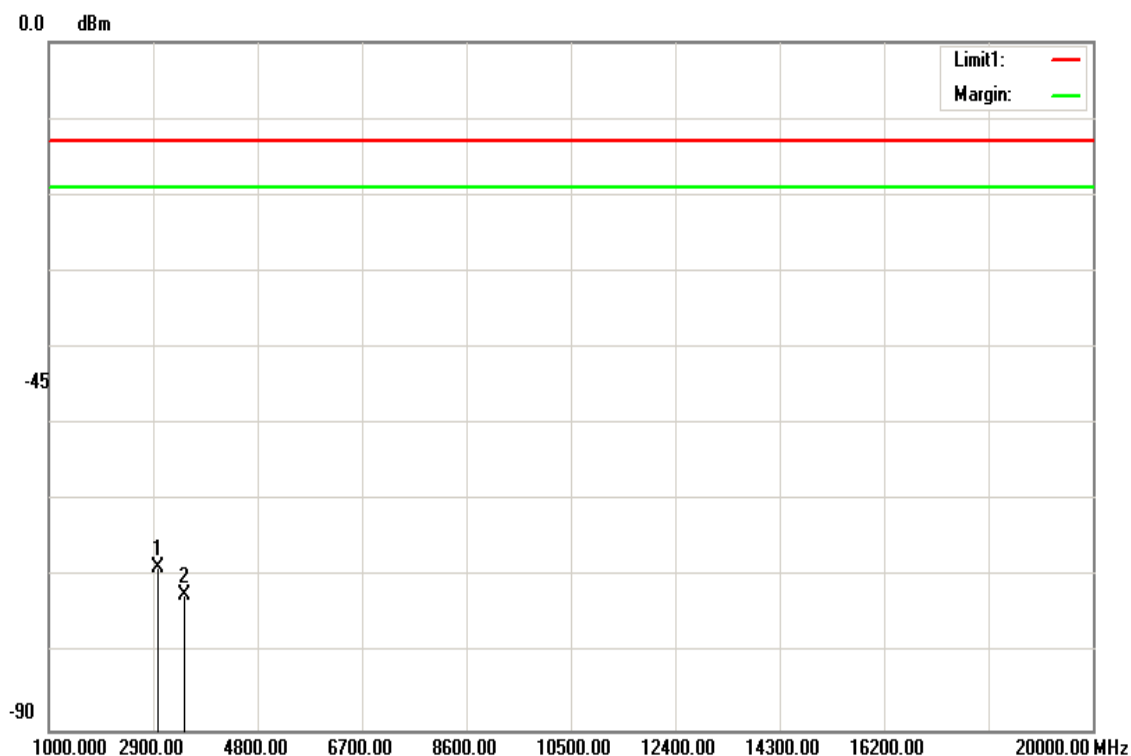
Test Date: October 2, 2018

Temperature: 22°C

Tested by: Jerry Chuang

Humidity: 40 %RH

Polarity: Ver.



Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
2998.500	-62.72	5.91	-68.63	-13.00	-55.63	V
3465.000	-66	6.39	-72.39	-13.00	-59.39	V
N/A						

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.



Report No.: T180821D09-RP4

Page: 46 / 122
Rev.: 01

Operation Mode: Tx / Low CH

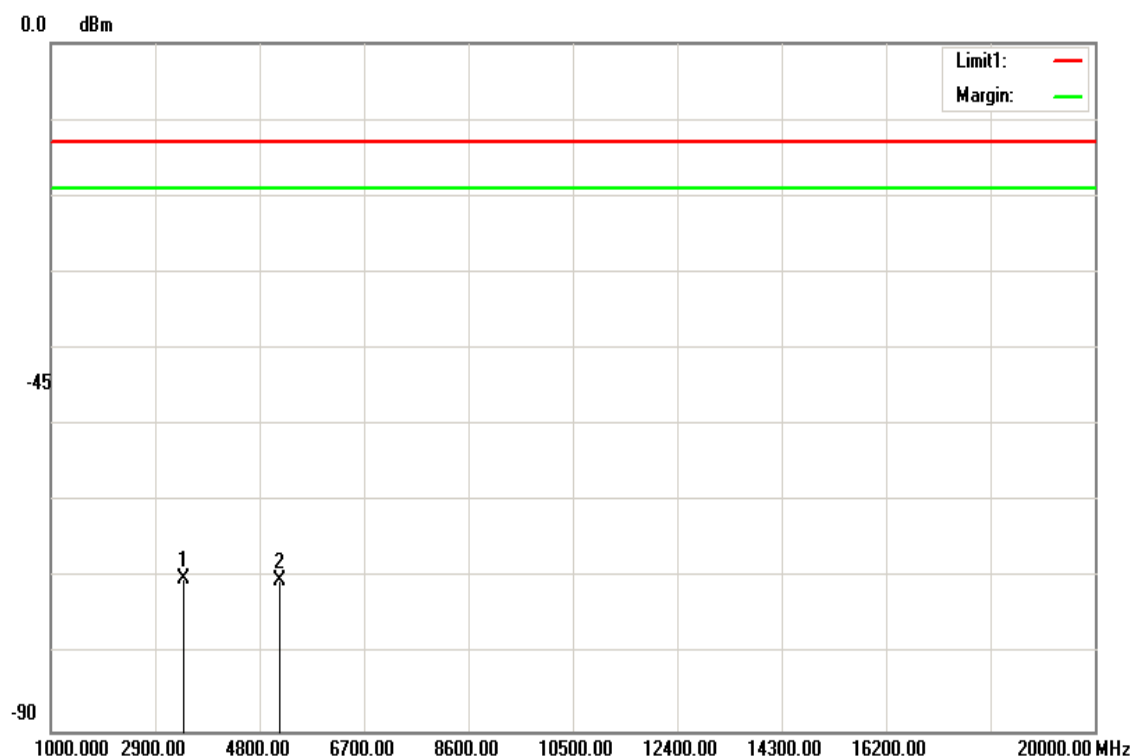
Test Date: October 2, 2018

Temperature: 22°C

Tested by: Jerry Chuang

Humidity: 40 %RH

Polarity: Hor.



Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
3422.000	-63.68	6.35	-70.03	-13.00	-57.03	H
5160.000	-62.41	7.95	-70.36	-13.00	-57.36	H
N/A						

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.



Report No.: T180821D09-RP4

Page: 47 / 122
Rev.: 01

Operation Mode: Tx / Mid CH

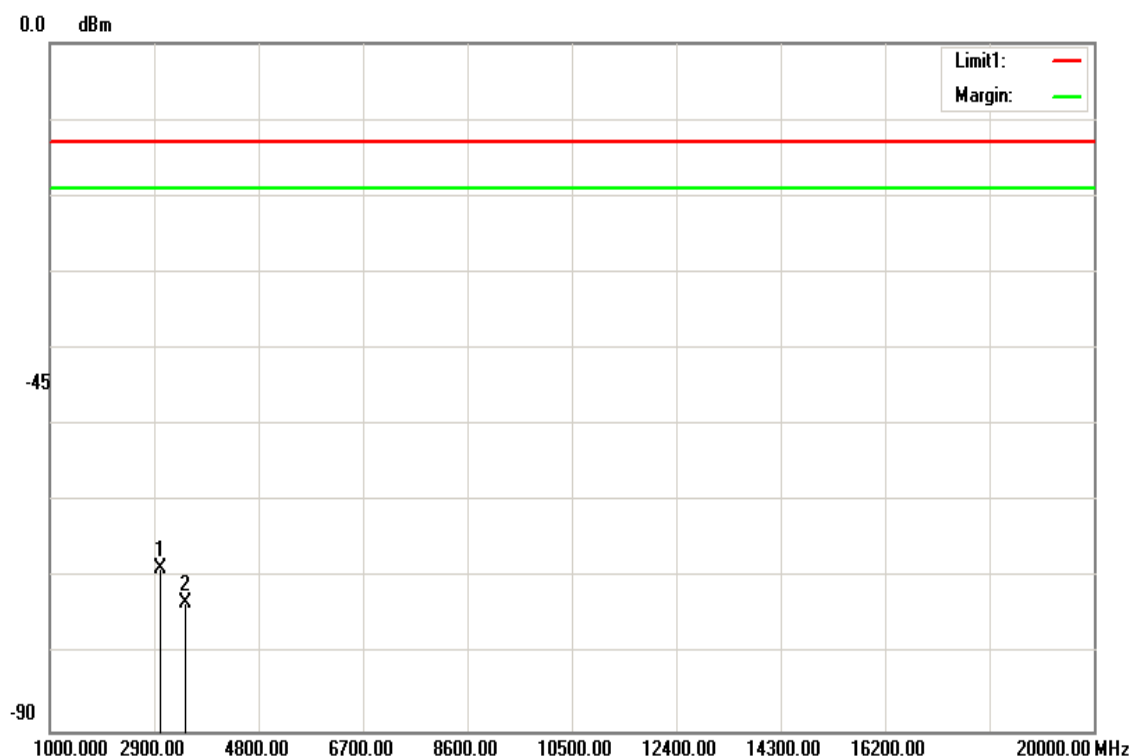
Test Date: October 2, 2018

Temperature: 22°C

Tested by: Jerry Chuang

Humidity: 40 %RH

Polarity: Ver.



Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
3002.000	-62.72	5.91	-68.63	-13.00	-55.63	V
3465.000	-66.93	6.39	-73.32	-13.00	-60.32	V
N/A						

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.



Report No.: T180821D09-RP4

Page: 48 / 122
Rev.: 01

Operation Mode: Tx / Mid CH

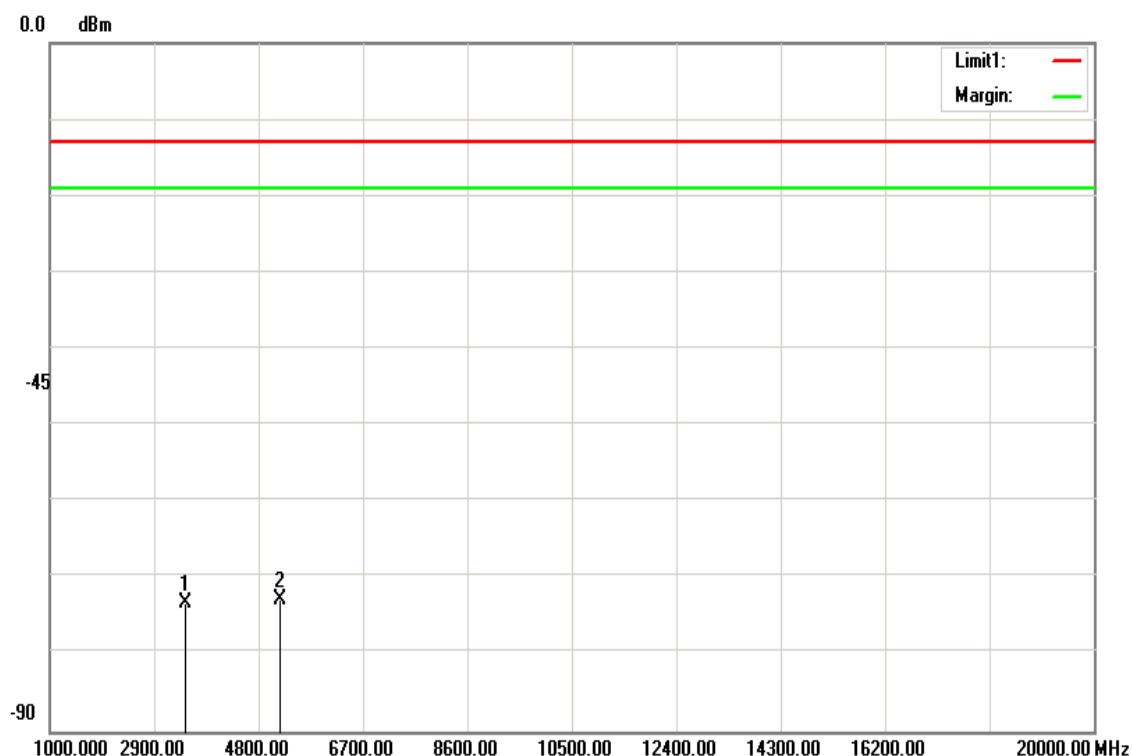
Test Date: October 2, 2018

Temperature: 22°C

Tested by: Jerry Chuang

Humidity: 40 %RH

Polarity: Hor.



Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
3465.000	-66.96	6.39	-73.35	-13.00	-60.35	H
5197.500	-64.71	7.98	-72.69	-13.00	-59.69	H
N/A						

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.



Report No.: T180821D09-RP4

Page: 49 / 122
Rev.: 01

Operation Mode: Tx / High CH

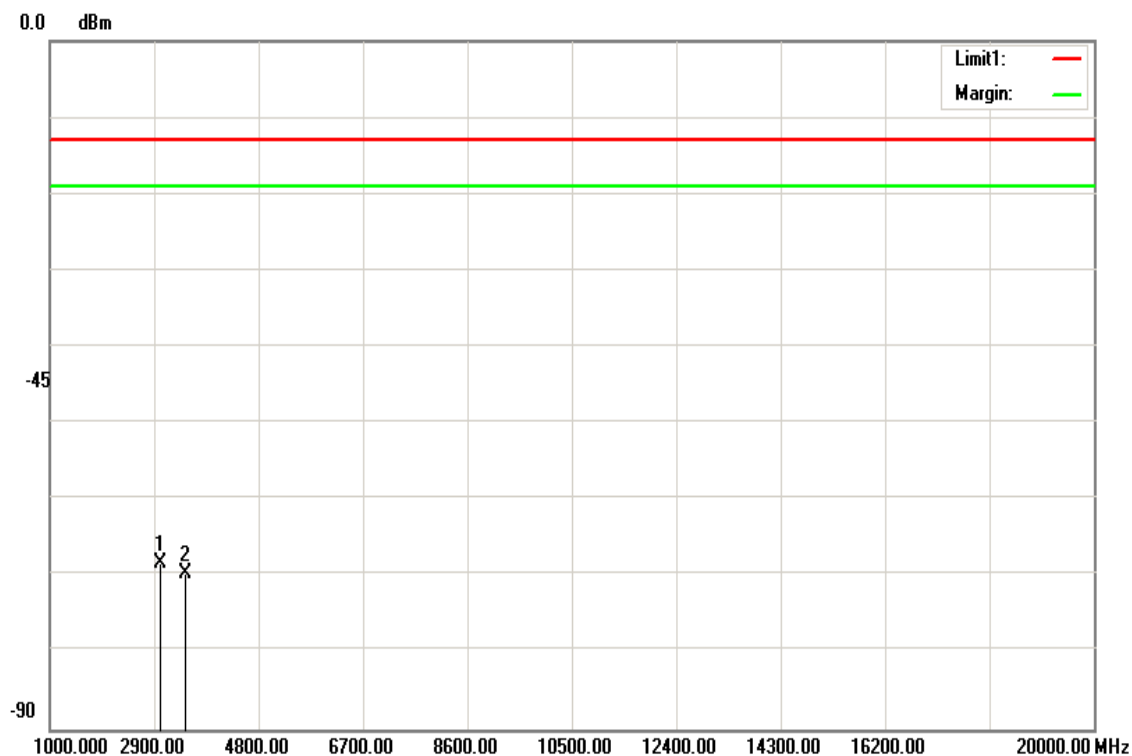
Test Date: October 2, 2018

Temperature: 22°C

Tested by: Jerry Chuang

Humidity: 40 %RH

Polarity: Ver.



Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
3002.000	-62.43	5.91	-68.34	-13.00	-55.34	V
3471.000	-63.25	6.4	-69.65	-13.00	-56.65	V
N/A						

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.



Report No.: T180821D09-RP4

Page: 50 / 122
Rev.: 01

Operation Mode: Tx / High CH

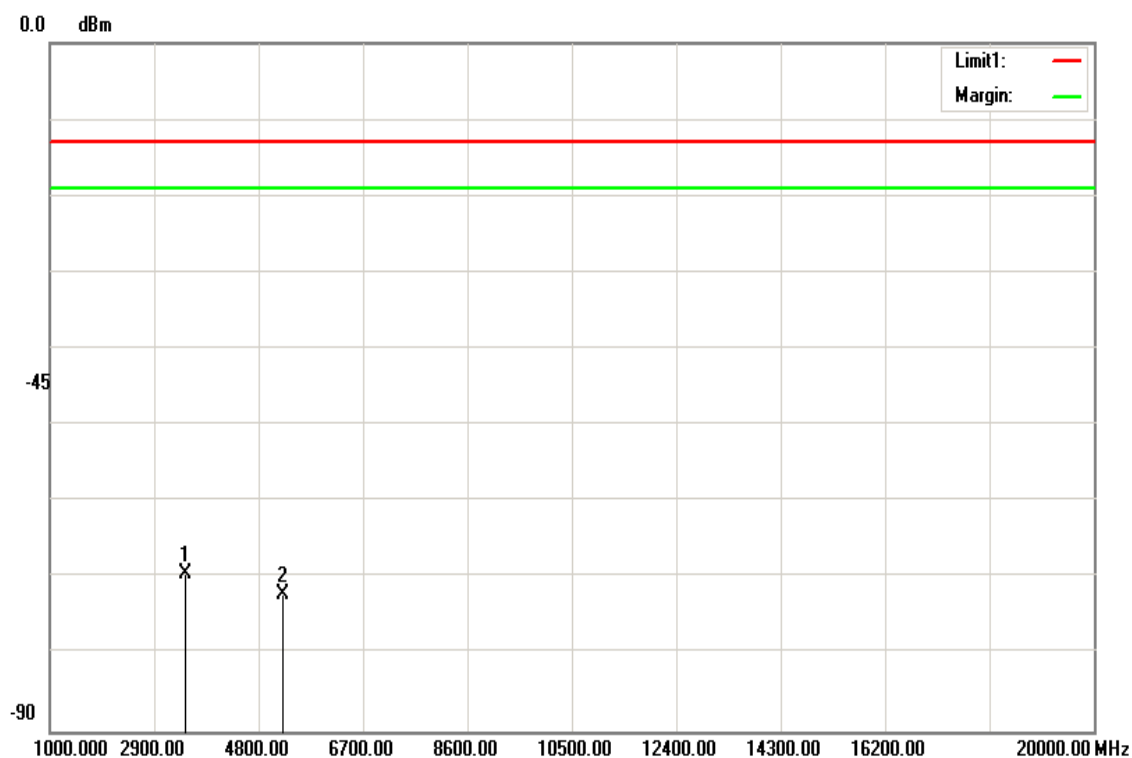
Test Date: October 2, 2018

Temperature: 22°C

Tested by: Jerry Chuang

Humidity: 40 %RH

Polarity: Hor.



Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
3471.000	-62.98	6.4	-69.38	-13.00	-56.38	H
5235.000	-64.18	8.01	-72.19	-13.00	-59.19	H
N/A						

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.



Report No.: T180821D09-RP4

Page: 51 / 122
Rev.: 01

Test Results

Below 1GHz

LTE Band 7 / BW: 20MHz / QPSK / RB =1, RB Offset = 0

Operation Mode: Tx / Mid CH

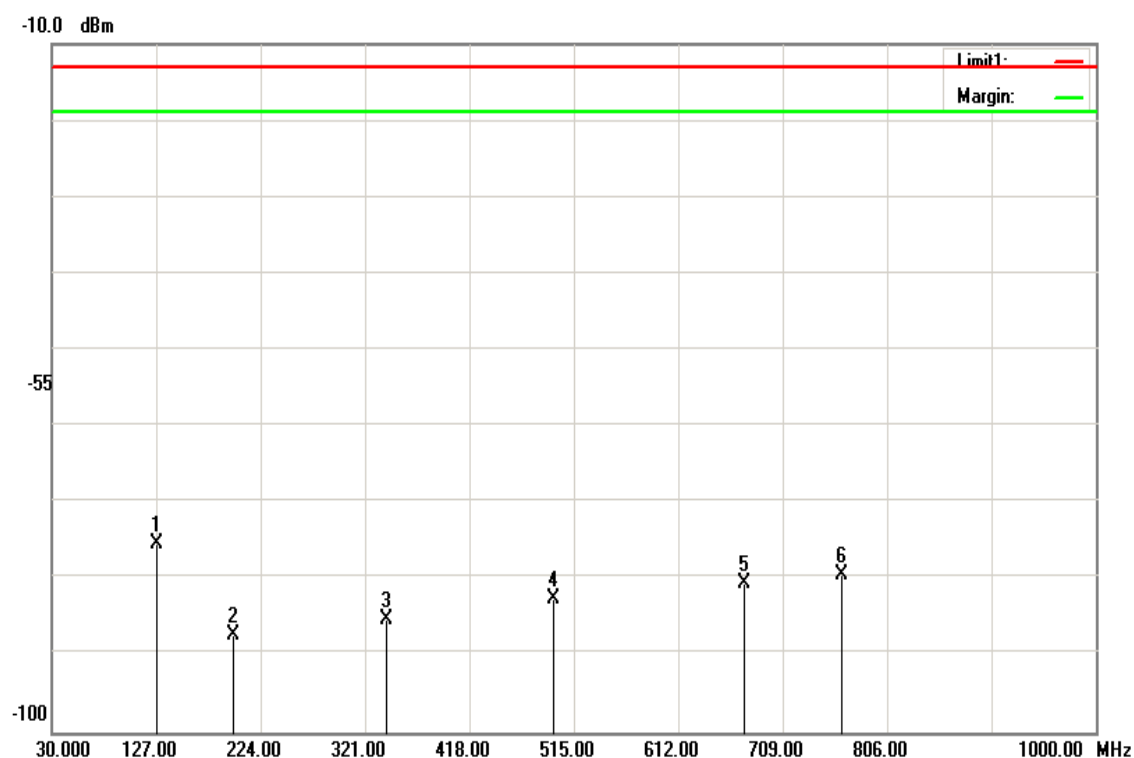
Test Date: September 28, 2018

Temperature: 23°C

Tested by: Jerry Chuang

Humidity: 41 %RH

Polarity: Ver.



Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
127.0000	-74.23	1.12	-75.35	-13.00	-62.35	V
198.7800	-85.88	1.4	-87.28	-13.00	-74.28	V
341.8550	-83.3	1.85	-85.15	-13.00	-72.15	V
496.0850	-80.32	2.24	-82.56	-13.00	-69.56	V
673.1100	-77.93	2.62	-80.55	-13.00	-67.55	V
763.3200	-76.53	2.8	-79.33	-13.00	-66.33	V



Report No.: T180821D09-RP4

Page: 52 / 122
Rev.: 01

Operation Mode: Tx / Mid CH

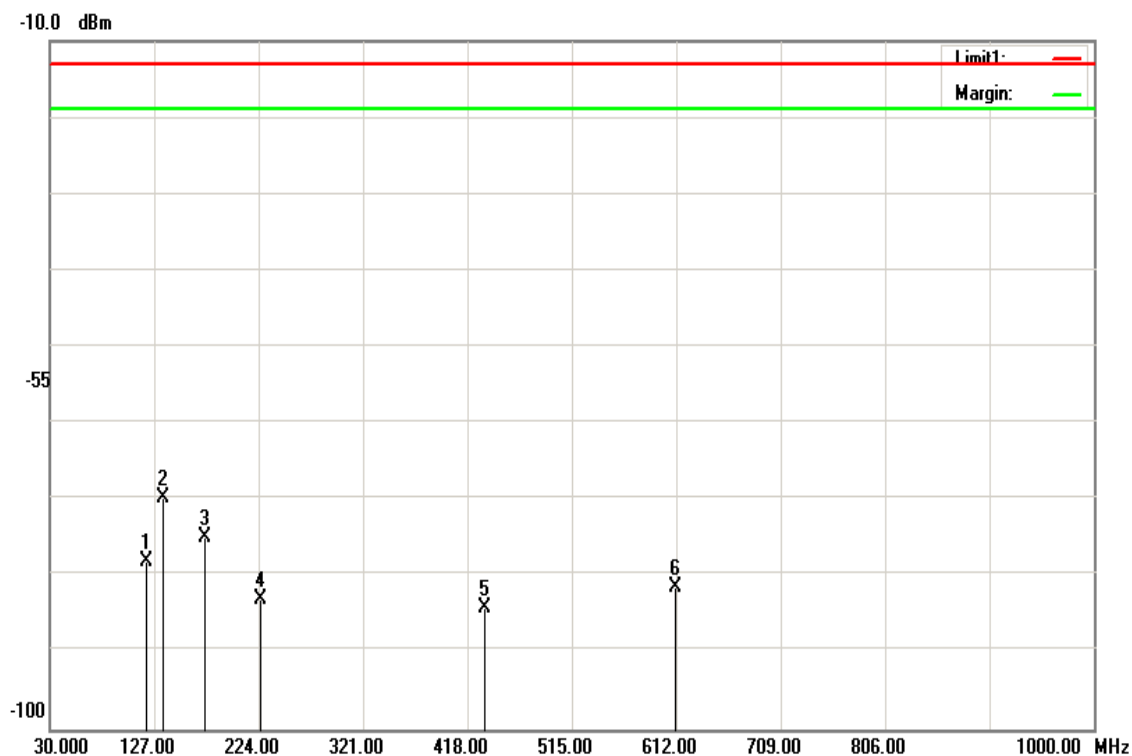
Test Date: September 28, 2018

Temperature: 23°C

Tested by: Jerry Chuang

Humidity: 41 %RH

Polarity: Hor.



Frequency (MHz)	S.G. (dBm)	Ant. Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
119.2400	-77.08	1.09	-78.17	-13.00	-65.17	H
135.2450	-68.48	1.15	-69.63	-13.00	-56.63	H
173.5600	-73.65	1.3	-74.95	-13.00	-61.95	H
225.9400	-81.54	1.49	-83.03	-13.00	-70.03	H
434.4900	-82.13	2.09	-84.22	-13.00	-71.22	H
611.5150	-78.96	2.49	-81.45	-13.00	-68.45	H

LTE Band 7 / BW: 20MHz / 16QAM / RB =1, RB Offset = 0
Operation Mode: Tx / Mid CH

Test Date:

September 28, 2018

Temperature: 23°C

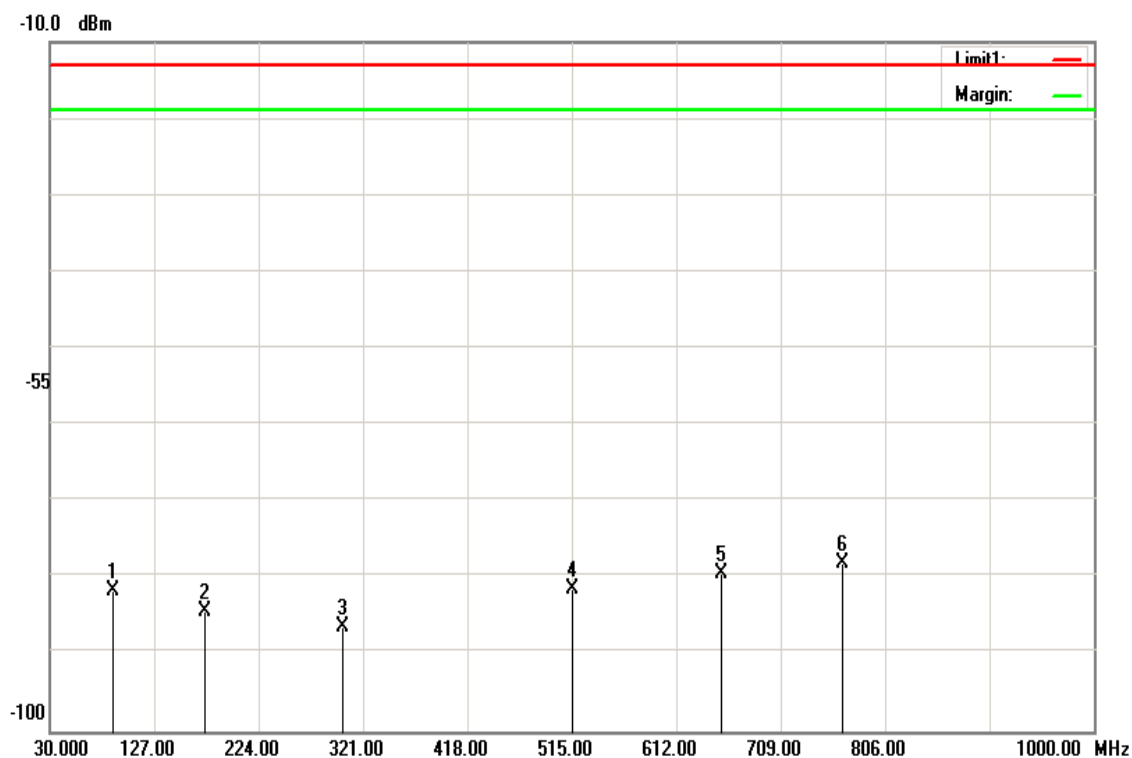
Tested by:

Jerry Chuang

Humidity: 41 %RH

Polarity:

Ver.



Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
89.6550	-80.78	0.93	-81.71	-13.00	-68.71	V
174.0450	-83.14	1.31	-84.45	-13.00	-71.45	V
301.6000	-84.73	1.73	-86.46	-13.00	-73.46	V
515.0000	-79.17	2.28	-81.45	-13.00	-68.45	V
654.1950	-76.8	2.58	-79.38	-13.00	-66.38	V
766.2300	-75.35	2.81	-78.16	-13.00	-65.16	V

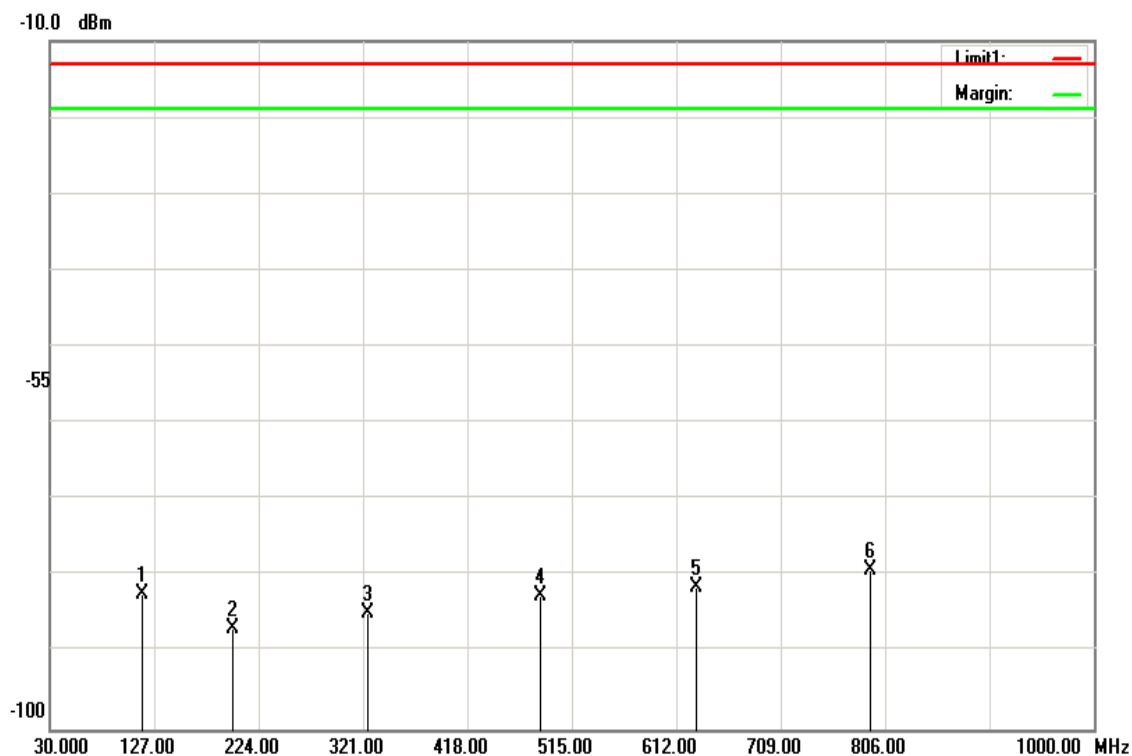
Operation Mode: Tx / Mid CH

Test Date: September 28, 2018

Temperature: 23°C

Tested by: Jerry Chuang

Humidity: 41 %RH

Polarity: Hor.


Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
115.3600	-81.3	1.07	-82.37	-13.00	-69.37	H
199.7500	-85.42	1.4	-86.82	-13.00	-73.82	H
325.8500	-82.99	1.8	-84.79	-13.00	-71.79	H
485.9000	-80.41	2.22	-82.63	-13.00	-69.63	H
630.9150	-78.86	2.53	-81.39	-13.00	-68.39	H
792.4200	-76.42	2.86	-79.28	-13.00	-66.28	H



Report No.: T180821D09-RP4

Above 1GHz

LTE Band 7 / BW: 20MHz / QPSK RB =1, RB Offset = 0

Operation Mode: Tx / Low CH

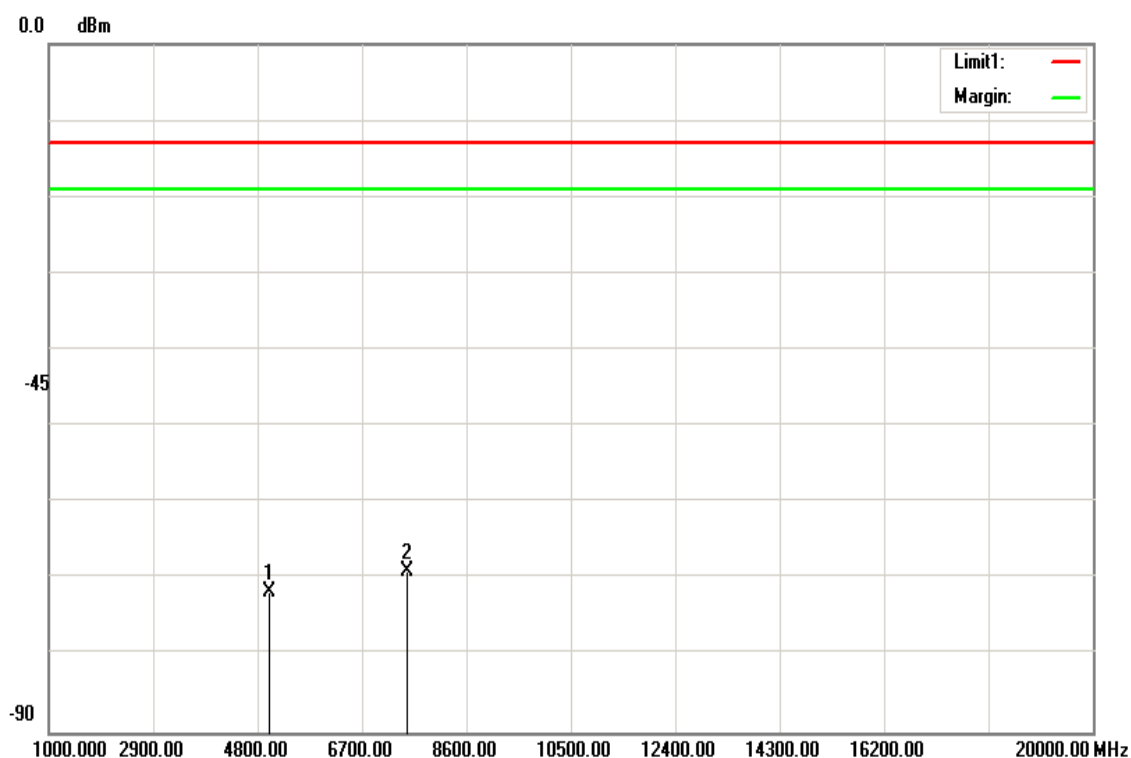
Test Date: October 2, 2018

Temperature: 22°C

Tested by: Jerry Chuang

Humidity: 40 %RH

Polarity: Ver.



Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
5020.000	-63.76	7.83	-71.59	-13.00	-58.59	V
7530.000	-59.08	9.87	-68.95	-13.00	-55.95	V
N/A						

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

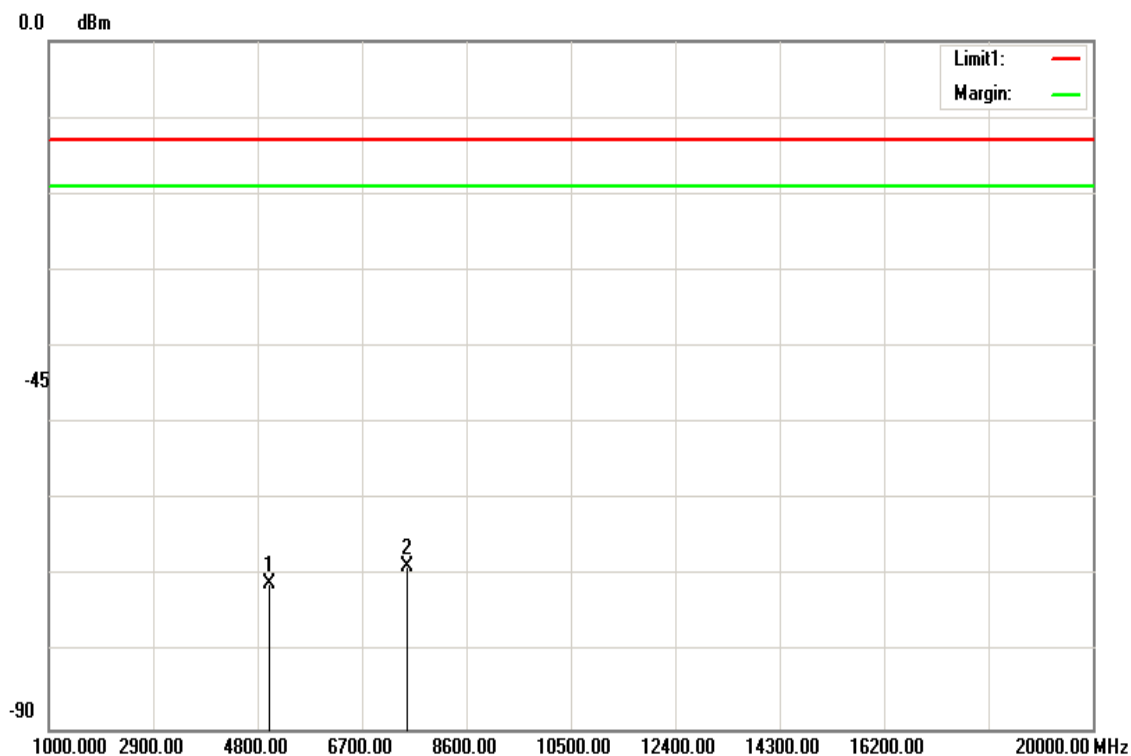


Report No.: T180821D09-RP4

Page: 56 / 122
Rev.: 01

Operation Mode: Tx / Low CH
Temperature: 22°C
Humidity: 40 %RH

Test Date: October 2, 2018
Tested by: Jerry Chuang
Polarity: Hor.



Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
5020.000	-63.15	7.83	-70.98	-13.00	-57.98	H
7530.000	-58.98	9.87	-68.85	-13.00	-55.85	H
N/A						

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

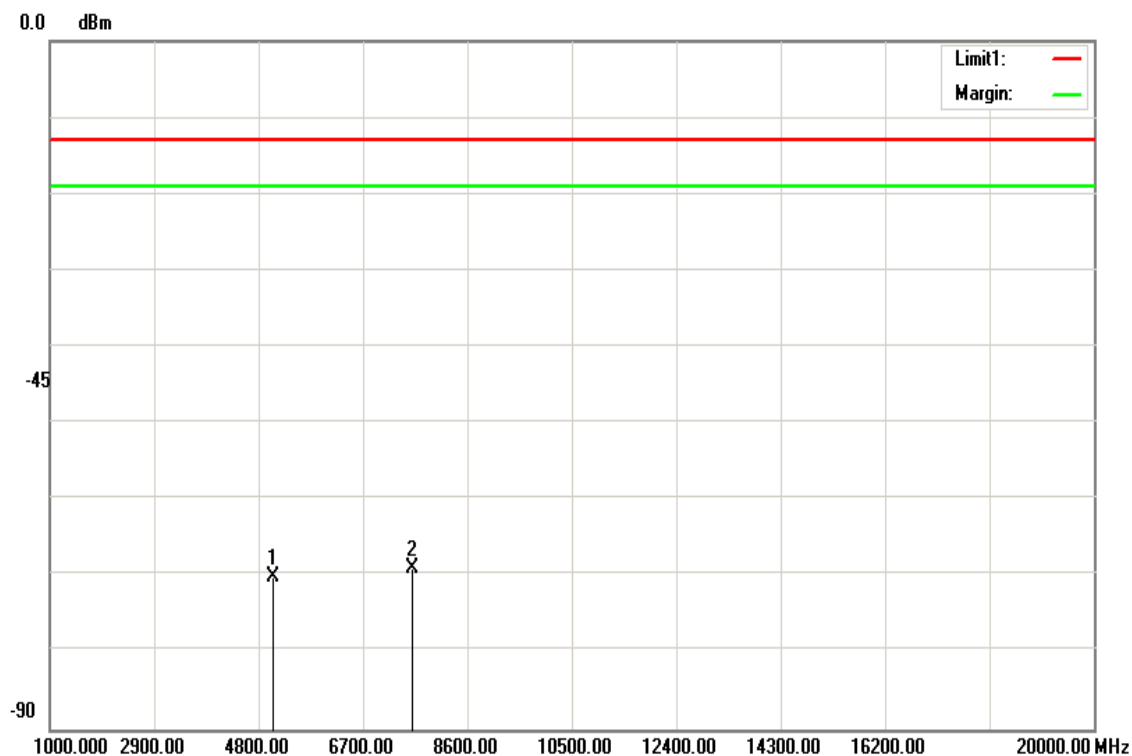


Report No.: T180821D09-RP4

Page: 57 / 122
Rev.: 01

Operation Mode: Tx / Mid CH
Temperature: 22°C
Humidity: 40 %RH

Test Date: October 2, 2018
Tested by: Jerry Chuang
Polarity: Ver.



Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
5070.000	-62.29	7.87	-70.16	-13.00	-57.16	V
7605.000	-58.95	9.93	-68.88	-13.00	-55.88	V
N/A						

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.



Report No.: T180821D09-RP4

Page: 58 / 122

Rev.: 01

Operation Mode: Tx / Mid CH

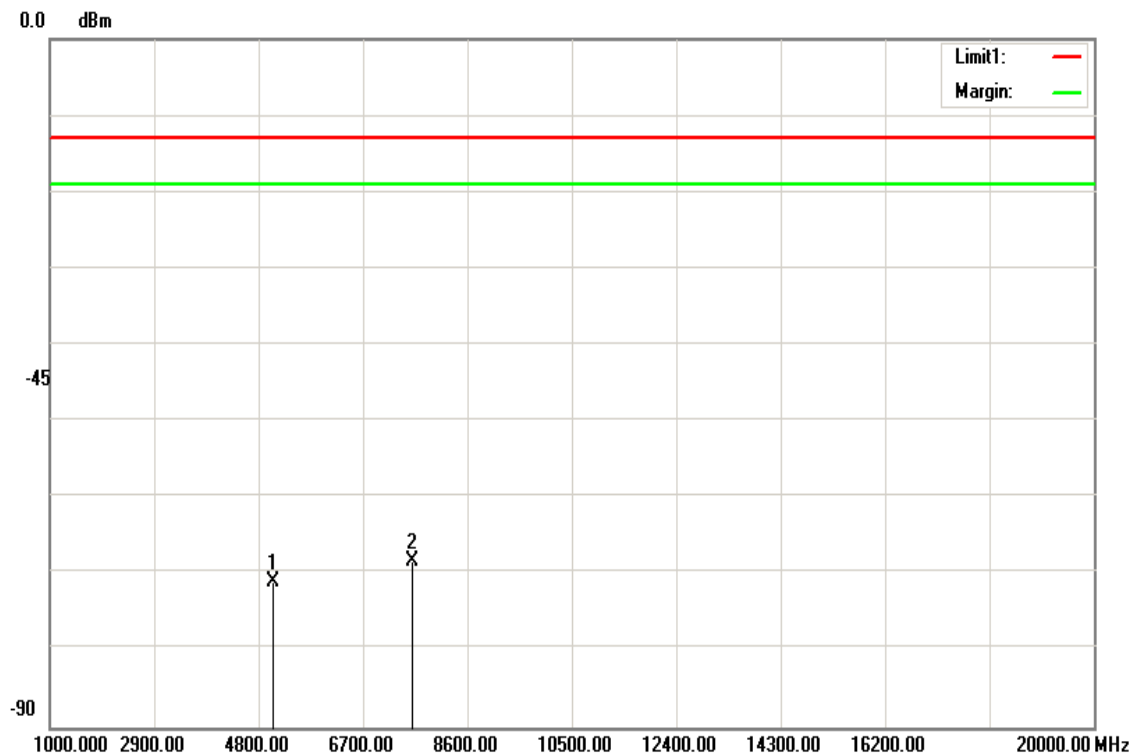
Test Date: October 2, 2018

Temperature: 22°C

Tested by: Jerry Chuang

Humidity: 40 %RH

Polarity: Hor.



Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
5070.000	-63.1	7.87	-70.97	-13.00	-57.97	H
7605.000	-58.41	9.93	-68.34	-13.00	-55.34	H
N/A						

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

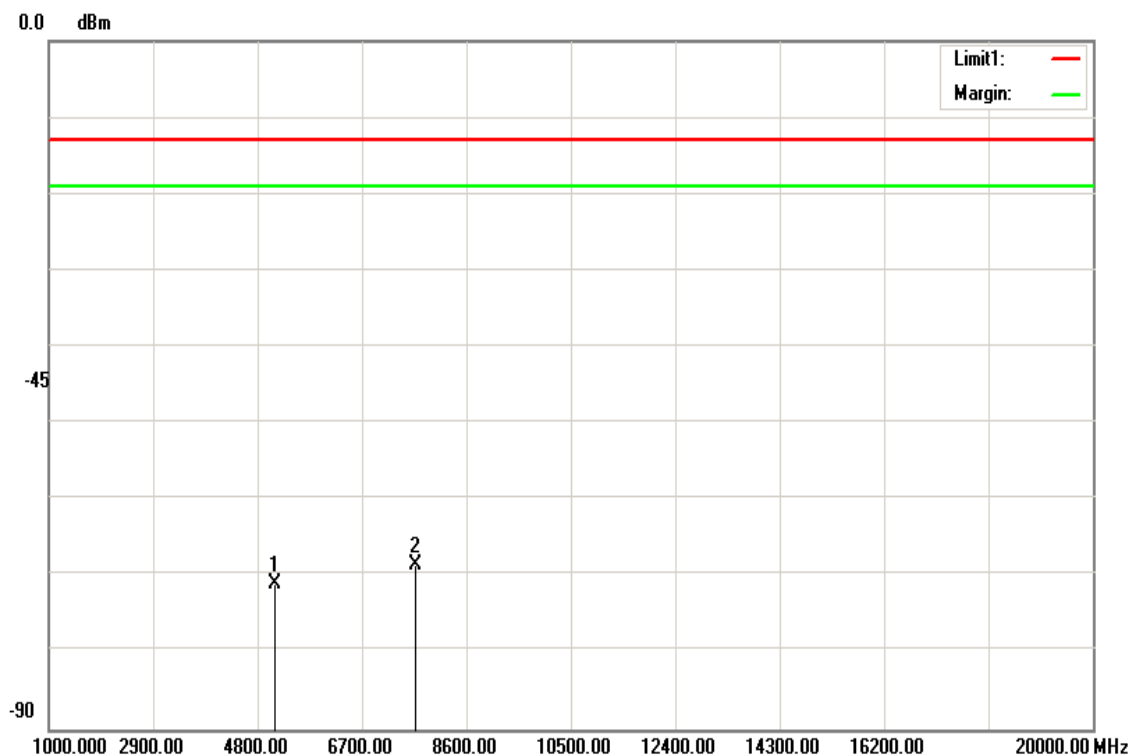


Report No.: T180821D09-RP4

Page: 59 / 122
Rev.: 01

Operation Mode: Tx / High CH
Temperature: 22°C
Humidity: 40 %RH

Test Date: October 2, 2018
Tested by: Jerry Chuang
Polarity: Ver.



Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
5120.000	-63.07	7.91	-70.98	-13.00	-57.98	V
7680.000	-58.5	9.99	-68.49	-13.00	-55.49	V
N/A						

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

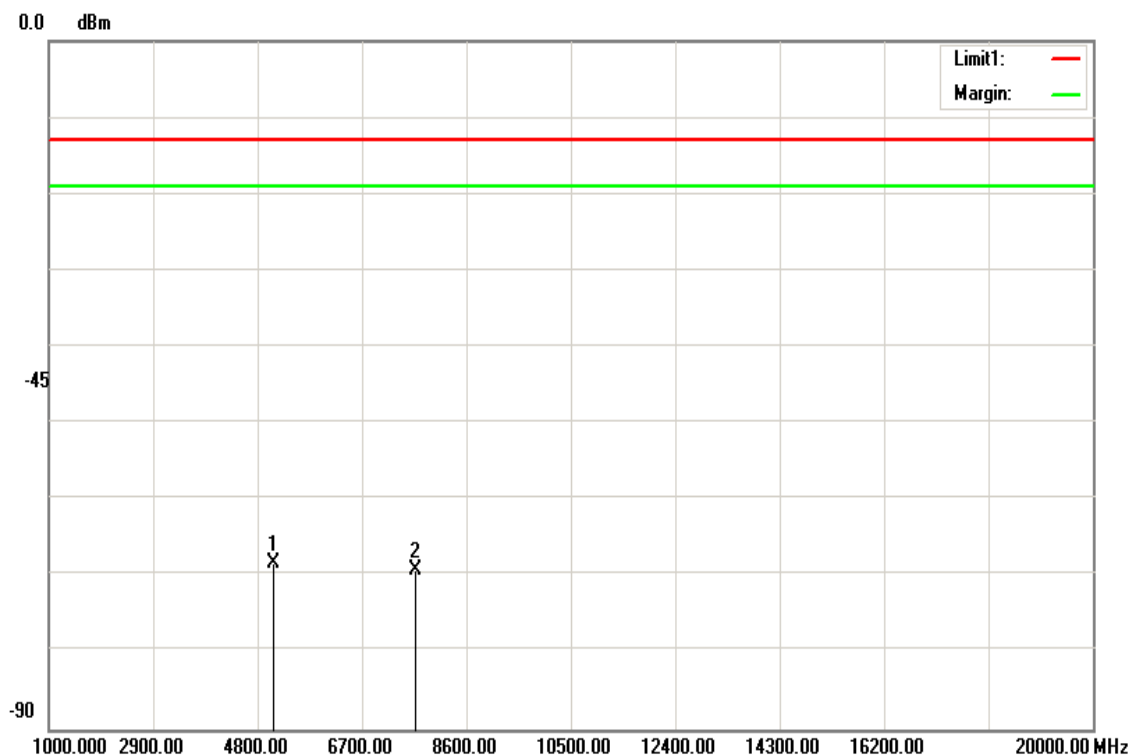


Report No.: T180821D09-RP4

Page: 60 / 122
Rev.: 01

Operation Mode: Tx / High CH
Temperature: 22°C
Humidity: 40 %RH

Test Date: October 2, 2018
Tested by: Jerry Chuang
Polarity: Hor.



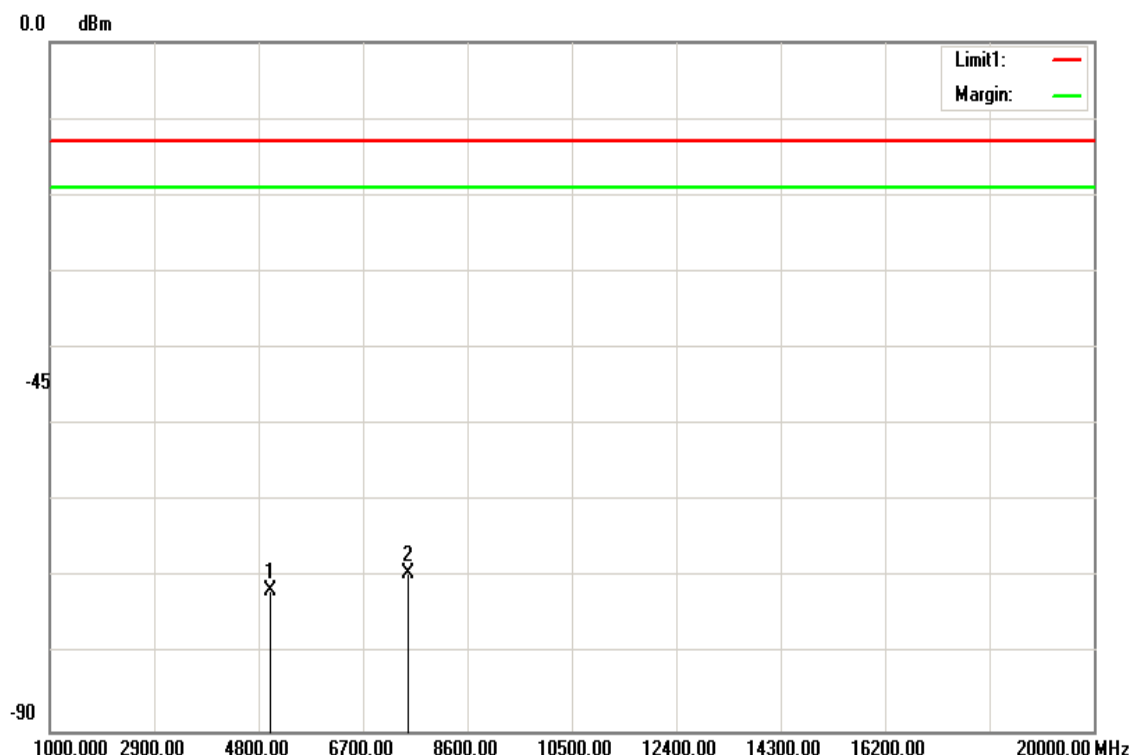
Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
5102.000	-60.32	7.9	-68.22	-13.00	-55.22	H
7680.000	-59.13	9.99	-69.12	-13.00	-56.12	H
N/A						

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

LTE Band 7 / BW: 20MHz / 16QAM / RB =1, RB Offset = 0

Operation Mode: Tx / Low CH **Test Date:** October 2, 2018
Temperature: 22°C **Tested by:** Jerry Chuang
Humidity: 40 %RH **Polarity:** Ver.



Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
5020.000	-63.75	7.83	-71.58	-13.00	-58.58	V
7530.000	-59.65	9.87	-69.52	-13.00	-56.52	V
N/A						

Remark:

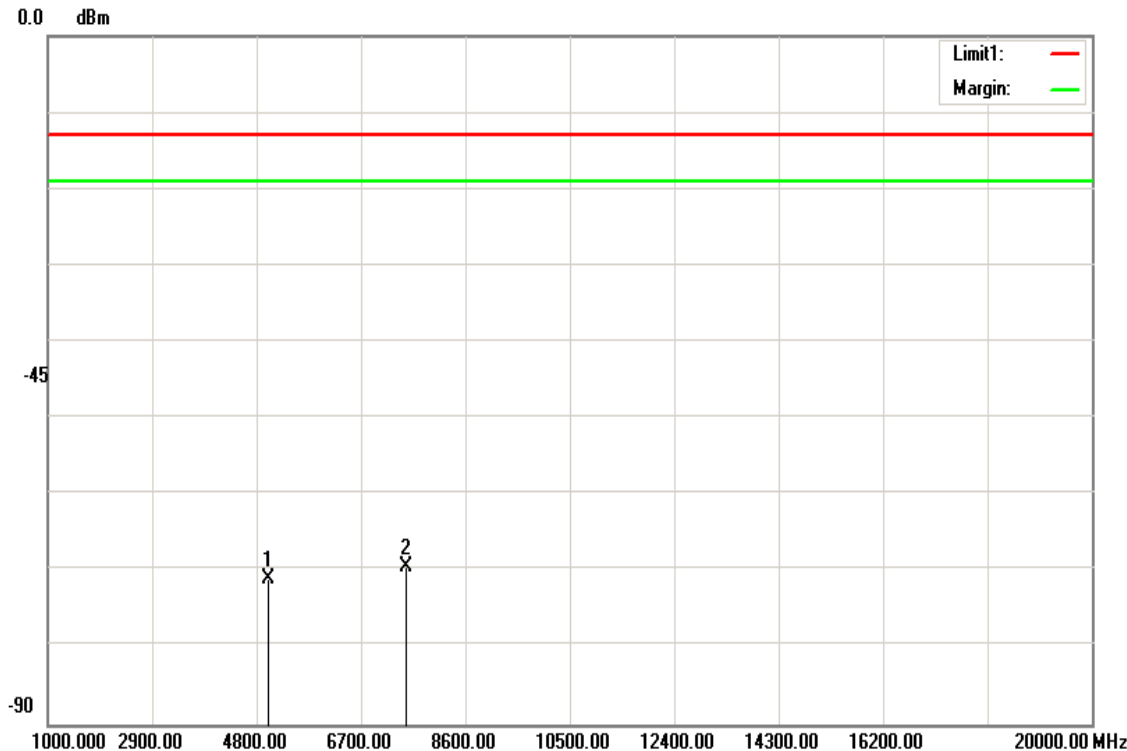
1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.



Report No.: T180821D09-RP4

Page: 62 / 122
Rev.: 01

Operation Mode:	Tx / Low CH	Test Date:	October 2, 2018
Temperature:	22°C	Tested by:	Jerry Chuang
Humidity:	40 %RH	Polarity:	Hor.



Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
5020.000	-63.1	7.83	-70.93	-13.00	-57.93	H
7530.000	-59.6	9.87	-69.47	-13.00	-56.47	H
N/A						

Remark:
1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

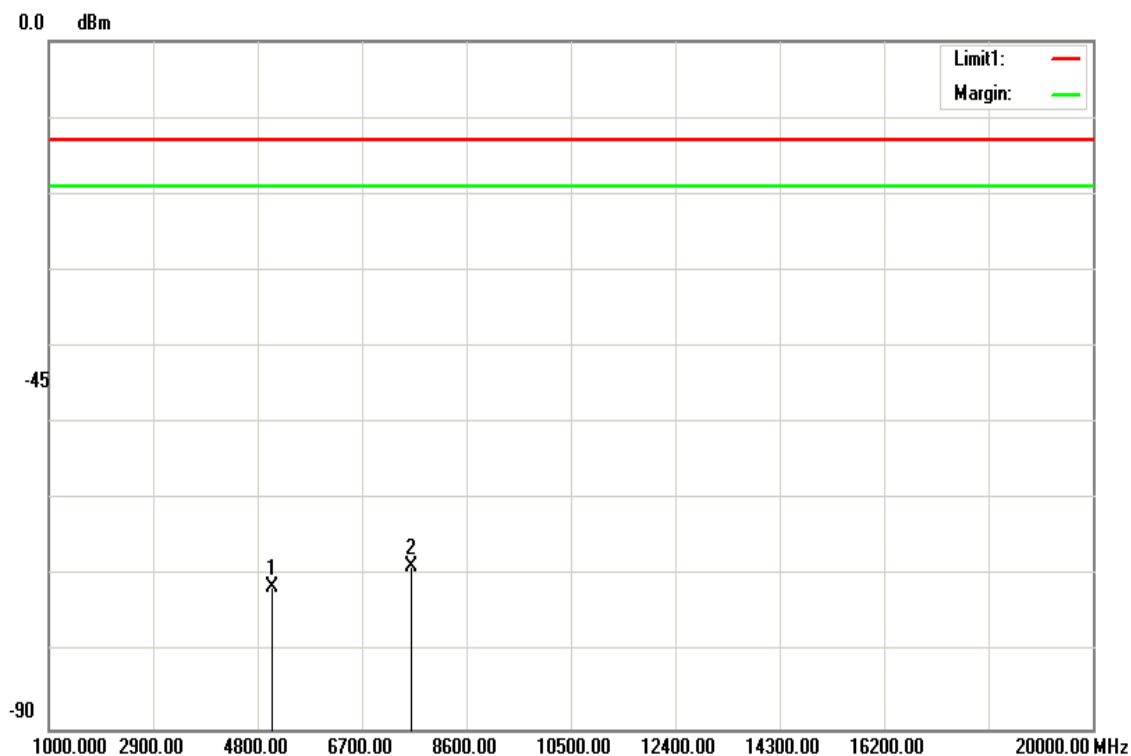


Report No.: T180821D09-RP4

Page: 63 / 122
Rev.: 01

Operation Mode: Tx / Mid CH
Temperature: 22°C
Humidity: 40 %RH

Test Date: October 2, 2018
Tested by: Jerry Chuang
Polarity: Ver.



Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
5070.000	-63.59	7.87	-71.46	-13.00	-58.46	V
7605.000	-58.8	9.93	-68.73	-13.00	-55.73	V
N/A						

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

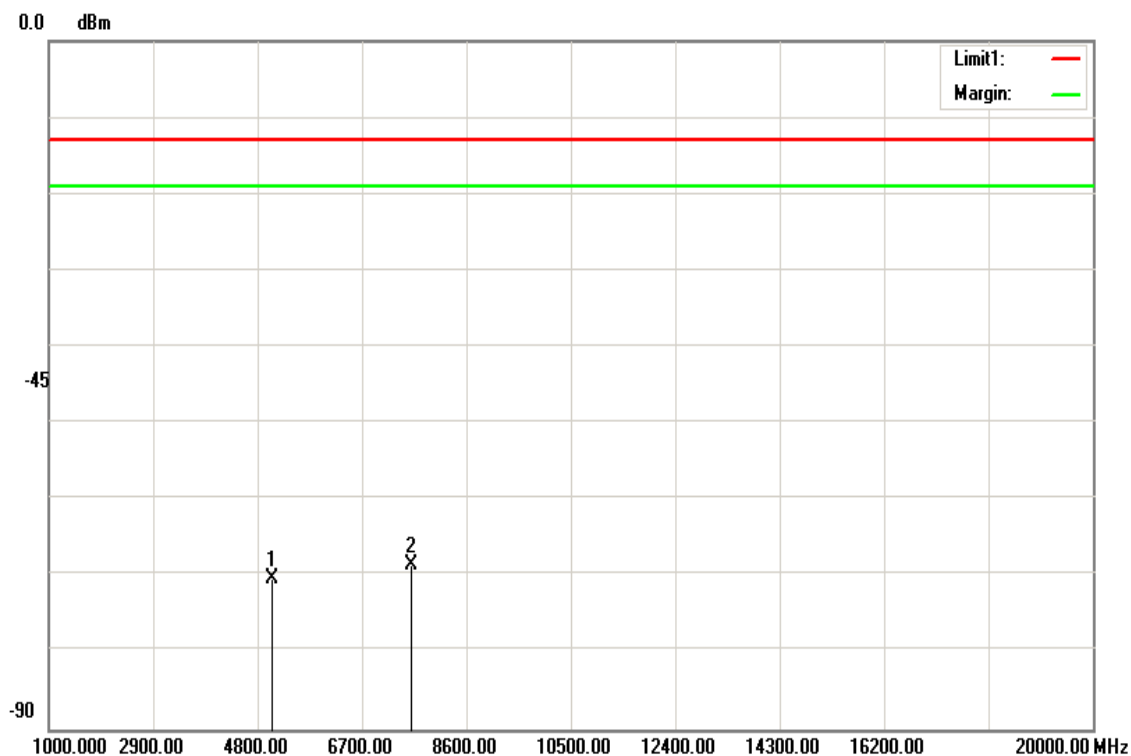


Report No.: T180821D09-RP4

Page: 64 / 122
Rev.: 01

Operation Mode: Tx / Mid CH
Temperature: 22°C
Humidity: 40 %RH

Test Date: October 2, 2018
Tested by: Jerry Chuang
Polarity: Hor.



Frequency (MHz)	S.G. (dBm)	Ant. Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
5070.000	-62.52	7.87	-70.39	-13.00	-57.39	H
7605.000	-58.65	9.93	-68.58	-13.00	-55.58	H
N/A						

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

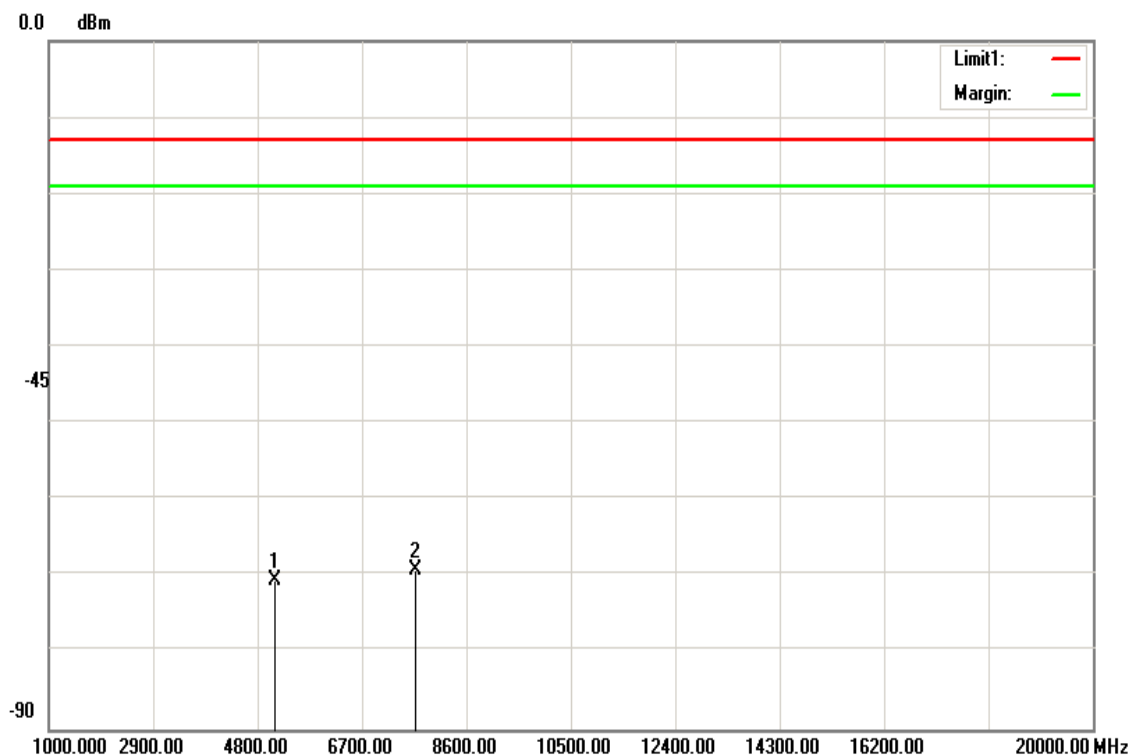


Report No.: T180821D09-RP4

Page: 65 / 122
Rev.: 01

Operation Mode: Tx / High CH
Temperature: 22°C
Humidity: 40 %RH

Test Date: October 2, 2018
Tested by: Jerry Chuang
Polarity: Ver.



Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
5120.000	-62.58	7.91	-70.49	-13.00	-57.49	V
7680.000	-59.1	9.99	-69.09	-13.00	-56.09	V
N/A						

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

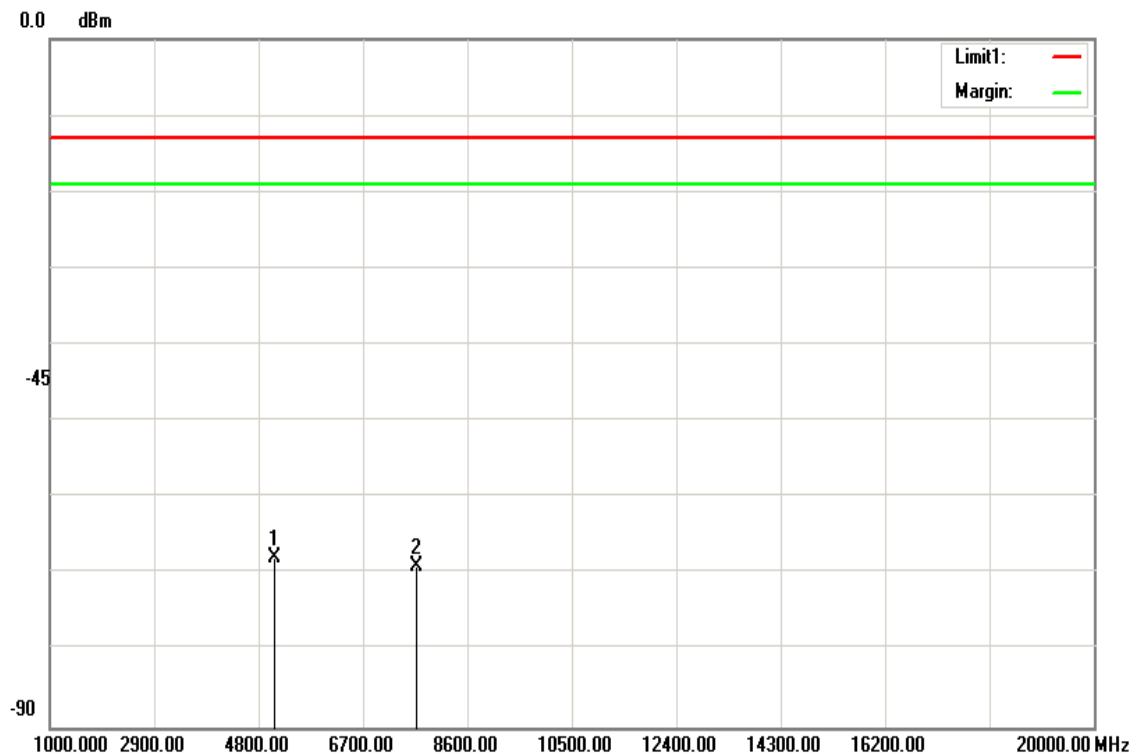


Report No.: T180821D09-RP4

Page: 66 / 122
Rev.: 01

Operation Mode: Tx / High CH
Temperature: 22°C
Humidity: 40 %RH

Test Date: October 2, 2018
Tested by: Jerry Chuang
Polarity: Hor.



Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
5102.000	-59.94	7.9	-67.84	-13.00	-54.84	H
7680.000	-58.89	9.99	-68.88	-13.00	-55.88	H
N/A						

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

Test Results

Below 1GHz

LTE Band 12 / BW: 10MHz / QPSK / RB =1, RB Offset = 0

Operation Mode: Tx / Mid CH

Test Date:

September 28, 2018

Temperature: 23°C

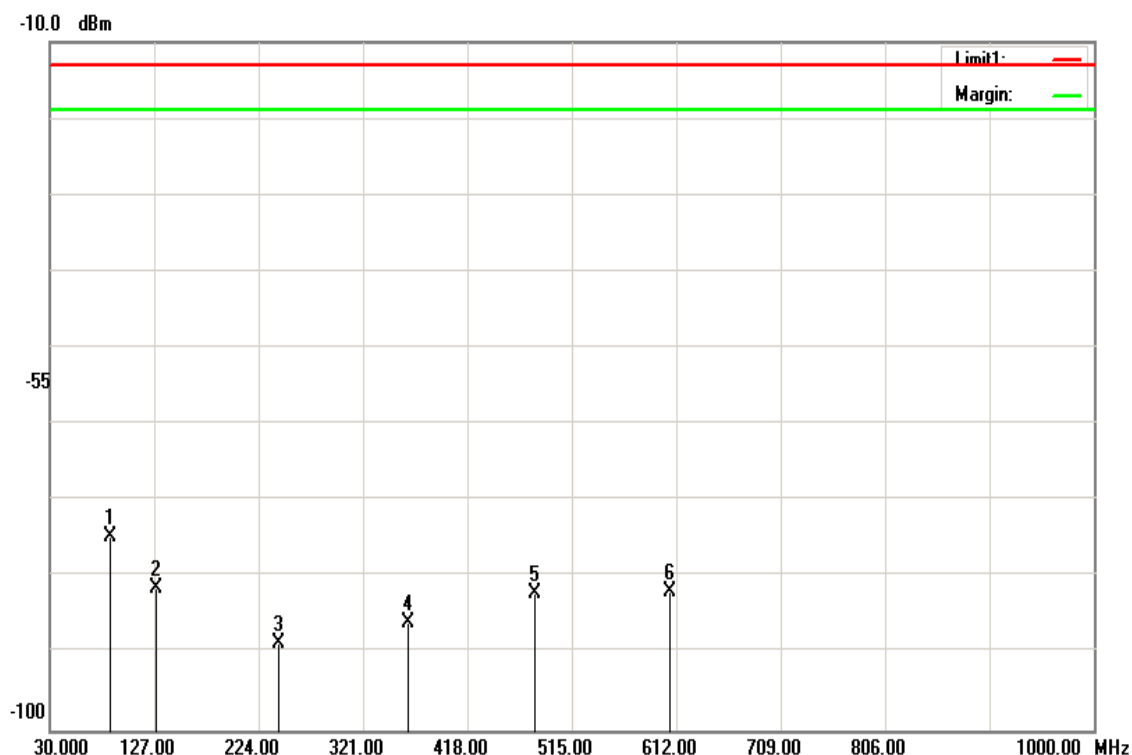
Tested by:

Jerry Chuang

Humidity: 41 %RH

Polarity:

Ver.



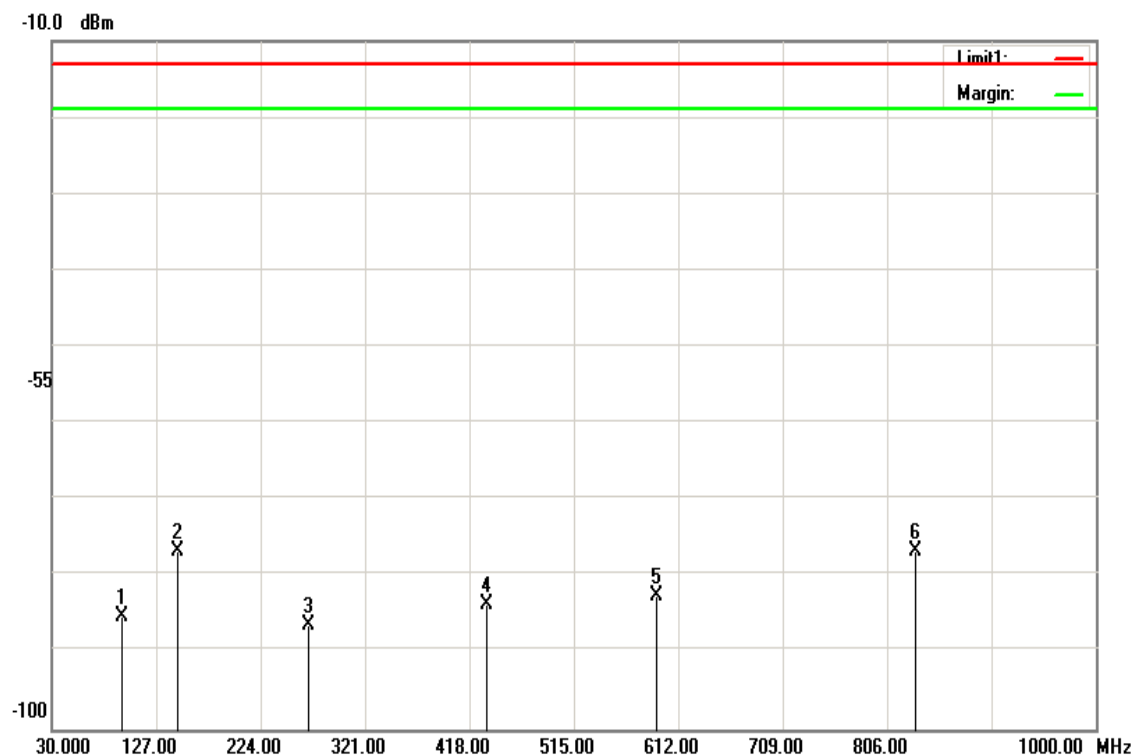
Frequency (MHz)	S.G. (dBm)	Ant. Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
86.7450	-73.77	0.91	-74.68	-13.00	-61.68	V
128.9400	-80.3	1.13	-81.43	-13.00	-68.43	V
242.4300	-87.04	1.54	-88.58	-13.00	-75.58	V
363.1950	-84.12	1.91	-86.03	-13.00	-73.03	V
481.5350	-79.79	2.21	-82.00	-13.00	-69.00	V
606.1800	-79.46	2.48	-81.94	-13.00	-68.94	V



Report No.: T180821D09-RP4

Operation Mode: Tx / Mid CH
Temperature: 23°C
Humidity: 41 %RH

Test Date: September 28, 2018
Tested by: Jerry Chuang
Polarity: Hor.



Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
95.4750	-84.34	0.96	-85.30	-13.00	-72.30	H
147.3700	-75.59	1.2	-76.79	-13.00	-63.79	H
268.6200	-84.83	1.63	-86.46	-13.00	-73.46	H
434.0050	-81.63	2.09	-83.72	-13.00	-70.72	H
591.6300	-80.22	2.45	-82.67	-13.00	-69.67	H
832.1900	-73.7	2.93	-76.63	-13.00	-63.63	H



Report No.: T180821D09-RP4

LTE Band 12 / BW: 10MHz / 16QAM / RB =1, RB Offset = 0

Operation Mode: Tx / Mid CH

Test Date:

September 28, 2018

Temperature: 23°C

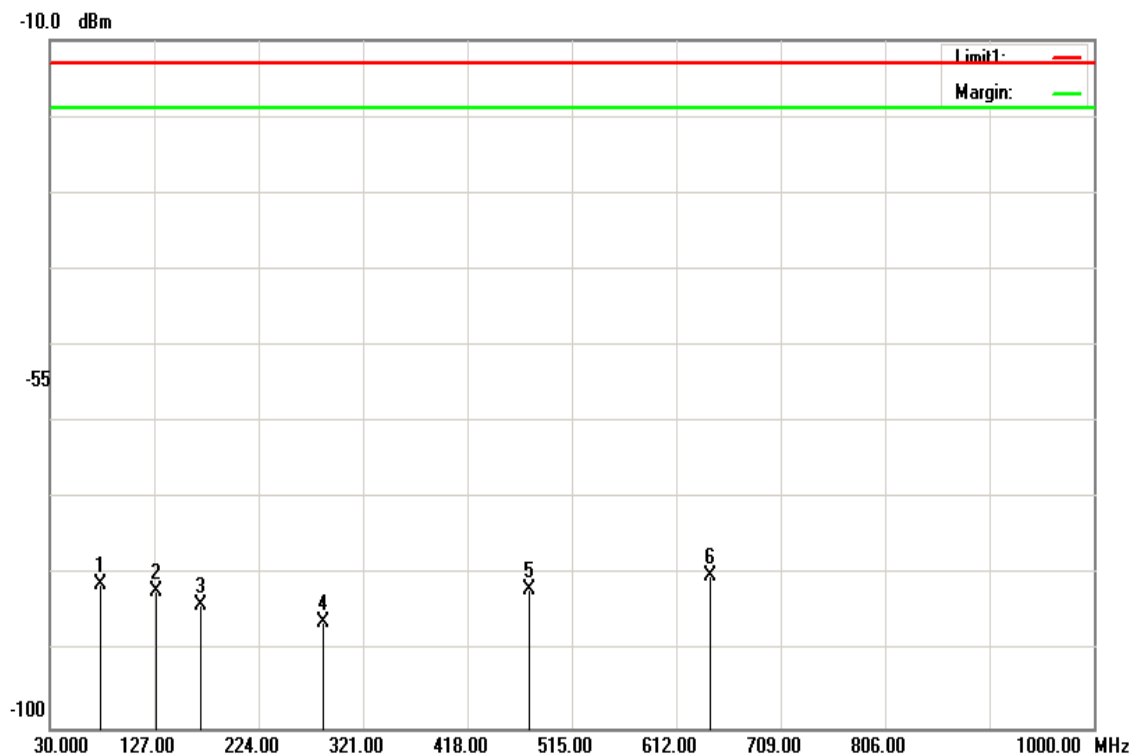
Tested by:

Jerry Chuang

Humidity: 41 %RH

Polarity:

Ver.



Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
76.5600	-80.28	0.86	-81.14	-13.00	-68.14	V
128.9400	-80.91	1.13	-82.04	-13.00	-69.04	V
170.1650	-82.66	1.29	-83.95	-13.00	-70.95	V
284.6250	-84.57	1.68	-86.25	-13.00	-73.25	V
475.7150	-79.8	2.19	-81.99	-13.00	-68.99	V
644.4950	-77.49	2.56	-80.05	-13.00	-67.05	V



Report No.: T180821D09-RP4

Page: 70 / 122
Rev.: 01

Operation Mode: Tx / Mid CH

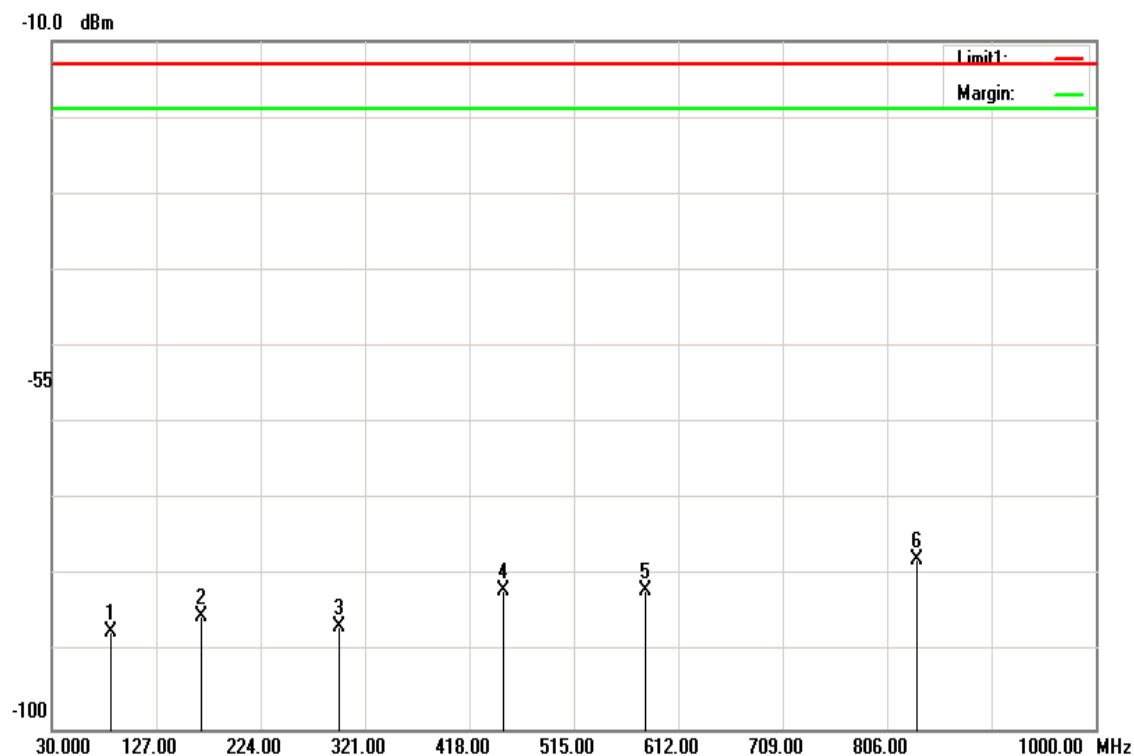
Test Date: September 28, 2018

Temperature: 23°C

Tested by: Jerry Chuang

Humidity: 41 %RH

Polarity: Hor.



Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
84.8050	-86.35	0.9	-87.25	-13.00	-74.25	H
169.1950	-84.03	1.29	-85.32	-13.00	-72.32	H
297.2350	-84.87	1.72	-86.59	-13.00	-73.59	H
449.5250	-79.85	2.13	-81.98	-13.00	-68.98	H
581.9300	-79.41	2.43	-81.84	-13.00	-68.84	H
833.1600	-74.81	2.94	-77.75	-13.00	-64.75	H



Report No.: T180821D09-RP4

Page: 71 / 122
Rev.: 01

Above 1GHz

LTE Band 12 / BW: 10MHz / QPSK RB =1, RB Offset = 0

Operation Mode: Tx / Low CH

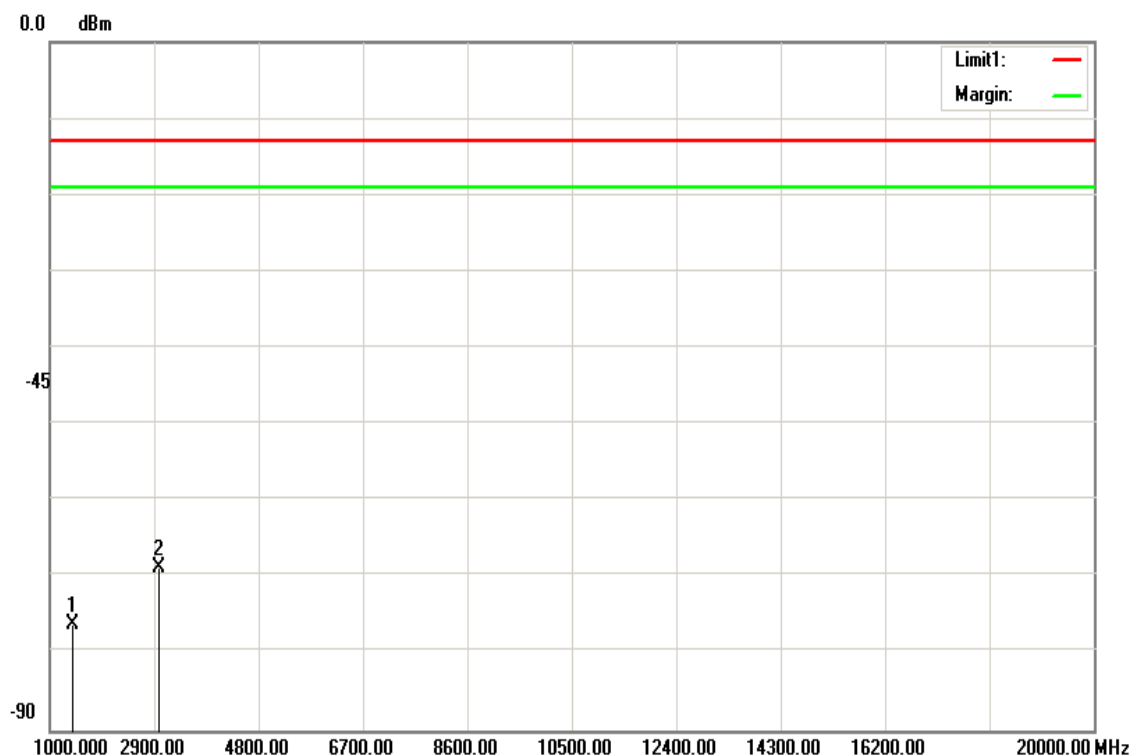
Test Date: October 2, 2018

Temperature: 22°C

Tested by: Jerry Chuang

Humidity: 40 %RH

Polarity: Ver.



Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
1408.000	-72.38	3.85	-76.23	-13.00	-63.23	V
2998.500	-62.93	5.91	-68.84	-13.00	-55.84	V
N/A						

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.



Report No.: T180821D09-RP4

Page: 72 / 122
Rev.: 01

Operation Mode: Tx / Low CH

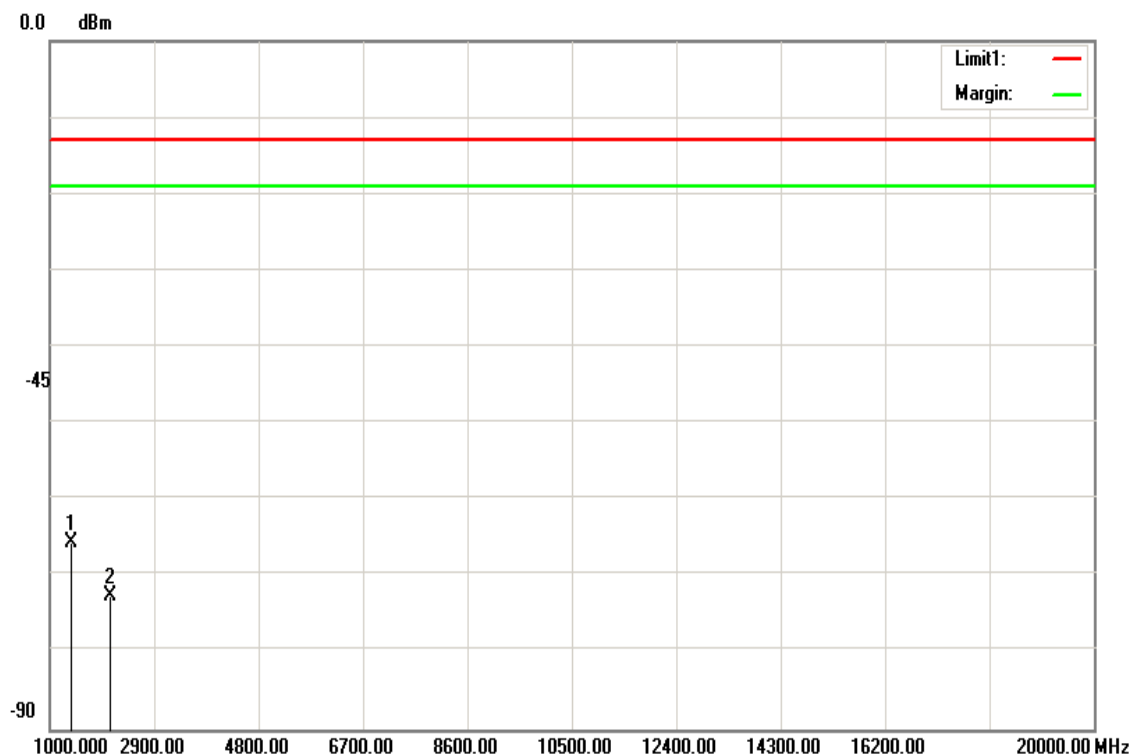
Test Date: October 2, 2018

Temperature: 22°C

Tested by: Jerry Chuang

Humidity: 40 %RH

Polarity: Hor.



Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
1399.000	-61.79	3.83	-65.62	-13.00	-52.62	H
2099.000	-67.8	4.82	-72.62	-13.00	-59.62	H
N/A						

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.



Report No.: T180821D09-RP4

Page: 73 / 122
Rev.: 01

Operation Mode: Tx / Mid CH

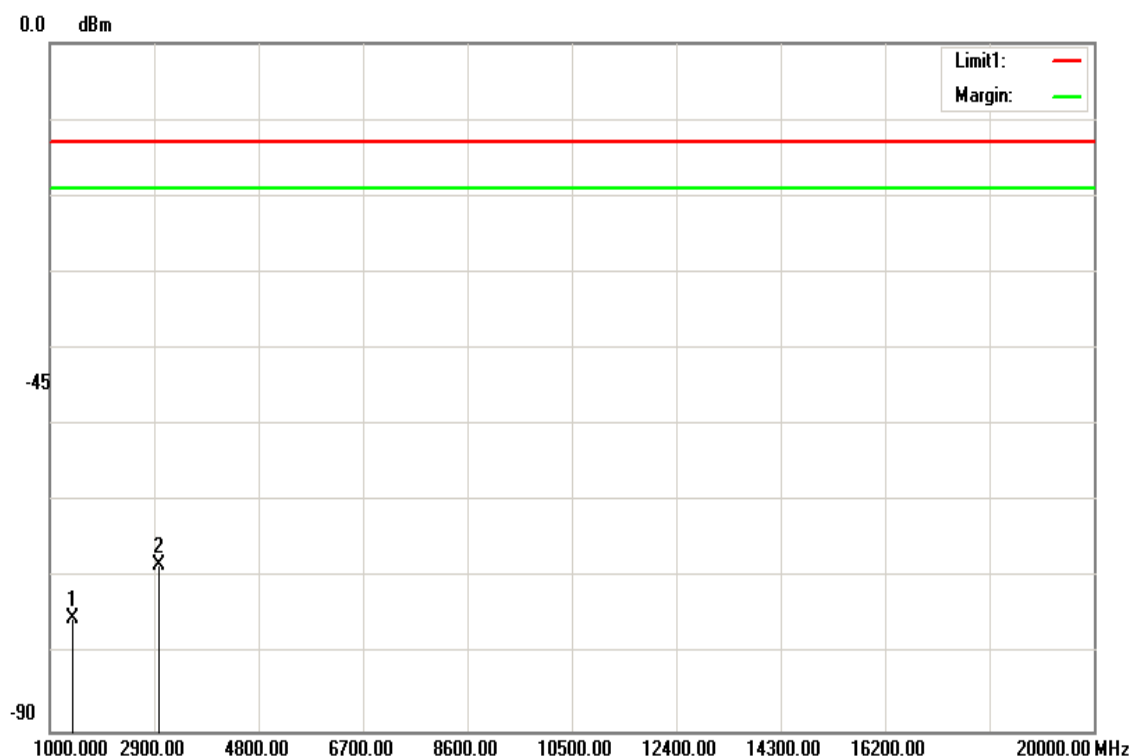
Test Date: October 2, 2018

Temperature: 22°C

Tested by: Jerry Chuang

Humidity: 40 %RH

Polarity: Ver.



Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
1415.000	-71.41	3.86	-75.27	-13.00	-62.27	V
2998.500	-62.29	5.91	-68.20	-13.00	-55.20	V
N/A						

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.



Report No.: T180821D09-RP4

Page: 74 / 122
Rev.: 01

Operation Mode: Tx / Mid CH

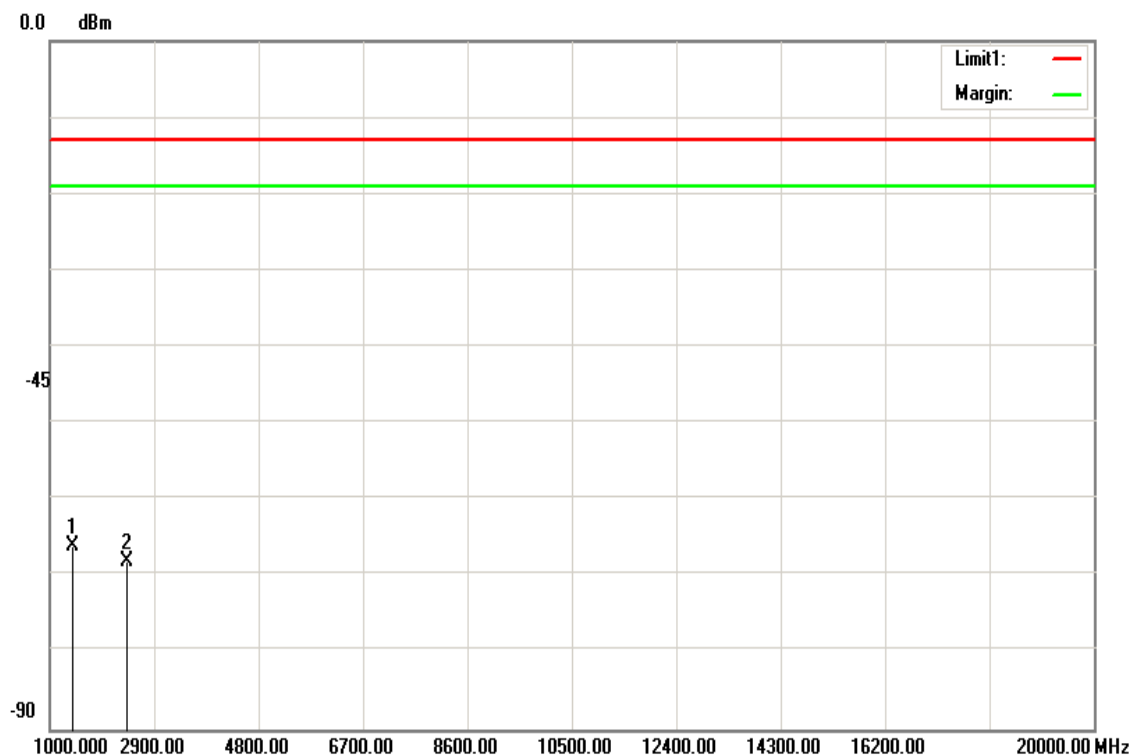
Test Date: October 2, 2018

Temperature: 22°C

Tested by: Jerry Chuang

Humidity: 40 %RH

Polarity: Hor.



Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
1406.000	-62.23	3.84	-66.07	-13.00	-53.07	H
2410.500	-62.85	5.22	-68.07	-13.00	-55.07	H
N/A						

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.



Report No.: T180821D09-RP4

Page: 75 / 122
Rev.: 01

Operation Mode: Tx / High CH

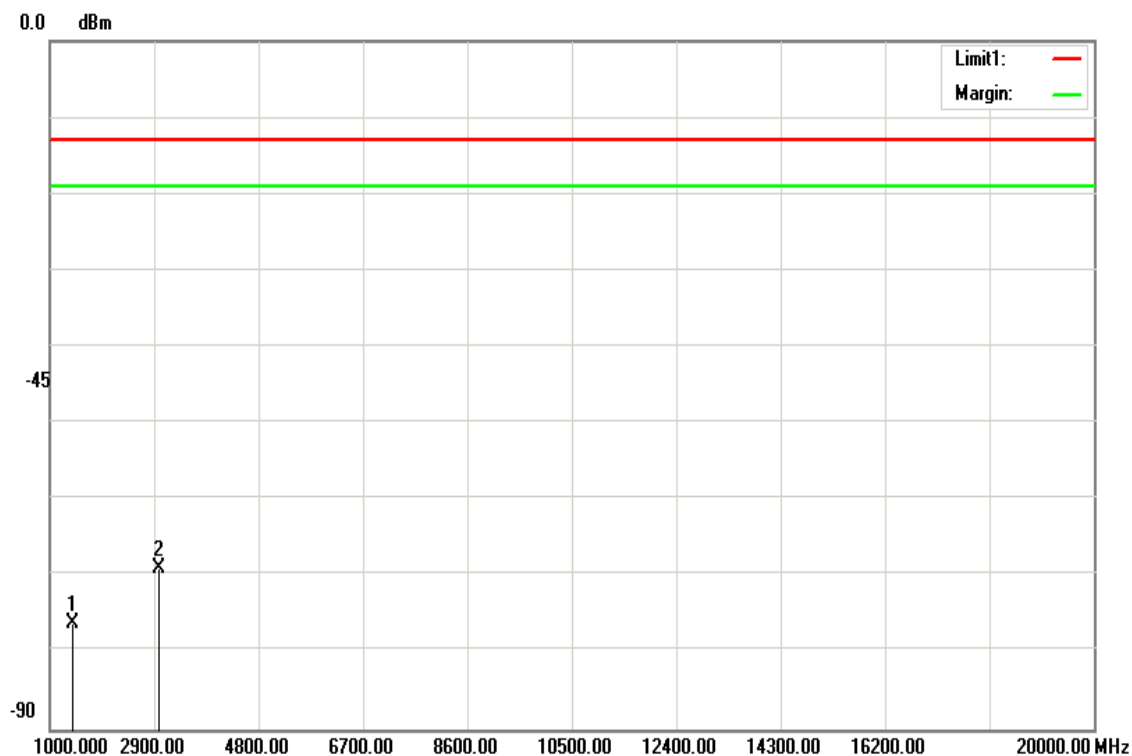
Test Date: October 2, 2018

Temperature: 22°C

Tested by: Jerry Chuang

Humidity: 40 %RH

Polarity: Ver.



Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
1422.000	-72.21	3.87	-76.08	-13.00	-63.08	V
2998.500	-62.95	5.91	-68.86	-13.00	-55.86	V
N/A						

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.



Report No.: T180821D09-RP4

Page: 76 / 122
Rev.: 01

Operation Mode: Tx / High CH

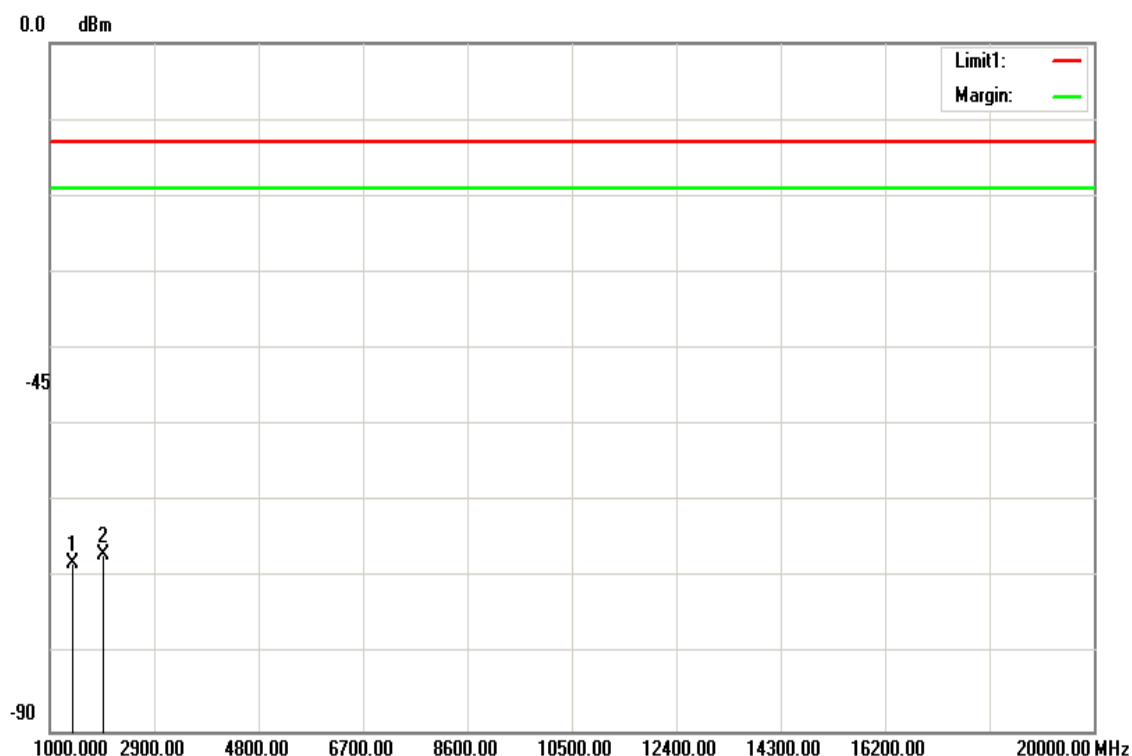
Test Date: October 2, 2018

Temperature: 22°C

Tested by: Jerry Chuang

Humidity: 40 %RH

Polarity: Hor.



Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
1413.000	-64.22	3.85	-68.07	-13.00	-55.07	H
1969.500	-62.29	4.65	-66.94	-13.00	-53.94	H
N/A						

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.



Report No.: T180821D09-RP4

LTE Band 12 / BW: 10MHz / 16QAM / RB =1, RB Offset = 0

Operation Mode: Tx / Low CH

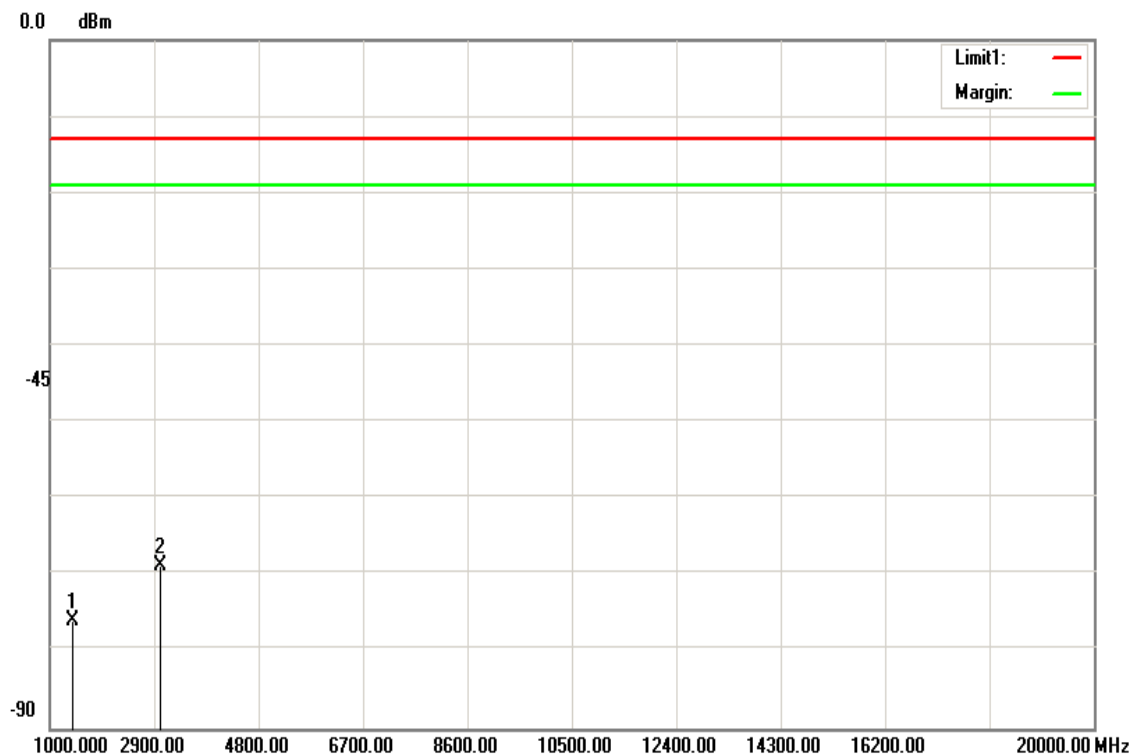
Test Date: October 2, 2018

Temperature: 22°C

Tested by: Jerry Chuang

Humidity: 40 %RH

Polarity: Ver.



Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
1408.000	-72.13	3.85	-75.98	-13.00	-62.98	V
3005.500	-62.91	5.92	-68.83	-13.00	-55.83	V
N/A						

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

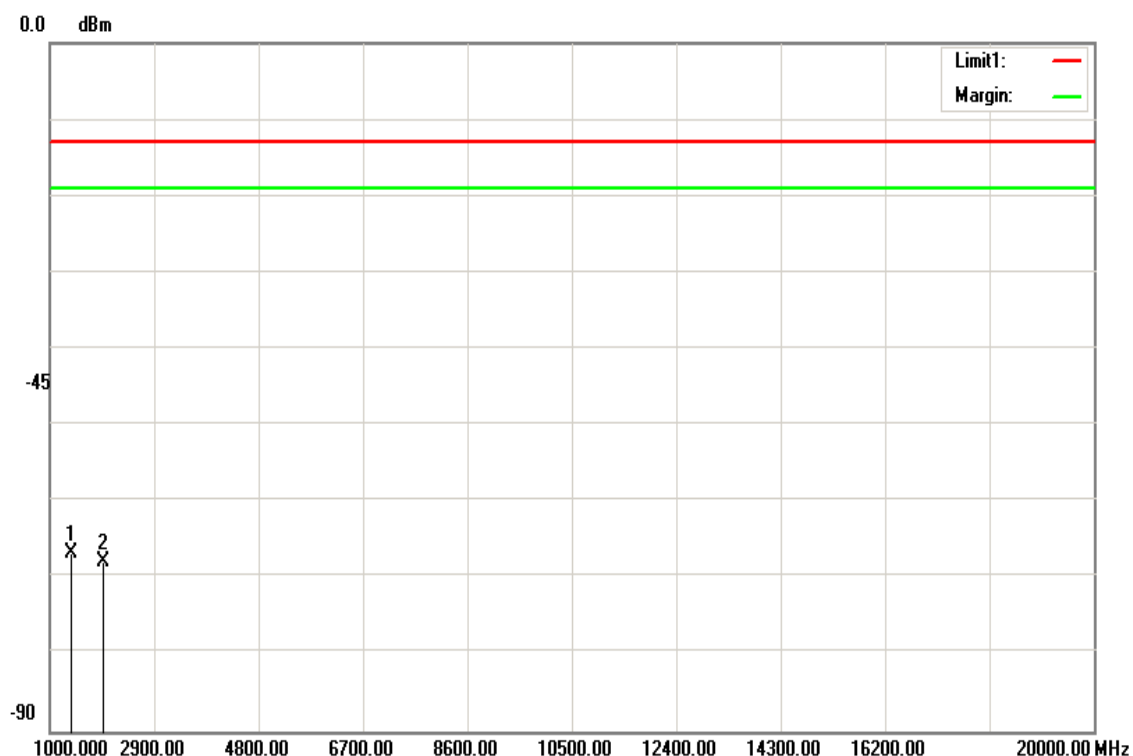


Report No.: T180821D09-RP4

Page: 78 / 122
Rev.: 01

Operation Mode: Tx / Low CH
Temperature: 22°C
Humidity: 40 %RH

Test Date: October 2, 2018
Tested by: Jerry Chuang
Polarity: Hor.



Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
1399.000	-62.89	3.83	-66.72	-13.00	-53.72	H
1969.500	-63.11	4.65	-67.76	-13.00	-54.76	H
N/A						

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

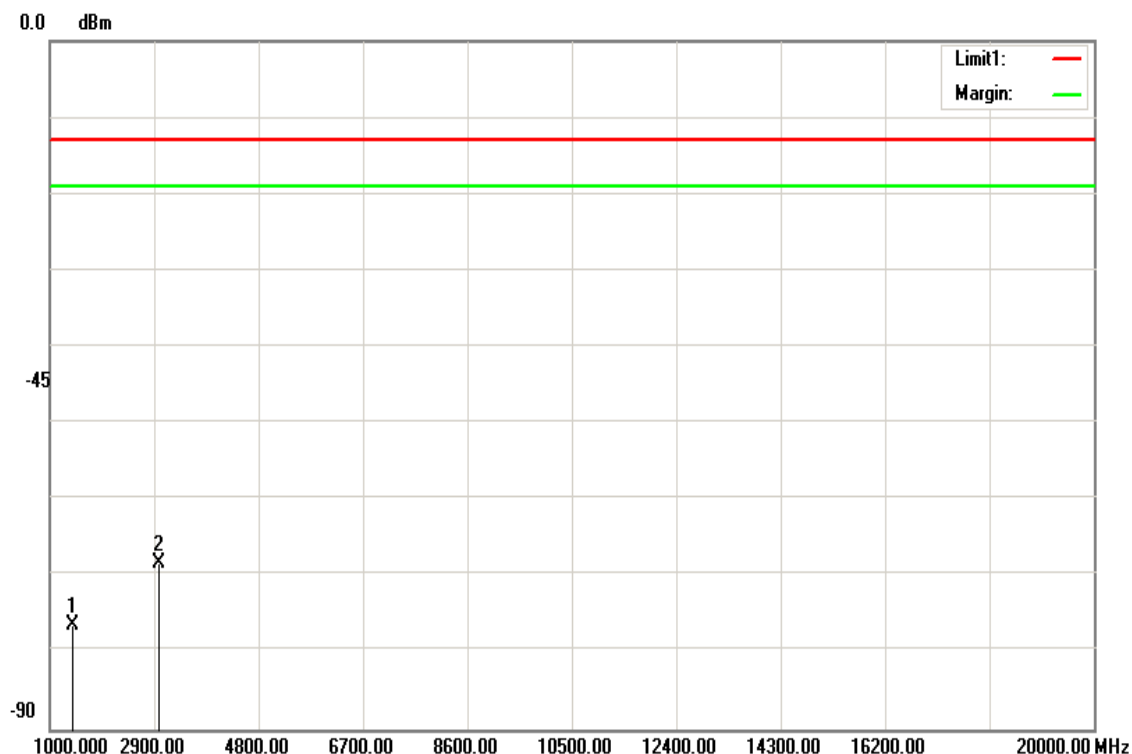


Report No.: T180821D09-RP4

Page: 79 / 122
Rev.: 01

Operation Mode: Tx / Mid CH
Temperature: 22°C
Humidity: 40 %RH

Test Date: October 2, 2018
Tested by: Jerry Chuang
Polarity: Ver.



Frequency (MHz)	S.G. (dBm)	Ant. Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
1415.000	-72.42	3.86	-76.28	-13.00	-63.28	V
2998.500	-62.41	5.91	-68.32	-13.00	-55.32	V
N/A						

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.



Report No.: T180821D09-RP4

Page: 80 / 122
Rev.: 01

Operation Mode: Tx / Mid CH

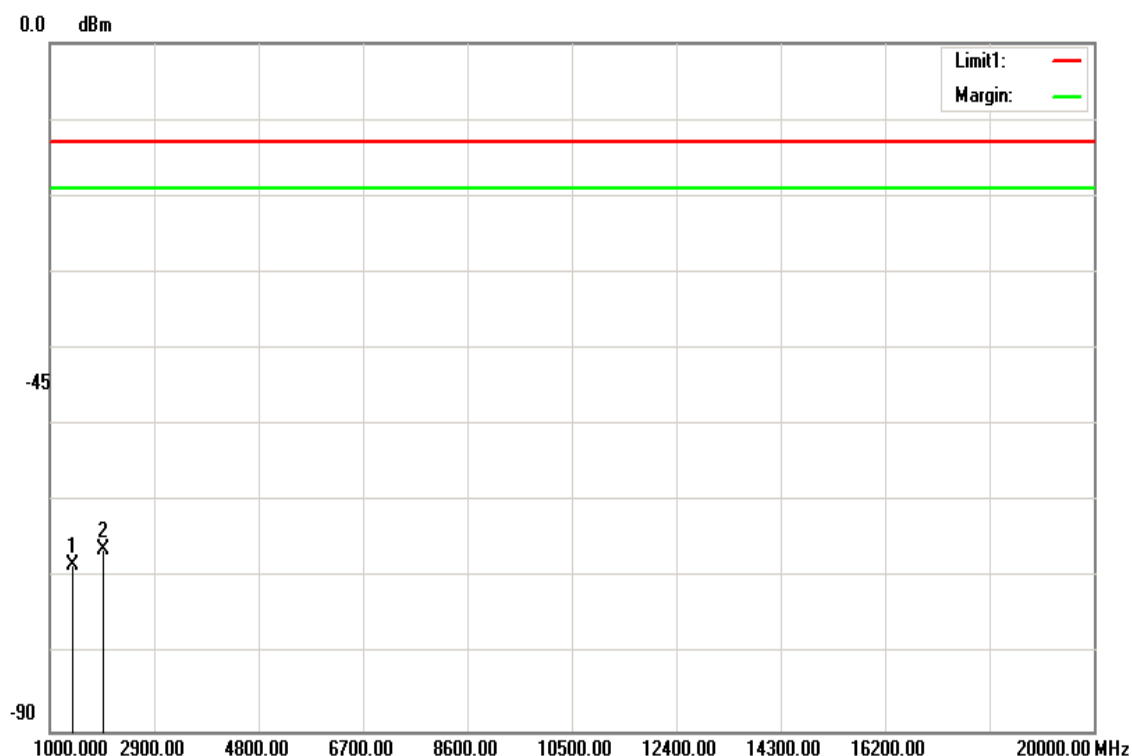
Test Date: October 2, 2018

Temperature: 22°C

Tested by: Jerry Chuang

Humidity: 40 %RH

Polarity: Hor.



Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
1406.000	-64.39	3.84	-68.23	-13.00	-55.23	H
1969.500	-61.69	4.65	-66.34	-13.00	-53.34	H
N/A						

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.



Report No.: T180821D09-RP4

Page: 81 / 122
Rev.: 01

Operation Mode: Tx / High CH

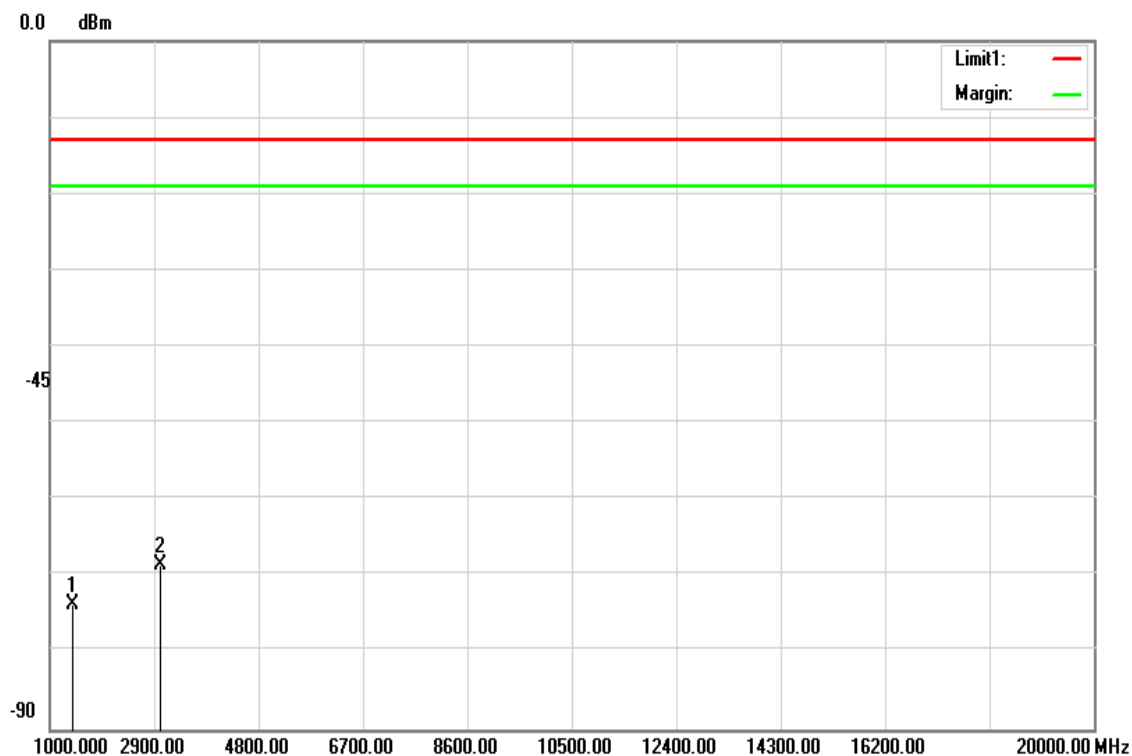
Test Date: October 2, 2018

Temperature: 22°C

Tested by: Jerry Chuang

Humidity: 40 %RH

Polarity: Ver.



Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
1430.500	-69.78	3.88	-73.66	-13.00	-60.66	V
3002.000	-62.58	5.91	-68.49	-13.00	-55.49	V
N/A						

Remark:

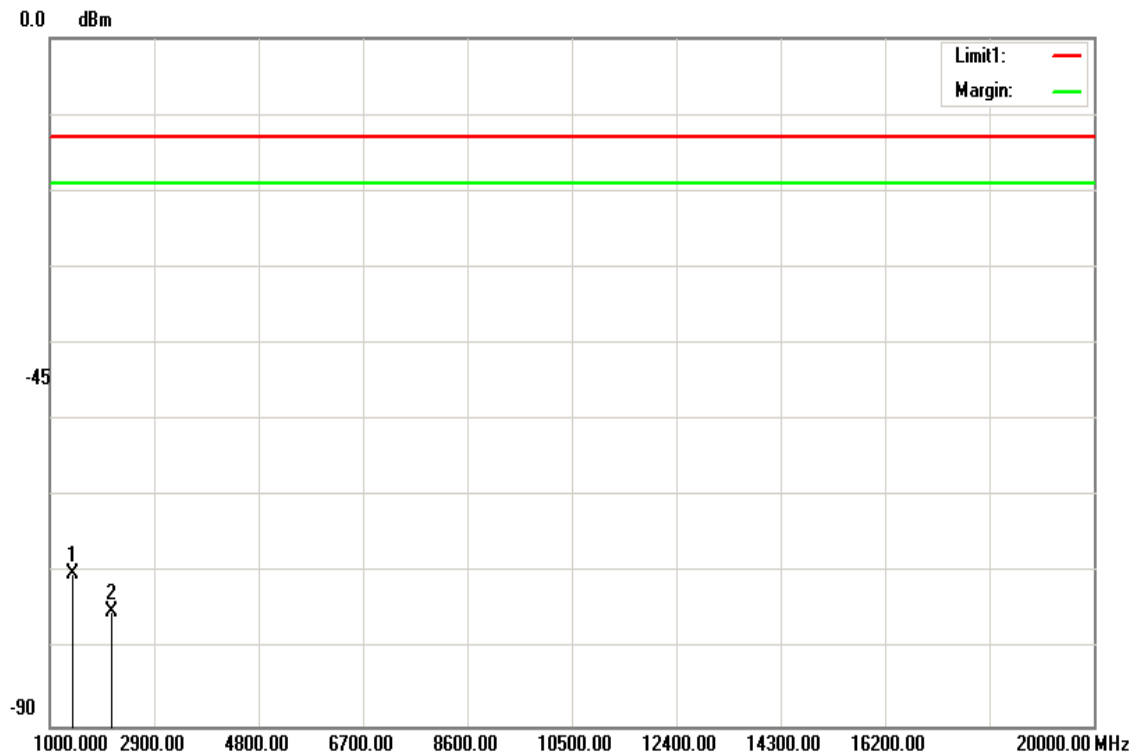
1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.



Report No.: T180821D09-RP4

Operation Mode: Tx / High CH
Temperature: 22°C
Humidity: 40 %RH

Test Date: October 2, 2018
Tested by: Jerry Chuang
Polarity: Hor.



Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
1413.000	-66.29	3.85	-70.14	-13.00	-57.14	H
2133.000	-70.17	4.86	-75.03	-13.00	-62.03	H
N/A						

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

Test Results**Below 1GHz****LTE Band 13 / BW: 10MHz / QPSK / RB =1, RB Offset = 0****Operation Mode:** Tx / Mid CH**Test Date:**

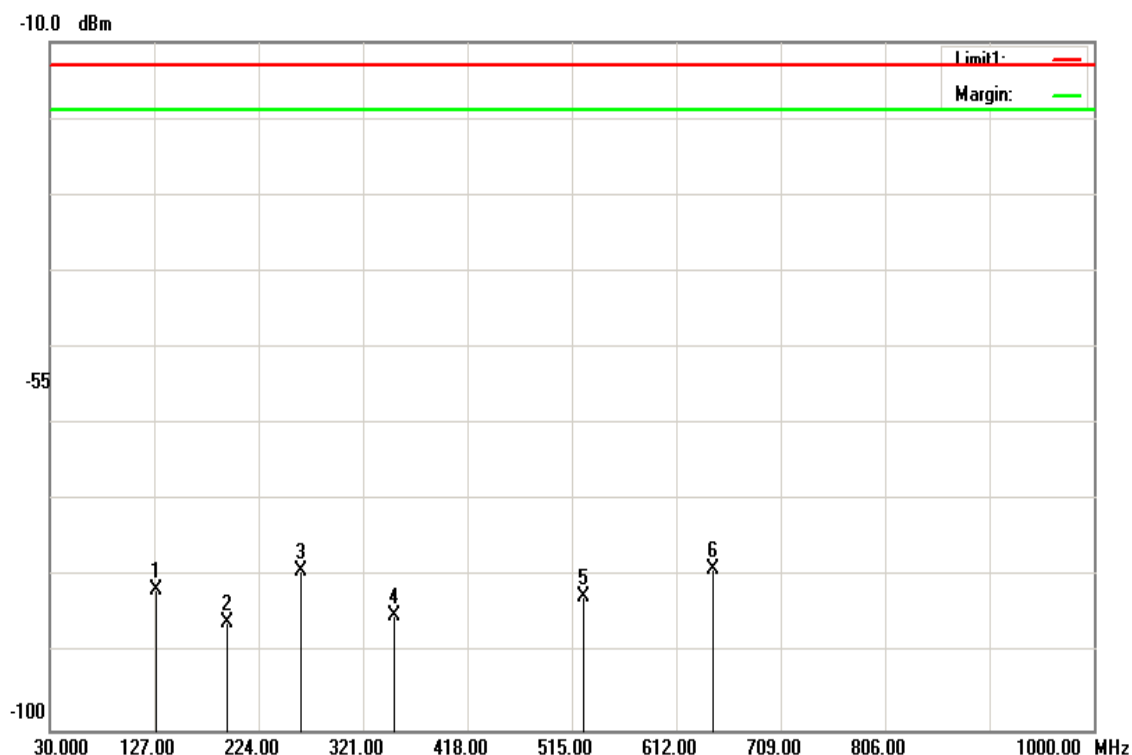
October 2, 2018

Temperature: 22°C**Tested by:**

Jerry Chuang

Humidity: 40 %RH**Polarity:**

Ver.



Frequency (MHz)	S.G. (dBm)	Ant. Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
128.9400	-80.55	1.13	-81.68	-13.00	-68.68	V
195.3850	-84.64	1.38	-86.02	-13.00	-73.02	V
263.7700	-77.52	1.62	-79.14	-13.00	-66.14	V
350.1000	-83.27	1.87	-85.14	-13.00	-72.14	V
526.1550	-80.31	2.31	-82.62	-13.00	-69.62	V
646.4350	-76.31	2.56	-78.87	-13.00	-65.87	V



Report No.: T180821D09-RP4

Page: 84 / 122
Rev.: 01

Operation Mode: Tx / Mid CH

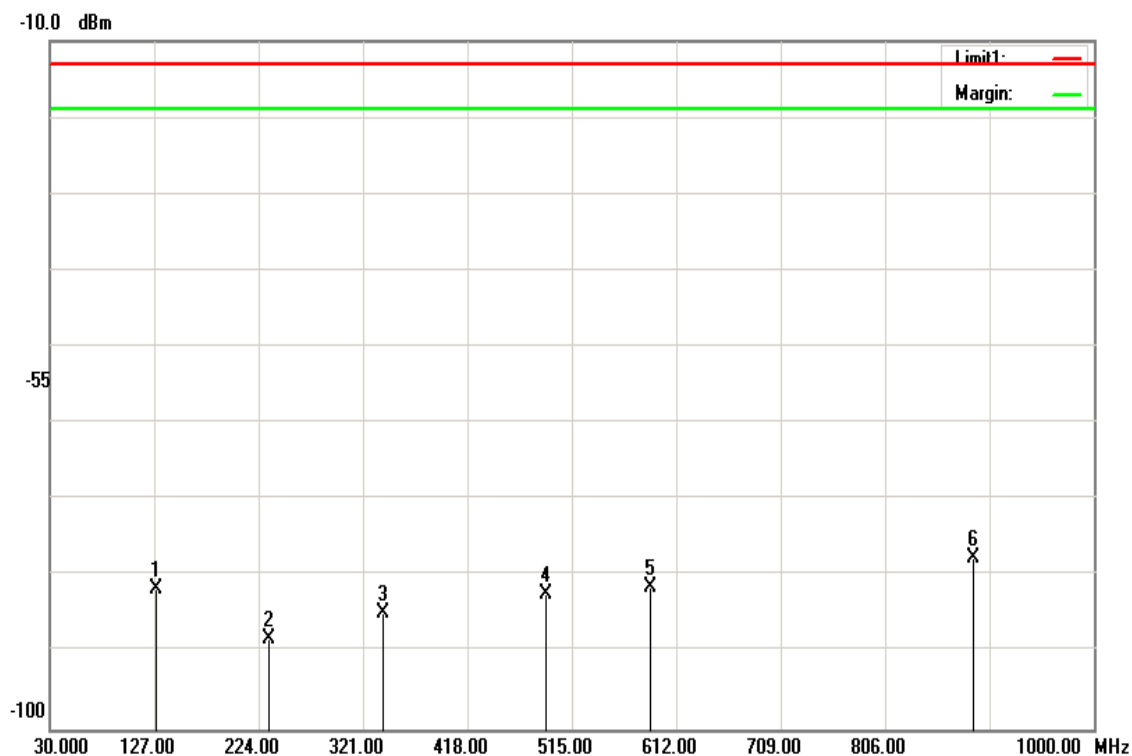
Test Date: October 2, 2018

Temperature: 22°C

Tested by: Jerry Chuang

Humidity: 40 %RH

Polarity: Hor.



Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
129.4250	-80.55	1.13	-81.68	-13.00	-68.68	H
234.1850	-86.78	1.51	-88.29	-13.00	-75.29	H
339.4300	-83.05	1.84	-84.89	-13.00	-71.89	H
490.7500	-80.13	2.23	-82.36	-13.00	-69.36	H
587.7500	-78.92	2.44	-81.36	-13.00	-68.36	H
887.4800	-74.67	3.04	-77.71	-13.00	-64.71	H

Report No.: T180821D09-RP4

LTE Band 13 / BW: 10MHz / 16QAM / RB =1, RB Offset = 0

Operation Mode: Tx / Mid CH

Test Date:

October 2, 2018

Temperature: 22°C

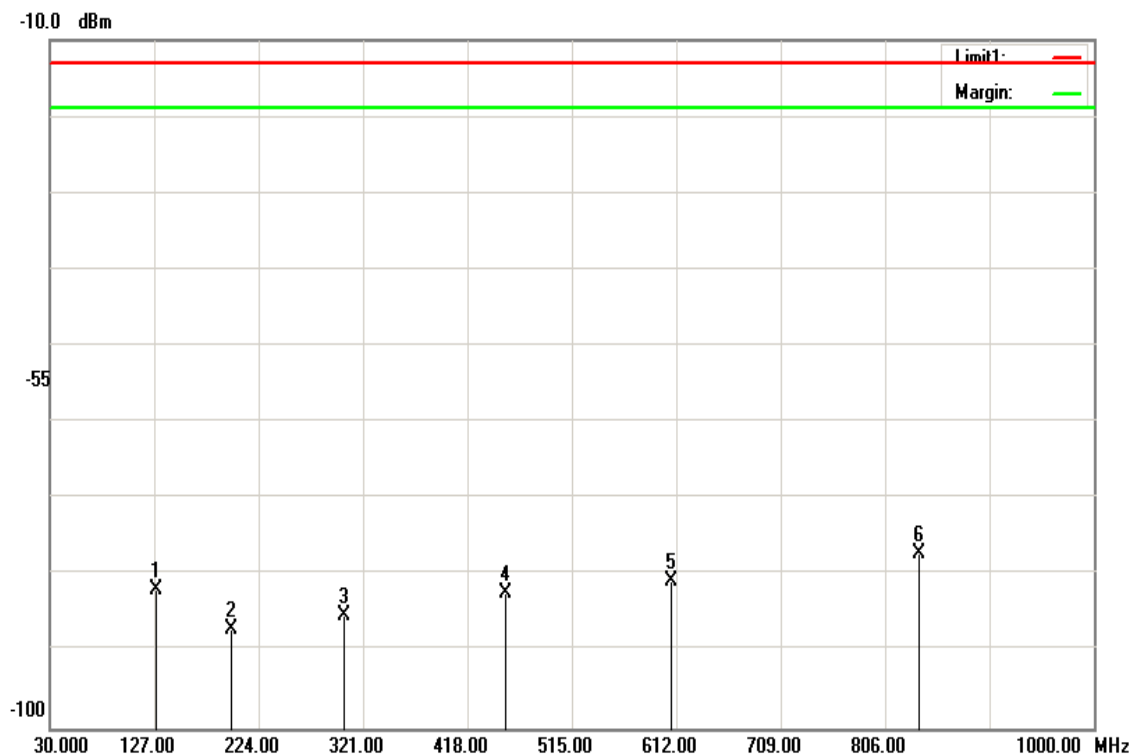
Tested by:

Jerry Chuang

Humidity: 40 %RH

Polarity:

Ver.



Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
128.9400	-80.71	1.13	-81.84	-13.00	-68.84	V
199.2650	-85.66	1.4	-87.06	-13.00	-74.06	V
303.5400	-83.49	1.74	-85.23	-13.00	-72.23	V
452.9200	-80.3	2.14	-82.44	-13.00	-69.44	V
607.6350	-78.36	2.49	-80.85	-13.00	-67.85	V
838.4950	-74.24	2.95	-77.19	-13.00	-64.19	V

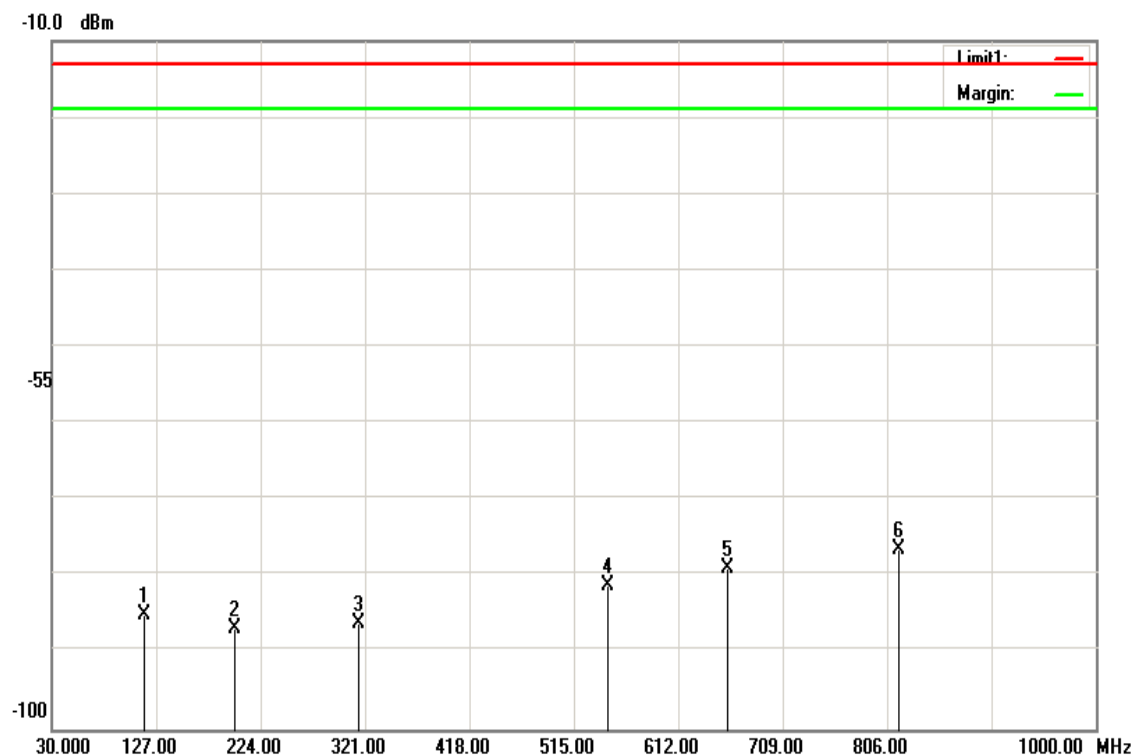
Operation Mode: Tx / Mid CH

Test Date: October 2, 2018

Temperature: 22°C

Tested by: Jerry Chuang

Humidity: 40 %RH

Polarity: Hor.


Frequency (MHz)	S.G. (dBm)	Ant. Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
115.8450	-83.97	1.07	-85.04	-13.00	-72.04	H
200.2350	-85.33	1.4	-86.73	-13.00	-73.73	H
315.1800	-84.37	1.77	-86.14	-13.00	-73.14	H
547.4950	-78.95	2.35	-81.30	-13.00	-68.30	H
657.5900	-76.45	2.59	-79.04	-13.00	-66.04	H
817.1550	-73.56	2.9	-76.46	-13.00	-63.46	H



Report No.: T180821D09-RP4

Page: 87 / 122
Rev.: 01

Above 1GHz

LTE Band 13 / BW: 10MHz / QPSK RB =1, RB Offset = 0

Operation Mode: Tx / Mid CH

Test Date:

October 2, 2018

Temperature: 22°C

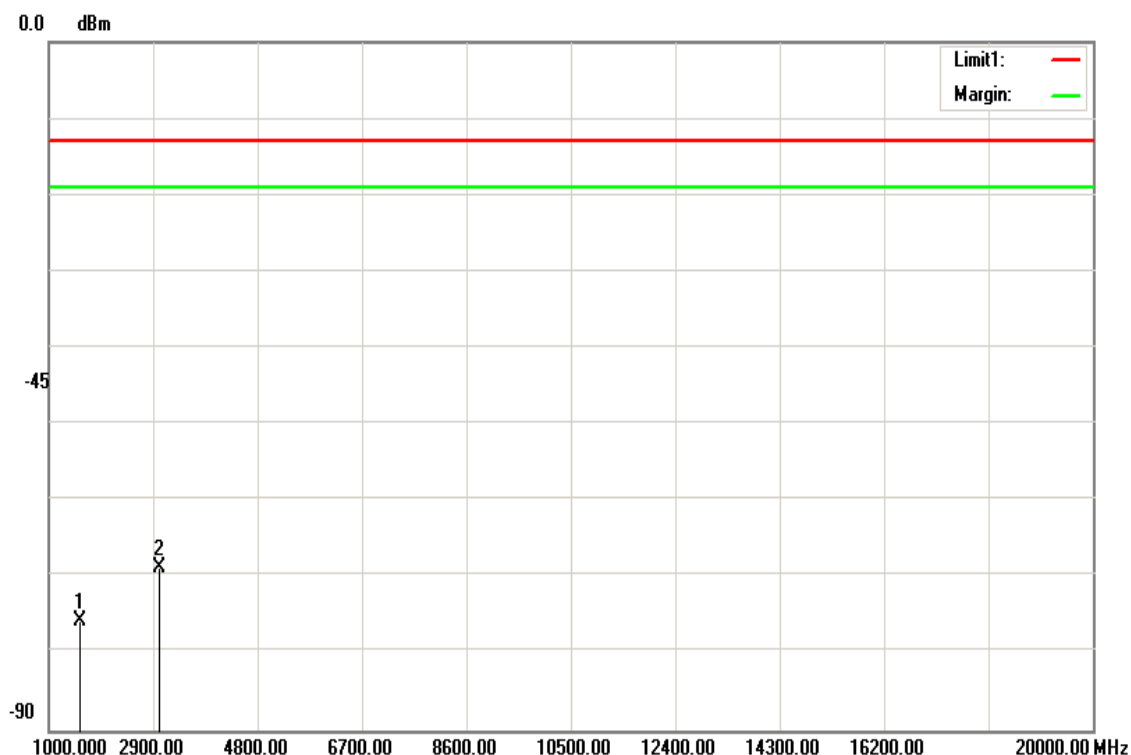
Tested by:

Jerry Chuang

Humidity: 40 %RH

Polarity:

Ver.



Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
1564.000	-71.54	4.08	-75.62	-13.00	-62.62	V
3002.000	-62.75	5.91	-68.66	-13.00	-55.66	V
N/A						

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.



Report No.: T180821D09-RP4

Operation Mode: Tx / Mid CH

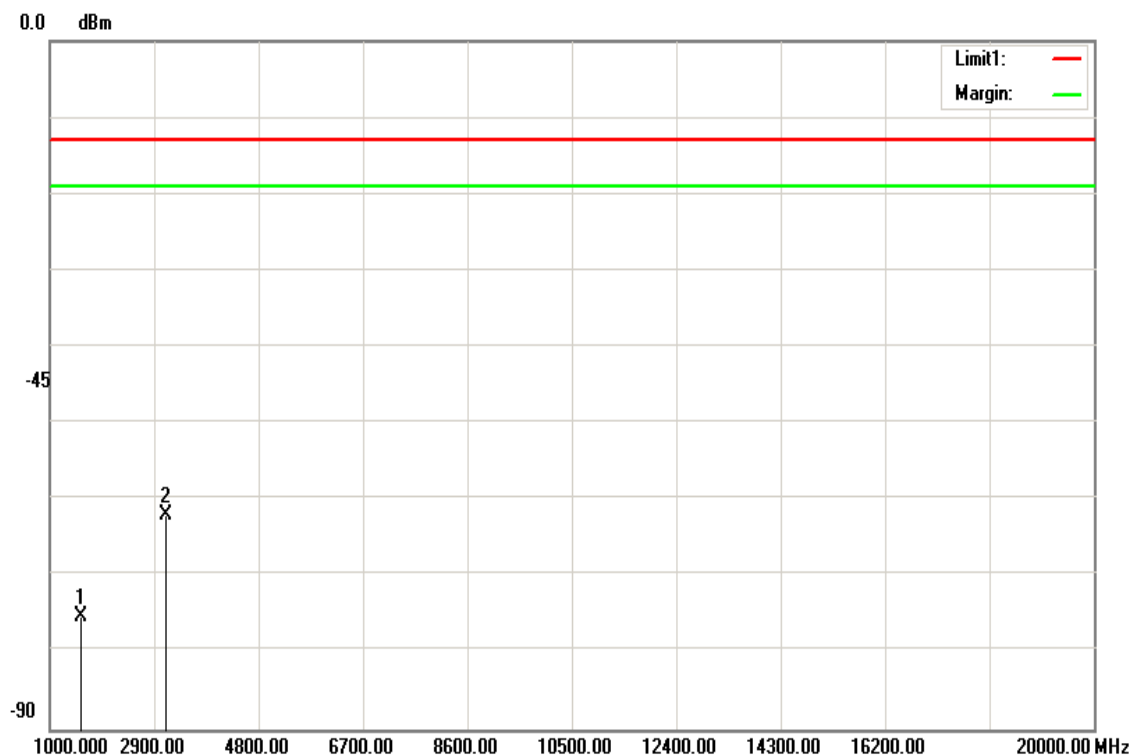
Temperature: 22°C

Humidity: 40 %RH

Test Date: October 2, 2018

Tested by: Jerry Chuang

Polarity: Hor.



Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
1564.000	-71.22	4.08	-75.30	-13.00	-62.30	H
3110.500	-55.98	6.02	-62.00	-13.00	-49.00	H
N/A						

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

Report No.: T180821D09-RP4

LTE Band 13 / BW: 10MHz / 16QAM RB =1, RB Offset = 0
Operation Mode: Tx / Mid CH

Test Date:

October 2, 2018

Temperature: 22°C

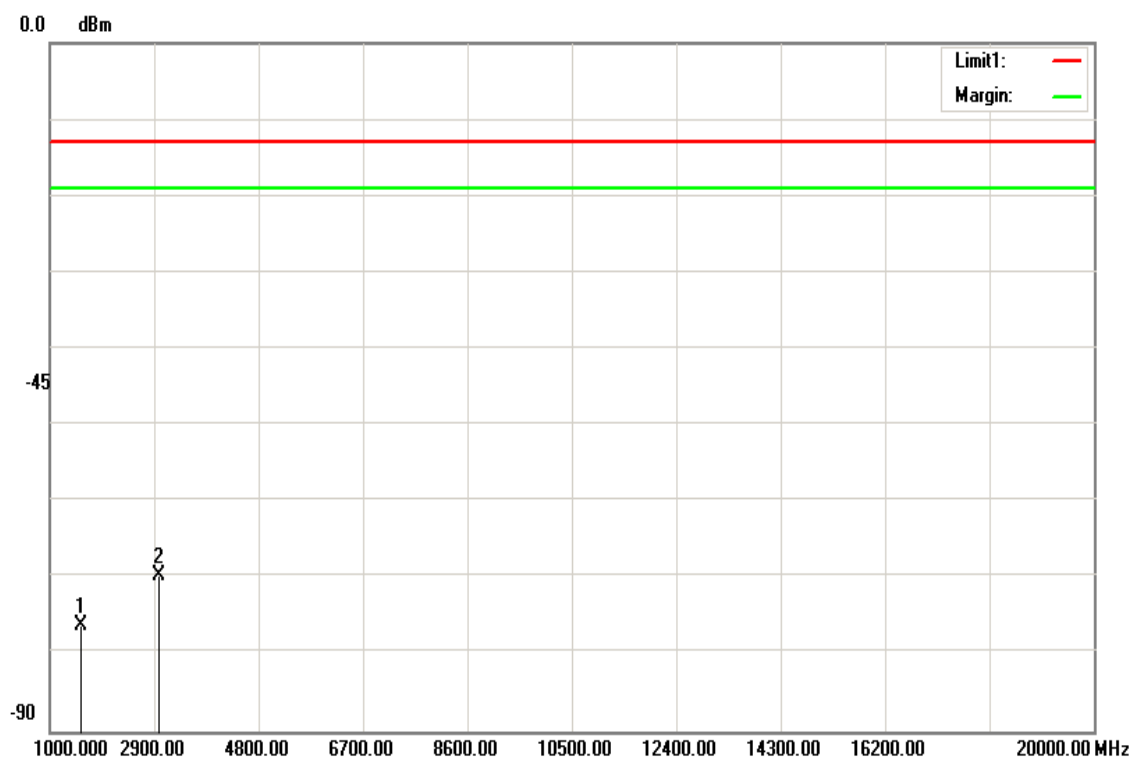
Tested by:

Jerry Chuang

Humidity: 40 %RH

Polarity:

Hor.



Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
1564.000	-71.98	4.08	-76.06	-13.00	-63.06	V
2998.500	-63.76	5.91	-69.67	-13.00	-56.67	V
N/A						

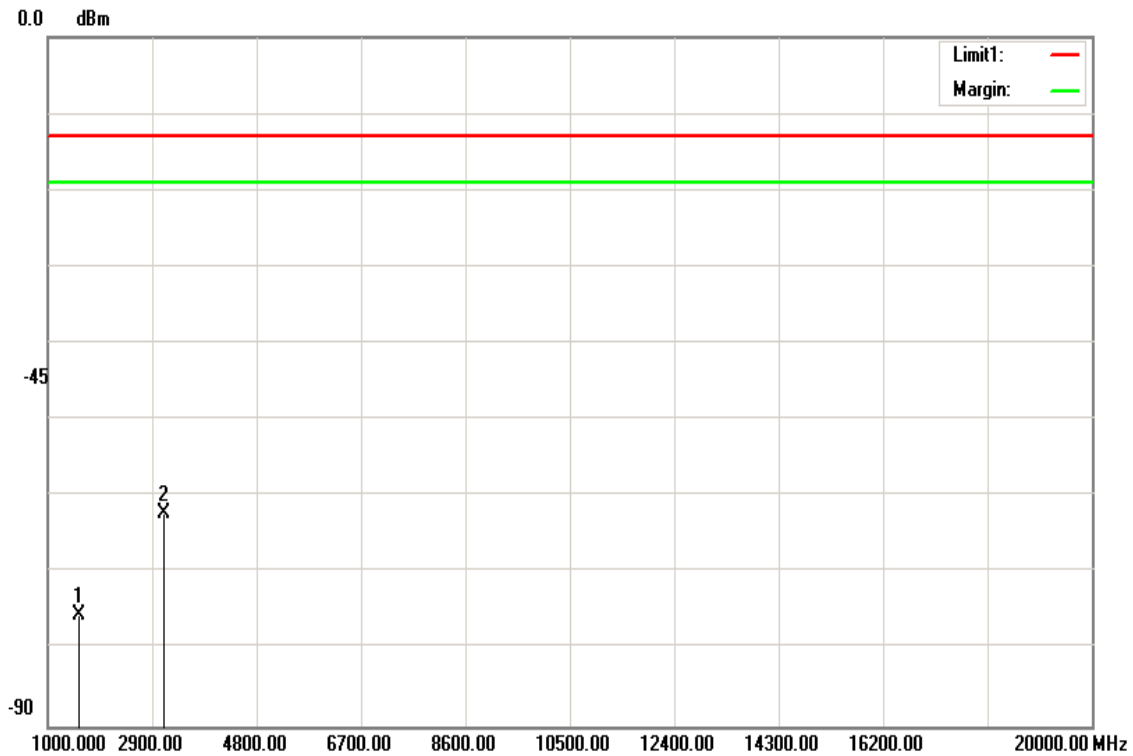
Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

Report No.: T180821D09-RP4

Operation Mode: Tx / Mid CH
Temperature: 22°C
Humidity: 40 %RH

Test Date: October 2, 2018
Tested by: Jerry Chuang
Polarity: Hor.



requeency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
1564.000	-71.31	4.08	-75.39	-13.00	-62.39	H
3110.500	-56.18	6.02	-62.20	-13.00	-49.20	H
N/A						

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.



Report No.: T180821D09-RP4

Page: 91 / 122
Rev.: 01

Test Results

Below 1GHz

LTE Band 41 / BW: 20MHz / QPSK / RB =1, RB Offset = 0

Operation Mode: Tx / Mid CH

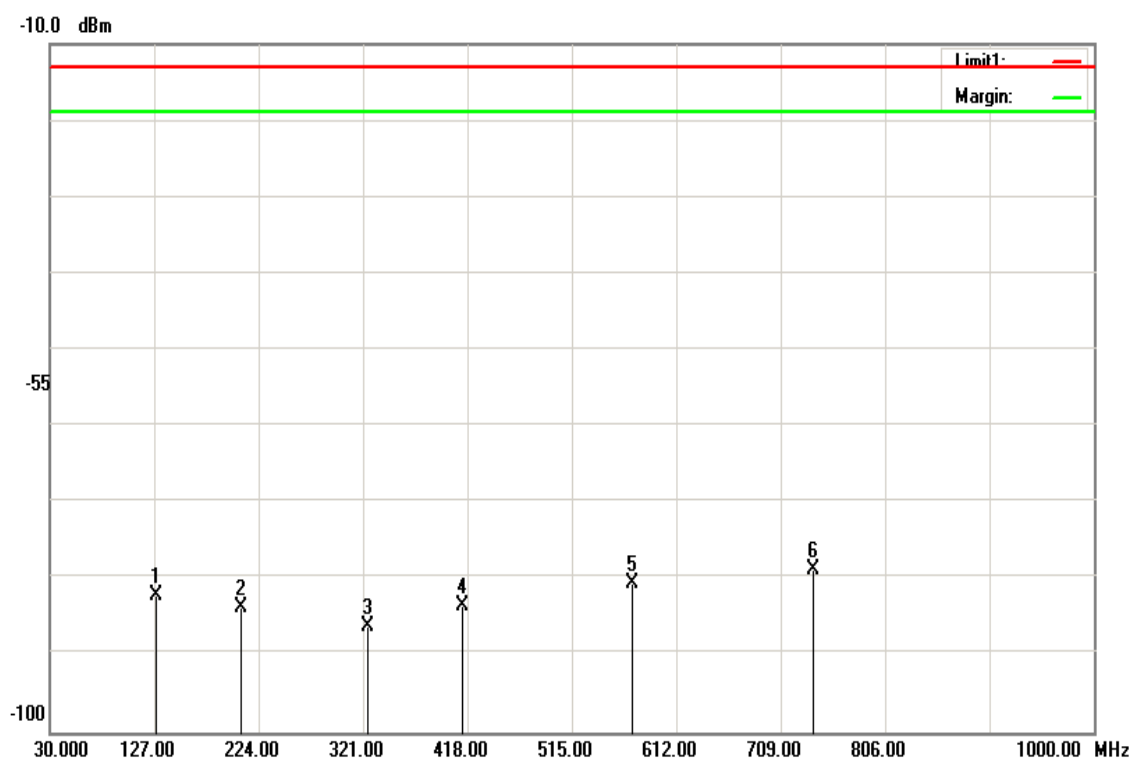
Test Date: September 28, 2018

Temperature: 23°C

Tested by: Jerry Chuang

Humidity: 41 %RH

Polarity: Ver.



Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
128.9400	-81.05	1.13	-82.18	-13.00	-69.18	V
207.9950	-82.16	1.43	-83.59	-13.00	-70.59	V
326.3350	-84.38	1.8	-86.18	-13.00	-73.18	V
413.1500	-81.44	2.04	-83.48	-13.00	-70.48	V
571.7450	-78.18	2.41	-80.59	-13.00	-67.59	V
739.5550	-75.96	2.76	-78.72	-13.00	-65.72	V

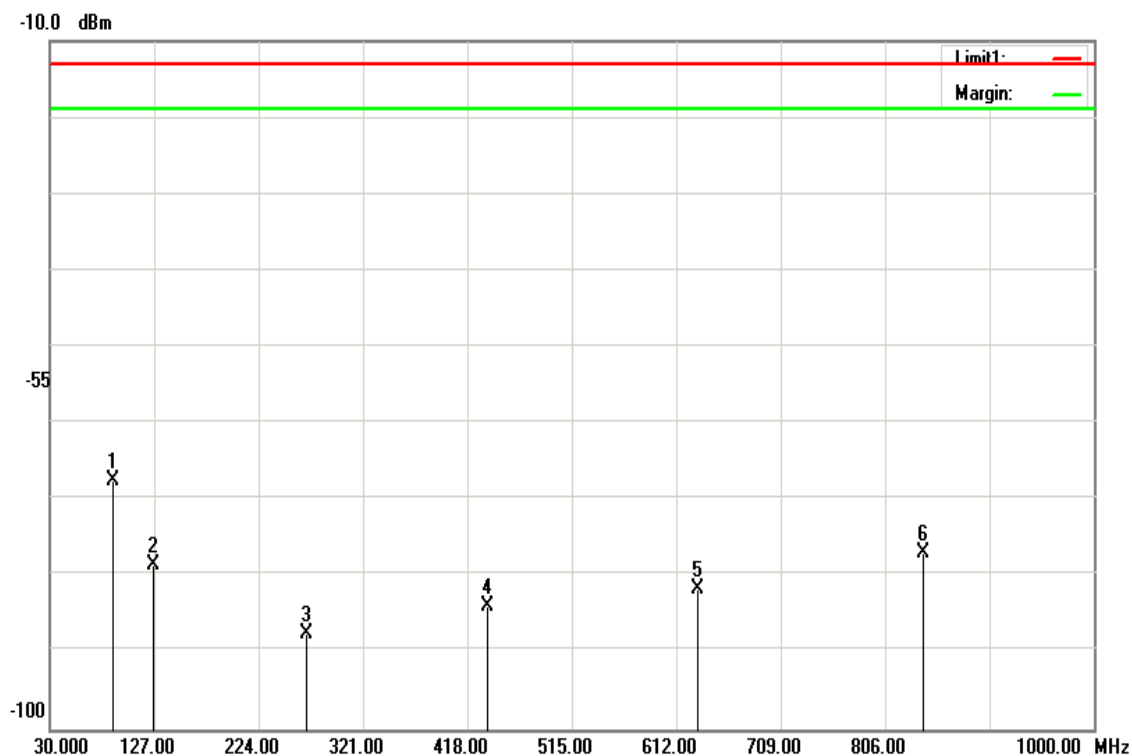


Report No.: T180821D09-RP4

Page: 92 / 122
Rev.: 01

Operation Mode: Tx / Mid CH
Temperature: 23°C
Humidity: 41 %RH

Test Date: September 28, 2018
Tested by: Jerry Chuang
Polarity: Hor.



Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
89.6550	-66.45	0.93	-67.38	-13.00	-54.38	H
126.0300	-77.43	1.11	-78.54	-13.00	-65.54	H
269.1050	-85.88	1.63	-87.51	-13.00	-74.51	H
436.4300	-81.87	2.1	-83.97	-13.00	-70.97	H
632.8550	-79.09	2.54	-81.63	-13.00	-68.63	H
841.4050	-74.05	2.95	-77.00	-13.00	-64.00	H

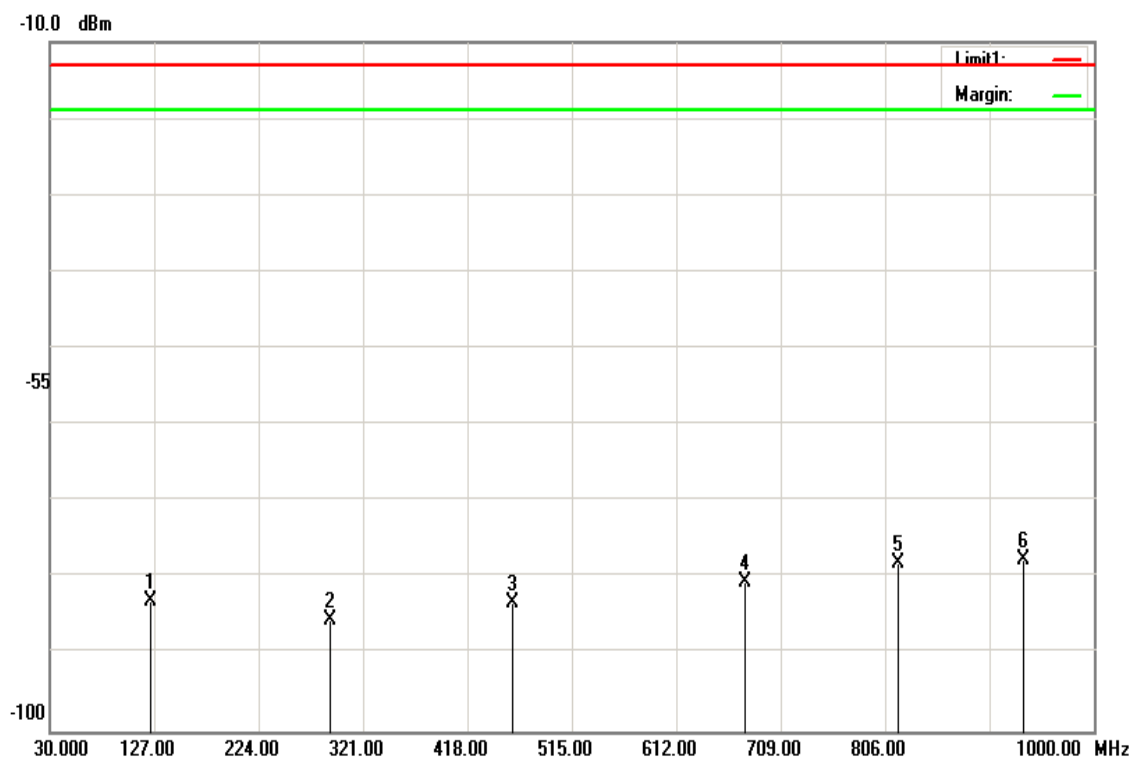
LTE Band 41 / BW: 20MHz / 16QAM / RB =1, RB Offset = 0
Operation Mode: Tx / Mid CH

Test Date: September 28, 2018

Temperature: 23°C

Tested by: Jerry Chuang

Humidity: 41 %RH

Polarity: Ver.


Frequency (MHz)	S.G. (dBm)	Ant. Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
123.6050	-82.01	1.1	-83.11	-13.00	-70.11	V
290.9300	-83.74	1.7	-85.44	-13.00	-72.44	V
459.7100	-81.14	2.15	-83.29	-13.00	-70.29	V
676.5050	-77.87	2.63	-80.50	-13.00	-67.50	V
817.6400	-75.08	2.91	-77.99	-13.00	-64.99	V
934.5250	-74.47	3.12	-77.59	-13.00	-64.59	V

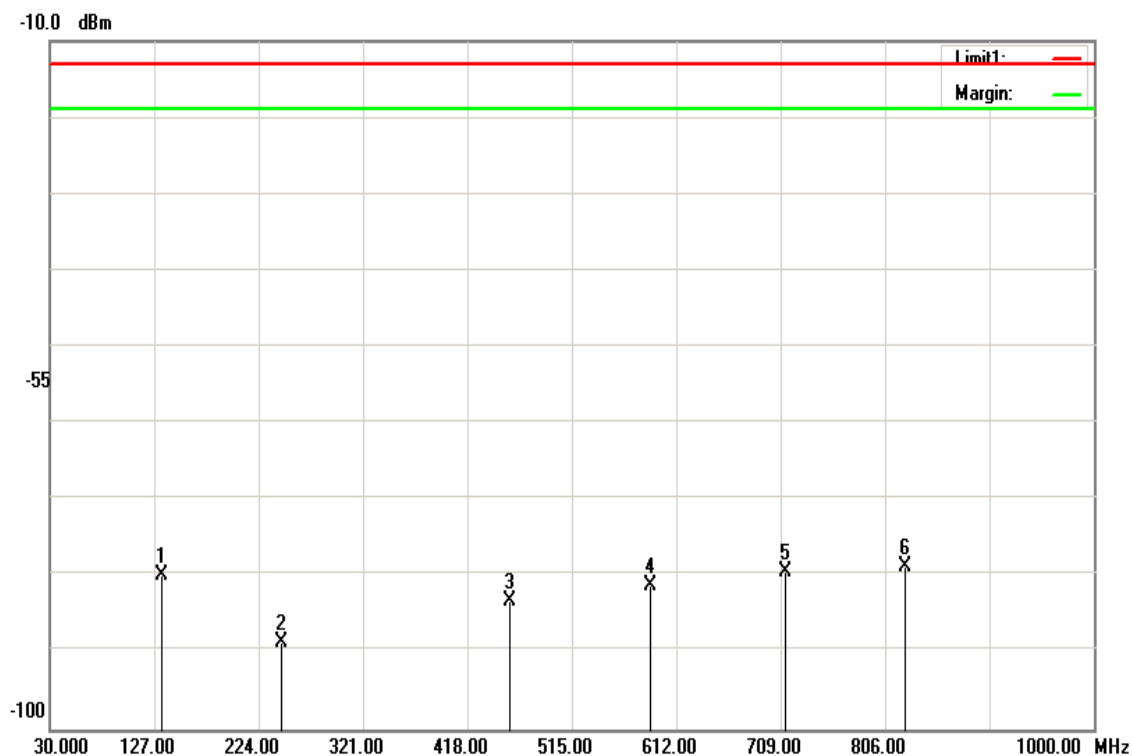


Report No.: T180821D09-RP4

Page: 94 / 122
Rev.: 01

Operation Mode: Tx / Mid CH
Temperature: 23°C
Humidity: 41 %RH

Test Date: September 28, 2018
Tested by: Jerry Chuang
Polarity: Hor.



Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
134.2750	-78.74	1.15	-79.89	-13.00	-66.89	H
245.8250	-87.14	1.55	-88.69	-13.00	-75.69	H
457.7700	-81	2.15	-83.15	-13.00	-70.15	H
588.2350	-78.78	2.44	-81.22	-13.00	-68.22	H
713.8500	-76.71	2.71	-79.42	-13.00	-66.42	H
824.4300	-75.77	2.92	-78.69	-13.00	-65.69	H

Report No.: T180821D09-RP4

Above 1GHz

LTE Band 41 / BW: 20MHz / QPSK RB =1, RB Offset = 0

Operation Mode: Tx / Low CH

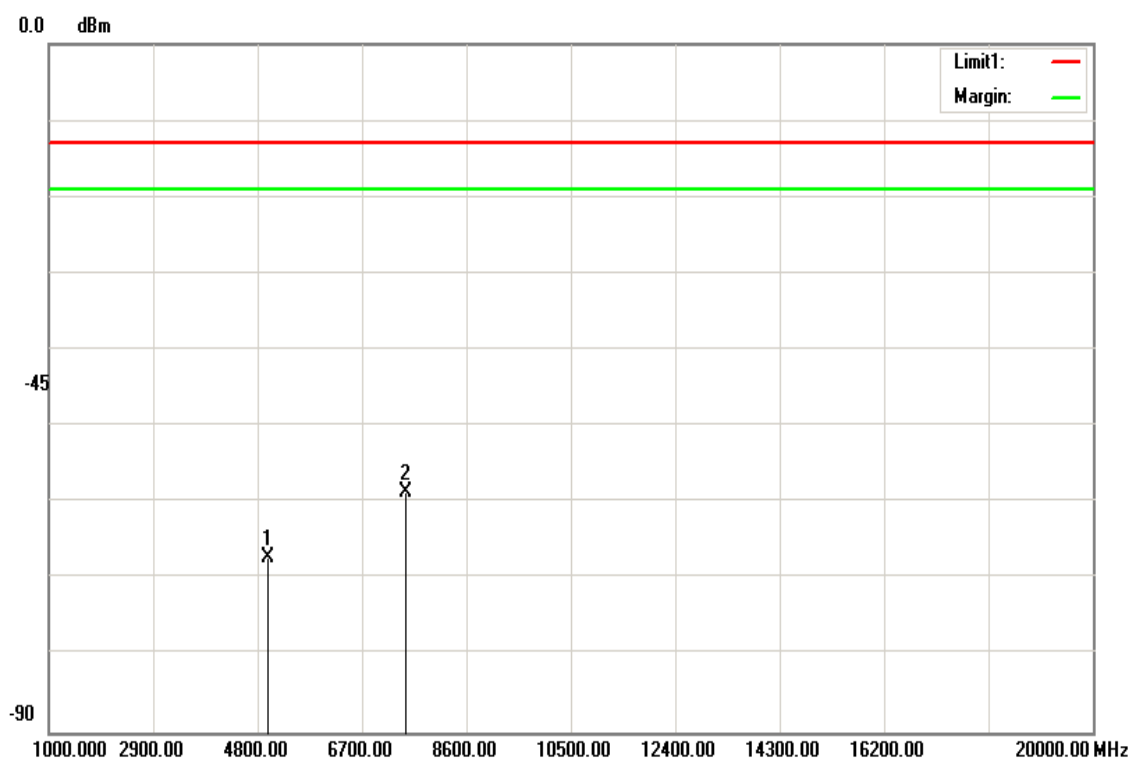
Test Date: October 2, 2018

Temperature: 22°C

Tested by: Jerry Chuang

Humidity: 40 %RH

Polarity: Ver.



Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
4993.500	-59.37	7.8	-67.17	-13.00	-54.17	V
7492.500	-48.8	9.84	-58.64	-13.00	-45.64	V
N/A						

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

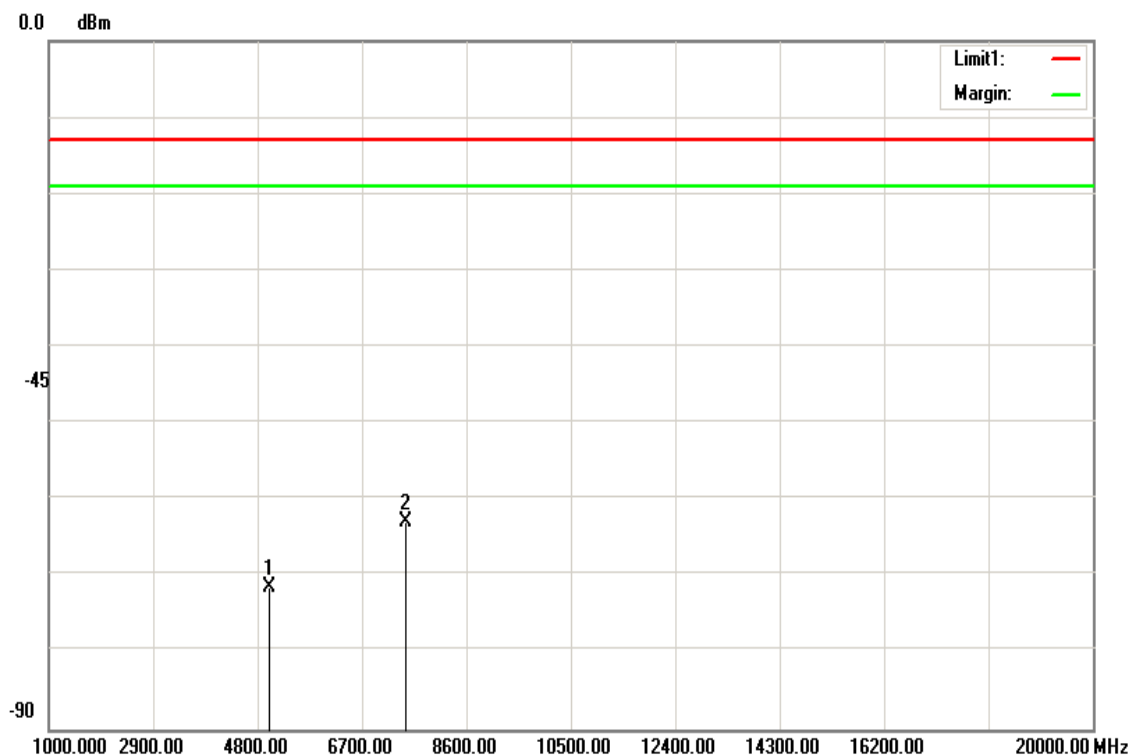


Report No.: T180821D09-RP4

Page: 96 / 122
Rev.: 01

Operation Mode: Tx / Low CH
Temperature: 22°C
Humidity: 40 %RH

Test Date: October 2, 2018
Tested by: Jerry Chuang
Polarity: Hor.



Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
5012.000	-63.63	7.82	-71.45	-13.00	-58.45	H
7492.500	-53.02	9.84	-62.86	-13.00	-49.86	H
N/A						

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

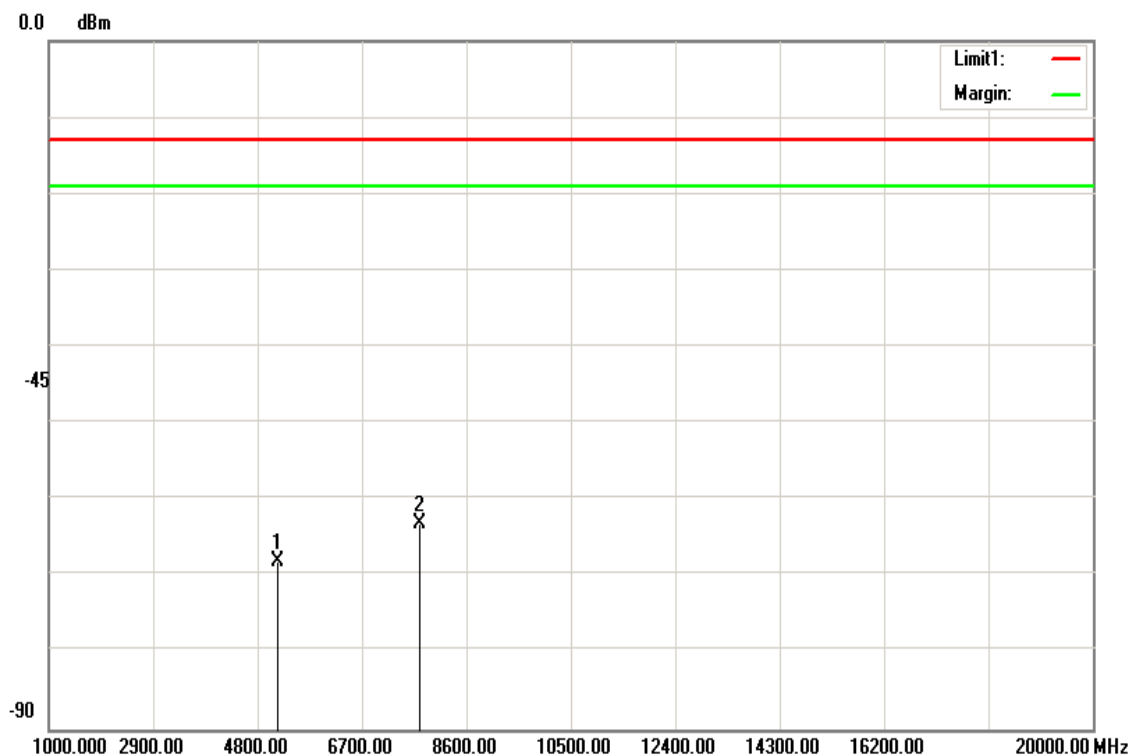


Report No.: T180821D09-RP4

Page: 97 / 122
Rev.: 01

Operation Mode: Tx / Mid CH
Temperature: 22°C
Humidity: 40 %RH

Test Date: October 2, 2018
Tested by: Jerry Chuang
Polarity: Ver.



Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
5168.500	-60.11	7.95	-68.06	-13.00	-55.06	V
7751.500	-53.09	10.05	-63.14	-13.00	-50.14	V
N/A						

Remark:

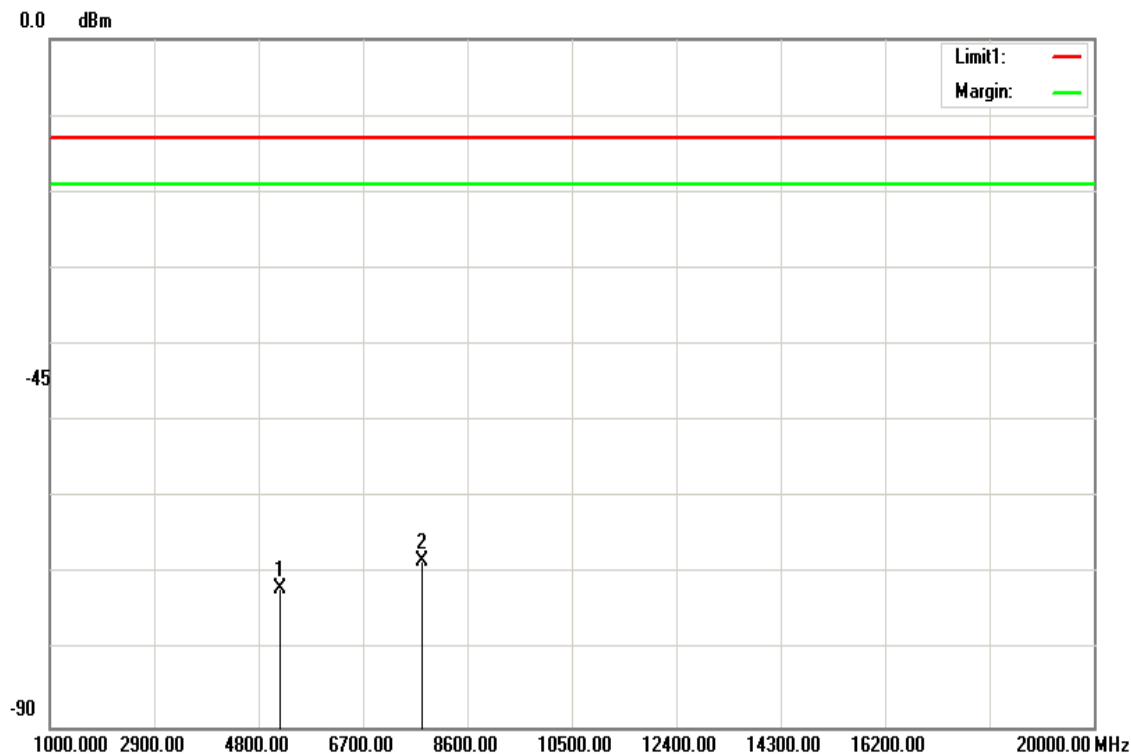
1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.



Report No.: T180821D09-RP4

Page: 98 / 122
Rev.: 01

Operation Mode:	Tx / Mid CH	Test Date:	October 2, 2018
Temperature:	22°C	Tested by:	Jerry Chuang
Humidity:	40 %RH	Polarity:	Hor.



Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
5186.000	-63.81	7.97	-71.78	-13.00	-58.78	H
7779.000	-58.17	10.07	-68.24	-13.00	-55.24	H
N/A						

Remark:
1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

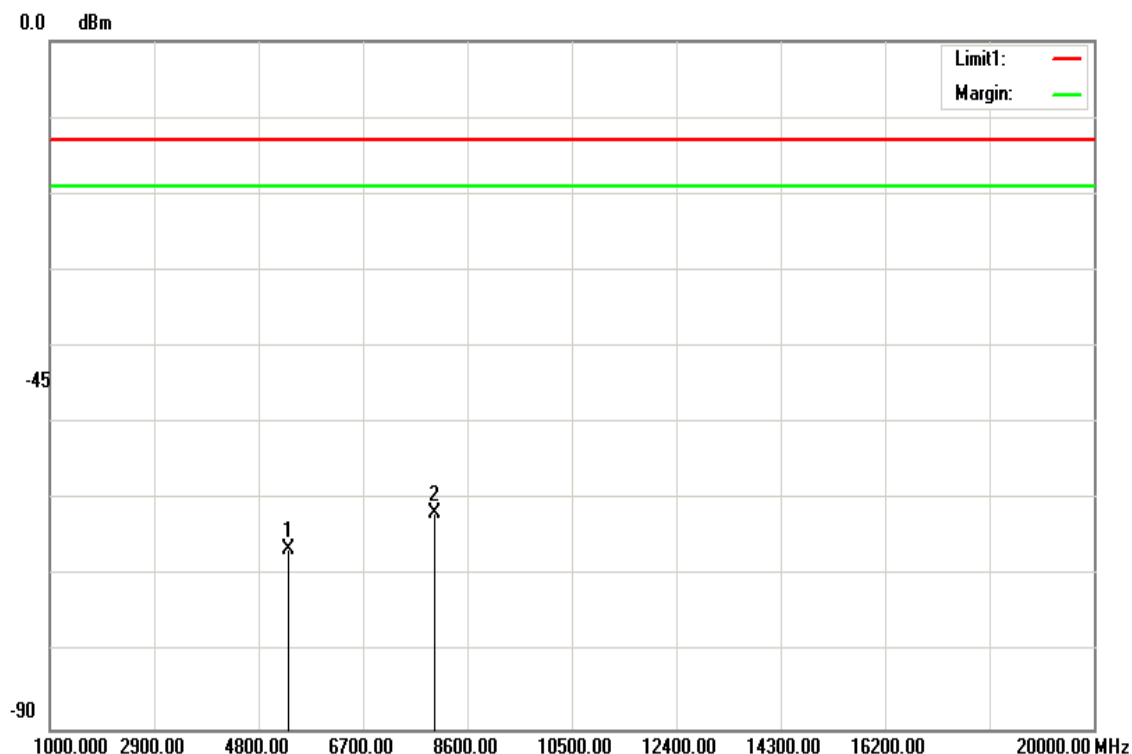


Report No.: T180821D09-RP4

Page: 99 / 122
Rev.: 01

Operation Mode: Tx / High CH
Temperature: 22°C
Humidity: 40 %RH

Test Date: October 2, 2018
Tested by: Jerry Chuang
Polarity: Ver.



Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
5343.500	-58.33	8.11	-66.44	-13.00	-53.44	V
8012.500	-51.52	10.26	-61.78	-13.00	-48.78	V
N/A						

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

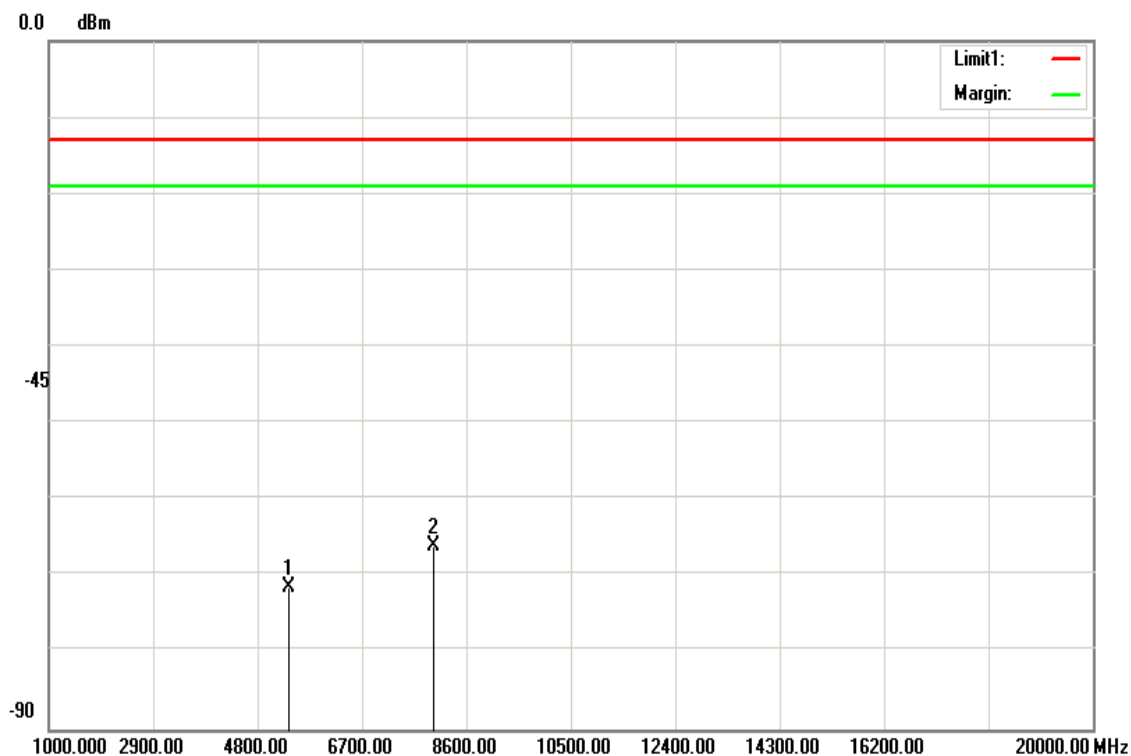


Report No.: T180821D09-RP4

Page: 100 / 122
Rev.: 01

Operation Mode: Tx / High CH
Temperature: 22°C
Humidity: 40 %RH

Test Date: October 2, 2018
Tested by: Jerry Chuang
Polarity: Hor.



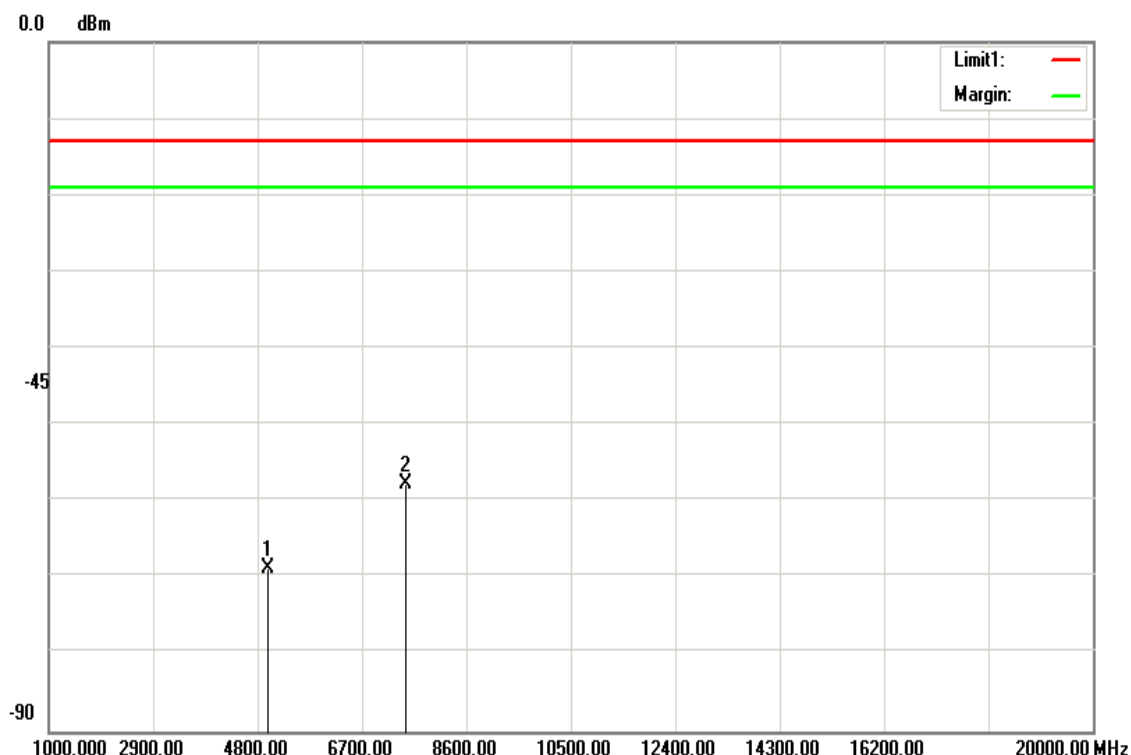
Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
5360.000	-63.28	8.12	-71.40	-13.00	-58.40	H
8014.000	-55.71	10.27	-65.98	-13.00	-52.98	H
N/A						

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

LTE Band 41 / BW: 20MHz / 16QAM / RB =1, RB Offset = 0

Operation Mode: Tx / Low CH **Test Date:** October 2, 2018
Temperature: 22°C **Tested by:** Jerry Chuang
Humidity: 40 %RH **Polarity:** Ver.



Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
4993.500	-60.87	7.8	-68.67	-13.00	-55.67	V
7492.500	-47.9	9.84	-57.74	-13.00	-44.74	V
N/A						

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

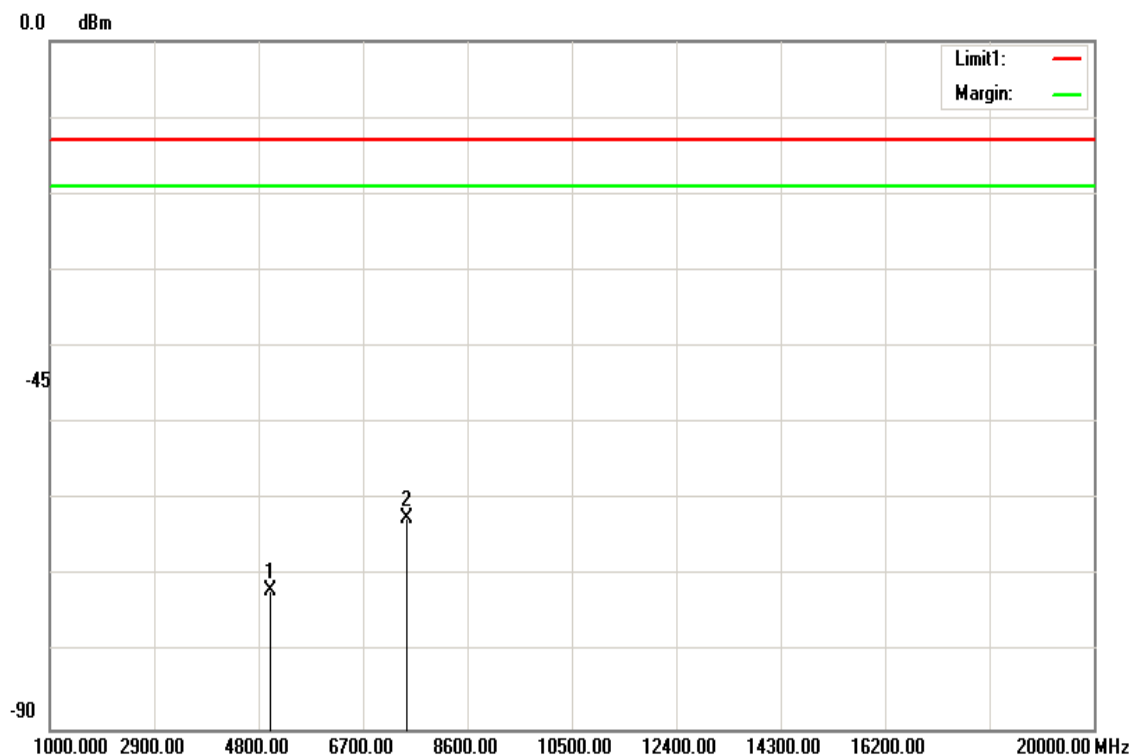


Report No.: T180821D09-RP4

Page: 102 / 122
Rev.: 01

Operation Mode: Tx / Low CH
Temperature: 22°C
Humidity: 40 %RH

Test Date: October 2, 2018
Tested by: Jerry Chuang
Polarity: Hor.



Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
5012.000	-64.04	7.82	-71.86	-13.00	-58.86	H
7492.500	-52.54	9.84	-62.38	-13.00	-49.38	H
N/A						

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

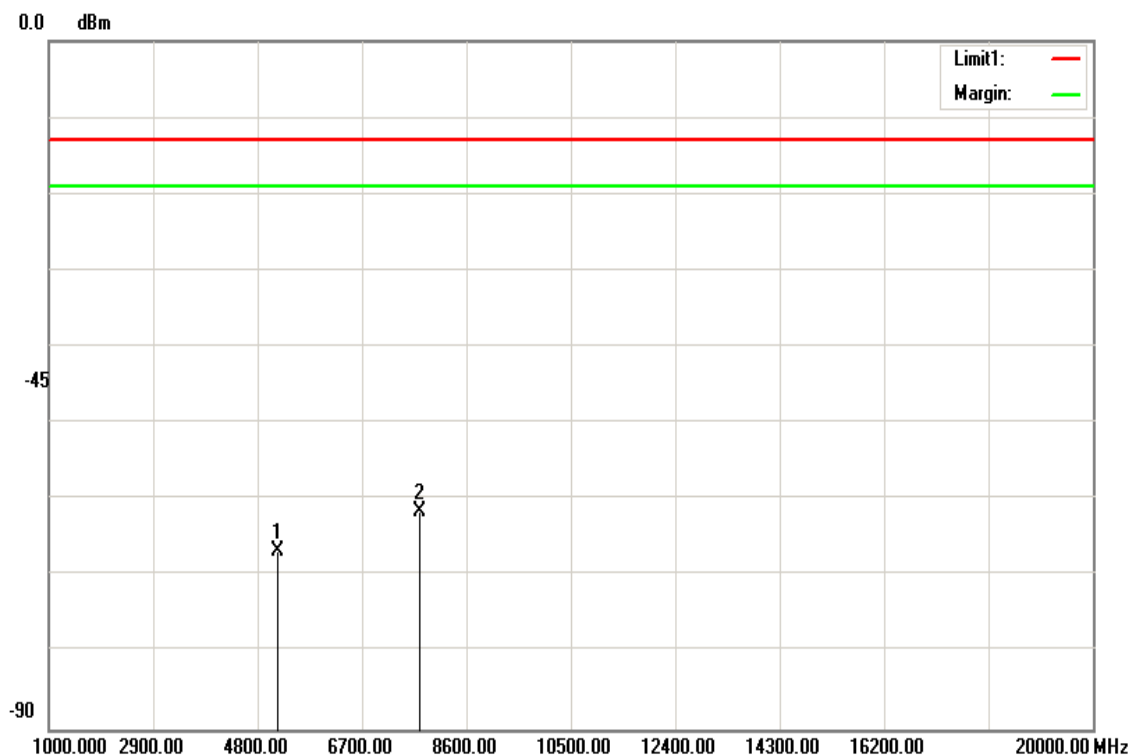


Report No.: T180821D09-RP4

Page: 103 / 122
Rev.: 01

Operation Mode: Tx / Mid CH
Temperature: 22°C
Humidity: 40 %RH

Test Date: October 2, 2018
Tested by: Jerry Chuang
Polarity: Ver.



Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
5168.500	-58.8	7.95	-66.75	-13.00	-53.75	V
7751.500	-51.54	10.05	-61.59	-13.00	-48.59	V
N/A						

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

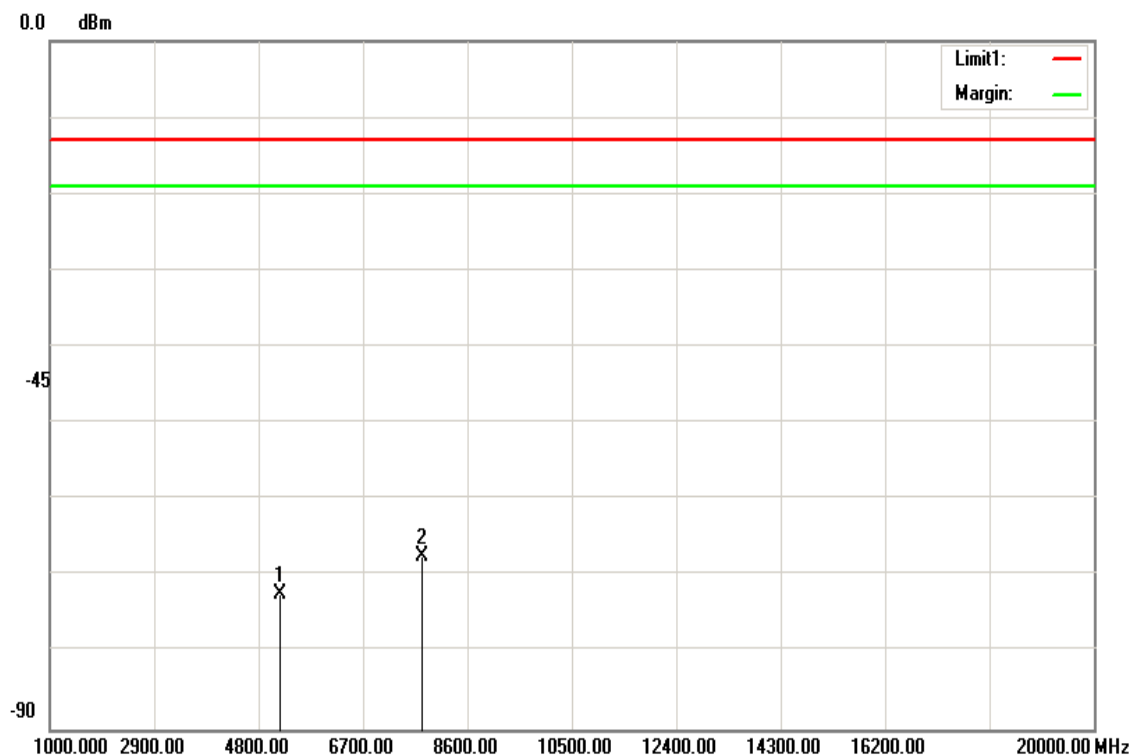


Report No.: T180821D09-RP4

Page: 104 / 122
Rev.: 01

Operation Mode: Tx / Mid CH
Temperature: 22°C
Humidity: 40 %RH

Test Date: October 2, 2018
Tested by: Jerry Chuang
Polarity: Hor.



Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
5186.000	-64.31	7.97	-72.28	-13.00	-59.28	H
7779.000	-57.41	10.07	-67.48	-13.00	-54.48	H
N/A						

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

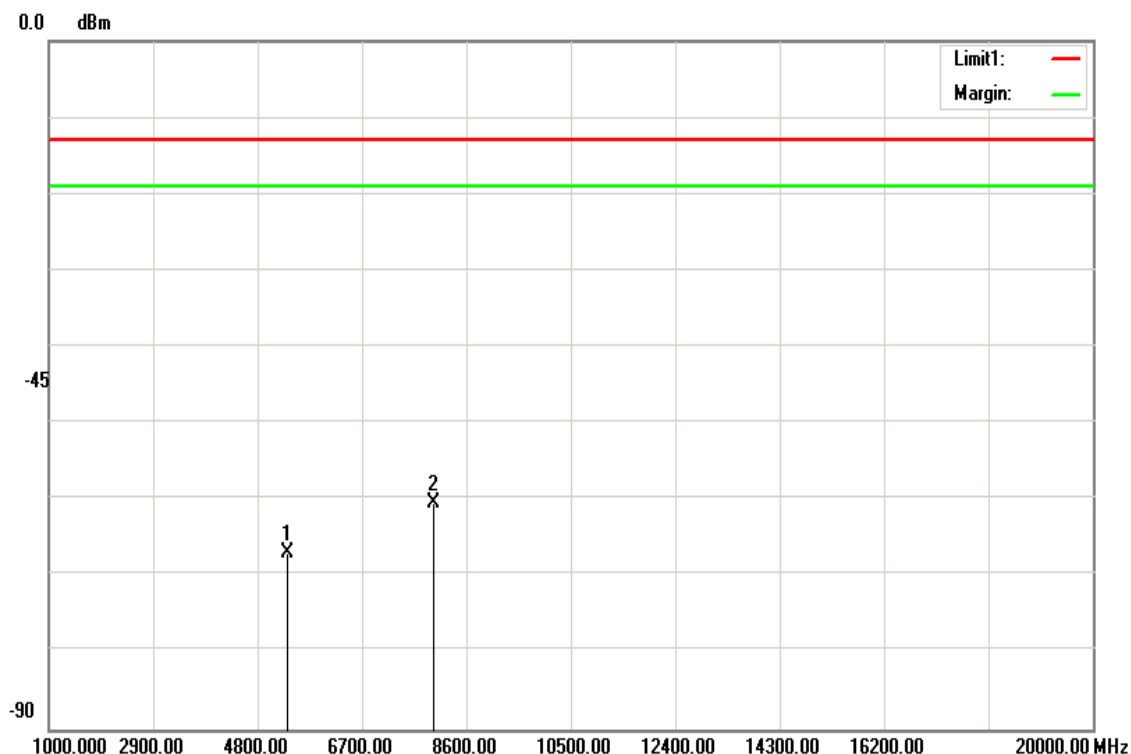


Report No.: T180821D09-RP4

Page: 105 / 122
Rev.: 01

Operation Mode: Tx / High CH
Temperature: 22°C
Humidity: 40 %RH

Test Date: October 2, 2018
Tested by: Jerry Chuang
Polarity: Ver.



Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
5343.500	-58.87	8.11	-66.98	-13.00	-53.98	V
8012.500	-50.06	10.26	-60.32	-13.00	-47.32	V
N/A						

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

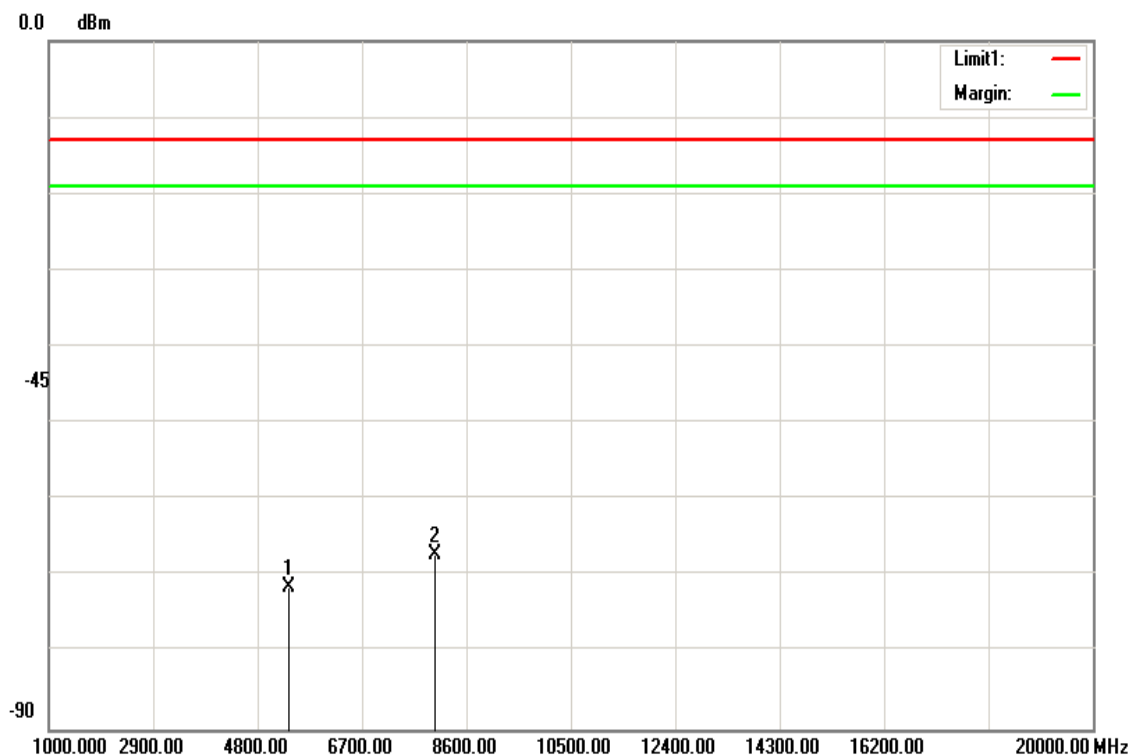


Report No.: T180821D09-RP4

Page: 106 / 122
Rev.: 01

Operation Mode: Tx / High CH
Temperature: 22°C
Humidity: 40 %RH

Test Date: October 2, 2018
Tested by: Jerry Chuang
Polarity: Hor.



Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
5360.000	-63.25	8.12	-71.37	-13.00	-58.37	H
8040.000	-56.78	10.29	-67.07	-13.00	-54.07	H
N/A						

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.



Report No.: T180821D09-RP4

Page: 107 / 122
Rev.: 01

Test Results

Below 1GHz

LTE Band 66 / BW: 20MHz / QPSK / RB =1, RB Offset = 0

Operation Mode: Tx / Mid CH

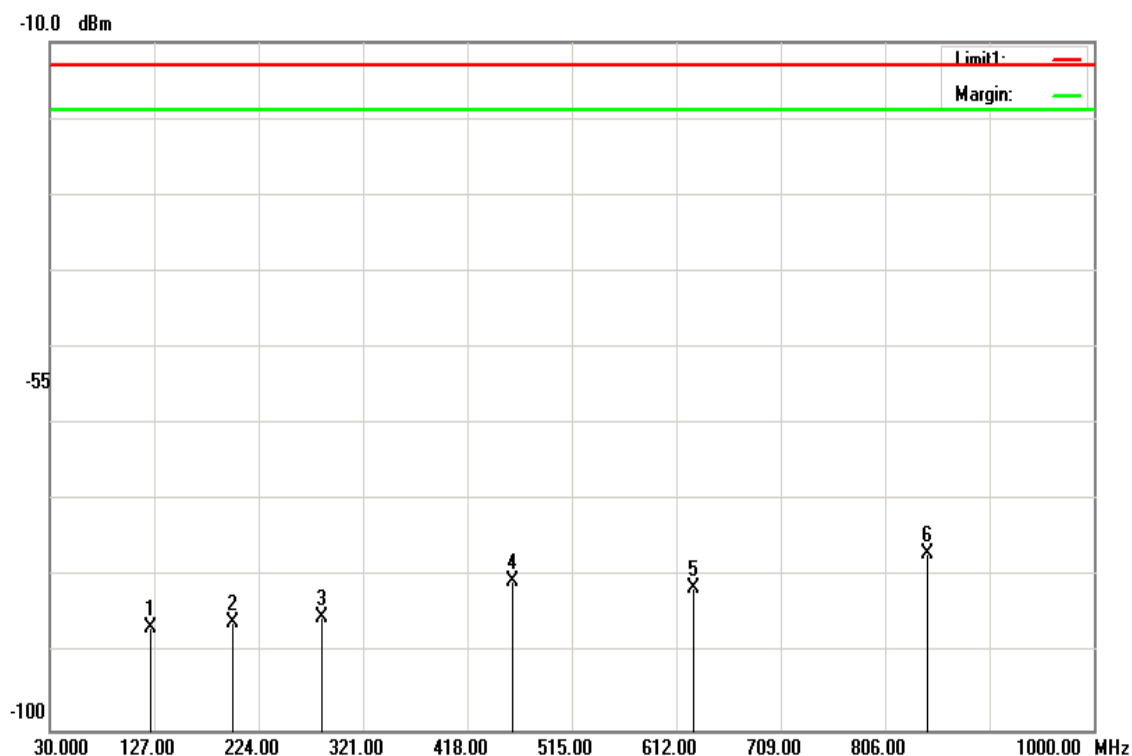
Test Date: September 28, 2018

Temperature: 23°C

Tested by: Jerry Chuang

Humidity: 41 %RH

Polarity: Ver.



Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
124.0900	-85.43	1.11	-86.54	-13.00	-73.54	V
200.2350	-84.59	1.4	-85.99	-13.00	-72.99	V
282.2000	-83.62	1.67	-85.29	-13.00	-72.29	V
460.1950	-78.36	2.15	-80.51	-13.00	-67.51	V
628.9750	-78.9	2.53	-81.43	-13.00	-68.43	V
844.8000	-73.98	2.96	-76.94	-13.00	-63.94	V

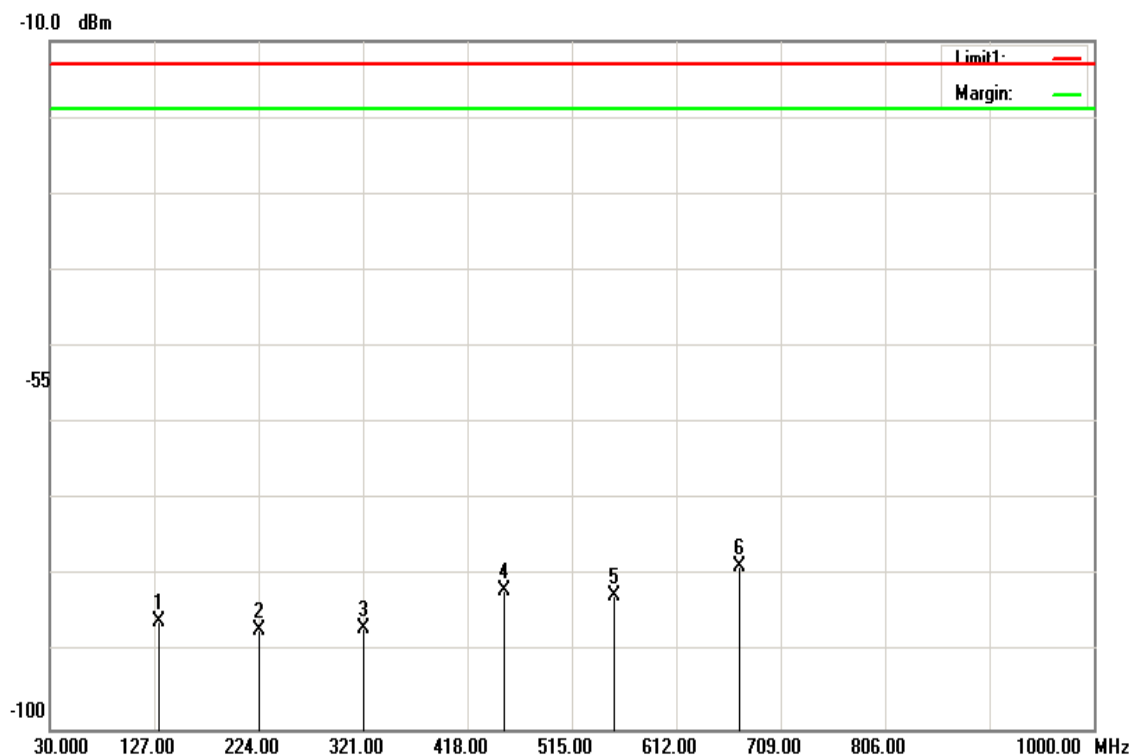


Report No.: T180821D09-RP4

Page: 108 / 122
Rev.: 01

Operation Mode: Tx / Mid CH
Temperature: 23°C
Humidity: 41 %RH

Test Date: September 28, 2018
Tested by: Jerry Chuang
Polarity: Hor.



Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
131.8500	-84.82	1.14	-85.96	-13.00	-72.96	H
224.9700	-85.47	1.48	-86.95	-13.00	-73.95	H
321.4850	-85.13	1.79	-86.92	-13.00	-73.92	H
451.9500	-79.86	2.13	-81.99	-13.00	-68.99	H
553.8000	-80.13	2.37	-82.50	-13.00	-69.50	H
670.2000	-76.17	2.61	-78.78	-13.00	-65.78	H

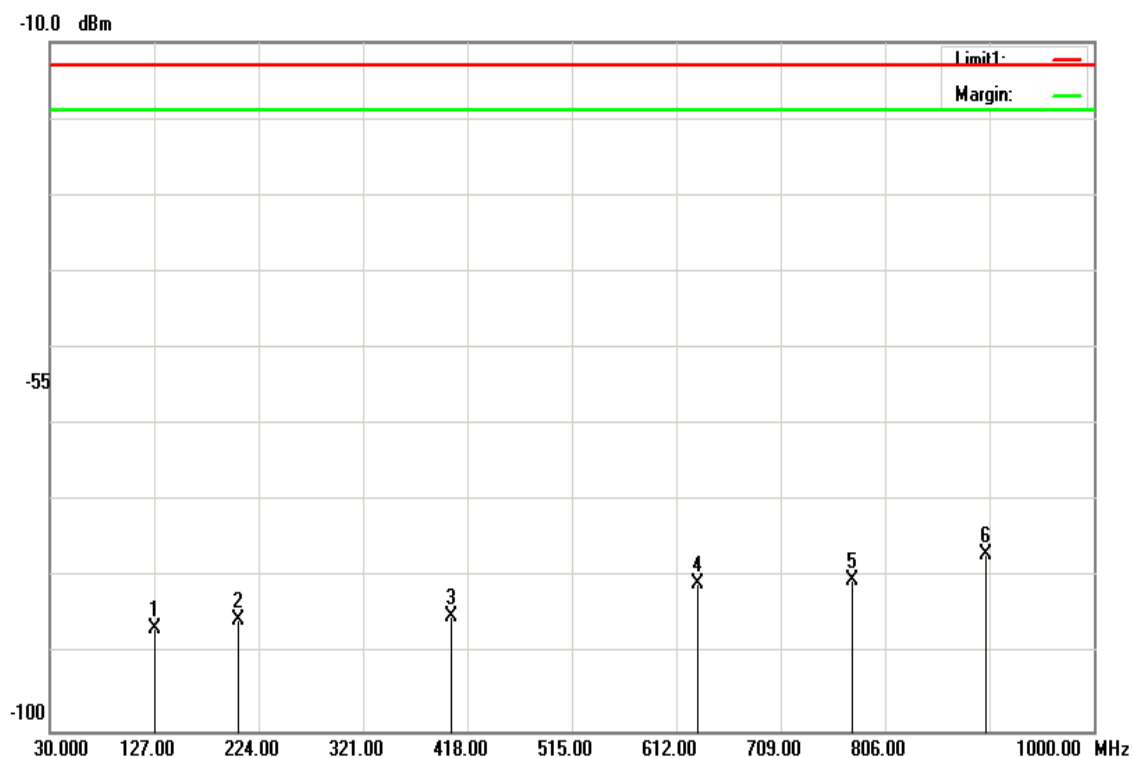
LTE Band 66 / BW: 20MHz / 16QAM / RB =1, RB Offset = 0
Operation Mode: Tx / Mid CH

Test Date: September 28, 2018

Temperature: 23°C

Tested by: Jerry Chuang

Humidity: 41 %RH

Polarity: Ver.


Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
127.9700	-85.57	1.12	-86.69	-13.00	-73.69	V
205.0850	-84.07	1.42	-85.49	-13.00	-72.49	V
403.4500	-82.91	2.02	-84.93	-13.00	-71.93	V
632.3700	-78.16	2.53	-80.69	-13.00	-67.69	V
775.9300	-77.42	2.83	-80.25	-13.00	-67.25	V
899.1200	-73.96	3.06	-77.02	-13.00	-64.02	V

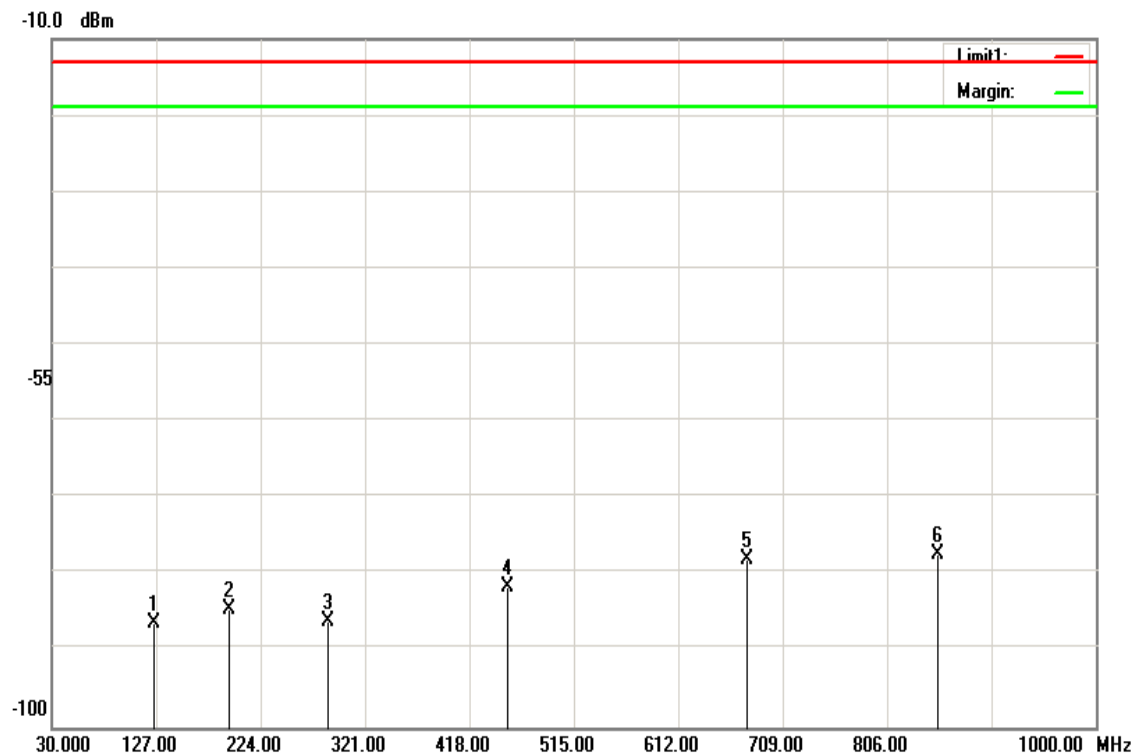


Report No.: T180821D09-RP4

Page: 110 / 122
Rev.: 01

Operation Mode: Tx / Mid CH
Temperature: 23°C
Humidity: 41 %RH

Test Date: September 28, 2018
Tested by: Jerry Chuang
Polarity: Hor.



Frequency (MHz)	S.G. (dBm)	Ant. Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
125.5450	-85.26	1.11	-86.37	-13.00	-73.37	H
194.9000	-83.27	1.38	-84.65	-13.00	-71.65	H
287.5350	-84.47	1.69	-86.16	-13.00	-73.16	H
452.9200	-79.51	2.14	-81.65	-13.00	-68.65	H
676.0200	-75.54	2.63	-78.17	-13.00	-65.17	H
854.0150	-74.51	2.98	-77.49	-13.00	-64.49	H



Report No.: T180821D09-RP4

Page: 111 / 122
Rev.: 01

Above 1GHz

LTE Band 66 / BW: 20MHz / QPSK RB =1, RB Offset = 0

Operation Mode: Tx / Low CH

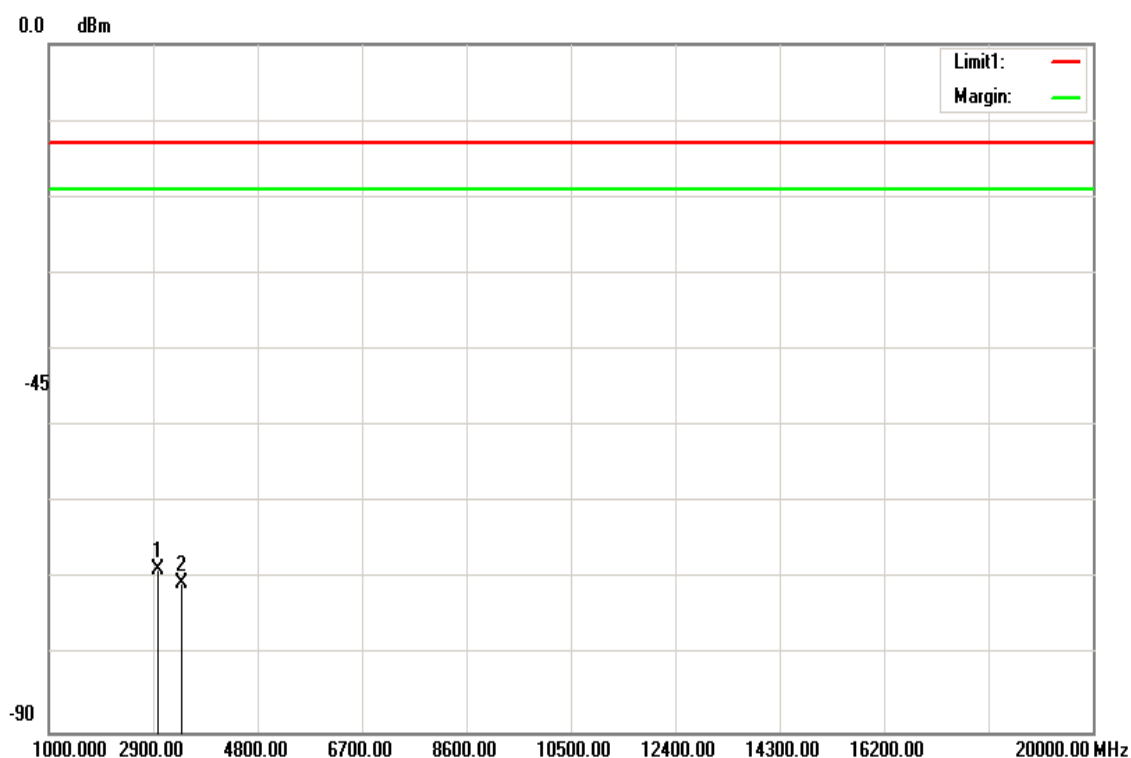
Test Date: October 2, 2018

Temperature: 22°C

Tested by: Jerry Chuang

Humidity: 40 %RH

Polarity: Ver.



Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
2998.500	-62.8	5.91	-68.71	-13.00	-55.71	V
3422.000	-64.13	6.35	-70.48	-13.00	-57.48	V
N/A						

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

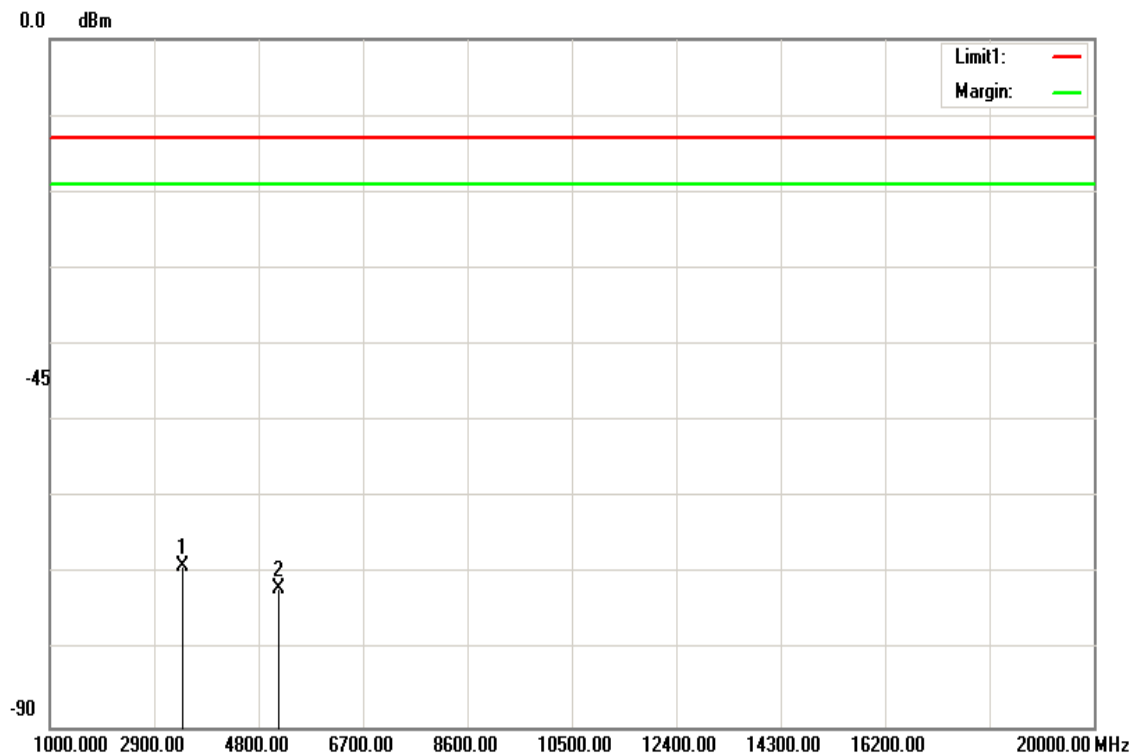


Report No.: T180821D09-RP4

Page: 112 / 122
Rev.: 01

Operation Mode: Tx / Low CH
Temperature: 22°C
Humidity: 40 %RH

Test Date: October 2, 2018
Tested by: Jerry Chuang
Polarity: Hor.



Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
3422.000	-62.59	6.35	-68.94	-13.00	-55.94	H
5160.000	-63.94	7.95	-71.89	-13.00	-58.89	H
N/A						

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

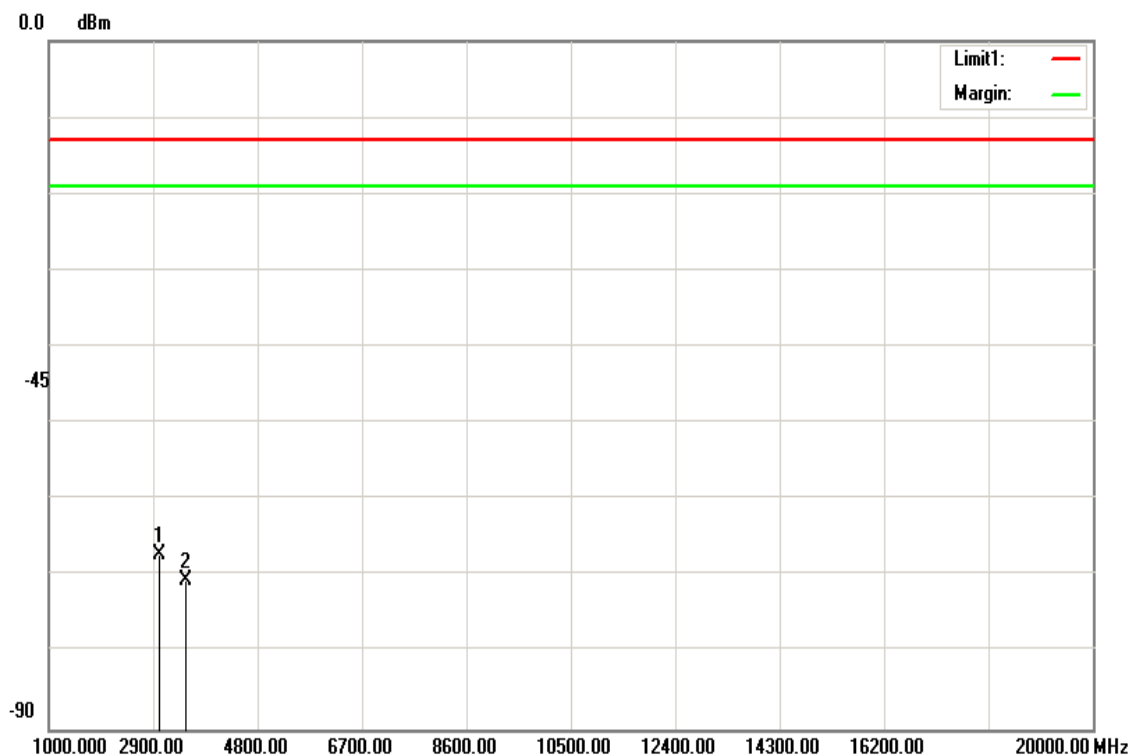


Report No.: T180821D09-RP4

Page: 113 / 122
Rev.: 01

Operation Mode: Tx / Mid CH
Temperature: 22°C
Humidity: 40 %RH

Test Date: October 2, 2018
Tested by: Jerry Chuang
Polarity: Ver.



Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
3002.000	-61.3	5.91	-67.21	-13.00	-54.21	V
3492.000	-64.04	6.42	-70.46	-13.00	-57.46	V
N/A						

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

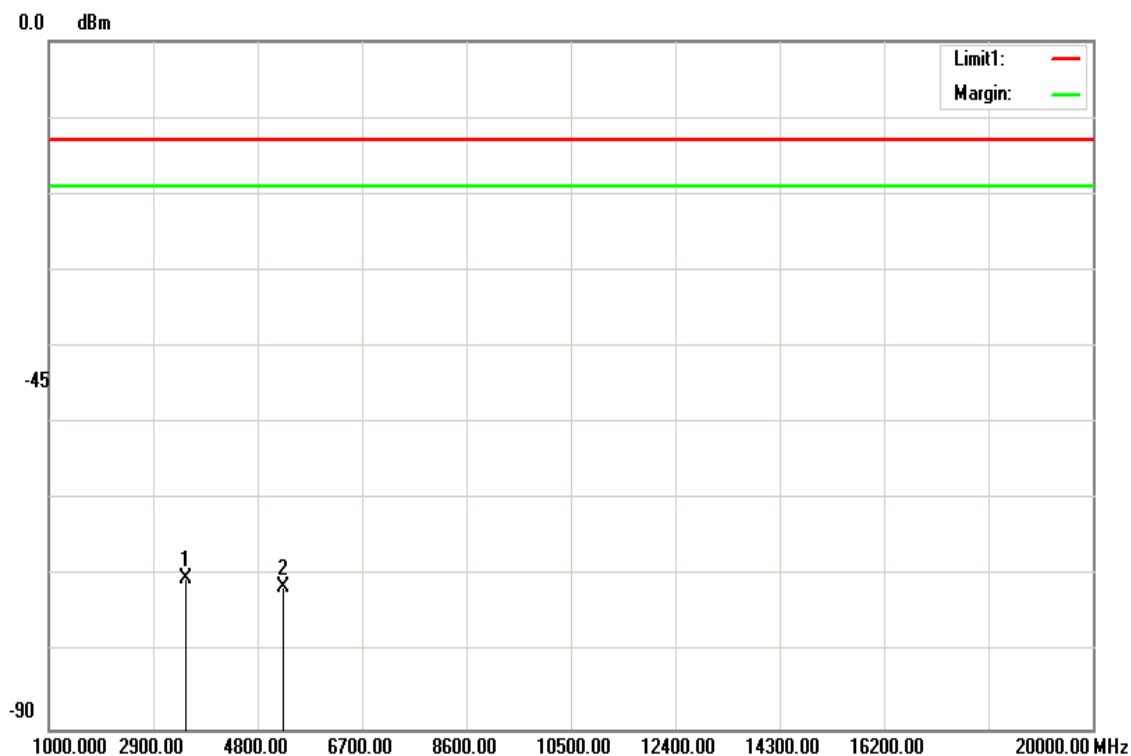


Report No.: T180821D09-RP4

Page: 114 / 122
Rev.: 01

Operation Mode: Tx / Mid CH
Temperature: 22°C
Humidity: 40 %RH

Test Date: October 2, 2018
Tested by: Jerry Chuang
Polarity: Hor.



Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
3492.000	-63.79	6.42	-70.21	-13.00	-57.21	H
5265.000	-63.41	8.04	-71.45	-13.00	-58.45	H
N/A						

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

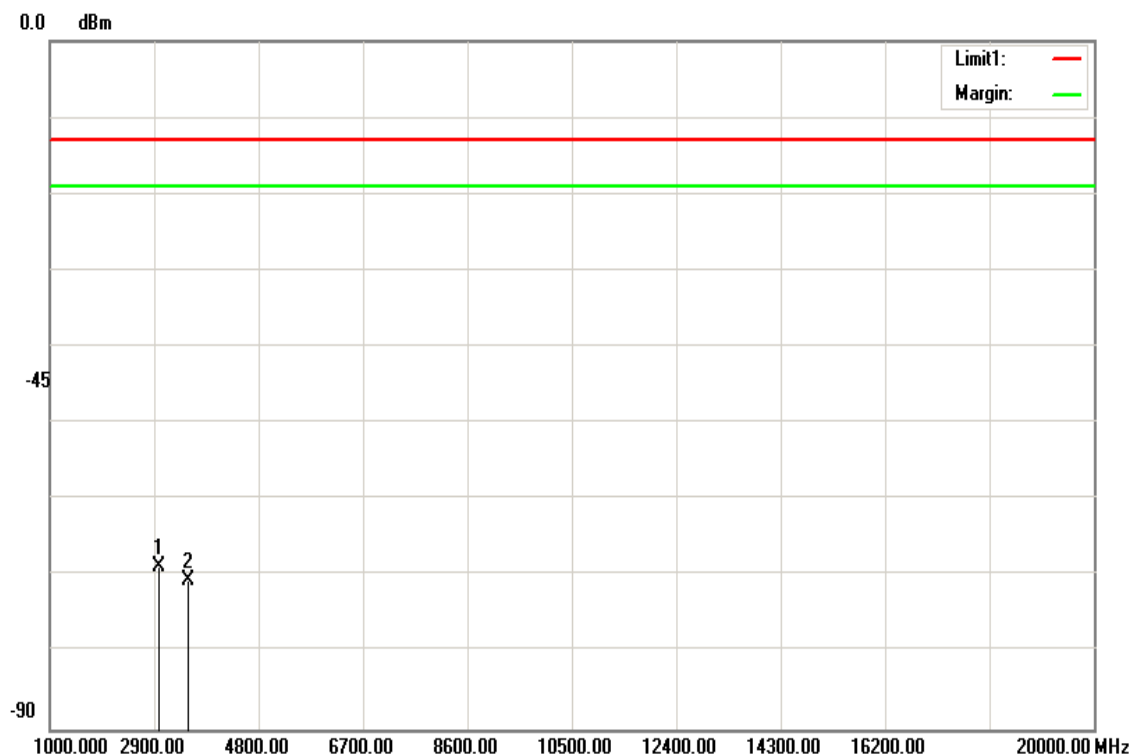


Report No.: T180821D09-RP4

Page: 115 / 122
Rev.: 01

Operation Mode: Tx / High CH
Temperature: 22°C
Humidity: 40 %RH

Test Date: October 2, 2018
Tested by: Jerry Chuang
Polarity: Ver.



Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
2998.500	-62.91	5.91	-68.82	-13.00	-55.82	V
3523.500	-64.06	6.45	-70.51	-13.00	-57.51	V
N/A						

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

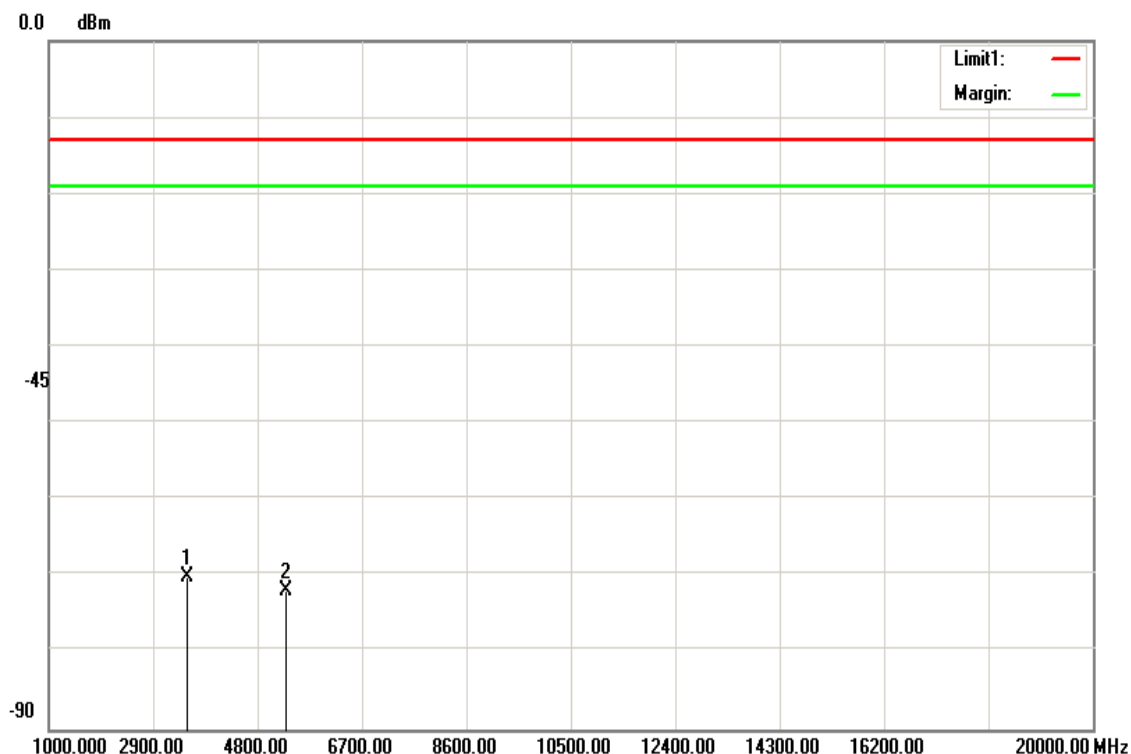


Report No.: T180821D09-RP4

Page: 116 / 122
Rev.: 01

Operation Mode: Tx / High CH
Temperature: 22°C
Humidity: 40 %RH

Test Date: October 2, 2018
Tested by: Jerry Chuang
Polarity: Hor.



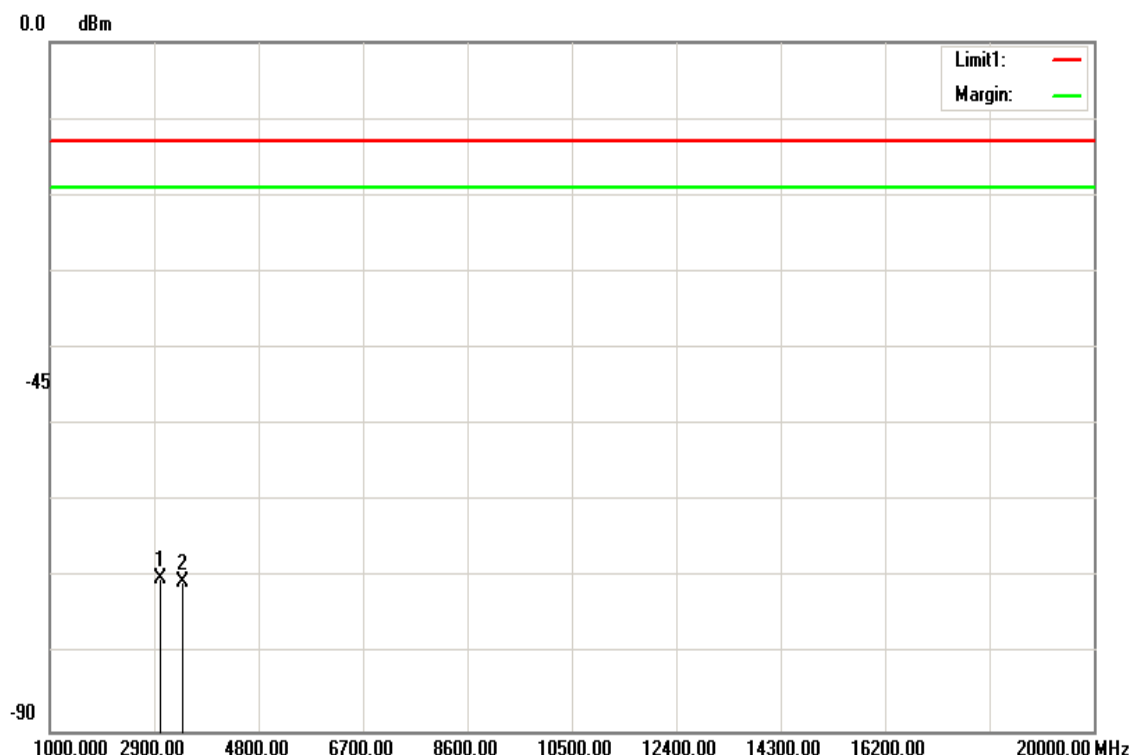
Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
3523.500	-63.58	6.45	-70.03	-13.00	-57.03	H
5310.000	-63.76	8.08	-71.84	-13.00	-58.84	H
N/A						

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

LTE Band 66 / BW: 20MHz / 16QAM / RB =1, RB Offset = 0

Operation Mode: Tx / Low CH **Test Date:** October 2, 2018
Temperature: 22°C **Tested by:** Jerry Chuang
Humidity: 40 %RH **Polarity:** Ver.



Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
3022.000	-64.18	5.93	-70.11	-13.00	-57.11	V
3422.000	-64.13	6.35	-70.48	-13.00	-57.48	V
N/A						

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

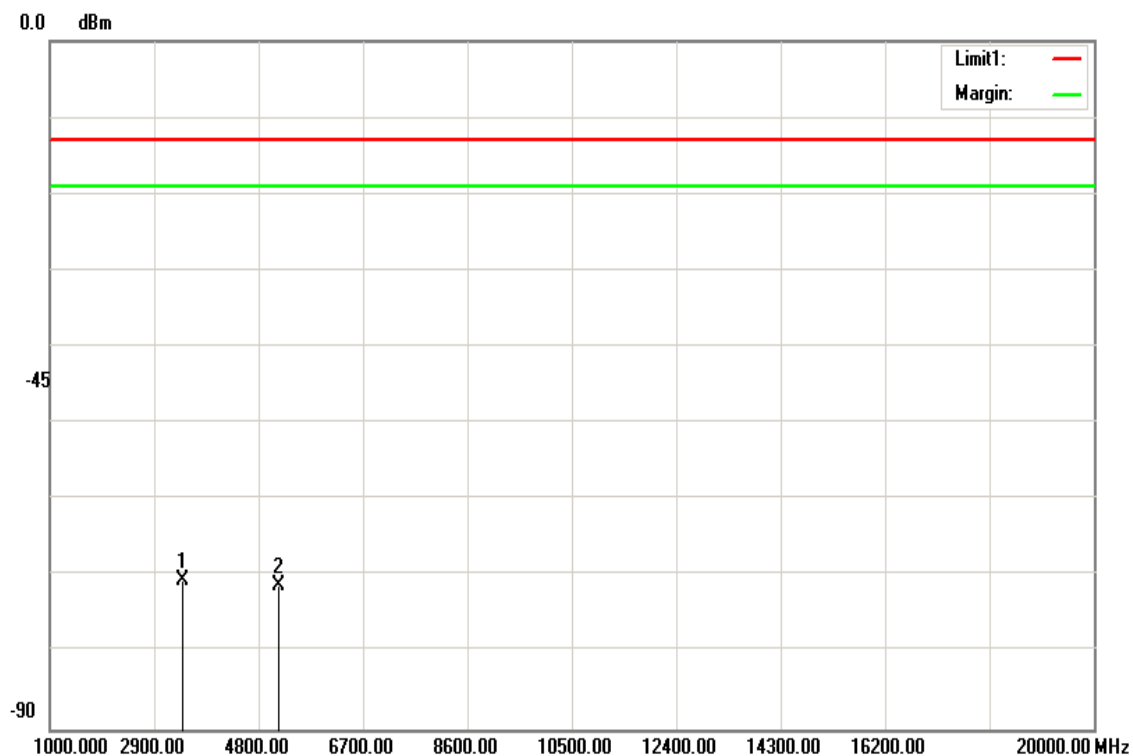


Report No.: T180821D09-RP4

Page: 118 / 122
Rev.: 01

Operation Mode: Tx / Low CH
Temperature: 22°C
Humidity: 40 %RH

Test Date: October 2, 2018
Tested by: Jerry Chuang
Polarity: Hor.



Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
3422.000	-64.11	6.35	-70.46	-13.00	-57.46	H
5160.000	-63.36	7.95	-71.31	-13.00	-58.31	H
N/A						

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

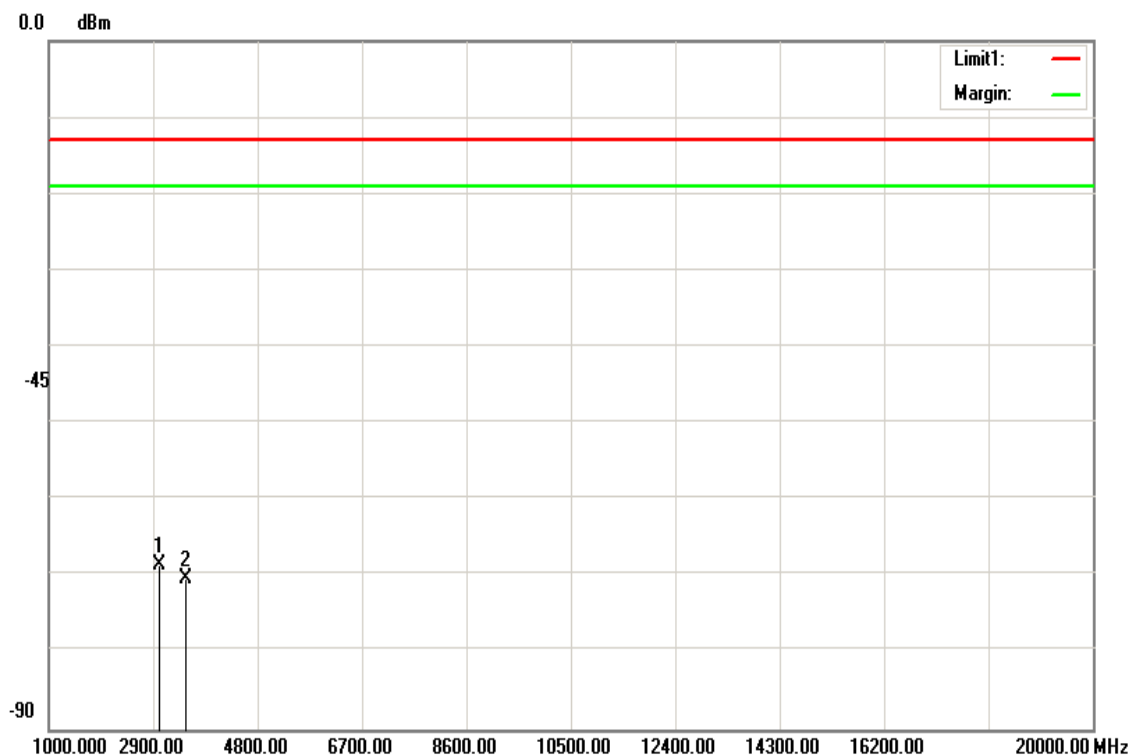


Report No.: T180821D09-RP4

Page: 119 / 122
Rev.: 01

Operation Mode: Tx / Mid CH
Temperature: 22°C
Humidity: 40 %RH

Test Date: October 2, 2018
Tested by: Jerry Chuang
Polarity: Ver.



Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
3002.000	-62.56	5.91	-68.47	-13.00	-55.47	V
3492.000	-63.85	6.42	-70.27	-13.00	-57.27	V
N/A						

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

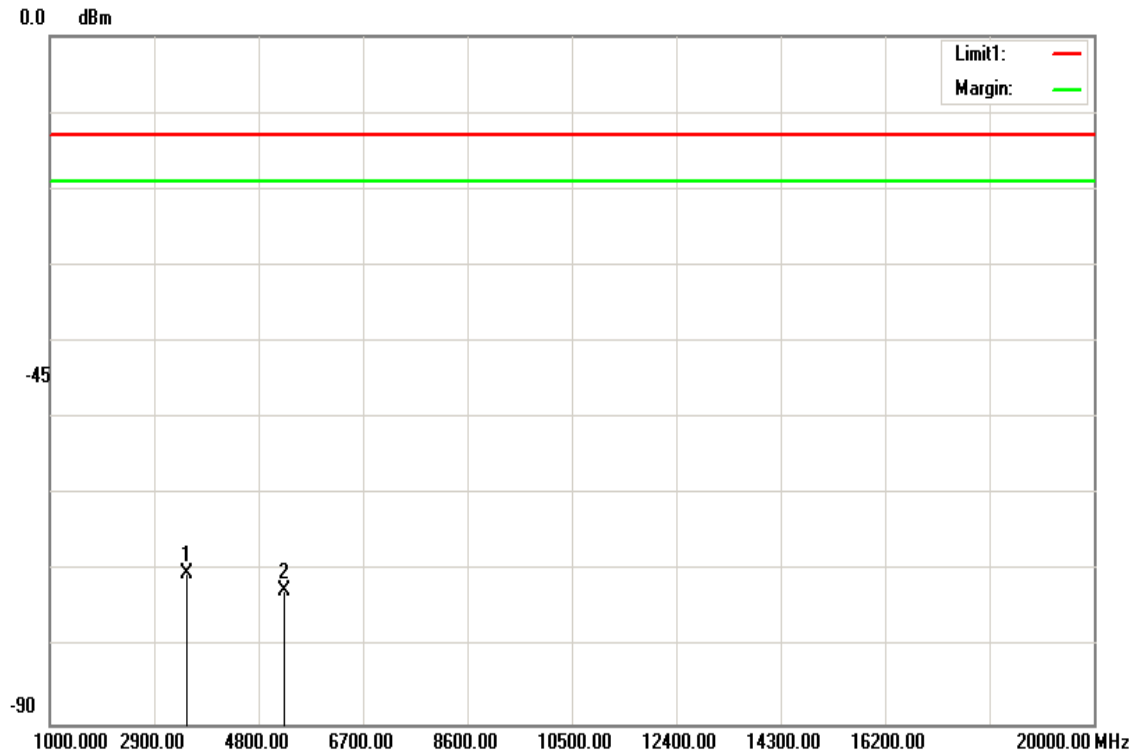


Report No.: T180821D09-RP4

Page: 120 / 122
Rev.: 01

Operation Mode: Tx / Mid CH
Temperature: 22°C
Humidity: 40 %RH

Test Date: October 2, 2018
Tested by: Jerry Chuang
Polarity: Hor.



Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
3492.000	-63.83	6.42	-70.25	-13.00	-57.25	H
5265.000	-64.48	8.04	-72.52	-13.00	-59.52	H
N/A						

Remark:
1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

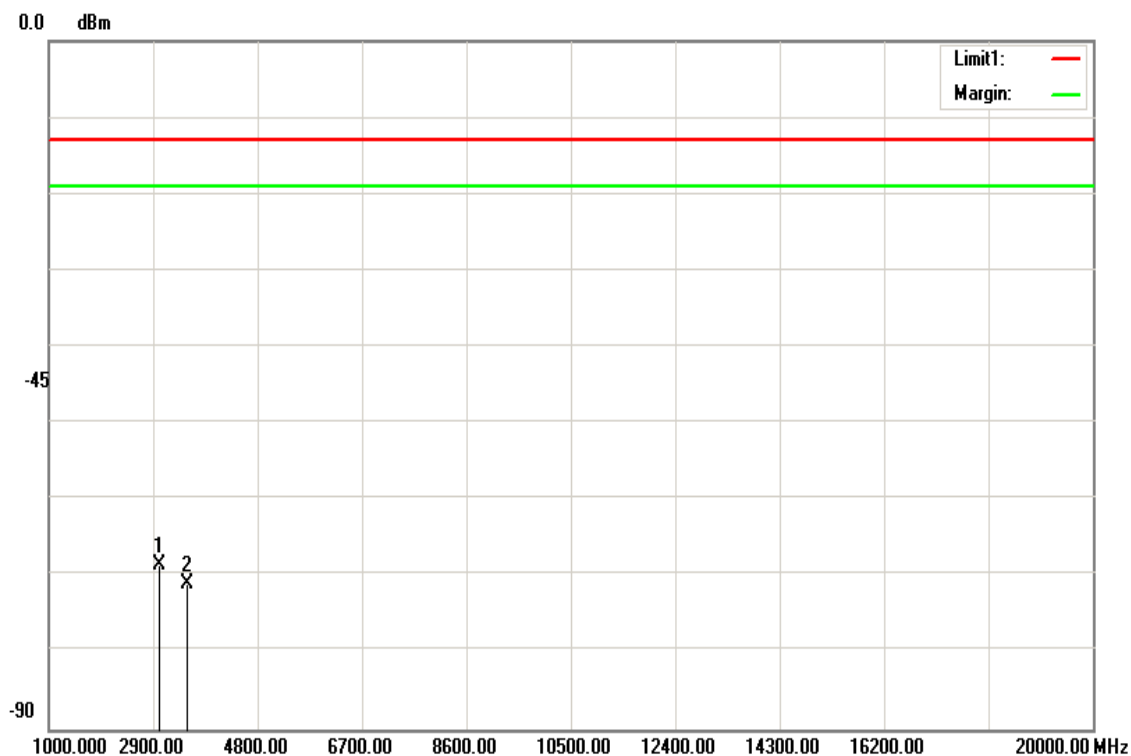


Report No.: T180821D09-RP4

Page: 121 / 122
Rev.: 01

Operation Mode: Tx / High CH
Temperature: 22°C
Humidity: 40 %RH

Test Date: October 2, 2018
Tested by: Jerry Chuang
Polarity: Ver.



Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
3002.000	-62.7	5.91	-68.61	-13.00	-55.61	V
3523.500	-64.58	6.45	-71.03	-13.00	-58.03	V
N/A						

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

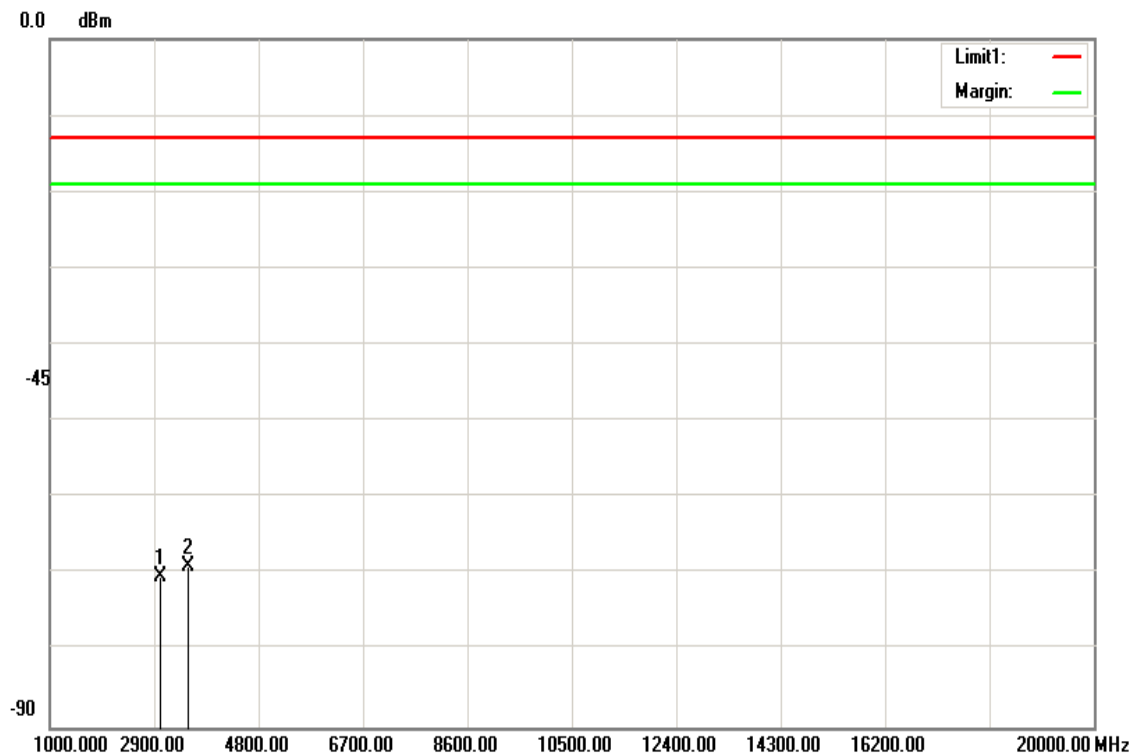


Report No.: T180821D09-RP4

Page: 122 / 122
Rev.: 01

Operation Mode: Tx / High CH
Temperature: 22°C
Humidity: 40 %RH

Test Date: October 2, 2018
Tested by: Jerry Chuang
Polarity: Hor.



Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
3002.000	-64.44	5.91	-70.35	-13.00	-57.35	H
3523.500	-62.44	6.45	-68.89	-13.00	-55.89	H
N/A						

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

-- End of Test Report --