FCC 47 CFR PART 22 SUBPART H AND PART 24 SUBPART E & INDUSTRY CANADA RSS-132 & RSS-133

TEST REPORT

For

Body Worn Camera

FCC Model No.: BC-03

ISED Model No.: ATT-WP7603

Trade Name: Getac

Issued to

Getac Technology Corp.
5F, Building A, No.209, Sec.1, Nangang Rd., Nangang Dist., Taipei City 11568, Taiwan.

Issued by

Compliance Certification Services Inc.
No.11, Wugong 6th Rd., Wugu Dist.,
New Taipei City 24891, Taiwan. (R.O.C.)
Issued Date: June 12, 2019

Revision History

Rev.		Issue Date		Revisions	Effect Page	Revised By
00		June 12, 2019		Initial Issue	ALL	May Lin

TABLE OF CONTENTS

1. TEST RESULT CERTIFICATION

Applicant: Getac Technology Corp.
5F, Building A, No.209, Sec.1, Nangang Rd., Nangang Dist., Taipei City 11568, Taiwan.

Manufacturer: Getac Technology Corp.
4F., NO.1, R&D ROAD 2, SCIENCE PARK, HSINCHU, TAIWAN, R.O.C.

Equipment Under Test: Body Worn Camera

Trade Name: Getac

FCC Model No.: BC-03

ISED Model No.: ATT-WP7603

Date of Test: February 26 ~March 13, 2019

APPLICABLE STANDARDS	
STANDARD	**TEST RESULT**
FCC 47 CFR Part 22 Subpart H & Part 24 Subpart E & IC RSS-132 Issue 3: January, 2013 and IC RSS-133 Issue 6: January, 2018	No non-compliance noted

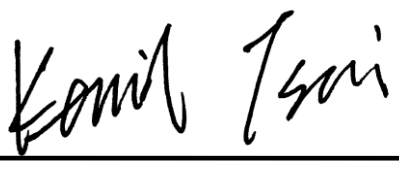
Statements of Conformity
Determination of compliance is based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

We hereby certify that:

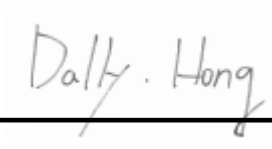
The above equipment was tested by Compliance Certification Services Inc. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.26-2015 and the energy emitted by the sample EUT tested as described in this report is in compliance with conducted and radiated emission limits of FCC Rule FCC PART 22 Subpart H and PART 24 Subpart E

The test results of this report relate only to the tested sample identified in this report.

Approved by: *Tested by:*



Kevin Tsai
Deputy Manager
Compliance Certification Services Inc.



Dally Hong
Engineer
Compliance Certification Services Inc.

2. EUT DESCRIPTION

Product	Body Worn Camera
FCC Model No.	BC-03
ISED Model No.	ATT-WP7603
Model Discrepancy	N/A
Trade	Getac
Received Date	January 15, 2019
Power Supply	1. Powered from battery: DC 5V 2. Powered from docking
Frequency Range	WCDMA / HSDPA / HSUPA Band II: 1852.4 ~ 1907.6 MHz WCDMA / HSDPA / HSUPA Band V: 826.4 ~ 846.6MHz
Antenna Gain	Coupling Antenna WCDMA band II: 2.43 dBi WCDMA band V: -4.72 dBi

Remark:

1. *The sample selected for test was engineering sample that approximated to production product and was provided by manufacturer.*
2. *For test mode WCDMA, HSUPA and HSDPA were pretest. The worst case was WCDMA in this test report*

Emission Designator					
System	**Band**	**Frequency Range(MHz)**	**Emission Designator (99% OBW)**	**Maximum ERP (W)**	**Maximum EIRP (W)**
WCDMA 12.2K RMC	**II**	**1852.4MHz ~1907.6MHz**	**4.1389**	**-**	**0.38459**
	V	**826.4MHz ~ 846.6MHz**	**4.1389**	**0.04710**	**-**

3. TEST METHODOLOGY

Both conducted and radiated testing were performed according to FCC CFR 47, Part 2, Part 22 Subpart H and Part 24 Subpart E

The tests documented in this report were performed in accordance with IC RSS-132, SPSR503, RSS-133, SPSR510 and ANSI C63.26: 2015.

3.1 EUT CONFIGURATION

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

3.2 DESCRIPTION OF TEST MODES

The EUT had been tested under operating condition.

The EUT be set in maximum power transmission via call box during testing.

3.2.1 The worst mode of measurement

Radiated Emission Measurement	
Test Condition	**Band edge, Emission for Unwanted and Fundamental**
Power supply Mode	**Mode 1: EUT Power by Docking (Big).** **Mode 2: EUT Power by Docking (Small).** **Mode 3: EUT Power by Battery.**
Worst Mode	☒ **Mode 1** ☐ **Mode 2** ☐ **Mode 3** ☐ **Mode 4**
Position	☐ **P**laced in fixed position. ☒ **P**laced in fixed position at X-Plane (E2-Plane) ☐ **P**laced in fixed position at Y-Plane (E1-Plane) ☐ **P**laced in fixed position at Z-Plane (H-Plane)

Radiated Emission Measurement Below 1G	
Test Condition	**Radiated Emission Below 1G**
Power supply Mode	**Mode 1: EUT Power by Docking (Big).** **Mode 2: EUT Power by Docking (Small).** **Mode 3: EUT Power by Battery.**
Worst Mode	☒ **Mode 1** ☐ **Mode 2** ☐ **Mode 3** ☐ **Mode 4**

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.

4. TEST SUMMERY

FCC Standard Sec.	IC Standard Sec.	Chapter	Test Item	Result
2.1046	RSS-GEN 6.12	7.1	Average Power	Pass
22.913(a) 24.232(b)	RSS-132 RSS-133	7.2	ERP & EIRP Measurement	Pass
2.1049	RSS-GEN Sec. 6.6	7.3	Occupied Bandwidth (99%) & 26 dB Bandwidth	Pass
22.917(a) 24.238(a)	RSS-132 RSS-133	7.4	Conducted Bandedge	Pass
22.913(d) 24.232(d)	RSS-132 RSS-133	7.5	Peak To Average Ratio	Pass
22.917(a) 24.238(a)	RSS-132 RSS-133	7.6	Conducted Spurious Emissions	Pass
22.917(a) 24.238(a)	RSS-132 RSS-133	7.7	Spurious Radiation	Pass
2.1055 22.355 24.235	RSS-132 RSS-133	7.8	Frequency Stability V.S. Temperature	Pass

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

Conducted Emissions Test Site					
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
Coaxial Cable	Woken	WC12	CC001	06/29/2018	06/28/2019
Coaxial Cable	Woken	WC12	CC002	06/29/2018	06/28/2019
Coaxial Cable	Woken	WC12	CC003	06/29/2018	06/28/2019
Power Divider	Solvang Technology	STI08-0015	008	07/27/2018	07/26/2019
Wideband Radio Communication Tester	R&S	CMW 500	116875	04/20/2018	04/19/2019
Signal Analyzer	R&S	FSV 40	101073	09/27/2018	09/26/2019
Wireless Communication Test Set	Agilent	8960/E5515C	MY48363204	07/23/2018	07/22/2019
Coaxial Cable	Woken	WC12	CC001	06/29/2018	06/28/2019
Software	N/A				

Wugu 966 Chamber A					
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	01/30/2019	01/29/2020
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)				

Remark: *Each piece of equipment is scheduled for calibration once a year.*

5.3 MEASUREMENT UNCERTAINTY

PARAMETER	UNCERTAINTY
3M Semi Anechoic Chamber / 30M~200M	+/- 4.12
3M Semi Anechoic Chamber / 200M~1000M	+/- 4.68
3M Semi Anechoic Chamber / 1G~8G	+/- 5.18
3M Semi Anechoic Chamber / 8G~18G	+/- 5.47
3M Semi Anechoic Chamber / 18G~26G	+/- 3.81
3M Semi Anechoic Chamber / 26G~40G	+/- 3.87
Emission bandwidth, 99%, 26dB bandwidth	+/- 0.0014
RF Output Power	+/- 1.14
Power Density, Conducted	+/- 1.40
Spurious Emissions, Conducted	+/- 1.4006

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

6. FACILITIES AND ACCREDITATIONS

6.1 FACILITIES

☐ No.199, Chunghsen Road, Hsintien City, Taipei Hsien, Taiwan, R.O.C.
Tel: 886-2-2217-0894 / Fax: 886-2-2217-1029

☒ No.11, Wugong 6th Rd., Wugu Dist., New Taipei City 24891, Taiwan. (R.O.C.)
Tel: 886-2-2299-9720 / Fax: 886-2-2298-4045

The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22.

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.

Conducted emissions are measured with Line Impedance Stabilization Networks and EMI Test Receivers.

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.”

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	Power Cord
	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. FCC PART 22 & 24 REQUIREMENTS & INDUSTRY CANADA RSS-132 & RSS-133

7.1 AVERAGE POWER

Test Procedures

According to RSS-GEN 6.12 add FCC Part 2.1046

CONDUCTED POWER MEASUREMENT:

1. The transmitter output power was connected to the call box.
2. Set EUT at maximum output power via call box.
3. Set Call box at lowest, middle and highest channels for each band and modulation.

Test Data

WCDMA

Band	Data Rate or Sub-test	UL/DL Channel No.	Frequency(MHz)	Average power(dBm)	Output Power (W)
WCDMA Band II	RMC 12.2Kbps	9262/9662	1852.4	22.91	13.9
		9400/9800	1880.0	22.99	14.0
		9538/9938	1907.6	22.77	13.7
WCDMA Band V	RMC 12.2Kbps	4132/4357	826.4	22.59	13.6
		4182/4407	836.4	22.58	13.5
		4233/4458	846.6	22.54	13.5

HSPA (HSDPA & HSUPA)

HSDPA

Band	Data Rate or Sub-test	UL/DL Channel No.	Frequency(MHz)	Average power(dBm)	Output Power (W)
HSDPA II	1	9262/9662	1852.4	21.34	12.3
		9400/9800	1880.0	21.46	12.4
		9538/9938	1907.0	21.33	12.3
	2	9262/9662	1852.4	21.58	12.5
		9400/9800	1880.0	21.50	12.5
		9538/9938	1907.0	21.36	12.3
	3	9262/9662	1852.4	21.05	12.0
		9400/9800	1880.0	20.88	11.8
		9538/9938	1907.0	20.89	11.9
	4	9262/9662	1852.4	21.06	12.0
		9400/9800	1880.0	20.85	11.8
		9538/9938	1907.0	20.92	11.9
HSDPA V	1	4132/4357	826.4	21.62	12.6
		4182/4407	836.4	21.58	12.5
		4233/4458	846.6	21.43	12.4
	2	4132/4357	826.4	21.25	12.2
		4182/4407	836.4	21.67	12.6
		4233/4458	846.6	21.29	12.3
	3	4132/4357	826.4	20.79	11.8
		4182/4407	836.4	21.08	12.0
		4233/4458	846.6	20.82	11.8
	4	4132/4357	826.4	20.74	11.7
		4182/4407	836.4	21.04	12.0
		4233/4458	846.6	20.78	11.7

HSPA (HSDPA & HSUPA)

HSUPA

Band	Data Rate or Sub-test	UL/DL Channel No.	Frequency(MHz)	Average power(dBm)	Output Power (W)
HSUPA II	1	9262/9662	1852.4	22.40	13.4
		9400/9800	1880.0	22.45	13.4
		9538/9938	1907.0	21.20	12.2
	2	9262/9662	1852.4	21.80	12.8
		9400/9800	1880.0	22.03	13.0
		9538/9938	1907.0	20.94	11.9
	3	9262/9662	1852.4	22.39	13.4
		9400/9800	1880.0	22.35	13.3
		9538/9938	1907.0	21.24	12.2
	4	9262/9662	1852.4	22.19	13.2
		9400/9800	1880.0	22.32	13.3
		9538/9938	1907.0	21.34	12.3
	5	9262/9662	1852.4	22.37	13.3
		9400/9800	1880.0	22.43	13.4
		9538/9938	1907.0	21.31	12.3
HSUPA V	1	4132/4357	826.4	20.89	11.9
		4182/4407	836.4	21.07	12.0
		4233/4458	846.6	20.97	11.9
	2	4132/4357	826.4	20.59	11.6
		4182/4407	836.4	20.64	11.6
		4233/4458	846.6	20.63	11.6
	3	4132/4357	826.4	20.81	11.8
		4182/4407	836.4	21.15	12.1
		4233/4458	846.6	20.98	11.9
	4	4132/4357	826.4	21.09	12.1
		4182/4407	836.4	21.11	12.1
		4233/4458	846.6	21.17	12.1
	5	4132/4357	826.4	20.82	11.8
		4182/4407	836.4	21.08	12.0
		4233/4458	846.6	20.93	11.9

7.2 ERP & EIRP MEASUREMENT

LIMIT

According to FCC 22.913(a): The Effective Radiated Power (ERP) of mobile transmitters must not exceed 7 Watts.

According to FCC 24.232(b): The equivalent Isotropic Radiated Power (EIRP) must not exceed 2 Watts.

RSS-132, section 5.4

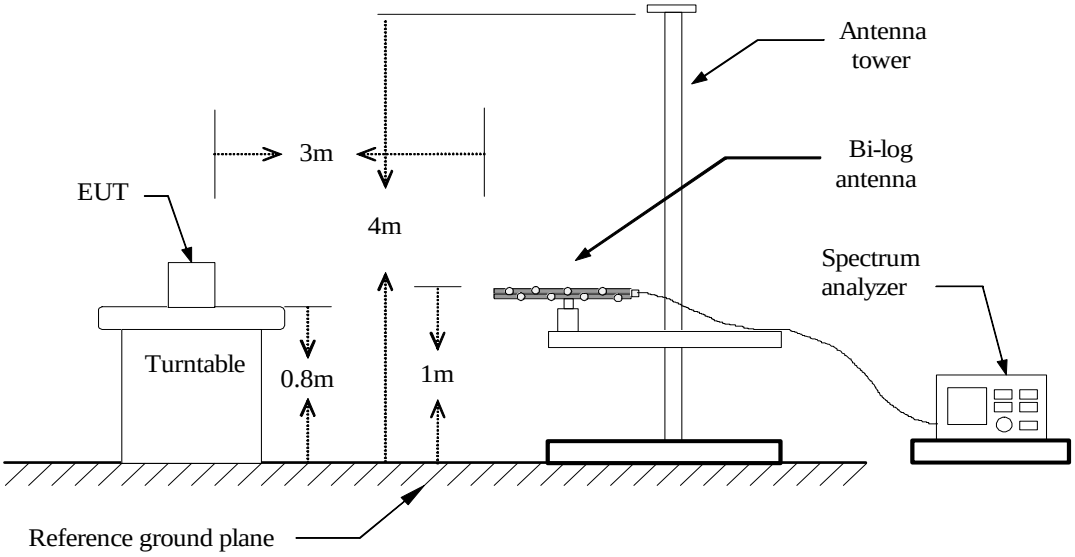
The transmitter output power shall be measured in terms of average power. The equivalent isotropically radiated power (e.i.r.p.) for mobile equipment shall not exceed 11.5 watts. Refer to SRSP-503 for base station e.i.r.p. limits.

RSS-133, section 6.4

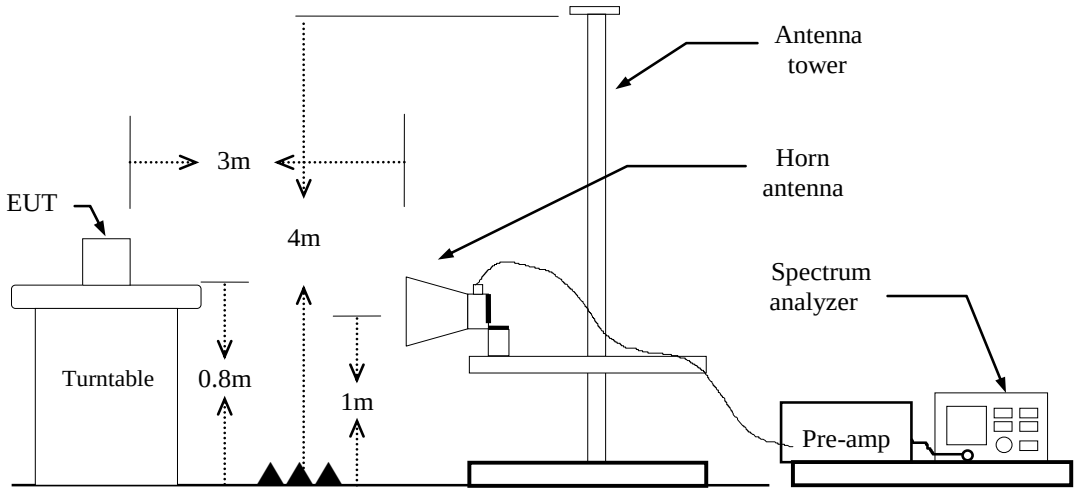
The equivalent isotropically radiated power (e.i.r.p.) for transmitters shall not exceed the limits given in SRSP-510. Moreover, base station transmitters operating in the band 1930-1995 MHz shall not have output power exceeding 100 watts.

Test Configuration

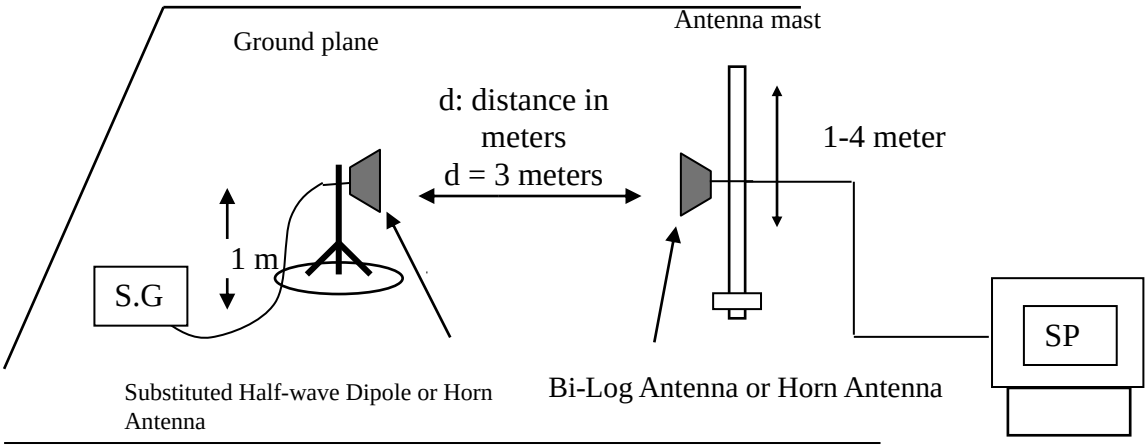
Below 1 GHz



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 above 1G) in a semi-chamber. The radiated emission at the fundamental frequency was measured at 3m and SA with RMS detector per section 5, KDB 971168 D01.

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.

ERP = S.G. output (dBm) + Antenna Gain (dBi) – Cable (dB)-2.15
EIRP = S.G. output (dBm) + Antenna Gain (dBi) – Cable (dB)

TEST RESULTS

No non-compliance noted.

WCDMA 12.2K RMC

Test Mode	Channel	Vertical		Horizontal	
		EIRP(dBm)	EIRP(W)	EIRP(dBm)	EIRP(W)
WCDMA 12.2K RMC (Band II)	Lowest	11.29	0.01346	25.85	0.38459
	Middle	8.89	0.00774	25.44	0.34995
	Highest	11.23	0.01327	24.92	0.31046

Test Mode	Channel	Vertical		Horizontal	
		ERP(dBm)	ERP(W)	ERP(dBm)	ERP(W)
WCDMA 12.2K RMC (Band V)	Lowest	0.03	0.00101	15.89	0.03882
	Middle	2.02	0.00159	16.73	0.04710
	Highest	15.89	0.03882	15.89	0.03882

7.3 OCCUPIED BANDWIDTH (99%) & 26 DB BANDWIDTH MEASUREMENT

Limits

For Reporting purpose only.

TEST PROCEDURES

KDB 971168 v02r02 - Section 4.2

1. The occupied bandwidth was measured with the spectrum analyzer at the lowest, middle and highest channels in each band and different modulation. The 99% and -26dB bandwidth was measured and recorded.
2. RBW = 1-5% of the expected OBW
3. VBW ≥ 3 x RBW
4. Detector = Peak
5. Trace mode = max. hold

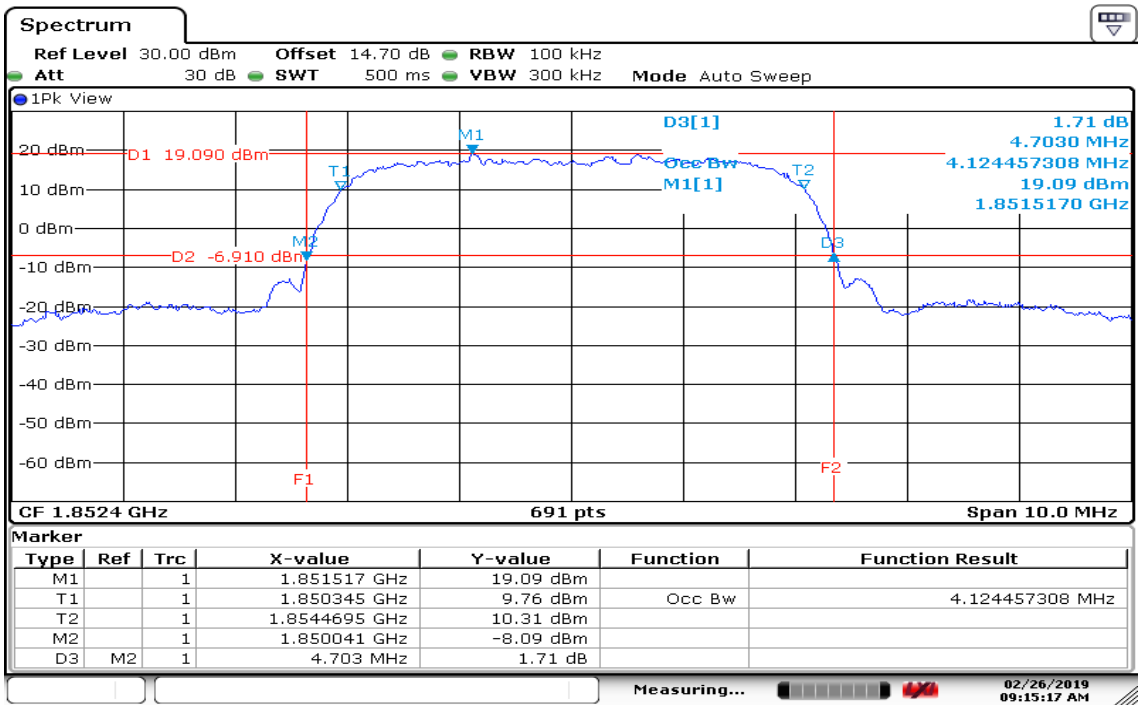
TEST RESULTS

No non-compliance noted

Test Data

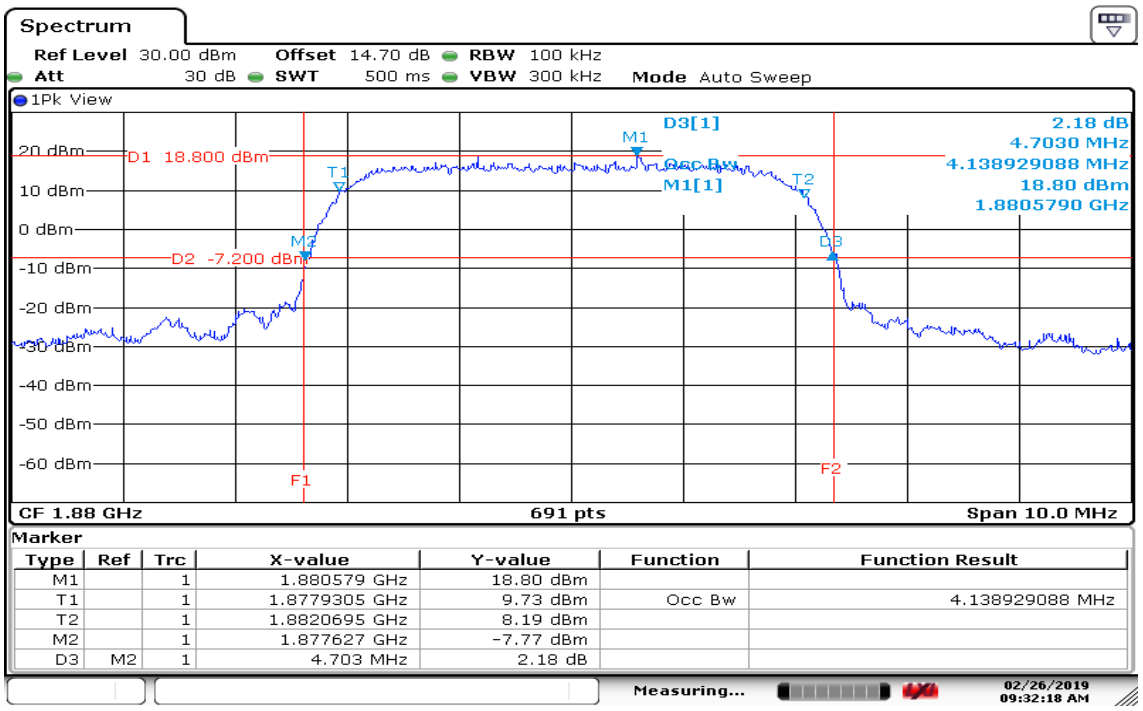
Test Mode	CH	Frequency (MHz)	99% Bandwidth (MHz)	26 dB Bandwidth (MHz)
WCDMA 12.2k RMC (Band II)	Lowest	1850.0	4.1244	4.703
	Middle	1.877.6	4.1389	4.703
	Highest	1905.2	4.1389	4.703
WCDMA 12.2k RMC (Band V)	Lowest	824.0	4.1389	4.732
	Middle	834.0	4.1099	4.674
	Highest	844.2	4.1389	4.689

Test Plot
WCDMA 12.2k RMC (Band II)
Low CH



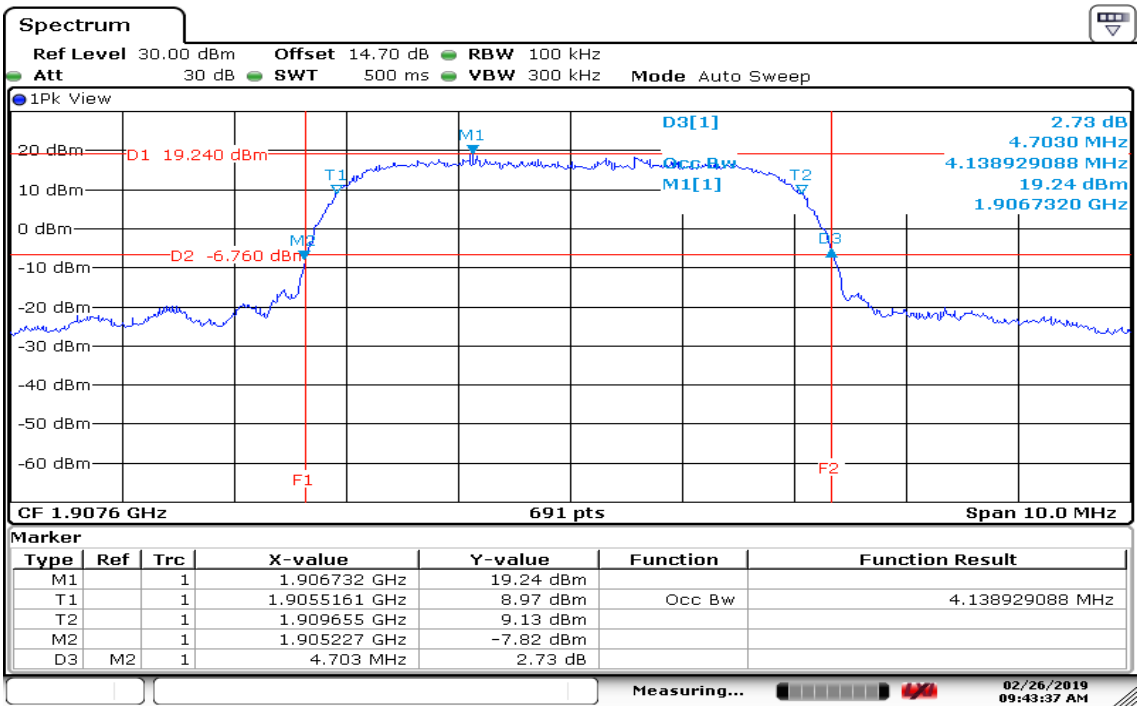
Date: 26.FEB.2019 09:15:17

Mid CH



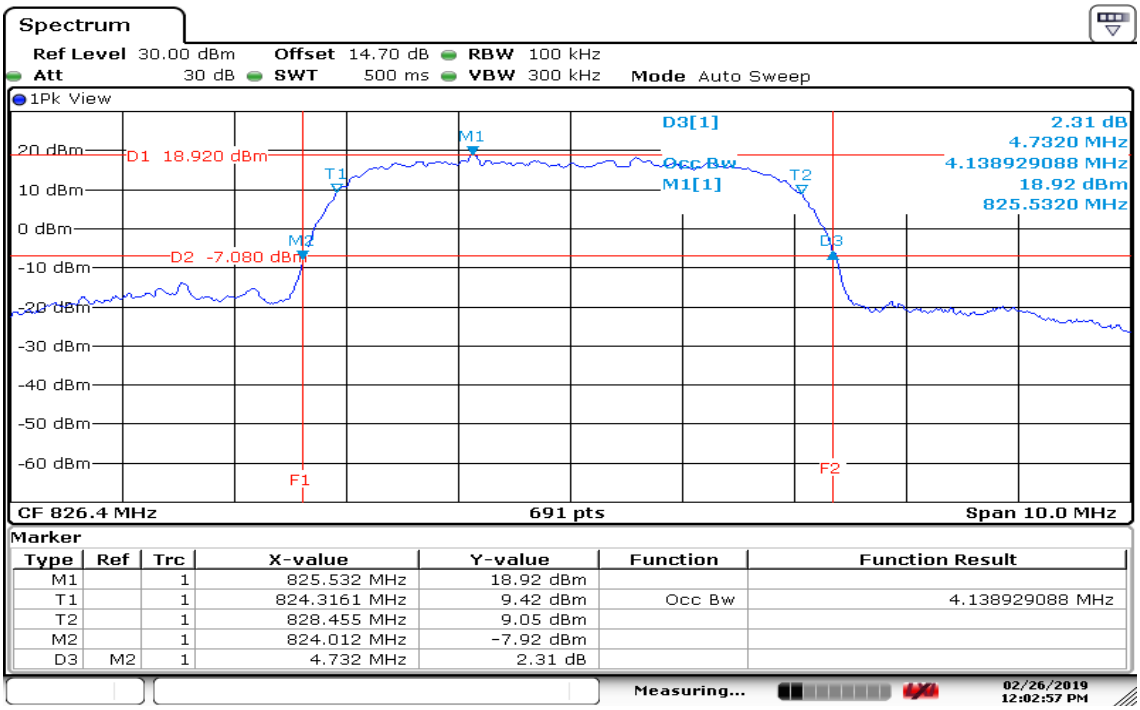
Date: 26.FEB.2019 09:32:18

High CH



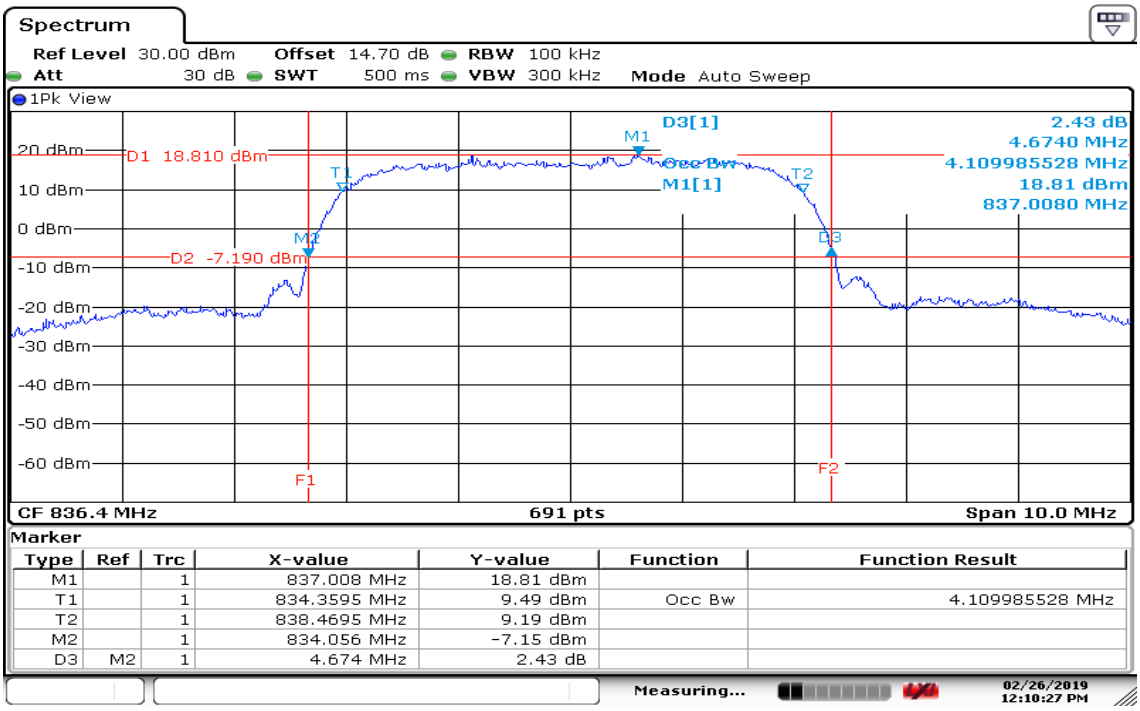
Date: 26.FEB.2019 09:43:38

WCDMA 12.2k RMC (Band V)
Low CH



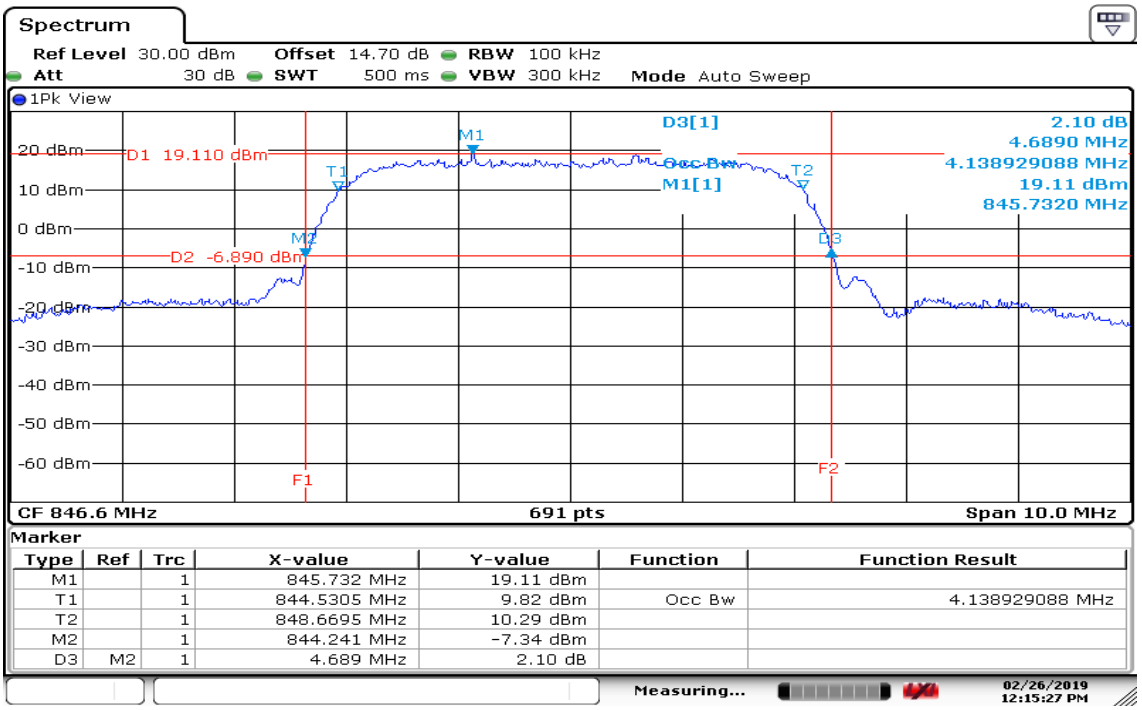
Date: 26.FEB.2019 12:02:57

Mid CH



Date: 26.FEB.2019 12:10:28

High CH



Date: 26.FEB.2019 12:15:28

7.4 CONDUCTED BANDEDGE MEASUREMENT

Limit

FCC §22.917(a), Band 5

For operations in the 824-849 MHz band, out of band emissions. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.

FCC §24.238(a), Band 2

For operations in the 1850-1910 and 1930-1950 MHz band, out of band emissions. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.

RSS-132 section 5.5 and RSS-133 section 6.5

In the first 1.0 MHz band immediately outside and adjacent to each of the sub-bands specified in Section 5.1, the power of emissions per any 1% of the occupied bandwidth shall be attenuated (in dB) below the transmitter output power P (dBW) by at least 43 + 10 log10 p (watts).

TEST PROCEDURE

According to KDB 971168 D01, section 6.0

1. The EUT was connected to spectrum analyzer and call box.
2. The RF output of EUT was connected to the spectrum analyzer.
3. Start and stop frequency were set such that the band edge would be placed in the center of the plot
4. Span was set large enough so as to capture all out of band emissions near the band edge
5. Set the spectrum analyzer, RBW=100kHz, VBW=300kHz.
6. Record the Band edge emission.

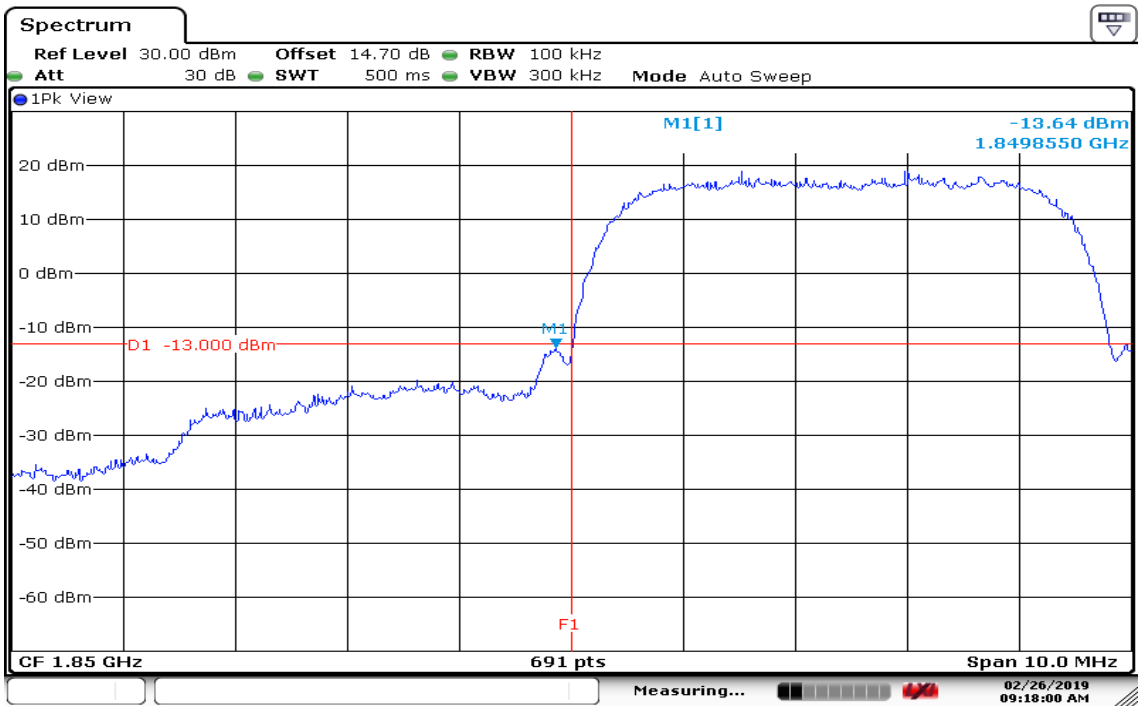
TEST RESULTS

No non-compliance noted.

Test Data

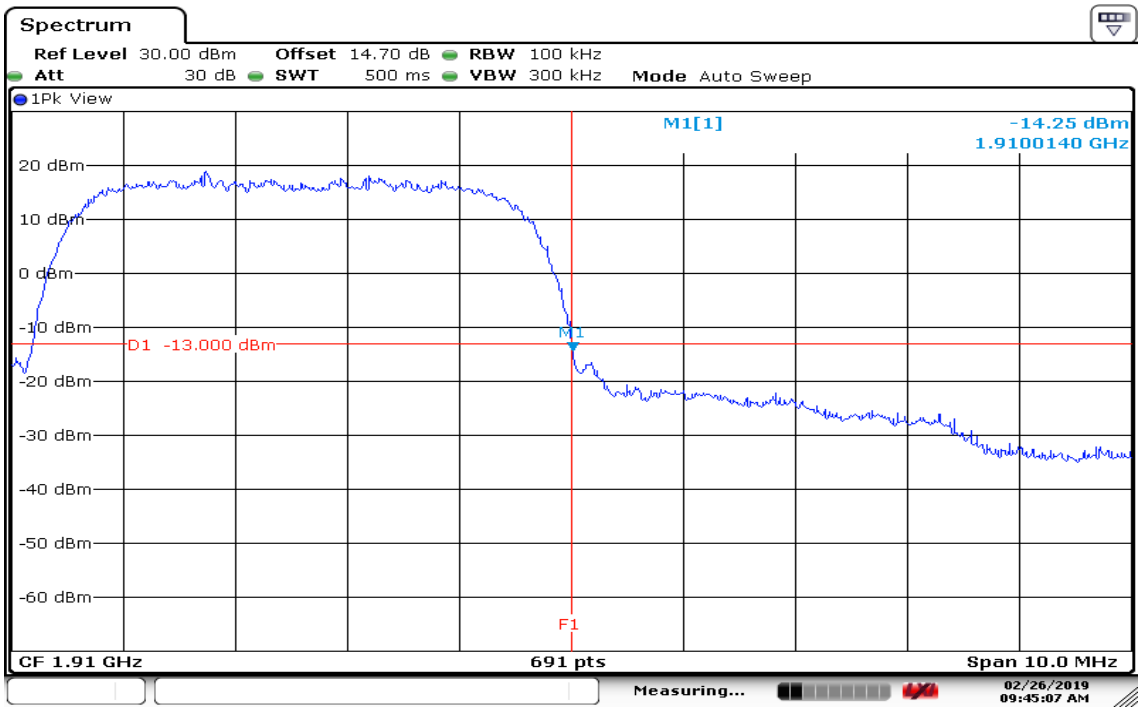
WCDMA 12.2k RMC (Band II)

Low CH



Date: 26.FEB.2019 09:18:01

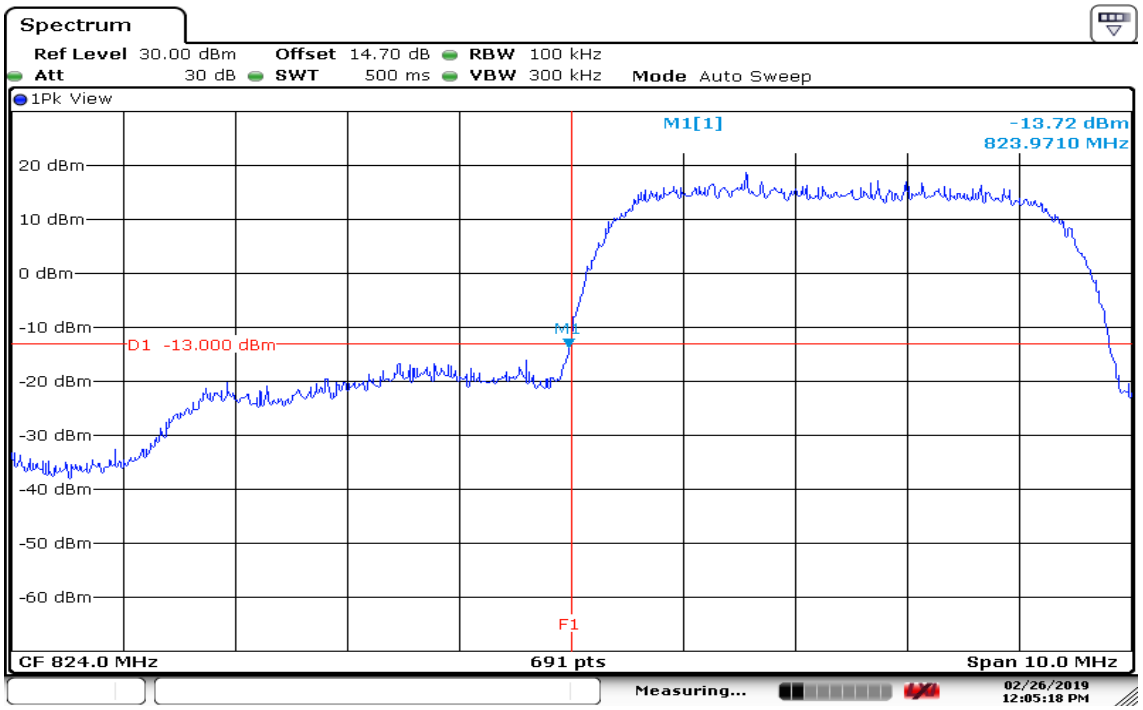
High CH



Date: 26.FEB.2019 09:45:07

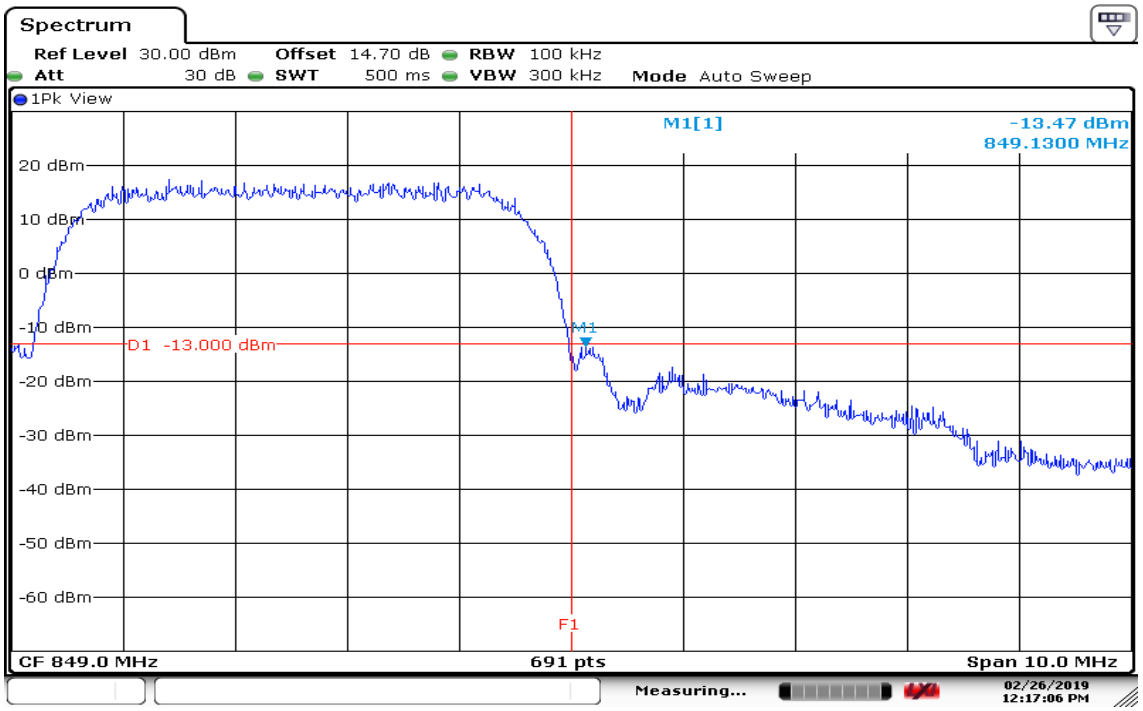
WCDMA 12.2k RMC (Band V)

Low CH



Date: 26.FEB.2019 12:05:18

High CH



Date: 26.FEB.2019 12:17:06

7.5 PEAK TO AVERAGE RATIO

Limit

FCC §22.913(d), Band 5

In measuring transmissions in this band using an average power technique, the peak to-average ratio (PAR) of the transmission may not exceed 13 dB

FCC §24.232(d), Band 2

In measuring transmissions in this band using an average power technique, the peak to-average ratio (PAR) of the transmission may not exceed 13 dB

RSS-132 section 5.4 and RSS-133 section 6.4

The peak-to-average power ratio (PAPR) of the transmitter shall not exceed 13 dB for more than 0.1% of the time using a signal corresponding to the highest PAPR during periods of continuous transmission.

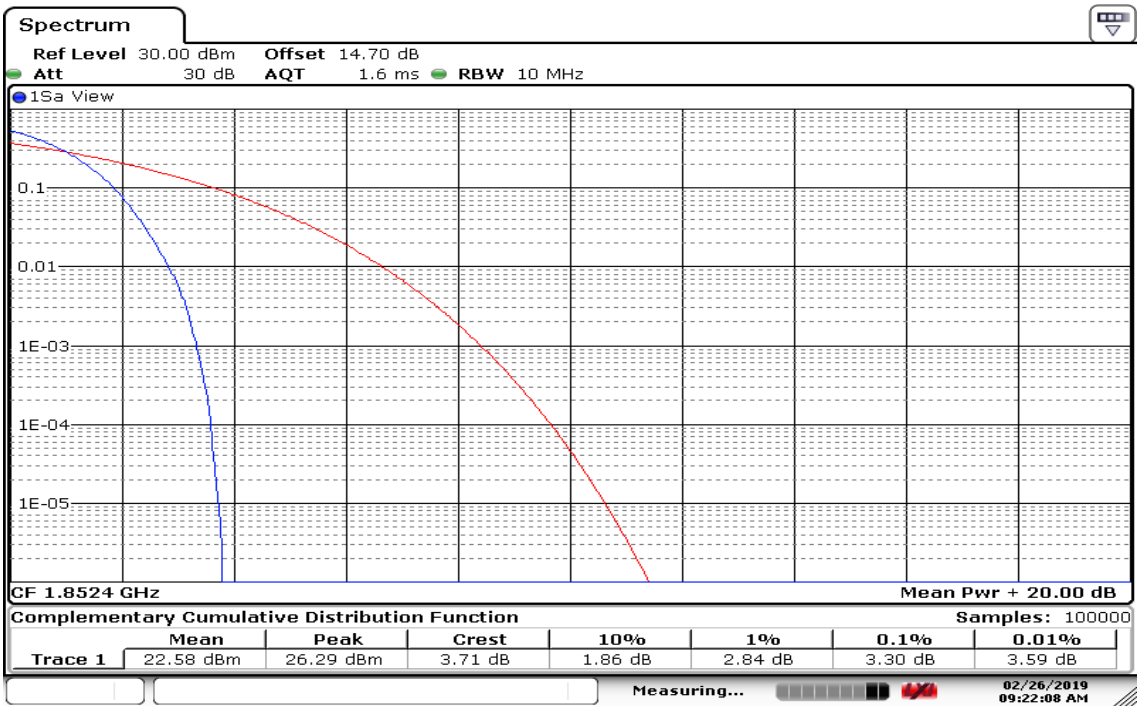
Test Procedures

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

Test Data

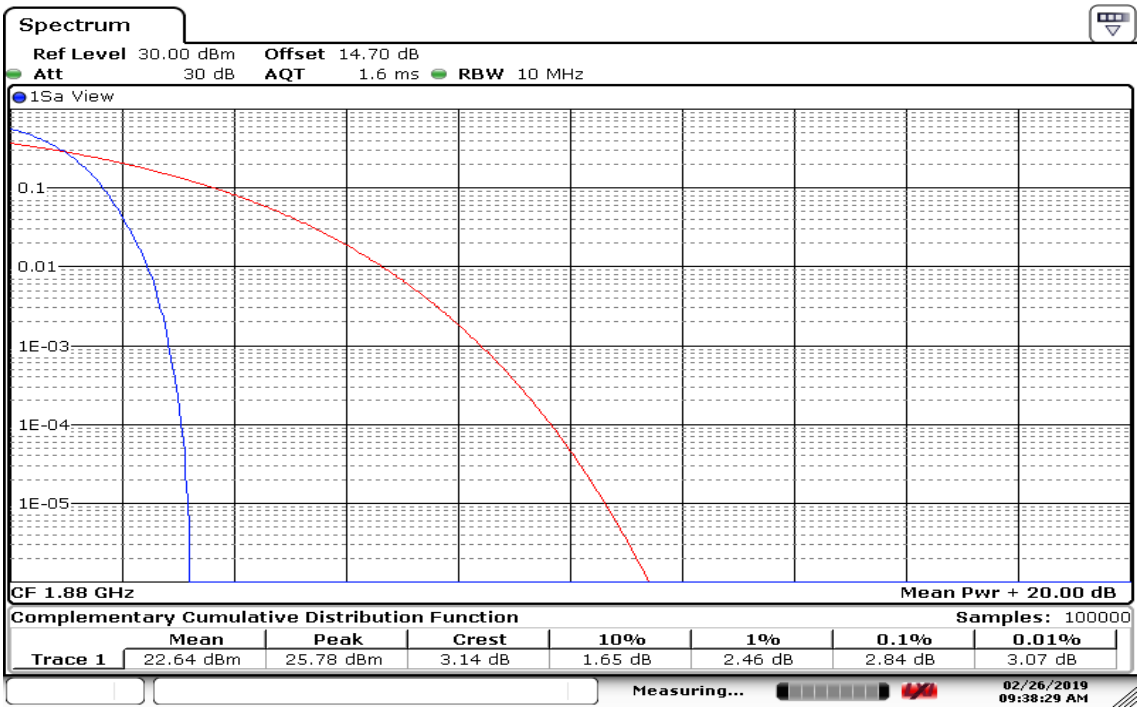
WCDMA 12.2k RMC (Band II)

Low CH



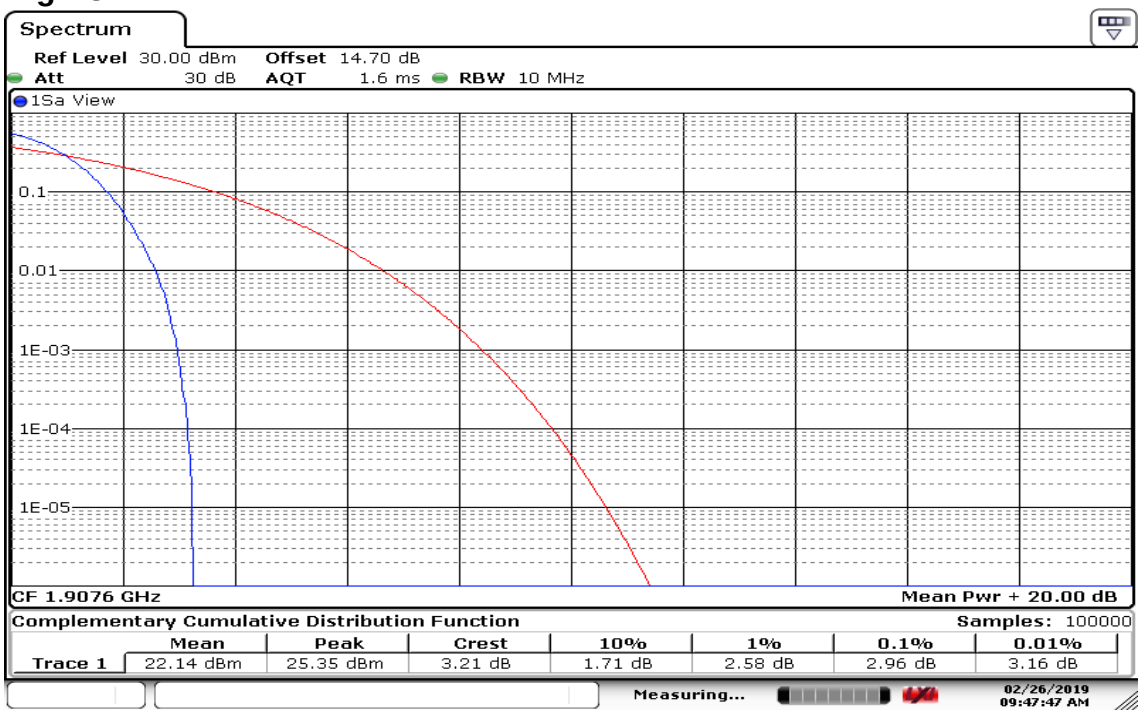
Date: 26.FEB.2019 09:22:08

Mid CH



Date: 26.FEB.2019 09:38:29

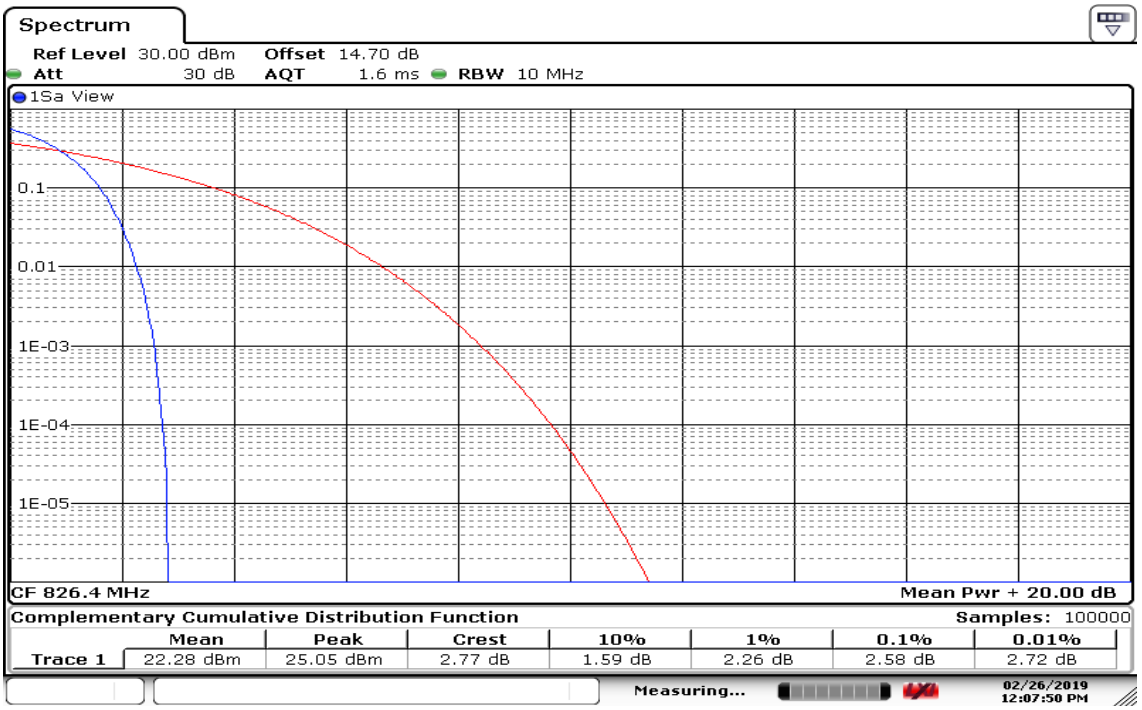
High CH



Date: 26.FEB.2019 09:47:48

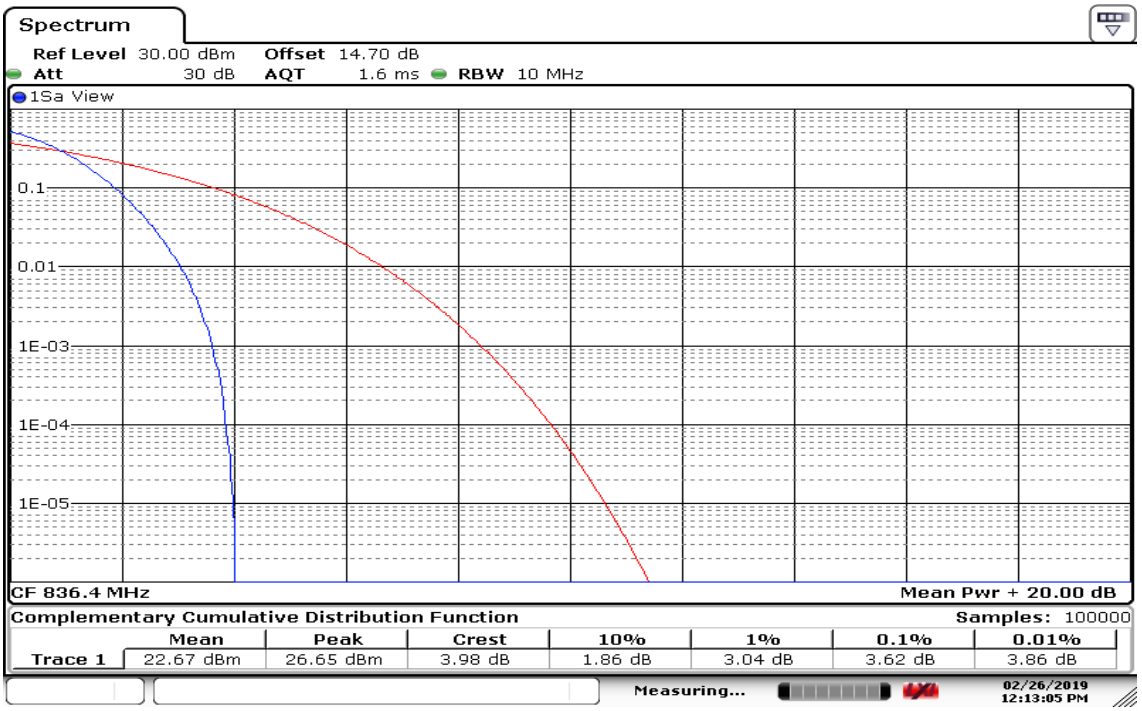
WCDMA 12.2k RMC (Band V)

Low CH



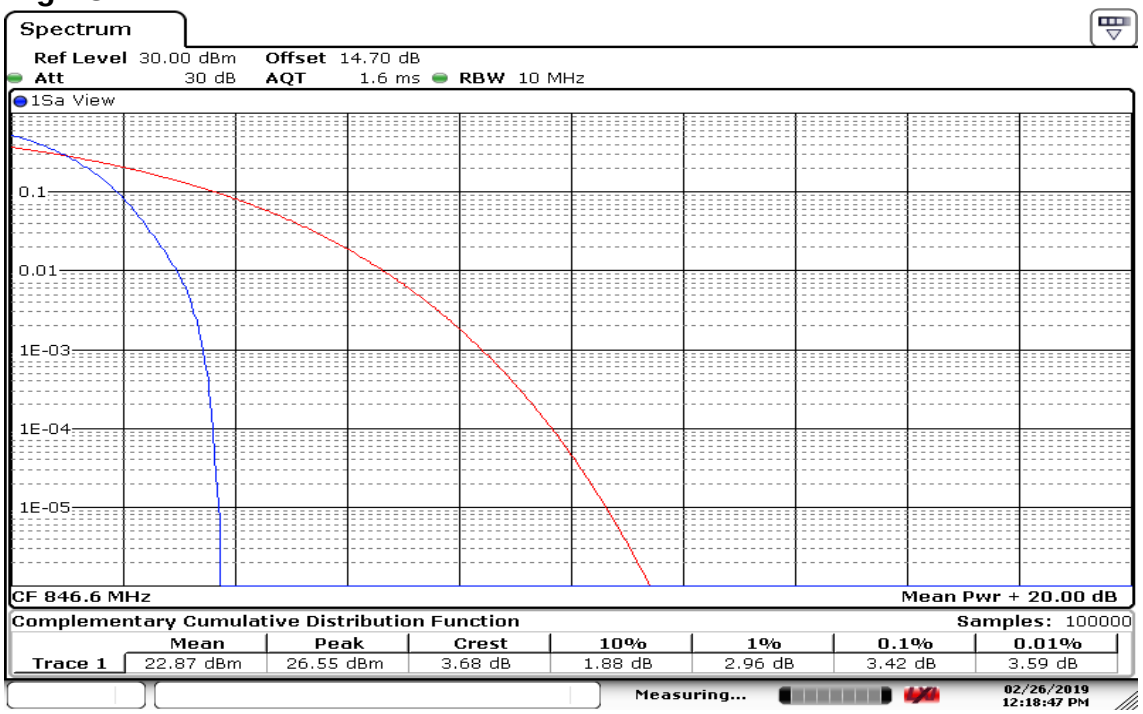
Date: 26.FEB.2019 12:07:51

Mid CH



Date: 26.FEB.2019 12:13:05

High CH



Date: 26.FEB.2019 12:18:47

7.6 CONDUCTED SPURIOUS EMISSIONS

Limit

FCC §22.917(a), Band 5

For operations in the 824-849 MHz band, out of band emissions. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.

FCC §24.238(a), Band 2

For operations in the 1850-1910 and 1930-1950 MHz band, out of band emissions. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.

RSS-132 section 5.5 and RSS-133 section 6.5

In the first 1.0 MHz band immediately outside and adjacent to each of the sub-bands specified in Section 5.1, the power of emissions per any 1% of the occupied bandwidth shall be attenuated (in dB) below the transmitter output power P (dBW) by at least 43 + 10 log10 p (watts).

Test Procedures

According to KDB 971168 D01, section 6.0

1. The EUT was connected to spectrum analyzer and call box.
2. The RF output of EUT was connected to the spectrum analyzer.
3. Set the spectrum analyzer, RBW=1MHz, VBW=3MHz.
4. Record the maximum spurious emission.
5. The fundamental frequency should be excluded against the limit in operating band.

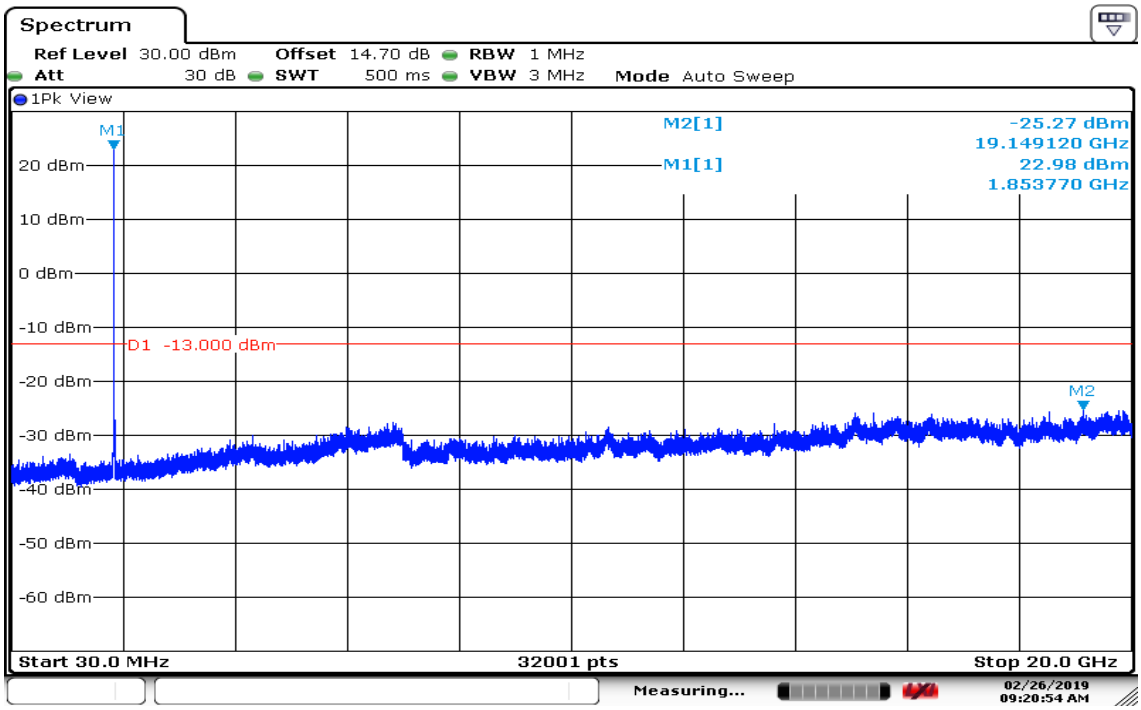
TEST RESULTS

No non-compliance noted

Test Data

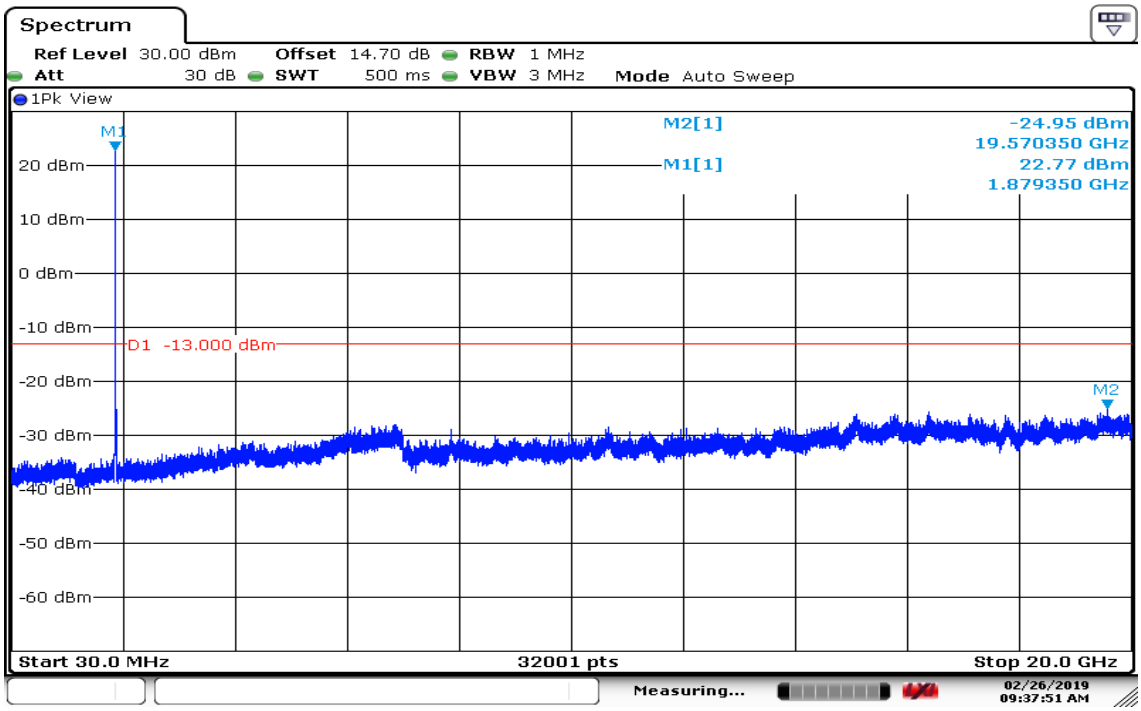
WCDMA 12.2k RMC (Band II)

Low CH



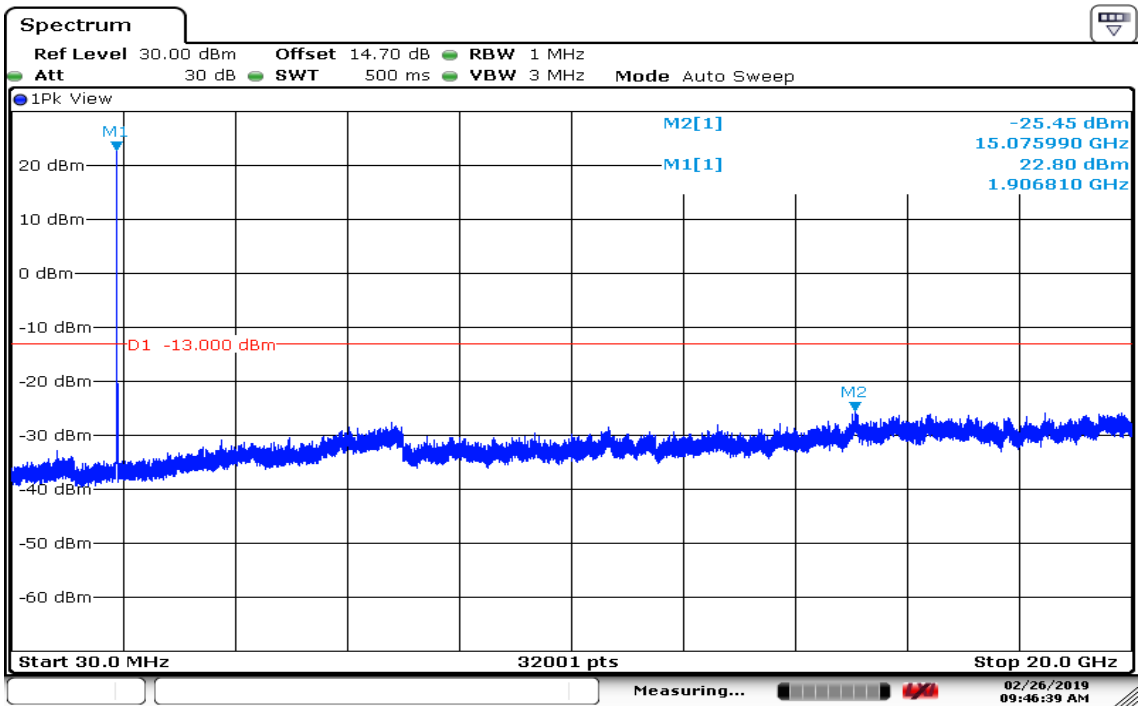
Date: 26.FEB.2019 09:20:54

Mid CH



Date: 26.FEB.2019 09:37:51

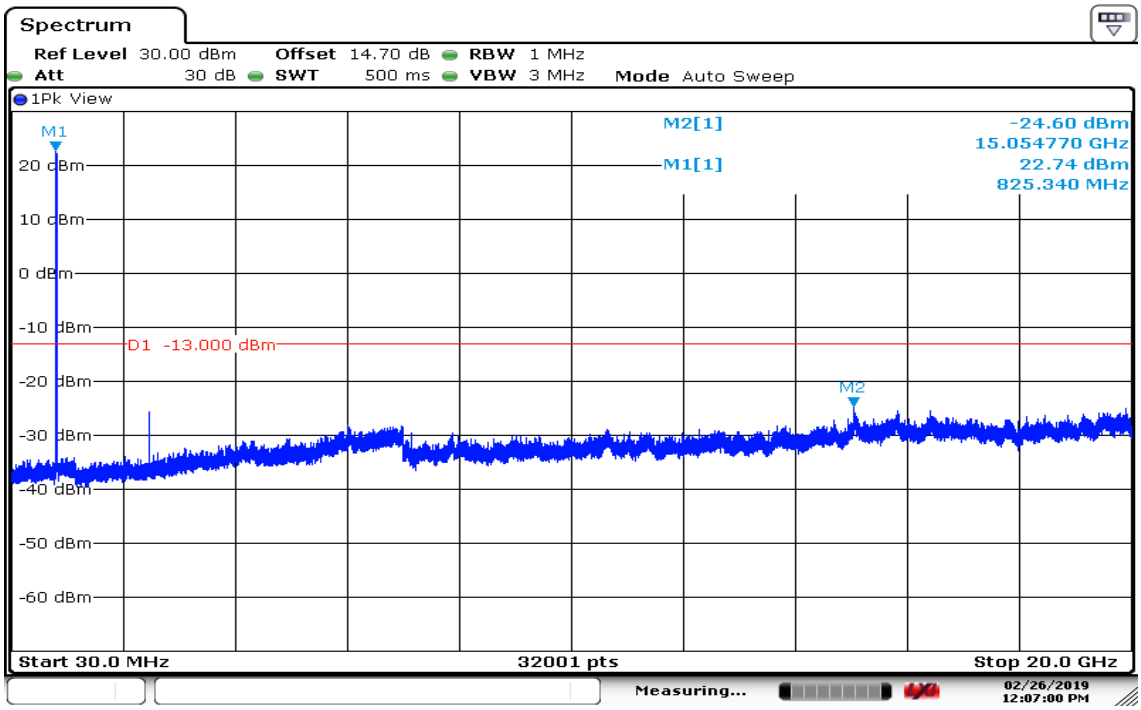
High CH



Date: 26.FEB.2019 09:46:39

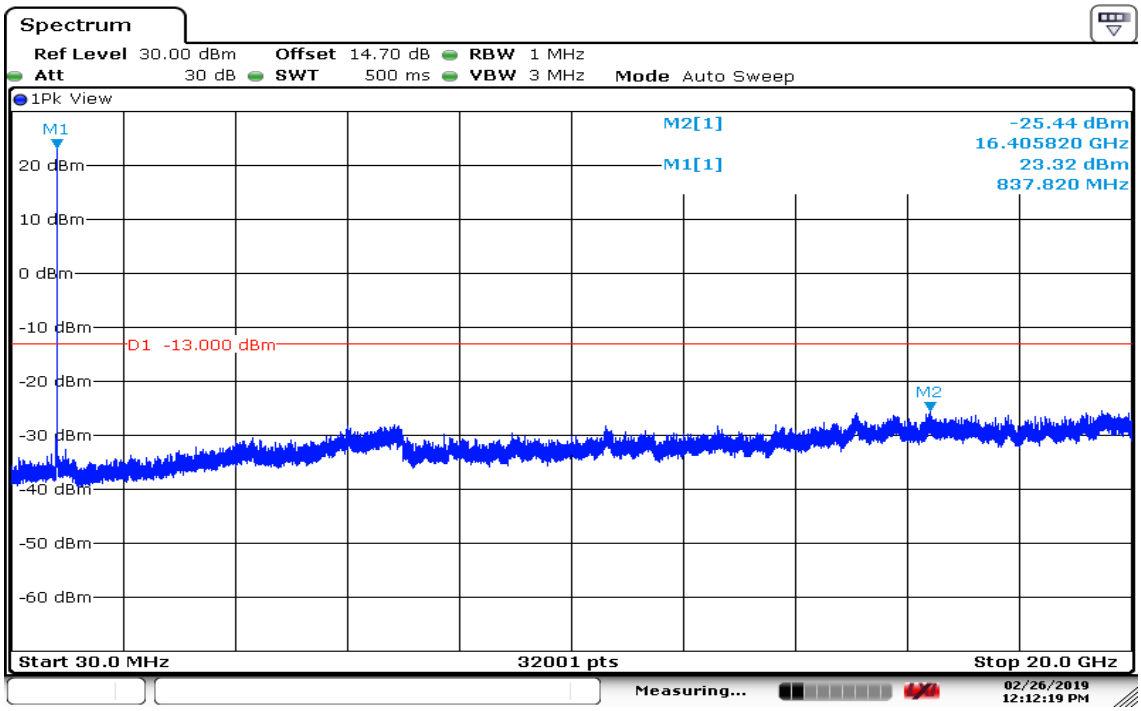
WCDMA 12.2k RMC (Band V)

Low CH



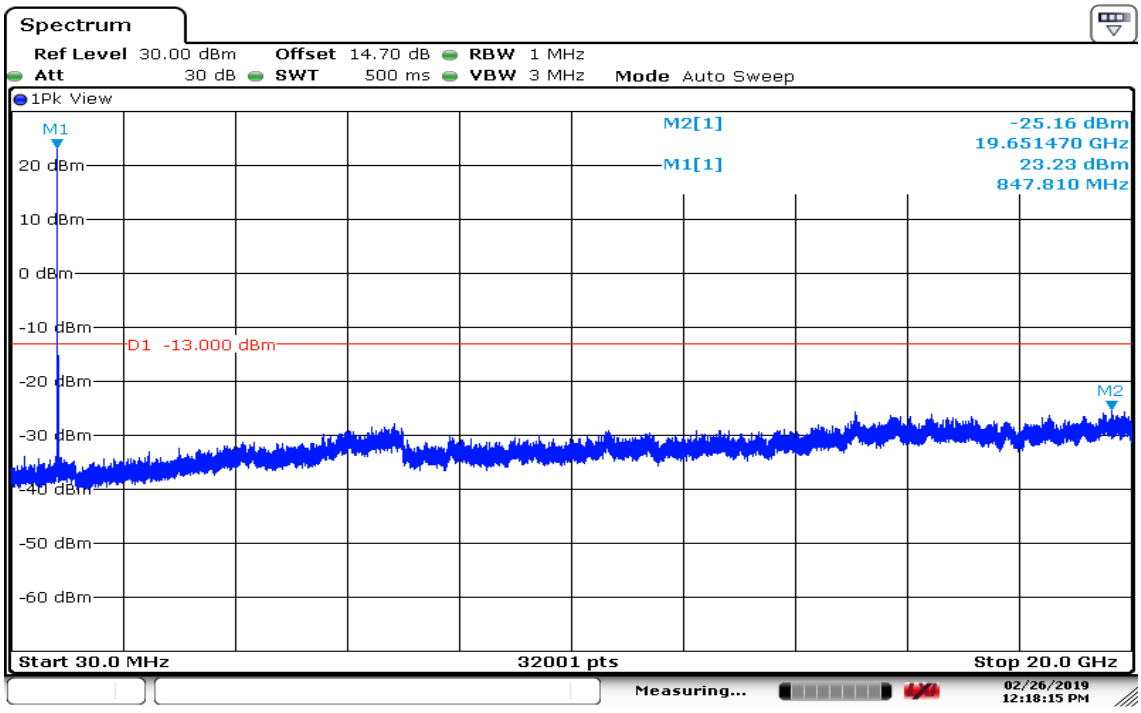
Date: 26.FEB.2019 12:07:01

Mid CH



Date: 26.FEB.2019 12:12:19

High CH



Date: 26.FEB.2019 12:18:15

7.7 SPURIOUS RADIATION MEASUREMENT

Limit

FCC §22.917(a), Band 5

For operations in the 824-849 MHz band, out of band emissions. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.

FCC §24.238(a), Band 2

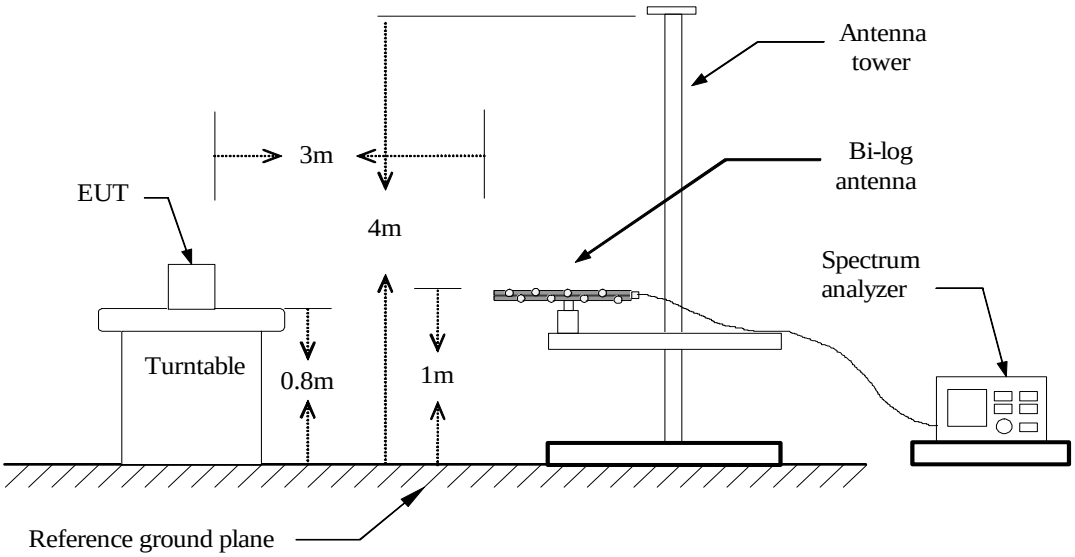
For operations in the 1850-1910 and 1930-1950 MHz band, out of band emissions. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.

RSS-132 section 5.5 and RSS-133 section 6.5

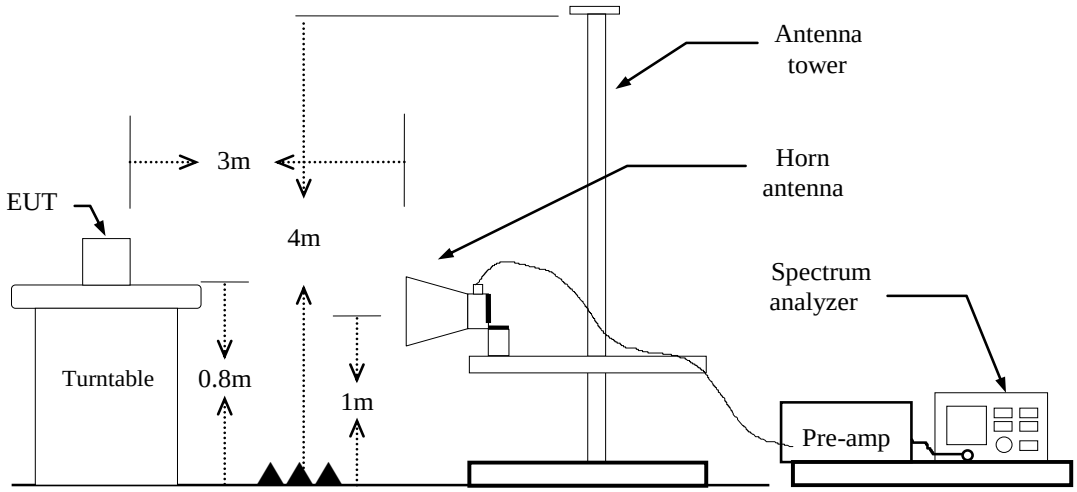
In the first 1.0 MHz band immediately outside and adjacent to each of the sub-bands specified in Section 5.1, the power of emissions per any 1% of the occupied bandwidth shall be attenuated (in dB) below the transmitter output power P (dBW) by at least 43 + 10 log10 p (watts).

Test Configuration

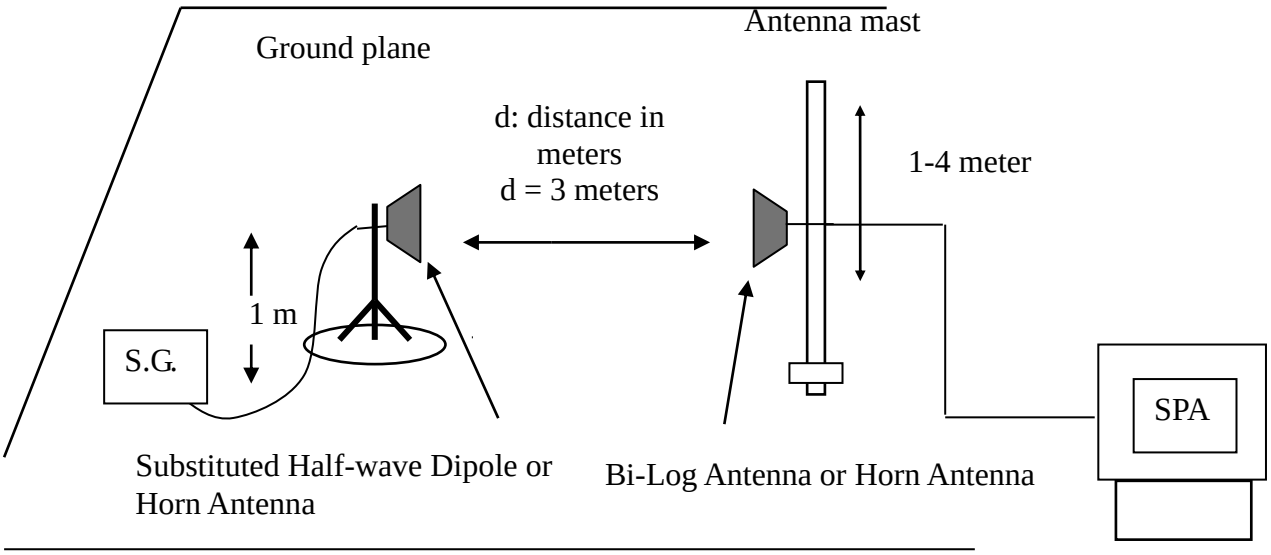
Below 1 GHz



Above 1 GHz



Substituted Method Test Set-up



TEST PROCEDURE

1. According to KDB 971168 D01. section 5.8.
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 = S.G. output (dBm) + Antenna Gain (dBd) – Cable (dB)

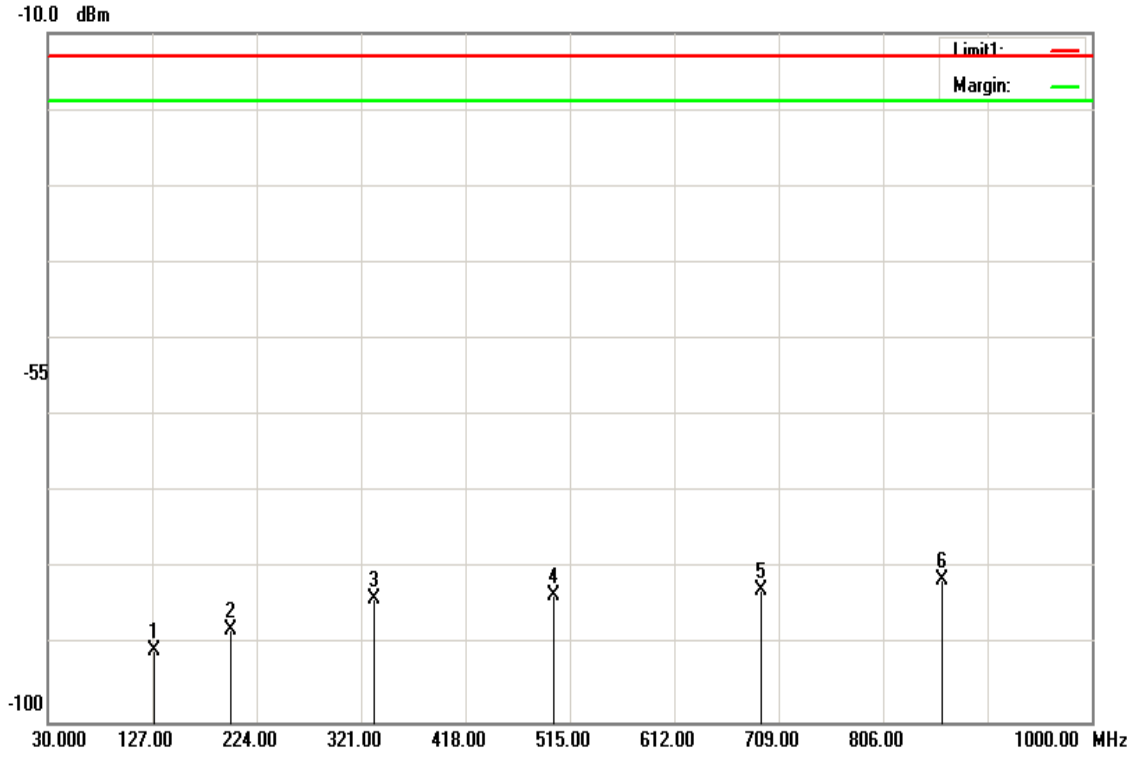
EIRP = S.G. output (dBm) + Antenna Gain (dBi) – Cable (dB)

TEST RESULTS

Refer to the attached tabular data sheets.

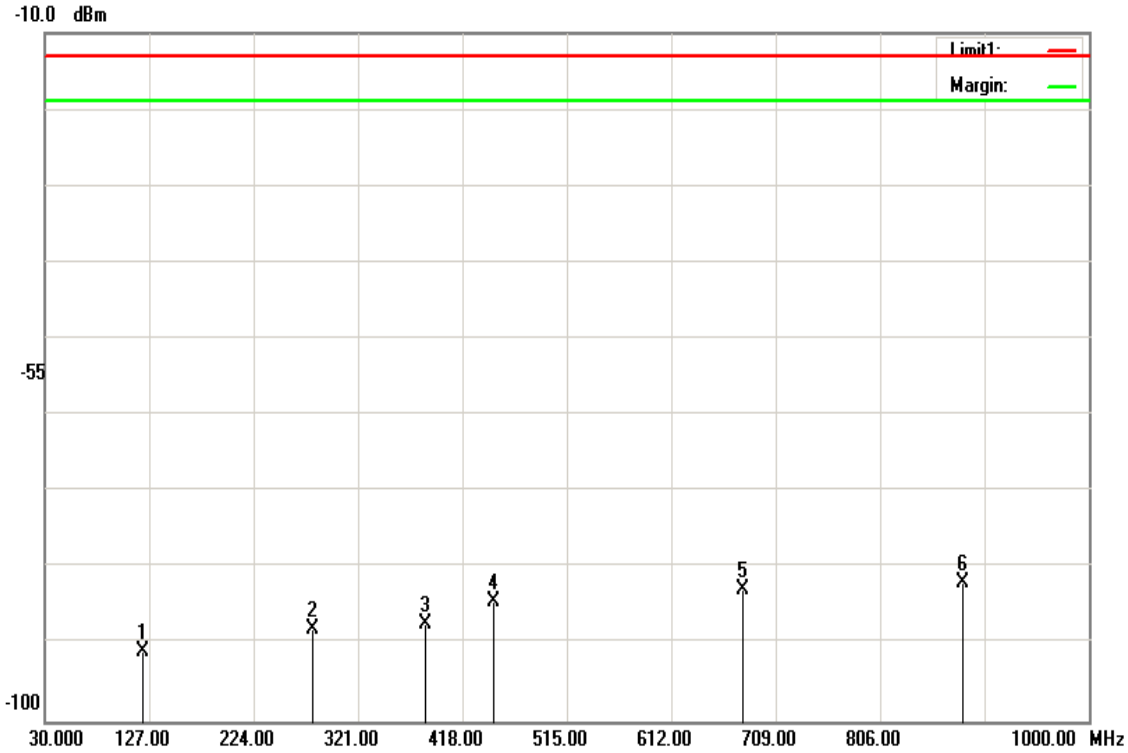
Radiated Spurious Emission Measurement Result / Below 1GHz

Operation Mode:	WCDMA 12.2k RMC Band II / TX /Mid CH	**Test Date:**	March 13, 2019
Temperature:	22ºC	**Tested by:**	Dally Hong
Humidity:	46 % RH	**Polarity:**	Ver.



Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
128.9400	-87.35	1.13	-90.63	-13.00	-77.63	V
199.7500	-84.33	1.4	-87.88	-13.00	-74.88	V
333.1250	-80.01	1.82	-83.98	-13.00	-70.98	V
499.9650	-78.97	2.25	-83.37	-13.00	-70.37	V
692.9950	-78.02	2.66	-82.83	-13.00	-69.83	V
861.7750	-76.19	2.99	-81.33	-13.00	-68.33	V

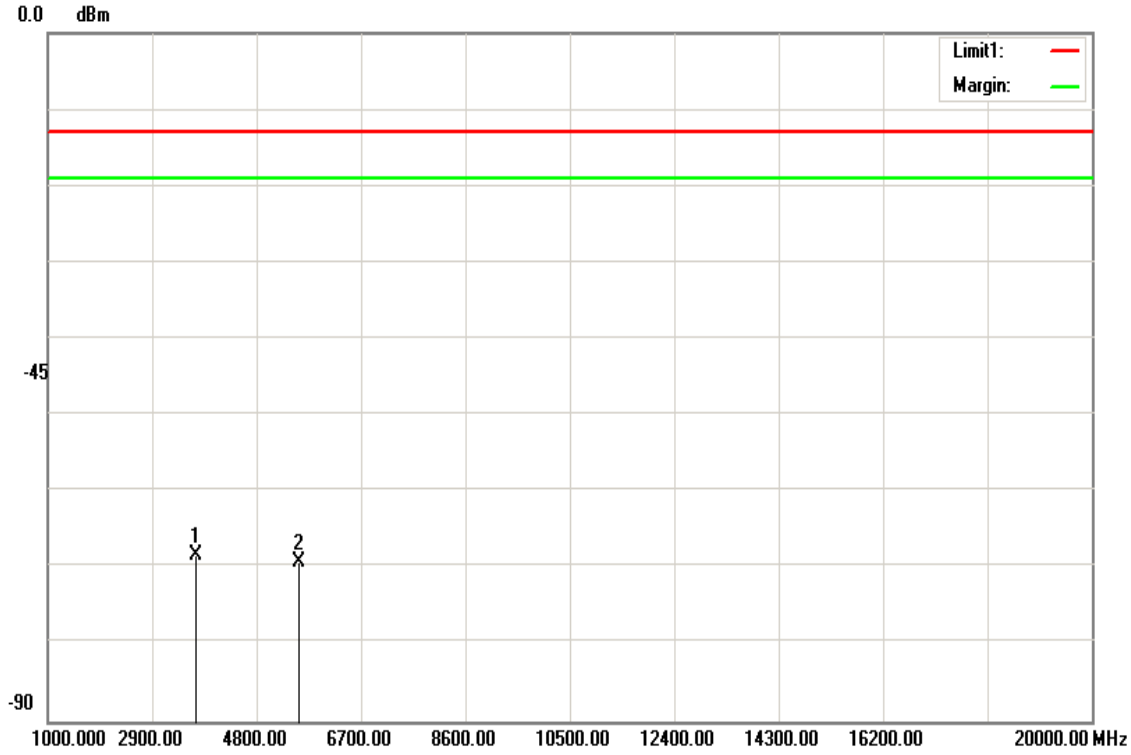
Operation Mode:	WCDMA 12.2k RMC Band II / TX /Mid CH	**Test Date:**	March 13, 2019
Temperature:	22°C	**Tested by:**	Dally Hong
Humidity:	46 % RH	**Polarity:**	Hor.



Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
121.1800	-87.55	1.09	-90.79	-13.00	-77.79	H
279.2900	-84.24	1.66	-88.05	-13.00	-75.05	H
384.5350	-83.25	1.97	-87.37	-13.00	-74.37	H
447.1000	-80.08	2.12	-84.35	-13.00	-71.35	H
678.9300	-78.03	2.63	-82.81	-13.00	-69.81	H
883.1150	-76.81	3.03	-81.99	-13.00	-68.99	H

Above 1GHz

Operation Mode:	WCDMA 12.2k RMC Band II / TX / Low CH	**Test Date:**	March 13, 2019
Temperature:	22°C	**Tested by:**	Dally Hong
Humidity:	46 % RH	**Polarity:**	Ver.

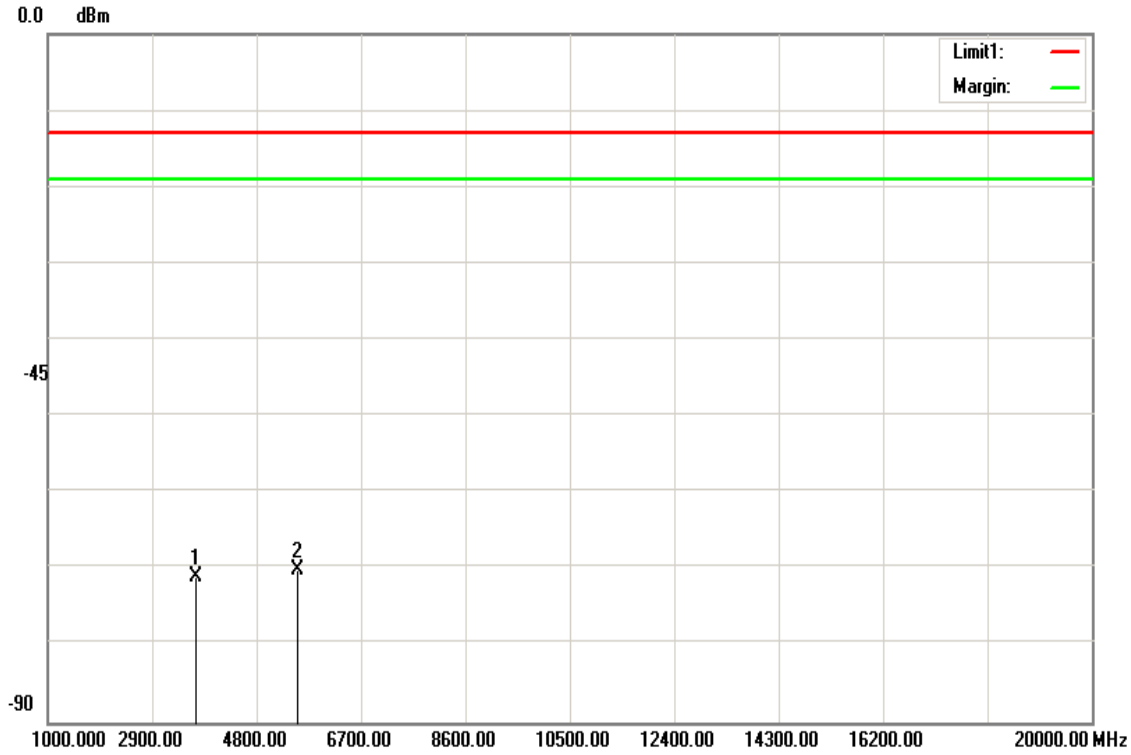


Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
3702.000	-61.6	6.63	-68.23	-13.00	-55.23	V
5560.500	-60.79	8.29	-69.08	-13.00	-56.08	V
N/A						

Remark:

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

Operation Mode:	WCDMA 12.2k RMC Band II / TX / Low CH	**Test Date:**	March 13, 2019
Temperature:	22°C	**Tested by:**	Dally Hong
Humidity:	46 % RH	**Polarity:**	Hor.

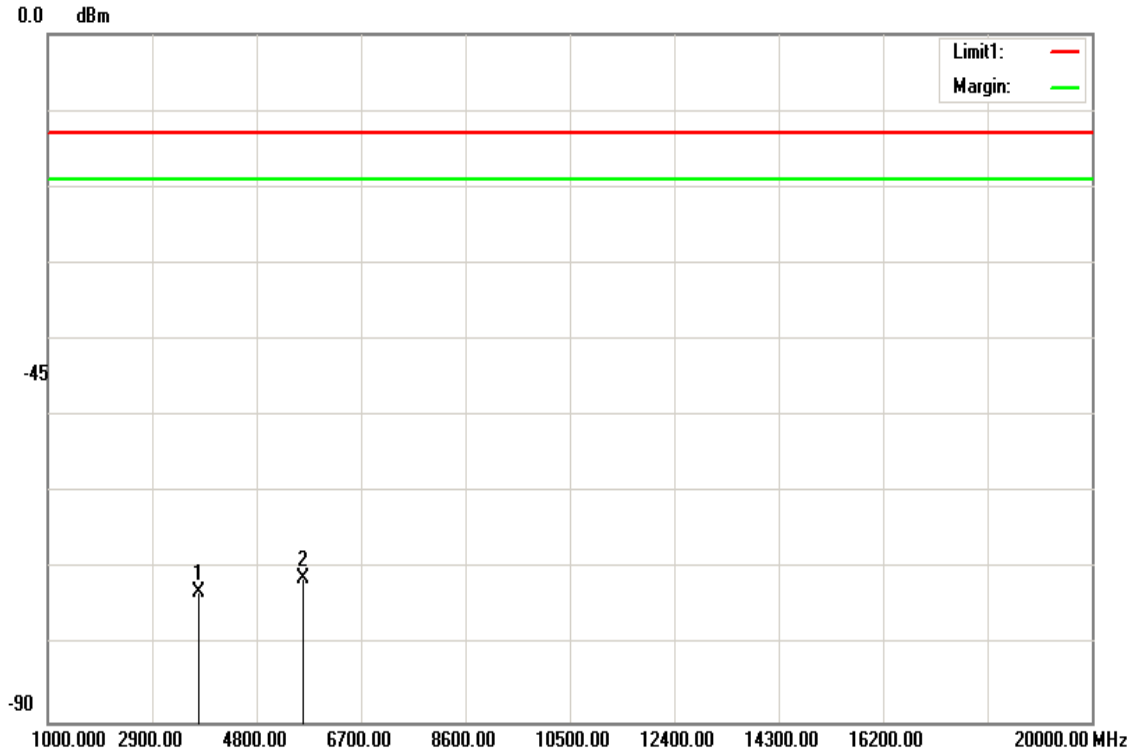


Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
3702.000	-64.34	6.63	-70.97	-13.00	-57.97	H
5553.500	-61.69	8.29	-69.98	-13.00	-56.98	H
N/A						

Remark:

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

Operation Mode:	WCDMA 12.2k RMC Band II / TX / Mid CH	**Test Date:**	March 13, 2019
Temperature:	22°C	**Tested by:**	Dally Hong
Humidity:	46 % RH	**Polarity:**	Ver.

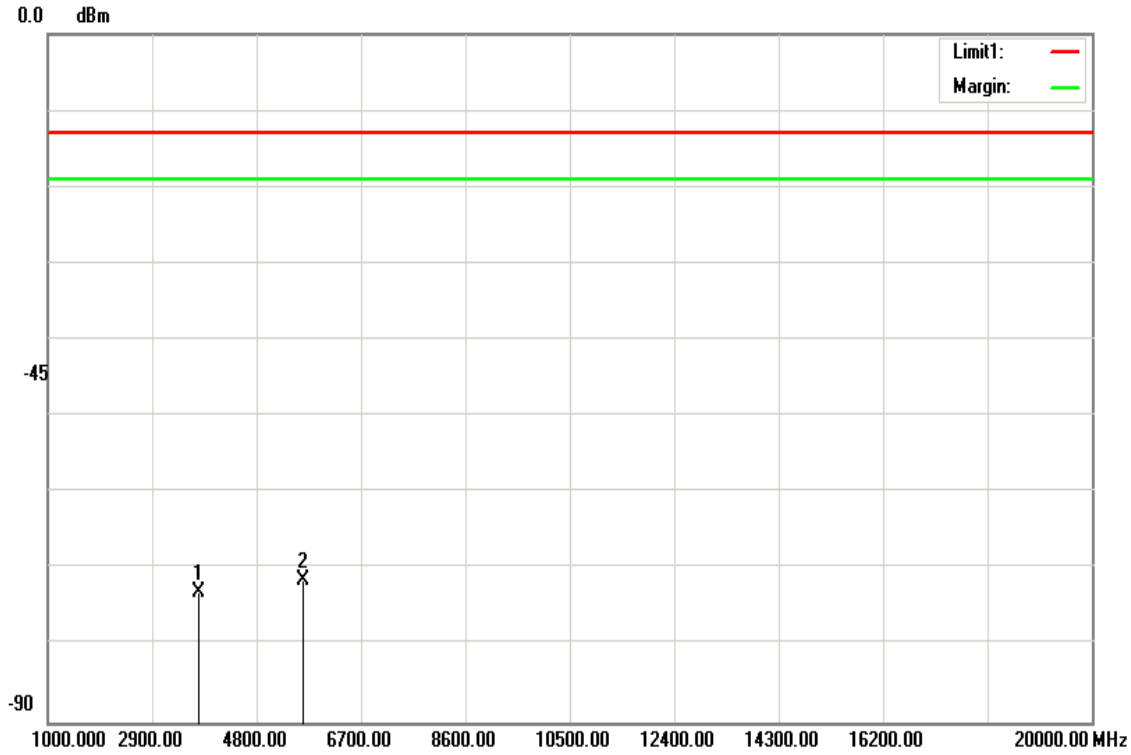


Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
3760.000	-66.43	6.68	-73.11	-13.00	-60.11	V
5640.000	-62.88	8.37	-71.25	-13.00	-58.25	V
N/A						

Remark:

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

Operation Mode:	WCDMA 12.2k RMC Band II / TX / Mid CH	**Test Date:**	March 13, 2019
Temperature:	22°C	**Tested by:**	Dally Hong
Humidity:	46 % RH	**Polarity:**	Hor.

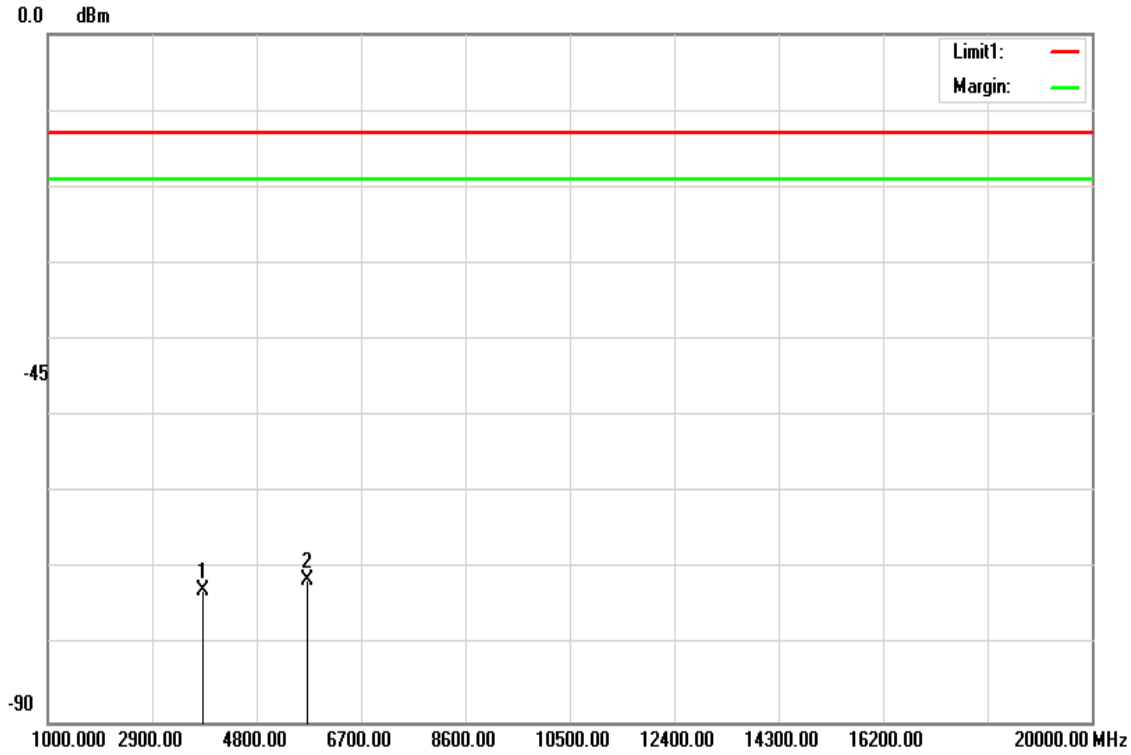


Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
3760.000	-66.44	6.68	-73.12	-13.00	-60.12	H
5640.000	-63.03	8.37	-71.40	-13.00	-58.40	H
N/A						

Remark:

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

Operation Mode:	WCDMA 12.2k RMC Band II / TX / High CH	**Test Date:**	March 13, 2019
Temperature:	22°C	**Tested by:**	Dally Hong
Humidity:	46 % RH	**Polarity:**	Ver.

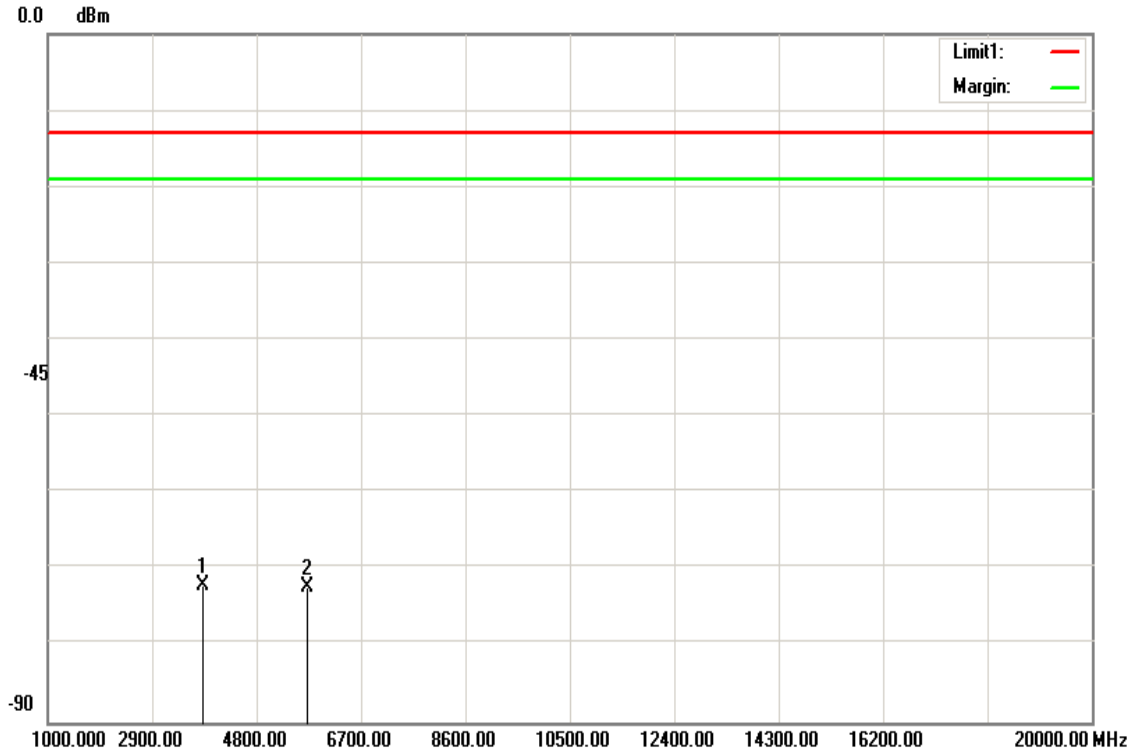


Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
3814.000	-65.99	6.74	-72.73	-13.00	-59.73	V
5721.000	-62.95	8.44	-71.39	-13.00	-58.39	V
N/A						

Remark:

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

Operation Mode:	WCDMA 12.2k RMC Band II / TX / High CH	**Test Date:**	March 13, 2019
Temperature:	22°C	**Tested by:**	Dally Hong
Humidity:	46 % RH	**Polarity:**	Hor.



Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
3814.000	-65.33	6.74	-72.07	-13.00	-59.07	H
5721.000	-63.87	8.44	-72.31	-13.00	-59.31	H
N/A						

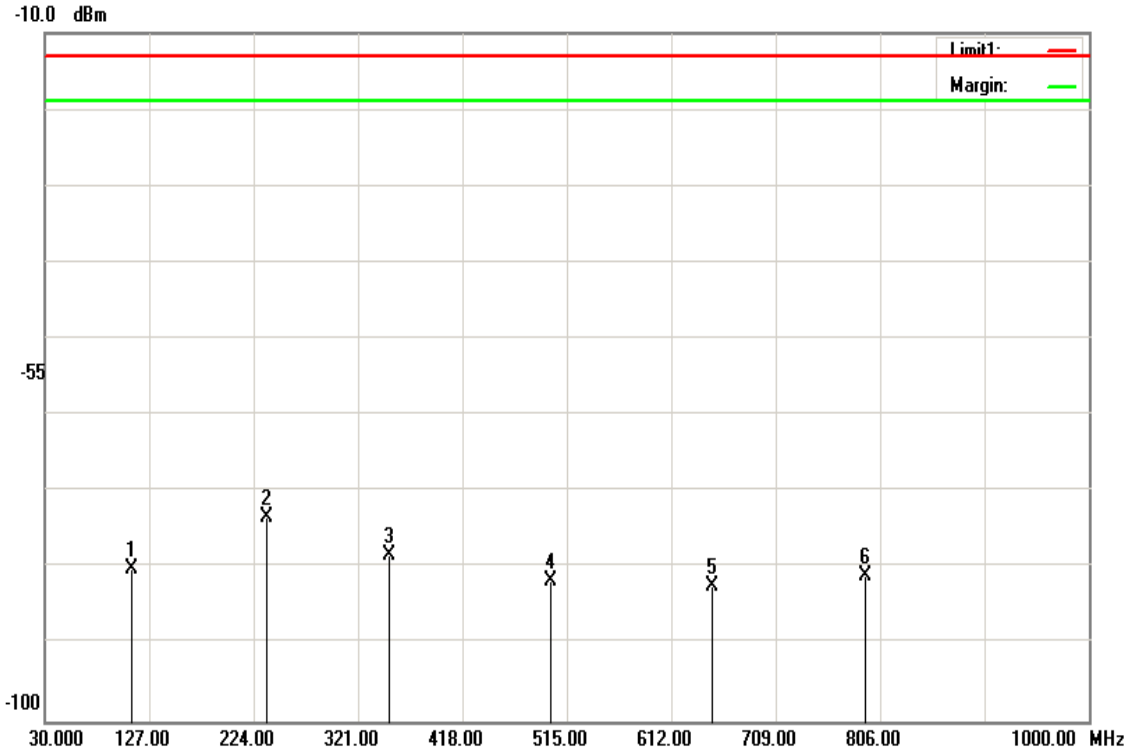
Remark:

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

Report No.: T190115W01-RP1

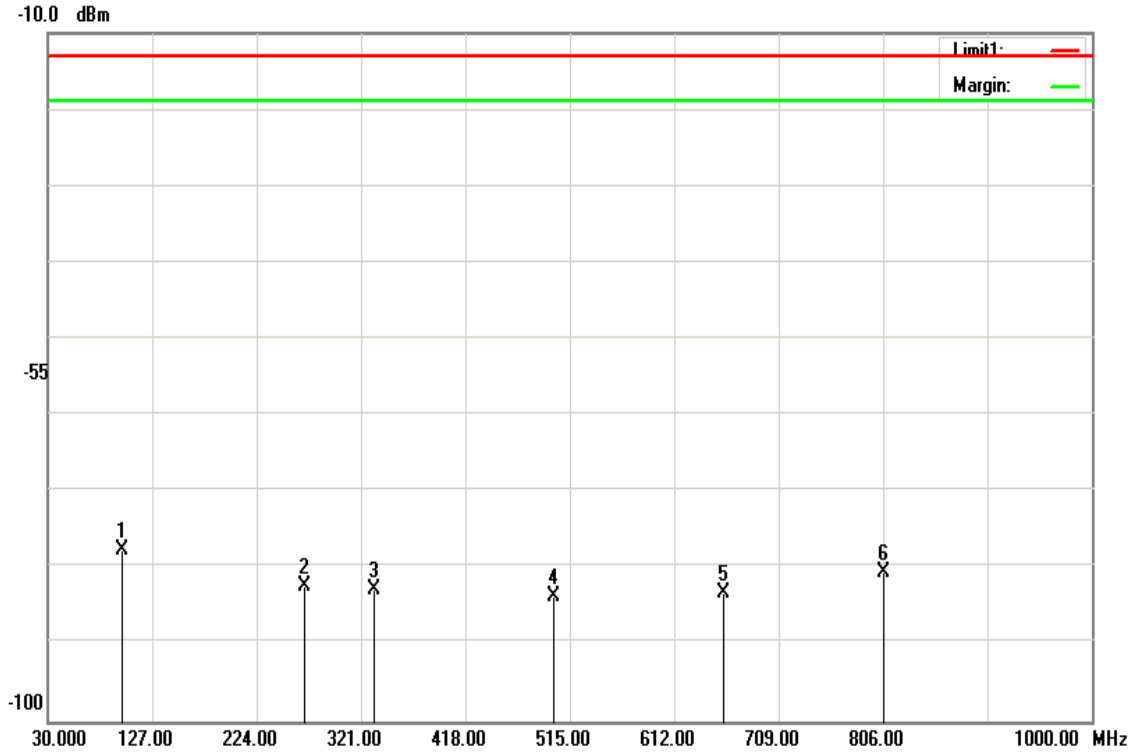
Radiated Spurious Emission Measurement Result / Below 1GHz

Operation Mode:	WCDMA 12.2k RMC Band V / TX /Mid CH	**Test Date:**	March 13, 2019
Temperature:	22°C	**Tested by:**	Dally Hong
Humidity:	46 % RH	**Polarity:**	Ver.



Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
110.9950	-76.96	1.04	-80.15	-13.00	-67.15	V
236.1250	-69.63	1.52	-73.30	-13.00	-60.30	V
350.1000	-74.23	1.87	-78.25	-13.00	-65.25	V
499.9650	-77.17	2.25	-81.57	-13.00	-68.57	V
649.8300	-77.65	2.57	-82.37	-13.00	-69.37	V
792.9050	-75.97	2.86	-80.98	-13.00	-67.98	V

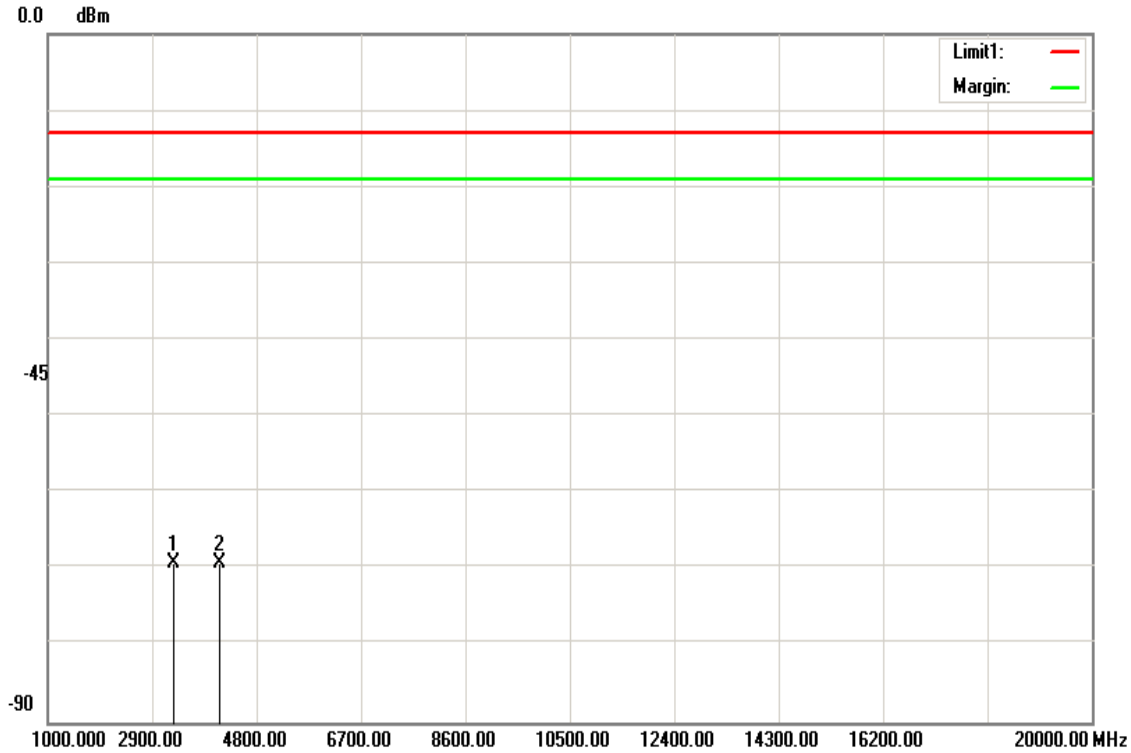
Operation Mode:	WCDMA 12.2k RMC Band V / TX /Mid CH	**Test Date:**	March 13, 2019
Temperature:	22°C	**Tested by:**	Dally Hong
Humidity:	46 % RH	**Polarity:**	Hor.



Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
99.3550	-74.36	0.99	-77.50	-13.00	-64.50	H
268.6200	-78.5	1.63	-82.28	-13.00	-69.28	H
333.1250	-78.77	1.82	-82.74	-13.00	-69.74	H
499.9650	-79.23	2.25	-83.63	-13.00	-70.63	H
657.5900	-78.54	2.59	-83.28	-13.00	-70.28	H
807.4550	-75.59	2.88	-80.62	-13.00	-67.62	H

Above 1GHz

Operation Mode:	WCDMA 12.2k RMC Band V / TX / Low CH	**Test Date:**	March 13, 2019
Temperature:	22°C	**Tested by:**	Dally Hong
Humidity:	46 % RH	**Polarity:**	Ver.

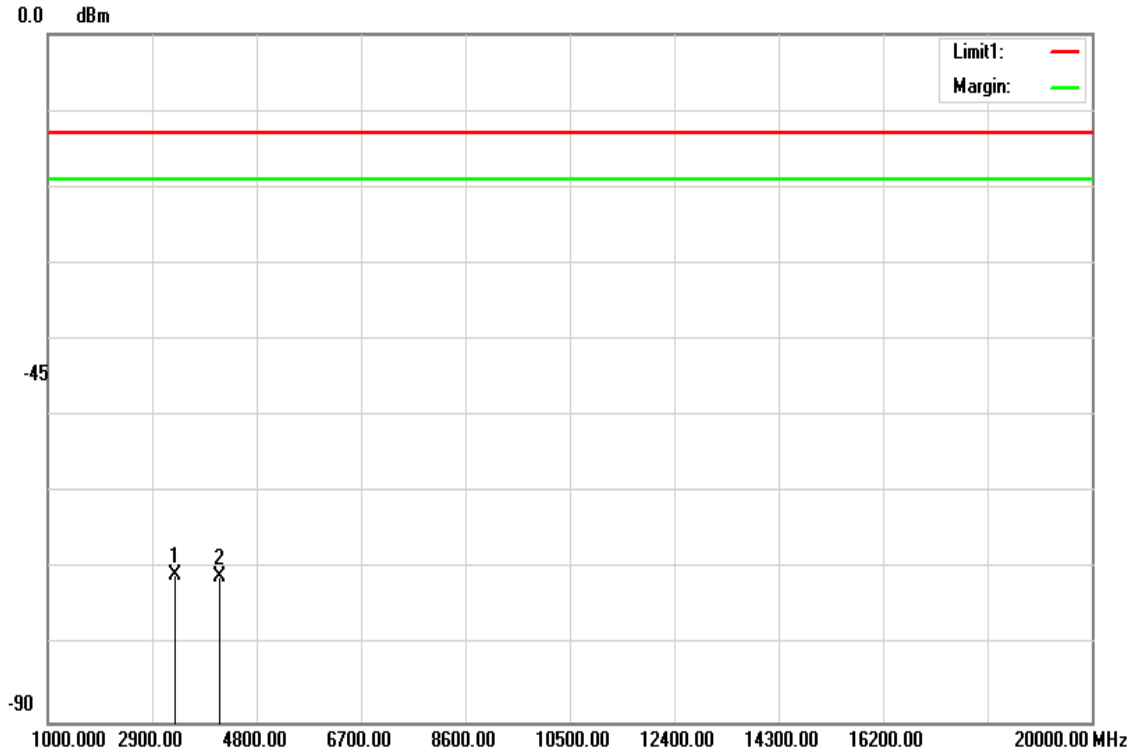


Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
3303.000	-63.03	6.23	-69.26	-13.00	-56.26	V
4129.000	-62.05	7.03	-69.08	-13.00	-56.08	V
N/A						

Remark:

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

Operation Mode:	WCDMA 12.2k RMC Band V / TX / Low CH	**Test Date:**	March 13, 2019
Temperature:	22°C	**Tested by:**	Dally Hong
Humidity:	46 % RH	**Polarity:**	Hor.

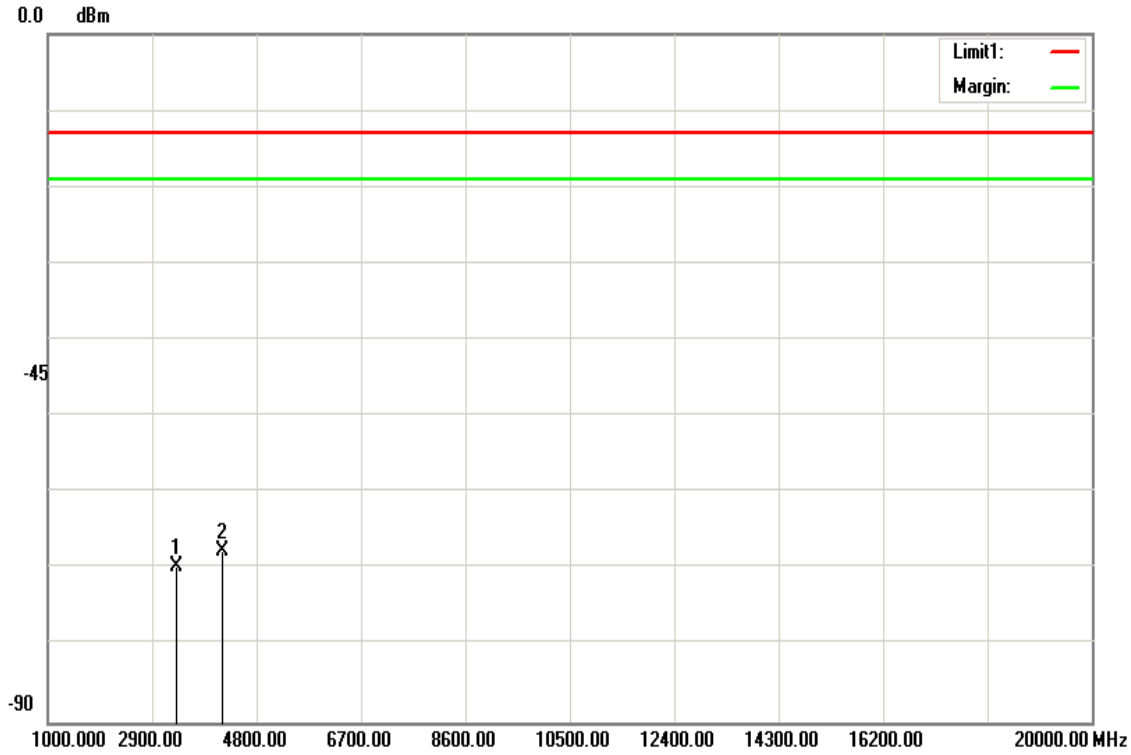


Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
3306.500	-64.43	6.23	-70.66	-13.00	-57.66	H
4125.500	-63.92	7.03	-70.95	-13.00	-57.95	H
N/A						

Remark:

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

Operation Mode:	WCDMA 12.2k RMC Band V / TX / Mid CH	**Test Date:**	March 13, 2019
Temperature:	22°C	**Tested by:**	Dally Hong
Humidity:	46 % RH	**Polarity:**	Ver.

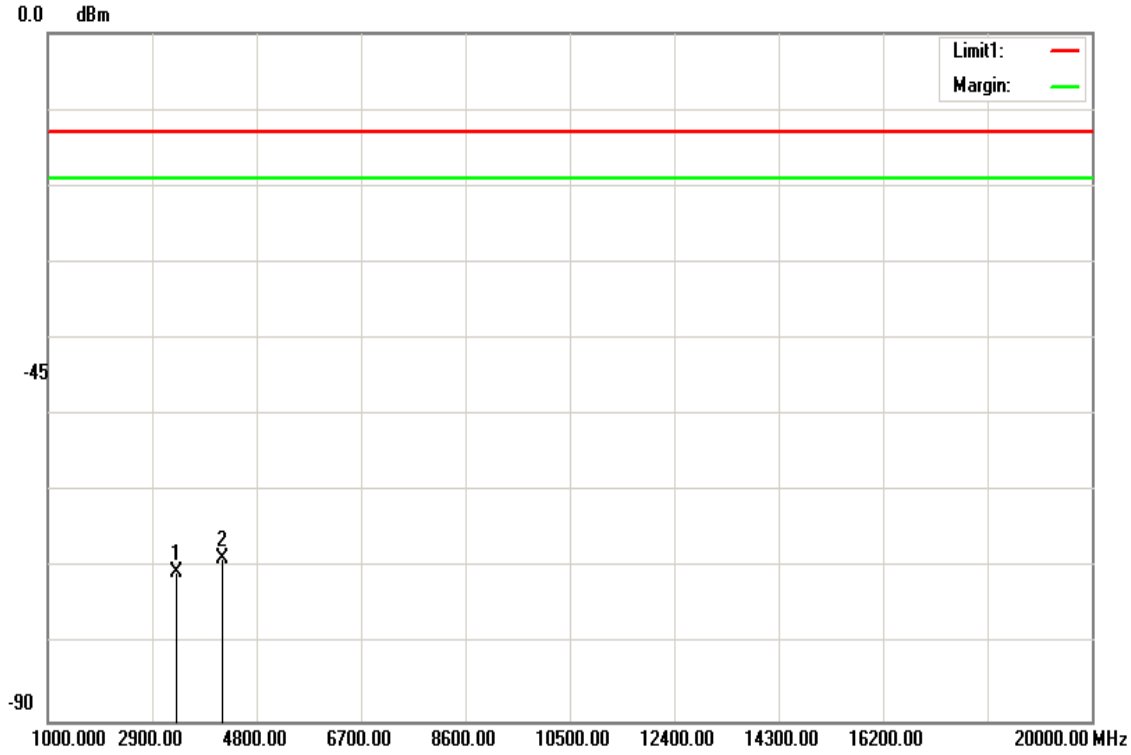


Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
3341.500	-63.33	6.27	-69.60	-13.00	-56.60	V
4178.000	-60.44	7.08	-67.52	-13.00	-54.52	V
N/A						

Remark:

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

Operation Mode:	WCDMA 12.2k RMC Band V / TX / Mid CH 4182	**Test Date:**	March 13, 2019
Temperature:	22°C	**Tested by:**	Dally Hong
Humidity:	46 % RH	**Polarity:**	Hor.

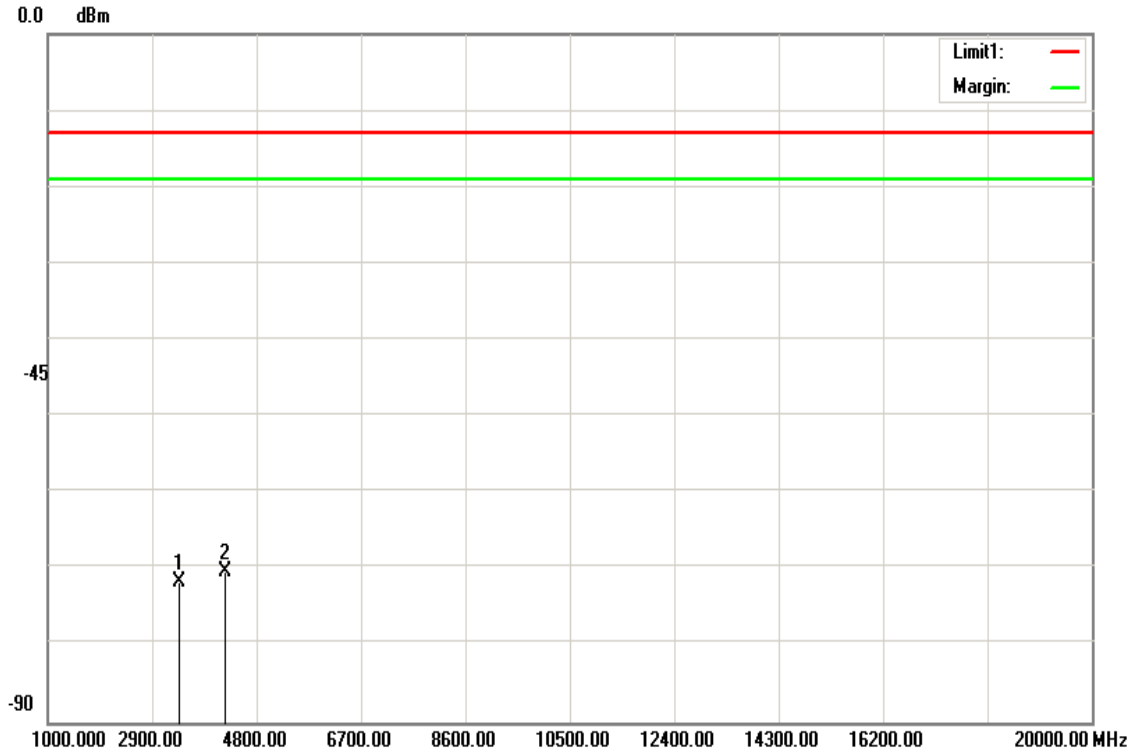


Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
3341.500	-64.35	6.27	-70.62	-13.00	-57.62	H
4181.500	-61.77	7.08	-68.85	-13.00	-55.85	H
N/A						

Remark:

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

Operation Mode:	WCDMA 12.2k RMC Band V / TX /High CH	**Test Date:**	March 13, 2019
Temperature:	22°C	**Tested by:**	Dally Hong
Humidity:	46 % RH	**Polarity:**	Ver.

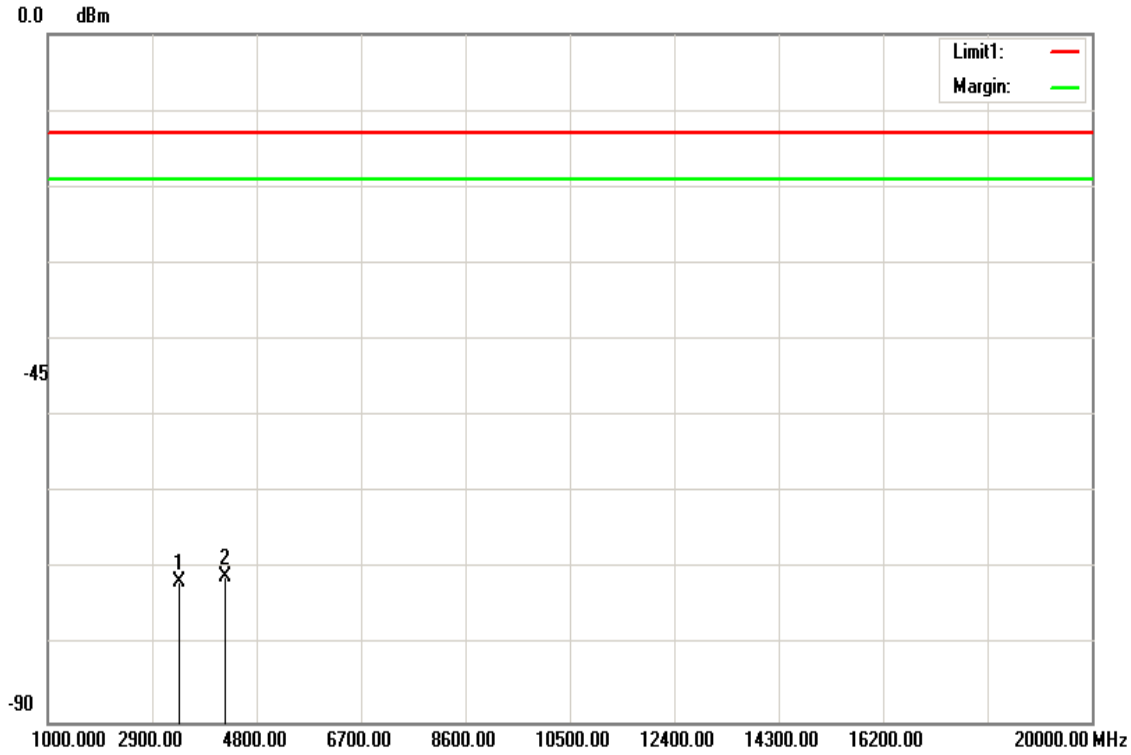


Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
3387.000	-65.33	6.31	-71.64	-13.00	-58.64	V
4237.500	-63.15	7.13	-70.28	-13.00	-57.28	V
N/A						

Remark:

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

Operation Mode:	WCDMA 12.2k RMC Band V / TX /High CH	**Test Date:**	March 13, 2019
Temperature:	22°C	**Tested by:**	Dally Hong
Humidity:	46 % RH	**Polarity:**	Hor.



Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
3383.500	-65.32	6.31	-71.63	-13.00	-58.63	H
4237.500	-63.81	7.13	-70.94	-13.00	-57.94	H
N/A						

Remark:

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

7.8 FREQUENCY STABILITY V.S. TEMPERATURE MEASUREMENT

LIMIT

According to FCC §2.1055, FCC §22.355, FCC §24.235.

According to RSS-132 (5.3) & RSS-133 (6.3).

Test Procedure

Use Anritsu 8820 with frequency Error measurement capability.
Temp = -30 to +50℃ ,Voltage= 85% to 115% of the nominal value for AC powered equipment. Frequency Tolerance: +/-2.5 ppm

NOTE: *The frequency error was recorded frequency error from the communication simulator.*

TEST RESULTS

No non-compliance noted.

Reference Frequency: WCDMA 12.2k RMC Band II Low Channel 1852.4 MHz				
Limit: ± 2.5 ppm = 4631 Hz				
Power Supply (Vac)	Environment Temperature (°C)	Frequency Error(Hz)	Frequency Error (ppm)	Limit (ppm)
120	50	2.00	0.0011	+/- 2.5
120	40	1.00	0.0005	
120	30	1.00	0.0005	
120	20	0.00	0.0000	
120	10	1.00	0.0005	
120	0	-1.00	-0.0005	
120	-10	-1.00	-0.0005	
120	-20	2.00	0.0011	

Reference Frequency: WCDMA 12.2k RMC Band II Mid Channel 1880 MHz				
Limit: ± 2.5 ppm = 4700 Hz				
Power Supply (Vac)	Environment Temperature (°C)	Frequency Error(Hz)	Frequency Error (ppm)	Limit (ppm)
120	50	-2.00	-0.0011	+/- 2.5
120	40	-2.00	-0.0011	
120	30	1.00	0.0005	
120	20	1.00	0.0005	
120	10	-1.00	-0.0005	
120	0	1.00	0.0005	
120	-10	-1.00	-0.0005	
120	-20	1.00	0.0005	

Reference Frequency: WCDMA 12.2k RMC Band II High Channel 1907.6 MHz				
Limit: ± 2.5 ppm = 4769 Hz				
Power Supply (Vac)	Environment Temperature (°C)	Frequency Error(Hz)	Frequency Error (ppm)	Limit (ppm)
120	50	2.00	0.0010	+/- 2.5
120	40	-1.00	-0.0005	
120	30	2.00	0.0010	
120	20	0.00	0.0000	
120	10	0.00	0.0000	
120	0	1.00	0.0005	
120	-10	-2.00	-0.0010	
120	-20	-2.00	-0.0010	

Reference Frequency: WCDMA 12.2k RMC Band V Low Channel 826.4 MHz				
Limit: ± 2.5 ppm = 2066 Hz				
Power Supply (Vac)	Environment Temperature (°C)	Frequency Error(Hz)	Frequency Error (ppm)	Limit (ppm)
120	50	-2.00	-0.0024	+/- 2.5
120	40	-2.00	-0.0024	
120	30	-1.00	-0.0012	
120	20	-1.00	-0.0012	
120	10	0.00	0.0000	
120	0	-1.00	-0.0012	
120	-10	-2.00	-0.0024	
120	-20	-2.00	-0.0024	

Reference Frequency: WCDMA 12.2k RMC Band V Mid Channel 836.6 MHz				
Limit: ± 2.5 ppm = 2091.5 Hz				
Power Supply (Vac)	Environment Temperature (°C)	Frequency Error(Hz)	Frequency Error (ppm)	Limit (ppm)
120	50	-3.00	-0.0036	+/- 2.5
120	40	2.00	0.0024	
120	30	-1.00	-0.0012	
120	20	0.00	0.0000	
120	10	-2.00	-0.0024	
120	0	-1.00	-0.0012	
120	-10	1.00	0.0012	
120	-20	-3.00	-0.0036	

Reference Frequency: WCDMA 12.2k RMC Band V High Channel 846.6 MHz				
Limit: ± 2.5 ppm = 2116.5 Hz				
Power Supply (Vac)	Environment Temperature (°C)	Frequency Error(Hz)	Frequency Error (ppm)	Limit (ppm)
120	50	-3.00	-0.0035	+/- 2.5
120	40	-2.00	-0.0024	
120	30	3.00	0.0035	
120	20	0.00	0.0000	
120	10	1.00	0.0012	
120	0	1.00	0.0012	
120	-10	-2.00	-0.0024	
120	-20	-2.00	-0.0024	

FREQUENCY STABILITY V.S. VOLTAGE MEASUREMENT:

Reference Frequency: WCDMA 12.2k RMC Band II Low Channel 1852.4 MHz				
Limit: ± 2.5 ppm = 4631Hz				
Power Supply (Vac)	Environment Temperature (°C)	Frequency Error(Hz)	Frequency Error (ppm)	Limit (ppm)
102	20	1.00	0.0005	+/- 2.5
120		1.00	0.0005	
138		-1.00	-0.0005	

Reference Frequency: WCDMA 12.2k RMC Band II Mid Channel 1880 MHz				
Limit: ± 2.5 ppm = 4700Hz				
Power Supply (Vac)	Environment Temperature (°C)	Frequency Error(Hz)	Frequency Error (ppm)	Limit (ppm)
102	20	0.00	0.0000	+/- 2.5
120		1.00	0.0005	
138		-1.00	-0.0005	

Reference Frequency: WCDMA 12.2k RMC Band II High Channel 1907.6 MHz				
Limit: ± 2.5 ppm = 4769Hz				
Power Supply (Vac)	Environment Temperature (°C)	Frequency Error(Hz)	Frequency Error (ppm)	Limit (ppm)
102	20	1.00	0.0005	+/- 2.5
120		1.00	0.0005	
138		1.00	0.0005	

Reference Frequency: WCDMA 12.2k RMC Band V Mid Channel 826.4 MHz				
Limit: ± 2.5 ppm = 2066Hz				
Power Supply (Vac)	Environment Temperature (°C)	Frequency Error(Hz)	Frequency Error (ppm)	Limit (ppm)
102	20	0.00	0.0000	+/- 2.5
120		-1.00	-0.0012	
138		-1.00	-0.0012	

Reference Frequency: WCDMA 12.2k RMC Band V Mid Channel 836.6 MHz				
Limit: ± 2.5 ppm = 2091.5Hz				
Power Supply (Vac)	Environment Temperature (°C)	Frequency Error(Hz)	Frequency Error (ppm)	Limit (ppm)
102	20	-1.00	-0.0012	+/- 2.5
120		0.00	0.0000	
138		1.00	0.0012	

Reference Frequency: WCDMA 12.2k RMC Band V Mid Channel 846.6 MHz				
Limit: ± 2.5 ppm = 2116.5Hz				
Power Supply (Vac)	Environment Temperature (°C)	Frequency Error(Hz)	Frequency Error (ppm)	Limit (ppm)
102	20	1.00	0.0012	+/- 2.5
120		2.00	0.0024	
138		2.00	0.0024	

--End of Report--