FCC 47 CFR PART 27 SUBPART L
+
INDUSTRY CANADA RSS-139

TEST REPORT

For

Chiron pro

Model No.: N635

Trade Name: Mitac, Mio, Navman, Magellan

Issued to

FCC:	**Mitac Digital Technology Corporation No.200, Wen Hwa 2nd Rd.,Kuei Shan Dist. Taoyuan, 33383 Taiwan**
IC:	**MiTAC Digital Technology Corporation No.200, Wenhua 2nd Rd., Guishan Dist. Taoyuan City 333 Taiwan**

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: January 17, 2020

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.
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Revision History

Rev.		Issue Date		Revisions	Effect Page	Revised By
00		January 17, 2020		Initial Issue	ALL	Allison Chen

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APPENDIX 1 - PHOTOGRAPHS OF EUT

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1 TEST RESULT CERTIFICATION

FCC Applicant:	Mitac Digital Technology Corporation No.200, Wen Hwa 2nd Rd.,Kuei Shan Dist. Taoyuan, 33383 Taiwan
IC Applicant:	MiTAC Digital Technology Corporation No.200, Wenhua 2nd Rd., Guishan Dist. Taoyuan City 333 Taiwan
Manufacturer:	MITAC COMPUTER (KUNSHAN) CO., LTD. No. 269, 2nd Avenue, District A, Comprehensive Free Trade Zone, Kunshan, Jiangsu, P.R. China
Equipment Under Test:	Chiron pro
Trade Name:	Mitac, Mio, Navman, Magellan
Model No.:	N635
Date of Test:	December 6 ~ 10, 2019

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APPLICABLE STANDARDS	
STANDARD	**TEST RESULT**
FCC 47 CFR PART 27 SUBPART L + RSS-139 Issue 3 2015	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 TIA-603-E and the energy emitted by the sample EUT tested as described in this report is in compliance with radiated emission limits of FCC Rule FCC PART 27 Subpart L and IC RSS-139 Issue 3.

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

Approved by:

Kevin Tsai
Deputy Manager
Compliance Certification Services Inc.

Tested by:

Dally Hong
Engineer
Compliance Certification Services Inc.

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2 EUT DESCRIPTION

Product	Chiron pro
Model No.	N635
Model Discrepancy	Difference of the those trade names (list on this report) are just for marketing purpose only.
Trade	Mitac, Mio, Navman, Magellan
Received Date	November 5, 2019
Power Supply	1. Power from Rechargeable Li-ion Polymer Battery. Rating: 3.7VDC, 4000mAh, 14.8Wh 2. Power from Adapter. I/P: 100-240VAC, 50/60Hz, 0.5A O/P: 5.0VDC, 2A
Frequency Range	WCDMA / HSDPA / HSUPA Band IV: 1712.4-1752.6 MHz
Transmit Power (EIRP Power)	WCDMA Band IV: 23.17 dBm
Antenna Specification	Antenna type: Integral Band IV: 3.19 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 EIRP (W)**
WCDMA 12.2K RMC	**IV**	**1712.4MHz ~1752.6MHz**	**4M12F9W**	**0.2075**

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3 TEST METHODOLOGY

Both conducted and radiated testing were performed according to the procedures document on TIA-603-E and FCC CFR 47, Part 27 Subpart L.

Both conducted and radiated testing were performed according to the procedures document on ANSI C63.26: 2015 and RSS-139.

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.

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3.2 DESCRIPTION OF TEST MODES

The EUT (model: N635) had been tested under operating condition.

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

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3.2.1 The worst mode of measurement

Radiated Emission Measurement	
Test Condition	**Band edge, Emission for Unwanted and Fundamental**
Power supply Mode	Mode1: EUT Power by Battery (DC 3V) Mode2: EUT Power by Adapter + Type C USB Mode3: EUT Power by Type C USB+ CarCharge (DC12V) Mode4: EUT Power by Cradle(N564)+Micro USB+Adapter Mode5: EUT Power by Cradle(N564)+Micro USB+ CarCharge (DC12V) Mode6: EUT Power by Cradle(N564) + Cable(DC 12V) Mode7: EUT Power by Cradle(N564_TN)+Micro USB+Adapter Mode8: EUT Power by Cradle(N564_TN)+Micro USB+ CarCharge (DC12V) Mode9: EUT Power by Cradle(N564_TN) + Cable(DC 12V) Mode10: EUT Power by Cradle(N635_V)+Micro USB+Adapter Mode11: EUT Power by Cradle(N635_V)+Micro USB+ CarCharge (DC12V) Mode12: EUT Power by Cradle(N635_V) + Cable(DC 12V) Mode13: EUT Power by Cradle(N635_VL)+Micro USB+Adapter Mode14: EUT Power by Cradle(N635_VL)+Micro USB+ CarCharge (DC12V) Mode15: EUT Power by Cradle(N635_VL) + Cable(DC 12V) Mode16: EUT Power by Cradle(N635_VHG) + Cable(DC 12V)
Worst Mode	☒ Mode 1 ☐ Mode 2 ☐ Mode 3 ☐ Mode 4
Worst 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)

Radiated Emission Measurement Below 1G	
Test Condition	**Radiated Emission Below 1G**
Power supply Mode	Mode1: EUT Power by Battery (DC 3V) Mode2: EUT Power by Adapter + Type C USB Mode3: EUT Power by Type C USB+ CarCharge (DC12V) Mode4: EUT Power by Cradle(N564)+Micro USB+Adapter Mode5: EUT Power by Cradle(N564)+Micro USB+ CarCharge (DC12V) Mode6: EUT Power by Cradle(N564) + Cable(DC 12V) Mode7: EUT Power by Cradle(N564_TN)+Micro USB+Adapter Mode8: EUT Power by Cradle(N564_TN)+Micro USB+ CarCharge (DC12V) Mode9: EUT Power by Cradle(N564_TN) + Cable(DC 12V) Mode10: EUT Power by Cradle(N635_V)+Micro USB+Adapter Mode11: EUT Power by Cradle(N635_V)+Micro USB+ CarCharge (DC12V) Mode12: EUT Power by Cradle(N635_V) + Cable(DC 12V) Mode13: EUT Power by Cradle(N635_VL)+Micro USB+Adapter Mode14: EUT Power by Cradle(N635_VL)+Micro USB+ CarCharge (DC12V) Mode15: EUT Power by Cradle(N635_VL) + Cable(DC 12V) Mode16: EUT Power by Cradle(N635_VHG) + Cable(DC 12V)
Worst Mode	☒ Mode 1 ☐ Mode 2 ☐ Mode 3 ☐ Mode 4

Remark:

1. The worst mode was record in this test report.

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

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4 TEST SUMMERY

FCC Standard Section	IC Standard Secction	Report Section	Test Item	Result
-	-	2	Antenna Requirement	Pass
27.50(d)	RSS-132, section 5.4 RSS-133, section 6.4	8.1	EIRP Measurement	Pass
2.1049	RSS-GEN 6.7	8.2	Occupied Bandwidth Measurement	Pass
27.53(h)	RSS-132 section 5.5 RSS-133 section 6.5	8.3	Conducted Band Edge	Pass
27.53(h)	RSS-132, section 5.4 RSS-133, section 6.4	8.4	Peak to Average Ratio	Pass
27.50(a)	RSS-132 section 5.5 RSS-133 section 6.5	8.5	Conducted Spurious Emission	Pass
27.53(h)	RSS-132 section 5.5 RSS-133 section 6.5	8.6	Spurious Radiation Measurement	Pass
2.1055, 27.54	RSS-132 section 5.3 RSS-133 section 6.3	8.7	Frequency Stability v.s. temperature measurement	Pass

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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

Remark: *Each piece of equipment is scheduled for calibration*

RF Conducted Test Site					
Equipment	**Manufacturer**	**Model**	**S/N**	**Cal Date**	**Cal Due**
Coaxial Cable	Woken	WC12	CC001	06/28/2019	06/27/2020
Wideband Radio Communication Tester	R&S	CMW 500	116875	07/29/2019	07/28/2020
Power Divider	Solvang Technology	STI08-0015	008	08/06/2019	08/05/2020
Signal Analyzer	R&S	FSV 40	101073	09/25/2019	09/24/2020
Software	N/A				

3M 966 Chamber Test Site					
Equipment	**Manufacturer**	**Model**	**S/N**	**Cal Date**	**Cal Due**
Band Reject Filters	MICRO TRONICS	BRM 50702	120	02/26/2019	02/25/2020
Bilog Antenna	Sunol Sciences	JB3	A030105	07/26/2019	07/25/2020
Coaxial Cable	HUBER SUHNER	SUCOFLEX 104PEA	20995	02/26/2019	02/25/2020
Coaxial Cable	EMCI	EMC105	190914+25111	09/20/2019	09/19/2020
Digital Thermo-Hygro Meter	WISEWIND	1206	D07	01/30/2019	01/29/2020
double Ridged Guide Horn Antenna	ETC	MCTD 1209	DRH13M02003	10/04/2019	10/03/2020
Loop Ant	COM-POWER	AL-130	121051	03/22/2019	03/21/2020
Pre-Amplifier	EMEC	EM330	060609	02/26/2019	02/25/2020
Pre-Amplifier	HP	8449B	3008A00965	02/26/2019	02/25/2020
Wideband Radio Communication Tester	R&S	CMW 500	116875	07/29/2019	07/28/2020
PSA Series Spectrum Analyzer	Agilent	E4446A	MY46180323	05/29/2019	05/28/2020
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	e3 6.11-20180413				

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5.3 MEASUREMENT UNCERTAINTY

PARAMETER	UNCERTAINTY
AC Powerline Conducted Emission	+/- 1.2575
Emission bandwidth, 20dB bandwidth	+/- 0.0014
RF output power, conducted	+/- 1.14
Power density, conducted	+/- 1.40
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

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

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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.
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

☐ No.81-1, Lane 210, Bade 2nd Rd., Luchu Hsiang, Taoyuan Hsien 338, Taiwan
Tel: 886-3-324-0332 / Fax: 886-3-324-5235

The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.10: 2013 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.”

6.3 LABORATORY ACCREDITATIONS AND LISTING

The test facilities used to perform radiated and conducted emissions tests are accredited by American Association for Laboratory Accreditation Program for the specific scope accreditation under Lab Code: 0824-01 to perform Electromagnetic Interference tests according to FCC Part 15 and CISPR 22 requirements. In addition, the test facilities are listed with Industry Canada, Certification and Engineering Bureau, IC 2324G-1 for 3M Semi Anechoic Chamber A, 2324G-2 for 3M Semi Anechoic Chamber B.

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7 SETUP OF EQUIPMENT UNDER TEST

7.1 SETUP CONFIGURATION OF EUT

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

7.2 SUPPORT EQUIPMENT

No	Equipment	Brand	Model	Series No.	FCC ID
	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.*

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8 FCC PART 27 REQUIREMENTS & INDUSTRY CANADA RSS-139

8.1 EIRP MEASUREMENT

LIMIT

FCC Part 27.50(d)(4)

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

RSS-139 section 6.5

The equivalent isotropically radiated power (e.i.r.p.) for mobile and portable transmitters shall not exceed one watt. The e.i.r.p. for fixed and base stations in the band 1710-1780 MHz shall not exceed 1 watt.

TEST PROCEDURES

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 RESULTS

No non-compliance noted.

Remark: *The value of factor includes both the loss of cable and external attenuator*

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WCDMA 12.2K RMC

Band		WCDMA IV			EIRP Power		
TX Channel		1312	1412	1513	1312	1412	1513
Frequency (MHz)		1712.4	1732.4	1752.6	1712.4	1732.4	1752.6
3GPP Rel 99	RMC 12.2Kbps	21.90	22.13	22.10	22.94	23.17	23.14
3GPP Rel 5	HSDPA Subtest-1	21.43	21.76	21.77	22.47	22.80	22.81
	HSDPA Subtest-2	21.42	21.79	21.72	22.46	22.83	22.76
	HSDPA Subtest-3	21.34	21.47	21.43	22.38	22.51	22.47
	HSDPA Subtest-4	21.34	21.49	21.45	22.38	22.53	22.49
3GPP Rel 6	HSUPA Subtest-1	21.80	22.00	21.90	22.84	23.04	22.94
	HSUPA Subtest-2	20.00	19.90	19.60	21.04	20.94	20.64
	HSUPA Subtest-3	20.00	20.00	19.90	21.04	21.04	20.94
	HSUPA Subtest-4	20.60	20.50	20.50	21.64	21.54	21.54
	HSUPA Subtest-5	21.70	21.70	21.80	22.74	22.74	22.84

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8.2 OCCUPIED BANDWIDTH MEASUREMENT

LIMIT

For Reporting purpose only.

TEST PROCEDURE

According to KDB 971168 D01 Power Meas License Digital System and TIA-603-E Section 2.2.12.

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	Channel	99% Bandwidth (MHz)	26 dB Bandwidth (MHz)
WCDMA 12.2K RMC (Band IV)	Lowest	4.1244	4.732
	Middle	4.1244	4.718
	Highest	4.1244	4.718

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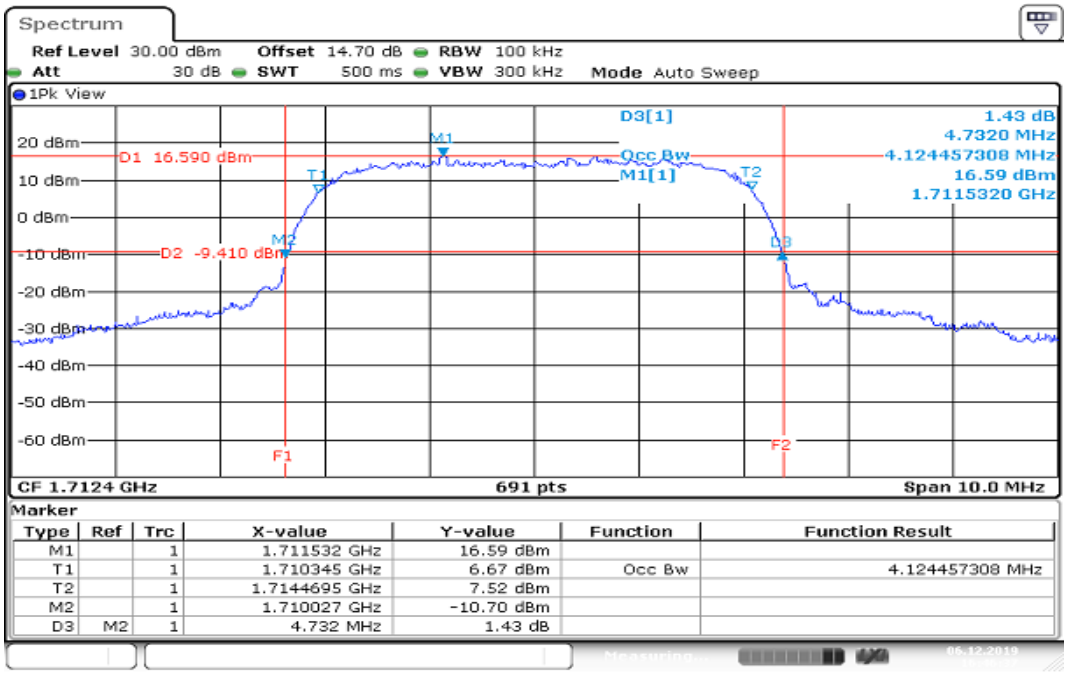
Test Plot

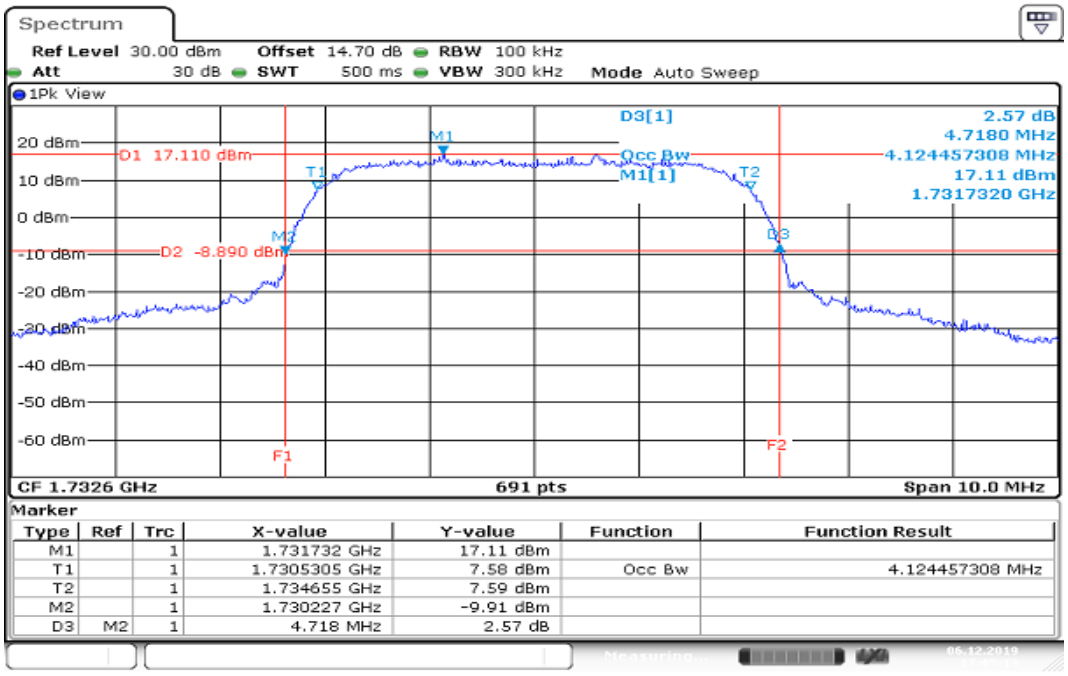
WCDMA 12.2K RMC (BAND IV)

Low CH



Date: 6.DEC.2019 16:46:37

Mid CH



Date: 6.DEC.2019 17:05:13

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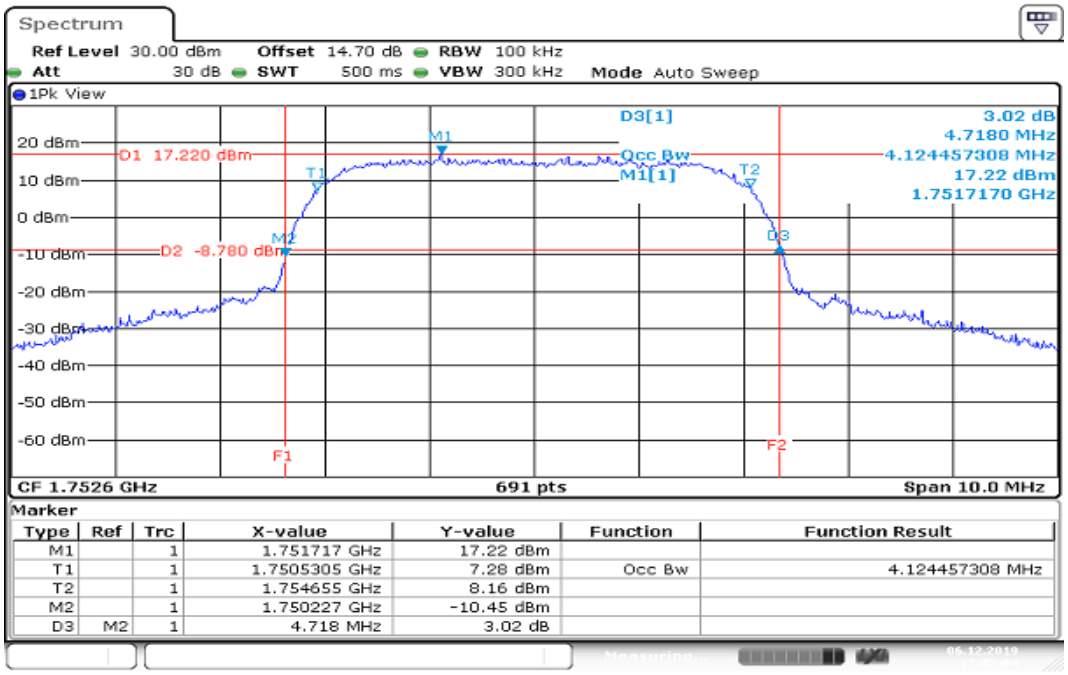
High CH



Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	1.751717 GHz	17.22 dBm		
T1		1	1.7505305 GHz	7.28 dBm	Occ Bw	4.124457308 MHz
T2		1	1.754655 GHz	8.16 dBm		
M2		1	1.750227 GHz	-10.45 dBm		
D3	M2	1	4.718 MHz	3.02 dB		

Date: 6.DEC.2019 17:07:04

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8.3 PEAK TO AVERAGE POWER RATIO

Limit

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

Test Procedures

1. According to KDB 971168 D01.
2. The EUT was connect to spectrum analyzer and call box.
3. Set the CCDF function in spectrum analyzer.
4. The highest RF output power were measured and recorded the maximum PAPR level associated with a probability of 0.1%.
5. Record the Peak to Average Power Ratio.

Test Results

WCDMA 12.2K RMC (Band IV)

	0.1% (dB)
CH Low	3.13
CH Mid	3.10
CH High	2.96

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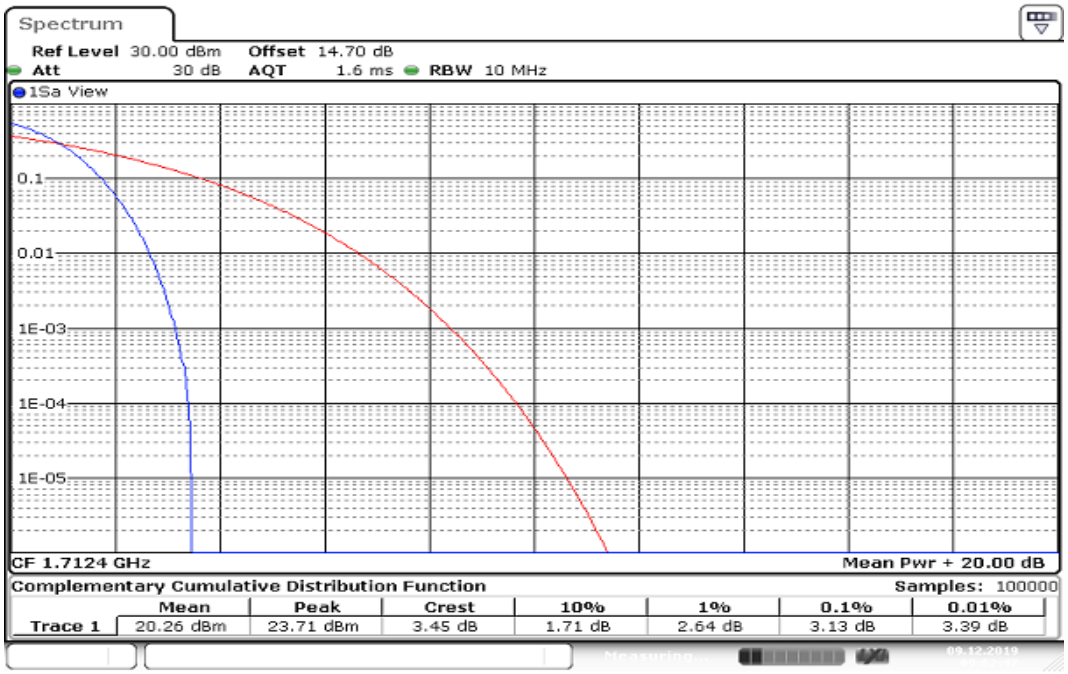
Test Plot

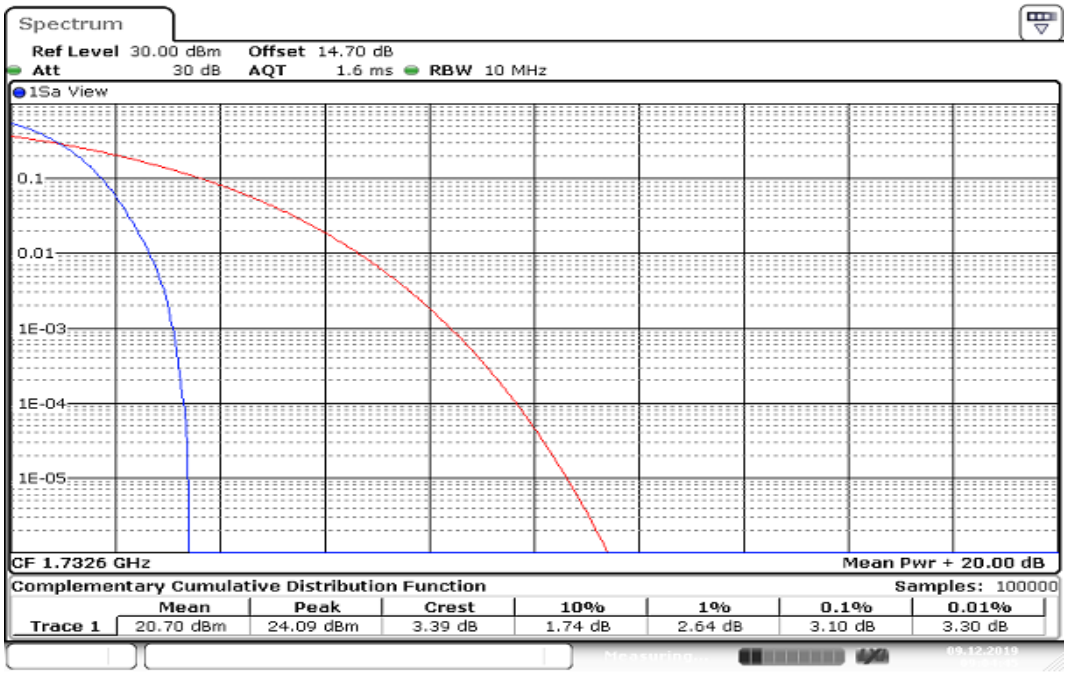
WCDMA 12.2K RMC (BAND IV)

Low CH



Date: 9.DEC.2019 09:02:48

Mid CH



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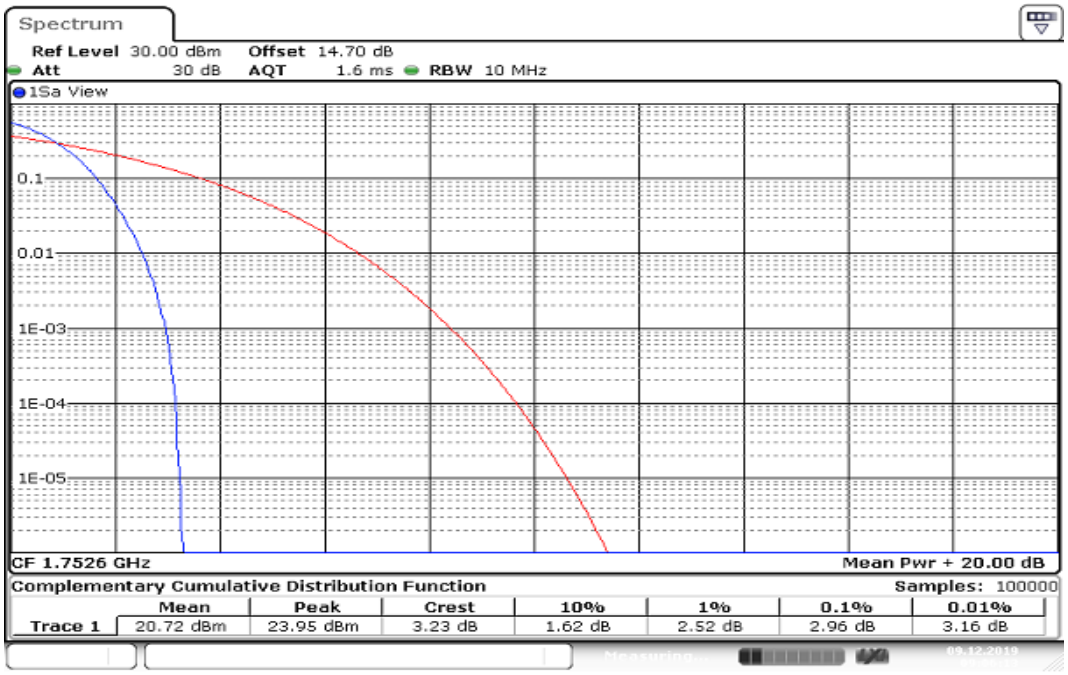
High CH



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8.4 CONDUCTED BAND EDGE MEASUREMENT

LIMIT

FCC §27.53 (h)

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 log10 (P) dB.

RSS-139 section 6.6

The mean power of emission must be attenuated below the mean power of the non-modulated carrier (P) on any frequency twice or more than twice the fundamental frequency by at least 43 + 10 log P dB.

TEST PROCEDURE

According to KDB 971168 D01,

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.

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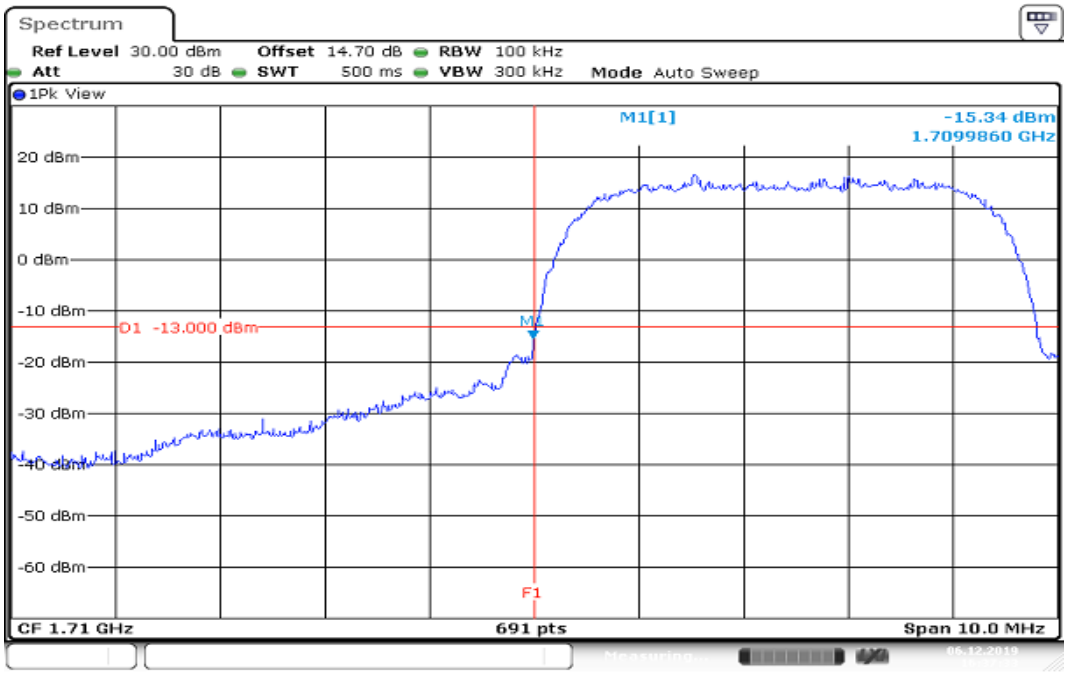
Test Data

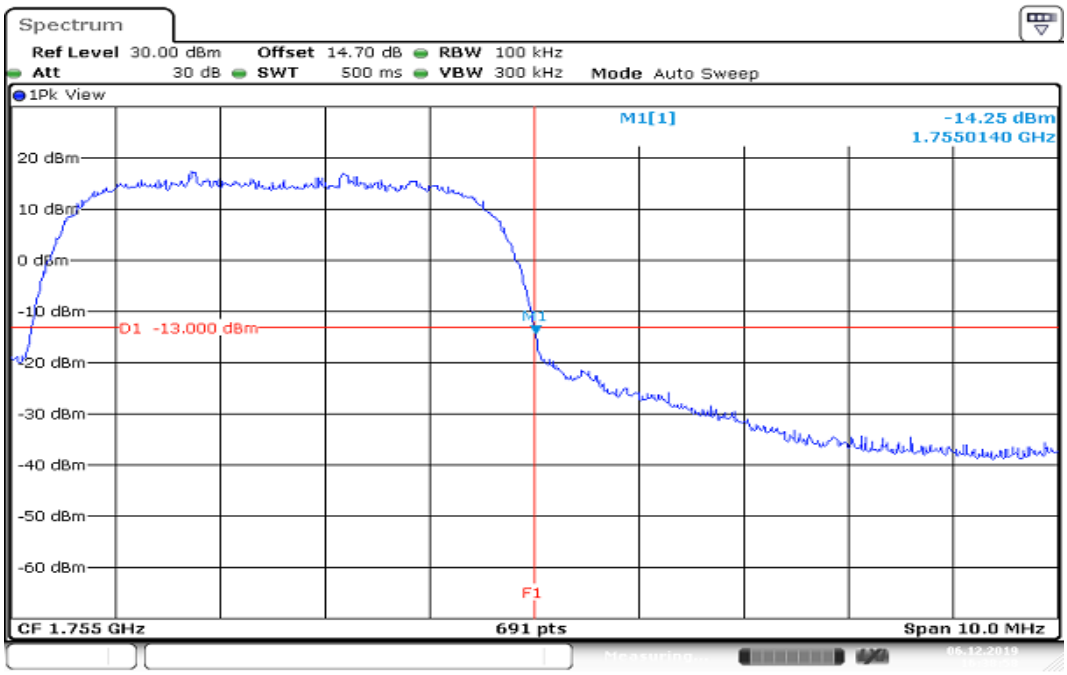
WCDMA 12.2K RMC (BAND IV)

Low CH



Date: 6.DEC.2019 16:37:33

High CH



Date: 6.DEC.2019 16:38:58

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8.5 CONDUCTED SPURIOUS EMISSIONS

LIMIT

FCC §27.53 (h)

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 log10 (P) dB.

RSS-139 section 6.6

The mean power of emission must be attenuated below the mean power of the non-modulated carrier (P) on any frequency twice or more than twice the fundamental frequency by at least 43 + 10 log P dB.

TEST PROCEDURE

According to KDB 971168 D01,

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.

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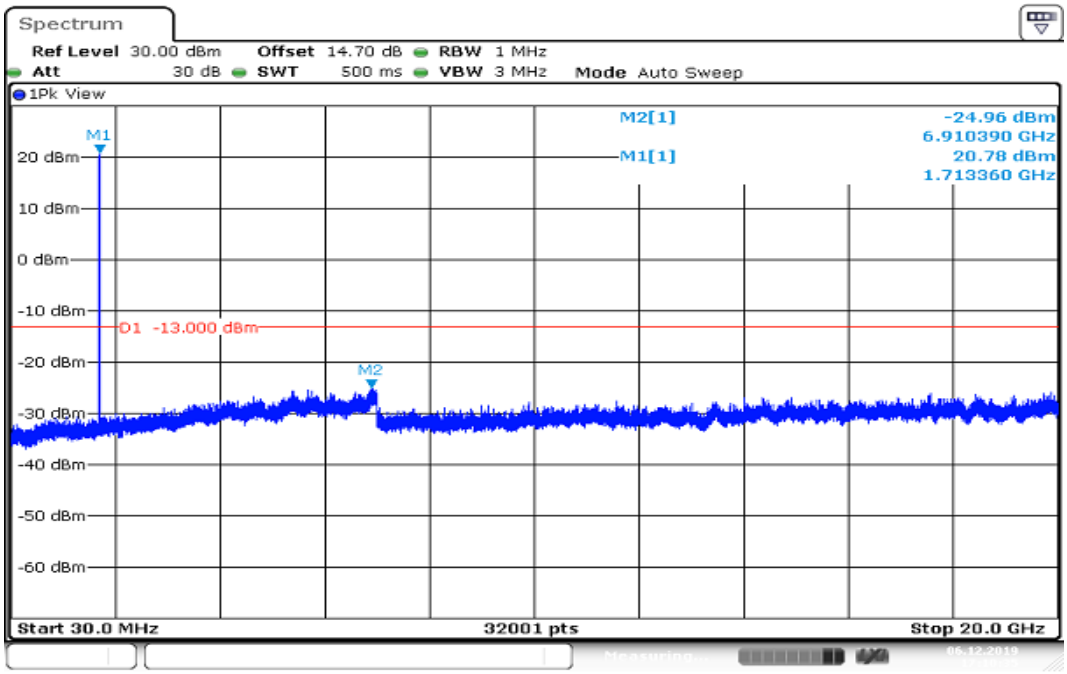
Test Data

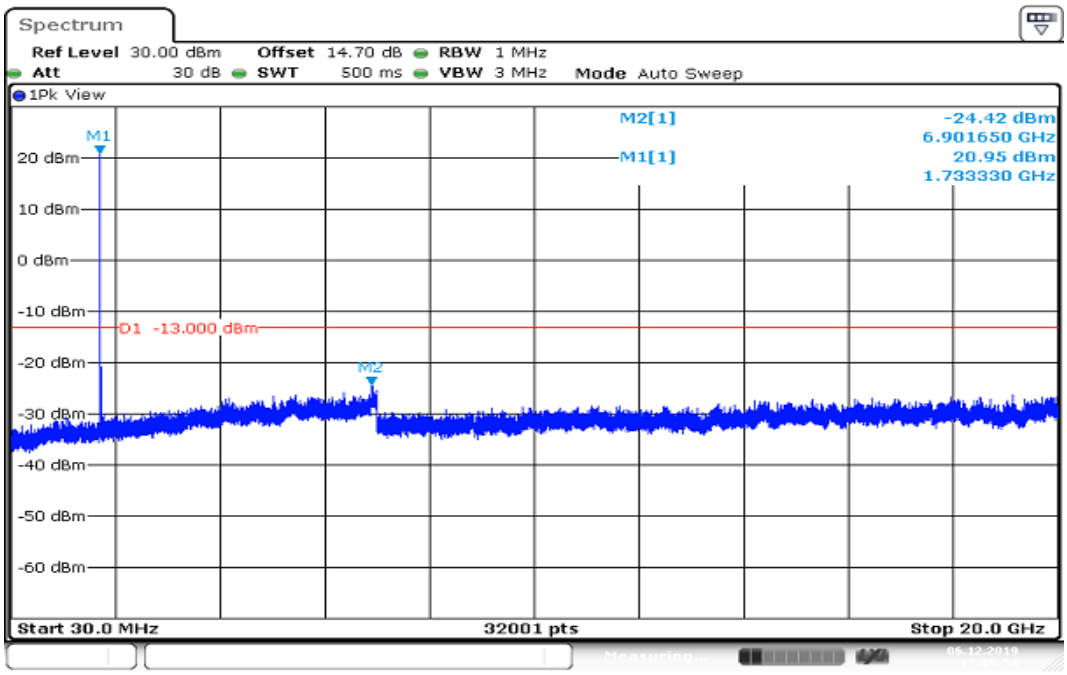
WCDMA 12.2K RMC (BAND IV)

Low CH



Date: 6.DEC.2019 17:10:35

Mid CH



Date: 6.DEC.2019 17:09:54

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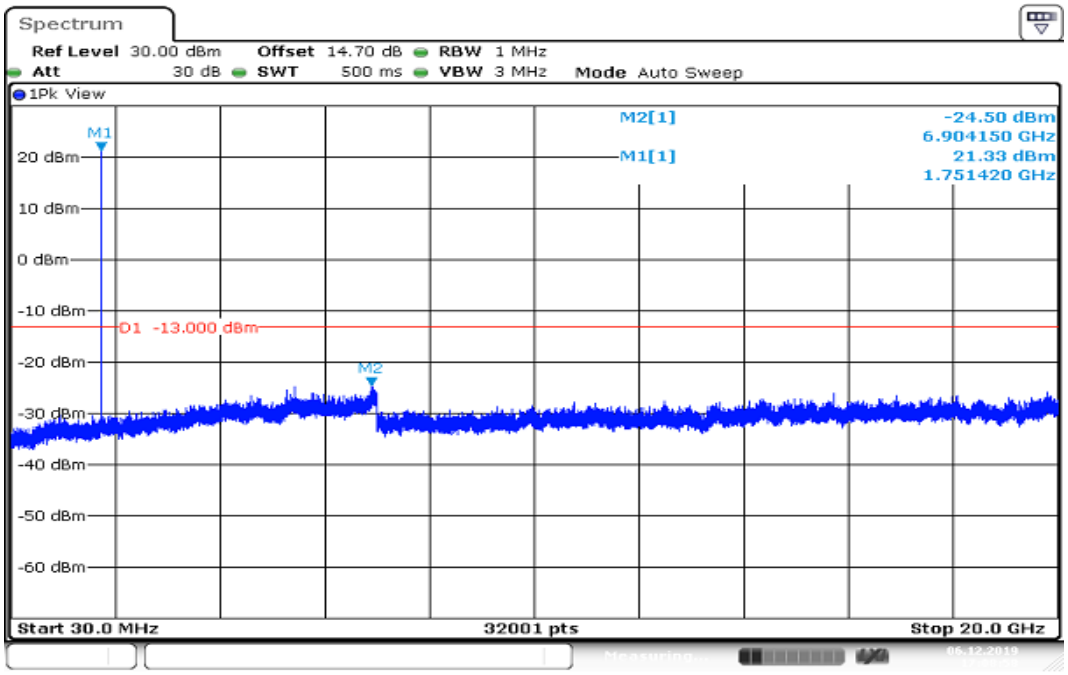
High CH



Date: 6.DEC.2019 17:08:58

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8.6 SPURIOUS RADIATION MEASUREMENT

LIMIT

FCC §27.53 (h)

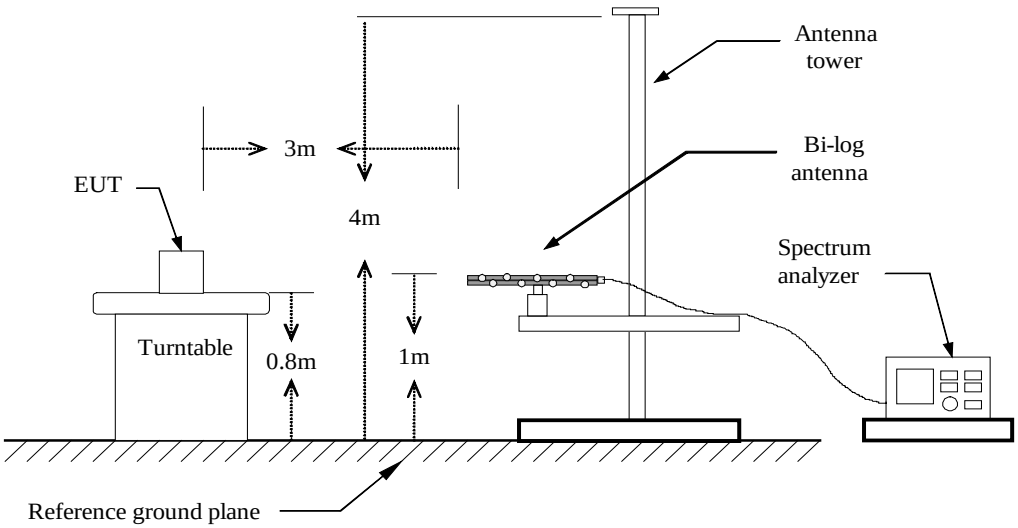
The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least 43 + 10 log10 (P) dB.

RSS-139 section 6.6

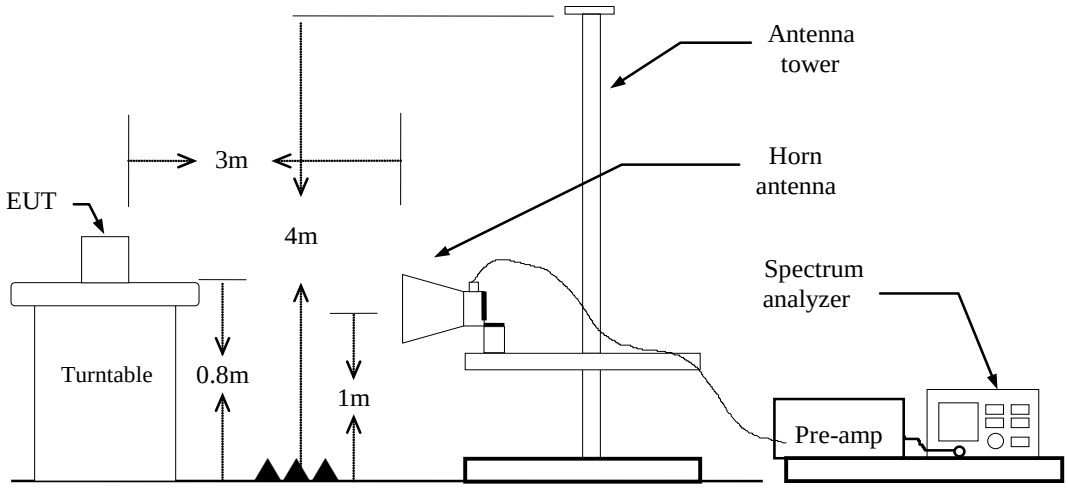
The mean power of emission must be attenuated below the mean power of the non-modulated carrier (P) on any frequency twice or more than twice the fundamental frequency by at least 43 + 10 log P dB.

Test Configuration

Below 1 GHz



Above 1 GHz



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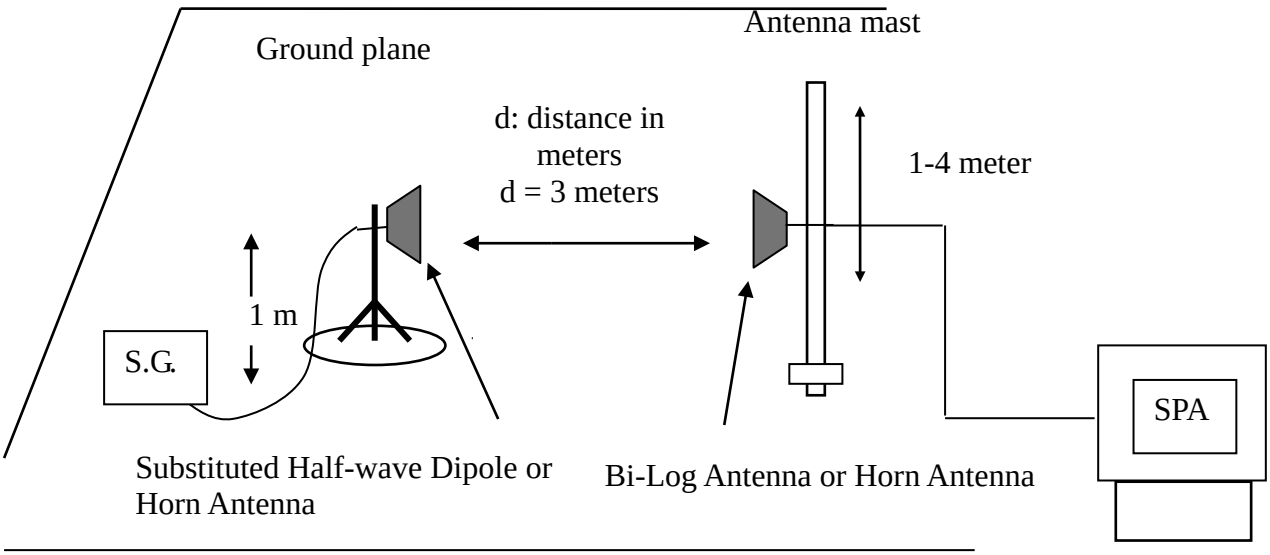
Substituted Method Test Set-up



TEST PROCEDURE

1. According to KDB 971168 D01 Power Meas License Digital System and TIA-603-E Section 2.2.12.
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 (dBi) – Cable (dB)-2.15

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

TEST RESULTS

Refer to the attached tabular data sheets.

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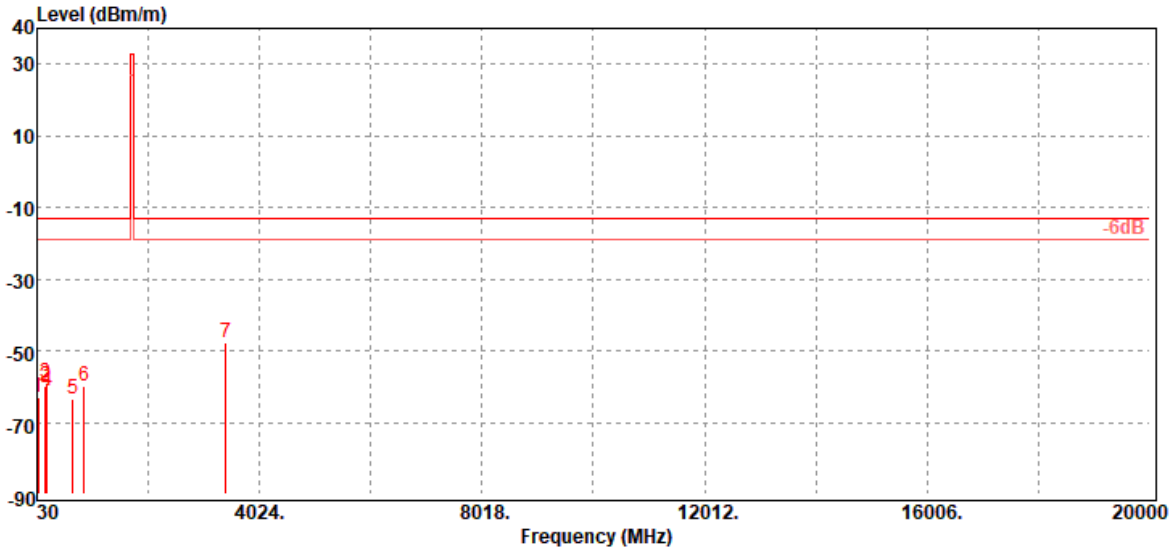
Radiated Spurious Emission Measurement Result

Operation Mode:	WCDMA 12.2k RMC Band IV / TX / Low CH	**Test Date:**	December 10, 2019
Temperature:	18.6℃	**Tested by:**	Jerry Chang
Humidity:	59 % RH	**Polarity:**	Ver.



Freq. (MHz)	ERP/EIRP (dBm)	SG Output Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
57.16	-63.04	-51.96	-10.47	-0.61	-13.00	-50.04	V
182.29	-59.83	-54.52	-4.20	-1.11	-13.00	-46.83	V
192.96	-59.18	-53.94	-4.10	-1.14	-13.00	-46.18	V
207.51	-61.24	-57.61	-2.45	-1.18	-13.00	-48.24	V
676.99	-63.56	-60.07	-1.30	-2.19	-13.00	-50.56	V
875.84	-59.95	-56.17	-1.28	-2.50	-13.00	-46.95	V
3424.80	-47.82	-55.07	12.75	-5.50	-13.00	-34.82	V

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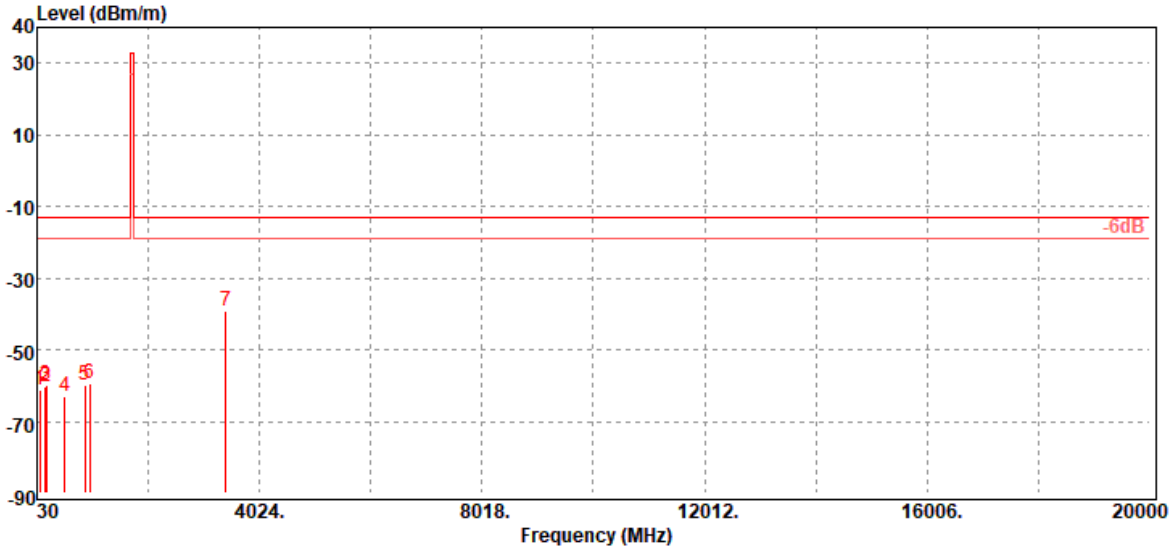
Operation Mode:	WCDMA 12.2k RMC Band IV / TX / Low CH	**Test Date:**	December 10, 2019
Temperature:	18.6℃	**Tested by:**	Jerry Chang
Humidity:	59 % RH	**Polarity:**	Hor.



Freq. (MHz)	ERP/EIRP (dBm)	SG Output Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
80.44	-61.12	-51.93	-8.46	-0.73	-13.00	-48.12	H
178.41	-60.13	-54.47	-4.56	-1.10	-13.00	-47.13	H
191.99	-59.84	-54.6	-4.10	-1.14	-13.00	-46.84	H
526.64	-62.92	-59.7	-1.30	-1.92	-13.00	-49.92	H
896.21	-59.81	-55.99	-1.28	-2.54	-13.00	-46.81	H
970.90	-59.36	-55.4	-1.32	-2.64	-13.00	-46.36	H
3424.80	-39.33	-46.58	12.75	-5.50	-13.00	-26.33	H

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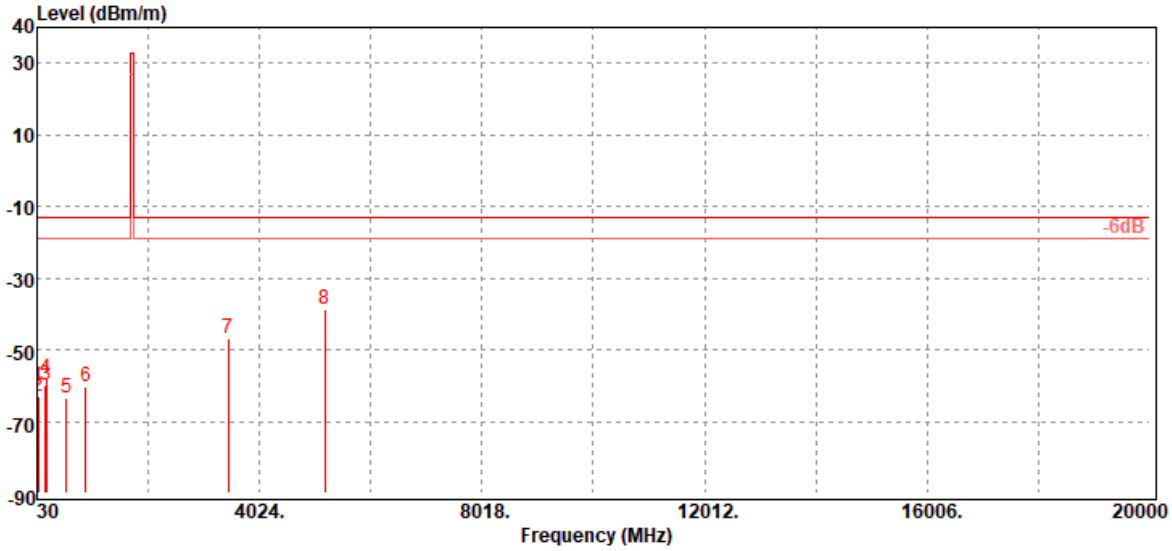
Operation Mode:	WCDMA 12.2k RMC Band IV / TX / Mid CH	**Test Date:**	December 10, 2019
Temperature:	18.6℃	**Tested by:**	Jerry Chang
Humidity:	59 % RH	**Polarity:**	Ver.



Freq. (MHz)	ERP/EIRP (dBm)	SG Output Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
32.91	-60.13	-32.47	-27.19	-0.47	-13.00	-47.13	V
57.16	-62.97	-51.89	-10.47	-0.61	-13.00	-49.97	V
178.41	-59.74	-54.08	-4.56	-1.10	-13.00	-46.74	V
191.99	-58.02	-52.78	-4.10	-1.14	-13.00	-45.02	V
558.65	-63.33	-59.99	-1.37	-1.97	-13.00	-50.33	V
905.91	-60.17	-56.3	-1.32	-2.55	-13.00	-47.17	V
3465.20	-46.67	-53.78	12.64	-5.53	-13.00	-33.67	V
5197.80	-38.79	-45.03	12.99	-6.75	-13.00	-25.79	V

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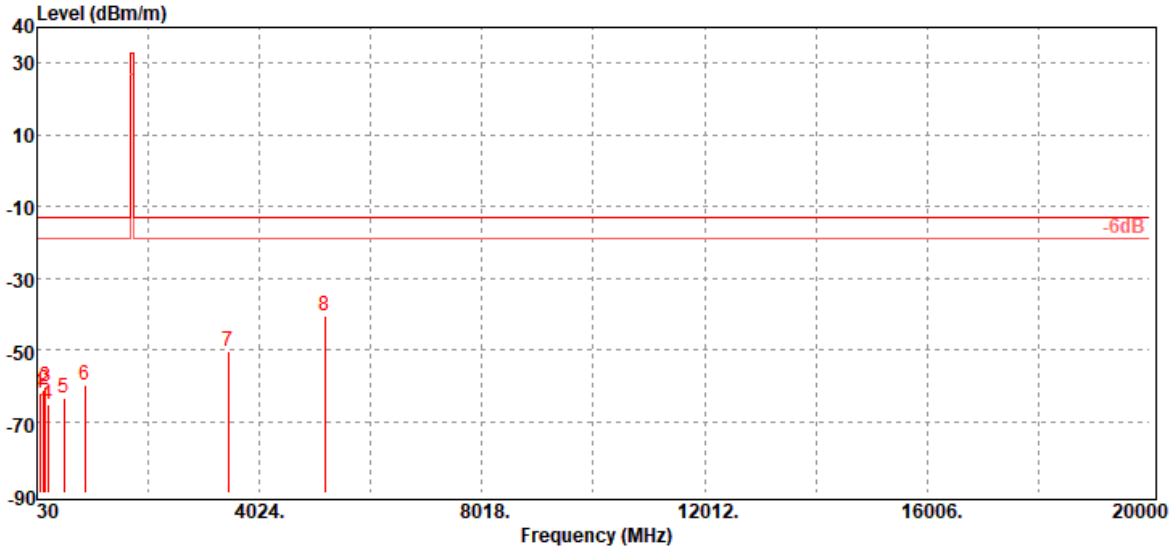
Operation Mode:	WCDMA 12.2k RMC Band IV / TX / Mid CH	**Test Date:**	December 10, 2019
Temperature:	18.6℃	**Tested by:**	Jerry Chang
Humidity:	59 % RH	**Polarity:**	Hor.



Freq. (MHz)	ERP/EIRP (dBm)	SG Output Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
80.44	-62.01	-52.82	-8.46	-0.73	-13.00	-49.01	H
159.01	-61.13	-53.69	-6.40	-1.04	-13.00	-48.13	H
178.41	-60.11	-54.45	-4.56	-1.10	-13.00	-47.11	H
222.06	-65.31	-62.13	-1.96	-1.22	-13.00	-52.31	H
519.85	-63.25	-59.94	-1.40	-1.91	-13.00	-50.25	H
896.21	-59.79	-55.97	-1.28	-2.54	-13.00	-46.79	H
3465.20	-50.33	-57.44	12.64	-5.53	-13.00	-37.33	H
5197.80	-40.33	-46.57	12.99	-6.75	-13.00	-27.33	H

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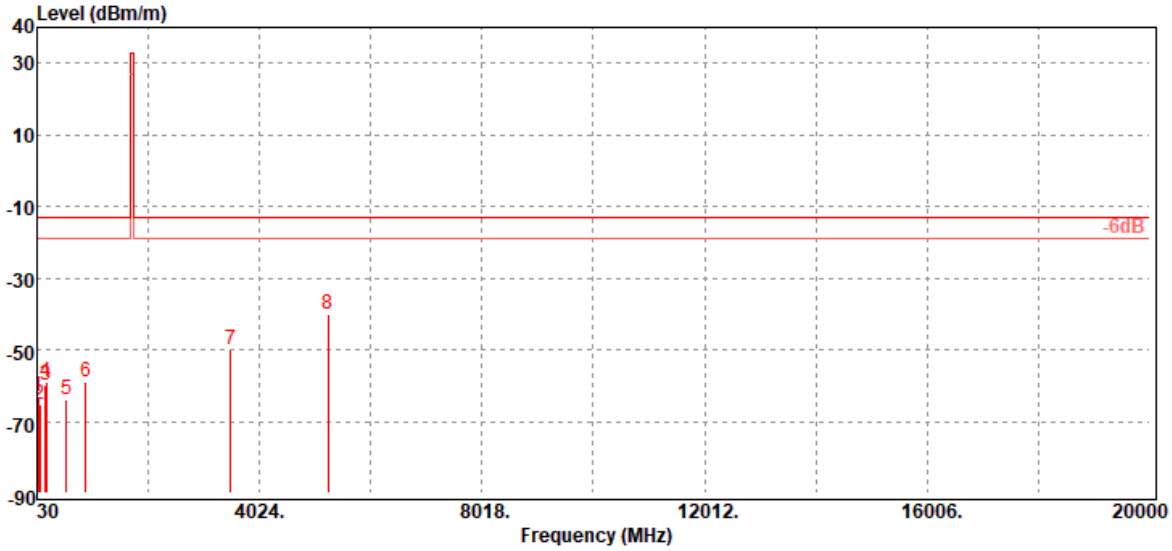
Operation Mode:	WCDMA 12.2k RMC Band IV / TX / High CH	**Test Date:**	December 10, 2019
Temperature:	18.6℃	**Tested by:**	Jerry Chang
Humidity:	59 % RH	**Polarity:**	Ver.



Freq. (MHz)	ERP/EIRP (dBm)	SG Output Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
57.16	-62.91	-51.83	-10.47	-0.61	-13.00	-49.91	V
76.56	-65.22	-55.71	-8.79	-0.72	-13.00	-52.22	V
178.41	-59.71	-54.05	-4.56	-1.10	-13.00	-46.71	V
191.99	-59.06	-53.82	-4.10	-1.14	-13.00	-46.06	V
558.65	-63.72	-60.38	-1.37	-1.97	-13.00	-50.72	V
900.09	-59.07	-55.33	-1.20	-2.54	-13.00	-46.07	V
3505.20	-50.08	-57.01	12.49	-5.56	-13.00	-37.08	V
5257.80	-40.20	-46.59	13.20	-6.81	-13.00	-27.20	V

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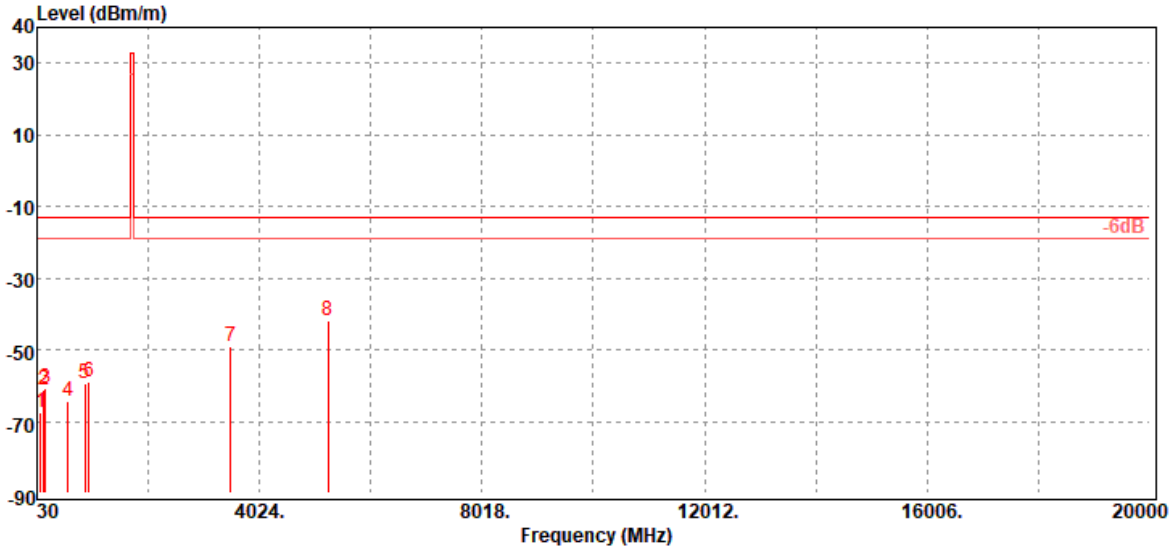
Operation Mode:	WCDMA 12.2k RMC Band IV / TX / High CH	**Test Date:**	December 10, 2019
Temperature:	18.6℃	**Tested by:**	Jerry Chang
Humidity:	59 % RH	**Polarity:**	Hor.



Freq. (MHz)	ERP/EIRP (dBm)	SG Output Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
88.20	-67.52	-59.59	-7.16	-0.77	-13.00	-54.52	H
159.01	-61.42	-53.98	-6.40	-1.04	-13.00	-48.42	H
178.41	-60.93	-55.27	-4.56	-1.10	-13.00	-47.93	H
587.75	-64.36	-61.23	-1.09	-2.04	-13.00	-51.36	H
888.45	-59.27	-55.52	-1.23	-2.52	-13.00	-46.27	H
968.96	-58.88	-54.94	-1.30	-2.64	-13.00	-45.88	H
3505.20	-48.87	-55.8	12.49	-5.56	-13.00	-35.87	H
5257.80	-41.88	-48.27	13.20	-6.81	-13.00	-28.88	H

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8.7 FREQUENCY STABILITY V.S. TEMPERATURE MEASUREMENT

LIMIT

According to the FCC part 27.54 shall be tested the frequency stability. The rule is defined that" The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

RSS-139 section 6.4

Test Procedure

Use Anritsu 8820 with frequency Error measurement capability.

Temp = -35 to +65℃

Voltage= 85% to 115% of the nominal value for AC powered equipment.

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

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TEST RESULTS

No non-compliance noted.

FREQUENCY STABILITY V.S. TEMPERATURE MEASUREMENT:

Reference Frequency: WCDMA 12.2k RMC Band IV Low Channel 1712.4 MHz at 20(°C)				
Limit: □ 2.5 ppm = 4281 Hz				
Power Supply (Vac)	Environment Temperature (°C)	BW: 20M Frequency Error(Hz)	Frequency Error (ppm)	Limit (ppm)
120	65	1.00	0.0006	+/- 2.5
120	50	-1.00	-0.0006	
120	40	0.00	0.0000	
120	30	-2.00	-0.0012	
120	20	-1.00	-0.0006	
120	10	0.00	0.0000	
120	0	-1.00	-0.0006	
120	-10	1.00	0.0006	
120	-20	1.00	0.0006	
120	-35	-1.00	-0.0006	

FREQUENCY STABILITY V.S. VOLTAGE MEASUREMENT:

Reference Frequency: WCDMA 12.2k RMC Band IV Low Channel 1712.4 MHz at 20(°C)				
Limit: □ 2.5 ppm = 4281 Hz				
Power Supply (Vac)	Environment Temperature (°C)	BW: 20M Frequency Error(Hz)	Frequency Error (ppm)	Limit (ppm)
138	20	-1.00	-0.0006	+/- 2.5
120		-1.00	-0.0006	
102		-2.00	-0.0012	

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FREQUENCY STABILITY V.S. TEMPERATURE MEASUREMENT:

Reference Frequency: WCDMA 12.2k RMC Band IV Mid Channel 1732.6 MHz at 20(°C)				
Limit: □ 2.5 ppm = 4331.5 Hz				
Power Supply (Vac)	Environment Temperature (°C)	BW: 20M Frequency Error(Hz)	Frequency Error (ppm)	Limit (ppm)
120	65	0.00	0.0000	+/- 2.5
120	50	-1.00	-0.0006	
120	40	0.00	0.0000	
120	30	-1.00	-0.0006	
120	20	1.00	0.0006	
120	10	0.00	0.0000	
120	0	1.00	0.0006	
120	-10	1.00	0.0006	
120	-20	1.00	0.0006	
120	-35	0.00	0.0000	

FREQUENCY STABILITY V.S. VOLTAGE MEASUREMENT:

Reference Frequency: WCDMA 12.2k RMC Band IV Mid Channel 1732.6 MHz at 20(°C)				
Limit: □ 2.5 ppm = 4331.5 Hz				
Power Supply (Vac)	Environment Temperature (°C)	BW: 20M Frequency Error(Hz)	Frequency Error (ppm)	Limit (ppm)
138	20	-1.00	-0.0006	+/- 2.5
120		-1.00	-0.0006	
102		0.00	0.0000	

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FREQUENCY STABILITY V.S. TEMPERATURE MEASUREMENT:

Reference Frequency: WCDMA 12.2k RMC Band IV High Channel 1752.6 MHz at 20(°C)				
Limit: □ 2.5 ppm = 4381.5 Hz				
Power Supply (Vac)	Environment Temperature (°C)	BW: 20M Frequency Error(Hz)	Frequency Error (ppm)	Limit (ppm)
120	65	-2.00	-0.0011	+/- 2.5
120	50	0.00	0.0000	
120	40	2.00	0.0011	
120	30	-1.00	-0.0006	
120	20	2.00	0.0011	
120	10	-2.00	-0.0011	
120	0	1.00	0.0006	
120	-10	0.00	0.0000	
120	-20	-1.00	-0.0006	
120	-35	-1.00	-0.0006	

FREQUENCY STABILITY V.S. VOLTAGE MEASUREMENT:

Reference Frequency: WCDMA 12.2k RMC Band IV High Channel 1752.6 MHz at 20(°C)				
Limit: □ 2.5 ppm = 4381.5 Hz				
Power Supply (Vac)	Environment Temperature (°C)	BW: 20M Frequency Error(Hz)	Frequency Error (ppm)	Limit (ppm)
138	20	0.00	0.0000	+/- 2.5
120		0.00	0.0000	
102		-1.00	-0.0006	

- End of Test Report -

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