ACCREDITED
TESTING LABORATORY
CERTIFICATE#4323.01

FCC PART 27

MEASUREMENT AND TEST REPORT

For

Micron Electronics LLC.

1001 Yamato Road, Suite 400, Boca Raton, Florida 33431, United States

FCC ID: ZKQ-ATW

Report Type:	**Product Type:**
Class II Permissive Change	Tracker

Test Engineer: Max Min

Report Number: RSHA180522005-00A

Report Date: 2018-05-26

Reviewed By: Oscar Ye
RF Leader

Prepared By: Bay Area Compliance Laboratories Corp. (Kunshan)
No.248 Chenghu Road,Kunshan,Jiangsu province,China
Tel: +86-0512-86175000
Fax: +86-0512-88934268
www.baclcorp.com.cn

TABLE OF CONTENTS

DOCUMENT REVISION HISTORY **4**

GENERAL INFORMATION **5**

PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT) 5
OBJECTIVE 5
RELATED SUBMITTAL(S)/GRANT(S) 5
TEST METHODOLOGY 5
MEASUREMENT UNCERTAINTY 6
TEST FACILITY 6

SYSTEM TEST CONFIGURATION **7**

JUSTIFICATION 7
CHANNEL LIST 7
EQUIPMENT MODIFICATIONS 7
SUPPORT EQUIPMENT LIST AND DETAILS 7
EXTERNAL CABLE LIST AND DETAILS 7
BLOCK DIAGRAM OF TEST SETUP 8

SUMMARY OF TEST RESULTS **9**

TEST EQUIPMENT LIST **10**

FCC §1.1310 & §2.1091- MAXIMUM PERMISSIBLE EXPOSURE (MPE) **12**

APPLICABLE STANDARD 12
CALCULATED FORMULARY: 12
CALCULATED DATA: 13

FCC §2.1047 - MODULATION CHARACTERISTIC **14**

FCC §2.1046; §27.50 (D) - RF OUTPUT POWER **15**

APPLICABLE STANDARDS 15
TEST PROCEDURE 15
TEST DATA 16

FCC §2.1049, §27.53 - OCCUPIED BANDWIDTH **18**

APPLICABLE STANDARDS 18
TEST PROCEDURE 18
TEST DATA 18

FCC § 2.1051; §27.53 (H) SPURIOUS EMISSIONS AT ANTENNA TERMINALS **21**

APPLICABLE STANDARDS 21
TEST PROCEDURE 21
TEST DATA 21

FCC § 2.1053; §27.53 (H) - SPURIOUS RADIATED EMISSIONS **23**

APPLICABLE STANDARDS 23
TEST PROCEDURE 23
TEST DATA 24

FCC §27.53 (H) - BAND EDGES **25**

APPLICABLE STANDARDS 25
TEST PROCEDURE 25
TEST DATA 25

FCC § 2.1055; §27.54; - FREQUENCY STABILITY 30
APPLICABLE STANDARDS.....30
TEST PROCEDURE 30
TEST DATA 30

DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of revision	Date of revision
0	RSHA180326003-00A	Original Report	2018-04-23
1	RSHA180522005-00A	CIIPC Report(See note 1)	2018-05-26

Note:

1. This is a CIIPC report based on the Original report: RSHA180326003-00A (FCC ID: ZKQ-ATW), the test was performed by Max Min on 2018-04-23.

It is identical to the previously certified except for the changes as below:

Add WCDMA band IV

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

Applicant	Micron Electronics LLC.
Tested Model	ATW
Product Type	Tracker
Dimension	74.8 mm (L)* 42.5 mm (W)*27 mm(H)
Power Supply	DC 3.7V from battery and DC 5.0V charging by adapter

Adapter Information:
Model: JT-M050100
Input: AC100-240 V 50/60Hz
Output:5.0V, 1A

**All measurement and test data in this report was gathered from production sample serial number: 20180326003. (Assigned by the BACL. The EUT supplied by the applicant was received on 2018-03-26)*

Objective

This type approval report is prepared on behalf of Micron Electronics LLC. in accordance with Part 2 and Part 27 of the Federal Communication Commission's rules.

The objective is to determine the compliance of EUT with FCC rules for output power, modulation characteristic, occupied bandwidth, and spurious emission at antenna terminal, spurious radiated emission, frequency stability, and band edge.

Related Submittal(s)/Grant(s)

FCC Part 15.247 DTS and Part 22H24E PCB grant with FCC ID: ZKQ-ATW.

Test Methodology

All tests and measurements indicated in this document were performed in accordance with the Code of Federal Regulations Title 47 Part 2, Sub-Part J as well as the following parts:

Part 27 – Miscellaneous wireless communications services

Applicable Standards: TIA/EIA 603-D.

All radiated and conducted emissions measurements were performed at Bay Area Compliance Laboratories Corp. (Kunshan). The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

Measurement Uncertainty

Item		Uncertainty
AC Power Lines Conducted Emissions		3.19dB
RF conducted test with spectrum		0.9dB
RF Output Power with Power meter		0.5dB
Radiated emission	30MHz~1GHz	6.11dB
	1GHz~6GHz	4.45dB
	6GHz~18GHz	5.23dB
	18GHz~40GHz	5.65dB
Occupied Bandwidth		0.5kHz
Temperature		1.0℃
Humidity		6%

Test Facility

The test site used by Bay Area Compliance Laboratories Corp. (Kunshan) to collect test data is located on the No.248 Chenghu Road, Kunshan, Jiangsu province, China.

Bay Area Compliance Laboratories Corp. (Kunshan) Lab is accredited to ISO/IEC 17025 by A2LA (Lab code: 4323.01) and the FCC designation No. CN1185 under the FCC KDB 974614 D01. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2014.

SYSTEM TEST CONFIGURATION

Justification

The EUT was configured for testing according to TIA/EIA-603-D.

The final qualification test was performed with the EUT operating at normal mode.

Channel List

Mode	Channel		Frequency (MHz)
WCDMA Band IV	Low	1312	1712.4
	Middle	1413	1732.6
	High	1513	1752.6

Equipment Modifications

No modifications were made to the EUT.

Support Equipment List and Details

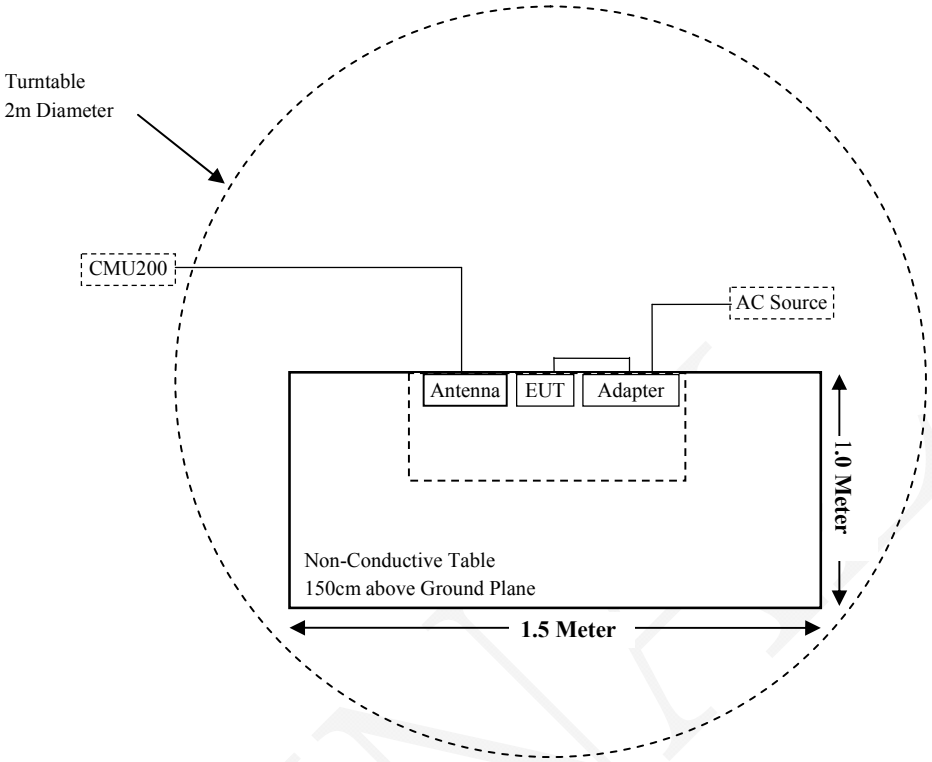
Manufacturer	Description	Model	Serial Number
Aihuaixin Technology	Antenna	/	/

External Cable List and Details

Cable Description	Length (m)	From Port	To
Power Cable	0.8	EUT	Adapter

Block Diagram of Test Setup

For Radiated Emissions(Below & Above 1GHz)



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§1.1310& §2.1091	MAXIMUM PERMISSIBLE EXPOSURE (MPE)	Compliant
§2.1046; §27.50 (d)	RF Output Power	Compliant
§ 2.1047	Modulation Characteristics	Not Applicable
§ 2.1049; §27.53	Occupied Bandwidth	Compliant
§ 2.1051; §27.53 (h)	Spurious Emissions at Antenna Terminal	Compliant
§ 2.1053; §27.53 (h)	Spurious Radiated Emissions	Compliant
§27.53 (h)	Band Edge	Compliant
§ 2.1055; §27.54;	Frequency stability	Compliant

TEST EQUIPMENT LIST

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Radiated Emission Test（Chamber 1#）					
Rohde & Schwarz	EMI Test Receiver	ESCI	100195	2017-11-12	2018-11-11
HP	Signal Generator	HP 8341B	2624A00116	2017-08-29	2018-08-28
Sunol Sciences	Broadband Antenna	JB3	A090413-1	2016-12-26	2019-12-25
Sunol Sciences	Broadband Antenna	JB3	A090314-2	2016-01-09	2019-01-08
Sonoma Instrunent	Pre-amplifier	310N	171205	2017-08-15	2018-08-14
Rohde & Schwarz	Auto test Software	EMC32	100361	/	/
MICRO-COAX	Coaxial Cable	Cable-6	006	2017-08-15	2018-08-14
MICRO-COAX	Coaxial Cable	Cable-8	008	2017-08-15	2018-08-14
MICRO-COAX	Coaxial Cable	Cable-9	009	2017-08-15	2018-08-14
MICRO-COAX	Coaxial Cable	Cable-10	010	2017-08-15	2018-08-14
Rohde & Schwarz	UNIVERSAL RADIO COMMUNICATION TESTER	CMU200	110605	2017-11-12	2018-11-11
Radiated Emission Test（Chamber 2#）					
HP	Signal Generator	HP 8341B	2624A00116	2017-08-29	2018-08-28
Rohde & Schwarz	EMI Test Receiver	ESU40	100207	2017-08-27	2018-08-26
ETS-LINDGREN	Horn Antenna	3115	9311-4159	2016-01-11	2019-01-10
ETS-LINDGREN	Horn Antenna	3115	6229	2016-01-11	2019-01-10
ETS-LINDGREN	Horn Antenna	3116	00084159	2016-10-18	2019-10-17
ETS-LINDGREN	Horn Antenna	3116	2516	2016-12-12	2019-12-12
Narda	Pre-amplifier	AFS42-00101800	2001270	2017-12-12	2018-12-11
EM Electronics Corporation	Amplifier	EM18G40G	060726	2018-03-22	2019-03-21
Rohde & Schwarz	Auto test Software	EMC32	100361	/	/
MICRO-COAX	Coaxial Cable	Cable-6	006	2017-08-15	2018-08-14
MICRO-COAX	Coaxial Cable	Cable-11	011	2017-08-15	2018-08-14
MICRO-COAX	Coaxial Cable	Cable-12	012	2017-08-15	2018-08-14
MICRO-COAX	Coaxial Cable	Cable-13	013	2017-08-15	2018-08-14
MICRO-COAX	Coaxial Cable	Cable-16	016	2017-08-15	2018-08-14
Rohde & Schwarz	UNIVERSAL RADIO COMMUNICATION TESTER	CMU200	110605	2017-11-12	2018-11-11

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
RF Conducted Test					
Rohde & Schwarz	Signal Analyzer	FSIQ26	836131/009	2017-09-21	2018-09-20
Rohde & Schwarz	UNIVERSAL RADIO COMMUNICATION TESTER	CMU200	110605	2017-11-12	2018-11-11
BACL	Temperature & Humidity Chamber	BTH-150	30023	2017-10-10	2018-10-09
EAST	Regulated DC Power Supply	MCH-303D-II	14070562	2017-10-10	2018-10-09
Micron Electronics	RF Cable	/	/	Each Time	/

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Kunshan) attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

FCC §1.1310 & §2.1091- MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Applicable Standard

According to subpart 1.1310, 2.1091 systems operating under the provisions of this section shall be operated in a manner that ensures the public is not exposed to RF energy level in excess of the communication guidelines.

Limits for General Population/Uncontrolled Exposure				
Frequency Range (MHz)	**Electric Field Strength (V/m)**	**Magnetic Field Strength (A/m)**	**Power Density (mW/cm^2)**	**Averaging Time (minutes)**
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*(180/f^2)	30
30-300	27.5	0.073	0.2	30
300-1500	/		f/1500	30
1500-100,000	/		1.0	30

f = frequency in MHz; * = Plane-wave equivalent power density

Calculated Formulary:

Predication of MPE limit at a given distance

$S = PG/4\pi R^2$ = power density (in appropriate units, e.g. mW/cm^2);
P = power input to the antenna (in appropriate units, e.g., mW);
G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally numeric gain;
R = distance to the center of radiation of the antenna (appropriate units, e.g., cm);

For simultaneously transmit system, the calculated power density should comply with:

$$\sum_i \frac{S_i}{S_{Limit,i}} \leq 1$$

Calculated Data:

Mode	Frequency Range (MHz)	Antenna Gain		Tune-up Conducted Power		Evaluation Distance (cm)	Power Density (mW/cm^2)	MPE Limit (mW/cm^2)	MPE Ratio
		(dBi)	(numeric)	(dBm)	(mW)				
Wi-Fi	2412~2462	-2.00	0.63	16	39.81	20	0.0050	1.00	0.0050
GPRS 850	824~849	2.00	1.58	27	501.19	20	0.1580	0.55	0.2873
EGPRS 850	824~849	2.00	1.58	21	125.89	20	0.0397	0.55	0.0722
WCDMA Band V	824~849	2.00	1.58	23	199.53	20	0.0629	0.55	0.1144
GPRS 1900	1850~1910	2.00	1.58	24	251.19	20	0.0792	1.00	0.0792
EGPRS 1900	1850~1910	2.00	1.58	19	79.43	20	0.0250	1.00	0.0250
WCDMA Band II	1850~1910	2.00	1.58	23	199.53	20	0.0629	1.00	0.0629
WCDMA Band IV	1710~1755	2.00	1.58	23	199.53	20	0.0629	1.00	0.0629

Note:

(1) For GPRS/EGPRS Mode, the time based average power is relevant, the difference in between depends on the duty cycle of the TDMA signal.

Number of Time slot	1	2	3	4
Duty Cycle	1:8	1:4	1:2.66	1:2
Time based Ave. power compared to slotted Ave. power	-9 dB	-6 dB	-4.25 dB	-3 dB

(2) **Wi-Fi** and **GPRS or WCDMA** can transmit simultaneously; the worst condition is Wi-Fi & GPRS 850, as below:

$$\sum_i \frac{S_i}{S_{Limit,i}} \le 1$$ = 0.0050+0.2873=0.2923＜1.0

Result: The device meet FCC MPE at 20 cm distance.

FCC §2.1047 - MODULATION CHARACTERISTIC

According to FCC § 2.1047(d), Part 27 there is no specific requirement for digital modulation, therefore modulation characteristic is not presented.

FCC §2.1046; §27.50 (d) - RF OUTPUT POWER

Applicable Standards

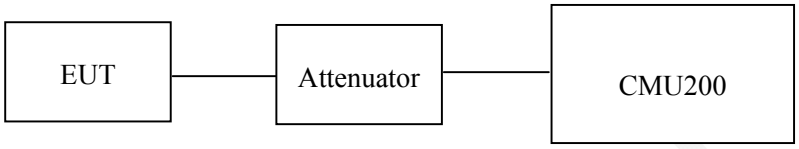
According to §27.50(d), the maximum EIRP must not exceed 1Watts (30dBm) for 1710-1755MHz.

The peak-to-average power ratio (PAPR) of the transmitter output power must not exceed 13 dB.

Test Procedure

Conducted method:

The RF output of the transmitter was connected to the CMU200 through sufficient attenuation.



Radiated Output Power:
The measurements procedures specified in ANSI/TIA-603-D were applied.
a) Connect the equipment as illustrated. Mount the equipment with the manufacturer specified antenna in a vertical orientation on a manufacturer specified mounting surface located on a non-conducting rotating platform of a RF anechoic chamber (preferred) or a standard radiation site.
b) Key the transmitter, then rotate the EUT 360o azimuthally and record spectrum analyzer power level (LVL) measurements at angular increments that are sufficiently small to permit resolution of all peaks. If a standard radiation test site is used, raise and lower the test antenna to obtain a maximum reading at each angular increment. (Note: several batteries may be needed to offset the effect of battery voltage droop, which should not exceed 5% of the manufactured specified battery voltage during transmission).
c) Replace the transmitter under test with a vertically polarized half-wave dipole (or an antenna whose gain is known relative to an ideal half-wave dipole). The center of the antenna should be at the same location as the center of the antenna under test.
d) Connect the antenna to a signal generator with a known output power and record the path loss (in dB) as LOSS. If a standard radiation test site is used,raise and lower the test antenna to obtain a maximum reading.
LOSS = Generator Output Power (dBm) – Analyzer reading (dBm)
e) Determine the effective radiated output power at each angular position from
the readings in steps b) and d) using the following equation:
ERP (dBm) = LVL (dBm) + LOSS (dB)
f) The maximum ERP is the maximum value determined in the preceding step.
(Note: Effective Isotropic Radiated Power (EIRP) can be computed using the following:
EIRP (dBm) = ERP (dBm) + 2.15 (dB.)

Test Data

Environmental Conditions

Temperature:	23.4℃
Relative Humidity:	50 %
ATM Pressure:	101.2kPa

The testing was performed by Max Min on 2018-05-26.

Conducted Power:

WCDMA Band IV

Mode	Test Condition	Test Mode	3GPP Sub Test	Average Output Power (dBm)		
				Low Frequency	Middle Frequency	High Frequency
WCDMA (Band IV)	Normal	Rel 99	1	22.62	22.78	22.57
		HSDPA	1	22.52	22.64	22.44
			2	22.37	22.61	22.41
			3	22.31	22.52	22.34
			4	22.19	22.43	22.26
		HSUPA	1	22.51	22.62	22.41
			2	22.33	22.49	22.31
			3	22.14	22.34	22.11
			4	22.22	22.39	22.17
			5	22.36	22.43	22.26
		HSPA+	1	22.55	22.69	22.52

Peak-to-average ratio (PAR):

WCDMA Band IV

Mode	Channel	PAR (dB)	Limit (dB)
WCDMA (Rel 99)	Low	2.67	13
	Middle	2.69	13
	High	2.71	13
WCDMA (HSDPA)	Low	2.29	13
	Middle	2.31	13
	High	2.32	13
WCDMA (HSUPA)	Low	2.38	13
	Middle	2.46	13
	High	2.43	13
WCDMA (HSPA+)	Low	2.27	13
	Middle	2.24	13
	High	2.23	13

Radiated Power:

WCDMA Mode

Frequency (MHz)	Receiver Reading (dBµV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (cm)	Polar (H/V)	Submitted Level (dBm)	Cable loss (dB)	Antenna Gain (dBd/dBi)			
WCDMA Band IV, Middle Channel(EIRP)										
1732.60	84.97	12	243	H	12.89	0.84	8.57	20.62	30	9.38
1732.60	82.29	28	133	V	9.94	0.84	8.57	17.67	30	12.33

Note:
All above data were tested with no amplifier.
Absolute Level = Submitted Level - Cable loss + Antenna Gain
Margin = Limit- Absolute Level

FCC §2.1049, §27.53 - OCCUPIED BANDWIDTH

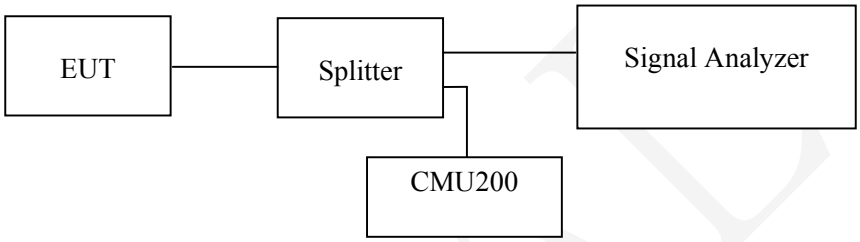
Applicable Standards

FCC 47 §2.1049, §27.53.

Test Procedure

The RF output of the transmitter was connected to the simulator and the spectrum analyzer through sufficient attenuation.

The resolution bandwidth of the spectrum analyzer was set at 5 kHz (Cellular /PCS) & 100 kHz (WCDMA) and the 26 dB & 99% bandwidth was recorded.



Test Data

Environmental Conditions

Temperature:	23 ℃
Relative Humidity:	50 %
ATM Pressure:	101.0kPa

The testing was performed by Max Min on 2018-05-26.

EUT operation mode: Transmitting

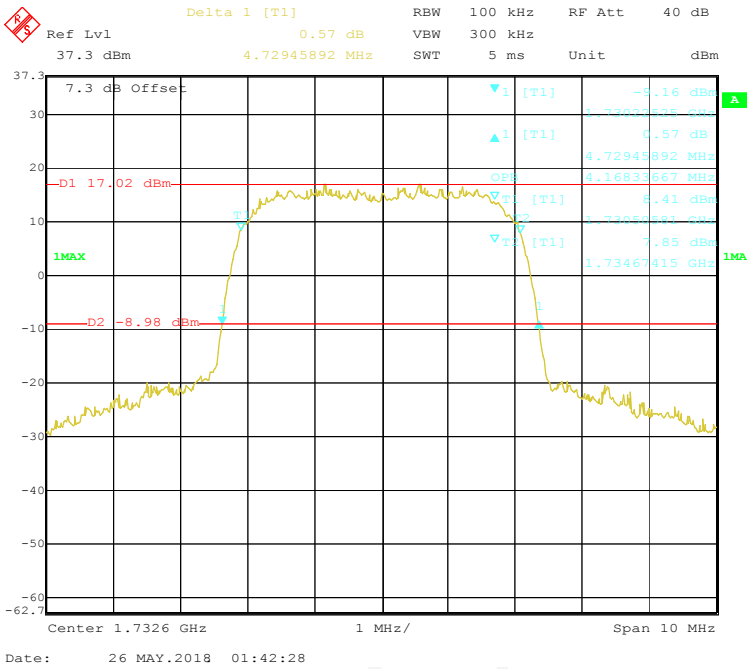
Test Result: Compliance.

WCDMA Band IV

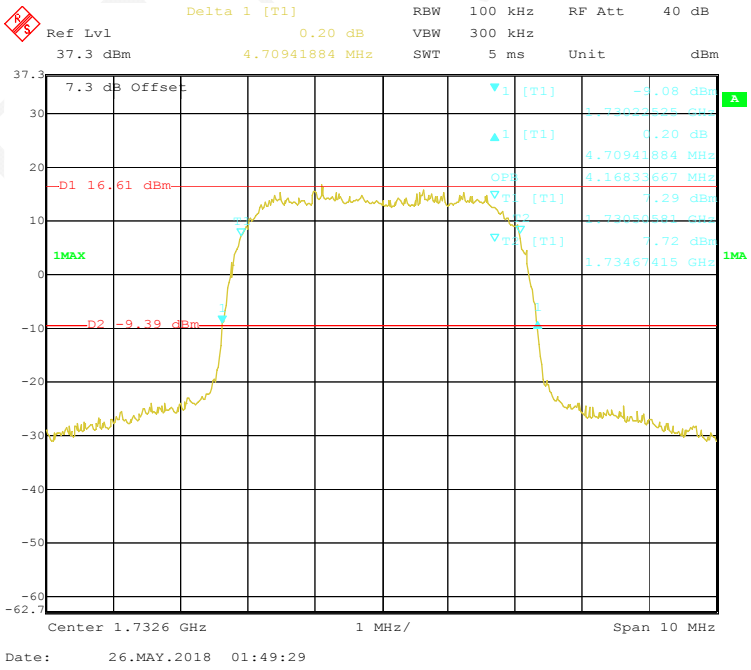
Mode	Frequency (MHz)	26 dB Emission Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
WCDMA (Rel 99)	1732.6	4.729	4.168
WCDMA (HSDPA)	1732.6	4.709	4.168
WCDMA (HSUPA)	1732.6	4.729	4.168
WCDMA (HSPA+)	1732.6	4.729	4.168

WCDMA Band IV

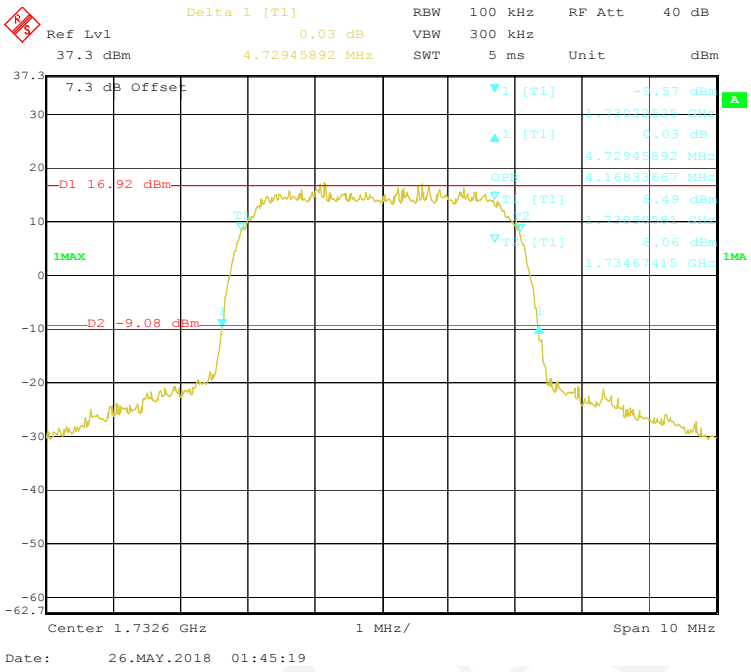
99% Occupied & 26 dB Emissions Bandwidth for WCDMA (Rel 99) Mode



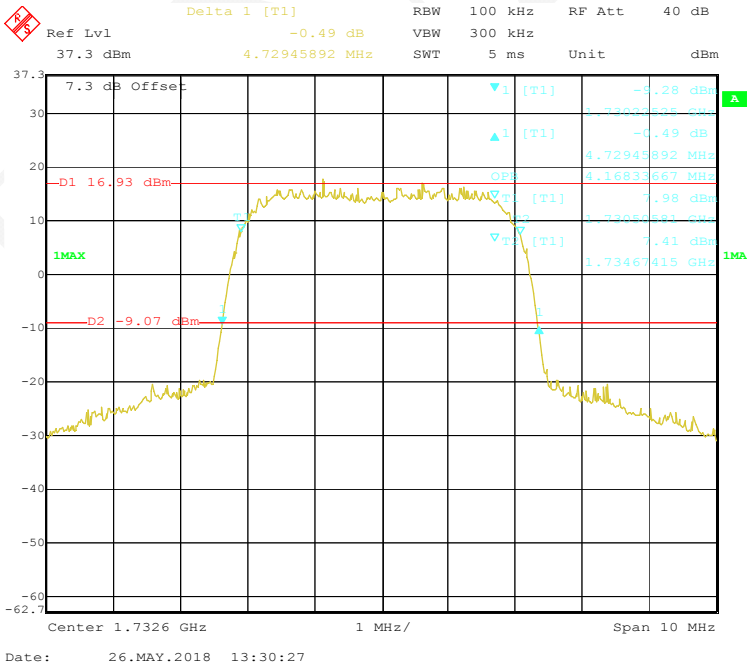
99% Occupied & 26 dB Emissions Bandwidth for WCDMA (HSDPA) Mode



99% Occupied & 26 dB Emissions Bandwidth for WCDMA (HSUPA) Mode



99% Occupied & 26 dB Emissions Bandwidth for WCDMA (HSPA+) Mode



FCC § 2.1051; §27.53 (h) SPURIOUS EMISSIONS AT ANTENNA TERMINALS

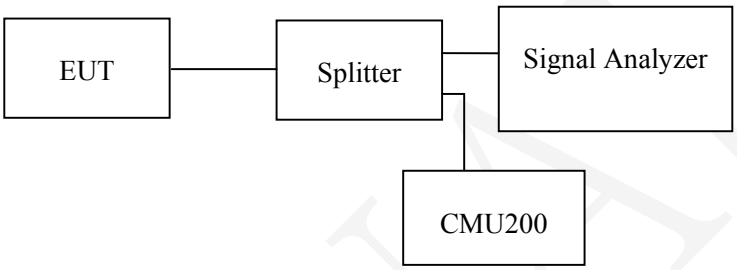
Applicable Standards

FCC §2.1051, §27.53(h).

The spectrum was to be investigated to the tenth harmonics of the highest fundamental frequency as specified in § 2.1051.

Test Procedure

The RF output of the transceiver was connected to a spectrum analyzer and simulator through appropriate attenuation. The resolution bandwidth of the spectrum analyzer was set at 100kHz for below 1GHz & 1MHz for above 1GHz. Sufficient scans were taken to show any out of band emissions up to 10th harmonic.



Test Data

Environmental Conditions

Temperature:	23.2 ℃
Relative Humidity:	50 %
ATM Pressure:	101.2kPa

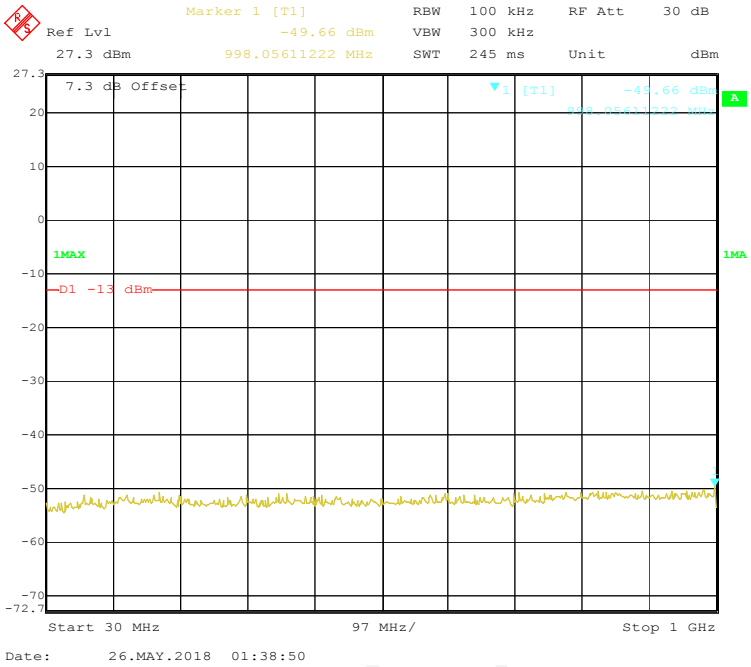
The testing was performed by Max Min on 2018-05-26.

EUT operation mode: Transmitting

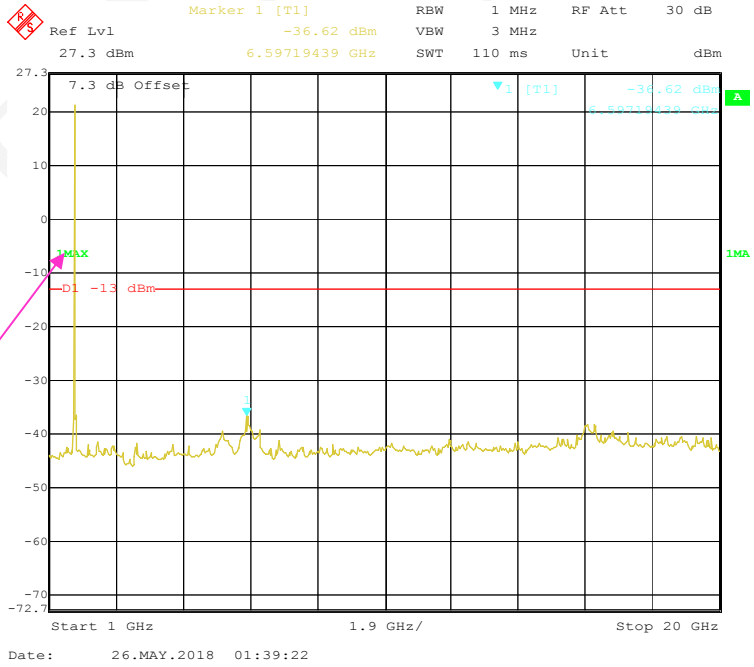
Test Result: Compliance.

WCDMA Band IV:

30 MHz – 1 GHz



1 GHz – 20 GHz



Fundamental

FCC § 2.1053; §27.53 (h) - SPURIOUS RADIATED EMISSIONS

Applicable Standards

FCC § 2.1053 & § 27.53(h)

27.53 (h) AWS emission limits—(1) General protection levels. Except as otherwise specified below, for operations in the 1710-1755 MHz band, 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.

Test Procedure

The transmitter was placed on a wooden turntable, and it was transmitting into a non-radiating load which was also placed on the turntable.

The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and polarization as well as EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. The test was performed by placing the EUT on 3-orthogonal axis.

The frequency range up to tenth harmonic of the fundamental frequency was investigated.

Remove the EUT and replace it with substitution antenna. A signal generator was connected to the substitution antenna by a non-radiating cable. The absolute levels of the spurious emissions were measured by the substitution.

Spurious emissions in dB = 10 lg (TX pwr in Watts/0.001) – the absolute level

Spurious attenuation limit in dB = 43 + 10 Log_{10} (power out in Watts)

Test Data

Environmental Conditions

Temperature:	23.3 ℃
Relative Humidity:	50 %
ATM Pressure:	101.2kPa

The testing was performed by Max Min on 2018-05-26.

Test mode: Transmitting (Pre-scan with low, middle and high channels, and the worse case data as below)

30 MHz ~ 20 GHz:

WCDMA Band IV

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (cm)	Polar (H/V)	Submitted Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)			
WCDMA Mode, Middle channel										
84.12	54.36	143	142	H	-52.63	0.31	-7.48	-60.42	-13	47.42
84.12	53.13	291	244	V	-52.37	0.31	-7.48	-60.16	-13	47.16
3465.20	59.56	69	154	H	-45.23	0.93	9.87	-36.29	-13	23.29
3465.20	58.78	209	122	V	-46.44	0.93	9.87	-37.50	-13	24.50
5197.80	50.87	137	129	H	-51.21	1.10	10.30	-42.01	-13	29.01
5197.80	49.62	57	142	V	-52.66	1.10	10.30	-43.46	-13	30.46

FCC §27.53 (h) - BAND EDGES

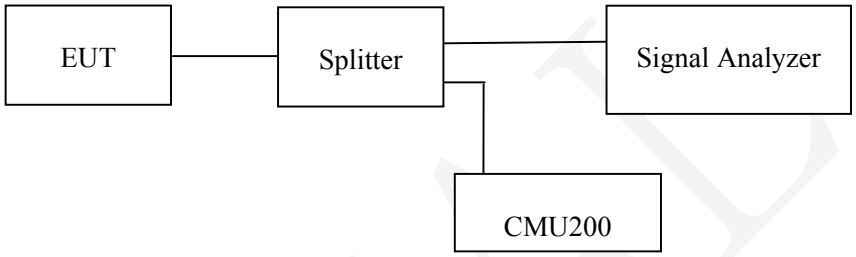
Applicable Standards

According to FCC §27.53 (h) , 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.

Test Procedure

The RF output of the transmitter was connected to the input of the spectrum analyzer through sufficient attenuation.

The center of the spectrum analyzer was set to block edge frequency



Test Data

Environmental Conditions

Temperature:	23.3 ℃
Relative Humidity:	50 %
ATM Pressure:	101.2kPa

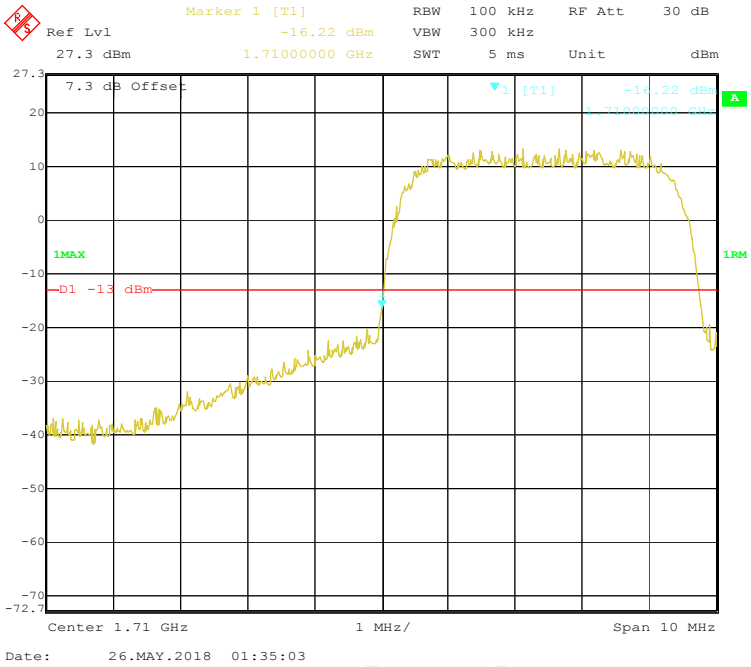
The testing was performed by Max Min on 2018-05-26.

EUT operation mode: Transmitting

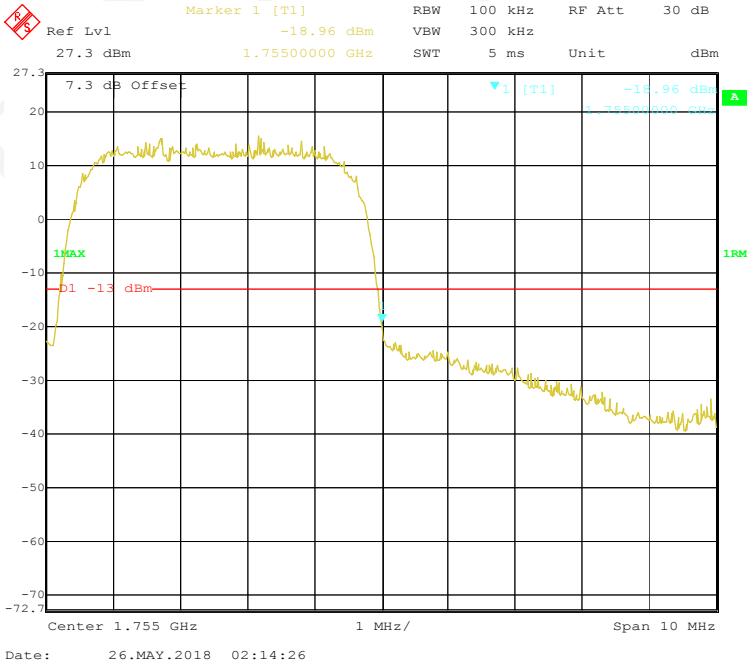
Test Result: Compliance.

WCDMA Band IV

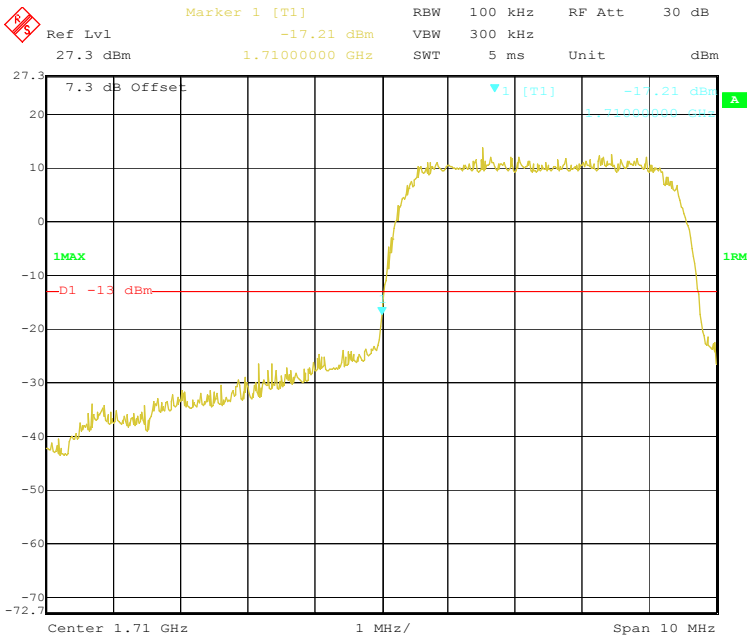
WCDMA (Rel 99) Mode, Left Band Edge



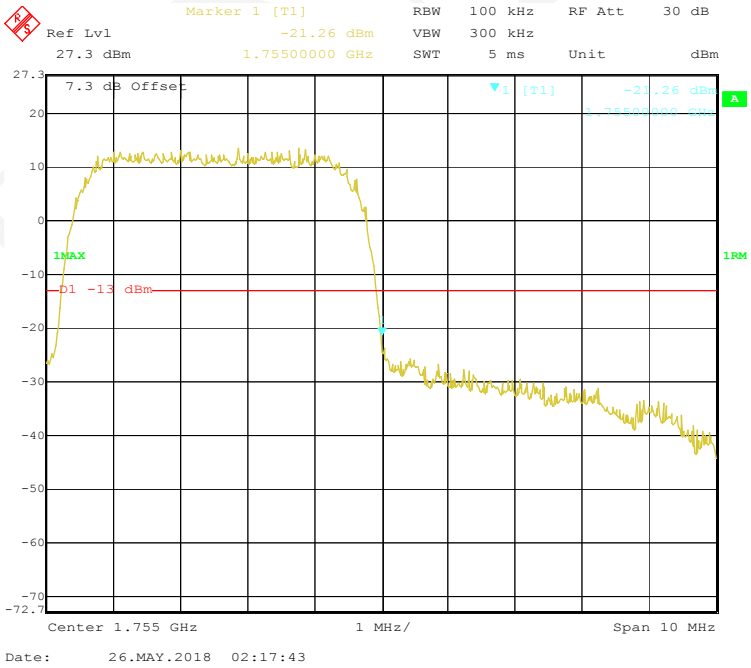
WCDMA (Rel 99) Mode, Right Band Edge



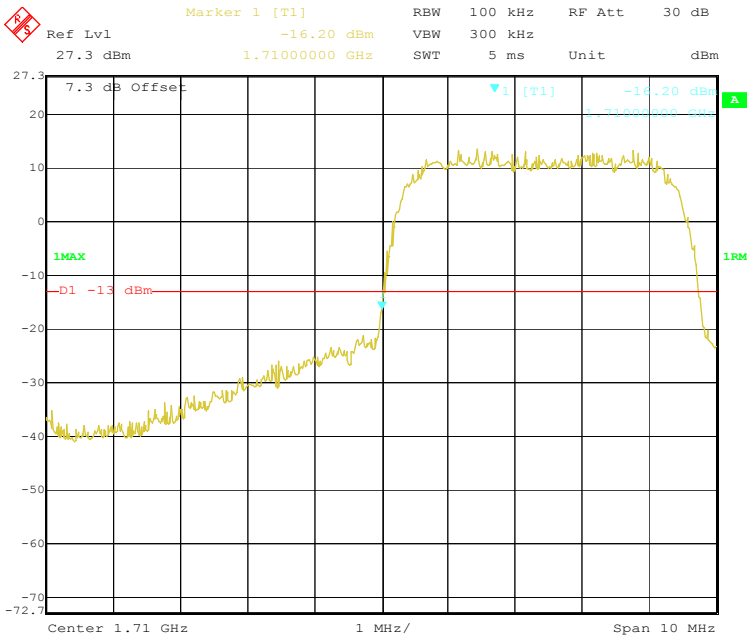
WCDMA (HSDPA) Mode, Left Band Edge



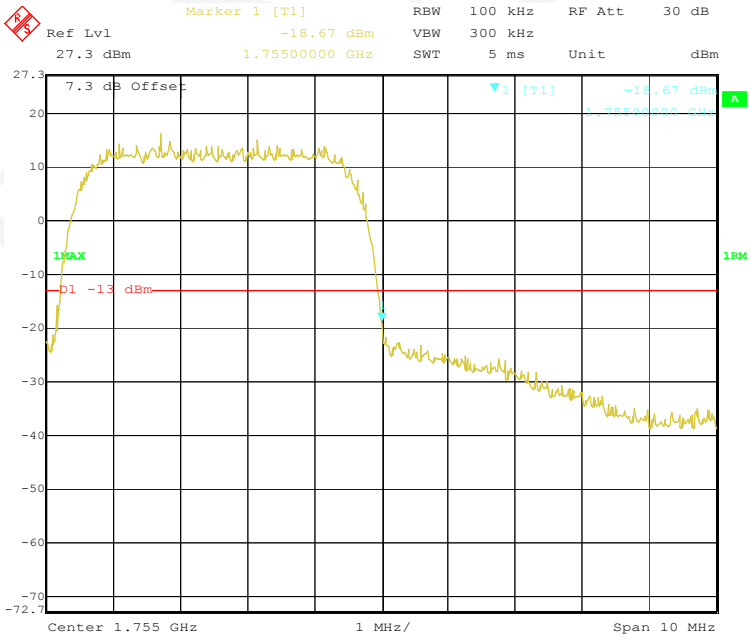
WCDMA (HSDPA) Mode, Right Band Edge



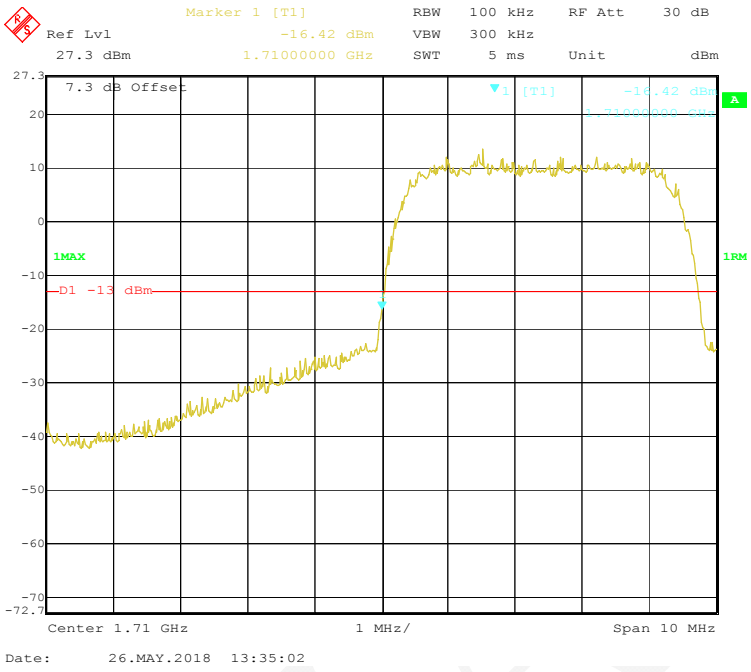
WCDMA (HSUPA) Mode, Left Band Edge



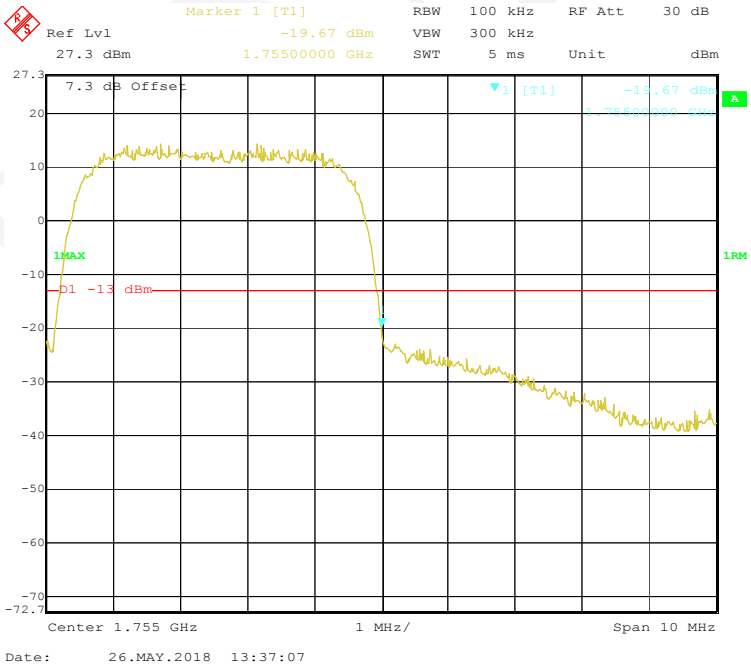
WCDMA (HSUPA) Mode, Right Band Edge



WCDMA (HSPA+) Mode, Left Band Edge



WCDMA (HSPA+) Mode, Right Band Edge



FCC § 2.1055; §27.54; - FREQUENCY STABILITY

Applicable Standards

FCC § 2.1055 & §27.54.

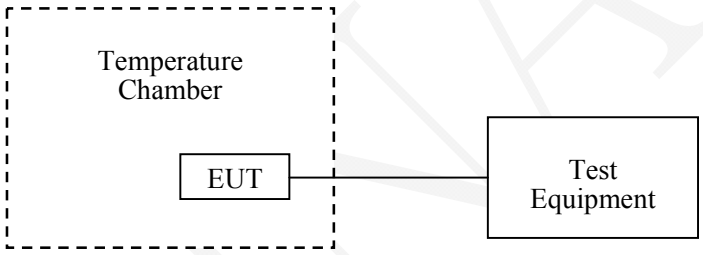
According to FCC §2.1055, the frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

Test Procedure

Frequency Stability vs. Temperature: The equipment under test was connected to an external DC power supply and the RF output was connected to communication test set via feed-through attenuators. The EUT was placed inside the temperature chamber. The DC leads and RF output cable exited the chamber through an opening made for the purpose.

After the temperature stabilized for approximately 20 minutes, the frequency output was recorded from the communication test set.

Frequency Stability vs. Voltage: For hand carried, battery powered equipment; reduce primary supply voltage to the battery operating end point which shall be specified by the manufacturer.



Test Data

Environmental Conditions

Temperature:	23.2 ℃
Relative Humidity:	50 %
ATM Pressure:	101.2kPa

The testing was performed by Max Min on 2018-05-26.

EUT operation mode: Transmitting

Test Result: Compliance.

WCDMA Band IV:

WCDMA Mode, Middle Channel, f_o=1732.6 MHz				
Temperature (℃)	**Power Supplied (V_{DC})**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Result**
-30	3.7	-5	-0.00289	Pass
-20		-11	-0.00635	Pass
-10		-6	-0.00346	Pass
0		-4	-0.00231	Pass
10		-8	-0.00462	Pass
20		-7	-0.00404	Pass
30		-2	-0.00115	Pass
40		-3	-0.00173	Pass
50		-4	-0.00231	Pass
25	V min.= 3.3	-9	-0.00519	Pass
25	V max.= 4.1	-5	-0.00289	Pass

******* END OF REPORT *******