

FCC REPORT

(GSM & WCDMA)

Applicant: Nebra LTD.

Address of Applicant: Unit 4 Bells Yew Green Business Court, Bells Yew Green,
Tunbridge Wells TN3 9BJ

Equipment Under Test (EUT)

Product Name: Nebra Smart Outdoor LoRa Gateway / Nebra HNT Outdoor Hotspot Miner

Model No.: HNTOUT-915-G-LT+, HNTOUT-915-G-LT, HNTOUT-915-LT+, HNTOUT-915 -LT, HNTOUT-915-G-LT+, HNTOUT-915-G, HNTOUT-915

Trade mark: Nebra

FCC ID: 2AZDM-HNTOUT

Applicable standards: FCC CFR Title 47 Part 2
FCC CFR Title 47 Part 22 Subpart H
FCC CFR Title 47 Part 24 Subpart E
FCC CFR Title 47 Part 27 Subpart L

Date of sample receipt: 18 May, 2021

Date of Test: 18 May, to 17 Jun., 2021

Date of report issued: 27 Jun., 2021

Test Result: PASS*

* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:



Bruce Zhang
Laboratory Manager

This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product and does not permit the use of the JYT product certification mark. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

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2. Version

Version No.	Date	Description
00	09 Jul., 2021	Original
01	26 Jun., 2021	Update Section 6.1
02	27 Jun., 2021	Update page 10
Remark: The FCC ID number of the module quoted in this report is XMR201903EG25G. The difference between the two is as follows: The antenna and is now used inside the whole machine. Therefore, the AC Power Line Conducted Emission and the Radiated Spurious Emission are retested.		

Tested by:



Test Engineer

Date:

27 Jun., 2021

Reviewed by:



Project Engineer

Date:

27 Jun., 2021

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4. Test Summary

Test Item	Section in CFR 47	Result
RF Exposure (SAR)	Part 1.1307 Part 2.1093	Pass* (Please refer to SAR Report)
RF Output Power	Part 2.1046 Part 22.913 (a)(5) Part 24.232 (c) Part 27.50 (d)(4)	Pass
Peak-to-Average Power Ratio	Part 24.232 (d) Part 27.50(d)(5)	Pass*
Modulation Characteristics	Part 2.1047	Pass*
99% & -26 dB Occupied Bandwidth	Part 2.1049 Part 22.917(b) Part 24.238(b) Part 27.53(h)	Pass*
Out of band emission at antenna terminals	Part 2.1051 Part 22.917 (a) Part 24.238 (a) Part 27.53 (h)	Pass*
Field strength of spurious radiation	Part 2.1053 Part 22.917 (a) Part 24.238 (a) Part 27.53 (h)	Pass
Frequency stability vs. temperature	Part 22.355 Part 24.235 Part 27.54 Part 2.1055(a)(1)(b)	Pass*
Frequency stability vs. voltage	Part 22.355 Part 24.235 Part 27.54 Part 2.1055(d)(2)	Pass*
Remark: 1. Pass: The EUT complies with the essential requirements in the standard. 2. Pass*: Refer to the FCC ID:XMR201903EG25G 3. The cable insertion loss used by "RF Output Power" and other conduction measurement items is 0.5dB(Fundamental Frequency below 1GHz)/1.0dB(Fundamental Frequency above 1GHz) (provided by the customer).		
Test Method:	ANSI/TIA-603-E-2016 ANSI C63.26-2015	

5. General Information

5.1 Client Information

Applicant:	Nebra LTD.
Address:	Unit 4 Bells Yew Green Business Court, Bells Yew Green, Tunbridge Wells TN3 9BJ
Manufacturer:	Nebra LTD.
Address:	Unit 4 Bells Yew Green Business Court, Bells Yew Green, Tunbridge Wells TN3 9BJ
Factory:	SUNSOAR TECH CO., LIMITED
Address:	4/F, Block E, Fengze Building, Huafeng No.2 Industrial Park, Hangkong Road, XiXiang Town, BaoAn District, Shenzhen, China

5.2 General Description of E.U.T.

Product Name:	Nebra Smart Outdoor LoRa Gateway / Nebra HNT Outdoor Hotspot Miner		
Model No.:	HNTOUT-915-G-LT+, HNTOUT-915-G-LT, HNTOUT-915-LT+, HNTOUT-915 -LT, HNTOUT-915-G-LT+, HNTOUT-915-G, HNTOUT-915		
Operation Frequency range:	GSM 850: 824.20MHz-848.80MHz PCS1900: 1850.20MHz-1909.80MHz WCDMA Band V: 826.4MHz-846.6MHz WCDMA Band II: 1852.4 MHz-1907.6 MHz WCDMA Band IV: 1712.4 MHz-1752.6 MHz		
Modulation type:	2G	☐ Voice(GMSK)	☒ GPRS(GMSK)
	3G	☒ RMC(QPSK)	☒ HSUPA(QPSK)
Antenna type:	Internal Antenna		
Antenna gain:	GSM 850: 1.75 dBi(declare by Applicant) PCS 1900: 2.39 dBi(declare by Applicant) WCDMA Band V: 1.75 dBi(declare by Applicant) WCDMA Band II: 2.39 dBi(declare by Applicant) WCDMA Band IV: 2.31 dBi(declare by Applicant)		
Test Power supply:	AC 120V / 60Hz		
Remark:	Model No.: HNTOUT-915-G-LT+, HNTOUT-915-G-LT, HNTOUT-915-LT+, HNTOUT-915 -LT, HNTOUT-915-G-LT+, HNTOUT-915-G, HNTOUT-915 The difference: we will offer the unit with or without a GPS module included. Models with the GPS Included are indicated with a -G on the end of the model number. For example a unit with model no HNTOUT-915 is 915 Mhz, no GPS. A unit with Model No HNTOUT-915-G, is 915Mhz with GPS. We offer the unit using the Raspberry Pi Compute Module 3+ 32GB by standard (no suffix) but have an -LT variant which uses the Raspberry Pi Compute Module 3 Lite with a 32 GB eMMC to SD adapter card and a -LT+ variant which uses the Raspberry Pi Compute Module 3+ Lite with a 32 GB eMMC to SD adapter card. These suffixes can be applied to the models both with and without GPS as described above. We also provide customers the ability to, optionally, add both cellular connectivity and an additional 8 channel LoRa gateway to any of these models by using an mPCIe module however these come as optional extras.		
Test Sample Condition:	The test samples were provided in good working order with no visible defects.		

Operation Frequency List:

GSM 850		PCS1900	
Channel	Frequency (MHz)	Channel	Frequency (MHz)
128	824.20	512	1850.20
129	824.40	513	1850.40
...	...	...	...
189	836.40	660	1879.80
190	836.60	661	1880.00
191	836.80	662	1880.20
...	...	...	...
250	848.60	809	1909.60
251	848.80	810	1909.80
WCDMA Band V		WCDMA Band II	
Channel	Frequency (MHz)	Channel	Frequency (MHz)
4132	826.40	9262	1852.40
4133	826.60	9263	1852.60
...	...	...	...
4182	836.40	9399	1879.80
4183	836.60	9400	1880.00
4184	836.80	9401	1880.20
...	...	...	...
4232	846.40	9537	1907.40
4233	846.60	9538	1907.60
WCDMA Band IV			
Channel	Frequency (MHz)		
1312	1712.40		
1313	1712.60		
...	...		
1412	1732.40		
1413	1732.60		
1414	1732.80		
...	...		
1512	1752.40		
1513	1752.60		

Regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

GSM850			PCS1900		
Channel		Frequency(MHz)	Channel		Frequency(MHz)
Lowest	128	824.20	Lowest	512	1850.20
Middle	190	836.60	Middle	661	1880.00
Highest	251	848.80	Highest	810	1909.80
WCDMA Band V			WCDMA Band II		
Channel		Frequency(MHz)	Channel		Frequency(MHz)
Lowest	4132	826.40	Lowest	9262	1852.40
Middle	4183	836.60	Middle	9400	1880.00
Highest	4233	846.60	Highest	9538	1907.60
WCDMA Band IV					
Channel		Frequency(MHz)			
Lowest	1312	1712.40			
Middle	1413	1732.60			
Highest	1513	1752.60			

5.3 Test environment and mode, and test samples plans

Operating Environment:	
Temperature:	Normal: 15℃ ~ 35℃, Extreme: -30℃ ~ +50℃
Humidity:	20 % ~ 75 % RH
Atmospheric Pressure:	1008 mbar
Voltage:	Nominal: 120Vac, Extreme: Low 102 Vac, High 138Vac
Test mode:	
GPRS mode	Keep the EUT communication with simulated station in GPRS mode
EGPRS mode	Keep the EUT communication with simulated station in EGPRS mode
RMC mode	Keep the EUT communication with simulated station in RMC mode
HSDPA	Keep the EUT communication with simulated station in HSDPA mode
HSUPA	Keep the EUT communication with simulated station in HSUPA mode
Remark: The EUT has been tested under continuous transmitting mode. Channel Low, Mid and High for each type band with rated data rate were chosen for full testing. The field strength of spurious radiation emission was measured as EUT stand-up position (H mode) and lie down position (E1, E2 mode) for these modes. Just the worst case position (H mode) shown in report.	

5.4 Description of Support Units

Test Equipment	Manufacturer	Model No.	Serial No.
Simulated Station	Rohde & Schwarz	CMW500	140493

5.5 Measurement Uncertainty

Parameters	Expanded Uncertainty
Radiated Emission (9kHz ~ 30MHz)	±3.12 dB (k=2)
Radiated Emission (30MHz ~ 1000MHz)	±4.32 dB (k=2)
Radiated Emission (1GHz ~ 18GHz)	±5.16 dB (k=2)
Radiated Emission (18GHz ~ 40GHz)	±3.20 dB (k=2)

5.6 Additions to, deviations, or exclusions from the method

No

5.7 Laboratory Facility

The test facility is recognized, certified, or accredited by the following organizations:

● **FCC - Designation No.: CN1211**

JianYan Testing Group Shenzhen Co., Ltd. has been accredited as a testing laboratory by FCC(Federal Communications Commission). The test firm Registration No. is 727551.

● **ISED – CAB identifier.: CN0021**

The 3m Semi-anechoic chamber of JianYan Testing Group Shenzhen Co., Ltd. has been Registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 10106A-1.

● **A2LA - Registration No.: 4346.01**

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005 General requirements for the competence of testing and calibration laboratories. The test scope can be found as below link: <https://portal.a2la.org/scopepdf/4346-01.pdf>

5.8 Laboratory Location

JianYan Testing Group Shenzhen Co., Ltd.

Address: No.101, Building 8, Innovation Wisdom Port, No.155 Hongtian Road, Huangpu Community, Xinqiao Street, Bao'an District, Shenzhen, Guangdong, People's Republic of China.

Tel: +86-755-23118282, Fax: +86-755-23116366

Email: info-JYTee@lets.com, Website: <http://www.ccis-cb.com>

5.9 Test Instruments list

Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date (mm-dd-yy)	Cal. Due date (mm-dd-yy)
3m SAC	ETS	9m*6m*6m	966	01-19-2021	01-18-2024
BiConiLog Antenna	SCHWARZBECK	VULB9163	497	03-03-2021	03-02-2022
Biconical Antenna	SCHWARZBECK	VUBA9117	359	06-18-2020	06-17-2021
				06-17-2021	06-16-2022
Horn Antenna	SCHWARZBECK	BBHA9120D	916	03-03-2021	03-02-2022
Horn Antenna	SCHWARZBECK	BBHA9120D	1805	06-18-2020	06-17-2021
				06-17-2021	06-16-2022
Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170582	11-18-2020	11-17-2021
EMI Test Software	AUDIX	E3	Version: 6.110919b		
Pre-amplifier	HP	8447D	2944A09358	03-03-2021	03-02-2022
Pre-amplifier	CD	PAP-1G18	11804	03-03-2021	03-02-2022
Spectrum analyzer	Rohde & Schwarz	FSP30	101454	03-03-2021	03-02-2022
Spectrum analyzer	Rohde & Schwarz	FSP40	100363	11-18-2020	11-17-2021
EMI Test Receiver	Rohde & Schwarz	ESRP7	101070	03-03-2021	03-02-2022
Spectrum Analyzer	Agilent	N9020A	MY50510123	11-18-2020	11-17-2021
Signal Generator	Rohde & Schwarz	SMX	835454/016	03-03-2021	03-02-2022
Signal Generator	R&S	SMR20	1008100050	03-03-2021	03-02-2022
RF Switch Unit	MWRFTTEST	MW200	N/A	N/A	N/A
Test Software	MWRFTTEST	MTS8200	Version: 2.0.0.0		
Cable	ZDECL	Z108-NJ-NJ-81	1608458	03-03-2021	03-02-2022
Cable	MICRO-COAX	MFR64639	K10742-5	03-03-2021	03-02-2022
Cable	SUHNER	SUCOFLEX100	58193/4PE	03-03-2021	03-02-2022
DC Power Supply	XinNuoEr	WYK-10020K	1409050110020	09-25-2020	09-24-2021
Temperature Humidity Chamber	HengPu	HPGDS-500	20140828008	11-01-2020	10-31-2021
Simulated Station	Rohde & Schwarz	CMW500	140493	07-22-2020	07-21-2021

6. Test results

6.1 Conducted Output Power, ERP and EIRP

Test Requirement:	FCC part 22.913(a)(5), FCC part 24.232(c), FCC part 27.50(d)(4)
Limit:	GSM 850: 7W, PCS 1900: 2W WCDMA Band V: 7W, WCDMA Band II: 2W, WCDMA Band IV: 1W
Test setup:	Conducted Output Power Refer to the FCC ID:XMR201903EG25G
Test Procedure:	
Test Instruments:	
Test mode:	
Test results:	
	Passed

Measurement Data:

EUT Mode	Burst Average power (dBm)		
	128	190	251
	824.20 (MHz)	836.60 (MHz)	848.80 (MHz)
GPRS 850	32.32	32.53	32.20
EGPRS 850	26.51	26.67	26.67
Antenna Gain (dBi)	1.75		
Max. ERP (dBm)	32.13		
ERP Limit (dBm)	38.45		
EUT Mode	Burst Average power (dBm)		
	512	661	810
	1850.20 (MHz)	1880.00 (MHz)	1909.80 (MHz)
GPRS 1900	29.66	29.41	29.18
EGPRS 1900	26.20	25.92	25.67
Antenna Gain (dBi)	2.39		
Max. EIRP (dBm)	32.05		
EIRP Limit (dBm)	33.00		

Note: EIRP (dBm) = Burst Average power (dBm) + Antenna Gain (dBi).
ERP (dBm) = EIRP (dBm) - 2.15 (dB).

EUT Mode		Burst Average power (dBm)		
		4132	4183	4233
		826.40 (MHz)	836.60 (MHz)	846.60 (MHz)
UMTS 850 RMC	12.2kbps	23.86	23.81	23.76
Antenna Gain (dBi)		1.75		
Max. ERP (dBm)		23.46		
ERP Limit (dBm)		38.45		
EUT Mode		Burst Average power (dBm)		
		9262	9400	9538
		1852.40 (MHz)	1880.00 (MHz)	1907.60 (MHz)
UMTS 1900	12.2kbps	23.88	23.79	23.76
Antenna Gain (dBi)		2.39		
Max. EIRP (dBm)		26.19		
EIRP Limit (dBm)		33.00		
EUT Mode		Burst Average power (dBm)		
		1312	1413	1513
		1712.40 (MHz)	1732.60 (MHz)	1752.60 (MHz)
UMTS 1700	12.2kbps	23.82	23.74	23.64
Antenna Gain (dBi)		2.31		
Max. EIRP (dBm)		26.13		
EIRP Limit (dBm)		30.00		
Note: EIRP (dBm) = Burst Average power (dBm) + Antenna Gain (dBi).				
ERP (dBm) = EIRP (dBm) - 2.15 (dB).				

6.2 Peak-to-Average Power Ratio

Test Requirement:	FCC part 24.232(d), FCC part 27.50(d)(5)
Limit:	The peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.
Test setup:	Refer to the FCC ID:XMR201903EG25G
Test Procedure:	
Test Instruments:	
Test mode:	
Measurement Data:	
Test results:	Passed

6.3 Occupy Bandwidth

Test Requirement:	FCC part 22.917(b), FCC part 24.238(b), FCC Part 27.53(h)
Test setup:	Refer to the FCC ID:XMR201903EG25G
Test Procedure:	
Test Instruments:	
Test mode:	
Measurement Data:	
Test results:	Passed

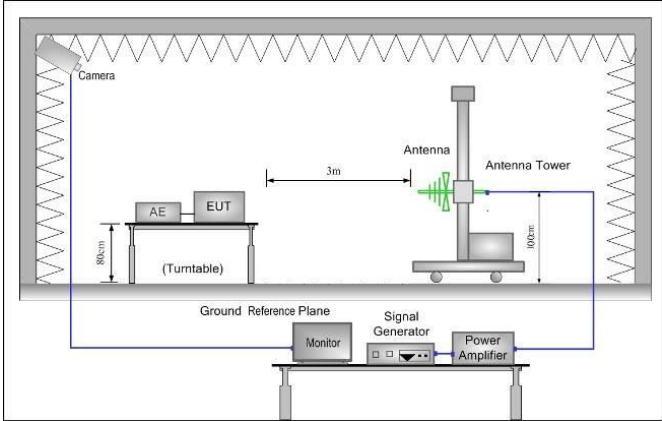
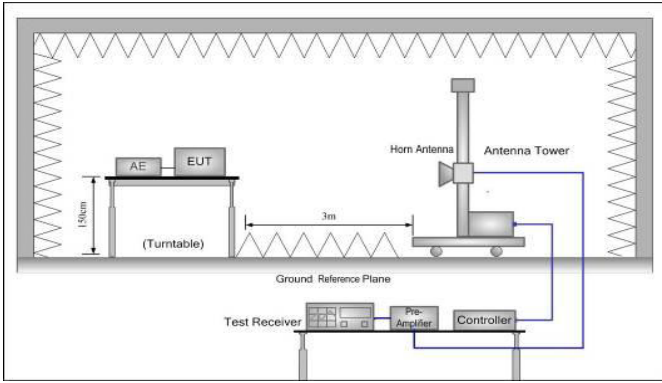
6.4 Modulation Characteristic

Refer to the FCC ID:XMR201903EG25G

6.5 Out of band emission at antenna terminals

Test Requirement:	FCC part 22.917(a), FCC part 24.238(a), FCC Part 27.53 (h)
Limit:	-13dBm
Test setup:	Refer to the FCC ID:XMR201903EG25G
Test Procedure:	
Test Instruments:	
Test mode:	
Measurement Data:	
Test results:	Passed

6.6 Field strength of spurious radiation measurement

Test Requirement:	FCC part 22.917(a), FCC part 24.238(a), FCC part 27.53(h)
Limit:	-13dBm
Test setup:	Below 1GHz  Above 1GHz 
Test Procedure:	1. The EUT was placed on the top of a rotating table 0.8m(below 1GHz)/1.5m(above 1GHz) above the ground at a 3 meter camber. The radiated emission at the fundamental frequency was measured at 3 m with a test antenna and EMI spectrum analyzer. 2. During the tests, the antenna height and the EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. This maximization process was repeated with the EUT positioned in each of its three orthogonal orientations. 3. The frequency range up to tenth harmonic was investigated for each of three fundamental frequency (low, middle and high channels). Once spurious emission was identified, the power of the emission was determined using the substitution method. 4. The spurious emissions attenuation was calculated as the difference between radiated power at the fundamental frequency and the spurious emissions frequency. $ERP / EIRP = S.G. \text{ output (dBm)} + \text{Antenna Gain(dB/dBi)} - \text{Cable Loss (dB)}$
Test Instruments:	Refer to section 5.9 for details
Test mode:	Refer to section 5.3 for details.
Test results:	Passed

Measurement Data (worst case):

GSM850						
Lowest channel						
Frequency (MHz)	Level at antenna terminals (dBm)	Factor (dB)	Spurious Emission level (dBm)	Limit Line (dBm)	Margin (dB)	Polarization
1648.40	-60.11	-9.89	-70.00	-13.00	57.00	Vertical
2472.60	-57.33	-5.57	-62.90	-13.00	49.90	Vertical
3296.80	-57.22	-2.14	-59.36	-13.00	46.36	Vertical
1648.40	-53.11	-9.89	-63.00	-13.00	50.00	Horizontal
2472.60	-57.64	-5.57	-63.21	-13.00	50.21	Horizontal
3296.80	-57.21	-2.14	-59.35	-13.00	46.35	Horizontal
Middle channel						
Frequency (MHz)	Level at antenna terminals (dBm)	Factor (dB)	Spurious Emission level (dBm)	Limit Line (dBm)	Margin (dB)	Polarization
1673.20	-60.30	-9.88	-70.18	-13.00	57.18	Vertical
2509.80	-57.57	-5.29	-62.86	-13.00	49.86	Vertical
3346.40	-57.01	-2.05	-59.06	-13.00	46.06	Vertical
1673.20	-53.51	-9.88	-63.39	-13.00	50.39	Horizontal
2509.80	-57.41	-5.29	-62.70	-13.00	49.70	Horizontal
3346.40	-57.35	-2.05	-59.40	-13.00	46.40	Horizontal
Highest channel						
Frequency (MHz)	Level at antenna terminals (dBm)	Factor (dB)	Spurious Emission level (dBm)	Limit Line (dBm)	Margin (dB)	Polarization
1697.60	-59.84	-9.87	-69.71	-13.00	56.71	Vertical
2546.40	-57.10	-5.13	-62.23	-13.00	49.23	Vertical
3395.20	-57.07	-1.97	-59.04	-13.00	46.04	Vertical
1697.60	-53.76	-9.87	-63.63	-13.00	50.63	Horizontal
2546.40	-57.36	-5.13	-62.49	-13.00	49.49	Horizontal
3395.20	-57.75	-1.97	-59.72	-13.00	46.72	Horizontal
Remark: 1. The emission levels of below 1 GHz are lower than the limit 20dB and not show in test report.						

PCS1900						
Lowest channel						
Frequency (MHz)	Level at antenna terminals (dBm)	Factor (dB)	Spurious Emission level (dBm)	Limit Line (dBm)	Margin (dB)	Polarization
3700.40	-33.11	-1.40	-34.51	-13.00	21.51	Vertical
5550.60	-64.12	5.27	-58.85	-13.00	45.85	Vertical
3700.40	-33.14	-1.40	-34.54	-13.00	21.54	Horizontal
5550.60	-63.25	5.27	-57.98	-13.00	44.98	Horizontal
Middle channel						
Frequency (MHz)	Level at antenna terminals (dBm)	Factor (dB)	Spurious Emission level (dBm)	Limit Line (dBm)	Margin (dB)	Polarization
3760.00	-33.30	-1.03	-34.33	-13.00	21.33	Vertical
5640.00	-64.45	6.06	-58.39	-13.00	45.39	Vertical
3760.00	-33.53	-1.03	-34.56	-13.00	21.56	Horizontal
5640.00	-63.39	6.06	-57.33	-13.00	44.33	Horizontal
Highest channel						
Frequency (MHz)	Level at antenna terminals (dBm)	Factor (dB)	Spurious Emission level (dBm)	Limit Line (dBm)	Margin (dB)	Polarization
3819.60	-33.07	-0.83	-33.90	-13.00	20.90	Vertical
5729.40	-64.11	6.82	-57.29	-13.00	44.29	Vertical
3819.60	-33.05	-0.83	-33.88	-13.00	20.88	Horizontal
5729.40	-62.92	6.82	-56.10	-13.00	43.10	Horizontal
Remark:						
1. The emission levels of below 1 GHz are lower than the limit 20dB and not show in test report.						

WCDMA BAND V 12.2k RMC						
Lowest channel						
Frequency (MHz)	Level at antenna terminals (dBm)	Factor (dB)	Spurious Emission level (dBm)	Limit Line (dBm)	Margin (dB)	Polarization
1652.80	-60.18	-9.89	-70.07	-13.00	57.07	Vertical
2479.20	-57.81	-5.57	-63.38	-13.00	50.38	Vertical
3305.60	-57.16	-2.09	-59.25	-13.00	46.25	Vertical
1652.80	-53.52	-9.89	-63.41	-13.00	50.41	Horizontal
2479.20	-57.81	-5.57	-63.38	-13.00	50.38	Horizontal
3305.60	-57.33	-2.09	-59.42	-13.00	46.42	Horizontal
Middle channel						
Frequency (MHz)	Level at antenna terminals (dBm)	Factor (dB)	Spurious Emission level (dBm)	Limit Line (dBm)	Margin (dB)	Polarization
1673.20	-60.25	-9.88	-70.13	-13.00	57.13	Vertical
2509.80	-57.69	-5.29	-62.98	-13.00	49.98	Vertical
3346.40	-56.90	-2.05	-58.95	-13.00	45.95	Vertical
1673.20	-53.53	-9.88	-63.41	-13.00	50.41	Horizontal
2509.80	-57.93	-5.29	-63.22	-13.00	50.22	Horizontal
3346.40	-57.39	-2.05	-59.44	-13.00	46.44	Horizontal
Highest channel						
Frequency (MHz)	Level at antenna terminals (dBm)	Factor (dB)	Spurious Emission level (dBm)	Limit Line (dBm)	Margin (dB)	Polarization
1697.60	-60.28	-9.87	-70.15	-13.00	57.15	Vertical
2546.40	-57.96	-5.13	-63.09	-13.00	50.09	Vertical
3395.20	-56.75	-1.97	-58.72	-13.00	45.72	Vertical
1697.60	-54.02	-9.87	-63.89	-13.00	50.89	Horizontal
2546.40	-57.67	-5.13	-62.80	-13.00	49.80	Horizontal
3395.20	-57.88	-1.97	-59.85	-13.00	46.85	Horizontal
Remark:						
1. The emission levels of below 1 GHz are lower than the limit 20dB and not show in test report.						

WCDMA Band II 12.2k RMC						
Lowest channel						
Frequency (MHz)	Level at antenna terminals (dBm)	Factor (dB)	Spurious Emission level (dBm)	Limit Line (dBm)	Margin (dB)	Polarization
3704.80	-33.22	-1.28	-34.50	-13.00	21.50	Vertical
5557.20	-63.90	5.27	-58.63	-13.00	45.63	Vertical
3704.80	-33.45	-1.28	-34.73	-13.00	21.73	Horizontal
5557.20	-62.56	5.27	-57.29	-13.00	44.29	Horizontal
Middle channel						
Frequency (MHz)	Level at antenna terminals (dBm)	Factor (dB)	Spurious Emission level (dBm)	Limit Line (dBm)	Margin (dB)	Polarization
3760.00	-33.59	-1.03	-34.62	-13.00	21.62	Vertical
5640.00	-64.15	6.06	-58.09	-13.00	45.09	Vertical
3760.00	-33.82	-1.03	-34.85	-13.00	21.85	Horizontal
5640.00	-62.74	6.06	-56.68	-13.00	43.68	Horizontal
Highest channel						
Frequency (MHz)	Level at antenna terminals (dBm)	Factor (dB)	Spurious Emission level (dBm)	Limit Line (dBm)	Margin (dB)	Polarization
3815.20	-33.91	-0.83	-34.74	-13.00	21.74	Vertical
5722.80	-63.85	6.72	-57.13	-13.00	44.13	Vertical
3815.20	-34.09	-0.83	-34.92	-13.00	21.92	Horizontal
5722.80	-62.93	6.72	-56.21	-13.00	43.21	Horizontal
Remark: 1. The emission levels of below 1 GHz are lower than the limit 20dB and not show in test report.						

WCDMA Band IV 12.2k RMC						
Lowest channel						
Frequency (MHz)	Level at antenna terminals (dBm)	Factor (dB)	Spurious Emission level (dBm)	Limit Line (dBm)	Margin (dB)	Polarization
3424.40	-40.11	-1.82	-41.93	-13.00	28.93	Vertical
5136.60	-64.12	4.66	-59.46	-13.00	46.46	Vertical
3424.40	-41.17	-1.82	-42.99	-13.00	29.99	Horizontal
5136.60	-62.50	4.66	-57.84	-13.00	44.84	Horizontal
Middle channel						
Frequency (MHz)	Level at antenna terminals (dBm)	Factor (dB)	Spurious Emission level (dBm)	Limit Line (dBm)	Margin (dB)	Polarization
3464.80	-40.18	-1.73	-41.91	-13.00	28.91	Vertical
5197.20	-63.84	4.76	-59.08	-13.00	46.08	Vertical
3464.80	-41.03	-1.73	-42.76	-13.00	29.76	Horizontal
5197.20	-62.61	4.76	-57.85	-13.00	44.85	Horizontal
Highest channel						
Frequency (MHz)	Level at antenna terminals (dBm)	Factor (dB)	Spurious Emission level (dBm)	Limit Line (dBm)	Margin (dB)	Polarization
3505.20	-39.78	-1.64	-41.42	-13.00	28.42	Vertical
5257.80	-63.44	5.04	-58.40	-13.00	45.40	Vertical
3505.20	-41.32	-1.64	-42.96	-13.00	29.96	Horizontal
5257.80	-62.46	5.04	-57.42	-13.00	44.42	Horizontal
Remark: 1. The emission levels of below 1 GHz are lower than the limit 20dB and not show in test report.						

6.7 Frequency stability V.S. Temperature measurement

Test Requirement:	FCC Part 22.355, FCC Part 24.235, FCC Part 27.54 FCC Part 2.1055(a)(1)(b)
Limit:	±2.5 ppm for GSM 850 and WCDMA 850 Within authorized band for PCS 1900 and WCDMA 1900 and WCDMA 1700
Test setup:	Refer to the FCC ID:XMR201903EG25G
Test Procedure:	
Test Instruments:	
Test mode:	
Measurement Data:	
Test results:	Passed

6.8 Frequency stability V.S. Voltage measurement

Test Requirement:	FCC Part 22.355, FCC Part 24.235, FCC Part 27.54 FCC Part 2.1055(d)(2)
Limit:	±2.5 ppm for GSM 850 and WCDMA 850 Within authorized band for PCS 1900 and WCDMA 1900 and WCDMA 1700
Test setup:	Refer to the FCC ID:XMR201903EG25G
Test Procedure:	
Test Instruments:	
Test mode:	
Measurement Data:	
Test results:	Passed