



# FCC RF Test Report

**APPLICANT** : Xiaomi Communications Co., Ltd.  
**EQUIPMENT** : Mobile Phone  
**BRAND NAME** : Redmi  
**MODEL NAME** : 2201116SR  
**FCC ID** : 2AFZZ16SR  
**STANDARD** : 47 CFR Part 2, 22(H), 24(E), 27(L)  
**CLASSIFICATION** : PCS Licensed Transmitter Held to Ear (PCE)  
**TEST DATE(S)** : Jan. 01, 2022

We, Sporton International (Kunshan) Inc., would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.26-2015 and shown compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of Sporton International (Kunshan) Inc., the test report shall not be reproduced except in full.

Reviewed by: Jason Jia / Supervisor

Approved by: Alex Wang / Manager



**Sporton International (Kunshan) Inc.**

No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300  
People's Republic of China



# TABLE OF CONTENTS

**REVISION HISTORY..... 3**

**SUMMARY OF TEST RESULT ..... 4**

**1 GENERAL DESCRIPTION ..... 5**

    1.1 Applicant..... 5

    1.2 Manufacturer ..... 5

    1.3 Product Feature of Equipment Under Test ..... 5

    1.4 Product Specification of Equipment Under Test ..... 6

    1.5 Modification of EUT ..... 7

    1.6 Re-use of Measured Data ..... 7

    1.7 Maximum ERP/EIRP Power, and Emission Designator ..... 8

    1.8 Testing Location ..... 9

    1.9 Test Software ..... 9

    1.10 Applicable Standards ..... 9

**2 TEST CONFIGURATION OF EQUIPMENT UNDER TEST ..... 10**

    2.1 Test Mode..... 10

    2.2 Connection Diagram of Test System ..... 11

    2.3 Support Unit used in test configuration ..... 11

    2.4 Frequency List of Low/Middle/High Channels..... 12

**3 CONDUCTED TEST RESULT..... 13**

    3.1 Measuring Instruments..... 13

    3.2 Test Setup ..... 13

    3.3 Test Result of Conducted Test..... 13

    3.4 Conducted Output Power and ERP/EIRP ..... 14

**4 RADIATED TEST ITEMS ..... 15**

    4.1 Measuring Instruments..... 15

    4.2 Test Setup ..... 15

    4.3 Test Result of Radiated Test..... 16

    4.4 Field Strength of Spurious Radiation Measurement ..... 17

**5 LIST OF MEASURING EQUIPMENT ..... 18**

**6 UNCERTAINTY OF EVALUATION ..... 19**

**APPENDIX A. TEST RESULTS OF CONDUCTED TEST**

**APPENDIX B. TEST RESULTS OF RADIATED TEST**

**APPENDIX C. TEST SETUP PHOTOGRAPHS**

**APPENDIX D. REFERENCE REPORT**





### SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.4	§2.1046	Conducted Output Power	-	Report Only	-
	§22.913(a)(5)	Effective Radiated Power	< 7 Watts	PASS	-
	§24.232(c)	Equivalent Isotropic Radiated Power	< 2 Watts	PASS	-
	§27.50(d)(4)	Equivalent Isotropic Radiated Power	< 1 Watts	PASS	-
4.4	§2.1053; §22.917(a); §24.238(a); §27.53(h)	Field Strength of Spurious Radiation	< 43+10log10(P[Watts])	PASS	Under limit 12.62 dB at 1672.000 MHz

**Declaration of Conformity:**

The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.

**Comments and Explanations:**

The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.



# 1 General Description

## 1.1 Applicant

Xiaomi Communications Co., Ltd.

#019, 9th Floor, Building 6, 33 Xi'erqi Middle Road, Haidian District, Beijing, China, 100085

## 1.2 Manufacturer

Xiaomi Communications Co., Ltd.

#019, 9th Floor, Building 6, 33 Xi'erqi Middle Road, Haidian District, Beijing, China, 100085

## 1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	Mobile Phone
Brand Name	Redmi
Model Name	2201116SR
FCC ID	2AFZZ16SR
IMEI Code	Conducted: 861288050015360/861288050015378 Radiation: 861288050015741/861288050015758
HW Version	P1.1
SW Version	MIUI 13
EUT Stage	Identical Prototype

**Remark:** The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.



### 1.4 Product Specification of Equipment Under Test

Standards-related Product Specification	
<b>Tx Frequency</b>	<b>GSM/GPRS/EDGE:</b> 850: 824 MHz ~ 849 MHz 1900: 1850MHz ~ 1910MHz <b>WCDMA:</b> Band V: 824 MHz ~ 849 MHz Band II: 1850 MHz ~ 1910 MHz Band IV: 1710 MHz ~ 1755 MHz
<b>Rx Frequency</b>	<b>GSM/GPRS/EDGE:</b> 850: 869 MHz ~ 894 MHz 1900: 1930 MHz ~ 1990 MHz <b>WCDMA:</b> Band V: 869 MHz ~ 894 MHz Band II: 1930 MHz ~ 1990 MHz Band IV: 2110 MHz ~ 2155 MHz
<b>Maximum Output Power to Antenna</b>	<b>For Ant 0:</b> <b>GSM/GPRS/EDGE:</b> 850: 32.21 dBm 1900: 29.34 dBm <b>WCDMA:</b> Band V: 24.78 dBm Band II: 24.43 dBm Band IV: 24.17 dBm <b>For Ant 4:</b> <b>GSM/GPRS/EDGE:</b> 850: 32.27 dBm 1900: 29.04 dBm <b>WCDMA:</b> Band V: 24.47 dBm Band II: 23.36 dBm Band IV: 23.83 dBm
<b>Antenna Type</b>	PIFA Antenna
<b>Antenna Gain</b>	<b>For Ant 0:</b> Cellular Band: -4.7 dBi PCS Band: -3.7 dBi AWS Band: -2.9 dBi <b>For Ant 4:</b> Cellular Band: -5.5 dBi PCS Band: -4.0 dBi AWS Band: -5.6 dBi
<b>Type of Modulation</b>	GSM: GMSK GPRS: GMSK EDGE: GMSK / 8PSK WCDMA : BPSK (Uplink) HSDPA/DC-HSDPA : QPSK (Uplink) HSUPA : QPSK (Uplink) HSPA+ : 16QAM (16QAM uplink is not supported)



DC-HSDPA : 64QAM
------------------

### 1.5 Modification of EUT

No modifications are made to the EUT during all test items.

### 1.6 Re-use of Measured Data

#### 1.6.1 Introduction Section

This application re-uses data collected on a similar device. The subject device of this application (Model: 2201116SR, FCC ID: 2AFZZ16SR) is electrically identical to the reference device (Model: 2201116SG, FCC ID: 2AFZZ16SG) for the portions of the circuitry corresponding to the data being re-used, as treated by KDB Publication 484596 D01.

#### 1.6.2 Difference Section

The main difference between FCC ID: 2AFZZ16SG and FCC ID: 2AFZZ16SR is as below:

- Remove LTE Band 32/66 and 5G NR n66.
- Add LTE Band 42

Other differences and all the details of similarity and difference can be found in the confidential documents (2AFZZ16SR\_Operational Description of Product Equality Declaration).

The re-used RF data includes the following bands provided in Appendix D (Sporton RF Report No. FG1N1013A for the reference device Model: 2201116SG, FCC ID: 2AFZZ16SG).

#### 1.6.3 Reference detail Section:

Equipment Class	Reference FCC ID	Folder Test	Report Title/Section
PCE	2AFZZ16SG	Part22H.24E.27L (Report No. FG1N1013A)	All conducted test sections applicable

#### 1.6.4 Spot Check Verification Data Section

In order to confirm hardware similarity of the subject device with the reference device, spot check measurements were performed on the subject device for the following test items, the test result were consistent with FCC ID: 2AFZZ16SG.

Assertions concerning the similarity of these devices are based on representations by the applicant. The applicant accepts full responsibility for the validity of the similarity claim, and for the determination that verification test data are sufficient to support it.



Test Item	Mode	2AFZZ16SG Worst Result	2AFZZ16SR Worst Result	Difference (dB)
Average Conducted Power (dBm)	GSM850_Ant0	32.21	32.21	0
	GSM1900_Ant0	29.34	29.34	0
	WCDMA B2_Ant0	24.43	24.43	0
	WCDMA B4_Ant0	24.88	24.17	0.71
	WCDMA B5_Ant0	24.78	24.78	0

Based on the spot check test result, the test data from the original model is representative for the variant model. The power level spot check are shown within expected level compliant to limit line.

### 1.7 Maximum ERP/EIRP Power, and Emission Designator

FCC Rule	Frequency Band	Frequency Range (MHz)	Type of Modulation	Maximum ERP/EIRP (W)	Emission Designator
Part 22H	GSM850	824.2 ~ 848.8	GMSK	0.3436	-
Part 22H	GSM850 (EDGE)	824.2 ~ 848.8	8PSK	0.0815	-
Part 22H	WCDMA Band V	826.4 ~ 846.6	BPSK	0.0621	-
Part 24E	GSM1900	1850.2 ~ 1909.8	GMSK	0.3664	-
Part 24E	GSM1900 (EDGE)	1850.2 ~ 1909.8	8PSK	0.1476	-
Part 24E	WCDMA Band II	1852.4 ~ 1907.6	BPSK	0.1183	-
Part 27L	WCDMA Band IV	1712.4 ~ 1752.6	BPSK	0.1340	-

Note: The ERP/EIRP is calculated from Output power and antenna gain, so the maximum ERP/EIRP is shown in the report, GSM850/1900/WCDMA Band V/II/IV for Antenna 0.





### 1.8 Testing Location

Sporton International (Kunshan) Inc. is accredited to ISO/IEC 17025:2017 by American Association for Laboratory Accreditation with Certificate Number 5145.02.

<b>Test Firm</b>	Sporton International (Kunshan) Inc.		
<b>Test Site Location</b>	No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300 People's Republic of China TEL : +86-512-57900158 FAX : +86-512-57900958		
<b>Test Site No.</b>	<b>Sporton Site No.</b>	<b>FCC Designation No.</b>	<b>FCC Test Firm Registration No.</b>
	03CH05-KS TH01-KS	CN1257	314309

### 1.9 Test Software

Item	Site	Manufacturer	Name	Version
1.	03CH05-KS	AUDIX	E3	6.2009-8-24al

### 1.10 Applicable Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- 47 CFR Part 2, 22(H), 24(E), 27(L)
- ANSI C63.26-2015
- FCC KDB 971168 D01 Power Meas. License Digital Systems v03r01
- FCC KDB 412172 D01 Determining ERP and EIRP v01r01

**Remark:**

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.



## 2 Test Configuration of Equipment Under Test

### 2.1 Test Mode

Antenna port conducted and radiated test items were performed according to KDB 971168 D01 Power Meas. License Digital Systems v03r01 with maximum output power.

Radiated measurements were performed with rotating EUT in different three orthogonal test planes to find the maximum emission.

Radiated emissions were investigated as following frequency range:

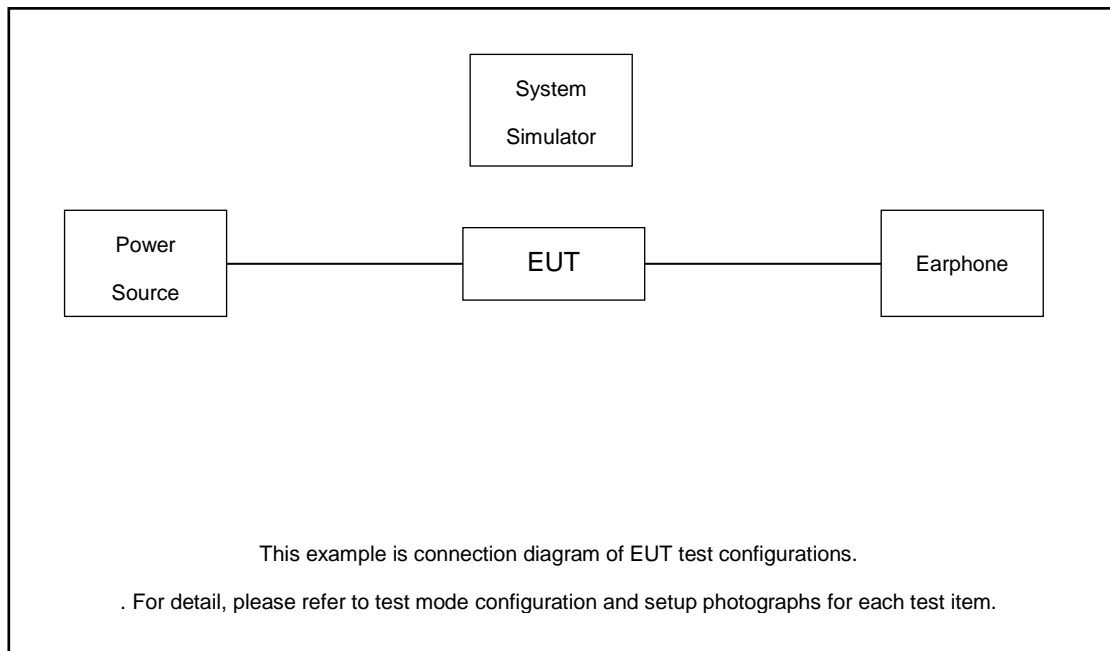
1. 30 MHz to 10th harmonic for GSM850 and WCDMA Band V.
2. 30 MHz to 10th harmonic for WCDMA Band IV.
3. 30 MHz to 10th harmonic for GSM1900 and WCDMA Band II.

All modes and data rates and positions were investigated.

Test modes are chosen to be reported as the worst case configuration below:

Test Modes		
Band	Radiated TCs	Conducted TCs
GSM 850	<ul style="list-style-type: none"> <li>■ GSM Link</li> <li>■ EDGE class 8 Link</li> </ul>	<ul style="list-style-type: none"> <li>■ GSM Link</li> <li>■ EDGE class 8 Link</li> </ul>
GSM 1900	<ul style="list-style-type: none"> <li>■ GSM Link</li> <li>■ EDGE class 8 Link</li> </ul>	<ul style="list-style-type: none"> <li>■ GSM Link</li> <li>■ EDGE class 8 Link</li> </ul>
WCDMA Band V	<ul style="list-style-type: none"> <li>■ RMC 12.2Kbps Link</li> </ul>	<ul style="list-style-type: none"> <li>■ RMC 12.2Kbps Link</li> </ul>
WCDMA Band II	<ul style="list-style-type: none"> <li>■ RMC 12.2Kbps Link</li> </ul>	<ul style="list-style-type: none"> <li>■ RMC 12.2Kbps Link</li> </ul>
WCDMA Band IV	<ul style="list-style-type: none"> <li>■ RMC 12.2Kbps Link</li> </ul>	<ul style="list-style-type: none"> <li>■ RMC 12.2Kbps Link</li> </ul>

## 2.2 Connection Diagram of Test System



The EUT has been configuration operated in a manner tended to maximize its emission characteristics in a typical application.

## 2.3 Support Unit used in test configuration

Item	Equipment	Trade Name	Model No.	FCC ID	Data Cable	Power Cord
1.	System Simulator	R&S	CMU 200	N/A	N/A	Unshielded, 1.8 m
2.	Earphone	MI	N/A	N/A	Unshielded, 1.2m	N/A



## 2.4 Frequency List of Low/Middle/High Channels

Frequency List				
Band	Channel/Frequency(MHz)	Lowest	Middle	Highest
GSM850	Channel	128	189	251
	Frequency	824.2	836.4	848.8
WCDMA Band V	Channel	4132	4182	4233
	Frequency	826.4	836.4	846.6
GSM1900	Channel	512	661	810
	Frequency	1850.2	1880.0	1909.8
WCDMA Band II	Channel	9262	9400	9538
	Frequency	1852.4	1880.0	1907.6
WCDMA Band IV	Channel	1312	1413	1513
	Frequency	1712.4	1732.6	1752.6

### 3 Conducted Test Result

#### 3.1 Measuring Instruments

See list of measuring instruments of this test report.

#### 3.2 Test Setup

##### 3.2.1 Conducted Output Power



#### 3.3 Test Result of Conducted Test

Please refer to Appendix A.



### 3.4 Conducted Output Power and ERP/EIRP

#### 3.4.1 Description of the Conducted Output Power and ERP/EIRP

A system simulator was used to establish communication with the EUT. Its parameters were set to enforce EUT transmitting at the maximum power. The measured power in the radio frequency on the transmitter output terminals shall be reported.

The ERP of mobile transmitters must not exceed 7 Watts for GSM850 and WCDMA Band V.

The EIRP of mobile transmitters must not exceed 2 Watts for GSM1900 and WCDMA Band II.

The EIRP of mobile transmitters must not exceed 1 Watts for WCDMA Band IV.

According to KDB 412172 D01 Power Approach,

$EIRP = P_T + G_T - L_C$ ,  $ERP = EIRP - 2.15$ , where

$P_T$  = transmitter output power in dBm

$G_T$  = gain of the transmitting antenna in dBi

$L_C$  = signal attenuation in the connecting cable between the transmitter and antenna in dB

#### 3.4.2 Test Procedures

1. The testing follows ANSI C63.26 Section 5.2
2. The transmitter output port was connected to the system simulator.
3. Set EUT at maximum power through the system simulator.
4. Select lowest, middle, and highest channels for each band and different modulation.
5. Measure and record the power level from the system simulator.

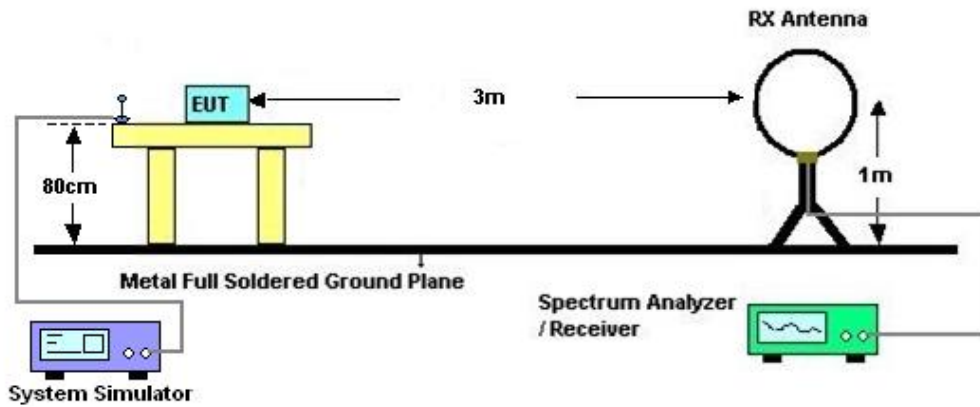
## 4 Radiated Test Items

### 4.1 Measuring Instruments

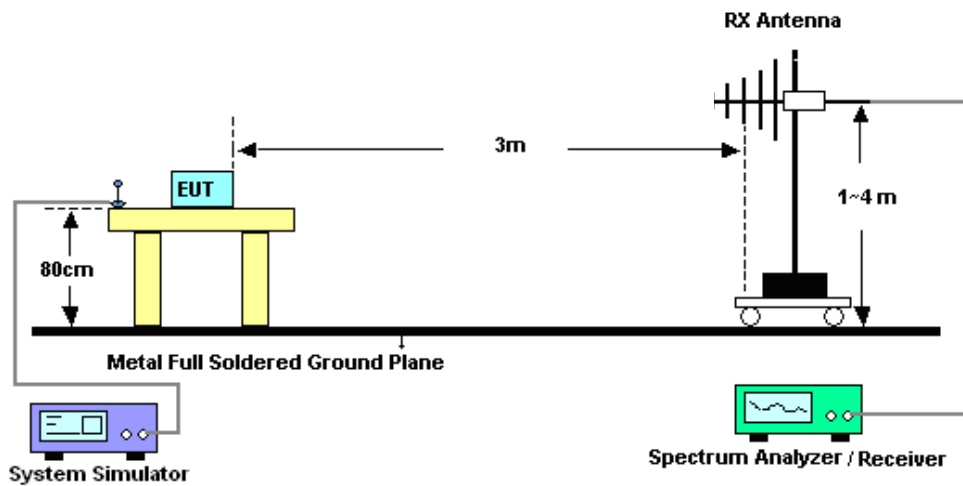
See list of measuring instruments of this test report.

### 4.2 Test Setup

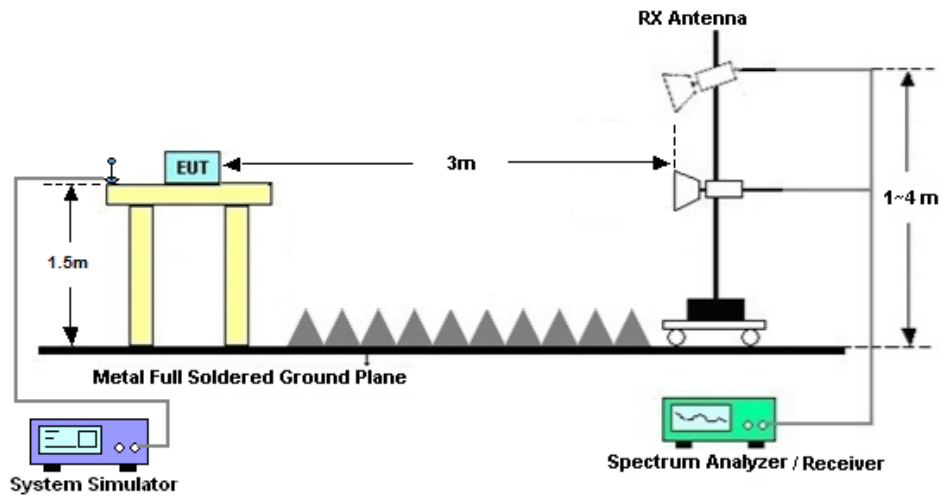
#### 4.2.1 For radiated test below 30MHz



#### 4.2.2 For radiated test from 30MHz to 1GHz



#### 4.2.3 For radiated test above 1GHz



### 4.3 Test Result of Radiated Test

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line was not reported.

Please refer to Appendix B.





## 4.4 Field Strength of Spurious Radiation Measurement

### 4.4.1 Description of Field Strength of Spurious Radiated Measurement

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitter power (P) by a factor of at least  $43 + 10 \log (P)$  dB. The spectrum is scanned from 30 MHz up to a frequency including its 10th harmonic.

### 4.4.2 Test Procedures

1. The testing follows ANSI C63.26 Section 5.5
2. The EUT was placed on a rotatable wooden table 0.8 meters for frequency below 1GHz and 1.5 meter for frequency above 1GHz above the ground.
3. The EUT was set 3 meters from the receiving antenna, which was mounted on the antenna tower.
4. The table was rotated 360 degrees to determine the position of the highest spurious emission.
5. The height of the receiving antenna is varied between one meter and four meters to search for the maximum spurious emission for both horizontal and vertical polarizations.
6. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, taking record of maximum spurious emission.
7. A horn antenna was substituted in place of the EUT and was driven by a signal generator.
8. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.
9. Taking the record of output power at antenna port.
10. Repeat step 7 to step 8 for another polarization.
11.  $EIRP \text{ (dBm)} = S.G. \text{ Power} - Tx \text{ Cable Loss} + Tx \text{ Antenna Gain}$
12.  $ERP \text{ (dBm)} = EIRP - 2.15$
13. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
14. The limit line is derived from  $43 + 10\log(P)$  dB below the transmitter power P(Watts)



## 5 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSV40	101040	10Hz~40GHz	Oct. 14, 2021	Jan. 01, 2022	Oct. 13, 2022	Conducted (TH01-KS)
Power divider	STI	STI08-0055	-	0.5~40GHz	Aug. 26, 2021	Jan. 01, 2022	Aug. 25, 2022	Conducted (TH01-KS)
EXA Spectrum Analyzer	Keysight	N9010A	MY55150244	10Hz~44G,MAX 30dB	Apr. 13, 2021	Jan. 01, 2022	Apr. 12, 2022	Radiation (03CH05-KS)
Loop Antenna	R&S	HFH2-Z2	100321	9kHz~30MHz	Oct. 30, 2021	Jan. 01, 2022	Oct. 29, 2022	Radiation (03CH05-KS)
Bilog Antenna	TeseQ	CBL6111D	49922	30MHz~1GHz	Jun. 04, 2021	Jan. 01, 2022	Jun. 03, 2022	Radiation (03CH05-KS)
Double Ridge Horn Antenna	ETS-Lindgren	3117	00218652	1GHz~18GHz	Apr. 24, 2021	Jan. 01, 2022	Apr. 23, 2022	Radiation (03CH05-KS)
SHF-EHF Horn	Com-power	AH-840	101115	18GHz~40GHz	Nov. 09, 2021	Jan. 01, 2022	Nov. 08, 2022	Radiation (03CH05-KS)
Amplifier	SONOMA	310N	187289	9KHz~1GHz	Apr. 12, 2021	Jan. 01, 2022	Apr. 11, 2022	Radiation (03CH05-KS)
Amplifier	MITEQ	EM18G40G GA	060728	18~40GHz	Jan. 07, 2021	Jan. 01, 2022	Jan. 06, 2022	Radiation (03CH05-KS)
high gain Amplifier	MITEQ	AMF-7D-001 01800-30-10 P	2012228	1Ghz~18Ghz	Oct. 16, 2021	Jan. 01, 2022	Oct. 15, 2022	Radiation (03CH05-KS)
Amplifier	Keysight	83017A	MY53270316	500MHz~26.5GHz	Oct. 16, 2021	Jan. 01, 2022	Oct. 15, 2022	Radiation (03CH05-KS)
AC Power Source	Chroma	61601	F104090004	N/A	NCR	Jan. 01, 2022	NCR	Radiation (03CH05-KS)
Turn Table	ChamPro	EM 1000-T	060762-T	0~360 degree	NCR	Jan. 01, 2022	NCR	Radiation (03CH05-KS)
Antenna Mast	ChamPro	EM 1000-A	060762-A	1 m~4 m	NCR	Jan. 01, 2022	NCR	Radiation (03CH05-KS)

NCR: No Calibration Required



## 6 Uncertainty of Evaluation

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI 63.26-2015. All the measurement uncertainty value were shown with a coverage K=2 to indicate 95% level of confidence. The measurement data show herein meets or exceeds the CISPR measurement uncertainty values specified in CISPR 16-4-2 and can be compared directly to specified limit to determine compliance.

### Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	2.5dB
---	-------

### Uncertainty of Radiated Emission Measurement (1 GHz ~ 40 GHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	2.1dB
---	-------

----- THE END -----



## Appendix A. Test Results of Conducted Test

Test Engineer :	Simle Wang	Temperature :	22~23°C
		Relative Humidity :	40~42%

### Conducted Output Power(Average power) and ERP/EIRP

For Ant 0:

GSM850	Burst Average Power (dBm)			ERP(W)		
	TX Channel	128	189	251	L	M
Frequency (MHz)	824.2	836.4	848.8			
GSM 1 Tx slot	32.21	32.10	31.97	0.3436	0.3350	0.3251
GPRS 1 Tx slot	32.15	32.04	31.89	0.3388	0.3304	0.3192
GPRS 2 Tx slots	29.43	29.46	29.27	0.1811	0.1824	0.1746
GPRS 3 Tx slots	27.33	27.74	27.67	0.1117	0.1227	0.1208
GPRS 4 Tx slots	26.00	26.32	26.30	0.0822	0.0885	0.0881
EDGE 1 Tx slot	25.94	25.96	25.85	0.0811	0.0815	0.0794
EDGE 2 Tx slots	23.17	23.11	23.14	0.0429	0.0423	0.0426
EDGE 3 Tx slots	21.19	21.24	21.16	0.0272	0.0275	0.0270
EDGE 4 Tx slots	19.84	20.12	20.03	0.0199	0.0212	0.0208
GSM1900	Burst Average Power (dBm)			EIRP(W)		
TX Channel	512	661	810	L	M	H
Frequency (MHz)	1850.2	1880	1909.8			
GSM 1 Tx slot	29.34	29.33	29.21	0.3664	0.3656	0.3556
GPRS 1 Tx slot	29.27	29.28	29.10	0.3606	0.3614	0.3467
GPRS 2 Tx slots	26.70	26.64	26.39	0.1995	0.1968	0.1858
GPRS 3 Tx slots	24.63	24.82	24.61	0.1239	0.1294	0.1233
GPRS 4 Tx slots	23.17	23.52	23.43	0.0885	0.0959	0.0940
EDGE 1 Tx slot	25.23	25.39	25.18	0.1422	0.1476	0.1406
EDGE 2 Tx slots	22.51	22.45	22.27	0.0760	0.0750	0.0719
EDGE 3 Tx slots	19.92	19.82	19.73	0.0419	0.0409	0.0401
EDGE 4 Tx slots	19.97	19.69	19.85	0.0424	0.0397	0.0412



Band		WCDMA V			ERP(W)		
TX Channel		4132	4182	4233			
Rx Channel		4357	4407	4458			
Frequency (MHz)		826.4	836.4	846.6	L	M	H
3GPP Rel 99	AMR 12.2Kbps	24.71	24.74	24.72	0.0611	0.0615	0.0612
3GPP Rel 99	RMC 12.2Kbps	24.75	24.78	24.69	0.0617	0.0621	0.0608
3GPP Rel 6	HSDPA Subtest-1	23.76	23.81	23.54	0.0491	0.0497	0.0467
3GPP Rel 6	HSDPA Subtest-2	23.82	23.69	23.58	0.0498	0.0483	0.0471
3GPP Rel 6	HSDPA Subtest-3	23.33	23.29	23.20	0.0445	0.0441	0.0432
3GPP Rel 6	HSDPA Subtest-4	23.32	23.34	23.22	0.0444	0.0446	0.0434
3GPP Rel 8	DC-HSDPA Subtest-1	23.82	23.87	23.56	0.0498	0.0504	0.0469
3GPP Rel 8	DC-HSDPA Subtest-2	23.87	23.74	23.56	0.0504	0.0489	0.0469
3GPP Rel 8	DC-HSDPA Subtest-3	23.37	23.30	23.21	0.0449	0.0442	0.0433
3GPP Rel 8	DC-HSDPA Subtest-4	23.38	23.31	23.18	0.0450	0.0443	0.0430
3GPP Rel 6	HSUPA Subtest-1	23.69	23.75	23.66	0.0483	0.0490	0.0480
3GPP Rel 6	HSUPA Subtest-2	21.78	21.79	21.67	0.0311	0.0312	0.0303
3GPP Rel 6	HSUPA Subtest-3	22.80	22.77	22.64	0.0394	0.0391	0.0379
3GPP Rel 6	HSUPA Subtest-4	21.73	21.78	21.70	0.0308	0.0311	0.0305
3GPP Rel 6	HSUPA Subtest-5	23.78	23.74	23.40	0.0493	0.0489	0.0452

Band		WCDMA IV			EIRP(W)		
TX Channel		1312	1413	1513			
Rx Channel		1537	1638	1738			
Frequency (MHz)		1712.4	1732.6	1752.6	L	M	H
3GPP Rel 99	AMR 12.2Kbps	24.10	24.13	24.11	0.1318	0.1327	0.1321
3GPP Rel 99	RMC 12.2Kbps	24.14	24.17	24.09	0.1330	0.1340	0.1315
3GPP Rel 6	HSDPA Subtest-1	23.21	23.20	23.05	0.1074	0.1072	0.1035
3GPP Rel 6	HSDPA Subtest-2	23.23	23.18	23.11	0.1079	0.1067	0.1050
3GPP Rel 6	HSDPA Subtest-3	22.72	22.68	22.59	0.0959	0.0951	0.0931
3GPP Rel 6	HSDPA Subtest-4	22.71	22.73	22.61	0.0957	0.0962	0.0935
3GPP Rel 8	DC-HSDPA Subtest-1	23.09	23.08	22.93	0.1045	0.1042	0.1007
3GPP Rel 8	DC-HSDPA Subtest-2	23.11	23.06	22.99	0.1050	0.1038	0.1021
3GPP Rel 8	DC-HSDPA Subtest-3	22.60	22.56	22.47	0.0933	0.0925	0.0906
3GPP Rel 8	DC-HSDPA Subtest-4	22.59	22.61	22.49	0.0931	0.0935	0.0910
3GPP Rel 6	HSUPA Subtest-1	23.17	23.17	23.05	0.1064	0.1064	0.1035
3GPP Rel 6	HSUPA Subtest-2	21.17	21.18	21.03	0.0671	0.0673	0.0650
3GPP Rel 6	HSUPA Subtest-3	22.19	22.16	22.03	0.0849	0.0843	0.0818
3GPP Rel 6	HSUPA Subtest-4	21.12	21.17	21.09	0.0664	0.0671	0.0659
3GPP Rel 6	HSUPA Subtest-5	23.90	23.90	23.50	0.1259	0.1259	0.1148



Band		WCDMA II			EIRP(W)		
TX Channel		9262	9400	9538			
Rx Channel		9662	9800	9938			
Frequency (MHz)		1852.4	1880	1907.6	L	M	H
3GPP Rel 99	AMR 12.2Kbps	24.38	24.33	24.31	0.1169	0.1156	0.1151
3GPP Rel 99	RMC 12.2Kbps	24.40	24.43	24.36	0.1175	0.1183	0.1164
3GPP Rel 6	HSDPA Subtest-1	23.80	23.83	23.81	0.1023	0.1030	0.1026
3GPP Rel 6	HSDPA Subtest-2	23.77	23.82	23.80	0.1016	0.1028	0.1023
3GPP Rel 6	HSDPA Subtest-3	22.96	23.26	23.30	0.0843	0.0904	0.0912
3GPP Rel 6	HSDPA Subtest-4	23.31	23.32	23.27	0.0914	0.0916	0.0906
3GPP Rel 8	DC-HSDPA Subtest-1	23.85	23.80	23.79	0.1035	0.1023	0.1021
3GPP Rel 8	DC-HSDPA Subtest-2	23.77	23.87	23.86	0.1016	0.1040	0.1038
3GPP Rel 8	DC-HSDPA Subtest-3	23.02	23.22	23.25	0.0855	0.0895	0.0902
3GPP Rel 8	DC-HSDPA Subtest-4	23.27	23.37	23.29	0.0906	0.0927	0.0910
3GPP Rel 6	HSUPA Subtest-1	23.46	23.45	23.37	0.0946	0.0944	0.0927
3GPP Rel 6	HSUPA Subtest-2	21.42	21.43	21.33	0.0592	0.0593	0.0579
3GPP Rel 6	HSUPA Subtest-3	22.44	22.47	22.34	0.0748	0.0753	0.0731
3GPP Rel 6	HSUPA Subtest-4	21.45	21.46	21.28	0.0596	0.0597	0.0573
3GPP Rel 6	HSUPA Subtest-5	23.40	23.50	23.40	0.0933	0.0955	0.0933



## Appendix B. Test Results of Radiated Test

### Radiated Spurious Emission

Test Engineer :	Chris Chen	Temperature :	22~23°C
		Relative Humidity :	41~42%

GSM850 (GSM)								
Channel	Frequency ( MHz )	ERP ( dBm )	Limit ( dBm )	Over Limit ( dB )	S.G. Power ( dBm )	TX Cable loss ( dB )	TX Antenna Gain (dBi)	Polarization (H/V)
Middle	1672	-25.62	-13	-12.62	-32.59	1.58	10.70	H
	2512	-40.36	-13	-27.36	-48.61	2.102	12.50	H
	3344	-61.98	-13	-48.98	-70.87	2.856	13.90	H
	1672	-26.06	-13	-13.06	-33.03	1.58	10.70	V
	2512	-43.19	-13	-30.19	-51.44	2.10	12.50	V
	3344	-59.91	-13	-46.91	-68.80	2.86	13.90	V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.

GSM850 (EDGE class 8)								
Channel	Frequency ( MHz )	ERP ( dBm )	Limit ( dBm )	Over Limit ( dB )	S.G. Power ( dBm )	TX Cable loss ( dB )	TX Antenna Gain (dBi)	Polarization (H/V)
Middle	1672	-26.41	-13	-13.41	-33.38	1.58	10.70	H
	2512	-39.33	-13	-26.33	-47.58	2.10	12.50	H
	3344	-59.40	-13	-46.40	-68.29	2.86	13.90	H
	4182	-61.78	-13	-48.78	-70.24	2.69	13.30	H
	5016	-54.47	-13	-41.47	-62.23	3.09	13.00	H
	1672	-28.15	-13	-15.15	-35.12	1.58	10.70	V
	2512	-42.78	-13	-29.78	-51.03	2.10	12.50	V
	3345.6	-63.62	-13	-50.62	-72.51	2.86	13.90	V
	4184	-62.13	-13	-49.13	-70.59	2.69	13.30	V
	5016	-59.24	-13	-46.24	-67.00	3.09	13.00	V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.



GSM1900 (GSM)								
Channel	Frequency ( MHz )	EIRP ( dBm )	Limit ( dBm )	Over Limit ( dB )	S.G. Power ( dBm )	TX Cable loss ( dB )	TX Antenna Gain (dBi)	Polarization (H/V)
Middle	3765	-55.77	-13	-42.77	-68.03	2.64	14.90	H
	5640	-43.78	-13	-30.78	-55.64	2.94	14.80	H
	7520	-52.57	-13	-39.57	-62.34	3.39	13.16	H
	9400	-55.65	-13	-42.65	-66.13	4.00	14.48	H
	11280	-53.80	-13	-40.80	-63.31	4.23	13.74	H
	3765	-50.50	-13	-37.50	-62.76	2.64	14.90	V
	5640	-45.81	-13	-32.81	-57.67	2.94	14.80	V
	7520	-56.23	-13	-43.23	-66.00	3.39	13.16	V
	9400	-55.00	-13	-42.00	-65.48	4.00	14.48	V
11280	-50.61	-13	-37.61	-60.12	4.23	13.74	V	

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.

GSM1900 (EDGE class 8)								
Channel	Frequency ( MHz )	EIRP ( dBm )	Limit ( dBm )	Over Limit ( dB )	S.G. Power ( dBm )	TX Cable loss ( dB )	TX Antenna Gain (dBi)	Polarization (H/V)
Middle	3765	-56.63	-13	-43.63	-68.89	2.64	14.90	H
	5640	-47.25	-13	-34.25	-59.11	2.94	14.80	H
	7515	-54.25	-13	-41.25	-64.02	3.39	13.16	H
	9400	-55.68	-13	-42.68	-66.16	4.00	14.48	H
	11280	-52.96	-13	-39.96	-62.47	4.23	13.74	H
	3765	-51.08	-13	-38.08	-63.34	2.64	14.90	V
	5640	-46.84	-13	-33.84	-58.70	2.94	14.80	V
	7515	-50.48	-13	-37.48	-60.25	3.39	13.16	V
	9400	-54.80	-13	-41.80	-65.28	4.00	14.48	V
	11280	-51.04	-13	-38.04	-60.55	4.23	13.74	V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.

WCDMA Band V(RMC 12.2Kbps)								
Channel	Frequency ( MHz )	ERP ( dBm )	Limit ( dBm )	Over Limit ( dB )	S.G. Power ( dBm )	TX Cable loss ( dB )	TX Antenna Gain (dBi)	Polarization (H/V)
Middle	1672	-67.23	-13	-54.23	-74.20	1.58	10.70	H
	2510	-61.73	-13	-48.73	-69.98	2.102	12.50	H
	3344	-63.87	-13	-50.87	-72.76	2.856	13.90	H
	1672	-66.60	-13	-53.60	-73.57	1.58	10.70	V
	2510	-61.85	-13	-48.85	-70.10	2.10	12.50	V
	3345.6	-63.50	-13	-50.50	-72.39	2.86	13.90	V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.





WCDMA Band II(RMC 12.2Kbps)								
Channel	Frequency ( MHz )	EIRP ( dBm )	Limit ( dBm )	Over Limit ( dB )	S.G. Power ( dBm )	TX Cable loss ( dB )	TX Antenna Gain (dBi)	Polarization (H/V)
Middle	3765	-61.19	-13	-48.19	-73.45	2.64	14.90	H
	5640	-57.66	-13	-44.66	-69.52	2.94	14.80	H
	7520	-55.41	-13	-42.41	-65.18	3.39	13.16	H
	9400	-45.53	-13	-32.53	-56.01	4.00	14.48	H
	11280	-44.67	-13	-31.67	-54.18	4.23	13.74	H
	13160	-50.89	-13	-37.89	-60.73	4.49	14.32	H
	3760	-61.18	-13	-48.18	-73.44	2.64	14.90	V
	5640	-58.36	-13	-45.36	-70.22	2.94	14.80	V
	7520	-53.54	-13	-40.54	-63.31	3.39	13.16	V
	9400	-41.77	-13	-28.77	-52.25	4.00	14.48	V
	11280	-44.73	-13	-31.73	-54.24	4.23	13.74	V
	13160	-50.30	-13	-37.30	-60.14	4.49	14.32	V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.

WCDMA Band IV(RMC 12.2Kbps)								
Channel	Frequency ( MHz )	EIRP ( dBm )	Limit ( dBm )	Over Limit ( dB )	S.G. Power ( dBm )	TX Cable loss ( dB )	TX Antenna Gain (dBi)	Polarization (H/V)
Middle	3465.2	-61.90	-13	-48.90	-72.64	2.604	13.34	H
	5197.8	-52.51	-13	-39.51	-63.02	3.011	13.52	H
	6930	-56.66	-13	-43.66	-66.86	3.271	13.47	H
	8663	-51.44	-13	-38.44	-58.41	5.527	12.5	H
	10395	-52.53	-13	-39.53	-59.39	6.038	12.9	H
	12135	-45.13	-13	-32.13	-52.33	6.726	13.93	H
	3465	-61.29	-13	-48.29	-72.03	2.604	13.34	V
	5190	-54.55	-13	-41.55	-65.06	3.011	13.52	V
	6930	-56.80	-13	-43.80	-67.00	3.271	13.47	V
	8663	-51.50	-13	-38.50	-58.47	5.527	12.50	V
	10395.6	-52.33	-13	-39.33	-59.19	6.038	12.90	V
	12128.2	-43.09	-13	-30.09	-50.29	6.726	13.93	V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.



## **Appendix D. Reference Report**

Please refer to Sporton report number FG1N1013A which is issued separately.