

FCC TEST REPORT (PART 24)



Applicant:	Xiaomi Communications Co., Ltd.
Address:	#019, 9th Floor, Building 6, 33 Xi'erqi Middle Road, Haidian District, Beijing, China, 100085

Manufacturer or Supplier:	Xiaomi Communications Co., Ltd.
Address:	#019, 9th Floor, Building 6, 33 Xi'erqi Middle Road, Haidian District, Beijing, China, 100085
Product:	Mobile Phone
Brand Name:	Redmi
Model Name:	2312CRNCCL
FCC ID:	2AFZZNCCL
Date of tests:	Oct. 16, 2023 ~ Nov. 22, 2023

The tests have been carried out according to the requirements of the following standard:

- FCC PART 24, Subpart E**
 FCC PART 2
 ANSI/TIA/EIA-603-D
 ANSI/TIA/EIA-603-E
 ANSI C63.26-2015

CONCLUSION: The submitted sample was found to COMPLY with the test requirement

Prepared by Chao Wu Engineer / Mobile Department	Approved by Peibo Sun Manager / Mobile Department
	
Date: Nov. 22, 2023	Date: Nov. 22, 2023

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
W7L-P23100008RF05	Original release	Nov. 22, 2023



1 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC Part 24 & Part 2			
STANDARD SECTION	TEST TYPE	RESULT	LAB
§2.1046	Conducted Output Power	Compliance	A
§24.232(c)	Equivalent Isotropic Radiated Power	Compliance	A
§2.1055 §24.235	Frequency Stability	Compliance	A
§2.1049	Occupied Bandwidth	Compliance	A
§24.232(d)	Peak to average ratio	Compliance	A
§24.238(a)(b)	Band Edge Measurements	Compliance	A
§2.1051 §24.238(a)(b)	Conducted Spurious Emissions	Compliance	A
§2.1053 §24.238(a)(b)	Radiated Spurious Emissions	Compliance	A

Test Lab Information Reference:

Lab A

Huarui 7Layers High Technology (Suzhou) Co., Ltd.

Lab Address:

Tower N, Innovation Center, 88 Zhuyi Road, High-tech District, Suzhou City, Anhui Province

Accredited Test Lab Cert 6613.01

The FCC Site Registration No. is 434559; The Designation No. is CN1325.

1.1 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

MEASUREMENT	UNCERTAINTY
Frequency Stability	$\pm 76.97\text{Hz}$
Radiated emissions (9KHz~30MHz)	$\pm 2.68\text{dB}$
Radiated emissions & Radiated Power (30MHz~1GHz)	$\pm 4.98\text{dB}$
Radiated emissions & Radiated Power (1GHz ~6GHz)	$\pm 4.70\text{dB}$
Radiated emissions (6GHz ~18GHz)	$\pm 4.60\text{dB}$
Radiated emissions (18GHz ~40GHz)	$\pm 4.12\text{dB}$
Conducted emissions	$\pm 4.01\text{dB}$
Occupied Channel Bandwidth	$\pm 43.58\text{KHz}$
Conducted Output power	$\pm 2.06\text{dB}$
Band Edge Measurements	$\pm 4.70\text{dB}$
Peak to average ratio	$\pm 0.76\text{dB}$

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



1.2 TEST SITE AND INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
MXE EMI Receiver	KEYSIGHT	N9038A-544	MY54450026	Mar. 28,23	Mar. 27,24
EXA Signal Analyzer	KEYSIGHT	N9010A-544	MY54510355	May.10,23	May.09,24
Loop Antenna	Schwarzbeck	FMZB 1519B	00173	Sep.02,23	Sep.01,24
Bilog Antenna	ETS-LINDGRE N	3143B	00161965	Feb. 18,23	Feb. 17,24
Horn Antenna	ETS-LINDGRE N	3117	00168692	Feb. 18,23	Feb. 17,24
Horn Antenna (18GHz-40GHz)	N/A	QWH-SL-18-40-K- SG/QMS-00361	15433	Sep.03, 23	Sep.02, 24
Radio Communication Analyzer	ANRITSU	MT8820C	6201465426	Feb. 14,23	Feb. 13,24
Signal Pre-Amplifier	EMSI	EMC 9135	980249	May. 06,23	May. 05,24
Signal Pre-Amplifier	EMSI	EMC 012645B	980257	May.10,23	May.09,24
Signal Pre-Amplifier	EMSI	EMC 184045B	980259	Feb. 17,23	Feb.16,24
3m Semi-anechoic Chamber	ETS-LINDGRE N	9m*6m*6m	Euroshieldpn- CT0001143-121 6	May. 22, 23	May. 21,26
Test Software	E3	V 9.160323	N/A	N/A	N/A
Test Software	JS1120	3.1.36	N/A	N/A	N/A
10dB Attenuator	JFW/USA	50HF-010-SMA	50HF-010-SMA	May. 06,23	May. 05,24
Power Meter	Anritsu	ML2495A	1506002	Feb. 14,23	Feb. 13,24
Power Sensor	Anritsu	MA2411B	1339352	Feb. 14,23	Feb. 13,24
Temperature Chamber	ESPEC	SH-242	93000855	May. 06,23	May. 05,24
MXG Analog Microwave Signal Generator	KEYSIGHT	N5183A	MY50143024	Feb. 14,23	Feb. 13,24
Base station R&S CMW500	Rohde&Schwa rz	CMW500	153085	May.10,23	May.09,24
DC Source	Kikusui/JP	PMX18-5A	N/A	Aug. 11,23	Aug. 10,24



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Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Pre-Amplifier	R&S	SCU18F1	100815	Aug.30,22	Aug.29,24
Pre-Amplifier	R&S	SCU08F1	101028	Sep.16,22	Sep.15,24
Vector Signal Generator	R&S	SMBV100B	102176	Feb.16,22	Feb.15,24
Signal Generator	R&S	SMB100A	182185	Feb.16,22	Feb.15,24
3m Fully-anechoic Chamber	TDK	9m*6m*6m	HRSW-SZ-EMC-01Chamber	Nov.25,22	Nov.24,25
3m Semi-anechoic Chamber	TDK	9m*6m*6m	HRSW-SZ-EMC-02Chamber	Nov.25,22	Nov.24,25
EMI TEST Receiver	R&S	ESR26	101734	Feb.25,22	Feb.24,24
EMI TEST Receiver	R&S	ESW44	101973	Feb.25,22	Feb.24,24
Bilog Antenna	SCHWARZBECK	VULB 9163	1264	Feb.28,22	Feb.27,24
Horn Antenna	ETS-LINDGREN	3117	227836	Aug.22,22	Aug.21,24
Horn Antenna (18GHz-40GHz)	Steatite Q-par Antennas	QMS 00880	23486	Feb.23,22	Feb.22,24
Horn Antenna	Steatite Q-par Antennas	QMS 00208	23485	Aug.22,22	Aug.21,24
Loop Antenna	SCHWARZ	HFH2-Z2/Z2E	100976	Feb.23,22	Feb.22,24
WIDEBANDRADIO COMMUNICATION TESTER	R&S	CMW500	169399	Jun.27,22	Jun.26,24
Test Software	EMC32	EMC32	N/A	N/A	N/A
6DB attenuator	Tonscend Technology Co., Ltd	N/A	23062787	N/A	N/A
Test Software	ELEKTRA	ELEKTRA4.32	N/A	N/A	N/A
Open Switch and Control Unit	R&S	OSP220	101964	Oct.01,22	Sep.30,24
DC Source	HYELEC	HY3010B	551016	Aug.31,22	Aug.30,24
Hygrothermograph	DELI	20210528	SZ014	Sep.06,22	Sep.05,24
PC	LENOVO	E14	HRSW0024	N/A	N/A
TMC-AMI18843A(CABLE)	R&S	HF290-NMNM-7.00M	N/A	N/A	N/A
TMC-AMI18843A(CABLE)	R&S	HF290-NMNM-4.00M	N/A	N/A	N/A
CABLE	R&S	W13.02	N/A	Apr.28,23	Oct.27,23
CABLE	R&S	W13.02	N/A	Oct.27,23	Apr.26,24
CABLE	R&S	W12.14	N/A	Apr.28,23	Oct.27,23
CABLE	R&S	W12.14	N/A	Oct.27,23	Apr.26,24
CABLE	R&S	J12J103539-00-1	SEP-03-20-069	Apr.28,23	Oct.27,23
CABLE	R&S	J12J103539-00-1	SEP-03-20-069	Oct.27,23	Apr.26,24
CABLE	R&S	J12J103539-00-1	SEP-03-20-070	Apr.28,23	Oct.27,23

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CABLE	R&S	J12J103539-00-1	SEP-03-20-070	Oct.27,23	Apr.26,24
Temperature Chamber	votsch	VT4002	58566078100050	May.31,22	May.30,24

- NOTE:** 1. The calibration interval of the above test instruments is 6 months or 12 months or 24 months or 36 months, and the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.
2. The FCC Site Registration No. is 434559; The Designation No. is CN1325.



2 GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

PRODUCT	Mobile Phone	
BRAND NAME	Redmi	
MODEL NAME	2312CRNCCL	
NOMINAL VOLTAGE	5Vdc (adapter or host equipment) 3.82Vdc (Li-ion, battery)	
MODULATION TYPE	GSM: GMSK EDGE: 8PSK WCDMA: BPSK, QPSK LTE Band 2: QPSK, 16QAM, 64QAM	
FREQUENCY RANGE	GSM, EDGE	1850.2MHz ~ 1909.8MHz
	WCDMA	1852.4MHz ~ 1907.6MHz
	LTE Band 2 Channel Bandwidth: 1.4MHz	1850.7MHz ~ 1909.3MHz
	LTE Band 2 Channel Bandwidth: 3MHz	1851.5MHz ~ 1908.5MHz
	LTE Band 2 Channel Bandwidth: 5MHz	1852.5MHz ~ 1907.5MHz
	LTE Band 2 Channel Bandwidth: 10MHz	1855.0MHz ~ 1905.0MHz
	LTE Band 2 Channel Bandwidth: 15MHz	1857.5MHz ~ 1902.5MHz
	LTE Band 2 Channel Bandwidth: 20MHz	1860.0MHz ~ 1900.0MHz
	MAX. EIRP POWER	GSM
EDGE		344.35mW
WCDMA		286.42mW
LTE Band 2 Channel Bandwidth: 1.4MHz		267.3mW
LTE Band 2 Channel Bandwidth: 3MHz		266.69mW
LTE Band 2 Channel Bandwidth: 5MHz		263.63mW
LTE Band 2 Channel Bandwidth: 10MHz		263.63mW
LTE Band 2 Channel Bandwidth: 15MHz		271.02mW



	LTE Band 2 Channel Bandwidth: 20MHz	271.64mW	
EMISSION DESIGNATOR	GSM	247KGXW	
	EDGE	250KG7W	
	WCDMA	4M17F9W	
	LTE Band 2 Channel Bandwidth: 1.4MHz	QPSK: 1M10G7D	
		16QAM: 1M10W7D	
		64QAM: 1M09W7D	
	LTE Band 2 Channel Bandwidth: 3MHz	QPSK: 2M69G7D	
		16QAM: 2M69W7D	
		64QAM: 2M70W7D	
	LTE Band 2 Channel Bandwidth: 5MHz	QPSK: 4M51G7D	
		16QAM: 4M49W7D	
		64QAM: 4M49W7D	
	LTE Band 2 Channel Bandwidth: 10MHz	QPSK: 9M00G7D	
		16QAM: 9M00W7D	
		64QAM: 8M98W7D	
LTE Band 2 Channel Bandwidth: 15MHz	QPSK: 13M5G7D		
	16QAM: 13M5W7D		
	64QAM: 13M5W7D		
LTE Band 2 Channel Bandwidth: 20MHz	QPSK: 18M0G7D		
	16QAM: 18M0W7D		
	64QAM: 18M0W7D		
ANTENNA TYPE	ANT 0(DOWN): PIFA Antenna with 0.2dBi gain for GSM1900/ WCDMA II/LTE B2 ANT 1(UP): PIFA Antenna with -1.71dBi gain for GSM1900/ WCDMA II/LTE B2		
HW VERSION	13510C3Y		
SW VERSION	Android 14		
IMEI	864532070015786/94 864532070015406/14 864532070023426/34 864532070023566/74 864532070033300/18		
I/O PORTS	Refer to user's manual		
CABLE SUPPLIED	USB cable: non-shielded cable, with w/o ferrite core, 1.0 meter		



EXTREME TEMPERATURE	0-40 °C
EXTREME VOLTAGE	3.6V - 4.25V

NOTE:

1. For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.
2. Physically, the EUT provides two completed transmitters and two receivers.

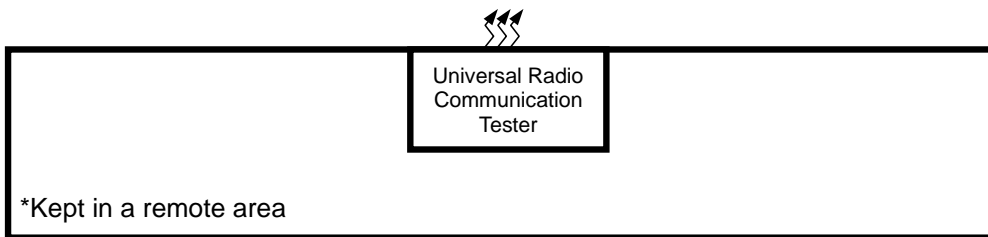
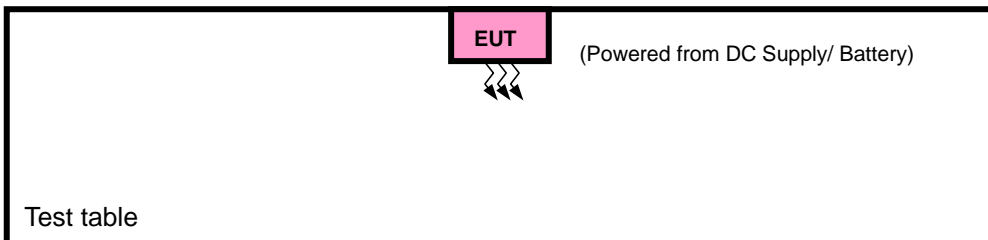
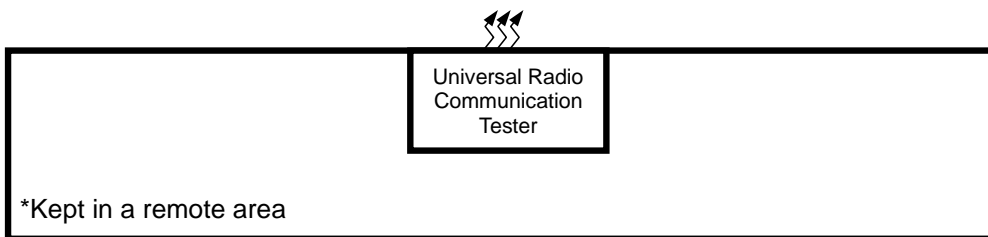
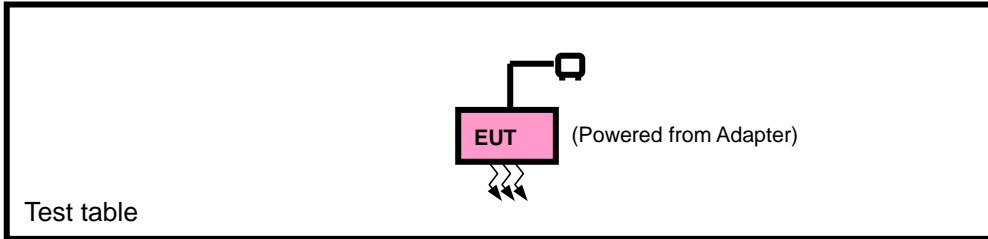
MODULATION MODE	TX FUNCTION
GSM/GPRS/EDGE	2TX/2RX
WCDMA	2TX/2RX
LTE	2TX/2RX

3. For the test results, the EUT had been tested with all conditions. But only the worst case was shown in the test report.
4. Antenna gain and EUT conducted cable loss are provided by the customer, and the laboratory will record the results based on these items that involve these two parameters.



2.2 CONFIGURATION OF SYSTEM UNDER TEST

FOR RADIATION EMISSION TEST





2.3 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	DC source	Kikusui/JP	PMX18-5A	0000001	N/A

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	DC Line: Unshielded, Detachable 1.0m

2.4 TEST ITEM AND TEST CONFIGURATION

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis and antenna ports. The worst case in EIRP and radiated emission was found when positioned on X-plane for GSM/EDGE/ LTE. Following channel(s) was (were) selected for the final test as listed below:

EUT CONFIGURE MODE	DESCRIPTION
A	EUT + Adapter with GSM or WCDMA or LTE link
B	EUT + DC source with GSM or WCDMA or LTE link

GSM MODE

EUT CONFIGURE MODE	TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	MODE
A	EIRP	512 to 810	512, 661, 810	GSM, EDGE
B	FREQUENCY STABILITY	512 to 810	512, 661, 810	GSM, EDGE
A	OCCUPIED BANDWIDTH	512 to 810	512, 661, 810	GSM, EDGE
A	PEAK TO AVERAGE RATIO	512 to 810	512, 661, 810	GSM, EDGE
A	BAND EDGE	512 to 810	512, 810	GSM, EDGE
A	CONDUCTED EMISSION	512 to 810	512, 661, 810	GSM, EDGE
A	RADIATED EMISSION	512 to 810	512, 661, 810	GSM, EDGE



WCDMA

EUT CONFIGURE MODE	TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	MODE
A	EIRP	9262 to 9538	9262, 9400, 9538	WCDMA
B	FREQUENCY STABILITY	9262 to 9538	9262, 9400, 9538	WCDMA
A	OCCUPIED BANDWIDTH	9262 to 9538	9262, 9400, 9538	WCDMA
A	PEAK TO AVERAGE RATIO	9262 to 9538	9262, 9400, 9538	WCDMA
A	BAND EDGE	9262 to 9538	9262, 9538	WCDMA
A	CONDCUDED EMISSION	9262 to 9538	9262, 9400, 9538	WCDMA
A	RADIATED EMISSION	9262 to 9538	9262, 9400, 9538	WCDMA

LTE BAND 2 MODE

EUT CONFIGURE MODE	TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	CHANNEL BANDWIDTH	MODULATION	MODE
A	EIRP	18607 to 19193	18607, 18900, 19193	1.4MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset
		18615 to 19185	18615, 18900, 19185	3MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset
		18625 to 19175	18625, 18900, 19175	5MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset
		18650 to 19150	18650, 18900, 19150	10MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset
		18675 to 19125	18675, 18900, 19125	15MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset
		18700 to 19100	18700, 18900, 19100	20MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset
B	FREQUENCY STABILITY	18700 to 19100	18700, 18900, 19100	10MHz	QPSK,16QAM, 64QAM	100 RB / 0 RB Offset
A	OCCUPIED BANDWIDTH	18607 to 19193	18607, 18900, 19193	1.4MHz	QPSK,16QAM, 64QAM	6 RB / 0 RB Offset
		18615 to 19185	18615, 18900, 19185	3MHz	QPSK,16QAM, 64QAM	15 RB / 0 RB Offset
		18625 to 19175	18625, 18900, 19175	5MHz	QPSK,16QAM, 64QAM	25 RB / 0 RB Offset
		18650 to 19150	18650, 18900, 19150	10MHz	QPSK,16QAM, 64QAM	50 RB / 0 RB Offset
		18675 to 19125	18675, 18900, 19125	15MHz	QPSK,16QAM, 64QAM	75 RB / 0 RB Offset
		18700 to 19100	18700, 18900, 19100	20MHz	QPSK,16QAM, 64QAM	100 RB / 0 RB Offset
A	PEAK TO AVERAGE RATIO	18700 to 19100	18700, 18900, 19100	20MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset 100 RB / 0 RB Offset



A	BAND EDGE	18607 to 19193	18607	1.4MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset		
			19193	1.4MHz	QPSK,16QAM, 64QAM	6 RB / 0 RB Offset		
		18615 to 19185	18615	3MHz	QPSK,16QAM, 64QAM	1 RB / 5 RB Offset		
			19185	3MHz	QPSK,16QAM, 64QAM	6 RB / 0 RB Offset		
		18625 to 19175	18625	5MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset		
			19175	5MHz	QPSK,16QAM, 64QAM	15 RB / 0 RB Offset		
		18650 to 19150	18650	10MHz	QPSK,16QAM, 64QAM	1 RB / 14 RB Offset		
			19150	10MHz	QPSK,16QAM, 64QAM	15 RB / 0 RB Offset		
		18675 to 19125	18675	15MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset		
			19125	15MHz	QPSK,16QAM, 64QAM	25 RB / 0 RB Offset		
		18700 to 19100	18700	20MHz	QPSK,16QAM, 64QAM	1 RB / 24 RB Offset		
			19100	20MHz	QPSK,16QAM, 64QAM	25 RB / 0 RB Offset		
		A	CONDCUDED EMISSION	18607 to 19193	18607, 18900, 19193	1.4MHz	QPSK	1 RB / 0 RB Offset
				18615 to 19185	18615, 18900, 19185	3MHz	QPSK	1 RB / 0 RB Offset
				18625 to 19175	18625, 18900, 19175	5MHz	QPSK	1 RB / 0 RB Offset
				18650 to 19150	18650, 18900, 19150	10MHz	QPSK	1 RB / 0 RB Offset
				18675 to 19125	18675, 18900, 19125	15MHz	QPSK	1 RB / 0 RB Offset
				18700 to 19100	18700, 18900, 19100	20MHz	QPSK	1 RB / 0 RB Offset
A	RADIATED EMISSION	18607 to 19193	18900	1.4MHz	QPSK	1 RB / 0 RB Offset		
		18615 to 19185	18900	3MHz	QPSK	1 RB / 0 RB Offset		
		18625 to 19175	18900	5MHz	QPSK	1 RB / 0 RB Offset		
		18650 to 19150	18900	10MHz	QPSK	1 RB / 0 RB Offset		
		18675 to 19125	18900	15MHz	QPSK	1 RB / 0 RB Offset		
		18700 to 19100	18700, 18900, 19100	20MHz	QPSK	1 RB / 0 RB Offset		

Note: This device was tested under all bandwidths, RB configurations and modulations. The worst case was found in QPSK modulation.



TEST CONDITION:

TEST ITEM	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
EIRP	25deg. C, 57%RH	DC 5V By Adapter	Jace Hu
FREQUENCY STABILITY	See Note	DC 3.6/3.82/4.25 By DC Source	James Fu
OCCUPIED BANDWIDTH	23deg. C, 61%RH	DC 5V By Adapter	James Fu
PEAK TO AVERAGE RATIO	23deg. C, 61%RH	DC 5V By Adapter	James Fu
BAND EDGE	23deg. C, 61%RH	DC 5V By Adapter	James Fu
CONDCUDED EMISSION	23deg. C, 61%RH	DC 5V By Adapter	James Fu
RADIATED EMISSION	23deg. C, 70%RH	DC 5V By Adapter	Jace Hu

Note: LV = Low voltage (3.6V); NV = Normal voltage (3.82V); HV= High voltage (4.25V).
NT = Normal temperature (25°C)

2.5 EUT OPERATING CONDITIONS

The EUT makes a call to the communication simulator. The communication simulator station system controlled an EUT to export maximum output power under transmission mode and specific channel frequency.

2.6 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is an RF product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

FCC 47 CFR Part 2

FCC 47 CFR Part 24

KDB 971168 D01 Power Meas License Digital Systems v03r01

ANSI/TIA/EIA-603-D

ANSI/TIA/EIA-603-E

ANSI C63.26-2015

NOTE: All test items have been performed and recorded as per the above standards.

3 TEST TYPES AND RESULTS

3.1 OUTPUT POWER MEASUREMENT

3.1.1 LIMITS OF OUTPUT POWER MEASUREMENT

Mobile and portable stations are limited to 2 watts EIRP.

3.1.2 TEST PROCEDURES

EIRP MEASUREMENT:

Per KDB 971168 D01 Power Meas License Digital Systems v03r01 or subclause 5.2.5.5 of ANSI C63.26-2015, the relevant equation for determining the ERP or EIRP from the conducted RF output power measured using the guidance provided above is:

$$\text{ERP or EIRP} = P_{\text{Meas}} + G_{\text{T}} - L_{\text{C}}$$

Where:

ERP or EIRP = effective radiated power or equivalent isotropically radiated power, respectively

(expressed in the same units as P_{Meas} , typically dBW or dBm);

P_{Meas} = measured transmitter output power or PSD, in dBm or dBW;

G_{T} = gain of the transmitting antenna, in dBd (ERP) or dBi (EIRP);

L_{C} = signal attenuation in the connecting cable between the transmitter and antenna, in dB.

CONDUCTED POWER MEASUREMENT:

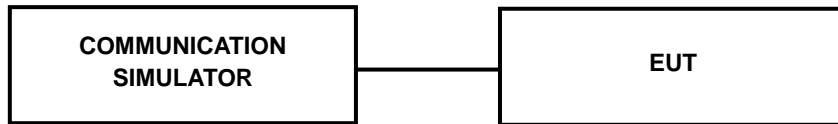
The EUT was set up for the maximum power with WCDMA link data modulation and link up with simulator. Set the EUT to transmit under low, middle and high channel and record the power level shown on simulator.



3.1.3 TEST SETUP

EIRP / ERP Measurement:

CONDUCTED POWER MEASUREMENT:



3.1.4 TEST RESULTS

CONDUCTED OUTPUT POWER (dBm)

Ant 0(DOWN):

Band	GSM1900		
Channel	512	661	810
Frequency (MHz)	1850.2	1880	1909.8
GSM	29.36	29.37	29.22
GPRS (GMSK, 1Tx-slot)	29.35	29.35	29.20
GPRS (GMSK, 2Tx-slot)	25.61	25.66	25.55
GPRS (GMSK, 3Tx-slot)	23.82	23.90	23.82
GPRS (GMSK, 4Tx-slot)	22.98	22.97	22.91
EDGE (8PSK, 1Tx-slot)	25.06	25.17	25.16
EDGE (8PSK, 2Tx-slot)	22.06	22.16	22.25
EDGE (8PSK, 3Tx-slot)	20.23	20.38	20.33
EDGE (8PSK, 4Tx-slot)	19.07	19.13	19.03

Band	WCDMA II		
Channel	9262	9400	9538
Frequency (MHz)	1852.4	1880	1907.6
RMC 12.2K	24.37	24.24	24.26
HSDPA Subtest-1	23.53	23.38	23.41
HSDPA Subtest-2	23.51	23.36	23.42
HSDPA Subtest-3	22.96	22.84	22.86
HSDPA Subtest-4	22.98	22.84	22.92
DC-HSDPA Subtest-1	23.52	23.39	23.42
DC-HSDPA Subtest-2	23.51	23.35	23.42
DC-HSDPA Subtest-3	22.98	22.86	22.86
DC-HSDPA Subtest-4	22.99	22.93	22.94
HSUPA Subtest-1	21.76	21.60	21.63
HSUPA Subtest-2	21.40	21.24	21.36
HSUPA Subtest-3	22.37	22.21	22.23
HSUPA Subtest-4	21.23	21.03	21.13
HSUPA Subtest-5	22.32	22.22	22.15
HSPA+ Subtest-1	21.58	21.49	21.48



**BUREAU
VERITAS**

Test Report No.: W7L-P23100008RF05

LTE BAND 2

Band/BW	Modulation	RB Size	RB Offset	Low CH 18607	Mid CH 18900	High CH 19193
				Frequency 1850.7 MHz	Frequency 1880 MHz	Frequency 1909.3 MHz
2/ 1.4	QPSK	1	0	23.67	23.76	23.72
		1	2	24.07	23.97	23.84
		1	5	23.61	23.49	23.62
		3	0	23.83	23.95	23.84
		3	1	23.82	23.66	23.76
		3	3	23.88	23.78	23.78
		6	0	22.91	22.89	22.95
	16QAM	1	0	22.63	22.59	22.54
		1	2	22.70	22.75	22.75
		1	5	22.50	22.55	22.40
		3	0	22.77	22.83	22.78
		3	1	22.90	22.99	22.82
		3	3	22.83	22.87	23.00
		6	0	21.84	21.83	21.98
	64QAM	1	0	21.79	21.71	21.62
		1	2	21.91	21.80	21.92
		1	5	21.48	21.52	21.59
		3	0	21.81	21.83	21.78
		3	1	21.87	21.82	21.85
		3	3	21.99	21.83	21.87
		6	0	20.86	20.93	20.82



**BUREAU
VERITAS**

Test Report No.: W7L-P23100008RF05

Band/BW	Modulation	RB Size	RB Offset	Low CH 18615	Mid CH 18900	High CH 19185
				Frequency 1851.5 MHz	Frequency 1880 MHz	Frequency 1908.5 MHz
2/3	QPSK	1	0	23.58	23.69	23.70
		1	7	24.06	23.97	23.93
		1	14	23.52	23.61	23.52
		8	0	22.94	22.89	22.85
		8	3	22.74	22.69	22.78
		8	7	22.89	22.73	22.73
		15	0	22.92	22.85	22.90
	16QAM	1	0	22.60	22.62	22.51
		1	7	22.64	22.80	22.70
		1	14	22.45	22.53	22.48
		8	0	21.73	21.87	21.81
		8	3	21.84	21.94	21.82
		8	7	21.86	21.98	21.90
		15	0	21.97	21.88	21.94
	64QAM	1	0	21.71	21.80	21.66
		1	7	21.98	21.88	21.90
		1	14	21.54	21.55	21.56
		8	0	20.77	20.88	20.86
		8	3	20.85	20.80	20.82
		8	7	20.93	20.75	20.81
		15	0	20.77	20.95	20.82



**BUREAU
VERITAS**

Test Report No.: W7L-P23100008RF05

Band/BW	Modulation	RB Size	RB Offset	Low CH 18625	Mid CH 18900	High CH 19175
				Frequency 1852.5 MHz	Frequency 1880 MHz	Frequency 1907.5 MHz
2/5	QPSK	1	0	23.61	23.67	23.67
		1	12	24.01	23.93	23.91
		1	24	23.57	23.51	23.58
		12	0	22.87	22.92	22.89
		12	6	22.80	22.77	22.66
		12	13	22.89	22.80	22.68
		25	0	22.91	22.91	22.87
	16QAM	1	0	22.71	22.57	22.58
		1	12	22.66	22.82	22.65
		1	24	22.53	22.51	22.39
		12	0	21.71	21.81	21.76
		12	6	21.90	22.00	21.76
		12	13	21.84	21.98	21.90
		25	0	21.88	21.86	21.88
	64QAM	1	0	21.76	21.68	21.62
		1	12	21.92	21.78	21.94
		1	24	21.43	21.54	21.55
		12	0	20.78	20.85	20.81
		12	6	20.87	20.77	20.82
		12	13	21.05	20.82	20.85
		25	0	20.87	21.03	20.83



**BUREAU
VERITAS**

Test Report No.: W7L-P23100008RF05

Band/BW	Modulation	RB Size	RB Offset	Low CH 18650	Mid CH 18900	High CH 19150
				Frequency 1855 MHz	Frequency 1880 MHz	Frequency 1905 MHz
2/ 10	QPSK	1	0	23.60	23.67	23.77
		1	24	24.01	23.89	23.96
		1	49	23.58	23.61	23.54
		25	0	22.83	22.93	22.86
		25	12	22.79	22.80	22.72
		25	25	22.82	22.83	22.75
		50	0	22.83	22.97	22.87
	16QAM	1	0	22.72	22.63	22.51
		1	24	22.64	22.69	22.69
		1	49	22.40	22.47	22.51
		25	0	21.79	21.88	21.82
		25	12	21.90	21.87	21.77
		25	25	21.84	21.86	21.96
		50	0	21.95	21.87	21.87
	64QAM	1	0	21.81	21.71	21.65
		1	24	21.99	21.87	21.94
		1	49	21.41	21.54	21.63
		25	0	20.89	20.79	20.86
		25	12	20.80	20.78	20.80
		25	25	20.93	20.76	20.87
		50	0	20.79	20.98	20.84



**BUREAU
VERITAS**

Test Report No.: W7L-P23100008RF05

Band/BW	Modulation	RB Size	RB Offset	Low CH 18675	Mid CH 18900	High CH 19125
				Frequency 1857.5 MHz	Frequency 1880 MHz	Frequency 1902.5 MHz
2/ 15	QPSK	1	0	23.64	23.65	23.66
		1	37	24.13	23.87	23.95
		1	74	23.50	23.56	23.53
		36	0	22.89	22.92	22.85
		36	19	22.82	22.72	22.73
		36	39	22.88	22.83	22.79
		75	0	22.90	22.93	22.82
	16QAM	1	0	22.59	22.57	22.49
		1	37	22.69	22.69	22.72
		1	74	22.53	22.52	22.50
		36	0	21.80	21.78	21.77
		36	19	21.89	21.93	21.70
		36	39	21.87	21.89	21.94
		75	0	21.92	21.87	21.96
	64QAM	1	0	21.67	21.74	21.62
		1	37	21.88	21.79	21.94
		1	74	21.40	21.52	21.61
		36	0	20.83	20.88	20.89
		36	19	20.79	20.79	20.80
		36	39	20.91	20.86	20.85
		75	0	20.91	20.99	20.91



**BUREAU
VERITAS**

Test Report No.: W7L-P23100008RF05

Band/BW	Modulation	RB Size	RB Offset	Low CH 18700	Mid CH 18900	High CH 19100
				Frequency 1860 MHz	Frequency 1880 MHz	Frequency 1900 MHz
2/ 20	QPSK	1	0	23.69	23.78	23.79
		1	50	24.14	23.98	23.99
		1	99	23.65	23.64	23.63
		50	0	22.95	23.01	22.91
		50	25	22.88	22.81	22.79
		50	50	22.93	22.88	22.82
		100	0	22.94	22.99	22.97
	16QAM	1	0	22.73	22.65	22.64
		1	50	22.76	22.84	22.78
		1	99	22.55	22.61	22.53
		50	0	21.86	21.90	21.91
		50	25	21.91	22.01	21.85
		50	50	21.98	22.01	22.02
		100	0	21.99	21.97	21.99
	64QAM	1	0	21.82	21.82	21.69
		1	50	22.01	21.89	21.95
		1	99	21.55	21.63	21.64
		50	0	20.91	20.93	20.91
		50	25	20.93	20.83	20.89
		50	50	21.06	20.90	20.91
		100	0	20.92	21.05	20.97



**BUREAU
VERITAS**

Test Report No.: W7L-P23100008RF05

Ant 1(UP):

Band	GSM1900		
Channel	512	661	810
Frequency (MHz)	1850.2	1880	1909.8
GSM	29.57	29.68	29.52
GPRS (GMSK, 1Tx-slot)	29.56	29.66	29.51
GPRS (GMSK, 2Tx-slot)	25.80	25.96	25.87
GPRS (GMSK, 3Tx-slot)	24.01	24.19	24.14
GPRS (GMSK, 4Tx-slot)	23.08	23.27	23.23
EDGE (8PSK, 1Tx-slot)	25.42	25.39	25.59
EDGE (8PSK, 2Tx-slot)	22.14	22.09	22.34
EDGE (8PSK, 3Tx-slot)	20.29	20.25	20.48
EDGE (8PSK, 4Tx-slot)	19.54	19.37	19.50

Band	WCDMA II		
Channel	9262	9400	9538
Frequency (MHz)	1852.4	1880	1907.6
RMC 12.2K	24.45	24.39	24.40
HSDPA Subtest-1	23.63	23.59	23.51
HSDPA Subtest-2	23.62	23.51	23.59
HSDPA Subtest-3	23.13	23.00	23.01
HSDPA Subtest-4	23.07	23.06	22.99
DC-HSDPA Subtest-1	23.55	23.56	23.49
DC-HSDPA Subtest-2	23.56	23.50	23.49
DC-HSDPA Subtest-3	23.14	23.02	23.02
DC-HSDPA Subtest-4	23.11	23.07	23.10
HSUPA Subtest-1	21.75	21.76	21.77
HSUPA Subtest-2	21.45	21.45	21.39
HSUPA Subtest-3	22.40	22.35	22.30
HSUPA Subtest-4	21.10	21.01	21.09
HSUPA Subtest-5	22.37	22.29	22.40
HSPA+ Subtest-1	21.73	21.61	21.61



**BUREAU
VERITAS**

Test Report No.: W7L-P23100008RF05

LTE BAND 2

Band/BW	Modulation	RB Size	RB Offset	Low CH 18607	Mid CH 18900	High CH 19193
				Frequency 1850.7 MHz	Frequency 1880 MHz	Frequency 1909.3 MHz
2/ 1.4	QPSK	1	0	24.02	23.99	23.91
		1	2	24.32	24.26	24.18
		1	5	23.83	23.75	23.55
		3	0	23.98	24.03	23.91
		3	1	23.84	23.90	23.80
		3	3	23.98	23.95	23.78
		6	0	23.20	23.04	23.12
	16QAM	1	0	23.10	23.22	22.96
		1	2	23.41	23.36	23.25
		1	5	22.90	22.90	22.95
		3	0	22.87	22.89	22.87
		3	1	22.84	22.89	22.83
		3	3	23.09	22.87	22.87
		6	0	22.19	22.16	21.95
	64QAM	1	0	22.17	22.17	22.03
		1	2	22.43	22.21	22.18
		1	5	22.01	21.99	21.73
		3	0	21.89	21.97	21.71
		3	1	21.78	21.89	21.66
		3	3	21.82	21.93	21.78
		6	0	21.12	21.02	21.01



**BUREAU
VERITAS**

Test Report No.: W7L-P23100008RF05

Band/BW	Modulation	RB Size	RB Offset	Low CH 18615	Mid CH 18900	High CH 19185
				Frequency 1851.5 MHz	Frequency 1880 MHz	Frequency 1908.5 MHz
2/3	QPSK	1	0	23.99	23.99	23.90
		1	7	24.24	24.23	24.16
		1	14	23.85	23.71	23.62
		8	0	23.12	23.17	23.00
		8	3	23.01	23.05	22.99
		8	7	23.27	23.02	22.97
		15	0	23.23	23.09	23.06
	16QAM	1	0	23.06	23.15	22.95
		1	7	23.52	23.36	23.35
		1	14	22.97	22.99	22.88
		8	0	22.09	22.07	21.96
		8	3	22.11	22.13	21.90
		8	7	22.20	21.95	22.06
		15	0	22.21	22.08	22.04
	64QAM	1	0	22.16	22.15	22.01
		1	7	22.35	22.14	22.21
		1	14	22.13	22.08	21.80
		8	0	20.95	21.17	20.79
		8	3	21.04	21.03	20.78
		8	7	21.03	21.08	20.96
		15	0	21.11	20.99	20.92



**BUREAU
VERITAS**

Test Report No.: W7L-P23100008RF05

Band/BW	Modulation	RB Size	RB Offset	Low CH 18625	Mid CH 18900	High CH 19175
				Frequency 1852.5 MHz	Frequency 1880 MHz	Frequency 1907.5 MHz
2/5	QPSK	1	0	24.06	23.89	23.90
		1	12	24.36	24.23	24.10
		1	24	23.91	23.67	23.68
		12	0	23.18	23.21	22.99
		12	6	23.08	23.04	22.99
		12	13	23.21	23.08	22.98
		25	0	23.18	23.07	23.00
	16QAM	1	0	23.11	23.23	22.94
		1	12	23.39	23.35	23.29
		1	24	23.03	22.91	22.96
		12	0	22.04	22.15	21.96
		12	6	22.03	22.06	21.93
		12	13	22.19	21.94	21.99
		25	0	22.25	22.16	22.03
	64QAM	1	0	22.10	22.18	21.98
		1	12	22.43	22.10	22.18
		1	24	22.03	21.99	21.79
		12	0	21.08	21.15	20.83
		12	6	21.09	21.08	20.84
		12	13	21.03	21.10	21.00
		25	0	21.12	21.00	20.93



**BUREAU
VERITAS**

Test Report No.: W7L-P23100008RF05

Band/BW	Modulation	RB Size	RB Offset	Low CH 18650	Mid CH 18900	High CH 19150
				Frequency 1855 MHz	Frequency 1880 MHz	Frequency 1905 MHz
2/ 10	QPSK	1	0	23.94	24.02	23.86
		1	24	24.23	24.16	24.08
		1	49	23.89	23.71	23.56
		25	0	23.20	23.16	22.98
		25	12	23.01	22.99	22.93
		25	25	23.25	23.08	22.91
		50	0	23.24	23.11	23.08
	16QAM	1	0	23.18	23.09	22.88
		1	24	23.39	23.37	23.25
		1	49	22.95	22.98	22.97
		25	0	22.04	22.12	22.06
		25	12	22.03	22.09	22.04
		25	25	22.28	21.92	22.00
		50	0	22.18	22.05	21.94
	64QAM	1	0	22.11	22.11	21.95
		1	24	22.34	22.16	22.24
		1	49	22.03	22.04	21.78
		25	0	21.07	21.03	20.82
		25	12	21.04	21.08	20.87
		25	25	20.98	21.19	21.02
		50	0	21.18	21.00	20.98



**BUREAU
VERITAS**

Test Report No.: W7L-P23100008RF05

Band/BW	Modulation	RB Size	RB Offset	Low CH 18675	Mid CH 18900	High CH 19125
				Frequency 1857.5 MHz	Frequency 1880 MHz	Frequency 1902.5 MHz
2/ 15	QPSK	1	0	24.00	23.99	23.91
		1	37	24.31	24.16	24.07
		1	74	23.84	23.65	23.66
		36	0	23.17	23.14	23.07
		36	19	23.04	23.05	22.98
		36	39	23.21	23.13	22.97
		75	0	23.24	23.10	23.04
	16QAM	1	0	23.17	23.16	22.94
		1	37	23.41	23.36	23.33
		1	74	22.90	22.85	22.93
		36	0	22.12	22.10	22.05
		36	19	22.07	21.99	22.00
		36	39	22.32	21.99	21.99
		75	0	22.24	22.10	21.93
	64QAM	1	0	22.18	22.18	22.02
		1	37	22.37	22.16	22.21
		1	74	22.07	22.04	21.79
		36	0	20.99	21.11	20.80
		36	19	20.99	21.08	20.78
		36	39	21.11	21.15	21.07
		75	0	21.21	21.06	20.94