





RADIO TEST REPORT

(FCC Part 15 Subpart C)

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

Manufacturer:	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:	POCO
Model Name:	2310FPCA4G
FCC ID:	2AFZZCA4G
Date of tests:	Aug. 07, 2023 ~ Sep. 18, 2023

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

□ Part 15 Subpart C §15. 225

□ RSS-Gen Issue 5, Amendment 2 (February 2021)

ANSI C63.10-2013

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

Prepared by Simon Wang	Approved by Luke Lu
Engineer / Mobile Department	Manager / Mobile Department
Simon Wang	luke lu
Date: Sep. 18, 2023	Date: Sep. 18, 2023

This report is governed by, and incorporates by reference, the Conditions of Testing as posted at the date of issuance of this report at http://www.bureauveritas.com/home/about-us/our-business/cps/about-us/terms-conditions/ and is intended for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof based upon the information that you provided to us. Measurement uncertainty is only provided upon request for accredited tests. Statements of conformity are based on simple acceptance criteria without taking measurement uncertainty into account, unless otherwise requested in writing. You have 60 days from date of issuance of this report to notify us of any material error or omission caused by our negligence or if you require measurement uncertainty; provided, however, that such notice shall be in

writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report the tests conducted and the correctness of the report contents.

No.B102, Dazu Chuangxin Mansion, North of Beihuan Avenue, North Area, Hi-Tech Industrial Park, Nanshan District, Shenzhen, Guangdong, China

Email: customerservice.sw@bureauveritas.com

TABLE OF CONTENTS

1	GEN	ERAL DES	CRIPTION	5
	1.1	GENERA	L DESCRIPTION OF EUT	5
	1.2	MODIFIC	ATION OF EUT	5
	1.3	APPLICA	BLE STANDARDS	5
2	TES	T CONFIGU	JRATION OF EQUIPMENT UNDER TEST	6
	2.1	DESCRIP	TIONS OF TEST MODE	6
	2.2	TEST CO	NFIGURATIONS	7
	2.3		T EQUIPMENT	
	2.4		TUP	
	2.5		EMENT RESULTS EXPLANATION EXAMPLE	
3	TES	T RESULT		11
	3.1	20DB AN	D 99% BANDWIDTH MEASUREMENT	11
		3.1.1	LIMIT OF 20DB AND 99% BANDWIDTH	
		3.1.2	TEST PROCEDURES	11
		3.1.3	TEST RESULT OF 20DB AND 99% BANDWIDTH	12
	3.2	FREQUE	NCY STABILITY MEASUREMENT	13
		3.2.1	LIMIT OF FREQUENCY STABILITY	13
		3.2.2	TEST PROCEDURES	13
		3.2.3	TEST RESULT OF FREQUENCY STABILITY	13
	3.3	FIELD ST	RENGTH OF FUNDAMENTAL EMISSIONS AND MASK MEASUREMENT	15
		3.3.1	LIMIT OF FIELD STRENGTH OF FUNDAMENTAL EMISSIONS AND MASK	15
		3.3.2	TEST PROCEDURES	15
		3.3.3	TEST RESULTS OF FIELD STRENGTH OF FUNDAMENTAL EMISSIONS AND	MASK
		(1.705 MHZ	Z ~ 30 MHZ)	16
	3.4	RADIATE	D EMISSIONS MEASUREMENT	17
		3.4.1	LIMIT	17
		3.4.2	MEASURING INSTRUMENT SETTING	17
		3.4.3	TEST PROCEDURES	17
		3.4.4	TEST RESULTS OF RADIATED EMISSIONS (9 KHZ ~ 30 MHZ)	19
		3.4.5	TEST RESULT OF RADIATED SPURIOUS EMISSION (30MHZ ~ 1GHZ)	21
	3.5	ANTENN	A REQUIREMENTS	23
		3.5.1	STANDARD APPLICABLE	23
		3.5.2	ANTENNA CONNECTED CONSTRUCTION	23
		3.5.3	ANTENNA GAIN	23
4	LIST	OF MEAS	URING EQUIPMENT	24
5	UNC	ERTAINTY	OF EVALUATION	25



REPORT REVISE RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
W7L-P23080017RF10	Original release	Sep. 18, 2023

Email: customerservice.sw@bureauveritas.com



SUMMARY OF TEST RESULT

FCC Rule	IC Rule	Description	Limit	Result	Remark
-	RSS-Gen 6.7	99% Bandwidth	-	Pass	-
15.225(a)(b)(c)	RSS-210 Annex B.6	Field Strength of Fundamental Emissions	15.225(a)(b)(c) RSS-210 Annex B.6	Pass	-
15.215	-	20dB Spectrum Bandwidth	15.215	Pass	-
15.225(d) 15.209	RSS-210 Annex B.6	Radiated Emission	15.225(d) & 15.209 RSS-210 Annex B.6	Pass	See note 1
15.207	RSS-GEN 8.8	AC Conducted Emission	15.207(a)	Note	See note 1
15.225(e)	Annex B.6	Frequency Stability	< ±100 ppm	Pass	-
15.203	RSS-Gen 6.8	Antenna Requirement	N/A	Pass	-



1 GENERAL DESCRIPTION

1.1 GENERAL DESCRIPTION OF EUT

Items	Description
Tx/Rx Frequency Range	13.553MHz ~ 13.567MHz
Channel Number	1
20dBW	2.692 kHz
99%OBW	2.312 kHz
Antenna Type	FPC Antenna
Type of Modulation	ASK

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

1.2 MODIFICATION OF EUT

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

1.3 APPLICABLE STANDARDS

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

- FCC Part 15 Subpart C §15.225
- ANSI C63.10-2013
- RSS-210 Issue 10
- RSS-Gen Issue 5



2 TEST CONFIGURATION OF EQUIPMENT UNDER TEST

2.1 DESCRIPTIONS OF TEST MODE

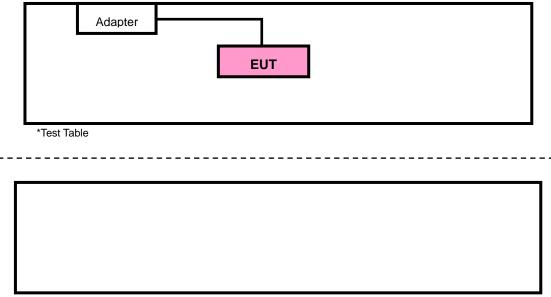
Investigation has been done on all the possible configurations for searching the worst cases. The following table is a list of the test modes shown in this test report.

1011	following table is a list of the test modes shown in this test report.					
	Test Items					
Α	C Power Line Conducted Emissions	Field Strength of Fundamental Emissions				
20	0dB Spectrum Bandwidth	Frequency Stability				
R	adiated Emissions 9kHz~30MHz	Radiated Emissions 30MHz~1GHz				
No	te:					
1.	The EUT was programmed to be in continuous	ly transmitting mode.				
2.	The ancillary equipment, NFC card, is used	to make the EUT (NFC) continuously transmit at				
	13.56MHz and is placed around 3 cm gap to the	e EUT.				
3.	Pre-Scan has been conducted to determine the	ne worst-case mode from all possible combinations				
	between available modulations, work in modes	s and data rates. Selected for the final test as listed				
	below.					

Frequency	Work in Modes	Туре	Data Rate (Kbps)				
13.56 MHz	Card Emulation Reader/Writer Peer-to-Peer	□A □B ☑F □V	□ 106 □ 212 □ 424 □ 848				
Remark: The mark [®] means is chosen for testing; The mark [®] means is not chosen for testing.							

2.2 TEST CONFIGURATIONS

< For Fundamental Emissions and Mask and Radiated Emissions Measurement >



^{*} Kept in a remote area

2.3 SUPPORT EQUIPMENT

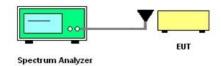
NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	N/A	N/A	N/A	N/A	N/A

2.4 TEST SETUP

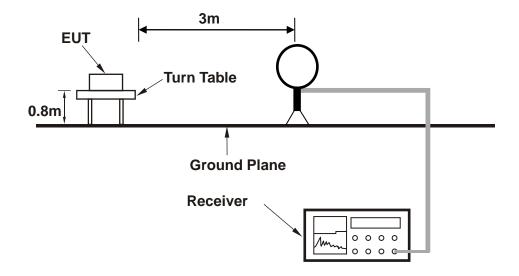
The EUT is continuously communicating during the tests.

EUT was set in the Hidden menu mode to enable NFC communications.

Setup diagram for Conducted Test

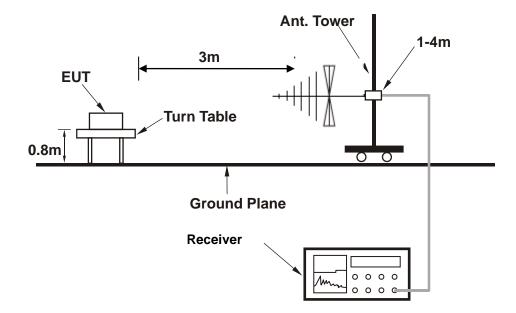


Setup diagram for Radiation(9KHz~30MHz) Test





Setup diagram for Radiation(Below 1G) Test



2.5 MEASUREMENT RESULTS EXPLANATION EXAMPLE

For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuator factor between EUT conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly the EUT RF output level.

Example:

The spectrum analyzer offset is derived from RF cable loss and attenuator factor.

Offset = RF cable loss + attenuator factor.

Following shows an offset computation example with cable loss 5 dB and 10dB attenuator.

Offset(dB) = RF cable loss(dB) + attenuator factor(dB). = 5 + 10 = 15 (dB)



3 TEST RESULT

3.1 20DB AND 99% BANDWIDTH MEASUREMENT

3.1.1 LIMIT OF 20DB AND 99% BANDWIDTH

Intentional radiators must be designed to ensure that the 20dB and 99% emission bandwidth in the specific band 13.553~13.567MHz.

3.1.2 TEST PROCEDURES

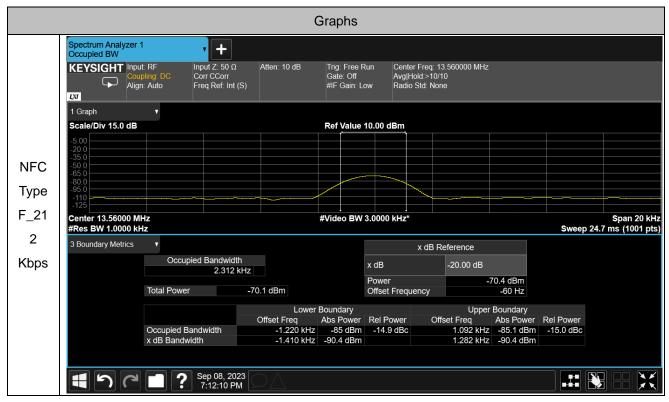
- The spectrum analyzer connected via a receive antenna placed near the EUT in peak Max hold mode.
- The resolution bandwidth of 1 kHz and the video bandwidth of 3 kHz were used. (Since the signal being measured is CW or CW-like, it is impractical to adjust RBW according to C63.10 because the bandwidth measured will always follow RBW and the result will be approximately twice as large as RBW.)
- 3. Measured the spectrum width with power higher than 20dB below carrier.
- 4. Measured the 99% OBW.



3.1.3 TEST RESULT OF 20DB AND 99% BANDWIDTH

Test Mode :	NFC		Temperature :		23 ℃	
Test Engineer :	Jace hu		Relative Humidity :		50%	
Mode	Frequency	20dB Ban	dwidth [kHz]	99	% OBW[kHz]	Verdict
NFC Type F_212 Kbps	13.56MHz	2	.692		2.312	PASS

20dB Bandwidth & 99% Bandwidth Plot



Email: customerservice.sw@bureauveritas.com



3.2 FREQUENCY STABILITY MEASUREMENT

3.2.1 LIMIT OF FREQUENCY STABILITY

The frequency tolerance of the carrier signal shall be maintained within +/- 0.01% (100ppm) of the operating frequency over a temperature variation of -20 degrees to +50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C. For battery operated equipment, the equipment tests shall be performed using a new battery.

3.2.2 TEST PROCEDURES

- 1. The spectrum analyzer connected via a receive antenna placed near the EUT.
- 2. EUT have transmitted signal and fixed channelize.
- 3. Set the spectrum analyzer span to view the entire emissions bandwidth.
- 4. Set RBW = 1 kHz, VBW = 3 kHz with peak detector and maxhold settings.
- 5. The fc is declaring of channel frequency. Then the frequency error formula is (fc-f)/fc × 10⁶ ppm and the limit is less than ±100ppm.
- 6. Extreme temperature rule is -20°C~50°C.

3.2.3 TEST RESULT OF FREQUENCY STABILITY

The NFC Type F_212 Kbps is the worst case, Only report worst mode data



NFC Type F_212 Kbps

Voltage (Vdc)	Temperature (°C)	Measurement Frequency (MHz)	Frequency Tolerance(ppm)	Limit(ppm)	Result
3.6	20	13.55994	-4.42		Pass
4.25	20	13.56024	17.70		Pass
	-20	13.56013	9.59		Pass
	-10	13.56015	11.06		Pass
	0	13.55981	-14.01	±100	Pass
3.84	10	13.55981	-14.01	1100	Pass
3.84	20	13.56002	1.47		Pass
	30	13.55992	-5.90		Pass
	40	13.55971	-21.39		Pass
	50	13.56025	18.44		Pass

Page 14 of 25

Tel: +86 755 8869 6566 Fax: +86 755 8869 6577



3.3 FIELD STRENGTH OF FUNDAMENTAL EMISSIONS AND MASK MEASUREMENT

3.3.1 LIMIT OF FIELD STRENGTH OF FUNDAMENTAL EMISSIONS AND MASK

Rules and specifications	FCC CFR 47 Part 15 section 15.225							
Rules and specifications	IC RSS-210 B.6							
Description	Compliance with th	e spectrum mask is t	ested with RBW set t	o 9kHz.				
From of Emission (MUT)	Field Strength	Field Strength	Field Strength	Field Strength				
Freq. of Emission (MHz)	(µV/m) at 30m	(dBµV/m) at 30m	(dBµV/m) at 10m	(dBµV/m) at 3m				
1.705~13.110	30	29.5	48.58	69.5				
13.110~13.410	106	40.5	59.58	80.5				
13.410~13.553	334	50.5	69.58	90.5				
13.553~13.567	15848	84.0	103.08	124.0				
13.567~13.710	334	50.5	69.58	90.5				
13.710~14.010	106	40.5	59.58	80.5				
14.010~30.000	30	29.5	48.58	69.5				

3.3.2 TEST PROCEDURES

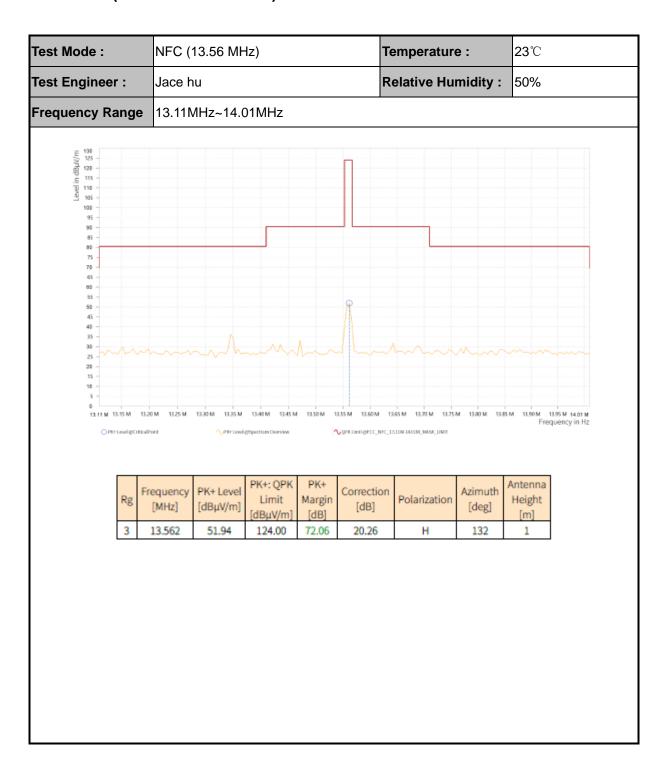
- 1. Configure the EUT according to ANSI C63.10. The EUT was placed on the top of the turntable 0.8 meter above ground. The phase center of the loop receiving antenna mounted antenna tower was placed 3 meters far away from the turntable.
- Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
- 3. The height of the receiving antenna was fixed at one meter above ground to find the maximum emissions field strength.
- 4. For Fundamental emissions, use the receiver to measure QP reading.
- 5. When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum value.
- 6. Compliance with the spectrum mask is tested with RBW set to 9kHz. Note: Emission level ($dB\mu V/m$) = 20 log Emission level ($\mu V/m$).

No.B102, Dazu Chuangxin Mansion, North of Beihuan Avenue, North Area, Hi-Tech Industrial Park, Nanshan District, Shenzhen, Guangdong, China

Tel: +86 755 8869 6566 Fax: +86 755 8869 6577

Email: customerservice.sw@bureauveritas.com

3.3.3 TEST RESULTS OF FIELD STRENGTH OF FUNDAMENTAL EMISSIONS AND MASK (1.705 MHZ ~ 30 MHZ)



3.4 RADIATED EMISSIONS MEASUREMENT

3.4.1 LIMIT

The field strength of any emissions which appear outside of 13.110 ~14.010MHz band shall not exceed the general radiated emissions limits.

Frequencies	Field Strength	Measurement Distance
(MHz)	(μV/m)	(meters)
0.009~0.490	2400/F(kHz)	300
0.490~1.705	24000/F(kHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

3.4.2 MEASURING INSTRUMENT SETTING

The following table is the setting of receiver.

Receiver Parameter	Setting
Attenuation	Auto
Frequency Range: 9kHz~150kHz	RBW 200Hz for QP
Frequency Range: 150kHz~30MHz	RBW 9kHz for QP
Frequency Range: 30MHz~1000MHz	RBW 120kHz for Peak

Note: The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz. Radiated emission limits in these two bands are based on measurements employing an average detector.

3.4.3 TEST PROCEDURES

- Configure the EUT according to ANSI C63.10. The EUT was placed on the top of the turntable 0.8 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
- 2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
- The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.
- 4. For each suspected emissions, the antenna tower was scan (from 1 M to 4 M) and then the



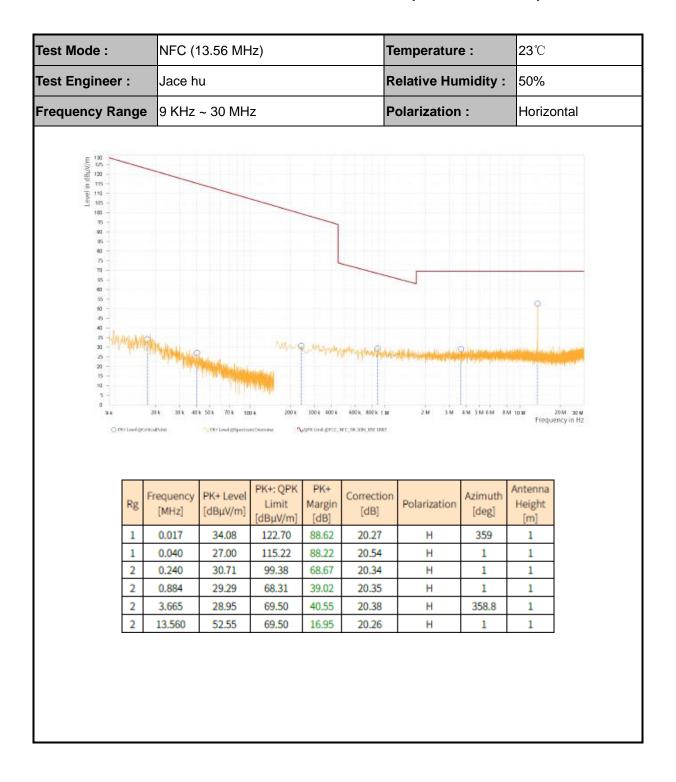
turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.

- 5. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.
- 6. When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum value.
- 7. In case the emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded data should be QP measured by receiver.

Tel: +86 755 8869 6566

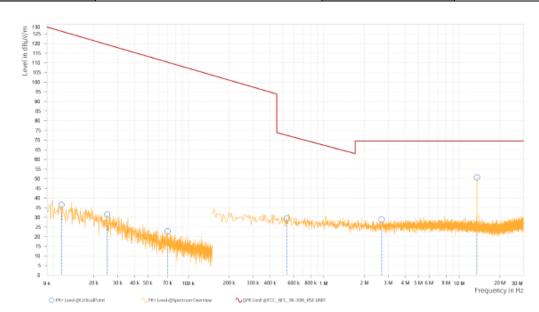
Fax: +86 755 8869 6577

3.4.4 TEST RESULTS OF RADIATED EMISSIONS (9 KHZ ~ 30 MHZ)





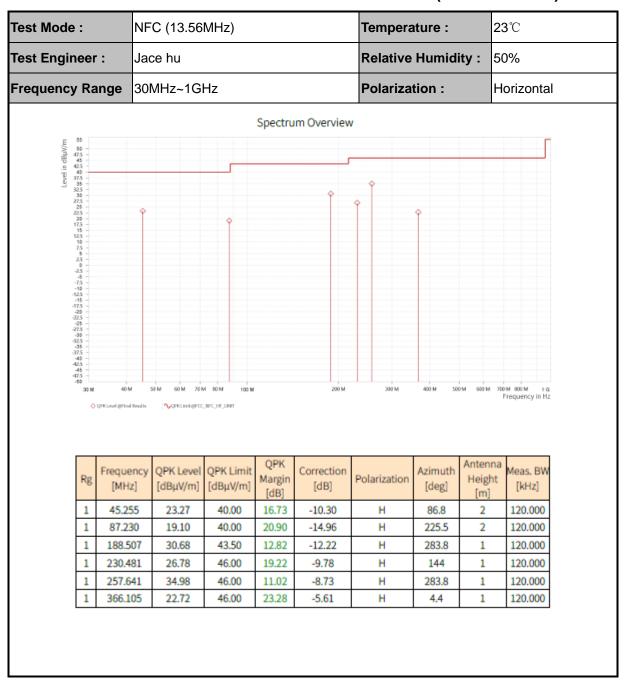
Test Mode :	NFC (13.56 MHz)	Temperature :	23 ℃
Test Engineer :	Jace hu	Relative Humidity :	50%
Frequency Range	9 KHz ~ 30 MHz	Polarization :	Vertical



Rg	Frequency [MHz]	PK+ Level [dBµV/m]	PK+: QPK Limit [dBµV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
1	0.012	36.46	126.33	89.86	20.11	٧	1	1
1	0.025	31.44	119.40	87.96	20.40	٧	359	1
1	0.070	22.84	110.31	87.47	20.53	٧	359	1
2	0.533	29.47	72.43	42.96	20.35	٧	1	1
2	2.675	28.86	69.50	40.64	20.34	٧	359	1
2	13.560	50.72	69.50	18.78	20.26	V	358.8	1



3.4.5 TEST RESULT OF RADIATED SPURIOUS EMISSION (30MHZ ~ 1GHZ)



Fax: +86 755 8869 6577 Email: customerservice.sw@bureauveritas.com



Test Mode :	NF	NFC (13.56MHz)			Tempera	ture :	23	3℃	
Test Engineer :	Jac	Jace hu F			Relative	Humidi	ty : 50	0%	
requency Ran	ige 301	√Hz~1Gl	Hz			Polariza	tion :	V	ertical
g 65				Spectru	ım Overview	/			
J/NT 60									
E 42.5 - 40 37.5 -									
32.5 - 30 -									
25	Ŷ	φ			Ŷ		φ	9	
17.5 15 12.5 18.0				<u> </u>					
7.5 - 5 2.5 -									
-2.5 -5									
25 40 5 37.3 40 5 37.3 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5									
-17.5 -									
-20 = -225 = -27.3 = -40 = -225 = -37.5 = -40									
-38									
-42.5 - -46 - -47.5 -									
30 M	40 M		M 80 M 100 M		200 M	300 M	400 M 500		M 800 M 1 G Frequency in Hz
0	PKLovel @Final Bosults	∿ QPKLInit@f0	C_NFC_HF_UMIT						
				QPK				Antenna	
Rg F	Frequency	QPK Level	QPK Limit	Margin	Correction	Polarization	Azimuth	Height	meas. BW
	[MHz]	[dBµV/m]	[dBµV/m]	[dB]	[dB]		[deg]	[m]	[kHz]
1	40.846	22.71	40.00	17.29	-10.93	V	1	1	120.000
1	56.895	21.27	40.00	18.73	-11.26	٧	0.9	2	120.000
1	106.277	17.88	43.50	25.62	-12.01	V	0.9	2	120.000
1	189.345	22.62	43.50	20.88	-12.10	٧	354.3	2	120.000
1	366.105 603.755	20.76	46.00 46.00	25.24	-5.61 -3.12	V	134.4 359.1	1	120.000 120.000
1	003.755	22.48	40.00	25.52	-3.12	V	359.1	1	120.000



3.5 ANTENNA REQUIREMENTS

3.5.1 STANDARD APPLICABLE

Except for special regulations, the Low-power Radio-frequency Devices must not be equipped with

any jacket for installing an antenna with extension cable. An intentional radiator shall be designed to

ensure that no antenna other than that furnished by the responsible party shall be used with the

device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to

the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The

manufacturer may design the unit so that the user can replace a broken antenna, but the use of a

standard antenna jack or electrical connector is prohibited.

3.5.2 ANTENNA CONNECTED CONSTRUCTION

An FPC Antenna design is used.

3.5.3 ANTENNA GAIN

The antenna peak gain of EUT is less than 6 dBi.



LIST OF MEASURING EQUIPMENT

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.	
3m Semi-anechoic	ETC LINDODEN	9m*6m*6m	Euroshieldpn-	May 40.00	May. 17,26	
Chamber	ETS-LINDGREN		CT0001143-1216	May. 18,23		
Bilog Antenna	ETS-LINDGREN	3143B	00161965	Feb. 18,23	Feb. 17,24	
MXE EMI Receiver	KEYSIGHT	N9038A-544	MY54450026	Mar. 28,23	Mar. 27,24	
Signal Pre-Amplifier	EMSI	EMC 9135	980249	May. 06,23	May. 05,24	
E3 Test Software	E3	V 9.160323	N/A	N/A	N/A	
Loop Antonno	Cabusarahaala	FMZB	00472	0 00 00	0 00 00	
Loop Antenna	Schwarzbeck	1519B	00173	Sep.03,22	Sep.02,23	
	Cabarranda	FMZB	00472	0 00 . 00	0 04 04	
Loop Antenna	Schwarzbeck	1519B	00173	Sep.02,23	Sep.01,24	

NOTE: 1. The calibration interval of the above test instruments is 12 months or 36 months and the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.

- 2. The test was performed in 3m Chamber.
- 3. The FCC Site Registration No. is 525120; The Designation No. is CN1171.

Page 24 of 25

Tel: +86 755 8869 6566

Fax: +86 755 8869 6577



UNCERTAINTY OF EVALUATION

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
AC Power Conducted emissions	±2.70dB
Radiated emissions (9KHz~30MHz)	±2.68dB
Radiated emissions (30MHz~1GHz)	±4.98dB
Occupied Channel Bandwidth	±43.58KHz
Frequency Stability	±76.97Hz

