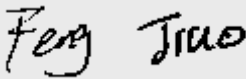
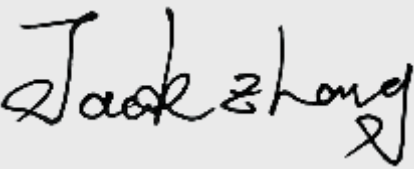




Test report No:
23A0637R-RF-US-P06V01

FCC TEST REPORT

Product Name	NFC Module
Model and /or type reference	B22-1938S-6P-T-33-A
FCC ID	2A769-B22-1938S
Applicant's name / address	K-tronics(Su Zhou)Technology Co.,LTD No.1088, Dajing Road,Economic and Technological Development Zone,Wujiang District, Suzhou, Jiangsu Province, 215200, P. R. China
Test method requested, standard	47 CFR FCC Part 15 (Section 15.225) ANSI C63.10: 2013
Verdict Summary	IN COMPLIANCE
Documented by (name / position & signature)	Feng Jiao/ Project Engineer 
Approved by (name / position & signature)	Jack Zhang/ Manager 
Date of issue	2024-01-04
Report Version	V1.0
Report template No	Template_FCC 15.225-RF-V1.0

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COMPETENCES AND GUARANTEES

DEKRA is a testing laboratory competent to carry out the tests described in this report.

In order to assure the traceability to other national and international laboratories, DEKRA has a calibration and maintenance program for its measurement equipment.

DEKRA guarantees the reliability of the data presented in this report, which is the result of the measurements and the tests performed to the item under test on the date and under the conditions stated in the report and it is based on the knowledge and technical facilities available at DEKRA at the time of performance of the test.

DEKRA is liable to the client for the maintenance of the confidentiality of all information related to the item under test and the results of the test.

The results presented in this Test Report apply only to the particular item under test established in this document.

IMPORTANT: No parts of this report may be reproduced or quoted out of context, in any form or by any means, except in full, without the previous written permission of DEKRA.

GENERAL CONDITIONS

Test Location	No. 99, Hongye Road, Suzhou Industrial Park Suzhou, 215006, P.R. China
Date(receive sample)	Oct. 26, 2023
Date (start test)	Nov. 01, 2023
Date (finish test)	Nov. 30, 2023

1. This report is only referred to the item that has undergone the test.
2. This report does not constitute or imply on its own an approval of the product by the Certification Bodies or Competent Authorities.
3. This document is only valid if complete; no partial reproduction can be made without previous written permission of DEKRA.
4. This test report cannot be used partially or in full for publicity and/or promotional purposes without previous written permission of DEKRA.

ENVIRONMENTAL CONDITIONS

The climatic conditions during the tests are within the limits specified by the manufacturer for the operation of the EUT and the test equipment. The climatic conditions during the tests were within the following limits:

Ambient temperature	15 °C – 35 °C
Relative Humidity air	30% - 60%

If explicitly required in the basic standard or applied product / product family standard the climatic values are recorded and documented separately in this test report.

POSSIBLE TEST CASE VERDICTS

Test case does not apply to test object	N/A
Test object does meet requirement	P (Pass) / PASS
Test object does not meet requirement	F (Fail) / FAIL
Not measured	N/M

ABBREVIATIONS

For the purposes of the present document, the following abbreviations apply:

EUT	: Equipment Under Test
QP	: Quasi-Peak
CAV	: CISPR Average
AV	: Average
CDN	: Coupling Decoupling Network
SAC	: Semi-Anechoic Chamber
OATS	: Open Area Test Site
BW	: Bandwidth
AM	: Amplitude Modulation
PM	: Pulse Modulation
HCP	: Horizontal Coupling Plane
VCP	: Vertical Coupling Plane
U_N	: Nominal voltage
T_x	: Transmitter
R_x	: Receiver
N/A	: Not Applicable
N/M	: Not Measured

DOCUMENT HISTORY

Report No.	Version	Description	Issued Date
23A0637R-RF-US-P06V01	V1.0	Initial issue of report.	2024-01-04

REMARKS AND COMMENTS

1. The equipment under test (EUT) does meet the essential requirements of the stated standard(s)/test(s).
2. These test results on a sample of the device are for the purpose of demonstrating Compliance with 47 CFR FCC Part 15 (Section 15.225).
3. The measurement result is considered in conformance with the requirement if it is within the prescribed limit, It is not necessary to account the uncertainty associated with the measurement result.
4. The test results presented in this report relate only to the object tested.
5. The test report shall not be reproduced without the written approval of DEKRA Testing and Certification (Suzhou) Co., Ltd.
6. This report will not be used for social proof function in China market.
7. DEKRA declines any responsibility with the following test data provided by customer that may affect the validity of result:
 - Chapter 1.1 General Description of the Item(s);
 - Chapter 1.2 Antenna Informaion;
 - Chapter 1.3 Channel List.

USED EQUIPMENT

AC Power Line Conducted Emission / TR1

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date	Firmware Version	Software version
EMI Test Receiver	R&S	ESCI	100726	2023.08.26	2024.08.25	4.42 SP1	N/A
Two-Line V-Network	R&S	ENV 216	101044	2023.01.07	2024.01.06	N/A	N/A
Two-Line V-Network	R&S	ENV 216	101189	2023.05.14	2024.05.13	N/A	N/A
50ohm Coaxial Switch	Anritsu	MP59B	6200464462	2023.05.14	2024.05.13	N/A	N/A
Coaxial Cable	Huber+Suhner	RG 223	TR1-C1	2023.05.14	2024.05.13	N/A	N/A
Impedance Stabilization Network	Teseq GmbH	ISN T800	57318	2023.03.07	2024.03.06	N/A	N/A
Temperature/Humidity Meter	RTS	RTS-8S	EMC01	2023.05.19	2024.05.18	N/A	N/A
Dekra test software	Dekra	N/A	N/A	N/A	N/A	N/A	N/A

Field Strength of Fundamental, E-field Emission/ Field Strength of Spurious/ Frequency Stability/ Emission Bandwidth (9KHz-1GHz) / AC2

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date	Firmware Version	Software version
EMI Test Receiver	R&S	ESCI	100176	2023.05.20	2024.05.19	4.42 SP3	N/A
Loop Antenna	R&S	HFH2-Z2E	101149	2023.04.25	2024.04.24	N/A	N/A
Bilog Antenna	Teseq GmbH	CBL6112D	27611	2023.02.20	2024.02.19	N/A	N/A
Temperature/Humidity Meter	RTS	RTS-8S	AC2-TH	2023.05.19	2024.05.18	N/A	N/A
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC2-C	2023.05.21	2024.05.20	N/A	N/A
Dekra test software	Dekra	N/A	N/A	N/A	N/A	N/A	3

UNCERTAINTY

Uncertainties have been calculated according to the DEKRA internal document. The reported expanded uncertainties are based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately 95%.

Test item	Uncertainty
AC Power Line Conducted Emission	± 2.02 dB
Radiated Emission(9KHz~30MHz)	Horizontal: 9KHz~30MHz: 2.10 dB Vertical: 30MHz~200MHz: 2.30 dB
Radiated Emission(30MHz~1GHz)	± 3.80 dB
Occupied Bandwidth	± 1 kHz

1 GENERAL INFORMATION

1.1 General Description of the Item(s)

Product Name..... :	NFC Module
Model No. :	B22-1938S-6P-T-33-A
FCC ID	2A769-B22-1938S
Hardware Version	B22-1938S-6P-T-33-A A1
Software Version	22 RegistUID SYSCard DPLow 221014(221103)
Manufacturer	iSolution Technologies Co., Ltd.
Manufacturer Address..... :	13th Floor, Bldg A, Tanglang Town Plaza West, Liuxian Avenue, Nanshan District, Shenzhen
Factory	K-tronics(Su Zhou)Technology Co.,LTD
Factory address	No.1088, Dajing Road,Economic and Technological Development Zone,Wujiang District, Suzhou, Jiangsu Province, 215200, P.R. China

Wireless Specification..... :	NFC
Operating frequency range(s)..... :	13.56 MHz
Type of modulation	ASK
Number of channel..... :	1

Rated power supply	Voltage and Frequency	
	☐	AC: 220 - 240 V, 50/60 Hz
	☐	AC: 100 - 240 V, 50/60 Hz
	☒	DC: 3.3 Vdc
	☐	Poe:
	☐	Adapter:
Mounting position..... :	☐	Tabletop equipment
	☐	Wall/Ceiling mounted equipment
	☐	Floor standing equipment
	☐	Hand-held/Portable equipment
	☒	Other: <i>Module</i>

1.2. Antenna information

Antenna model..... :	N/A		
Antenna Delivery	☒	1TX + 1RX	
	☐	2TX + 2RX	
	☐	Others:.....	
Antenna technology	☒	SISO	
	☐	MIMO	☐ CDD
			☐ Beam-forming
Antenna Type	☐	External	☐ Dipole
			☐ Sectorized
	☒	Internal	☐ Ceramic Chip
			☐ PIFA
			☒ LOOP
			☐ Others:
Antenna Gain..... :	N/A		

1.3. Channel List

Frequency of Each Channel:							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
01	13.56 MHz	--	--	--	--	--	--

Note: The general description of the Item(s), antenna information and channel list in clause 1 are provided and confirmed by the client.

2 DESCRIPTION OF TEST SETUP

2.1 Operating mode(s) used for tests

During the tests the following operating mode(s) has(have) been used.

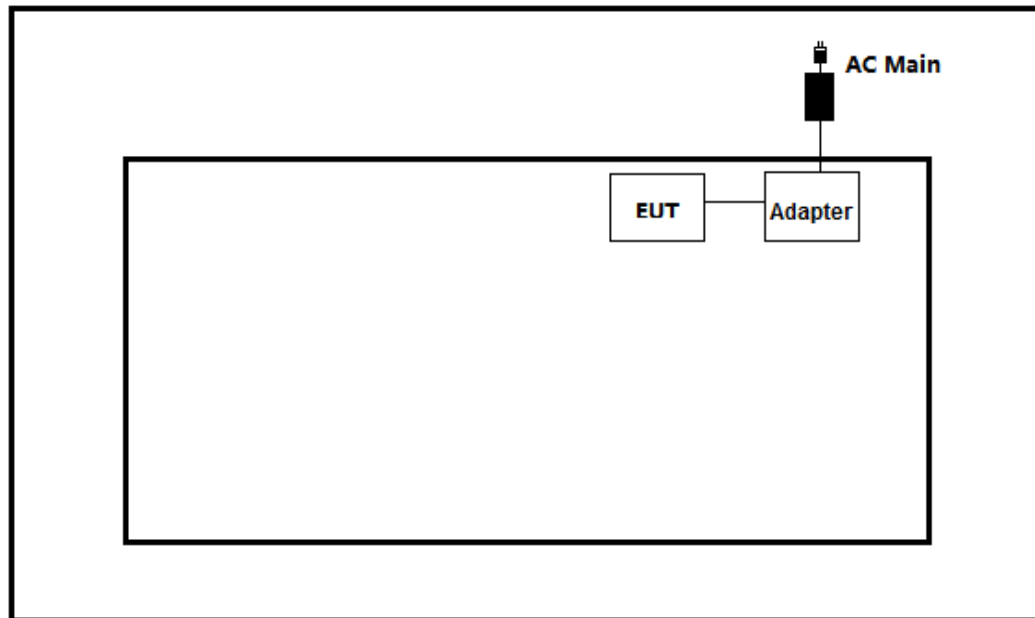
Test Mode	Mode 1: Transmit by NFC
-----------	-------------------------

2.2 Support / Auxiliary equipment / unit / Test software for the EUT

Auxiliary equipment	Type / Version	Manufacturer	Supplied by
NFC Card	N/A	Tesla	N/A
software	Type / Version	Manufacturer	Supplied by
N/A	N/A	N/A	N/A

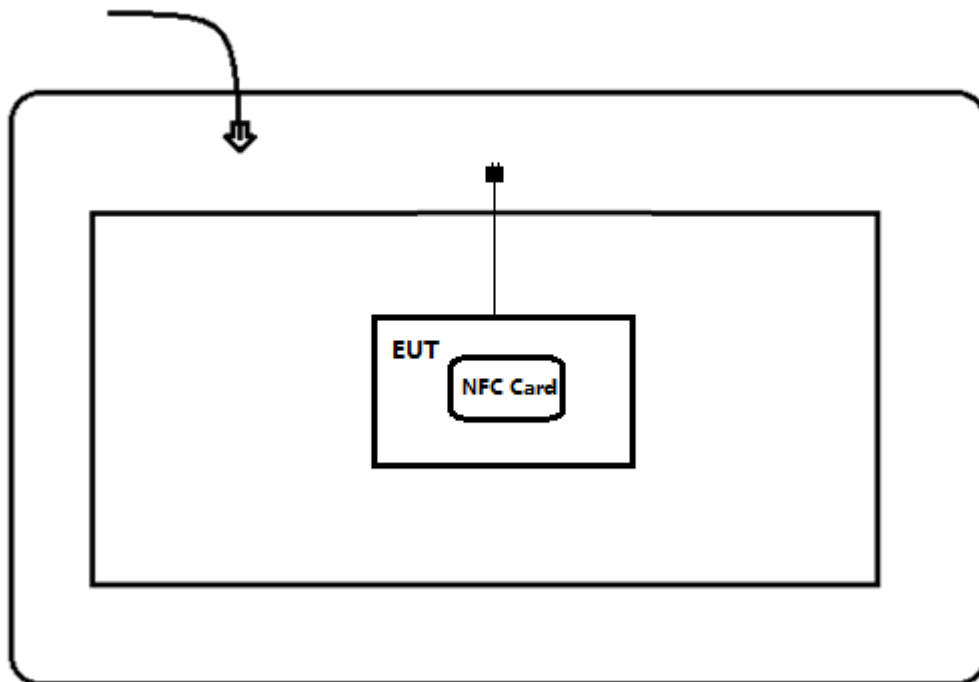
2.3 Test Configuration / Block diagram used for tests

Test setup Diagram- AC Line Conducted Emission Test



Test setup Diagram- Radiated Emission

Chamber



2.4 Testing process

1	Setup the EUT as shown in Section 2.3.
2	Execute the power on the EUT.
3	Verify that the EUT works properly.

3 VERDICT SUMMARY SECTION

This chapter presents an overview of standards and results. Refer to the next chapters for details of measured test results and applied test levels.

3.1 Standards

Standard	Year	Description
FCC CFR Title 47 Part 15 Subpart C Section 15.225	2023	Operation within the band 13.110-14.010 MHz
ANSI C63.10	2013	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices

3.2 Overview of results

For FCC

Requirement – Test case	Basic standard(s)	Verdict	Remark
AC Power Line Conducted Emission	FCC CFR Title 47 Part 15 Subpart C Section 15.207	N/A	N/A
Field Strength of Fundamental, E-field Emission	FCC CFR Title 47 Part 15 Subpart C Section 15.225(a)(b)(c)	PASS	Test data please refer to Appendix A
Field Strength of Spurious	FCC CFR Title 47 Part 15 Subpart C Section 15.209 & 15.225(d)	PASS	Test data please refer to Appendix B
Emission Bandwidth	FCC CFR Title 47 Part 15 Subpart C Section 15.215(c)	PASS	Test data please refer to Appendix C
Frequency Stability	FCC CFR Title 47 Part 15 Subpart C Section 15.225(e)	PASS	Test data please refer to Appendix D
Antenna Requirement	FCC CFR Title 47 Part 15 Subpart C Section 15.203	PASS	---

3.3 Test Matrix

Test item	Model: ESY07P1
	1(#1)
E-field Emission	☒
Field Strength of Spurious	☒
Frequency Stability	☒
Emission Bandwidth	☒
Field Strength of Fundamental	☒

3.4 Test Facility

USA : FCC Designation Number: CN1199

4 TEST RESULTS

4.1 AC Power Line Conducted Emission

VERDICT: N/A

4.1.1 Limit

Standard	FCC Part 15 Subpart C Paragraph 15.207; RSS-Gen Issue 5 Section 8.8	
Frequency range [MHz]	Limit: QP [dB(μV) ¹⁾]	Limit: AV [dB(μV) ¹⁾]
0,15 - 0,50	66 - 56 ²⁾	56 - 46 ²⁾
0,50 - 5,0	56	46
5,0 - 30	60	50

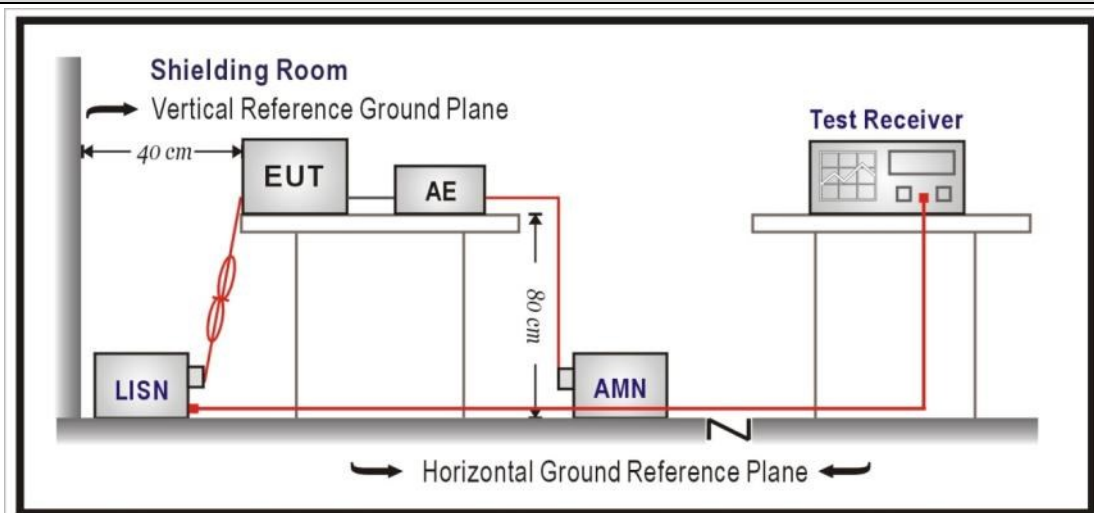
¹⁾ At the transition frequency, the lower limit applies.

²⁾ The limit decreases linearly with the logarithm of the frequency.

NOTE 1: The exclusion band for transmitters shall be considered for transmitters operating at frequencies below 30 MHz.

NOTE 2: Where the AC output port is directly connected (or via a circuit breaker) to the AC power input port of the EUT the AC power output port need not to be tested.

4.1.2 Test Setup



4.1.3 Test Procedure

	References Rule	Chapter	Item
☒	ANSI C63.10	6.2	Standard test method for ac power-line conducted emissions from unlicensed wireless devices

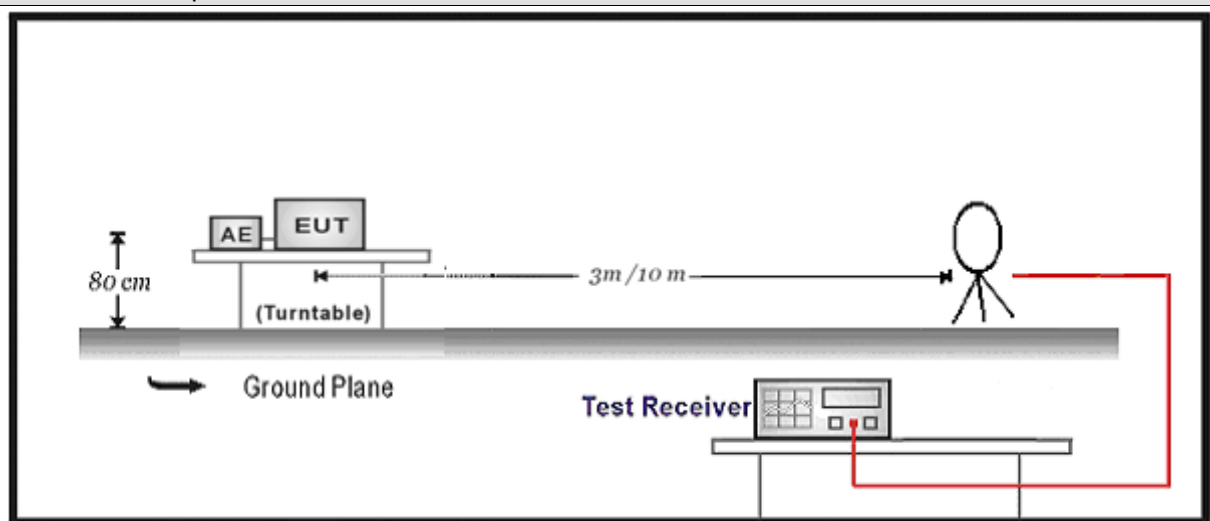
4.2 E-field Emission**VERDICT: PASS****4.2.1 Limit****Standard**

FCC Part 15 Subpart C Paragraph 15.225; RSS-210 Issue 10 Section B.6

- (a) The field strength of any emissions within the band 13.553-13.567 MHz shall not exceed 15,848 microvolts/meter at 30 meters.
- (b) Within the bands 13.410-13.553 MHz and 13.567-13.710 MHz, the field strength of any emissions shall not exceed 334 microvolts/meter at 30 meters.
- (c) Within the bands 13.110-13.410 MHz and 13.710-14.010 MHz the field strength of any emissions shall not exceed 106 microvolts/meter at 30 meters.
- (d) The field strength of any emissions appearing outside of the 13.110-14.010 MHz band shall not exceed the general radiated emission limits in §15.209.

4.2.2 Test Setup

Below 30MHz Test Setup:

**4.2.3 Test Procedure**

	References Rule	Chapter	Description
☒	ANSI C63.10	6.4	Radiated emissions from unlicensed wireless devices below 30 MHz
☐	ANSI C63.10	6.5	Radiated emissions from unlicensed wireless devices in the frequency range of 30 MHz to 1000 MHz
☐	ANSI C63.10	6.6	Radiated emissions from unlicensed wireless devices above 1 GHz

4.3 Field Strength of Spurious**VERDICT: PASS****4.3.1 Limit**

Standard	FCC Part 15 Subpart C Paragraph 15. 209; RSS-210 Issue 10, Section B.6 RSS-Gen Issue 5, Section 8.9
-----------------	--

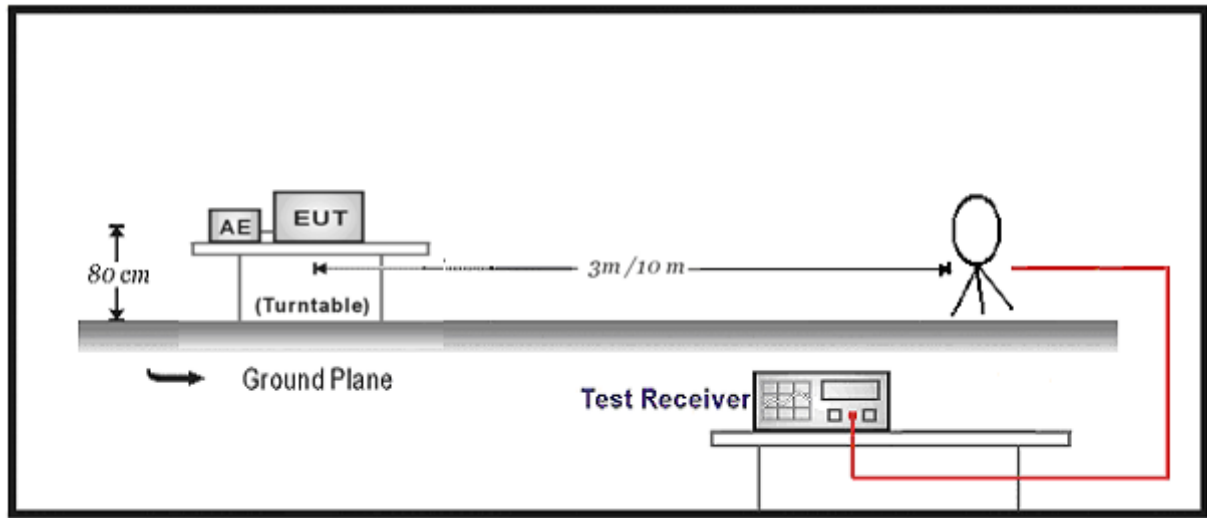
Restricted Band Emissions Limit			
Frequency (MHz)	Field strength (μ V/m)	Field strength (dB μ V/m)	Measurement distance (m)
0.009 - 0.49	2400/F(kHz)	48.5 – 13.8	300 _(Note 1)
0.49 - 1.705	24000/F(kHz)	33.8 - 23	30 _(Note 1)
1.705 - 30	30	29.5	30 _(Note 1)
30 - 88	100	40	3 _(Note 2)
88 - 216	150	43.5	3 _(Note 2)
216 - 960	200	46	3 _(Note 2)
Above 960	500	54	3 _(Note 2)

Note 1: At frequencies below 30 MHz, measurements may be performed at a distance closer than that specified in the regulations; however, an attempt should be made to avoid making measurements in the near field. Pending the development of an appropriate measurement procedure for measurements performed below 30 MHz, when performing measurements at a closer distance than specified, the results shall be extrapolated to the specified distance by either making measurements at a minimum of two distances on at least one radial to determine the proper extrapolation factor or by using the square of an inverse linear distance extrapolation factor (40 dB/decade).

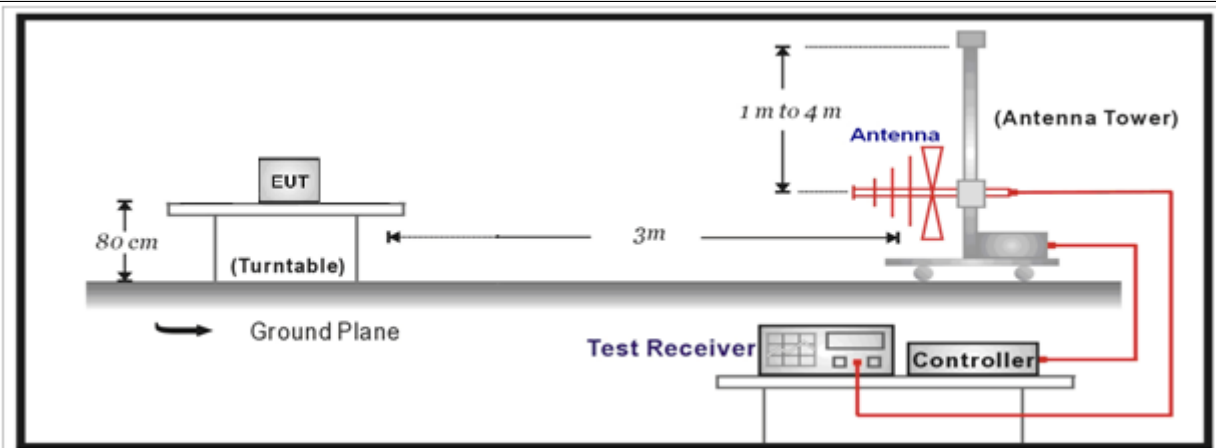
Note 2: At frequencies at or above 30 MHz, measurements may be performed at a distance other than what is specified provided: measurements are not made in the near field except where it can be shown that near field measurements are appropriate due to the characteristics of the device; and it can be demonstrated that the signal levels needed to be measured at the distance employed can be detected by the measurement equipment. Measurements shall not be performed at a distance greater than 30 meters unless it can be further demonstrated that measurements at a distance of 30 meters or less are impractical. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse linear-distance for field strength measurements; inverse-linear-distance-squared for power density measurements).

4.3.2 Test Setup

Below 30MHz Test Setup:



30MHz-1GHz Test Setup:

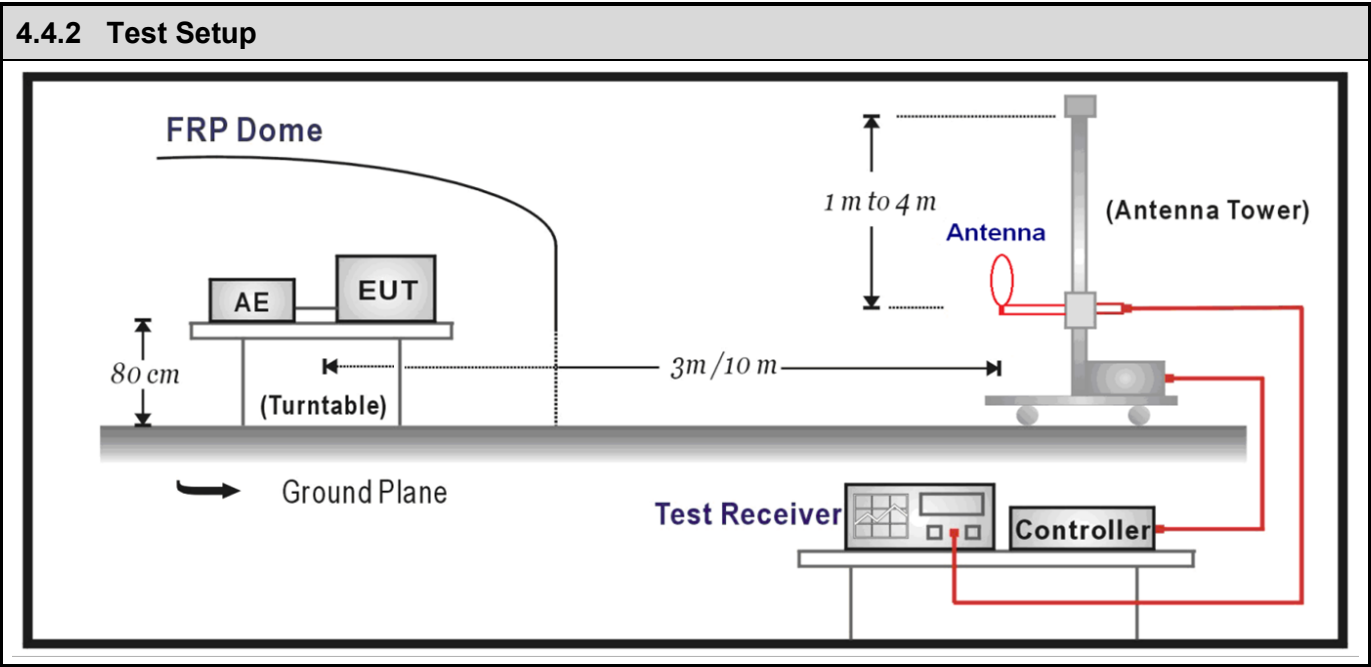


4.3.3 Test Procedure

	References Rule	Chapter	Description
	☒ ANSI C63.10	6.4	Radiated emissions from unlicensed wireless devices below 30 MHz
	☒ ANSI C63.10	6.5	Radiated emissions from unlicensed wireless devices in the frequency range of 30 MHz to 1000 MHz
	☐ ANSI C63.10	6.6	Radiated emissions from unlicensed wireless devices above 1 GHz

4.4 Emission bandwidth	VERDICT: PASS
------------------------	---------------

4.4.1 Limit	
Standard	FCC Part 15 Subpart C Paragraph 15.215; RSS-Gen Section 6.7
Within the band.	



4.4.3 Test Procedure			
	Reference Rule	Chapter	Description
☒	ANSI C63.10	6.9.2	Occupied bandwidth—relative measurement procedure

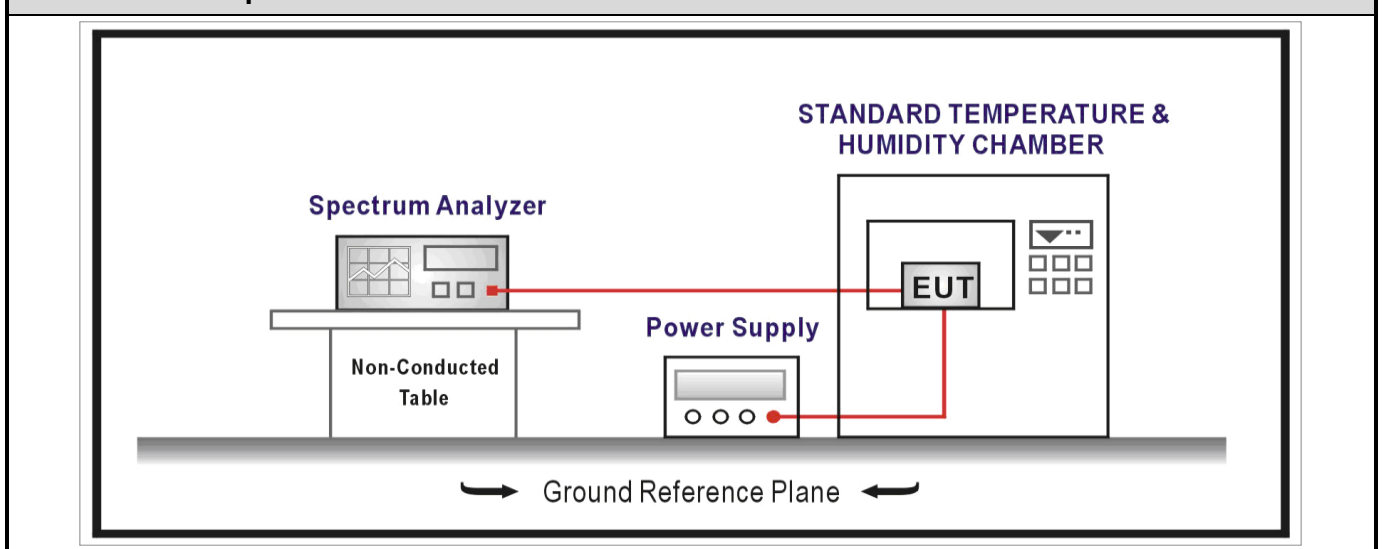
4.5 Frequency Stability

VERDICT: PASS

4.5.1 Limit:

Standard	FCC Part 15 Subpart C Paragraph 15.225(e); RSS-210 Issue 10 Section B.6
☒	The frequency tolerance of the carrier signal shall be maintained within $\pm 0.01\%$ 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.

4.5.2 Test Setup



4.5.3 Test Procedure

	References Rule	Chapter	Description
☒	ANSI C63.10	6.8	Frequency stability tests
☒	ANSI C63.10	6.8.1	Frequency stability with respect to ambient temperature
☒	ANSI C63.10	6.8.2	Frequency stability when varying supply voltage

4.6 Antenna Requirement**VERDICT: PASS****4.6.1 Limit:**

Standard	FCC Part 15 Subpart E Paragraph 15.203
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 a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of §15.211, §15.213, §15.217, §15.219, or §15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with §15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.	

4.6.2 Antenna Connector Construction:

- | | |
|-------------------------------------|--|
| ☒ | The use of a permanently attached antenna |
| ☐ | The antenna use of a unique coupling to the intentional radiator |
| ☐ | The use of a nonstandard antenna jack or electrical connector |

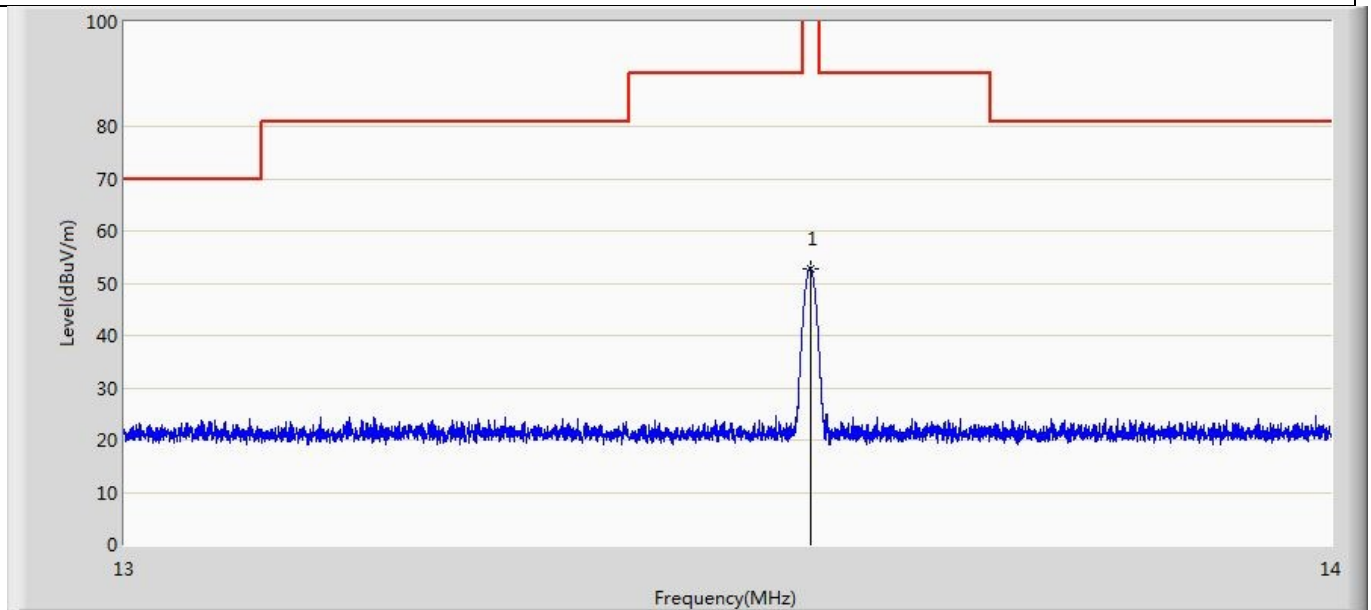
Please refer to the attached document "Internal Photograph" to show the antenna connector.

5	TEST SETUP PHOTO AND EUT PHOTO	VERDICT: PASS
---	--------------------------------	---------------

Remark: The test setup photo and EUT Photo please see appendix.

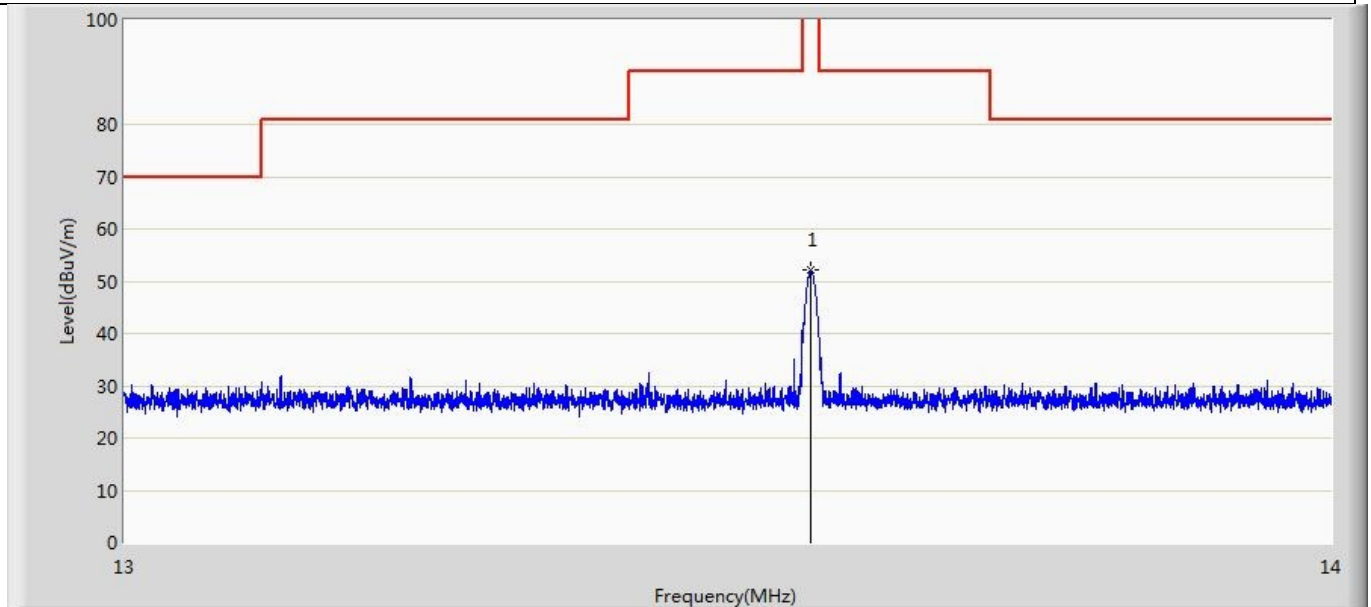
Appendix A: E-field Emission

Profile: 23A0637R	Page No.: 7
Engineer: Pengchengyang	
Site: AC2	Time: 2023/11/17 - 14:26
Limit: 13.56 mask	Margin: 0
Probe: RF(0.009-30MHz)	Polarity: X
EUT: NFC Module	Power: 3.3 Vdc
Note: Mode 1 : Transmit at 13.56MHz by NFC	



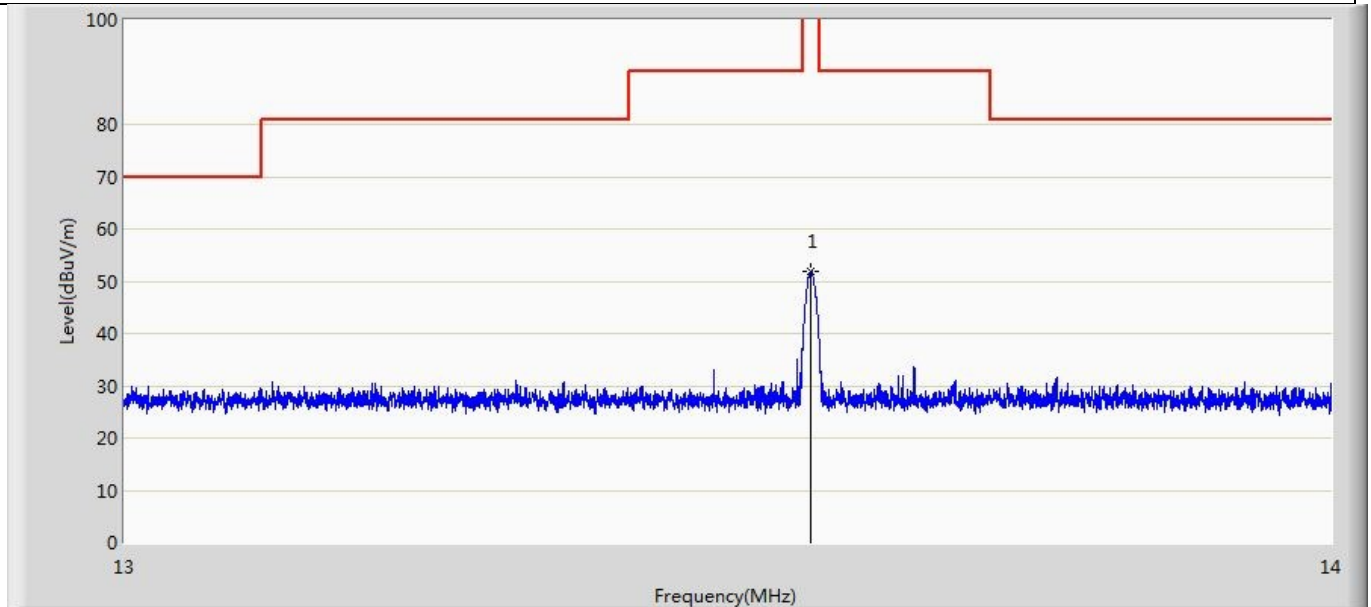
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	13.560	52.785	31.733	-71.215	124.000	21.052	QP

Profile: 23A0637R	Page No.: 8
Engineer: Pengchengyang	
Site: AC2	Time: 2023/11/17 - 14:29
Limit: 13.56 mask	Margin: 0
Probe: RF(0.009-30MHz)	Polarity: Y
EUT: NFC Module	Power: 3.3 Vdc
Note: Mode 1 : Transmit at 13.56MHz by NFC	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	13.560	52.085	31.533	-71.915	124.000	20.552	QP

Profile: 23A0637R	Page No.: 9
Engineer: Pengchengyang	
Site: AC2	Time: 2023/11/17 - 14:33
Limit: 13.56 mask	Margin: 0
Probe: RF(0.009-30MHz)	Polarity: Z
EUT: NFC Module	Power: 3.3 Vdc
Note: Mode 1 : Transmit at 13.56MHz by NFC	

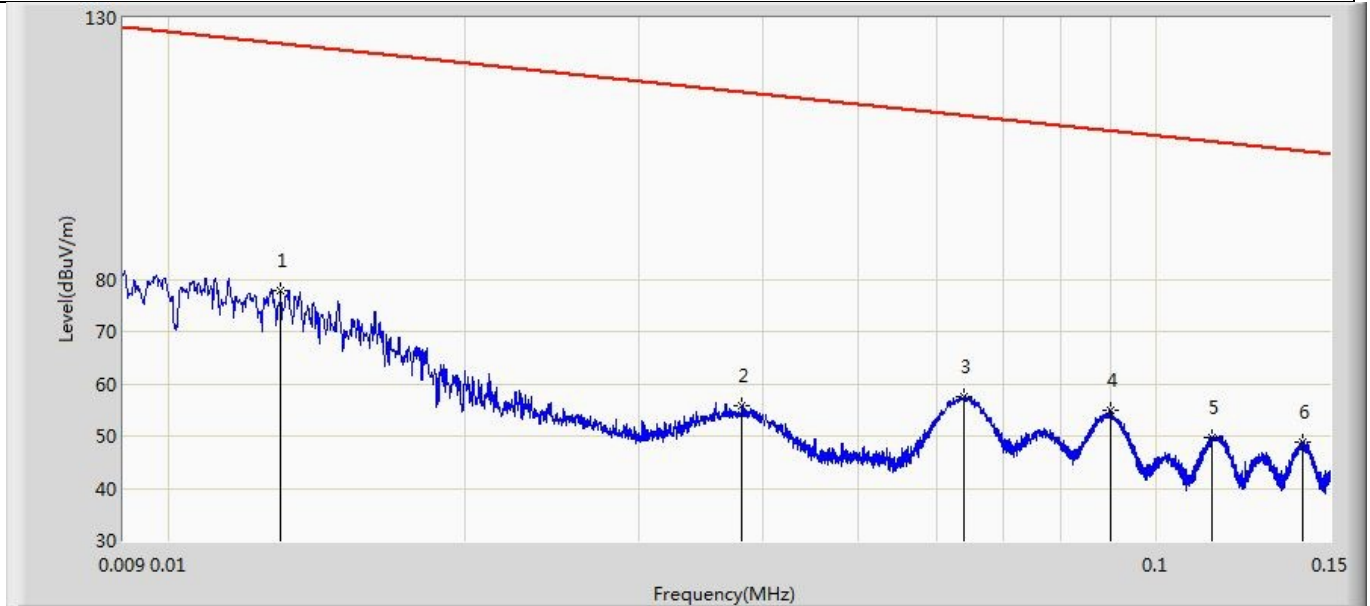


No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	13.560	51.744	31.192	-72.256	124.000	20.552	QP

Note : Measurement Level = Reading Level + Factor(Probe+Cable-Amp).

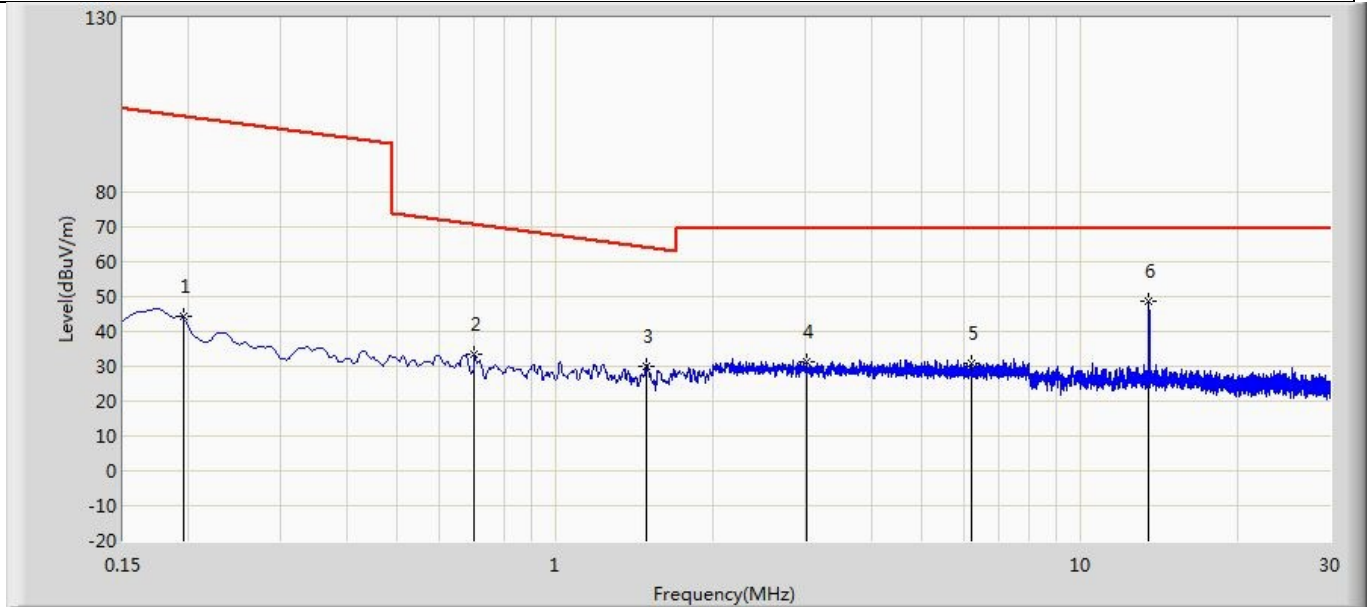
Appendix B: Field Strength of Spurious

Profile: 23A0637R	Page No.: 1
Engineer: Pengchengyang	
Site: AC2	Time: 2023/11/17 - 14:02
Limit: 15.209	Margin: 0
Probe: RF(0.009-30MHz)	Polarity: X
EUT: NFC Module	Power: 3.3 Vdc
Note: Mode 1 : Transmit at 13.56MHz by NFC	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	0.013	77.803	56.647	-47.405	125.208	21.155	PK
2		0.038	55.667	33.736	-60.229	115.896	21.931	PK
3		0.064	57.590	35.655	-53.781	111.371	21.935	PK
4		0.090	54.801	32.896	-53.610	108.411	21.905	PK
5		0.114	49.731	27.854	-56.628	106.359	21.877	PK
6		0.141	48.793	26.942	-55.721	104.514	21.851	PK

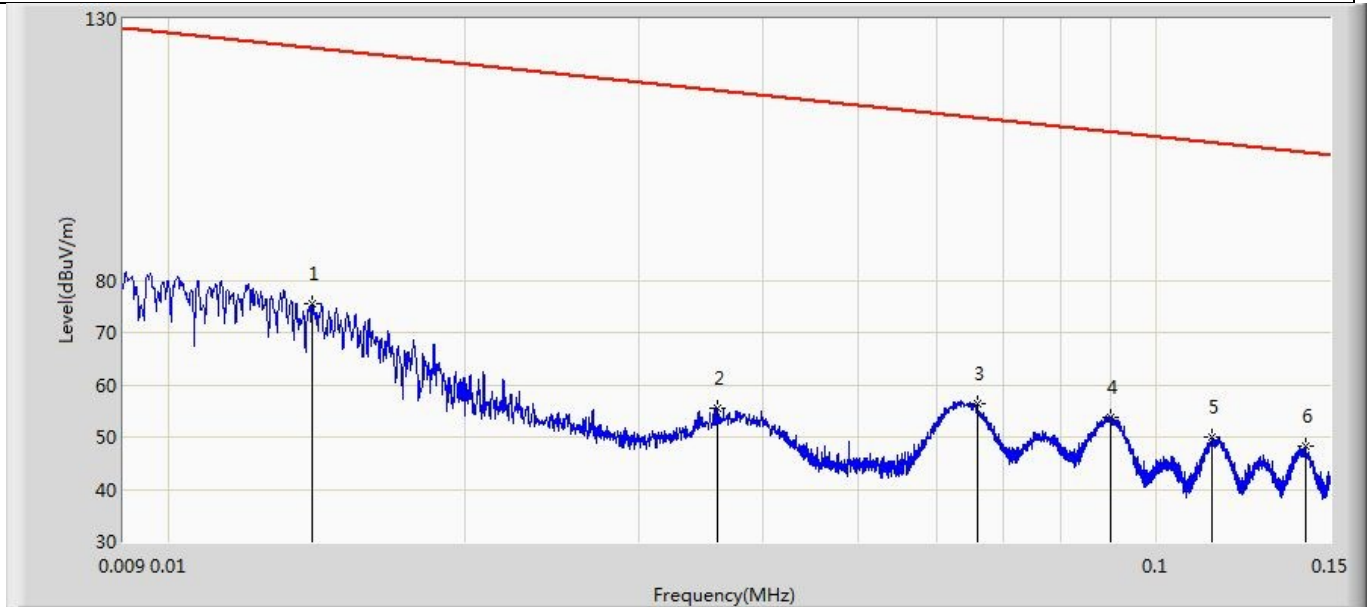
Profile: 23A0637R	Page No.: 2
Engineer: Pengchengyang	
Site: AC2	Time: 2023/11/17 - 14:08
Limit: 15.209	Margin: 0
Probe: RF(0.009-30MHz)	Polarity: X
EUT: NFC Module	Power: 3.3 Vdc
Note: Mode 1 : Transmit at 13.56MHz by NFC	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		0.195	44.237	22.447	-57.462	101.699	21.790	PK
2		0.702	33.547	12.700	-37.039	70.586	20.847	PK
3		1.490	30.098	9.667	-33.969	64.067	20.431	PK
4		3.016	31.234	10.395	-38.166	69.400	20.839	PK
5		6.236	30.659	10.069	-38.741	69.400	20.590	PK
6	*	13.560	48.541	27.489	-20.859	69.400	21.052	PK

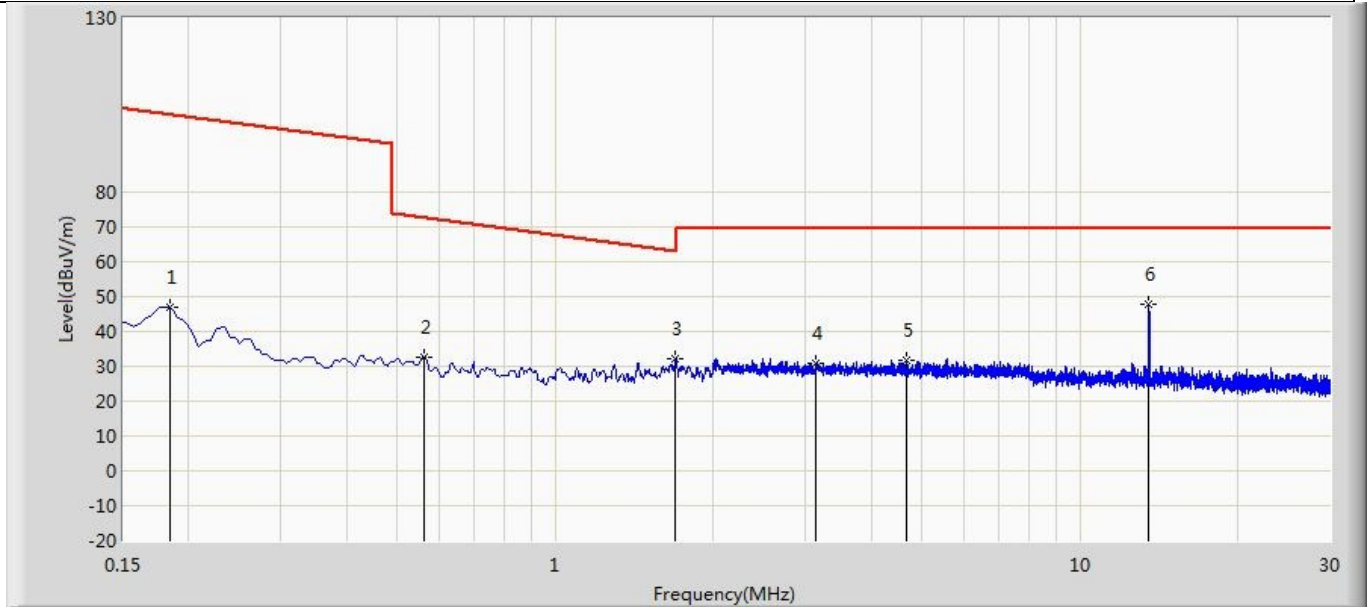
Mark 6 is the fundamental emission.

Profile: 23A0637R	Page No.: 3
Engineer: Pengchengyang	
Site: AC2	Time: 2023/11/17 - 14:12
Limit: 15.209	Margin: 0
Probe: RF(0.009-30MHz)	Polarity: Y
EUT: NFC Module	Power: 3.3 Vdc
Note: Mode 1 : Transmit at 13.56MHz by NFC	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	0.014	75.627	54.940	-48.938	124.564	20.687	PK
2		0.036	55.610	34.241	-60.755	116.365	21.369	PK
3		0.066	56.348	34.915	-54.756	111.103	21.433	PK
4		0.090	53.837	32.432	-54.574	108.411	21.405	PK
5		0.114	49.933	28.556	-56.426	106.359	21.377	PK
6		0.142	48.248	26.898	-56.204	104.452	21.350	PK

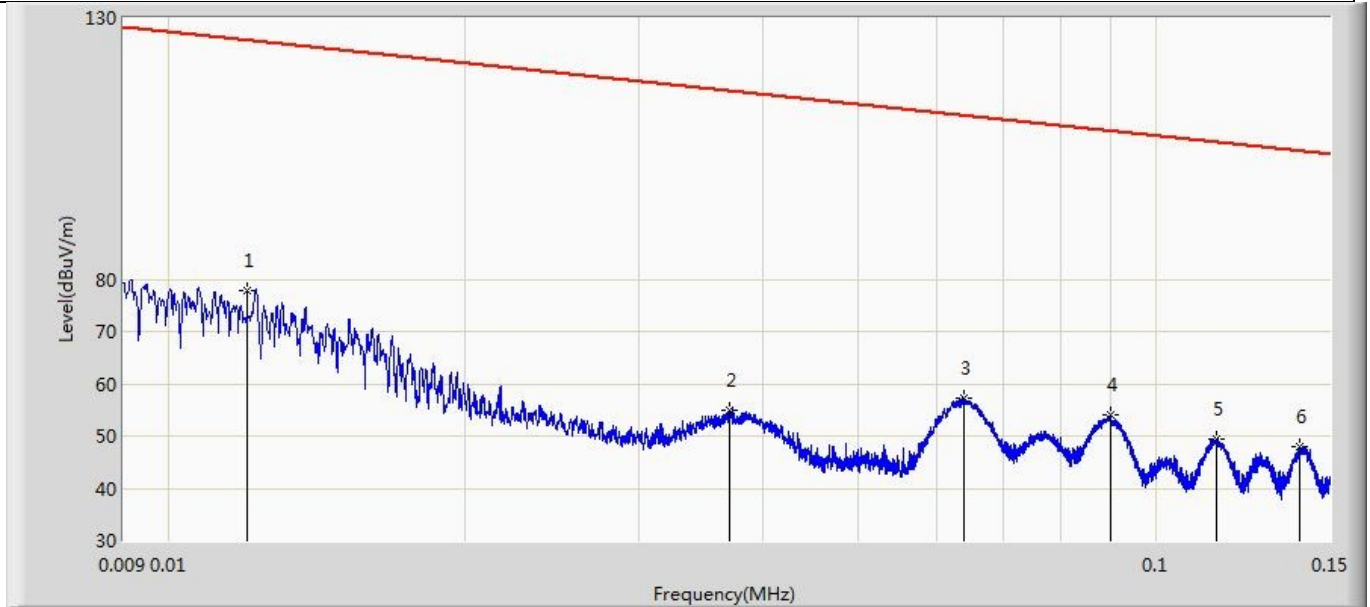
Profile: 23A0637R	Page No.: 4
Engineer: Pengchengyang	
Site: AC2	Time: 2023/11/17 - 14:16
Limit: 15.209	Margin: 0
Probe: RF(0.009-30MHz)	Polarity: Y
EUT: NFC Module	Power: 3.3 Vdc
Note: Mode 1 : Transmit at 13.56MHz by NFC	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		0.184	47.051	25.751	-55.152	102.203	21.301	PK
2		0.564	32.482	11.704	-39.999	72.482	20.778	PK
3		1.695	32.092	11.948	-30.859	62.951	20.144	PK
4		3.142	31.082	10.768	-38.318	69.400	20.314	PK
5		4.672	31.912	11.782	-37.488	69.400	20.130	PK
6	*	13.560	47.739	27.187	-21.661	69.400	20.552	PK

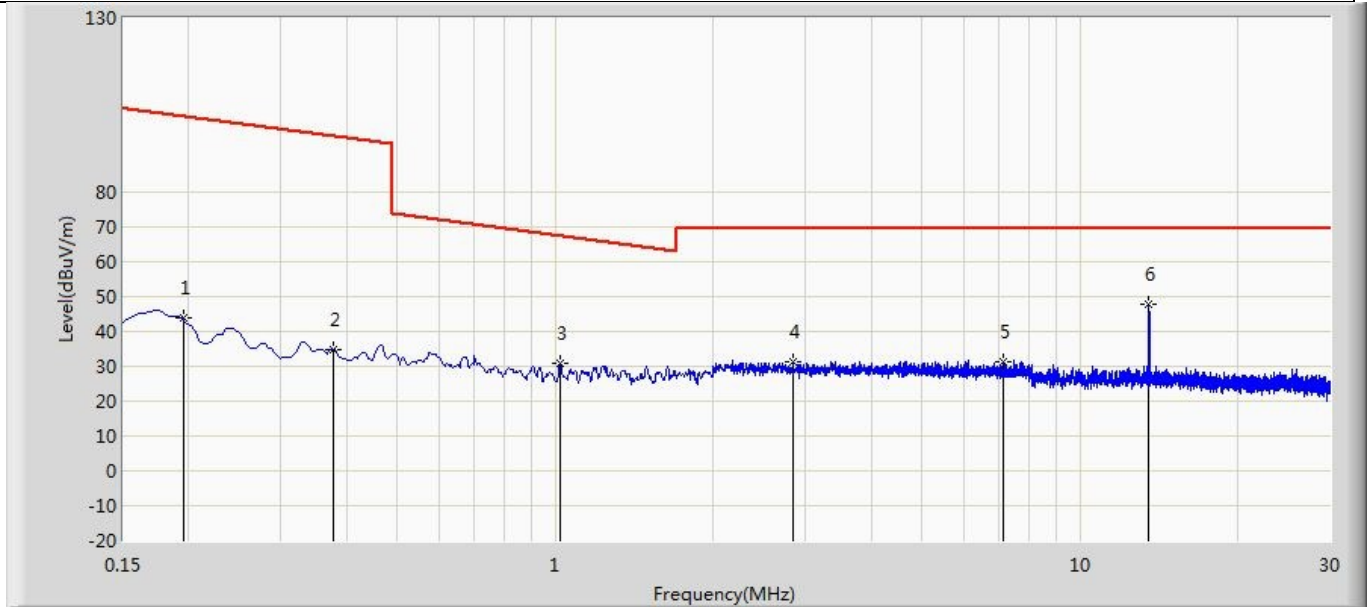
Mark 6 is the fundamental emission.

Profile: 23A0637R	Page No.: 5
Engineer: Pengchengyang	
Site: AC2	Time: 2023/11/17 - 14:19
Limit: 15.209	Margin: 0
Probe: RF(0.009-30MHz)	Polarity: Z
EUT: NFC Module	Power: 3.3 Vdc
Note: Mode 1 : Transmit at 13.56MHz by NFC	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	0.012	77.964	57.339	-47.939	125.903	20.625	PK
2		0.037	55.064	33.664	-61.063	116.128	21.401	PK
3		0.064	57.385	35.950	-53.986	111.371	21.435	PK
4		0.090	53.972	32.567	-54.439	108.411	21.405	PK
5		0.115	49.415	28.039	-56.868	106.283	21.376	PK
6		0.140	47.917	26.565	-56.659	104.575	21.352	PK

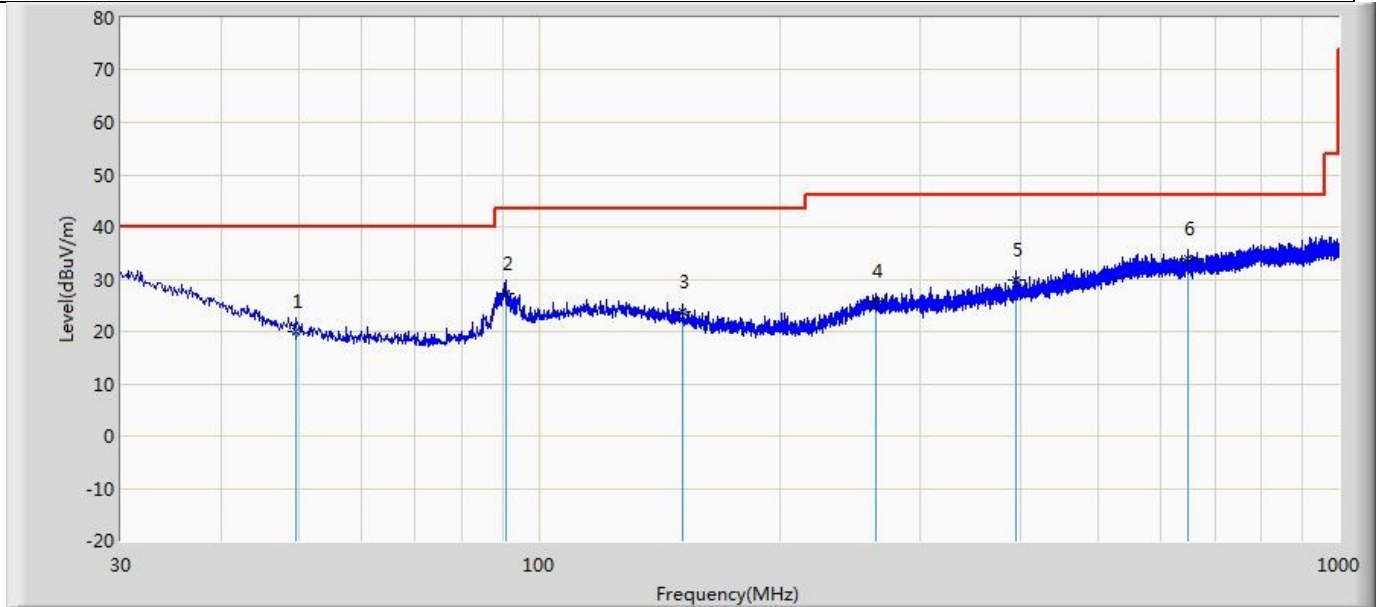
Profile: 23A0637R	Page No.: 6
Engineer: Pengchengyang	
Site: AC2	Time: 2023/11/17 - 14:23
Limit: 15.209	Margin: 0
Probe: RF(0.009-30MHz)	Polarity: Z
EUT: NFC Module	Power: 3.3 Vdc
Note: Mode 1 : Transmit at 13.56MHz by NFC	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		0.195	43.737	22.447	-57.962	101.699	21.290	PK
2		0.378	34.810	13.706	-61.143	95.953	21.104	PK
3		1.023	30.874	11.412	-36.451	67.324	19.461	PK
4		2.836	31.354	11.006	-38.046	69.400	20.348	PK
5		7.131	31.150	11.069	-38.250	69.400	20.081	PK
6	*	13.560	48.041	27.489	-21.359	69.400	20.552	PK

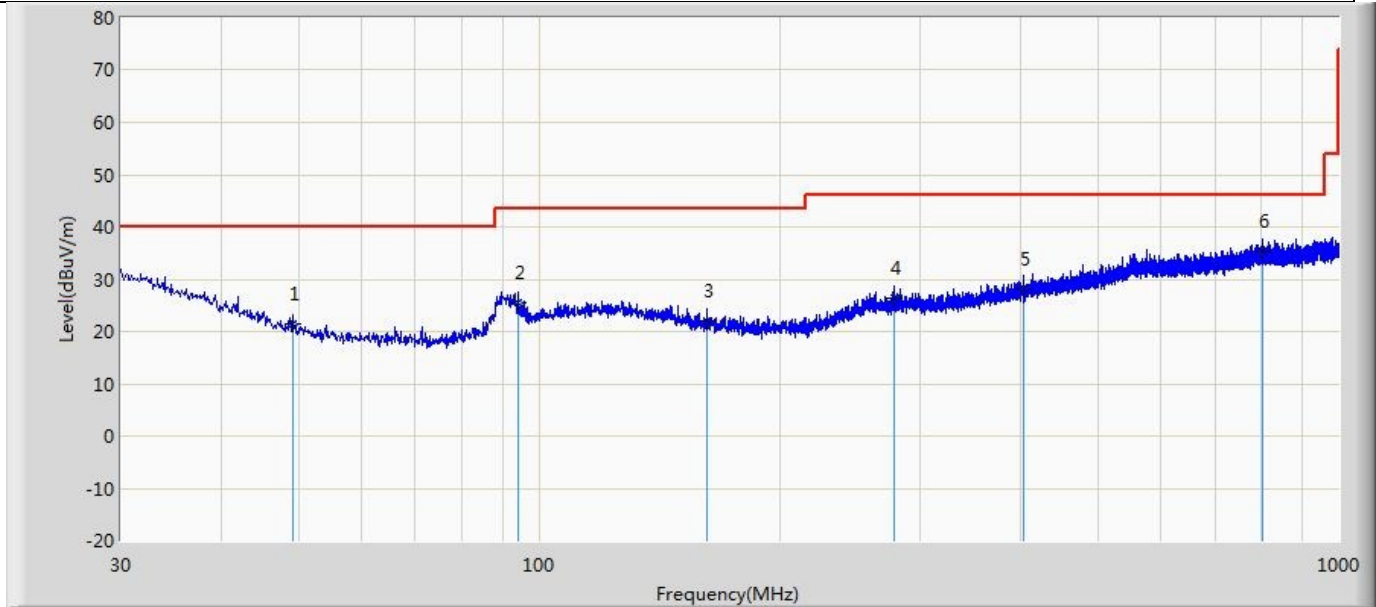
Mark 6 is the fundamental emission.

Profile: 23A0637R	Page No.: 39
Engineer: Pengchengyang	
Site: AC2	Time: 2023/11/25 - 17:35
Limit: FCC_Part 15.109_RE (3m)_Class B	Margin: 0
Probe: CBL6112D_27613(30-1000MHz)	Polarity: Horizontal
EUT: NFC Module	Power: 3.3 Vdc
Note: Mode 1 : Transmit at 13.56MHz by NFC	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		49.643	20.136	5.088	-19.864	40.000	15.049	QP
2		90.746	27.247	11.188	-16.253	43.500	16.059	QP
3		151.129	23.780	6.414	-19.720	43.500	17.366	QP
4		263.527	25.711	5.030	-20.289	46.000	20.681	QP
5		395.205	29.967	6.507	-16.033	46.000	23.459	QP
6	*	647.526	33.816	6.385	-12.184	46.000	27.431	QP

Profile: 23A0637R	Page No.: 40
Engineer: Pengchengyang	
Site: AC2	Time: 2023/11/25 - 17:36
Limit: FCC_Part 15.109_RE (3m)_Class B	Margin: 0
Probe: CBL6112D_27613(30-1000MHz)	Polarity: Vertical
EUT: NFC Module	Power: 3.3 Vdc
Note: Mode 1 : Transmit at 13.56MHz by NFC	

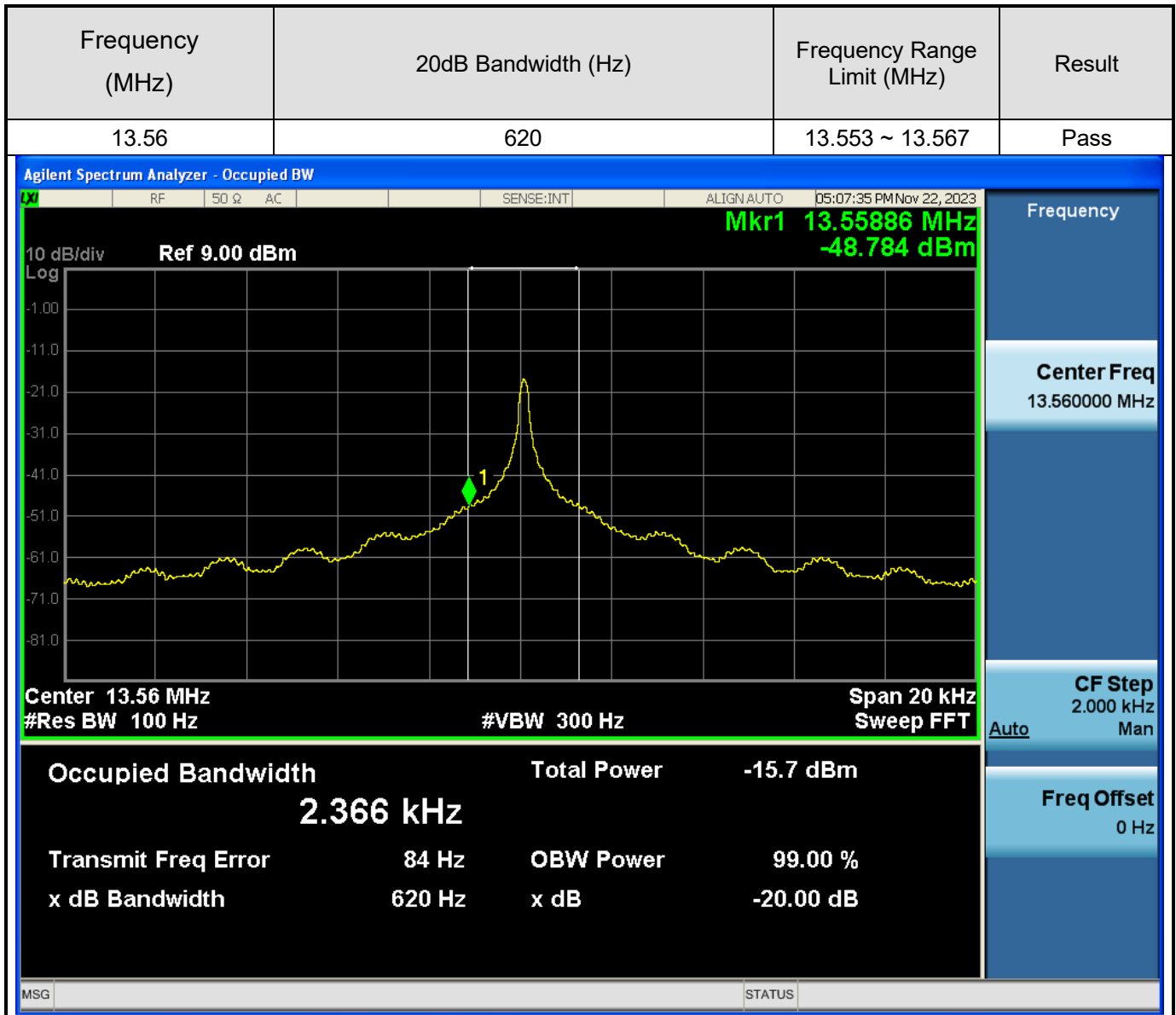


No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		49.158	21.530	6.308	-18.470	40.000	15.222	QP
2		94.262	25.446	8.547	-18.054	43.500	16.898	QP
3		162.284	22.153	5.227	-21.347	43.500	16.927	QP
4		277.835	26.267	5.925	-19.733	46.000	20.342	QP
5		403.086	28.160	4.459	-17.840	46.000	23.702	QP
6	*	802.362	35.487	6.073	-10.513	46.000	29.414	QP

Note 1: " * ", means this data is the worst emission level.

Note 2: Measurement Level = Reading Level + Factor(Probe+Cable-Amp).

Appendix C: Emission Bandwidth



Appendix D: Frequency Stability

Frequency Stability under Temperature at 0min			
Temperature Interval (°C)	Test Frequency (MHz)	Deviation (ppm)	Limit (ppm)
0	13.56	60.32	±100
10	13.56	60.21	±100
20	13.56	60.11	±100
30	13.56	60.36	±100
35	13.56	60.33	±100
Frequency Stability under Temperature at 2min			
Temperature Interval (°C)	Test Frequency (MHz)	Deviation (ppm)	Limit (ppm)
0	13.56	60.38	±100
10	13.56	60.36	±100
20	13.56	60.35	±100
30	13.56	60.31	±100
35	13.56	60.35	±100
Frequency Stability under Temperature at 5min			
Temperature Interval (°C)	Test Frequency (MHz)	Deviation (ppm)	Limit (ppm)
0	13.56	60.38	±100
10	13.56	60.31	±100
20	13.56	60.33	±100
30	13.56	60.34	±100
35	13.56	60.34	±100
Frequency Stability under Temperature at 10min			
Temperature Interval (°C)	Test Frequency (MHz)	Deviation (ppm)	Limit (ppm)
0	13.56	60.32	±100
10	13.56	60.31	±100
20	13.56	60.37	±100
30	13.56	60.32	±100
35	13.56	60.18	±100

Frequency Stability under Voltage			
DC Voltage (V)	Test Frequency (MHz)	Deviation (ppm)	Limit (ppm)
40.8	13.56	60.74	±100
48.0	13.56	60.33	±100
55.2	13.56	60.25	±100

_____ The End _____