FCC RADIO TEST REPORT

The device described below is tested by Dongguan Nore Testing Center Co., Ltd. to determine the maximum emission levels emanating from the device, the severe levels which the device can endure and E.U.T.'s performance criterion. The test results, data evaluation, test procedures, and equipment of configurations shown in this report were made in accordance with the procedures in ANSI C63.10(2013).

Applicant/ Manufacturer	:	Miura Systems Ltd
Address	:	Unit 3, Cliveden Office Village, Lancaster Road, Cressex Industrial Estate, High Wycombe HP12 3YZ, United Kingdom
Factory	:	JABIL Assembly Poland Sp. z o.o.
Address	:	ul. Milosna 32 82-500 Kwidzyn Poland
E.U.T.	:	Portable payment terminal
Brand Name	:	Miura
Model No.	:	M010
FCC ID	:	2AO4FM010-3
Measurement Standard	:	FCC Part 15.225
Date of Receiver	:	October 29, 2019
Date of Test	:	October 29, 2019 to December 13, 2019
Date of Report	:	December 13, 2019

This Test Report is Issued Under the Authority of :

Prepared by	Approved & Authorized Signer
Sundiy Jiang/ Engineer	Iori Fan / Authorized Signatory

This test report is for the customer shown above and their specific product only. This report applies to above tested sample only and shall not be reproduced in part without written approval of Dongguan Nore Testing Center Co., Ltd.

TEL: +86-769-22022444 FAX: +86-769-22022799 Web: www.ntc-c.com
Address: Building D, Gaosheng Science and Technology park, Hongtu road, Nancheng district, Dongguan city, Guangdong province, China

Table of Contents

1. GENERAL INFORMATION 5

1.1 PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST 5
1.2 RELATED SUBMITTAL(S) / GRANT (S) 6
1.3 TEST METHODOLOGY 6
1.4 EQUIPMENT MODIFICATIONS 6
1.5 SUPPORT DEVICE 6
1.6 TEST FACILITY AND LOCATION 7
1.7 SUMMARY OF TEST RESULTS 8
1.8 DEVIATIONS AND ABNORMALITIES FROM STANDARD CONDITIONS 8

2. ANTENNA REQUIREMENT 9

2.1 STANDARD REQUIREMENT 9
2.2 EUT ANTENNA 9

3. CONDUCTED EMISSIONS TEST 10

3.1 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION) 10
3.2 TEST CONDITION 10
3.3 MEASUREMENT RESULTS 10

4. RADIATED EMISSION TEST 13

4.1 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION) 13
4.2 MEASUREMENT PROCEDURE 14
4.3 LIMIT 15
4.4 MEASUREMENT RESULTS 15

5. FIELD STRENGTH OF FUNDAMENTAL EMISSIONS 22

5.1 MEASUREMENT PROCEDURE 22
5.2 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION) 22
5.3 LIMIT 22
5.4 MEASUREMENT RESULTS 23

6 20DB BANDWIDTH 26

6.1 MEASUREMENT PROCEDURE 26
6.2 SPECTRUM ANALYZER SETTINGS 26
6.3 LIMIT 26
6.4 MEASUREMENT RESULTS 26

7 FREQUENCY STABILITY 27

7.1 TEST PROCEDURE 27

7.2 LIMIT 27

7.3 MEASUREMENT RESULTS 27

8 TEST EQUIPMENT LIST 28

Revision History of This Test Report

Report Number	Description	Issued Date
NTC1910090FV00	Initial Issue	2019-12-13

1. GENERAL INFORMATION

1.1 Product Description for Equipment under Test

Product Name	:	Portable payment terminal
Main Model Name	:	M010
Brand Name	:	Miura
Rating	:	DC 5V (From Type-C Port) or DC 3.7V (From built-in battery)
Test voltage	:	AC 120V 60Hz (Adapter input), DC 3.7V (Only the worst case was recorded in this report)
Cable	:	USB Line: 1.15m shielded
Hardware version	:	M010-TEST502-V3-3
Software version	:	2019-07-18-M999-TESTEXERCISE01-V0-21-M010
OS version	:	2019-07-18-M000-TESTOS-VE-1o
Note	:	N/A

Technical parameters (NFC)

Frequency Range	:	13.56MHz
Modulation	:	ASK
Channelized system/ Non- Channelized	:	Non- Channelized
Antenna Type	:	PCB antenna
Antenna Gain	:	0 dBi (Declaration by manufacturer)

1.2 Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for FCC ID: **2AO4FM010-3** filing to comply with Section 15.225 of the FCC Part 15, Subpart C Rule.

1.3 Test Methodology

The radiated emission measurement was performed according to the procedures in ANSI C63.10 (2013). Radiated emission measurement was performed in semi-anechoic chamber. For radiated emission measurement, preliminary scans were performed in the semi-anechoic chamber only to determine the worst case modes. All radiated tests were performed at an antenna to EUT distance of 3 meters.

1.4 Equipment Modifications

Not available for this EUT intended for grant.

1.5 Support Device

Adapter	:	Provided by applicant Manufacturer: TT Electronics IoT Solutions Ltd M/N: T7760DV Input : AC 100-240V 50/60Hz , 0.3A Output: 5V 2A

1.6 Test Facility and Location

Site Description

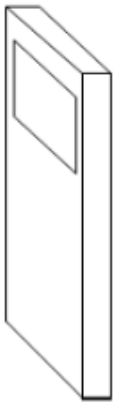
EMC Lab	:	Listed by CNAS, August 13, 2018 The certificate is valid until August 13, 2024 The Laboratory has been assessed and proved to be in compliance with CNAS/CL01 The Certificate Registration Number is L5795. Listed by A2LA, November 01, 2017 The certificate is valid until December 31, 2021 The Laboratory has been assessed and proved to be in compliance with ISO17025 The Certificate Registration Number is 4429.01 Listed by FCC, November 06, 2017 The Designation Number is CN1214 Test Firm Registration Number: 907417 Listed by Industry Canada, June 08, 2017 The Certificate Registration Number. Is 46405-9743
Name of Firm	:	Dongguan Nore Testing Center Co., Ltd. (Dongguan NTC Co., Ltd.)
Site Location	:	Building D, Gaosheng Science and Technology park, Hongtu road, Nancheng district, Dongguan city, Guangdong province, China

1.7 Summary of Test Results

FCC Rules	Description Of Test	Result
§15.203	Antenna Requirement	Compliant
§15.207	Conducted Emission	Compliant
§15.225(d)/15.209	Radiated Emissions	Compliant
§15.225(a)(b)(c)/15.205	Field Strength of Fundamental Emissions	Compliant
§15.215	20dB Bandwidth	Compliant
§15.225(e)	Frequency Tolerance	Compliant

Note: The EUT operating multiple positions, so the EUT shall be performed three orthogonal planes. The worst plane is Z

Example:

X Plane	Y Plane	Z Plane
		

1.8 Deviations and Abnormalities from Standard Conditions

No additions, deviations and exclusions from the standard.

2. Antenna requirement

2.1 Standard requirement

According to of FCC part 15C section 15.203 and 15.240:

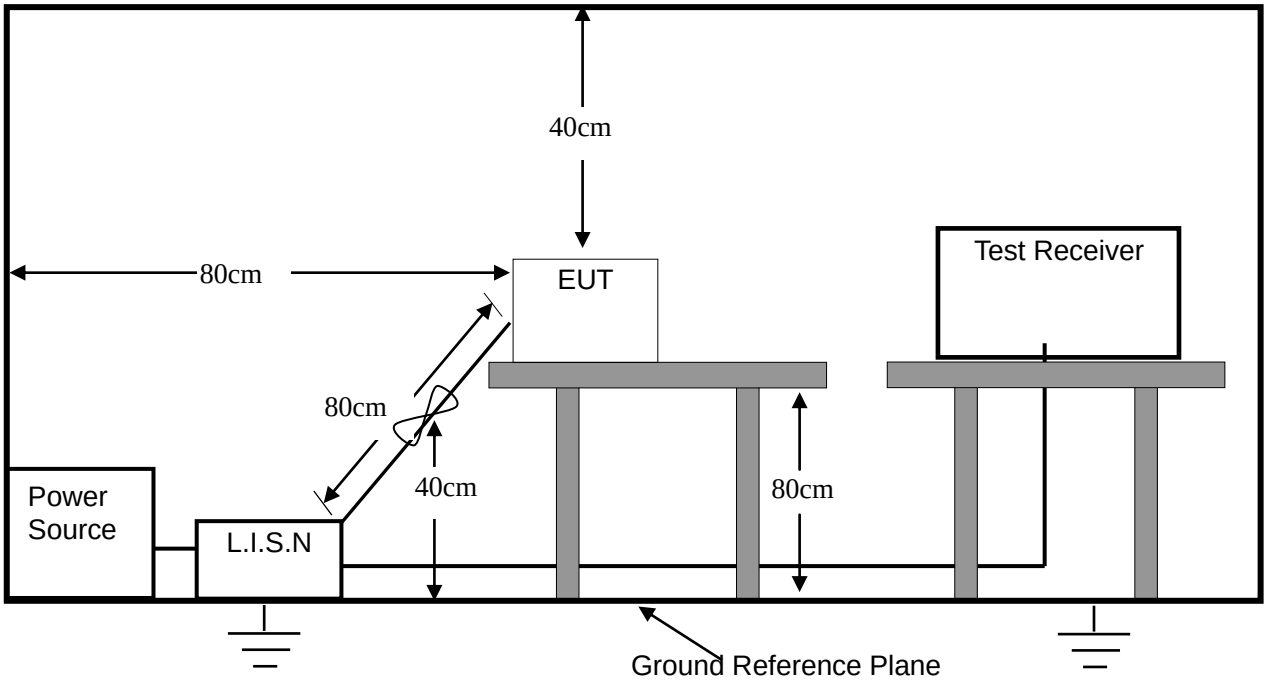
An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

2.2 EUT Antenna

The antenna is PCB Antenna and no consideration of replacement, and the best case gain of the antenna is 0 dBi. So, the antenna is consider meet the requirement.

3. Conducted Emissions Test

3.1 Test SET-UP (Block Diagram of Configuration)



3.2 Test Condition

Test Requirement: FCC Part 15.207

Frequency Range: 150KHz ~ 30MHz

Detector: RBW 9KHz, VBW 30KHz

Operation Mode: Charging+ TX

3.3 Measurement Results

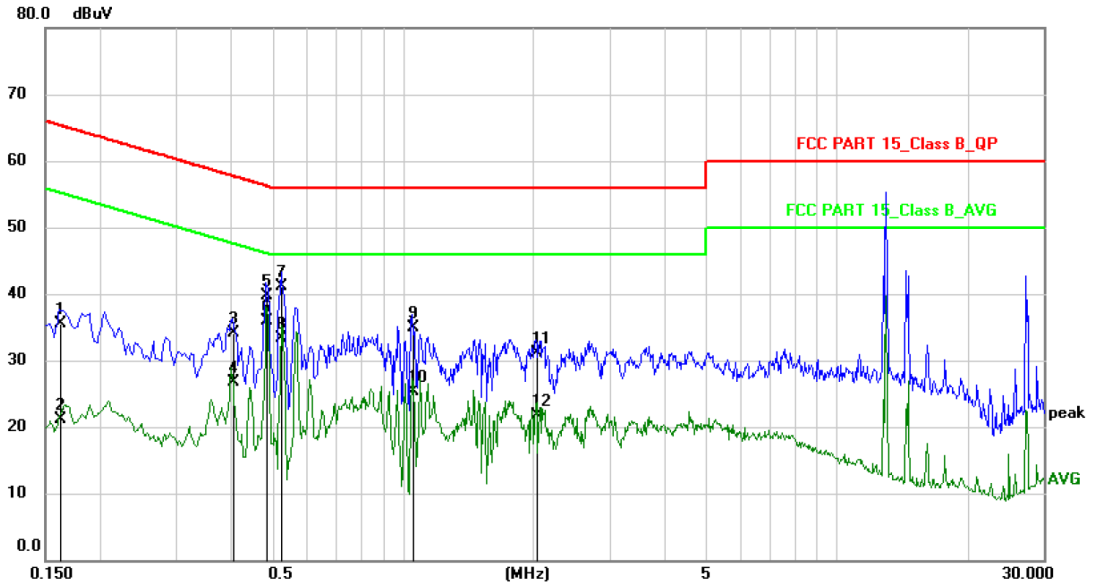
Pass

Please refer to following plots.

Dongguan NTC Co., Ltd.
Tel: +86-769-22022444 Fax: +86-769-22022799
Web: Http://www.ntc-c.com

Conducted Emission Measurement

File :M010 Data :#31 Date: 2019/12/13 Time: 16:39:04



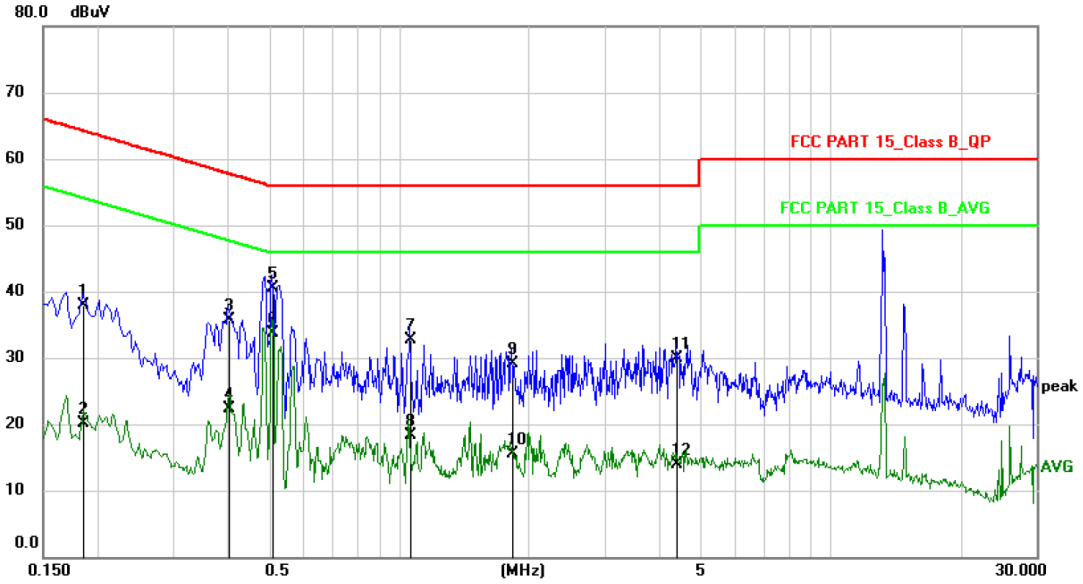
Site Phase: *L1* Temperature: 26
Limit: FCC PART 15_Class B_QP Power: AC120V/60Hz Humidity: 50 %
EUT: Portable payment terminal
M/N: M010
Mode: TX+ Charging
Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1620	25.00	10.60	35.60	65.36	-29.76	QP	
2		0.1620	10.60	10.60	21.20	55.36	-34.16	AVG	
3		0.4060	23.59	10.61	34.20	57.73	-23.53	QP	
4		0.4060	16.19	10.61	26.80	47.73	-20.93	AVG	
5		0.4860	29.07	10.63	39.70	56.24	-16.54	QP	
6	*	0.4860	25.37	10.63	36.00	46.24	-10.24	AVG	
7		0.5260	30.57	10.63	41.20	56.00	-14.80	QP	
8		0.5260	22.67	10.63	33.30	46.00	-12.70	AVG	
9		1.0540	24.20	10.70	34.90	56.00	-21.10	QP	
10		1.0540	14.60	10.70	25.30	46.00	-20.70	AVG	
11		2.0260	20.40	10.70	31.10	56.00	-24.90	QP	
12		2.0260	11.00	10.70	21.70	46.00	-24.30	AVG	

Dongguan NTC Co., Ltd.
Tel: +86-769-22022444 Fax: +86-769-22022799
Web: Http://www.ntc-c.com

Conducted Emission Measurement

File :M010 Data :#32 Date: 2019/12/13 Time: 16:46:52



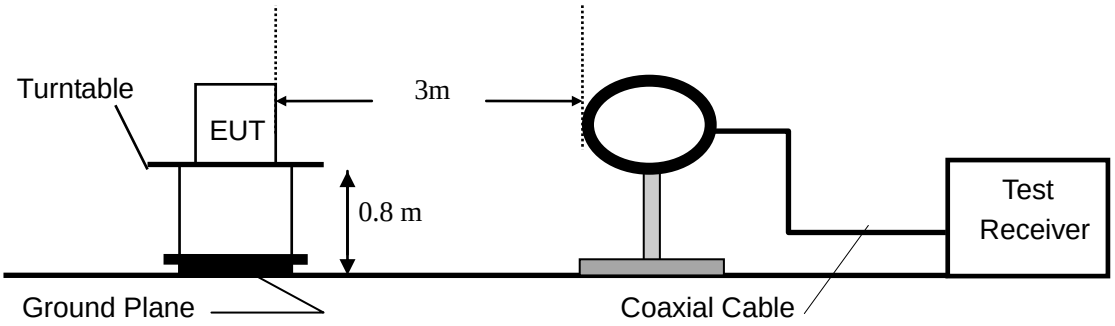
Site Phase: *N* Temperature: 26
Limit: FCC PART 15_Class B_QP Power: AC120V/60Hz Humidity: 50 %
EUT: Portable payment terminal
M/N: M010
Mode: TX+ Charging
Note:

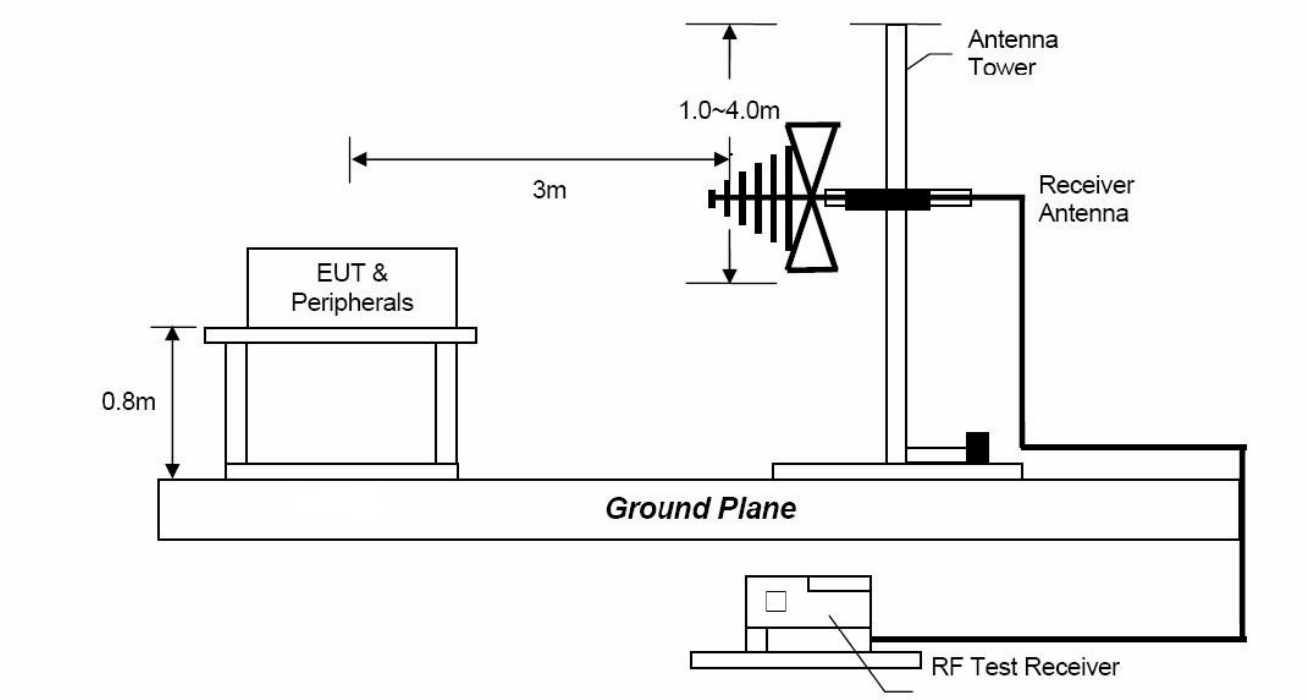
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1860	27.30	10.60	37.90	64.21	-26.31	QP	
2		0.1860	9.60	10.60	20.20	54.21	-34.01	AVG	
3		0.4020	25.19	10.61	35.80	57.81	-22.01	QP	
4		0.4020	11.79	10.61	22.40	47.81	-25.41	AVG	
5		0.5100	29.87	10.63	40.50	56.00	-15.50	QP	
6	*	0.5100	23.17	10.63	33.80	46.00	-12.20	AVG	
7		1.0620	22.10	10.70	32.80	56.00	-23.20	QP	
8		1.0620	7.70	10.70	18.40	46.00	-27.60	AVG	
9		1.8220	18.50	10.70	29.20	56.00	-26.80	QP	
10		1.8220	4.80	10.70	15.50	46.00	-30.50	AVG	
11		4.3979	19.29	10.71	30.00	56.00	-26.00	QP	
12		4.3979	3.29	10.71	14.00	46.00	-32.00	AVG	

4. Radiated Emission Test

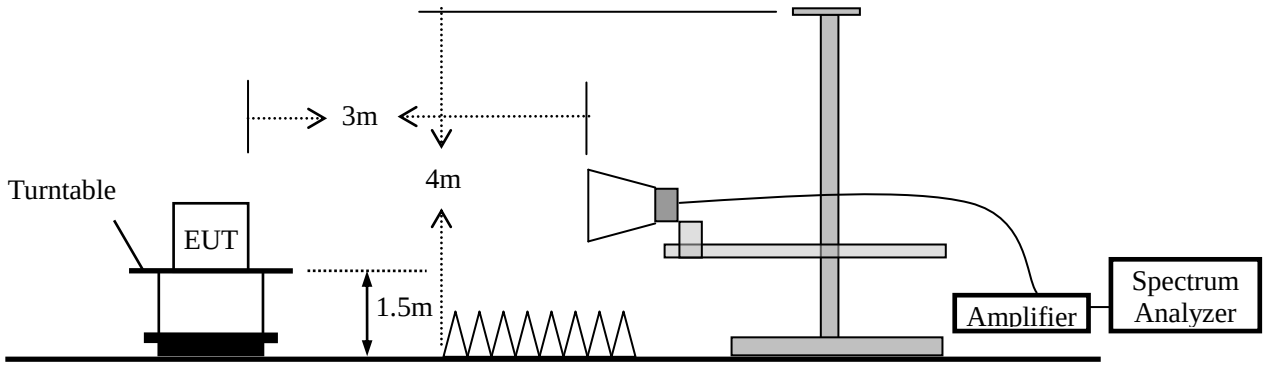
4.1 Test SET-UP (Block Diagram of Configuration)

(1)Radiated Emission Test Set-Up, Frequency Below 30MHz and 30-1000MHz





(2) Radiated Emission Test Set-Up, Frequency above 1GHz



4.2 Measurement Procedure

a. Blow 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi- anechoic chamber room.
b. For the radiated emission test above 1GHz:
   The EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter full anechoic chamber room. The table was rotated 360 degrees to determine the position of the highest radiation. Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane.
c. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
d. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
e. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading. The test-receiver system was set to peak detect function and specified bandwidth with maximum hold mode.
f. A Quasi-peak measurement was then made for that frequency point for below 1GHz test. PK and AV for above 1GHz emission test.

During the radiated emission test, the spectrum analyzer was set with the following configurations:

Frequency Band (MHz)	Resolution Bandwidth	Video Bandwidth
0.009~0.15	200 Hz	1 kHz
0.15~30.0	9 kHz	30 kHz
30.0~1000	120 kHz	300 kHz
Above 1000	1 MHz	1 MHz

4.3 Limit

According to FCC section 15.209 (a), except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency range MHz	Distance Meters	Field Strengths Limit (15.209) μV/m
0.009 ~ 0.490	300	2400/F(kHz)
0.490 ~ 1.705	30	24000/F(kHz)
1.705 ~ 30	30	30
30 ~ 88	3	100
88 ~ 216	3	150
216 ~ 960	3	200
Above 960	3	500

Rmark：(1) Emission level (dB)μV = 20 log Emission level μV/m

(2) The smaller limit shall apply at the cross point between two frequency bands.

(3) As shown in 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.

(4) The frequency range scanned is from the lowest radio frequency signal generated in the device which is greater than 9 kHz to the tenth harmonic of the highest fundamental frequency or 40 GHz, whichever is lower.

4.4 Measurement Results

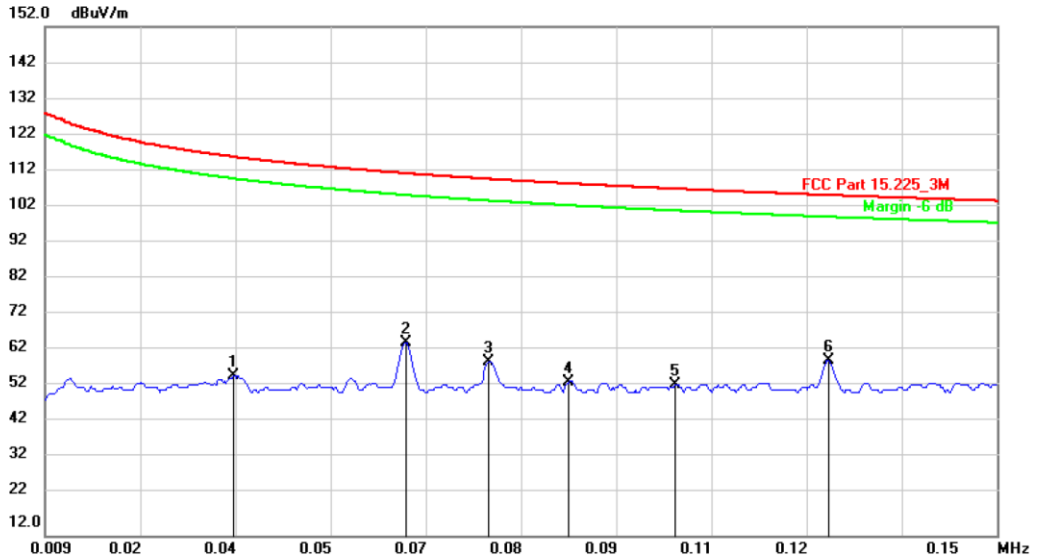
Pass

Please refer to following plots of the worst case.

Dongguan NTC Co., Ltd.
Tel:+86-769-22022444 Fax:+86-769-22022799
Web: Http://www.ntc-c.com

Radiated Emission Measurement

File :M010 Data :#53 Date: 2019/11/7 Time: 22:19:13



Site
Limit: FCC Part 15.225_3M
EUT: Portable payment terminal
M/N: M010
Mode: TX+ Charging
Note:

Polarization: ***Horizontal***
Power: AC120V/60Hz
Distance:

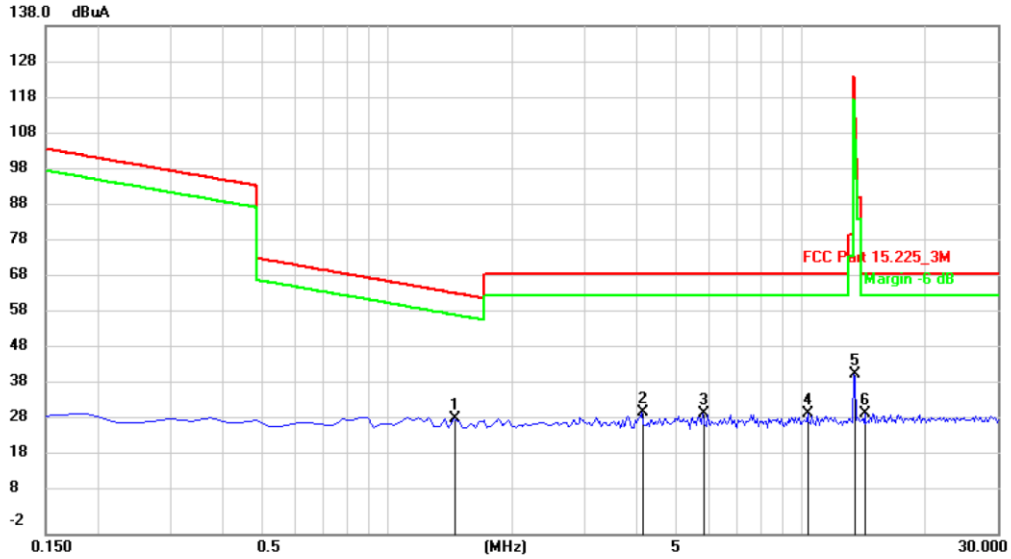
Temperature: 26
Humidity: 60 %

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		0.0367	23.48	32.32	55.80	116.19	-60.39	peak			
2		0.0623	32.87	32.30	65.17	111.61	-46.44	peak			
3		0.0747	27.61	32.30	59.91	110.05	-50.14	peak			
4		0.0865	22.04	32.31	54.35	108.78	-54.43	peak			
5		0.1024	21.13	32.31	53.44	107.32	-53.88	peak			
6	*	0.1250	27.89	32.30	60.19	105.60	-45.41	peak			

Dongguan NTC Co., Ltd.
Tel:+86-769-22022444 Fax:+86-769-22022799
Web: Http://www.ntc-c.com

Radiated Emission Measurement

File :M010 Data :#52 Date: 2019/11/7 Time: 22:13:11



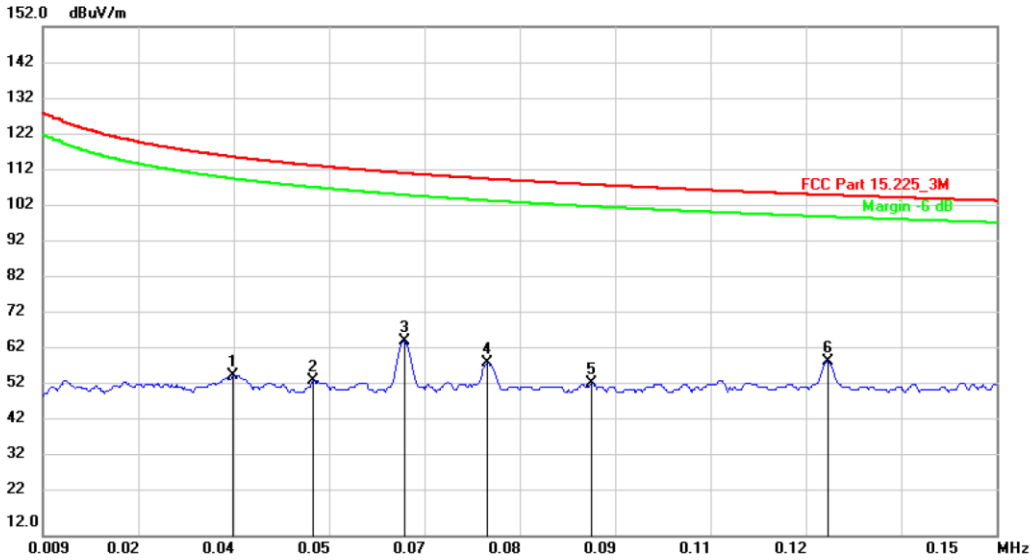
Site		Polarization: ***Horizontal***	Temperature: 26
Limit: FCC Part 15.225_3M		Power: AC120V/60Hz	Humidity: 60 %
EUT: Portable payment terminal		Distance:	
M/N: M010			
Mode: TX+ Charging			
Note:			

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuA	dBuA	dB	Detector	cm	degree	Comment
1	*	1.4557	-2.61	32.17	29.56	64.30	-34.74	peak			
2		4.1424	-0.84	32.21	31.37	69.54	-38.17	peak			
3		5.8215	-1.19	32.23	31.04	69.54	-38.50	peak			
4		10.4481	-1.44	32.36	30.92	69.54	-38.62	peak			
5		13.5450	9.70	32.33	42.03	90.47	-48.44	peak			
6		14.3659	-1.18	32.33	31.15	69.54	-38.39	peak			

Dongguan NTC Co., Ltd.
Tel:+86-769-22022444 Fax:+86-769-22022799
Web: Http://www.ntc-c.com

Radiated Emission Measurement

File :M010 Data :#54 Date: 2019/11/7 Time: 22:26:17



Site
Limit: FCC Part 15.225_3M
EUT: Portable payment terminal
M/N: M010
Mode: TX+ Charging
Note:

Polarization: ***Vertical***
Power: AC120V/60Hz
Distance:

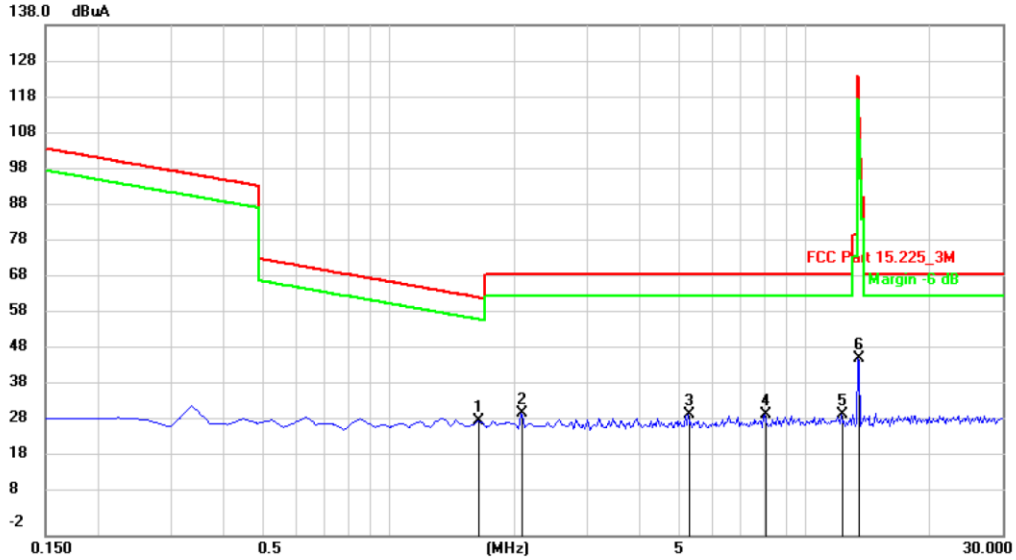
Temperature: 26
Humidity: 60 %

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		0.0369	23.48	32.32	55.80	116.14	-60.34	peak			
2		0.0490	22.04	32.36	54.40	113.69	-59.29	peak			
3		0.0623	33.16	32.30	65.46	111.61	-46.15	peak			
4		0.0747	27.14	32.30	59.44	110.05	-50.61	peak			
5		0.0900	21.50	32.31	53.81	108.44	-54.63	peak			
6	*	0.1250	27.62	32.30	59.92	105.60	-45.68	peak			

Dongguan NTC Co., Ltd.
Tel:+86-769-22022444 Fax:+86-769-22022799
Web: Http://www.ntc-c.com

Radiated Emission Measurement

File :M010 Data :#51 Date: 2019/11/7 Time: 22:05:29



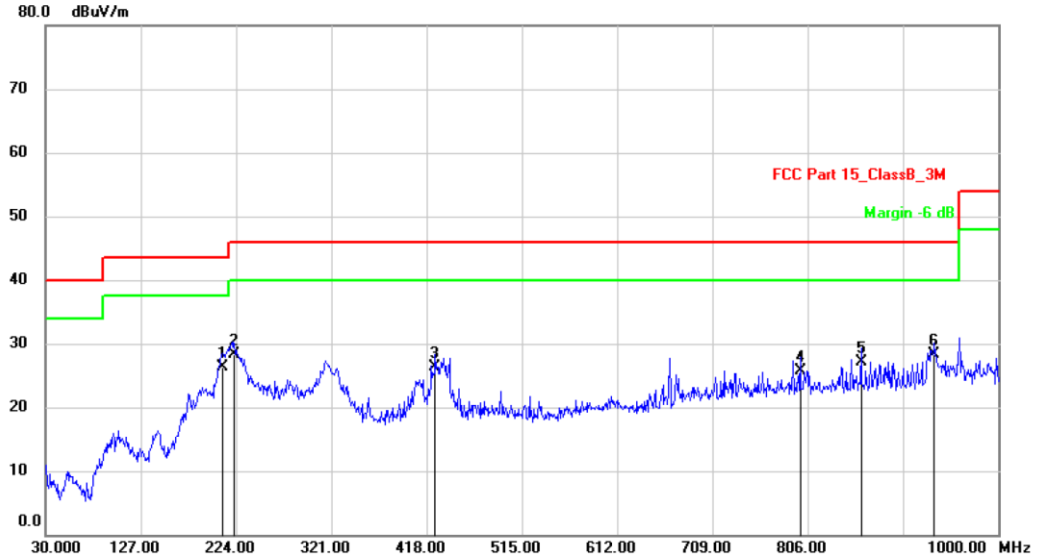
Site		Polarization:	***Vertical***	Temperature:	26
Limit:	FCC Part 15.225_3M	Power:	AC120V/60Hz	Humidity:	60 %
EUT:	Portable payment terminal	Distance:			
M/N:	M010				
Mode:	TX+ Charging				
Note:					

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuA	dBuA	dB	Detector	cm	degree	Comment
1	*	1.6425	-2.91	32.17	29.26	63.25	-33.99	peak			
2		2.0901	-0.85	32.17	31.32	69.54	-38.22	peak			
3		5.2618	-1.18	32.22	31.04	69.54	-38.50	peak			
4		8.0602	-1.19	32.29	31.10	69.54	-38.44	peak			
5		12.2766	-1.18	32.35	31.17	69.54	-38.37	peak			
6		13.5450	14.14	32.33	46.47	90.47	-44.00	peak			

Dongguan NTC Co., Ltd.
Tel:+86-769-22022444 Fax:+86-769-22022799
Web: Http://www.ntc-c.com

Radiated Emission Measurement

File :M010 Data :#47 Date: 2019/11/7 Time: 21:39:05



Site
Limit: FCC Part 15_ClassB_3M
EUT: Portable payment terminal
M/N: M010
Mode: TX+ Charging
Note:

Polarization: ***Horizontal***
Power: AC120V/60Hz
Distance: 3m

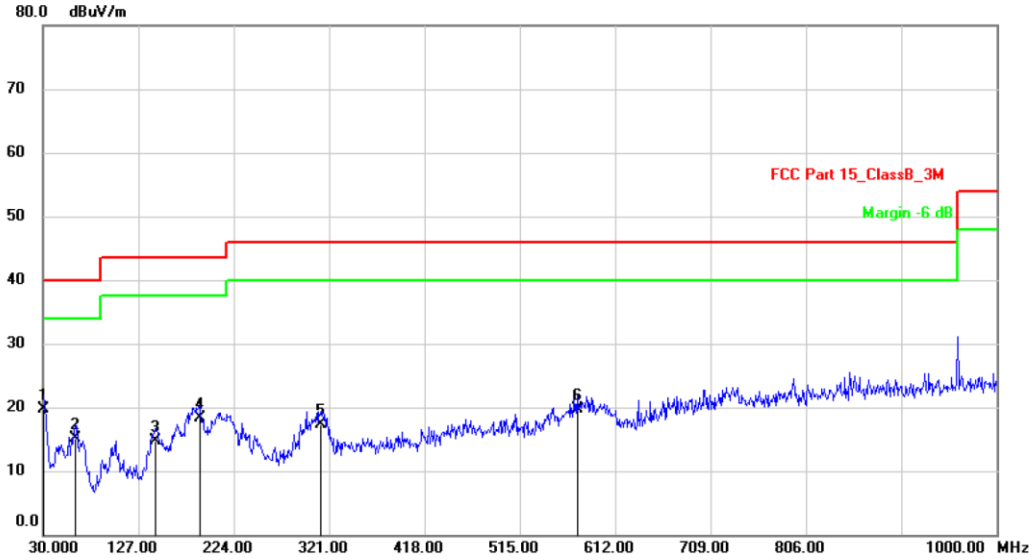
Temperature: 26
Humidity: 47 %

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	*	210.4200	39.63	-13.23	26.40	43.50	-17.10	QP			
2		222.0600	41.08	-12.86	28.22	46.00	-17.78	QP			
3		426.7300	34.90	-8.50	26.40	46.00	-19.60	QP			
4		798.2400	27.77	-1.97	25.80	46.00	-20.20	QP			
5		860.3200	28.31	-1.11	27.20	46.00	-18.80	QP			
6		935.0100	28.83	-0.53	28.30	46.00	-17.70	QP			

Dongguan NTC Co., Ltd.
Tel:+86-769-22022444 Fax:+86-769-22022799
Web: Http://www.ntc-c.com

Radiated Emission Measurement

File :M010 Data :#48 Date: 2019/11/7 Time: 21:46:24



Site
Limit: FCC Part 15_ClassB_3M
EUT: Portable payment terminal
M/N: M010
Mode: TX+ Charging
Note:

Polarization: ***Vertical***
Power: AC120V/60Hz
Distance: 3m

Temperature: 26
Humidity: 47 %

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	*	30.9700	35.63	-15.83	19.80	40.00	-20.20	QP			
2		62.9800	30.27	-15.07	15.20	40.00	-24.80	QP			
3		144.4600	33.30	-18.60	14.70	43.50	-28.80	QP			
4		189.0800	35.03	-16.63	18.40	43.50	-25.10	QP			
5		312.2700	29.43	-12.13	17.30	46.00	-28.70	QP			
6		573.2000	27.58	-7.78	19.80	46.00	-26.20	QP			

5. Field Strength of Fundamental Emissions

5.1 Measurement Procedure

As the radiation test, set the RBW=10kHz VBW=30kHz, observed the outside band of 13.110 MHz to 14.010 MHz, than mark the higher-level emission for comparing with the FCC rules.

5.2 Test SET-UP (Block Diagram of Configuration)

Same as section 3.1.

5.3 Limit

According to FCC section 15.225, for <30 MHz, Radiated emissions were measured according to ANSI C63.4. The EUT was set to transmit at the highest output power. The EUT was set 3 meter away from the measuring antenna. The loop antenna was positioned 1 meter above the ground from the center of the loop. The measuring bandwidth was set to 10 KHz. (Note: During testing the receive antenna was rotated about its axis to maximize the emission from the EUT)
There was no detected Restricted bands and Radiated suprious emission below 30MHz. The 30m limit was converted to 3m Limit using square factor(x) as it was found by measurements as follows; 3 m Limit(dBuV/m) = 20log(X)+40log(30/3)= 20log(15848)+40log(30/3) = 124dBuV
Except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency range (MHz)	Field Strength@30m		Field Strength@3m
	µV/m	dBµV/m	dBµV/m
Below 13.110	30	29.5	69.5
13.110 ~ 13.410	106	40.5	80.5
13.410 ~ 13.553	334	50.5	90.5
13.553 ~13.567	15.848	84	124
13.567 ~ 13.710	334	50.5	90.5
13.710 ~14.010	106	40.5	80.5
Above 14.010	30	29.5	69.5

Note:

1. Field Strength (dBµV/m) = 20*log[Field Strength (µV/m)].
2. In the emission tables above, the tighter limit applies at the band edges.

5.4 Measurement Results

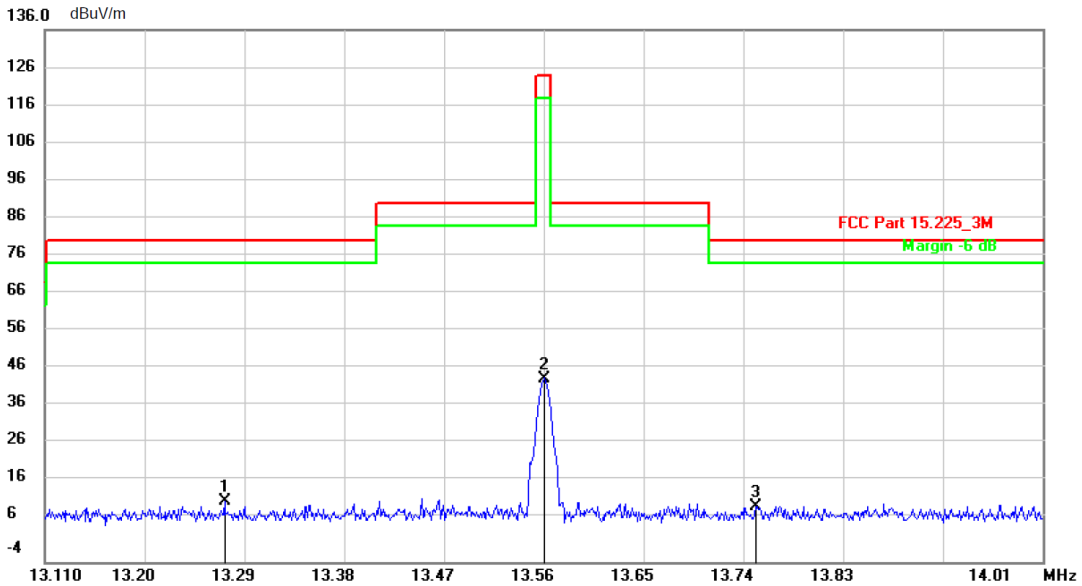
Pass.

Please refer to following plots of the worst case.

Dongguan NTC Co., Ltd.
Tel:+86-769-22022444 Fax:+86-769-22022799
Web: Http://www.ntc-c.com

Radiated Emission Measurement

File :M010 Data :#89 Date: 2019/11/8 Time: 16:11:38



Site: 3m Chamber
Limit: FCC Part 15.225_3M
EUT: Portable payment terminal
M/N: M010
Mode: TX+ Charging
Note:

Polarization: ***Horizontal***
Power: AC120V/60Hz
Distance:

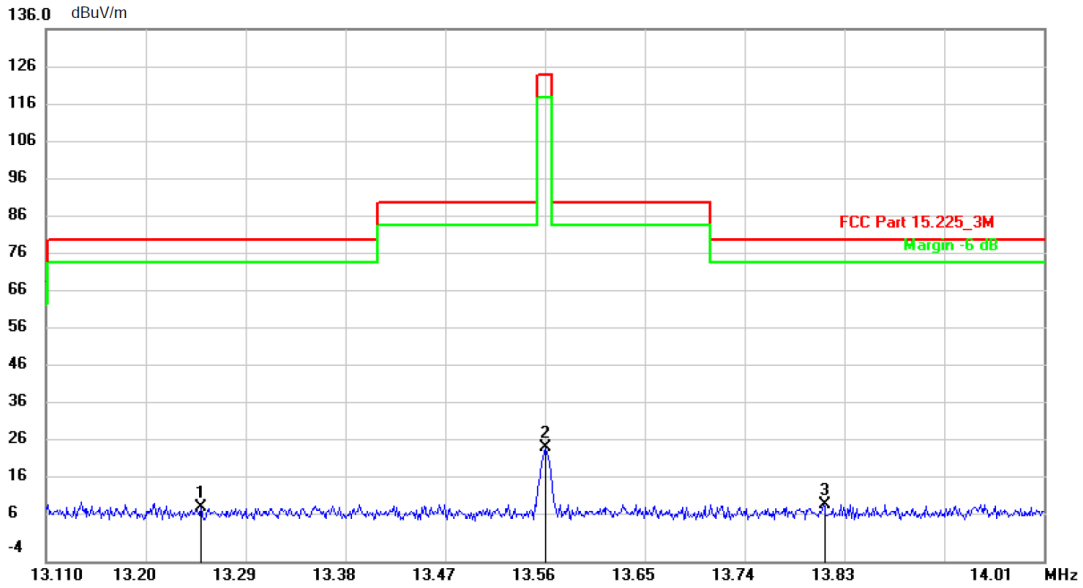
Temperature: 26
Humidity: 60 %

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	*	13.2720	-20.27	32.33	12.06	80.51	-68.45	peak			
2		13.5610	11.97	32.33	44.30	124.00	-79.70	peak			
3		13.7512	-21.75	32.32	10.57	80.51	-69.94	peak			

Dongguan NTC Co., Ltd.
Tel:+86-769-22022444 Fax:+86-769-22022799
Web: Http://www.ntc-c.com

Radiated Emission Measurement

File :M010 Data :#90 Date: 2019/11/8 Time: 16:19:07



Site: 3m Chamber
Limit: FCC Part 15.225_3M
EUT: Portable payment terminal
M/N: M010
Mode: TX+ Charging
Note:

Polarization: ***Vertical***
Power: AC120V/60Hz
Distance:

Temperature: 26
Humidity: 60 %

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		13.2495	-22.19	32.33	10.14	80.51	-70.37	peak			
2		13.5600	-6.52	32.33	25.81	124.00	-98.19	peak			
3	*	13.8109	-21.54	32.33	10.79	80.51	-69.72	peak			

6 20dB Bandwidth

6.1 Measurement Procedure

The 20dB bandwidth is measured with a spectrum analyzer connected via a receiver antenna placed near the EUT while the EUT is operating in transmission mode.

6.2 Spectrum analyzer settings

Span = approximately 2 to 5 times the OBW
RBW ≥ 1% to 5% of the OBW
VBW ≥ 3*RBW
Sweep = auto
Detector function = peak
Trace = max hold.

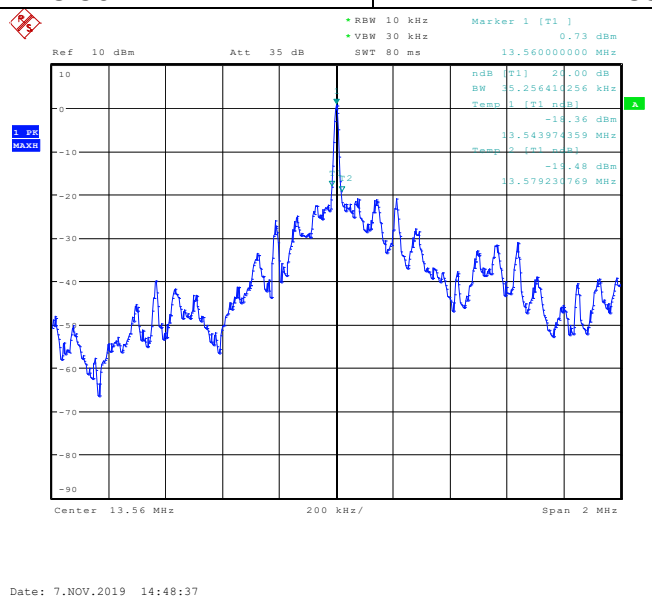
6.3 Limit

Operation within the band 13.110 MHz to 14.010 MHz

6.4 Measurement Results

Refer to attached data chart.

Test Frequency (MHz)	Test Result (KHz)
13.56	35.256



7 Frequency stability

7.1 Test Procedure

The test is performed in a Temperature Chamber.

7.2 Limit

The frequency tolerance of the carrier signal shall be maintained within ±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.

7.3 Measurement Results

Voltage (Vdc)	Temp. (℃)	Frequency (MHz)	Deviation (%)	Limit (%)
3.7	-20	13.560346	0.002%	+/-0.01%
	-10	13.560264	0.001%	
	0	13.560538	0.003%	
	10	13.560672	0.004%	
	20	13.560469	0.003%	
	30	13.560583	0.004%	
	40	13.560588	0.004%	
	50	13.560264	0.001%	
3.33	20	13.560683	0.005%	
4.07	20	13.560395	0.002%	

8 Test Equipment List

Description	Manufacturer	Model Number	Serial Number	Characteristics	Calibration Date	Calibration Due Date
Test Receiver	Rohde & Schwarz	ESCI7	100837	9KHz~7GHz	Mar. 14, 2019	1 year
Antenna	Schwarzbeck	VULB9162	9162-010	30MHz~7GHz	Mar. 23, 2019	1 year
Spectrum Analyzer	Rohde & Schwarz	FSU26	200409/026	20Hz~26.5GHz	Mar. 14, 2019	1 year
Spectrum Analyzer	Keysight	N9020A	MY54200831	20Hz~26.5GHz	Apr. 24, 2019	1 year
Spectrum Analyzer	Rohde & Schwarz	FSV40	101003	10Hz~40GHz	Apr. 24, 2019	1 year
Horn Antenna	Schwarzbeck	BBHA9170	9170-372	15GHz~40GHz	Mar. 23, 2019	1 year
Pre-Amplifier	EMCI	EMC 184045	980102	18GHz~40GHz	Apr. 24, 2019	1 year
Power Sensor	DARE	RPR3006W	15I00041SNO64	100MHz~6GHz	Mar. 14, 2019	1 year
Communication Tester	Rohde & Schwarz	CMW500	149004	70MHz~6GHz	Mar. 14, 2019	1 year
Horn Antenna	COM-Power	AH-118	071078	500MHz~18GHz	Mar. 23, 2019	1 year
Pre-Amplifier	HP	HP 8449B	3008A00964	1GHz~26.5GHz	Mar. 14, 2019	1 year
Pre-Amplifier	HP	HP 8447D	1145A00203	100KHz~1.3GHz	Mar. 14, 2019	1 year
Loop Antenna	Schwarzbeck	FMZB 1513	1513-272	9KHz~30MHz	Apr. 24, 2019	1 year
Temperature & Humidity Chamber	REMAFEE	SYHR225L	N/A	-40~150℃	Apr. 24, 2019	1 year
DC Source	MY	MY8811	N/A	0~30V	N/A	N/A
Temporary antenna connector	TESCOM	SS402	N/A	9KHz~25GHz	N/A	N/A
Power Meter	Anritsu	ML2495A	1139001	100k-65GHz	Apr. 24, 2019	1 year
Power Sensor	Anritsu	MA2411B	100345	300M-40GHz	Apr. 24, 2019	1 year
Test Receiver	Rohde & Schwarz	ESCI	101152	9KHz-3GHz	Mar. 14, 2019	1 year
L.I.S.N	Rohde & Schwarz	ENV 216	101317	9KHz-30MHz	Mar. 14, 2019	1 Year
RF Switching Unit	Compliance Direction Systems Inc.	RSU-M2	38311	9KHz-3GHz	Mar.14, 2019	1 Year
Test Software	EZ	EZ_EMC	N/A	N/A	N/A	N/A

---End---