

FCC RADIO TEST REPORT

Applicant..... : Miura Systems Ltd

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High Wycombe, HP12 3YZ, United Kingdom

Manufacturer..... : Miura Systems Ltd

Address..... : Unit 3, Cliveden Office Village, Lancaster Road, Cressex Industrial Estate,
High Wycombe, HP12 3YZ, United Kingdom

Factory..... : Jabil Vietnam

Address..... : Lot I-8 SaiGon Hitech Park, Long Thanh My ward, Thu Duc city, Ho Chi Minh
city, Vietnam

Product Name..... : Mobile Payment Terminal Device

Brand Name..... : Miura Systems Ltd

Model No. : M010 V3

FCC ID..... : 2AO4FM010-4

Measurement Standard..... : 47 CFR FCC Part 15, Subpart C (Section 15.247)

Receipt Date of Samples..... : February 27, 2024

Date of Tested..... : February 27, 2024 to April 09, 2024

Date of Report..... : May 13, 2024

This report shows that above equipment is technically compliant with the requirements of the standards above. All test results in this report apply only to the tested sample(s). Without prior written approval of Dongguan Nore Testing Center Co., Ltd, this report shall not be reproduced except in full.



Prepared by

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Approved by

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1. Summary of Test Result

FCC Rules	Description of Test	Result	Remarks
§15.247(a)(1)	Channel Separation test	PASS	---
§15.247(a)(1)	20dB Bandwidth	PASS	---
§15.247(a)(1)(iii)	Hopping Channel Number	PASS	---
§15.247(a)(1)(iii)	Time of Occupancy (Dwell Time)	PASS	---
§15.247(b)	Max Peak output Power test	PASS	---
§15.247(d)	Band edge test	PASS	---
§15.207 (a)	AC Power Conducted Emission	PASS	---
§15.247(d), §15.209, §15.205	Radiated Emission	PASS	---
§15.203	Antenna Requirement	PASS	---
§15.247(d)	Conducted Spurious Emission	PASS	---

2. General Description of EUT

Product Information	
Product Name:	Mobile Payment Terminal Device
Main Model Name:	M010 V3
Additional Model Name:	N/A
Model Difference:	N/A
S/N:	051-056936, 051-056930
Brand Name:	Miura Systems Ltd
Hardware Version:	M010-TEST506-V3-4
Software Version:	M000-TESTOS-V9-10b
Firmware Version:	M000-MPI-Vx-yy
Rating:	USB charging input: 5Vdc; Internal li-ion Battery: 3.7Vdc 800mAh
Typical arrangement:	Table-top
I/O Port:	Refer to user manual
Accessories Information	
Adapter:	N/A
Cable:	USB Cable: 1.0m shielded, detachable
Other:	N/A
Additional Information	
Note:	N/A
Remark:	All the information above are provided by the manufacturer. More detailed feature of the EUT please refers to the user manual.

Technical Specification	
Bluetooth Version:	V4.2
Frequency Range:	2402-2480MHz
Modulation Type:	GFSK, $\pi/4$ -DQPSK, 8DPSK
Number of Channel:	79 (refer to following channel list for details)
Channel Space:	1MHz
Antenna Type:	Chip Antenna
Antenna Gain:	3.50 dBi
Remark:	The manufacturer declared that the product does not support BLE feature.

Channel List							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
0	2402	20	2422	40	2442	60	2462
1	2403	21	2423	41	2443	61	2463
2	2404	22	2424	42	2444	62	2464
3	2405	23	2425	43	2445	63	2465
4	2406	24	2426	44	2446	64	2466
5	2407	25	2427	45	2447	65	2467
6	2408	26	2428	46	2448	66	2468
7	2409	27	2429	47	2449	67	2469
8	2410	28	2430	48	2450	68	2470
9	2411	29	2431	49	2451	69	2471
10	2412	30	2432	50	2452	70	2472
11	2413	31	2433	51	2453	71	2473
12	2414	32	2434	52	2454	72	2474
13	2415	33	2435	53	2455	73	2475
14	2416	34	2436	54	2456	74	2476
15	2417	35	2437	55	2457	75	2477
16	2418	36	2438	56	2458	76	2478
17	2419	37	2439	57	2459	77	2479
18	2420	38	2440	58	2460	78	2480
19	2421	39	2441	59	2461	---	---

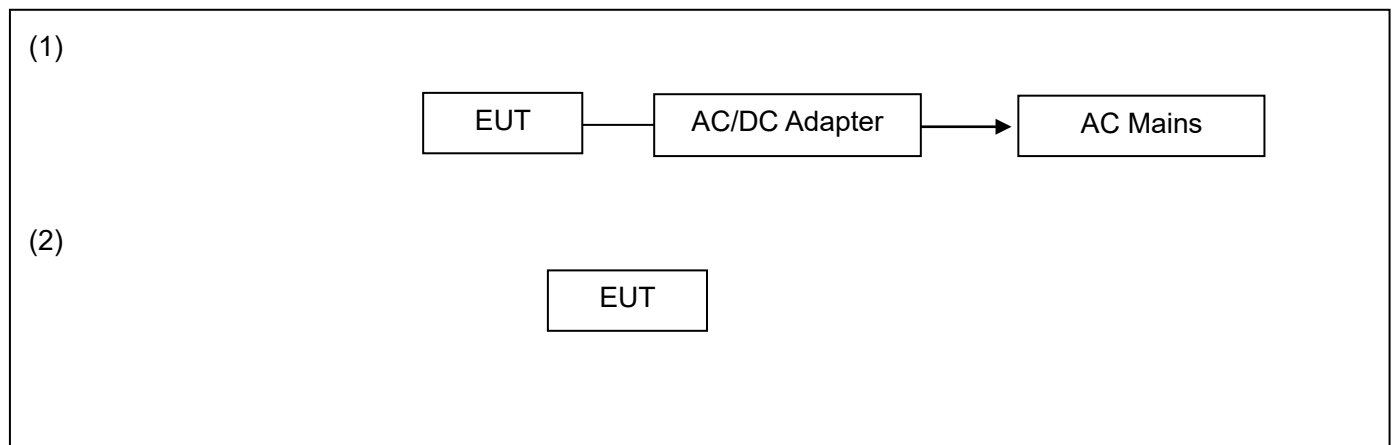
3. Test Channels and Modes Detail

No.	Mode	Channel	Frequency (MHz)	Modulation
1	TX	Hopping	2402-2480	GFSK / $\pi/4$ -DQPSK / 8DPSK
2	TX	Low	2402	GFSK / $\pi/4$ -DQPSK / 8DPSK
3	TX	Mid	2441	GFSK / $\pi/4$ -DQPSK / 8DPSK
4	TX	High	2480	GFSK / $\pi/4$ -DQPSK / 8DPSK
5	TX (Worst case) + NFC	---	---	---

Remark: The worst case of TX is “TX Low with 8DPSK modulation” according to the measured results.

Note: TX mode means that the EUT was programmed to be in continuously transmitting mode.

4. Configuration of EUT



5. Modification of EUT

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

6. Description of Support Device

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.	Equipment	Brand	M/N	S/N	Cable Specification	Remarks
1.	Adapter	HUAWEI	HW-050200C01	--	--	Provided by the lab

Software	Mode	Power Setting
Test Firmware Programmed	GFSK, Π4/-DQPSK, 8DPSK	Default

7. Test Facility and Location

Test Site	:	Dongguan Nore Testing Center Co., Ltd. (Dongguan NTC Co., Ltd.)
Accreditations and Authorizations	:	The Laboratory has been assessed and proved to be in compliance with CNAS/CL01 Listed by CNAS, August 13, 2018 The Certificate Registration Number is L5795. The Certificate is valid until August 13, 2024 The Laboratory has been assessed and proved to be in compliance with ISO17025 Listed by A2LA, November 01, 2017 The Certificate Registration Number is 4429.01 The Certificate is valid until December 31, 2025 Listed by FCC, November 06, 2017 Test Firm Registration Number: 907417 Listed by Industry Canada, June 08, 2017 The Certificate Registration Number. Is 46405-9743A The CAB identifier number: CN0015
Test Site Location	:	Building D, Gaosheng Science and Technology Park, Hongtu Road, Nancheng District, Dongguan City, Guangdong Province, China

8. Applicable Standards and References

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

Test Standards:

47 CFR Part 15, Subpart C, 15.247

ANSI C63.10-2013

References Test Guidance:

DTS KDB 558074 D01 15.247 Meas Guidance v05r02

Remark:

The EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.

9. Deviations and Abnormalities from Standard Conditions

No additions, deviations and exclusions from the standard.

10. Test Conditions

No.	Test Item	Test Mode	Test Voltage	Tested by	Remarks
1.	Channel Separation test	1	DC 3.7V	Sean Yuan	See note ¹
2.	20dB Bandwidth	2-4	DC 3.7V	Sean Yuan	See note ¹
3.	Hopping Channel Number	1	DC 3.7V	Sean Yuan	See note ¹
4.	Time of Occupancy (Dwell Time)	1	DC 3.7V	Sean Yuan	See note ¹
5.	Max Peak output Power test	2-4	DC 3.7V	Sean Yuan	See note ¹
6.	Band edge test	1-4	DC 3.7V	Sean Yuan	See note ¹
7.	AC Power Conducted Emission	1-5	AC 120V 60Hz	Sean Yuan	See note ¹
8.	Radiated Emission	1-5	AC 120V 60Hz DC 3.7V	Sean Yuan	See note ¹
9.	Antenna Requirement	---	---	---	---
10.	Conducted Spurious Emission	1-4	DC 3.7V	Sean Yuan	See note ¹

Note:

1. The testing climatic conditions for temperature, humidity, and atmospheric pressure are within: 15~35℃, 30~70%, 86~106kPa
2. AC 120V 60Hz was the input voltage of Adapter; DC 3.7V was the voltage of internal li-ion battery.
3. As the EUT can be operated multiple positions, all X,Y,Z axis were considered during the test and only the worst case Z was recorded.
4. For AC Power Conducted Emission and Radiated Emission tests, all test modes are considered and tested, only the worst case was recorded in the report.
5. Sample 051-056936 used for conducted measurement and 051-056930 used for Radiated Emission and AC Power Conducted Emission test.

11. Measurement Uncertainty

No.	Test Item	Frequency	Uncertainty	Remarks
1.	Conducted Emission	150KHz ~ 30MHz	±2.52 dB	---
2.	Radiated Emission	9kHz ~ 30MHz	±5.66 dB	
		30MHz ~ 1GHz	±5.66 dB	---
		1GHz ~ 18GHz	±5.19 dB	---
		18GHz ~ 40GHz	±5.19 dB	
3.	Conducted Spurious Emissions	10Hz ~ 40GHz	±0.78 dB	---
4.	RF Output Power	10Hz ~ 40GHz	±1.18 dB	
5.	Power Spectral Density	10Hz ~ 40GHz	±1.06 dB	
6.	Occupied Channel Bandwidth	---	±0.72%	---

Note:

1. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.
2. The measurement uncertainty levels above are estimated and calculated according to CISPR 16-4-2.
3. The conformity assessment statement in this report is based solely on the test results, measurement uncertainty is excluded.

12. Sample Calculations

Conducted Emission						
Freq. (MHz)	Reading Level (dBUV)	Correct Factor (dB)	Measurement (dBUV)	Limit (dBUV)	Over (dB)	Detector
0.1980	33.04	10.56	43.60	63.69	-20.09	QP
Where, Freq. = Emission frequency in MHz Reading Level = Spectrum Analyzer/Receiver Reading Corrector Factor = Insertion loss of LISN + Cable Loss + RF Switching Unit attenuation Measurement = Reading + Corrector Factor Limit = Limit stated in standard Margin = Measurement - Limit Detector = Reading for Quasi-Peak / Average / Peak						

Radiated Spurious Emissions and Restricted Bands						
Freq. (MHz)	Reading Level (dBUV)	Correct Factor (dB/m)	Measurement (dBUV/m)	Limit (dBUV/m)	Over (dB)	Detector
30.0000	29.39	-10.69	18.70	40.00	-21.30	QP
Where, Freq. = Emission frequency in MHz Reading Level = Spectrum Analyzer/Receiver Reading Corrector Factor = Antenna Factor + Cable Loss - Pre-amplifier Measurement = Reading + Corrector Factor Limit = Limit stated in standard Over = Margin, which calculated by Measurement - Limit Detector = Reading for Quasi-Peak / Average / Peak						

Note: For all conducted test items, the spectrum analyzer offset or transducer is derived from RF cable loss and attenuator factor. The offset or transducer is equal to the RF cable loss plus attenuator factor.

13. Test Items and Results

13.1 Conducted Emissions Measurement

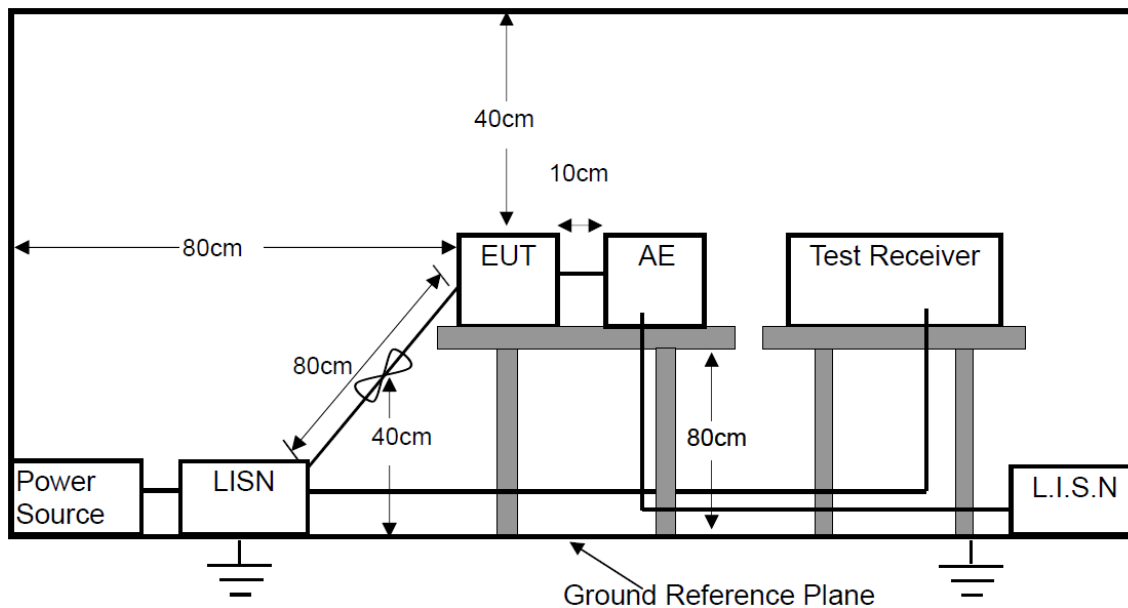
LIMITS

According to the requirements of FCC PART 15.207, the limits are as follows:

Frequency (MHz)	Quasi-peak	Average
0.15 to 0.5	66 to 56	56 to 46
0.5 to 5	56	46
5 to 30	60	50

- Note:
1. If the limits for the average detector are met when using the quasi-peak detector, then the limits for the measurements with the average detector are considered to be met.
 2. The lower limit shall apply at the transition frequencies.
 3. The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5MHz.

BLOCK DIAGRAM OF TEST SETUP



TEST PROCEDURES

- a. The EUT was placed on a wooden table 0.8m height from the metal ground plan and 0.4m from the conducting wall of the shielding room and it was kept at 0.8m from any other grounded conducting surface.
- b. All I/O cables and support devices were positioned as per ANSI C63.10.
- c. Connect mains power port of the EUT to a line impedance stabilization network (LISN).
- d. Connect all support devices to the other LISN and AAN, if needed.
- e. Scan the frequency range from 150KHz to 30MHz at both sides of AC line for maximum conducted interference checking and record the test data.

TEST RESULTS

PASS

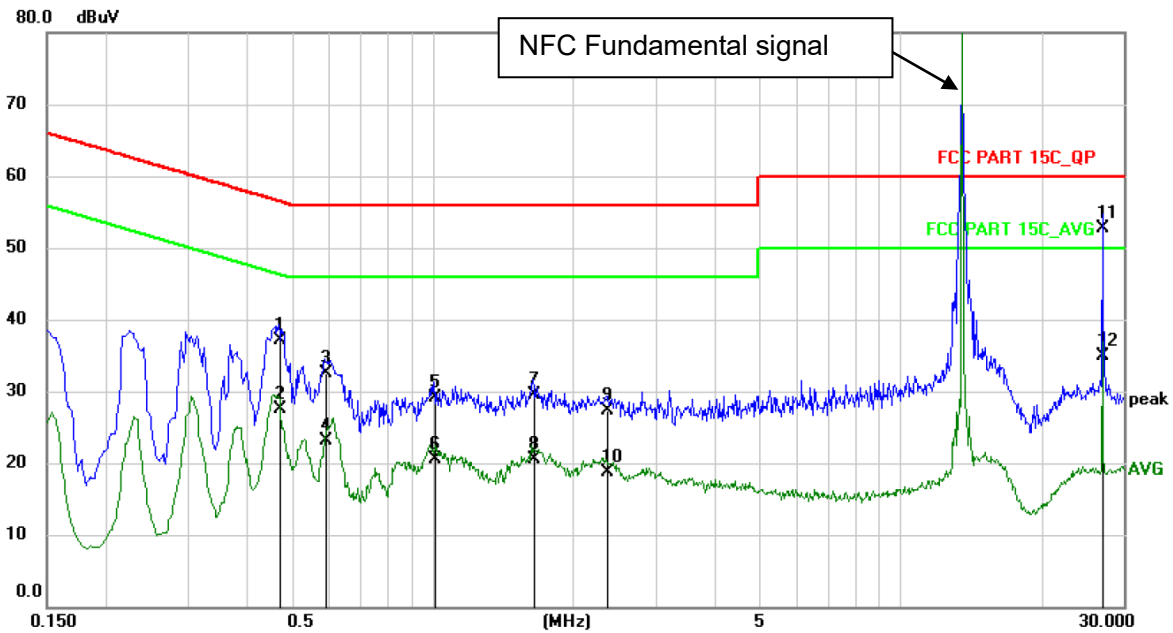
Please refer to the following pages of the worst case.

M/N: M010 V3	Testing Voltage: AC 120V 60Hz
Phase: L1	Detector: QP & AVG
Test Mode: 5	

Conducted Emission Measurement

Date: 2024/4/7

Time: 10:21:17



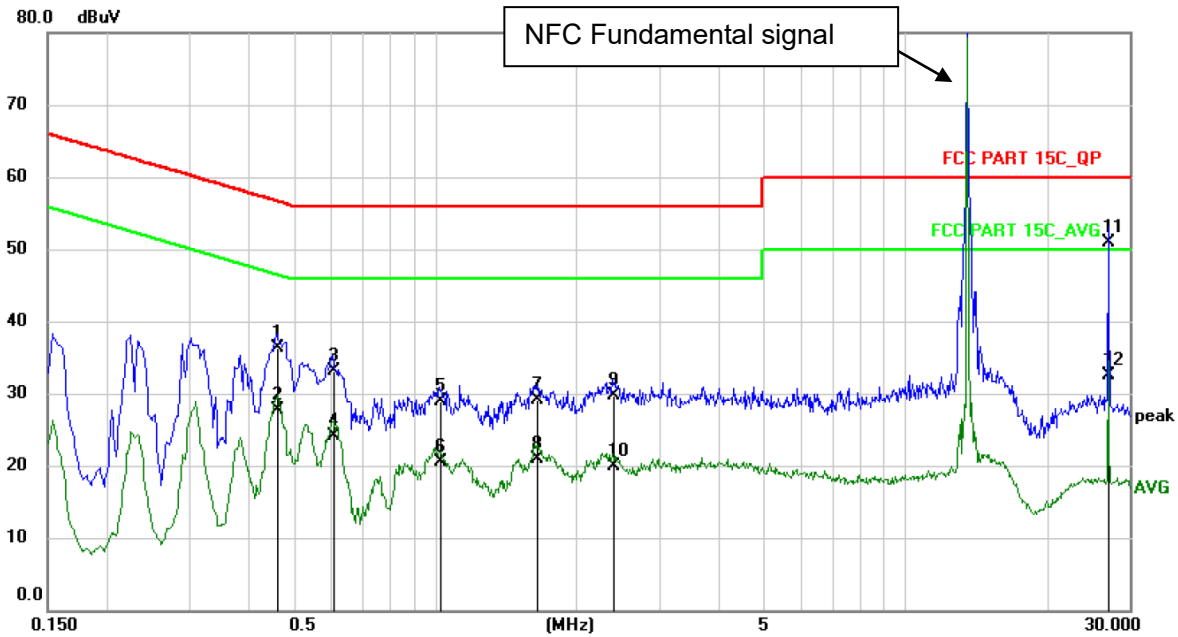
No. Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector	Comment
	MHz	dBuV	dB	dBuV	dBuV	dB		
1	0.4700	27.16	10.04	37.20	56.51	-19.31	QP	
2	0.4700	17.46	10.04	27.50	46.51	-19.01	AVG	
3	0.5899	22.48	10.02	32.50	56.00	-23.50	QP	
4	0.5899	13.08	10.02	23.10	46.00	-22.90	AVG	
5	1.0100	19.20	10.00	29.20	56.00	-26.80	QP	
6	1.0100	10.50	10.00	20.50	46.00	-25.50	AVG	
7	1.6379	19.59	10.01	29.60	56.00	-26.40	QP	
8	1.6379	10.49	10.01	20.50	46.00	-25.50	AVG	
9	2.3500	17.28	10.02	27.30	56.00	-28.70	QP	
10	2.3500	8.68	10.02	18.70	46.00	-27.30	AVG	
11 *	27.1179	41.88	10.82	52.70	60.00	-7.30	QP	
12	27.1179	24.08	10.82	34.90	50.00	-15.10	AVG	

M/N: M010 V3	Testing Voltage: AC 120V 60Hz
Phase: N	Detector: QP & AVG
Test Mode: 5	

Conducted Emission Measurement

Date: 2024/4/7

Time: 10:27:49



No. Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over		
	MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	0.4620	26.30	10.00	36.30	56.66	-20.36	QP	
2	0.4620	17.70	10.00	27.70	46.66	-18.96	AVG	
3	0.6059	23.21	9.99	33.20	56.00	-22.80	QP	
4	0.6059	14.21	9.99	24.20	46.00	-21.80	AVG	
5	1.0220	18.94	9.96	28.90	56.00	-27.10	QP	
6	1.0220	10.54	9.96	20.50	46.00	-25.50	AVG	
7	1.6419	19.13	9.97	29.10	56.00	-26.90	QP	
8	1.6419	11.03	9.97	21.00	46.00	-25.00	AVG	
9	2.3940	19.83	9.97	29.80	56.00	-26.20	QP	
10	2.3940	9.93	9.97	19.90	46.00	-26.10	AVG	
11 *	27.1219	40.19	10.81	51.00	60.00	-9.00	QP	
12	27.1219	21.69	10.81	32.50	50.00	-17.50	AVG	

13.2 Radiated Spurious Emissions and Restricted Bands Measurement

LIMIT of Radiated Band Edges and non-restricted bands

In any 100 kHz bandwidth outside the intentional radiator frequency band, all harmonics/spurious must be at least 20 dB below the highest emission level within the authorized band. If the output power of this device was measured by spectrum analyzer, the attenuation under this paragraph shall be 30 dB instead of 20 dB.

LIMIT of Restricted bands

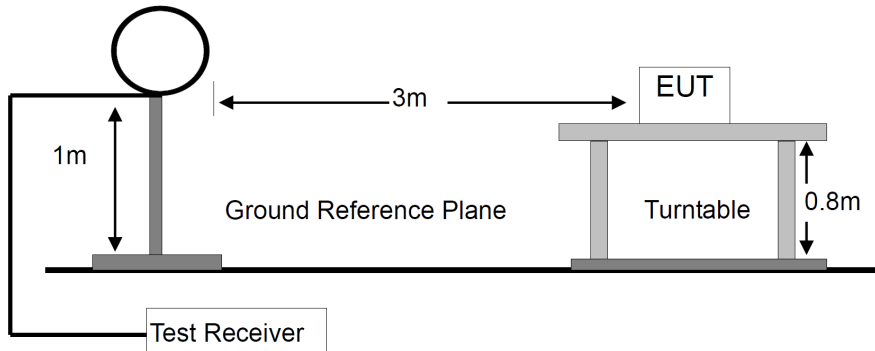
In addition, radiated emissions which fall in the restricted bands must also comply with the limits as below:

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

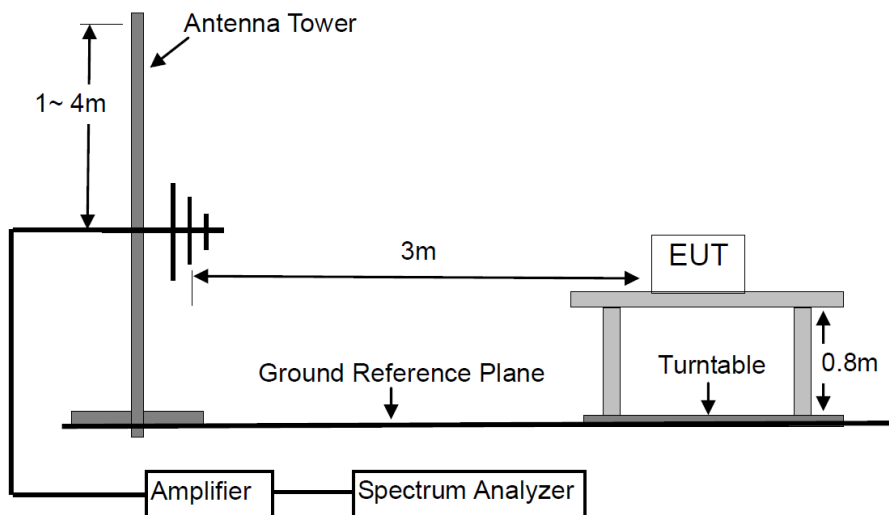
- Remark:
- (1) Emission level (dB) μV = 20 log Emission level $\mu\text{V/m}$
 - (2) The smaller limit shall apply at the cross point between two frequency bands.
 - (3) As shown in 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field 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.
 - (5) §15.247(d) specifies that emissions which fall in the restricted bands, as defined in §15.205 comply with radiated emission limits specified in §15.209.

BLOCK DIAGRAM OF TEST SETUP

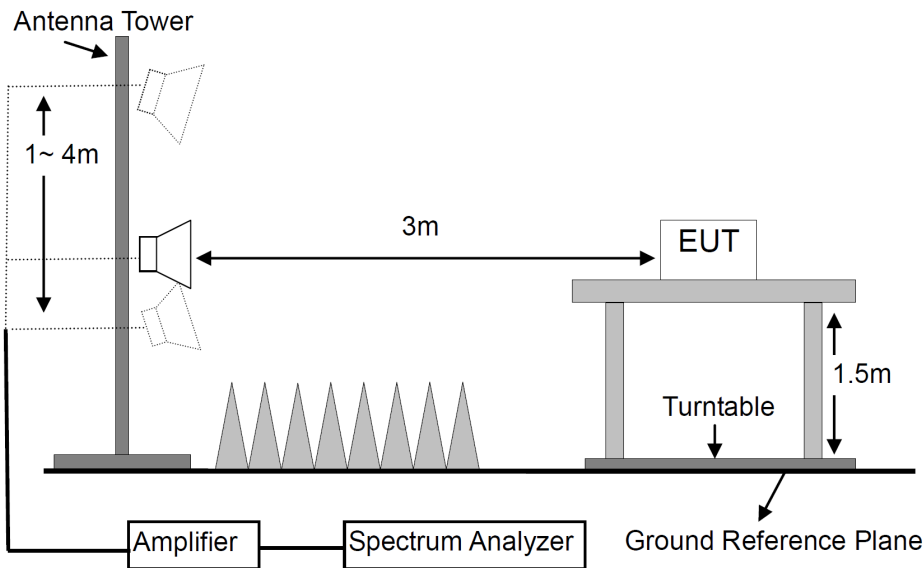
For Radiated Emission below 30MHz



For Radiated Emission 30-1000MHz



For Radiated Emission Above 1000MHz.



TEST PROCEDURES

- Below 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.
- 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.
- The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- 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.
- 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.
- g. Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis and packet type.

The worst case was found when the EUT was positioned on Z axis for radiated emission.

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

Frequency Band (MHz)	Detector	Resolution Bandwidth	Video Bandwidth
0.009~0.15	QP & AVG	200 Hz	1 kHz
0.15~30	QP & AVG	10 kHz	30 kHz
30 to 1000	QP	120 kHz	300 kHz
Above 1000	Peak	1 MHz	3 MHz
	Average	1 MHz	10 Hz

TEST RESULTS

PASS

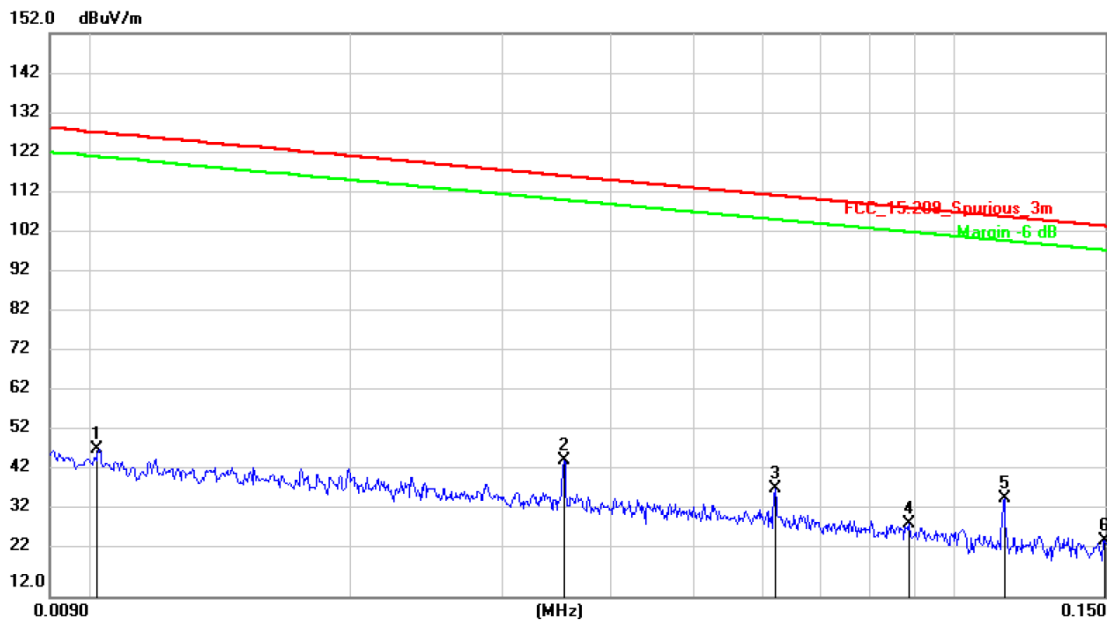
Please refer to the following pages of the worst case.

M/N: M010 V3	Testing Voltage: AC 120V 60Hz
Polarization: Horizontal	Detector: QP & AVG
Test Mode: 5	Distance: 3m

Radiated Emission Measurement

Date: 2024/3/18

Time: 16:41:49



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over		
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	Comment
1		0.0102	28.97	19.52	48.49	127.24	-78.75	peak	
2		0.0354	25.25	20.54	45.79	116.50	-70.71	peak	
3		0.0621	18.07	20.54	38.61	111.64	-73.03	peak	
4		0.0888	9.46	20.54	30.00	108.55	-78.55	peak	
5	*	0.1144	15.95	20.53	36.48	106.36	-69.88	peak	
6		0.1495	5.44	20.52	25.96	104.05	-78.09	peak	

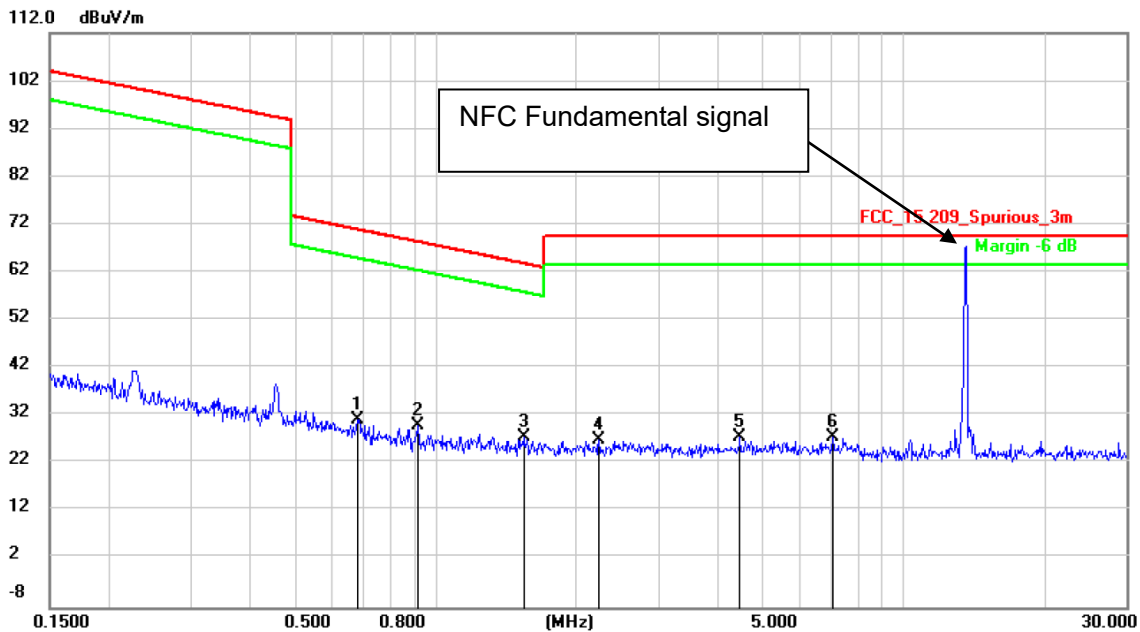
Note: The measured peak emission levels are lower than the allowable Quasi-Peak and AVG limits, thus, the Quasi-Peak and AVG emission levels are considered compliance with the limits.

M/N: M010 V3	Testing Voltage: AC 120V 60Hz
Polarization: Horizontal	Detector: QP & AVG
Test Mode: 5	Distance: 3m

Radiated Emission Measurement

Date: 2024/3/18

Time: 16:48:14



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over		
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	Comment
1		0.6824	10.88	20.41	31.29	70.92	-39.63	peak	
2		0.9184	9.62	20.40	30.02	68.34	-38.32	peak	
3	*	1.5436	7.17	20.40	27.57	63.83	-36.26	peak	
4		2.2367	6.69	20.40	27.09	69.50	-42.41	peak	
5		4.4775	7.03	20.45	27.48	69.50	-42.02	peak	
6		7.0622	7.09	20.49	27.58	69.50	-41.92	peak	

Note: The measured peak emission levels are lower than the allowable Quasi-Peak and AVG limits, thus, the Quasi-Peak and AVG emission levels are considered compliance with the limits.

M/N: M010 V3

Testing Voltage: AC 120V 60Hz

Polarization: Vertical

Detector: QP & AVG

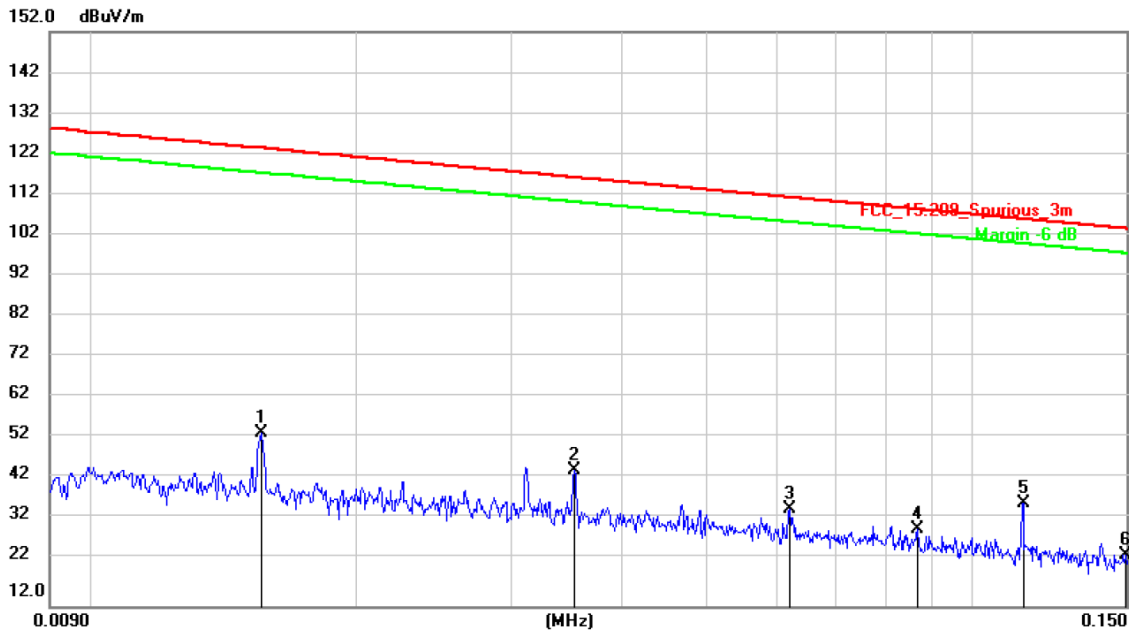
Test Mode: 5

Distance: 3m

Radiated Emission Measurement

Date: 2024/3/18

Time: 16:54:45



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over		
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	Comment
1		0.0156	34.15	20.05	54.20	123.57	-69.37	peak	
2		0.0354	24.59	20.54	45.13	116.50	-71.37	peak	
3		0.0621	15.18	20.53	35.71	111.64	-75.93	peak	
4		0.0868	10.12	20.54	30.66	108.75	-78.09	peak	
5	*	0.1144	16.61	20.53	37.14	106.36	-69.22	peak	
6		0.1495	4.00	20.52	24.52	104.05	-79.53	peak	

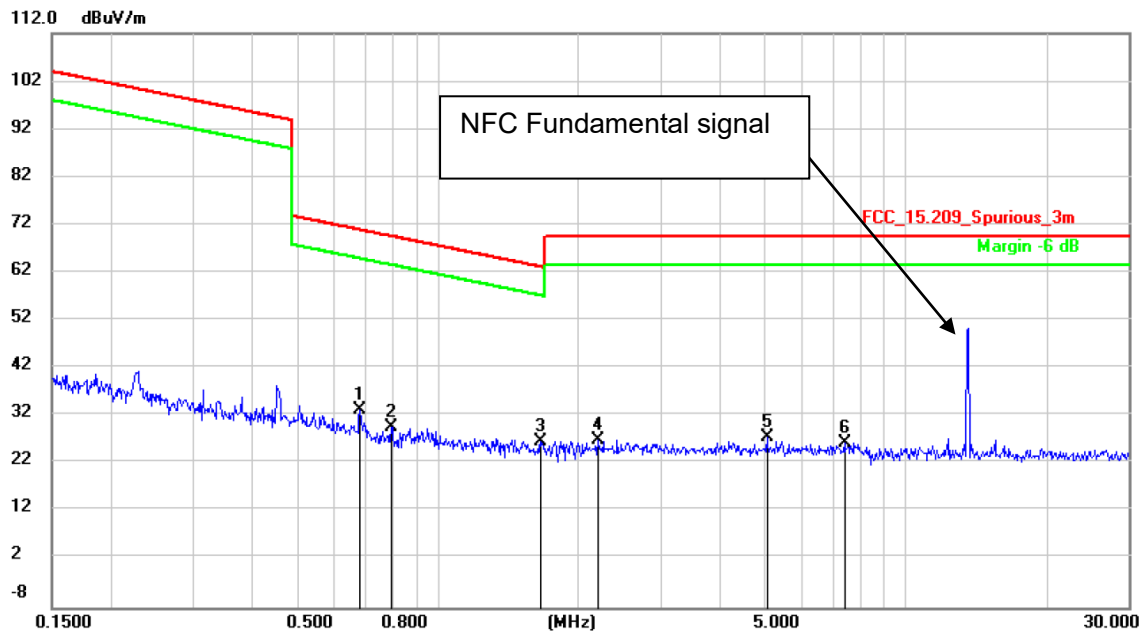
Note: The measured peak emission levels are lower than the allowable Quasi-Peak and AVG limits, thus, the Quasi-Peak and AVG emission levels are considered compliance with the limits.

M/N: M010 V3	Testing Voltage: AC 120V 60Hz
Polarization: Vertical	Detector: QP & AVG
Test Mode: 5	Distance: 3m

Radiated Emission Measurement

Date: 2024/3/18

Time: 17:00:33



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over		
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	Comment
1		0.6826	12.71	20.43	33.14	70.92	-37.78	peak	
2		0.7960	9.35	20.41	29.76	69.59	-39.83	peak	
3	*	1.6624	6.36	20.40	26.76	63.19	-36.43	peak	
4		2.2014	6.44	20.40	26.84	69.50	-42.66	peak	
5		5.0579	7.01	20.44	27.45	69.50	-42.05	peak	
6		7.4071	5.81	20.51	26.32	69.50	-43.18	peak	

Note: The measured peak emission levels are lower than the allowable Quasi-Peak and AVG limits, thus, the Quasi-Peak and AVG emission levels are considered compliance with the limits.