TEST REPORT

Report No.:	TW2203329-05E
File Reference No.:	2022-05-13
Applicant:	Shenzhen Jingwah Information Technology Co., Ltd.
Product:	Tablet PC
Model No.:	K13
Trademark:	TechPad
Test Standards:	FCC Part 15.225
Test Result:	It is herewith confirmed and found to comply with the requirements set up by ANSI C63.4&FCC Part 15.225, for the evaluation of electromagnetic compatibility

Approved By:

Terry Tang

Manager

Dated: May 13, 2022

Results appearing herein relate only to the sample tested

The technical reports is issued errors and omissions exempt and is subject to withdrawal at

SHENZHEN TIMEWAY TESTING LABORATORIES

Zone C, 1st Floor, Block B, Jun Xiang Da Building, Zhongshan Park Road West, Tong Le Village, Nanshan District, Shenzhen, China

Tel (755) 83448688, Fax (755) 83442996, E-Mail:info@timeway-lab.com

Special Statement:

The testing quality ability of our laboratory meet with "Quality Law of People's Republic of China" Clause 19.

The testing quality system of our laboratory meets with ISO/IEC-17025 requirements, which is approved by CNAS. This approval result is accepted by MRA of APLAC.

Our test facility is recognized, certified, or accredited by the following organizations:

CNAS-LAB Code: L2292

The EMC Laboratory has been assessed and in compliance with CNAS-CL01 accreditation criteria for testing Laboratories (identical to ISO/IEC 17025:2005 General Requirements) for the Competence of testing Laboratories.

FCC-Registration No.: 744189

The EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications commission. The acceptance letter from the FCC is maintained in our files. Registration No.: 744189.

Industry Canada (IC) —Registration No.:5205A

The EMC Laboratory has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 5205A.

A2LA (Certification Number:5013.01)

The EMC Laboratory has been accredited by the American Association for Laboratory Accreditation (A2LA). Certification Number:5013.01

Test Report Conclusion

Content

1.0 General Details

1.1 Test Lab Details

Name : SHENZHEN TIMEWAY TESTING LABORATORIES.

Address: Zone C, 1st Floor, Block B, Jun Xiang Da Building, Zhongshan Park Road West, Tong Le Village, Nanshan District, Shenzhen, China

Telephone: +86 755 83448688

Fax: +86 755 83442996

Site on File with the Federal Communications Commission – United Sates

Registration Number: 744189

For 3m Anechoic Chamber

1.2 Applicant Details

Applicant: Shenzhen Jingwah Information Technology Co., Ltd.

Address: 6F, Bldg.4, Jinghua Square, No. 168, Zhenzhong Rd., Fuqiang Community, Huaqiangbei, Futian District, Shenzhen

Telephone: --

Fax: --

1.3 Description of EUT

Product:	Tablet PC
Manufacturer:	Shenzhen Jingwah Information Technology Co., Ltd.
Address:	6F, Bldg.4, Jinghua Square, No. 168, Zhenzhong Rd., Fuqiang Community, Huaqiangbei, Futian District, Shenzhen
Trademark:	TechPad
Model Number:	K13
Additional Model Name	N/A
Additional Trademark	N/A
Hardware Version:	TH1330-RK3566-V3.1
Software Version:	Android 11
Serial No.:	JK132203000001~UP
Rating:	DC5.0V, 3A
Battery:	DC3.7V, 10000mAh Li-ion battery
Operation Frequency:	13.56MHz
Modulation Type:	ASK
Antenna Designation	Integral Antenna with Gain 0dBi

1.4 Submitted Sample

2 Samples

1.5 Test Duration

2022-03-23 to 2022-05-13

1.6 Test Uncertainty

Conducted Emissions Uncertainty =3.6dB

Radiated Emissions below 9kHz-30MHz Uncertainty =4.3dB

Radiated Emissions below 30MHz-1GHz Uncertainty =4.7dB

Occupied Channel Bandwidth Uncertainty = 2%

1.7 Test Engineer

The sample tested by Andy -Xi

Print Name: Andy Xing

2.0 Test Equipment					
Instrument Type	Manufacturer	Model	Serial No.	Date of Cal.	Due Date
ESPI Test Receiver	R&S	ESPI 3	100379	2021-06-18	2022-06-17
TWO Line-V-NETW	R&S	EZH3-Z5	100294	2021-06-18	2022-06-17
TWO Line-V-NETW	R&S	EZH3-Z5	100253	2021-06-18	2022-06-17
Impuls-Begrenzer	R&S	ESH3-Z2	100281	2021-06-18	2022-06-17
Loop Antenna	EMCO	6507	00078608	2021-06-18	2022-06-17
Spectrum	R&S	FSIQ26	100292	2021-06-18	2022-06-17
Horn Antenna	A-INFO	LB-180400-KF	J211060660	2021-06-18	2022-06-17
Horn Antenna	R&S	BBHA 9120D	9120D-631	2021-07-02	2024-07-01
Power meter	Anritsu	ML2487A	6K00003613	2021-06-18	2022-06-17
Power sensor	Anritsu	MA2491A	32263	2021-06-18	2022-06-17
Bilog Antenna	Schwarebeck	VULB9163	9163/340	2021-07-02	2024-07-01
9*6*6 Anechoic	--	--	N/A	2021-07-02	2024-07-01
EMI Test Receiver	RS	ESVB	826156/011	2021-06-18	2022-06-17
EMI Test Receiver	RS	ESH3	860904/006	2021-06-18	2022-06-17
Spectrum	HP/Agilent	ESA-L1500A	US37451154	2021-06-18	2022-06-17
Spectrum	HP/Agilent	E4407B	MY50441392	2021-06-18	2022-06-17
Spectrum	RS	FSP	1164.4391.38	2022-01-14	2023-01-13
RF Cable	Zhengdi	ZT26-NJ-NJ-8M/FA	--	2021-06-18	2022-06-17
RF Cable	Zhengdi	7m	--	2021-06-18	2022-06-17
RF Switch	EM	EMSW18	060391	2021-06-18	2022-06-17
Pre-Amplifier	Schwarebeck	BBV9743	#218	2021-06-18	2022-06-17
Pre-Amplifier	HP/Agilent	8449B	3008A00160	2021-06-18	2022-06-17
LISN	SCHAFFNER	NNB42	00012	2022-01-05	2023-01-04

3.0 Technical Details

3.1 Summary of test results

The EUT has been tested according to the following specifications:

Standard	Test Type	Result	Notes
FCC Part 15, Paragraph 15.203	Antenna requirements	**Pass**	Compliant
FCC Part 15, Paragraph 15.207	Conducted Emission Test	**Pass**	Compliant
FCC Part 15, Paragraph 15.209 (a) (f); FCC Part 15, Paragraph 15.225 (a)	Radiated Emissions	**Pass**	Compliant
FCC Part 15, Paragraph 15.225 (e)	Frequency Tolerance	**Pass**	Compliant
FCC Part 15, Paragraph 15.215	20dB Bandwidth Testing	**Pass**	Compliant

3.2 Test Standards

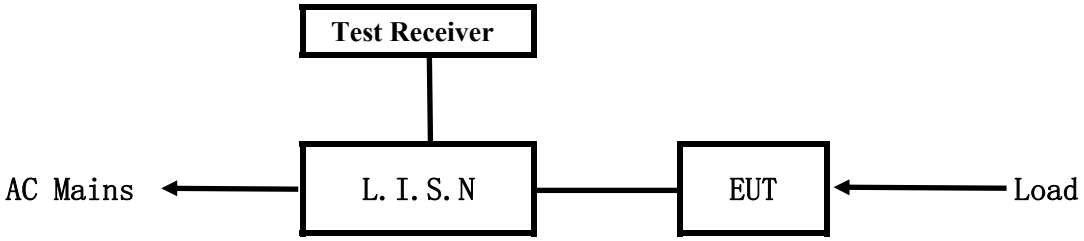
FCC Part 15 Subpart C , ANSI C63.4 :2014 and ANSI C63.10 :2013

4.0 EUT Modification

No modification by SHENZHEN TIMEWAY TESTING LABORATORIES

5. Power Line Conducted Emission Test

5.1 Schematics of the test



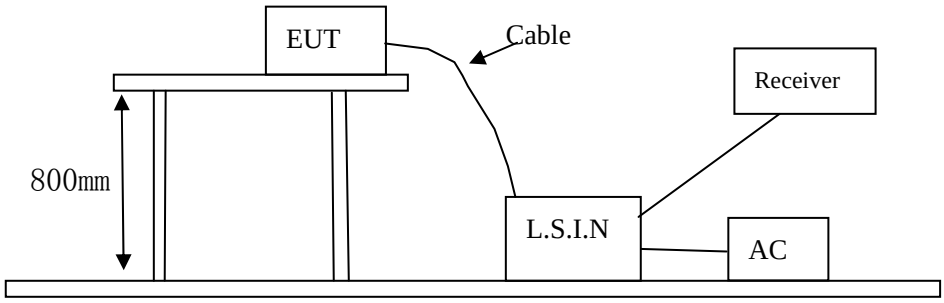
EUT: Equipment Under Test

5.2 Test Method and test Procedure

The EUT was tested according to ANSI C63.10-2013.The Frequency spectrum From 0.15MHz to 30MHz was investigated. The LISN used was 50ohm/50uH as specified by section 5.1 of ANSI C63.10 –2013.

Test Voltage: 120V~, 60Hz

Block diagram of Test setup



5.3 Configuration of The EUT

The EUT was configured according to ANSI C63.4-2014. All interface ports were connected to the appropriate peripherals. All peripherals and cables are listed below.

A. EUT

Device	Manufacturer	Model	FCC ID
Tablet PC	Shenzhen Jingwah Information Technology Co., Ltd.	K13	RBD-K13

B. Internal Device

Device	Manufacturer	Model	FCC ID/DOC
N/A			

C. Peripherals

Device	Manufacturer	Model	Rating

Power Supply	FUJIA	FJ-SW528G0505000E	Input: 100-240V~, 50/60Hz, 1.5A; Output: DC5V, 5A

5.4 EUT Operating Condition

Operating condition is according to ANSI C63.10 -2013.

A Setup the EUT and simulators as shown on follow

B Enable AF signal and confirm EUT active to normal condition

5.5 Power line conducted Emission Limit according to Paragraph 15.207

Frequency (MHz)	Limits (dB μ V)	
	Quasi-peak Level	Average Level
0.15 ～ 0.50	66.0～56.0*	56.0～46.0*
0.50 ～ 5.00	56.0	46.0
5.00 ～ 30.00	60.0	50.0

Notes: 1. *Decreasing linearly with logarithm of frequency.

2. The tighter limit shall apply at the transition frequencies

5.6 Test Results

The frequency spectrum from 0.15MHz to 30MHz was investigated. All reading are quasi-peak values with a resolution bandwidth of 9kHz. (The average detector is necessary when the Quasi-peak emission level beyond the average Limit.)

A: Conducted Emission on Live Terminal (150kHz to 30MHz)

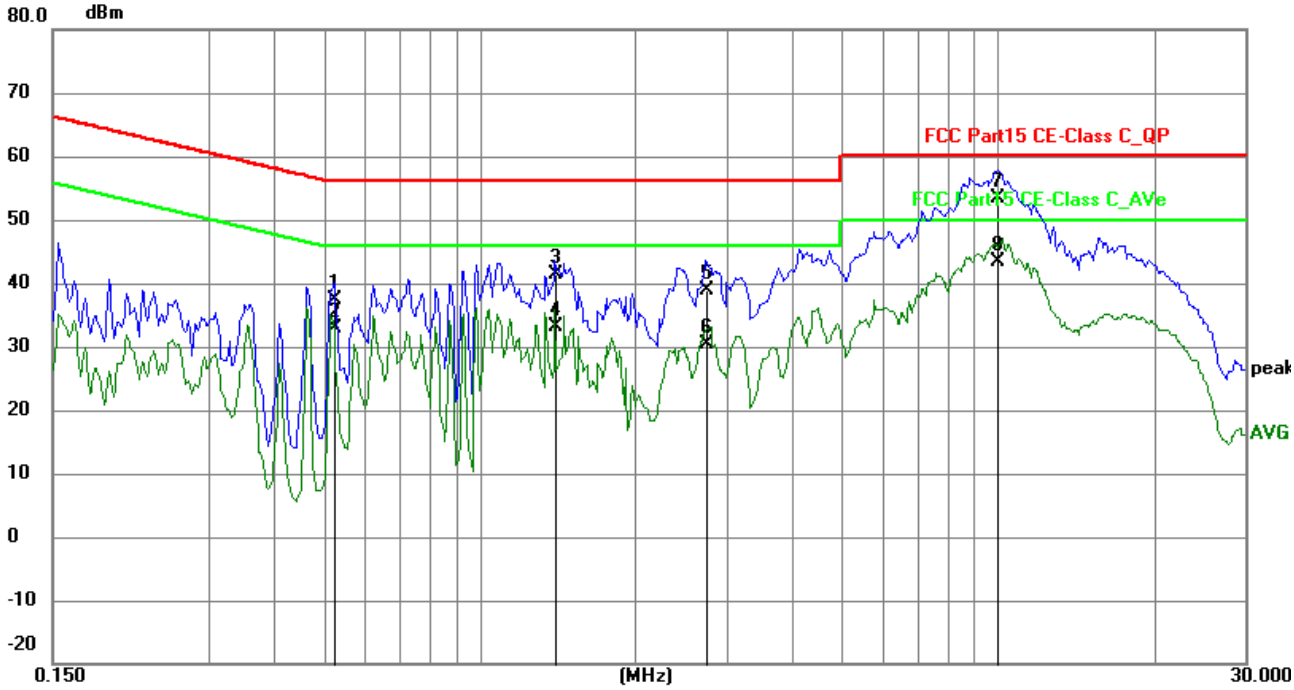
EUT Operating Environment

Temperature: 26℃ Humidity: 65%RH Atmospheric Pressure: 101 KPa

EUT set Condition: Keep Transmitting

Results: Pass

Please refer to following diagram for individual



No.	Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.5243	27.70	9.77	37.47	56.00	-18.53	QP	P
2	0.5243	23.10	9.77	32.87	46.00	-13.13	AVG	P
3	1.4019	31.57	9.79	41.36	56.00	-14.64	QP	P
4	1.4019	23.33	9.79	33.12	46.00	-12.88	AVG	P
5	2.7318	29.17	9.83	39.00	56.00	-17.00	QP	P
6	2.7318	20.54	9.83	30.37	46.00	-15.63	AVG	P
7	10.0122	43.28	10.16	53.44	60.00	-6.56	QP	P
8	10.0122	33.21	10.16	43.37	50.00	-6.63	AVG	P

B: Conducted Emission on Neutral Terminal (150kHz to 30MHz)

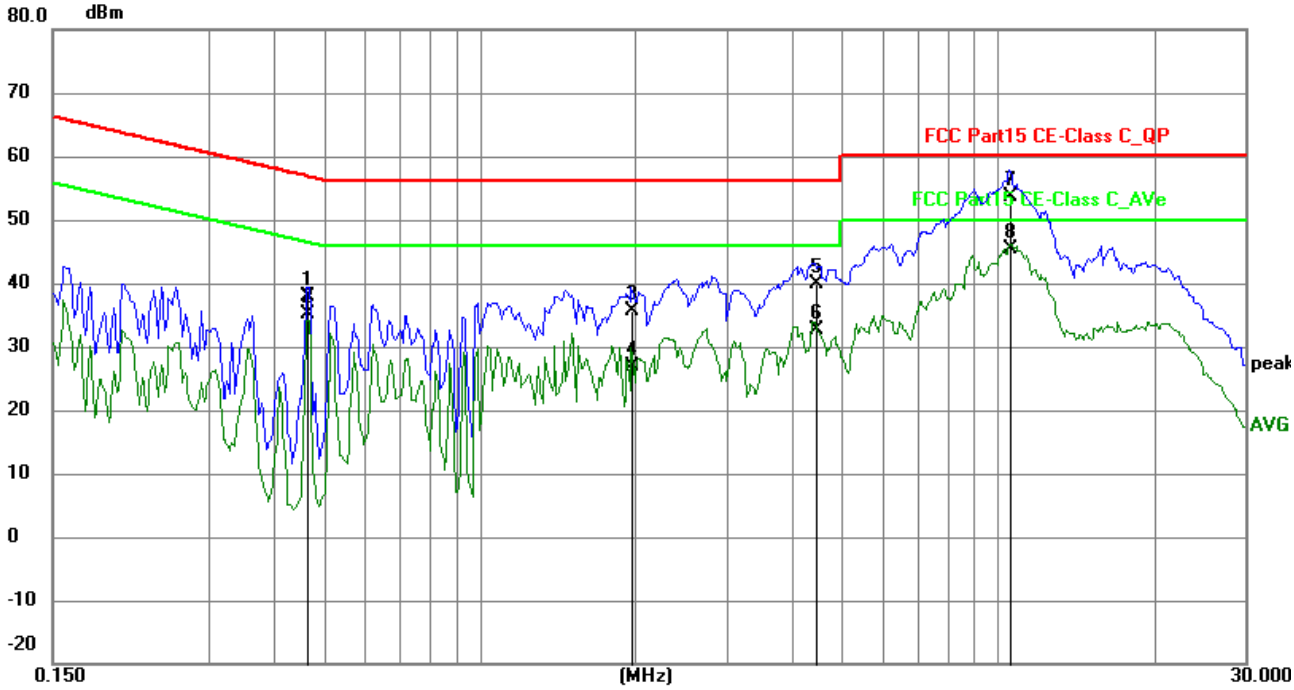
EUT Operating Environment

Temperature: 26℃ Humidity: 65%RH Atmospheric Pressure: 101 KPa

EUT set Condition: Keep Transmitting

Results: Pass

Please refer to following diagram for individual



No.	Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.4659	28.01	9.77	37.78	56.59	-18.81	QP	P
2	0.4659	25.26	9.77	35.03	46.59	-11.56	AVG	P
3	1.9635	25.94	9.80	35.74	56.00	-20.26	QP	P
4	1.9635	17.20	9.80	27.00	46.00	-19.00	AVG	P
5	4.4508	30.08	9.91	39.99	56.00	-16.01	QP	P
6	4.4508	22.62	9.91	32.53	46.00	-13.47	AVG	P
7	10.5543	43.53	10.18	53.71	60.00	-6.29	QP	P
8	10.5543	35.12	10.18	45.30	50.00	-4.70	AVG	P

6 Radiated Emission Test

6.1 Test Method and test Procedure:

(1) The EUT was tested according to ANSI C63.10-2013. The radiated test was performed at TIMEWAY EMC Laboratory. This site is on file with the FCC laboratory division, Registration No.744189

(2) The EUT, peripherals were put on the turntable which table size is 1m x 1.5 m, table high 0.8 m. All set up is according to ANSI C63.10-2013.

(3) The frequency spectrum from 9 kHz to 1 GHz was investigated. All readings from 30 MHz to 1 GHz are quasi-peak values with RBW=120 kHz/VBW=300 kHz; All readings from 9 kHz to 30 MHz are quasi-peak values with RBW=10 kHz/VBW=30 kHz. For the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz Radiated emission test in these three bands are based on measurements employing an average detector. Measurements were made at 3 meters.

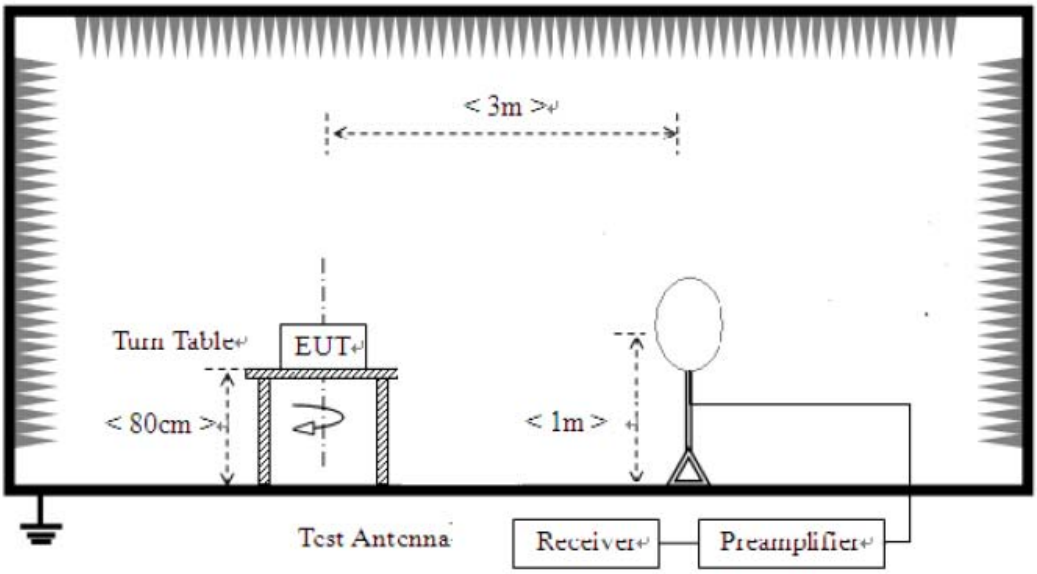
(4) The antenna high is varied from 1 m to 4 m high to find the maximum emission for each frequency.

(5) Maximizing procedure was performed on the six (6) highest emissions to ensure EUT compliance is with all installation combinations. All data was recorded in the peak detection mode. Quasi-peak readings was performed only when an emission was found to be marginal (within -4 dB of specification limit), and are distinguished with a "**QP**" in the data table.

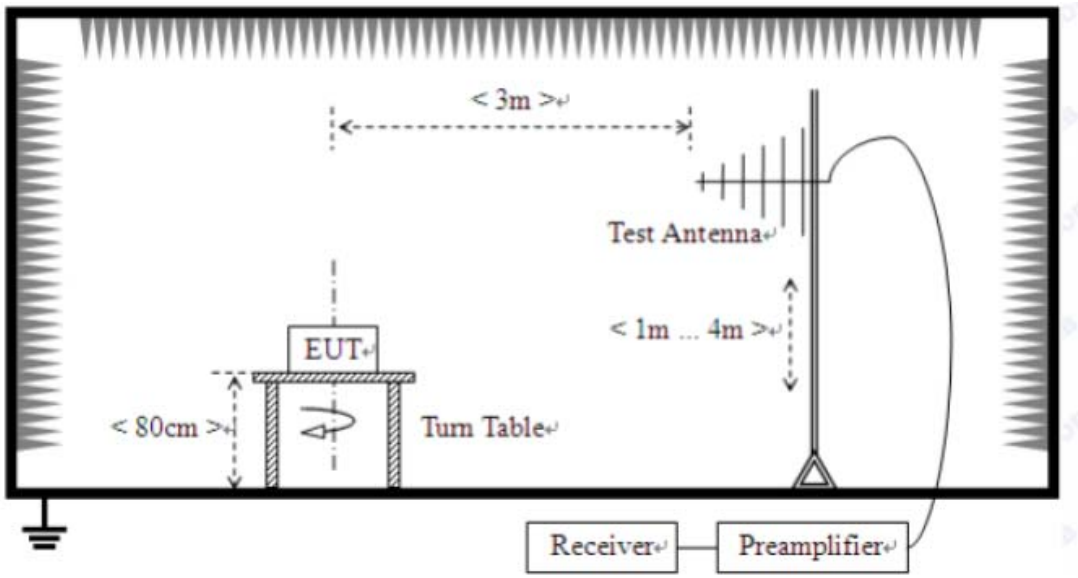
(6) The antenna polarization: Vertical polarization and Horizontal polarization.

Block diagram of Test setup

9kHz-30MHz



30MHz-1000MHz



6.2 Configuration of The EUT

Same as section 5.3 of this report

6.3 EUT Operating Condition

Same as section 5.4 of this report.

6.4 Radiated Emission Limit

All emission from a digital device, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strength specified below:

A. Fundamental frequency is compiled to limit on Paragraph 15.225.

(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.

B. Frequencies in restricted band are compiled to limit on Paragraph 15.209.

Limits for frequency below 30MHz

Frequency Range (MHz)	Distance (m)	Field strength (V/m)
0.009-0.490	300	24000/F(kHz)
0.490-1.705	30	2400/F(kHz)
1.705-30	30	30

Limits for frequency above 30MHz

Frequency Range (MHz)	Distance (m)	Field strength (dB μ V/m)
30-88	3	40.0
88-216		43.5
216-960	3	46.0
Above 960	3	54.0

Note: 1. RF Voltage (dBuV) = 20 log RF Voltage (uV)

2. In the Above Table, the tighter limit applies at the band edges.

3. Distance refers to the distance in meters between the measuring instrument antenna and the EUT

4. 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 three bands are based on measurements employing an average detector.

6.5 Test result

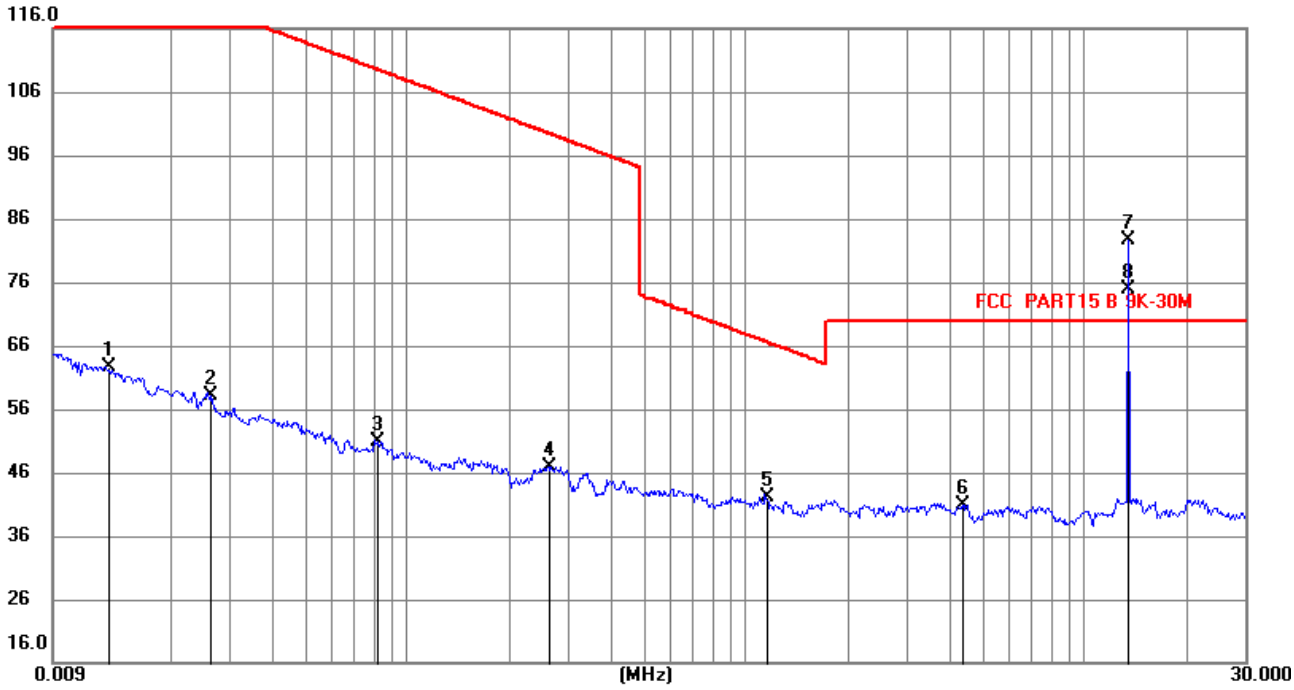
Measurement data:

Note: Limit dBuV/m @3m = Limit dBμV/m @300m+ 80

Limit dBuV/m @3m = Limit dBμV/m @30m + 40

For 13.56MHz, the limit is 124 dBμV/m

9 kHz~30 MHz



No.	Frequency (MHz)	Reading ()	Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	0.0131	52.50	10.11	62.61	125.08	-62.47	peak	P
2	0.0262	47.93	10.24	58.17	119.10	-60.93	peak	P
3	0.0820	40.99	9.78	50.77	109.24	-58.47	peak	P
4	0.2610	37.21	9.75	46.96	99.24	-52.28	peak	P
5	1.1524	32.37	9.79	42.16	66.39	-24.23	peak	P
6	4.3700	31.00	9.90	40.90	69.53	-28.63	peak	P
7	13.5000	72.22	10.31	82.53	69.57	12.96	peak	F
8	13.5000	64.57	10.31	74.88	69.57	5.31	AVG	F

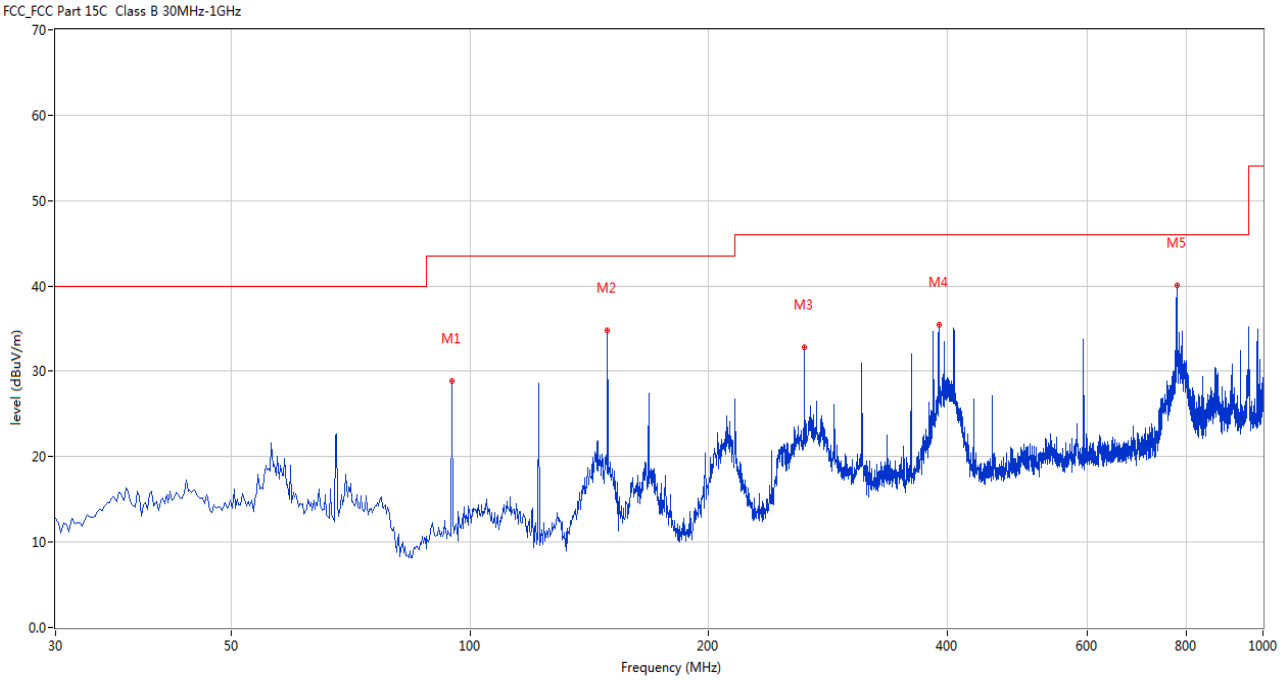
A. General Radiated Emission Data

Radiated Emission In Horizontal (30MHz----1000MHz)

EUT set Condition: Keep Transmitting

Results: **Pass**

Please refer to following diagram for individual



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	94.731	28.90	-14.32	43.5	-14.60	Peak	313.00	100	Horizontal	Pass
2	149.038	34.75	-17.11	43.5	-8.75	Peak	307.00	100	Horizontal	Pass
3	263.954	32.78	-11.79	46.0	-13.22	Peak	0.00	100	Horizontal	Pass
4	390.022	35.52	-8.88	46.0	-10.48	Peak	16.00	100	Horizontal	Pass
5	779.865	40.12	-3.19	46.0	-5.88	Peak	29.00	100	Horizontal	Pass

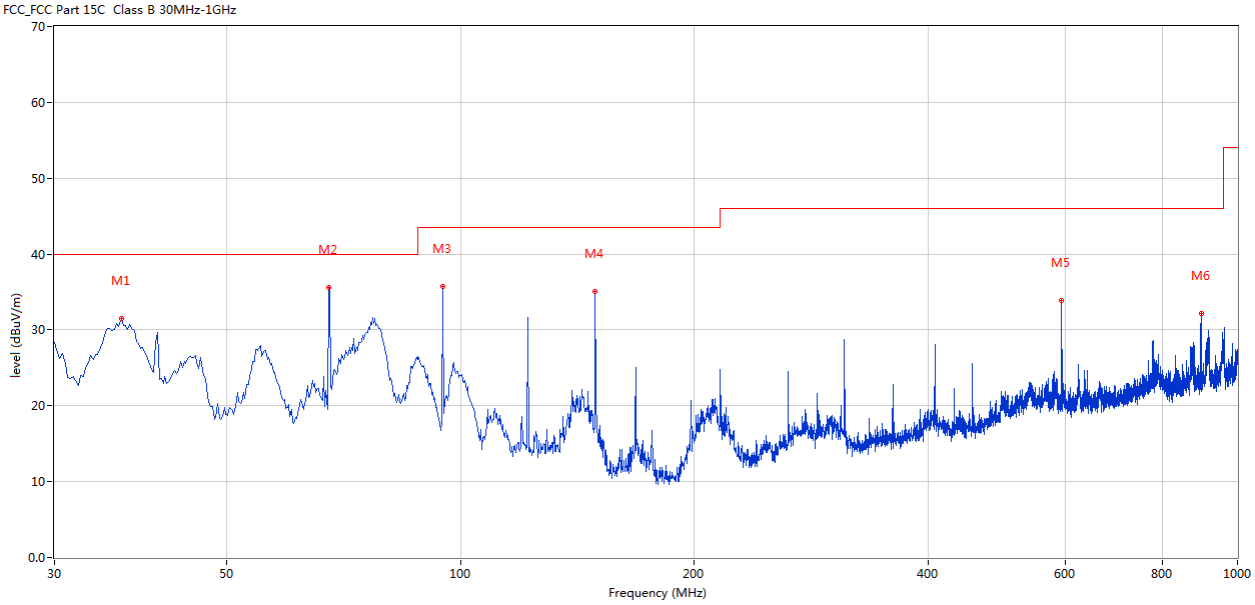
B. General Radiated Emission Data

Radiated Emission In Vertical (30MHz----1000MHz)

EUT set Condition: Keep Transmitting

Results: **Pass**

Please refer to following diagram for individual



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	36.546	31.51	-13.45	40.0	-8.49	Peak	41.00	100	Vertical	Pass
2	67.578	35.62	-14.47	40.0	-4.38	Peak	199.00	100	Vertical	Pass
3	94.731	35.70	-14.32	43.5	-7.80	Peak	85.00	100	Vertical	Pass
4	149.038	35.08	-17.11	43.5	-8.42	Peak	1.00	100	Vertical	Pass
5	593.914	33.85	-5.25	46.0	-12.15	Peak	316.00	100	Vertical	Pass
6	897.448	32.18	-1.76	46.0	-13.82	Peak	58.00	100	Vertical	Pass

7.0 Frequency Stability

7.1 Limits of Frequency Stability Measurement

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

7.2 Test Procedure

1. The EUT was placed inside the environmental test chamber and powered by nominal AC voltage.
2. Turn the EUT on and couple its output to a spectrum analyzer.
3. Turn the EUT off and set the chamber to the highest temperature specified.
4. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize, turn the EUT on and measure the operating frequency after 2, 5, and 10 minutes.
5. Repeat step 2 and 3 with the temperature chamber set to the lowest temperature.
6. The test chamber was allowed to stabilize at +20 degree C for a minimum of 30 minutes. The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.

7.3 Test Result

Voltage vs. Frequency Stability

Voltage	Measurement Frequency
DC4.2V	13.5599138MHz
DC3.7V	13.5599123MHz
DC3.3V	13.5599097MHz
Nominal Frequency:	13.56MHz
Max. Deviation	-90.3Hz
Limit	±1356Hz (Note: ±0.01% of operated frequency)

Rated working voltage: DC3.7V

Temperature vs. Frequency Stability

Temperature（℃）	Measurement Frequency
-20	13.5599127 MHz
-10	13.5599096 MHz
0	13.5599134 MHz
10	13.5599086 MHz
20	13.5599102 MHz
30	13.5599113 MHz
40	13.5599093 MHz
50	13.5599118 MHz
Nominal Frequency:	13.56 MHz
Max. Deviation	91.4Hz
Limit	±1356Hz (Note: ±0.01% of operated frequency)

8.0 20dB Bandwidth Testing

8.1 Test Procedure

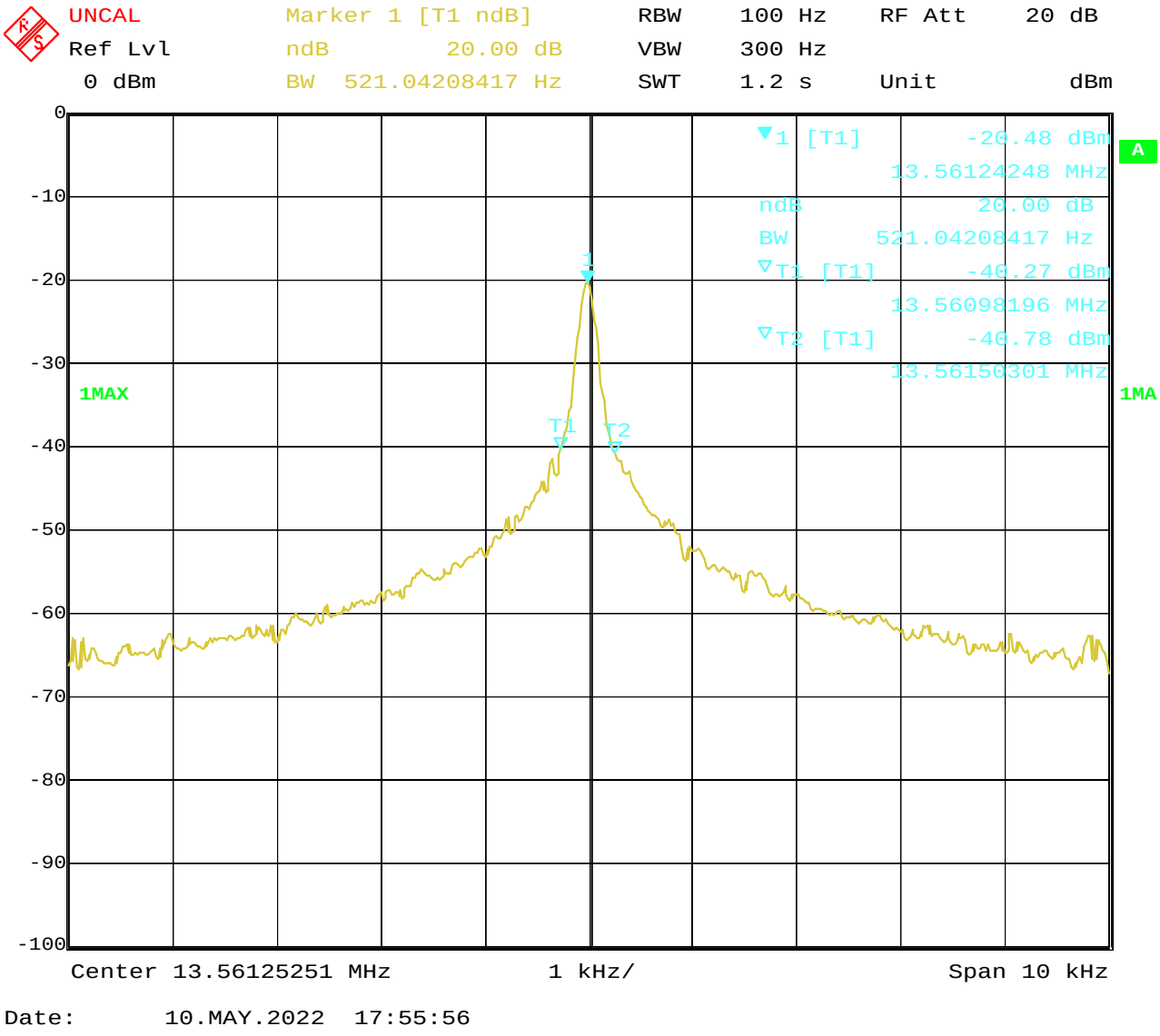
With the EUT's antenna attached, the EUT's 20dB Bandwidth was received by the test antenna which was connected to the spectrum analyzer with the START and STOP frequencies set to the EUT's operation band.

8.3 Test Data

Frequency	20dB Bandwidth Emission (kHz)	Limit (kHz)	Result
13.56MHz	0.521	--	Pass

Refer to attached plots:

20dB Bandwidth



9.0 **Antenna Requirement**

9.1 Standard Applicable

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 Sections 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 Section 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.

9.2 Antenna Connected constructions

The antenna is Integral Antenna. The antenna gain is 0dBi. So it meets the requirement of 15.203

10.0 FCC ID Label

FCC ID: RBD-K13

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

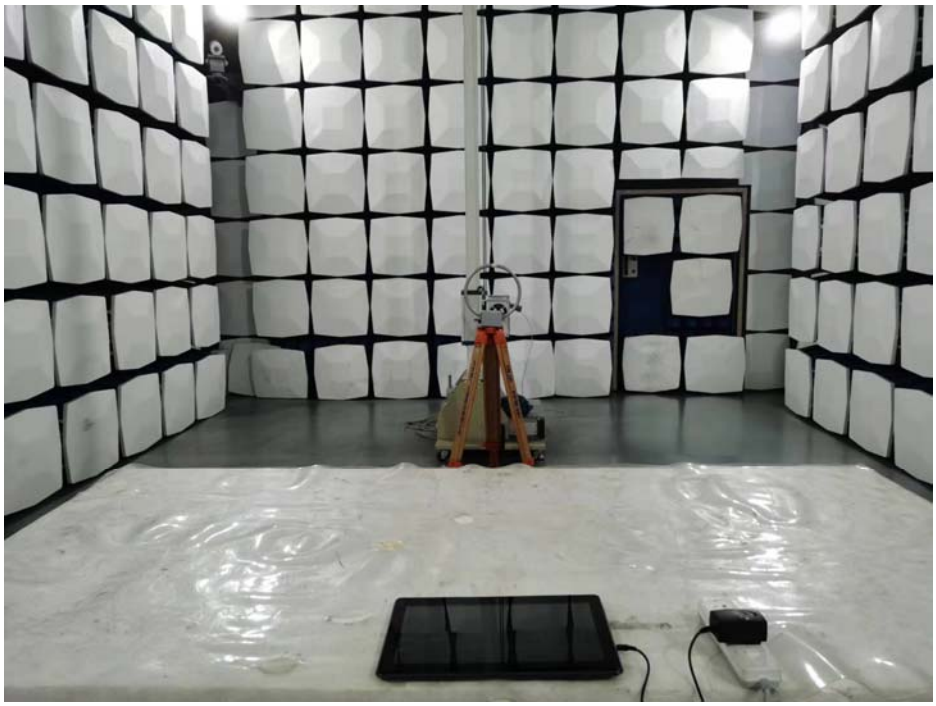
The label must not be a stick-on paper label. The label on these products must be permanently affixed to the product and readily visible at the time of purchase and must last the expected lifetime of the equipment not be readily detachable.

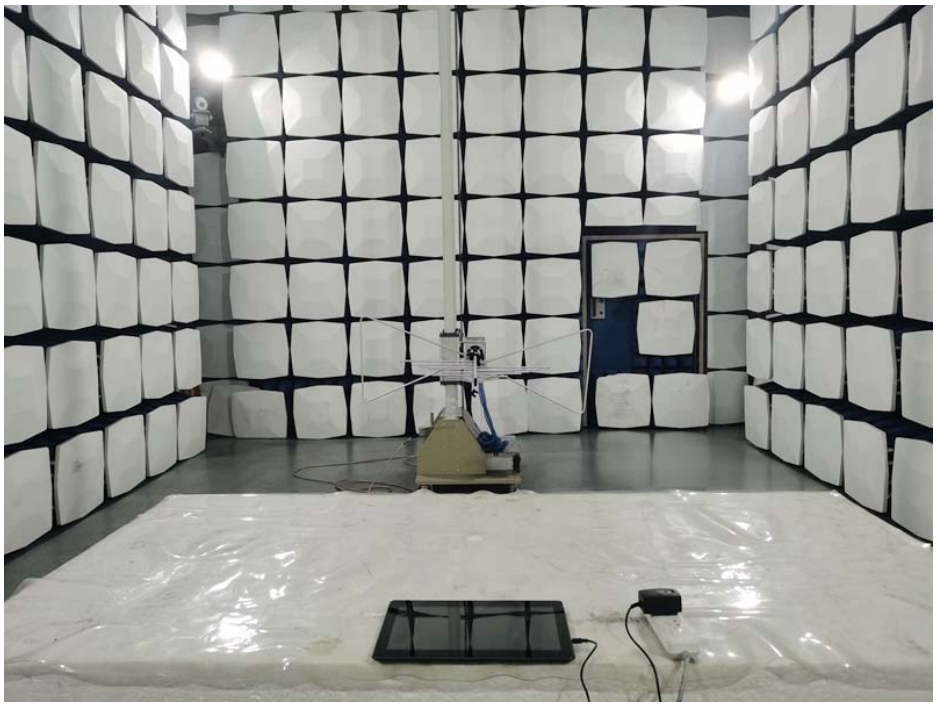
Mark Location:

11.0. Photo of testing

11.1 Conducted test View

11.2 Radiated emission test view





Photographs – EUT

Please refer test report TW2203329-01E

--End of Report--