

TEST REPORT

FCC ID: 2ADYY-T14RA-1

Product: Laptop Computer

Model No.: T14RA

Trade Mark: TECNO

Report No.: WSCT-ANAB-R&E240900045A-15B

Issued Date: 14 October 2024

Issued for:

TECNO MOBILE LIMITED

FLAT N 16/F BLOCK B UNIVERSAL INDUSTRIAL CENTRE 19-25 SHAN MEI
STREET FOTAN NT HONGKONG

Issued By:

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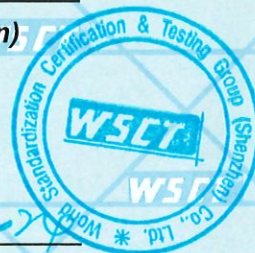
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1. Test Certification

Product: Laptop Computer**Model No.:** T14RA**Trade Mark:** TECNO**Applicant:** TECNO MOBILE LIMITED**Address:** FLAT N 16/F BLOCK B UNIVERSAL INDUSTRIAL CENTRE 19-25
SHAN MEI STREET FOTAN NT HONGKONG**Manufacturer:** TECNO MOBILE LIMITED**Address:** FLAT N 16/F BLOCK B UNIVERSAL INDUSTRIAL CENTRE 19-25
SHAN MEI STREET FOTAN NT HONGKONG**Date of Test:** 29 August 2024 to 11 October 2024**Applicable Standards:** FCC CFR Title 47 Part 15 Subpart B

The above equipment has been tested by World Standardization Certification & Testing Group(Shenzhen) Co., Ltd. and found compliance with the requirements set forth in the technical standards mentioned above. The results of testing in this report apply only to the product system, which was tested. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

Tested By: Liang Guanliang
(Jiang Guanliang)**Checked By:** Qin Shuiquan
(Qin Shuiquan)**Approved By:** Li Huaibi
(Li Huaibi)**Date:** 14 October 2024

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2. GENERAL DESCRIPTION OF EUT

Equipment Type:	Laptop Computer
Test Model:	T14RA
Trade Mark	TECNO
EUT Power Rating	Adapter: FC498U INPUT: 100-240V~50/60Hz 1.5A MAX OUTPUT: PD:5V---3A 9V---3A 12V---3A 20V---3.25A PPS:3.3---11V---5A MAX Rechargeable Li-ion Polymer Battery: 528282-3S1P Nominal Voltage: 11.61V Rated Capacity:6460mAh/75Wh Typical Capacity: 6550mAh/76.04Wh Limited Charge Voltage: 13.35V
Remark:	N/A.

Configuration differences

Configuration/ Processor	TDP
T14RA (i5-1335U)	15W
T14RA (i7-1355U)	15W
T14RA (i5-13420H)	30W
T14RA (i7-13620H)	30W
T14RA (i7-13700H)	30W

Note: These models of TDP are different, and the T14RA (i7-13620H) is the main test model reported

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3. Test Result Summary

Requirement	CFR 47 Section	Result
CONDUCTED EMISSION	§15.107	PASS
RADIATED EMISSION	§15.109	PASS

Note:

1. PASS: Test item meets the requirement.
2. Fail: Test item does not meet the requirement.
3. N/A: Test case does not apply to the test object.
4. The test result judgment is decided by the limit of test standard.

4. TEST METHODOLOGY

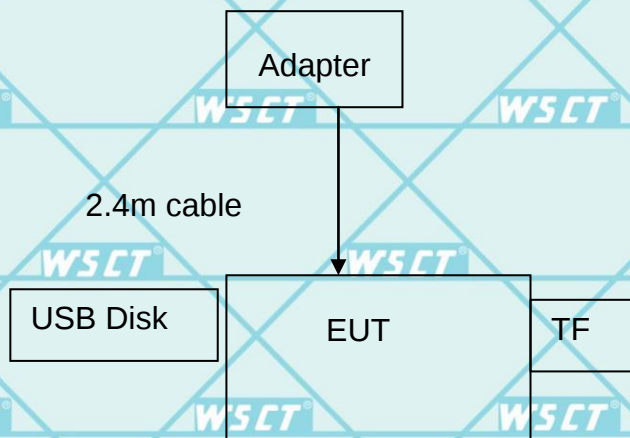
To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Pretest Mode	Description
Mode 1	Video Recording
Model 2	Video Playing
Mode 3	Transferring with USB Disk (the worst case)
Mode 4	TF Card Playing

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4.1. CONFIGURATION OF SYSTEM UNDER TEST

Mode 1&2&3&4



(EUT: Laptop Computer)

I/O Port of EUT			
I/O Port Type	Q'TY	Cable	Tested with
Power	1	2.4m cable, unshielded	1
USB cable	1	1.8m USB cable, unshielded	1

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4.2. DESCRIPTION OF SUPPORT UNITS (CONDUCTED MODE)

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.

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.	Note
1	TF	Kingston	DTX/64GB	/	/
2	Adapter	/	FC498U	/	/
3	USB Disk	Kingston	/	/	/

Note:

- (1) The support equipment was authorized by Declaration of Confirmation.
- (2) For detachable type I/O cable should be specified the length in cm in 「Length」 column.

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5. MEASUREMENT INSTRUMENTS

Kind of Equipment	Manufacturer	Type No.	Serial No.	Last Calibrated	Calibrated until
Test software	--	EZ-EMC	CON-03A	--	--
ESCI Test Receiver	R&S	ESCI	100005	11/05/2023	11/04/2024
LISN	AFJ	LS16	16010222119	11/05/2023	11/04/2024
LISN(EUT)	Mastic	AN3016	04/10040	11/05/2023	11/04/2024
pre-amplifier	CDSI	PAP-1G18-38	--	11/05/2023	11/04/2024
System Controller	CT	SC100	-	11/05/2023	11/04/2024
Bi-log Antenna	Chase	CBL6111C	2576	11/05/2023	11/04/2024
Spectrum analyzer	R&S	FSU26	200409	11/05/2023	11/04/2024
Horn Antenna	SCHWARZBECK	9120D	1141	11/05/2023	11/04/2024
Bi-log Antenna	SCHWARZBECK	VULB9168	01488	11/05/2023	11/04/2024
Pre Amplifier	H.P.	HP8447E	2945A02715	11/05/2023	11/04/2024
9*6*6 Anechoic	--	--	--	11/05/2023	11/04/2024

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6. Facilities and Accreditations

6.1. Facilities

All measurement facilities used to collect the measurement data are located at **World Standardization Certification & Testing Group (Shenzhen) Co., Ltd. Building A-B, Baoli'an Industrial Park, No.58 and 60, Tangtou Avenue, Shiyan Street, Bao'an District, Shenzhen City, Guangdong Province, China**

The sites are constructed in conformance with the requirements of ANSI C63.4 and CISPR Publication 32. All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

6.2. ACCREDITATIONS

CNAS - Registration Number: L3732

China National Accreditation Service for Conformity Assessment, The test firm Registration Number: L3732

FCC - Designation Number: CN1303

World Standardization Certification & Testing Group (Shenzhen) CO., LTD. has been accredited as a testing laboratory by FCC (Federal Communications Commission). The test firm Designation Number: CN1303.

ANAB - Certificate Number: AT-3951

The EMC Laboratory has been accredited by the American Association for Laboratory Accreditation (ANAB). Certification Number: AT-3951

6.3. Measurement Uncertainty

The reported uncertainty of measurement $y \pm U$, where expanded uncertainty U is based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately 95 %.

No.	Item	MU
1	Conducted Emission Test	$\pm 3.2\text{dB}$
2	RF power, conducted	$\pm 0.16\text{dB}$
3	Spurious emissions, conducted	$\pm 0.21\text{dB}$
4	All emissions, radiated(<1GHz)	$\pm 4.7\text{dB}$
5	All emissions, radiated(>1GHz)	$\pm 4.7\text{dB}$
6	Temperature	$\pm 0.5^{\circ}\text{C}$
7	Humidity	$\pm 2.0\%$

7. EMC EMISSION TEST

7.1. CONDUCTED EMISSION MEASUREMENT

7.1.1. POWER LINE CONDUCTED EMISSION LIMITS

FREQUENCY (MHz)	Class A (dBuV)		Class B (dBuV)		Standard
	Quasi-peak	Average	Quasi-peak	Average	
0.15 -0.5	79.00	66.00	66 - 56 *	56 - 46 *	FCC
0.50 -5.0	73.00	60.00	56.00	46.00	FCC
5.0 -30.0	73.00	60.00	60.00	50.00	FCC

Note:

- (1) The tighter limit applies at the band edges.
- (2) The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

The following table is the setting of the receiver

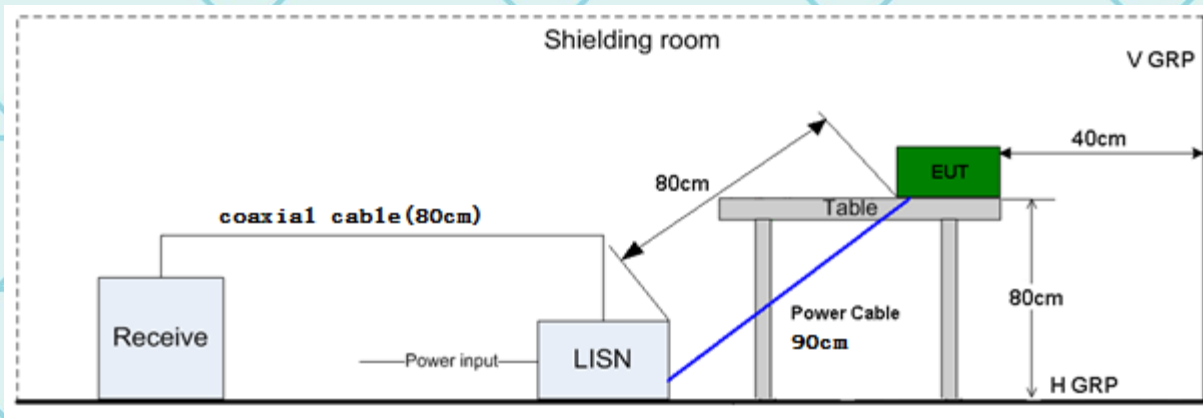
Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

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TEST PROCEDURE

- The EUT was placed 0.4 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- LISN at least 80 cm from nearest part of EUT chassis.
- For the actual test configuration, please refer to the related Item –EUT Test Photos.

TEST SETUP

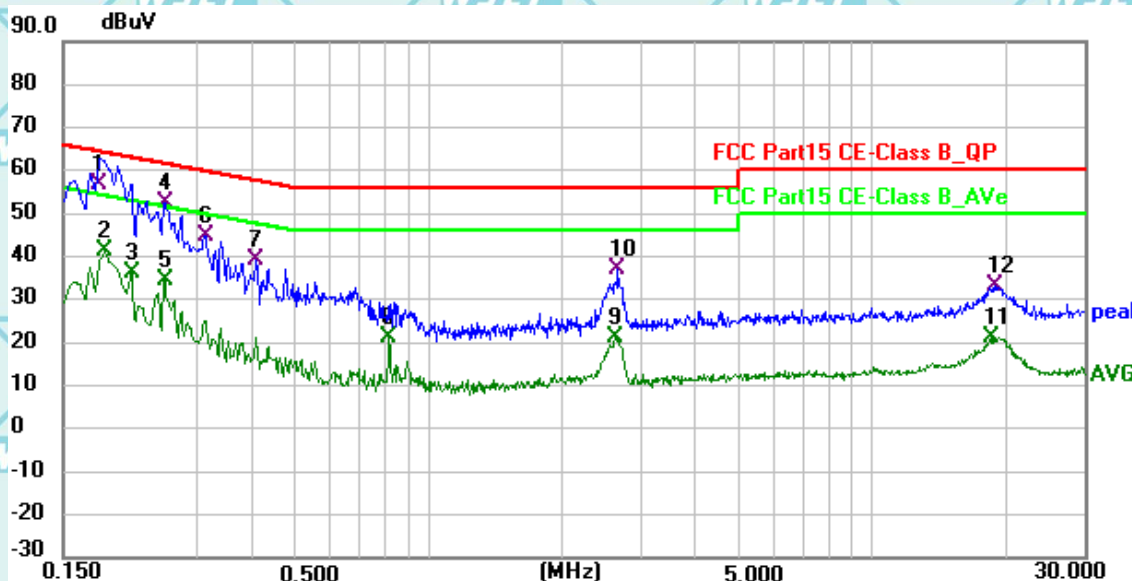


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7.1.2. Test Results

Temperature	20 °C	Relative Humidity	48%
Pressure	1010 hPa	Test Mode	Adapter: Mode 3(the worst case)

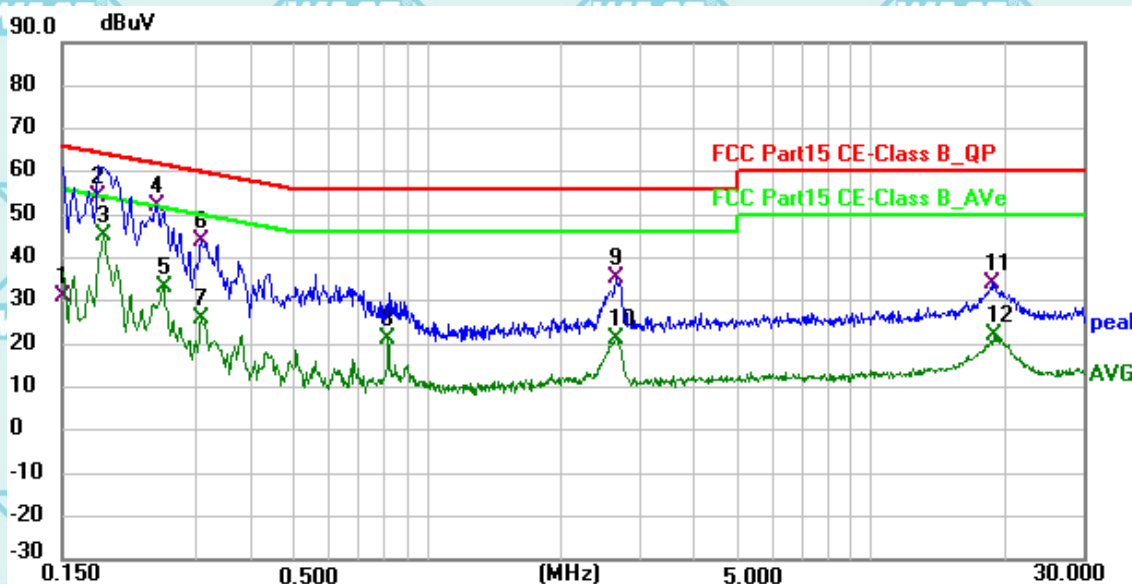
Conducted Emission on Line Terminal of the power line (150 kHz to 30MHz)



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1 *	0.1815	35.93	20.70	56.63	64.42	-7.79	QP
2	0.1860	20.66	20.70	41.36	54.21	-12.85	AVG
3	0.2130	15.74	20.68	36.42	53.09	-16.67	AVG
4	0.2535	31.98	20.66	52.64	61.64	-9.00	QP
5	0.2535	13.89	20.66	34.55	51.64	-17.09	AVG
6	0.3120	24.35	20.62	44.97	59.92	-14.95	QP
7	0.4065	18.71	20.57	39.28	57.72	-18.44	QP
8	0.8160	0.83	20.59	21.42	46.00	-24.58	AVG
9	2.6430	0.43	20.60	21.03	46.00	-24.97	AVG
10	2.6745	16.36	20.60	36.96	56.00	-19.04	QP
11	18.5055	0.79	20.23	21.02	50.00	-28.98	AVG
12	18.8924	12.99	20.24	33.23	60.00	-26.77	QP

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Conducted Emission on Neutral Terminal of the power line (150 kHz to 30MHz)



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1500	10.51	20.73	31.24	66.00	-34.76	QP
2	0.1815	33.61	20.70	54.31	64.42	-10.11	QP
3 *	0.1860	24.69	20.70	45.39	54.21	-8.82	AVG
4	0.2445	31.55	20.66	52.21	61.94	-9.73	QP
5	0.2535	12.68	20.66	33.34	51.64	-18.30	AVG
6	0.3075	23.32	20.63	43.95	60.04	-16.09	QP
7	0.3075	5.22	20.63	25.85	50.04	-24.19	AVG
8	0.8160	0.70	20.59	21.29	46.00	-24.71	AVG
9	2.6610	14.55	20.60	35.15	56.00	-20.85	QP
10	2.6700	0.62	20.60	21.22	46.00	-24.78	AVG
11	18.6944	13.92	20.24	34.16	60.00	-25.84	QP
12	18.9465	1.86	20.24	22.10	50.00	-27.90	AVG

Note1:

Freq. = Emission frequency in MHz

Reading level (dBuV) = Receiver reading

Corr. Factor (dB) = LISN factor + Cable loss

Measurement (dBuV) = Reading level (dBuV) + Corr. Factor (dB)

Limit (dBuV) = Limit stated in standard

Margin (dB) = Measurement (dBuV) - Limits (dBuV)

Q.P. =Quasi-Peak AVG =average

* is meaning the worst frequency has been tested in the frequency range 150 kHz to 30MHz.

7.2. RADIATED EMISSION MEASUREMENT

7.2.1. Radiated Emission Limits

The field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values:

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

LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000MHz)

FREQUENCY (MHz)	Limit (dBuV/m) (at 3M)	
	PEAK	AVERAGE
Above 1000	74	54

Notes:

- (1) The limit for radiated test was performed according to FCC PART 15B.
- (2) The tighter limit applies at the band edges.
- (3) Emission level (dBuV/m)=20log Emission level (uV/m).

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RB / VB (emission in restricted band)	1 MHz / 1 MHz for Peak, 1 MHz / 1Hz for Average

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

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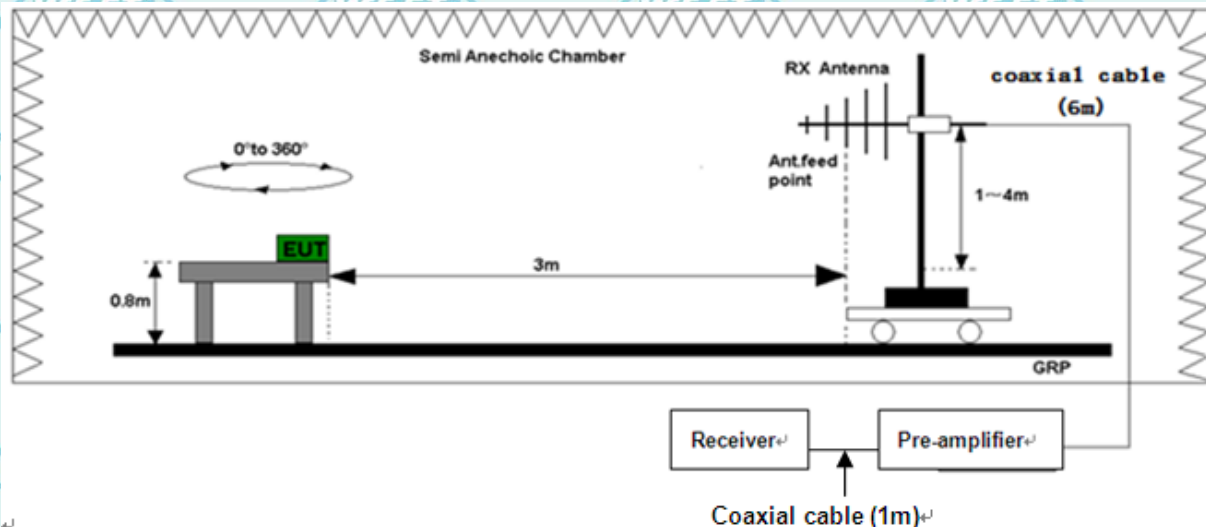
TEST PROCEDURE

- a. The measuring distance of at 3 m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.
- b. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.
- c. The height of the equipment or of the substitution antenna shall be 0.8 m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- e. If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
- f. For the actual test configuration, please refer to the related Item –EUT Test Photos.

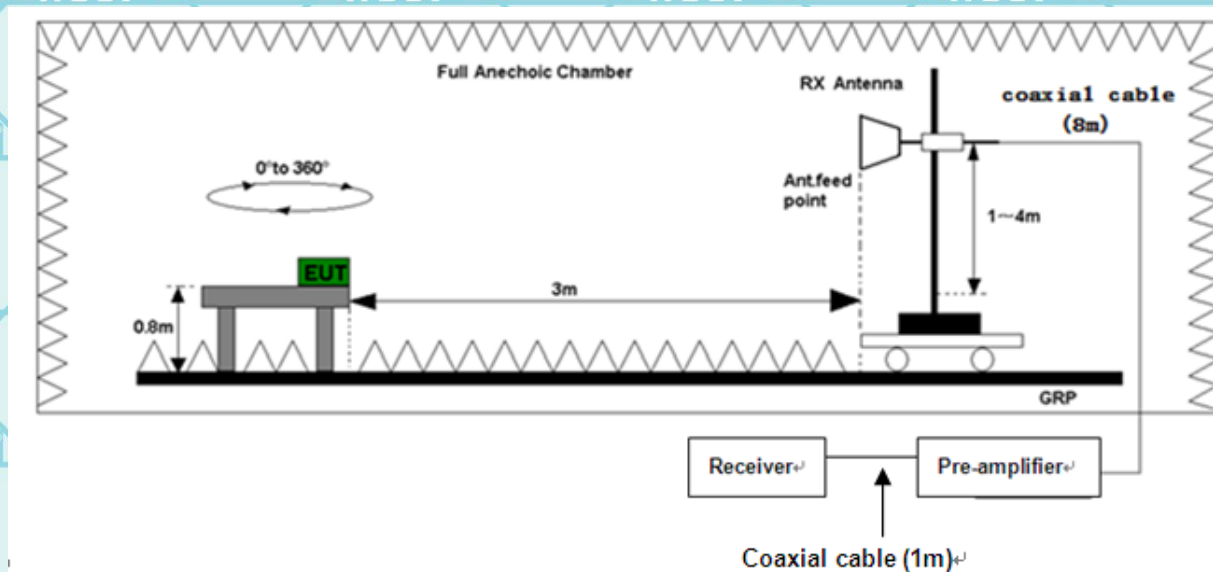
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TEST SETUP

(A) Radiated Emission Test-Up Frequency 30MHz~1GHz



(B) Radiated Emission Test-Up Frequency Above 1GHz



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7.2.2. Test Results

Temperature	20 °C	Relative Humidity	48%
Pressure	1010 hPa	Test Mode	Adapter: Mode 3(the worst case)

Please refer to following diagram for individual

Below 1GHz

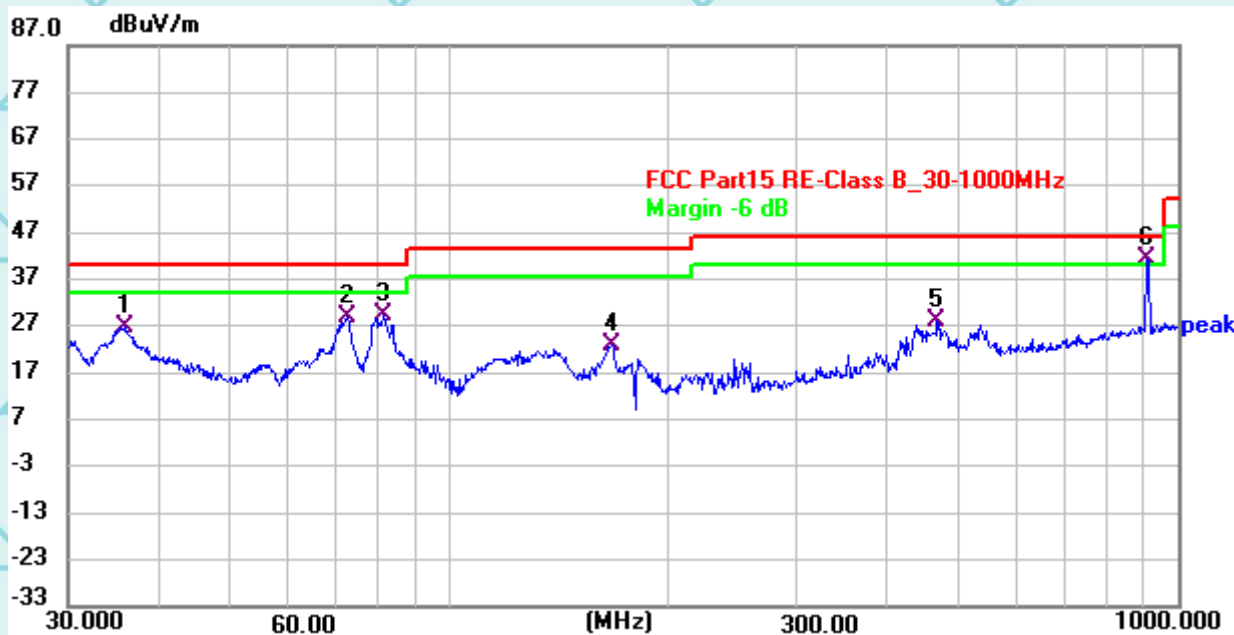
Horizontal:



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	71.8005	44.32	-22.54	21.78	40.00	-18.22	QP
2	80.9984	41.11	-24.07	17.04	40.00	-22.96	QP
3 *	142.0751	50.19	-19.79	30.40	43.50	-13.10	QP
4	216.0240	48.45	-24.05	24.40	46.00	-21.60	QP
5	251.0703	52.71	-21.75	30.96	46.00	-15.04	QP
6	432.5457	44.08	-16.93	27.15	46.00	-18.85	QP

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Vertical:



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	35.9534	46.09	-19.44	26.65	40.00	-13.35	QP
2	72.6872	51.52	-22.80	28.72	40.00	-11.28	QP
3	81.4256	53.37	-24.08	29.29	40.00	-10.71	QP
4	167.3101	43.18	-20.30	22.88	43.50	-20.62	QP
5	468.6707	44.33	-16.05	28.28	46.00	-17.72	QP
6 *	909.2680	51.20	-9.85	41.35	46.00	-4.65	QP

Note:

Freq. = Emission frequency in MHz

Reading level (dBuV) = Receiver reading

Corr. Factor (dB) = Antenna factor + Cable loss - Amplifier factor.

Measurement (dBuV) = Reading level (dBuV) + Corr. Factor (dB)

Limit (dBuV) = Limit stated in standard

Margin (dB) = Measurement (dBuV) - Limits (dBuV)

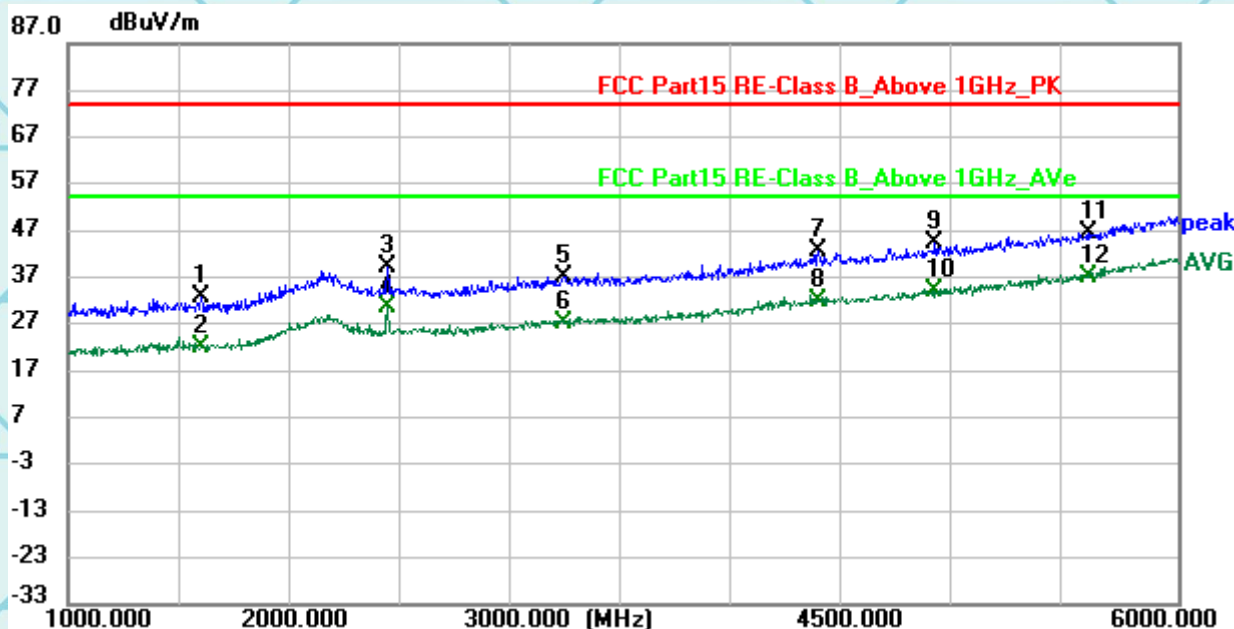
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TEST RESULTS

Above 1GHz(1~6GHz) :(Mode 1)

Note: The spurious above 6G is noise only, do not show on the report.

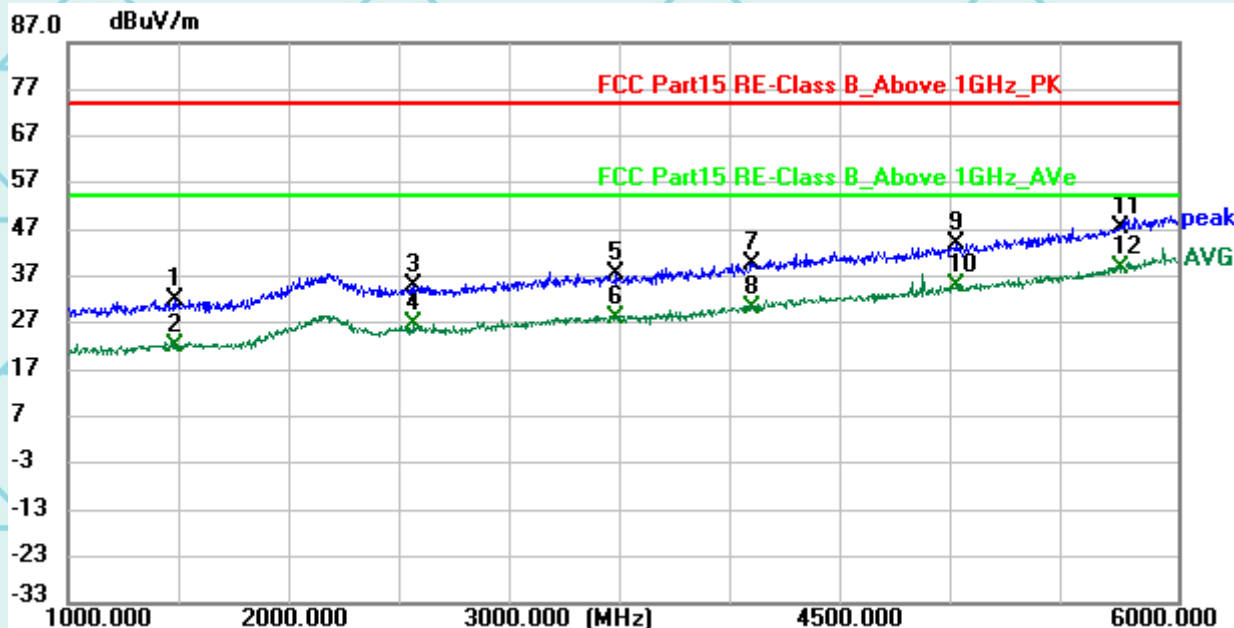
Horizontal:



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	1601.250	40.10	-7.41	32.69	74.00	-41.31	peak
2	1601.250	29.31	-7.41	21.90	54.00	-32.10	AVG
3	2443.125	43.05	-3.89	39.16	74.00	-34.84	peak
4	2443.125	34.57	-3.89	30.68	54.00	-23.32	AVG
5	3232.500	38.95	-1.75	37.20	74.00	-36.80	peak
6	3232.500	29.01	-1.75	27.26	54.00	-26.74	AVG
7	4383.750	40.25	2.53	42.78	74.00	-31.22	peak
8	4383.750	29.50	2.53	32.03	54.00	-21.97	AVG
9	4906.875	39.52	4.82	44.34	74.00	-29.66	peak
10	4906.875	29.20	4.82	34.02	54.00	-19.98	AVG
11	5604.375	39.19	7.32	46.51	74.00	-27.49	peak
12 *	5604.375	29.78	7.32	37.10	54.00	-16.90	AVG

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Vertical:



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	1483.125	39.45	-7.41	32.04	74.00	-41.96	peak
2	1483.125	29.34	-7.41	21.93	54.00	-32.07	AVG
3	2563.750	38.46	-3.43	35.03	74.00	-38.97	peak
4	2563.750	30.15	-3.43	26.72	54.00	-27.28	AVG
5	3471.250	38.66	-1.20	37.46	74.00	-36.54	peak
6	3471.250	29.20	-1.20	28.00	54.00	-26.00	AVG
7	4082.500	38.24	1.32	39.56	74.00	-34.44	peak
8	4082.500	29.03	1.32	30.35	54.00	-23.65	AVG
9	5010.000	38.68	5.28	43.96	74.00	-30.04	peak
10	5010.000	29.80	5.28	35.08	54.00	-18.92	AVG
11	5738.125	39.41	8.04	47.45	74.00	-26.55	peak
12 *	5738.125	30.95	8.04	38.99	54.00	-15.01	AVG

Remark:

All emissions not reported were more than 20dB below the specified limit or in the noise floor.

Freq. = Emission frequency in MHz

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Over = Emission Level - Limit.

All the x/y/z orientation has been investigated, and only worst case is presented in this report.

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8. Test Setup Photographs

Please refer to Annex "Set Up Photos-15B" for test setup photos

*******END OF REPORT*******