

FCC Part 18 Test Report

FCC ID: 2A3QY-DT-2101

Report No. : TB-FCC184715
Applicant : NOA THE BRAND PTY LTD

Equipment Under Test (EUT)

EUT Name : DAYTRIPPER
Model No. : DT-2101
Brand Name : NOA THE BRAND
Receipt Date : 2021-11-15
Test Date : 2021-11-15 to 2021-12-21
Issue Date : 2021-12-21
Standards : FCC 47 CFR Part 18
Conclusions : **PASS**

In the configuration tested, the EUT complied with the standards specified above,
The EUT technically complies with the FCC requirements

Test/Witness Engineer : Camille Li Camille Li
Engineer Supervisor : Ivan Su Ivan Su
Engineer Manager : Ray Lai Ray Lai



This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in the report.

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Revision History

1. General Information

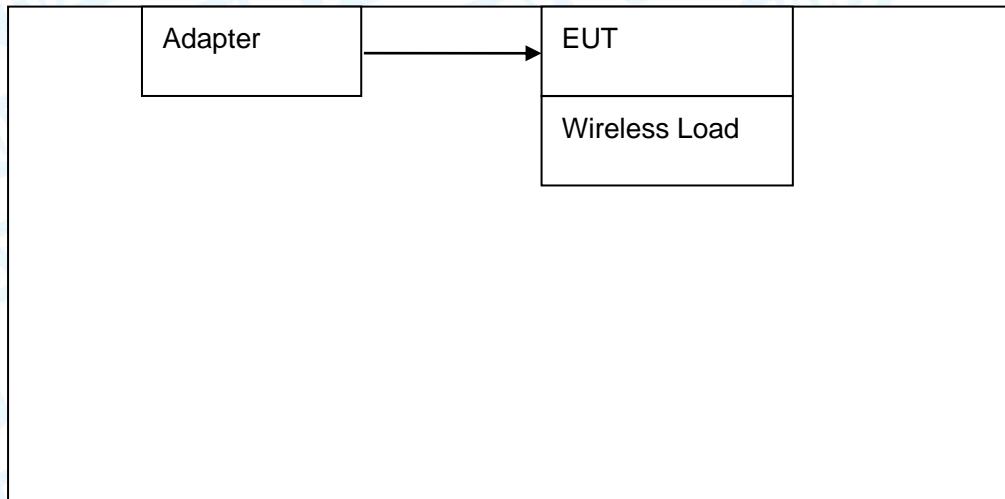
1.1 Client Information

Applicant	:	NOA THE BRAND PTY LTD
Address	:	Level 8, 76-80 Clarence Street Sydney NSW 2000 Australia
Manufacturer	:	NOA THE BRAND PTY LTD
Address	:	Level 8, 76-80 Clarence Street Sydney NSW 2000 Australia

1.2 General Description of EUT (Equipment Under Test)

EUT Name	:	DAYTRIPPER
Models No.	:	DT-2101
Product Description	Operation Frequency:	110KHz-205KHz
	Modulation Type:	FSK
	Antenna:	Coil Antenna
Power Rating	:	Input: DC 5V, 3A / 9V, 2A / 12V, 1.5A Type-C Output: 12V, 1.5A Wireless charger: 15W Max
Connecting I/O Port(S)	:	Please refer to the User's Manual
Remark	:	The antenna gain provided by the applicant, the verified for the RF conduction test and adapter provided by TOBY test lab.

1.3 Block Diagram Showing The Configuration of System Tested



1.4 Description of Support Units

Equipment Information				
Name	Model	S/N	Manufacturer	Used "✓"
Adapter	5V 2A/9V 2A	----	HUAWEI	✓
Wireless Load	5V/9V	----	----	✓
Cable Information				
Number	Shielded Type	Ferrite Core	Length	Note
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1.5 Description of Test Mode

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 follow was evaluated respectively.

Final Test Mode	Description
Mode 1	AC/DC Adapter + EUT + Load Mode
Mode 2	Charge from PC + EUT + Load Mode
Mode 3	Wireless Charging Mode
Mode 4	EUT + Load Mode

The EUT system operated these modes were found to be the worst case during the pre-scanning test as Following:

For Conducted Test	
Final Test Mode	Description
Mode 1	AC/DC Adapter + EUT + Load
For Radiated Test	
Final Test Mode	Description
Mode 1	AC/DC Adapter + EUT + Load

1.6 Test Location

The testing report were performed by the Shenzhen Toby Technology Co., Ltd., in their facilities located at 1A/F., Building 6, Rundongsheng Industrial Zone, Longzhu, Xixiang, Bao'an District, Shenzhen, Guangdong, China. At the time of testing, the following bodies accredited the Laboratory:

CNAS (L5813)

The Laboratory has been accredited by CNAS to ISO/IEC 17025: 2017 General Requirements for the Competence of Testing and Calibration Laboratories for the competence in the field of testing. And the Registration No.: CNAS L5813.

A2LA Certificate No.: 4750.01

The laboratory has been accredited by American Association for Laboratory Accreditation(A2LA) to ISO/IEC 17025: 2017 General Requirements for the Competence of Testing and Calibration Laboratories for the technical competence in the field of Electrical Testing. And the A2LA Certificate No.: 4750.01. FCC Accredited Test Site Number: 854351.

IC Registration No.: (11950A)

The Laboratory has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing. The site registration: Site# 11950A.

1.7 Measurement Uncertainty

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

Test	Parameters	Expanded Uncertainty (U_{Lab})	Expanded Uncertainty (U_{Cispr})
Conducted Emission	Level Accuracy: 9kHz~150kHz 150kHz to 30MHz	± 3.50 dB ± 3.10 dB	± 4.0 dB ± 3.6 dB
Radiated Emission	Level Accuracy: Above 1000MHz	± 4.50 dB	N/A
Radiated Emission	Level Accuracy: 30MHz to 1000 MHz	± 4.40 dB	± 5.2 dB

2. Test Summary

Standard Section	Test Item	Test Method	Judgment
18.305	Radiated Emission (9KHz to 1GHz)	FCC OST/MP-5:1986	PASS
18.307(a)	Conducted Emission (150KHz to 30MHz)	FCC OST/MP-5:1986	PASS

Note: N/A is an abbreviation for Not Applicable.

3. Test Software

Test Item	Test Software	Manufacturer	Version No.
Conducted Emission	EZ-EMC	EZ	CDI-03A2
Radiation Emission	EZ-EMC	EZ	FA-03A2RE

4. Test Equipment Used

Conducted Emission Test					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due Date
EMI Test Receiver	Rohde & Schwarz	ESCI	100321	Jul. 05, 2021	Jul. 04, 2022
RF Switching Unit	Compliance Direction Systems Inc	RSU-A4	34403	Jul. 05, 2021	Jul. 04, 2022
AMN	SCHWARZBECK	NNBL 8226-2	8226-2/164	Jul. 05, 2021	Jul. 04, 2022
LISN	Rohde & Schwarz	ENV216	101131	Jul. 05, 2021	Jul. 04, 2022
Radiation Emission Test					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due Date
Spectrum Analyzer	Agilent	E4407B	MY45106456	Jul. 06, 2020	Jul. 05, 2021
EMI Test Receiver	Rohde & Schwarz	ESCI	101165	Jul. 06, 2020	Jul. 05, 2021
Bilog Antenna	ETS-LINDGREN	3142E	00117537	Mar. 01, 2020	Feb. 28, 2022
Horn Antenna	ETS-LINDGREN	3117	00143207	Mar. 01, 2020	Feb. 28, 2022
Loop Antenna	SCHWARZBECK	FMZB 1519 B	1519B-059	Jul. 06, 2021	Jul. 05, 2022
Pre-amplifier	Sonoma	310N	185903	Feb. 25, 2021	Feb. 24, 2022
Pre-amplifier	HP	8449B	3008A00849	Feb. 25, 2021	Feb. 24, 2022
Cable	HUBER+SUHNER	100	SUCOFLEX	Feb. 25, 2021	Feb. 24, 2022
Positioning Controller	ETS-LINDGREN	2090	N/A	N/A	N/A

5. Conducted Emission Test

5.1 Test Standard and Limit

5.1.1 Test Standard

FCC Part 18.307(a)

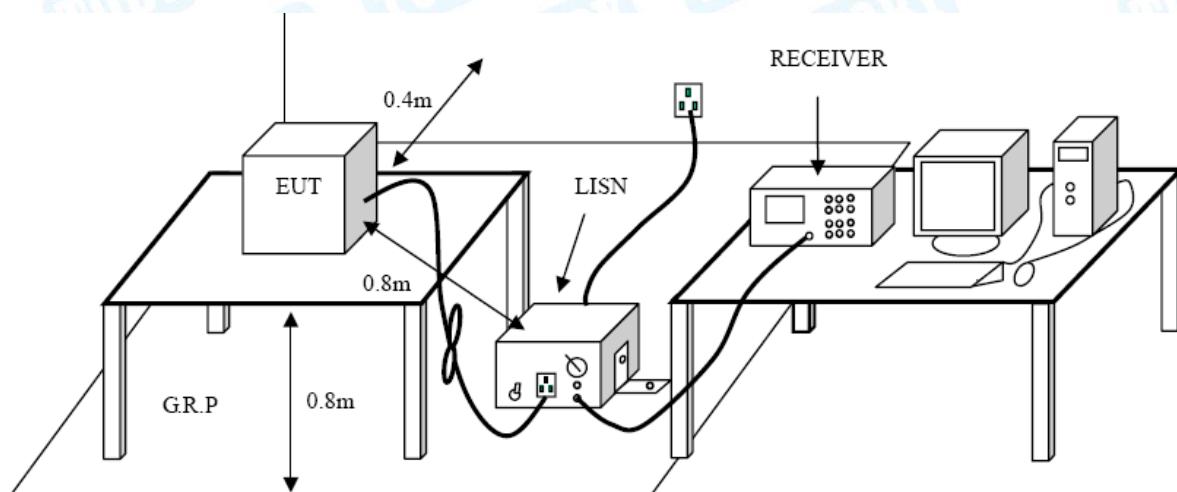
5.1.2 Test Limit

Conducted Emission Test Limit

Frequency (MHz)	Maximum RF Line Voltage (dB μ V)	
	Quasi-peak Level	Average Level
0.15 ~ 0.5	66 ~ 56 *	56 ~ 46 *
0.5 ~ 5	56	46
5 ~ 30	60	50

Notes:(1) *Decreasing linearly with logarithm of the frequency.
(2) The lower limit shall apply at the transition frequencies.

5.2 Test Setup



4.3 Test Procedure

The EUT was placed 0.8 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 the nearest part of EUT chassis.

The bandwidth of EMI test receiver is set at 9kHz, and the test frequency band is from 0.15MHz to 30MHz.

5.4 Deviation

The test is no deviation from the standard.

5.5 Deviation From Test Standard

No deviation

5.6 Test Data

Please refer to the Attachment A.

6. Radiated Emission Test

6.1 Test Standard and Limit

6.1.1 Test Standard

FCC Part 18.305

6.1.2 Test Limit

Radiated Emission Limit

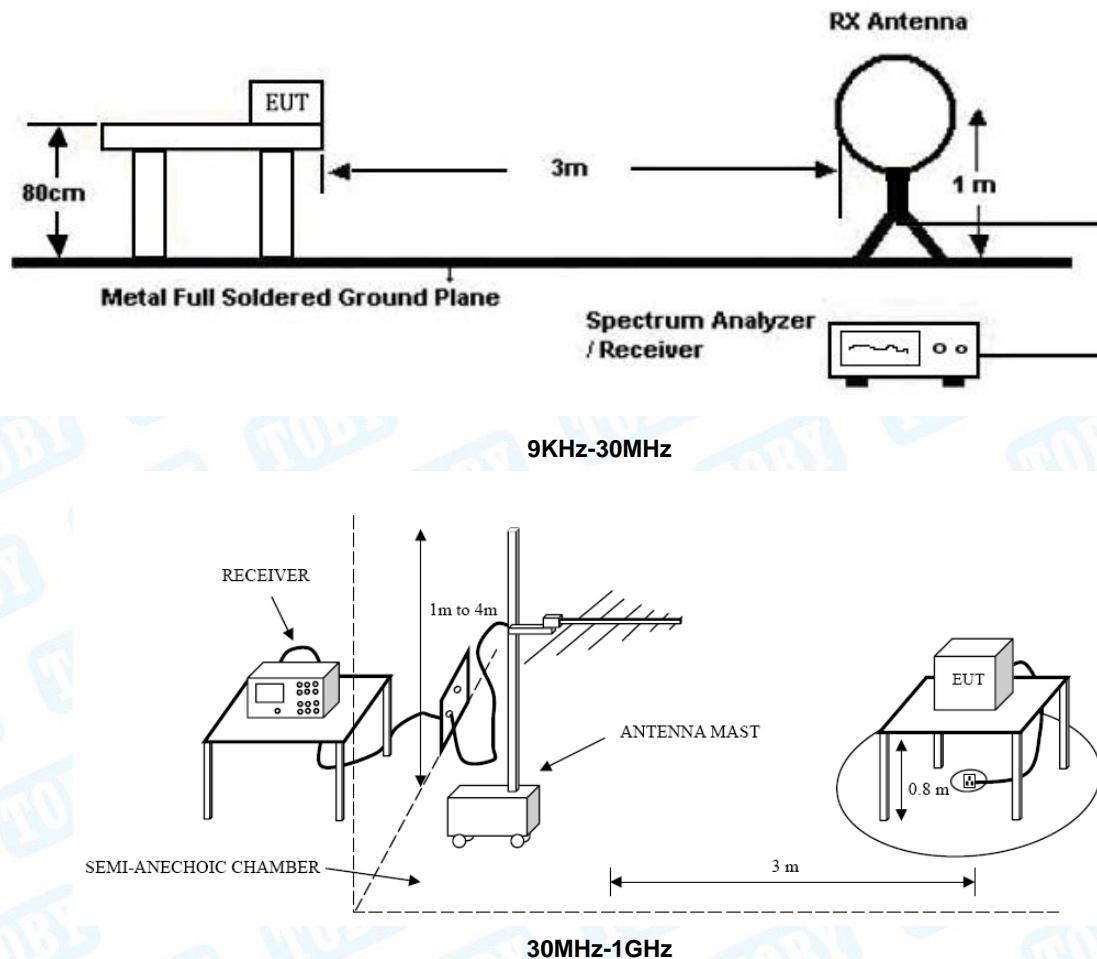
Equipment	Operating frequency	RF Power generated by equipment (watts)	Field strength limit (uV/m)	Distance (meters)
Any type unless otherwise specified (miscellaneous)	Any ISM frequency	Below 500 500 or more	25 $25 \times \text{SQRT}(\text{power}/500)$	300 1300
	Any non-ISM frequency	Below 500 500 or more	15 $15 \times \text{SQRT}(\text{power}/500)$	300 1300
Industrial heaters and RF stabilized arc welders	On or below 5,725 MHz Above 5,725 MHz	Any Any	10 (²)	1,600 (²)
Medical diathermy	Any ISM frequency Any non-ISM frequency	Any Any	25 15	300 300
Ultrasonic	Below 490 kHz	Below 500 500 or more	$2,400/F(\text{kHz})$ $2,400/F(\text{kHz}) \times \text{SQRT}(\text{power}/500)$	300 300
	490 to 1,600 kHz Above 1,600 kHz	Any Any	$24,000/F(\text{kHz})$ 15	30 30
Induction cooking ranges	Below 90 kHz On or above 90 kHz	Any Any	1,500 300	430 430

Frequency (MHz)	Limit (dBuV/m)	Remark	Measurement Distance(m)
0.009-30	103.5	Quasi-Peak	3
30-88	40.0	Quasi-Peak	3
88-216	43.5	Quasi-Peak	3
216-1000	46.0	Quasi-Peak	3

Note: According to the article 18.305(b), The operating frequency is non-ISM frequency; the RF power generated by equipment is below 500(Watts).

Note: Emission Level(dBuV/m)= $20\log$ Emission Level(uV/m)

6.2 Test Setup



6.3 Test Procedure

- (1) The measuring distance of 3m shall be used for measurements at frequency up to 30MHz. The EUT was placed on a rotating 0.8m high above ground, the table was rotated 360 degrees to determine the position of the highest radiation.
- (2) The EUT was placed on the top of a rotating table which is 0.8 meters above the ground. EUT is set 3.0 meters away from the receiving antenna that mounted on a antenna tower. The table was rotated 360 degrees to determine the position of the highest radiation, the antenna can be moved up and down between 1.0 meter and 4 meters to find out the maximum emission level. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- (3) An initial scan was performed in the 3m chamber using the spectrum analyzer in peak detection mode. Average measurements were conducted based on the peak sweep graph. The EUT was measured by a loop antenna.
- (4) For the actual test configuration, please see the test setup photo.

6.4 Deviation

For Radiated Emission, test at 3m distance instead of 30m distance. 40dB was plus to the limit of 30m measurement limit. More details refer to FCC part 15.31(f)(2).

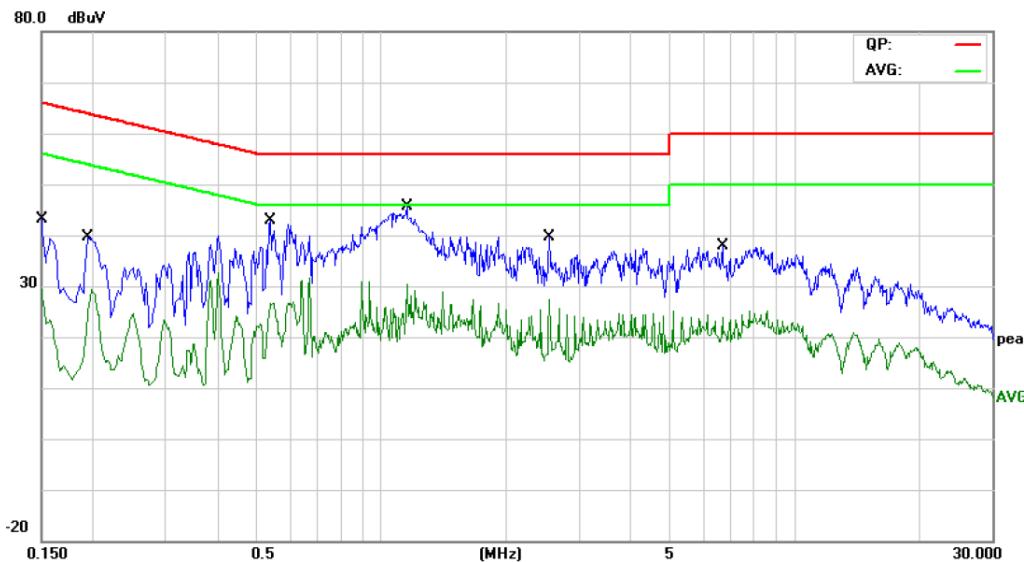
6.5 Deviation From Test Standard

No deviation

6.6 Test Data

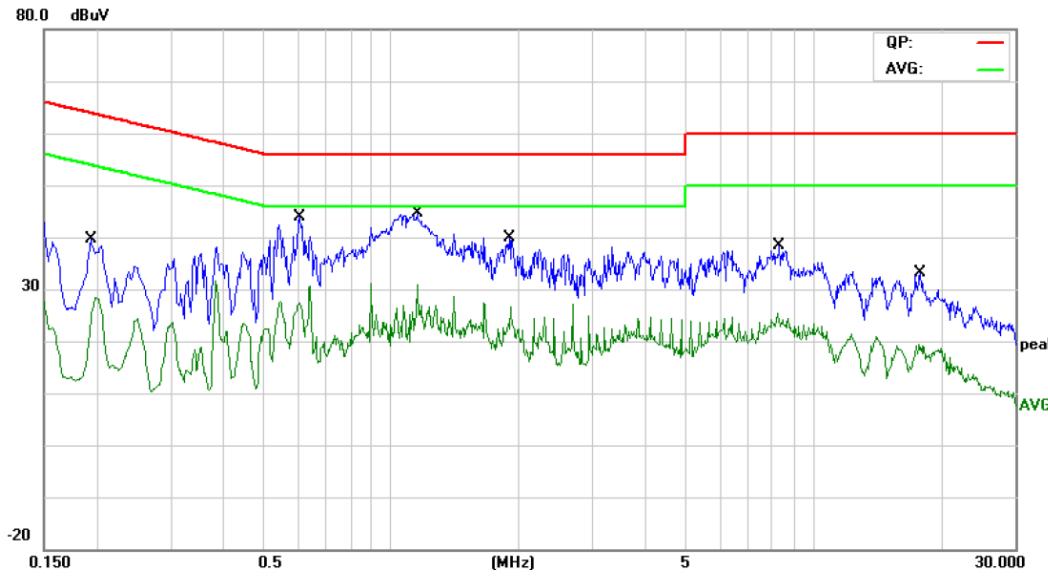
Please refer to the Attachment B.

Attachment A--Conducted Emission Test Data

Temperature:	23.6°C	Relative Humidity:	43%					
Test Voltage:	AC 120V/60Hz							
Terminal:	Line							
Test Mode:	Mode 1							
Remark:	Only worse case is reported							
 <p>The graph shows conducted emission test data in dBuV on the y-axis (ranging from -20 to 80.0) versus frequency in MHz on the x-axis (ranging from 0.150 to 30.000). A red line represents the Quasi-Peak (QP) measurement, and a green line represents the Average (AVG) measurement. A blue line shows the raw signal. A green shaded band indicates the measurement limit. The QP limit is approximately 65.99 dBuV, and the AVG limit is approximately 56.00 dBuV. The test data shows several peaks, with the highest peak reaching approximately 41.10 dBuV at 0.150 MHz.</p>								
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Over Detector
1	0.1500	29.51	11.59	41.10	65.99	-24.89	QP	
2	0.1500	16.30	11.59	27.89	55.99	-28.10	AVG	
3	0.1940	24.14	11.66	35.80	63.86	-28.06	QP	
4	0.1940	12.51	11.66	24.17	53.86	-29.69	AVG	
5	0.5380	25.32	11.50	36.82	56.00	-19.18	QP	
6	0.5380	14.05	11.50	25.55	46.00	-20.45	AVG	
7	*	29.02	11.09	40.11	56.00	-15.89	QP	
8	1.1500	9.49	11.09	20.58	46.00	-25.42	AVG	
9	2.5420	22.32	10.30	32.62	56.00	-23.38	QP	
10	2.5420	16.53	10.30	26.83	46.00	-19.17	AVG	
11	6.6660	15.42	10.03	25.45	60.00	-34.55	QP	
12	6.6660	7.49	10.03	17.52	50.00	-32.48	AVG	

Remark:

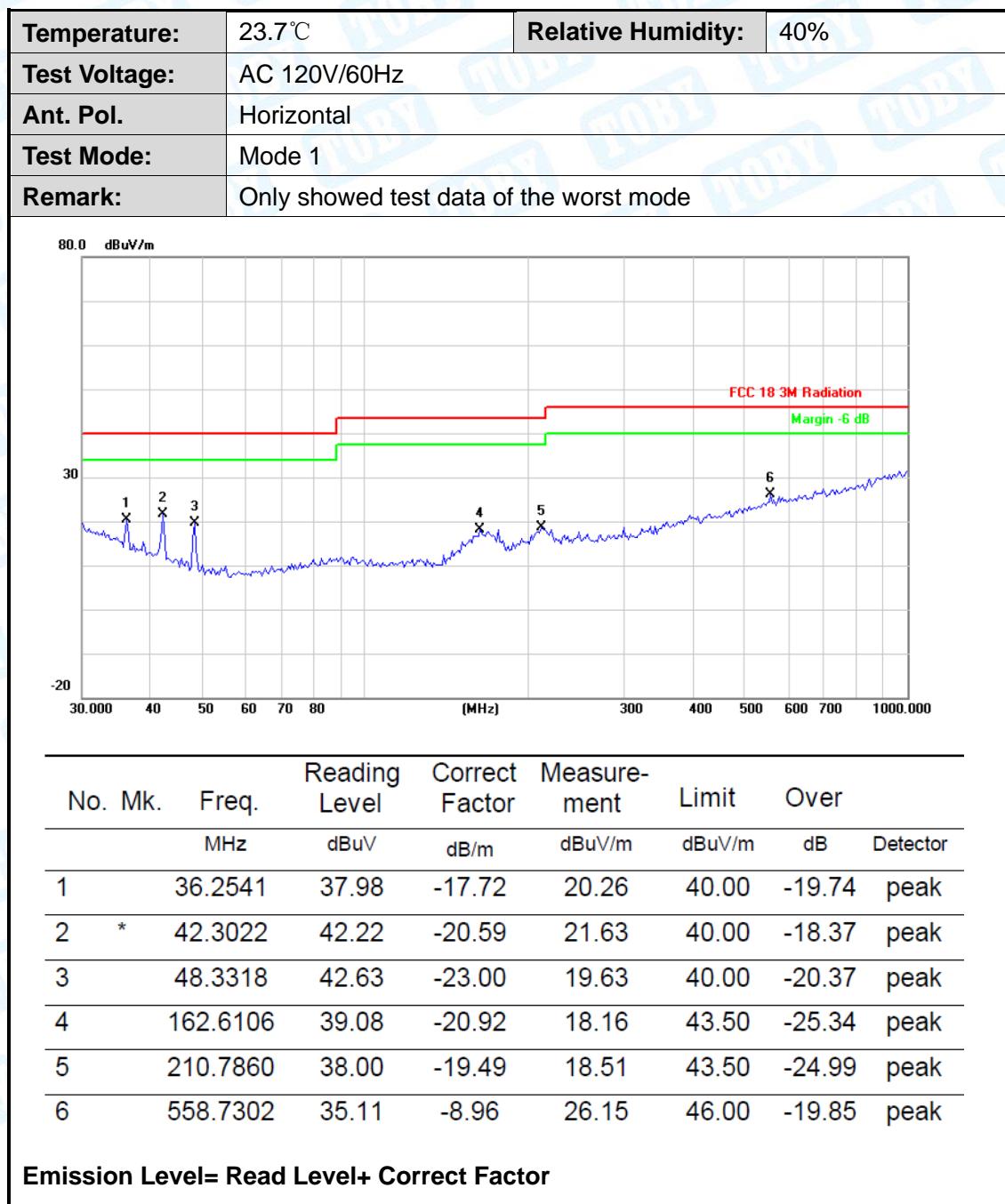
1. Corr. Factor (dB) = LISN Factor (dB) + Cable Loss (dB)
2. Margin (dB) = QuasiPeak/Average (dBuV)-Limit (dBuV)

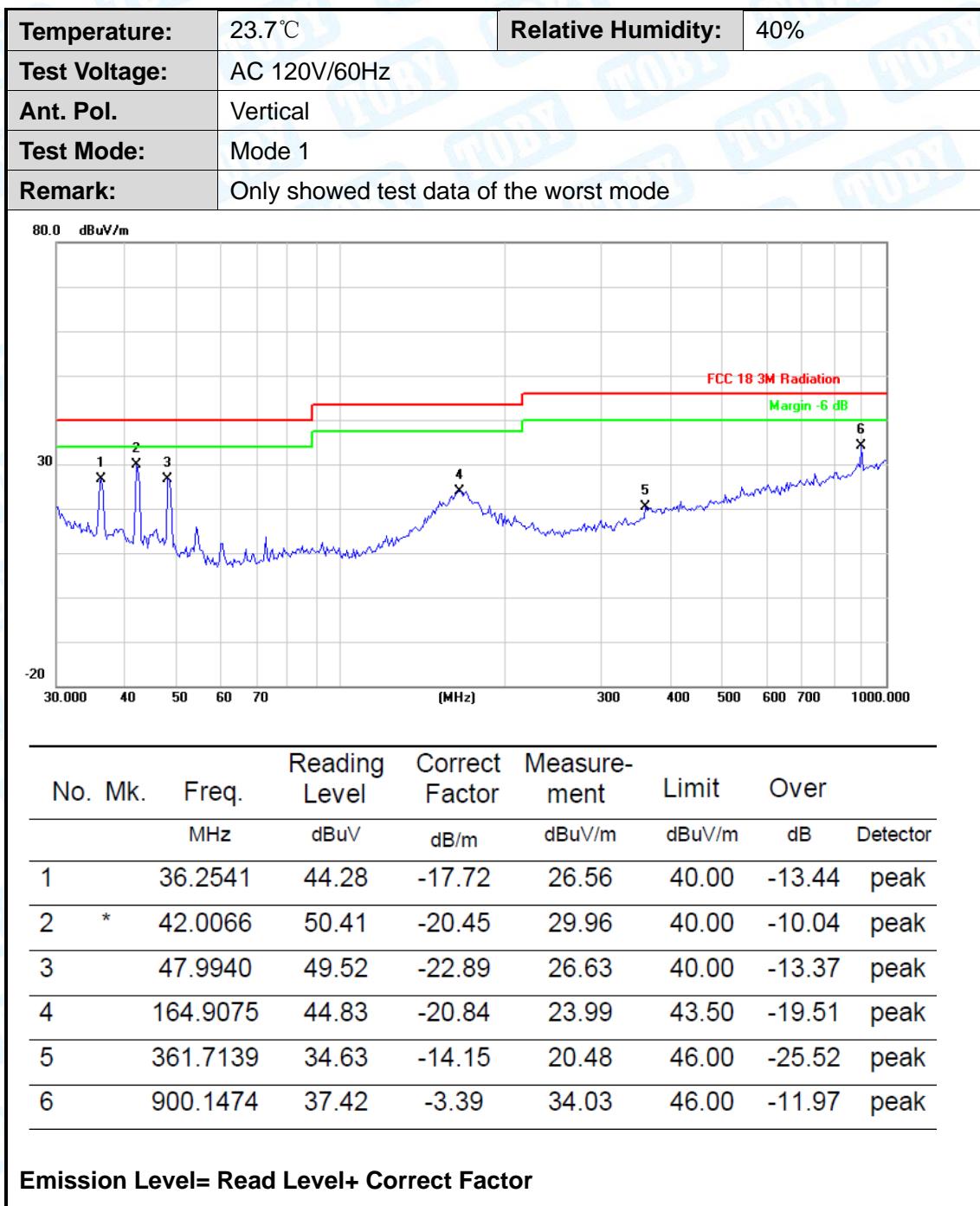
Temperature:	23.6°C	Relative Humidity:	43%				
Test Voltage:	AC 120V/60Hz						
Terminal:	Neutral						
Test Mode:	Mode 1						
Remark:	Only worse case is reported						
							
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over
		MHz	dBuV	dB	dBuV	dBuV	dB Detector
1		0.1940	24.57	11.66	36.23	63.86	-27.63 QP
2		0.1940	13.00	11.66	24.66	53.86	-29.20 AVG
3		0.6060	26.65	11.47	38.12	56.00	-17.88 QP
4		0.6060	15.18	11.47	26.65	46.00	-19.35 AVG
5	*	1.1500	28.55	11.09	39.64	56.00	-16.36 QP
6		1.1500	18.36	11.09	29.45	46.00	-16.55 AVG
7		1.8980	22.00	10.55	32.55	56.00	-23.45 QP
8		1.8980	11.62	10.55	22.17	46.00	-23.83 AVG
9		8.3139	19.74	10.08	29.82	60.00	-30.18 QP
10		8.3139	12.50	10.08	22.58	50.00	-27.42 AVG
11		17.9020	13.43	10.48	23.91	60.00	-36.09 QP
12		17.9020	7.35	10.48	17.83	50.00	-32.17 AVG

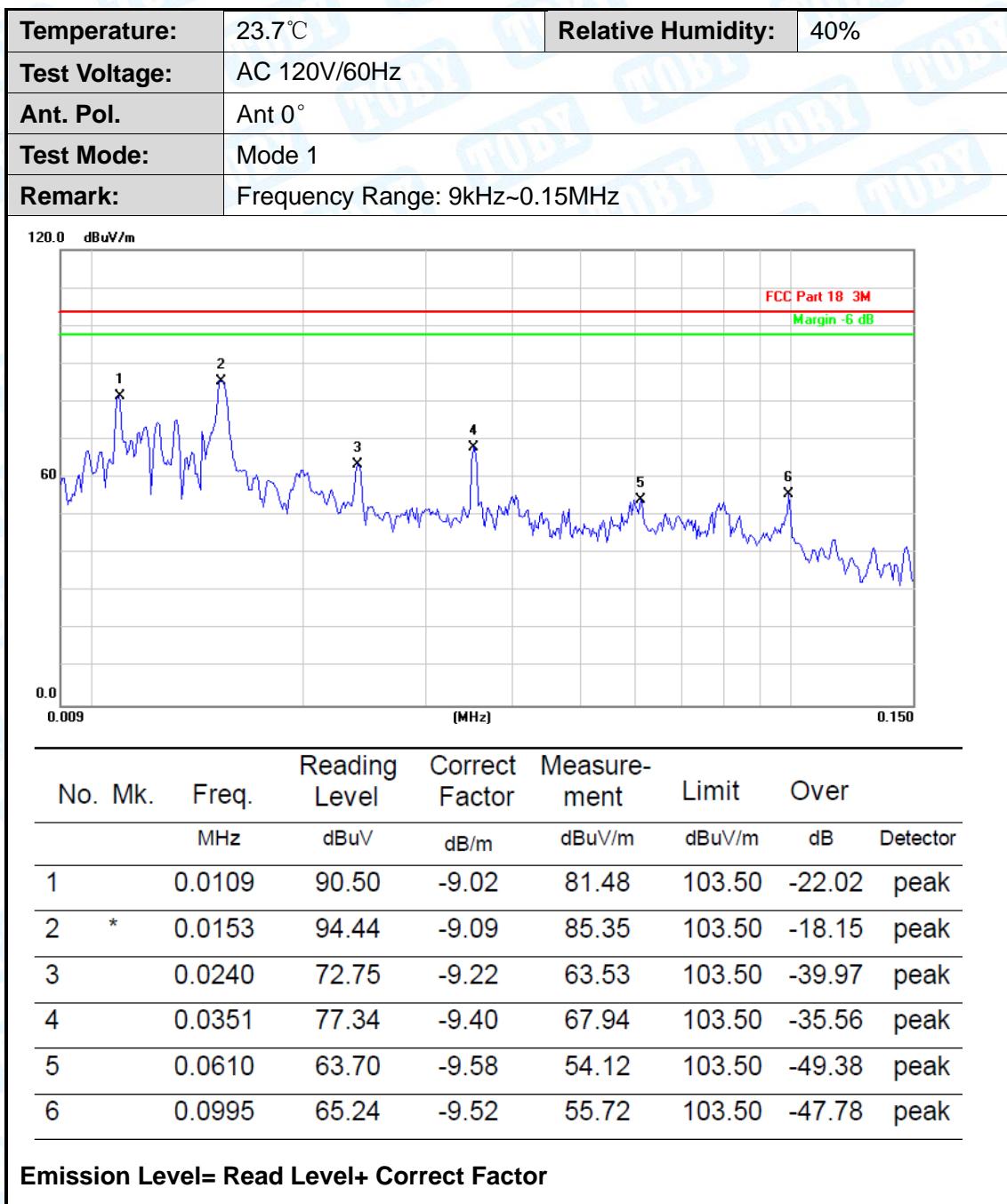
Remark:

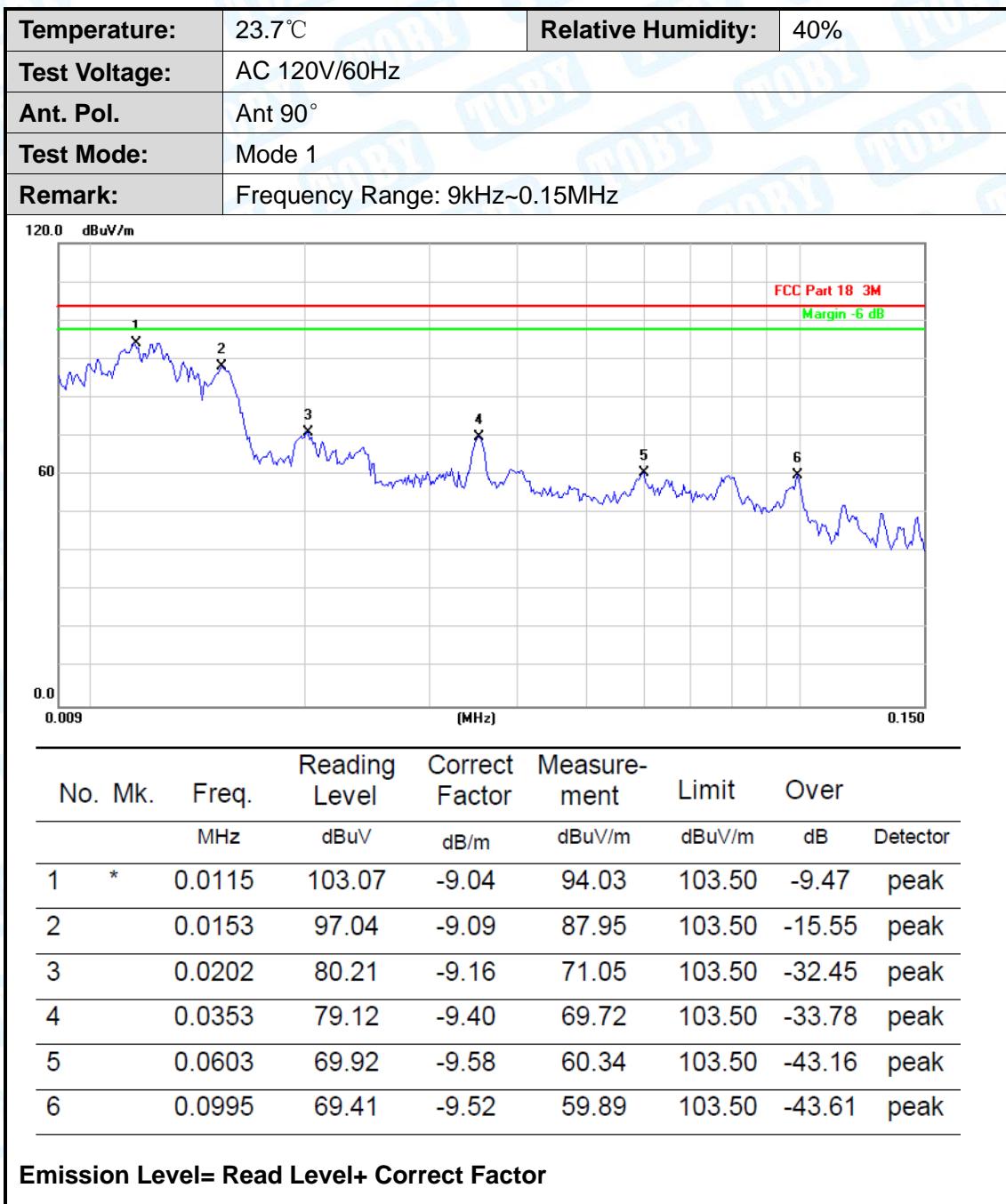
1. Corr. Factor (dB) = LISN Factor (dB) + Cable Loss (dB)
2. Margin (dB) = QuasiPeak/Average (dBuV)-Limit (dBuV)

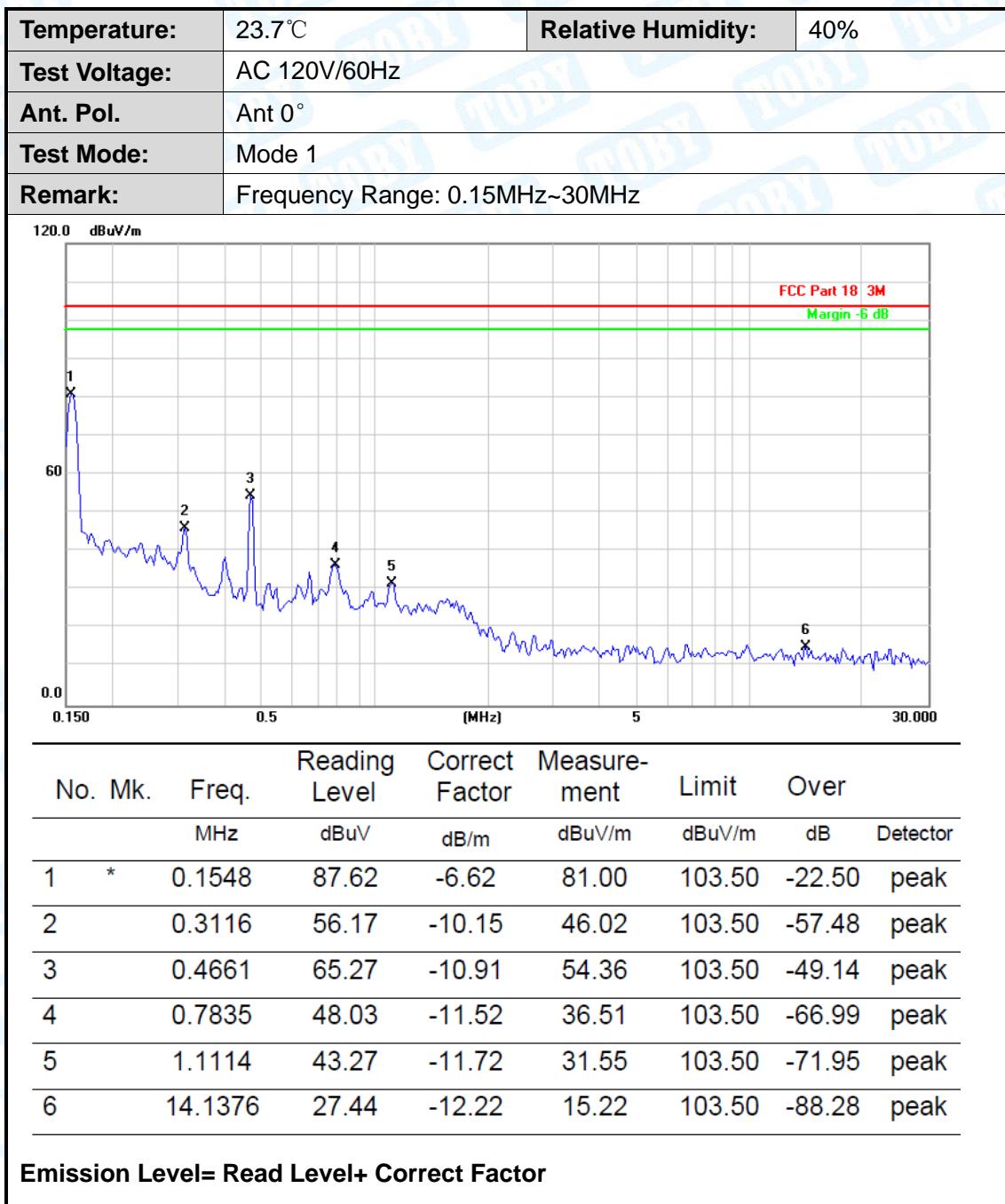
Attachment B-- Radiated Emission Test Data

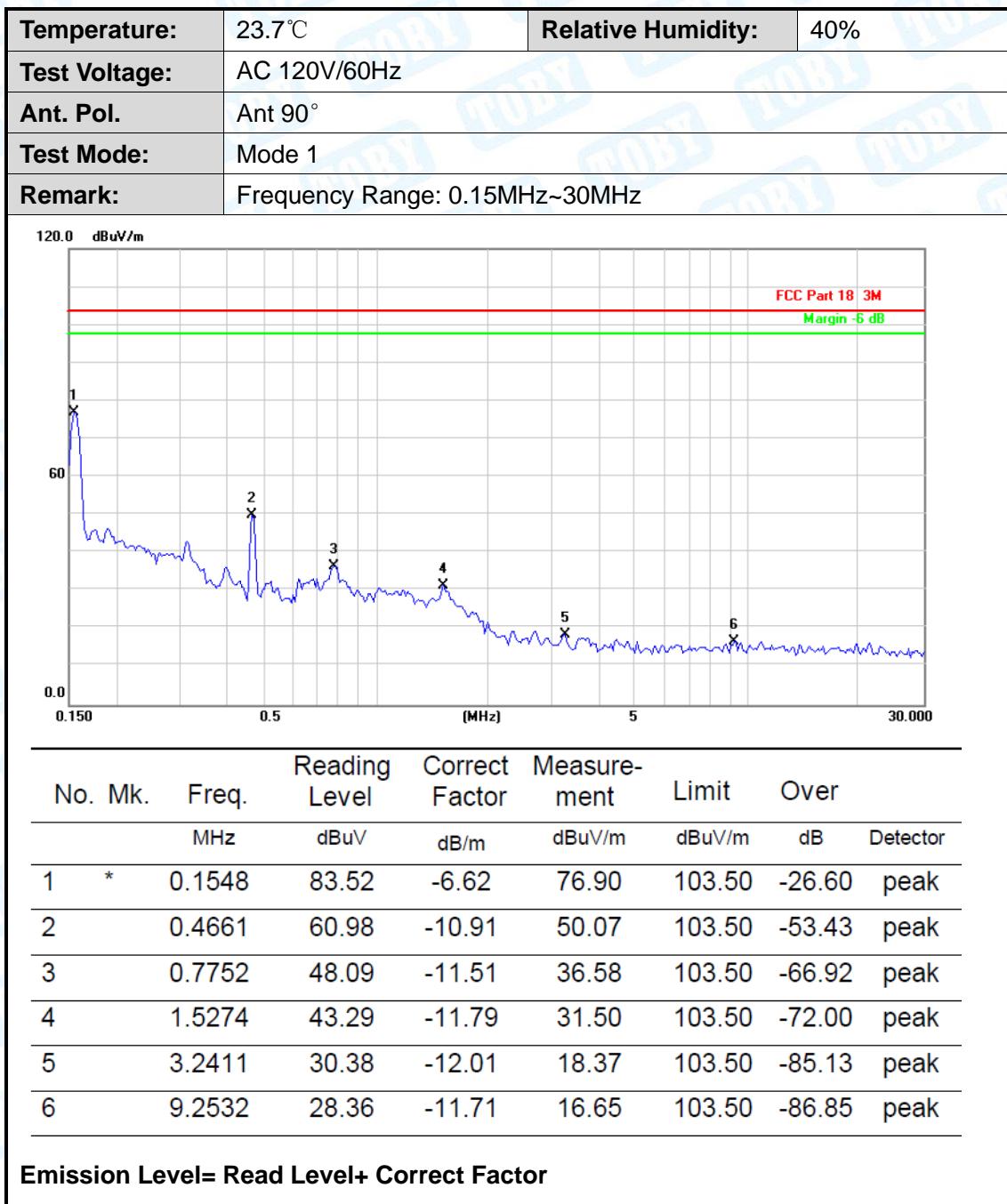












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