

FCC Test Report

FCC ID: 2ADXY59503LN

Original Grant

Report No. : TB-FCC159572
Applicant : The Vollrath Company, LLC
Equipment Under Test (EUT)
EUT Name : Buffet Induction Warmer
Model No. : 59503LN75
Series Model No. : 5950275, 5950280, 59502DW, 59503LN85, 59503LNDW,
59503SB75, 59503SB85, 59503SBDW
Brand Name : VOLLRATH
Receipt Date : 2018-04-26
Test Date : 2018-04-27 to 2018-05-08
Issue Date : 2018-05-09
Standards : FCC Part 18 : 2017
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 :

Jason Xu

Engineer Supervisor :

Ivan Su

Engineer Manager :

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.

Contents

CONTENTS.....	2
1. GENERAL INFORMATION ABOUT EUT	4
1.1 Client Information.....	4
1.2 General Description of EUT (Equipment Under Test)	4
1.3 Block Diagram Showing the Configuration of System Tested.....	4
1.4 Description of Support Units	5
1.5 Description of Test Mode.....	5
1.6 Test Location	5
2. TEST SUMMARY	6
3. TEST EQUIPMENT	6
4. CONDUCTED EMISSION TEST	7
4.1 Test Standard and Limit.....	7
4.2 Test Setup.....	7
4.3 Test Procedure.....	7
4.4 Deviation	8
4.5 Test Data.....	8
5. RADIATED EMISSION TEST	9
5.1 Test Standard and Limit.....	9
5.2 Test Setup.....	9
5.3 Test Procedure.....	9
5.4 Deviation	10
5.5 Test Data.....	10
ATTACHMENT A-- CONDUCTED EMISSION TEST DATA	11
ATTACHMENT B-- RADIATED EMISSION TEST DATA	15

Revision History

Report No.	Version	Description	Issued Date
TB-FCC159572	Rev.01	Initial issue of report	2018-05-09

1. General Information about EUT

1.1 Client Information

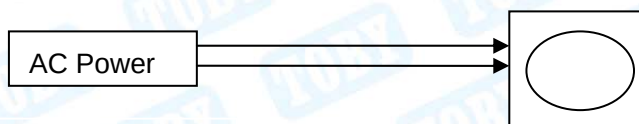
Applicant	:	The Vollrath Company, LLC
Address	:	1236 North 18th Street, Sheboygan, WI 53081
Manufacturer	:	Luxine (Xi'an) Electronics Co., Ltd.
Address	:	5th Building, No.29, 3rd Shanglinyuan Rd, Xi'an, Shaanxi, China

1.2 General Description of EUT (Equipment Under Test)

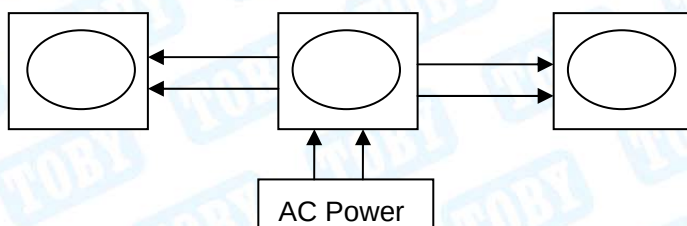
EUT Name	:	Induction Buffet Warmer
Models No.	:	5950275, 5950280, 59502DW, 59503LN75, 59503LN85, 59503LNDW, 59503SB75, 59503SB85, 59503SBDW
Model difference	:	All these models are identical in the same PCB, layout and electrical circuit, the only difference is the color of the appearance and installation, drop-in model with "DW" suffix has one more control box.
Power Supply	:	AC 120V, 60Hz
Power	:	One unit rated power: 310W Three units rated power: 3*310W
Connecting I/O Port(s)	:	Please refer to the User's Manual
Note: For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.		

1.3 Block Diagram Showing the Configuration of System Tested

One Unit Working



Three Units Working



1.4 Description of Support Units

The EUT has been tested with water up to 80% of the maximum capacity of the boiler.

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 the EUT operation mode, and the worst Case is when the EUT is operation with the maximum power, so the conducted and radiated emission data of bellow only showed the worst case.

1.6 Test Location

The testing report were performed by the Shenzhen Toby Technology Co., Ltd., in their facilities located at 1A/F., Bldg.6, Yusheng Industrial Zone, The National Road No.107 Xixiang Section 467, Xixiang, Bao'an, 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: 2005 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: 2005 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.

IC Registration No.: (11950A-1)

The Laboratory has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing. The site registration: Site# 11950A-1.

2. Test Summary

FCC Part 18: 2017			
Standard Section	Test Item	Test Method	Judgment
18.305	Radiated Emission (9KHz to 30MHz)	FCC OST/MP-5:1986	PASS
18.307(a)	Conducted Emission (9KHz to 30MHz)	FCC OST/MP-5:1986	PASS
Note: N/A is an abbreviation for Not Applicable.			

3. Test Equipment

Conducted Emission Test					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due Date
EMI Test Receiver	Rohde & Schwarz	ESCI	100321	Jul. 20, 2017	Jul. 19, 2018
RF Switching Unit	Compliance Direction Systems Inc	RSU-A4	34403	Jul. 20, 2017	Jul. 19, 2018
AMN	SCHWARZBECK	NNBL 8226-2	8226-2/164	Jul. 20, 2017	Jul. 19, 2018
LISN	Rohde & Schwarz	ENV216	101131	Jul. 21, 2017	Jul. 20, 2018
Radiation Emission Test					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due Date
Spectrum Analyzer	Agilent	E4407B	MY45106456	Jul. 20, 2017	Jul. 19, 2018
EMI Test Receiver	Rohde & Schwarz	ESPI	100010/007	Jul. 20, 2017	Jul. 19, 2018
Bilog Antenna	ETS-LINDGREN	3142E	00117537	Mar.16, 2018	Mar. 15, 2019
Bilog Antenna	ETS-LINDGREN	3142E	00117542	Mar.16, 2018	Mar. 15, 2019
Horn Antenna	ETS-LINDGREN	3117	00143207	Mar.16, 2018	Mar. 15, 2019
Horn Antenna	ETS-LINDGREN	3117	00143209	Mar.16, 2018	Mar. 15, 2019
Loop Antenna	SCHWARZBECK	FMZB 1519 B	1519B-059	Jul. 03, 2017	Jul. 02, 2018
Pre-amplifier	Sonoma	310N	185903	Mar.17, 2018	Mar. 16, 2019
Pre-amplifier	HP	8449B	3008A00849	Mar.17, 2018	Mar. 16, 2019
Cable	HUBER+SUHNER	100	SUCOFLEX	Mar.17, 2018	Mar. 16, 2019
Positioning Controller	ETS-LINDGREN	2090	N/A	N/A	N/A

4. Conducted Emission Test

4.1 Test Standard and Limit

4.1.1 Test Standard

FCC Part 18.307(a)

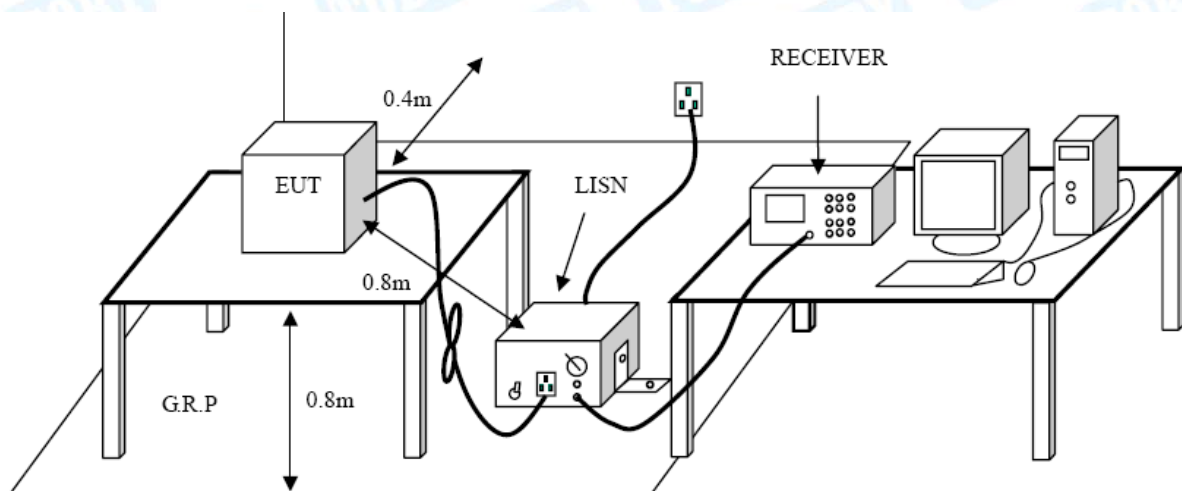
4.1.2 Test Limit

Conducted Emission Test Limit

Frequency (MHz)	Maximum RF Line Voltage (dB μ V)	
	Quasi-peak Level	Average Level
0.009 ~ 0.05	110	--
0.05 ~ 0.15	90 ~ 80	--
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.

4.2 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.

4.4 Deviation

The test is no deviation from the standard.

4.5 Test Data

Please refer to the Attachment A.

5. Radiated Emission Test

5.1 Test Standard and Limit

5.1.1 Test Standard

FCC Part 18.305

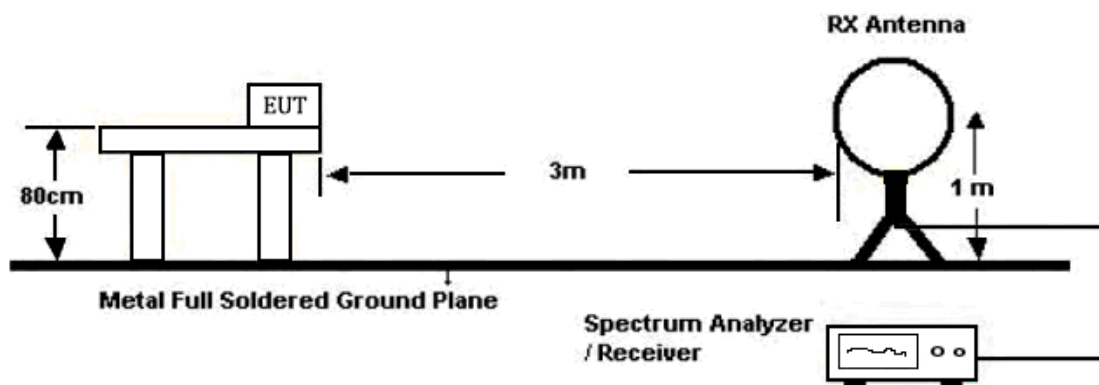
5.1.2 Test Limit

Radiated Emission Limit (9kHz~30MHz)

Frequency (MHz)	Field Strength Limit (microvolt/meter)	Measurement Distance (meters)
0.009~30	1500	30

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

5.2 Test Setup



5.3 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) 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.
- (3) For the actual test configuration, please see the test setup photo.

5.4 Deviation

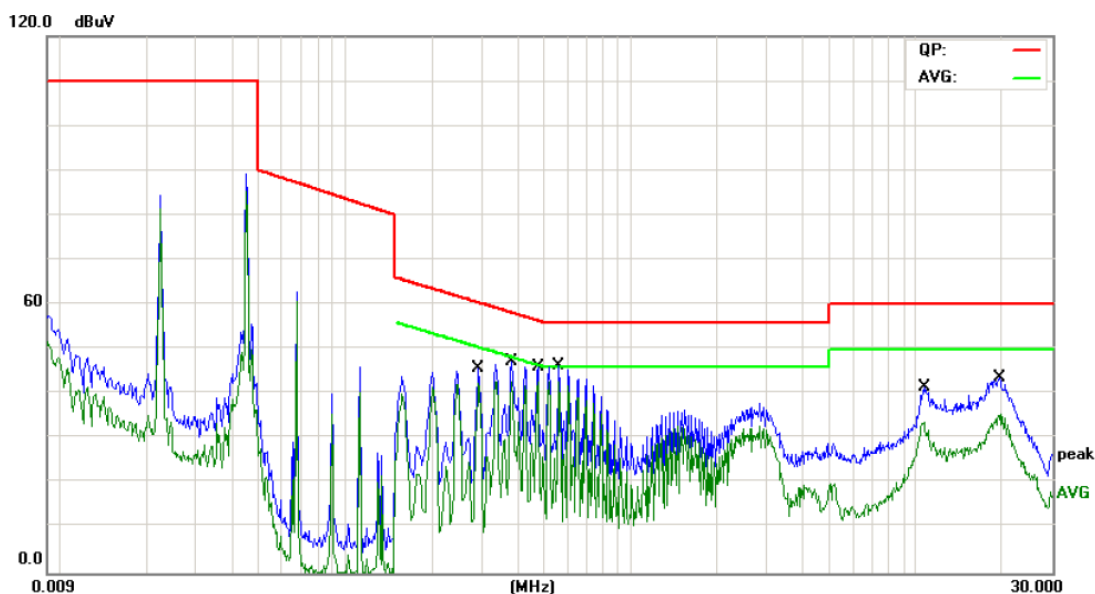
For Radiated Emission, test at 3m distance instead of 30m distance. 40dB was plus to the limit of 30m measurement limit. More details refer to FCC part 15.31(f)(2).

5.5 Test Data

Please refer to the Attachment B.

Attachment A-- Conducted Emission Test Data

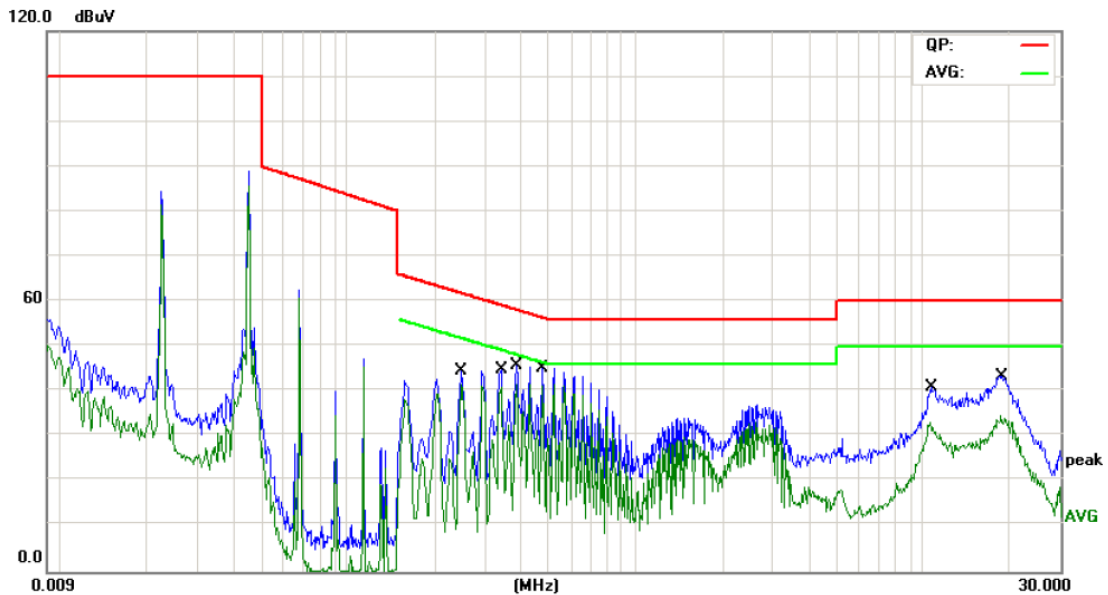
Temperature:	22 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Terminal:	Line		
Test Mode:	One Unit working		
Remark:	Only worse case is reported		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector
1		0.2940	34.99	9.59	44.58	60.41	-15.83	QP
2		0.2940	32.48	9.59	42.07	50.41	-8.34	AVG
3		0.3820	36.32	9.60	45.92	58.23	-12.31	QP
4		0.3820	33.61	9.60	43.21	48.23	-5.02	AVG
5		0.4740	34.91	9.60	44.51	56.44	-11.93	QP
6		0.4740	32.25	9.60	41.85	46.44	-4.59	AVG
7		0.5620	35.22	9.60	44.82	56.00	-11.18	QP
8	*	0.5620	32.40	9.60	42.00	46.00	-4.00	AVG
9		10.7180	27.90	10.11	38.01	60.00	-21.99	QP
10		10.7180	22.16	10.11	32.27	50.00	-17.73	AVG
11		19.5300	29.08	10.52	39.60	60.00	-20.40	QP
12		19.5300	24.10	10.52	34.62	50.00	-15.38	AVG

Emission Level= Read Level+ Correct Factor

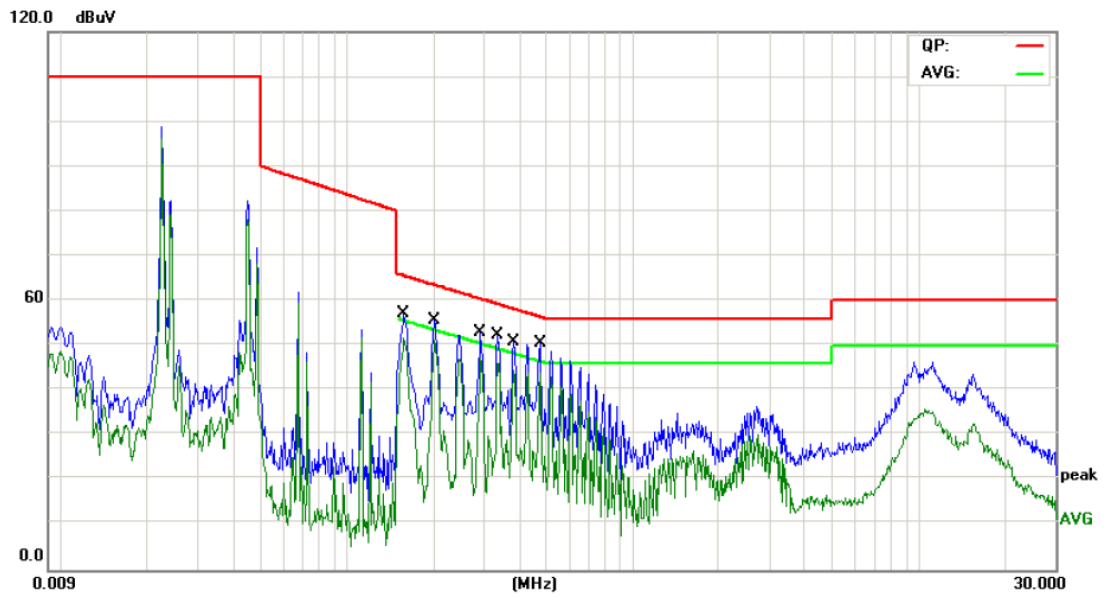
Temperature:	22 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Terminal:	Neutral		
Test Mode:	One Unit working		
Remark:	Only worse case is reported		



No. Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector
1	0.2500	33.64	9.61	43.25	61.75	-18.50	QP
2	0.2500	31.06	9.61	40.67	51.75	-11.08	AVG
3	0.3420	32.58	9.57	42.15	59.15	-17.00	QP
4	0.3420	29.97	9.57	39.54	49.15	-9.61	AVG
5	0.3860	34.25	9.58	43.83	58.15	-14.32	QP
6 *	0.3860	31.58	9.58	41.16	48.15	-6.99	AVG
7	0.4780	31.77	9.58	41.35	56.37	-15.02	QP
8	0.4780	28.93	9.58	38.51	46.37	-7.86	AVG
9	10.6300	19.60	10.29	29.89	60.00	-30.11	QP
10	10.6300	10.41	10.29	20.70	50.00	-29.30	AVG
11	18.8260	28.36	10.64	39.00	60.00	-21.00	QP
12	18.8260	23.22	10.64	33.86	50.00	-16.14	AVG

Emission Level= Read Level+ Correct Factor

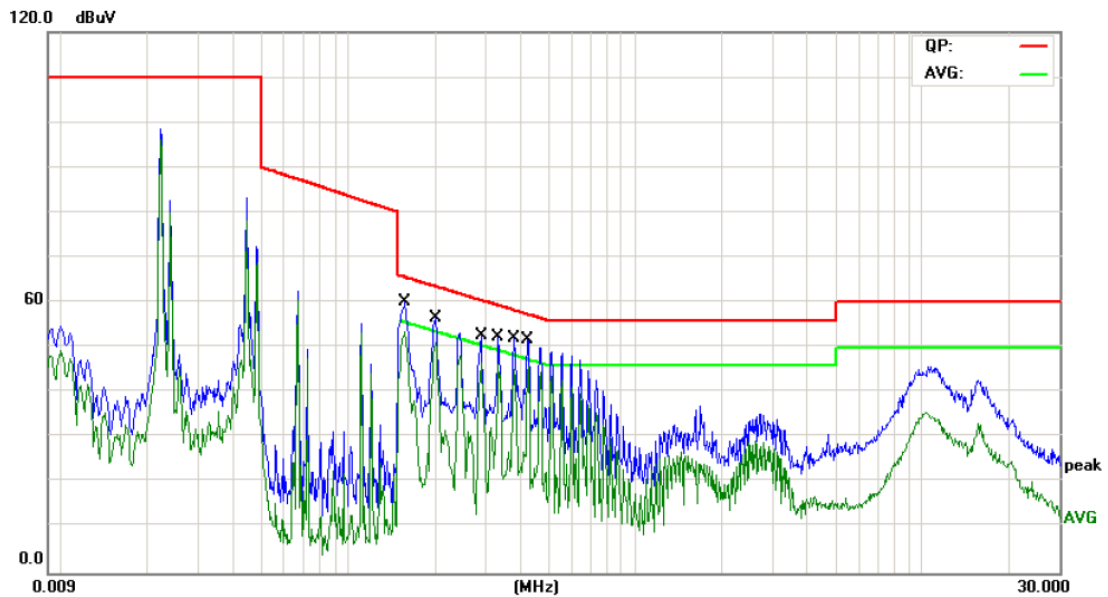
Temperature:	22 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Terminal:	Line		
Test Mode:	Three Units working		
Remark:	Only worse case is reported		



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector
1		0.1580	47.58	9.58	57.16	65.56	-8.40	QP
2		0.1580	42.18	9.58	51.76	55.56	-3.80	AVG
3		0.2020	46.05	9.58	55.63	63.52	-7.89	QP
4		0.2020	41.46	9.58	51.04	53.52	-2.48	AVG
5		0.2938	43.22	9.59	52.81	60.41	-7.60	QP
6		0.2938	37.58	9.59	47.17	50.41	-3.24	AVG
7		0.3379	42.66	9.59	52.25	59.25	-7.00	QP
8		0.3379	36.47	9.59	46.06	49.25	-3.19	AVG
9		0.3820	41.32	9.60	50.92	58.23	-7.31	QP
10		0.3820	34.97	9.60	44.57	48.23	-3.66	AVG
11		0.4738	41.05	9.60	50.65	56.45	-5.80	QP
12	*	0.4738	34.45	9.60	44.05	46.45	-2.40	AVG

Emission Level= Read Level+ Correct Factor

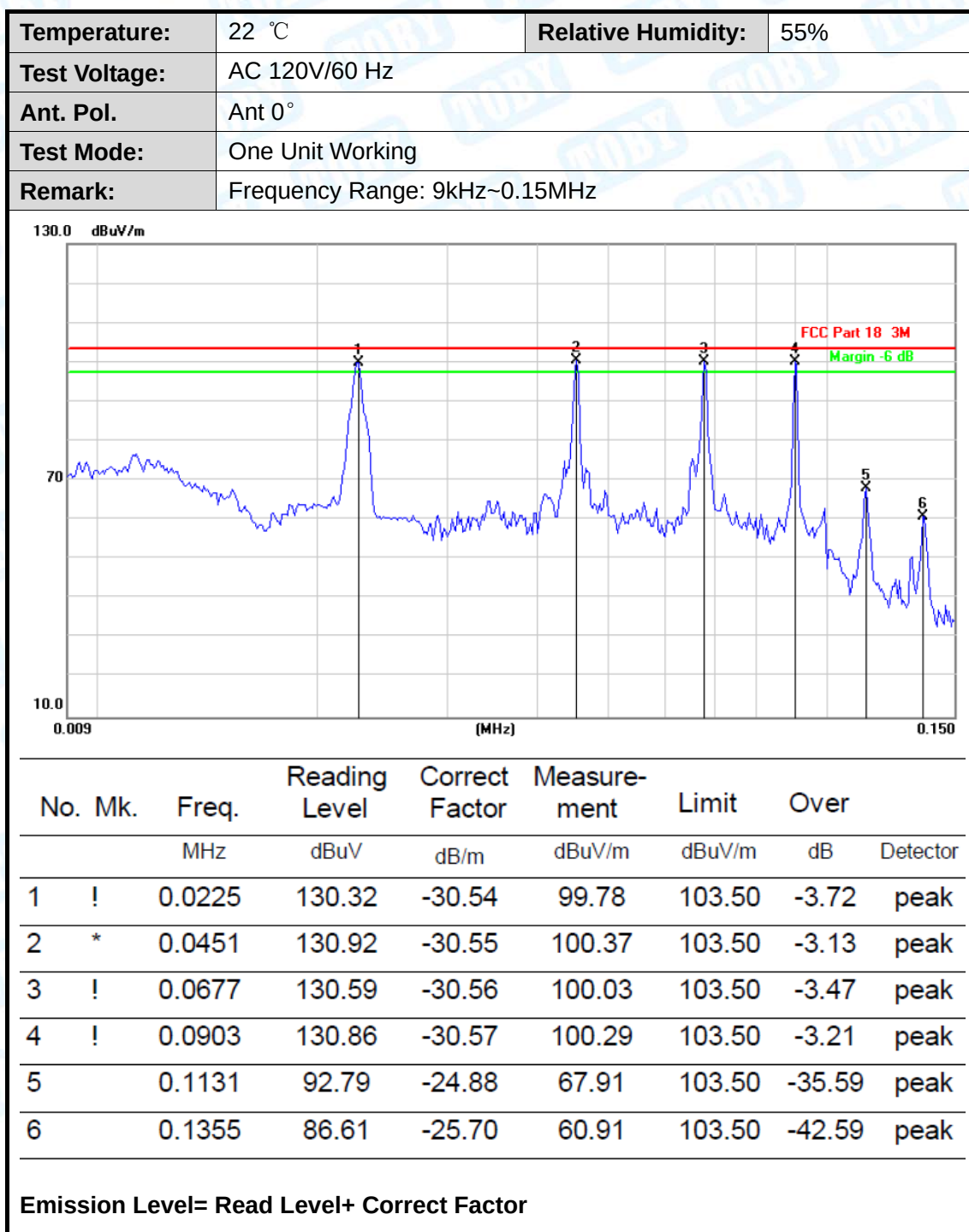
Temperature:	22 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Terminal:	Neutral		
Test Mode:	Three Units working		
Remark:	Only worse case is reported		

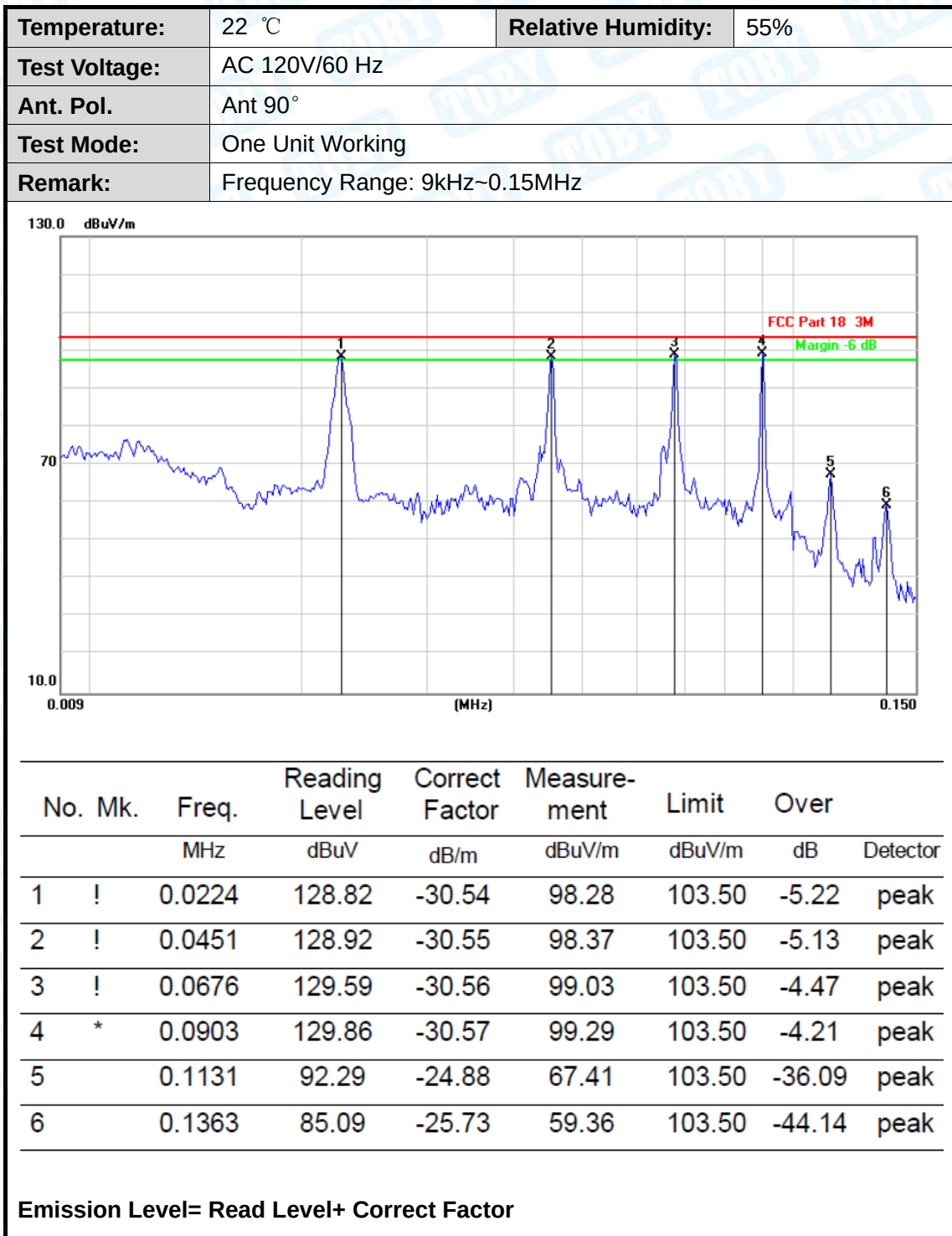


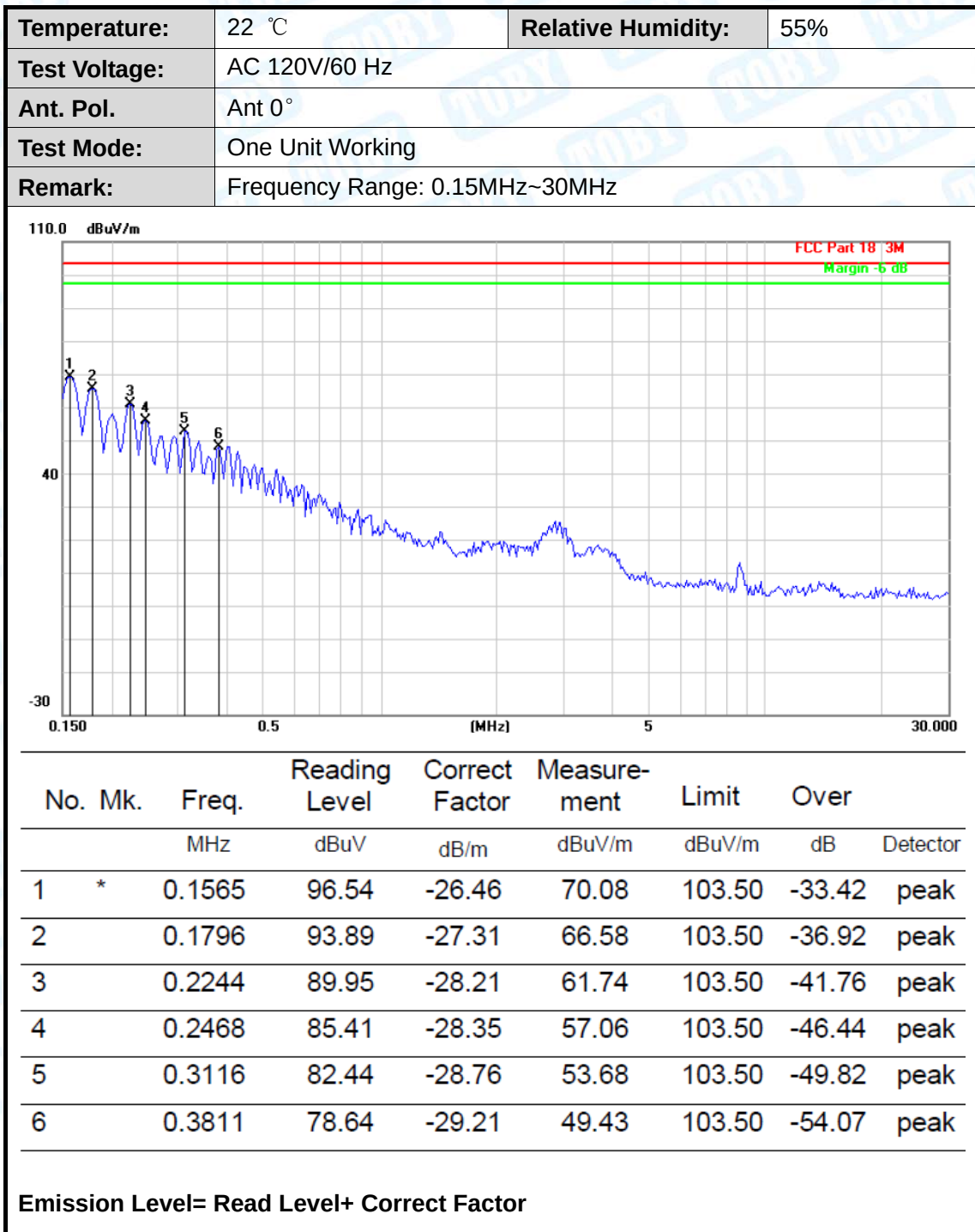
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector
1		0.1580	50.42	9.58	60.00	65.56	-5.56	QP
2		0.1580	44.03	9.58	53.61	55.56	-1.95	AVG
3		0.2020	46.88	9.58	56.46	63.52	-7.06	QP
4		0.2020	41.47	9.58	51.05	53.52	-2.47	AVG
5		0.2900	42.99	9.59	52.58	60.52	-7.94	QP
6		0.2900	37.12	9.59	46.71	50.52	-3.81	AVG
7		0.3339	42.85	9.59	52.44	59.35	-6.91	QP
8		0.3339	36.80	9.59	46.39	49.35	-2.96	AVG
9		0.3780	42.54	9.60	52.14	58.32	-6.18	QP
10		0.3780	35.62	9.60	45.22	48.32	-3.10	AVG
11		0.4220	42.30	9.60	51.90	57.41	-5.51	QP
12	*	0.4220	36.04	9.60	45.64	47.41	-1.77	AVG

Emission Level= Read Level+ Correct Factor

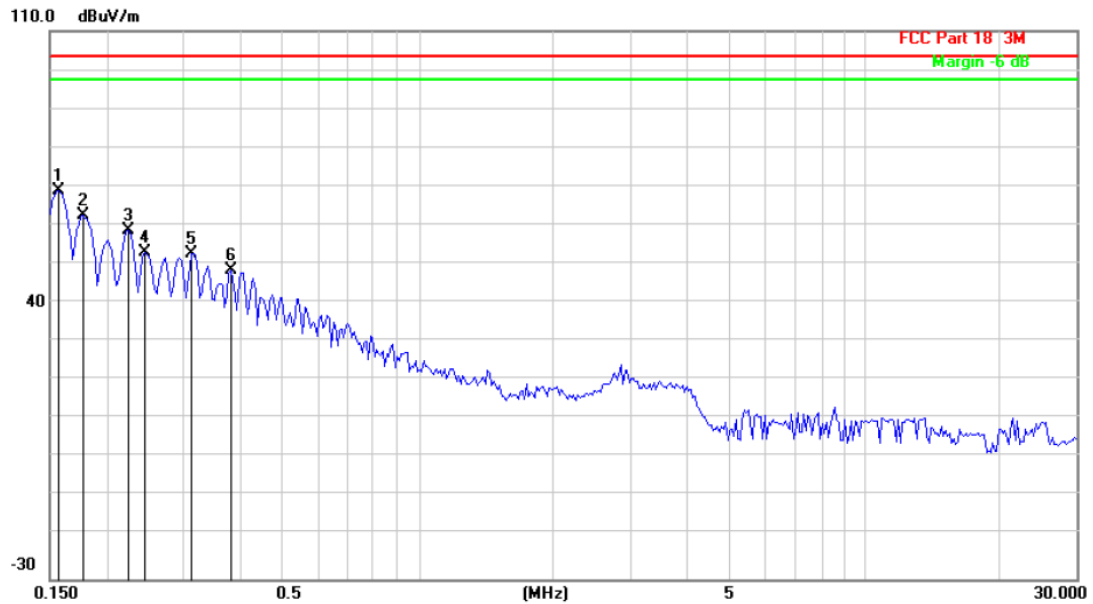
Attachment B-- Radiated Emission Test Data





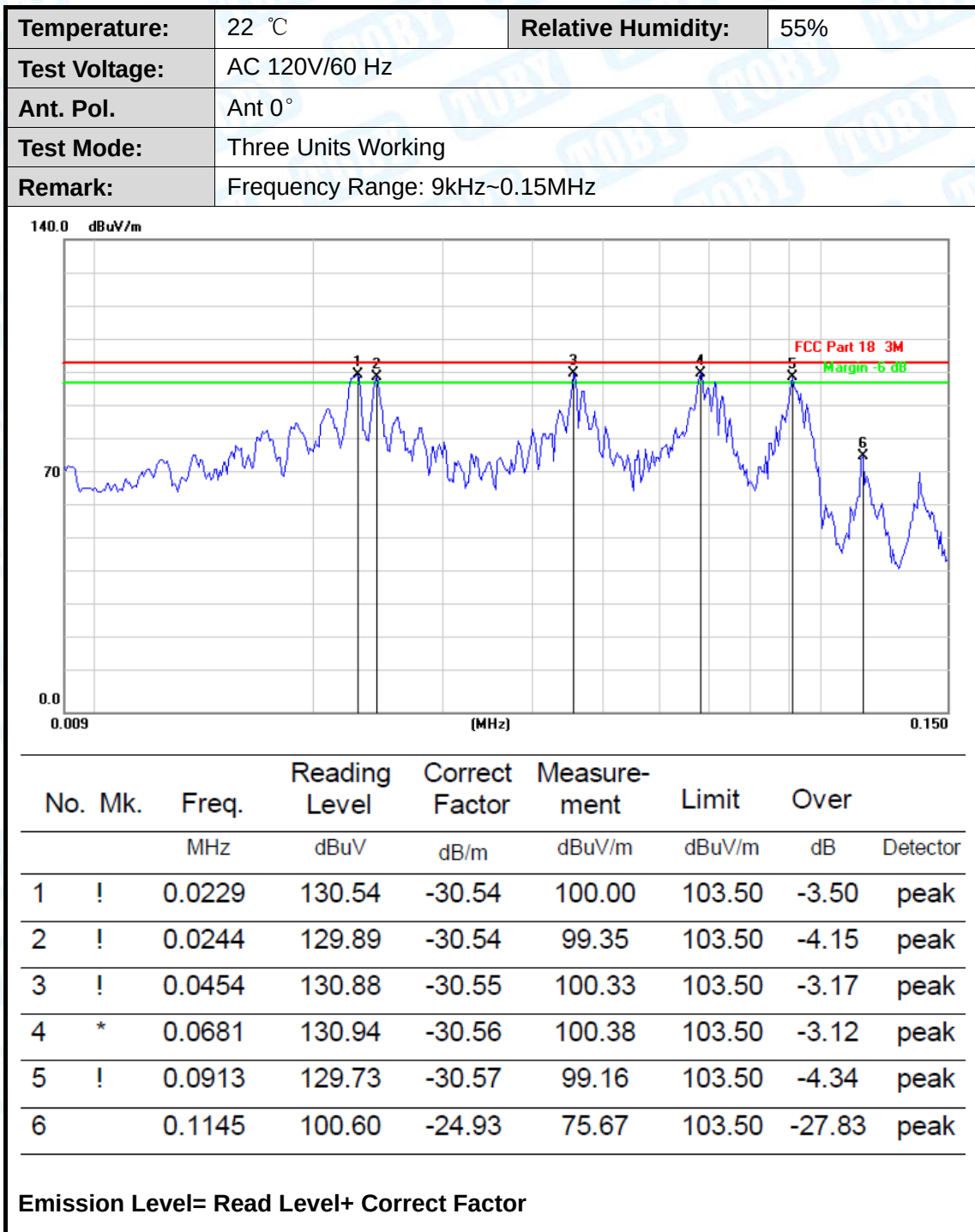


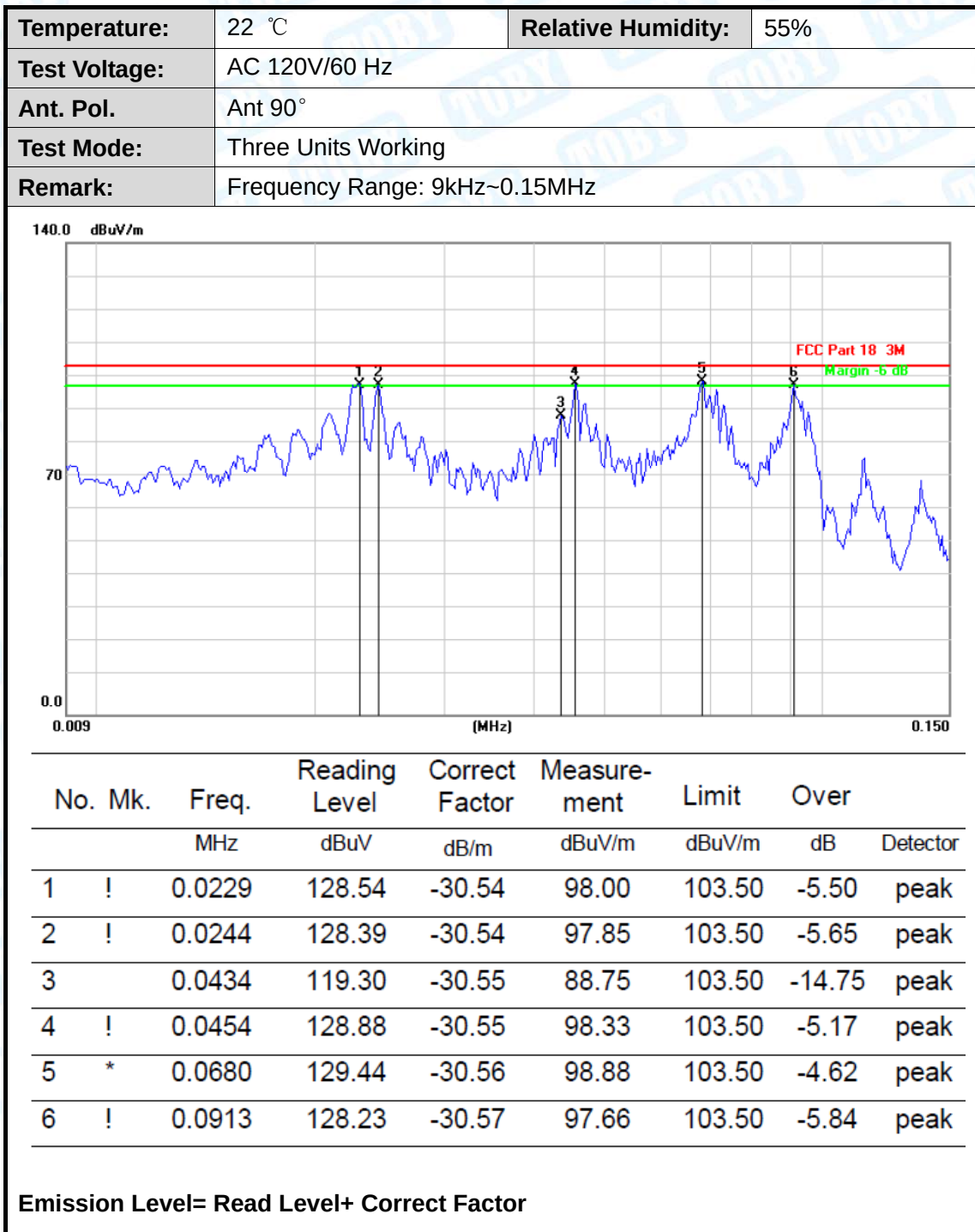
Temperature:	22 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Ant 90°		
Test Mode:	One Unit Working		
Remark:	Frequency Range: 0.15MHz~30MHz		



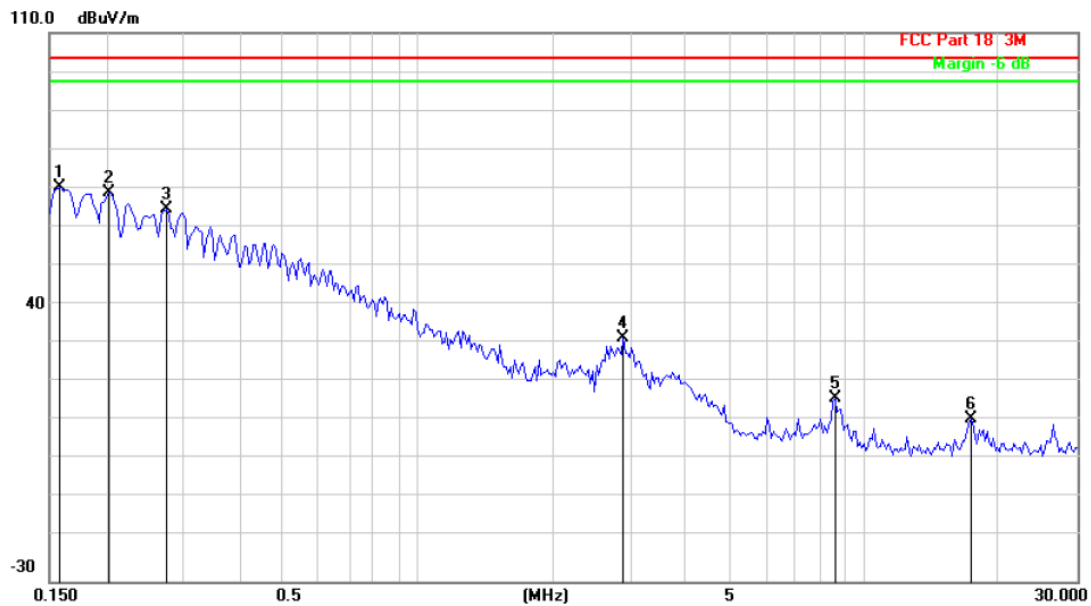
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1	*	0.1565	95.54	-26.46	69.08	103.50	-34.42	peak
2		0.1776	90.26	-27.23	63.03	103.50	-40.47	peak
3		0.2243	87.45	-28.21	59.24	103.50	-44.26	peak
4		0.2442	81.74	-28.34	53.40	103.50	-50.10	peak
5		0.3115	81.94	-28.76	53.18	103.50	-50.32	peak
6		0.3810	78.14	-29.21	48.93	103.50	-54.57	peak

Emission Level= Read Level+ Correct Factor



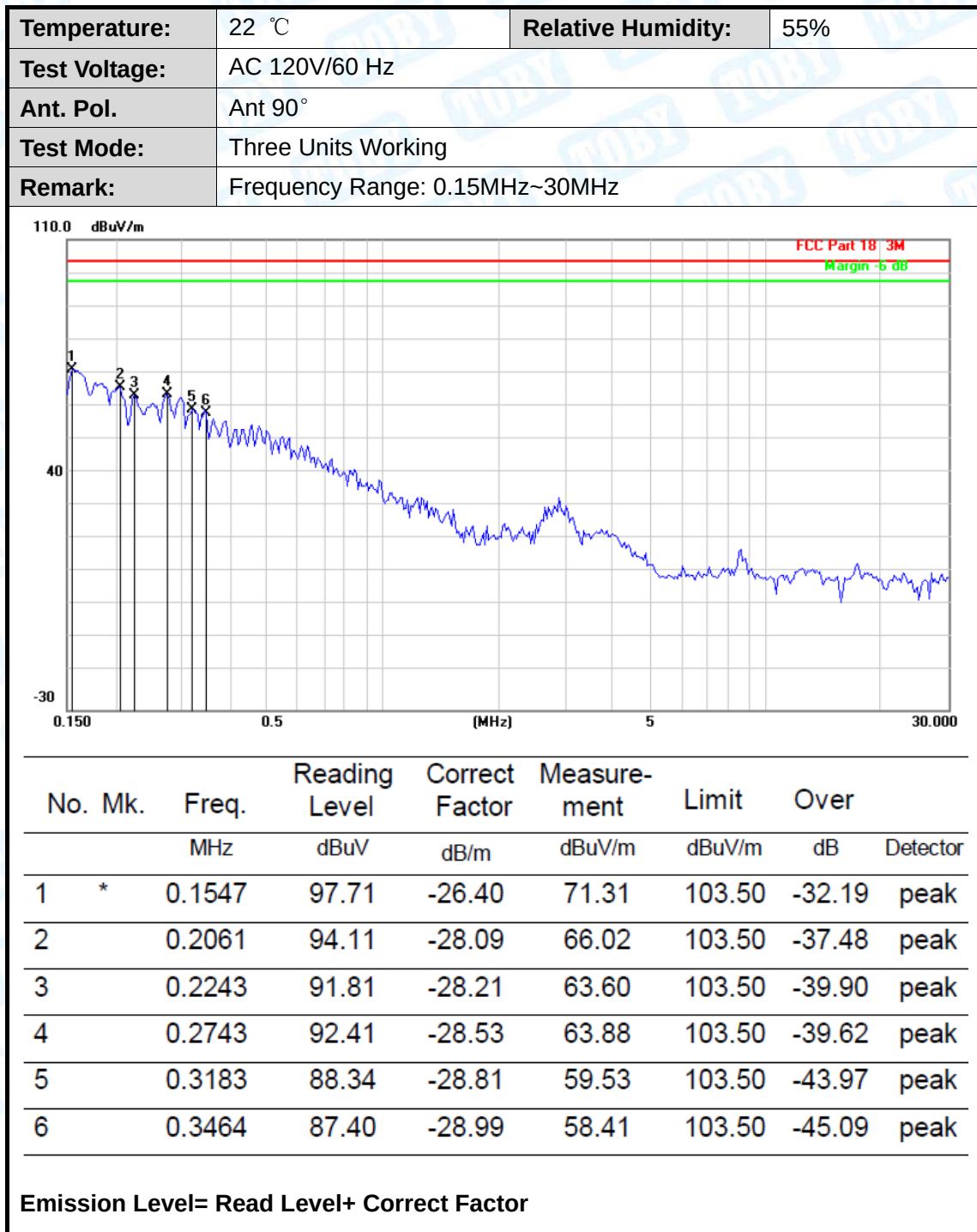


Temperature:	22 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Ant 0°		
Test Mode:	Three Units Working		
Remark:	Frequency Range: 0.15MHz~30MHz		



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1	*	0.1582	97.00	-26.52	70.48	103.50	-33.02	peak
2		0.2040	97.14	-28.08	69.06	103.50	-34.44	peak
3		0.2744	93.41	-28.53	64.88	103.50	-38.62	peak
4		2.8845	62.80	-30.66	32.14	103.50	-71.36	peak
5		8.5917	47.84	-31.15	16.69	103.50	-86.81	peak
6		17.2908	42.77	-31.33	11.44	103.50	-92.06	peak

Emission Level= Read Level+ Correct Factor



-----END OF REPORT-----