

# FCC Radio Test Report

## FCC ID: M82-AIM10W

This report concerns (check one): ☒ Original Grant ☐ Class I Change ☐ Class II Change

**Project No.** : 1710083  
**Equipment** : Computer  
**Test Model** : AIM 10W  
**Series Model** : AIM 10WXXXXXXXXXXXXXXXXXXXXX(where X may be any alphanumeric character , blank or "-".)  
**Applicant** : Advantech Co., Ltd.  
**Address** : No.1, Alley 20, Lane 26, Rueiguang Road, Neihu District, Taipei 11491, Taiwan, R.O.C.

**Date of Receipt** : Nov. 13, 2017  
**Date of Test** : Nov. 13, 2017 ~ Feb. 27, 2018  
**Issued Date** : Mar. 01, 2018  
**Tested by** : BTL Inc.

**Testing Engineer**

:

  
(Kenji Lin)

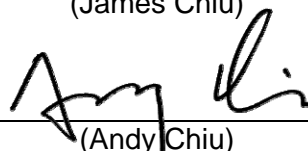
**Technical Manager**

:

  
(James Chiu)

**Authorized Signatory**

:

  
(Andy Chiu)

# B T L I N C .

No.18, Ln. 171, Sec. 2, Jiuzong Rd.,  
Neihu Dist., Taipei City, Taiwan (R.O.C.)  
TEL:+886-2-2657-3299 FAX: +886-2-2657-3331



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### **Limitation**

For the use of the authority's logo is limited unless the Test Standard(s)/Scope(s)/Item(s) mentioned in this test report is (are) included in the conformity assessment authorities acceptance respective.

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## REPORT ISSUED HISTORY

Issue No.	Description	Issued Date
BTL-FCCP-6-1710083	Original Issue.	Mar. 01, 2018

## 1 CERTIFICATION

Equipment : Computer  
Brand Name : ADVANTECH  
Test Model : AIM 10W  
Series Model : AIM 10WXXXXXXXXXXXXXXXXXX(where X may be any alphanumeric character , blank or "-".)  
Applicant : Advantech Co., Ltd.  
Manufacturer : Advantech Co., Ltd.  
Address : No.1, Alley 20, Lane 26, Rueiguang Road, Neihu District, Taipei, Taiwan 11491, R.O.C.  
Factory : N/A  
Address : N/A  
Date of Test : Nov. 13, 2017 ~ Feb. 27, 2018  
Test Sample : Production Unit  
Standard(s) : FCC Part 15, Subpart C (15.225)  
ANSI C63.10-2013

The above equipment has been tested and found in compliance with the requirement of the relative standards by BTL Inc.

The test data, data evaluation, and equipment configuration contained in our test report (Ref No. BTL-FCCP-6-1710083) were obtained utilizing the test procedures, test instruments, test sites that has been accredited by the Authority of TAF according to the ISO-17025 quality assessment standard and technical standard(s).

**Test results included in this report is only for the RFID 13.56MHz part.**

## 2 SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

Standard Section	Test Item	Result
15.207	Conducted emission	PASS
15.35 / 15.205 / 15.209 / 15.225	Radiated emission	PASS
15.225(e)	Frequency Stability	PASS
15.203	Antenna Requirement	PASS

NOTE:

(1) N/A denotes test is not applicable in this test report

## 2.1 TEST FACILITY

The test facilities used to collect the test data in this report:

### Conducted emission Test:

**C05:** (VCCI RN: C-4742; FCC RN:674415; FCC DN:TW0659)

No. 68-1, Ln. 169, Sec. 2, Datong Rd., Xizhi Dist., New Taipei City 221, Taiwan (R.O.C.)

### Radiated emission Test:

**CB15:** (VCCI RN: G-20020; FCC RN:674415; FCC DN:TW0659; ISED Assigned Code:20088-5)

No. 68-1, Ln. 169, Sec. 2, Datong Rd., Xizhi Dist., New Taipei City 221, Taiwan (R.O.C.)

## 2.2 MEASUREMENT UNCERTAINTY

**The measurement uncertainty is not specified by FCC rules and for reference only.**

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%.

The measurement instrumentation uncertainty considerations contained in CISPR 16-4-2.

The BTL measurement uncertainty is less than the CISPR 16-4-2  $U_{\text{CISPR}}$  requirement.

### A. Conducted emission test:

Test Site	Method	Measurement Frequency Range	U, (dB)
C05	CISPR	150 kHz ~ 30MHz	2.68

### B. Radiated emission test:

Test Site	Method	Measurement Frequency Range	U, (dB)
CB15 (3m)	CISPR	9kHz ~ 150kHz	2.82
		150kHz ~ 30MHz	2.58

Test Site	Method	Measurement Frequency Range	Ant. H / V	U, (dB)
CB15 (3m)	CISPR	30MHz ~ 200MHz	V	4.20
		30MHz ~ 200MHz	H	3.64
		200MHz ~ 1,000MHz	V	4.56
		200MHz ~ 1,000MHz	H	3.90

### 3 GENERAL INFORMATION

#### 3.1 GENERAL DESCRIPTION OF EUT

Equipment	Computer	
Brand Name	ADVANTECH	
Test Model	AIM 10W	
Series Model	AIM 10WXXXXXXXXXXXXXXXXXX(where X may be any alphanumeric character , blank or "-".)	
Model Difference	The market distribution is different only.	
Product Description	Operation Frequency	13.56 MHz
	Antenna Designation	LOOP Antenna
Power Source	DC Voltage supplied from AC/DC adapter.	
Power Rating	I/P: AC 100-240V~, 1.5A, 50~60Hz, 1.5A O/P: DC 19V---3.42A	
Products Covered	1 * AC Adapter: TAMURA / XEW1934N 2* Dock: 1) Desk Docking: ADVANTECH/AIM-OFD-0000 2) VESA Docking: ADVANTECH/AIM-DOC-0001	

Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

### 3.2 DESCRIPTION OF TEST MODES

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	13.56MHz Transmit

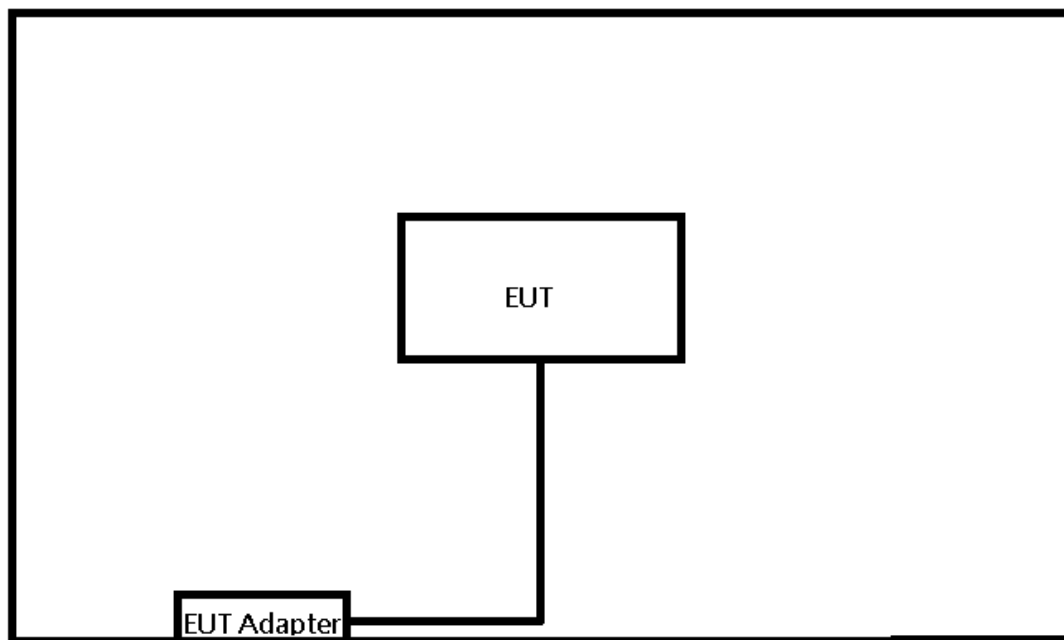
Conducted emission test	
Final Test Mode	Description
Mode 1	13.56MHz Transmit

Radiated emission test	
Final Test Mode	Description
Mode 1	13.56MHz Transmit

Frequency Stability test	
Final Test Mode	Description
Mode 1	13.56MHz Transmit

Antenna Requirement test	
Final Test Mode	Description
Mode 1	13.56MHz Transmit

### 3.3 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED



### 3.4 DESCRIPTION OF SUPPORT UNITS

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.	FCC ID	Series No.
-	-	-	-	-	-

Item	Shielded Type	Ferrite Core	Length	Note
1	YES	NO	1.7m	Power Cable

## 4 CONDUCTED EMISSION

### 4.1 LIMITS

FREQUENCY (MHz)	(dBuV)	
	Quasi-peak	Average
0.15 - 0.5	66 - 56 *	56 - 46 *
0.50 - 5.0	56.00	46.00
5.0 - 30.0	60.00	50.00

**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.
3. The test result calculated as following:  
 Measurement Value = Reading Level + Correct Factor  
 Correct Factor = Insertion Loss + Cable Loss + Attenuator Factor(if use)  
 Margin Level = Measurement Value – Limit Value

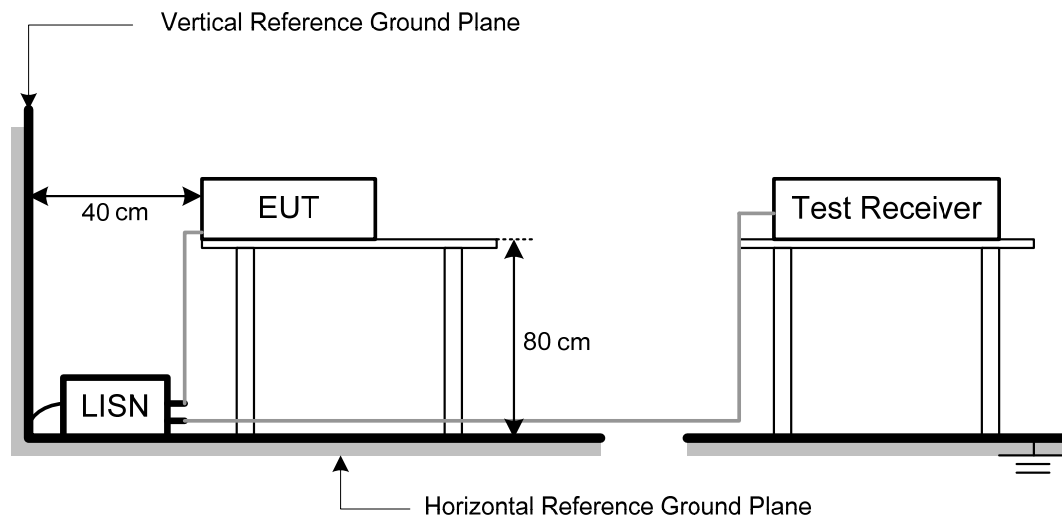
### 4.2 TEST PROCEDURES

- a. 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.
- b. 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.
- c. 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.
- d. LISN at least 80 cm from nearest part of EUT chassis.
- e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

**NOTE:**

- a. Reading in which marked as Peak, QP or AVG means measurements by using are Quasi-Peak or Average Mode with Detector BW=9 kHz (6 dB Bandwidth).
- b. All readings are Peak Mode value unless otherwise stated QP or AVG in column of Note. If the Peak or QP Mode Measured value compliance with the QP Limits and lower than AVG Limits, the EUT shall be deemed to meet both QP & AVG Limits and then only Peak or QP Mode was measured, but AVG Mode didn't perform.

#### 4.3 TEST SETUP LAYOUT



#### 4.4 DEVIATION FROM TEST STANDARD

No deviation

#### 4.5 EUT OPERATING CONDITIONS

The EUT used during radiated and/or conducted emission measurement was designed to exercise in a manner similar to a typical use.

#### 4.6 EUT TEST CONDITIONS

Temperature: 25°C

Relative Humidity: 55%

Test Voltage: AC 120V/60Hz

#### 4.7 TEST RESULTS

Please refer to the Appendix A.

Remark:

- (1) All readings are QP Mode value unless otherwise stated AVG in column of 『Note』. If the QP Mode Measured value compliance with the QP Limits and lower than AVG Limits, the EUT shall be deemed to meet both QP & AVG Limits and then only QP Mode was measured, but AVG Mode didn't perform in this case, a "\*" marked in AVG Mode column of Interference Voltage Measured.
- (2) Measuring frequency range from 150KHz to 30MHz.

## 5 RADIATED EMISSION

### 5.1 LIMITS

FCC Part 15.209				
Frequency (MHz)	Field Strength Limitation		Field Strength Limitation at 3m Measurement Dist	
	(uV/m)	Dist	(uV/m)	(dBuV/m)
0.009 – 0.490	2400 / F(KHz)	300m	10000 * 2400/F(KHz)	20log 2400/F(KHz) + 80
0.490 – 1.705	24000 / F(KHz)	30m	100 * 24000/F(KHz)	20log 24000/F(KHz) + 40
1.705 – 30.00	30	30m	100* 30	20log 30 + 40
30.0 – 88.0	100	3m	100	20log 100
88.0 – 216.0	150	3m	150	20log 150
216.0 – 960.0	200	3m	200	20log 200
Above 960.0	500	3m	500	20log 500
FCC Part 15.225(a)/(b)/(c)				
Frequency (MHz)	Field Strength Limitation		Field Strength Limitation at 3m Measurement Dist	
	(uV/m)	Dist	(uV/m)	(dBuV/m)
13.553 – 13.567	15,848	30 m	15,848*100	124
13.567 – 13.710	334	30 m	334*100	90.5
13.110 – 13.410 13.710 – 14.010	106	30 m	106*100	80.5

**NOTE:**

- (1) The tighter limit shall apply at the boundary between two frequency range.
- (2) Limitation expressed in dBuV/m is calculated by 20log Emission Level (uV/m).
- (3) If measurement is made at 3m distance, then F.S Limitation at 3m distance is adjusted by using the formula of  $L_{d1} = L_{d2} * (d_2/d_1)^2$ .  
Example:  
F.S Limit at 30m distance is 30uV/m , then F.S Limitation at 3m distance is adjusted as  $L_{d1} = L_1 = 30uV/m * (10)^2 = 100 * 30 uV/m$
- (4) The test result calculated as following:  
Measurement Value = Reading Level + Correct Factor  
Correct Factor = Insertion Loss + Cable Loss + Attenuator Factor(if use)  
Margin Level = Measurement Value – Limit Value

## 5.2 TEST PROCEDURE

- a. The measuring distance of 3 m shall be used for measurements. The EUT was placed on the top of a rotating table 0.8 meter above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.(below 1GHz)
- b. The height of the equipment or of the substitution antenna shall be 0.8 m or 1.5m, 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.
- c. The initial step in collecting radiated emission data is a receiver peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- d. All readings are Peak unless otherwise stated QP in column of Note. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform. (below 1GHz)
- e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

### NOTE: (FCC PART 15.209)

- a. Reading in which marked as QP or Peak means measurements by using are Quasi-Peak Mode with Detector BW=120 kHz.
- b. All readings are Peak unless otherwise stated QP in column of Note. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform.

### NOTE: (FCC PART 15.225)

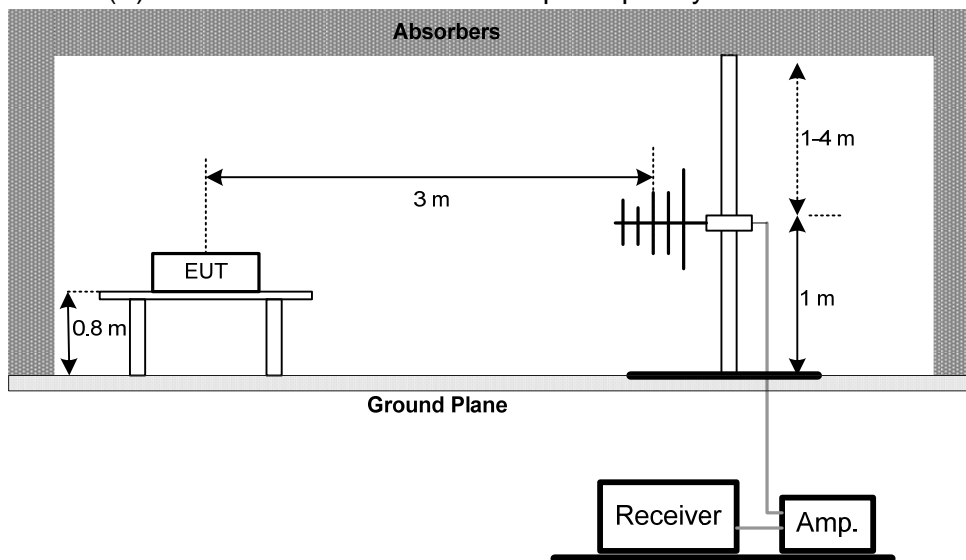
- a. Spectrum Setting:  
 9 KHz – 150 KHz, RBW= 200Hz, VBW=200Hz, Sweep time = 200 ms.  
 150 K Hz – 30 MHz, RBW= 10 KHz, VBW=10 KHz, Sweep time = 200 ms.  
 30 MHz – 1000 MHz, RBW= 100KHz, VBW=100KHz, Sweep time = 200 ms.
- b. All readings are Peak unless otherwise stated QP in column of Note. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform.
- c. The Log-Bicon Antenna will use to test frequency range from 30MHz to 1000MHz and the Loop Antenna will use to test frequency below 30MHz.

### 5.3 DEVIATION FROM TEST STANDARD

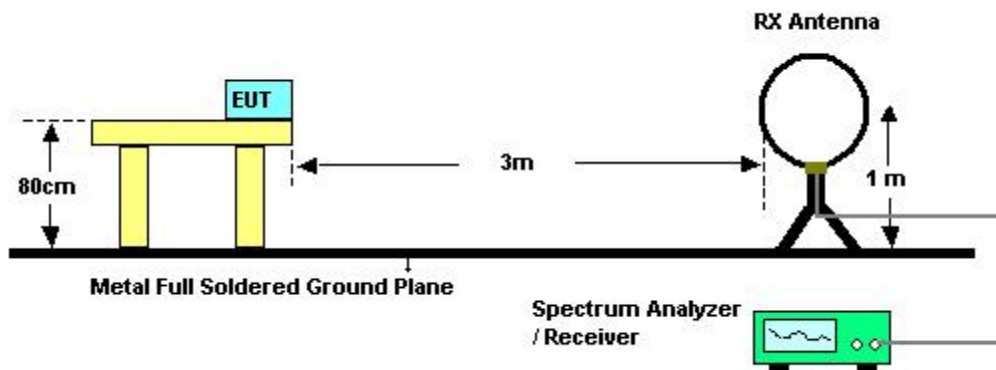
No deviation

### 5.4 TEST SETUP

(A) Radiated Emission Test Set-Up Frequency Below 1 GHz



(B) For radiated emissions below 30MHz



### 5.5 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of **4.5** unless otherwise a special operating condition is specified in the follows during the testing.

## **5.6 EUT TEST CONDITIONS**

Temperature: 23°C

Relative Humidity: 70%

Test Voltage: AC 120V/60Hz

## **5.7 TEST RESULTS (BELOW 30MHZ) - FCC PART 15.209**

Please refer to the Appendix B.

## **5.8 TEST RESULTS - (30-1000MHZ) - FCC PART 15.209**

Please refer to the Appendix C.

## **5.9 TEST RESULTS- FCC PART 15.225**

Please refer to the Appendix D.

## 6 FREQUENCY STABILITY

### 6.1 LIMITS

#### FCC Part 15.225(e)

The frequency tolerance of the carrier signal shall be maintained within  $\pm 0.01\%$  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 C.

For battery operated equipment, the equipment tests shall be performed using a new battery.

### 6.2 TEST PROCEDURE

- a. The equipment under test was connected to an external AC power supply and the RF output was connected to a frequency counter via feed through attenuators. The EUT was placed inside the temperature chamber.  
After the temperature stabilized for approximately 20 minutes, the frequency of the output signal was recorded from the counter.
- b. At room temperature ( $25 \pm 5^\circ\text{C}$ ), an external variable AC power supply was connected to the EUT. The frequency of the transmitter was measured for 115%, 100% and 85% of the nominal operating input voltage.

### 6.3 DEVIATION FROM TEST STANDARD

No deviation

### 6.4 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 4.5 unless otherwise a special operating condition is specified in the follows during the testing.

### 6.5 EUT TEST CONDITIONS

Temperature:  $22^\circ\text{C}$

Relative Humidity: 66%

Test Voltage: AC 120V/60Hz

### 6.6 TEST RESULTS

Please refer to the Appendix E.

## 7 MEASUREMENT INSTRUMENTS LIST

Conducted Emission Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	TWO-LINE V-NETWORK	R&S	ENV216	101050	Jan. 24, 2019
2	Test Cable	TIMES	CFD300-NL	C02	Jun. 13, 2019
3	EMI Test Receiver	R&S	ESR7	101433	Dec. 07, 2019
4	Measurement Software	EZ	EZ EMC (Version NB-03A)	N/A	N/A

Radiated Emission Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Preamplifier	EMCI	012645B	980267	Feb. 28, 2018
2	Preamplifier	EMCI	EMC02325	980217	Dec. 27, 2019
3	Preamplifier	EMCI	EMC2654045	980030	Feb. 13, 2019
4	Test Cable	EMCI	EMC104-SM-SM-8000	8m	Jan. 03, 2019
5	Test Cable	EMCI	EMC104-SM-SM-800	150207	Jan. 03, 2019
6	Test Cable	EMCI	EEMC104-SM-SM-3000	151205	Jan. 03, 2019
7	MXE EMI Receiver	Agilent	N9038A	MY55420127	Jan. 08, 2019
8	Signal Analyzer	Agilent	N9010A	MY52220990	Feb. 21, 2019
9	Loop Ant	EMCO	6502	42960	Nov. 23, 2018
10	Horn Ant	SCHWARZBECK	BBHA 9120D	9120D-1342	Feb. 28, 2018
11	Horn Ant	Schwarzbeck	BBHA 9170	187	Dec. 05, 2019
12	Trilog-Broadband Antenna	Schwarzbeck	VULB 9168	9168-548	Jan. 15, 2019
13	5dB Attenuator	EMCI	EMCI-N-6-05	AT-N0623	Jan. 15, 2019

Frequency Stability Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	R&S/FSP30	100854	May 25, 2018

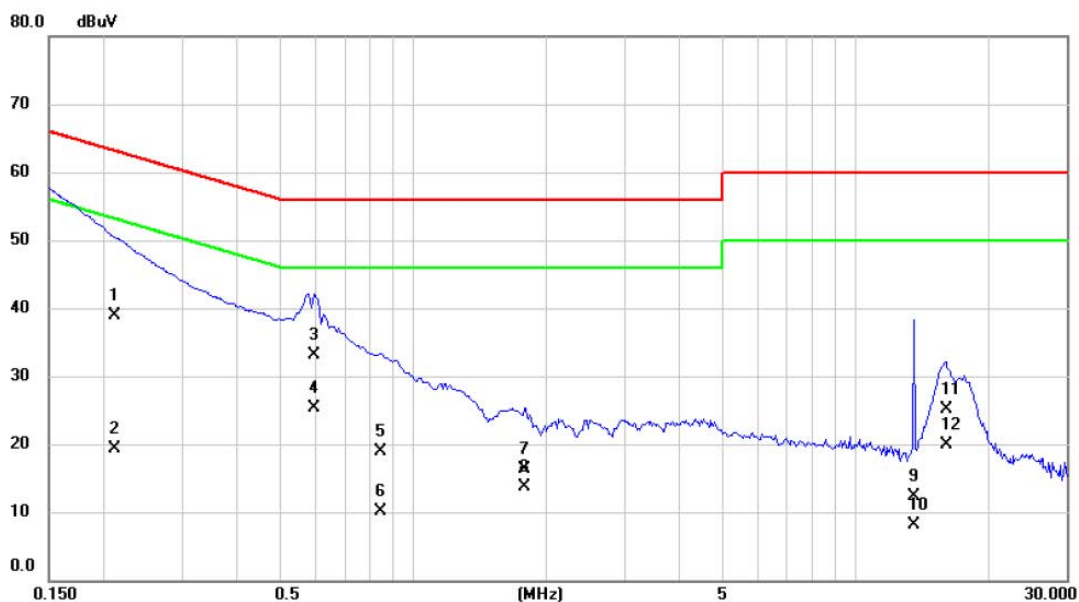
Remark: "N/A" denotes no model name, serial no. or calibration specified.  
All calibration period of equipment list is one year.

## APPENDIX A - CONDUCTED EMISSION

Test Mode:

13.56MHz Transmit

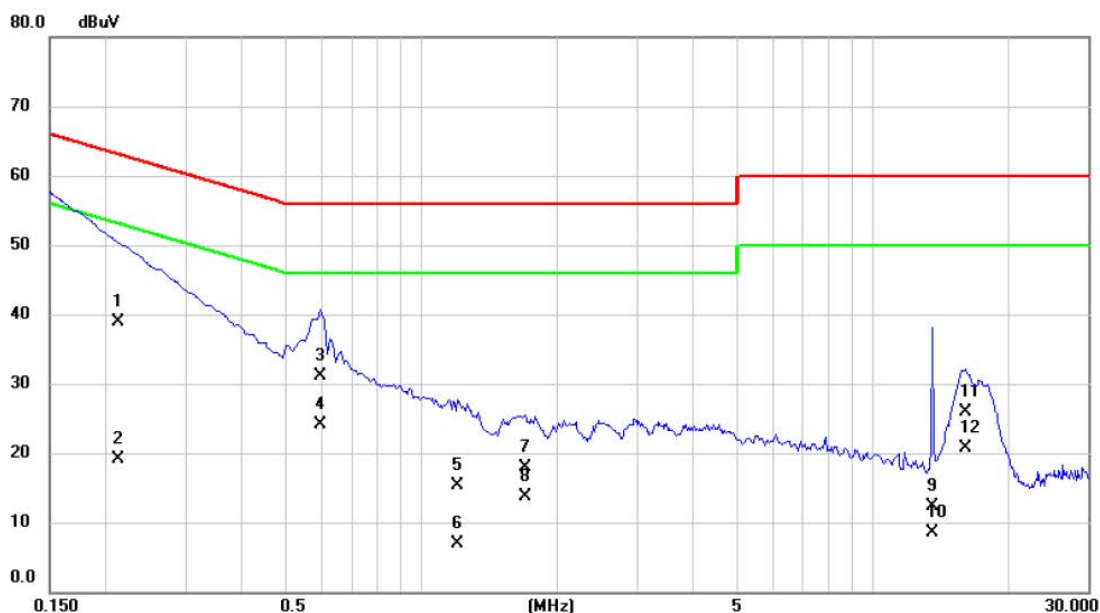
### Line



No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over		
		MHz	dBuV	Factor	ment	dBuV	dB	Detector	Comment
1		0.2110	29.10	9.71	38.81	63.17	-24.36	QP	
2		0.2110	9.60	9.71	19.31	53.17	-33.86	AVG	
3		0.5990	23.40	9.74	33.14	56.00	-22.86	QP	
4	*	0.5990	15.60	9.74	25.34	46.00	-20.66	AVG	
5		0.8420	9.10	9.74	18.84	56.00	-37.16	QP	
6		0.8420	0.40	9.74	10.14	46.00	-35.86	AVG	
7		1.7870	6.60	9.77	16.37	56.00	-39.63	QP	
8		1.7870	3.90	9.77	13.67	46.00	-32.33	AVG	
9		13.5500	2.40	9.98	12.38	60.00	-47.62	QP	
10		13.5500	-1.80	9.98	8.18	50.00	-41.82	AVG	
11		16.0500	15.20	9.98	25.18	60.00	-34.82	QP	
12		16.0500	10.00	9.98	19.98	50.00	-30.02	AVG	

Test Mode: 13.56MHz Transmit

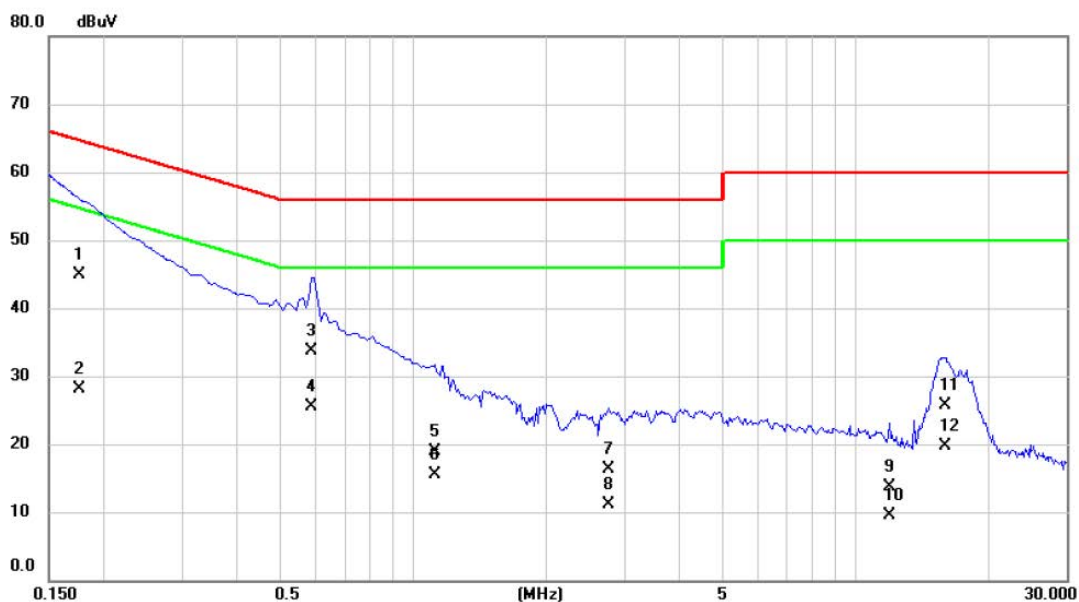
### Neutral



No. Mk.	Freq.	Reading	Correct	Measure-	Limit	Over	Detector	Comment
	MHz	dBuV	Factor	dBuV	dBuV	dB		
1	0.2123	29.20	9.65	38.85	63.11	-24.26	QP	
2	0.2123	9.50	9.65	19.15	53.11	-33.96	AVG	
3	0.5990	21.50	9.68	31.18	56.00	-24.82	QP	
4 *	0.5990	14.40	9.68	24.08	46.00	-21.92	AVG	
5	1.2020	5.70	9.69	15.39	56.00	-40.61	QP	
6	1.2020	-2.70	9.69	6.99	46.00	-39.01	AVG	
7	1.6970	8.10	9.71	17.81	56.00	-38.19	QP	
8	1.6970	4.00	9.71	13.71	46.00	-32.29	AVG	
9	13.5500	2.30	9.98	12.28	60.00	-47.72	QP	
10	13.5500	-1.50	9.98	8.48	50.00	-41.52	AVG	
11	16.0000	16.00	9.99	25.99	60.00	-34.01	QP	
12	16.0000	10.70	9.99	20.69	50.00	-29.31	AVG	

Test Mode: 13.56MHz Transmit\_Desk Docking

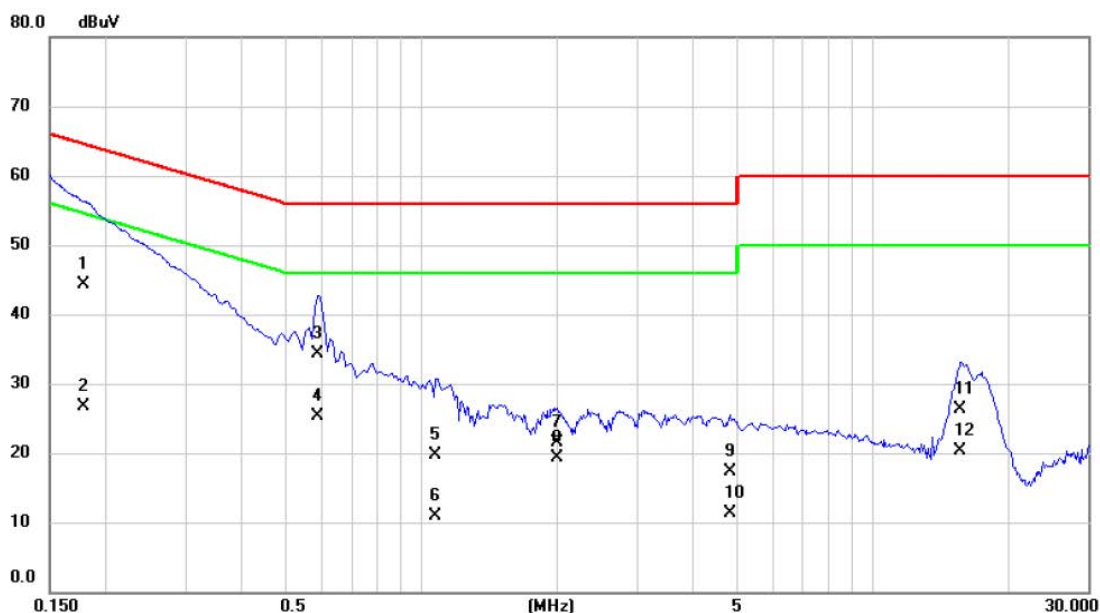
### Line



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1	*	0.1760	35.20	9.72	44.92	64.67	-19.75	QP	
2		0.1760	18.30	9.72	28.02	54.67	-26.65	AVG	
3		0.5900	24.00	9.74	33.74	56.00	-22.26	QP	
4		0.5900	15.80	9.74	25.54	46.00	-20.46	AVG	
5		1.1210	9.20	9.74	18.94	56.00	-37.06	QP	
6		1.1210	5.70	9.74	15.44	46.00	-30.56	AVG	
7		2.7590	6.60	9.79	16.39	56.00	-39.61	QP	
8		2.7590	1.40	9.79	11.19	46.00	-34.81	AVG	
9		11.9000	3.70	9.98	13.68	60.00	-46.32	QP	
10		11.9000	-0.40	9.98	9.58	50.00	-40.42	AVG	
11		15.9500	15.70	9.98	25.68	60.00	-34.32	QP	
12		15.9500	9.80	9.98	19.78	50.00	-30.22	AVG	

Test Mode: 13.56MHz Transmit\_Desk Docking

### Neutral

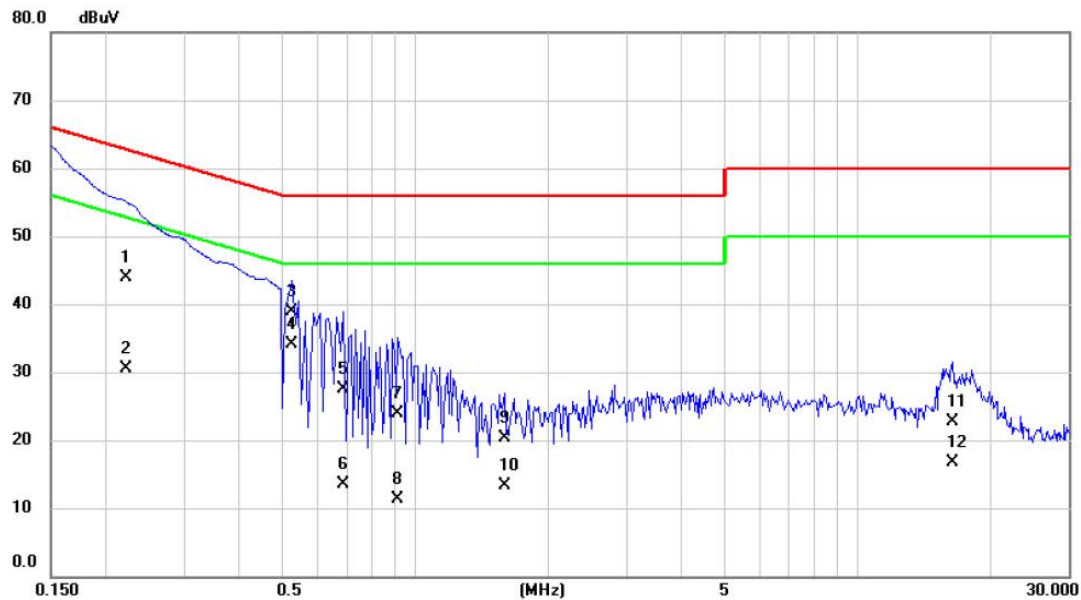


No. Mk.	Freq.	Reading	Correct	Measure-	Limit	Over		
	MHz	dBuV	Factor	ment	dBuV	dB	Detector	Comment
1 *	0.1780	34.60	9.65	44.25	64.58	-20.33	QP	
2	0.1780	17.00	9.65	26.65	54.58	-27.93	AVG	
3	0.5900	24.60	9.68	34.28	56.00	-21.72	QP	
4	0.5900	15.70	9.68	25.38	46.00	-20.62	AVG	
5	1.0760	10.00	9.69	19.69	56.00	-36.31	QP	
6	1.0760	1.30	9.69	10.99	46.00	-35.01	AVG	
7	2.0030	11.70	9.71	21.41	56.00	-34.59	QP	
8	2.0030	9.60	9.71	19.31	46.00	-26.69	AVG	
9	4.8290	7.60	9.79	17.39	56.00	-38.61	QP	
10	4.8290	1.50	9.79	11.29	46.00	-34.71	AVG	
11	15.6500	16.30	9.99	26.29	60.00	-33.71	QP	
12	15.6500	10.30	9.99	20.29	50.00	-29.71	AVG	

Test Mode:

13.56MHz Transmit\_VESA Docking

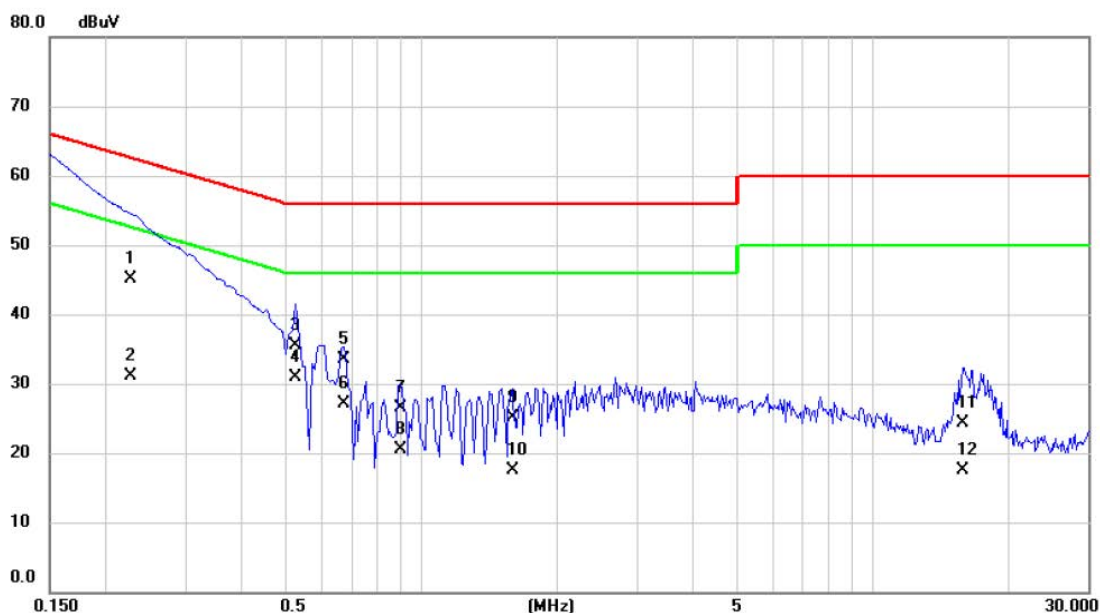
### Line



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.2214	34.10	9.72	43.82	62.77	-18.95	QP	
2		0.2214	20.70	9.72	30.42	52.77	-22.35	AVG	
3		0.5270	29.20	9.74	38.94	56.00	-17.06	QP	
4	*	0.5270	24.40	9.74	34.14	46.00	-11.86	AVG	
5		0.6890	17.80	9.74	27.54	56.00	-28.46	QP	
6		0.6890	3.80	9.74	13.54	46.00	-32.46	AVG	
7		0.9140	14.20	9.74	23.94	56.00	-32.06	QP	
8		0.9140	1.50	9.74	11.24	46.00	-34.76	AVG	
9		1.5890	10.60	9.76	20.36	56.00	-35.64	QP	
10		1.5890	3.60	9.76	13.36	46.00	-32.64	AVG	
11		16.3500	12.70	9.98	22.68	60.00	-37.32	QP	
12		16.3500	6.80	9.98	16.78	50.00	-33.22	AVG	

Test Mode:	13.56MHz Transmit_VESA Docking
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### Neutral

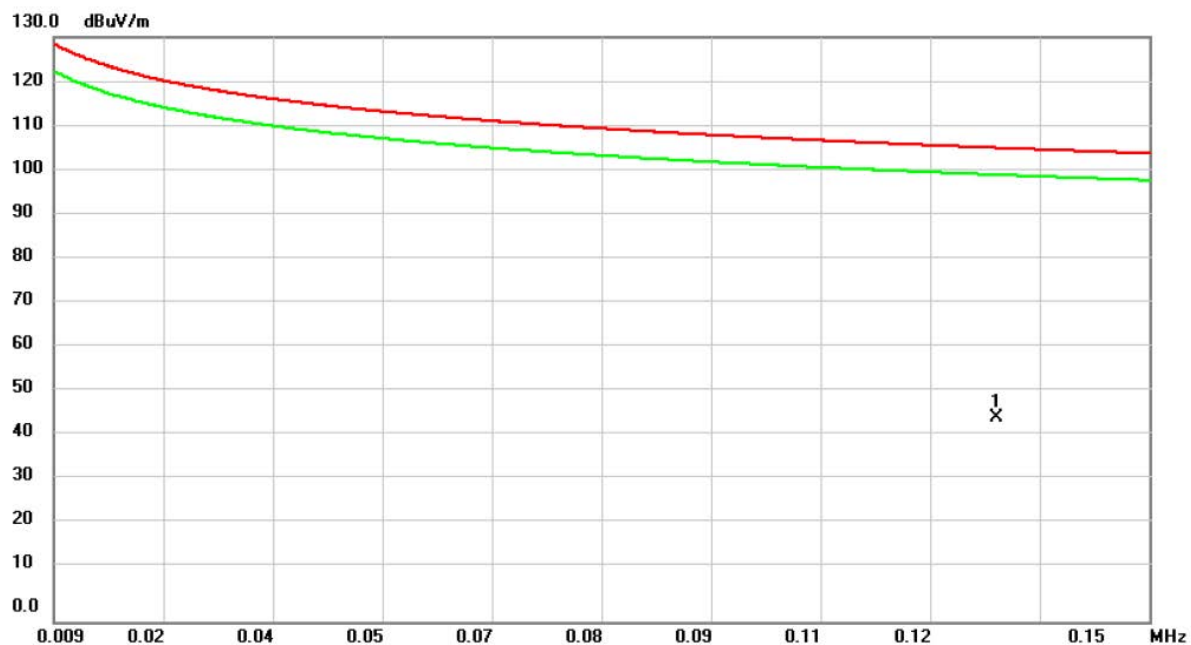


No. Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector	Comment
	MHz	dBuV	dB	dBuV	dBuV	dB		
1	0.2270	35.50	9.66	45.16	62.56	-17.40	QP	
2	0.2270	21.50	9.66	31.16	52.56	-21.40	AVG	
3	0.5270	25.80	9.68	35.48	56.00	-20.52	QP	
4 *	0.5270	21.30	9.68	30.98	46.00	-15.02	AVG	
5	0.6710	23.80	9.68	33.48	56.00	-22.52	QP	
6	0.6710	17.40	9.68	27.08	46.00	-18.92	AVG	
7	0.8960	16.80	9.69	26.49	56.00	-29.51	QP	
8	0.8960	10.90	9.69	20.59	46.00	-25.41	AVG	
9	1.5890	15.40	9.71	25.11	56.00	-30.89	QP	
10	1.5890	7.80	9.71	17.51	46.00	-28.49	AVG	
11	15.8500	14.40	9.99	24.39	60.00	-35.61	QP	
12	15.8500	7.60	9.99	17.59	50.00	-32.41	AVG	

## APPENDIX B - RADIATED EMISSION (9KHZ-30MHZ)

Test Mode:	13.56MHz Transmit
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### Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	*	0.1303	33.17	12.05	45.22	105.31	-60.09	peak	

Test Mode: 13.56MHz Transmit

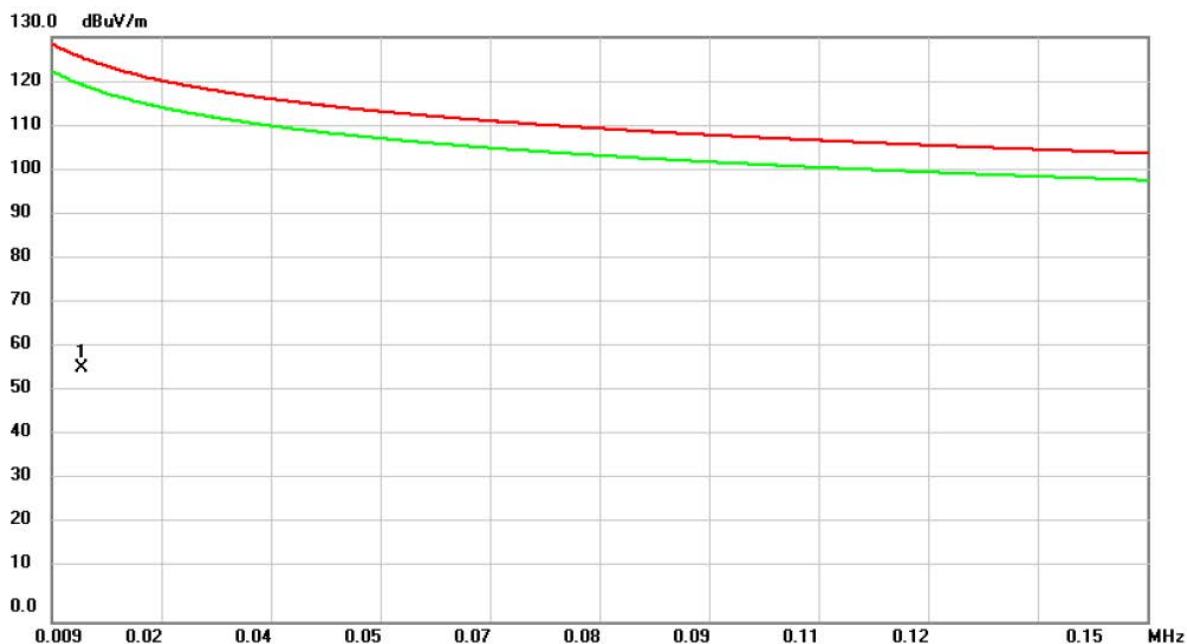
### Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		0.1500	47.08	12.03	59.11	104.08	-44.97	peak	
2	*	2.5082	23.58	11.32	34.90	69.54	-34.64	peak	
3		5.6424	17.12	11.39	28.51	69.54	-41.03	peak	
4		8.5380	14.99	11.33	26.32	69.54	-43.22	peak	
5		9.8513	13.42	11.30	24.72	69.54	-44.82	peak	
6		15.8212	17.59	11.13	28.72	69.54	-40.82	peak	

Test Mode:	13.56MHz Transmit
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### Horizontal

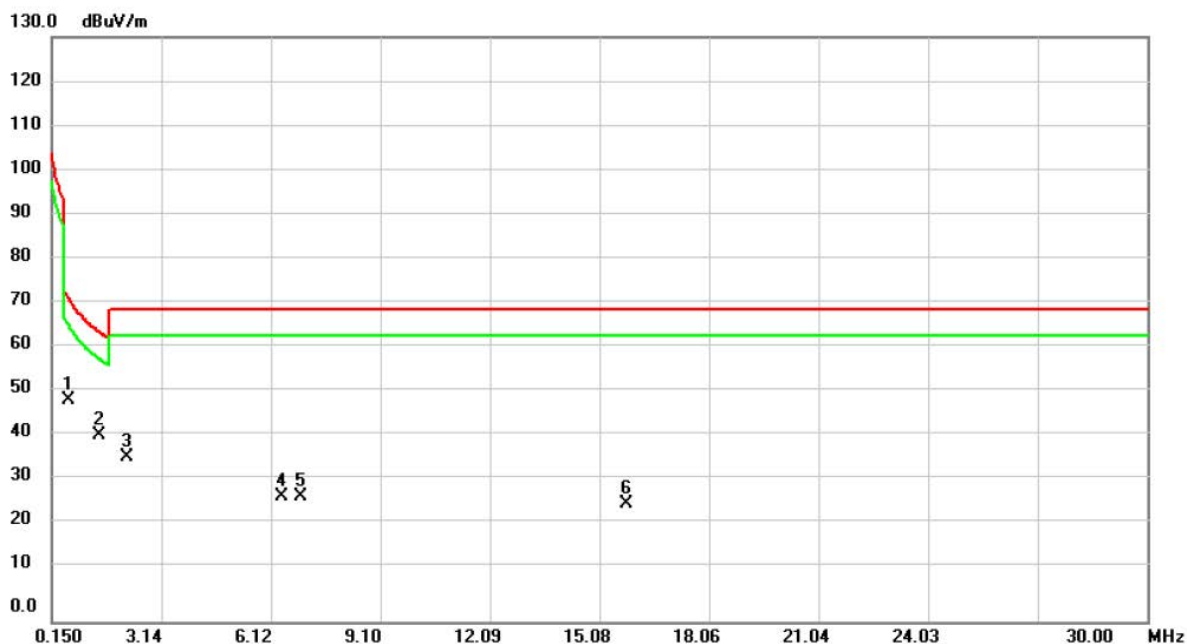


No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	0.0128	36.71	19.73	56.44	125.46	-69.02	peak	

Test Mode:

13.56MHz Transmit

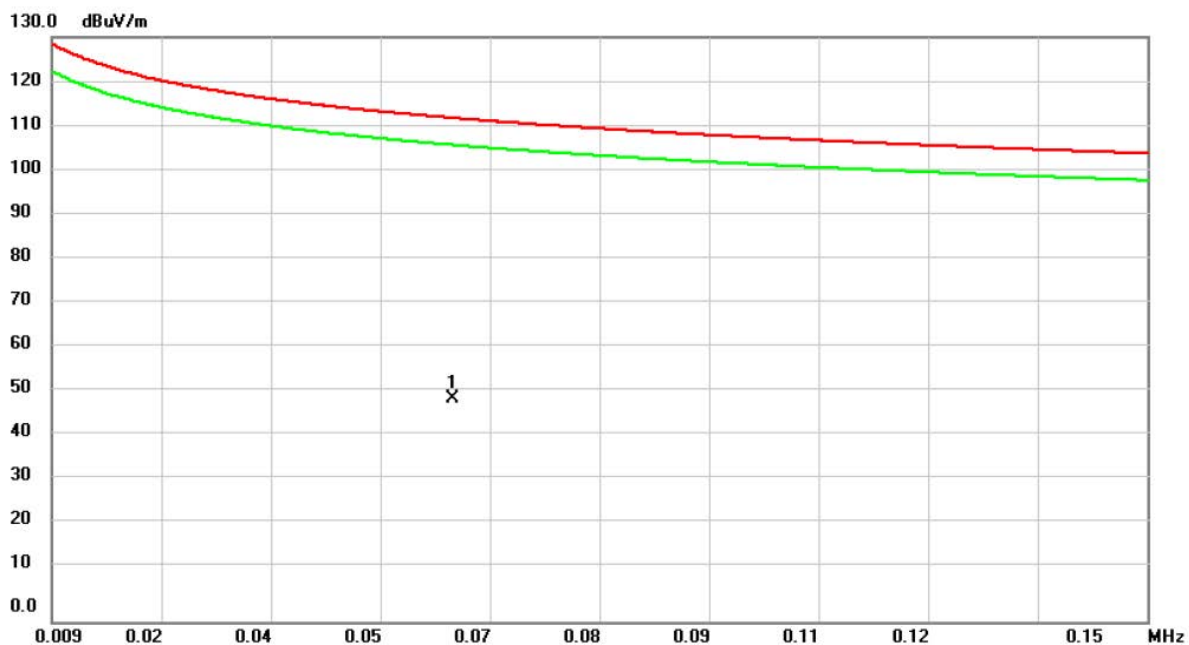
# Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	0.5978	37.54	11.84	49.38	72.07	-22.69	peak	
2		1.4336	29.54	11.80	41.34	64.47	-23.13	peak	
3		2.1798	25.07	11.47	36.54	69.54	-33.00	peak	
4		6.4185	16.30	11.37	27.67	69.54	-41.87	peak	
5		6.9260	16.44	11.36	27.80	69.54	-41.74	peak	
6		15.8212	15.06	11.13	26.19	69.54	-43.35	peak	

Test Mode: 13.56MHz Transmit\_Desk Docking

Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	*	0.0606	36.85	12.81	49.66	111.95	-62.29	peak	

Test Mode:	13.56MHz Transmit_Desk Docking
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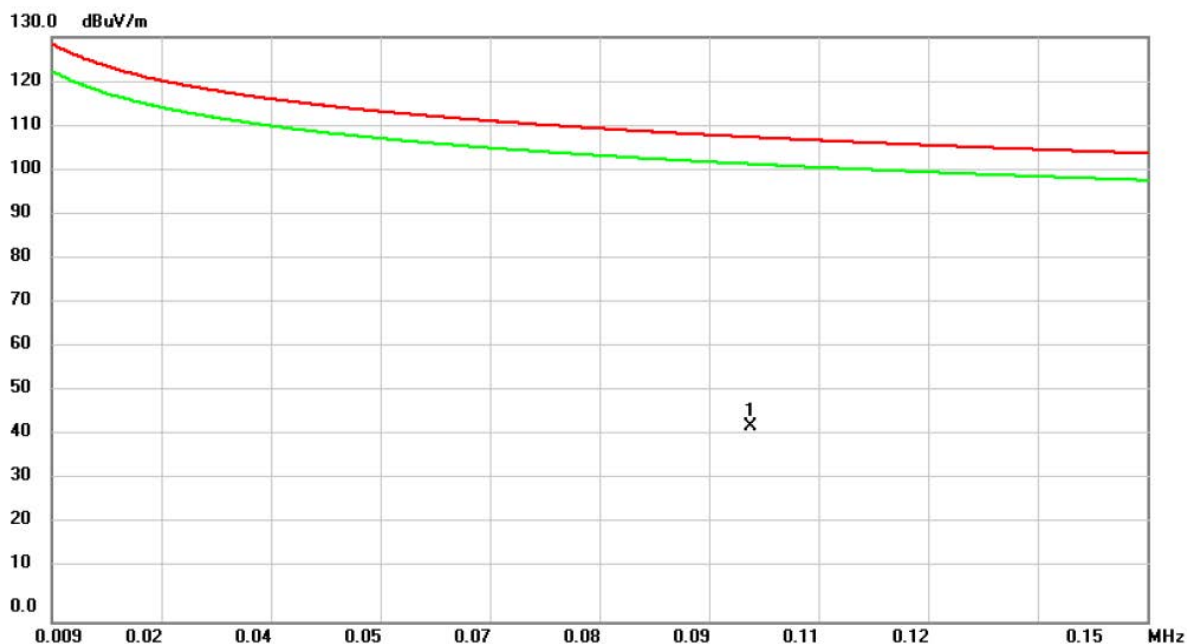
### Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		0.1500	47.08	12.03	59.11	104.08	-44.97	peak	
2	*	2.5081	23.58	11.32	34.90	69.54	-34.64	peak	
3		4.6275	17.62	11.34	28.96	69.54	-40.58	peak	
4		5.6424	17.12	11.39	28.51	69.54	-41.03	peak	
5		8.5380	14.99	11.33	26.32	69.54	-43.22	peak	
6		10.5975	13.45	11.28	24.73	69.54	-44.81	peak	

Test Mode: 13.56MHz Transmit\_Desk Docking

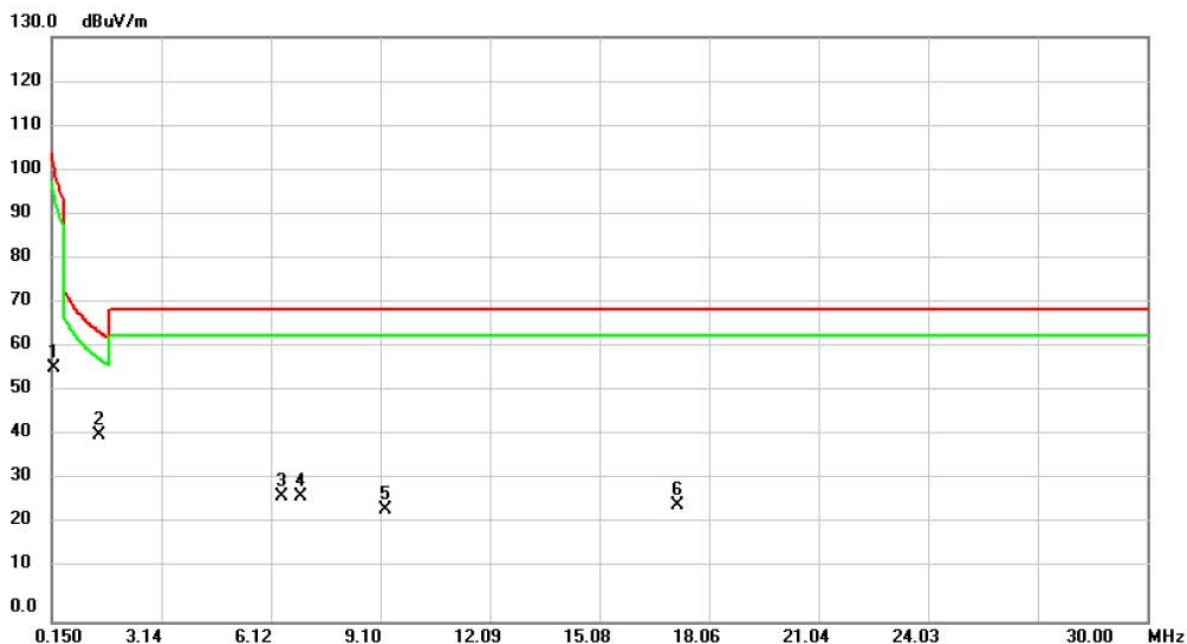
### Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	0.0990	31.37	12.12	43.49	107.69	-64.20	peak	

Test Mode: 13.56MHz Transmit\_Desk Docking

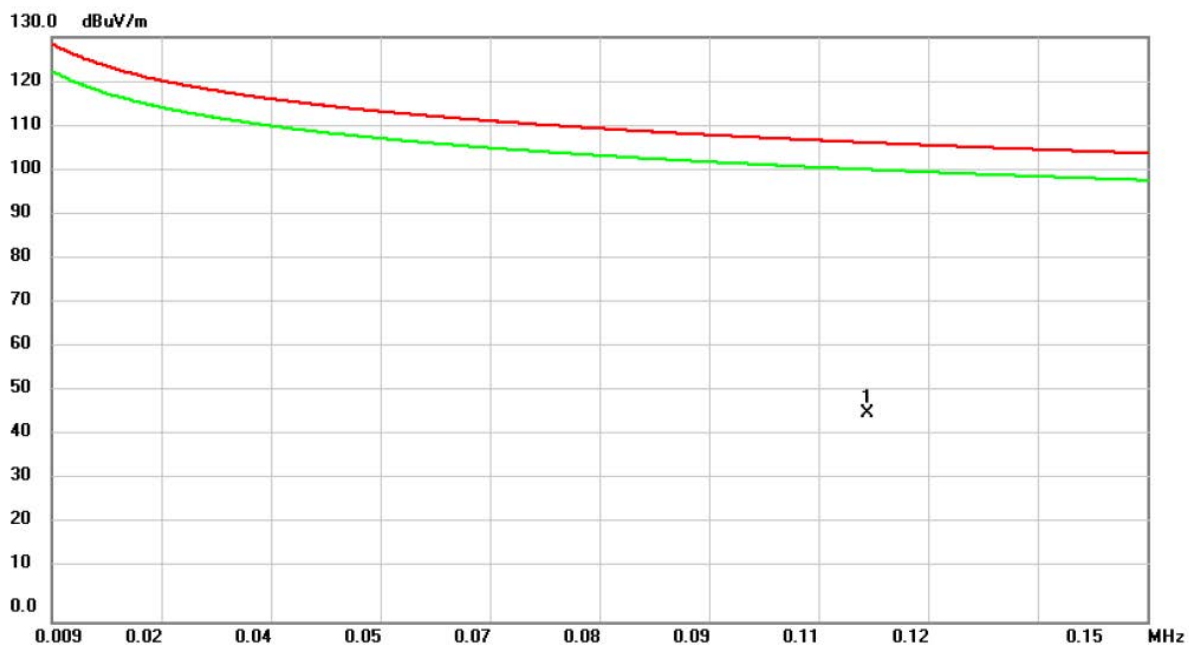
### Horizontal



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		0.2096	44.32	11.94	56.26	101.18	-44.92	peak	
2	*	1.4334	29.54	11.80	41.34	64.48	-23.14	peak	
3		6.4184	16.30	11.37	27.67	69.54	-41.87	peak	
4		6.9260	16.44	11.36	27.80	69.54	-41.74	peak	
5		9.2543	13.54	11.31	24.85	69.54	-44.69	peak	
6		17.1944	14.71	11.08	25.79	69.54	-43.75	peak	

Test Mode: 13.56MHz Transmit\_VESA Docking

Vertical

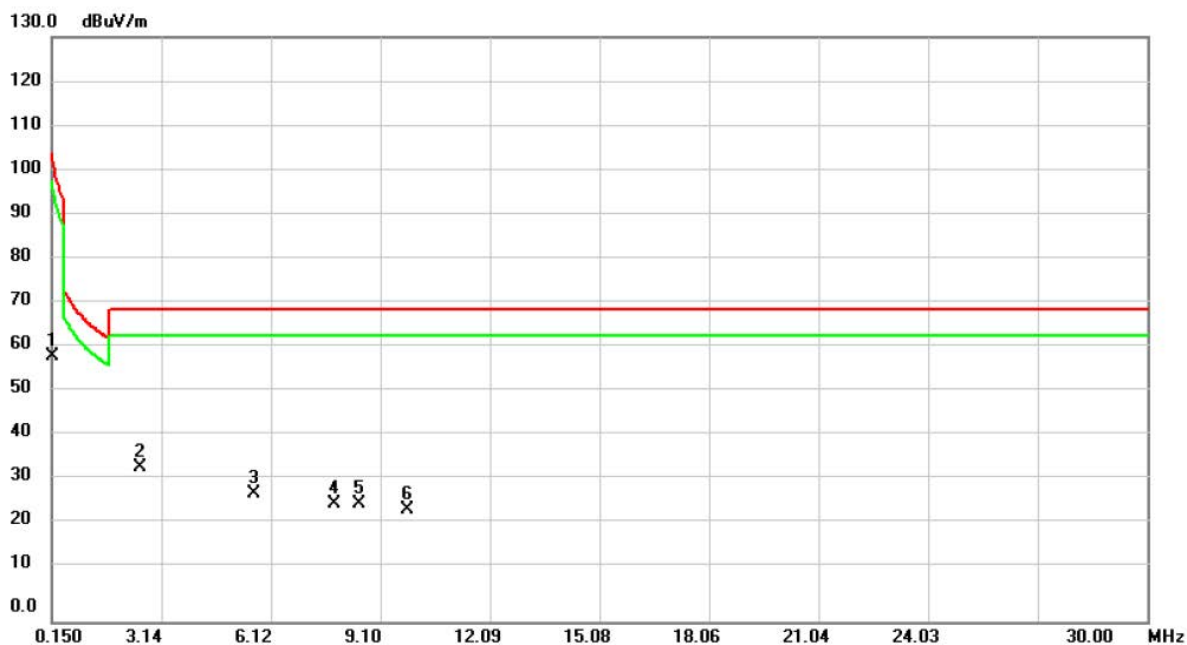


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	*	0.1140	34.18	12.08	46.26	106.47	-60.21	peak	

Test Mode:

13.56MHz Transmit\_VESA Docking

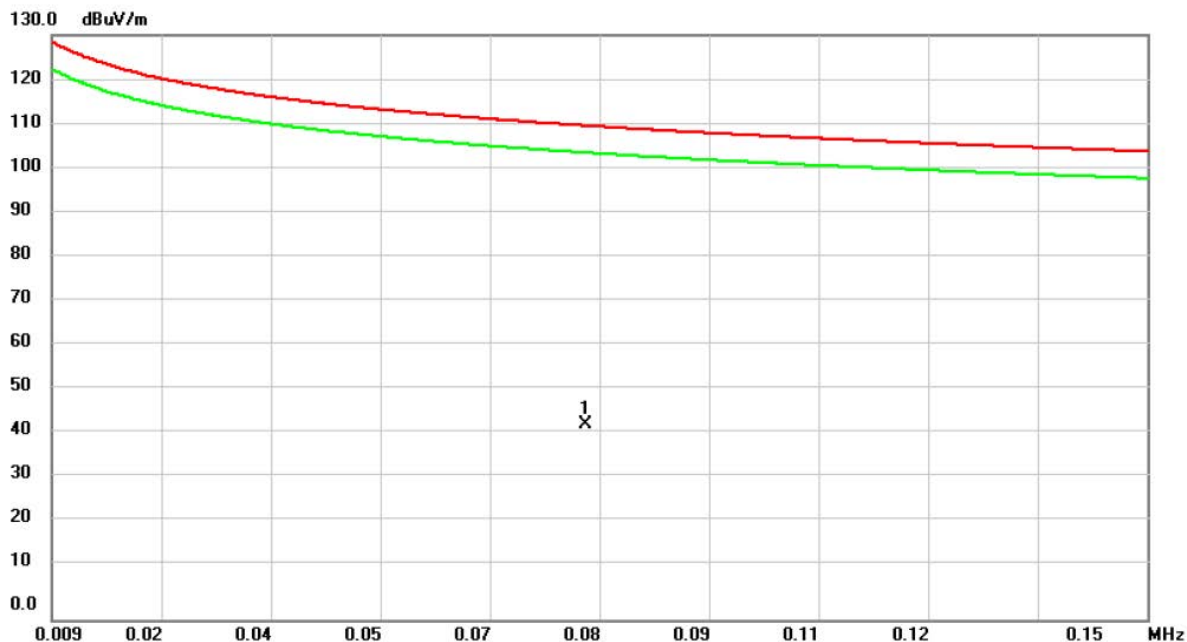
### Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		0.1500	47.08	12.03	59.11	104.08	-44.97	peak	
2	*	2.5678	23.06	11.29	34.35	69.54	-35.19	peak	
3		5.6424	17.12	11.39	28.51	69.54	-41.03	peak	
4		7.8513	14.79	11.34	26.13	69.54	-43.41	peak	
5		8.5380	14.99	11.33	26.32	69.54	-43.22	peak	
6		9.8513	13.42	11.30	24.72	69.54	-44.82	peak	

Test Mode: 13.56MHz Transmit\_VESA Docking

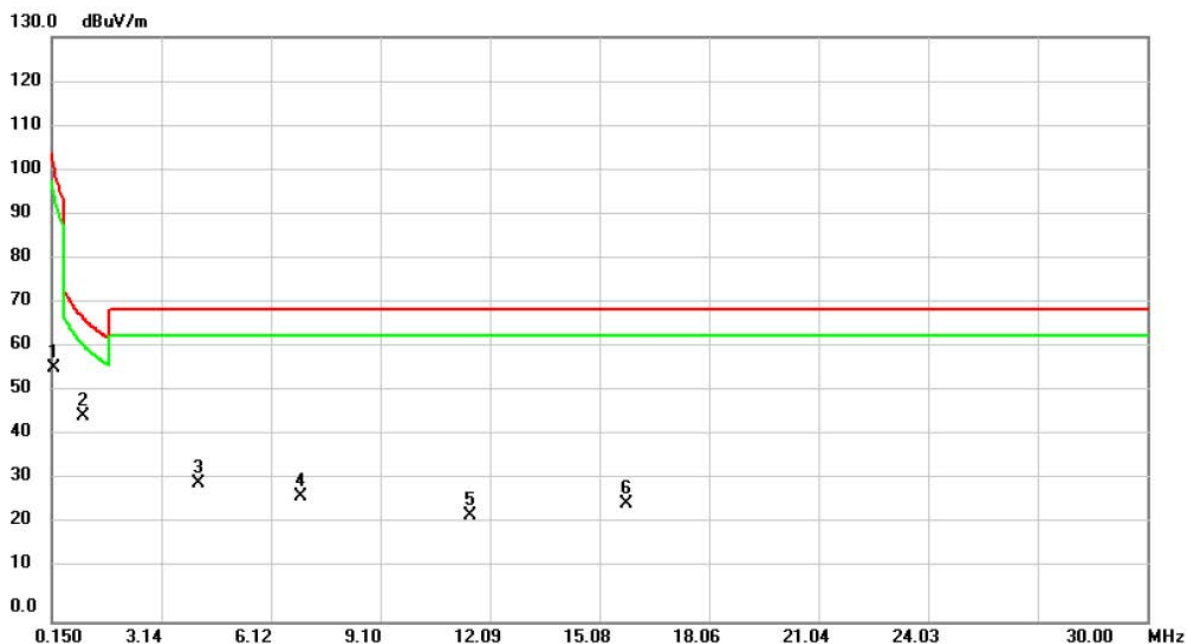
### Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	0.0777	30.88	12.50	43.38	109.80	-66.42	peak	

Test Mode: 13.56MHz Transmit\_VESA Docking

### Horizontal



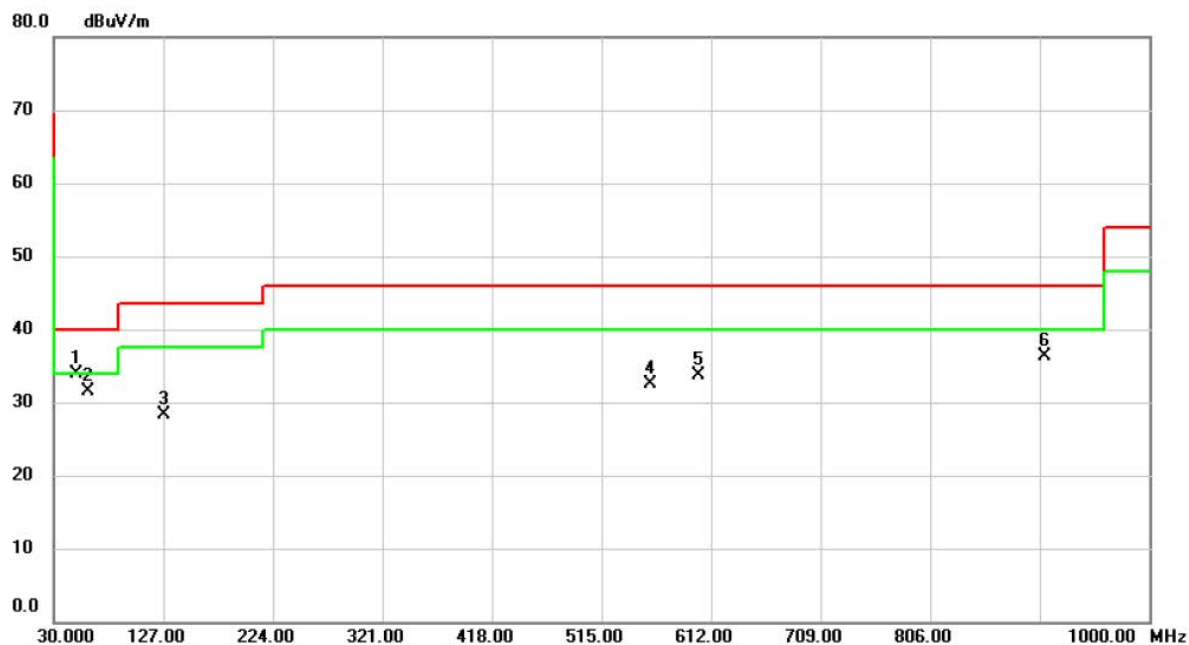
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		0.2096	44.32	11.94	56.26	101.18	-44.92	peak	
2	*	0.9858	33.68	11.99	45.67	67.73	-22.06	peak	
3		4.1497	19.46	11.27	30.73	69.54	-38.81	peak	
4		6.9260	16.44	11.36	27.80	69.54	-41.74	peak	
5		11.5525	12.26	11.25	23.51	69.54	-46.03	peak	
6		15.8210	15.06	11.13	26.19	69.54	-43.35	peak	

## APPENDIX C - RADIATED EMISSION (30MHZ TO 1000MHZ)

Test Mode:

13.56MHz Transmit

### Vertical

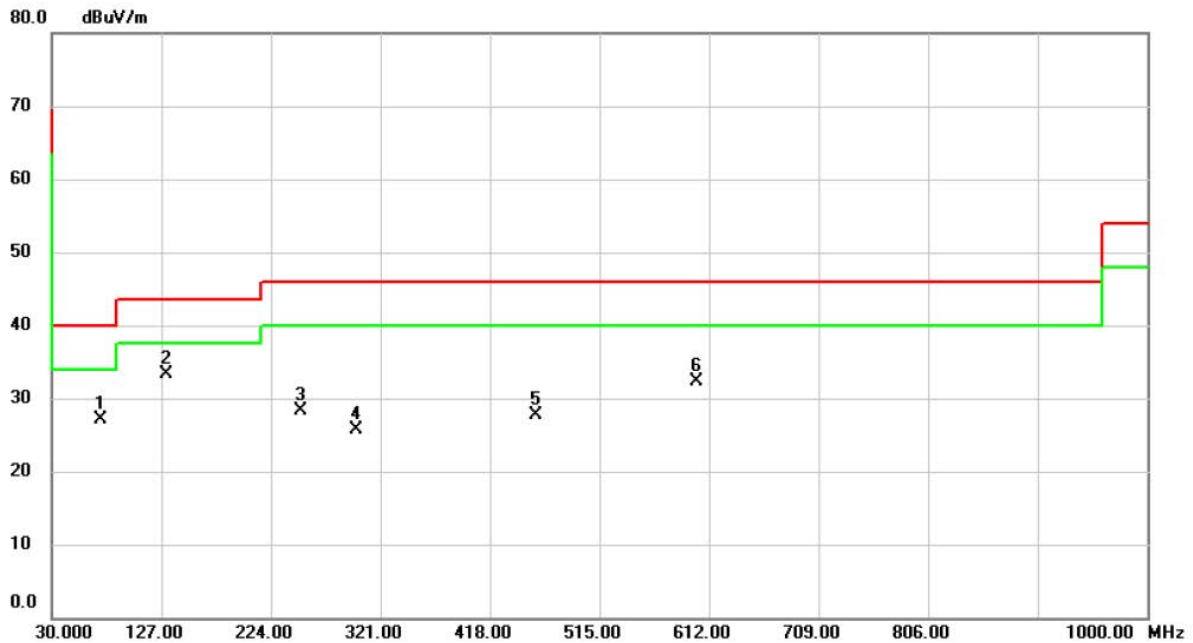


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	*	49.4000	42.19	-8.33	33.86	40.00	-6.14	peak	
2		60.0700	40.20	-8.61	31.59	40.00	-8.41	peak	
3		127.0000	38.13	-9.75	28.38	43.50	-15.12	peak	
4		558.6500	34.00	-1.49	32.51	46.00	-13.49	peak	
5		600.3600	34.22	-0.42	33.80	46.00	-12.20	peak	
6		906.8800	32.01	4.22	36.23	46.00	-9.77	peak	

Test Mode:

13.56MHz Transmit

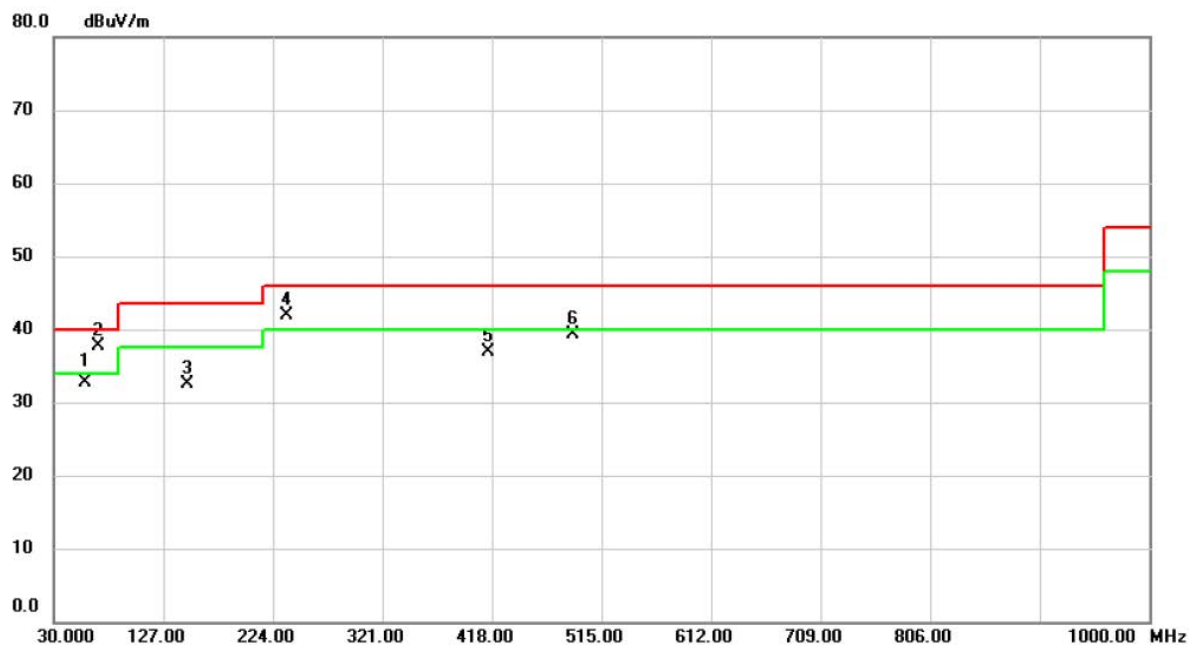
### Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		72.6800	37.71	-10.65	27.06	40.00	-12.94	peak	
2	*	130.8800	42.92	-9.52	33.40	43.50	-10.10	peak	
3		250.1900	37.30	-9.07	28.23	46.00	-17.77	peak	
4		299.6600	33.13	-7.50	25.63	46.00	-20.37	peak	
5		458.7400	31.03	-3.42	27.61	46.00	-18.39	peak	
6		600.3600	32.64	-0.42	32.22	46.00	-13.78	peak	

Test Mode: 13.56MHz Transmit\_Desk Docking

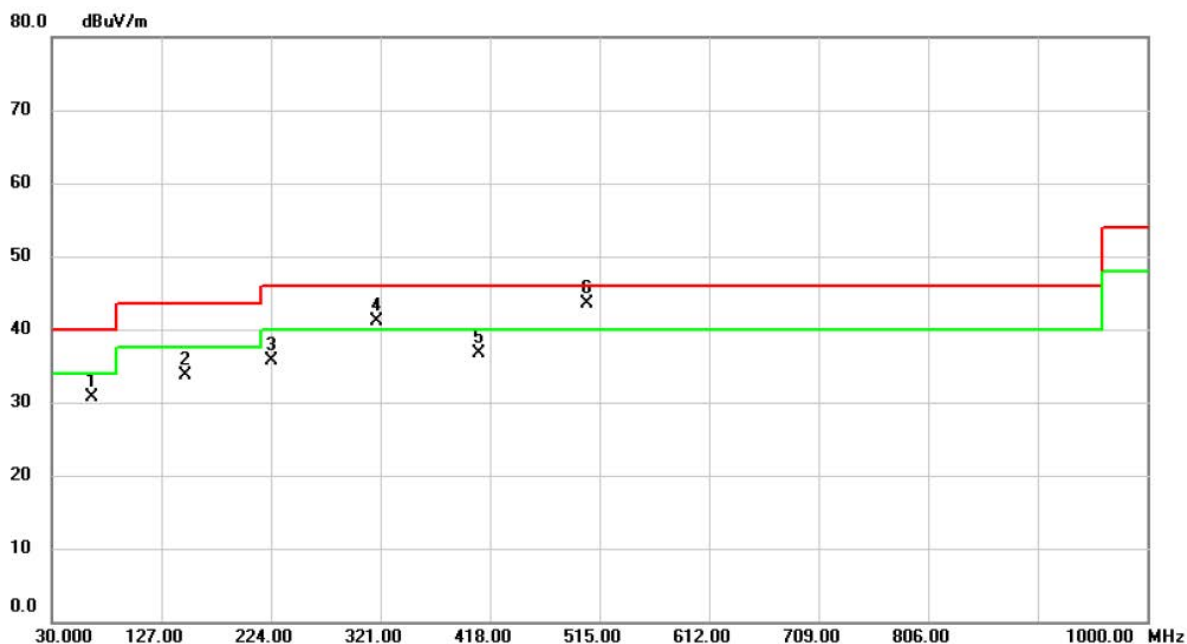
### Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		57.1600	40.40	-7.69	32.71	40.00	-7.29	QP	
2	*	68.8000	46.97	-9.29	37.68	40.00	-2.32	peak	
3		148.3400	40.02	-7.58	32.44	43.50	-11.06	peak	
4	!	235.6400	50.87	-9.05	41.82	46.00	-4.18	peak	
5		415.0900	40.52	-3.57	36.95	46.00	-9.05	peak	
6		489.7800	41.10	-1.86	39.24	46.00	-6.76	peak	

Test Mode: 13.56MHz Transmit\_Desk Docking

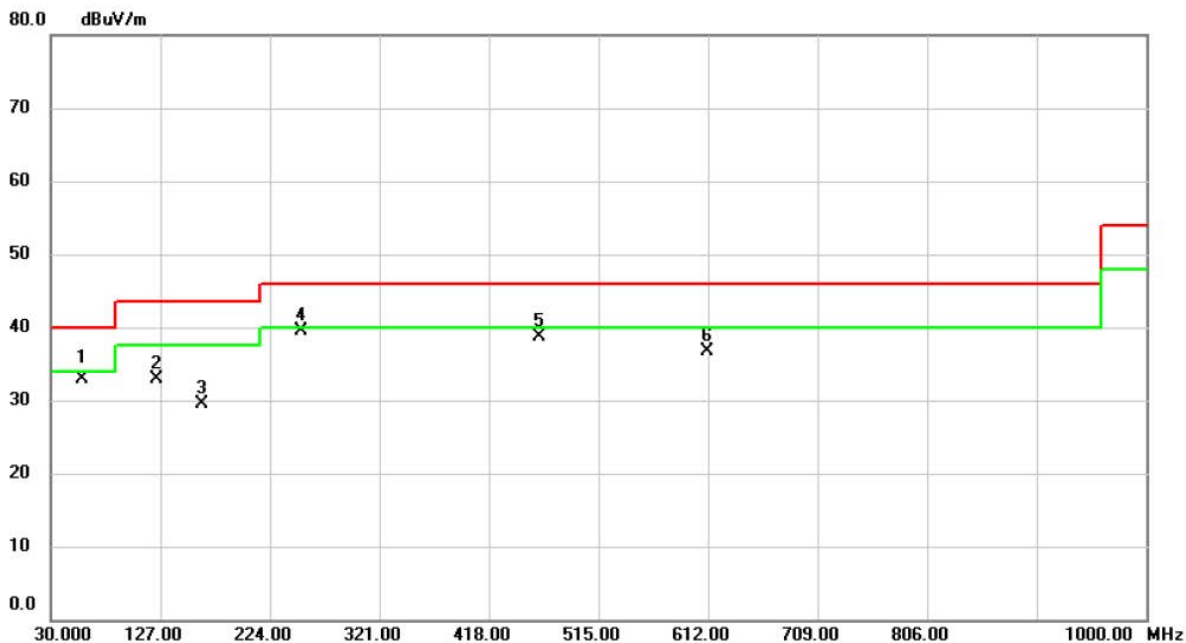
### Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		65.8900	39.59	-8.81	30.78	40.00	-9.22	peak	
2		148.3400	41.31	-7.58	33.73	43.50	-9.77	peak	
3		224.9700	45.39	-9.77	35.62	46.00	-10.38	peak	
4	!	318.0900	47.33	-6.30	41.03	46.00	-4.97	peak	
5		408.3000	40.56	-3.76	36.80	46.00	-9.20	peak	
6	*	504.3300	45.16	-1.66	43.50	46.00	-2.50	peak	

Test Mode: 13.56MHz Transmit\_VESA Docking

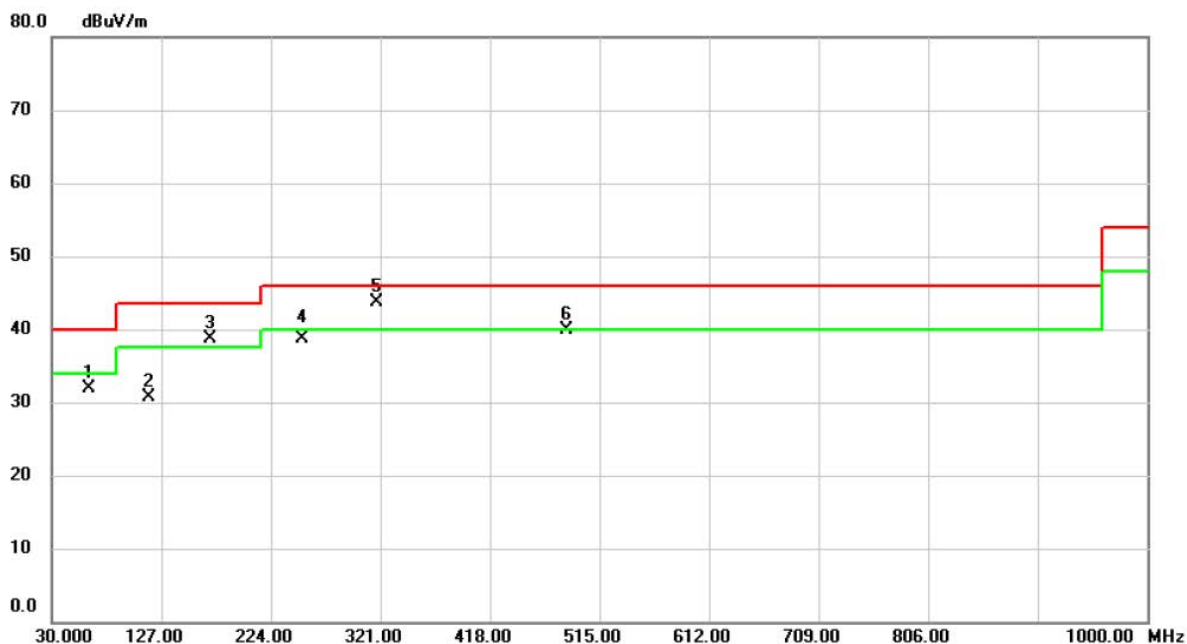
Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		58.1300	40.70	-7.75	32.95	40.00	-7.05	QP	
2		124.0900	42.29	-9.42	32.87	43.50	-10.63	peak	
3		163.8600	37.06	-7.52	29.54	43.50	-13.96	peak	
4	*	252.1300	47.82	-8.37	39.45	46.00	-6.55	peak	
5		462.6200	41.07	-2.35	38.72	46.00	-7.28	peak	
6		611.0300	36.72	-0.06	36.66	46.00	-9.34	peak	

Test Mode: 13.56MHz Transmit\_VESA Docking

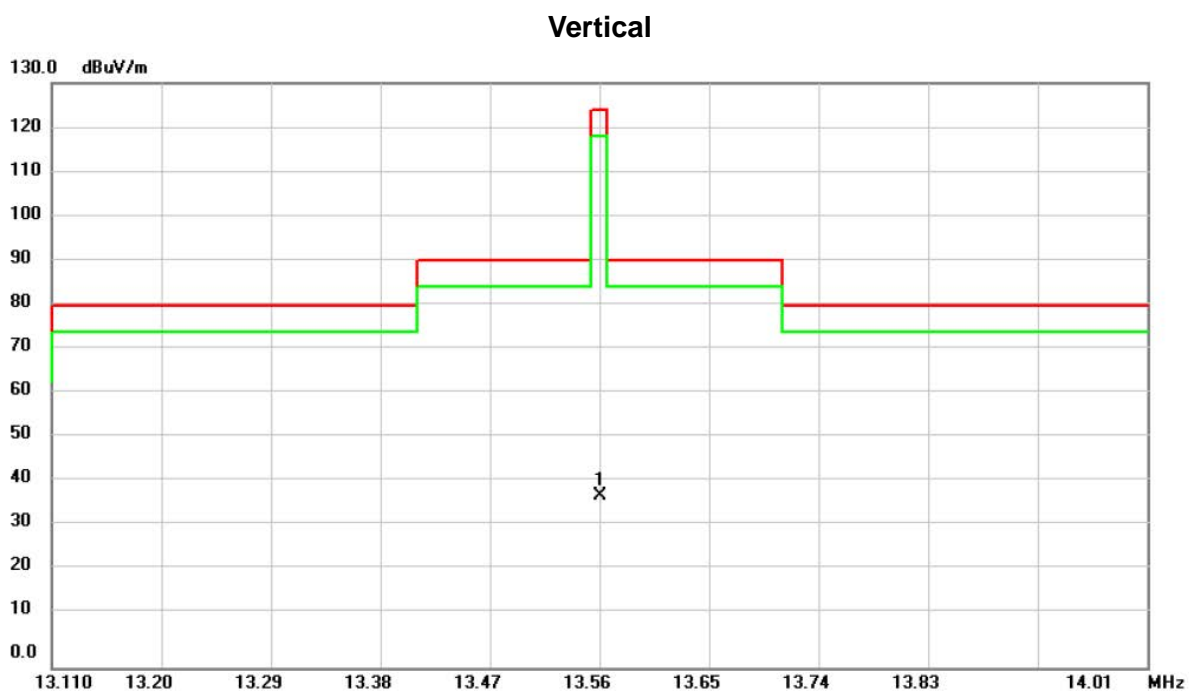
### Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		62.9800	40.31	-8.34	31.97	40.00	-8.03	peak	
2		116.3300	40.80	-10.15	30.65	43.50	-12.85	peak	
3	!	170.6500	46.53	-7.86	38.67	43.50	-4.83	peak	
4		251.1600	47.03	-8.40	38.63	46.00	-7.37	QP	
5	*	317.1200	50.00	-6.33	43.67	46.00	-2.33	peak	
6		485.9000	41.94	-1.94	40.00	46.00	-6.00	peak	

## APPENDIX D - RADIATED EMISSION (FCC PART 15.225)

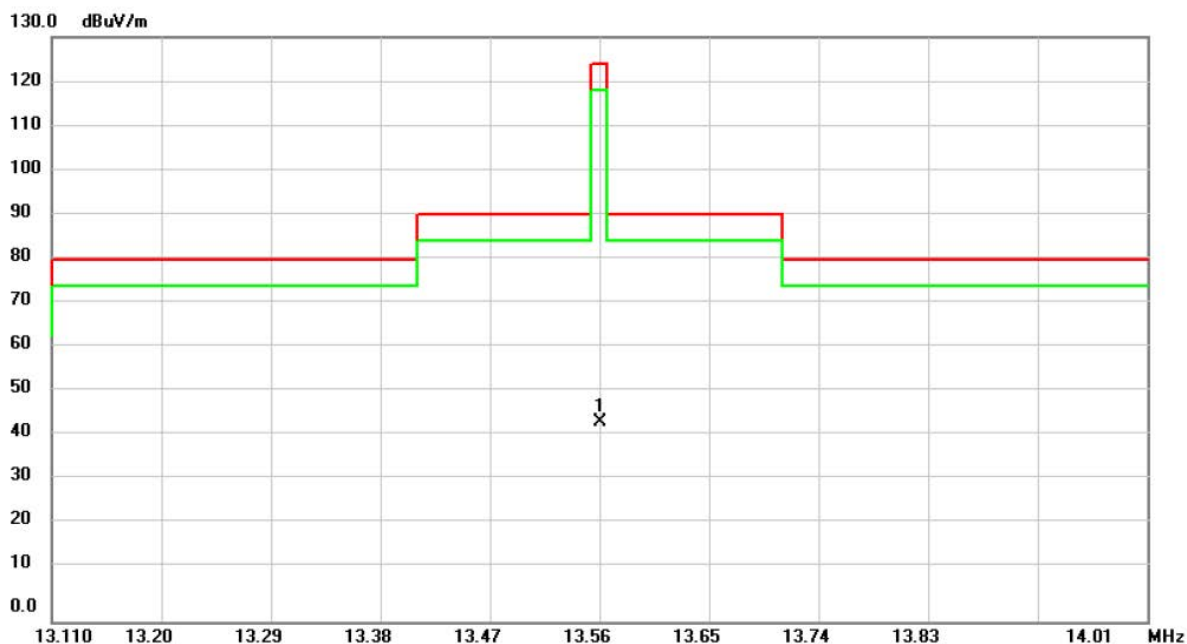
Test Mode:	13.56MHz Transmit
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No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	13.5600	26.84	11.19	38.03	124.00	-85.97	peak	

Test Mode: 13.56MHz Transmit

### Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	13.5600	33.09	11.19	44.28	124.00	-79.72	peak	

## APPENDIX E - FREQUENCY STABILITY MEASUREMENT

Test Mode:	13.56MHz Transmit
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Frequency Stability Versus Environmental Temperature						
	Temperature (°C)	Voltage (AC)	Frequency (MHz)	Frequency Error (kHz)	Limit (kHz)	Result
0 min	20	120V	13.56020	-	-	-
	50	120V	13.56020	0.000	+/- 1.356	PASS
	-20	120V	13.55980	-0.400	+/- 1.356	PASS
2 min	50	120V	13.56020	0.000	+/- 1.356	PASS
	-20	120V	13.55980	-0.400	+/- 1.356	PASS
	50	120V	13.56020	0.000	+/- 1.356	PASS
5 min	-20	120V	13.55980	-0.400	+/- 1.356	PASS
	50	120V	13.56020	0.000	+/- 1.356	PASS
	-20	120V	13.55980	-0.400	+/- 1.356	PASS
10 min	50	120V	13.56040	0.200	+/- 1.356	PASS
	-20	120V	13.55960	-0.600	+/- 1.356	PASS

Frequency Stability Versus Input Voltage						
Temperature (°C)	Voltage (AC)		Frequency (MHz)	Frequency Error (kHz)	Limit (kHz)	Result
20	V-nom	120	13.56020	-	-	-
20	V-min	102	13.56000	-0.2	+/- 1.356	PASS
20	V-max	138	13.56040	0.2	+/- 1.356	PASS