

# **FCC** Radio Test Report

FCC ID: M82-AIM58W

Project No. : 1710T083D Equipment : Computer **Test Model** : AIM 10W

Series Model : AIM-58, AIM-58XXXXXXXXXXXXXXXXX, AIM

10WXXXXXXXXXXXXXXXX (where X may be any

alphanumeric character, blank or "-".)

: Advantech Co., Ltd. **Applicant** 

: No.1, Alley 20, Lane 26, Rueiguang Road, Neihu Address

District, Taipei 11491, Taiwan, R.O.C.

**Date of Receipt** : 2017/11/13

2020/12/16

Date of Test : 2017/11/13 ~ 2018/2/27

2020/12/16 ~ 2021/4/16

Issued Date : 2021/10/15 : BTL Inc. Tested by

Prepared by

Approved by

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#### **Declaration**

BTL represents to the client that testing is done in accordance with standard procedures as applicable and that test instruments used has been calibrated with standards traceable to international standard(s) and/or national standard(s).

BTL's reports apply only to the specific samples tested under conditions. It is manufacture's responsibility to ensure that additional production units of this model are manufactured with the identical electrical and mechanical components. BTL shall have no liability for any declarations, inferences or generalizations drawn by the client or others from **BTL** issued reports.

This report is the confidential property of the client. As a mutual protection to the clients, the public and ourselves, the test report shall not be reproduced, except in full, without our written approval.

BTL's laboratory quality assurance procedures are in compliance with the ISO/IEC 17025 requirements, and accredited by the conformity assessment authorities listed in this test report.

BTL is not responsible for the sampling stage, so the results only apply to the sample as received. The information, data and test plan are provided by manufacturer which may affect the validity of results, so it is manufacturer's responsibility to ensure that the apparatus meets the essential requirements of applied standards and in all the possible configurations as representative of its intended use.

#### 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.

Please note that the measurement uncertainty is provided for informational purpose only and are not use in determining the Pass/Fail results.

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# **REPORT ISSUED HISTORY**

Report No.	Version	Description	Issued Date
BTL-FCCP-6-1710T083D	R00	Original Report.	2021/4/27
BTL-FCCP-6-1710T083D	R01	Revised report to address TCB's	2021/9/8
		comments.	
BTL-FCCP-6-1710T083D	R02	Revised typo.	2021/10/15

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#### 1 CERTIFICATION

Equipment : Computer
Brand Name : ADVANTECH
Test Model : AIM 10W

(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 :  $2017/11/13 \sim 2018/2/27$ 

2020/12/16 ~ 2021/4/16

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-6-1710T083D) were obtained utilizing the test procedures, test instruments, test sites that has been accredited by the Authority of TAF according to the ISO/IEC 17025 quality assessment standard and technical standard(s).

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

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# **2 SUMMARY OF TEST RESULTS**

Test procedures according to the technical standards:

Took procedures deserting to the teerninear 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

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

No. 68-1, Ln. 169, Sec. 2, Datong Rd., Xizhi Dist., New Taipei City 221, Taiwan The test sites and facilities are covered under FCC RN: 674415 and DN: TW0659.

C05 □ CB08 □ CB11 ☐ CB16

SR05

#### 2.2 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 %.

The measurement instrumentation uncertainty considerations contained in CISPR 16-4-2. The BTL measurement uncertainty is less than the CISPR 16-4-2 U<sub>cispr</sub> requirement.

A. AC power line conducted emissions test:

Test Site	Method	Measurement Frequency Range	U (dB)
C05	CISPR	150 kHz ~ 30MHz	3.44

#### B. Radiated emissions test:

Test Site	Measurement Frequency Range	U,(dB)
	0.03 GHz ~ 0.2 GHz	4.17
	0.2 GHz ~ 1 GHz	4.72
CB15	1 GHz ~ 6 GHz	5.21
CDIS	6 GHz ~ 18 GHz	5.51
	18 GHz ~ 26 GHz	3.69
	26 GHz ~ 40 GHz	4.23

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#### **3 GENERAL INFORMATION**

#### 3.1 GENERAL DESCRIPTION OF EUT

Equipment	Computer		
Brand Name	ADVANTECH		
Test Model	AIM 10W		
Series Model	AIM-58, AIM-58XXXXXXXXXXXXXXXXX, AIM 10WXXXXXXXXXXXXXXXXX (where X may be any alphanumeric character, blank or "-".)		
Model Difference	The market distribution is different only.		
Draduat Description	Operation Frequency	13.56 MHz	
Product Description	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		
	2* AC Adapter: (1) TAMURA / XEW1934N (2) FSP / FSP065-DBCM1		
Products Covered	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.
- (2) In this report, the test results of below items refer to BTL-FCCP-6-1710083 report due to the device is identical to the original device of the referencing report, except added series models and added an external power adapter.
  - a. Conducted Emission
  - b. Radiated Emission (9KHZ-30MHZ & 30MHZ TO 1000MHZ & FCC PART 15.225)
  - c. Frequency Stability

Spot checks are applied to below items:

a. Radiated Emission (FCC PART 15.225)

After evaluated, the changes with respect to the original device below items are tested.

- a. Conducted Emission
- b. Radiated Emission (9KHZ-30MHZ & 30MHZ TO 1000MHZ)

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#### 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		

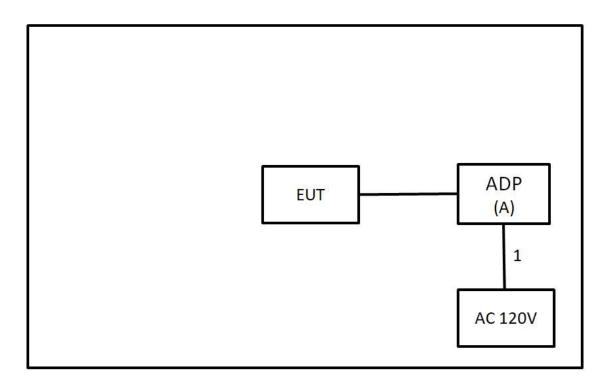
Frequency Stability test			
Final Test Mode	Description		
Mode 1	13.56MHz Transmit		

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

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#### 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	Brand	Model No.	Series No.	Remarks
Α	Adapter	FSP GROUP INC	FSP065-DBC M1	IN/A	Supplied by test requester

Item	Shielded	Ferrite Core	Length	Cable Type	Remarks
1	N/A	N/A	1.1m		Supplied by test requester

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#### **4 CONDUCTED EMISSION**

#### 4.1 LIMITS

FREQUENCY	(dBuV)			
(MHz)	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:

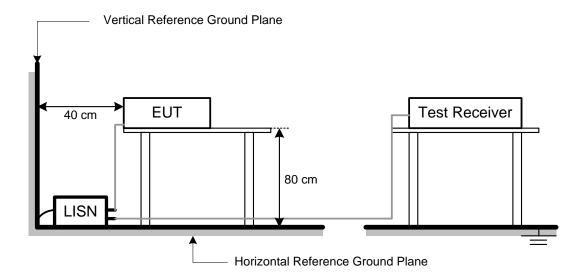
- a. Reading in which marked as Peak, QP or AVG means measurements by using are Quasi-Peak or Average Mode with Detector BW=9 kHz (6 dB Bandwidth).
- b. All readings are Peak Mode value unless otherwise stated QP or AVG in column of Note. If the Peak or QP Mode Measured value compliance with the QP Limits 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.

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#### 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, 19°C Relative Humidity: 55%, 61% 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 FNote, I. 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.

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#### **5 RADIATED EMISSION**

#### 5.1 LIMITS

		FC	CC Part 15.209		
Frequency (MHz)	Field Streng Limitation	2	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 P	art 15.225(a)/(b)/(c)		
Frequency	Field Strength Limitation		Field Strength Limitation at 3m Measurement D		
(MHz)	(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	13.110 – 13.410		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

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#### **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.

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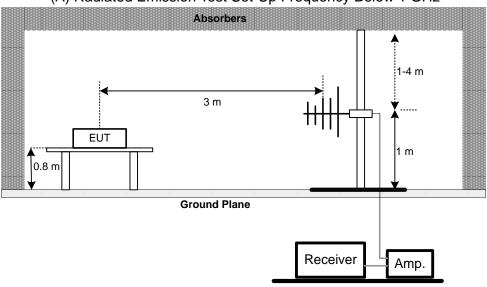


#### 5.3 DEVIATION FROM TEST STANDARD

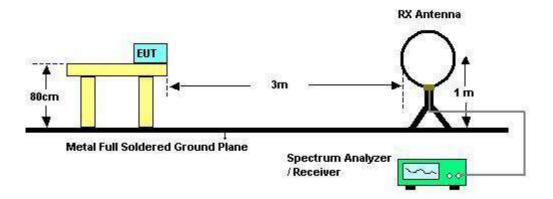
No deviation

#### 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.

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#### **5.6 EUT TEST CONDITIONS**

Temperature: 23°C, 21°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.

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#### **6 FREQUENCY STABILITY**

#### 6.1 LIMITS

#### FCC Part 15.225(e)

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 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±5°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°C, 21°C Relative Humidity: 66%, 70% Test Voltage: AC 120V/60Hz

#### **6.6 TEST RESULTS**

Please refer to the Appendix E.

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# **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				

	Conducted Emission Measurement (For Adapter: FSP / FSP065-DBCM1)								
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until				
1	TWO-LINE V-NETWORK	R&S	ENV216	101050	2021/6/10				
2	Test Cable	EMCI	EMC400-BM-BM- 5000	170501	2021/6/7				
3	EMI Test Receiver	R&S	ESCI	100080	2021/6/14				
4	Measurement Software	EZ	EZ_EMC (Version NB-03A1-01)	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-S M-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	Horm Ant	SCHWARZBECK	BBHA 9120D	9120D-1342	Feb. 28, 2018			
11	Horm 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			

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	Radiated Emission Measurement (For Spot check test)								
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until				
1	Preamplifier	EMCI	EMC001340	980555	2021/4/9				
2	Preamplifier	EMCI	EMC02325B	980217	2021/4/9				
3	Preamplifier	EMCI	EMC012645B	980267	2021/4/9				
4	Preamplifier	EMCI	EMC184045SE	980512	2021/5/31				
5	Test Cable	EMCI	EMC-SM-SM-10 00	180809	2021/4/9				
6	Test Cable	EMCI	EMC104-SM-S M-3000	151205	2021/4/9				
7	Test Cable	EMCI	EMC-SM-SM-70 00	180408	2021/4/9				
8	MXE EMI Receiver	Agilent	N9038A	MY554200087	2021/6/9				
9	Signal Analyzer	Agilent	N9010A	MY56480554	2021/8/24				
10	Loop Ant	Electro-Metrics	EMCI-LPA600	274	2021/6/15				
11	Horn Ant	SCHWARZBECK	BBHA 9120D	9120D-1342	2021/6/11				
12	Horn Ant	Schwarzbeck	BBHA 9170	BBHA 9170340	2021/7/8				
13	Trilog-Broadband Antenna	Schwarzbeck	VULB 9168	VULB 9168-352	2021/7/23				
14	5dB Attenuator	EMCI	EMCI-N-6-05	AT-N0625	2021/7/23				
15	Measurement Software	EZ	EZ_EMC (Version NB-03A1-01)	N/A	N/A				

	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			

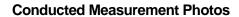
Remark: "N/A" denotes no model name, serial no. or calibration specified. All calibration period of equipment list is one year.

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# **8 EUT TEST PHOTO**







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# Conducted Measurement Photos Desk Docking





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# Conducted Measurement Photos VESA Docking





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Conducted Measurement Photos Adapter: FSP / FSP065-DBCM1





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Conducted Measurement Photos Adapter: FSP / FSP065-DBCM1+ VESA Docking

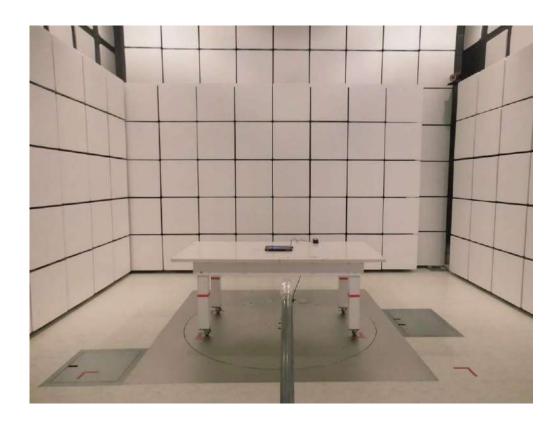


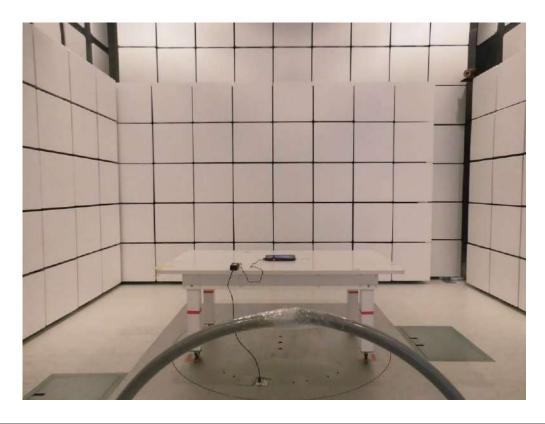


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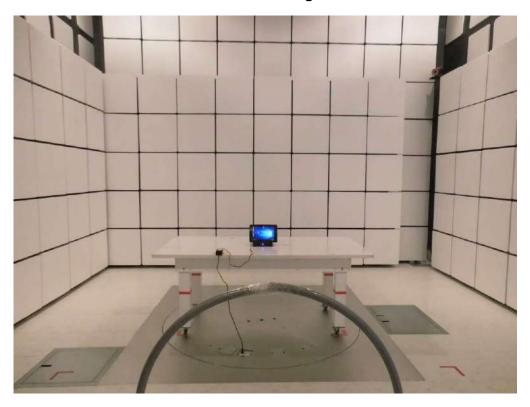


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# **Desk Docking**





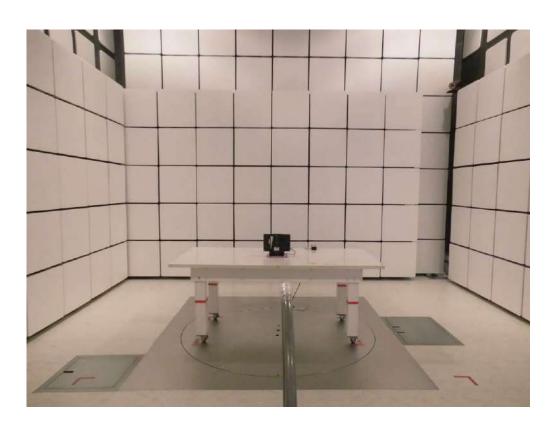
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# **VESA Docking**



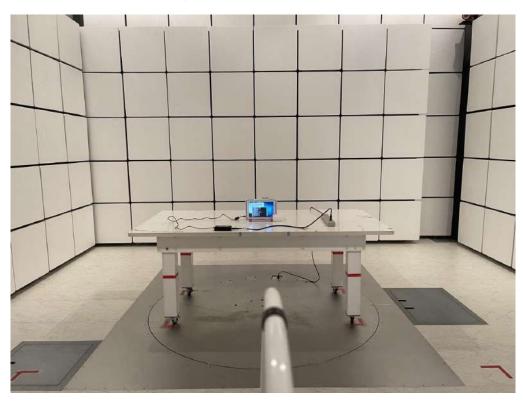


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Adapter: FSP / FSP065-DBCM1



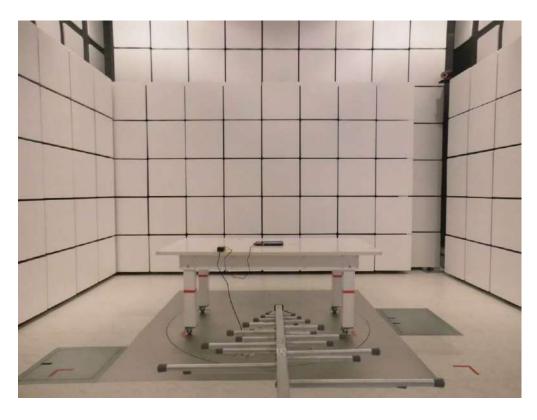


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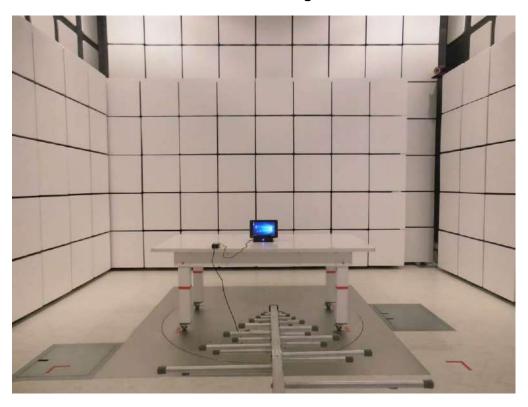


Report No.: BTL-FCCP-6-1710T083D

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# **Desk Docking**



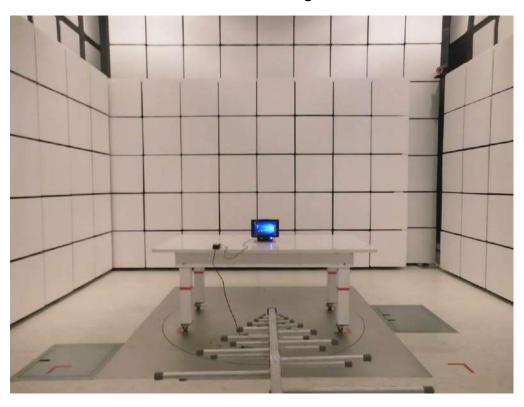


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# **VESA Docking**



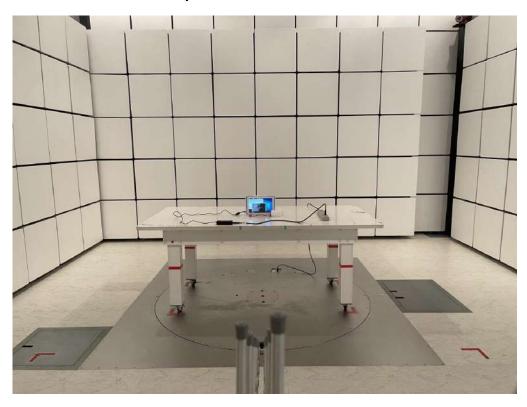


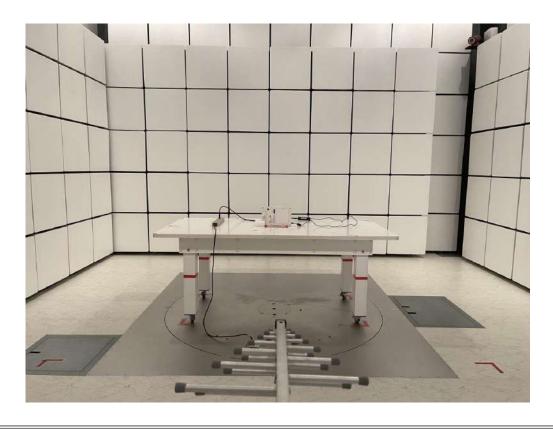
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Adapter: FSP / FSP065-DBCM1



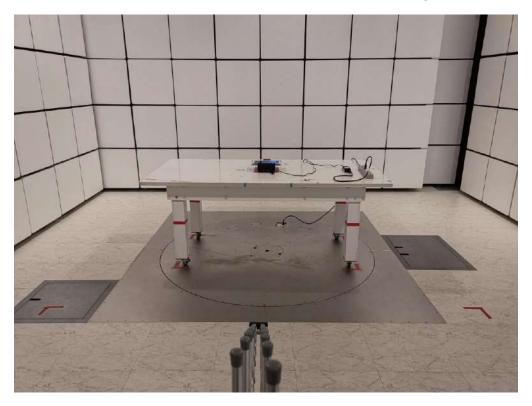


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Adapter: FSP / FSP065-DBCM1+ VESA Docking





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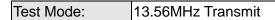
APPENDIX A - CONDUCTED EMISSION

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10

0.0



0.5

# Eline 90.0 dBuV 70 60 40 1 20 2 X 5 7 8 8 9

(MHz)

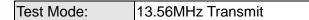
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBu√	dB	Detector	Comment
1		0.2110	29.10	9.71	38.81	63.17	-24.36	QP	
2		0.2110	9.60	9.71	19.31	53.17	-33.86	AVG	
3		0.5990	23.40	9.74	33.14	56.00	-22.86	QP	
4	*	0.5990	15.60	9.74	25.34	46.00	-20.66	AVG	
5		0.8420	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	

Report No.: BTL-FCCP-6-1710T083D

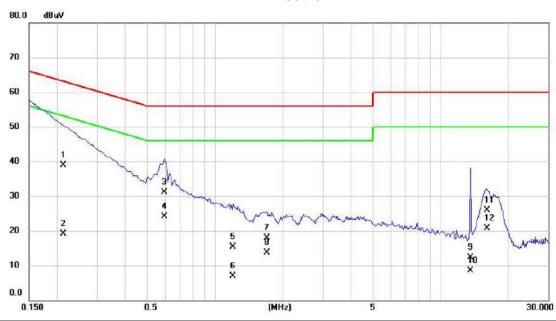
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30.000





## Neutral

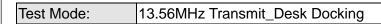


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		
		MHz	dBu∀	dB	dBuV	dBu∀	dB	Detector	Comment
1		0.2123	29.20	9.65	38.85	63.11	-24.26	QP	
2		0.2123	9.50	9.65	19.15	53.11	-33.96	AVG	
3		0.5990	21.50	9.68	31.18	56.00	-24.82	QP	
4	*	0.5990	14.40	9.68	24.08	46.00	-21.92	AVG	
5		1.2020	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	

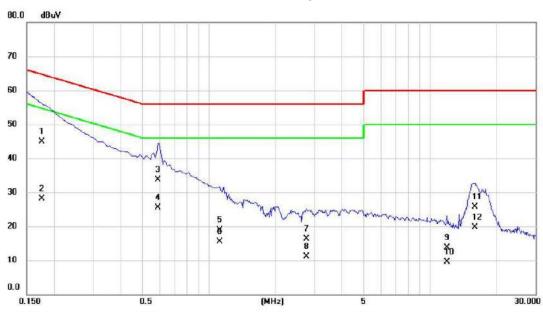
Report No.: BTL-FCCP-6-1710T083D

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# Line



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBu∀	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	

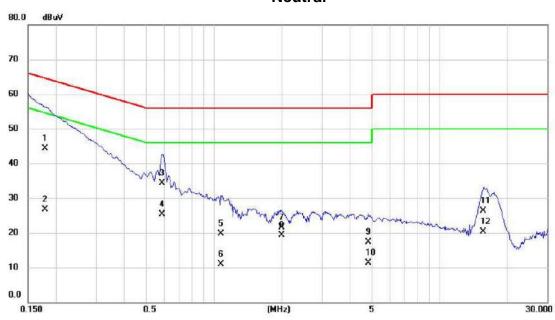
Report No.: BTL-FCCP-6-1710T083D

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## Neutral

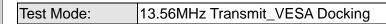


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		
		MHz	dBu∀	dB	dBuV	dBu∀	dB	Detector	Comment
1	*	0.1780	34.60	9.65	44.25	64.58	-20.33	QP	
2		0.1780	17.00	9.65	26.65	54.58	-27.93	AVG	
3		0.5900	24.60	9.68	34.28	56.00	-21.72	QP	
4		0.5900	15.70	9.68	25.38	46.00	-20.62	AVG	
5		1.0760	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	

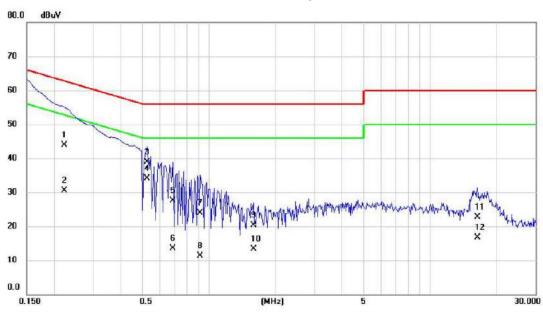
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## Line



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBu∀	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	

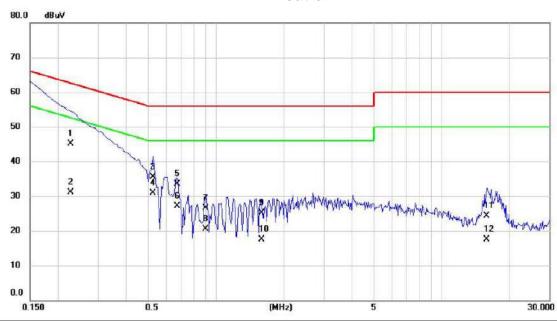
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## Neutral



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		
		MHz	dBu∀	dB	dBuV	dBu∀	dB	Detector	Comment
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	

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7

8

9

10

11

12

1.3088

1.3088

2.8568

2.8568

9.3863

9.3863

11.90

-0.77

7.99

5.89

8.92

-1.57

9.70

9.70

9.76

9.76

9.92

9.92

21.60

8.93

17.75

15.65

18.84

8.35

56.00

46.00

56.00

46.00

60.00

50.00

-34.40

-37.07

-38.25

-30.35

-41.16

-41.65

QΡ

AVG

QΡ

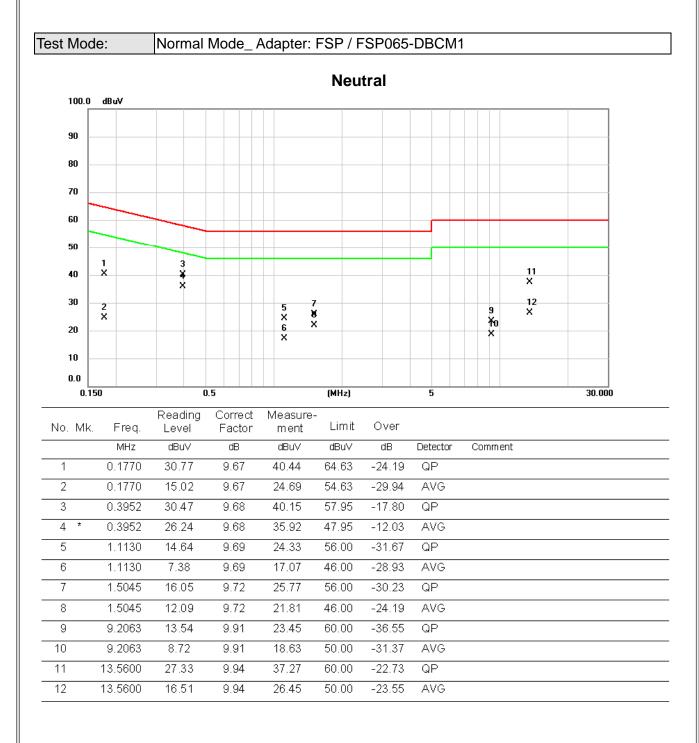
AVG

QΡ

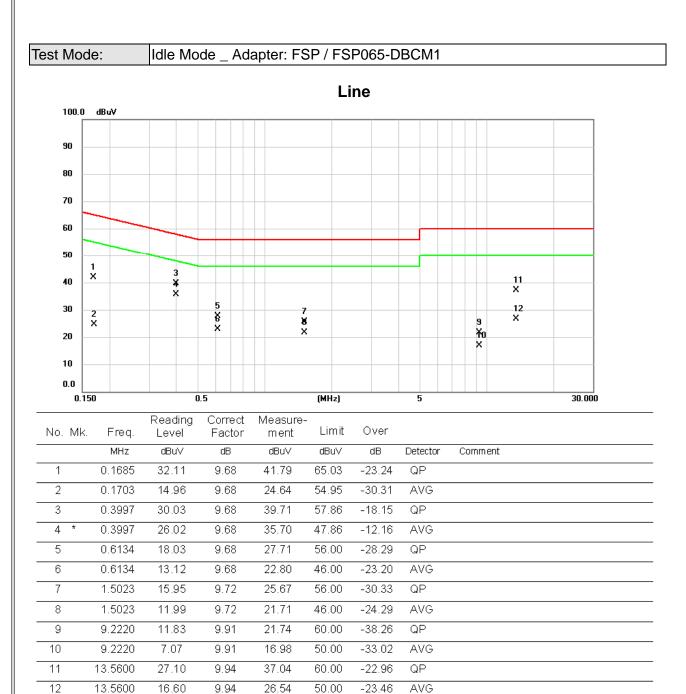
AVG

Test Mode: Normal Mode \_ Adapter: FSP / FSP065-DBCM1 Line 100.0 dBuV 90 80 70 60 50 40 3 X 1 X 30 11 X 90 X 20 12 10 0.0 0.150 (MHz) 30.000 Reading Correct Measure-No. Mk. Freq. Limit Over Level Factor ment MHz dBu∀ dΒ dBu∀ dBu∀ dΒ Detector Comment 0.1777 19.49 9.67 29.16 64.59 -35.43 QP 1 0.1777 0.39 9.67 10.06 54.59 -44.53 2 AVG 3 0.4042 22.57 9.68 32.25 57.77 -25.52 QΡ 4 0.4042 7.30 9.68 16.98 47.77 -30.79 AVG 13.98 23.66 56.00 5 0.5955 9.68 -32.34 QΡ 6 0.5955 7.02 9.68 16.70 46.00 -29.30 AVG











Test Mode: Idle Mode \_ Adapter: FSP / FSP065-DBCM1 Neutral 100.0 dBuV 90 80 70 60 50 40 30 7 8 X 2 X ¥ X ¥o × 20 10 0.0 0.5 (MHz) 30.000 0.150 5 Reading Correct Measure-Limit Over No. Mk. Freq. Level Factor ment MHz dBu∀ dΒ dBu∨ dBu∨ dΒ Detector Comment 1 0.1770 30.16 9.67 39.83 64.63 -24.80 QΡ 2 0.1770 14.31 9.67 23.98 54.63 -30.65 AVG 3 0.3885 30.51 -17.91 QΡ 9.68 40.19 58.10 4 0.3885 26.76 36.44 48.10 AVG 9.68 -11.66 QΡ 0.6405 17.25 56.00 -29.07 9.68 26.93 5 6 0.6405 12.96 9.68 22.64 46.00 -23.36 AVG QΡ 7 1.4933 16.43 9.71 26.14 56.00 -29.86 8 1.4933 12.78 9.71 22.49 46.00 -23.51 AVG

9

10

11

12

9.2288

9.2288

13.5600

13.5600

12.98

8.79

27.50

16.45

9.91

9.91

9.94

9.94

22.89

18.70

37.44

26.39

60.00

50.00

60.00

50.00

-37.11

-31.30

-22.56

-23.61

QΡ

AVG

QΡ

AVG



Test Mode: Normal Mode \_ Adapter: FSP / FSP065-DBCM1+ VESA Docking

#### Line 80.0 dBuV 70 60 50 40 9 X 10 X 5 X 6 X 30 7 8 X 20 10 0 -10 -20.0 0.150 0.5 (MHz) 30.000

No. Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		
	MHz	dBu∨	dB	dBu∨	dBu∨	dB	Detector	Comment
1	0.2175	26.56	9.67	36.23	62.91	-26.68	QP	
2	0.2175	10.52	9.67	20.19	52.91	-32.72	AVG	
3	0.3952	33.70	9.68	43.38	57.95	-14.57	QP	
4 *	0.3952	27.45	9.68	37.13	47.95	-10.82	AVG	
5	0.7552	18.90	9.69	28.59	56.00	-27.41	QP	
6	0.7552	11.78	9.69	21.47	46.00	-24.53	AVG	
7	9.0780	15.45	9.91	25.36	60.00	-34.64	QP	
8	9.0780	10.13	9.91	20.04	50.00	-29.96	AVG	
9	13.5600	19.63	9.94	29.57	60.00	-30.43	QP	
10	13.5600	11.36	9.94	21.30	50.00	-28.70	AVG	
11	18.7148	7.44	9.96	17.40	60.00	-42.60	QP	
12	18.7148	2.94	9.96	12.90	50.00	-37.10	AVG	

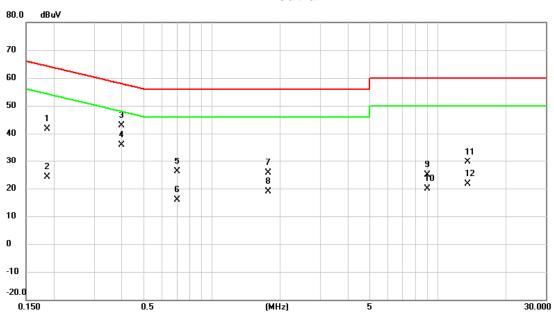
Report No.: BTL-FCCP-6-1710T083D

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Test Mode: Normal Mode\_ Adapter: FSP / FSP065-DBCM1+ VESA Docking

### **Neutral**



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		
		MHz	dBu∨	dB	dBu∨	dBu∨	dB	Detector	Comment
1		0.1864	32.00	9.67	41.67	64.20	-22.53	QP	
2		0.1864	14.42	9.67	24.09	54.20	-30.11	AVG	
3		0.3997	33.27	9.68	42.95	57.86	-14.91	QP	
4	*	0.3997	26.16	9.68	35.84	47.86	-12.02	AVG	
5		0.7012	16.38	9.68	26.06	56.00	-29.94	QP	
6		0.7012	6.16	9.68	15.84	46.00	-30.16	AVG	
7		1.7655	16.02	9.73	25.75	56.00	-30.25	QP	
8		1.7655	9.25	9.73	18.98	46.00	-27.02	AVG	
9		9.0218	14.88	9.91	24.79	60.00	-35.21	QP	
10		9.0218	9.93	9.91	19.84	50.00	-30.16	AVG	
11		13.5600	19.59	9.94	29.53	60.00	-30.47	QP	
12		13.5600	11.73	9.94	21.67	50.00	-28.33	AVG	

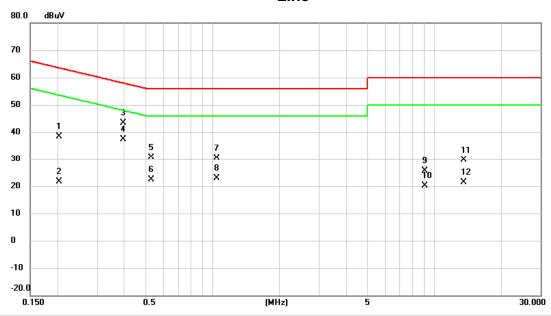
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Test Mode: Idle Mode \_ Adapter: FSP / FSP065-DBCM1+ VESA Docking

### Line



No. M	k. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		
	MHz	dBu∨	dB	dBu∨	dBu∨	dB	Detector	Comment
1	0.2030	28.65	9.67	38.32	63.49	-25.17	QP	
2	0.2030	11.95	9.67	21.62	53.49	-31.87	AVG	
3	0.3952	33.60	9.68	43.28	57.95	-14.67	QΡ	
4 *	0.3952	27.73	9.68	37.41	47.95	-10.54	AVG	
5	0.5280	20.85	9.68	30.53	56.00	-25.47	QP	
6	0.5280	12.71	9.68	22.39	46.00	-23.61	AVG	
7	1.0455	20.58	9.69	30.27	56.00	-25.73	QP	
8	1.0455	13.31	9.69	23.00	46.00	-23.00	AVG	
9	9.0375	15.70	9.91	25.61	60.00	-34.39	QP	
10	9.0375	10.12	9.91	20.03	50.00	-29.97	AVG	
11	13.5600	19.65	9.94	29.59	60.00	-30.41	QP	
12	13.5600	11.41	9.94	21.35	50.00	-28.65	AVG	

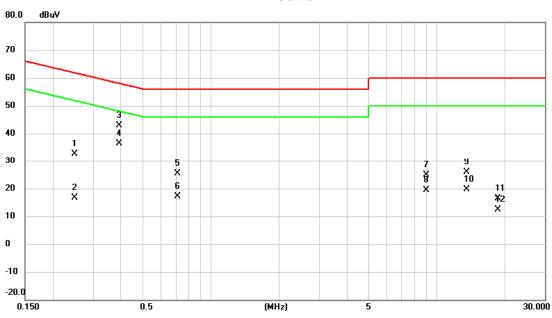
Report No.: BTL-FCCP-6-1710T083D

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Test Mode: Idle Mode \_ Adapter: FSP / FSP065-DBCM1+ VESA Docking

### **Neutral**



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		
		MHz	dBu∨	dB	dBu∨	dBu∨	dB	Detector	Comment
1		0.2490	23.07	9.68	32.75	61.79	-29.04	QP	
2		0.2490	6.94	9.68	16.62	51.79	-35.17	AVG	
3		0.3930	33.08	9.68	42.76	58.00	-15.24	QP	
4	*	0.3930	26.62	9.68	36.30	48.00	-11.70	AVG	
5		0.7147	15.80	9.68	25.48	56.00	-30.52	QP	
6		0.7147	7.43	9.68	17.11	46.00	-28.89	AVG	
7		9.0262	14.86	9.91	24.77	60.00	-35.23	QP	
8		9.0262	9.58	9.91	19.49	50.00	-30.51	AVG	
9		13.5600	15.83	9.94	25.77	60.00	-34.23	QP	
10		13.5600	9.62	9.94	19.56	50.00	-30.44	AVG	
11		18.6743	6.50	9.96	16.46	60.00	-43.54	QP	
12		18.6743	2.52	9.96	12.48	50.00	-37.52	AVG	

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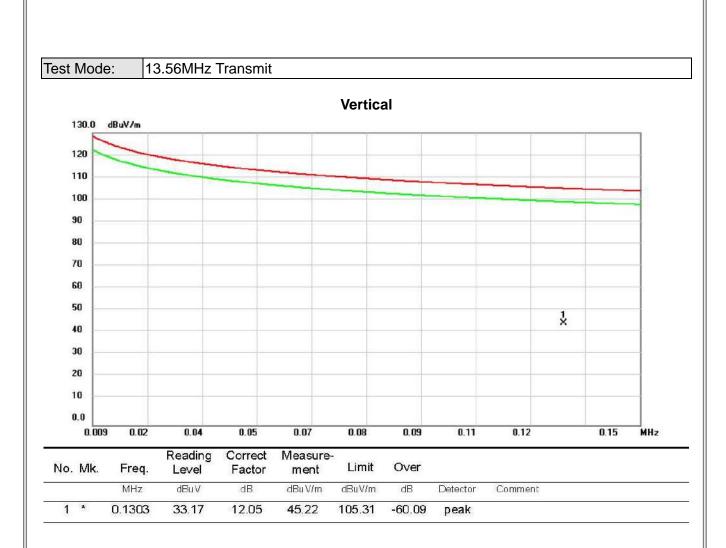
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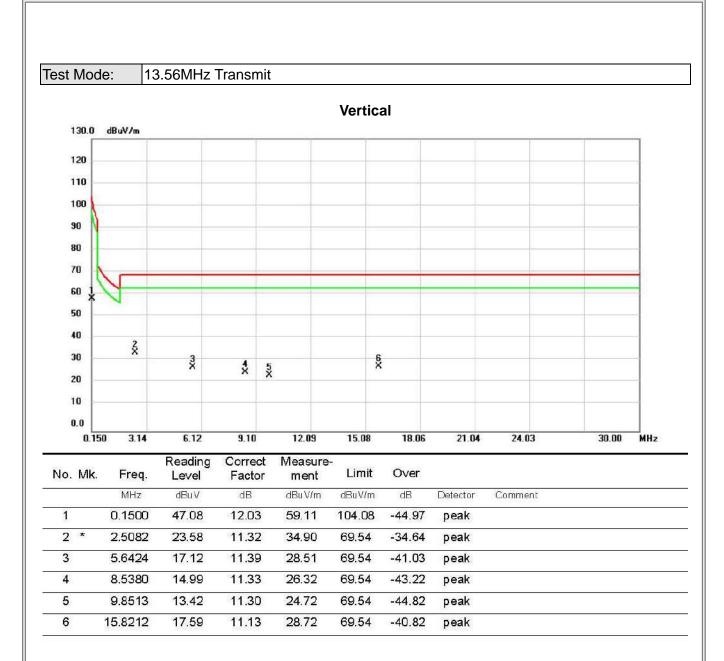
APPENDIX B - RADIATED EMISSION (9KHZ-30MHZ)

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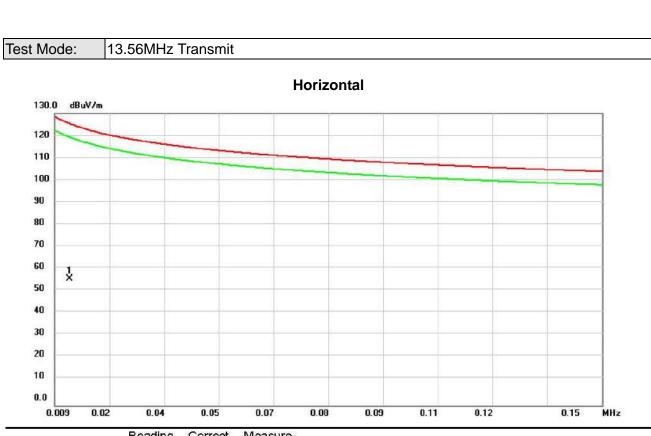








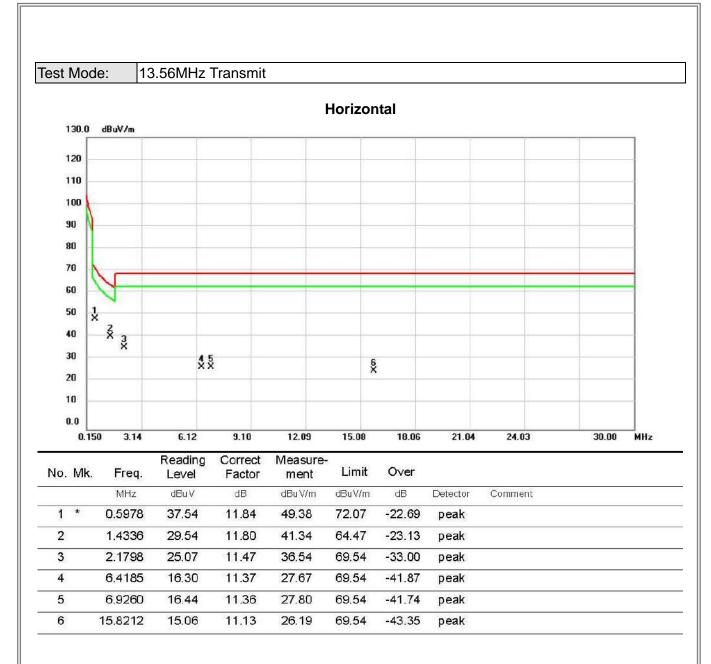




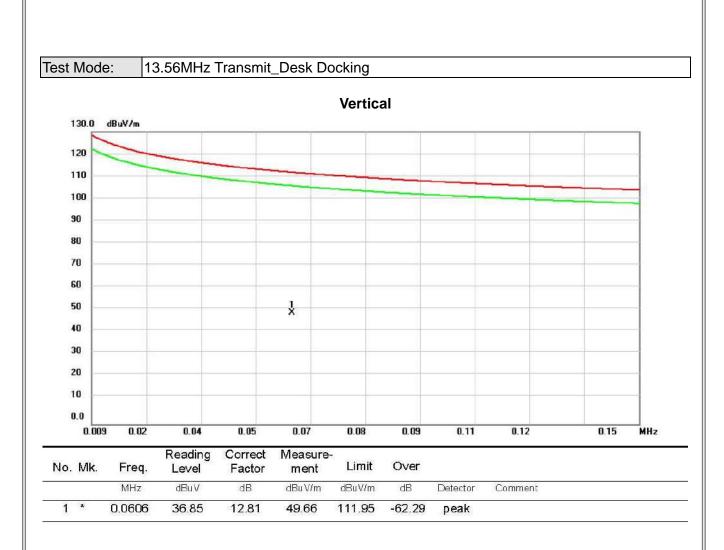
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	O∨er			
		MHz	dBu V	dB	dBu V/m	dBuV/m	dB	Detector	Comment	
1	*	0.0128	36.71	19.73	56.44	125.46	-69.02	peak		

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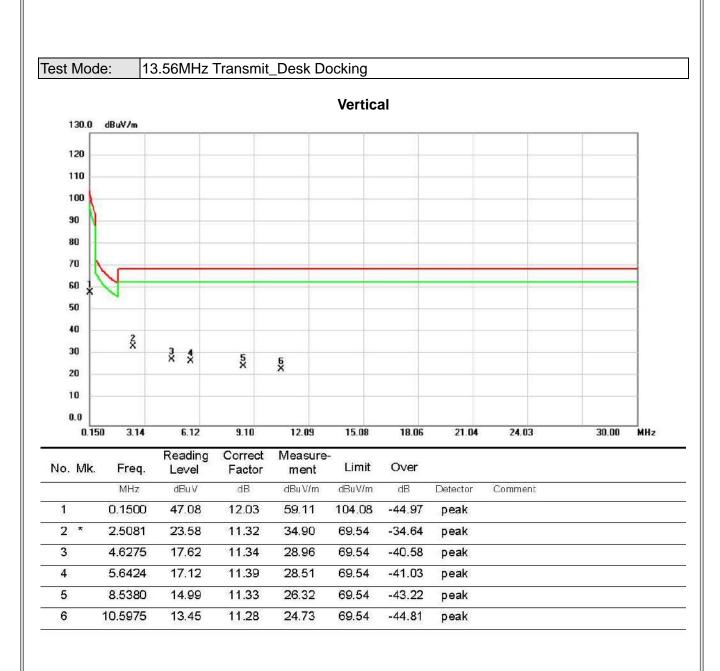




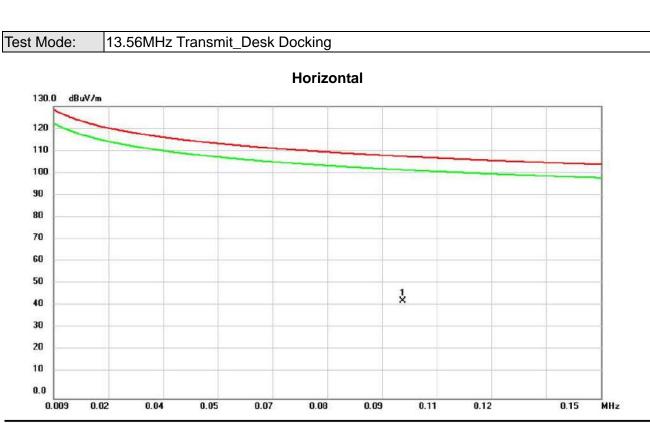












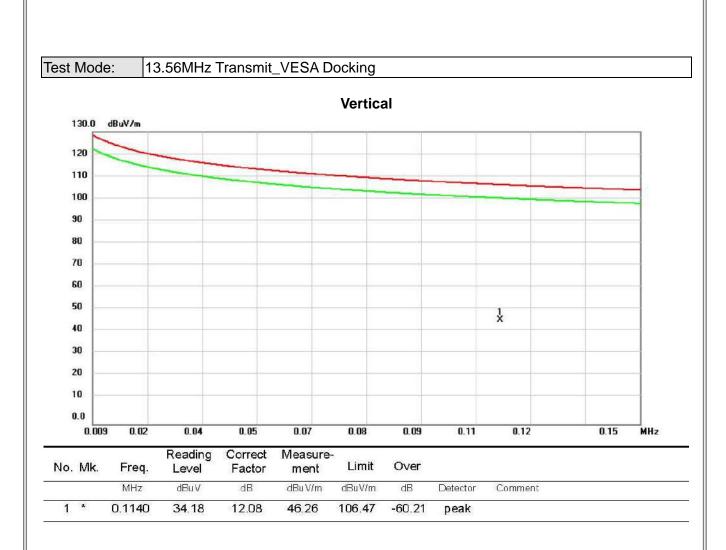
No. Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over			
	MHz	dBu∀	dB	dBu V/m	dBuV/m	dB	Detector	Comment	
1 *	0.0990	31.37	12.12	43.49	107.69	-64.20	peak		

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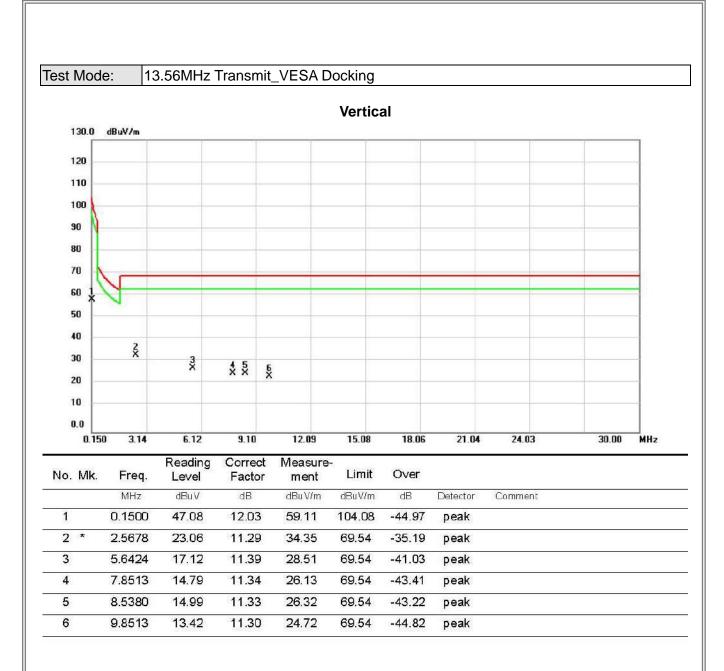














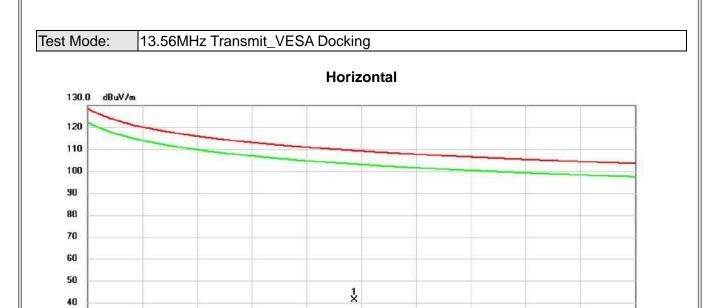
0.009

0.02

0.04

0.05

0.07



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

0.08

0.09

0.11

0.12

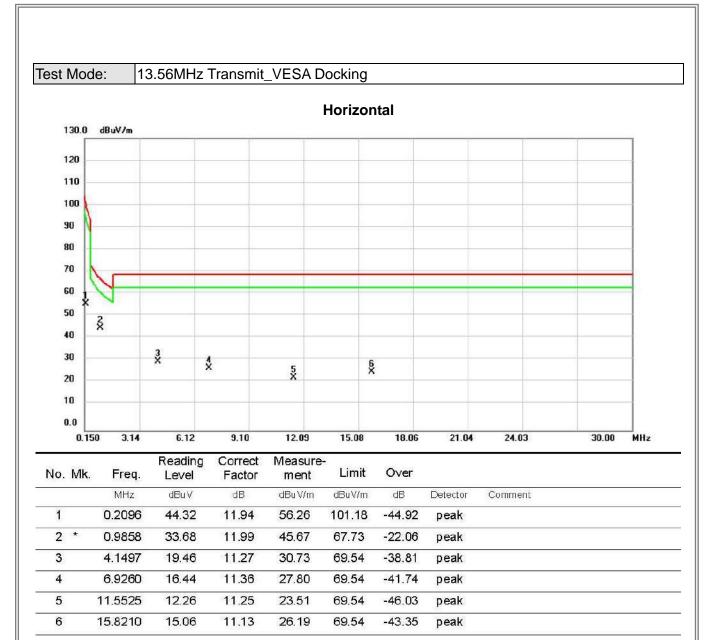
0.15

MHz

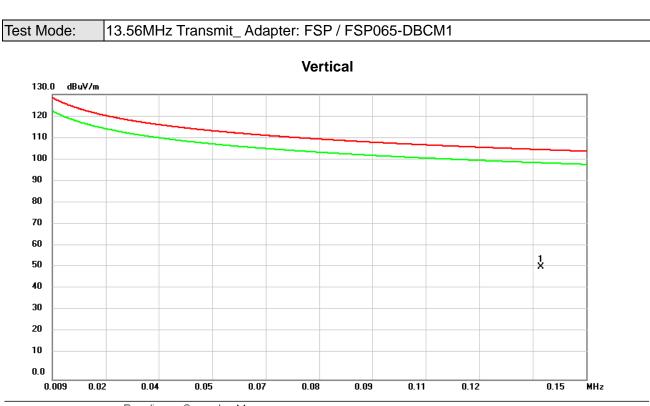
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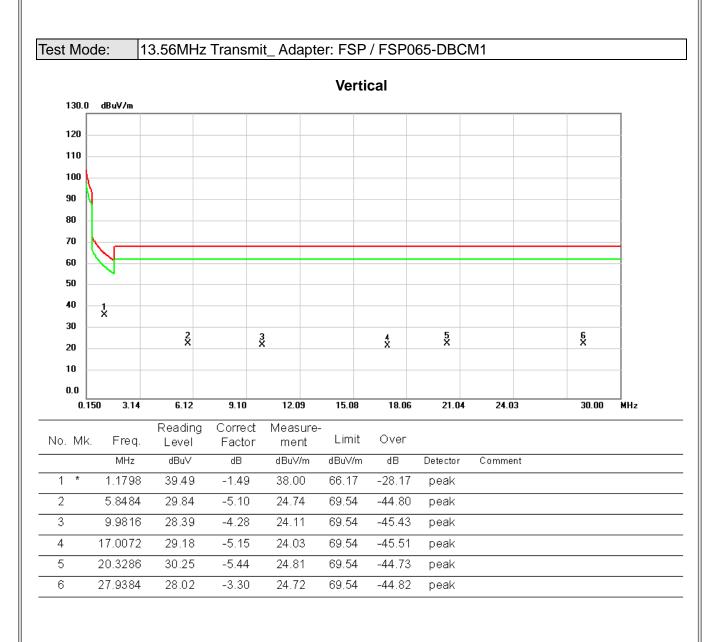




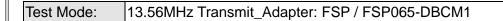
_	No.	Mk.	Freq.	Reading Level		Measure- ment	Limit	Over			
_			MHz	dBu∀	dB	dBuV/m	dBuV/m	dB	Detector	Comment	

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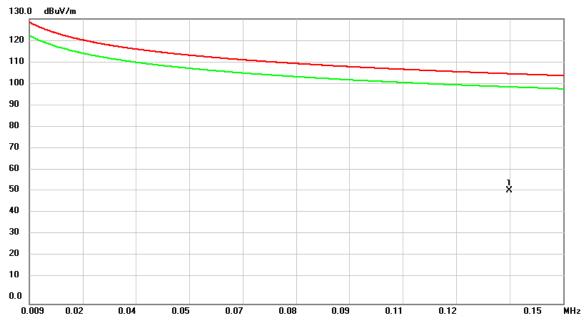








#### Horizontal



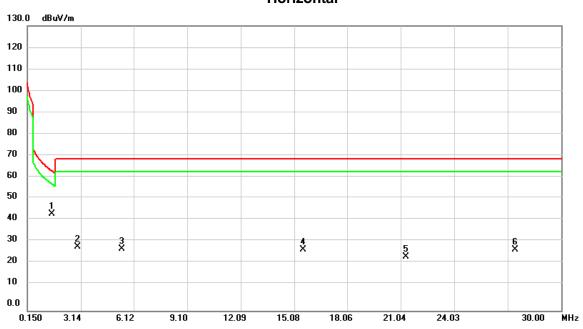
No. Mk.	Freq.			Measure- ment		Over		
	MHz	dBu∨	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1 *	0.1358	38.42	13.25	51.67	104.95	-53.28	peak	

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No. Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		
	MHz	dBu∀	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1 *	1.5171	46.18	-2.14	44.04	63.98	-19.94	peak	
2	2.9470	33.71	-4.73	28.98	69.54	-40.56	peak	
3	5.4651	33.36	-5.17	28.19	69.54	-41.35	peak	
4	15.5595	32.92	-4.97	27.95	69.54	-41.59	peak	
5	21.3325	29.83	-5.16	24.67	69.54	-44.87	peak	
6	27.4388	31.14	-3.44	27.70	69.54	-41.84	peak	

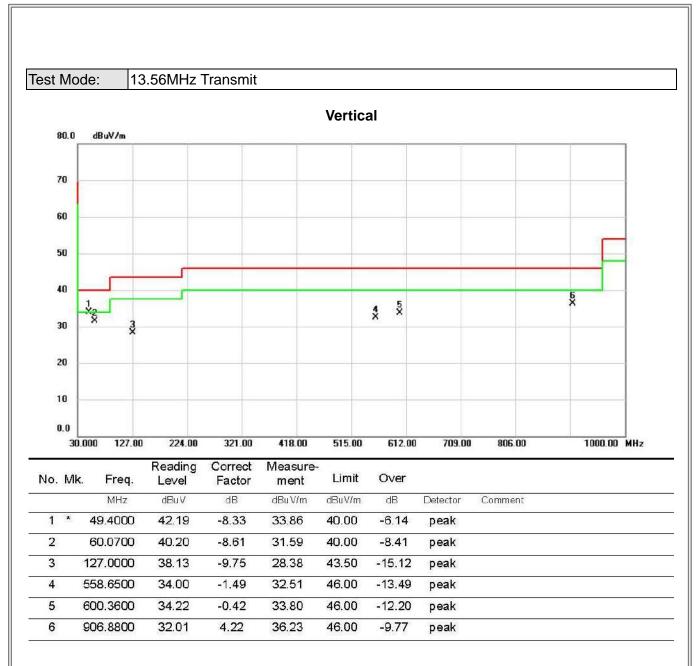
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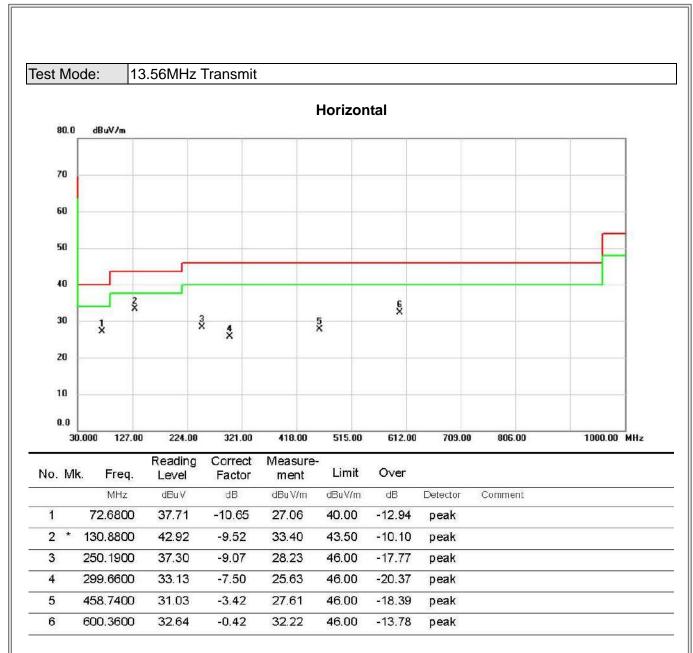
APPENDIX C - RADIATED EMISSION (30MHZ TO 1000MHZ)

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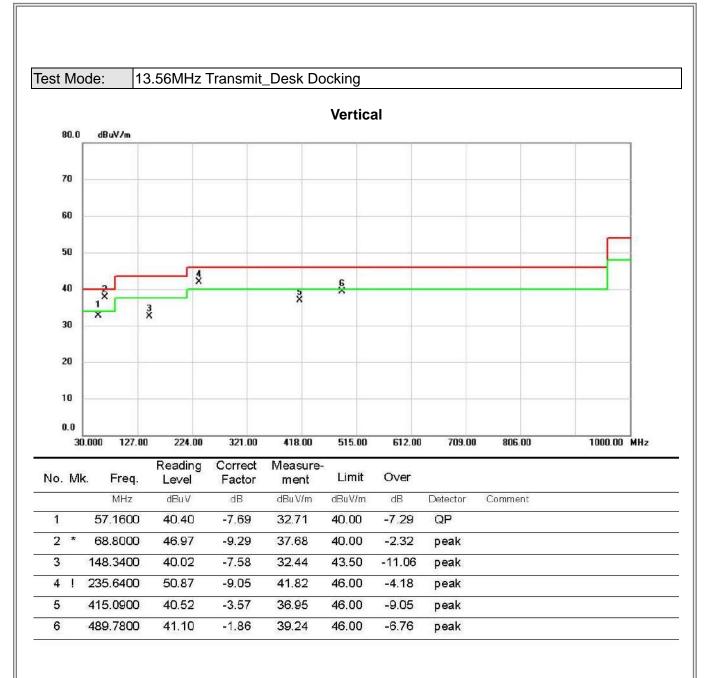




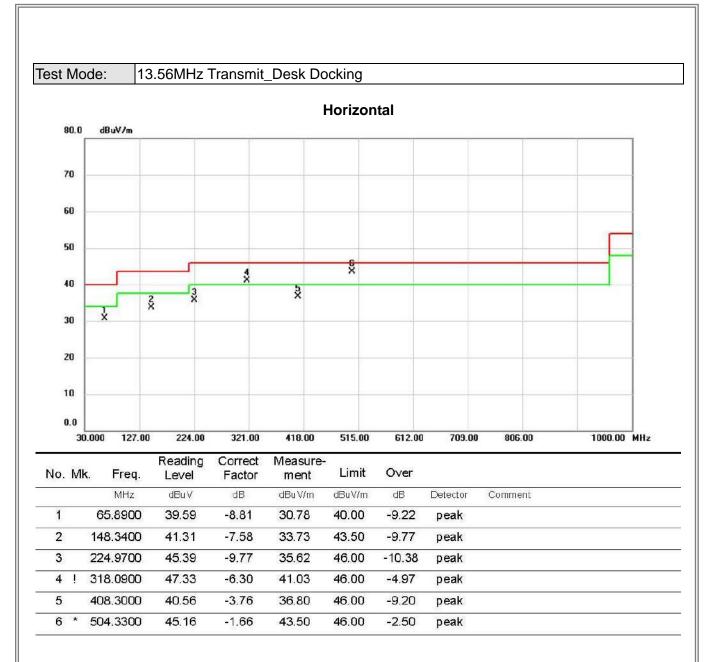




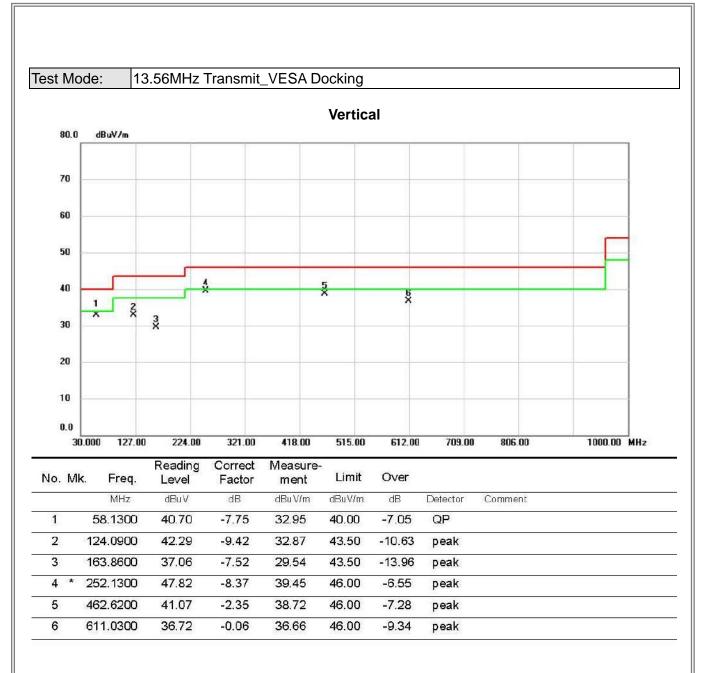




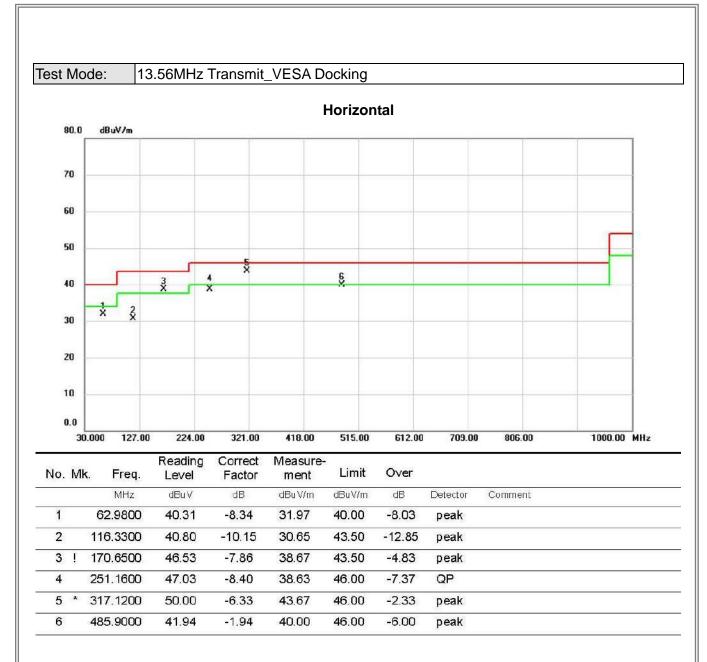




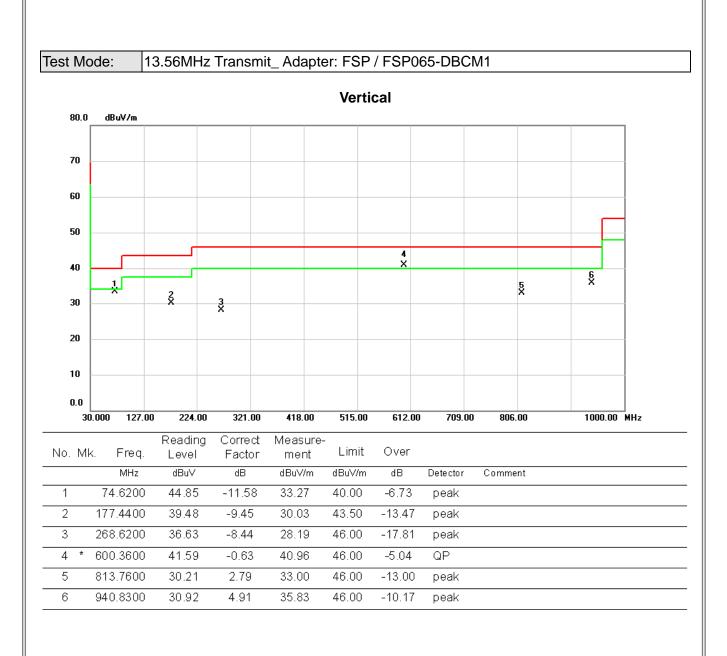




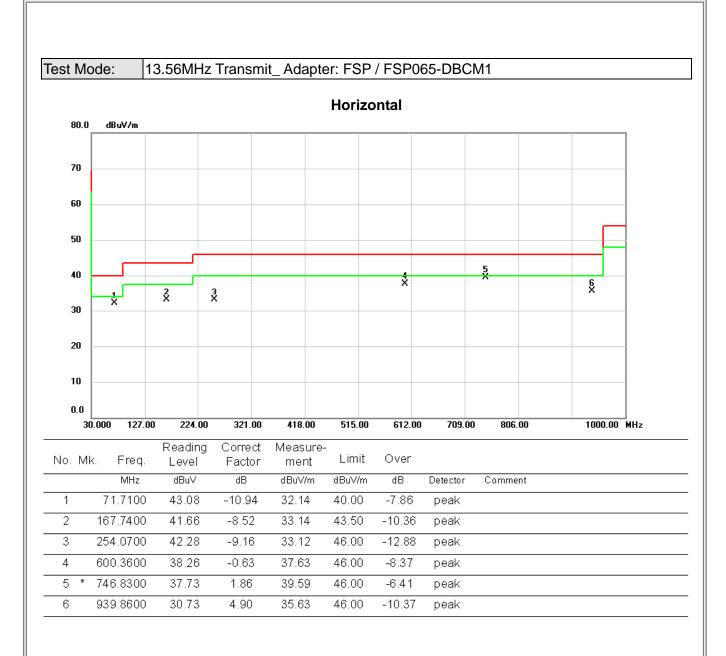




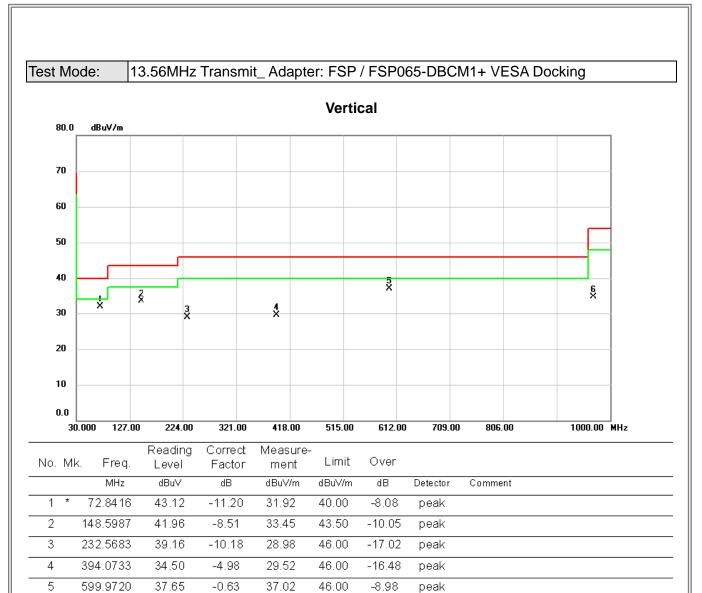












54.00

-19.37

peak

34.63

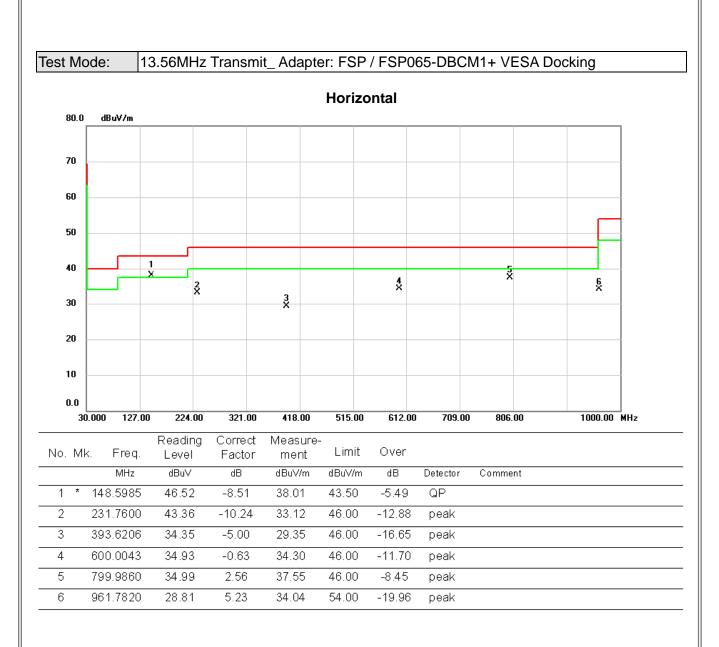
969.2833

6

29.30

5.33





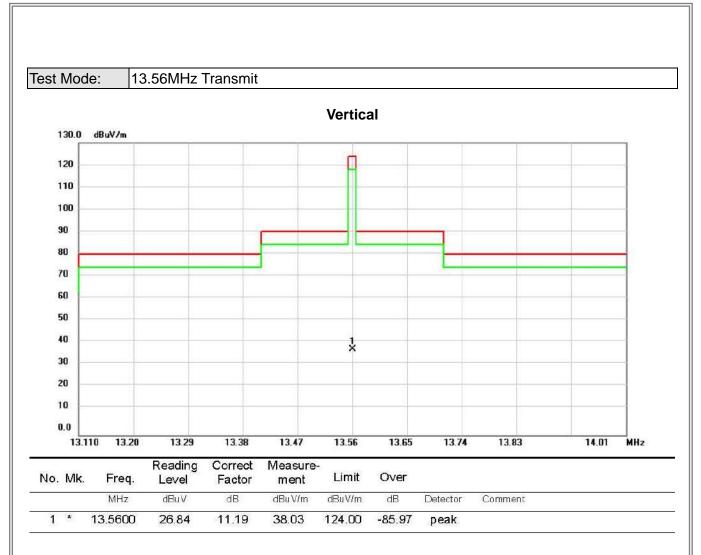


APPENDIX D - RADIATED EMISSION (FCC PART 15.225)

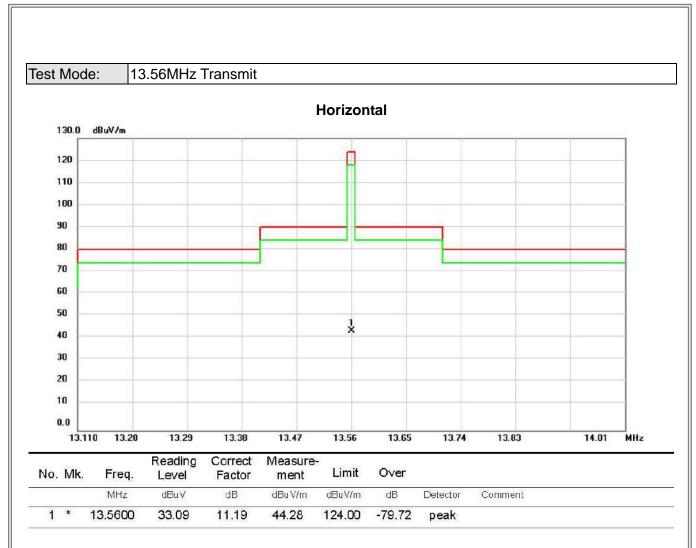
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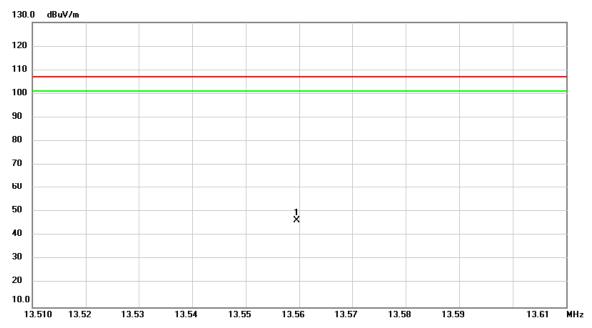
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## Spot check test:



## Vertical

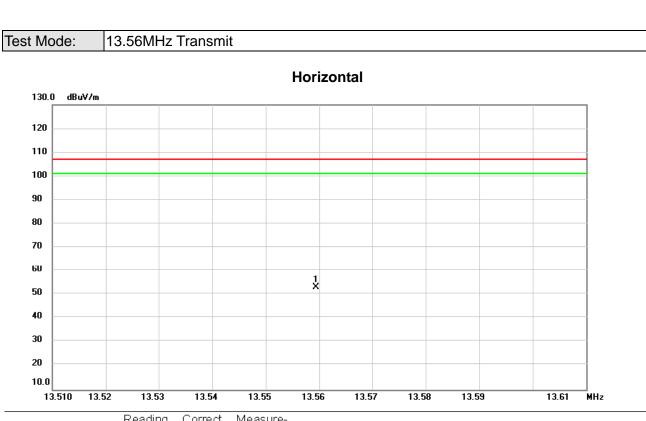


No.	Mk.	Freq.	Reading Level		Measure- ment	Limit	Over		
		MHz	dBu√	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	13.5595	51.05	-4.71	46.34	106.99	-60.65	peak	

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No.	Mk	. Freq.		Correct Factor	Measure- ment	Limit	Over				
		MHz	dBu∨	dB	dBuV/m	dBuV/m	dB	Detector	Comment		
1	*	13.5594	57.83	-4.71	53.12	106.99	-53.87	peak			

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APPENDIX E - FREQUENCY STAB	ILITY MEASUREMENT

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Test Mode: 13.56MHz Transmit

	Frequency Stability Versus Environmental Temperature										
	Temperature (°C)	Voltage (AC)	Frequency (MHz)	Frequency Error (kHz)	Limit (kHz)	Result					
	20	120V	13.56020	-	-	-					
0 min	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					
5 min	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					

Fuequency Stability Versus Input Voltage										
Temperature	Vol	tage	Frequency	Frequency Error	Limit	Result				
(°C)	(AC)		(MHz)	(kHz)	(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				

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