

## FCC TEST REPORT

**FCC ID** : LE2G4  
**Applicant** : JSW Pacific Corporation  
**Address** : 3F-3, No 700, Chung-Zweng Road Chung Ho City, Taipei, Hsien, Taiwan

**Equipment Under Test (EUT) :**

Product Name : Digital Wireless Surveillance System  
Model No. : G4

**Standards** : FCC CFR47 Part 15 Section 15.107:2010  
FCC CFR47 Part 15 Section 15.109:2010

**Date of Test** : May 7, 2012 ~ May 13, 2012  
**Date of Issue** : May 14, 2012

**Test Engineer** : Hunk yan / Engineer



**Reviewed By** : Philo zhong / Manager



<b>Test Result</b>	: PASS *
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**Prepared By:**

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Reference No.: WT12052777R1-D-S-F

## 2 Test Summary

Test Items	Test Requirement	Test Method	Result
Radiated Emission	FCC Part 15.109:2009	ANSI C63.4: 2003	PASS
Conducted Emission	FCC Part 15.107:2009	ANSI C63.4: 2003	PASS

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## 4 General Information

### 4.1 Client Information

**Applicant** : JSW Pacific Corporation  
**Address of Applicant** : 3F-3, No 700, Chung-Zweng Road Chung Ho City, Taipei, Hsien, Taiwan

**Manufacturer** : JSW Pacific(China) Co., Ltd  
**Address of Manufacturer** : No 138. SanJiang Industry District, Hengli Town, Dongguang City, Guangdong Province, China

### 4.2 General Description of E.U.T.

**Product Name** : Digital Wireless Surveillance System  
**Model No.** : G4

### 4.3 Details of E.U.T.

**Technical Data** : 5.0V DC or 3.7V 1800mAh Li-ion Rechargeable Battery.  
Three kind of adapters can be used for different market. The full test were performed with these three adapters separately and battery, the worst case is the sample going with adapter 1, so the worst data were shown as follow. We confirm that all conditions had been considered during the test and full tests are passed.

**Adapter 1** : KSAS0060500100VUD (Ktec)  
Input: 100 – 240VAC, 50/60Hz, 0.18A  
Output: 5.0VDC, 1.0A

**Adapter 2** : SYS1421-0505-W2 (Sunny)  
Input: 100 – 240VAC, 50/60Hz, 0.5A MAX  
Output: 5.0VDC, 1.0A, 5W MAX

**Adapter 3** : SSA051F050100USD (KUANTEN)  
Input: 100 – 240VAC, 50/60Hz, 0.2A  
Output: 5.0VDC, 1.0A

**Working Frequency** : 2414.25MHz ~ 2461.50MHz

**RF Part Data** : The RF modula has been tested and passed. For more details of the test results, please refer to the FCC ID: LE2G4 reference  
No.: WT12052777-D-S-F

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#### **4.4 Description of Support Units**

The EUT has been tested as an independent unit.

#### **4.5 Standards Applicable for Testing**

The customer requested FCC tests for a Digital Wireless Surveillance System. The standards used were FCC Part 15 Section 15.107:2009 and Section 15.109:2009.

#### **4.6 Test Facility**

The test facility has a test site registered with the following organizations:

- **IC – Registration No.: IC7760A**

Waltek Services(Shenzhen) Co., Ltd. has been registered and fully described in a report filed with the Industry Canada. The acceptance letter from the Industry Canada is maintained in our files. Registration 7760A, August 3, 2010.

- **FCC – Registration No.: 880581**

Waltek Services(Shenzhen) Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 880581, May 26, 2011.

#### **4.7 Test Location**

All the tests were performed at:

Waltek Services(Shenzhen) Co., Ltd. at 1/F, Fukangtai Building, West Baima Rd., Songgang Street, Baoan District, Shenzhen, China.

## 5 Equipment Used during Test

Equipment Name	Manufacturer Model	Equipment No	Internal No	Specification	Cal. Date	Due Date	Uncertainty
EMC Analyzer	Agilent/ E7405A	MY45114 943	W2008001	9k-26.5GHz	Aug.2- 2011	Aug.1- 2012	±1dB
Trilog Broadband Antenne 30- 3000 MHz	SCHWARZB ECK MESS- ELEKTROM/ VULB9163	336	W2008002	30-3000 MHz	Aug.2- 2011	Aug.1- 2012	±1dB
10m Coaxial Cable with N-male Connectors usable up to 18GHz,	SCHWARZB ECK MESS- ELEKTROM/ AK 9515 H	-	-	-	Aug.2- 2011	Aug.1- 2012	-
10m 50 Ohm Coaxial Cable with N-plug, individual length,usable up to 3(5)GHz, Connector	SCHWARZB ECK MESS- ELEKTROM/ AK 9513	-	-	-	Aug.2- 2011	Aug.1- 2012	-
Positioning Controller	C&C LAB/ CC-C-IF	-	-	-	-	-	-
Color Monitor	SUNSPO/ SP- 14C	-	-	-	-	-	-
Test Receiver	ROHDE&SC HWARZ/ ESPI	101155	W2005001	9k-3GHz	Aug.2- 2011	Aug.1- 2012	±1dB
Two-Line V- Network	ROHDE&SC HWARZ/ ENV216	100115	W2005002	50Ω/50μH	Aug.2- 2011	Aug.1- 2012	±10%
V-LISN	SCHWARZB ECK MESS — ELEKTRONIK	NSLK 8128	8128-259	9k-30MHz	Aug.2- 2011	Aug.1- 2012	-
Absorbing Clamp	ROHDE&SC HWARZ/ MDS-21	100205	W2005003	impandance50 Ω Loss : 17 dB	Aug.2- 2011	Aug.1- 2012	±1dB
10m 50 Ohm Coaxial Cable with N-plug, individual length,usable up to 3(5)GHz, Connectors	SCHWARZB ECK MESS- ELEKTROM/ AK 9514	-	-	-	Aug.2- 2011	Aug.1- 2012	-

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## 6 FCC Part 15 Subpart B Requirements

### 6.1 Conducted Emission Data

Test Requirement:	FCC Part 15 Section 15.107
Test Method:	ANSI C63.4:2003
Test Result:	PASS
Frequency Range:	150kHz to 30MHz
Class:	Class B
Limit:	66-56 dB $\mu$ V between 0.15MHz & 0.5MHz 56 dB $\mu$ V between 0.5MHz & 5MHz 60 dB $\mu$ V between 5MHz & 30MHz The tighter limit applies at the band edges.
Detector:	Peak for pre-scan (9kHz Resolution Bandwidth) Quasi-Peak & Average if maximised peak within 6dB of Average Limit

#### 6.1.1 E.U.T. Operation

##### Operating Environment:

Temperature: 25.5 °C

Humidity: 51 % RH

Atmospheric Pressure: 1012 mbar

##### EUT Operation:

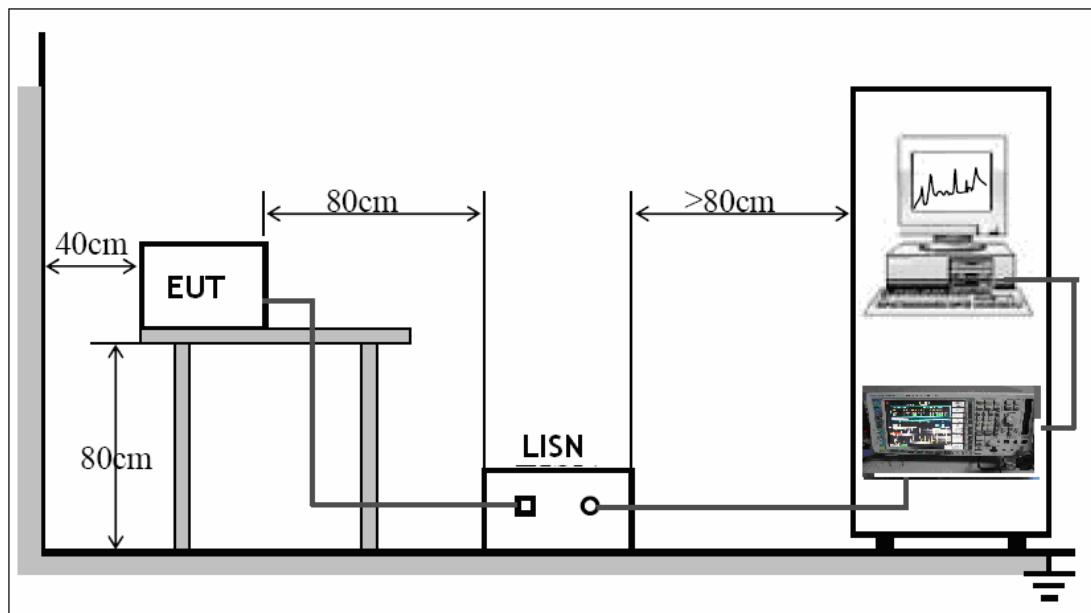
The pre-test was performance on three modes: 1.PC access mode via a base. The worst mode is mode 1, so the data show in the report is that mode's only.

The EUT was tested according to ANSI C63.4:2003. The frequency spectrum from 150kHz to 30MHz was investigated.

The maximised peak emissions from the EUT was scanned and measured for both the Live and Neutral Lines. Quasi-peak & average measurements were performed if peak emissions were within 6dB of the average limit line.

### 6.1.2 EUT Setup

The conducted emission tests were performed using the setup accordance with the ANSI C63.4:2003, The specification used in this report was the FCC Part15 Section 15.107 limits.



The EUT was placed on the test table in shielding room

### 6.1.3 Conducted Emission Test Result

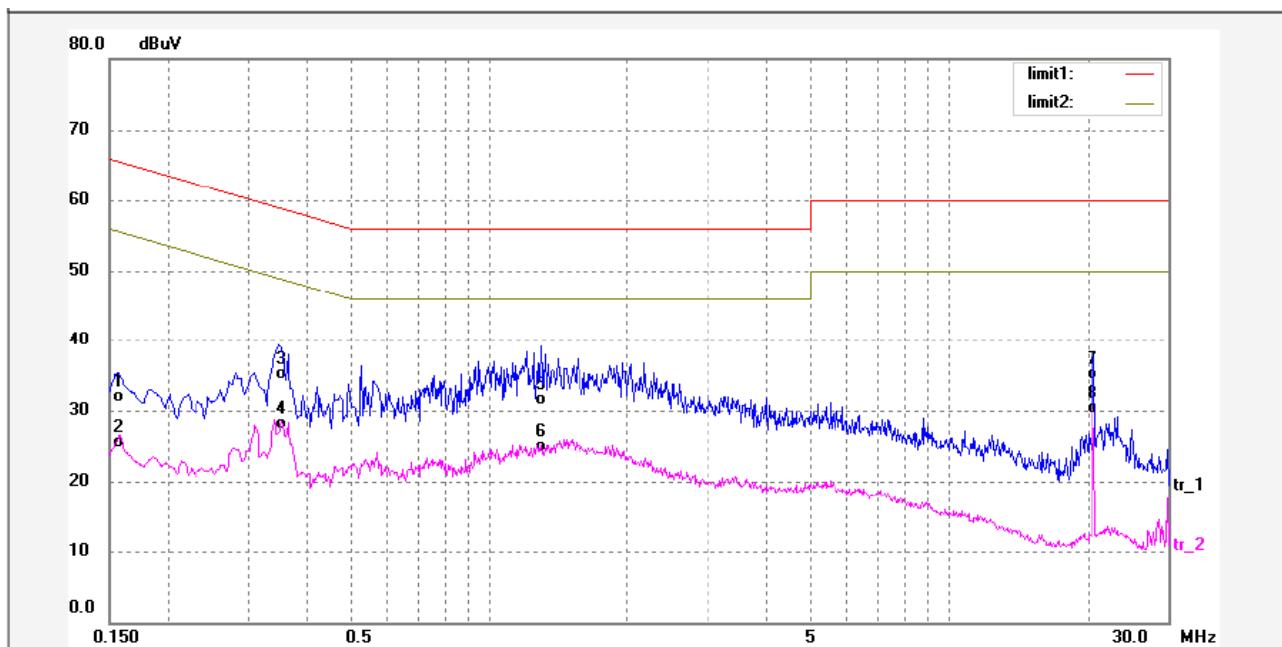
An initial pre-scan was performed on the live and neutral lines.

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Live line:



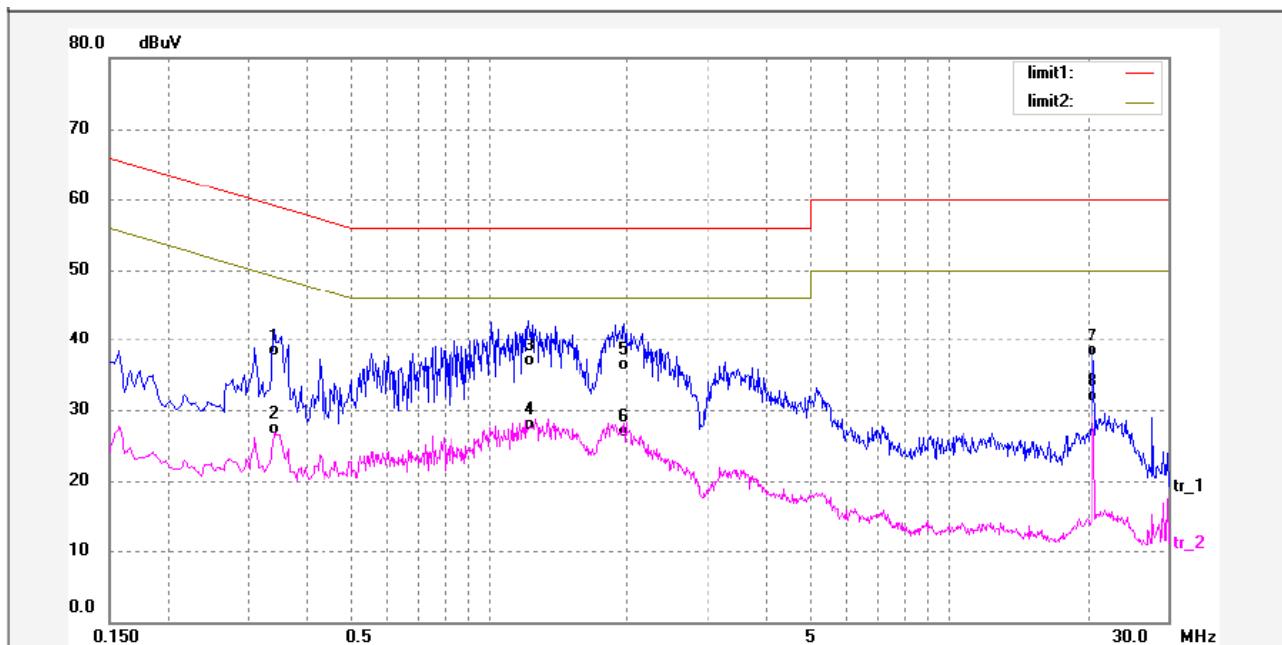
No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Margin (dB)	Detector	Remark
1	0.1580	20.58	10.61	31.19	65.56	-34.37	QP	
2	0.1580	14.07	10.61	24.68	55.56	-30.88	AVG	
3	0.3500	23.58	10.75	34.33	58.96	-24.63	QP	
4	0.3500	16.63	10.75	27.38	48.96	-21.58	AVG	
5	1.3020	18.59	12.19	30.78	56.00	-25.22	QP	
6	1.3020	11.98	12.19	24.17	46.00	-21.83	AVG	
7	20.7020	22.12	12.16	34.28	60.00	-25.72	QP	
8	20.7020	17.44	12.16	29.60	50.00	-20.40	AVG	

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Neutral line:



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Margin (dB)	Detector	Remark
1	0.3420	26.73	10.73	37.46	59.15	-21.69	QP	
2	0.3420	15.69	10.73	26.42	49.15	-22.73	AVG	
3	1.2220	23.97	12.19	36.16	56.00	-19.84	QP	
4	1.2220	14.83	12.19	27.02	46.00	-18.98	AVG	
5	1.9700	23.17	12.25	35.42	56.00	-20.58	QP	
6	1.9700	13.92	12.25	26.17	46.00	-19.83	AVG	
7	20.7020	25.34	12.16	37.50	60.00	-22.50	QP	
8	20.7020	18.86	12.16	31.02	50.00	-18.98	AVG	

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## 6.2 Radiation Emission Data

Test Requirement:	FCC Part 15 Section 15.109
Test Method:	ANSI C63.4:2003
Test Result:	PASS
Frequency Range:	30MHz to 1GHz
Measurement Distance:	3m
Class:	Class B
Limit:	40.0 dB $\mu$ V/m between 30MHz & 88MHz 43.5 dB $\mu$ V/m between 88MHz & 216MHz 46.0 dB $\mu$ V/m between 216MHz & 960MHz 54.0 dB $\mu$ V/m above 960MHz The tighter limit applies at the band edges.
Detector:	Peak for pre-scan (120kHz resolution bandwidth) Quasi-Peak if maximised peak within 6dB of limit

### 6.2.2 E.U.T. Operation

#### Operating Environment:

Temperature: 25.5 °C  
Humidity: 51 % RH  
Atmospheric Pressure: 1012 mbar

#### EUT Operation:

The pre-test was performance on three modes: 1. PC access mode via a base. The worst mode is mode 1, so the data show in the report is that mode's only.

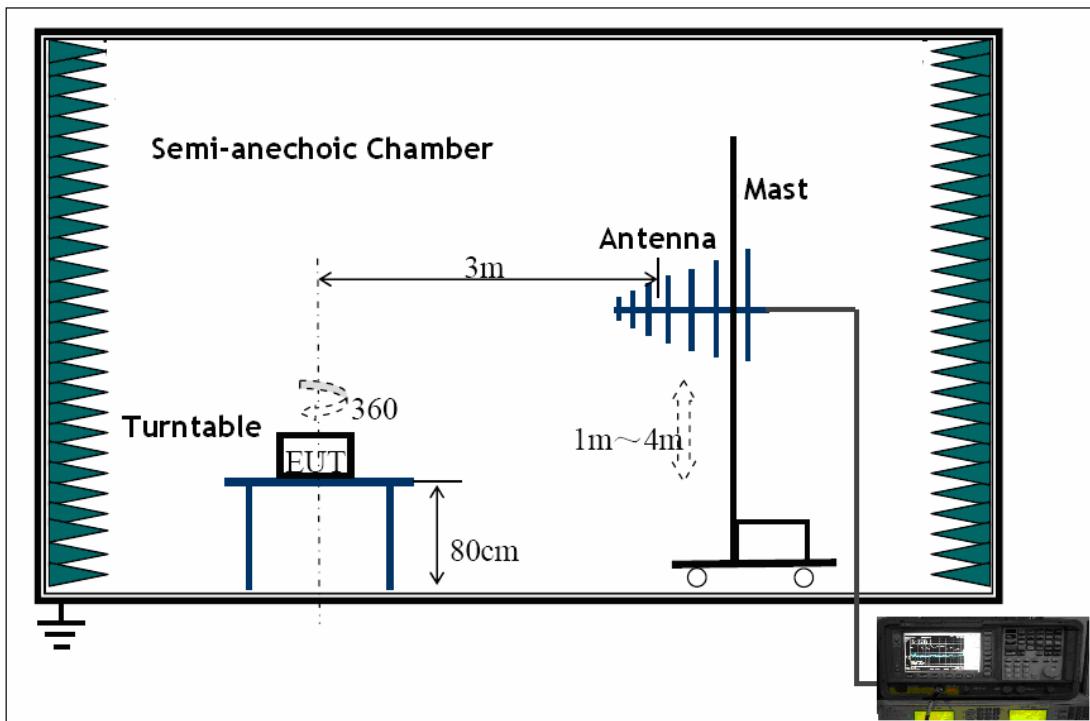
### 6.2.1 Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in the field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

Based on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of a radiation emissions measurement at Waltek EMC Lab is  $\pm 5.03$ dB.

### 6.2.2 EUT Setup

The radiated emission tests were performed in the 3m Semi- Anechoic Chamber test site, using the setup accordance with the ANSI C63.4:2003, The specification used in this report was the FCC Part 15 Section 15.109 limits.



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### 6.2.3 Spectrum Analyzer Setup

According to FCC Part15 B Rules, the system was tested 30 to 1000MHz.

30MHz ~ 1GHz

Start Frequency .....	30 MHz
Stop Frequency .....	1000MHz
Sweep Speed .....	Auto
IF Bandwidth.....	120 KHz
Video Bandwidth.....	100KHz
Quasi-Peak Adapter Bandwidth .....	120 KHz
Quasi-Peak Adapter Mode .....	Normal
Resolution Bandwidth .....	100KHz

#### 6.2.4 Test Procedure

1. The EUT is placed on a turntable, which is 0.8m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is moved from 1m to 4m to find out the maximum emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Repeat above procedures until the measurements for all frequencies are complete.
7. The radiation measurements are performed in X(normal uses) axis positioning. And all the modes was tested in the report. Only the worst case is shown in the report.

#### 6.2.5 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

$$\text{Corr. Ampl.} = \text{Indicated Reading} + \text{Antenna Factor} + \text{Cable Factor} - \text{Amplifier Gain}$$

The “Margin” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -7dB $\mu$ V means the emission is 7dB $\mu$ V below the maximum limit for Class B. The equation for margin calculation is as follows:

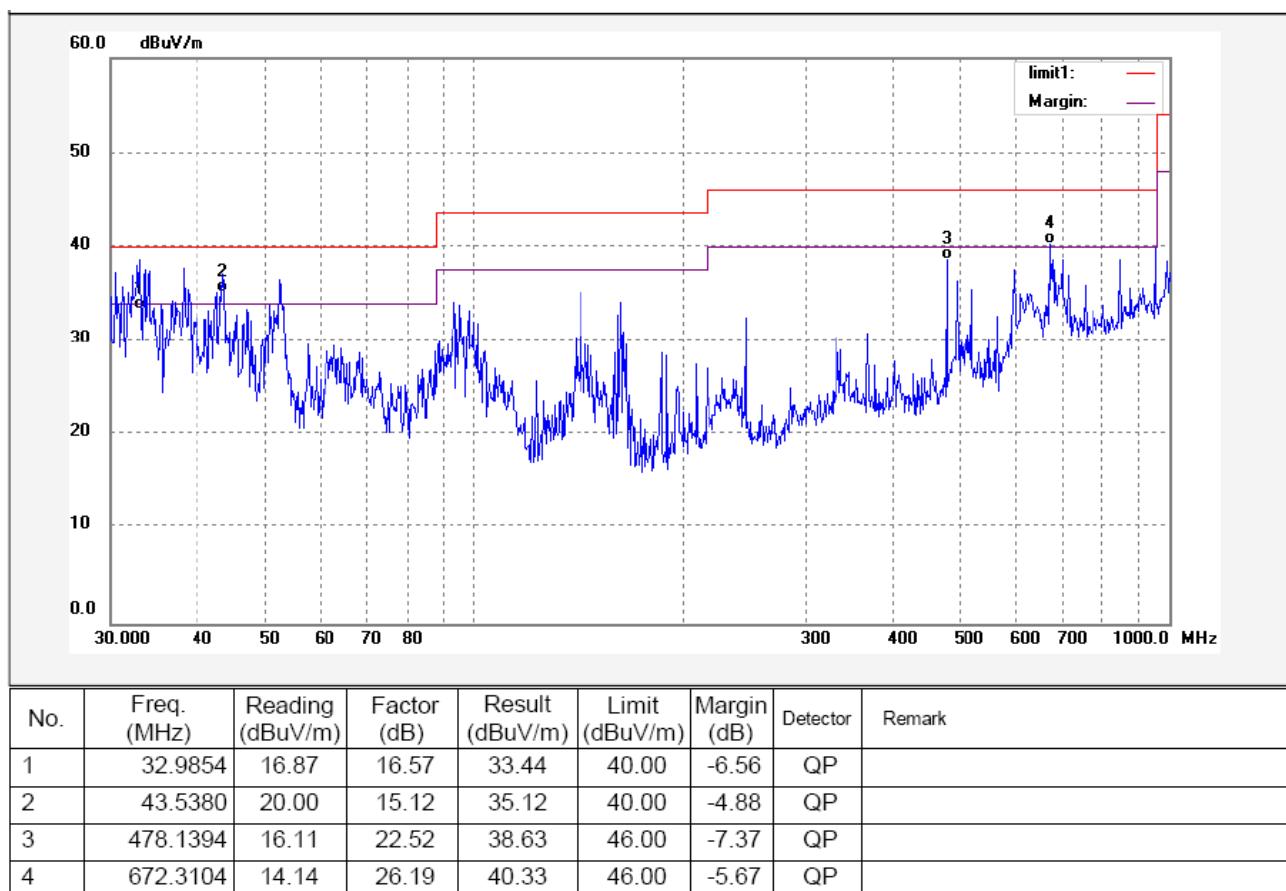
$$\text{Margin} = \text{Corr. Ampl.} - \text{Class B Limit}$$

### 6.2.6 Summary of Test Results

According to the data in this section, the EUT complied with the FCC Part15 Section 15.109 standards.

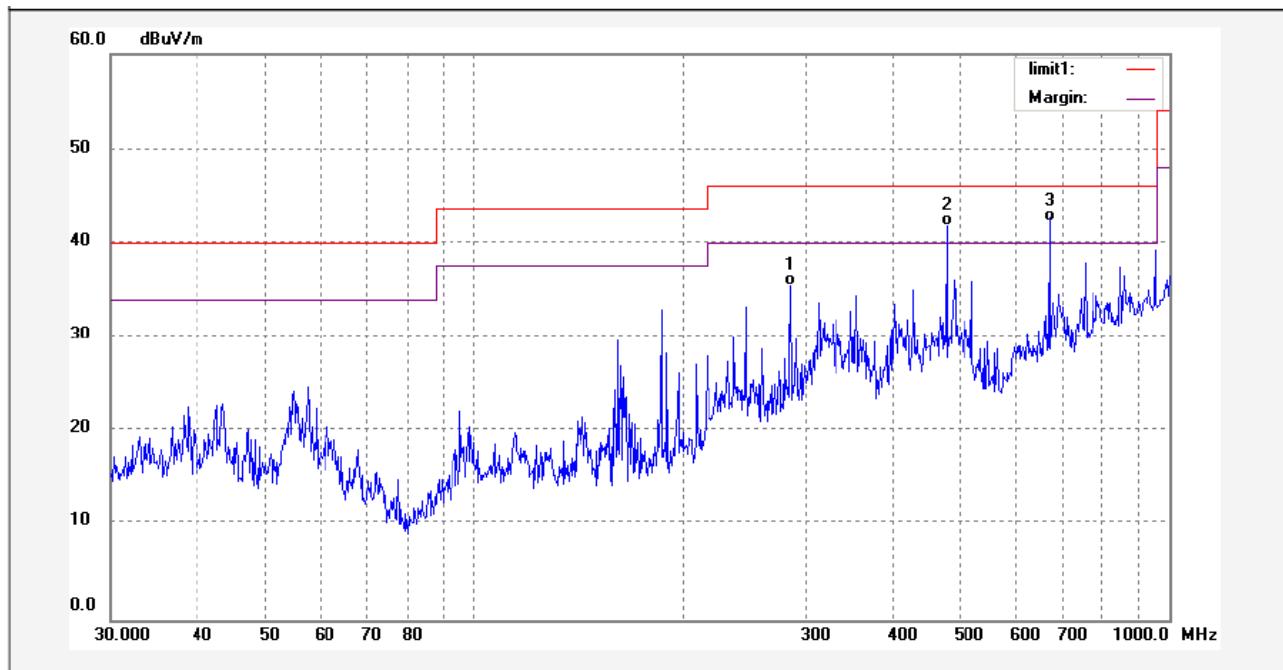
Investigate Frequency: 30MHz ~ 1000MHz

Antenna polarization: Vertical



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Antenna polarization: Horizontal



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	285.2611	18.94	16.51	35.45	46.00	-10.55	QP	
2	478.1394	19.27	22.52	41.79	46.00	-4.21	QP	
3	672.3104	16.00	26.19	42.19	46.00	-3.81	QP	

==END==

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