

# FCC PART 15B

## MEASUREMENT AND TEST REPORT

### FOR

**Pakedge Device and Software Inc.**

**1163 Triton Drive Foster City, CA 94404**

**FCC ID: SLYSWXXXXPB**

<b>Report Concerns:</b> Original Report	<b>Equipment Type:</b> NETWORKS SWITCH
<b>Model:</b>	<u>SW24-24PB</u>
<b>Report No.:</b>	<u>STR10088080I</u>
<b>Test Date:</b>	<u>2010-08-13 to 2010-08-20</u>
<b>Issue Date:</b>	<u>2010-10-11</u>
<b>Tested By:</b>	<u>Jason Chen / Engineer</u> <span style="float: right;"><i>Jason chen</i></span>
<b>Reviewed By:</b>	<u>Lahm Peng / EMC Manager</u> <span style="float: right;"><i>Lahm peng</i></span>
<b>Approved &amp; Authorized By:</b>	<u>Jandy so/PSQ Manager</u> <span style="float: right;"><i>Jandyso</i></span>
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Note: This test report is limited to the above client company and the product model only. It may not be duplicated without prior permitted by SEM.Test Compliance Service Co., Ltd.

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## 1. GENERAL INFORMATION

### 1.1 Product Description for Equipment Under Test (EUT)

#### Client Information

Applicant: Pakedge Device and Software Inc.  
 Address of applicant: 1163 Triton Drive Foster City, CA 94494

Manufacturer: Quickte Technology Co., Ltd.  
 Address of manufacturer: 2nd/F, 8 Block, Xinwu Industrial Area, Xili, Nanshan District, Shenzhen, Guangdong, PRC

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

Items	Description
EUT Description:	NETWORKS SWITCH
Trade Name:	Dakedge
Model No.:	SW24-24PB
Add Models:	SW16-16PB, SW8-8PB, QTS20
Rated Voltage:	AC 110-240V
Rated Current:	4A
Size:	42.5x29.0 x4.4 cm
For more information refer to the circuit diagram form and the user's manual.	

*The test data is gathered from a production sample, provided by the manufacturer. Test is carried out with SW24-24PB since the others listed in the report have the different appearances only without electronic construction changed, declared by the manufacturer.*

### 1.2 Test Standards

The following report is prepared on behalf of the Pakedge Device and Software Inc. in accordance with Part 2, Subpart J, and Part 15, Subparts A and B of the Federal Communication Commissions rules.

The objective is to determine compliance with FCC Part 15.107, and 15.109 rules.

**Maintenance of compliance** is the responsibility of the manufacturer. Any modification of the product, which results in lowering the emission/immunity, should be checked to ensure compliance has been maintained.

### 1.3 Related Submittal(s)/Grant(s)

No Related Submittal(s).

### 1.4 Test Methodology

All measurements contained in this report were conducted with ANSI C63.4-2003, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in

the range of 9 kHz to 40 GHz.

The equipment under test (EUT) was configured to measure its highest possible susceptibility against the tested phenomena. The test modes were adapted accordingly in reference to the Operating Instructions.

## 1.5 Test Facility

FCC – Registration No.: **994117**

SEM.Test Compliance Services 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 and the Registration is 994117.

Industry Canada (IC) Registration No.: **7673A**

The 3m Semi-anechoic chamber of SEM.Test Compliance Services Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 7673A.

## 1.6 EUT Exercise Software

The EUT exercise program used during radiated and conducted testing was designed to exercise the system components. The test software, provided by the customer, is started while the EUT is on to simulate the normal work. under the Windows XP terminal.

## 1.7 Accessories Equipment List and Details

Description	Manufacturer	Model	Serial Number
Notebook PC	ASUS	X51R	/
/	/	/	/

## 1.8 EUT Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/Without Core
Network Cable	2	Unshielded	Without Core
Power Cable	1	Unshielded	Without Core

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## 2. SUMMARY OF TEST RESULTS

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<b>Description of Test</b>	<b>Result</b>
§15.107 (a) Conducted Emission	Compliant
§15.109(a) Radiated Emission	Compliant

### 3. §15.107 (a)- CONDUCTED EMISSION

#### 3.1 Measurement Uncertainty

Base on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any conducted emissions measurement is  $\pm 2.88$  dB.

#### 3.2 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2010-08-12	2011-08-11
L.I.S.N	Schwarz beck	NSLK8126	8126-224	2010-08-12	2011-08-11
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100911	2010-08-12	2011-08-11

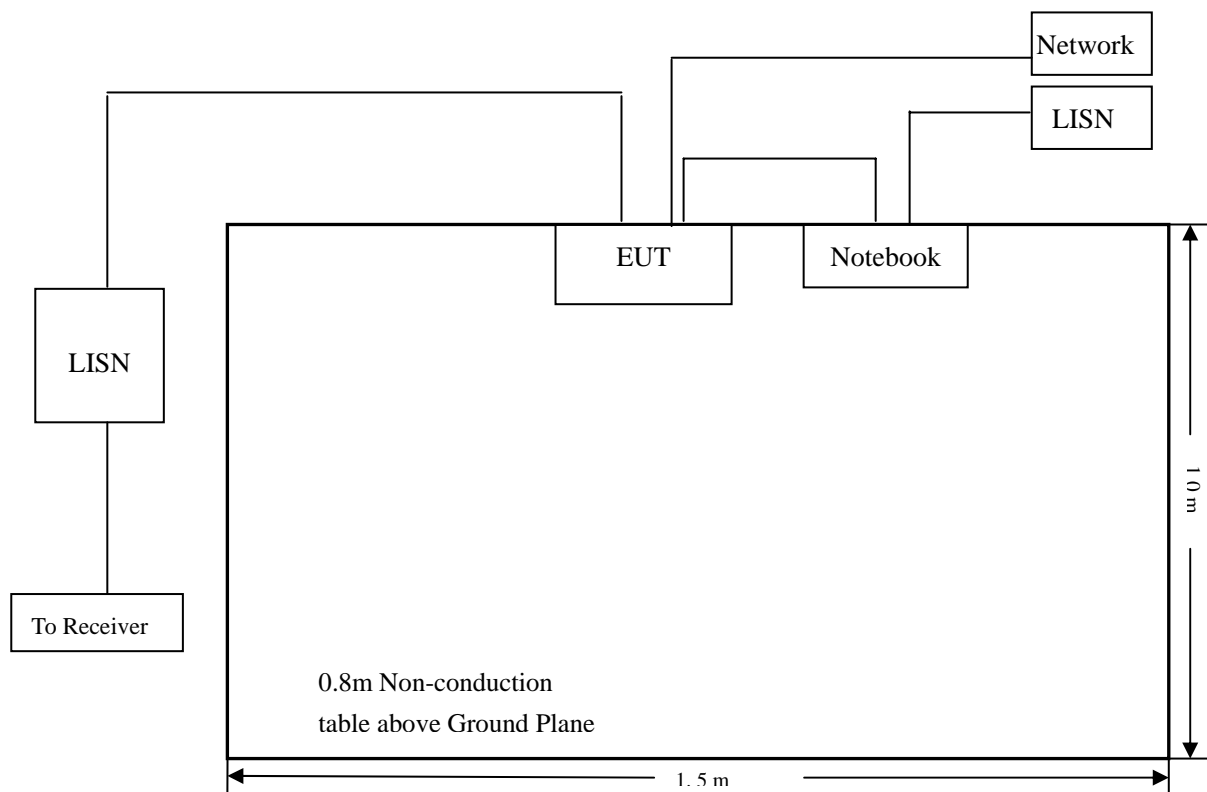
#### 3.3 Test Procedure

The setup of EUT is according with per ANSI C63.4-2003 measurement procedure. The specification used was with the FCC Part 15.107 Limit.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The spacing between the peripherals was 10 cm.

#### 3.4 Basic Test Setup Block Diagram



### 3.5 Environmental Conditions

Temperature:	25 °C
Relative Humidity:	52%
ATM Pressure:	1012 mbar

### 3.6 Test Receiver Setup

During the conducted emission test, the test receiver was set with the following configurations:

Start Frequency ..... 150 kHz  
 Stop Frequency..... 30 MHz  
 Sweep Speed ..... Auto  
 IF Bandwidth..... 10 kHz  
 Quasi-Peak Adapter Bandwidth ..... 9 kHz  
 Quasi-Peak Adapter Mode ..... Normal

### 3.7 Summary of Test Results/Plots

According to the data in section 3.8, the EUT complied with the FCC 15B Conducted margin for a Class B device, with the *worst* margin reading of:

**-11.83 dB $\mu$ V at 26.61 MHz in the Line mode Average detector, 0.15-30MHz**

### 3.8 Conducted Emissions Test Data

**Plot of Conducted Emissions Test Data**

*Conducted Disturbance*

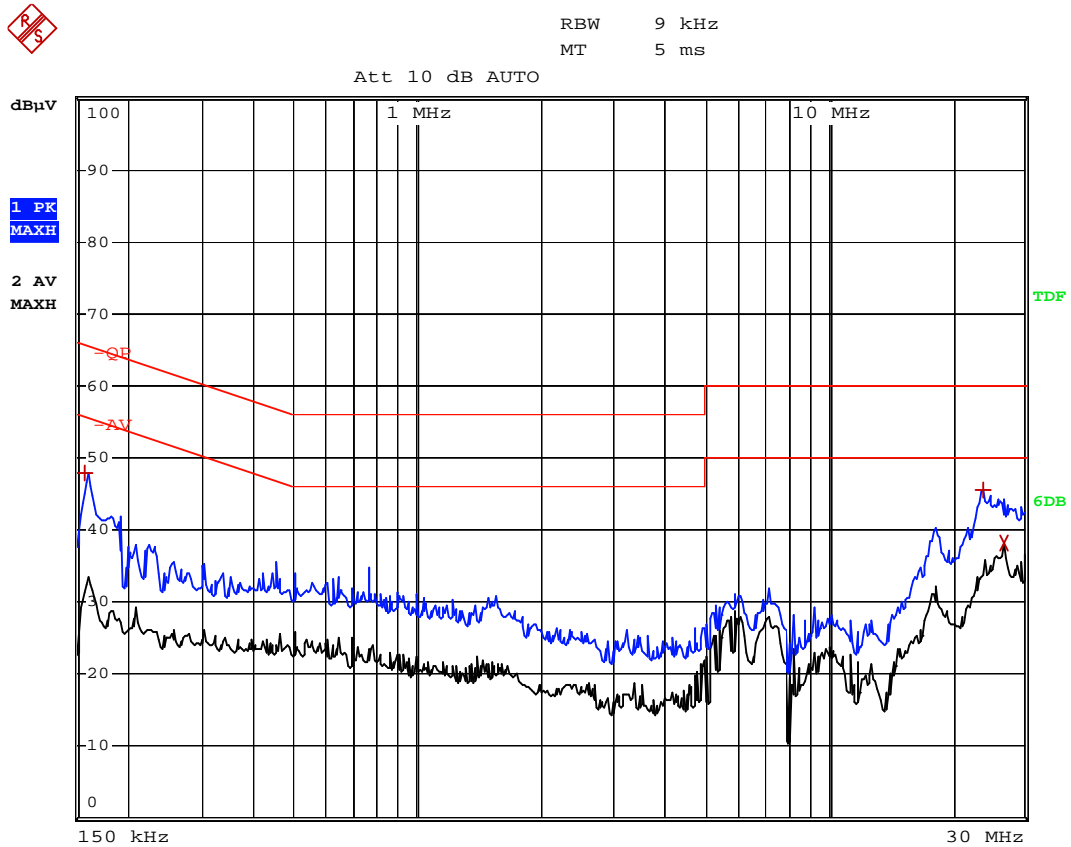
*EUT: NETWORKS SWITCH*

*M/N: SW24-24PB*

*Operating Condition: Operating*

*Test Specification: N*

*Comment: Connect to PC*



EDIT PEAK LIST (Prescan Results)			
Trace1:	-QP		
Trace2:	-AV		
Trace3:	---		
TRACE	FREQUENCY	LEVEL dBµV	DELTA LIMIT dB
1 Max Peak	158 kHz	47.87	-17.69
1 Max Peak	23.83 MHz	45.49	-14.50
2 Average	26.61 MHz	38.16	-11.83



**Plot of Conducted Emissions Test Data**

*Conducted Disturbance*

*EUT: NETWORKS SWITCH*

*M/N: SW24-24PB*

*Operating Condition: Operating*

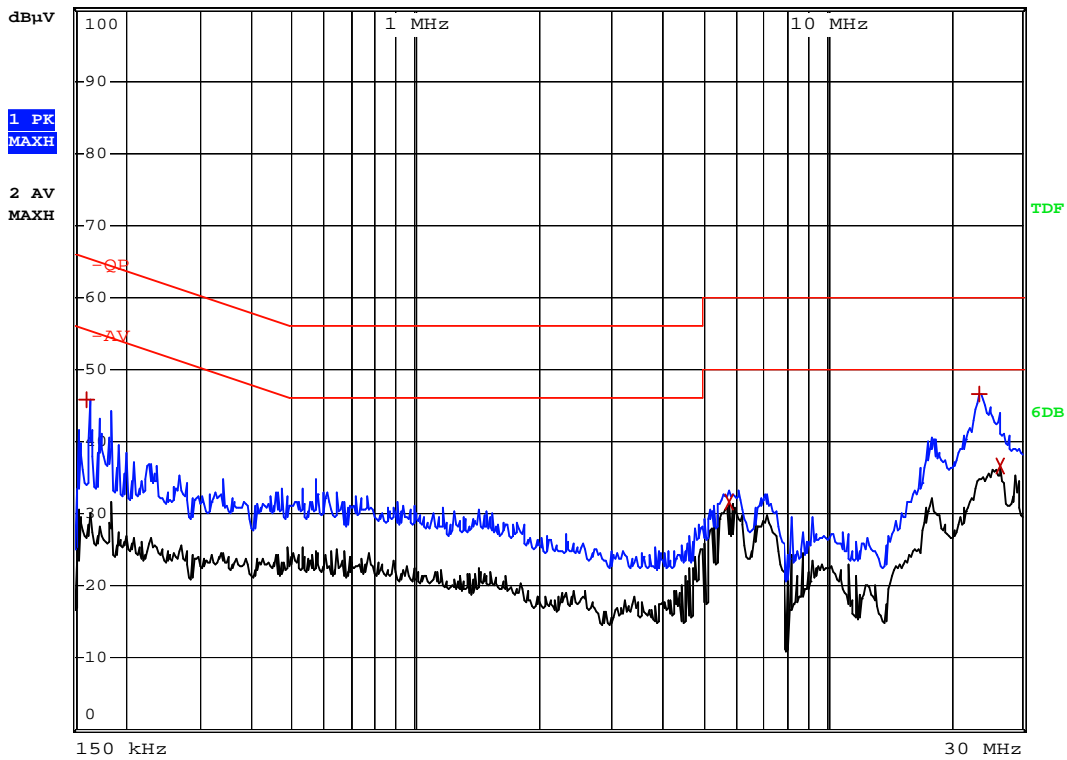
*Test Specification: L*

*Comment: Connect to PC*



RBW 9 kHz  
MT 5 ms

Att 10 dB AUTO



EDIT PEAK LIST (Prescan Results)			
Trace1:	-QP		
Trace2:	-AV		
Trace3:	---		
TRACE	FREQUENCY	LEVEL dBµV	DELTA LIMIT dB
1 Max Peak	162 kHz	45.80	-19.55
2 Average	5.83 MHz	31.50	-18.49
1 Max Peak	23.434 MHz	46.71	-13.28
2 Average	26.49 MHz	36.50	-13.50

## 4. §15.109(a)- RADIATED EMISSION

### 4.1 Measurement Uncertainty

Base on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any radiation emissions measurement is  $\pm 5.10$  dB.

### 4.2 Test Equipment List and Details

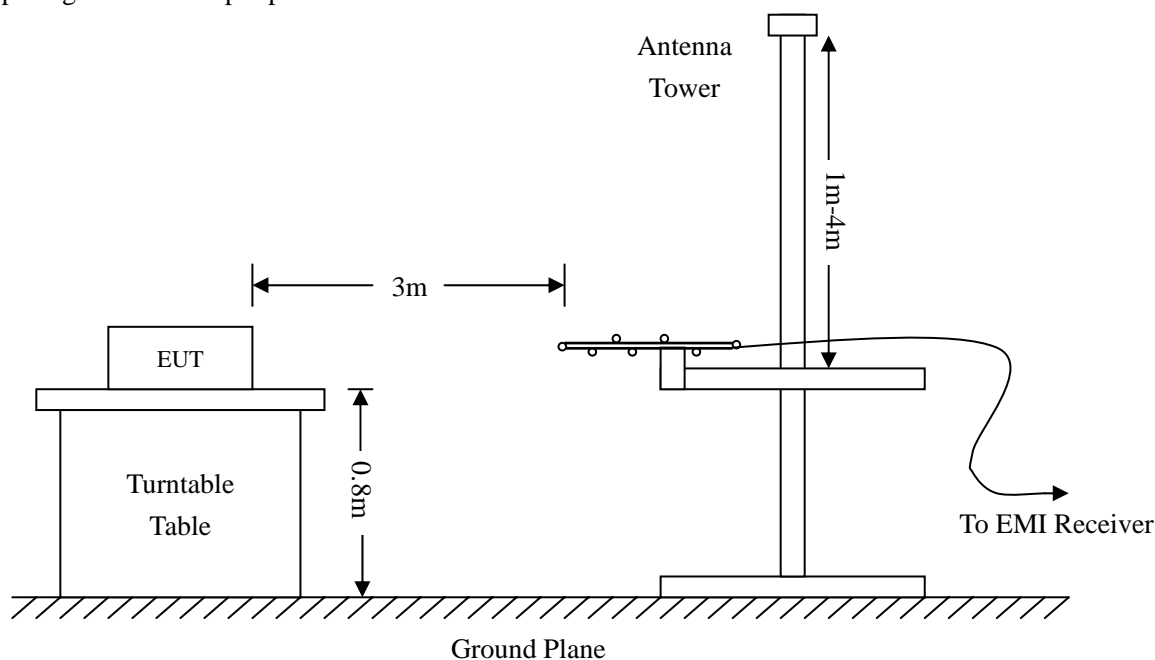
Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
Spectrum Analyzer	R&S	FSP	836079/035	2010-04-16	2011-04-15
EMI Test Receiver	R&S	ESVB	825471/005	2010-08-12	2011-08-11
Positioning Controller	C&C	CC-C-1F	N/A	2010-08-12	2011-08-11
RF Switch	EM	EMSW18	SW060023	2010-08-12	2011-08-11
Pre-amplifier	Agilent	8447F	3113A06717	2010-08-12	2011-08-11
Pre-amplifier	Compliance Direction	PAP-0118	24002	2010-08-12	2011-08-11
Trilog Broadband Antenna	SCHWARZBECK	VULB9163	9163-333	2010-07-21	2011-07-20
Horn Antenna	ETS	3117	00086197	2010-07-21	2011-07-20

### 4.3 Test Procedure

The setup of EUT is according with per ANSI C63.4-2003 measurement procedure. The specification used was with the FCC Part 15.205 and FCC Part 15.109 Limit.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The spacing between the peripherals was 10 cm.



#### 4.4 Test Receiver Setup

During the conducted emission test, the test receiver was set with the following configurations:

Start Frequency ..... 30 MHz  
 Stop Frequency..... 1000 MHz  
 Sweep Speed ..... Auto  
 IF Bandwidth..... 10 kHz  
 Quasi-Peak Adapter Bandwidth ..... 120 kHz  
 Quasi-Peak Adapter Mode ..... Normal

#### 4.5 Corrected Amplitude & Margin Calculation

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

$$\text{Corr. Ampl.} = \text{Indicated Reading} - \text{Corr. Factor}$$

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -6dBμV means the emission is 6dBμV below the maximum limit for Class B. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Corr. Ampl.} - \text{FCC Part 15B Limit}$$

#### 4.6 Environmental Conditions

Temperature:	25 °C
Relative Humidity:	54%
ATM Pressure:	1011 mbar

#### 4.7 Summary of Test Results/Plots

According to the data, the EUT complied with the FCC 15B Class B standards, and had the worst margin of:

**-3.72dBμV at 374.6225MHz in the Horizontal polarization, 30 MHz to 1 GHz, 3Meters**

**Plot of Radiation Emissions Test Data**

*Radiated Emission*

*EUT: NETWORKS SWITCH*

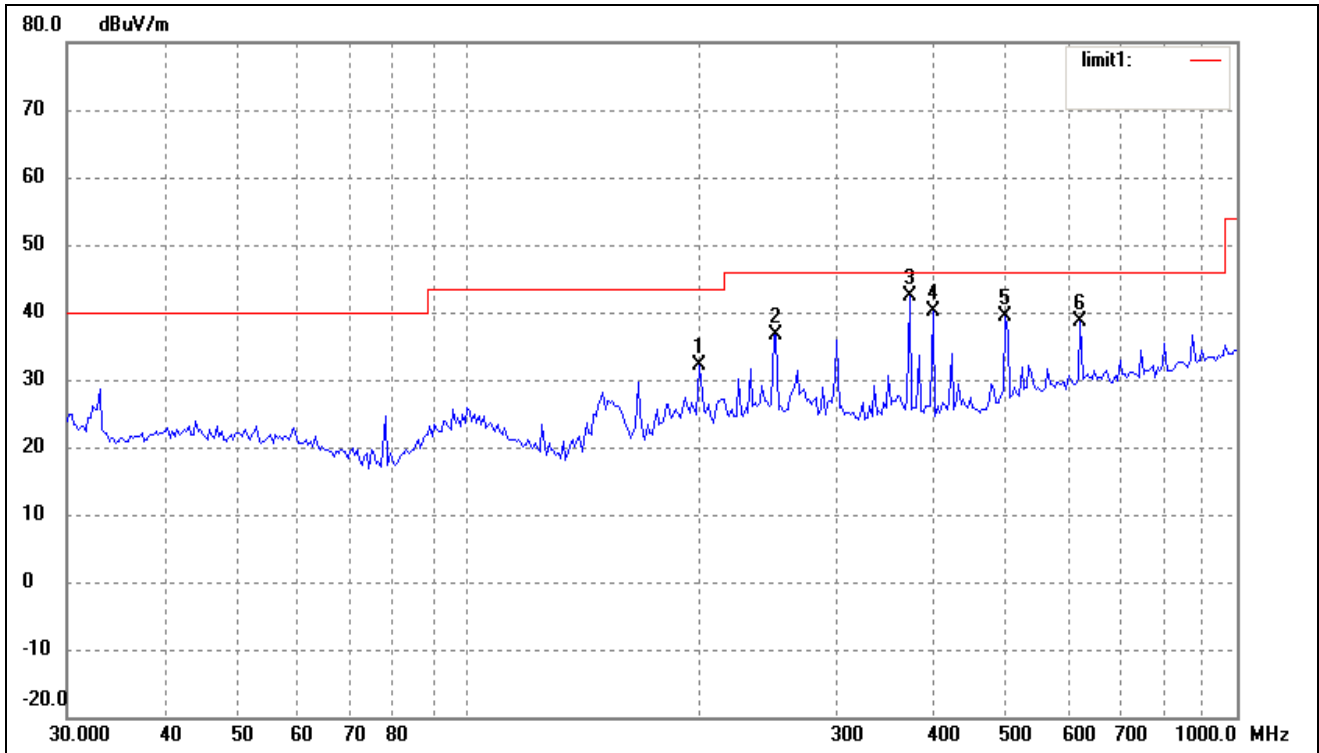
*M/N: SW24-24PB*

*Operating Condition: Operating*

*Test Specification: Horizontal & Vertical*

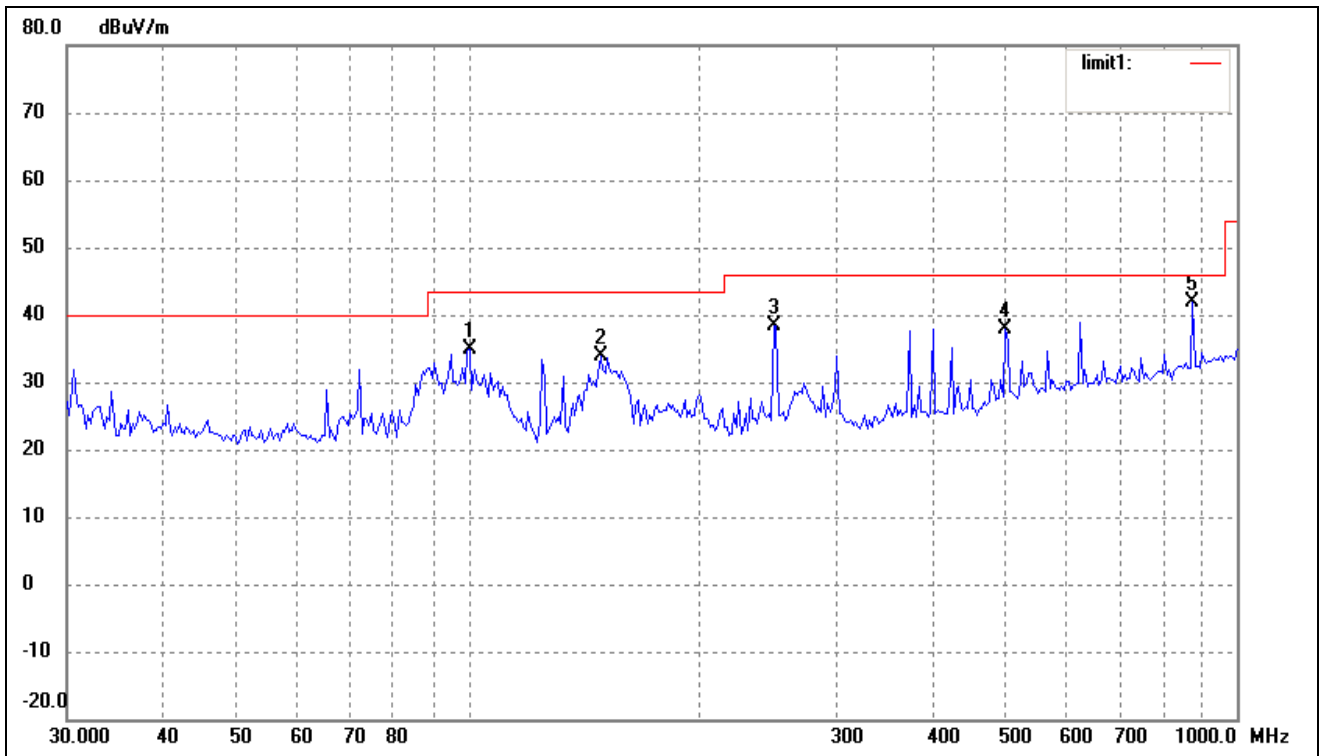
*Comment: Connect to PC*

*Horizontal*



No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	199.2855	26.38	5.68	32.06	43.50	-11.44	360	100	peak
2	251.1804	28.99	7.71	36.70	46.00	-9.30	0	200	peak
3	374.6225	32.44	9.84	42.28	46.00	-3.72	212	114	QP
4	401.8385	30.08	10.08	40.16	46.00	-5.84	360	100	peak
5	499.4247	27.09	12.37	39.46	46.00	-6.54	0	100	peak
6	625.0780	24.50	14.25	38.75	46.00	-7.25	0	200	peak

Vertical



No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	100.2286	27.14	7.79	34.93	43.50	-8.57	360	200	peak
2	148.4410	30.54	3.30	33.84	43.50	-9.66	0	100	peak
3	249.4250	30.67	7.67	38.34	46.00	-7.66	0	100	peak
4	499.4247	24.94	12.88	37.82	46.00	-8.18	360	200	peak
5	875.2470	25.27	16.56	41.83	46.00	-4.17	223	136	QP

\*\*\*\*\* END OF REPORT \*\*\*\*\*