



# FCC PART 15.223 MEASUREMENT AND TEST REPORT

For

# SHENZHEN PROMATIC SECURITY SYSTEMS CO., LTD

FLAT B 19th/F HI-TECH&INNOVATION PLAZA TIANAN CYBER PARK,SHENZHEN ,CHINA

FCC ID: VUSPDS8830-8820

**Equipment Type:** This Report Concerns: Original Report RF EAS MONO kild Yang **Test Engineer:** Kidd Yang **Report No.:** RSZ07101903 **Test Date:** 2007-11-20 to 2007-12-21 **Report Date:** 2007-12-21 Green. Tu Reviewed By: EMC Manager: Green Xu **Prepared By:** Bay Area Compliance Laboratories Corp. (Shenzhen) 6/F, the 3rd Phase of WanLi Industrial Building, ShiHua Road, FuTian Free Trade Zone Shenzhen, Guangdong, China Tel: +86-755-33320018 Fax: +86-755-33320008

**Note:** This test report is for the customer shown above and their specific product only. It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp. (Shenzhen). This report **must not** be used by the customer to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the Federal Government.

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#### **GENERAL INFORMATION**

#### **Product Description for Equipment under Test (EUT)**

The SHENZHEN PROMATIC SECURITY SYSTEMS CO., LTD's product, model number: PDS8830, PDS8820 or the "EUT" as referred to in this report is a RF EAS MONO, which measures approximately: 34.0 cm L x 13.5 cm W x 153 cm H. rated input voltage: DC 24V.

The series products, model name: PDS8830, PDS8820 have the same circuit diagram, PCB layout, only appearance is different, so, we select PDS8830 to test.

Adapter:

Model: GFP361DA-2415B Input: AC 100~240 50/60Hz 1.2A

Output: DC 24V 1.5A

#### **Objective**

This Type approval report is prepared on behalf of *SHENZHEN PROMATIC SECURITY SYSTEMS CO.,LTD* in accordance with Part 2, Subpart J, and Part 15, Subparts A, B and C of the Federal Communication Commissions rules.

The objective is to determine compliance with FCC rules, sec 15.203, 15.205, 15.207, 15.209 and 15.223.

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

No Related Submittals.

#### **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.

All radiated and conducted emissions measurement was performed at Bay Area Compliance Laboratories Corp. (Shenzhen). The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

<sup>\*</sup> All measurement and test data in this report was gathered from production sample serial number: 0711027 (Assigned by BACL, Shenzhen). The EUT was received on 2007-10-19.

#### **Test Facility**

The Test site used by Bay Area Compliance Laboratories Corp. (Shenzhen) to collect test data is located in the 6/F, the 3rd Phase of WanLi Industrial Building, ShiHua Road, FuTian Free Trade Zone Shenzhen, Guangdong, China.

Test site at Bay Area Compliance Laboratories Corp. (Shenzhen) has been fully described in reports submitted to the Federal Communication Commission (FCC). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on November 04, 2004. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2003.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 382179. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

Additionally, Bay Area Compliance Laboratories Corp. (Shenzhen) is a National Institute of Standards and Technology (NIST) accredited laboratory, under the National Voluntary Laboratory Accredited Program (Lab Code 200707-0).



The current scope of accreditations can be found at http://ts.nist.gov/Standards/scopes/2007070.htm

# **SYSTEM TEST CONFIGURATION**

# **Justification**

The system was configured for testing in a typical fashion (as normally used by a typical user).

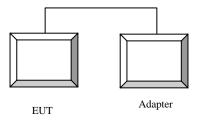
# **Equipment Modifications**

No modifications were made to the unit tested.

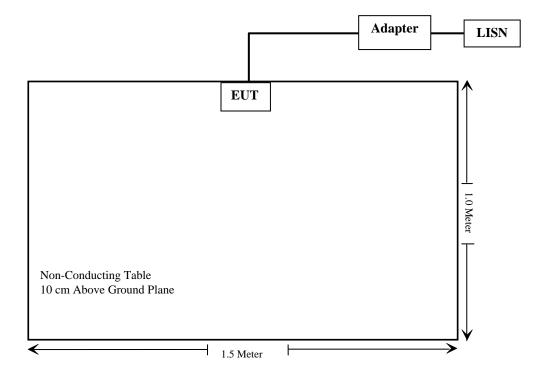
# **External I/O Cable**

Cable Description	Length (M)	From Port	То
Unshielded Detachable AC Cable	1.4	EUT	adapter

# **Configuration of Test Setup**



# **Block Diagram of Test Setup**



# **SUMMARY OF TEST RESULTS**

FCC RULES	DESCRIPTION OF TEST	RESULT
§15.203	Antenna Requirement	Compliant
§15.207	Conducted emissions	Compliant*
§15.205, §15.209	Radiated emissions	Compliant*
§ 15.223 (a)	field strength of radiated emissions	Compliant
§15.223(b)	Out of Band Emissions	Compliant
§15.223(a)	6dB Bandwidth Testing	Compliant

<sup>\*</sup> Within measurement uncertainty

# §15.203 - ANTENNA REQUIREMENT

# **Standard Applicable**

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.

#### **Antenna Connected Construction**

The EUT was a permanently attached antenna which, in accordance to the above sections, is considered sufficient to comply with the provisions of these sections. Please see EUT photo for details.

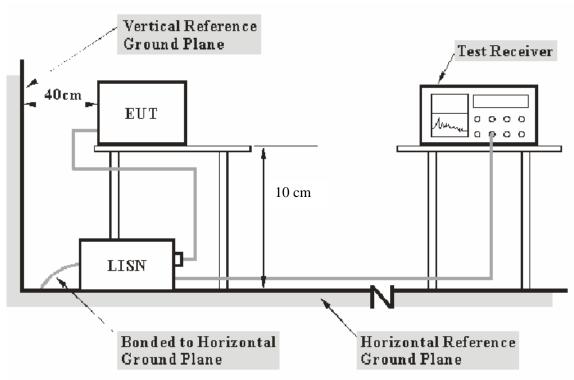
### §15.207 - CONDUCTED EMISSIONS

#### **Measurement Uncertainty**

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, and LISN.

Based on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any conducted emissions measurement at Bay Area Compliance Laboratories Corp. (Shenzhen) is +2.4 dB.

# **EUT Setup**



Note: 1. Support units were connected to second LISN.

2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

The setup of EUT is according with per ANSI C63.4-2003 measurement procedure. The specification used was with the FCC Part 15.207.

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.

The adapter was connected to a 120 VAC/60 Hz power source.

#### **EMI Test Receiver Setup**

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30 MHz.

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

#### **Test Equipment List and Details**

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Com-Power	L.I.S.N.	LI-200	12005	N/A	N/A
Com-Power	L.I.S.N.	LI-200	12008	N/A	N/A
Rohde & Schwarz	EMI Test Receiver	ESCI	100035	2007-10-16	2008-10-16
Rohde & Schwarz	L.I.S.N.	ESH2-Z5	892107/021	2007-03-26	2008-03-26

<sup>\*</sup> Com-Power's LISN were used as the supporting equipment.

#### **Test Procedure**

During the conducted emission test, the adapter was connected to the outlet of the LISN.

Maximizing procedure were performed on the six (6) highest emissions of the EUT.

All data was recorded in the Quasi-peak and average detection mode.

# **Test Results Summary**

According to the recorded data in following table, the EUT complied with the <u>FCC Part 15.207</u>, with the worst margin reading of:

**2.40 dB** at **26.920 MHz** in the **Neutral** conductor mode.

<sup>\*</sup> **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

**Test Data** 

#### **Environmental Conditions**

Temperature:	25 ° C
Relative Humidity:	56%
ATM Pressure:	100.0 kPa

The testing was performed by Kidd Yang on 2007-11-20.

Test Mode: Running

	Line Co	FCC Pa	rt 15.207		
Frequency (MHz)	Amplitude (dBµV)	Detector (QP/AV)	Conductor (Hot/Neutral)	Limit (dBµV)	Margin (dB)
26.920	57.60	QP	Neutral	60.00	2.40*
24.250	55.00	QP	Neutral	60.00	5.00
29.410	54.70	QP	Hot	60.00	5.30
8.670	54.50	QP	Neutral	60.00	5.50
8.640	54.00	QP	Hot	60.00	6.00
26.860	53.00	QP	Hot	60.00	7.00
8.640	31.00	AV	Hot	50.00	19.00
8.710	29.20	AV	Neutral	50.00	20.80
26.920	21.80	AV	Neutral	50.00	28.20
0.150	36.30	QP	Hot	66.00	29.70
0.270	31.40	QP	Hot	61.12	29.72
1.100	25.00	QP	Neutral	56.00	31.00
0.150	34.60	QP	Neutral	66.00	31.40
1.160	24.10	QP	Hot	56.00	31.90
1.100	13.30	AV	Neutral	46.00	32.70
29.440	16.90	AV	Hot	50.00	33.10
26.890	15.50	AV	Hot	50.00	34.50
1.160	9.40	AV	Hot	46.00	36.60
0.260	24.50	QP	Neutral	61.43	36.93
24.250	12.40	AV	Neutral	50.00	37.60
0.260	13.80	AV	Neutral	51.43	37.63
0.270	13.40	AV	Hot	51.12	37.72
0.150	11.10	AV	Hot	56.00	44.90
0.150	10.80	AV	Neutral	56.00	45.20

<sup>\*</sup> Within measurement uncertainty

# Plot(s) of Test Data

Plot(s) of Test Data is presented hereinafter as reference.

#### 120V AC / 60Hz Hot:

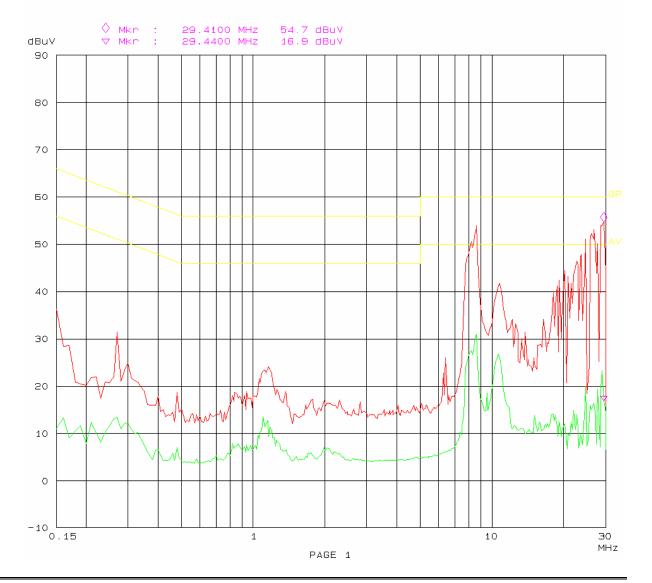
EUT:

Conducted Emission Test FCC Part15 B

RF EAS MONO M/N: PDS8830

Manuf: PROMATIC
Op Cond: Running
Operator: Kidd Yang
Test Spec: AC 120V/60Hz
Comment: Temp: 25 Humi 56%

20. Nov 07 23: 32



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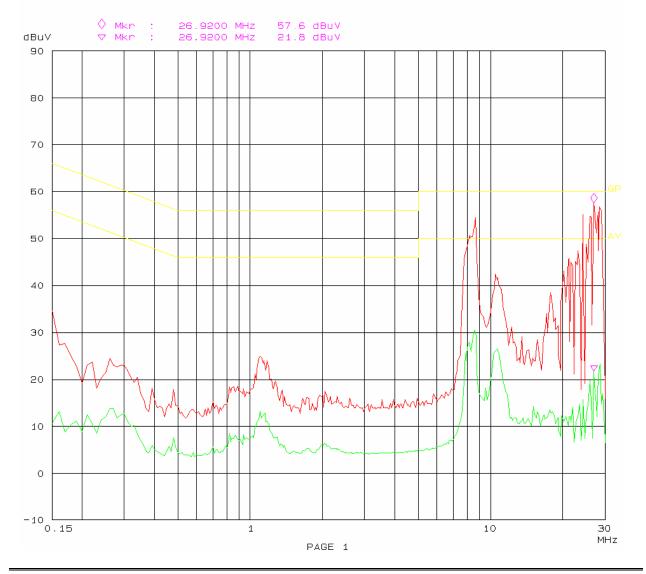
#### 120V AC / 60Hz Neutral:

Conducted Emission Test FCC Part15 B

20. Nov 07 23:09

EUT: RF EAS MONO M/N: PDS8830

Manuf: PROMATIC
Op Cond: Running
Operator: Kidd Yang
Test Spec: AC 120V/60Hz
Comment: Temp: 25 Humi 56%



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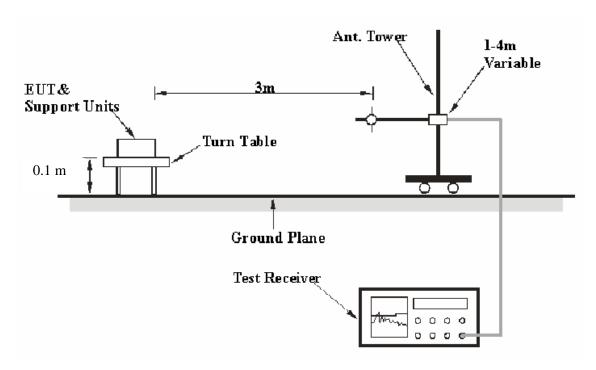
### §15.205, §15.209 - RADIATED EMISSIONS

#### **Measurement Uncertainty**

All measurements involve certain levels of uncertainties, especially in 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 Bay Area Compliance Laboratories Corp. (Shenzhen) is  $\pm 4.0$  dB.

# **EUT Setup**



The radiated emission tests were performed in the 3 meters chamber B test site, using the setup accordance with the ANSI C63.4-2003. The specification used was the FCC 15.109, FCC 15.209 and FCC 15.223 limits.

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.

The adapter was connected to a 120 VAC/60 Hz power source.

#### **EMI Test Receiver Setup**

The system was investigated from 30 MHz to 1000MHz.

During the radiated emission test, the EMI test receiver Setup was set with the following configurations:

Frequency Range	RBW	Video B/W	
30MHz - 1000 MHz	100 kHz	300 kHz	

# **Test Equipment List and Details**

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
HP	Amplifier	HP8447D	2944A09795	2007-11-15	2008-11-15
Rohde & Schwarz	EMI Test Receiver	ESCI	100035	2007-10-16	2008-10-16
Sunol Sciences	Broadband Antenna	JB1	A040904-1	2007-08-14	2008-08-14

<sup>\*</sup> Statement of Traceability: Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

#### **Test Procedure**

For the radiated emissions test, the adapter was connected to the AC floor outlet.

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

All data was recorded in the PK&AV detection mode.

# **Corrected Amplitude & Margin Calculation**

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

Corrected Amplitude= Meter Reading + Antenna Loss + Cable Loss- 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 means the emission is 7dB below the maximum limit. The equation for margin calculation is as follows:

Margin = Limit - Corrected Amplitude.

# **Test Results Summary**

According to the recorded data in following table, the EUT complied with the <u>FCC Title 47, Part 15, Subpart C, section 15.109, 15.205, 15.209, and 15.223</u>, with the worst margin reading of:

# 1.8 dB at 638.190210 MHz in the Horizontal polarization

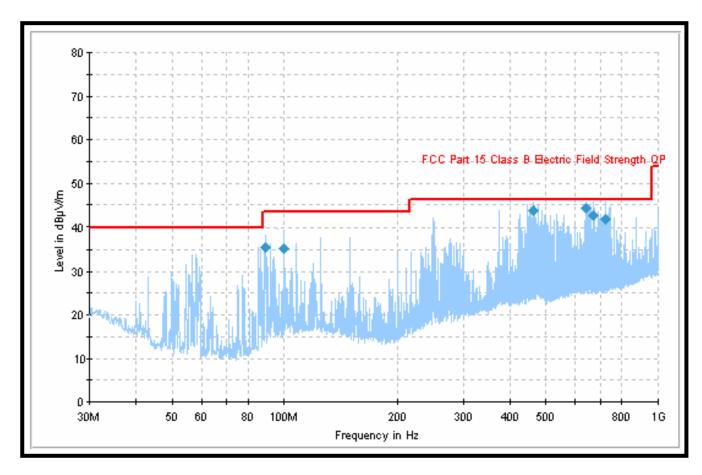
#### **Test Data**

#### **Environmental Conditions**

Temperature:	25 ° C
Relative Humidity:	52%
ATM Pressure:	100.9 kPa

The testing was performed by Kidd Yang on 2007-11-30.

Test mode: Running



Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Polarity (H/V)	Turntable Position (deg)	Correction Factor (dB)	Limit (dB µ V/m)	Margin (dB)
638.190210	44.2	121.0	Н	40.0	-5.5	46.0	1.8*
462.983063	43.6	104.0	Н	337.0	-5.5	46.0	2.4*
668.745000	42.4	104.0	Н	337.0	-5.6	46.0	3.6*
724.035620	41.8	104.0	Н	342.0	-5.6	46.0	4.2
88.846875	35.4	104.0	V	39.0	-17.9	43.5	8.1
100.082501	35.2	114.0	Н	9.0	-5.5	43.5	8.3

<sup>\*</sup> Within measurement uncertainty.

# §15.223(a) – FIELD STRENGTH OF RADIATED EMISSIONS

#### **Test Standard**

The field strength of any emission within the band 1.705–10.0 MHz shall not exceed 100 microvolts/meter at a distance of 30 meters. However, if the bandwidth of the emission is less than 10% of the center frequency, the field strength shall not exceed 15 microvolts/meter or (the bandwidth of the device in kHz) divided by (the center frequency of the device in MHz) microvolts/meter at a distance of 30 meters, whichever is the higher level.

### **Test Equipment List and Details**

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
HP	Amplifier	8447E	1937A01046	2007-11-15	2008-11-15
Rohde & Schwarz	EMI Test Receiver	ESCI	100035	2007-10-16	2008-10-16
ETS	Passive Loop Antenna	6512	00029604	2007-08-25	2008-08-25

<sup>\*</sup> Statement of Traceability: Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed per the NVLAP requirements, traceable to NIST.

# **EUT Setup**

The field strength of radiated emissions tests were performed in the 3-meter chamber A test site, using the setup accordance with the ANSI C63.4-2003. The specification used was the FCC Part Subpart C limits.

#### **Test Data**

#### **Environmental Conditions**

Temperature:	25 °C
<b>Relative Humidity:</b>	53 %
<b>ATM Pressure:</b>	101.0 kPa

The testing was performed by Kidd Yang on 2007-11-30 and 2007-12-21.

Test mode: Running

# Emission within the band 1.705–10.0 MHz:

	Indicated				Corr	ection Fa	ctor	Cord.	FCC 15.22	23/209
Freq. (MHz)	Meter Reading (dBμV/m) @3m	Table Angle Degree	Antenna Height (m)	Detector PK/QP/AV	Antenna Factor (dB/m)	Cable Loss (dB)	Dist. Factor (dB)	Amp. (dBµV/m) @30m	Limit (dBµV/m) @30m	Margin (dB)
2.12	9.86	90	1.2	AV	37.2	0.01	40	7.07	29.5	22.43
5.21	9.91	180	1.5	AV	36.4	0.01	40	6.32	29.5	23.18
5.78	9.32	90	1	AV	34.5	0.01	40	3.83	29.5	25.67
6.22	10.1	45	1	AV	32.5	0.01	40	2.61	29.5	26.89

# **Fundamental Radiated Emissions:**

	Indicated	Table	Antenna	-	Corr	ection Fa	ctor	Cord.	FCC 15.	223
Freq. (MHz)	Meter Reading (dBμV/m) @3m	Angle Degree	Height (m)	Detector PK/QP/AV	Antenna Factor (dB/m)	Cable Loss (dB)	Dist. Factor (dB)	Amp. (dBμV/m) @30m	Limit (dBµV/m) @30m	Margin (dB)
8.68	18.42	45	1	AV	32.5	0.02	40	10.94	40	29.06

# §15.223(b) - OUT OF BAND EMISSIONS

#### **Test Standard**

The field strength of emissions outside of the band 1.705–10.0 MHz shall not exceed the general radiated emission limits in §15.209.

# **Test Equipment List and Details**

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
HP	Amplifier	8447E	1937A01046	2007-11-15	2008-11-15
Rohde & Schwarz	EMI Test Receiver	ESCI	100035	2007-10-16	2008-10-16
ETS	Passive Loop Antenna	6512	00029604	2007-08-25	2008-08-25

<sup>\*</sup> Statement of Traceability: Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed per the NVLAP requirements, traceable to NIST.

# **EUT Setup**

The out of band emission tests were performed in the 3-meter chamber A test site, using the setup accordance with the ANSI C63.4-2003. The specification used was the FCC Part Subpart C limits.

#### **Test Data**

#### **Environmental Conditions**

Temperature:	25 °C
Relative Humidity:	53 %
ATM Pressure:	101.0 kPa

The testing was performed by Kidd Yang on 2007-12-05.

	Indicated	<b></b>			Corr	ection Fa	ctor	Cord.	FCC 15.22	23/209
Freq. (MHz)	Meter Reading (dBμV/m) @3m	Table Angle Degree	Antenna Height (m)	Detector PK/QP/AV	Antenna Factor (dB/m)	Cable Loss (dB)	Dist. Factor (dB)	Amp. (dBµV/m) @30m	Limit (dBµV/m) @30m	Margin (dB)
16.24	8.88	90	1.2	AV	37.2	0.02	40	6.10	29.5	23.4
17.09	8.39	180	1.5	AV	36.4	0.02	40	4.81	29.5	24.69
18.22	8.68	90	1	AV	34.5	0.02	40	3.20	29.5	26.3
25.86	8.31	45	1	AV	32.5	0.03	40	0.84	29.5	28.66

**Test Result:** Compliant.

# §15.223(a) – 6dB BANDWIDTH TESTING

# **Applicable Standard**

For the purposes of this section, bandwidth is determined at the points 6 dB down from the modulated carrier.

#### **Test Equipment List and Details**

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCI	100035	2007-10-16	2008-10-16

<sup>\*</sup> **Statement of Traceability:** Bay Area Compliance Laboratory Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

#### **Test Procedure**

- 1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
- 2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect it to measurement instrument. Then set it to any one convenient frequency within its operating range. Set a reference level on the measuring instrument equal to the highest peak value.
- 3. Measure the frequency difference of two frequencies that were attenuated 6 dB from the reference level. Record the frequency difference as the emission bandwidth.
- 4. Repeat above procedures until all frequencies measured were complete.

#### **Test Data**

#### **Environmental Conditions**

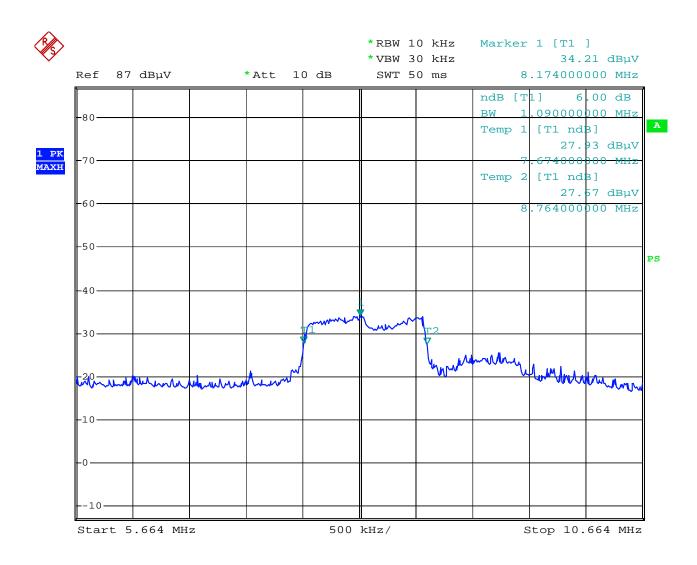
Temperature:	25 ° C
<b>Relative Humidity:</b>	53%
<b>ATM Pressure:</b>	100.9 kPa

The testing was performed by Kidd Yang on 2007-12-08.

**Test Result:** Compliant.

Please refer to following table and plot.

Frequency (MHz)	6 dB Bandwidth (kHz)	10% of Middle Frequency (kHz)
8.174	1090.00	817.4



6dB

Date: 8.DEC.2007 22:54:44

Shenzhen Promatic Security Systems Co., Ltd.	FCC ID: VUSPDS8830-8820
DECLARATION LET	TTER .



# To: Bay Area Compliance Laboratories Corp

# **Declaration letter**

Dear Sir,

For our business issue and marketing requirement, we would like to list 2 model numbers on the FCC, CE certificates and reports (see the attached pictures), as following:

Model No.: PDS8820 PDS8830

We declare that there is no electrical change has been made to the equipment that alters the compliance characteristics. The difference of these two models is the covers. Please kindly handle on the project.

Thank you!

Signature:

张为为

Printed name/ title: zhangfangfang engineer

Tel: 0755-83437050 Ext.:882

Fax: 0755-83434421

Address:FLAT B 19th/F HI-TECH&INNOVATION PLAZA TIANAN CYBER

PARK, SHENZHEN, CHINA

SHENZHEN PROMATIC SECURITY SYSTEMS CO.,LTD

2007.12.07

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