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FCC REPORT

Report Reference No. .....:	**TRE1702002201** R/C…….: 64647
FCC ID .....:	**VUSPDS8834**
Applicant's name .....:	**Shenzhen Promatic Security Systems CO., Ltd.**
Address.....:	Flat B 19th/ F Hi-Tech & Innovation Plaza, Tianan, Shenzhen,China
Manufacturer.....:	Shenzhen Promatic Security Systems CO., Ltd.
Address.....:	Flat B 19th/ F Hi-Tech & Innovation Plaza, Tianan, Shenzhen,China
Test item description .....:	Electronic Article Surveillance
Trade Mark .....:	promatic
Model/Type reference.....:	PDS8834
Standard .....:	**FCC CFR Title 47 Part 15 Subpart C Section 15.223**
Date of receipt of test sample……..:	Feb. 4, 2017
Date of testing……:	Feb. 15, 2017-Feb. 20, 2017
Date of issue……...:	Feb. 20, 2017
Result ..... ……...:	**Pass**

Compiled by (position+printed name+signature).....:	File administrators Shayne Zhu
Supervised by (position+printed name+signature).....:	Project Engineer Lion Cai
Approved by (position+printed name+signature).....:	Manager Hans Hu

Testing Laboratory Name .....:	**Shenzhen Huatongwei International Inspection Co., Ltd.**
Address.....:	1/F, Bldg 3, Hongfa Hi-tech Industrial Park, Genyu Road, Tianliao, Gongming, Shenzhen, China

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Change History		
Issue	Date	Reason for change
1.0	2017.02.20	First edition

1. GENERAL INFORMATION

1.1 EUT Description

EUT Name ..... :	Electronic Article Surveillance
FCC ID..... :	VUSPDS8834
Trade Name……..:	
Brand Name……:	Promatic
Hardware Version..... :	dkeB
Software Version ..... :	BD_LAMF920TV1.0.0B04
Operate Frequency	7.7-8.7MHz

Note1: The EUT is a Electronic Article Surveillance, it supports the following operating frequency band: 7.7MHz-8.7MHz;

Note 2:The highest operate frequency is 8.7MHz.

Note 3:For a more detailed description, please refer to Specification or User's Manual supplied by the applicant and/or manufacturer.

Note 4: The EUT was programmed to be in continuously transmitting mode via the software.

1.2 Test Standards and Results

The objective of the report is to perform testing according to 47 CFR Part 15 Subpart C:

No.	Identity	Document Title
1	47 CFR Part 15 Subpart C	Radio Frequency Devices

Test detailed items/section required by FCC rules and results are as below:

No.	Section	Description	Result
1	15.223	Device Operation in the band 1.705-10 MHz	PASS
2	15.207	Conducted Emission	PASS
3	15.209	Radiated Emission	PASS

NOTE:

(1) The EUT has been tested according to 47 CFR Part 15 Subpart C, Class B.The test procedure is according to ANSI C63.10:2013.

1.3 Facilities and Accreditations

1.3.1 Facilities

CNAS-Lab Code: L1225

Shenzhen Huatongwei International Inspection Co., Ltd. has been assessed and proved to be in compliance with CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories

(identical to ISO/IEC17025: 2005 General Requirements) for the Competence of Testing and Calibration Laboratories, Date of Registration: February 28, 2015. Valid time is until February 27, 2018.

FCC-Registration No.: 317478

Shenzhen Huatongwei International Inspection 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 317478, Renewal date Jul. 18, 2014, valid time is until Jul. 18, 2017.

1.3.2 Test Environment Conditions

During the measurement, the environmental conditions were within the listed ranges:

Temperature (°C):	15°C - 35°C
Relative Humidity (%):	25% -75%
Atmospheric Pressure (kPa):	86kPa-106kPa

1.3.3 Measurement Uncertainty

The uncertainty is calculated using the methods suggested in the "Guide to the Expression of Uncertainty in Measurement" (GUM) published by ISO.

Uncertainty of Conducted Emission:	Uc = 3.6 dB (k=2)
Uncertainty of Radiated Emission:	Uc = 4.5 dB (k=2)

2. TEST CONDITIONS SETTING

2.1 Test Peripherals

The following is a listing of the EUT and peripherals utilized during the performance of EMC test:

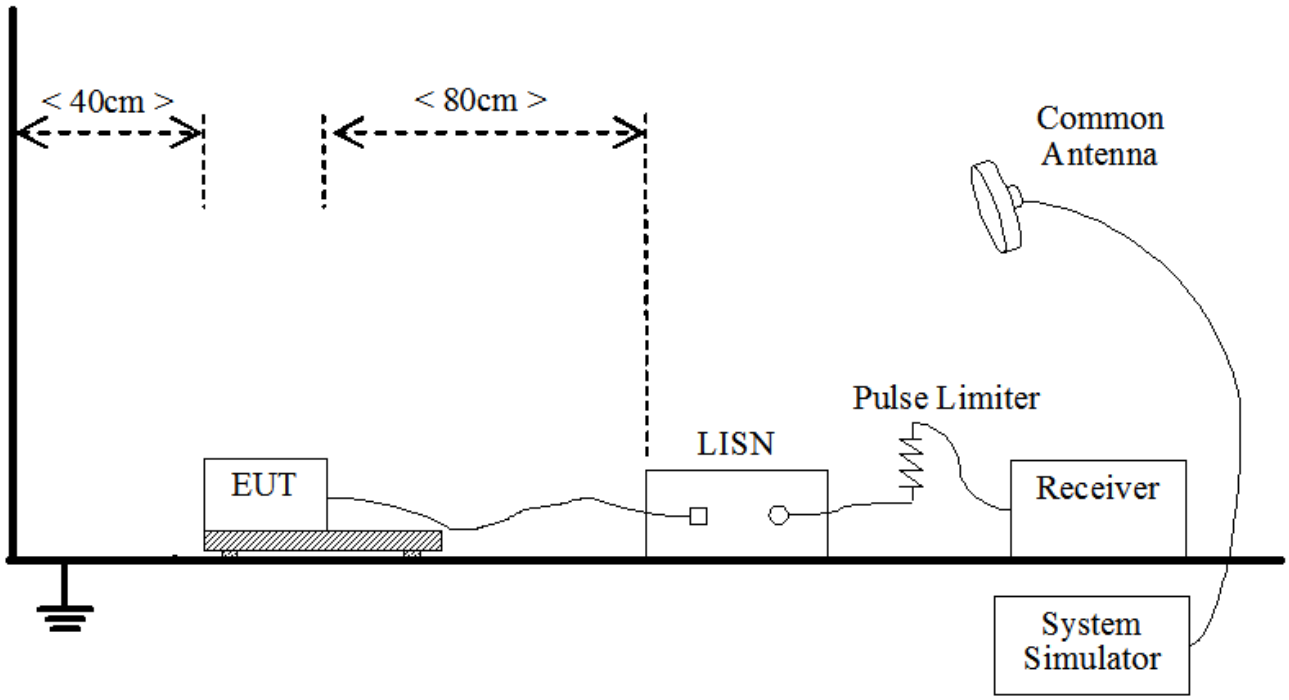
2.2 Test Mode

The EUT configuration of the emission tests is EUT + AC Adapter.

2.3 Test Setup and Equipments List

2.3.1 Conducted Emission

A. Test Setup:

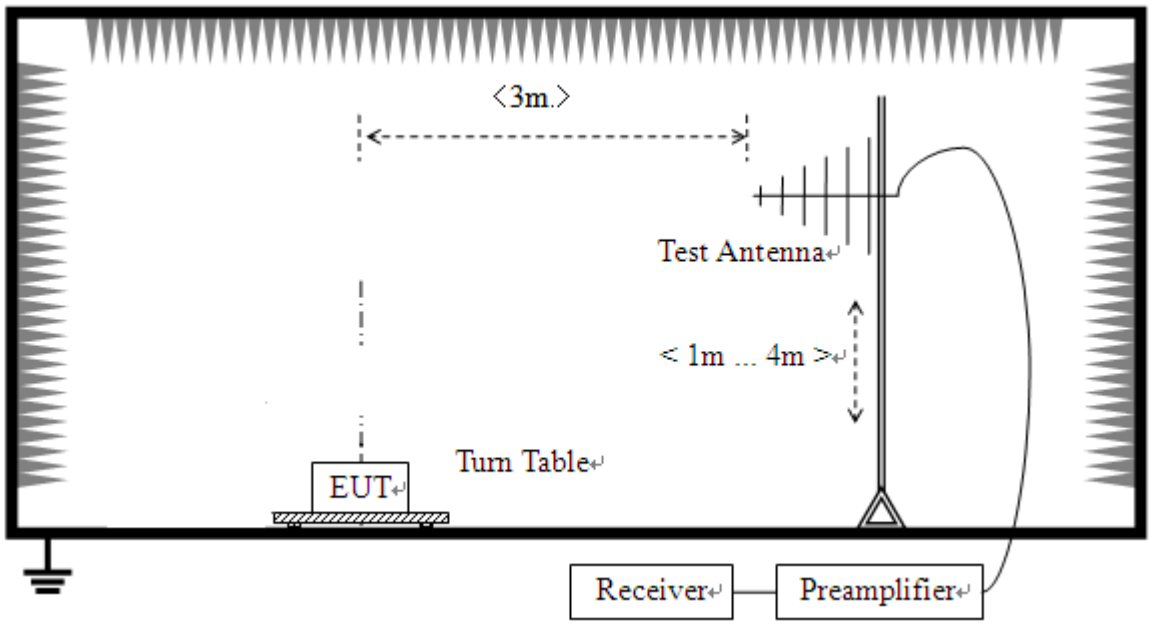


The EUT is placed on a 12m high insulating table, which stands on the grounded conducting floor, and keeps 0.4m away from the grounded conducting wall. The EUT is connected to the power mains through a LISN which provides 50Ω/50μH of coupling impedance for the measuring instrument. The Common Antenna is used for the call between the EUT and the System Simulator (SS). A Pulse Limiter is used to protect the measuring instrument. The factors of the whole test system are calibrated to correct the reading.

2.3.2 Radiated Emission

A. Test Setup:

1) For radiated emissions from 30MHz to1GHz



B. Test Procedure

The test is performed in a 3m Semi-Anechoic Chamber; the antenna factor, cable loss and so on of the site (factors) is calculated to correct the reading. The EUT is placed on a 12mm high insulating Turn Table, and keeps 3m away from the Test Antenna, which is mounted on a variable-height antenna master tower.

For the test Antenna:

1) In the frequency range above 30MHz, Bi-Log Test Antenna (30MHz to 1GHz) are used. Test Antenna is 10m away from the EUT. Test Antenna height is varied from 1m to 4m above the ground to determine the maximum value of the field strength. The emission levels at both horizontal and vertical polarizations should be tested.

3. 47 CFR PART 15B REQUIREMENTS

3.1 Conducted Emission

3.1.1 Requirement

According to FCC section 15.207, the radio frequency voltage that is conducted back onto the AC power line on any frequency within the band 150kHz to 30MHz shall not exceed the limits in the following table, as measured using a 50μH/50Ω line impedance stabilization network (LISN).

Frequency range (MHz)	Conducted Limit (dBμV)	
	Quasi-peak	Average
0.15 - 0.50	66 to 56	56 to 46
0.50 - 5	56	46
5 - 30	60	50

Note:

a) The limit subjects to the Class B digital device.

b) The lower limit shall apply at the band edges.

c) The limit decreases linearly with the logarithm of the frequency in the range 0.15 - 0.50MHz.

3.1.2 Test Description

See section 2.3.1 of this report.

3.1.3 Test Result

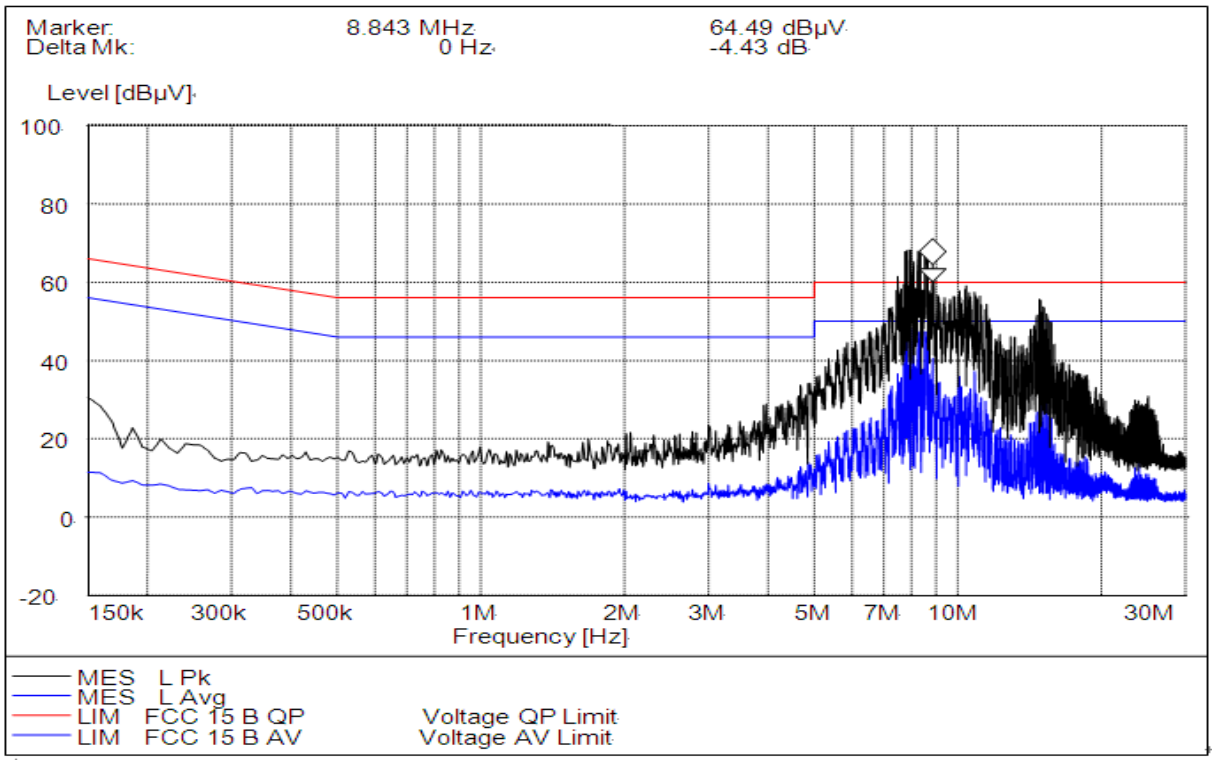
The maximum conducted interference is searched using Peak (PK), Quasi-peak (QP) and Average (AV) detectors; the emission levels more than the AV and QP limits, and that have narrow margins from the AV and QP limits will be re-measured with AV and QP detectors. Tests for both L phase and N phase lines of the power mains connected to the EUT are performed. All test modes are considered, refer to recorded points and plots below.

Note:

Devices subject to Part 15 must be tested for all available U.S. voltages and frequencies (such as a Nominal 120V AC,50/60Hz) for which the device is capable of operation. A device rated for 50/60 Hz operation need not be tested at both frequencies provided the radiated and line conducted emissions are the same at both frequencies.

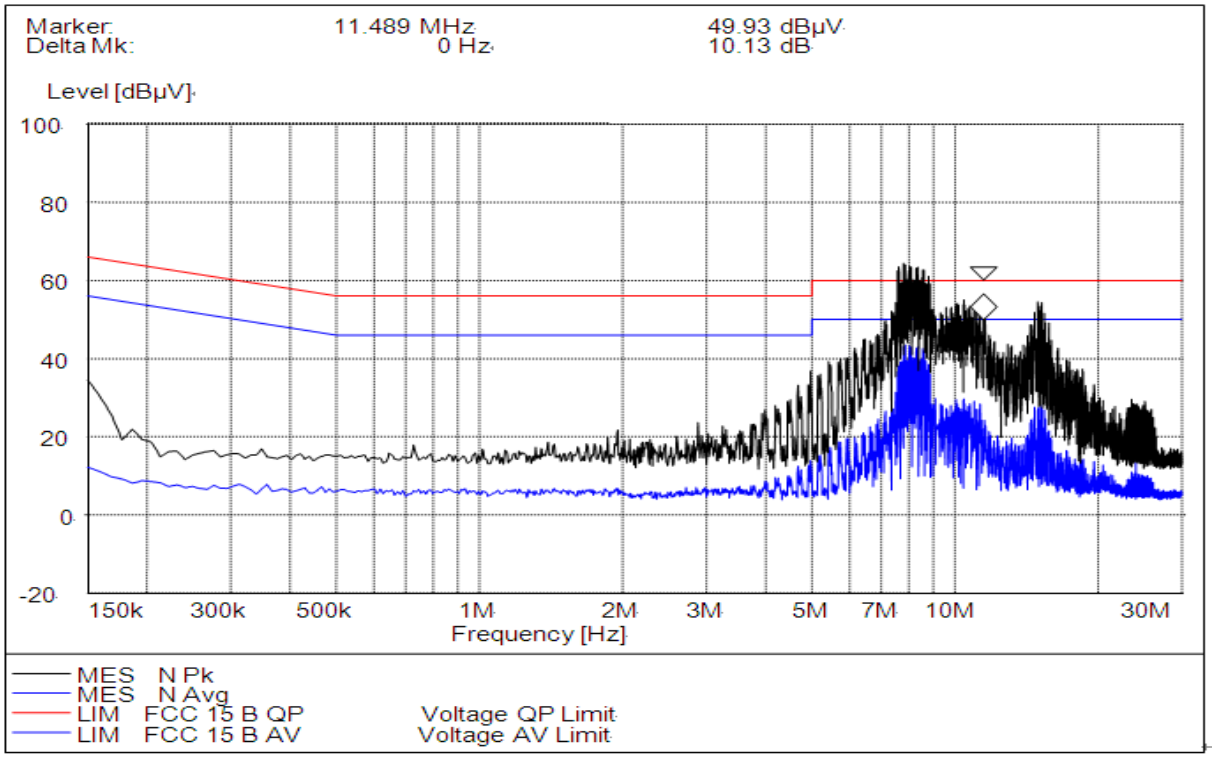
Test voltage and frequency (120V AC,60Hz)

A. Test Plot and Suspicious Points:



(Plot A: L Phase)

Conducted Disturbance at Mains Terminals							
L Test Data							
QP				AV			
Frequency (MHz)	Limits (dBµV)	Measurement Value (dBµV)	Margin (dB)	Frequency (MHz)	Limits (dBµV)	Measurement Value (dBµV)	Margin (dB)
7.4840	60.00	51.54	8.46	7.4840	50.00	26.70	23.3
8.088	60.00	54.07	5.93	8.088	50.00	28.71	21.29
8.8430	60.00	55.66	4.34	8.8430	50.00	31.20	18.8
10.4090	60.00	49.78	10.22	10.4090	50.00	29.15	20.85
15.023	60.00	46.44	13.56	15.023	50.00	27.66	22.34
26.011	60.00	33.37	26.63	26.011	50.00	20.87	29.13



(Plot B: N Phase)

Conducted Disturbance at Mains Terminals							
N Test Data							
QP				AV			
Frequency (MHz)	Limits (dBµV)	Measurement Value (dBµV)	Margin (dB)	Frequency (MHz)	Limits (dBµV)	Measurement Value (dBµV)	Margin (dB)
7.774	60.00	44.71	15.29	7.774	50.00	25.62	-24.38
8.089	60.00	43.21	16.79	8.089	50.00	24.99	-25.01
10.4540	60.00	45.64	14.36	10.4540	50.00	29.68	-20.32
11.4890	60.00	40.97	19.03	11.4890	50.00	28.97	-21.03
14.9090	60.00	46.40	13.6	14.9090	50.00	25.12	-24.88
24.306	60.00	31.42	28.58	24.306	50.00	20.11	-29.89

Test Result: PASS

3.2 Radiated Emission

3.2.1 Requirement

§15.223 Operation in the band 1.705-10 MHz

(a) 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. For the purposes of this section, bandwidth is determined at the points 6 dB down from the modulated carrier. The emission limits in this paragraph are based on measurement instrumentation employing an average detector. The provisions in §15.35(b) for limiting peak emissions apply.

(b) 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.

According to FCC section 15.209, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values:

Frequency range (MHz)	Field Strength		Field Strength Limitation at 10m Measurement Dist	
	μV/m	Dist	(uV/m)	(dBuV/m)
0.009 - 0.490	2400/F(kHz)	300m	900* 2400/F(kHz)	20log 2400/F(kHz) + 59
0.490 - 1.705	24000/F(kHz)	30m	9* 24000/F(kHz)	20log 24000/F(kHz) + 19
1.705 - 30.00	30	30m	9*30	20log 30 + 19
30.0 - 88.0	100	3m	30	20log 30
88.0 - 216.0	150	3m	45	20log 45
216.0 - 960.0	200	3m	60	20log 60
Above 960.0	500	3m	150	20log 150

a) As shown in FCC section 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector. When average radiated emission measurements are specified in this part, including emission measurements below 1000MHz, there also is a limit on the radio frequency emissions, as measured using instrumentation with a peak detector function, corresponding to 20dB above the maximum permitted average limit for the frequency being investigated unless a different peak emission limit is otherwise specified in the rules.

b) Test Antenna is 3m away from the EUT. Test Antenna height is varied from 1m to 4m above the ground to determine the maximum value of the field strength.

c) For below 1G :QP detector RBW 120kHz ,VBW 300kHz.

d) 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

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 $Ld1 = Ld2 * (d2/d1)^{2.}$
   Example:
   F.S Limit at 30m distance is 30uV/m, then F.S Limitation at 3m distance is adjusted as
   $Ld1 = L1 = 30uV/m * (10)^2 = 100 * 30uV/m.$

3.2.2 Test Description

See section 2.3.2 of this report.

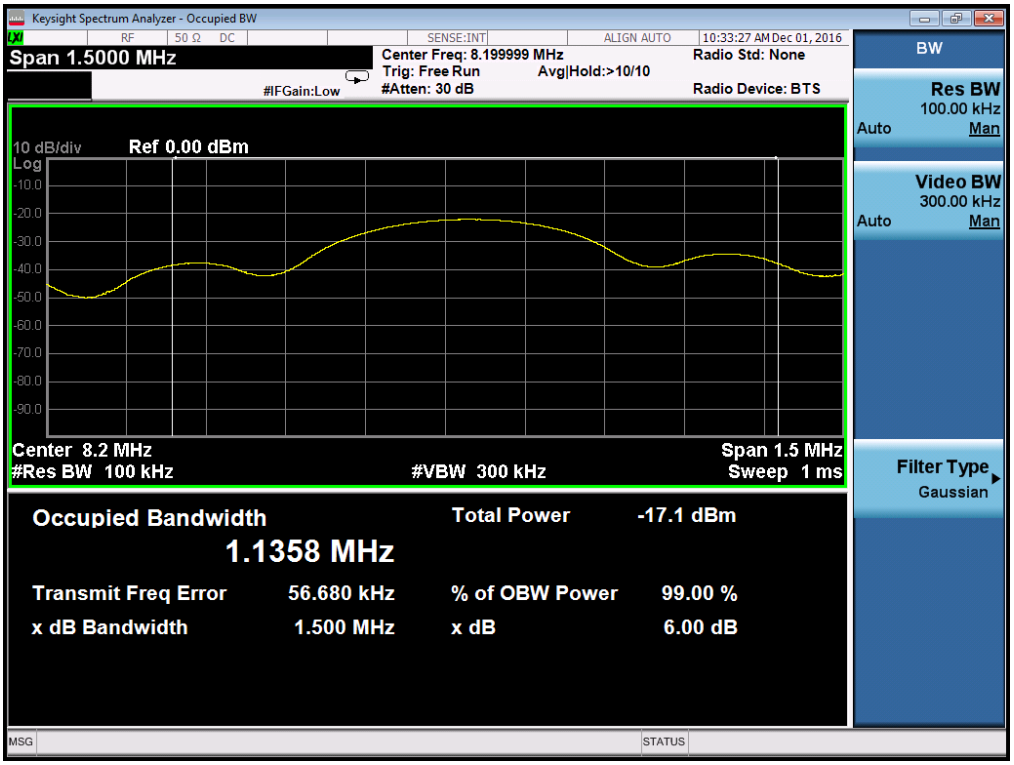
3.2.3 Test Result

The maximum radiated emission is searched using PK, QP and AV detectors; the emission levels more than the limits, and that have narrow margins from the limits will be re-measured with AV and QP detectors. Both the vertical and the horizontal polarizations of the Test Antenna are considered to perform the tests. All test modes are considered, refer to recorded points and plots below.

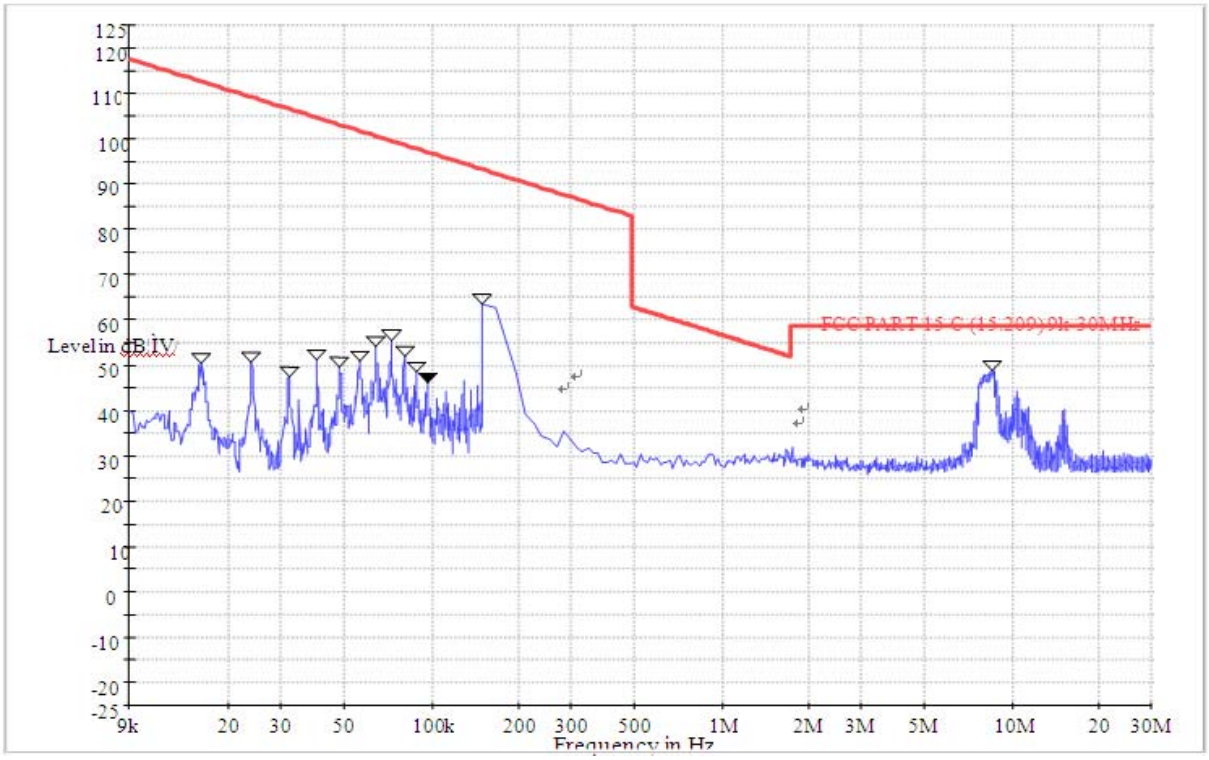
The amplitude of spurious emissions which are attenuated more than 20 dB below the permissible value need not be reported.

Note: The RFID was performed under the continuously transmitting mode via the software. The operating frequency: 7.7-8.7MHz

B. A Test Plot of 6dB Bandwidth

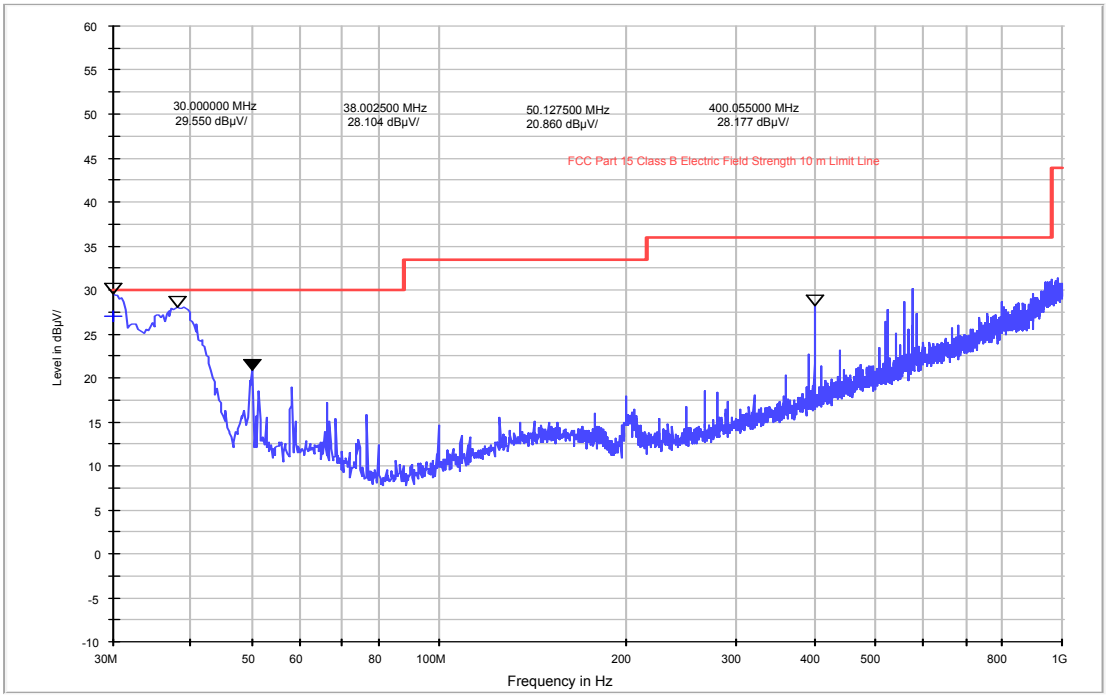


C. Test Plots and Suspicious Points:



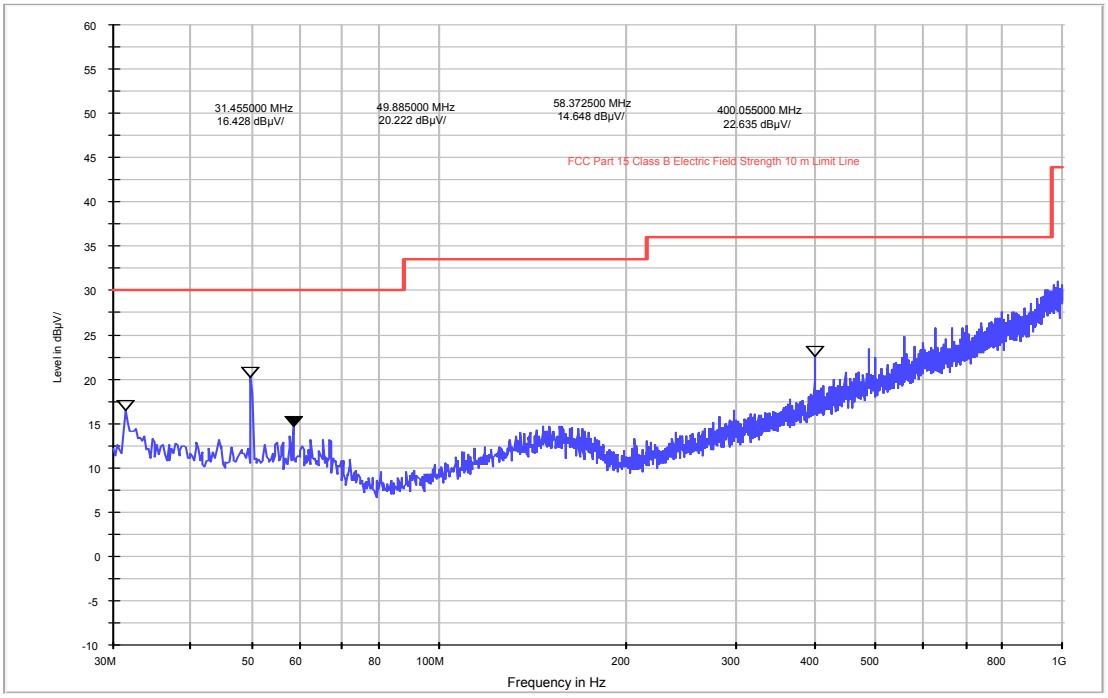
(Plot A: 9KHz-30MHz)

Frequency	QuasiPeak (dBµV/m)	Bandwidth (kHz)	Antenna height (cm)	Limit (dBµV/m)	Margin (dB)	Verdict
56.23(KHz)	51.01	120.000	240.0	102.00	50.99	Pass
72.31(KHz)	55.50	120.000	159.5	99.00	43.5	Pass
150.0(KHz)	47.40	120.000	245.3	93.00	45.6	Pass
8.53MHz	46.81	120.000	240.3	69.00	22.19	Pass



(Plot B: Test Antenna Vertical 30M - 1G)

Frequency (MHz)	QuasiPeak (dBµV/m)	Bandwidth (kHz)	Antenna height (cm)	Limit (dBµV/m)	Margin (dB)	Antenna	Verdict
30.00000	27.89	120.000	131.4	30.00	2.11	Vertical	Pass
38.00000	26.63	120.000	145.6	30.00	3.37	Vertical	Pass
400.06000	25.89	120.000	215.4	36.00	10.11	Vertical	Pass



(Plot C: Test Antenna Horizontal 30M - 1G)

Frequency (MHz)	QuasiPeak (dBµV/m)	Bandwidth (kHz)	Antenna height (cm)	Limit (dBµV/m)	Margin (dB)	Antenna	Verdict
31.45000	15.25	120.000	134.5	30.00	14.75	Horizontal	Pass
49.88000	18.54	120.000	223.7	30.00	11.46	Horizontal	Pass
400.06000	20.63	120.000	169.0	36.00	15.37	Horizontal	Pass

4. EQUIPMENT LIST

Conducted Emission					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	EMI TEST RECEIVER	Rohde & Schwarz	ESCI	100106	11/13/2016
2	ARTIFICIAL MAINS	Rohde & Schwarz	ESH2-Z5	100028	11/13/2016
3	PULSE LIMITER	Rohde & Schwarz	ESHSZ2	100044	11/13/2016
4	EMI TEST SOFTWARE	Rohde & Schwarz	ES-K1	N/A	N/A

Radiated Emission					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	ULTRA-BROADBAN D ANTENNA	ShwarzBeck	VULB9163	538	11/13/2016
2	EMI TEST RECEIVER	Rohde & Schwarz	ESI 26	100009	11/13/2016
3	EMI TEST Software	Audix	E3	N/A	N/A
4	TURNTABLE	MATURO	TT2.0	----	N/A
5	ANTENNA MAST	MATURO	TAM-4.0-P	----	N/A
6	EMI TEST Software	Rohde & Schwarz	ESK1	N/A	N/A
7	ULTRA-BROADBAN D ANTENNA	Rohde&Schwarz	HL562	100015	11/13/2016
8	Amplifer	Sonoma	310N	E009-13	11/13/2016
9	JS amplifer	Rohde & Schwarz	JS4-00101800-2 8-5A	F201504	11/13/2016
11	TURNTABLE	ETS	2088	2149	N/A
12	ANTENNA MAST	ETS	2075	2346	N/A
13	HORN ANTENNA	Rohde&Schwarz	HF906	100039	11/13/2016
14	Loop Antenna	Rohde&Schwarz	HFH2-Z2	100020	11/13/2016