



FCC PART 15.249
EMI MEASUREMENT AND TEST REPORT
For

Changsha SunSky Electronic Design & Development Co.,Ltd.
Room1204, Kaihua Building, No.308 Laodongxi Rd., Changsha City, Hunan Province, China

FCC ID: WSVSUNVOTEW4X

Oct. 16, 2008

| | |
|--|---|
| This Report Concerns: Original Report | Equipment Type : Voting System |
| Test Engineer: | Eric Li  |
| Report No.: | F08100902A |
| Receive EUT Date/Test Date: | Oct.10,2008/ Oct.10-16,2008 |
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1. GENERAL INFORMATION

1.1. Report information

1.1.1.This report is not a certificate of quality; it only applies to the sample of the specific product/equipment given at the time of its testing. The results are not used to indicate or imply that they are application to the similar items. In addition, such results must not be used to indicate or imply that BST approves recommends or endorses the manufacture, supplier or use of such product/equipment, or that BST in any way guarantees the later performance of the product/equipment.

1.1.2.The sample/s mentioned in this report is/are supplied by Applicant, BST therefore assumes no responsibility for the accuracy of information on the brand name, model number, origin of manufacture or any information supplied.

Additional copies of the report are available to the Applicant at an additional fee. No third part can obtain a copy of this report through BST, unless the applicant has authorized BST in writing to do so.

Test Facility -

The test site used to collect the radiated data is located on the address of Solid Industrial Co., Ltd. (FCC Registered Test Site Number: 759397) on 333 Bulong Highway Buji, Longgang Shenzhen, Guangdong, China

The Test Site is constructed and calibrated to meet the FCC requirements.

1.2. Measurement Uncertainty

Available upon request.

2. PRODUCT DESCRIPTION

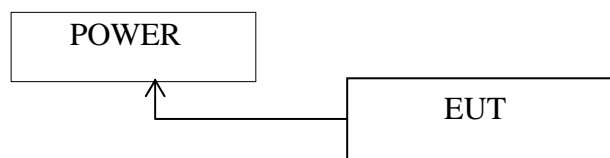
2.1. EUT Description

Description : Voting System
Applicant : Changsha SunSky Electronic Design & Development Co.,Ltd.
Room1204, Kaihua Building, No.308 Laodongxi Rd.,
Changsha City, Hunan Province, China
Model Number : PVS-W40

Additonal Information

Frequency : 2400MHZ~2483.5MHZ
Number : -
of Channels
Power Supply : DC 3V (POWERED BY BATTERY)
Maximum : N/A
Range
Transmitter : -
Antenna
Current : N/A
Consumption

2.2. Block Diagram of EUT Configuration



2.3. Support Equipment List

N/A

2.4. Test Conditions

Temperature: 23~25
Relative Humidity: 55~63 %

3. FCC ID LABEL

FCC ID: WSVSUNVOTEW4X

This device complies with Part 15 of the FCC Rules.Operation is subject to the following two conditions:

- 1. This device may not cause harmful interference, and**
- 2. This device must accept any interference received,including interference that may cause undesired operation.**

Label Location on EUT

EUT Bottom View/ FCC ID Label Location



4. TEST RESULTS SUMMARY

FCC 15 Subpart C, Paragraph 15.249:2004

| Test Standards | Test Items | Test Results |
|---|----------------------------------|--------------|
| FCC Part 15, Paragraph 15.207 | Conducted Test | N/A |
| FCC Part 15 Subpart C, Paragraph 15.249(a) and 15.249(b) | Field Strength of Fundamental | Pass |
| FCC Part 15, Paragraph 15.209 | Radiated Test | Pass |
| FCC Part 15 Subpart C, Paragraph 15.249(d) | Measured Band Edges | Pass |

Remark: “N/A” means “Not applicable.”

Modifications

No modification was made.

5. TEST EQUIPMENT USED

| Equipment/Facilities | Manufacturer | Model # | Serial no. | Date of Cal. | Cal. Interval |
|---------------------------------|--------------------|--------------|------------|---------------|---------------|
| Cable | Resenberger | N/A | NO.1 | Mar 10 , 2008 | 1 Year |
| Cable | SCHWARZBECK | N/A | NO.2 | Mar 10 , 2008 | 1 Year |
| Cable | SCHWARZBECK | N/A | NO.3 | Mar 10 , 2008 | 1 Year |
| LISN | Rohde & Schwarz | ESH3-Z5 | 100305 | Mar 10 , 2008 | 1 Year |
| 50 Coaxial Switch | ANRITSU CORP | MP59B | 6200283933 | Mar 10, 2008 | 1 Year |
| EMI Test Receiver | Rohde & Schwarz | ESP13 | 100180 | Oct.18,2007 | 1 Year |
| Spectrum Analyzer | Rohde & Schwarz | FSP40 | 100273 | Sep.10,2008 | 1 Year |
| 3m Semi-Anechoic Chamber | Albatross Projects | 9mx6mx6m | N/A | Feb.20,2008 | 1 Year |
| Signal Generator | FLUKE | PM5418 + Y/C | LO747012 | Feb.20,2008 | 1 Year |
| Signal Generator | FLUKE | PM5418TX | LO738007 | Feb.20,2008 | 1 Year |
| Loop Antenna | SCHWARZBECK | FMZB1516 | 113 | Jan.30,2008 | 1 Year |
| Trilog-Super Broadband Antenna | SCHWARZBECK | VULB9161 | 9161-4079 | Sep.22,2008 | 1 Year |
| Broad-Band Horn Antenna | SCHWARZBECK | BBHA9120D | 9120D-564 | Sep.22,2008 | 1 Year |
| Ultra Broadband Antenna | Rohde & Schwarz | HL-562 | 100110 | June.15,2008 | 1 Year |
| AMN | Rohde & Schwarz | ESH3-Z5 | 100196 | Oct.11,2008 | 1 Year |
| AMN | Rohde & Schwarz | ESH3-Z5 | 100197 | Oct.11,2008 | 1 Year |
| Pulse Limiter | Rohde & Schwarz | ESH3-Z2 | N/A | N/A | N/A |
| Power Meter | Rohde & Schwarz | NRVD | 100041 | Feb.20,2008 | 1 Year |
| EMI Test Receiver | Rohde & Schwarz | ESCS30 | 100003 | Feb.20,2008 | 1 Year |
| Coaxial Cable with N-connectors | SCHWARZBECK | AK9515H | 95549 | Sep.22,2008 | 1 Year |
| Radio Communication Test Set | Rohde & Schwarz | CMS 54 | 846621/024 | Feb.20,2008 | 1 Year |
| Modulation Analyzer | Hewlett-Packard | 8901B | 2303A00362 | Feb.20,2008 | 1 Year |
| Absorbing clamp | Rohde & Schwarz | MDS-21 | N/A | Oct.29,2007 | 1 Year |

6. CONDUCTED POWER LINE TEST

6.1. Test Equipment

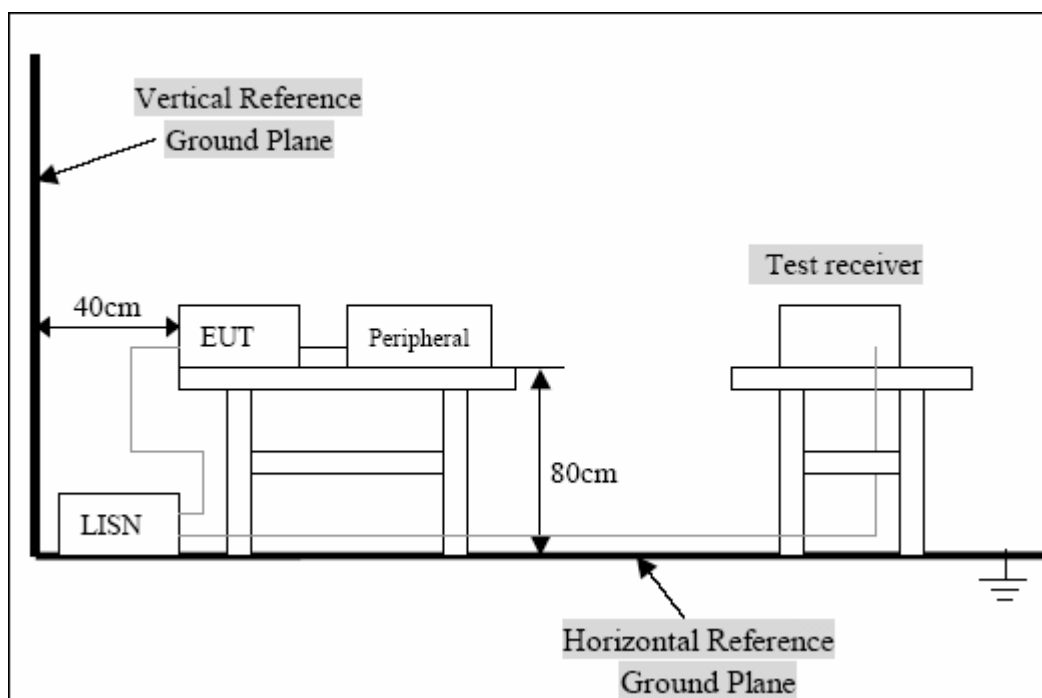
Please refer to section 4 this report.

6.2. Test Procedure

The EUT and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm/50uh coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uh coupling impedance with 50ohm termination.

Both sides of A.C. Line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ASIN C63.4:2003 on conducted measurement. Conducted emissions were measured over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9KHz.

6.3. Test Setup



For the actual test configuration, Please refer to the related items-Photos of testing

6.4. Configuring of the EUT

The EUT was configured according to ASIN C63.4:4-2003. Enable the signal transmitted from the external antenna from EUT to receiver. All interface ports were connected to the appropriate peripherals. All peripherals and cables are listed below.

Note:

Below 1GHZ, the channel low, middle, high were pre-tested, The channel low, worst case one, was chosen for conducted and radiated emission test.

Above 1GHZ, the channel low, middle, high were tested individually.

A.EUT

| Device | Manufacturer | Model # | FCC ID |
|---------------|--|---------|---------------|
| Voting System | Changsha SunSky Electronic Design & Development Co.,Ltd. | PVS-W40 | WSVSUNVOTEW4X |

B.Internal Devices

| Device | Manufacturer | Model # | FCC ID |
|--------|--------------|---------|--------|
| N/A | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

C.Peripherals

| Device | Manufacturer | Model # Serial # | FCC ID/ Doc | Cable |
|--------|--------------|---------------------|----------------|-------|
| N/A | | | | |
| | | | | |
| | | | | |
| | | | | |

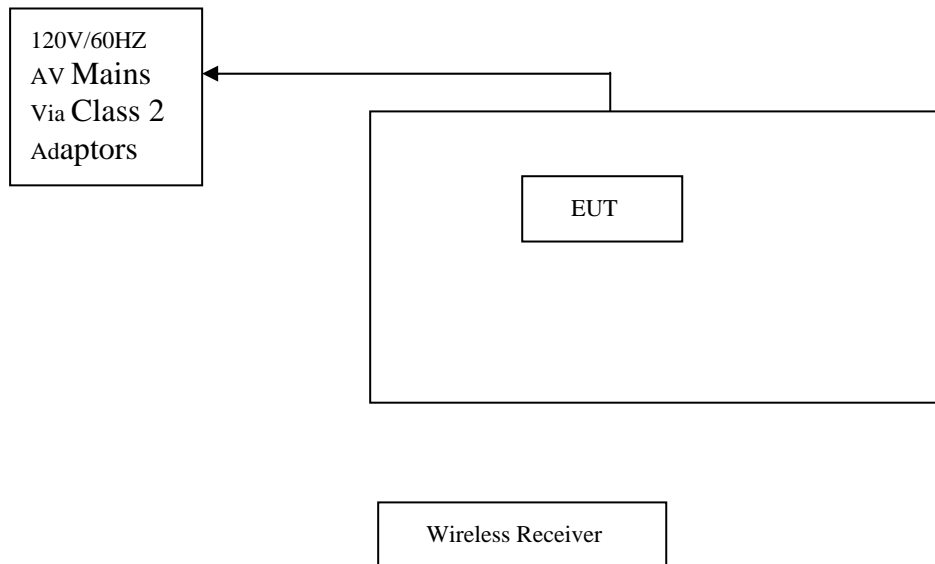
6.5. EUT Operating Condition

Operating condition is according to ANSI C63.4-2003.

Setup the EUT and simulators as shown on follow.

Enable RF signal and confirm EUT active.

Modulate output capacity of EUT up to specification.



6.6. Conducted Power line Emission Limits

| FCC Part 15 Paragraph 15.207 (dBuv) | | |
|-------------------------------------|---------------|---------------|
| Frequency Range (MHZ) | Class A QP/AV | Class B QP/AV |
| 0.15-0.5 | 79/66 | 65-56/56-46 |
| 0.5-5.0 | 73/60 | 56-46 |
| 5.0-3.0 | 73/60 | 60-50 |

Note: In the above table, the tighter limit applies at the band edges.

6.7. Conducted Power Line Test Result

N/A

7. RADIATED EMISSION TEST

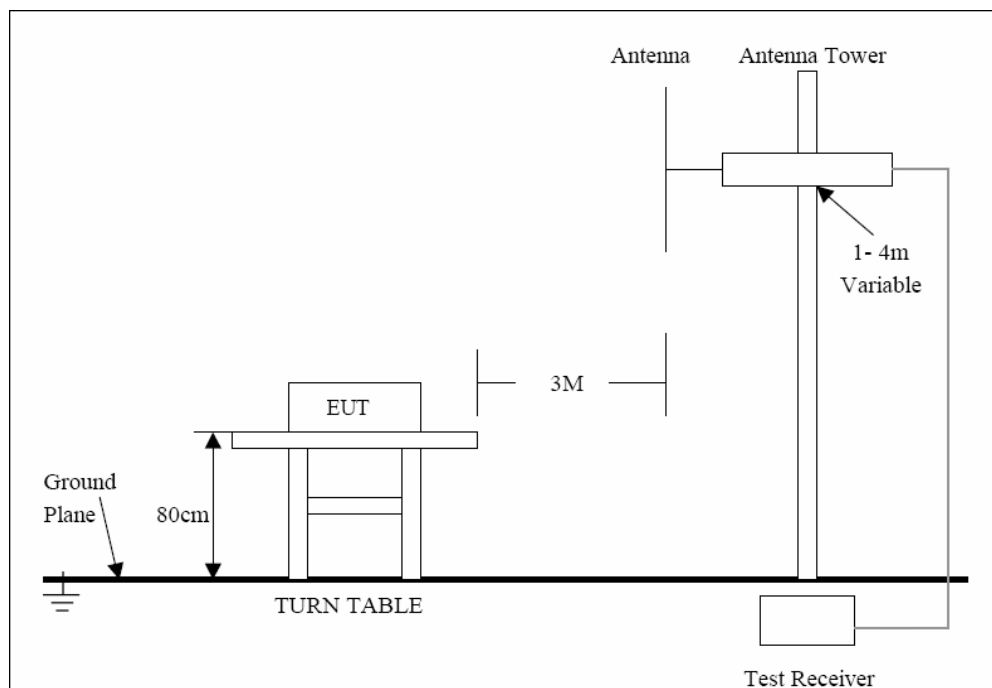
7.1. Test Equipment

Please refer to section 4 this report.

7.2. Test Procedure

1. The EUT was tested according C63.4-2003.The radiated test was performed at FCC Registration laboratory .
2. The EUT,peripherals were put on the turntable which table size od 1m×1.5m,table high 0.8m.All set up is according tl ANSI C63.4-2003.
3. The frequency spectrum from 30MHZ to 1 GHZ was investigated.All readings from 30MHZ to 1 GHZ are quasi-peak values with a resolution bandwidth of 120 KHZ. All readings are above 1GHZ ,prak values with a resolution bandwidth of 1 MHZ.Measurements were made at 3 merers.
4. The antenna high is varied from 1m to 4m high to find the maximum emission for each frequency.
5. Maximizing procedure was performed on the six(6)highest emissions to ensure EUT compliance is with all installation combinations.All data was recorded in the peak detection mode.Quasi-peak readings was performed only when an emission was found to be marginal (within -4 Db of specification limit),and are distinguished with a “QP” in the data table.
6. The antenna polarization:Vertical polarization and Horizontal polarization.

7.3. Radiated Test Setup



For the accrual test configuration, please refer to the related items-photos of Testing.

7.4. Configuration of the EUT

Same as section 5.4 of this report

7.5. EUT Operating Condition

Same as section 5.5 of this report.

7.6. Radiated Emission Limit

All emission from a digital device,including any network of conductors and apparatus connected thereto,shall not exceed the level of field strength specified below :

A . FCC Part 15 Subpart C Paragraph 15.249(a) Limit

| Frequency (MHZ) | Distance (m) | Field Strength (dBuV/m) |
|--------------------|-----------------|----------------------------|
| 30-88 | 3 | 40.0 |
| 88-216 | 3 | 43.5 |
| 216-960 | 3 | 46.0 |
| ABOVE 960 | 3 | 54.0 |

Note: (1) RF Voltage (DbUv)=20 log Voltage(Uv)

(2) Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

(3) The emission limit in this paragraph is based on measurement instrumentation employing an average detector.Measurement using instrumentation with a peak

| Fundamental Frequency (MHZ) | Field as strength of Fundamental(3m) | | | Field as strength of Harmonics(3m) | | |
|-----------------------------------|--------------------------------------|-------------|-----------|------------------------------------|-------------|----------|
| | Mv/m | dBuV/M | | Uv/m | DBuV/M | |
| 902~928 | 50 | 94(Average) | 114(Peak) | 500 | 54(Average) | 74(Peak) |
| 2400~2483.5 | 50 | 94(Average) | 114(Peak) | 500 | 54(Average) | 74(Peak) |

detector function,corresponding to 20dB above the maximum permitted average limit.

B.Frequencies in restricted band are complied to limit on Paragraph 15.209.

Note: (1) RF Voltage (DbUv)=20 log Voltage(Uv)

(2) In the Above Table,the tighter limit applies at the band edges.

(3) Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

7.7. Radiated Emission Test Result

A.Fundamental Radiated Emission Data

| | | | |
|---------------|------------------------------------|--------------|------------------|
| Product: | Voting System | Test mode: | CH Low ~ CH High |
| Test Item: | Fundamental Radiated Emission Data | Temperature: | 25 |
| Test Voltage: | DC3V | Humidity: | 56%RH |
| Test Result: | PASS | | |

CH Low

| Freq. (MHz) | Emission(dBuV/m) Peak Detector/ AV | HORIZ/ VERT | Limits(dBuV/m) Peak/AVERAGE | Margin (Db) |
|----------------|---------------------------------------|----------------|--------------------------------|----------------|
| 2402.0 | 88.54/85.32 | HORIZ | 114/94 | 25.46/8.68 |
| 2402.0 | 89.43/86.64 | VERT | 114/94 | 24.57/7.36 |

CH Middle

| Freq. (MHz) | Emission(dBuV/m) Peak Detector/ AV | HORIZ/ VERT | Limits(dBuV/m) Peak/AVERAGE | Margin (Db) |
|----------------|---------------------------------------|----------------|--------------------------------|----------------|
| 2448.01 | 85.7/82.3 | HORIZ | 114/94 | 28.3/11.7 |
| 2448.01 | 88.4/85.5 | VERT | 114/94 | 25.6/8.5 |

CH High

| Freq. (MHz) | Emission(dBuV/m) Peak Detector/ AV | HORIZ/ VERT | Limits(dBuV/m) Peak/AVERAGE | Margin (Db) |
|----------------|---------------------------------------|----------------|--------------------------------|----------------|
| 2480.0 | 85.6/83.7 | HORIZ | 114/94 | 28.4/10.3 |
| 2480.0 | 86.3/84.4 | VERT | 114/94 | 27.7/9.6 |

B.Harmonics Radiated Emission Data

| | | | |
|---------------|------------------------|--------------|------------------|
| Product: | Voting System | Test mode: | CH Low ~ CH High |
| Test Item: | Radiated Emission Data | Temperature: | 25 |
| Test Voltage: | DC3V | Humidity: | 56%RH |
| Test Result: | PASS | | |

CH Low

| Freq. (MHz) | Emission(dBuV/m) Peak Detector | HORIZ/ VERT | Limits(dBuV/m) Peak/AVERAGE | Margin (Db) |
|----------------|-----------------------------------|----------------|--------------------------------|----------------|
| 4804 | - | H/V | 74.0/54.0 | - |
| 7206 | - | H/V | 74.0/54.0 | - |
| 9608 | - | H/V | 74.0/54.0 | - |
| 12010 | - | H/V | 74.0/54.0 | - |
| 14412 | - | H/V | 74.0/54.0 | - |
| 16814 | - | H/V | 74.0/54.0 | - |
| 19216 | - | H/V | 74.0/54.0 | - |
| 21618 | - | H/V | 74.0/54.0 | - |
| 24020 | - | H/V | 74.0/54.0 | - |

CH Middle

| Freq. (MHz) | Emission(dBuV/m) Peak Detector | HORIZ/ VERT | Limits(dBuV/m) Peak/ACERAGE | Margin (Db) |
|----------------|-----------------------------------|----------------|--------------------------------|----------------|
| 4896.02 | - | H/V | 74.0/54.0 | - |
| 7344.03 | - | H/V | 74.0/54.0 | - |
| 9792.04 | - | H/V | 74.0/54.0 | - |
| 12240.05 | - | H/V | 74.0/54.0 | - |
| 14688.06 | - | H/V | 74.0/54.0 | - |
| 17136.07 | - | H/V | 74.0/54.0 | - |
| 19584.08 | - | H/V | 74.0/54.0 | - |
| 22032.09 | - | H/V | 74.0/54.0 | - |
| 24480.1 | - | H/V | 74.0/54.0 | - |

CH High

| Freq. (MHz) | Emission(dBuV/m) Peak Detector | HORIZ/ VERT | Limits(dBuV/m) Peak/ACERAGE | Margin (Db) |
|----------------|-----------------------------------|----------------|--------------------------------|----------------|
| 4960 | - | H/V | 74.0/54.0 | - |
| 7440 | - | H/V | 74.0/54.0 | - |
| 9920 | - | H/V | 74.0/54.0 | - |
| 12400 | - | H/V | 74.0/54.0 | - |
| 14880 | - | H/V | 74.0/54.0 | - |
| 17360 | - | H/V | 74.0/54.0 | - |
| 19840 | - | H/V | 74.0/54.0 | - |
| 22320 | - | H/V | 74.0/54.0 | - |
| 24800 | - | H/V | 74.0/54.0 | - |

Note: - means the emission is too low at least 20dB to the limit.

C. General Radiated Emission Data

| | | | |
|---------------|------------------------|--------------|-------|
| Product: | Voting System | Test mode: | - |
| Test Item: | Radiated Emission Data | Temperature: | 25 |
| Test Voltage: | DC3V | Humidity: | 56%RH |
| Test Result: | PASS | | |

| Freq. (MHz) | Emission(dBuV/m) Peak Detector | HORIZ/ VERT | Limits(dBuV/m) Peak/ACERAGE | Margin (Db) |
|----------------|-----------------------------------|----------------|--------------------------------|----------------|
| 318.112 | 20.8 | HORIZ | 46 | 25.2 |
| 318.124 | 16.6 | VERT | 46 | 29.4 |
| 560.325 | 25.8 | HORIZ | 46 | 20.2 |
| 560.325 | 24.9 | VERT | 46 | 21.1 |
| 953.925 | 31.6 | HORIZ | 46 | 14.4 |
| 946.650 | 30.0 | VERT | 46 | 16.0 |

8. BAND EDGE

8.1. Test Equipment

Please refer to Section 4 this report.

8.2. Test Procedure

1. The EUT was tested according C63.4-2003.The radiated test was performed at FCC Registration laboratory .
2. The transmitter output was connected to the spectrum analyzer via a low lose cable. Set both RBW and VBW of spectrum analyzer to 100 kHz with suitable frequency span including 100 MHz bandwidth from band edge. The band edges was measured and recorded.

8.3. Configuration of The EUT

Same as section 5.4 of this report

8.4. EUT Operating Condition

Same as section 5.5 of this report

8.5. Band Edge FCC 15.249(d) Limit

In any 100kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating,the radio frequency power that is produced by the intentional radiator shall be at least 50dB below that in the 100kHz bandwidth within the band that contains the desired power,based on either an RF conducted or a radited measurement,Attenuation below the general limits specified in Section 15.209(a) is not required. In addition,radiated emissions which fall in the restricted bands as defined in Section 15.205(a),must also comply with the radiated emission limits specitfied in Section 15.209(a) (see Section 15.205(c)).

8.6. Band Edge Test Result

| | | | |
|---------------|---------------|--------------|----------------|
| Product: | Voting System | Test mode: | CH Low,CH High |
| Test Item: | - | Temperature: | 25 |
| Test Voltage: | DC3V | Humidity: | 56%RH |
| Test Result: | PASS | | |

Out of band emission

| Frequency | Reading | Detector | Direction | Height | Polar | Antenna Loss | Cable loss | Amplifier | Correction Reading | FCC 15.249 | FCC 15.249 |
|-----------|---------|----------|-----------|--------|-------|--------------|------------|-----------|--------------------|------------|------------|
| MHz | dBμV/m | PK//AV | Degree | Meter | H / V | dB | dB | dB | dBμV/m | Limit | Margin |
| 2345.3 | 34.15 | AV | 20 | 1.2 | H | 28.9 | 3.61 | 35 | 31.66 | 54 | 22.34 |
| 2345.3 | 39.30 | PK | 263 | 1.4 | H | 28.9 | 3.61 | 35 | 36.81 | 74 | 37.19 |
| 2327.7 | 34.19 | AV | 49 | 1.2 | V | 30.6 | 3.61 | 35 | 33.4 | 54 | 20.6 |
| 2327.7 | 39.79 | PK | 270 | 1.6 | V | 30.6 | 3.61 | 35 | 39.0 | 74 | 35.0 |
| 2489.2 | 32.34 | AV | 168 | 1.6 | H | 28.9 | 4 | 35 | 30.24 | 54 | 23.76 |
| 2489.2 | 36.69 | PK | 268 | 1.6 | H | 28.9 | 4 | 35 | 34.59 | 74 | 39.41 |
| 2488.8 | 32.74 | AV | 230 | 1.8 | V | 30.6 | 4 | 35 | 32.34 | 54 | 21.66 |
| 2488.8 | 38.15 | PK | 230 | 1.8 | V | 30.6 | 4 | 35 | 37.75 | 74 | 36.25 |

