Shenzhen Certification Technology Service Co., Ltd
3F, Bldg27,Area A, Tanglang Industrial Zone, Xili Town, Nanshan District, Shenzhen, Guang dong, P.R. China.

# TEST REPORT

## FCC ID: W8TVS1-01
## IC ID:8251AVS1-01

**Applicant : VERSUS LIMITED**
**Address : UNIT 15,11/F,WAH WAI CENTER,38-40 AU PUI WAN STREET,FOTAN,HONG KONG**

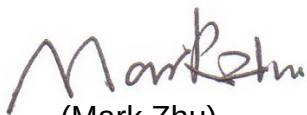
**Equipment under Test (EUT):**

**Name** : VERSUS SCOREBOARD
**Model** : VS1-01
**Standards** : FCC PART 15, SUBPART C : 2008 ( 15.249)&RSS210（A2.9）

**Report No.** : STE090311067
**Date of Test** : March 16,2009
**Date of Issue** : March 20,2009

| **Test Result :** | **PASS *** |
|---|---|

* In the configuration tested, the EUT complied with the standards specified above
Authorized Signature



(Mark Zhu)
General Manager

The manufacture should ensure that all the products in series production are in conformity with the product sample detailed in this report.

If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of Shenzhen Certification Technology Service Co., Ltd. Or test done by Shenzhen Certification Technology Service Co., Ltd. Approvals in connection with, distribution or use of the product described in this report must be approved by Shenzhen Certification Technology Service Co., Ltd. Approvals in writing.

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# 1 General Information

## 1.1 Description of Device (EUT)

| | | |
|---|---|---|
| Trade Name | : | N/A |
| EUT | : | VERSUS SCOREBOARD |
| Model No. | : | VS1-01 |
| Type of Antenna | : | Integral Antenna |
| Operation Frequency | : | 2439.5~2483.5MHZ |
| Modulation type | | GFSK |
| Power Supply | : | DC 12V/3A supply by adapter or 8 D-Cell battery |
| Rated RF output Power | | 71.5dBuV/M(Peak Detector) |
| Applicant | : | VERSUS LIMITED |
| Address | : | UNIT 15,11/F,WAH WAI CENTER,38-40 AU PUI WAN STREET,FOTAN,HONG KONG |
| Manufacturer | : | PAT TAT PLASTIC METAL CO.,LIMITED |
| Address | : | UNIT 15,11/F,WAH WAI CENTER,38-40 AU PUI WAN STREET,FOTAN,HONG KONG |

## 1.2 Description of Test Facility

Shenzhen Certification Technology Service Co.,Ltd.
3F, Bldg.27, Area A, Tanglang Industrial Zone, Xili Town, Nanshan District,
Shenzhen 518055, Guangdong, P.R. China
FCC Registered No.:305283

# 2 Test Equipment List

| Equipment | Manufacture | Model No. | Serial No. | Last cal. | Cal Interval |
|---|---|---|---|---|---|
| 3m Semi-Anechoic | ETS-LINDGREN | N/A | SEL0017 | 16/06/2008 | 1Year |
| Spectrum analyzer | Agilent | E4443A | MY46185649 | 06/06/2008 | 1Year |
| Receiver | R&S | ESCI | 100492 | 04/06/2008 | 1Year |
| Receiver | R&S | ESCI | 101202 | 07/01/2008 | 1Year |
| Bilog Antenna | Sunol | JB3 | A121206 | 04/06/2008 | 1Year |
| Horn Antenna | EMCO | 3115 | 640201028-06 | 04/06/2008 | 1Year |
| ETS Horn Antenna | ETS | 3160 | SEL0076 | 12/08/2008 | 1Year |
| Active Loop Antenna | Beijing Daze | ZN30900A | SEL0097 | 15/06/2008 | 1Year |
| Cable | Resenberger | N/A | No.1 | 04/06/2008 | 1Year |
| Cable | SCHWARZBECK | N/A | No.2 | 04/06/2008 | 1Year |
| Cable | SCHWARZBECK | N/A | No.3 | 04/06/2008 | 1Year |
| Pre-amplifier | R&S | AFS42-00101800-25-S-42 | SEL0081 | 18/06/2008 | 1Year |
| Pre-amplifier | R&S | AFS33-18002650-30-8P-44 | SEL0080 | 18/06/2008 | 1Year |

# 3 Summary of Measurement

| Test Item | Test Requirement | Standard Paragraph | Result |
|---|---|---|---|
| Radiation Emission | FCC PART15/RSS210 | 15.209/A2.7 Table2 | Compliance |
| Maximum Carrier Field Strength | FCC PART15/RSSGen | 15.249/A2.9 | Compliance |
| Conducted Emission | FCC PART15/RSSGen | 15.207/7.2.2 | Compliance |
| Band edge Requirement | FCC PART15/RSS210 | 15.249/A2.9 | Compliance |
| Antenna Requirement | FCC PART15/RSSGen | 15.203/7.1.4 | Compliance |

# 4 Radiated Emission Measurement

## 4.1 Radiated Emission Limits(15.209)&A2.7 Table2

| **Frequency (MHZ)** | **Field Strength Limits at 3 metres** | | |
|---|---|---|---|
| | uV/m | dB uV/m | Measurement distance(m) |
| 0.009-0.490 | 2400/F(kHz) | XX | 300 |
| 0.490-1.705 | 24000/F(kHz) | XX | 30 |
| 1.705-30 | 30 | 29.5 | 30 |
| 30~88 | 100(3nW) | 40 | 3 |
| 88~216 | 150(6.8nW) | 43.5 | 3 |
| 216~960 | 200(12nW) | 46 | 3 |
| Above960 | 500(75nW) | 54 | 3 |

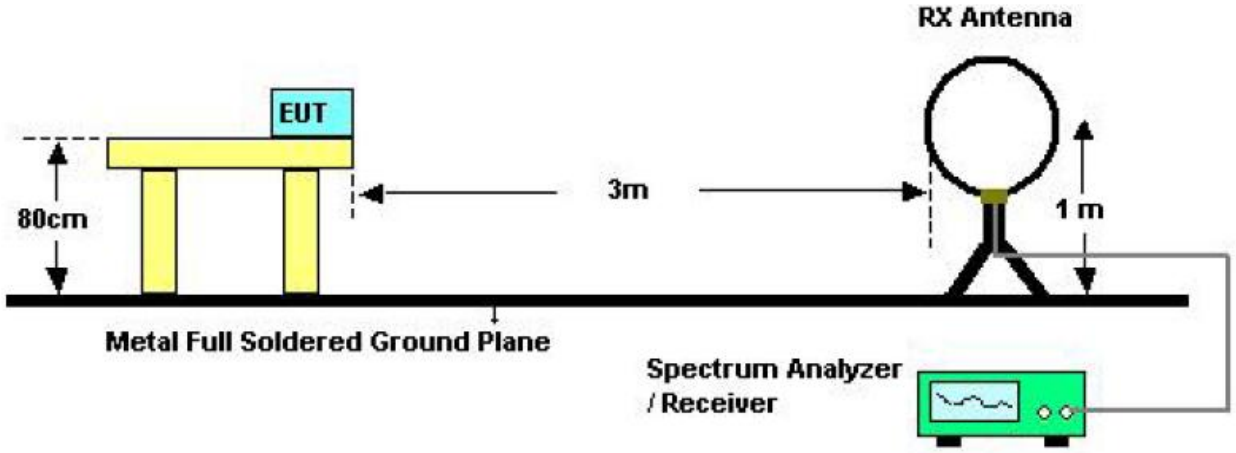
**NOTE:**

a) The tighter limit applies at the band edges.
b) Emission Level(dB uV/m)=20log Emission Level(uV/m)

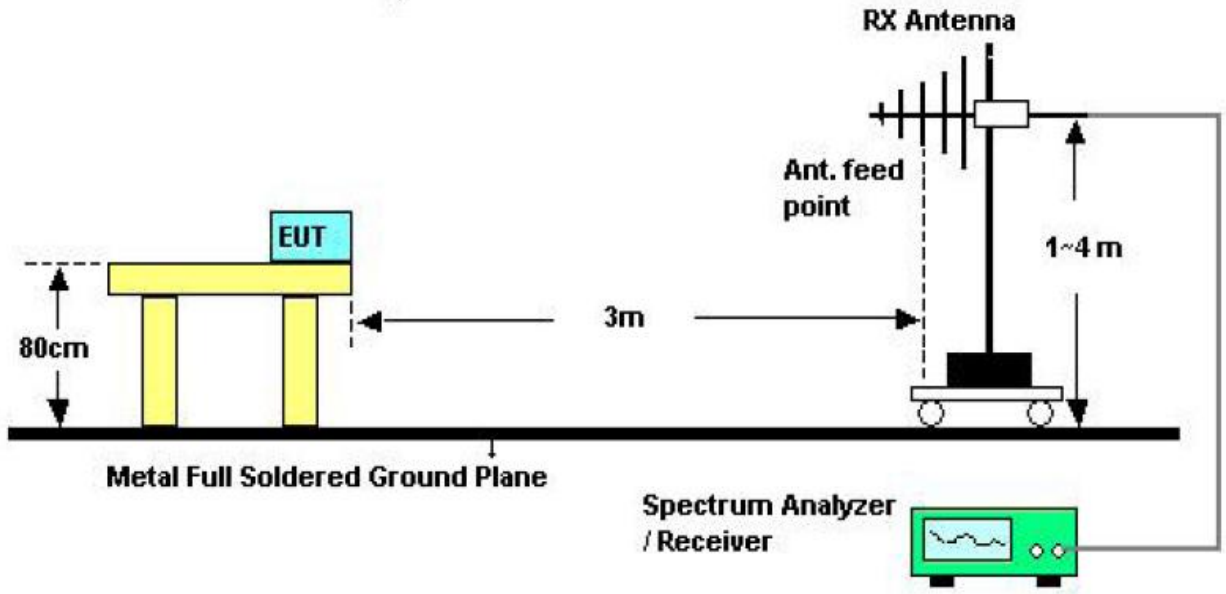
Remark: **Emissions attenuated more than 20 dB below the permissible value are not reported.**

# Test Setup for Emission measurement

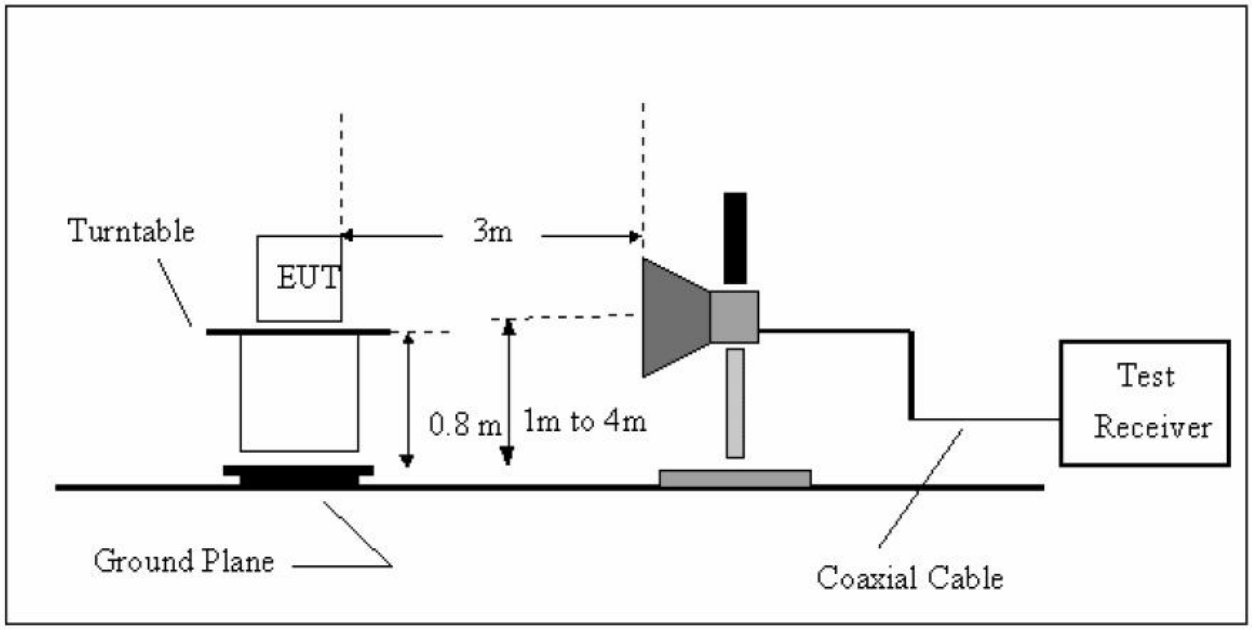
## 4.2.1Test Setup for Emission below 30MHz




## 4.2.2Test Setup for Emission above 30MHz



4.2.3Test Setup for Emission above 1GHz



## Test Procedure

a) The measuring distance of 3m shall be used for measurements at frequency up to 1GHZ and above 1 GHZ, The EUT was placed on a rotating 0.8 m high above ground. The table was rotated 360 degrees to determine the position of the highest radiation

b) The Test antenna shall vary between 1m and 4m. Both Horizontal and Vertical antenna are set to make measurement.

c) The initial step in collecting conducted emission data is a spectrum analyzer Peak detector mode pre-scanning the measurement frequency range. Significant Peaks are then marked and then Qusia Peak Detector mode premeasured

d) If Peak value comply with QP limit Below 1GHZ.The EUT deemed to comply with QP limit. But the Peak value and average value both need to comply with applicable limit above 1GHZ.

e) For the actual test configuration, please see the test setup photo.

f) Test Equipment Setting For emission test:

30MHZ~1GHZ:
(QP Detector) RBW 120KHZ VBW 300KHZ

Above 1GHZ :
RBW 1MHZ VBW 3MHZ for Peak value
RBW 1MHZ VBW 10HZ for Average Value

# Test Results

## Test Results for Emission Below 1GHz

| | | | |
|---|---|---|---|
| **EUT** | VERSUS SCOREBOARD | **Model Name** | VS1-01 |
| **Temperature** | 26°C | **Relative Humidity** | 55% |
| **Pressure** | 960hPa | **Test voltage** | DC12V by adapter |
| **Test Mode** | TX(High Channel) | **Antenna polarization** | Horizontal/Vertical |

| **Antenna polarization: Horizontal** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Frequency MHZ** | **Reading dBuV** | **Cable Loss dB** | **Antenna Factor dB** | **Amplifier Gain** | **Correct Factor dB** | **Measurement Result dBuV/m** | **Limit line dBuV/m** | **Over Margin** |
| 133.19 | 51.32 | 1.01 | 9.93 | 28.1 | -17.16 | 34.16 | 43.5 | -9.34 |
| 144.07 | 50.28 | 1.14 | 7.48 | 28.07 | -19.45 | 30.83 | 43.5 | -12.67 |
| 192.35 | 53.14 | 1.19 | 9.06 | 27.89 | -17.64 | 35.5 | 43.5 | -8 |
| 400 | 49.67 | 1.25 | 8.08 | 27.71 | -18.38 | 31.29 | 46 | -10.5 |
| 749.6 | 45.61 | 1.64 | 11.07 | 26.95 | -14.24 | 31.37 | 46 | -14.71 |
| 892.1 | 43.19 | 2.72 | 15.05 | 27.58 | -9.81 | 33.38 | 46 | -12.62 |
| -- | -- | -- | -- | -- | -- | -- | -- | -- |

| **Antenna polarization: Vertical** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Frequency MHZ** | **Reading dBuV** | **Cable Loss dB** | **Antenna Factor dB** | **Amplifier Gain** | **Correct Factor dB** | **Measurement Result dBuV/m** | **Limit line dBuV/m** | **Over Margin** |
| 48.02 | 48.98 | 0.8 | 7.65 | 28.07 | -19.62 | 29.36 | 40 | -10.64 |
| 140.07 | 51.34 | 1.19 | 9.06 | 27.89 | -17.64 | 33.7 | 43.5 | -9.8 |
| 190.31 | 50.34 | 1.63 | 12.04 | 26.95 | -13.28 | 37.06 | 43.5 | -6.44 |
| 298.4 | 49.27 | 1.13 | 16 | 27.25 | -10.12 | 39.15 | 46 | -6.85 |
| 733.1 | 44.71 | 1.75 | 11.58 | 27.53 | -14.2 | 30.51 | 46 | -15.49 |
| 838.4 | 46.83 | 2.51 | 16.2 | 26.55 | -7.84 | 38.99 | 46 | -7.01 |
| -- | -- | -- | -- | -- | -- | -- | -- | -- |

| **EUT** | VERSUS SCOREBOARD | **Model Name** | VS1-01 |
|---|---|---|---|
| **Temperature** | 26°C | **Relative Humidity** | 55% |
| **Pressure** | 960hPa | **Test voltage** | DC12V by adapter |
| **Test Mode** | TX(Low&Middle Channel) | **Antenna polarization** | Horizontal/Vertical |

| **Antenna polarization: Horizontal** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Frequency MHZ** | **Reading dBuV** | **Cable Loss dB** | **Antenna Factor dB** | **Amplifier Gain** | **Correct Factor dB** | **Measurement Result dBuV/m** | **Limit line dBuV/m** | **Over Margin** |
| -- | -- | -- | -- | -- | -- | -- | -- | -- |
| -- | -- | -- | -- | -- | -- | -- | -- | -- |
| -- | -- | -- | -- | -- | -- | -- | -- | -- |

| **Antenna polarization: Vertical** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Frequency MHZ** | **Reading dBuV** | **Cable Loss dB** | **Antenna Factor dB** | **Amplifier Gain** | **Correct Factor dB** | **Measurement Result dBuV/m** | **Limit line dBuV/m** | **Over Margin** |
| -- | -- | -- | -- | -- | -- | -- | -- | -- |
| -- | -- | -- | -- | -- | -- | -- | -- | -- |
| -- | -- | -- | -- | -- | -- | -- | -- | -- |

| **EUT** | VERSUS SCOREBOARD | **Model Name** | VS1-01 |
|---|---|---|---|
| **Temperature** | 26°C | **Relative Humidity** | 55% |
| **Pressure** | 960hPa | **Test voltage** | DC12V by battery |
| **Test Mode** | TX(Low&Middle&High Channel) | **Antenna polarization** | Horizontal/Vertical |

| **Antenna polarization: Horizontal** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Frequency MHZ** | **Reading dBuV** | **Cable Loss dB** | **Antenna Factor dB** | **Amplifier Gain** | **Correct Factor dB** | **Measurement Result dBuV/m** | **Limit line dBuV/m** | **Over Margin** |
| -- | -- | -- | -- | -- | -- | -- | -- | -- |
| -- | -- | -- | -- | -- | -- | -- | -- | -- |
| -- | -- | -- | -- | -- | -- | -- | -- | -- |

| **Antenna polarization: Vertical** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Frequency MHZ** | **Reading dBuV** | **Cable Loss dB** | **Antenna Factor dB** | **Amplifier Gain** | **Correct Factor dB** | **Measurement Result dBuV/m** | **Limit line dBuV/m** | **Over Margin** |
| -- | -- | -- | -- | -- | -- | -- | -- | -- |
| -- | -- | -- | -- | -- | -- | -- | -- | -- |
| -- | -- | -- | -- | -- | -- | -- | -- | -- |

**Notes:** --Means other frequency and mode comply with standard requirements and at least have 20dB margin.
Correct Factor=Cable Loss+Antenna Factor-Amplifier Gain
Measurement Result=Reading + Correct Factor
Margin=Measurement Result-Limit

| **EUT** | VERSUS SCOREBOARD | **Model Name** | VS1-01 |
|---|---|---|---|
| **Temperature** | 26°C | **Relative Humidity** | 55% |
| **Pressure** | 960hPa | **Test voltage** | DC12V by battery or by a adapter |
| **Test Mode** | USB /Line in/Standby | **Antenna polarization** | Horizontal/Vertical |

| **Antenna polarization: Horizontal** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Frequency MHZ** | **Reading dBuV** | **Cable Loss dB** | **Antenna Factor dB** | **Amplifier Gain** | **Correct Factor dB** | **Measurement Result dBuV/m** | **Limit line dBuV/m** | **Over Margin** |
| -- | -- | -- | -- | -- | -- | -- | -- | -- |
| -- | -- | -- | -- | -- | -- | -- | -- | -- |
| -- | -- | -- | -- | -- | -- | -- | -- | -- |

| **Antenna polarization: Vertical** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Frequency MHZ** | **Reading dBuV** | **Cable Loss dB** | **Antenna Factor dB** | **Amplifier Gain** | **Correct Factor dB** | **Measurement Result dBuV/m** | **Limit line dBuV/m** | **Over Margin** |
| -- | -- | -- | -- | -- | -- | -- | -- | -- |
| -- | -- | -- | -- | -- | -- | -- | -- | -- |
| -- | -- | -- | -- | -- | -- | -- | -- | -- |

**Notes:** --Means other frequency and mode comply with standard requirements and at least have 20dB margin.

Correct Factor=Cable Loss+Antenna Factor-Amplifier Gain

Measurement Result=Reading + Correct Factor

Margin=Measurement Result-Limit

Test Results for Emission Above 1GHz

| **EUT** | VERSUS SCOREBOARD | **Model Name** | VS1-01 |
|---|---|---|---|
| **Temperature** | 26°C | **Relative Humidity** | 55% |
| **Pressure** | 960hPa | **Test voltage** | DC12V by adapter |
| **Test Mode** | TX | **Antenna polarization** | Horizontal/Vertical |

**Channel Low**

| Fre. | Plority | Reading | | Antenna | Cable | Amplifier | Correct | Measure Result | | Limit | | Margin | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MHz | H/V | PK dBuV | AV dBuV | Factor dB | Loss dB | Gain dB | Factor dB | PK dBuV | AV dBuV | PK dBuV | AV dBuV | PK dBuV | AV dBuV |
| 2390 | H | 70.58 | 55.58 | 33.58 | 2.5 | 46.68 | -10.6 | 59.98 | 44.98 | 74 | 54 | -14.02 | -9.02 |
| 4808 | H | 67.32 | 49.07 | 34.04 | 2.71 | 45.4 | -8.65 | 58.67 | 40.42 | 74 | 54 | -15.33 | -13.58 |
| 7222 | H | 64.51 | 46.15 | 36.29 | 3.15 | 44.49 | -5.05 | 59.46 | 41.1 | 74 | 54 | -14.54 | -12.9 |
| -- | | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | | | | | | | | | | | | | |
| 2400 | V | 70.18 | 57.25 | 33.75 | 2.56 | 46.18 | -9.87 | 60.31 | 47.38 | 74 | 54 | -13.69 | -6.62 |
| 4808 | V | 67.51 | 48.93 | 34.04 | 2.7 | 45.4 | -8.66 | 58.85 | 40.27 | 74 | 54 | -15.15 | -13.73 |
| -- | | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | V | | | | | | | | | | | | |

**Channel Middle**

| Fre. | Plority | Reading | | Antenna | Cable | Amplifier | Correct | Measure Result | | Limit | | Margin | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MHz | H/V | PK dBuV | AV dBuV | Factor dB | Loss dB | Gain dB | Factor dB | PK dBuV | AV dBuV | PK dBuV | AV dBuV | PK dBuV | AV dBuV |
| 4893 | H | 63.87 | 50.53 | 34.02 | 2.72 | 45.42 | -8.68 | 55.19 | 41.85 | 74 | 54 | -18.81 | -12.15 |
| 7324 | H | 60.19 | 42.73 | 36.1 | 3.16 | 43.39 | -4.13 | 56.06 | 38.6 | 74 | 54 | -17.94 | -15.4 |
| -- | | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | | | | | | | | | | | | | |
| 4882.5 | V | 64.57 | 50.22 | 34.02 | 2.72 | 45.42 | -8.68 | 55.89 | 41.54 | 74 | 54 | -18.11 | -12.46 |
| 7333.8 | V | 60.58 | 44.33 | 36.1 | 3.16 | 44.37 | -5.11 | 55.47 | 39.22 | 74 | 54 | -18.53 | -14.78 |
| 12210 | V | 57.28 | 44.49 | 38.93 | 3.84 | 43.59 | -0.82 | 56.46 | 43.67 | 74 | 54 | -17.54 | -10.33 |
| -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| Channel High | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Fre.** | **Plority** | **Reading** | | **Antenna** | **Cable** | **Amplifier** | **Correct** | **Measure Result** | | **Limit** | | **Margin** | |
| **MHz** | **H/V** | **PK dBuV** | **AV dBuV** | **Factor dB** | **Loss dB** | **Gain dB** | **Factor dB** | **PK dBuV** | **AV dBuV** | **PK dBuV** | **AV dBuV** | **PK dBuV** | **AV dBuV** |
| 2500 | H | 68.97 | 52.17 | 33.74 | 2.65 | 45.85 | -9.46 | 59.51 | 42.71 | 74 | 54 | -14.49 | -11.29 |
| 4962 | H | 61.75 | 47.94 | 34.01 | 2.74 | 45.44 | -8.69 | 53.06 | 39.25 | 74 | 54 | -20.94 | -14.75 |
| 7453 | H | 58.27 | 47.83 | 35.88 | 3.18 | 44.25 | -5.19 | 53.08 | 42.64 | 74 | 54 | -20.92 | -11.36 |
| -- | | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | | | | | | | | | | | | | |
| 7443 | V | 60.24 | 47.82 | 35.91 | 3.18 | 44.26 | -5.17 | 55.07 | 42.65 | 74 | 54 | -18.93 | -11.35 |
| 9925 | V | 56.37 | 48.07 | 37.23 | 3.49 | 41.92 | -1.2 | 55.17 | 46.87 | 74 | 54 | -18.83 | -7.13 |
| -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | | | | | | | | | | | | | |

**Notes:** --Means other frequency and mode comply with standard requirements and at least have 20dB margin. (We have scanned up the 10th harmonics about the EUT)
Correct Factor=Cable Loss+Antenna Factor-Amplifier Gain
Measurement Result=Reading + Correct Factor
Margin=Measurement Result-Limit

| **EUT** | VERSUS SCOREBOARD | **Model Name** | VS1-01 |
|---|---|---|---|
| **Temperature** | 26°C | **Relative Humidity** | 55% |
| **Pressure** | 960hPa | **Test voltage** | DC12V by battery |
| **Test Mode** | TX/Standby(by adapter) | **Antenna polarization** | Horizontal/Vertical |

| **Channel High** | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Fre.** | **Plority** | **Reading** | | **Antenna** | **Cable** | **Amplifier** | **Correct** | **Measure Result** | | **Limit** | | **Margin** | |
| **MHz** | **H/V** | **PK dBuV** | **AV dBuV** | **Factor dB** | **Loss dB** | **Gain dB** | **Factor dB** | **PK dBuV** | **AV dBuV** | **PK dBuV** | **AV dBuV** | **PK dBuV** | **AV dBuV** |
| -- | H | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| -- | H | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| -- | H | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | | | | | | | | | | | | | |
| -- | V | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| -- | V | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| -- | V | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |

**Notes:** --Means other frequency and mode comply with standard requirements and at least have 20dB margin. (We have scanned up the 10th harmonics about the EUT)
Correct Factor=Cable Loss+Antenna Factor-Amplifier Gain
Measurement Result=Reading + Correct Factor
Margin=Measurement Result-Limit

# 5 Maximum carrier field strength

## 5.1 Limit (15.249/RSS210 A2.9)

| **Frequency (MHZ)** | **Field Strength Limits at 3 metres** | | | | |
|---|---|---|---|---|---|
| | Fundamental dB uV/m | | Harmonic dB uV/m | | Measurement distance(m) |
| | PK | AV | PK | AV | 3m |
| 2400~2483.5 | 114 | 94 | 74 | 54 | |

## 5.2 Method of measurement

Same as 5.3

## 5.3 Test Setup

Same as section 5.2

## 5.4 Test Results

| **Frequency (MHZ)** | **Read Level (dBuV/m)** | **Level (dBuV/m)** | **Limit line (dBuV/m)** | **Over Limit (dB)** | **Detector** | **Antenna (H/V)** |
|---|---|---|---|---|---|---|
| 2439.5 | 33.53 | 63.66 | 94 | -30.34 | Average | V |
| 2439.5 | 41.37 | 71.5 | 114 | -42.5 | Peak | V |
| 2461.5 | 33.31 | 63.6 | 94 | -30.4 | Average | V |
| 2461.5 | 40.71 | 71 | 114 | -43 | Peak | V |
| 2483.5 | 11.07 | 41.47 | 94 | -52.53 | Average | V |
| 2483.5 | 39.09 | 59.09 | 114 | -54.91 | Peak | V |
| -- | -- | -- | -- | -- | -- | |

Notes:--means harmonic frequency at least have 20dB margin.
H/V means the antenna polarity.
Above is maximum data. the test mode is TX by a adapter.

# 6 Conducted Emission Test

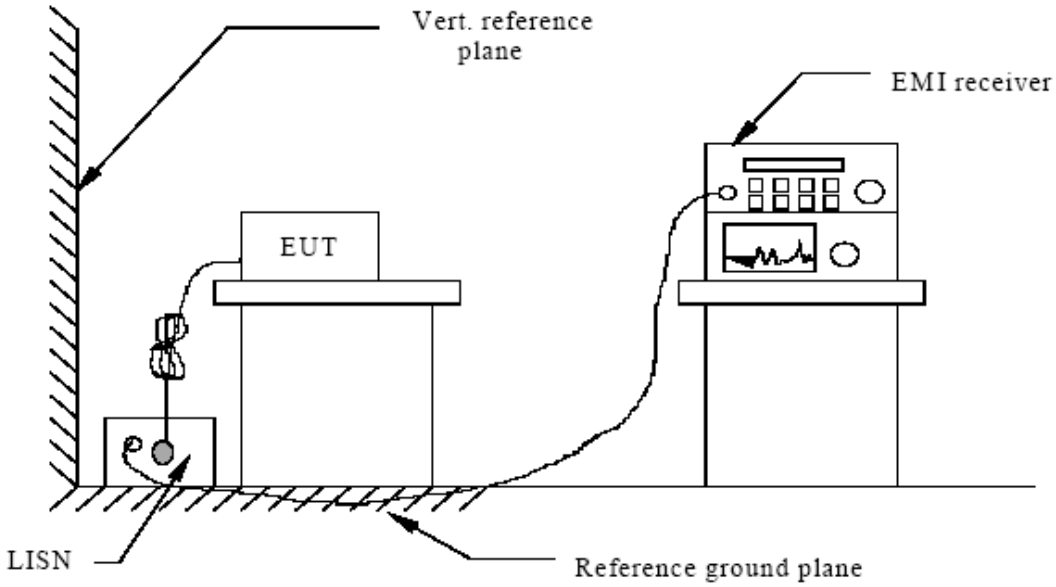
## 6.1 Conducted Emission Limits

| Frequency of Emission(MHZ) | Conducted Limit(dBuV) | |
|---|---|---|
| | Quasi-peak | Average |
| 0.15-0.5<br>0.5-5<br>5-30 | 66 to 56<br>56<br>60 | 56 to 46<br>46<br>50 |

## 6.2 Test Procedure

The EUT is put on the plane 0.8m high above the ground by insulating support and connected to the AC mains through a Line Impedance Stability Network (L.I.S.N). This provided a 50ohm coupling impedance for the tested equipments. Both sides of AC line are investigated to find out the maximum conducted emission according to the FCC PART15 regulations during conducted emission test.
The bandwidth of the field strength meter (R&S Test Receiver ESCI) is set at 9 KHz. The frequency range from 150 kHz to 30MHz is investigated.

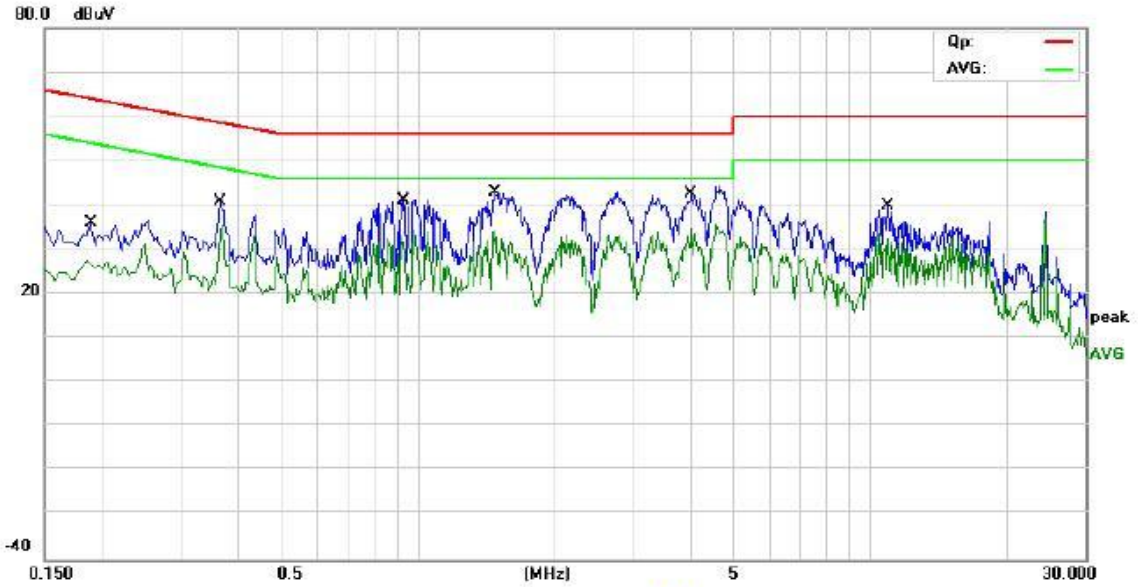
## 6.3 Test Setup




## 6.4 Test Results

PASS, Please see the following page.

**Conducted Emission Measurement**




Site site #1 Phase: *L1* Temperature: 26

Limit: FCC PART15C 207 Power: AC120V Humidity: 60 %

EUT: VERSUS SCOREBOARD

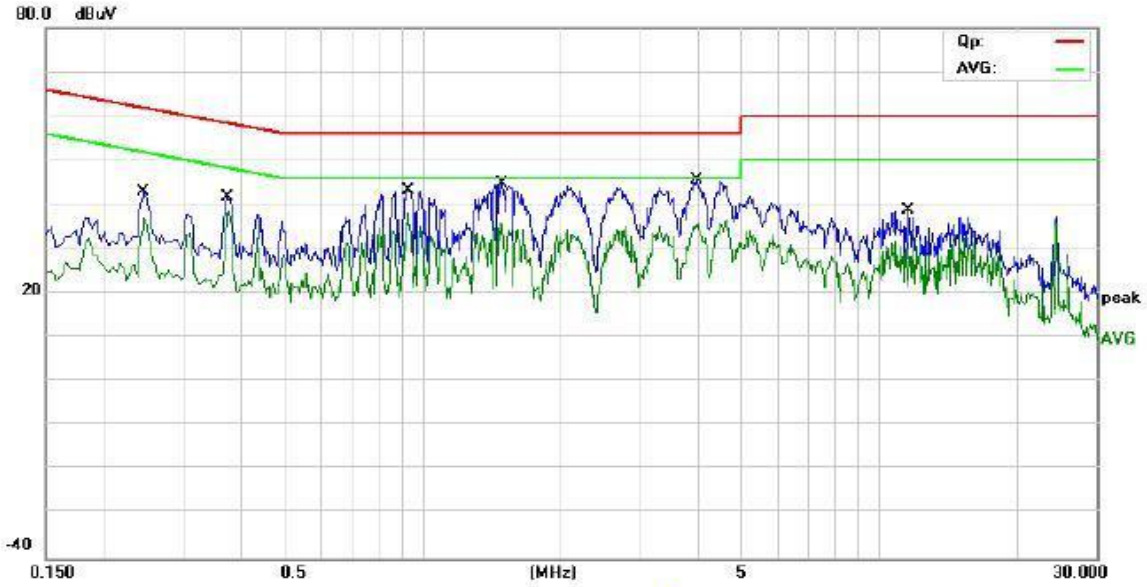
M/N: VS1-01

Mode: USB

Note:

| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | | |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV | dBuV | dB | Detector | Comment |
| 1 | | 0.1900 | 24.79 | 11.40 | 36.19 | 64.04 | -27.85 | QP | |
| 2 | | 0.3660 | 29.86 | 10.89 | 40.75 | 58.59 | -17.84 | QP | |
| 3 | | 0.9340 | 31.24 | 10.00 | 41.24 | 56.00 | -14.76 | QP | |
| 4 | | 1.4940 | 33.37 | 9.51 | 42.88 | 56.00 | -13.12 | QP | |
| 5 | | 4.0460 | 31.61 | 11.05 | 42.66 | 56.00 | -13.34 | QP | |
| 6 | | 10.9980 | 31.08 | 9.00 | 40.08 | 60.00 | -19.92 | QP | |

Conducted Emission Measurement




Site site #1
Limit: FCC PART15 C207
EUT: VERSUS SCOREBOARD
M/N: VS1-01
Mode: USB
Note:

Phase: *N*
Power: AC120V

Temperature: 26
Humidity: 60 %

| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | | |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV | dBuV | dB | Detector | Comment |
| 1 | | 0.2460 | 31.39 | 11.69 | 43.08 | 61.89 | -18.81 | QP | |
| 2 | | 0.3740 | 30.96 | 10.84 | 41.80 | 58.41 | -16.61 | QP | |
| 3 | | 0.9380 | 33.25 | 10.00 | 43.25 | 56.00 | -12.75 | QP | |
| 4 | | 1.4980 | 35.15 | 9.50 | 44.65 | 56.00 | -11.35 | QP | |
| 5 | | 3.9940 | 34.59 | 10.99 | 45.58 | 56.00 | -10.42 | QP | |
| 6 | | 11.6260 | 29.78 | 9.00 | 38.78 | 60.00 | -21.22 | QP | |

**Notes:** The other modes at least have 20dB margin.

# 7 Band edge Test

## 7.1 Standard Requirement

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.

## 7.2 Test Setup

Same as 5.2

## 7.3 Test procedure

Same as 5.3

## 7.4 Results

Temperature:26 0C Relative Humidity:64%

| Freq. (MHZ) | Read (dBuV/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin dB | Detector | Antenna (H/V) |
|---|---|---|---|---|---|---|
| 2399.54 | -- | -- | -- | -- | PK | V |
| 2399.54 | -- | -- | -- | -- | AV | V |
| 2483.67 | 27.16 | 57.44 | 74 | -16.56 | PK | V |
| 2483.67 | 20.15 | 50.43 | 54 | -3.57 | AV | V |
| Notes: Above is maximum data. The test mode is TX by adapter. | | | | | | |

Notes: Level=Read+Correct Factor
Margin=Level-Limit
--Means the frequency comply with standard requirements and at least have 20dB margin.

# 8 Antenna Requirements

## 8.1 Standard Requirement

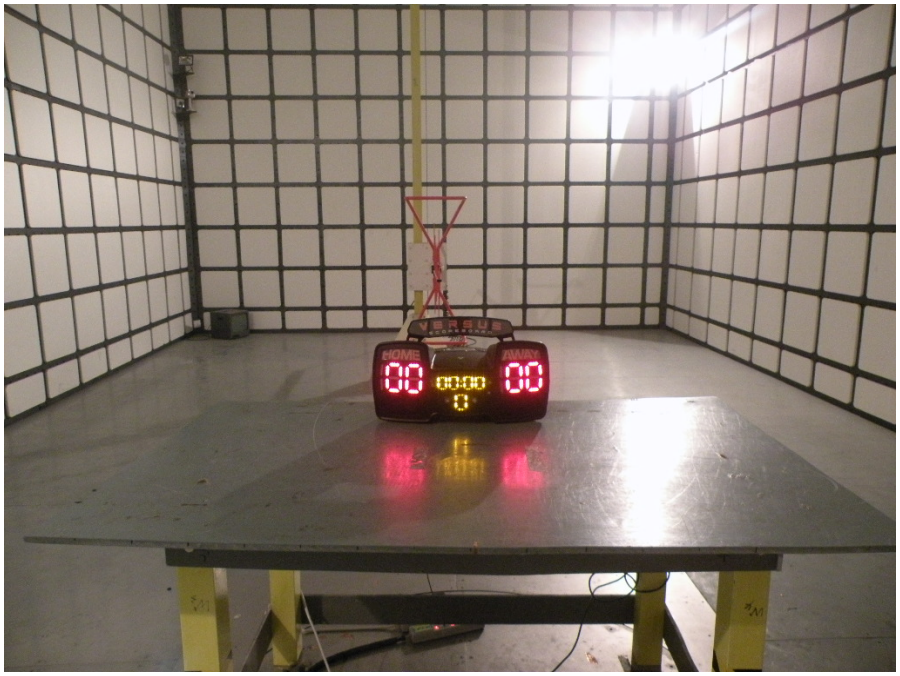
An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

## 8.2 Results

The EUT antenna is integral Antenna. It complies with the standard requirement.

# 9 Photographs of Test Setup

Photographs-Radiated Emission Test Setup in Chamber



# 10 Photographs of EUT

**Figure 1**

Photo of EUT

Front View [ ]

Rear View [ ]

Top View [ √ ]

Bottom View[ ]

Left View [ ]

Right View [ ]

Full View [ ]


**Figure 2**

Photo of EUT

Front View [ ]

Rear View [ ]

Top View [ ]

Bottom View[ √ ]

Left View [ ]

Right View [ ]

Full View [ ]

**Figure 3**

Photo of EUT

Front View [ √ ]

Rear View [ ]

Top View [ ]

Bottom View[ ]

Left View [ ]

Right View [ ]

Internal View [ ]


**Figure 4**

Photo of EUT

Front View [ ]

Rear View [ √ ]

Top View [ ]

Bottom View[ ]

Left View [ ]

Right View [ ]

Internal View [ ]

**Figure 5**

Photo of EUT

Front View [ ]

Rear View [ ]

Top View [ ]

Bottom View[ ]

Left View [ √ ]

Right View [ ]

Internal View [ ]


**Figure 6**

Photo of EUT

Front View [ ]

Rear View [ ]

Top View [ ]

Bottom View[ ]

Left View [ ]

Right View [ ]

Internal View [ √ ]

**Figure 7**

Photo of EUT

Front View [ ]

Rear View [ ]

Top View [ ]

Bottom View[ ]

Left View [ ]

Right View [ ]

Power View [ √ ]

**Figure 8**

Photo of EUT

Front View [ ]

Rear View [ ]

Top View [ ]

Bottom View[ ]

Left View [ ]

Right View [ ]

Power View [ √ ]

**------- THE END OF REPORT-------**