



# Radio Test Report

Report No.:STS2411070W04

Issued for

Shenzhen Kingbolen Electrics Technology Co.,Ltd.

B1020-1028, Yousong Technology Building, Donghuan 1st  
road, Longhua, Shenzhen, 518109 China

Product Name: OBDII Bluetooth Vehicle Diagnostic Tool

Brand Name: KINGBOLEN

Model Name: Soloscan

Series Model(s): N/A

FCC ID: 2A8T7EMINI

Test Standards: FCC Part15.247

The test results presented in this report relate only to the object tested. This report shall not be reproduced, except in full, without the written approval of the Shenzhen STS Test Services Co., Ltd.

**TEST REPORT**

**Applicant's Name**..... : Shenzhen Kingbolen Electrics Technology Co.,Ltd.  
**Address** ..... : B1020-1028, Yousong Technology Building, Donghuan 1st road,  
Longhua, Shenzhen, 518109 China  
**Manufacturer's Name** ..... : Shenzhen Kingbolen Electrics Technology Co.,Ltd.  
**Address** ..... : B1020-1028, Yousong Technology Building, Donghuan 1st road,  
Longhua, Shenzhen, 518109 China

**Product Description**

**Product Name** ..... : OBDII Bluetooth Vehicle Diagnostic Tool  
**Brand Name** ..... : KINGBOLEN  
**Model Name** ..... : Soloscan  
**Series Model(s)** ..... : N/A

**Test Standards**..... : FCC Part15.247

**Test Procedure** ..... : ANSI C63.10-2020

This device described above has been tested by STS, the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

The test results presented in this report relate only to the object tested. This report shall not be reproduced, except in full, without the written approval of the Shenzhen STS Test Services Co., Ltd.

**Date of Test**..... :

**Date of receipt of test item** ..... : 28 June 2024

**Date (s) of performance of tests**..... : 28 June 2024 ~ 19 Nov. 2024

**Date of Issue**..... : 19 Nov. 2024

**Test Result**..... : **Pass**

**Testing Engineer** :

*Aaron Bu*

(Aaron Bu)

**Technical Manager** :

*Tony Liu*

(Tony Liu)

**Authorized Signatory** :

*Bovey Yang*

(Bovey Yang)





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**Revision History**

| Rev. | Issue Date   | Report No.    | Effect Page | Contents                                                                               |
|------|--------------|---------------|-------------|----------------------------------------------------------------------------------------|
| 00   | 04 July 2024 | STS2406140W04 | ALL         | Initial Issue                                                                          |
| 00   | 26 July 2024 | STS2407150W04 | ALL         | Update FCC ID number, applicant, manufacturer, product name, brand name and model name |
| 00   | 19 Nov. 2024 | STS2411070W04 | ALL         | Update model name and radiation spurious                                               |



## 1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:  
KDB 558074 D01 15.247 Meas Guidance v05r02.

| FCC Part 15.247,Subpart C |                            |          |        |
|---------------------------|----------------------------|----------|--------|
| Standard Section          | Test Item                  | Judgment | Remark |
| 15.209                    | Radiated Spurious Emission | PASS     | --     |
| 15.203                    | Antenna Requirement        | PASS     | --     |

### NOTE:

- (1) 'N/A' denotes test is not applicable in this Test Report.
- (2) All tests are according to ANSI C63.10-20120.



### 1.1 TEST FACTORY

SHENZHEN STS TEST SERVICES CO., LTD

Add. : 101, Building B, Zhuoke Science Park, No.190 Chongqing Road, ZhanChengShequ, Fuhai Sub-District, Bao'an District, Shenzhen, Guang Dong, China

FCC test Firm Registration Number: 625569

IC test Firm Registration Number: 12108A

A2LA Certificate No.: 4338.01

### 1.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement  $y \pm U$ , where expended uncertainty  $U$  is based on a standard uncertainty multiplied by a coverage factor of  $k=2$ , providing a level of confidence of approximately **95** %.

| No. | Item                             | Uncertainty         |
|-----|----------------------------------|---------------------|
| 3   | All emissions, radiated 9K-30MHz | $\pm 3.80\text{dB}$ |
| 4   | All emissions, radiated 30M-1GHz | $\pm 4.18\text{dB}$ |



## 2. GENERAL INFORMATION

### 2.1 GENERAL DESCRIPTION OF THE EUT

|                         |                                                      |                    |
|-------------------------|------------------------------------------------------|--------------------|
| Product Name            | OBDII Bluetooth Vehicle Diagnostic Tool              |                    |
| Brand Name              | KINGBOLEN                                            |                    |
| Model Name              | Soloscan                                             |                    |
| Series Model(s)         | N/A                                                  |                    |
| Model Difference        | N/A                                                  |                    |
| Product Description     | The EUT is a OBDII Bluetooth Vehicle Diagnostic Tool |                    |
|                         | Operation Frequency:                                 | 2402~2480 MHz      |
|                         | Modulation Type:                                     | GFSK               |
|                         | Radio Technology:                                    | BLE                |
|                         | Bluetooth Configuration:                             | LE(Support 1M PHY) |
|                         | Number Of Channel:                                   | 40                 |
|                         | Antenna Type:                                        | Internal Antenna   |
|                         | Antenna Gain (dBi)                                   | 2.72 dBi           |
| Channel List            | Please refer to the Note 3.                          |                    |
| Rating                  | Input: 9-18VDC 100mA                                 |                    |
| Hardware version number | V1.0                                                 |                    |
| Software version number | V1.0                                                 |                    |
| Connecting I/O Port(s)  | Please refer to the Note 1.                          |                    |

Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the User Manual.
2. The antenna information refer the manufacturer provide report, applicable only to the tested sample identified in the report. Due to the incorrect antenna information, a series of problems such as the accuracy of the test results will be borne by the customer.



3.

| Channel List |                 |         |                 |         |                 |         |                 |
|--------------|-----------------|---------|-----------------|---------|-----------------|---------|-----------------|
| Channel      | Frequency (MHz) | Channel | Frequency (MHz) | Channel | Frequency (MHz) | Channel | Frequency (MHz) |
| 00           | 2402            | 10      | 2422            | 20      | 2442            | 30      | 2462            |
| 01           | 2404            | 11      | 2424            | 21      | 2444            | 31      | 2464            |
| 02           | 2406            | 12      | 2426            | 22      | 2446            | 32      | 2466            |
| 03           | 2408            | 13      | 2428            | 23      | 2448            | 33      | 2468            |
| 04           | 2410            | 14      | 2430            | 24      | 2450            | 34      | 2470            |
| 05           | 2412            | 15      | 2432            | 25      | 2452            | 35      | 2472            |
| 06           | 2414            | 16      | 2434            | 26      | 2454            | 36      | 2474            |
| 07           | 2416            | 17      | 2436            | 27      | 2456            | 37      | 2476            |
| 08           | 2418            | 18      | 2438            | 28      | 2458            | 38      | 2478            |
| 09           | 2420            | 19      | 2440            | 29      | 2460            | 39      | 2480            |



## 2.2 DESCRIPTION OF THE TEST MODES

For conducted test items and radiated spurious emissions  
Each of these EUT operation mode(s) or test configuration mode(s) mentioned below was evaluated respectively.

| Worst Mode | Description      | Data/Modulation |
|------------|------------------|-----------------|
| Mode 1     | TX CH00(2402MHz) | 1 Mbps/GFSK     |
| Mode 2     | TX CH19(2440MHz) | 1 Mbps/GFSK     |
| Mode 3     | TX CH39(2480MHz) | 1 Mbps/GFSK     |

Note:

(1) We tested for all available U.S. voltage and frequencies (For 120V, 50/60Hz and 240V, 50/60Hz) for which the device is capable of operation, and the worst case of 120V/ 60Hz is shown in the report.

(2) Use DC 12V the radiated and RF conducted test.

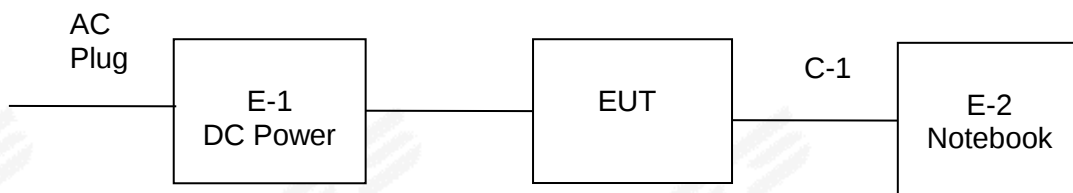
## 2.3 TEST SOFTWARE AND POWER LEVEL

During testing channel & power controlling software provided by the customer was used to control the operating channel as well as the output power level.

| RF Function | Type | Mode Or Modulation type | ANT Gain(dBi) | Power Class | Software For Testing |
|-------------|------|-------------------------|---------------|-------------|----------------------|
| BLE         | BLE  | GFSK                    | 2.72          | 0           | BT98X RF Tool V1.2   |

## 2.4 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

Radiated Spurious Emission Test





## 2.5 DESCRIPTION OF NECESSARY ACCESSORIES AND SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

### Necessary accessories

| Item | Equipment | Mfr/Brand | Model/Type No. | Length | Note |
|------|-----------|-----------|----------------|--------|------|
|      | N/A       | N/A       | N/A            | N/A    | N/A  |
|      |           |           |                |        |      |
|      |           |           |                |        |      |
|      |           |           |                |        |      |

### Support units

| Item | Equipment | Mfr/Brand      | Model/Type No. | Length | Note |
|------|-----------|----------------|----------------|--------|------|
| E-2  | Notebook  | DELL           | VOSTRO.3800    | N/A    | N/A  |
| C-1  | USB Cable | N/A            | 100cm          | N/A    | N/A  |
| E-1  | DC Power  | HONGSHENG FENG | DPS-305AF      | N/A    | N/A  |
|      |           |                |                |        |      |

### Note:

- (1) For detachable type I/O cable should be specified the length in cm in 『Length』 column.
- (2) “YES” is means “with core”; “NO” is means “without core”.



## 2.6 EQUIPMENTS LIST

| RF Radiation Test Equipment |                  |                    |              |                  |                  |
|-----------------------------|------------------|--------------------|--------------|------------------|------------------|
| Kind of Equipment           | Manufacturer     | Type No.           | Serial No.   | Last Calibration | Calibrated Until |
| Temperature & Humidity      | SW-108           | SuWei              | N/A          | 2024.03.15       | 2025.03.14       |
| Pre-Amplifier(0.1M-3GHz)    | EM               | EM330              | 060665       | 2024.02.23       | 2025.02.22       |
| Pre-Amplifier(1G-18GHz)     | SKET             | LNPA-01018G-45     | SK2018080901 | 2024.09.23       | 2025.09.22       |
| Pre-Amplifier(18G-40GHz)    | SKET             | LNPA_1840-50       | SK2018101801 | 2024.02.23       | 2025.02.22       |
| Active loop Antenna         | ZHINAN           | ZN30900C           | 16035        | 2023.02.28       | 2025.02.27       |
| Bilog Antenna               | TESEQ            | CBL6111D           | 34678        | 2024.09.30       | 2025.09.29       |
| Horn Antenna                | SCHWARZBECK      | BBHA 9120D         | 02014        | 2023.09.24       | 2025.09.23       |
| Horn Antenna                | A-INFOMW         | LB-180400-KF       | J211020657   | 2023.10.10       | 2025.10.09       |
| Positioning Controller      | MF               | MF-7802            | MF-780208587 | N/A              | N/A              |
| Signal Analyzer             | R&S              | FSV 40-N           | 101823       | 2024.09.23       | 2025.09.22       |
| Switch Control Box          | N/A              | N/A                | N/A          | N/A              | N/A              |
| Filter Box                  | BALUN Technology | SU319E             | BL-SZ1530051 | N/A              | N/A              |
| Antenna Mast                | MF               | MFA-440H           | N/A          | N/A              | N/A              |
| Turn Table                  | MF               | SC100_1            | 60531        | N/A              | N/A              |
| AC Power Source             | APC              | KDF-11010G         | F214050035   | N/A              | N/A              |
| DC power supply             | HONGSHENG FENG   | DPS-305AF          | 17064939     | 2024.09.23       | 2025.09.22       |
| Test SW                     | EZ-EMC           | Ver.STSLAB-03A1 RE |              |                  |                  |



### 3. RADIATED EMISSION MEASUREMENT

#### 3.1 RADIATED EMISSION LIMITS

In any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the Restricted band specified on Part 15.205(a)&209(a) limit in the table and according to ANSI C63.10-2020 below has to be followed.

LIMITS OF RADIATED EMISSION MEASUREMENT (Frequency Range 9kHz-1000MHz)

| Frequencies<br>(MHz) | Field Strength<br>(micorvolts/meter) | Measurement Distance<br>(meters) |
|----------------------|--------------------------------------|----------------------------------|
| 0.009~0.490          | 2400/F(KHz)                          | 300                              |
| 0.490~1.705          | 24000/F(KHz)                         | 30                               |
| 1.705~30.0           | 30                                   | 30                               |
| 30~88                | 100                                  | 3                                |
| 88~216               | 150                                  | 3                                |
| 216~960              | 200                                  | 3                                |
| Above 960            | 500                                  | 3                                |

LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000MHz)

| FREQUENCY (MHz) | (dBuV/m) (at 3M) |         |
|-----------------|------------------|---------|
|                 | PEAK             | AVERAGE |
| Above 1000      | 74               | 54      |

Notes:

- (1) The limit for radiated test was performed according to FCC PART 15C.
- (2) The tighter limit applies at the band edges.
- (3) Emission level (dBuV/m)=20log Emission level (uV/m).

#### LIMITS OF RESTRICTED FREQUENCY BANDS

| FREQUENCY (MHz)   | FREQUENCY (MHz)     | FREQUENCY (MHz) | FREQUENCY (GHz) |
|-------------------|---------------------|-----------------|-----------------|
| 0.090-0.110       | 16.42-16.423        | 399.9-410       | 4.5-5.15        |
| 0.495-0.505       | 16.69475-16.69525   | 608-614         | 5.35-5.46       |
| 2.1735-2.1905     | 16.80425-16.80475   | 960-1240        | 7.25-7.75       |
| 4.125-4.128       | 25.5-25.67          | 1300-1427       | 8.025-8.5       |
| 4.17725-4.17775   | 37.5-38.25          | 1435-1626.5     | 9.0-9.2         |
| 4.20725-4.20775   | 73-74.6             | 1645.5-1646.5   | 9.3-9.5         |
| 6.215-6.218       | 74.8-75.2           | 1660-1710       | 10.6-12.7       |
| 6.26775-6.26825   | 108-121.94          | 1718.8-1722.2   | 13.25-13.4      |
| 6.31175-6.31225   | 123-138             | 2200-2300       | 14.47-14.5      |
| 8.291-8.294       | 149.9-150.05        | 2310-2390       | 15.35-16.2      |
| 8.362-8.366       | 156.52475-156.52525 | 2483.5-2500     | 17.7-21.4       |
| 8.37625-8.38675   | 156.7-156.9         | 2690-2900       | 22.01-23.12     |
| 8.41425-8.41475   | 162.0125-167.17     | 3260-3267       | 23.6-24.0       |
| 12.29-12.293      | 167.72-173.2        | 3332-3339       | 31.2-31.8       |
| 12.51975-12.52025 | 240-285             | 3345.8-3358     | 36.43-36.5      |
| 12.57675-12.57725 | 322-335.4           | 3600-4400       | Above 38.6      |
| 13.36-13.41       |                     |                 |                 |



## For Radiated Emission

| Spectrum Parameter                    | Setting                                                                                                                         |
|---------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|
| Attenuation                           | Auto                                                                                                                            |
| Detector                              | Peak/QP/AV                                                                                                                      |
| Start Frequency                       | 9 KHz/150KHz(Peak/QP/AV)                                                                                                        |
| Stop Frequency                        | 150KHz/30MHz(Peak/QP/AV)                                                                                                        |
| RB / VB (emission in restricted band) | 200Hz (From 9kHz to 0.15MHz)/<br>9KHz (From 0.15MHz to 30MHz);<br>200Hz (From 9kHz to 0.15MHz)/<br>9KHz (From 0.15MHz to 30MHz) |

| Spectrum Parameter                    | Setting            |
|---------------------------------------|--------------------|
| Attenuation                           | Auto               |
| Detector                              | Peak/QP            |
| Start Frequency                       | 30 MHz(Peak/QP)    |
| Stop Frequency                        | 1000 MHz (Peak/QP) |
| RB / VB (emission in restricted band) | 120 KHz / 300 KHz  |

| Spectrum Parameter                    | Setting                                   |
|---------------------------------------|-------------------------------------------|
| Attenuation                           | Auto                                      |
| Detector                              | Peak/AV                                   |
| Start Frequency                       | 1000 MHz(Peak/AV)                         |
| Stop Frequency                        | 10th carrier hamonic(Peak/AV)             |
| RB / VB (emission in restricted band) | 1 MHz / 3 MHz(Peak)<br>1 MHz/1/T MHz(AVG) |

## For Restricted band

| Spectrum Parameter   | Setting                                                                |
|----------------------|------------------------------------------------------------------------|
| Detector             | Peak/AV                                                                |
| Start/Stop Frequency | Lower Band Edge: 2310 to 2410 MHz<br>Upper Band Edge: 2475 to 2500 MHz |
| RB / VB              | 1 MHz / 3 MHz(Peak)<br>1 MHz/1/T MHz(AVG)                              |



| Receiver Parameter     | Setting                              |
|------------------------|--------------------------------------|
| Start ~ Stop Frequency | 9kHz~90kHz / RB 200Hz for PK & AV    |
| Start ~ Stop Frequency | 90kHz~110kHz / RB 200Hz for QP       |
| Start ~ Stop Frequency | 110kHz~490kHz / RB 200Hz for PK & AV |
| Start ~ Stop Frequency | 490kHz~30MHz / RB 9kHz for QP        |
| Start ~ Stop Frequency | 30MHz~1000MHz / RB 120kHz for QP     |

### 3.2 TEST PROCEDURE

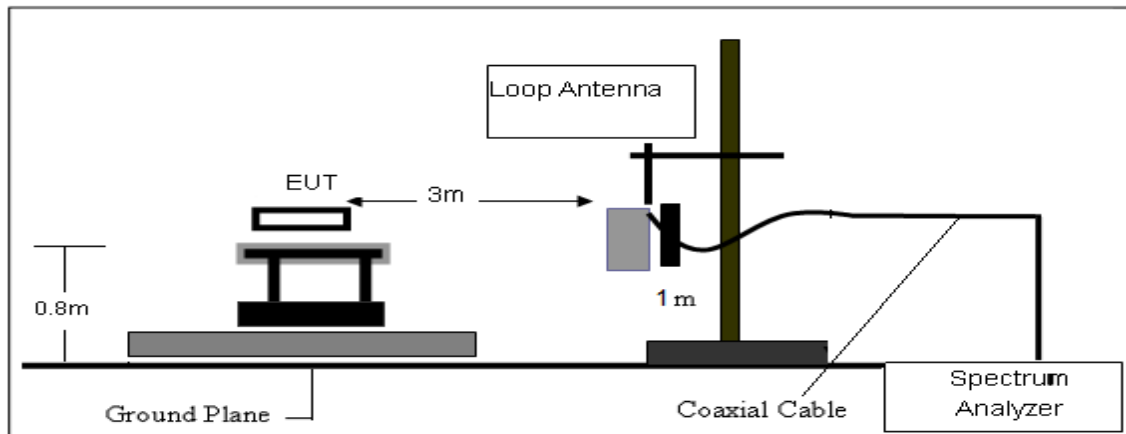
- The measuring distance at 3 m shall be used for measurements at frequency 0.009MHz up to 1GHz, and above 1GHz.
- The EUT was placed on the top of a rotating table 0.8 m (above 1GHz is 1.5 m) above the ground at a 3 m anechoic chamber test site. The table was rotated 360 degree to determine the position of the highest radiation.
- The height of the equipment shall be 0.8 m (above 1GHz is 1.5 m); the height of the test antenna shall vary between 1 m to 4 m. Horizontal and vertical polarization of the antenna are set to make the measurement.
- 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 QuasiPeak detector mode will be re-measured.
- If the Peak Mode measured value is compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and no additional QP Mode measurement was performed.
- For the actual test configuration, please refer to the related Item –EUT Test Photos.

**Note:**

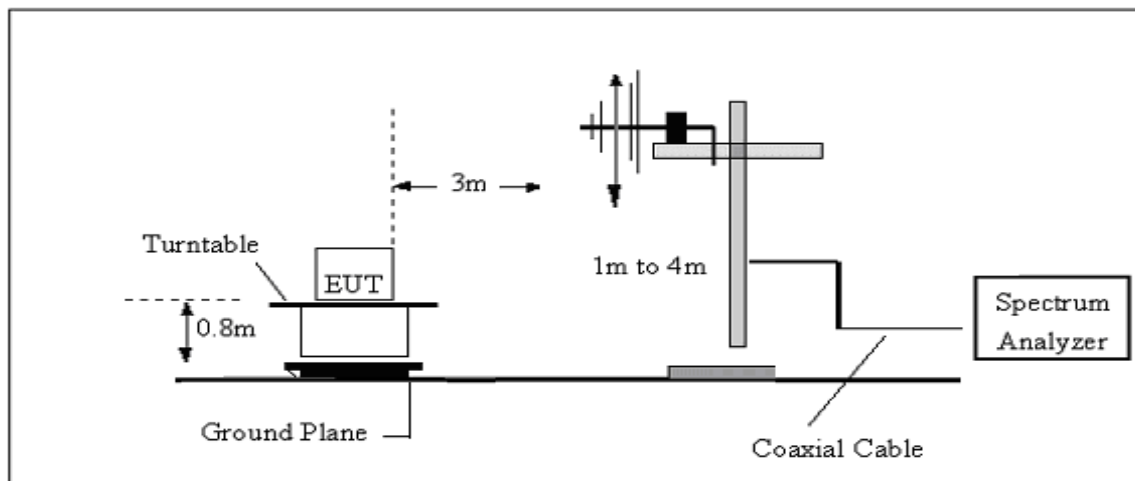
Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported.

### 3.3 TEST SETUP

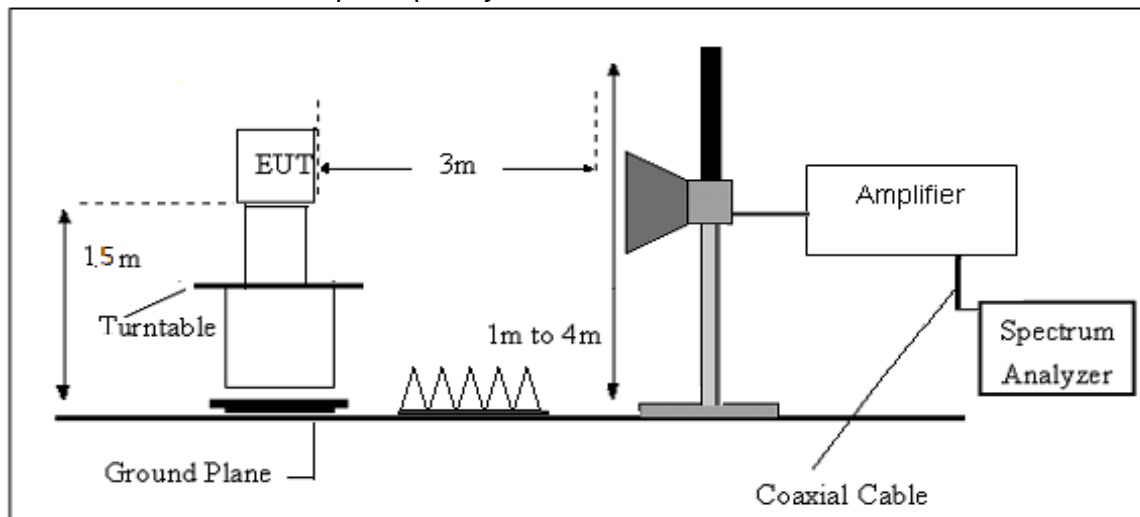
#### (A) Radiated Emission Test-Up Frequency Below 30MHz



#### (B) Radiated Emission Test-Up Frequency 30MHz~1GHz



#### (C) Radiated Emission Test-Up Frequency Above 1GHz



### 3.4 EUT OPERATING CONDITIONS

Please refer to section 3.4 of this report.



### 3.5 FIELD STRENGTH CALCULATION

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor (if any) from the measured reading. The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CL - AG$$

Where

FS = Field Strength

CL = Cable Attenuation Factor (Cable Loss)

RA = Reading Amplitude

AG = Amplifier Gain

AF = Antenna Factor

For example

| Frequency | FS       | RA       | AF   | CL   | AG   | Factor |
|-----------|----------|----------|------|------|------|--------|
| (MHz)     | (dBμV/m) | (dBμV/m) | (dB) | (dB) | (dB) | (dB)   |
| 300       | 40       | 58.1     | 12.2 | 1.6  | 31.9 | -18.1  |

$$\text{Factor} = \text{AF} + \text{CL} - \text{AG}$$

### 3.6 TEST RESULTS

(Between 9KHz – 30 MHz)

|               |                     |                    |       |
|---------------|---------------------|--------------------|-------|
| Temperature:  | 23.1°C              | Relative Humidity: | 60%RH |
| Test Voltage: | DC 12V From Battery | Polarization:      | --    |
| Test Mode:    | TX Mode             |                    |       |

| Freq. | Reading  | Limit    | Margin | State |
|-------|----------|----------|--------|-------|
| (MHz) | (dBuV/m) | (dBuV/m) | (dB)   | P/F   |
| --    | --       | --       | --     | PASS  |
| --    | --       | --       | --     | PASS  |

Note:

The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

Distance extrapolation factor =  $40 \log (\text{specific distance/test distance})(\text{dB})$ ;

Limit line = specific limits(dBuV) + distance extrapolation factor.



(30MHz -1000MHz)

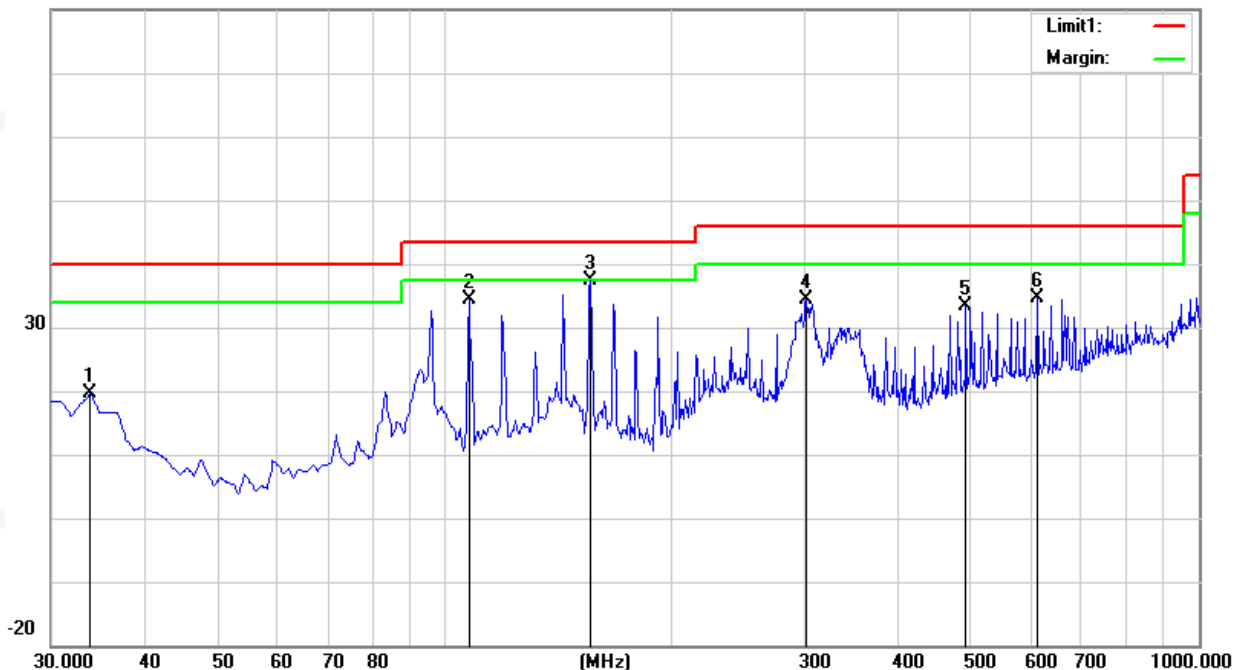
|               |                                |                    |            |
|---------------|--------------------------------|--------------------|------------|
| Temperature:  | 23.1°C                         | Relative Humidity: | 60%RH      |
| Test Voltage: | DC 12V From Battery            | Phase:             | Horizontal |
| Test Mode:    | Mode 1/2/3 (Mode 2 worst mode) |                    |            |

| No. | Frequency<br>(MHz) | Reading<br>(dBuV) | Correct<br>Factor(dB/<br>m) | Result<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Remark |
|-----|--------------------|-------------------|-----------------------------|--------------------|-------------------|----------------|--------|
| 1   | 33.8800            | 34.39             | -14.80                      | 19.59              | 40.00             | -20.41         | peak   |
| 2   | 107.6000           | 53.68             | -19.32                      | 34.36              | 43.50             | -9.14          | peak   |
| 3   | 156.1000           | 55.95             | -18.66                      | 37.29              | 43.50             | -6.21          | peak   |
| 4   | 301.6000           | 49.02             | -14.75                      | 34.27              | 46.00             | -11.73         | peak   |
| 5   | 491.7200           | 41.60             | -8.18                       | 33.42              | 46.00             | -12.58         | peak   |
| 6   | 612.0000           | 40.05             | -5.50                       | 34.55              | 46.00             | -11.45         | peak   |

Remark:

1. Margin = Result (Result =Reading + Factor )-Limit
2. Factor= Antenna factor+Cable attenuation factor(cable loss)-Amplifier gain
3. All modes have been tested,only show the worst case.

80.0 dBuV/m





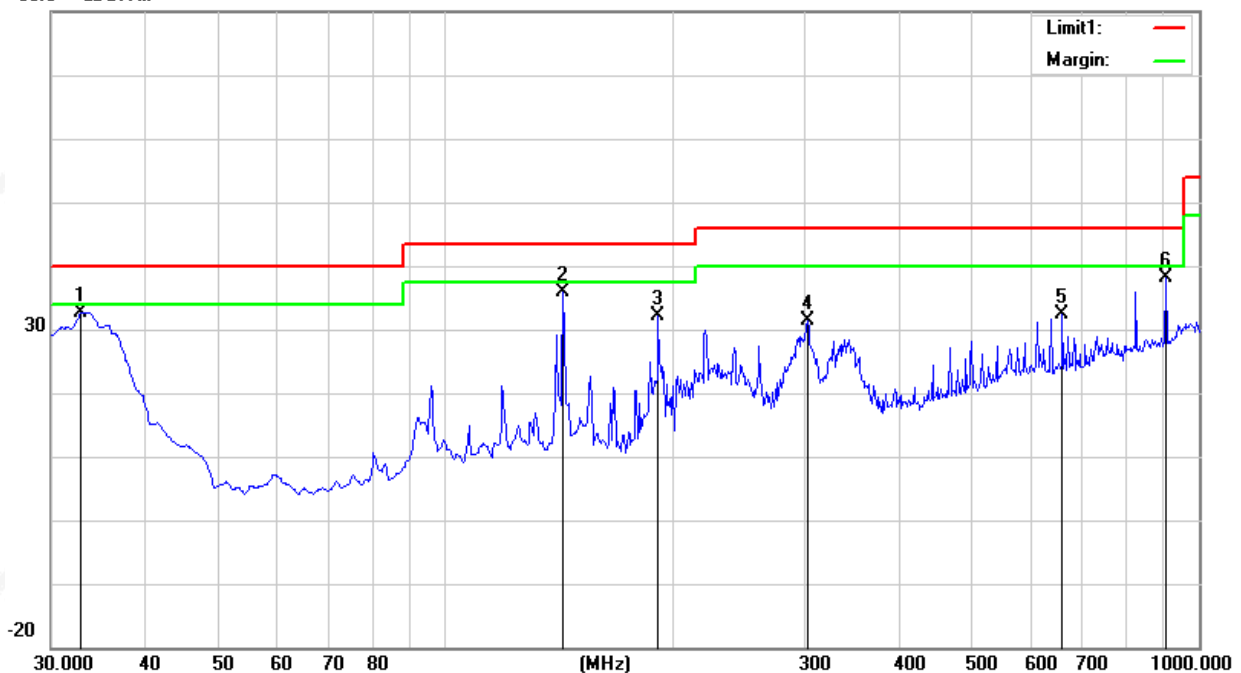
|               |                                |                    |          |
|---------------|--------------------------------|--------------------|----------|
| Temperature:  | 23.1°C                         | Relative Humidity: | 60%RH    |
| Test Voltage: | DC 12V From Battery            | Phase:             | Vertical |
| Test Mode:    | Mode 1/2/3 (Mode 2 worst mode) |                    |          |

| No. | Frequency<br>(MHz) | Reading<br>(dBUV) | Correct<br>Factor(dB/<br>m) | Result<br>(dBUV/m) | Limit<br>(dBUV/m) | Margin<br>(dB) | Remark |
|-----|--------------------|-------------------|-----------------------------|--------------------|-------------------|----------------|--------|
| 1   | 32.9100            | 46.88             | -14.33                      | 32.55              | 40.00             | -7.45          | peak   |
| 2   | 143.4900           | 54.11             | -18.23                      | 35.88              | 43.50             | -7.62          | peak   |
| 3   | 191.9900           | 53.20             | -21.04                      | 32.16              | 43.50             | -11.34         | peak   |
| 4   | 303.5400           | 46.10             | -14.69                      | 31.41              | 46.00             | -14.59         | peak   |
| 5   | 660.5000           | 37.17             | -4.80                       | 32.37              | 46.00             | -13.63         | peak   |
| 6   | 903.9700           | 38.47             | -0.34                       | 38.13              | 46.00             | -7.87          | peak   |

Remark:

1. Margin = Result (Result = Reading + Factor) – Limit
2. Factor= Antenna factor+Cable attenuation factor(cable loss)-Amplifier gain
3. All modes have been tested,only show the worst case.

80.0 dBUV/m





## (1000MHz-25GHz) Spurious emission Requirements

| Above 1000 MHz                 |         |           |       |         |           |          |          |        |          |            |
|--------------------------------|---------|-----------|-------|---------|-----------|----------|----------|--------|----------|------------|
| Meter                          |         |           |       | Antenna | Corrected | Emission |          |        |          |            |
| Frequency                      | Reading | Amplifier | Loss  | Factor  | Factor    | Level    | Limits   | Margin | Detector |            |
| (MHz)                          | (dBμV)  | (dB)      | (dB)  | (dB/m)  | (dB)      | (dBμV/m) | (dBμV/m) | (dB)   | Type     | Comment    |
| Low Channel (GFSK/2402 MHz)    |         |           |       |         |           |          |          |        |          |            |
| 3264.76                        | 61.11   | 44.70     | 6.70  | 28.20   | -9.80     | 51.31    | 74.00    | -22.69 | PK       | Vertical   |
| 3264.76                        | 50.33   | 44.70     | 6.70  | 28.20   | -9.80     | 40.53    | 54.00    | -13.47 | AV       | Vertical   |
| 3264.72                        | 61.46   | 44.70     | 6.70  | 28.20   | -9.80     | 51.66    | 74.00    | -22.34 | PK       | Horizontal |
| 3264.72                        | 50.53   | 44.70     | 6.70  | 28.20   | -9.80     | 40.73    | 54.00    | -13.27 | AV       | Horizontal |
| 4804.47                        | 58.15   | 44.20     | 9.04  | 31.60   | -3.56     | 54.59    | 74.00    | -19.41 | PK       | Vertical   |
| 4804.47                        | 49.78   | 44.20     | 9.04  | 31.60   | -3.56     | 46.22    | 54.00    | -7.78  | AV       | Vertical   |
| 4804.54                        | 58.52   | 44.20     | 9.04  | 31.60   | -3.56     | 54.96    | 74.00    | -19.04 | PK       | Horizontal |
| 4804.54                        | 49.26   | 44.20     | 9.04  | 31.60   | -3.56     | 45.70    | 54.00    | -8.30  | AV       | Horizontal |
| 5359.74                        | 49.27   | 44.20     | 9.86  | 32.00   | -2.34     | 46.92    | 74.00    | -27.08 | PK       | Vertical   |
| 5359.74                        | 40.29   | 44.20     | 9.86  | 32.00   | -2.34     | 37.94    | 54.00    | -16.06 | AV       | Vertical   |
| 5359.80                        | 48.25   | 44.20     | 9.86  | 32.00   | -2.34     | 45.91    | 74.00    | -28.09 | PK       | Horizontal |
| 5359.80                        | 38.63   | 44.20     | 9.86  | 32.00   | -2.34     | 36.28    | 54.00    | -17.72 | AV       | Horizontal |
| 7205.96                        | 53.87   | 43.50     | 11.40 | 35.50   | 3.40      | 57.27    | 74.00    | -16.73 | PK       | Vertical   |
| 7205.96                        | 44.02   | 43.50     | 11.40 | 35.50   | 3.40      | 47.42    | 54.00    | -6.58  | AV       | Vertical   |
| 7205.77                        | 54.36   | 43.50     | 11.40 | 35.50   | 3.40      | 57.76    | 74.00    | -16.24 | PK       | Horizontal |
| 7205.77                        | 43.62   | 43.50     | 11.40 | 35.50   | 3.40      | 47.02    | 54.00    | -6.98  | AV       | Horizontal |
| Middle Channel (GFSK/2440 MHz) |         |           |       |         |           |          |          |        |          |            |
| 3263.00                        | 60.90   | 44.70     | 6.70  | 28.20   | -9.80     | 51.10    | 74.00    | -22.90 | PK       | Vertical   |
| 3263.00                        | 50.03   | 44.70     | 6.70  | 28.20   | -9.80     | 40.23    | 54.00    | -13.77 | AV       | Vertical   |
| 3263.01                        | 61.47   | 44.70     | 6.70  | 28.20   | -9.80     | 51.67    | 74.00    | -22.33 | PK       | Horizontal |
| 3263.01                        | 50.70   | 44.70     | 6.70  | 28.20   | -9.80     | 40.90    | 54.00    | -13.10 | AV       | Horizontal |
| 4879.97                        | 59.59   | 44.20     | 9.04  | 31.60   | -3.56     | 56.03    | 74.00    | -17.97 | PK       | Vertical   |
| 4879.97                        | 50.34   | 44.20     | 9.04  | 31.60   | -3.56     | 46.78    | 54.00    | -7.22  | AV       | Vertical   |
| 4879.99                        | 58.26   | 44.20     | 9.04  | 31.60   | -3.56     | 54.70    | 74.00    | -19.30 | PK       | Horizontal |
| 4879.99                        | 49.81   | 44.20     | 9.04  | 31.60   | -3.56     | 46.25    | 54.00    | -7.75  | AV       | Horizontal |
| 5357.34                        | 48.12   | 44.20     | 9.86  | 32.00   | -2.34     | 45.77    | 74.00    | -28.23 | PK       | Vertical   |
| 5357.34                        | 40.17   | 44.20     | 9.86  | 32.00   | -2.34     | 37.83    | 54.00    | -16.17 | AV       | Vertical   |
| 5357.39                        | 47.23   | 44.20     | 9.86  | 32.00   | -2.34     | 44.88    | 74.00    | -29.12 | PK       | Horizontal |
| 5357.08                        | 38.61   | 44.20     | 9.86  | 32.00   | -2.34     | 36.27    | 54.00    | -17.73 | AV       | Horizontal |
| 7320.85                        | 54.84   | 43.50     | 11.40 | 35.50   | 3.40      | 58.24    | 74.00    | -15.76 | PK       | Vertical   |
| 7320.85                        | 44.36   | 43.50     | 11.40 | 35.50   | 3.40      | 47.76    | 54.00    | -6.24  | AV       | Vertical   |
| 7320.52                        | 54.33   | 43.50     | 11.40 | 35.50   | 3.40      | 57.73    | 74.00    | -16.27 | PK       | Horizontal |



|                              |       |       |       |       |       |       |       |        |    |            |
|------------------------------|-------|-------|-------|-------|-------|-------|-------|--------|----|------------|
| 7320.52                      | 44.69 | 43.50 | 11.40 | 35.50 | 3.40  | 48.09 | 54.00 | -5.91  | AV | Horizontal |
| High Channel (GFSK/2480 MHz) |       |       |       |       |       |       |       |        |    |            |
| 3264.68                      | 61.86 | 44.70 | 6.70  | 28.20 | -9.80 | 52.06 | 74.00 | -21.94 | PK | Vertical   |
| 3264.68                      | 50.51 | 44.70 | 6.70  | 28.20 | -9.80 | 40.71 | 54.00 | -13.29 | AV | Vertical   |
| 3264.65                      | 60.88 | 44.70 | 6.70  | 28.20 | -9.80 | 51.08 | 74.00 | -22.92 | PK | Horizontal |
| 3264.65                      | 49.85 | 44.70 | 6.70  | 28.20 | -9.80 | 40.05 | 54.00 | -13.95 | AV | Horizontal |
| 4960.35                      | 58.88 | 44.20 | 9.04  | 31.60 | -3.56 | 55.32 | 74.00 | -18.68 | PK | Vertical   |
| 4960.35                      | 49.57 | 44.20 | 9.04  | 31.60 | -3.56 | 46.01 | 54.00 | -7.99  | AV | Vertical   |
| 4960.39                      | 58.60 | 44.20 | 9.04  | 31.60 | -3.56 | 55.04 | 74.00 | -18.96 | PK | Horizontal |
| 4960.39                      | 49.30 | 44.20 | 9.04  | 31.60 | -3.56 | 45.74 | 54.00 | -8.26  | AV | Horizontal |
| 5359.66                      | 48.23 | 44.20 | 9.86  | 32.00 | -2.34 | 45.88 | 74.00 | -28.12 | PK | Vertical   |
| 5359.66                      | 40.13 | 44.20 | 9.86  | 32.00 | -2.34 | 37.78 | 54.00 | -16.22 | AV | Vertical   |
| 5359.82                      | 48.39 | 44.20 | 9.86  | 32.00 | -2.34 | 46.04 | 74.00 | -27.96 | PK | Horizontal |
| 5359.82                      | 38.63 | 44.20 | 9.86  | 32.00 | -2.34 | 36.29 | 54.00 | -17.71 | AV | Horizontal |
| 7439.82                      | 54.17 | 43.50 | 11.40 | 35.50 | 3.40  | 57.57 | 74.00 | -16.43 | PK | Vertical   |
| 7439.82                      | 43.82 | 43.50 | 11.40 | 35.50 | 3.40  | 47.22 | 54.00 | -6.78  | AV | Vertical   |
| 7439.70                      | 54.07 | 43.50 | 11.40 | 35.50 | 3.40  | 57.47 | 74.00 | -16.53 | PK | Horizontal |
| 7439.70                      | 44.24 | 43.50 | 11.40 | 35.50 | 3.40  | 47.64 | 54.00 | -6.36  | AV | Horizontal |

**Remark:**

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.
2. Emission Level = Reading + Factor  
Margin = Emission Level-Limit
3. The frequency emission of peak points that did not show above the forms are at least 20dB below the limit, the frequency emission is mainly from the environment noise.

#### 4. ANTENNA REQUIREMENT

##### 4.1 STANDARD REQUIREMENT

15.203 requirement: For intentional device, according to 15.203: 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.

##### 4.2 EUT ANTENNA

The EUT antenna is Internal Antenna. It comply with the standard requirement.



## APPENDIX 2- EUT TEST PHOTO

Note: See test photos in setup photo document for the actual connections between Product and support equipment.

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