



ISO/IEC17025 Accredited Lab.

Report No: FCC 1304071  
File reference No: 2013-04-28

Applicant: Videotech Technology Development co., Ltd.

Product: 2.4GHz Digital Wireless Receiver

Model No: VT-9305RX

Trademark: N/A

Test Standards: FCC Part 15 Subpart C, Paragraph 15.247

Test result: It is herewith confirmed and found to comply with the requirements set up by ANSI C63.4 and FCC Part 15 Subpart C, Paragraph 15.247 regulations for the evaluation of electromagnetic compatibility

Approved By

*Jack Chung*

Jack Chung  
Manager

Dated: April 28, 2013

**Results appearing herein relate only to the sample tested**

**The technical reports is issued errors and omissions exempt and is subject to withdrawal at**

**SHENZHEN TIMEWAY TECHNOLOGY CONSULTING CO., LTD**

5/F, Block 4, Anhua Industrial Zone., No.8 TaiRan Rd.CheGongMiao, FuTian District, Shenzhen, CHINA.

Tel (755) 83448688

Fax (755) 83442996





### **Special Statement:**

The testing quality ability of our laboratory meet with "Quality Law of People's Republic of China" Clause 19.

The testing quality system of our laboratory meet with ISO/IEC-17025 requirements, which is approved by CNAL. This approval result is accepted by MRA of APLAC.

Our test facility is recognized, certified, or accredited by the following organizations:

#### **CNAL-LAB Code: L2292**

The EMC Laboratory has been assessed and in compliance with CNAL/AC01:2002 accreditation criteria for testing Laboratories (identical to ISO/IEC 17025:1999 General Requirements) for the Competence of testing Laboratories.

#### **FCC-Registration No.: 899988**

The 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 No.: 899988.

#### **IC- Registration No.: IC5205A-02**

The EMC Laboratory has been registered and fully described in a report filed with the (IC) Industry Canada. The acceptance letter from the IC is maintained in our files. Registration IC No.: 5205A-02.

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## Test Report Conclusion

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## 1.0 General Details

### 1.1 Test Lab Details

Name : SHENZHEN TIMEWAY TECHNOLOGY CONSULTING CO., LTD  
Address: 5/F,Block 4, Anhua Industrial Zone.,No.8 TaiRan Rd.CheGongMiao,FuTian District, Shenzhen,CHINA.  
Telephone: (755) 83448688  
Fax: (755) 83442996  
Site on File with the Federal Communications Commission – United States  
Registration Number: 899988  
For 3m & 10 m OATS  
Site Listed with Industry Canada of Ottawa, Canada  
Registration Number: IC: 5205A-02  
For 3m & 10 m OATS

### 1.2 Applicant Details

Applicant: Videotech Technology Development co., Ltd.  
Address: Bldg 12, Section B, BaoSheng Industrial Area, BaiNiKeng, PingHu Town, ShenZhen, Guangdong, China  
Telephone: 0755-36855285  
Fax: --

### 1.3 Description of EUT

Product: 2.4GHz Digital Wireless Receiver  
Manufacturer: Videotech Technology Development co., Ltd.  
Address: Bldg 12, Section B, BaoSheng Industrial Area, BaiNiKeng, PingHu Town, ShenZhen, Guangdong, China  
Brand Name: N/A  
Model Number: VT-9305RX  
Additional Model Number: N/A  
Additional Trade Name: N/A

Type of Modulation 16QAM  
Frequency range 2403-2478MHz;  
Channel Spacing 1MHz  
Frequency Selection By software  
Channel Number 76 Channels  
Antenna: Patch Antenna with maximum gain 2.5dBi.

### 1.4 Submitted Sample: 2 Samples

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1.5 Test Duration

2013-01-10 to 2013-04-27

1.6 Test Uncertainty

Conducted Emissions Uncertainty =3.6dB

Radiated Emissions Uncertainty =4.7dB

1.7 Test Engineer

*Terry Tang*

The sample tested by \_\_\_\_\_

Print Name: Terry Tang

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| 2.0 Test Equipments    |               |            |                       |              |            |
|------------------------|---------------|------------|-----------------------|--------------|------------|
| Instrument Type        | Manufacturer  | Model      | Serial No.            | Date of Cal. | Due Date   |
| ESPI Test Receiver     | ROHDE&SCHWARZ | ESPI 3     | 100379                | 2012-08-21   | 2013-08-20 |
| TWO<br>Line-V-NETW     | ROHDE&SCHWARZ | EZH3-Z5    | 100294                | 2012-08-21   | 2013-08-20 |
| TWO<br>Line-V-NETW     | ROHDE&SCHWARZ | EZH3-Z5    | 100253                | 2012-08-21   | 2013-08-20 |
| Ultra Broadband<br>ANT | ROHDE&SCHWARZ | HL562      | 100157                | 2012-08-21   | 2013-08-20 |
| ESDV Test Receiver     | ROHDE&SCHWARZ | ESDV       | 100008                | 2012-08-21   | 2013-08-20 |
| Impuls-Begrenzer       | ROHDE&SCHWARZ | ESH3-Z2    | 100281                | 2012-08-21   | 2013-08-20 |
| System Controller      | CT            | SC100      | -                     | --           | --         |
| Printer                | EPSON         | PHOTO EX3  | CFNH234850            | --           | --         |
| Computer               | IBM           | 8434       | 1S8434KCE99BLXL<br>O* | -            | -          |
| Loop Antenna           | EMCO          | 6502       | 00042960              | 2012-08-21   | 2013-08-20 |
| ESPI Test Receiver     | ROHDE&SCHWARZ | ESI26      | 838786/013            | 2012-08-21   | 2013-08-20 |
| 3m OATS                | --            | --         | N/A                   | 2012-08-21   | 2013-08-20 |
| Horn Antenna           | SCHWARZBECK   | BBHA 9170  | BBHA9170265           | 2012-08-21   | 2013-08-20 |
| Horn Antenna           | SCHWARZBECK   | BBHA 9120D | 9120D-631             | 2012-08-21   | 2013-08-20 |
| Power meter            | Anritsu       | ML2487A    | 6K00003613            | 2012-08-21   | 2013-08-20 |
| Power sensor           | Anritsu       | MA2491A    | 32263                 | 2012-08-21   | 2013-08-20 |
| Bilog Antenna          | Schwarebeck   | VULB9163   | 9163/340              | 2012-08-21   | 2013-08-20 |
| LISN                   | AFJ           | LS16C      | 10010947251           | 2012-08-21   | 2013-08-20 |
| LISN (Three Phase)     | Schwarebeck   | NSLK 8126  | 8126453               | 2012-08-21   | 2013-08-20 |
| 9*6*6 Anechoic         | --            | --         | N/A                   | 2012-08-21   | 2013-08-20 |
| EMI Test Receiver      | RS            | ESCS30     | 100139                | 2012-08-21   | 2013-08-20 |
| LISN                   | AFJ           | LS16C      | 10010947251           | 2012-08-21   | 2013-08-20 |
| LISN (Three Phase)     | Schwarebeck   | NSLK 8126  | 8126453               | 2012-08-21   | 2013-08-20 |

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### 3.0 Technical Details

#### 3.1 Summary of test results

| The EUT has been tested according to the following specifications: |  |        |          |
|--|--|--------|----------|
| Standard   | Test Type  | Result | Notes    |
| FCC Part 15, Paragraph 15.107 & 15.207                             | Conducted Emission Test  | PASS   | Complies |
| FCC Part 15 Subpart C Paragraph 15.247(a)(2) Limit                 | Spectrum bandwidth of a Orthogonal Frequency Division Multiplex System<br>Limit: 6dB bandwidth>500kHz  | PASS   | Complies |
| FCC Part 15, Paragraph 15.247(b)                                   | Maximum peak output power<br>Limit: max. 30dBm   | PASS   | Complies |
| FCC Part 15, Paragraph 15.109,15.205 & 15.209                      | Transmitter Radiated Emission<br>Limit: Table 15.209   | PASS   | Complies |
| FCC Part 15, Paragraph 15.247(e)                                   | Power Spectral Density<br>Limit: max. 8dBm   | PASS   | Complies |
| FCC Part 15, Paragraph 15.247(d)                                   | Out of Band Emission and Restricted Band Radiation<br>Limit: 20dB less than peak value of fundamental frequency<br>Restricted band limit: Table 15.209 | PASS   | Complies |

#### 3.2 Test Standards

FCC Part 15 Subpart & Subpart C, Paragraph 15.247

#### 4.0 EUT Modification

No modification by Shenzhen Timeway Technology Consulting Co., Ltd

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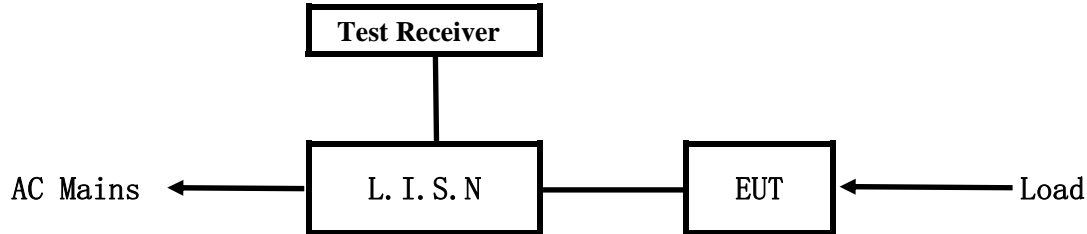
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## 5. Power Line Conducted Emission Test

### 5.1 Schematics of the test

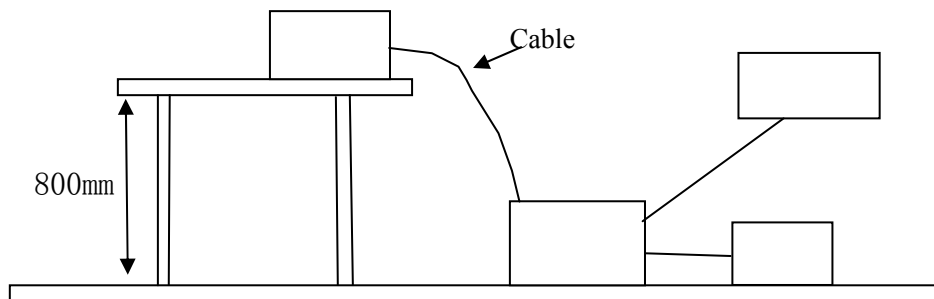


EUT: Equipment Under Test

### 5.2 Test Method and test Procedure

The EUT was tested according to ANSI C63.4-2003. The Frequency spectrum From 0.15MHz to 30MHz was investigated. The LISN used was 50ohm/50uH as specified by section 5.1 of ANSI C63.4 –2003.

Block diagram of Test setup



### 5.3 Configuration of The EUT

The EUT was configured according to ANSI C63.4-2003. All interface ports were connected to the appropriate peripherals. All peripherals and cables are listed below.

#### A. EUT

| Device                           | Manufacturer                               | Model     | FCC ID       |
|----------------------------------|--|-----------|--------------|
| 2.4GHz Digital Wireless Receiver | Videotech Technology Development co., Ltd. | VT-9305RX | W3DVT-9305RX |

#### B. Internal Device

| Device | Manufacturer | Model | FCC ID/DOC |
|--------|--------------|-------|------------|
|--------|--------------|-------|------------|

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|     |  |  |  |
|-----|--|--|--|
| N/A |  |  |  |
|-----|--|--|--|

### C. Peripherals

| Device | Manufacturer | Model | FCC ID/DOC | Cable |
|--------|--------------|-------|------------|-------|
| N/A    |              |       |            |       |

#### 5.4 EUT Operating Condition

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

A Setup the EUT and simulators as shown on follow

B Enable AF signal and confirm EUT active to normal condition

#### 5.5 Power line conducted Emission Limit according to Paragraph 15.207.

| Frequency<br>(MHz) | Class A Limits (dB $\mu$ V) |               | Class B Limits (dB $\mu$ V) |               |
|--------------------|-----------------------------|---------------|-----------------------------|---------------|
|                    | Quasi-peak Level            | Average Level | Quasi-peak Level            | Average Level |
| 0.15 ~ 0.50        | 79.0                        | 66.0          | 66.0~56.0*                  | 56.0~46.0*    |
| 0.50 ~ 5.00        | 73.0                        | 60.0          | 56.0                        | 46.0          |
| 5.00 ~ 30.00       | 73.0                        | 60.0          | 60.0                        | 50.0          |

- Notes:
1. \*Decreasing linearly with logarithm of frequency.
  2. The tighter limit shall apply at the transition frequencies

#### 5.6 Test Results

The frequency spectrum from 0.15MHz to 30MHz was investigated. All reading are quasi-peak values with a resolution bandwidth of 9kHz.

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**A: Conducted Emission on Live Terminal (150kHz to 30MHz)**

**EUT Operating Environment**

Temperature: 26°C Humidity: 65%RH Atmospheric Pressure: 101 KPa

**EUT set Condition: Charging and Keep Transmitting**

**Equipment Level: Class B**

**Results: N/A**

Please refer to following diagram for individual

| Frequency<br>(MHz) | Line | Reading(dBμV) |         | Limit(dBμV) |         |
|--------------------|------|---------------|---------|-------------|---------|
|                    |      | Quasi-peak    | Average | Quasi-peak  | Average |
|                    | Live |               |         |             |         |
|                    | Live |               |         |             |         |
|                    | Live |               |         |             |         |
|                    | Live |               |         |             |         |
|                    | Live |               |         |             |         |
|                    | Live |               |         |             |         |
|                    | Live |               |         |             |         |

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**B: Conducted Emission on Neutral Terminal (150kHz to 30MHz)**

**EUT Operating Environment**

Temperature: 26°C Humidity: 65%RH Atmospheric Pressure: 101 KPa

**EUT set Condition: Charging and Keep Transmitting**

**Equipment Level: Class B**

**Results: N/A**

Please refer to following diagram for individual

| Frequency<br>(MHz) | Line    | Reading(dBμV) |         | Limit(dBμV) |         |
|--------------------|---------|---------------|---------|-------------|---------|
|                    |         | Quasi-peak    | Average | Quasi-peak  | Average |
|                    | Neutral |               |         |             |         |
|                    | Neutral |               |         |             |         |
|                    | Neutral |               |         |             |         |
|                    | Neutral |               |         |             |         |
|                    | Neutral |               |         |             |         |
|                    | Neutral |               |         |             |         |
|                    | Neutral |               |         |             |         |

**N/A --- EUT powered by vehicle battery, this test item not applicable.**

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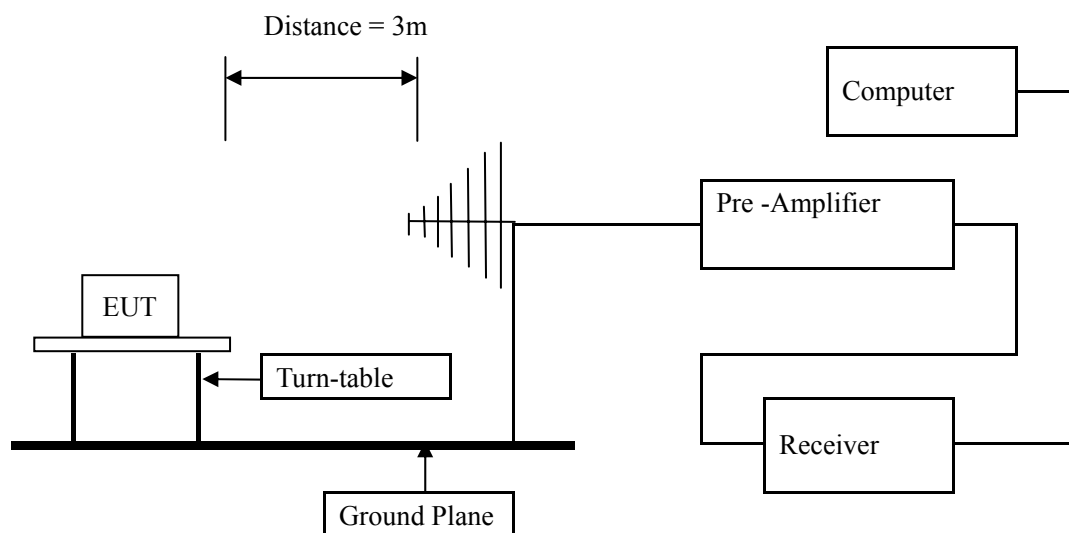


## 6 Radiated Emission Test

### 6.1 Test Method and test Procedure:

- (1) The EUT was tested according to ANSI C63.4 –2003. The radiated test was performed at Timeway Laboratory. This site is on file with the FCC laboratory division, Registration No.899988
- (2) The EUT, peripherals were put on the turntable which table size is 1m x 1.5 m, table high 0.8 m. All set up is according to ANSI C63.4-2003.
- (3) The frequency spectrum from 30 MHz to 25 GHz was investigated. All readings from 30 MHz to 1 GHz are Quasi-peak values with a resolution bandwidth of 120 kHz. For measurement above 1GHz, peak values with RBW=VBW=1MHz and PK detector. AV value with RBW=1MHz, VBW=10Hz and PK detector. Measurements were made at 3 meters.
- (4) The antenna high is varied from 1 m to 4 m 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.

### Block diagram of Test setup



### 6.2 Configuration of The EUT

Same as section 5.3 of this report

### 6.3 EUT Operating Condition

Same as section 5.4 of this report.

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#### 6.4 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:

**Frequencies in restricted band are complied to limit on Paragraph 15.209**

| Frequency Range (MHz) | Distance (m) | Field strength (dB $\mu$ V/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 RF Voltage ( $\mu$ V)
  2. In the Above Table, the higher limit applies at the band edges.
  3. Distance refers to the distance in meters between the measuring instrument antenna and the EUT

**Note: EUT used in vehicle environment. The input voltage is DC12V**

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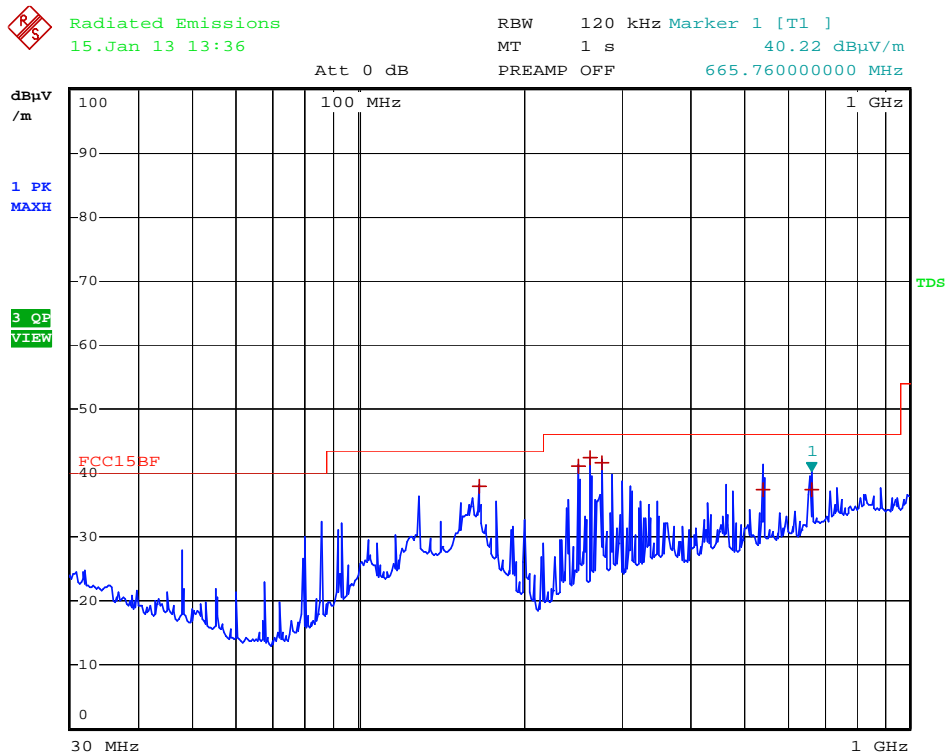
## Test result

### General Radiated Emission Data and Harmonics Radiated Emission Data Radiated Emission In Horizontal (30MHz----1000MHz)

EUT set Condition: Keep transmitting

Results: Pass

Test Figure:



Date: 15.JAN.2013 13:36:55

| Polarization | Frequency(MHz) | Read Value (dBuV/m) | Antenna Factor(dB) | Cable Loss(dB) | Measured Result (dBuV/m) | QP limit (dBuV/m) | margin (dB) |
|--------------|----------------|---------------------|--------------------|----------------|--------------------------|-------------------|-------------|
| H            | 165.76         | 28.9                | 8.3                | 0.8            | 38.0                     | 43.5              | -5.5        |
| H            | 251.76         | 28.3                | 11.6               | 1.2            | 41.1                     | 46.0              | -4.9        |
| H            | 264.04         | 29.3                | 12.0               | 1.2            | 42.5                     | 46.0              | -3.5        |
| H            | 276.32         | 28.0                | 12.4               | 1.2            | 41.6                     | 46.0              | -4.4        |
| H            | 543.32         | 17.8                | 18.0               | 1.7            | 37.5                     | 46.0              | -8.5        |
| H            | 665.76         | 15.9                | 19.7               | 1.9            | 37.5                     | 46.0              | -8.5        |

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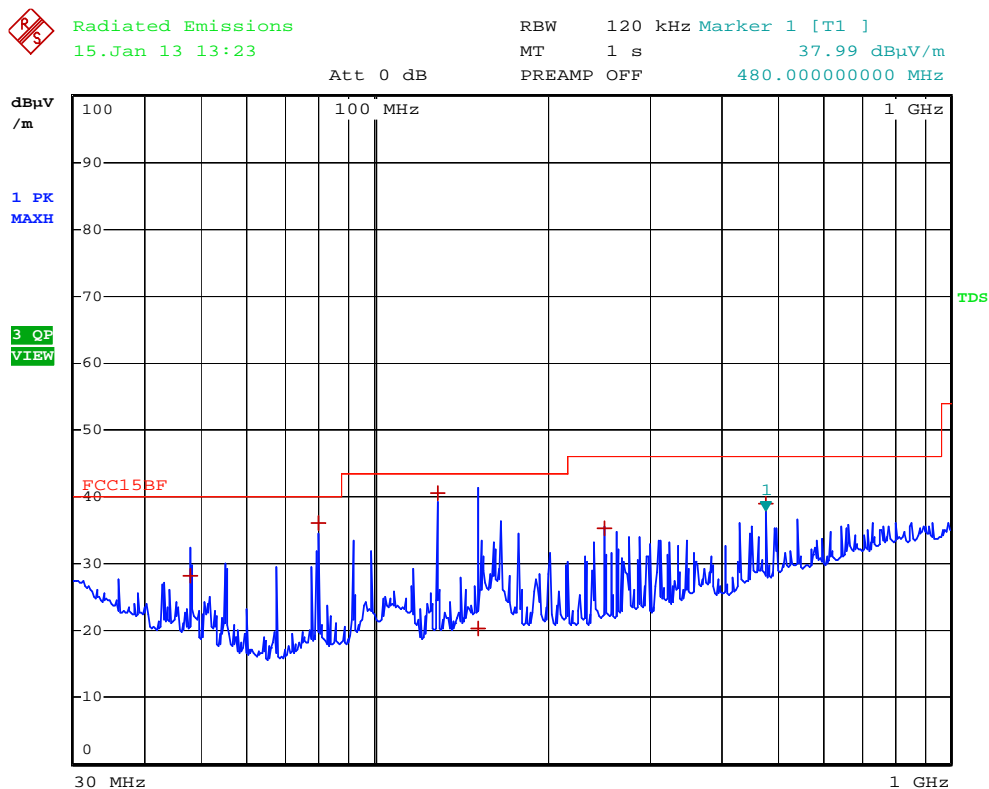
Test result  
General Radiated Emission Data and Harmonics Radiated Emission  
Data

Radiated Emission In Vertical (30MHz---1000MHz)

EUT set Condition: Keep transmitting

Results: Pass

Test Figure:



Date: 15.JAN.2013 13:23:13

| Polarization | Frequency (MHz) | Read Value (dBuV/m) | Antenna Factor(dB) | Cable Loss(dB) | Measured Result (dBuV/m) | QP limit (dBuV/m ) | margin (dB) |
|--------------|-----------------|---------------------|--------------------|----------------|--------------------------|--------------------|-------------|
| V            | 47.96           | 19.9                | 7.7                | 0.5            | 28.1                     | 40.0               | -11.9       |
| V            | 79.84           | 28.3                | 7.3                | 0.4            | 36.0                     | 40.0               | -4.0        |
| V            | 128.92          | 32.5                | 7.1                | 0.8            | 40.4                     | 43.5               | -3.1        |
| V            | 151.72          | 11.5                | 8.3                | 0.7            | 20.5                     | 43.5               | -23.0       |
| V            | 251.88          | 22.7                | 11.3               | 1.2            | 35.2                     | 46.0               | -10.8       |
| V            | 480.00          | 20.8                | 16.8               | 1.4            | 39.0                     | 46.0               | -7.0        |

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**Operation Mode: Transmitting under Low Channel (2403MHz)**

| Frequency (MHz) | Level@3m (dB $\mu$ V/m) | Antenna Polarity | Limit@3m (dB $\mu$ V/m) |
|-----------------|-------------------------|------------------|-------------------------|
| 2403            | 87.58 (PK)              | H                | Fundamental Frequency   |
| 2403            | 87.48 (PK)              | V                |                         |
| 4806            | --                      | H/V              | 74(Peak)/ 54(AV)        |
| 7209            | --                      | H/V              | 74(Peak)/ 54(AV)        |
| 9612            | --                      | H/V              | 74(Peak)/ 54(AV)        |
| 12015           | --                      | H/V              | 74(Peak)/ 54(AV)        |
| 14418           | --                      | H/V              | 74(Peak)/ 54(AV)        |
| 16821           | --                      | H/V              | 74(Peak)/ 54(AV)        |
| 19224           | --                      | H/V              | 74(Peak)/ 54(AV)        |
| 21627           | --                      | H/V              | 74(Peak)/ 54(AV)        |
| 24030           | --                      | H/V              | 74(Peak)/ 54(AV)        |

Note: 1. Level = Reading + AF + Cable - Preamp + Filter - Dist, Margin = Level - Limit  
2. Remark "---" means that the emissions level is too low to be measured

**Operation Mode: Transmitting g under Middle Channel (2441MHz)**

| Frequency (MHz) | Level@3m (dB $\mu$ V/m) | Antenna Polarity | Limit@3m (dB $\mu$ V/m) |
|-----------------|-------------------------|------------------|-------------------------|
| 2441            | 87.02 (PK)              | H                | Fundamental Frequency   |
| 2441            | 85.78 (PK)              | V                |                         |
| 4882            | --                      | H/V              | 74(Peak)/ 54(AV)        |
| 7323            | --                      | H/V              | 74(Peak)/ 54(AV)        |
| 9764            | --                      | H/V              | 74(Peak)/ 54(AV)        |
| 12205           | --                      | H/V              | 74(Peak)/ 54(AV)        |
| 14646           | --                      | H/V              | 74(Peak)/ 54(AV)        |
| 17087           | --                      | H/V              | 74(Peak)/ 54(AV)        |
| 19528           | --                      | H/V              | 74(Peak)/ 54(AV)        |
| 21969           | --                      | H/V              | 74(Peak)/ 54(AV)        |
| 24410           | --                      | H/V              | 74(Peak)/ 54(AV)        |

Note: 1. Level = Reading + AF + Cable - Preamp + Filter - Dist, Margin = Level - Limit  
2. Remark "---" means that the emissions level is too low to be measured

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**Operation Mode: Transmitting under High Channel (2478MHz)**

| Frequency (MHz) | Level@3m (dB $\mu$ V/m) | Antenna Polarity | Limit@3m (dB $\mu$ V/m) |
|-----------------|-------------------------|------------------|-------------------------|
| 2478            | 86.58 (PK)              | H                | Fundamental Frequency   |
| 2478            | 88.57 (PK)              | V                |                         |
| 4956            | --                      | H/V              | 74(Peak)/ 54(AV)        |
| 7434            | --                      | H/V              | 74(Peak)/ 54(AV)        |
| 9912            | --                      | H/V              | 74(Peak)/ 54(AV)        |
| 12390           | --                      | H/V              | 74(Peak)/ 54(AV)        |
| 14868           | --                      | H/V              | 74(Peak)/ 54(AV)        |
| 17346           | --                      | H/V              | 74(Peak)/ 54(AV)        |
| 19824           | --                      | H/V              | 74(Peak)/ 54(AV)        |
| 22303           | --                      | H/V              | 74(Peak)/ 54(AV)        |
| 24780           | --                      | H/V              | 74(Peak)/ 54(AV)        |

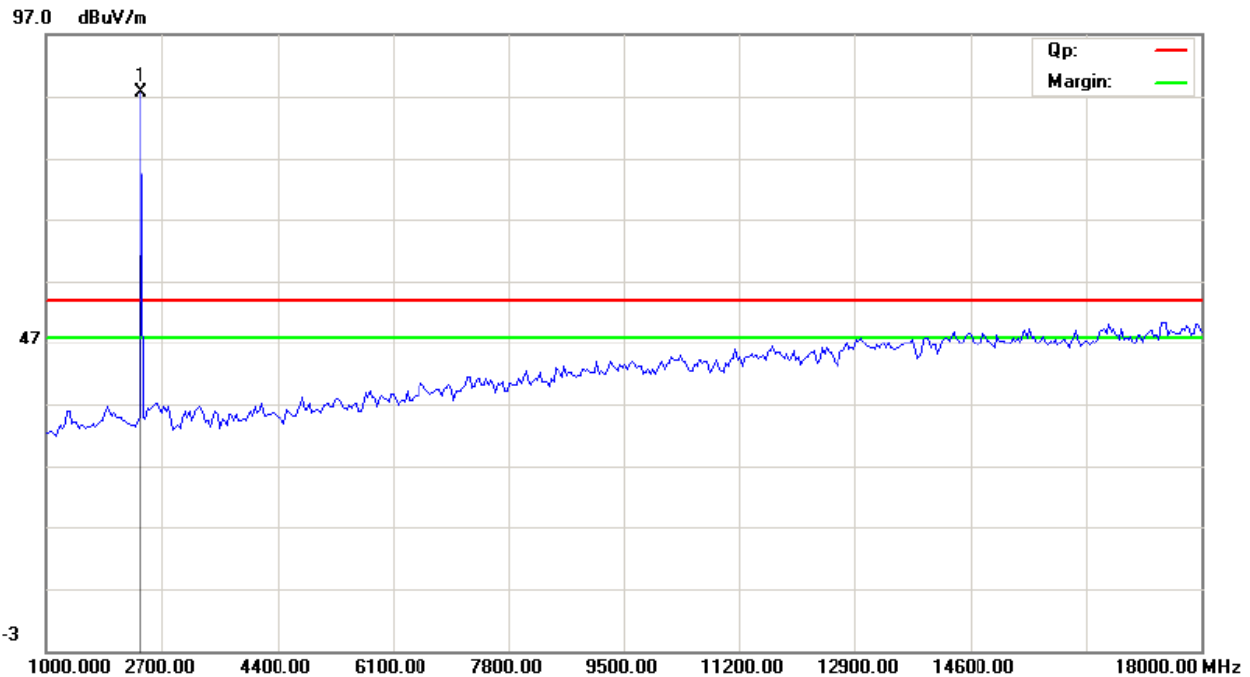
Note: 1. Level = Reading + AF + Cable - Preamp + Filter - Dist, Margin = Level - Limit  
2. Remark "---" means that the emissions level is too low to be measured

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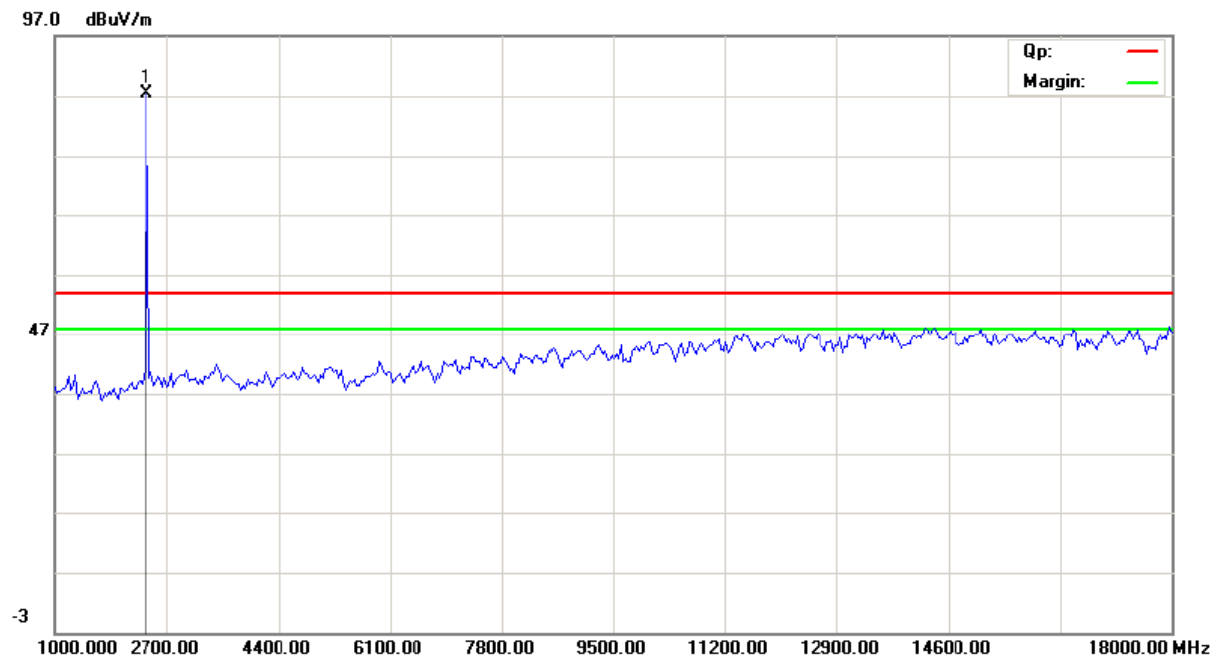


Please refer to the following test plots for details:

**Low Channel: Horizontal**



**Low Channel : Vertical**



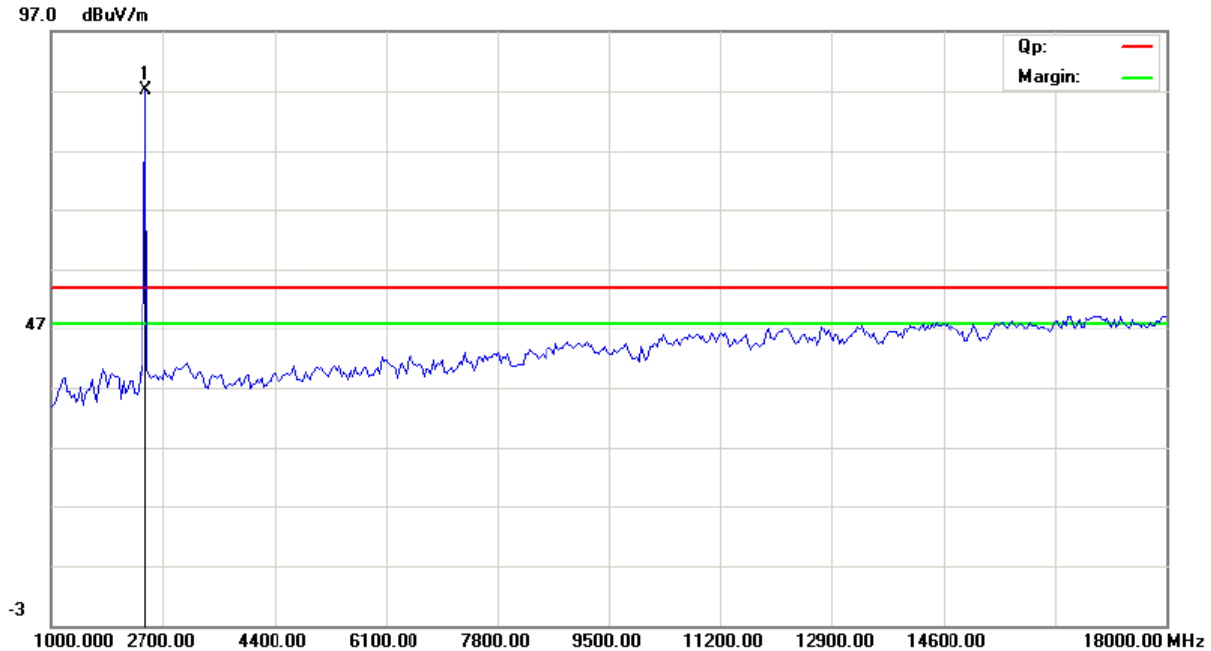
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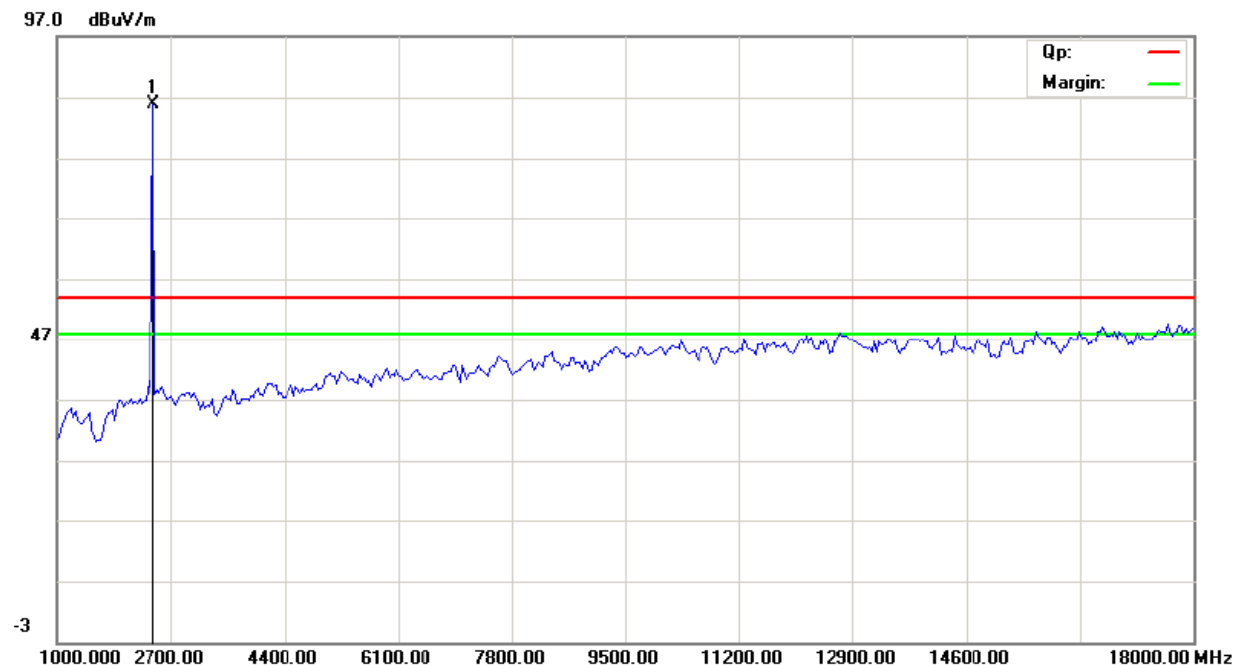
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### Middle Channel : Horizontal



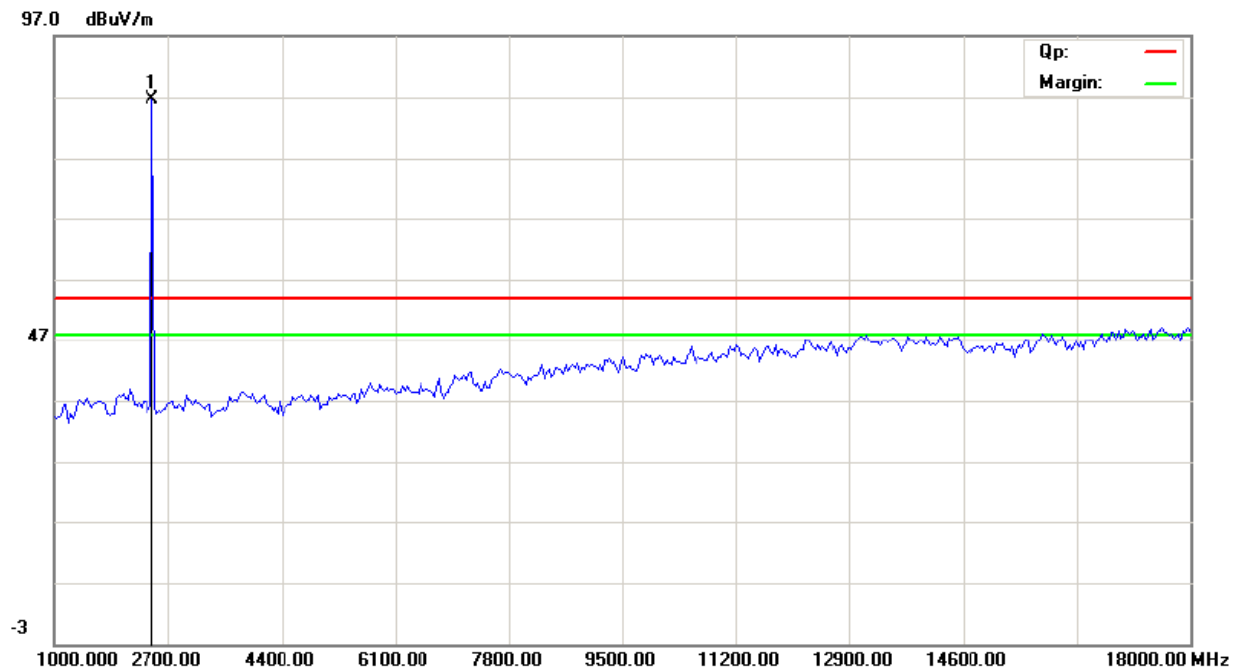
### Middle Channel : Vertical



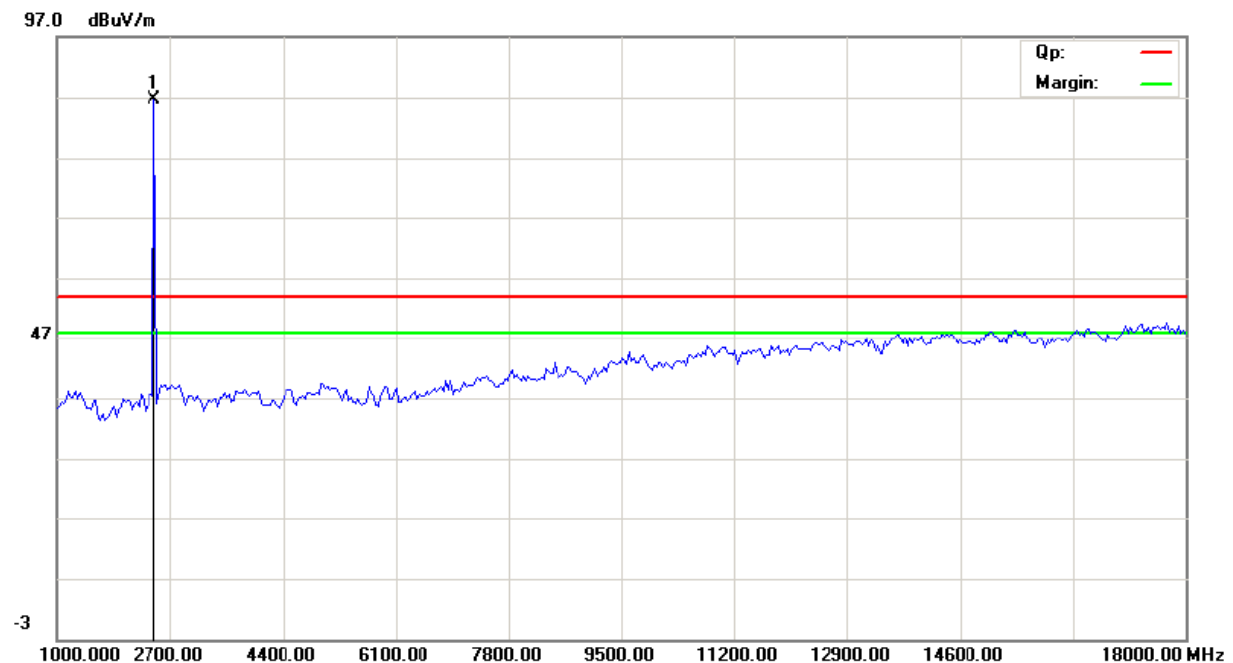
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### High Channel : Horizontal



### High Channel : Vertical



**Note: for the radiated emissions above 18G, it is the floor noise.**

The report refers only to the sample tested and does not apply to the bulk.

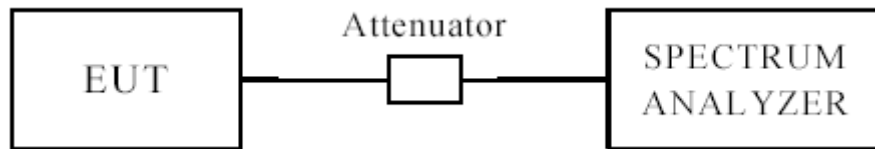
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## 7.0 6dB Bandwidth Measurement

### 7.1 Test Setup



### 7.2 Limits of 6dB Bandwidth Measurement

The minimum of 6dB Bandwidth Measurement is >500 kHz

### 7.3 Test Procedure

1. Set resolution bandwidth (RBW) = 100 kHz
2. Set the video bandwidth (VBW)  $\geq 3 \times$  RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

### 7.4 Test Result

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### 6dB Occupied Bandwidth

|             |                         |                                  |                           |               |                      |                     |            |
|-------------|-------------------------|----------------------------------|---------------------------|---------------|----------------------|---------------------|------------|
| EUT         |                         | 2.4GHz Digital Wireless Receiver |                           | Model         |                      | VT-9305RX           |            |
| Mode        |                         | Keep Transmitting                |                           | Input Voltage |                      | DC12V               |            |
| Temperature |                         | 24 deg. C,                       |                           | Humidity      |                      | 56% RH              |            |
| Channel     | Channel Frequency (MHz) |                                  | Data Transfer Rate (Mbps) |               | 6 dB Bandwidth (MHz) | Minimum Limit (MHz) | Pass/ Fail |
| Low         | 2403                    |                                  | 1                         |               | 2.86                 | 0.5                 | Pass       |
| Middle      | 2441                    |                                  | 1                         |               | 2.86                 | 0.5                 | Pass       |
| High        | 2478                    |                                  | 1                         |               | 2.89                 | 0.5                 | Pass       |

Note: EUT used in vehicle environment. The input voltage is DC12-24V. After pre-scanning, the DC24V is the worse case.

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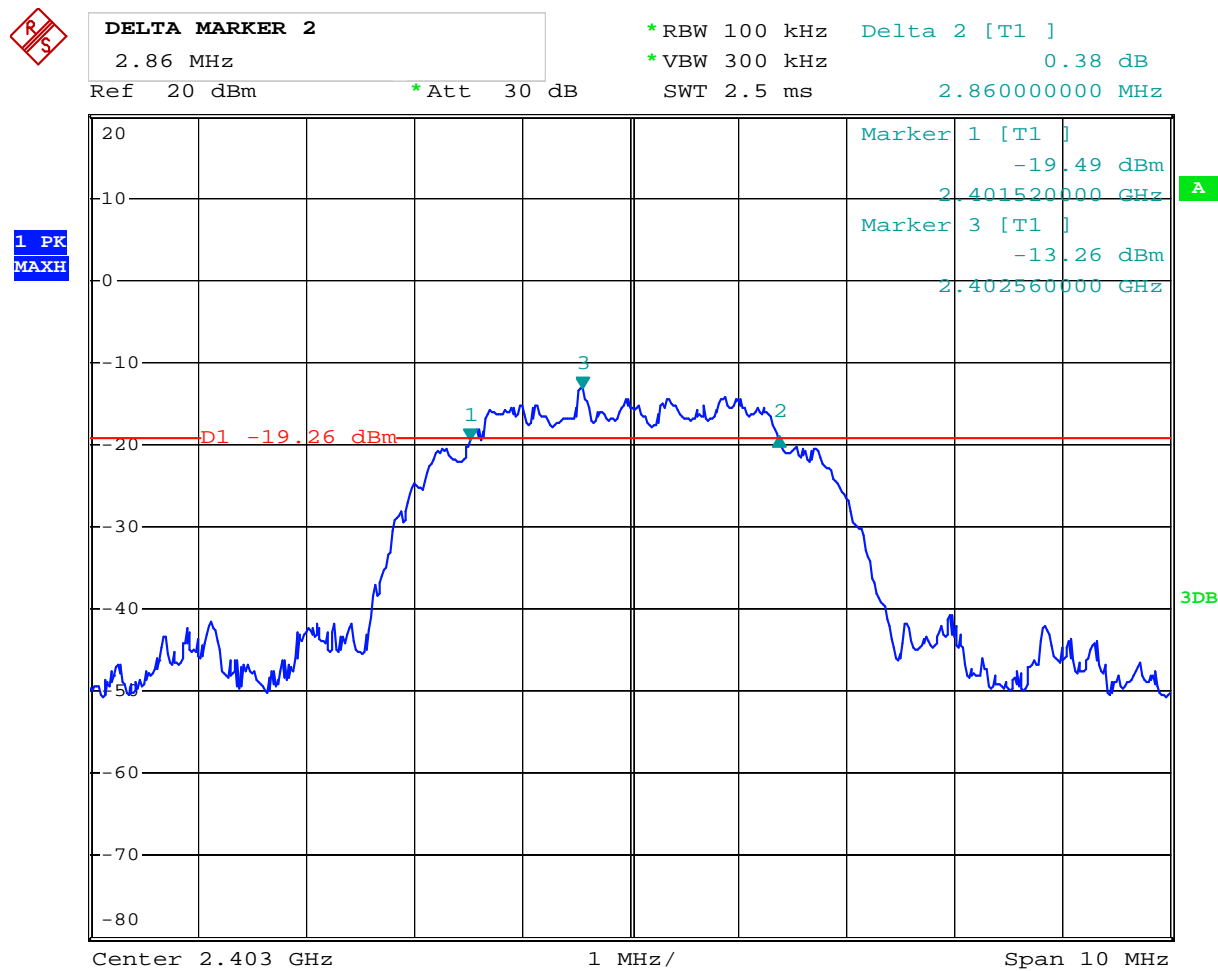
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Test Figure:

1. Condition: Low Channel



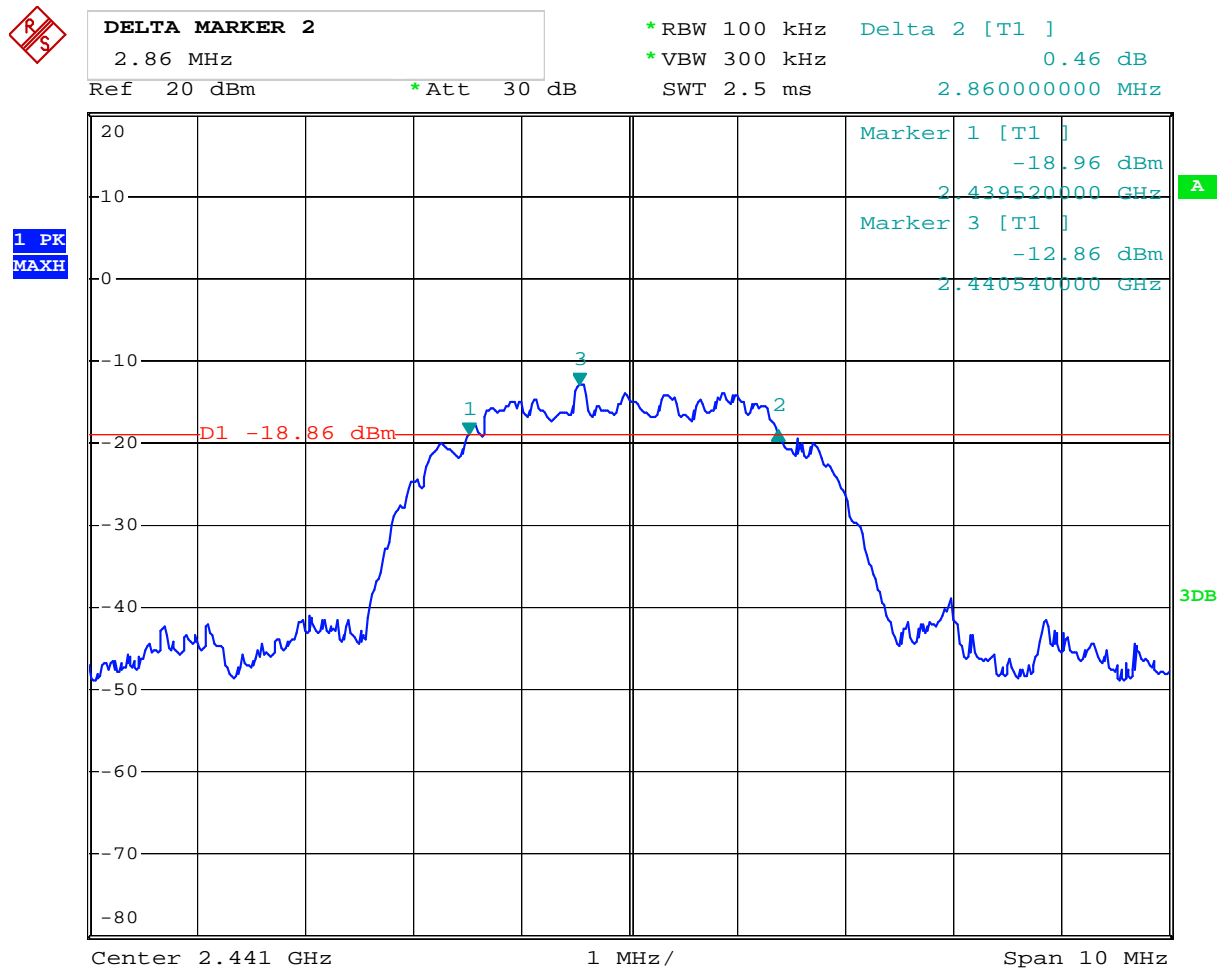
Date: 27.APR.2013 18:04:33

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2. Condition: Middle Channel



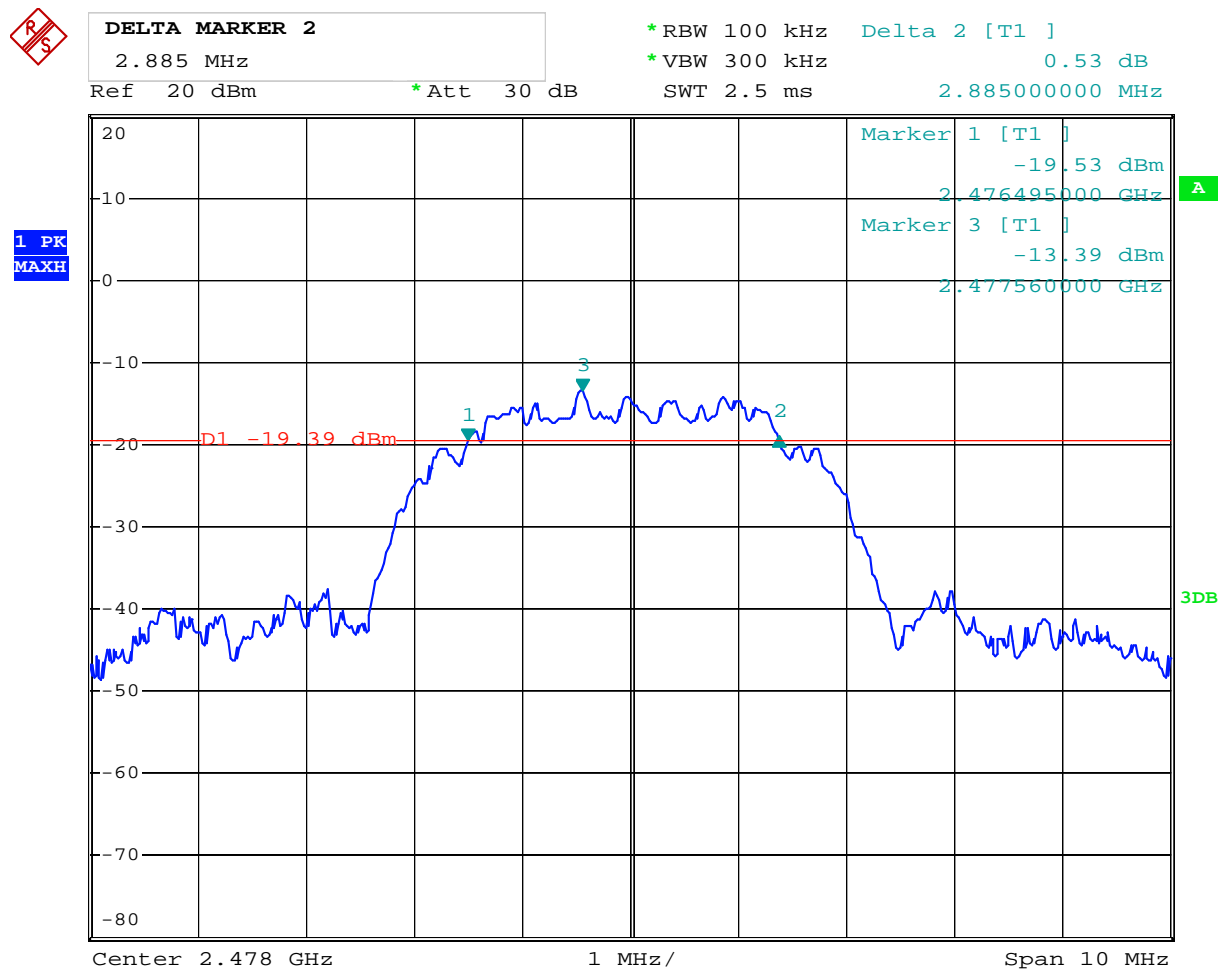
Date: 27.APR.2013 18:09:13

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3. High Channel



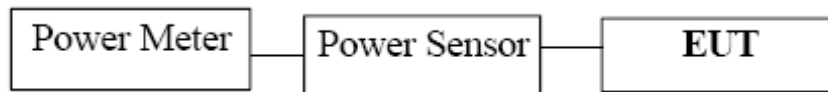
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## 8. Maximum Peak Output Power

### 8.1 Test Setup



### 8.2 Limits of Maximum Peak Output Power

The Maximum Peak Output Power Measurement is 30dBm.

### 8.3 Test Procedure

The RF power output was measured with a Power meter connected to the RF Antenna connector ( conducted measurement ) while EUT was operating in transmit mode at the appropriate centre frequency.

**Note: the peak power was measured**

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#### 8.4 Test Results

|             |                                  |                         |               |                        |            |
|-------------|----------------------------------|-------------------------|---------------|------------------------|------------|
| EUT         | 2.4GHz Digital Wireless Receiver |                         | Model         | VT-9305RX              |            |
| Mode        | Keep Transmitting                |                         | Input Voltage | DC12V                  |            |
| Temperature | 24 deg. C,                       |                         | Humidity      | 56% RH                 |            |
| Channel     | Channel Frequency (MHz)          | Peak Power Output (dBm) |               | Peak Power Limit (dBm) | Pass/ Fail |
| Low         | 2403                             | 0.23                    |               | 30                     | Pass       |
| Middle      | 2441                             | 0.58                    |               | 30                     | Pass       |
| High        | 2478                             | 0.05                    |               | 30                     | Pass       |

Note:

1. The result basic equation calculation as follow:

Peak Power Output = Peak Power Reading + Cable loss + Attenuator

2. EUT used in vehicle environment. The input voltage is DC12-24V. After pre-scanning, the DC24V is the worse case.

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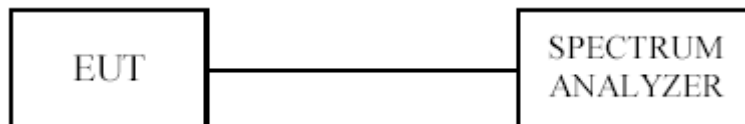
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## 9. Power Spectral Density Measurement

### 9.1 Test Setup



### 9.2 Limits of Power Spectral Density Measurement

The Maximum Power Spectral Density Measurement is 8dBm.

### 9.3 Test Procedure

1. Use this procedure when the maximum peak conducted output power in the fundamental emission is used to demonstrate compliance.
2. Set the RBW = 10 kHz.
3. Set the VBW  $\geq$  30 kHz.
4. Set the span to 1.5 times the DTS channel bandwidth.
5. Detector = peak.
6. Sweep time = auto couple.
7. Trace mode = max hold.
8. Allow trace to fully stabilize.
9. Use the peak marker function to determine the maximum amplitude level.
10. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.
11. The resulting peak PSD level must be  $\leq$  8 dBm.

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#### 9.4 Test Result

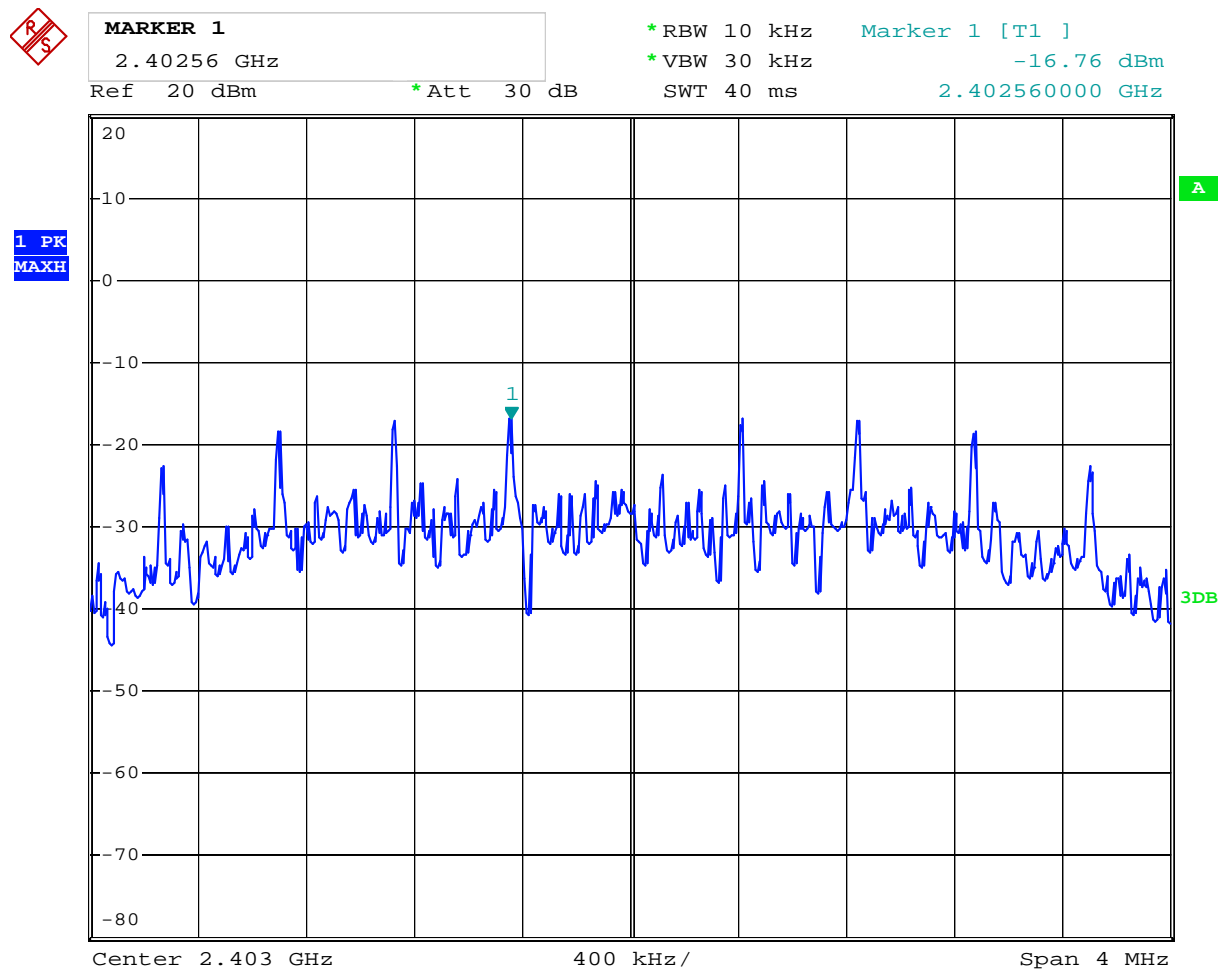
| EUT         | 2.4GHz Digital Wireless Receiver |                            | Model               | VT-9305RX  |  |
|-------------|----------------------------------|----------------------------|---------------------|------------|--|
| Mode        | Keep Transmitting                |                            | Input Voltage       | DC12V      |  |
| Temperature | 24 deg. C,                       |                            | Humidity            | 56% RH     |  |
| Channel     | Channel Frequency (MHz)          | Final RF Power Level (dBm) | Maximum Limit (dBm) | Pass/ Fail |  |
| Low         | 2403                             | -16.76                     | 8                   | Pass       |  |
| Middle      | 2441                             | -16.26                     | 8                   | Pass       |  |
| High        | 2478                             | -16.45                     | 8                   | Pass       |  |

Note: EUT used in vehicle environment. The input voltage is DC12-24V. After pre-scanning, the DC24V is the worse case.





Test Plots:  
Low Channel:



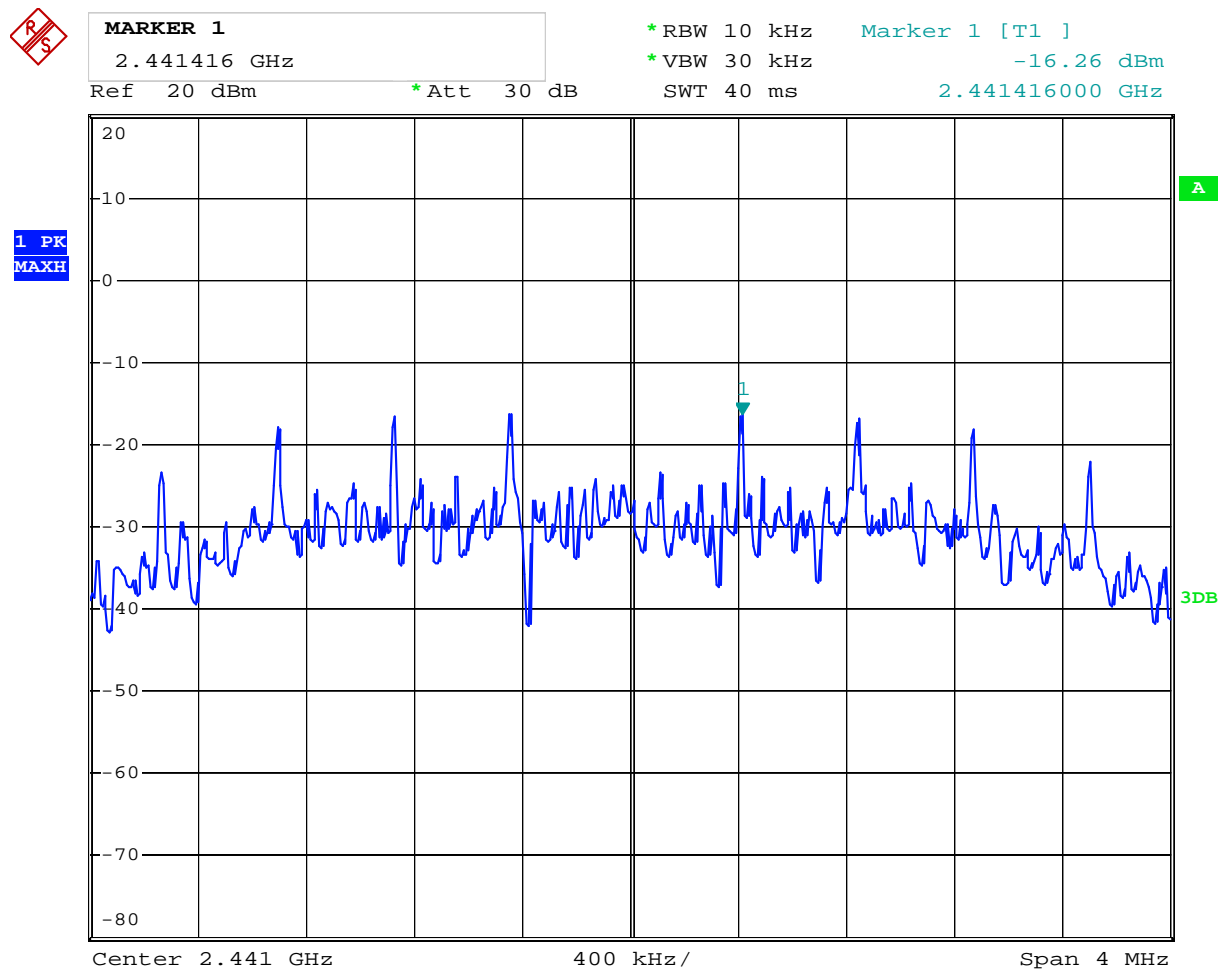
Date: 27.APR.2013 18:06:19

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Middle Channel:



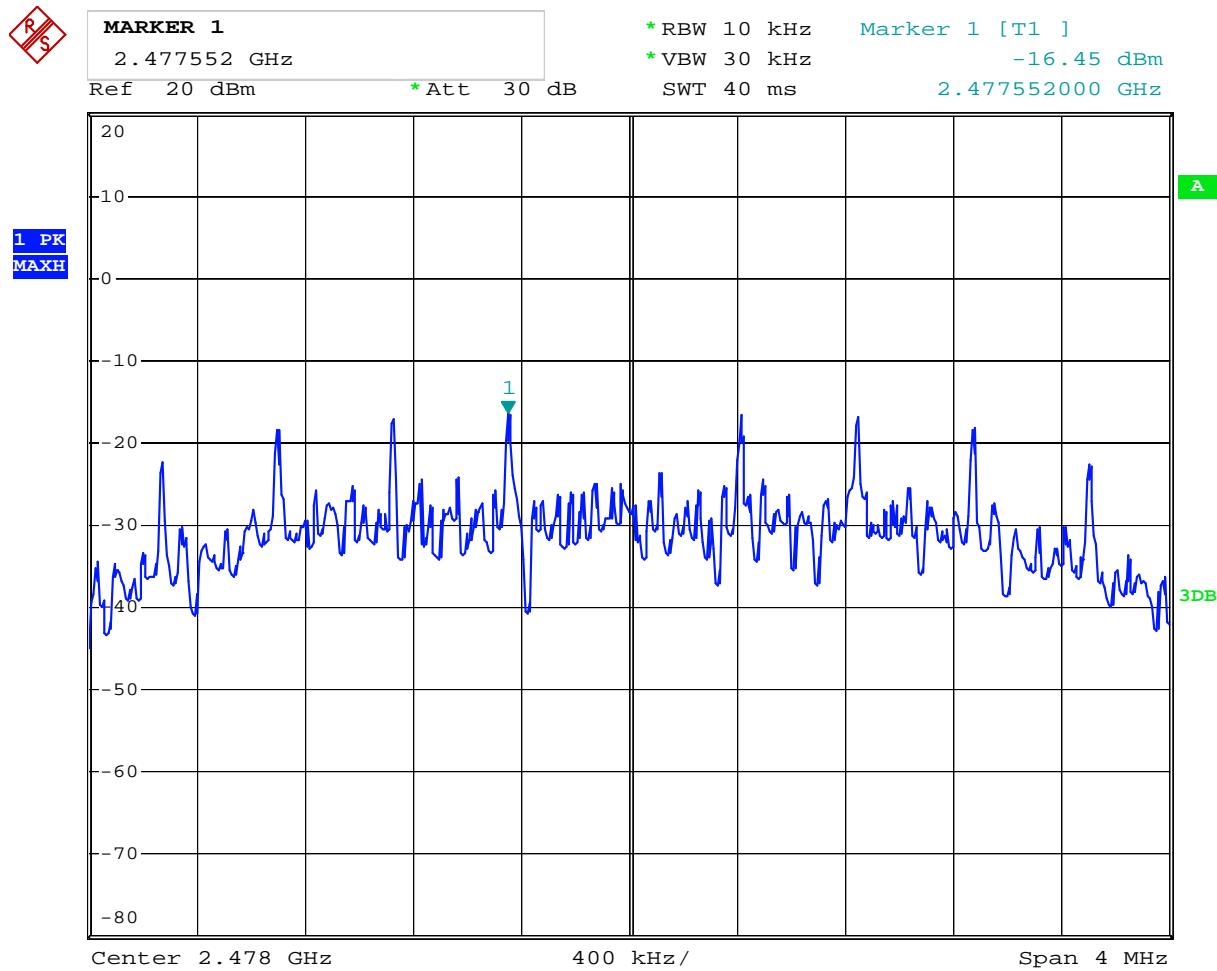
Date: 27.APR.2013 18:10:43

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High Channel



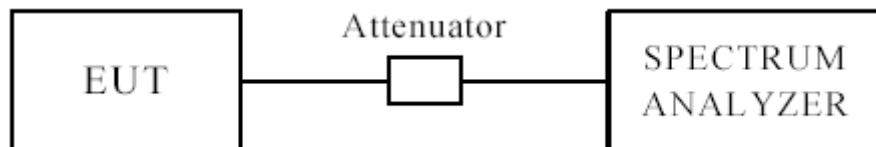
Date:            27.APR.2013    18:11:44

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## 10 Out of Band Measurement

### 10.1 Test Setup for band edge



**The restricted band requirement based on radiated emission test; please see the clause 6 for the test setup**

### 10.2 Limits of Out of Band Emissions Measurement

1. Below -20dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).
2. Fall in the restricted bands listed in section 15.205. The maximum permitted average field strength is listed in section 15.209.

### 10.3 Test Procedure

For signals in the restricted bands above and below the 2.4-2.483GHz allocated band a measurement was made of radiated emission test.( Peak values with RBW=VBW=1MHz and PK detector. AV value with RBW=1MHz, VBW=10Hz and PK detector)

For bandage test, the spectrum set as follows: RBW=VBW=100 kHz. A conducted measurement used

### 10.4 Test Result

Please see next pages

Note: 1. for band-edge measurement, the frequency from 30MHz-25GHz was tested. And It met the FCC rule.

2. Note: EUT used in vehicle environment. The input voltage is DC12V

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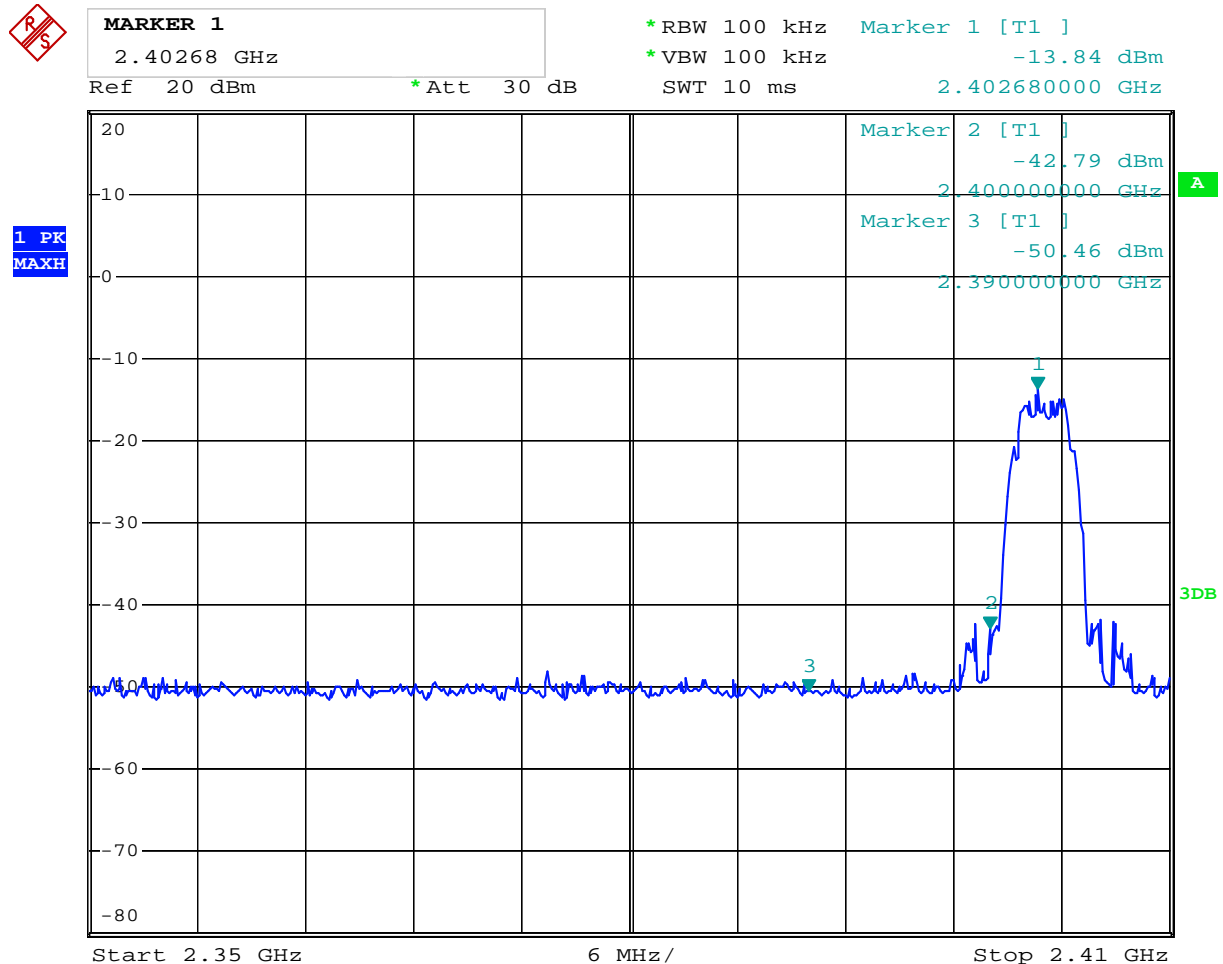




#### 10.4 Band-edge and Restricted band Measurement

|              |                                  |       |               |            |
|--------------|----------------------------------|-------|---------------|------------|
| EUT          | 2.4GHz Digital Wireless Receiver |       | Model         | VT-9305RX  |
| Mode         | Keeping Transmitting             |       | Input Voltage | DC12V      |
| Temperature  | 24 deg. C,                       |       | Humidity      | 56% RH     |
| Test Result: | Pass                             |       | Detector      | PK         |
| 2400         | PK (dBμV/m)                      | 43.67 | Limit         | 74(dBμV/m) |
|              | AV (dBμV/m)                      | --    |               | 54(dBμV/m) |
| 2390         | PK (dBμV/m)                      | 38.03 | Limit         | 74(dBμV/m) |
|              | AV (dBμV/m)                      | --    |               | 54(dBμV/m) |

Test Figure:



Date: 27.APR.2013 18:07:27

Note: The Max. FS in Restrict Band are measured in conventional method.

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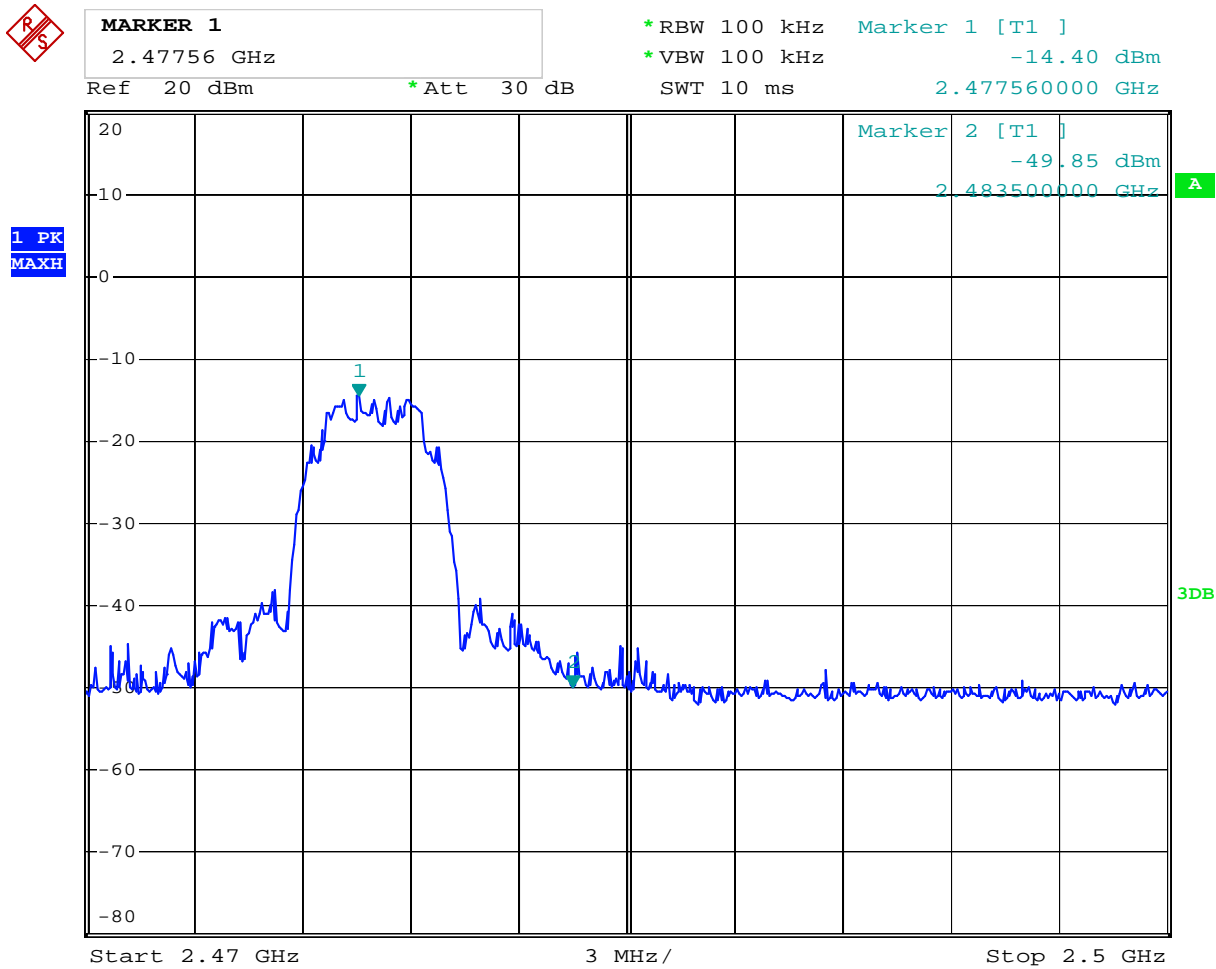




10.4 Band-edge and Restricted band Measurement

|              |                                  |       |               |            |
|--------------|----------------------------------|-------|---------------|------------|
| EUT          | 2.4GHz Digital Wireless Receiver |       | Model         | VT-9305RX  |
| Mode         | Keeping Transmitting             |       | Input Voltage | DC12V      |
| Temperature  | 24 deg. C,                       |       | Humidity      | 56% RH     |
| Test Result: | Pass                             |       | Detector      | PK         |
| 2483.5       | PK (dBμV/m)                      | 41.77 | Limit         | 74(dBμV/m) |
|              | AV (dBμV/m)                      | --    |               | 54(dBμV/m) |

Test Figure:



Date: 27.APR.2013 18:15:01

Note: The Max. FS in Restrict Band are measured in conventional method.

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## **11.0 Antenna Requirement**

### **11.1 Standard Applicable**

For intentional device, according to FCC 47 CFR Section 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.

And according to FCC 47 CFR Section 15.247 (b), if transmitter antennas of directional gain greater than 6 dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

### **11.2 Antenna Connected construction**

Patch Antenna used. The maximum Gain of the antennas is 2.5dBi.

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## 12.0 FCC ID Label

**FCC ID: W3DVT-9305RX**

**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.**

The label must not be a stick-on paper label. The label on these products must be permanently affixed to the product and readily visible at the time of purchase and must last the expected lifetime of the equipment not be readily detachable.

### Mark Location:



FCC ID Label Location

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### 13.0 Photo of testing

Conducted Emission Test Setup:--N/A

Radiated Emission Test Setup:



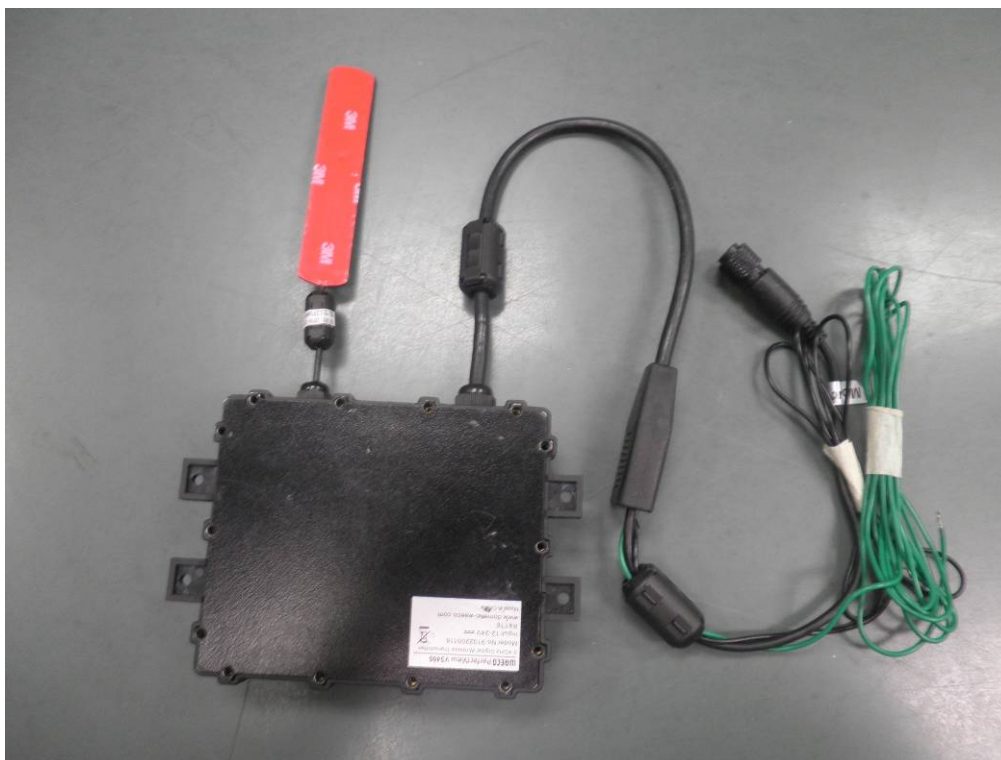
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Photo for the EUT



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Photo for the EUT

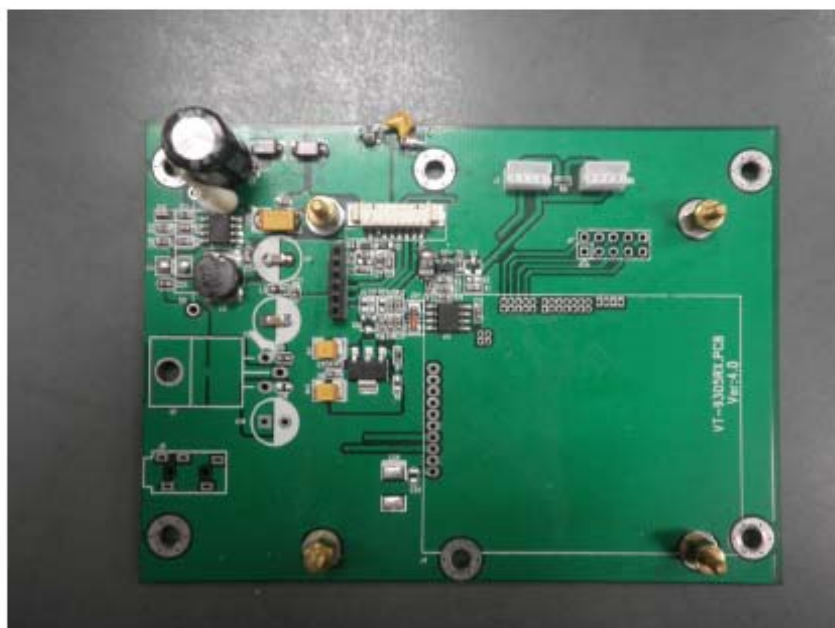


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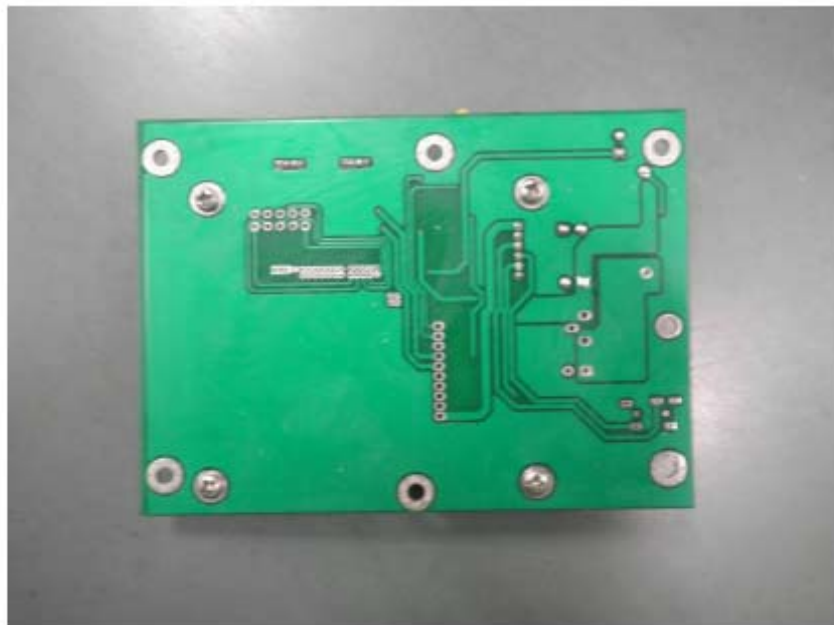


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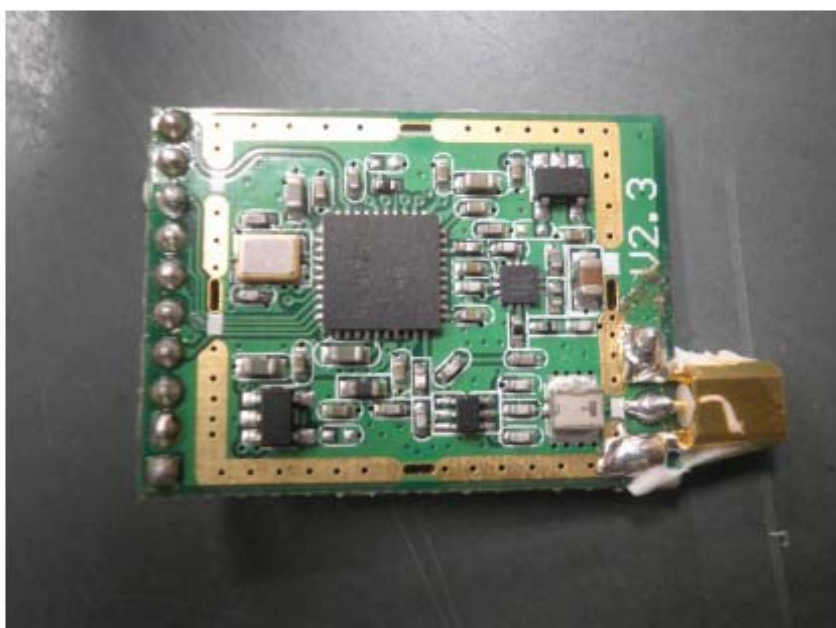


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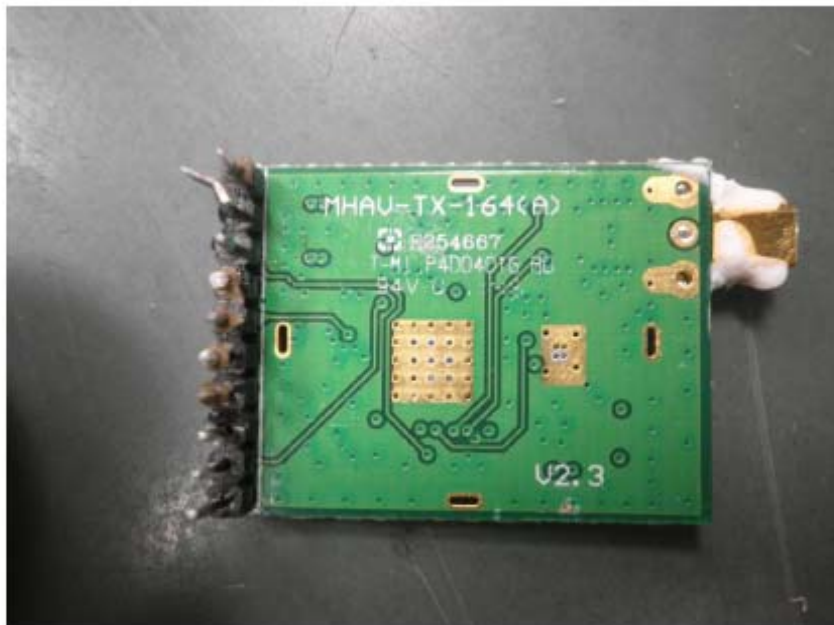


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