



**CENTRE OF TESTING SERVICE  
INTERNATIONAL**

**OPERATE ACCORDING TO ISO/IEC 17025**

# **FCC ID/IC TEST REPORT**

**TEST REPORT NUMBER : CGZ3140220-00105-EFI**



**CENTRE OF TESTING SERVICE CO., LTD.**

A101, No.65, Zhuji Highway, Tianhe District, Guangzhou, China



TEST REPORT For FCC ID/IC

47 CFR PART 15 OCT, 2013

Report Reference No. .... CGZ3140220-00105-EFI

Date of issue ..... 24 April 2014

Testing Laboratory Name ..... CENTRE OF TESTING SERVICE CO., LTD.

Address..... A101, No.65, Zhuji Highway,Tianhe District, Guangzhou, China

Testing location/ procedure ..... Full application of Harmonised standards ■  
Partial application of Harmonised standards □  
Other standard testing method □

Applicant's name ..... TECHSIGNO S.R.L.

Address..... Via Selvuzzis, 53 Udine 33100 Italy

Test specification .....

Standard ..... 47 CFR PART 15 OCT, 2013  
RSS-210 Issue 8, RSS-Gen Issue 3  
ANSI C63.4-2009

Test Report Form No. .... CTSEMC-1.0

TRF Originator ..... CENTRE OF TESTING SERVICE CO., LTD.

Master TRF ..... Dated 2009-01

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Test item description..... : Double Technology Scanner

Trade Mark..... TECHSIGNO

Manufacturer..... TECHSIGNO S.R.L.

Model/Type reference ..... PT2SCAN WIRED HF USB 1D

Ratings..... DC 5V, 0.3AW

Operating Frequency ..... 13.56MHz

Result ..... Positive

Compiled by:

Kate zhang / Fileadministrators

Supervised by:

Duke yang / Technique principal

Approved by:

Vincent yao / Manager



## FCC ID -- TEST REPORT

|                                               |                                       |
|-----------------------------------------------|---------------------------------------|
| <b>Test Report No. :</b> CGZ3140220-00105-EFI | <u>24 April 2014</u><br>Date of issue |
|-----------------------------------------------|---------------------------------------|

|                           |                                     |
|---------------------------|-------------------------------------|
| Type / Model.....         | PT2SCAN WIRED HF USB 1D             |
| EUT.....                  | Double Technology Scanner           |
| <b>Applicant</b> .....    | TECHSIGNO S.R.L.                    |
| Address.....              | Via Selvuzzis, 53 Udine 33100 Italy |
| Telephone.....            | +39-0432603604                      |
| Fax.....                  | +39-0432602905                      |
| Contact.....              | Dr. Roberto Chiandussi              |
| <b>Manufacturer</b> ..... | TECHSIGNO S.R.L.                    |
| Address.....              | Via Selvuzzis, 53 Udine 33100 Italy |
| Telephone.....            | +39-0432603604                      |
| Fax.....                  | +39-0432602905                      |
| Contact.....              | Dr. Roberto Chiandussi              |
| <b>Factory</b> .....      | TECHSIGNO S.R.L.                    |
| Address.....              | Via Selvuzzis, 53 Udine 33100 Italy |
| Telephone.....            | +39-0432603604                      |
| Fax.....                  | +39-0432602905                      |
| Contact.....              | Dr. Roberto Chiandussi              |

**Test Result** according to the standards on page 1: **PASSED**

The test report merely corresponds to the test sample.  
It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

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## 1.0 TEST STANDARDS

The tests were performed according to following standards:

- 47 CFR PART 15 OCT, 2013
- RSS-210 Issue 8, RSS-Gen Issue 3
- ANSI C63.4-2009

## 2.0 SUMMARY

### 2.1 GENERAL REMARKS

|                                |                           |
|--------------------------------|---------------------------|
| Date of receipt of test sample | 20 February 2014          |
| Testing commenced on           | 20 February~24 April 2014 |
| Testing concluded on           | 24 April 2014             |

### 2.2 FINAL ASSESSMENT

The FCC requirements pertaining to the technical standards and tested operation modes are

■ - fulfilled.

□ - **not** fulfilled.

The equipment under test

■ - fulfils the FCC requirements cited on page 1.

□ - **does not** fulfil the FCC requirements cited on page 1.

## 3.0 EQUIPMENT UNDER TEST

### 3.1 Power supply system utilised

Power supply voltage : ■ DC 5V by PC

### 3.2 Short description of the Equipment under Test (EUT)

Number of tested samples: **1**

Serial number: Prototype

### 3.3 EUT operation mode

The equipment under test was operated during the measurement under the following conditions:

□ - Standby

□ TX- Y position

□ TX- Z position

■ TX- X position

Transmitter Frequency : 13.56MHz

Note: Operation mode TX -X position of EUT is the radiated test worst case. So only these test results be recorded in the test report.

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### 3.4 EUT configuration

#### 3.4.1. Description of configuration (EUT)

|                     |   |                                            |
|---------------------|---|--------------------------------------------|
| Description         | : | Double Technology Scanner                  |
| Model Number        | : | PT2SCAN WIRED HF USB 1D                    |
| Operation frequency | : | 13.56MHz                                   |
| Antenna             | : | PCB antenna, met requirement of FCC 15.203 |

#### 3.4.2. Tested Supporting System Details

##### 3.4.2.1. Notebook

|              |   |                                     |
|--------------|---|-------------------------------------|
| M/N          | : | F83VF                               |
| S/N          | : | AEN0AS64740305D                     |
| Manufacturer | : | ASUS                                |
| Power Cord   | : | Unshielded, Detachable, 1.5m , 3Pin |
| FCC          | : | By DoC                              |

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## 4.0 TEST ENVIRONMENT

### 4.1 Address of the test laboratory

A101, No.65, Zhuji Highway, Tianhe District, Guangzhou, China

Tel: +86-20-85543113 (32 lines)

Fax: +86-20-38780406

### 4.2 Test facility

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

#### CNAS-Lab Code: L3394

CENTRE OF TESTING SERVICE CO., LTD has been assessed and proved to be in compliance with CNAS-CL01: 2006 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC 17025: 2005 General Requirements) for the Competence of Testing and Calibration Laboratories.

#### IC-Registration No.: 8374A

The 3m Alternate Test Site of CENTRE OF TESTING SERVICE CO., LTD has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No. 8374A on June 6, 2011.

#### FCC-Registration No.: 971995

CENTRE OF TESTING SERVICE CO., LTD, EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files. Registration No. 971995, July 13, 2012.

### 4.3 Environmental conditions

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

|                       |            |
|-----------------------|------------|
| Temperature:          | 15~35 ° C  |
| Humidity:             | 25~75 %    |
| Atmospheric pressure: | 86~106 kPa |

### 4.4 Definitions of symbols used in this test report

- - The black square indicates that the listed condition, standard or equipment is applicable for this report.
- - The empty square indicates that the listed condition, standard or equipment is **not** applicable for this report.

### 4.5 Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to CISPR 16 - 4 "Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements" and is documented in the CTS quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

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## 4.6 Measurement Uncertainty

| Test Item               | Frequency Range | Uncertainty         | Note |
|-------------------------|-----------------|---------------------|------|
| Conduction disturbance  | 150kHz~30MHz    | $\pm 1.22\text{dB}$ | (1)  |
| Power disturbance       | 30MHz~300MHz    | $\pm 1.38\text{dB}$ | (1)  |
| Radiation emission (3m) | 30MHz~300MHz    | $\pm 3.14\text{dB}$ | (1)  |
|                         | 300MHz~1000MHz  | $\pm 3.18\text{dB}$ | (1)  |
|                         | 1GHz~26.5GHz    | $\pm 3.54\text{dB}$ | (1)  |

(1). This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of  $k=2$ .

## 5.0 SUMMARY OF STANDARDS AND RESULTS

### 5.1. Description of Standards and Results

The EUT have been tested according to the applicable standards as referenced below.

| EMISSION                                   |                                                                          |         |
|--------------------------------------------|--------------------------------------------------------------------------|---------|
| Description of Test Item                   | Standard                                                                 | Results |
| Conducted Emission Test                    | FCC Part 15 : 15.207<br>RSS-Gen:7.2.4<br>ANSI C63.4-2009                 | PASSED  |
| Radiated emission                          | FCC Part 15.205/15.209/15.225<br>RSS-210 Issue 8:A2.6<br>ANSI C63.4-2009 | PASSED  |
| Frequency Stability                        | FCC Part 15.225(e)<br>RSS-210 Issue 8:A2.6<br>ANSI C63.4-2009            | PASSED  |
| 99% Bandwidth                              | RSS-Gen 4.6.1                                                            | PASSED  |
| N/A is an abbreviation for Not Applicable. |                                                                          |         |

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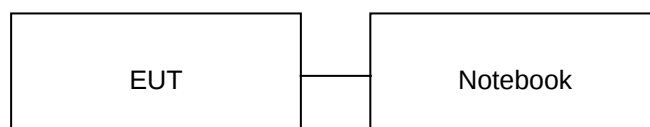
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## 6.0 POWER LINE CONDUCTED EMISSION TEST

### 6.1. Test Equipment

| Conducted Disturbance |                   |                 |           |            |           |
|-----------------------|-------------------|-----------------|-----------|------------|-----------|
| Item                  | Test Equipment    | Manufacturer    | Model No. | Serial No. | Last Cal. |
| 1                     | EMI Test Receiver | ROHDE & SCHWARZ | ESHS10    | 842884/012 | 2013/11   |
| 2                     | Artificial Mains  | ROHDE & SCHWARZ | ESH3-Z5   | 832479/025 | 2013/11   |
| 3                     | Artificial Mains  | ROHDE & SCHWARZ | ESH3-Z5   | 832479/026 | 2013/11   |
| 4                     | Pulse Limiter     | ROHDE & SCHWARZ | ESHSZ2    | 100301     | 2013/11   |
| 5                     | EMI Test Software | EZ-EMC          | Farad     | N/A        | N/A       |

### 6.2. Block Diagram of Test Setup



(EUT: Double Technology Scanner)

### 6.3. Power Line Conducted Emission Test Limits

Standard: FCC Part 15 : 15.207, ANSI C63.4-2009

| Frequency       | Maximum RF Line Voltage    |                         |
|-----------------|----------------------------|-------------------------|
|                 | Quasi-Peak Level<br>dB(μV) | Average Level<br>dB(μV) |
| 150kHz ~ 500kHz | 66 ~ 56*                   | 56 ~ 46*                |
| 500kHz ~ 5MHz   | 56                         | 46                      |
| 5MHz ~ 30MHz    | 60                         | 50                      |

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

### 6.4. Test Procedure

The XBOX Power connected to the power mains through a line impedance stabilization network (L.I.S.N.#2). This provides a 50 ohm coupling impedance for the EUT. Please refer the block diagram of the test setup and photographs. The other peripheral devices power cord connected to the power mains through a line impedance stabilization network (L.I.S.N.#1). Power on the PC and let it work normally, we use a keyboard test soft ware, let EUT working in test mode, then test it. Both sides of AC line are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to FCC Part 15C on Conducted Emission Test.

### 6.5. Power Line Conducted Emission Test Results

**PASSED.**

The frequency range from 150KHz~30MHz is investigated. Please see the following pages.

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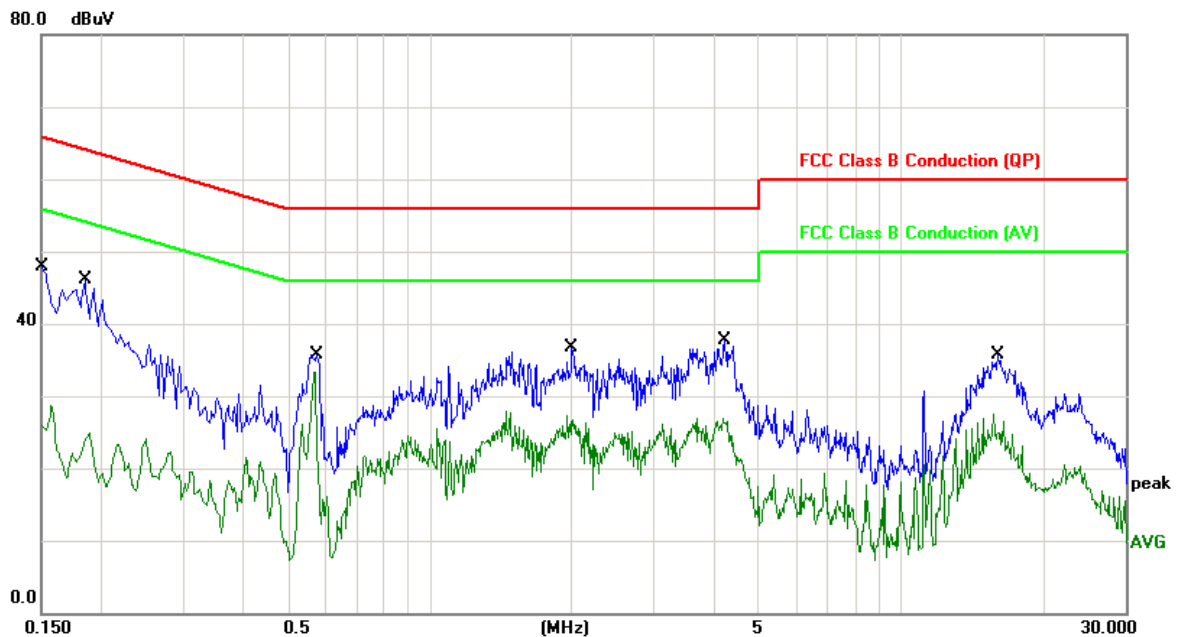
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|                  |               |         |                                              |
|------------------|---------------|---------|----------------------------------------------|
| Test point:      | L             | Result: | <input checked="" type="checkbox"/> - passed |
| Frequency range: | 0.15MHz~30MHz |         | <input type="checkbox"/> - not passed        |

|                     |                                         |
|---------------------|-----------------------------------------|
| EUT                 | Double Technology Scanner               |
| Operating Condition | TX                                      |
| Test Condition      | Ambient Temperature: 25°C Humidity: 56% |
| Test Date:          | 20 February~24 April 2014               |
| Operator            | Duke                                    |
| MODEL NO            | PT2SCAN WIRED HF USB 1D                 |

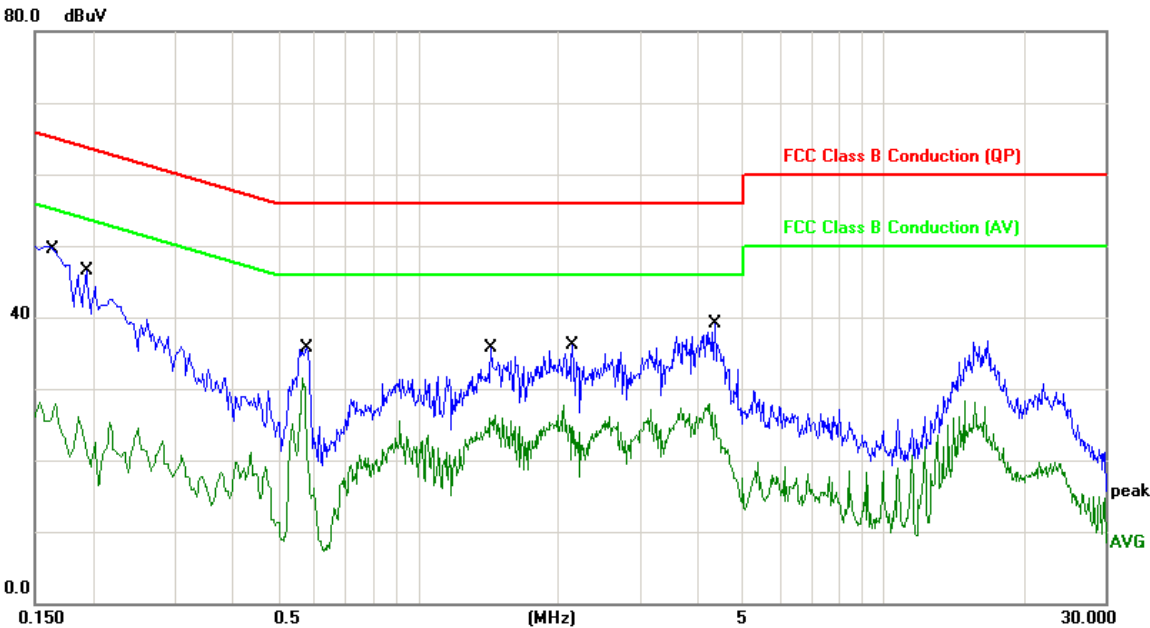


| No. | Frequency (MHz) | Factor (dB) | Reading (dBuV) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Det. |
|-----|-----------------|-------------|----------------|----------------|----------------|-------------|------|
| 1   | 0.1500          | 9.78        | 30.69          | 40.47          | 66.00          | -25.53      | QP   |
| 2   | 0.1500          | 9.78        | 15.99          | 25.77          | 56.00          | -30.23      | AVG  |
| 3   | 0.1860          | 9.78        | 29.44          | 39.22          | 64.21          | -24.99      | QP   |
| 4   | 0.1860          | 9.78        | 14.68          | 24.46          | 54.21          | -29.75      | AVG  |
| 5   | 0.5780          | 9.84        | 23.68          | 33.52          | 56.00          | -22.48      | QP   |
| 6   | 0.5780          | 9.84        | 11.48          | 21.32          | 46.00          | -24.68      | AVG  |
| 7   | 2.0100          | 9.86        | 19.88          | 29.74          | 56.00          | -26.26      | QP   |
| 8   | 2.0100          | 9.86        | 14.16          | 24.02          | 46.00          | -21.98      | AVG  |
| 9   | 4.2420          | 9.91        | 21.62          | 31.53          | 56.00          | -24.47      | QP   |
| 10  | 4.2420          | 9.91        | 14.32          | 24.23          | 46.00          | -21.77      | AVG  |
| 11  | 16.1300         | 9.96        | 19.66          | 29.62          | 60.00          | -30.38      | QP   |
| 12  | 16.1300         | 9.96        | 14.20          | 24.16          | 50.00          | -25.84      | AVG  |

Remark: Other frequency mini margin all >6 dB of Limit



|                  |               |         |                                              |
|------------------|---------------|---------|----------------------------------------------|
| Test point:      | N             | Result: | <input checked="" type="checkbox"/> - passed |
| Frequency range: | 0.15MHz~30MHz |         | <input type="checkbox"/> - not passed        |



| No. | Frequency (MHz) | Factor (dB) | Reading (dBuV) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Det. |
|-----|-----------------|-------------|----------------|----------------|----------------|-------------|------|
| 1   | 0.1660          | 9.78        | 30.00          | 39.78          | 65.16          | -25.38      | QP   |
| 2   | 0.1660          | 9.78        | 11.14          | 20.92          | 55.16          | -34.24      | AVG  |
| 3   | 0.1940          | 9.78        | 23.96          | 33.74          | 63.86          | -30.12      | QP   |
| 4   | 0.1940          | 9.78        | 10.73          | 20.51          | 53.86          | -33.35      | AVG  |
| 5   | 0.5780          | 9.84        | 23.62          | 33.46          | 56.00          | -22.54      | QP   |
| 6   | 0.5780          | 9.84        | 11.55          | 21.39          | 46.00          | -24.61      | AVG  |
| 7   | 1.4340          | 9.84        | 19.33          | 29.17          | 56.00          | -26.83      | QP   |
| 8   | 1.4340          | 9.84        | 14.08          | 23.92          | 46.00          | -22.08      | AVG  |
| 9   | 2.1540          | 9.87        | 18.46          | 28.33          | 56.00          | -27.67      | QP   |
| 10  | 2.1540          | 9.87        | 14.35          | 24.22          | 46.00          | -21.78      | AVG  |
| 11  | 4.3380          | 9.91        | 20.97          | 30.88          | 56.00          | -25.12      | QP   |
| 12  | 4.3380          | 9.91        | 14.09          | 24.00          | 46.00          | -22.00      | AVG  |

Remark: Other frequency mini margin all >6 dB of Limit

Note:Level=Reading+Factor.    Margin= Level-Limit

## 7.0 RADIATED EMISSION

### 7.1 Limit

Except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

| FCC Part 15.209            |                           |          |                                                      |          |
|----------------------------|---------------------------|----------|------------------------------------------------------|----------|
| Frequency                  | Field Strength Limitation |          | Field Strength Limitation at 3m Measurement Distance |          |
| (MHz)                      | (uV/m)                    | Distance | (dBuV/m)                                             | (dBuV/m) |
| 0.009-0.490                | 2400/F(KHz)               | 300m     | 20log 2400/F(KHz)+80                                 | -----    |
| 0.490-1.705                | 24000/F(KHz)              | 30m      | 20log 24000/F(KHz)+40                                | -----    |
| 1.705-30.00                | 30                        | 30m      | 20log 30+40                                          | 69.5     |
| 30.00-88.00                | 100                       | 3m       | 20log 100                                            | 40.0     |
| 88.00-216.00               | 150                       | 3m       | 20log 150                                            | 43.5     |
| 216.00-960.00              | 200                       | 3m       | 20log 200                                            | 46.0     |
| Above 960.00               | 500                       | 3m       | 20log 500                                            | 54.0     |
| FCC Part 15.225(a)/(b)/(c) |                           |          |                                                      |          |
| Frequency                  | Field Strength Limitation |          | Field Strength Limitation at 3m Measurement Distance |          |
| (MHz)                      | (uV/m)                    | Distance | (dBuV/m)                                             | (dBuV/m) |
| 13.553-13.567              | 15848                     | 30m      | 20log 15848+40                                       | 124.0    |
| 13.567-13.710              | 334                       | 30m      | 20log 334+40                                         | 90.5     |
| 13.110-13.410              | 106                       | 30m      | 20log 106+40                                         | 80.5     |
| 13.710-14.010              |                           |          |                                                      |          |

Note:

- (1) The tighter limit shall apply at the boundary between two frequency range.
- (2) Limitation expressed in dBuV/m is calculated by 20log Emission Level (uV/m).
- (3) If measurement is made at 3m distance, then F.S Limitation at 3m distance is adjusted by using the formula of  $L_{d1} = L_{d2} * (d_2/d_1)^2$ .

Example:

F.S Limit at 30m distance is 30uV/m , then F.S Limitation at 3m distance is adjusted as

$$L_{d1} = L_1 = 30\text{uV/m} * (10)^2 = 100 * 30 \text{ uV/m}$$

### 7.2 Test Equipment

| Radiated disturbance (electric field) |                   |                 |            |            |           |
|---------------------------------------|-------------------|-----------------|------------|------------|-----------|
| Item                                  | Test Equipment    | Manufacturer    | Model No.  | Serial No. | Last Cal. |
| 1                                     | EMI Test Receiver | ROHDE & SCHWARZ | ESCI       | 100868     | 2013/11   |
| 2                                     | Biconical Antenna | ROHDE & SCHWARZ | HK116      | 100221     | 2014/03   |
| 3                                     | Log per Antenna   | ROHDE & SCHWARZ | HL223      | 100226     | 2014/03   |
| 4                                     | Log per Antenna   | ROHDE & SCHWARZ | HL050      | 100186     | 2014/03   |
| 5                                     | Signal analyzer   | ROHDE & SCHWARZ | FSIQ26     | 100311     | 2014/03   |
| 6                                     | Loop Antenna      | A.R.A           | PLA-1030/B | 1030       | 2013/11   |
| 7                                     | EMI Test Software | EZ-EMC          | Farad      | N/A        | N/A       |

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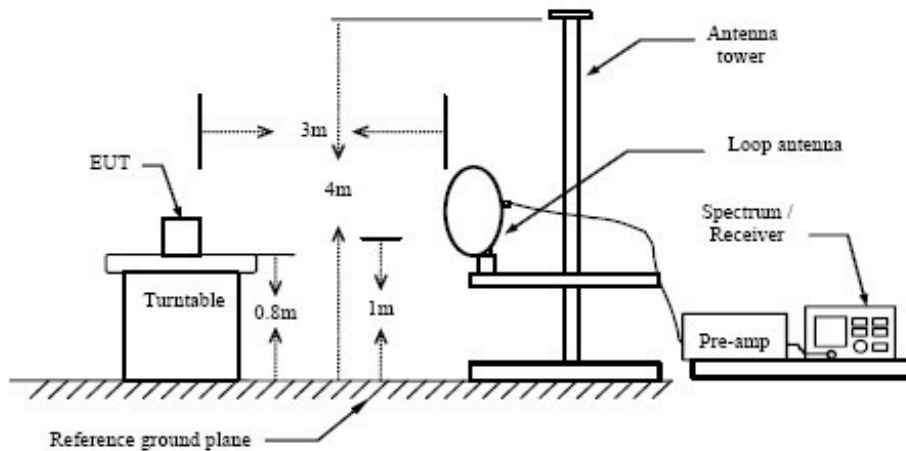
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E-mail: cts@cts-lab.com.cn

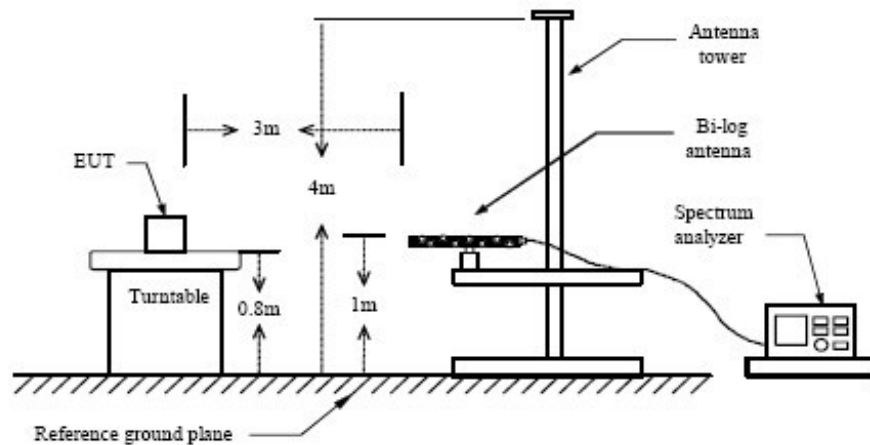
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## 7.3 Test Configuration

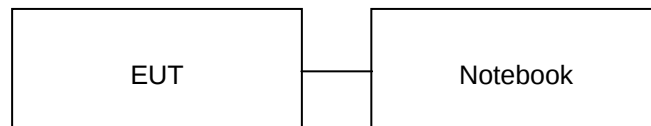
Below 30MHz



Below 1 GHz



## 7.4. Block Diagram of Test Setup



(EUT: Double Technology Scanner)

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## 7.5 Test Procedure

1. The measuring distance of at 3 m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.
2. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3m or 10 meter open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.
3. The height of the equipment or of the substitution antenna shall be 0.8 m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
4. The initial step in collecting radiated emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
5. If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
6. For the actual test configuration, please refer to the related Item –EUT Test Photos.

### NOTE: (FCC PART 15.209)

1. Reading in which marked as QP or Peak means measurements by using are Quasi-Peak Mode with Detector BW=120 kHz.
2. All readings are Peak unless otherwise stated QP in column of Note. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform.

### NOTE: (FCC PART 15.225)

1. Spectrum Setting:  
9 KHz – 150 KHz, RBW= 200Hz, VBW=200Hz, Sweep time = 200 ms.  
150 K Hz – 30 MHz, RBW= 10 KHz, VBW=10 KHz, Sweep time = 200 ms.  
30 MHz – 1000 MHz, RBW= 100KHz, VBW=100KHz, Sweep time = 200 ms.
2. All readings are Peak unless otherwise stated QP in column of Note. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform.
3. The Log-Bicon Antenna will use to test frequency range from 30MHz to 1000MHz and the Loop Antenna will use to test frequency below 30MHz.

## 7.6 Test Results

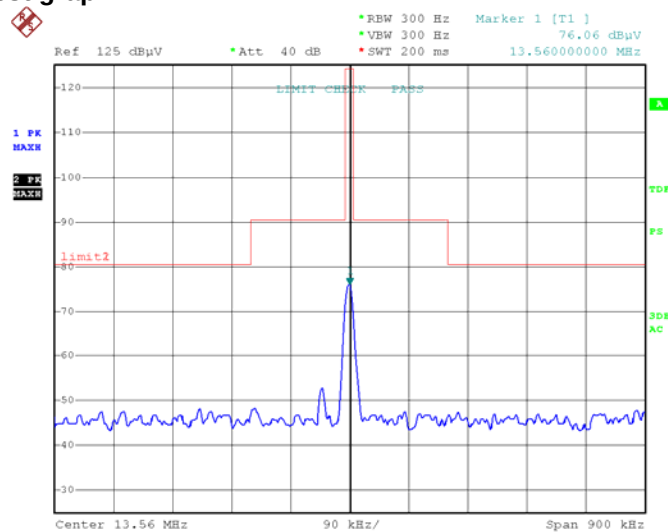
The frequency range from 9KHz~30MHz, 30MHz to 230MHz, 230MHz to 1000MHz is investigated. Please see the following pages.

|                     |                                         |
|---------------------|-----------------------------------------|
| EUT                 | Double Technology Scanner               |
| Operating Condition | DC 5V                                   |
| Test Condition      | Ambient Temperature: 25°C Humidity: 56% |
| Test distance       | 3 Meter                                 |
| Test Date:          | 20 February~24 April 2014               |
| Operator            | Duke                                    |
| MODEL NO            | PT2SCAN WIRED HF USB 1D                 |

|                  |                     |         |                                              |
|------------------|---------------------|---------|----------------------------------------------|
| Test Mode:       | TX -X Position Mode | Result: | <input checked="" type="checkbox"/> - passed |
| Frequency range: | 9KHz~30MHz          |         | <input type="checkbox"/> - not passed        |

| No.                                                       | Frequency (MHz) | Factor (dB) | Reading (dBuV) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Det. |
|-----------------------------------------------------------|-----------------|-------------|----------------|----------------|----------------|-------------|------|
| 1                                                         | 13.56000        | 14.24       | 61.82          | 76.06          | 124.00         | -47.94      | QP   |
| 2                                                         | 27.17620        | 14.79       | 33.68          | 48.47          | 69.50          | -21.03      | QP   |
| Remark: Others the result margin all > 10dB of the limit. |                 |             |                |                |                |             |      |

#### FCC Part 15.225 test graph:



Date: 23.APR.2014 15:19:19

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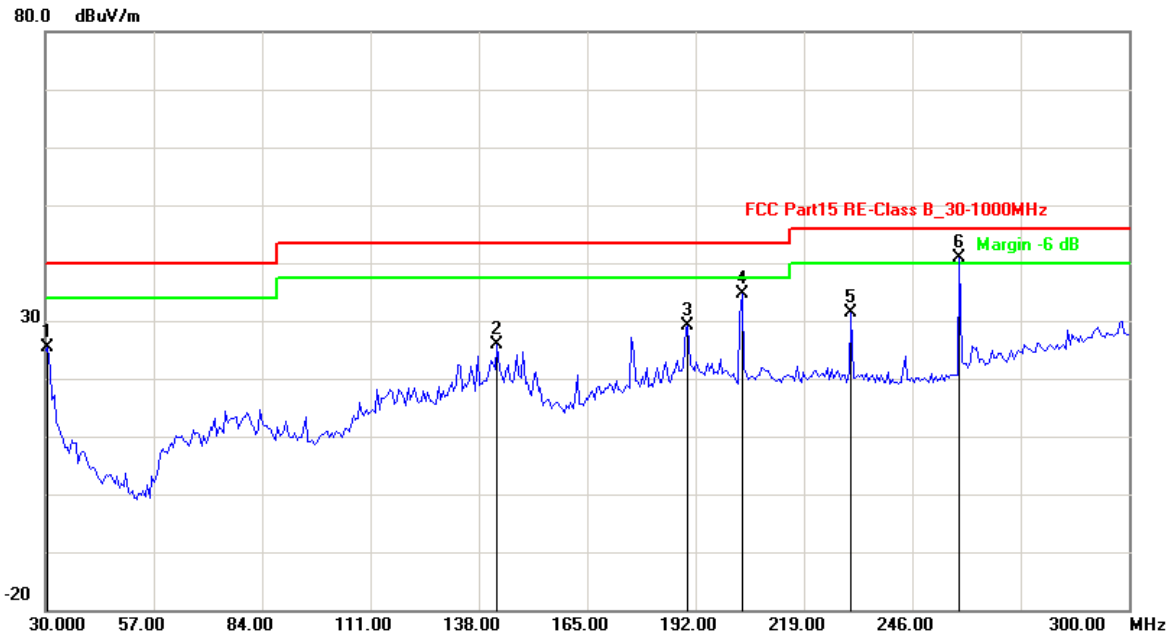
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|                  |                |         |                                              |
|------------------|----------------|---------|----------------------------------------------|
| Channel:         | TX -X Position | Result: | <input checked="" type="checkbox"/> - passed |
| Test point:      | Horizontal     |         | <input type="checkbox"/> - not passed        |
| Frequency range: | 30MHz-1GHz     |         |                                              |

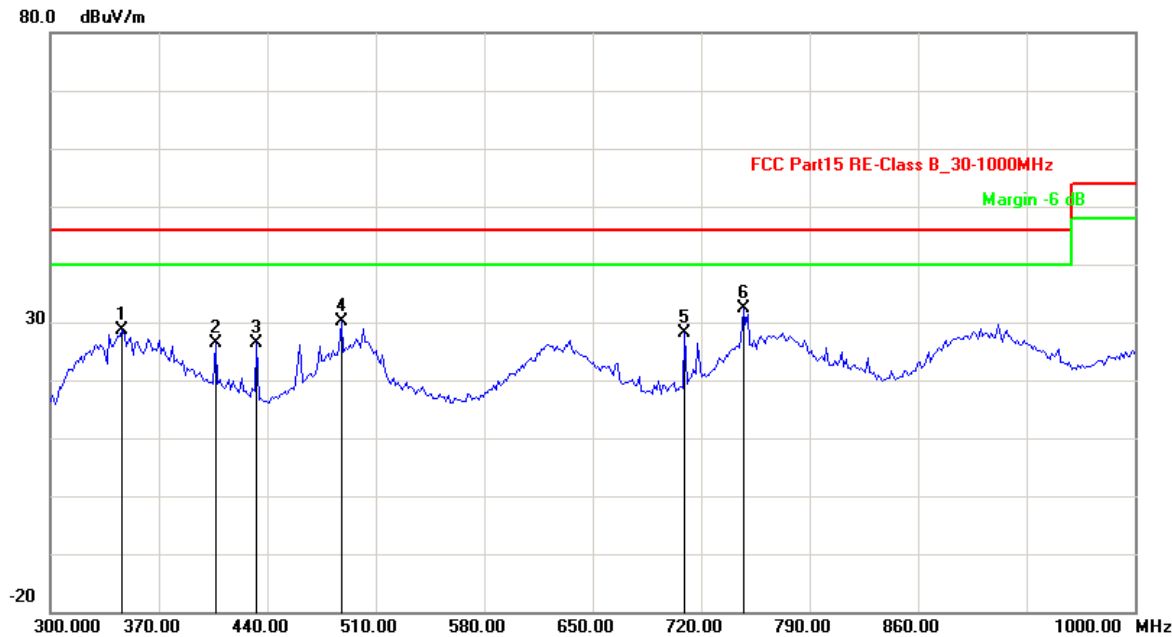


| No. | Frequency (MHz) | Factor (dB) | Reading (dBuV) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Det. |
|-----|-----------------|-------------|----------------|----------------|----------------|-------------|------|
| 1   | 30.5410         | -18.94      | 44.27          | 25.33          | 40.00          | -14.67      | QP   |
| 2   | 142.5450        | -16.62      | 42.50          | 25.88          | 43.50          | -17.62      | QP   |
| 3   | 190.1603        | -12.02      | 41.11          | 29.09          | 43.50          | -14.41      | QP   |
| 4   | 203.6873        | -12.44      | 47.09          | 34.65          | 43.50          | -8.85       | QP   |
| 5   | 230.7414        | -12.40      | 43.90          | 31.50          | 46.00          | -14.50      | QP   |
| 6   | 257.7955        | -12.65      | 53.41          | 40.76          | 46.00          | -5.24       | QP   |

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| No. | Frequency (MHz) | Factor (dB) | Reading (dBuV) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Det. |
|-----|-----------------|-------------|----------------|----------------|----------------|-------------|------|
| 1   | 346.2926        | -13.36      | 41.92          | 28.56          | 46.00          | -17.44      | QP   |
| 2   | 406.6132        | -14.94      | 41.32          | 26.38          | 46.00          | -19.62      | QP   |
| 3   | 433.2665        | -15.64      | 42.04          | 26.40          | 46.00          | -19.60      | QP   |
| 4   | 487.9760        | -9.88       | 39.90          | 30.02          | 46.00          | -15.98      | QP   |
| 5   | 709.6192        | -12.46      | 40.54          | 28.08          | 46.00          | -17.92      | QP   |
| 6   | 747.4950        | -6.54       | 38.86          | 32.32          | 46.00          | -13.68      | QP   |

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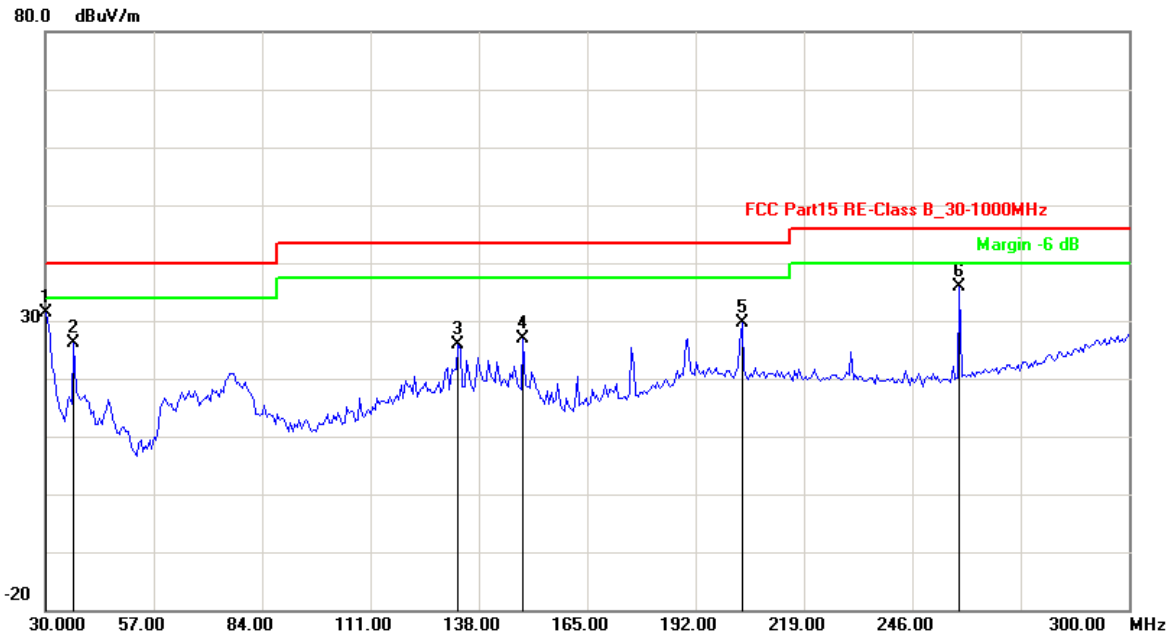
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|                  |                |         |                                              |
|------------------|----------------|---------|----------------------------------------------|
| Channel:         | TX -X Position | Result: | <input checked="" type="checkbox"/> - passed |
| Test point:      | Vertical       |         | <input type="checkbox"/> - not passed        |
| Frequency range: | 30MHz-1GHz     |         |                                              |



| No. | Frequency (MHz) | Factor (dB) | Reading (dBuV) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Det. |
|-----|-----------------|-------------|----------------|----------------|----------------|-------------|------|
| 1   | 30.0000         | -18.45      | 49.80          | 31.35          | 40.00          | -8.65       | QP   |
| 2   | 37.0341         | -24.22      | 50.25          | 26.03          | 40.00          | -13.97      | QP   |
| 3   | 132.8056        | -16.87      | 42.77          | 25.90          | 43.50          | -17.60      | QP   |
| 4   | 149.0381        | -17.25      | 44.24          | 26.99          | 43.50          | -16.51      | QP   |
| 5   | 203.6874        | -12.44      | 41.95          | 29.51          | 43.50          | -13.99      | QP   |
| 6   | 257.7956        | -12.65      | 48.41          | 35.76          | 46.00          | -10.24      | QP   |

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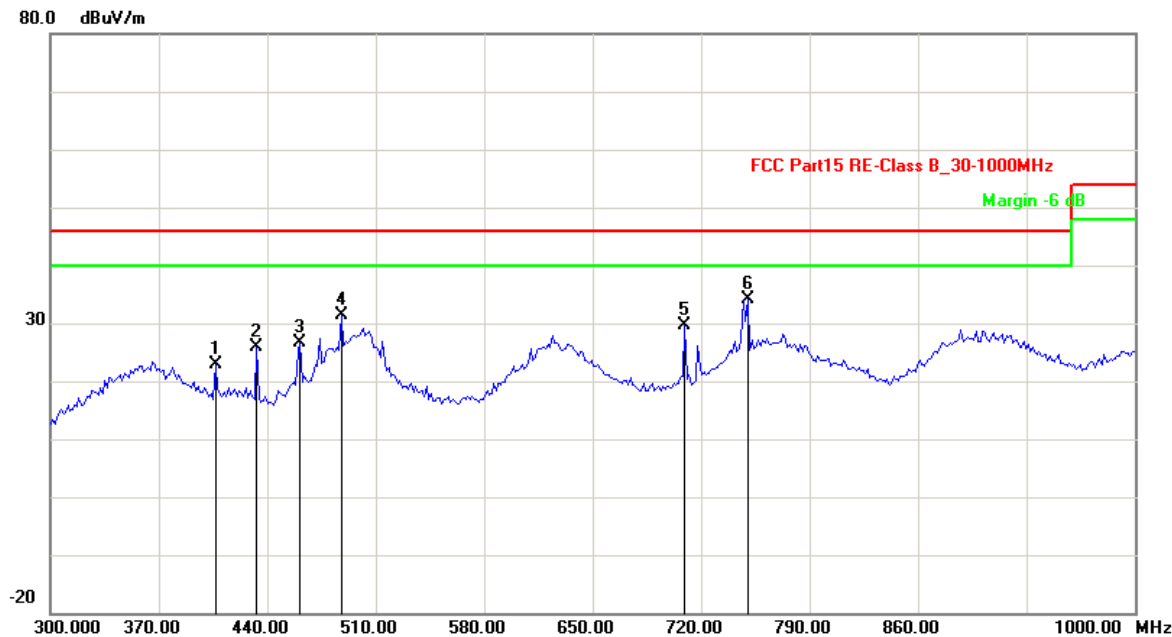
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| No. | Frequency (MHz) | Factor (dB) | Reading (dBuV) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Det. |
|-----|-----------------|-------------|----------------|----------------|----------------|-------------|------|
| 1   | 406.6132        | -14.94      | 37.94          | 23.00          | 46.00          | -23.00      | QP   |
| 2   | 433.2665        | -15.64      | 41.46          | 25.82          | 46.00          | -20.18      | QP   |
| 3   | 461.3226        | -13.09      | 39.64          | 26.55          | 46.00          | -19.45      | QP   |
| 4   | 487.9760        | -9.88       | 41.15          | 31.27          | 46.00          | -14.73      | QP   |
| 5   | 709.6192        | -12.46      | 42.09          | 29.63          | 46.00          | -16.37      | QP   |
| 6   | 750.3006        | -6.30       | 40.35          | 34.05          | 46.00          | -11.95      | QP   |

Remark: Other frequency mini margin all >10 dB of Limit

## 8.0 FREQUENCY STABILITY MEASUREMENT

### 8.1 Limit

#### FCC Part 15.225(e)

The frequency tolerance of the carrier signal shall be maintained within  $\pm 0.01\%$  of the operating frequency over a temperature variation of  $-20$  degrees to  $+50$  degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C.

For battery operated equipment, the equipment tests shall be performed using a new battery.

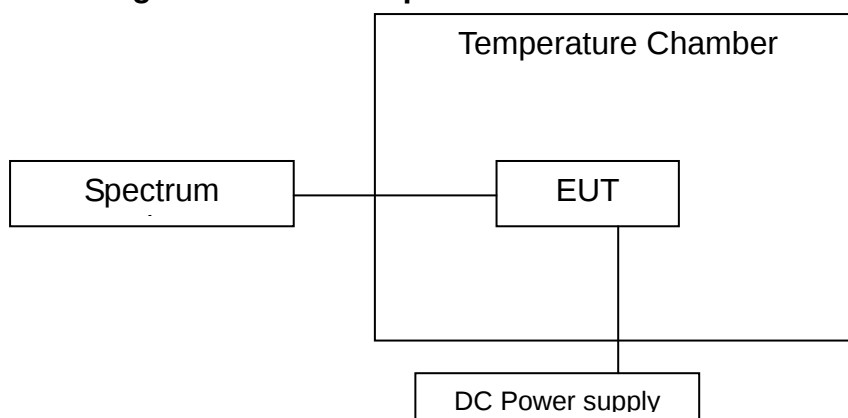
### 8.2 Test Equipment

| Radiated disturbance (electric field) |                     |                 |             |            |           |
|---------------------------------------|---------------------|-----------------|-------------|------------|-----------|
| Item                                  | Test Equipment      | Manufacturer    | Model No.   | Serial No. | Last Cal. |
| 1                                     | EMI Test Receiver   | ROHDE & SCHWARZ | ESCI        | 100868     | 2013/11   |
| 2                                     | Temperature Chamber | GW              | GDS-150     | 1016       | 2013/11   |
| 3                                     | DC Source           | MCP             | M10-SP-305E | /          | 2014/3    |

### 8.3 Test Procedure

1. The equipment under test was connected to an external DC power supply and the RF output was connected to a frequency counter via feed through attenuators. The EUT was placed inside the temperature chamber.  
After the temperature stabilized for approximately 20 minutes, the frequency of the output signal was recorded from the counter.
2. At room temperature ( $25 \pm 5^\circ\text{C}$ ), an external variable DC power supply was connected to the EUT. The frequency of the transmitter was measured for 115%, 100% and 85% of the nominal operating input voltage.

### 8.4. Block Diagram of Test Setup



(EUT: Double Technology Scanner)

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## 8.5. Test Results

Please see the following pages.

| 0 Min.           |                        |                    |                |                |
|------------------|------------------------|--------------------|----------------|----------------|
| Test Temp.       | Test Voltage<br>(V dc) | Frequency<br>(MHz) | Error<br>(KHz) | Limit<br>(KHz) |
| -20℃             | 4.25                   | 13.559423          | -0.577         | ±1.356         |
|                  | 5.00                   | 13.559412          | -0.588         |                |
|                  | 5.75                   | 13.559397          | -0.603         |                |
| 25℃              | 4.25                   | 13.559345          | -0.655         |                |
|                  | 5.00                   | 13.559365          | -0.635         |                |
|                  | 5.75                   | 13.559345          | -0.655         |                |
| 50℃              | 3.45                   | 13.559324          | -0.676         |                |
|                  | 3.00                   | 13.559367          | -0.633         |                |
|                  | 2.55                   | 13.559370          | -0.630         |                |
| Test Result:PASS |                        |                    |                |                |

| 2 Min.           |                        |                    |                |                |
|------------------|------------------------|--------------------|----------------|----------------|
| Test Temp.       | Test Voltage<br>(V dc) | Frequency<br>(MHz) | Error<br>(KHz) | Limit<br>(KHz) |
| -20℃             | 4.25                   | 13.559417          | -0.583         | ±1.356         |
|                  | 5.00                   | 13.559410          | -0.590         |                |
|                  | 5.75                   | 13.559393          | -0.607         |                |
| 25℃              | 4.25                   | 13.559345          | -0.655         |                |
|                  | 5.00                   | 13.559363          | -0.637         |                |
|                  | 5.75                   | 13.559347          | -0.653         |                |
| 50℃              | 3.45                   | 13.559330          | -0.670         |                |
|                  | 3.00                   | 13.559361          | -0.639         |                |
|                  | 2.55                   | 13.559368          | -0.632         |                |
| Test Result:PASS |                        |                    |                |                |

| 5 Min.           |                        |                    |                |                |
|------------------|------------------------|--------------------|----------------|----------------|
| Test Temp.       | Test Voltage<br>(V dc) | Frequency<br>(MHz) | Error<br>(KHz) | Limit<br>(KHz) |
| -20℃             | 4.25                   | 13.559418          | -0.582         | ±1.356         |
|                  | 5.00                   | 13.559411          | -0.589         |                |
|                  | 5.75                   | 13.559395          | -0.605         |                |
| 25℃              | 4.25                   | 13.559342          | -0.658         |                |
|                  | 5.00                   | 13.559362          | -0.637         |                |
|                  | 5.75                   | 13.559341          | -0.659         |                |
| 50℃              | 3.45                   | 13.559332          | -0.668         |                |
|                  | 3.00                   | 13.559365          | -0.635         |                |
|                  | 2.55                   | 13.559366          | -0.634         |                |
| Test Result:PASS |                        |                    |                |                |

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| 10 Min.          |                        |                    |                |                |
|------------------|------------------------|--------------------|----------------|----------------|
| Test Temp.       | Test Voltage<br>(V dc) | Frequency<br>(MHz) | Error<br>(KHz) | Limit<br>(KHz) |
| -20℃             | 4.25                   | 13.559420          | -0.580         | ±1.356         |
|                  | 5.00                   | 13.559423          | -0.577         |                |
|                  | 5.75                   | 13.559397          | -0.603         |                |
| 25℃              | 4.25                   | 13.559349          | -0.651         |                |
|                  | 5.00                   | 13.559361          | -0.639         |                |
|                  | 5.75                   | 13.559350          | -0.650         |                |
| 50℃              | 3.45                   | 13.559333          | -0.667         |                |
|                  | 3.00                   | 13.559362          | -0.638         |                |
|                  | 2.55                   | 13.559370          | -0.630         |                |
| Test Result:PASS |                        |                    |                |                |

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## 9.0 99% BANDWIDTH

### 9.1 Test procedure

According to RSS-210 RSS-Gen 4.6.1 The Receiver output is connected to the spectrum analyzer. The resolution bandwidth shall be set to as close to 1% of the selected span as is possible without being below 1%. The video bandwidth shall be set to 3 times the resolution bandwidth. Video averaging is not permitted. Where practical, a sampling detector shall be used given that a peak or peak hold may produce a wider bandwidth than actual. The sweep time is coupled.

### 9.2. Test Equipment

| Band Edge Compliance test |                   |                 |            |            |           |
|---------------------------|-------------------|-----------------|------------|------------|-----------|
| Item                      | Test Equipment    | Manufacturer    | Model No.  | Serial No. | Last Cal. |
| 1                         | Loop Antenna      | A.R.A           | PLA-1030/B | 1030       | 2013/11   |
| 2                         | EMI Test Receiver | ROHDE & SCHWARZ | ESCI       | 100868     | 2013/11   |

### 9.3. Test Results

PASSED.

| Channel | Frequency<br>(MHz) | Bandwidth<br>(KHz) |
|---------|--------------------|--------------------|
| -----   | 13.56              | 168.00             |

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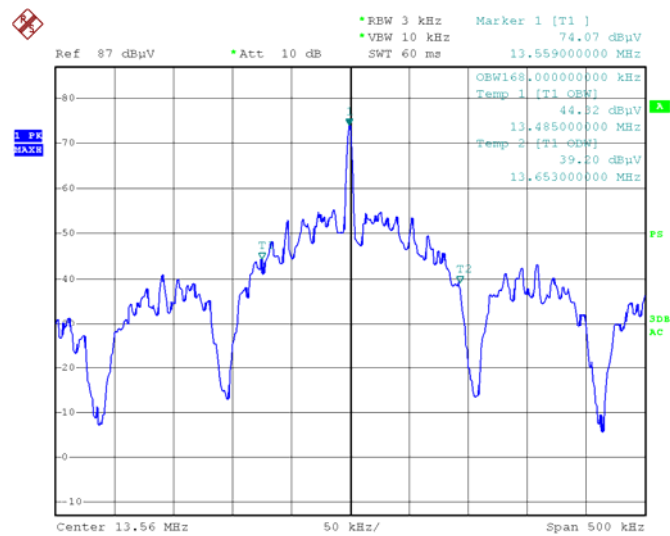
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99% Bandwidth 13.56 MHz



Date: 24.APR.2014 08:49:12

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## 10.0 DEVIATION TO TEST SPECIFICATIONS

The following identical model(s):

N/A

Belong to the tested device:

Product description: **Double Technology Scanner**  
Model name: **PT2SCAN WIRED HF USB 1D**

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