Report No.:SZ12040027E01

# FCC/IC TEST REPORT

*Issued to*

**ICO Products, LLC**

*For*

**Game caller remote**

| | |
|---|---|
| Model Name: | GC300 |
| Trade Name: | N/A |
| Brand Name: | ICOTEC |
| FCC ID: | ULD-ICOGC300 |
| IC ID: | 9273A-ICOTECGC300 |
| Standard: | 47 CFR Part 15 Subpart C |
| | RSS-210 issue 8: 2010 Annex 1 |
| Test date: | May 10, 2012 – May 28, 2012 |
| Issue date: | May 30, 2012 |

**Shenzhen Morlab Communications Technology Co., Ltd.**

| | | | | | |
|---|---|---|---|---|---|
| *Tested by* | Tu Lang | *Approved by* | Wei Yanquan | *Review by* | Huang Pulong |
| *Date* | 2012.5.30 | *Date* | 2012.5.30 | *Date* | 2012.5.30 |

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| Version NO. | Date | Description |
| 1.0 | May 30, 2012 | Initial creation of document |

# 1. GENERAL INFORMATION

## 1.1 EUT Description

| | |
|---|---|
| EUT Type | Game caller remote |
| Serial No. | (n.a., marked #1 by test site) |
| Hardware Version | V03 |
| Software Version | V07 |
| Applicant | ICO products, LLC<br>5241 Secor, Rd. Unit L, Toledo, Ohio, United State 43623 |
| Manufacturer | ICO products, LLC<br>B23-3F, Hengfeng Industrial Zone, Xixiang Town, Bao'an District, Shenzhen City |
| Modulation Type | FSK |
| Working Frequency | 433.92MHz |
| Power supply | Battery |
| | Brand Name: TINKO |
| | Model No.: A12 |
| | Serial No.: (n.a. marked #1 by test site) |
| | Capacitance: about 300mAh |
| | Rated Voltage: DC 12V |
| | Charge Limit: None Charge |
| | Manufacturer: TINKO<br>No.1 Factory, Oriental Hi-tech Park, Qiaoxiang Rd, Nanshan District, Shenzhen, 518053, China. |

*Note 1:* The EUT is a Game caller remote transmitter. It was working at 433.92MHz.

*Note 2:* For a more detailed description, please refer to Specification or User's Manual supplied by the applicant and/or manufacturer.

## 1.2 Test Standards and Results

The objective of the report is to perform testing according to 47 CFR Part 15 Subpart C for the EUT FCC ID Certification, according to RSS-210 issue 8: 2010 Annex 1 for the EUT Industry Canada Certification.

| No. | Identity | Document Title |
|---|---|---|
| 1 | 47 CFR Part 15 (11-10-01Edition) | Radio Frequency Devices |
| 2 | RSS-210 issue 8: 2010 Annex 1 | Momentarily Operated Devices and Remote Control |

Test detailed items/section required by FCC rules and results are as below:

| No. | Section | Description | Result |
|---|---|---|---|
| 1 | 47 CFR Part 15: 15.203 | Antenna Requirement | Compliance |
| 3 | 47 CFR Part 15: 15.231(a)(1)<br>RSS-210 issue 8: A1.1.1 | Manually Activated Transmitter | Compliance |
| 4 | 47 CFR Part 15: 15.231(c)<br>RSS-210 issue 8: A1.1.3 | Occupied Bandwidth Testing | Compliance |
| 5 | 47 CFR Part 15: 15.205;15.209; 15.231(b)<br>RSS-210 issue 8: A1.1.2 | Radiated Emission | Compliance |

NOTE:

1 This EUT is power by battery only, the conducted emission is not applicable.

2 All measurements contained in this report were conducted with ANSI C63.4-2009, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Equipment in the range of 9 kHz to 40GHz for FCC ID Certification, conducted with RSS-Gen Issue 3, General Requirements and Information for the Certification of Radio Apparatus for IC Certification.

## 1.3 Test Equipments Used

| Description | Manufacturer | Model | Serial No. | Cal. Date |
|---|---|---|---|---|
| EMC Analyzer | Agilent | E7405A | US44210471 | 2012.05 |
| Receiver | Narda | PMM 9060 | 001WX11001 | 2011.12 |
| Receiver | Narda | PMM 9010 | 595WX11007 | 2011.11 |
| Amplifier | Lucix | S10M100L3802 | 46732 | 2012.05 |
| Full-Anechoic Chamber | Albatross | 9m*6m*6m | (n.a.) | 2012.05 |
| Test Antenna - Bi-Log | Schwarzbeck | VULB 9163 | 9163-274 | 2012.05 |
| Test Antenna - Horn | Schwarzbeck | BBHA 9120D | 9120D-963 | 2012.05 |
| Test Antenna -Loop | Schwarzbeck | FMZB 1519 | 1519-022 | 2012.05 |

## 1.4 Facilities and Accreditations

### 1.4.1 Facilities

Shenzhen Morlab Communications Technology Co., Ltd. Morlab Laboratory is a testing organization accredited by China National Accreditation Service for Conformity Assessment (CNAS) according to ISO/IEC 17025. The accreditation certificate number is L3572.

All measurement facilities used to collect the measurement data are located at 3/F, Electronic Testing Building, Shahe Road, Xili, Nanshan District, Shenzhen, 518055 P. R. China. The test site is constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22; the FCC registration number is 741109.

### 1.4.2 Test Environment Conditions

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

| | |
|---|---|
| Temperature (°C): | 15 - 35 |
| Relative Humidity (%): | 30 - 60 |
| Atmospheric Pressure (kPa): | 86 - 106 |

### 1.4.3 Measurement Uncertainty

The uncertainty is calculated using the methods suggested in the "Guide to the Expression of Uncertainty in Measurement" (GUM) published by ISO.

| | |
|---|---|
| Uncertainty of Conducted Emission: | ±1.8dB |
| Uncertainty of Radiated Emission: | ±3.1dB |

# 2. REQUIREMENTS

## 2.1 Antenna requirement

### 2.1.1 Applicable Standard

According to FCC 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. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.

**Result**: Compliant

The EUT has a permanently and irreplaceable attached antenna. Please refer to the EUT internal photos.

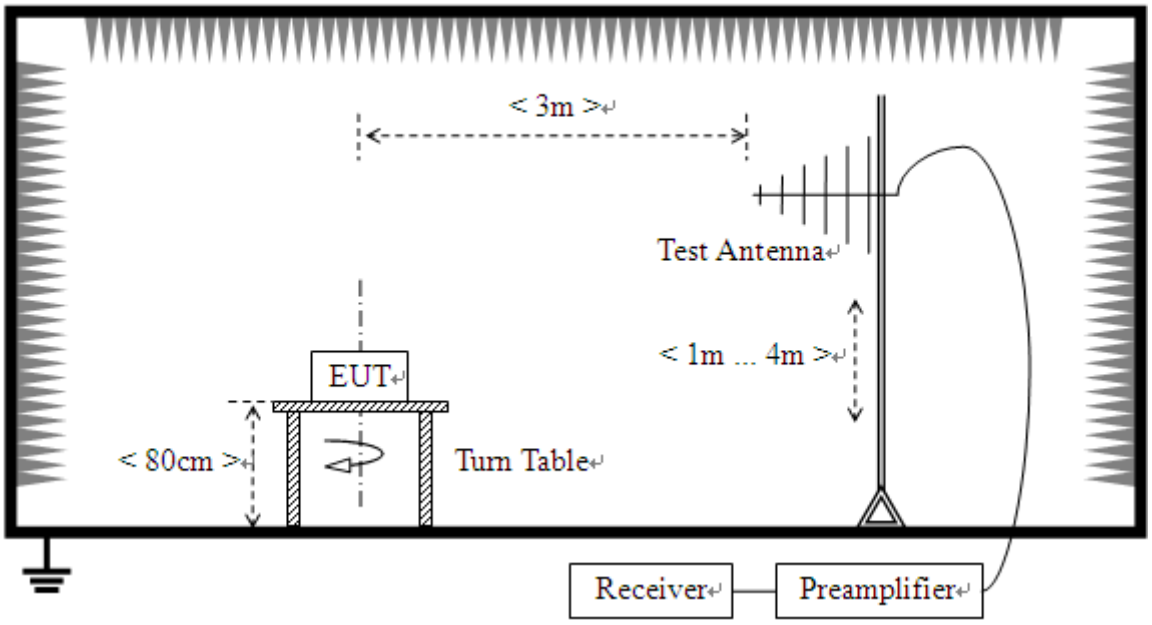
## 2.2 Manually Activated Transmitter

### 2.2.1 Applicable Standard

According to FCC 15.231(a)(1) and RSS-210 issue 8: A1.1.1, a manually operated transmitter shall employ a switch that will automatically deactivate the transmitter within not more than 5 seconds of being released.

The EUT can be released to work as a transmitter through pressing the keys on the surface of the EUT .

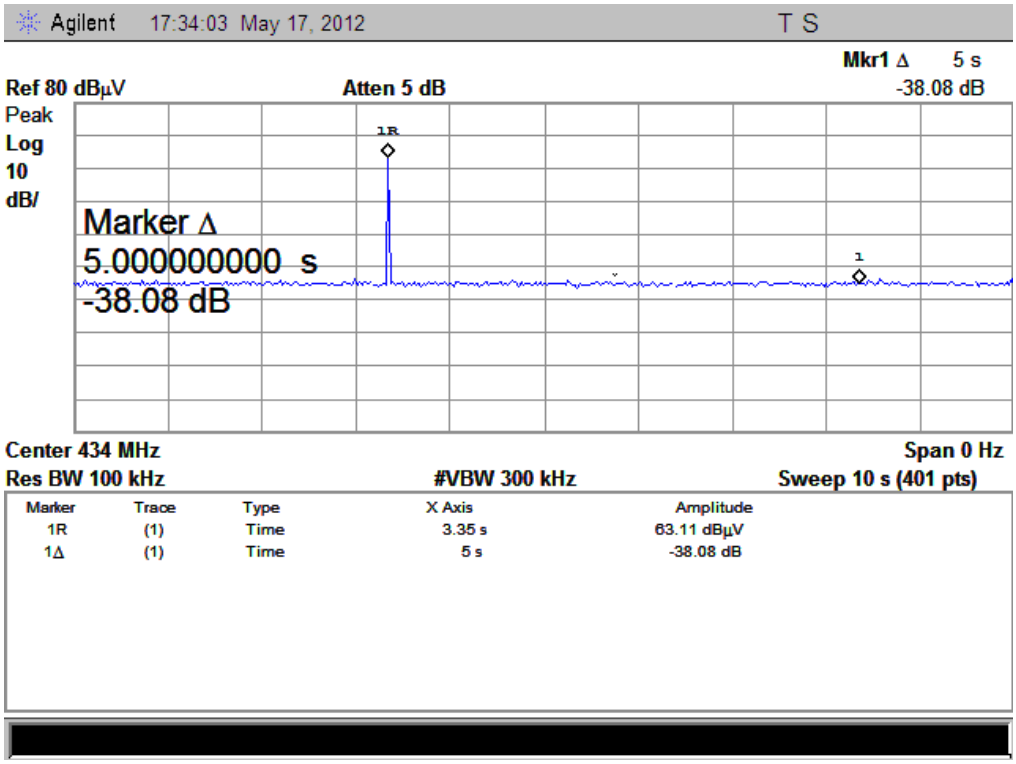
### 2.2.2 Test Setup




### 2.2.3 Summary of Test results

| Work mode | activate Time | Limit | Plot | Conclusion |
|---|---|---|---|---|
| Transmitting | 23ms | 5 s | A | Pass |

### 2.2.4 Test plots




(Plot A: Deactivate Time)

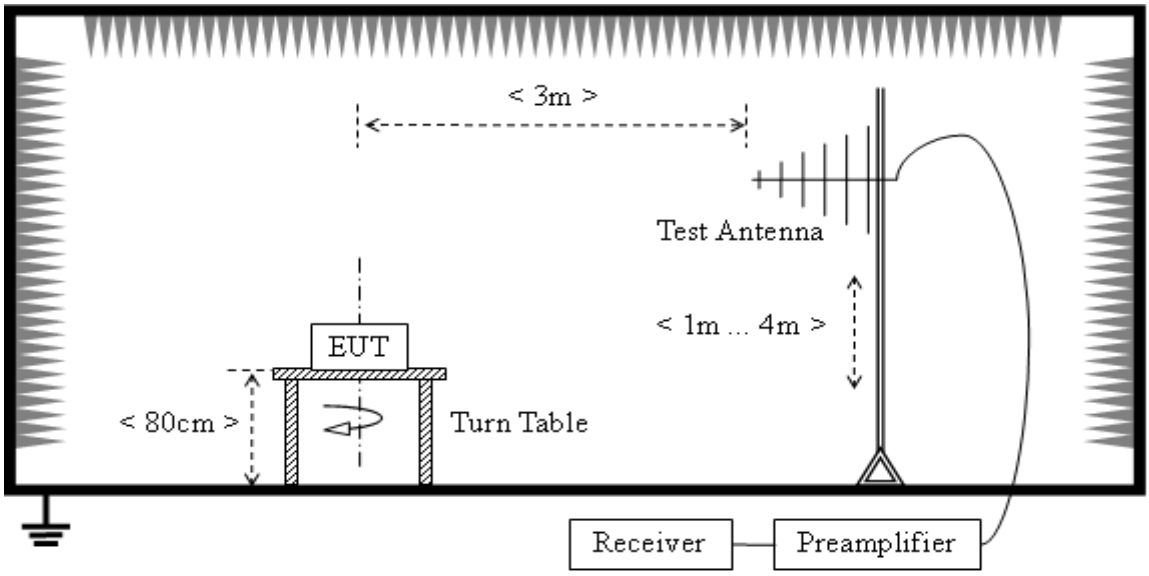
**Result**: Compliant

## 2.3 Occupied Bandwidth Test

### 2.3.1 Applicable Standard

According to FCC 15.231(c), the bandwidth of the emission shall be no wider than 0.25% of the center frequency for devices operating above 70 MHz and below 900 MHz. Bandwidth is determined at the points 20 dB down from the modulated carrier.
According to RSS-210 issue 8: A1.1.3, the 99% bandwidth shall be no wider than 0.25% of the centre frequency for devices operating between 70 MHz and 900 MHz. For devices operating above 900 MHz, the emission shall be no wider than 0.5% of the centre frequency.

### 2.3.2 Test Setup

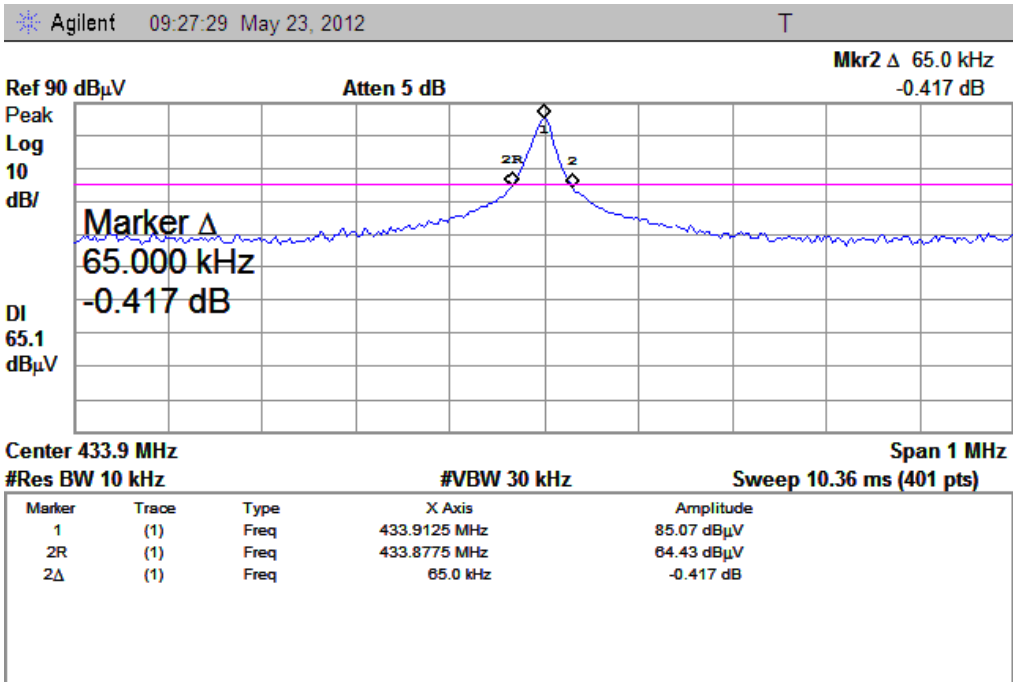



### 2.3.3 Summary of Test results

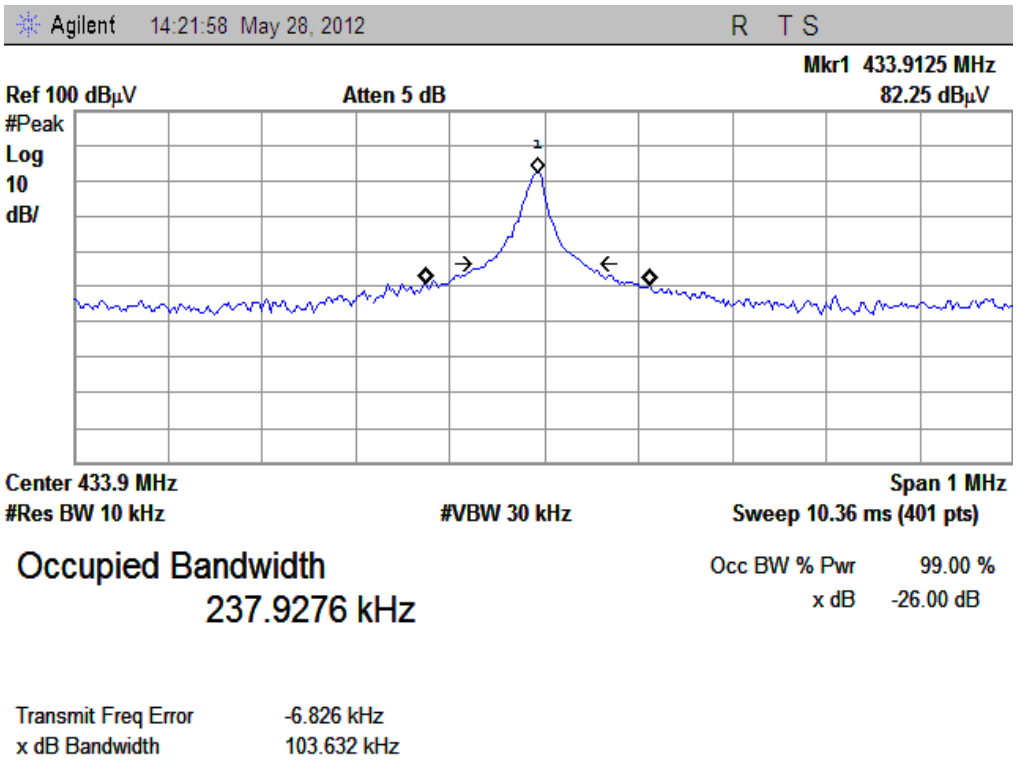
| Work Mode | Bandwidth | | Limit [Note 1] | Plot | Conclusion |
|---|---|---|---|---|---|
| | 20dB | 99% | | | |
| Transmitting | 65 KHz | 237.9KHz | 1084.8 KHz | A, B | Pass |

Note 1: Limit = Operating Frequency*0.25% = 433.92MHz*0.25% = 1084.8KHz.

### 2.3.4 Bandwidth Plot




(Plot A：20dB Bandwidth)




(Plot B：99% Bandwidth)

**Result**: Compliant

## 2.4 Radiated Emission

### 2.4.1 Standard Applicable

According to section FCC 15.231(b) and RSS-210 issue 8: A1.1.2, the field strength of emissions from intentional radiators operated under this section shall not exceed the following:

| Fundamental frequency(MHz) | Field strength of fundamental (Microvolts/meter) | Fied strength of spurious emissions(Microvolts/meter) |
|---|---|---|
| 260-470 | 3750 to 12500* | 375 to 1250* |

*Linear interpolations.

*For the band 433.92MHz, the field strength of fundamental limit at 3m

20lg(41.6*433.92-7083.3) = 80.8(dBμV/m)

The field strength of spurious emissions: 20lg(4.17*433.92-709.2) = 60.8(dBμV/m)

According to FCC section 15.209 (a) and RSS-Gen Issue 3, 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:

| Frequency range (MHz) | Field Strength | | Field Strength Limitation at 3m Measurement Dist | |
|---|---|---|---|---|
| | μV/m | Dist | (μV/m) | (dBμV/m) |
| 0.009 - 0.490 | 2400/F(KHz) | 300m | 10000* 2400/F(KHz) | 20log 2400/F(KHz) + 80 |
| 0.490 - 1.705 | 2400/F(KHz) | 30m | 100* 2400/F(KHz) | 20log 2400/F(KHz) + 40 |
| 1.705 - 30.00 | 30 | 30m | 100*30 | 20log 30 + 40 |
| 30.0 - 88.0 | 100 | 3m | 100 | 20log 100 |
| 88.0 - 216.0 | 150 | 3m | 150 | 20log 150 |
| 216.0 - 960.0 | 200 | 3m | 200 | 20log 200 |
| Above 960.0 | 500 | 3m | 500 | 20log 500 |

The above field strength limits are specified at a distance of 3-meters the tighter limits apply at the band edges.

As shown in FCC section 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector. When average radiated emission measurements are specified in this part, including emission measurements below 1000MHz, there also is a limit on the radio frequency emissions, as measured using instrumentation with a peak detector function, corresponding to 20dB above the maximum permitted average limit for the frequency being investigated unless a different peak emission limit is otherwise specified in the rules.

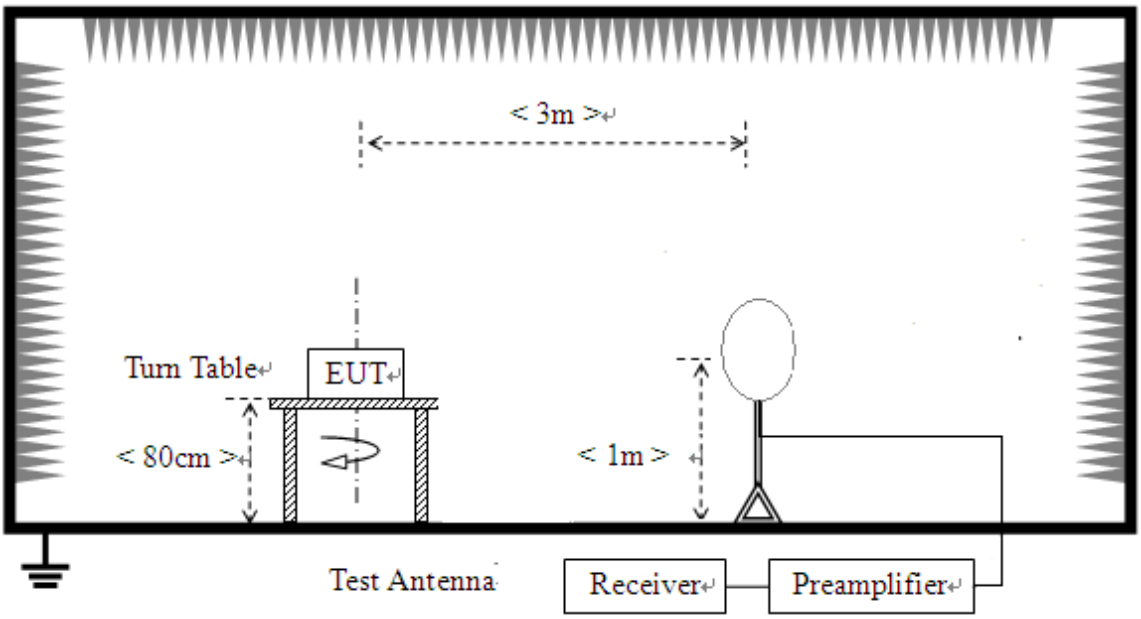
Note:

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 Ld1 = Ld2 * $(d2/d1)^{2}$.
   Example:
   F.S Limit at 30m distance is 30uV/m, then F.S Limitation at 3m distance is adjusted as

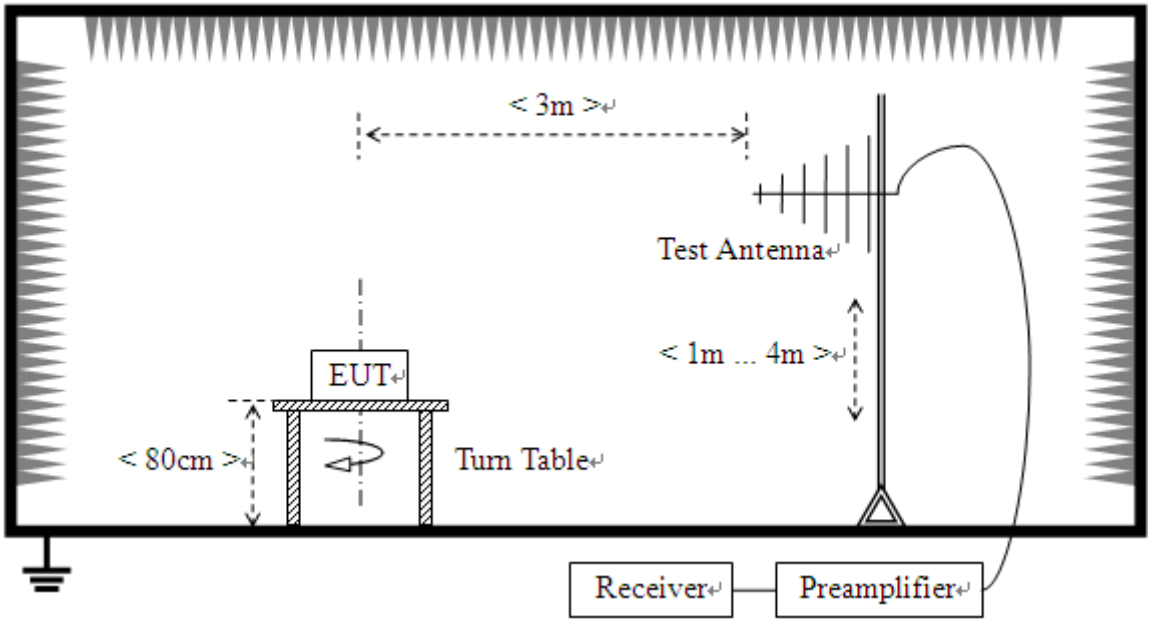
   Ld1 = L1 = 30uV/m * $(10)^2$ = 100 * 30uV/m

### 2.4.2 Test Setup

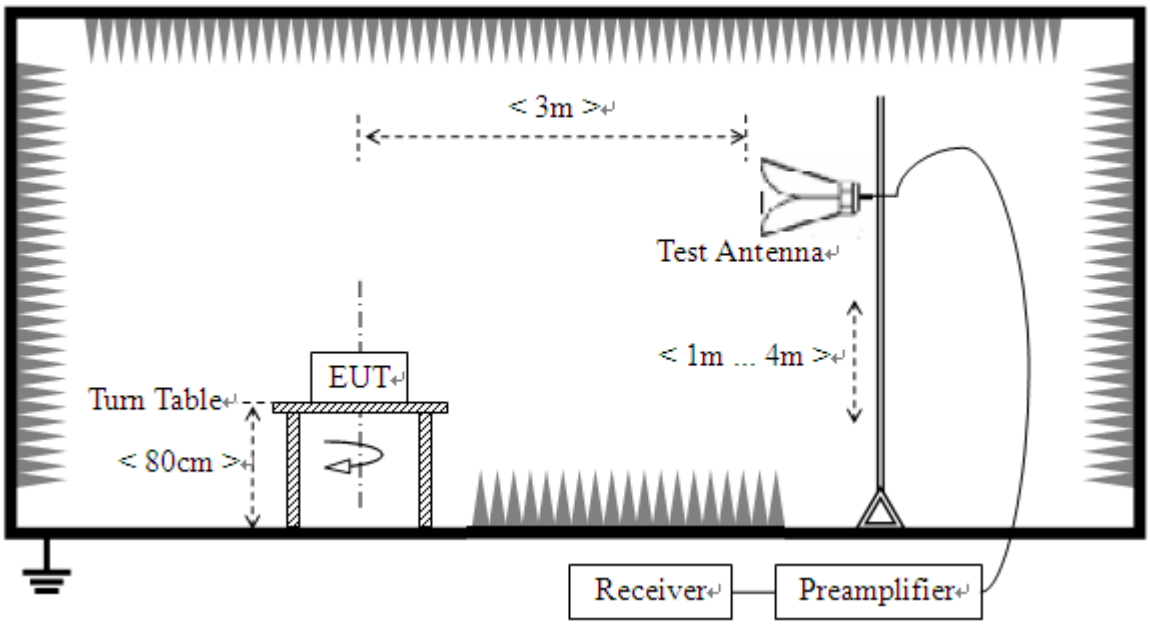
1) For radiated emissions from 9kHz to 30MHz




2) For radiated emissions from 30MHz to1GHz




3) For radiated emissions above 1GHz




### 2.4.3 Test Procedure

The test is performed in a 3m Semi-Anechoic Chamber; the antenna factor, cable loss and so on of the site (factors) is calculated to correct the reading. The EUT is placed on a 0.8m high insulating Turn

Table, and keeps 3m away from the Test Antenna, which is mounted on a variable-height antenna master tower.

For the test Antenna:

1) In the frequency range of 9KHz to 30MHz, magnetic field is measured with Loop Test Antenna.

   The Test Antenna is positioned with its plane vertical at 1m distance from the EUT. The center of the Loop Test Antenna is 1m above the ground. During the measurement the Loop Test Antenna rotates about its vertical axis for maximum response at each azimuth about the EUT.

2) In the frequency range above 30MHz, Bi-Log Test Antenna (30MHz to 1GHz) and Horn Test Antenna (above 1GHz) are used. Test Antenna is 3m away from the EUT. Test Antenna height is varied from 1m to 4m above the ground to determine the maximum value of the field strength. The emission levels at both horizontal and vertical polarizations should be tested.

### 2.4.4 Summary of test Results and Plots

The amplitude of spurious emissions which are attenuated more than 20 dB below the permissible value need not be reported.

Note: All radiated emission tests were performed in X, Y, Z axis direction, and only the worst axis test condition was recorded in this test report.

**The Emissions:**

| Fre (MHz) | Polar (H/V) | Reading _Peak (dBμV) | Total Factor (dB) | PEAK (dBμV/m) | AV Factor (dB) | AVG (dBμV/m) | Limits | | Result (Pass /Fail) | Emissions Type |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Peak | AVG | | |
| 433.92 | H | 75.06 | 18.6 | 93.66 | -19.76 | 73.9 | 100.8 | 80.8 | PASS | Fundamental |
| 867.84 | H | 30.4 | 22.6 | 53.0 | -19.76 | 33.24 | 80.8 | 60.8 | PASS | Harmonics |
| 1301.76 | H | 28.6 | 25.7 | 54.3 | -19.76 | 34.54 | 74 | 54 | PASS | Harmonics |
| 1735.68 | H | 31.7 | 28.4 | 60.1 | -19.76 | 40.34 | 80.8 | 60.8 | PASS | Harmonics |
| 346.70 | H | 30.5 | 20.8 | 51.3 | -19.76 | 31.54 | 74 | 54 | PASS | Spurious |
| 1278.60 | H | 32.57 | 25.0 | 57.57 | -19.76 | 37.81 | 74 | 54 | PASS | Spurious |
| 433.92 | V | 62 | 18.6 | 80.6 | -19.76 | 60.84 | 100.8 | 80.8 | PASS | Fundamental |
| 867.84 | V | 28.4 | 22.6 | 51.0 | -19.76 | 31.24 | 80.8 | 60.8 | PASS | Harmonics |
| 1301.76 | V | 30.4 | 25.7 | 56.1 | -19.76 | 36.34 | 74 | 54 | PASS | Harmonics |
| 245.63 | V | 28.5 | 19.3 | 47.8 | -19.76 | 28.04 | 74 | 54 | PASS | Spurious |
| 1378.64 | V | 29.6 | 26.04 | 55.64 | -19.76 | 35.88 | 74 | 54 | PASS | Spurious |

NOTE:

1. The EUT was tested in all three orthogonal planes and frequency range 30MHz to the tenth

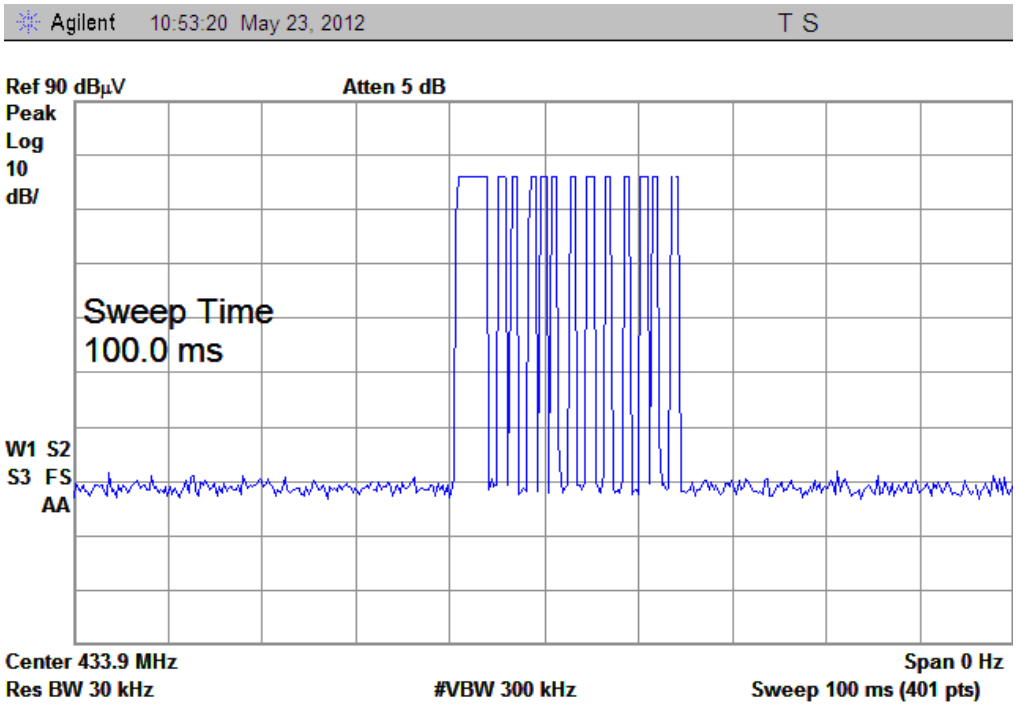
harmonics, here we ranged to 5GHz. The above table only shows the frequencies which peak emission exceed or close to the average limit. The peak data of other frequencies are attenuated more than 20 dB below the permissible value need not be reported.

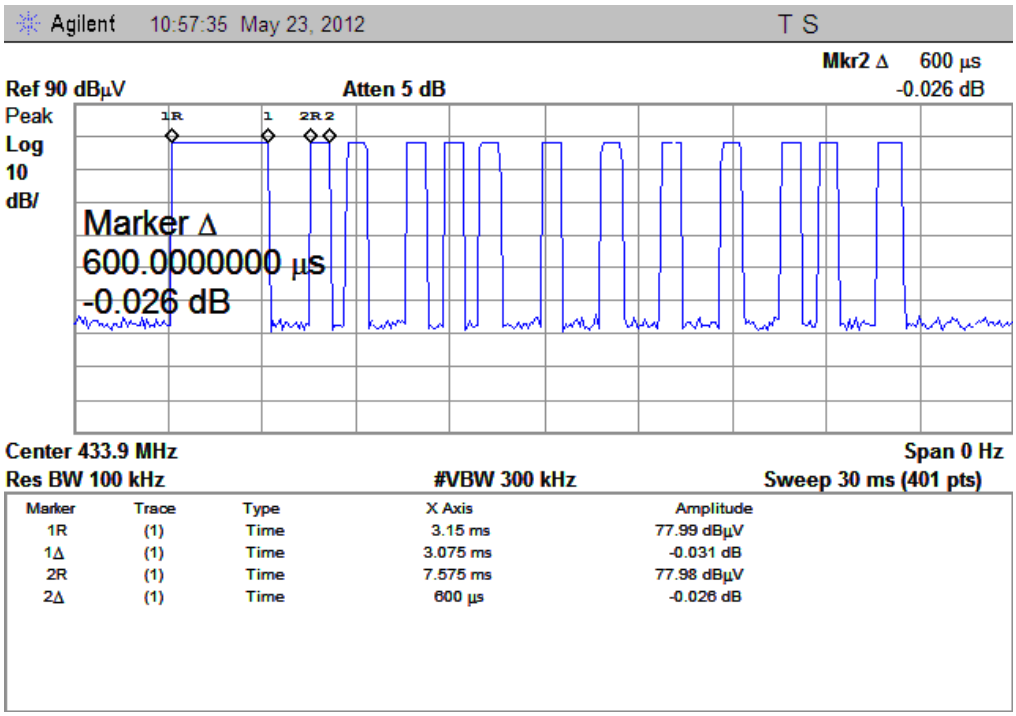
2. Below 1GHz: The Total Factor = cable loss + antenna factor
   Above 1GHz: The Total Factor = cable loss + antenna factor – amplifier factor

3. PEAK(dBμV/m) = Reading Level_PK(dBμV) + total factor (dB)
   AV(dBμV/m) = PEAK(dBμV/m) + AV factor(dB)

4. The duty cycle is simply the on-time divided by the period (See 2.4.5 “The Plots of duty cycle”)
   The duration of one cycle > 100ms
   Effective period of the cycle = 1*3.075ms + 12*600μs = 10.275ms
   Duty Cycle = 10.275ms/100ms = 0.10275
   Therefore, the averaging factor is found by 20*log (Duty cycle) = 20* log(0.10275) = -19.76

   The Plots of Duty Cycle:






**Result**: Compliant

** END OF REPORT **