

FCC Part 15C

Measurement And Test Report For

WUXI KYDZ CO.,LTD.

3F, 5 Bldg, Huaqing Creative Park, Huishan Economic Development Zone,
Wuxi, Jiangsu

FCC ID: 2AE9ZTHL-5

Jun. 24, 2015

| | |
|---|--|
| This Report Concerns: <input checked="" type="checkbox"/> Original Report | Equipment Type: Car remote control |
| Report Number: | MTI150513001RF |
| Test Engineer: | David Chen <i>David Chen</i> |
| Reviewed By: | Tim Zhang <i>Tim Zhang</i> |
| Approved & Authorized By: | Hebe Lee <i>Hebe Lee</i>  |
| Test Date: | May 15 - Jun. 17, 2015 |
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1. Test Certification

| | |
|------------------------------|--|
| Product: | Car remote control |
| Model No.: | THL-5 |
| Applicant: | WUXI KYDZ CO.,LTD. |
| Address: | 3F, 5 Bldg, Huaqing Creative Park, Huishan Economic Development Zone, Wuxi, Jiangsu. |
| Manufacturer: | WUXI KYDZ CO.,LTD. |
| Address: | 3F, 5 Bldg, Huaqing Creative Park, Huishan Economic Development Zone, Wuxi, Jiangsu. |
| Date of Test: | May. 15 – Jun. 17, 2015 |
| Applicable Standards: | FCC Part 15, Subpart C (15.231) KDB 447498 D01 V05 R02, clause 4.3.1 |

The above equipment has been tested by Shenzhen Microtest Testing Lab. and found compliance with the requirements set forth in the technical standards mentioned above. The results of testing in this report apply only to the product/system, which was tested. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

2. Test Result Summary

| Requirement | CFR 47 Section | Result |
|----------------------------------|--------------------|--------|
| Antenna requirement | §15.203 | PASS |
| AC Power Line Conducted Emission | §15.207 | N/A |
| Radiated Emission Test | FCC Part 15.231(a) | PASS |
| Bandwidth | FCC Part 15.231 | PASS |
| Release Time Measurement | FCC Part 15.231(a) | PASS |
| Duty Cycle | FCC Part 15.231 | PASS |

Note:

1. *PASS: Test item meets the requirement.*
2. *Fail: Test item does not meet the requirement.*
3. *N/A: Test case does not apply to the test object.*
4. *The test result judgment is decided by the limit of test standard.*

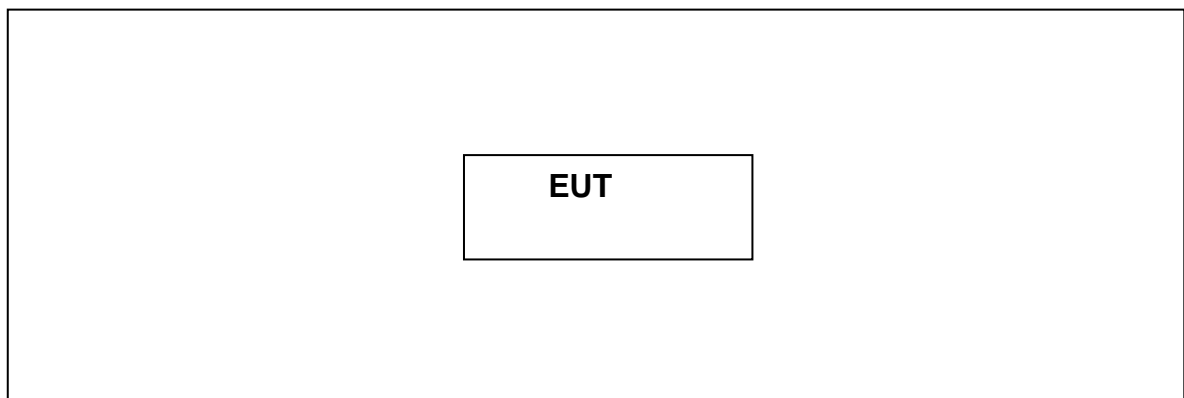
3. EUT Description

| | |
|-----------------------------|----------------------------|
| Product Name: | Car remote control |
| Model : | THL-5 |
| Additional Model: | THL-2,THL-3,THL-4,THL-6 |
| Trade Mark: | KYDZ |
| Operation Frequency: | 315MHz |
| Modulation Type: | OOK |
| Antenna Type: | PCB LOOP Antenna |
| Antenna Gain: | 5dBi |
| Power Supply: | DC Battery: DC 3V (CR2032) |

Note:

- (1) For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

3.1. Block Diagram Showing the Configuration of System Tested



3.2. Description of Support Units

The EUT has been tested as an independent unit.

3.3. Description of Test Mode

To investigate the maximum EMI emission characteristics generated from EUT, the test system was pre-scanning tested based on the consideration of following EUT operation mode or test configuration mode which possibly have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned follows was evaluated respectively.

| Test Items | Note |
|-------------------|---------------------------|
| Radiated Emission | Continuously transmitting |
| Bandwidth | Continuously transmitting |
| Duty Cycle | Continuously transmitting |
| Release Time | Normal Mode |

Note:

- (1) During the testing procedure, the continuously transmitting mode was programmed by the customer.
- (2) The EUT is considered a portable unit, and it was pre-tested on the position of each 3 axis: X axis, Y axis and Z axis. The worst case was found positioned on Z-plane. Therefore, only the test data of this Z-plane were used for radiated emission measurement test.

4. Facilities and Accreditations

4.1. Facilities

Shenzhen Toby Technology Co., Ltd.
 Add.: 10/F.,A Block, Jiada R&D Bldg., No.5 Songpingshan, Road, Science&Technology Park,
 Shenzhen, 518057
 FCC Registration No.:811562

4.2. Measurement Uncertainty

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

| No. | Item | MU |
|-----|-------------------------------|---------------------------|
| 1 | Conducted Emission | $\pm 1.38\text{dB}$ |
| 2 | RF power, conducted | $\pm 0.16\text{dB}$ |
| 3 | Spurious emissions, conducted | $\pm 0.21\text{dB}$ |
| 4 | All emissions, radiated(<1G) | $\pm 4.68\text{dB}$ |
| 5 | All emissions, radiated(>1G) | $\pm 4.89\text{dB}$ |
| 6 | Temperature | $\pm 0.5^{\circ}\text{C}$ |
| 7 | Humidity | $\pm 2\%$ |

5. Test Results and Measurement Data

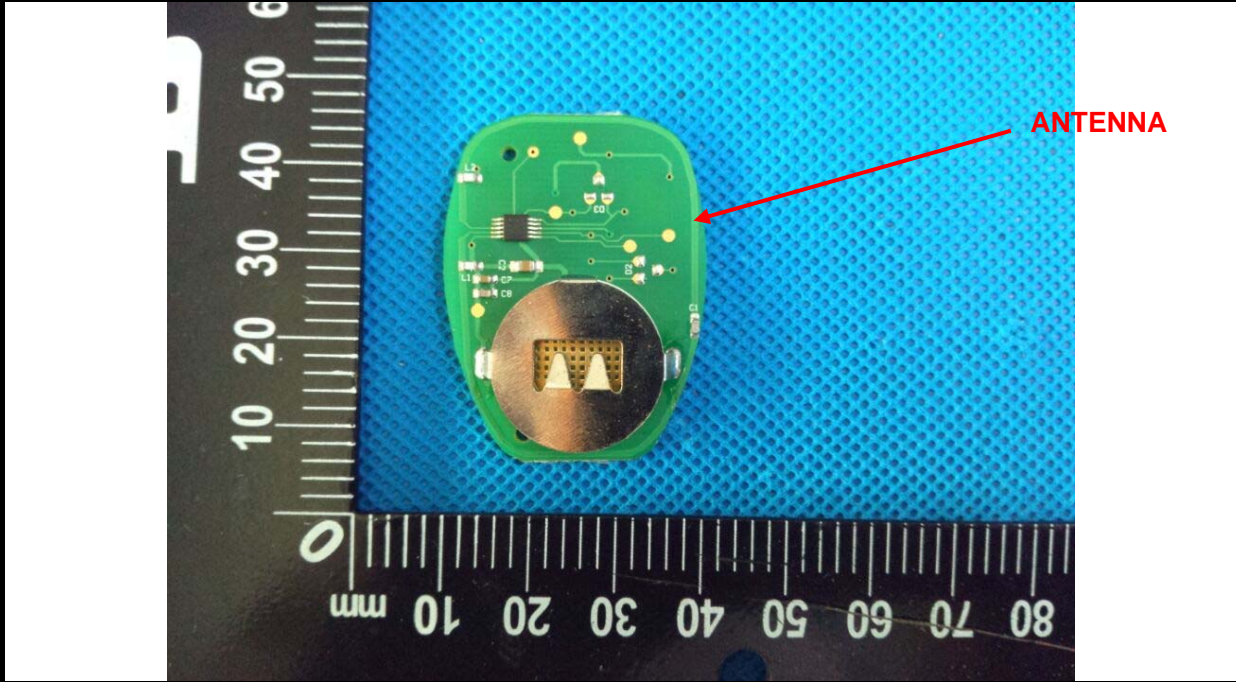
5.1. Antenna requirement

| | |
|------------------------------|-----------------------------|
| Standard requirement: | FCC Part15 C Section 15.203 |
|------------------------------|-----------------------------|

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

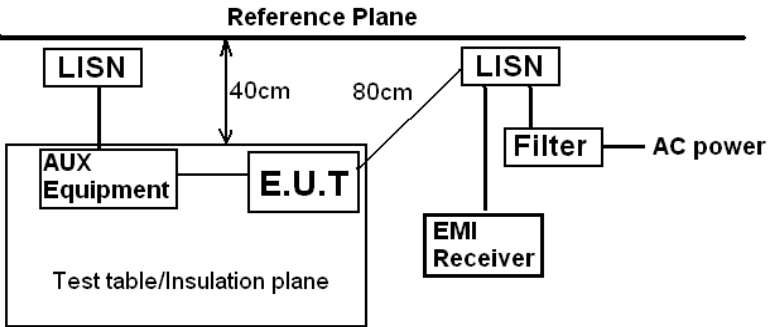
| | |
|-----------------------|--|
| E.U.T Antenna: | |
|-----------------------|--|

The EUT transmitting antennas belongs to Dipole antenna which removable attached, and the best case gain of the antenna is 5dBi for 315MHz.



6. Conducted Emission

6.1 Test Specification

| Test Requirement: | FCC Part15 C Section 15.207 | | | | | | | | | | | | | | |
|--------------------------|--|-----------------------|--------------|--|------------|---------|----------|-----------|-----------|-------|----|----|------|----|----|
| Test Method: | ANSI C63.4:2009 | | | | | | | | | | | | | | |
| Frequency Range: | 150 kHz to 30 MHz | | | | | | | | | | | | | | |
| Receiver setup: | RBW=9 kHz, VBW=30 kHz, Sweep time=auto | | | | | | | | | | | | | | |
| Limits: | <table border="1"> <thead> <tr> <th rowspan="2">Frequency range (MHz)</th> <th colspan="2">Limit (dBuV)</th> </tr> <tr> <th>Quasi-peak</th> <th>Average</th> </tr> </thead> <tbody> <tr> <td>0.15-0.5</td> <td>66 to 56*</td> <td>56 to 46*</td> </tr> <tr> <td>0.5-5</td> <td>56</td> <td>46</td> </tr> <tr> <td>5-30</td> <td>60</td> <td>50</td> </tr> </tbody> </table> | Frequency range (MHz) | Limit (dBuV) | | Quasi-peak | Average | 0.15-0.5 | 66 to 56* | 56 to 46* | 0.5-5 | 56 | 46 | 5-30 | 60 | 50 |
| Frequency range (MHz) | Limit (dBuV) | | | | | | | | | | | | | | |
| | Quasi-peak | Average | | | | | | | | | | | | | |
| 0.15-0.5 | 66 to 56* | 56 to 46* | | | | | | | | | | | | | |
| 0.5-5 | 56 | 46 | | | | | | | | | | | | | |
| 5-30 | 60 | 50 | | | | | | | | | | | | | |
| Test Setup: |  <p><i>Remark</i> E.U.T: Equipment Under Test LISN: Line Impedance Stabilization Network Test table height=0.8m</p> | | | | | | | | | | | | | | |
| Test Mode: | Continuous transmitting mode | | | | | | | | | | | | | | |
| Test Procedure: | <ol style="list-style-type: none"> 1. The E.U.T and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm/50uH coupling impedance for the measuring equipment. 2. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs). 3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4: 2009 on conducted measurement. | | | | | | | | | | | | | | |
| Test Result: | The test is not applicable | | | | | | | | | | | | | | |

6.1.2 Test Instruments

| Conducted Emission Shielding Room Test Site (843) | | | | |
|---|--------------|----------------|---------------|-----------------|
| Equipment | Manufacturer | Model | Serial Number | Calibration Due |
| EMI Test Receiver | R&S | ESCI | 100321 | 2015-08-09 |
| 50 Ω Coaxial Switch | Anritsu | MP59B | X10321 | 2015-08-09 |
| L.I.S.N | R&S | ENV216 | 101131 | 2015-08-09 |
| L.I.S.N | SCHWARZBZCK | NNBL 8226-2 | 8226-2/164 | 2015-08-09 |

Note: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).

6.1.3 Test data

The test is not applicable.

7. Radiated Emission Test

7.1 Test Standard and Limit

7.1.1 Test Standard

FCC Part 15.231(a)

7.1.2 Test Limit

According to FCC 15.231(a) requirement:

In addition to the provisions of Section 15.205, the field strength of emissions from intentional radiators operated under this Section shall not exceed the following:

| Fundamental Frequency (MHz) | Field Strength of Fundamental (microvolt/meter) at 3m | Field Strength of Spurious Emissions (microvolt/meter) at 3m |
|-----------------------------|---|--|
| 40.66~40.70 | 2250 | 225 |
| 70~130 | 1250 | 125 |
| 130~174 | 1250 to 3750(**) | 125 to 375(**) |
| 174~260 | 3750 | 375 |
| 260~470 | 3750 to 12500(**) | 375 to 1250(**) |
| Above 470 | 12500 | 1250 |

** Linear interpolations, the formulas for calculating the maximum permitted fundamental field strengths are as follows:

- (1) for the band 130~174 MHz, $\mu\text{V}/\text{m}$ at 3 meters = $56.81818(F) - 6136.3636$;
- (2) for the band 260~470 MHz, $\mu\text{V}/\text{m}$ at 3 meter = $41.6667(F) - 7083.3333$.

The maximum permitted unwanted emissions level is 20 dB below the maximum permitted fundamental level. In addition field strength of any emissions which appear inside of the restriction band shall not exceed the general radiated emissions limits in Section 15.209(a).

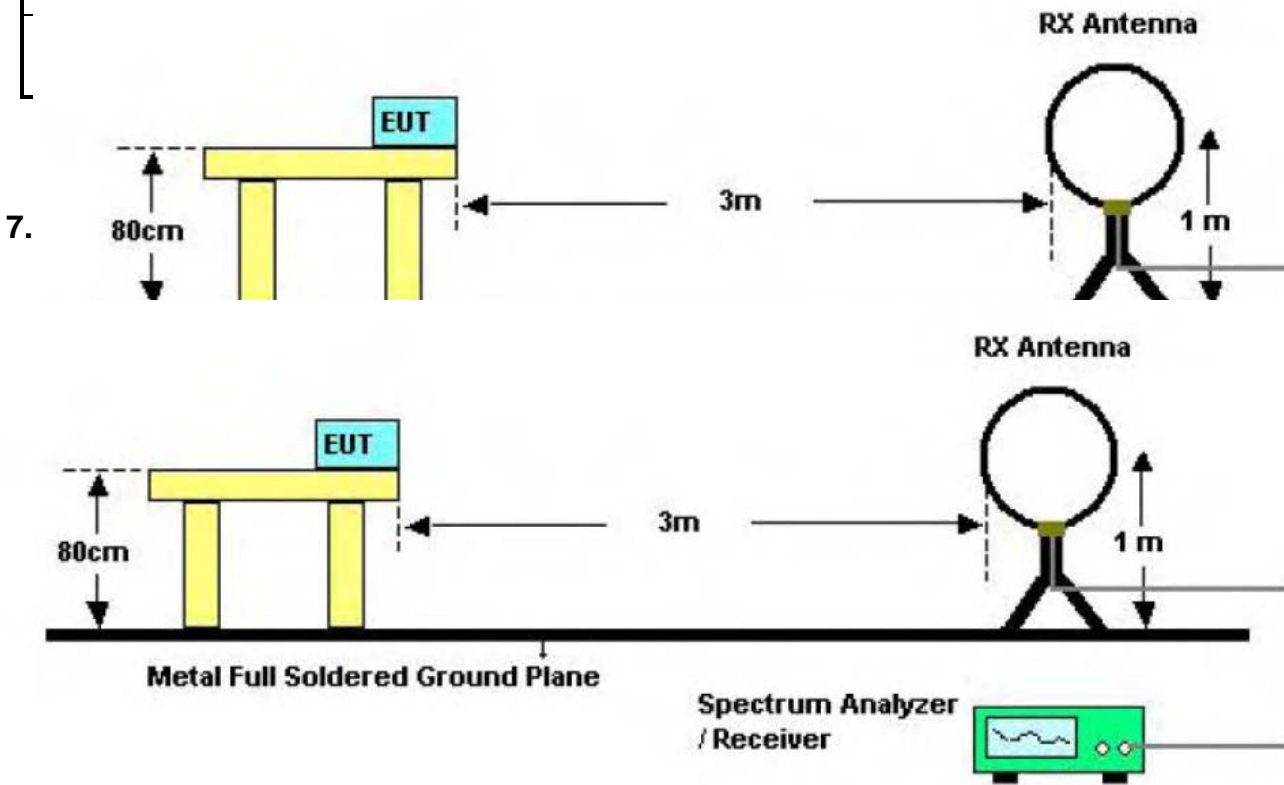
| Frequency (MHz) | Field Strength (microvolt/meter) | Measurement Distance (meters) |
|-----------------|----------------------------------|-------------------------------|
| 0.009~0.490 | 2400/F(KHz) | 300 |
| 0.490~1.705 | 2400/F(KHz) | 30 |
| 1.705~30.0 | 30 | 30 |
| 30~88 | 100 | 3 |
| 88~216 | 150 | 3 |
| 216~960 | 200 | 3 |
| Above 960 | 500 | 3 |

Note:

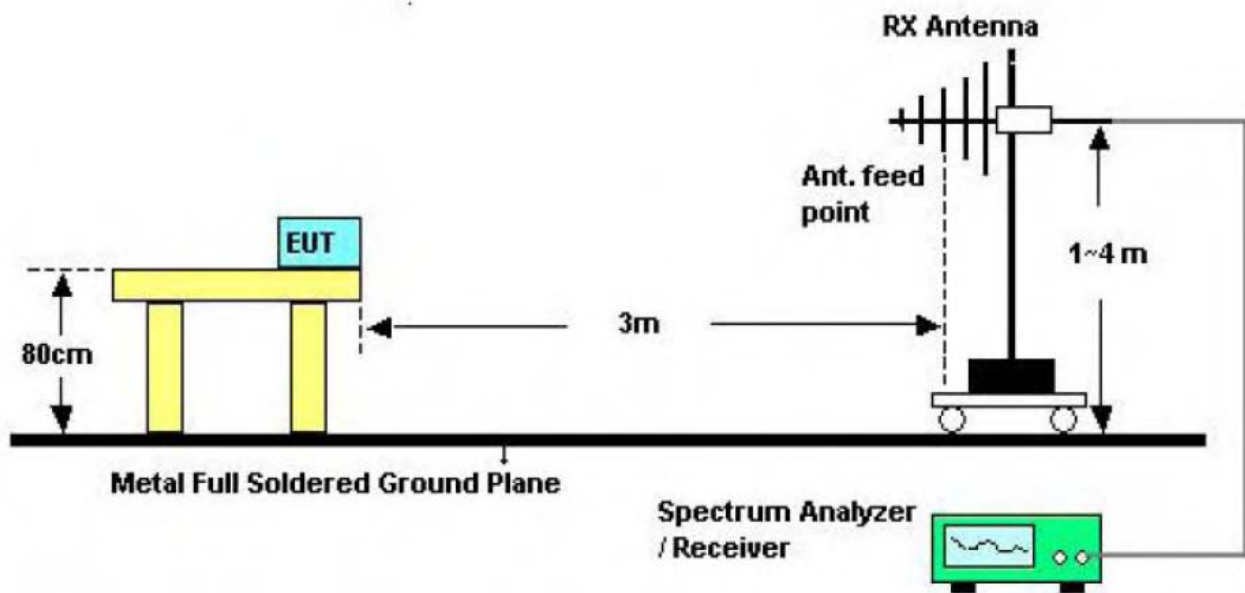
- (1) The tighter limit applies at the band edges.
- (2) Emission Level(dBuV/m)=20log Emission Level(uV/m)

So the field strength of emission limits have been calculated in below table.

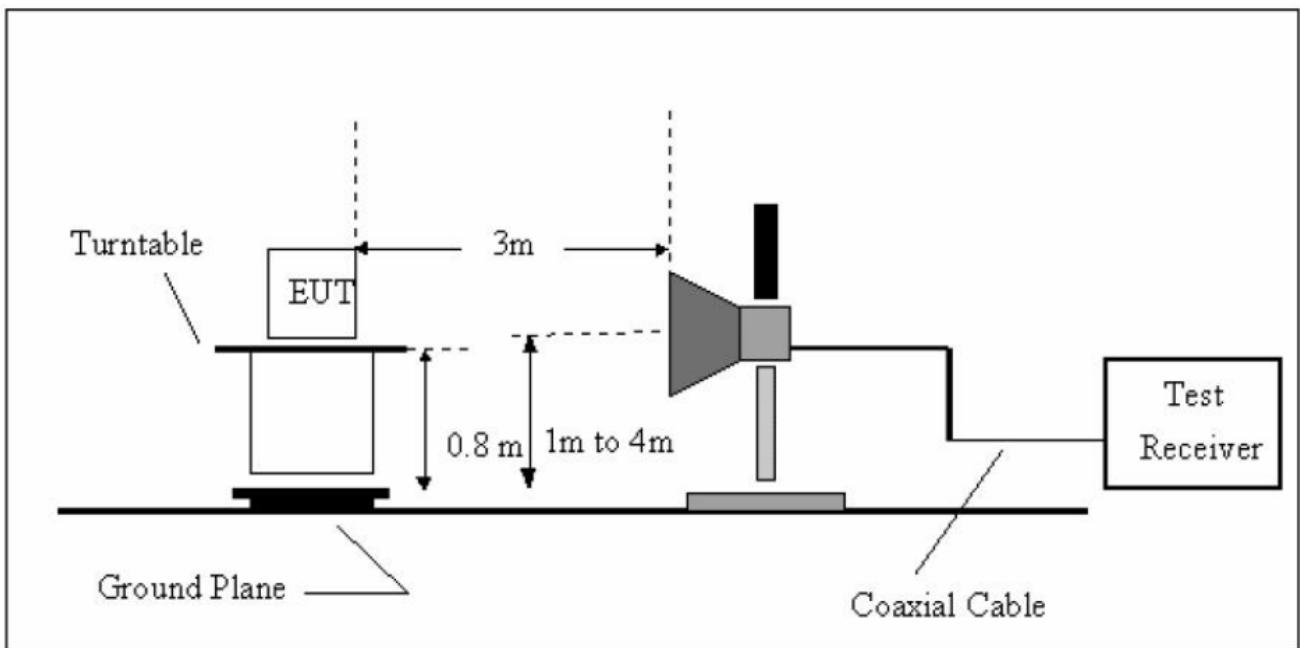
| Fundamental Frequency (MHz) | Field Strength of Fundamental (microvolt/meter) at 3m |
|-----------------------------|---|
| 215 MHz | 75.62 (Average) |



Bellow 30MHz Test Setup



Bellow 1000MHz Test Setup



Above 1GHz Test Setup

100.82.1 Test Procedure

- (1) The measuring distance of 3m shall be used for measurements at frequency up to 1GHz and above 1 GHz. The EUT was placed on a rotating 0.8m high above ground, the table was rotated 360 degrees to determine the position of the highest radiation.
- (2) The Test antenna shall vary between 1m and 4m, Both Horizontal and Vertical antenna are set to make measurement.

- (3) The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- (4) If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit Bellow 1 GHz, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed. But the Peak Value and average value both need to comply with applicable limit above 1 GHz.
- (5) For the actual test configuration, please see the test setup photo.

7.3 EUT Operating Conditio

The Equipment Under Test was set to Continual Transmitting in maximum power.

7.4 Test Equipment

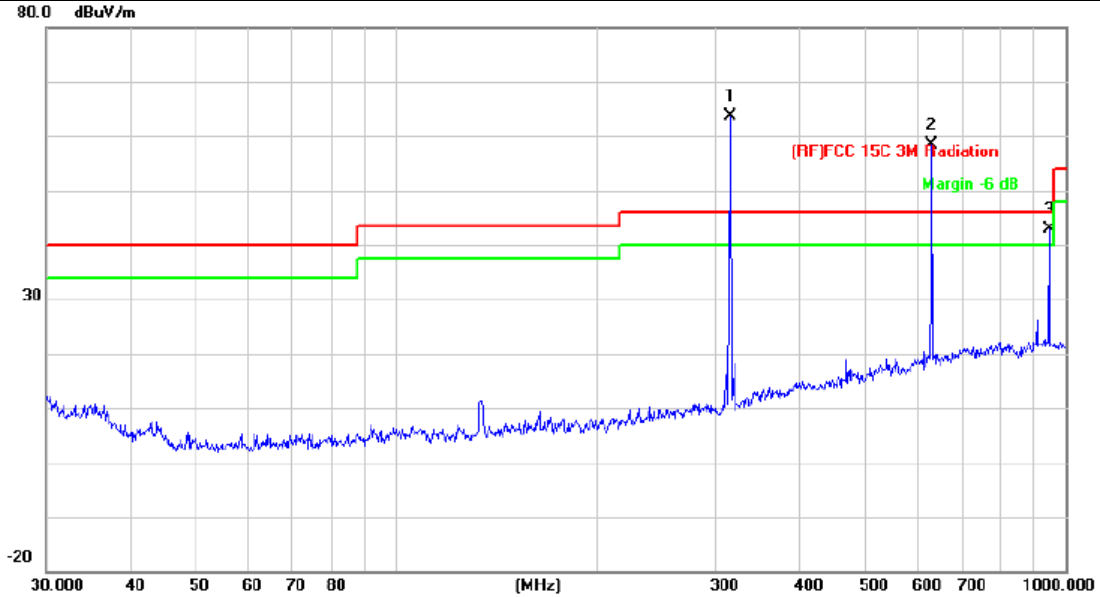
| Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Cal. Due Date |
|------------------------|---------------------|------------------|-------------------|------------------|----------------------|
| Spectrum Analyzer | Agilent | E4407B | MY45106456 | Mar. 20, 2015 | Mar. 19, 2016 |
| Spectrum Analyzer | Rohde & Schwarz | FSP30 | DE25181 | Aug. 08, 2015 | Aug.07, 2016 |
| EMI Test Receiver | Rohde & Schwarz | ESCI | 101165 | Aug. 08, 2015 | Aug.07, 2016 |
| Bilog Antenna | ETS-LINDGREN | 3142E | 00117537 | Mar. 07, 2015 | Mar.06, 2016 |
| Horn Antenna | ETS-LINDGREN | 3117 | 00143207 | Mar. 07, 2015 | Mar.06, 2016 |
| Pre-amplifier | HP | 11909A | 185903 | Mar. 07, 2015 | Mar.06, 2016 |
| Pre-amplifier | HP | 8447B | 3008A00849 | Mar. 07, 2015 | Mar.06, 2016 |
| Cable | HUBER+SUHNER | 100 | SUCOFLEX | Mar. 07, 2015 | Mar.06, 2016 |
| Signal Generator | Rohde & Schwarz | SML03 | IKW682-054 | Feb. 11, 2015 | Feb.10, 2016 |
| Positioning Controller | ETS-LINDGREN | 2090 | N/A | N/A | N/A |

7.5 Test Data

Please refer to the following pages.

Radiated Emission Bellow 1 GHz

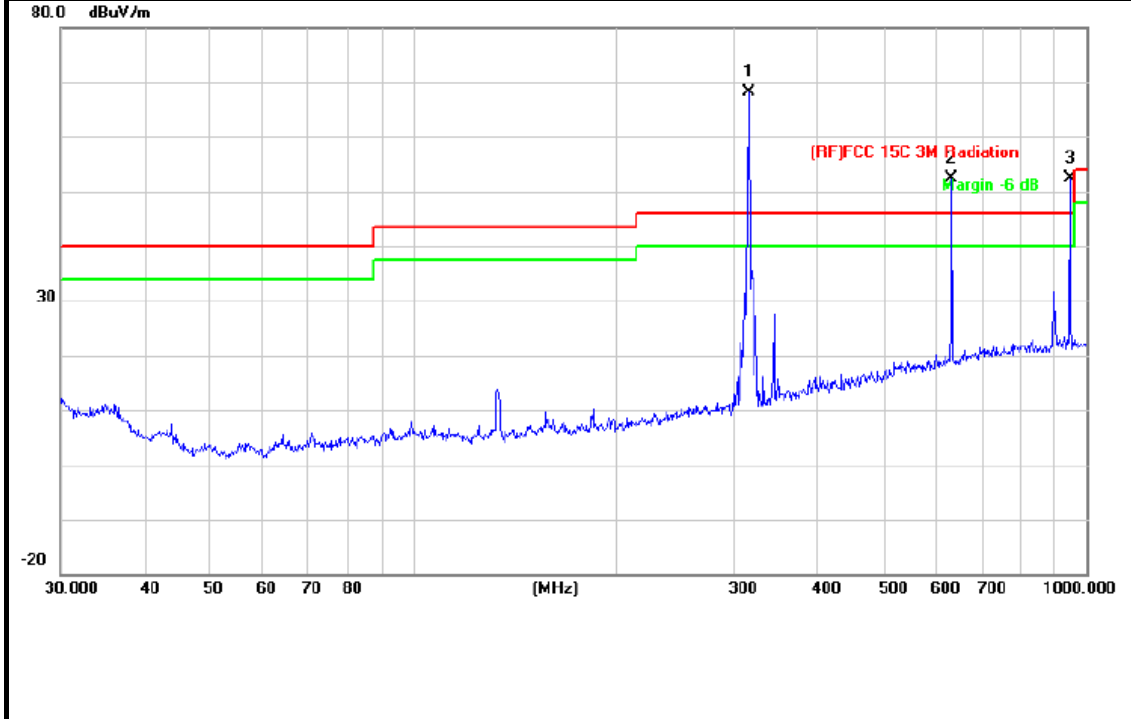
| | | | |
|---------------|----------------|--------------------|-------|
| EUT: | Radio Emitters | Model Name : | THL-5 |
| Temperature: | 25 °C | Relative Humidity: | 55% |
| Test Voltage: | DC 3V | | |
| Ant. Pol. | Vertical | | |
| Test Mode: | TX Mode | | |
| Remark: | | | |



| No. | Mk. | Freq. MHz | Reading Level dBuV | Correct Factor dB/m | Measure- ment dBuV/m | Limit dBuV/m | Over dB | Detector | Antenna Height cm | Table Degree degree | Comment |
|-----|-----|--------------|--------------------------|---------------------------|----------------------------|-----------------|------------|----------|-------------------------|---------------------------|---------|
| 1 | * | 315.4808 | 80.23 | -16.50 | 63.73 | 46.00 | 17.73 | peak | | | |
| 2 | X | 631.6884 | 66.93 | -8.57 | 58.36 | 46.00 | 12.36 | peak | | | |
| 3 | ! | 945.4399 | 47.71 | -4.83 | 42.88 | 46.00 | -3.12 | peak | | | |

Emission Level= Read Level+ Correct Factor

| | | | |
|----------------------|----------------|---------------------------|-------|
| EUT: | Radio Emitters | Model Name : | THL-5 |
| Temperature: | 25 °C | Relative Humidity: | 55% |
| Test Voltage: | DC 3V | | |
| Ant. Pol. | Horizontal | | |
| Test Mode: | TX Mode | | |
| Remark: | | | |



| No. | Mk. | Freq. MHz | Reading Level dBuV | Correct Factor dB/m | Measure- ment dBuV/m | Limit dBuV/m | Over dB | Antenna Height cm | Table Degree degree | Comment |
|-----|-----|--------------|--------------------------|---------------------------|----------------------------|-----------------|------------|-------------------------|---------------------------|---------|
| 1 | * | 315.4808 | 84.73 | -16.50 | 68.23 | 46.00 | 22.23 | peak | | |
| 2 | X | 631.6884 | 60.88 | -8.57 | 52.31 | 46.00 | 6.31 | peak | | |
| 3 | X | 945.4399 | 57.10 | -4.83 | 52.27 | 46.00 | 6.27 | peak | | |

Emission Level= Read Level+ Correct Factor

- Note:**
- (1) All Readings are Peak Value.
 - (2) Emission Level= Reading Level+ Probe Factor +Cable Loss
 - (3) The QP measurement was not performed when the peak measured data under the limit of QP detection.

Fundamental and Harmonics emissions

| Freq. (MHz) | Ant.Pol. H/V | Emission Level(dBuV) | | Limit 3m(dBuV/m) | | Margin(dB) | |
|----------------|-----------------|----------------------|-------|------------------|-------|------------|-------|
| | | PK | AV | PK | AV | PK | AV |
| 315 | V | 63.73 | 52.56 | 95.62 | 75.62 | 31.89 | 23.06 |
| 630 | V | 58.36 | 47.19 | 75.62 | 55.62 | 17.26 | 8.43 |
| 945 | V | 42.88 | 31.71 | 75.62 | 55.62 | 32.74 | 23.91 |
| 1260 | V | 46.74 | 35.57 | 75.62 | 55.62 | 28.88 | 20.05 |
| 1575 | V | 42.57 | 31.4 | 75.62 | 55.62 | 33.05 | 24.22 |
| 1890 | V | 38.69 | 27.52 | 75.62 | 55.62 | 36.93 | 28.1 |
| 2205 | V | 36.14 | 24.97 | 74 | 54 | 37.86 | 29.03 |
| Freq. (MHz) | Ant.Pol. H/V | Emission Level(dBuV) | | Limit 3m(dBuV/m) | | Margin(dB) | |
| | | PK | AV | PK | AV | PK | AV |
| 315 | H | 68.23 | 57.06 | 95.62 | 75.62 | 27.39 | 18.56 |
| 630 | H | 52.31 | 41.14 | 75.62 | 55.62 | 23.31 | 14.48 |
| 945 | H | 52.27 | 41.1 | 75.62 | 55.62 | 23.35 | 14.52 |
| 1260 | H | 48.63 | 37.46 | 75.62 | 55.62 | 26.99 | 18.16 |
| 1575 | H | 46.58 | 35.41 | 75.62 | 55.62 | 29.04 | 20.21 |
| 1890 | H | 44.31 | 33.14 | 75.62 | 55.62 | 31.31 | 22.48 |
| 2205 | H | 41.09 | 29.92 | 74 | 54 | 32.91 | 24.08 |

Other harmonics emissions are lower than 20dB below the allowable limit.

Note: (1) All Readings are Peak Value and AV. And AV is calculated by the following:

Average =Peak Value + 20log(Duty Cycle), Final AV=PK-11.17

(2) Emission Level= Reading Level + Probe Factor +Cable Loss

(3) Data of measurement within this frequency range shown "--" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

Pulse Desensitization Correction Factor

Note:

(1)The Total Pulse Width (PW)= 27.64 ms

(2) $2/PW=2/27.64$ (ms)= 0.07 kHz<100 kHz

Because $2/PW < RBW$, so the PDCF is not needed.

8. Bandwidth

8.1 Test Standard and Limit

8.1.1 Test Standard

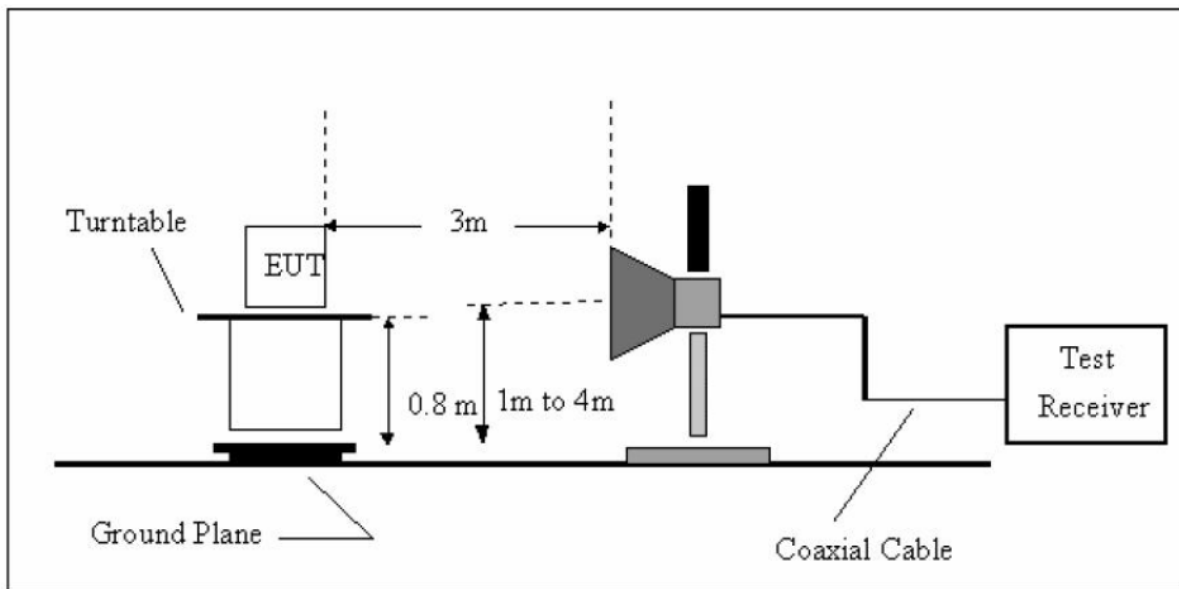
FCC Part 15.231

8.1.2 Test Limit

The bandwidth of the emissions shall be no wider than 0.25% of the center frequency for devices operating above 70 MHz and below 900 MHz. So the emission bandwidth limits have been calculated in below table.

| Fundamental Frequency | 20 dB Bandwidth Limits (MHz) |
|-----------------------|------------------------------|
| 315 MHz | 0.7875 |

8.2 Test Setup



8.3 Test Procedure

- (1) Set Spectrum Analyzer Center Frequency= Fundamental Frequency, RBW=10 kHz, VBW= 30 kHz, Span= 1 MHz.
- (2) Measured the spectrum width with power higher than 20 dB below carrier.

8.4 EUT Operating Condition

The Equipment Under Test was Programmed to be in continuously transmitting mode.

8.5 Test Equipment

| Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Cal. Due Date |
|-------------------|-----------------|-----------|------------|---------------|---------------|
| Spectrum Analyzer | Agilent | E4407B | MY45106456 | Mar. 20, 2015 | Mar. 19, 2016 |
| Spectrum Analyzer | Rohde & Schwarz | FSP30 | DE25181 | Aug. 08, 2014 | Aug.07, 2015 |
| EMI Test Receiver | Rohde & Schwarz | ESCI | 101165 | Aug. 08, 2014 | Aug.07, 2015 |
| Bilog Antenna | ETS-LINDGREN | 3142E | 00117537 | Mar. 07, 2015 | Mar.06, 2016 |

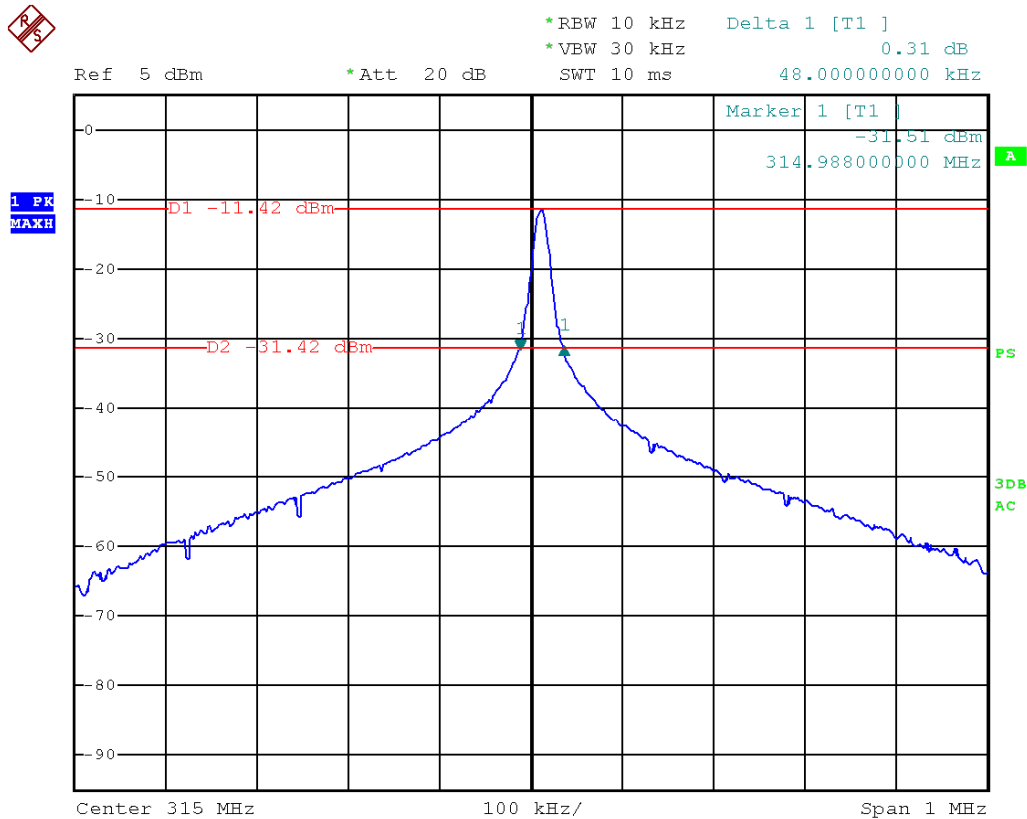
| | | | | | |
|-------------------------------|---------------------|-------------|------------|---------------|--------------|
| Horn Antenna | ETS-LINDGREN | 3117 | 00143207 | Mar. 07, 2015 | Mar.06, 2016 |
| Pre-amplifier | HP | 11909A | 185903 | Mar. 07, 2015 | Mar.06, 2016 |
| Pre-amplifier | HP | 8447B | 3008A00849 | Mar. 07, 2015 | Mar.06, 2016 |
| Cable | HUBER+SUHNER | 100 | SUCOFLEX | Mar. 07, 2015 | Mar.06, 2016 |
| Signal Generator | Rohde & Schwarz | SML03 | IKW682-054 | Feb. 11, 2015 | Feb.10, 2016 |
| Positioning Controller | ETS-LINDGREN | 2090 | N/A | N/A | N/A |

8.6 Test Condition

| | | |
|-------------------|---|----------|
| Temperature | : | 25 °C |
| Relative Humidity | : | 65 % |
| Pressure | : | 1010 hPa |
| Test Power | : | DC 3V |

8.7 Test Data

| Frequency (MHz) | 20 dBc Bandwidth (kHz) | Result |
|-----------------|------------------------|--------|
| 315 | 48.00 | PASS |



9. Release Time Measurement

9.1 Test Standard and Limit

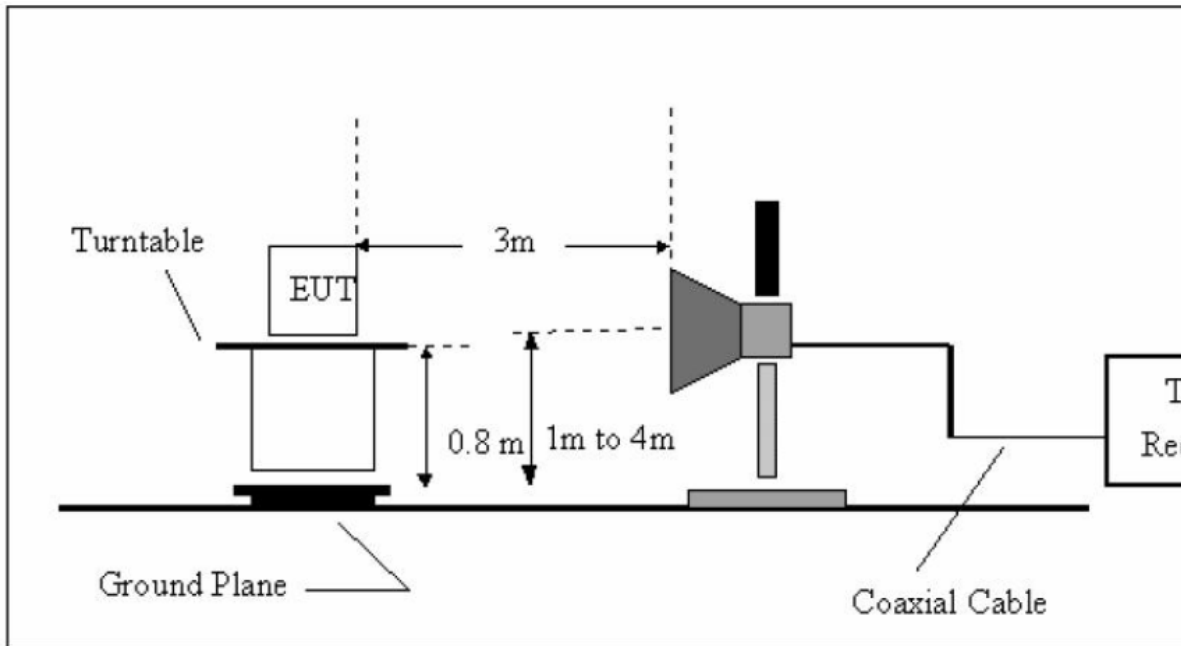
9.1.1 Test Standard

FCC Part 15.231 (a)(1)

9.1.2 Test Limit

According to FCC Part 15.231 (a)(1), A manually operated transmitter shall employ a switch that will automatically deactivate the transmitter within not more than 5 seconds of being released.

9.2 Test Setup



9.3 Test Procedure

- (1) Setup the EUT as show in the block diagram above.
- (2) Set Spectrum Analyzer Centre Frequency= Fundamental Frequency, RBW=100 kHz, VBW= 100 kHz, Span= 0 Hz. Sweep Time= 5 Seconds.
- (3) Setup the EUT as normal operation and press Transmitter button.
- (4) Set Spectrum Analyzer View, Delta Mark time.

9.4 EUT Operating Condition

The EUT was set to work in transmitting mode.

9.5 Test Equipment

| Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Cal. Due Date |
|-------------------|-----------------|-----------|------------|---------------|---------------|
| Spectrum Analyzer | Agilent | E4407B | MY45106456 | Mar. 20, 2015 | Mar. 19, 2016 |
| Spectrum Analyzer | Rohde & Schwarz | FSP30 | DE25181 | Aug. 08, 2014 | Aug.07, 2015 |
| EMI Test Receiver | Rohde & Schwarz | ESCI | 101165 | Aug. 08, 2014 | Aug.07, 2015 |
| Bilog Antenna | ETS-LINDGREN | 3142E | 00117537 | Mar. 07, 2015 | Mar.06, 2016 |

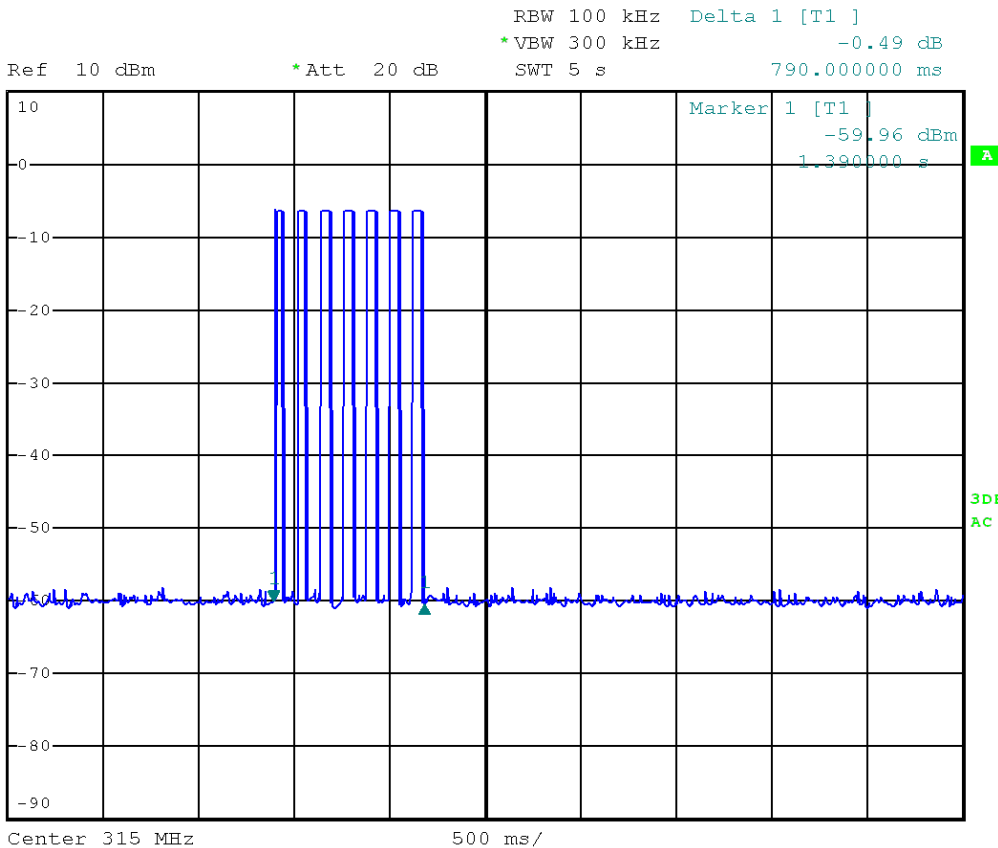
| | | | | | |
|-------------------------------|---------------------|-------------|------------|---------------|--------------|
| Horn Antenna | ETS-LINDGREN | 3117 | 00143207 | Mar. 07, 2015 | Mar.06, 2016 |
| Pre-amplifier | HP | 11909A | 185903 | Mar. 07, 2015 | Mar.06, 2016 |
| Pre-amplifier | HP | 8447B | 3008A00849 | Mar. 07, 2015 | Mar.06, 2016 |
| Cable | HUBER+SUHNER | 100 | SUCOFLEX | Mar. 07, 2015 | Mar.06, 2016 |
| Signal Generator | Rohde & Schwarz | SML03 | IKW682-054 | Feb. 11, 2015 | Feb.10, 2016 |
| Positioning Controller | ETS-LINDGREN | 2090 | N/A | N/A | N/A |

9.6 Test Condition

| | | |
|-------------------|---|----------|
| Temperature | : | 25 °C |
| Relative Humidity | : | 65 % |
| Pressure | : | 1010 hPa |
| Test Power | : | DC 3V |

9.7 Test Data

| Release Time (s) | Limit (s) | Result |
|------------------|-----------|--------|
| 0.79 | 5 | PASS |

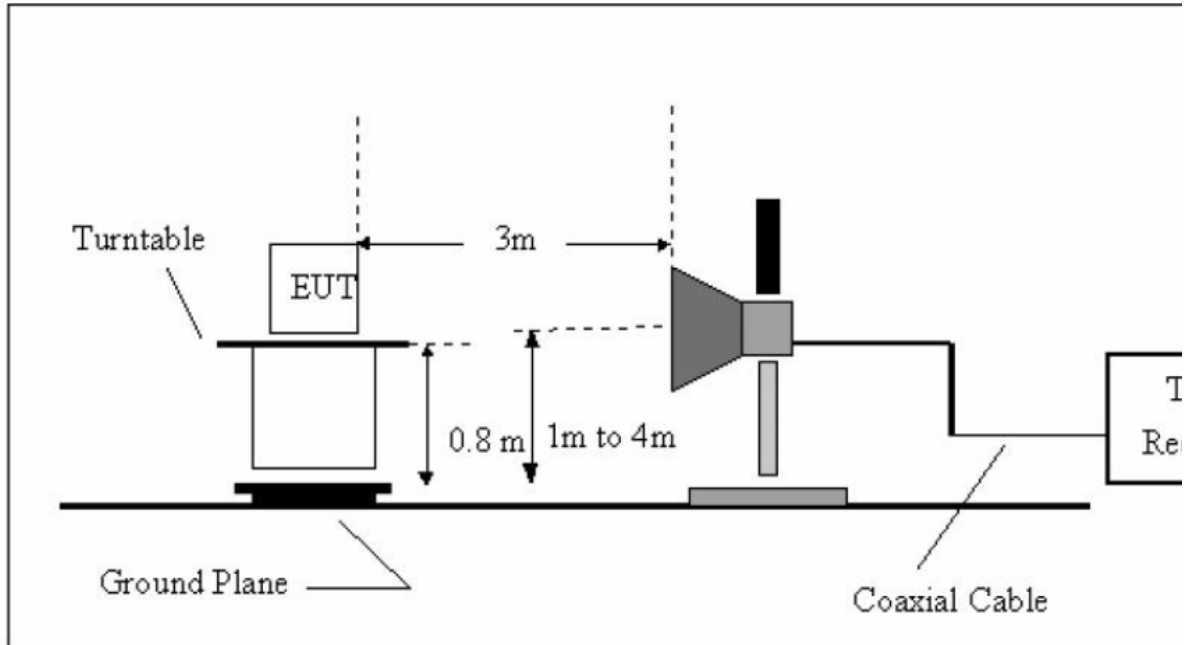


10. Duty Cycle

10.1. Test Standard and Limit

10.1.1 Test Standard
FCC Part 15.231

10.2. Test Setup



10.3. Test Procedure

- (1) The EUT was placed on a turntable which is 0.8m above ground plane.
- (2) Set EUT operating in continuous transmitting mode.
- (3) Set the Spectrum Analyzer to the transmitter carrier frequency, and set the spectrum analyzer resolution bandwidth (RBW) to 100 kHz and video bandwidth (VBW) to 300 kHz, Span was set to 0 Hz.
- (4) The Duty Cycle was measured and recorded.

10.4. EUT Operating Condition

The EUT was programmed to be in transmitting mode.

10.5. Test Equipment

| Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Cal. Due Date |
|-------------------|-----------------|-----------|------------|---------------|---------------|
| Spectrum Analyzer | Agilent | E4407B | MY45106456 | Mar. 20, 2015 | Mar. 19, 2016 |
| Spectrum Analyzer | Rohde & Schwarz | FSP30 | DE25181 | Aug. 08, 2014 | Aug.07, 2015 |
| EMI Test Receiver | Rohde & Schwarz | ESCI | 101165 | Aug. 08, 2014 | Aug.07, 2015 |
| Bilog Antenna | ETS-LINDGREN | 3142E | 00117537 | Mar. 07, 2015 | Mar.06, 2016 |

| | | | | | |
|-----------------------------------|--------------------------|-------------|------------|---------------|--------------|
| Horn Antenna | ETS-LINDGREN | 3117 | 00143207 | Mar. 07, 2015 | Mar.06, 2016 |
| Pre-amplifier | HP | 11909A | 185903 | Mar. 07, 2015 | Mar.06, 2016 |
| Pre-amplifier | HP | 8447B | 3008A00849 | Mar. 07, 2015 | Mar.06, 2016 |
| Cable | HUBER+SUHNE R | 100 | SUCOFLEX | Mar. 07, 2015 | Mar.06, 2016 |
| Signal Generator | Rohde & Schwarz | SML03 | IKW682-054 | Feb. 11, 2015 | Feb.10, 2016 |
| Positioning Controller | ETS-LINDGREN | 2090 | N/A | N/A | N/A |

10.6. Test Condition

| | |
|-------------------|----------|
| Temperature | 25 °C |
| Relative Humidity | 65 % |
| Pressure | 1010 hPa |
| Test Power | DC 3V |

10.7. Test Data

Please refer the following pages:

Plot 1: transmit once in 100ms, and each cycle is 100 ms.there are four kinds of pulse in each cycle, the pulses total: P1=1 , P2=10 , P3=15 , P4=51.

Plot 2: pulse 1 in a time period of 5.600 ms

Plot 3: pulse 2 in a time period of 2.080 ms

Plot 4: pulse 3 in a time period of 0.640 ms

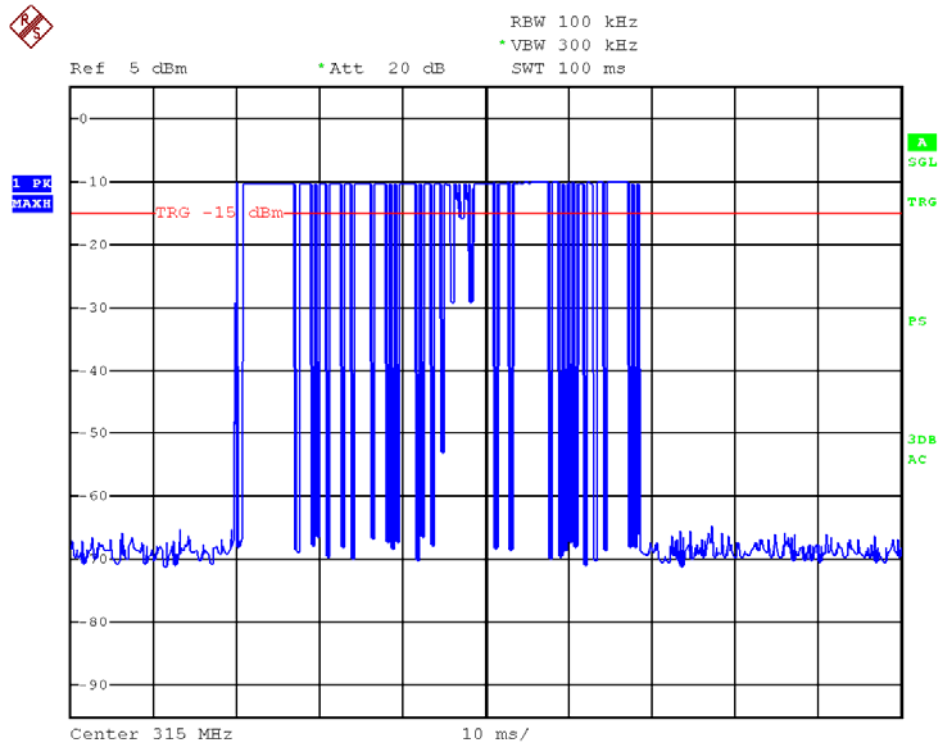
Plot 5: pulse 4 in a time period of 0.260 ms

Duty Cycle=ON/Total=(0.26*45+0.46*29)/100=27.64%

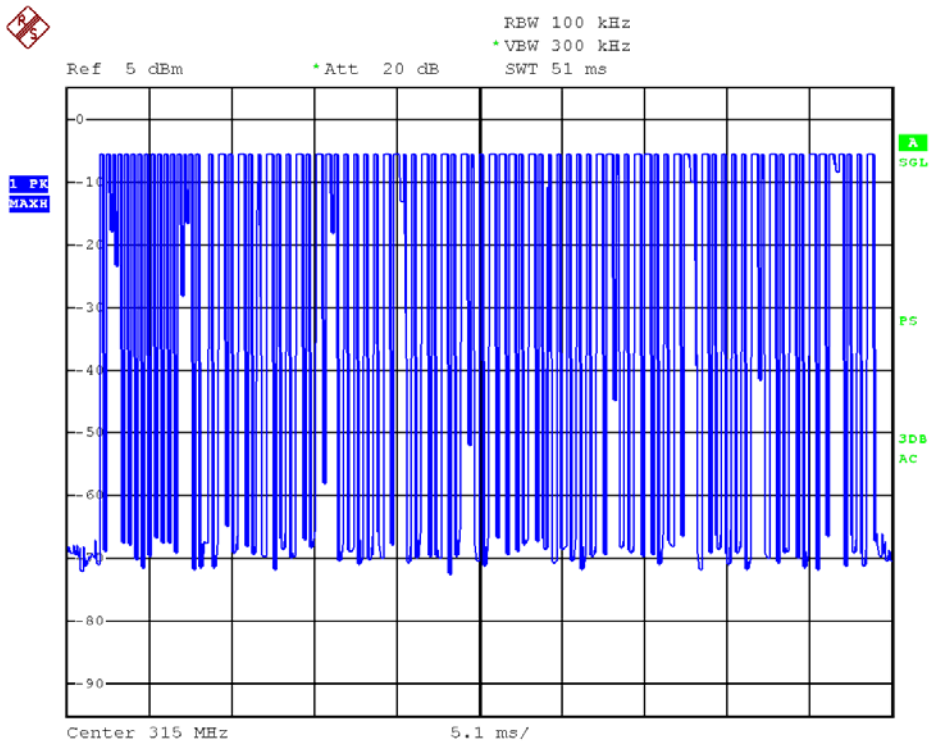
20 log(Duty Cycle)=-11.17

Average=Peak value+ 20log(Duty Cycle), AV=PK-11.17

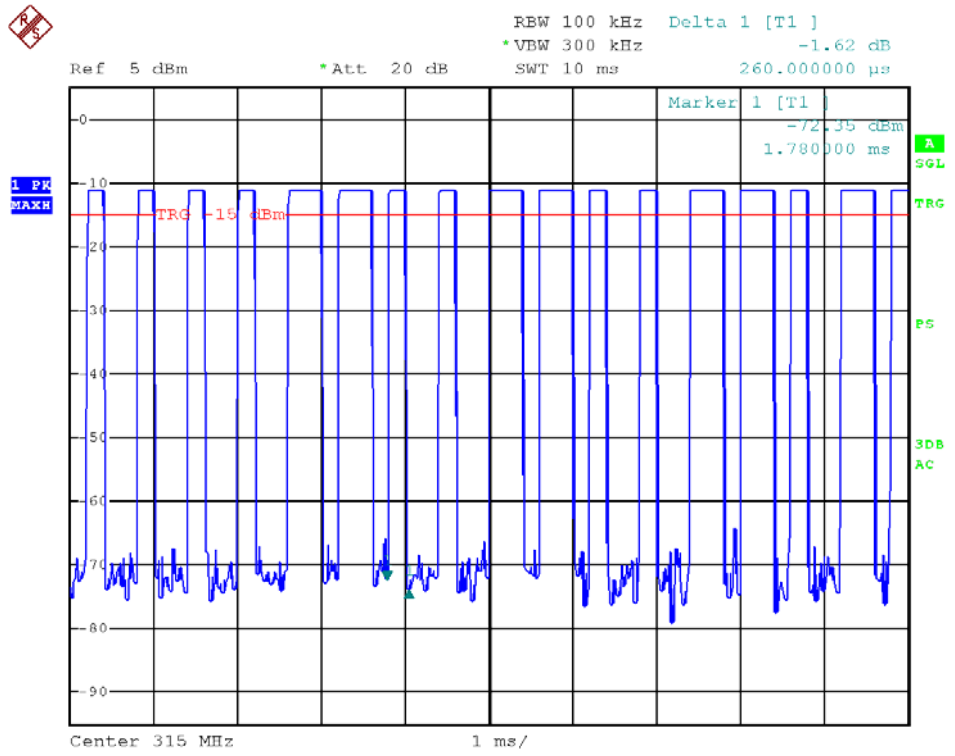
Plot 1



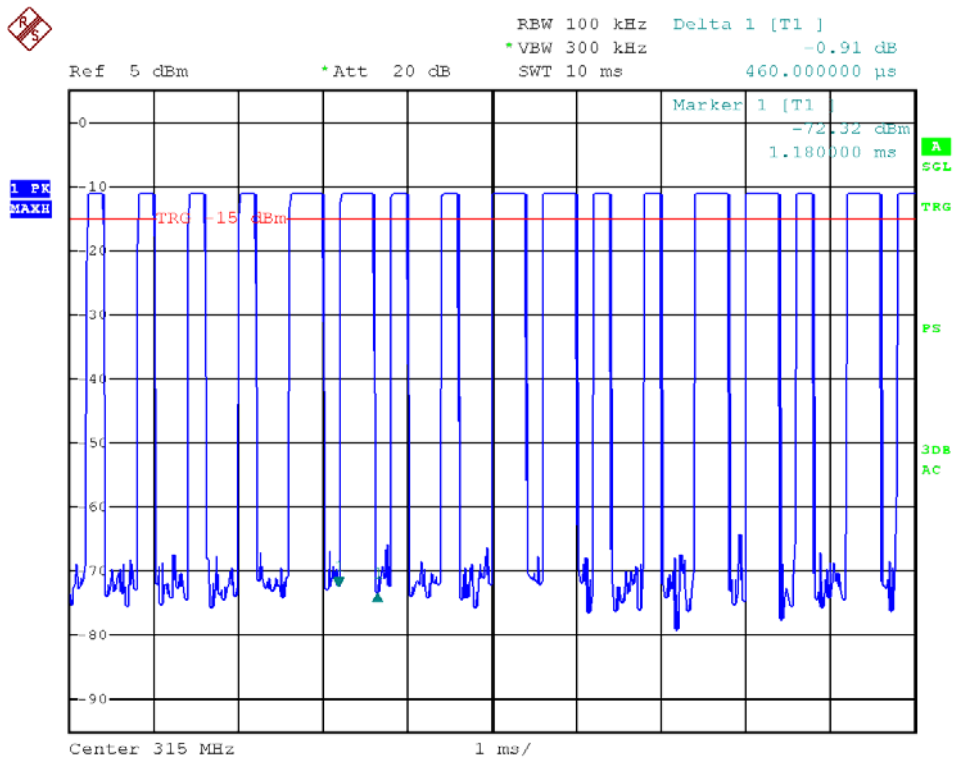
Plot 2



Plot 3



Plot 4



*****END OF REPORT*****