



China

RF - TEST REPORT

Report Number : **64.790.12.00867.01-FCC** Date of Issue: 2012-06-29

Model : AA1T3, AA2T3, AA3T3

Product Type : Transmitter

FCC ID : OGT2009AA

Applicant : XIN HUI A.A. ELECTRONICS & TOYS LTD

Address : NO.12,CHAO XING ROAD,HUI CHENG TOWN,XIN HUI DISTRICT, 529100 JIANG MEN CITY,GUANG DONG PROVINCE, PEOPLE'S REPUBLIC OF CHINA

Production Facility : XIN HUI A.A. ELECTRONICS & TOYS LTD

Address : NO.12,CHAO XING ROAD,HUI CHENG TOWN,XIN HUI DISTRICT, 529100 JIANG MEN CITY,GUANG DONG PROVINCE, PEOPLE'S REPUBLIC OF CHINA

Test Result : Positive Negative



Total pages including Appendices : 21

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1. DETAILS ABOUT THE TEST LABORATORY

Details about the Test Laboratory

Company name: Neutron Engineering Inc.
No.3.JinShaGang 1st Road,
ShiXia, DaLang Town,
DongGuan, China

Telephone: 86 769 83183000
Fax: 86 769 83196000

January 24, 2005 File on
Federal Communications Commission
Laboratory Division
7435 Oakland Mills Road
Columbia, MD 21046

Registration Number: 319330



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2. DESCRIPTION OF THE EQUIPMENT UNDER TEST

| | |
|---|--|
| Test Standards | |
| FCC Part 15 Subpart C (Edition: Oct 1, 2011) | PART 15 - RADIO FREQUENCY DEVICES Subpart C - Intentional Radiators |

| | | |
|---------------------|---|--------------------------------|
| Equipment | Transmitter | |
| Model Name. | AA1T3, AA2T3, AA3T3 | |
| Model Difference | All models are identical in circuit design, PCB layout and components used but just different in IC's program and appearance. Due to the differences, tests were only performed on AA1T3. | |
| Product Description | The EUT is a radio frequency remote controller. | |
| | Product Type | Low Power Communication Device |
| | Operation Frequency: | 315MHz |
| | Modulation Type: | ASK |
| | Antenna Designation: | Printed antenna |
| | Output Power: | 65.24dBuV/m@3m |
| | More details of EUT technical specification. Please refer to the User's Manual. | |
| Power Source | DC Voltage supplied from Battery | |
| Power Rating | DC 3V(size "AAA" x 2) | |
| Products Covered | N/A | |

Note:

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



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3. SUMMARY OF TEST RESULTS

| Technical Requirements | | | | |
|---|--|-------------------------------------|--------------------------|--------------------------|
| Transmitter mode | | | | |
| Test Condition | | Test Result | | |
| | | Pass | Fail | N/A |
| 15.205 Restricted bands | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 15.209 Radiated Emission | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 15.231 Periodic operation in the band 40.66 - 40.70 MHz and above 70 MHz. | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |



4. GENERAL REMARKS

This submittal(s) (test report) is intended for

FCC ID:OGT2009AA

filing to comply with

- Section 15.205, 15.209, 15.231 of the FCC Part 15, Subpart C Rules. Tests have been carried out in accordance with FCC rules Part 15 Subpart C.

SUMMARY:

All tests according to the regulations cited on page 5 were

- Performed

- Not Performed

The Equipment Under Test

- Fulfills the general approval requirements.

- Does not fulfill the general approval requirements.

Testing Start Date: 2012-05-12

Testing End Date: 2012-05-12

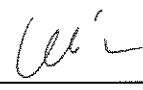
- JIANGSU TÜV PRODUCT SERVICE LTD. GUANGZHOU BRANCH-

Reviewed by:

Tested by:



Tony Liu



Celia Xiang



China

5. DESCRIPTION OF TEST MODES

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

| For Radiated Test | |
|-------------------|------------------------------|
| Final Test Mode | Description |
| | Continuous transmitting mode |

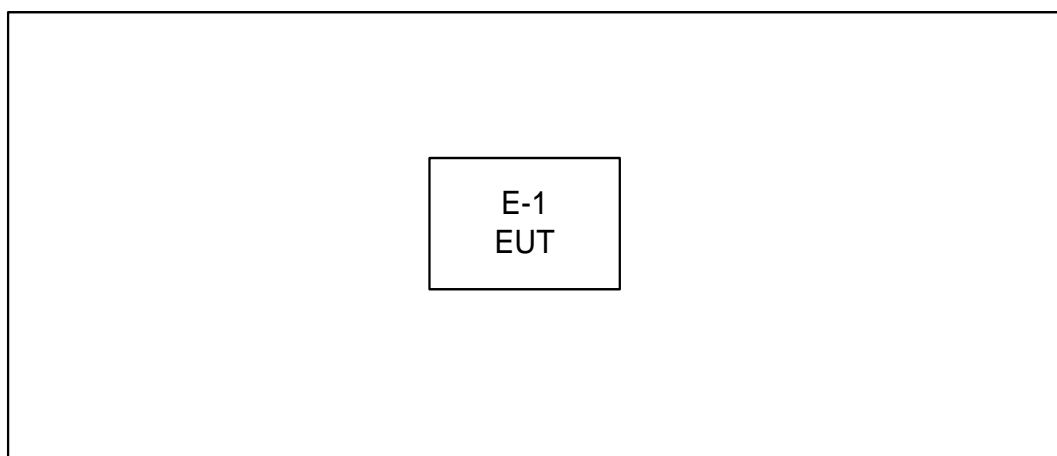
Note:

(1) The EUT used the new battery



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5.1 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED





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6. TEST RESULTS

6.1 RADIATED EMISSION MEASUREMENT

6.1.1 Radiated Emission Limits (FCC 15.209)

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

Harmonic emissions limits comply with below 54 dBuV/m at 3m. Other emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or comply with the radiated emissions limits specified in section 15.209(a) limit in the table below has to be followed.

Note:

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

LIMITS OF RADIATED EMISSION MEASUREMENT (FCC 15.209)

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

Notes:

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

LIMITS OF RADIATED EMISSION MEASUREMENT (FCC Part 15.231b)

| FCC Part15 (15.231b) | | |
|----------------------|----------------|------------|
| Frequency | Field Strength | |
| Fundamental (315MHz) | 6041.7uV/m | 75.6dBuV/m |
| Harmonic | 604.17uV/m | 55.6dBuV/m |



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6.1.2 MEASUREMENT INSTRUMENTS LIST

| Item | Kind of Equipment | Manufacturer | Type No. | Serial No. | Calibrated until |
|------|-------------------|--------------|-----------|------------|------------------|
| 1 | Antenna | Schwarbeck | VULB9160 | 9160-3232 | Jun .04.2012 |
| 2 | Amplifier | HP | 8447D | 2944A09673 | May.26.2012 |
| 3 | Test Receiver | R&S | ESCI | 100382 | May.26.2012 |
| 4 | Test Cable | N/A | C-01_CB03 | N/A | Jul.01.2012 |
| 5 | Controller | CT | SC100 | N/A | N/A |
| 6 | Antenna | ETS | 3115 | 00075789 | May.26.2012 |
| 7 | Amplifier | Agilent | 8449B | 3008A02274 | May.26.2012 |
| 8 | Spectrum | Agilent | E4408B | US39240143 | Nov.26.2012 |
| 9 | Test Cable | HUBER+SUHNER | C-45 | N/A | May.04.2013 |
| 10 | Controller | CT | SC100 | N/A | N/A |

Remark: " N/A " denotes No Model Name. / Serial No. and No Calibration specified.

| Spectrum Parameter | Setting |
|---|--|
| Attenuation | Auto |
| Start Frequency | 1000 MHz |
| Stop Frequency | 10th carrier harmonic |
| RBW / VBW (emission in restricted band) | 1 MHz / 1 MHz for Peak, Average=PK-dycty cycle |

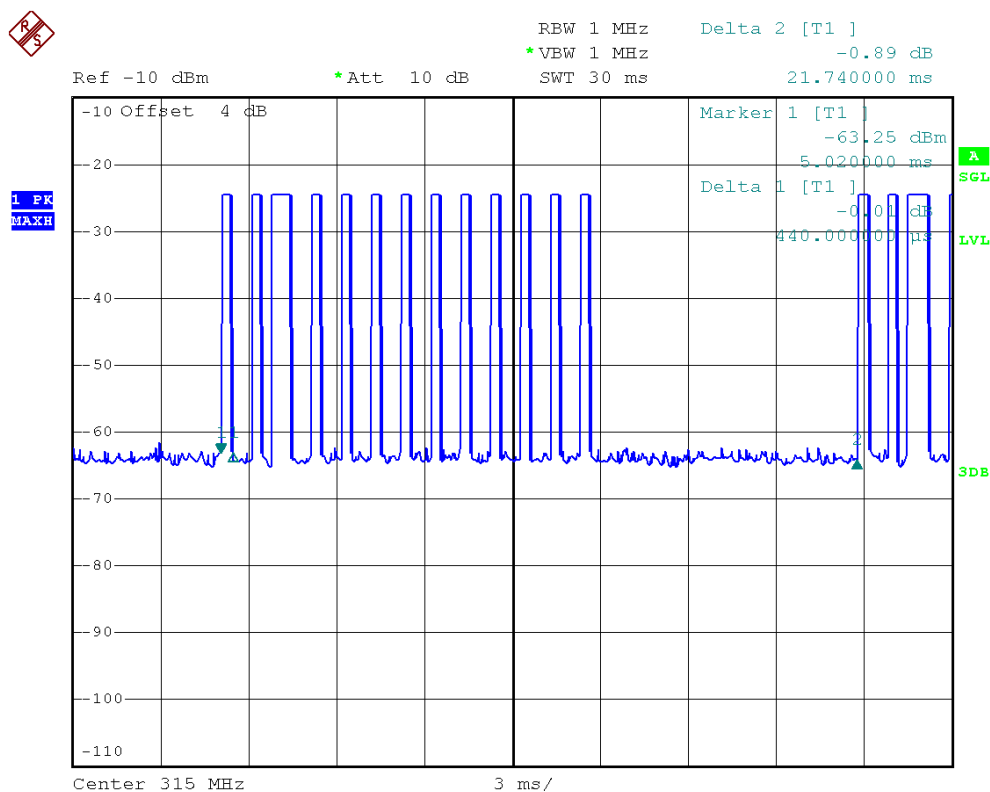
| Receiver Parameter | Setting |
|------------------------|-----------------------------------|
| Attenuation | Auto |
| Start ~ Stop Frequency | 9kHz~150kHz / RBW 200Hz for QP |
| Start ~ Stop Frequency | 150kHz~30MHz / RBW 9kHz for QP |
| Start ~ Stop Frequency | 30MHz~1000MHz / RBW 120kHz for QP |

6.1.3 DUTY CYCLE

$$\text{DUTY CYCLE} = (0.44 \times 12 + 0.8 \times 1) / 21.74 = 0.28$$

$$\text{AVG} = \text{PEAK} + 20 \log(\text{DUTY CYCLE}) = \text{PEAK} - 11.05 \text{ dB}$$

Total time(ON+OFF)= 21.74 msec ;

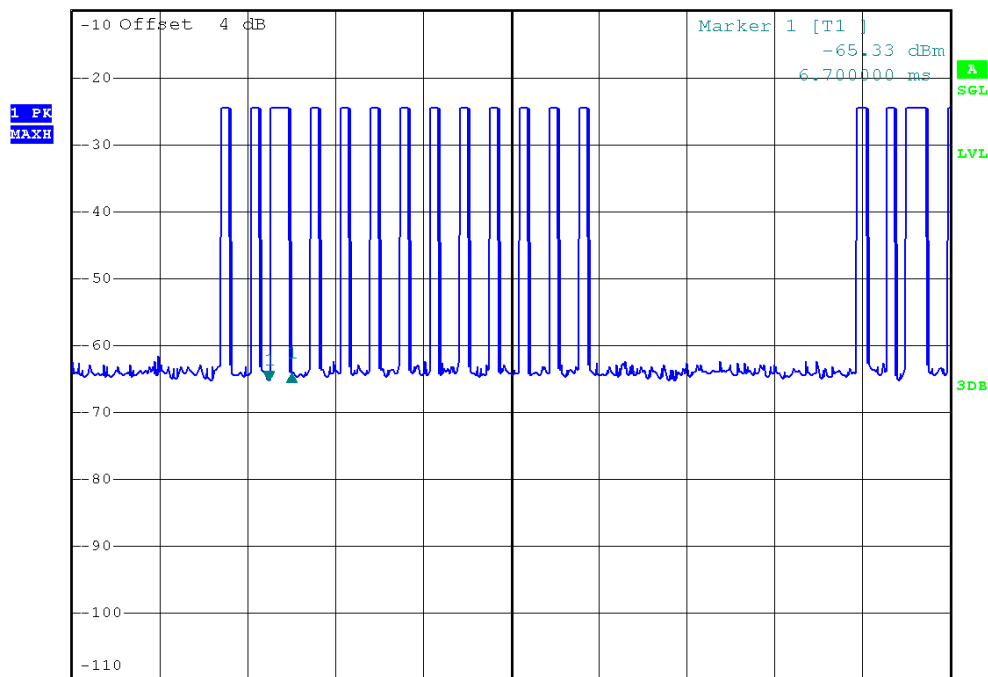




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Ref -10 dBm *Att 10 dB RBW 1 MHz Delta 1 [T1]
*VBW 1 MHz 1.08 dB
SWT 30 ms 800.000000 μ s



Center 315 MHz 3 ms/



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6.1.4 TEST PROCEDURE

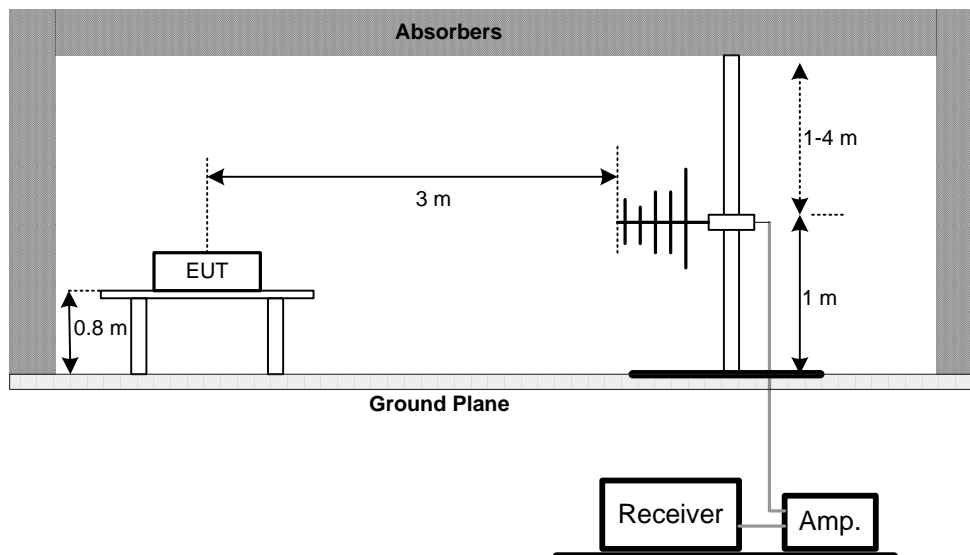
- a. The measuring distance of at 3 m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.
- b. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3m meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- c. 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.
- d. 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.
- e. 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.
- f. For the actual test configuration, please refer to the related Item –EUT Test Photos.

6.1.5 DEVIATION FROM TEST STANDARD

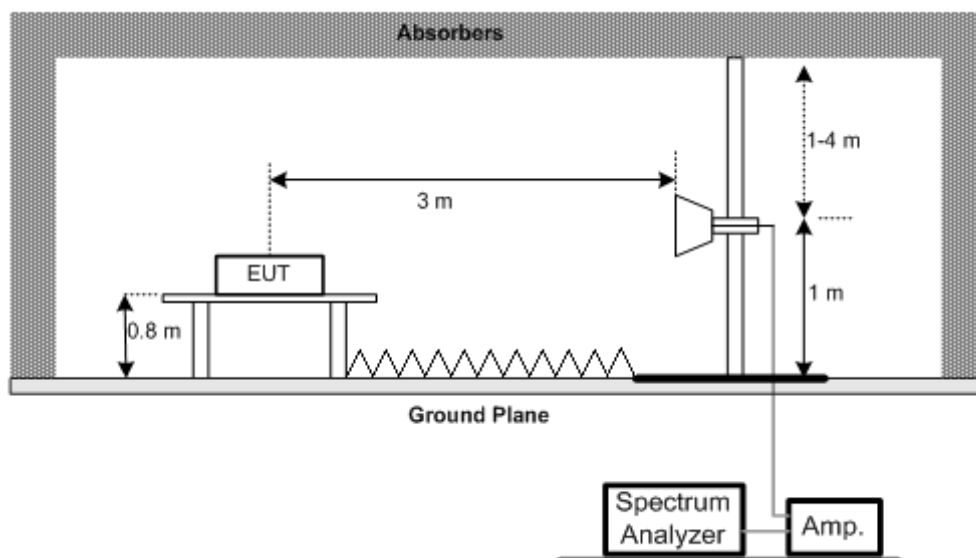
No deviation

6.1.6 TEST SETUP

(A) Radiated Emission Test Set-Up Frequency Below 1 GHz



(B) Radiated Emission Test Set-Up Frequency Above 1 GHz



6.1.7 EUT OPERATING CONDITIONS

Normal operation with continuous transmitting mode.



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6.1.8 TEST RESULTS(BETWEEN 30 – 5000 MHz)

| | | | |
|--------------|------------------|--------------------|--------|
| EUT: | Transmitter | Model Name. : | AA1T3 |
| Temperature: | 28°C | Relative Humidity: | 60 % |
| Pressure: | 1012 hPa | Test Power : | DC 3V |
| Test Mode : | Normal operation | EUT Position: | X axis |

| Freq. (MHz) | Ant. H/V | Reading (dBuV) | Corr. Factor (dB) | Measured (dBuV/m) | Limits(QP) (dBuV/m) | Margin (dB) | Note |
|-------------|----------|----------------|-------------------|-------------------|---------------------|-------------|------|
| 315 | H | 76.92 | -11.68 | 65.24 | 95.6 | -30.36 | PK |
| 315 | H | - | - | 54.19 | 75.6 | -21.41 | AV |
| 630 | H | 37.67 | -3.68 | 33.99 | 75.6 | -41.61 | PK |
| 630 | H | - | - | 22.94 | 55.6 | -32.66 | AV |
| 945 | H | 42.46 | 0.69 | 43.15 | 75.6 | -32.45 | PK |
| 945 | H | - | - | 32.1 | 55.6 | -23.5 | AV |
| 1260 | H | 56.43 | -7.69 | 48.74 | 75.6 | -26.86 | PK |
| 1260 | H | - | - | 37.69 | 55.6 | -17.91 | AV |
| 1575 | H | 69.28 | -5.54 | 63.74 | 75.6 | -11.86 | PK |
| 1575 | H | - | - | 11.05 | 55.6 | -44.55 | AV |
| 2205 | H | 59.53 | -1.22 | 58.31 | 75.6 | -17.29 | PK |
| 2205 | H | - | - | 47.26 | 55.6 | -8.34 | AV |
| 2835 | H | 53.84 | -0.4 | 53.44 | 75.6 | -22.16 | PK |
| 2835 | H | - | - | 42.39 | 55.6 | -13.21 | AV |
| 315 | V | 62.91 | 11.68 | 51.23 | 95.6 | -44.37 | PK |
| 315 | V | - | - | 40.18 | 75.6 | -35.42 | AV |
| 630 | V | 32.84 | -3.68 | 29.16 | 75.6 | -46.44 | PK |
| 630 | V | - | - | 18.11 | 55.6 | -37.49 | AV |
| 945 | V | 38.79 | 0.69 | 39.48 | 75.6 | -36.12 | PK |
| 945 | V | - | - | 28.43 | 55.6 | -27.17 | AV |
| 1260 | V | 57.99 | -7.69 | 50.3 | 75.6 | -25.3 | PK |
| 1260 | V | - | - | 39.25 | 55.6 | -16.35 | AV |
| 1575 | V | 60.02 | -5.54 | 54.48 | 75.6 | -21.12 | PK |
| 1575 | V | - | - | 43.43 | 55.6 | -12.17 | AV |
| 2205 | V | 56.88 | -1.22 | 55.66 | 75.6 | -19.94 | PK |
| 2205 | V | - | - | 44.61 | 55.6 | -10.99 | AV |



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| | | | |
|--------------|------------------|---------------------|--------|
| EUT: | Transmitter | Model Name. : | AA1T3 |
| Temperature: | 28°C | Relative Humidity : | 60 % |
| Pressure: | 1012 hPa | Test Power : | DC 3V |
| Test Mode : | Normal operation | EUT Position: | Y axis |

| Freq. (MHz) | Ant. H/V | Reading (dBuV) | Corr. Factor (dB) | Measured (dBuV/m) | Limits(QP) (dBuV/m) | Margin (dB) | Note |
|-------------|----------|----------------|-------------------|-------------------|---------------------|-------------|------|
| 315 | H | 75.01 | -11.68 | 63.33 | 95.6 | -32.27 | PK |
| 315 | H | - | - | 52.28 | 75.6 | -23.32 | AV |
| 630 | H | 34.93 | -3.68 | 31.25 | 75.6 | -44.35 | PK |
| 630 | H | - | - | 20.2 | 55.6 | -35.4 | AV |
| 945 | H | 46.11 | 0.69 | 46.8 | 75.6 | -28.8 | PK |
| 945 | H | - | - | 35.75 | 55.6 | -19.85 | AV |
| 1260 | H | 57.13 | -7.69 | 49.44 | 75.6 | -26.16 | PK |
| 1260 | H | - | - | 38.39 | 55.6 | -17.21 | AV |
| 1575 | H | 66.68 | -5.54 | 61.14 | 75.6 | -14.46 | PK |
| 1575 | H | - | - | 11.05 | 55.6 | -44.55 | AV |
| 2205 | H | 60.96 | -1.22 | 59.74 | 75.6 | -15.86 | PK |
| 2205 | H | - | - | 48.69 | 55.6 | -6.91 | AV |
| 315 | V | 63.03 | -11.68 | 51.35 | 95.6 | -44.25 | PK |
| 315 | V | - | - | 40.3 | 75.6 | -35.3 | AV |
| 630 | V | 36.59 | -3.68 | 32.91 | 75.6 | -42.69 | PK |
| 630 | V | - | - | 21.86 | 55.6 | -33.74 | AV |
| 945 | V | 42.35 | 0.69 | 43.04 | 75.6 | -32.56 | PK |
| 945 | V | - | - | 31.99 | 55.6 | -23.61 | AV |
| 1575 | V | 59.63 | -5.54 | 54.09 | 75.6 | -21.51 | PK |
| 1575 | V | - | - | 43.04 | 55.6 | -12.56 | AV |
| 1890 | V | 53.95 | -2.12 | 51.83 | 75.6 | -23.77 | PK |
| 1890 | V | - | - | 40.78 | 55.6 | -14.82 | AV |
| 2205 | V | 57.17 | -1.22 | 55.95 | 75.6 | -19.65 | PK |
| 2205 | V | - | - | 44.9 | 55.6 | -10.7 | AV |
| 2520 | V | 62.95 | -1.58 | 61.37 | 75.6 | -14.23 | PK |
| 2520 | V | - | - | 50.32 | 55.6 | -5.28 | AV |



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| | | | |
|--------------|------------------|---------------------|--------|
| EUT: | Transmitter | Model Name. : | AA1T3 |
| Temperature: | 28°C | Relative Humidity : | 60 % |
| Pressure: | 1012 hPa | Test Power : | DC 3V |
| Test Mode : | Normal operation | EUT Position: | Z axis |

| Freq. (MHz) | Ant. H/V | Reading (dBuV) | Corr. Factor (dB) | Measured (dBuV/m) | Limits(QP) (dBuV/m) | Margin (dB) | Note |
|-------------|----------|----------------|-------------------|-------------------|---------------------|-------------|------|
| 315 | H | 60.97 | -11.68 | 49.29 | 95.6 | -46.31 | PK |
| 315 | H | - | - | 38.24 | 75.6 | -37.36 | AV |
| 1575 | H | 59.15 | -5.54 | 53.61 | 75.6 | -21.99 | PK |
| 1575 | H | - | - | 11.05 | 55.6 | -44.55 | AV |
| 2205 | H | 59.02 | -1.22 | 57.8 | 75.6 | -17.8 | PK |
| 2205 | H | - | - | 46.75 | 55.6 | -8.85 | AV |
| 315 | V | 70.78 | -11.68 | 59.1 | 95.6 | -36.5 | PK |
| 315 | V | - | - | 48.05 | 75.6 | -27.55 | AV |
| 630 | V | 39.89 | -3.68 | 36.21 | 75.6 | -39.39 | PK |
| 630 | V | - | - | 25.16 | 55.6 | -30.44 | AV |
| 945 | V | 44.34 | 0.69 | 45.03 | 75.6 | -30.57 | PK |
| 945 | V | - | - | 33.98 | 55.6 | -21.62 | AV |
| 1575 | V | 65.11 | -5.54 | 59.57 | 75.6 | -16.03 | PK |
| 1575 | V | - | - | 48.52 | 55.6 | -7.08 | AV |
| 2205 | V | 58.37 | -1.22 | 57.15 | 75.6 | -18.45 | PK |
| 2205 | V | - | - | 46.1 | 55.6 | -9.5 | AV |

Remark

- (1) 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.
- (2) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency. "F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency.
- (3) Radiated emissions measured in frequency range from 30 MHz to 1000 MHz were made with an instrument using Peak detector mode or QP detector mode of the emission .
- (4) 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.
- (5) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.
- (6) EUT Orthogonal Axis:
"X" - denotes Laid on Table; "Y" - denotes Vertical Stand; "Z" - denotes Side Stand
- (7) During the measurements above 1 GHz it is taken care of that the EUT is always within the 3 dB cone of radiation BW of the used antenna
- (8) The average value of fundamental frequency is:
Average = Peak value + 20log(Duty cycle) , Final AV=PK-11.05



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6.2 BANDWIDTH TEST

6.2.1 MEASUREMENT INSTRUMENTS LIST

| Item | Kind of Equipment | Manufacturer | Type No. | Serial No. | Calibrated until |
|------|-------------------|--------------|----------|------------|------------------|
| 1 | Test Receiver | R&S | ESCI | 100382 | May.26.2012 |

6.2.2 TEST PROCEDURE

- a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
- b. Spectrum Setting : RBW= 10KHz, VBW=10KHz, Sweep time = 10 ms.

6.2.3 DEVIATION FROM STANDARD

No deviation.

6.2.4 EUT OPERATION CONDITIONS

Normal operation with continuous transmitting mode.



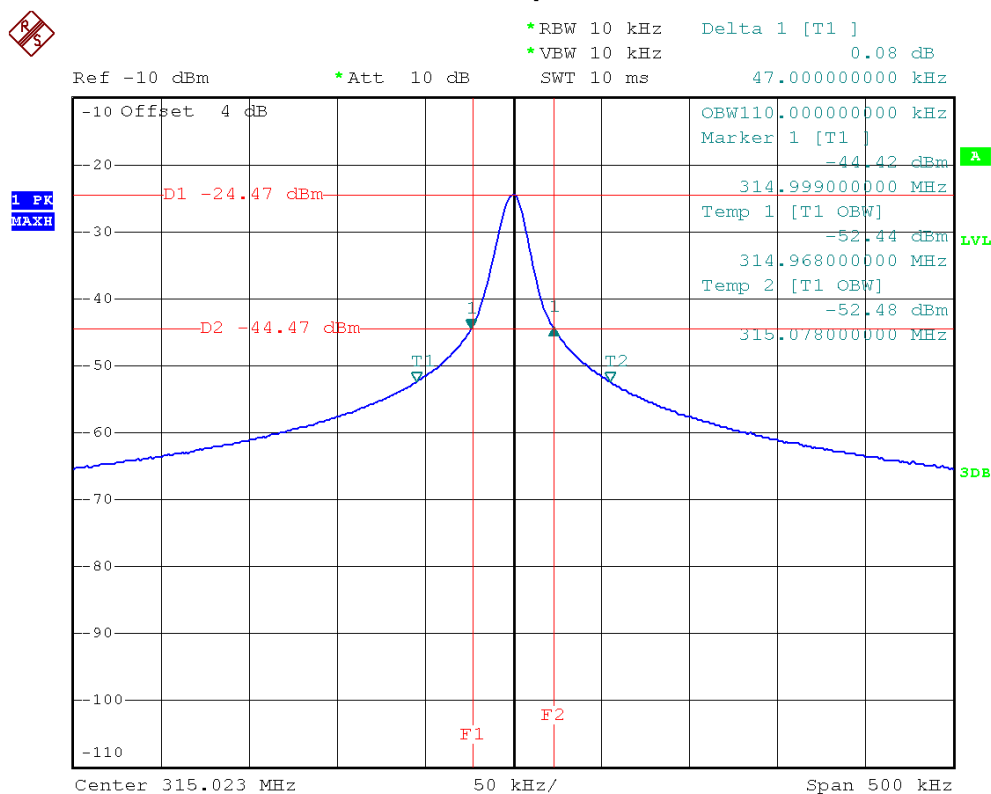
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6.2.5 TEST RESULTS

| | | | |
|--------------|------------------|--------------------|-------|
| EUT: | Transmitter | Model Name. : | AA1T3 |
| Temperature: | 28°C | Relative Humidity: | 60 % |
| Pressure: | 1012 hPa | Test Power : | DC 3V |
| Test Mode : | Normal operation | | |

| Measured Bandwidth (MHz) | 20 dB Bandwidth Limit(MHz) | Result |
|--------------------------|----------------------------|--------|
| 0.047 | 0.7875 | Pass |

Normal operation





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6.3 Release Time Test

6.3.1 MEASUREMENT INSTRUMENTS LIST

| Item | Kind of Equipment | Manufacturer | Type No. | Serial No. | Calibrated until |
|------|-------------------|--------------|----------|------------|------------------|
| 1 | Test Receiver | R&S | ESCI | 100382 | May.26.2012 |

6.3.2 TEST PROCEDURE

- a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
- b. Spectrum Setting : RBW= 1MHz, VBW=1MHz, Sweep time = 5s.

6.3.3 DEVIATION FROM STANDARD

No deviation.

6.3.4 EUT OPERATION CONDITIONS

Press the button and release it immediately.



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6.3.5 TEST RESULTS

| | | | |
|--------------|------------------|--------------------|-------|
| EUT: | Transmitter | Model Name. : | AA1T3 |
| Temperature: | 28°C | Relative Humidity: | 60 % |
| Pressure: | 1001 hPa | Test Power : | DC 3V |
| Test Mode : | Normal operation | | |

Test result: The release time is 550ms(less than 5s).

