

FCC TEST REPORT

FCC ID : XRQWTP100
Applicant : Efergy Technologies Limited
Address : 105, Bld 18, Bishui Haoyuan, Nanhuan Rd, Binjiang, Hangzhou, Zhejiang China

Equipment Under Test (EUT) :

Product Name : Elite true power meter
Model No. : Elite-TPM-NA 1.0

Standards : FCC CFR47 Part 15 Section 15.231:2010

Date of Test : December 3 ~ December 16, 2011
Date of Issue : December 30, 2011

Test Engineer : Hunk yan / Engineer 

Reviewed By : Philo zhong / Manager 

| | |
|--------------------|---------------|
| Test Result | : PASS |
|--------------------|---------------|

Prepared By:
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The sample detailed above has been tested to the requirements of Council Directives ANSI C63.4:2003. The test results have been reviewed against the Directives above and found to meet their essential requirements.

The results shown in this test report refer only to the sample(s) tested , This Test report cannot be reproduced, except in full, without prior written permission of the Company.

WALTEK SERVICES

Reference No.: WT11126777-D-E-F

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3 Test Summary

| Test | Test Requirement | Test Method | Result |
|---|----------------------------------|------------------|--------|
| Activation time | 15.231(a)(2) | ANSI C63.4: 2003 | PASS |
| Bandwidth | 15.231(c) | ANSI C63.4: 2003 | PASS |
| Radiated Emission (9kHz to 5GHz) | 15.205(a) 15.209 15.231(b) | ANSI C63.4: 2003 | PASS |
| Conducted Emission (150KHz to 30MHz) | 15.207 | ANSI C63.4: 2003 | PASS |

Remark : the methods of measurement in all the test items were according to ANSI C63.4: 2003

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4 General Information

4.1 Client Information

Applicant : Efergy Technologies Limited

Address of Applicant : 105, Bld 18, Bishui Haoyuan, Nanhuan Rd, Binjiang, Hangzhou, Zhejiang China

Manufacturer : Efergy Technologies Limited

Address of Manufacturer : 105, Bld 18, Bishui Haoyuan, Nanhuan Rd, Binjiang, Hangzhou, Zhejiang China

4.2 General Description of E.U.T.

Product Name : Elite true power meter

Model No. : Elite-TPM-NA 1.0

Operation Frequency : 433.50MHz

Modulation : FSK

Antenna Gain : 0dBi

4.3 Details of E.U.T.

Power Supply : 120VAC, 60Hz

4.4 Description of Support Units

The EUT has been tested as an independent unit.

4.5 Standards Applicable for Testing

The customer requested FCC tests for a Elite true power meter. The standards used were FCC Part 15 Section 15.203, Section 15.209 and Section 15.231.

4.6 Test Facility

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

- **IC – Registration No.:IC7760**

Waltek Services(Shenzhen) Co., Ltd. has been registered and fully described in a report filed with the Industry Canada. The acceptance letter from the Industry Canada is maintained in our files. Registration IC7760, August 3, 2010.

- **FCC – Registration No.: 880581**

Waltek Services(Shenzhen) Co., Ltd. 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 880581, May 26, 2011

4.7 Test Location

All Emissions tests were performed at:-

Waltek Services(Shenzhen) Co., Ltd. at 1/F, Fukangtai Building, West Baima Rd., Songgang Street, Baoan District, Shenzhen 518105, China.

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5 Equipment Used during Test

| Equipment Name | Manufacturer Model | Equipment No | Internal No | Specification | Cal. Date | Due Date | Uncertainty |
|--|---|--------------|-------------|---|--------------|--------------|--|
| EMC Analyzer | Agilent/ E7405A | MY451149 43 | W2008001 | 9k-26.5GHz | Aug. 2, 2011 | Aug. 1, 2012 | ±1dB |
| Trilog Broadband Antenne | SCHWARZB ECK MESS-ELEKTROM / VULB9163 | 336 | W2008002 | 30-3000 MHz | Aug. 2, 2011 | Aug. 1, 2012 | ±1dB |
| Broad-band Horn Antenna | SCHWARZB ECK MESS-ELEKTROM / BBHA 9120D(1201) | 667 | W2008003 | 1-18GHz | Aug. 2, 2011 | Aug. 1, 2012 | f < 10 GHz : ±1dB 10GHz < f < 18 GHz : ±1.5dB |
| Broadband Preamplifier | SCHWARZB ECK MESS-ELEKTROM / BBV 9718 | 9718-148 | W2008004 | 0.5-18GHz | Aug. 2, 2011 | Aug. 1, 2012 | ±1.2dB |
| 10m Coaxial Cable with N-male Connectors | SCHWARZB ECK MESS-ELEKTROM / AK 9515 H | - | - | - | Aug. 2, 2011 | Aug. 1, 2012 | - |
| 10m 50 Ohm Coaxial Cable | SCHWARZB ECK MESS-ELEKTROM / AK 9513 | - | - | - | Aug. 2, 2011 | Aug. 1, 2012 | - |
| Positioning Controller | C&C LAB/ CC-C-IF | - | - | - | Aug. 2, 2011 | Aug. 1, 2012 | - |
| Color Monitor | SUNSPO/ SP-14C | - | - | - | Aug. 2, 2011 | Aug. 1, 2012 | - |
| Test Receiver | ROHDE&SC HWARZ/ ESPI | 101155 | W2005001 | 9k-3GHz | Aug. 2, 2011 | Aug. 1, 2012 | ±1dB |
| Two-Line V-Network | ROHDE&SC HWARZ/ ENV216 | 100115 | W2005002 | 50Ω/50μH | Aug. 2, 2011 | Aug. 1, 2012 | ±10% |
| RF Generator | TESEQ GmbH/ NSG4070 | 25781 | W2008008 | Fraq-range : 9K-1GHz RF voltage : -60 dBm-+10dBm | Aug. 2, 2011 | Aug. 1, 2012 | Power_freq distinguish0.1Hz RFeletricity distinguish 0.1B |
| Active Loop Antenna | Beijing Dazhi / ZN30900A | - | - | - | Aug. 2, 2011 | Aug. 1, 2012 | ±1dB |

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6 Conducted Emission Test

| | |
|-------------------|---|
| Product Name: | Elite true power meter |
| Test Requirement: | FCC CFR47 Part 15 Section 15.207 |
| Test Method: | Based on ANSI C63.4:2003 |
| Frequency Range: | 150kHz to 30MHz |
| Detector: | Peak for pre-scan (9kHz Resolution Bandwidth) Quasi-Peak & Average if maximised peak within 6dB of Average Limit |

6.1 Test Equipment

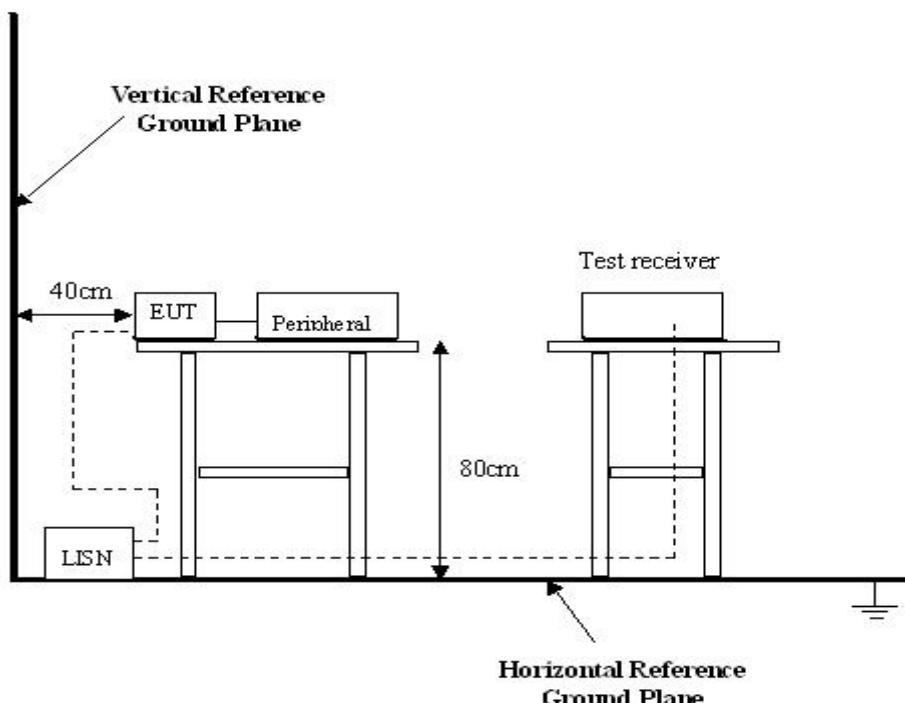
Please refer to Section 5 this report.

6.2 Test Procedure

1. The EUT was tested according to ANSI C63.4: 2003. The frequency spectrum from 150kHz to 30MHz was investigated.
2. The maximised peak emissions from the EUT was scanned and measured for both the Live and Neutral Lines. Quasi-peak & average measurements were performed if peak emissions were within 6dB of the average limit line.

6.3 Conducted Test Setup

The conducted emission tests were performed using the setup accordance with the ANSI C63.4: 2003, The specification used in this report was the FCC CFR47 Part 15 Section 15.207 limits.

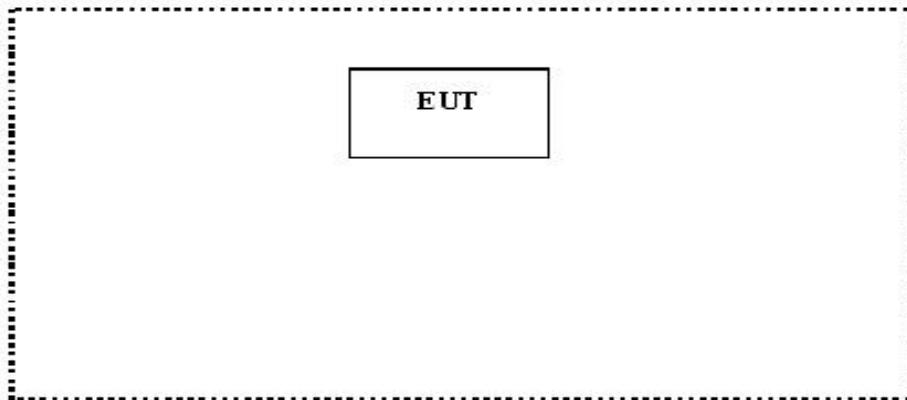


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6.4 EUT Operating Condition

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

- A. Setup the EUT and simulators as shown on follow.
- B. Enable RF signal and confirm EUT active.
- C. Modulate output capacity of EUT up to specification.



6.5 Conducted Emission Limits

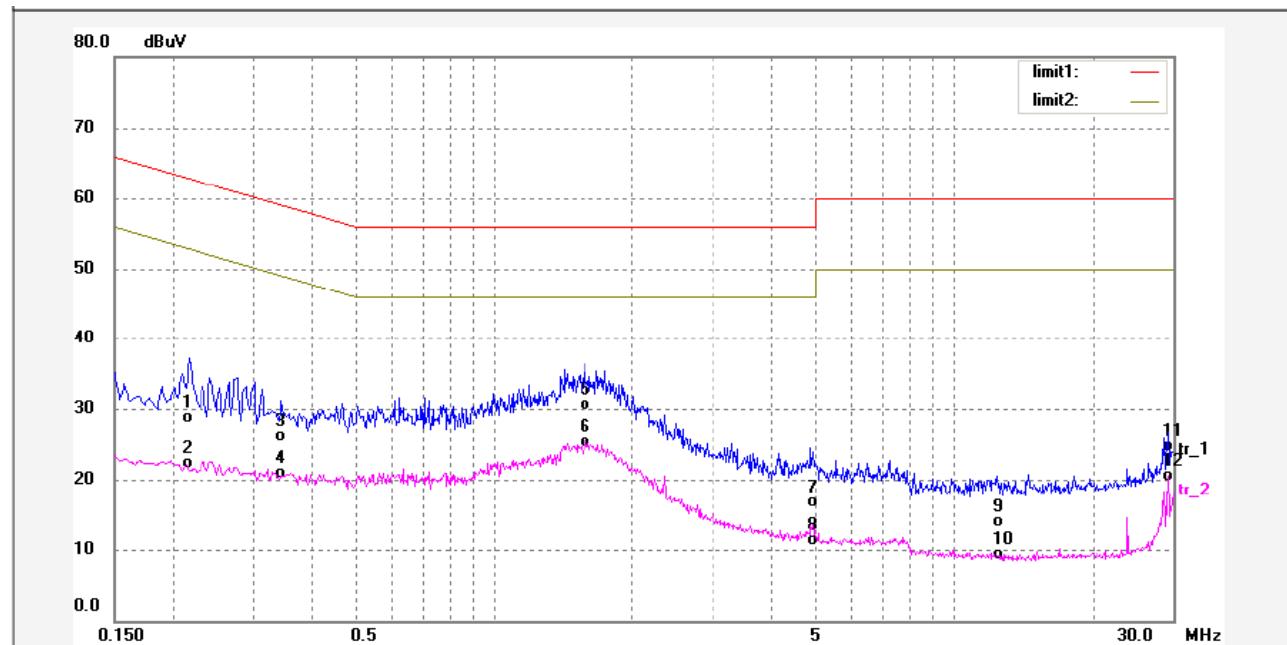
| Frequency (MHz) | Conducted limit (dB μ V) | |
|--------------------|------------------------------|-----------|
| | Quasi-peak | Average |
| 0.15–0.5 | 66 to 56* | 56 to 46* |
| 0.5–5 | 56 | 46 |
| 5–30 | 60 | 50 |

* Decreases with the logarithm of the frequency.

Note: In the above limits, the tighter limit applies at the band edges.

6.6 Conducted Emission Test Data

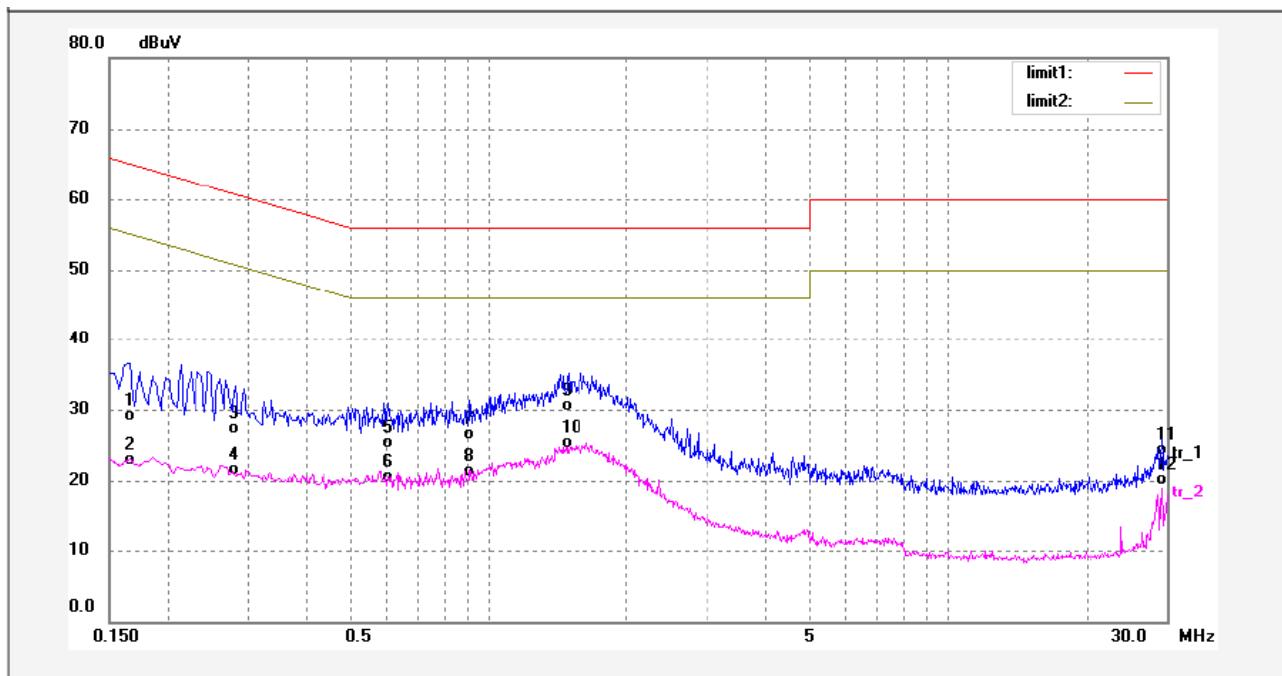
Live line:



| No. | Freq. (MHz) | Reading (dBuV) | Factor (dB) | Result (dBuV) | Limit dBuV | Margin (dB) | Detector | Remark |
|-----|-------------|----------------|-------------|---------------|------------|-------------|----------|--------|
| 1 | 0.2180 | 17.20 | 10.66 | 27.86 | 62.89 | -35.03 | QP | |
| 2 | 0.2180 | 10.91 | 10.66 | 21.57 | 52.89 | -31.32 | AVG | |
| 3 | 0.3460 | 14.49 | 10.74 | 25.23 | 59.06 | -33.83 | QP | |
| 4 | 0.3460 | 9.38 | 10.74 | 20.12 | 49.06 | -28.94 | AVG | |
| 5 | 1.5820 | 17.57 | 12.20 | 29.77 | 56.00 | -26.23 | QP | |
| 6 | 1.5820 | 12.23 | 12.20 | 24.43 | 46.00 | -21.57 | AVG | |
| 7 | 4.8900 | 4.00 | 11.83 | 15.83 | 56.00 | -40.17 | QP | |
| 8 | 4.8900 | -1.36 | 11.83 | 10.47 | 46.00 | -35.53 | AVG | |
| 9 | 12.4700 | 0.94 | 12.09 | 13.03 | 60.00 | -46.97 | QP | |
| 10 | 12.4700 | -3.68 | 12.09 | 8.41 | 50.00 | -41.59 | AVG | |
| 11 | 29.2380 | 11.05 | 12.82 | 23.87 | 60.00 | -36.13 | QP | |
| 12 | 29.2380 | 6.95 | 12.82 | 19.77 | 50.00 | -30.23 | AVG | |

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Neutral line:



| No. | Freq. (MHz) | Reading (dBuV) | Factor (dB) | Result (dBuV) | Limit dBuV | Margin (dB) | Detector | Remark |
|-----|-------------|----------------|-------------|---------------|------------|-------------|----------|--------|
| 1 | 0.1660 | 17.58 | 10.65 | 28.23 | 65.15 | -36.92 | QP | |
| 2 | 0.1660 | 11.47 | 10.65 | 22.12 | 55.15 | -33.03 | AVG | |
| 3 | 0.2819 | 15.81 | 10.61 | 26.42 | 60.76 | -34.34 | QP | |
| 4 | 0.2819 | 10.18 | 10.61 | 20.79 | 50.76 | -29.97 | AVG | |
| 5 | 0.6060 | 13.24 | 11.24 | 24.48 | 56.00 | -31.52 | QP | |
| 6 | 0.6060 | 8.41 | 11.24 | 19.65 | 46.00 | -26.35 | AVG | |
| 7 | 0.9180 | 14.30 | 11.34 | 25.64 | 56.00 | -30.36 | QP | |
| 8 | 0.9180 | 9.10 | 11.34 | 20.44 | 46.00 | -25.56 | AVG | |
| 9 | 1.5020 | 17.60 | 12.19 | 29.79 | 56.00 | -26.21 | QP | |
| 10 | 1.5020 | 12.30 | 12.19 | 24.49 | 46.00 | -21.51 | AVG | |
| 11 | 29.2380 | 10.62 | 12.82 | 23.44 | 60.00 | -36.56 | QP | |
| 12 | 29.2380 | 6.47 | 12.82 | 19.29 | 50.00 | -30.71 | AVG | |

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7 Radiation Emission Test

| | |
|-----------------------|---|
| Product Name: | Elite true power meter |
| Test Requirement: | FCC CFR47 Part 15 Section 15.209 & Section 15.231 |
| Test Method: | Based on ANSI C63.4:2003 |
| Frequency Range: | 9kHz to 5GHz |
| Measurement Distance: | 3m |

7.1 Test Equipment

Please refer to Section 5 this report.

7.2 Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in the field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

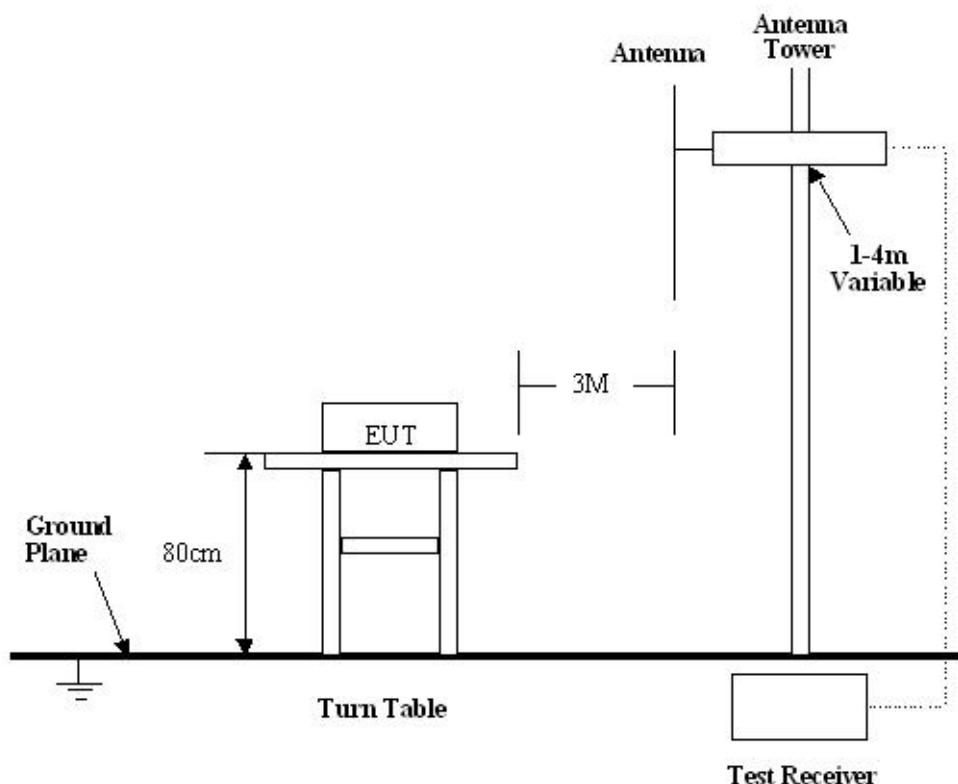
Based on ANSI C63.4: 2003, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of a radiation emissions measurement at Waltek EMC Lab is ± 5.03 dB.

7.3 Test Procedure

1. The radiation emission should be tested under 3-axes position(lying,side and stand), After pre-test, It was found that the worse radiation emission was get at the lying position.
2. Maximizing procedure was performed on the six (6) highest emissions to ensure EUT is compliant with all installation combinations.
3. All data was recorded in the peak and average detection mode.
4. The EUT was under working mode during the final qualification test and the configuration was used to represent the worst case results.

7.4 Radiated Test Setup

The radiated emission tests were performed in the 3m Semi- Anechoic Chamber test site, using the setup accordance with the ANSI C63.4: 2003, The specification used in this report was the FCC CFR47 Part 15 Section 15.209 & Section 15.231 limits.



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7.5 Spectrum Analyzer Setup

According to FCC Part 15.209 and 15.231 Rules, the system was tested from 9kHz to 5000 MHz.

9kHz ~ 30MHz

| | |
|---------------------------|-------|
| Start Frequency | 9kHz |
| Stop Frequency | 30MHz |
| Sweep Speed..... | Auto |
| IF Bandwidth..... | 10KHz |
| Video Bandwidth..... | 10KHz |
| Resolution Bandwidth..... | 10KHz |

30MHz ~ 1GHz

| | |
|------------------------------------|---------|
| Start Frequency | 30 MHz |
| Stop Frequency..... | 1000MHz |
| Sweep Speed..... | Auto |
| IF Bandwidth..... | 120 KHz |
| Video Bandwidth..... | 100KHz |
| Quasi-Peak Adapter Bandwidth | 120 KHz |
| Quasi-Peak Adapter Mode | Normal |
| Resolution Bandwidth | 100KHz |

Above 1GHz

| | |
|------------------------------------|----------|
| Start Frequency | 1000 MHz |
| Stop Frequency..... | 25000MHz |
| Sweep Speed..... | Auto |
| IF Bandwidth..... | 120 KHz |
| Video Bandwidth..... | 3MHz |
| Quasi-Peak Adapter Bandwidth | 120 KHz |
| Quasi-Peak Adapter Mode | Normal |
| Resolution Bandwidth | 1MHz |

7.6 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

$$\text{Corr. Ampl.} = \text{Indicated Reading} + \text{Antenna Factor} + \text{Cable Factor} - \text{Amplifier Gain}$$

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -7dB means the emission is 7dB below the maximum limit for Class B. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Corr. Ampl.} - \text{Class B Limit}$$

7.7 Summary of Test Results

According to the data in section 7.10, the EUT complied with the FCC CFR47 Part 15 Section 15.209 & Section 15.231 standards.

7.8 EUT Operating Condition

Same as section 6.4 of this report.

7.9 Radiated Emissions Limit

FCC Part 15.209 Limits

| Frequency (MHz) | Field Strength | | Field Strength Limit at 3m Measurement Dist | |
|--------------------|----------------|-----------------|---|--------------------------------|
| | uV/m | Distance (m) | uV/m | dBuV/m |
| 0.009 ~ 0.490 | 2400/F(kHz) | 300 | 10000 * 2400/F(kHz) | $20\log^{(2400/F(kHz))} + 80$ |
| 0.490 ~ 1.705 | 24000/F(kHz) | 30 | 100 * 24000/F(kHz) | $20\log^{(24000/F(kHz))} + 40$ |
| 1.705 ~ 30 | 30 | 30 | 100 * 30 | $20\log^{(30)} + 40$ |
| 30 ~ 88 | 100 | 3 | 100 | $20\log^{(100)}$ |
| 88 ~ 216 | 150 | 3 | 150 | $20\log^{(150)}$ |
| 216 ~ 960 | 200 | 3 | 200 | $20\log^{(200)}$ |
| Above 960 | 500 | 3 | 500 | $20\log^{(500)}$ |

FCC Part 15.231 Limits

| Fundamental frequency (MHz) | Field strength of fundamental (microvolts/meter) | Field strength of spurious emissions (microvolts/meter) |
|-----------------------------|---|--|
| 40.66-40.70..... | 1,000..... | 100 |
| 70-130..... | 1,250..... | 125 |
| 130-174..... | \1\ 1,250 to 3,750 | \1\ 125 to 375 |
| 174-260..... | 3,750..... | 375 |
| 260-470..... | \1\ 3,750 to 12,500. | \1\ 375 to 1,250 |
| Above 470..... | 12,500..... | 1,250 |

Where F is the frequency in MHz, The formulas for calculating the maximum permitted fundamental field strengths are as follows:

- (1). For the band 130-174MHz, uV/m at 3 meters=22.72727(F)-2454.545;
- (2). For the band 260-470MHz, uV/m at 3 meters=16.6667(F)-2833.3333.

Sample calculation of limit @ 433.92MHz

$$16.6667(433.92)-2833.333=4893.68\text{V/m}$$

$$20\log(4893.68)=72.8664 \text{ dBuV/m limit @ 433.92MHz}$$

And

The maximum permitted unwanted emission level is 20 dB below the maximum permitted fundamental level. And the AV = Peak +20Log₁₀(duty cycle).

And The maximum permitted unwanted emission level is 20 dB below the maximum permitted fundamental level.

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7.10 Radiated Emissions Test Result

Formula of conversion factors: the field strength at 3m was established by adding the meter reading of the spectrum analyser (which is set to read in units of dBuV) to the antenna correction factor supplied by the antenna manufacturer. The antenna correction factors are stated in terms of dB. The gain of the preselector was accounted for in the spectrum analyser meter reading.

Example:

Freq(MHz) Meter Reading +ACF=FS

33 20dBuV+10.36dB=30.36dBuV/m @3m

Radiated Emission Test Data

Test Item: Radiated Emission Test Data

Test Mode: TX On

Temperature: 24 °C

Humidity: 52%RH

Test Result: PASS

| Frequency (MHz) | Detector | Antenna Polarization | Emission Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Antenna Height (m) | Turntable Angle (°) |
|-----------------|----------|----------------------|-------------------------|----------------|-------------|--------------------|---------------------|
| 433.485 | AV | Vertical | 63.66 | 72.87 | 9.21 | 1.1 | 60 |
| 433.485 | AV | Horizontal | 65.32 | 72.87 | 7.55 | 1.1 | 50 |
| 867.832 | AV | Vertical | 50.46 | 52.87 | 2.41 | 1.0 | 45 |
| 1301.74 | AV | Vertical | 44.52 | 54.00 | 9.48 | 1.2 | 10 |
| 1735.58 | AV | Vertical | 42.32 | 54.00 | 11.68 | 1.1 | 60 |
| 2169.61 | AV | Vertical | 33.63 | 54.00 | 20.37 | 1.2 | 120 |
| 2603.52 | AV | Vertical | 35.36 | 54.00 | 18.64 | 1.1 | 50 |
| 3037.44 | AV | Vertical | 34.25 | 54.00 | 19.75 | 1.0 | 120 |
| 3471.36 | AV | Vertical | 32.34 | 54.00 | 21.66 | 1.2 | 60 |
| 3905.28 | AV | Vertical | 36.96 | 54.00 | 17.04 | 1.3 | 150 |
| 4336.32 | AV | Vertical | 31.25 | 54.00 | 22.75 | 1.1 | 110 |
| 867.831 | AV | Horizontal | 48.63 | 52.87 | 4.24 | 1.1 | 90 |
| 1301.76 | AV | Horizontal | 43.25 | 54.00 | 10.75 | 1.0 | 135 |
| 1735.58 | AV | Horizontal | 41.22 | 54.00 | 12.78 | 1.5 | 90 |
| 2169.60 | AV | Horizontal | 40.32 | 54.00 | 13.68 | 1.0 | 130 |
| 2603.52 | AV | Horizontal | 33.65 | 54.00 | 20.35 | 1.2 | 40 |
| 3037.44 | AV | Horizontal | 35.25 | 54.00 | 18.75 | 1.1 | 60 |
| 3471.36 | AV | Horizontal | 33.63 | 54.00 | 20.37 | 1.1 | 110 |
| 3905.28 | AV | Horizontal | 35.24 | 54.00 | 18.76 | 1.3 | 140 |
| 4334.86 | AV | Horizontal | 34.63 | 54.00 | 19.37 | 1.0 | 150 |
| 433.485 | Peak | Vertical | 67.31 | 92.87 | 25.56 | 1.0 | 20 |
| 433.485 | Peak | Horizontal | 68.97 | 92.87 | 23.90 | 1.1 | 110 |
| 867.832 | Peak | Vertical | 54.11 | 72.87 | 18.76 | 1.0 | 40 |

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| | | | | | | | |
|---------|------|------------|-------|-------|-------|-----|-----|
| 1301.74 | Peak | Vertical | 48.17 | 74.00 | 25.83 | 1.2 | 300 |
| 1735.58 | Peak | Vertical | 45.97 | 74.00 | 28.03 | 1.1 | 120 |
| 2169.61 | Peak | Vertical | 37.28 | 74.00 | 36.72 | 1.1 | 140 |
| 2603.52 | Peak | Vertical | 39.01 | 74.00 | 34.99 | 1.3 | 60 |
| 3037.44 | Peak | Vertical | 37.9 | 74.00 | 36.10 | 1.1 | 135 |
| 3471.36 | Peak | Vertical | 35.99 | 74.00 | 38.01 | 1.5 | 60 |
| 3905.28 | Peak | Vertical | 40.61 | 74.00 | 33.39 | 1.1 | 60 |
| 4336.28 | Peak | Vertical | 34.9 | 74.00 | 39.10 | 1.1 | 110 |
| 867.831 | Peak | Horizontal | 52.28 | 72.87 | 20.59 | 1.5 | 90 |
| 1301.76 | Peak | Horizontal | 46.9 | 74.00 | 27.10 | 1.1 | 150 |
| 1735.57 | Peak | Horizontal | 44.87 | 74.00 | 29.13 | 1.5 | 90 |
| 2169.65 | Peak | Horizontal | 43.97 | 74.00 | 30.03 | 1.0 | 130 |
| 2603.52 | Peak | Horizontal | 37.3 | 74.00 | 36.70 | 1.2 | 40 |
| 3037.58 | Peak | Horizontal | 38.9 | 74.00 | 35.10 | 1.3 | 40 |
| 3471.36 | Peak | Horizontal | 37.28 | 74.00 | 36.72 | 1.1 | 20 |
| 3905.24 | Peak | Horizontal | 38.89 | 74.00 | 35.11 | 1.0 | 10 |
| 4334.89 | Peak | Horizontal | 38.28 | 74.00 | 35.72 | 1.2 | 40 |

Remark: For more details of the duty cycle,please refer to the section 8 of the Activation time.

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8 Activation time

| | |
|-------------------|---|
| Test Requirement: | FCC Part 15.231 (a)(2) |
| Test Method: | Based on ANSI C63.4:2003 |
| Limit: | A transmitter activated automatically shall cease transmission within 5 seconds after activation. |
| Test Status: | Normal working mode. |

Test Procedure:

1. The EUT was placed on a turntable which is 0.8m above ground plane
2. Set EUT as normal operation mode
3. Set SPA center frequency = fundamental frequency, RBW = 100kHz, VBW = 300kHz, Span = 0 Hz, Adjacent sweep time.

Test Result:

The duty cycle was determined by the following equation:

To calculate the actual field intensity, The duty cycle correction factor in decibel is needed for later use and can be obtained from following conversion

Duty Cycle(%)=

Total On interval in a complete pulse train/ Length of a complete pulse train * %

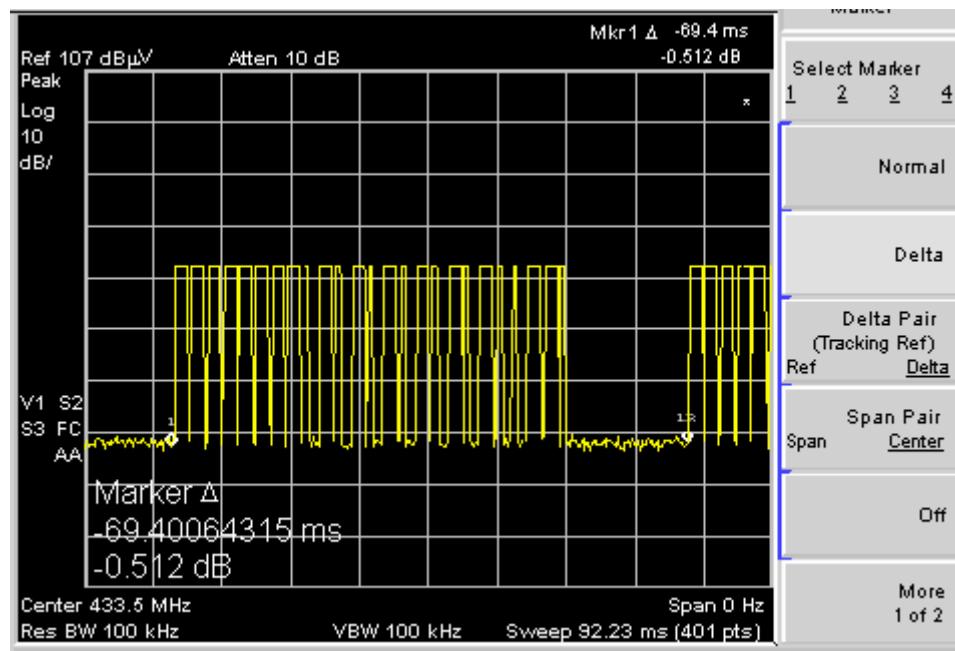
Duty Cycle Correction Factor(dB)=20 * Log₁₀(Duty Cycle(%))

| Pulse Train | Number of Pulse | T(ms) | Total Time(ms) |
|-------------|-----------------|-------|----------------|
| Long Pulse | 16 | 2.075 | 33.2msec |
| Short Pulse | 9 | 1.383 | 12.447msec |

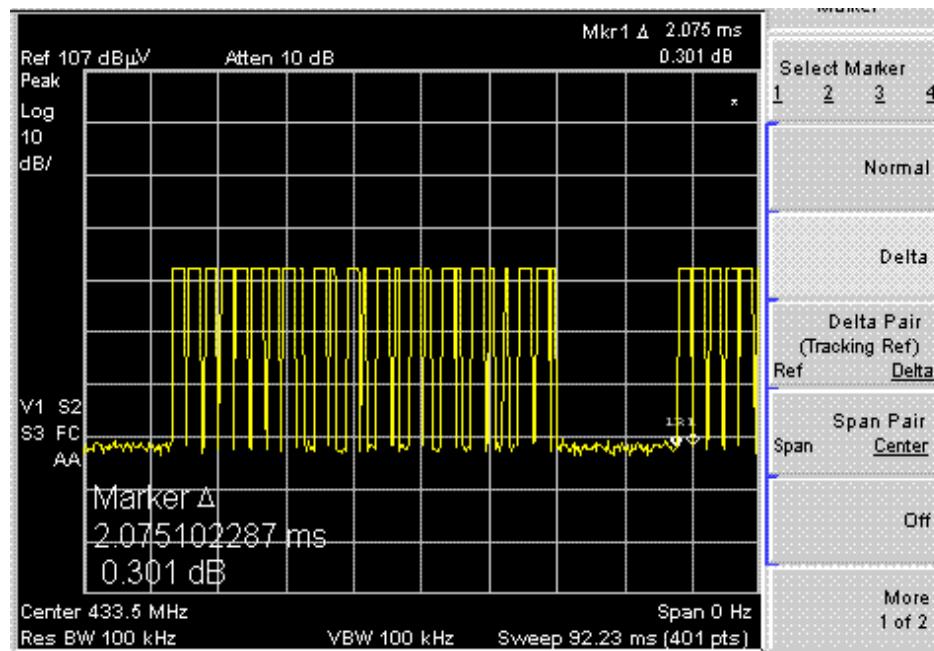
| | |
|---|------------|
| Total On interval in a complete pulse train | 69.4msec |
| Length of a complete pulse train | 45.647msec |
| Duty Cycle(%) | 65.78% |
| Duty Cycle Correction Factor(dB) | 3.65 |

Refer to the duty cycle plot (as below), This device does meet the FCC requirement.

Length of a complete pulse train:

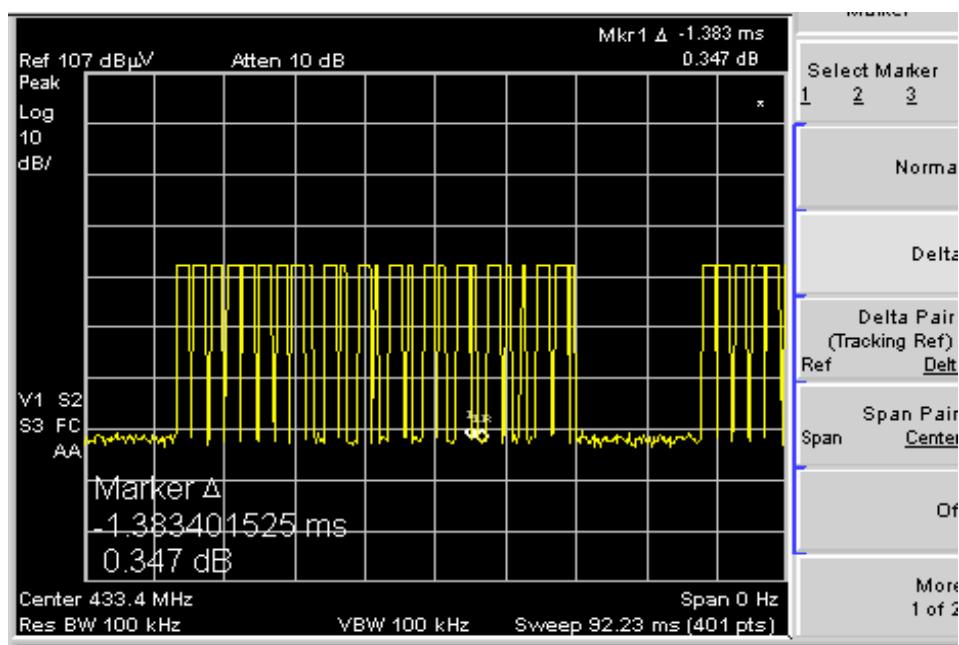


Long Pulse



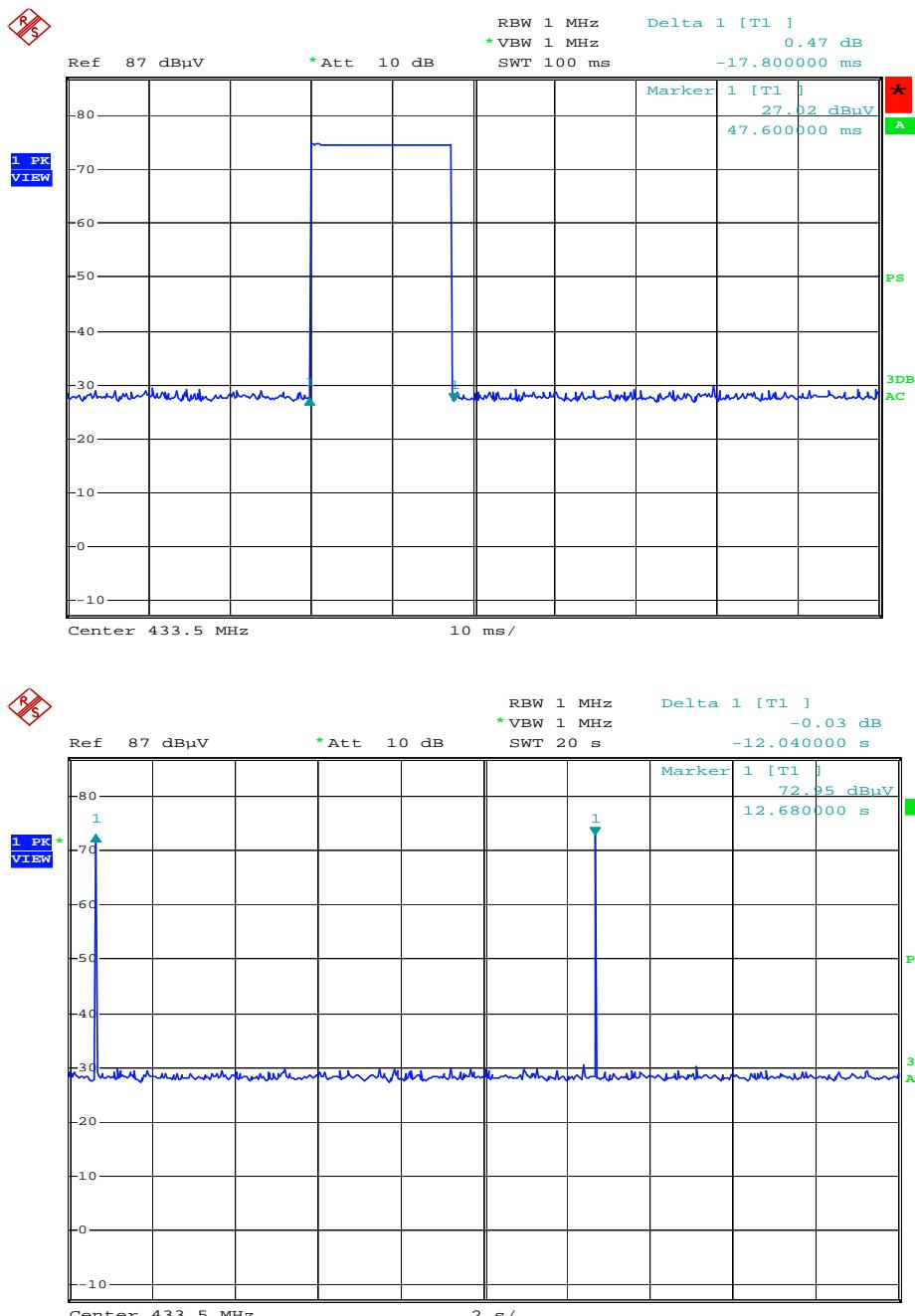
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Short Pulse:



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Refer to the plot (as below), We find each the duration transmission for the device is about 0.0178 seconds and silent period between transmissions is about 12.04 seconds, This device does meet the FCC requirement.



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9 Bandwidth

| | |
|-------------------|--------------------------|
| Test Requirement: | FCC Part 15.231 (c) |
| Test Method: | Based on ANSI C63.4:2003 |
| Test mode: | TX On |
| Temperature: | 24 °C |
| Humidity: | 52%RH |

9.1 Test Procedure

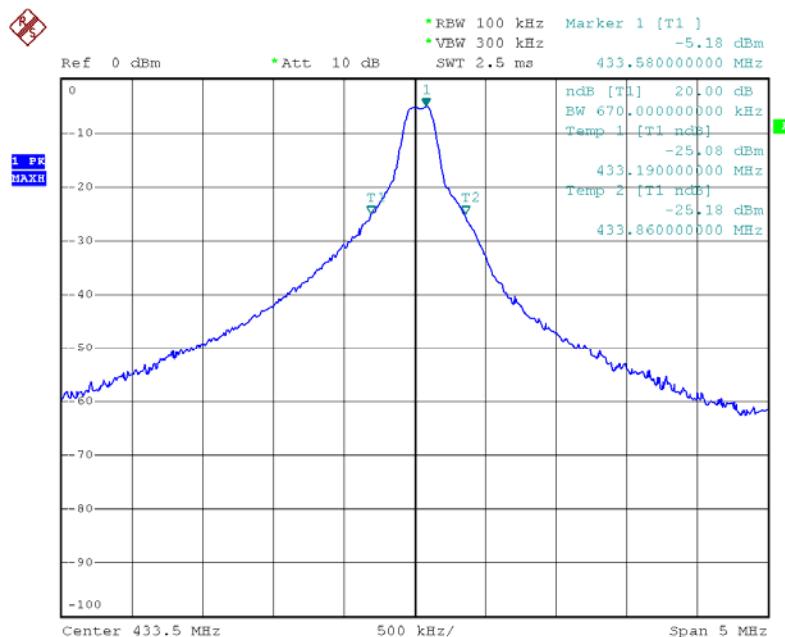
1. The transmitter output (antenna port) was connected to the spectrum analyzer. EUT and its simulators are placed on a table, let EUT working in test mode, then test it.
2. The bandwidth of the fundamental frequency was measured by spectrum analyser with 100kHz RBW and 300kHz VBW.

9.2 Bandwidth

The bandwidth of the emission shall be no wider than 0.25% of the center frequency at the points 20 dB down from the modulated carrier. The bandwidth of the emission shall be no wider than 1083.75kHz.

| Frequency (MHz) | Bandwidth Emission (KHz) | Limit (KHz) | Result |
|-----------------|--------------------------|-------------|--------|
| 433.50 | 670 | 1083.75 | Pass |

9.3 Bandwidth Test Result



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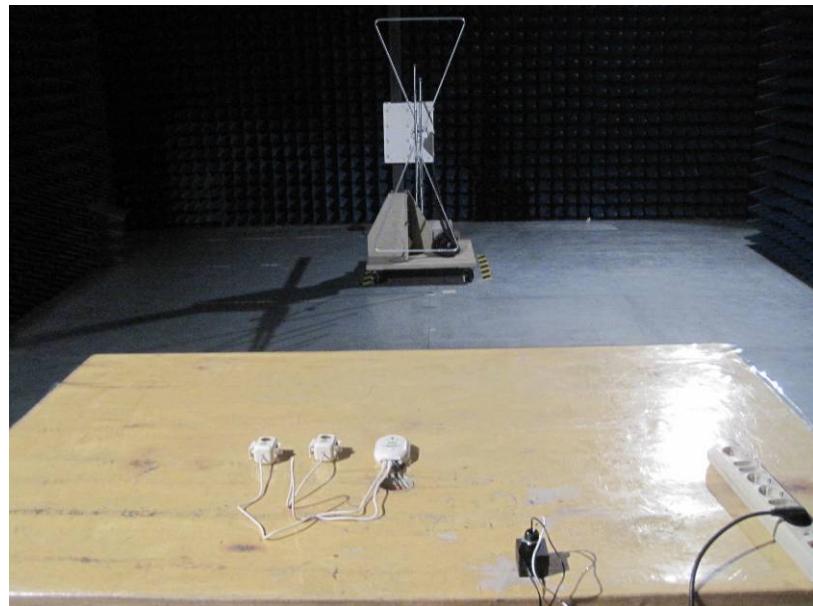
10 Antenna Requirement.

According to the FCC Part 15 Paragraph 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. This product has a permanent antenna, fulfill the requirement of this section.

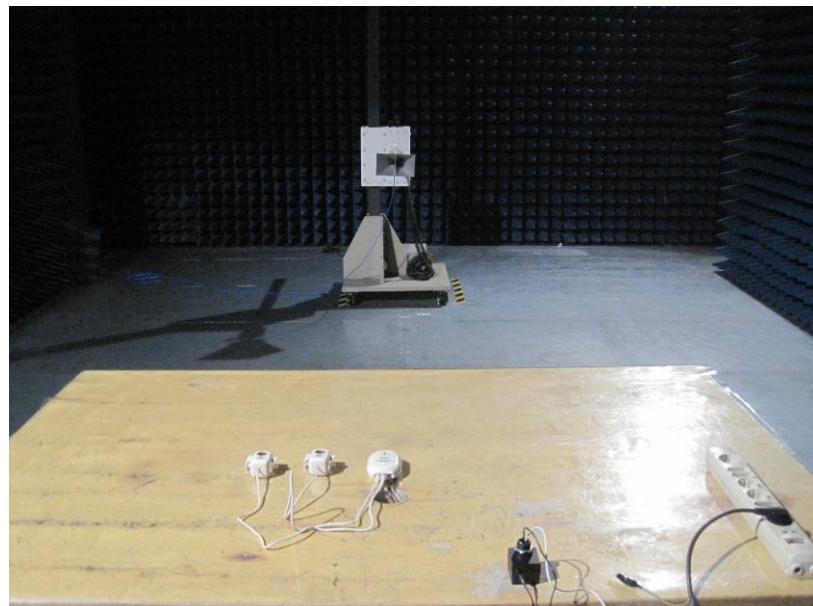
11 Photographs of Testing

11.1 Radiated Emissions Test Setup View

Below 1GHz



Above 1GHz



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11.2 Conducted Emissions Test Setup View



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12 Photographs - Constructional Details

12.1 Product View



12.2 EUT - Appearance View



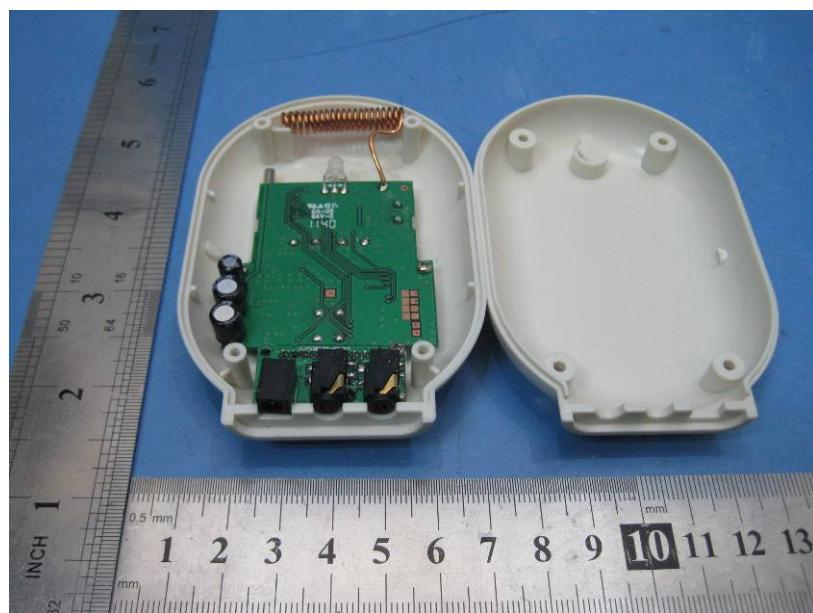
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12.3 EUT - Open View

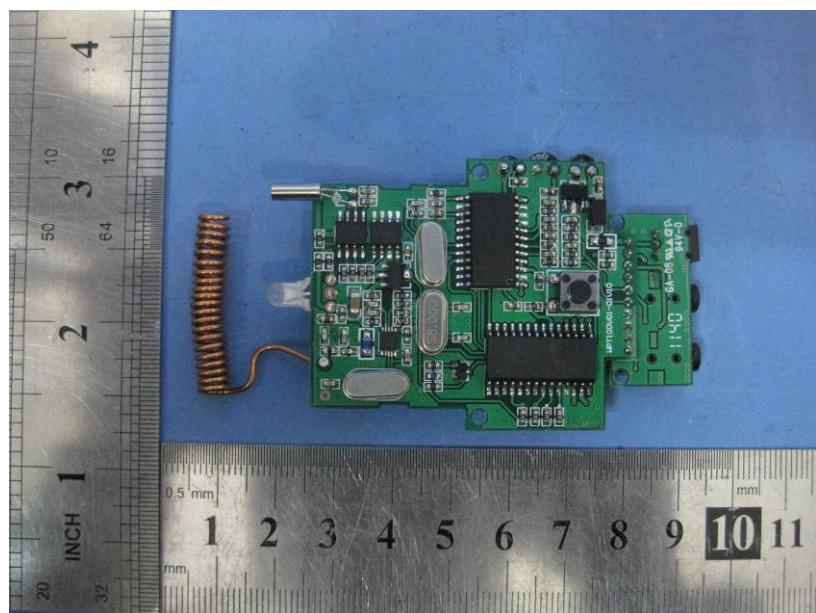
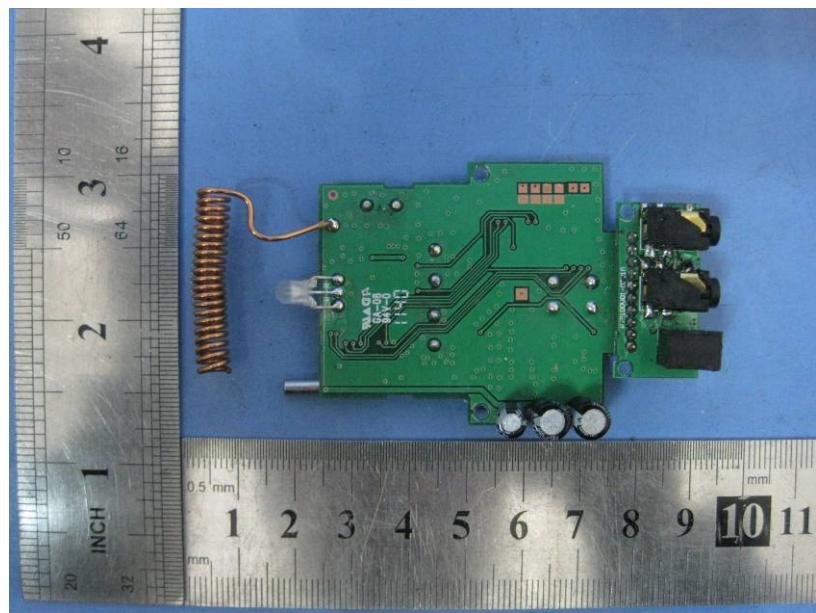


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12.4 EUT - PCB View



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12.5 CT Sensor - Appearance View

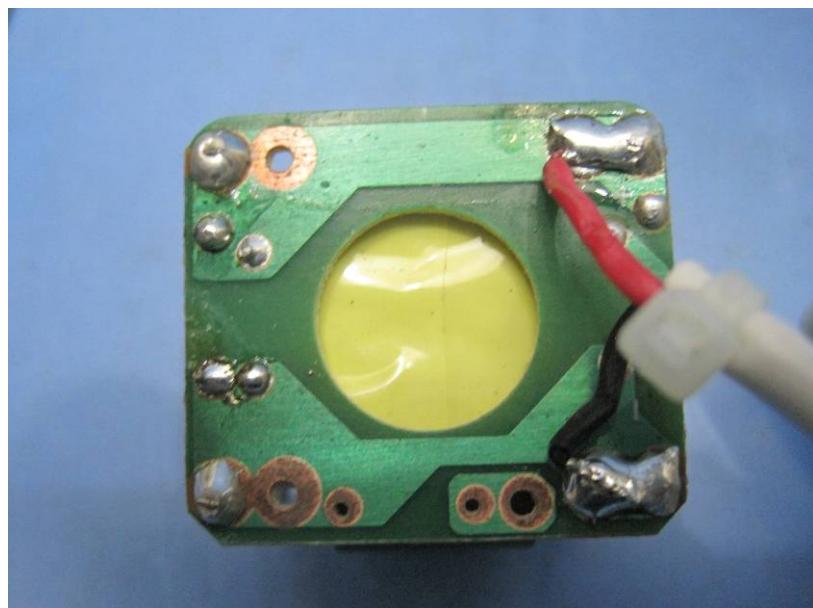
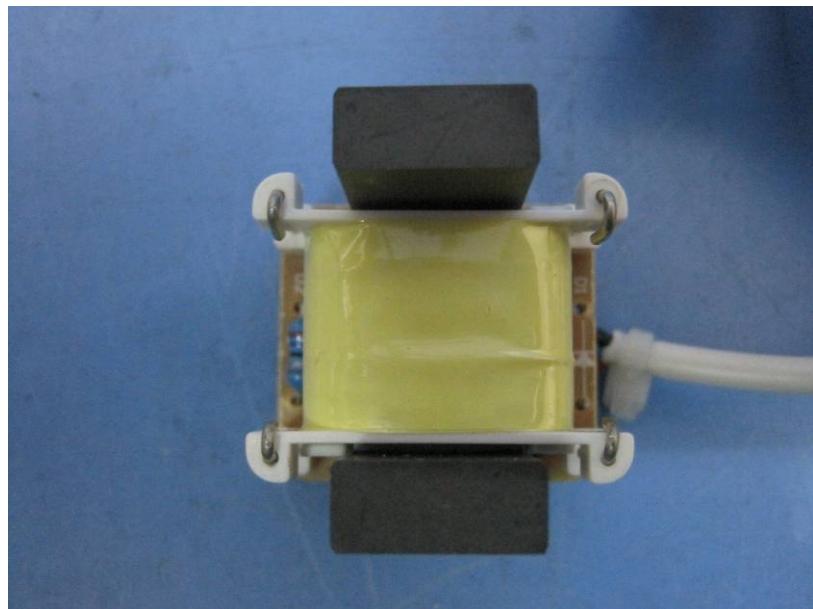


12.6 CT Sensor - Open View



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12.7 CT Sensor - Internal View



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12.8 Adapter - Appearance View

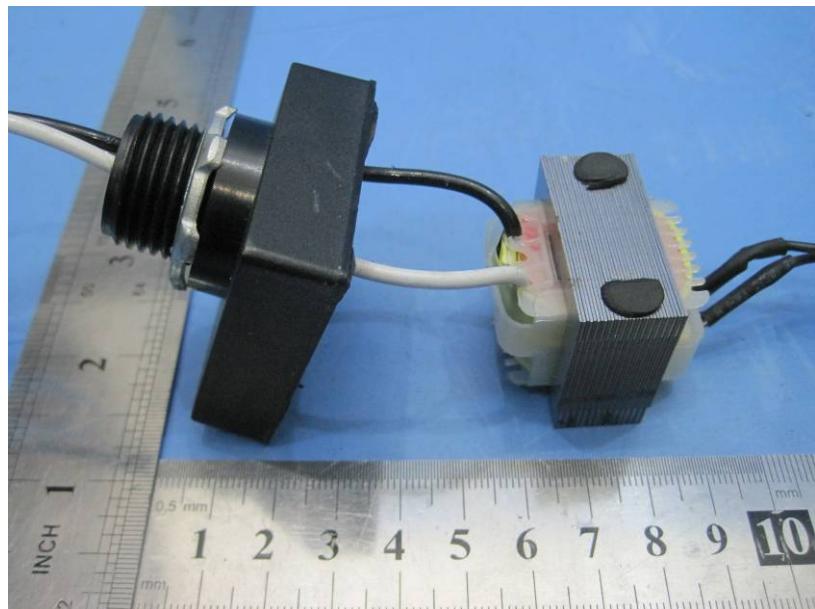


12.9 Adapter - Open View



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12.10 Adapter - Internal View



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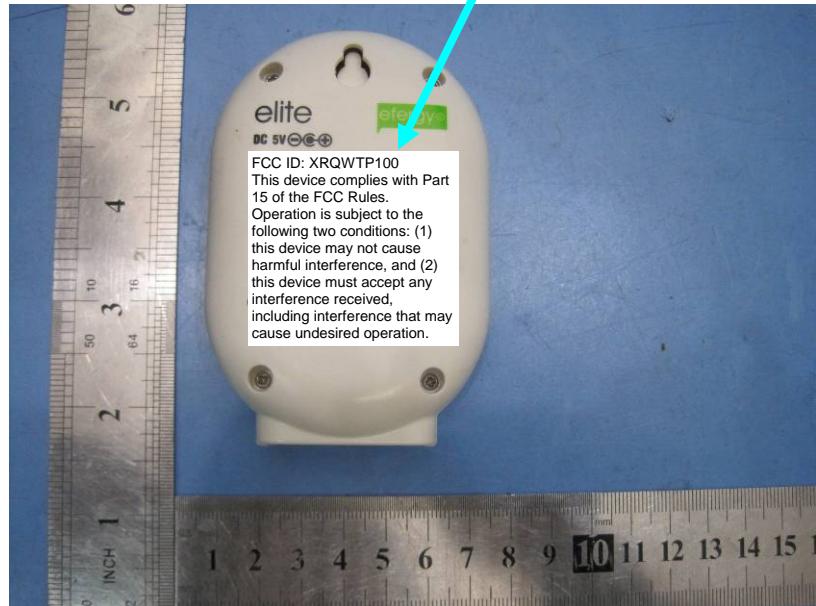
13 FCC Label

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

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

Proposed Label Location on EUT

EUT Bottom View/proposed FCC Label Location



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