

FCC TEST REPORT

REPORT NO.: RF990419D13A

MODEL NO.: 720002010A

FCC ID: YLI720002010A

RECEIVED: Aug. 3, 2010

TESTED: Aug. 5 ~ 9, 2010

ISSUED: Aug. 16, 2010

APPLICANT: H.S. CRAFT MANUFACTURING CO.

ADDRESS: 10F, NO. 35, GUANG FU N. ROAD, TAIPEI, TAIWAN

ISSUED BY: Bureau Veritas Consumer Products Services (H.K.)

Ltd., Taoyuan Branch

LAB LOCATION: No. 47, 14th Ling, Chia Pau Tsuen, Lin Kou Hsiang,

Taipei Hsien 244, Taiwan

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Report No.: RF990419D13A Reference No.: 990803D07



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1. CERTIFICATION

PRODUCT: Color Effects Remote Control

BRAND NAME: GE

MODEL NO.: 720002010A

APPLICANT: H.S. CRAFT MANUFACTURING CO.

TESTED: Aug. 5 ~ 9, 2010

TEST SAMPLE: ENGINEERING SAMPLE

STANDARDS: FCC Part 15, Subpart C (Section 15.231)

ANSI C63.4-2003

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch,** and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

PREPARED BY: Jestica long, DATE: Aug. 16, 2010

(Jessica Cheng / Specalist)

TECHNICAL

ACCEPTANCE: James Chan, DATE: Aug. 16, 2010

APPROVED BY: \(\(\lambda_{\text{A} \text{A}} \) \(\lambda_{\text{A}} \) \(\lambda_{\text{A}} \text{A} \text

(Ken Liu / Manager)

(Jamison Chan / Supervisor)

Responsible for RF



2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

| APPLIED STANDARD: FCC Part 15, Subpart C (Section 15.231) | | | | | |
|---|--------------------------------|--------|--|--|--|
| STANDARD SECTION | TEST TYPE AND LIMIT | RESULT | REMARK | | |
| 15.207 | Conducted Emission Test | N/A | Power supply is 3Vdc from batteries | | |
| 15.209 15.231(b) | Radiated Emission Test | PASS | Minimum passing margin is –1.3dB at 2603.52MHz | | |
| 15.231(c) | Emission Bandwidth Measurement | PASS | Meet the requirement of limit | | |
| 15.231(a) | De-activation | PASS | Meet the requirement of limit | | |

2.1 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

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

| Measurement | Frequency | Uncertainty | |
|--------------------|--------------|-------------|--|
| Dedicted emissions | 30MHz ~ 1GHz | 3.67 dB | |
| Radiated emissions | Above 1GHz | 2.89 dB | |



3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

| EUT | Color Effects Remote Control |
|------------------------------|------------------------------|
| MODEL NO. | 720002010A |
| FCC ID | YLI720002010A |
| POWER SUPPLY | 3Vdc from batteries |
| MODULATION TYPE | FSK |
| OPERATING FREQUENCY | 433.92MHz |
| NUMBER OF CHANNEL | 1 |
| ANTENNA TYPE Printed antenna | |
| ANTENNA CONNECTOR N/A | |
| DATA CABLE | N/A |
| I/O PORTS | N/A |
| ASSOCIATED DEVICES | N/A |

NOTE:

- 1. The EUT is a transceiver.
- 2. The above EUT information was declared by the manufacturer and for more detailed features description, please refer to the manufacturer's specifications or User's Manual.

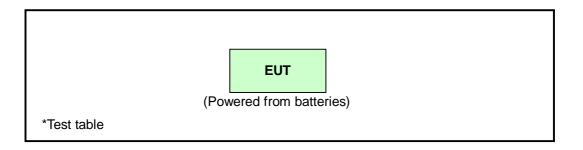


3.2 DESCRIPTION OF TEST MODES

1 channel was provided to this EUT.

| Channel | Frequency |
|---------|-----------|
| 1 | 433.92MHz |

3.2.1 CONFIGURATION OF SYSTEM UNDER TEST





3.2.2TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

| EUT configure | | Ар | plicable | to | | Description |
|---------------|------|--------------|--------------------|----------|----------|-------------|
| mode | PLC | RE<1G | RE ³ 1G | EB | DT | Bocompaion |
| - | Note | \checkmark | \checkmark | √ | √ | - |

Where **PLC:** Power Line Conducted Emission

RE<1G: Radiated Emission below 1GHz

RE³1G: Radiated Emission above 1GHz

EB: 20dB Bandwidth Measurement

DT: Deactivation Time Measurement

Note: No need to concern of Conducted Emission due to the EUT is powered by batteries.

RADIATED EMISSION TEST (BELOW 1 GHz):

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, XYZ Axis and antenna ports (if EUT with antenna diversity architecture).

Following channel(s) was (were) selected for the final test as listed below.

| AVAILABLE TESTED CHANNEL CHANNEL | | MODULATION TYPE | AXIS |
|----------------------------------|---|--------------------|------|
| 1 | 1 | FSK | Z |

RADIATED EMISSION TEST (ABOVE 1 GHz):

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulation, XYZ Axis and antenna ports (if EUT with antenna diversity architecture)

Following channel(s) was (were) selected for the final test as listed below.

| AVAILABLE TESTED CHANNEL CHANNEL | | MODULATION TYPE | AXIS |
|----------------------------------|---|--------------------|------|
| 1 | 1 | FSK | Z |

EMISSION BANDWIDTH MEASUREMENT:

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations and antenna ports (if EUT with antenna diversity architecture).

Following channel(s) was (were) selected for the final test as listed below.

| AVAILABLE | TESTED | MODULATION |
|-----------|---------|------------|
| CHANNEL | CHANNEL | TYPE |
| 1 | 1 | FSK |



DEACTIVATION TIME MEASUREMENT:

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations and antenna ports (if EUT with antenna diversity architecture).

Following channel(s) was (were) selected for the final test as listed below.

| AVAILABLE | TESTED | MODULATION |
|-----------|---------|------------|
| CHANNEL | CHANNEL | TYPE |
| 1 | 1 | FSK |

TEST CONDITION:

| APPLICABLE TO | ENVIRONMENTAL CONDITIONS | INPUT POWER | TESTED BY |
|--------------------|---------------------------|-------------|-----------|
| RE<1G | 26deg. C,59% RH, 1006hPa | 3Vdc | Nick Chen |
| RE ³ 1G | 26deg. C,59% RH, 1006hPa | 3Vdc | Nick Chen |
| EB | 28deg. C, 78% RH, 1002hPa | 3Vdc | Nick Chen |
| DT | 28deg. C, 78% RH, 1002hPa | 3Vdc | Nick Chen |

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3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a RF product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

FCC Part 15, Subpart C. (15.231) ANSI C63.4-2003

All test items have been performed and recorded as per the above standards.

3.4 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together without any necessary accessory or support unit.



4. TEST TYPES AND RESULTS

4.1 CONDUCTED EMISSION MEASUREMENT

N/A

4.2 RADIATED EMISSION MEASUREMENT

4.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

According to 15.231 the field strength of emissions from intentional radiators operated under these frequencies bands shall not exceed the following:

| Fundamental | Field Strength of Fundamental | | Field Strength of Spurious | |
|-----------------|-------------------------------|---------------|----------------------------|---------------|
| Frequency (MHz) | uV/meter | dBuV/meter | uV/meter | dBuV/meter |
| 40.66 ~ 40.70 | 2250 | 67.04 | 225 | 48.04 |
| 70 ~ 130 | 1250 | 61.94 | 125 | 41.94 |
| 130 ~ 174 | 1250 ~ 3750 | 61.94 ~ 71.48 | 125 ~ 375 | 41.94 ~ 51.48 |
| 174 ~ 260 | 3750 | 71.48 | 75 | 37.50 |
| 260 ~ 470 | 3750 ~ 12500 | 71.48 ~ 81.94 | 375 ~ 1250 | 51.48 ~ 61.94 |
| Above 470 | 12500 | 81.94 | 1250 | 61.94 |

NOTE:

- Where F is the frequency in MHz, the formula for calculating the maximum permitted fundamental field strengths are as follows: for the band 130-174 MHz, uV/m at 3 meters = 56.81818(F)-6136.3636; for the band 260-470 MHz, uV/m at 3 meters = 41.6667(F)- 7083.3333. The maximum permitted unwanted emission level is 20 dB below the maximum permitted fundamental level.
- 2. The above field strength limits are specified at a distance of 3meters. The tighter limits apply at the band edges.



Emissions radiated outside of the specified bands, shall be according to the general radiated limits in 15.209 as following:

| Frequencies (MHz) | Field strength (microvolts/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 |

NOTE:

- 1. The lower limit shall apply at the transition frequencies.
- 2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
- 3. As shown in 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.



4.2.2 TEST INSTRUMENTS

| DESCRIPTION & MANUFACTURER | MODEL NO. | SERIAL NO. | CALIBRATED DATE | CALIBRATED UNTIL |
|--------------------------------------|------------------------------|----------------------|--------------------|---------------------|
| HP Preamplifier | 8447D | 2432A03504 | May 06, 2010 | May 05, 2011 |
| HP Preamplifier | 8449B | 3008A01924 | Jul. 14, 2010 | Jul. 13, 2011 |
| HP Preamplifier | 8449B | 3008A01292 | Jul. 14, 2010 | Jul. 13, 2011 |
| ROHDE & SCHWARZ TEST RECEIVER | ESU26 | 100005 | Jun. 10, 2010 | Jun. 09, 2011 |
| Schwarzbeck Antenna | VULB 9168 | 137 | Apr. 29, 2010 | Apr. 28, 2011 |
| Schwarzbeck Antenna | VHBA 9123 | 480 | Apr. 29, 2010 | Apr. 28, 2011 |
| ADT. Turn Table | TT100 | 0306 | NA | NA |
| ADT. Tower | AT100 | 0306 | NA | NA |
| Software | ADT_Radiated_V 7.6.15.9.2 | NA | NA | NA |
| SUHNER RF cable | SF104-26.5 | CABLE-CH6-17m -01 | Aug. 20, 2009 | Aug. 19, 2010 |
| ROHDE & SCHWARZ Spectrum Analyzer | FSP 40 | 100036 | Apr. 06, 2010 | Apr. 05, 2011 |
| EMCO Horn Antenna | 3115 | 6714 | Oct. 26, 2009 | Oct. 25, 2010 |
| EMCO Horn Antenna | 3115 | 9312-4192 | Apr. 23, 2010 | Apr. 22, 2011 |

NOTE: 1. The calibration interval of the above test instruments is 12/24 months. And the calibrations are traceable to NML/ROC and NIST/USA.

- 2. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
- 3. The test was performed in Chamber No. 6.
- 4. The Industry Canada Reference No. IC 7450E-6.
- 5. The FCC Site Registration No. is 447212.



4.2.3 TEST PROCEDURES

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi- anechoic. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.
- f. If the emission level of the EUT in peak mode was lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions would be re-tested one by one using peak, quasi-peak method or average method as specified and then reported in data sheet.

NOTE:

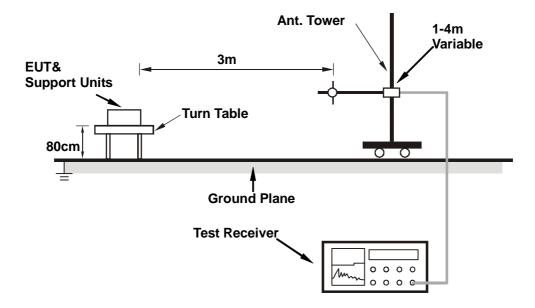
- 1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Peak detection (PK) and Quasi-peak detection (QP) at frequency below 1GHz.
- 2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
- 3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 10Hz for Average detection (AV) at frequency above 1GHz.
- 4. All modes of operation were investigated and the worst-case emissions are reported.

4.2.4 DEVIATION FROM TEST STANDARD

No deviation



4.2.5 TEST SETUP



For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

4.2.6 EUT OPERATING CONDITIONS

Set the transmitter part of EUT under transmission condition continuously at specific channel frequency.



4.2.7 TEST RESULTS

ABOVE 1GHz DATA

| EUT TEST CONDITION | | MEASUREMENT DETAIL | | |
|--------------------------|-----------------------------|----------------------|---------------------------|--|
| CHANNEL | Channel 1 | FREQUENCY RANGE | 1 ~ 25GHz | |
| INPUT POWER | 3Vdc | DETECTOR FUNCTION | Peak (PK) Average (AV) | |
| ENVIRONMENTAL CONDITIONS | 26deg. C, 59% RH 1006hPa | TESTED BY | Nick Chen | |

| | ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M | | | | | | | |
|-----|---|-------------------------------|-------------------|-------------|-----------------------|----------------------------|---------------------|--------------------------------|
| NO. | FREQ. (MHz) | EMISSION LEVEL (dBuV/m) | LIMIT (dBuV/m) | MARGIN (dB) | ANTENNA HEIGHT (m) | TABLE ANGLE (Degree) | RAW VALUE (dBuV) | CORRECTION FACTOR (dB/m) |
| 1 | 1301.76 | 54.4 PK | 80.8 | -26.4 | 1.07 H | 269 | 25.97 | 28.44 |
| 2 | 1301.76 | 47.4 AV | 60.8 | -13.4 | 1.07 H | 269 | 18.97 | 28.44 |
| 3 | 2603.52 | 66.5 PK | 80.8 | -14.3 | 1.03 H | 21 | 33.63 | 32.83 |
| 4 | 2603.52 | 59.5 AV | 60.8 | -1.3 | 1.03 H | 21 | 26.63 | 32.83 |
| 5 | 3037.44 | 57.1 PK | 80.8 | -23.7 | 1.12 H | 214 | 22.72 | 34.39 |
| 6 | 3037.44 | 50.1 AV | 60.8 | -10.7 | 1.12 H | 214 | 15.72 | 34.39 |
| | | ANTENNA | A POLARITY | / & TEST DI | STANCE: V | ERTICAL A | T 3 M | |
| NO. | FREQ. (MHz) | EMISSION LEVEL (dBuV/m) | LIMIT (dBuV/m) | MARGIN (dB) | ANTENNA HEIGHT (m) | TABLE ANGLE (Degree) | RAW VALUE (dBuV) | CORRECTION FACTOR (dB/m) |
| 1 | 1301.76 | 60.9 PK | 80.8 | -19.9 | 1.17 V | 141 | 32.42 | 28.44 |
| 2 | 1301.76 | 53.9 AV | 60.8 | -6.9 | 1.17 V | 141 | 25.42 | 28.44 |
| 3 | 1735.68 | 58.9 PK | 80.8 | -21.9 | 1.10 V | 163 | 29.16 | 29.76 |
| 4 | 1735.68 | 51.9 AV | 60.8 | -8.9 | 1.10 V | 163 | 22.16 | 29.76 |
| 5 | 3037.44 | 57.3 PK | 80.8 | -23.5 | 1.06 V | 261 | 22.87 | 34.39 |
| 6 | 3037.44 | 50.3 AV | 60.8 | -10.5 | 1.06 V | 261 | 15.87 | 34.39 |

REMARKS: 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).

- 2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
- 3. The other emission levels were very low against the limit.
- 4. Margin value = Emission level Limit value.
- 5. The average value of fundamental frequency is: Average = Peak value + 20log(Duty cycle) Where the duty factor is calculated from following formula:

$$20\log(\text{Duty cycle}) = 20\log\frac{44.55\text{ms x 1}}{100\text{ ms}} = -7.0\text{dB}$$

Please see page 17 for plotted duty.



BELOW 1GHz WORST-CASE DATA

| EUT TEST CONDITION | | MEASUREMENT DETAIL | | |
|--------------------------|-----------------------------|----------------------|---|--|
| CHANNEL | Channel 1 | FREQUENCY RANGE | Below 1000MHz | |
| INPUT POWER | 3Vdc | DETECTOR FUNCTION | Quasi-Peak Peak (PK) Average (AV) | |
| ENVIRONMENTAL CONDITIONS | 26deg. C, 59% RH 1006hPa | TESTED BY | Nick Chen | |

| | | ANTENNA I | POLARITY | & TEST DIS | TANCE: HO | RIZONTAL | AT 3 M | |
|---------------------------------|---|--|---|--|--|---|--|--|
| NO. | FREQ. (MHz) | EMISSION LEVEL (dBuV/m) | LIMIT (dBuV/m) | MARGIN (dB) | ANTENNA HEIGHT (m) | TABLE ANGLE (Degree) | RAW VALUE (dBuV) | CORRECTION FACTOR (dB/m) |
| 1 | 39.32 | 24.4 QP | 60.8 | -36.4 | 1.17 H | 208 | 11.01 | 13.42 |
| 2 | 110.83 | 20.5 QP | 60.8 | -40.3 | 1.06 H | 39 | 9.64 | 10.83 |
| 3 | 176.12 | 29.8 QP | 60.8 | -31.0 | 1.12 H | 219 | 17.17 | 12.65 |
| 4 | *433.92 | 60.4 PK | 100.8 | -40.4 | 1.00 H | 349 | 41.47 | 18.98 |
| 5 | *433.92 | 53.4 AV | 80.8 | -27.4 | 1.00 H | 349 | 34.47 | 18.98 |
| 6 | 493.23 | 30.3 QP | 60.8 | -30.5 | 1.01 H | 97 | 9.66 | 20.64 |
| 7 | 637.80 | 33.2 QP | 60.8 | -27.6 | 1.07 H | 219 | 9.29 | 23.89 |
| 8 | 780.81 | 35.0 QP | 60.8 | -25.8 | 1.04 H | 193 | 9.06 | 25.96 |
| | | ANTENNA | POLARITY | / & TEST DI | STANCE: V | ERTICAL A | T 3 M | |
| | | EMISSION | | | | TABLE | | CORRECTION |
| NO. | FREQ. (MHz) | LEVEL (dBuV/m) | LIMIT (dBuV/m) | MARGIN (dB) | ANTENNA HEIGHT (m) | ANGLE (Degree) | RAW VALUE (dBuV) | FACTOR (dB/m) |
| NO . | FREQ. (MHz) 70.33 | LEVEL | | MARGIN (dB) -31.7 | | ANGLE | | FACTOR |
| | ` , | LEVEL (dBuV/m) | (dBuV/m) | - (") | HEIGHT (m) | ANGLE (Degree) | (dBuV) | FACTOR (dB/m) |
| 1 | 70.33 | LEVEL (dBuV/m) 29.1 QP | (dBuV/m) 60.8 | -31.7 | HEIGHT (m) 1.02 V | ANGLE (Degree) | (dBuV) 16.94 | FACTOR (dB/m) 12.17 |
| 1 2 | 70.33 176.04 | LEVEL (dBuV/m) 29.1 QP 29.5 QP | (dBuV/m) 60.8 60.8 | -31.7 -31.3 | 1.02 V 1.00 V | ANGLE (Degree) 217 265 | (dBuV) 16.94 16.83 | FACTOR (dB/m) 12.17 12.67 |
| 1 2 3 | 70.33 176.04 379.67 | LEVEL (dBuV/m) 29.1 QP 29.5 QP 31.3 QP | (dBuV/m) 60.8 60.8 60.8 | -31.7 -31.3 -29.5 | 1.02 V 1.00 V 1.08 V | ANGLE (Degree) 217 265 224 | (dBuV) 16.94 16.83 13.44 | FACTOR (dB/m) 12.17 12.67 17.87 |
| 1 2 3 4 | 70.33 176.04 379.67 *433.92 | LEVEL (dBuV/m) 29.1 QP 29.5 QP 31.3 QP 79.8 PK | (dBuV/m) 60.8 60.8 60.8 100.8 | -31.7 -31.3 -29.5 -21.0 | 1.02 V 1.00 V 1.08 V 1.33 V | ANGLE (Degree) 217 265 224 67 | (dBuV) 16.94 16.83 13.44 60.86 | FACTOR (dB/m) 12.17 12.67 17.87 18.98 |
| 1 2 3 4 5 | 70.33 176.04 379.67 *433.92 *433.92 | LEVEL (dBuV/m) 29.1 QP 29.5 QP 31.3 QP 79.8 PK 72.8 AV | (dBuV/m) 60.8 60.8 60.8 100.8 80.8 | -31.7 -31.3 -29.5 -21.0 -8.0 | 1.02 V 1.00 V 1.08 V 1.33 V 1.33 V | ANGLE (Degree) 217 265 224 67 | (dBuV) 16.94 16.83 13.44 60.86 53.86 | FACTOR (dB/m) 12.17 12.67 17.87 18.98 18.98 |
| 1 2 3 4 5 6 | 70.33 176.04 379.67 *433.92 *433.92 460.51 | LEVEL (dBuV/m) 29.1 QP 29.5 QP 31.3 QP 79.8 PK 72.8 AV 30.6 QP | (dBuV/m) 60.8 60.8 60.8 100.8 80.8 60.8 | -31.7 -31.3 -29.5 -21.0 -8.0 -30.2 | 1.02 V 1.00 V 1.08 V 1.33 V 1.33 V 1.18 V | ANGLE (Degree) 217 265 224 67 67 107 | (dBuV) 16.94 16.83 13.44 60.86 53.86 11.02 | FACTOR (dB/m) 12.17 12.67 17.87 18.98 18.98 19.59 |
| 1 2 3 4 5 6 7 | 70.33 176.04 379.67 *433.92 *433.92 460.51 488.49 | LEVEL (dBuV/m) 29.1 QP 29.5 QP 31.3 QP 79.8 PK 72.8 AV 30.6 QP 28.8 QP | (dBuV/m) 60.8 60.8 60.8 100.8 80.8 60.8 60.8 | -31.7 -31.3 -29.5 -21.0 -8.0 -30.2 -32.0 | 1.02 V 1.00 V 1.08 V 1.33 V 1.33 V 1.18 V 1.01 V | ANGLE (Degree) 217 265 224 67 67 107 103 | (dBuV) 16.94 16.83 13.44 60.86 53.86 11.02 8.35 | FACTOR (dB/m) 12.17 12.67 17.87 18.98 18.98 19.59 20.49 |

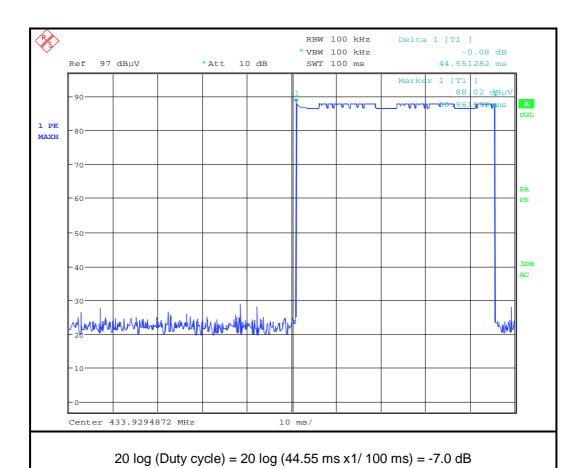
REMARKS: 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).

- 2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
- 3. The other emission levels were very low against the limit.
- 4. Margin value = Emission level Limit value.
- 5. The average value of fundamental frequency is: Average = Peak value + 20log(Duty cycle) Where the duty factor is calculated from following formula:

$$20\log(\text{Duty cycle}) = 20\log\frac{44.55\text{ms x 1}}{100\text{ ms}} = -7.0\text{dB}$$

Please see page 17 for plotted duty.





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4.3 20dB OCCUPIED BANDWIDTH MEASUREMENT

4.3.1 LIMITS OF EMISSION BANDWIDTH MEASUREMENT

The bandwidth of the emission shall be no wider than 0.25% of the center frequency for device operating above 70 MHz and below 900 MHz.

| Fundamental Frequency (MHz) | Limit of Emission Bandwidth(kHz) |
|-----------------------------|----------------------------------|
| 433.92 | 1084.80 |

4.3.2 TEST INSTRUMENTS

| Description & Manufacturer | Model No. | Serial No. | Calibrated Date | Calibrated Until |
|----------------------------|-----------|------------|--------------------|---------------------|
| SPECTRUM ANALYZER | FSP 40 | 100036 | Apr. 27, 2010 | Apr. 26, 2011 |

NOTE: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

4.3.3 TEST PROCEDURE

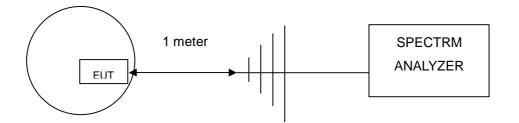
- a. The EUT was placed on the turn table.
- b. The signal was coupled to the spectrum analyzer through an antenna.
- c. Set the resolution bandwidth to 100kHz and video bandwidth to 300kHz then select Peak function to scan the channel frequency.
- d. The emission bandwidth was measured and recorded.



4.3.4 DEVIATION FROM TEST STANDARD

No deviation

4.3.5TEST SETUP

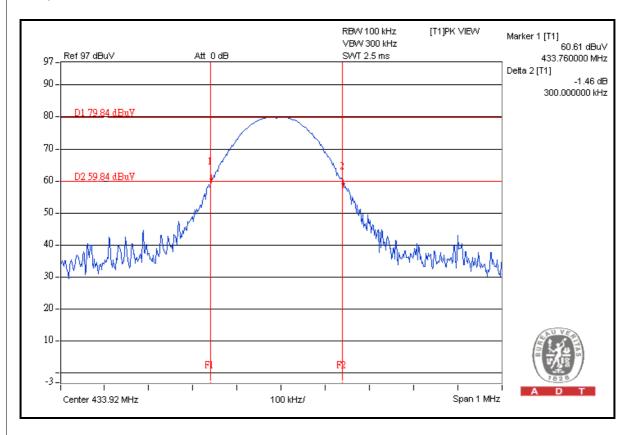




4.3.6 TEST RESULTS

| Frequency (MHz) | 20dB Bandwidth (kHz) | Maximum Limit (kHz) | PASS/FAIL |
|-----------------|-------------------------|------------------------|-----------|
| 433.92 | 300 | 1084.80 | PASS |

The plot of test result is attached as below.





4.4 DEACTIVATION TIME

4.4.1 LIMITS OF DEACTIVATION TIME MEASUREMENT

A transmitter activated automatically shall cease transmission within 5 seconds after activation.

4.4.2TEST INSTRUMENTS

| Description & Manufacturer | Model No. | Serial No. | Calibrated Date | Calibrated Until |
|----------------------------|-----------|------------|--------------------|---------------------|
| SPECTRUM ANALYZER | FSP 40 | 100036 | Apr. 27, 2010 | Apr. 26, 2011 |

NOTE: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

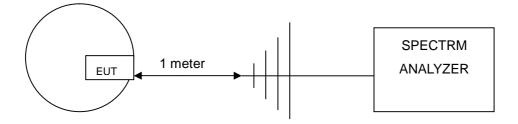
4.4.3TEST PROCEDURES

- a. The EUT was placed on the turning table.
- b. The signal was coupled to the spectrum analyzer through an antenna.
- c. Set the resolution bandwidth to 100kHz and video bandwidth to 300kHz. The spectrum analyser was turned to the centre frequency of the transmitter's and the analyser's marker function was used to determine the duration of transmission.
- d. The transmission duration was measured and recorded.

4.4.4 DEVIATION FROM TEST STANDARD

No deviation

4.4.5TEST SETUP



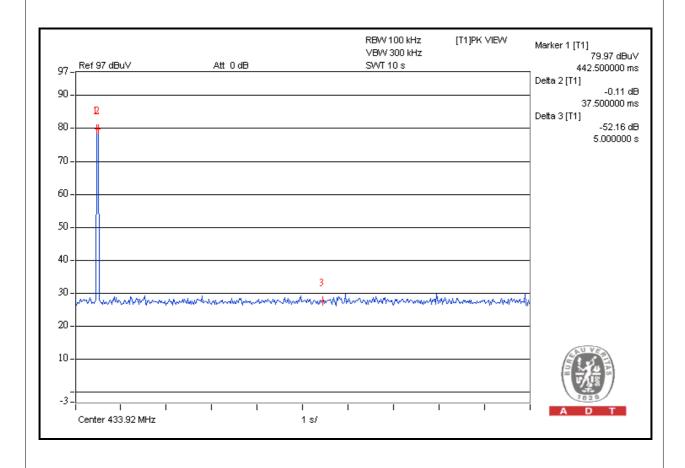
Report No.: RF990419D13A Reference No.: 990803D07



4.4.6TESE RESULTS

| Trigger | Frequency (MHz) | Maximum limit (sec) | PASS/FAIL |
|---------|-----------------|---------------------|-----------|
| 1 | 433.92 | 5 | PASS |

The plots of test results are attached as below.





5. PHOTOGRAPHS OF THE TEST CONFIGURATION

| 5. PHOTOGRAPHS OF THE TEST CONFIGURATION |
|---|
| Please refer to the attached file (Test Setup Photo). |
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6. INFORMATION ON THE TESTING LABORATORIES

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved according to ISO/IEC 17025.

Copies of accreditation certificates of our laboratories obtained from approval agencies can be downloaded from our web site: www.adt.com.tw/index.5/phtml. If you have any comments, please feel free to contact us at the following:

Linko EMC/RF Lab:Hsin Chu EMC/RF Lab:Tel: 886-2-26052180Tel: 886-3-5935343Fax: 886-2-26051924Fax: 886-3-5935342

Hwa Ya EMC/RF/Safety Telecom Lab:

Tel: 886-3-3183232 Fax: 886-3-3185050

Web Site: www.adt.com.tw

The address and road map of all our labs can be found in our web site also.

Report No.: RF990419D13A Reference No.: 990803D07



7. APPENDIX A – MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

| No any modifications are made to the EUT by the lab during the test. |
|--|
| END |
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