

**FCC PART 15 SUBPART C TEST REPORT  
for  
Remote Control  
Model No.: 315-2  
FCC ID: V2S-CMGL0-315**

of

**Applicant: C-M GLO, LLC**

**Address: 301 W Spaulding St., Watertown, WI 53098 USA**

Tested and Prepared

by

**Taiwan ETS Product Service Co., Ltd.**

**FCC Registration No.: 930600**

**Industry Canada filed test laboratory Reg. No. IC 5679A-1**

**A2LA Accredited No.: 1983.02**

**PTCRB Accredited Type Certification Test House**

**Report No.: W6M20802-8863-C-1**



# ***Taiwan ETS Product Service Co., Ltd.***

Registration number: W6M20802-8863-C-1  
FCC ID: V2S-CMGLO-315

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# Taiwan ETS Product Service Co., Ltd.

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## **1 General Information**

### **1.1 Notes**

The purpose of conformity testing is to increase the probability of adherence to the essential requirements or conformity specifications, as appropriate.

The complexity of the technical specifications, however, means that full and thorough testing is impractical for both technical and economic reasons.

Furthermore, there is no guarantee that a test sample which has passed all the relevant tests conforms to a specification.

Neither is there any guarantee that such a test sample will interwork with other genuinely open systems. The existence of the tests nevertheless provides the confidence that the test sample possesses the qualities as maintained and that its performance generally conforms to representative cases of communications equipment.

The test results of this test report relate exclusively to the item tested as specified in 1.5.

The test report may only be reproduced or published in full.

Reproduction or publication of extracts from the report requires the prior written approval of the Taiwan ETS Product Service Co., Ltd.

### **Tester:**

February 14, 2008

Jay Chaing

*Jay Chaing*

Date

ETS-Lab.

Name

Signature

February 14, 2008

Steven Chuang

*Steven Chuang*

Date

ETS

Name

Signature



# Taiwan ETS Product Service Co., Ltd.

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## **1.2 Testing laboratory**

### **1.2.1 Location**

OATS

No.5-1, Shuang Sing Village,  
LiShuei Rd., Wanli Township,  
Taipei County 207, Taiwan (R.O.C.)  
Company

Taiwan ETS Product Service Co., Ltd.  
6F, NO. 58, LANE 188, RUEY-KUANG RD.  
NEIHU, TAIPEI 114, TAIWAN R.O.C.  
Tel : 886-2-66068877  
Fax : 886-2-66068879

### **1.2.2 Details of accreditation status**

#### **Accredited testing laboratory**

**A2LA accredited number: 1983.02**

**FCC filed test laboratory Reg. No. 930600**

**Industry Canada filed test laboratory Reg. No. IC 5679A-1**

**PTCRB Accredited Type Certification Test House**

Town: ./.  
Country: ./.  
Telephone: ./.  
Fax: ./.

## **1.3 Details of approval holder**

|            |  |
|------------|--|
| Name:      | C-M GLO, LLC                             |
| Street:    | 301 W Spaulding St., Watertown, WI 53098 |
| Town:      | ./.                                      |
| Country:   | USA                                      |
| Telephone: | 920-261-1000                             |
| Fax:       | 920-261-4500                             |



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## **1.4 Application details**

Date of receipt of test item: February 05, 2008  
Date of test: from February 06, 2008 to February 13, 2008

## **1.5 Test item**

Description of test item: Remote Control  
Type identification: 315-2  
Brand name: ./.  
Multi-listing model number: 315-3 / 315-4  
Transmitting frequency: 315 MHz  
Operation mode: simplex  
Voltage supply: Battery (DC 12V)

(The device is tested under fresh battery condition.)

Highest clock frequency: 315 MHz  
Antenna type: Loop antenna  
Photos: see Appendix

## **Manufacturer (if applicable)**

Name: ./.  
Street: ./.  
Town: ./.  
Country: ./.

Additional information: ./.

## **1.6 Test standards**

Technical standard : FCC RULES PART 15 SUBPART C § 15.231 (a) (2007-10)



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## **2      Technical test**

### **2.1    Summary of test results**

No deviations from the technical specification(s) were ascertained in the course of the tests performed.

**or**

The deviations as specified in 3 were ascertained in the course of the tests performed.

### **2.2    Test environment**

Temperature:                            23 °C

Relative humidity content:            20 ... 75 %

Air pressure:                            86 ... 103 kPa

Details of power supply:              Battery (DC 12V)

### **2.3    Test Mode**

This EUT is the portable device. So the EUT was tested on three different axes. Please see assessment test results as section 3 of this test report.



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## 2.4 Test equipment utilized

| No.          | Test equipment  | Type            | Serial No.     | Manufacturer | Cal. Date     | Next Cal. Date |
|--------------|---|-----------------|----------------|--------------|---------------|----------------|
| ETSTW-CE 001 | EMI TEST RECEIVER   | ESHS10          | 842121/013     | R&S          | 2007/10/15    | 2008/10/14     |
| ETSTW-CE 002 | PREREULATOR MODE DC POWER SUPPLY                                    | None            | None           |              | Function Test |                |
| ETSTW-CE 003 | AC POWER SOURCE   | APS-9102        | D161137        | GW           | Function Test |                |
| ETSTW-CE 004 | ZWEILEITER-V- NETZNACHBILDUNG TWO-LINE V-NETWORK                    | ESH3-Z5         | 840731/011     | R&S          | 2007/10/15    | 2008/10/14     |
| ETSTW-CE 005 | Line-Impedance Stabilisation Network                                | NNBM 8126D      | 137            | Schwarzbeck  | 2007/10/15    | 2008/10/14     |
| ETSTW-CE 006 | IMPULSBEGRENZER PULSE LIMITER                                       | ESH3-Z2         | 100226         | R&S          | 2007/5/11     | 2008/5/10      |
| ETSTW-CE 008 | ABSORBING CLAMP   | MDS 21          | 3469           | Schwarzbeck  | 2007/10/23    | 2009/10/22     |
| ETSTW-CE 009 | TEMP.&HUMIDITY CHAMBER  | GTH-225-40-1P-U | MAA0305-009    | GIANT FORCE  | 2007/8/2      | 2008/8/1       |
| ETSTW-CE 013 | CISPR 22 TWO BALANCED TELECOM PAIRS IMPEDANCE STABILIZATION NETWORK | FCC-TLISN-T4-02 | 20242          | FCC          | 2007/11/2     | 2009/11/1      |
| ETSTW-CE 014 | CISPR 22 TWO BALANCED TELECOM PAIRS IMPEDANCE STABILIZATION NETWORK | FCC-TLISN-T2-02 | 20241          | FCC          | 2005/12/7     | 2008/12/6      |
| ETSTW-CE 015 | CISPR 22 TWO BALANCED TELECOM PAIRS IMPEDANCE STABILIZATION NETWORK | FCC-TLISN-T8-02 | 20307          | FCC          | 2006/11/7     | 2008/11/6      |
| ETSTW-CE 016 | TWO-LINE V-NETWORK  | ENV216          | 100050         | R&S          | 2007/10/29    | 2008/10/28     |
| ETSTW-RE 002 | Function Generator  | 33220A          | MY43004982     | Agilent      | 2007/10/12    | 2009/10/11     |
| ETSTW-RE 003 | EMI TEST RECEIVER   | ESI 26          | 831438/001     | R&S          | 2007/12/3     | 2008/12/2      |
| ETSTW-RE 004 | EMI TEST RECEIVER   | ESI 40          | 832427/004     | R&S          | 2007/10/29    | 2008/10/28     |
| ETSTW-RE 005 | EMI TEST RECEIVER   | ESVS10          | 843207/020     | R&S          | 2007/10/11    | 2008/10/12     |
| ETSTW-RE 010 | PROGRAMMABLE LINEAR POWER SUPPLY                                    | LPS-305         | 30503070181    | MOTECH       | Function Test |                |
| ETSTW-RE 011 | PROGRAMMABLE LINEAR POWER SUPPLY                                    | LPS-305         | 30503070165    | MOTECH       | Function Test |                |
| ETSTW-RE 017 | Log-Periodic Antenna  | HL025           | 352886/001     | R&S          | 2006/5/4      | 2008/5/3       |
| ETSTW-RE 018 | MICROWAVE HORN ANTENNA  | AT4560          | 27212          | AR           | 2007/11/7     | 2010/11/6      |
| ETSTW-RE 020 | MICROWAVE HORN ANTENNA  | AT4002A         | 306915         | AR           | Function Test |                |
| ETSTW-RE 021 | SWEEP GENERATOR   | SWM05           | 835130/010     | R&S          | 2007/10/9     | 2008/10/8      |
| ETSTW-RE 027 | Passive Loop Antenna  | 6512            | 00034563       | EMCO         | 2007/6/29     | 2008/6/28      |
| ETSTW-RE 028 | Log-Periodic DipoleArray Antenna                                    | 3148            | 34429          | EMCO         | 2006/5/26     | 2008/5/25      |
| ETSTW-RE 029 | Biconical Antenna   | 3109            | 33524          | EMCO         | 2006/5/26     | 2008/5/25      |
| ETSTW-RE 030 | Double-Ridged Guide Horn Antenna                                    | 3117            | 00035224       | EMCO         | 2006/5/3      | 2008/5/2       |
| ETSTW-RE 032 | Millivoltmeter  | URV 55          | 849086/013     | R&S          | 2007/10/9     | 2008/10/8      |
| ETSTW-RE 033 | WaveRunner 6000A Serise   | WAVERUNNER      | LCRY0604P14508 | LeCroy       | 2007/7/9      | 2008/7/8       |



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|              | Oscilloscope                        | 6100A       |               |             |               |            |
|--------------|-------------------------------------|-------------|---------------|-------------|---------------|------------|
| ETSTW-RE 034 | Power Sensor                        | URV5-Z4     | 839313/006    | R&S         | 2007/10/16    | 2009/10/15 |
| ETSTW-RE 042 | Biconical Antenna                   | HK116       | 100172        | R&S         | 2007/1/11     | 2009/1/10  |
| ETSTW-RE 043 | Log-Periodic Dipole Antenna         | HL223       | 100166        | R&S         | 2006/5/8      | 2008/5/7   |
| ETSTW-RE 044 | Log-Periodic Antenna                | HL050       | 100094        | R&S         | 2006/5/29     | 2008/5/28  |
| ETSTW-RE 047 | ESA-E SERIES SPECTRUM ANALYZER      | E4445A      | MY46181369    | Agilent     | 2007/7/19     | 2008/7/18  |
| ETSTW-RE 048 | Triple Loop Antenna                 | HXYZ 9170   | HXYZ 9170-134 | Schwarzbeck | 2005/3/22     | 2008/3/21  |
| ETSTW-RE 049 | TRILOG Super Broadband test Antenna | VULB 9160   | 9160-3185     | Schwarzbeck | 2007/5/2      | 2009/5/1   |
| ETSTW-RE 055 | SPECTRUM ANALYZER                   | FSU-26      | 200074        | R&S         | 2007/7/16     | 2008/7/15  |
| ETSTW-RE 064 | Bluetooth Test Set                  | MT8852B-042 | 6K00005709    | Anritsu     | Function Test |            |
| ETSTW-RE 072 | CELL SITE TEST SET                  | 8921A       | 3339A00375    | HP          | 2007/7/2      | 2009/7/1   |



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## 2.5 General Test Procedure

**POWER LINE CONDUCTED INTERFERENCE:** The procedure used was ANSI STANDARD C63.4-2003 5.2 using a 50 $\mu$ H LISN (if necessary). Both lines were observed. The bandwidth of the spectrum analyzer was 10 kHz with an appropriate sweep speed.

**RADIATION INTERFERENCE:** The test procedure used was ANSI STANDARD C63.4-2003 6.4 using a spectrum analyzer. The bandwidth of the spectrum analyzer was 100 kHz with an appropriate sweep speed. The analyzer was calibrated in dB above a microvolt at the output of the antenna. The resolution bandwidth was the 100 kHz and the video bandwidth was 300 kHz.

**FORMULA OF CONVERSION FACTORS:** The Field Strength at 3m was established by adding the meter reading of the spectrum analyzer (which is set to read in units of dB $\mu$ V) to the antenna correction factor supplied by the antenna manufacturer. The antenna correction factors are stated in terms of dB.

Example:

|            |  |
|------------|--|
| Freq (MHz) | METER READING + ACF + CABLE LOSS (to the receiver) = FS    |
| 33         | 20 dB $\mu$ V + 10.36 dB/m + 6 dB = 36.36 dB $\mu$ V/m @3m |

**ANSI STANDARD C63.4-2003 6.2.1 MEASUREMENT PROCEDURES:** The UUT was placed on a table 80 cm high and with dimensions of 1m by 1.5m (non metallic table). The UUT was placed in the center of the table. The table used for radiated measurements is capable of continuous rotation. The spectrum was scanned from 30 MHz to 10<sup>th</sup> harmonic of the fundamental.

Peak readings were taken in three (3) orthogonal planes and the highest readings.

Measurements were made by Taiwan ETS Product Service Co., Ltd. at the registered open field test site located at. The Registration Number: **930600**

When an emission was found, the table was rotated to produce the maximum signal strength. At this point, the antenna was raised and lowered from 1m to 4m. The antenna was placed in both the horizontal and vertical planes.



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## **3 Test results (enclosure)**

1st test       test after modification       production test

| TEST CASE                                    | Para. Number  | Required                            | Test passed                         | Test failed              |
|--|---------------|-------------------------------------|-------------------------------------|--------------------------|
| Transmission Requirements                    | FCC 15.231(a) | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| Radiated Emission                            | FCC 15.231(b) | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| Bandwidth of Emission                        | FCC 15.231(c) | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| Frequency Tolerance                          | FCC 15.231(d) | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> |
| Period Alternate Field Strength Requirements | FCC 15.231(e) | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> |
| Antenna Requirement                          | FCC 15.203    | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| Conducted Measurement at (AC) Power Line     | FCC 15.207    | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> |

**The follows is intended to leave blank.**



# **Taiwan ETS Product Service Co., Ltd.**

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## **3.1 Transmission Requirements**

FCC 15.231(a)

### **3.1.1 Limit of Transmission Time**

- According to 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.
- According to 15.231(a)(2), a transmitter activated automatically shall cease transmission within 5 seconds after activation.

### **3.1.2 Active Time**

- This manually operated transmitter employs a switch that automatically deactivate the transmitter within 586.538462 ms of being released.
- This transmitter is operated by automatic activation and active will cease transmission in \_\_\_\_\_ s after activation.

Explanation: See attached appendix.

Test equipment used: ETSTW-RE 003, ETSTW-RE 004, ETSTW-RE 028, ETSTW-RE 029  
ETSTW-RE 042, ETSTW-RE 043



# Taiwan ETS Product Service Co., Ltd.

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## 3.2 Output Power (Field Strength)

| Model:             | 315-2                     | Date:                        | 2008/2/12                           |       |                                    |                 |                           |                      |     |
|--------------------|---------------------------|------------------------------|-------------------------------------|-------|------------------------------------|-----------------|---------------------------|----------------------|-----|
| Mode:              |                           | Temperature:                 | 26 °C                               |       |                                    |                 |                           |                      |     |
| Polarization:      | Horizontal                | Humidity:                    | 60 %                                |       |                                    | Engineer: Derek |                           |                      |     |
| Frequency<br>(MHz) | Reading<br>(dBuV)<br>Peak | Factor<br>(dB)<br>Corr. Duty | Result @3m<br>(dBuV/m)<br>Peak Ave. |       | Limit @3m<br>(dBuV/m)<br>Peak Ave. | Margin<br>(dB)  | Table<br>Degree<br>(Deg.) | Ant.<br>High<br>(cm) |     |
| 314.930            | 53.17                     | 15.71 -10.40                 | 68.88                               | 58.48 | 95.62                              | 75.62           | -17.14                    | 30                   | 150 |

Polarization: Vertical

| Frequency<br>(MHz) | Reading<br>(dBuV)<br>Peak | Factor<br>(dB)<br>Corr. Duty | Result @3m<br>(dBuV/m)<br>Peak Ave. |       | Limit @3m<br>(dBuV/m)<br>Peak Ave. | Margin<br>(dB) | Table<br>Degree<br>(Deg.) | Ant.<br>High<br>(cm) |     |
|--------------------|---------------------------|------------------------------|-------------------------------------|-------|------------------------------------|----------------|---------------------------|----------------------|-----|
| 314.918            | 63.33                     | 15.71 -10.40                 | 79.04                               | 68.64 | 95.62                              | 75.62          | -6.98                     | 30                   | 150 |

Limit 15.231(b)

| Fundamental Frequency<br>(MHz) | Field strength of fundamental, limit<br>µV/m                  |
|--------------------------------|---|
| 40.66 – 40.70                  | 2,250   |
| 70 – 130                       | 1,250   |
| 130 – 174                      | 1,250 to 3,750  |
| 174 – 260                      | 3,750   |
| 260 – 470                      | 3,750 to 12,500**<br>(315 MHz: 95.62 dBµV/m = 6041.6772 µV/m) |
| Above 470                      | 12,500  |

\*\* linear interpolation

Explanation: See attached appendix.

Test equipment used: ETSTW-RE 003, ETSTW-RE 004, ETSTW-RE 028, ETSTW-RE 029  
ETSTW-RE 042, ETSTW-RE 043



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### **3.3 Out of Band Radiated Emissions**

FCC Rule: 15.231(b) , 15.35

For out of band emissions that are close to or that exceed the 20 dB attenuation requirement described in the specification, radiated measurements were performed at a 3 m separation distance to determine whether these emissions complied with the general radiated emission requirement.

Guidance on Measurement of pulsed emission: 15.35(c)

“the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum value.”

Duty Cycle correction =  $20 \log (\text{dwell time}/100\text{ms or one period})$

Limits:

For frequencies (Average measurements)

Correction factor conform 15.35 (c) (Average measurements)

Duty cycle correction :

Max. Peak reading – duty cycle correction

Max permitted average Limits = Max permitted Fundamental limit – 20 dB

For example for 315 fundamental carrier:

Max permitted average Limit:  $95.62 \text{ dB}\mu\text{V/m} - 20 \text{ dB} = 75.62 \text{ dB}\mu\text{V/m}$

For frequencies above 1GHz (Peak measurements).

Modified Limits for peak conform 15.35 (b) = Max Permitted average Limits + 20dB (because Peak detector is used)



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## 3.4 Transmitter Radiated Emissions in restricted Bands

FCC Rules: 15.231 (b), 15.205, 15.209, 15.35

Radiated emission measurements were performed from 30 MHz to 8000 MHz.

For radiated emission tests, the analyzer setting was as followings:

RES BW VID BW

Frequency <1 GHz 100 kHz 100 kHz (Peak measurements)

Frequency >1 GHz 1 MHz 1 MHz (Peak measurements)

1 MHz 1 MHz (Average measurements)

Limits:

For frequencies below 1GHz :

| Frequency of Emission (MHz) | Field strength (microvolts/meter) | Field Strength (dB microvolts/meter) |
|-----------------------------|-----------------------------------|--------------------------------------|
| 30 – 88                     | 100                               | 40.0                                 |
| 88 – 216                    | 150                               | 43.5                                 |
| 216 – 960                   | 200                               | 46.0                                 |
| Above 960                   | 500                               | 54.0                                 |

For frequencies above 1GHz (Average measurements).

Guidance on Measurement of pulsed emission:

"If the emission is pulsed, modify the unit for continues operation , use the settings shown above, then correct the reading by subtracting the peak-average correction factor, derived from the appropriate duty cycle calculation.

For frequencies above 1GHz (Average measurements).

The correction factor, based on the channel dwell time in a 100 ms period, may be mathematically applied to a measurement made with an average detector, to further reduce the value.

Duty cycle correction =  $20 \log (\text{dwell time}/100\text{ms})$

No duty cycle correction was added to the reading

Modified Limits for peak conform 15.35 (b) = Max Permitted average Limits + 20dB (because Peak detector is used)

Above 960 MHz

For mode DSSS CW:  $54 \text{ dB}\mu\text{V/m} + 20 \text{ dB} = 74 \text{ dB}\mu\text{V/m}$



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## 3.5 Spurious Emission radiated, Transmitter

Spurious emission was measured with modulation (declared by manufacturer).

The limits on the field strength of the spurious emission in the table § 15.231(b) are based on the fundamental frequency of the intentional radiator. Spurious emission shall be attenuated to the average (or alternatively, CISPR quasi-peak) limits shown in this table or to the general limits shown in § 15.209, whichever limit permits a higher field strength.

In addition, radiated emission which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a) (see § 15.205(c)).

**SAMPLE CALCULATION OF LIMIT.** All results will be updated by an automatic measuring system in accordance to point 2.3.

Calculation of test results:

Such factors like antenna correction, cable loss, external attenuation etc. are already included in the provided measurement results. This is done by using validated test software and calibrated test system according the accreditation requirements.

The peak and average spurious emission plots was measured with the average limits.

In the Table being listed the critical peak and average value an exhibit the compliance with the above calculated Limits.

Summary table with radiated data of the test plots

| Model:          | 315-2                  | Date:                     | 2008/2/13                        |                                 |             |                     |                |  |
|-----------------|------------------------|---------------------------|----------------------------------|---------------------------------|-------------|---------------------|----------------|--|
| Mode:           |                        | Temperature:              | 26 °C                            |                                 |             |                     |                |  |
| Polarization:   | Horizontal             | Humidity:                 | 60 %                             |                                 |             |                     |                |  |
| Frequency (MHz) | Reading (dBuV)<br>Peak | Factor (dB)<br>Corr. Duty | Result @3m (dBuV/m)<br>Peak Ave. | Limit @3m (dBuV/m)<br>Peak Ave. | Margin (dB) | Table Degree (Deg.) | Ant. High (cm) |  |
| 283.227         | 12.27                  | 14.90 -10.40              | 27.17 16.77                      | 46.00 46.00                     | -18.83      | 205                 | 150            |  |
| 629.659         | 25.13                  | 22.38 -10.40              | 47.51 37.11                      | 75.62 55.62                     | -18.51      | 30                  | 150            |  |
| 945.291         | 9.72                   | 27.17 -10.40              | 36.89 26.49                      | 75.62 55.62                     | -29.13      | 30                  | 150            |  |
| 1258.517        | 55.67                  | -12.59 -10.40             | 43.08 32.68                      | 75.62 55.62                     | -22.94      | 30                  | 150            |  |
| 1575.150        | 56.01                  | -9.90 -10.40              | 46.11 35.71                      | 74.00 54.00                     | -18.29      | 30                  | 150            |  |
| 2833.667        | 42.50                  | -3.47 -10.40              | 39.03 28.63                      | 74.00 54.00                     | -25.37      | 30                  | 150            |  |

Polarization: Vertical

| Frequency (MHz) | Reading (dBuV)<br>Peak | Factor (dB)<br>Corr. Duty | Result @3m (dBuV/m)<br>Peak Ave. | Limit @3m (dBuV/m)<br>Peak Ave. | Margin (dB) | Table Degree (Deg.) | Ant. High (cm) |
|-----------------|------------------------|---------------------------|----------------------------------|---------------------------------|-------------|---------------------|----------------|
| 278.357         | 11.97                  | 14.78 -10.40              | 26.75 16.35                      | 46.00 46.00                     | -19.25      | 300                 | 150            |
| 629.659         | 33.94                  | 22.38 -10.40              | 56.32 45.92                      | 75.62 55.62                     | -9.70       | 30                  | 150            |
| 945.291         | 19.66                  | 27.17 -10.40              | 46.83 36.43                      | 75.62 55.62                     | -19.19      | 30                  | 150            |
| 1258.517        | 59.00                  | -12.59 -10.40             | 46.41 36.01                      | 75.62 55.62                     | -19.61      | 35                  | 150            |
| 1575.15         | 62.16                  | -9.90 -10.40              | 52.26 41.858                     | 74.00 54.00                     | -12.14      | 35                  | 150            |
| 2517.034        | 43.82                  | -4.98 -10.40              | 38.84 28.438                     | 75.62 55.62                     | -27.18      | 30                  | 150            |
| 2833.667        | 45.48                  | -3.47 -10.40              | 42.01 31.608                     | 74.00 54.00                     | -22.39      | 35                  | 150            |



# Taiwan ETS Product Service Co., Ltd.

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**Note**

1. Correction Factor = Antenna factor + Cable loss - Preamplifier
2. The formula of measured value as: Test Result = Reading + Correction Factor
3. Detector function in the form : PK = Peak, QP = Quasi Peak, AV = Average
4. All not in the table noted test results are more than 20 dB below the relevant limits.
5. See the attached diagram as appendix.

All other not noted test plots do not contain significant test results in relation to the limits  
Test results: The unit meets the FCC requirements.

Test equipment used: ETSTW-RE 003, ETSTW-RE 004, ETSTW-RE 017, ETSTW-RE 028,  
ETSTW-RE 029, ETSTW-RE 030, ETSTW-RE 042, ETSTW-RE 043,  
ETSTW-RE 044



## **Taiwan ETS Product Service Co., Ltd.**

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### **3.6 Channel Bandwidth**

Measurement of Necessary Bandwidth (BN)

| Used frequency | Bandwidth        | Limit      |
|----------------|------------------|------------|
| 315 MHz        | 63.461538462 kHz | 0.7875 MHz |

Explanation: The bandwidth fulfills the requirements of FCC § 15.231,  
See attached appendix.

Limits:

The bandwidth of the emission shall be no wider than 0.25% of the center frequency for devices operating above 70 MHz and below 900 MHz. For devices operating above 900 MHz, the emission shall be no wider than 0.5% of the center frequency. Bandwidth is determined at the points 20 dB down from the modulated carrier.

Test equipment used: ETSTW-RE 003, ETSTW-RE 004, ETSTW-RE 028, ETSTW-RE 029  
ETSTW-RE 042, ETSTW-RE 043



# **Taiwan ETS Product Service Co., Ltd.**

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## **3.7 Antenna 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 shall be considered sufficient to comply with the provisions of this Section. 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. This requirement does not apply to carrier current devices or to devices operated under the provisions of Sections 15.211, 15.213, 15.217, 15.219, or 15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with Section 15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this Part are not exceeded.

Explanation: This Loop antenna is integral antenna which passes antenna requirement.

|                                      |  |                                |
|--------------------------------------|--|--------------------------------|
| The equipment meets the requirements | yes<br><input checked="" type="checkbox"/> | no<br><input type="checkbox"/> |
|--------------------------------------|--|--------------------------------|



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## 3.8 Duty Cycle

The correction factor, based on the channel dwell time in a 100ms period, may be mathematically applied to a measurement made with an average detector, to further reduce the measured value.

Average Reading = Peak Reading (dBuV/m) + Duty Cycle Correction

Duty Cycle Correction =  $20 \log(\text{Cycle})$

In order to determine the Duty Cycle, the EUT is measured as:

| Testing Mode      | T period (ms) | T on (ms) | Duty Cycle  | Duty Cycle Correction<br>$20 * \log(\text{Duty Cycle})$ |
|-------------------|---------------|-----------|-------------|---|
| Transmitting mode | 31.603        | 9.542     | 0.301933361 | -10.402   |

Explanation: See attached appendix.

Test equipment used: ETSTW-RE 003, ETSTW-RE 004, ETSTW-RE 028, ETSTW-RE 029

ETSTW-RE 042, ETSTW-RE 043



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## **3.9 Conducted Measurement at (AC) Power Line**

For an intentional radiator which is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the table bellows with this provision shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminals.

This measurement was transact first with instrumentation using an average and peak detector and a 10 kHz bandwidth. If the peak detector achieves a calculated level, the measurement is repeated by an instrumentation using a quasi-peak detector.

| Frequency | Level                     |                        |
|-----------|---------------------------|------------------------|
|           | quasi-peak (dB $\mu$ V/m) | average (dB $\mu$ V/m) |
| -- kHz    | --                        | --                     |

### **Limits:**

| Frequency of Emission (MHz) | Conducted Limit (dB $\mu$ V) |          |
|-----------------------------|------------------------------|----------|
|                             | Quasi Peak                   | Average  |
| 0.15-0.5                    | 66 to 56                     | 56 to 46 |
|                             | 56                           | 46       |
|                             | 60                           | 50       |

Explanation: This test is not required because the sample uses battery.

Test equipment used: ETSTW-CE 001, ETSTW-CE 003, ETSTW-CE 004, ETSTW-CE 006



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## **Appendix**

### **A      Measurement diagrams**

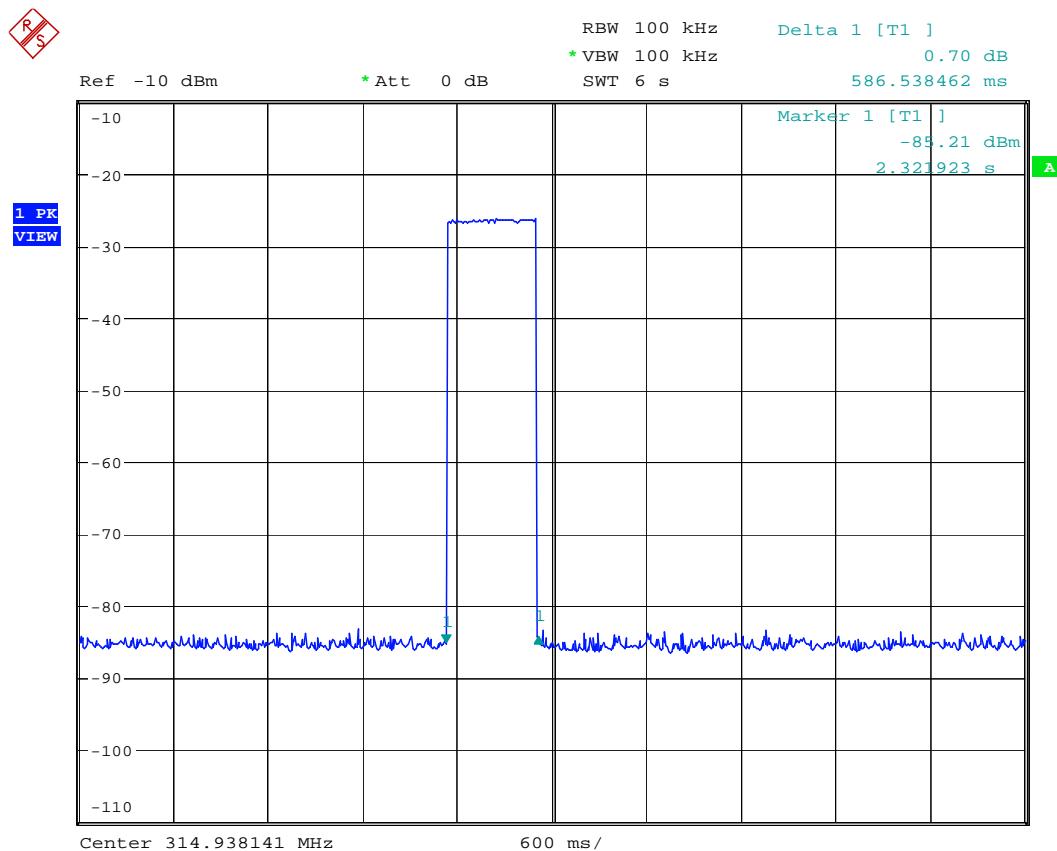
1. Active Time
2. Output Power
3. Spurious Emissions radiated
4. Bandwidth
5. Duty Cycle

### **B      Photos**

1. External Photos
2. Internal Photos
3. Set Up Photos

Registration number: W6M20802-8863-C-1  
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## Active Time



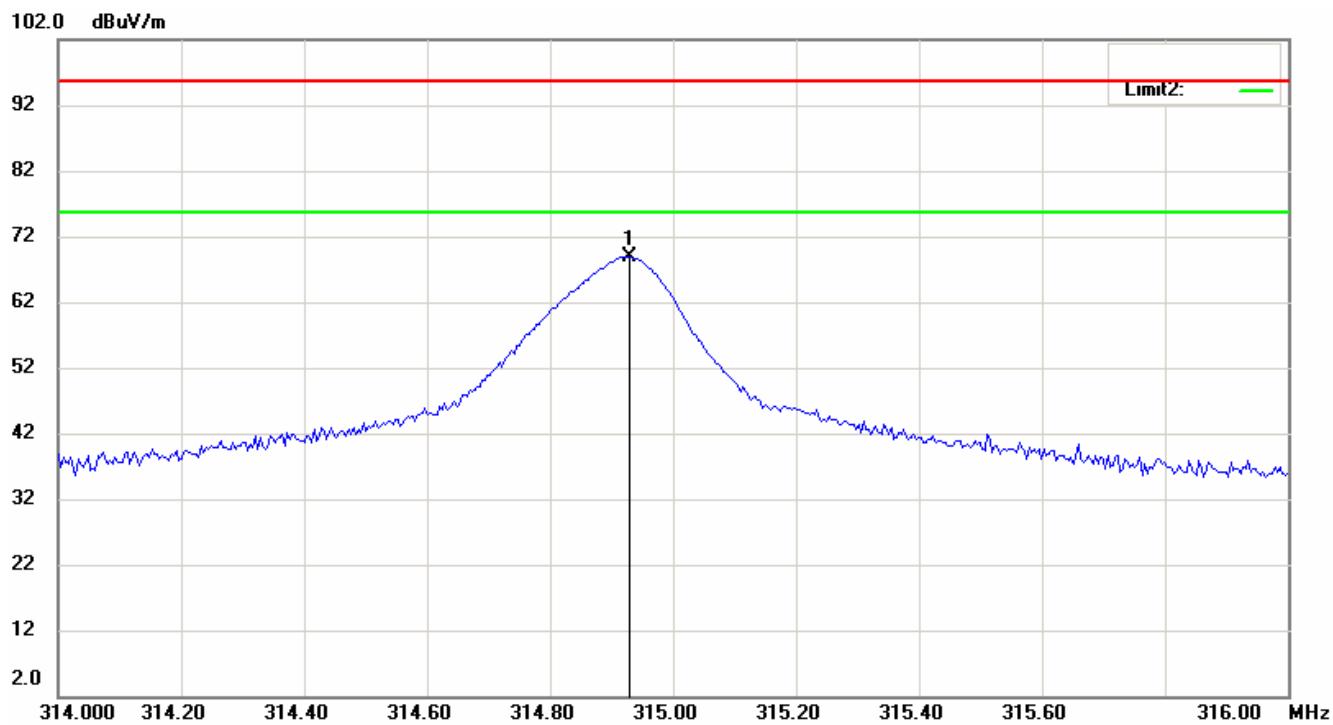
### DURATION TIME

Date: 12.FEB.2008 07:44:52

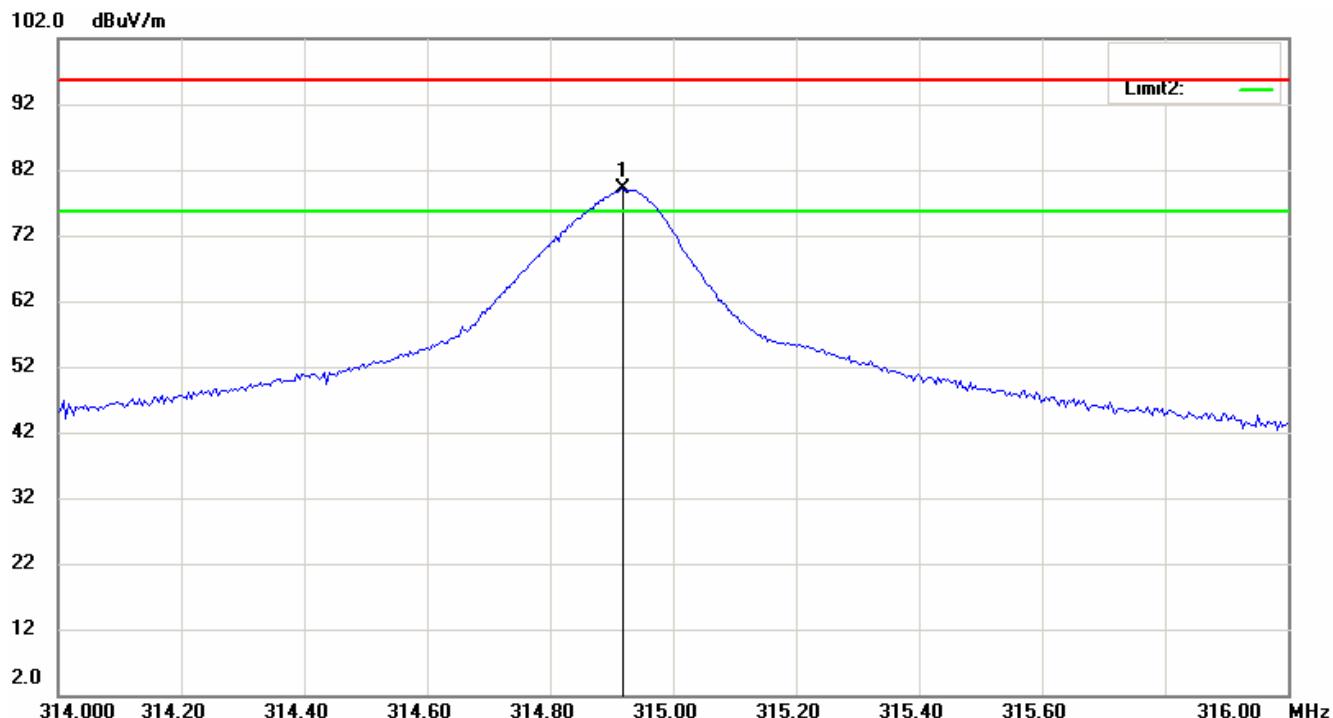


Registration number: W6M20802-8863-C-1  
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## Output Power Antenna Polarization H



## Antenna Polarization V



Up Line: Peak Limit Line

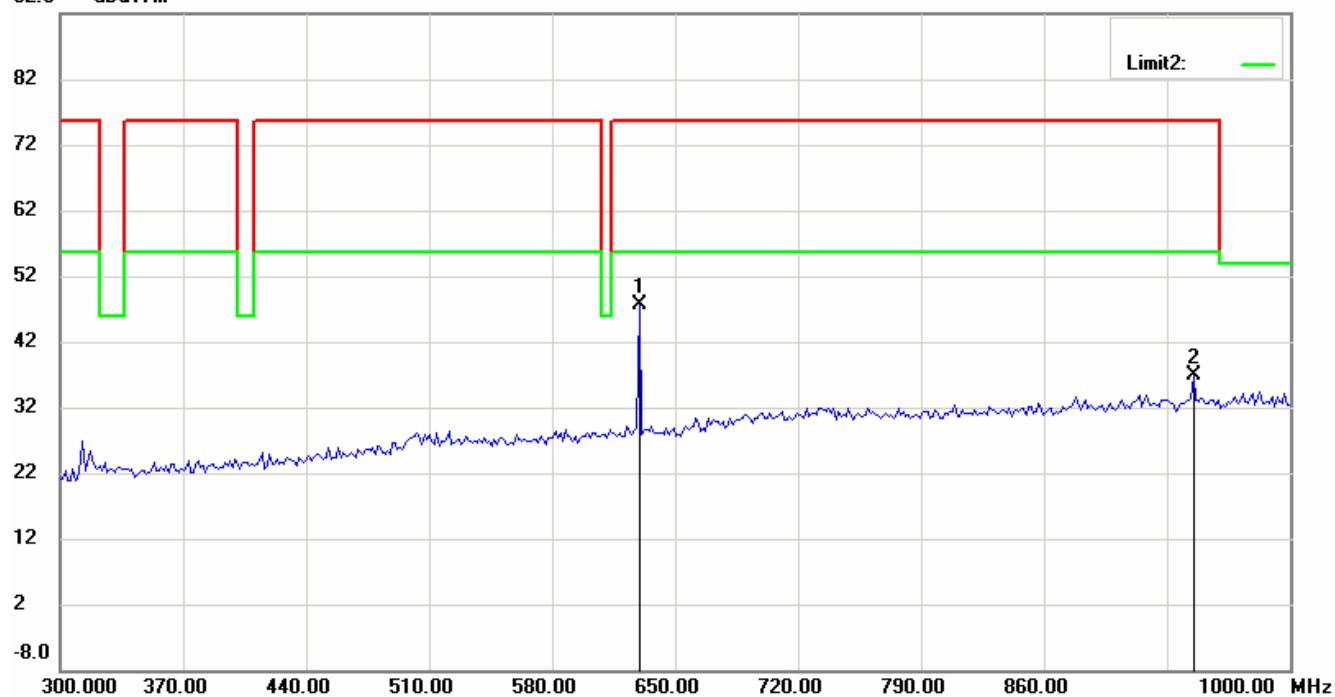
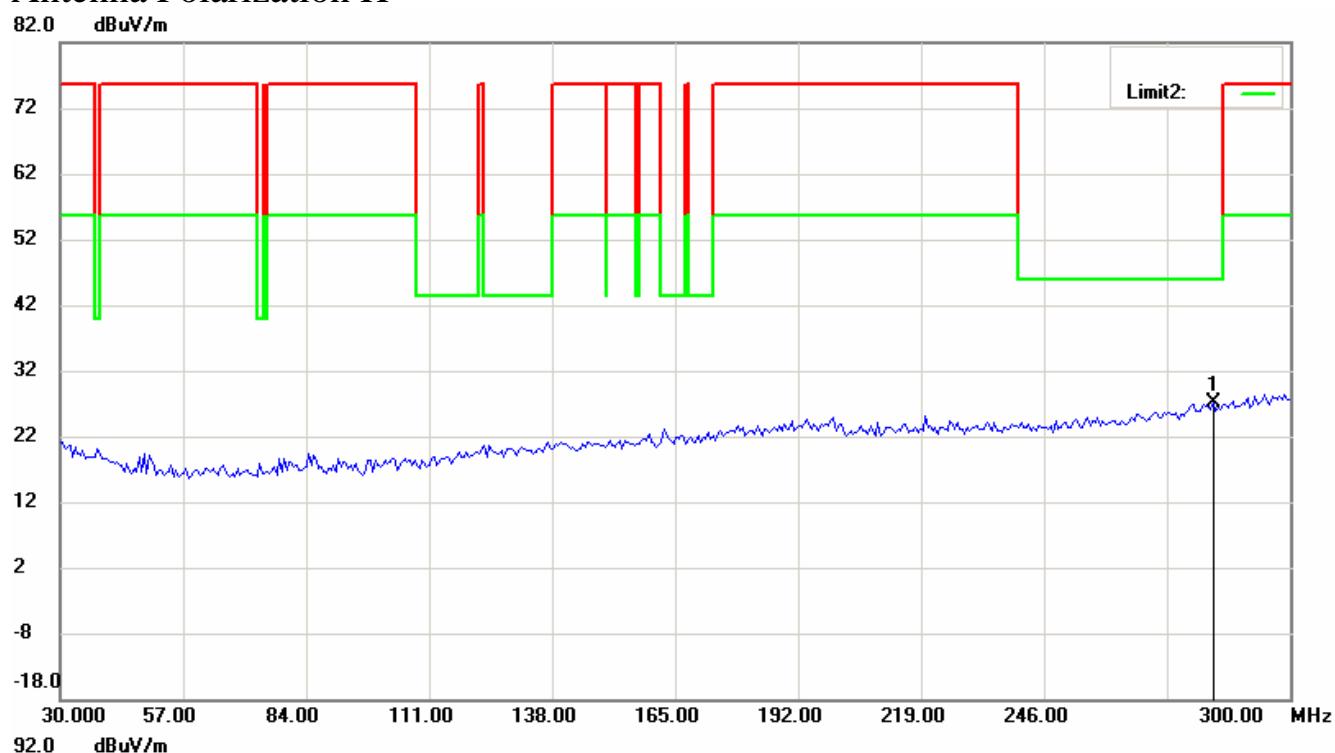
Down Line: Ave Limit Line

Note:

1. The plots are pre-scanned data for determining the tested points and for reference only.
2. The exact test result is shown in the data table of Output Power of this test report.

Registration number: W6M20802-8863-C-1  
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## Spurious Emissions radiated Antenna Polarization H



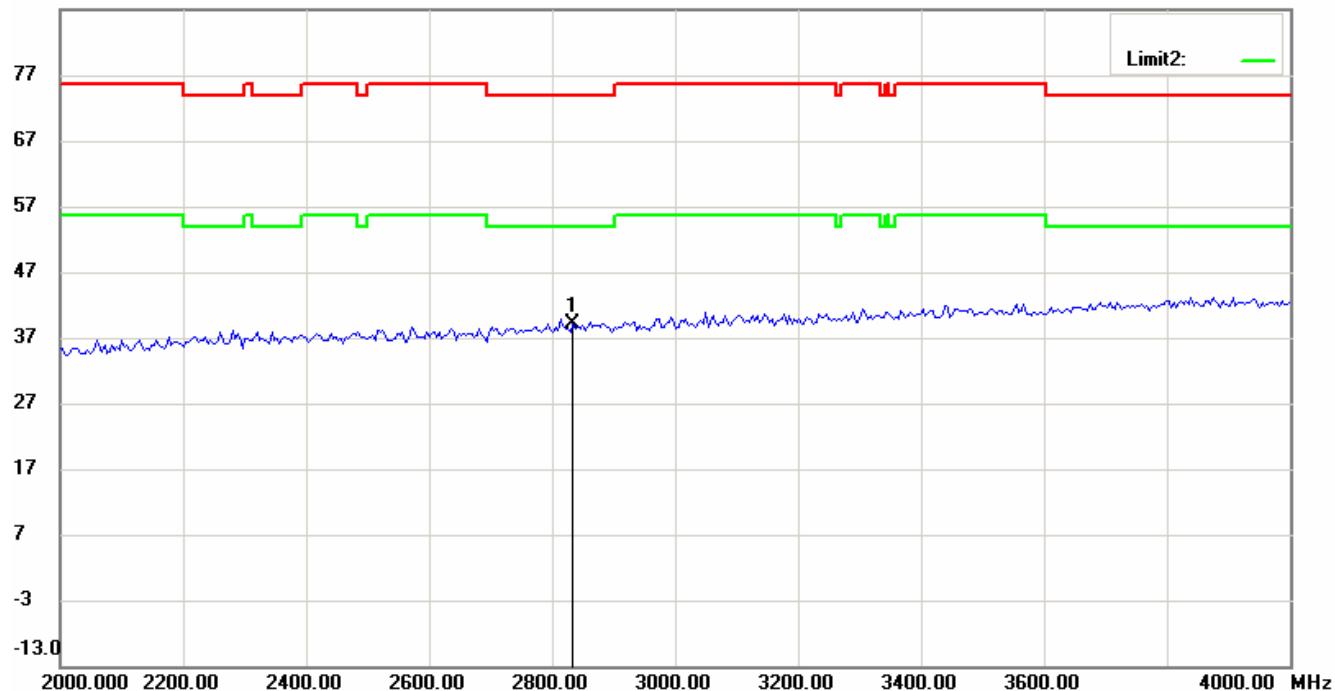
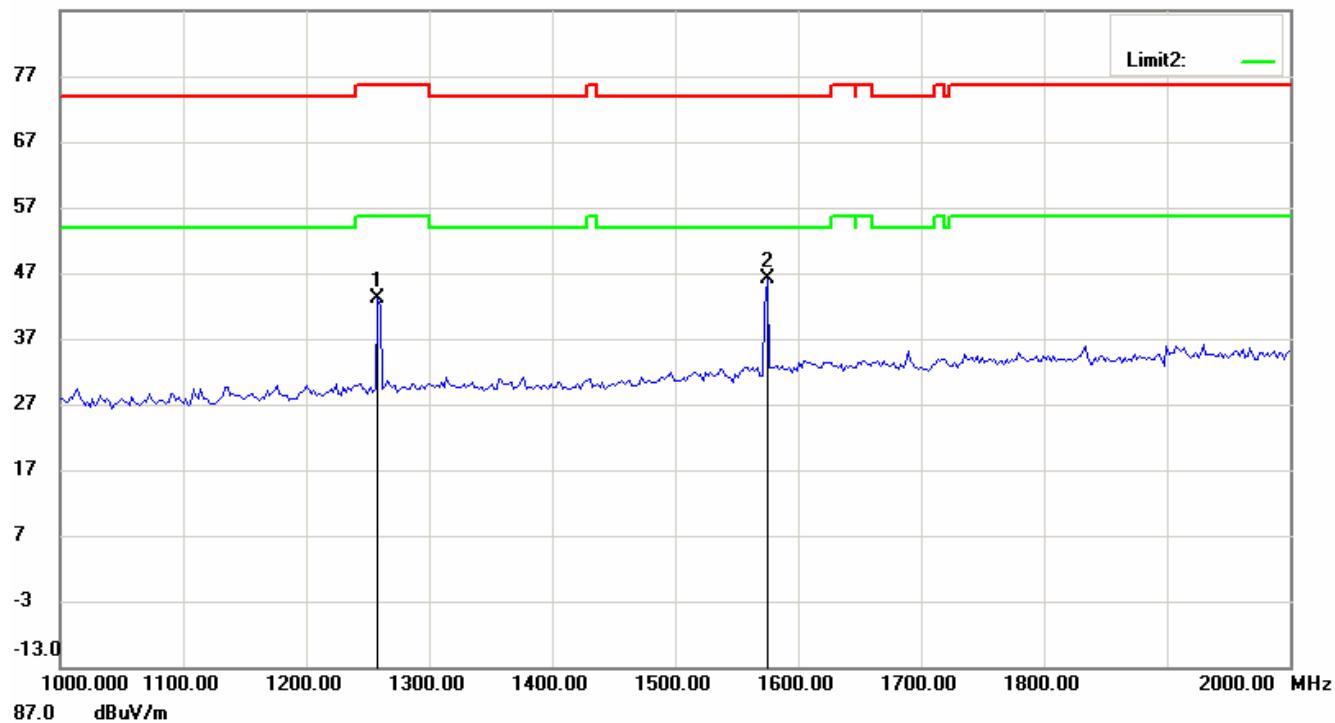


# Taiwan ETS Product Service Co., Ltd.

Registration number: W6M20802-8863-C-1

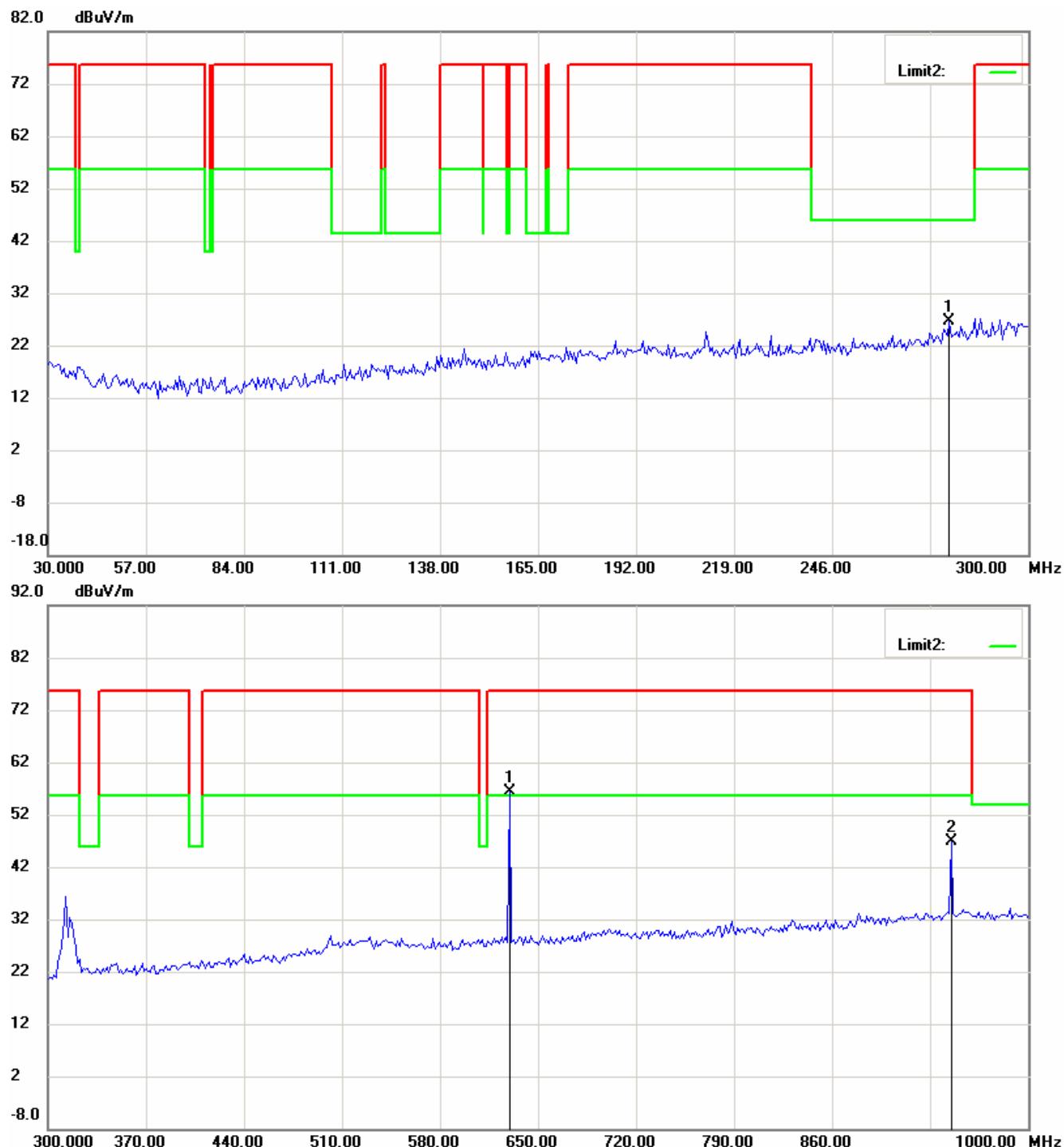
FCC ID: V2S-CMGLO-315

87.0 dBuV/m



Registration number: W6M20802-8863-C-1  
FCC ID: V2S-CMGLO-315

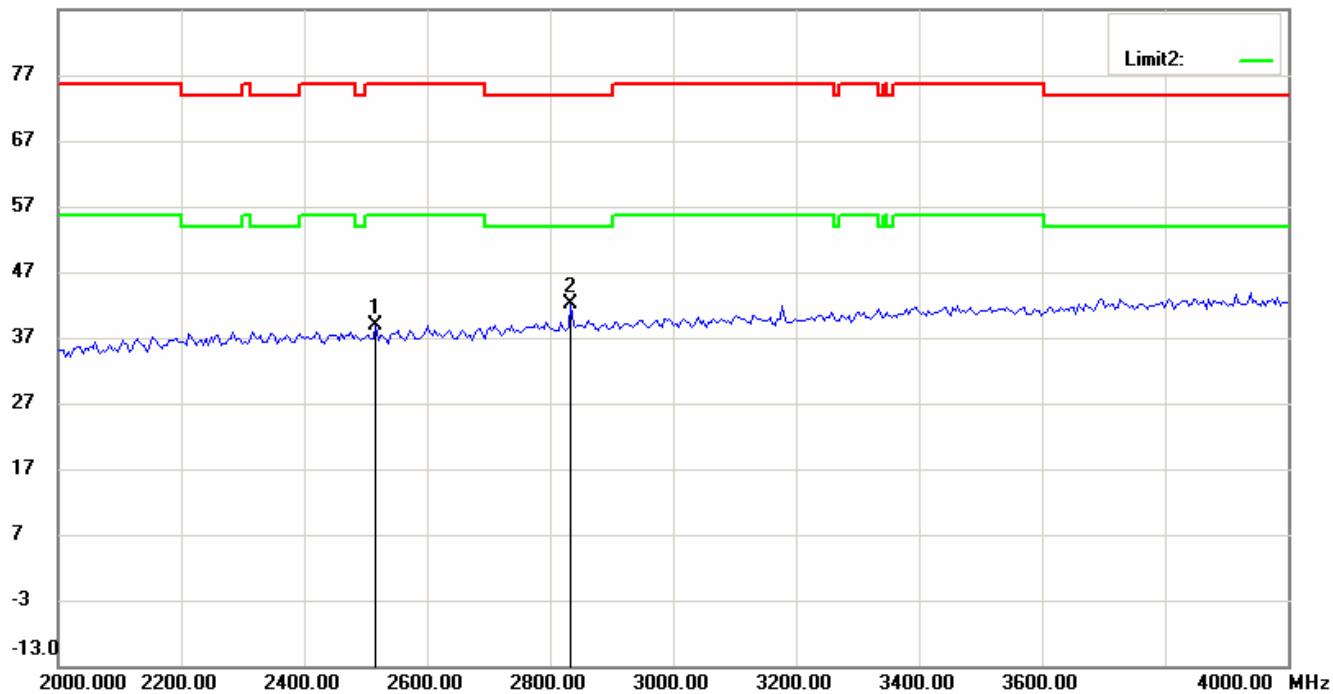
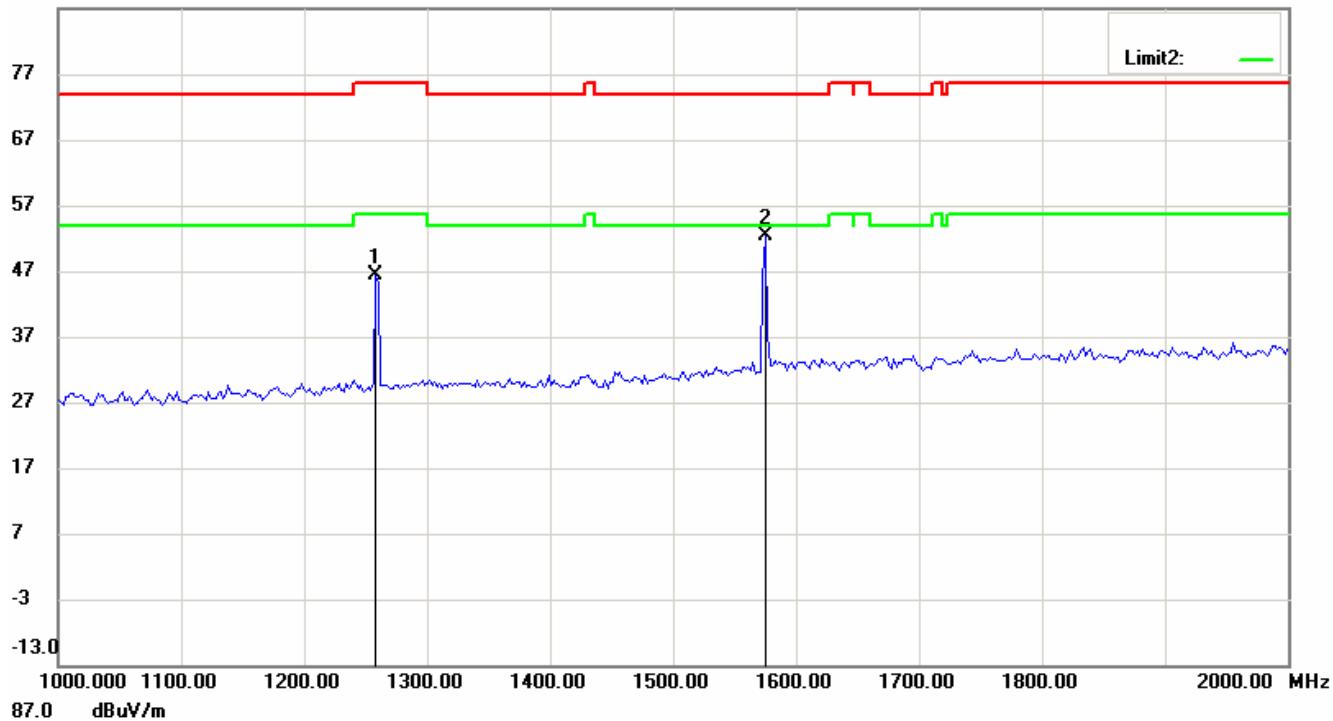
## Antenna Polarization V



Registration number: W6M20802-8863-C-1

FCC ID: V2S-CMGLO-315

87.0 dB<sub>uV/m</sub>



**Up Line: Peak Limit Line**

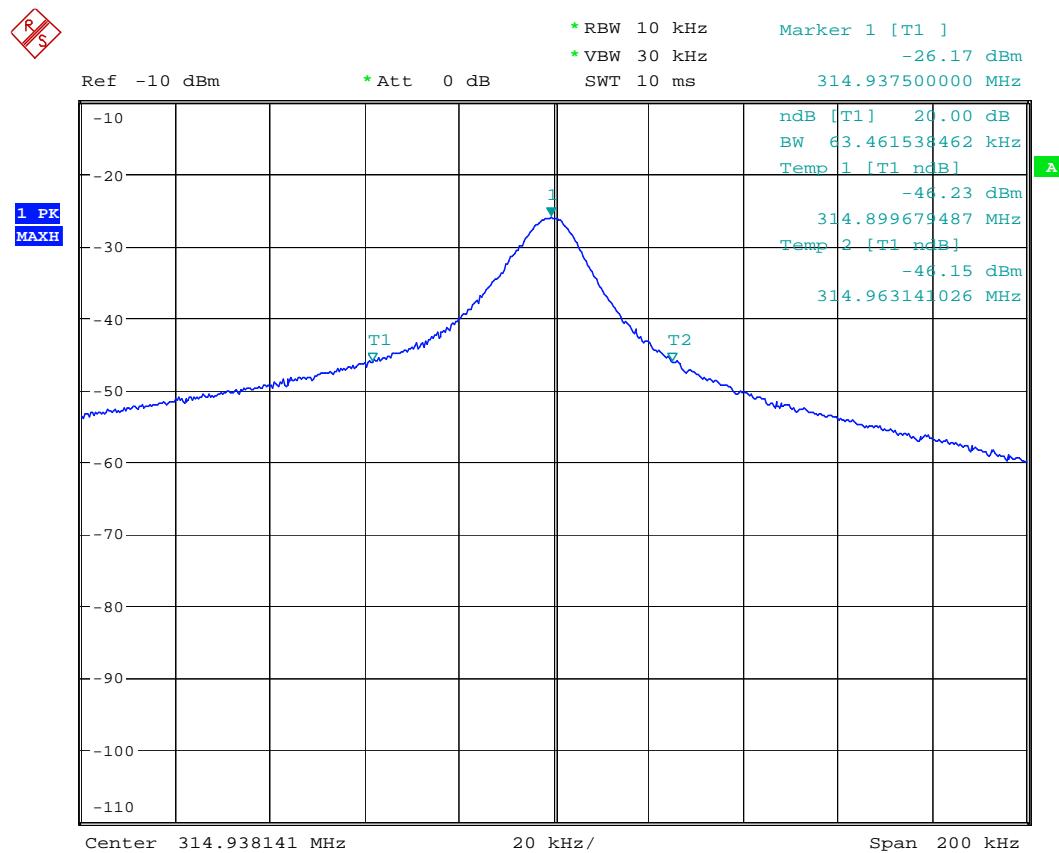
**Down Line: Ave Limit Line**

**Note:**

1. The plots are pre-scanned data for determining the tested points and for reference only.
2. The exact test result is shown in the data table of Radiated emission test of this test report.

Registration number: W6M20802-8863-C-1  
 FCC ID: V2S-CMGLO-315

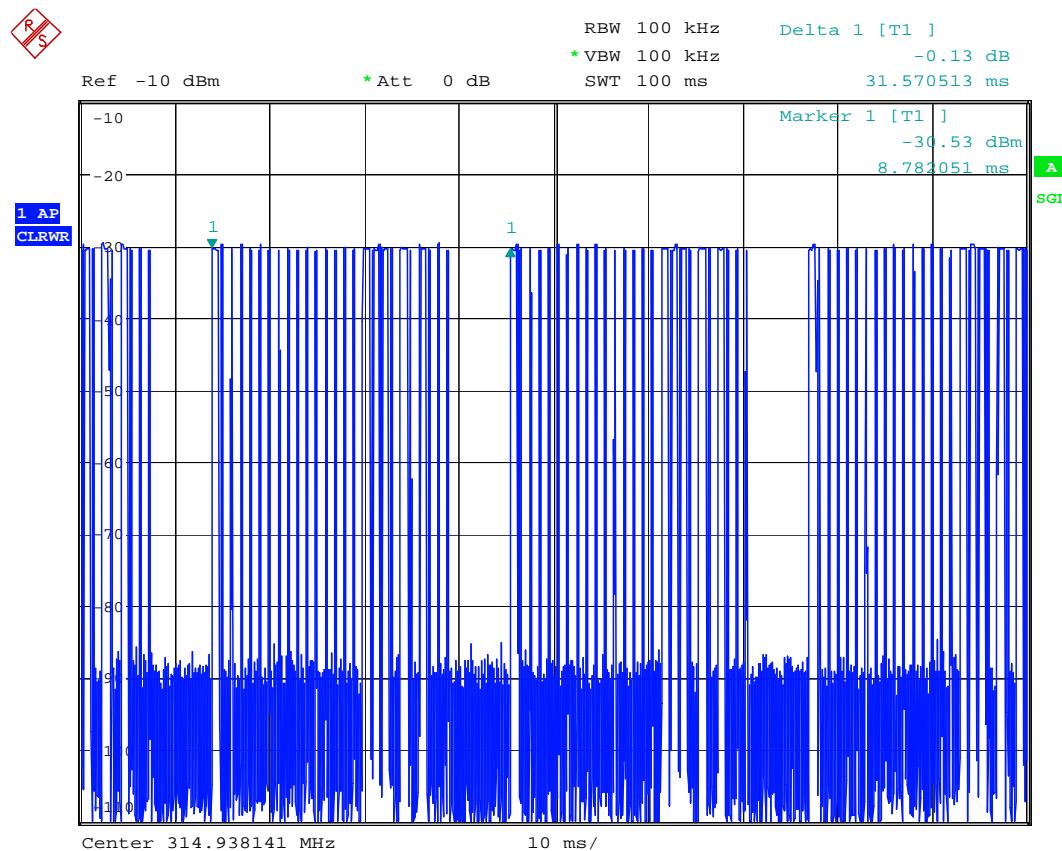
## Bandwidth



20dB BANDWIDTH  
 Date: 12.FEB.2008 07:42:03

Registration number: W6M20802-8863-C-1  
FCC ID: V2S-CMGLO-315

## Duty Cycle



### DUTY CYCLE

Date: 12.FEB.2008 07:46:25

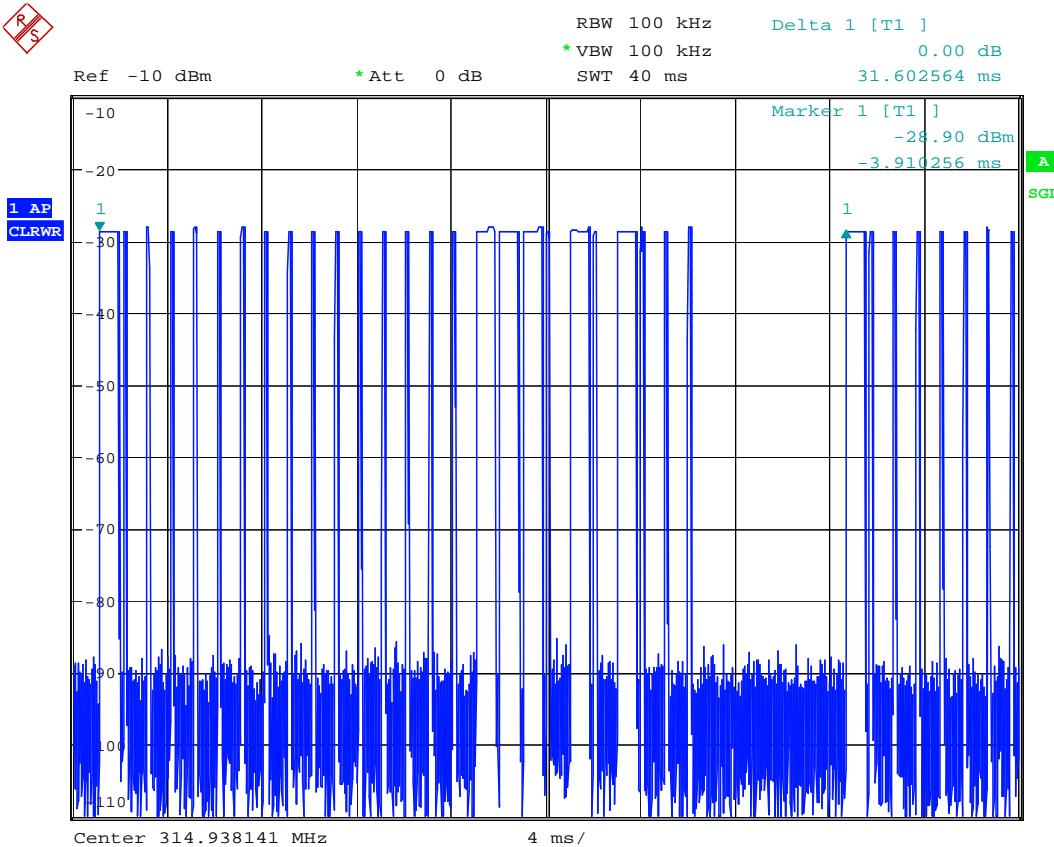


# Taiwan ETS Product Service Co., Ltd.

Registration number: W6M20802-8863-C-1

FCC ID: V2S-CMGLO-315

RS



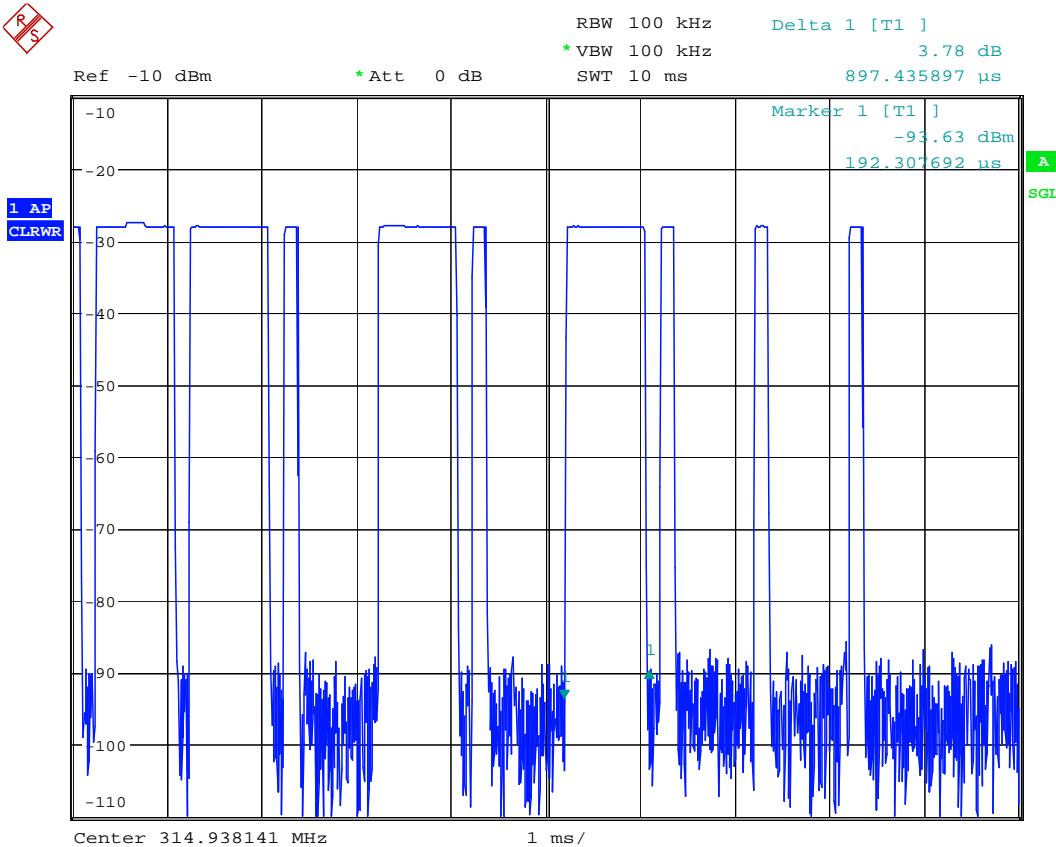
## DUTY CYCLE

Date: 12.FEB.2008 07:47:33

Registration number: W6M20802-8863-C-1

FCC ID: V2S-CMGLO-315

RS



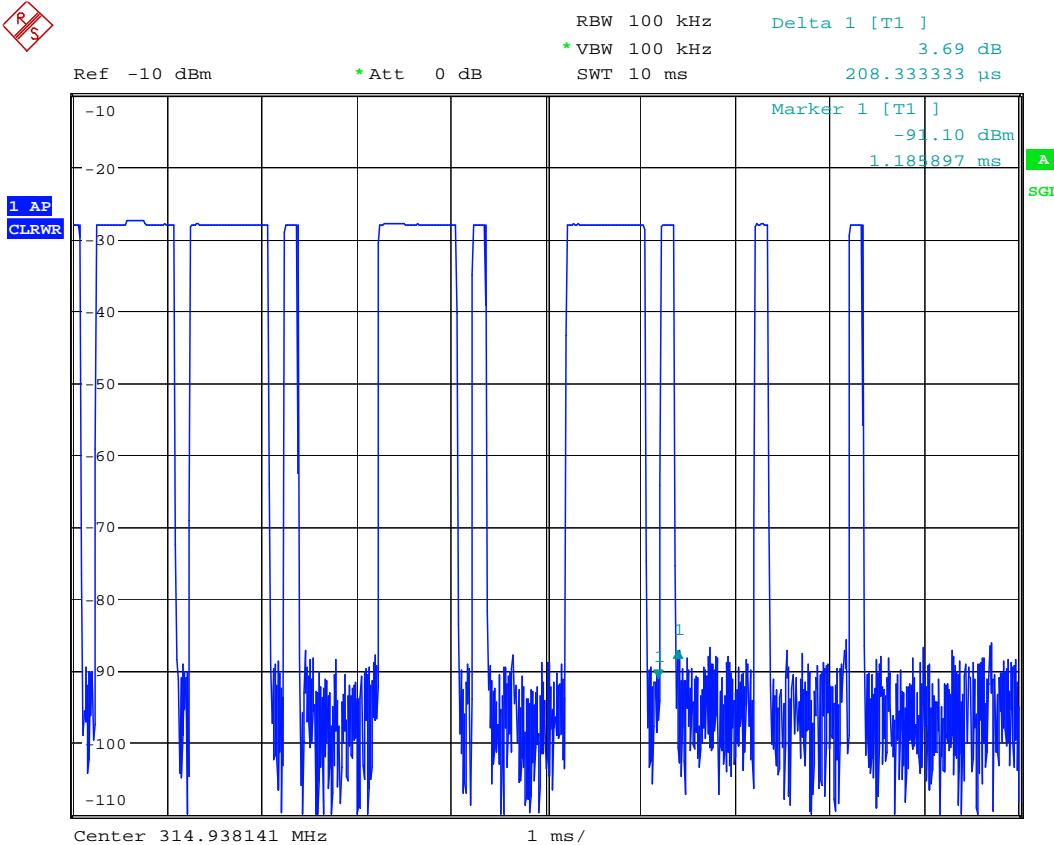
#### DUTY CYCLE

Date: 12.FEB.2008 07:48:14

Registration number: W6M20802-8863-C-1

FCC ID: V2S-CMGLO-315

RS



DUTY CYCLE

Date: 12.FEB.2008 07:49:24