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FCC TEST REPORT

REPORT NO.: RF980213H03

MODEL NO.: W401A

RECEIVED: Feb. 17, 2009

TESTED: Feb. 17 to 27, 2009

ISSUED: March 20, 2009

APPLICANT: Oro Technology Co., LTD

ADDRESS: No.8, Sec.3, Tansing Rd., Tanzih Township, Taichung County 427, Taiwan

ISSUED BY: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch Hsin Chu Laboratory

ADDRESS: No. 81-1, Lu Liao Keng, 9th Ling, Wu Lung Tsuen, Chiung Lin Hsiang, Hsin Chu Hsien 307, Taiwan

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TABLE OF CONTENTS

| | | |
|-----------|--|-----------|
| 1. | CERTIFICATION..... | 4 |
| 2. | SUMMARY OF TEST RESULTS | 5 |
| 2.1 | MEASUREMENT UNCERTAINTY | 5 |
| 3. | GENERAL INFORMATION | 6 |
| 3.1 | GENERAL DESCRIPTION OF EUT | 6 |
| 3.2 | DESCRIPTION OF TEST MODES | 7 |
| 3.2.1 | TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL..... | 8 |
| 3.3 | GENERAL DESCRIPTION OF APPLIED STANDARDS | 9 |
| 3.4 | DESCRIPTION OF SUPPORT UNITS | 10 |
| 3.5 | CONFIGURATION OF SYSTEM UNDER TEST | 10 |
| 4. | TEST TYPES AND RESULTS..... | 11 |
| 4.1 | CONDUCTED EMISSION MEASUREMENT | 11 |
| 4.2 | RADIATED EMISSION MEASUREMENT | 11 |
| 4.2.1 | LIMITS OF RADIATED EMISSION MEASUREMENT | 11 |
| 4.2.2 | TEST INSTRUMENTS | 13 |
| 4.2.3 | TEST PROCEDURES | 14 |
| 4.2.4 | DEVIATION FROM TEST STANDARD | 14 |
| 4.2.5 | TEST SETUP..... | 15 |
| 4.2.6 | EUT OPERATING CONDITIONS | 15 |
| 4.2.7 | TEST RESULTS | 16 |
| 4.2.8 | TEST RESULTS | 17 |
| 4.3 | 20DB OCCUPIED BANDWIDTH MEASUREMENT | 20 |
| 4.3.1 | LIMITS OF EMISSION BANDWIDTH MEASUREMENT | 20 |
| 4.3.2 | TEST INSTRUMENTS | 20 |
| 4.3.3 | TEST PROCEDURE | 20 |
| 4.3.4 | DEVIATION FROM TEST STANDARD | 20 |
| 4.3.5 | TEST SETUP..... | 21 |
| 4.3.6 | EUT OPERATING CONDITIONS | 21 |
| 4.3.7 | TEST RESULTS | 22 |
| 4.4 | DEACTIVATION TIME | 23 |
| 4.4.1 | LIMITS OF DEACTIVATION TIME MEASUREMENT | 23 |
| 4.4.2 | TEST INSTRUMENTS | 23 |
| 4.4.3 | TEST PROCEDURE | 23 |
| 4.4.4 | DEVIATION FROM TEST STANDARD | 23 |
| 4.4.5 | TEST SETUP..... | 24 |
| 4.4.6 | EUT OPERATING CONDITION..... | 24 |
| 4.4.7 | TEST RESULTS | 25 |



A D T

| | | |
|-----------|---|-----------|
| 5. | PHOTOGRAPHS OF THE TEST CONFIGURATION..... | 27 |
| 6. | INFORMATION ON THE TESTING LABORATORIES..... | 28 |
| 7. | APPENDIX - A MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB | 29 |



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1. CERTIFICATION

PRODUCT : TPMS
MODEL NO.: W401A
BRAND : ORO
APPLICANT : Oro Technology Co., LTD
TESTED : Feb. 17 to 27, 2009
TEST SAMPLE : R&D SAMPLE
STANDARDS : **FCC Part 15, Subpart C (Section 15.231)**
ANSI C63.4-2003

The above equipment (Model: W401A) 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 :  , **DATE:** March 20, 2009
(Claire Kuan, Specialist)

TECHNICAL ACCEPTANCE :  , **DATE:** March 20, 2009
Responsible for RF (Hank Chung, Deputy Manager)

APPROVED BY :  , **DATE:** March 20, 2009
(May Chen, Deputy Manager)

2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

| APPLIED STANDARD: FCC Part 15, Subpart C; RSS-210 Issue 6 | | | |
|---|--------------------------------|--------|--|
| Standard Section | Test Type and Limit | Result | REMARK |
| 15.207 | AC Power Conducted Emission | NA | NA |
| 15.209 15.231(e) | Radiated Emission Test | PASS | Meet the requirement of limit. Minimum passing margin is -0.50dB at 3037.72MHz |
| 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 | Value |
|-----------------------------------|---------|
| Radiated emissions (30MHz-1GHz) | 3.94 dB |
| Radiated emissions (1GHz -18GHz) | 2.33 dB |
| Radiated emissions (18GHz -40GHz) | 2.56 dB |

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

| | |
|---------------------------|---|
| PRODUCT | TPMS |
| MODEL NO. | W401A |
| FCC ID | W55676FM1B2 |
| POWER SUPPLY | Tire sensor: DC 3.6V from battery or Receiver: DC 12V from car charger |
| MODULATION TYPE | FSK |
| CARRIER FREQUENCY | 433.92MHz |
| NUMBER OF CHANNEL | 1 |
| ANTENNA TYPE | Loop antenna |
| DATA CABLE | NA |
| I/O PORT | USB port x 1 |
| ASSOCIATED DEVICES | Car charger cable (Unshielded, 2.1m, With one core) |

NOTE:

1. The EUT is one Tire Pressure Monitoring System, includes 4 tire sensors and 1 receiver display.
2. The EUT has two tire valve was pre-tested in chamber under the following modes:

| Test Mode | Description |
|---------------|------------------------|
| Mode A | Long tire valve |
| Mode B | Short tire valve |

From the above modes, the worst case was found in Mode A. Therefore only the test data of the modes were recorded in this report.

3. The EUT was pre-tested in chamber under the following modes:

| Test Mode | Description |
|---------------|------------------|
| Mode A | X-Y plane |
| Mode B | Y-Z plane |
| Mode C | Z-X plane |

From the above modes, the worst case was found in **Mode A**. Therefore only the test data of the modes were recorded in this report.

4. The above EUT information was declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.

3.2 DESCRIPTION OF TEST MODES

One channel was provided to this EUT.

| CHANNEL | FREQUENCY |
|---------|-----------|
| 1 | 433.92MHz |



3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

| EUT CONFIGURE MODE | APPLICABLE TO | | | | | DESCRIPTION |
|--------------------|---------------|---------|-----|----|----|-------------|
| | RE ≥ 1G | RE < 1G | PLC | EB | DT | |
| - | √ | √ | - | √ | √ | - |

Where **RE ≥ 1G**: Radiated Emission above 1GHz **RE < 1G**: Radiated Emission below 1GHz
PLC: Power Line Conducted Emission **EB**: 20dB Bandwidth measurement
DT: Deactivation Time measurement

NOTE: No need to concern of Conducted Emission due to the EUT is powered by battery.

RADIATED EMISSION TEST (ABOVE 1 GHz):

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

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

RADIATED EMISSION TEST (BELOW 1 GHz):

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

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

EMISSION BANDWIDTH MEASUREMENT:

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations.

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

| AVAILABLE CHANNEL | TESTED CHANNEL | MODULATION 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.

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

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



3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is an 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

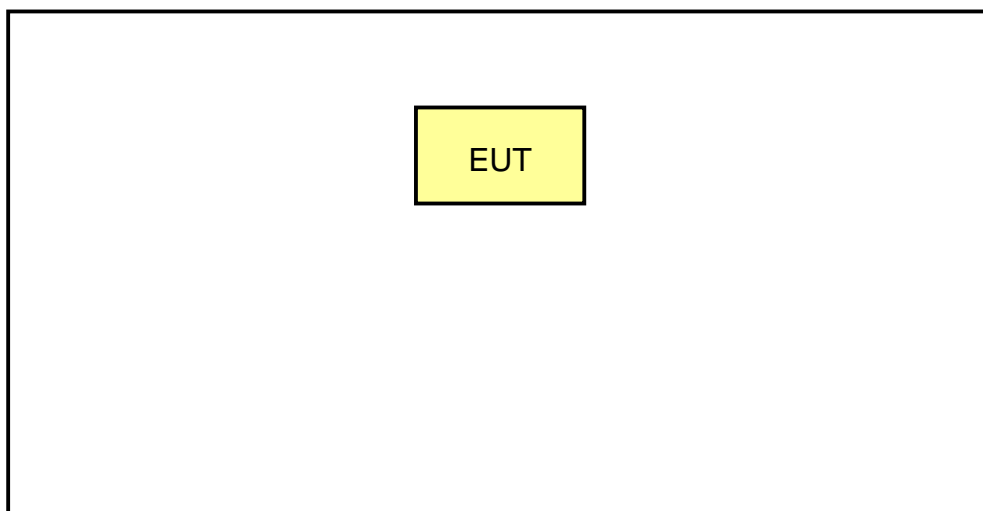
All test items have been performed and recorded as per the above standards.

NOTE: The EUT is also considered as a kind of computer peripheral, because the connection to computer is necessary for typical use. It has been verified to comply with the requirements of FCC Part 15, Subpart B, Class B (DoC). The test report has been issued separately.

3.4 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit.

3.5 CONFIGURATION OF SYSTEM UNDER TEST



4. TEST TYPES AND RESULTS

4.1 CONDUCTED EMISSION MEASUREMENT

NA

4.2 RADIATED EMISSION MEASUREMENT

4.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

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

| Fundamental Frequency (MHz) | Field Strength of Fundamental | | Field Strength of Spurious | |
|-----------------------------|-------------------------------|---------------|----------------------------|---------------|
| | uV/meter | dBuV/meter | uV/meter | dBuV/meter |
| 40.66 ~ 40.70 | 1000 | 60 | 100 | 46.02 |
| 70 ~ 130 | 500 | 53.97 | 50 | 33.97 |
| 130 ~ 174 | 500 ~ 1500 | 53.97 ~ 63.52 | 50 ~ 150 | 33.97 ~ 43.52 |
| 174 ~ 260 | 1500 | 63.52 | 150 | 43.52 |
| 260 ~ 470 | 1500 ~ 5000 | 63.52 ~ 73.97 | 150 ~ 500 | 43.52 ~ 53.97 |
| Above 470 | 5000 | 73.97 | 500 | 53.97 |

NOTE:

1. Where F is the frequency in MHz, the formulas for calculating the maximum permitted fundamental field strengths are as follows: for the band 130-174 MHz, $\mu\text{V/m}$ at 3 meters = $22.72727(F) - 2454.545$; for the band 260-470 MHz, $\mu\text{V/m}$ at 3 meters = $16.6667(F) - 2833.3333$. 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.



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4.2.2 TEST INSTRUMENTS

| DESCRIPTION & MANUFACTURER | MODEL NO. | SERIAL NO. | CALIBRATED DATE | CALIBRATED UNTIL |
|--------------------------------------|------------------------------|---------------------|-----------------|------------------|
| ADVANTEST Spectrum Analyzer | R3271A | 85060311 | July 16, 2008 | July 15, 2009 |
| HP Pre_Amplifier | 8449B | 3008A0192 2 | Sep. 25, 2008 | Sep. 24, 2009 |
| ROHDE & SCHWARZ Test Receiver | ESCS30 | 100375 | April 01, 2008 | Mar. 31, 2009 |
| SCHWARZBECK TRILOG Broadband Antenna | VULB 9168 | 138 | April 30, 2008 | April 29, 2009 |
| Schwarzbeck Horn_Antenna | BBHA9120 | D124 | Dec. 16, 2008 | Dec. 15, 2009 |
| Schwarzbeck Horn_Antenna | BBHA 9170 | BBHA91701 53 | Jan. 27, 2009 | Jan. 26, 2010 |
| R&S Loop Antenna | HFH2-Z2 | 100070 | Jan. 13, 2009 | Jan. 12, 2010 |
| RF Switches | EMH-011 | 08009 | Oct. 07, 2008 | Oct. 06, 2009 |
| RF CABLE (Chaintek) | SF102 | 22054-2 | Dec. 06, 2008 | Dec. 05, 2009 |
| RF Cable | 8DFB | STCCAB-30 M-1GHz | Oct. 07, 2008 | Oct. 06, 2009 |
| Software | ADT_Radiated _V7.6.15.9.2 | NA | NA | NA |
| CT Antenna Tower & Turn Table | NA | NA | NA | NA |

- Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The horn antenna, HP preamplifier (model: 8449B) and Spectrum Analyzer (model: R3271A) are used only for the measurement of emission frequency above 1GHz if tested.
3. The test was performed in Open Site No. C.
4. The FCC Site Registration No. is 656396.
5. The VCCI Site Registration No. is R-1626.
6. The CANADA Site Registration No. is IC 7450G-3.

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 10-meter open field site. 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.
- f. If the emission level of the EUT in peak mode was 10 dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10 dB margin would be re-tested one by one using the quasi-peak method or average method as specified and then reported in Data sheet peak mode and QP mode.

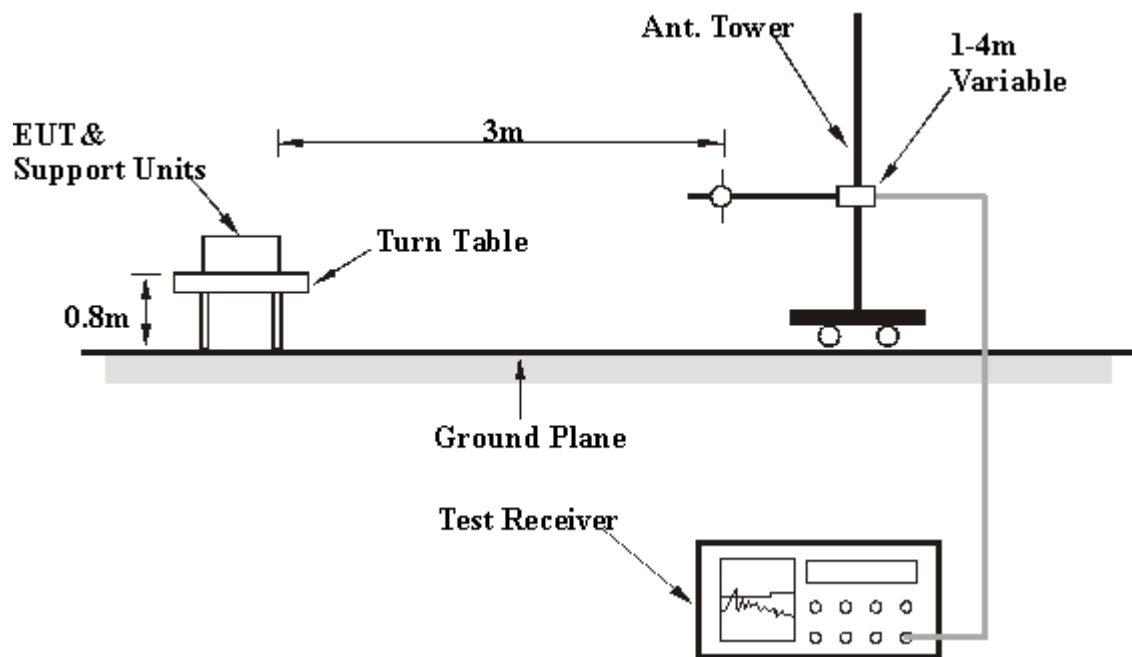
NOTE:

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. 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

Below 1GHz Worst-Case Data

| EUT TEST CONDITION | | MEASUREMENT DETAIL | |
|--------------------------|---------------------------|--------------------|---------------|
| CHANNEL | Channel 1 | FREQUENCY RANGE | Below 1000MHz |
| INPUT POWER | 12Vdc | DETECTOR FUNCTION | Quasi-Peak |
| ENVIRONMENTAL CONDITIONS | 25deg. C, 61%RH 960hPa | TESTED BY | Eric Lee |

| 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 | 141.600 | 25.67 QP | 52.86 | -27.19 | 1.47 H | 34 | 10.48 | 15.19 |
| 2 | 194.900 | 24.98 QP | 52.86 | -27.88 | 1.37 H | 310 | 11.60 | 13.38 |
| 3 | 287.100 | 28.83 QP | 52.86 | -24.03 | 1.37 H | 24 | 12.21 | 16.62 |
| 4 | 403.500 | 32.67 QP | 46.00 | -13.33 | 1.00 H | 216 | 11.48 | 21.19 |
| 5 | *433.960 | 88.64 PK | 92.86 | -4.22 | 1.03 H | 45 | 66.99 | 21.65 |
| 6 | *433.960 | 68.64 AV | 72.86 | -4.22 | 1.03 H | 45 | 46.99 | 21.65 |
| 7 | 534.400 | 30.64 QP | 52.86 | -22.22 | 1.28 H | 183 | 7.16 | 23.48 |
| 8 | 832.700 | 40.66 QP | 46.00 | -5.34 | 1.00 H | 213 | 10.40 | 30.26 |
| 9 | 867.800 | 65.32 PK | 72.86 | -7.54 | 1.00 H | 79 | 34.68 | 30.64 |
| 10 | 867.800 | 45.32 AV | 52.86 | -7.54 | 1.00 H | 79 | 14.68 | 30.64 |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL 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 | 177.900 | 25.66 QP | 52.86 | -27.20 | 1.14 V | 183 | 11.12 | 14.54 |
| 2 | 194.900 | 23.72 QP | 52.86 | -29.14 | 1.31 V | 46 | 10.34 | 13.38 |
| 3 | 202.200 | 25.44 QP | 52.86 | -27.42 | 1.29 V | 189 | 12.35 | 13.09 |
| 4 | 231.300 | 27.33 QP | 52.86 | -25.53 | 1.24 V | 222 | 12.82 | 14.51 |
| 5 | 308.900 | 25.40 QP | 52.86 | -27.46 | 1.01 V | 147 | 8.02 | 17.38 |
| 6 | 342.800 | 21.34 QP | 52.86 | -31.52 | 1.42 V | 55 | 2.57 | 18.77 |
| 7 | *433.960 | 83.64 PK | 92.86 | -9.22 | 2.13 V | 344 | 61.99 | 21.65 |
| 8 | *433.960 | 63.64 AV | 72.86 | -9.22 | 2.13 V | 344 | 41.99 | 21.65 |
| 9 | 867.800 | 59.13 PK | 72.86 | -13.73 | 1.69 V | 243 | 28.49 | 30.64 |
| 10 | 867.800 | 39.13 AV | 52.86 | -13.73 | 1.69 V | 243 | 8.49 | 30.64 |

- 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. "*" = Fundamental frequency
 6. The average value of fundamental frequency is: Average = Peak value + 20log (Duty cycle) Where the duty factor is calculated from following formula:

$$20\log (\text{Duty cycle}) = 20\log \frac{1 \times 10\text{ms}}{100\text{ms}} = -20\text{dB}$$

Please see page 18 for plotted duty.



4.2.8 TEST RESULTS

Above 1GHz Worst-Case Data

| EUT TEST CONDITION | | MEASUREMENT DETAIL | |
|--------------------------|---------------------------|--------------------|---------------------------|
| CHANNEL | Channel 1 | FREQUENCY RANGE | 1 ~ 20GHz |
| INPUT POWER | 12Vdc | DETECTOR FUNCTION | Peak (PK) Average (AV) |
| ENVIRONMENTAL CONDITIONS | 25deg. C, 61%RH 960hPa | TESTED BY | Eric Lee |

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 | 1301.800 | 66.30 PK | 74.00 | -7.70 | 1.00 H | 193 | 33.60 | 32.70 |
| 2 | 1301.800 | 46.30 AV | 54.00 | -7.70 | 1.00 H | 193 | 13.60 | 32.70 |
| 3 | 1735.840 | 65.74 PK | 74.00 | -8.26 | 1.00 H | 193 | 33.04 | 32.70 |
| 4 | 1735.840 | 45.74 AV | 54.00 | -8.26 | 1.00 H | 193 | 13.04 | 32.70 |
| 5 | 2603.760 | 61.30 PK | 74.00 | -12.70 | 1.09 H | 318 | 28.60 | 32.70 |
| 6 | 2603.760 | 41.30 AV | 54.00 | -12.70 | 1.09 H | 318 | 8.60 | 32.70 |
| 7 | 3037.720 | 69.84 PK | 74.00 | -4.16 | 1.00 H | 360 | 37.14 | 32.70 |
| 8 | 3037.720 | 49.84 AV | 54.00 | -4.16 | 1.00 H | 360 | 17.14 | 32.70 |
| 9 | 3905.640 | 61.70 PK | 74.00 | -12.30 | 1.25 H | 320 | 29.00 | 32.70 |
| 10 | 3905.640 | 41.70 AV | 54.00 | -12.30 | 1.25 H | 320 | 9.00 | 32.70 |
| 11 | 4339.600 | 56.00 PK | 74.00 | -18.00 | 1.00 H | 184 | 23.30 | 32.70 |
| 12 | 4339.600 | 36.00 AV | 54.00 | -18.00 | 1.00 H | 184 | 3.30 | 32.70 |



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ANTENNA POLARITY & TEST DISTANCE: VERTICAL 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 | 1301.800 | 69.40 PK | 74.00 | -4.60 | 1.00 V | 253 | 36.70 | 32.70 |
| 2 | 1301.800 | 49.40 AV | 54.00 | -4.60 | 1.00 V | 253 | 16.70 | 32.70 |
| 3 | 1735.840 | 67.24 PK | 74.00 | -6.76 | 1.00 V | 107 | 34.54 | 32.70 |
| 4 | 1735.840 | 47.24 AV | 54.00 | -6.76 | 1.00 V | 107 | 14.54 | 32.70 |
| 5 | 2603.760 | 65.60 PK | 74.00 | -8.40 | 1.00 V | 124 | 32.90 | 32.70 |
| 6 | 2603.760 | 45.60 AV | 54.00 | -8.40 | 1.00 V | 124 | 12.90 | 32.70 |
| 7 | 3037.720 | 73.50 PK | 74.00 | -0.50 | 1.00 V | 340 | 40.80 | 32.70 |
| 8 | 3037.720 | 53.50 AV | 54.00 | -0.50 | 1.00 V | 340 | 20.80 | 32.70 |
| 9 | 3905.640 | 68.82 PK | 74.00 | -5.18 | 1.00 V | 242 | 36.12 | 32.70 |
| 10 | 3905.640 | 48.82 AV | 54.00 | -5.18 | 1.00 V | 242 | 16.12 | 32.70 |
| 11 | 4339.600 | 57.30 PK | 74.00 | -16.70 | 1.03 V | 294 | 24.60 | 32.70 |
| 12 | 4339.600 | 37.30 AV | 54.00 | -16.70 | 1.03 V | 294 | 4.60 | 32.70 |

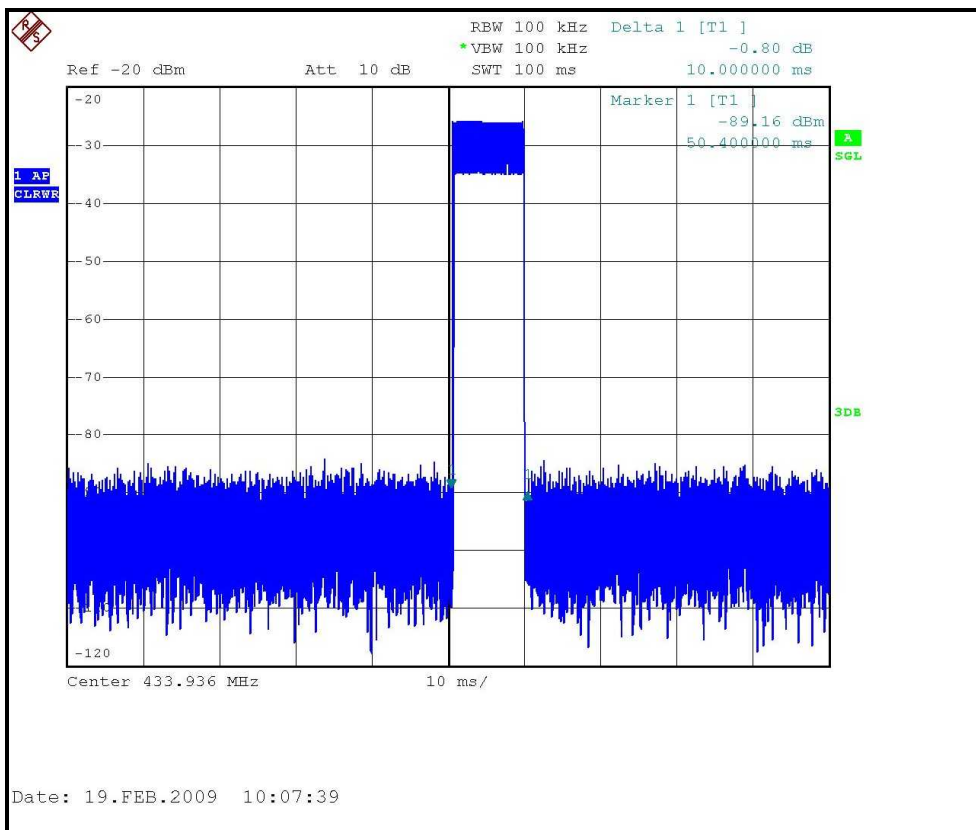
- REMARKS:**
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
 2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level – Limit value.
 5. “*” = Fundamental frequency
 6.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

$$20\log (\text{Duty cycle}) = 20\log \frac{1 \times 10\text{ms}}{100\text{ms}} = -20\text{dB}$$

Please see page 18 for plotted duty.



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$$20\log (\text{Duty cycle}) = 20\log \frac{1 \times 10\text{ms}}{100\text{ms}} = -20\text{dB}$$

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 |
|----------------------------|-----------|------------|-----------------|------------------|
| R&S SPECTRUM ANALYZER | FSP40 | 100036 | Dec. 09, 2008 | Dec. 08, 2009 |

NOTE:

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

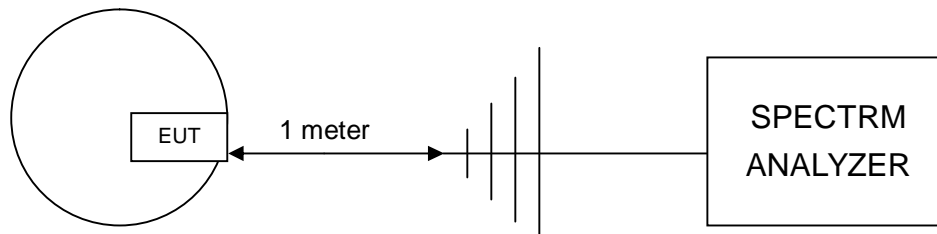
4.3.3 TEST PROCEDURE

- 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 10 kHz and video bandwidth to 30 kHz 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

4.3.5 TEST SETUP



4.3.6 EUT OPERATING CONDITIONS

Same as Item 4.2.6



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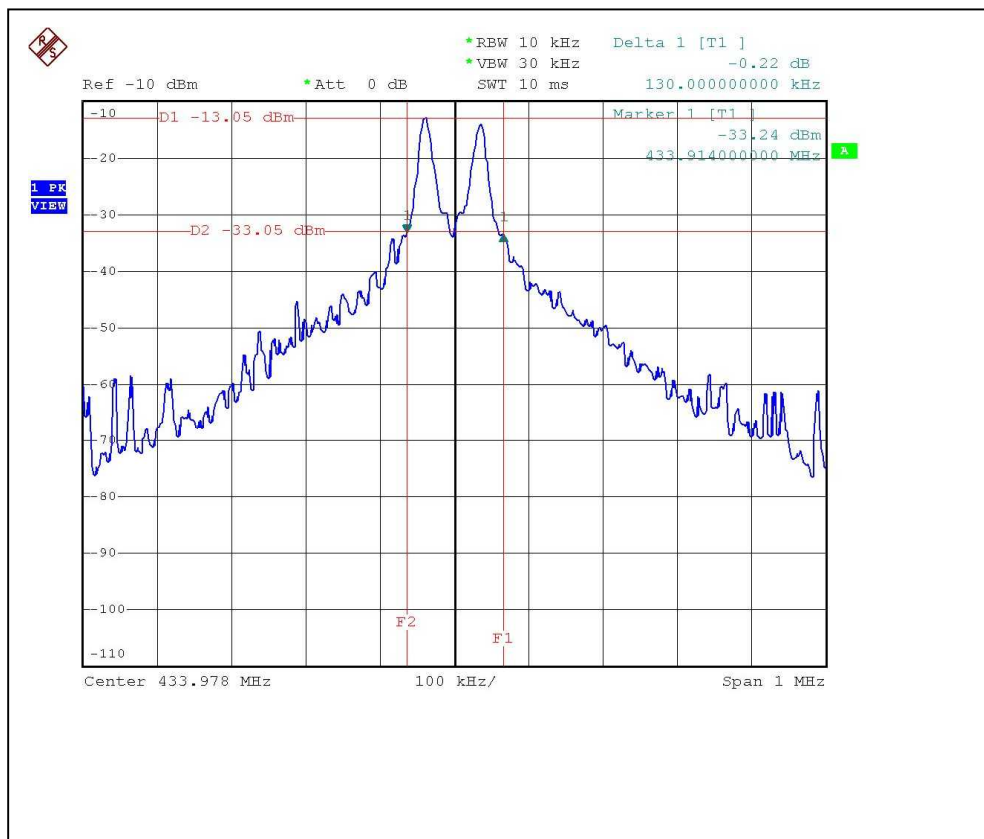
4.3.7 TEST RESULTS

802.11b DSSS MODULATION:

| | | | |
|------------------------|----------|---------------------------------|------------------------|
| MODULATION TYPE | FSK | TRANSFER RATE | 9600bps |
| INPUT POWER | 12Vdc | ENVIRONMENTAL CONDITIONS | 25deg.C, 60%RH, 960hPa |
| TESTED BY | Eric Lee | | |

| CHANNEL | CHANNEL FREQUENCY (MHz) | 20dB BANDWIDTH (KHz) | MAXIMUM LIMIT (KHz) | PASS / FAIL |
|---------|-------------------------|----------------------|---------------------|-------------|
| 1 | 433.92 | 130.00 | 1084.80 | PASS |

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4.4 DEACTIVATION TIME

4.4.1 LIMITS OF DEACTIVATION TIME MEASUREMENT

Device operated automatically shall be limiting operation so that the duration of each transmission shall not be greater than one second and the silent period between transmissions shall be at least 30 times the duration of the transmission but in no case less than 10 seconds.

4.4.2 TEST INSTRUMENTS

| DESCRIPTION & MANUFACTURER | MODEL NO. | SERIAL NO. | CALIBRATED DATE | CALIBRATED UNTIL |
|----------------------------|-----------|------------|-----------------|------------------|
| R&S SPECTRUM ANALYZER | FSP40 | 100036 | Dec. 09, 2008 | Dec. 08, 2009 |

NOTE:

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

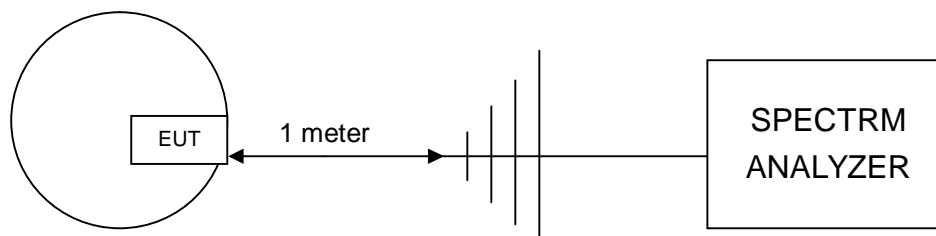
4.4.3 TEST PROCEDURE

- 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 100kHz. 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

4.4.5 TEST SETUP



4.4.6 EUT OPERATING CONDITION

Same as Item 4.2.6



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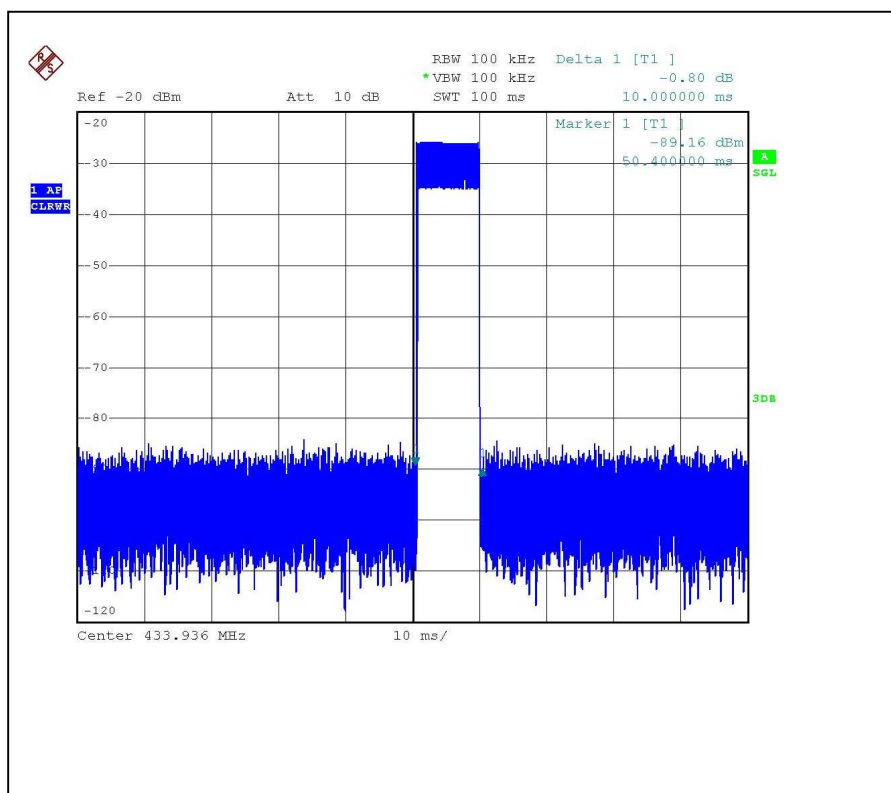
4.4.7 TEST RESULTS

802.11b DSSS MODULATION:

| | | | |
|------------------------|----------|---------------------------------|------------------------|
| MODULATION TYPE | FSK | TRANSFER RATE | 9600bps |
| INPUT POWER | 12Vdc | ENVIRONMENTAL CONDITIONS | 25deg.C, 60%RH, 960hPa |
| TESTED BY | Eric Lee | | |

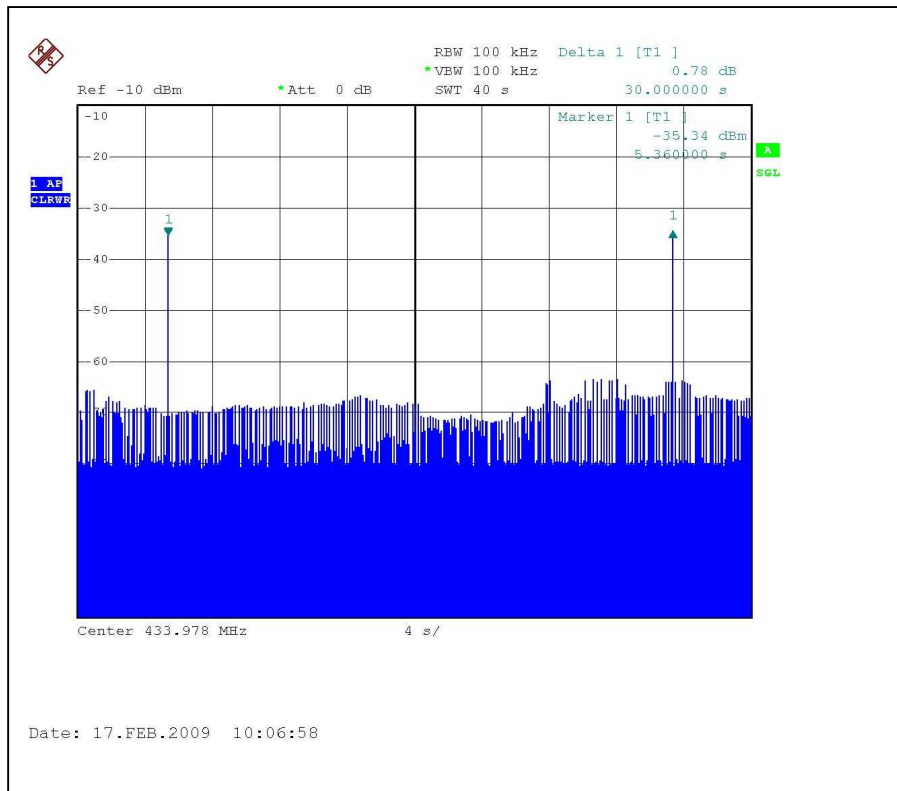
| CHANNEL FREQUENCY (MHZ) | EACH TRANSMISSION TIME (SECOND) | SILENT PERIOD BETWEEN TRANSMISSIONS (SECOND) | PASS/FAIL |
|--------------------------------|--|---|------------------|
| 433.92 | <1s | >10s and >30*(duration of the transmission) | PASS |

The plots of test results are attached as below.





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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 by the following approval agencies according to ISO/IEC 17025.

| | |
|--------------------|----------------------|
| USA | FCC, NVLAP |
| Germany | TUV Rheinland |
| Japan | VCCI |
| Norway | NEMKO |
| Canada | INDUSTRY CANADA, CSA |
| R.O.C. | TAF, BSMI, NCC |
| Netherlands | Telefication |
| Singapore | GOST-ASIA(MOU) |
| Russia | CERTIS(MOU) |

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:

Tel: 886-2-26052180

Fax: 886-2-26052943

Hsin Chu EMC/RF Lab:

Tel: 886-3-5935343

Fax: 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.



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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 ---