

FCC PART 15 SUBPART C / IC RSS-210 TEST REPORT

for

TPM sensor tester

Model No.: OPSS2

FCC ID: TH9OPSS-2

IC: 6361A-OPSS2

of

Applicant: **Orange Electronic Co., Ltd**

Address: **NO 15, LANE 81, SEC 2, TANFU RD., TANZIH,
TAICHUNG, TAIWAN**

Tested and Prepared

by

Worldwide Testing Services (Taiwan) Co., Ltd.

FCC Registration No.: 930600

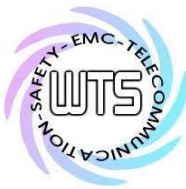
Industry Canada filed test laboratory Reg. No. IC 5679A-1

A2LA Accredited No.: 2732.01



Report No.: W6M21007-10792-P-15

6F, NO. 58, LANE 188, RUEY-KUANG RD., NEIHU TAIPEI 114, TAIWAN, R.O.C.
TEL: 886-2-66068877 FAX: 886-2-66068879 E-mail: wts@wts-lab.com



Registration number: W6M21007-10792-P-15
FCC ID: TH9OPSS-2
IC: 6361A-OPSS2

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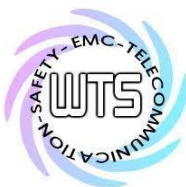
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Worldwide Testing Services(Taiwan) Co., Ltd.

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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 Worldwide Testing Services(Taiwan) Co., Ltd.

Tester:

November 23, 2010

Robert Ren

Date

WTS-Lab.

Name

Signature

Technical responsibility for area of testing:

November 23, 2010

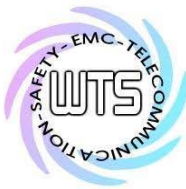
Chang Tse-Ming

Date

WTS

Name

Signature



Worldwide Testing Services(Taiwan) 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

Worldwide Testing Services(Taiwan) 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: 2732.01

FCC filed test laboratory Reg. No. 930600

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

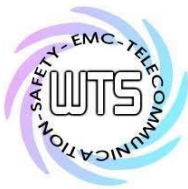


Test location, where different from Worldwide Testing Services (Taiwan) Co., Ltd. :

Name: ./.
Accredited number: ./.
Street: ./.
Town: ./.
Country: ./.
Telephone: ./.
Fax: ./.

1.3 Details of approval holder

Name: Orange Electronic Co., Ltd
Street: No 15, Lane 81, Sec 2, Tanfu Rd.,
Town: Tanzih, Taichung,
Country: Taiwan
Telephone: +886-4-2535-1558
Fax: +886-4-2535-1582



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1.4 Application details

Date of receipt of test item: November 15, 2010

Date of test: from November 16, 2010 to November 23, 2010

1.5 General information of Test item

Type of test item: TPM sensor tester

Model Number: OPSS2

Multi-listing model number: ./.

Brand name: Orange Electronic

Photos: see Appendix

Technical data

Transmitting Frequency: 125 kHz

Operation modes: simplex

Modulation Type: AM

Antenna Type: CHOKE COIL

Antenna Gain: Max. 0 dBi

Power supply: Battery 9 VDC

Manufacturer: (if different from Approval Holder)

Name: ./.

Street: ./.

City: ./.

Country: ./.

Additional information: ./.



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1.6 Test standards

Technical standard : FCC RULES SUBPART C § 2.1049, § 15.203, § 15.209, § 15.207 (2009-10)
IC RSS-210 Issue 7

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 9 Vdc |
| Extreme conditions parameters: | test voltage : -- extreme min : -- V max : -- V |



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2.3 Test Equipment List

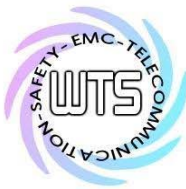
| No. | Test equipment | Type | Serial No. | Manufacturer | Cal. Date | Next Cal. Date |
|--------------|---|------------------|----------------|--------------|------------------|----------------|
| ETSTW-CE 001 | EMI TEST RECEIVER | ESHS10 | 842121/013 | R&S | 2010/9/2 | 2011/9/1 |
| ETSTW-CE 004 | ZWEILEITER-V-NETZNACHBILDUNG TWO-LINE V-NETWORK | ESH3-Z5 | 840731/011 | R&S | 2010/3/2 | 2011/3/1 |
| ETSTW-CE 005 | Line-Impedance Stabilisation Network | NNBM 8126D | 137 | Schwarzbeck | 2010/9/8 | 2011/9/7 |
| ETSTW-CE 006 | IMPULSBEGRENZER PULSE LIMITER | ESH3-Z2 | 100226 | R&S | 2010/5/8 | 2011/5/7 |
| ETSTW-CE 007 | SPECTRUM ANALYZER 5GHz | FSB | 849670/001 | R&S | Pre-test Use NCR | |
| ETSTW-CE 008 | HF-EICHLITUNG RF STEP ATTENUATOR 139dB DPSP | 334.6010.02 | 844581/024 | R&S | Function Test | |
| ETSTW-CE 009 | TEMP.&HUMIDITY CHAMBER | GTH-225-40-1P-U | MAA0305-009 | GIANT FORCE | 2010/7/21 | 2011/7/20 |
| ETSTW-CE 013 | CISPR 22 TWO BALANCED TELECOM PAIRS IMPEDANCE STABILIZATION NETWORK | FCC-TLISN-T4-02 | 20242 | FCC | 2010/10/21 | 2011/10/20 |
| ETSTW-CE 015 | CISPR 22 TWO BALANCED TELECOM PAIRS IMPEDANCE STABILIZATION NETWORK | FCC-TLISN-T8-02 | 20307 | FCC | 2010/9/6 | 2011/9/5 |
| ETSTW-RE 002 | Function Generator | 33220A | MY43004982 | Agilent | Function Test | |
| ETSTW-RE 003 | EMI TEST RECEIVER | ESI 26 | 831438/001 | R&S | 2010/8/10 | 2011/8/9 |
| ETSTW-RE 004 | EMI TEST RECEIVER | ESI 40 | 832427/004 | R&S | 2010/9/14 | 2011/9/13 |
| ETSTW-RE 005 | EMI TEST RECEIVER | ESVS10 | 843207/020 | R&S | 2010/9/2 | 2011/9/1 |
| ETSTW-RE 006 | Attenuator 10dB | 50HF-010-5N-1 | None | STEP | 2010/3/5 | 2011/3/4 |
| ETSTW-RE 010 | ABSORBING CLAMP | MDS 21 | 3469 | Schwarzbeck | 2010/9/6 | 2011/9/5 |
| ETSTW-RE 012 | TUNABLE BANDREJECT FILTER | D.C 0309 | 146 | K&L | Function Test | |
| ETSTW-RE 013 | TUNABLE BANDREJECT FILTER | D.C 0336 | 397 | K&L | Function Test | |
| ETSTW-RE 018 | MICROWAVE HORN ANTENNA | AT4560 | 27212 | AR | 2010/10/4 | 2011/10/3 |
| ETSTW-RE 020 | MICROWAVE HORN ANTENNA | AT4002A | 306915 | AR | Function Test | |
| ETSTW-RE 021 | SWEEP GENERATOR | SWM05 | 835130/010 | R&S | 2010/8/20 | 2011/8/19 |
| ETSTW-RE 027 | Passive Loop Antenna | 6512 | 00034563 | EMCO | 2010/7/22 | 2011/7/21 |
| ETSTW-RE 028 | Log-Periodic Dipole Array Antenna | 3148 | 34429 | EMCO | 2010/4/14 | 2011/4/13 |
| ETSTW-RE 029 | Biconical Antenna | 3109 | 33524 | EMCO | 2010/4/14 | 2011/4/13 |
| ETSTW-RE 030 | Double-Ridged Guide Horn Antenna | 3117 | 00035224 | EMCO | 2010/3/2 | 2011/3/1 |
| ETSTW-RE 032 | Millivoltmeter | URV 55 | 849086/013 | R&S | 2010/10/4 | 2011/10/3 |
| ETSTW-RE 033 | WaveRunner 6000A Serise Oscilloscope | WAVERUNNER 6100A | LCRY0604P14508 | LeCroy | Function Test | |
| ETSTW-RE 034 | Power Sensor | URV5-Z4 | 839313/006 | R&S | 2010/10/4 | 2011/10/3 |
| ETSTW-RE 044 | Log-Periodic Antenna | HL050 | 100094 | R&S | 2010/5/11 | 2011/5/10 |
| ETSTW-RE 047 | PSA SERIES SPECTRUM ANALYZER | E4445A | MY46181369 | Agilent | Pre-test Use NCR | |
| ETSTW-RE 048 | Triple Loop Antenna | HXYZ 9170 | HXYZ 9170-134 | Schwarzbeck | 2010/8/30 | 2011/8/29 |
| ETSTW-RE 049 | TRILOG Super Broadband test Antenna | VULB 9160 | 9160-3185 | Schwarzbeck | 2010/4/13 | 2011/4/12 |
| ETSTW-RE 050 | Attenuator 10dB | 50HF-010-1 | None | JFW | 2010/3/5 | 2011/3/4 |



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| | | | | | | |
|-----------------|--------------------------------------|--|----------------|--------------------------|------------------|-----------|
| ETSTW-RE 051 | Attenuator 6dB | 50HF-006-1 | None | JFW | 2010/3/5 | 2011/3/4 |
| ETSTW-RE 053 | Attenuator 3dB | 50HF-003-1 | None | JFW | 2010/3/5 | 2011/3/4 |
| ETSTW-RE 055 | SPECTRUM ANALYZER | FSU 26 | 200074 | R&S | 2010/6/3 | 2011/6/2 |
| ETSTW-RE 060 | Attenuator 30dB | 5015-30 | F651012z-01 | ATM | Pre-test Use NCR | |
| ETSTW-RE 061 | Amplifier Module | CHC 1 | None | ETS | 2010/9/27 | 2011/9/26 |
| ETSTW-RE 062 | Amplifier Module | CHC 2 | None | KMIC | 2010/11/10 | 2011/11/9 |
| ETSTW-RE 064 | Bluetooth Test Set | MT8852B-042 | 6K00005709 | Anritsu | Function Test | |
| ETSTW-RE 065 | Amplifier | AMF-6F-18002650-25-10P | 941608 | MITEQ | 2010/4/13 | 2011/4/12 |
| ETSTW-RE 066 | Highpass Filter | H1G013G1 | 206015 | MICROWAVE CIRCUITS, INC. | 2010/3/5 | 2011/3/4 |
| ETSTW-RE 072 | CELL SITE TEST SET | 8921A | 3339A00375 | HP | 2010/10/7 | 2011/10/6 |
| ETSTW-RE 073 | Power Meter | N1911A | MY45100769 | Agilent | 2010/1/7 | 2011/1/6 |
| ETSTW-RE 074 | Power Sensor | N1921A | MY45241198 | Agilent | 2010/1/7 | 2011/1/6 |
| ETSTW-RE 081 | Highpass Filter | H03G13G1 | 4260-02 DC0428 | MICROWAVE CIRCUITS, INC. | 2010/3/5 | 2011/3/4 |
| ETSTW-RE 096 | SIGNAL GENERATOR | SMIQ 03B | 102274 | R&S | 2010/5/31 | 2011/5/30 |
| ETSTW-RE 099 | DC Block | 50DB-007-1 | None | JFW | 2010/3/5 | 2011/3/4 |
| ETSTW-RE 105 | 2.4GHz Notch Filter | NO124411 | 39555 | MICROWAVE CIRCUITS, INC. | 2010/3/25 | 2011/3/24 |
| ETSTW-RE 106 | Humidity Temperature Meter | TES-1366 | 091011113 | TES | 2010/3/25 | 2011/3/24 |
| ETSTW-GSM 002 | Universal Radio Communication Tester | CMU 200 | 109439 | R&S | 2010/10/7 | 2011/10/6 |
| ETSTW-GSM 019 | Band Reject Filter | WRCTF824/849-822/851-40/12+9SS | 3 | WI | Function Test | |
| ETSTW-GSM 020 | Band Reject Filter | WRCD1747/1748-1743/1752-32/5SS | 1 | WI | Function Test | |
| ETSTW-GSM 021 | Band Reject Filter | WRCD1879.5/1880.5-1875.5/1884.5-32/5SS | 3 | WI | Function Test | |
| ETSTW-GSM 022 | Band Reject Filter | WRCT901.9/903.1-904.25-50/8SS | 1 | WI | Function Test | |
| ETSTW-GSM 023 | Power Divider | 4901.19.A | None | SUHNER | 2010/9/20 | 2011/9/19 |
| ETSTW-Cable 002 | Microwave Cable | SUCOFLEX 104 (S_Cable 7) | 238093 | HUBER+SUHNER | 2010/9/27 | 2011/9/26 |
| ETSTW-Cable 003 | Microwave Cable | SUCOFLEX 104 (S_Cable 11) | 209953 | HUBER+SUHNER | 2010/9/27 | 2011/9/26 |
| ETSTW-Cable 006 | Microwave Cable | SUCOFLEX 104 (S_Cable 8) | 238095 | HUBER+SUHNER | 2010/3/5 | 2011/3/4 |
| ETSTW-Cable 010 | BNC Cable | 5 M BNC Cable | None | JYE BAO CO.,LTD. | 2010/3/5 | 2011/3/4 |
| ETSTW-Cable 011 | BNC Cable | BNC Cable 1 | None | JYE BAO CO.,LTD. | 2010/8/19 | 2011/8/18 |
| ETSTW-Cable 012 | BNC Cable | BNC Cable 2 | None | JYE BAO CO.,LTD. | 2010/8/19 | 2011/8/18 |
| ETSTW-Cable 013 | Microwave Cable | SUCOFLEX 104 (S_Cable 5) | 232345 | HUBER+SUHNER | 2010/3/5 | 2011/3/4 |
| ETSTW-Cable 022 | N TYPE Cable | OATS Cable 3 | 0002 | JYE BAO CO.,LTD. | 2010/3/5 | 2011/3/4 |
| ETSTW-Cable 028 | Microwave Cable | FA147A0015M2020 | 30064-2 | UTIFLEX | 2010/9/13 | 2011/9/12 |
| ETSTW-Cable 029 | Microwave Cable | FA147A0015M2020 | 30064-3 | UTIFLEX | 2010/9/13 | 2011/9/12 |
| ETSTW-Cable 039 | Microwave Cable | SUCOFLEX 104 (S_Cable 19) | 316739 | HUBER+SUHNER | 2010/3/5 | 2011/3/4 |



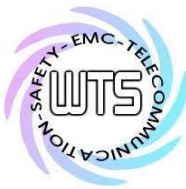
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| | | | | | |
|--------------|-----------------------------|----------------|------|-------------|---|
| WTSTW-SW 001 | EMI TEST SOFTWARE | Harmonics-1000 | None | EMC PARTNER | HARCS Version 4.16 Firmware Version 2.18 |
| WTSTW-SW 002 | EMI TEST SOFTWARE | EZ_EMCC | None | Farad | Version ETS-03A1 |
| WTSTW-SW 003 | EMS TEST SOFTWARE | i2 | None | AUDIX | Version 3.2007-8-17b |
| WTSTW-SW 005 | GSM Fading Level Correction | GSMFadLevCor | None | R&S | Version 1.66 |



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2.4 General Test Procedure

POWER LINE CONDUCTED INTERFERENCE: The procedure used was ANSI STANDARD C63.4-2003 using a 50 μ 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 according to ANSI STANDARD C63.4-2003 employing a spectrum analyzer. For investigated frequency is equal to or below 1GHz, the RBW and VBW of the spectrum analyzer was 100 kHz and 100kHz respectively with an appropriate sweep speed. For investigated frequency is above 1GHz, both of RBW and VBW of the spectrum analyzer were 1 MHz with an appropriate sweep speed. The analyzer was calibrated in dB above a microvolt at the output of the antenna.

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 μ V) to the antenna correction factor supplied by the antenna manufacturer. The antenna correction factors are stated in terms of dB.

Example:

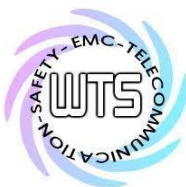
Freq (MHz) METER READING + ACF + CABLE LOSS (to the receiver) = FS
33 20 dB μ V + 10.36 dB + 6 dB = 36.36 dB μ V/m @3m

ANSI STANDARD C63.4-2003 10.1.7 MEASUREMENT PROCEDURES: The EUT was placed on a table 80 cm height and with dimensions of 1m by 1.5m (non metallic table). The EUT was placed in the centre of the table. The table used for radiated measurements is capable of continuous rotation. The spectrum was scanned from 30 MHz to 10th harmonic of the fundamental.

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

Measurements were made by Worldwide Testing Services(Taiwan) Co., Ltd. at the registered open field test site located at No.5-1, Shuang Sing Village, LiShuei Rd., Wanli Township, Taipei County 207, Taiwan (R.O.C.) 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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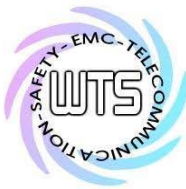
FCC ID: TH9OPSS-2

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3 Test results (enclosure)

| Test case | Para. Number | Required | Test passed | Test failed |
|--|--------------------------------|-------------------------------------|-------------------------------------|--------------------------|
| Peak Output Power | 15.209 IC RSS-210 2.7 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| Spurious Emissions radiated – Transmitter operating | 15.209 IC RSS-210 A1.1.2 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| Occupied bandwidth | 2.1049 IC RSS-210 A1.1.3 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| Antenna Requirement | FCC 15.203 IC RSS-Gen | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| Power Line Conducted Emission | FCC 15.207 IC RSS-Gen | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

The follows is intended to leave blank.



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3.1 Peak Output Power

FCC Rules: 15.209

The power was measured with modulation (declared by the applicant).

| Frequency (kHz) | Transmitter field strength (dBμV/m) |
|--------------------------------|-------------------------------------|
| 125.000000000 | 69.52 |
| Measurement uncertainty | ± 4.86 dB |

Limits: 15.209

| Frequency of Emission (MHz) | Field Strength of Fundamental Limit uV/m | Measurement distance |
|-----------------------------|--|----------------------|
| 0.009 – 0.490 | 2400 / f (KHz) | 300 |
| 0.49 – 1.705 | 24000 / f (KHz) | 30 |
| 1.705 – 30 | 30 | 30 |
| 30 – 88 | 100 | 3 |
| 88 – 216 | 150 | 3 |
| 216 – 960 | 200 | 3 |
| Above 960 | 500 | 3 |

The test was performed in the anechoic chamber at 3 meter test distance, i.e. the distance between measuring antenna and EUT boundary. The results were extrapolated by using the square of an inverse linear distance factor DF:

DF (distance factor) = $40 \log (D_1/D_2) = 80$ dB, where

D_1 is the 300 meter specified measurement distance,
 D_2 is the 3 meter test measurement distance.

For 125 kHz frequency the calculated limit is:

$Limit_{3m} = Limit_{300m} + DF = 25.6dBuV/m + 80 dB = 105.6 dBuV/m$

Test equipment used: ETSTW-RE 003, ETSTW-RE 004, ETSTW-RE 027, ETSTW-RE 055.

Explanation: See attached diagrams in appendix.



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3.2 Spurious Emissions radiated – Transmitter operating

FCC Rules: 15.209

The field strength of any emission appearing outside of the specific band shall not exceed the general radiated emission limits in 15.209.

For the frequency from 9 kHz to 30 MHz:

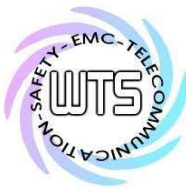
| Frequency (kHz) | Test Result (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) |
|--------------------------------|--------------------------------|----------------------|-------------|
| 64.653449709 | 98.85 | 111.39 | -12.54 |
| 78.026811130 | 89.90 | 109.76 | -19.86 |
| 130.281368118 | 88.26 | 105.31 | -17.05 |
| 2145.437164 | 53.62 | 69.54 | -15.92 |
| 2687.270515 | 53.13 | 69.54 | -16.41 |
| 5232.466943 | 46.11 | 69.54 | -23.43 |
| 7912.815545 | 43.07 | 69.54 | -26.47 |
| Measurement uncertainty | ± 4.86dB | | |

Note: The above field strength limits are specified at a distance of 3 meters.

For the frequency from 30 MHz to 1000 MHz.:

Model: OPSS2 Date: 2010/11/16
 Mode: Temperature: 24 °C Engineer: Robert
 Polarization: Horizontal Humidity: 58 %

| Frequency (MHz) | Reading (dBuV) | Detector | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Table Degree (Deg.) | Ant. High (cm) |
|-----------------|----------------|----------|-------------|-----------------|----------------|-------------|---------------------|----------------|
| 105.7514 | 26.38 | peak | 11.89 | 38.27 | 43.50 | -5.23 | 280 | 150 |
| 224.2485 | 14.64 | peak | 13.63 | 28.27 | 46.00 | -17.73 | 140 | 150 |
| 288.0962 | 15.56 | peak | 15.93 | 31.49 | 46.00 | -14.51 | 30 | 150 |
| 598.7975 | 8.96 | peak | 23.52 | 32.48 | 46.00 | -13.52 | 210 | 150 |
| 696.9940 | 8.85 | peak | 24.80 | 33.65 | 46.00 | -12.35 | 140 | 150 |
| 907.4148 | 8.88 | peak | 27.78 | 36.66 | 46.00 | -9.34 | 190 | 150 |



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Polarization: Vertical

| Frequency (MHz) | Reading (dBuV) | Detector | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Table Degree (Deg.) | Ant. High (cm) |
|-----------------|----------------|----------|-------------|-----------------|----------------|-------------|---------------------|----------------|
| 103.5871 | 20.52 | peak | 11.49 | 32.01 | 43.50 | -11.49 | 210 | 150 |
| 196.6533 | 13.52 | peak | 12.14 | 25.66 | 43.50 | -17.84 | 130 | 150 |
| 288.0962 | 14.33 | peak | 15.93 | 30.26 | 46.00 | -15.74 | 140 | 150 |
| 521.6432 | 9.23 | peak | 21.54 | 30.77 | 46.00 | -15.23 | 30 | 150 |
| 660.5210 | 9.19 | peak | 24.26 | 33.45 | 46.00 | -12.55 | 140 | 150 |
| 911.6231 | 9.13 | peak | 27.86 | 36.99 | 46.00 | -9.01 | 180 | 150 |

- 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. **Measurement uncertainty 0.009-30MHz = ± 4.86dB, 30-1000MHz = ± 4.94dB, 1-18 GHz = ± 5.50dB, 18-40 GHz = ± 5.20 dB ; Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.**
 6. **See the attached diagram as appendix.**

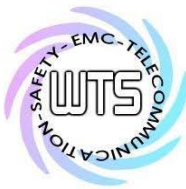
All other not noted test plots do not contain significant test results in relation to the limits.

TEST RESULT (Transmitter): The unit DOES meet the FCC requirements.

Limits: 15.209

| Frequency of Emission (MHz) | Field Strength of Fundamental Limit uV/m | Measurement distance |
|-----------------------------|--|----------------------|
| 0.009 – 0.490 | 2400 / f (KHz) | 300 |
| 0.49 – 1.705 | 24000 / f (KHz) | 30 |
| 1.705 – 30 | 30 | 30 |
| 30 – 88 | 100 | 3 |
| 88 – 216 | 150 | 3 |
| 216 – 960 | 200 | 3 |
| Above 960 | 500 | 3 |

* In the emission table above, the tighter limit applies at the band edges.



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The test was performed in the anechoic chamber at 3 meter test distance, i.e. the distance between measuring antenna and EUT boundary. The results were extrapolated by using the square of an inverse linear distance factor DF:

$$DF = 40 \log (D_1/D_2) = 80 \text{ dB, where}$$

For D_1 is the 300 meter specified measurement distance.

D_2 is the 3 meter test measurement distance.

The DF = 80 dB was applied for limit calculation at 3 meter test distance measurements.

For D_1 is the 30 meter specified measurement distance.

D_2 is the 3 meter test measurement distance.

The DF = 40 dB was applied for limit calculation at 3 meter test distance measurements.

If the frequency between 9 – 490 kHz,

$$\text{Limit} = 20\log(2400/f(\text{kHz})) + 80$$

If the frequency between 490 – 1705 kHz,

$$\text{Limit} = 20\log(2400/f(\text{kHz})) + 40$$

If the frequency between 1705 – 30000 kHz,

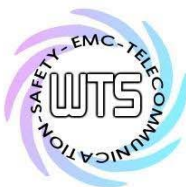
$$\text{Limit} = 20\log 30 + 40$$

For 125 kHz frequency the calculated limit is:

$$\text{Limit}_{3\text{m}} = \text{Limit}_{300\text{m}} + DF = 25.6\text{dBuV/m} + 80 \text{ dB} = 105.6 \text{ dBuV/m}$$

Test equipment used: ETSTW-RE 003, ETSTW-RE 004, ETSTW-RE 027, ETSTW-RE 028,
ETSTW-RE 029, ETSTW-RE 055, ETSTW-RE 049.

Explanation: See attached diagrams in appendix.



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3.3 Occupied Bandwidth

FCC Rules: 2.1049

The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated are each equal to 0.5% of the total mean power radiated by a given emission.

The resolution bandwidth of the spectrum analyzer shall be set to a value greater than 5.0% of the allowed bandwidth specifications are given, the following guidelines are used:

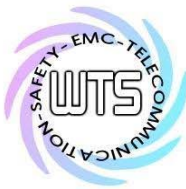
| Fundamental frequency | Minimum resolution bandwidth |
|-----------------------|------------------------------|
| 9 kHz to 30 MHz | 1 kHz |
| 30 MHz to 1000 MHz | 10 kHz |
| 1000 MHz to 40 GHz | 100 kHz |

Test result:

| Frequency (kHz) | Occupied Channel Bandwidth (kHz) |
|----------------------------|---|
| 125.000000000 kHz | 7.115384615 kHz |

Test equipment: ETSTW-RE 055

Explanation: See attached diagrams in appendix.



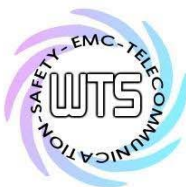
Registration number: W6M21007-10792-P-15
FCC ID: TH9OPSS-2
IC: 6361A-OPSS2

3.4 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 antenna is CHOKER COIL which passes antenna requirement.

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



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3.5 Power Line Conducted Emission

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 (dB μ V) | |
|-----------|--------------------|------------------|
| | quasi-peak | average |
| 150 kHz | Lower limit line | Lower limit line |

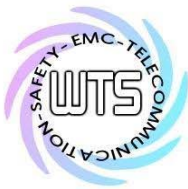
Model: -- Date: --
 Mode: Temperature: 24 °C Engineer: --
 Polarization: N Humidity: 60 %

| Frequency (MHz) | Reading (dB μ V) | | Factor (dB) Corr. | Result (dB μ V) | | Limit (dB μ V) | | Margin (dB) |
|--------------------|-------------------------|------|-------------------------|------------------------|------|-----------------------|------|----------------|
| | QP | Ave. | | QP | Ave. | QP | Ave. | |
| -- | -- | -- | -- | -- | -- | -- | -- | -- |
| -- | -- | -- | -- | -- | -- | -- | -- | -- |

Polarization: L1

| Frequency (MHz) | Reading (dB μ V) | | Factor (dB) Corr. | Result (dB μ V) | | Limit (dB μ V) | | Margin (dB) |
|--------------------|-------------------------|------|-------------------------|------------------------|------|-----------------------|------|----------------|
| | QP | Ave. | | QP | Ave. | QP | Ave. | |
| -- | -- | -- | -- | -- | -- | -- | -- | -- |
| -- | -- | -- | -- | -- | -- | -- | -- | -- |

- Note**
1. The formula of measured value as: **Test Result = Reading + Correction Factor**
 2. The **Correction Factor = Cable Loss + LISN Insertion Loss + Pulse Limit Loss**
 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. **Measurement uncertainty = ± 1.30 dB; Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.**
 6. **The EUT is battery-used, so this test is not required.**



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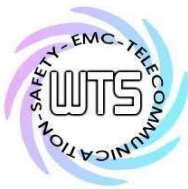
FCC ID: TH9OPSS-2

IC: 6361A-OPSS2

Limits:

| Frequency of Emission (MHz) | Conducted Limit (dBuV) | |
|-----------------------------|------------------------|----------|
| | Quasi Peak | Average |
| 0.15-0.5 | 66 to 56 | 56 to 46 |
| 0.5-5 | 56 | 46 |
| 5-30 | 60 | 50 |

Test equipment used: ETSTW-CE 001, ETSTW-CE 004, ETSTW-CE 006, ETSTW-RE 064.



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FCC ID: TH9OPSS-2
IC: 6361A-OPSS2

Appendix

A Measurement diagrams

1. Peak Output Power
2. Spurious Emissions radiated- transmitter
3. Occupied Bandwidth

B Photos

1. External Photos
2. Internal Photos
3. Set Up Photo of Radiated Emission

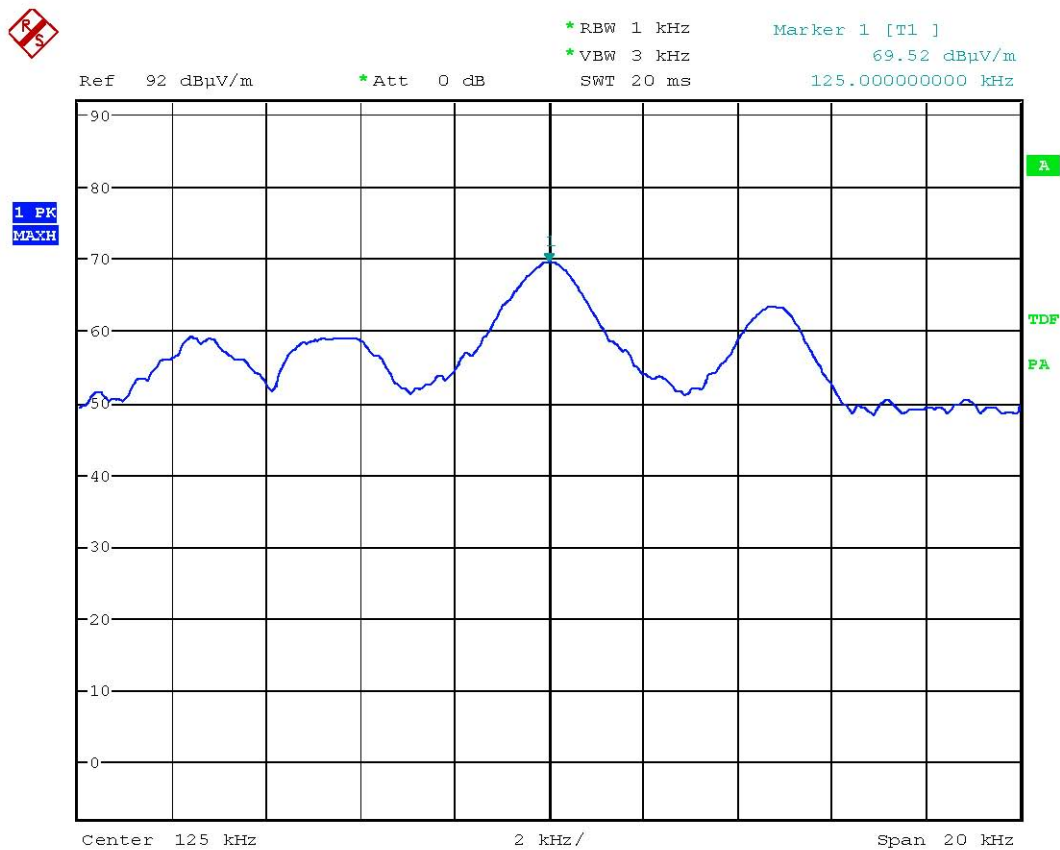


Registration number: W6M21007-10792-P-15

FCC ID: TH9OPSS-2

IC: 6361A-OPSS2

Peak Output Power



Peak Output Power

Date: 19.NOV.2010 12:12:14



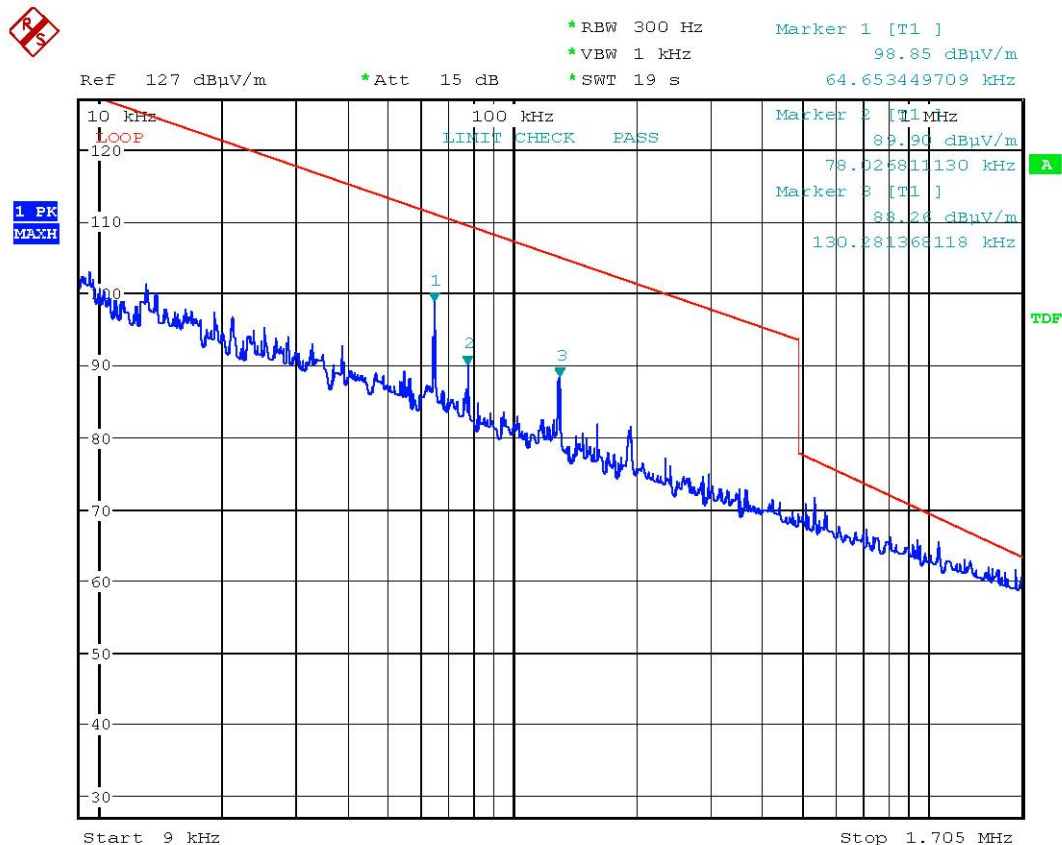
Registration number: W6M21007-10792-P-15

FCC ID: TH9OPSS-2

IC: 6361A-OPSS2

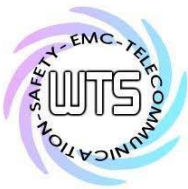
Spurious Emissions radiated- transmitter

Frequency from 9 kHz to 30000 kHz:



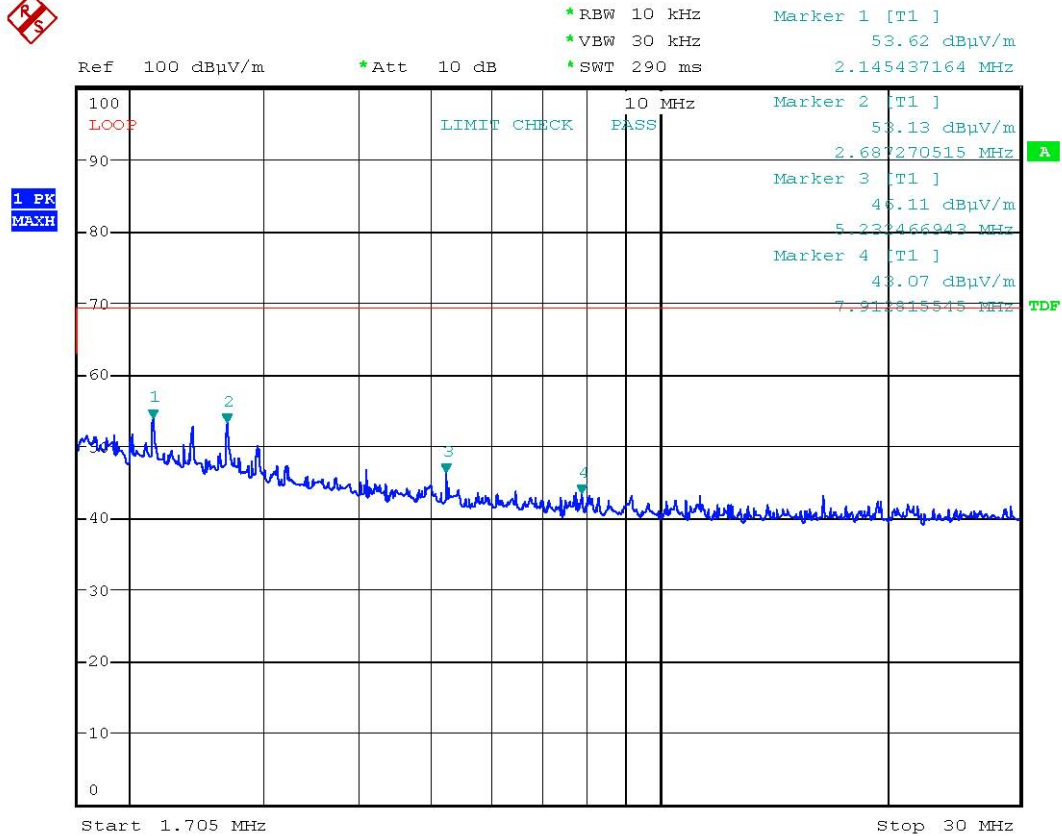
Spurious Emission

Date: 23.NOV.2010 08:43:48



Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6M21007-10792-P-15
FCC ID: TH9OPSS-2
IC: 6361A-OPSS2



Spurious Emission

Date: 23.NOV.2010 08:48:54



Worldwide Testing Services(Taiwan) Co., Ltd.

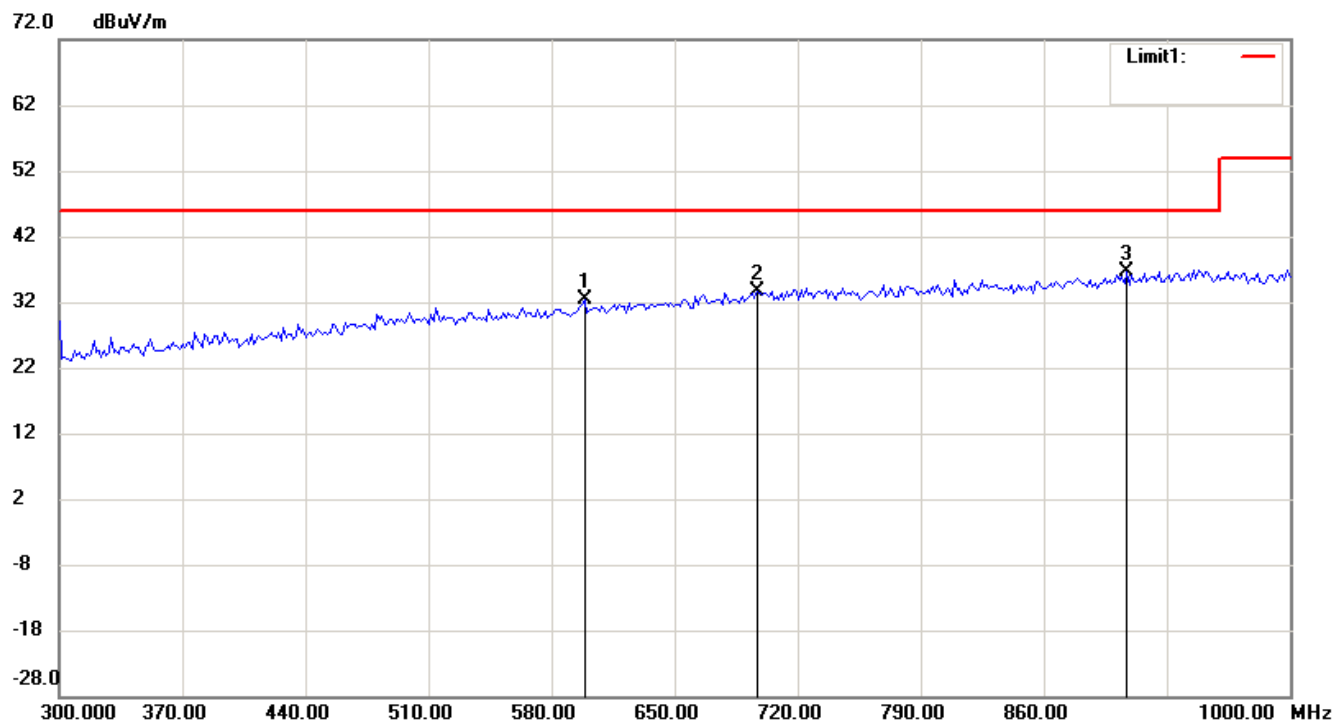
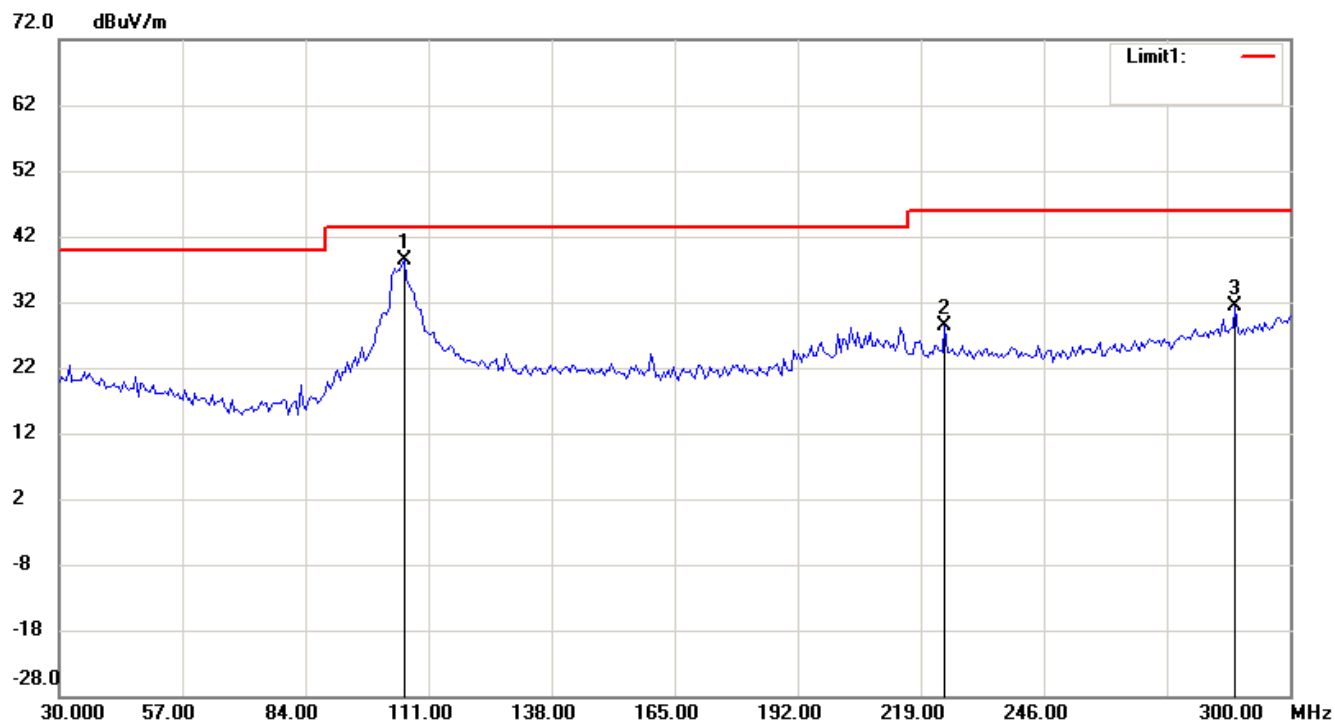
Registration number: W6M21007-10792-P-15

FCC ID: TH9OPSS-2

IC: 6361A-OPSS2

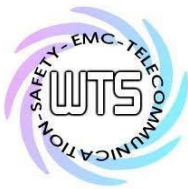
Frequency from 30 MHz to 1000 MHz:

Antenna Polarization H



Note:

1. The attached measurement plots are preliminarily pre-scanned with peak detector for determining the final checking frequencies and are for reference only.
2. The some frequencies may exceed the limit line without the specified detectors, but that cannot present the results are failed to the specification of test standard.
3. For corrected test results are listed in the relevant table of radiated test data of this test report.

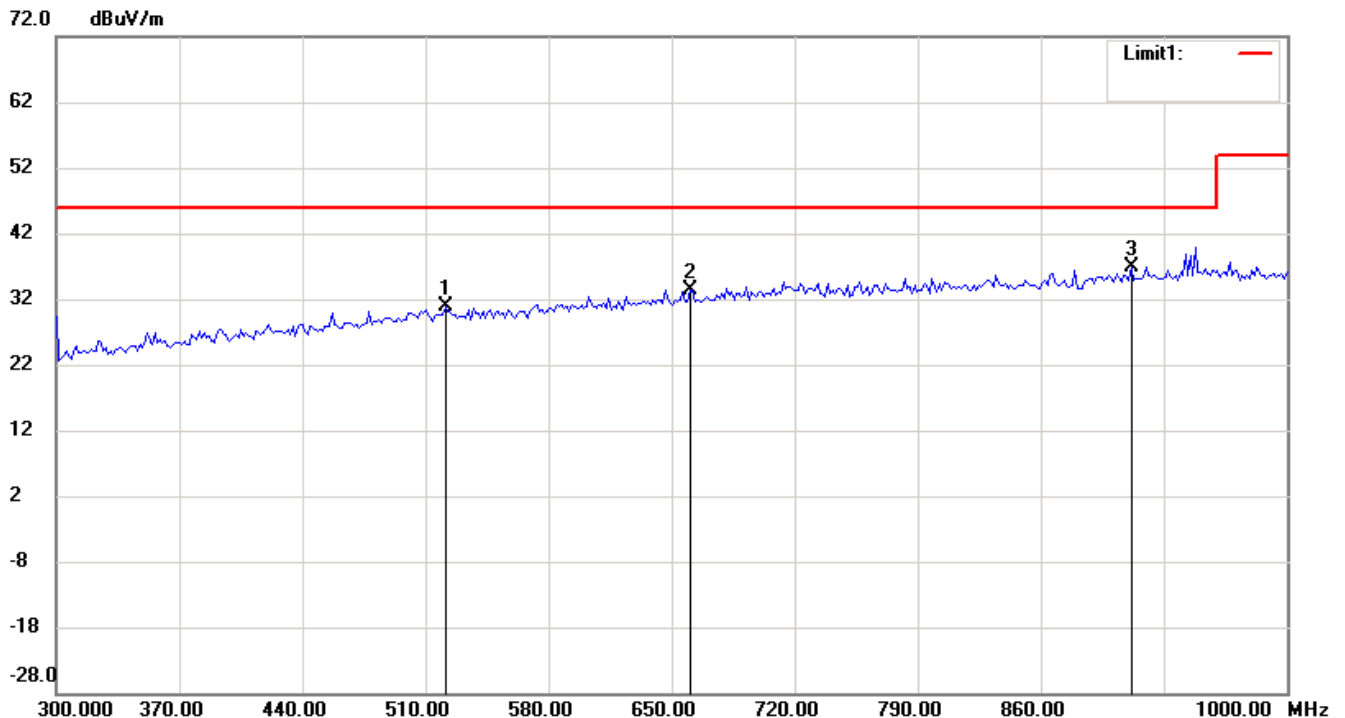
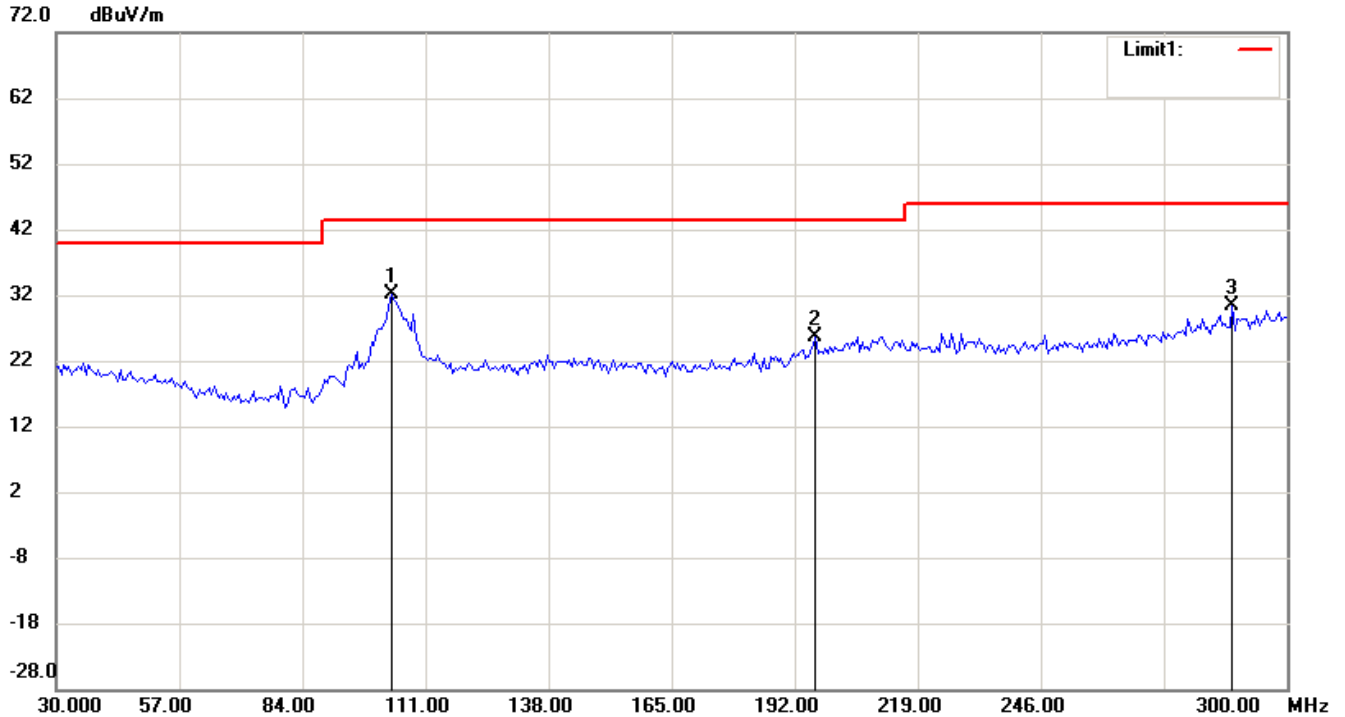


Registration number: W6M21007-10792-P-15

FCC ID: TH9OPSS-2

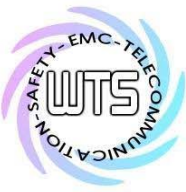
IC: 6361A-OPSS2

Antenna Polarization V



Note:

1. The attached measurement plots are preliminarily pre-scanned with peak detector for determining the final checking frequencies and are for reference only.
2. The some frequencies may exceed the limit line without the specified detectors, but that cannot present the results are failed to the specification of test standard.
3. For corrected test results are listed in the relevant table of radiated test data of this test report.



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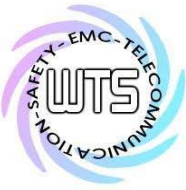
Registration number: W6M21007-10792-P-15

FCC ID: TH9OPSS-2

IC: 6361A-OPSS2

External Photos

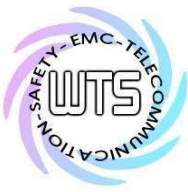




Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6M21007-10792-P-15
FCC ID: TH9OPSS-2
IC: 6361A-OPSS2

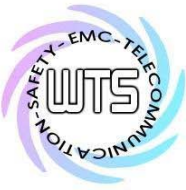




Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6M21007-10792-P-15
FCC ID: TH9OPSS-2
IC: 6361A-OPSS2

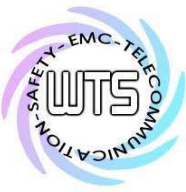




Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6M21007-10792-P-15
FCC ID: TH9OPSS-2
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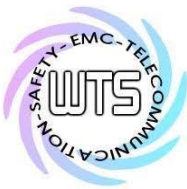




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Registration number: W6M21007-10792-P-15
FCC ID: TH9OPSS-2
IC: 6361A-OPSS2

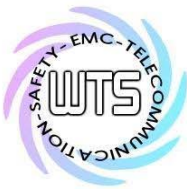




Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6M21007-10792-P-15
FCC ID: TH9OPSS-2
IC: 6361A-OPSS2

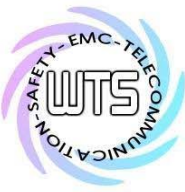




Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6M21007-10792-P-15
FCC ID: TH9OPSS-2
IC: 6361A-OPSS2

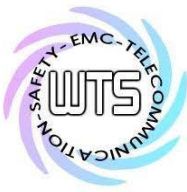




Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6M21007-10792-P-15
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IC: 6361A-OPSS2





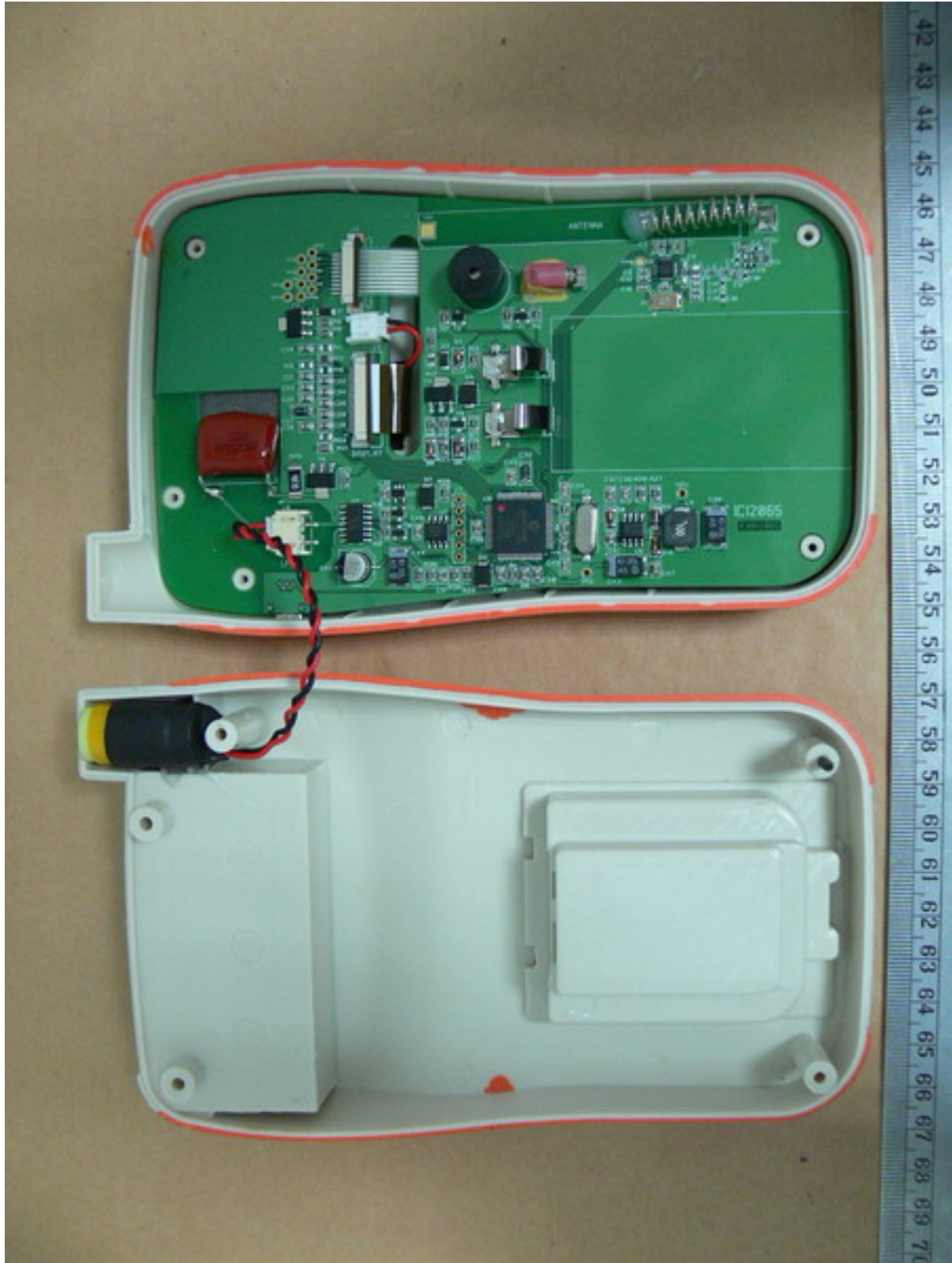
Worldwide Testing Services(Taiwan) Co., Ltd.

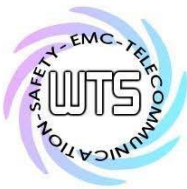
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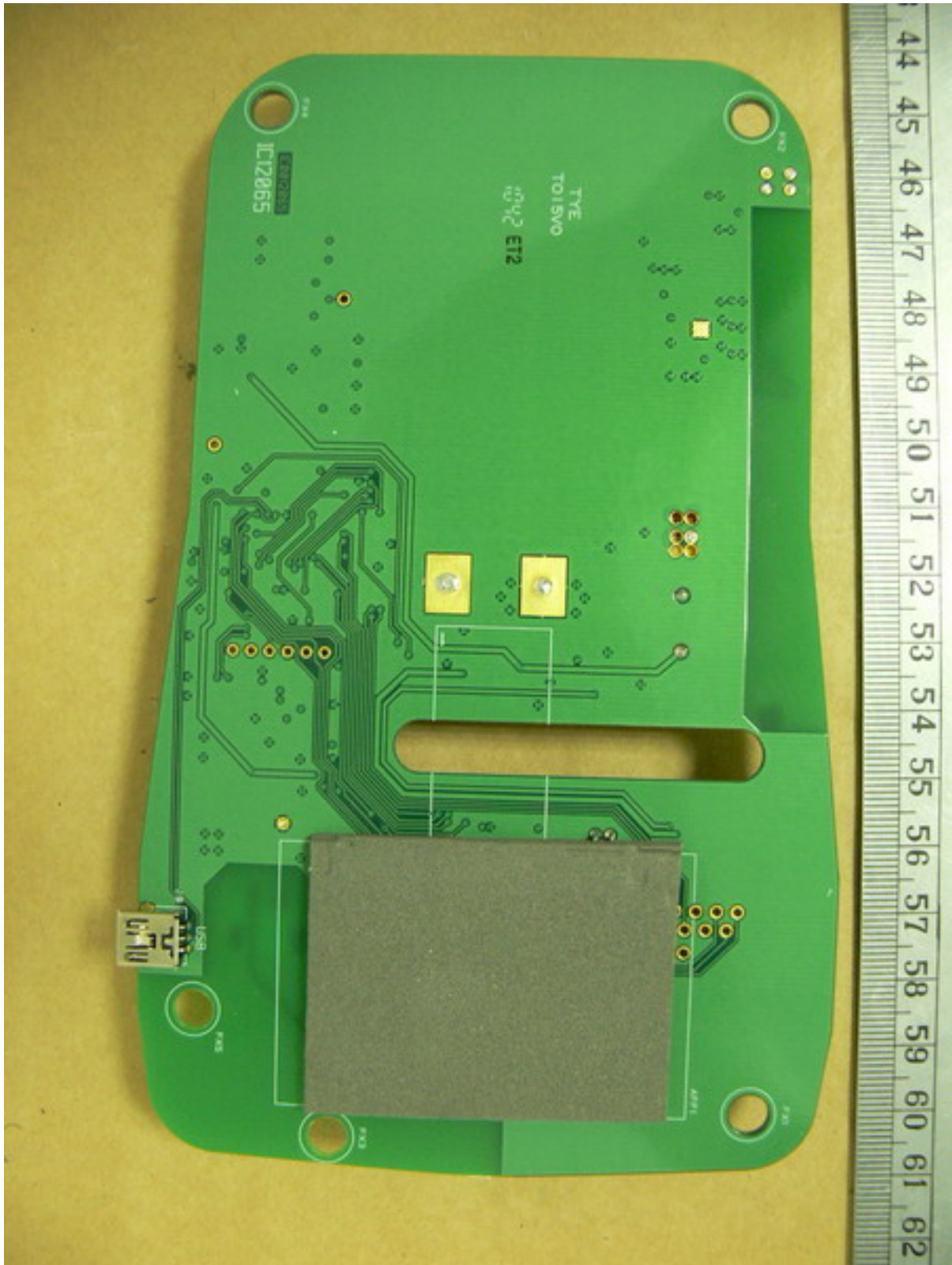
Internal Photos

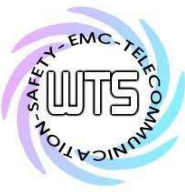




Worldwide Testing Services(Taiwan) Co., Ltd.

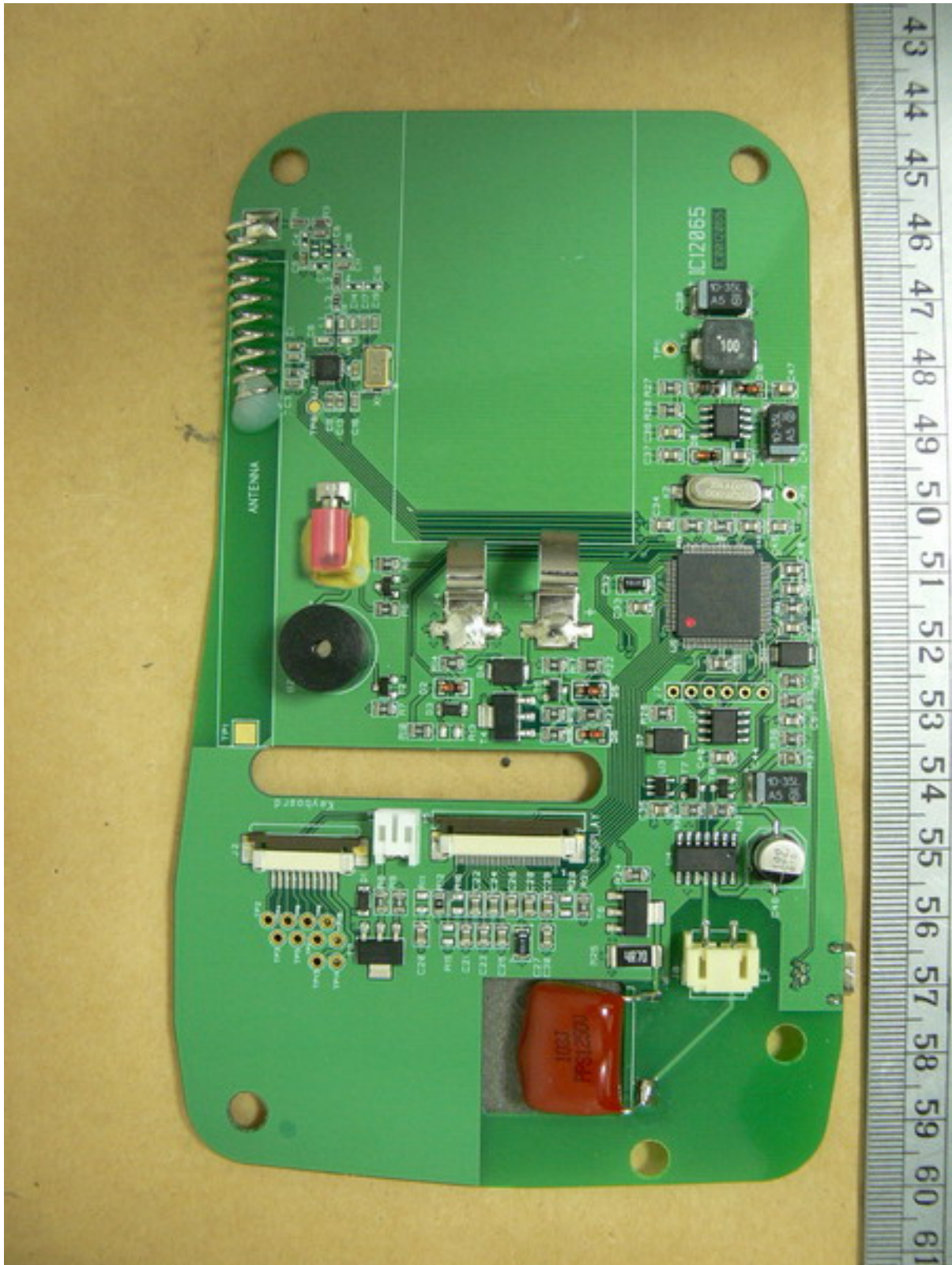
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FCC ID: TH9OPSS-2
IC: 6361A-OPSS2





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Registration number: W6M21007-10792-P-15
FCC ID: TH9OPSS-2
IC: 6361A-OPSS2





Registration number: W6M21007-10792-P-15

FCC ID: TH9OPSS-2

IC: 6361A-OPSS2

Set Up Photo of Radiated Emission

Frequency from 9 kHz to 30000 kHz





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Registration number: W6M21007-10792-P-15
FCC ID: TH9OPSS-2
IC: 6361A-OPSS2
Frequency from 30 MHz to 1000 MHz

