

ETS Dr.GenZ Taiwan PS Co., Ltd.

FCC Registration No.: 930600

Accredited Testing Laboratory



A2LA Cert.No.: 2300.01

PTCRB Accredited Type Certification Test House

TEST - REPORT

FCC RULES PART 15 / SUBPART C

FCC ID:ELVATFE

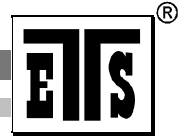
Test report no.:

W6M20607-7174-C-1

FCC

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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.

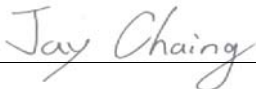
The existence of the tests nevertheless provides the confidence that the test sample possesses the qualities as maintained and that its performance generally conforms to representative cases of communications equipment.

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

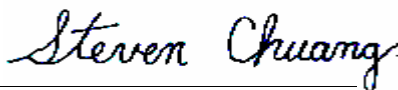
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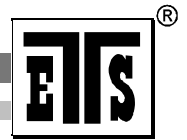
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Tester:

| | | | |
|---------------|----------|------------|--|
| July 19, 2006 | | Jay Chaing |  |
| Date | ETS-Lab. | Name | Signature |

Technical responsibility for area of testing:

| | | | |
|---------------|-----|---------------|--|
| July 19, 2006 | | Steven Chuang |  |
| Date | ETS | Name | Signature |



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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

ETS DR. GENZ TAIWAN PS 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-registration number: 2300.01

FCC filed test laboratory Reg. No. 930600

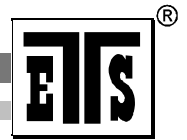
Industry Canada filed test laboratory Reg. No. IC 5679

PTCRB Accredited Type Certification Test House

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

1.3 Details of approval holder

Name : NUTEK CORPORATION
Street : 5F, NO.3, ALLEY 6, LANE 45 PAO-HSING RD
Town : HSING-TIEN CITY, TAIPEI
Country : Taiwan R.O.C.
Telephone : +886-2-2918-9478*190
Fax : +886-2-2917-9069



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1.4 Application details

Date of receipt of application : July 14, 2006
Date of receipt of test item : July 14, 2006
Date of test : from July 14, 2006 to July 18, 2006

1.5 Test item

Description of test item : ALARM DEVICE
Type identification : A1BTX
Brand name : ./.
Serial number : Test sample without serial number
Transmitting frequency : 433.9 MHz
Operation mode : simplex
Voltage supply : 6 V DC (1.5 VDC × 4Battery)

(If the device is using battery, please check if the device is tested under fresh battery condition.)

Highest clock frequency : 433.9 MHz
Antenna type : spiral antenna
Photos : see Annex

Manufacturer (if applicable)

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

Additional information : ./.

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1.6 Test standards

Technical standard : FCC RULES PART 15 / SUBPART B § 15.109/ SUBPART C
§ 15.203, § 15.209, § 15.231 (a)

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 2.5 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 : 6 V DC (1.5 VDC × 4Battery)

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2.3 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 | 2005/10/27 | 2006/10/26 |
| 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 | 2005/10/25 | 2006/10/24 |
| ETSTW-CE 005 | Line-Impedance Stabilisation Network | NNBM 8126D | 137 | Schwarzbeck | 2005/10/21 | 2006/10/20 |
| ETSTW-CE 006 | IMPULS-BEGRENZER PULSE LIMITER | ESH3-Z2 | 100226 | R&S | 2004/11/11 | 2006/11/10 |
| ETSTW-CE 008 | ABSORBING CLAMP | MDS 21 | 3469 | ABSORPTIONS- MESSWANDLER- ZANGE | 2005/10/24 | 2007/10/23 |
| ETSTW-CE 009 | TEMP.&HUMIDITY CHAMBER | GTH-225-40-1P-U | MAA0305-009 | GIANT FORCE | 2005/8/18 | 2006/8/17 |
| ETSTW-CE 011 | Power Line Conducted Emission Only | None | None | ETS | 2005/10/25 | 2006/10/24 |
| ETSTW-CE 012 | Dual-Phase-V-Network | NNB-2/16Z | 03/10201 | Telemeter | 2006/6/13 | 2007/6/12 |
| ETSTW-RE 002 | Function Generator | 33220A | MY43004982 | Agilent | 2005/10/14 | 2007/10/13 |
| ETSTW-RE 003 | EMI TEST RECEIVER | ESI 26 | 831438/001 | R&S | 2005/10/24 | 2006/10/23 |
| ETSTW-RE 004 | EMI TEST RECEIVER | ESI 40 | 832427/004 | R&S | 2005/10/29 | 2006/10/30 |
| ETSTW-RE 005 | EMI TEST RECEIVER | ESVS10 | 843207/020 | R&S | 2005/10/16 | 2006/10/15 |
| 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 | ANTENNA | HL025 | 352886/001 | R&S | 2006/5/4 | 2008/5/3 |
| ETSTW-RE 018 | ANTENNA | AT4560 | 27212 | AR | 2004/11/8 | 2007/11/7 |
| ETSTW-RE 021 | SWEEP GENERATOR | SWM05 | 835130/010 | R&S | 2005/10/14 | 2006/10/13 |
| ETSTW-RE 022 | AMPLIFIER | 8447D | 2944A09837 | Agilent | 2005/10/14 | 2006/10/13 |
| ETSTW-RE 027 | Passive Loop Antenna | 6512 | 34563 | EMCO | 2004/6/30 | 2007/6/29 |
| 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 Waveguide Horn Antenna | 3117 | 35224 | EMCO | 2006/5/3 | 2008/5/2 |
| ETSTW-RE 032 | Millivoltmeter | URV 55 | 849086/013 | R&S | 2005/10/17 | 2006/10/16 |
| ETSTW-RE 033 | 4CH 1GHz 5GS/s DSO | WAVERUNNER 6100A | LCRY0604P14508 | LeCory | 2005/8/11 | 2006/8/10 |
| ETSTW-RE 034 | Power Sensor | URV5-Z4 | 839313/006 | R&S | 2005/10/17 | 2006/10/16 |
| ETSTW-RE 037 | Log-Periodic DipoleArray Antenna | 3148 | 00034546 | EMCO | 2004/11/18 | 2006/11/17 |
| ETSTW-RE 038 | Log-Periodic DipoleArray Antenna | 3148 | 00034547 | EMCO | 2004/11/18 | 2006/11/17 |
| ETSTW-RE 039 | Biconical Antenna | 3110B | 41760 | EMCO | 2004/11/18 | 2006/11/17 |

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| | | | | | | |
|---------------|--------------------------------------|-----------------|---------------|----------------|---------------|------------|
| ETSTW-RE 040 | Biconical Antenna | 3110B | 41761 | EMCO | 2004/11/18 | 2006/11/17 |
| ETSTW-RE 042 | ANTENNA | HK116 | 100172 | R&S | 2005/1/14 | 2007/1/13 |
| ETSTW-RE 043 | ANTENNA | HL223 | 100166 | R&S | 2006/5/8 | 2008/5/7 |
| ETSTW-RE 044 | ANTENNA | HL050 | 100094 | R&S | 2006/5/29 | 2008/5/28 |
| 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 | 2005/5/19 | 2007/5/18 |
| ETSTW-RE 055 | SPECTRUM ANALYZER | FSU-26 | 200074 | R&S | 2005/9/6 | 2006/9/5 |
| ETSTW-EMI 001 | HARMONICS 1000 | HAR1000-1P | 93 | EMC-PARTNER | 2005/9/12 | 2006/9/11 |
| ETSTW-EMS 002 | Frequency Converter | YF-6020 | 0308014 | T-Power | Function Test | |
| ETSTW-GSM 01 | SIM Simulator | IT3 | B2004-50106 | ORGA | 2005/9/15 | 2006/9/14 |
| ETSTW-GSM 02 | Universal Radio Communication Tester | CMU 200 | 103489 | R&S | 2005/11/15 | 2006/11/14 |
| ETSTW-GSM 03 | Agilent 8960 Test Set 1 | E5515C | GB44052675 | Agilent | 2006/7/13 | 2008/7/12 |
| ETSTW-GSM 04 | Agilent 8960 Test Set 2 | E5515C | GB44052665 | Agilent | 2006/7/13 | 2008/7/12 |
| ETSTW-GSM 05 | Agilent 8960 Test Set 3 | E5515C | GB44052652 | Agilent | 2006/7/16 | 2008/7/15 |
| ETSTW-GSM 06 | Agilent 8960 Test Set 4 | E5515C | GB44052684 | Agilent | 2006/7/16 | 2008/7/15 |
| ETSTW-GSM 07 | Agilent 8960 Test Set 5 | E5515C | GB44052658 | Agilent | 2006/7/13 | 2008/7/12 |
| ETSTW-GSM 08 | Agilent 8960 Test Set 6 | E5515C | GB44052666 | Agilent | 2006/7/16 | 2008/7/15 |
| ETSTW-GSM 10 | Combiner Wessex / Anite | B4605/100 | 053 | Wessex / Anite | 2006/7/13 | 2008/7/12 |
| ETSTW-GSM 11 | GSM 850,900,1800,1900 Test system | TS8950G | | R&S | 2005/11/1 | 2006/10/31 |
| ETSTW-GSM 12 | Acoustical Calibrator | 4231 | 2463874 | Brüel&Kjær | 2005/10/31 | 2006/10/30 |
| ETSTW-GSM 16 | TEMP.&HUMIDITY CHAMBER | GTH-120-40-1P-U | MAA0501002 | GIANT FORCE | 2005/12/29 | 2006/12/28 |
| ETSTW-GSM 18 | AUDIO ANALYZER | UPL16 | 100173 | R&S | 2005/10/29 | 2006/10/28 |
| ETSTW-GSM 24 | Vibration Testing System | VS-100V | 5494 | Vibration | 2005/12/20 | 2006/12/19 |

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2.4 General Test Procedure

POWER LINE CONDUCTED INTERFERENCE: The procedure used was ANSI STANDARD C63.4-2003 5.2 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 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. The ambient temperature of the UUT was 23°C with a humidity of 40 %.

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/m + 6 dB = 36.36 dB μ 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 10th harmonic of the fundamental.

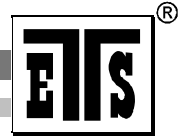
Peak readings were taken in three (3) orthogonal planes and the highest readings.

Measurements were made by ETS Dr. Genz Taiwan PS 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.

ANTENNA & GROUND:

This unit uses spiral antenna. (see photo).



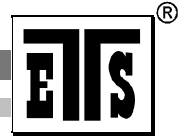
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3 Test results (enclosure)

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"/> |
| Radiated Emission from Receiver | FCC 15.109 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Radiated Emission from Digital Part | FCC 15.109 | <input type="checkbox"/> | <input 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.



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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 1.67 second of being released.
- This transmitter is operated by automatic activation and active will cease transmission in __second after activation..

Remark: See attached appendix A



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3.2 Output Power (Field Strength)

| Test condition | | Transmitter field strength (dB μ V/m) | |
|--|--------------------------|---|-------|
| $T_{nom} = 23\text{ }^{\circ}\text{C}$ | $V_{nom} = 6\text{V DC}$ | PK | AV |
| | | 90.57 | 79.48 |
| Measurement uncertainty | | < 3 dB | |

Limit 15.231(b)

| Fundamental Frequency (MHz) | Field strength of fundamental, limit μ V/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** (433.92 MHz: 80.8 dB μ V/m = 10,965 μ V/m) |
| Above 470 | 12,500 |

** linear interpolation

Remarks: see attached diagrams

Test equipment used: ETSTW-RE 003, ETSTW-RE 0004, ETSTW-RE 055, ETSTW-RE 049

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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.

Limits:

For frequencies below 1GHz :

Max permitted average Limits = Max. reading – 20 dB

80.80 dB μ V/m- 20 dB= 60.80 dB μ V/m

Guidance on Measurement of pulsed emission: 815.231 (b), §15.35(c)

“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.” Here the correction was added to the limit instead subtracted from the reading.

Duty Cycle correction = 20 log (dwell time/100ms)

For frequencies above 1GHz (Peak measurements).

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

80.80 dB μ V/m

For frequencies above 1GHz (Average measurements).

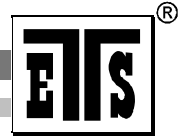
Correction factor conform 15.35 (c) (Average measurements)

Duty cycle correction :

Max. reading – 20 dB – duty cycle correction

No duty cycle correction was added to the reading:

80.80 dB μ V/m- 20 dB= 60.80 dB μ V/m



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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 (dwell time/100ms)

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 dBμV/m + 20 dB = 74 dBμV/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.

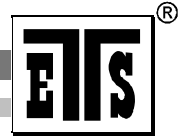
The peak and average spurious emission plots was measured with the average limits.

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

| Antenna Polarization | Frequency Marker (MHz) | Corrected Reading (dBuV) | Correction Factor (dB) | Detector | Test Result (dBuV/m) | Compliance Limit (dBuV/m) | Margin (dB) | Table Azimuth (degree) | Antenna Height (cm) |
|----------------------|------------------------|--------------------------|------------------------|----------|----------------------|---------------------------|-------------|------------------------|---------------------|
| H | 868.537 | 32.55 | 25.66 | PK | 58.21 | 60.82 | 2.61 | 65 | 175 |
| | 3735.46 | 46.3 | 1,73 | PK | 48.03 | 54 | 5.97 | 70 | 155 |
| | 1299.31 | 51.51 | -7.98 | PK | 43.53 | 60.82 | 17.29 | 258 | 166 |
| V | 868.537 | 41.68 | 25.66 | PK | 67.34 | 80.82 | 13.48 | 330 | 160 |
| | 868.537 | 30.67 | 25.66 | AV | 56.33 | 60.82 | 4.49 | 220 | 160 |
| | 1299.24 | 51.34 | -7.98 | PK | 43.36 | 60.82 | 17.46 | 257 | 168 |
| | 5872.36 | 46.69 | 5.54 | PK | 52.23 | 60.82 | 8.59 | 231 | 162 |

- Note**
- 1. Correction Factor = Antenna Factor + Cable Loss - Pre-amplifier**
 - 2. The formula of measured value as: Test Result = Corrected Reading + Correction Factor**
 - 3. Detector function in the form : P = Peak, QP = Quasi Peak, AV = Average**



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Freq. – Frequency Range:

- 1: 30 - 200 MHz
- 2: 200 - 1000MHz
- 3: 1 - 4 GHz
- 4: 4 - 8 GHz

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

Comment: See attached diagrams.

Test equipment used: ETSTW-RE 003, ETSTW-RE 004, ETSTW-RE 055, ETSTW-RE 049,
ETSTW-RE 030, ETSTW-RE 044, ETSTW-RE 017

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3.6 Channel Bandwidth

Measurement of Necessary Bandwidth (BN)

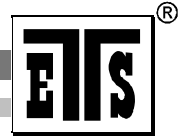
| Used frequency | Bandwidth | Limit |
|-------------------------|-----------|------------|
| 433.9 MHz | 50.48 kHz | 1.0828 MHz |
| Measurement uncertainty | < 10 Hz | |

Remarks: The bandwidth fulfills the requirements of FCC § 15.231,
see attached diagrams

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 055, ETSTW-RE 049



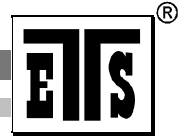
Registration number: W6M20607-7174-C-1
 FCC ID: ELVATFE

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.

Remark: This spiral antenna is integral antenna which passes antenna requirement.

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



Registration number: W6M20607-7174-C-1
 FCC ID: ELVATFE

3.8 Spurious Emission radiated, Receiver

FCC 15.109

This test item is not required because this test sample is transmitter only.

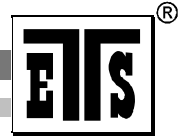
Limits:

| Frequency (MHz) | E-field field strength limit dB μ V/m |
|--------------------|--|
| 30 – 88 | 40.00 |
| 88 – 216 | 43.52 |
| 216 – 960 | 46.02 |
| Above 960 | 53.98 (73.98 dB μ V/m 20 dB peak detector) |

Above 960 MHz: limit line 74 dB μ V/m 20 dB peak detector

Remarks: ./.

Test equipment used: ETSTW-RE 003, ETSTW-RE 004, ETSTW-RE 055, ETSTW-RE 049,
 ETSTW-RE 030, ETSTW-RE 044, ETSTW-RE 017



Registration number: W6M20607-7174-C-1
 FCC ID: ELVATFE

3.9 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

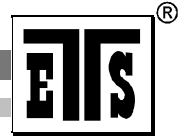
Duty Cycle Correction = $20 \log(\text{Cycle})$

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

| Testing Mode | T period (ms) | T on (ms) | Duty Cycle (%) (Ton/Tp)*100% | Duty Cycle Correction $20*\log(\text{Duty Cycle})$ |
|--------------|---------------|-----------|---------------------------------|---|
| Mode 1 | 100 | 27.875 | 27.875 | -11.09 |

Remarks: see attached diagram.

Test equipment used: ETSTW-RE 003, ETSTW-RE 0004, ETSTW-RE 055, ETSTW-RE 049



Registration number: W6M20607-7174-C-1
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3.10 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 μ V/m) | average (dB μ V/m) |
| -- kHz | -- | -- |

Limits:

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

Comment: Test is not required because the sample is using a battery.

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



Registration number: W6M20607-7174-C-1
FCC ID: ELVATFE

Appendix

- A Active Time
- B Output Power
- C Spurious Emissions radiated - Transmitter
- D Bandwidth
- E Duty Cycle
- F Pictures



Registration number: W6M20607-7174-C-1

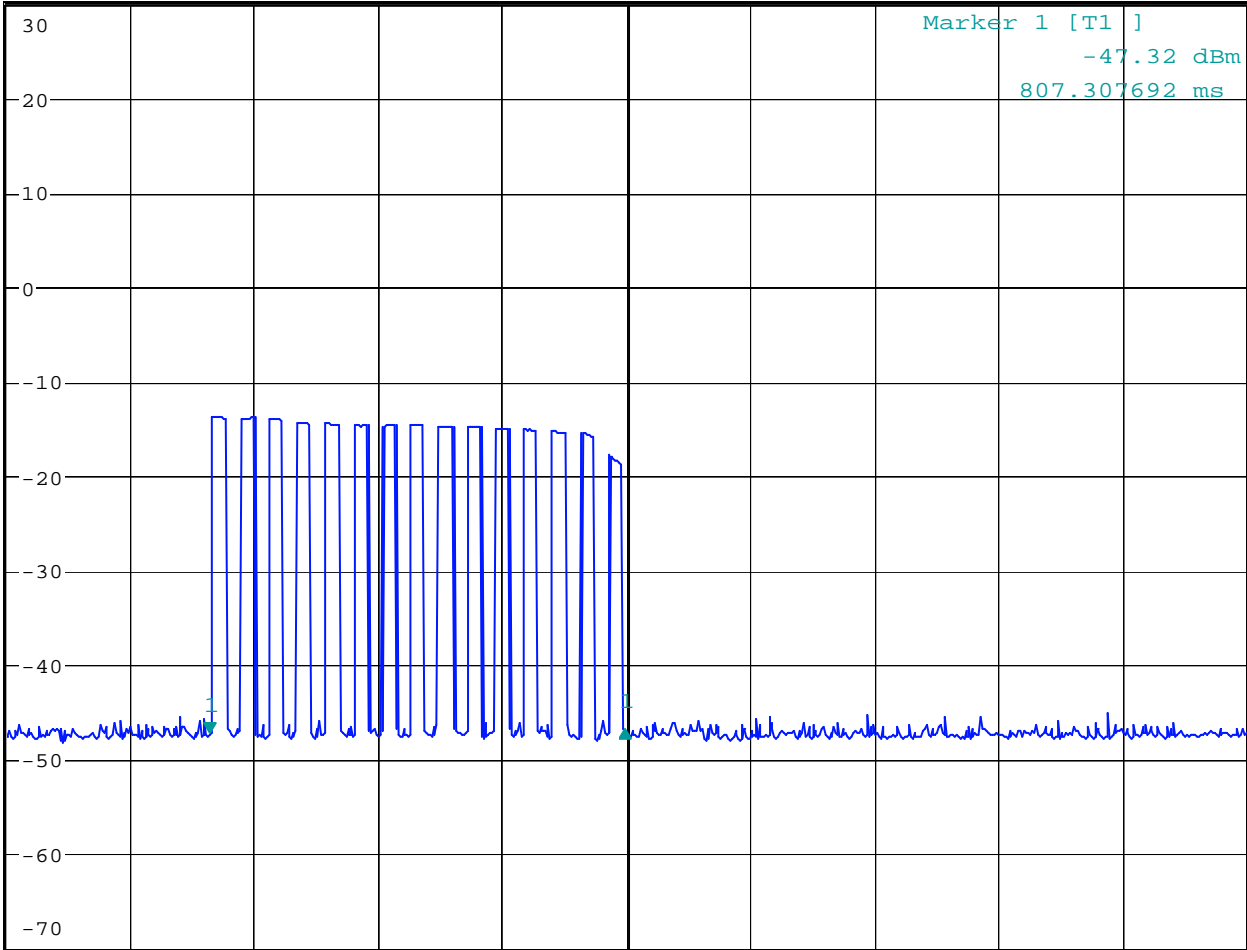
FCC ID: ELVATFE

Appendix A

Active Time



Ref 30 dBm *Att 30 dB RBW 1 MHz Delta 1 [T1]
VBW 3 MHz 0.30 dB
SWT 5 s 1.674679 s



1 PK *
CLRWR

Center 433.8774038 MHz 500 ms/

Duration Time
Date: 16.JUL.2006 13:52:36



Registration number: W6M20607-7174-C-1

FCC ID: ELVATFE

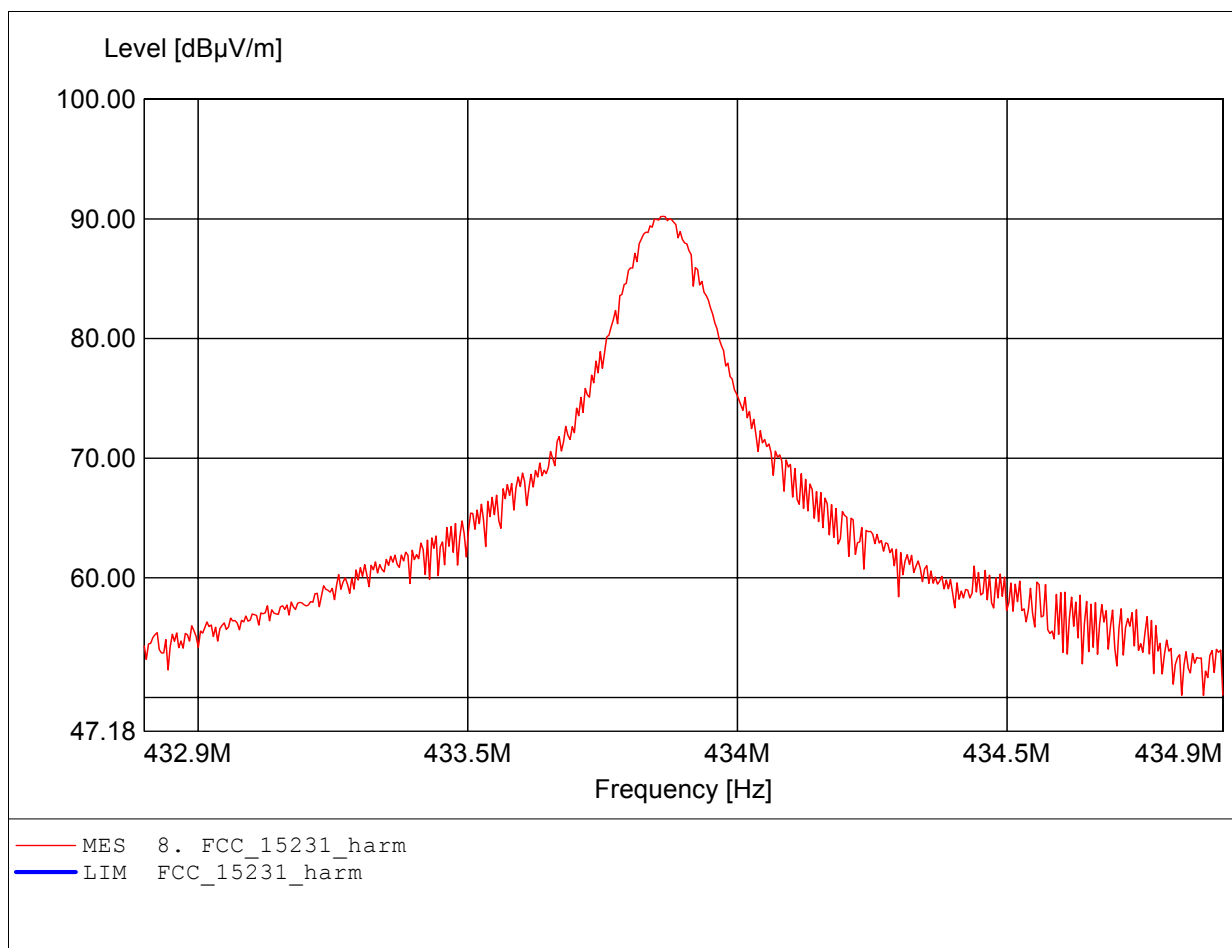
Appendix B

Output Power

Field Strength of Fundamental

FCC RULES PART 15, SUBPART C / LP0002

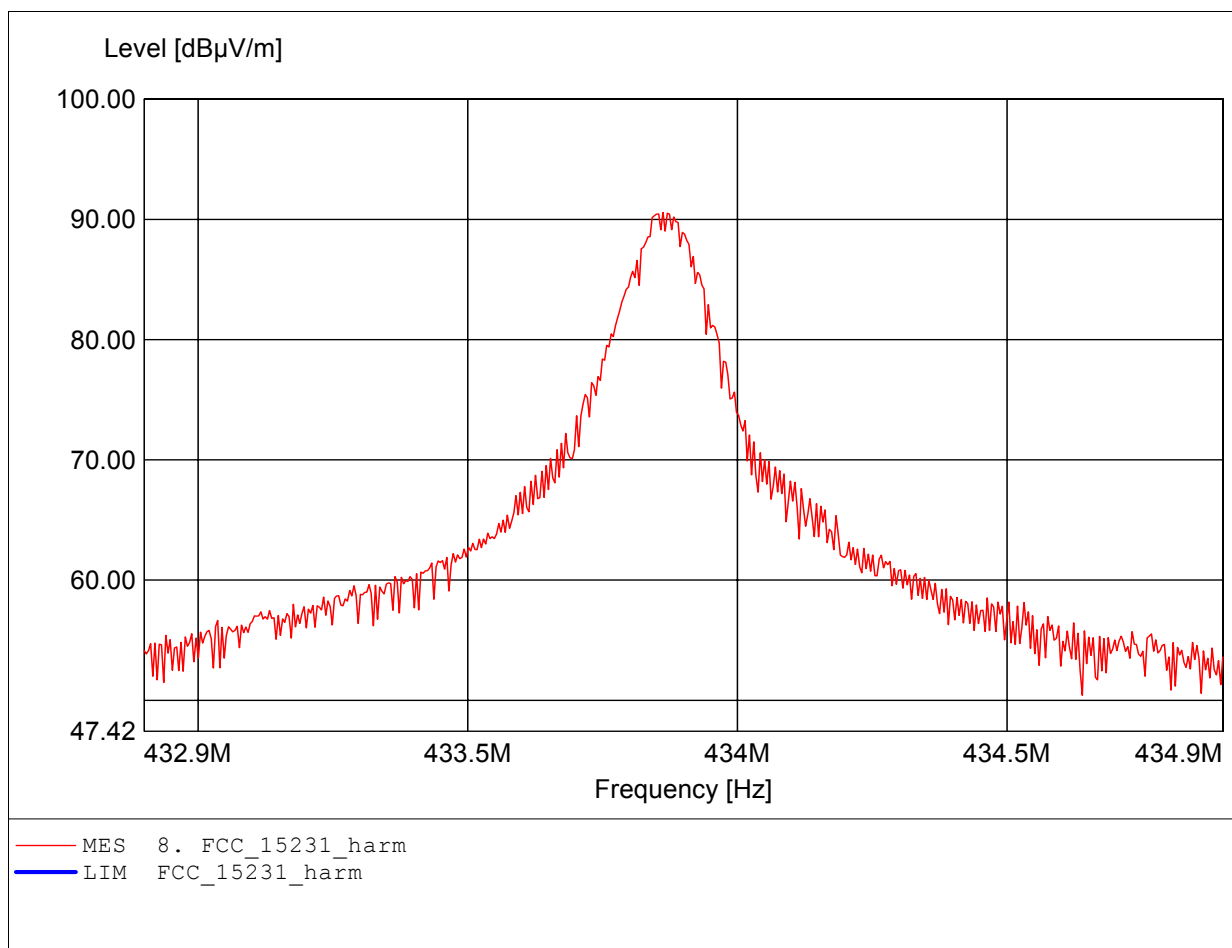
Order Number: W6M20607-7174
Test Site / Operator: ETS / Charles
Temperature/Voltage: Temp.: 23.9°C/ Unom.: 6 VDC (3VDC * 2 battery)
Test Specification: according to Section15.231
Comment 1: Dist.: 3m, Ant.: HL223
Freq: 433.862MHz, Emax: 90.21dBµV/m, RBW: 100kHz

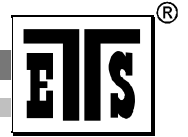


Field Strength of Fundamental

FCC RULES PART 15, SUBPART C / LP0002

Order Number: W6M20607-7174
Test Site / Operator: ETS / Charles
Temperature/Voltage: Temp.: 23.9°C/ Unom.: 6 VDC (3VDC * 2 battery)
Test Specification: according to Section15.231
Comment 1: Dist.: 3m, Ant.: HL223
Freq: 433.862MHz, Emax: 90.57dBµV/m, RBW: 100kHz





Registration number: W6M20607-7174-C-1
FCC ID: ELVATFE

Appendix C

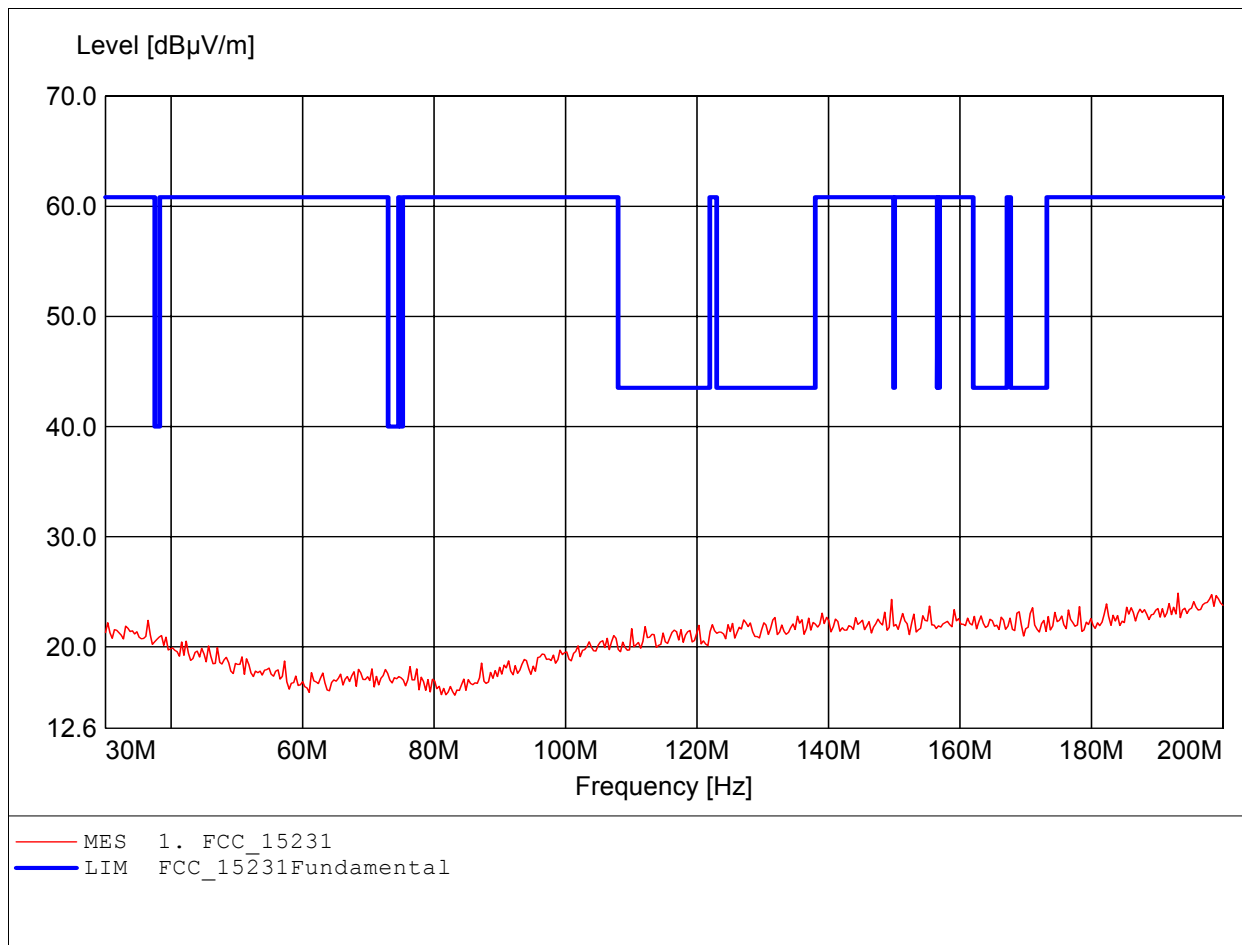
Spurious Emissions radiated - Transmitter

(The measurement diagrams are wideband pre-scan results; only for reference)

Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C / LP0002

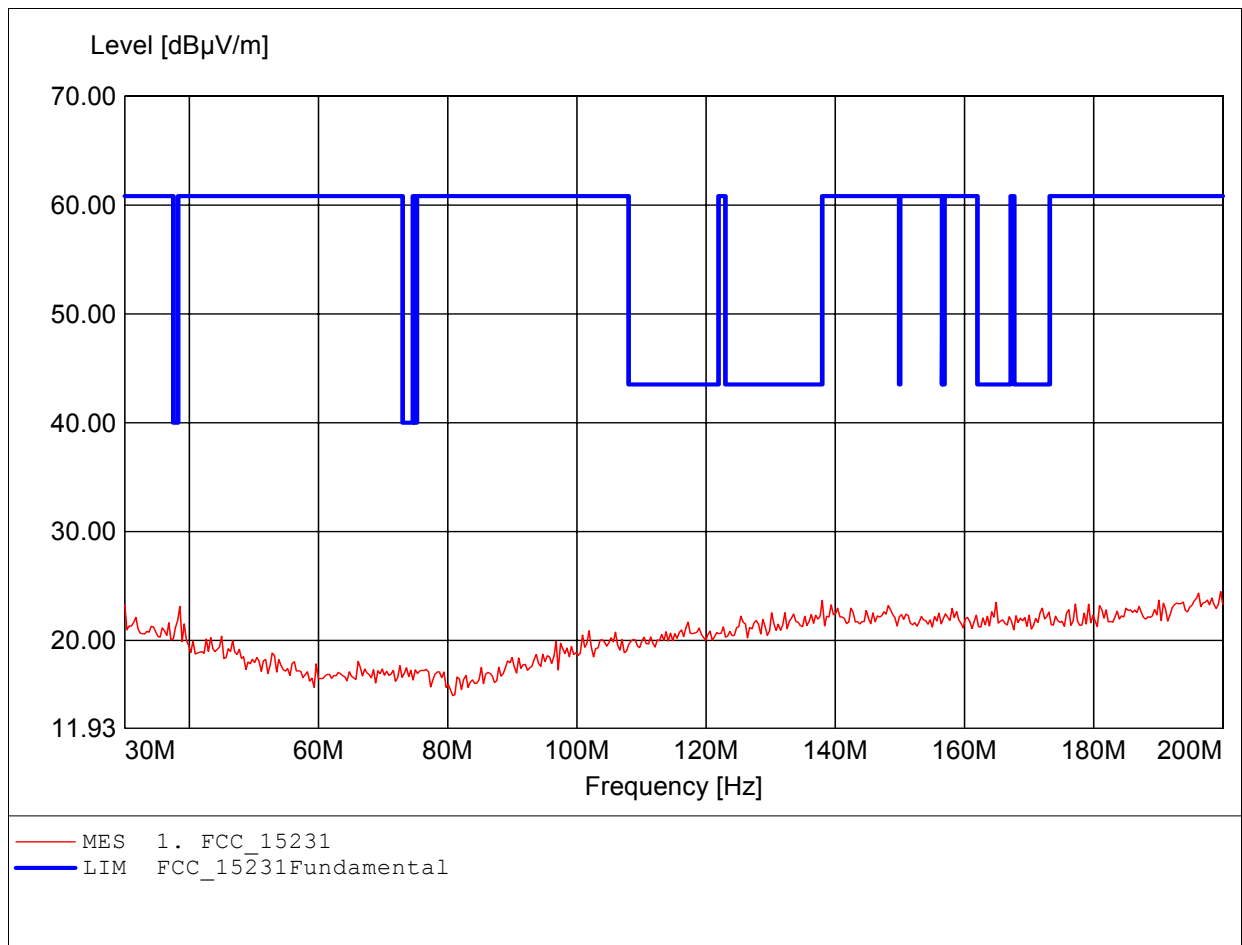
Order Number: W6M20607-7174
Test Site / Operator: ETS / Charles
Temperature/Voltage: Temp.: 23.9°C/ Unom.: 6 VDC (3VDC * 2 battery)
Test Specification: according to Section15.231
Comment 1: Dist.: 3m, Ant.: HK 116
Freq: 193.186MHz, Emax: 24.87dBµV/m, RBW: 100kHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C / LP0002

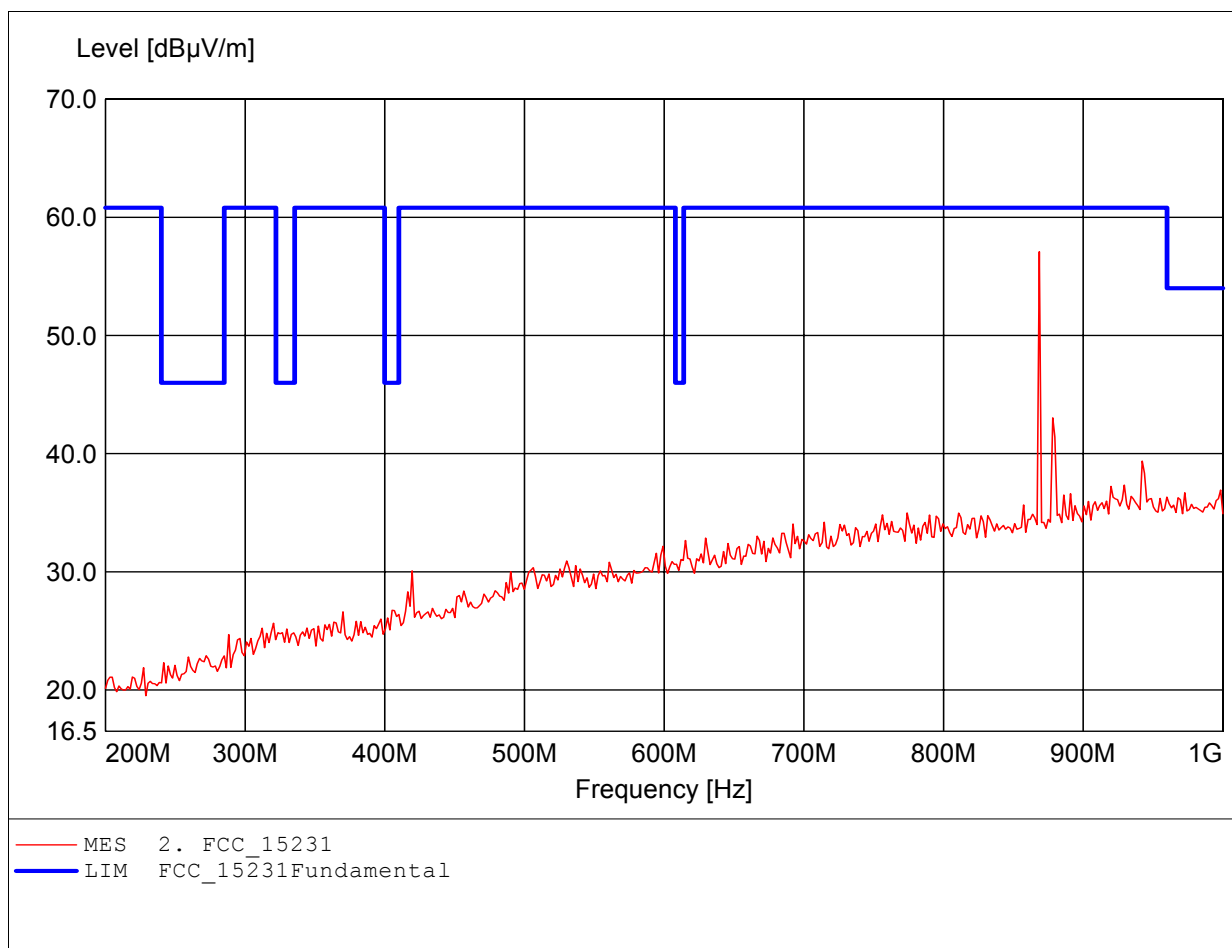
Order Number: W6M20607-7174
Test Site / Operator: ETS / Charles
Temperature/Voltage: Temp.: 23.9°C/ Unom.: 6 VDC (3VDC * 2 battery)
Test Specification: according to Section15.231
Comment 1: Dist.: 3m, Ant.: HK 116
Freq: 199.659MHz, Emax: 24.50dBµV/m, RBW: 100kHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C / LP0002

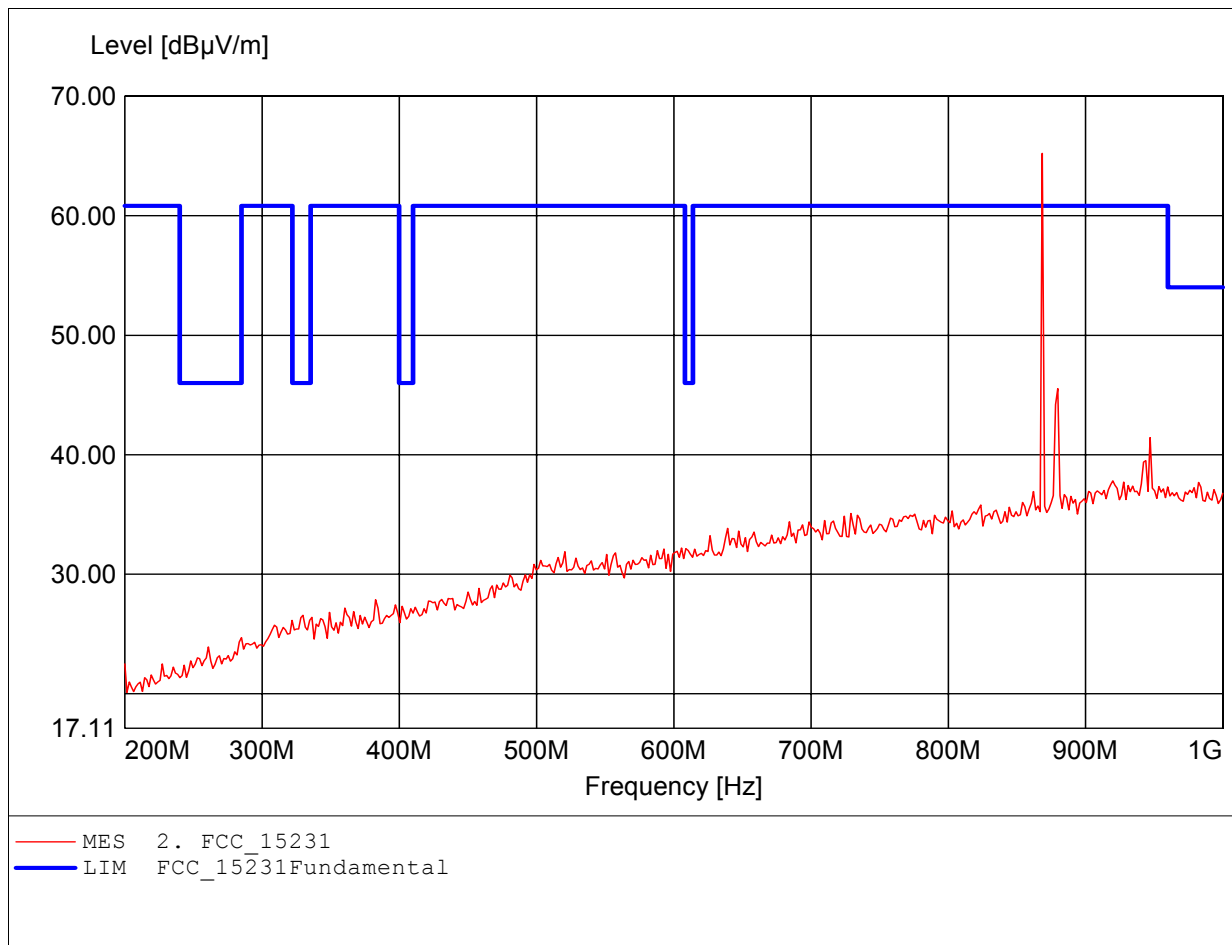
Order Number: W6M20607-7174
Test Site / Operator: ETS / Charles
Temperature/Voltage: Temp.: 23.9°C/ Unom.: 6 VDC (3VDC * 2 battery)
Test Specification: according to Section15.231
Comment 1: Dist.: 3m, Ant.: HL 223, amplif.
Freq: 868.537MHz, Emax: 57.09dBµV/m, RBW: 100kHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C / LP0002

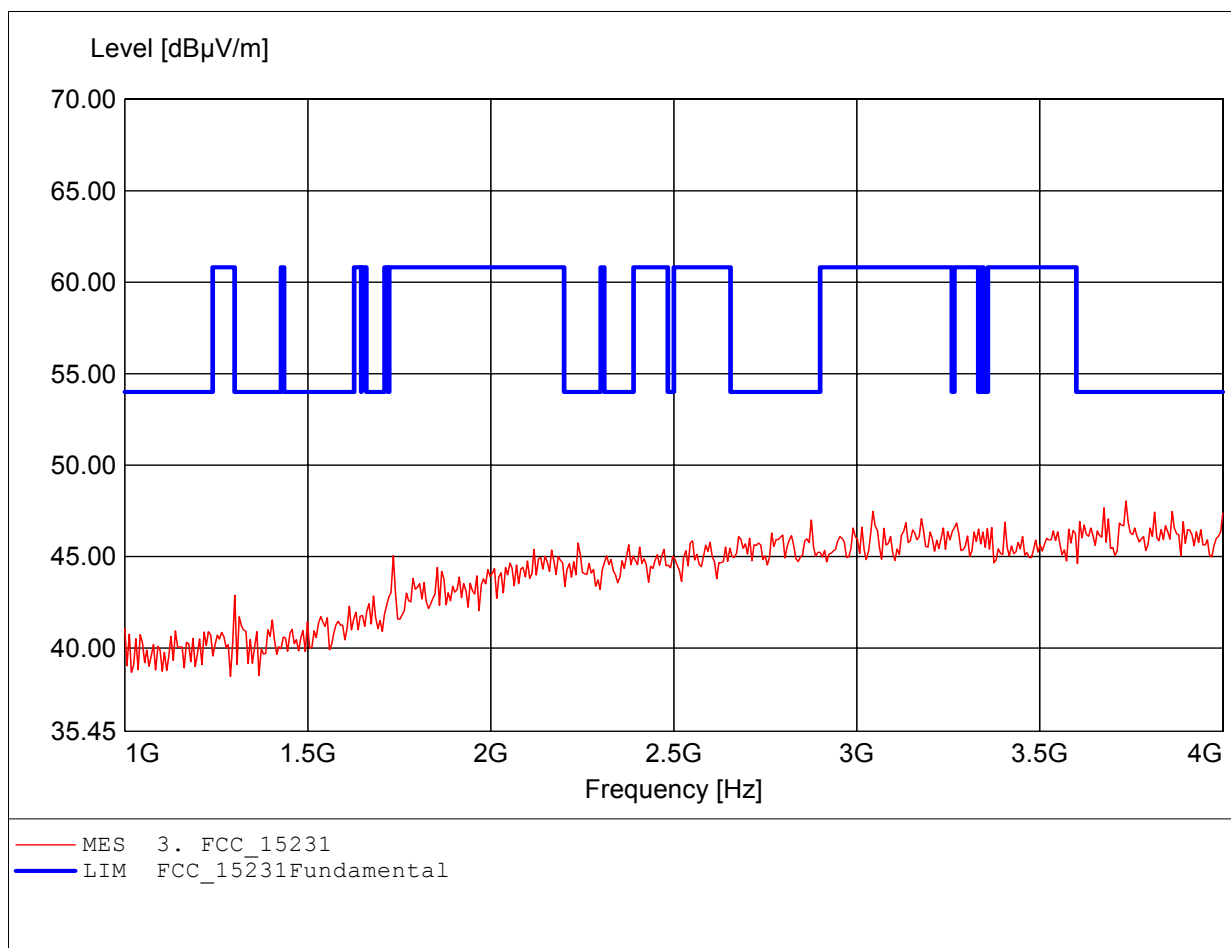
Order Number: W6M20607-7174
Test Site / Operator: ETS / Charles
Temperature/Voltage: Temp.: 23.9°C/ Unom.: 6 VDC (3VDC * 2 battery)
Test Specification: according to Section15.231
Comment 1: Dist.: 3m, Ant.: HL 223, amplif.
Freq: 868.537MHz, Emax: 65.21dBµV/m, RBW: 100kHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C / LP0002

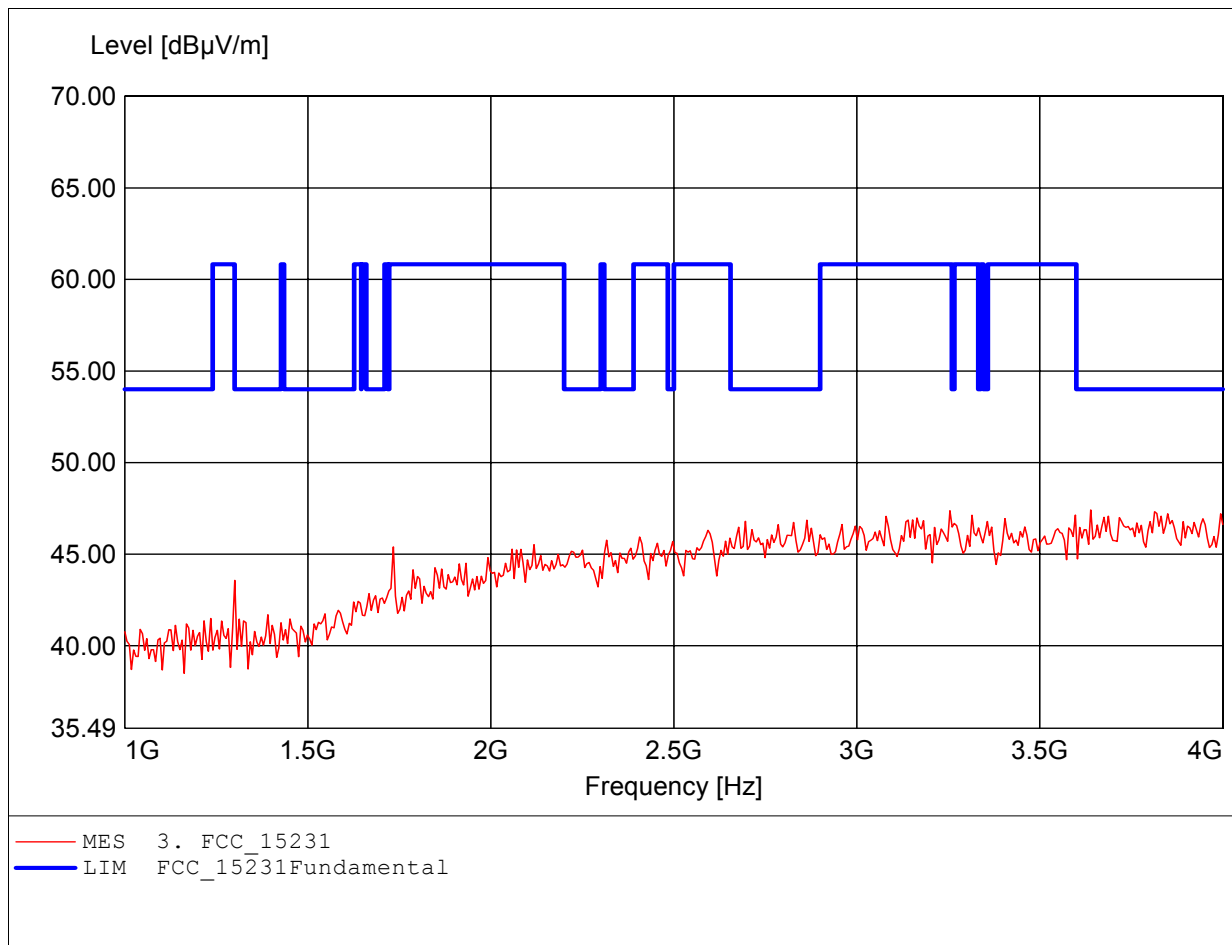
Order Number: W6M20607-7174
Test Site / Operator: ETS / Charles
Temperature/Voltage: Temp.: 23.9°C/ Unom.: 6 VDC (3VDC * 2 battery)
Test Specification: according to Section 15.231, peak detector
Comment 1: Dist.: 3m, Ant.: HL025, amplif.
Freq: 3.735GHz, Emax: 48.03dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C / LP0002

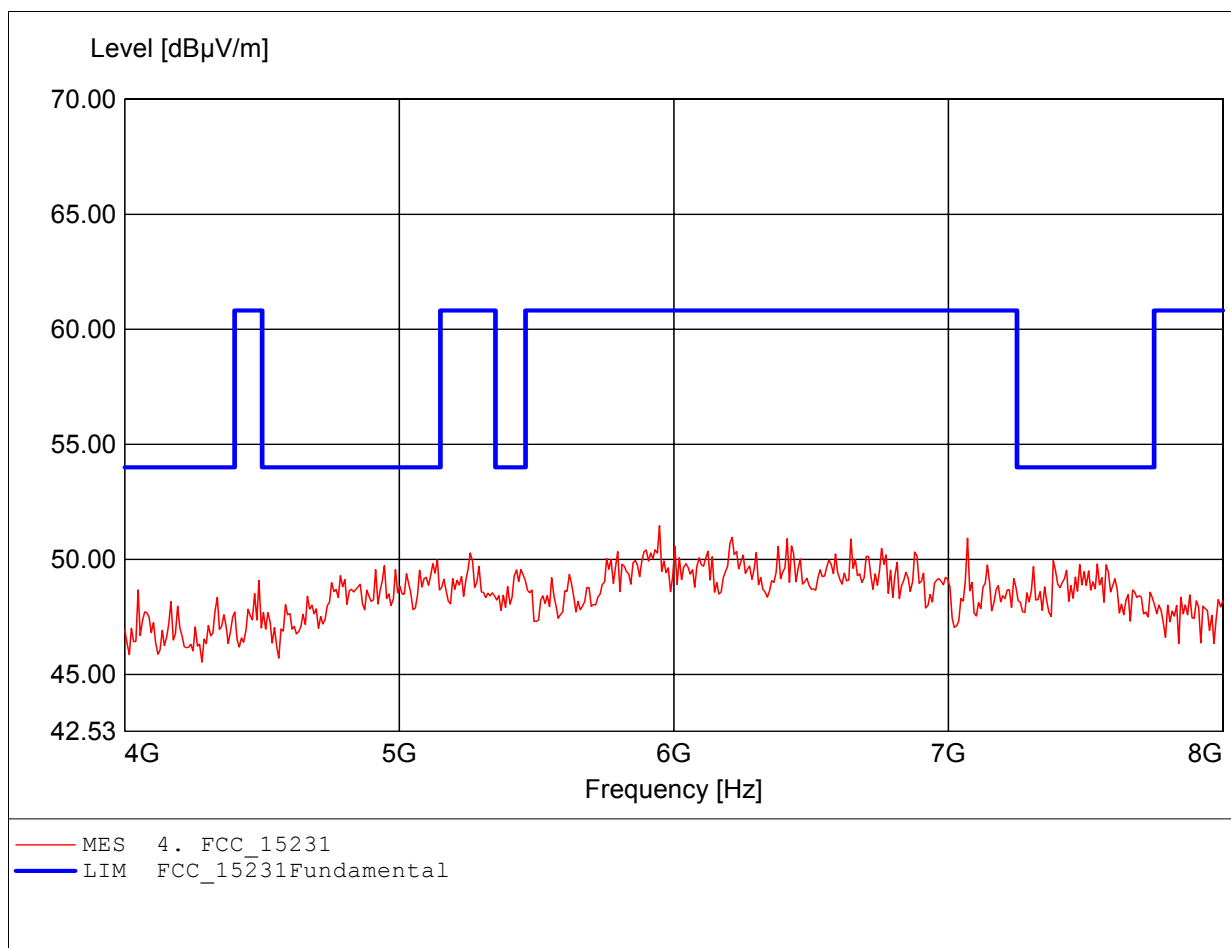
Order Number: W6M20607-7174
Test Site / Operator: ETS / Charles
Temperature/Voltage: Temp.: 23.9°C/ Unom.: 6 VDC (3VDC * 2 battery)
Test Specification: according to Section 15.231, peak detector
Comment 1: Dist.: 3m, Ant.: HL025, amplif.
Freq: 3.639GHz, Emax: 47.41dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C / LP0002

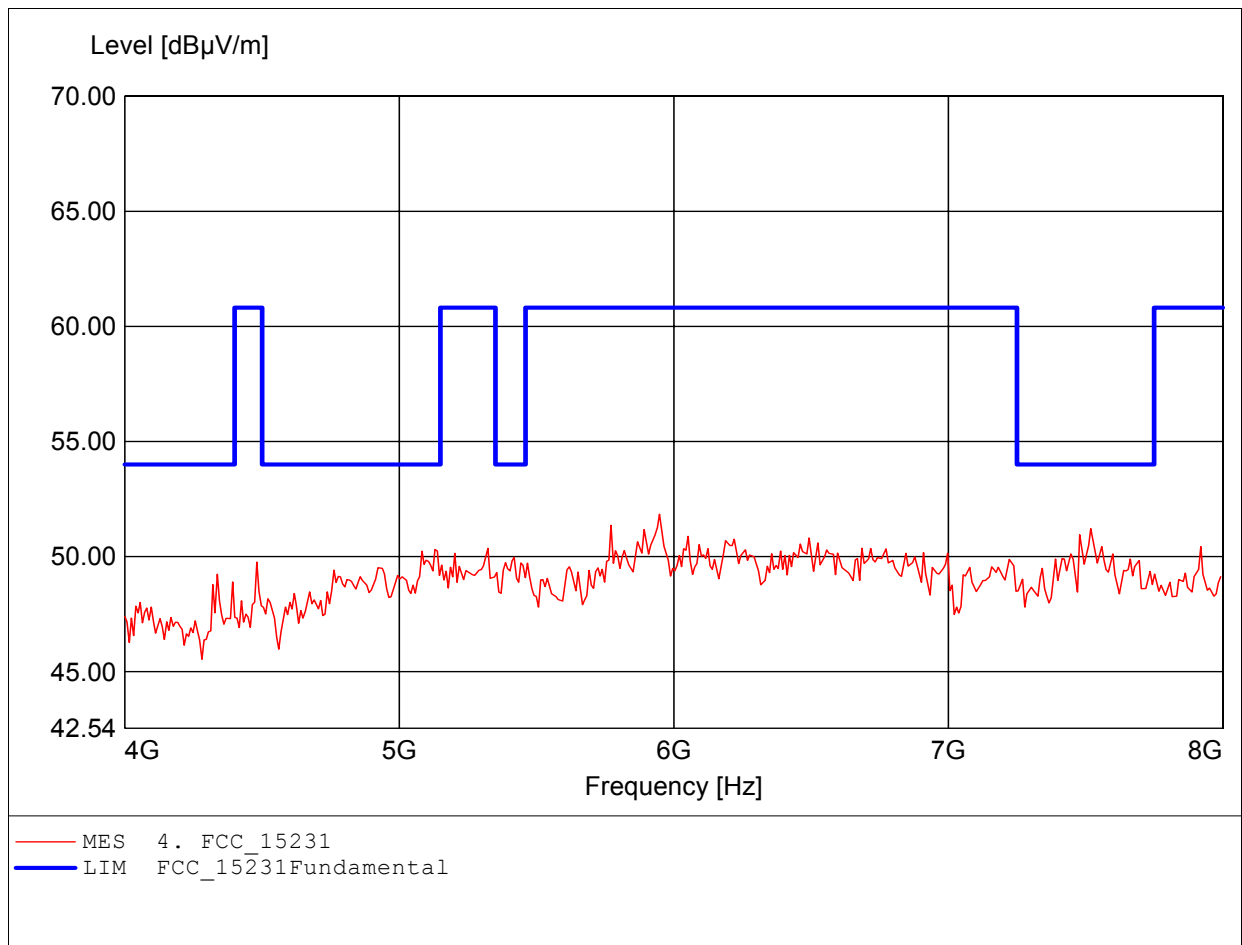
Order Number: W6M20607-7174
Test Site / Operator: ETS / Charles
Temperature/Voltage: Temp.: 23.9°C/ Unom.: 6 VDC (3VDC * 2 battery)
Test Specification: according to Section 15.231, peak detector
Comment 1: Dist.: 3m, Ant.: HL025, ampl.+HP.
Freq: 5.948GHz, Emax: 51.46dBμV/m, RBW: 1MHz

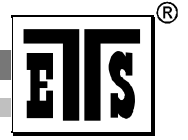


Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C / LP0002

Order Number: W6M20607-7174
Test Site / Operator: ETS / Charles
Temperature/Voltage: Temp.: 23.9°C/ Unom.: 6 VDC (3VDC * 2 battery)
Test Specification: according to Section 15.231, peak detector
Comment 1: Dist.: 3m, Ant.: HL025, ampl.+HP.
Freq: 5.948GHz, Emax: 51.84dBuV/m, RBW: 1MHz





Registration number: W6M20607-7174-C-1

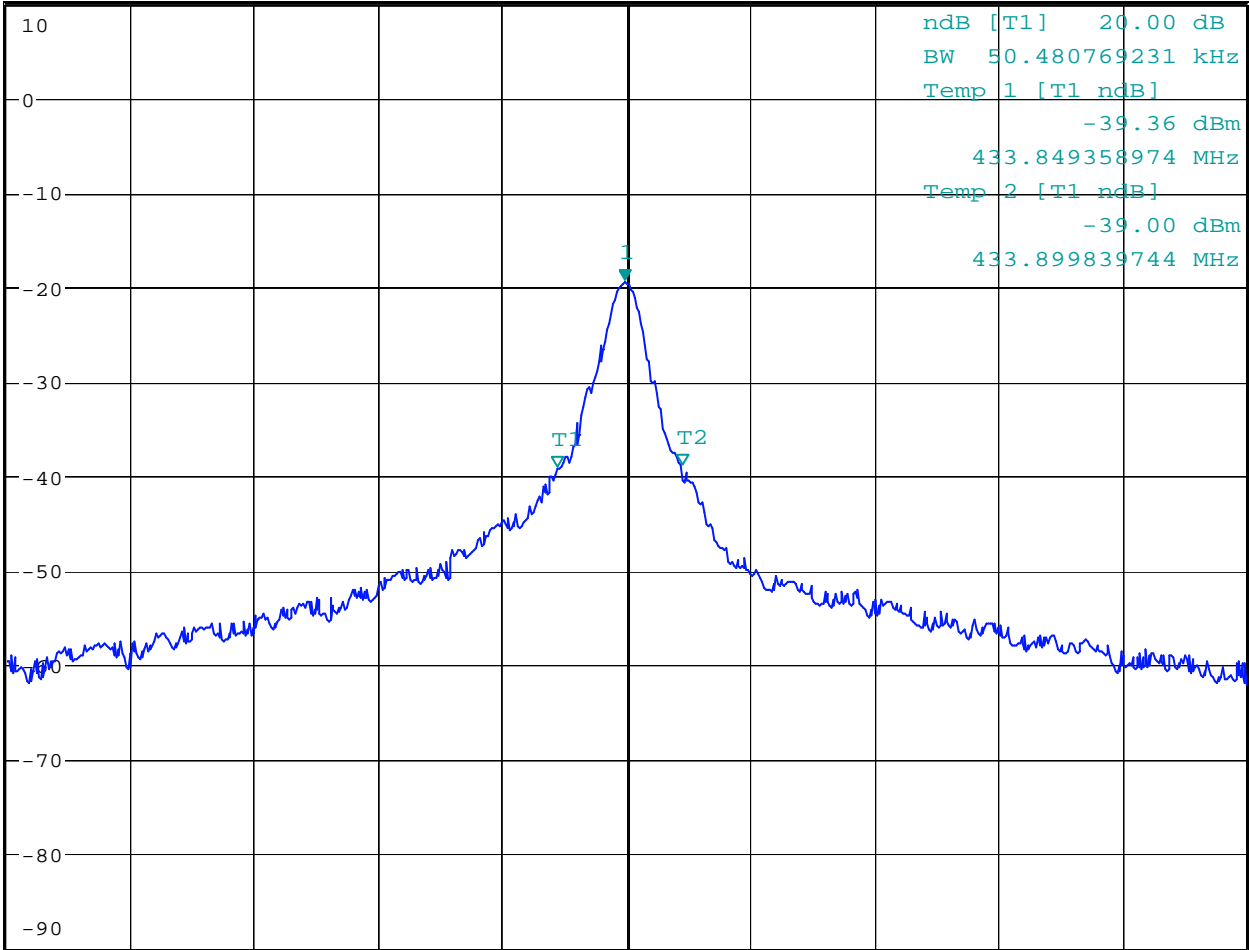
FCC ID: ELVATFE

Appendix D

Bandwidth



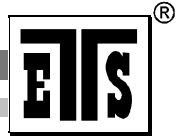
Ref 10 dBm * Att 5 dB * RBW 10 kHz Marker 1 [T1]
VBW 30 kHz -19.61 dBm
SWT 20 ms 433.876602564 MHz



Center 433.8774038 MHz 50 kHz/ Span 500 kHz

20dB Bandwidth

Date: 16.JUL.2006 13:18:25



Registration number: W6M20607-7174-C-1

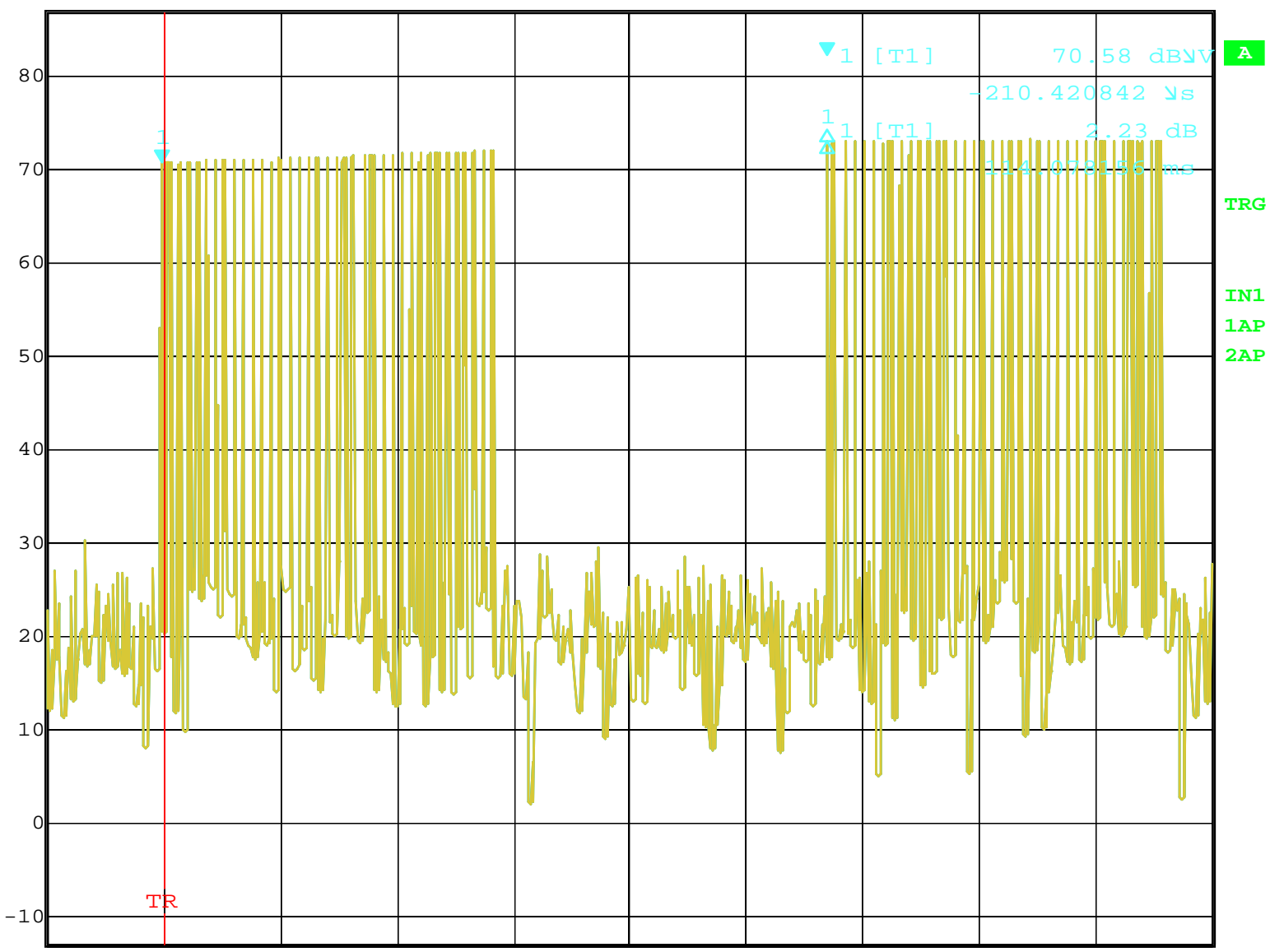
FCC ID: ELVATFE

Appendix E

Duty Cycle



Ref Lvl 87 dB μ V
Marker 1 [T1] 70.58 dB μ V
-210.420842 μ s
RBW 1 MHz RF Att 10 dB
VBW 1 MHz
SWT 200 ms Unit dB μ V



Center 433.9068136 MHz 20 ms/

Date: 21.JUL.2006 10:45:52



Marker 1 [T1]

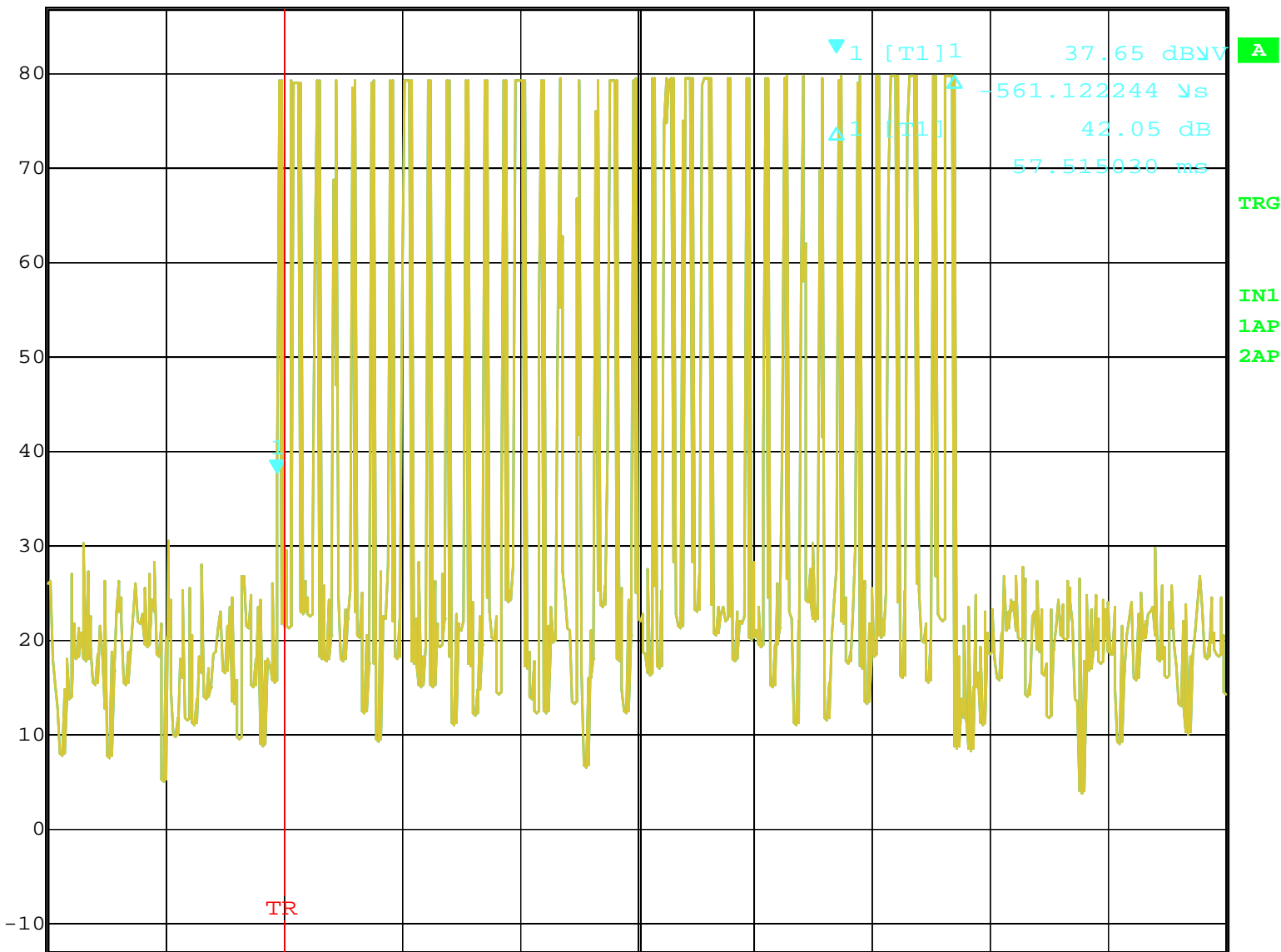
RBW 1 MHz RF Att 10 dB

Ref Lvl 37.65 dBμV

VBW 1 MHz

87 dBμV -561.122244 μs

SWT 100 ms Unit dBμV

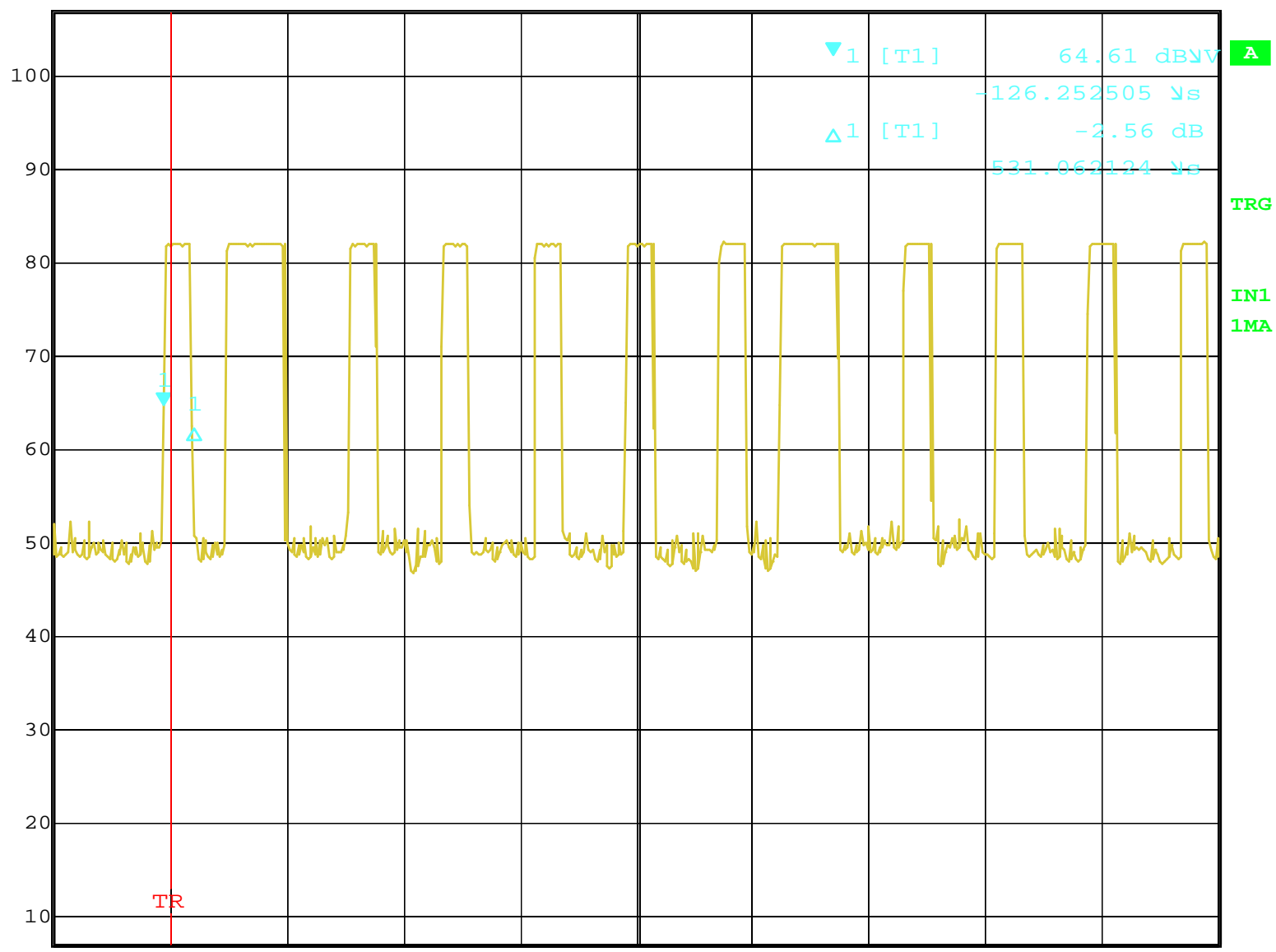


Center 433.9068136 MHz 10 ms/

Date: 21.JUL.2006 10:47:31



Ref Lvl 107 dBV
Marker 1 [T1] 64.61 dBV
RBW 1 MHz RF Att 30 dB
VBW 1 MHz
SWT 20 ms Unit dBV

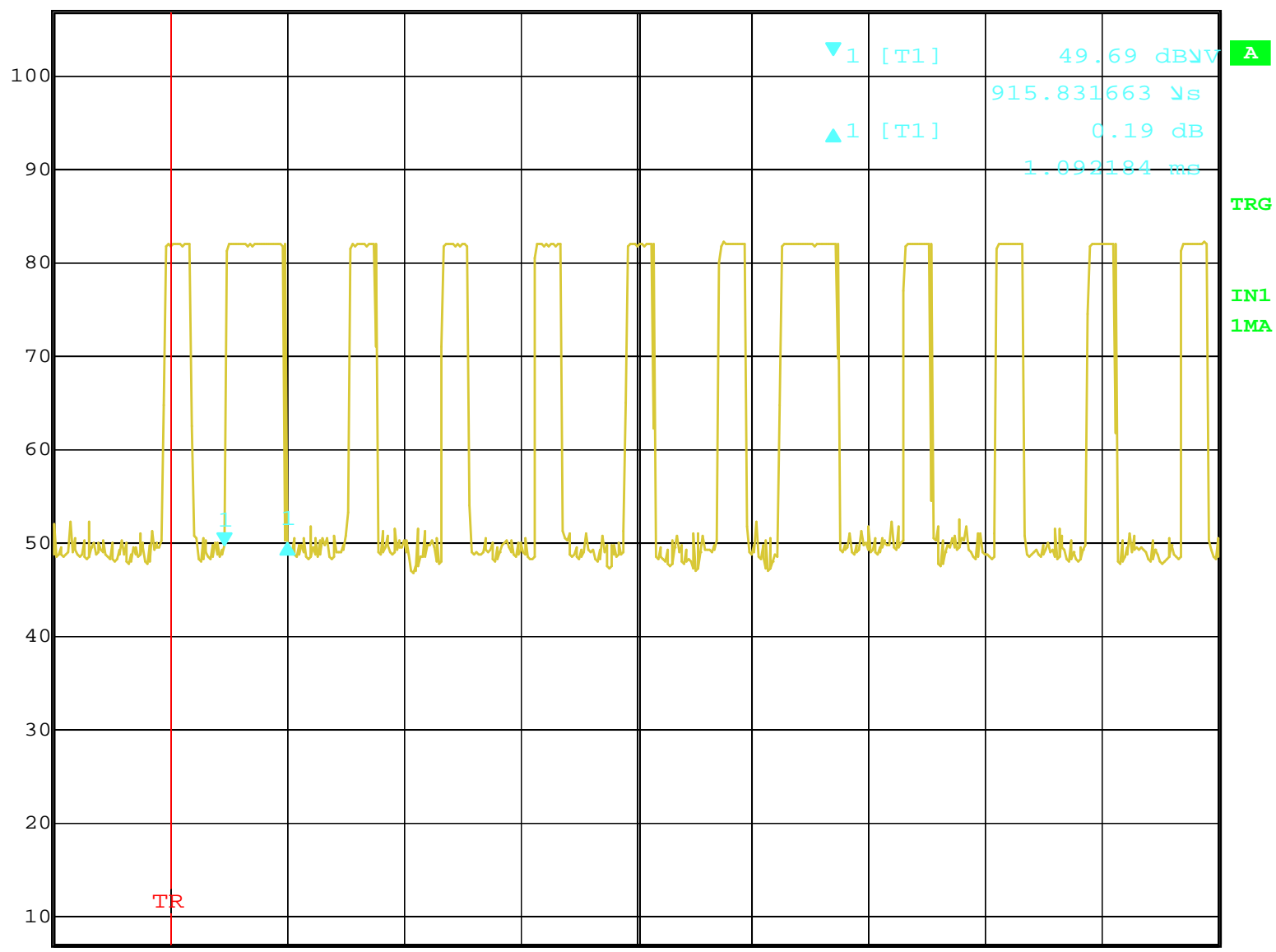


Center 433.8677355 MHz 2 ms/

Date: 21.JUL.2006 11:57:59



Delta 1 [T1] RBW 1 MHz RF Att 30 dB
Ref Lvl 0.19 dB VBW 1 MHz
107 dB μ V 1.092184 ms SWT 20 ms Unit dB μ V



Center 433.8677355 MHz 2 ms/

Date: 21.JUL.2006 11:58:30



Registration number: W6M20607-7174-C-1

FCC ID: ELVATFE

Appendix F

Pictures



Registration number: W6M20607-7174-C-1

FCC ID: ELVATFE

External photo

Registration number: W6M20607-7174-C-1

FCC ID: ELVATFE



Registration number: W6M20607-7174-C-1
FCC ID: ELVATFE



Registration number: W6M20607-7174-C-1
FCC ID: ELVATFE



Registration number: W6M20607-7174-C-1
FCC ID: ELVATFE





Registration number: W6M20607-7174-C-1

FCC ID: ELVATFE



Registration number: W6M20607-7174-C-1

FCC ID: ELVATFE





Registration number: W6M20607-7174-C-1

FCC ID: ELVATFE

Internal photo

Registration number: W6M20607-7174-C-1

FCC ID: ELVATFE



Registration number: W6M20607-7174-C-1
FCC ID: ELVATFE



Registration number: W6M20607-7174-C-1

FCC ID: ELVATFE



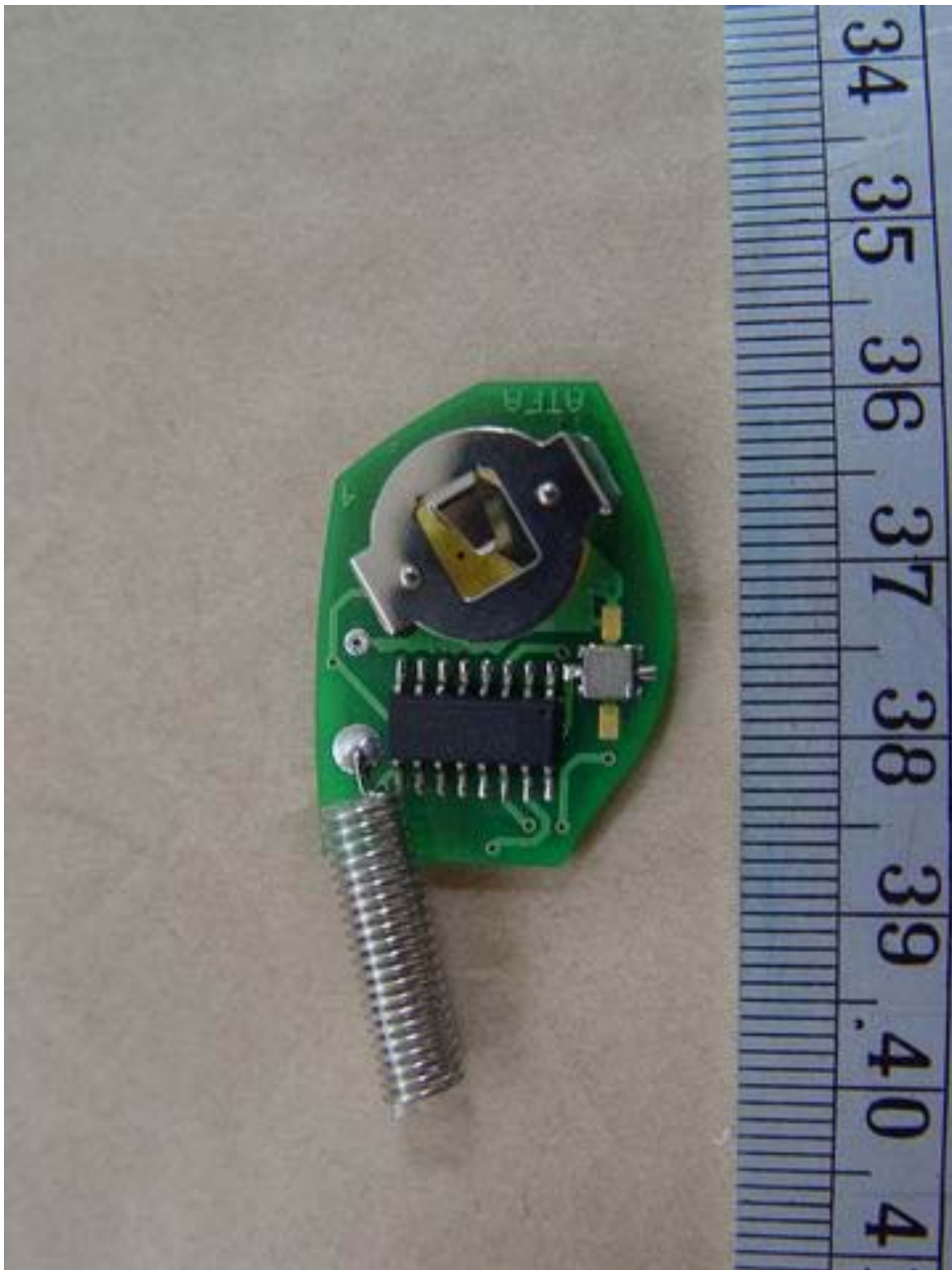
Registration number: W6M20607-7174-C-1
FCC ID: ELVATFE



Registration number: W6M20607-7174-C-1
FCC ID: ELVATFE

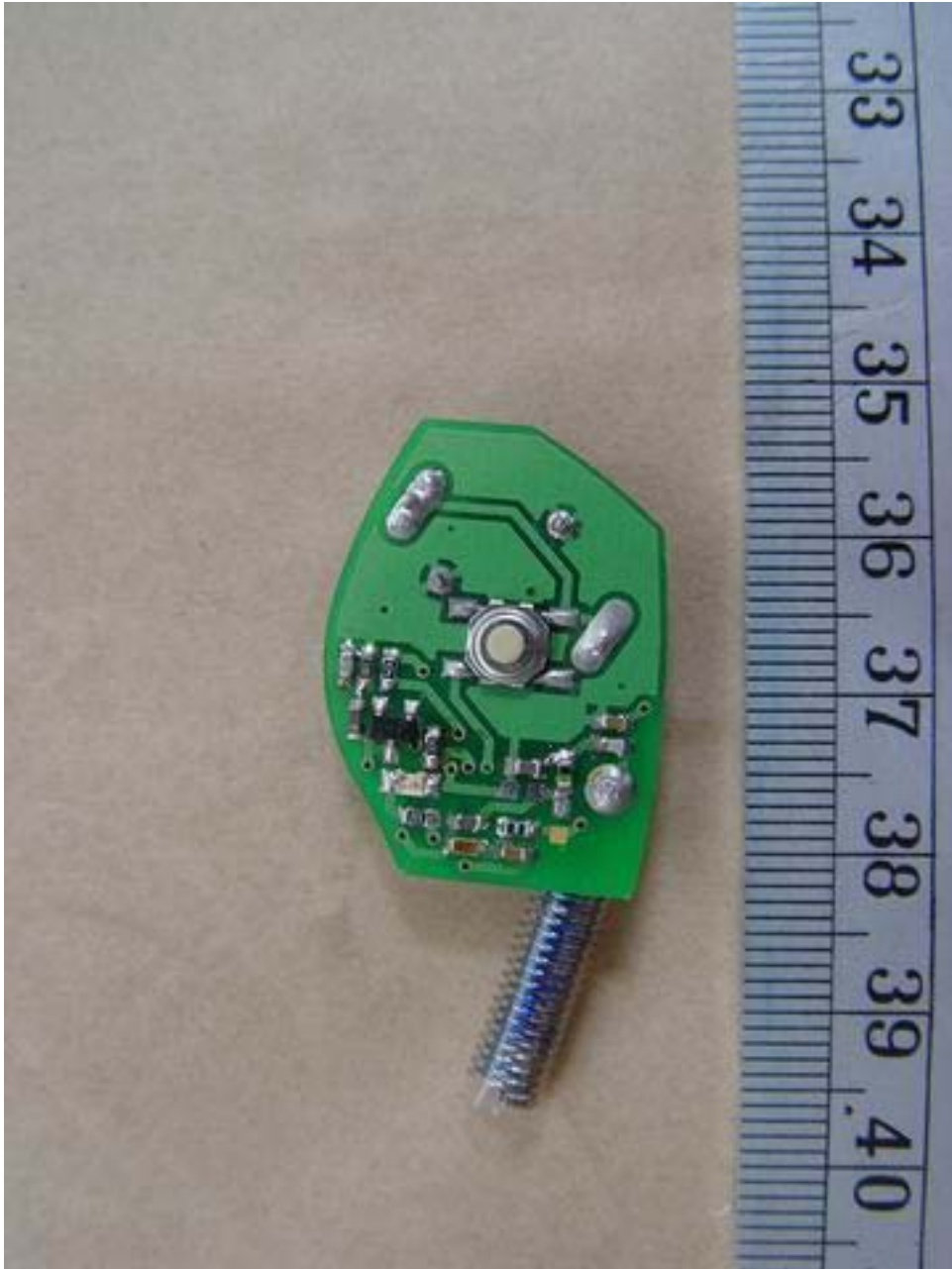


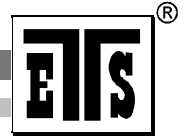
Registration number: W6M20607-7174-C-1
FCC ID: ELVATFE



Registration number: W6M20607-7174-C-1

FCC ID: ELVATFE





Registration number: W6M20607-7174-C-1

FCC ID: ELVATFE

Set Up photo

Registration number: W6M20607-7174-C-1

FCC ID: ELVATFE



Registration number: W6M20607-7174-C-1

FCC ID: ELVATFE

