

TEST REPORT

Report Number: 100146516ATL-005

December 15, 2010

Product Designation: RA3TX

Standard: 47 CFR Part 15, Subpart C (15.231 - Periodic operation in the band 40.66-40.70 MHz and above 70 MHz)
RSS-210, Issue 7, 2007

Tested by:

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Client:

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South Jordan, UT 84095
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Tests performed by:

A handwritten signature in blue ink, appearing to read "T. Ihle".

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A handwritten signature in blue ink, appearing to read "J. Pickens".

Jeremy O. Pickens
EMC Department Manager

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1.0 Introduction and Conclusion

The tests indicated in section 2.0 were performed on the product constructed as described in section 3.0. The remaining test sections are the verbatim text from the actual data sheets used during the investigation. These test sections include the test name, the specified test Method, a list of the actual Test Equipment Used, documentation Photos, Results and raw Data. No additions, deviations, or exclusions have been made from the standard(s) unless specifically noted.

Based on the results of our investigation, we have concluded the product tested complies with the requirements of the standard(s) indicated. The results obtained in this test report pertain only to the item(s) tested.

2.0 Test Summary

| Section | Test Full Name | Test Date | Result |
|---------|---|------------|--------|
| 4.0 | System setup including cable interconnection details, support equipment and simplified block diagram. (System Setup) | | |
| 5.0 | Overview of EUT (Low Power Transmitters) (EUT Overview) | | |
| 6.0 | Restrictions (FCC 15C - 15.231(a)) | 10/21/2010 | PASS |
| 7.0 | Duty Cycle Determination (FCC 15A - 15.35(c)) | 10/21/2010 | |
| 8.0 | Radiated Emissions (FCC 15C - 15.231(b)) | 12/01/2010 | PASS |
| 9.0 | Bandwidth Requirements (FCC 15C - 15.231(c)) | 12/15/2010 | PASS |
| NA | Conducted Emissions for Intentional Radiators (FCC 15C - 15.207) was waived due to the device does not connect to the AC mains. | | |

3.0 Description of Equipment Under Test

| Equipment Under Test | | | |
|----------------------|--------------|--------------|---------------|
| Description | Manufacturer | Model Number | Serial Number |
| Pendant Transmitter | Mytrex, Inc. | RA3TX | NA |

| | |
|------------------------|------------------------|
| EUT receive date: | 10/21/2010, 11/30/2010 |
| EUT receive condition: | Good |

Description of EUT provided by Client:

The RA3Tx is a personal help button for use with the MDX Personal Emergency Response System.

Description of EUT exercising:

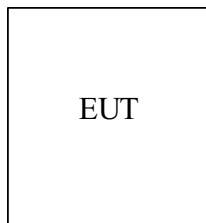
During testing, the button was constantly depressed which resulted in a continuous, modulated transmission.

4.0 System setup including cable interconnection details, support equipment and simplified block diagram. (System Setup)

Method:

Record the details of EUT cabling, document the support equipment, and show the interconnections in a block diagram.

Drawing:



Setup Diagram

Data:

4.0 System setup including cable interconnection details, support equipment and simplified block diagram. (System Setup)

| EUT Cabling | | | | | | |
|-------------|-------------|--------|-----------|----------|------------|----|
| ID | Description | Length | Shielding | Ferrites | Connection | |
| | | | | | From | To |
| None | | | | | | |

| Support Equipment | | | |
|-------------------|--------------|--------------|---------------|
| Description | Manufacturer | Model Number | Serial Number |
| None | | | |

5.0 Overview of EUT (Low Power Transmitters) (EUT Overview)

Method:

Complete the overview spreadsheet.

Related Submittal(s) Grants: This report is for use with an application for certification of a low power transmitter. One transmitter is included in the application.

Data:

| | |
|---|--|
| Applicant | Mytrex, Inc. |
| | 10321 Beckstead Lane |
| | South Jordan, UT 84095 |
| Trade Name & Model No. | RA3TX |
| FCC Identifier | NY5RA3TX |
| Frequency Range (MHz) | 418 |
| Antenna Type (15.203) | PCB |
| Manufacturer name & address | Mytrex, Inc. |
| | 10321 Beckstead Lane |
| | South Jordan, UT 84095 |
| Related Submittals and Grants: | This report is for use with an application for certification of a low power transmitter. One transmitter is included in the application. |
| Additions, deviations and exclusions from standards | None |

6.0 Restrictions (FCC 15C - 15.231(a))

Method:

15.231(a) The provisions of this section are restricted to periodic operation within the band 40.66-40.70 MHz and above 70 MHz. Except as shown in paragraph (e) of this section, the intentional radiator is restricted to the transmission of a control signal such as those used with alarm systems, door openers, remote switches, etc. Continuous transmissions, voice, video and the radio control of toys are not permitted. Data is permitted to be sent with a control signal. The following conditions shall be met to comply with the provisions for this periodic operation:

(1) A manually operated transmitter shall employ a switch that will automatically deactivate the transmitter within not more than 5 seconds of being released.

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

(3) Periodic transmissions at regular predetermined intervals are not permitted. However, polling or supervision transmissions, including data, to determine system integrity of transmitters used in security or safety applications are allowed if the total duration of transmissions does not exceed more than two seconds per hour for each transmitter. There is no limit on the number of individual transmissions, provided the total transmission time does not exceed two seconds per hour.

(4) Intentional radiators which are employed for radio control purposes during emergencies involving fire, security, and safety of life, when activated to signal an alarm, may operate during the pendency of the alarm condition

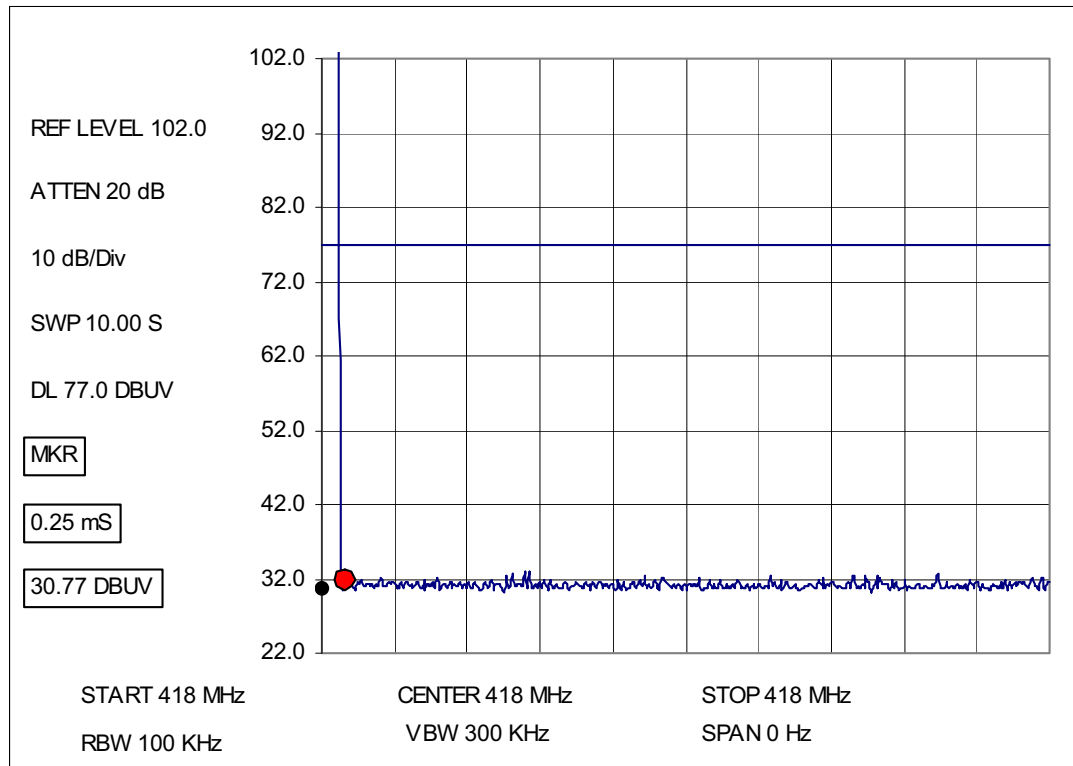
(5) Transmission of set-up information for security systems may exceed the transmission duration limits in paragraphs (a)(1) and (a)(2) of this section, provided such transmissions are under the control of a professional installer and do not exceed ten seconds after a manually operated switch is released or a transmitter is activated automatically. Such set-up information may include data.

Test Equipment Used:

| Description: | Manufacturer: | Model: | Asset Number: | Cal Date: | Cal Due: |
|-----------------------------------|-----------------|--------|---------------|------------|------------|
| EMI Receiver | Hewlett Packard | 8546A | 211505 | 02/02/2010 | 02/02/2011 |
| EMI Receiver, Preselector section | Hewlett Packard | 85460A | 015762 | 02/02/2010 | 02/02/2011 |

Results: The sample tested was found to Comply.

Plot:



10s Plot

6.0 Restrictions (FCC 15C - 15.231(a))**Data:**

| 15.231(a) | Response | Requirement |
|-------------------------------|----------|-----------------------------|
| Frequency Range (Mhz, max) | 418 | 40.66-40.70 MHz and > 70MHz |
| Frequency Range (MHz, min) | 418 | 40.66-40.70 MHz and > 70MHz |
| Transmit only control signal? | Yes | Only control signal allowed |
| Continuous transmission? | No | No |
| Voice transmission? | No | No |
| Video transmission? | No | No |
| Radio control of toy? | No | No |

| | | |
|-------------------------------|-----|-----|
| 15.231(a)(1) | | |
| Manually operated? | Yes | |
| Deactivates within 5 seconds? | Yes | Yes |
| Show plot (10 second sweep) | Yes | |

| | | |
|-------------------------------|----|--|
| 15.231(a)(2) | | |
| Automatically operated? | No | |
| Deactivates within 5 seconds? | NA | |
| Show plot (10 second sweep) | NA | |

| | | |
|--|----|----------------------------|
| 15.231(a)(3) | | |
| Periodically transmits at predetermined intervals? | No | Allowed, with restrictions |
| Polling signals? | No | Allowed, with restrictions |
| Polling rate and timing | NA | < 2 seconds per hour |

| | | |
|--------------------|-----|---------|
| 15.231(a)(4) | | |
| For Emergency Use? | Yes | Allowed |

| | | |
|---|----|----------------------------------|
| 15.231(a)(5) | | |
| Exceed 15.231(a)(1) or (a)(2) requirements? | No | Allowed for professional install |

7.0 Duty Cycle Determination (FCC 15A - 15.35(c))

Method:

(c) Unless otherwise specified, e.g. §15.255(b), when the radiated emission limits are expressed in terms of the average value of the emission, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum value. The exact method of calculating the average field strength shall be submitted with any application for certification or shall be retained in the measurement data file for equipment subject to notification or verification.

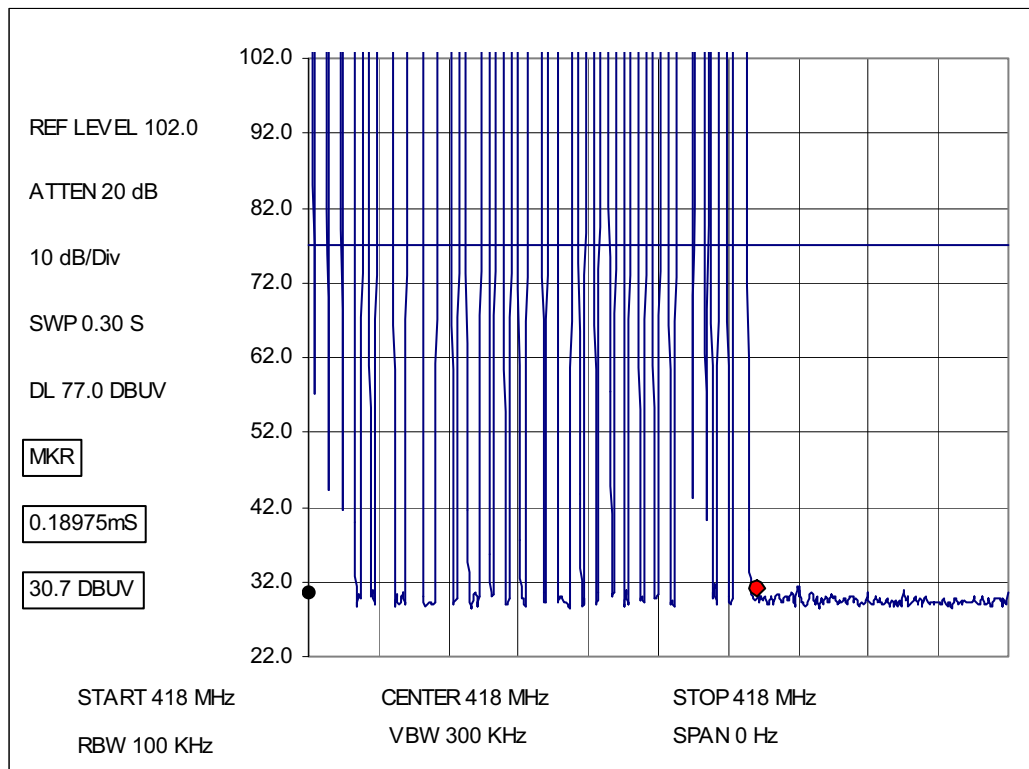
Determine the period of the pulse train, T, in mSec and record the results. T is defined as the time from the beginning of one pulse train to the beginning of the next pulse train.

Count the number of different types of pulses, N and record the results.

For each of the different types of pulses, count the number of occurrences within one pulse train.

Use the Duty Cycle Correction Factor, DCCF, from the results table and use it to adjust the field strength measurements recorded for radiated emissions.

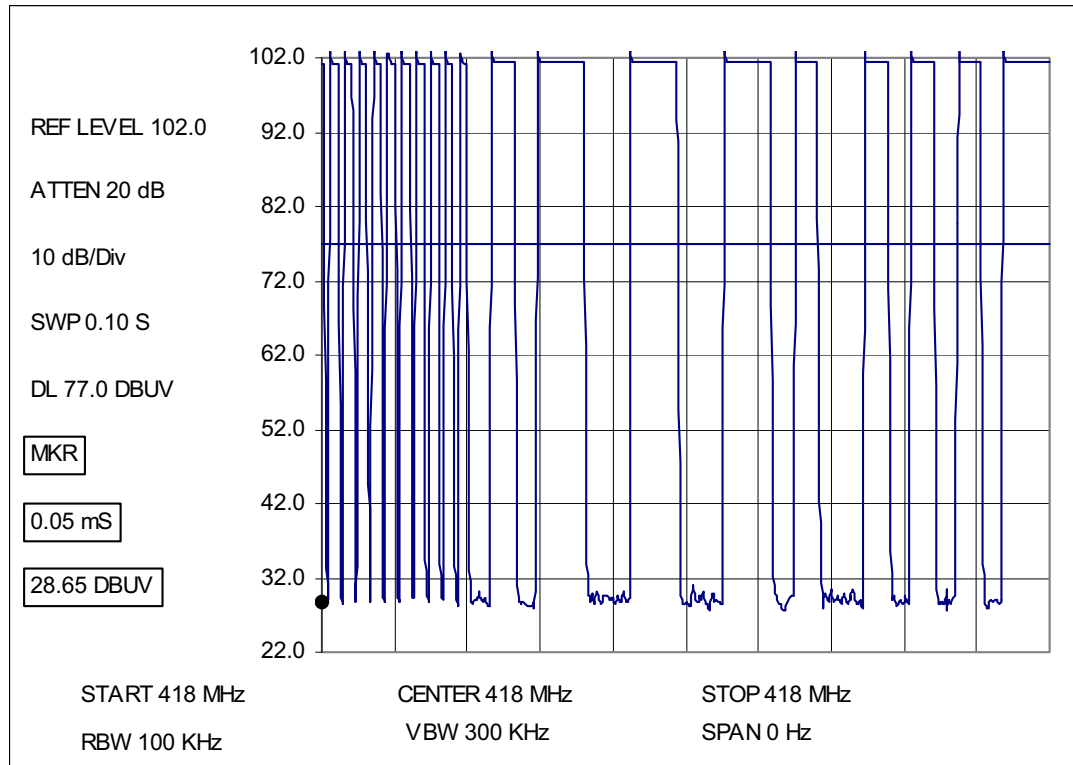
Plot:



300mS Plot

7.0 Duty Cycle Determination (FCC 15A - 15.35(c))

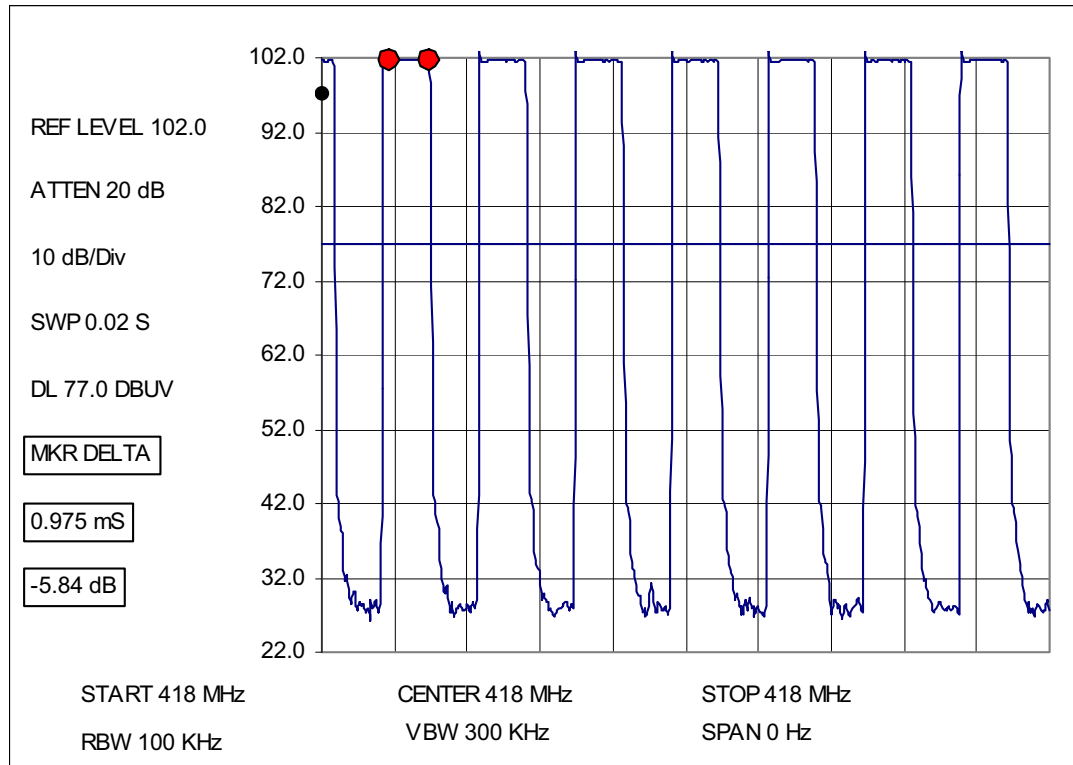
Plot:



100mS Plot

7.0 Duty Cycle Determination (FCC 15A - 15.35(c))

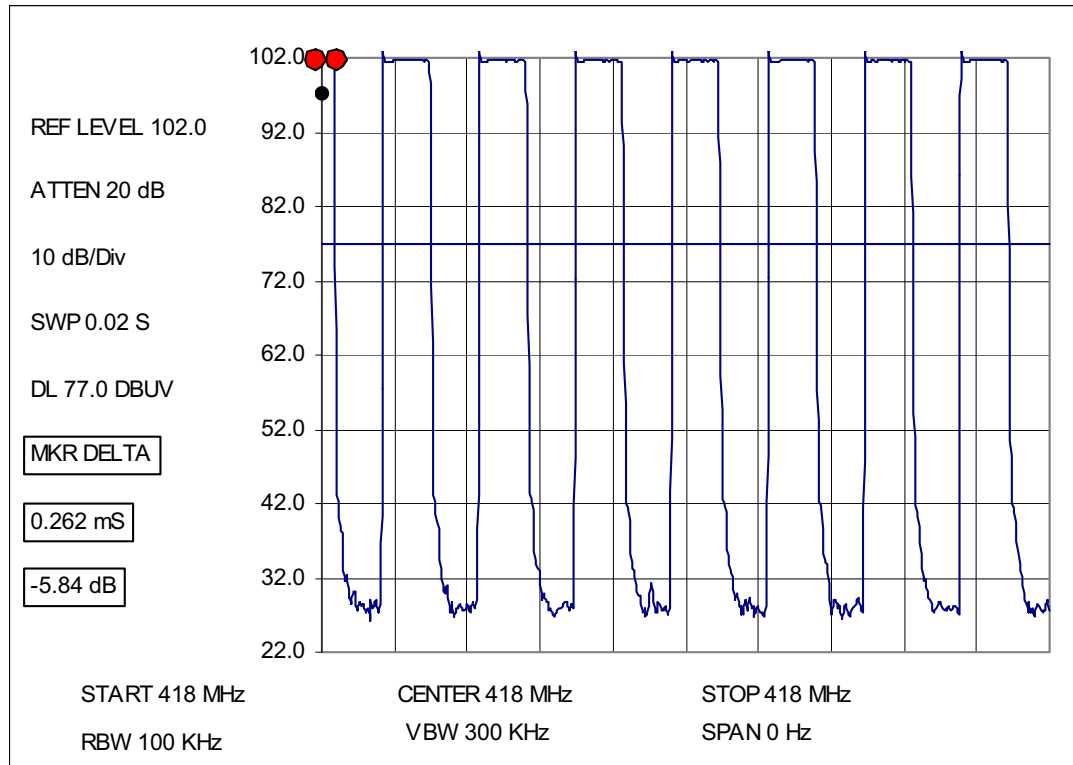
Plot:



0.975mS Pulse

7.0 Duty Cycle Determination (FCC 15A - 15.35(c))

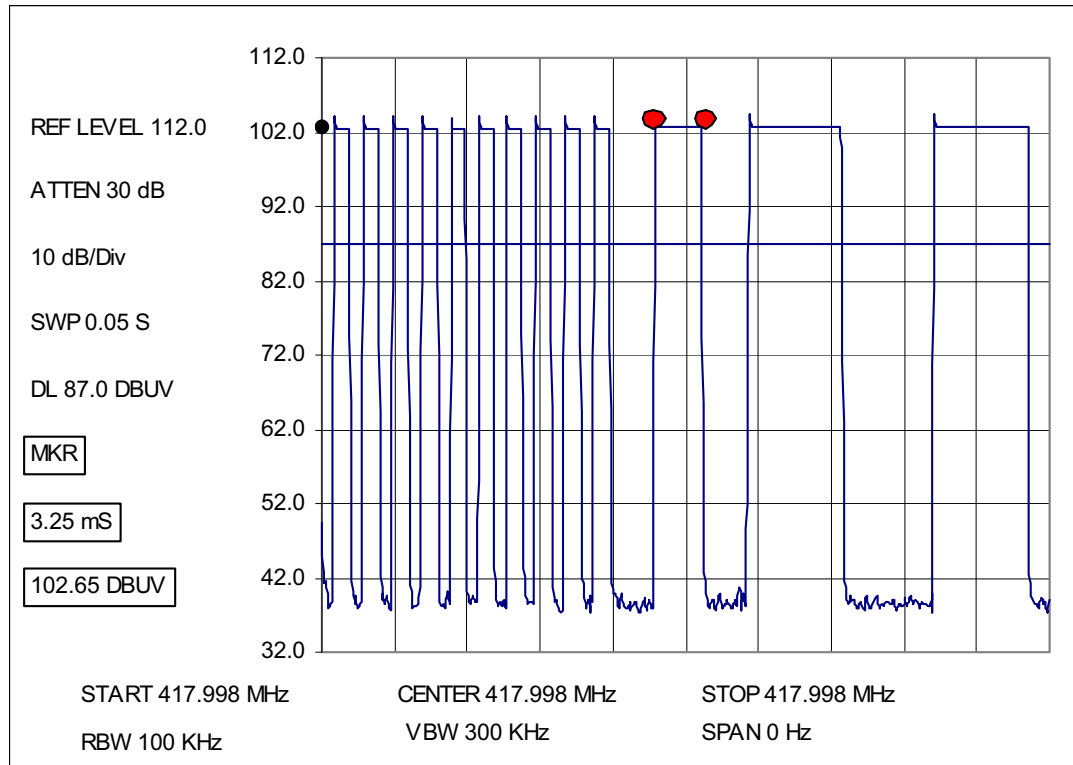
Plot:



0.262mS

7.0 Duty Cycle Determination (FCC 15A - 15.35(c))

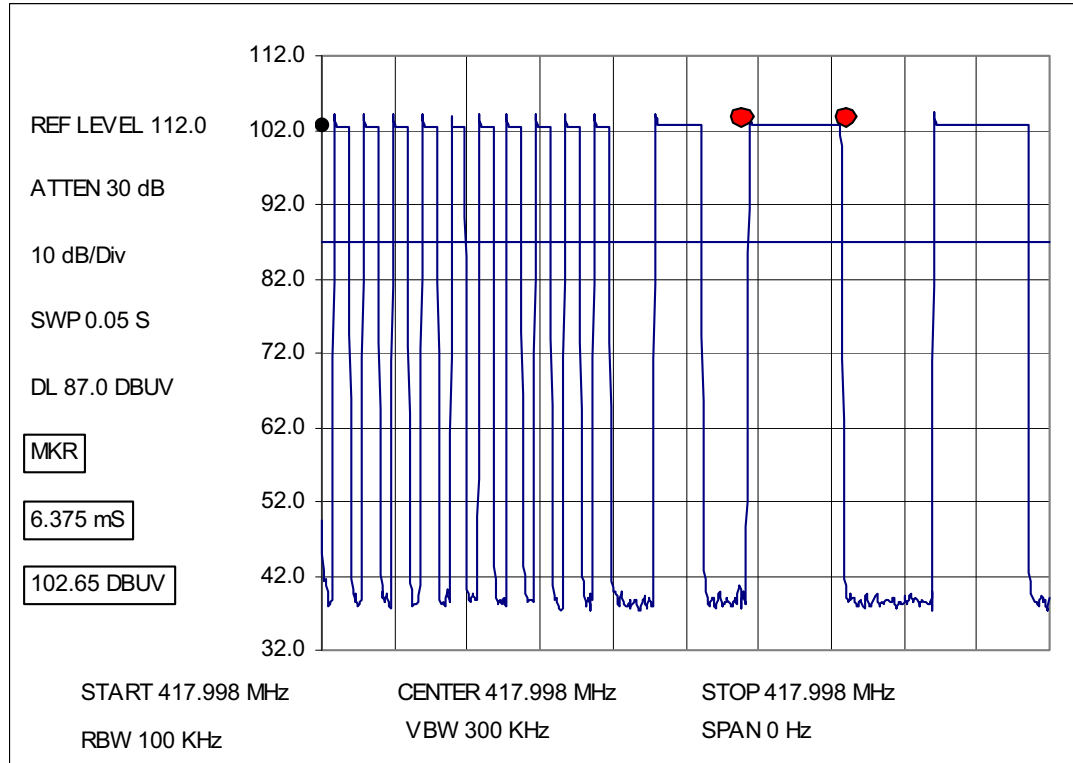
Plot:



3.25mS Plot

7.0 Duty Cycle Determination (FCC 15A - 15.35(c))

Plot:



6.375mS Plot

Data:

7.0 Duty Cycle Determination (FCC 15A - 15.35(c))

| | |
|------------------------------------|-----|
| Duration of Pulse Train, T (mSec): | 161 |
| Averaging Interval, A_I (mSec): | 100 |
| Number of different Pulses, N: | 4 |

| | Number (#P _x) | Pulse Width, mSec (PW _x) | Product (#P _x)*(PW _x) |
|----------------|------------------------------|---|--|
| Pulse Width 1 | 1 | 0.262 | 0.262 |
| Pulse Width 2 | 10 | 0.955 | 9.55 |
| Pulse Width 3 | 5 | 3.25 | 16.25 |
| Pulse Width 4 | 4 | 6.375 | 25.5 |
| Pulse Width 5 | | | |
| Pulse Width 6 | | | |
| Pulse Width 7 | | | |
| Pulse Width 8 | | | |
| Pulse Width 9 | | | |
| Pulse Width 10 | | | |

| | |
|-----------------------------------|---------|
| Duty Cycle: | 0.51562 |
| Duty Cycle Correction Factor, dB: | -5.8 |

$$T_{on} = (PW_1 * \#P_1) + (PW_2 * \#P_2) + \dots + (PW_n * \#P_n)$$

$$DutyCycle = T_{on} \div A_I$$

$$DCCF = 20 * \log_{10}(DutyCycle)$$

8.0 Radiated Emissions (FCC 15C - 15.231(b))

Method:

(b) In addition to the provisions of §15.205, the field strength of emissions from intentional radiators operated under this section shall not exceed the limits specified in FCC Part 15.231(b).

Intentional radiators operating under the provisions of this section shall demonstrate compliance with the limits on the field strength of emissions, as shown in the above table, based on the average value of the measured emissions. As an alternative, compliance with the limits in the above table may be based on the use of measurement instrumentation with a CISPR quasi-peak detector. The specific method of measurement employed shall be specified in the application for equipment authorization. If average emission measurements are employed, the provisions in §15.35 for averaging pulsed emissions and for limiting peak emissions apply. Further, compliance with the provisions of §15.205 shall be demonstrated using the measurement instrumentation specified in that section.

The limits on the field strength of the spurious emissions in the above table are based on the fundamental frequency of the intentional radiator. Spurious emissions 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.

For radiated emission measurements, the EUT is attached to a styro-foam block and placed on a non-conductive table whose top is 80cm above the ground plane. If the EUT is handheld, the signal shall be maximized through rotation and placement in the three orthogonal axes.

During the test the EUT is rotated and the antenna height and polarization are varied during the search for maximum signal level. The antenna height is varied from 1 to 4 meters.

Radiated emissions are taken at 3 meters unless the signal level is too low for measurement at that distance. If necessary, a pre-amplifier is used and/or the test is conducted at a closer distance. All readings are extrapolated back to the equivalent 3-meter reading using inverse scaling with distance.

Radiated emission measurements were performed from 30 MHz to 10 times the highest frequency generated in the EUT. When provided, emissions plots are taken with a peak detector unless otherwise indicated.

Analyzer resolution is:

- 100 kHz or greater for frequencies 1000 MHz and below,
- 1 MHz for frequencies above 1000 MHz.

Equipment setup for radiated disturbance tests shall follow the guidelines of ANSI C63.4:2003.

The Peak value of the Field Strength was measured. The Average value was obtained from the Peak by subtracting the Duty Cycle Correction Factor or by using an average detector.

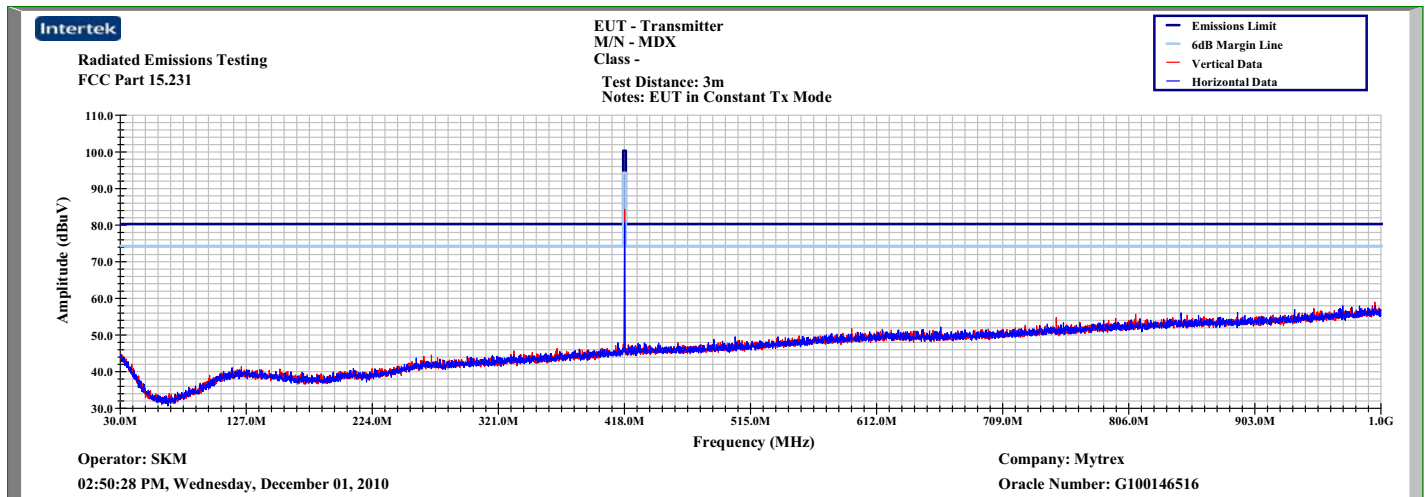
Test Equipment Used:

| Description: | Manufacturer: | Model: | Asset Number: | Cal Date: | Cal Due: |
|-----------------------------------|--------------------|---------------|---------------|------------|------------|
| Antenna, BiLog, 20-2000MHz | Chase | CBL6112A | 211518 | 01/13/2010 | 01/13/2011 |
| Antenna, Horn, <18 GHz | EMCO | 3115 | 213061 | 05/07/2010 | 05/07/2011 |
| Cable, 7 meters, 1-18GHz | Storm Products Co. | PR90-241-7MTR | ST-2 | 08/19/2010 | 08/19/2011 |
| Cable, 7 meters, 1-18GHz | Storm Products Co. | PR90-195-7MTR | ST-3 | 08/19/2010 | 08/19/2011 |
| Cable, N-N, 3 meters, 18GHz | Megaphase | TM18-NKNK-118 | E204 | 05/04/2010 | 05/04/2011 |
| EMI Receiver | Hewlett Packard | 8546A | 211505 | 02/02/2010 | 02/02/2011 |
| EMI Receiver, Preselector section | Hewlett Packard | 85460A | 015762 | 02/02/2010 | 02/02/2011 |
| Filter, 1 GHz High Pass | Filtek | HP12/1000-5AB | 213156a | 04/21/2010 | 04/21/2011 |

Results: The sample tested was found to Comply.

Plot:

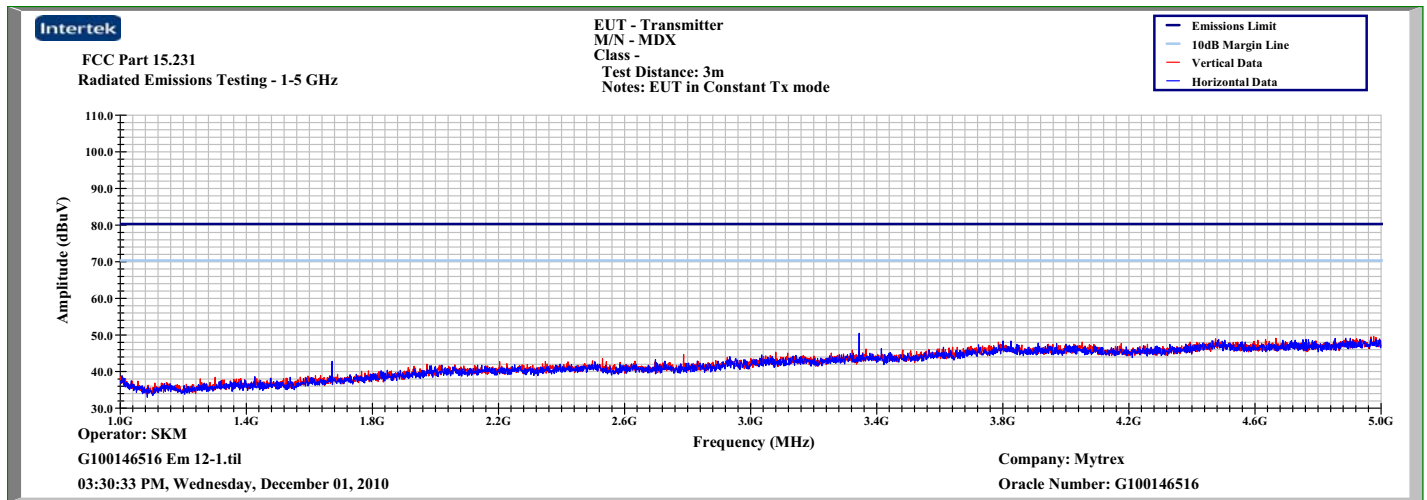
8.0 Radiated Emissions (FCC 15C - 15.231(b))



Peak Plot - 30-1000MHz

8.0 Radiated Emissions (FCC 15C - 15.231(b))

Plot:



Peak Plot - 1000-5000MHz

Data:

8.0 Radiated Emissions (FCC 15C - 15.231(b))

Date: 12/1/2010

Limit: 15_231 Pk Limit at 418MHz-3m

Frequency Range (MHz): 30-1000

Test Distance (m): 3

Input power: Battery

Modifications for compliance (y/n): n

Notes: Continuous transmit with modulation

| A | B | C | D | E | F | G | H | I | J | K |
|-----------------|---------------|----------------|------------------------|---------------|-------------------|----------------------|--------------|-------------------|-----------|-----------------|
| Ant. Pol. (V/H) | Frequency MHz | Reading dB(uV) | Antenna Factor dB(1/m) | Cable Loss dB | Pre-amp Factor dB | Duty Cycle Factor dB | Net dB(uV/m) | 3m Limit dB(uV/m) | Margin dB | Axis / Detector |
| v | 418.065 | 65.2 | 15.3 | 2.9 | 0.0 | 0.0 | 83.4 | 100.2 | -16.8 | XP |
| v | 418.065 | 65.2 | 15.3 | 2.9 | 0.0 | 5.8 | 77.6 | 80.2 | -2.6 | XA |
| v | 418.065 | 65.8 | 15.3 | 2.9 | 0.0 | 0.0 | 84.0 | 100.2 | -16.2 | YP |
| v | 418.065 | 65.8 | 15.3 | 2.9 | 0.0 | 5.8 | 78.2 | 80.2 | -2.0 | YA |
| v | 418.065 | 48.8 | 15.3 | 2.9 | 0.0 | 0.0 | 67.0 | 100.2 | -33.2 | ZP |
| v | 418.065 | 48.8 | 15.3 | 2.9 | 0.0 | 5.8 | 61.2 | 80.2 | -19.0 | ZA |
| h | 418.065 | 57.9 | 16.5 | 2.9 | 0.0 | 0.0 | 77.3 | 100.2 | -22.9 | XP |
| h | 418.065 | 57.9 | 16.5 | 2.9 | 0.0 | 5.8 | 71.5 | 80.2 | -8.7 | XA |
| h | 418.065 | 59.2 | 16.5 | 2.9 | 0.0 | 0.0 | 78.6 | 100.2 | -21.6 | YP |
| h | 418.065 | 59.2 | 16.5 | 2.9 | 0.0 | 5.8 | 72.8 | 80.2 | -7.4 | YA |
| h | 418.065 | 66.0 | 16.5 | 2.9 | 0.0 | 0.0 | 85.4 | 100.2 | -14.8 | ZP |
| h | 418.065 | 66.0 | 16.5 | 2.9 | 0.0 | 5.8 | 79.6 | 80.2 | -0.6 | ZA |
| v | 836.133 | 11.5 | 20.2 | 4.6 | 0.0 | 0.0 | 36.3 | 80.2 | -43.9 | XP NF |
| v | 836.133 | 11.5 | 20.2 | 4.6 | 0.0 | 5.8 | 30.5 | 60.2 | -29.7 | XA NF |
| v | 836.133 | 10.9 | 20.2 | 4.6 | 0.0 | 0.0 | 35.7 | 80.2 | -44.5 | YP NF |
| v | 836.133 | 10.9 | 20.2 | 4.6 | 0.0 | 5.8 | 29.9 | 60.2 | -30.3 | YA NF |
| v | 836.133 | 11.8 | 20.2 | 4.6 | 0.0 | 0.0 | 36.6 | 80.2 | -43.6 | ZP NF |
| v | 836.133 | 11.8 | 20.2 | 4.6 | 0.0 | 5.8 | 30.8 | 60.2 | -29.4 | ZA NF |
| h | 836.133 | 12.3 | 20.2 | 4.6 | 0.0 | 0.0 | 37.1 | 80.2 | -43.1 | XP NF |
| h | 836.133 | 12.3 | 20.2 | 4.6 | 0.0 | 5.8 | 31.3 | 60.2 | -28.9 | XA NF |
| h | 836.133 | 13.2 | 20.2 | 4.6 | 0.0 | 0.0 | 38.0 | 80.2 | -42.2 | YP NF |
| h | 836.133 | 13.2 | 20.2 | 4.6 | 0.0 | 5.8 | 32.2 | 60.2 | -28.0 | YA NF |
| h | 836.133 | 10.8 | 20.2 | 4.6 | 0.0 | 0.0 | 35.6 | 80.2 | -44.6 | ZP NF |
| h | 836.133 | 10.8 | 20.2 | 4.6 | 0.0 | 5.8 | 29.8 | 60.2 | -30.4 | ZA NF |
| Calculations | | G=C+D+E-F | | | I=G-H | | | | | |

9.0 Bandwidth Requirements (FCC 15C - 15.231(c))

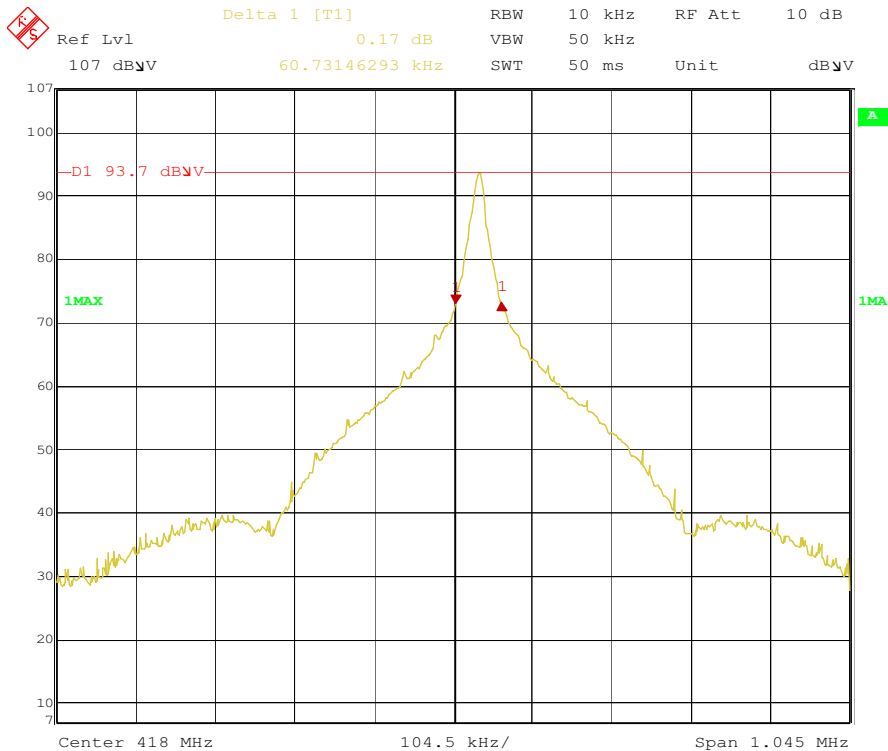
Method:

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.

- Center Frequency is set to the fundamental of transmitter.
- Resolution Bandwidth is set to approximately 1% of the emission bandwidth.
- Video Bandwidth is set greater than or equal to the Resolution Bandwidth.

Results: The sample tested was found to Comply.

Plot:



Date: 15.DEC.2010 11:22:58

Bandwidth Plot

Data:

9.0 Bandwidth Requirements (FCC 15C - 15.231(c))

| Fundamental Frequency MHz | Measured Bandwidth MHz | Bandwidth Limit MHz |
|---------------------------------|------------------------------|---------------------------|
| 418 | 0.0607 | 1.045 |

| Suggested Instrument Settings | |
|-------------------------------|-------|
| RBW (kHz): | 10 |
| VBW (kHz): | 31 |
| Span (MHz): | 1.045 |
| Sweep time (s): | >1 |