Lab Code: 200707-0

# FCC PART 95

# EMI MEASUREMENT AND TEST REPORT

For

## Win Channel Electronics Company Ltd.

No. 1, Shangxing road, Shangjiao, Changan Town,

DongGuan City, GuangDong, China

## FCC ID: Y7SFRS-318US

| **Report Type:** Original Report | **Product Type:** Portable FRS/GMRS PTT Radio Transceiver |
|---|---|

| | |
|---|---|
| **Test Engineer:** | Allan An |
| **Report Number:** | RSZ11012201 |
| **Report Date:** | 2011-03-17 |
| **Reviewed By:** | Merry Zhao<br>EMC Engineer |
| **Prepared By:** | Bay Area Compliance Laboratories Corp. (Shenzhen)<br>6/F, the 3rd Phase of WanLi Industrial Building,<br>ShiHua Road, FuTian Free Trade Zone<br>Shenzhen, Guangdong, China<br>Tel: +86-755-33320018<br>Fax: +86-755-33320008 |

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# GENERAL INFORMATION

## Product Description for Equipment Under Test (EUT)

The *Win Channel Electronics Company Ltd.*'s product, model number: *318US (FCC ID: Y7SFRS-318US)* or the "EUT" as referred to in this report is a *FRS/GMRS.* The EUT is measured approximately: 12.5 cm (L) x 5.5 cm (W) x 3.0 cm (H), rated input voltage: DC 3.6V Battery.

*Note: The serial products model *318US/KT2022/PF222,* we select *318US* to test, all the models are electrically identical, only model names and trade names have difference due to marketing purposes, which were explained in the attached declaration letter.

** All measurement and test data in this report was gathered from production sample serial number: 11010075 (Assigned by BACL, Shenzhen). The EUT was received on 2011-01-22.*

## Objective

This Type approval report is prepared on behalf of *Win Channel Electronics Company Ltd.* in accordance with Part 2, Subpart J, and Part 95 of the Federal Communication Commissions rules.

## Related Submittal(s)/Grant(s)

No related submittal(s).

## Test Methodology

All tests and measurements indicated in this document were performed in accordance with Part 95 Subpart A, B and Subpart E of the Federal Communication Commissions rules with TIA-603-C, Land Mobile FM or PM-Communications Equipment-Measurement and Performance Standards.

All emissions measurement was performed and Bay Area Compliance Laboratories Corp. (Shenzhen). The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

## Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Shenzhen) to collect test data is located in the 6/F, the 3rd Phase of WanLi Industrial Building, ShiHua Road, FuTian Free Trade Zone Shenzhen, Guangdong, China.

Test site at Bay Area Compliance Laboratories Corp. (Shenzhen) has been fully described in reports submitted to the Federal Communication Commission (FCC). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on December 06, 2010. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2009.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 382179. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

Additionally, Bay Area Compliance Laboratories Corp. (Shenzhen) is a National Institute of Standards and Technology (NIST) accredited laboratory, under the National Voluntary Laboratory Accredited Program (Lab Code 200707-0).


NVLAP LAB CODE 200707-0

The current scope of accreditations can be found at http://ts.nist.gov/Standards/scopes/2007070.htm

# SYSTEM TEST CONFIGURATION

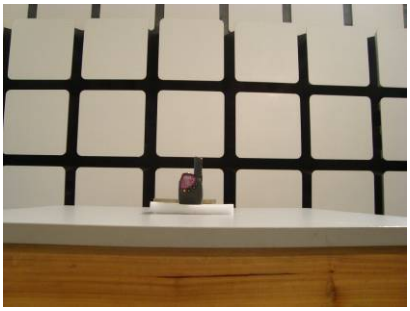
## Description of Test Configuration

The system was configured for testing in a typical fashion (as normally used by a typical user).

## Equipment Modifications

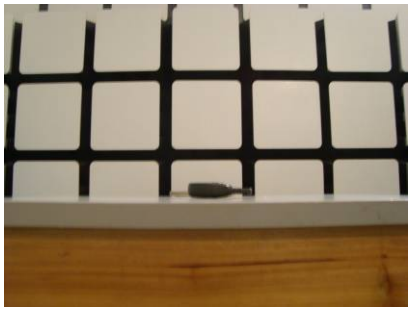
Bay Area Compliance Laboratories Corp. (Shenzhen) has not done any modification on the EUT.

## Configuration of Test Setup



Standing View

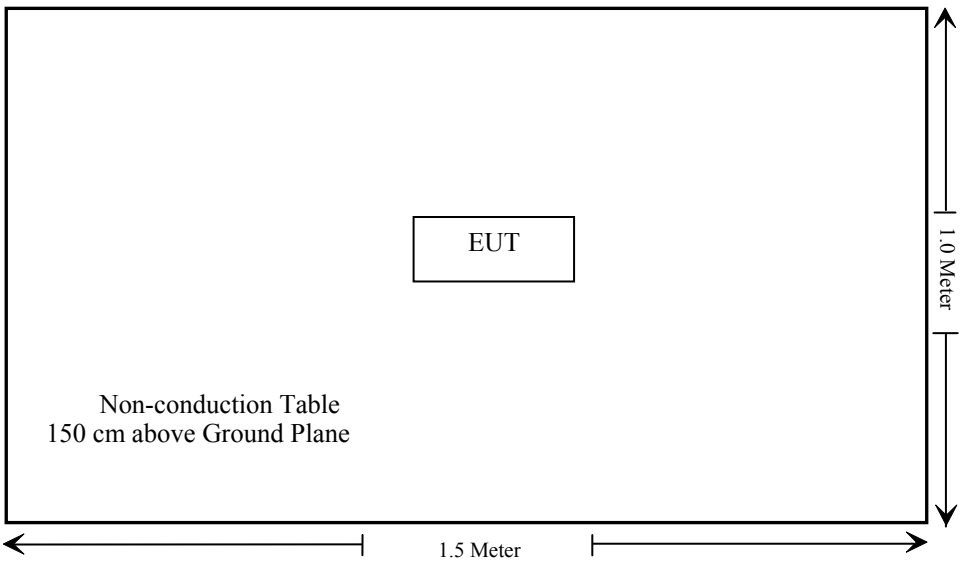
Lying View



Side View

Note: We tested Lying orientation, Side orientation and standing orientation, the Standing orientation is the worst mode, so we select the Standing orientation to test.

## Block Diagram of Test Setup



# SUMMARY OF TEST RESULTS

| FCC Rules | Description of Test | Results |
|---|---|---|
| §1.1307(b) (1) | RF Exposure Info | Compliance |
| §2.1046, §95.639(a), §95.639(d) | RF Output Power | Compliance |
| §2.1047, §95.637(a) | Modulation Characteristic | Compliance |
| §2.1049, §95.633(a) (c) | Occupied Bandwidth & Emission Mask | Compliance |
| §2.1053, §95.635(b) (7) | Spurious Radiated Emissions | Compliance |
| §2.1055(d), §95.627(b), §95.621 | Frequency Stability | Compliance |

# FCC §2.1093 - RF EXPOSURE INFORMATION

## Applicable Standard

According to FCC §2.1093 and §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensure that the public is not exposed to radio frequency energy level in excess of the Commission's guideline.

According to FCC OET KDB447498 D01 section 5, Push-to-talk (PTT) devices:

a) RF exposure is evaluated with a duty factor of 50% when the actual operating duty factor is ≤ 50%. Devices supporting higher duty factors shall be evaluated at the maximum duty factor; for example, devices supporting operator-assisted PSTN calls. Contact the FCC Laboratory when unable to test a device at the required duty factor due to hardware limitations or other reasons.

b) Portable PTT devices

i) The power thresholds and operating conditions in Table 1 are used to determine SAR test requirements for PTT radios required to comply with the general population exposure limit. When the occupational exposure limit applies, these power thresholds are increased by a factor of five (5) to determine the test requirements. SAR is required for PTT devices with maximum output power greater than these thresholds.28 SAR evaluation is also required for separation distances smaller than those in Table 1. Contact the FCC Laboratory to determine if SAR evaluation is necessary for other frequencies or when the SAR is very low.

**Table 1 - SAR Evaluation Power Thresholds for PTT devices, $f \leq 0.5$ GHz**

| Exposure Conditions | mW |
|---|---|
| Held to face ≥ 2.5 cm | 250 |
| Body-worn ≥ 1.5 cm | 200 |
| Body-worn ≥ 1.0 cm | 150 |

Notes:
1. The time-averaged output power, corresponding to the required PTT duty factor, is compared with these thresholds.
2. The closest distance between the user and the device or its antenna is used to determine the power thresholds.

ii) Additional SAR evaluation with a SAM phantom is required for PTT devices with held-to-ear operating mode.29 Contact the FCC Laboratory for device operating and test configurations.

Routine SAR evaluation refers to that specifically required by §2.1093, using measurements or computer simulation. When routine SAR evaluation is not required, portable transmitters with output power greater than the applicable low threshold require SAR evaluation to qualify for TCB approval.

## Result

According to FCC KDB447498 generic portable criteria

The Max output power: 281.8 mW, Duty factor: 50%

The time-averaged output power is: 281.8*0.5= 140.9 mW < 250 mW

Stand-alone SAR evaluation for held-face is not required.

Note: The device does not have the body-worn capability.

# FCC §2.1046, §95.639(a) & §95.639(d) - RF OUTPUT POWER

## Applicable Standard

Per FCC §2.1046, §95.639(a) and §95.639(d), No FRS Unit, under any condition of modulation, shall exceed a 0.5 W effective radiated power (ERP).

Per FCC §95.639 (a) (1), No GMRS transmitter, under any condition of modulation, shall exceed 50 W Carrier power when transmitting emission type A1D, F1D, G1D, A3E, F3E or G3E.

## Test Procedure

The transmitter was placed on a wooden turntable, and it was transmitting into a non-radiating load, which was also placed on the turntable.

The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and polarization as well as EUT azimuth were varied in order to identify the maximum level of emissions from the EUT .The test was performed by placing the EUT on 3-orthogonal axis.

Remove the EUT and replace it with substitution antenna. A signal generator was connected to the substitution antenna by a non-radiating cable. The absolute levels of the emissions were measured by the substitution.

## Test Equipment List and Details

| Manufacturer | Description | Model NO. | Serial NO. | Calibration Date | Calibration Due Date |
|---|---|---|---|---|---|
| HP | Signal Generator | HP8657A | 2849U00982 | 2010-10-28 | 2011-10-27 |
| Rohde & Schwarz | EMI Test Receiver | ESCI | 100035 | 2010-11-24 | 2011-11-24 |
| Sunol Sciences | Broadband Antenna | JB1 | A040904-1 | 2010-03-11 | 2011-03-11 |
| Com Power | Dipole Antenna | AD-100 | 041000 | 2010-09-25 | 2011-09-25 |

*** Statement of Traceability:** Bay Area Compliance Lab Corp. (ShenZhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

## Test Data

### Environmental Conditions

| | |
|---|---|
| **Temperature:** | 25 ° C |
| **Relative Humidity:** | 50% |
| **ATM Pressure:** | 100.5kPa |

*The testing was performed by Allan An on 2011-03-01.*

*Test Mode: Transmitting*

| Indicated | | Table Angle Degree | Test Ant. | | Substituted | | | Absolute Level (dBm) | FCC Part 95 | |
|---|---|---|---|---|---|---|---|---|---|---|
| Frequency (MHz) | S.A. Reading (dBµV) | | Height (m) | Polar (H/V) | S.G. Level (dBm) | Ant. Gain (dBd) | Cable Loss (dB) | | ERP (mW) | Limit (Watt) |
| GMRS Channel 16 | | | | | | | | | | |
| 462.6250 | 113.95 | 38 | 1.5 | V | 24.9 | 0 | 0.6 | 24.3 | 269.2 | 50 |
| 462.6250 | 111.23 | 18 | 1.0 | H | 23.3 | 0 | 0.6 | 22.7 | 186.2 | 50 |
| FRS Channel 11 | | | | | | | | | | |
| 467.6375 | 114.15 | 42 | 1.5 | V | 25.1 | 0 | 0.6 | 24.5 | 281.8 | 0.5 |
| 467.6375 | 111.83 | 17 | 1.0 | H | 23.4 | 0 | 0.6 | 22.8 | 190.5 | 0.5 |

**Test Result:** Compliance.

# FCC §2.1047 & §95.637(a) - MODULATION CHARACTERISTIC

## Applicable Standard

FCC §2.1047 & §95.637:

(a) Equipment which utilizes voice modulated communication shall show the frequency response of the audio modulating circuit over a range of 100 to 5000 Hz. for equipment which is required to have a low pass filter, the frequency response of the filter, or all of the circuitry installed between the modulation limited and the modulated stage shall be supplied.
(b) Equipment which employs modulation limiting, a curve showing the percentage of modulation versus the modulation input voltage shall be supplied.
(c) A FRS Unit that transmits emission type F3E must not exceed peak frequency deviation of plus or minus 2.5 kHz.
(d) A GMRS transmitter that transmits emission type F3E must not exceed a peak frequency deviation of plus or minus 5 kHz.

## Test Equipment List and Details

| Manufacturer | Description | Model NO. | Serial NO. | Calibration Date | Calibration Due Date |
|---|---|---|---|---|---|
| HP | RF Communication Test Set | HP8920A | 3438A05201 | 2010-05-05 | 2011-05-05 |

*** Statement of Traceability:** Bay Area Compliance Lab Corp. (ShenZhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

## Test Procedure

Test Method: TIA/EIA-603-C

## Test Data

### Environmental Conditions

| | |
|---|---|
| **Temperature:** | 25 ° C |
| **Relative Humidity:** | 50% |
| **ATM Pressure:** | 100.5kPa |

*The testing was performed by Allan An on 2011-03-01 to 2011-03-17.*

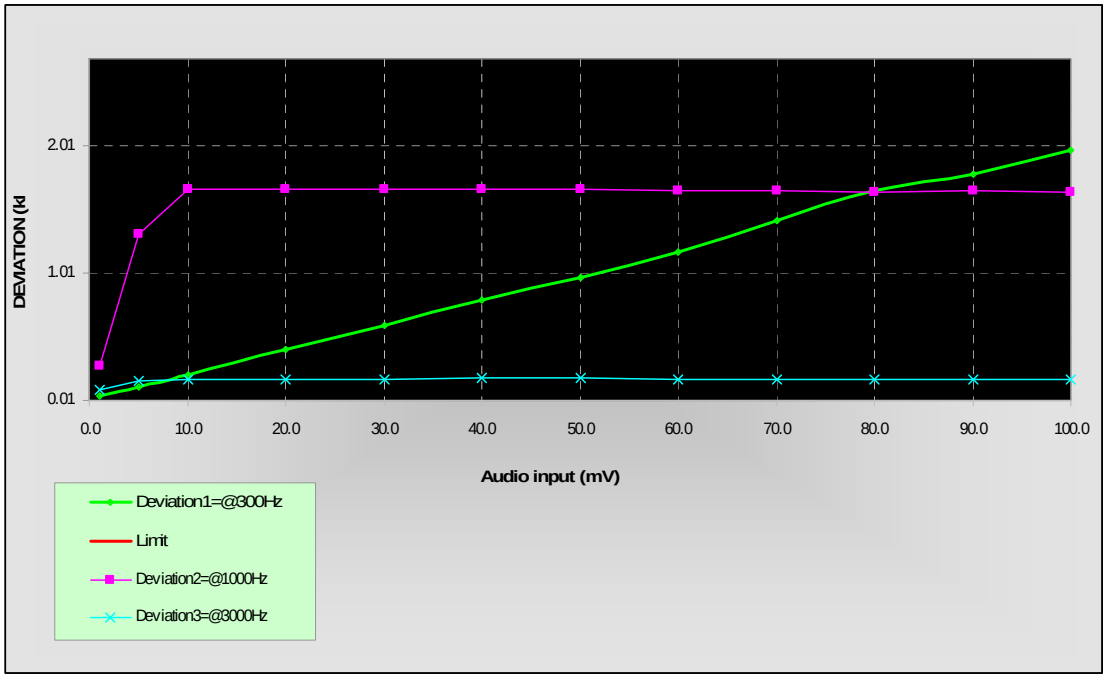
Please refer to the following tables and plots.

*Test Mode: Transmitting*

## TRANSMITTER FREQUENCY DEVIATION

FRS – Channel 11 (467.6375 MHz)

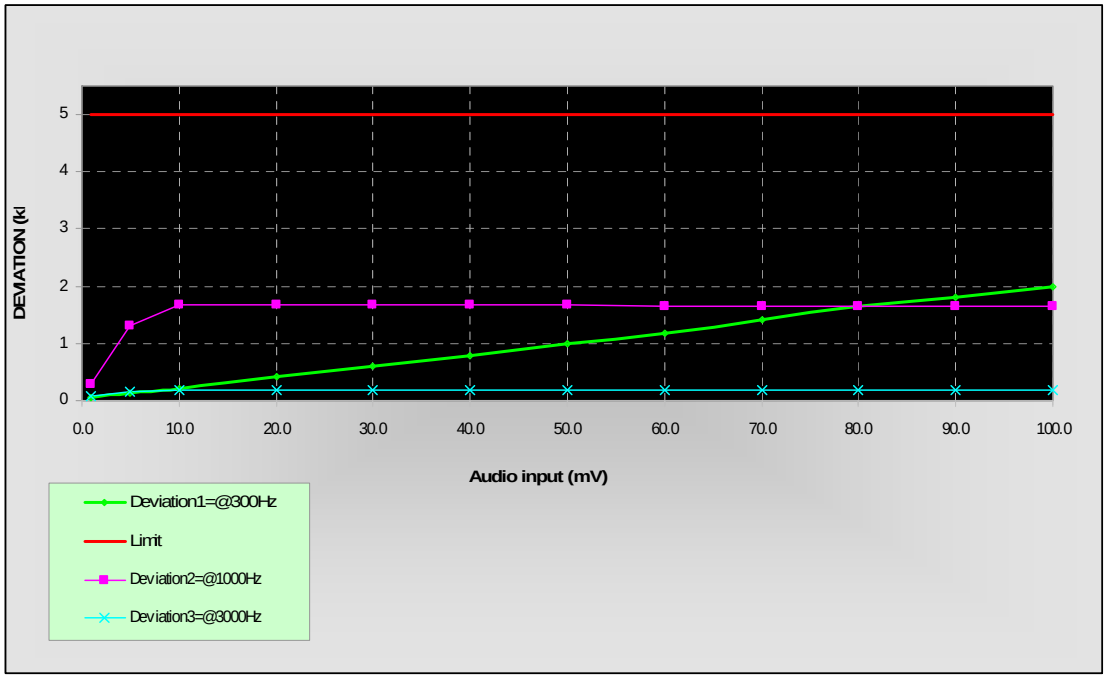
| Audio Input Level (mV) | Frequency Deviation (kHz) | | | FCC Limit (kHz) |
|---|---|---|---|---|
| | (@ 300 Hz ) | (@ 1000 Hz ) | (@ 3000 Hz ) | |
| 1.0 | 0.053 | 0.303 | 0.068 | 2.5 |
| 5.0 | 0.132 | 1.423 | 0.183 | 2.5 |
| 10.0 | 0.231 | 1.775 | 0.187 | 2.5 |
| 20.0 | 0.444 | 1.786 | 0.192 | 2.5 |
| 30.0 | 0.652 | 1.788 | 0.195 | 2.5 |
| 40.0 | 0.863 | 1.787 | 0.188 | 2.5 |
| 50.0 | 1.073 | 1.793 | 0.189 | 2.5 |
| 60.0 | 1.307 | 1.783 | 0.192 | 2.5 |
| 70.0 | 1.553 | 1.796 | 0.194 | 2.5 |
| 80.0 | 1.815 | 1.795 | 0.192 | 2.5 |
| 90.0 | 1.953 | 1.775 | 0.191 | 2.5 |
| 100.0 | 2.103 | 1.773 | 0.193 | 2.5 |



## TRANSMITTER FREQUENCY DEVIATION

GMRS – Channel 16 (462.6250 MHz)

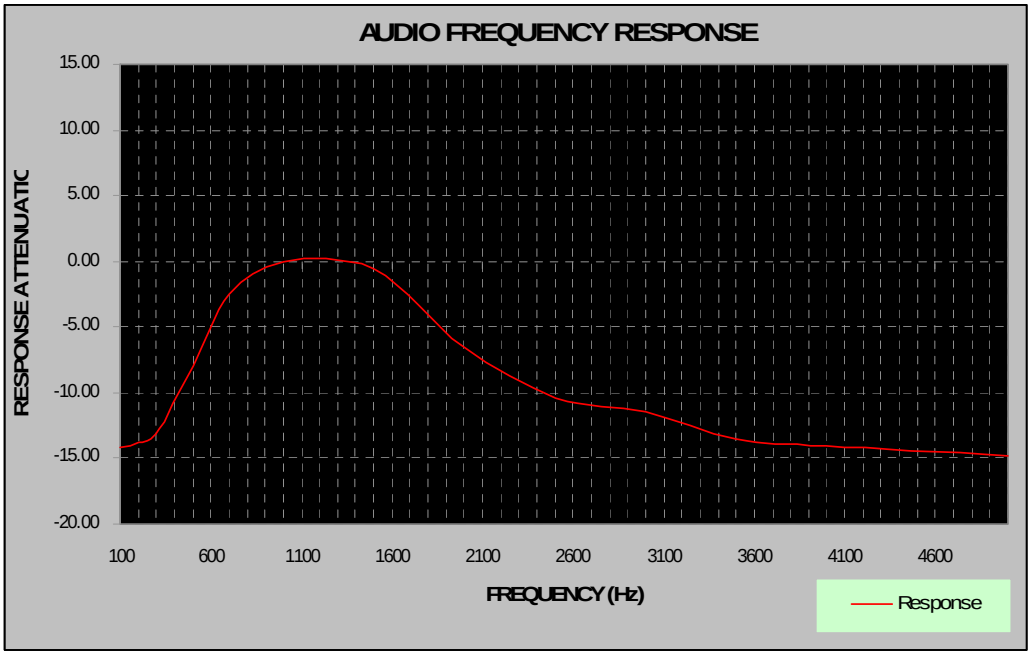
| Audio Input Level (mV) | Frequency Deviation (kHz) | | | FCC Limit (kHz) |
|---|---|---|---|---|
| | (@ 300 Hz ) | (@ 1000 Hz ) | (@ 3000 Hz ) | |
| 1.0 | 0.047 | 0.285 | 0.087 | 5.0 |
| 5.0 | 0.119 | 1.321 | 0.165 | 5.0 |
| 10.0 | 0.213 | 1.675 | 0.177 | 5.0 |
| 20.0 | 0.414 | 1.678 | 0.181 | 5.0 |
| 30.0 | 0.596 | 1.673 | 0.179 | 5.0 |
| 40.0 | 0.796 | 1.671 | 0.183 | 5.0 |
| 50.0 | 0.983 | 1.674 | 0.182 | 5.0 |
| 60.0 | 1.182 | 1.663 | 0.179 | 5.0 |
| 70.0 | 1.425 | 1.658 | 0.178 | 5.0 |
| 80.0 | 1.658 | 1.655 | 0.181 | 5.0 |
| 90.0 | 1.795 | 1.657 | 0.178 | 5.0 |
| 100.0 | 1.981 | 1.653 | 0.179 | 5.0 |



## Audio Frequency Response

FRS – Channel 11 (467.6375 MHz)

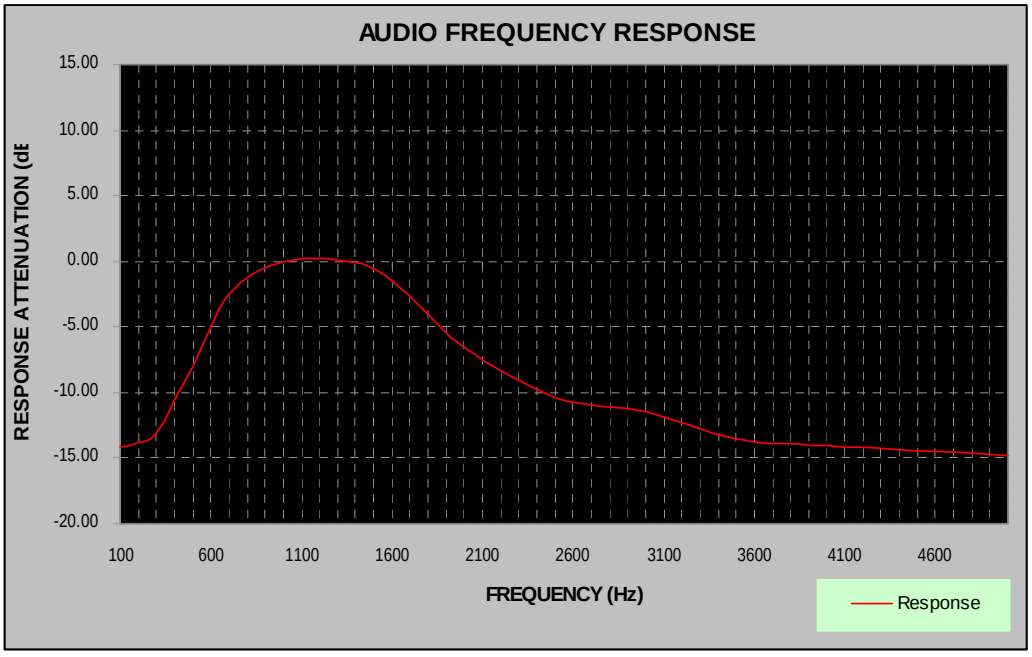
| Audio Frequency (Hz) | Response Attenuation (dB) |
|---|---|
| 100 | -14.18 |
| 200 | -13.74 |
| 300 | -13.11 |
| 500 | -7.89 |
| 700 | -2.48 |
| 1000 | 0.00 |
| 1500 | -0.53 |
| 2000 | -6.58 |
| 2500 | -10.45 |
| 3000 | -11.46 |
| 3500 | -13.56 |
| 4000 | -13.98 |
| 5000 | -14.86 |



## Audio Frequency Response

GMRS – Channel 16 (462.6250 MHz)

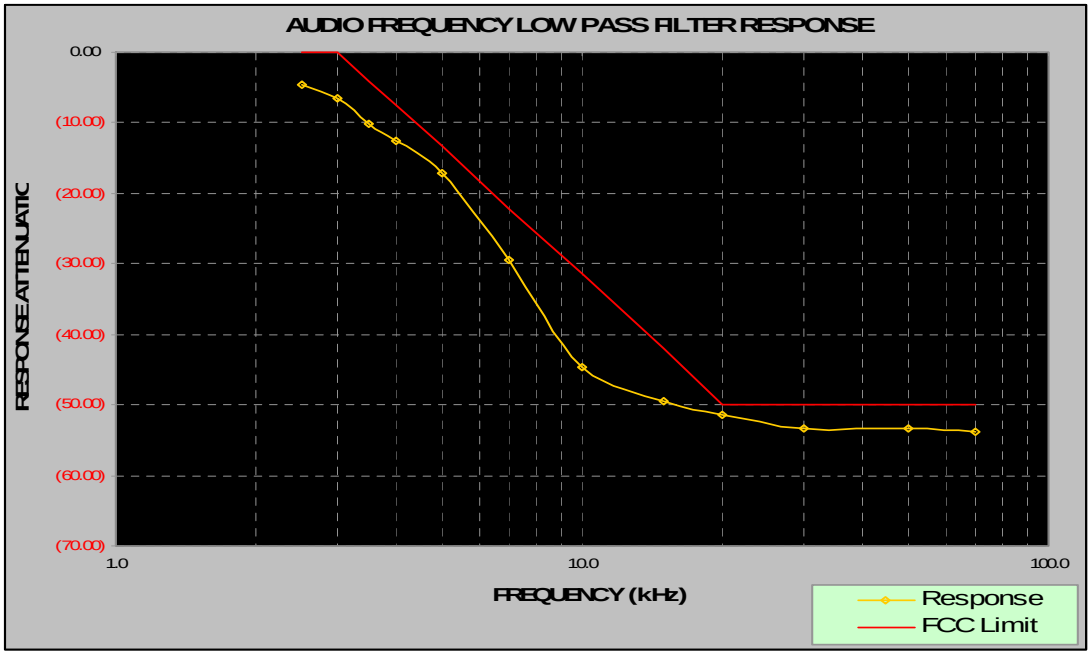
| Audio Frequency (Hz) | Response Attenuation (dB) |
|---|---|
| 100 | -13.24 |
| 200 | -12.57 |
| 300 | -11.37 |
| 500 | -7.57 |
| 700 | -2.14 |
| 1000 | 0.00 |
| 1500 | -0.51 |
| 2000 | -5.78 |
| 2500 | -9.87 |
| 3000 | -10.76 |
| 3500 | -13.27 |
| 4000 | -13.67 |
| 5000 | -14.72 |



## Audio frequency Low Pass Filter Response

FRS – Channel 11 (467.6375 MHz)

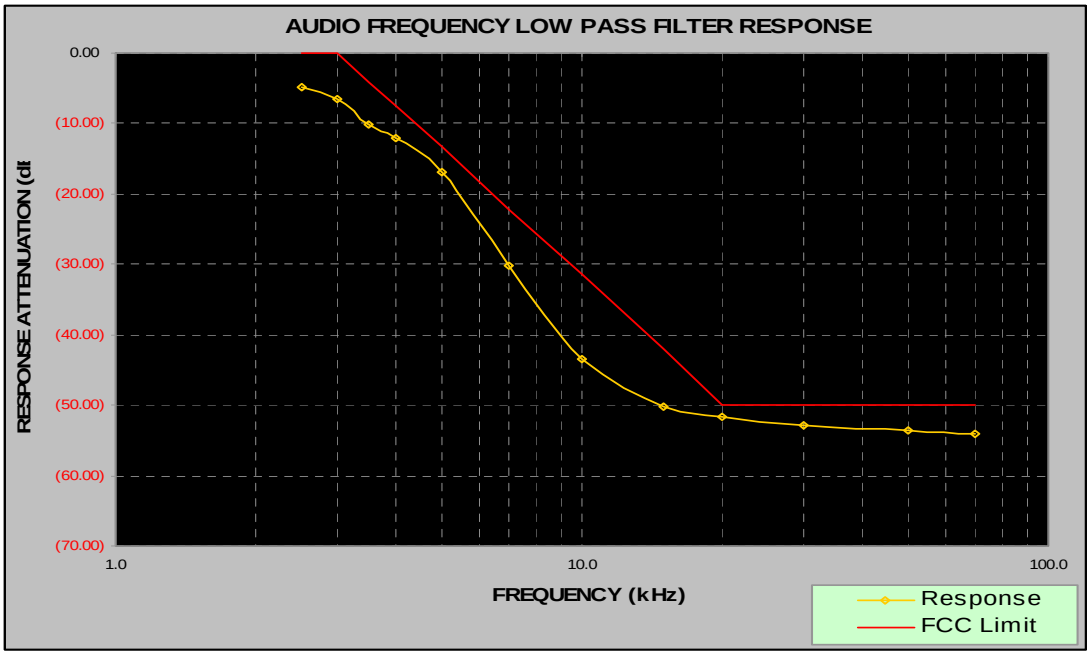
| Audio Frequency (kHz) | Response Attenuation (dB) | FCC Limit (dB) |
|---|---|---|
| 2.5 | -4.70 | 0.0 |
| 3.0 | -6.58 | 0.0 |
| 3.5 | -10.17 | -4.0 |
| 4.0 | -12.47 | -7.5 |
| 5.0 | -17.21 | -13.3 |
| 7.0 | -29.37 | -22.1 |
| 10.0 | -44.71 | -31.4 |
| 15.0 | -49.53 | -42.0 |
| 20.0 | -51.37 | -50.0 |
| 30.0 | -53.27 | -50.0 |
| 50.0 | -53.38 | -50.0 |
| 70.0 | -53.75 | -50.0 |



## Audio frequency Low Pass Filter Response

GMRS – Channel 16 (462.6250 MHz)

| Audio Frequency (kHz) | Response Attenuation (dB) | FCC Limit (dB) |
|---|---|---|
| 2.5 | -4.85 | 0.0 |
| 3.0 | -6.42 | 0.0 |
| 3.5 | -10.12 | -4.0 |
| 4.0 | -11.98 | -7.5 |
| 5.0 | -16.87 | -13.3 |
| 7.0 | -30.10 | -22.1 |
| 10.0 | -43.46 | -31.4 |
| 15.0 | -50.15 | -42.0 |
| 20.0 | -51.67 | -50.0 |
| 30.0 | -52.97 | -50.0 |
| 50.0 | -53.67 | -50.0 |
| 70.0 | -53.97 | -50.0 |




**Test result:** Compliance.

# FCC §2.1049 & §95.633(a) (c) - OCCUPIED BANDWIDTH AND EMISSION MASK

## Applicable Standard

Per FCC §2.1049 and FCC §95.633(a) (c), the authorized bandwidth for emission type F3E or F2D transmitted by an FRS Unit is 12.5 kHz.and The authorized bandwidth for emission type F1D, G1D, F3E or G3E transmitted by an GMRS Unit is 20 kHz.

## Test Procedure

TIA-603-C, section 2.2.11

## Test Equipment List and Details

| Manufacturer | Description | Model | Serial Number | Calibration Date | Calibration Due Date |
|---|---|---|---|---|---|
| NANYAN | Audio Generator | NY2201 | 019596 | 2010-05-05 | 2011-05-05 |
| Rohde&Schwarz | EMI Test Receiver | ESCI | 100035 | 2010-11-24 | 2011-11-24 |

*** Statement of Traceability:** Bay Area Compliance Lab Corp. (ShenZhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

## Test Data

### Environmental Conditions

| | |
|---|---|
| **Temperature:** | 25 ° C |
| **Relative Humidity:** | 50% |
| **ATM Pressure:** | 100.5kPa |

*The testing was performed by Allan An on 2011-02-24 and 2011-02-25.*

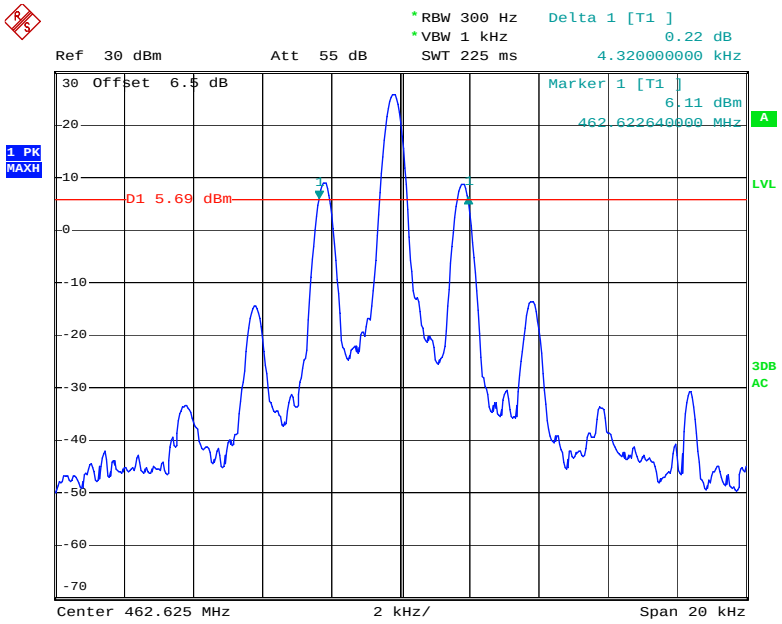
*Test Mode: Transmitting*

| | Emission Bandwidth (kHz) | Modulation Type | Authorized Bandwidth (kHz) | Emission Designator |
|---|---|---|---|---|
| FRS | 4.40 | F3E | 12.5 | 4K40F3E |
| GMRS | 4.32 | F3E | 20 | 4K32F3E |

*Please refer to thefollowing plots*

## Occupied Bandwith

GMRS – Channel 16 (462.6250 MHz)

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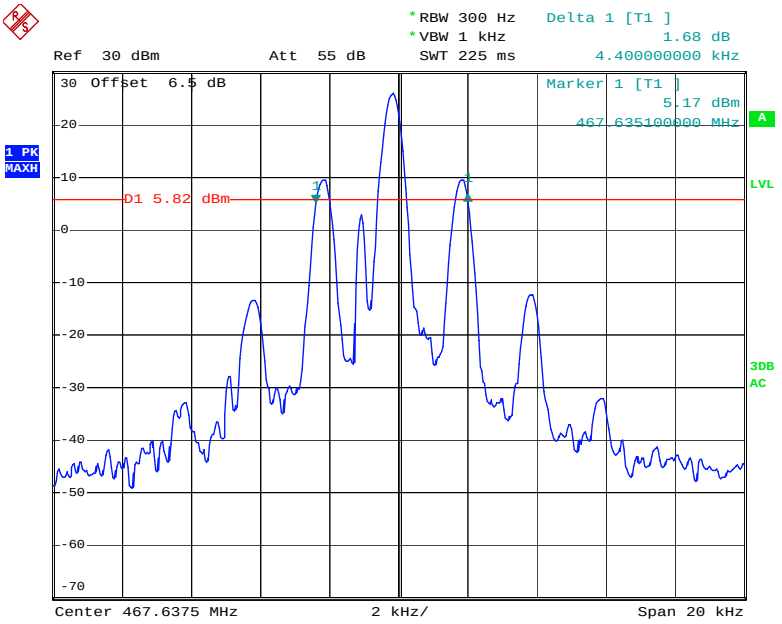
FRS – Channel 11 (467.6375 MHz)

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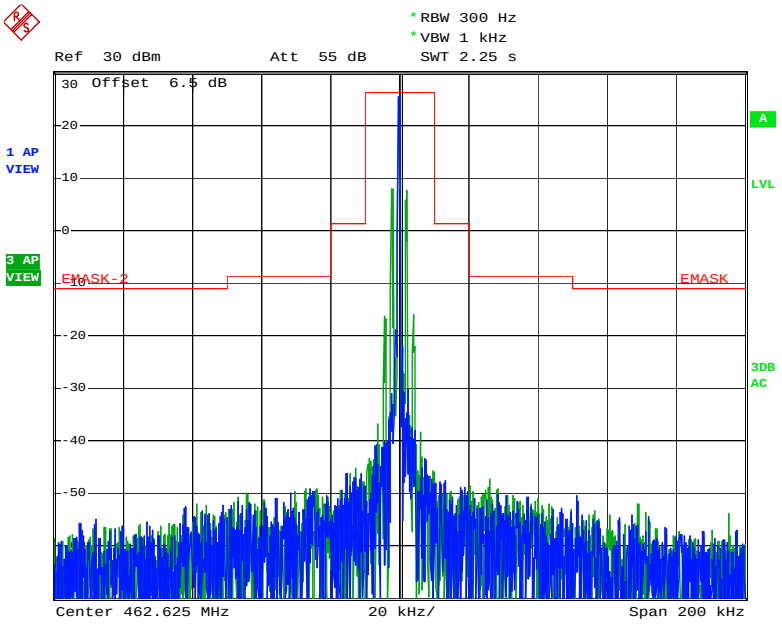
## Emission Mask

GMRS – Channel 16 (462.6250 MHz)

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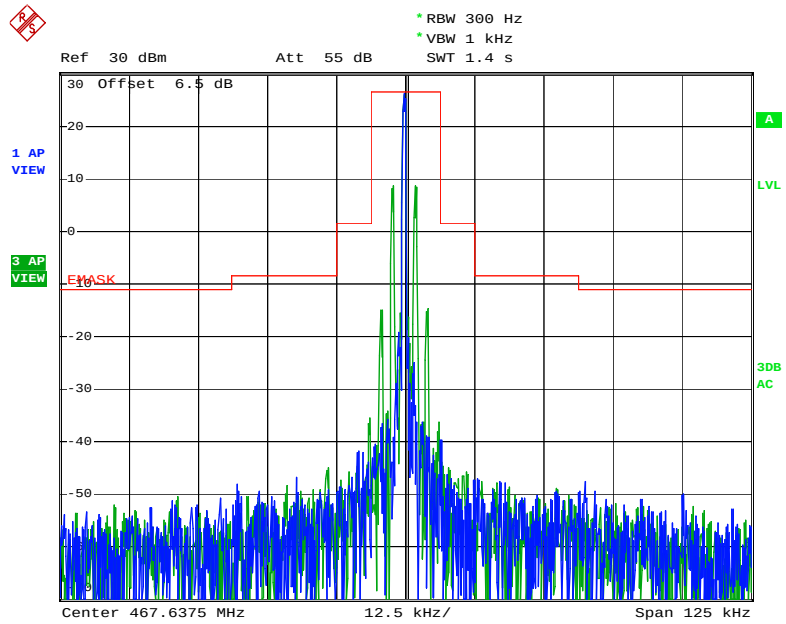
FRS – Channel 11 (467.6375 MHz)




Date: 24.FEB.2011 14:30:48

# FCC §2.1053 & §95.635(b) (7) - RADIATED SPURIOUS EMISSION

## Applicable Standard

FCC §2.1053 and §95.635

## Test Procedure

The transmitter was placed on a wooden turntable, and it was transmitting into a non-radiating load, which was also placed on the turntable.

The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and polarization as well as EUT azimuth were varied in order to identify the maximum level of emissions from the EUT .The test was performed by placing the EUT on 3-orthogonal axis.

The frequency range up to tenth harmonic of the fundamental frequency was investigated.

Remove the EUT and replace it with substitution antenna. A signal generator was connected to the substitution antenna by a non-radiating cable. The absolute levels of the spurious emissions were measured by the substitution.

Spurious emissions in dB =10 1g (TXpwr in Watts/0.001)-the absolute level
Spurious attenuation limit in dB = 43+10 $Log_{10}$ (power out in Watts)

## Test Equipment List and Details

| Manufacturer | Description | Model | Serial Number | Calibration Date | Calibration Due Date |
|---|---|---|---|---|---|
| Sunol Sciences | Horn Antenna | DRH-118 | A052604 | 2010-09-25 | 2011-09-25 |
| Sunol Sciences | Broadband Antenna | JB1 | A040904-1 | 2010-03-11 | 2011-03-11 |
| HP | Spectrum Analyzer | 8593A | - | 2010-07-08 | 2011-07-07 |
| HP | Amplifier | 2VA-213+ | T-E27H | 2010-03-08 | 2011-03-07 |
| HP | Signal Generator | HP8657A | 2849U00982 | 2010-10-16 | 2011-10-15 |
| HP | Amplifier | HP8447D | 2944A09795 | 2010-08-02 | 2011-08-02 |
| HP | Synthesized Sweeper | 8341B | 2624A00116 | 2010-11-07 | 2011-11-06 |
| COM POWER | Dipole Antenna | AD-100 | 041000 | 2010-09-25 | 2011-09-25 |
| A.H. System | Horn Antenna | SAS-200/571 | 135 | 2010-05-17 | 2011-05-17 |

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

## Test Data

### Environmental Conditions

| | |
|---|---|
| **Temperature:** | 25 ° C |
| **Relative Humidity:** | 50% |
| **ATM Pressure:** | 100.5kPa |

*The testing was performed by Allan An on 2011-03-01.*

*Test Mode: Transmitting*

GMRS: Channel 16 (462.625 MHz)

| Indicated | | Table Angle Degree | Test Antenna | | Substituted | | | Absolute Level (dBm) | Spurious Attenuation (dBc) | Limit (dBc) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Frequency (MHz) | Receiver Reading (dBuV) | | Height (m) | Polar (H/V) | Level (dBm) | Antenna Gain Correction | Cable Loss (dB) | | | | |
| 925.250 | 62.72 | 340 | 1.0 | V | -30.4 | 0 | 0.71 | -31.11 | 55.41 | 37.3 | 18.11 |
| 925.250 | 60.19 | 160 | 1.2 | H | -33.1 | 0 | 0.71 | -33.81 | 58.11 | 37.3 | 20.81 |
| 2313.125 | 56.68 | 194 | 2.3 | H | -48.1 | 7.2 | 1.14 | -42.04 | 66.34 | 37.3 | 29.04 |
| 1387.875 | 55.34 | 214 | 2.1 | H | -48.3 | 6.4 | 0.87 | -42.77 | 67.07 | 37.3 | 29.77 |
| 2313.125 | 56.79 | 211 | 2.3 | V | -51.2 | 7.2 | 1.14 | -45.14 | 69.44 | 37.3 | 32.14 |
| 1387.875 | 57.19 | 179 | 1.4 | V | -51.2 | 6.4 | 0.87 | -45.67 | 69.97 | 37.3 | 32.67 |
| 1850.500 | 55.13 | 205 | 2.3 | V | -51.9 | 6.2 | 1.01 | -46.71 | 71.01 | 37.3 | 33.71 |
| 1850.500 | 53.22 | 195 | 2.3 | H | -54.2 | 6.2 | 1.01 | -49.01 | 73.31 | 37.3 | 36.01 |

Note: Spurious Attenuation = EUT ouput power (24.3 dBm) – Absolute level
Spurious attenuation limit in dB = 43+10 $\text{Log}_{10}$ (power out in Watts) = 37.3 dB

FRS: Channel 11 (467.6375 MHz)

| Indicated | | Table Angle Degree | Test Antenna | | Substituted | | | Absolute Level (dBm) | Spurious Attenuation (dBc) | Limit (dBc) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Frequency (MHz) | Receiver Reading (dBuV) | | Height (m) | Polar (H/V) | Level (dBm) | Antenna Gain Correction | Cable Loss (dB) | | | | |
| 935.2750 | 64.22 | 330 | 1.0 | V | -28.9 | 0 | 0.72 | -29.62 | 53.92 | 37.5 | 16.42 |
| 935.2750 | 61.37 | 155 | 1.2 | H | -31.9 | 0 | 0.72 | -32.62 | 56.92 | 37.5 | 19.42 |
| 1870.5500 | 68.67 | 180 | 1.0 | V | -38.3 | 6.2 | 1.02 | -33.12 | 57.42 | 37.5 | 19.92 |
| 2338.1875 | 62.17 | 188 | 2.1 | H | -42.6 | 7.3 | 1.15 | -36.45 | 60.75 | 37.5 | 23.25 |
| 1402.9125 | 64.50 | 203 | 1.0 | V | -43.8 | 6.4 | 0.88 | -38.28 | 62.58 | 37.5 | 25.08 |
| 1402.9125 | 58.17 | 56 | 1.9 | H | -45.4 | 6.4 | 0.88 | -39.88 | 64.18 | 37.5 | 26.68 |
| 2338.1875 | 59.83 | 182 | 1.0 | V | -48.1 | 7.3 | 1.15 | -41.95 | 66.25 | 37.5 | 28.75 |
| 1870.5500 | 56.17 | 189 | 1.8 | H | -51.2 | 6.2 | 1.02 | -46.02 | 70.32 | 37.5 | 32.82 |

Note: Spurious Attenuation = EUT ouput power (24.5 dBm) – Absolute level
Spurious attenuation limit in dB = 43+10 $\text{Log}_{10}$ (power out in Watts) = 37.5 dB

# FCC§2.1055 (d), §95.627(b) & §95.621 - FREQUENCY STABILITY

## Applicable Standard

According to FCC §2.1055(a) (1), the frequency stability shall be measured with variation of ambient temperature from –30 ºC to +50 ºC, and according to FCC 2.1055(d) (2), the frequency stability shall be measured with reducing primary supply voltage to the battery operating end point which is specified by the manufacturer.

According to FCC §95.627(b), Each FRS Unit must be maintained within a frequency tolerance of 0.00025%.

According to FCC §95.621, Each GMRS transmitter for mobile station, small base station and control station operation must be maintained within a frequency tolerance of 0.0005%.

## Test Procedure

Frequency Stability vs. Temperature: The equipment under test was connected to an external DC power supply and the RF output was connected to a Frequency Counter via feed-through attenuators. The EUT was placed inside the temperature chamber. The DC leads and RF output cable exited the chamber through an opening made for the purpose.

After the temperature stabilized for approximately 20 minutes, the frequency output was recorded from the Frequency Counter.

Frequency Stability vs. Voltage:

1) Vary primary supply voltage from 85 to 115 percent of the nominal value for other than hand carried battery equipment.

(2) For hand carried, battery powered equipment, reduce primary supply voltage to the battery operating end point which shall be specified by the manufacturer.

The output frequency was recorded for each voltage.

## Test Equipment List and Details

| Manufacturer | Description | Model NO. | Serial NO. | Calibration Date | Calibration Due Date |
|---|---|---|---|---|---|
| Hewlett-Packard | Frequency Counter | 5342A | 2317A08289 | 2010-04-22 | 2011-04-22 |
| WUHUAN | Temperature & Humidity Chamber | HTP205 | 20021115 | 2010-05-09 | 2011-05-09 |

*** Statement of Traceability:** Bay Area Compliance Lab Corp. (ShenZhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

## Test Data

### Environmental Conditions

| | |
|---|---|
| **Temperature:** | 25 ° C |
| **Relative Humidity:** | 50% |
| **ATM Pressure:** | 100.5kPa |

*The testing was performed by Allan An on 2011-03-01.*

*Test Mode: Transmitting*

**GMRS**

| Reference Frequency: 462.625 MHz, Limit: ±5 ppm | | | |
|---|---|---|---|
| **Environment Temperature (°C)** | **Power Supplied (Vdc)** | **Measurement Frequency (MHz)** | **Frequency Error (ppm)** |
| Frequency Stability Ver. Temperature | | | |
| 50 | 3.6 | 462.62525 | 0.540394 |
| 40 | 3.6 | 462.62523 | 0.497163 |
| 30 | 3.6 | 462.62518 | 0.389084 |
| 20 | 3.6 | 462.62520 | 0.432316 |
| 10 | 3.6 | 462.62516 | 0.345852 |
| 0 | 3.6 | 462.62519 | 0.410700 |
| -10 | 3.6 | 462.62521 | 0.453931 |
| -20 | 3.6 | 462.62522 | 0.475547 |
| -30 | 3.6 | 462.62524 | 0.518779 |
| Frequency Stability Ver. Input Voltage | | | |
| 20 | 3.0 | 462.62531 | 0.670089 |

**FRS**

| Reference Frequency: 467.6375 MHz, Limit: ±2.5 ppm | | | |
|---|---|---|---|
| **Environment Temperature (°C)** | **Power Supplied (Vdc)** | **Measurement Frequency (MHz)** | **Frequency Error (ppm)** |
| Frequency Stability Ver. Temperature | | | |
| 50 | 3.6 | 467.63788 | 0.812595 |
| 40 | 3.6 | 467.63784 | 0.727059 |
| 30 | 3.6 | 467.63777 | 0.577370 |
| 20 | 3.6 | 467.63772 | 0.470450 |
| 10 | 3.6 | 467.63770 | 0.427682 |
| 0 | 3.6 | 467.63768 | 0.384914 |
| -10 | 3.6 | 467.63779 | 0.620138 |
| -20 | 3.6 | 467.63781 | 0.662907 |
| -30 | 3.6 | 467.63783 | 0.705675 |
| Frequency Stability Ver. Input Voltage | | | |
| 20 | 3.0 | 467.63774 | 0.513218 |

# PRODUCT SIMILARITY DECLARATION LETTER

## Product Similarity Declaration

To Whom It May Concern,

We, WIN CHANNEL ELECTRONICS COMPANY LIMITED, hereby declare that our FRS/GMRS, Model Number: KT2022, PF222 are electrically identical with the Model Number: 318US that was certified by BACL. KT2022, PF222 and 318US are named differently due to marketing purposes. Each model has its own trade name as following,

| Model Name | Trade Name |
|---|---|
| 318US | WE |
| KT2022 | HELLO KITTY |
| PF222 | PAUL FRANK |

Please contact me if you have any question.

Signature:

WIN CHANNEL ELECTRONICS COMPANY LIMITED 榮智電子有限公司 * HONG KONG *

Print Name: Catalina Cheung

Title: Manager

Date: 17-Mar-2011

******* END OF REPORT *******