



TESTING LABORATORY  
CERTIFICATE #4820.01



## FCC PART 95 MEASUREMENT AND TEST REPORT

For

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**FCC ID: 2ACVFM-880B**

|                                                                                                                                                                                                                                                                                 |                                                                                                                    |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|
| <b>Report Type:</b><br>Original Report                                                                                                                                                                                                                                          | <b>Product Type:</b><br>Walkie Talkie                                                                              |
| <b>Report Number:</b> ATC210518-17942E-RF                                                                                                                                                                                                                                       |                                                                                                                    |
| <b>Report Date:</b> 2021-06-24                                                                                                                                                                                                                                                  |                                                                                                                    |
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**GENERAL INFORMATION****Product Description for Equipment Under Test (EUT)**

|                        |                                                                                                                                              |
|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| Product                | Walkie Talkie                                                                                                                                |
| Tested Model           | M-880                                                                                                                                        |
| Frequency Range        | 462.5500~462.7250MHz<br>467.5625~467.7125MHz                                                                                                 |
| Transmit Power (ERP)   | 462.5500~462.7250MHz:<br>Low Power: 20.33dBm<br>High Power: 23.89dBm<br>467.5625~467.7125MHz:<br>Low Power: 17.61dBm<br>High Power: 20.27dBm |
| Channel Spacing        | 12.5kHz                                                                                                                                      |
| Modulation Technique   | FM                                                                                                                                           |
| Antenna Specification* | 0dBi(It is provided by the applicant)                                                                                                        |
| Voltage Range          | DC 3.6V from batteries or DC 5V from adapter                                                                                                 |
| Sample serial number   | ATC210518-17942E-RF-S1(Assigned by BACL, Dongguan)                                                                                           |
| Received date          | 2021-05-18                                                                                                                                   |
| Sample/EUT Status      | Good condition                                                                                                                               |
| Adapter information    | Model: W&T-AD1806C050100UU<br>Input: AC 100-240V, 50/60Hz, 0.3A<br>Output: DC 5.0V, 2A                                                       |

**Objective**

This test report is in accordance with Part 2 and Part 95, Subpart A & Subpart B of the Federal Communication Commissions rules.

**Test Methodology**

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

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

**Measurement Uncertainty**

| Parameter                        | Uncertainty                                                                                                          |
|----------------------------------|----------------------------------------------------------------------------------------------------------------------|
| Occupied Channel Bandwidth       | ±5%                                                                                                                  |
| RF Output Power with Power meter | 0.61dB                                                                                                               |
| RF conducted test with spectrum  | 3.12 dB (150 kHz to 30 MHz)                                                                                          |
| Unwanted Emissions, radiated     | 30M~200MHz: 4.55 dB, 200M~1GHz: 5.92 dB, 1G~6GHz: 4.98 dB, 6G~18GHz: 5.89 dB, 18G~26.5G: 5.47 dB, 26.5G~40G: 5.63 dB |
| Temperature                      | ±1°C                                                                                                                 |
| Humidity                         | 5%                                                                                                                   |
| Supply voltages                  | 0.4%                                                                                                                 |

*Note: The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval. Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty.*

**Test Facility**

The test site used by Bay Area Compliance Laboratories Corp. (Dongguan) to collect test data is located on the No.12, Pulong East 1<sup>st</sup> Road, Tangxia Town, Dongguan, Guangdong, China.

The lab has been recognized as the FCC accredited lab under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No. : 897218, the FCC Designation No. : CN1220.

The lab has been recognized by Innovation, Science and Economic Development Canada to test to Canadian radio equipment requirements, the CAB identifier: CN0022.

**SYSTEM TEST CONFIGURATION****Description of Test Configuration**

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

FRS Channel List

| Channel No. | Channel Frequency (MHz) | Channel No. | Channel Frequency (MHz) |
|-------------|-------------------------|-------------|-------------------------|
| 1           | 462.5625                | 12          | 467.6625                |
| 2           | 462.5875                | 13          | 467.6875                |
| 3           | 462.6125                | 14          | 467.7125                |
| 4           | 462.6375                | 15          | 462.5500                |
| 5           | 462.6625                | 16          | 462.5750                |
| 6           | 462.6875                | 17          | 462.6000                |
| 7           | 462.7125                | 18          | 462.6250                |
| 8           | 467.5625                | 19          | 462.6500                |
| 9           | 467.5875                | 20          | 462.6750                |
| 10          | 467.6125                | 21          | 462.7000                |
| 11          | 467.6375                | 22          | 462.7250                |

**Equipment Modifications**

No modification was made to the EUT tested.

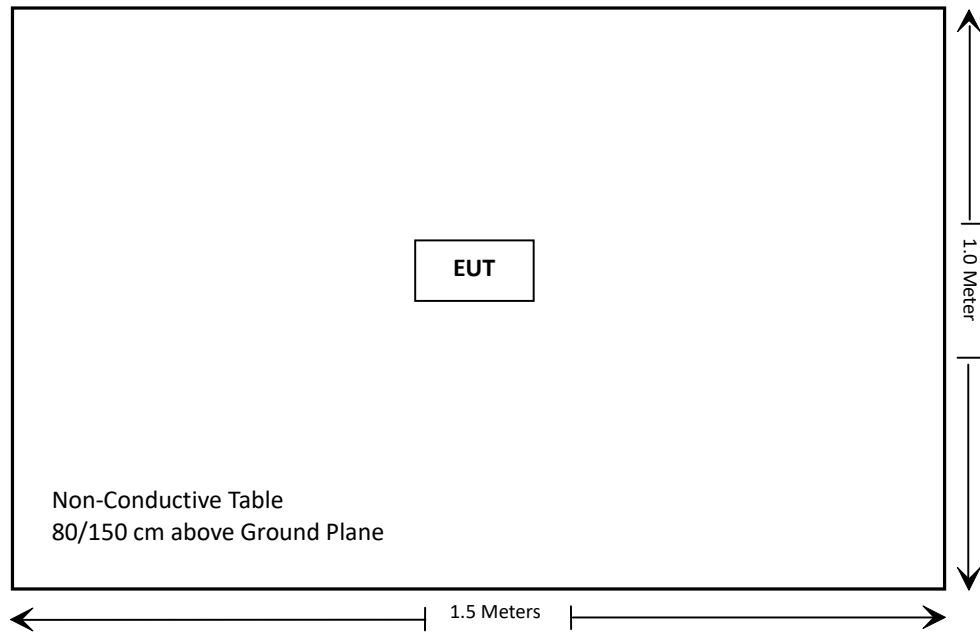
**Support Equipment List and Details**

| Manufacturer | Description | Model | Serial Number |
|--------------|-------------|-------|---------------|
| /            | /           | /     | /             |

**External I/O Cable**

| Cable Description | Length (m) | From Port | To |
|-------------------|------------|-----------|----|
| /                 | /          | /         | /  |

## Block Diagram of Test Setup



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**SUMMARY OF TEST RESULTS**

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| FCC Rules                 | Description of Test                  | Results    |
|---------------------------|--------------------------------------|------------|
| §2.1093                   | RF Exposure                          | Compliance |
| §95.587(b)(1)(2)(3)       | Antenna Requirement                  | Compliance |
| §2.1046, §95.567          | RF Output Power                      | Compliance |
| §2.1047, §95.575          | Modulation Characteristic            | Compliance |
| §2.1049, §95.573, §95.579 | Authorized Bandwidth & Emission Mask | Compliance |
| §2.1053, §95.579          | Radiated Spurious Emission           | Compliance |
| §2.1055(d), §95.565       | Frequency Stability                  | Compliance |

**TEST EQUIPMENT LIST**

| Manufacturer                  | Description                              | Model      | Serial Number | Calibration Date | Calibration Due Date |
|-------------------------------|------------------------------------------|------------|---------------|------------------|----------------------|
| <b>Radiated Emission Test</b> |                                          |            |               |                  |                      |
| Sunol Sciences                | Antenna                                  | JB3        | A060611-1     | 2020-11-10       | 2023-11-10           |
| Sunol Sciences                | Antenna                                  | JB3        | A060611-2     | 2020-08-25       | 2023-08-25           |
| R&S                           | EMI Test Receiver                        | ESR3       | 102453        | 2020-09-12       | 2021-09-12           |
| Unknown                       | Coaxial Cable                            | C-NJNJ-50  | C-0075-01     | 2020-09-05       | 2021-09-05           |
| Unknown                       | Coaxial Cable                            | C-NJNJ-50  | C-0400-01     | 2020-09-05       | 2021-09-05           |
| Unknown                       | Coaxial Cable                            | C-NJNJ-50  | C-1400-01     | 2020-09-05       | 2021-09-05           |
| HP                            | Amplifier                                | 8447D      | 2727A05902    | 2020-09-05       | 2021-09-05           |
| Agilent                       | Spectrum Analyzer                        | E4440A     | SG43360054    | 2020-07-07       | 2021-07-07           |
| TDK RF                        | Horn Antenna                             | HRN-0118   | 130 084       | 2018-10-12       | 2021-10-12           |
| ETS-Lindgren                  | Horn Antenna                             | 3115       | 000 527 35    | 2018-10-12       | 2021-10-12           |
| Unknown                       | Coaxial Cable                            | C-SJSJ-50  | C-0800-01     | 2020-09-05       | 2021-09-05           |
| Mini-Circuit                  | Amplifier                                | ZVA-213-S+ | 54201245      | 2020-09-05       | 2021-09-05           |
| Agilent                       | Signal Generator                         | E8247C     | MY43321350    | 2020-09-05       | 2021-09-05           |
| <b>RF Conducted test</b>      |                                          |            |               |                  |                      |
| HP                            | RF Communication test set                | 8920A      | 3438A05201    | 2020-07-07       | 2021-07-07           |
| R&S                           | Spectrum Analyzer                        | FSV40      | 101474        | 2021-01-09       | 2022-01-09           |
| ESPEC                         | Constant temperature and humidity Tester | ESX-4CA    | 018 463       | 2021-02-24       | 2022-02-23           |
| Pro instrument                | DC Power Supply                          | Pps3300    | 3300012       | NCR              | NCR                  |
| UNI-T                         | Multimeter                               | UT39A      | M130199938    | 2020-07-23       | 2021-07-23           |

\* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

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## **§2.1093 - RF EXPOSURE INFORMATION**

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### **Applicable Standard**

§2.1093.

### **Test Result**

Compliance, please refer to the SAR report: ATC210518-17942E-20.

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**FCC §95.587(b)(1)(2)(3) – ANTENNA REQUIREMENT**

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**Applicable Standard**

According to FCC § 95.587, (b) Antenna. The antenna of each FRS transmitter type must meet the following requirements.

- (1) The antenna must be a non-removable integral part of the FRS transmitter type.
- (2) The gain of the antenna must not exceed that of a half-wave dipole antenna.
- (3) The antenna must be designed such that the electric field of the emitted waves is vertically polarized when the unit is operated in the normal orientation.

**Antenna Description**

The EUT has an integral vertically polarized antenna arrangement and the antenna gain is 0dBi, fulfill the requirement of this section. Please refer to the EUT photos.

**Result:** Compliance.

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**FCC §2.1046 & §95.567 - RF OUTPUT POWER**

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**Applicable Standard**

Per FCC §2.1046, and §95.567, Each FRS transmitter type must be designed such that the effective radiated power (ERP) on channels 8 through 14 does not exceed 0.5 Watts and the ERP on channels 1 through 7 and 15 through 22 does not exceed 2.0 Watts.

**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 Data****Environmental Conditions**

|                           |           |
|---------------------------|-----------|
| <b>Temperature:</b>       | 24 °C     |
| <b>Relative Humidity:</b> | 58 %      |
| <b>ATM Pressure:</b>      | 101.0 kPa |

*The testing was performed by JOE Qiao on 2021-06-02.*

*Test Mode: Transmitting*

## High Power:

| Frequency (MHz) | Polar (H/V) | Receiver Reading (dBμV) | Substituted Method      |                        |                 | Absolute Level (dBm) | Limit (dBm) | Margin (dB) |
|-----------------|-------------|-------------------------|-------------------------|------------------------|-----------------|----------------------|-------------|-------------|
|                 |             |                         | Substituted Level (dBm) | Antenna Gain (dBd/dBi) | Cable Loss (dB) |                      |             |             |
| 462.6375        | H           | 103.55                  | 22.22                   | 0                      | 0.67            | 21.55                | 33          | 11.45       |
| 462.6375        | V           | 102.94                  | 24.56                   | 0                      | 0.67            | 23.89                | 33          | 9.11        |
| 467.6375        | H           | 99.29                   | 18.09                   | 0                      | 0.68            | 17.41                | 27          | 9.59        |
| 467.6375        | V           | 99.18                   | 20.95                   | 0                      | 0.68            | 20.27                | 27          | 6.73        |

## Low Power:

| Frequency (MHz) | Polar (H/V) | Receiver Reading (dBμV) | Substituted Method      |                        |                 | Absolute Level (dBm) | Limit (dBm) | Margin (dB) |
|-----------------|-------------|-------------------------|-------------------------|------------------------|-----------------|----------------------|-------------|-------------|
|                 |             |                         | Substituted Level (dBm) | Antenna Gain (dBd/dBi) | Cable Loss (dB) |                      |             |             |
| 462.6375        | H           | 99.46                   | 18.13                   | 0                      | 0.67            | 17.46                | 33          | 15.54       |
| 462.6375        | V           | 99.38                   | 21.00                   | 0                      | 0.67            | 20.33                | 33          | 12.67       |
| 467.6375        | H           | 96.11                   | 14.91                   | 0                      | 0.68            | 14.23                | 27          | 12.77       |
| 467.6375        | V           | 96.52                   | 18.29                   | 0                      | 0.68            | 17.61                | 27          | 9.39        |

**Test Result:** Compliance.

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**FCC §2.1047 & §95.575 - MODULATION CHARACTERISTIC**

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**Applicable Standard**

Per FCC §2.1047 and §95.575: Each FRS transmitter type must be designed such that the peak frequency deviation does not exceed 2.5 kHz, and the highest audio frequency contributing substantially to modulation must not exceed 3.125 kHz.

**Test Procedure**

Test Method: TIA/EIA-603-E

**Test Data****Environmental Conditions**

|                           |           |
|---------------------------|-----------|
| <b>Temperature:</b>       | 25 °C     |
| <b>Relative Humidity:</b> | 52 %      |
| <b>ATM Pressure:</b>      | 101.0 kPa |

*The testing was performed by JOE Qiao on 2021-06-02.*

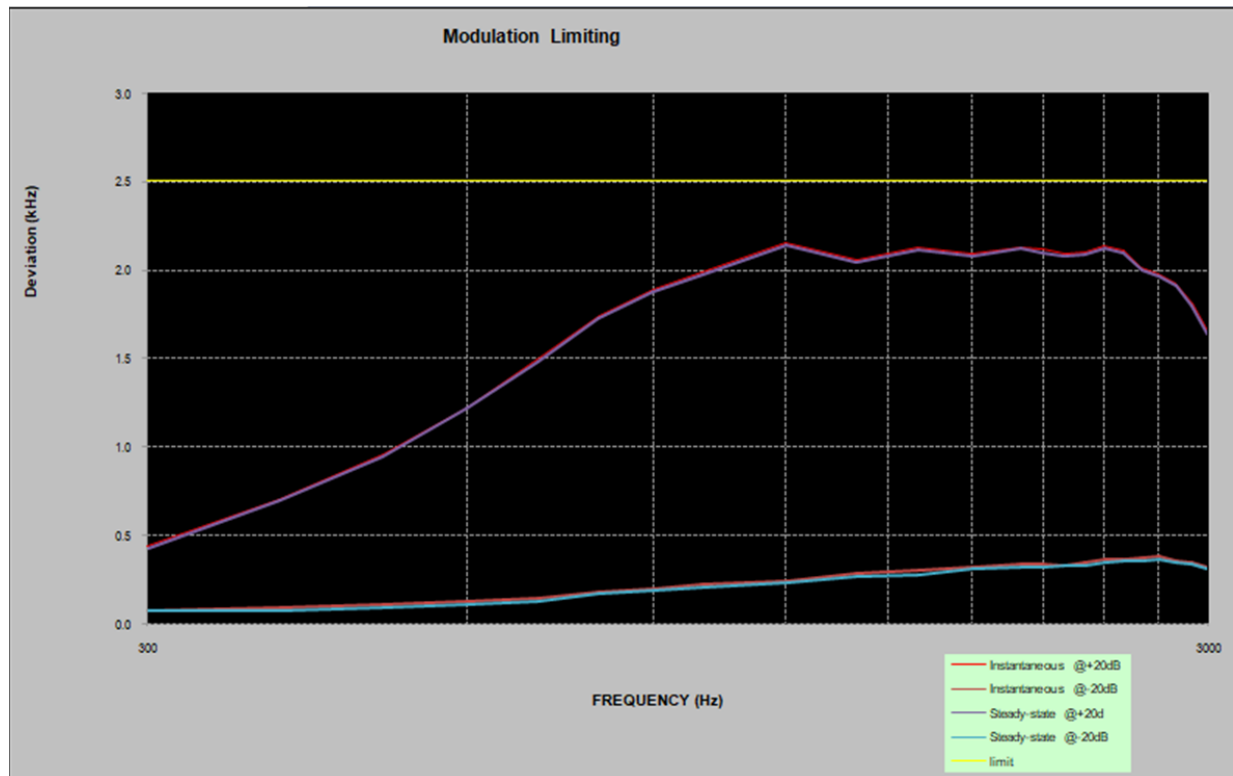
*Please refer to the following tables and plots.*

*Test Mode: Transmitting*

**MODULATION LIMITING**

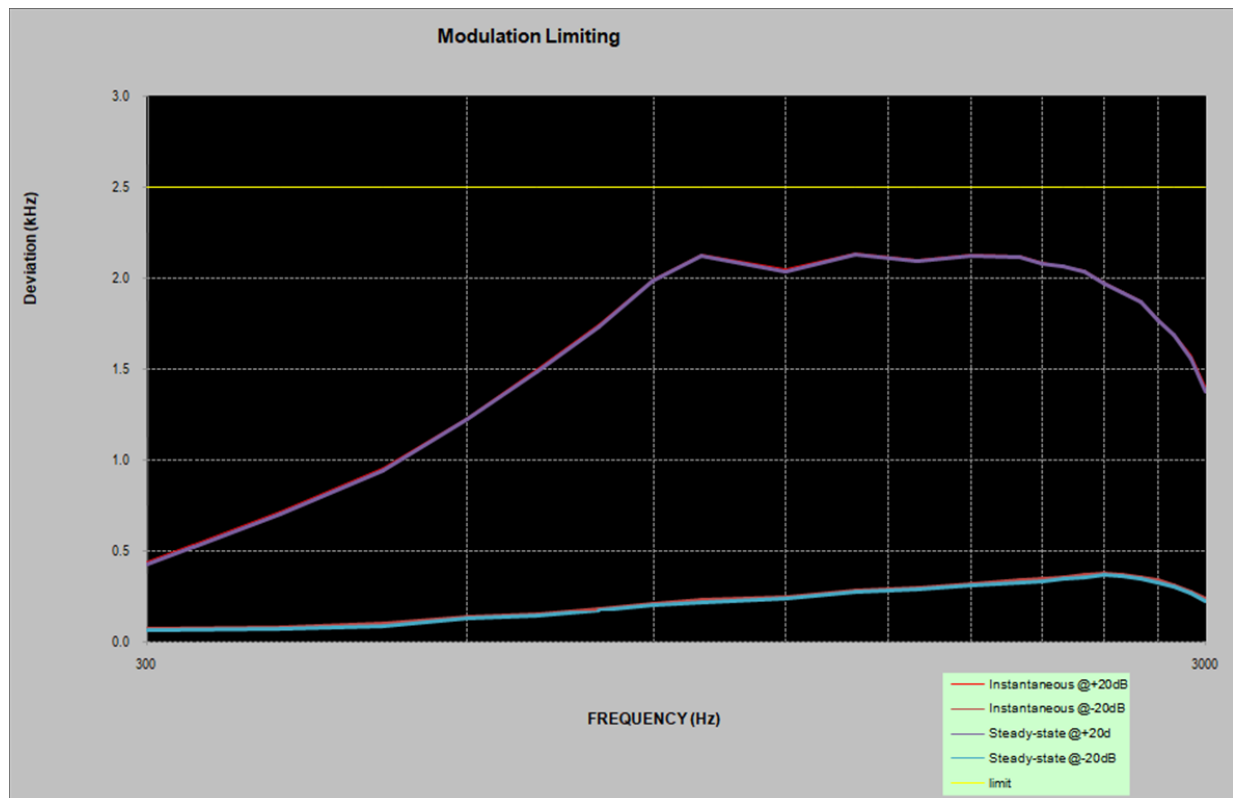
Carrier Frequency: 462.6375MHz

| Audio Frequency<br>(Hz) | Instantaneous                  |                                | Steady-state                   |                                | Limit<br>[kHz] |
|-------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|----------------|
|                         | DEVIATION<br>(@+20dB)<br>[kHz] | DEVIATION<br>(@-20dB)<br>[kHz] | DEVIATION<br>(@+20dB)<br>[kHz] | DEVIATION<br>(@-20dB)<br>[kHz] |                |
| 300                     | 0.437                          | 0.074                          | 0.424                          | 0.069                          | 2.500          |
| 400                     | 0.703                          | 0.088                          | 0.692                          | 0.076                          | 2.500          |
| 500                     | 0.953                          | 0.108                          | 0.942                          | 0.092                          | 2.500          |
| 600                     | 1.222                          | 0.124                          | 1.211                          | 0.111                          | 2.500          |
| 700                     | 1.492                          | 0.143                          | 1.481                          | 0.127                          | 2.500          |
| 800                     | 1.739                          | 0.180                          | 1.726                          | 0.165                          | 2.500          |
| 900                     | 1.885                          | 0.196                          | 1.871                          | 0.185                          | 2.500          |
| 1000                    | 1.983                          | 0.217                          | 1.972                          | 0.203                          | 2.500          |
| 1200                    | 2.152                          | 0.240                          | 2.140                          | 0.229                          | 2.500          |
| 1400                    | 2.058                          | 0.281                          | 2.042                          | 0.265                          | 2.500          |
| 1600                    | 2.123                          | 0.297                          | 2.111                          | 0.276                          | 2.500          |
| 1800                    | 2.094                          | 0.322                          | 2.081                          | 0.310                          | 2.500          |
| 2000                    | 2.129                          | 0.333                          | 2.117                          | 0.319                          | 2.500          |
| 2100                    | 2.118                          | 0.335                          | 2.098                          | 0.321                          | 2.500          |
| 2200                    | 2.093                          | 0.331                          | 2.079                          | 0.324                          | 2.500          |
| 2300                    | 2.102                          | 0.346                          | 2.090                          | 0.329                          | 2.500          |
| 2400                    | 2.135                          | 0.359                          | 2.123                          | 0.343                          | 2.500          |
| 2500                    | 2.104                          | 0.366                          | 2.092                          | 0.352                          | 2.500          |
| 2600                    | 2.007                          | 0.368                          | 1.996                          | 0.356                          | 2.500          |
| 2700                    | 1.976                          | 0.376                          | 1.963                          | 0.359                          | 2.500          |
| 2800                    | 1.924                          | 0.352                          | 1.911                          | 0.341                          | 2.500          |
| 2900                    | 1.813                          | 0.347                          | 1.796                          | 0.332                          | 2.500          |
| 3000                    | 1.648                          | 0.320                          | 1.634                          | 0.307                          | 2.500          |



Carrier Frequency: 467.6375MHz

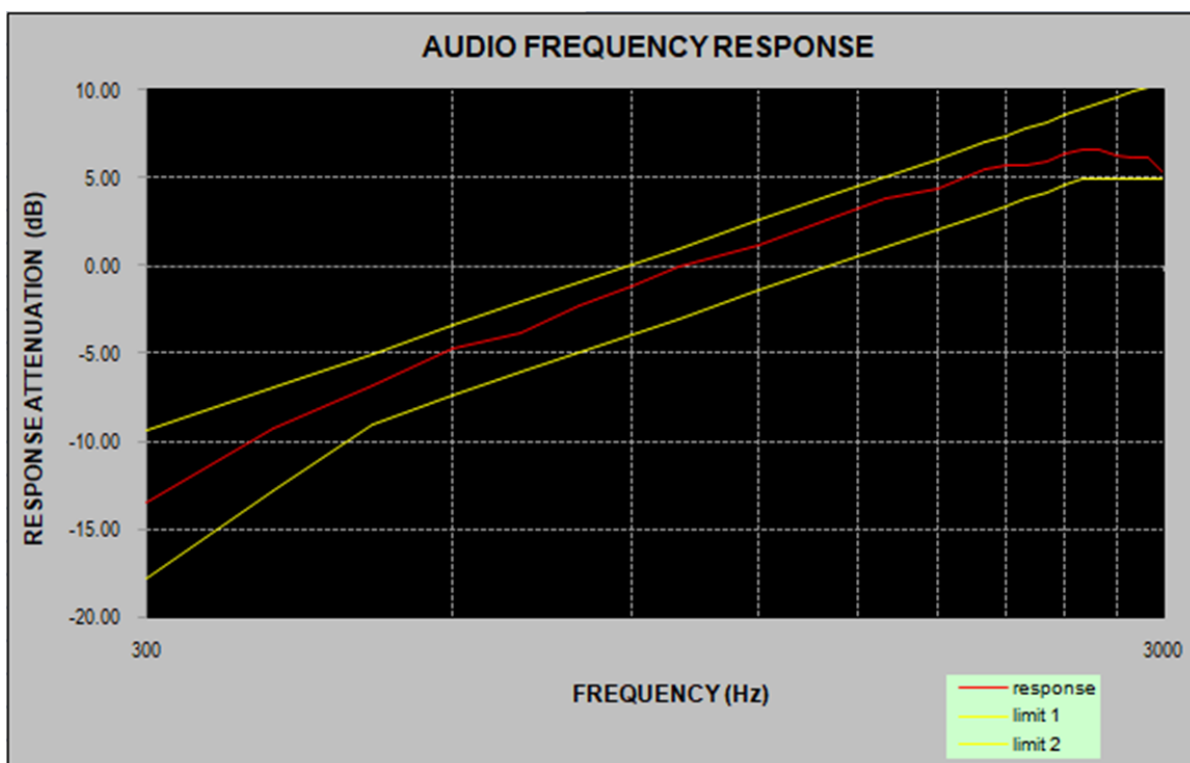
| Audio Frequency<br>(Hz) | Instantaneous                  |                                | Steady-state                   |                                | Limit<br>[kHz] |
|-------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|----------------|
|                         | DEVIATION<br>(@+20dB)<br>[kHz] | DEVIATION<br>(@-20dB)<br>[kHz] | DEVIATION<br>(@+20dB)<br>[kHz] | DEVIATION<br>(@-20dB)<br>[kHz] |                |
| 300                     | 0.441                          | 0.069                          | 0.423                          | 0.063                          | 2.500          |
| 400                     | 0.712                          | 0.075                          | 0.698                          | 0.072                          | 2.500          |
| 500                     | 0.956                          | 0.098                          | 0.939                          | 0.086                          | 2.500          |
| 600                     | 1.225                          | 0.136                          | 1.219                          | 0.127                          | 2.500          |
| 700                     | 1.496                          | 0.152                          | 1.485                          | 0.142                          | 2.500          |
| 800                     | 1.745                          | 0.176                          | 1.731                          | 0.168                          | 2.500          |
| 900                     | 1.988                          | 0.204                          | 1.979                          | 0.197                          | 2.500          |
| 1000                    | 2.125                          | 0.227                          | 2.118                          | 0.215                          | 2.500          |
| 1200                    | 2.048                          | 0.244                          | 2.034                          | 0.237                          | 2.500          |
| 1400                    | 2.133                          | 0.276                          | 2.126                          | 0.269                          | 2.500          |
| 1600                    | 2.096                          | 0.295                          | 2.087                          | 0.286                          | 2.500          |
| 1800                    | 2.127                          | 0.314                          | 2.118                          | 0.305                          | 2.500          |
| 2000                    | 2.119                          | 0.334                          | 2.111                          | 0.326                          | 2.500          |
| 2100                    | 2.081                          | 0.345                          | 2.073                          | 0.332                          | 2.500          |
| 2200                    | 2.062                          | 0.355                          | 2.059                          | 0.346                          | 2.500          |
| 2300                    | 2.041                          | 0.366                          | 2.032                          | 0.351                          | 2.500          |
| 2400                    | 1.975                          | 0.371                          | 1.967                          | 0.364                          | 2.500          |
| 2500                    | 1.925                          | 0.366                          | 1.918                          | 0.357                          | 2.500          |
| 2600                    | 1.874                          | 0.355                          | 1.863                          | 0.342                          | 2.500          |
| 2700                    | 1.773                          | 0.335                          | 1.761                          | 0.321                          | 2.500          |
| 2800                    | 1.695                          | 0.308                          | 1.682                          | 0.301                          | 2.500          |
| 2900                    | 1.575                          | 0.275                          | 1.554                          | 0.265                          | 2.500          |
| 3000                    | 1.403                          | 0.236                          | 1.372                          | 0.221                          | 2.500          |



**Audio Frequency Response**

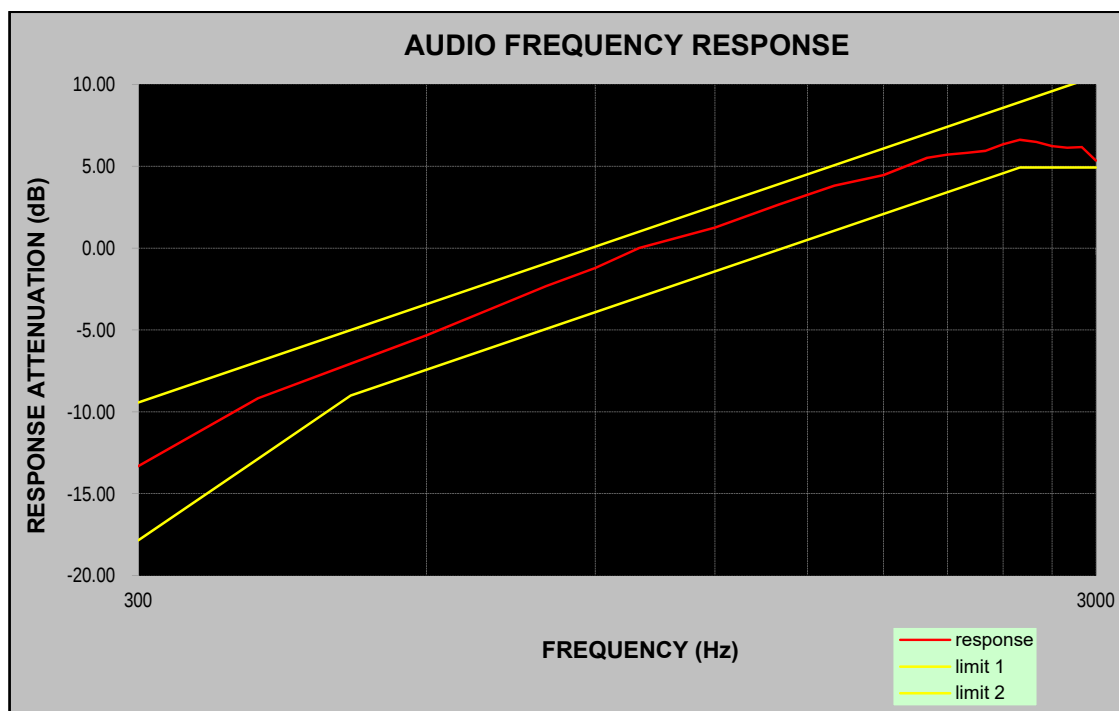
Carrier Frequency: 462.6375MHz

| Audio Frequency<br>(Hz) | Response Attenuation<br>(dB) |
|-------------------------|------------------------------|
| 300                     | -13.47                       |
| 400                     | -9.32                        |
| 500                     | -6.86                        |
| 600                     | -4.76                        |
| 700                     | -3.80                        |
| 800                     | -2.23                        |
| 900                     | -1.15                        |
| 1000                    | 0                            |
| 1200                    | 1.20                         |
| 1400                    | 2.61                         |
| 1600                    | 3.78                         |
| 1800                    | 4.39                         |
| 2000                    | 5.46                         |
| 2100                    | 5.69                         |
| 2200                    | 5.74                         |
| 2300                    | 5.91                         |
| 2400                    | 6.36                         |
| 2500                    | 6.65                         |
| 2600                    | 6.58                         |
| 2700                    | 6.26                         |
| 2800                    | 6.18                         |
| 2900                    | 6.12                         |
| 3000                    | 5.26                         |



Carrier Frequency: 467.6375MHz

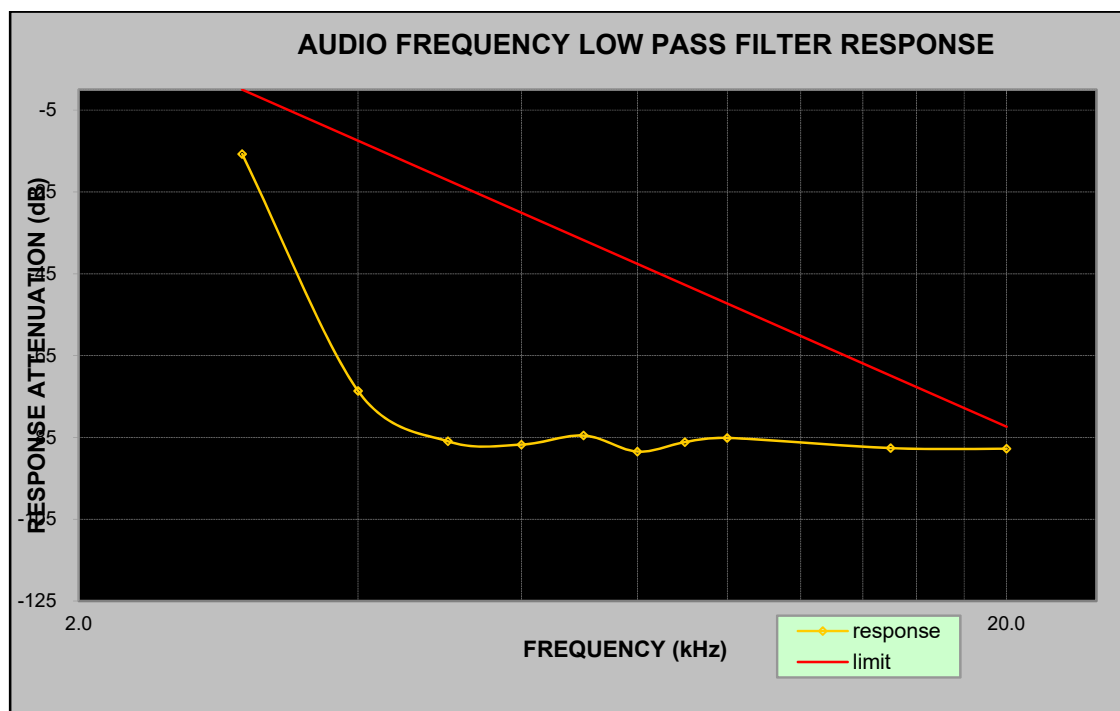
| Audio Frequency<br>(Hz) | Response Attenuation<br>(dB) |
|-------------------------|------------------------------|
| 300                     | -13.31                       |
| 400                     | -9.17                        |
| 500                     | -7.05                        |
| 600                     | -5.32                        |
| 700                     | -3.72                        |
| 800                     | -2.32                        |
| 900                     | -1.21                        |
| 1000                    | 0                            |
| 1200                    | 1.26                         |
| 1400                    | 2.67                         |
| 1600                    | 3.82                         |
| 1800                    | 4.46                         |
| 2000                    | 5.52                         |
| 2100                    | 5.72                         |
| 2200                    | 5.82                         |
| 2300                    | 5.94                         |
| 2400                    | 6.34                         |
| 2500                    | 6.62                         |
| 2600                    | 6.49                         |
| 2700                    | 6.24                         |
| 2800                    | 6.13                         |
| 2900                    | 6.18                         |
| 3000                    | 5.35                         |



**Audio frequency lows pass filter response**

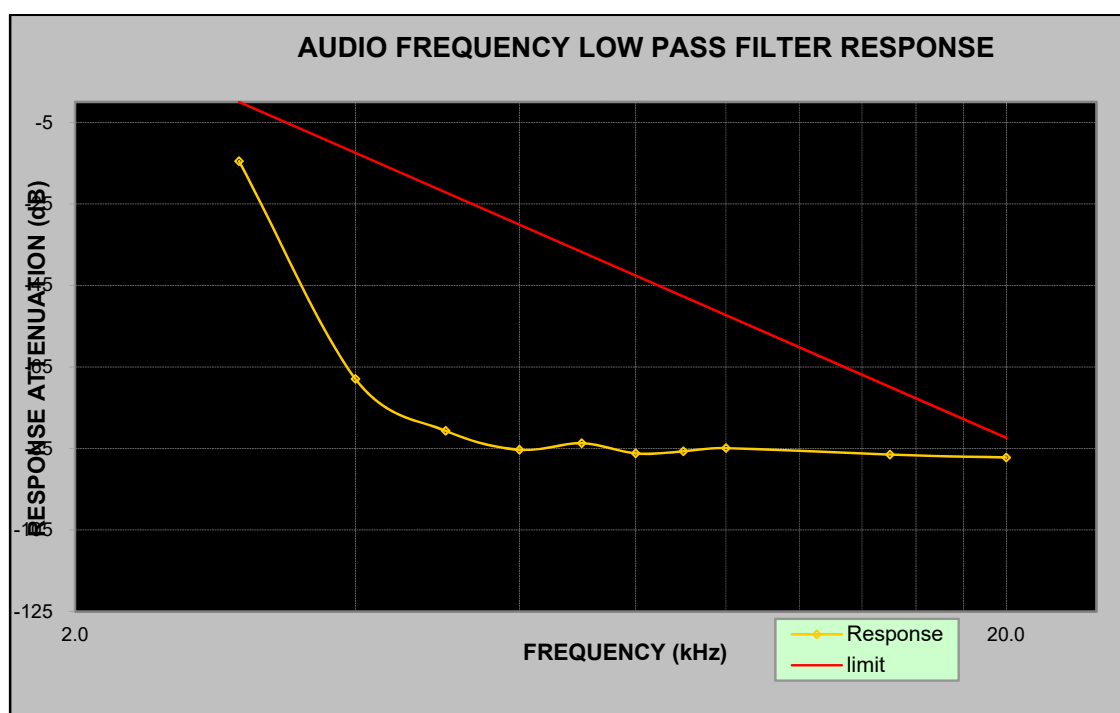
Carrier Frequency: 462.6375MHz

| Audio Frequency (kHz) | Response Attenuation (dB) | Limit (dB) |
|-----------------------|---------------------------|------------|
| 1.0                   | 0                         | /          |
| 3.0                   | -15.75                    | 0          |
| 4.0                   | -73.65                    | -12.5      |
| 5.0                   | -85.95                    | -22.2      |
| 6.0                   | -86.75                    | -30.1      |
| 7.0                   | -84.54                    | -36.8      |
| 8.0                   | -88.46                    | -42.6      |
| 9.0                   | -86.15                    | -47.7      |
| 10.0                  | -85.13                    | -52.3      |
| 15.0                  | -87.61                    | -69.9      |
| 20.0                  | -87.77                    | -82.4      |



Carrier Frequency: 467.6375MHz

| Audio Frequency (kHz) | Response Attenuation (dB) | Limit (dB) |
|-----------------------|---------------------------|------------|
| 1.0                   | 0                         | /          |
| 3.0                   | -14.5                     | 0          |
| 4.0                   | -68.0                     | -12.5      |
| 5.0                   | -80.7                     | -22.2      |
| 6.0                   | -85.3                     | -30.1      |
| 7.0                   | -83.7                     | -36.8      |
| 8.0                   | -86.2                     | -42.6      |
| 9.0                   | -85.7                     | -47.7      |
| 10.0                  | -84.9                     | -52.3      |
| 15.0                  | -86.5                     | -69.9      |
| 20.0                  | -87.2                     | -82.4      |



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**FCC §2.1049 & §95.573 & §95.579 - AUTHORIZED BANDWIDTH AND EMISSION MASK**

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**Applicable Standard**

According to §95.573. Each FRS transmitter type must be designed such that the occupied bandwidth does not exceed 12.5 kHz.

Each FRS transmitter type must be designed to satisfy the applicable unwanted emissions limits in this paragraph.

(a) Attenuation requirements. The power of unwanted emissions must be attenuated below the carrier power output in Watts (P) by at least:

(1) 25 dB (decibels) in the frequency band 6.25 kHz to 12.5 kHz removed from the channel center frequency.

(2) 35 dB in the frequency band 12.5 kHz to 31.25 kHz removed from the channel center frequency.

(3)  $43 + 10 \log (P)$  dB in any frequency band removed from the channel center frequency by more than 31.25 kHz.

(b) Measurement bandwidths. The power of unwanted emissions in the frequency bands specified in paragraphs (a)(1) and (2) of this section is measured with a reference bandwidth of 300 Hz. The power of unwanted emissions in the frequency range specified in paragraph (a)(3) is measured with a reference bandwidth of at least 30 kHz.

**Test Procedure**

TIA-603-E, section 2.2.11

**Test Data****Environmental Conditions**

|                           |           |
|---------------------------|-----------|
| <b>Temperature:</b>       | 25 °C     |
| <b>Relative Humidity:</b> | 52 %      |
| <b>ATM Pressure:</b>      | 101.0 kPa |

*The testing was performed by JOE Qiao on 2021-06-02.*

*Test Mode: Transmitting*

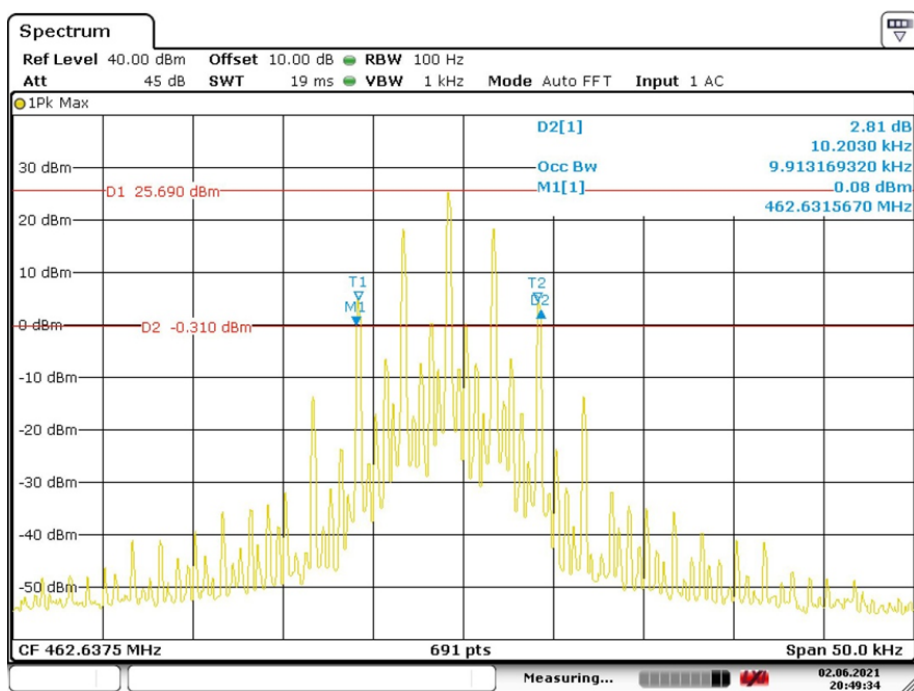
| Modulation | Channel Separation (kHz) | Frequency (MHz) | Power Level | 99% Occupied Bandwidth (kHz) | 20dB Emissions Bandwidth (kHz) |
|------------|--------------------------|-----------------|-------------|------------------------------|--------------------------------|
| Analog     | 12.5                     | 462.6375        | High power  | 9.91                         | 10.20                          |
| Analog     | 12.5                     | 462.6375        | Low power   | 9.91                         | 10.20                          |
| Analog     | 12.5                     | 467.6375        | High power  | 9.91                         | 10.20                          |
| Analog     | 12.5                     | 467.6375        | Low power   | 9.91                         | 10.20                          |

Emission Designator Per CFR 47 §2.201& §2.202&,  $B_n = 2M + 2D$  :

Emission Designator 11K0F3E In this case, the maximum modulating frequency is 3.0 kHz with a 2.5 kHz deviation.  $BW = 2(M+D) = 2*(3.0 \text{ kHz} + 2.5 \text{ kHz}) = 11 \text{ kHz} \rightarrow 11K0$

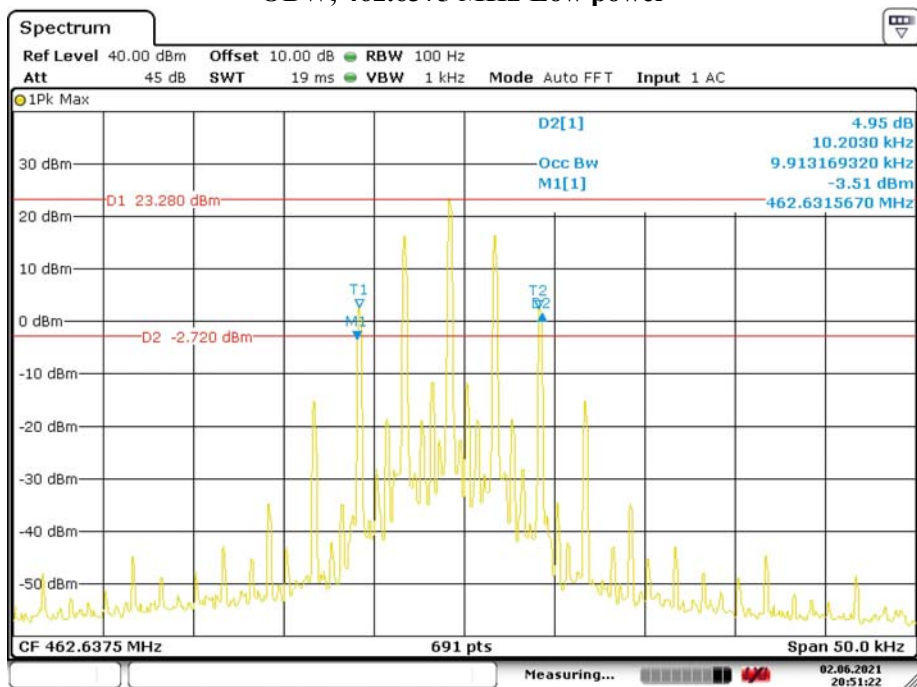
F3E portion of the designator represents an FM voice transmission Therefore, the entire designator for 12.5 kHz channel spacing FM mode is 11K0F3E.

# OBW, 462.6375 MHz-High power



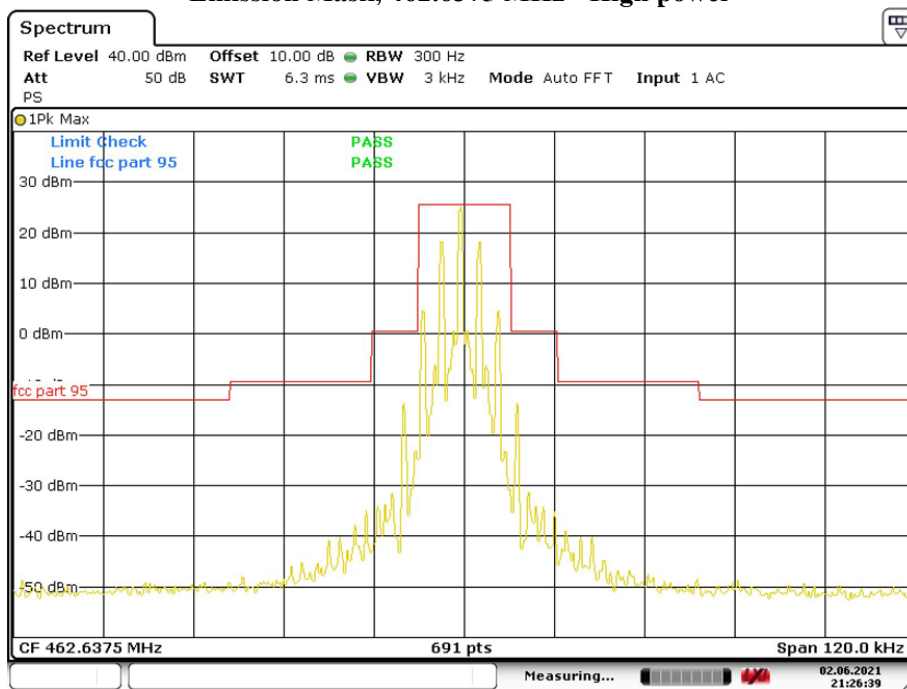
Date: 2.JUN.2021 20:49:34

# OBW, 462.6375 MHz-Low power



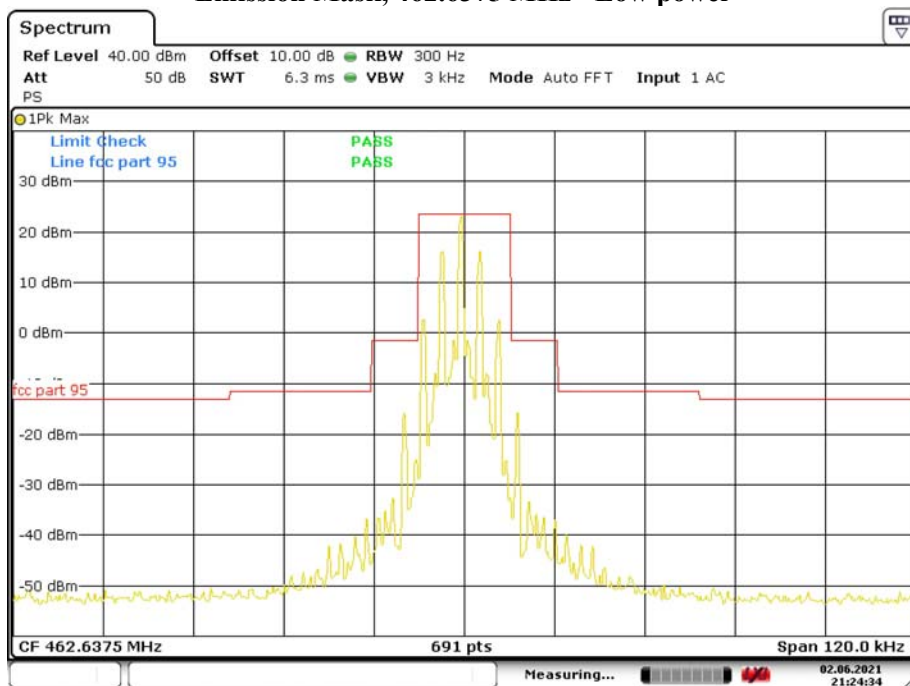
Date: 2.JUN.2021 20:51:22

### Emission Mask, 462.6375 MHz - High power



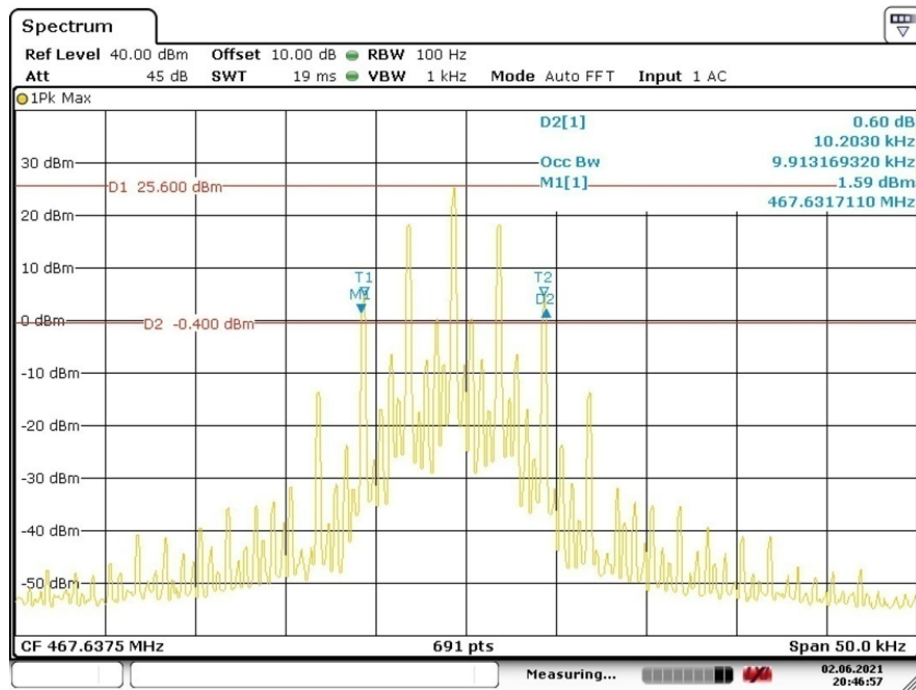
Date: 2.JUN.2021 21:26:39

### Emission Mask, 462.6375 MHz - Low power



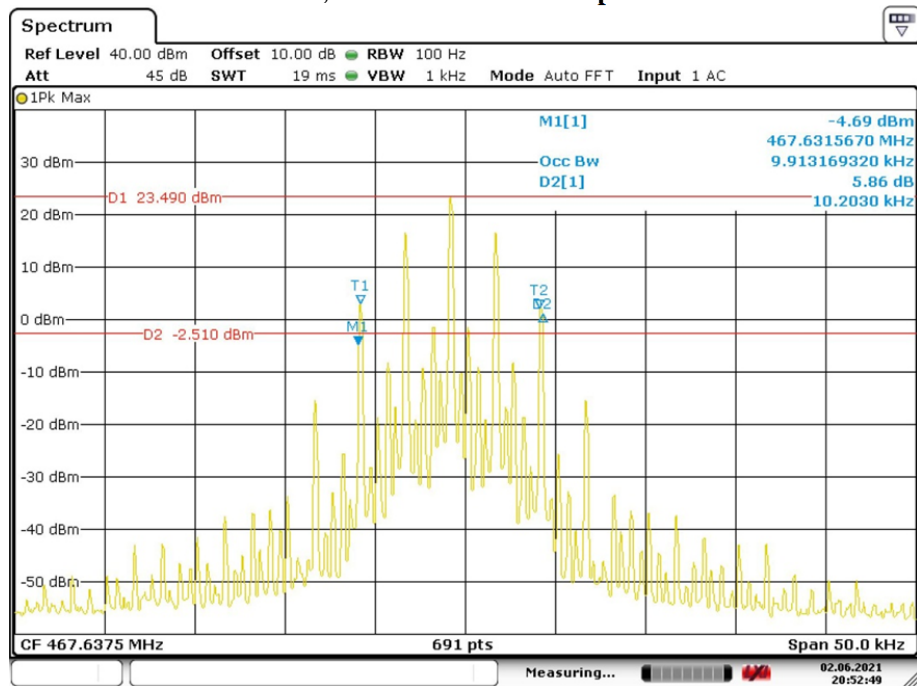
Date: 2.JUN.2021 21:24:34

### OBW, 467.6375 MHz-High power



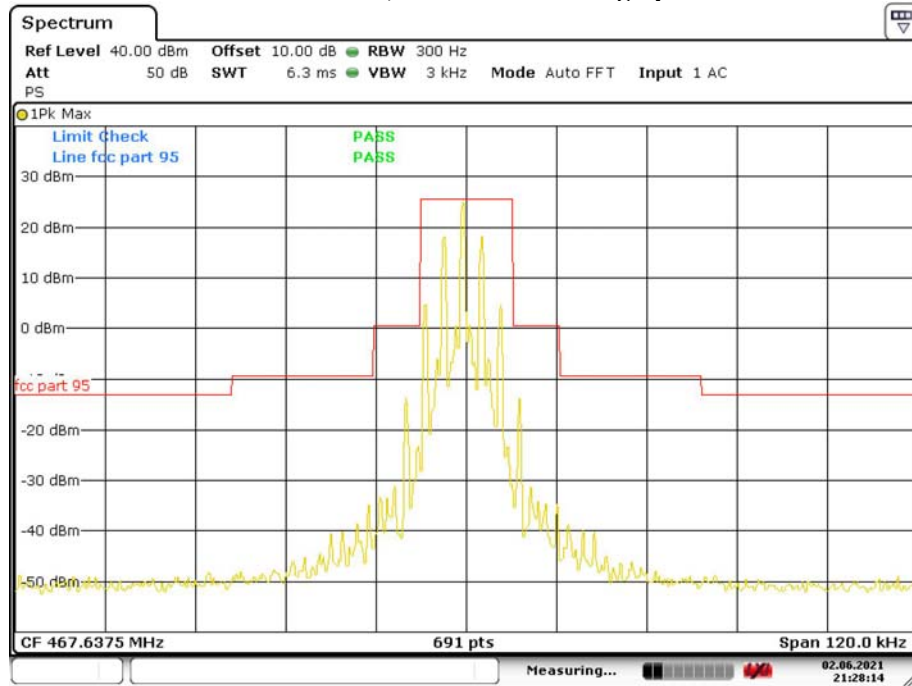
Date: 2.JUN.2021 20:46:58

### OBW, 467.6375 MHz - Low power



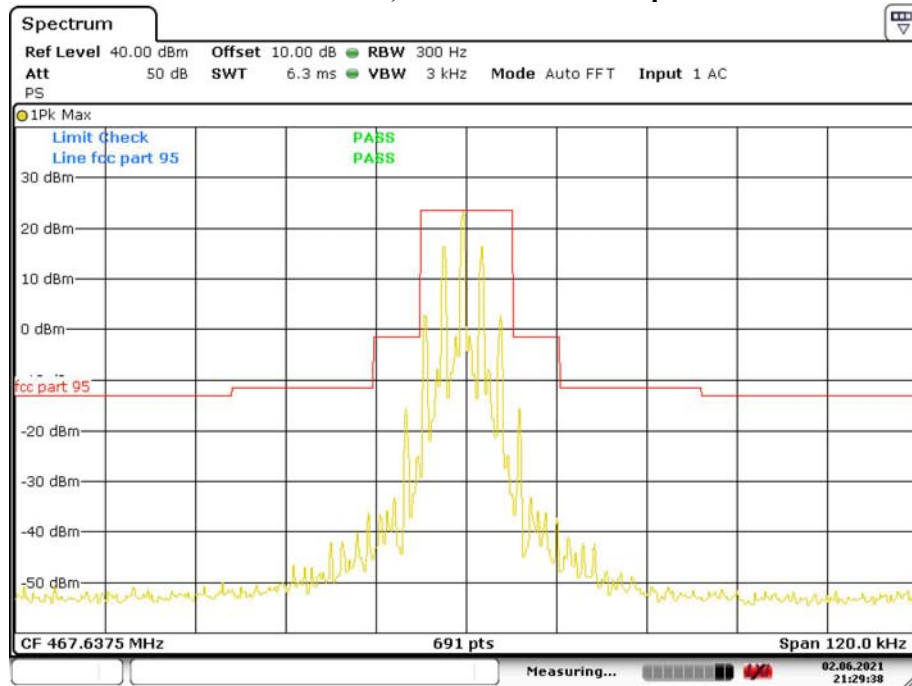
Date: 2.JUN.2021 20:52:49

### Emission Mask, 467.6375 MHz-High power



Date: 2.JUN.2021 21:28:14

### Emission Mask, 467.6375 MHz-Low power



Date: 2.JUN.2021 21:29:39

## FCC §2.1053 & §95.579- RADIATED SPURIOUS EMISSION

### Applicable Standard

FCC §2.1053 and §95.579. Each FRS transmitter type must be designed to satisfy the applicable unwanted emissions limits in this paragraph.

(a) *Attenuation requirements.* The power of unwanted emissions must be attenuated below the carrier power output in Watts (P) by at least:

- (1) 25 dB (decibels) in the frequency band 6.25 kHz to 12.5 kHz removed from the channel center frequency.
- (2) 35 dB in the frequency band 12.5 kHz to 31.25 kHz removed from the channel center frequency.
- (3)  $43 + 10 \log (P)$  dB in any frequency band removed from the channel center frequency by more than 31.25 kHz.

(b) *Measurement bandwidths.* The power of unwanted emissions in the frequency bands specified in paragraphs (a)(1) and (2) of this section is measured with a reference bandwidth of 300 Hz. The power of unwanted emissions in the frequency range specified in paragraph (a)(3) is measured with a reference bandwidth of at least 30 kHz.

(c) *Measurement conditions.* The requirements in this section apply to each FRS transmitter type both with and without the connection of permitted attachments, such as an external speaker, microphone and/or power cord.

### Test Procedure

The transmitter was placed on a wooden 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 =  $10 \lg (\text{TXpwr in Watts}/0.001)$  - the absolute level  
Spurious attenuation limit in dB =  $43 + 10 \lg_{10} (\text{power out in Watts})$

### Test Data

#### Environmental Conditions

|                    |           |
|--------------------|-----------|
| Temperature:       | 25 °C     |
| Relative Humidity: | 52 %      |
| ATM Pressure:      | 101.0 kPa |

The testing was performed by JOE Qiao on 2021-06-02.

Test Mode: Transmitting (Worst case for High power level)

| Frequency<br>(MHz) | Polar<br>(H/V) | Turntable<br>Angle<br>Degree | Receiver<br>Reading<br>(dBμV) | Substituted Method            |                              |                       | Absolute<br>Level<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) |
|--------------------|----------------|------------------------------|-------------------------------|-------------------------------|------------------------------|-----------------------|----------------------------|----------------|----------------|
|                    |                |                              |                               | Substituted<br>Level<br>(dBm) | Antenna<br>Gain<br>(dBd/dBi) | Cable<br>Loss<br>(dB) |                            |                |                |
| 462.6375MHz        |                |                              |                               |                               |                              |                       |                            |                |                |
| 925.27             | H              | 75                           | 73.33                         | -22.76                        | 0.00                         | 0.97                  | -23.73                     | -13            | 10.73          |
| 1387.91            | H              | 157                          | 69.94                         | -34.44                        | 9.53                         | 1.21                  | -26.12                     | -13            | 13.12          |
| 1850.55            | H              | 164                          | 61.25                         | -43.62                        | 11.05                        | 1.20                  | -33.77                     | -13            | 20.77          |
| 2313.19            | H              | 335                          | 62.48                         | -41.58                        | 11.94                        | 1.20                  | -30.84                     | -13            | 17.84          |
| 2775.83            | H              | 215                          | 58.76                         | -44.41                        | 12.31                        | 1.38                  | -33.48                     | -13            | 20.48          |
| 3238.46            | H              | 248                          | 61.37                         | -41.00                        | 12.30                        | 1.55                  | -30.25                     | -13            | 17.25          |
| 3701.10            | H              | 219                          | 59.14                         | -42.15                        | 12.24                        | 1.55                  | -31.46                     | -13            | 18.46          |
| 925.27             | V              | 142                          | 81.67                         | -16.25                        | 0.00                         | 0.97                  | -17.22                     | -13            | 4.22           |
| 1387.91            | V              | 36                           | 75.62                         | -28.87                        | 9.53                         | 1.21                  | -20.55                     | -13            | 7.55           |
| 1850.55            | V              | 258                          | 66.78                         | -38.03                        | 11.05                        | 1.20                  | -28.18                     | -13            | 15.18          |
| 2313.19            | V              | 163                          | 68.91                         | -36.02                        | 11.94                        | 1.20                  | -25.28                     | -13            | 12.28          |
| 2775.83            | V              | 124                          | 62.35                         | -41.40                        | 12.31                        | 1.38                  | -30.47                     | -13            | 17.47          |
| 3238.46            | V              | 179                          | 62.77                         | -38.82                        | 12.30                        | 1.55                  | -28.07                     | -13            | 15.07          |
| 3701.10            | V              | 226                          | 60.18                         | -40.54                        | 12.24                        | 1.55                  | -29.85                     | -13            | 16.85          |
| 467.6375MHz        |                |                              |                               |                               |                              |                       |                            |                |                |
| 935.27             | H              | 75                           | 71.58                         | -24.09                        | 0.00                         | 0.94                  | -25.03                     | -13            | 12.03          |
| 1402.91            | H              | 129                          | 68.49                         | -35.99                        | 9.59                         | 1.23                  | -27.63                     | -13            | 14.63          |
| 1870.55            | H              | 36                           | 61.38                         | -43.48                        | 11.11                        | 1.19                  | -33.56                     | -13            | 20.56          |
| 2338.19            | H              | 162                          | 59.71                         | -44.30                        | 11.97                        | 1.20                  | -33.53                     | -13            | 20.53          |
| 2805.83            | H              | 155                          | 58.13                         | -44.99                        | 12.32                        | 1.40                  | -34.07                     | -13            | 21.07          |
| 3273.46            | H              | 267                          | 57.92                         | -44.38                        | 12.29                        | 1.56                  | -33.65                     | -13            | 20.65          |
| 3741.1             | H              | 308                          | 58.37                         | -42.79                        | 12.25                        | 1.53                  | -32.07                     | -13            | 19.07          |
| 935.27             | V              | 94                           | 79.72                         | -17.71                        | 0.00                         | 0.94                  | -18.65                     | -13            | 5.65           |
| 1402.91            | V              | 217                          | 74.68                         | -29.89                        | 9.59                         | 1.23                  | -21.53                     | -13            | 8.53           |
| 1870.55            | V              | 263                          | 65.34                         | -39.45                        | 11.11                        | 1.19                  | -29.53                     | -13            | 16.53          |
| 2338.19            | V              | 204                          | 64.21                         | -40.74                        | 11.97                        | 1.20                  | -29.97                     | -13            | 16.97          |
| 2805.83            | V              | 211                          | 60.19                         | -43.41                        | 12.32                        | 1.40                  | -32.49                     | -13            | 19.49          |
| 3273.46            | V              | 13                           | 61.41                         | -40.02                        | 12.29                        | 1.56                  | -29.29                     | -13            | 16.29          |
| 1402.91            | V              | 97                           | 60.23                         | -40.55                        | 12.25                        | 1.53                  | -29.83                     | -13            | 16.83          |

**Note 1:** The unit of antenna gain is dBd for frequency below 1GHz and is dBi for frequency above 1GHz.

**Note 2:** Absolute Level = SG Level - Cable loss + Antenna Gain  
Margin = Limit- Absolute Level

## FCC§2.1055 (d) & §95.565 - FREQUENCY STABILITY

### Applicable Standard

According to FCC §2.1055(a) (1), the frequency stability shall be measured with variation of ambient temperature from  $-30^{\circ}\text{C}$  to  $+50^{\circ}\text{C}$ , 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 §95.565, Each FRS transmitter type must be designed such that the carrier frequencies remain within  $\pm 2.5$  parts-per-million of the channel center frequencies specified in §95.563 during normal operating conditions.

### 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 (item 1 or item 2 will be chosen according to different condition) :

☐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 Data

#### Environmental Conditions

|                    |           |
|--------------------|-----------|
| Temperature:       | 20 °C     |
| Relative Humidity: | 52 %      |
| ATM Pressure:      | 101.0 kPa |

The testing was performed by JOE Qiao on 2021-06-02.

Test Mode: Transmitting

| Reference Frequency:462.6375MHz, Limit:2.5 ppm, 12.5kHz |                                   |                             |                       |
|---------------------------------------------------------|-----------------------------------|-----------------------------|-----------------------|
| Environment Temperature (°C)                            | Power Supplied (V <sub>DC</sub> ) | Measurement Frequency (MHz) | Frequency Error (ppm) |
| Frequency Stability Ver. Temperature                    |                                   |                             |                       |
| 50                                                      | 3.6                               | 462.637562                  | 0.134                 |
| 40                                                      | 3.6                               | 462.637561                  | 0.132                 |
| 30                                                      | 3.6                               | 462.637563                  | 0.136                 |
| 20                                                      | 3.6                               | 462.637572                  | 0.156                 |
| 10                                                      | 3.6                               | 462.637569                  | 0.149                 |
| 0                                                       | 3.6                               | 462.637571                  | 0.153                 |
| -10                                                     | 3.6                               | 462.637559                  | 0.128                 |
| -20                                                     | 3.6                               | 462.637568                  | 0.147                 |
| -30                                                     | 3.6                               | 462.637558                  | 0.125                 |
| Frequency Stability Ver. Input Voltage                  |                                   |                             |                       |
| 20                                                      | 3.2                               | 462.637552                  | 0.112                 |
| 20                                                      | 4.0                               | 462.637563                  | 0.136                 |

| Reference Frequency:467.6375 MHz, Limit:2.5 ppm, 12.5kHz |                                   |                             |                       |
|----------------------------------------------------------|-----------------------------------|-----------------------------|-----------------------|
| Environment Temperature (°C)                             | Power Supplied (V <sub>DC</sub> ) | Measurement Frequency (MHz) | Frequency Error (ppm) |
| Frequency Stability Ver. Temperature                     |                                   |                             |                       |
| 50                                                       | 3.6                               | 467.637563                  | 0.135                 |
| 40                                                       | 3.6                               | 467.637557                  | 0.122                 |
| 30                                                       | 3.6                               | 467.637566                  | 0.141                 |
| 20                                                       | 3.6                               | 467.637573                  | 0.156                 |
| 10                                                       | 3.6                               | 467.637569                  | 0.148                 |
| 0                                                        | 3.6                               | 467.637574                  | 0.158                 |
| -10                                                      | 3.6                               | 467.637571                  | 0.152                 |
| -20                                                      | 3.6                               | 467.637558                  | 0.125                 |
| -30                                                      | 3.6                               | 467.637560                  | 0.128                 |
| Frequency Stability Ver. Input Voltage                   |                                   |                             |                       |
| 20                                                       | 3.2                               | 467.637572                  | 0.154                 |
| 20                                                       | 4.0                               | 467.637573                  | 0.156                 |

Note: the battery operating end point voltage is 3.2V which was provided by the applicant.

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