

FCC PART 22, 74 and 90

## TEST REPORT

For

### Hytera Communications Corporation Limited

Hytera Tower, Hi-Tech Industrial Park North, 9108# Beihuan Road, Nanshan District, Shenzhen,  
518057 China

**FCC ID:YAMCHU-P1BA01**

|                                        |                                                                                                                                                                                                                                                       |
|----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Report Type:</b><br>Original Report | <b>Product Type:</b><br>Base Station Channel Unit(CHU)                                                                                                                                                                                                |
| <b>Report Number:</b> RDG200611007-00A |                                                                                                                                                                                                                                                       |
| <b>Report Date:</b> 2020-08-11         |                                                                                                                                                                                                                                                       |
| <b>Reviewed By:</b>                    | Ivan Cao<br>Assistant Manager                                                                                                                                     |
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## GENERAL INFORMATION

### Product Description for Equipment under Test (EUT)

|                                            |                                               |
|--------------------------------------------|-----------------------------------------------|
| <b>EUT Name:</b>                           | Base Station Channel Unit(CHU)                |
| <b>EUT Model:</b>                          | CHU-P1BA01                                    |
| <b>Modulation Type:</b>                    | 4FSK                                          |
| <b>Channel Spacing:</b>                    | 12.5 kHz                                      |
| <b>Frequency Range:</b>                    | 400-470 MHz                                   |
| <b>Rated Output Power:<br/>(Conducted)</b> | High Power Level: 100W<br>Low Power Level: 5W |
| <b>Rated Input Voltage:</b>                | DC 28V ,12.5A                                 |
| <b>Serial Number:</b>                      | RDG200611007-RF-S1                            |
| <b>EUT Received Date:</b>                  | 2020.05.19                                    |
| <b>EUT Received Status:</b>                | Good                                          |

*Note: the device is a Base Station.*

### Objective

This test report is prepared on behalf of **Hytera Communications Corporation Limited** in accordance with Part 2, and Part 22,74 and 90 of the Federal Communication Commissions rules.

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

No related submittal(s)/grant(s).

### Test Methodology

All tests and measurements indicated in this document were performed in accordance with:

the Code of federal Regulations Title 47, Part 2, Part 22, Part 74, Part 90

ANSI C63.26-2015, American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services

TIA-603-E-2016, 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                     | Measurement Uncertainty                      |
|-------------------------------|----------------------------------------------|
| Occupied Channel Bandwidth    | $\pm 5\%$                                    |
| RF output power, conducted    | $\pm 0.61\text{dB}$                          |
| Unwanted Emissions, radiated  | 30MHz ~ 1GHz: 5.85 dB<br>1G~26.5GHz: 5.23 dB |
| Unwanted Emissions, conducted | $\pm 1.5\text{ dB}$                          |
| Temperature                   | $\pm 1^\circ\text{C}$                        |
| Humidity                      | $\pm 5\%$                                    |
| DC and low frequency voltages | $\pm 0.4\%$                                  |
| Duty Cycle                    | 1%                                           |

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

**Test Facility**

The Test site used by Bay Area Compliance Laboratories Corp. (Dongguan) to collect test data is located on the No.69 Pulongcun, Puxinhu Industry Area, Tangxia, 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.

**Declarations**

BACL is not responsible for the authenticity of any test data provided by the applicant. Data included from the applicant that may affect test results are marked with a triangle symbol “ $\Delta$ ”. Customer model name, addresses, names, trademarks etc. are not considered data.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.

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## SYSTEM TEST CONFIGURATION

### Description of Test Configuration

The system was configured for testing in a test mode which has been done in the factory.

### EUT Exercise Software

No exercise software was used.

### Special Accessories

| Manufacturer                   | Description | Model     | Serial Number | Note                                              |
|--------------------------------|-------------|-----------|---------------|---------------------------------------------------|
| Kenbotong<br>Communication LTD | Antenna     | TQJ-150M1 | TQJ-150M1-S1  | input impedance:<br>50 ohm<br>Antenna Gain:9.6dBi |

*Note: Per the test method, the antenna sold with the device was not used during the test.*

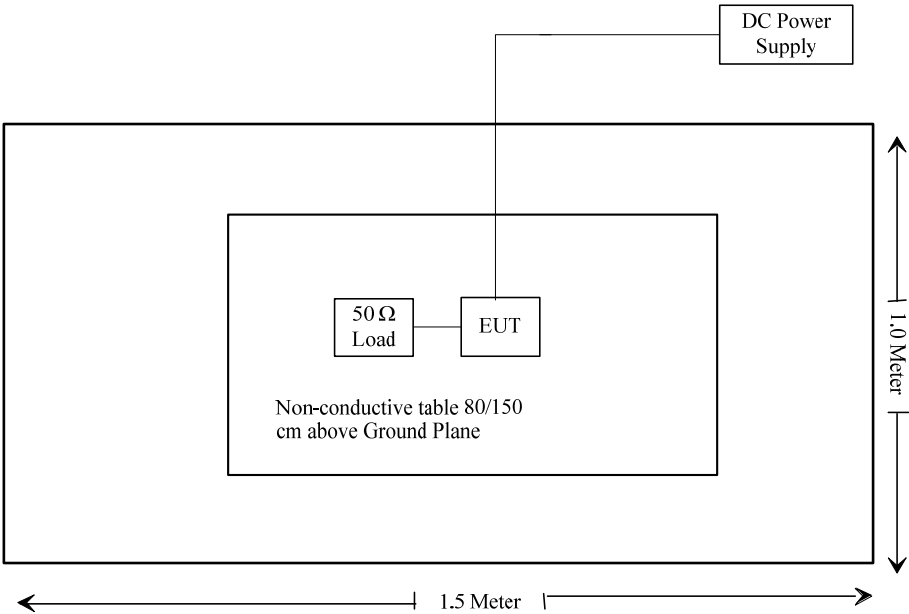
### Equipment Modifications

No modification was made to the EUT tested.

### Support Equipment List and Details

| Manufacturer   | Description             | Model   | Serial Number |
|----------------|-------------------------|---------|---------------|
| Weinschel      | 50Ω Load Terminal       | MD477   | 1440-3        |
| HP             | RF Communication Tester | 8920A   | 3438A05201    |
| Pro instrument | DC Power Supply         | pps3300 | 3300012       |

Block Diagram of Test Setup



**SUMMARY OF TEST RESULTS**

| FCC Rules                                                | Description of Test                   | Results        |
|----------------------------------------------------------|---------------------------------------|----------------|
| §1.1310 and §2.1091                                      | Maximum Permissible Exposure (MPE)    | Compliance     |
| §2.1046; § 22.727;<br>§74.461; §90.205                   | RF Output Power                       | Compliance     |
| §2.1047                                                  | Modulation Characteristic             | Not Applicable |
| §2.1049; §22.357; § 22.731;<br>§74.462; §90.209; §90.210 | Occupied Bandwidth & Emission Mask    | Compliance     |
| §2.1051; §22.861; §74.462;<br>§90.210                    | Spurious Emission at Antenna Terminal | Compliance     |
| §2.1053; §22.861;<br>§74.462; §90.210                    | Spurious Radiated Emissions           | Compliance     |
| §2.1055; § 22.355;<br>§74.464; §90.213                   | Frequency Stability                   | Compliance     |
| §90.214                                                  | Transient Frequency Behavior          | Compliance     |

*Note: the test is Not Applicable for Digital modulation.*

**TEST EQUIPMENT LIST**

| Manufacturer                         | Description                              | Model          | Serial Number | Calibration Date | Calibration Due Date |
|--------------------------------------|------------------------------------------|----------------|---------------|------------------|----------------------|
| <b>Radiated emissions below 1GHz</b> |                                          |                |               |                  |                      |
| Sunol Sciences                       | Antenna                                  | JB3            | A060611-1     | 2017-11-10       | 2020-11-10           |
| R&S                                  | EMI Test Receiver                        | ESR3           | 102453        | 2019-09-12       | 2020-09-12           |
| Unknown                              | Coaxial Cable                            | C-NJNJ-50      | C-0075-01     | 2019-09-05       | 2020-09-05           |
| Unknown                              | Coaxial Cable                            | C-NJNJ-50      | C-0400-01     | 2019-09-05       | 2020-09-05           |
| Unknown                              | Coaxial Cable                            | C-NJNJ-50      | C-1400-01     | 2020-05-06       | 2021-05-06           |
| HP                                   | Amplifier                                | 8447D          | 2727A05902    | 2019-09-05       | 2020-09-05           |
| EMCO                                 | Adjustable Dipole Antenna                | 3121C          | 9109-753      | N/A              | N/A                  |
| Unknown                              | Coaxial Cable                            | C-NJNJ-50      | C-0200-02     | 2019-09-05       | 2020-09-05           |
| Agilent                              | Signal Generator                         | E8247C         | MY43321350    | 2019-12-10       | 2020-12-10           |
| Ouli                                 | Band Rejector Filter                     | 400-470M       | 087           | 2020-01-23       | 2021-01-23           |
| <b>Radiated emissions above 1GHz</b> |                                          |                |               |                  |                      |
| ETS-Lindgren                         | Horn Antenna                             | 3115           | 000 527 35    | 2018-10-12       | 2021-10-12           |
| Agilent                              | Spectrum Analyzer                        | E4440A         | SG43360054    | 2020-05-09       | 2021-05-09           |
| Unknown                              | Coaxial Cable                            | C-SJSJ-50      | C-0800-01     | 2019-09-05       | 2020-09-05           |
| Mini-Circuit                         | Amplifier                                | ZVA-213-S+     | 54201245      | 2019-09-05       | 2020-09-05           |
| TDK RF                               | Horn Antenna                             | HRN-0118       | 130 084       | 2018-10-12       | 2021-10-12           |
| Unknown                              | Coaxial Cable                            | C-NJNJ-50      | C-0200-02     | 2019-09-05       | 2020-09-05           |
| Agilent                              | Signal Generator                         | E8247C         | MY43321350    | 2019-12-10       | 2020-12-10           |
| <b>RF Conducted Test</b>             |                                          |                |               |                  |                      |
| R&S                                  | Spectrum Analyzer                        | FSU 26         | 200256        | 2020-01-04       | 2021-01-04           |
| yzjingcheng                          | Coaxial Cable                            | KTRFBU-141-50  | 41005011      | Each time        | N/A                  |
| Unknown                              | Coaxial Cable                            | C-SJ00-0010    | C0010/02      | Each time        | N/A                  |
| E-Microwave                          | Blocking Control                         | EMDCB-00036    | 0E01201048    | Each time        | N/A                  |
| Weinschel                            | Coaxial Attenuators                      | 53-20-34       | LN749         | Each time        | N/A                  |
| E-Microwave                          | Coaxial Attenuators                      | EMCA40-200SN-6 | OE01201046    | Each time        | N/A                  |
| Agilent                              | Signal Generator                         | E8247C         | MY43321350    | 2019-12-10       | 2020-07-23           |
| Ouli                                 | Band Rejector Filter                     | 400-470M       | 087           | 2020-01-23       | 2021-01-23           |
| HP                                   | RF Communications Test Set               | 8920A          | 3438A05201    | 2020-05-09       | 2021-05-09           |
| ESPEC                                | Constant temperature and humidity Tester | ESX-4CA        | 018 463       | 2020-03-26       | 2021-03-26           |
| UNI-T                                | Multimeter                               | UT39A          | M130199938    | 2019-07-23       | 2021-07-23           |

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

## **FCC §1.1310 & §2.1091- MAXIMUM PERMISSIBLE EXPOSURE (MPE)**

### **Applicable Standard**

According to 1.1310, 2.1091 systems operating under the provisions of this section shall be operated in a manner that ensures the public is not exposed to RF energy level in excess of the communication guidelines.

Limits for Maximum Permissible Exposure (MPE)

| <b>Limits for Occupational/Controlled Exposure</b> |                                          |                                          |                                              |                                               |
|----------------------------------------------------|------------------------------------------|------------------------------------------|----------------------------------------------|-----------------------------------------------|
| <b>Frequency Range (MHz)</b>                       | <b>Electric Field Strength (E) (V/m)</b> | <b>Magnetic Field Strength (H) (A/m)</b> | <b>Power Density (S) (mW/cm<sup>2</sup>)</b> | <b>Averaging Time  E ,  H  or S (minutes)</b> |
| 0.3- 3.0                                           | 614                                      | 1.63                                     | (100)*                                       | 6                                             |
| 3.0 - 30                                           | 1842/f                                   | 4.89/f                                   | (900/f <sup>2</sup> )*                       | 6                                             |
| 30-300                                             | 61.4                                     | 0.163                                    | 1.0                                          | 6                                             |
| 300-1500                                           | /                                        | /                                        | f/300                                        | 6                                             |
| 1500-100,000                                       | /                                        | /                                        | 5                                            | 6                                             |

f = frequency in MHz;

\* = Plane-wave equivalent power density;

### **MPE Calculation**

**Prediction of power density at the distance of the applicable MPE limit**

$$S = PG/4\pi R^2$$

Where: S = power density (in appropriate units, e.g. mW/cm<sup>2</sup>);

P = power input to the antenna (in appropriate units, e.g., mW);

G = power gain of the antenna in the direction of interest relative to an isotropic radiator

R = distance to the center of radiation of the antenna (appropriate units, e.g., cm);

### **MPE Results**

| <b>Frequency (MHz)</b> | <b>Antenna Gain</b> |                  | <b>Maximum Peak output power including Tune-up Tolerance (mW)</b> | <b>Duty cycle</b> | <b>Evaluation Distance (cm)</b> | <b>Power Density (mW/cm<sup>2</sup>)</b> | <b>Power Density Limit (mW/cm<sup>2</sup>)</b> |
|------------------------|---------------------|------------------|-------------------------------------------------------------------|-------------------|---------------------------------|------------------------------------------|------------------------------------------------|
|                        | <b>(dBi)</b>        | <b>(numeric)</b> |                                                                   |                   |                                 |                                          |                                                |
| 400-470                | 9.6                 | 9.12             | 110000                                                            | 50%               | 200                             | 1.00                                     | 1.33                                           |

*Note: the Maximum Peak output power including Tune-up Tolerance is 110W, that declared by manufacturer.*

**Result:** The device meet FCC MPE of the Occupational/Controlled use at 200 cm distance.

## **FCC §2.1046 & § 22.727 & §74.461 & §90.205 - RF OUTPUT POWER**

### **Applicable Standard**

FCC §2.1046, § 22.727, §74.461 and §90.205

### **Test Procedure**

Conducted RF Output Power:

The RF output of the transmitter was connected to the input of the spectrum analyzer through sufficient attenuation.

Spectrum Analyzer Setting:

|         |           |
|---------|-----------|
| R B/W   | Video B/W |
| 100 kHz | 300 kHz   |

### **Test Data**

#### **Environmental Conditions**

|                           |                         |
|---------------------------|-------------------------|
| <b>Temperature:</b>       | 25.6~28.5°C             |
| <b>Relative Humidity:</b> | 62~71 %                 |
| <b>ATM Pressure:</b>      | 100.3~100.4 kPa         |
| <b>Tester:</b>            | James Chen              |
| <b>Test Date:</b>         | 2020-07-05 ~ 2020-08-03 |

*Test Mode: Transmitting*

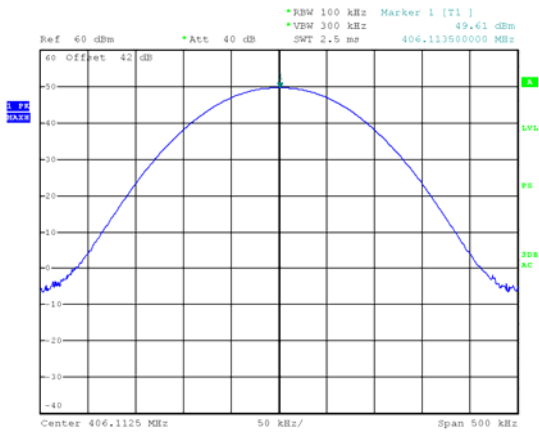
**Test Result:** Compliance. Please refer to following table.

| Rule               | Test Frequency (MHz) | Conducted Output Power (dBm) |                 | Limit (dBm)      |                 |
|--------------------|----------------------|------------------------------|-----------------|------------------|-----------------|
|                    |                      | High Power Level             | Low Power Level | High Power Level | Low Power Level |
| <b>For federal</b> | 400.0125             | 49.61                        | 36.71           | 50.79            | 37.78           |
| <b>FCC part 90</b> | 406.1125             | 49.61                        | 36.71           | 50.79            | 37.78           |
|                    | 453.2125             | 49.92                        | 37.11           | 50.79            | 37.78           |
|                    | 469.9875             | 50.00                        | 37.15           | 50.79            | 37.78           |
| <b>FCC part 22</b> | 454.0125             | 49.96                        | 37.10           | 50.79            | 37.78           |
| <b>FCC part 74</b> | 455.0125             | 49.99                        | 37.12           | 50.79            | 37.78           |

Note: The high rated power level is 100W(50dBm), and low rated power level is 5 W(37dBm).

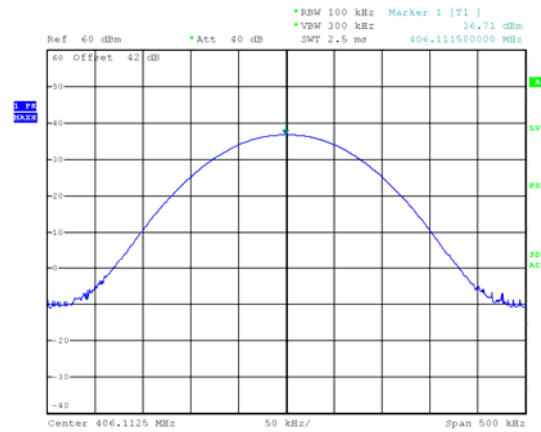
The output power shall not exceed by more than 20 percent the manufacturer's rated output power for the particular transmitter specifically listed on the authorization.

**Part 90, Low Channel, 406.1125 MHz High Power**



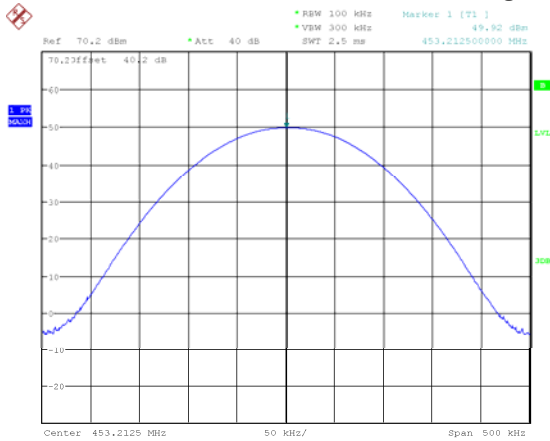
Date: 3.AUG.2020 21:50:22

**Part 90, Low Channel, 406.1125 MHz Low Power**



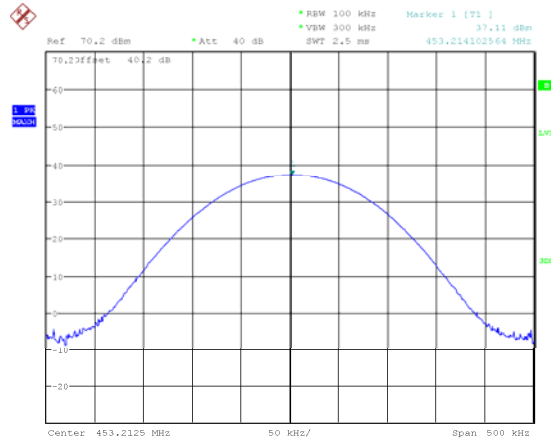
Date: 3.AUG.2020 21:49:57

**Part 90, Middle Channel, 453.2125 MHz High Power**



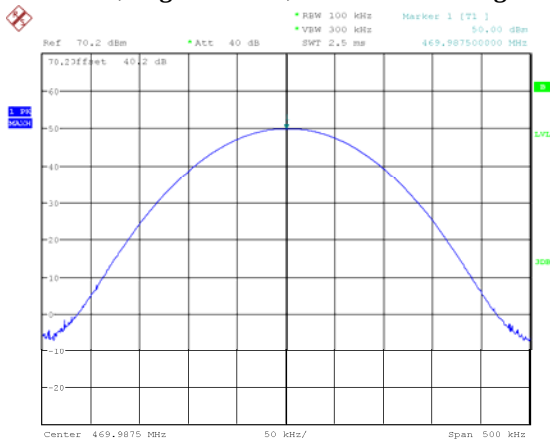
Date: 5.JUL.2020 15:49:34

**Part 90, Middle Channel, 453.2125 MHz Low Power**



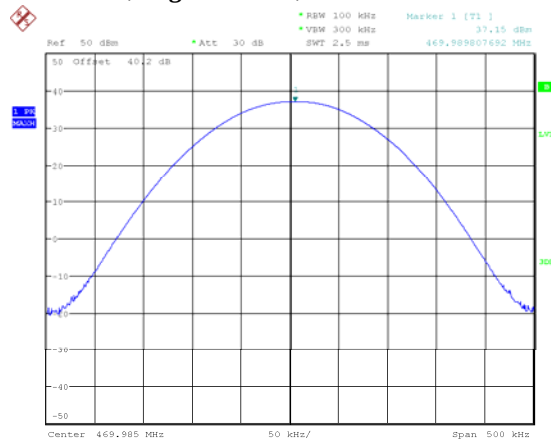
Date: 5.JUL.2020 15:54:22

**Part 90, High Channel, 469.9857 MHz High Power**



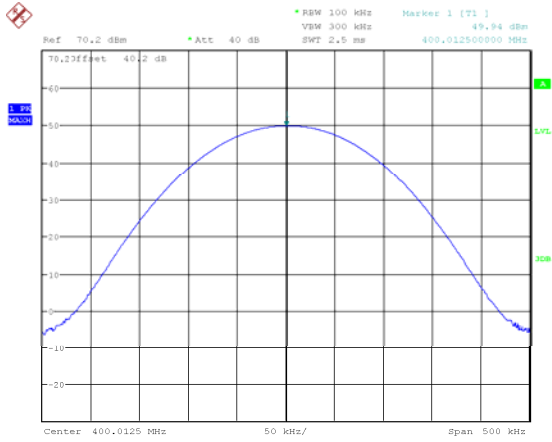
Date: 5.JUL.2020 11:56:07

**Part 90, High Channel, 469.9857 MHz Low Power**



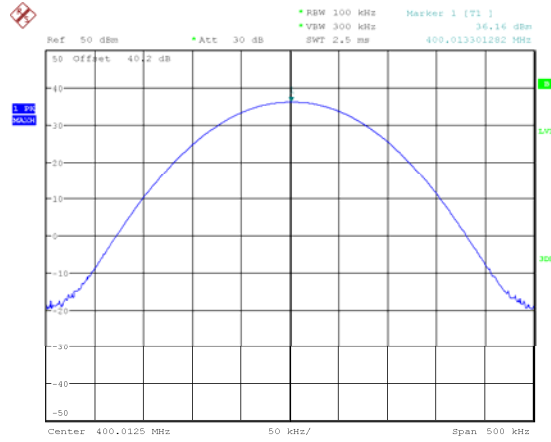
Date: 5.JUL.2020 14:08:30

**Additional, For federal, 400.0125 MHz High Power**



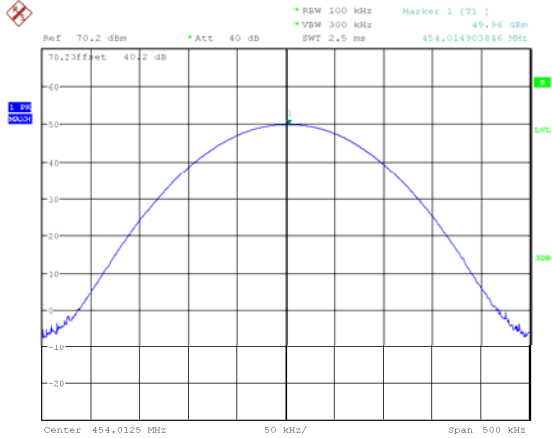
Date: 5.JUL.2020 11:46:23

**Additional, For federal, 400.0125 MHz Low Power**



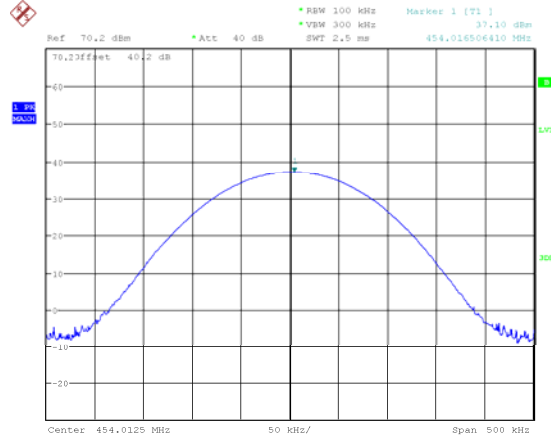
Date: 5.JUL.2020 13:45:36

**Additional, For Part 22, 454.0125 MHz High Power**



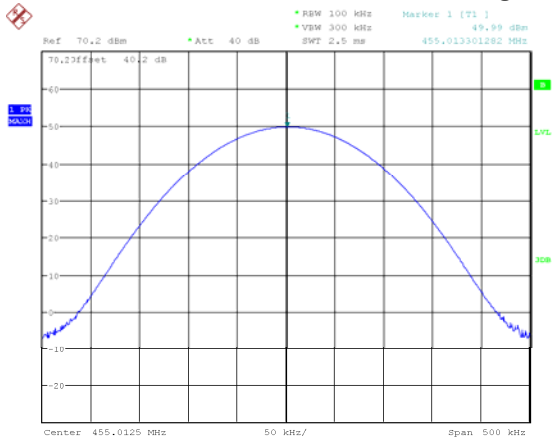
Date: 5.JUL.2020 15:55:50

**Additional, For Part 22, 454.0125 MHz Low Power**



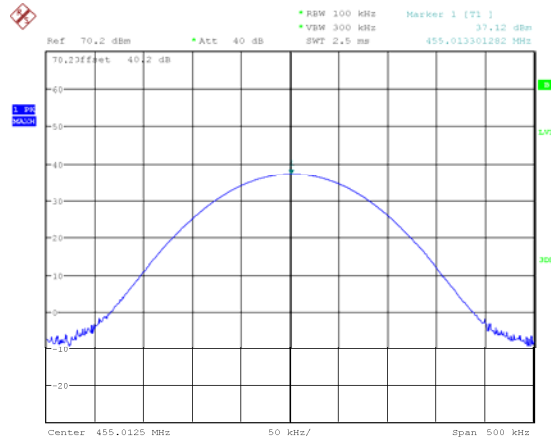
Date: 5.JUL.2020 15:55:24

**Additional, For Part 74, 455.0125 MHz High Power**



Date: 5.JUL.2020 15:57:28

**Additional, For Part 74, 455.0125 MHz Low Power**



Date: 5.JUL.2020 15:57:54

## FCC §2.1049 & §22.357 & § 22.731 & §74.462 & §90.209 & §90.210 – OCCUPIED BANDWIDTH & EMISSION MASK

### Applicable Standard

FCC §2.1049, §22.357, § 22.731, §74.462, §90.209 and §90.210

### Test Procedure

The RF output of the transmitter was connected to the input of the spectrum analyzer through sufficient attenuation.

The resolution bandwidth of the spectrum analyzer was set at 100 Hz or 300 Hz and the spectrum was recorded in the frequency band  $\pm 50$  kHz from the carrier frequency.

### Test Data

#### Environmental Conditions

|                           |                       |
|---------------------------|-----------------------|
| <b>Temperature:</b>       | 27 ~ 29.5°C           |
| <b>Relative Humidity:</b> | 54 ~ 69 %             |
| <b>ATM Pressure:</b>      | 99.6~101.1kPa         |
| <b>Tester:</b>            | James Chen            |
| <b>Test Date:</b>         | 2020-07-05~2020-08-03 |

Test mode: transmitting

| Rule        | Test Frequency (MHz) | High Power Level             |                       | Low Power Level              |                       |
|-------------|----------------------|------------------------------|-----------------------|------------------------------|-----------------------|
|             |                      | 99% Occupied Bandwidth (kHz) | 26 dB Bandwidth (kHz) | 99% Occupied Bandwidth (kHz) | 26 dB Bandwidth (kHz) |
| FCC part 90 | 406.1125             | 7.300                        | 8.600                 | 7.400                        | 9.000                 |
|             | 453.2125             | 7.051                        | 8.653                 | 7.451                        | 8.894                 |
|             | 469.9875             | 7.200                        | 9.600                 | 7.400                        | 9.000                 |
| FCC part 22 | 454.0125             | 7.451                        | 8.894                 | 7.452                        | 8.894                 |
| FCC part 74 | 455.0125             | 7.532                        | 8.894                 | 7.372                        | 8.894                 |

Note: Emission bandwidth was based on calculation method instead of measurement.

Emission Designator

Per CFR 47 §2.201& §2.202, BW = 2M + 2D

#### For Digital Mode (Channel Spacing: 12.5 kHz)

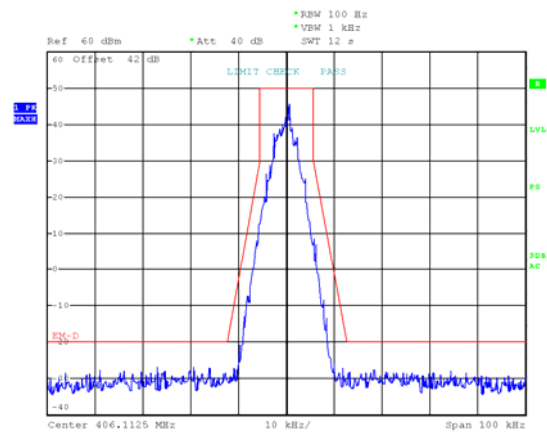
Emission Designator 7K60F1D and 7K60F1E

The 99% energy rule (title 47CFR 2.1049) was used for digital mode. It basically states that 99% of the modulation energy falls within X kHz, in this case, 7.60 kHz. The emission mask was obtained from 47CFR 90.210(d).

F1D and F1E portion of the designator indicates digital information.

Therefore, the entire designator for 12.5 kHz channel spacing digital mode is 7K60F1D and 7K60F1E.

### Low Channel, 406.1125 MHz



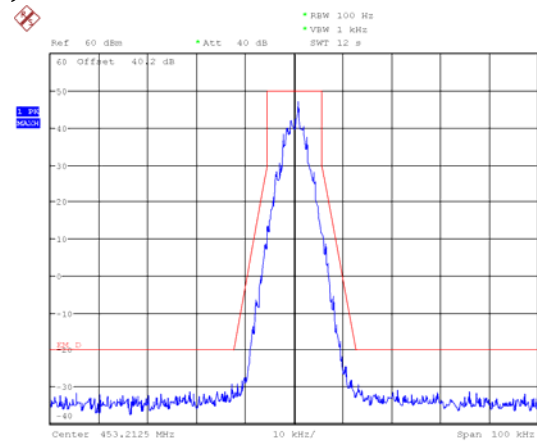
Date: 3.AUG.2020 21:45:05

MARKER 1  
453.2083333 MHz 17.67 dBm  
Ref 60 dBm Att 40 dB  
BW 100 Hz  
VPM 1 kHz  
SWT 6 s  
453.20833333 MHz

Offset 40.2 dB  
D1 47.25 dBm  
CS 21.29 dBm

OSB 7.051282551 kHz  
Delta 1 [T1] 0.66 kHz  
Temp 1 [T1 OAW] 2.004 MHz  
453.209134615 MHz  
Temp 2 [T1 OAW] 2.004 MHz  
453.214188970 MHz

Center 453.2125 MHz 5 kHz/  
Span 50 kHz



Date: 5.JUL.2020 16:32:02

\*BW 100 Hz Delta 1 [T1]  
 -3.23 dB  
 \*VM 1 kHz  
 SMT 6 s  
 9.600000000 kHz

Ref 60 dBm Att 40 dB  
 60 Offset 42 dB

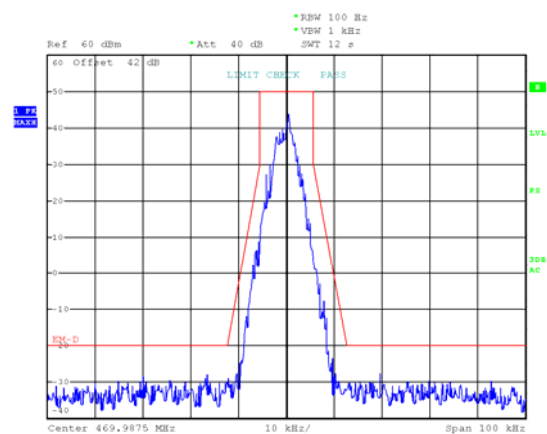
1 F  
 MAX

D1 44.81 dBm  
 D2 17.92 dBm

469.985000000 MHz  
 1 [T1] ONW  
 44.07 dBm  
 469.985000000 MHz  
 1 [T1] ONW  
 44.27 dBm  
 469.985000000 MHz  
 Temp 2  
 20.28 dBm  
 469.990700000 MHz

50 AC

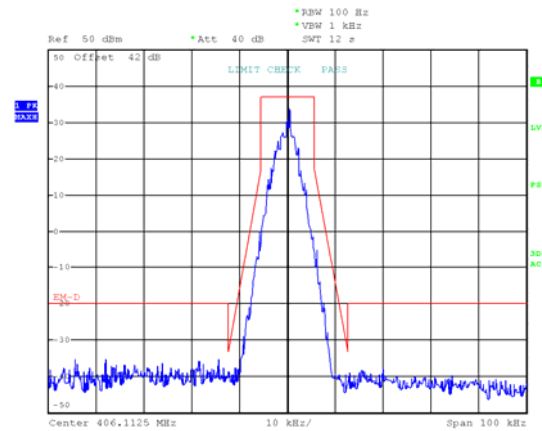
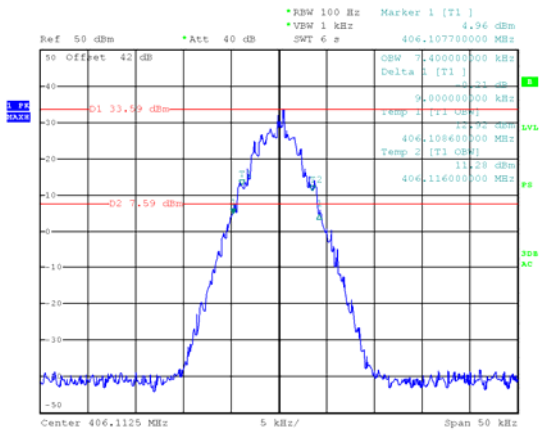
Center 469.9875 MHz 5 kHz/ Span 5.0 kHz



Date: 4.AUG.2020 00:58:57

FCC part 90, Low Power:

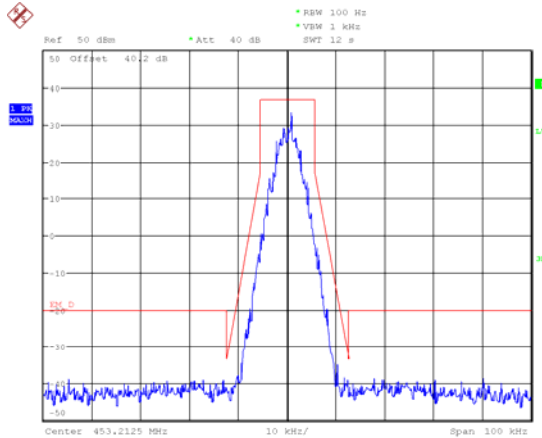
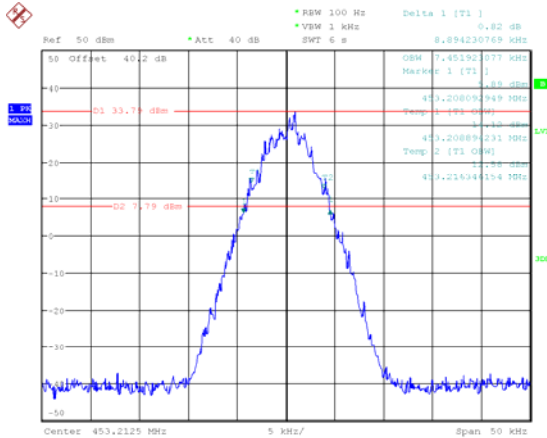
Low Channel, 406.1125 MHz



Date: 3.AUG.2020 22:21:54

Date: 3.AUG.2020 21:48:05

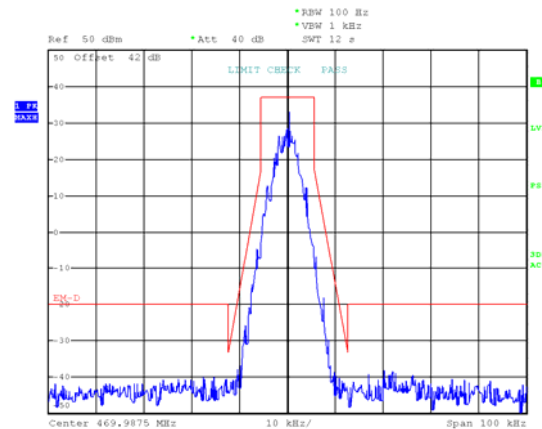
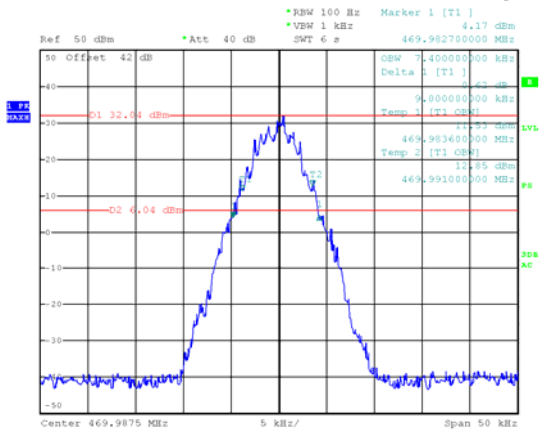
Middle Channel, 453.2125 MHz



Date: 5.JUL.2020 16:18:56

Date: 5.JUL.2020 16:39:04

High Channel, 469.9875 MHz

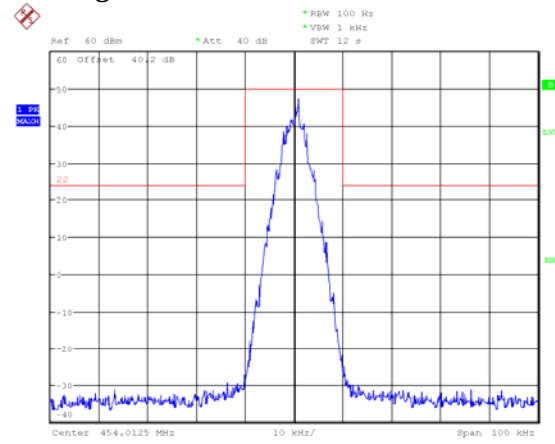
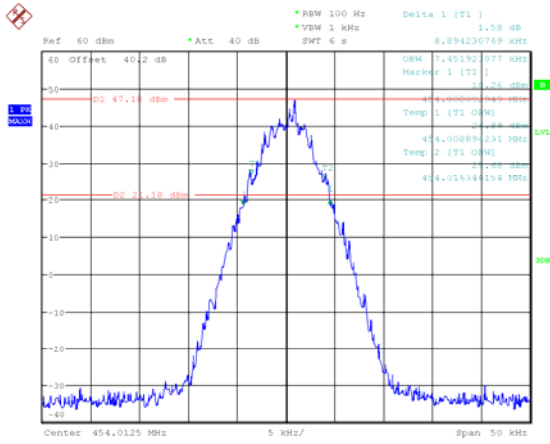


Date: 4.AUG.2020 01:11:08

Date: 4.AUG.2020 00:56:52

Additional:

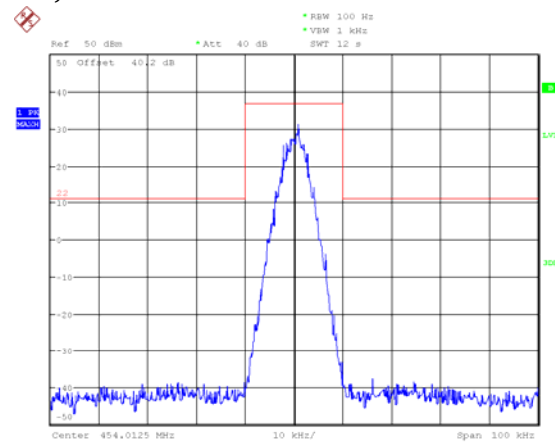
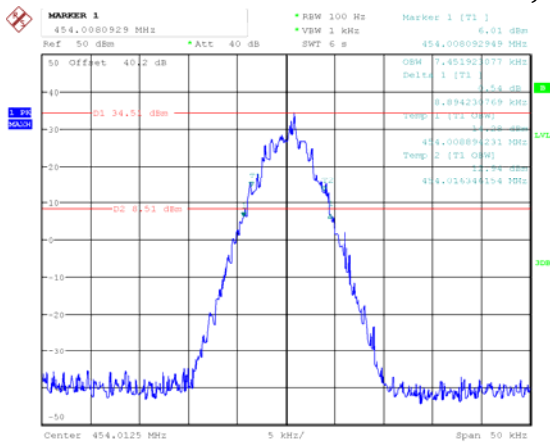
Part 22, 454.0125 MHz, High Power



Date: 5.JUL.2020 16:12:39

Date: 5.JUL.2020 16:49:00

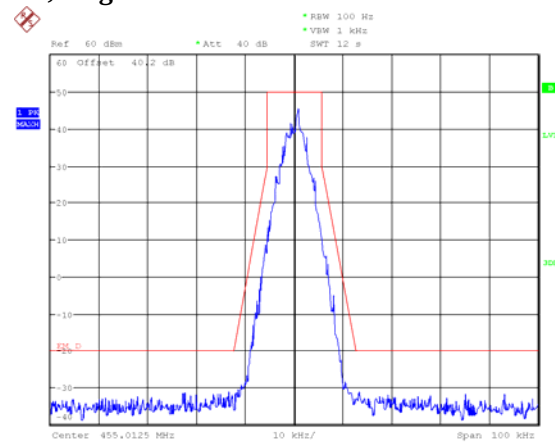
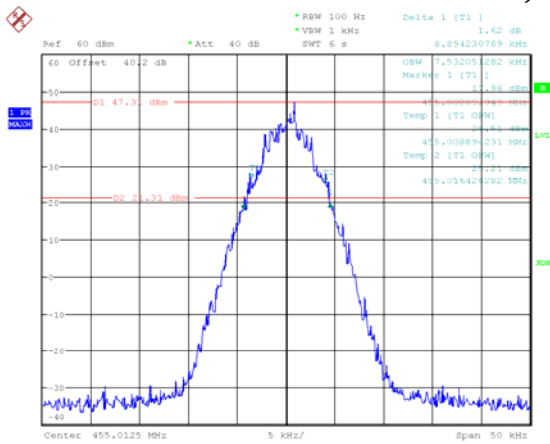
Part 22, 454.0125 MHz, Low Power



Date: 5.JUL.2020 16:14:58

Date: 5.JUL.2020 16:51:35

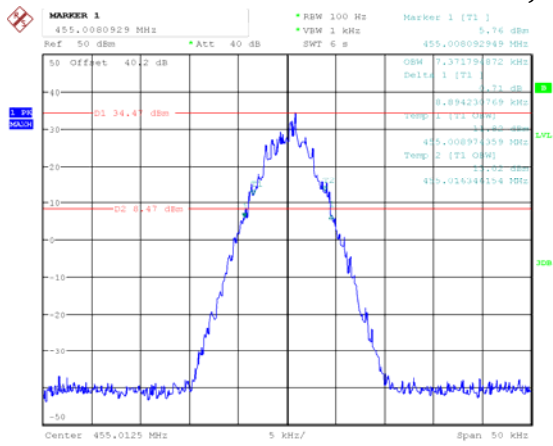
Part 74, 455.0125 MHz, High Power



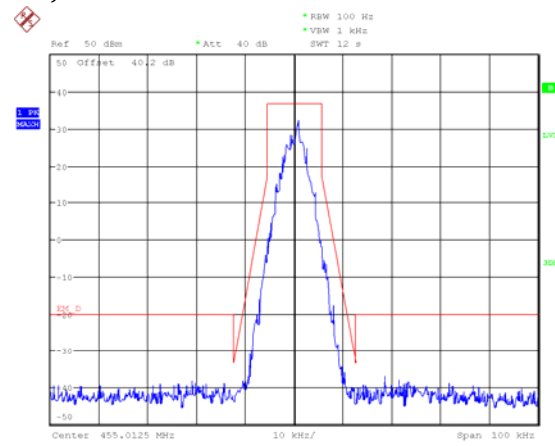
Date: 5.JUL.2020 16:07:25

Date: 5.JUL.2020 16:44:43

**Part 74, 455.0125 MHz, Low Power**



Date: 5.JUL.2020 16:04:01



Date: 5.JUL.2020 16:41:23

**FCC §2.1051 & §22.861 & §74.462 & §90.210 - SPURIOUS EMISSIONS AT ANTENNA TERMINALS**

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**Applicable Standard**

FCC §2.1051, §22.861, §74.462, and §90.210

**Test Procedure**

The RF output of the EUT was connected to a spectrum analyzer through appropriate attenuation. The resolution bandwidth of the spectrum analyzer was set at 100kHz for below 1GHz, and 1MHz for above 1GHz. Sufficient scans were taken to show any out of band emissions up to 10<sup>th</sup> harmonic.

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

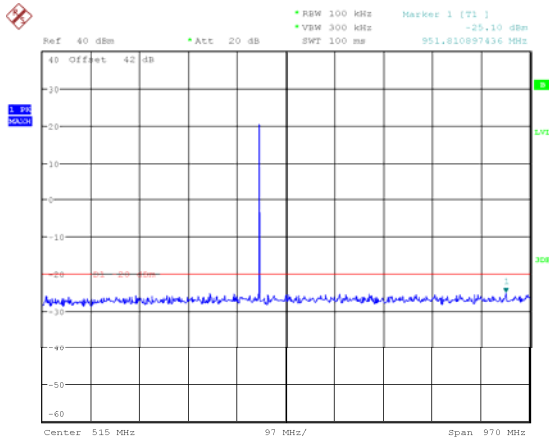
|                           |                       |
|---------------------------|-----------------------|
| <b>Temperature:</b>       | 25.3~25.6°C           |
| <b>Relative Humidity:</b> | 64~71 %               |
| <b>ATM Pressure:</b>      | 100.3~100.4kPa        |
| <b>Tester:</b>            | James Chen            |
| <b>Test Date:</b>         | 2020-08-03~2020-08-04 |

*Test Mode: Transmitting*

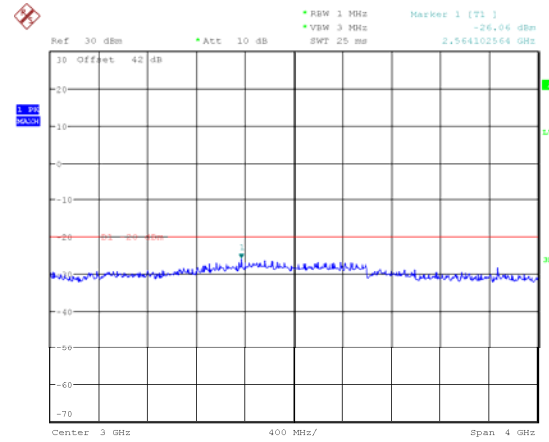
*Test Result: Compliance, test performed at high power level with Band Rejector Filter, please refer to the following plots.*

FCC part 90:

Low Channel, 406.1125 MHz

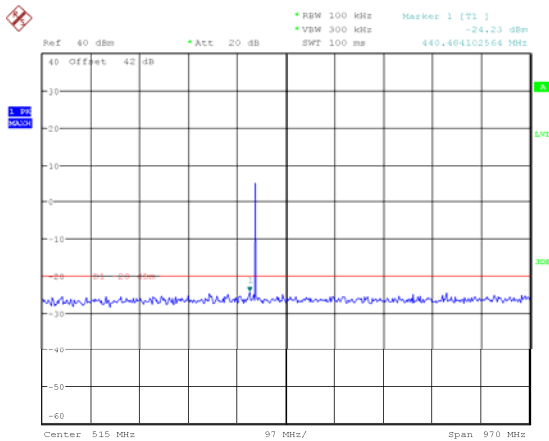


Date: 4.AUG.2020 00:47:27

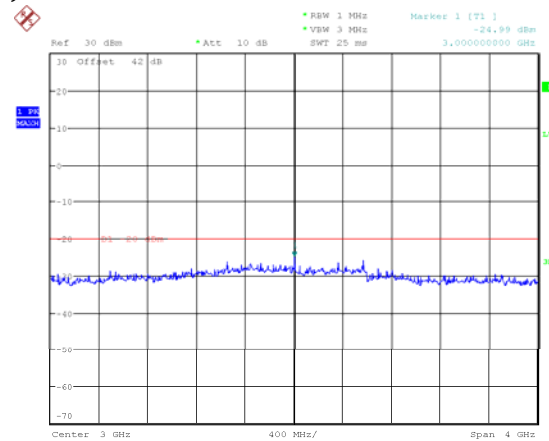


Date: 4.AUG.2020 00:47:38

Middle Channel, 453.2125 MHz

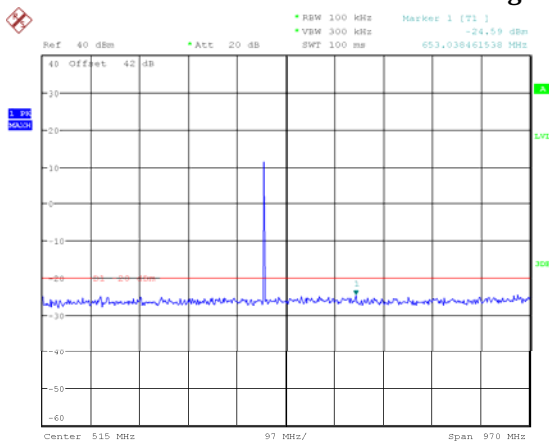


Date: 3.AUG.2020 23:06:22

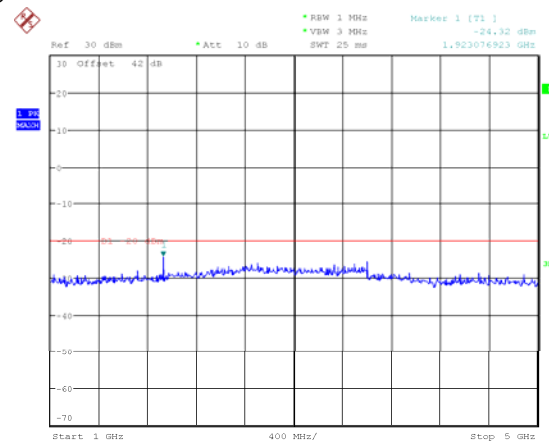


Date: 3.AUG.2020 23:06:34

High Channel, 469.9875 MHz



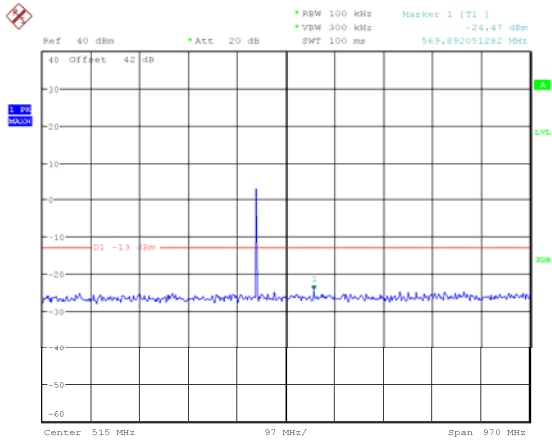
Date: 3.AUG.2020 23:41:35



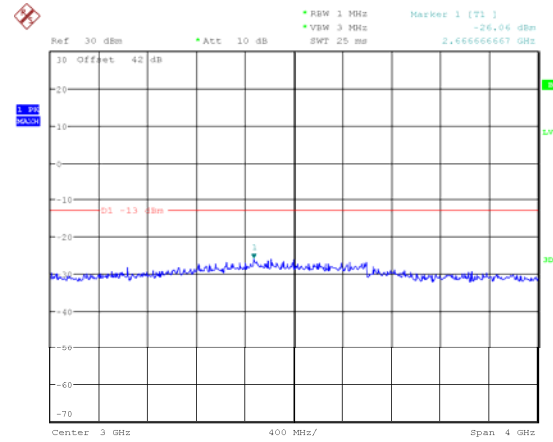
Date: 3.AUG.2020 23:41:47

**Additional:**

**Part 22, 454.0125 MHz**

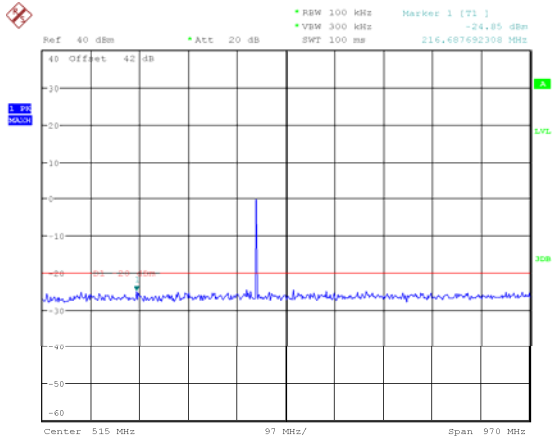


Date: 3.AUG.2020 23:15:29

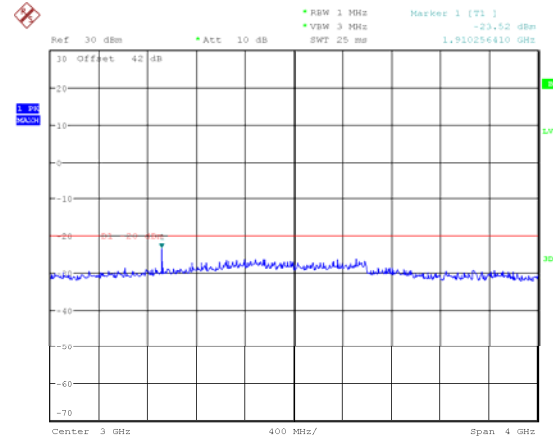


Date: 3.AUG.2020 23:15:47

**Part 74, 455.0125 MHz**



Date: 3.AUG.2020 23:12:05



Date: 3.AUG.2020 23:12:26

## FCC §2.1053 & §22.861 & §74.462 & §90.210 - RADIATED SPURIOUS EMISSIONS

### Applicable Standard

FCC §2.1053, §22.861, §74.462 and §90.210

### 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 teeth 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 (TXpwr in Watts/0.001)-the absolute level

### Test Data

#### Environmental Conditions

|                           |                       |
|---------------------------|-----------------------|
| <b>Temperature:</b>       | 23~27°C               |
| <b>Relative Humidity:</b> | 44~55 %               |
| <b>ATM Pressure:</b>      | 100.3~100.5kPa        |
| <b>Tester:</b>            | Jalon Liu & Bond Qin  |
| <b>Test Date:</b>         | 2020-06-20~2020-07-08 |

*Test Mode: Transmitting*

*Test Result: Compliance, test performed at high power level, please refer to the following table.*

**30MHz - 5GHz:**  
**Part 90**

| Frequency<br>(MHz)     | Polar<br>(H/V) | 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) |                            |                |                |
| Frequency: 406.1125MHz |                |                               |                               |                              |                       |                            |                |                |
| 812.225                | H              | 35.62                         | -62.85                        | 0.00                         | 0.94                  | -63.79                     | -20.0          | 43.79          |
| 812.225                | V              | 35.91                         | -66.10                        | 0.00                         | 0.94                  | -67.04                     | -20.0          | 47.04          |
| 979.990                | H              | 49.55                         | -44.26                        | 0.00                         | 0.80                  | -45.06                     | -20.0          | 25.06          |
| 979.990                | V              | 53.06                         | -42.19                        | 0.00                         | 0.80                  | -42.99                     | -20.0          | 22.99          |
| 1218.338               | H              | 37.38                         | -65.75                        | 7.48                         | 1.11                  | -59.38                     | -20.0          | 39.38          |
| 1218.338               | V              | 37.16                         | -67.03                        | 7.48                         | 1.11                  | -60.66                     | -20.0          | 40.66          |
| 1624.450               | H              | 37.06                         | -67.35                        | 10.27                        | 0.70                  | -57.78                     | -20.0          | 37.78          |
| 1624.450               | V              | 36.87                         | -68.14                        | 10.27                        | 0.70                  | -58.57                     | -20.0          | 38.57          |
| 2030.563               | H              | 37.32                         | -65.27                        | 11.82                        | 1.12                  | -54.57                     | -20.0          | 34.57          |
| 2030.563               | V              | 37.15                         | -65.72                        | 11.82                        | 1.12                  | -55.02                     | -20.0          | 35.02          |
| 2436.675               | H              | 37.17                         | -65.45                        | 12.59                        | 1.27                  | -54.13                     | -20.0          | 34.13          |
| 2436.675               | V              | 37.04                         | -65.71                        | 12.59                        | 1.27                  | -54.39                     | -20.0          | 34.39          |
| 3248.900               | H              | 36.92                         | -62.31                        | 13.60                        | 1.58                  | -50.29                     | -20.0          | 30.29          |
| 3248.900               | V              | 36.78                         | -62.48                        | 13.60                        | 1.58                  | -50.46                     | -20.0          | 30.46          |
| 3655.013               | H              | 36.65                         | -61.81                        | 14.04                        | 1.68                  | -49.45                     | -20.0          | 29.45          |
| 3655.013               | V              | 36.43                         | -62.02                        | 14.04                        | 1.68                  | -49.66                     | -20.0          | 29.66          |
| 4061.125               | H              | 36.51                         | -61.36                        | 13.82                        | 1.38                  | -48.92                     | -20.0          | 28.92          |
| 4061.125               | V              | 36.37                         | -61.61                        | 13.82                        | 1.38                  | -49.17                     | -20.0          | 29.17          |
| Frequency: 453.2125MHz |                |                               |                               |                              |                       |                            |                |                |
| 906.425                | H              | 35.53                         | -61.34                        | 0.00                         | 1.03                  | -62.37                     | -20.0          | 42.37          |
| 906.425                | V              | 35.18                         | -63.66                        | 0.00                         | 1.03                  | -64.69                     | -20.0          | 44.69          |
| 979.990                | H              | 49.41                         | -44.40                        | 0.00                         | 0.80                  | -45.20                     | -20.0          | 25.20          |
| 979.990                | V              | 52.92                         | -42.33                        | 0.00                         | 0.80                  | -43.13                     | -20.0          | 23.13          |
| 1359.638               | H              | 37.68                         | -65.88                        | 8.72                         | 1.20                  | -58.36                     | -20.0          | 38.36          |
| 1359.638               | V              | 37.43                         | -66.85                        | 8.72                         | 1.20                  | -59.33                     | -20.0          | 39.33          |
| 1812.850               | H              | 37.54                         | -66.56                        | 11.19                        | 0.72                  | -56.09                     | -20.0          | 36.09          |
| 1812.850               | V              | 37.32                         | -67.34                        | 11.19                        | 0.72                  | -56.87                     | -20.0          | 36.87          |
| 2266.063               | H              | 37.42                         | -64.63                        | 11.06                        | 1.20                  | -54.77                     | -20.0          | 34.77          |
| 2266.063               | V              | 37.21                         | -64.74                        | 11.06                        | 1.20                  | -54.88                     | -20.0          | 34.88          |
| 2719.275               | H              | 37.22                         | -64.69                        | 13.10                        | 1.27                  | -52.86                     | -20.0          | 32.86          |
| 2719.275               | V              | 37.09                         | -64.93                        | 13.10                        | 1.27                  | -53.10                     | -20.0          | 33.10          |
| 3625.700               | H              | 36.58                         | -62.18                        | 14.07                        | 1.58                  | -49.69                     | -20.0          | 29.69          |
| 3625.700               | V              | 36.48                         | -62.28                        | 14.07                        | 1.58                  | -49.79                     | -20.0          | 29.79          |
| 4078.913               | H              | 36.44                         | -61.55                        | 13.76                        | 1.36                  | -49.15                     | -20.0          | 29.15          |
| 4078.913               | V              | 36.31                         | -61.80                        | 13.76                        | 1.36                  | -49.40                     | -20.0          | 29.40          |
| 4532.125               | H              | 36.43                         | -60.82                        | 14.13                        | 1.64                  | -48.33                     | -20.0          | 28.33          |
| 4532.125               | V              | 36.04                         | -61.14                        | 14.13                        | 1.64                  | -48.65                     | -20.0          | 28.65          |

| Frequency<br>(MHz)     | Polar<br>(H/V) | 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) |                            |                |                |
| Frequency: 469.9875MHz |                |                               |                               |                              |                       |                            |                |                |
| 939.975                | H              | 35.37                         | -60.11                        | 0.00                         | 0.93                  | -61.04                     | -20.0          | 41.04          |
| 939.975                | V              | 35.08                         | -62.12                        | 0.00                         | 0.93                  | -63.05                     | -20.0          | 43.05          |
| 979.990                | H              | 49.41                         | -44.40                        | 0.00                         | 0.80                  | -45.20                     | -20.0          | 25.20          |
| 979.990                | V              | 52.96                         | -42.29                        | 0.00                         | 0.80                  | -43.09                     | -20.0          | 23.09          |
| 1409.963               | H              | 38.23                         | -65.31                        | 9.05                         | 1.21                  | -57.47                     | -20.0          | 37.47          |
| 1409.963               | V              | 37.87                         | -66.22                        | 9.05                         | 1.21                  | -58.38                     | -20.0          | 38.38          |
| 1879.950               | H              | 37.66                         | -65.45                        | 11.66                        | 0.95                  | -54.74                     | -20.0          | 34.74          |
| 1879.950               | V              | 37.34                         | -66.13                        | 11.66                        | 0.95                  | -55.42                     | -20.0          | 35.42          |
| 2349.938               | H              | 36.88                         | -65.42                        | 11.75                        | 1.26                  | -54.93                     | -20.0          | 34.93          |
| 2349.938               | V              | 36.28                         | -66.07                        | 11.75                        | 1.26                  | -55.58                     | -20.0          | 35.58          |
| 2819.925               | H              | 37.59                         | -63.93                        | 13.26                        | 1.36                  | -52.03                     | -20.0          | 32.03          |
| 2819.925               | V              | 37.11                         | -64.63                        | 13.26                        | 1.36                  | -52.73                     | -20.0          | 32.73          |
| 3759.900               | H              | 36.22                         | -61.42                        | 13.76                        | 1.63                  | -49.29                     | -20.0          | 29.29          |
| 3759.900               | V              | 36.09                         | -61.41                        | 13.76                        | 1.63                  | -49.28                     | -20.0          | 29.28          |
| 4229.888               | H              | 36.58                         | -61.09                        | 13.97                        | 1.35                  | -48.47                     | -20.0          | 28.47          |
| 4229.888               | V              | 36.34                         | -61.32                        | 13.97                        | 1.35                  | -48.70                     | -20.0          | 28.70          |
| 4699.875               | H              | 36.97                         | -60.26                        | 14.40                        | 1.67                  | -47.53                     | -20.0          | 27.53          |
| 4699.875               | V              | 36.74                         | -60.58                        | 14.40                        | 1.67                  | -47.85                     | -20.0          | 27.85          |

**Part 74**

| Frequency<br>(MHz)                   | Polar<br>(H/V) | 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) |                            |                |                |
| 4FSK,Frequency: 455.0125MHz-12.5 kHz |                |                               |                               |                              |                       |                            |                |                |
| 910.03                               | H              | 35.24                         | -61.48                        | 0.00                         | 1.02                  | -62.50                     | -20.0          | 42.50          |
| 910.03                               | V              | 35.01                         | -63.65                        | 0.00                         | 1.02                  | -64.67                     | -20.0          | 44.67          |
| 979.99                               | H              | 49.36                         | -44.45                        | 0.00                         | 0.80                  | -45.25                     | -20.0          | 25.25          |
| 979.99                               | V              | 52.87                         | -42.38                        | 0.00                         | 0.80                  | -43.18                     | -20.0          | 23.18          |
| 1365.04                              | H              | 37.24                         | -66.29                        | 8.76                         | 1.20                  | -58.73                     | -20.0          | 38.73          |
| 1365.04                              | V              | 37.21                         | -67.03                        | 8.76                         | 1.20                  | -59.47                     | -20.0          | 39.47          |
| 1820.05                              | H              | 37.22                         | -66.78                        | 11.24                        | 0.75                  | -56.29                     | -20.0          | 36.29          |
| 1820.05                              | V              | 37.15                         | -67.38                        | 11.24                        | 0.75                  | -56.89                     | -20.0          | 36.89          |
| 2275.06                              | H              | 37.02                         | -65.06                        | 11.10                        | 1.21                  | -55.17                     | -20.0          | 35.17          |
| 2275.06                              | V              | 37.05                         | -64.93                        | 11.10                        | 1.21                  | -55.04                     | -20.0          | 35.04          |
| 2730.08                              | H              | 36.89                         | -64.99                        | 13.10                        | 1.28                  | -53.17                     | -20.0          | 33.17          |
| 2730.08                              | V              | 36.78                         | -65.23                        | 13.10                        | 1.28                  | -53.41                     | -20.0          | 33.41          |
| 3640.10                              | H              | 36.75                         | -61.86                        | 14.06                        | 1.63                  | -49.43                     | -20.0          | 29.43          |
| 3640.10                              | V              | 36.52                         | -62.08                        | 14.06                        | 1.63                  | -49.65                     | -20.0          | 29.65          |
| 4095.11                              | H              | 36.44                         | -61.66                        | 13.71                        | 1.35                  | -49.30                     | -20.0          | 29.30          |
| 4095.11                              | V              | 36.20                         | -62.03                        | 13.71                        | 1.35                  | -49.67                     | -20.0          | 29.67          |
| 4550.13                              | H              | 36.02                         | -61.18                        | 14.15                        | 1.70                  | -48.73                     | -20.0          | 28.73          |
| 4550.13                              | V              | 35.87                         | -61.30                        | 14.15                        | 1.70                  | -48.85                     | -20.0          | 28.85          |

**Part 22**

| Frequency<br>(MHz)                   | Polar<br>(H/V) | 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) |                            |                |                |
| 4FSK,Frequency: 454.0125MHz-12.5 kHz |                |                               |                               |                              |                       |                            |                |                |
| 908.03                               | H              | 35.31                         | -61.50                        | 0.00                         | 1.03                  | -62.53                     | -13.0          | 49.53          |
| 908.03                               | V              | 35.10                         | -63.66                        | 0.00                         | 1.03                  | -64.69                     | -13.0          | 51.69          |
| 979.99                               | H              | 49.50                         | -44.31                        | 0.00                         | 0.80                  | -45.11                     | -13.0          | 32.11          |
| 979.99                               | V              | 52.97                         | -42.28                        | 0.00                         | 0.80                  | -43.08                     | -13.0          | 30.08          |
| 1362.04                              | H              | 37.33                         | -66.22                        | 8.73                         | 1.20                  | -58.69                     | -13.0          | 45.69          |
| 1362.04                              | V              | 37.02                         | -67.24                        | 8.73                         | 1.20                  | -59.71                     | -13.0          | 46.71          |
| 1816.05                              | H              | 37.18                         | -66.87                        | 11.21                        | 0.73                  | -56.39                     | -13.0          | 43.39          |
| 1816.05                              | V              | 36.69                         | -67.92                        | 11.21                        | 0.73                  | -57.44                     | -13.0          | 44.44          |
| 2270.06                              | H              | 37.02                         | -65.04                        | 11.08                        | 1.20                  | -55.16                     | -13.0          | 42.16          |
| 2270.06                              | V              | 36.70                         | -65.26                        | 11.08                        | 1.20                  | -55.38                     | -13.0          | 42.38          |
| 2724.08                              | H              | 36.95                         | -64.94                        | 13.10                        | 1.28                  | -53.12                     | -13.0          | 40.12          |
| 2724.08                              | V              | 36.58                         | -65.44                        | 13.10                        | 1.28                  | -53.62                     | -13.0          | 40.62          |
| 3632.10                              | H              | 36.92                         | -61.78                        | 14.07                        | 1.61                  | -49.32                     | -13.0          | 36.32          |
| 3632.10                              | V              | 36.40                         | -62.29                        | 14.07                        | 1.61                  | -49.83                     | -13.0          | 36.83          |
| 4086.11                              | H              | 36.52                         | -61.52                        | 13.74                        | 1.36                  | -49.14                     | -13.0          | 36.14          |
| 4086.11                              | V              | 36.23                         | -61.94                        | 13.74                        | 1.36                  | -49.56                     | -13.0          | 36.56          |
| 4540.13                              | H              | 36.32                         | -60.91                        | 14.14                        | 1.66                  | -48.43                     | -13.0          | 35.43          |
| 4540.13                              | V              | 36.02                         | -61.16                        | 14.14                        | 1.66                  | -48.68                     | -13.0          | 35.68          |

**Note:**

Absolute Level = Substituted Level - Cable loss + Antenna Gain

Margin = Limit- Absolute Level

**FCC §2.1055 & § 22.355 & §74.464 & §90.213 - FREQUENCY STABILITY****Applicable Standard**

FCC §2.1055, § 22.355, §74.464 and §90.213

**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 counter.

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

|                           |            |
|---------------------------|------------|
| <b>Temperature:</b>       | 25.6°C     |
| <b>Relative Humidity:</b> | 71 %       |
| <b>ATM Pressure:</b>      | 100.4Pa    |
| <b>Tester:</b>            | James Chen |
| <b>Test Date:</b>         | 2020-08-03 |

*Test Mode: Transmitting*

FCC Part 90:

| 4FSK, 12.5kHz, Reference Frequency: 453.2125MHz, Limit: $\pm 1.5$ ppm |                                     |                          |                       |
|-----------------------------------------------------------------------|-------------------------------------|--------------------------|-----------------------|
| Temperature (°C)                                                      | Voltage Supplied (V <sub>DC</sub> ) | Measured Frequency (MHz) | Frequency Error (ppm) |
| -30                                                                   | 28                                  | 453.2130763              | 1.27                  |
| -20                                                                   |                                     | 453.2128763              | 0.83                  |
| -10                                                                   |                                     | 453.2126763              | 0.39                  |
| 0                                                                     |                                     | 453.2128763              | 0.83                  |
| 10                                                                    |                                     | 453.2126763              | 0.39                  |
| 20                                                                    |                                     | 453.2126763              | 0.39                  |
| 30                                                                    |                                     | 453.2126763              | 0.39                  |
| 40                                                                    |                                     | 453.2122763              | -0.49                 |
| 50                                                                    |                                     | 453.2126763              | 0.39                  |
| 20                                                                    | 23.8                                | 453.2125763              | 0.17                  |
| 20                                                                    | 32.2                                | 453.2126763              | 0.39                  |

FCC Part 74:

| 4FSK, 12.5kHz, Reference Frequency: 455.0125 MHz, Limit: $\pm 2.5$ ppm |                                     |                          |                       |
|------------------------------------------------------------------------|-------------------------------------|--------------------------|-----------------------|
| Temperature (°C)                                                       | Voltage Supplied (V <sub>DC</sub> ) | Measured Frequency (MHz) | Frequency Error (ppm) |
| -30                                                                    | 28                                  | 455.0126763              | 0.39                  |
| -20                                                                    |                                     | 455.0117763              | -1.61                 |
| -10                                                                    |                                     | 455.0126763              | 0.39                  |
| 0                                                                      |                                     | 455.0123763              | -0.27                 |
| 10                                                                     |                                     | 455.0122763              | -0.50                 |
| 20                                                                     |                                     | 455.0126763              | 0.39                  |
| 30                                                                     |                                     | 455.0129763              | 1.06                  |
| 40                                                                     |                                     | 455.0126763              | 0.39                  |
| 50                                                                     |                                     | 455.0118763              | -1.39                 |
| 20                                                                     | 23.8                                | 455.0124763              | -0.05                 |
| 20                                                                     | 32.2                                | 455.0126763              | 0.39                  |

FCC Part 22:

| 4FSK, 12.5kHz, Reference Frequency: 454.0125 MHz, Limit: $\pm 2.5$ ppm |                                     |                          |                       |
|------------------------------------------------------------------------|-------------------------------------|--------------------------|-----------------------|
| Temperature (°C)                                                       | Voltage Supplied (V <sub>DC</sub> ) | Measured Frequency (MHz) | Frequency Error (ppm) |
| -30                                                                    | 28                                  | 454.0122763              | -0.49                 |
| -20                                                                    |                                     | 454.0122763              | -0.49                 |
| -10                                                                    |                                     | 454.0127763              | 0.61                  |
| 0                                                                      |                                     | 454.0126763              | 0.39                  |
| 10                                                                     |                                     | 454.0122763              | -0.49                 |
| 20                                                                     |                                     | 454.0126763              | 0.39                  |
| 30                                                                     |                                     | 454.0123763              | -0.27                 |
| 40                                                                     |                                     | 454.0126763              | 0.39                  |
| 50                                                                     |                                     | 454.0124763              | -0.05                 |
| 20                                                                     | 23.8                                | 454.0122763              | -0.49                 |
| 20                                                                     | 32.2                                | 454.0126763              | 0.39                  |

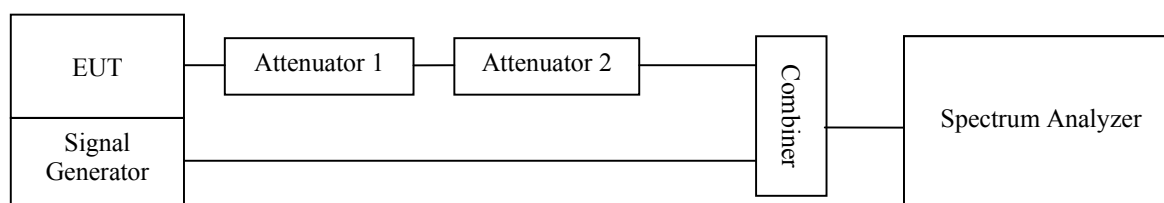
## FCC §90.214 - TRANSIENT FREQUENCY BEHAVIOR

### Applicable Standard

Regulations: FCC §90.214

### Test Procedure

- Connect the EUT and test equipment as shown on the following block diagram.
- Set the Spectrum Analyzer to measure FM deviation, and tune the RF frequency to the transmitter assigned frequency.
- Set the signal generator to the assigned transmitter frequency and modulate it with a 1 kHz tone at  $\pm 12.5$  kHz deviation and set its output level to -100dBm.
- Turn on the transmitter.
- Supply sufficient attenuation via the RF attenuator to provide an input level to the Spectrum Analyzer that is 40 dB below the maximum allowed input power when the transmitter is operating at its rated power level. Note this power level on the Spectrum Analyzer as  $P_0$ .
- Turn off the transmitter.
- Adjust the RF level of the signal generator to provide RF power equal to  $P_0$ . This signal generator RF level shall be maintained throughout the rest of the measurement.
- Remove the attenuation 1, so the input power to the Spectrum Analyzer is increased by 30 dB when the transmitter is turned on.
- Adjust the vertical amplitude control of the spectrum analyzer to display the 1000 Hz at  $\pm 4$  divisions vertically centered on the display. Set trigger mode of the Spectrum Analyzer to "Video", and tune the "trigger level" on suitable level. Then set the "trigger offset" to -10ms for turn on and -15ms for turn off.
- Turn on the transmitter and the transient wave will be captured on the screen of Spectrum Analyzer. Observe the stored display. The instant when the 1 kHz test signal is completely suppressed is considered to be  $t_{on}$ . The trace should be maintained within the allowed divisions during the period  $t_1$  and  $t_2$ .
- Then turn off the transmitter, and another transient wave will be captured on the screen of Spectrum Analyzer. The trace should be maintained within the allowed divisions during the period  $t_3$ .



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

|                           |            |
|---------------------------|------------|
| <b>Temperature:</b>       | 29.4℃      |
| <b>Relative Humidity:</b> | 50 %       |
| <b>ATM Pressure:</b>      | 100.9kPa   |
| <b>Tester:</b>            | James Chen |
| <b>Test Date:</b>         | 2020-07-24 |

| <b>Channel Spacing<br/>(kHz)</b> | <b>Transient Period<br/>(ms)</b> | <b>Transient Frequency</b> | <b>Result</b> |
|----------------------------------|----------------------------------|----------------------------|---------------|
| 12.5                             | <10(t <sub>1</sub> )             | ±12.5 kHz                  | Pass          |
|                                  | <25(t <sub>2</sub> )             | ±6.25 kHz                  |               |
|                                  | <10(t <sub>3</sub> )             | ±12.5 kHz                  |               |

Please refer to the following plots.

**Turn on**

