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|---|--|
|  |     <p style="font-size: small;">MS ISO/IEC 17025<br/>TESTING<br/>SAMM NO. 0825</p> |
|---|--|

**MOTOROLA PENANG ADV. COMM. LABORATORY**  
 Motorola Solutions Malaysia SDN BHD,  
 Plot 2A, Medan Bayan Lepas,  
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 Penang, Malaysia.

**FCC/ISED TEST REPORT**  
**Report Revision : Rev.B**

|  |   |  |                    |
|--|---|--|--------------------|
| <p><b>Date/s Tested</b> : 16-DEC-2020 - 22-DEC-2020<br/> <b>Report Issue Date</b> : 21-JAN-2021<br/> <b>Manufacturer</b> : Motorola Solutions Malaysia SDN BHD<br/> <b>Manufacturer Address</b> : Plot 2A, Medan Bayan Lepas, Mukim 12 SWD,<br/>                 11900 Bayan Lepas, Penang, Malaysia<br/> <b>Requestor</b> : Mohamad Shafiq Hanif Bin Ab Wahid<br/> <b>Product Type</b> : Mobile<br/> <b>Product Version (PMN)</b> : XPR 5550e<br/> <b>Model Number (HVIN)</b> : AAM28QNN9RA1AN (PMUE3645C) (IC MODEL:<br/>                 PMUE3645CBMNA)<br/> <b>Frequency Band</b> : 403-470MHz<br/> <b>Max RF Output Power</b> : 30 Watts<br/> <b>Applicant Name</b> : Motorola Solutions Inc<br/> <b>Applicant Address</b> : 8000 West Sunrise Boulevard,<br/>                 Fort Lauderdale, Florida 33322<br/> <b>ISED Registrations</b> : MY0001<br/> <b>FCC Registrations</b> : 461337<br/> <b>Firmware Version (FVIN)</b> : R02.20.02.0002</p> |  |  |                    |
| <p><b>The equipment was tested accordance to the requirement listed below:</b></p> <table style="width: 100%; border: none;"> <tr> <td style="width: 60%;"> <p>(LMR )<br/>                     FCC 47 CFR Part 2 / 22 / 74 / 80 / 90<br/>                     ISED RSS- Gen Issue 5 / 119 Issue 12</p> </td> <td style="width: 40%; text-align: center; vertical-align: middle;"> <p><b>PASS</b></p> </td> </tr> </table>  |   | <p>(LMR )<br/>                     FCC 47 CFR Part 2 / 22 / 74 / 80 / 90<br/>                     ISED RSS- Gen Issue 5 / 119 Issue 12</p> | <p><b>PASS</b></p> |
| <p>(LMR )<br/>                     FCC 47 CFR Part 2 / 22 / 74 / 80 / 90<br/>                     ISED RSS- Gen Issue 5 / 119 Issue 12</p>   | <p><b>PASS</b></p>  |  |                    |

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|  |   |
|--|---|
| <p>Prepared By:</p> <div style="text-align: center; margin-top: 20px;"> <br/> <hr style="width: 200px; margin: 0 auto;"/> <p><b>Putri Nur Sarah Sofia</b><br/> <b>Test Personnel</b></p> </div> | <p>Approved Signatory:</p> <div style="text-align: center; margin-top: 20px;"> <br/> <hr style="width: 200px; margin: 0 auto;"/> <p><b>Vincent Foong Chuen Kit</b><br/> <b>Responsible Engineer</b></p> </div> |
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# Table of Contents

|  |    |
|--|----|
| Report Revision History .....                              | 3  |
| 1.0 General Information.....                               | 4  |
| 2.0 Summary of Test Results .....                          | 5  |
| 3.0 Measurement Uncertainty.....                           | 6  |
| 4.0 Equipment List.....                                    | 7  |
| 5.0 Test Condition.....                                    | 10 |
| 5.1. Transmitter Test Conditions .....                     | 10 |
| 6.0 Transmitter Test Parameters .....                      | 11 |
| 6.1. RF Output Power .....                                 | 11 |
| 6.1.1. Test Setup.....                                     | 11 |
| 6.1.2. Test Result .....                                   | 11 |
| 6.2. Frequency Stability .....                             | 12 |
| 6.2.1. Test Setup.....                                     | 12 |
| 6.2.2. Test Result .....                                   | 13 |
| 6.2.3. Test Limit.....                                     | 14 |
| 6.3. Audio Frequency Response .....                        | 15 |
| 6.3.1. Test Setup.....                                     | 15 |
| 6.3.2. Test Result .....                                   | 16 |
| 6.3.3. Test Limit.....                                     | 18 |
| 6.4. Audio Low Pass Filter Response .....                  | 19 |
| 6.4.1. Test Setup.....                                     | 19 |
| 6.4.2. Test Result .....                                   | 20 |
| 6.4.3. Test Limit.....                                     | 22 |
| 6.5. Modulation Limiting .....                             | 23 |
| 6.5.1. Test Setup.....                                     | 23 |
| 6.5.2. Test Result .....                                   | 24 |
| 6.5.3. Test Limit.....                                     | 25 |
| 6.6. Occupied Bandwidth.....                               | 26 |
| 6.6.1. Test Setup (Analog) .....                           | 26 |
| 6.6.2. Test Result (Analog).....                           | 27 |
| 6.6.3. Test Setup (Digital).....                           | 32 |
| 6.6.4. Test Result (Digital).....                          | 33 |
| 6.6.5. Test Limit.....                                     | 39 |
| 6.7. Band Edge Conducted Spurious Emission (Part 22) ..... | 40 |
| 6.7.1. Test Setup (Analog) .....                           | 40 |
| 6.7.2. Test Result (Analog).....                           | 41 |
| 6.7.3. Test Setup (Digital).....                           | 43 |
| 6.7.4. Test Result (Digital).....                          | 44 |
| 6.7.5. Test Limit.....                                     | 45 |
| 6.8. Transient Frequency Behavior .....                    | 46 |
| 6.8.1. Test Setup.....                                     | 46 |
| 6.8.2. Test Result .....                                   | 47 |
| 6.8.3. Test Limit.....                                     | 49 |

6.9. Adjacent Channel Power..... 50

6.9.1. Test Setup (Analog) ..... 50

6.9.2. Test Result ..... 50

6.9.3. Test Setup (Digital)..... 51

6.9.4. Test Result ..... 51

6.9.5. Test Limit..... 52

6.10. Conducted Spurious Emission ..... 54

6.10.1. Test Setup..... 54

6.10.2. Test Result (Analog)..... 55

6.10.3. Test Result (Digital)..... 67

6.10.4. Test Limit..... 78

6.11. Radiated Spurious Emission ..... 80

6.11.1. Test Setup..... 80

6.11.2. Test Result (Analog)..... 81

6.11.3. Test Result (Digital)..... 81

6.11.4. Test Limit..... 105

6.12. Effective Radiated Power (ERP) ..... 106

6.12.1. Test Setup..... 106

6.12.2. Test Result ..... 107

6.12.3. Test Limit..... 107

6.13. GNSS (EIRP for 1559 - 1610MHz)..... 108

6.13.1. Test Setup..... 108

6.13.1. Test Result ..... 109

6.13.2. Test Limit..... 109

**Report Revision History**

| <b>Revision History</b> | <b>Description</b>   | <b>Date</b> | <b>Originator</b>     |
|-------------------------|----------------------|-------------|-----------------------|
| Rev. A                  | Initial Report       | 22-DEC-2020 | Putri Nur Sarah Sofia |
| Rev. B                  | Update Part 80 power | 19-Mar-2021 | Putri Nur Sarah Sofia |

## 1.0 General Information

### EUT Description:

|                        |                         |
|------------------------|-------------------------|
| <b>Technologies</b>    | Land Mobile Radio (LMR) |
| <b>Modulation Type</b> | Analog, 4FSK            |

The EUT contains following accessory devices and data cable:

| <b>Item</b>   | <b>Brand</b> | <b>Model or P/N</b> |
|---|--------------|---------------------|
| POWER CABLE TO BATTERY, 6M (20 FT.), 20 AMP (1- 45W)          | MOTOROLA     | HKN4192B            |
| 13 WATT EXTERNAL SPEAKER                                      | MOTOROLA     | RSN4002A            |
| IMPRES 4-WAY NAVIGATION KEYPAD MICROPHONE WITH ENHANCED AUDIO | MOTOROLA     | RMN5127C            |

### General Description of Applied Standards

The EUT is a RF Product. According to the specifications of the manufacturer, the EUT is to comply with the requirements of the following standards:

**ANSI C63.4-2014**

**ANSI C63.26-2015**

No modifications were done to the UUT to facilitate the tests in this report.

### Deviation from standard

Not applicable as no deviation from standard test method

### Selection of test modes

Some reports may contain a limited number of test points/modes, in which case all channels and modulations were evaluated and the worst case performance is presented in the report

### Generic Option Board

All radiated tests are performed with the generic option board activated in the EUT.

## 2.0 Summary of Test Results

| FCC General Rules Part (47CFR)                     | ISED General Rules Part | Test Item                             | Result | Remarks  | Serial number tested |
|--|-------------------------|---------------------------------------|--------|--|----------------------|
| 2.1046, 22.565, 74.461, 74.534, 80.215             | RSS-119                 | RF Power Output                       | Pass   |  | 511TWX2279           |
| 2.1055, 90.213, 22.355                             | RSS-119                 | Frequency Stability                   | Pass   |  | 511TWX2279           |
| 2.1047, 74.463, 80.213                             | RSS-119                 | Audio Frequency Response              | Pass   |  | 511TWX2279           |
| 2.1047, 74.463, 80.213                             | RSS-119                 | Audio Low Pass Filter Response        | Pass   |  | 511TWX2279           |
| 2.1047, 74.463, 80.213                             | RSS-119                 | Modulation limiting                   | Pass   |  | 511TWX2279           |
| 74.462(c), 80.211(f), 90.210, 80.211(c), 22.359(b) | RSS-119                 | Occupied Bandwidth                    | Pass   | 16K0F3E- 15.0203 KHz<br>11K0F3E- 9.8530KHz<br>7K60F1D/FXD- 7.4225KHz<br>7K60F1E/FXE- 7.2937KHz<br>7K60F1W- 7.4053KHz | 511TWX2279           |
| 2.1051, 22.359 (a), (b)                            | RSS-119                 | Band Edge Conducted Spurious Emission | Pass   |  | 511TWX2279           |
| 90.214   | RSS-119                 | Transient Frequency Behavior          | Pass   |  | 511TWX2279           |
| -  | -                       | Adjacent Channel Power                | NA     |  |                      |
| 2.1051, 22.359, 90.210, 74.462(c), 80.211(c)       | RSS-119                 | Conducted Spurious Emissions          | Pass   | Highest spur: -37.52dBm  | 511TWX2279           |
| 2.1051, 22.359, 74.462(c), 80.211(c)               | RSS-119                 | Radiated Spurious Emission            | Pass   | Highest spur: -51.32dBm  | 511TWX2291           |
| -  | -                       | GNSS (EIRP for 1559 – 1610MHz)        | NA     |  |                      |
| 80.215(e)  | -                       | Effective Radiated Power (ERP)        | Pass   |  |                      |

**NA → Not Applicable**

### 3.0 Measurement Uncertainty

| Measurement  | Frequency           | Expanded Uncertainty<br>(k=1.96) (±) |
|--|---------------------|--------------------------------------|
| AC Power Line Conducted Spurious Emission              | 150KHz ~ 30MHz      | 3.43 dB                              |
| Radiated Emissions up to 1 GHz                         | 30MHz ~ 200MHz      | 4.25 dB                              |
|  | 200MHz ~<br>1000MHz | 4.25 dB                              |
| Radiated Emissions above 1 GHz                         | 1GHz ~ 18GHz        | 4.94 dB                              |
|  | 18GHz ~ 25GHz       | 4.94 dB                              |
| Conducted Spurious Emissions                           | 9kHz ~ 12.75GHz     | 2.82 dB                              |
| Frequency Stability                                    | 9kHz ~ 12.75GHz     | 0.0085 ppm                           |
| Audio Frequency Response / Low Pass Filter<br>Response | 300Hz – 20kHz       | 4.09 %                               |
| Modulation Limiting                                    | 300Hz – 3kHz        | 1.15 %                               |
| Occupied Bandwidth                                     | 9kHz ~ 12.75GHz     | 2.82 dB                              |
| Band Edge Conducted Spurious Emission                  | 9kHz ~ 12.75GHz     | 2.82 dB                              |
| Transient Frequency Behavior                           | 9kHz ~ 12.75GHz     | 5.4 ms                               |
| Adjacent Channel Power                                 | 9kHz ~ 12.75GHz     | 2.82 dB                              |

#### 4.0 Equipment List

##### FCC Analog ATE#1: (SW version: 2.4.6 & FCC\_Frequency Stability 1.0.3 rev.)

| Description                 | Model         | Serial Number | Calibration Date | Calibration Due Date |
|-----------------------------|---------------|---------------|------------------|----------------------|
| CHAMBER                     | SH-641        | 92009188      | 06-Mar-20        | 06-Mar-21            |
| DSA Dynamic Signal Analyzer | 35670A        | MY42507095    | 19-Jun-20        | 19-Jun-21            |
| ANALYZER AUDIO              | 8903B         | 3514A15797    | 29-Oct-20        | 29-Oct-21            |
| POWER METER                 | E4416A        | MY45102699    | 26-Jun-20        | 26-Jun-21            |
| POWER SENSOR                | E9301B        | MY41498918    | 12-Aug-20        | 12-Aug-21            |
| POWER SUPPLY                | 6031A         | 3325A02771    | 13-Mar-20        | 13-Mar-21            |
| SIGNAL GENERATOR            | 2042          | 119718/063    | 24-Jun-20        | 24-Jun-21            |
| ANALYZER MODULATION         | 8901B         | 3122A03662    | 08-Jul-20        | 08-Jul-21            |
| N to N RF Cable # 1         | M17/128-RG400 | NA            | NA               | NA                   |
| BNC to N RF Cable # 1       | RG 58         | NA            | NA               | NA                   |
| BNC to BNC RF Cable # 1     | RG 58         | NA            | NA               | NA                   |
| BNC to BNC RF Cable # 2     | RG 58         | NA            | NA               | NA                   |
| BNC to BNC RF Cable # 3     | RG 58         | NA            | NA               | NA                   |
| BNC to BNC RF Cable # 4     | RG 58         | NA            | NA               | NA                   |
| BNC to BNC RF Cable # 5     | RG 58         | NA            | NA               | NA                   |
| BNC to BNC RF Cable # 6     | RG 58         | NA            | NA               | NA                   |
| BNC to BNC RF Cable # 7     | RG 58         | NA            | NA               | NA                   |
| N to SMA RF Cable # 1       | RG 58         | NA            | NA               | NA                   |
| N to SMA RF Cable # 2       | RG 58         | NA            | NA               | NA                   |
| N to SMA RF Cable # 3       | RG 58         | NA            | NA               | NA                   |
| Aeroflex Attenuator 30dB    | 49-30-34-LIM  | NA            | NA               | NA                   |

**FCC Transient ATE #1: (SW version: FCC Transient ATE\_R1.1.3)**

| Description                | Model         | Serial Number | Calibration Date | Calibration Due Date |
|----------------------------|---------------|---------------|------------------|----------------------|
| SWITCH CONTROL UNIT        | 3488A         | 2719A36210    | CNR              | CNR                  |
| ATTENUATOR / SWITCH DRIVER | 11713A        | 2508A10141    | CNR              | CNR                  |
| POWER METER                | E4416A        | GB41293866    | 26-Feb-19        | 26-Feb-21            |
| POWER SUPPLY               | 6032A         | MY41002067    | 22-Feb-20        | 22-Feb-21            |
| SIGNAL GENERATOR           | 8657A         | 3250A05137    | 19-Jun-20        | 19-Jun-21            |
| STEP ATTENUATOR            | 8494G         | MY42143006    | 12-Jun-20        | 12-Jun-21            |
| STEP ATTENUATOR            | 8496G         | MY42143012    | 13-Jun-20        | 13-Jun-21            |
| OSCILLOSCOPE               | MSO8104A      | MY45002372    | 26-Jun-20        | 26-Jun-21            |
| ANALYZER MODULATION        | 8901B         | 3438A05093    | 23-Jun-20        | 23-Jun-21            |
| ANALYZER AUDIO             | 8903B         | 3011A12671    | 11-Mar-20        | 11-Mar-21            |
| ANALYZER AUDIO             | 8903B         | 3011A08952    | 29-Jul-20        | 29-Jul-21            |
| SPECTRUM ANALYZER          | E4440A        | MY46181974    | 2-Aug-20         | 2-Aug-21             |
| N to N RF Cable # 1        | SF126/11N/11N | NA            | NA               | NA                   |
| N to N RF Cable # 2        | M17/128-RG400 | NA            | NA               | NA                   |
| N to N RF Cable # 3        | M17/128-RG400 | NA            | NA               | NA                   |
| N to N RF Cable # 4        | M17/128-RG400 | NA            | NA               | NA                   |
| N to N RF Cable # 5        | M17/128-RG400 | NA            | NA               | NA                   |
| N to N RF Cable # 6        | M17/128-RG400 | NA            | NA               | NA                   |
| N to N RF Cable # 7        | M17/128-RG400 | NA            | NA               | NA                   |
| N to N RF Cable # 8        | M17/128-RG400 | NA            | NA               | NA                   |
| N to N RF Cable # 9        | M17/128-RG400 | NA            | NA               | NA                   |
| BNC to BNC RF Cable # 1    | RG 58         | NA            | NA               | NA                   |
| BNC to BNC RF Cable # 2    | RG 58         | NA            | NA               | NA                   |
| BNC to BNC RF Cable # 3    | RG 58         | NA            | NA               | NA                   |
| BNC to BNC RF Cable # 4    | RG 58         | NA            | NA               | NA                   |
| BNC to BNC RF Cable # 5    | RG 58         | NA            | NA               | NA                   |
| BNC to BNC RF Cable # 6    | RG 58         | NA            | NA               | NA                   |
| BNC to N RF Cable # 1      | RG 58         | NA            | NA               | NA                   |
| Aeroflex Attenuator 10dB   | 49-10-43-LIM  | NA            | NA               | NA                   |
| Aeroflex Attenuator 10dB   | 33-10-34-LIM  | NA            | NA               | NA                   |
| SWITCH CONTROL UNIT        | 3488A         | 2719A36210    | CNR              | CNR                  |



**CONDUCTED SPUR EMISSION ATE # 1 (SW version: Conducted Spur ATE\_rev 1.23.03)**

| Description                 | Model         | Serial Number | Calibration Date | Calibration Due Date |
|-----------------------------|---------------|---------------|------------------|----------------------|
| SWITCH CONTROL UNIT         | 3488A         | 2719A32735    | CNR              | CNR                  |
| ANALYZER SPECTRUM           | E4440A        | MY46185415    | 10-Jan-20        | 10-Jan-22            |
| POWER SUPPLY                | 6031A         | 3543A03489    | 05-Jun-20        | 05-Jun-21            |
| HIGH PASS FILTER SWITCH BOX | -             | CS001         | 2-Jul-20         | 2-Jul-21             |
| N to N RF Cable # 1         | SF126/11N/11N | NA            | NA               | NA                   |
| N to N RF Cable # 2         | SF126/11N/11N | NA            | NA               | NA                   |
| BNC to BNC RF Cable # 1     | RG 58         | NA            | NA               | NA                   |
| Aeroflex Attenuator 30dB    | 49-30-43-LIM  | NA            | NA               | NA                   |
| Aeroflex Attenuator 10dB    | 33-10-34-LIM  | NA            | NA               | NA                   |

**EMC Chamber 1**

| DESCRIPTION               | MODEL                        | SERIAL NUMBER | CALIBRATION DATE | CALIBRATION DUE DATE |
|---------------------------|------------------------------|---------------|------------------|----------------------|
| DRG HORN FREQ.            | SAS-571                      | 720           | 21-Mar-19        | 21-Mar-21            |
| DRG HORN FREQ.            | SAS-571                      | 1143          | 14-Feb-19        | 14-Feb-21            |
| POWER SUPPLY              | 6032A                        | 2615A01178    | 21-May-20        | 21-May-21            |
| SIGNAL GENERATOR          | SMB 100A                     | 181117        | 8-Nov-18         | 8-Nov-21             |
| EMI TEST RECEIVER         | ESW44                        | 101731        | 3-Dec-19         | 3-Feb-21             |
| EMI TEST RECEIVER         | ESIB26                       | 100017        | 19-Jul-19        | 19-Jan-21            |
| 5m SEMI-ANECHOIC CHAMBER  | S800-HX                      | J2308         | No Cal. Req'd    | No Cal. Req'd        |
| BILOG ANTENNA             | CBL6112B                     | 2964          | 23-Apr-19        | 23-Apr-21            |
| BILOG ANTENNA             | CBL6112B                     | 2950          | 8-Jul-19         | 8-Jul-21             |
| DATA LOGGER               | SDL500                       | A.016776      | 4-Jun-20         | 4-Jun-21             |
| SYSTEM CONTROLLER         | SC104V                       | 050806-1      | CNR              | CNR                  |
| TURNTABLE FLUSH MOUNT 2M  | FM2011                       | NA            | CNR              | CNR                  |
| ANTENNA POSITIONING TOWER | TLT2                         | NA            | CNR              | CNR                  |
| BROAD-BAND HORN ANTENNA   | BBHA9170                     | BBHA9170255   | 27-Jan-20        | 27-Jan-21            |
| 18 - 40GHz PREAMPLIFIER   | MITEQ Hi GAIN SUCOFLEX       | 001           | CNR              | CNR                  |
| PREAMPLIFIER              | PAM-0118                     | 269           | 24-May-19        | 24-May-22            |
| LOOP ANTENNA              | 6502                         | 00203479      | 21-Jan-20        | 21-Jan-21            |
| TEST SOFTWARE             | EMC_FCC_IC_BLUETOOTH_RE_TEST |               |                  |                      |
| VERSION                   | EMC_FCC_RE_v1.6.2            |               |                  |                      |

## 5.0 Test Condition

### 5.1. Transmitter Test Conditions

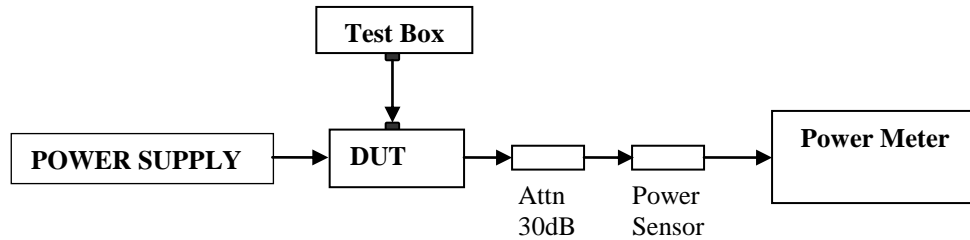
| Test Item,<br>(Channel Spacing)  | Power<br>(W) | Modulation      | Test Frequency<br>(MHz)  | Tested By        | Environmental<br>conditions                                     |
|--|--------------|-----------------|--|------------------|---|
| RF Output Power  | Low &<br>Max | Analog          | 403.0125, 406.2,<br>450.025,<br>459.125,<br>467.775,<br>469.9875 | Putri            | 23.4°C,<br>50%RH  |
| Frequency Stability  | Max          | Analog          | 467.775  | Putri            | 25.1°C,<br>54.3%RH,<br>60.3°C,<br>50%RH,<br>-30.1°C,<br>51.2%RH |
| Audio Frequency Response<br>(12.5kHz / 25kHz)                                    | Max          | Analog          | 467.775, 459.125   | Putri            | 23.4°C,<br>50%RH  |
| Audio Low Pass Filter Response<br>(12.5kHz / 25kHz)                              | Max          | Analog          | 467.775, 459.125   | Putri            | 23.4°C,<br>50%RH  |
| Modulation limiting<br>(12.5kHz / 25kHz)   | Max          | Analog          | 467.775, 459.125   | Putri            | 23.4°C,<br>50%RH  |
| Occupied Bandwidth<br>(12.5kHz / 20kHz / 25kHz)                                  | Max          | Analog,<br>4FSK | 406.2, 450.025,<br>467.775,<br>469.9875,<br>459.125              | Putri            | 23.4°C,<br>50%RH  |
| Band Edge Conducted Spurious<br>Emissions (Part 22)<br>(12.5kHz / 20kHz / 25kHz) | Low /<br>Max | Analog,<br>4FSK | 459.025, 459.65,<br>473.0125,<br>479.2875                        | Putri            | 23.4°C,<br>50%RH  |
| Transient Frequency Behavior<br>(UHF & VHF Band)<br>(12.5kHz / 25kHz)            | Max          | Analog          | 467.775  | Putri            | 23.4°C,<br>50%RH  |
| Adjacent Channel Power<br>(700MHz Band)<br>(12.5kHz / 25kHz)                     | Max          | NA              | NA   |                  |   |
| Conducted Spurious Emissions-<br>(12.5kHz / 25kHz)                               | Low /<br>Max | Analog,<br>4FSK | 403.0125, 406.2,<br>450.025,<br>459.125,<br>467.775,<br>469.9875 | Putri            | 23.4°C,<br>50%RH  |
| Radiated Spurious Emission<br>(12.5kHz / 25kHz)                                  | Low /<br>Max | Analog,<br>4FSK | 403.0125, 406.2,<br>450.025,<br>459.125,<br>467.775,<br>469.9875 | Nazrin&Amaluddin | 23.6°C,<br>67%RH  |
| GNSS (EIRP for 1559 - 1610MHz)<br>(12.5kHz / 25kHz)                              | Max          | NA              | 467.775  | Nazrin&Amaluddin | 23.6°C,<br>67%RH  |
| Effective Radiated Power (ERP)<br>(12.5kHz / 25kHz)                              | Max          | NA              | NA   |                  |   |

NA → Not Applicable

## 6.0 Transmitter Test Parameters

### 6.1. RF Output Power

#### 6.1.1. Test Setup



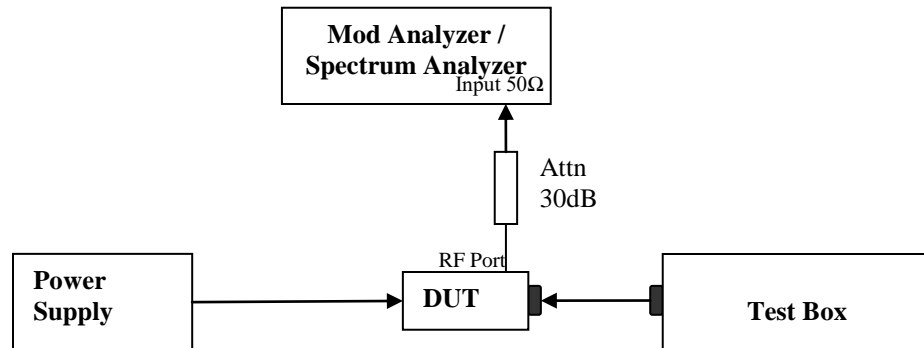
- 1) The DUT transmitter connected to Power Meter using the 30 dB attenuator and power sensor with above setup.
- 2) Path loss for the measurement included.
- 3) All the measurement was done at low, mid, high frequency for each band.
- 4) Record the power into the test report.

#### 6.1.2. Test Result

| Temperature     | 25°C          |             |               |             | Remark                                 |
|-----------------|---------------|-------------|---------------|-------------|--|
| Voltage (V)     | 13.6V         |             |               |             |  |
| Frequency (MHz) | Low Power (W) | Current (A) | Max Power (W) | Current (A) |  |
| 403.01250       | 0.98          | 1.50        | 29.70         | 5.10        | Not for FCC review<br><br>Part 80 (2W) |
| 406.20000       | 0.99          | 1.50        | 29.70         | 5.13        |  |
| 450.02500       | 0.99          | 1.53        | 30.00         | 5.61        |  |
| 459.12500       | 1.01          | 1.56        | 30.00         | 5.64        |  |
| 467.77500       | 1.01          | 1.56        | 2.00          | 1.91        |  |
| 469.98750       | 1.00          | 1.56        | 30.00         | 5.52        |  |

## 6.2. Frequency Stability

### 6.2.1. Test Setup

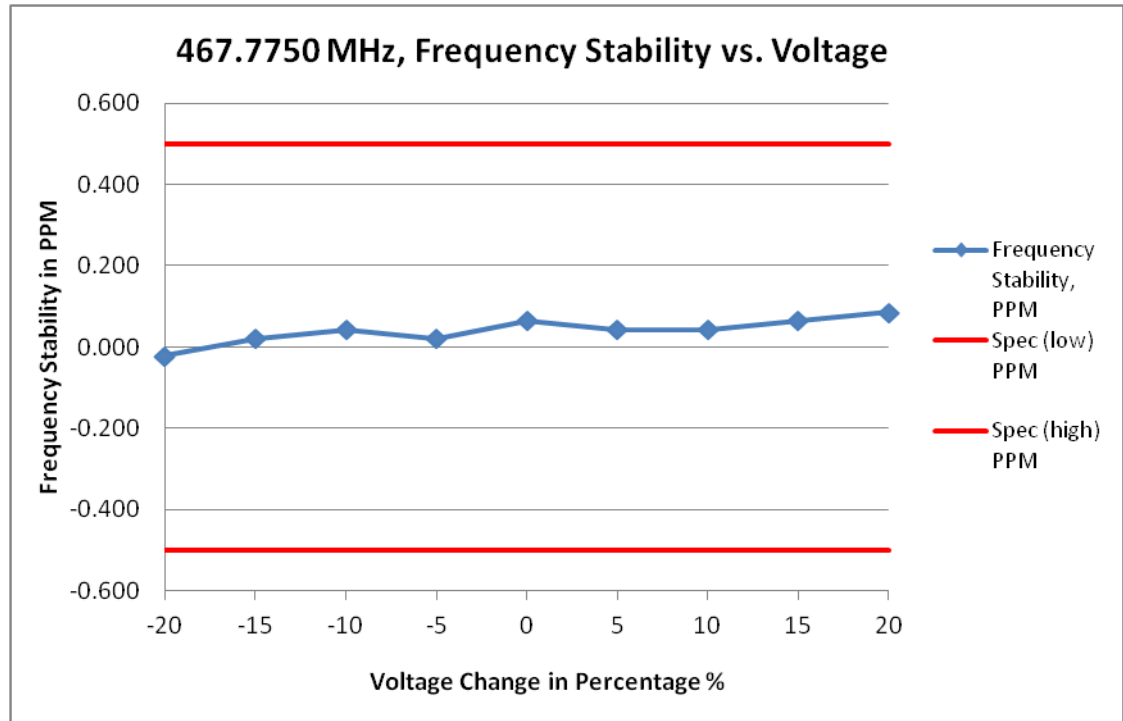


- 1) The DUT transmitter output port was connected to Modulation / Spectrum Analyzer.
- 2) Path loss for the measurement included.
- 3) Transmit the DUT and record the freq in  $MCF_{MHz}$ .
- 4) Test in 2 conditions:
  - Temperature: The frequency of the transmitter was measured from  $-30^{\circ}C$  to  $50^{\circ}C$ .
  - Supply Voltage:
    - Mobile: The frequency of the transmitter was measured from 85% to 115% of the nominal operating input voltage.
    - Portable: The frequency of the transmitter was measured from nominal  $\pm x\%$  as specified by the manufacturer
- 5) Calculate the ppm frequency error by the following:

$$ppm\ error = \left( \frac{MCF_{MHz}}{ACF_{MHz}} - 1 \right) * 10^6$$

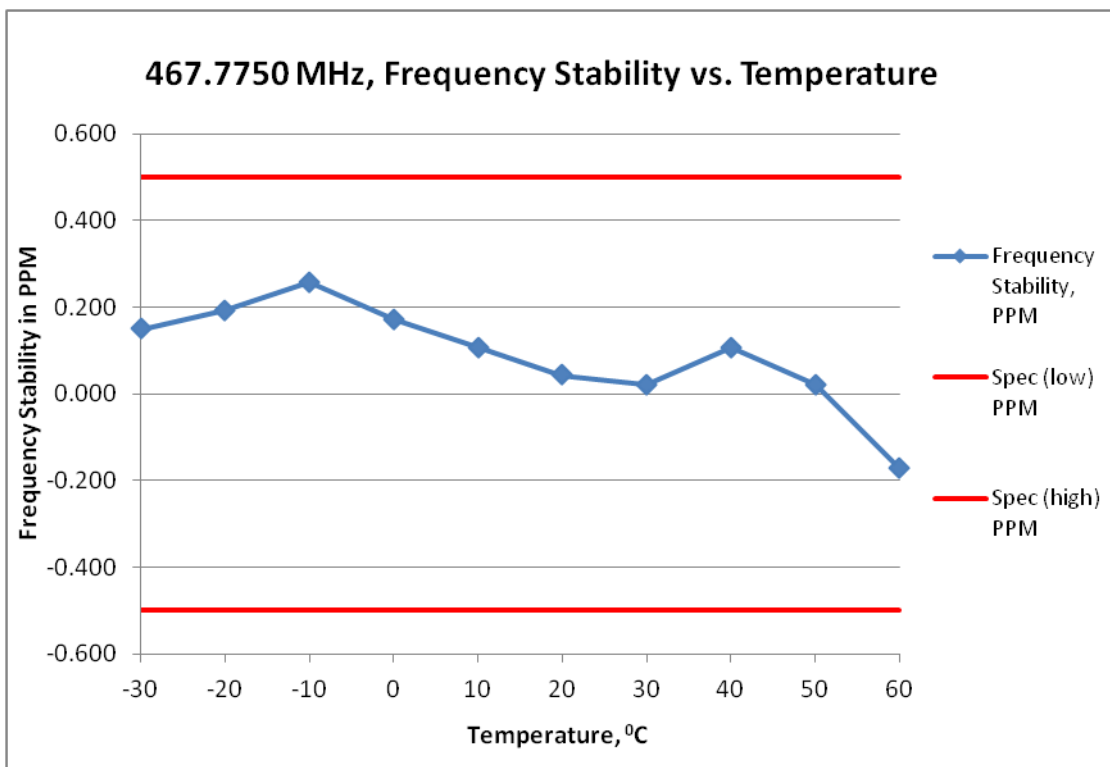
Where:  $MCF_{MHz}$  is the Measured Carrier Frequency in MHz  
 $ACF_{MHz}$  is the Assigned Carrier Frequency in MHz

**6.2.2. Test Result**



(i) Frequency Stability VS Voltage

| Frequency / Channel Spacing | 467.7750 MHz / 12.5 kHz |                |                          |                |                 |
|-----------------------------|-------------------------|----------------|--------------------------|----------------|-----------------|
| Temperature, °C             | 25                      |                |                          |                |                 |
| Voltage %                   | Voltage, V              | Frequency, MHz | Frequency Stability, PPM | Spec (low) PPM | Spec (high) PPM |
| -20                         | 9.000                   | 467.774990     | -0.021                   | -0.500         | 0.500           |
| -15                         | 11.560                  | 467.775010     | 0.021                    | -0.500         | 0.500           |
| -10                         | 12.240                  | 467.775020     | 0.043                    | -0.500         | 0.500           |
| -5                          | 12.920                  | 467.775010     | 0.021                    | -0.500         | 0.500           |
| 0                           | 13.600                  | 467.775030     | 0.064                    | -0.500         | 0.500           |
| 5                           | 14.280                  | 467.775020     | 0.043                    | -0.500         | 0.500           |
| 10                          | 14.960                  | 467.775020     | 0.043                    | -0.500         | 0.500           |
| 15                          | 15.640                  | 467.775030     | 0.064                    | -0.500         | 0.500           |
| 20                          | 16.320                  | 467.775040     | 0.086                    | -0.500         | 0.500           |



(ii) Frequency Stability VS temperature

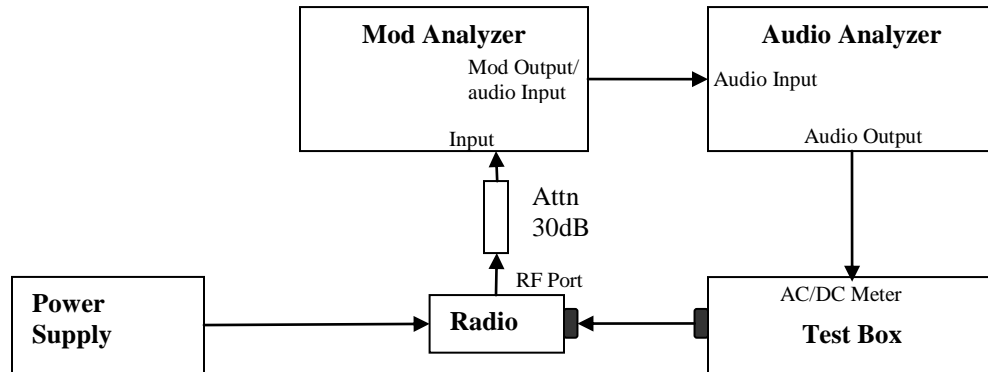
| Frequency / Channel Spacing | 467.7750 MHz / 12.5 kHz |                          |                |                 |
|-----------------------------|-------------------------|--------------------------|----------------|-----------------|
| Voltage, V                  | 13.6                    |                          |                |                 |
| Temperature, °C             | Frequency, MHz          | Frequency Stability, PPM | Spec (low) PPM | Spec (high) PPM |
| -30                         | 467.775070              | 0.150                    | -0.500         | 0.500           |
| -20                         | 467.775090              | 0.192                    | -0.500         | 0.500           |
| -10                         | 467.775120              | 0.257                    | -0.500         | 0.500           |
| 0                           | 467.775080              | 0.171                    | -0.500         | 0.500           |
| 10                          | 467.775050              | 0.107                    | -0.500         | 0.500           |
| 20                          | 467.775020              | 0.043                    | -0.500         | 0.500           |
| 30                          | 467.775010              | 0.021                    | -0.500         | 0.500           |
| 40                          | 467.775050              | 0.107                    | -0.500         | 0.500           |
| 50                          | 467.775010              | 0.021                    | -0.500         | 0.500           |
| 60                          | 467.774920              | -0.171                   | -0.500         | 0.500           |

**6.2.3. Test Limit**

As per manufacturer declared spec +/- 0.5ppm

### 6.3. Audio Frequency Response

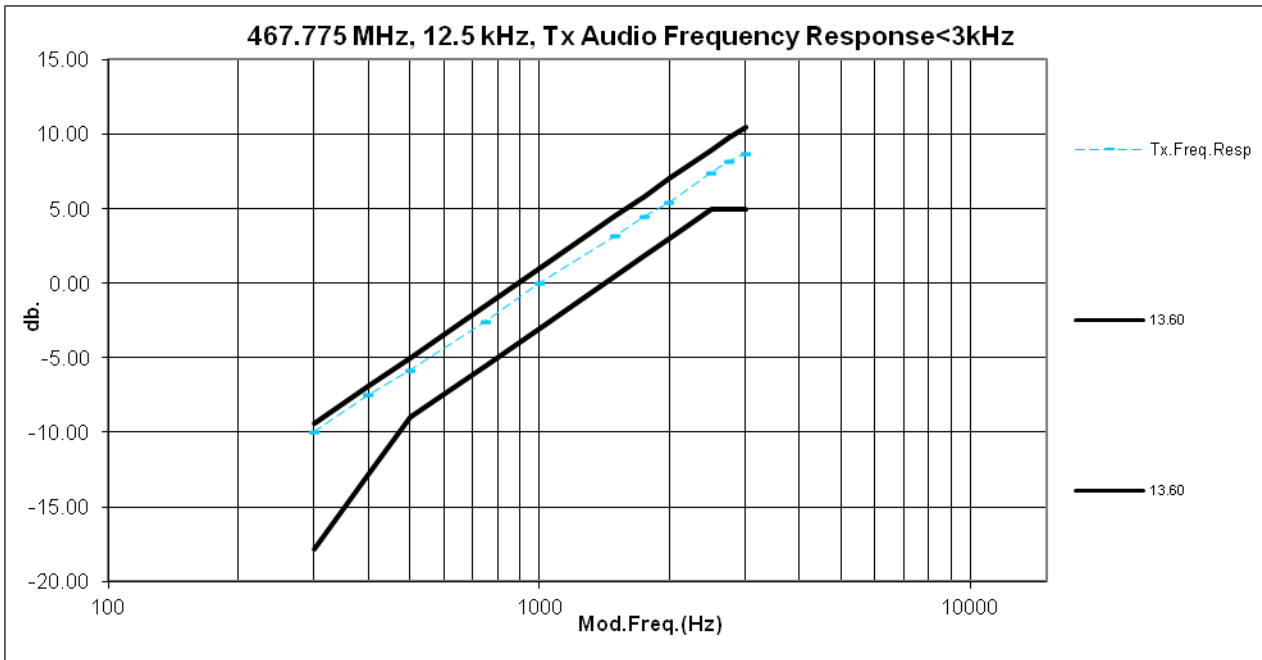
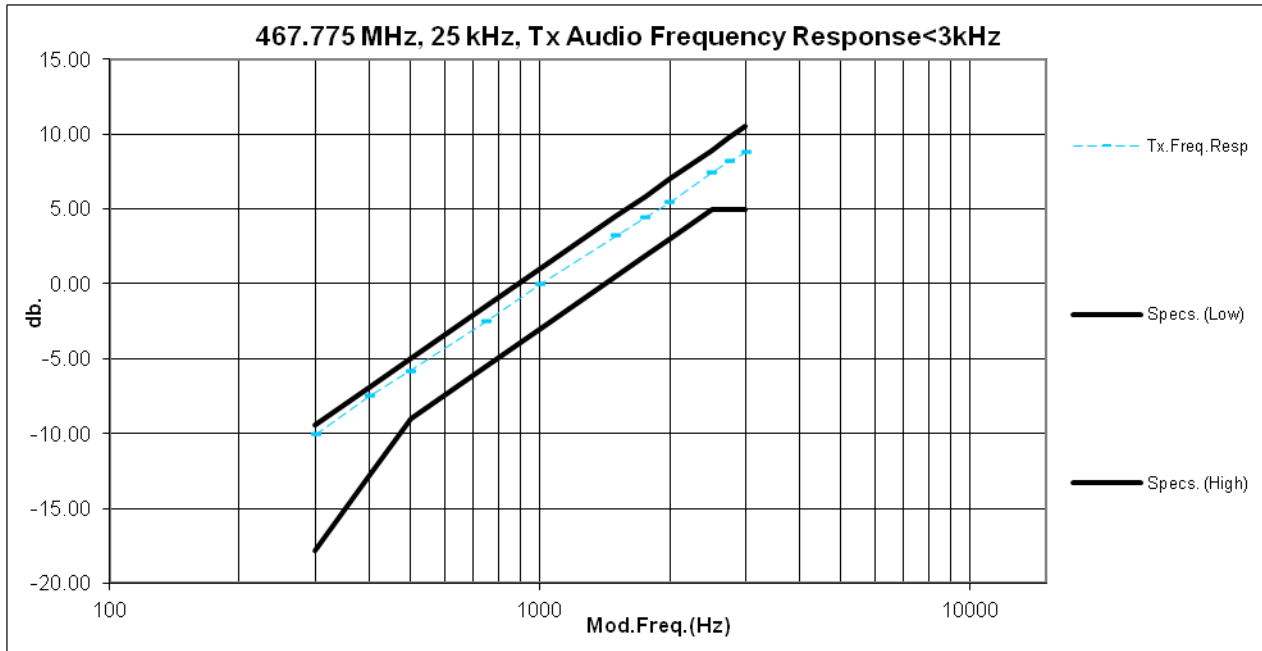
#### 6.3.1. Test Setup



- 1) The DUT transmitter output port was connected to Modulation Analyzer.
- 2) Path loss for the measurement included.
- 3) Set the audio bandwidth filter to 15 kHz and 50 kHz.
- 4) Transmit the radio and set the audio analyzer to 1 kHz audio frequency and 20% of the Full rated system deviation.
- 5) On audio analyzer, set the rated level as reference to zero.
- 6) Vary the audio frequency from 300 Hz to 3 kHz. Record the change in dB on the audio analyzer.

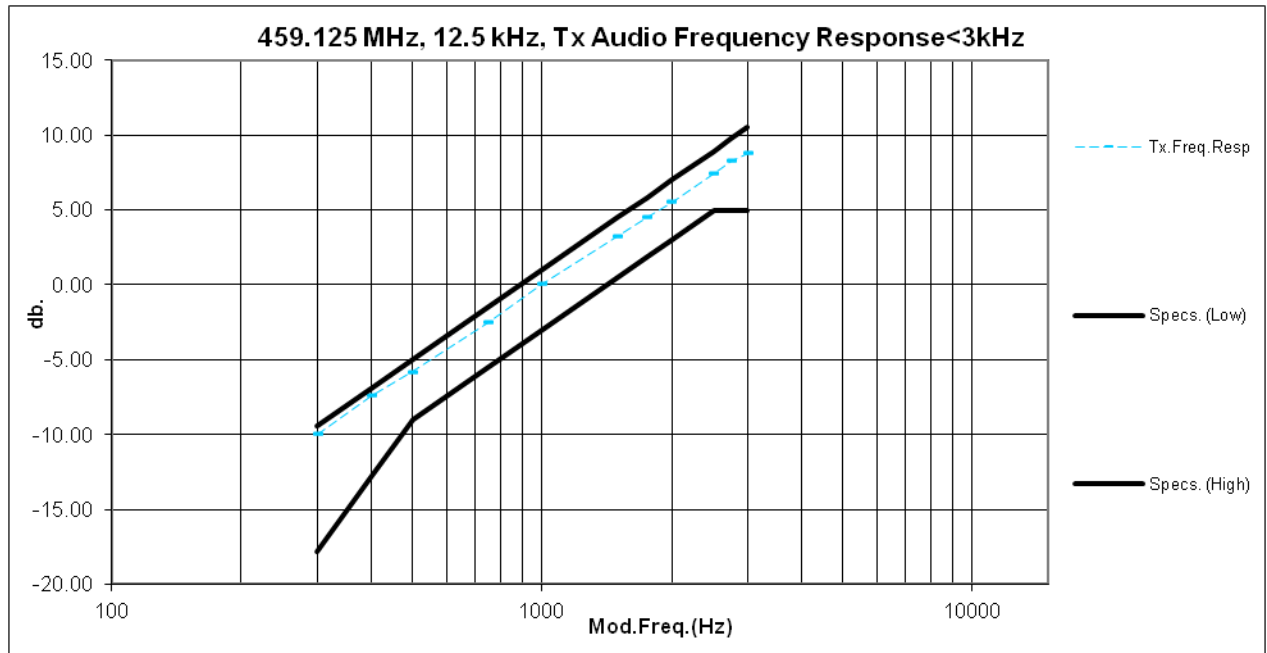
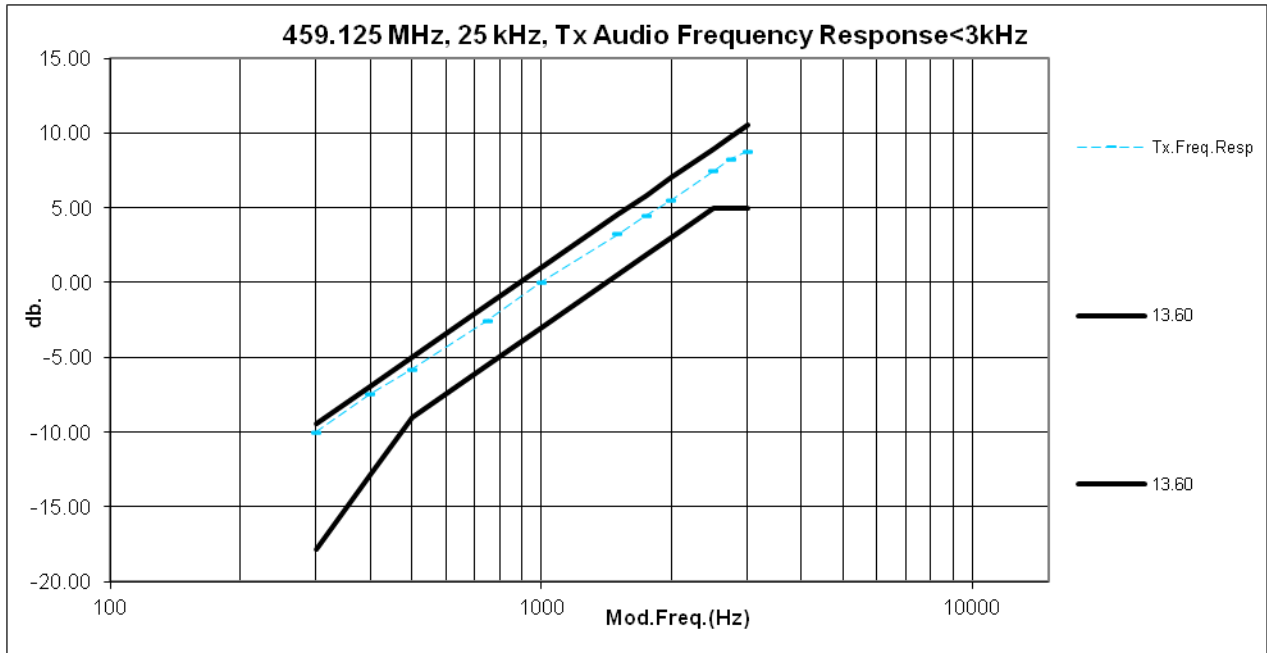
### 6.3.2. Test Result

Not for FCC review

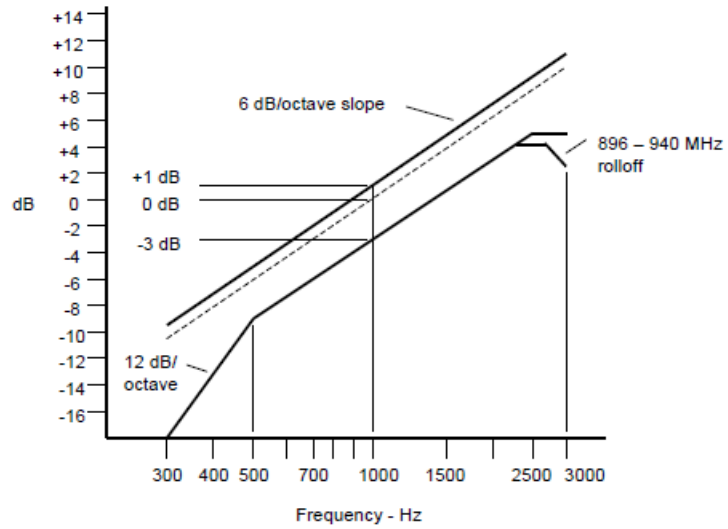




Not for FCC review



### 6.3.3. Test Limit

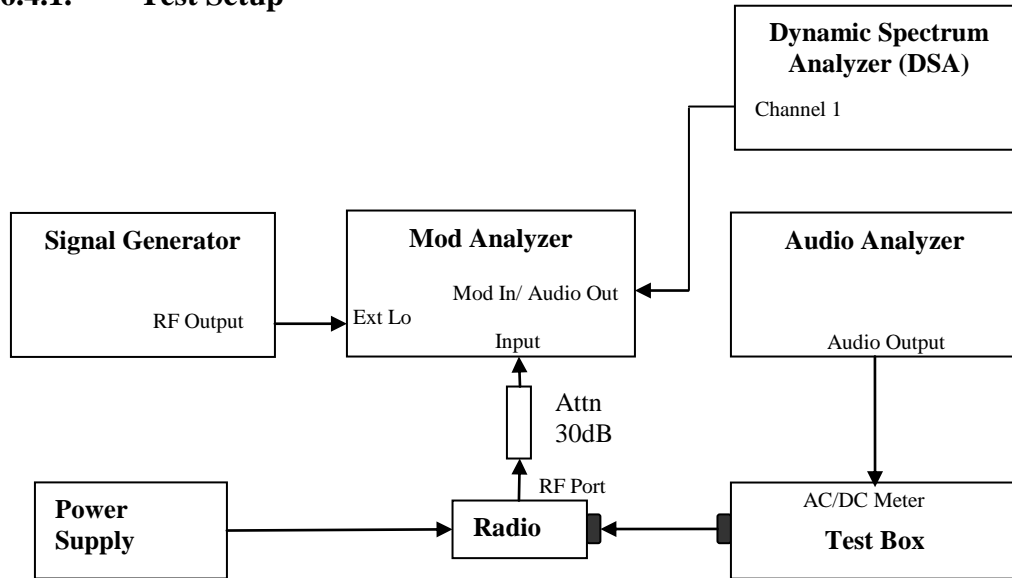


Note:

- o There are additional 6 dB per octave attenuation is allowed from 2.5KHz to 3KHz in equipment 25MHz to 869MHz radio.
- o Additional 6 dB per octave attenuation is allowed from 2.3KHz to 2.7KHz & additional 12 dB per octave attenuation is allowed from 2.7KHz to 3KHz in equipment 896MHz to 940MHz radio.

## 6.4. Audio Low Pass Filter Response

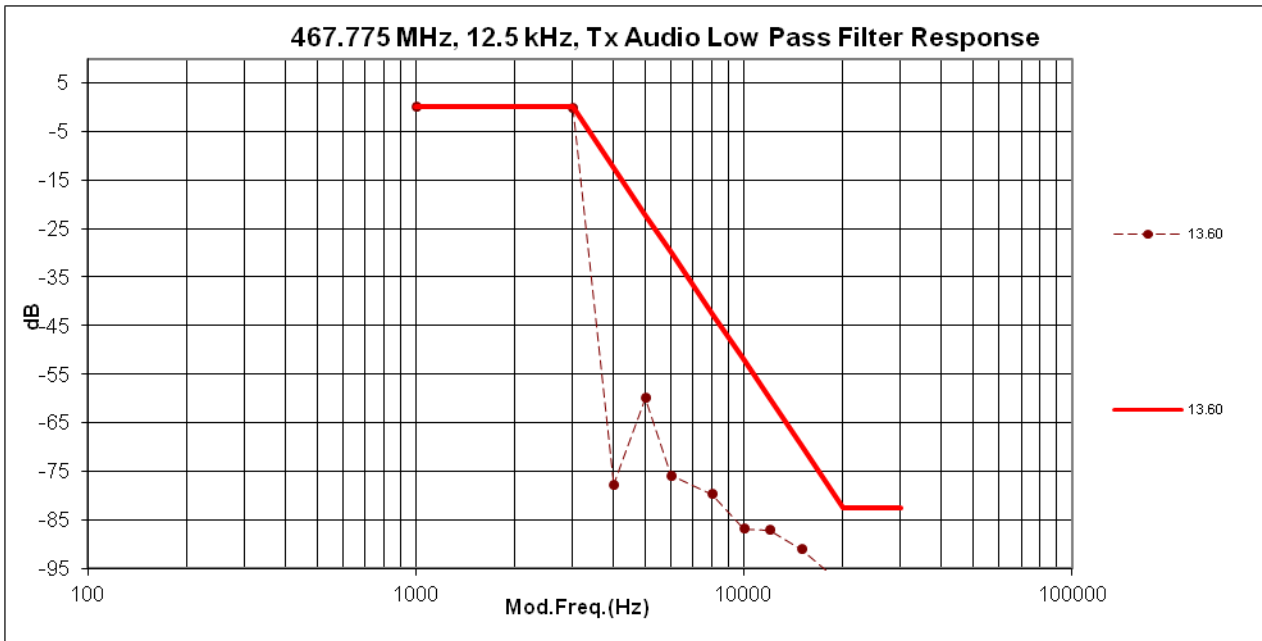
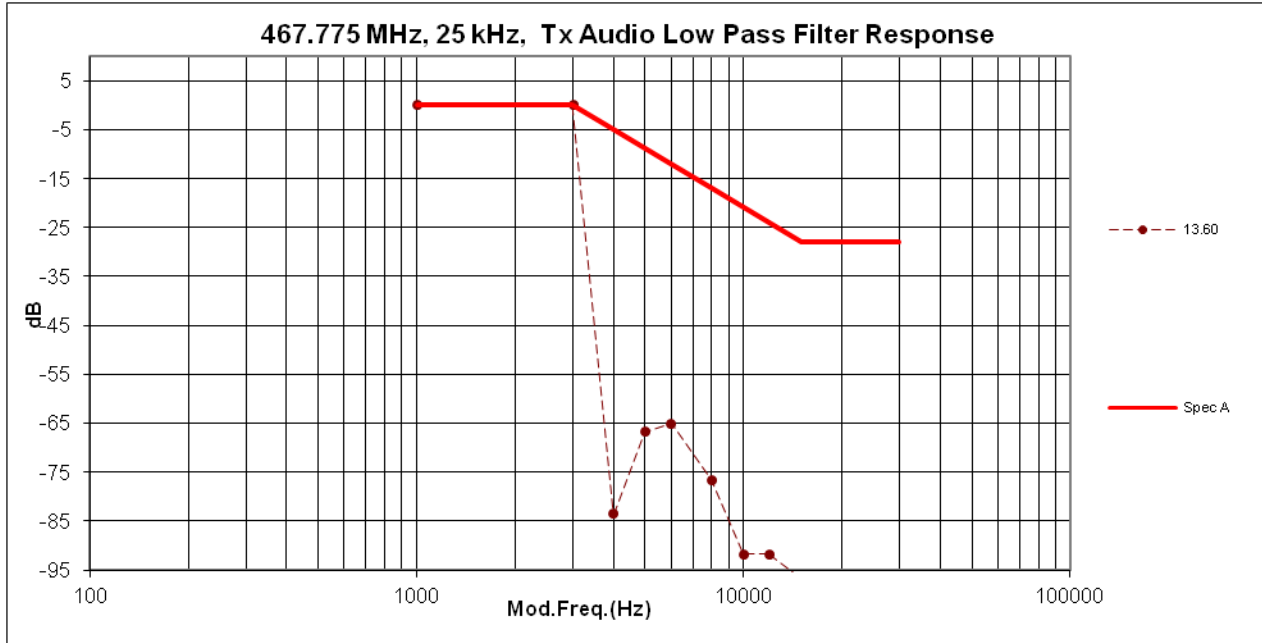
### 6.4.1. Test Setup



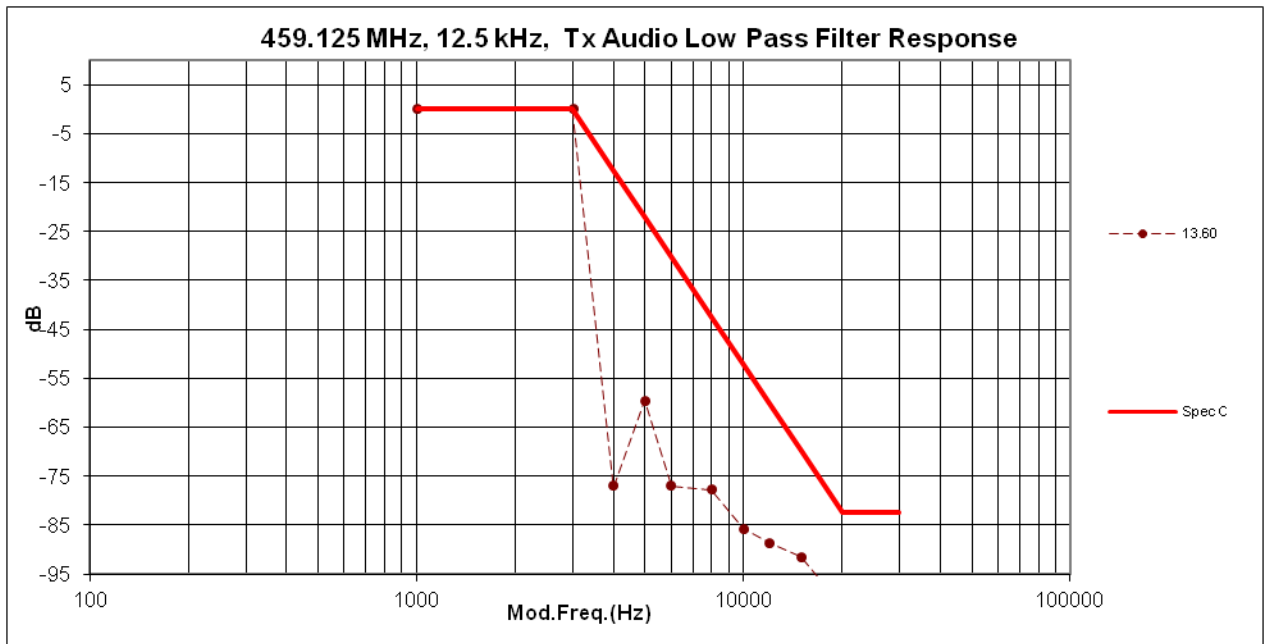
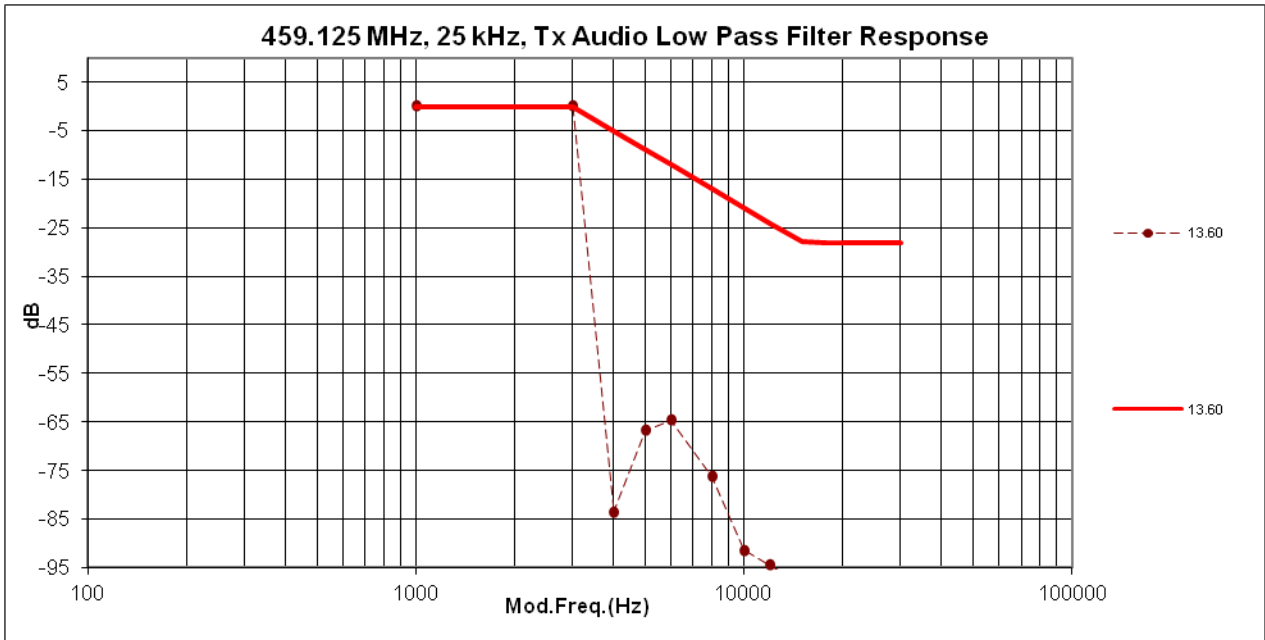
- 1) The DUT transmitter output port was connected to Modulation Analyzer.
- 2) Path loss for the measurement included.
- 3) Press 23.1SPCL on modulation analyzer to enable the external LO from Sigen.
- 4) Set the Sigen frequency to  $F_c + 1.5$  MHz, RF output level to 0dBm without modulation.
- 5) Transmit the radio and set the audio analyzer to 1 kHz audio frequency and 60% of the Full rated system deviation.
- 6) Up the amplitude by 20dB.
- 7) On DSA, get the reference point to 0dB.
- 8) Vary the frequency on audio analyzer from 3 kHz to 20 kHz, record the audio tone from DSA.

### 6.4.2. Test Result

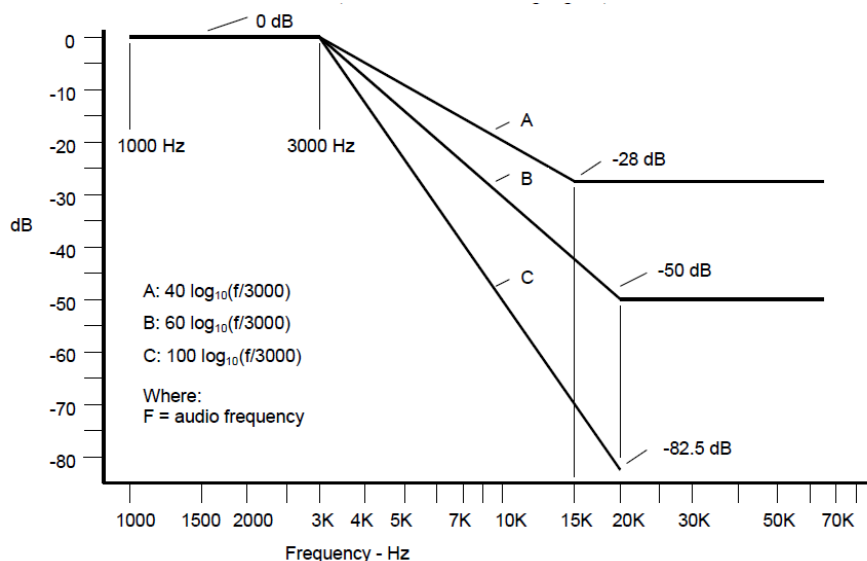
Not for FCC review



Not for FCC review



### 6.4.3. Test Limit



For audio frequencies above 3000 Hz, the audio response of the post limiter low-pass filter shall meet or exceed the following requirements:

- a) For equipment operating on 20, 25 or 30 kHz channel bandwidth in the 25 MHz to 174 MHz range:

At frequencies from 3000 Hz through 15,000 Hz the attenuation shall be greater than the attenuation at 1000 Hz by at least:  $40 \log_{10}(f/3000)$  dB

where:  $f$  is the audio frequency in Hz.

At frequencies above 15,000 Hz, the attenuation shall be greater than the attenuation at 1000 Hz, by at least: 28 dB.

- b) For equipment operating with 25 kHz bandwidth channels between 406 and 512 MHz through 896 MHz, and between 929 MHz through 930 MHz:

At frequencies from 3000 Hz through 20,000 Hz, the attenuation shall be greater than the attenuation at 1000 Hz by at least:  $60 \log_{10}(f/3000)$  dB

where:  $f$  is the audio frequency in Hz.

At frequencies above 20,000 Hz the attenuation shall be greater than the attenuation at 1000 Hz by at least: 50 dB.

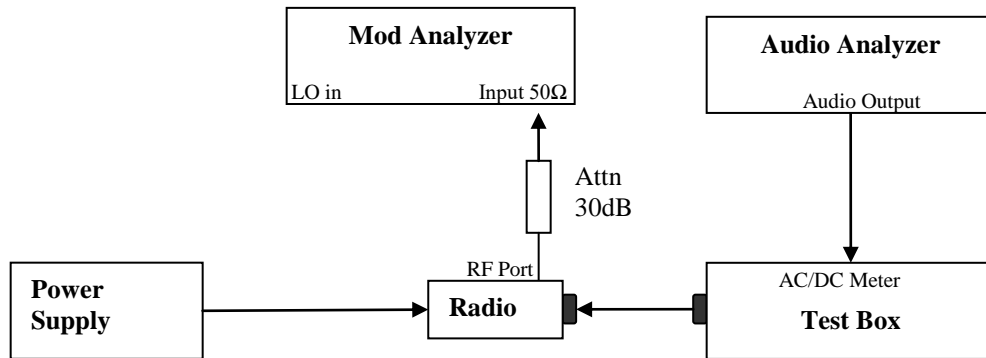
- c) For equipment operating on channels between 896 MHz through 901 MHz, between 935 MHz through 940 MHz, and 12.5 or 15 kHz spaced channels in the frequency range 138-174 MHz and 406-512 MHz.

At frequencies from 3000 Hz through 20,000 Hz the attenuation shall be greater than the attenuation at 1000 Hz by at least:  $100 \log_{10}(f/3000)$  dB

where:  $f$  is the audio frequency in Hz.

## 6.5. Modulation Limiting

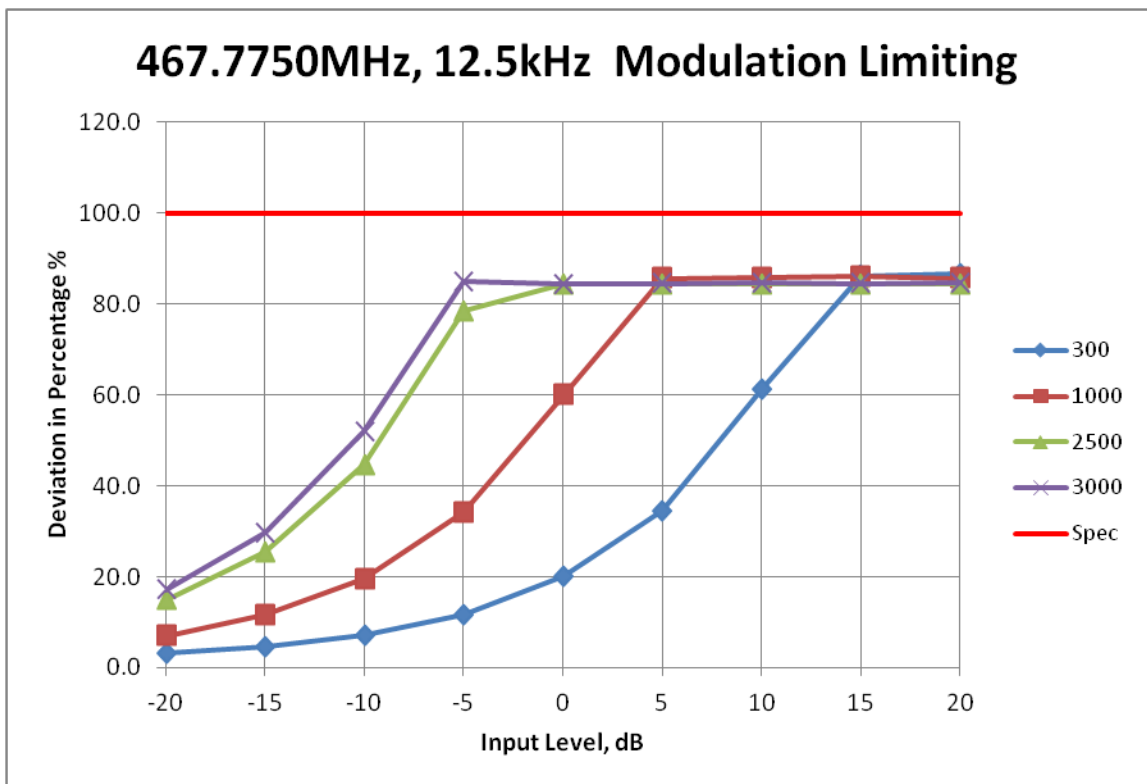
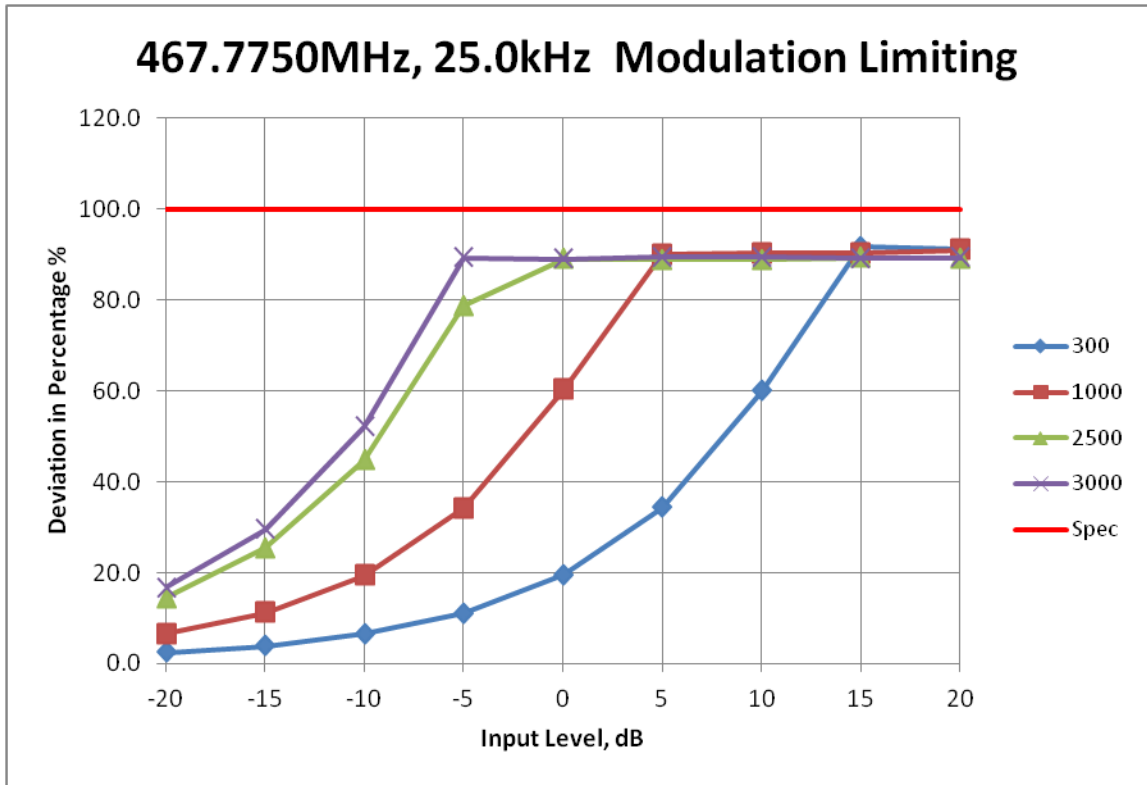
### 6.5.1. Test Setup



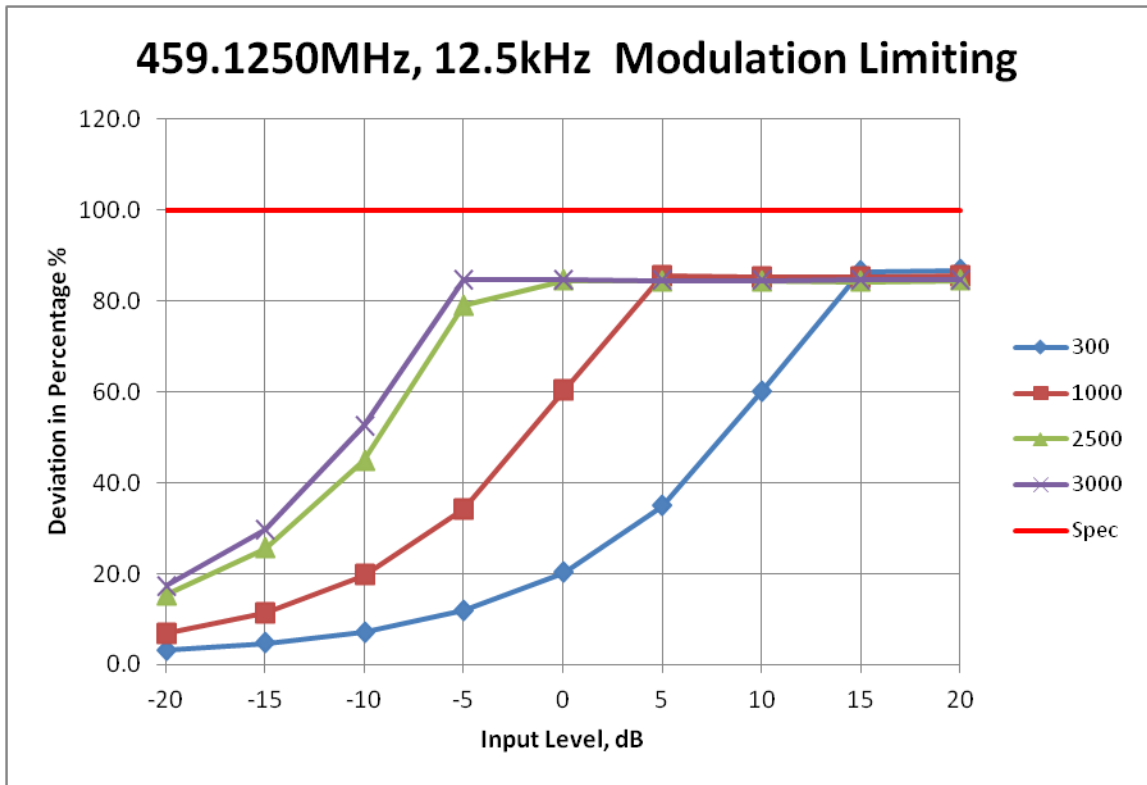
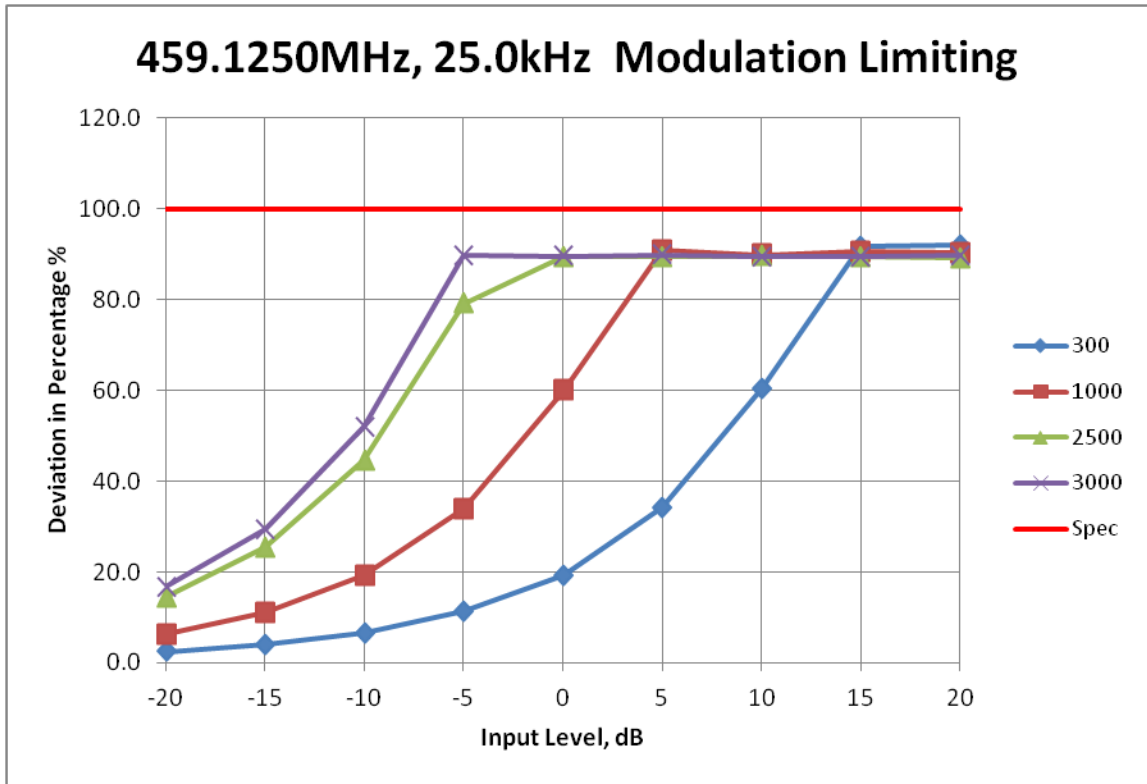
- 1) The DUT transmitter output port was connected to Modulation Analyzer.
- 2) Path loss for the measurement included.
- 3) Set the audio bandwidth filter to 15 kHz.
- 4) Transmit the radio and set the audio analyzer to 1 kHz audio frequency and 60% of the Full rated system deviation.
- 5) Record the frequency deviation as 0dB input level at 1kHz audio frequency.
- 6) Repeat the step and record the frequency deviation from -20 dB to 20dB by 5 dB increments and different audio freq 300 Hz, 2.5 kHz and 3 kHz.

### 6.5.2. Test Result

Not for FCC review



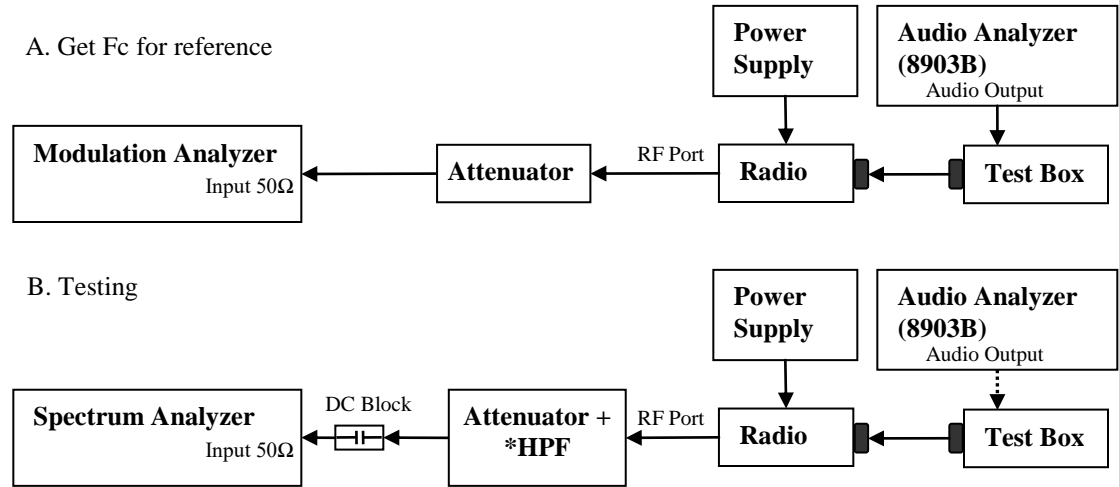




**6.5.3. Test Limit**  
Modulation Limiting shall not exceed 100 percent.

## 6.6. Occupied Bandwidth

### 6.6.1. Test Setup (Analog)



- 1) The DUT transmitter output port was connected to Modulation Analyzer.
- 2) Set the audio bandwidth filter to 15 kHz low pass filter and 50 kHz high pass filter.
- 3) Transmit the radio and set the audio analyzer to 2.5 kHz audio frequency and 50% of the rated deviation. Up the amplitude by 16 dB. Dekey the DUT.
- 4) Path loss for the measurement included.
- 5) Select the Occupied Bandwidth measurement for 99% Emissions Bandwidth Measurement.
- 6) Key in the Fc and Resolution Bandwidth (1 ~ 5 % of emission designator).
- 7) Transmit the DUT and record the occupied Bandwidth frequency.
- 8) Preset the spectrum analyzer for sideband spectrum measurement.
- 9) Set the span and Resolution Bandwidth (according to FCC/ ISED standard).
- 10) Save the screen shot as modulated signal
- 11) Remove the audio tone from audio analyzer to capture unmodulated signal.

\* Only HPF added for Mask 80.211 measurement with attenuator.

### 6.6.2. Test Result (Analog)

Standard Audio Modulation (25 kHz Channelization, Analog Voice):  
 Emission Designator 16K0F3E

In this case, the maximum modulating frequency is 3 kHz with a 5 kHz deviation.

$BW = 2(M+D) = 2*(3 \text{ kHz} + 5 \text{ kHz}) = 16 \text{ kHz} \Rightarrow 16K0$   
 F3E portion of the designator indicates voice.

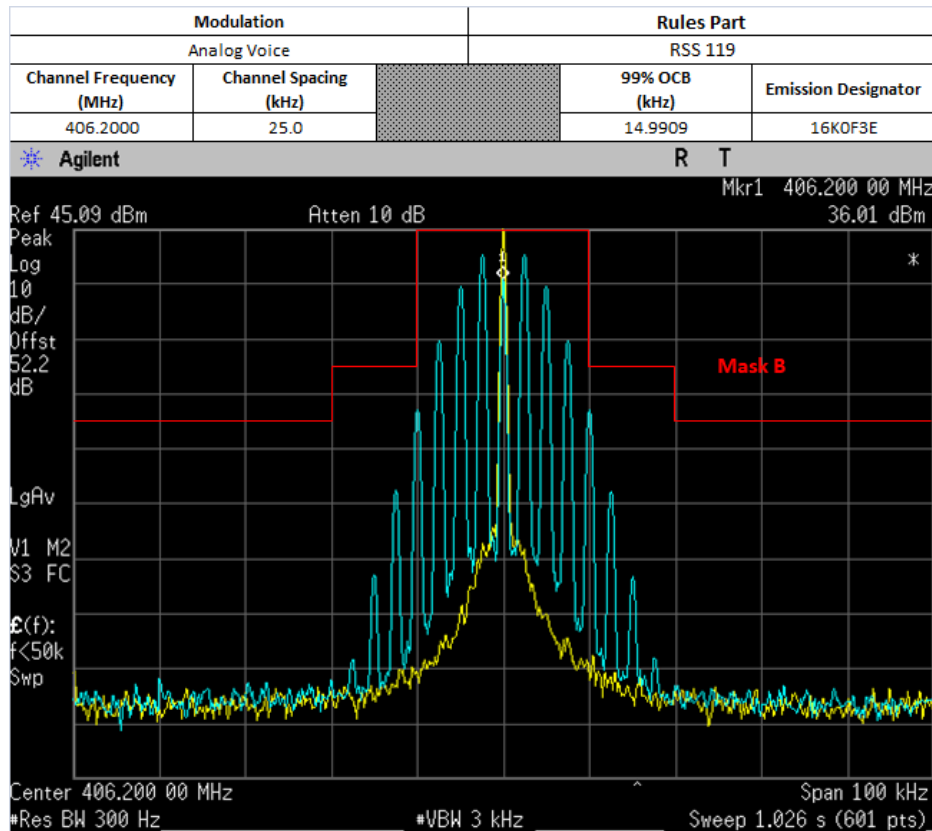
Therefore, the entire designator for 25 kHz channelization analog voice is 16K0F3E

Standard Audio Modulation (12.5 kHz Channelization, Analog Voice):  
 Emission Designator 11K0F3E

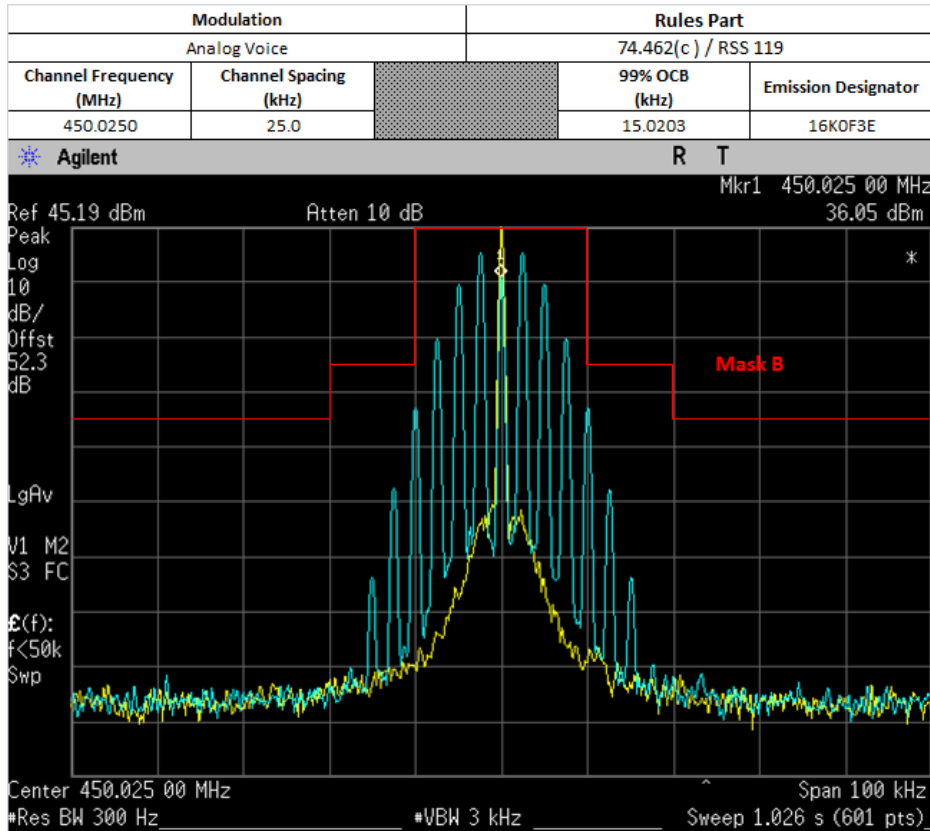
In this case, the maximum modulating frequency is 3.0 kHz with a 2.5 kHz deviation.

$BW = 2(M+D) = 2*(3.0 \text{ kHz} + 2.5 \text{ kHz}) = 11 \text{ kHz} \Rightarrow 11K0$   
 F3E portion of the designator indicates voice.

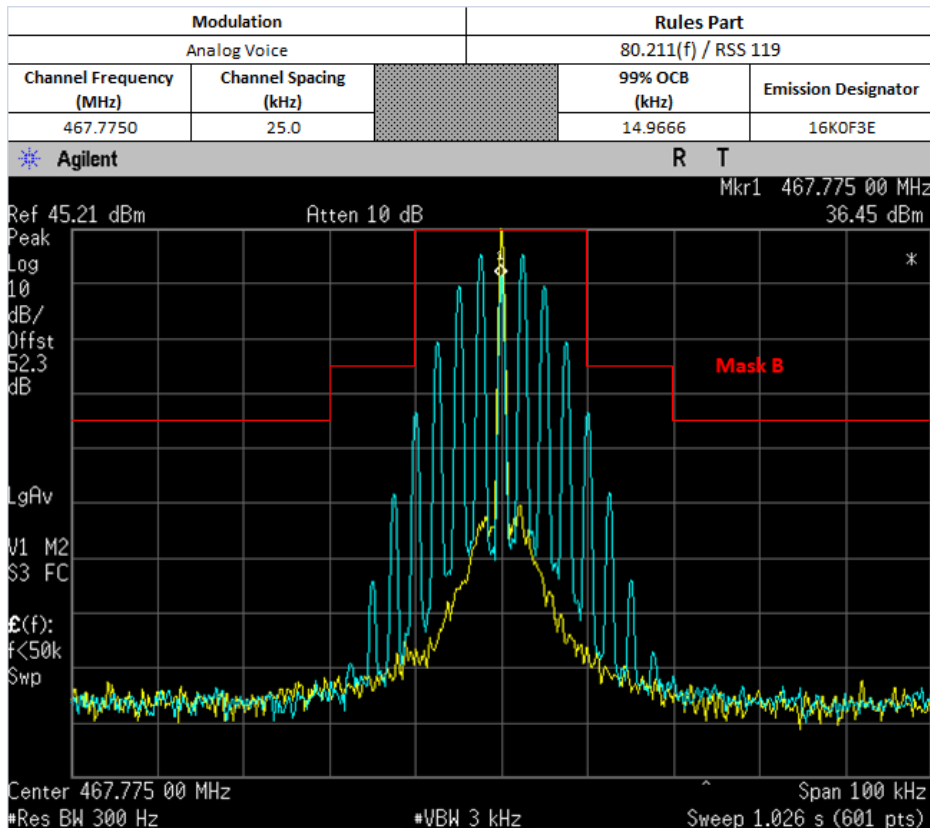
Therefore, the entire designator for 12.5 kHz channelization analog voice is 11K0F3E.



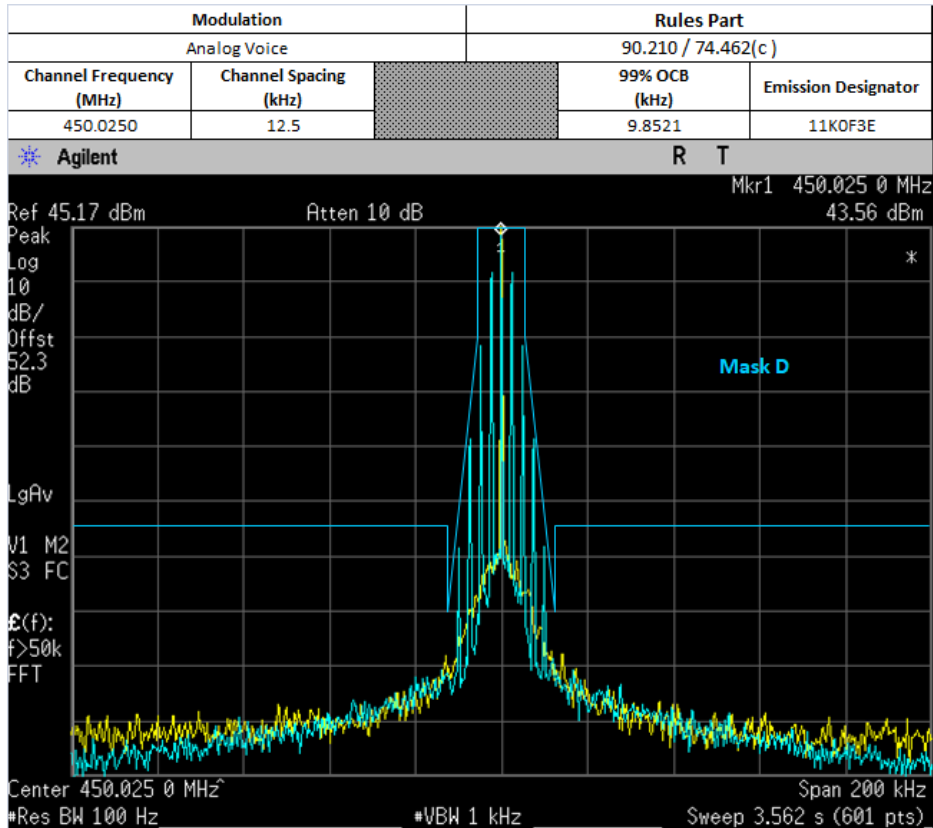
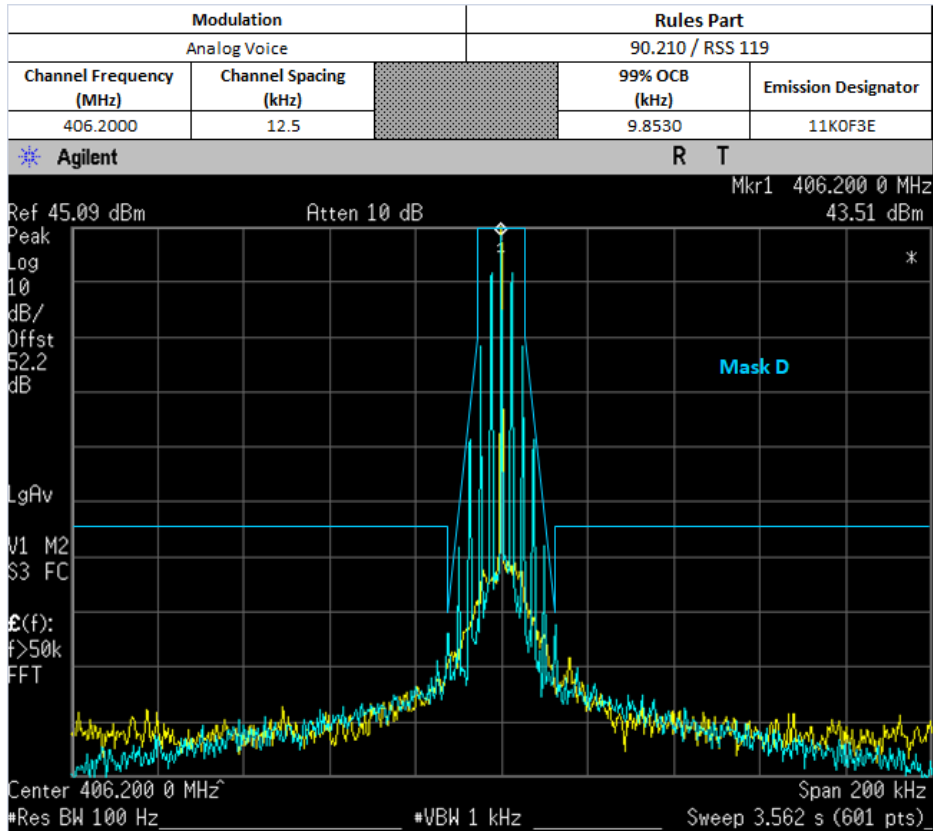
**Not for FCC review**

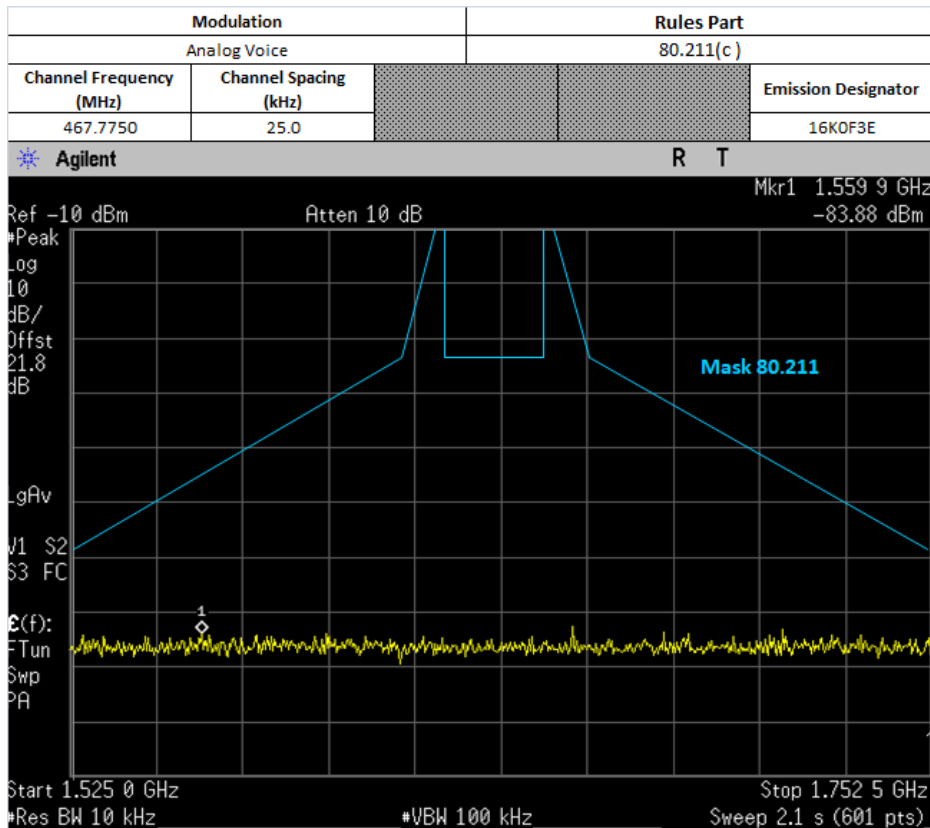
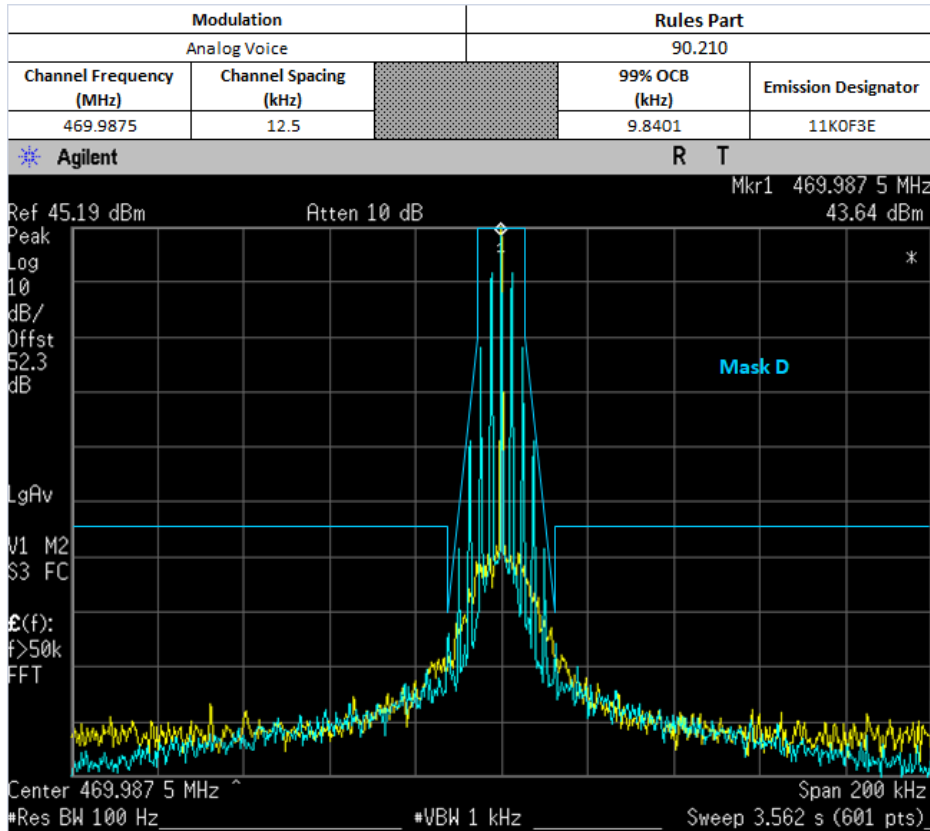


**For Part 74**

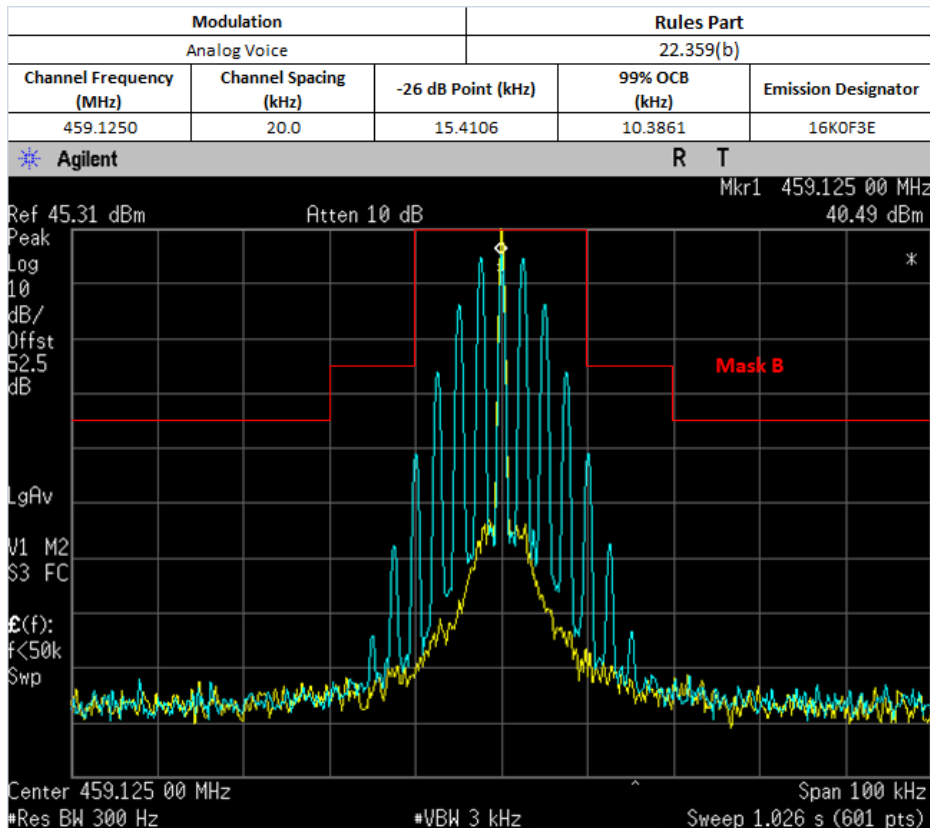
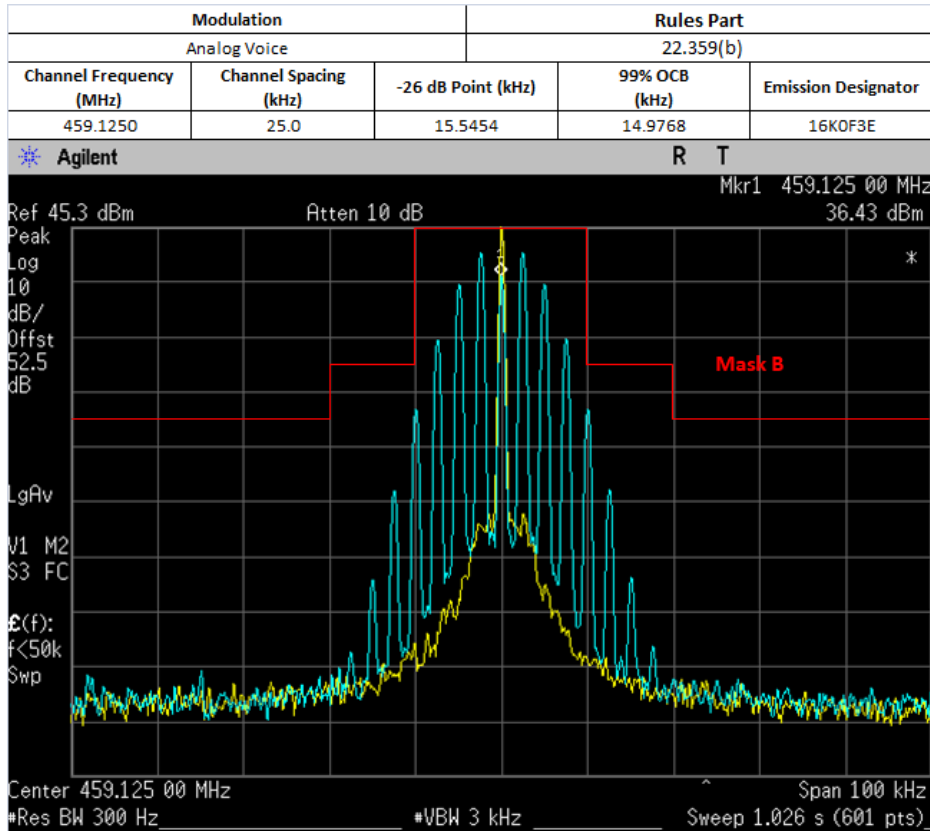


**For Part 80**

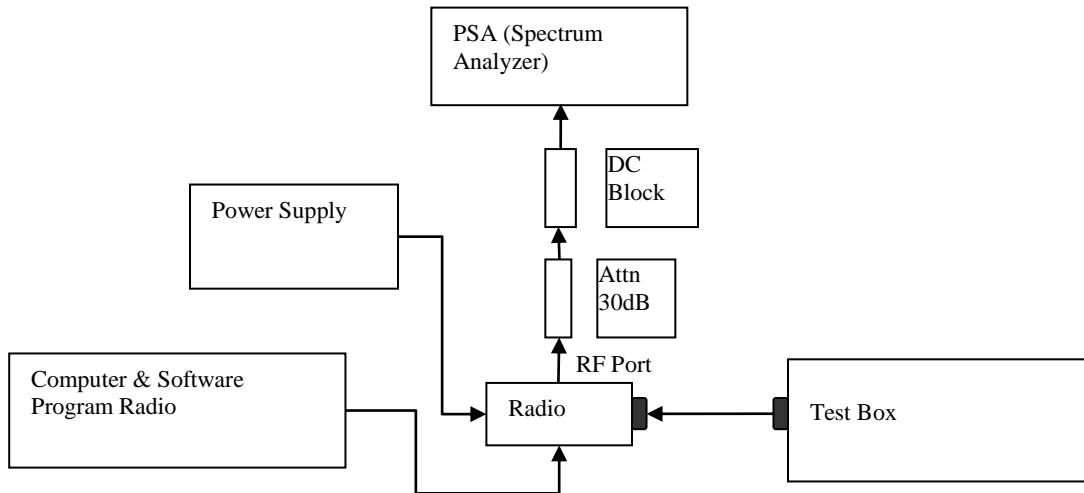




**Part 80 only**



### 6.6.3. Test Setup (Digital)



- 1) Program and set radio to operate in desire test frequency and digital mode with modulation. (\*4FSK, C4FM or other digital modulation form).
- 2) Path loss for the measurement included.
- 3) Select the Occupied Bandwidth measurement for 99% Emissions Bandwidth Measurement.
- 4) Key in the Fc and Resolution Bandwidth (1 ~ 5 % of emission designator).
- 5) Transmit the DUT and record the occupied Bandwidth frequency.
- 6) Preset the spectrum analyzer for modulation emission spectrum measurement.
- 7) Set the span and Resolution Bandwidth (according to FCC/ ISED standard).
- 8) Capture the screen shot as modulated signal.

\*Note:

- For Digital Modulation, 12.5 kHz Data F1D & FXD would be the same. Therefore only measurements with F1D modulation shown below.
- For Digital Modulation, 12.5 kHz Data F1E & FXE would be the same. Therefore only measurements with F1E modulation shown below.



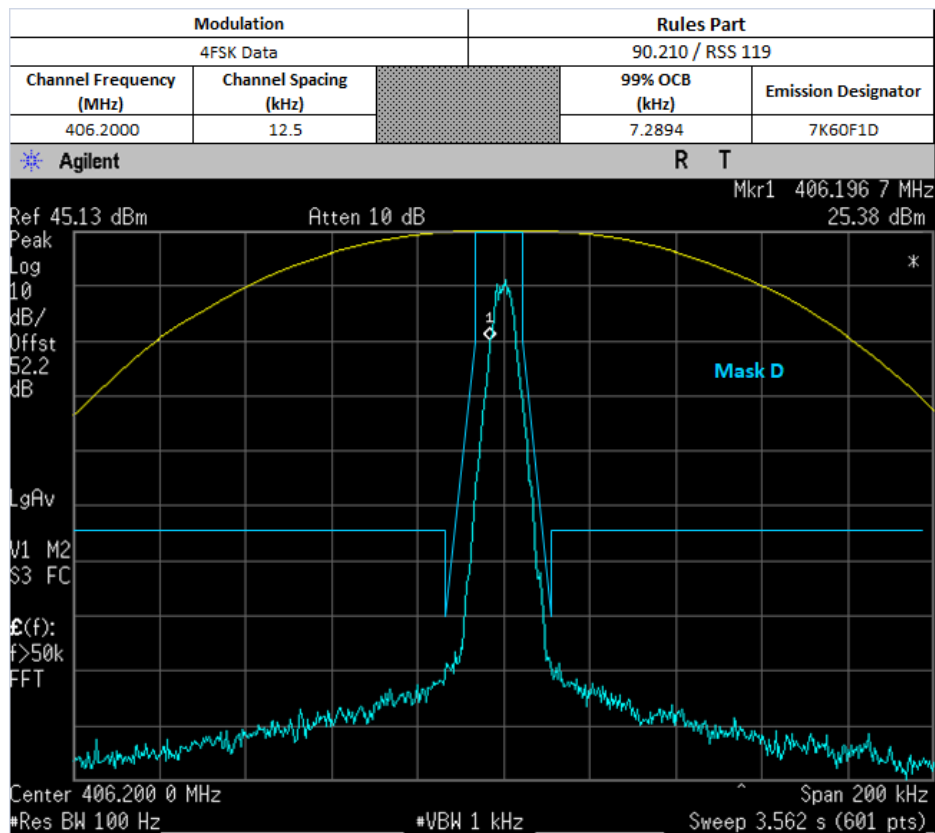
### 6.6.4. Test Result (Digital)

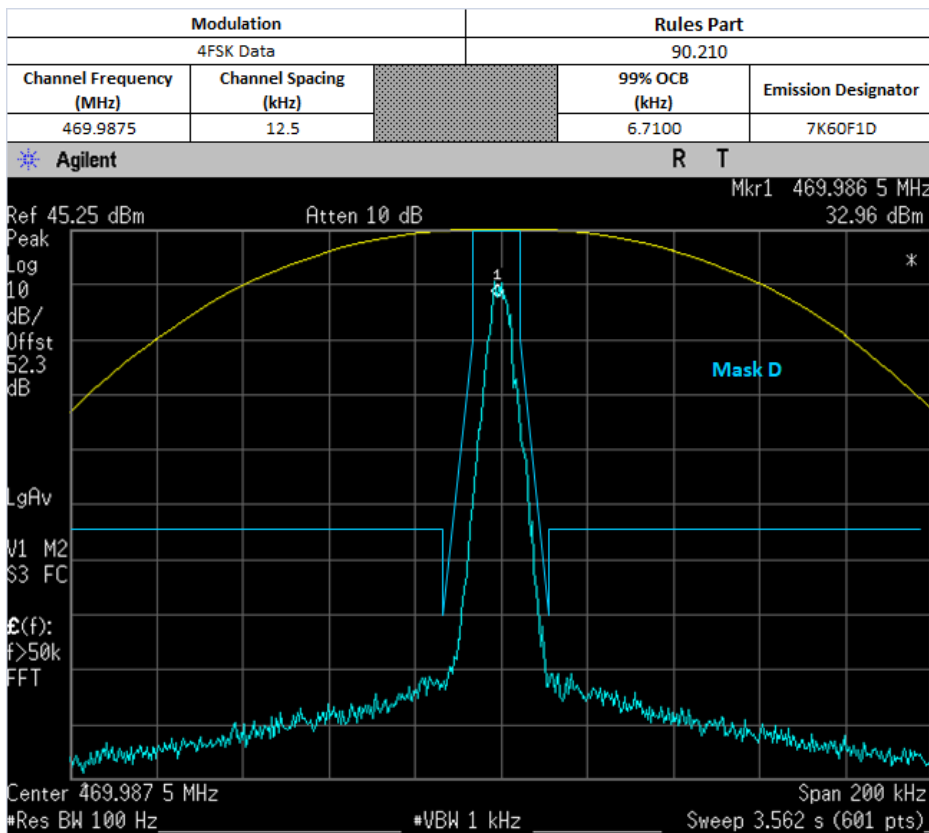
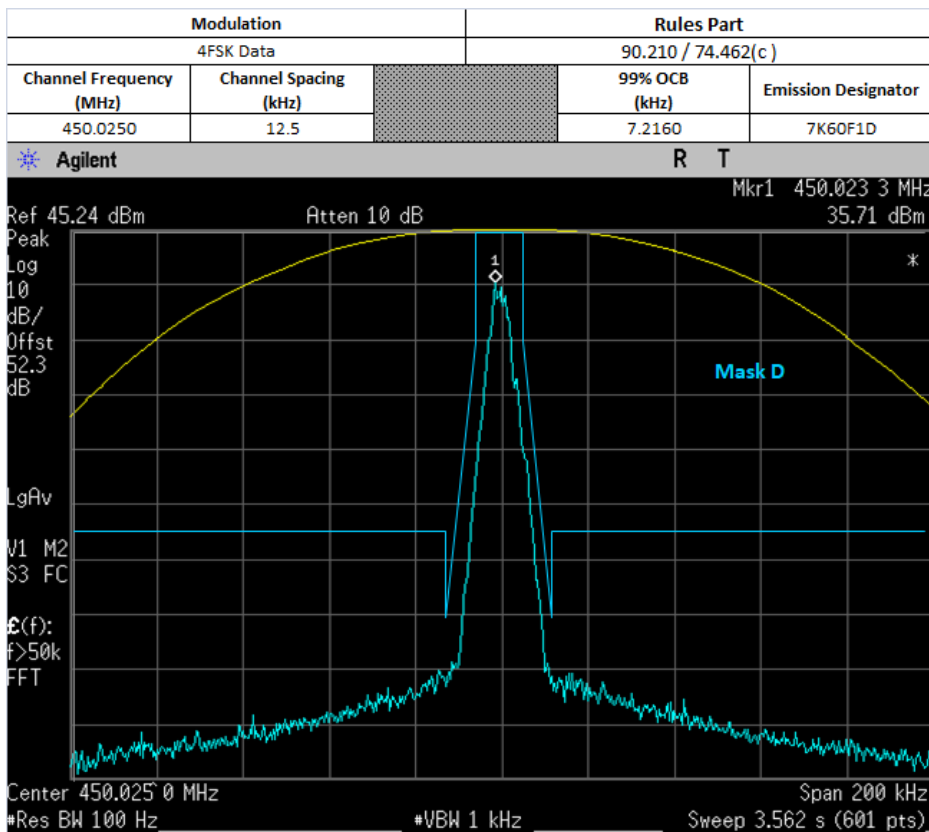
Digital (12.5 kHz Channelization, Digital Voice/Data/Voice+Data):  
 Emission Designator 7K60F1E/D/W

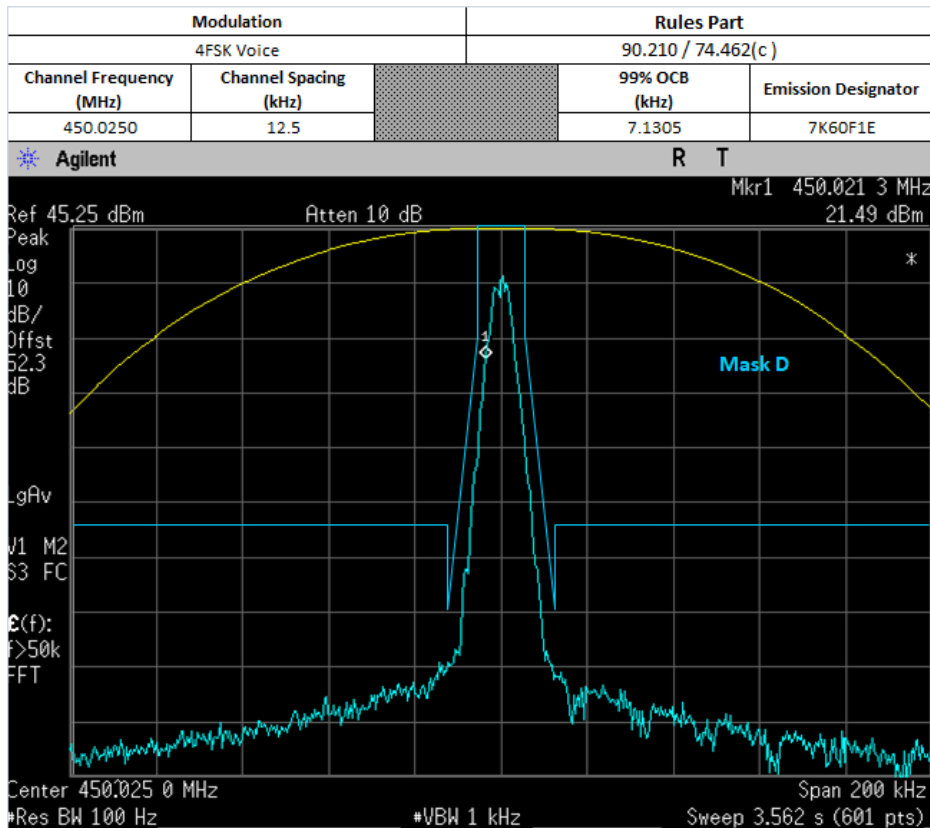
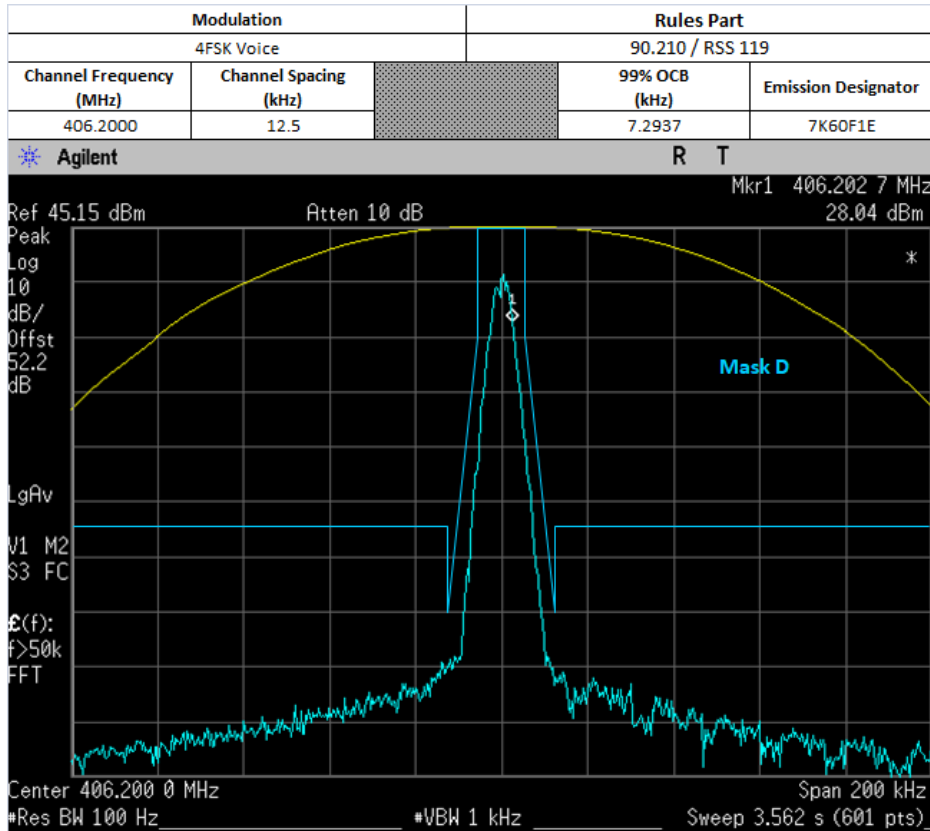
The 99% energy rule (title 47CFR 2.989) was used for digital mode and is more accurate than Carson's rule. It basically states that 99% of the modulation energy falls within X kHz, in this case, 7.60 kHz Measurements were performed in accordance with TIA/EIA TSB102.CAAB Section 2.2.5.2. The emission mask was obtained from 47CFR 90.210(d).

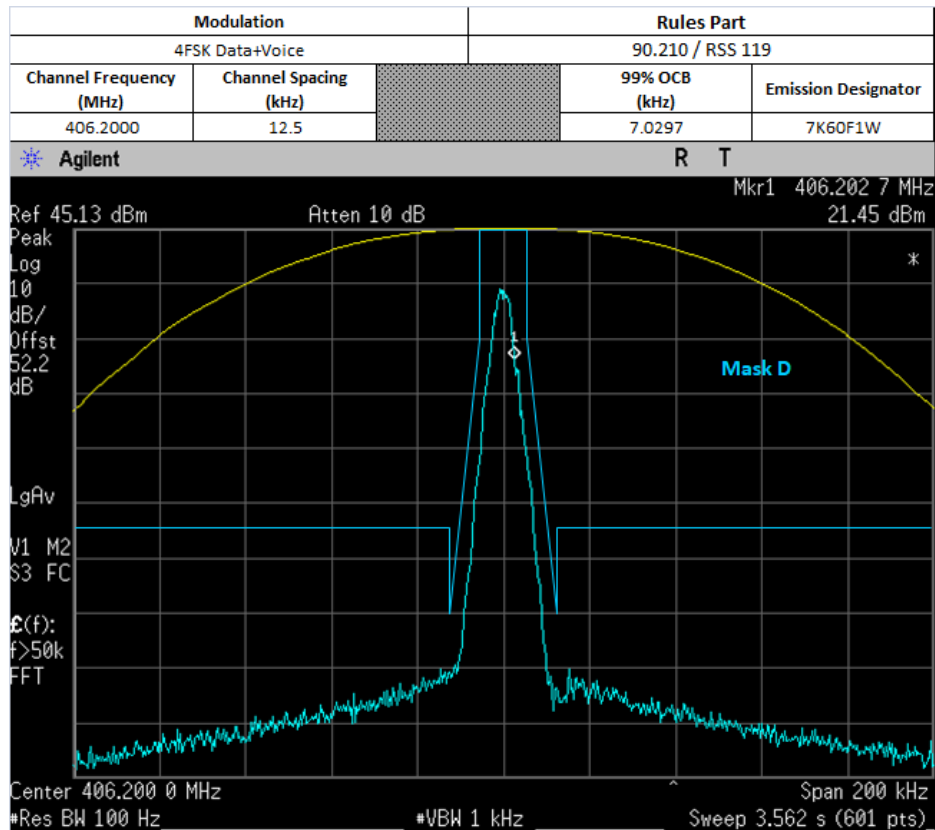
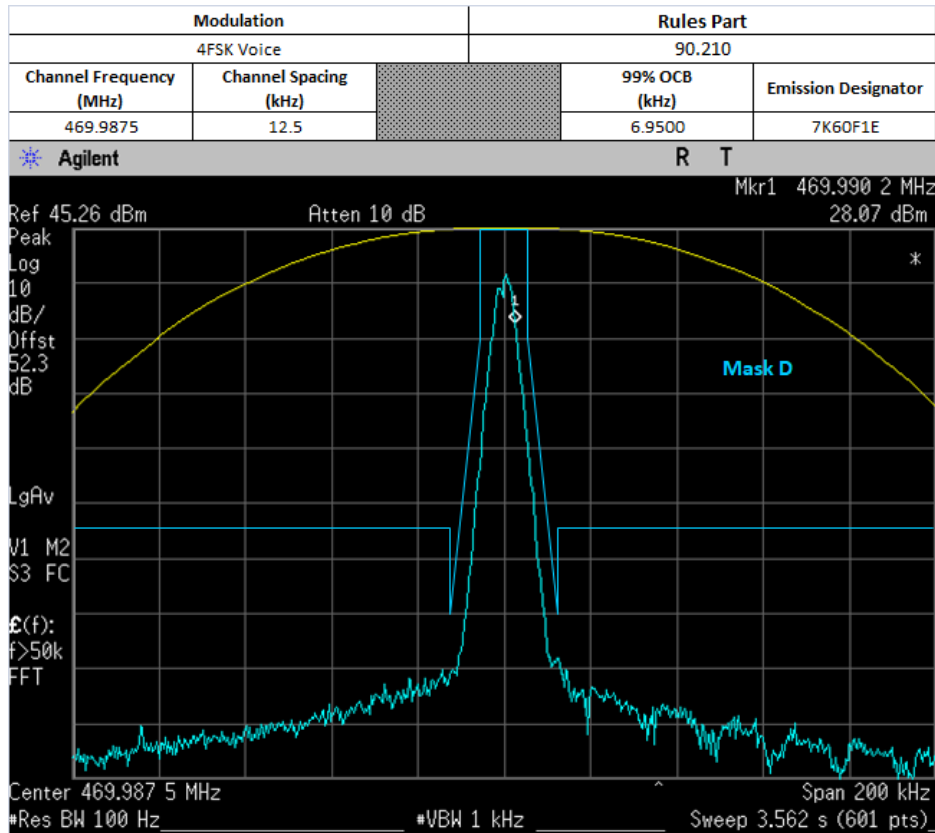
F1E/D/W portion of the designator indicates digital voice/data/voice+data.

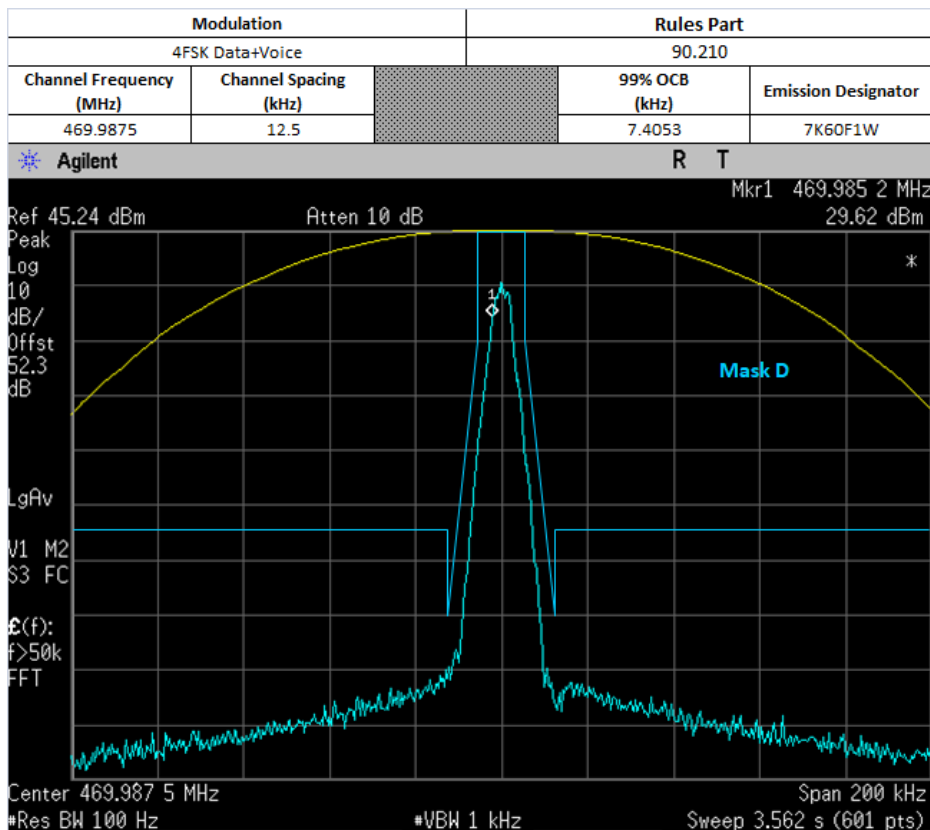
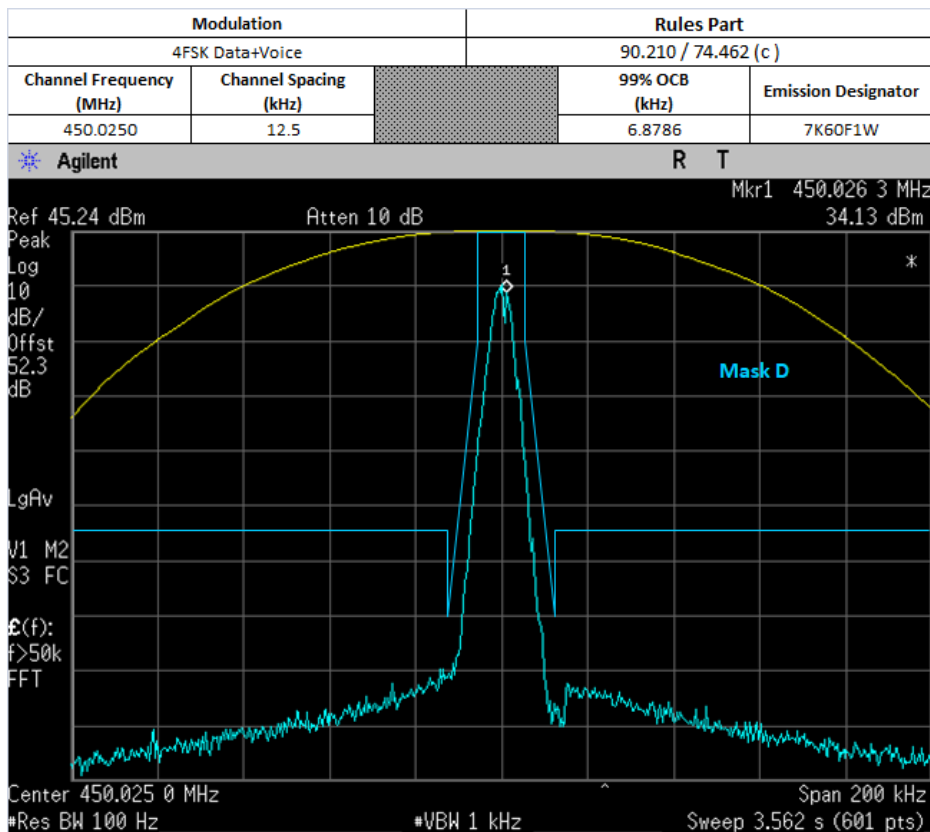
Therefore, the entire designator for 12.5 kHz channelization digital data is 7K60F1E/D/W

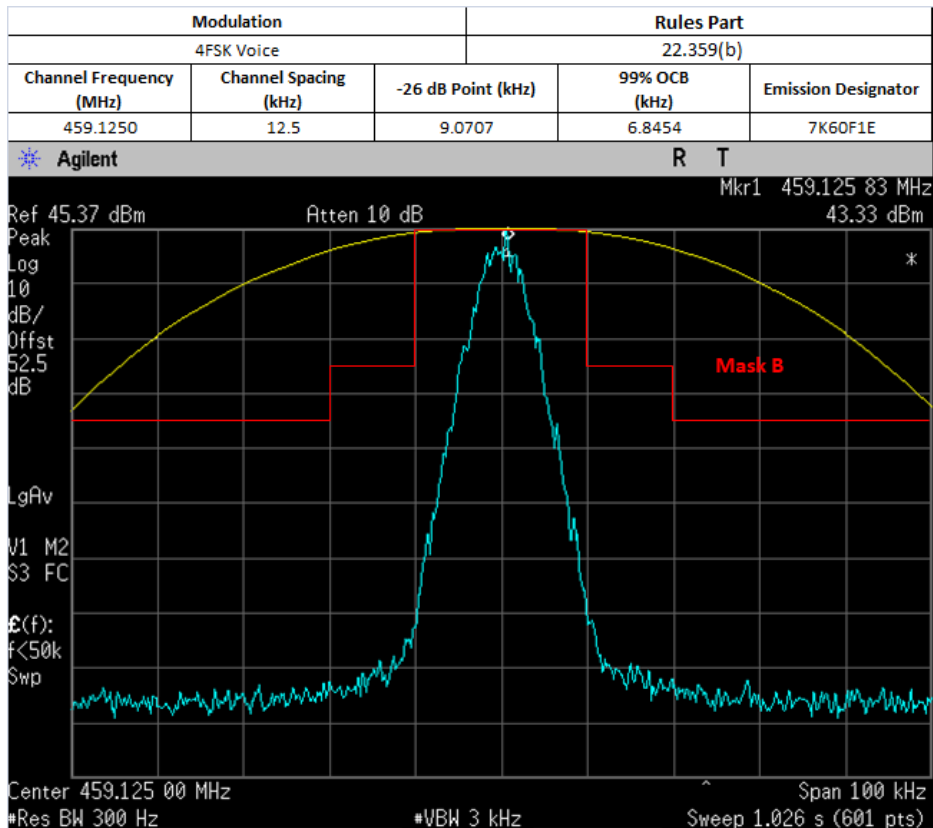
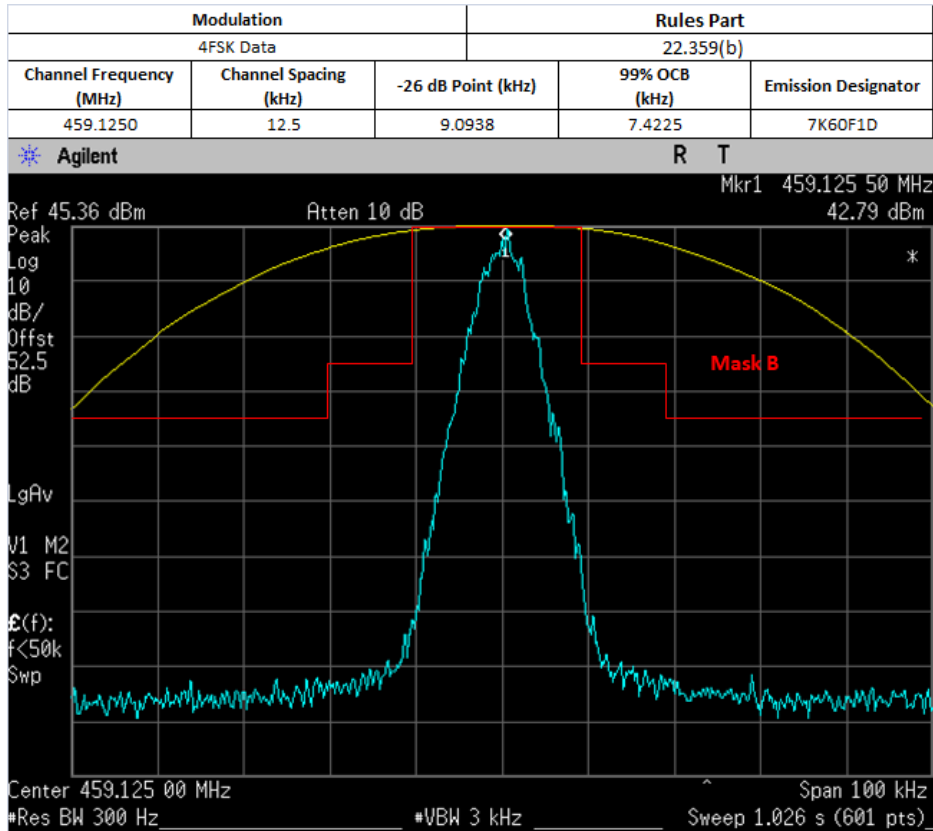


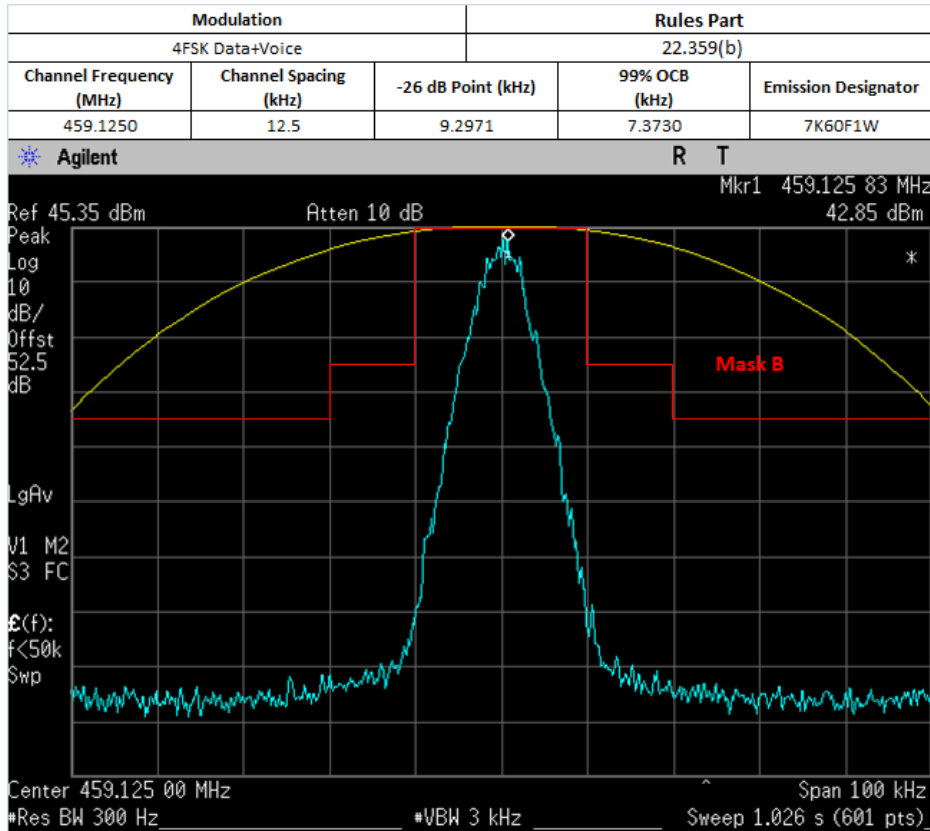










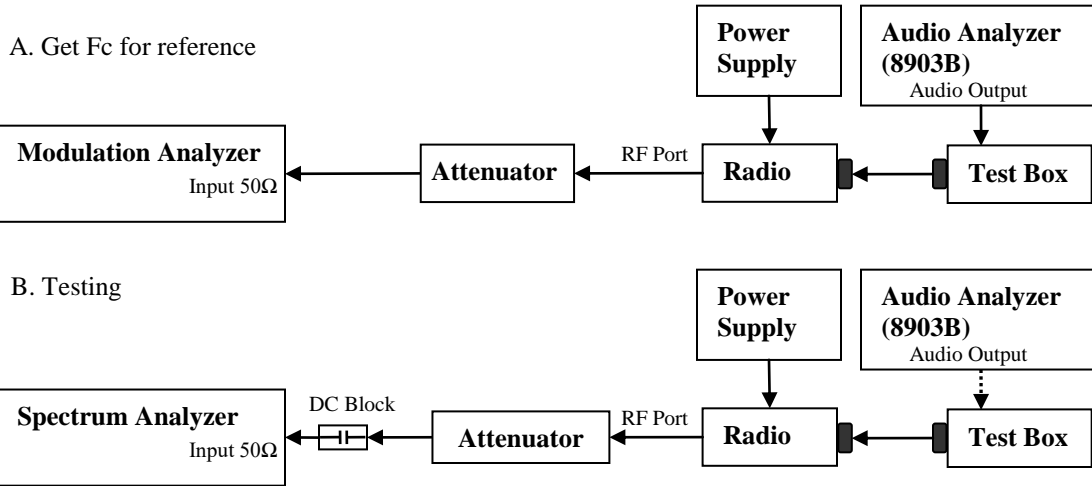


**6.6.5. Test Limit**

The 99% occupied bandwidth is the width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5% of the total mean transmitted power.

## 6.7. Band Edge Conducted Spurious Emission (Part 22)

### 6.7.1. Test Setup (Analog)



- 2) The DUT transmitter output port was connected to Modulation Analyzer.
- 3) Set the audio bandwidth filter to 15 kHz low pass filter and 50 kHz high pass filter.
- 4) Transmit the radio and set the audio analyzer to 2.5 kHz audio frequency and 50% of the rated deviation. Up the amplitude by 16 dB. Dekey the DUT.
- 5) Path loss for the measurement included.
- 6) Select the Occupied Bandwidth measurement for 99% and 26dB Emissions Bandwidth Measurement.
- 7) Key in the Fc and Resolution Bandwidth.
- 8) Transmit the DUT and record the occupied Bandwidth frequencies.
- 9) Preset the spectrum analyzer for band edge measurement.
- 10) The band edges of lowest and highest channels were measured.
- 11) Key in the Lowest and highest channel frequency, span is 60 kHz and Resolution Bandwidth is at least 1% of Emission Bandwidth.
- 12) Save the screen shot as modulated signal.
- 13) Remove the audio tone from audio analyzer to capture unmodulated signal.

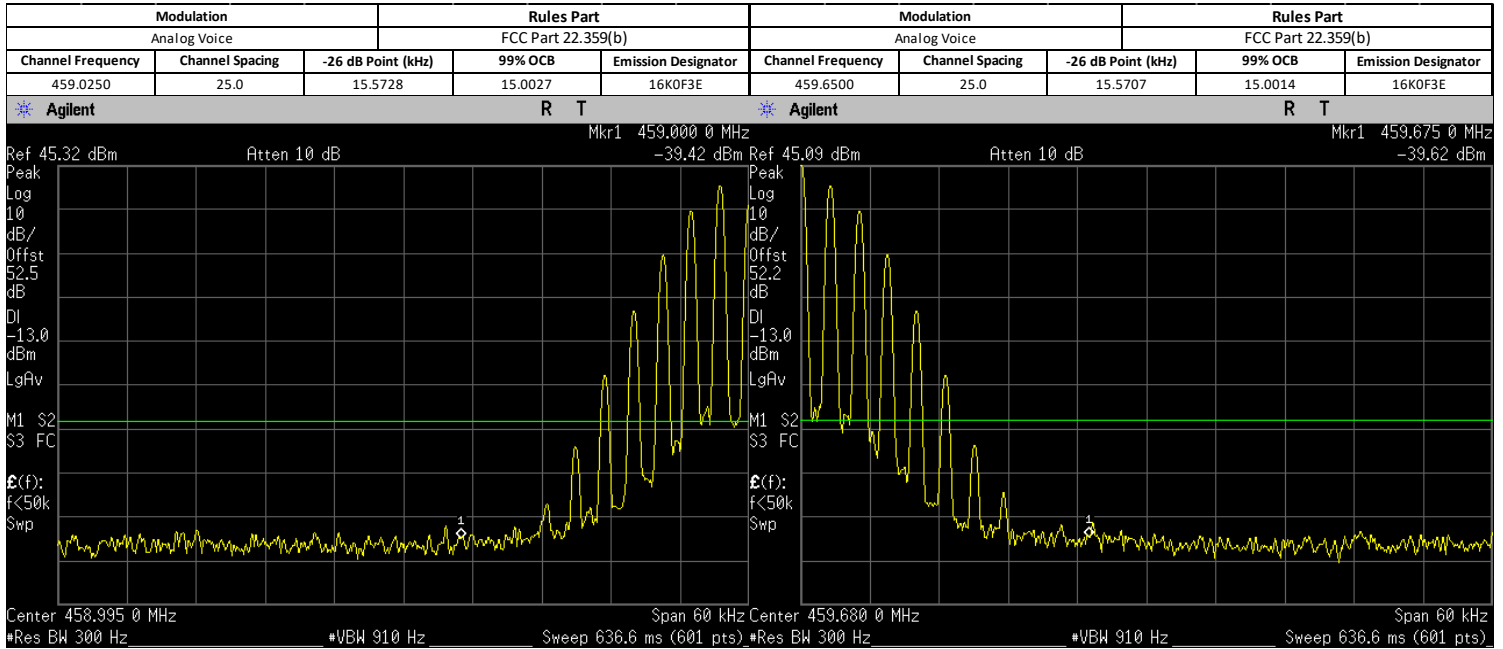
\*Note:

- For emission designator ending with F3E, 16K0F3E is the worst case and therefore only 16K0F3E will be shown.

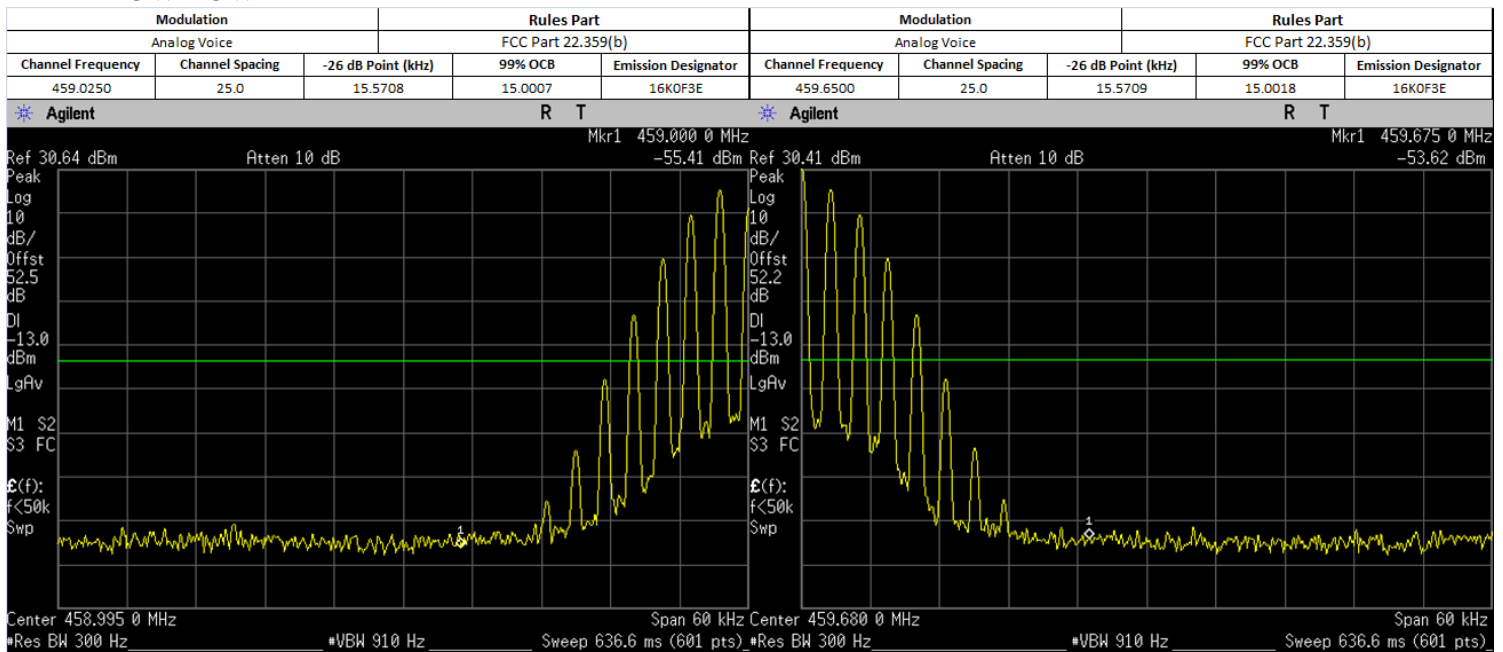


### 6.7.2. Test Result (Analog)

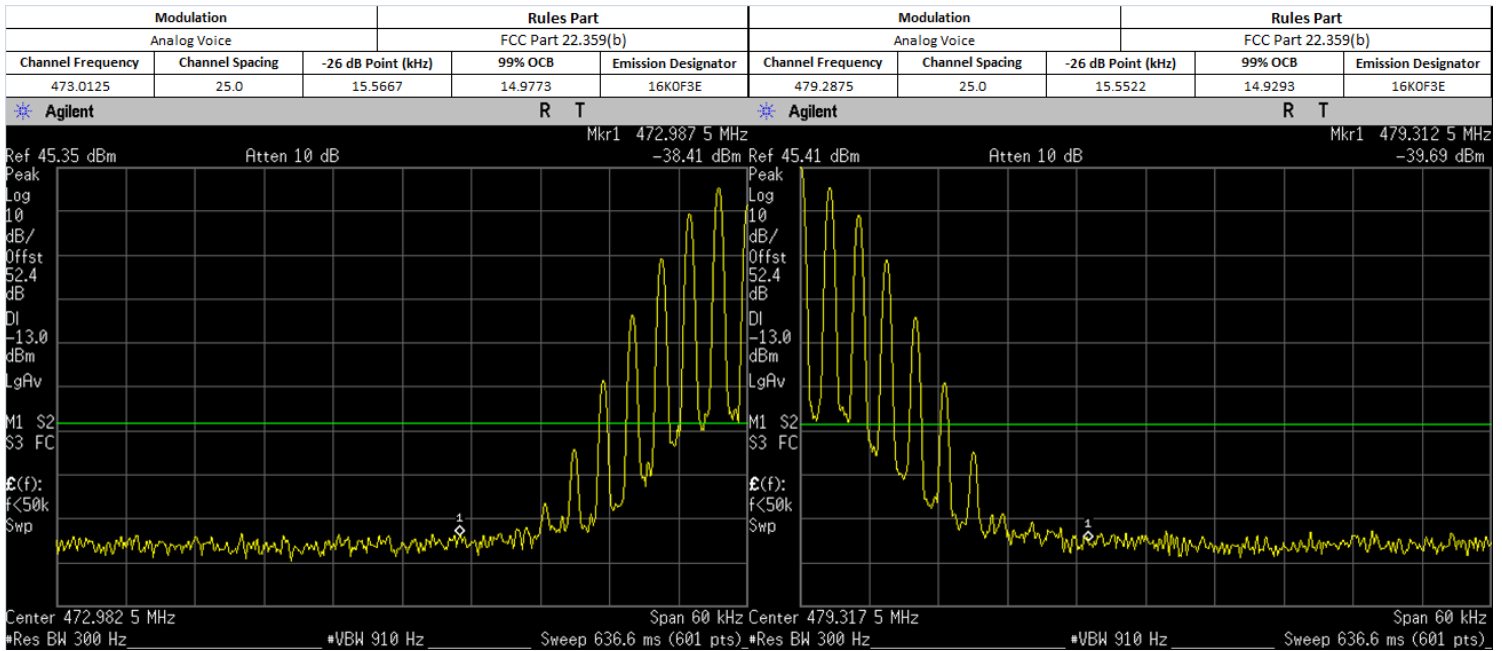
#### MAX POWER



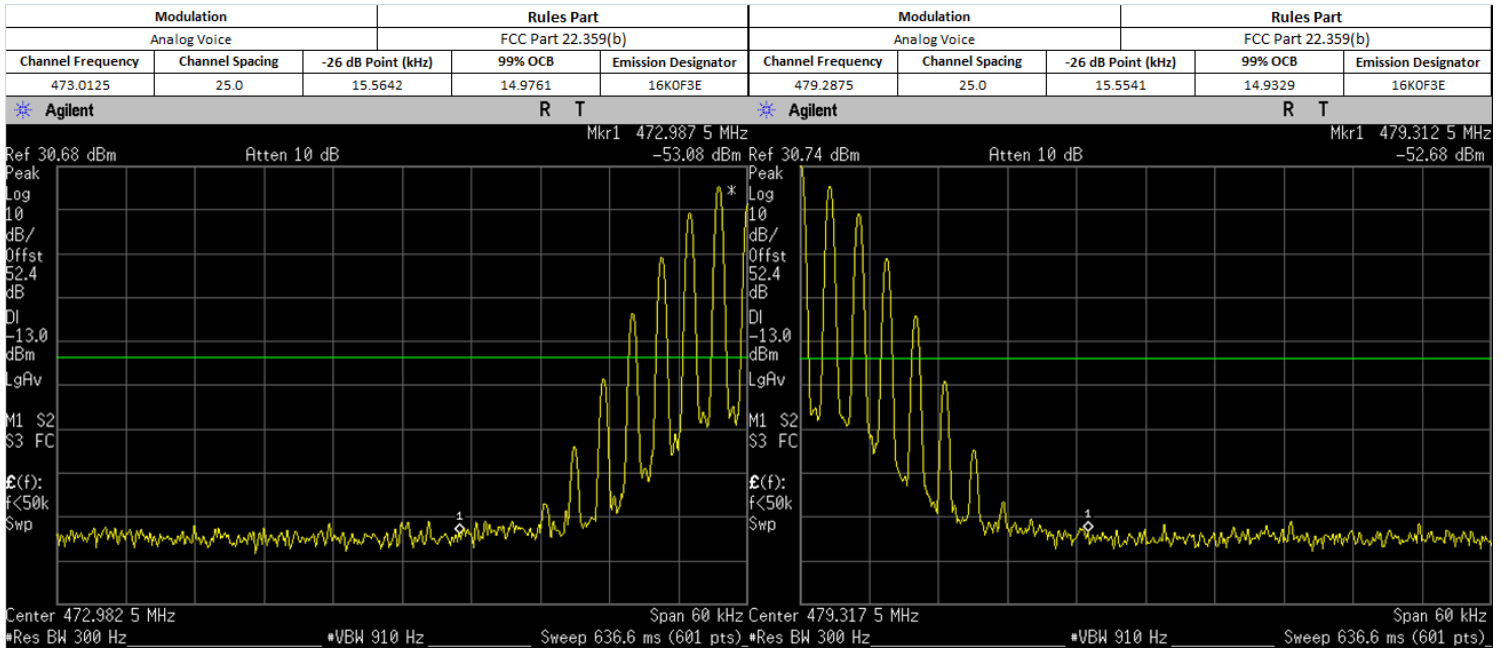
#### LOW POWER



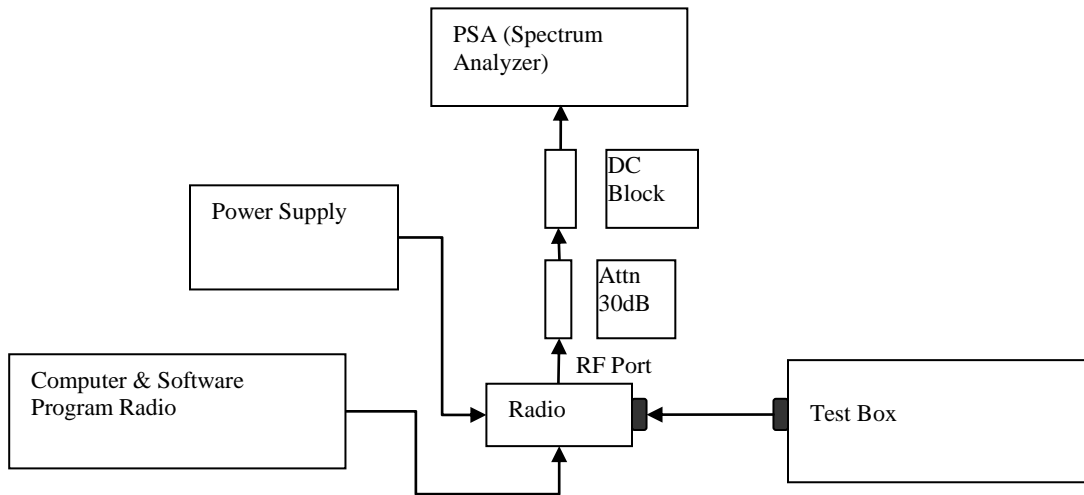
### MAX POWER



### LOW POWER



### 6.7.3. Test Setup (Digital)



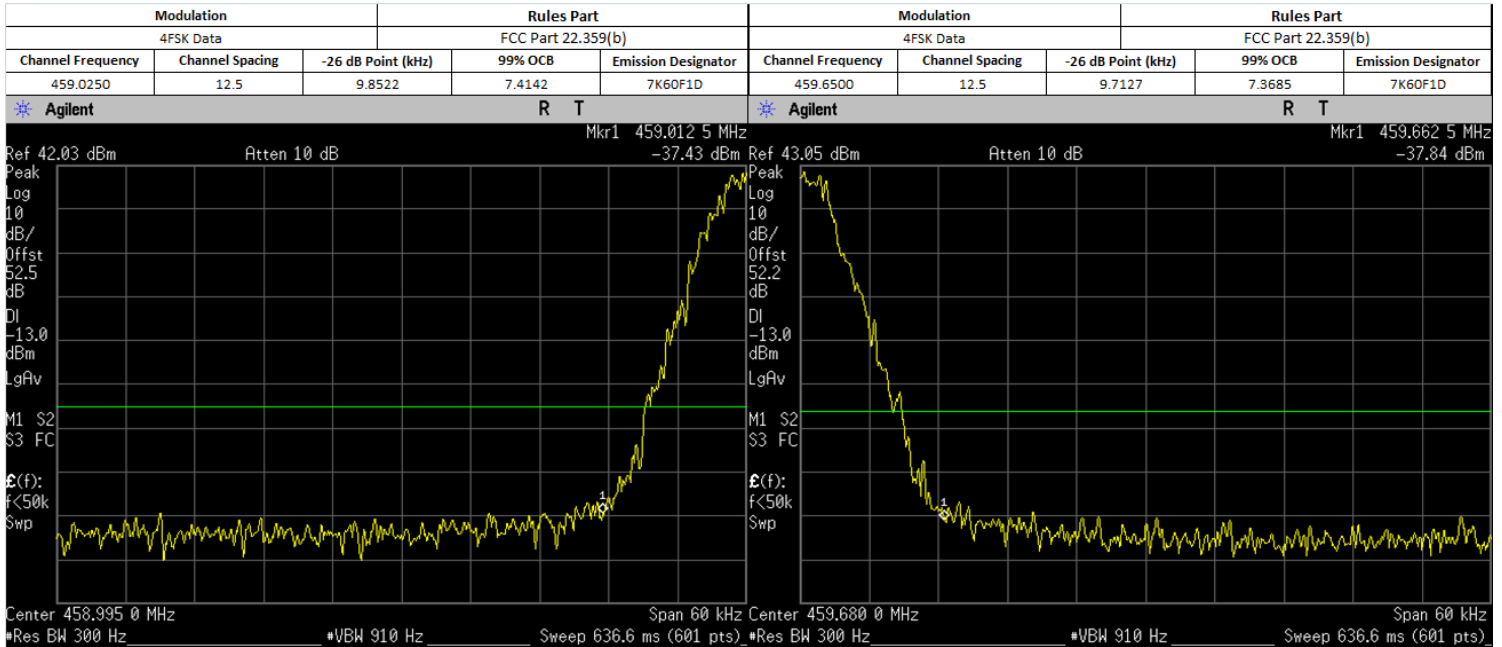
- 1) Program and set radio to operate in desire test frequency and digital mode with modulation. (\*4FSK, C4FM or other digital modulation form).
- 2) Path loss for the measurement included.
- 3) Select the Occupied Bandwidth measurement for 99% and 26dB Emissions Bandwidth Measurement.
- 4) Key in the Fc and Resolution Bandwidth.
- 5) Transmit radio record the occupied Bandwidth frequencies.
- 6) Preset the spectrum analyzer for band edge measurement.
- 7) Key in the lowest and highest channels frequency, span is 60 kHz and Resolution Bandwidth is at least 1% of Emission Bandwidth.
- 8) Save the screen shot.

\*Note:

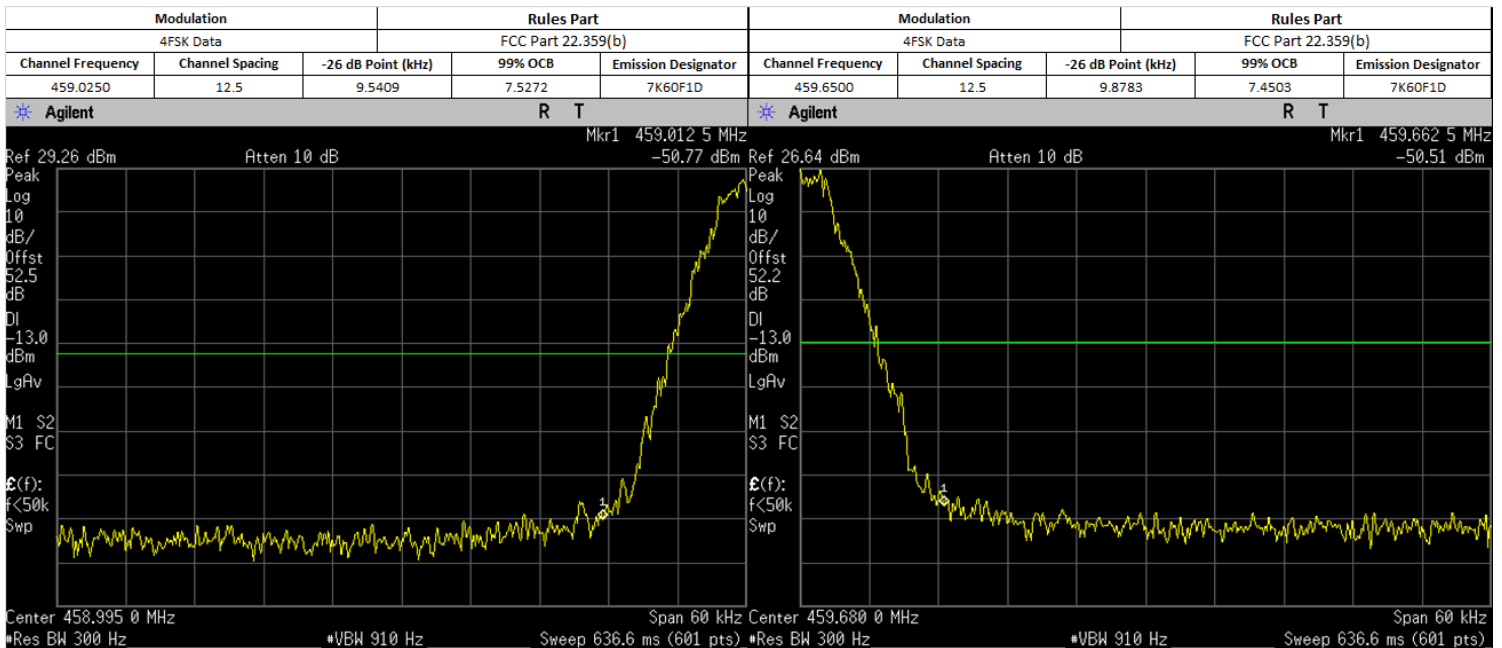
- For Digital Modulation, 12.5 kHz Data F1D & FXD would be the same. Therefore only measurements with F1D modulation shown below.
- For Digital Modulation, 12.5 kHz Data F1E & FXE would be the same. Therefore only measurements with F1E modulation shown below.

### 6.7.4. Test Result (Digital)

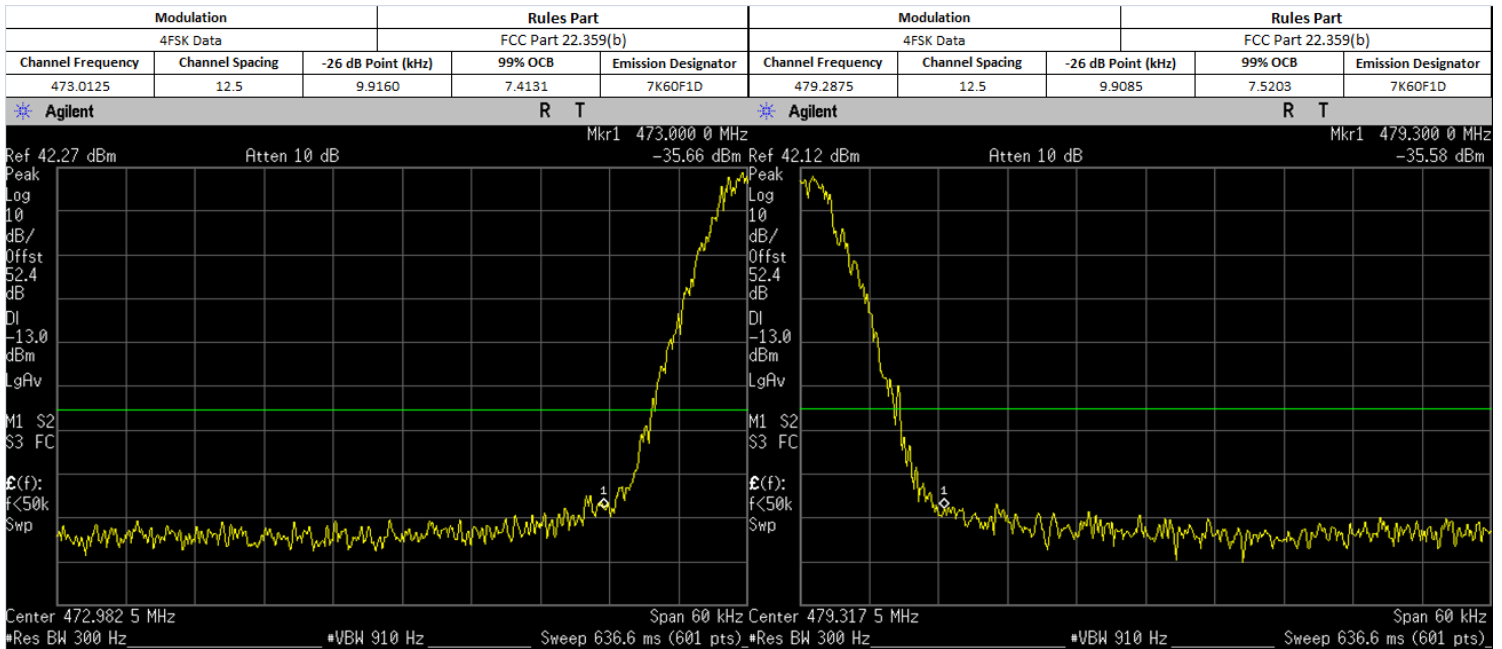
#### MAX POWER



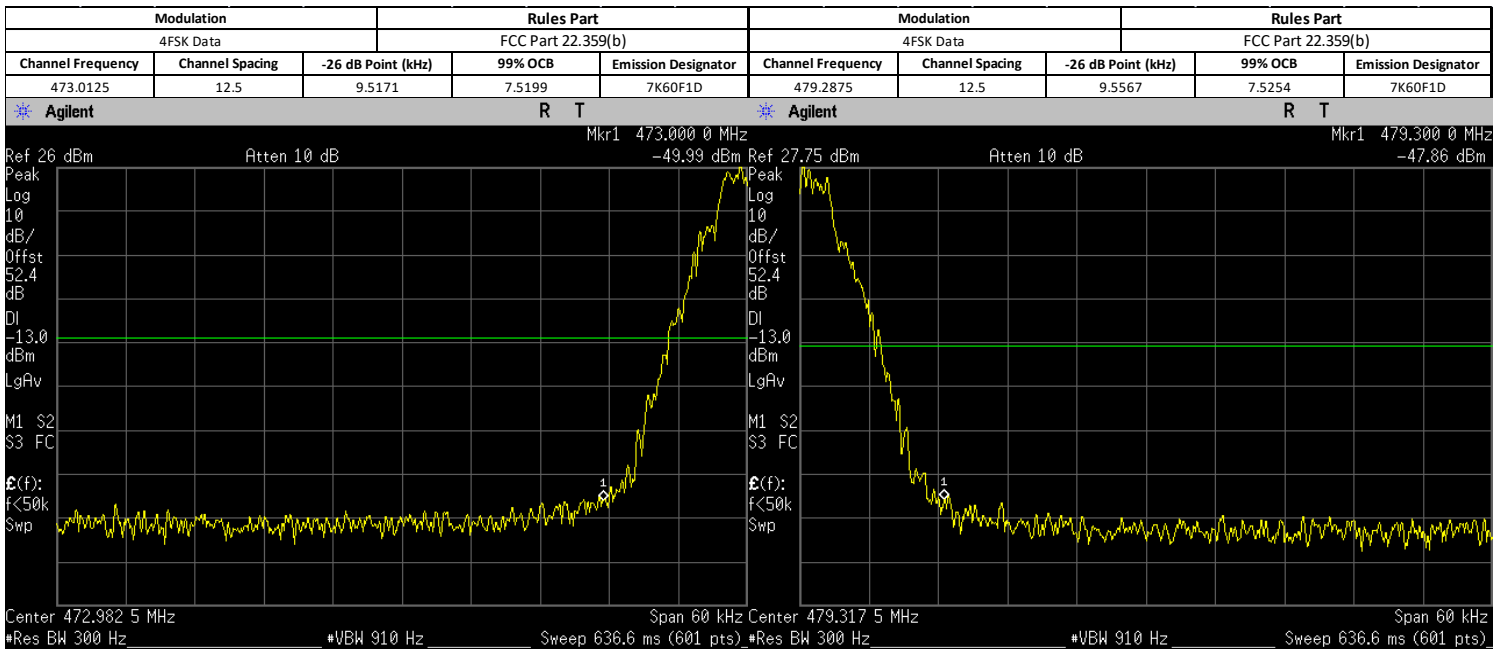
#### LOW POWER



### MAX POWER



### LOW POWER

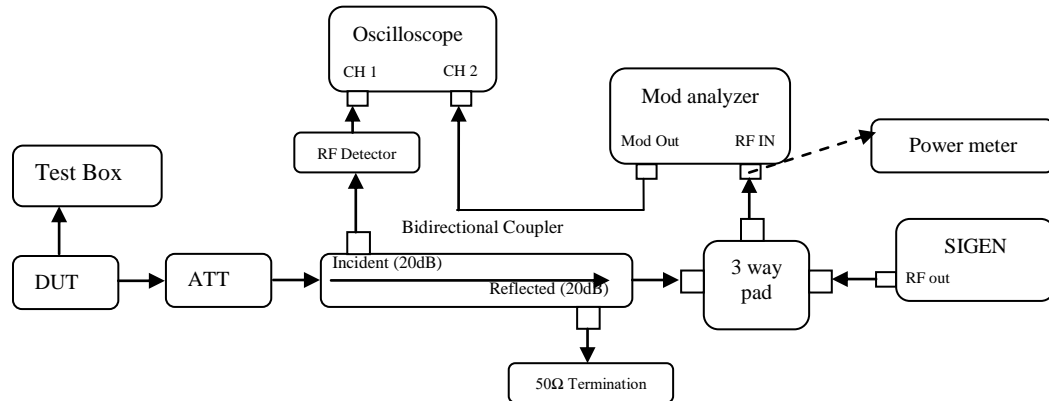


#### 6.7.5. Test Limit

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log(P)$  dB.

## 6.8. Transient Frequency Behavior

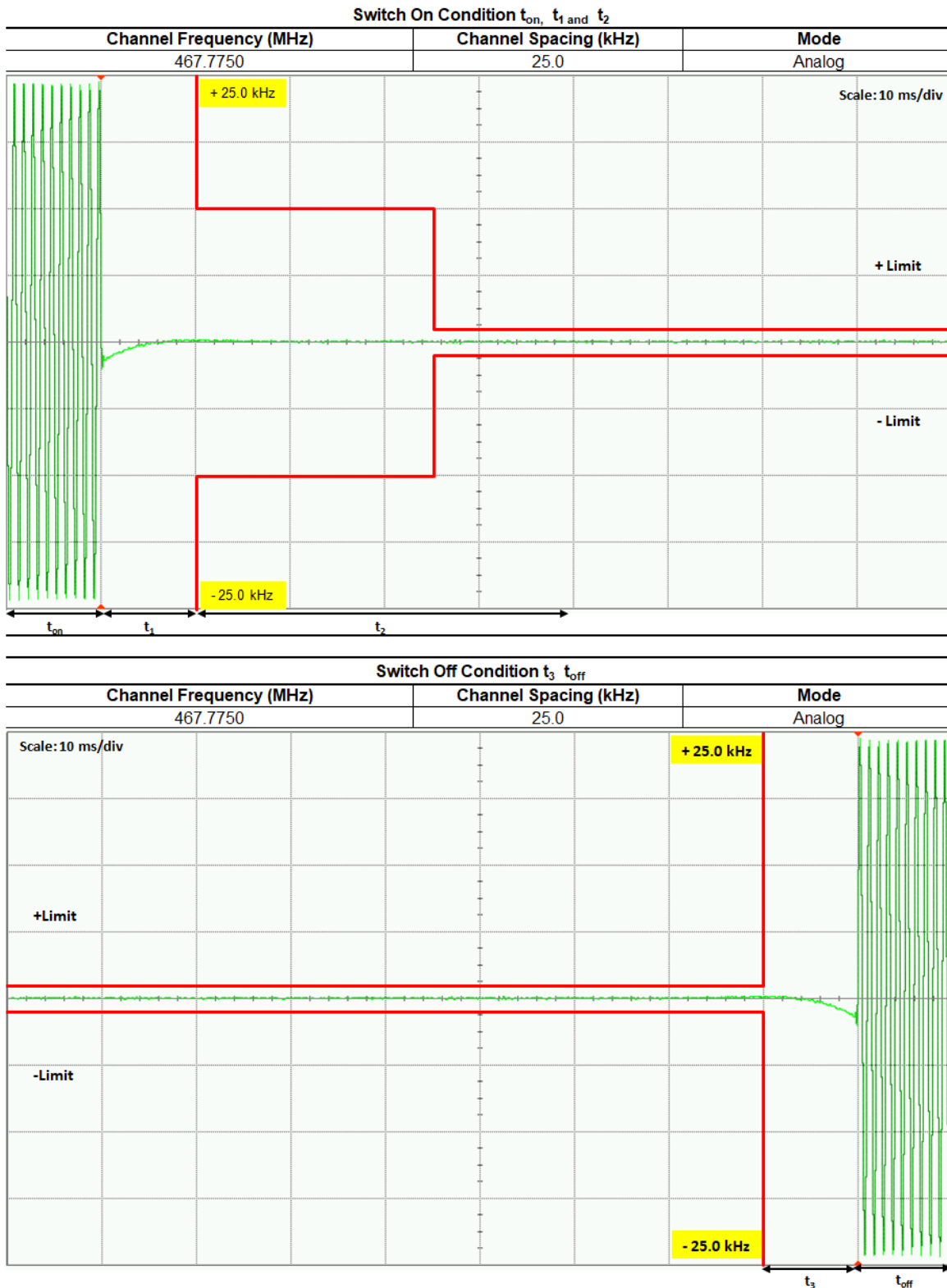
### 6.8.1. Test Setup

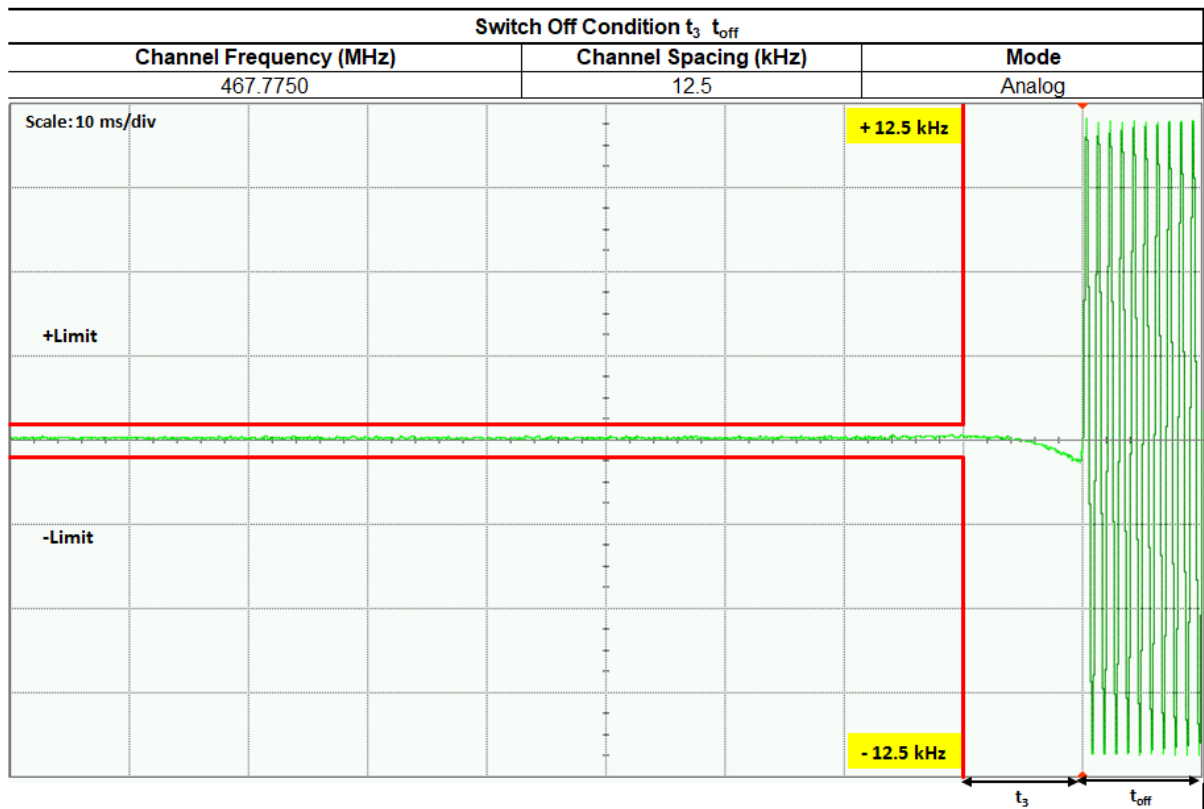
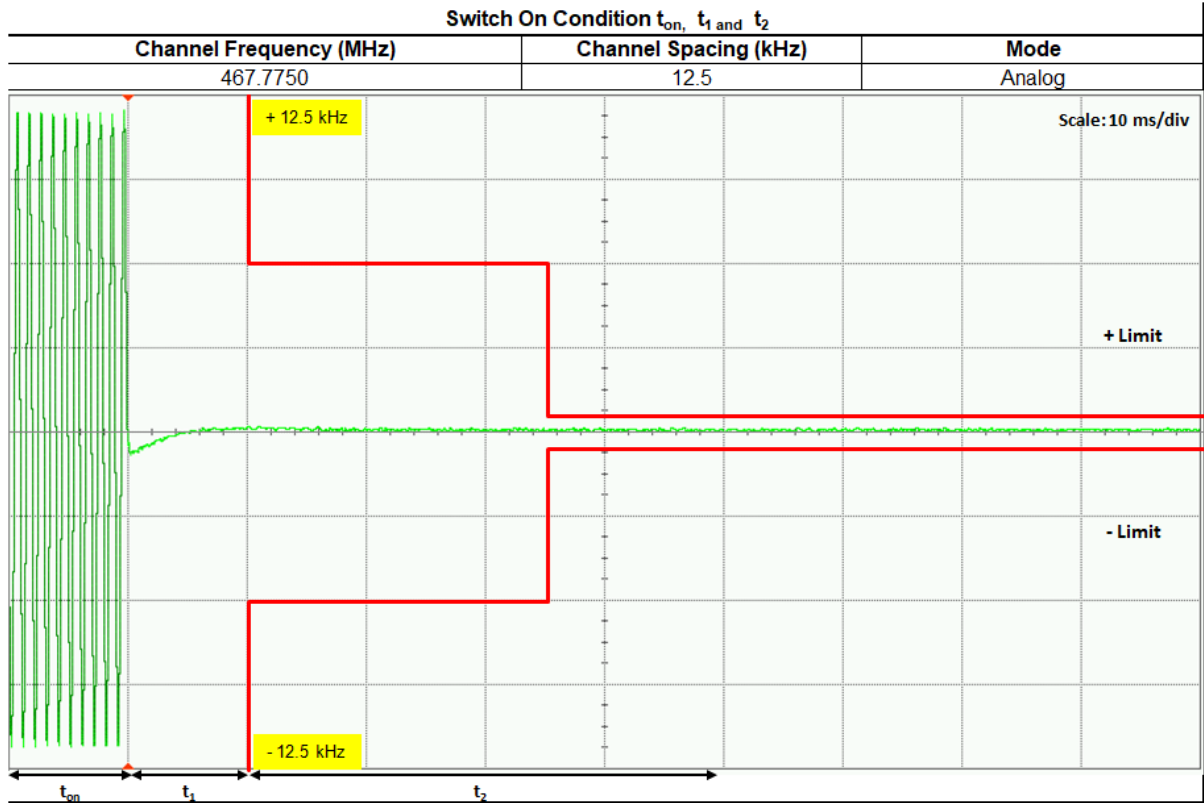


- 1) Connect the setup as figure above.
- 2) Path loss for the measurement included.
- 3) Set on Siggen with the assigned center frequency, internal 1 kHz FM tone.  
FM Deviation: Analog 25kHz Channel Spacing = 25 kHz  
Analog 12.5 kHz Channel Spacing = 12.5 kHz  
C4FM = 12.5 kHz
- 4) Turn on 50 kHz high pass filter and 15 kHz low pass filter on modulation analyzer.
- 5) Supply sufficient attenuation ATT to provide the output power of  $\leq -11\text{dBm}$  into power meter when DUT is keying up.
- 6) Note the power level on power meter and dekey the DUT.
- 7) Adjust the amplitude of the signal generator to the level power meter, maintained the amplitude throughout the rest of the measurement.
- 8) Connect the output to modulation analyzer.
- 9) Reduce 30dB attenuation and transmit the radio to get the trigger line.
- 10) Capture the screen shot for key-up (rising edge) and de-key (falling edge) mode.

### 6.8.2. Test Result

Not for FCC review







### 6.8.3. Test Limit

Transmitters designed to operate in the 150-174 MHz and 421-512 MHz frequency bands must maintain transient frequencies within the maximum frequency difference limits during the time intervals indicated:

| Time intervals <sup>1 2</sup>   | Maximum frequency difference <sup>3</sup> | All equipment  |                |
|---|---|----------------|----------------|
|   |   | 150 to 174 MHz | 421 to 512 MHz |
| Transient Frequency Behavior for Equipment Designed to Operate on 25 kHz Channels   |   |                |                |
| $t_1^4$   | ±25.0 kHz                                 | 5.0 ms         | 10.0 ms        |
| $t_2$   | ±12.5 kHz                                 | 20.0 ms        | 25.0 ms        |
| $t_3^4$   | ±25.0 kHz                                 | 5.0 ms         | 10.0 ms        |
| Transient Frequency Behavior for Equipment Designed to Operate on 12.5 kHz Channels |   |                |                |
| $t_1^4$   | ±12.5 kHz                                 | 5.0 ms         | 10.0 ms        |
| $t_2$   | ±6.25 kHz                                 | 20.0 ms        | 25.0 ms        |
| $t_3^4$   | ±12.5 kHz                                 | 5.0 ms         | 10.0 ms        |
| Transient Frequency Behavior for Equipment Designed to Operate on 6.25 kHz Channels |   |                |                |
| $t_1^4$   | ±6.25 kHz                                 | 5.0 ms         | 10.0 ms        |
| $t_2$   | ±3.125 kHz                                | 20.0 ms        | 25.0 ms        |
| $t_3^4$   | ±6.25 kHz                                 | 5.0 ms         | 10.0 ms        |

<sup>1</sup>  $t_{on}$  is the instant when a 1 kHz test signal is completely suppressed, including any capture time due to phasing.

$t_1$  is the time period immediately following  $t_{on}$ .

$t_2$  is the time period immediately following  $t_1$ .

$t_3$  is the time period from the instant when the transmitter is turned off until  $t_{off}$ .

$t_{off}$  is the instant when the 1 kHz test signal starts to rise.

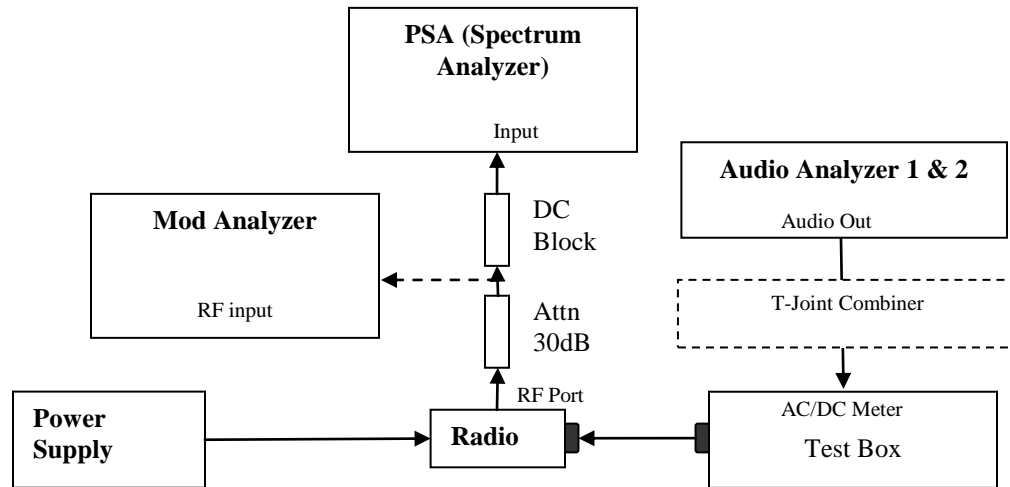
<sup>2</sup> During the time from the end of  $t_2$  to the beginning of  $t_3$ , the frequency difference must not exceed the limits specified in §90.213.

<sup>3</sup> Difference between the actual transmitter frequency and the assigned transmitter frequency.

<sup>4</sup> If the transmitter carrier output power rating is 6 watts or less, the frequency difference during this time period may exceed the maximum frequency difference for this time period.

## 6.9. Adjacent Channel Power

### 6.9.1. Test Setup (Analog)

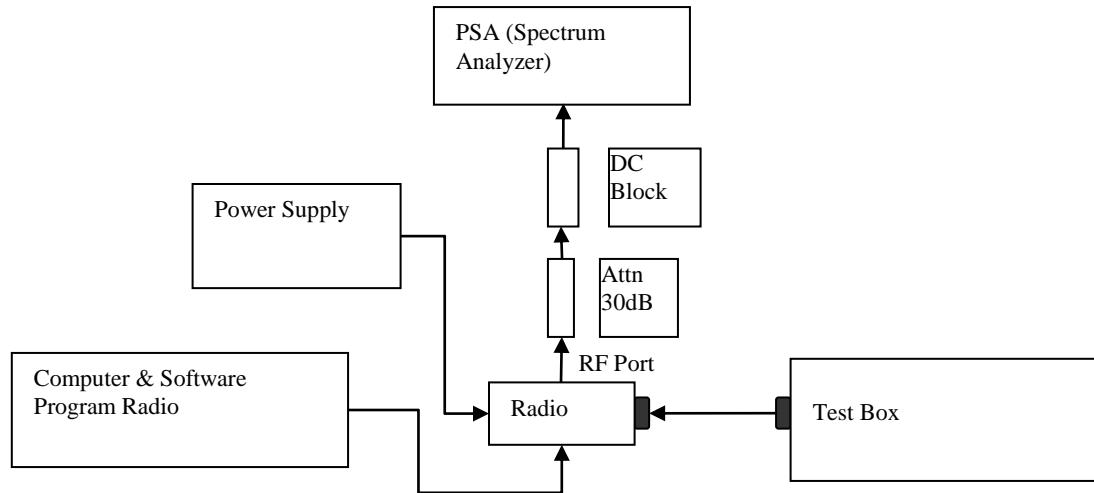


- 1) The DUT transmitter output port was connected to modulation analyzer.
- 2) Transmit the radio and turn on 1<sup>st</sup> audio analyzer with audio frequency 650Hz, 50% rated deviation, and record the amplitude value as AmpT1.
- 3) Turn off Audio analyzer 1 and turn on audio analyzer 2, set the audio frequency to 2.2 kHz and 50% deviation. Record the amplitude as AmpT2.
- 4) Turn both audio analyzers ON and up 10dB amplitude level.
- 5) Connect the output to PSA and set to assigned center frequency.
- 6) Set Span, Resolution Bandwidth and Video Bandwidth per rules part.
- 7) Transmit the radio and record the Adjacent Channel Power value in dBc.

### 6.9.2. Test Result

Not Applicable.

### 6.9.3. Test Setup (Digital)



- 1) Program and set radio to operate in desire test frequency and digital mode with modulation. (4FSK, C4FM or other digital modulation form).
- 2) Prepare setup as per picture.
- 3) Turn on the ACP Measurement – Press Measure, ACP.
- 4) Set Span, Resolution Bandwidth and Video Bandwidth as per rules part.
- 5) Transmit the radio and record the Adjacent Channel Power value in dBc.

### 6.9.4. Test Result

Not Applicable.

### 6.9.5. Test Limit

#### 12.5 kHz MOBILE TRANSMITTER ACP REQUIREMENTS

| Offset from center frequency (kHz) | Measurement bandwidth (kHz) | Maximum ACP relative (dBc) |
|------------------------------------|-----------------------------|----------------------------|
| 9.375                              | 6.25                        | -40                        |
| 15.625                             | 6.25                        | -60                        |
| 21.875                             | 6.25                        | -60                        |
| 37.50                              | 25.00                       | -60                        |
| 62.50                              | 25.00                       | -65                        |
| 87.50                              | 25.00                       | -65                        |
| 150.00                             | 100                         | -65                        |
| 250.00                             | 100                         | -65                        |
| 350.00                             | 100                         | -65                        |
| >400 to 12 MHz                     | 30 (s)                      | -75                        |
| 12 MHz to paired receive band      | 30 (s)                      | -75                        |
| In the paired receive band         | 30 (s)                      | -100                       |

#### 25 kHz MOBILE TRANSMITTER ACP REQUIREMENTS

| Offset from center frequency (kHz) | Measurement bandwidth (kHz) | Maximum ACP relative (dBc) |
|------------------------------------|-----------------------------|----------------------------|
| 15.625                             | 6.25                        | -40                        |
| 21.875                             | 6.25                        | -60                        |
| 37.50                              | 25                          | -60                        |
| 62.50                              | 25                          | -65                        |
| 87.50                              | 25                          | -65                        |
| 150.00                             | 100                         | -65                        |
| 250.00                             | 100                         | -65                        |
| 350.00                             | 100                         | -65                        |
| >400 kHz to 12 MHz                 | 30 (s)                      | -75                        |
| 12 MHz to paired receive band      | 30 (s)                      | -75                        |
| In the paired receive band         | 30 (s)                      | -100                       |

**12.5 kHz BASE TRANSMITTER ACP REQUIREMENTS**

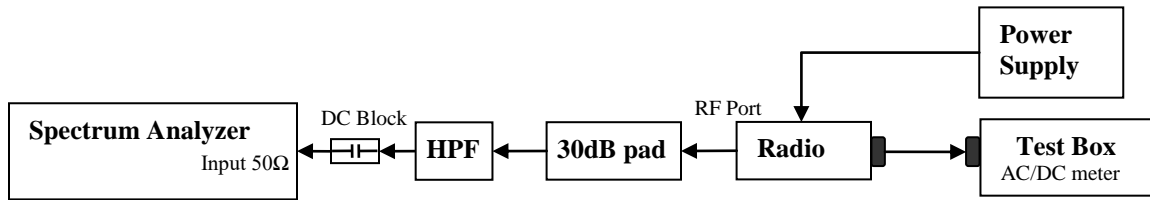
| Offset from center frequency (kHz) | Measurement bandwidth (kHz) | Maximum ACP (dBc) |
|------------------------------------|-----------------------------|-------------------|
| 9.375                              | 6.25                        | -40               |
| 15.625                             | 6.25                        | -60               |
| 21.875                             | 6.25                        | -60               |
| 37.5                               | 25                          | -60               |
| 62.5                               | 25                          | -65               |
| 87.5                               | 25                          | -65               |
| 150                                | 100                         | -65               |
| 250                                | 100                         | -65               |
| 350.00                             | 100                         | -65               |
| >400 kHz to 12 MHz                 | 30 (s)                      | -80               |
| 12 MHz to paired receive band      | 30 (s)                      | -80               |
| In the paired receive band         | 30 (s)                      | 1-85              |

**25 kHz BASE TRANSMITTER ACP REQUIREMENTS**

| Offset from center frequency (kHz) | Measurement bandwidth (kHz) | Maximum ACP (dBc) |
|------------------------------------|-----------------------------|-------------------|
| 15.625                             | 6.25                        | -40               |
| 21.875                             | 6.25                        | -60               |
| 37.5                               | 25                          | -60               |
| 62.5                               | 25                          | -65               |
| 87.5                               | 25                          | -65               |
| 150                                | 100                         | -65               |
| 250                                | 100                         | -65               |
| 350                                | 100.00                      | -65               |
| >400 kHz to 12 MHz                 | 30 (s)                      | -80               |
| 12 MHz to paired receive band      | 30 (s)                      | -80               |
| In the paired receive band         | 30 (s)                      | 1-85              |

## 6.10. Conducted Spurious Emission

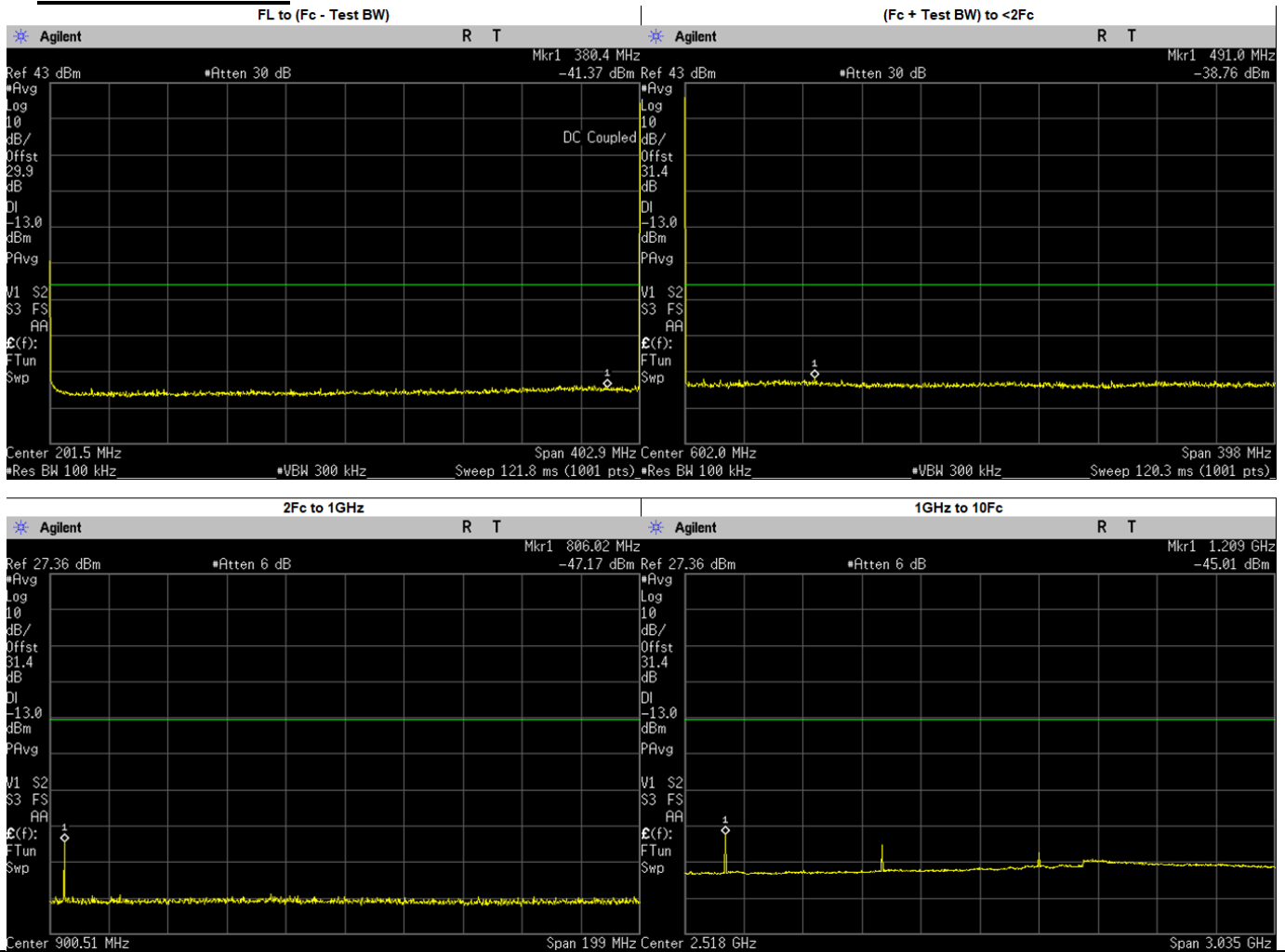
### 6.10.1. Test Setup



- 1) The DUT transmitter output port was connected to Spectrum Analyzer with above setup.
- 2) Program and set radio to operate in desire test frequency and mode. (Analog / digital modulation form).
- 3) Path loss for the measurement included.
- 4) Set the PSA Resolution Bandwidth as per rules part.
- 5) Set the Ref offset from the pathloss offset calibration file.
- 6) Adjust the center frequency of the spectrum analyzer for incremental coverage of the range from:
  - a. 9 KHz to  $F_c - \text{Test Bandwidth}$
  - b.  $F_c + \text{Test Bandwidth}$  to  $2F_c - 5\text{MHz}$ .
- 7) Key up the DUT, Peak Search the highest Spur and record the levels of spurious emissions
- 8) Dekey the DUT.
- 9) Turn On High Pass Filter path and Key up the DUT.
- 10) Adjust the PSA Freq for incremental coverage of range from  $2F_c$  to  $10F_c$
- 11) Key up the DUT and record the highest spur levels of spurious emissions.

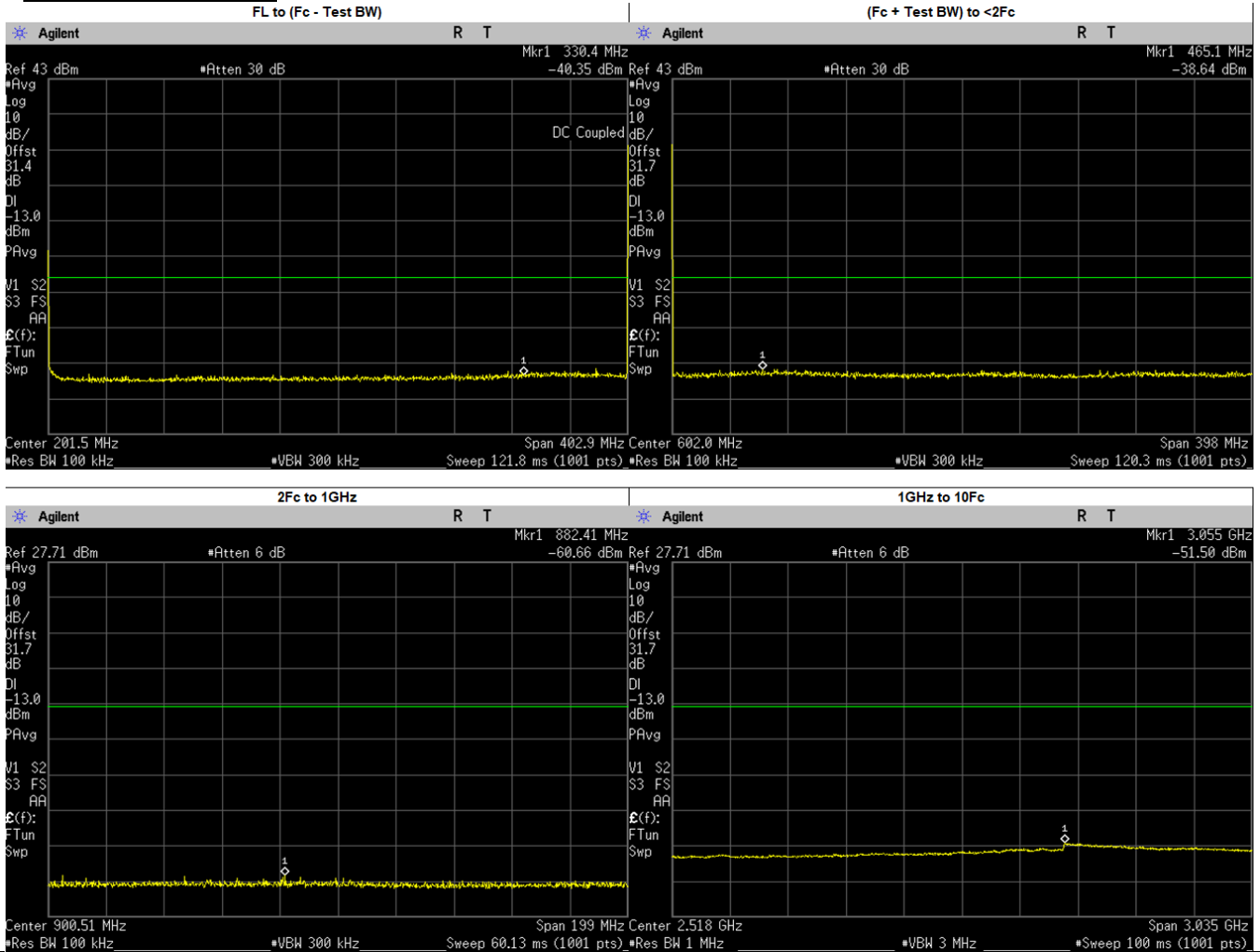
### 6.10.2. Test Result (Analog)

#### Analog: 403.0125. MHz, 25 kHz Channel Spacing, Max. Power Not for FCC review



| Frequency Range        | Highest Spur Frequency (MHz) | Spurious Level (dBm) | Failing Limit (dBm) | Results |
|------------------------|------------------------------|----------------------|---------------------|---------|
| FL to (Fc - Test BW)   | 380.4000                     | -41.3670             | -13.00              | PASS    |
| (Fc + Test BW) to <2Fc | 491.0166                     | -38.7600             | -13.00              | PASS    |
| 2Fc to 1GHz            | 806.0200                     | -47.1700             | -13.00              | PASS    |
| 1GHz to 10Fc           | 1209.0000                    | -45.0100             | -13.00              | PASS    |
|                        | 1209.0370                    | -46.3425             | -13.00              | PASS    |
|                        | 1612.0500                    | -55.1084             | -13.00              | PASS    |
|                        | 2015.0620                    | -48.8935             | -13.00              | PASS    |
|                        | 2418.0750                    | -54.9506             | -13.00              | PASS    |
|                        | 2821.0880                    | -49.8614             | -13.00              | PASS    |
|                        | 3224.1000                    | -52.7519             | -13.00              | PASS    |
|                        | 3627.1130                    | -53.3568             | -13.00              | PASS    |
| 4030.1250              | -53.8358                     | -13.00               | PASS                |         |

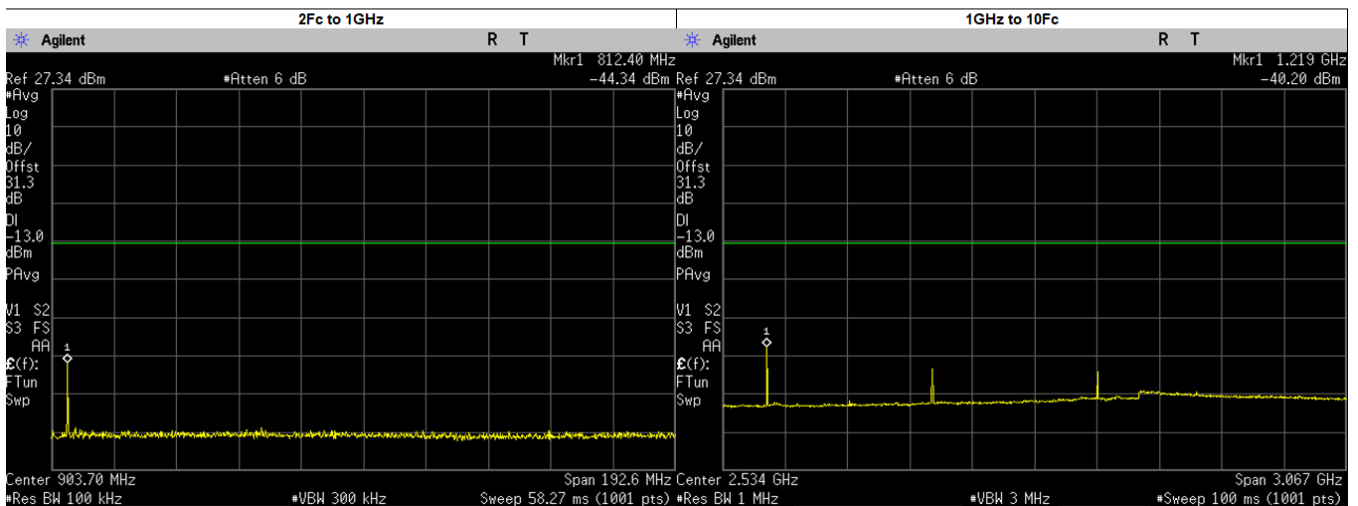
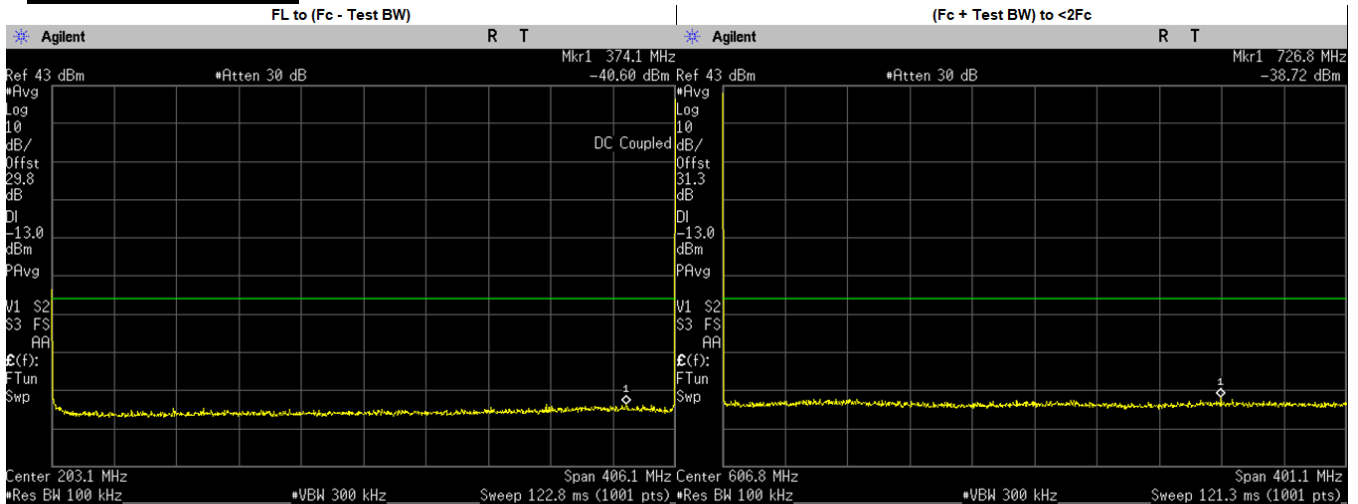
**Analog: 403.0125. MHz, 25 kHz Channel Spacing, Low. Power**  
**Not for FCC review**



| Frequency Range        | Highest Spur Frequency (MHz) | Spurious Level (dBm) | Failing Limit (dBm) | Results |
|------------------------|------------------------------|----------------------|---------------------|---------|
| FL to (Fc - Test BW)   | 330.4000                     | -40.3530             | -13.00              | PASS    |
| (Fc + Test BW) to <2Fc | 465.1494                     | -38.6400             | -13.00              | PASS    |
| 2Fc to 1GHz            | 882.4058                     | -60.6600             | -13.00              | PASS    |
| 1GHz to 10Fc           | 3054.7800                    | -51.5000             | -13.00              | PASS    |
|                        | 1209.0370                    | -55.1029             | -13.00              | PASS    |
|                        | 1612.0500                    | -55.3319             | -13.00              | PASS    |
|                        | 2015.0620                    | -54.8324             | -13.00              | PASS    |
|                        | 2418.0750                    | -54.5786             | -13.00              | PASS    |
|                        | 2821.0880                    | -53.4528             | -13.00              | PASS    |
|                        | 3224.1000                    | -52.4518             | -13.00              | PASS    |
|                        | 3627.1130                    | -53.1763             | -13.00              | PASS    |
| 4030.1250              | -53.6743                     | -13.00               | PASS                |         |

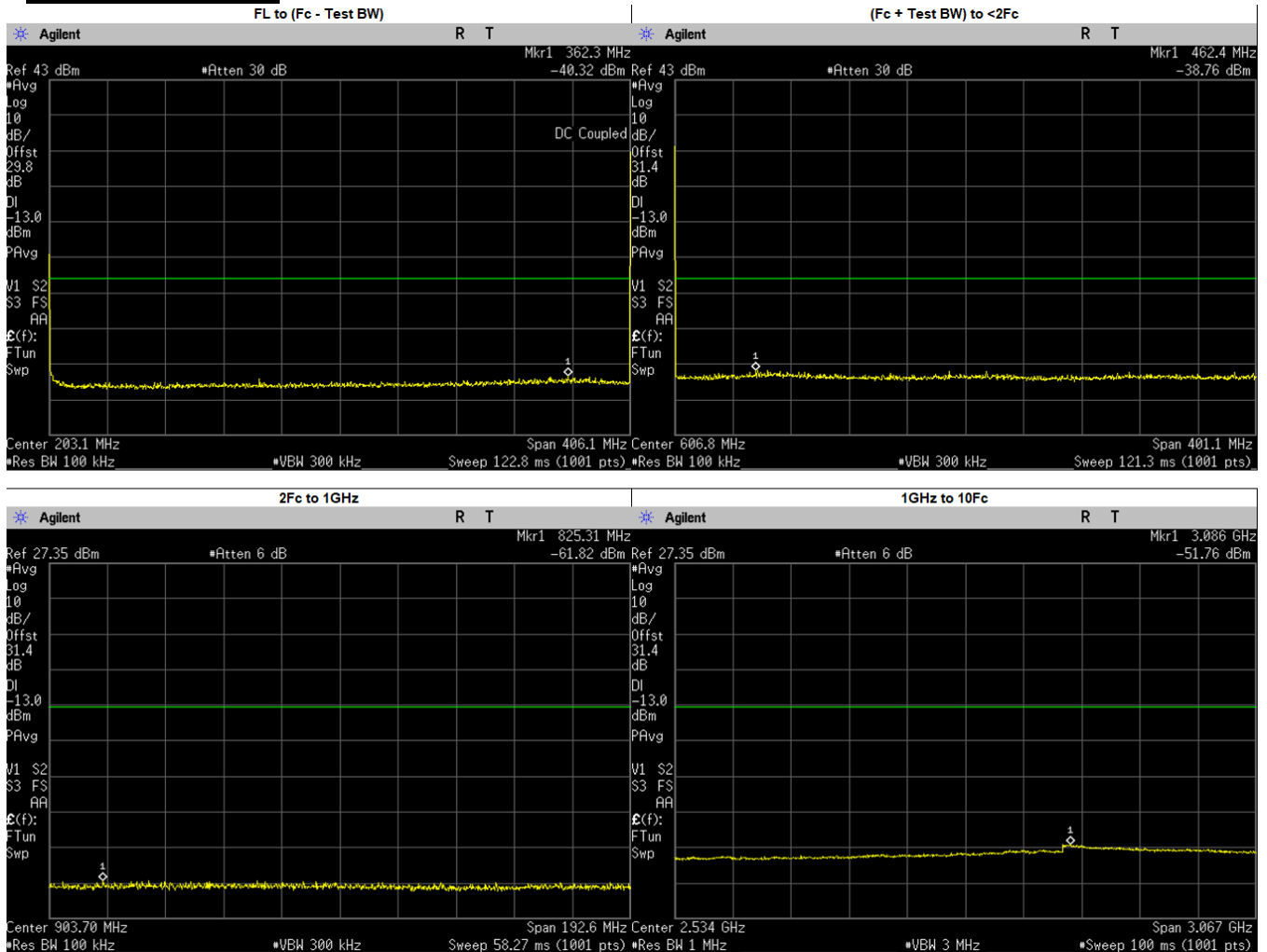


**Analog: 406.2. MHz, 25. kHz Channel Spacing, Max. Power**  
**Not for FCC review**



| Frequency Range        | Highest Spur Frequency (MHz) | Spurious Level (dBm) | Failing Limit (dBm) | Results |
|------------------------|------------------------------|----------------------|---------------------|---------|
| FL to (Fc - Test BW)   | 374.1000                     | -40.5980             | -13.00              | PASS    |
| (Fc + Test BW) to <2Fc | 726.7700                     | -38.7200             | -13.00              | PASS    |
| 2Fc to 1GHz            | 812.4000                     | -44.3400             | -13.00              | PASS    |
| 1GHz to 10Fc           | 1219.0000                    | -40.2000             | -13.00              | PASS    |
|                        | 1218.6000                    | -43.3959             | -13.00              | PASS    |
|                        | 1624.8000                    | -54.7557             | -13.00              | PASS    |
|                        | 2031.0000                    | -47.3814             | -13.00              | PASS    |
|                        | 2437.2000                    | -54.6311             | -13.00              | PASS    |
|                        | 2843.4000                    | -47.0179             | -13.00              | PASS    |
|                        | 3249.6000                    | -52.7315             | -13.00              | PASS    |
|                        | 3655.8000                    | -53.2933             | -13.00              | PASS    |
|                        | 4062.0000                    | -54.1328             | -13.00              | PASS    |

**Analog: 406.2. MHz, 25. kHz Channel Spacing, Low. Power**  
**Not for FCC review**



| Frequency Range        | Highest Spur Frequency (MHz) | Spurious Level (dBm) | Failing Limit (dBm) | Results |
|------------------------|------------------------------|----------------------|---------------------|---------|
| FL to (Fc - Test BW)   | 362.3000                     | -40.3200             | -13.00              | PASS    |
| (Fc + Test BW) to <2Fc | 462.4158                     | -38.7600             | -13.00              | PASS    |
| 2Fc to 1GHz            | 825.3118                     | -61.8200             | -13.00              | PASS    |
| 1GHz to 10Fc           | 3085.5600                    | -51.7600             | -13.00              | PASS    |
|                        | 1218.6000                    | -55.4433             | -13.00              | PASS    |
|                        | 1624.8000                    | -55.3380             | -13.00              | PASS    |
|                        | 2031.0000                    | -54.8469             | -13.00              | PASS    |
|                        | 2437.2000                    | -54.9412             | -13.00              | PASS    |
|                        | 2843.4000                    | -53.7092             | -13.00              | PASS    |
|                        | 3249.6000                    | -52.8330             | -13.00              | PASS    |
|                        | 3655.8000                    | -53.4357             | -13.00              | PASS    |
|                        | 4062.0000                    | -53.7949             | -13.00              | PASS    |