

	    <p>CERTIFICATE 2518.08</p> <p>MS ISO/IEC 17025 TESTING SAMM NO. 0825</p>																																					
<p><b>MOTOROLA PENANG ADV. COMM. LABORATORY</b>                  Motorola Solutions Malaysia SDN BHD,                  Plot 2A, Medan Bayan Lepas,                  Mukim 12 S.W.D, 11900 Bayan Lepas,                  Penang, Malaysia.</p>	<p><b>TEST REPORT</b>  <b>Report Revision : Rev.A</b></p>																																					
<table border="0"> <tr> <td><b>Date/s Tested</b></td> <td>: 22-AUG-2020 - 5-SEP-2020</td> <td rowspan="14" style="text-align: center; vertical-align: middle;">  </td> </tr> <tr> <td><b>Report Issue Date</b></td> <td>: 22-OCT-2020</td> </tr> <tr> <td><b>Manufacturer</b></td> <td>: Motorola Solutions Malaysia SDN BHD</td> </tr> <tr> <td><b>Manufacturer Address</b></td> <td>: Plot 2A, Medan Bayan Lepas, Mukim 12 SWD, 11900 Bayan Lepas, Penang, Malaysia</td> </tr> <tr> <td><b>Requestor</b></td> <td>: SZE KEAT NG</td> </tr> <tr> <td><b>Product Type</b></td> <td>: Portable</td> </tr> <tr> <td><b>Product Version (PMN)</b></td> <td>: APX8000XE</td> </tr> <tr> <td><b>Model Number (HVIN)</b></td> <td>: H91TGD9PW7AN</td> </tr> <tr> <td><b>Frequency Band</b></td> <td>: 380-520MHz</td> </tr> <tr> <td><b>Max RF Output Power</b></td> <td>: 5.7 Watts</td> </tr> <tr> <td><b>Applicant Name</b></td> <td>: Motorola Solutions Inc</td> </tr> <tr> <td><b>Applicant Address</b></td> <td>: 8000 West Sunrise Boulevard, Fort Lauderdale, Florida 33322</td> </tr> <tr> <td><b>ISED Registrations</b></td> <td>: MY0001</td> </tr> <tr> <td><b>FCC Registrations</b></td> <td>: 461337</td> </tr> <tr> <td><b>Firmware Version (FVIN)</b></td> <td>: R21.41.00</td> </tr> </table> <p><b>The equipment was tested accordance to the requirement listed below:</b></p> <table border="0" style="width: 100%;"> <tr> <td style="width: 60%;"><b>(LMR )</b></td> <td style="width: 40%;"></td> </tr> <tr> <td><b>FCC 47 CFR Part 2/ 22 / 24 / 74 / 80 / 90</b></td> <td style="text-align: right;"><b>PASS</b></td> </tr> <tr> <td><b>ISED RSS- Gen Issue 5 / 119 Issue 12</b></td> <td></td> </tr> </table>		<b>Date/s Tested</b>	: 22-AUG-2020 - 5-SEP-2020		<b>Report Issue Date</b>	: 22-OCT-2020	<b>Manufacturer</b>	: Motorola Solutions Malaysia SDN BHD	<b>Manufacturer Address</b>	: Plot 2A, Medan Bayan Lepas, Mukim 12 SWD, 11900 Bayan Lepas, Penang, Malaysia	<b>Requestor</b>	: SZE KEAT NG	<b>Product Type</b>	: Portable	<b>Product Version (PMN)</b>	: APX8000XE	<b>Model Number (HVIN)</b>	: H91TGD9PW7AN	<b>Frequency Band</b>	: 380-520MHz	<b>Max RF Output Power</b>	: 5.7 Watts	<b>Applicant Name</b>	: Motorola Solutions Inc	<b>Applicant Address</b>	: 8000 West Sunrise Boulevard, Fort Lauderdale, Florida 33322	<b>ISED Registrations</b>	: MY0001	<b>FCC Registrations</b>	: 461337	<b>Firmware Version (FVIN)</b>	: R21.41.00	<b>(LMR )</b>		<b>FCC 47 CFR Part 2/ 22 / 24 / 74 / 80 / 90</b>	<b>PASS</b>	<b>ISED RSS- Gen Issue 5 / 119 Issue 12</b>	
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<p>This report shall not be reproduced without written approval from an officially designated representative of the Motorola Penang Adv. Comm. Laboratory. The results and statements contained in this report pertain only to the device(s) evaluated.</p>																																						
<p>Prepared By:</p>  <p>_____</p> <p><b>Gan Boon Teong</b>  <b>Test Personnel</b></p>	<p>Approved Signatory:</p>  <p>_____</p> <p><b>Vincent Foong Chuen Kit</b>  <b>Responsible Engineer</b></p>																																					

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**Report Revision History**

<b>Revision History</b>	<b>Description</b>	<b>Date</b>	<b>Originator</b>
Rev. A	Initial Report	05-SEP-2020	Gan Boon Teong

## 1.0 General Information

### EUT Description:

<b>Technologies</b>	Land Mobile Radio (LMR)
<b>Modulation Type</b>	Analog, C4FM, Phase II

The EUT contains following accessory devices and data cable:

<b>Item</b>	<b>Brand</b>	<b>Model or P/N</b>
BATT IMPRES 2 LIION R IP68 5100T	MOTOROLA	PMNN4494A

### 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

## 2.0 Summary of Test Results

FCC General Rules Part (47CFR)	ISED General Rules Part	Test Item	Result	Remarks	Serial number tested
2.1046, 90.541 (700MHz), 22.565, 74.461, 74.534, 80.215	RSS-119	RF Power Output	Pass		579TWR0041
2.1055, 90.213, 22.355	RSS-119	Frequency Stability	Pass		579TWR0041
2.047, 74.463, 80.213	RSS-119	Audio Frequency Response	Pass		579TWR0041
2.047, 74.463, 80.213	RSS-119	Audio Low Pass Filter Response	Pass		579TWR0041
2.1047, 74.463, 80.213	RSS-119	Modulation limiting	Pass		579TWR0041
2.1049, 90.210, 22.359, 74.462, 74.535, 80.211(c), 80.211(f)	RSS-119	Occupied Bandwidth	Pass	16K0F3E – 15.0564kHz 11K0F3E – 9.9996kHz 8K10F1D – 7.9381kHz 8K10F1E – 8.1011kHz 8K10F1W – 8.0724kHz	579TWR0041
2.1051, 90.543 (700MHz), 22.359 (a), (b)	RSS-119	Band Edge Conducted Spurious Emission	Pass		579TWR0041
90.214	RSS-119	Transient Frequency Behavior	Pass		579TWR0041
-	-	Adjacent Channel Power	NA		579TWR0041
Low end of the band, Federal, Low end of part 90, High end of 90, High end of band, 74D, 74H, 90, 22, 22E, 80	RSS-119	Conducted Spurious Emissions	Pass	Highest Emission : -33.99dBm	579TWR0041
2.1051, 22.359, 74.462(c), 80.211(c)	RSS-119	Radiated Spurious Emission	Pass	No spur detected (noise floor)	579TWR0037
-	-	GNSS (EIRP for 1559 – 1610MHz)	NA		
-	-	Effective Radiated Power (ERP)	NA		

### 3.0 Measurement Uncertainty

Measurement	Frequency	Expanded Uncertainty (k=1.96) ( $\pm$ dB)
AC Power Line Conducted Spurious Emission	150KHz ~ 30MHz	3.43 dB
Radiated Emissions up to 1 GHz	30MHz ~ 200MHz	4.03 dB
	200MHz ~ 1000MHz	4.03 dB
Radiated Emissions above 1 GHz	1GHz ~ 18GHz	4.03 dB
	18GHz ~ 25GHz	4.03 dB
Conducted Spurious Emissions	9kHz ~ 12.75GHz	2.82 dB
Frequency Stability	9kHz ~ 12.75GHz	0.0085 ppm
Audio Frequency / Low Pass Filter 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	3729A17612	15-Nov-19	15-Nov-20
POWER METER	E4416A	GB41293747	19-Nov-18	19-Nov-20
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

**Radiated Emission**

**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	101750	24-Jul-19	24-Sep-20
EMI TEST RECEIVER	ESIB26	100017	19-Jul-19	19-Sep-20
5m Semi-anechoic Chamber	S800-HX	J2308	CNR	CNR
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	CNR	CNR
18 - 40GHz PREAMPLIFIER	Miteq Hi Gain Sucoflex	001	CNR	CNR
PREAMPLIFIER	PAM-0118	269	24-May-19	24-May-22
LOOP ANTENNA	6502	00208416	5-Sep-19	5-Sep-20
Test Software	EMC_FCC_IC_Bluetooth_RE_Test			
Version	EMC_FCC_RE_v1.6.2			

## 5.0 Test Condition

### 5.1. Transmitter Test Conditions

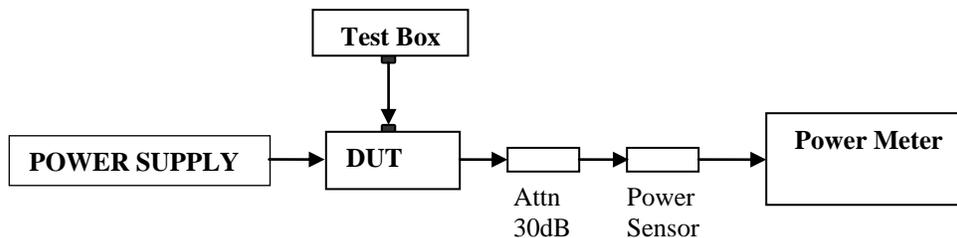
Test Item, (Channel Spacing)	Power (W)	Modulation	Test Frequency (MHz)	Tested By	Environmental conditions
RF Output Power	Low & Max	Analog	380.0125, 406.2, 450.025, 459.125, 467.775, 469.9875, 482.0125, 511.9875, 519.9875	Gan Boon Teong	23.4°C, 50%RH
Frequency Stability	Max	Analog	467.775	Gan Boon Teong	25.1°C, 54.3%RH, 60.3°C, 50%RH, -30.1°C, 51.2%RH
Audio Frequency Response (12.5kHz / 25kHz)	Max	Analog	467.775, 459.125, 511.9875	Gan Boon Teong	23.4°C, 50%RH
Audio Low Pass Filter Response (12.5kHz / 25kHz)	Max	Analog	467.775, 459.125, 511.9875	Gan Boon Teong	23.4°C, 50%RH
Modulation limiting (12.5kHz / 25kHz)	Max	Analog	467.775, 459.125, 511.9875	Gan Boon Teong	23.4°C, 50%RH
Occupied Bandwidth (12.5kHz / 20kHz / 25kHz)	Max	Analog, C4FM, Phase II	406.2, 450.025, 467.775, 473.0125, 511.9875	Gan Boon Teong	23.4°C, 50%RH
Band Edge Conducted Spurious Emissions (Part 22) (12.5kHz / 20kHz / 25kHz)	Low / Max	Analog, C4FM, Phase II	459.025, 459.65, 473.0125, 479.2875	Gan Boon Teong	23.4°C, 50%RH
Transient Frequency Behavior (UHF & VHF Band) (12.5kHz / 25kHz)	Max	Analog, C4FM	467.775	Gan Boon Teong	23.4°C, 50%RH
Adjacent Channel Power (700MHz Band) (12.5kHz / 25kHz)	Max	Analog, C4FM, Phase II	NA		
Conducted Spurious Emissions- (12.5kHz / 25kHz)	Low / Max	Analog, C4FM, Phase II	380.0125, 406.2, 450.025, 459.125, 467.775, 482.0125	Gan Boon Teong	23.4°C, 50%RH
Radiated Spurious Emission (12.5kHz / 25kHz)	Max	Phase II	406.2, 482.0125	Qawiman & Nazrin	23.8 Hum(70.6%RH)
GNSS (EIRP for 1559 - 1610MHz) (12.5kHz / 25kHz)	Max	Analog	NA		
Effective Radiated Power (ERP) (12.5kHz / 25kHz)	Max	Analog	NA		

NA → Not Applicable

## 6.0 Transmitter Test Parameters

### 6.1 RF Output Power

#### 6.1.1 Test Setup



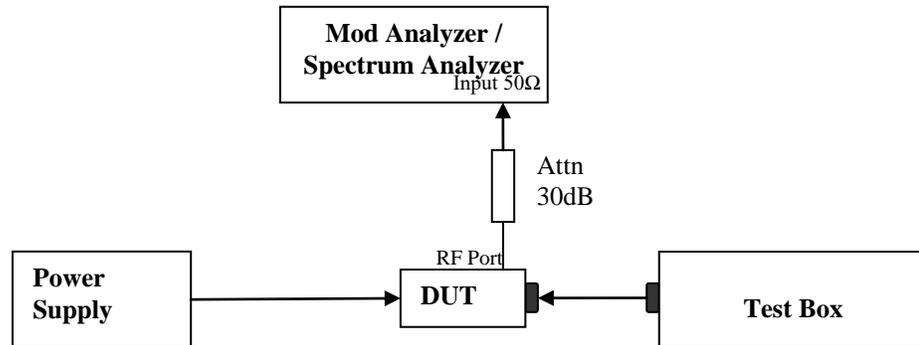
- 1) The DUT transmitter connected to Power Meter using the 30 dB attenuator and power sensor with above setup.
- 2) Path loss for the measurement included.
- 3) All the measurement was done at low, mid, high frequency for each band.
- 4) Record the power into the test report.

#### 6.1.2 Test Result

Temperature	25°C				REMARK
Voltage (V)	7.5V				
Frequency (MHz)	Low Power (W)	Current (A)	Max Power (W)	Current (A)	
380.0125	0.98	1.14	5.54	2.07	<b>Not for FCC review</b>
406.20000	0.97	1.02	5.54	2.17	
450.02500	0.98	1.08	5.60	2.04	
459.12500	0.98	1.08	5.57	2.07	
467.77500	0.98	1.08	3.95	1.68	<b>Part 80 (4W)</b>
469.98750	0.99	1.05	5.63	2.07	
482.01250	0.97	1.02	5.60	1.98	
511.98750	0.97	1.14	5.55	2.10	
519.98750	0.98	1.17	5.54	2.07	

## 6.2. Frequency Stability

### 6.2.1. Test Setup

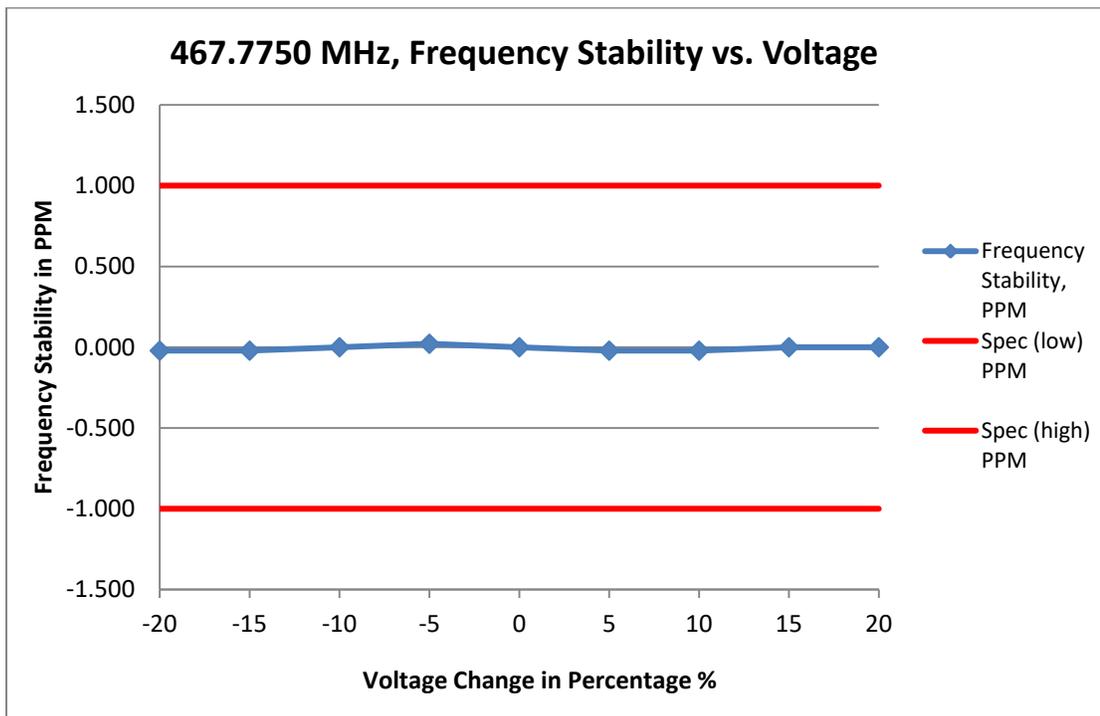


- 1) The DUT transmitter output port was connected to Modulation / Spectrum Analyzer.
- 2) Path loss for the measurement included.
- 3) Transmit the DUT and record the freq in  $MCF_{MHz}$ .
- 4) Test in 2 conditions:
  - Temperature: The frequency of the transmitter was measured from -30°C to 50°C.
  - 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:

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

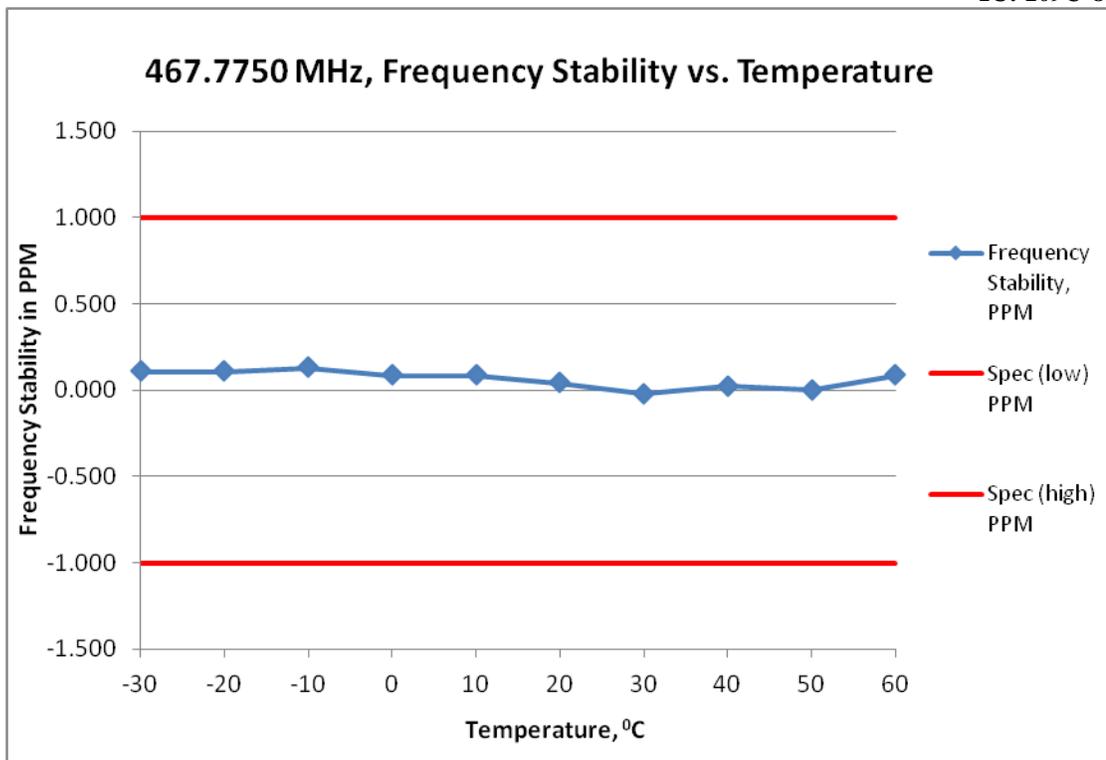
Where:  $MCF_{MHz}$  is the Measured Carrier Frequency in MHz  
 $ACF_{MHz}$  is the Assigned Carrier Frequency in MHz

**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	6.000	467.774990	-0.021	-1.000	1.000
-15	6.370	467.774990	-0.021	-1.000	1.000
-10	6.750	467.775000	0.000	-1.000	1.000
-5	7.120	467.775010	0.021	-1.000	1.000
0	7.500	467.775000	0.000	-1.000	1.000
5	7.870	467.774990	-0.021	-1.000	1.000
10	8.250	467.774990	-0.021	-1.000	1.000
15	8.620	467.775000	0.000	-1.000	1.000
20	9.000	467.775000	0.000	-1.000	1.000



(ii) Frequency Stability VS temperature

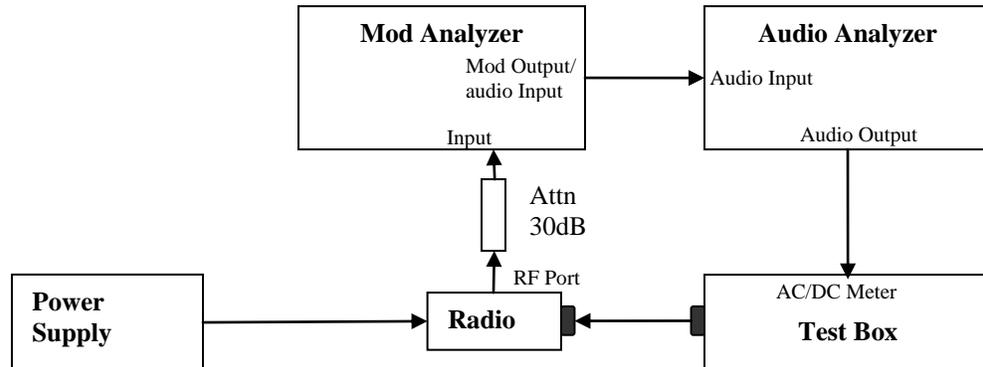
Frequency / Channel Spacing	467.7750 MHz / 12.5 kHz			
Voltage, V	7.5			
Temperature, °C	Frequency, MHz	Frequency Stability, PPM	Spec (low) PPM	Spec (high) PPM
-30	467.775050	0.107	-1.000	1.000
-20	467.775050	0.107	-1.000	1.000
-10	467.775060	0.128	-1.000	1.000
0	467.775040	0.086	-1.000	1.000
10	467.775040	0.086	-1.000	1.000
20	467.775020	0.043	-1.000	1.000
30	467.774990	-0.021	-1.000	1.000
40	467.775010	0.021	-1.000	1.000
50	467.775000	0.000	-1.000	1.000
60	467.775040	0.086	-1.000	1.000

**6.2.3. Test Limit**

As per manufacturer declared spec +/- 1.0 ppm

### 6.3. Audio Frequency Response

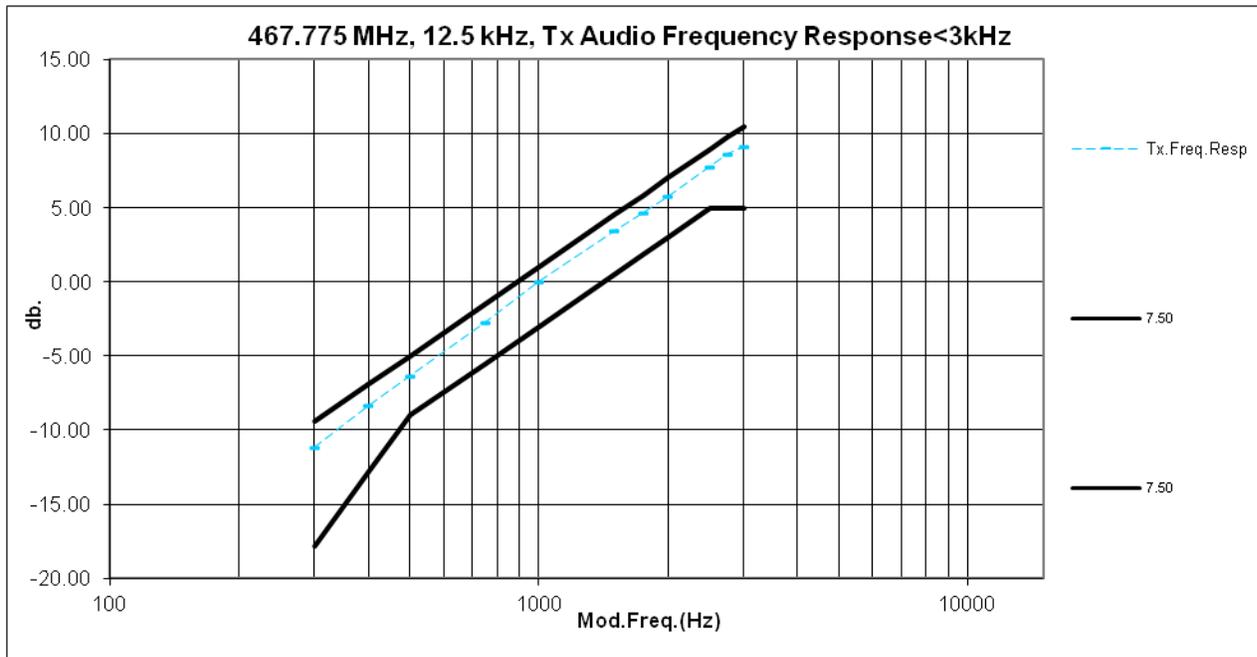
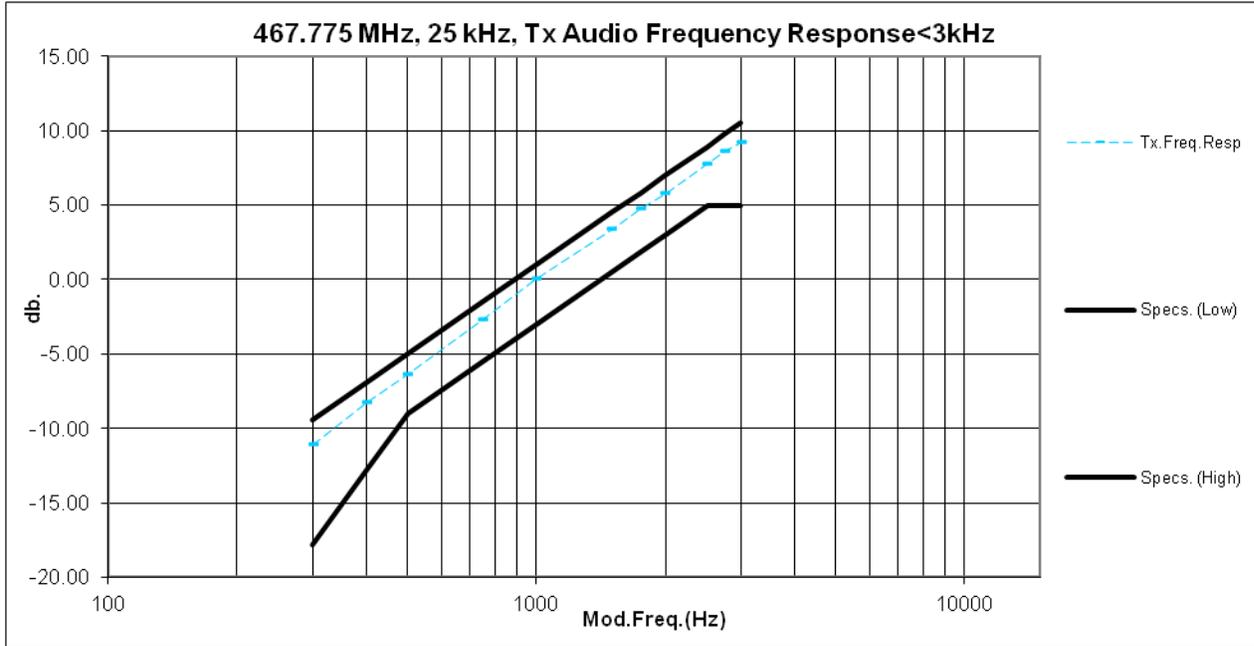
#### 6.3.1. Test Setup



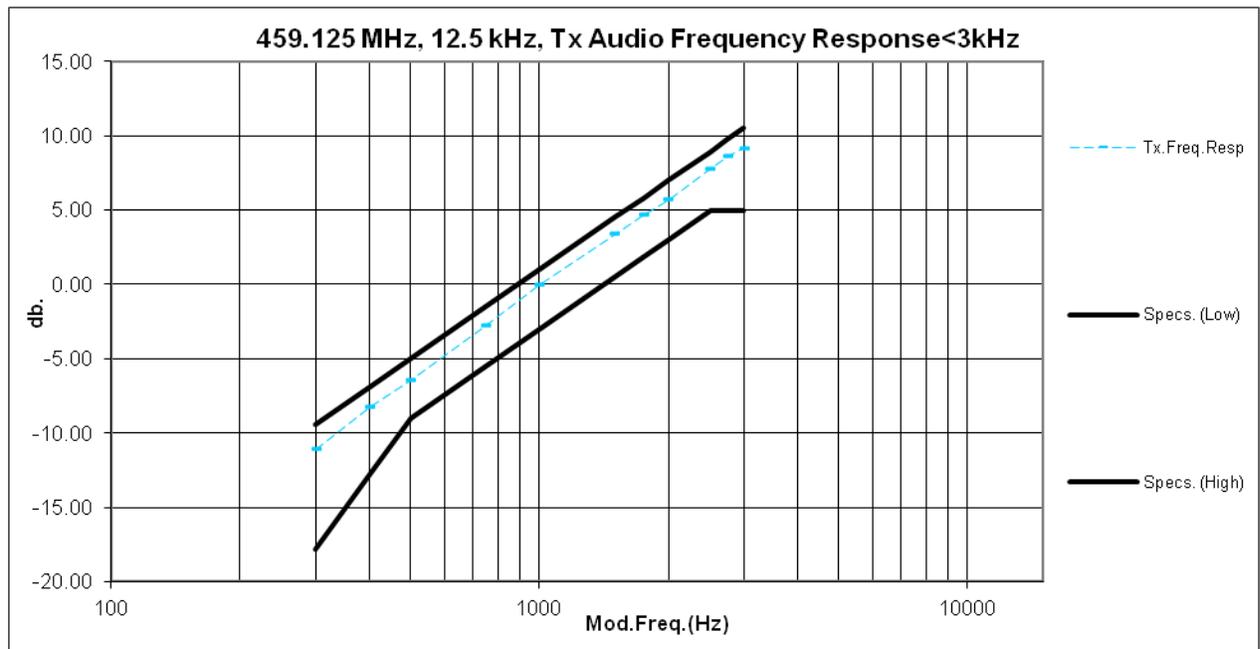
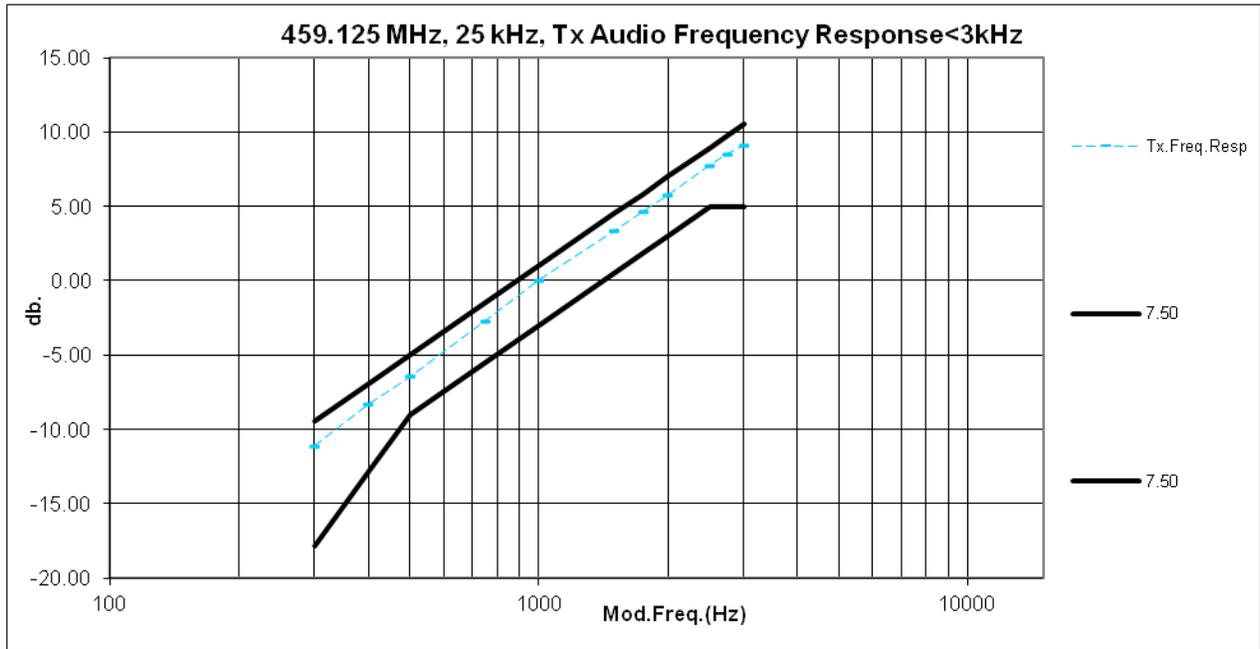
- 1) The DUT transmitter output port was connected to Modulation Analyzer.
- 2) Path loss for the measurement included.
- 3) Set the audio bandwidth filter to 15 kHz and 50 kHz.
- 4) Transmit the radio and set the audio analyzer to 1 kHz audio frequency and 20% of the Full rated system deviation.
- 5) 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.

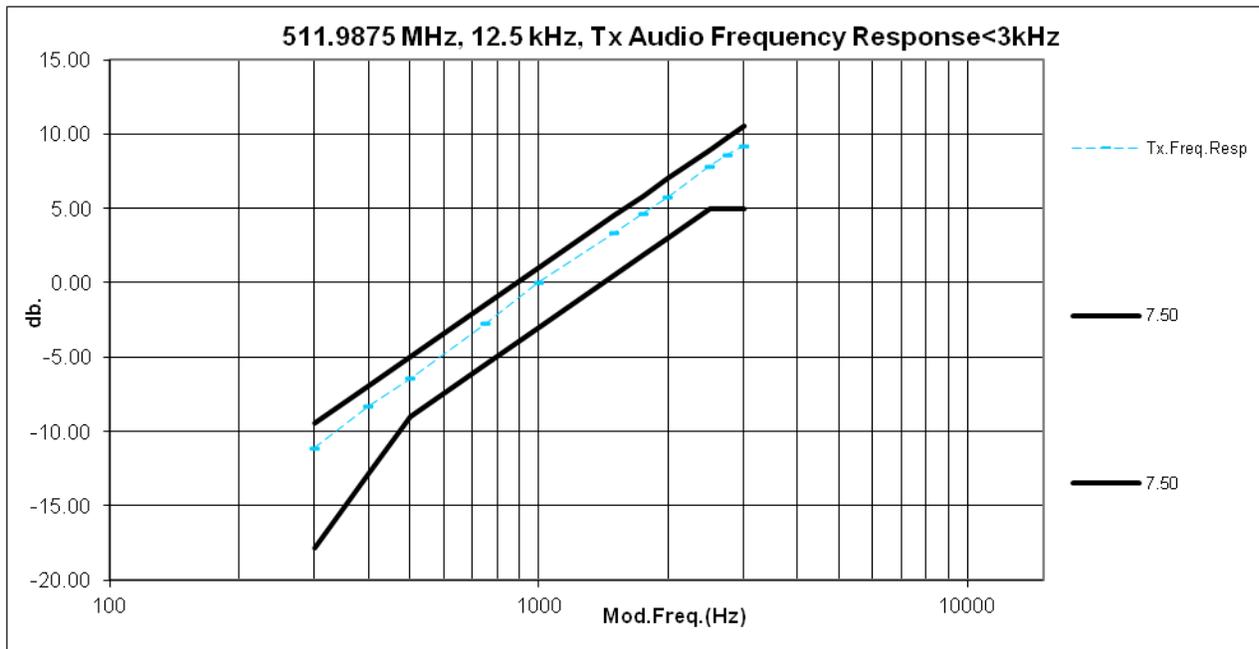
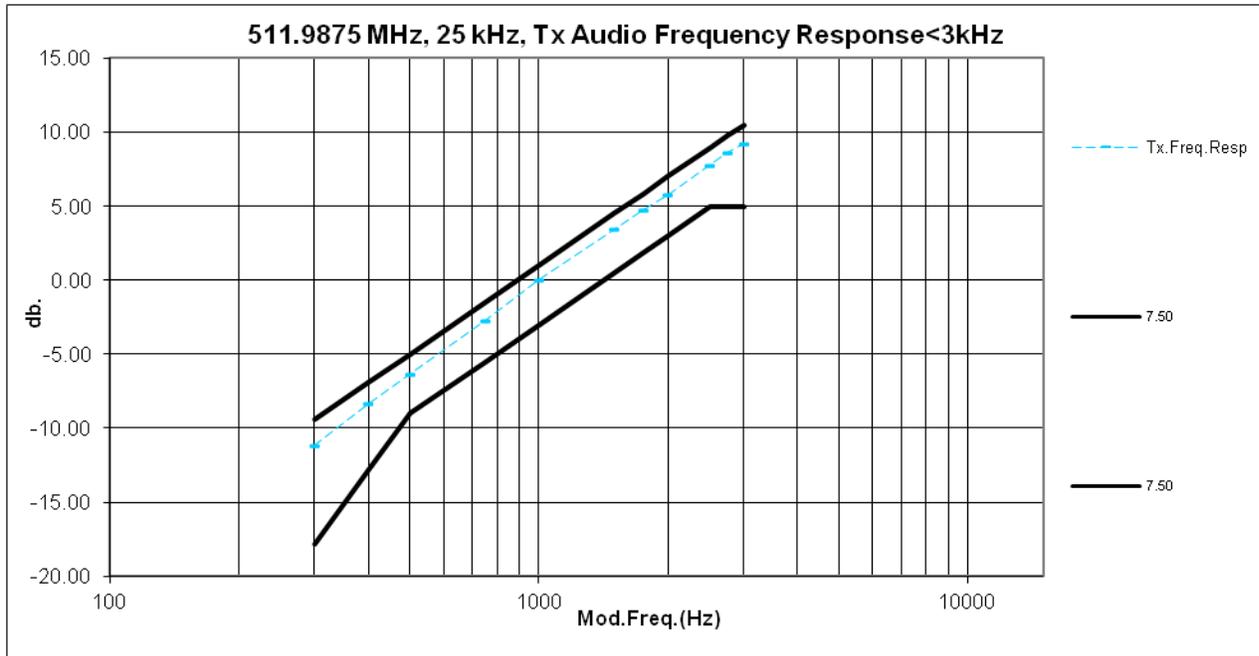
### 6.3.2. Test Result

Not for FCC reiew

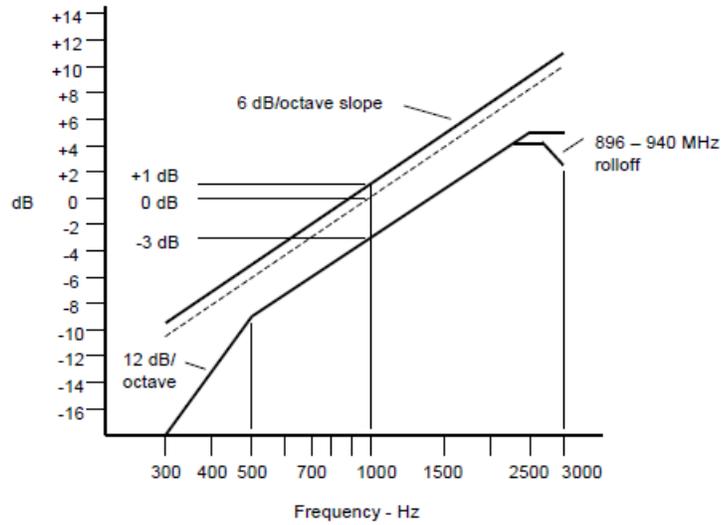


Not for FCC review





### 6.3.3. Test Limit

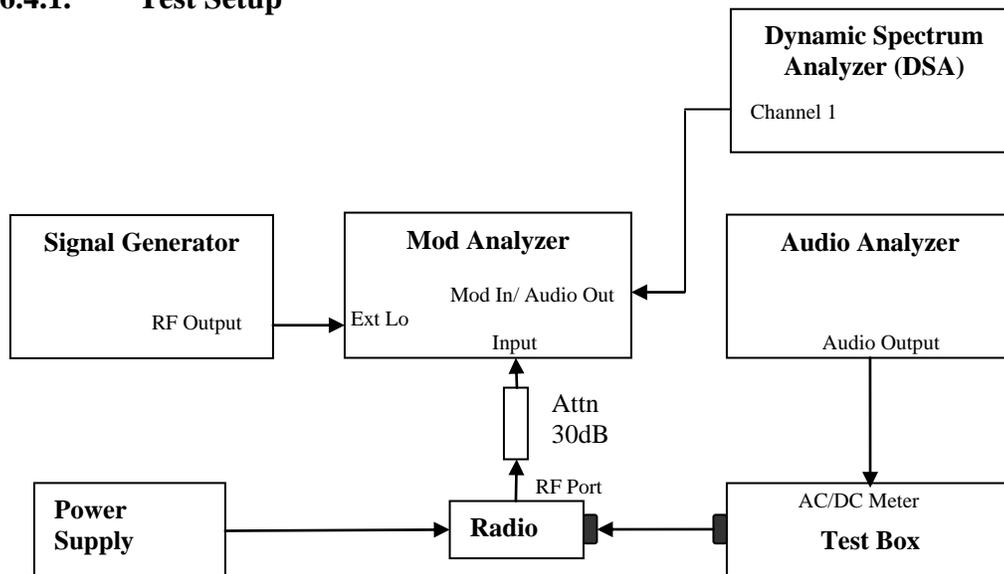


Note:

- 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

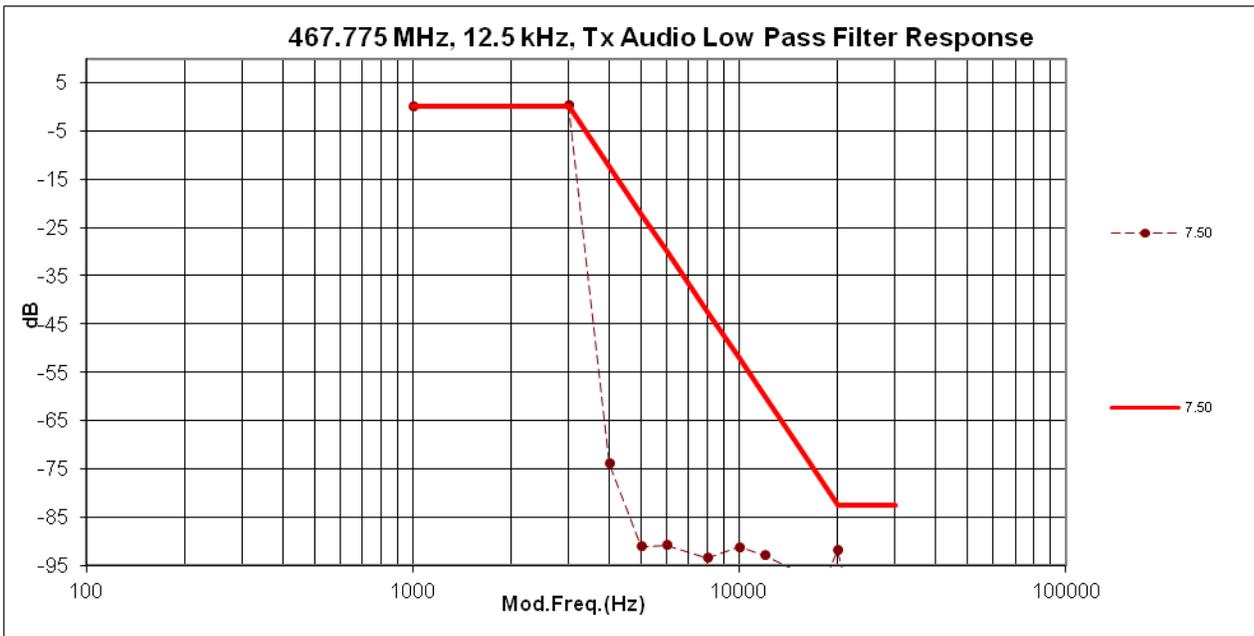
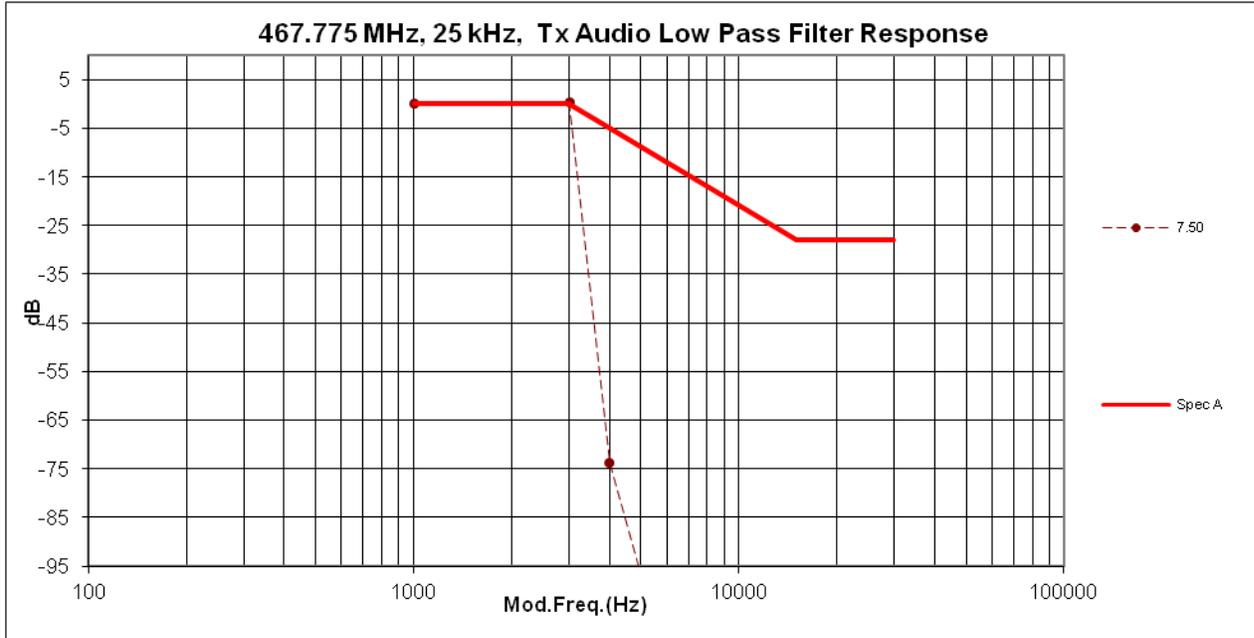
### 6.4.1. Test Setup



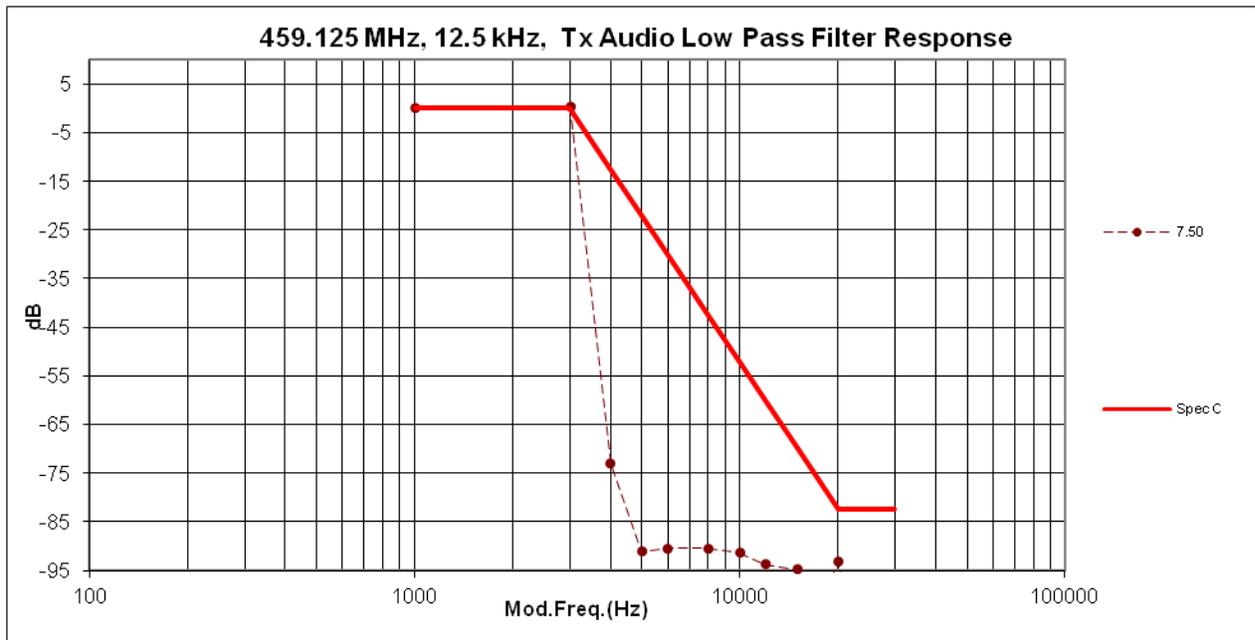
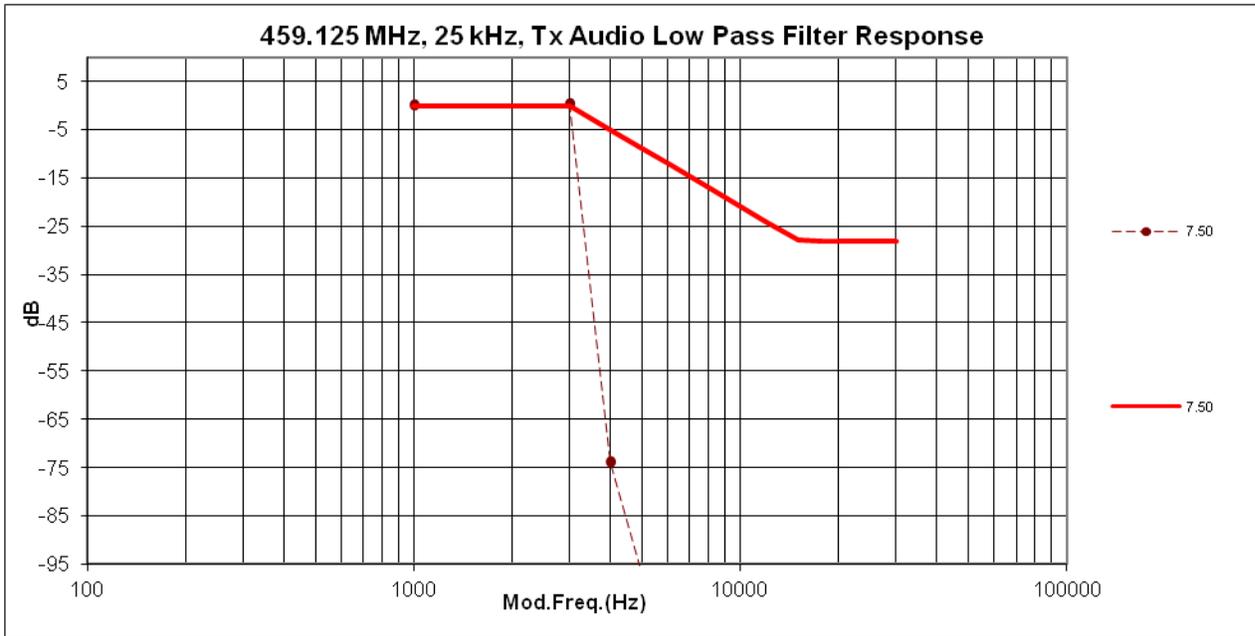
- 1) The DUT transmitter output port was connected to Modulation Analyzer.
- 2) Path loss for the measurement included.
- 3) Press 23.1SPCL on modulation analyzer to enable the external LO from Sigen.
- 4) Set the Sigen frequency to  $F_c + 1.5$  MHz, RF output level to 0dBm without modulation.
- 5) 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.

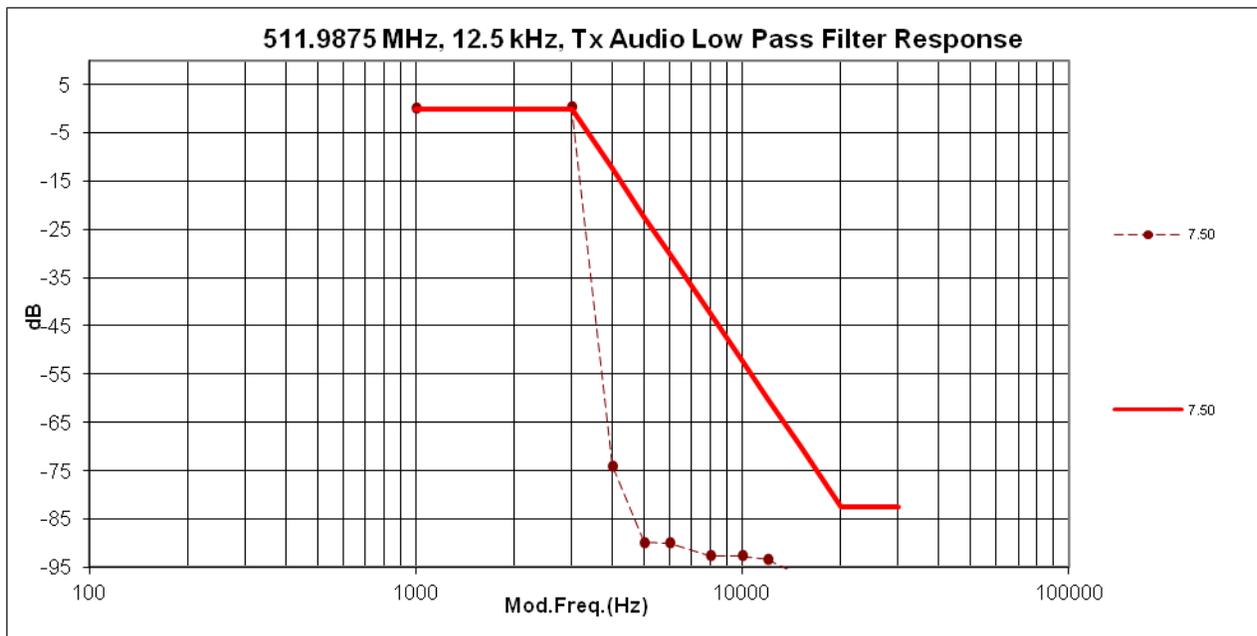
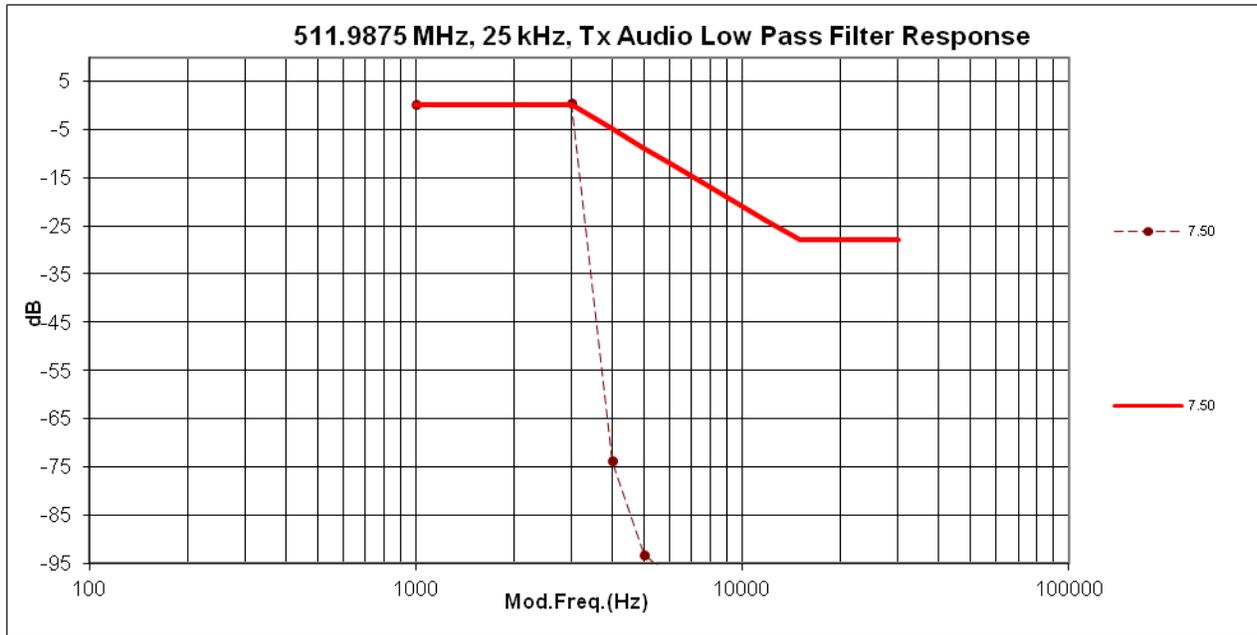
### 6.4.2. Test Result

Not for FCC review

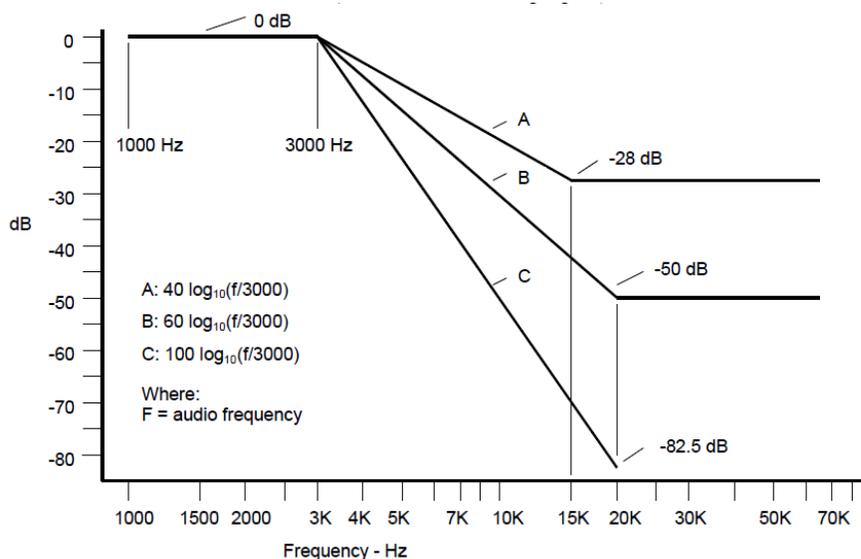


Not for FCC review





### 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.

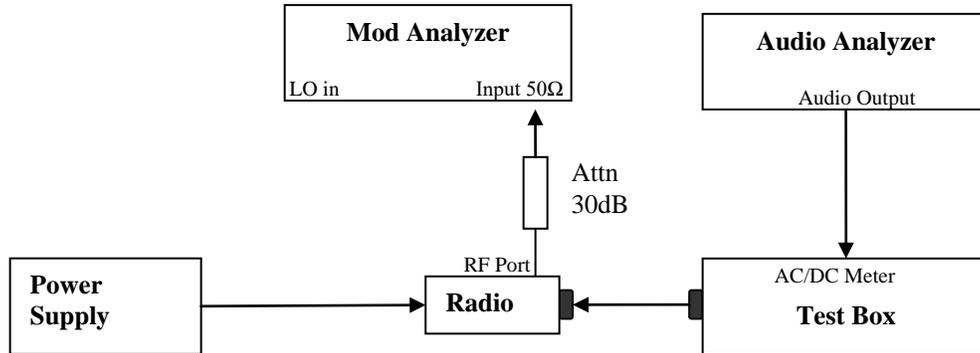
- c) For equipment operating on channels between 896 MHz through 901 MHz, between 935 MHz through 940 MHz, and 12.5 or 15 kHz spaced channels in the frequency range 138-174 MHz and 406-512 MHz.

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

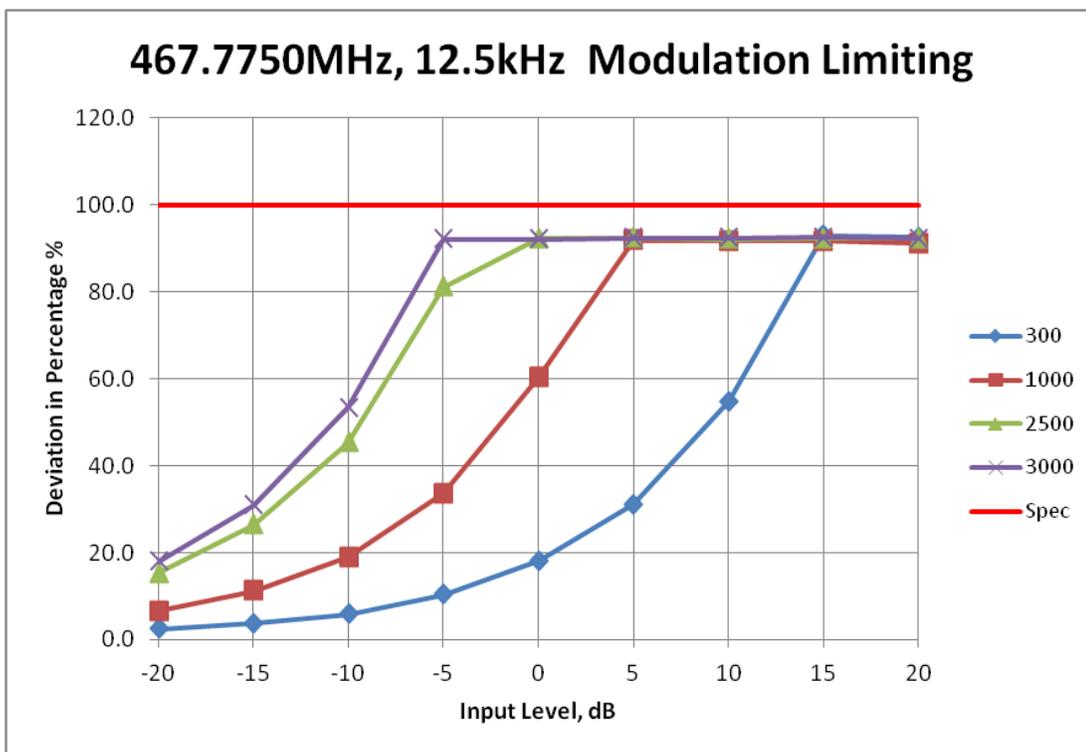
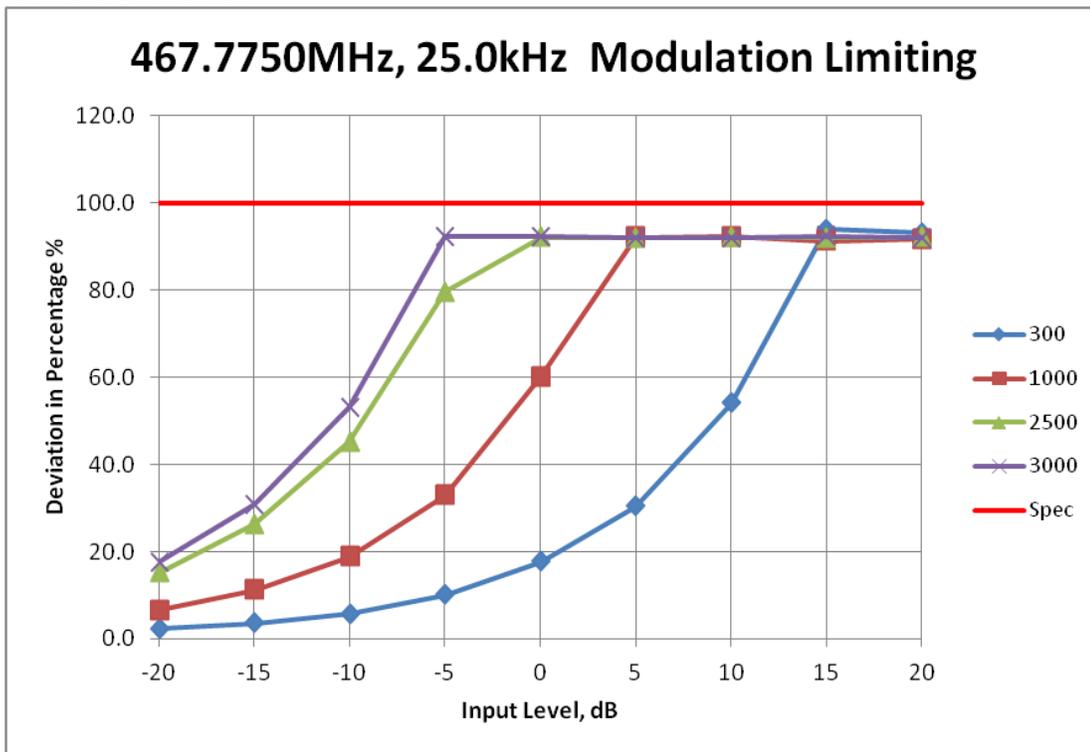
### 6.5.1. Test Setup



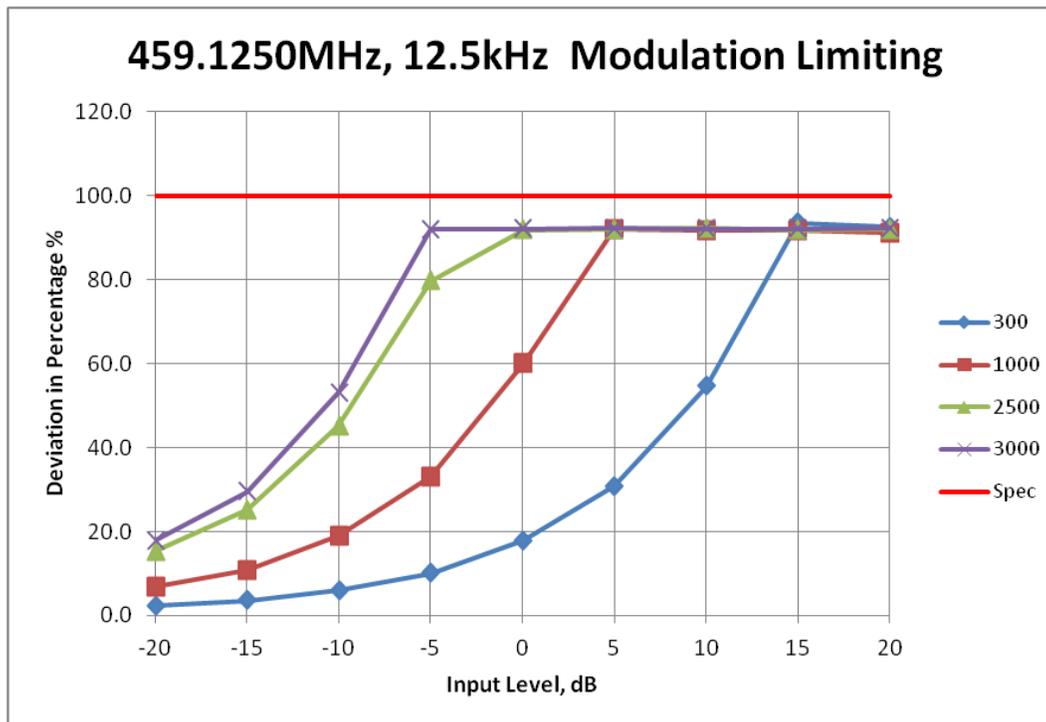
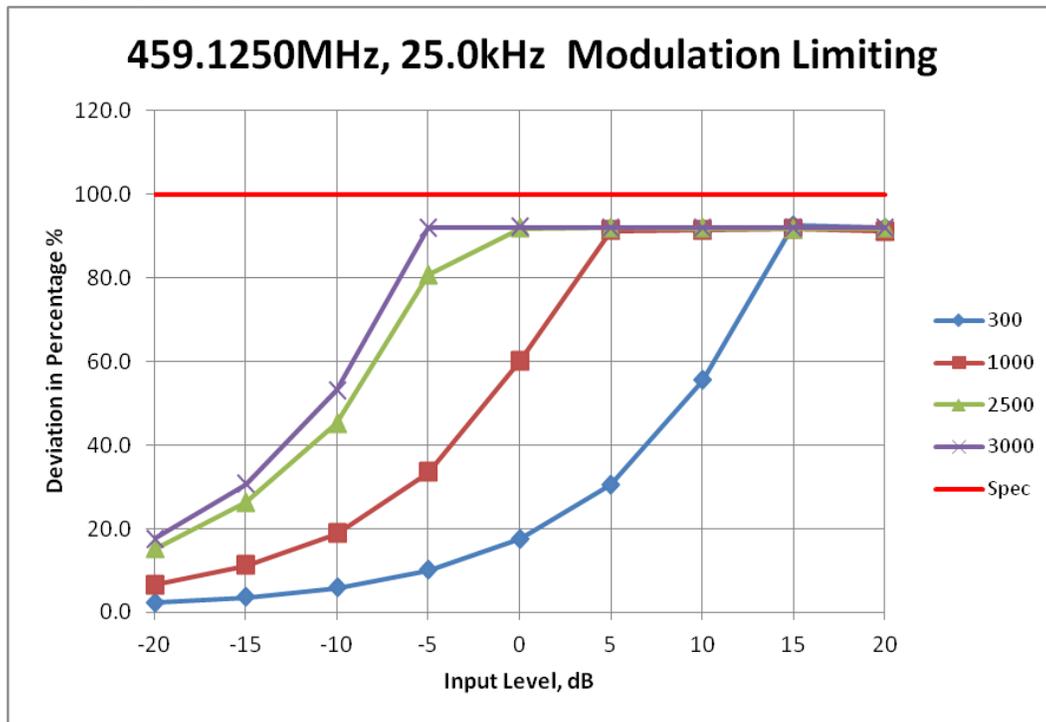
- 1) The DUT transmitter output port was connected to Modulation Analyzer.
- 2) Path loss for the measurement included.
- 3) Set the audio bandwidth filter to 15 kHz.
- 4) Transmit the radio and set the audio analyzer to 1 kHz audio frequency and 60% of the Full rated system deviation.
- 5) Record the 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.

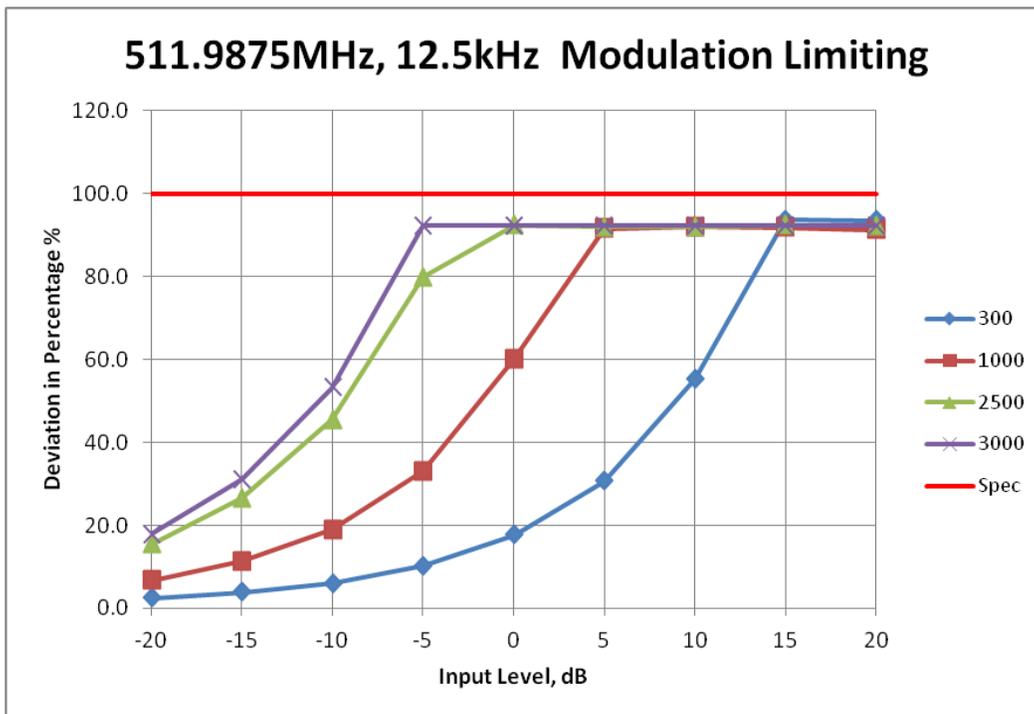
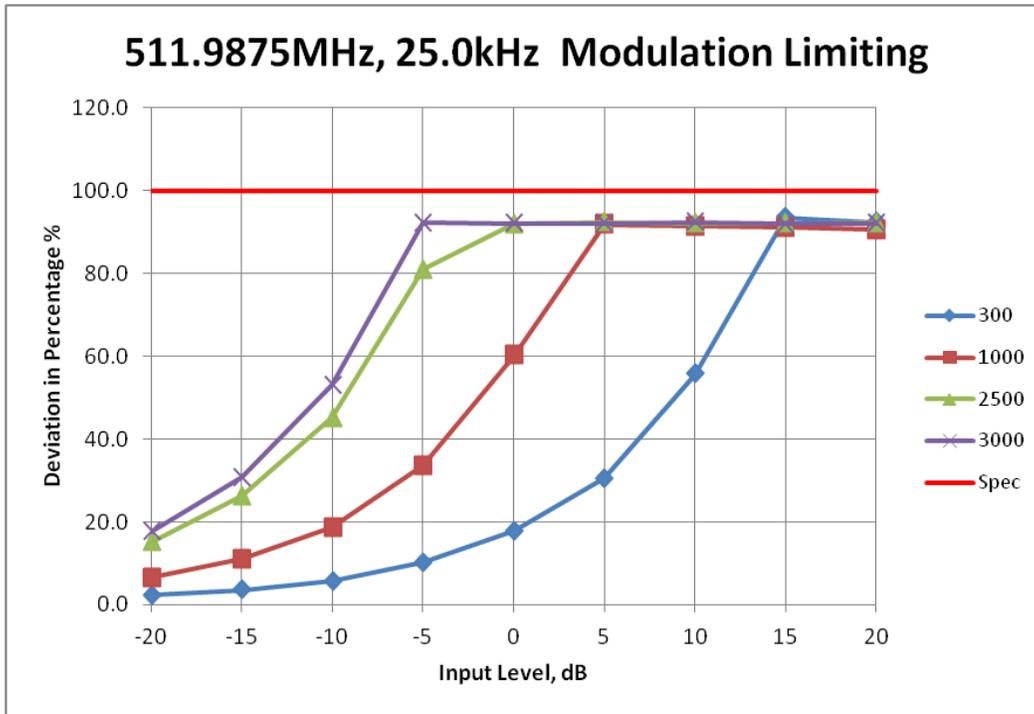
### 6.5.2. Test Result

Not for FCC review



Not for FCC review

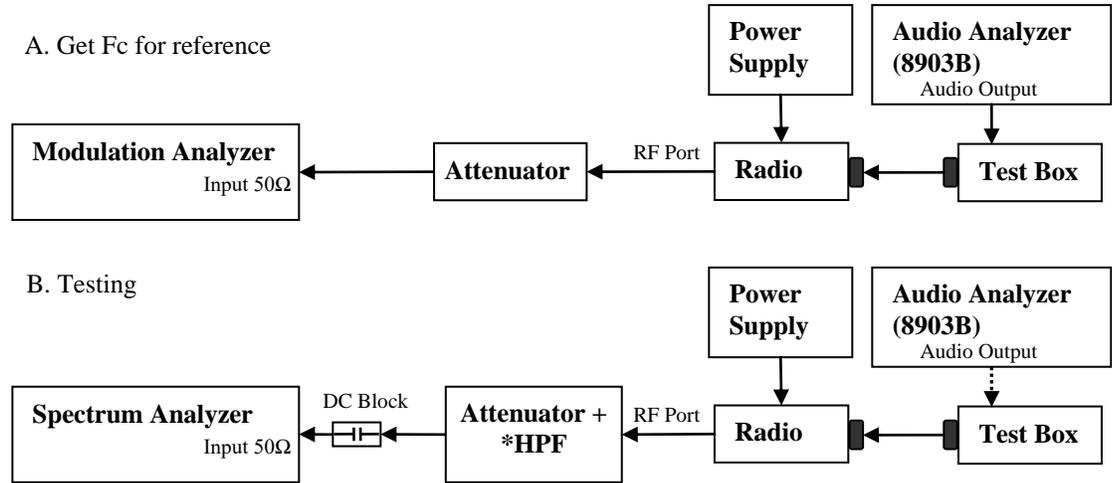




**6.5.3. Test Limit**  
Modulation Limiting shall not exceed 100 percent.

## 6.6. Occupied Bandwidth

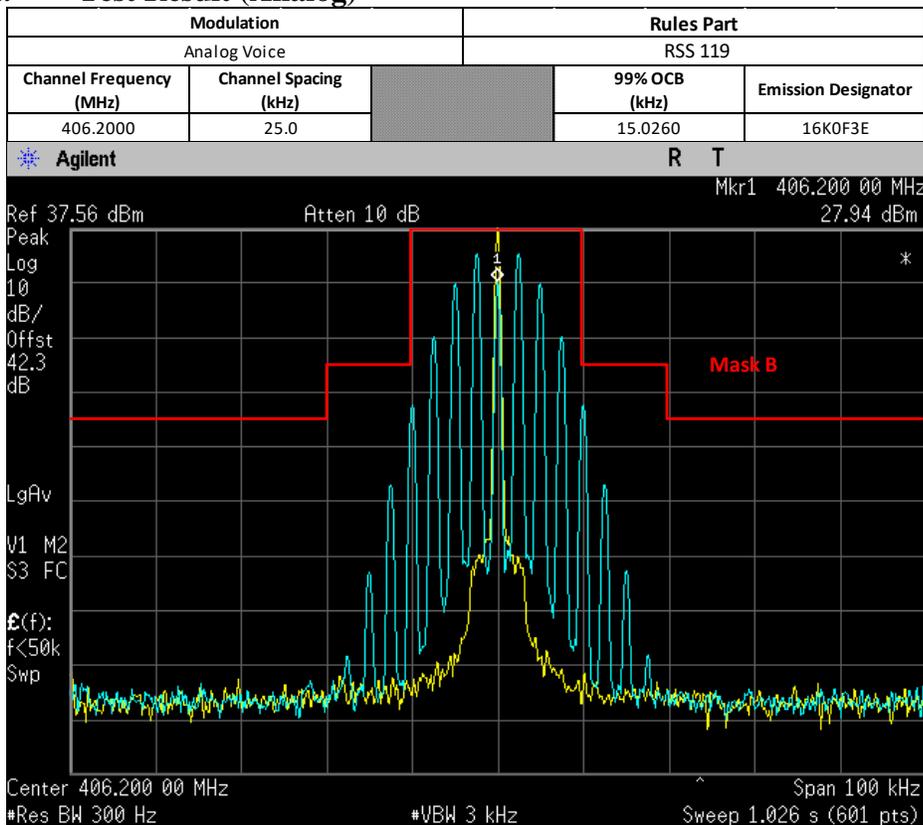
### 6.6.1. Test Setup (Analog)



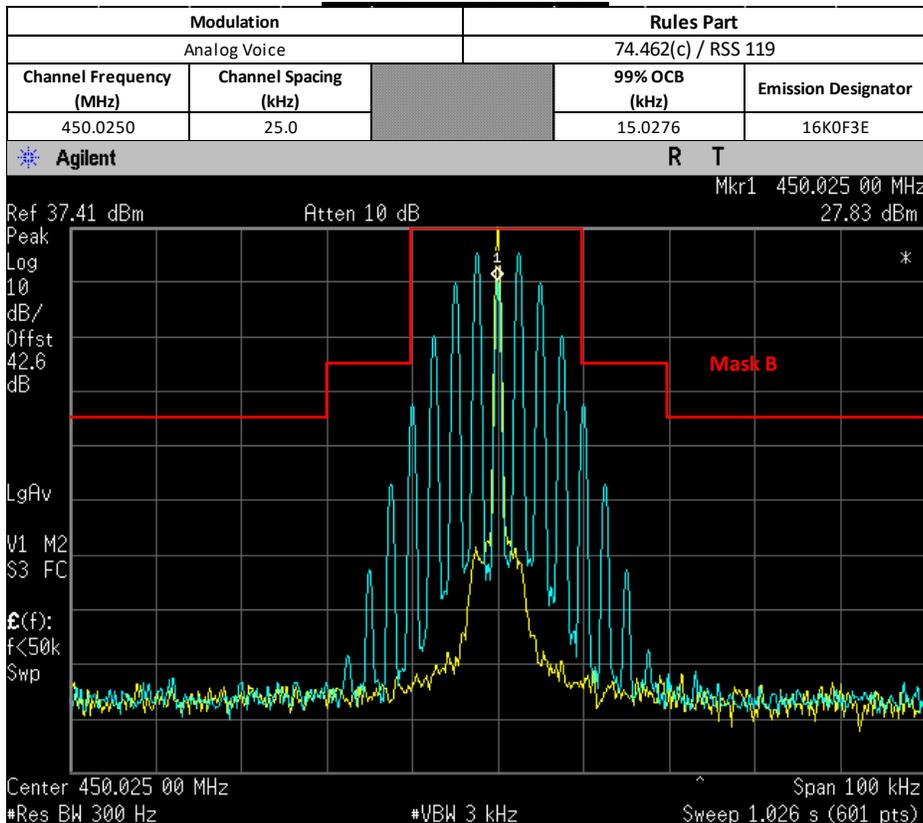
- 1) The DUT transmitter output port was connected to Modulation Analyzer.
- 2) Set the audio bandwidth filter to 15 kHz low pass filter and 50 kHz high pass filter.
- 3) Transmit the radio and set the audio analyzer to 2.5 kHz audio frequency and 50% of the rated deviation. Up the amplitude by 16 dB. 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.

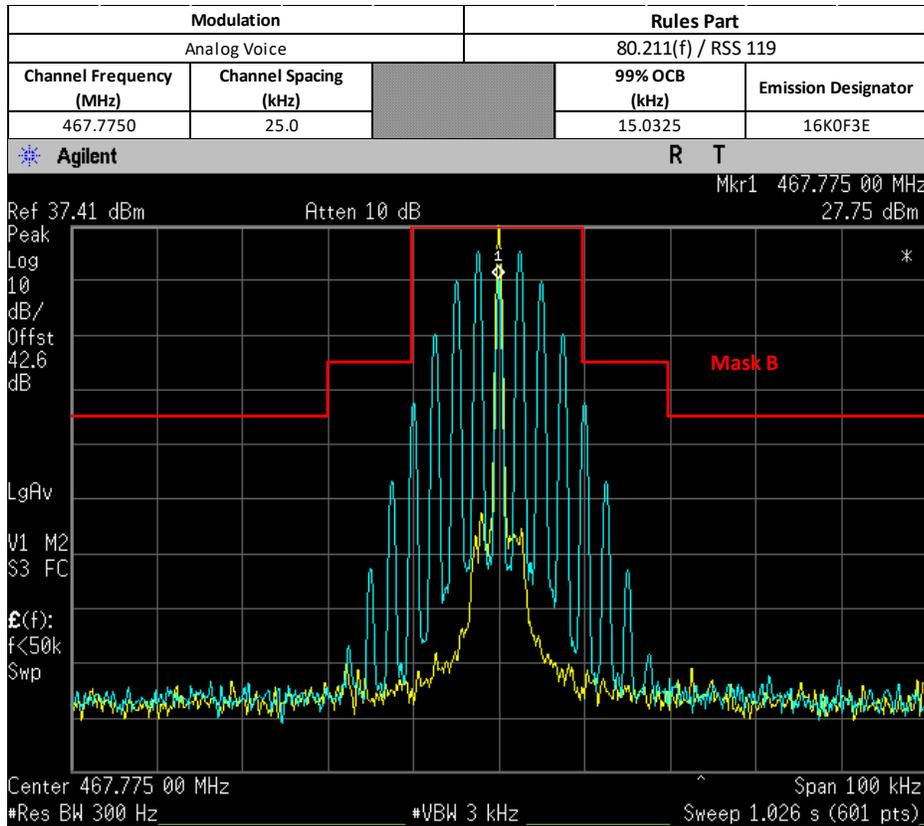
### 6.6.2. Test Result (Analog)



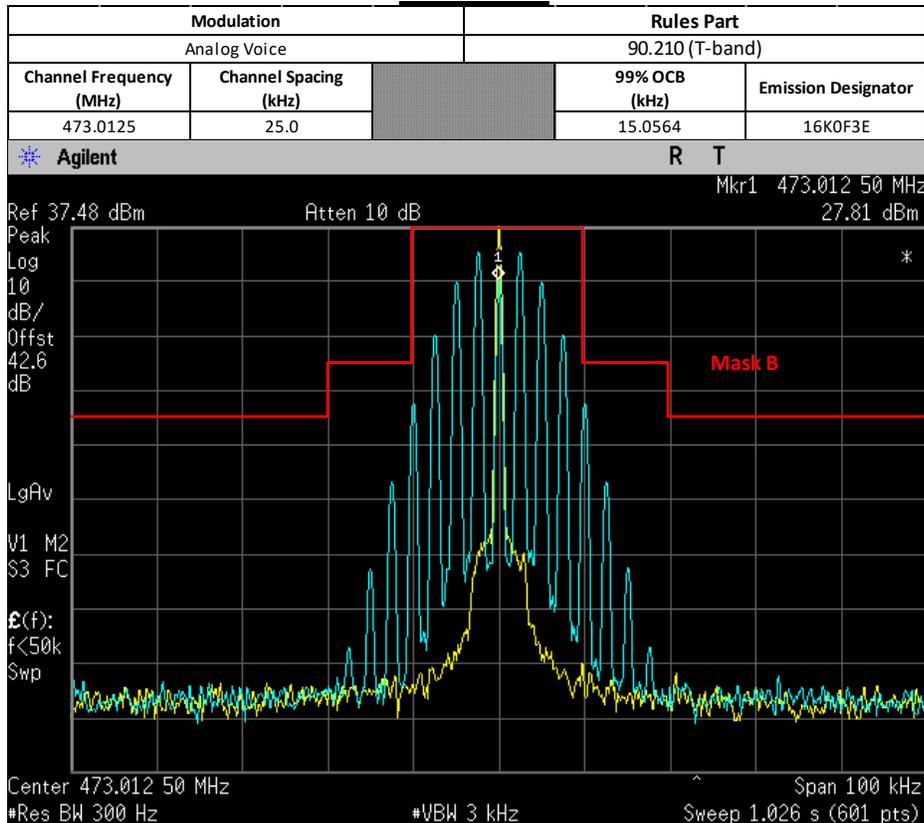
**Not For FCC Review**

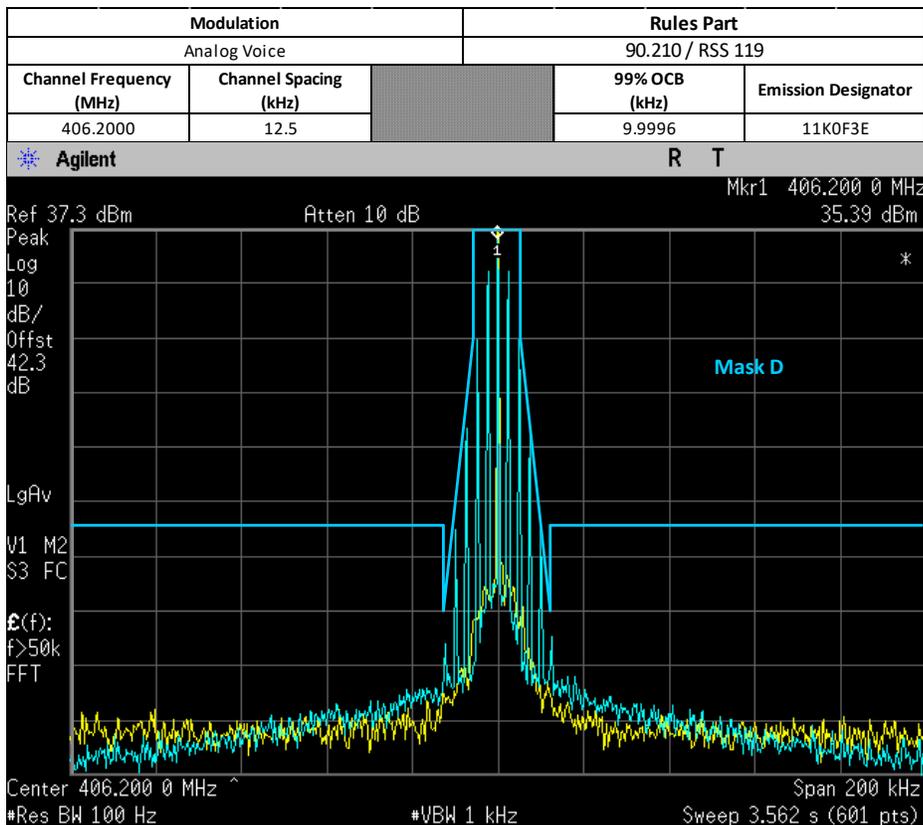
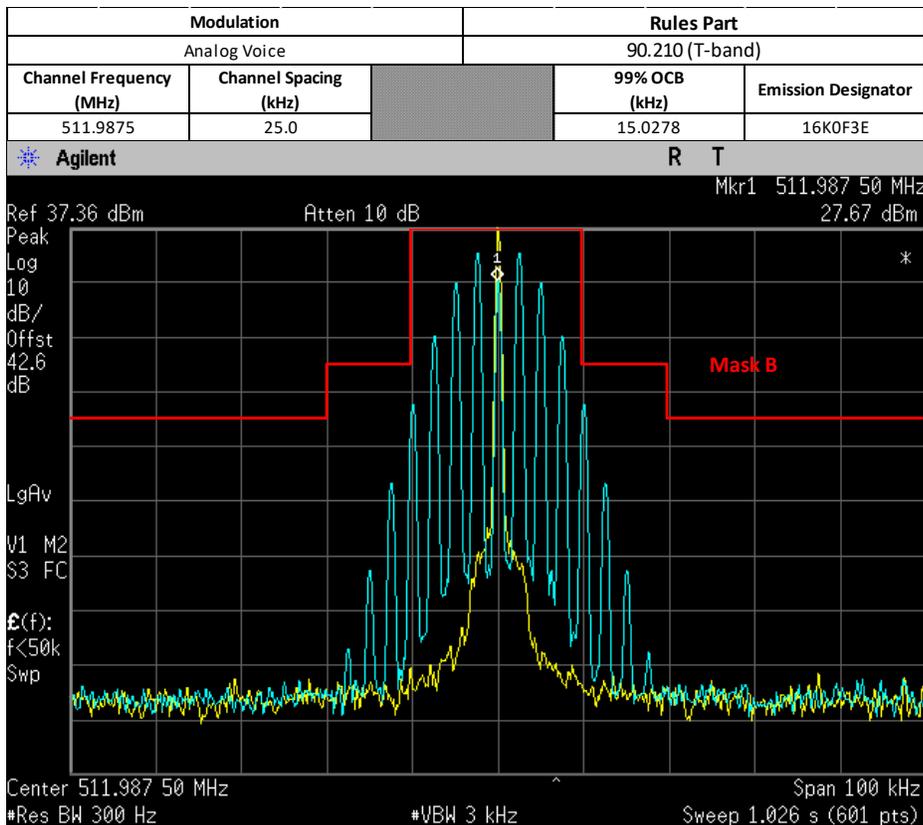


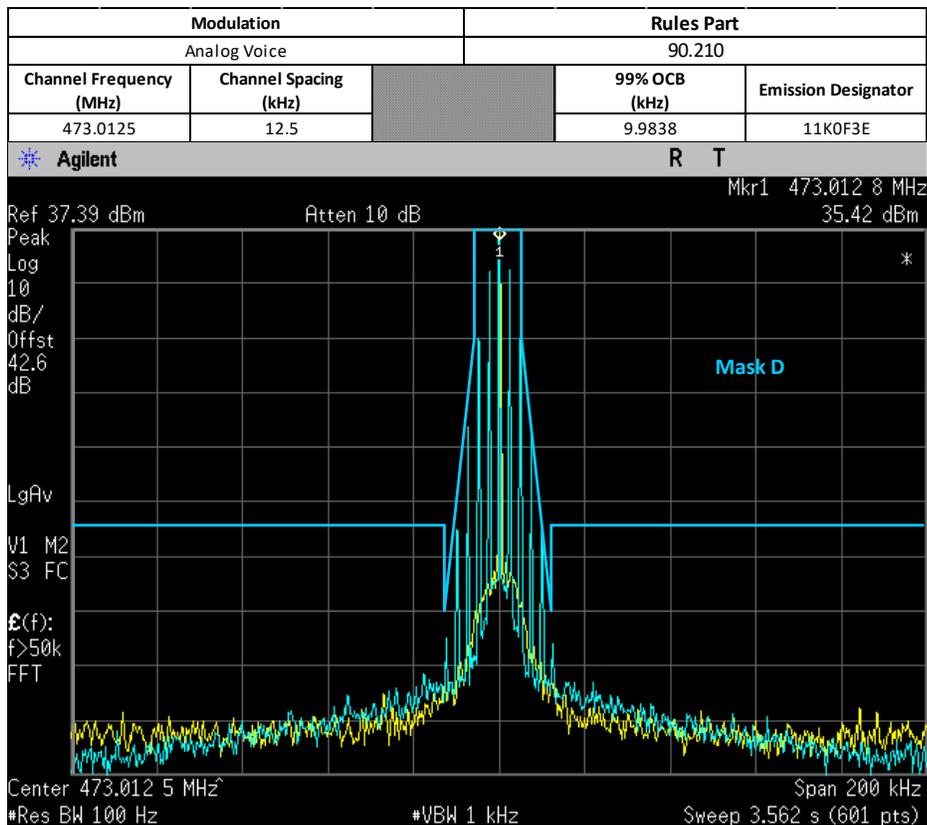
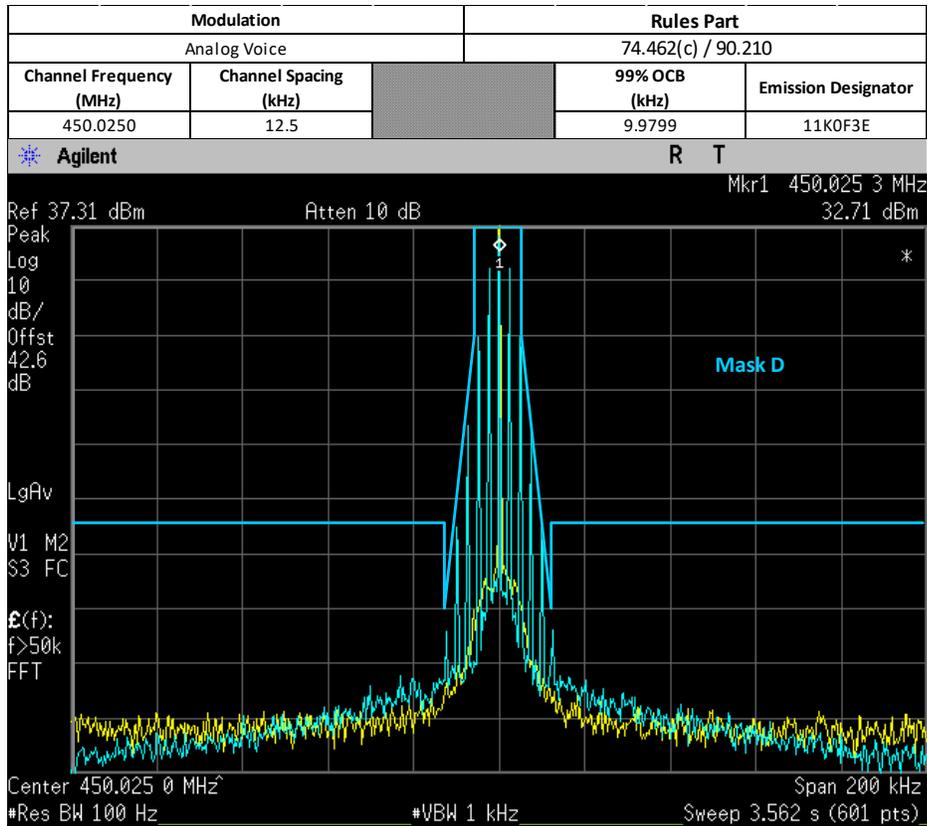
**For Part74**

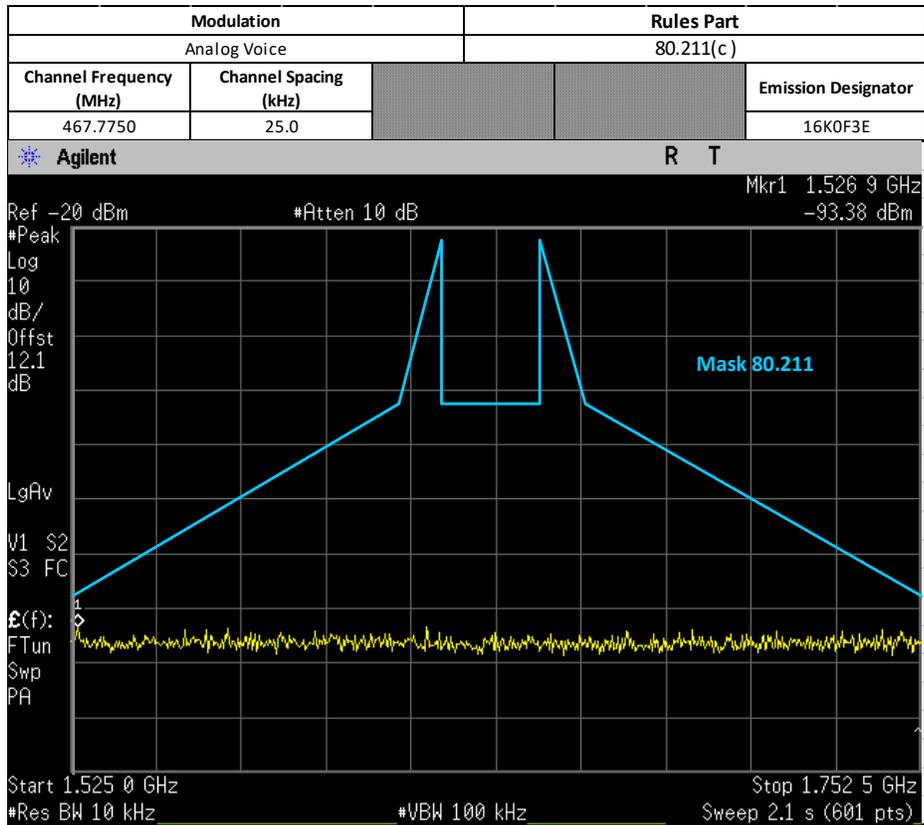
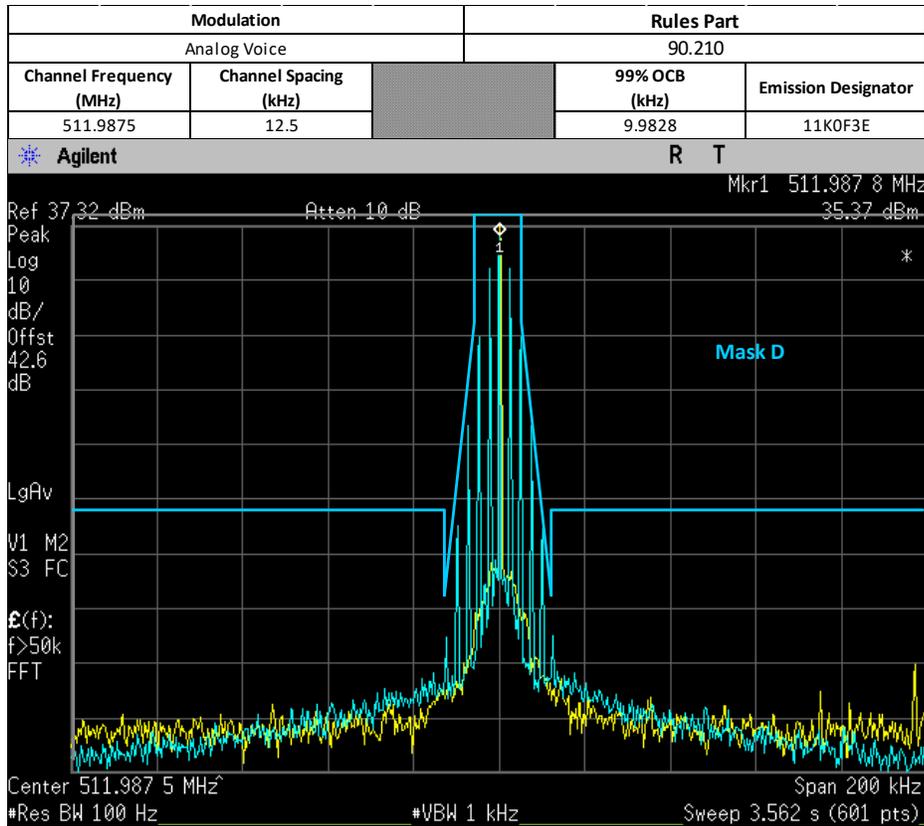


**For Part80**

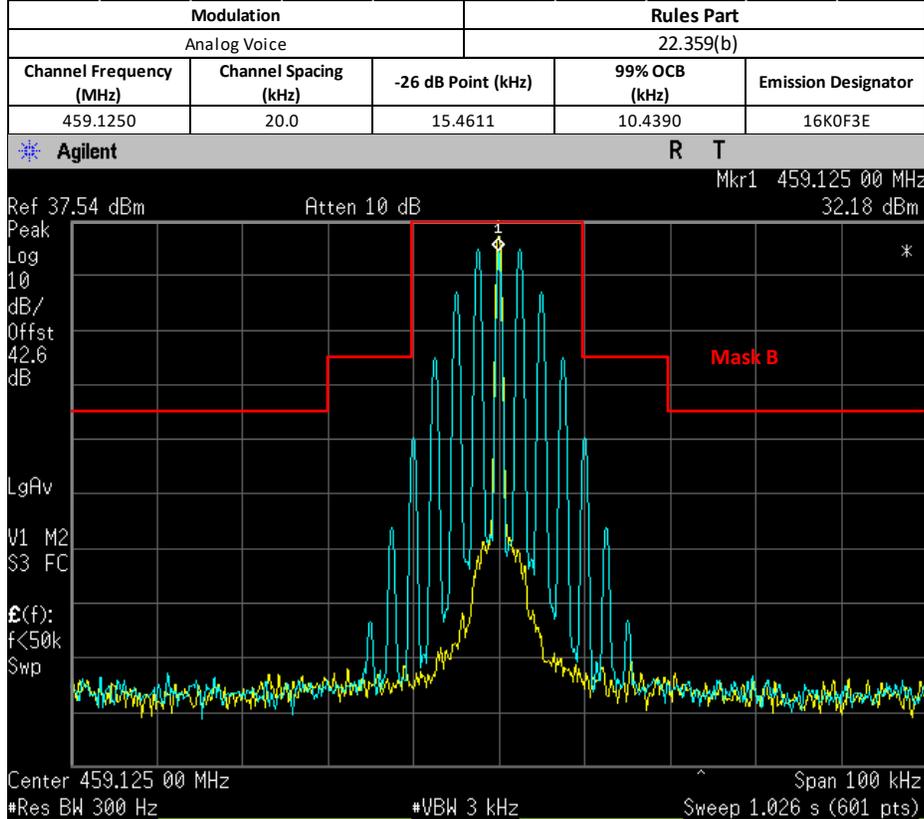
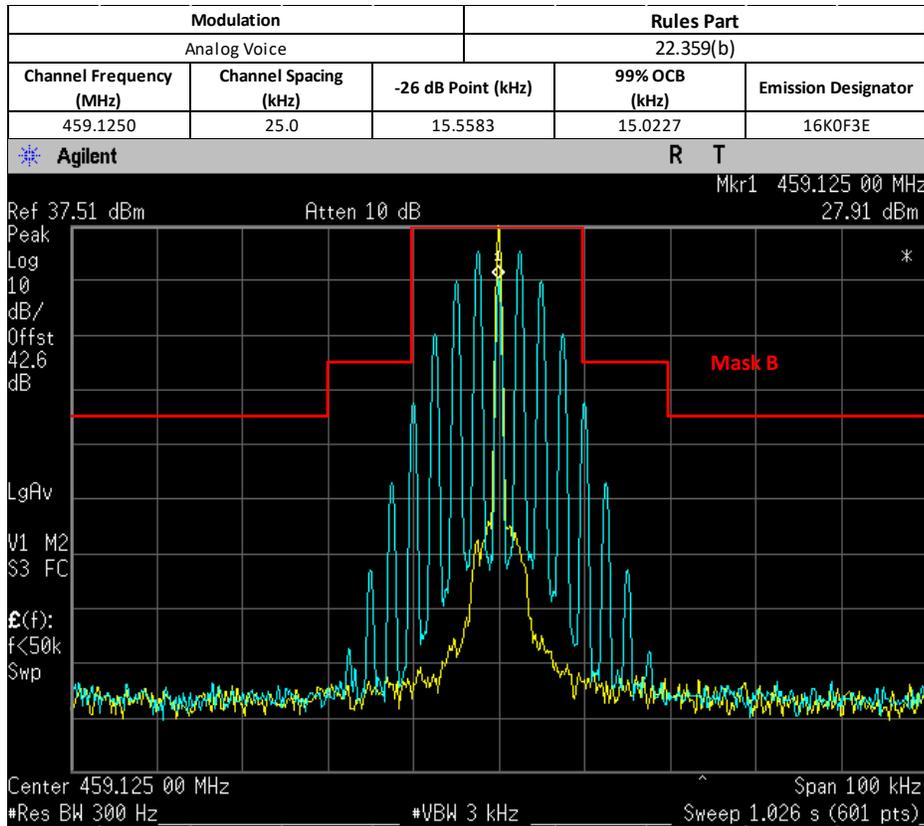


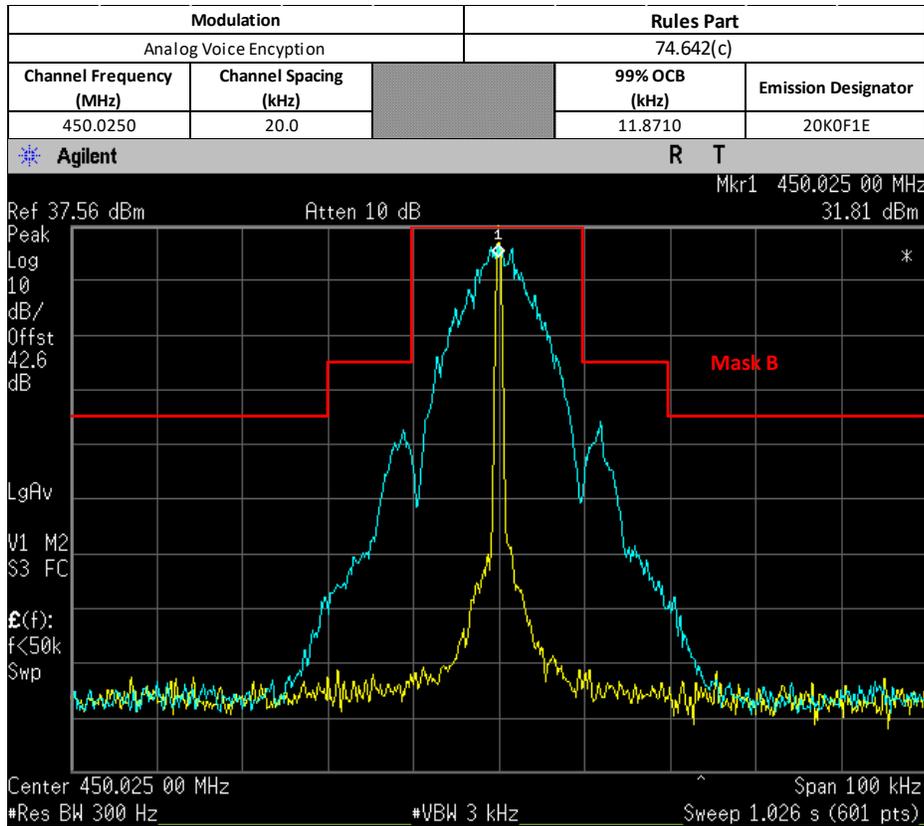




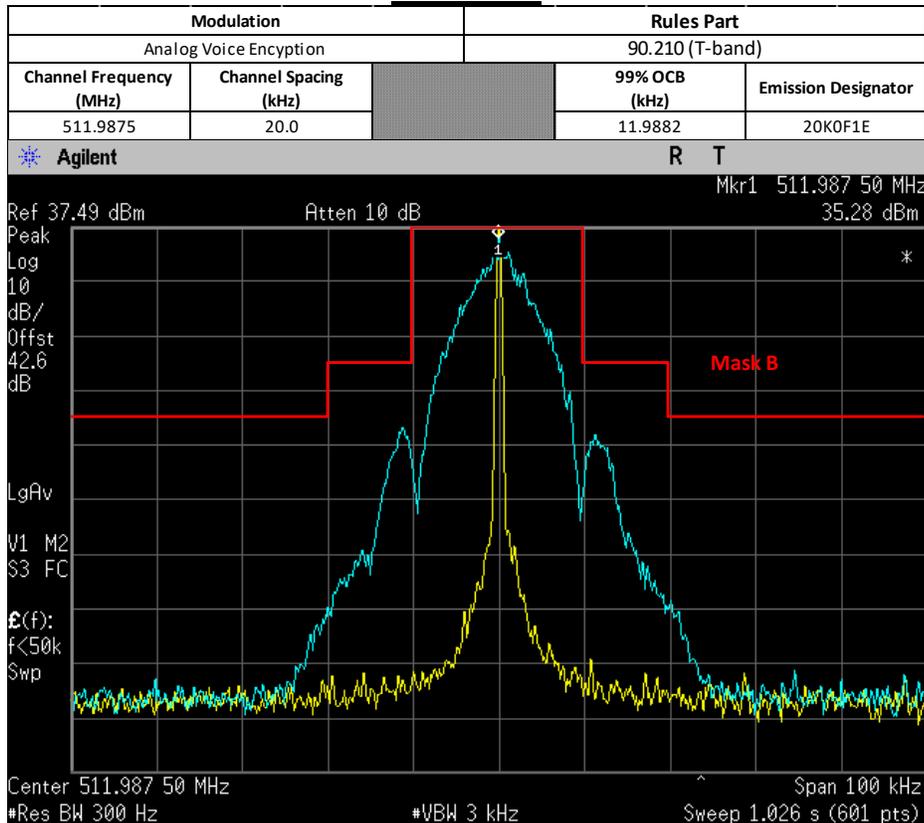


**For Part80**

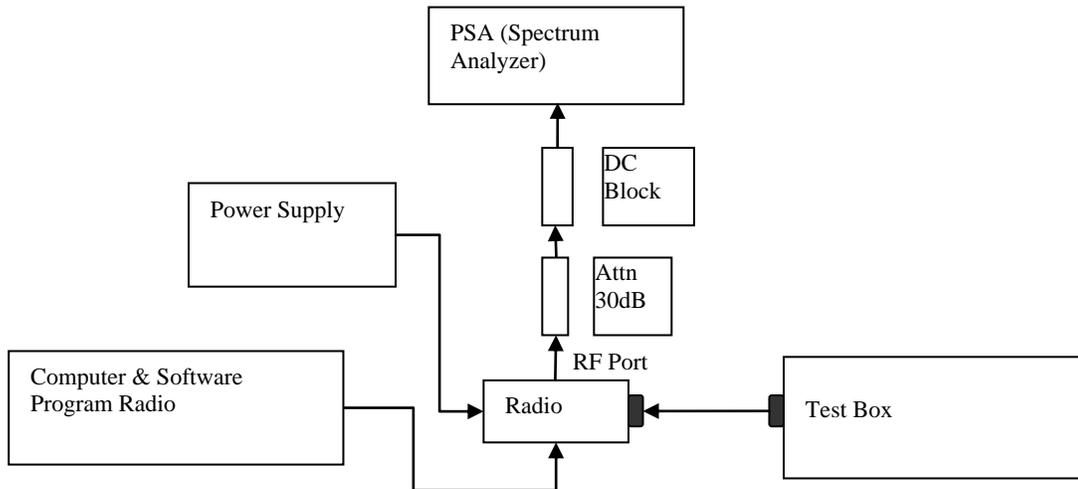




**For Part74**



### 6.6.3. Test Setup (Digital)

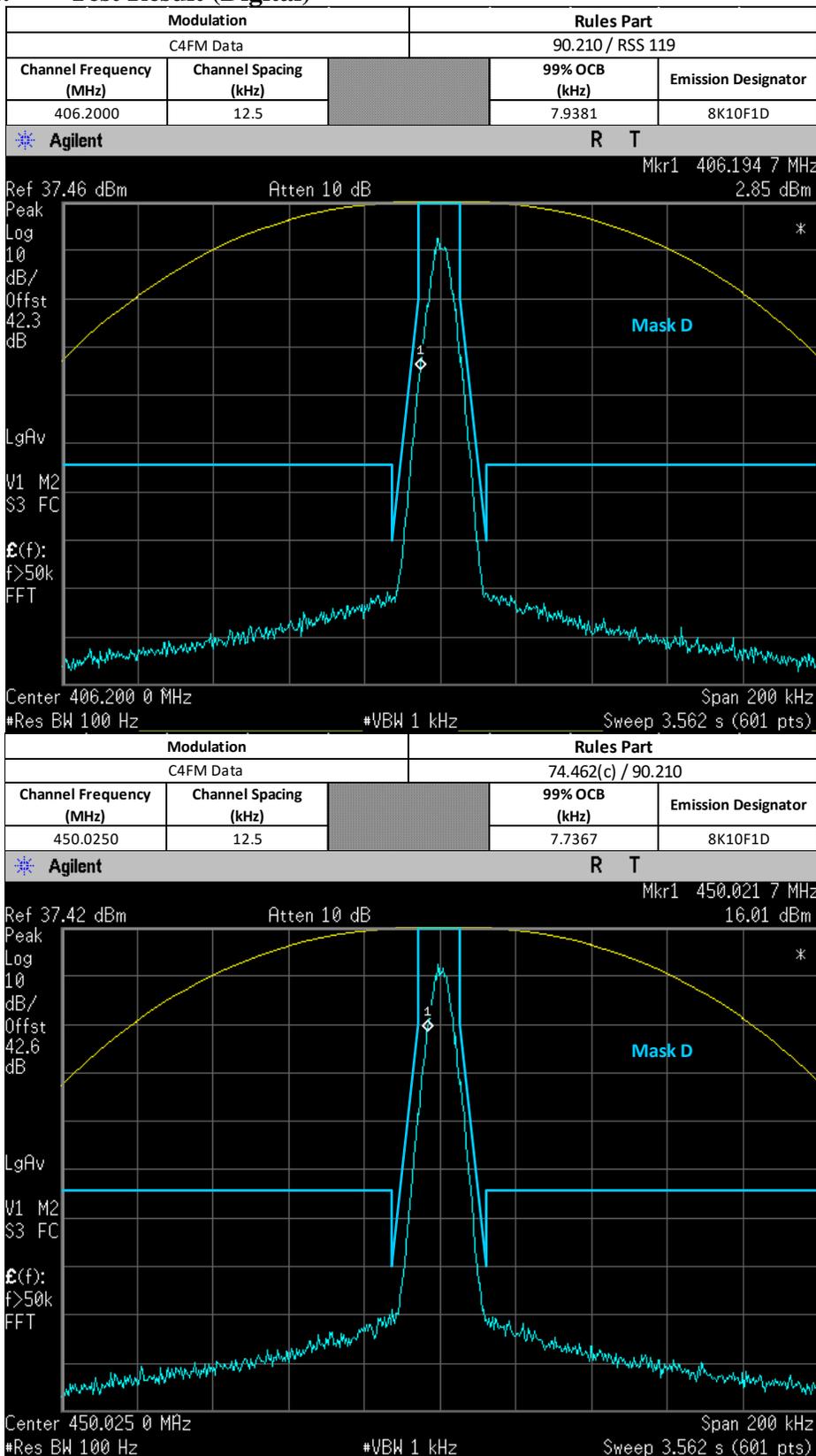


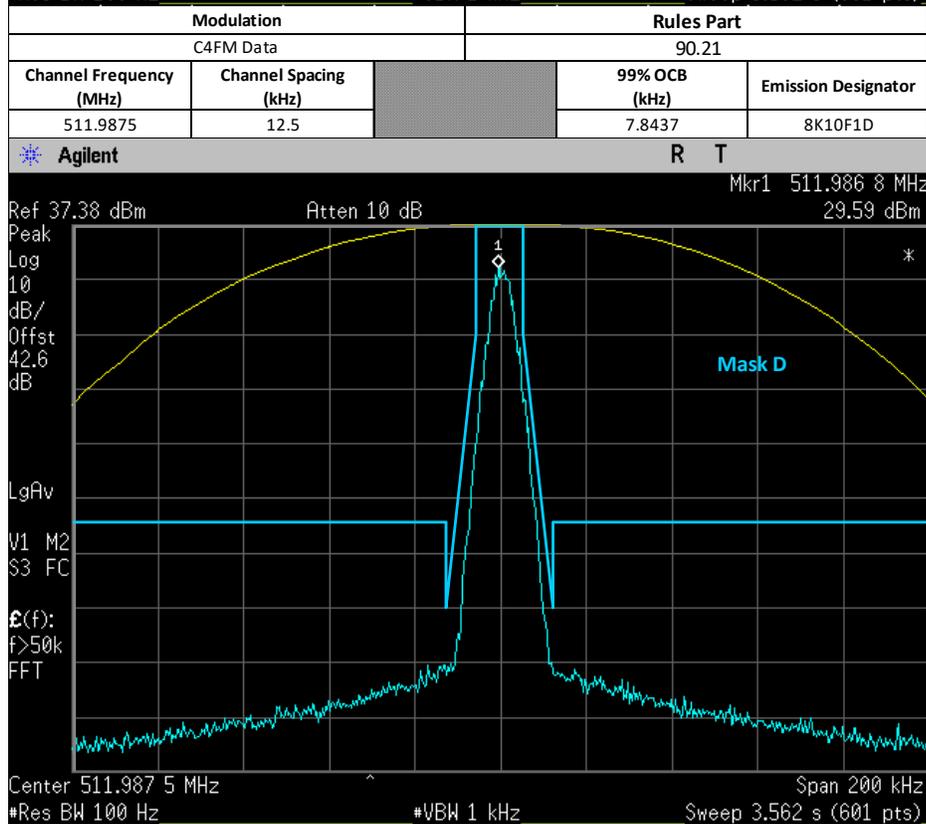
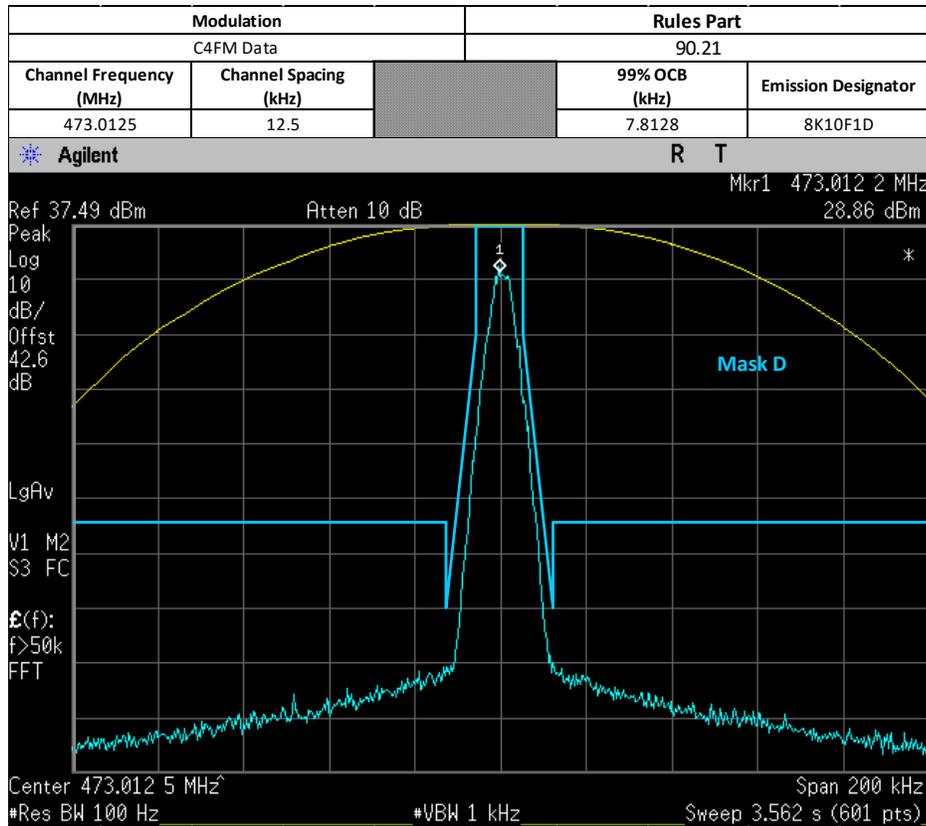
- 1) Program and set radio to operate in desire test frequency and digital mode with modulation. (\*4FSK, C4FM or other digital modulation form).
- 2) Path loss for the measurement included.
- 3) Select the Occupied Bandwidth measurement for 99% Emissions Bandwidth Measurement.
- 4) Key in the Fc and 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.

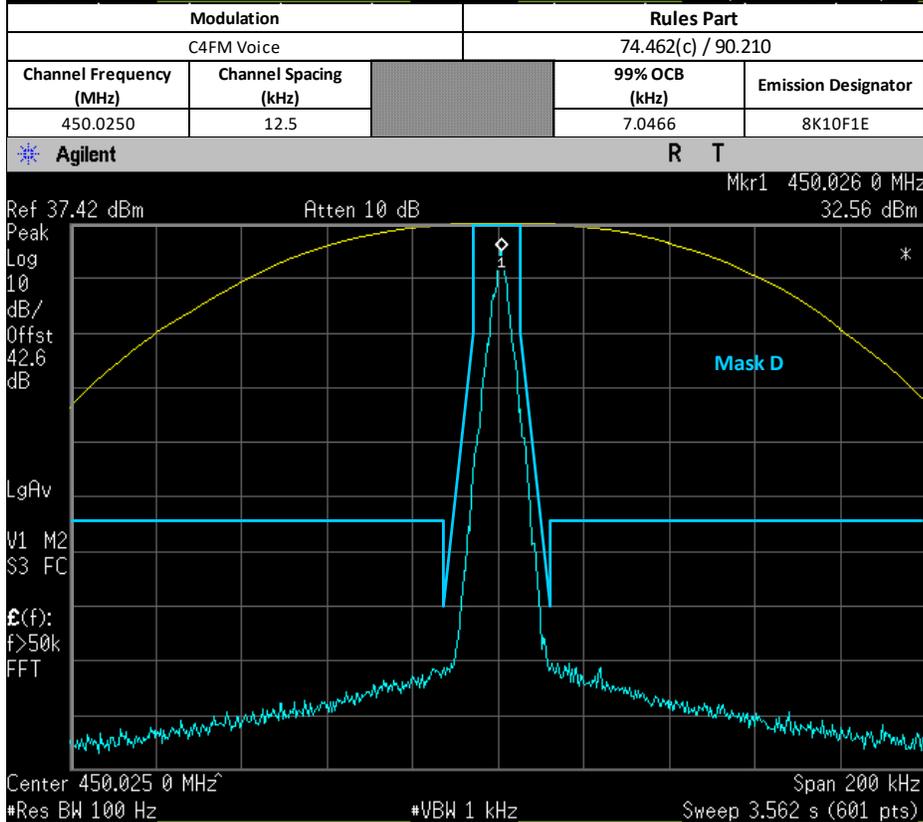
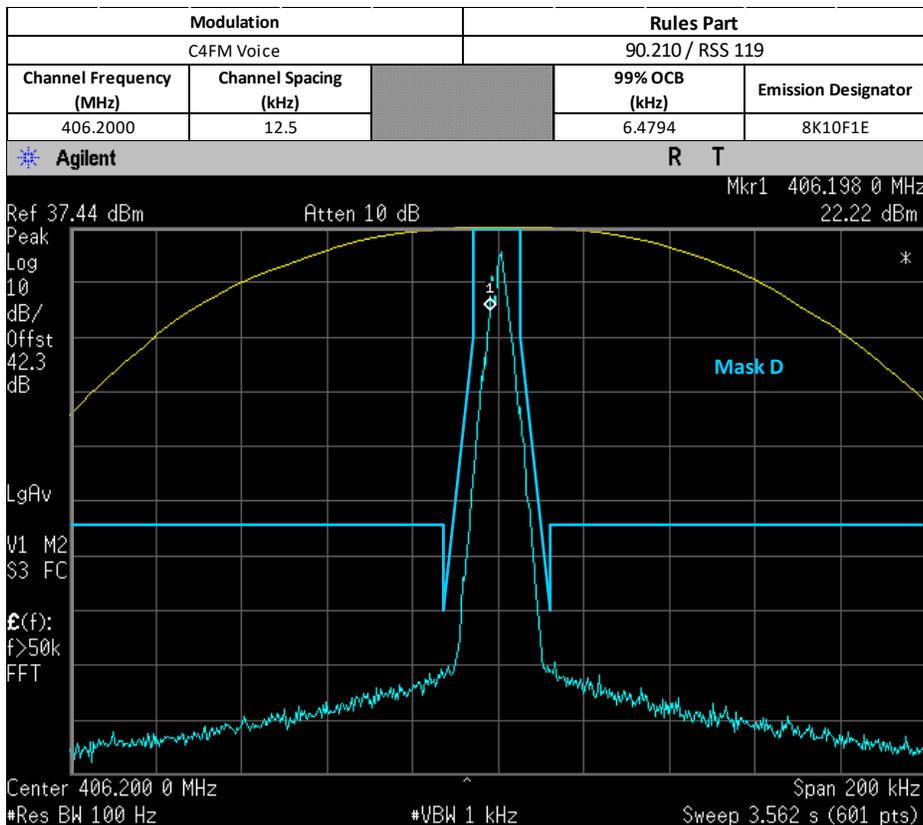
\*Note:

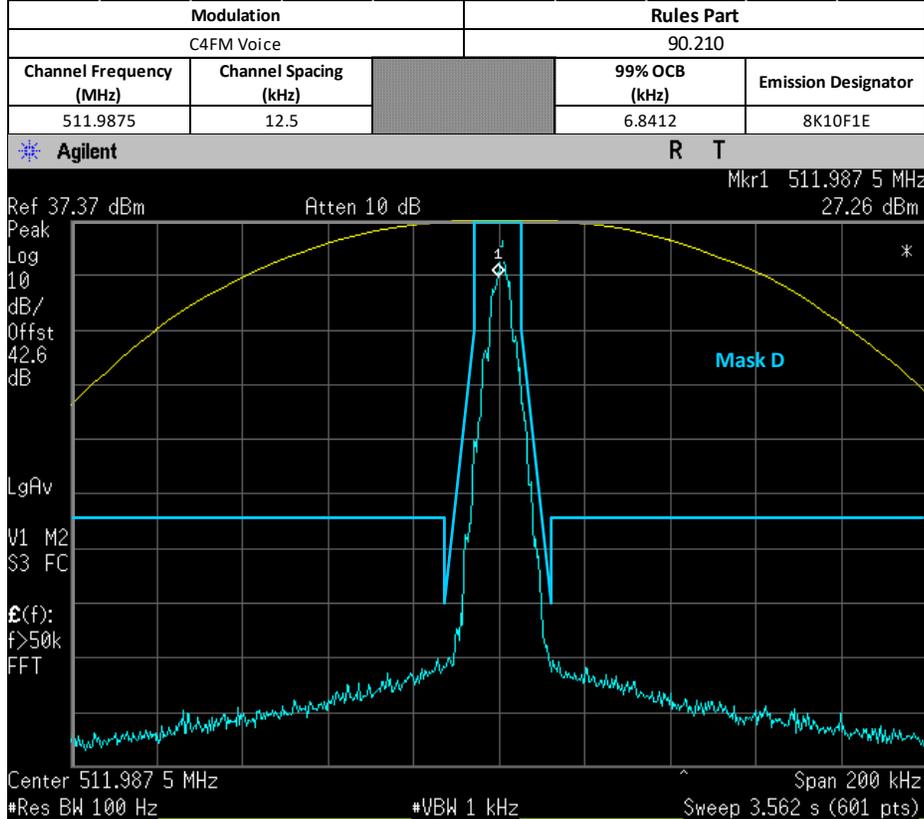
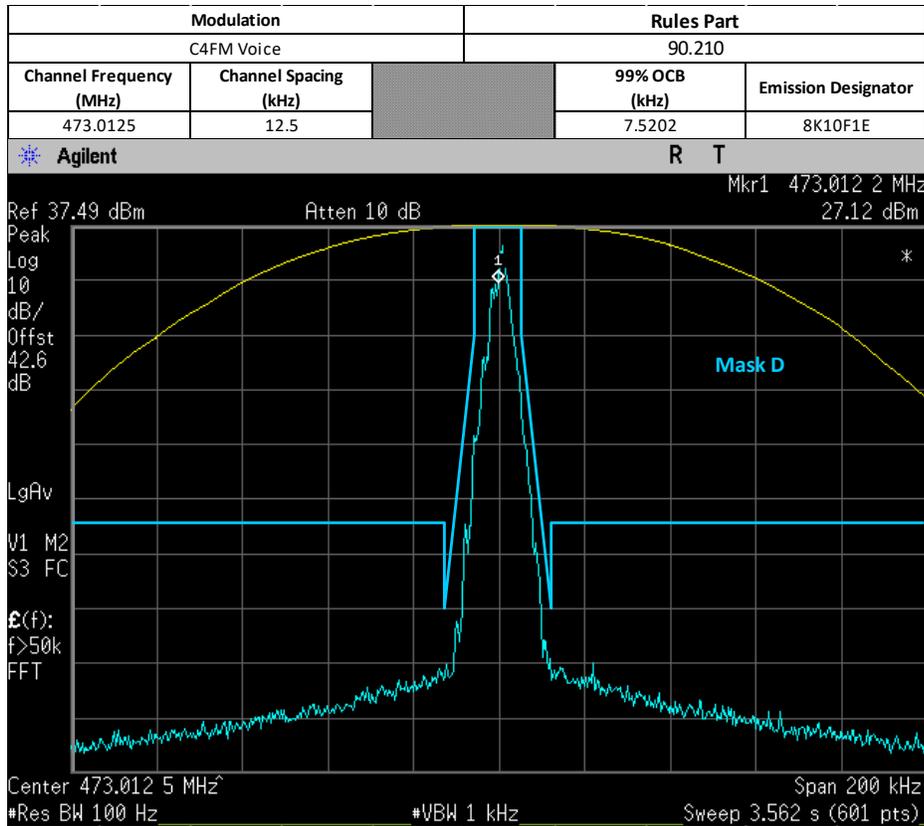
- For Digital Modulation, 12.5 kHz Data F1D & FXD would be the same. Therefore only measurements with F1D modulation shown below.
- For Digital Modulation, 12.5 kHz Data F1E & FXE would be the same. Therefore only measurements with F1E modulation shown below.

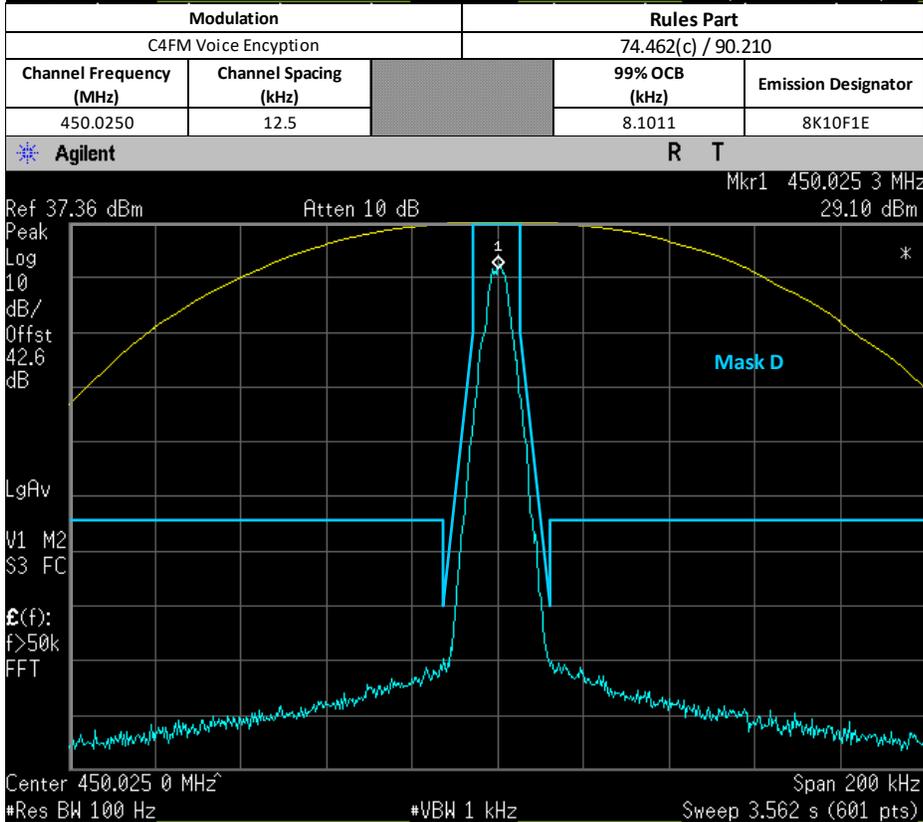
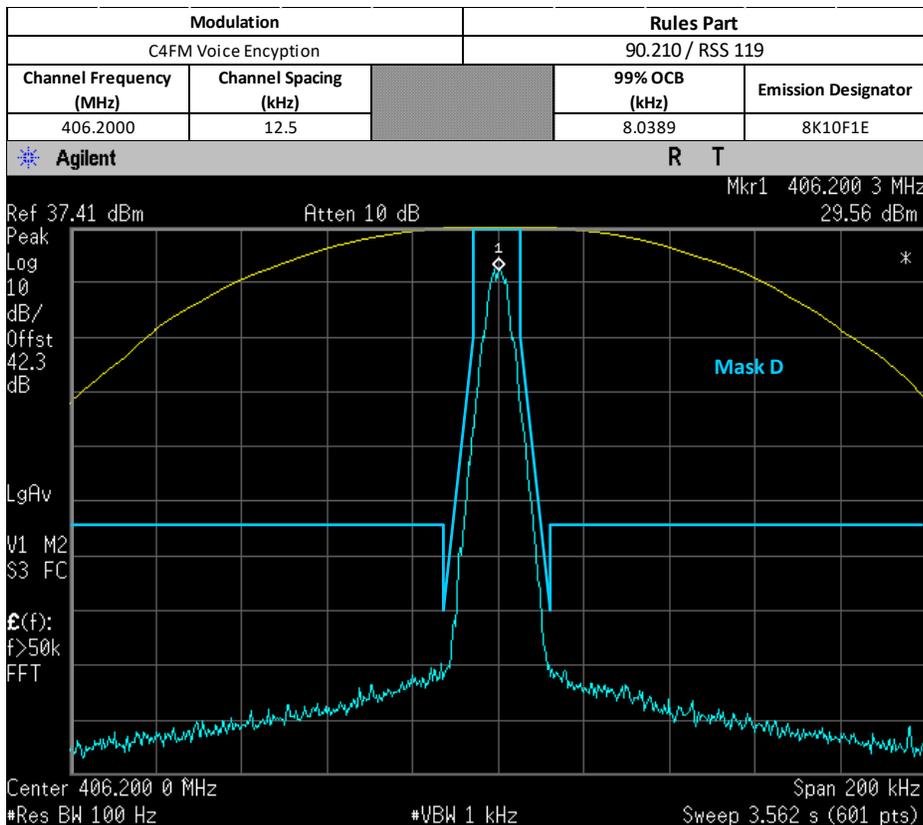
### 6.6.4. Test Result (Digital)

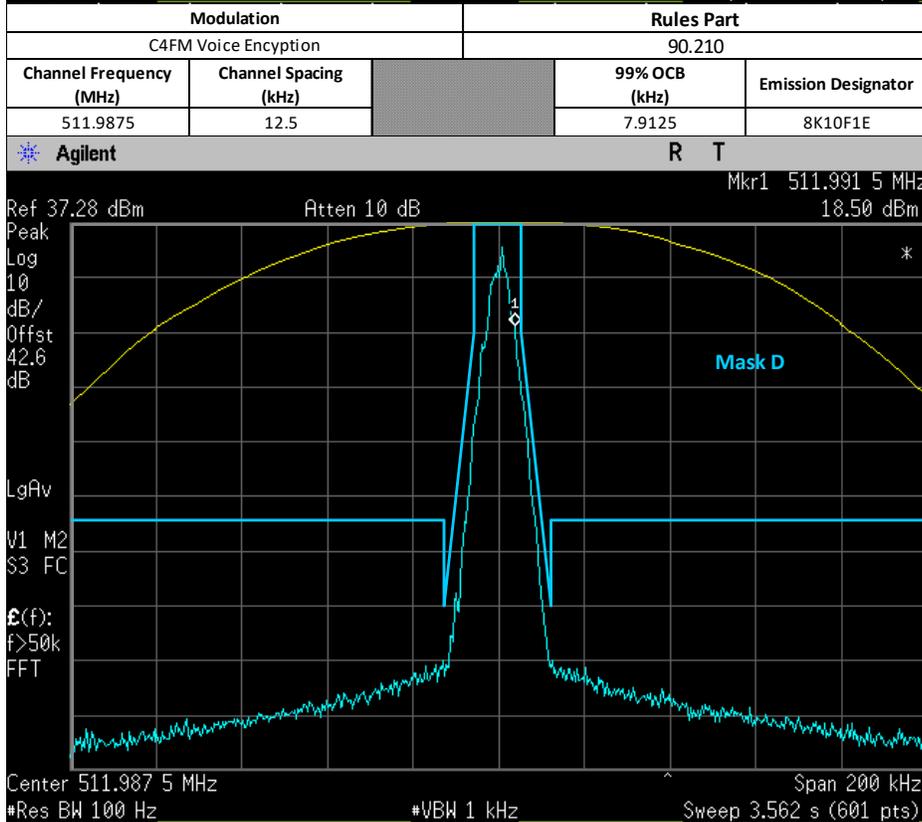
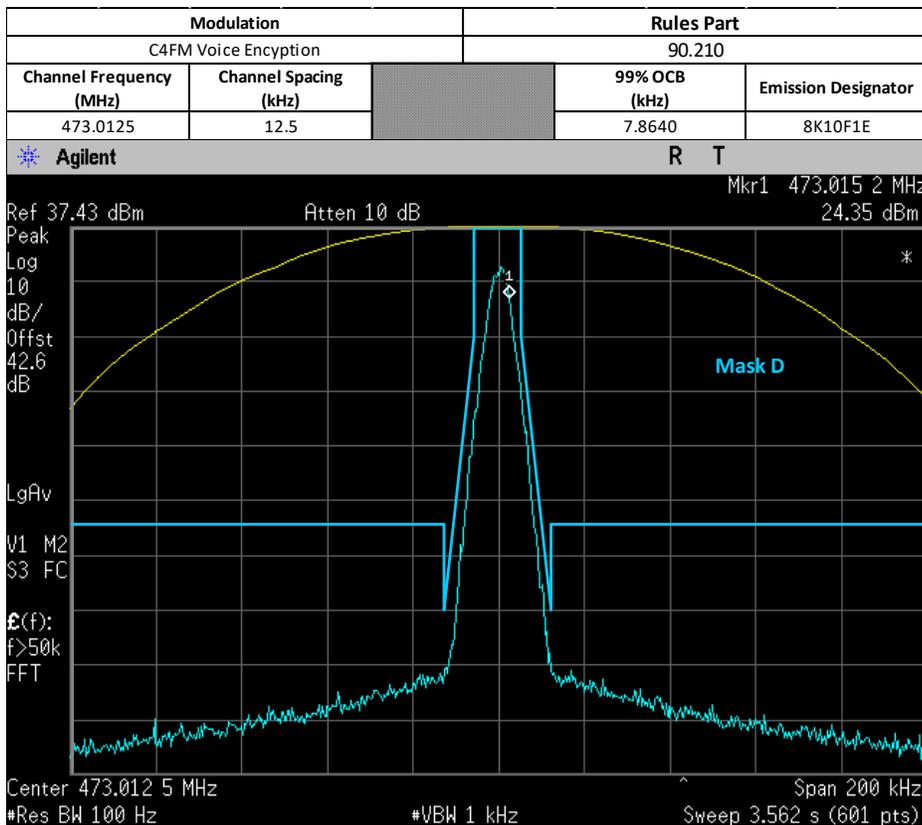


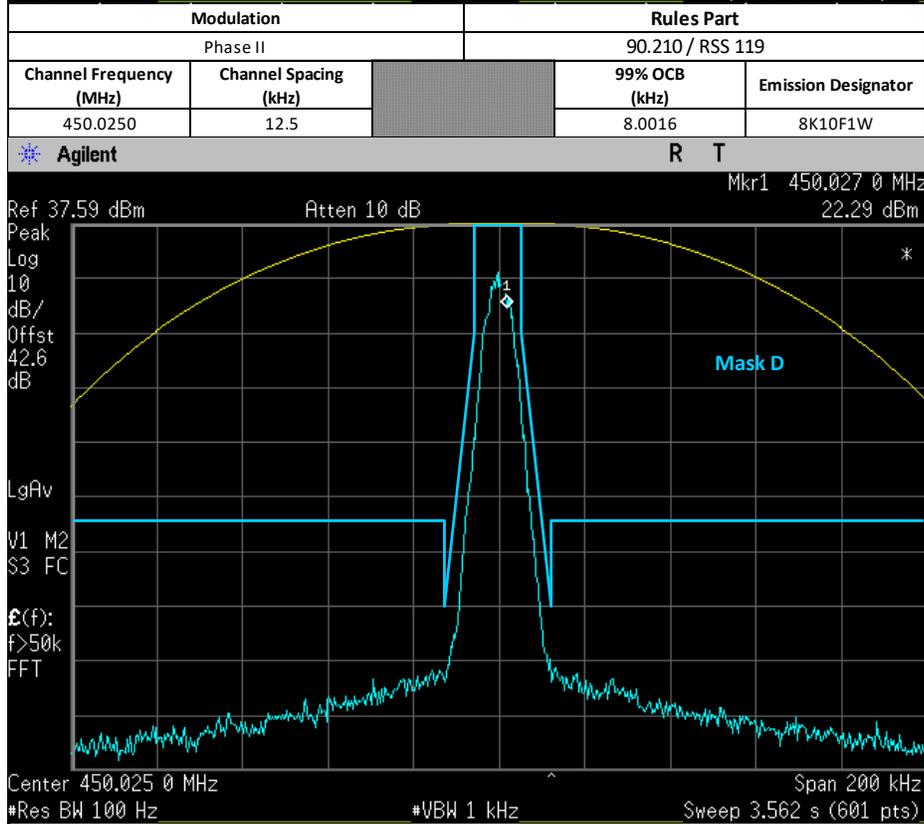
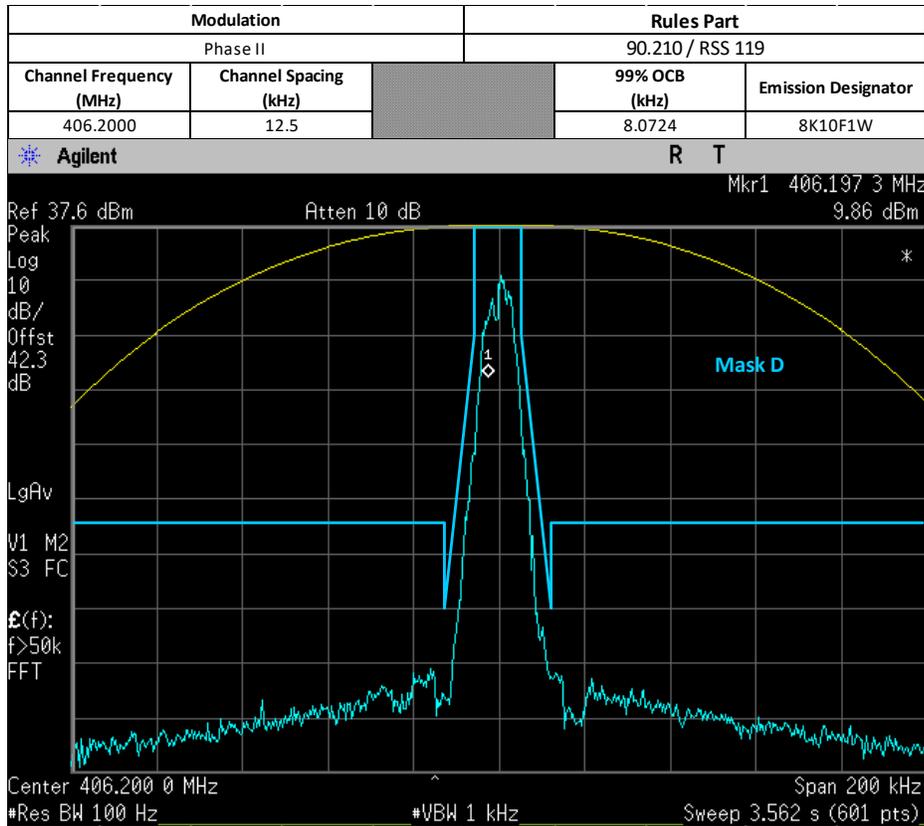


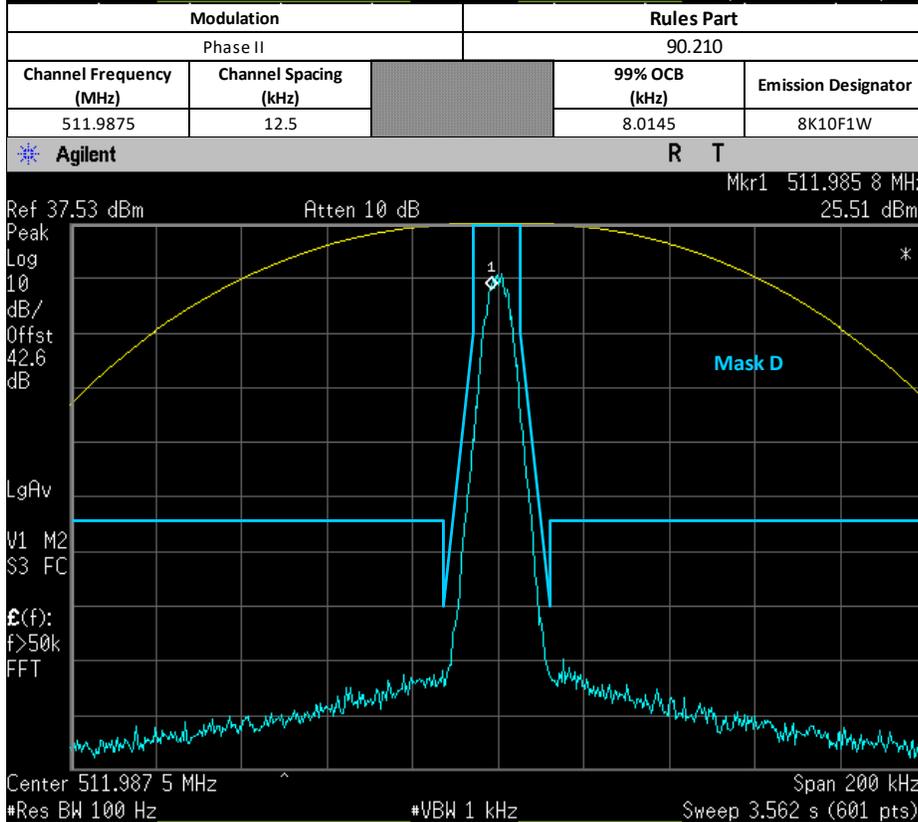
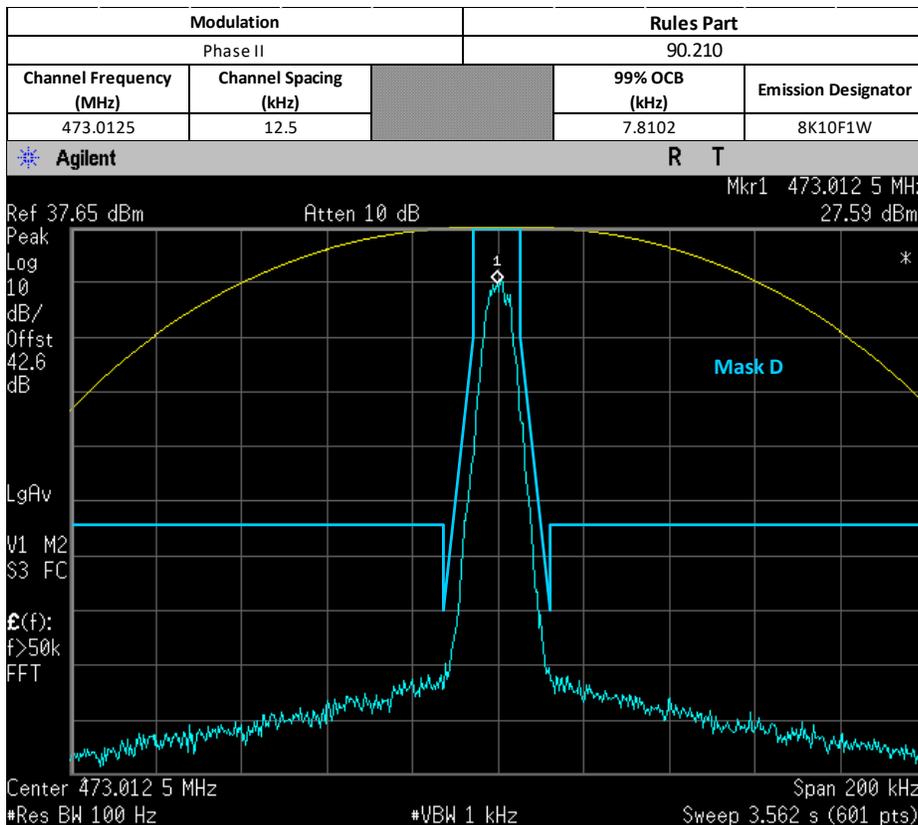


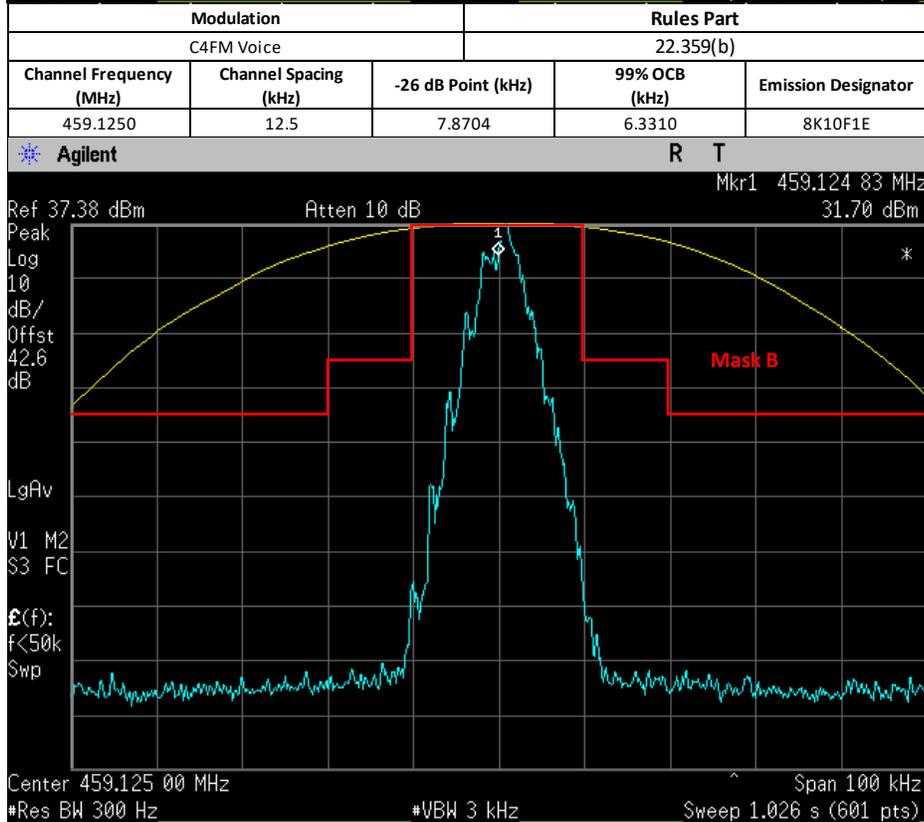
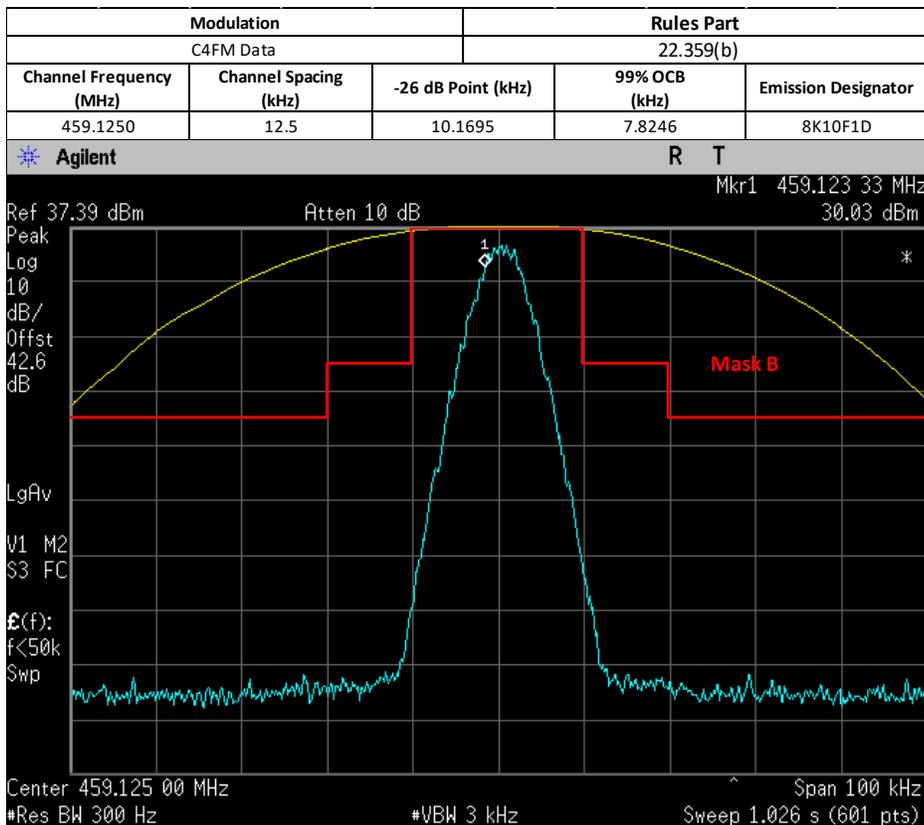


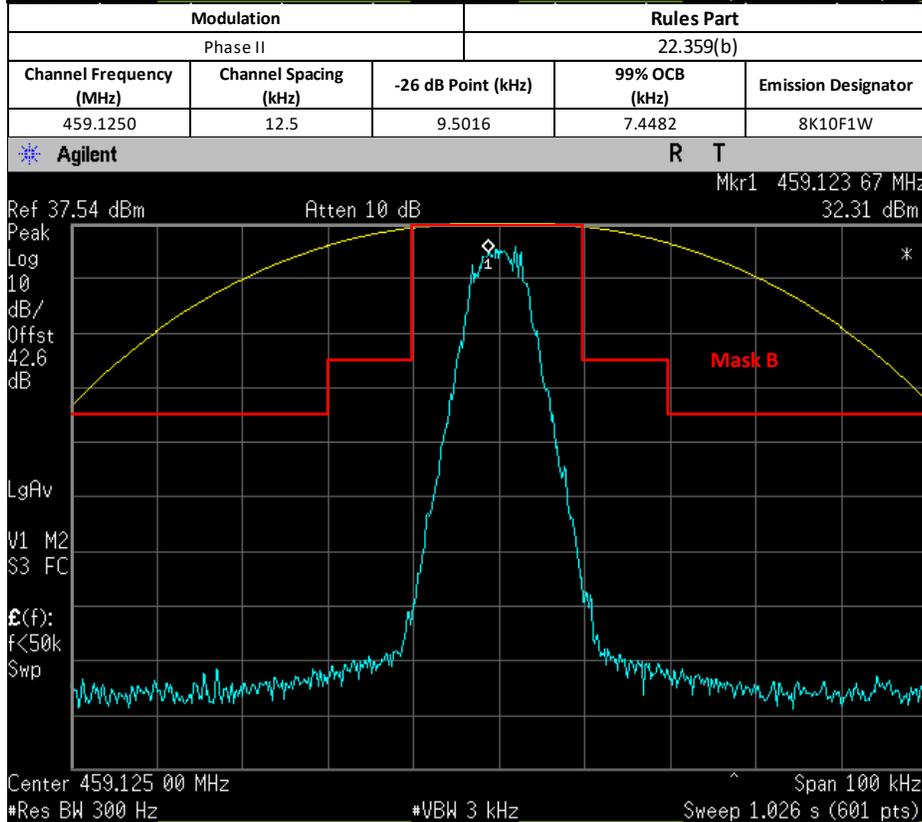
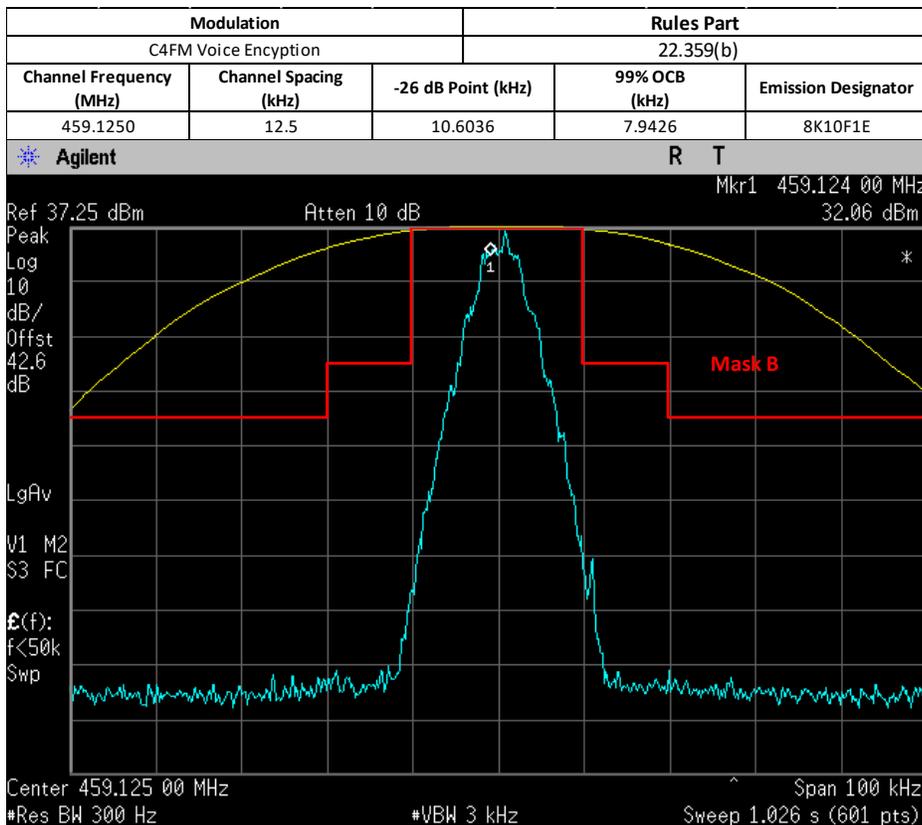










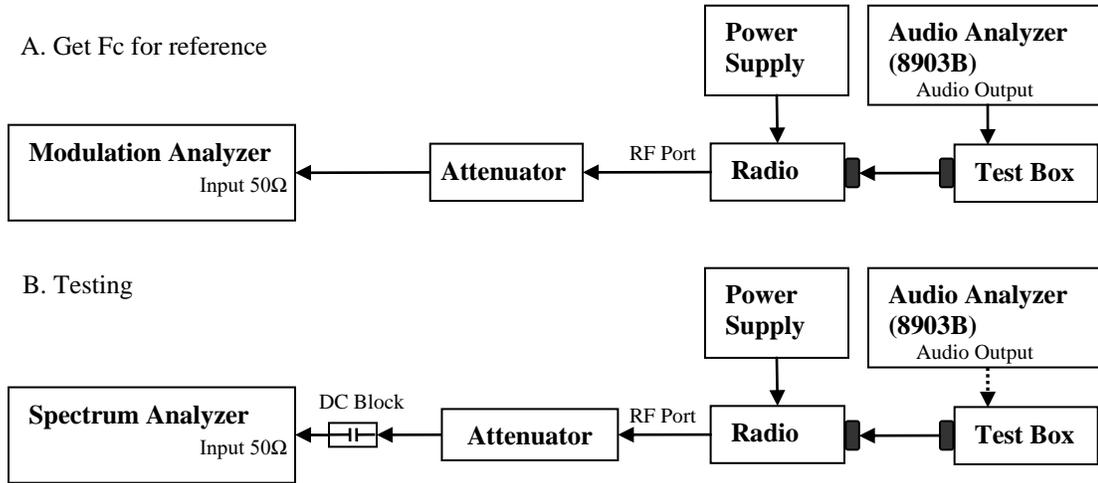


**6.6.5. Test Limit**

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)



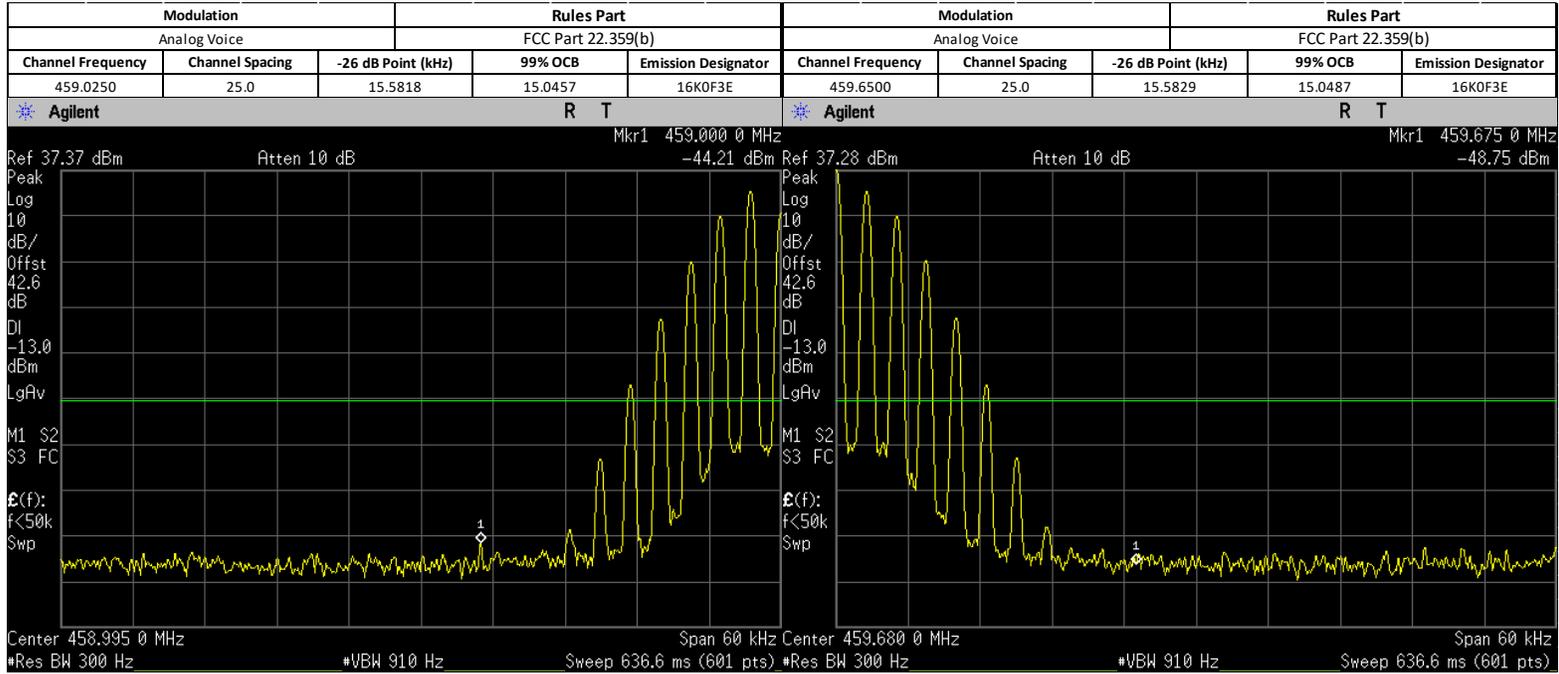
- 2) The DUT transmitter output port was connected to Modulation Analyzer.
- 3) Set the audio bandwidth filter to 15 kHz low pass filter and 50 kHz high pass filter.
- 4) Transmit the radio and set the audio analyzer to 2.5 kHz audio frequency and 50% of the rated deviation. Up the amplitude by 16 dB. 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:

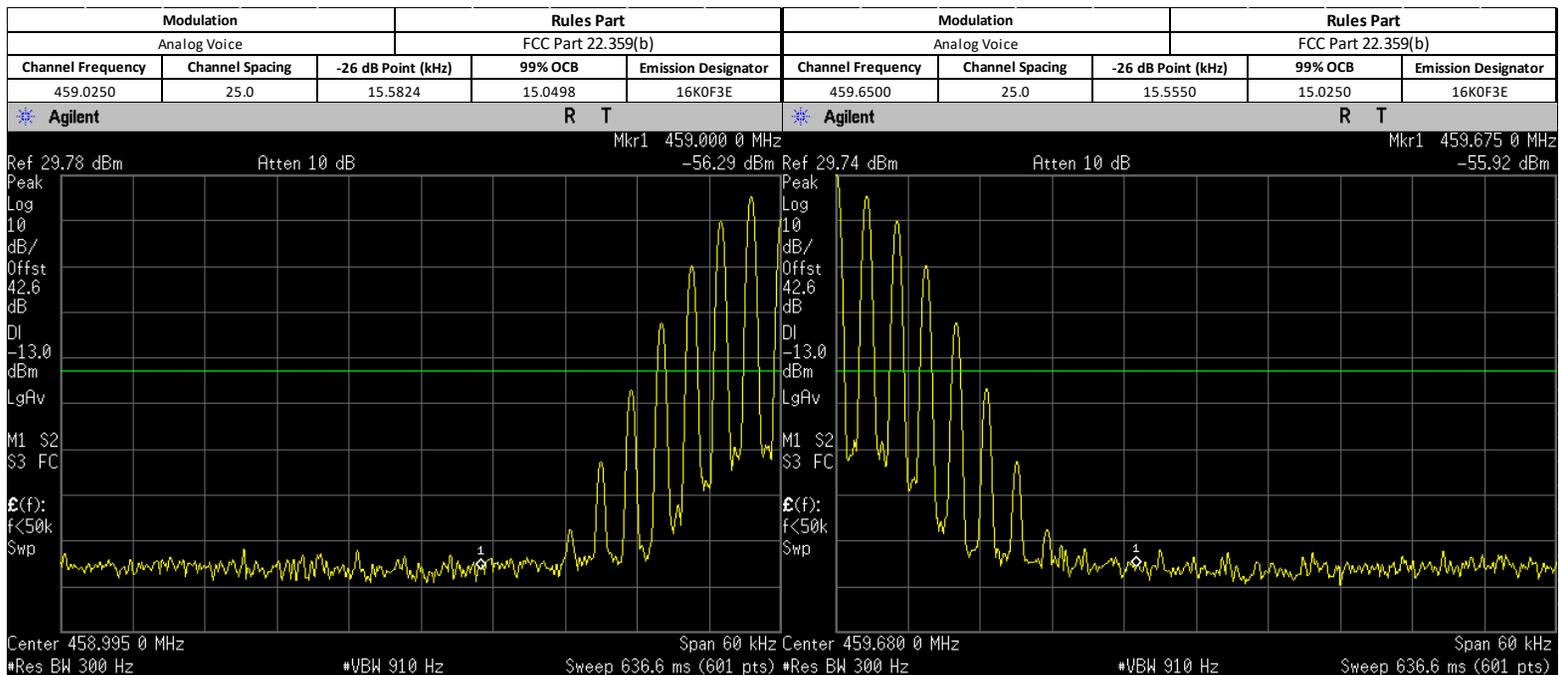
- For emission designator ending with F3E, 16K0F3E is the worst case and therefore only 16K0F3E will be shown.

### 6.7.2. Test Result (Analog)

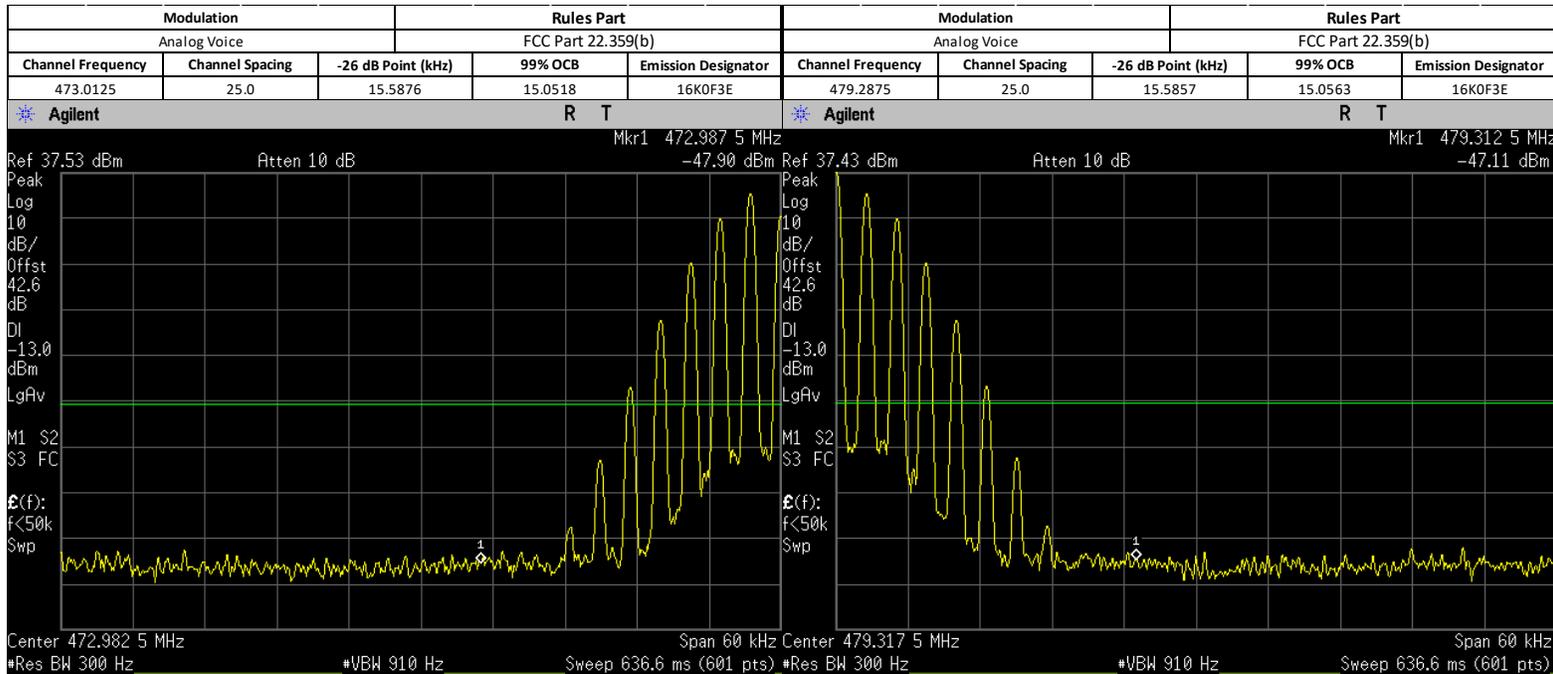
#### MAX PWR



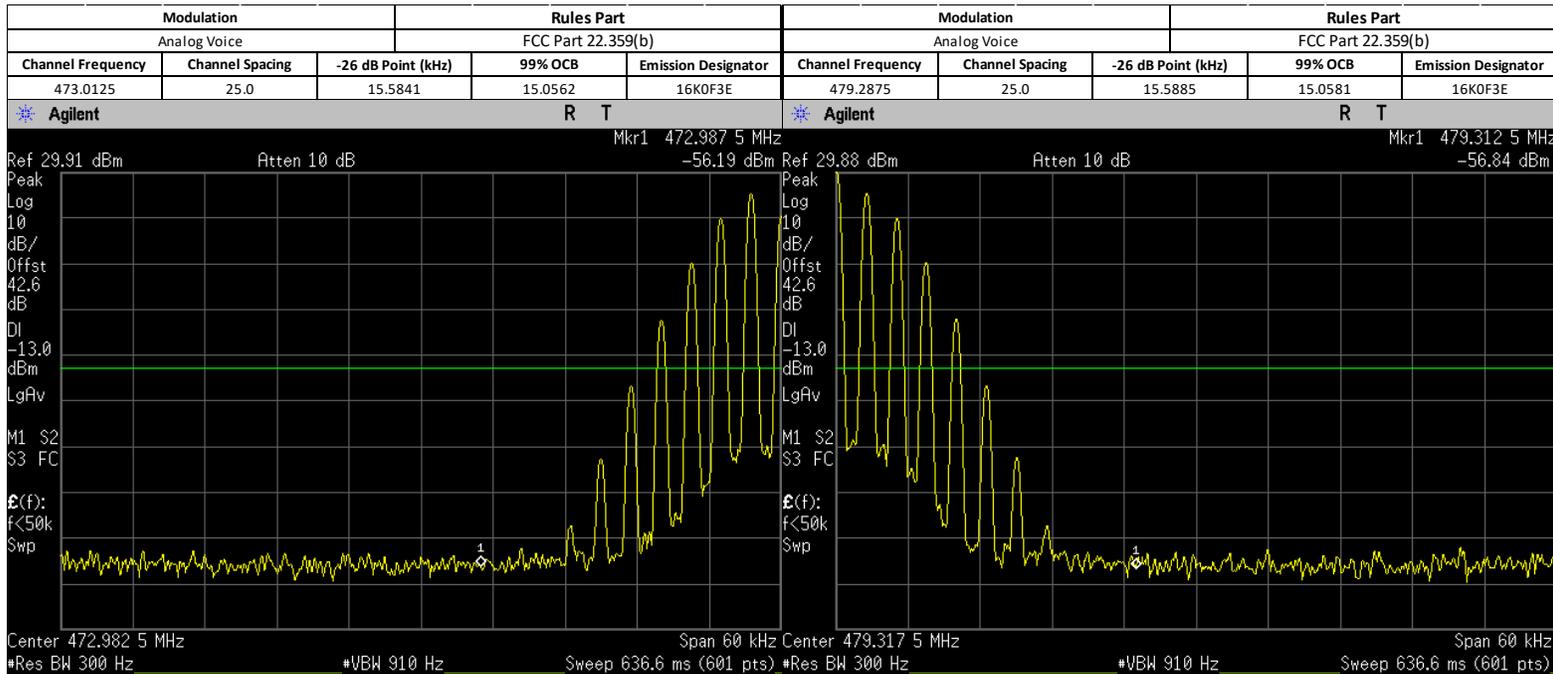
#### LOW PWR



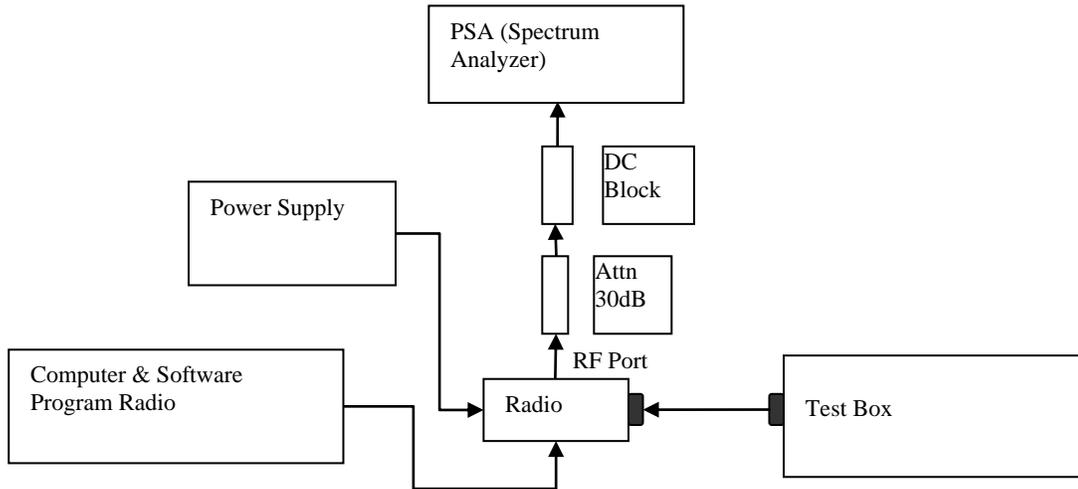
### MAX PWR



### LOW PWR



### 6.7.3. Test Setup (Digital)



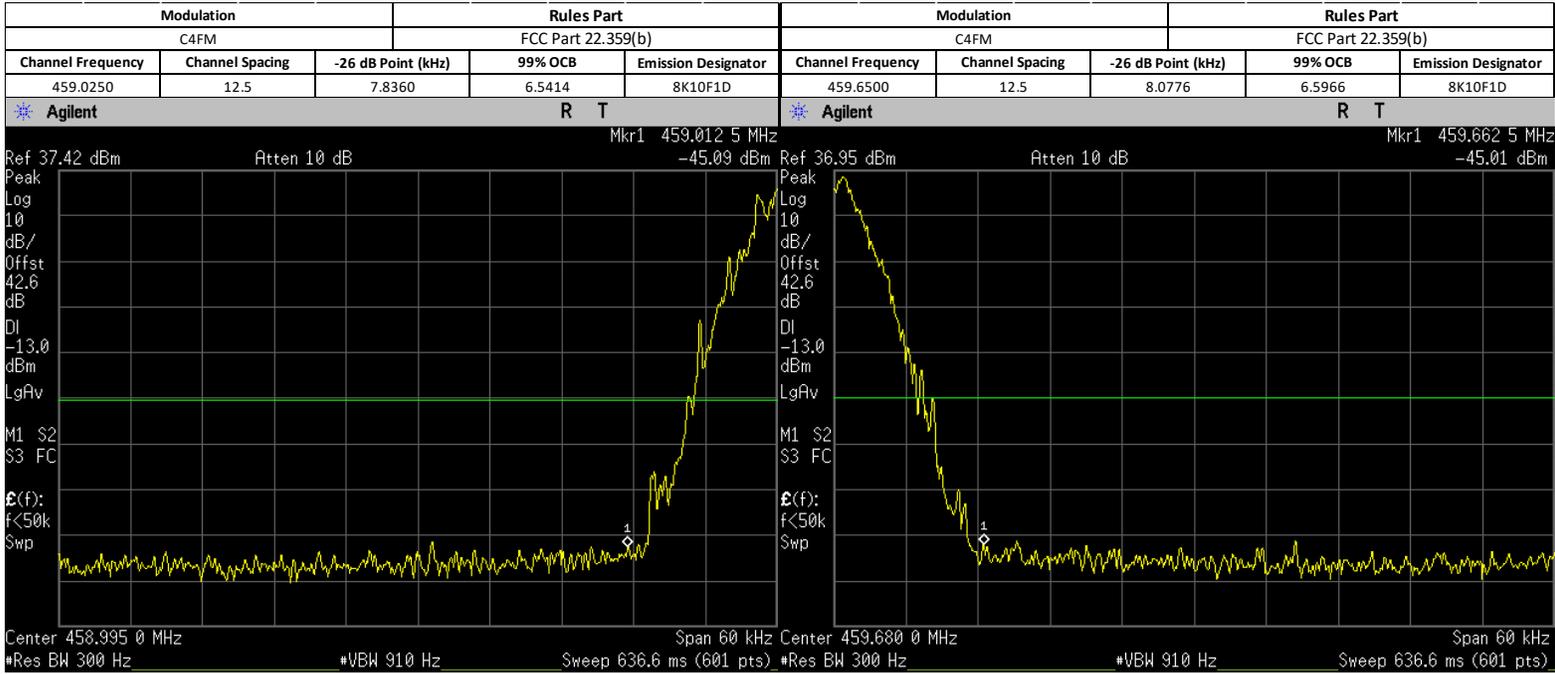
- 1) Program and set radio to operate in desire test frequency and digital mode with modulation. (\*4FSK, C4FM or other digital modulation form).
- 2) Path loss for the measurement included.
- 3) Select the Occupied Bandwidth measurement for 99% and 26dB Emissions Bandwidth Measurement.
- 4) Key in the 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:

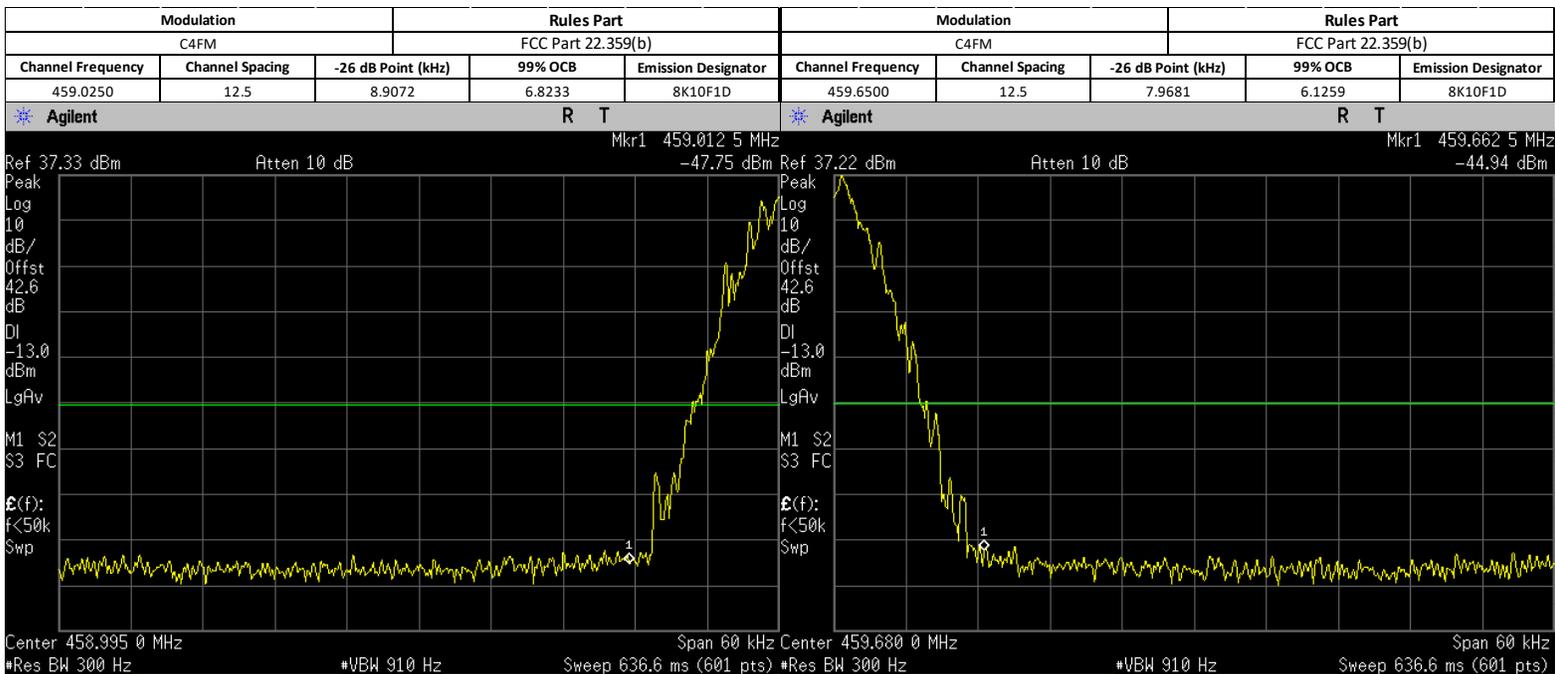
- For Digital Modulation, 12.5 kHz Data F1D & FXD would be the same. Therefore only measurements with F1D modulation shown below.
- For Digital Modulation, 12.5 kHz Data F1E & FXE would be the same. Therefore only measurements with F1E modulation shown below.

### 6.7.4. Test Result (Digital)

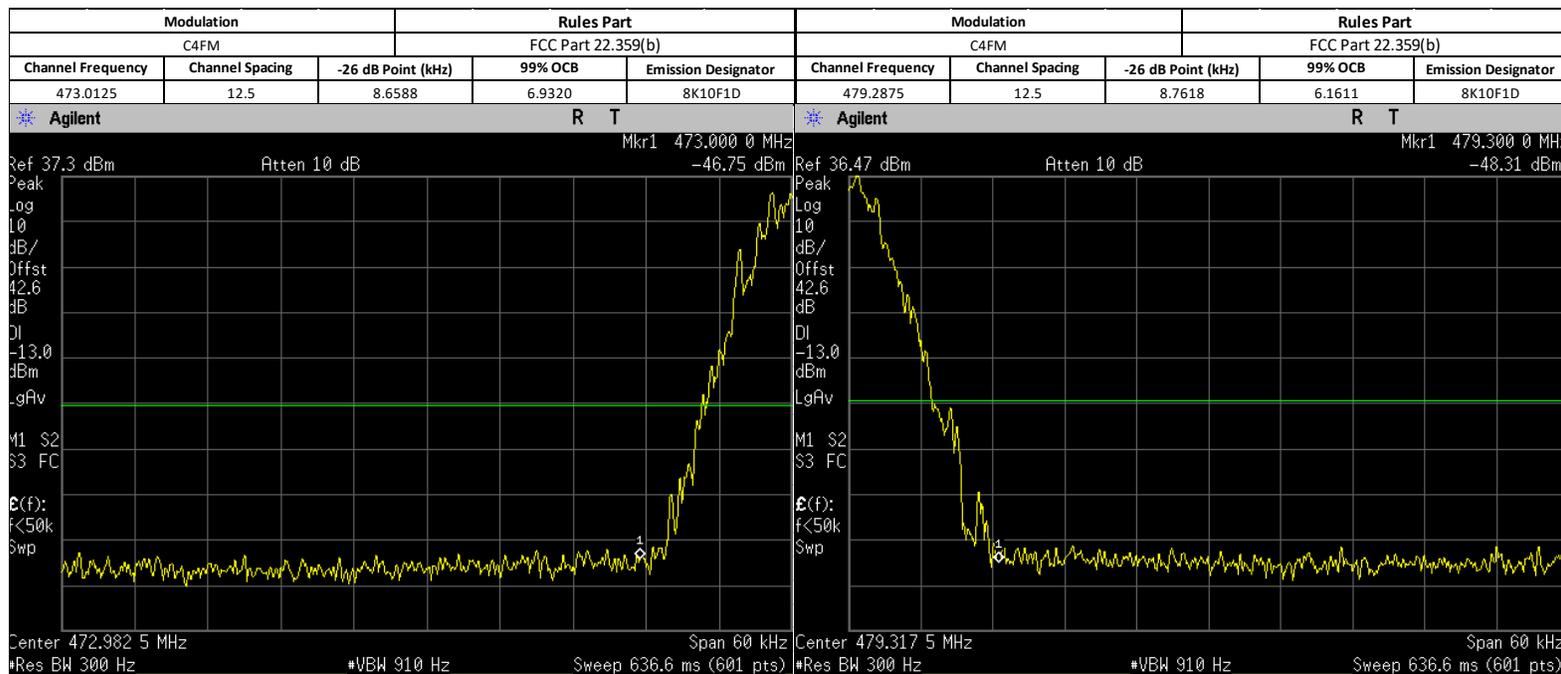
#### MAX PWR



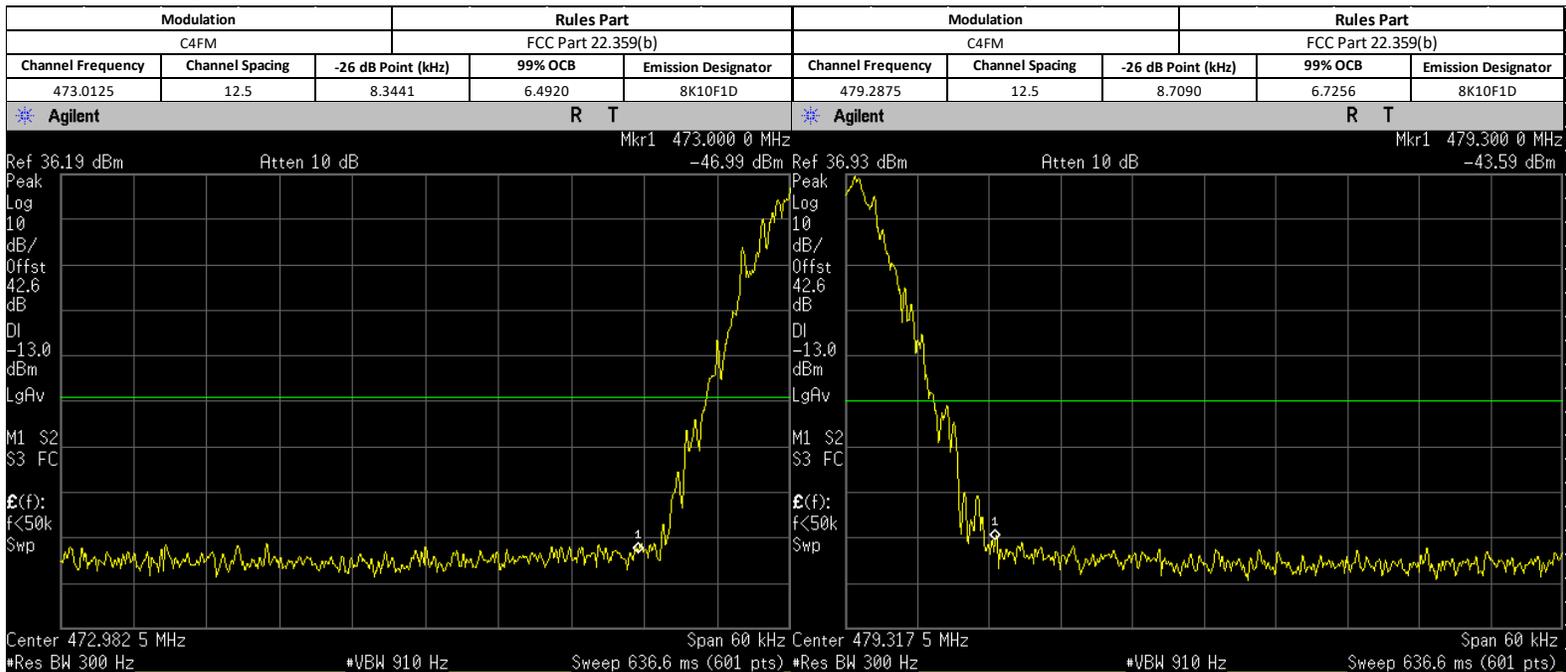
#### LOW PWR



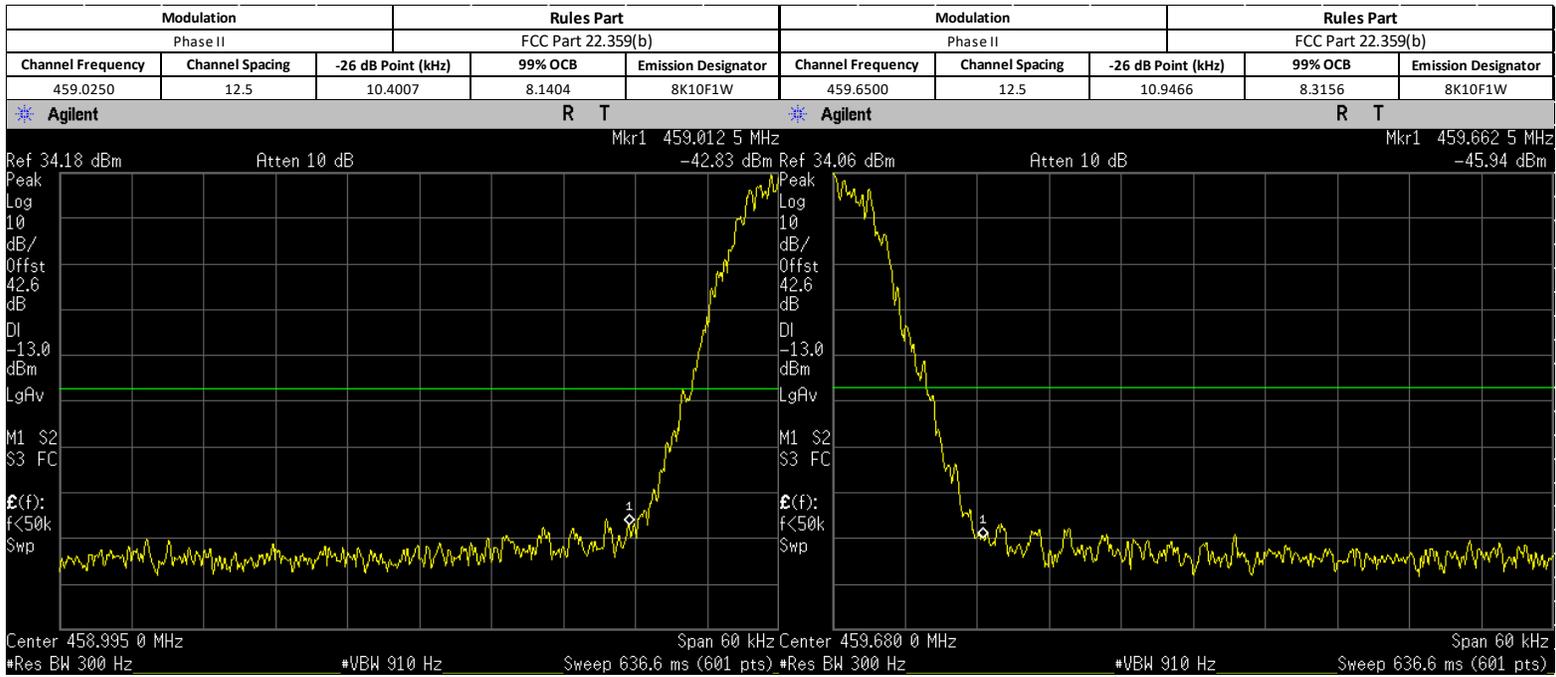
### MAX PWR



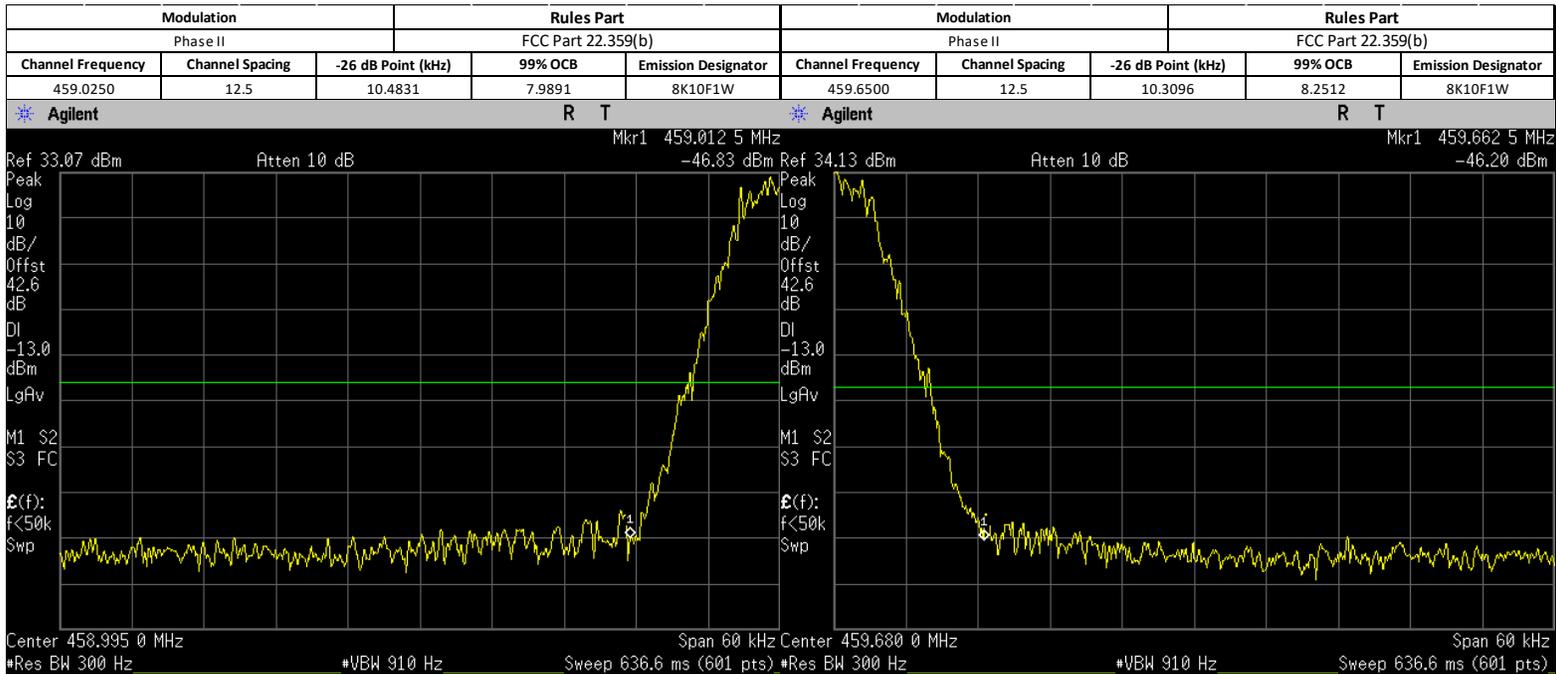
### LOW PWR



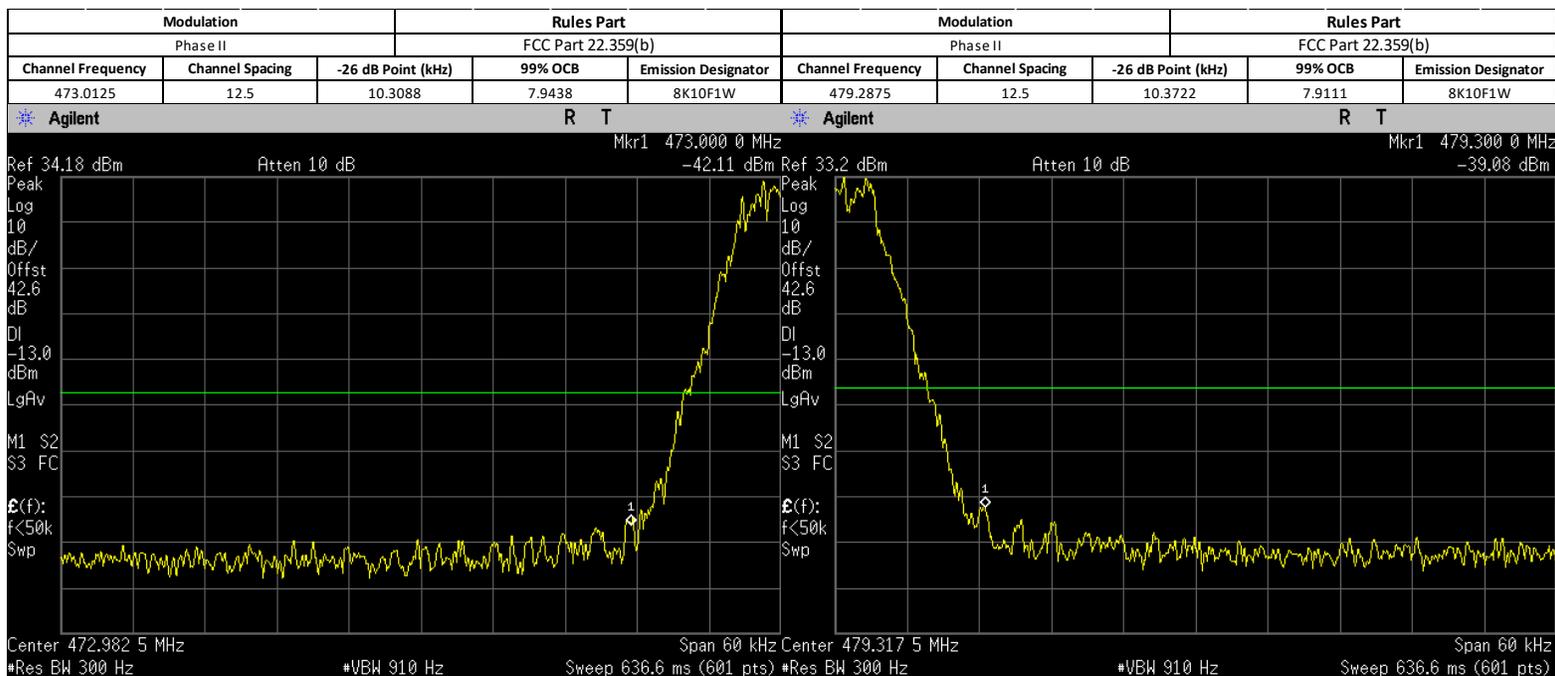
### MAX PWR



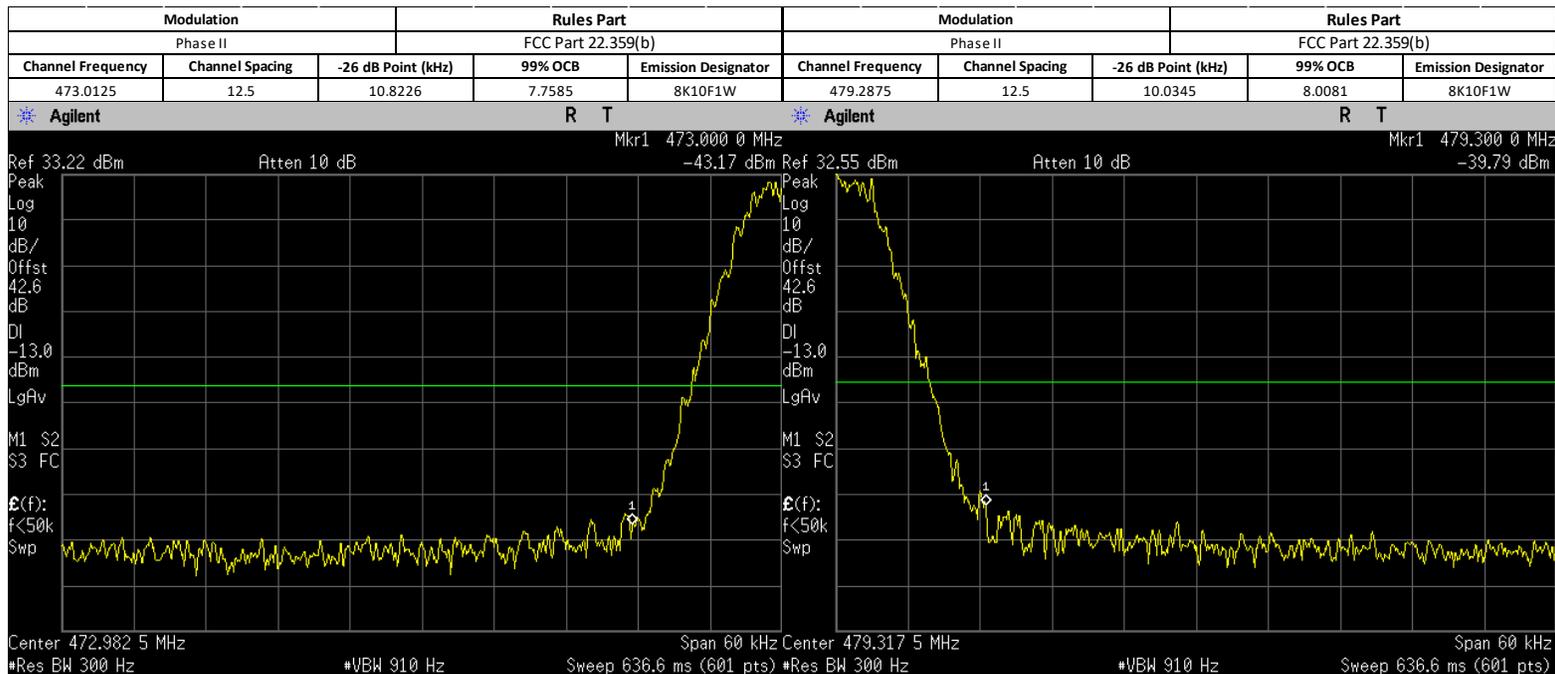
### LOW PWR



### MAX PWR



### LOW PWR

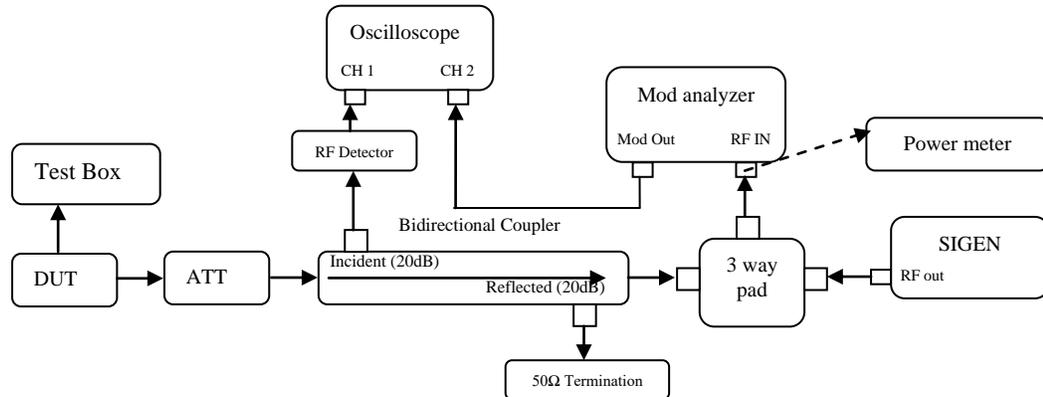


#### 6.7.5. Test Limit

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.

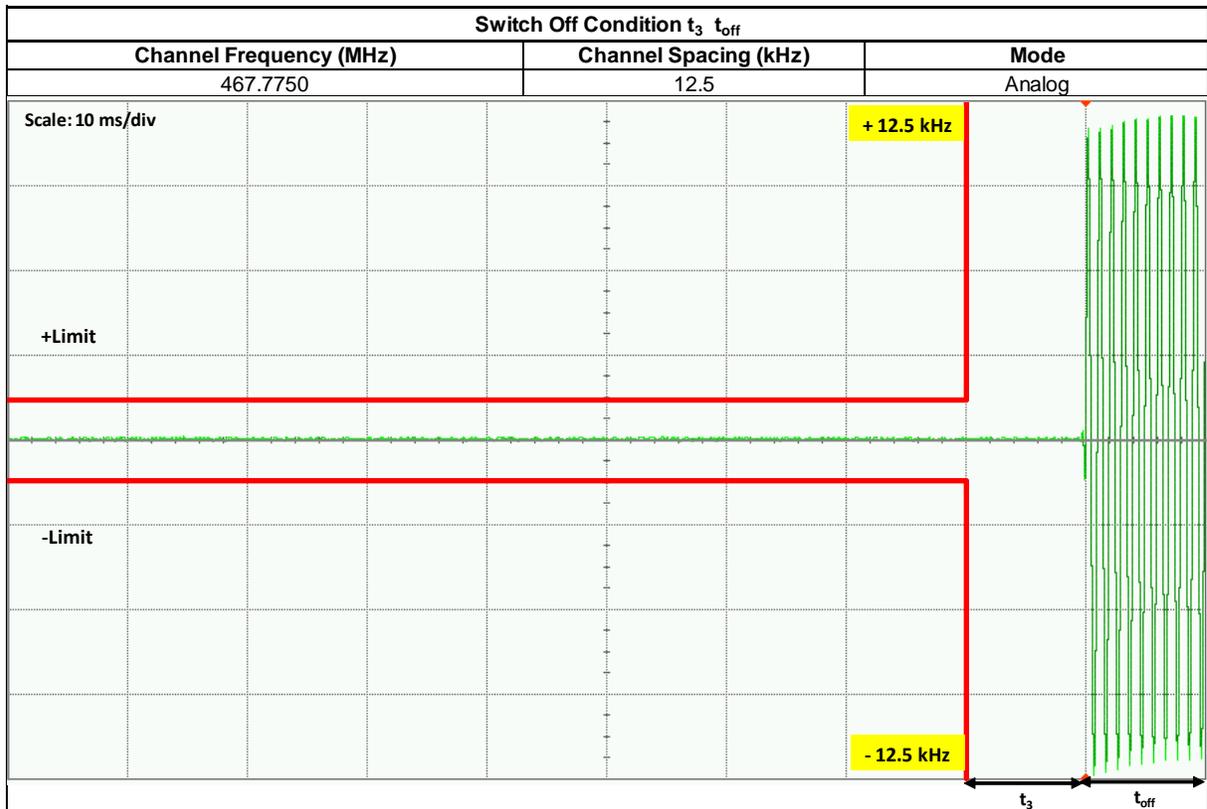
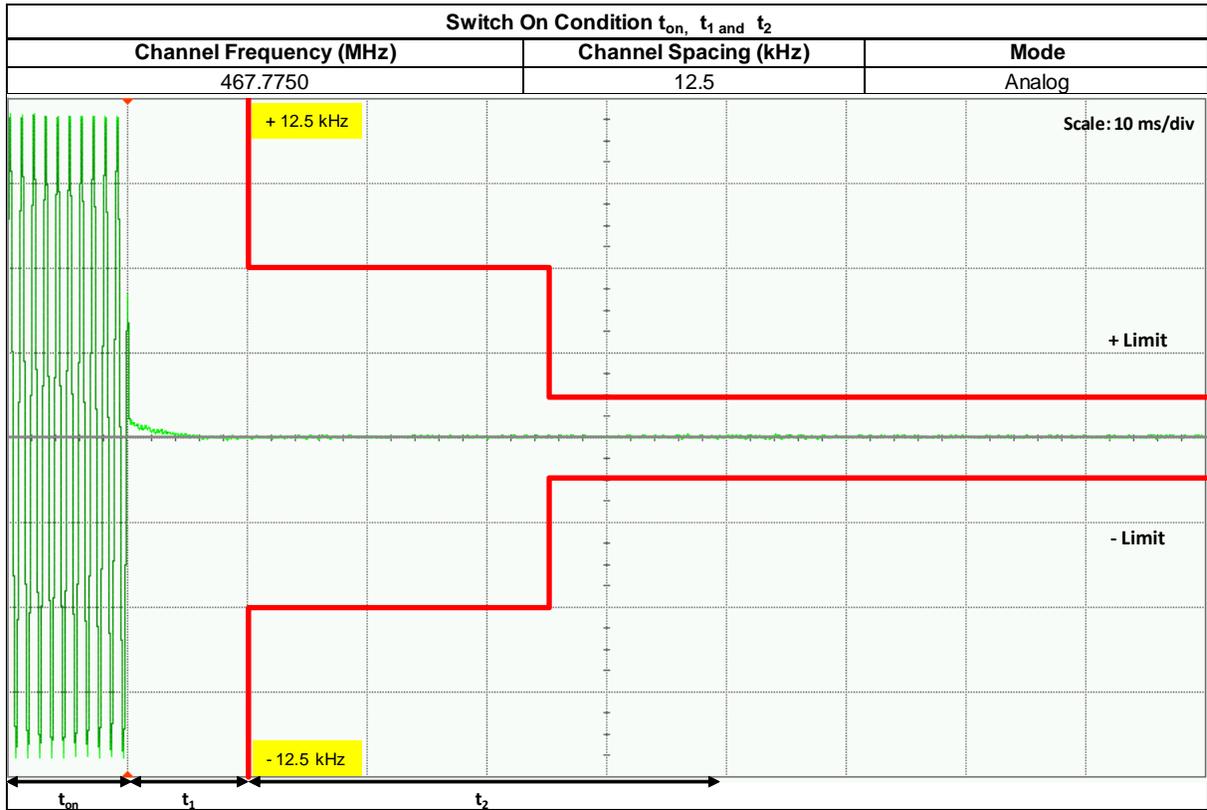
## 6.8. Transient Frequency Behavior

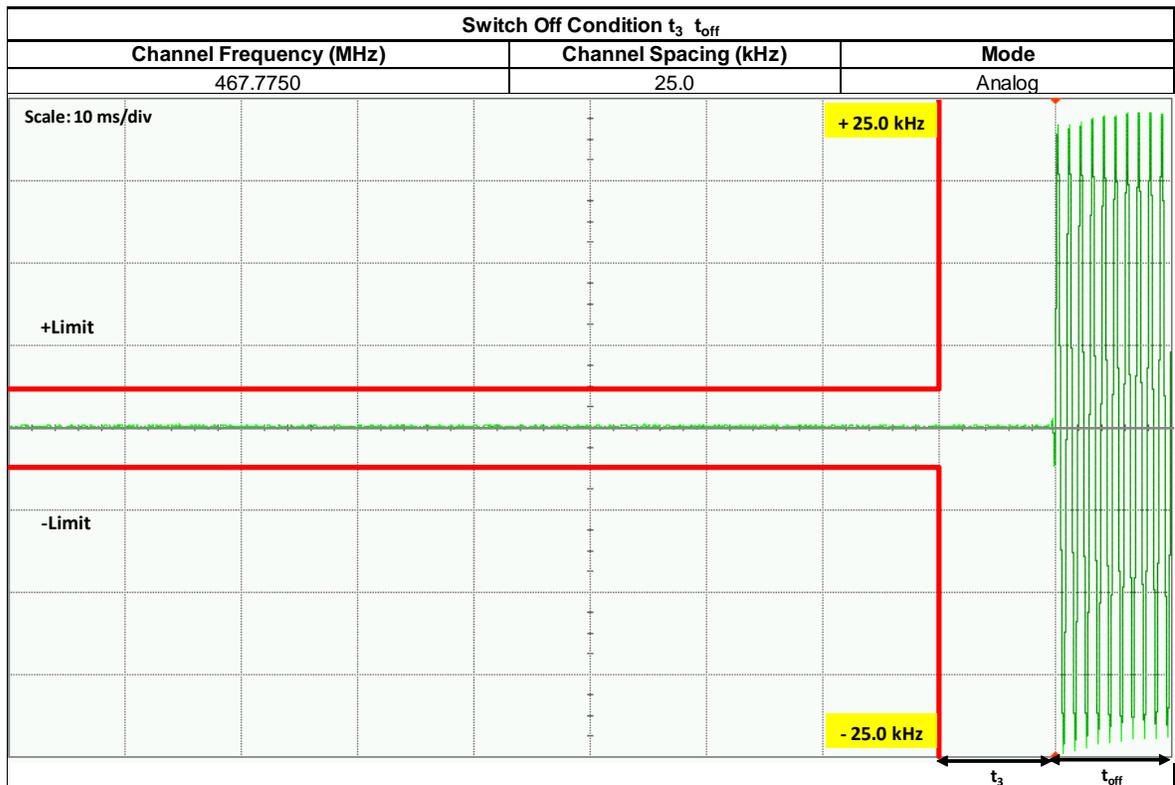
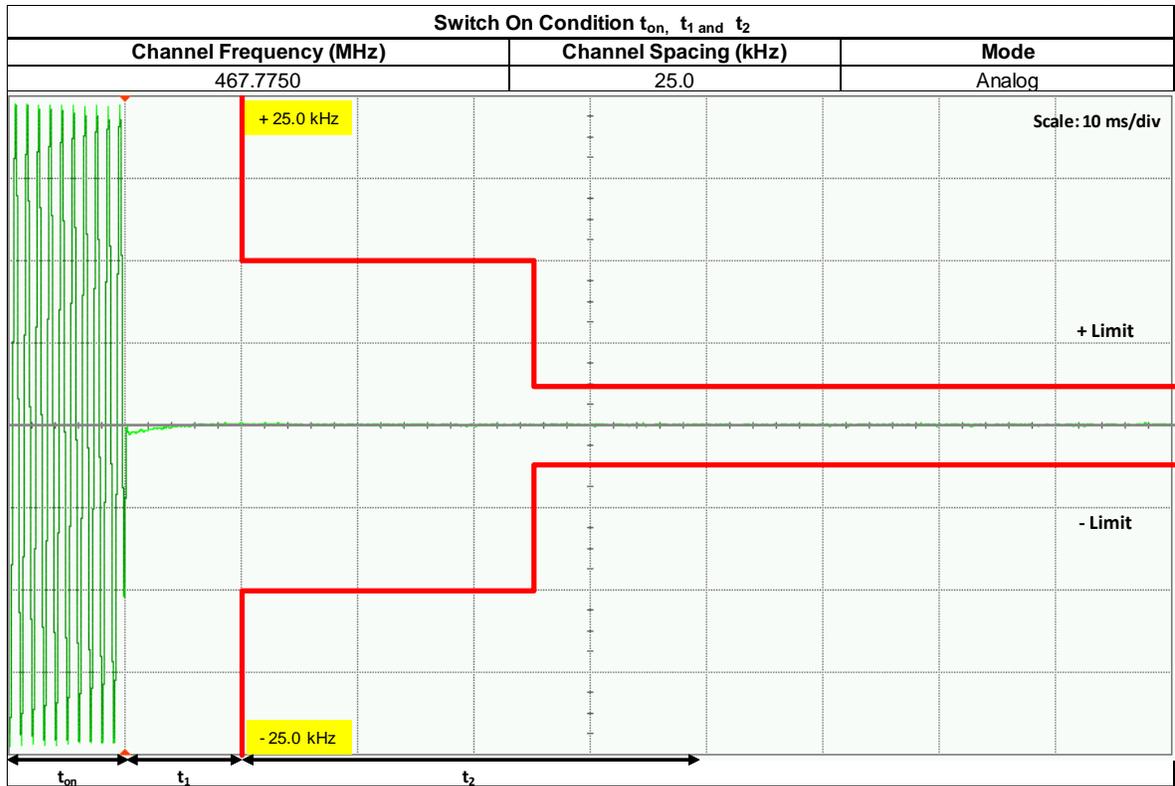
### 6.8.1. Test Setup

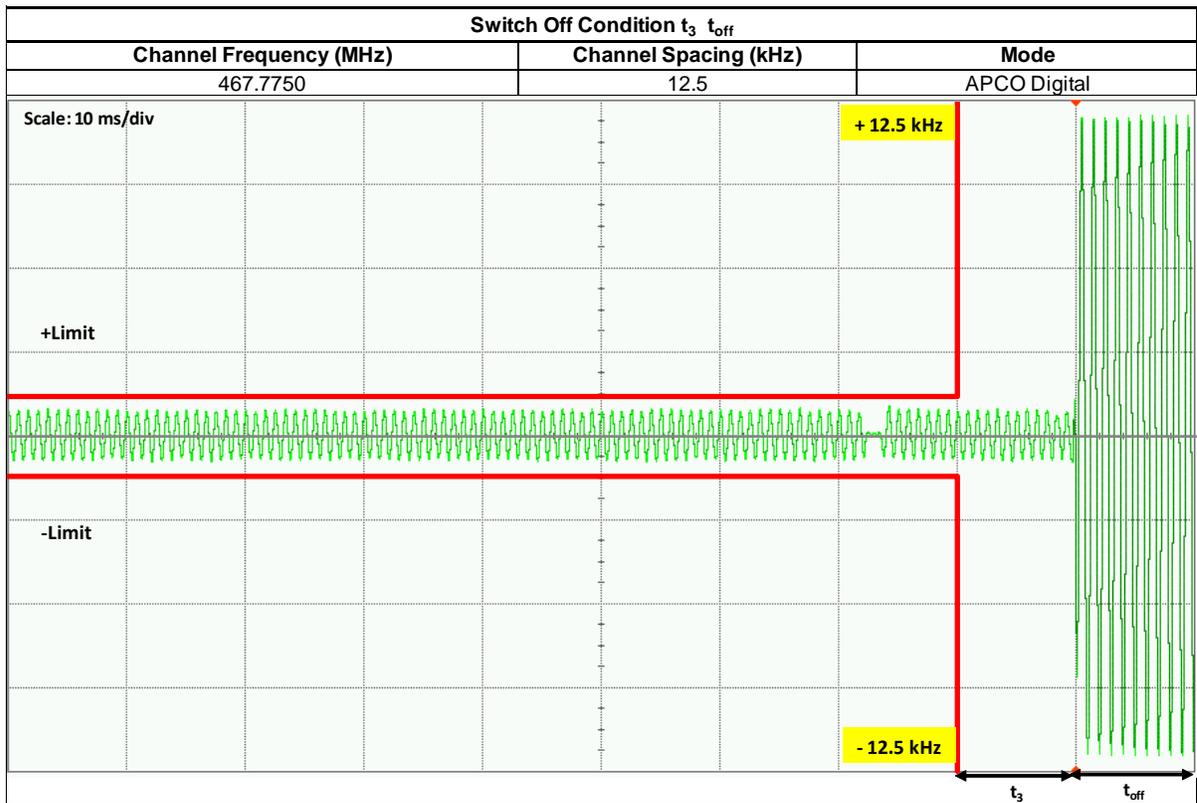
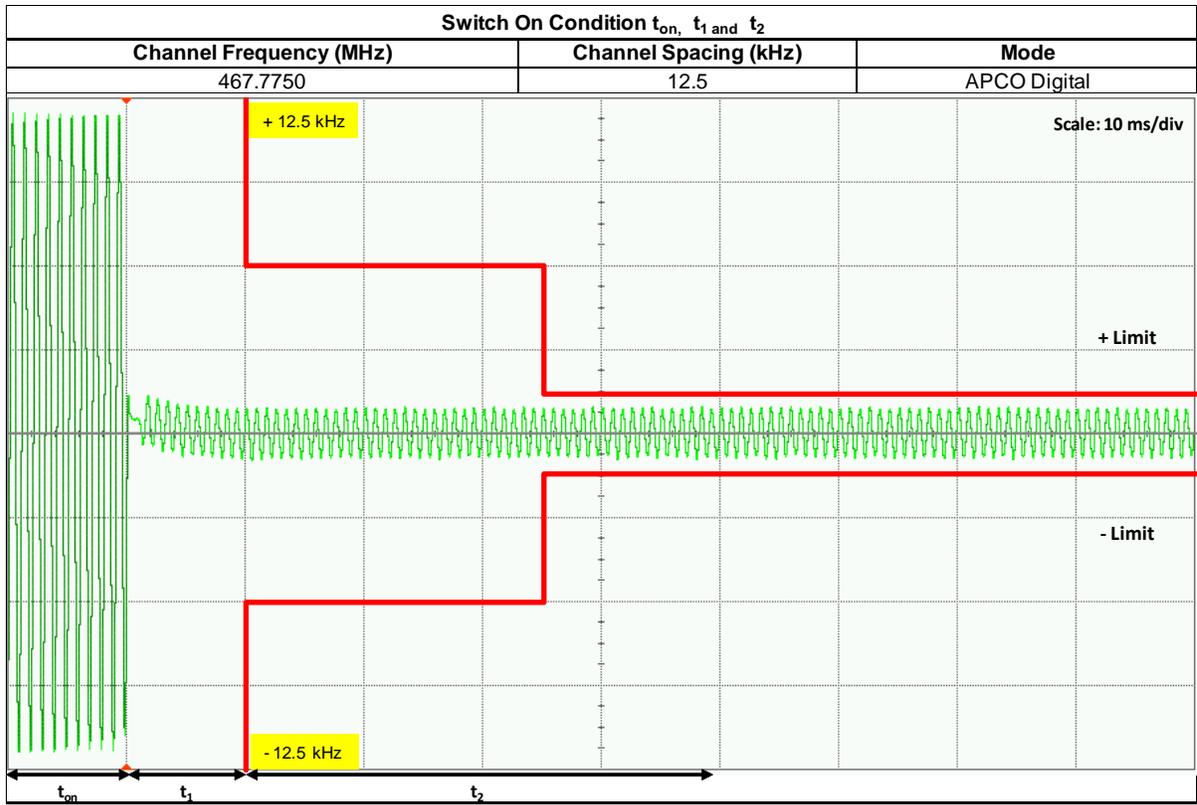


- 1) Connect the setup as figure above.
- 2) Path loss for the measurement included.
- 3) Set on Sigen with the assigned center frequency, internal 1 kHz FM tone.  
FM Deviation: Analog 25kHz Channel Spacing = 25 kHz  
Analog 12.5 kHz Channel Spacing = 12.5 kHz  
C4FM = 12.5 kHz
- 4) Turn on 50 kHz high 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







### 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 <sub>1</sub> <sup>4</sup>	±25.0 kHz	5.0 ms	10.0 ms
t <sub>2</sub>	±12.5 kHz	20.0 ms	25.0 ms
t <sub>3</sub> <sup>4</sup>	±25.0 kHz	5.0 ms	10.0 ms
Transient Frequency Behavior for Equipment Designed to Operate on 12.5 kHz Channels			
t <sub>1</sub> <sup>4</sup>	±12.5 kHz	5.0 ms	10.0 ms
t <sub>2</sub>	±6.25 kHz	20.0 ms	25.0 ms
t <sub>3</sub> <sup>4</sup>	±12.5 kHz	5.0 ms	10.0 ms
Transient Frequency Behavior for Equipment Designed to Operate on 6.25 kHz Channels			
t <sub>1</sub> <sup>4</sup>	±6.25 kHz	5.0 ms	10.0 ms
t <sub>2</sub>	±3.125 kHz	20.0 ms	25.0 ms
t <sub>3</sub> <sup>4</sup>	±6.25 kHz	5.0 ms	10.0 ms

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

t<sub>1</sub> is the time period immediately following t<sub>on</sub>.

t<sub>2</sub> is the time period immediately following t<sub>1</sub>.

t<sub>3</sub> is the time period from the instant when the transmitter is turned off until t<sub>off</sub>.

t<sub>off</sub> is the instant when the 1 kHz test signal starts to rise.

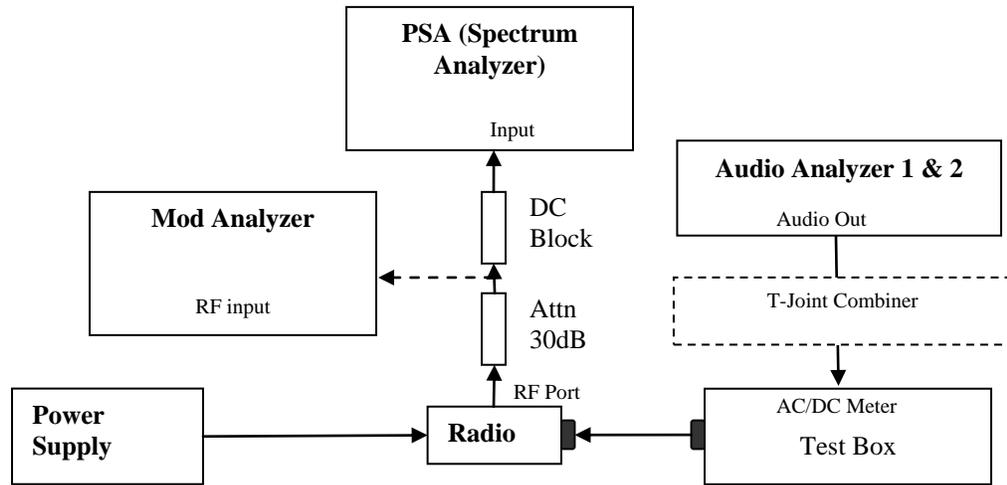
<sup>2</sup> During the time from the end of t<sub>2</sub> to the beginning of t<sub>3</sub>, the frequency difference must not exceed the limits specified in §90.213.

<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)

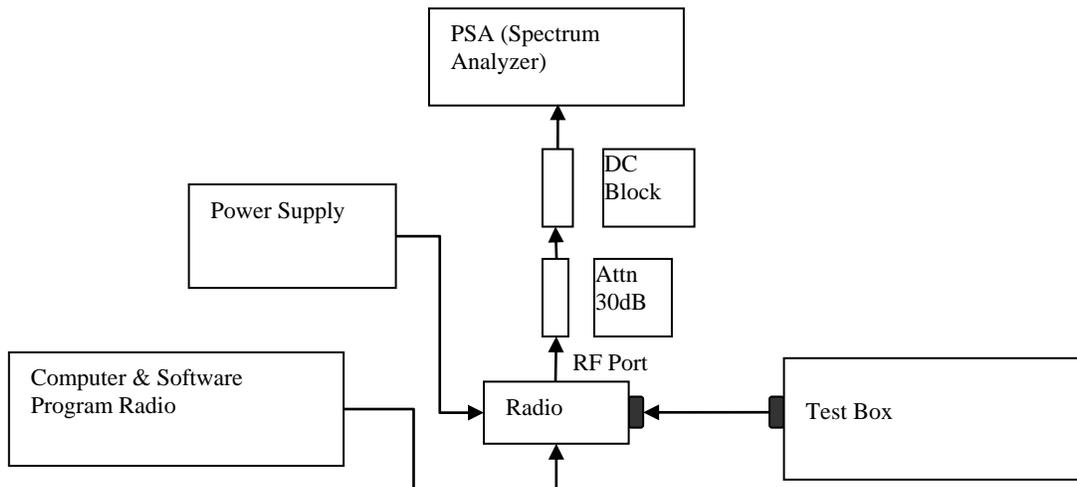


- 1) The DUT transmitter output port was connected to modulation analyzer.
- 2) Transmit the radio and turn on 1<sup>st</sup> audio analyzer with audio frequency 650Hz, 50% rated deviation, and record the amplitude value as AmpT1.
- 3) Turn off Audio analyzer 1 and turn on audio analyzer 2, set the audio 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**

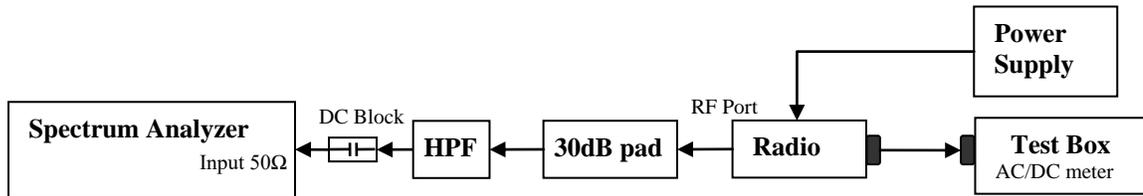
Offset from center frequency (kHz)	Measurement bandwidth (kHz)	Maximum ACP (dBc)
9.375	6.25	-40
15.625	6.25	-60
21.875	6.25	-60
37.5	25	-60
62.5	25	-65
87.5	25	-65
150	100	-65
250	100	-65
350.00	100	-65
>400 kHz to 12 MHz	30 (s)	-80
12 MHz to paired receive band	30 (s)	-80
In the paired receive band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

## 6.10. Conducted Spurious Emission

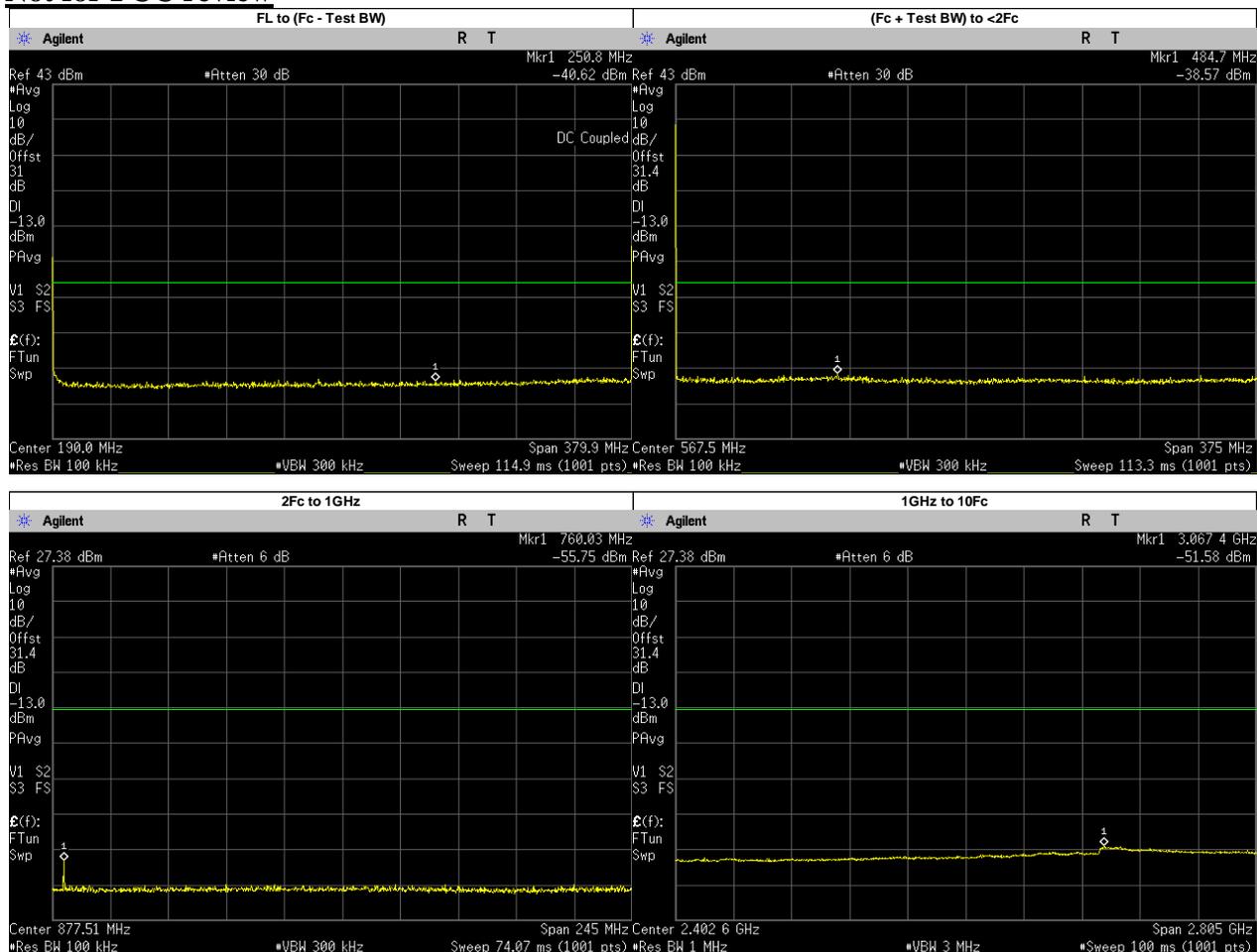
### 6.10.1. Test Setup



- 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.

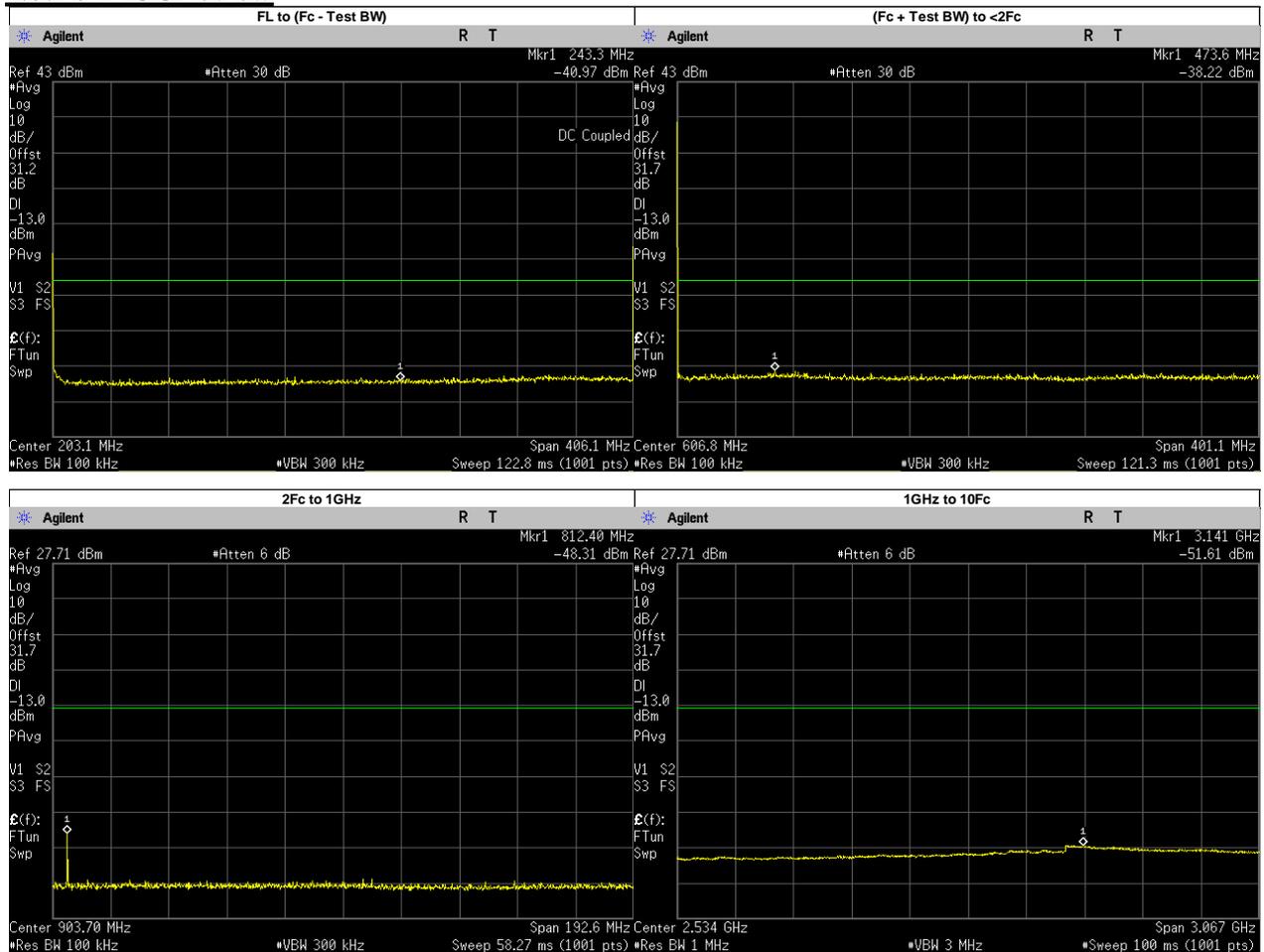
### 6.10.2. Test Result (Analog)

#### Analog: 380.0125 MHz, 25.0 kHz Channel Spacing, Max Power Not for FCC review



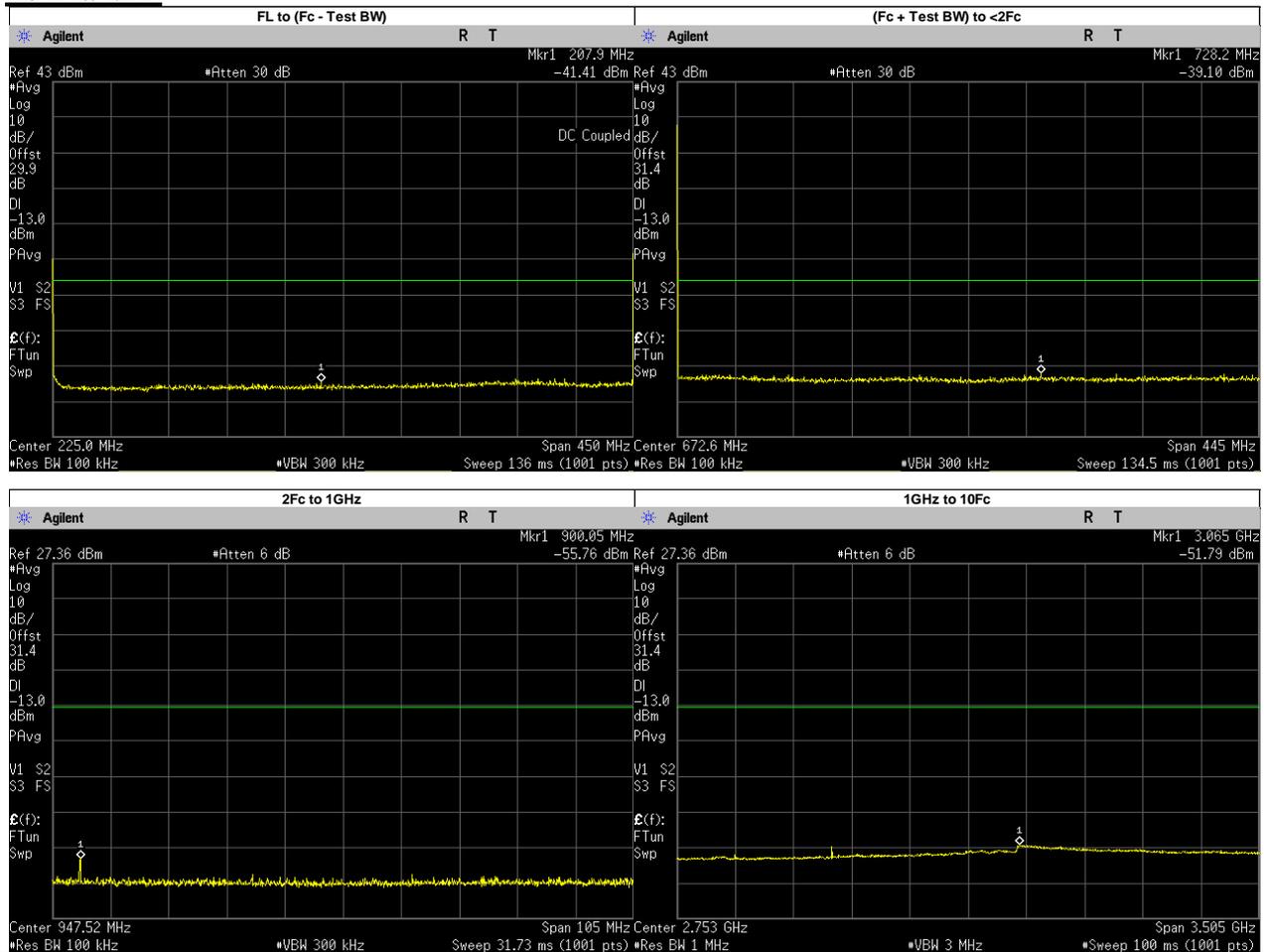
Frequency Range	Highest Spur Frequency (MHz)	Spurious Level (dBm)	Failing Limit (dBm)	Results
FL to (Fc - Test BW)	250.8000	-40.6200	-13.00	PASS
(Fc + Test BW) to <2Fc	484.6811	-38.5700	-13.00	PASS
2Fc to 1GHz	760.0300	-55.7500	-13.00	PASS
	760.0250	-57.4504	-13.00	PASS
1GHz to 10Fc	3067.3770	-51.5800	-13.00	PASS
	1140.0370	-54.9470	-13.00	PASS
	1520.0500	-55.5002	-13.00	PASS
	1900.0620	-55.2057	-13.00	PASS
	2280.0750	-55.0377	-13.00	PASS
	2660.0880	-54.3620	-13.00	PASS
	3040.1000	-53.8382	-13.00	PASS
	3420.1130	-52.9894	-13.00	PASS
	3800.1250	-53.2625	-13.00	PASS

**Analog: 406.2 MHz, 25.0 kHz Channel Spacing, Max Power**  
**Not for FCC review**



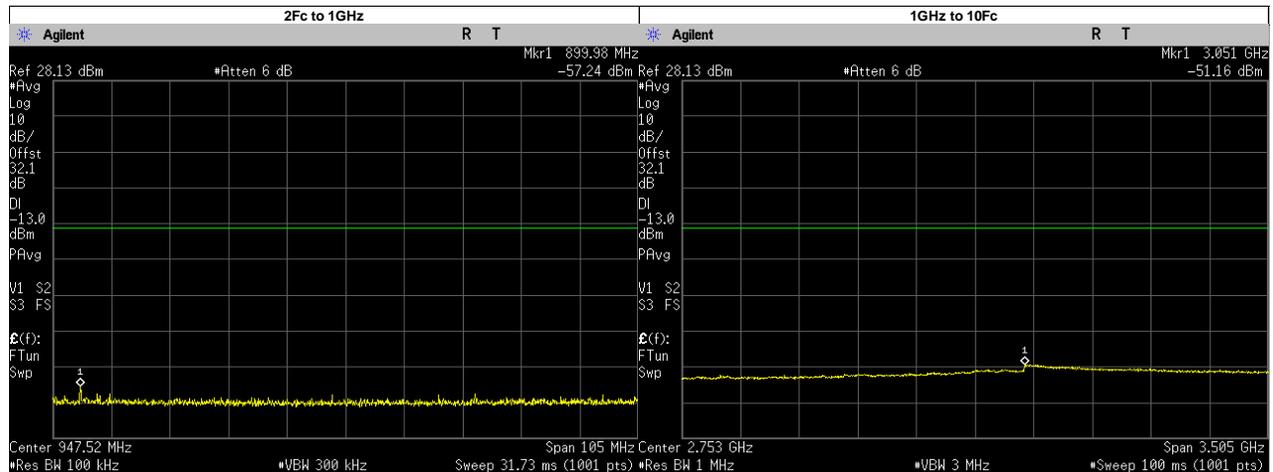
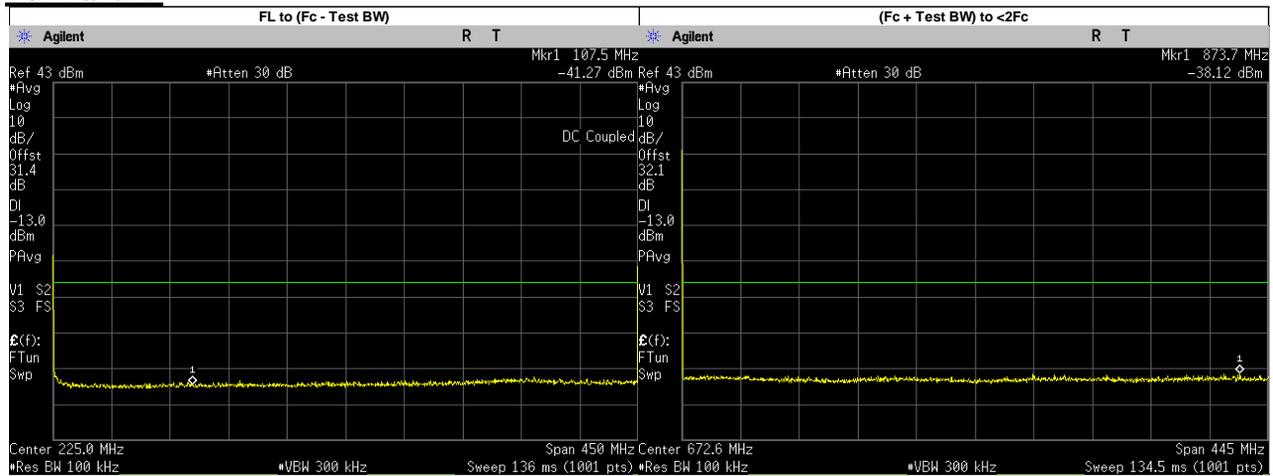
Frequency Range	Highest Spur Frequency (MHz)	Spurious Level (dBm)	Failing Limit (dBm)	Results
FL to (Fc - Test BW)	243.3000	-40.9700	-13.00	PASS
(Fc + Test BW) to <2Fc	473.6479	-38.2200	-13.00	PASS
2Fc to 1GHz	812.4000	-48.3100	-13.00	PASS
1GHz to 10Fc	3140.7660	-51.6100	-13.00	PASS
	1218.6000	-54.9586	-13.00	PASS
	1624.8000	-55.2379	-13.00	PASS
	2031.0000	-54.7128	-13.00	PASS
	2437.2000	-54.4825	-13.00	PASS
	2843.4000	-53.5434	-13.00	PASS
	3249.6000	-52.4706	-13.00	PASS
	3655.8000	-53.0782	-13.00	PASS
4062.0000	-53.5216	-13.00	PASS	

**Analog: 450.025 MHz, 25.0 kHz Channel Spacing, Max Power  
 For Part 74**



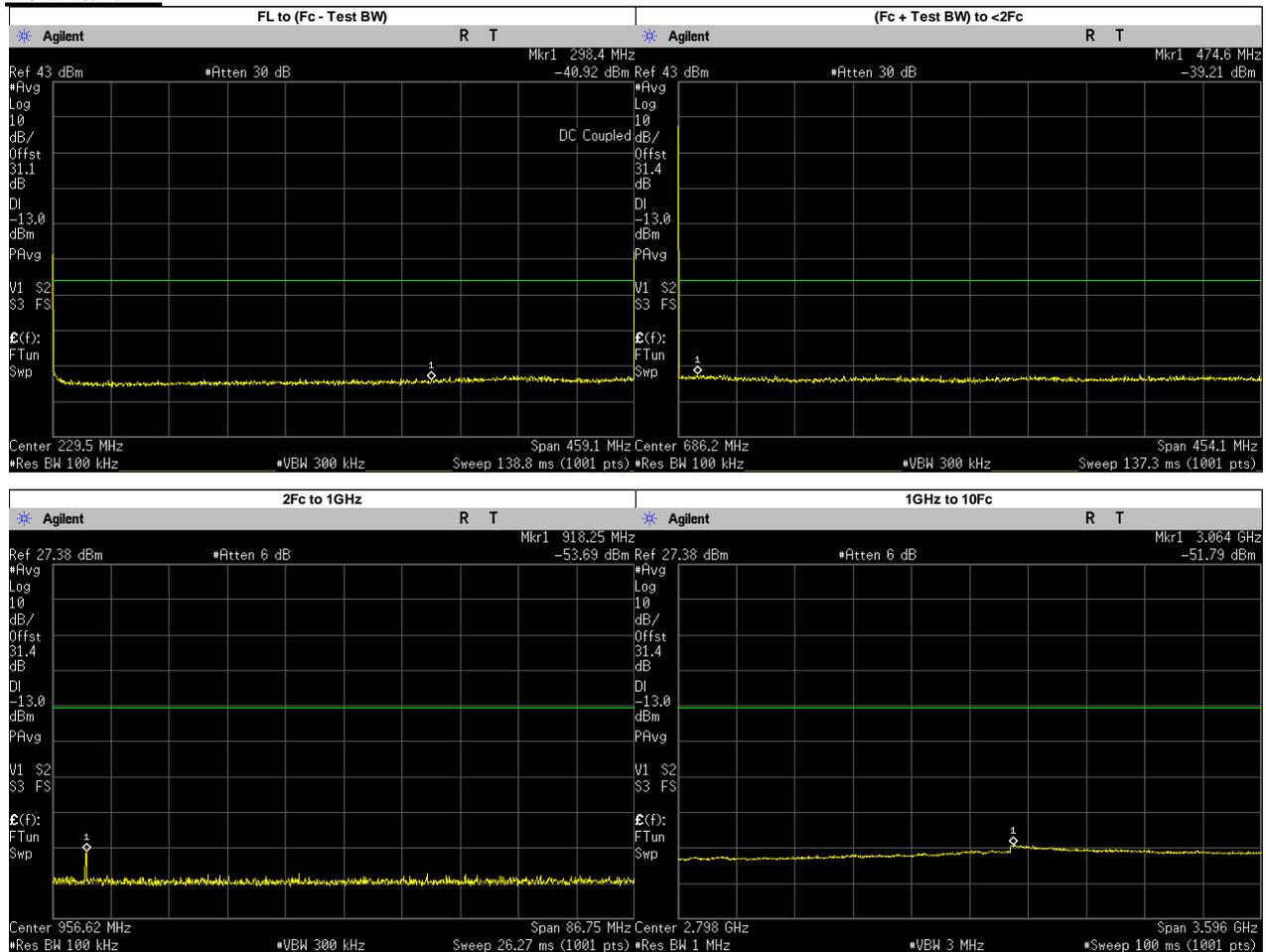
Frequency Range	Highest Spur Frequency (MHz)	Spurious Level (dBm)	Failing Limit (dBm)	Results
FL to (Fc - Test BW)	207.9000	-41.4080	-13.00	PASS
(Fc + Test BW) to <2Fc	728.1869	-39.1000	-13.00	PASS
2Fc to 1GHz	900.0500	-55.7600	-13.00	PASS
1GHz to 10Fc	3064.5920	-51.7900	-13.00	PASS
	1350.0750	-54.6530	-13.00	PASS
	1800.1000	-55.3804	-13.00	PASS
	2250.1250	-54.8533	-13.00	PASS
	2700.1500	-54.1663	-13.00	PASS
	3150.1750	-52.4640	-13.00	PASS
	3600.2000	-53.2023	-13.00	PASS
	4050.2250	-53.7756	-13.00	PASS
4500.2500	-54.1792	-13.00	PASS	

**Analog: 450.025 MHz, 25.0 kHz Channel Spacing, Low Power  
 For Part 74**



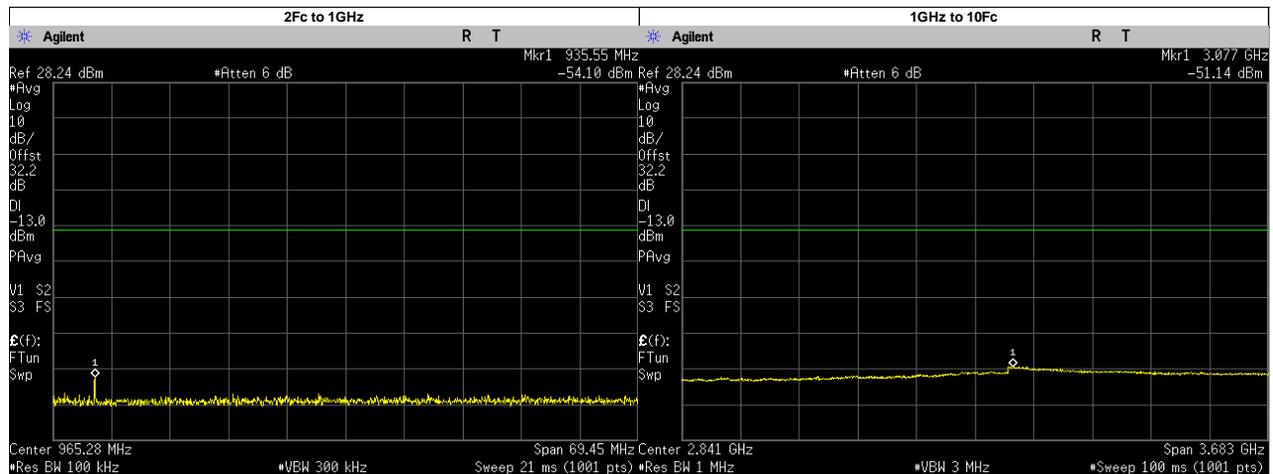
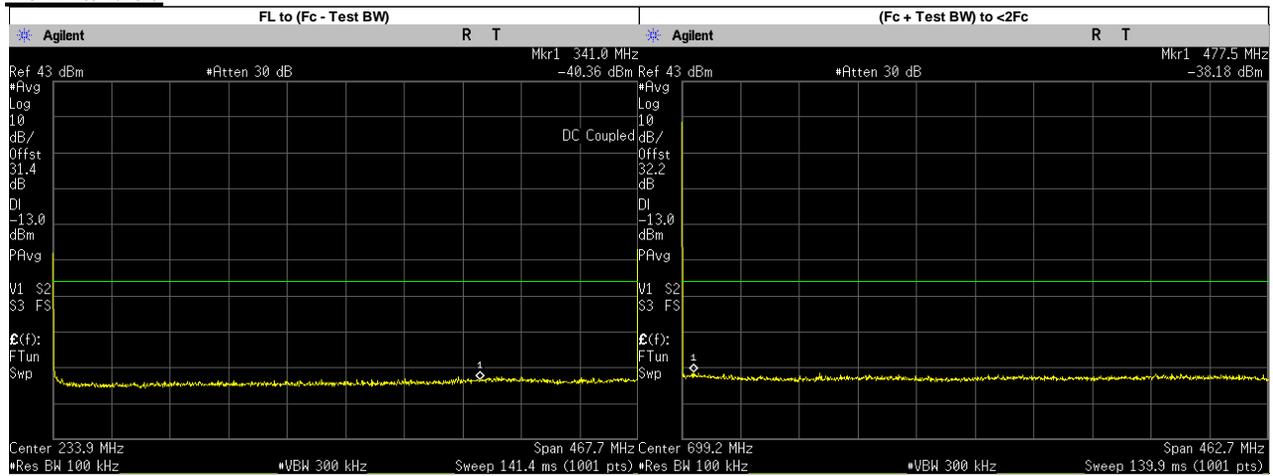
Frequency Range	Highest Spur Frequency (MHz)	Spurious Level (dBm)	Failing Limit (dBm)	Results
FL to (Fc - Test BW)	107.5000	-41.2740	-13.00	PASS
(Fc + Test BW) to <2Fc	873.6915	-38.1200	-13.00	PASS
2Fc to 1GHz	899.9827	-57.2400	-13.00	PASS
	900.0500	-58.6607	-13.00	PASS
1GHz to 10Fc	3050.5710	-51.1600	-13.00	PASS
	1350.0750	-54.8706	-13.00	PASS
	1800.1000	-54.5461	-13.00	PASS
	2250.1250	-54.2351	-13.00	PASS
	2700.1500	-53.4956	-13.00	PASS
	3150.1750	-51.6254	-13.00	PASS
	3600.2000	-52.6025	-13.00	PASS
	4050.2250	-53.2252	-13.00	PASS
4500.2500	-53.1746	-13.00	PASS	

**Analog: 459.125 MHz, 25.0 kHz Channel Spacing, Max Power  
 For Part 22**



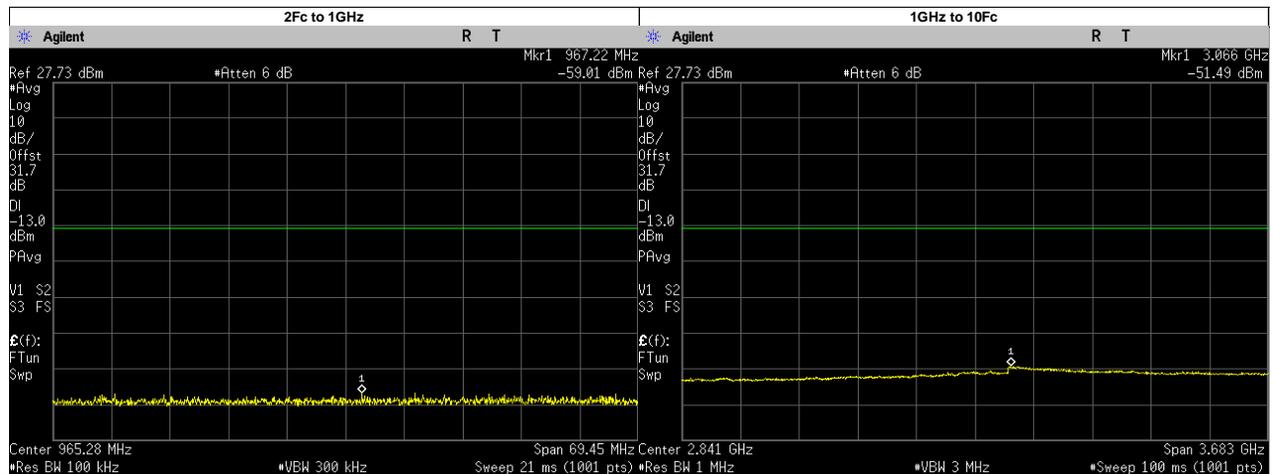
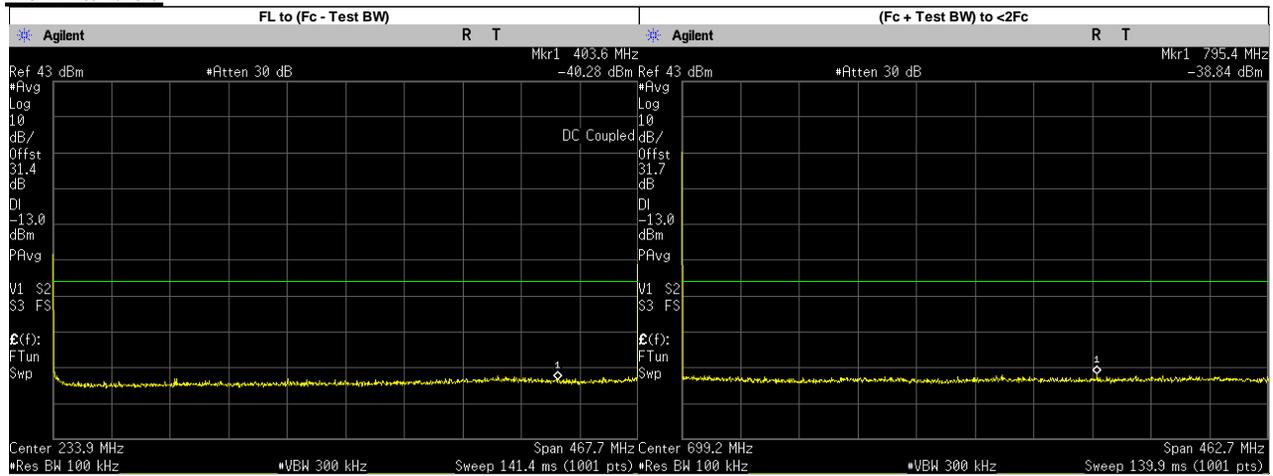
Frequency Range	Highest Spur Frequency (MHz)	Spurious Level (dBm)	Failing Limit (dBm)	Results
FL to (Fc - Test BW)	298.4000	-40.9200	-13.00	PASS
(Fc + Test BW) to <2Fc	474.6201	-39.2100	-13.00	PASS
2Fc to 1GHz	918.2500	-53.6900	-13.00	PASS
	918.2500	-53.8435	-13.00	PASS
1GHz to 10Fc	3064.2470	-51.7900	-13.00	PASS
	1377.3750	-55.5064	-13.00	PASS
	1836.5000	-55.3865	-13.00	PASS
	2295.6250	-55.0087	-13.00	PASS
	2754.7500	-53.6533	-13.00	PASS
	3213.8750	-52.6856	-13.00	PASS
	3673.0000	-53.4436	-13.00	PASS
	4132.1250	-53.6756	-13.00	PASS
	4591.2500	-53.9986	-13.00	PASS

**Analog: 467.775 MHz, 25.0 kHz Channel Spacing, Max Power  
 For Part 80**



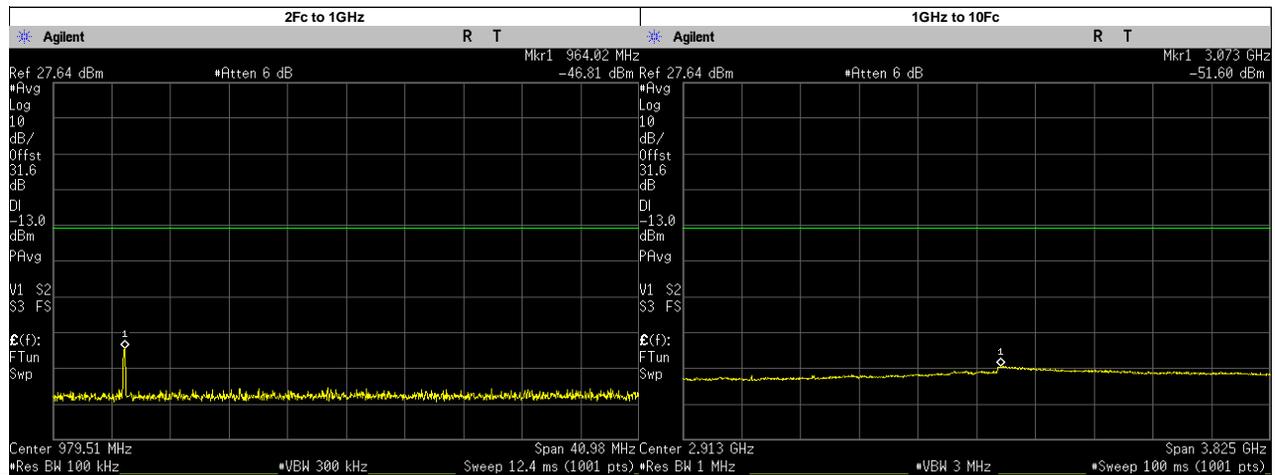
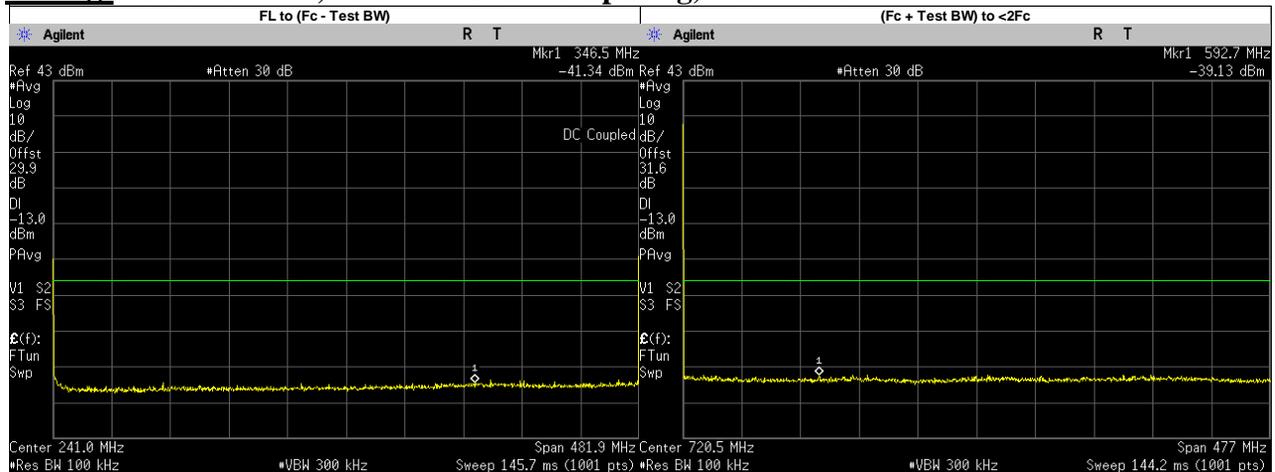
Frequency Range	Highest Spur Frequency (MHz)	Spurious Level (dBm)	Failing Limit (dBm)	Results
FL to (Fc - Test BW)	341.0000	-40.3600	-13.00	PASS
(Fc + Test BW) to <2Fc	477.5489	-38.1800	-13.00	PASS
2Fc to 1GHz	935.5500	-54.1000	-13.00	PASS
1GHz to 10Fc	3077.0710	-51.1400	-13.00	PASS
	1403.3250	-54.7690	-13.00	PASS
	1871.1000	-54.5751	-13.00	PASS
	2338.8750	-53.8529	-13.00	PASS
	2806.6500	-53.0120	-13.00	PASS
	3274.4250	-51.8862	-13.00	PASS
	3742.2000	-52.5732	-13.00	PASS
	4209.9750	-53.0670	-13.00	PASS
	4677.7500	-53.4446	-13.00	PASS

**Analog: 467.775 MHz, 25.0 kHz Channel Spacing, Low Power  
 For Part 80**



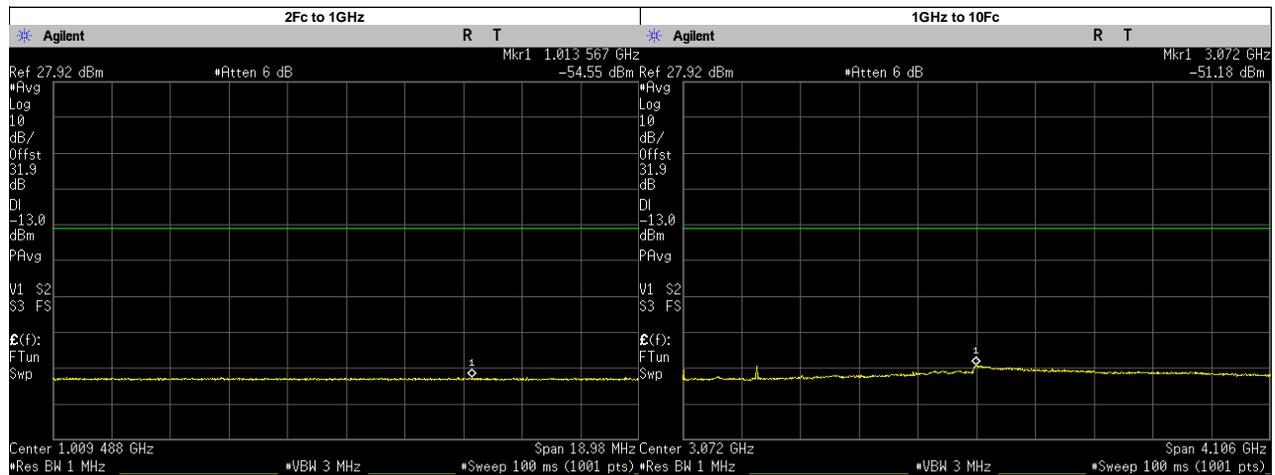
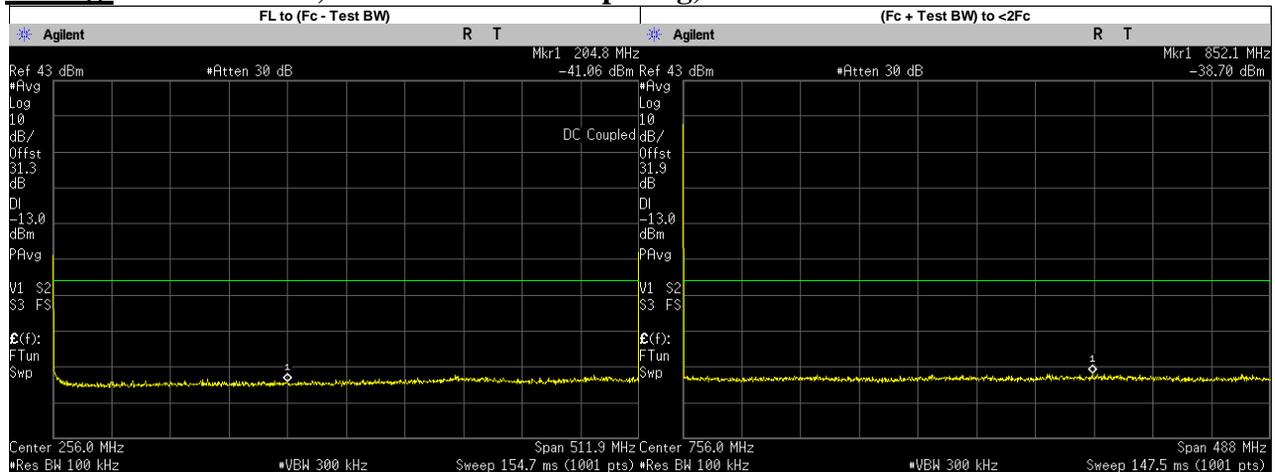
Frequency Range	Highest Spur Frequency (MHz)	Spurious Level (dBm)	Failing Limit (dBm)	Results
FL to (Fc - Test BW)	403.6000	-40.2800	-13.00	PASS
(Fc + Test BW) to <2Fc	795.4363	-38.8400	-13.00	PASS
2Fc to 1GHz	967.2196	-59.0100	-13.00	PASS
	935.5500	-60.1006	-13.00	PASS
1GHz to 10Fc	3066.0230	-51.4900	-13.00	PASS
	1403.3250	-55.2329	-13.00	PASS
	1871.1000	-55.0738	-13.00	PASS
	2338.8750	-54.4022	-13.00	PASS
	2806.6500	-53.5202	-13.00	PASS
	3274.4250	-52.5504	-13.00	PASS
	3742.2000	-53.0536	-13.00	PASS
	4209.9750	-53.3886	-13.00	PASS
	4677.7500	-53.6598	-13.00	PASS

**Analog: 482.0125 MHz, 25.0 kHz Channel Spacing, Max Power**



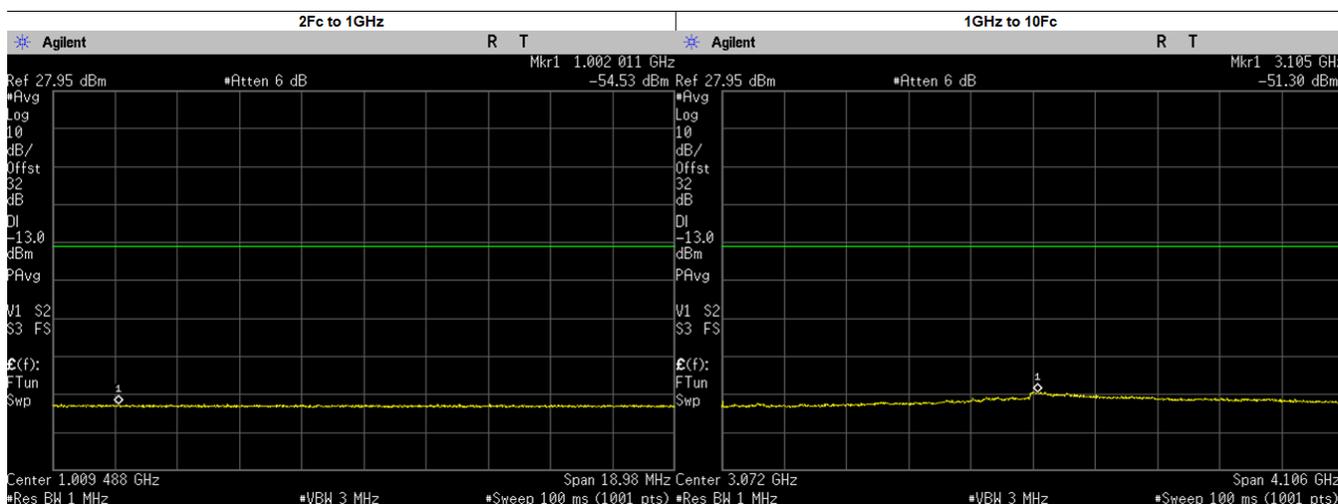
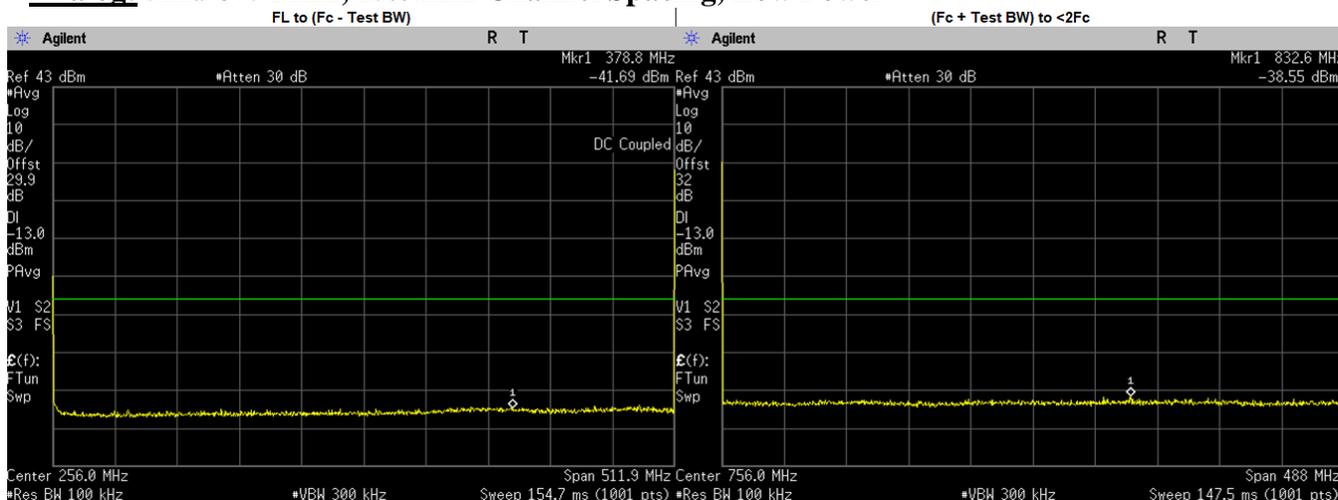
Frequency Range	Highest Spur Frequency (MHz)	Spurious Level (dBm)	Failing Limit (dBm)	Results
FL to (Fc - Test BW)	346.5000	-41.3400	-13.00	PASS
(Fc + Test BW) to <2Fc	592.7230	-39.1300	-13.00	PASS
2Fc to 1GHz	964.0200	-46.8100	-13.00	PASS
	964.0250	-46.8669	-13.00	PASS
1GHz to 10Fc	3073.2180	-51.6000	-13.00	PASS
	1446.0370	-54.6199	-13.00	PASS
	1928.0500	-54.9457	-13.00	PASS
	2410.0620	-54.6548	-13.00	PASS
	2892.0750	-53.8019	-13.00	PASS
	3374.0880	-52.7834	-13.00	PASS
	3856.1000	-53.3340	-13.00	PASS
	4338.1130	-53.7212	-13.00	PASS
	4820.1250	-54.0465	-13.00	PASS

**Analog: 511.9875 MHz, 25.0 kHz Channel Spacing, Max Power**



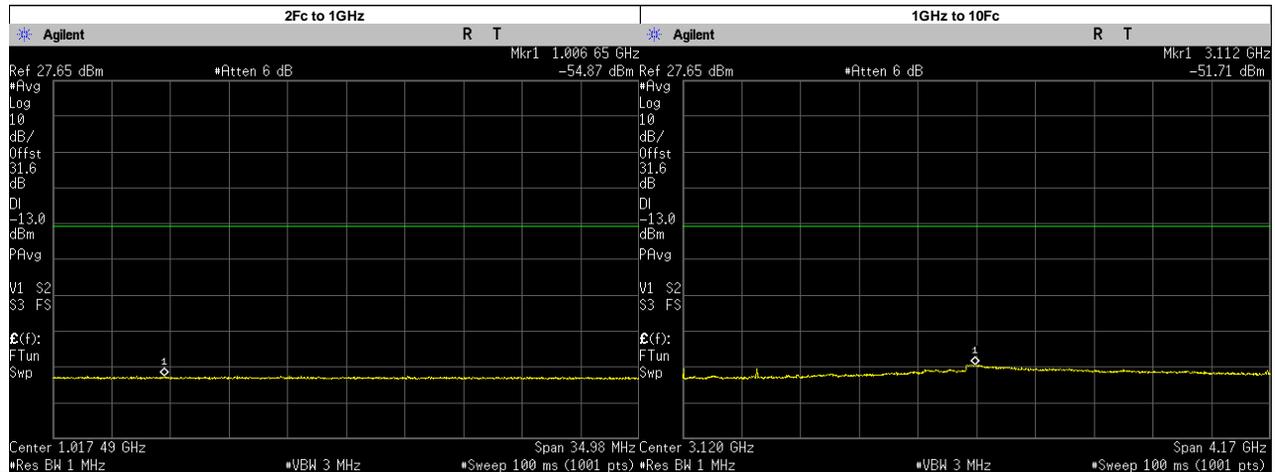
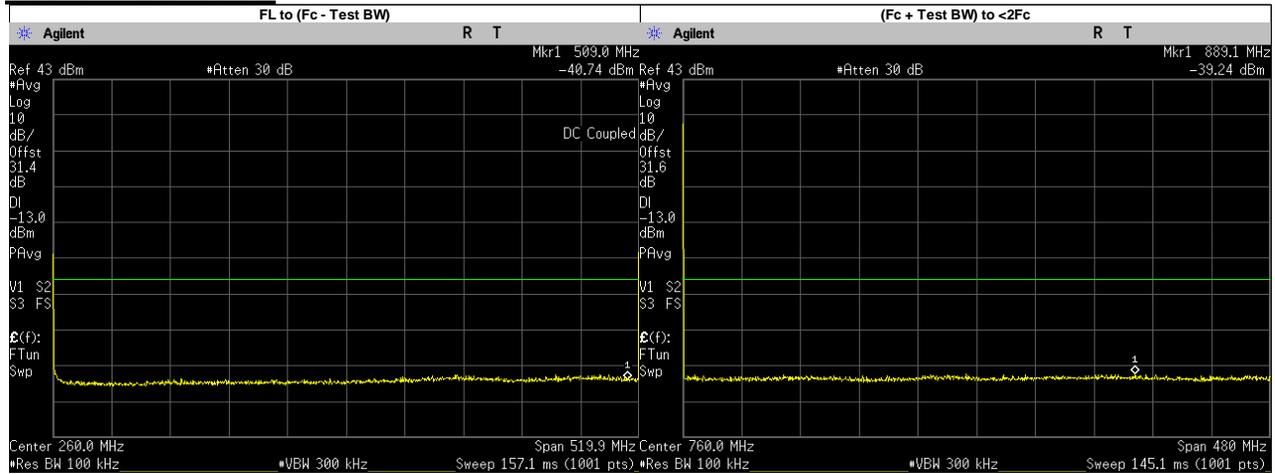
Frequency Range	Highest Spur Frequency (MHz)	Spurious Level (dBm)	Failing Limit (dBm)	Results
FL to (Fc - Test BW)	204.8000	-41.0600	-13.00	PASS
(Fc + Test BW) to <2Fc	852.1494	-38.7000	-13.00	PASS
2Fc to 1GHz	1013.5670	-54.5500	-13.00	PASS
1GHz to 10Fc	3072.0000	-51.1800	-13.00	PASS
	1023.9750	-53.1694	-13.00	PASS
	1535.9630	-51.8640	-13.00	PASS
	2047.9500	-54.3919	-13.00	PASS
	2559.9370	-53.9182	-13.00	PASS
	3071.9250	-51.1770	-13.00	PASS
	3583.9120	-53.0236	-13.00	PASS
	4095.9000	-53.4791	-13.00	PASS
	4607.8870	-53.5073	-13.00	PASS
5119.8750	-54.2157	-13.00	PASS	

**Analog: 511.9875 MHz, 25.0 kHz Channel Spacing, Low Power**



Frequency Range	Highest Spur Frequency (MHz)	Spurious Level (dBm)	Failing Limit (dBm)	Results
FL to (Fc - Test BW)	378.8000	-41.6900	-13.00	PASS
(Fc + Test BW) to <2Fc	832.6312	-38.5500	-13.00	PASS
2Fc to 1GHz	1002.0110	-54.5300	-13.00	PASS
1GHz to 10Fc	3104.7720	-51.3000	-13.00	PASS
	1023.9750	-54.0716	-13.00	PASS
	1535.9630	-54.6740	-13.00	PASS
	2047.9500	-54.4322	-13.00	PASS
	2559.9370	-53.9739	-13.00	PASS
	3071.9250	-51.6960	-13.00	PASS
	3583.9120	-52.8368	-13.00	PASS
	4095.9000	-53.3241	-13.00	PASS
4607.8870	-53.4085	-13.00	PASS	
5119.8750	-54.1075	-13.00	PASS	

**Analog: 519.9875 MHz, 25.0 kHz Channel Spacing, Max Power**  
**Not for FCC review**

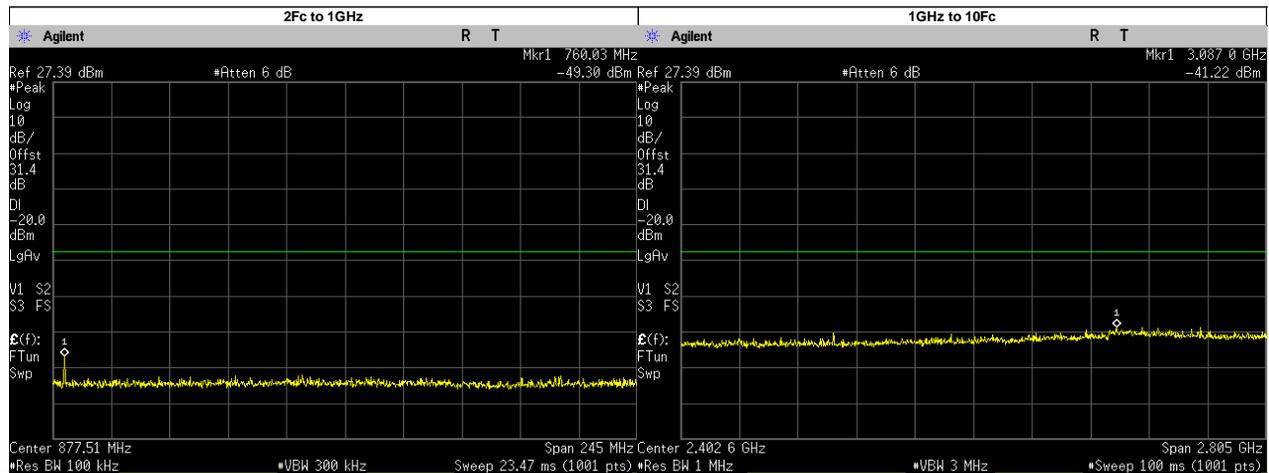
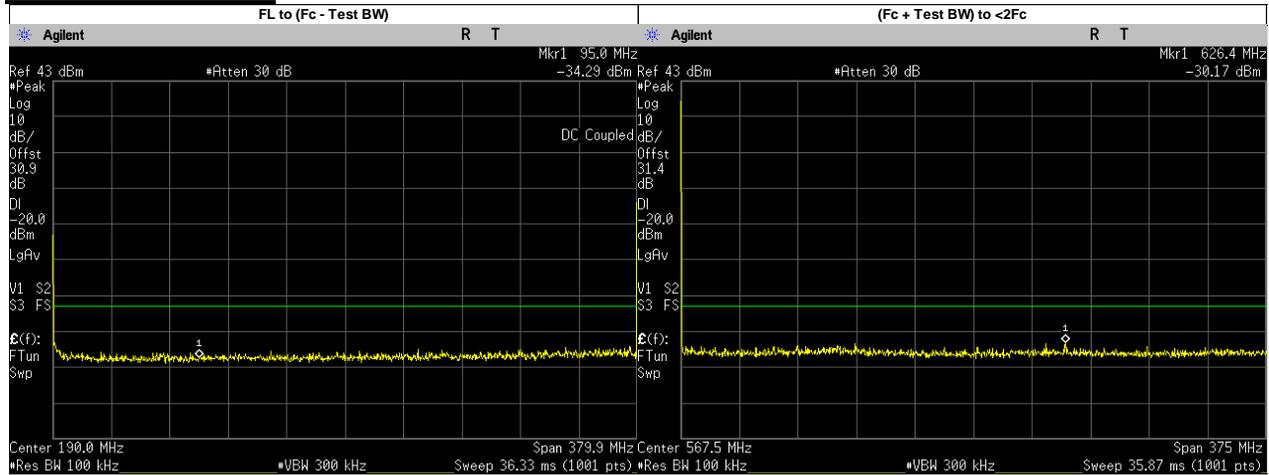


Frequency Range	Highest Spur Frequency (MHz)	Spurious Level (dBm)	Failing Limit (dBm)	Results
FL to (Fc - Test BW)	509.0000	-40.7400	-13.00	PASS
(Fc + Test BW) to <2Fc	889.1302	-39.2400	-13.00	PASS
2Fc to 1GHz	1006.6450	-54.8700	-13.00	PASS
1GHz to 10Fc	3111.5850	-51.7100	-13.00	PASS
	1039.9750	-53.2423	-13.00	PASS
	1559.9630	-52.9513	-13.00	PASS
	2079.9500	-54.4089	-13.00	PASS
	2599.9370	-54.3489	-13.00	PASS
	3119.9250	-52.0330	-13.00	PASS
	3639.9120	-53.1015	-13.00	PASS
	4159.9000	-53.3068	-13.00	PASS
	4679.8870	-53.8932	-13.00	PASS
5199.8750	-54.2128	-13.00	PASS	

### 6.10.3. Test Result (Digital)

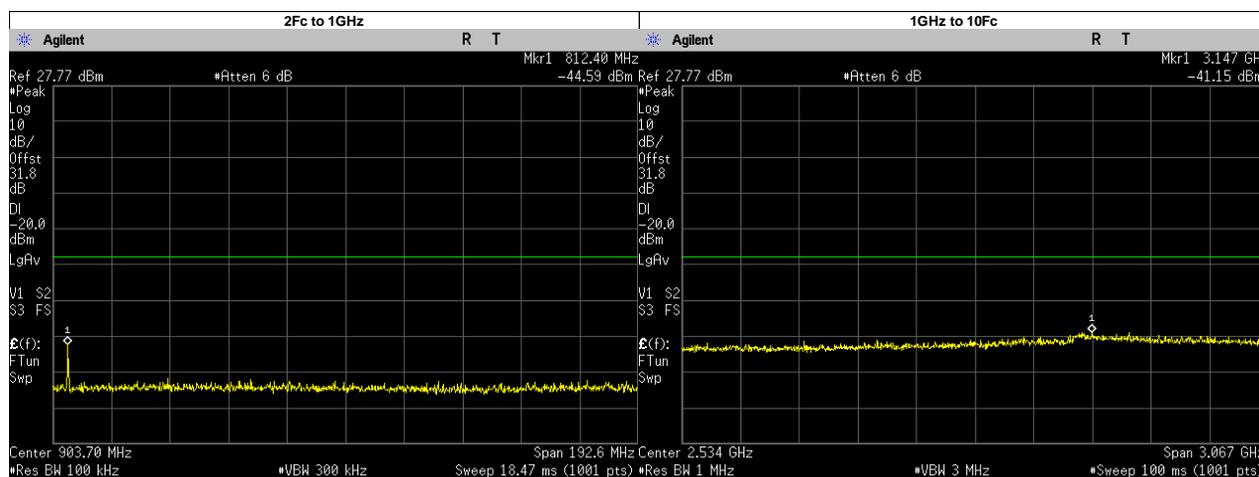
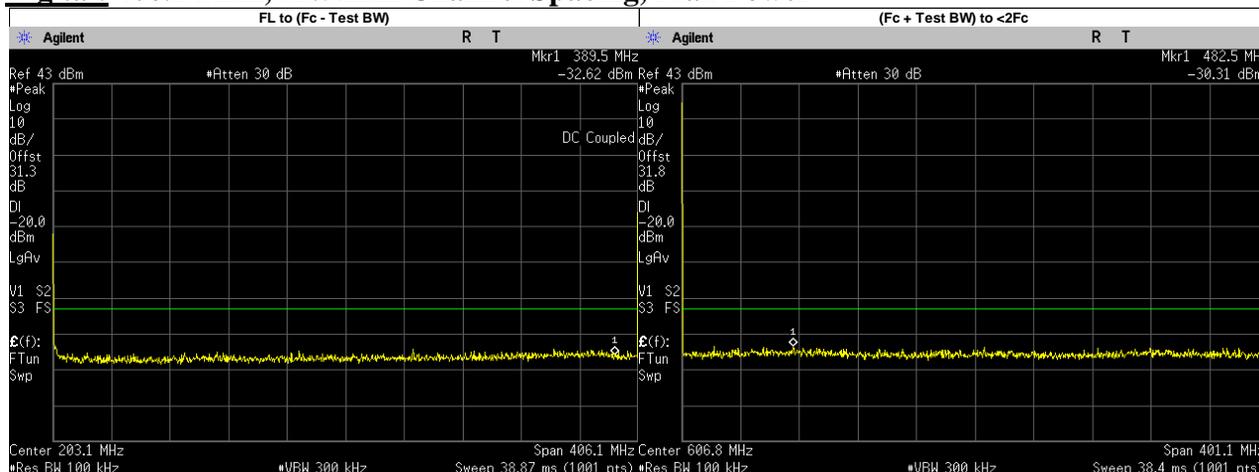
#### Digital: 380.0125 MHz, 12.5 kHz Channel Spacing, Max Power

Not for FCC review



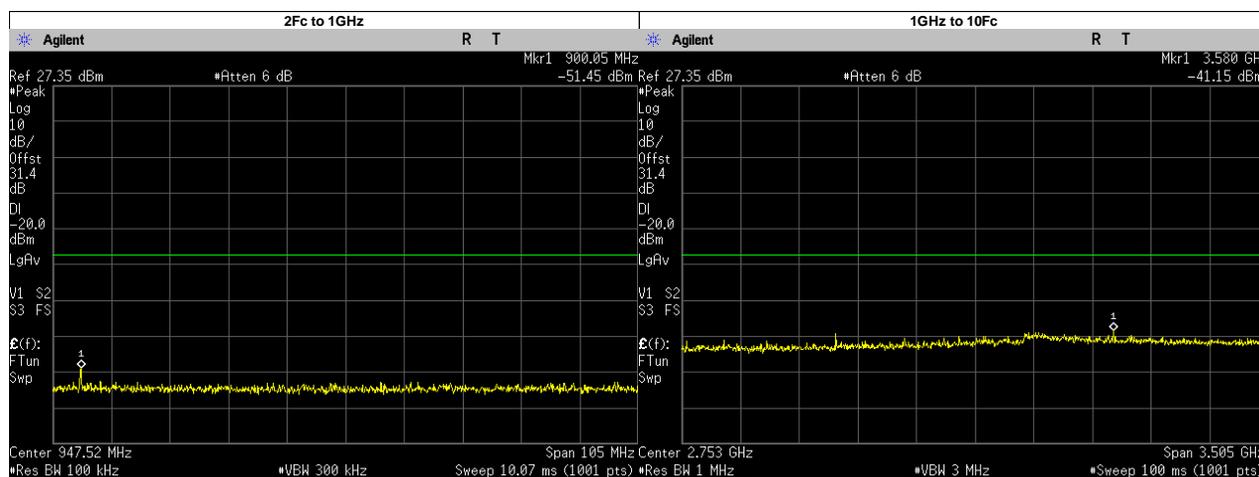
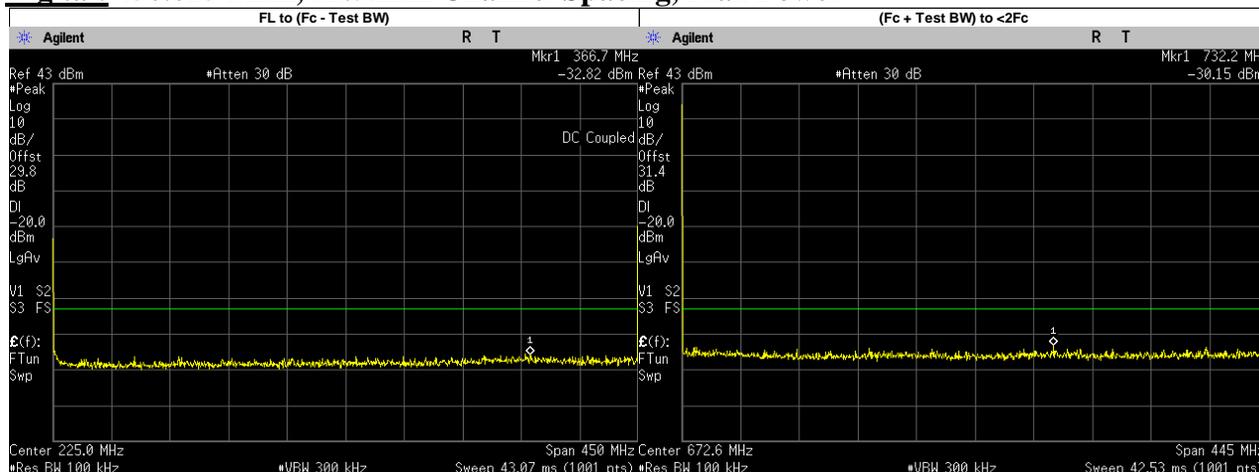
Frequency Range	Highest Spur Frequency (MHz)	Spurious Level (dBm)	Failing Limit (dBm)	Results
FL to (Fc - Test BW)	95.0000	-34.2930	-20.00	PASS
(Fc + Test BW) to <2Fc	626.4148	-30.1700	-20.00	PASS
2Fc to 1GHz	760.0300	-49.3000	-20.00	PASS
	760.0250	-49.2982	-20.00	PASS
1GHz to 10Fc	3087.0130	-41.2200	-20.00	PASS
	1140.0370	-45.6901	-20.00	PASS
	1520.0500	-45.7547	-20.00	PASS
	1900.0620	-46.1345	-20.00	PASS
	2280.0750	-44.8533	-20.00	PASS
	2660.0880	-44.6747	-20.00	PASS
	3040.1000	-44.5225	-20.00	PASS
	3420.1130	-43.7757	-20.00	PASS
	3800.1250	-43.8783	-20.00	PASS

### Digital: 406.2 MHz, 12.5 kHz Channel Spacing, Max Power



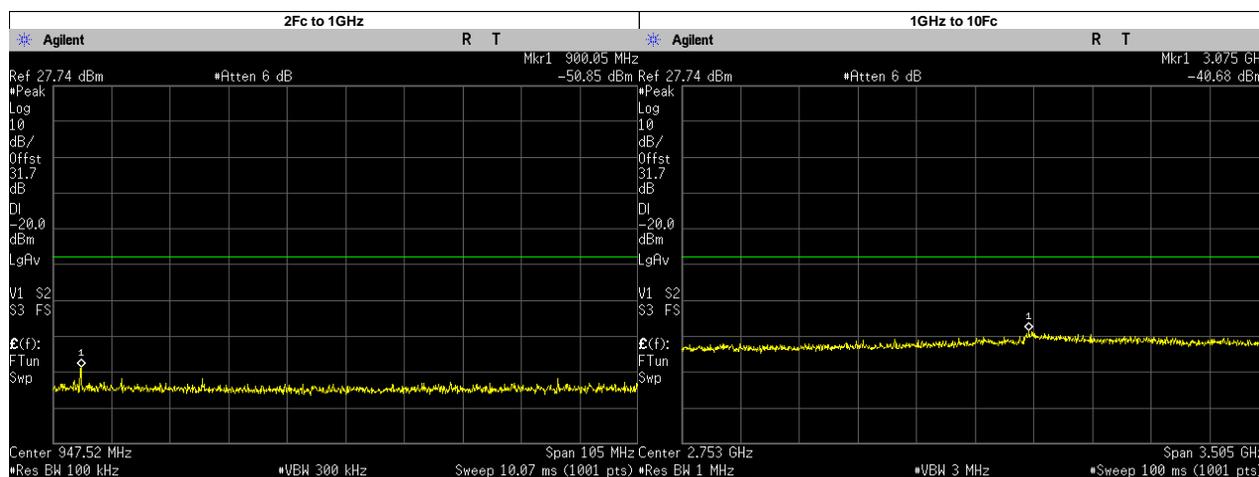
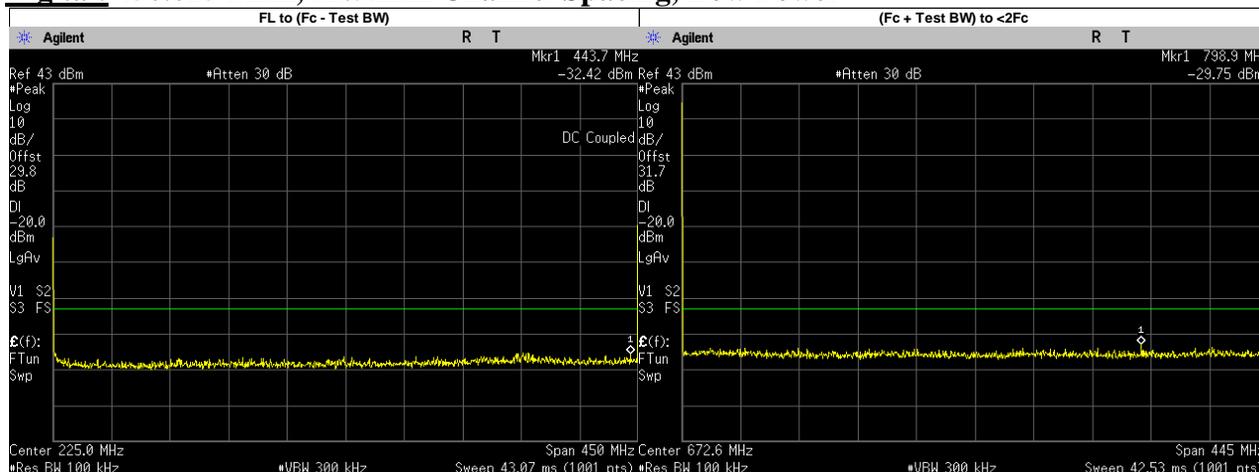
Frequency Range	Highest Spur Frequency (MHz)	Spurious Level (dBm)	Failing Limit (dBm)	Results
FL to (Fc - Test BW)	389.5000	-32.6240	-20.00	PASS
(Fc + Test BW) to <2Fc	482.4731	-30.3100	-20.00	PASS
2Fc to 1GHz	812.4000	-44.5900	-20.00	PASS
1GHz to 10Fc	3146.9000	-41.1500	-20.00	PASS
	1218.6000	-45.4689	-20.00	PASS
	1624.8000	-45.4473	-20.00	PASS
	2031.0000	-45.3381	-20.00	PASS
	2437.2000	-45.1337	-20.00	PASS
	2843.4000	-43.8928	-20.00	PASS
	3249.6000	-42.9741	-20.00	PASS
	3655.8000	-43.6061	-20.00	PASS
4062.0000	-43.9696	-20.00	PASS	

### Digital: 450.025 MHz, 12.5 kHz Channel Spacing, Max Power



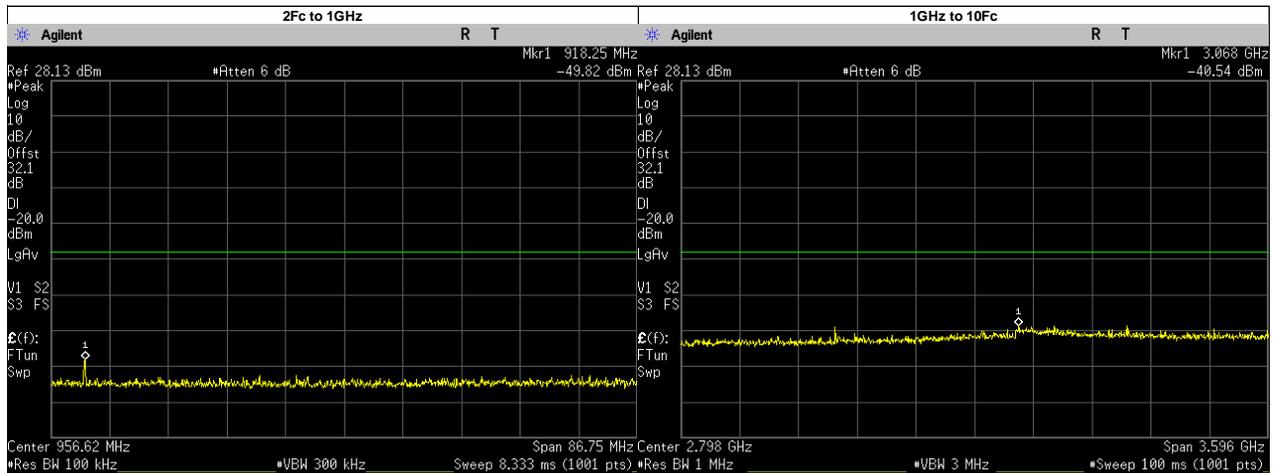
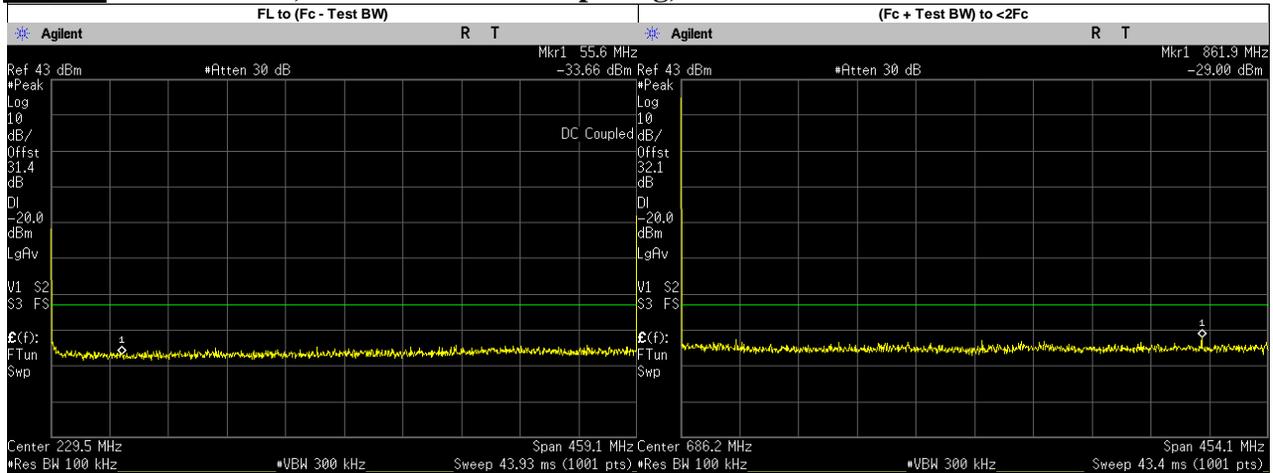
Frequency Range	Highest Spur Frequency (MHz)	Spurious Level (dBm)	Failing Limit (dBm)	Results
FL to (Fc - Test BW)	366.7000	-32.8230	-20.00	PASS
(Fc + Test BW) to <2Fc	732.1916	-30.1500	-20.00	PASS
2Fc to 1GHz	900.0500	-51.4500	-20.00	PASS
1GHz to 10Fc	3579.8640	-41.1500	-20.00	PASS
	1350.0750	-46.1625	-20.00	PASS
	1800.1000	-45.4179	-20.00	PASS
	2250.1250	-45.5108	-20.00	PASS
	2700.1500	-44.0609	-20.00	PASS
	3150.1750	-42.8075	-20.00	PASS
	3600.2000	-43.6700	-20.00	PASS
	4050.2250	-44.2611	-20.00	PASS
4500.2500	-44.8257	-20.00	PASS	

### Digital: 450.025 MHz, 12.5 kHz Channel Spacing, Low Power



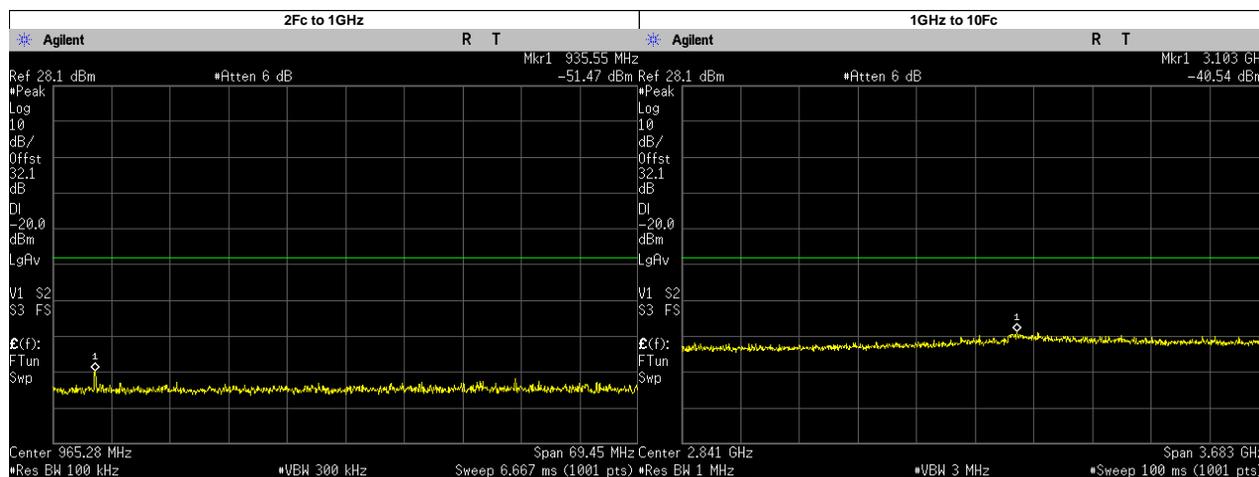
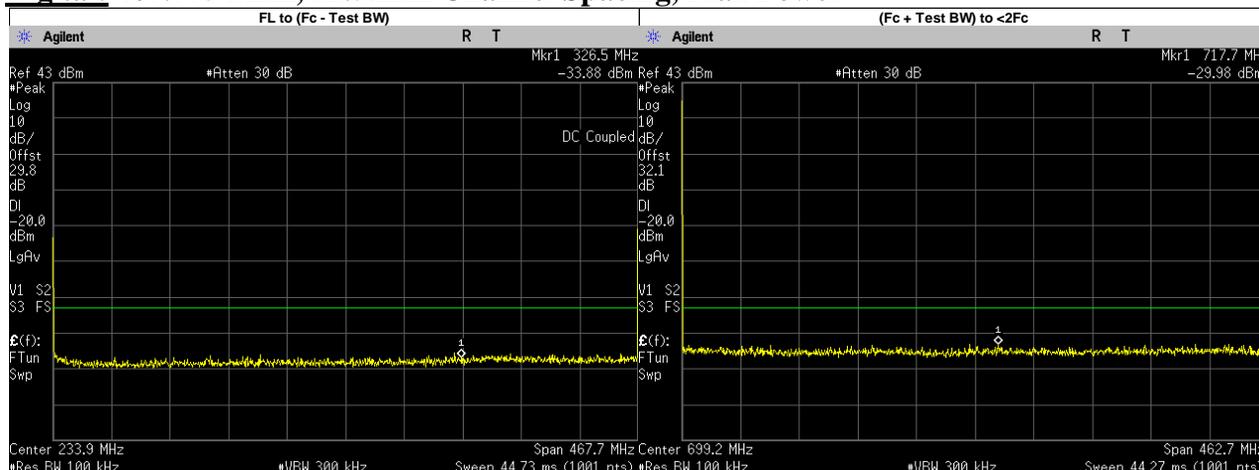
Frequency Range	Highest Spur Frequency (MHz)	Spurious Level (dBm)	Failing Limit (dBm)	Results
FL to (Fc - Test BW)	443.7000	-32.4220	-20.00	PASS
(Fc + Test BW) to <2Fc	798.9369	-29.7500	-20.00	PASS
2Fc to 1GHz	900.0500	-50.8500	-20.00	PASS
1GHz to 10Fc	3075.1080	-40.6800	-20.00	PASS
	1350.0750	-44.4995	-20.00	PASS
	1800.1000	-45.7945	-20.00	PASS
	2250.1250	-44.3290	-20.00	PASS
	2700.1500	-43.8210	-20.00	PASS
	3150.1750	-42.1368	-20.00	PASS
	3600.2000	-43.6949	-20.00	PASS
	4050.2250	-43.4293	-20.00	PASS
4500.2500	-44.2031	-20.00	PASS	

**Digital: 459.125 MHz, 12.5 kHz Channel Spacing, Max Power**



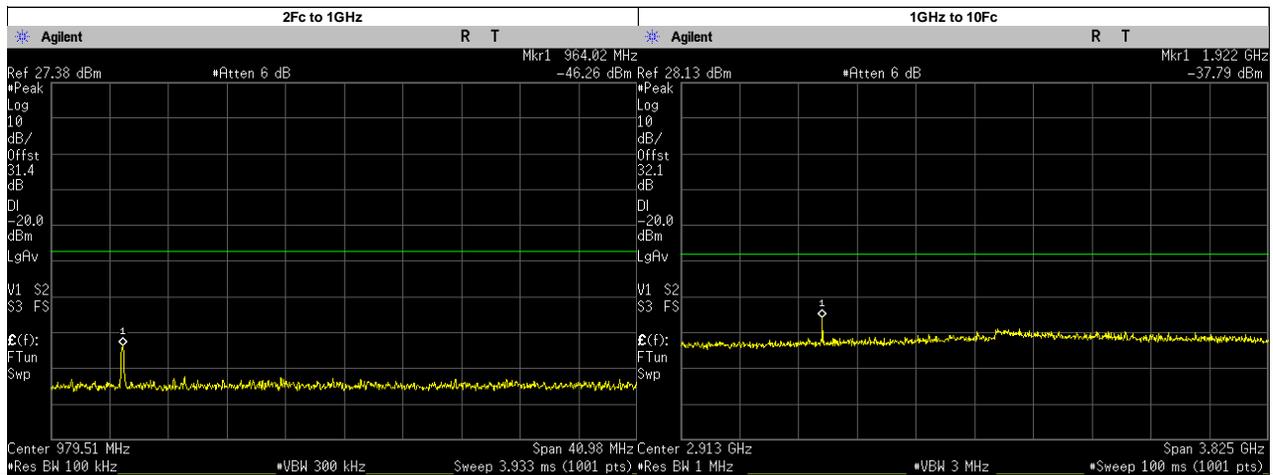
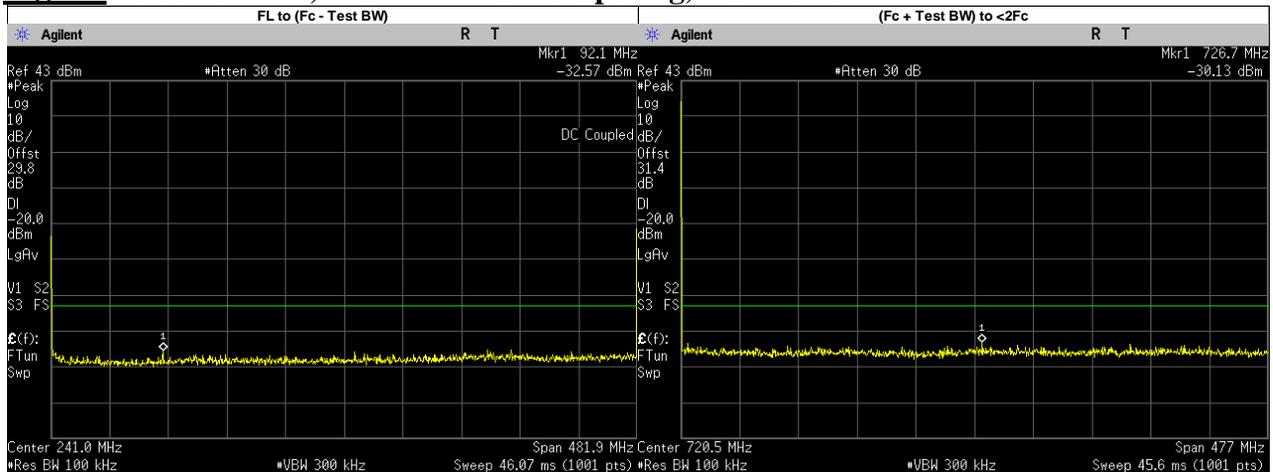
Frequency Range	Highest Spur Frequency (MHz)	Spurious Level (dBm)	Failing Limit (dBm)	Results
FL to (Fc - Test BW)	55.6000	-33.6590	-20.00	PASS
(Fc + Test BW) to <2Fc	861.9403	-29.0000	-20.00	PASS
2Fc to 1GHz	918.2500	-49.8200	-20.00	PASS
1GHz to 10Fc	3067.8440	-40.5400	-20.00	PASS
	1377.3750	-44.5262	-20.00	PASS
	1836.5000	-45.2932	-20.00	PASS
	2295.6250	-44.9275	-20.00	PASS
	2754.7500	-43.7721	-20.00	PASS
	3213.8750	-42.4846	-20.00	PASS
	3673.0000	-42.9372	-20.00	PASS
	4132.1250	-43.2941	-20.00	PASS
4591.2500	-42.7421	-20.00	PASS	

**Digital: 467.775 MHz, 12.5 kHz Channel Spacing, Max Power**



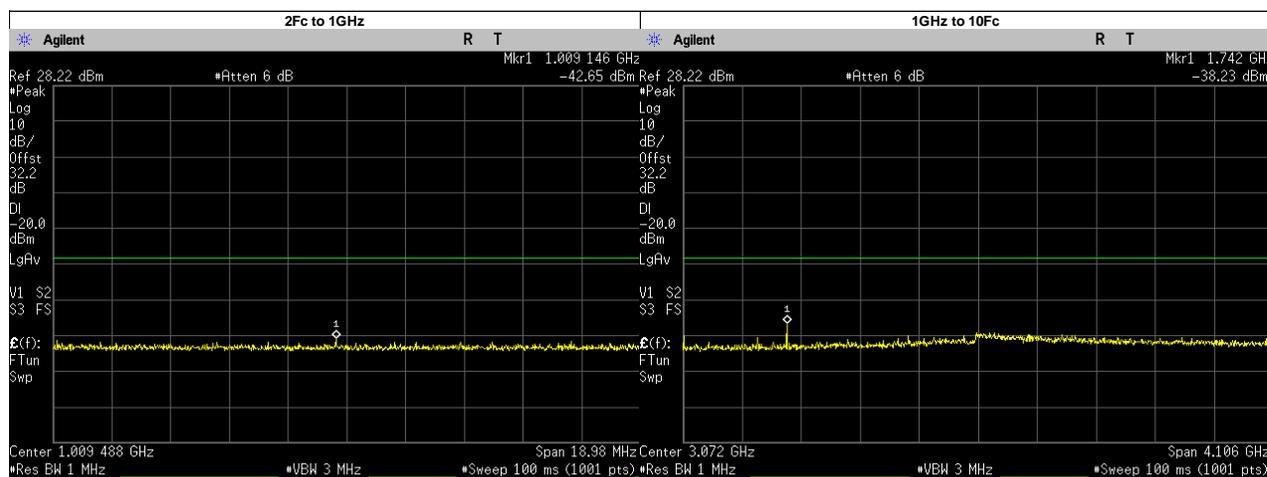
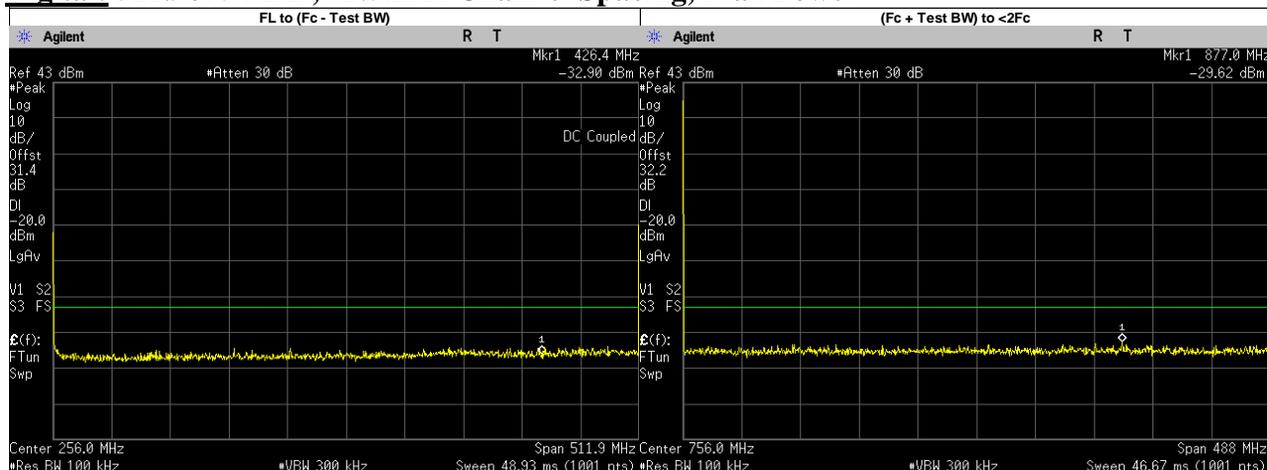
Frequency Range	Highest Spur Frequency (MHz)	Spurious Level (dBm)	Failing Limit (dBm)	Results
FL to (Fc - Test BW)	326.5000	-33.8800	-20.00	PASS
(Fc + Test BW) to <2Fc	717.6996	-29.9800	-20.00	PASS
2Fc to 1GHz	935.5500	-51.4700	-20.00	PASS
	935.5500	-51.4686	-20.00	PASS
1GHz to 10Fc	3102.8500	-40.5400	-20.00	PASS
	1403.3250	-45.2491	-20.00	PASS
	1871.1000	-45.4520	-20.00	PASS
	2338.8750	-44.1555	-20.00	PASS
	2806.6500	-43.5941	-20.00	PASS
	3274.4250	-42.8398	-20.00	PASS
	3742.2000	-42.9936	-20.00	PASS
	4209.9750	-43.5269	-20.00	PASS
	4677.7500	-44.4082	-20.00	PASS

**Digital: 482.0125 MHz, 12.5 kHz Channel Spacing, Max Power**



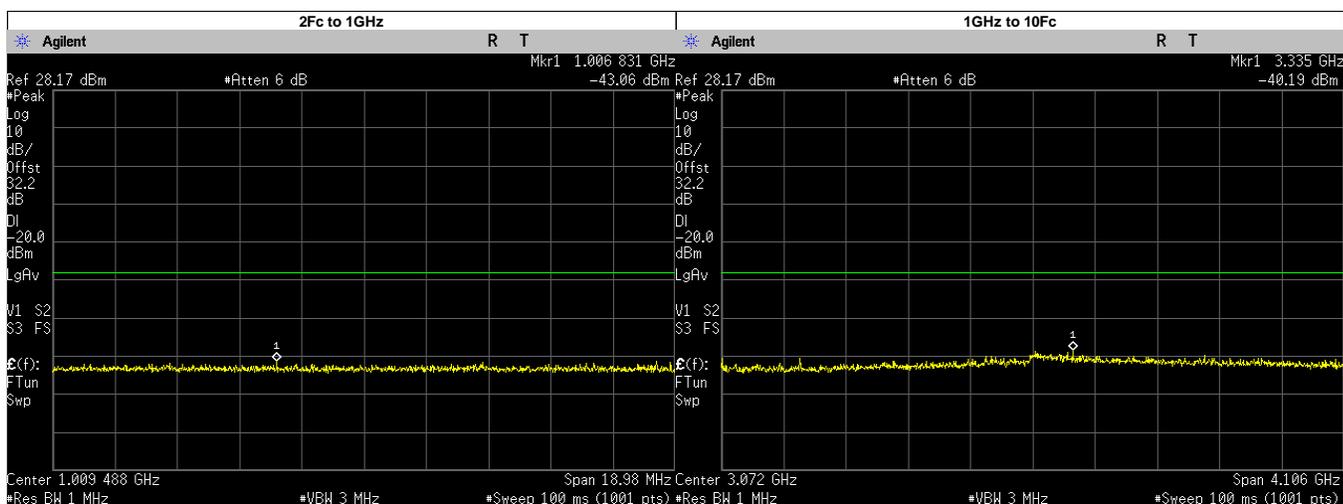
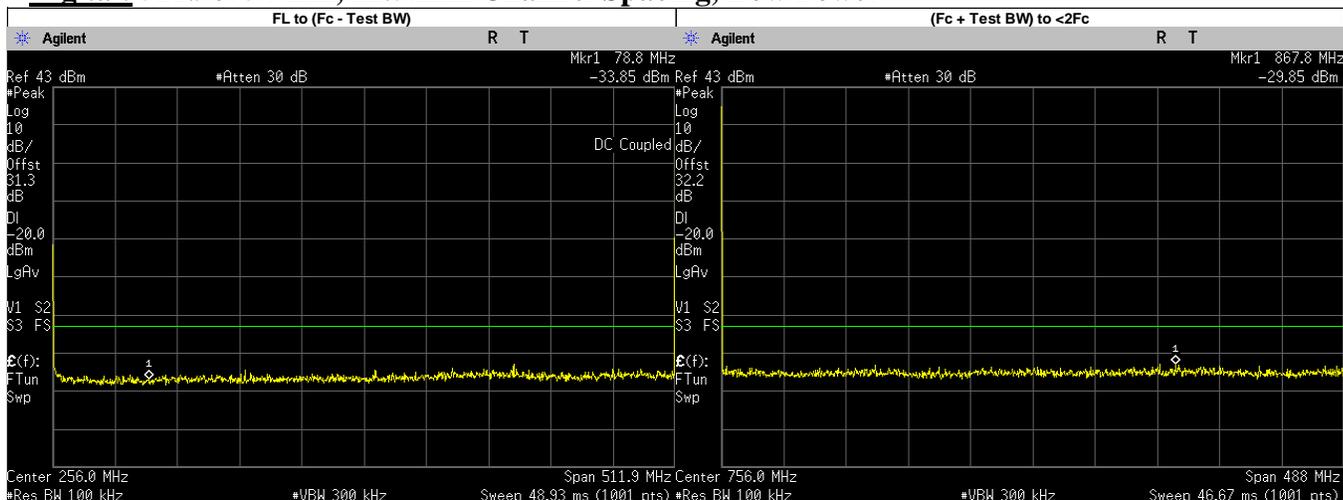
Frequency Range	Highest Spur Frequency (MHz)	Spurious Level (dBm)	Failing Limit (dBm)	Results
FL to (Fc - Test BW)	92.1000	-32.5700	-20.00	PASS
(Fc + Test BW) to <2Fc	726.7476	-30.1300	-20.00	PASS
2Fc to 1GHz	964.0200	-46.2600	-20.00	PASS
1GHz to 10Fc	1922.0000	-37.7900	-20.00	PASS
	1446.0370	-45.0790	-20.00	PASS
	1928.0500	-45.4800	-20.00	PASS
	2410.0620	-45.0279	-20.00	PASS
	2892.0750	-44.8176	-20.00	PASS
	3374.0880	-43.6148	-20.00	PASS
	3856.1000	-43.8780	-20.00	PASS
	4338.1130	-44.0080	-20.00	PASS
	4820.1250	-44.4352	-20.00	PASS

**Digital: 511.9875 MHz, 12.5 kHz Channel Spacing, Max Power**



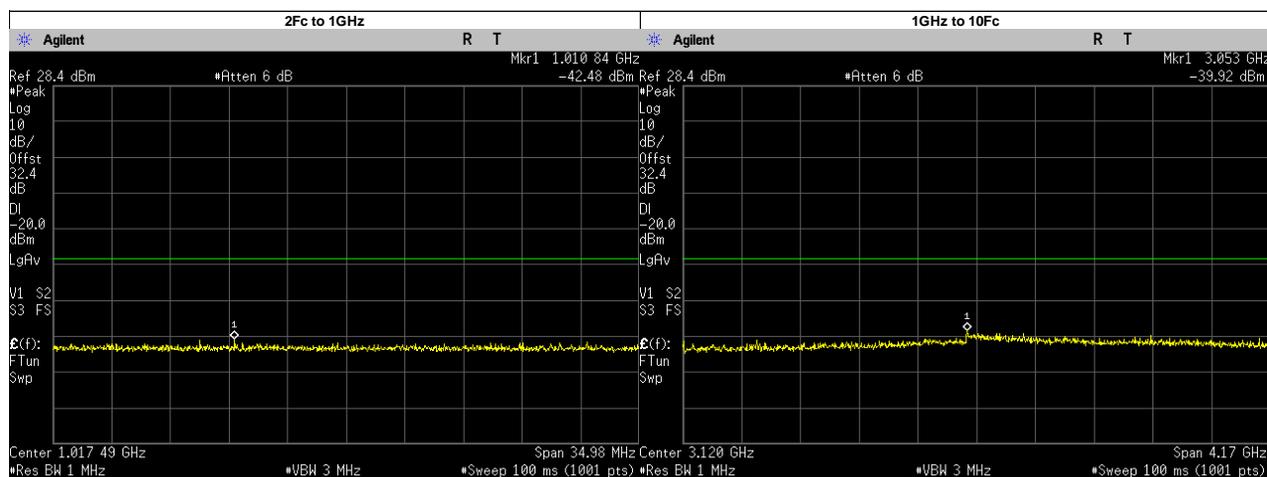
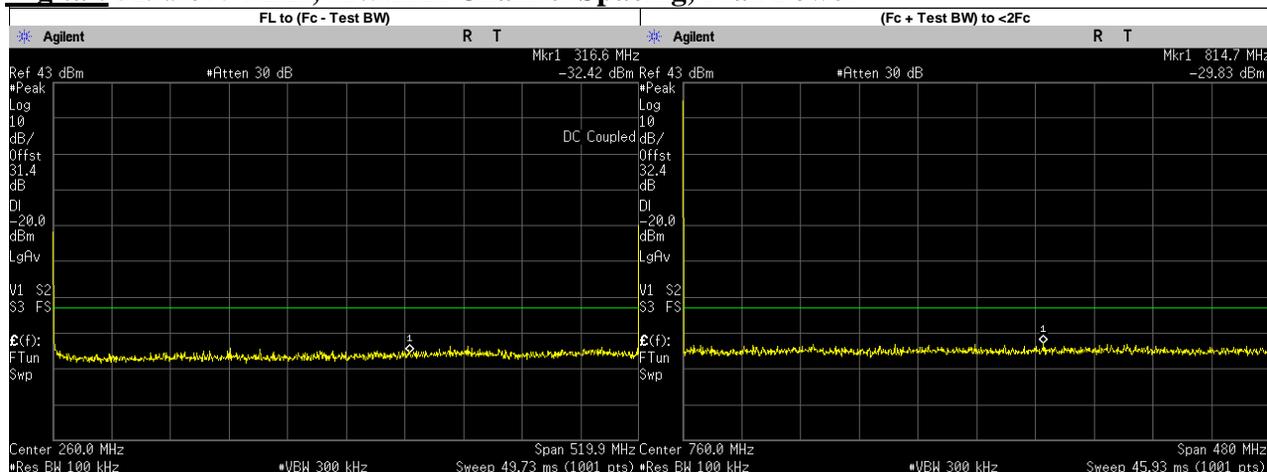
Frequency Range	Highest Spur Frequency (MHz)	Spurious Level (dBm)	Failing Limit (dBm)	Results
FL to (Fc - Test BW)	426.4000	-32.9000	-20.00	PASS
(Fc + Test BW) to <2Fc	877.0000	-29.6200	-20.00	PASS
2Fc to 1GHz	1009.1460	-42.6500	-20.00	PASS
1GHz to 10Fc	1742.0000	-38.2300	-20.00	PASS
	1023.9750	-43.2746	-20.00	PASS
	1535.9630	-42.5187	-20.00	PASS
	2047.9500	-44.8783	-20.00	PASS
	2559.9370	-43.8432	-20.00	PASS
	3071.9250	-41.7600	-20.00	PASS
	3583.9120	-42.9817	-20.00	PASS
	4095.9000	-44.0092	-20.00	PASS
	4607.8870	-43.0949	-20.00	PASS
5119.8750	-44.3467	-20.00	PASS	

### Digital: 511.9875 MHz, 12.5 kHz Channel Spacing, Low Power



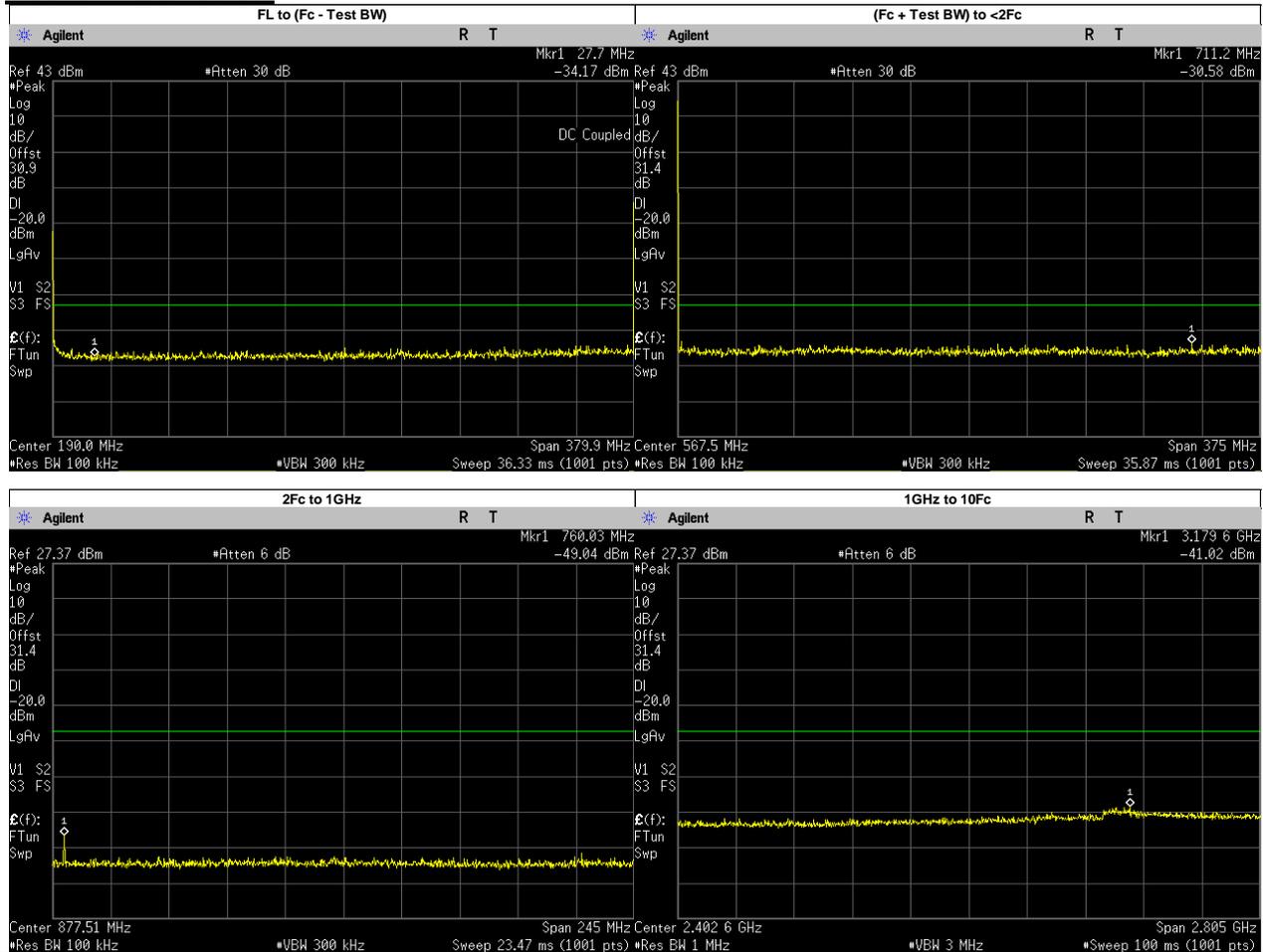
Frequency Range	Highest Spur Frequency (MHz)	Spurious Level (dBm)	Failing Limit (dBm)	Results
FL to (Fc - Test BW)	78.8000	-33.8510	-20.00	PASS
(Fc + Test BW) to <2Fc	867.7640	-29.8500	-20.00	PASS
2Fc to 1GHz	1006.8310	-43.0600	-20.00	PASS
1GHz to 10Fc	3334.7030	-40.1900	-20.00	PASS
	1023.9750	-42.8067	-20.00	PASS
	1535.9630	-42.5653	-20.00	PASS
	2047.9500	-44.5841	-20.00	PASS
	2559.9370	-43.9551	-20.00	PASS
	3071.9250	-41.4560	-20.00	PASS
	3583.9120	-43.5159	-20.00	PASS
	4095.9000	-43.6287	-20.00	PASS
	4607.8870	-43.3334	-20.00	PASS
5119.8750	-43.9185	-20.00	PASS	

### Digital: 519.9875 MHz, 12.5 kHz Channel Spacing, Max Power



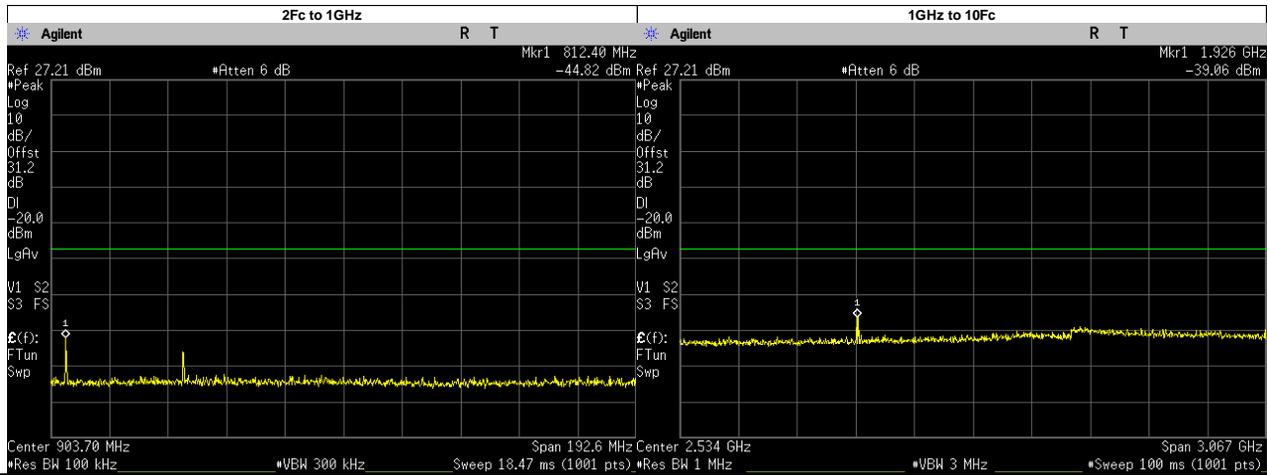
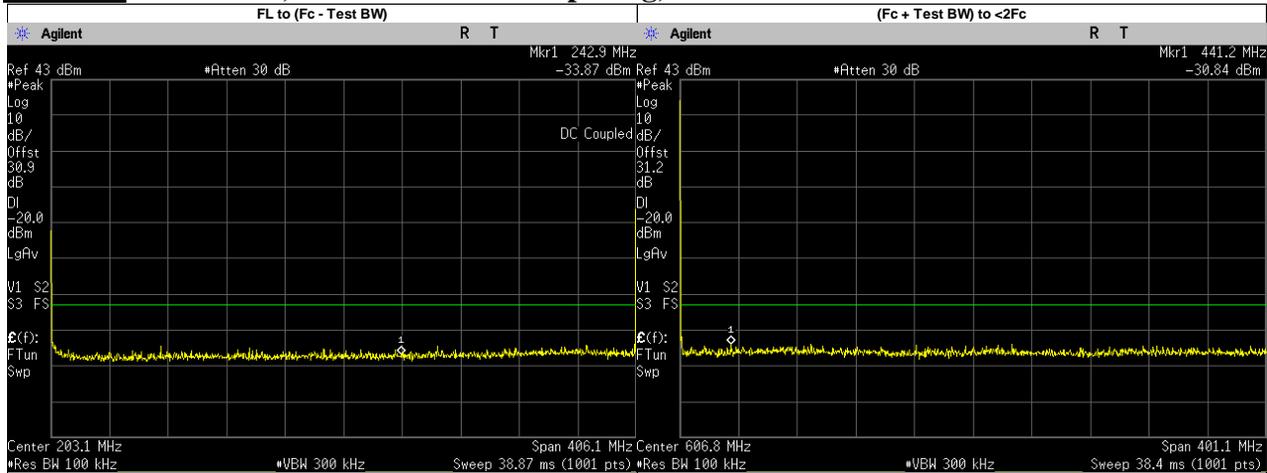
Frequency Range	Highest Spur Frequency (MHz)	Spurious Level (dBm)	Failing Limit (dBm)	Results
FL to (Fc - Test BW)	316.6000	-32.4220	-20.00	PASS
(Fc + Test BW) to <2Fc	814.7371	-29.8300	-20.00	PASS
2Fc to 1GHz	1010.8420	-42.4800	-20.00	PASS
1GHz to 10Fc	3053.0000	-39.9200	-20.00	PASS
	1559.9630	-42.8951	-20.00	PASS
	2079.9500	-44.1668	-20.00	PASS
	2599.9370	-44.3737	-20.00	PASS
	3119.9250	-41.8830	-20.00	PASS
	3639.9120	-42.7179	-20.00	PASS
	4159.9000	-43.3864	-20.00	PASS
	4679.8870	-43.5790	-20.00	PASS
	5199.8750	-42.9626	-20.00	PASS
	3053.2070	-39.9200	-20.00	PASS

**Phase II: 380.0125 MHz, 12.5 kHz Channel Spacing, Max Power**  
**Not for FCC review**



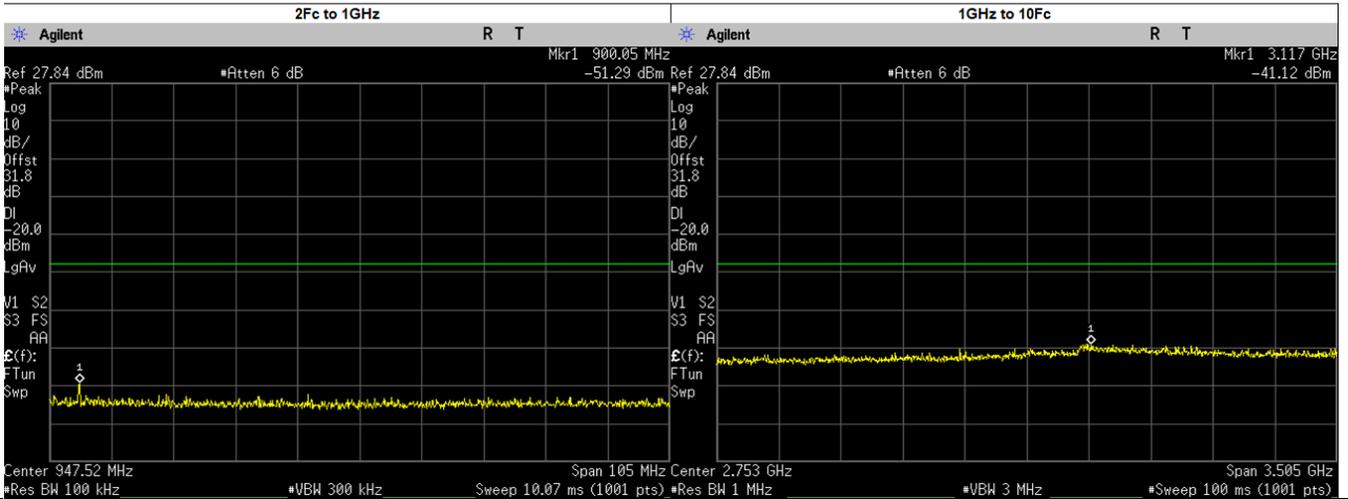
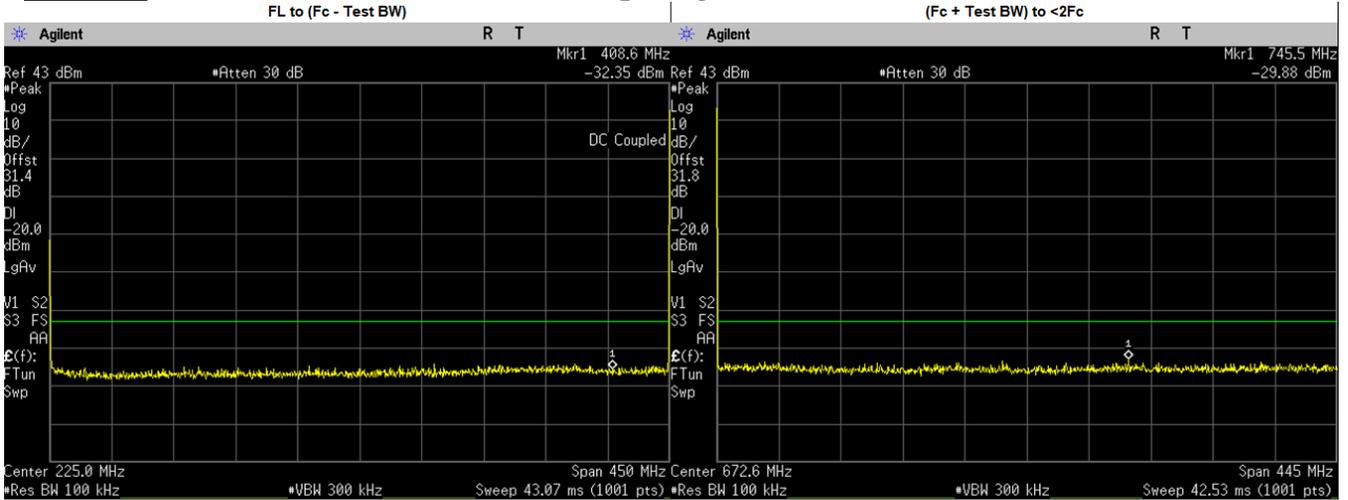
Frequency Range	Highest Spur Frequency (MHz)	Spurious Level (dBm)	Failing Limit (dBm)	Results
FL to (Fc - Test BW)	27.7000	-34.1700	-20.00	PASS
(Fc + Test BW) to <2Fc	711.1550	-30.5800	-20.00	PASS
2Fc to 1GHz	760.0300	-49.0400	-20.00	PASS
	760.0250	-49.1820	-20.00	PASS
1GHz to 10Fc	3179.6000	-41.0200	-20.00	PASS
	1140.0370	-46.5624	-20.00	PASS
	1520.0500	-46.1564	-20.00	PASS
	1900.0620	-46.0459	-20.00	PASS
	2280.0750	-45.9698	-20.00	PASS
	2660.0880	-44.8131	-20.00	PASS
	3040.1000	-44.7620	-20.00	PASS
	3420.1130	-43.6080	-20.00	PASS
	3800.1250	-43.9023	-20.00	PASS

**Phase II: 406.2 MHz, 12.5 kHz Channel Spacing, Max Power**



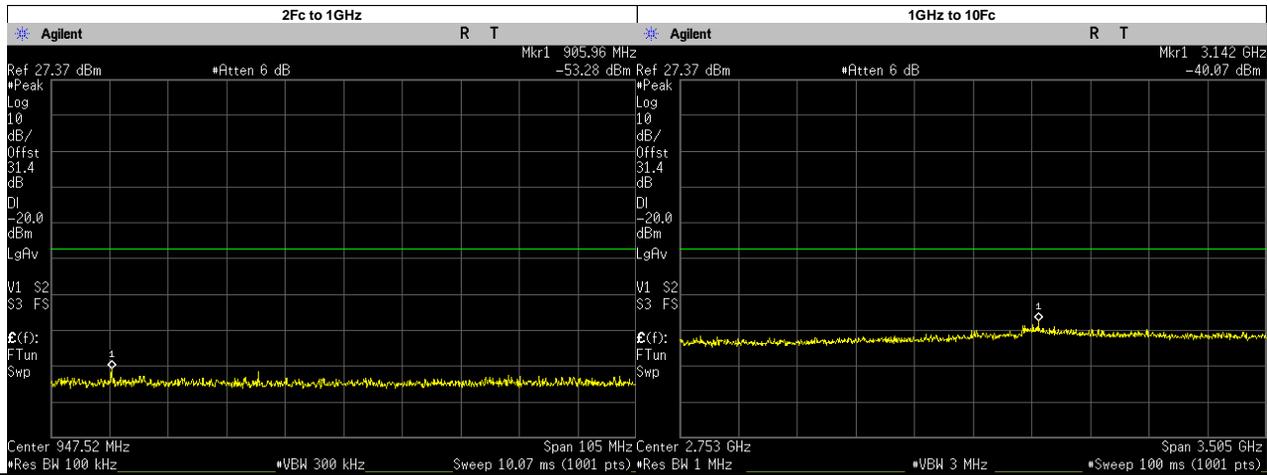
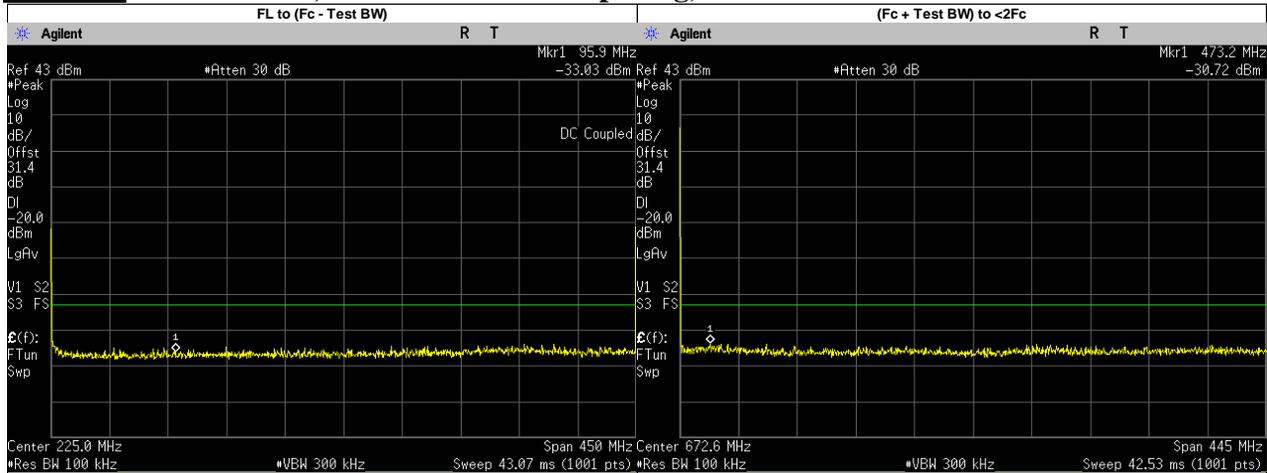
Frequency Range	Highest Spur Frequency (MHz)	Spurious Level (dBm)	Failing Limit (dBm)	Results
FL to (Fc - Test BW)	242.9000	-33.8660	-20.00	PASS
(Fc + Test BW) to <2Fc	441.1552	-30.8400	-20.00	PASS
2Fc to 1GHz	812.4000	-44.0200	-20.00	PASS
1GHz to 10Fc	1926.0000	-39.0600	-20.00	PASS
	1624.8000	-46.0766	-20.00	PASS
	2031.0000	-45.8595	-20.00	PASS
	2437.2000	-45.1056	-20.00	PASS
	2843.4000	-44.5509	-20.00	PASS
	3249.6000	-43.2508	-20.00	PASS
	3655.8000	-44.2379	-20.00	PASS
	4062.0000	-43.4547	-20.00	PASS
	1926.2340	-39.0600	-20.00	PASS

**Phase II: 450.025 MHz, 12.5 kHz Channel Spacing, Max Power**



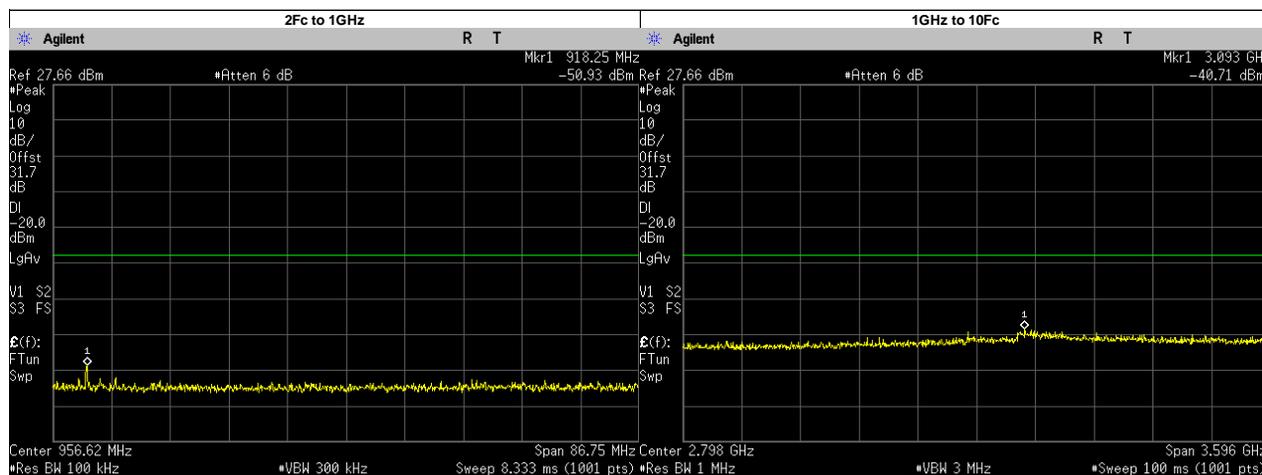
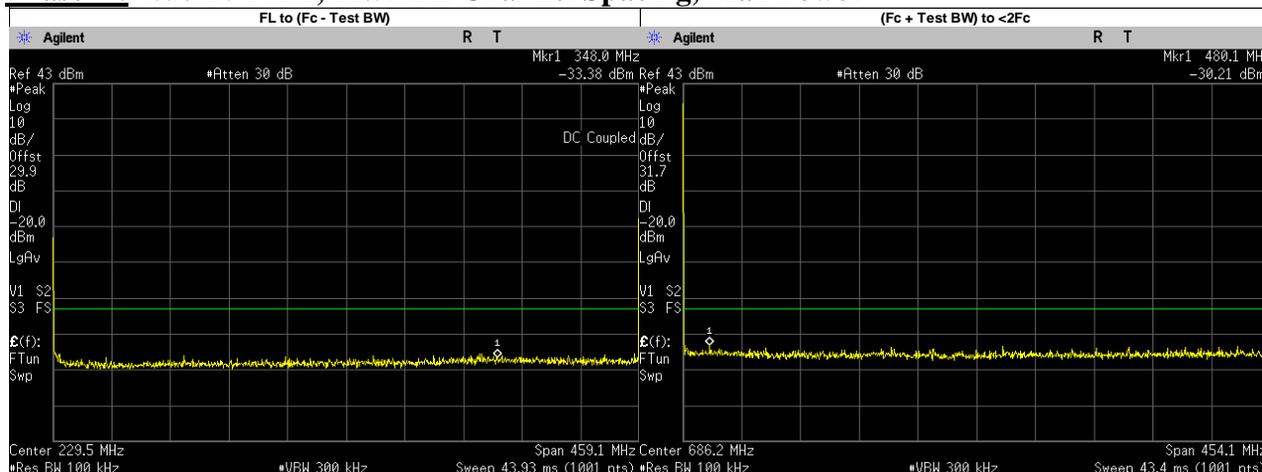
Frequency Range	Highest Spur Frequency (MHz)	Spurious Level (dBm)	Failing Limit (dBm)	Results
FL to (Fc - Test BW)	408.6000	-32.3550	-20.00	PASS
(Fc + Test BW) to <2Fc	745.5407	-29.8800	-20.00	PASS
2Fc to 1GHz	900.0500	-51.2900	-20.00	PASS
1GHz to 10Fc	3117.1710	-41.1200	-20.00	PASS
	1350.0750	-45.7575	-20.00	PASS
	1800.1000	-45.0836	-20.00	PASS
	2250.1250	-45.2679	-20.00	PASS
	2700.1500	-44.1754	-20.00	PASS
	3150.1750	-42.3782	-20.00	PASS
	3600.2000	-43.4781	-20.00	PASS
	4050.2250	-43.3564	-20.00	PASS
4500.2500	-43.6015	-20.00	PASS	

**Phase II: 450.025 MHz, 12.5 kHz Channel Spacing, Low Power**



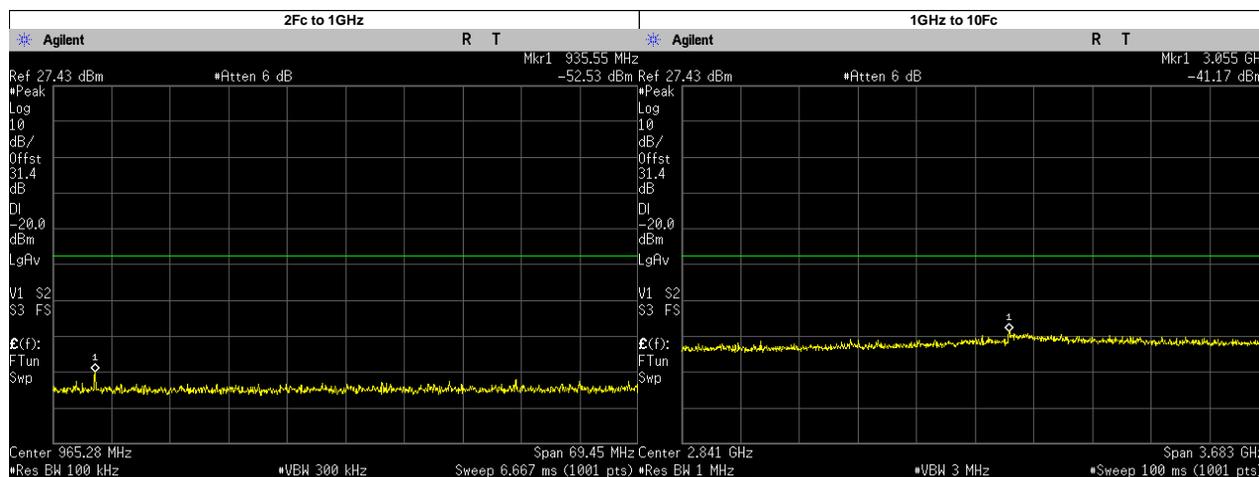
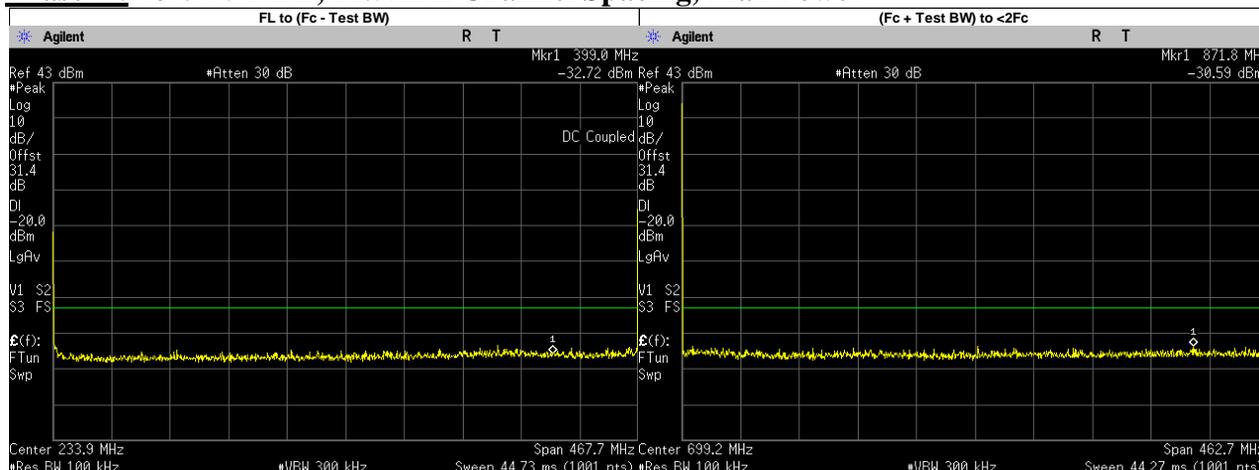
Frequency Range	Highest Spur Frequency (MHz)	Spurious Level (dBm)	Failing Limit (dBm)	Results
FL to (Fc - Test BW)	95.9000	-33.0300	-20.00	PASS
(Fc + Test BW) to <2Fc	473.2201	-30.7200	-20.00	PASS
2Fc to 1GHz	905.9648	-53.2800	-20.00	PASS
	900.0500	-56.0733	-20.00	PASS
1GHz to 10Fc	3141.7080	-40.0700	-20.00	PASS
	1350.0750	-45.1428	-20.00	PASS
	1800.1000	-45.8292	-20.00	PASS
	2250.1250	-44.9338	-20.00	PASS
	2700.1500	-44.0950	-20.00	PASS
	3150.1750	-42.2397	-20.00	PASS
	3600.2000	-44.1646	-20.00	PASS
	4050.2250	-44.2558	-20.00	PASS
	4500.2500	-44.1782	-20.00	PASS

### Phase II: 459.125 MHz, 12.5 kHz Channel Spacing, Max Power



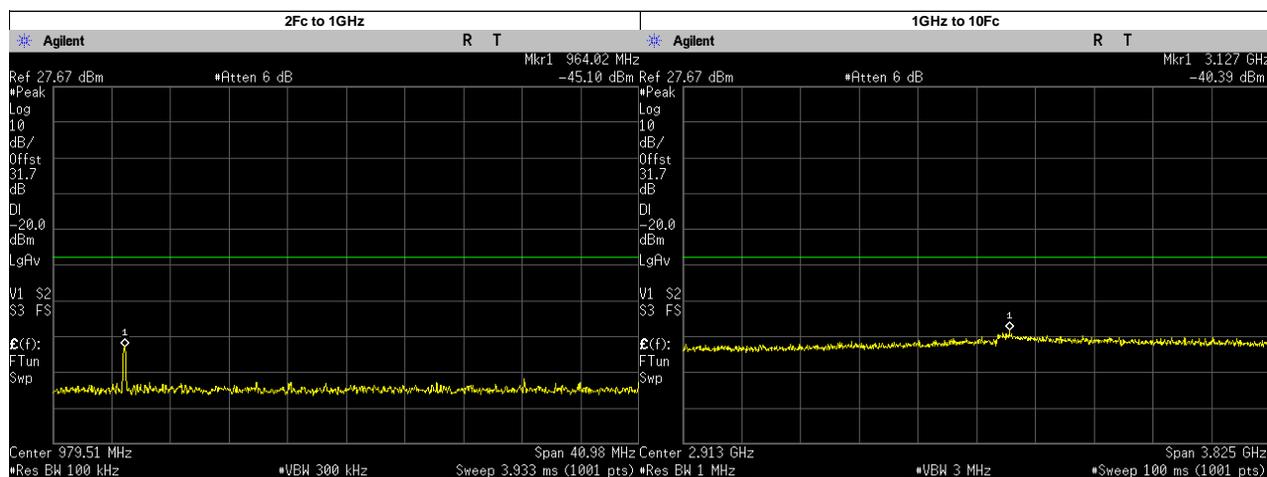
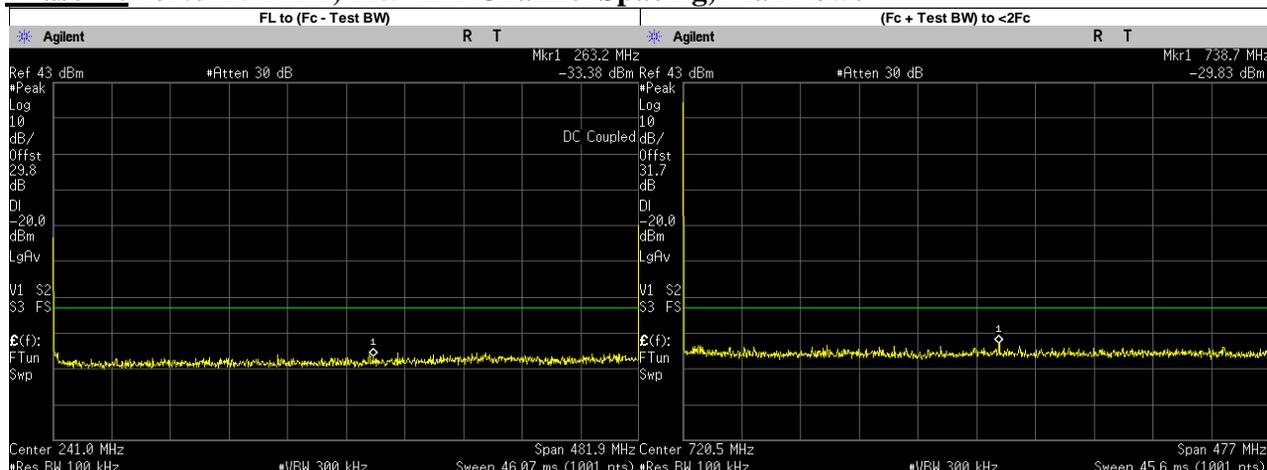
Frequency Range	Highest Spur Frequency (MHz)	Spurious Level (dBm)	Failing Limit (dBm)	Results
FL to (Fc - Test BW)	348.0000	-33.3790	-20.00	PASS
(Fc + Test BW) to <2Fc	480.0689	-30.2100	-20.00	PASS
2Fc to 1GHz	918.1947	-50.9300	-20.00	PASS
	918.2500	-51.0124	-20.00	PASS
1GHz to 10Fc	3093.0170	-40.7100	-20.00	PASS
	1377.3750	-45.8756	-20.00	PASS
	1836.5000	-45.5189	-20.00	PASS
	2295.6250	-44.6652	-20.00	PASS
	2754.7500	-44.3419	-20.00	PASS
	3213.8750	-42.8310	-20.00	PASS
	3673.0000	-43.5794	-20.00	PASS
	4132.1250	-44.0018	-20.00	PASS
	4591.2500	-43.6899	-20.00	PASS

### Phase II: 467.775 MHz, 12.5 kHz Channel Spacing, Max Power



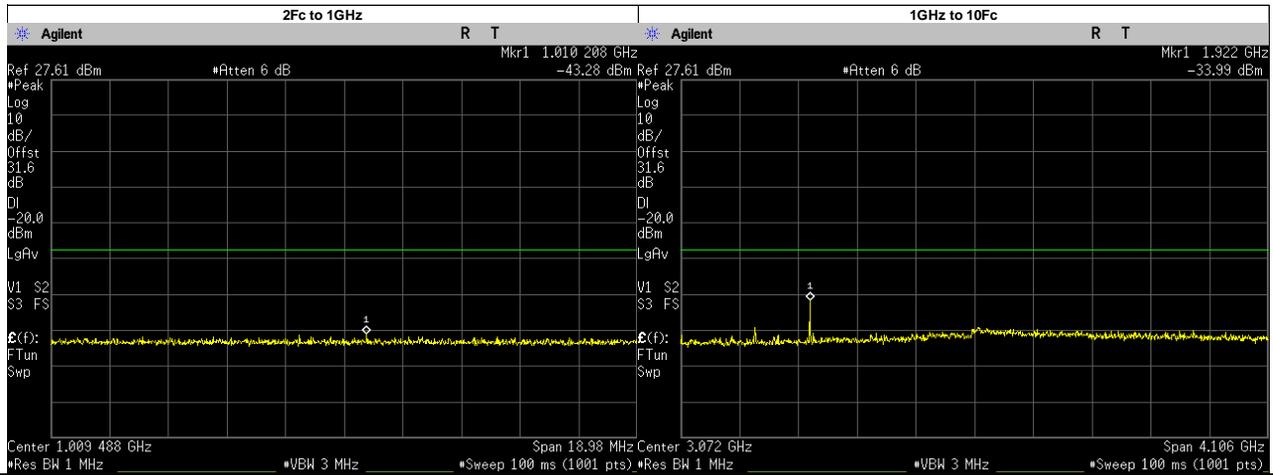
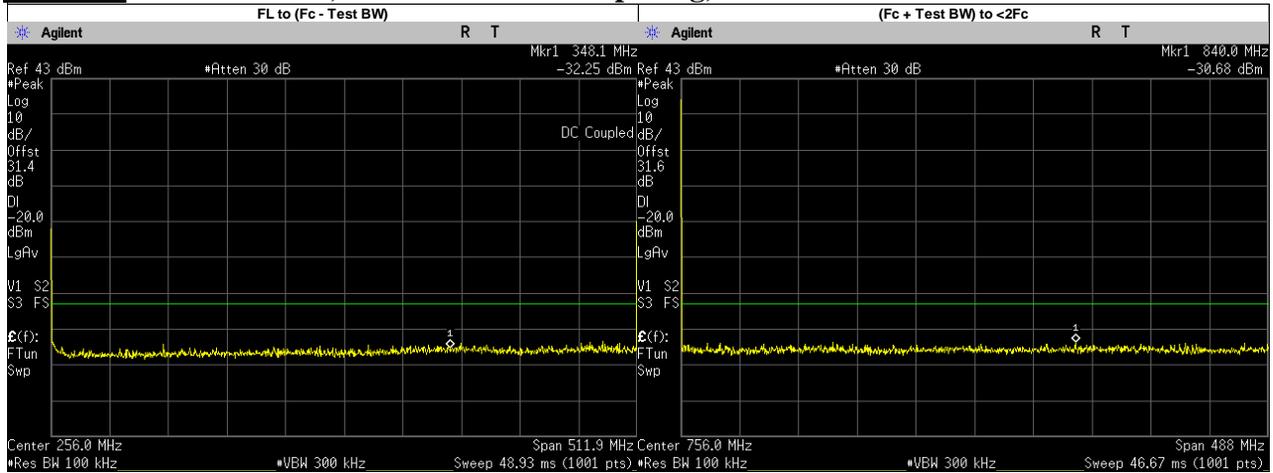
Frequency Range	Highest Spur Frequency (MHz)	Spurious Level (dBm)	Failing Limit (dBm)	Results
FL to (Fc - Test BW)	399.0000	-32.7210	-20.00	PASS
(Fc + Test BW) to <2Fc	871.7848	-30.5900	-20.00	PASS
2Fc to 1GHz	935.5500	-52.5300	-20.00	PASS
1GHz to 10Fc	3054.9740	-41.1700	-20.00	PASS
	1403.3250	-45.8925	-20.00	PASS
	1871.1000	-45.5287	-20.00	PASS
	2338.8750	-45.6703	-20.00	PASS
	2806.6500	-44.2180	-20.00	PASS
	3274.4250	-43.1041	-20.00	PASS
	3742.2000	-43.5671	-20.00	PASS
	4209.9750	-44.7386	-20.00	PASS
	4677.7500	-44.3747	-20.00	PASS

### Phase II: 482.0125 MHz, 12.5 kHz Channel Spacing, Max Power



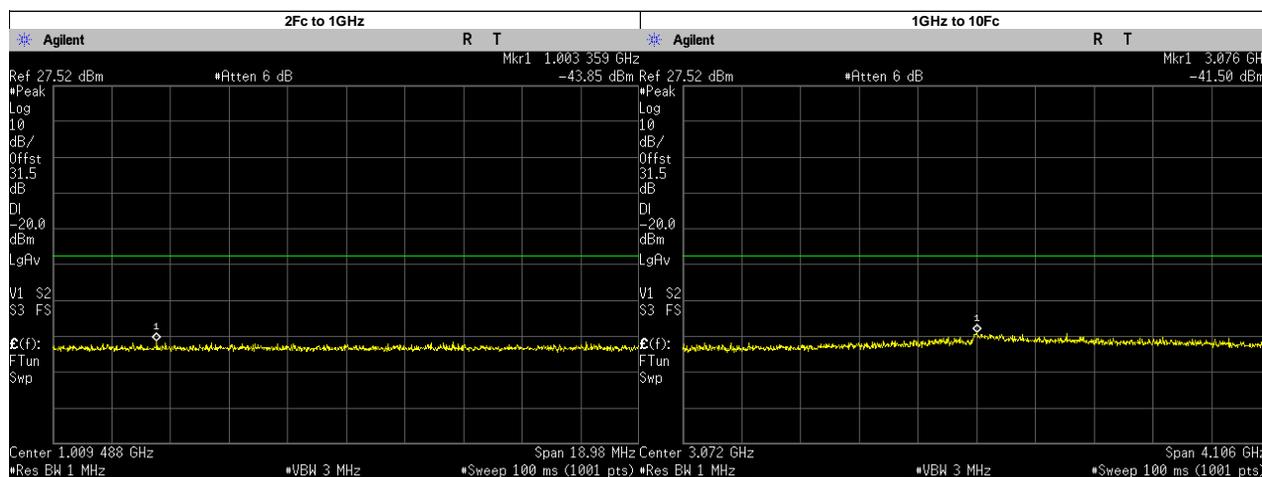
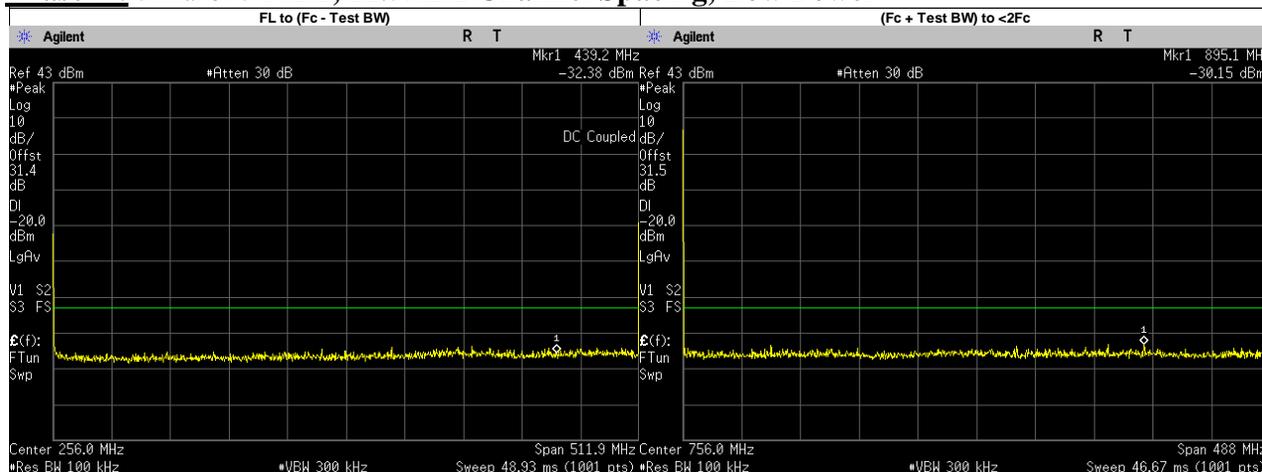
Frequency Range	Highest Spur Frequency (MHz)	Spurious Level (dBm)	Failing Limit (dBm)	Results
FL to (Fc - Test BW)	263.2000	-33.3760	-20.00	PASS
(Fc + Test BW) to <2Fc	738.6715	-29.8300	-20.00	PASS
2Fc to 1GHz	964.0200	-45.1000	-20.00	PASS
	964.0250	-45.1059	-20.00	PASS
1GHz to 10Fc	3126.7690	-40.3900	-20.00	PASS
	1446.0370	-45.2235	-20.00	PASS
	1928.0500	-45.0354	-20.00	PASS
	2410.0620	-44.2930	-20.00	PASS
	2892.0750	-43.9343	-20.00	PASS
	3374.0880	-42.3263	-20.00	PASS
	3856.1000	-44.3486	-20.00	PASS
	4338.1130	-44.0437	-20.00	PASS
	4820.1250	-44.6642	-20.00	PASS

**Phase II: 511.9875 MHz, 12.5 kHz Channel Spacing, Max Power**



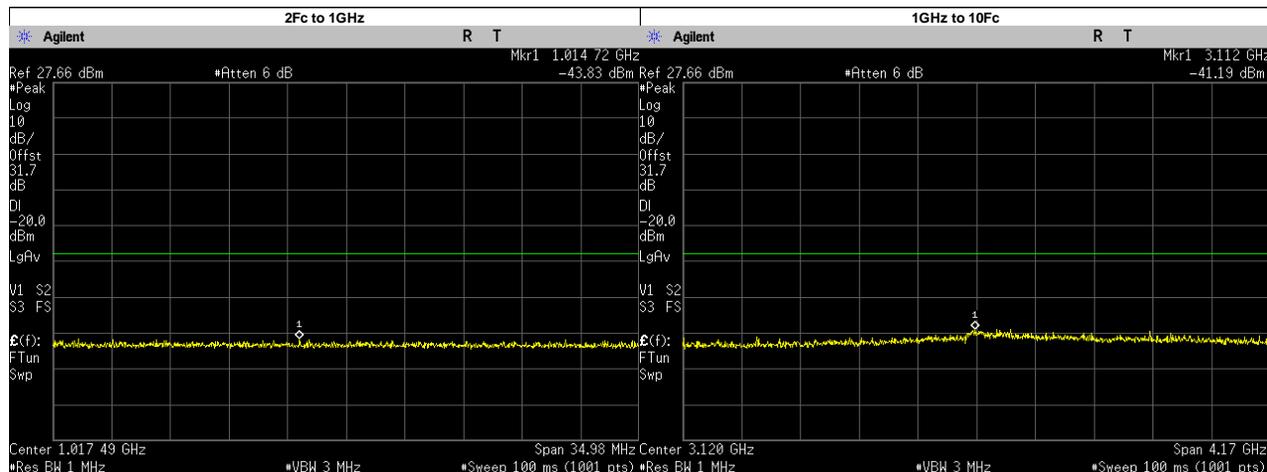
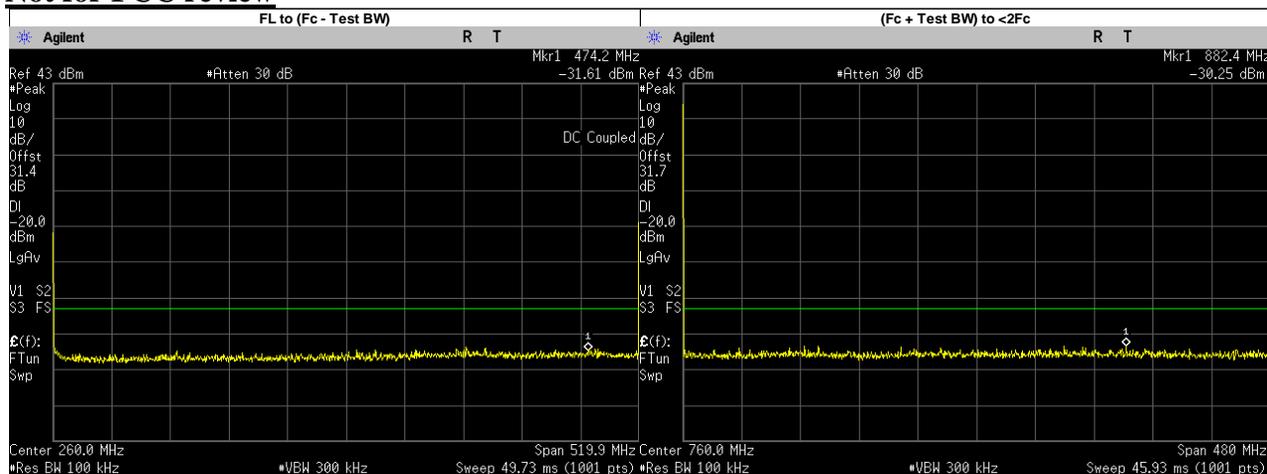
Frequency Range	Highest Spur Frequency (MHz)	Spurious Level (dBm)	Failing Limit (dBm)	Results
FL to (Fc - Test BW)	348.1000	-32.2530	-20.00	PASS
(Fc + Test BW) to <2Fc	839.9505	-30.6800	-20.00	PASS
2Fc to 1GHz	1010.2080	-43.2800	-20.00	PASS
1GHz to 10Fc	1922.0000	-33.9900	-20.00	PASS
	1535.9630	-41.9839	-20.00	PASS
	2047.9500	-45.1449	-20.00	PASS
	2559.9370	-45.1693	-20.00	PASS
	3071.9250	-42.0550	-20.00	PASS
	3583.9120	-43.5906	-20.00	PASS
	4095.9000	-43.6300	-20.00	PASS
	4607.8870	-43.7537	-20.00	PASS
	5119.8750	-44.9344	-20.00	PASS
1922.2730	-33.9900	-20.00	PASS	

### Phase II: 511.9875 MHz, 12.5 kHz Channel Spacing, Low Power



Frequency Range	Highest Spur Frequency (MHz)	Spurious Level (dBm)	Failing Limit (dBm)	Results
FL to (Fc - Test BW)	439.2000	-32.3800	-20.00	PASS
(Fc + Test BW) to <2Fc	895.0895	-30.1500	-20.00	PASS
2Fc to 1GHz	1003.3590	-43.8500	-20.00	PASS
1GHz to 10Fc	3076.0310	-41.5000	-20.00	PASS
	1023.9750	-44.9147	-20.00	PASS
	1535.9630	-45.5166	-20.00	PASS
	2047.9500	-45.4378	-20.00	PASS
	2559.9370	-44.7402	-20.00	PASS
	3071.9250	-41.8620	-20.00	PASS
	3583.9120	-43.5386	-20.00	PASS
	4095.9000	-44.0024	-20.00	PASS
	4607.8870	-44.9221	-20.00	PASS
5119.8750	-44.8364	-20.00	PASS	

**Phase II: 519.9875 MHz, 12.5 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)	474.2000	-31.6060	-20.00	PASS
(Fc + Test BW) to <2Fc	882.4109	-30.2500	-20.00	PASS
2Fc to 1GHz	1014.7250	-43.8300	-20.00	PASS
1GHz to 10Fc	3111.5850	-41.1900	-20.00	PASS
	1039.9750	-43.8986	-20.00	PASS
	1559.9630	-43.6454	-20.00	PASS
	2079.9500	-44.6149	-20.00	PASS
	2599.9370	-44.1362	-20.00	PASS
	3119.9250	-42.4950	-20.00	PASS
	3639.9120	-43.7643	-20.00	PASS
	4159.9000	-43.9630	-20.00	PASS
	4679.8870	-44.8662	-20.00	PASS
5199.8750	-44.4228	-20.00	PASS	

**6.10.4. Test Limit**

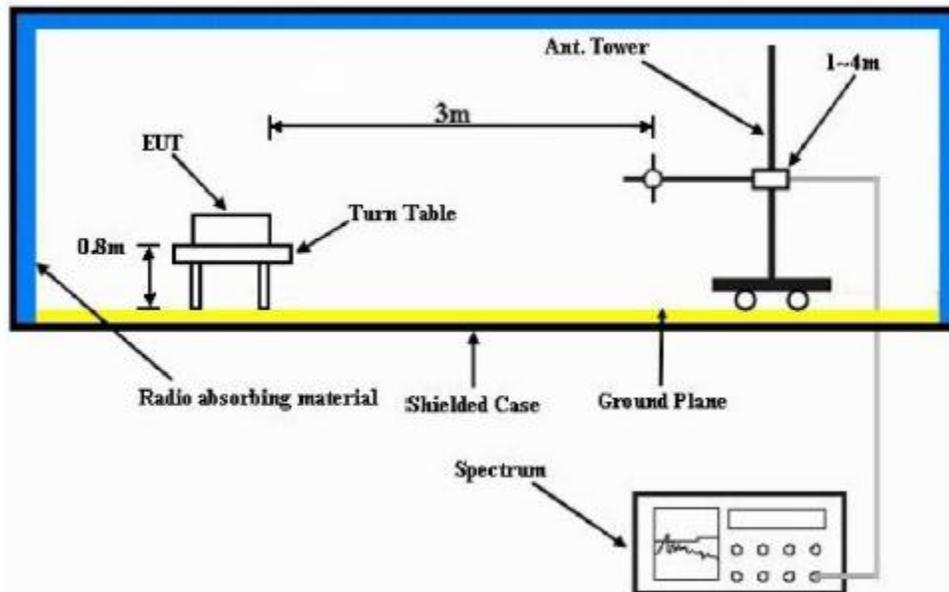
Table below summarized the power of any emission outside a licensee’s frequency block shall be attenuated below the transmitter power (P) by at least

Channel Spacing	Part 22	Part 24D	Part 74	Part 80	Part 90 (UHF, VHF, 800, 900)	Part 90 (700)
12.5kHz	43 + log <sub>10</sub> (P) (-13 dBm)	43 + log <sub>10</sub> (P) (-13 dBm)	43 + log <sub>10</sub> (P) (-13 dBm)	Not Applicable	50 + log <sub>10</sub> (P) (-20 dBm)	43 + log <sub>10</sub> (P) (-13 dBm)
25kHz		Not Applicable		43 + log <sub>10</sub> (P) (-13 dBm)	43 + log <sub>10</sub> (P) (-13 dBm)	43 + log <sub>10</sub> (P) (-13 dBm)

Channel Spacing	RSS 134	RSS 182	RSS 119 (UHF, VHF, 800, 900)	RSS 119 (700)
12.5kHz	43 + log <sub>10</sub> (P) (-13 dBm)	Not Applicable	50 + log <sub>10</sub> (P) (-20 dBm)	43 + log <sub>10</sub> (P) (-13 dBm)
25kHz	Not Applicable	43 + log <sub>10</sub> (P) (-13 dBm)	43 + log <sub>10</sub> (P) (-13 dBm)	43 + log <sub>10</sub> (P) (-13 dBm)

## 6.11. Radiated Spurious Emission

### 6.11.1. Test Setup



- 1) The Resolution Bandwidth for scanning Radiated Emission below 1 GHz is 100 kHz with Video Bandwidth = 300 kHz and Resolution Bandwidth for above 1 GHz is 1 MHz with Video Bandwidth = 3 MHz. Detector mode is positive peak.
- 2) In the semi- anechoic chamber, setup as illustrated above the DUT placed on the 0.8m height (for  $F_c < 1\text{GHz}$ ) or 1.5m height (for  $F_c > 1\text{GHz}$ ) of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum polar radiated power. The “Read Value” is the spectrum reading the maximum power value.
- 3) The substitution antenna is substituted for DUT at the same position and signals generator (S.G) export the CW signal to the substitution antenna via a TX cable. The receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum radiation power. Record the power level of maximum radiation power from spectrum. So, the measured substitution value = Ref level of S.G + TX cables loss – Substituted Antenna Gain.
- 4) Final Radiated Spurious Emission = “Read Value” + Measured substitution value.

### 6.11.2. Test Result (Analog)

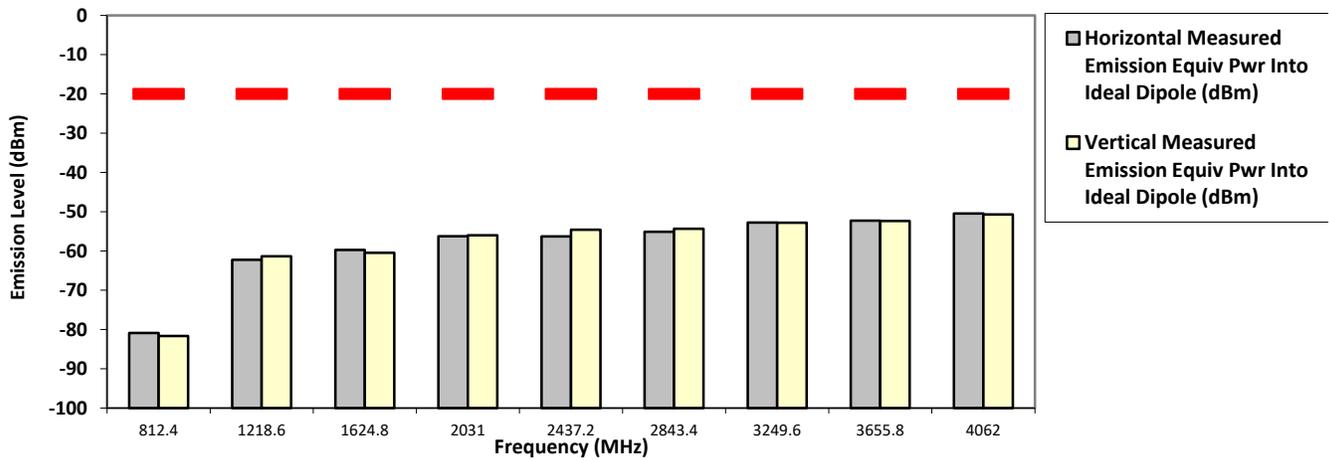
**Not Applicable**

### 6.11.3. Test Result (Digital)

**SAC Transmitter Radiated Emission:**  
**Model Number: H91TGD9PW7AN**      **S/N: 579TWR0037**      **SR:09154-EMC-00020**  
**Battery Part No: PMNN4494A**      **Accy Part No: NA**  
**Test Mode: TX APCO Digital Phase II**  
**406.20000 MHz**      **12.5 kHz**      **5.700 Watt(s) /Max Power**

Frequency (MHz)	Limit	Horizontal Measured Emission Equiv Pwr Into Ideal Dipole (dBm)	Vertical Measured Emission Equiv Pwr Into ideal Dipole (dBm)
812.4000	-20.0000	-80.8772 **	-81.6660 **
1218.6000	-20.0000	-62.2368 **	-61.3644 **
1624.8000	-20.0000	-59.7192 **	-60.4516 **
2031.0000	-20.0000	-56.2678 **	-55.9963 **
2437.2000	-20.0000	-56.2976 **	-54.5891 **
2843.4000	-20.0000	-55.1003 **	-54.3441 **
3249.6000	-20.0000	-52.7559 **	-52.7953 **
3655.8000	-20.0000	-52.2861 **	-52.3738 **
4062.0000	-20.0000	-50.4667 **	-50.7164 **

**RADIATED SPURIOUS EMISSIONS**



The data presented here was taken using the substitution method as found in the ANSI C63.26-2015 document.  
 Motorola Penang EMC Lab - Test Performed by: Qawiman&Nazrin      Sun, Aug 23, 2020

Remarks: \*\* Indicates the spurious emission could not be detected due to noise limitations or ambient.  
 \*Pursuant to CFR 47 Part 2.1057 ( c ), emissions attenuated more than 20 dB below the permissible limit are not reported  
 Temp(Deg): 23.8 Hum(%RH): 70.6

System MU: 4.03 dB

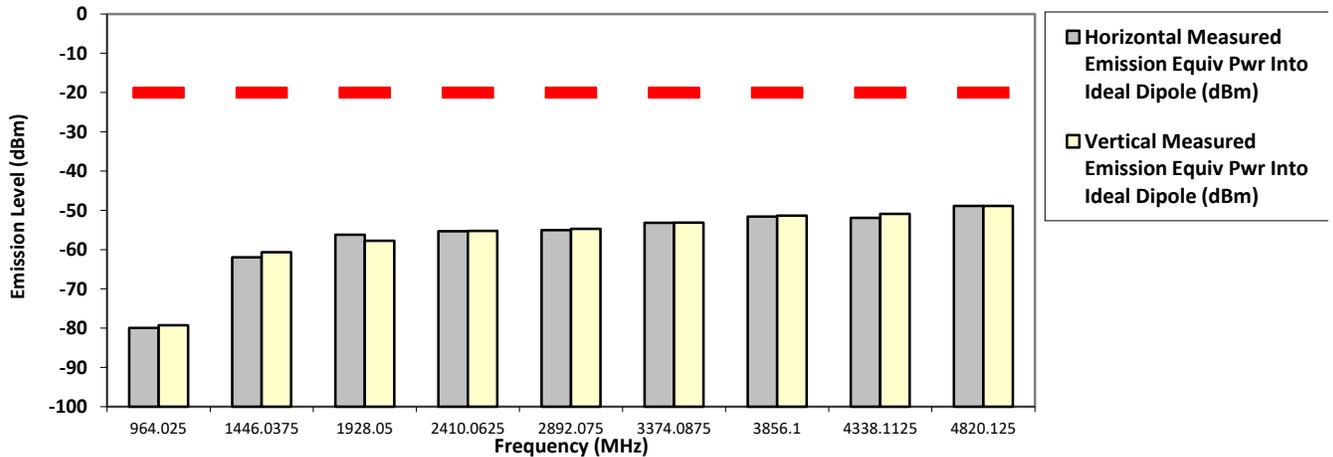
Remarks:	Passed Results	Marginal Results	Failed Results
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**SAC Transmitter Radiated Emission:**

**Model Number: H91TGD9PW7AN**      **S/N: 579TWR0037**      **SR:09154-EMC-00020**  
**Battery Part No: PMNN4494A**      **Accy Part No: NA**  
**Test Mode: TX APCO Digital Phase II**  
**482.012500 MHz**      **12.5 kHz**      **5.700 Watt(s) /Max Power**

Frequency (MHz)	Limit	Horizontal Measured Emission Equiv Pwr Into Ideal Dipole (dBm)	Vertical Measured Emission Equiv Pwr Into ideal Dipole (dBm)
964.0250	-20.0000	-79.9338 **	-79.2435 **
1446.0375	-20.0000	-61.9453 **	-60.6703 **
1928.0500	-20.0000	-56.2237 **	-57.7615 **
2410.0625	-20.0000	-55.3306 **	-55.2326 **
2892.0750	-20.0000	-55.0424 **	-54.7148 **
3374.0875	-20.0000	-53.1683 **	-53.1229 **
3856.1000	-20.0000	-51.5947 **	-51.3652 **
4338.1125	-20.0000	-51.9136 **	-50.9170 **
4820.1250	-20.0000	-48.8666 **	-48.8706 **

**RADIATED SPURIOUS EMISSIONS**



The data presented here was taken using the substitution method as found in the ANSI C63.26-2015 document.  
 Motorola Penang EMC Lab - Test Performed by: Qawiman&Nazrin      Sun, Aug 23, 2020

Remarks: \*\* Indicates the spurious emission could not be detected due to noise limitations or ambient.  
 \*Pursuant to CFR 47 Part 2.1057 ( c ), emissions attenuated more than 20 dB below the permissible limit are not reported  
 Temp(Deg): 23.8 Hum(%RH): 70.6

System MU: 4.03 dB

Remarks: Passed Results Marginal Results Failed Results

**6.11.4. Test Limit**

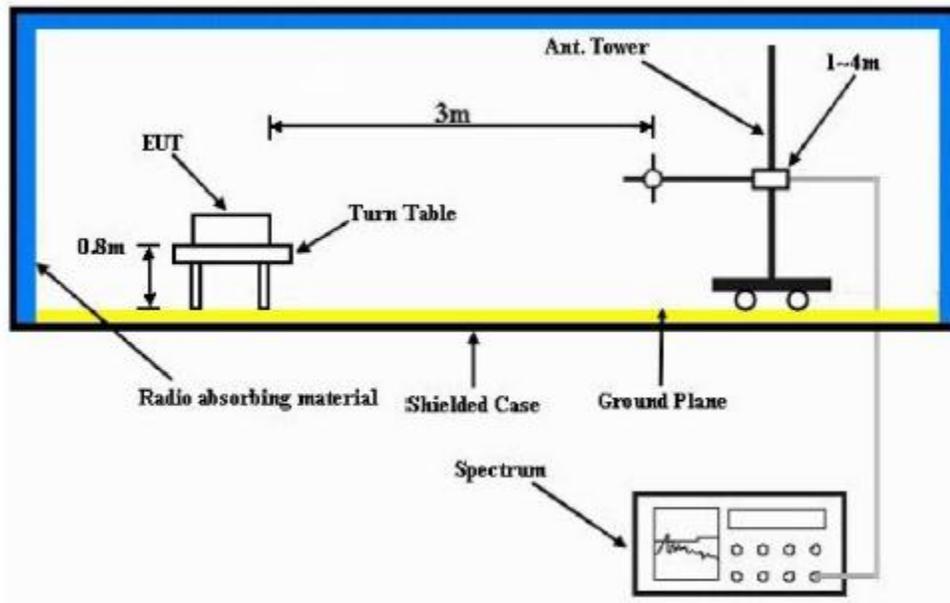
Table below summarized the power of any emission outside a licensee’s frequency block shall be attenuated below the transmitter power (P) by at least

Channel Spacing	Part 22	Part 24D	Part 74	Part 80	Part 90 (UHF, VHF, 800, 900)	Part 90 (700)
12.5kHz	43 + log <sub>10</sub> (P) (-13 dBm)	43 + log <sub>10</sub> (P) (-13 dBm)	43 + log <sub>10</sub> (P) (-13 dBm)	Not Applicable	50 + log <sub>10</sub> (P) (-20 dBm)	43 + log <sub>10</sub> (P) (-13 dBm)
25kHz		Not Applicable		43 + log <sub>10</sub> (P) (-13 dBm)	43 + log <sub>10</sub> (P) (-13 dBm)	43 + log <sub>10</sub> (P) (-13 dBm)

Channel Spacing	RSS 134	RSS 182	RSS 119 (UHF, VHF, 800, 900)	RSS 119 (700)
12.5kHz	43 + log <sub>10</sub> (P) (-13 dBm)	Not Applicable	50 + log <sub>10</sub> (P) (-20 dBm)	43 + log <sub>10</sub> (P) (-13 dBm)
25kHz	Not Applicable	43 + log <sub>10</sub> (P) (-13 dBm)	43 + log <sub>10</sub> (P) (-13 dBm)	43 + log <sub>10</sub> (P) (-13 dBm)

## 6.12. Effective Radiated Power (ERP)

### 6.12.1. Test Setup



- 1) The Resolution Bandwidth for Equivalent Radiated Power (ERP) below 1 GHz is 100 kHz with Video Bandwidth = 300 kHz and Resolution Bandwidth for EIRP above 1 GHz is 1 MHz with Video Bandwidth = 3 MHz. Detector Mode is RMS.
- 2) In the semi-anechoic chamber, setup as illustrated above the DUT placed on the 0.8m height (for  $F_c < 1\text{GHz}$ ) or 1.5m (for  $F_c > 1\text{GHz}$ ) of Turn Table, rotated the table 45 degree each interval to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum polar radiated power for each degree interval. The “Read Value” is the spectrum reading of maximum power value.
- 3) The substitution antenna is substituted for DUT at the same position and signals generator (S.G) export the CW signal to the substitution antenna via a TX cable. The receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum radiation power. Record the power level of maximum radiation power from spectrum. So, the Measured substitution value = Ref level of S.G + TX cables loss – Substituted Antenna Gain.

### 6.12.2. Test Result

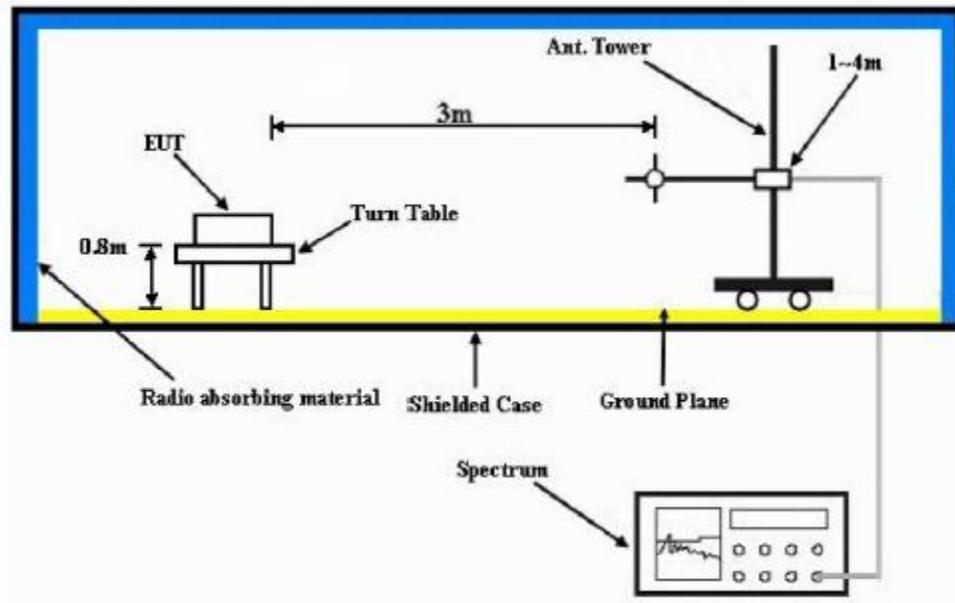
**Not Applicable**

### 6.12.3. Test Limit

The maximum output power of the transmitter for mobile stations is 100 watts (20 dB). Power is given in terms of effective radiated power (ERP).

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

#### 6.13.1. Test Setup



- 4) The Resolution Bandwidth for Equivalent Isotropically Radiated Power (EIRP) below 1 GHz is 100 kHz with Video Bandwidth = 300 kHz and Resolution Bandwidth for EIRP above 1 GHz is 1 MHz with Video Bandwidth = 3 MHz. Detector Mode is RMS.
- 5) In the semi-anechoic chamber, setup as illustrated above the DUT placed on the 0.8m height of Turn Table, rotated the table 45 degree each interval to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum polar radiated power for each degree interval. The “Read Value” is the spectrum reading of maximum power value.
- 6) The substitution antenna is substituted for DUT at the same position and signals generator (S.G) export the CW signal to the substitution antenna via a TX cable. The receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum radiation power. Record the power level of maximum radiation power from spectrum. So, the Measured substitution value = Ref level of S.G + TX cables loss – Substituted Antenna Gain.
- 7)  $EIRP = \text{“Read Value”} + \text{Measured substitution value} + 2.1$
- 8)

#### 6.13.1. Test Result

**Not Applicable**

#### 6.13.2. Test Limit

For operations in the 758-775 MHz and 788-805 MHz bands, all emissions including harmonics in the band 1559-1610 MHz shall be limited to  $-70$  dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and  $-80$  dBW EIRP for discrete emissions of less than 700 Hz bandwidth.

**~ End of Test Report ~**