MOTOROLA SOLUTIONS

CERTIFICATE 2518.08

MS ISO/IEC 17025 TESTING SAMM NO. 0825

MOTOROLA PENANG ADV. COMM. LABORATORY
Motorola Solutions Malaysia SDN BHD,
Plot 2A, Medan Bayan Lepas,
Mukim 12 S.W.D, 11900 Bayan Lepas,
Penang, Malaysia.

FCC/ISED TEST REPORT
Report Revision : Rev.B

Date/s Tested	:	31-MAR-2021 - 01-APR-2021
Report Issue Date	:	16-APR-2021
Manufacturer	:	Motorola Solutions Malaysia SDN BHD
Manufacturer Address	:	Plot 2A, Medan Bayan Lepas, Mukim 12 SWD, 11900 Bayan Lepas, Penang, Malaysia
Requestor	:	BOON LIEH CHONG
Product Type	:	Portable
Product Version (PMN)	:	APX1000
Model Number (HVIN)	:	H84QDH9PW7AN (MUE4386)
Frequency Band	:	380-470MHz
Max RF Output Power	:	5.7 Watts
Applicant Name	:	Motorola Solutions Inc
Applicant Address	:	8000 West Sunrise Boulevard, Fort Lauderdale, Florida 33322
ISED Registrations	:	MY0001
FCC Registrations	:	461337
Firmware Version (FVIN)	:	R23.01.00

The equipment was tested accordance to the requirement listed below:

(LMR)
FCC 47 CFR Part 2/ 90 **PASS**
ISED RSS-119 Issue 12

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Prepared By:

Putri Nur Sarah Sofia
Test Personnel

Approved Signatory:

Soon Oi May
Responsible Engineer

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Report Revision History

Revision History	Description	Date	Originator
Rev. A	Initial Report	11-APR-2021	PUTRI NUR SARAH SOFIA
Rev. B	Up revision by remove not related rules part.	22-APR-2021	PUTRI NUR SARAH SOFIA

1.0 General Information

EUT Description:

Technologies	Land Mobile Radio (LMR)
Modulation Type	Analog, C4FM, PHASE II

The EUT contains following accessory devices and data cable:

Item	Brand	Part Number
BATT IMPRES LIION IP68 2800T	MOTOROLA	PMNN4448B

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 EUT 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, 22.565, 74.461, 74.534, 80.215	RSS-119	RF Power Output	Pass		837TXD1454
2.1055, 90.213, 22.355, 74.464, 74.561	RSS-119	Frequency Stability	Pass		837TXD1454
-	-	Audio Frequency Response	NA		
-	-	Audio Low Pass Filter Response	NA		
-	-	Modulation limiting	NA		
-	-	Occupied Bandwidth	NA		
22.359 (a), (b)	RSS-119	Band Edge Conducted Spurious Emission	Pass		837TXD1454
-	-	Transient Frequency Behavior	NA		
-	-	Adjacent Channel Power	NA		
2.1051, 22.359, 90.210 74.462(c), 80.211(c)	RSS-119	Conducted Spurious Emissions	Pass	Highest Spur – -26.52dBm	837TXD1454
2.1051, 22.359, 74.462(c), 80.211(c)	RSS-119	Radiated Spurious Emission	Pass	Highest Spur – -29.30dBm	837TXD1462
-	-	GNSS (EIRP for 1559 – 1610MHz)	NA		
-	-	Effective Radiated Power (ERP)	NA		

NA → **Not Applicable**

3.0 Measurement Uncertainty

Measurement	Frequency	Expended Uncertainty (k=1.96) (±)
AC Power Line Conducted Spurious Emission	150KHz ~ 30MHz	3.43 dB
Radiated Emissions up to 1 GHz	30MHz ~ 200MHz	4.25 dB
	200MHz ~ 1000MHz	4.25 dB
Radiated Emissions above 1 GHz	1GHz ~ 18GHz	4.94 dB
	18GHz ~ 25GHz	4.94 dB
Conducted Spurious Emissions	9kHz ~ 12.75GHz	2.82 dB
Frequency Stability	9kHz ~ 12.75GHz	0.0085 ppm
Audio Frequency Response / Low Pass Filter 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	08-Mar-21	08-Mar-22
DSA Dynamic Signal Analyzer	35670A	MY42507095	19-Jun-20	19-Jun-21
ANALYZER AUDIO	8903B	3514A15797	28-Oct-21	28-Oct-21
POWER METER	E4416A	MY45102699	26-Jun-20	26-Jun-21
POWER SENSOR	E9301B	MY41498918	12-Aug-20	12-Aug-21
POWER SUPPLY	6032A	US38323921	27-Nov-20	27-Nov-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	E4418B	MY45104923	20-Feb-21	20-Feb-22
POWER SUPPLY	6033A	3004A05137	4-Aug-20	4-Aug-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	3011A10318	28-Oct-20	28-Oct-21
ANALYZER AUDIO	8903B	3011A08952	29-Jul-20	29-Jul-21
SPECTRUM ANAYLYZER	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

FCC CONDUCTED SPUR EMISSION ATE # 1 (SW version: Conducted Spur ATE_rev 1.23.03)

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

EMC Chamber 1

DESCRIPTION	MODEL	SERIAL NUMBER	CALIBRATION DATE	CALIBRATION DUE DATE
DRG HORN FREQ.	SAS-571	719	20-Aug-19	20-Aug-21
DRG HORN FREQ.	SAS-571	566	22-Oct-19	22-Oct-21
POWER SUPPLY (0-60V / 0-50A, 1000W)	6032A	2615A01178	21-May-20	21-May-21
SIGNAL GENERATOR	SMB 100A	181117	8-Nov-18	8-Nov-21
EMI TEST RECEIVER	ESW44	101750	15-Jan-21	15-Jan-22
EMI TEST RECEIVER	ESIB26	100017	19-Jul-19	19-May-21
5m SEMI-ANECHOIC CHAMBER	S800-HX	J2308	No Cal. Req'd	No Cal. Req'd
BILOG ANTENNA	CBL6112B	2964	23-Apr-19	23-Apr-21
BILOG ANTENNA	CBL6112B	2950	8-Jul-19	8-Jul-21
DATA LOGGER	SDL500	A.016776	4-Jun-20	4-Jun-21
SYSTEM CONTROLLER	SC104V	050806-1	No Cal. Req'd	No Cal. Req'd
TURNTABLE FLUSH MOUNT 2M	FM2011	NA	No Cal. Req'd	No Cal. Req'd
ANTENNA POSITIONING TOWER	TLT2	NA	No Cal. Req'd	No Cal. Req'd
BROAD-BAND HORN ANTENNA	BBHA9170	BBHA9170143	15-Jul-20	15-Jul-21
18 - 40GHz PREAMPLIFIER	MITEQ Hi GAIN SUCOFLEX	2006313	No Cal. Req'd	No Cal. Req'd
PREAMPLIFIER	PAM-0118	269	24-May-19	24-May-22
LOOP ANTENNA	6502	00208416	15-Sep-20	15-Sep-21
TEST SOFTWARE	EMC_FCC_IC_BLUETOOTH_RE_TEST			
VERSION	EMC_FCC_RE_v1.6.2			

5.0 Test Condition

5.1. Transmitter Test Conditions

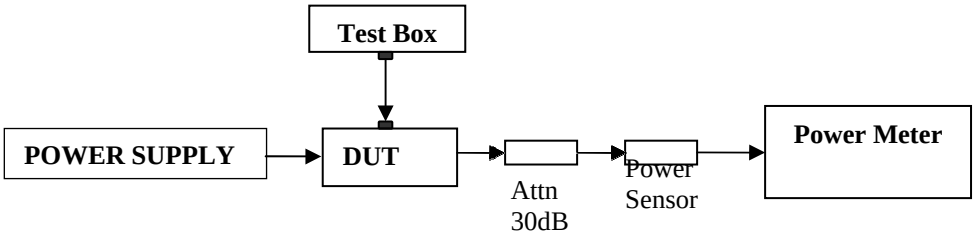
Test Item, (Channel Spacing)	Power (W)	Modulation	Test Frequency (MHz)	Tested By	Environmental conditions
RF Output Power	Low & Max	Analog	380.0125, 406.2, 450.025, 459.125, 467.775, 469.9875	Putri	23.4°C, 50%RH
Frequency Stability	Max	Analog	467.775	Putri	25.1°C, 54.3%RH, 60.3°C, 50%RH, -30.1°C, 51.2%RH
Audio Frequency Response (12.5kHz / 25kHz)	Max	Analog	NA	NA	NA
Audio Low Pass Filter Response (12.5kHz / 25kHz)	Max	Analog	NA	NA	NA
Modulation limiting (12.5kHz / 25kHz)	Max	Analog	NA	NA	NA
Occupied Bandwidth (12.5kHz / 20kHz / 25kHz)	Max	Analog, C4FM, Phase II	NA	NA	NA
Band Edge Conducted Spurious Emissions (Part 22) (12.5kHz / 20kHz / 25kHz)	Max	Analog, C4FM, Phase II	459.025, 459.65	Putri	23.4°C, 50%RH
Transient Frequency Behavior *(UHF & VHF Band)* (12.5kHz / 25kHz)	Max	Analog, C4FM, Phase II	NA	NA	NA
Adjacent Channel Power *(700MHz Band)* (12.5kHz / 25kHz)	Max	Analog, C4FM, Phase II	NA	NA	NA
Conducted Spurious Emissions- (12.5kHz / 25kHz)	Low / Max	Analog, C4FM, Phase II	380.0125, 406.2, 450.025, 459.125, 467.775, 469.9875	Putri	23.4°C, 50%RH
Radiated Spurious Emission (12.5kHz / 25kHz)	Low / Max	Analog, C4FM, Phase II	380.0125, 406.2, 459.125	Amaluddin, Qawiman&Nazrin	23.5°C, 68.9%RH
GNSS (EIRP for 1559 - 1610MHz) (12.5kHz / 25kHz)	Max	Analog	NA	NA	NA
Effective Radiated Power (ERP) (12.5kHz / 25kHz)	Max	Analog	NA	NA	NA

NA → Not Applicable

6.0 Transmitter Test Parameters

6.1. RF Output Power

6.1.1. Test Setup



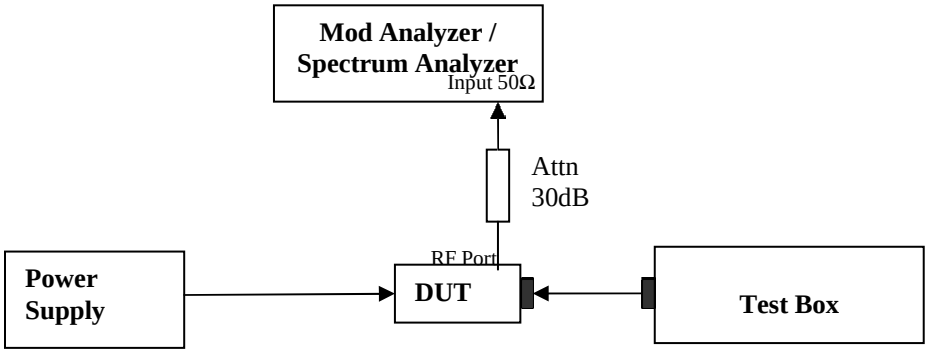
1) The DUT transmitter connected to Power Meter using the 30 dB attenuator and power sensor with above setup.
2) Path loss for the measurement included.
3) All the measurement was done at low, mid, high frequency for each band.
4) Record the power into the test report.

6.1.2. Test Result

Temperature	25˚C				
Voltage (V)	7.5V				
Frequency (MHz)	Low Power (W)	Current (A)	Max Power (W)	Current (A)	REMARK
380.01250	0.99	0.98	5.47	1.93	
406.20000	1.03	0.98	5.45	1.80	
450.02500	0.93	0.95	5.58	1.81	
459.12500	1.05	0.96	5.64	1.80	
467.77500	1.08	0.96	5.55	1.81	
469.98750	1.08	0.96	5.49	1.79	

6.2. Frequency Stability

6.2.1. Test Setup



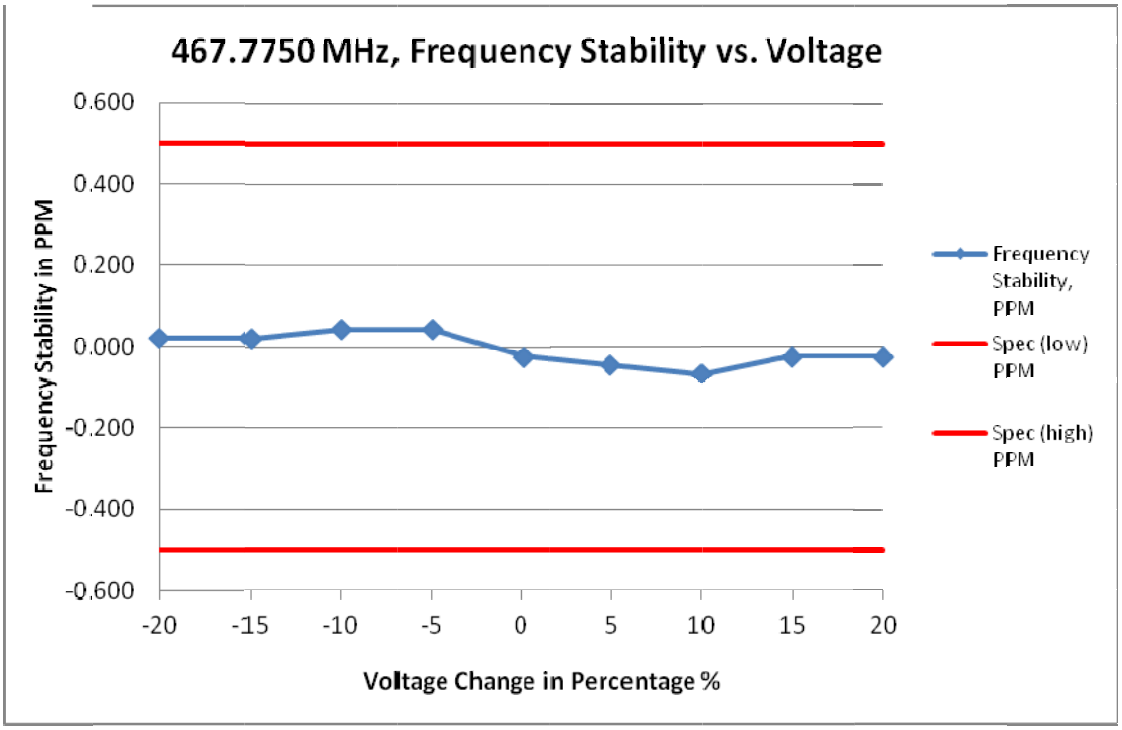
1) The DUT transmitter output port was connected to Modulation / Spectrum Analyzer.
2) Path loss for the measurement included.
3) Transmit the DUT and record the freq in MCF_{MHz}.
4) Test in 2 conditions:
   - Temperature: The frequency of the transmitter was measured from -30°C to 50°C.
   - Supply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

5) Calculate the ppm frequency error by the following:

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

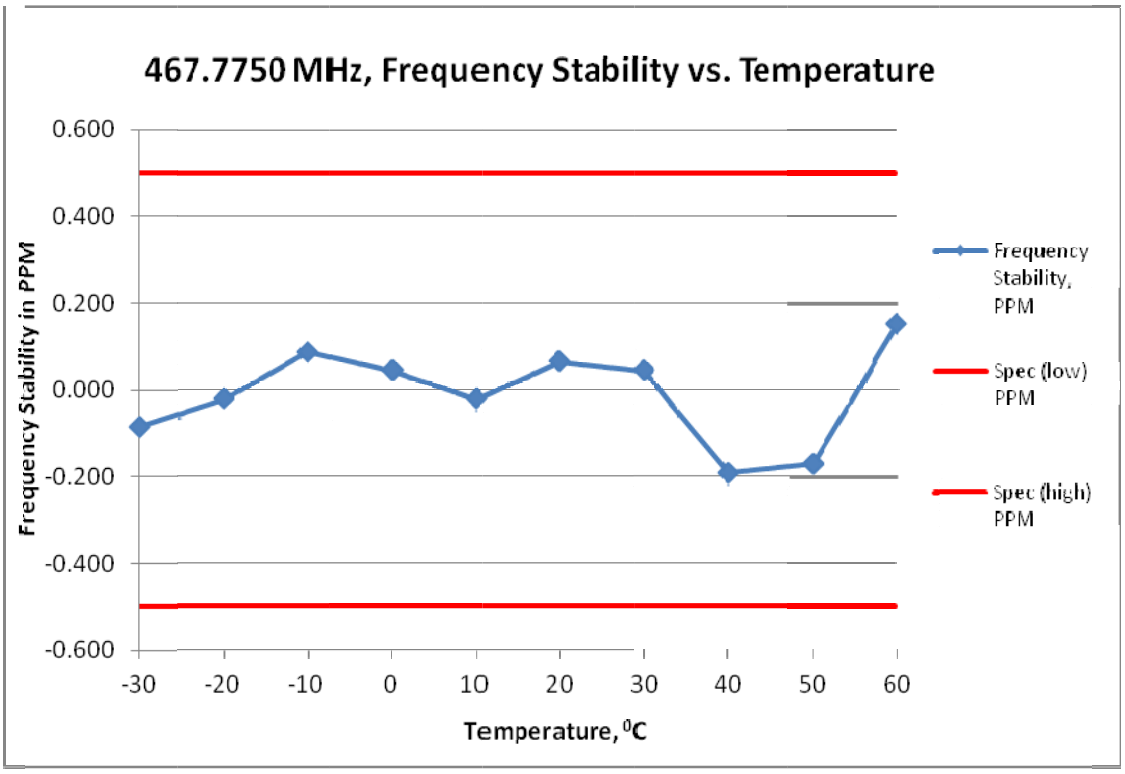
Where: MCF_{MHz} is the Measured Carrier Frequency in MHz
ACF_{MHz} is the Assigned Carrier Frequency in MHz

6.2.2. Test Result



(i) Frequency Stability VS Voltage

Frequency / Channel Spacing	467.7750 MHz / 12.5 kHz				
Temperature, ^{0}C	25				
Voltage %	Voltage, V	Frequency, MHz	Frequency Stability, PPM	Spec (low) PPM	Spec (high) PPM
-20	6.000	467.775010	0.021	-0.500	0.500
-15	6.370	467.775010	0.021	-0.500	0.500
-10	6.750	467.775020	0.043	-0.500	0.500
-5	7.120	467.775020	0.043	-0.500	0.500
0	7.500	467.774990	-0.021	-0.500	0.500
5	7.870	467.774980	-0.043	-0.500	0.500
10	8.250	467.774970	-0.064	-0.500	0.500
15	8.620	467.774990	-0.021	-0.500	0.500
20	9.000	467.774990	-0.021	-0.500	0.500



(ii) Frequency Stability VS temperature

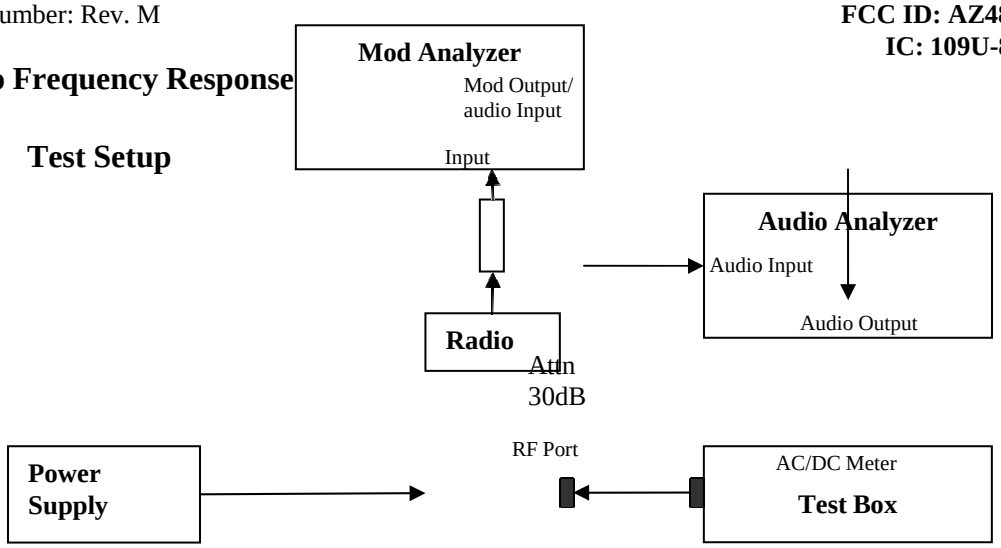
Frequency / Channel Spacing	467.7750 MHz / 12.5 kHz			
Voltage, V	7.5			
Temperature, ^{0}C	Frequency, MHz	Frequency Stability, PPM	Spec (low) PPM	Spec (high) PPM
-30	467.774960	-0.086	-0.500	0.500
-20	467.774990	-0.021	-0.500	0.500
-10	467.775040	0.086	-0.500	0.500
0	467.775020	0.043	-0.500	0.500
10	467.774990	-0.021	-0.500	0.500
20	467.775030	0.064	-0.500	0.500
30	467.775020	0.043	-0.500	0.500
40	467.774910	-0.192	-0.500	0.500
50	467.774920	-0.171	-0.500	0.500
60	467.775070	0.150	-0.500	0.500

6.2.3. Test Limit

As per manufacturer declared spec +/- 0.5ppm

6.3. Audio Frequency Response

6.3.1. Test Setup

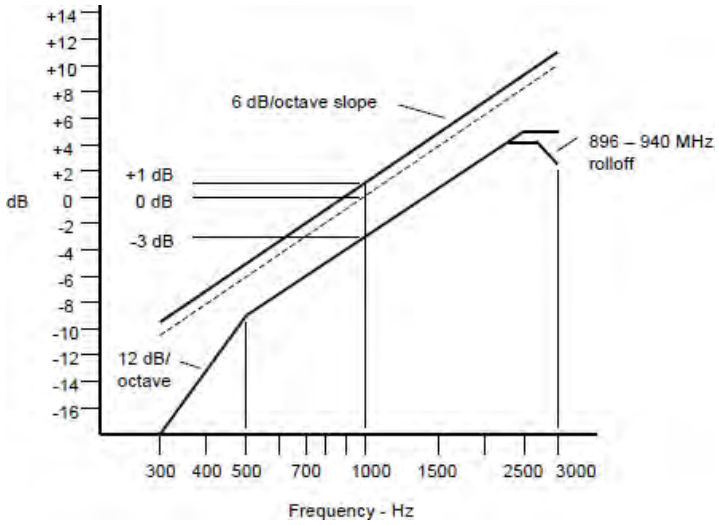


1) The DUT transmitter output port was connected to Modulation Analyzer.
2) Path loss for the measurement included.
3) Set the audio bandwidth filter to 15 kHz and 50 kHz.
4) Transmit the radio and set the audio analyzer to 1 kHz audio frequency and 20% of the Full rated system deviation.
5) On audio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

6.3.2. Test Result

Not Applicable.

6.3.3. Test Limit

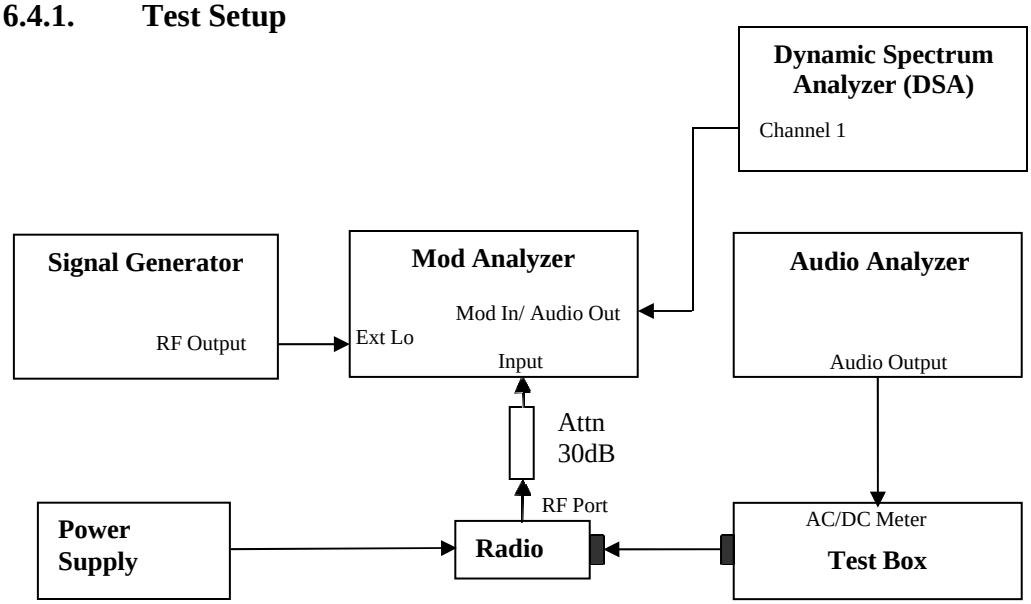


Note:

- *There are additional 6 dB per octave attenuation is allowed from 2.5KHz to 3KHz in equipment 25MHz to 869MHz radio.*
- *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

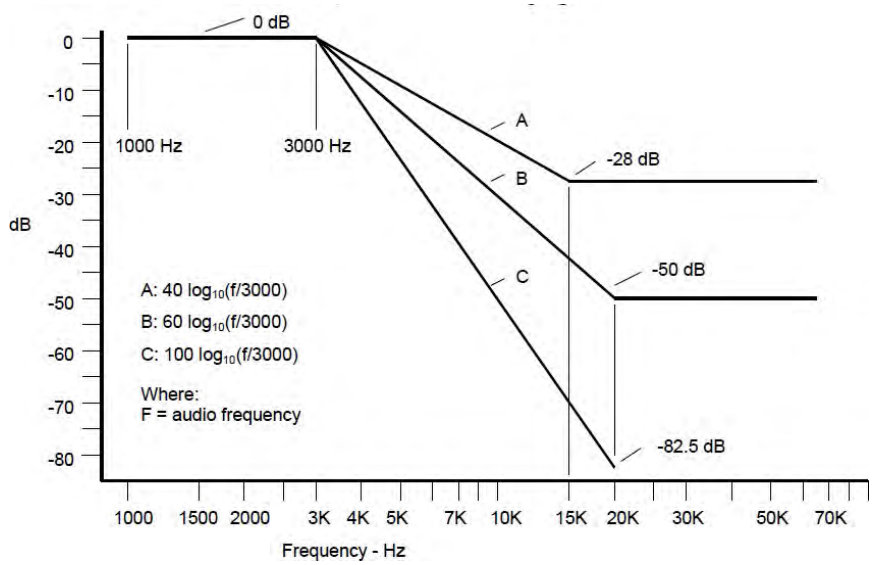


1) The DUT transmitter output port was connected to Modulation Analyzer.
2) Path loss for the measurement included.
3) Press 23.1SPCL on modulation analyzer to enable the external LO from Sigen.
4) Set the Sigen frequency to Fc + 1.5 MHz, RF output level to 0dBm without modulation.
5) Transmit the radio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

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.

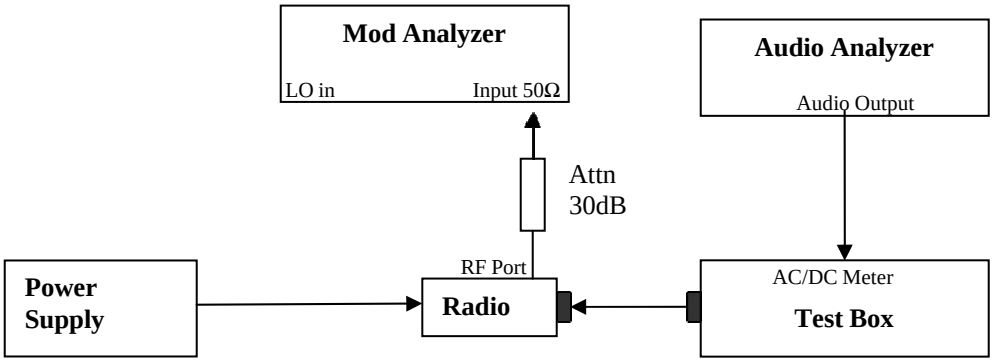
c) For equipment operating on channels between 896 MHz through 901 MHz, between 935 MHz through 940 MHz, and 12.5 or 15 kHz spaced channels in the frequency range 138-174 MHz and 406-512 MHz.

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 Applicable.

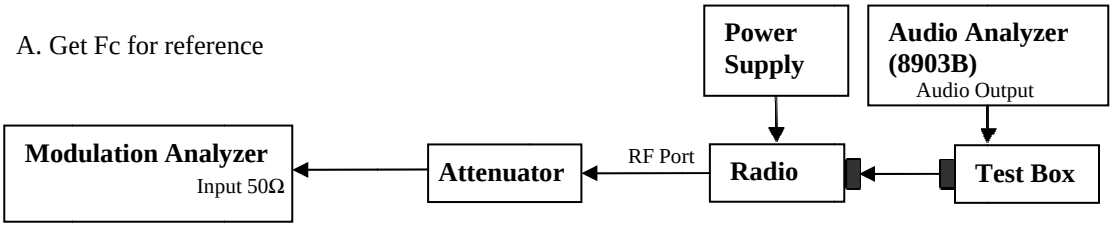
6.5.3. Test Limit

Modulation Limiting shall not exceed 100 percent.

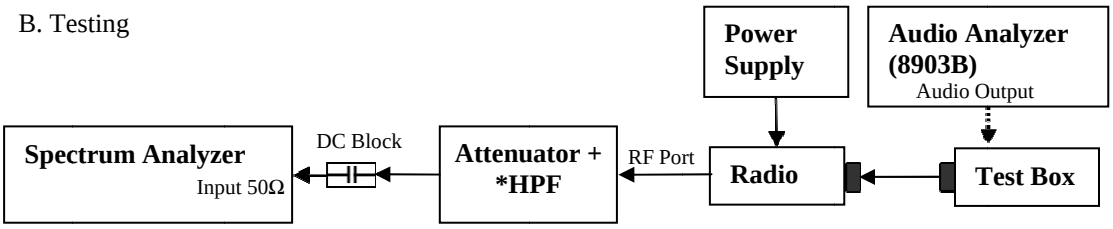
6.6. Occupied Bandwidth

6.6.1. Test Setup (Analog)

A. Get Fc for reference



B. Testing



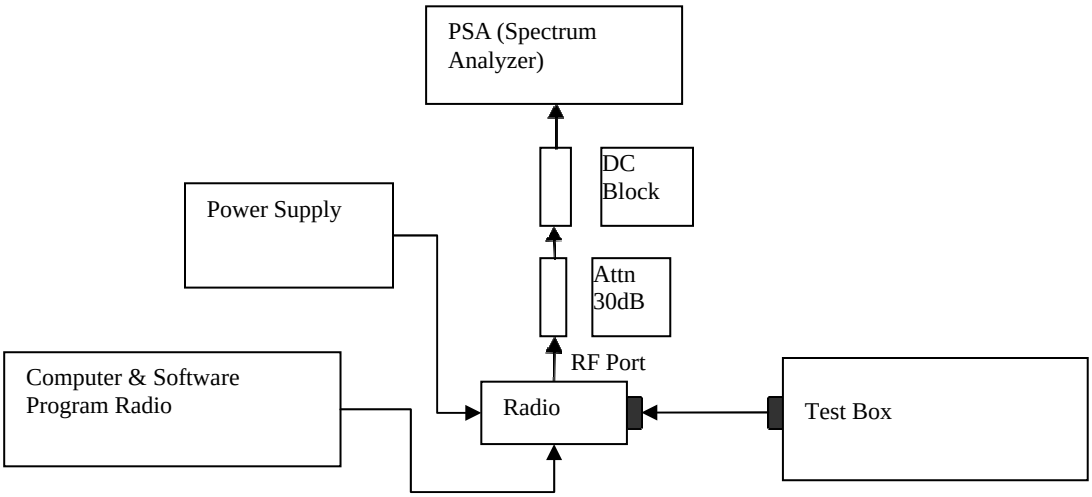
1) The DUT transmitter output port was connected to Modulation Analyzer.
2) Set the audio bandwidth filter to 15 kHz low pass filter and 50 kHz high pass filter.
3) Transmit the radio and set the audio analyzer to 2.5 kHz audio frequency and 50% of the rated deviation. Up the amplitude by 16 dB. Dekey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

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)

Not Applicable.

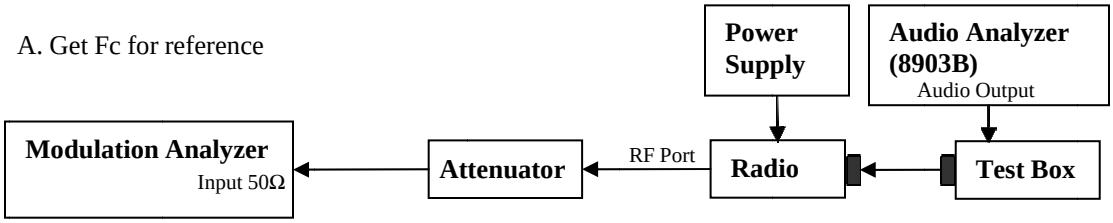
6.6.5. Test Limit

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.

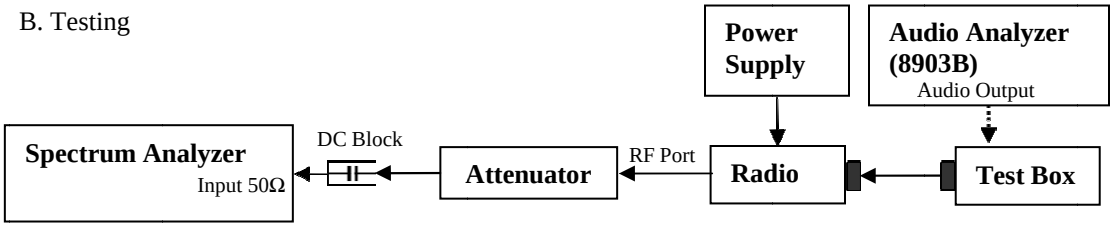
6.7. Band Edge Conducted Spurious Emission (Part 22)

6.7.1. Test Setup (Analog)

A. Get Fc for reference



B. Testing



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% and 26dB Emissions Bandwidth Measurement.
6) Key in the Fc and Resolution Bandwidth.
7) Transmit the DUT and record the occupied Bandwidth frequencies.
8) Preset the spectrum analyzer for band edge measurement.
9) The band edges of lowest and highest channels were measured.
10) Key in the Lowest and highest channel frequency, span is 60 kHz and Resolution Bandwidth is at least 1% of Emission Bandwidth.
11) Save the screen shot as modulated signal.
12) Remove the audio tone from audio analyzer to capture unmodulated signal.

*Note:

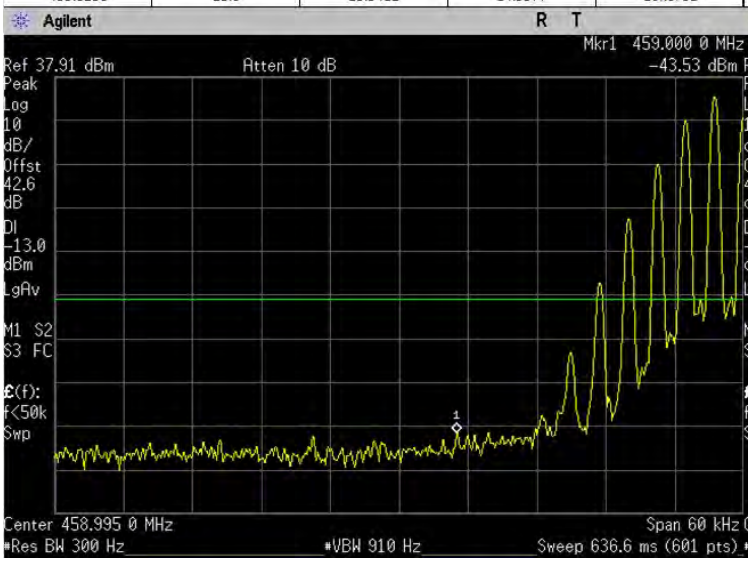
- For emission designator ending with F3E, 16K0F3E is the worst case and therefore only 16K0F3E will be shown.

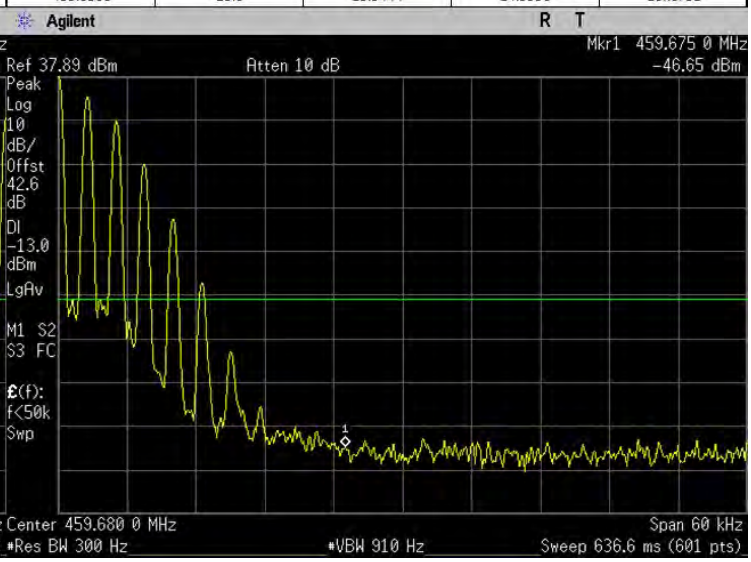
6.7.2. Test Result (Analog)

MAX POWER

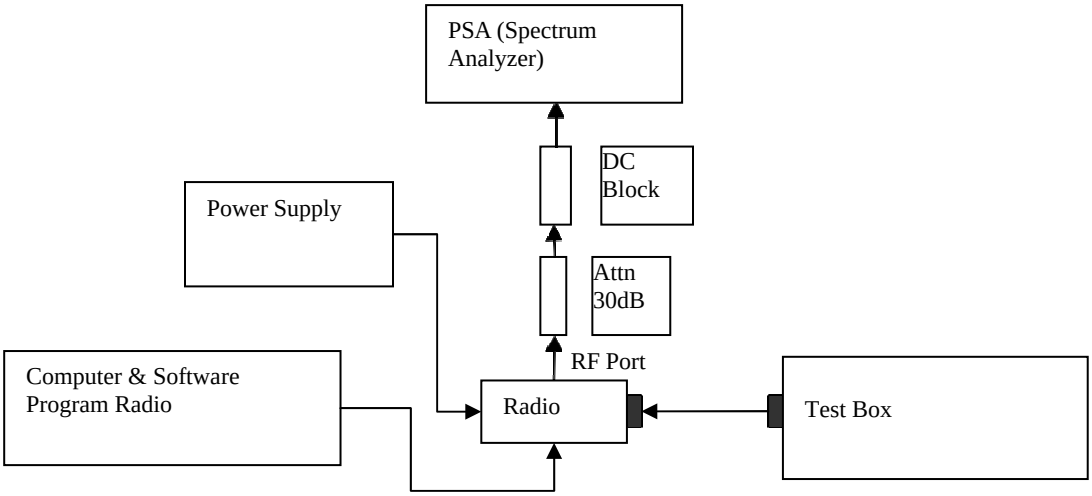
Modulation	Rules Part			
Analog Voice	FCC Part 22.359(b)			
Channel Frequency	**Channel Spacing**	**-26 dB Point (kHz)**	**99% OCB**	**Emission Designator**
459.0250	25.0	15.5412	14.9977	16K0F3E

Modulation	Rules Part			
Analog Voice	FCC Part 22.359(b)			
Channel Frequency	**Channel Spacing**	**-26 dB Point (kHz)**	**99% OCB**	**Emission Designator**
459.6500	25.0	15.5444	14.9996	16K0F3E





6.7.3. Test Setup (Digital)



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

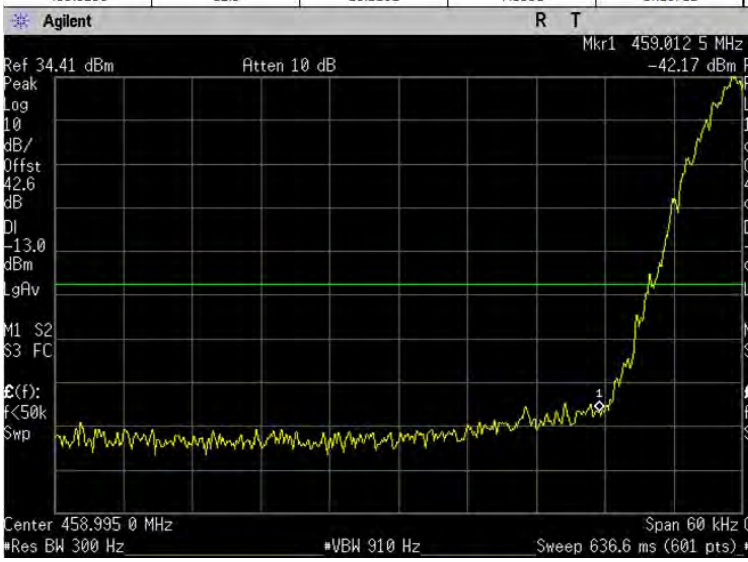
*Note:

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

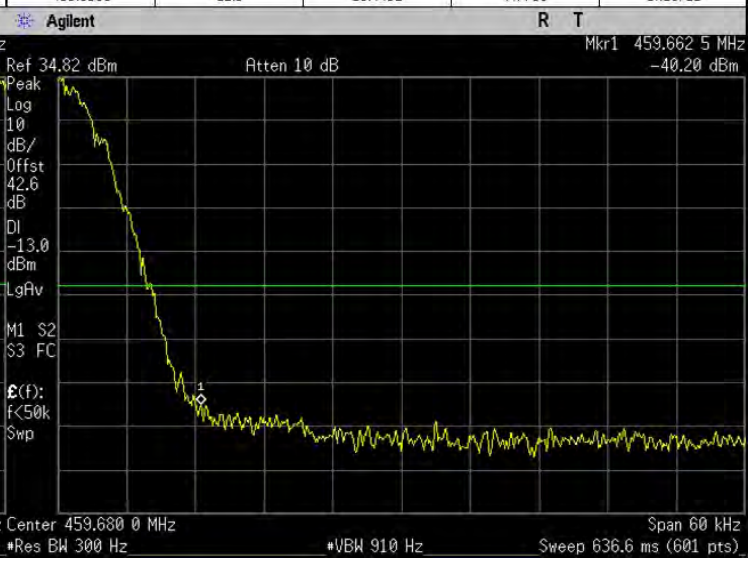
6.7.4. Test Result (Digital)

MAX POWER

Modulation	Rules Part			
C4FM Data	FCC Part 22.359(b)			
Channel Frequency	**Channel Spacing**	**-26 dB Point (kHz)**	**99% OCB**	**Emission Designator**
459.0250	12.5	10.2161	7.8551	8K10F1E

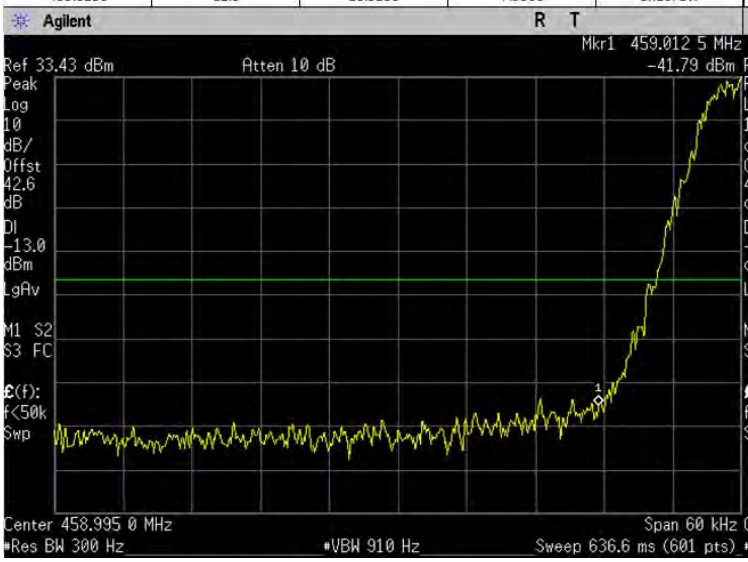


Modulation	Rules Part			
C4FM Data	FCC Part 22.359(b)			
Channel Frequency	**Channel Spacing**	**-26 dB Point (kHz)**	**99% OCB**	**Emission Designator**
459.6500	12.5	10.4492	7.7706	8K10F1E

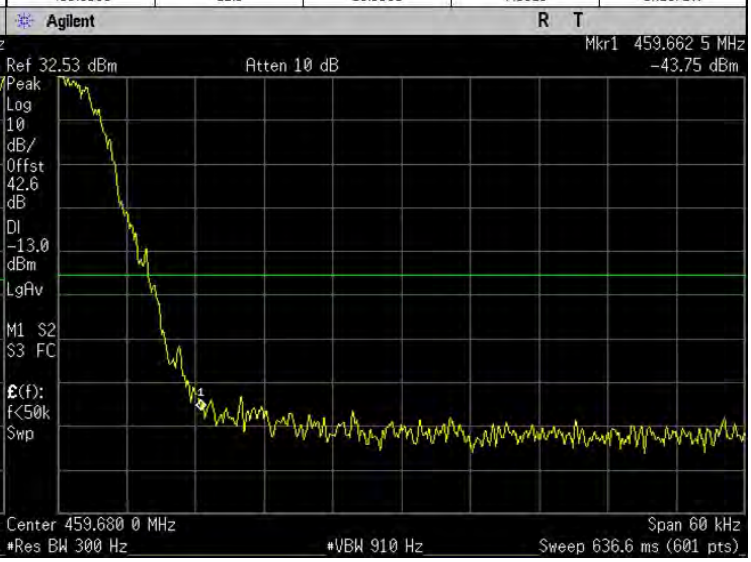


MAX POWER

Modulation	Rules Part			
Phase II	FCC Part 22.359(b)			
Channel Frequency	**Channel Spacing**	**-26 dB Point (kHz)**	**99% OCB**	**Emission Designator**
459.0250	12.5	10.3230	7.9300	8K10F1W



Modulation	Rules Part			
Phase II	FCC Part 22.359(b)			
Channel Frequency	**Channel Spacing**	**-26 dB Point (kHz)**	**99% OCB**	**Emission Designator**
459.6500	12.5	10.5568	7.8013	8K10F1W

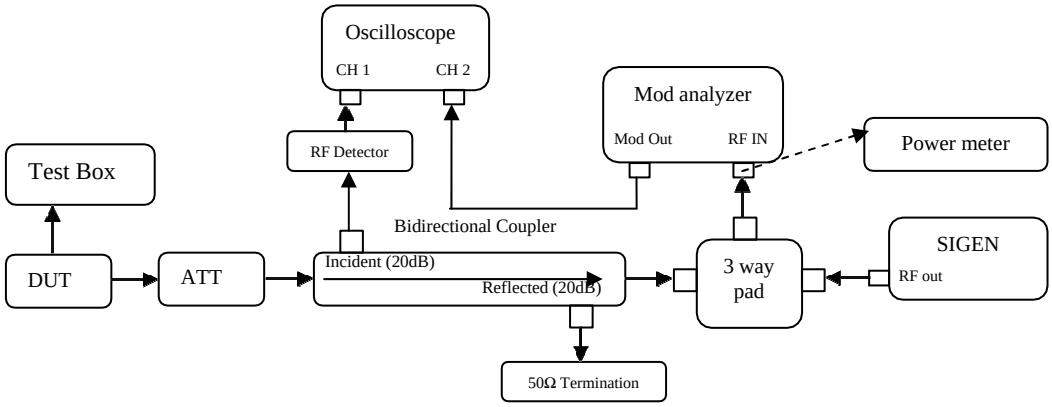


6.7.5. Test Limit

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 ≤ -11dBm into power meter when DUT is keying up.
6) Note the power level on power meter and dekey the DUT.
7) Adjust the amplitude of the signal generator to the level power meter, maintained the amplitude throughout the rest of the measurement.
8) Connect the output to modulation analyzer.
9) Reduce 30dB attenuation and transmit the radio to get the trigger line.
10) Capture the screen shot for key-up (rising edge) and de-key (falling edge) mode.

6.8.2. Test Result

Not Applicable

6.8.3. Test Limit

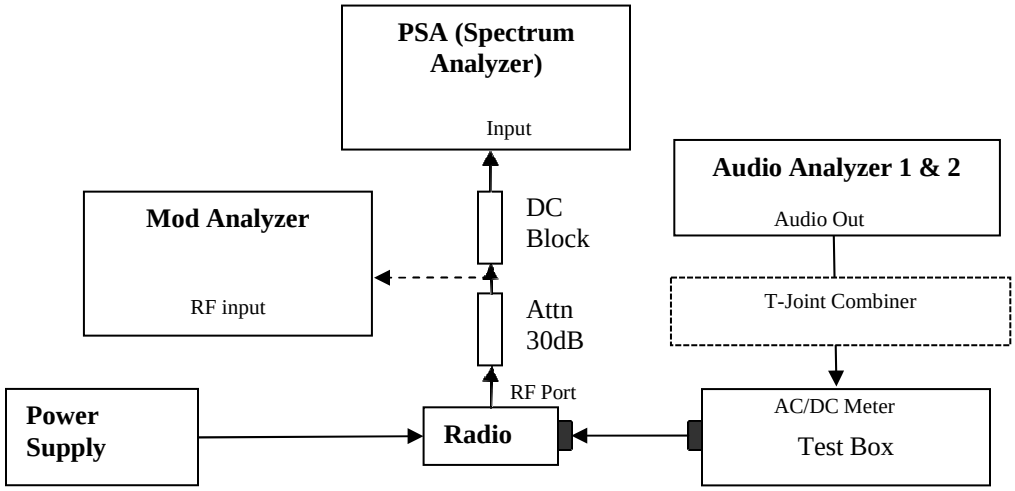
Transmitters designed to operate in the 150-174 MHz and 421-512 MHz frequency bands must maintain transient frequencies within the maximum frequency difference limits during the time intervals indicated:

Time intervals[1 2]	**Maximum frequency difference[3]**	**All equipment**	
		150 to 174 MHz	**421 to 512 MHz**
Transient Frequency Behavior for Equipment Designed to Operate on 25 kHz Channels			
t_1[4]	±25.0 kHz	5.0 ms	10.0 ms
t_2	±12.5 kHz	20.0 ms	25.0 ms
t_3[4]	±25.0 kHz	5.0 ms	10.0 ms
Transient Frequency Behavior for Equipment Designed to Operate on 12.5 kHz Channels			
t_1[4]	±12.5 kHz	5.0 ms	10.0 ms
t_2	±6.25 kHz	20.0 ms	25.0 ms
t_3[4]	±12.5 kHz	5.0 ms	10.0 ms
Transient Frequency Behavior for Equipment Designed to Operate on 6.25 kHz Channels			
t_1[4]	±6.25 kHz	5.0 ms	10.0 ms
t_2	±3.125 kHz	20.0 ms	25.0 ms
t_3[4]	±6.25 kHz	5.0 ms	10.0 ms

[1] t_{on} is the instant when a 1 kHz test signal is completely suppressed, including any capture time due to phasing.
t_1 is the time period immediately following t_{on}.
t_2 is the time period immediately following t_1.
t_3 is the time period from the instant when the transmitter is turned off until t_{off}.
t_{off} is the instant when the 1 kHz test signal starts to rise.
[2] During the time from the end of t_2 to the beginning of t_3, the frequency difference must not exceed the limits specified in §90.213.
[3] Difference between the actual transmitter frequency and the assigned transmitter frequency.
[4] 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)

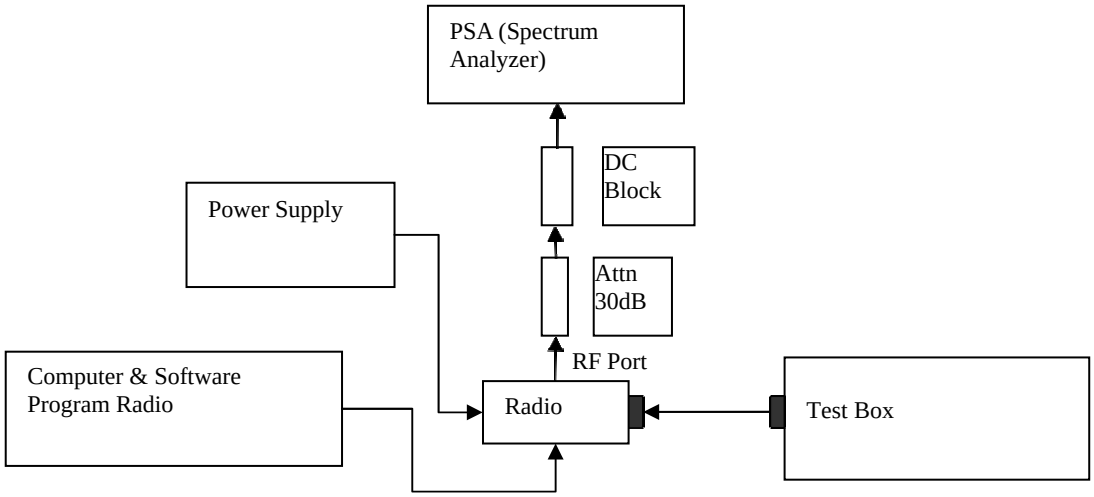


1) The DUT transmitter output port was connected to modulation analyzer.
2) Transmit the radio and turn on 1st audio analyzer with audio frequency 650Hz, 50% rated deviation, and record the amplitude value as AmpT1.
3) Turn off Audio analyzer 1 and turn on audio analyzer 2, set the audio frequency to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

6.9.2. Test Result

Not Applicable.

6.9.3. Test Setup (Digital)



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

6.9.4. Test Result

Not Applicable.

6.9.5. Test Limit

12.5 kHz Mobile Transmitter ACP Requirements

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

25 kHz Mobile Transmitter ACP Requirements

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

12.5 kHz Base Transmitter ACP Requirements

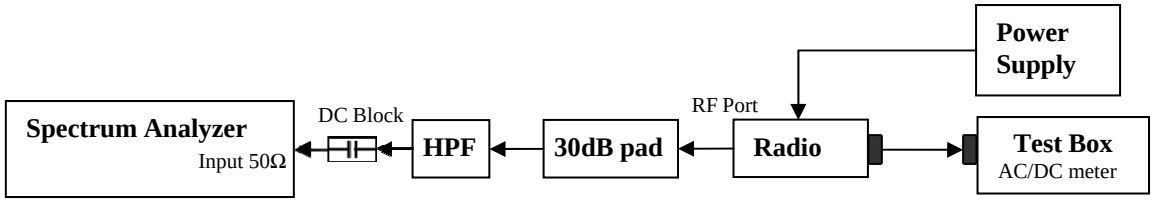
Offset from center frequency (kHz)	Measurement bandwidth (kHz)	Maximum ACP (dBc)
9.375	6.25	−40
15.625	6.25	−60
21.875	6.25	−60
37.5	25	−60
62.5	25	−65
87.5	25	−65
150	100	−65
250	100	−65
350.00	100	−65
>400 kHz to 12 MHz	30 (s)	−80
12 MHz to paired receive band	30 (s)	−80
In the paired receive band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

25 kHz Base Transmitter ACP Requirements

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

6.10. Conducted Spurious Emission

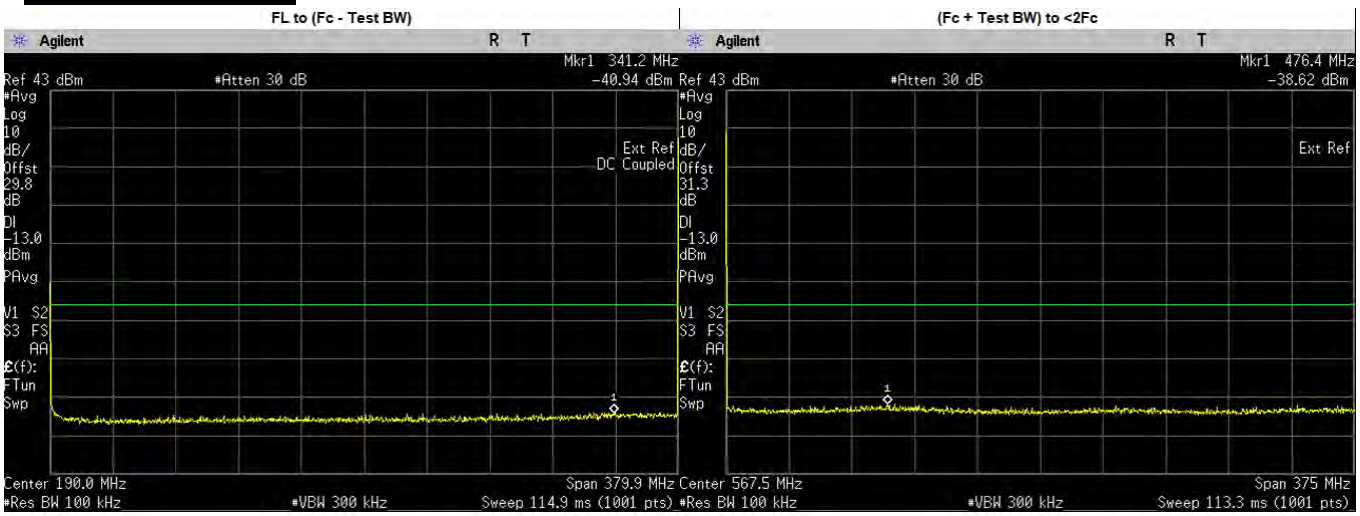
6.10.1. Test Setup

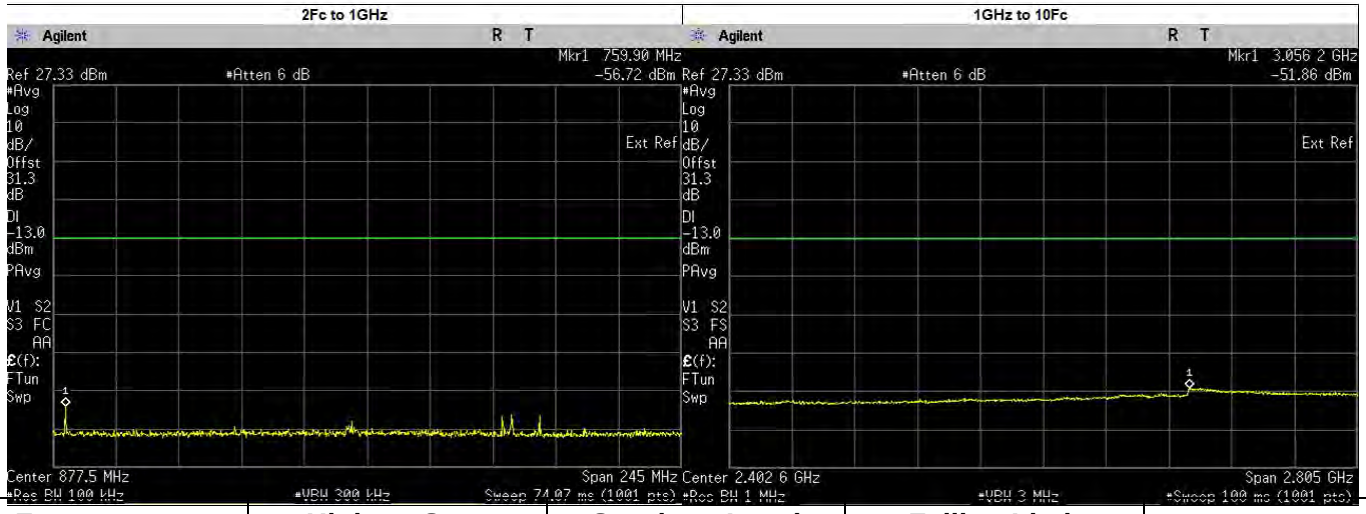


1) The DUT transmitter output port was connected to Spectrum Analyzer with above setup.
2) Program and set radio to operate in desire test frequency and mode. (Analog / digital modulation form).
3) Path loss for the measurement included.
4) Set the PSA Resolution Bandwidth as per rules part.
5) Set the Ref offset from the pathloss offset calibration file.
6) Adjust the center frequency of the spectrum analyzer for incremental coverage of the range from:
    a. 9 KHz to Fc – Test Bandwidth
    b. Fc + Test Bandwidth to 2Fc – 5MHz.
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 2Fc to 10Fc
11) Key up the DUT and record the highest spur levels of spurious emissions.

6.10.2. Test Result (Analog)

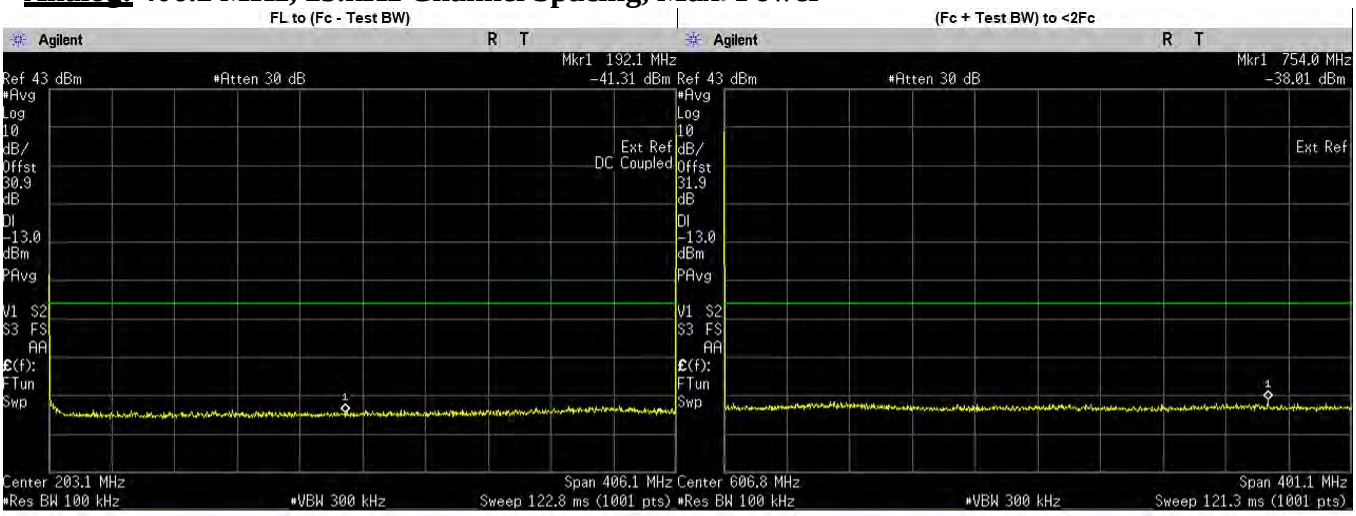
<u>Analog:</u> 380.0125 MHz, 25.kHz Channel Spacing, Max. Power
<u>Not for FCC review</u>

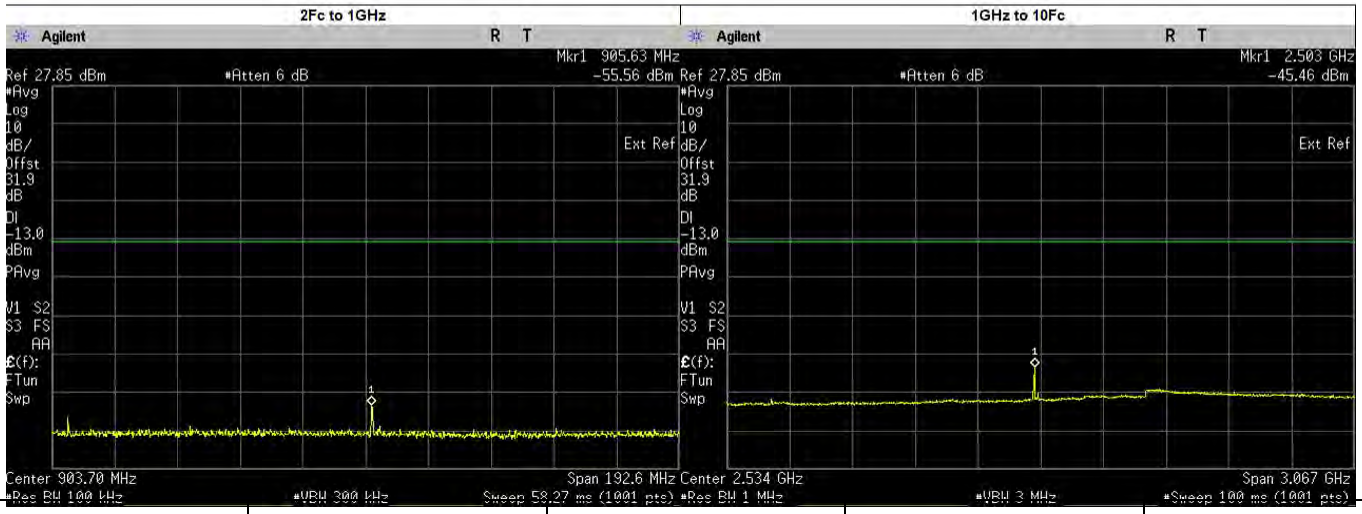




Frequency Range	Highest Spur Frequency (MHz)	Spurious Level (dBm)	Failing Limit (dBm)	Results
FL to (Fc - Test BW)	341.2000	-40.9400	-13.00	PASS
(Fc + Test BW) to <2Fc	476.4320	-38.6200	-13.00	PASS
2Fc to 1GHz	759.9000	-56.7200	-13.00	PASS
	760.0250	-56.9500	-13.00	PASS
1GHz to 10Fc	3056.2000	-51.8600	-13.00	PASS
	1140.0370	-55.2257	-13.00	PASS
	1520.0500	-55.6676	-13.00	PASS
	1900.0620	-55.3475	-13.00	PASS
	2280.0750	-55.0105	-13.00	PASS
	2660.0880	-54.3414	-13.00	PASS
	3040.1000	-53.7225	-13.00	PASS
	3420.1130	-53.2518	-13.00	PASS
	3800.1250	-53.4636	-13.00	PASS

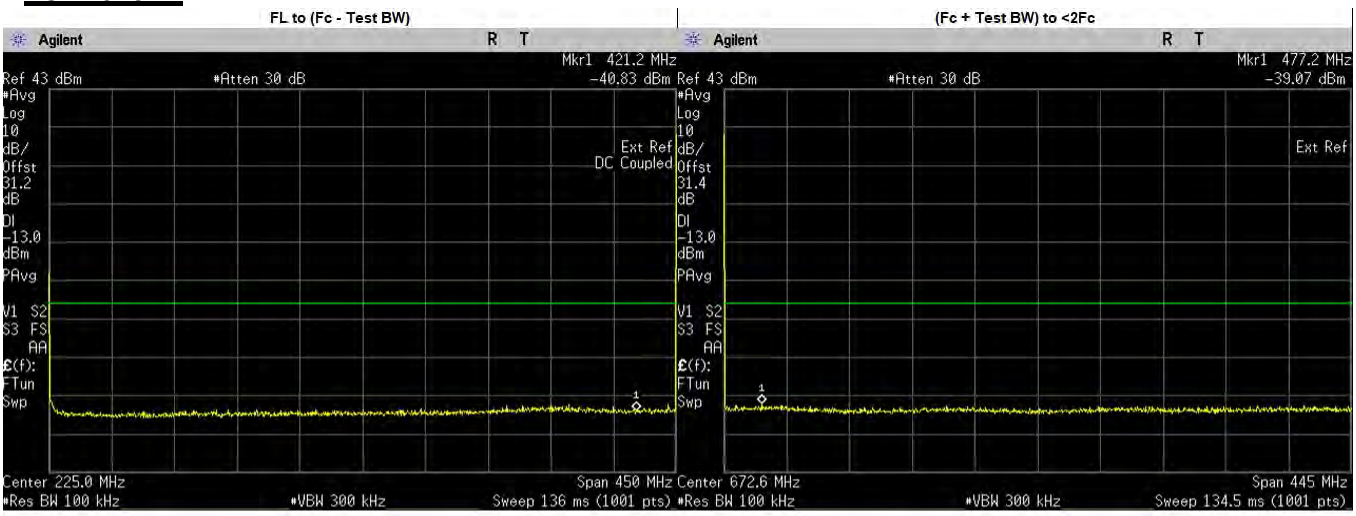
<u>Analog:</u> 406.2 MHz, 25.kHz Channel Spacing, Max. Power

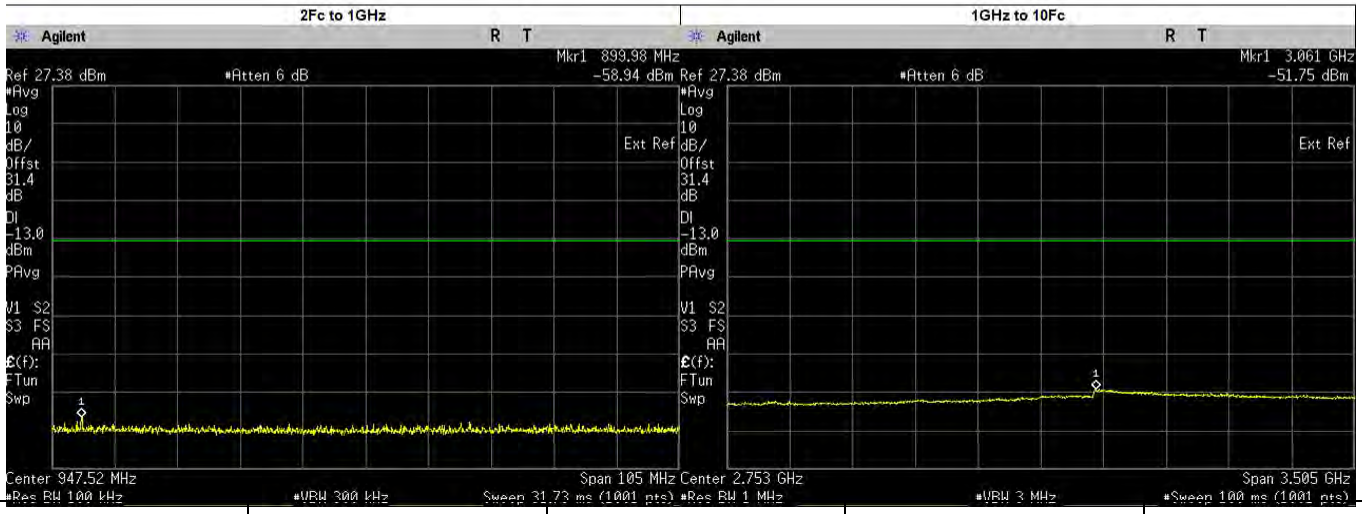




Frequency Range	Highest Spur Frequency (MHz)	Spurious Level (dBm)	Failing Limit (dBm)	Results
FL to (Fc - Test BW)	192.1000	-41.3100	-13.00	PASS
(Fc + Test BW) to <2Fc	754.0478	-38.0100	-13.00	PASS
2Fc to 1GHz	905.6300	-55.5600	-13.00	PASS
	812.4000	-58.7749	-13.00	PASS
1GHz to 10Fc	2503.0000	-45.4600	-13.00	PASS
	1218.6000	-54.2029	-13.00	PASS
	1624.8000	-55.1654	-13.00	PASS
	2031.0000	-54.5292	-13.00	PASS
	2437.2000	-54.3507	-13.00	PASS
	2843.4000	-53.3558	-13.00	PASS
	3249.6000	-52.2229	-13.00	PASS
	3655.8000	-52.9781	-13.00	PASS
	4062.0000	-53.2712	-13.00	PASS

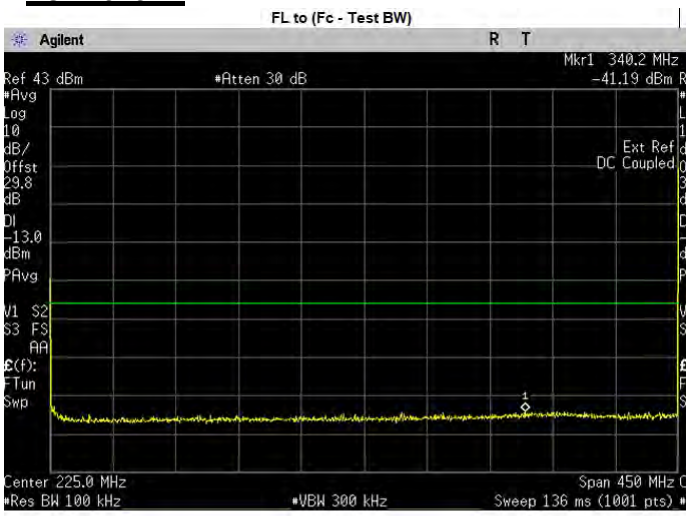
<u>Analog:</u> 450.025 MHz, 25.kHz Channel Spacing, Max. Power <u>For Part 74</u>

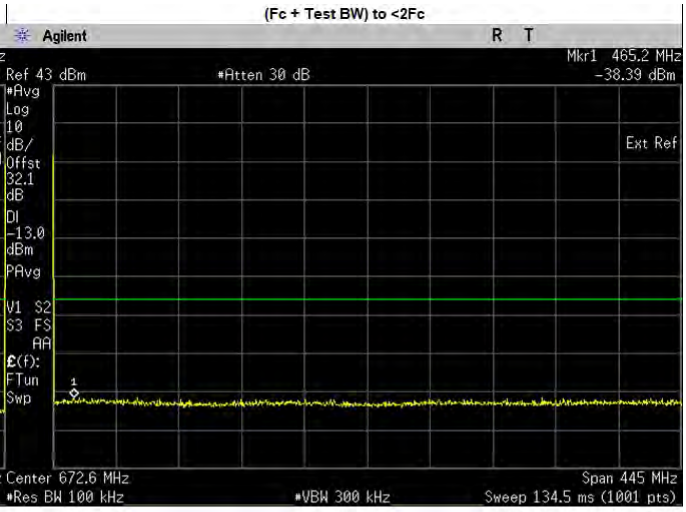


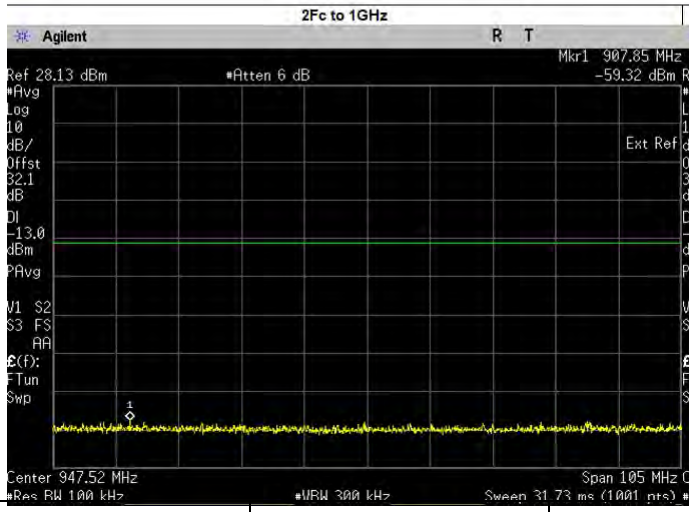


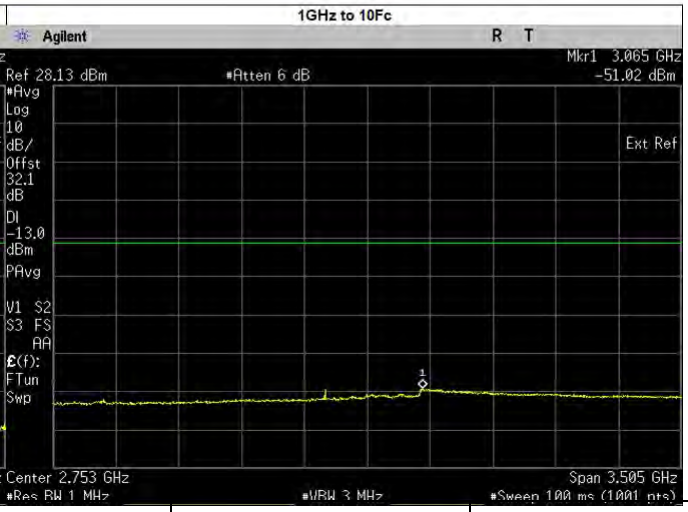
Frequency Range	Highest Spur Frequency (MHz)	Spurious Level (dBm)	Failing Limit (dBm)	Results
FL to (Fc - Test BW)	421.2000	-40.8330	-13.00	PASS
(Fc + Test BW) to <2Fc	477.2249	-39.0700	-13.00	PASS
2Fc to 1GHz	899.9827	-58.9400	-13.00	PASS
	900.0500	-58.9806	-13.00	PASS
1GHz to 10Fc	3061.0870	-51.7500	-13.00	PASS
	1350.0750	-55.0433	-13.00	PASS
	1800.1000	-55.2468	-13.00	PASS
	2250.1250	-54.8672	-13.00	PASS
	2700.1500	-54.1541	-13.00	PASS
	3150.1750	-52.1997	-13.00	PASS
	3600.2000	-53.3387	-13.00	PASS
	4050.2250	-53.9175	-13.00	PASS
	4500.2500	-54.0496	-13.00	PASS

<u>Analog:</u> 450.025 MHz, 25.kHz Channel Spacing, Low. Power <u>For Part 74</u>





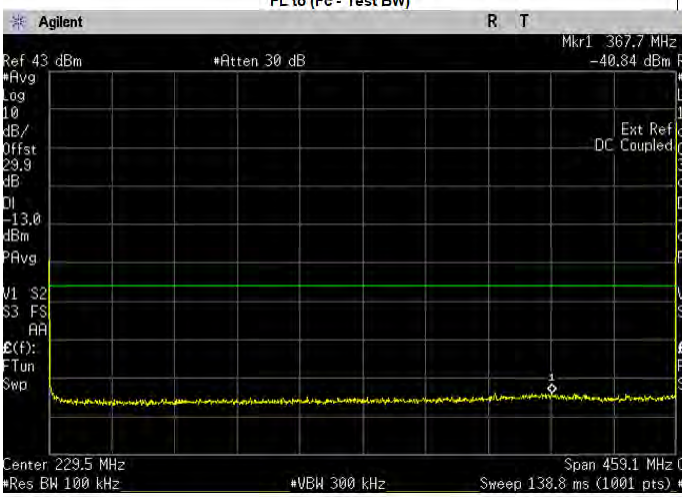




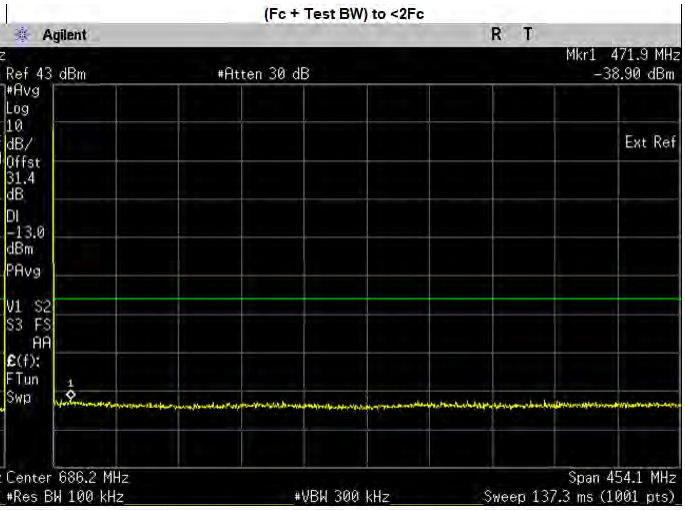
Frequency Range	Highest Spur Frequency (MHz)	Spurious Level (dBm)	Failing Limit (dBm)	Results
FL to (Fc - Test BW)	340.2000	-41.1900	-13.00	PASS
(Fc + Test BW) to <2Fc	465.2107	-38.3900	-13.00	PASS
2Fc to 1GHz	907.8539	-59.3200	-13.00	PASS
	900.0500	-60.6465	-13.00	PASS
1GHz to 10Fc	3065.0000	-51.0200	-13.00	PASS
	1350.0750	-54.6948	-13.00	PASS
	1800.1000	-54.4853	-13.00	PASS
	2250.1250	-53.9948	-13.00	PASS
	2700.1500	-53.5415	-13.00	PASS
	3150.1750	-51.5449	-13.00	PASS
	3600.2000	-52.8249	-13.00	PASS
	4050.2250	-53.2656	-13.00	PASS
	4500.2500	-53.3858	-13.00	PASS

<u>Analog:</u> 459.125 MHz, 25.kHz Channel Spacing, Max. Power <u>For Part 22</u>

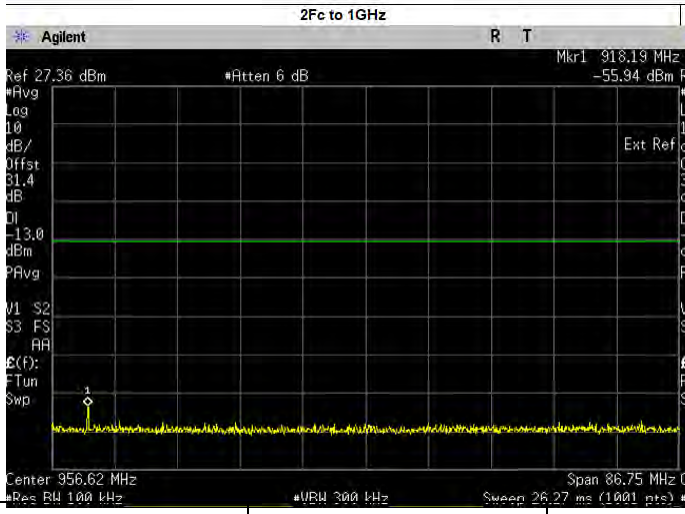
FL to (Fc - Test BW)



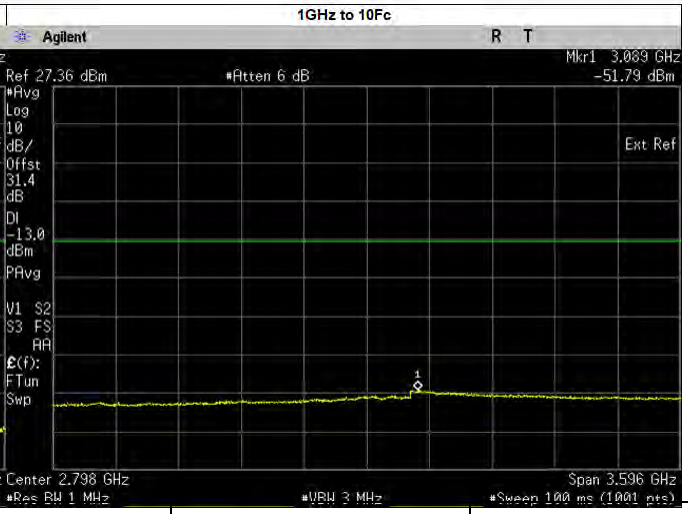
(Fc + Test BW) to <2Fc



2Fc to 1GHz

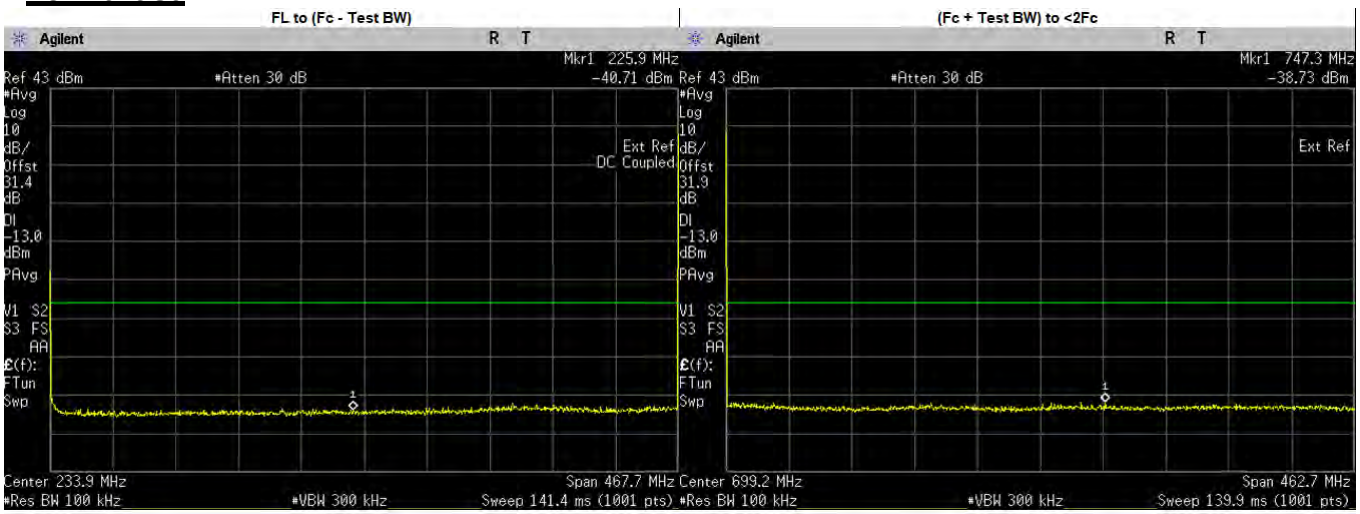


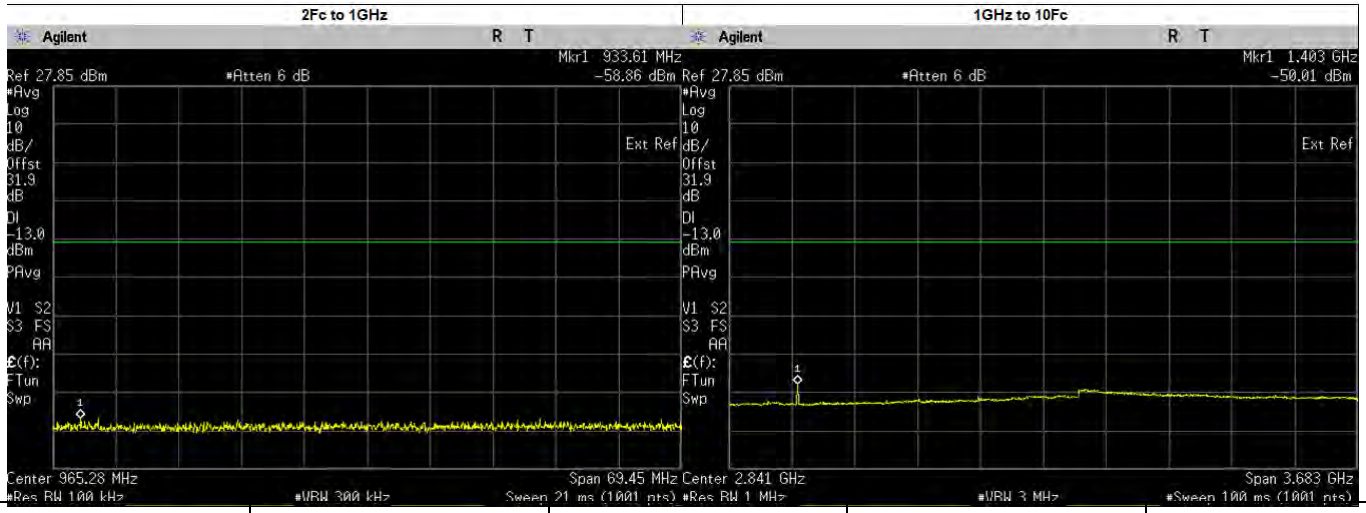
1GHz to 10Fc



Frequency Range	Highest Spur Frequency (MHz)	Spurious Level (dBm)	Failing Limit (dBm)	Results
FL to (Fc - Test BW)	367.7000	-40.8400	-13.00	PASS
(Fc + Test BW) to <2Fc	471.9000	-38.9000	-13.00	PASS
2Fc to 1GHz	918.1947	-55.9400	-13.00	PASS
	918.2500	-56.3172	-13.00	PASS
1GHz to 10Fc	3089.4210	-51.7900	-13.00	PASS
	1377.3750	-54.8219	-13.00	PASS
	1836.5000	-55.4377	-13.00	PASS
	2295.6250	-54.9400	-13.00	PASS
	2754.7500	-53.5913	-13.00	PASS
	3213.8750	-52.7667	-13.00	PASS
	3673.0000	-53.2595	-13.00	PASS
	4132.1250	-53.9201	-13.00	PASS
	4591.2500	-53.8403	-13.00	PASS

<u>Analog:</u> 467.775 MHz, 25.kHz Channel Spacing, Max. Power
<u>For Part 80</u>

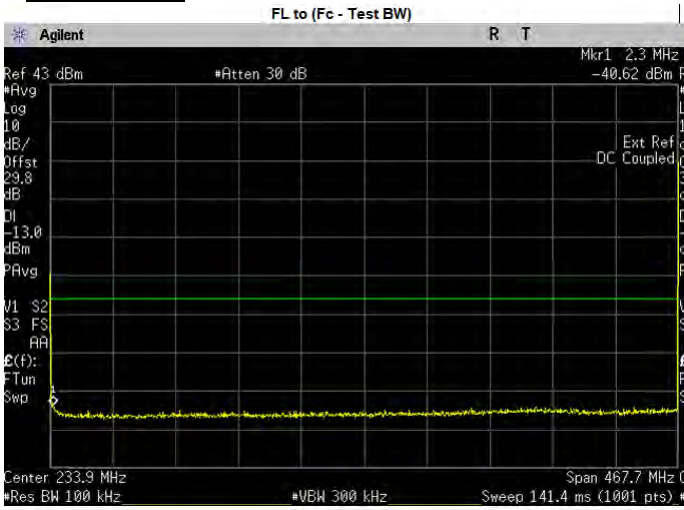




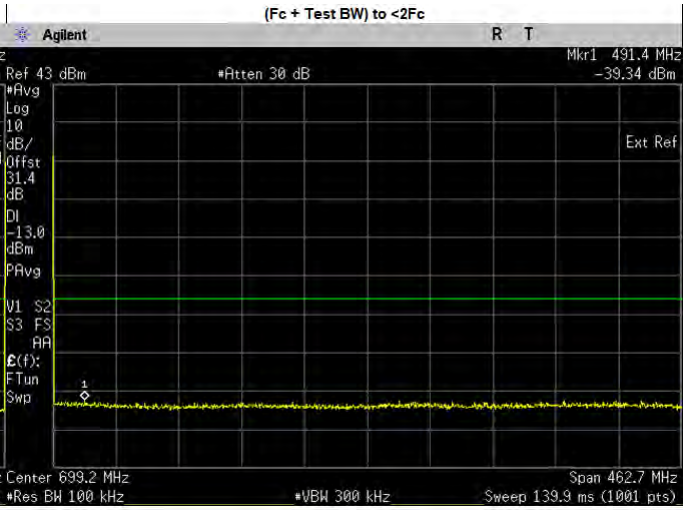
Frequency Range	Highest Spur Frequency (MHz)	Spurious Level (dBm)	Failing Limit (dBm)	Results
FL to (Fc - Test BW)	225.9000	-40.7120	-13.00	PASS
(Fc + Test BW) to <2Fc	747.3136	-38.7300	-13.00	PASS
2Fc to 1GHz	933.6100	-58.8600	-13.00	PASS
	935.5500	-58.9252	-13.00	PASS
1GHz to 10Fc	1403.3250	-50.0100	-13.00	PASS
	1871.1000	-54.7762	-13.00	PASS
	2338.8750	-54.4303	-13.00	PASS
	2806.6500	-53.3437	-13.00	PASS
	3274.4250	-52.2509	-13.00	PASS
	3742.2000	-52.8126	-13.00	PASS
	4209.9750	-53.3753	-13.00	PASS
	4677.7500	-53.6847	-13.00	PASS

<u>Analog:</u> 467.775 MHz, 25.kHz Channel Spacing, Low. Power
<u>For Part 80</u>

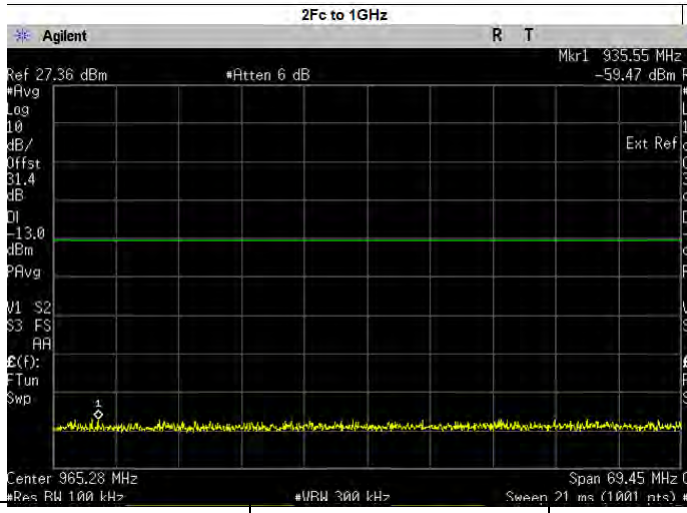
FL to (Fc - Test BW)



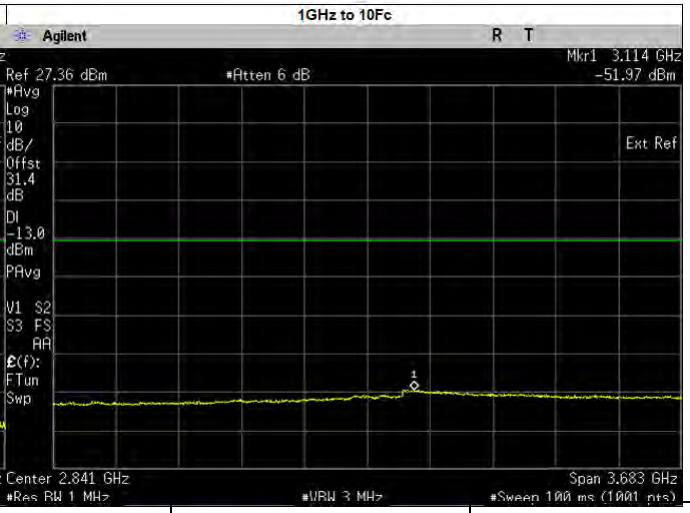
(Fc + Test BW) to <2Fc



2Fc to 1GHz

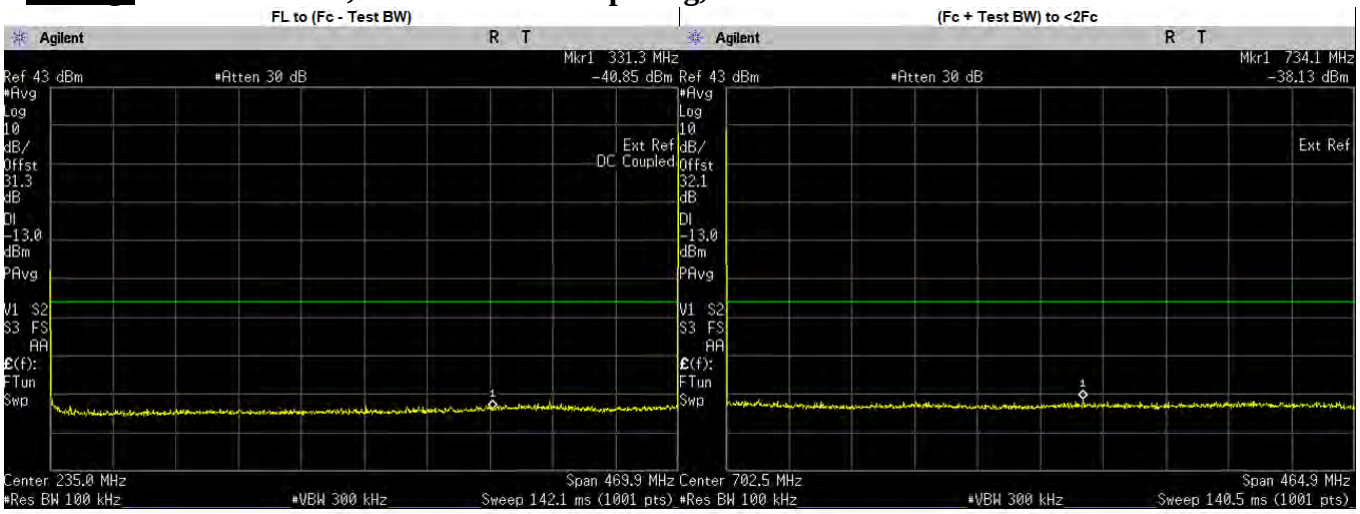


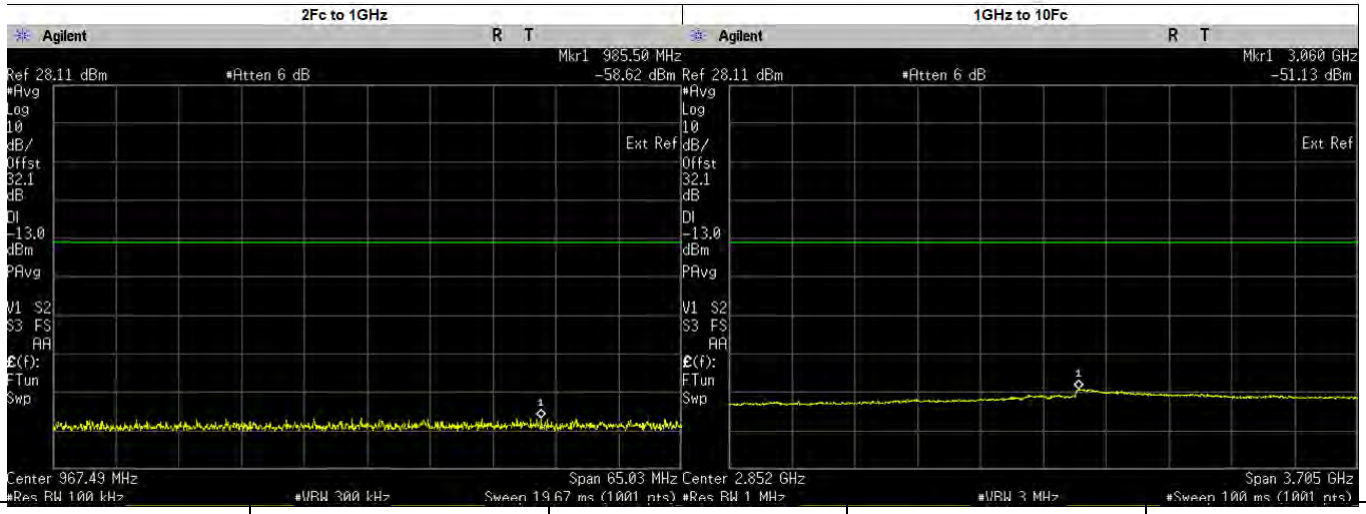
1GHz to 10Fc



Frequency Range	Highest Spur Frequency (MHz)	Spurious Level (dBm)	Failing Limit (dBm)	Results
FL to (Fc - Test BW)	2.3000	-40.6190	-13.00	PASS
(Fc + Test BW) to <2Fc	491.4304	-39.3400	-13.00	PASS
2Fc to 1GHz	935.5500	-59.4700	-13.00	PASS
1GHz to 10Fc	3114.0000	-51.9700	-13.00	PASS
	1403.3250	-55.7255	-13.00	PASS
	1871.1000	-55.3127	-13.00	PASS
	2338.8750	-54.8313	-13.00	PASS
	2806.6500	-53.9256	-13.00	PASS
	3274.4250	-52.7862	-13.00	PASS
	3742.2000	-53.1575	-13.00	PASS
	4209.9750	-53.6689	-13.00	PASS
	4677.7500	-53.9739	-13.00	PASS

Analog: 469.9875 MHz, 25.kHz Channel Spacing, Max. Power

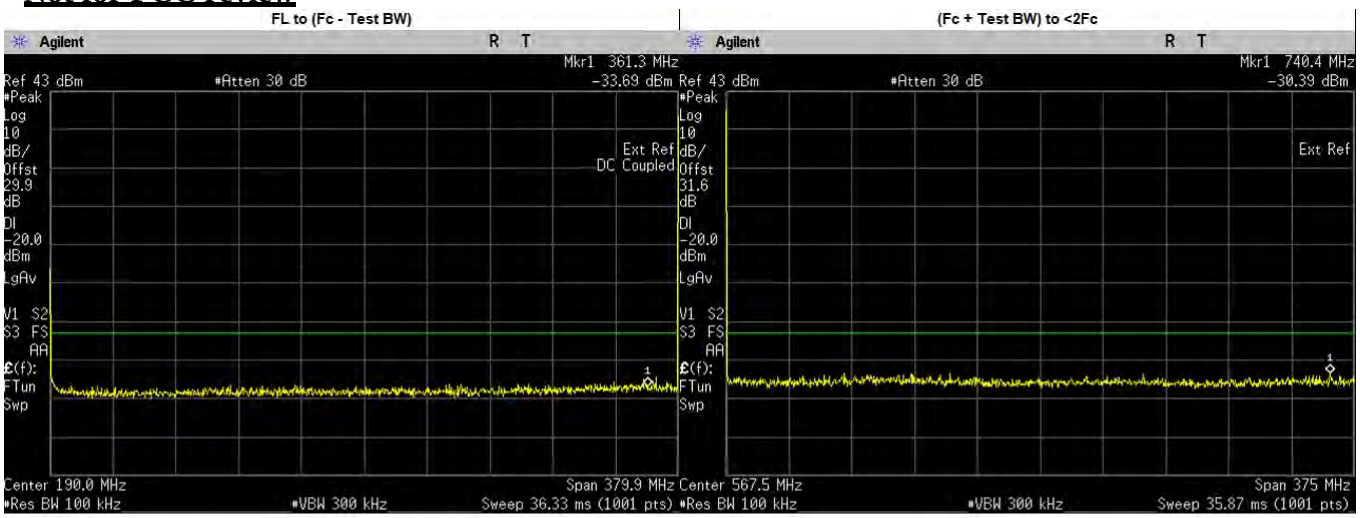


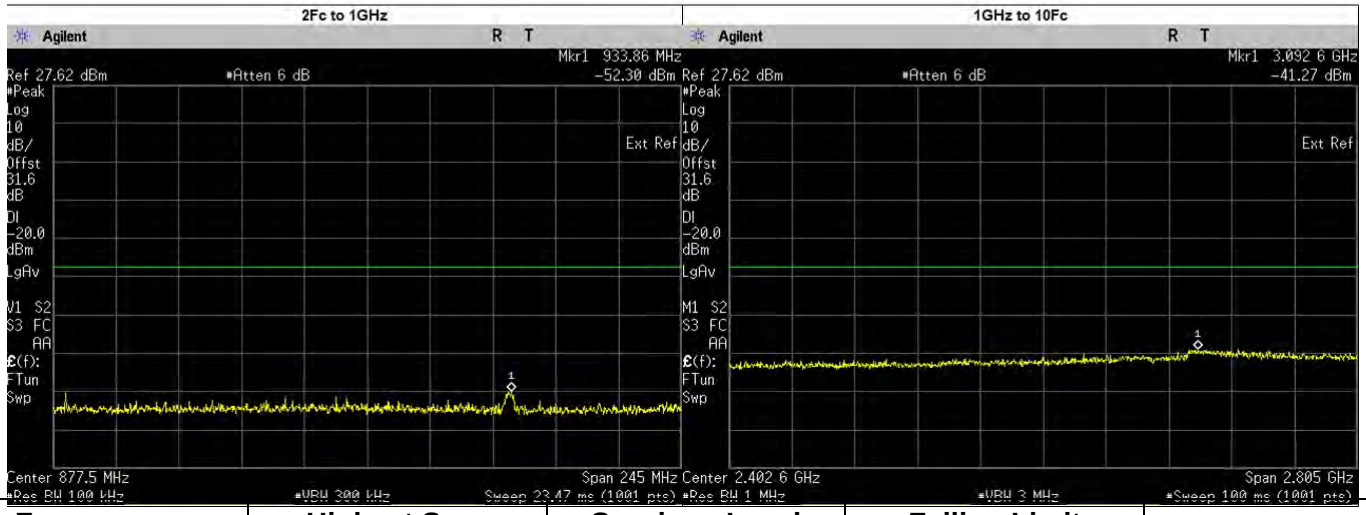


Frequency Range	Highest Spur Frequency (MHz)	Spurious Level (dBm)	Failing Limit (dBm)	Results
FL to (Fc - Test BW)	331.3000	-40.8540	-13.00	PASS
(Fc + Test BW) to <2Fc	734.1249	-38.1300	-13.00	PASS
2Fc to 1GHz	985.5000	-58.6200	-13.00	PASS
	939.9750	-59.3325	-13.00	PASS
1GHz to 10Fc	3060.0000	-51.1300	-13.00	PASS
	1409.9630	-54.4986	-13.00	PASS
	1879.9500	-54.4276	-13.00	PASS
	2349.9370	-54.0464	-13.00	PASS
	2819.9250	-52.8534	-13.00	PASS
	3289.9120	-51.8486	-13.00	PASS
	3759.9000	-52.5956	-13.00	PASS
	4229.8870	-52.9710	-13.00	PASS
	4699.8750	-53.3967	-13.00	PASS

6.10.3. Test Result (Digital)

Digital.: 380.0125. MHz, 12.5 kHz Channel Spacing, Max. Power
Not for FCC review

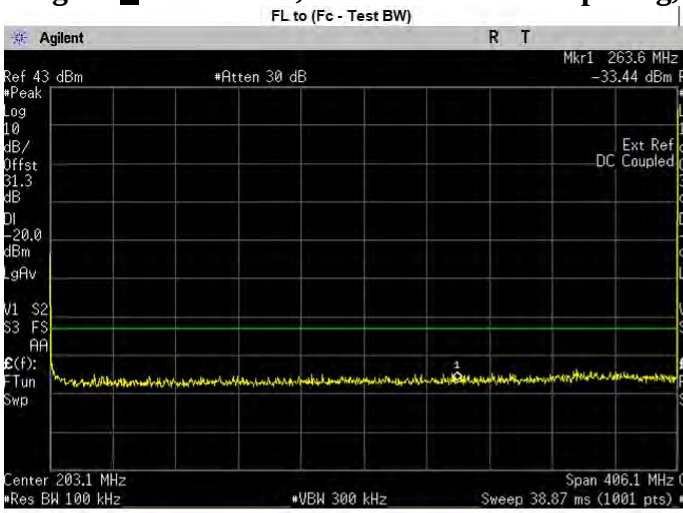




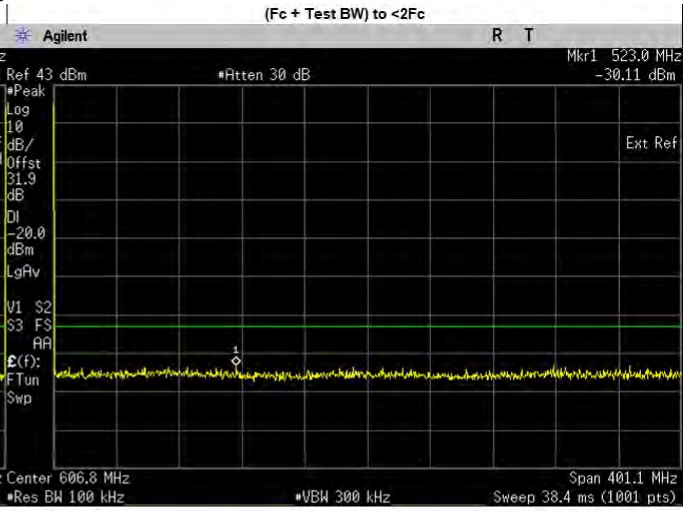
Frequency Range	Highest Spur Frequency (MHz)	Spurious Level (dBm)	Failing Limit (dBm)	Results
FL to (Fc - Test BW)	361.3000	-33.6910	-20.00	PASS
(Fc + Test BW) to <2Fc	740.4017	-30.3900	-20.00	PASS
2Fc to 1GHz	933.8600	-52.3000	-20.00	PASS
	760.0250	-53.6100	-20.00	PASS
1GHz to 10Fc	3092.6000	-41.2700	-20.00	PASS
	1140.0370	-46.0075	-20.00	PASS
	1520.0500	-45.7817	-20.00	PASS
	1900.0620	-45.7986	-20.00	PASS
	2280.0750	-45.6566	-20.00	PASS
	2660.0880	-43.8940	-20.00	PASS
	3040.1000	-43.6620	-20.00	PASS
	3420.1130	-42.4129	-20.00	PASS
	3800.1250	-43.6591	-20.00	PASS

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

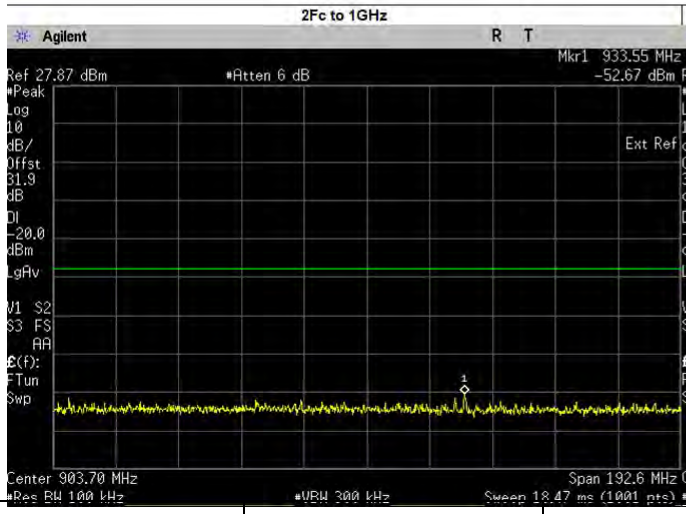
FL to (Fc - Test BW)



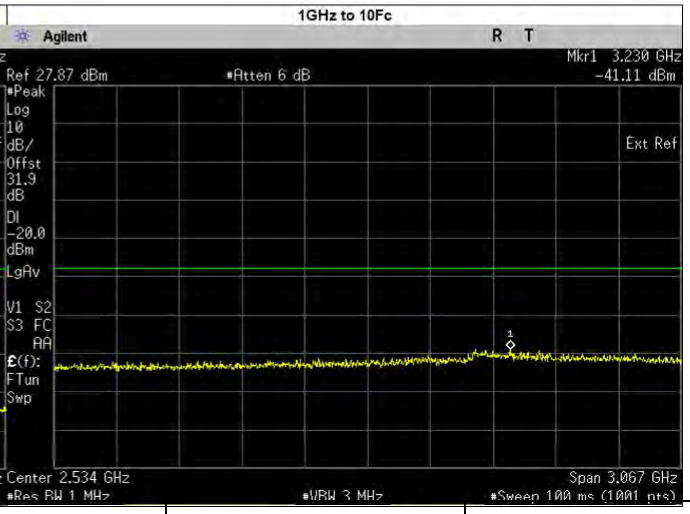
(Fc + Test BW) to <2Fc



2Fc to 1GHz

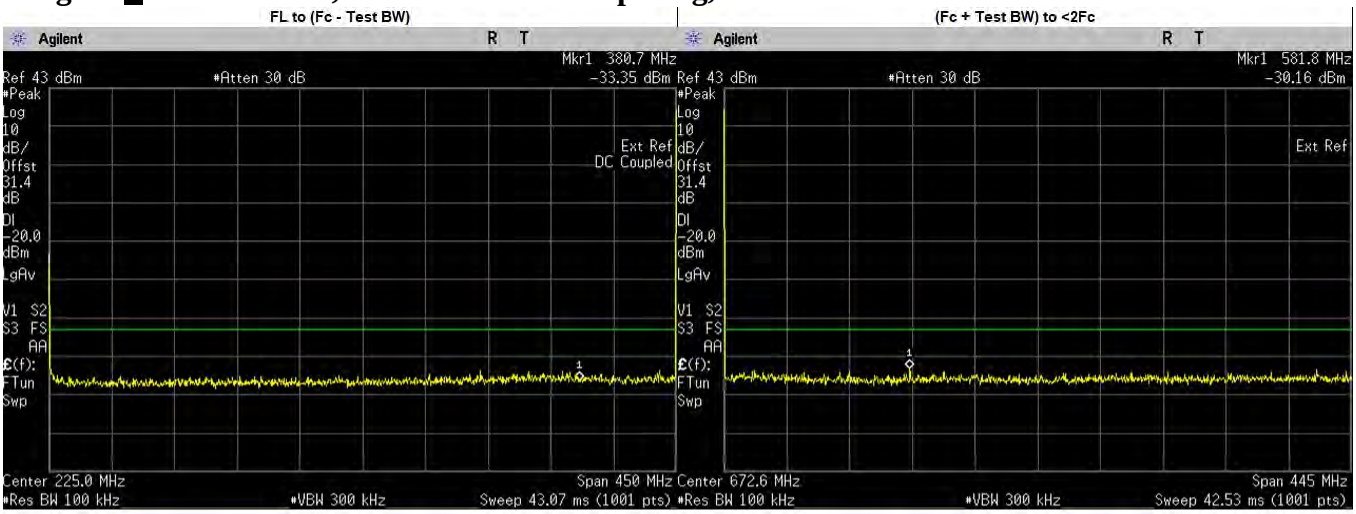


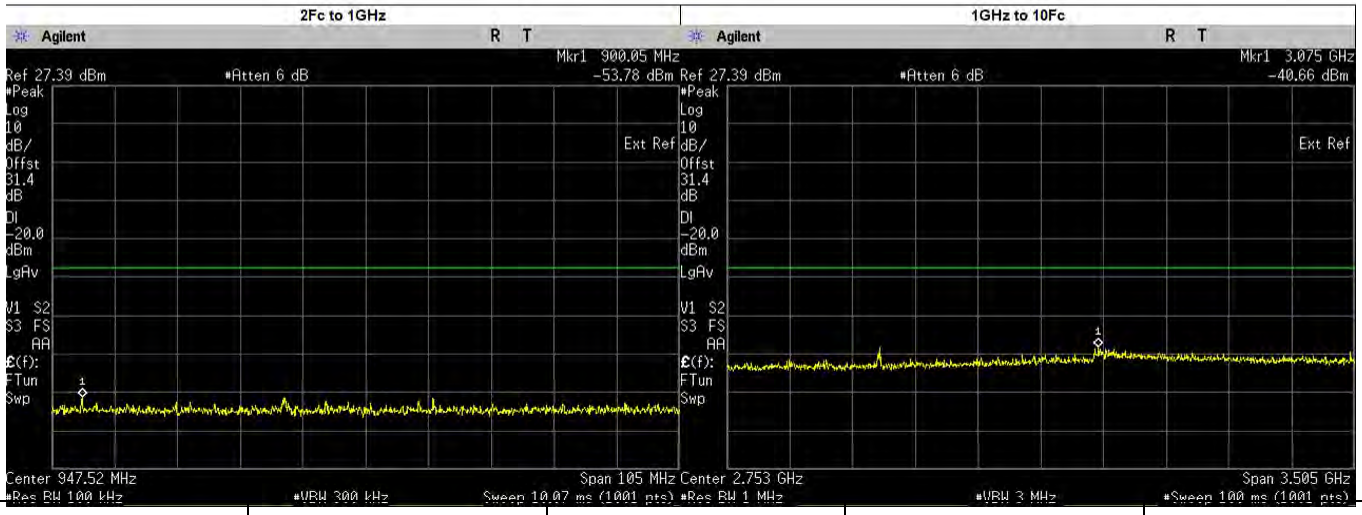
1GHz to 10Fc



Frequency Range	Highest Spur Frequency (MHz)	Spurious Level (dBm)	Failing Limit (dBm)	Results
FL to (Fc - Test BW)	263.6000	-33.4350	-20.00	PASS
(Fc + Test BW) to <2Fc	523.0000	-30.1100	-20.00	PASS
2Fc to 1GHz	933.5530	-52.6700	-20.00	PASS
	812.4000	-53.8114	-20.00	PASS
1GHz to 10Fc	3230.0000	-41.1100	-20.00	PASS
	1218.6000	-45.1956	-20.00	PASS
	1624.8000	-45.7328	-20.00	PASS
	2031.0000	-44.9571	-20.00	PASS
	2437.2000	-45.1720	-20.00	PASS
	2843.4000	-43.9230	-20.00	PASS
	3249.6000	-43.1623	-20.00	PASS
	3655.8000	-43.6088	-20.00	PASS
	4062.0000	-43.1938	-20.00	PASS

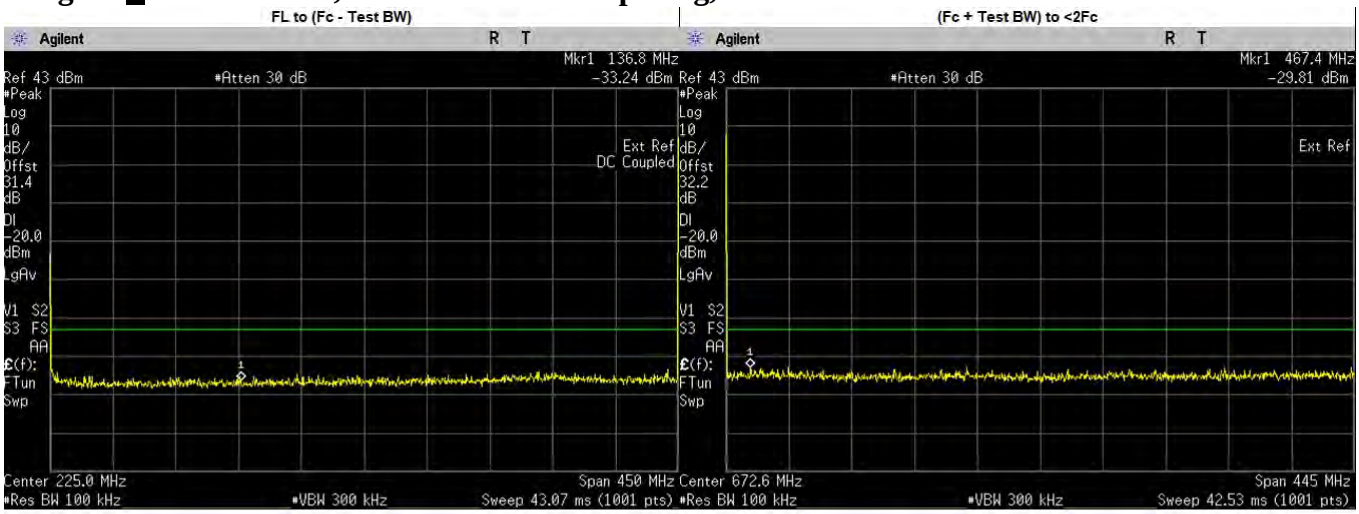
Digital.: 450.025. MHz, 12.5 kHz Channel Spacing, Max. Power

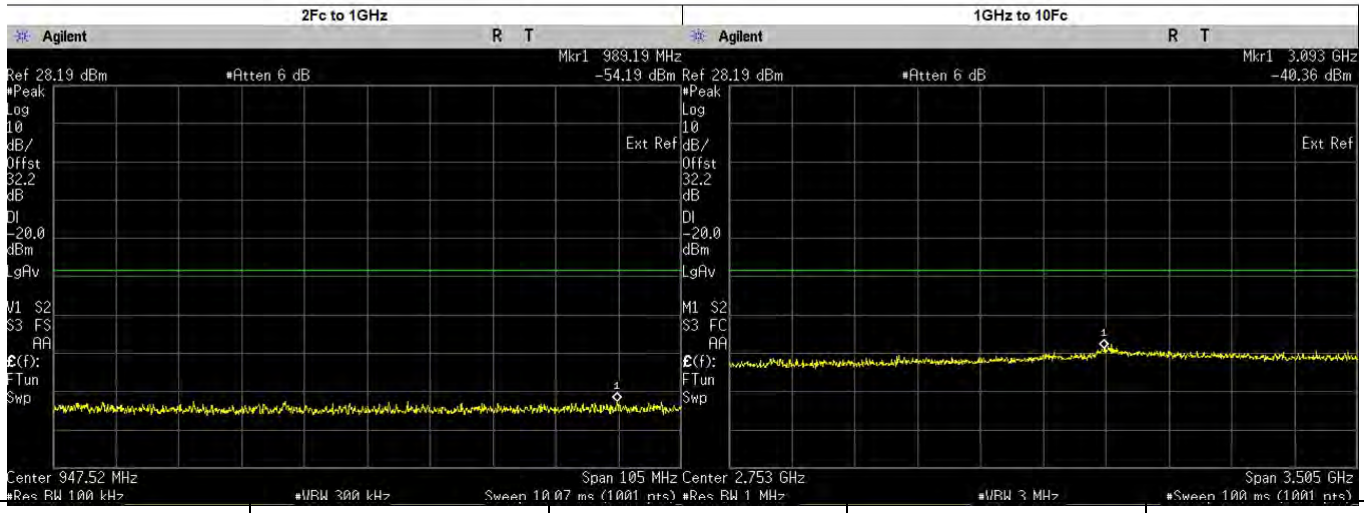




Frequency Range	Highest Spur Frequency (MHz)	Spurious Level (dBm)	Failing Limit (dBm)	Results
FL to (Fc - Test BW)	380.7000	-33.3450	-20.00	PASS
(Fc + Test BW) to <2Fc	581.8000	-30.1600	-20.00	PASS
2Fc to 1GHz	900.0500	-53.7800	-20.00	PASS
1GHz to 10Fc	3075.1080	-40.6600	-20.00	PASS
	1350.0750	-44.3520	-20.00	PASS
	1800.1000	-46.0071	-20.00	PASS
	2250.1250	-44.6701	-20.00	PASS
	2700.1500	-44.4757	-20.00	PASS
	3150.1750	-42.5348	-20.00	PASS
	3600.2000	-42.4434	-20.00	PASS
	4050.2250	-43.8365	-20.00	PASS
	4500.2500	-44.2486	-20.00	PASS

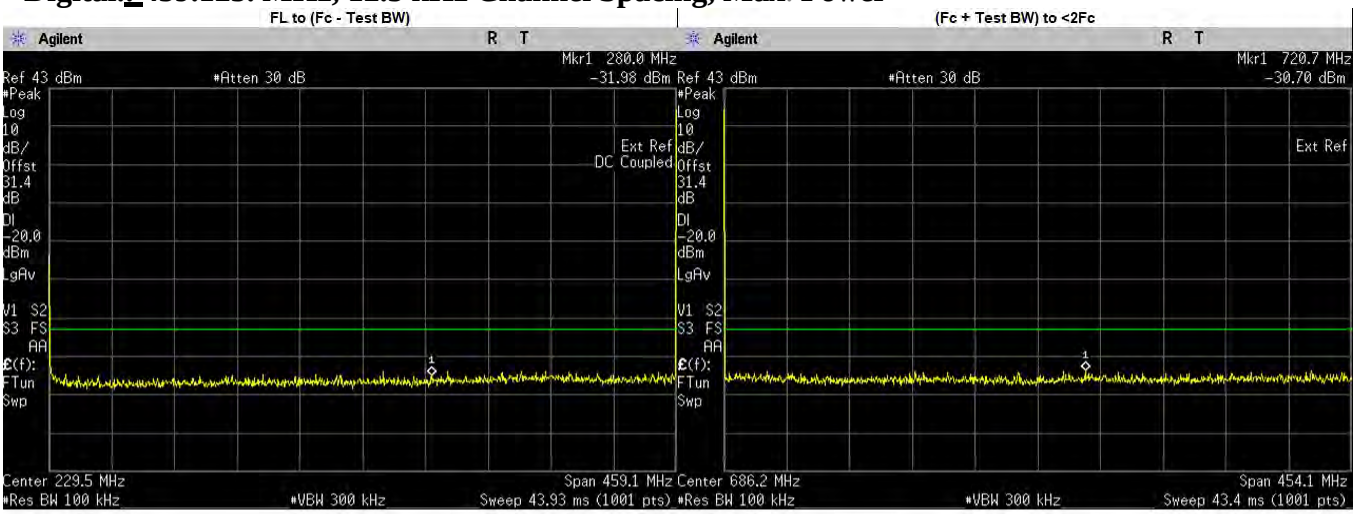
Digital.: 450.025. MHz, 12.5 kHz Channel Spacing, Low. Power

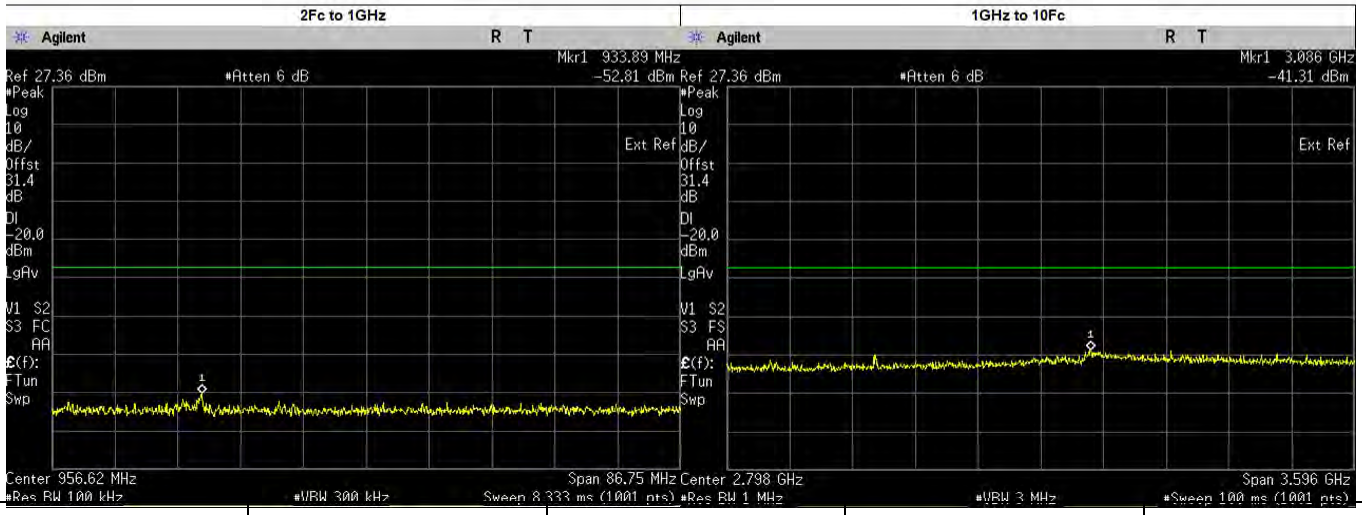




Frequency Range	Highest Spur Frequency (MHz)	Spurious Level (dBm)	Failing Limit (dBm)	Results
FL to (Fc - Test BW)	136.8000	-33.2350	-20.00	PASS
(Fc + Test BW) to <2Fc	467.4356	-29.8100	-20.00	PASS
2Fc to 1GHz	989.1902	-54.1900	-20.00	PASS
	900.0500	-55.3904	-20.00	PASS
1GHz to 10Fc	3093.0000	-40.3600	-20.00	PASS
	1350.0750	-44.9483	-20.00	PASS
	1800.1000	-45.0069	-20.00	PASS
	2250.1250	-44.9097	-20.00	PASS
	2700.1500	-43.6765	-20.00	PASS
	3150.1750	-41.5314	-20.00	PASS
	3600.2000	-43.1194	-20.00	PASS
	4050.2250	-43.4208	-20.00	PASS
	4500.2500	-42.6700	-20.00	PASS

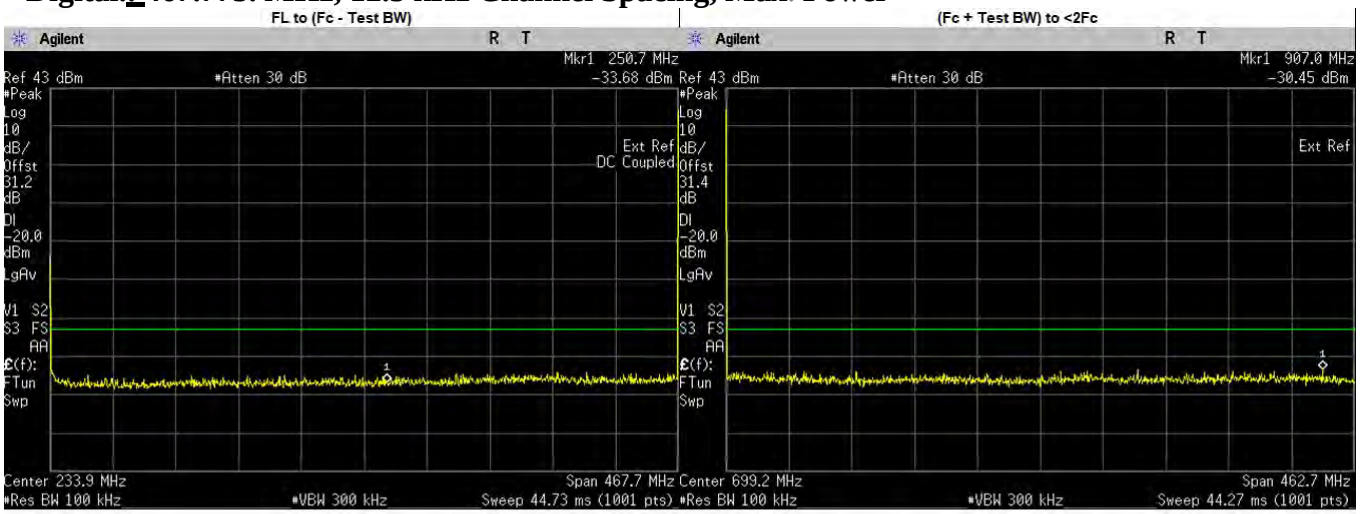
Digital.: 459.125. MHz, 12.5 kHz Channel Spacing, Max. Power

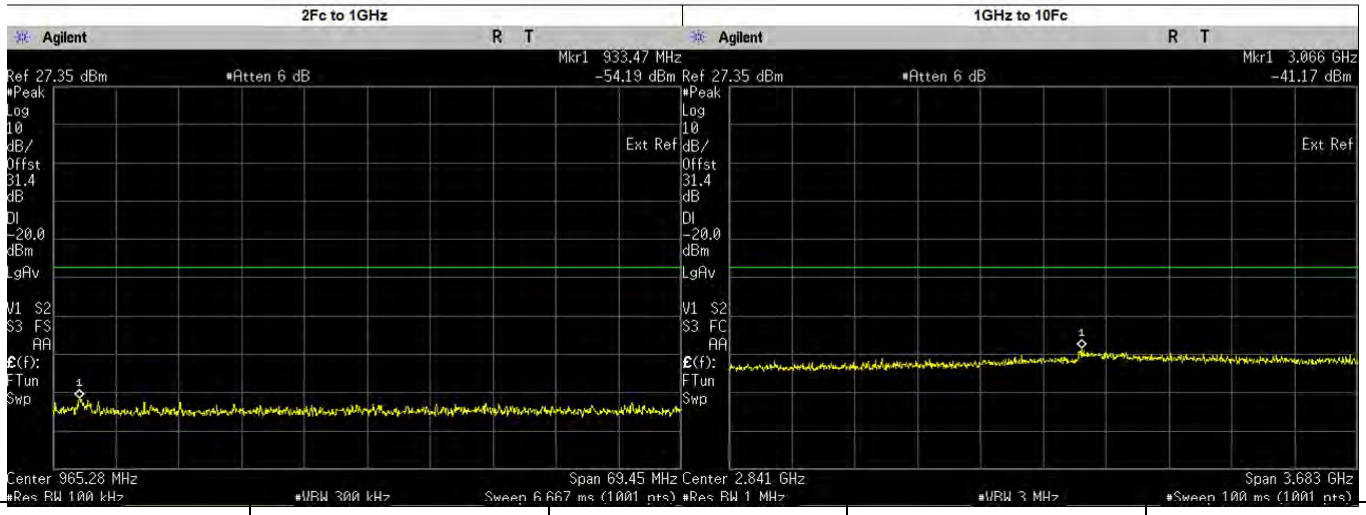




Frequency Range	Highest Spur Frequency (MHz)	Spurious Level (dBm)	Failing Limit (dBm)	Results
FL to (Fc - Test BW)	280.0000	-31.9790	-20.00	PASS
(Fc + Test BW) to <2Fc	720.7251	-30.7000	-20.00	PASS
2Fc to 1GHz	933.8900	-52.8100	-20.00	PASS
	918.2500	-53.5500	-20.00	PASS
1GHz to 10Fc	3086.0000	-41.3100	-20.00	PASS
	1377.3750	-44.4850	-20.00	PASS
	1836.5000	-46.0367	-20.00	PASS
	2295.6250	-44.9991	-20.00	PASS
	2754.7500	-43.9542	-20.00	PASS
	3213.8750	-42.9515	-20.00	PASS
	3673.0000	-43.5724	-20.00	PASS
	4132.1250	-44.9771	-20.00	PASS
	4591.2500	-44.7195	-20.00	PASS

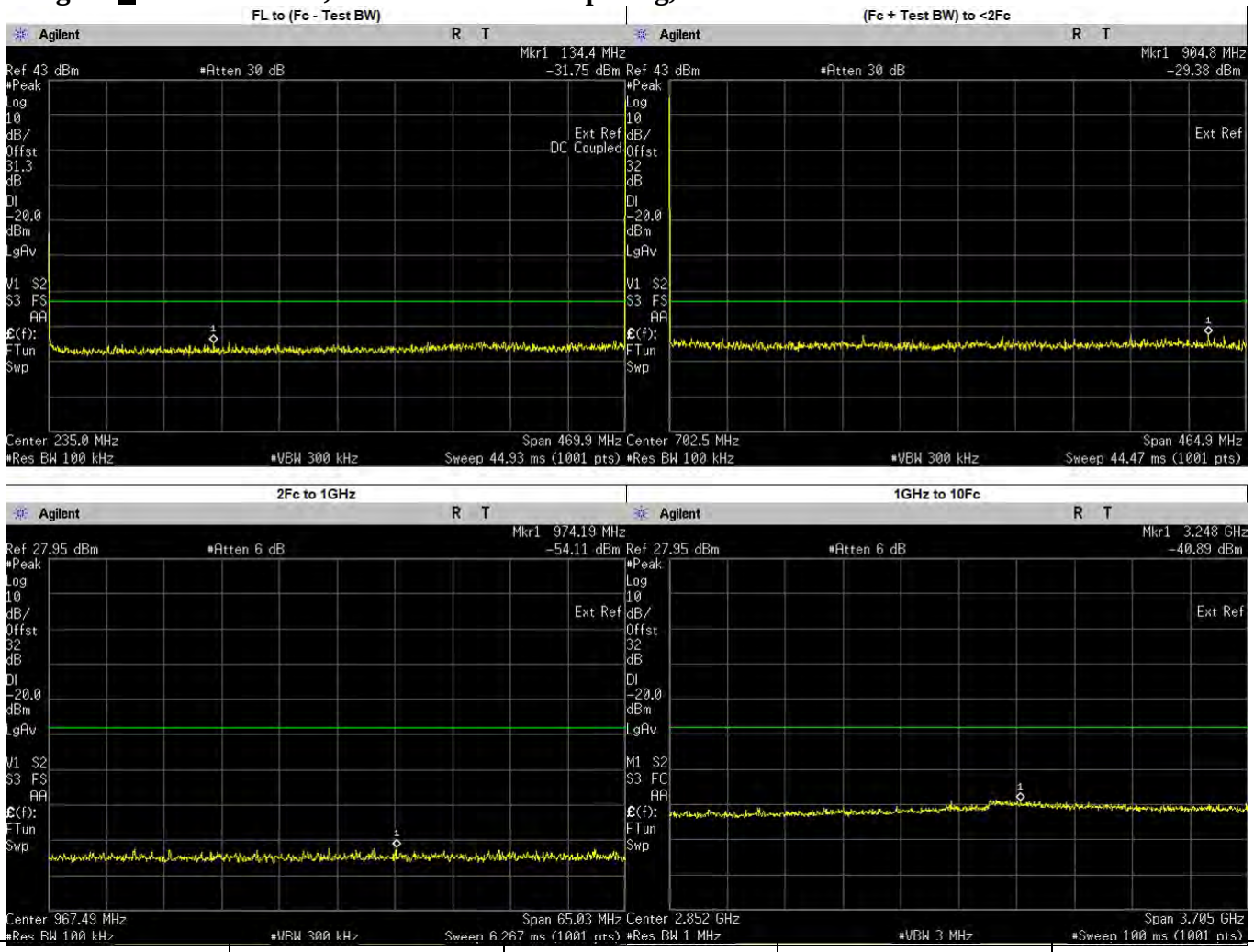
Digital.: 467.775. MHz, 12.5 kHz Channel Spacing, Max. Power





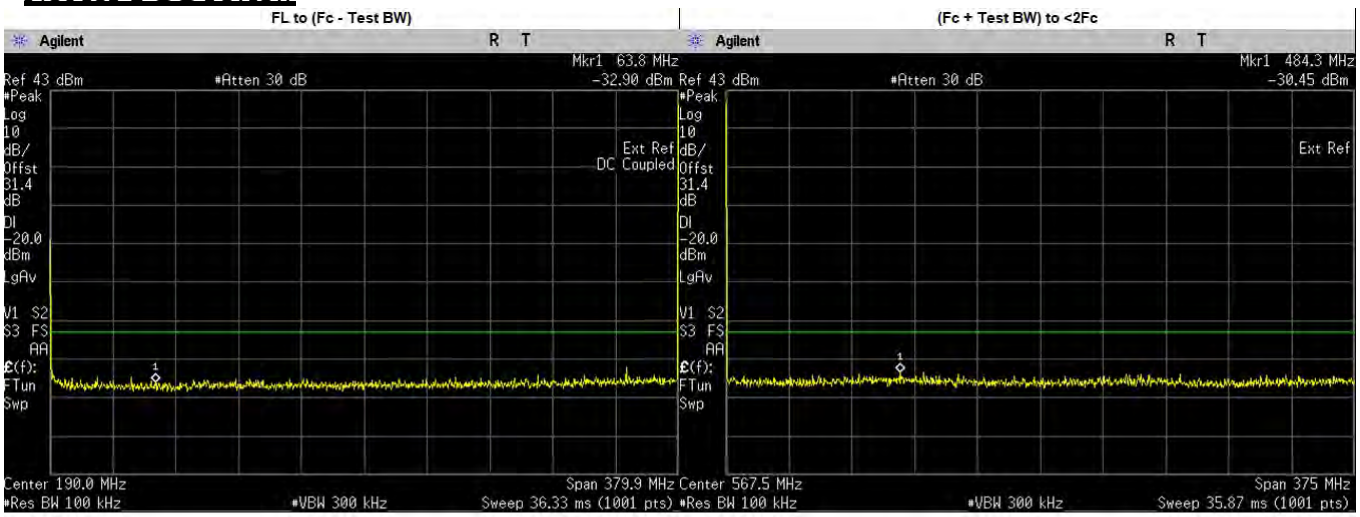
Frequency Range	Highest Spur Frequency (MHz)	Spurious Level (dBm)	Failing Limit (dBm)	Results
FL to (Fc - Test BW)	250.7000	-33.6840	-20.00	PASS
(Fc + Test BW) to <2Fc	907.0000	-30.4500	-20.00	PASS
2Fc to 1GHz	933.4700	-54.1900	-20.00	PASS
	935.5500	-55.0705	-20.00	PASS
1GHz to 10Fc	3066.0000	-41.1700	-20.00	PASS
	1403.3250	-44.4528	-20.00	PASS
	1871.1000	-46.1941	-20.00	PASS
	2338.8750	-45.0432	-20.00	PASS
	2806.6500	-44.4254	-20.00	PASS
	3274.4250	-42.4563	-20.00	PASS
	3742.2000	-43.6575	-20.00	PASS
	4209.9750	-44.4561	-20.00	PASS
	4677.7500	-44.5443	-20.00	PASS

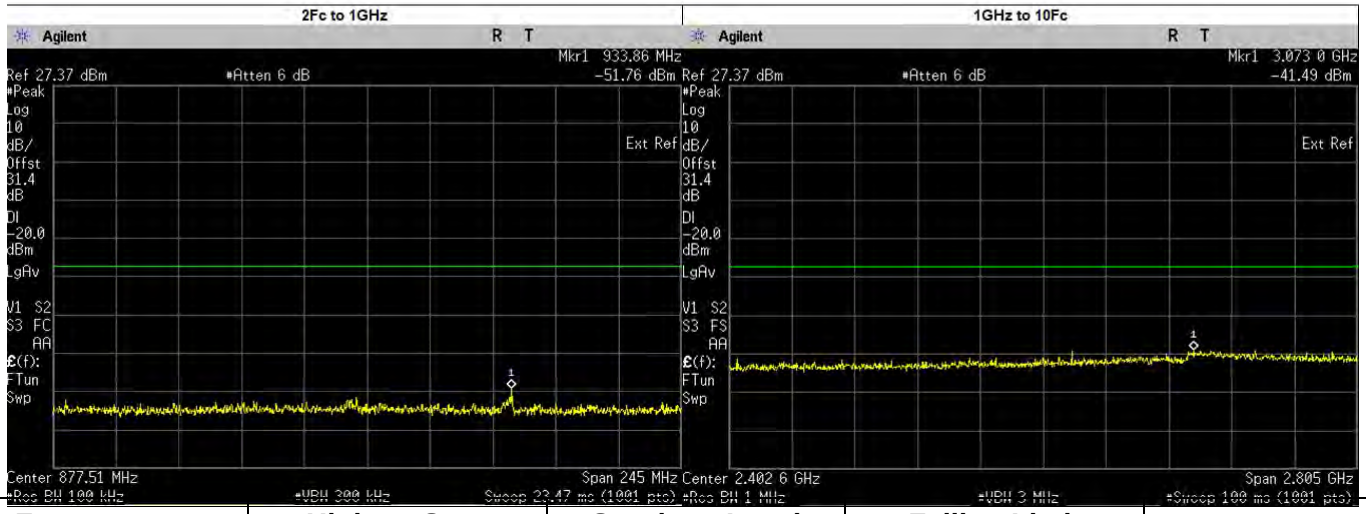
Digital.: 469.9875. MHz, 12.5 kHz Channel Spacing, Max. Power



Frequency Range	Highest Spur Frequency (MHz)	Spurious Level (dBm)	Failing Limit (dBm)	Results
FL to (Fc - Test BW)	134.4000	-31.7480	-20.00	PASS
(Fc + Test BW) to <2Fc	904.8000	-29.3800	-20.00	PASS
2Fc to 1GHz	974.1900	-54.1100	-20.00	PASS
	939.9750	-55.6586	-20.00	PASS
1GHz to 10Fc	3248.0000	-40.8900	-20.00	PASS
	1409.9630	-44.5498	-20.00	PASS
	1879.9500	-45.4683	-20.00	PASS
	2349.9370	-44.7300	-20.00	PASS
	2819.9250	-42.5706	-20.00	PASS
	3289.9120	-42.8014	-20.00	PASS
	3759.9000	-43.3107	-20.00	PASS
	4229.8870	-43.2935	-20.00	PASS
	4699.8750	-44.2866	-20.00	PASS

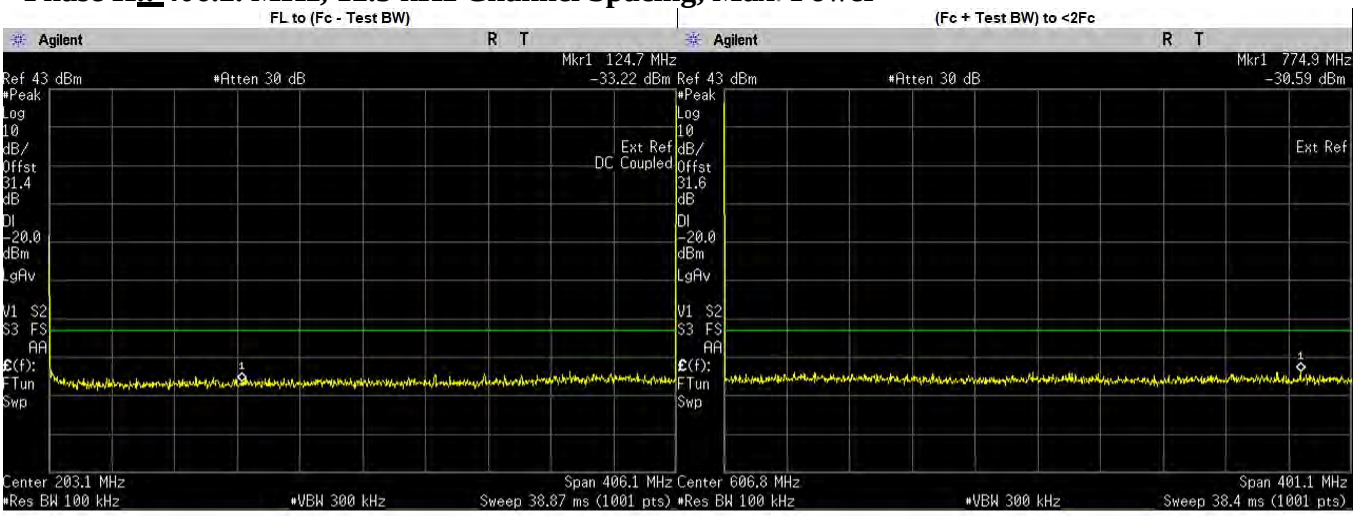
Phase II.: 380.0125. MHz, 12.5 kHz Channel Spacing, Max. Power
Not for FCC review

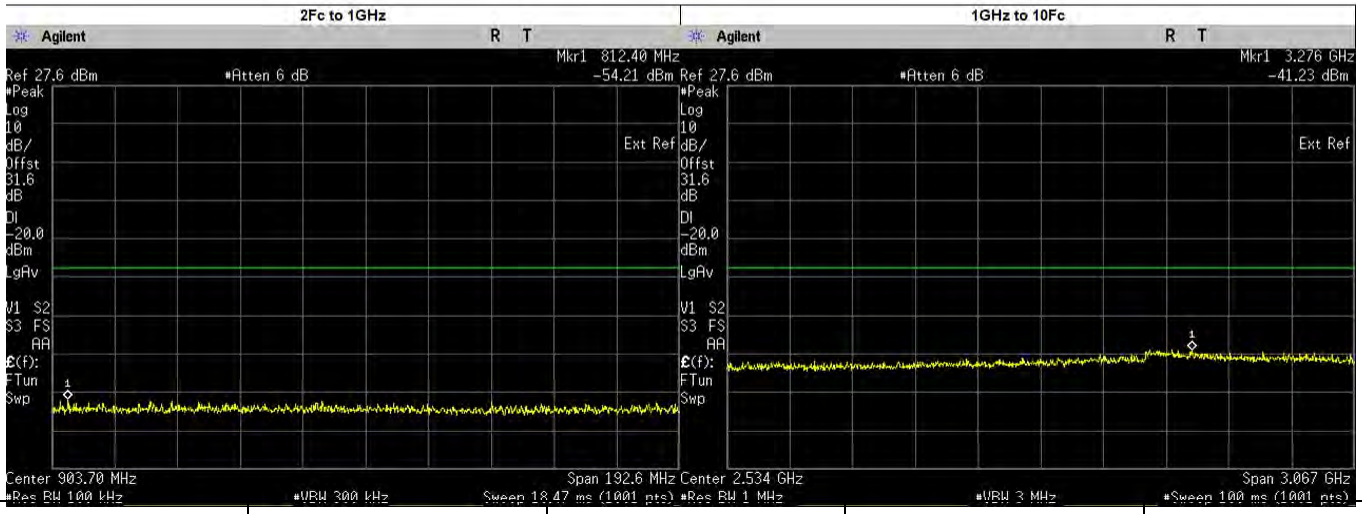




Frequency Range	Highest Spur Frequency (MHz)	Spurious Level (dBm)	Failing Limit (dBm)	Results
FL to (Fc - Test BW)	63.8000	-32.8950	-20.00	PASS
(Fc + Test BW) to <2Fc	484.3061	-30.4500	-20.00	PASS
2Fc to 1GHz	933.8600	-51.7600	-20.00	PASS
	760.0250	-52.5600	-20.00	PASS
1GHz to 10Fc	3073.0000	-41.4900	-20.00	PASS
	1140.0370	-45.9506	-20.00	PASS
	1520.0500	-45.6511	-20.00	PASS
	1900.0620	-45.4736	-20.00	PASS
	2280.0750	-45.3945	-20.00	PASS
	2660.0880	-44.7215	-20.00	PASS
	3040.1000	-43.8522	-20.00	PASS
	3420.1130	-43.1665	-20.00	PASS
	3800.1250	-44.2034	-20.00	PASS

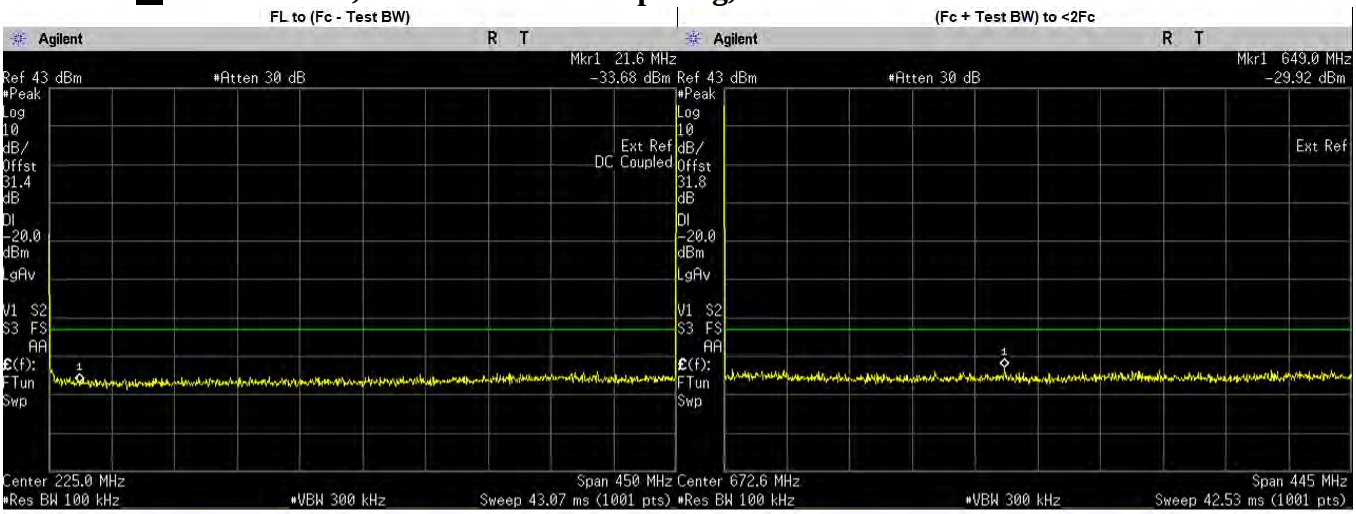
Phase II.: 406.2. MHz, 12.5 kHz Channel Spacing, Max. Power

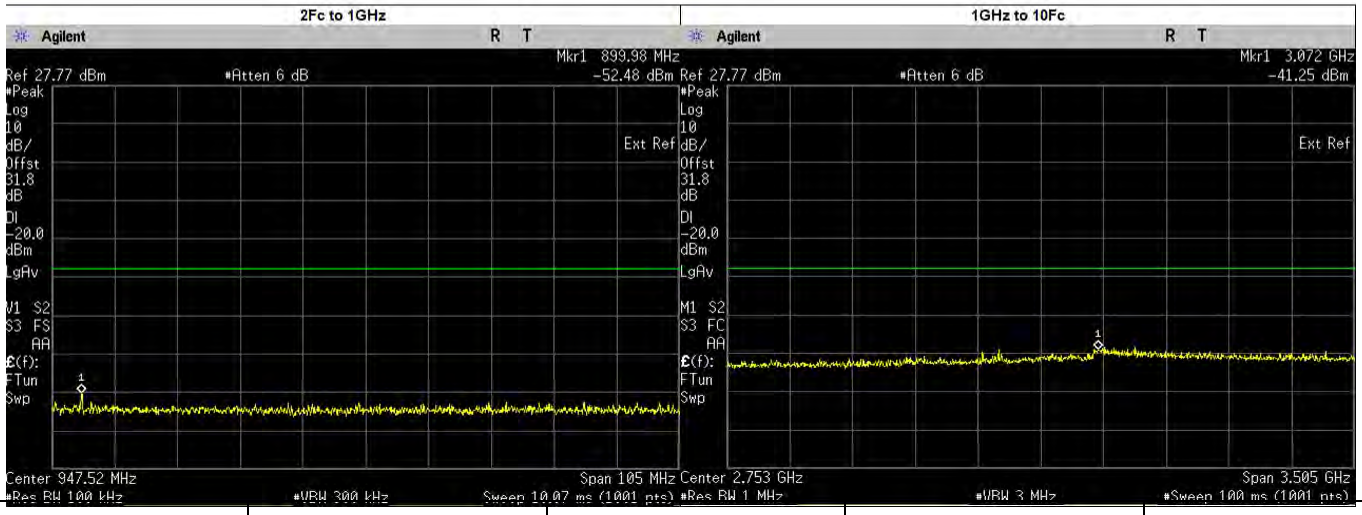




Frequency Range	Highest Spur Frequency (MHz)	Spurious Level (dBm)	Failing Limit (dBm)	Results
FL to (Fc - Test BW)	124.7000	-33.2230	-20.00	PASS
(Fc + Test BW) to <2Fc	774.9073	-30.5900	-20.00	PASS
2Fc to 1GHz	812.4000	-54.2100	-20.00	PASS
1GHz to 10Fc	3276.0000	-41.2300	-20.00	PASS
	1218.6000	-45.0692	-20.00	PASS
	1624.8000	-45.4371	-20.00	PASS
	2031.0000	-44.4289	-20.00	PASS
	2437.2000	-44.7774	-20.00	PASS
	2843.4000	-43.0755	-20.00	PASS
	3249.6000	-43.5573	-20.00	PASS
	3655.8000	-43.3537	-20.00	PASS
	4062.0000	-44.8636	-20.00	PASS

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

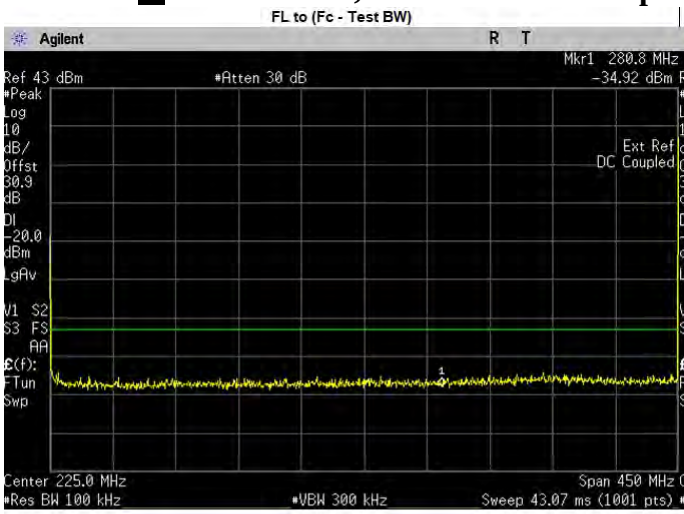




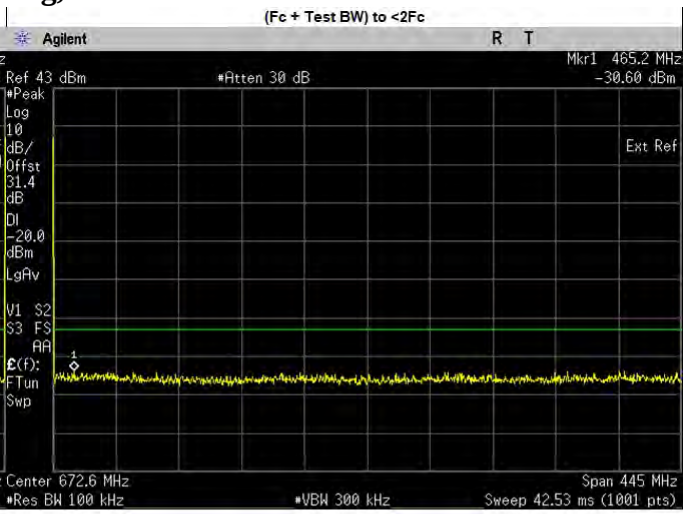
Frequency Range	Highest Spur Frequency (MHz)	Spurious Level (dBm)	Failing Limit (dBm)	Results
FL to (Fc - Test BW)	21.6000	-33.6820	-20.00	PASS
(Fc + Test BW) to <2Fc	649.0000	-29.9200	-20.00	PASS
2Fc to 1GHz	899.9827	-52.4800	-20.00	PASS
	900.0500	-52.6401	-20.00	PASS
1GHz to 10Fc	3072.0000	-41.2500	-20.00	PASS
	1350.0750	-45.9289	-20.00	PASS
	1800.1000	-45.9873	-20.00	PASS
	2250.1250	-45.2720	-20.00	PASS
	2700.1500	-43.8157	-20.00	PASS
	3150.1750	-42.2134	-20.00	PASS
	3600.2000	-43.8414	-20.00	PASS
	4050.2250	-44.1324	-20.00	PASS
	4500.2500	-43.7249	-20.00	PASS

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

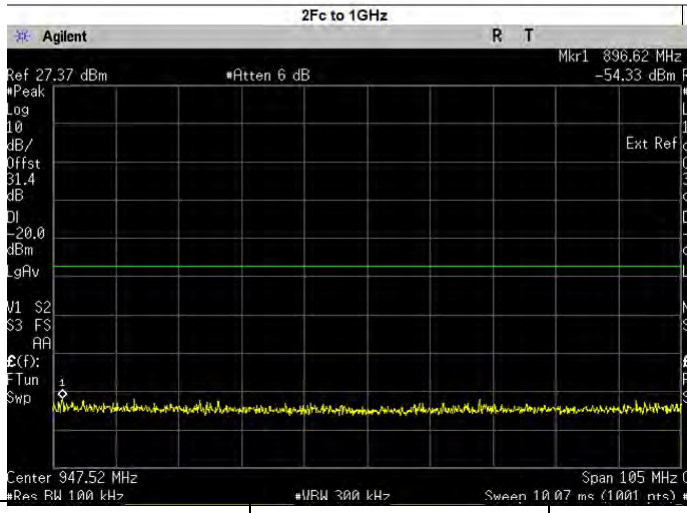
FL to (Fc - Test BW)



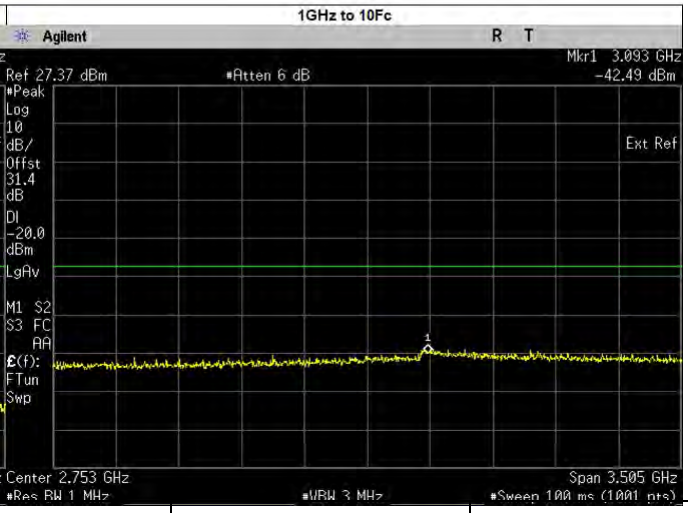
(Fc + Test BW) to <2Fc



2Fc to 1GHz



1GHz to 10Fc



Frequency Range	Highest Spur Frequency (MHz)	Spurious Level (dBm)	Failing Limit (dBm)	Results
FL to (Fc - Test BW)	280.8000	-34.9180	-20.00	PASS
(Fc + Test BW) to <2Fc	465.2107	-30.6000	-20.00	PASS
2Fc to 1GHz	896.6242	-54.3300	-20.00	PASS
	900.0500	-54.8822	-20.00	PASS
1GHz to 10Fc	3093.0000	-42.4900	-20.00	PASS
	1350.0750	-45.7160	-20.00	PASS
	1800.1000	-45.9330	-20.00	PASS
	2250.1250	-45.5067	-20.00	PASS
	2700.1500	-44.9495	-20.00	PASS
	3150.1750	-42.5747	-20.00	PASS
	3600.2000	-43.9848	-20.00	PASS
	4050.2250	-44.0622	-20.00	PASS
	4500.2500	-43.8121	-20.00	PASS