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.E

Date/s Tested	:	7-FEB-2020 - 3-MAR-2020
Report Issue Date	:	10-MAR-2020
Manufacturer	:	Motorola Solutions Malaysia SDN BHD
Manufacturer Address	:	Plot 2A, Medan Bayan Lepas, Mukim 12 SWD, 11900 Bayan Lepas, Penang, Malaysia
Requestor	:	SOH LEY KOON
Product Type	:	Portable
Product Version (PMN)	:	XPR 7550e
Model Number (HVIN)	:	AAH56RDN9RA1AN (PMUE3675DBCNAA)
Frequency Band	:	403-527 MHz
Firmware Version (FVIN)	:	D02.20.02.0092
Max RF Output Power	:	4.8 Watts
Applicant Name	:	Motorola Solutions Inc
Applicant Address	:	8000 West Sunrise Boulevard, Fort Lauderdale, Florida 33322
ISED Registrations	:	MY0001
FCC Registrations	:	461337

The equipment was tested accordance to the requirement listed below:

(LMR)	
FCC 47 CFR Part 2/ 22 / 74 / 80 / 90	**PASS**
ISED RSS- Gen Issue 5 / 119 Issue 12	

Prepared By:

Aaron Goh Tong Wen
Test Personnel

Approved Signatory:

Vincent Foong Chuen Kit
Deputy Technical Manager

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Report Revision History

Revision History	Description	Date	Originator
Rev. A	Initial Report	4-MAR-2020	Aaron Goh
Rev. B	Amend sales model	30-JUNE-2020	Vincent Foong
Rev. C	Removed non relevant rules parts	20-JULY-2020	Vincent Foong
Rev. D	Added part 80 power, updated cal date for bilog	10-AUG-2020	Vincent Foong
Rev. E	Updated sig gen cal date	19-AUG-2020	Vincent Foong

1.0 General Information

EUT Description:

Technologies	Land Mobile Radio (LMR)
Modulation Type	Analog, 4FSK

The EUT contains following accessory devices and data cable:

Item	Brand	Model or P/N
Antenna	MOTOROLA	PMAE4079A
Battery	MOTOROLA	PMNN4489A
PROGRAMMING, TEST & ALIGNMENT CABLE	MOTOROLA	PMKN4126A

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
2.1046,22.565,74.461, 80.215, 90.205	RSS-119	RF Power Output	Pass		871TWB3883
2.1055,90.213, 22.355	RSS-119	Frequency Stability	Pass		871TWB3883 871TWB3876
2.1047,74.463,80.213	RSS-119	Audio Frequency Response	Pass		871TWB3883
2.1047,74.463,80.213	RSS-119	Audio Low Pass Filter Response	Pass		871TWB3883
2.1047, 74.463, 80.213	RSS-119	Modulation limiting	Pass		871TWB3883
2.1049, 22.359, 90.210, 74.462(c), 80.211(f),90.210(T-band),80.211(c)	RSS-119 RSS-182	Occupied Bandwidth	Pass	16K0F3E-15.0105kHz 11K0F3E-9.8697kHz 7K60F1D/7K60FXD - 7.5167kHz 7K60F1E/7K60FXE - 7.1579kHz 7K60F1W -7.3167kHz	871TWB3883
2.1051, 22.359 (a), (b)	RSS-119	Band Edge Conducted Spurious Emission	Pass		871TWB3883
90.214	RSS-119	Transient Frequency Behavior	Pass		871TWB3883
-	-	Adjacent Channel Power	NA		
22.359, 74.462, 80.211, 90.210	RSS-119	Conducted Spurious Emissions	Pass	No spur detected (noise floor)	871TWB3883
22.359, 74.462, 80.211, 90.210	RSS-119	Radiated Spurious Emission	Pass	No spur detected (noise floor)	871TWB3893
-	-	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) (±dB)
AC Power Line Conducted Spurious Emission	150KHz ~ 30MHz	3.43
Radiated Emissions up to 1 GHz	30MHz ~ 200MHz	4.03
	200MHz ~ 1000MHz	4.03
Radiated Emissions above 1 GHz	1GHz ~ 18GHz	4.03
	18GHz ~ 25GHz	4.03

4.0 Equipment List

FCC Analog ATE#1: (SW version: 2.4.5 & FCC_Frequency Stability 1.0.3 rev.)

Description	Model	Serial Number	Calibration Date	Calibration Due Date
AUDIO ANALYZER	8903B	3729A17612	15-Nov-17	15-Nov-20
SIGNAL GENERATOR	2042	203002/747	4-Feb-20	4-Feb-21
MODULATION ANALYZER	8901B	3538A5696	4-Apr-19	4-Apr-20
DSA Dynamic Signal Analyzer	36570A	MY42506790	4-Apr-19	4-Apr-20
POWER SENSOR	E4412A	MY41502652	31-Jul-19	31-Jul-20
POWER METER	E4416A	GB41293747	19-Nov-18	19-Nov-20
POWER SUPPLY	6623A	2916A01562	31-Mar-19	31-Mar-20
CHAMBER	SH-641	92009188	29-Mar-19	29-Mar-20
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_R1.1.2)

Description	Model	Serial Number	Calibration Date	Calibration Due Date
POWER SUPPLY	6031A	2430A00146	5-Apr-19	5-Apr-20
POWER SENSOR	E4412A	MY41498918	31-Jul-19	31-Jul-20
POWER METER	E4416A	GB41293866	26-Feb-19	26-Feb-21
ATTENUATORS/SWITCH DRIVER	11713A	2508A10141	CNR	CNR
STEP ATTENUATOR/11dB	8494G	MY52300223	2-Aug-19	2-Aug-20
STEP ATTENUATOR/110dB	8496G	MY52000176	9-Aug-19	9-Aug-20
OSCILLOSCOPE	MSO8104A	MY45002372	17-Jun-19	17-Jun-20
AUDIO ANALYZER	8903B	3011A08952	5-Jul-19	5-Jul-20
AUDIO ANALYZER	8903B	3729A17409	4-Jul-19	4-Jul-20
MODULATION ANALYZER	8901B	3226A04052	3-Apr-19	3-Apr-20
SIGNAL GENERATOR	8657B	3427U06025	5-Apr-19	5-Apr-20
SPECTRUM ANAYLYZER	E4440A	MY48250517	1-Aug-19	1-Aug-20
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

CNR→Calibration Not Required

CONDUCTED SPUR EMISSION ATE # 1 (SW version: Conducted Spur ATE_rev 1.23.02)

Description	Model	Serial Number	Calibration Date	Calibration Due Date
SWITCH CONTROL UNIT	3488A	2719A32735	CNR	CNR
PSA Series Spectrum Analyzer	E4445A	MY46181732	12-Mar-19	12-Mar-21
POWER SUPPLY	6032A	2723A02219	2-Jul-19	2-Jul-20
HIGH PASS FILTER SWITCH BOX	-	CS001	4-Jul-19	4-Jul-20
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 Station

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 (0-60V / 0-50A, 1000W)	6032A	MY41001736	25-May-19	25-May-20
SIGNAL GENERATOR	SMB 100A	181117	8-Nov-18	8-Nov-21
EMI TEST RECEIVER	ESW44	101750	24-Jul-19	24-Jul-20
EMI TEST RECEIVER	ESIB26	100017	19-Jul-19	19-Jul-20
5m Semi-anechoic Chamber	S800-HX	J2308	No Cal. Req'd	No Cal. Req'd
BILOG ANTENNA	CBL6112D	30991	5-Aug-19	5-Aug-20
BILOG ANTENNA	CBL6112B	2964	23-Apr-20	23-Apr-21
DATA LOGGER	SDL500	A.016800	19-Mar-19	18-Mar-20
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	23-Jun-19	23-Jun-20
18 - 40GHz PREAMPLIFIER	Miteq Hi Gain Sucoflex	001	No Cal. Req'd	No Cal. Req'd
PREAMPLIFIER	PAM-0118	269	24-May-19	24-May-20
LOOP ANTENNA	6502	00208416	5-Sep-19	5-Sep-20
Test Software	EMC_FCC_IC_Bluetooth_RE_Test			
Version	EMC_FCC_RE_v1.6.1			

CNR→Calibration Not Required

5.0 Test Condition

5.1. Transmitter Test Conditions

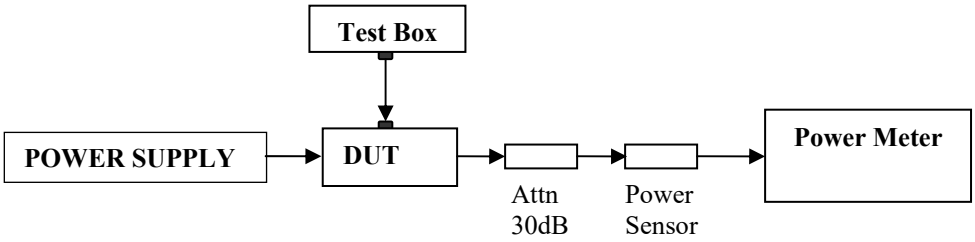
Test Item, (Channel Spacing)	Power (W)	Modulation	Test Frequency (MHz)	Tested By	Environmental conditions
RF Output Power	**Low & Max**	**Analog**	**403.0125,406.2,450.025, 459.025,459.125,459.65, 467.775,469.9875,473.0125, 479.2875,485.0125,511.9875, 526.9875**	**Aaron Goh**	**23.2°C, 57.3%RH**
Frequency Stability	**Max**	**Analog**	**467.775**	**Aaron Goh**	**25.1°C, 54.3%RH, 60.3°C, 50%RH, -30.1°C, 50%RH**
Audio Frequency Response (12.5kHz / 25kHz)	**Max**	**Analog**	**459.125,467.775,511.9875**	**Aaron Goh**	**23.2°C, 57.3%RH**
Audio Low Pass Filter Response (12.5kHz / 25kHz)	**Max**	**Analog**	**459.125,467.775,511.9875**	**Aaron Goh**	**23.2°C, 57.3%RH**
Modulation limiting (12.5kHz / 25kHz)	**Max**	**Analog**	**459.125,467.775,511.9875**	**Aaron Goh**	**23.2°C, 57.3%RH**
Occupied Bandwidth (12.5kHz / 20kHz / 25kHz)	**Max**	**Analog, 4FSK**	**406.2,450.025,459.125, 467.775,473.0125,511.9875**	**Aaron Goh**	**23.2°C, 57.3%RH**
Band Edge Conducted Spurious Emissions (Part 22) (12.5kHz / 20kHz / 25kHz)	**Max**	**Analog, 4FSK**	**459.025,459.65, 473.0125,479.2875**	**Aaron Goh**	**23.2°C, 57.3%RH**
Transient Frequency Behavior *(UHF & VHF Band)* (12.5kHz / 25kHz)	**Max**	**Analog**	**467.775**	**Aaron Goh**	**23.2°C, 57.3%RH**
Adjacent Channel Power *(700MHz Band)* (12.5kHz / 25kHz)	**Max**	**Analog**	**NA**	**NA**	**NA**
Conducted Spurious Emissions- (12.5kHz / 25kHz)	**Low / Max**	**Analog, 4FSK**	**403.0125,406.2,450.025, 459.125,467.775,511.9875, 526.9875**	**Aaron Goh**	**23.2°C, 57.3%RH**
Radiated Spurious Emission (12.5kHz / 25kHz)	**Low / Max**	**Analog, 4FSK**	**403.0125,406.2,450.025, 459.125,467.775,511.9875, 526.9875**	**Azil, Nazrin&Qawiman**	**22.8°C, 70.1%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



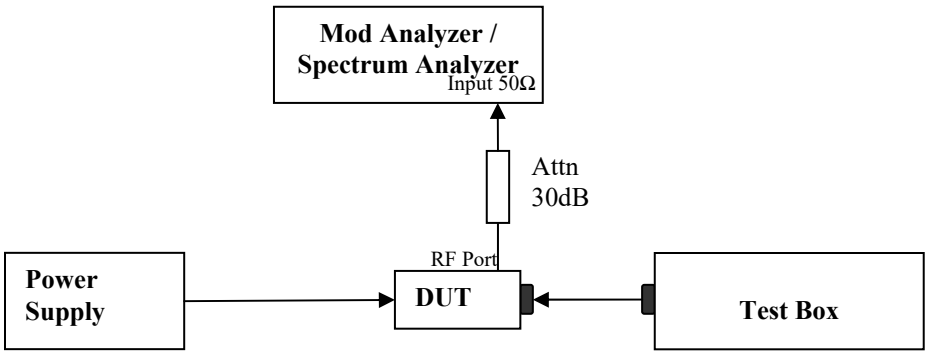
1) The DUT transmitter connected to Power Meter using the 30 dB attenuator and power sensor with above setup.
2) Path loss for the measurement included.
3) All the measurement was done at low, mid, high frequency for each band.
4) Record the power into the test report.

6.1.2. Test Result

Temperature	25˚C			
Voltage (V)	7.5V			
Frequency (MHz)	Low Power (W)	Current (A)	Max Power (W)	Current (A)
403.0125	1.04	0.76	4.67	1.56
406.20000	1.03	0.71	4.70	1.52
450.02500	1.00	0.73	4.72	1.64
459.02500	1.00	0.73	4.68	1.68
459.12500	0.99	0.73	4.69	1.68
459.65000	1.00	0.73	4.68	1.67
467.775	1.00	0.73	4.69	1.68
467.775			1.99 (Part 80 only)	1.01
469.9875	1.00	0.73	4.70	1.68
473.0125	1.02	0.72	4.73	1.64
479.2875	1.05	0.71	4.78	1.63
485.0125	1.04	0.72	4.76	1.60
511.9875	1.08	0.71	4.75	1.67
526.9875	1.02	0.76	4.72	1.74

6.2. Frequency Stability

6.2.1. Test Setup



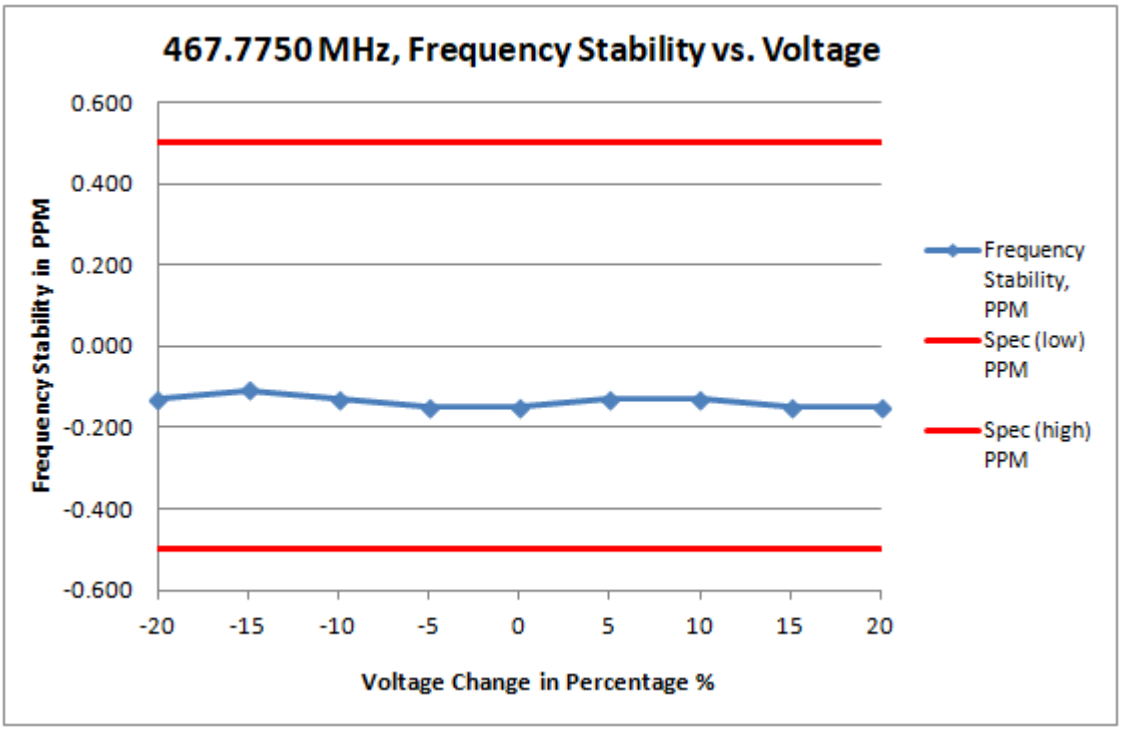
1) The DUT transmitter output port was connected to Modulation / Spectrum Analyzer.
2) Path loss for the measurement included.
3) Transmit the DUT and record the freq in MCF_{MHz}.
4) Test in 2 conditions:
   - Temperature: The frequency of the transmitter was measured from -30°C to 50°C.
   - Supply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

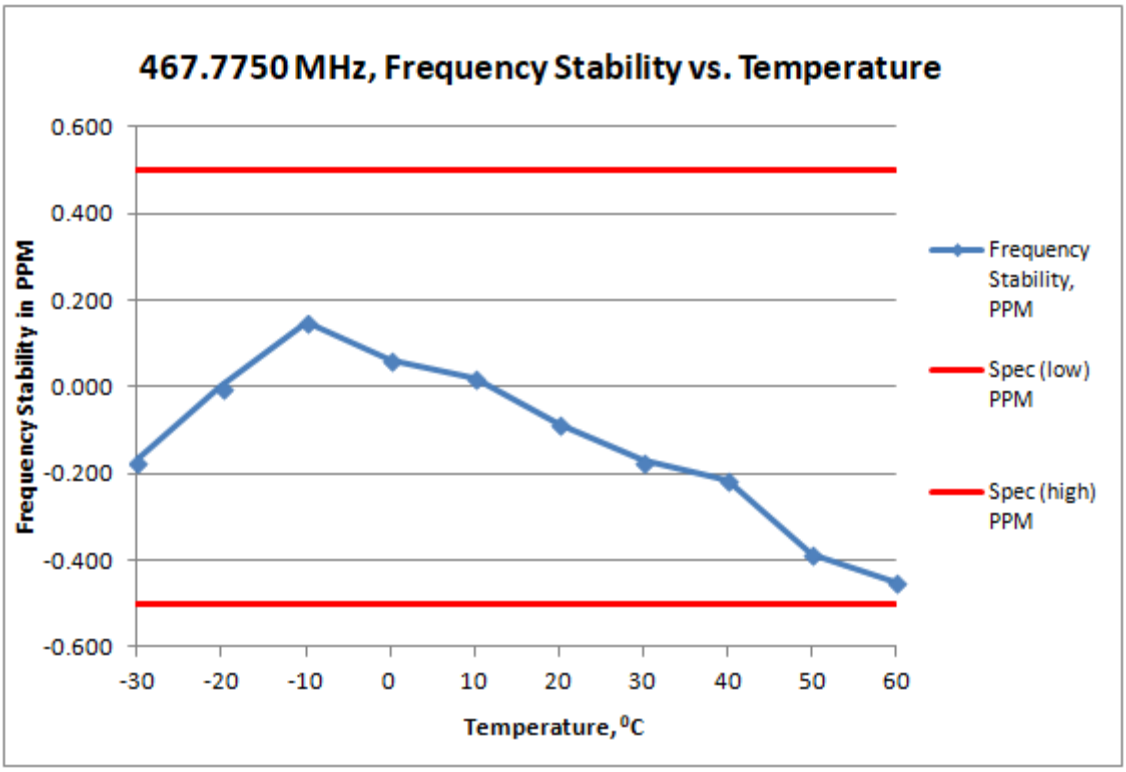
$$ppm\ error = \left(\frac{MCF_{MHz}}{ACF_{MHz}} - 1\right) * 10^6$$

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

6.2.2. Test Result



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	6.370	467.774940	-0.128	-0.500	0.500
-15	6.750	467.774950	-0.107	-0.500	0.500
-10	7.120	467.774940	-0.128	-0.500	0.500
-5	7.500	467.774930	-0.150	-0.500	0.500
0	7.870	467.774930	-0.150	-0.500	0.500
5	8.250	467.774940	-0.128	-0.500	0.500
10	8.620	467.774940	-0.128	-0.500	0.500
15	9.000	467.774930	-0.150	-0.500	0.500
20	9.000	467.774930	-0.150	-0.500	0.500



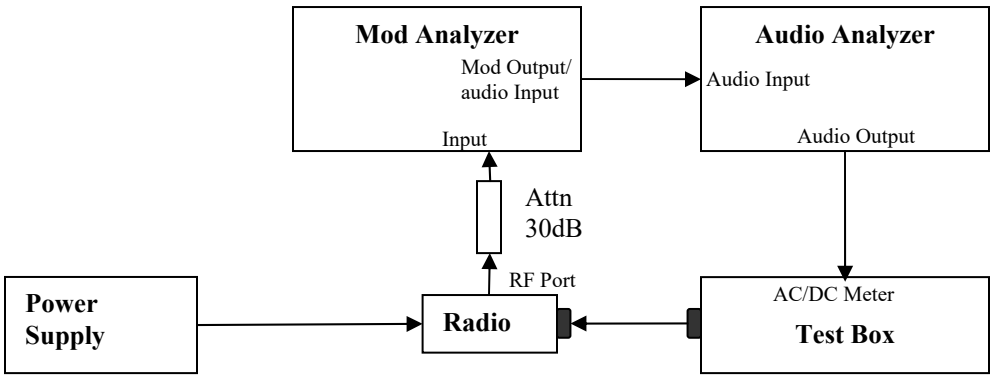
Frequency / Channel Spacing	467.7750 MHz / 12.5 kHz			
Voltage, V	7.5			
Temperature, °C	Frequency, MHz	Frequency Stability, PPM	Spec (low) PPM	Spec (high) PPM
-30	467.774920	-0.171	-0.500	0.500
-20	467.775000	0.000	-0.500	0.500
-10	467.775070	0.150	-0.500	0.500
0	467.775030	0.064	-0.500	0.500
10	467.775010	0.021	-0.500	0.500
20	467.774960	-0.086	-0.500	0.500
30	467.774920	-0.171	-0.500	0.500
40	467.774900	-0.214	-0.500	0.500
50	467.774820	-0.385	-0.500	0.500
60	467.774790	-0.449	-0.500	0.500

6.2.3. Test Limit

As per manufacturer declared spec +/- 0.5ppm

6.3. Audio Frequency Response

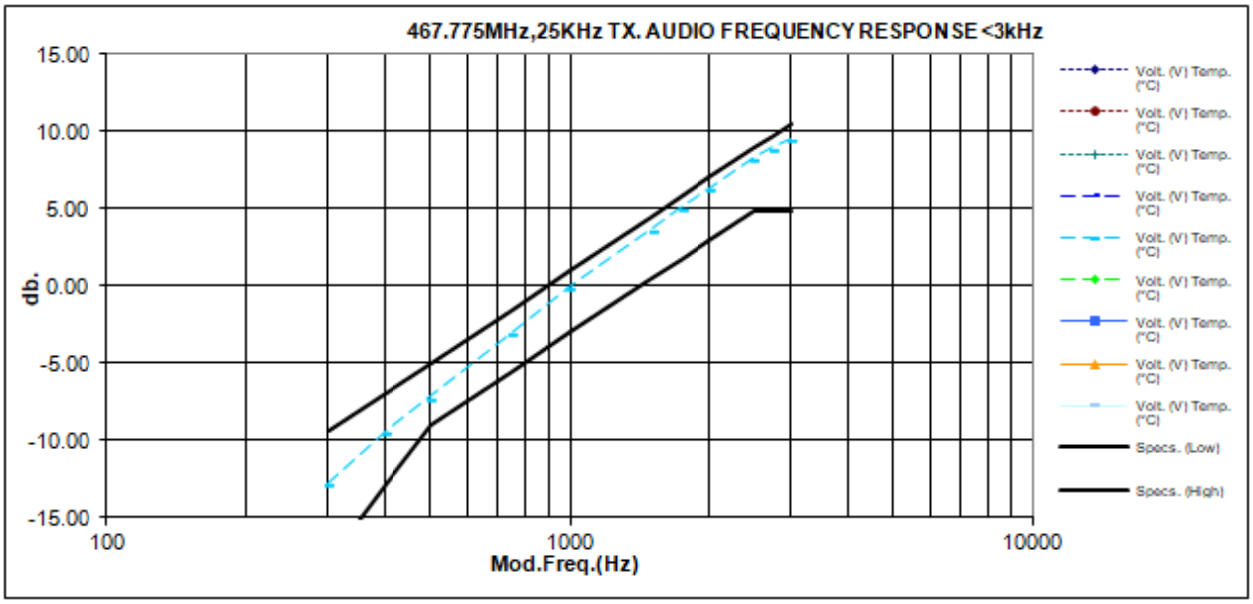
6.3.1. Test Setup

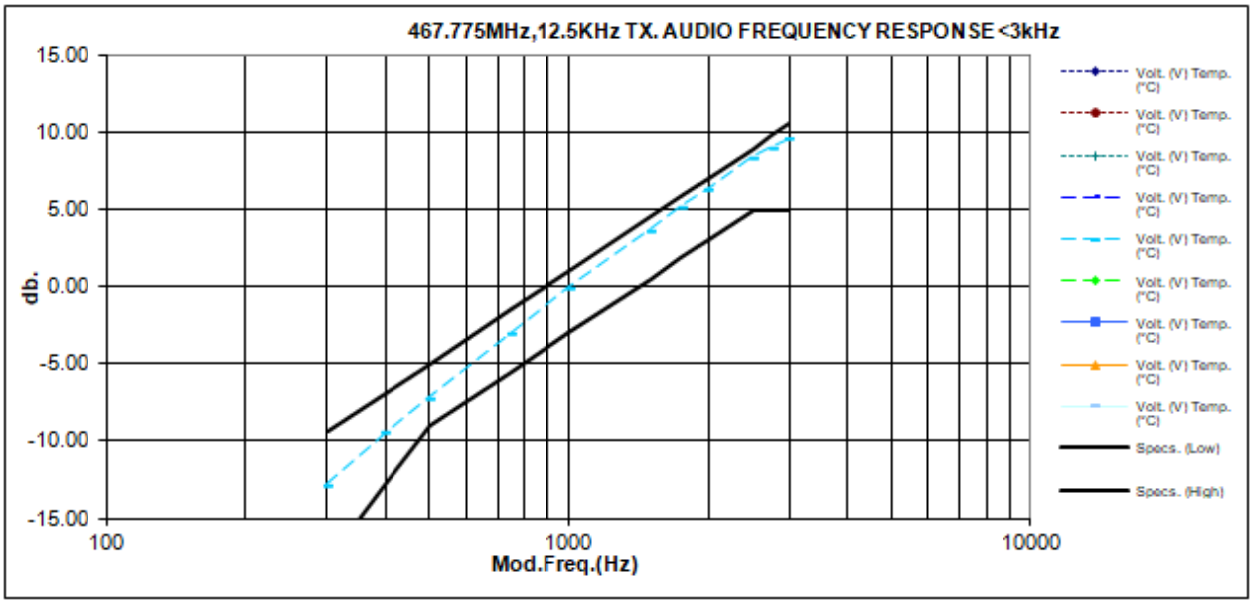


1) The DUT transmitter output port was connected to Modulation Analyzer.
2) Path loss for the measurement included.
3) Set the audio bandwidth filter to 15 kHz and 50 kHz.
4) Transmit the radio and set the audio analyzer to 1 kHz audio frequency and 20% of the Full rated system deviation.
5) On audio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

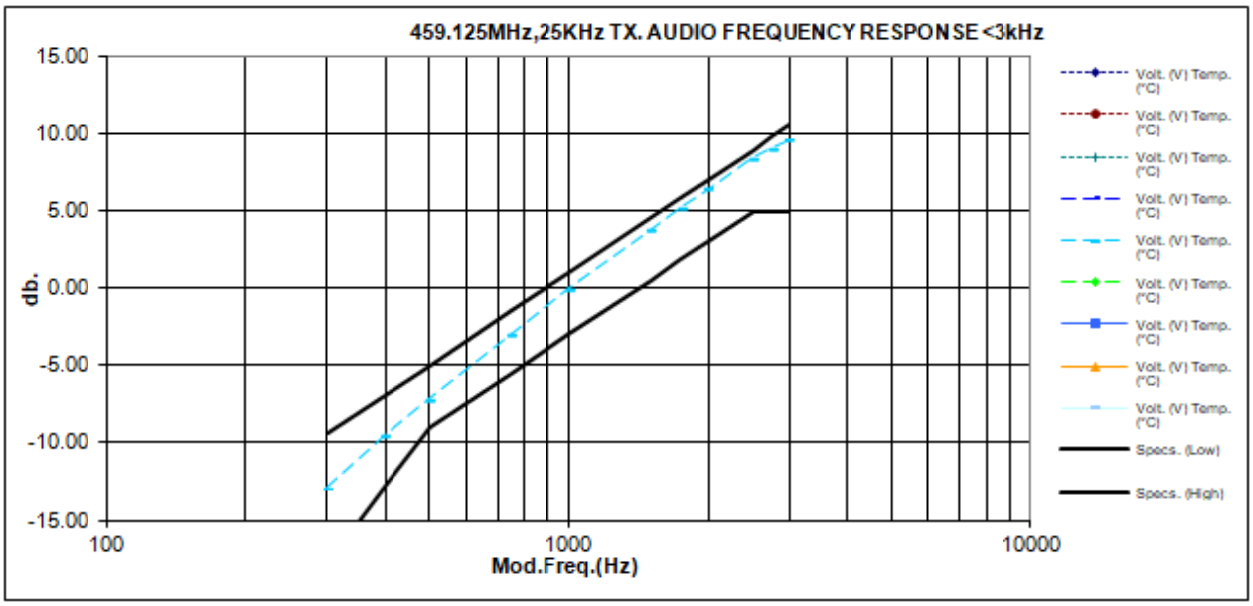
6.3.2. Test Result

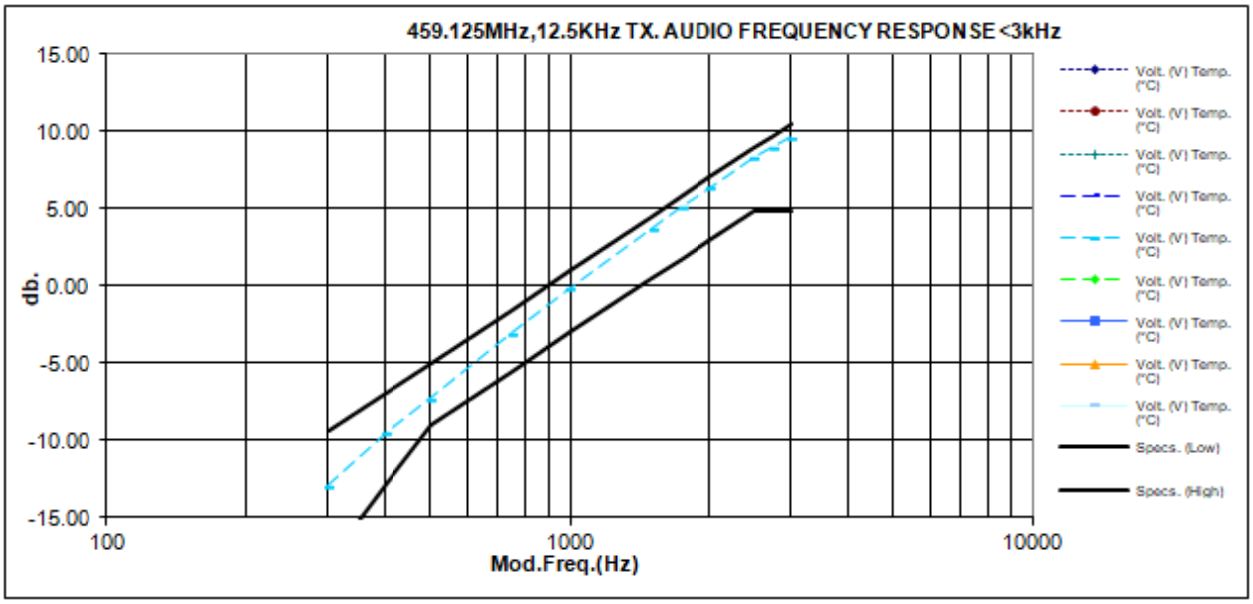
Not For FCC Review

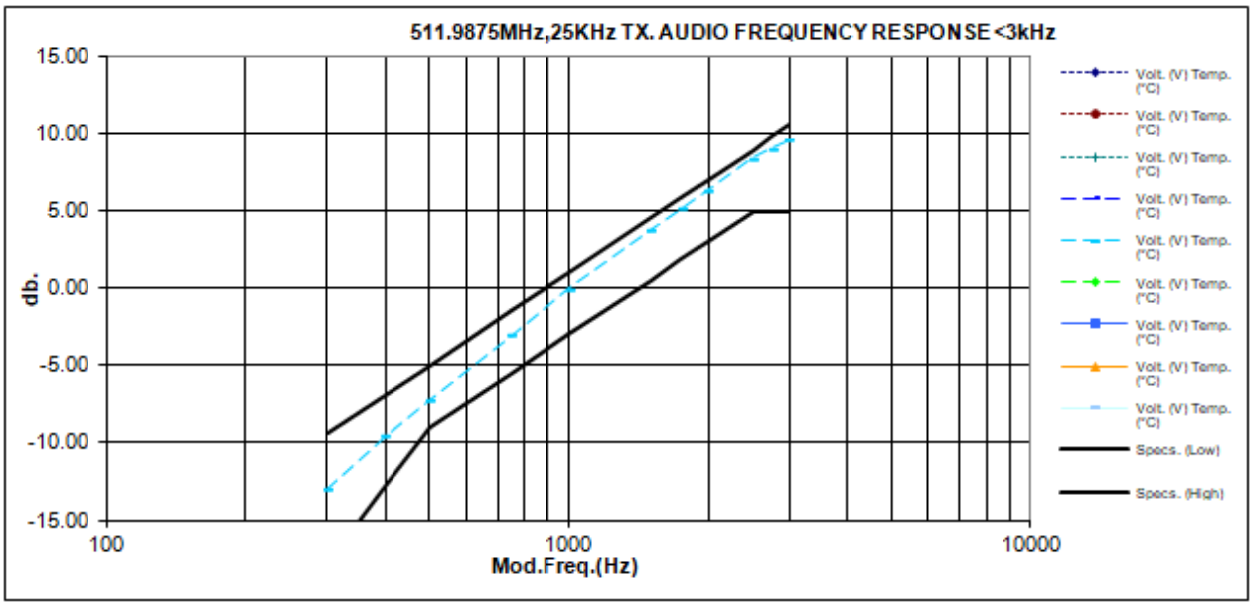


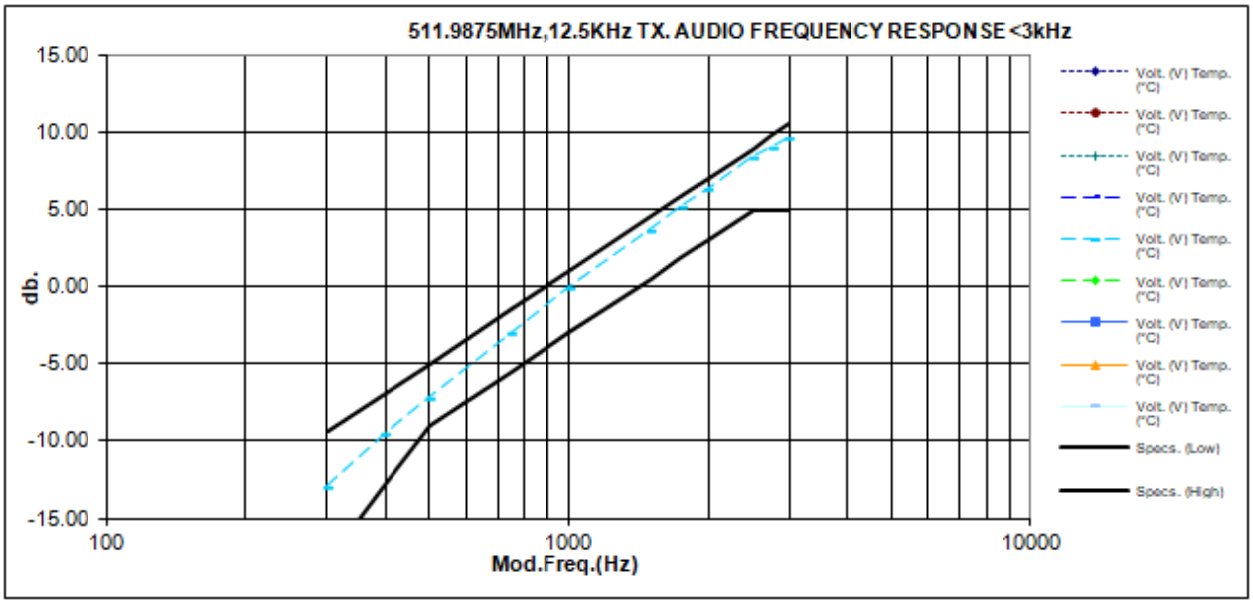


Not For FCC Review

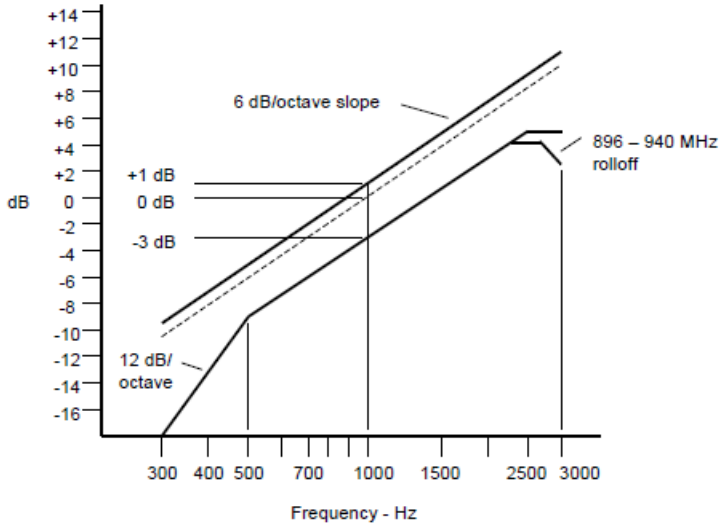





511.9875MHz,25KHz TX. AUDIO FREQUENCY RESPONSE <3kHz
15.00
10.00
5.00
0.00
-5.00
-10.00
-15.00
db.
100
1000
10000
Mod.Freq.(Hz)
Volt. (V) Temp. (°C)
Specs. (Low)
Specs. (High)


511.9875MHz,12.5KHz TX. AUDIO FREQUENCY RESPONSE <3kHz
15.00
10.00
5.00
0.00
-5.00
-10.00
-15.00
db.
100
1000
10000
Mod.Freq.(Hz)
Volt. (V) Temp. (°C)
Specs. (Low)
Specs. (High)

6.3.3. Test Limit

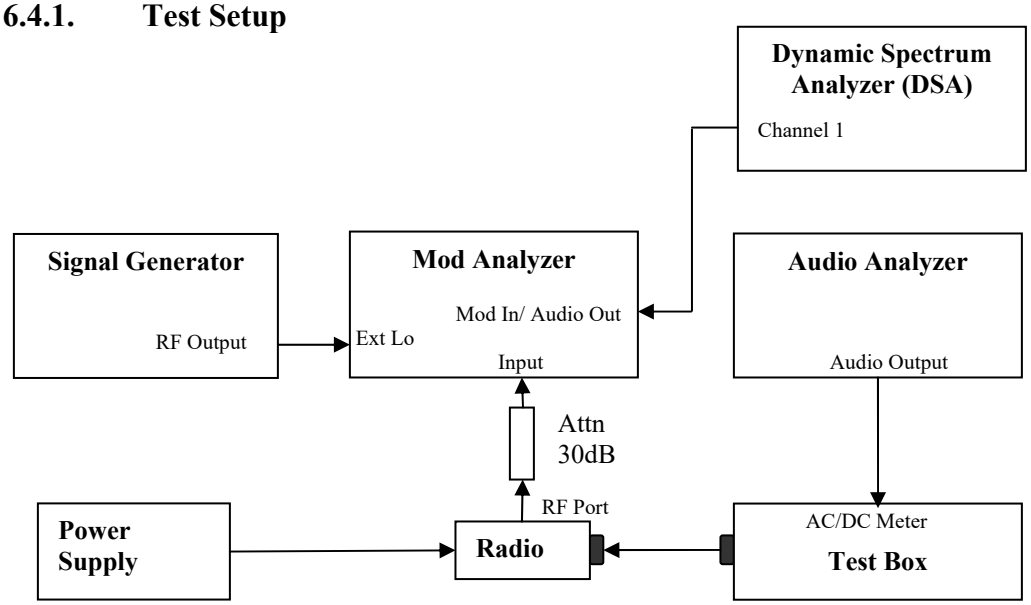


Note:

- *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

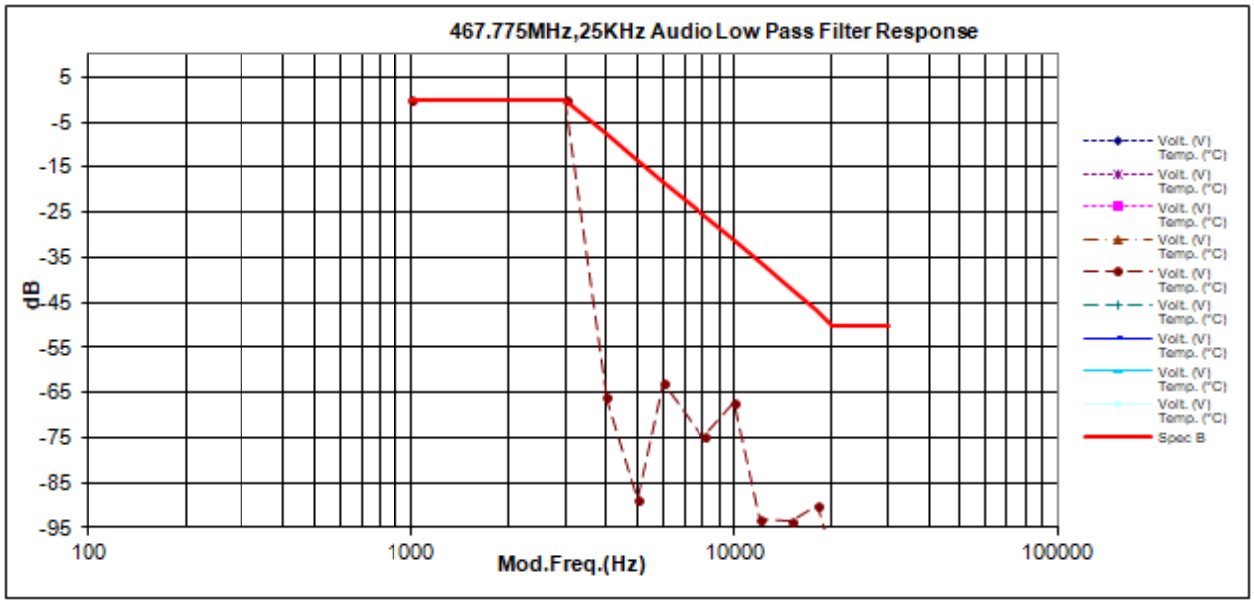
6.4.1. Test Setup

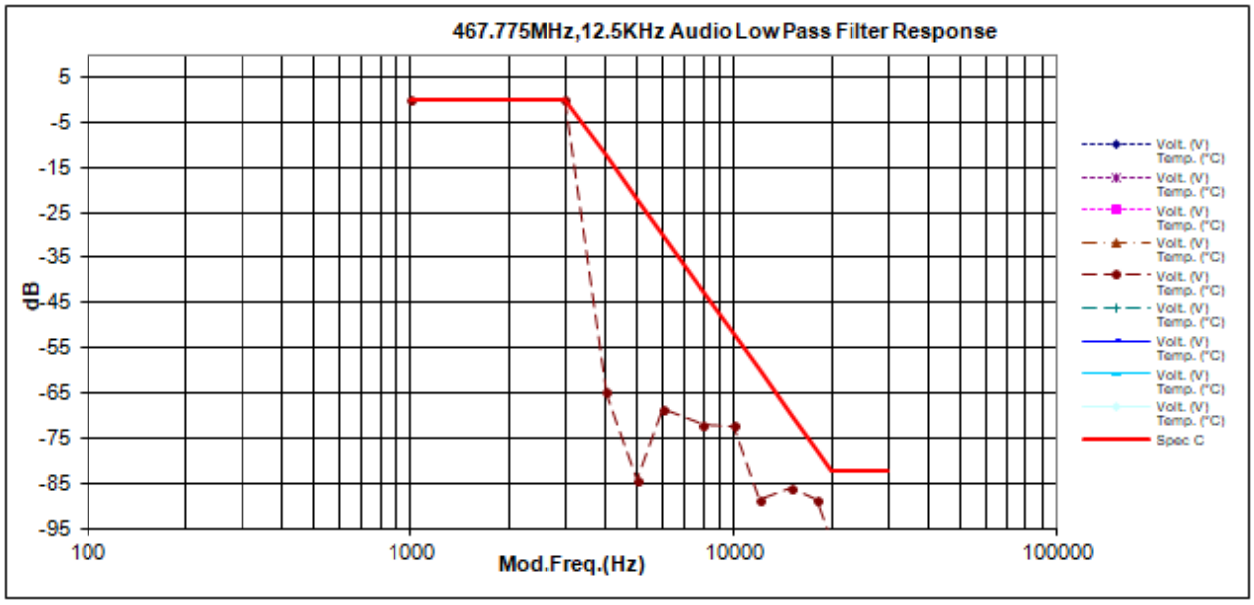


1) The DUT transmitter output port was connected to Modulation Analyzer.
2) Path loss for the measurement included.
3) Press 23.1SPCL on modulation analyzer to enable the external LO from Sigen.
4) Set the Sigen frequency to Fc + 1.5 MHz, RF output level to 0dBm without modulation.
5) Transmit the radio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

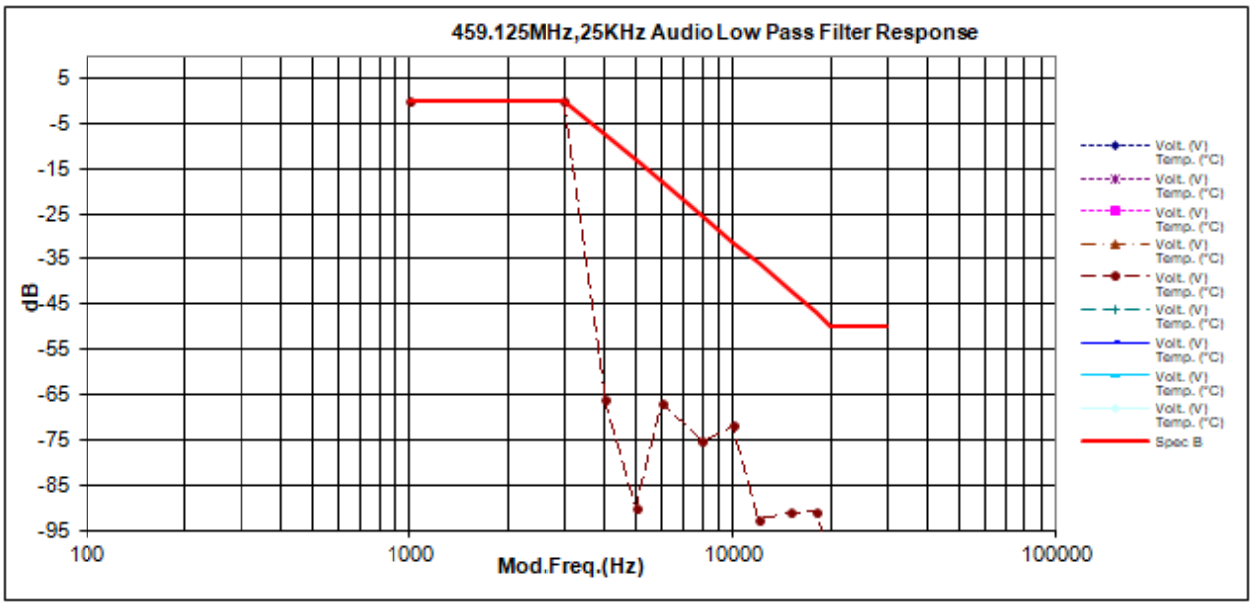
6.4.2. Test Result

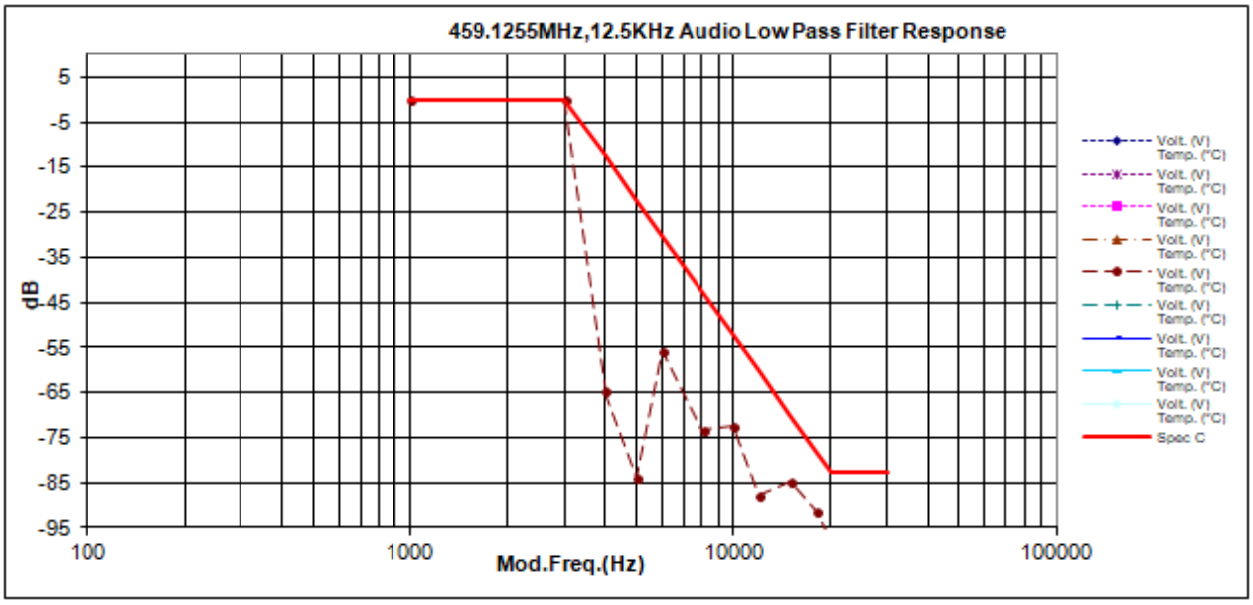
Not For FCC Review

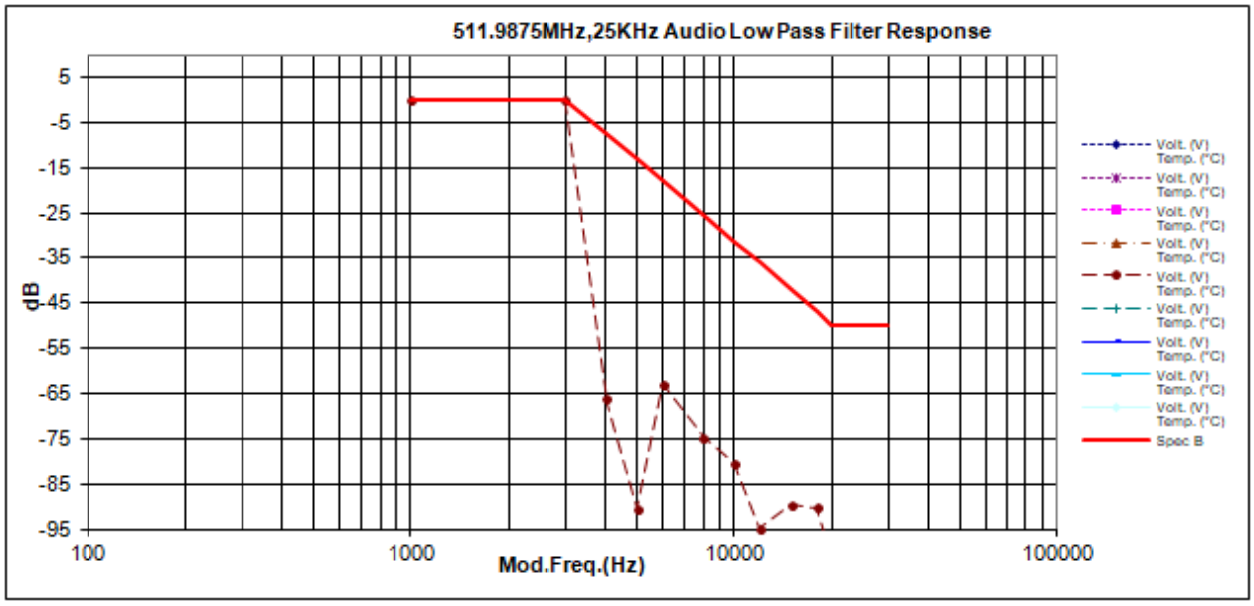


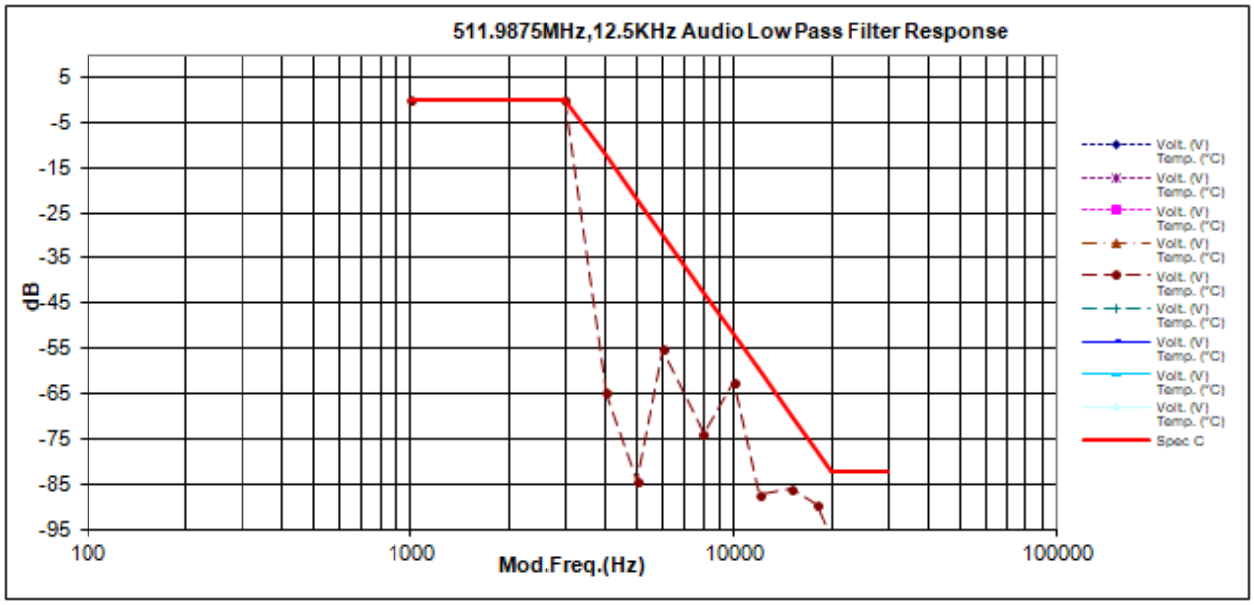


Not For FCC Review

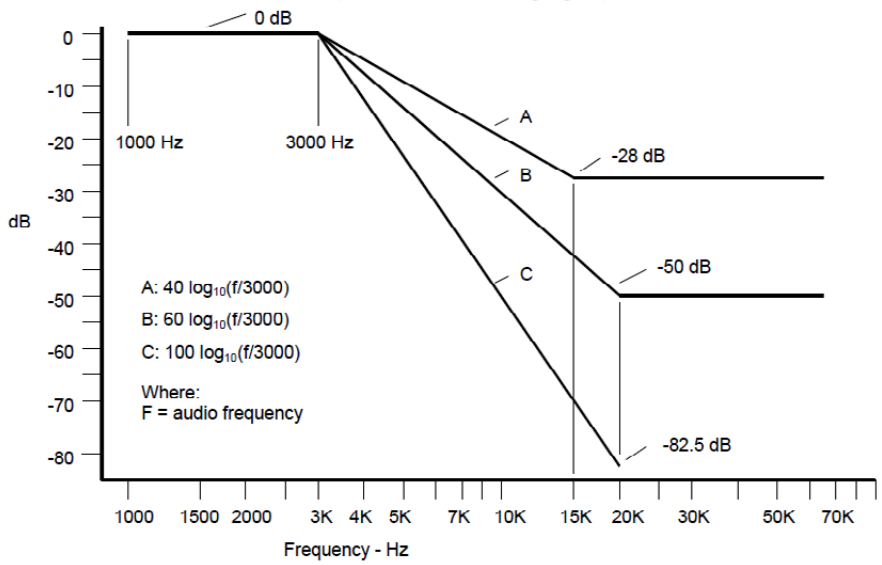





511.9875MHz,25KHz Audio Low Pass Filter Response
5
-5
-15
-25
-35
-45
-55
-65
-75
-85
-95
dB
100
1000
10000
100000
Mod.Freq.(Hz)
Volt. (V)
Temp. (°C)
Spec B


511.9875MHz,12.5KHz Audio Low Pass Filter Response
5
-5
-15
-25
-35
-45
-55
-65
-75
-85
-95
dB
100
1000
10000
100000
Mod.Freq.(Hz)
Volt. (V)
Temp. (°C)
Spec C

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.

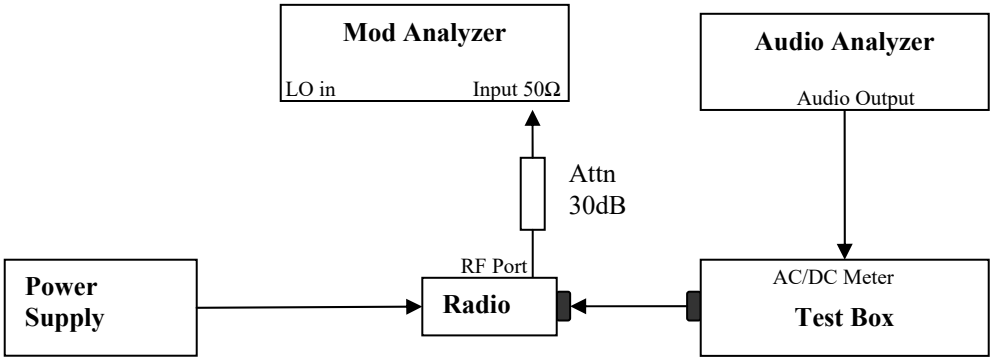
c) For equipment operating on channels between 896 MHz through 901 MHz, between 935 MHz through 940 MHz, and 12.5 or 15 kHz spaced channels in the frequency range 138-174 MHz and 406-512 MHz.

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

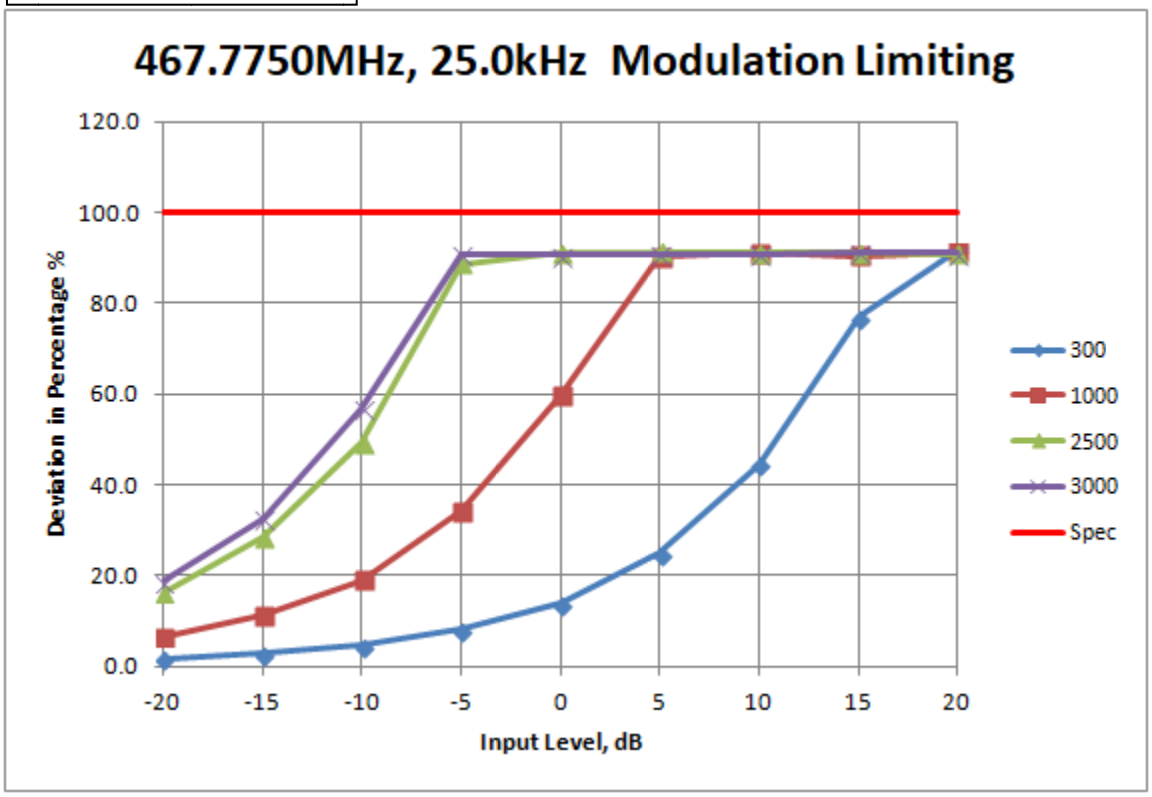
6.5.1. Test Setup

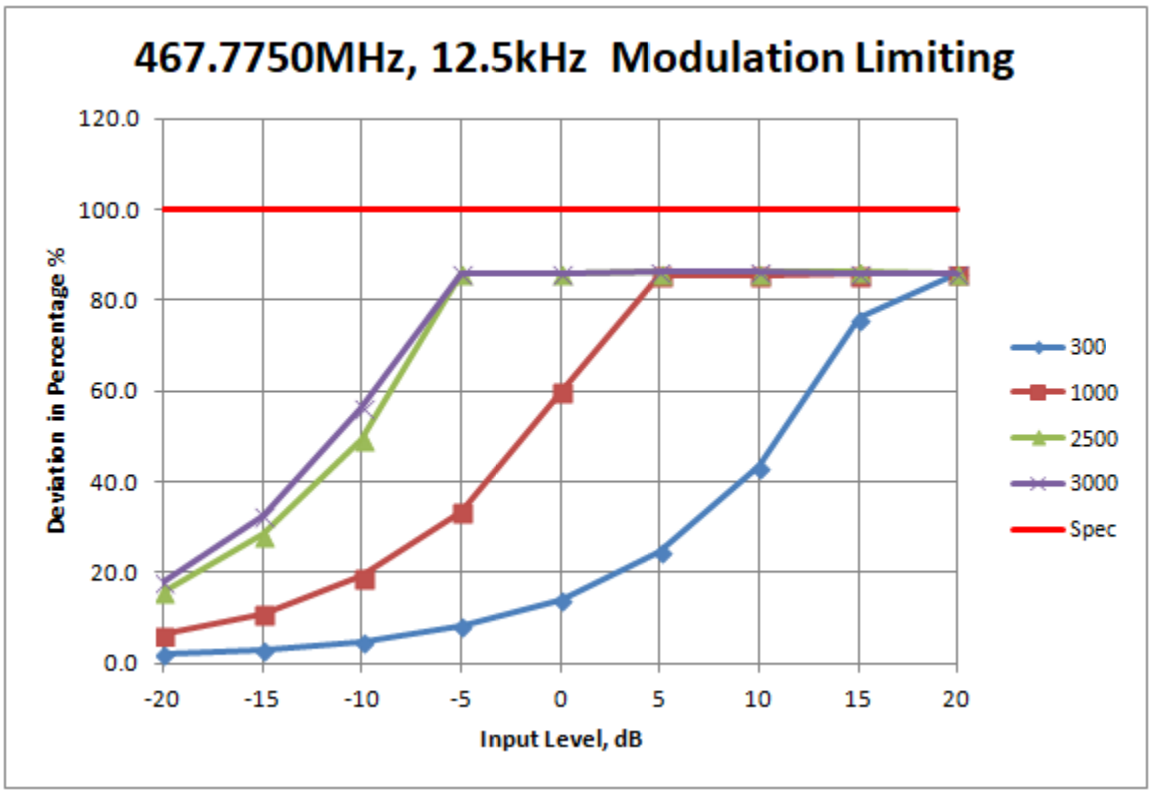


1) The DUT transmitter output port was connected to Modulation Analyzer.
2) Path loss for the measurement included.
3) Set the audio bandwidth filter to 15 kHz.
4) Transmit the radio and set the audio analyzer to 1 kHz audio frequency and 60% of the Full rated system deviation.
5) Record the frequency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

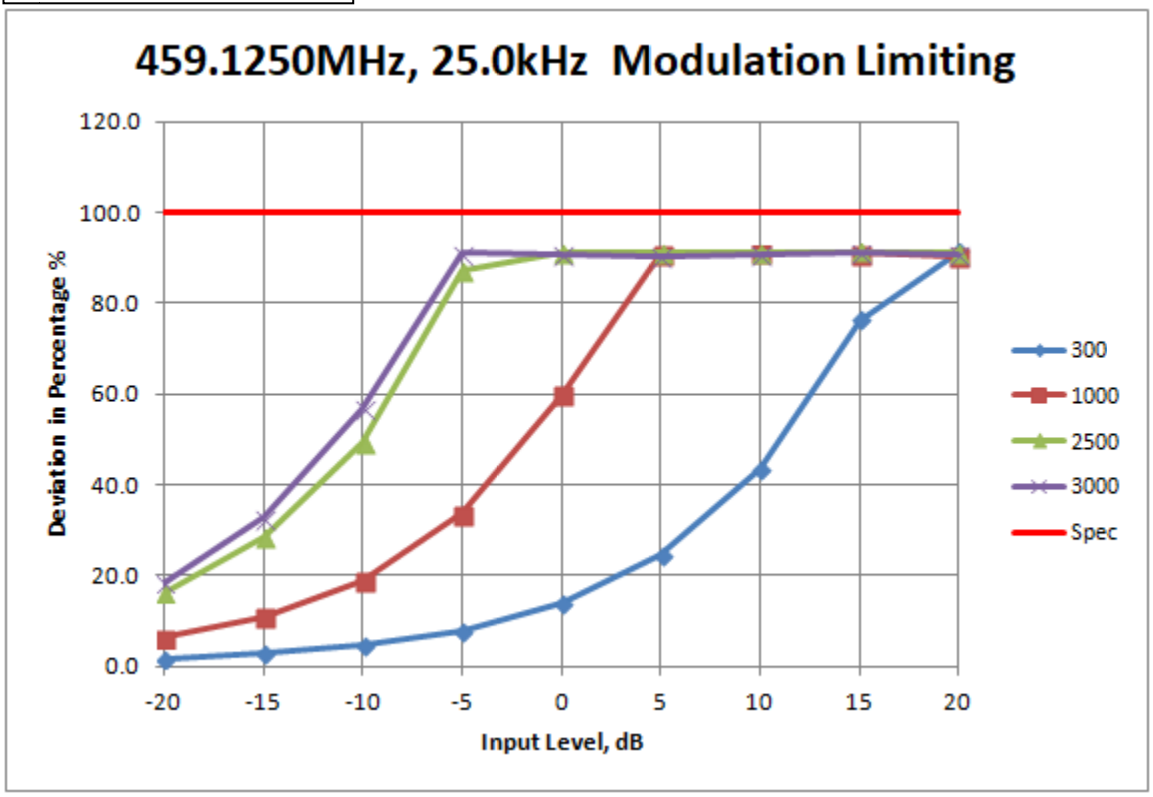
6.5.2. Test Result

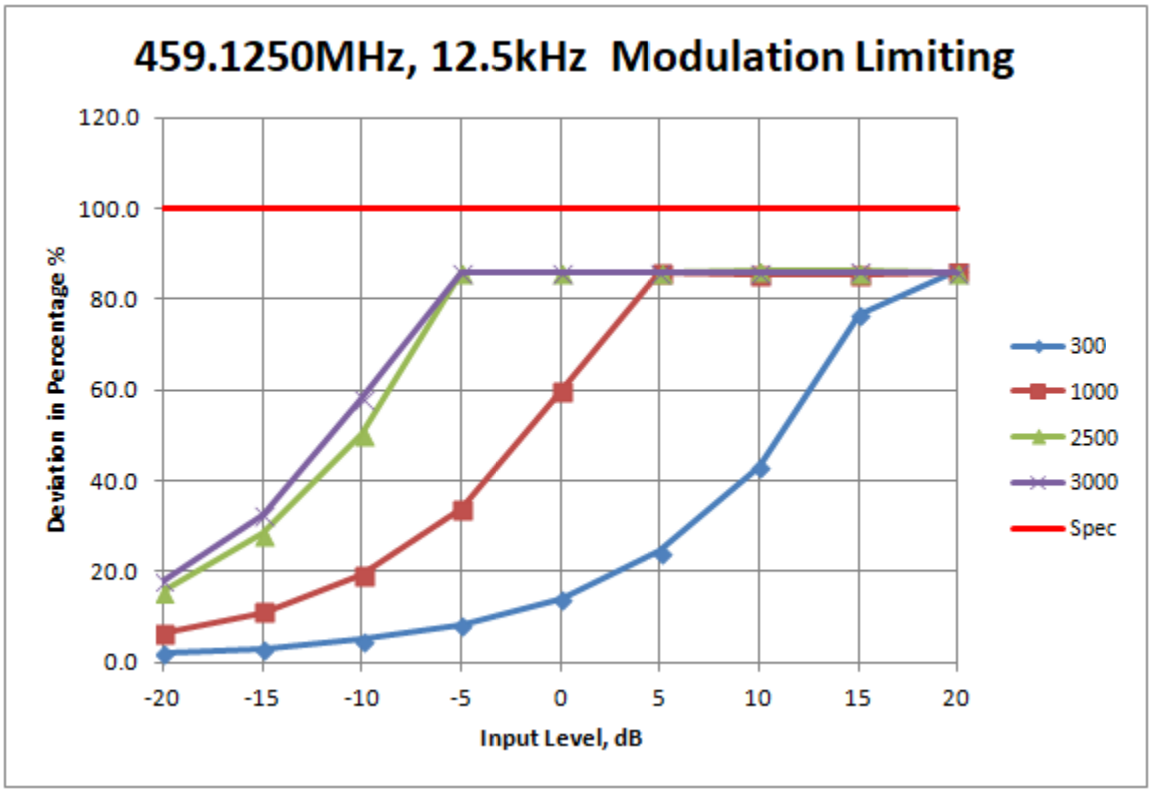
Not For FCC Review

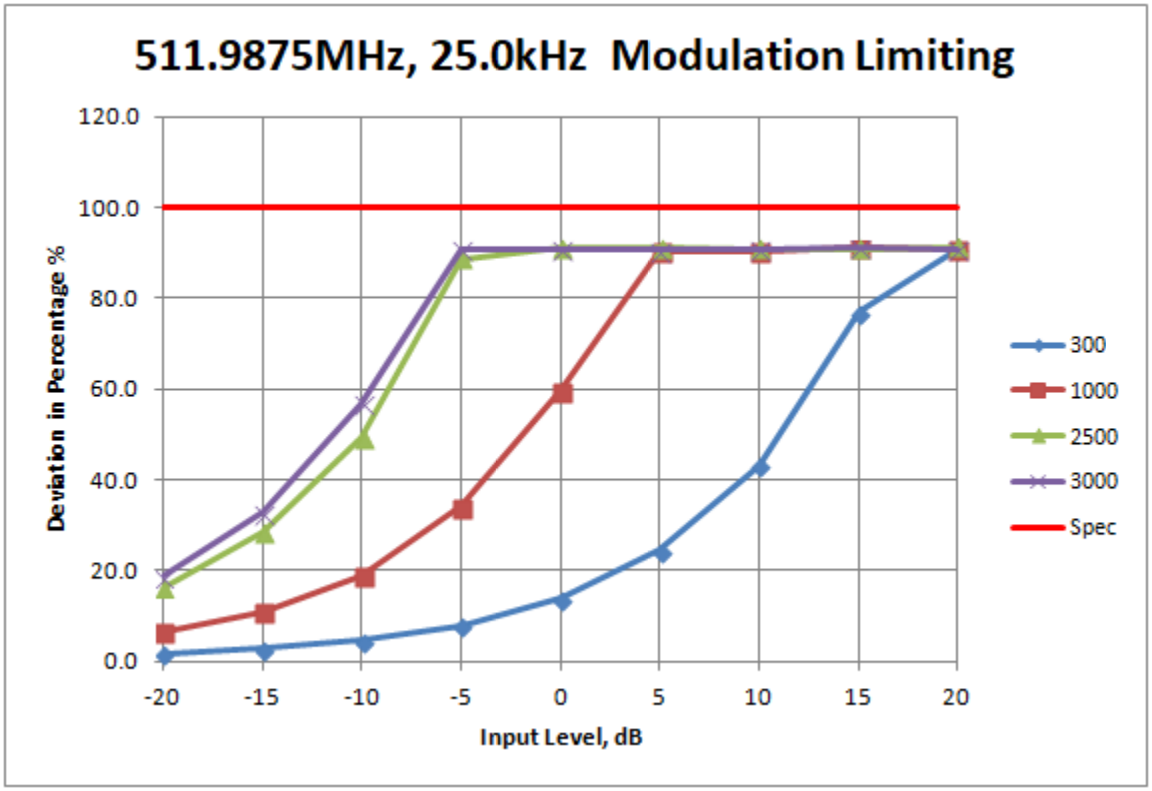


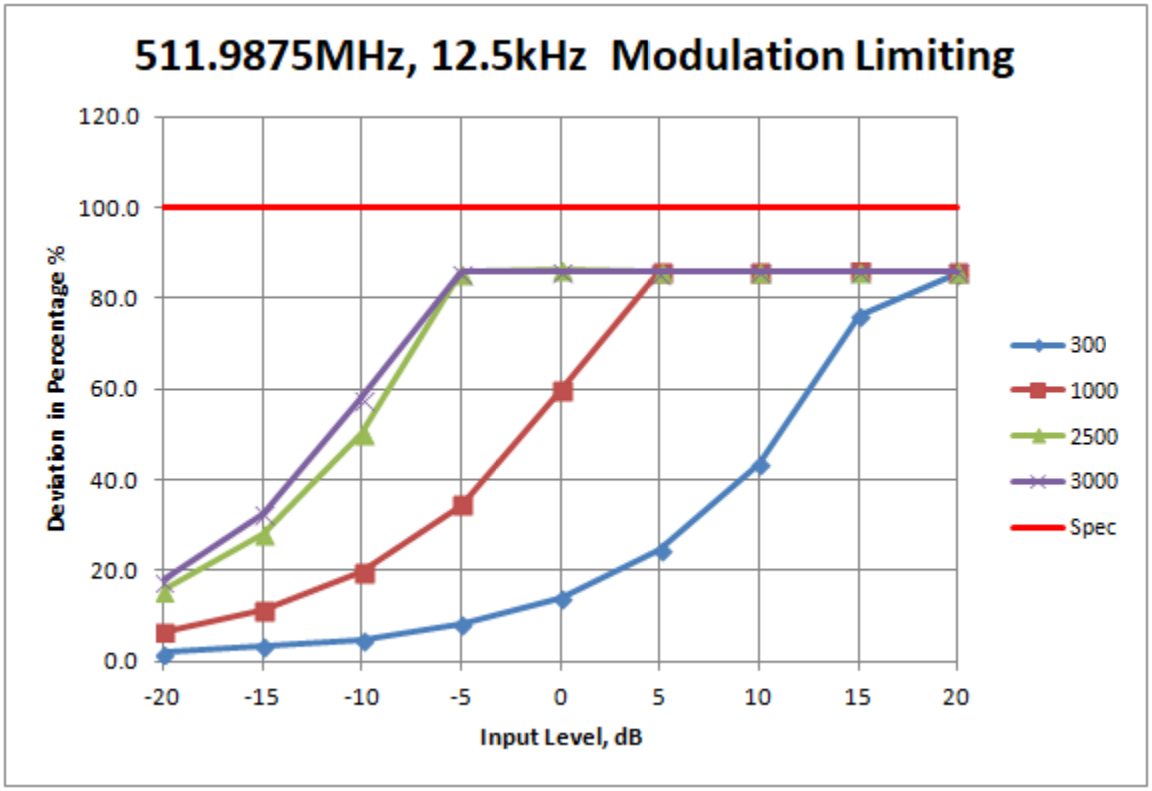


Not For FCC Review









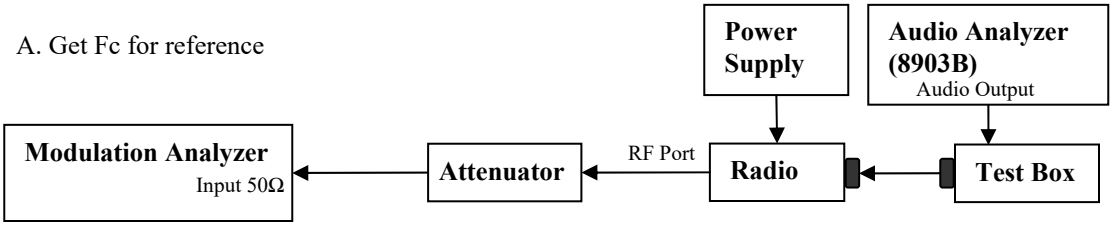
6.5.3. Test Limit

Modulation Limiting shall not exceed 100 percent.

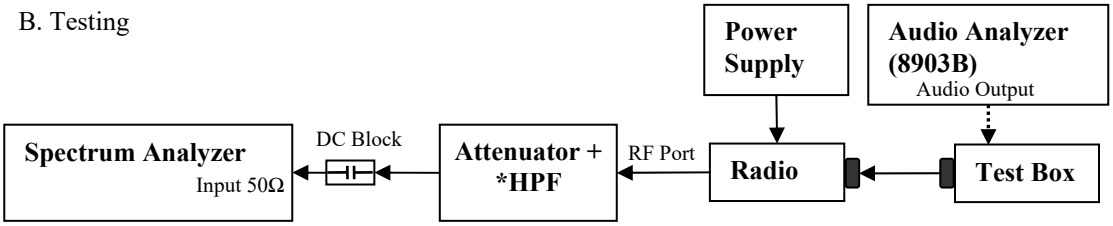
6.6. Occupied Bandwidth

6.6.1. Test Setup (Analog)

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)

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

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

BW = 2(M+D) = 2*(3 kHz + 5 kHz) = 16 kHz =➔ 16K0
F3E portion of the designator indicates voice.

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

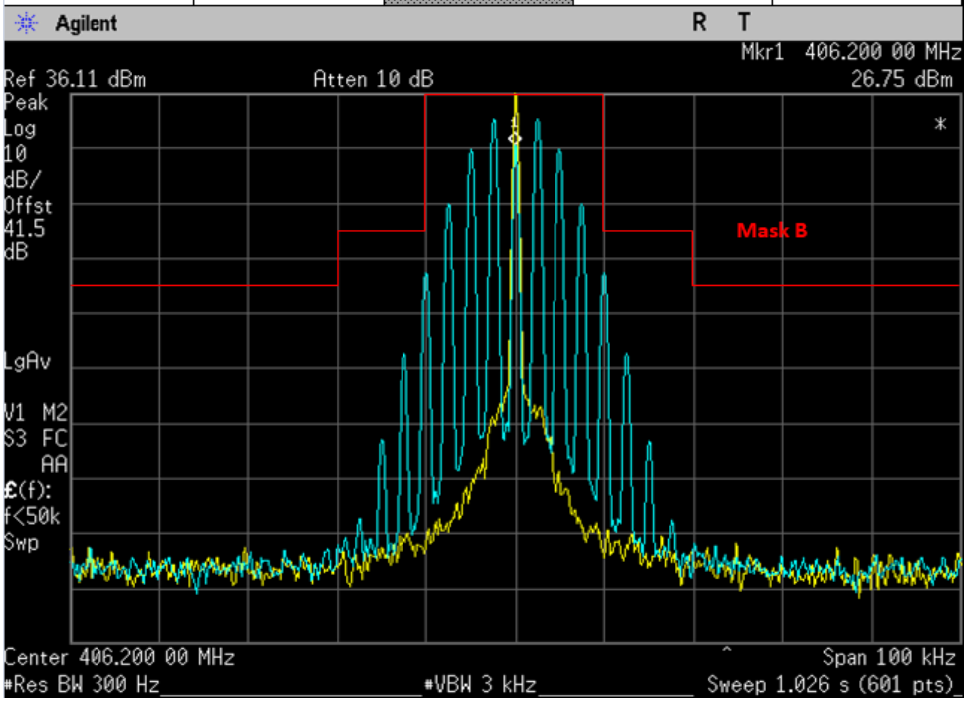
Standard Audio Modulation (12.5 kHz Channelization, Analog Voice):
Emission Designator 11K0F3E

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

BW = 2(M+D) = 2*(3.0 kHz + 2.5 kHz) = 11 kHz =➔ 11K0
F3E portion of the designator indicates voice.

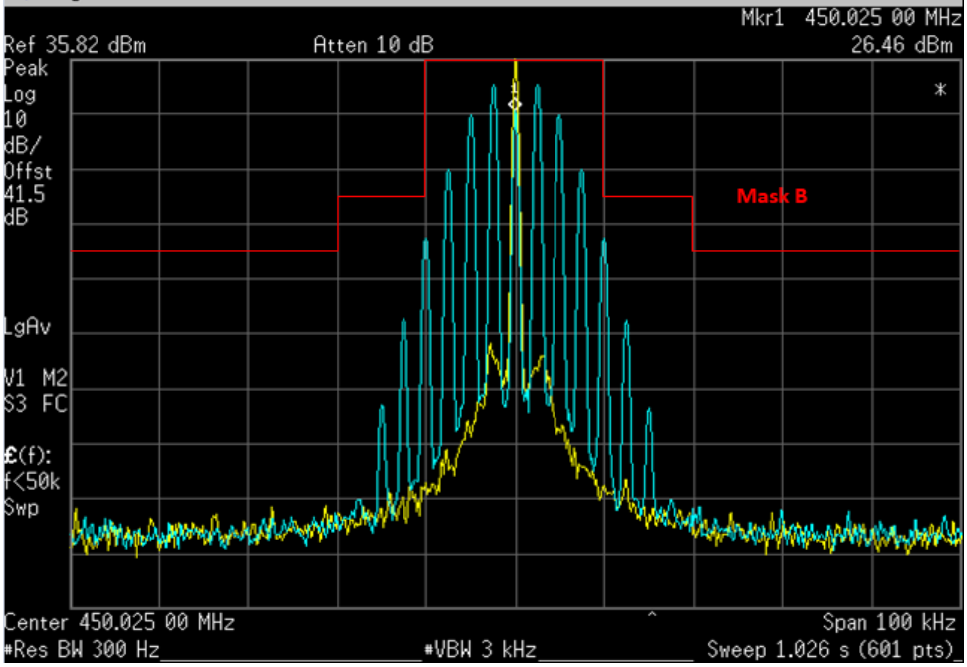
Therefore, the entire designator for 12.5 kHz channelization analog voice is 11K0F3E.

Modulation			Rules Part	
Analog Voice			RSS 119	
Channel Frequency (MHz)	Channel Spacing (kHz)		99% OCB (kHz)	Emission Designator
406.2000	25.0		15.0104	16K0F3E

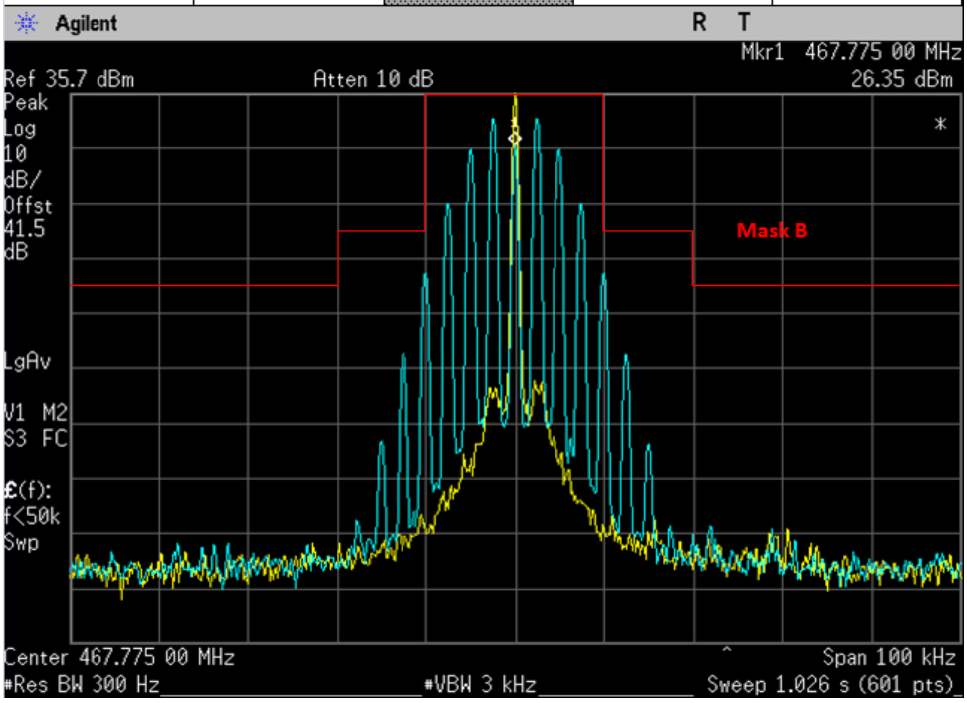


Not For FCC Review

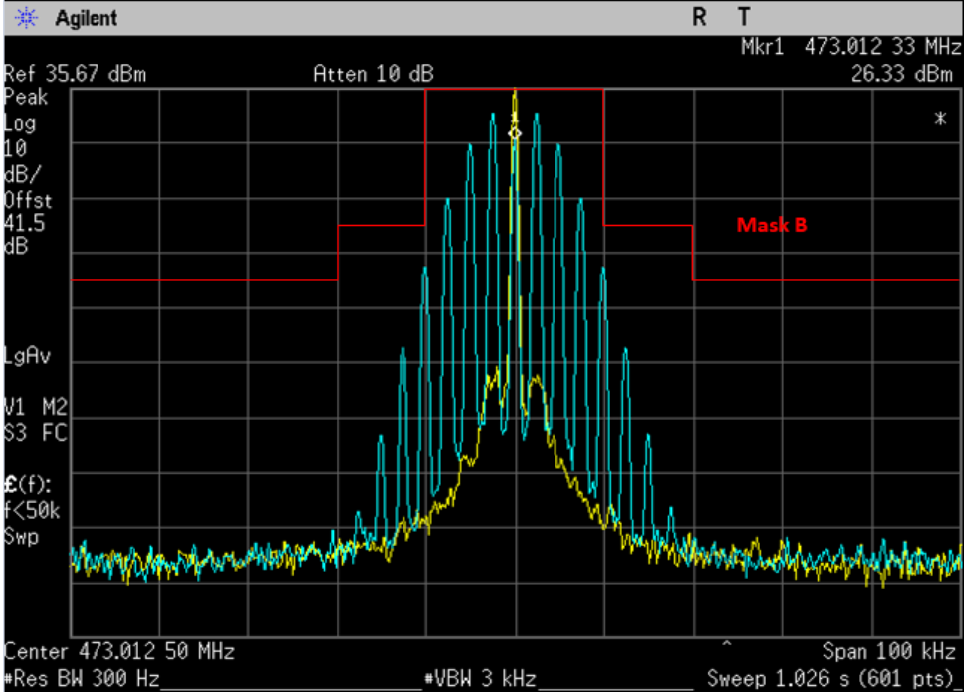
Modulation			Rules Part	
Analog Voice			74.462(c),RSS 119	
Channel Frequency (MHz)	Channel Spacing (kHz)		99% OCB (kHz)	Emission Designator
450.0250	25.0		15.0096	16K0F3E



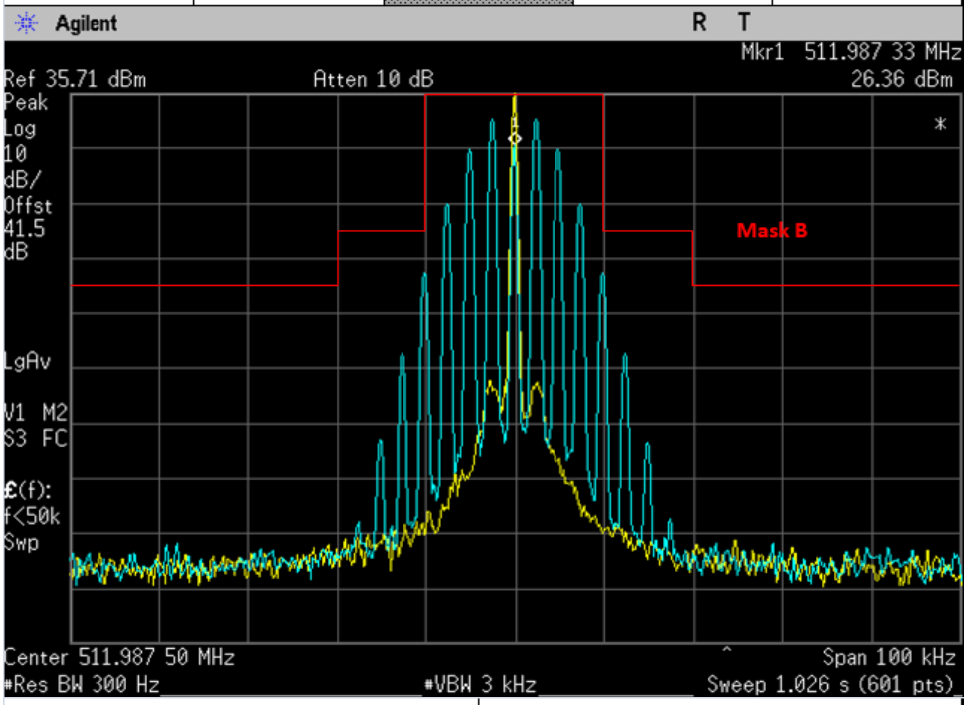
Modulation	Rules Part			
Analog Voice	80.211(f),RSS 119			
Channel Frequency (MHz)	**Channel Spacing (kHz)**		**99% OCB (kHz)**	**Emission Designator**
467.7750	25.0		15.0105	16K0F3E



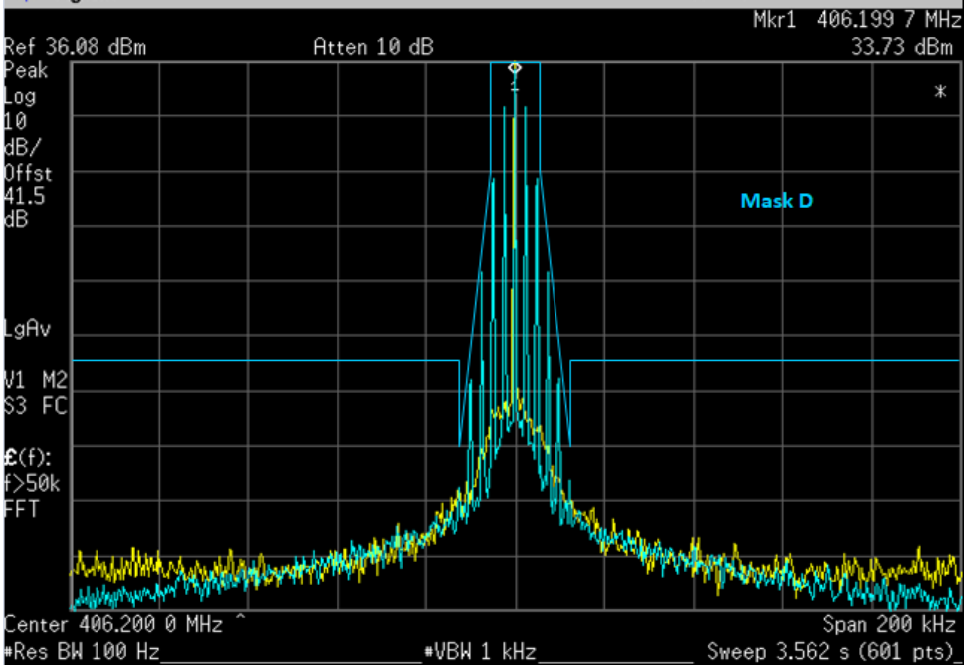
Modulation	Rules Part			
Analog Voice	90.210(T-Band)			
Channel Frequency (MHz)	**Channel Spacing (kHz)**		**99% OCB (kHz)**	**Emission Designator**
473.0125	25.0		15.0099	16K0F3E



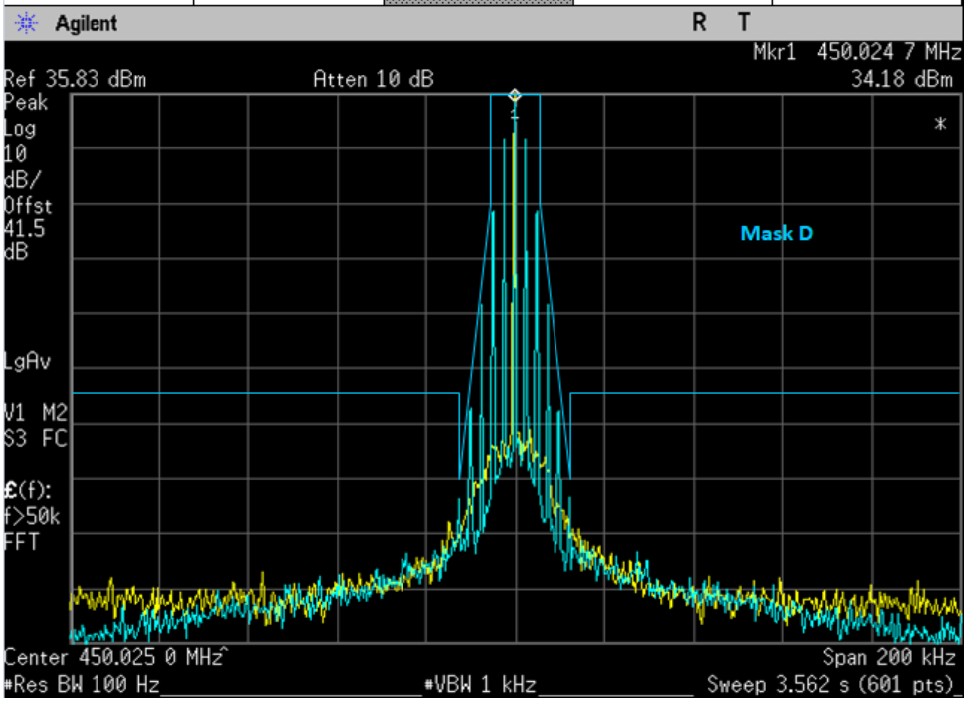
Modulation	Rules Part			
Analog Voice	90.210(T-Band)			
Channel Frequency (MHz)	**Channel Spacing (kHz)**		**99% OCB (kHz)**	**Emission Designator**
511.9875	25.0		15.0103	16K0F3E



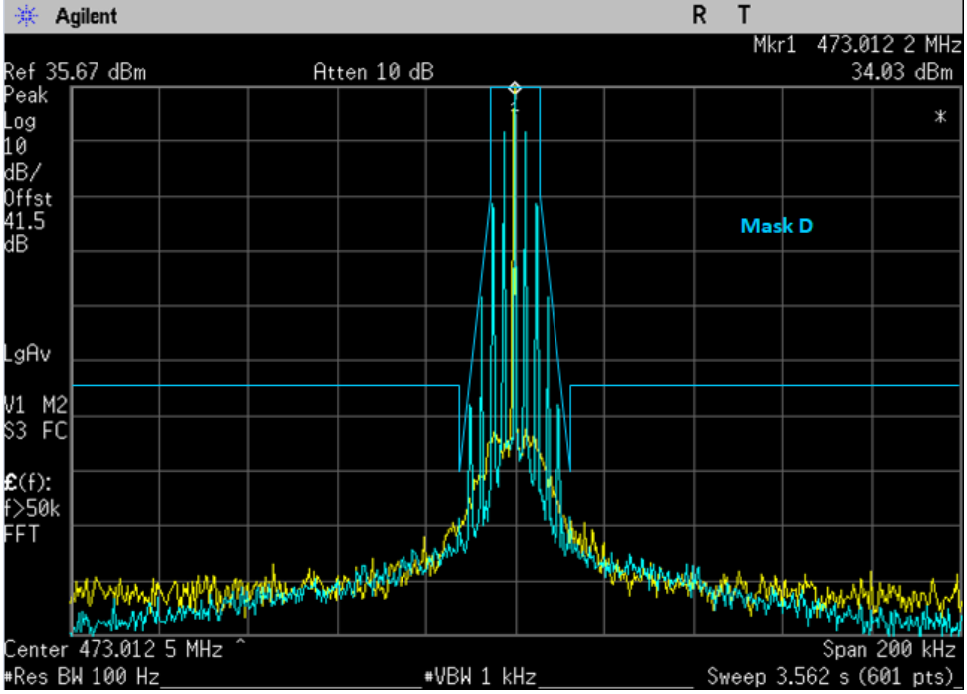
Modulation	Rules Part			
Analog Voice	90.210,RSS 119			
Channel Frequency (MHz)	**Channel Spacing (kHz)**		**99% OCB (kHz)**	**Emission Designator**
406.2000	12.5		9.8695	11K0F3E



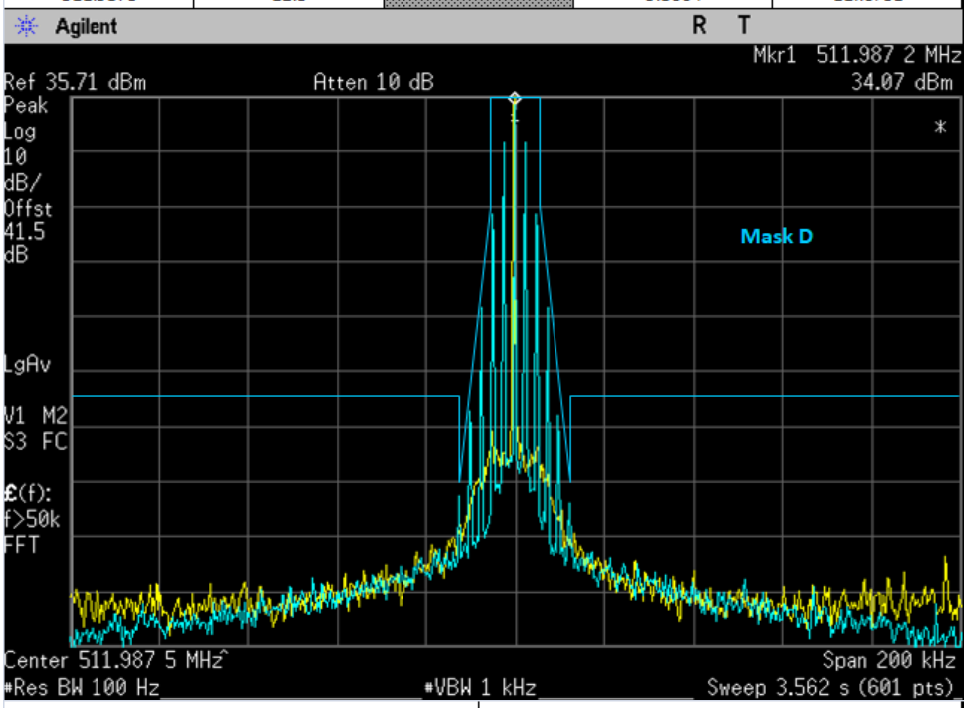
Modulation			Rules Part	
Analog Voice			90.210,74.462(c),RSS 119	
Channel Frequency (MHz)	**Channel Spacing (kHz)**		**99% OCB (kHz)**	**Emission Designator**
450.0250	12.5		9.8697	11K0F3E



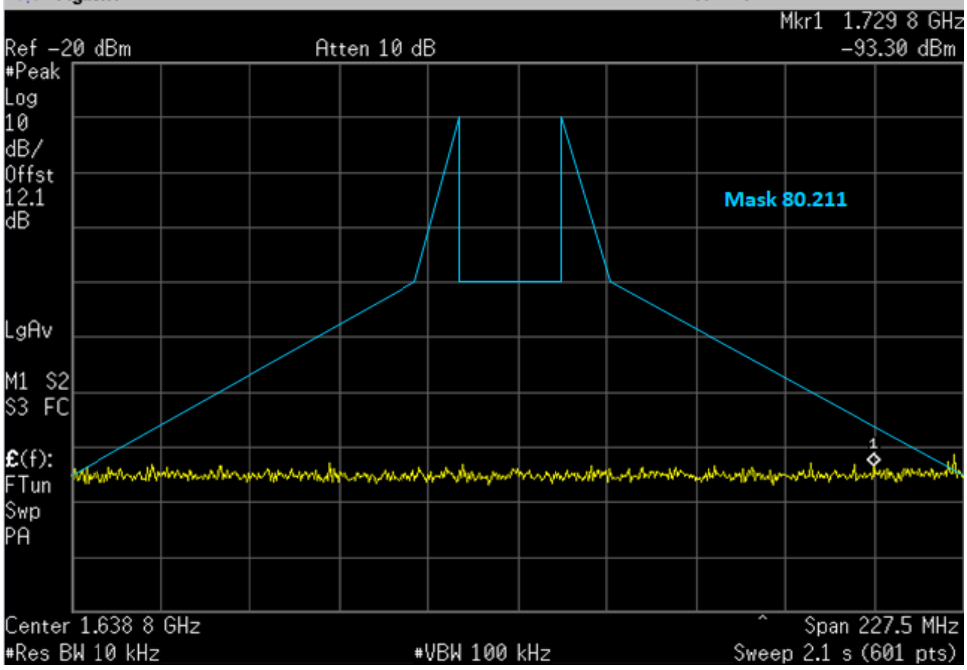
Modulation			Rules Part	
Analog Voice			90.210	
Channel Frequency (MHz)	**Channel Spacing (kHz)**		**99% OCB (kHz)**	**Emission Designator**
473.0125	12.5		9.8671	11K0F3E



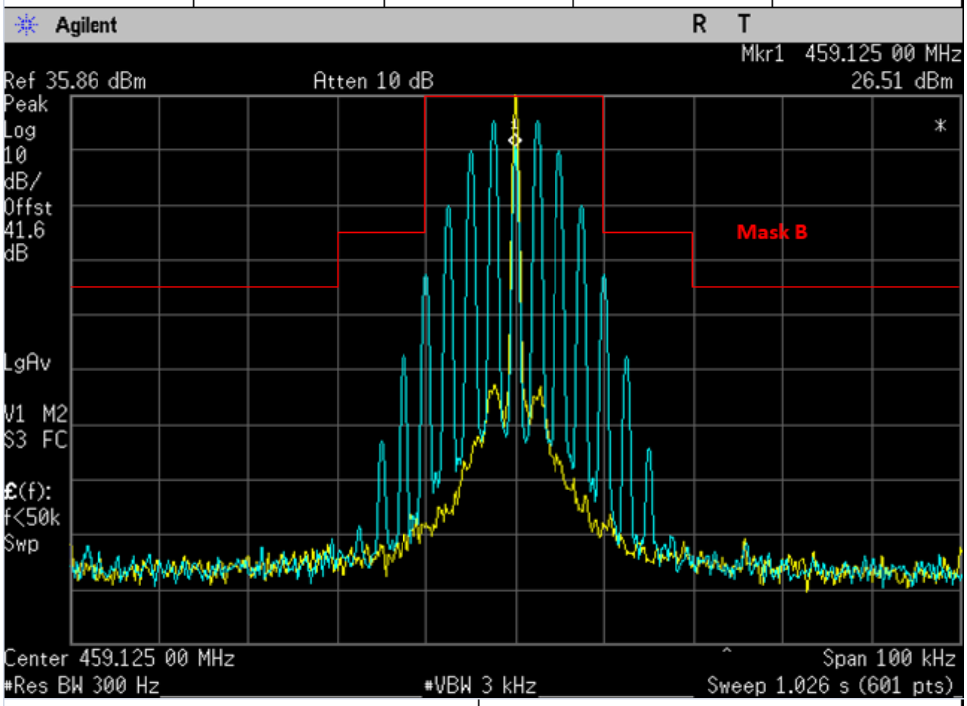
Modulation	Rules Part			
Analog Voice	90.210			
Channel Frequency (MHz)	**Channel Spacing (kHz)**		**99% OCB (kHz)**	**Emission Designator**
511.9875	12.5		9.8664	11K0F3E



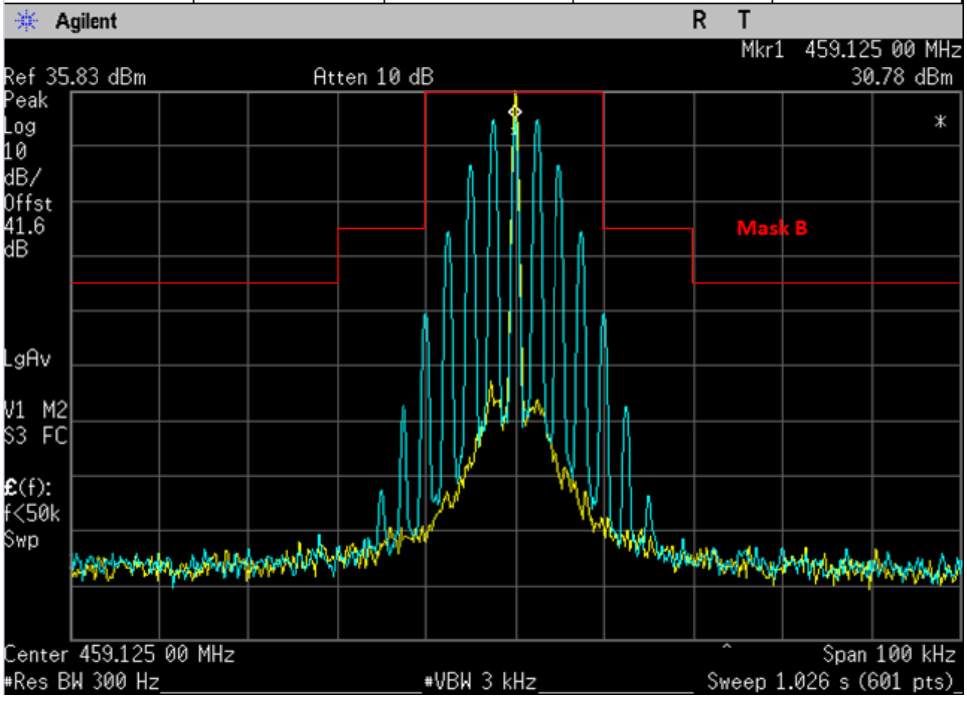
Modulation	Rules Part			
Analog	80.211(c),RSS182			
Channel Frequency (MHz)	**Channel Spacing (kHz)**			**Emission Designator**
467.7750	25.0			16K0F3E



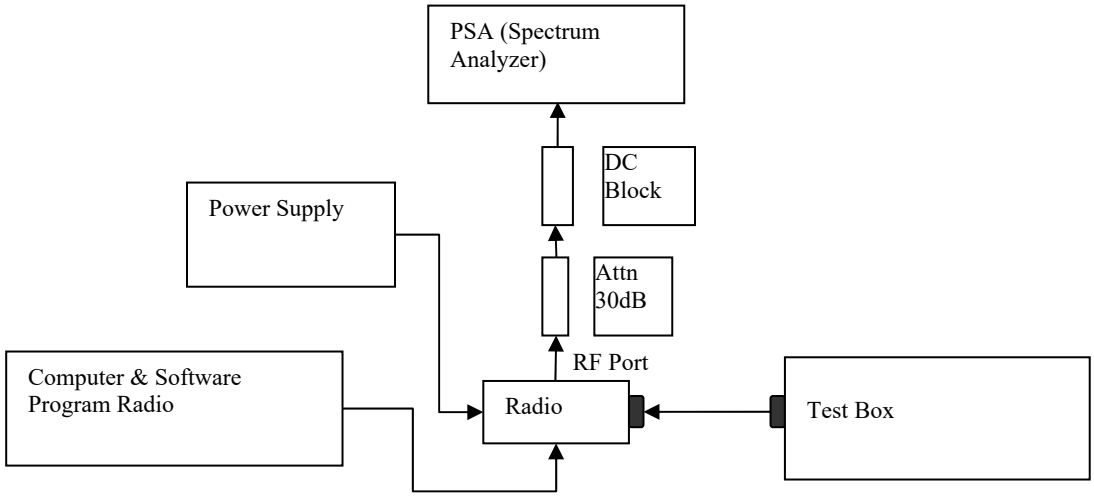
Modulation	Rules Part			
Analog Voice	FCC Part 22.359(b)			
Channel Frequency (MHz)	**Channel Spacing (kHz)**	**-26 dB Point (kHz)**	**99% OCB (kHz)**	**Emission Designator**
459.1250	25.0	15.5521	15.0093	16K0F3E



Modulation	Rules Part			
Analog Voice	FCC Part 22.359(b)			
Channel Frequency (MHz)	**Channel Spacing (kHz)**	**-26 dB Point (kHz)**	**99% OCB (kHz)**	**Emission Designator**
459.1250	20.0	15.4095	10.3920	16K0F3E



6.6.3. Test Setup (Digital)



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

*Note:

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

6.6.4. Test Result (Digital)

Digital (12.5 kHz Channelization, Digital Data):
Emission Designator 7K60F1D

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

F1D portion of the designator indicates digital data.

Therefore, the entire designator for 12.5 kHz channelization digital data is 7K60F1D.

Digital (12.5 kHz Channelization, Digital Voice):
Emission Designator 7K60F1E

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

F1E portion of the designator indicates digital voice.

Therefore, the entire designator for 12.5 kHz channelization digital voice is 7K60F1E.

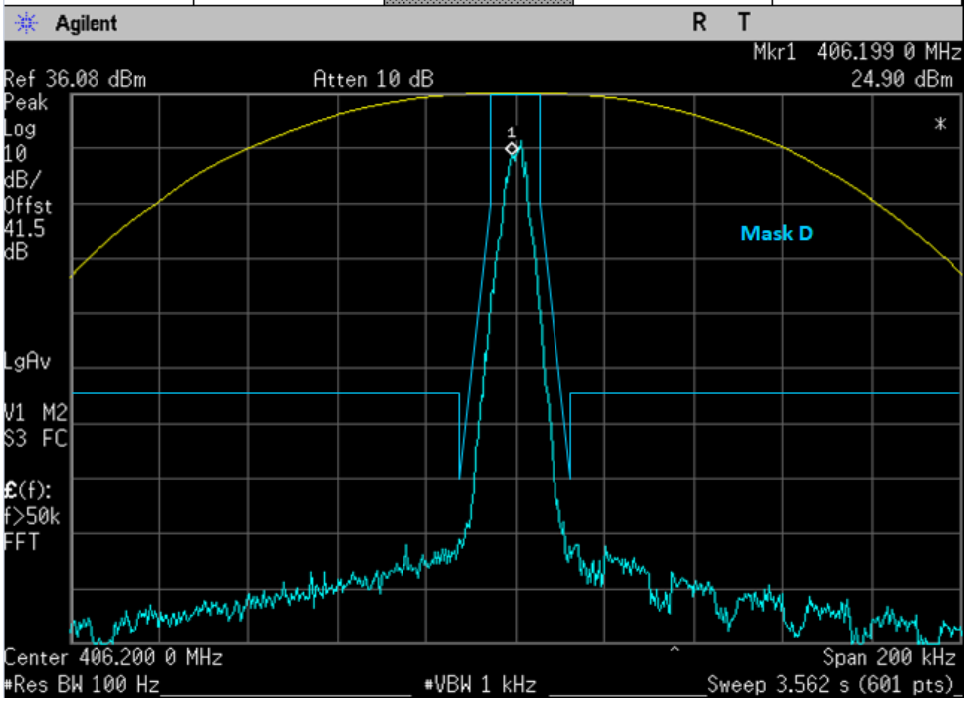
Digital (12.5 kHz Channelization, Digital TDMA):
Emission Designator 7K60F1W

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

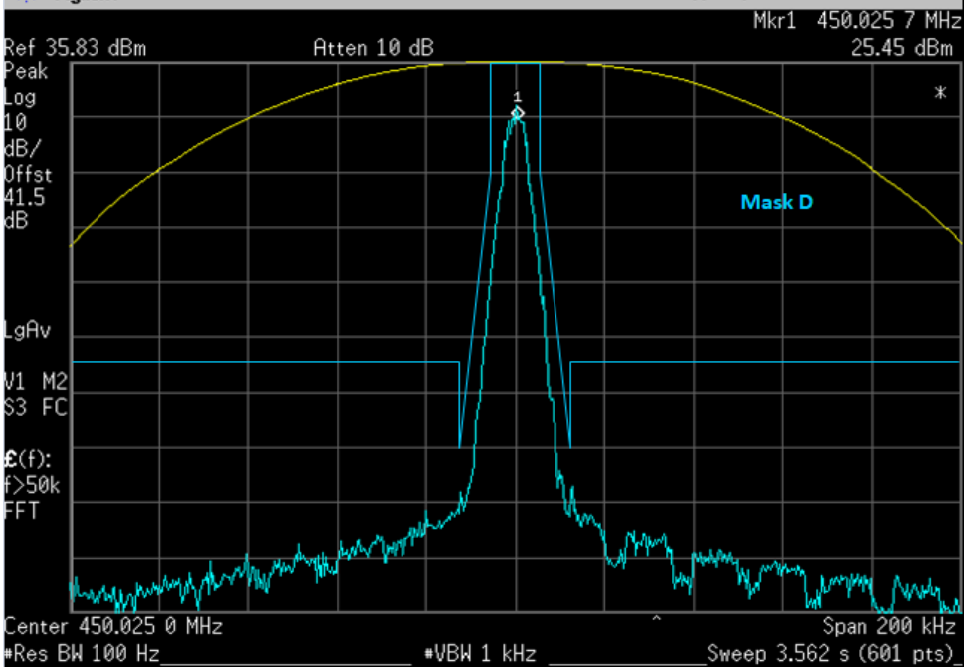
F1W portion of the designator indicates digital TDMA.

Therefore, the entire designator for 12.5 kHz channelization digital TDMA is 7K60F1W.

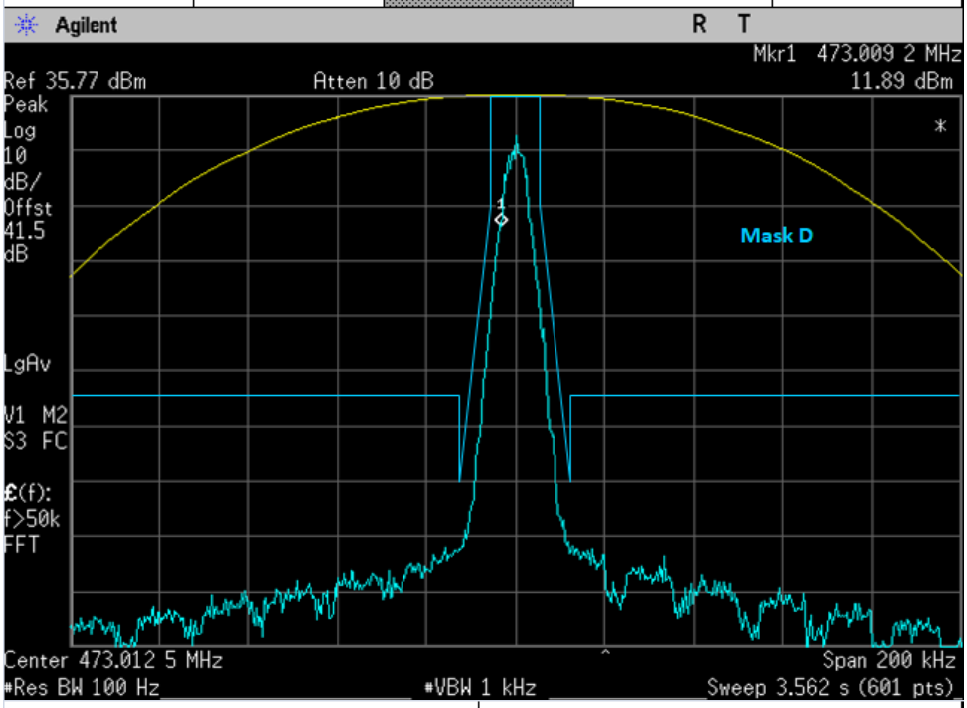
Modulation	Rules Part			
4FSK Data	90.210, RSS 119			
Channel Frequency (MHz)	**Channel Spacing (kHz)**		**99% OCB (kHz)**	**Emission Designator**
406.2000	12.5		7.3948	7K60F1D



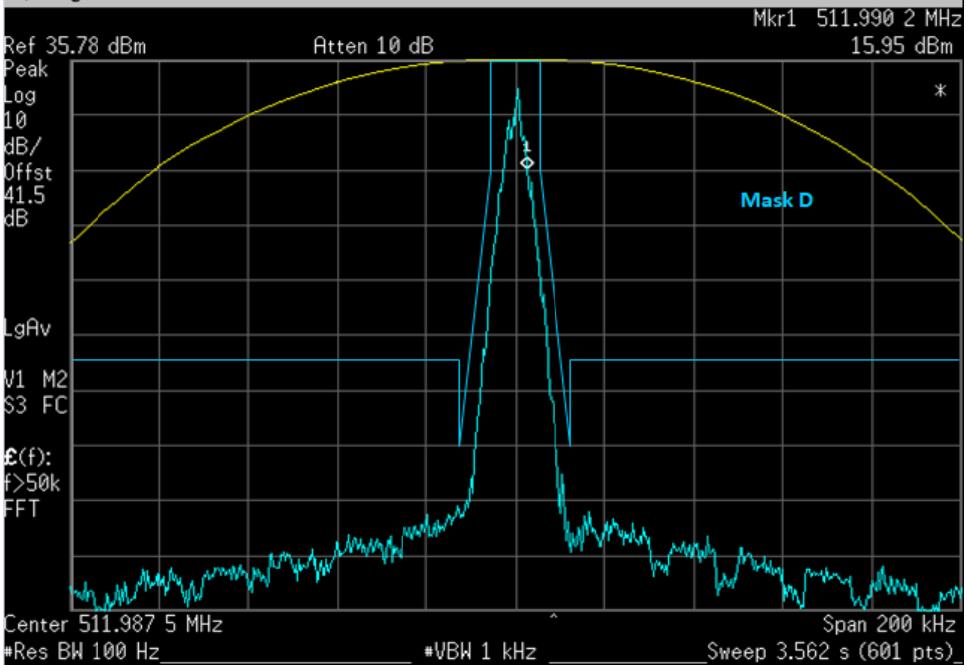
Modulation	Rules Part			
4FSK Data	90.210,74.462(c), RSS 119			
Channel Frequency (MHz)	**Channel Spacing (kHz)**		**99% OCB (kHz)**	**Emission Designator**
450.0250	12.5		7.5167	7K60F1D



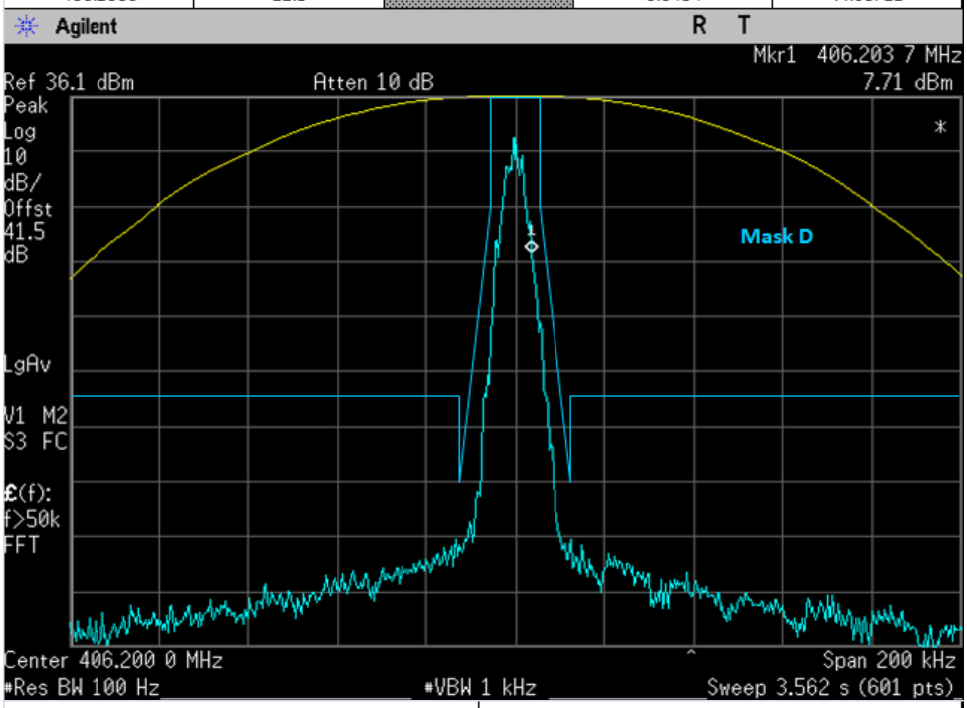
Modulation	Rules Part			
4FSK Data	90.210			
Channel Frequency (MHz)	**Channel Spacing (kHz)**		**99% OCB (kHz)**	**Emission Designator**
473.0125	12.5		7.4471	7K60F1D



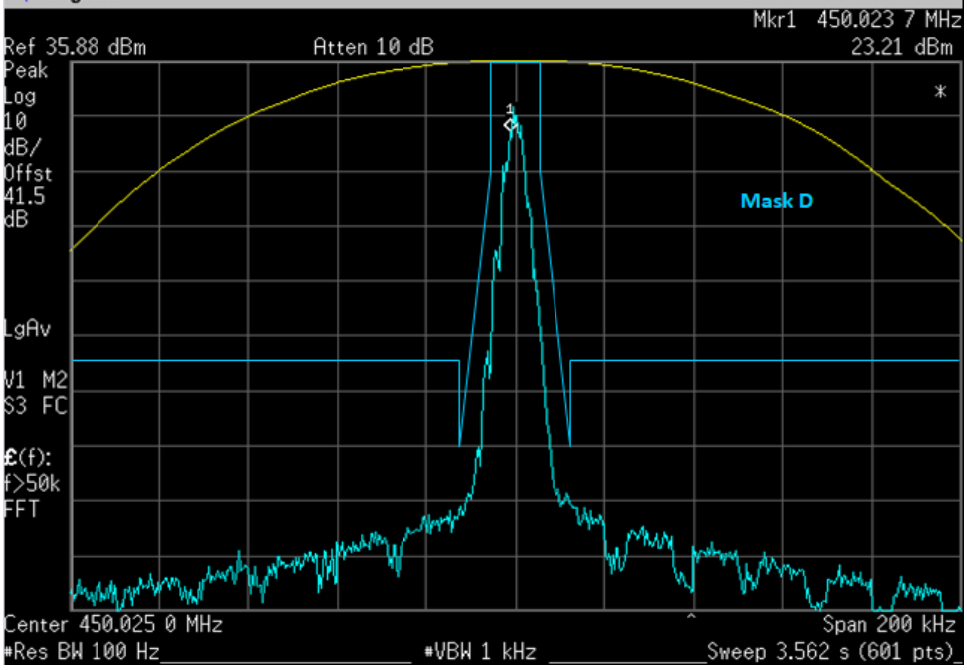
Modulation	Rules Part			
4FSK Data	90.210			
Channel Frequency (MHz)	**Channel Spacing (kHz)**		**99% OCB (kHz)**	**Emission Designator**
511.9875	12.5		7.4518	7K60F1D



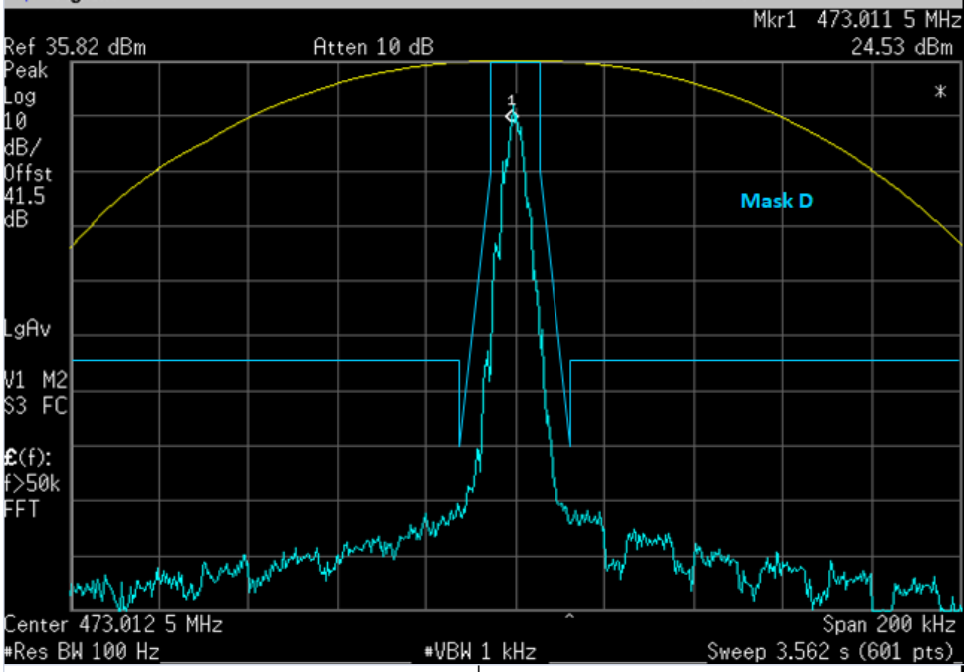
Modulation	Rules Part			
4FSK Voice	90.210,RSS 119			
Channel Frequency (MHz)	**Channel Spacing (kHz)**		**99% OCB (kHz)**	**Emission Designator**
406.2000	12.5		6.6434	7K60F1E



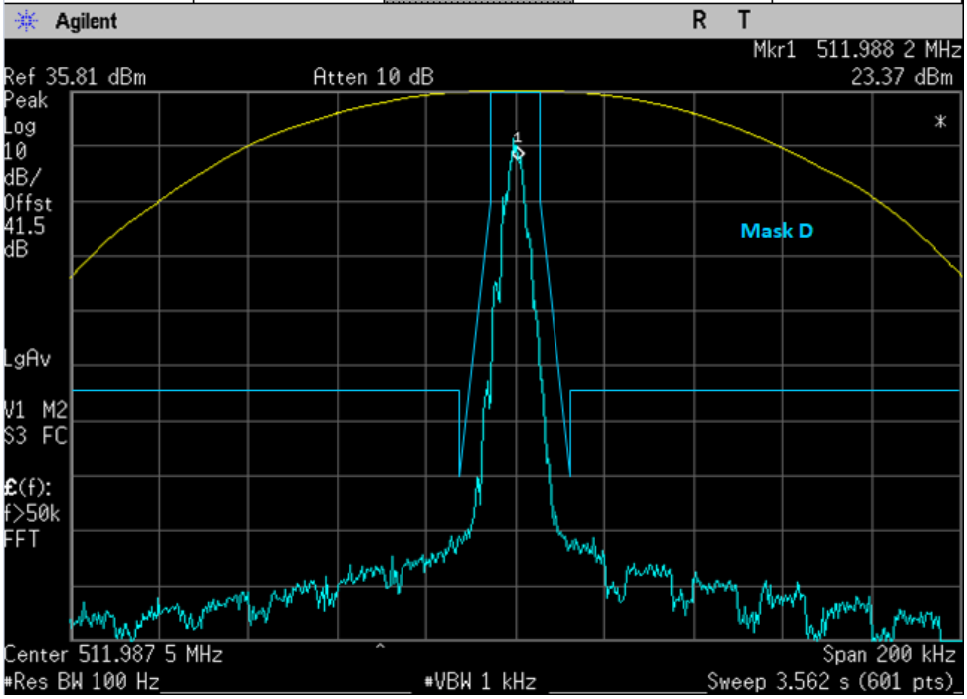
Modulation	Rules Part			
4FSK Voice	90.210,74.462(c), RSS 119			
Channel Frequency (MHz)	**Channel Spacing (kHz)**		**99% OCB (kHz)**	**Emission Designator**
450.0250	12.5		6.2259	7K60F1E



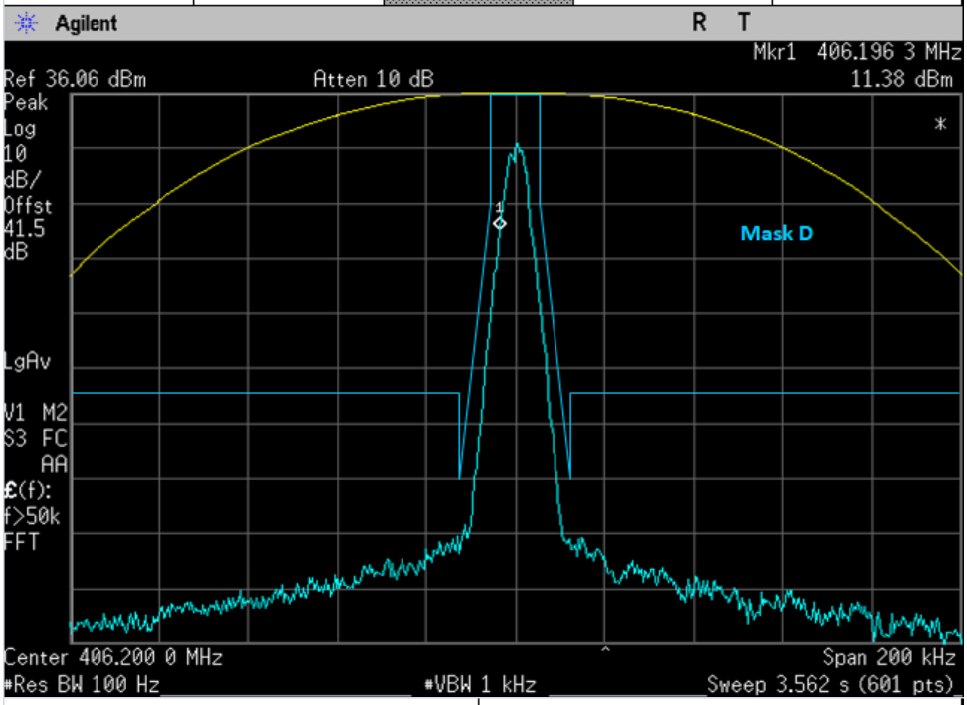
Modulation	Rules Part			
4FSK Voice	90.210			
Channel Frequency (MHz)	**Channel Spacing (kHz)**		**99% OCB (kHz)**	**Emission Designator**
473.0125	12.5		6.7486	7K60F1E



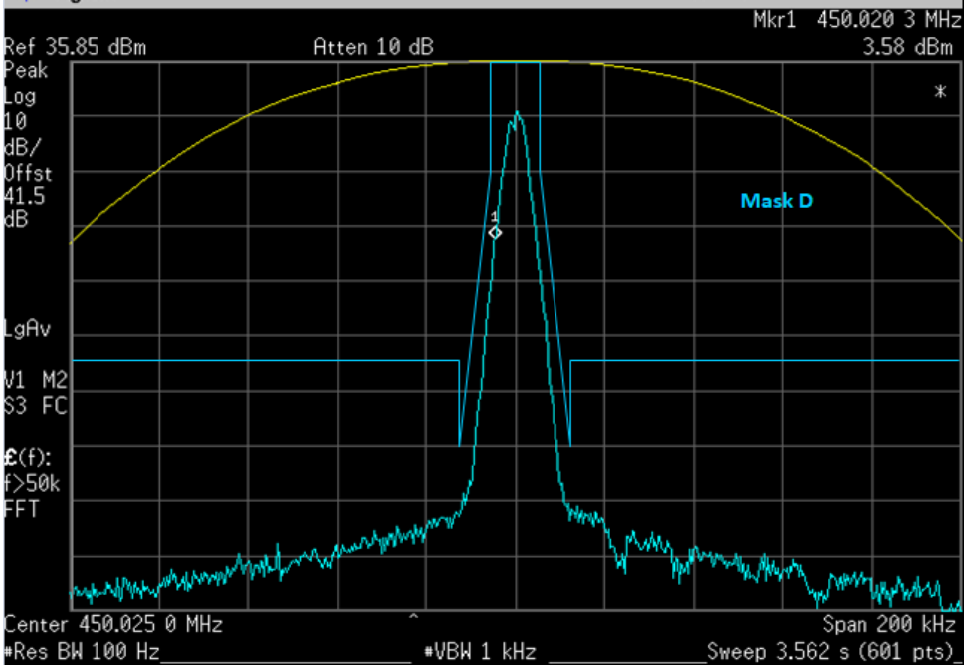
Modulation	Rules Part			
4FSK Voice	90.210			
Channel Frequency (MHz)	**Channel Spacing (kHz)**		**99% OCB (kHz)**	**Emission Designator**
511.9875	12.5		6.7438	7K60F1E



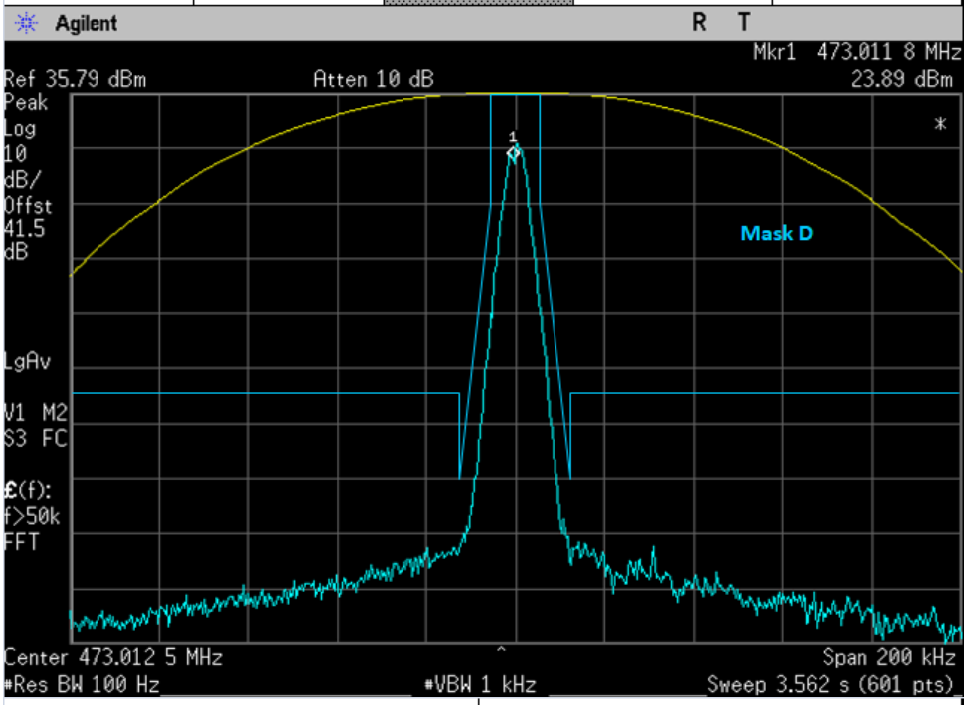
Modulation	Rules Part			
4FSK Data+Voice	90.210, RSS 119			
Channel Frequency (MHz)	**Channel Spacing (kHz)**		**99% OCB (kHz)**	**Emission Designator**
406.2000	12.5		7.1232	7K60F1W



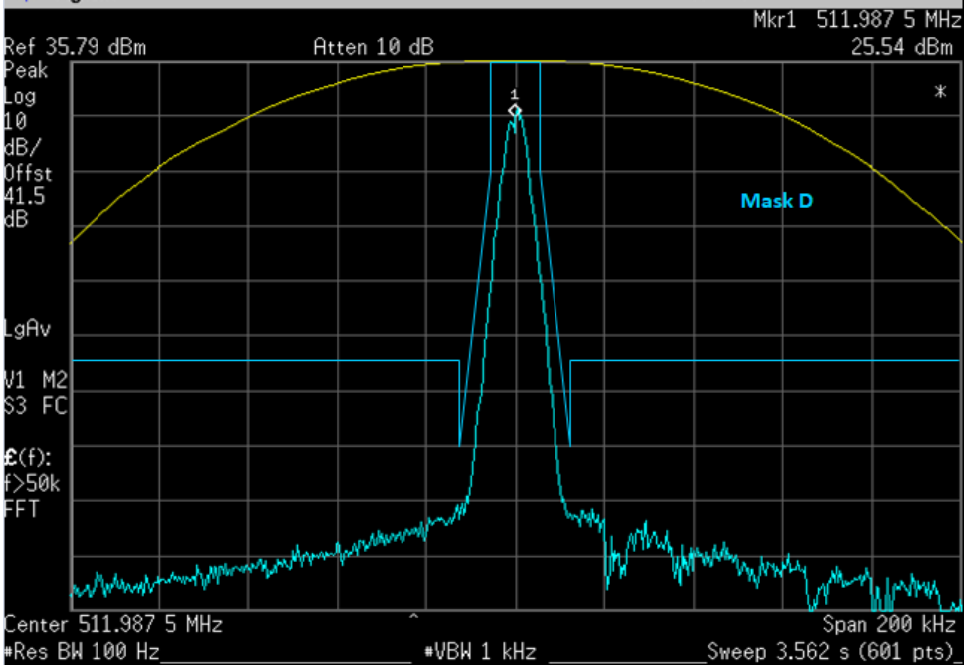
Modulation	Rules Part			
4FSK Data+Voice	90.210, RSS 119			
Channel Frequency (MHz)	**Channel Spacing (kHz)**		**99% OCB (kHz)**	**Emission Designator**
450.0250	12.5		7.1731	7K60F1W



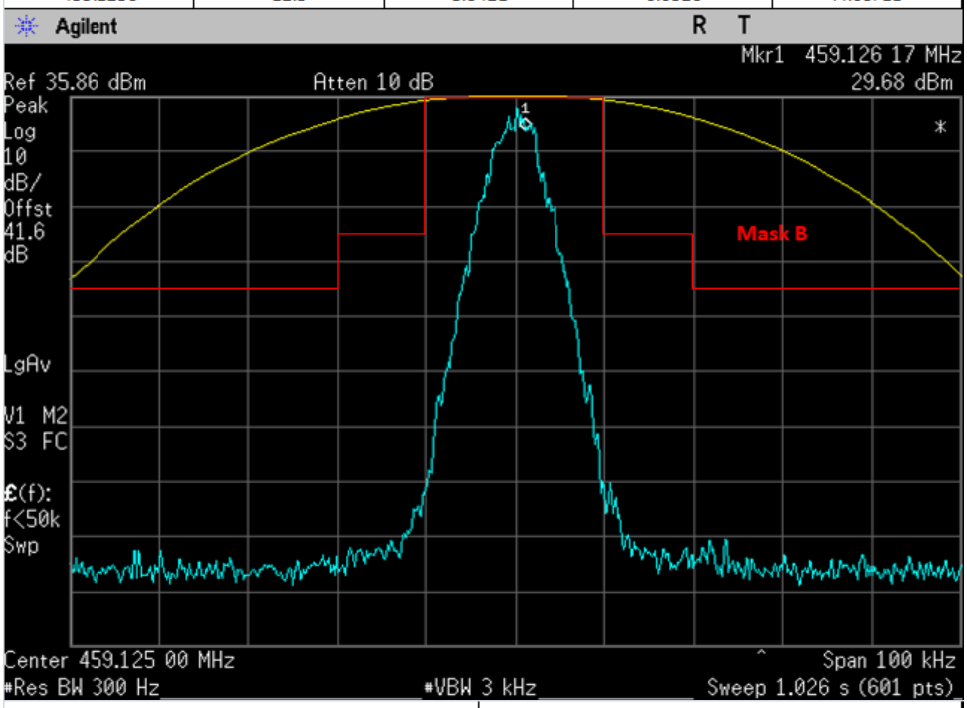
Modulation	Rules Part			
4FSK Data+Voice	90.210			
Channel Frequency (MHz)	**Channel Spacing (kHz)**		**99% OCB (kHz)**	**Emission Designator**
473.0125	12.5		7.1719	7K60F1W



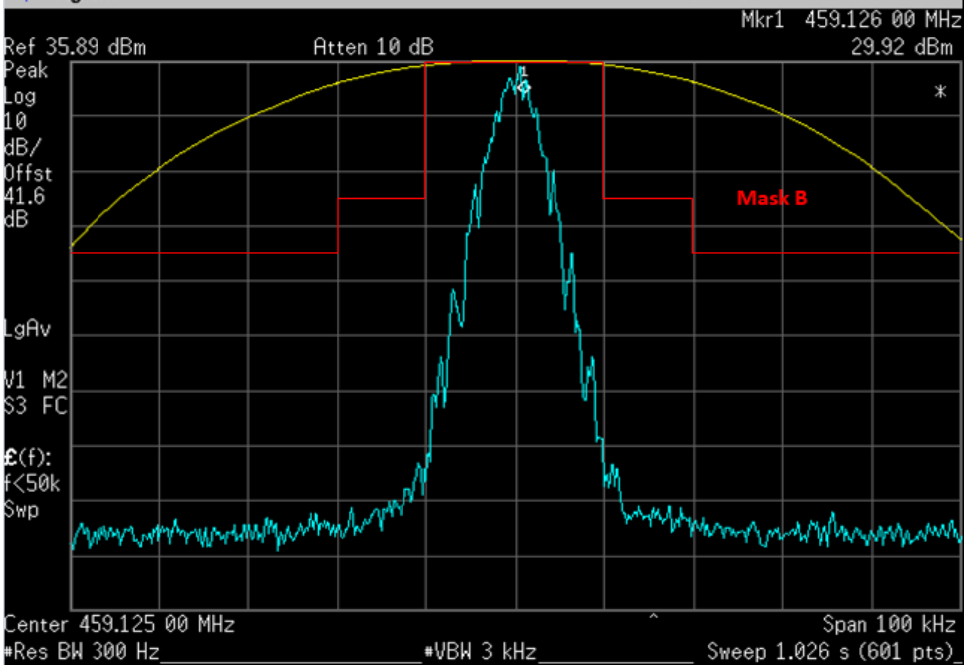
Modulation	Rules Part			
4FSK Data+Voice	90.210			
Channel Frequency (MHz)	**Channel Spacing (kHz)**		**99% OCB (kHz)**	**Emission Designator**
511.9875	12.5		7.3167	7K60F1W



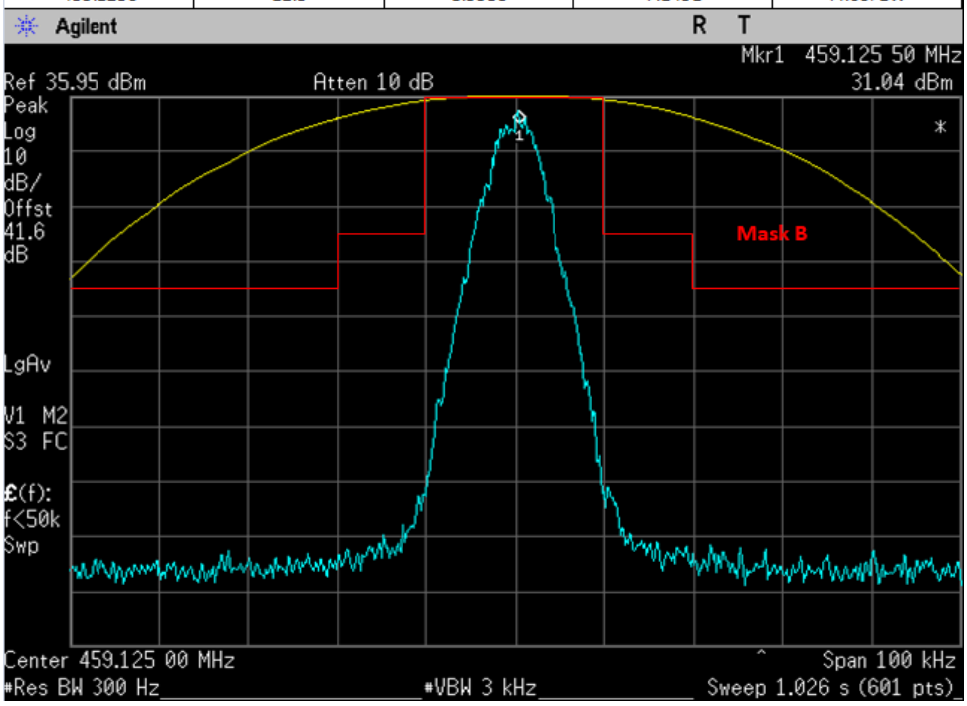
Modulation	Rules Part			
4FSK Data	FCC Part 22.359(b)			
Channel Frequency (MHz)	**Channel Spacing (kHz)**	**-26 dB Point (kHz)**	**99% OCB (kHz)**	**Emission Designator**
459.1250	12.5	8.0421	6.6326	7K60F1D



Modulation	Rules Part			
4FSK Voice	FCC Part 22.359(b)			
Channel Frequency (MHz)	**Channel Spacing (kHz)**	**-26 dB Point (kHz)**	**99% OCB (kHz)**	**Emission Designator**
459.1250	12.5	9.2730	7.1579	7K60F1E



Modulation		Rules Part		
4FSK Data+Voice		FCC Part 22.359(b)		
Channel Frequency (MHz)	**Channel Spacing (kHz)**	**-26 dB Point (kHz)**	**99% OCB (kHz)**	**Emission Designator**
459.1250	12.5	8.9953	7.1491	7K60F1W



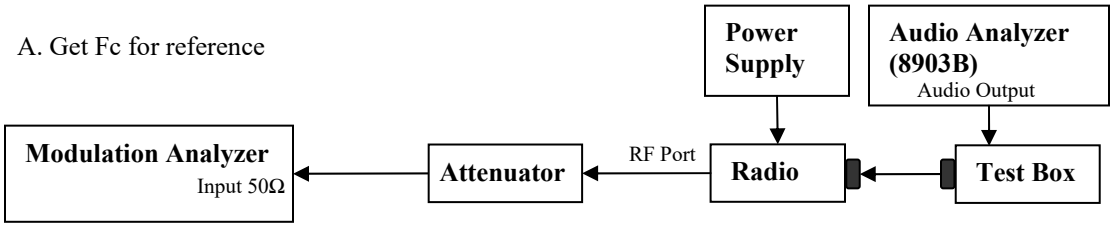
6.6.5. Test Limit

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.

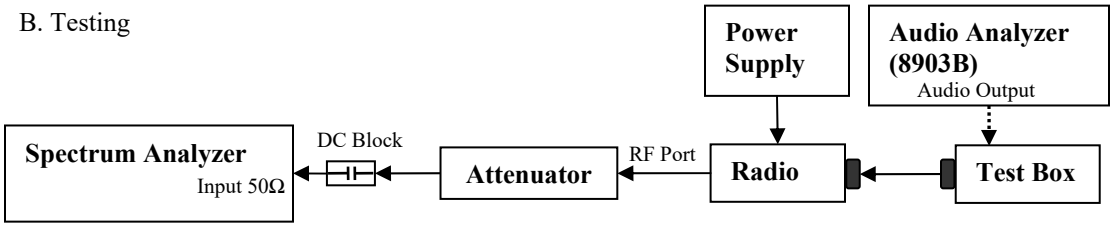
6.7. Band Edge Conducted Spurious Emission (Part 22)

6.7.1. Test Setup (Analog)

A. Get Fc for reference



B. Testing



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)

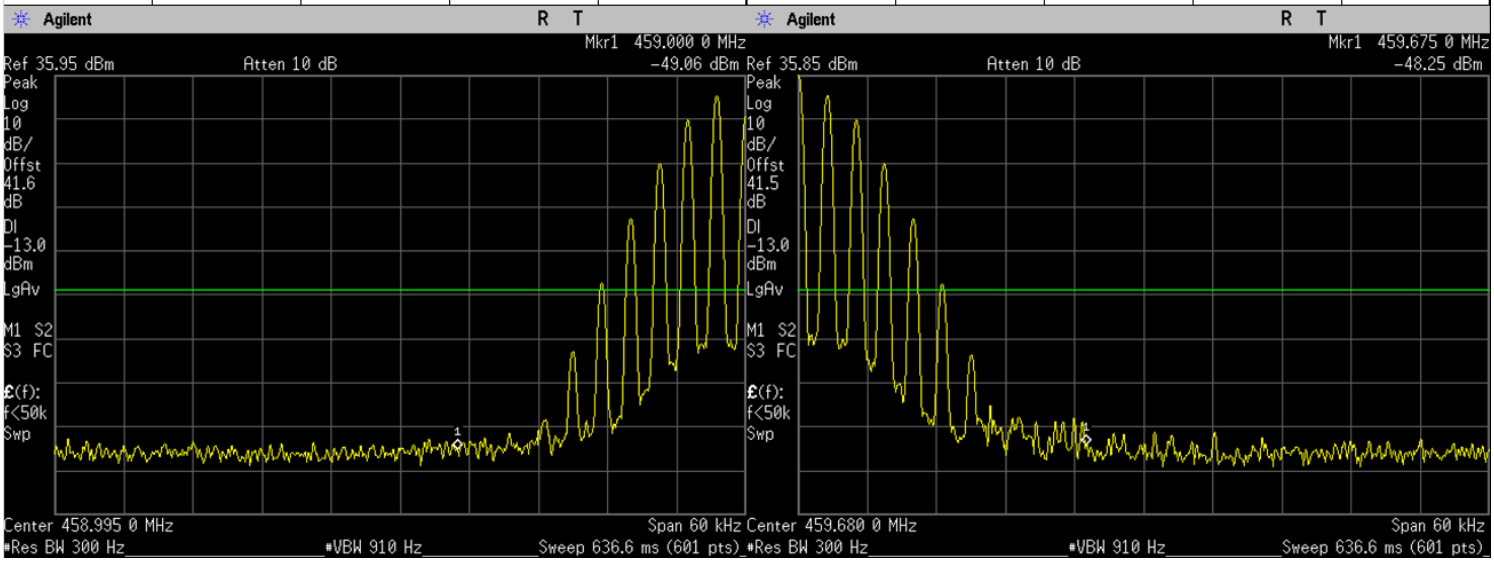
MAX PWR

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	15.5506	15.0041	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	15.5503	15.0097	16K0F3E



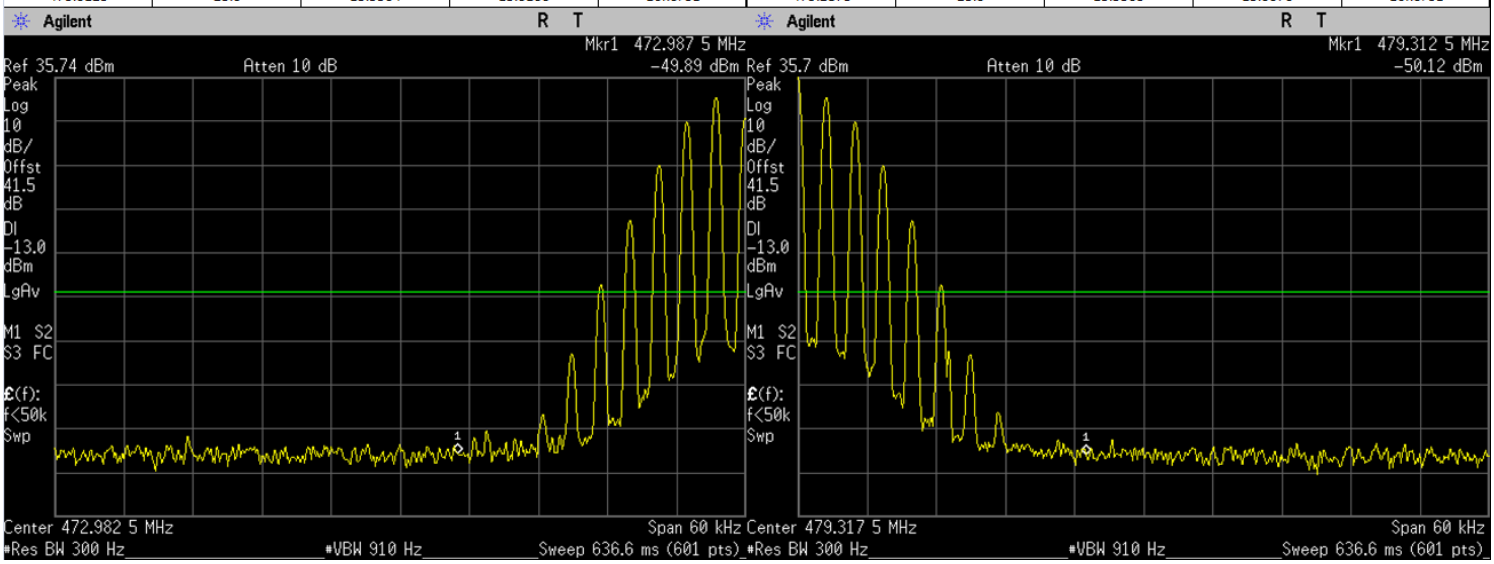
MAX PWR

Modulation	Rules Part
Analog Voice	FCC Part 22.359(b)

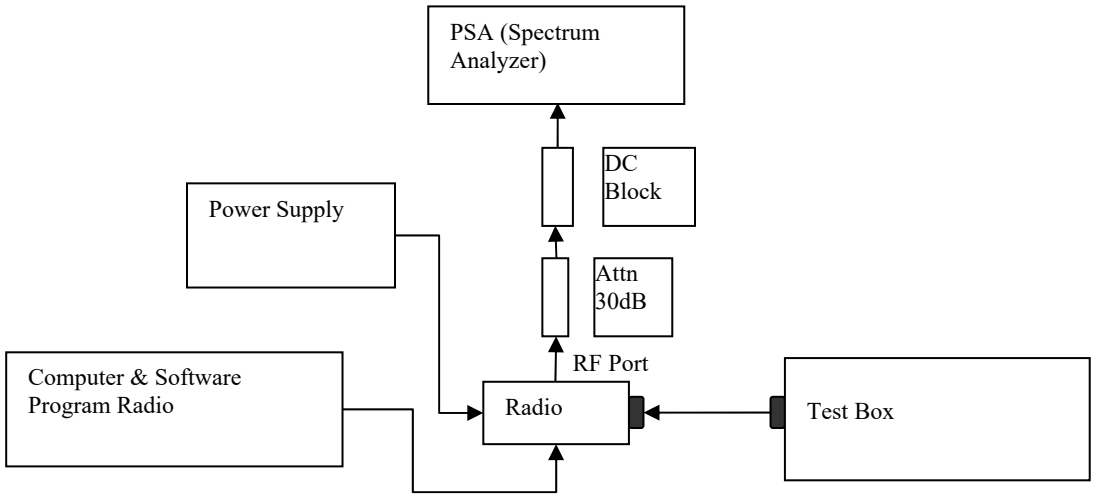
Channel Frequency	Channel Spacing	-26 dB Point (kHz)	99% OCB	Emission Designator
473.0125	25.0	15.5504	15.0100	16K0F3E

Modulation	Rules Part
Analog Voice	FCC Part 22.359(b)

Channel Frequency	Channel Spacing	-26 dB Point (kHz)	99% OCB	Emission Designator
479.2875	25.0	15.5503	15.0070	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.

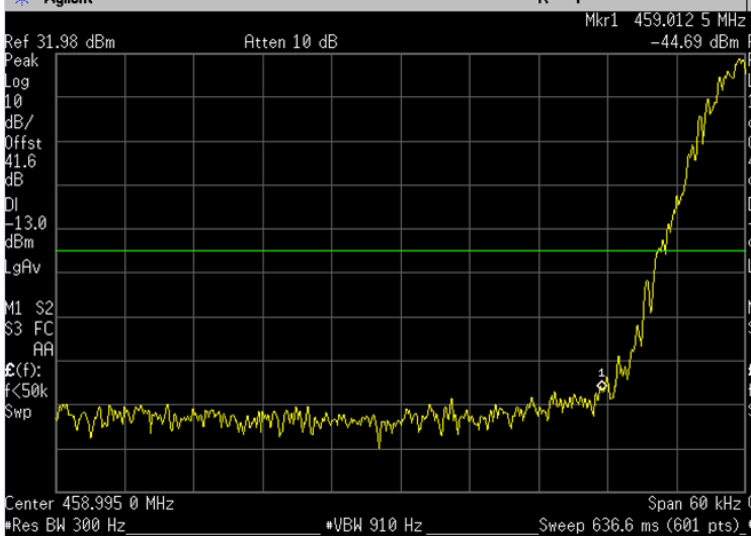
*Note:

- 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.

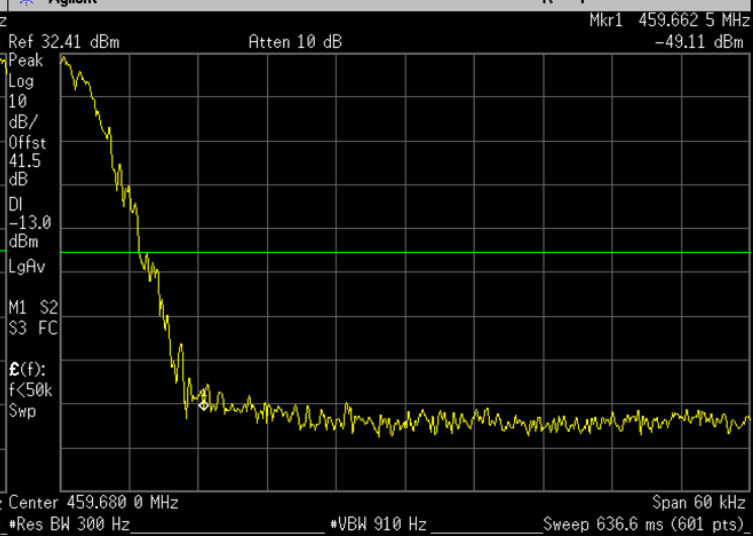
6.7.4. Test Result (Digital)

MAX PWR

Modulation	Rules Part			
4FSK Data	FCC Part 22.359(b)			
Channel Frequency	**Channel Spacing**	**-26 dB Point (kHz)**	**99% OCB**	**Emission Designator**
459.0250	12.5	9.7668	7.3471	7K60F1D

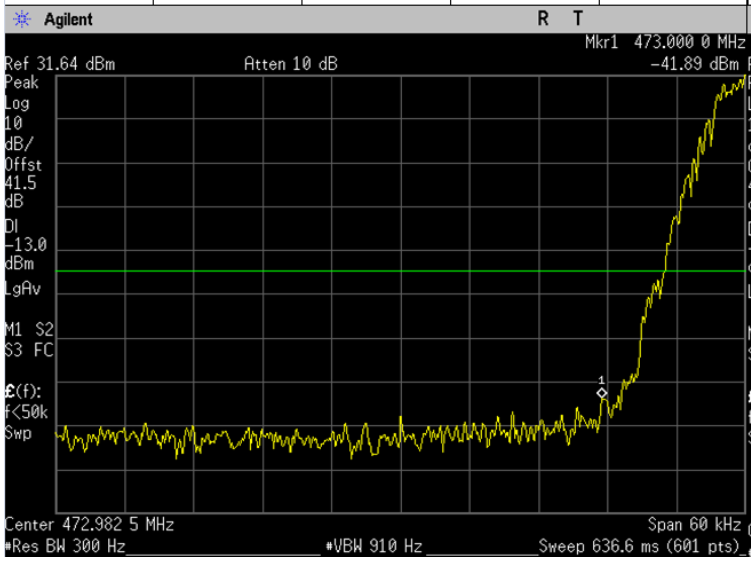


Modulation	Rules Part			
4FSK Data	FCC Part 22.359(b)			
Channel Frequency	**Channel Spacing**	**-26 dB Point (kHz)**	**99% OCB**	**Emission Designator**
459.6500	12.5	9.8457	7.4034	7K60F1D

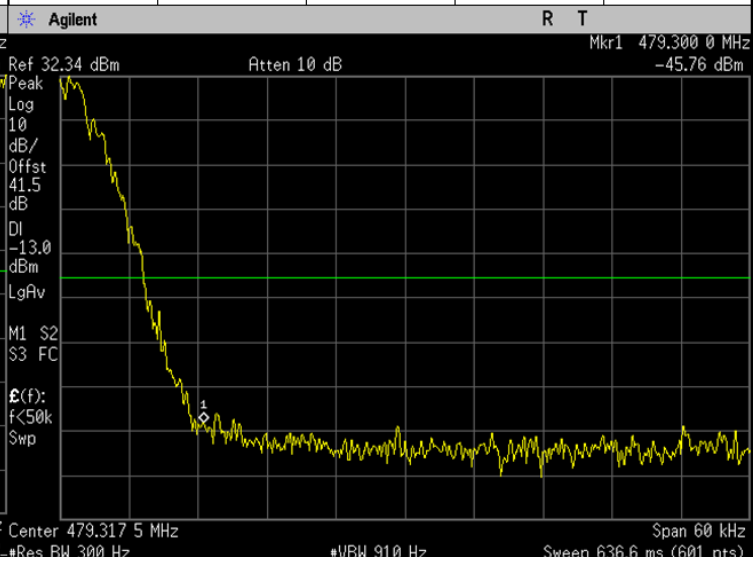


MAX PWR

Modulation	Rules Part			
4FSK Data	FCC Part 22.359(b)			
Channel Frequency	**Channel Spacing**	**-26 dB Point (kHz)**	**99% OCB**	**Emission Designator**
473.0125	12.5	9.5344	7.5798	7K60F1D



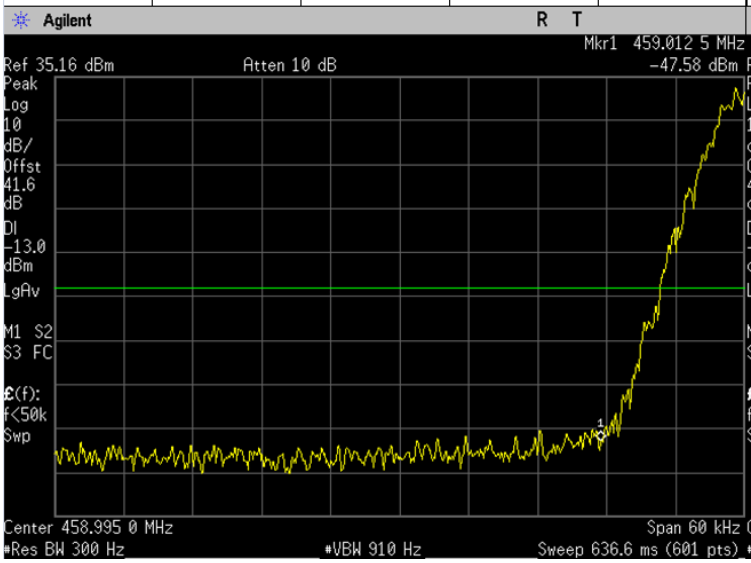
Modulation	Rules Part			
4FSK Data	FCC Part 22.359(b)			
Channel Frequency	**Channel Spacing**	**-26 dB Point (kHz)**	**99% OCB**	**Emission Designator**
479.2875	12.5	10.1356	7.5889	7K60F1D

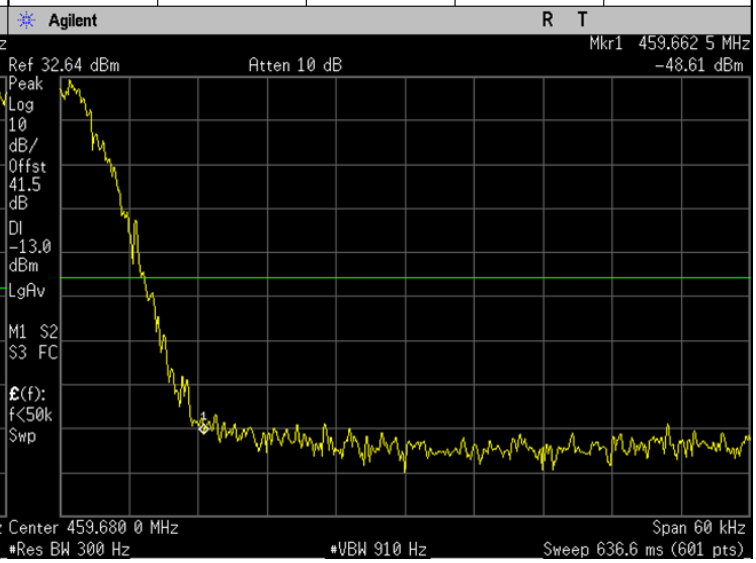


MAX PWR

Modulation		Rules Part		
4FSK Data + Voice		FCC Part 22.359(b)		
Channel Frequency	**Channel Spacing**	**-26 dB Point (kHz)**	**99% OCB**	**Emission Designator**
459.0250	12.5	10.2278	7.5715	7K60F1W

Modulation		Rules Part		
4FSK Data + Voice		FCC Part 22.359(b)		
Channel Frequency	**Channel Spacing**	**-26 dB Point (kHz)**	**99% OCB**	**Emission Designator**
459.6500	12.5	9.7464	7.7005	7K60F1W

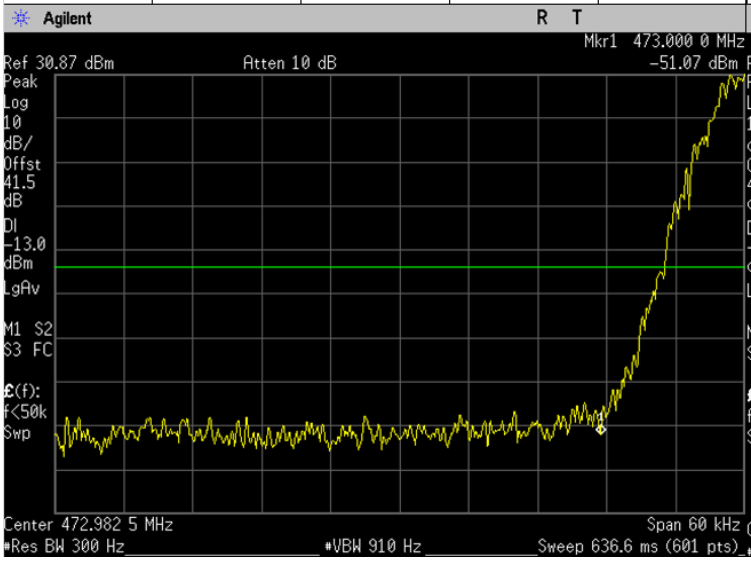


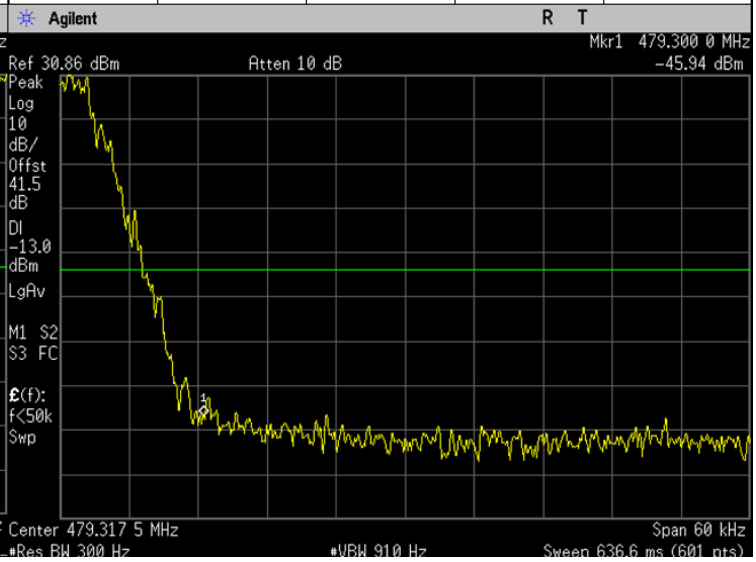


MAX PWR

Modulation		Rules Part		
4FSK Data + Voice		FCC Part 22.359(b)		
Channel Frequency	**Channel Spacing**	**-26 dB Point (kHz)**	**99% OCB**	**Emission Designator**
473.0125	12.5	9.5837	7.6011	7K60F1W

Modulation		Rules Part		
4FSK Data + Voice		FCC Part 22.359(b)		
Channel Frequency	**Channel Spacing**	**-26 dB Point (kHz)**	**99% OCB**	**Emission Designator**
479.2875	12.5	9.4082	7.6648	7K60F1W



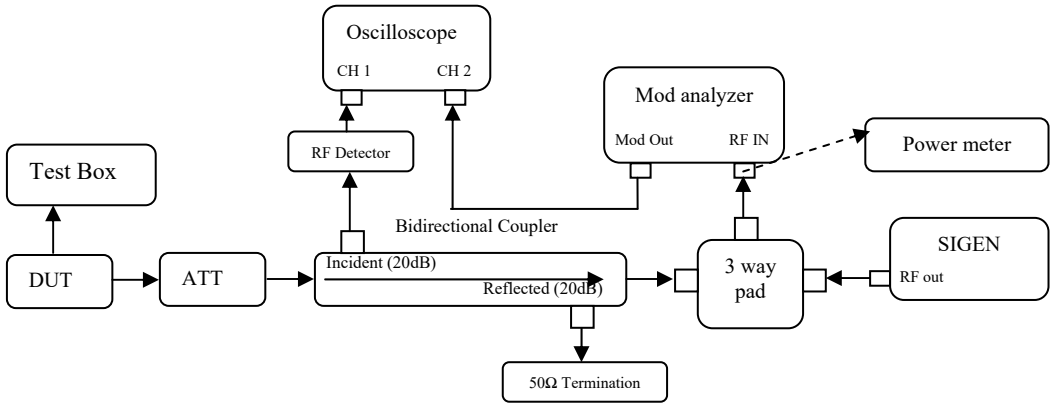


6.7.5. Test Limit

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

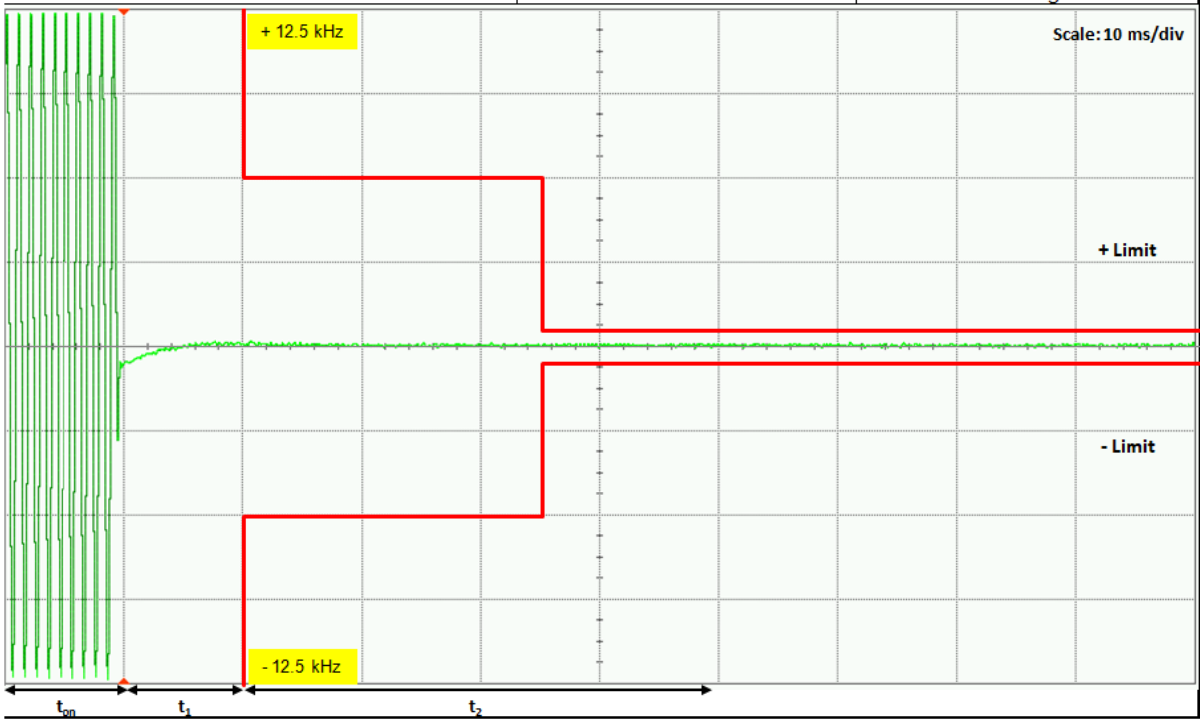


1) Connect the setup as figure above.
2) Path loss for the measurement included.
3) Set on Sigen with the assigned center frequency, internal 1 kHz FM tone.
   FM Deviation: Analog 25kHz Channel Spacing = 25 kHz
   Analog 12.5 kHz Channel Spacing = 12.5 kHz
   C4FM = 12.5 kHz
4) Turn on 50 kHz high pass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

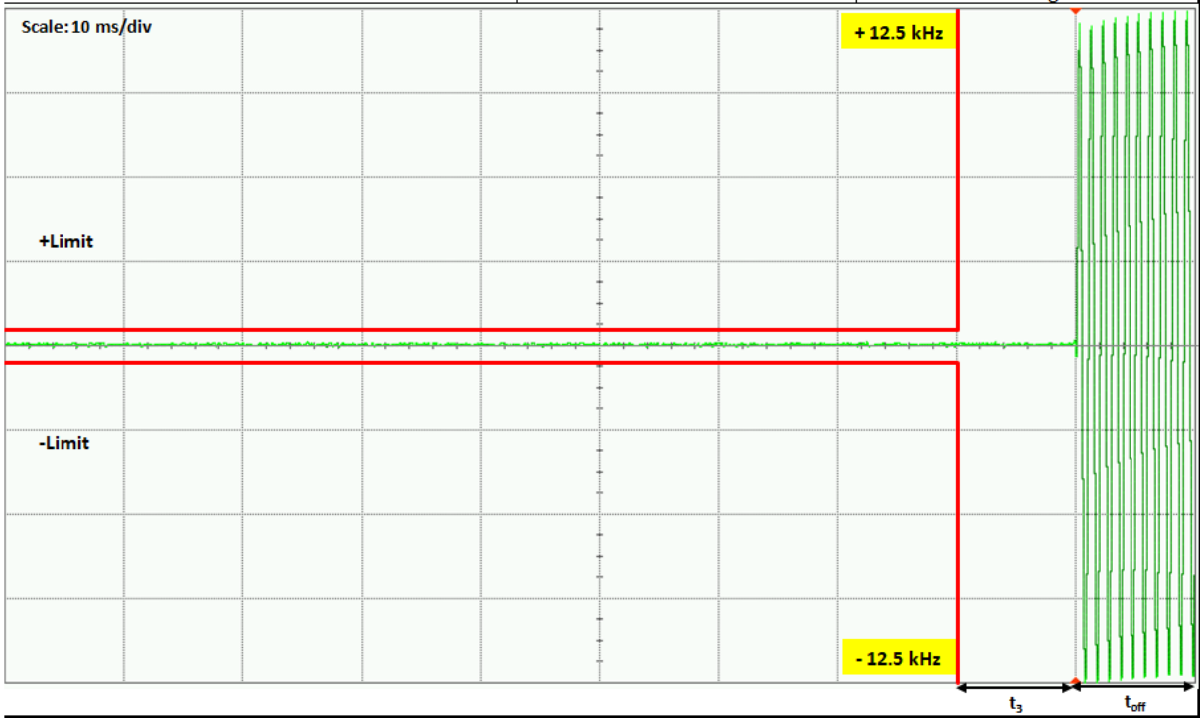
Switch On Condition t_{on}, t_1 and t_2

Channel Frequency (MHz)	Channel Spacing (kHz)	Mode
467.7750	12.5	Analog



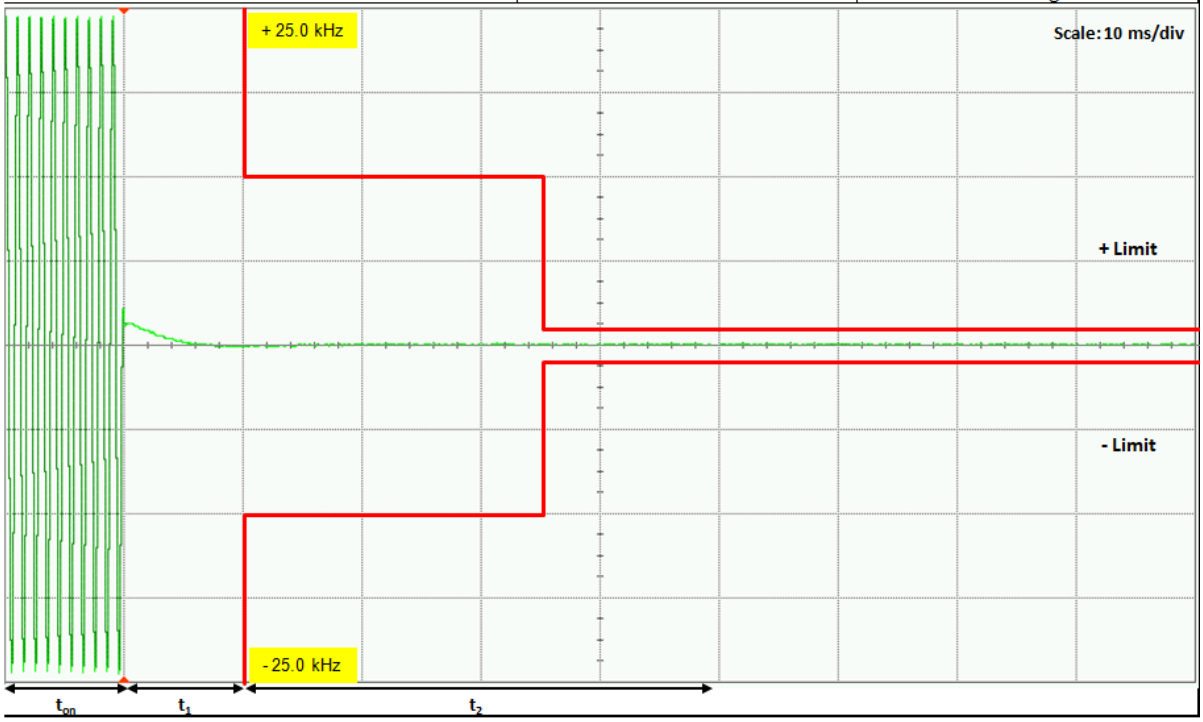
Switch Off Condition t_3 t_{off}

Channel Frequency (MHz)	Channel Spacing (kHz)	Mode
467.7750	12.5	Analog



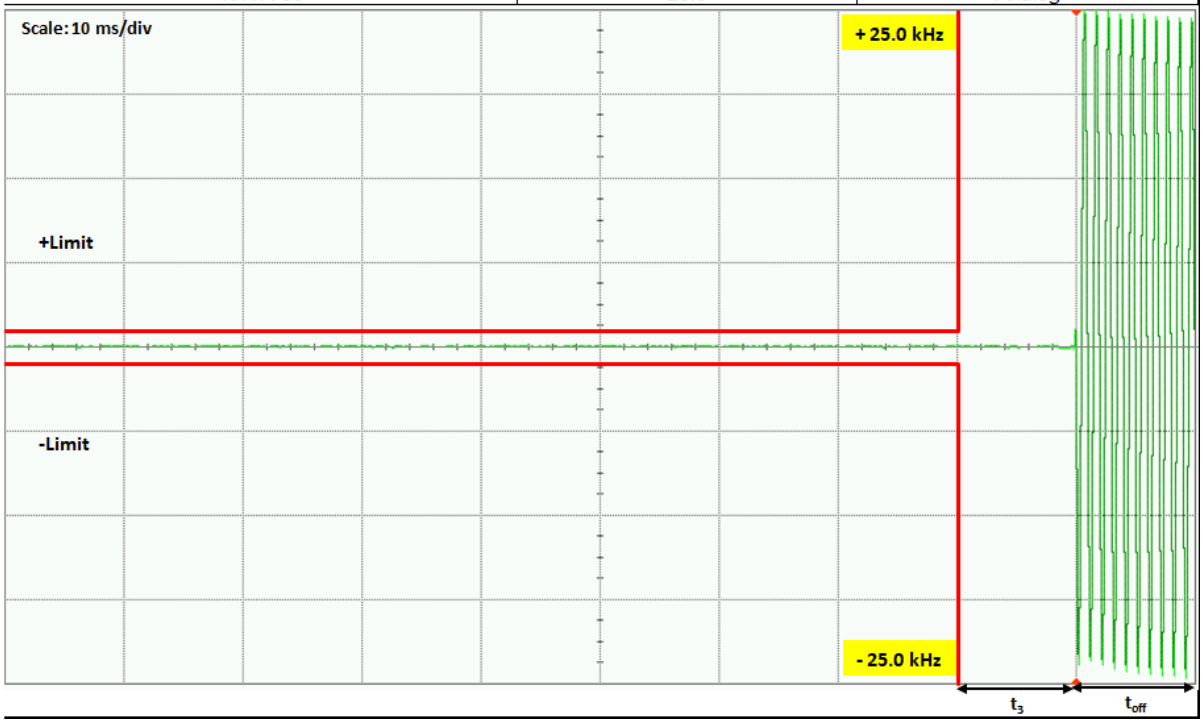
Switch On Condition t_{on}, t_1 and t_2

Channel Frequency (MHz)	Channel Spacing (kHz)	Mode
467.7750	25.0	Analog



Switch Off Condition t_3 t_{off}

Channel Frequency (MHz)	Channel Spacing (kHz)	Mode
467.7750	25.0	Analog



Not For FCC Review

6.8.3. Test Limit

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

Time intervals[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.

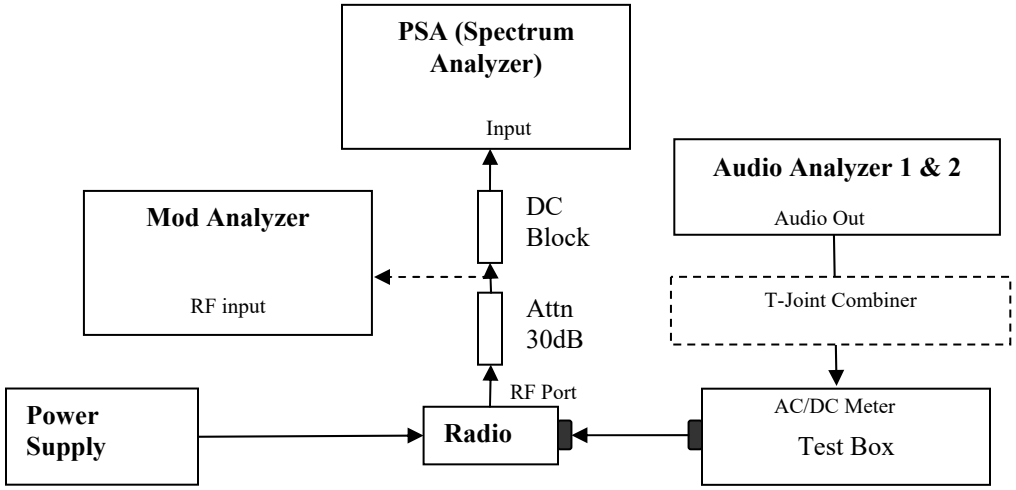
[2] During the time from the end of t_2 to the beginning of t_3, the frequency difference must not exceed the limits specified in §90.213.

[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)

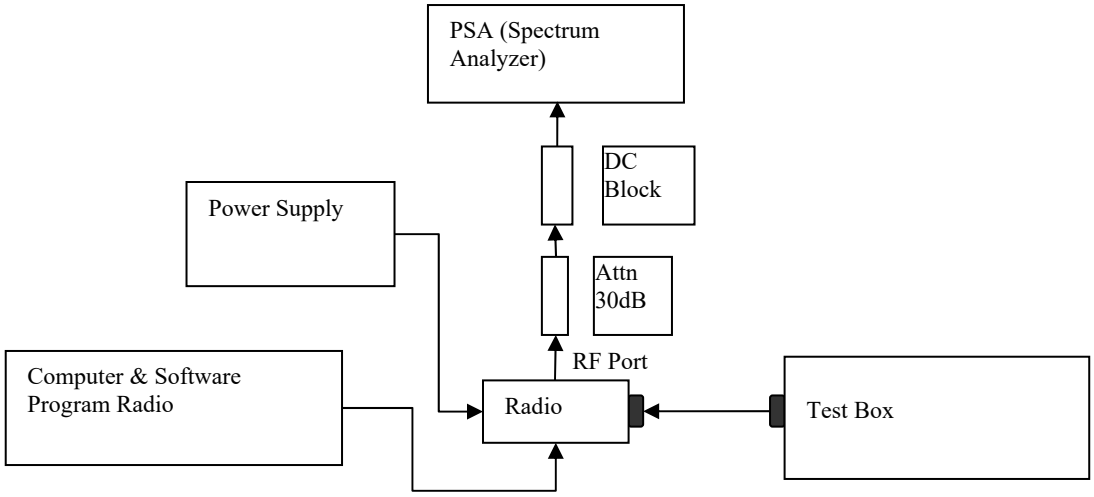


1) The DUT transmitter output port was connected to modulation analyzer.
2) Transmit the radio and turn on 1st audio analyzer with audio frequency 650Hz, 50% rated deviation, and record the amplitude value as AmpT1.
3) Turn off Audio analyzer 1 and turn on audio analyzer 2, set the audio frequency to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

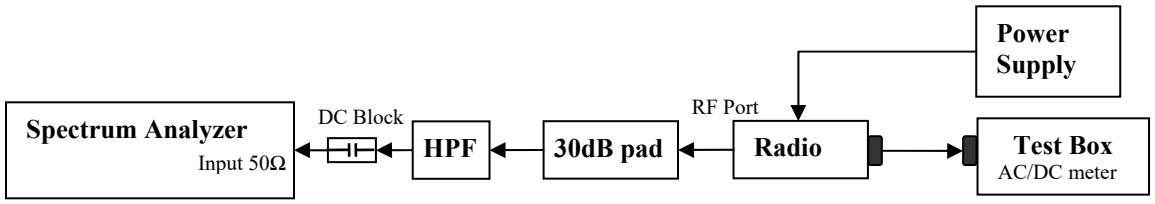
Offset from center frequency (kHz)	Measurement bandwidth (kHz)	Maximum ACP (dBc)
9.375	6.25	−40
15.625	6.25	−60
21.875	6.25	−60
37.5	25	−60
62.5	25	−65
87.5	25	−65
150	100	−65
250	100	−65
350.00	100	−65
>400 kHz to 12 MHz	30 (s)	−80
12 MHz to paired receive band	30 (s)	−80
In the paired receive band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

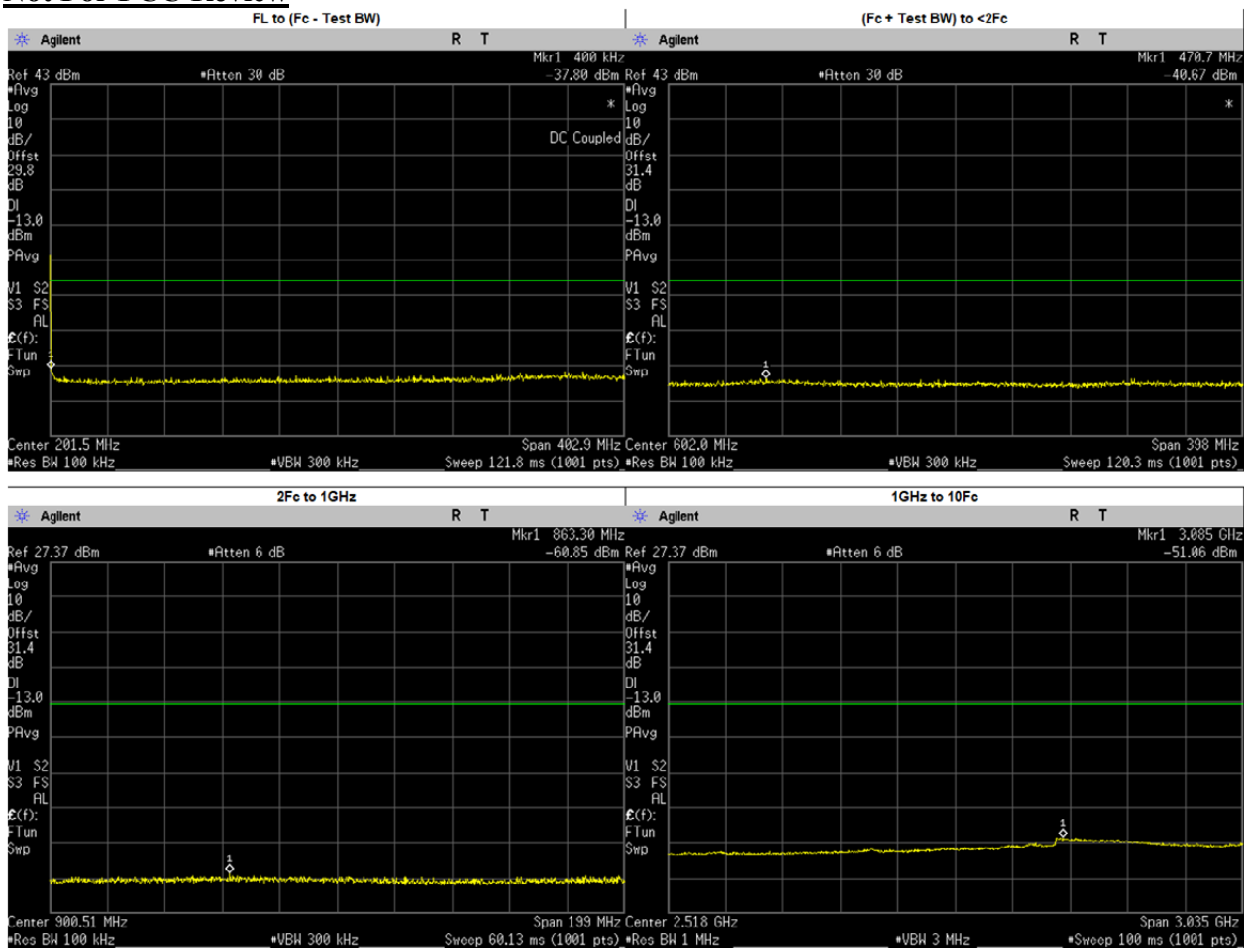
6.10.1. Test Setup



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.

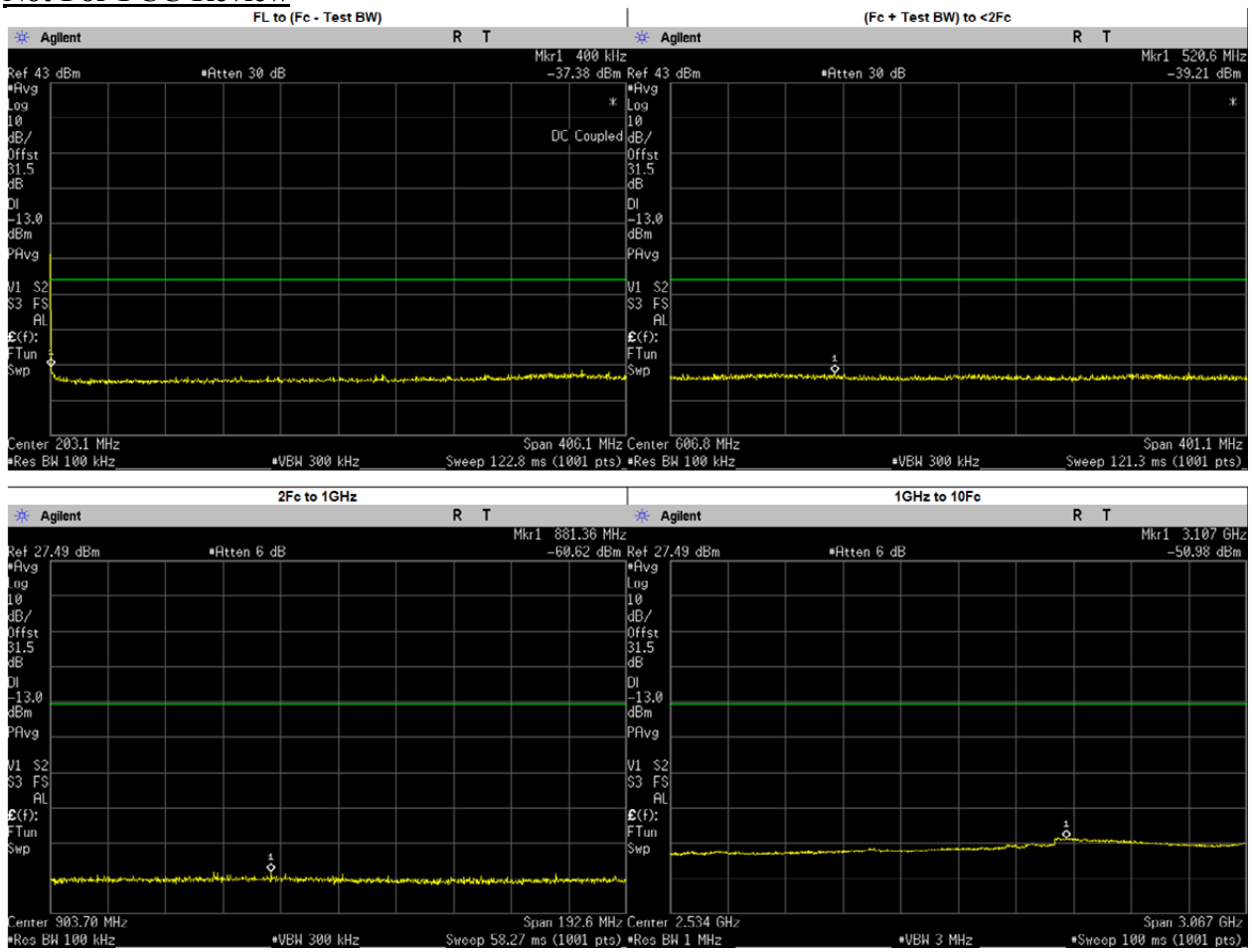
6.10.2. Test Result (Analog)

Analog: 403.0125 MHz, 25.0kHz Channel Spacing, Max Power
Not For FCC Review



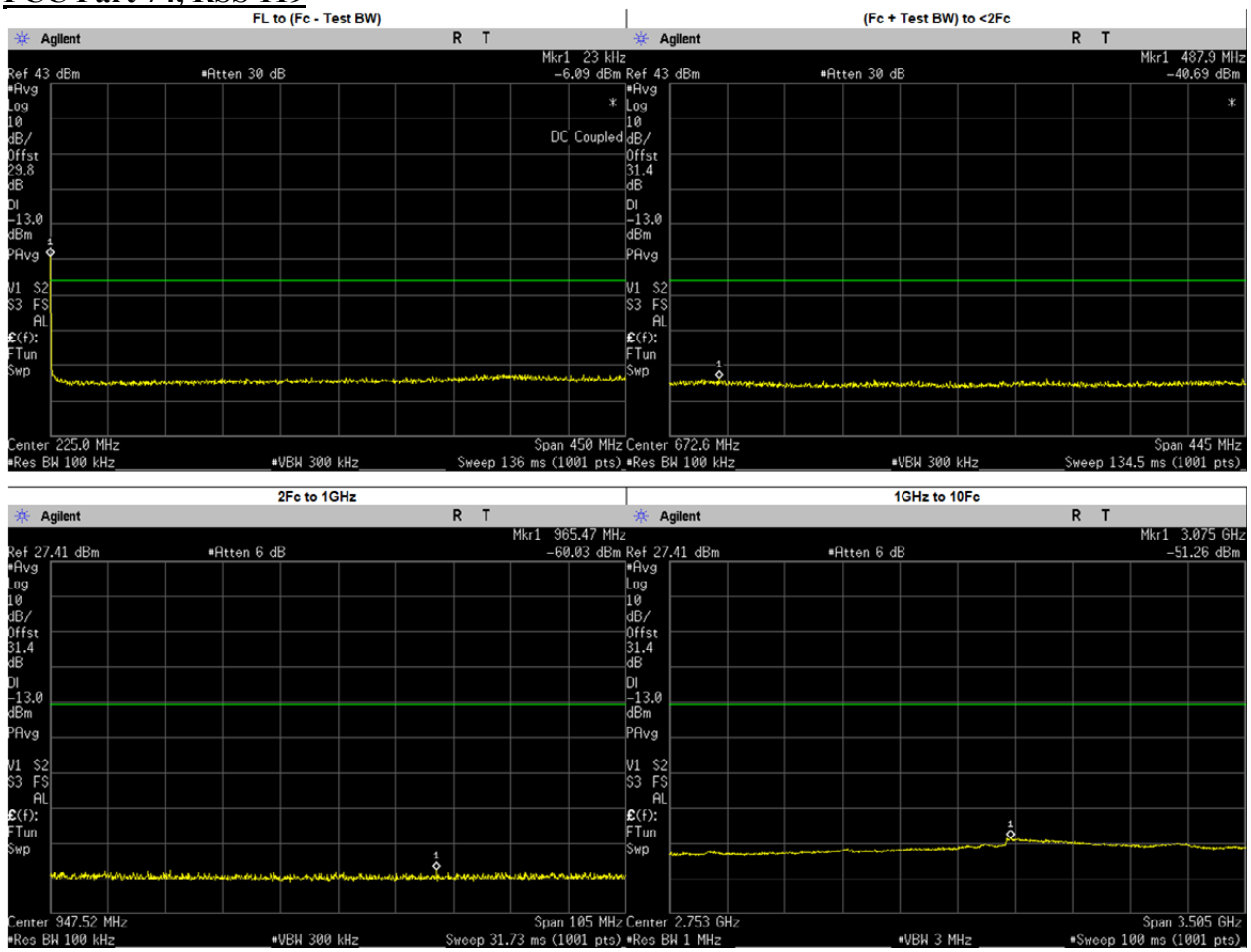
Frequency Range	Highest Spur Frequency (MHz)	Spurious Level (dBm)	Failing Limit (dBm)	Results
FL to (Fc - Test BW)	373.9446	-38.9800	-13.00	PASS
(Fc + Test BW) to <2Fc	470.7208	-40.6700	-13.00	PASS
2Fc to 1GHz	863.3042	-60.8500	-13.00	PASS
	806.0250	-63.1536	-13.00	PASS
1GHz to 10Fc	3085.1310	-51.0600	-13.00	PASS
	1612.0500	-55.5033	-13.00	PASS
	2015.0620	-54.9383	-13.00	PASS
	2418.0750	-54.2927	-13.00	PASS
	2821.0880	-53.4445	-13.00	PASS
	3224.1000	-51.8213	-13.00	PASS
	3627.1130	-53.0063	-13.00	PASS
	4030.1250	-52.8702	-13.00	PASS

Analog: 406.2 MHz, 25.0kHz Channel Spacing, Max Power
Not For FCC Review



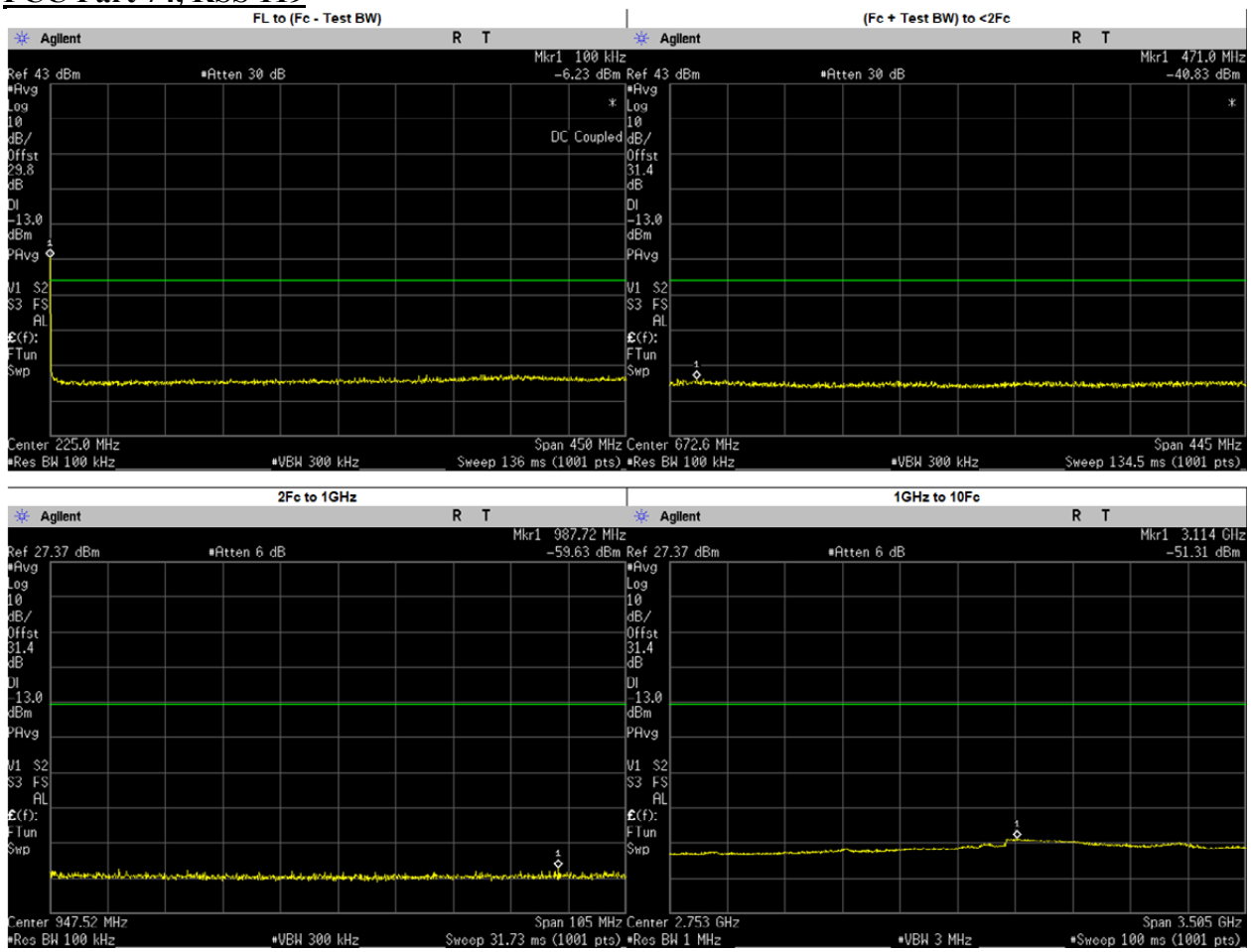
Frequency Range	Highest Spur Frequency (MHz)	Spurious Level (dBm)	Failing Limit (dBm)	Results
FL to (Fc - Test BW)	374.4658	-38.5600	-13.00	PASS
(Fc + Test BW) to <2Fc	520.5818	-39.2100	-13.00	PASS
2Fc to 1GHz	881.3584	-60.6200	-13.00	PASS
	812.4000	-62.8420	-13.00	PASS
1GHz to 10Fc	3107.0290	-50.9800	-13.00	PASS
	1218.6000	-55.1640	-13.00	PASS
	1624.8000	-55.2544	-13.00	PASS
	2031.0000	-54.7410	-13.00	PASS
	2437.2000	-54.4066	-13.00	PASS
	2843.4000	-53.6518	-13.00	PASS
	3249.6000	-51.6948	-13.00	PASS
	3655.8000	-53.0891	-13.00	PASS
	4062.0000	-52.6792	-13.00	PASS

Analog: 450.025 MHz, 25.0kHz Channel Spacing, Max Power
FCC Part 74, RSS 119



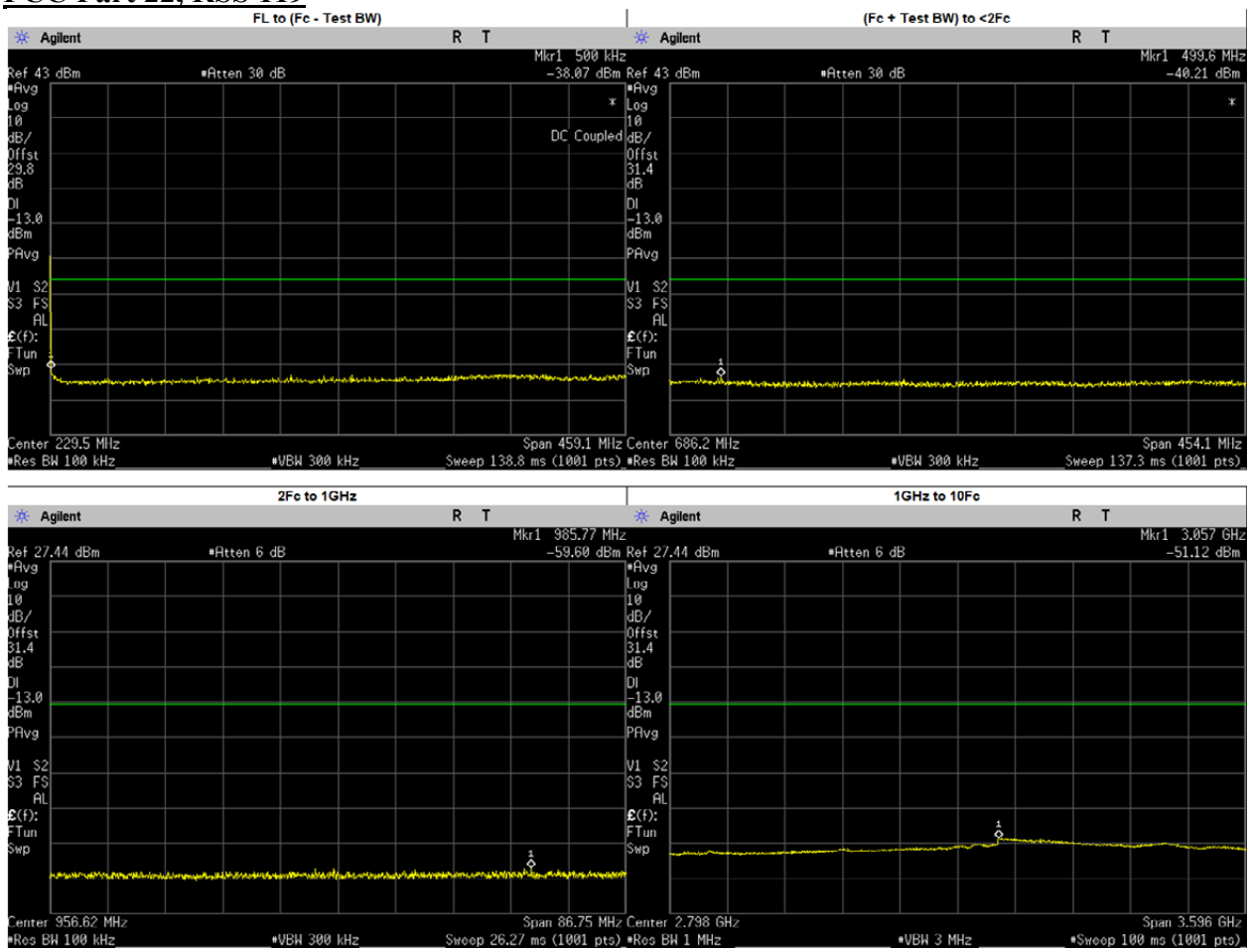
Frequency Range	Highest Spur Frequency (MHz)	Spurious Level (dBm)	Failing Limit (dBm)	Results
FL to (Fc - Test BW)	354.5768	-39.5300	-13.00	PASS
(Fc + Test BW) to <2Fc	487.9041	-40.6900	-13.00	PASS
2Fc to 1GHz	965.4715	-60.0300	-13.00	PASS
	900.0500	-62.3041	-13.00	PASS
1GHz to 10Fc	3075.1080	-51.2600	-13.00	PASS
	1350.0750	-55.3325	-13.00	PASS
	1800.1000	-55.1481	-13.00	PASS
	2250.1250	-54.5727	-13.00	PASS
	2700.1500	-53.9644	-13.00	PASS
	3150.1750	-51.7195	-13.00	PASS
	3600.2000	-52.9127	-13.00	PASS
	4050.2250	-52.9293	-13.00	PASS
	4500.2500	-53.8865	-13.00	PASS

Analog: 450.025 MHz, 25.0kHz Channel Spacing, Low Power
FCC Part 74, RSS 119



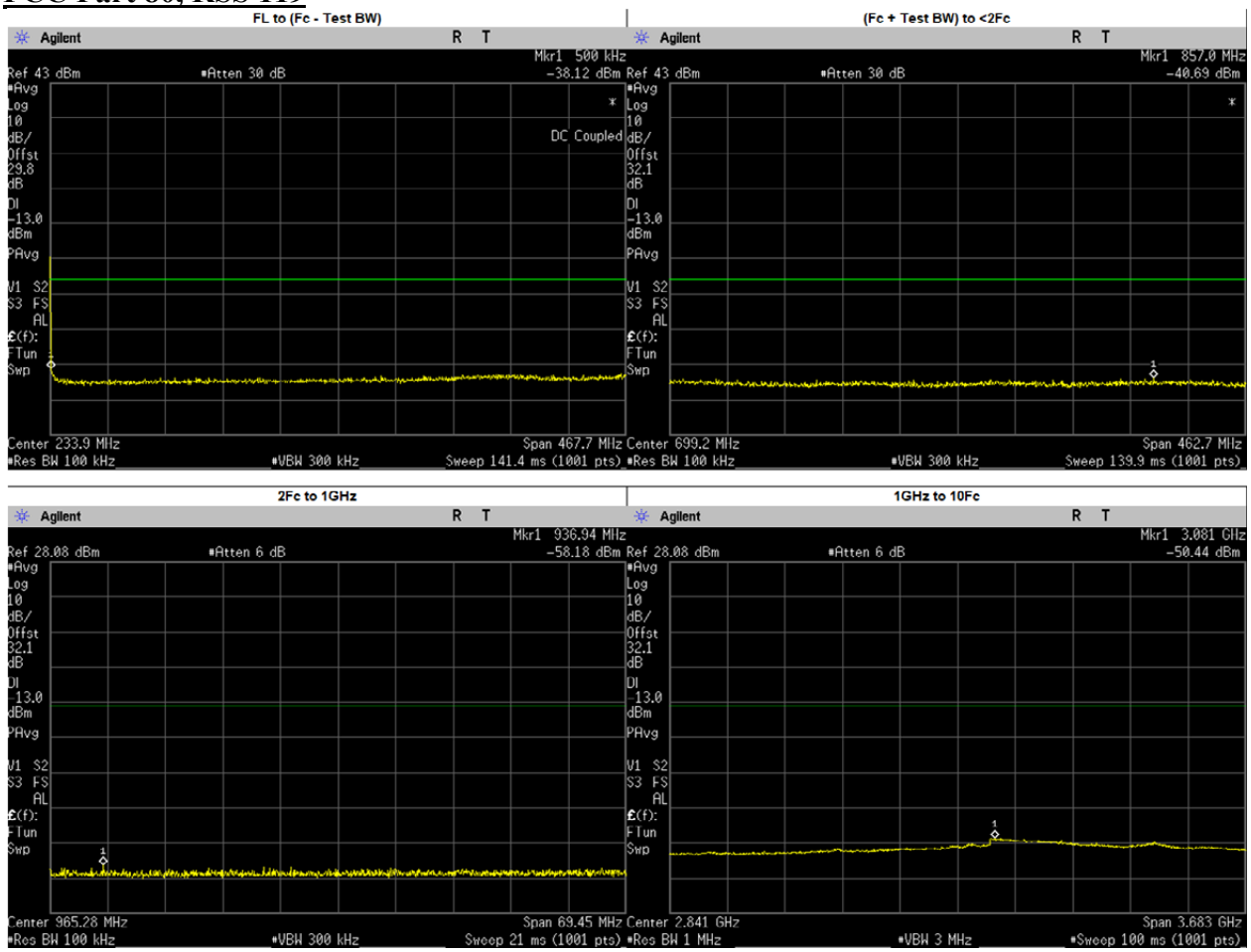
Frequency Range	Highest Spur Frequency (MHz)	Spurious Level (dBm)	Failing Limit (dBm)	Results
FL to (Fc - Test BW)	337.9284	-39.8200	-13.00	PASS
(Fc + Test BW) to <2Fc	470.9953	-40.8300	-13.00	PASS
2Fc to 1GHz	987.7209	-59.6300	-13.00	PASS
	900.0500	-61.8307	-13.00	PASS
1GHz to 10Fc	3113.6660	-51.3100	-13.00	PASS
	1350.0750	-55.5317	-13.00	PASS
	1800.1000	-55.1681	-13.00	PASS
	2250.1250	-54.8287	-13.00	PASS
	2700.1500	-54.0417	-13.00	PASS
	3150.1750	-51.7744	-13.00	PASS
	3600.2000	-52.9070	-13.00	PASS
	4050.2250	-52.8380	-13.00	PASS
	4500.2500	-53.8343	-13.00	PASS

Analog: 459.125 MHz, 25.0kHz Channel Spacing, Max Power
FCC Part 22, RSS 119



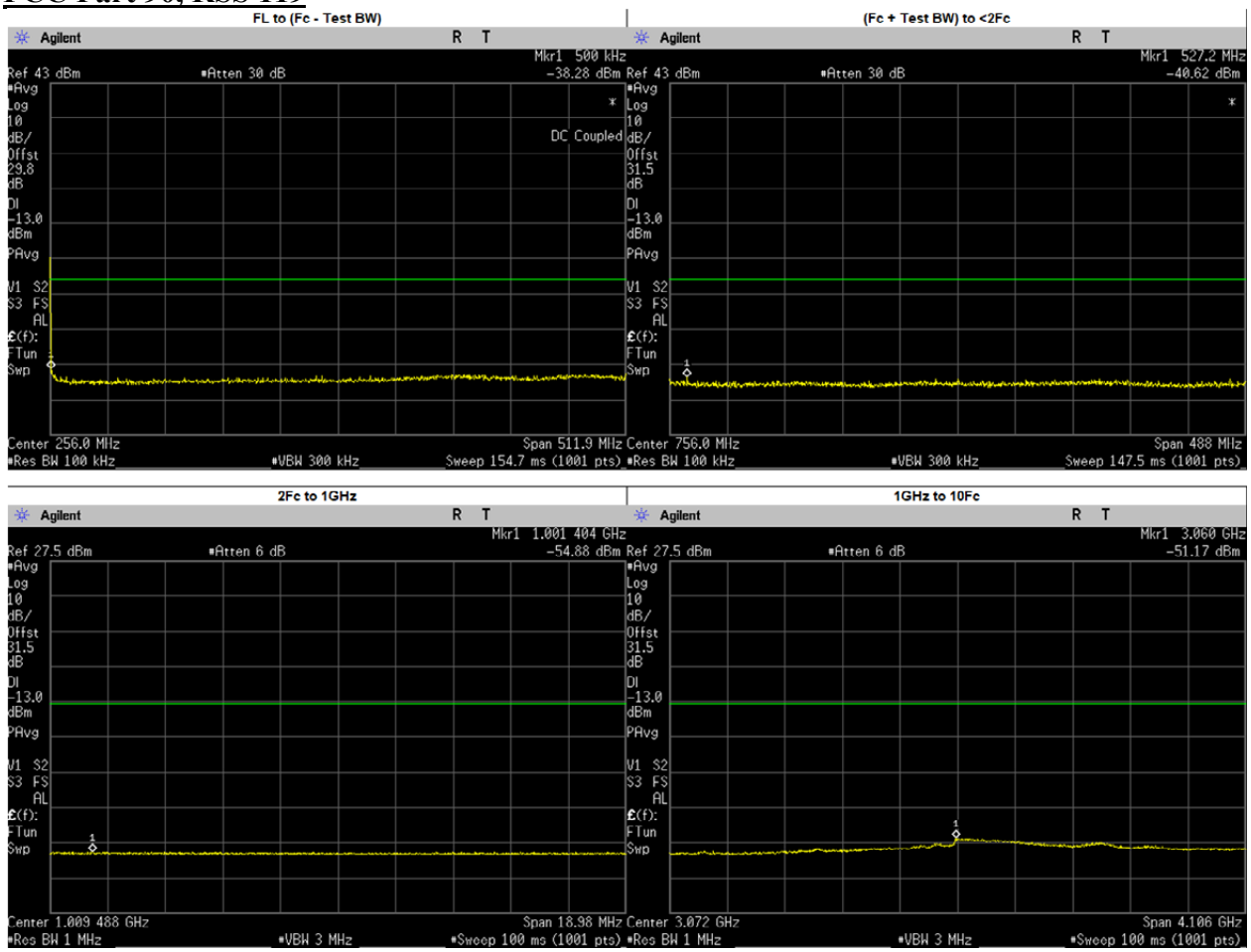
Frequency Range	Highest Spur Frequency (MHz)	Spurious Level (dBm)	Failing Limit (dBm)	Results
FL to (Fc - Test BW)	363.1248	-39.6800	-13.00	PASS
(Fc + Test BW) to <2Fc	499.5939	-40.2100	-13.00	PASS
2Fc to 1GHz	985.7730	-59.6000	-13.00	PASS
	918.2500	-61.4622	-13.00	PASS
1GHz to 10Fc	3057.0550	-51.1200	-13.00	PASS
	1377.3750	-55.3574	-13.00	PASS
	1836.5000	-55.1822	-13.00	PASS
	2295.6250	-54.6604	-13.00	PASS
	2754.7500	-53.9823	-13.00	PASS
	3213.8750	-51.6798	-13.00	PASS
	3673.0000	-52.9845	-13.00	PASS
	4132.1250	-52.8807	-13.00	PASS
	4591.2500	-54.1627	-13.00	PASS

Analog: 467.775 MHz, 25.0kHz Channel Spacing, Max Power
FCC Part 80, RSS 119



Frequency Range	Highest Spur Frequency (MHz)	Spurious Level (dBm)	Failing Limit (dBm)	Results
FL to (Fc - Test BW)	463.5088	-39.5800	-13.00	PASS
(Fc + Test BW) to <2Fc	856.9778	-40.6900	-13.00	PASS
2Fc to 1GHz	936.9394	-58.1800	-13.00	PASS
	935.5500	-60.6220	-13.00	PASS
1GHz to 10Fc	3080.7540	-50.4400	-13.00	PASS
	1403.3250	-54.9849	-13.00	PASS
	1871.1000	-54.4234	-13.00	PASS
	2338.8750	-53.7696	-13.00	PASS
	2806.6500	-52.7554	-13.00	PASS
	3274.4250	-51.3544	-13.00	PASS
	3742.2000	-52.4448	-13.00	PASS
	4209.9750	-53.0166	-13.00	PASS
	4677.7500	-53.6254	-13.00	PASS

Analog: 511.9875 MHz, 25.0kHz Channel Spacing, Max Power
FCC Part 90, RSS 119



Frequency Range	Highest Spur Frequency (MHz)	Spurious Level (dBm)	Failing Limit (dBm)	Results
FL to (Fc - Test BW)	475.0723	-39.6400	-13.00	PASS
(Fc + Test BW) to <2Fc	527.1709	-40.6200	-13.00	PASS
2Fc to 1GHz	1001.4040	-54.8800	-13.00	PASS
1GHz to 10Fc	3059.6070	-51.1700	-13.00	PASS
	1023.9750	-55.5896	-13.00	PASS
	1535.9630	-55.4217	-13.00	PASS
	2047.9500	-54.5655	-13.00	PASS
	2559.9370	-54.0789	-13.00	PASS
	3071.9250	-51.4940	-13.00	PASS
	3583.9120	-52.6390	-13.00	PASS
	4095.9000	-52.4719	-13.00	PASS
	4607.8870	-54.3147	-13.00	PASS
	5119.8750	-54.0679	-13.00	PASS