MOTOROLA SOLUTIONS

MS ISO/IEC 17025
TESTING
SAMM No. 0825

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

FCC/IC TEST REPORT

Report Revision : Rev. B

Date/s Tested	:	1-AUG-2017 - 5-AUG-2017
Report Issue Date	:	15-NOV-2017
Manufacturer/Location	:	Motorola Solutions Malaysia Sdn Bhd
Requestor	:	HENG TUCK CHANG
Product Type	:	Mobile
Model Number	:	AAM28QPN9RA1AN
Frequency Band	:	403-470MHZ
Low / Max RF Output Power	:	25 Watts / 48 Watts
Applicant Name	:	Motorola Solutions Malaysia Sdn Bhd
Applicant Address	:	Innoplex Plot 2A, Medan Bayan Lepas, Mukim 12 S.W.D, 11900 Bayan Lepas, Penang, Malaysia
FCC Registrations	:	772092
IC Registrations	:	109AK
FCC Test Firm Registration	:	461337

The equipment was tested accordance to the requirement listed below:

(LMR) **FCC 47 CFR Part 2 / 22 / 74/ 90** **IC RSS- Gen / 119**	**PASS**

Prepared By:

Song Zhi Wei
Test Personnel

Approved By:

Vincent Foong
Responsible Engineer

Table of Contents

Report Revision History

Revision History	Description	Date	Originator
Rev. A	Initial Report	11-OCT-2017	Song Zhi Wei
Rev. B	Amended Part 74,Mask D to 100Hz RBW. Amended the Plot Limit For 25kHz.	15-NOV-2017	Song Zhi Wei

1.0 General Information

EUT Description:

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

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/TIA/-603-D
ANSI C63.4.2014
ANSI C63.26-2015

2.0 Summary of Test Results

FCC General Rules Part (47CFR)	IC General Rules Part	Test Item	Result
2.1046, 90, 22.565, 74.461, 74.534, 80.215	RSS-Gen, RSS-119	RF Power Output	PASS
2.1055, 90.213, 22.355, 74.464, 74.561	-	Frequency Stability	PASS
-	-	Audio Frequency Response	NA
-	-	Audio Low Pass Filter Response	NA
-	-	Modulation limiting	NA
74.462(c), 80.211, 90.210	RSS-Gen, RSS-119	Occupied Bandwidth	PASS
22.359(a),(b)	-	Band Edge Conducted Spurious Emission	PASS
90.214	-	Transient Frequency Behavior	PASS
-	-	Adjacent Channel Power	NA
22, 74D, 74H, 80, 90	RSS-Gen, RSS-119	Conducted Spurious Emissions	PASS
-	-	Radiated Spurious Emission	PASS
-	-	GNSS (EIRP for 1559 – 1610MHz)	NA
-	-	Effective Radiated Power (ERP)	NA
-	-	AC Power Line Conducted Spurious Emission	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
Radiated Emissions up to 1 GHz	30MHz ~ 200MHz	5.01
	200MHz ~ 1000MHz	5.01
Radiated Emissions above 1 GHz	1GHz ~ 18GHz	5.01
	18GHz ~ 25GHz	5.01

4.0 Equipment List

FCC Analog ATE#1: (SW Version: Analog ATE_Rev 2.4.3 & FCC_FreqStability_Rev 1.0.3)

Description	Model	Serial Number	Calibration Date	Calibration Due Date
Audio Analyzer	8903B	3011A10475	2-May-17	2-May-18
SIGNAL GENERATOR	2042	203002/745	2-May-17	2-May-18
MODULATION ANALYZER	8901B	3216A03889	3-May-17	3-May-18
TRANSCEIVER INTERFACE	8954A	2234A00398	4-May-17	4-May-18
DSA	36570A	MY42506781	3-May-17	3-May-18
SIGNAL GENERATOR	E4425B	US39260201	2-May-17	2-May-18
SIGNAL GENERATOR	2042	203002/747	2-May-17	2-May-18
POWER SENSOR	E4412A	MY41502652	9-May-17	9-May-18
POWER METER	E4416A	GB41293855	9-May-17	9-May-18
POWER SUPPLY	6031A	3325A02771	3-May-17	28-Mar-18
CHAMBER	SH-641	92014678	4-Apr-17	4-Mar-18
RF TRANSCEIVER CONTROLLER	AX2007AI	NA	CNR	CNR

FCC Transient ATE #1: (SW Version: FCC Transient ATE_R 1.1.1)

Description	Model	Serial Number	Calibration Date	Calibration Due Date
POWER SUPPLY	6032A	2818A03549	11-May-17	11-May-18
POWER SENSOR	E4412A	MY41498918	09-May-17	09-May-18
POWER METER	E4416A	MY45101016	11-Jan-17	11-Jan-18
ATTENUATORS/SWITCH DRIVER	11713A	2508A10141	CNR	CNR
STEP ATTENUATOR/11dB	8494G	MY52300223	09-May-17	09-May-18
STEP ATTENUATOR/110dB	8496G	MY52300176	09-May-17	09-May-18
OSCILLOSCOPE	MSO8064A	MY45001903	25-May-17	25-May-18
AUDIO ANALYZER	8903B	3729A17409	02-May-17	02-May-18
AUDIO ANALYZER	8903B	3011A08952	02-May-17	02-May-18
MODULATION ANALYZER	8901B	3019A02766	04-Mar-17	04-Mar-18
SIGNAL GENERATOR	8657A	3323A05725	02-May-17	02-May-18
SPECTRUM ANAYLYZER	E4440A	MY46185415	24-May-17	24-May-19
SWITCH CONTROL UNIT	3488A	2719A36210	CNR	CNR

Conducted Spurious Emission ATE # 1: (SW Version: Conducted Spur ATE_rev 1.23.0)

Description	Model	Serial Number	Calibration Date	Calibration Due Date
SWITCH CONTROL UNIT	3488A	2719A32735	CNR	CNR
SPECTRUM ANALYZER	E4440A	US45303111	16-Feb-17	16-Feb-18
POWER SUPPLY	6032A	MY41002067	5-May-17	5-May-18
HIGH PASS FILTER SWITCH BOX	-	CS001	7-Apr-17	7-Apr-18
MICROWAVE GENERATOR	SMP 02	830682/015	19-Oct-16	19-Oct-17
MODULATION ANALYZER	8901B	3438A05278	3-Mar-17	3-Mar-18

Radiated Emission Station: (SW Version: EMC_FCC_IC_BT_RE_V 1.5.1)

DESCRIPTION	MODEL	SERIAL NUMBER	CALIBRATION DATE	CALIBRATION DUE DATE
DRG HORN FREQ.	SAS-571	566	04-Sep-16	04-Sep-17
DRG HORN FREQ.	SAS-571	720	02-Mar-17	02-Mar-19
POWER SUPPLY	6674A	3126A00133	12-Nov-15	12-Nov-17
MICROWAVE SIGNAL GENERATOR	SMP04	100127	19-Jul-17	18-Jul-18
EMI TEST RECEIVER	ESIB26	100336	13-Jul-17	12-Jul-18
SIGNAL ANALYZER	FSV40	101103	18-Jul-17	17-Jul-18
5m Semi-anechoic Chamber	S800-HX	J2308	CNR	CNR
BILOG ANTENNA	CBL6112B	2950	23-Feb-16	23-Feb-18
BILOG ANTENNA	CBL6112B	2964	03-Feb-17	03-Feb-18
BROAD-BAND HORN ANTENNA	BBHA9170	BBHA9170255	14-Oct-16	14-Oct-17
DATA LOGGER	SDL500	A.016776	18-Mar-17	18-Mar-18
SYSTEM CONTROLLER	SC104V	050806-1	CNR	CNR
TURNTABLE FLUSH MOUNT 2M	FM2011	NA	CNR	CNR
ANTENNA POSITIONING TOWER	TLT2	NA	CNR	CNR
18 - 40GHz PREAMPLIFIER	BBV9721	9721-007	CNR	CNR
PREAMPLIFIER	PAM-0118P	361	CNR	CNR

CNR → Calibration Not Required

5.0 Test Condition

5.1. Transmitter Test Conditions

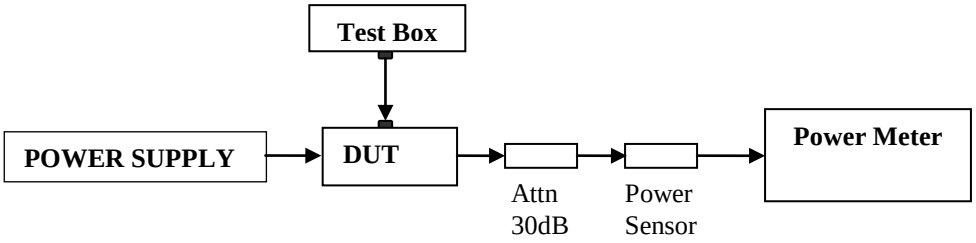
Test Item, (Channel Spacing)	Temperature (°C)	Voltage Supply (V)	Power (W)	Modulation	Test Frequency (MHz)
RF Output Power	25°C	Nominal	Low / Max	Analog	406.2, 450.65, 459.125 467.775
Frequency Stability	-30°C ~ 60°C	80% ~ 120% of Nominal Volt	Max	Analog	467.775
Audio Frequency Response (12.5kHz)	25°C	Nominal	Max	NA	NA
Audio Low Pass Filter Response (12.5kHz)	25°C	Nominal	Max	NA	NA
Modulation limiting (12.5kHz)	25°C	Nominal	Max	NA	NA
Occupied Bandwidth (12.5kHz / 20kHz / 25kHz)	25°C	Nominal	Max	Analog, Digital	406.2, 450.65, 459.125, 467.775
Band Edge Conducted Spurious Emission (12.5kHz / 20kHz / 25kHz)	25°C	Nominal	Max	Analog, Digital	459.025, 459.65
Transient Frequency Behavior *(UHF & VHF Band)* (12.5kHz / 25kHz)	25°C	Nominal	Max	Analog	467.775
Adjacent Channel Power *(700MHz Band)* (12.5kHz / 25kHz)	25°C	Nominal	Max	NA	NA
Conducted Spurious Emissions (12.5kHz / 20kHz / 25kHz)	25°C	Nominal	Low / Max	Analog, Digital	406.2, 450.65, 459.125, 467.775,459.025, 459.65
Radiated Spurious Emission (25kHz)	25°C	Nominal	Max	Analog	406.2, 450.65, 459.125, 467.775
GNSS *(700MHz Band)* (EIRP for 1559-1610MHz) (12.5kHz / 25kHz)	25°C	Nominal	Max	NA	NA
Effective Radiated Power (ERP) *(700MHz & 900MHz Band)* (12.5kHz / 25kHz)	25°C	Nominal	Max	NA	NA
AC Power Line Conducted Spurious Emissions* (12.5kHz)	25°C	Nominal	Max	NA	NA

*** – ONLY tested if portables can be operated during charging OR mobiles can be used in desktop operation connected to a power supply NA → Not Applicable**

6.0 Transmitter Test Parameters

6.1. RF Output Power

6.1.1. Test Setup



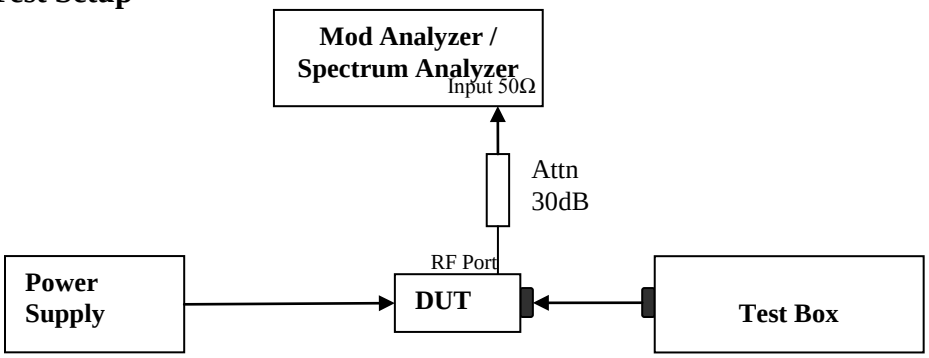
1) The DUT transmitter connected to Power Meter using the 30 dB attenuator and power sensor with above setup.
2) Path loss for the measurement included.
3) All the measurement was done at low, mid, high frequency for each band.
4) Record the power into the test report.

6.1.2. Test Result

Temperature	25˚C			
Voltage (V)	13.2			
Frequency (MHz)	Low Power (W)	Current (A)	Max Power (W)	Current (A)
406.2000	25.60	5.08	46.60	8.85
450.6500	25.60	5.13	46.20	8.86
459.1250	25.20	5.20	46.30	8.91
467.7750	25.20	5.12	45.80	8.89

6.2. Frequency Stability

6.2.1. Test Setup

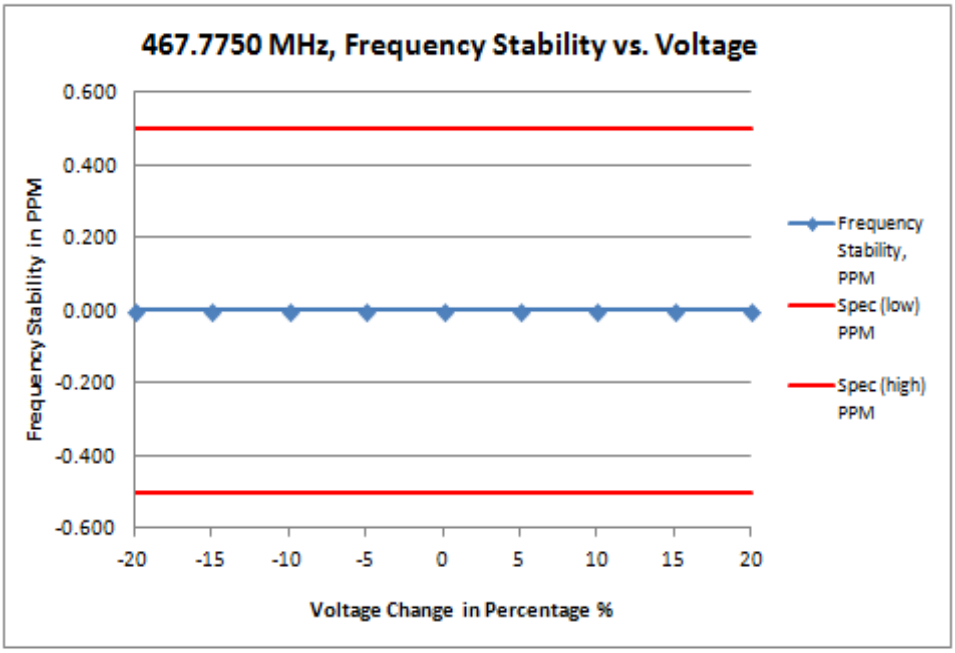


1) The DUT transmitter output port was connected to Modulation Analyzer.
2) Path loss for the measurement included.
3) Transmit the DUT and record the freq in MCF_{MHz}.
4) Test in 2 conditions: Different Temperature & Supply Voltage input.
    - Temperature: Vary voltage per test condition in Clause 5.1
    - Supply Voltage: Vary temperature per test condition in Clause 5.1
5) Calculate the ppm frequency error by the following:

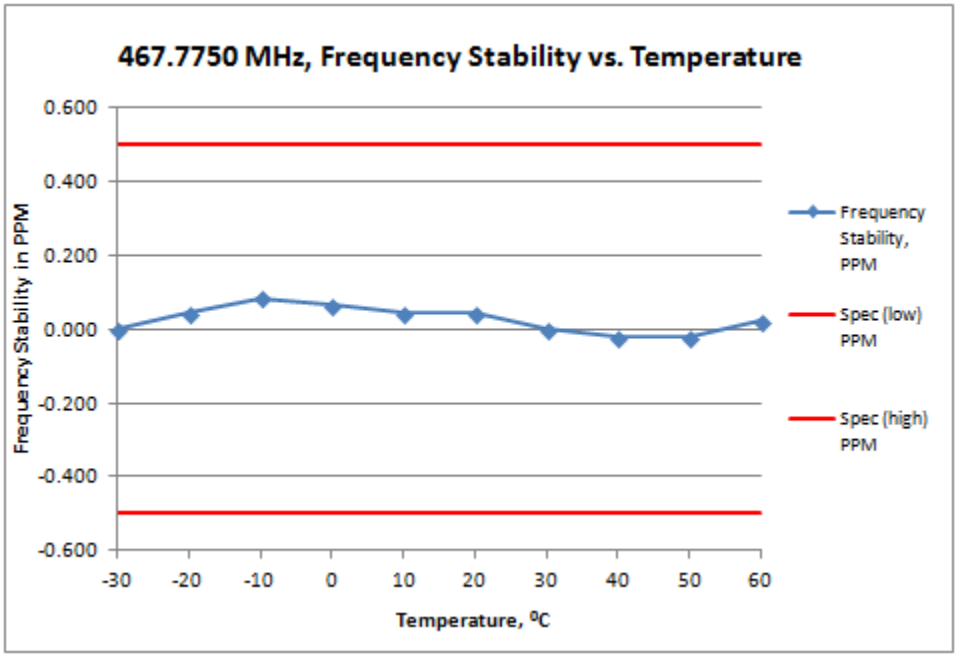
$$ppm\ error = \left(\frac{MCF_{MHz}}{ACF_{MHz}} - 1\right) * 10^6$$

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 / 0 12. kHz				
Temperature, °C	25				
Voltage %	Voltage, V	Frequency, MHz	Frequency Stability, PPM	Spec (low) PPM	Spec (high) PPM
-20	11.220	467.775000	0.000	-0.500	0.500
-15	11.880	467.775000	0.000	-0.500	0.500
-10	12.540	467.775000	0.000	-0.500	0.500
-5	13.200	467.775000	0.000	-0.500	0.500
0	13.860	467.775000	0.000	-0.500	0.500
5	14.520	467.775000	0.000	-0.500	0.500
10	15.180	467.775000	0.000	-0.500	0.500
15	15.840	467.775000	0.000	-0.500	0.500
20	15.840	467.775000	0.000	-0.500	0.500



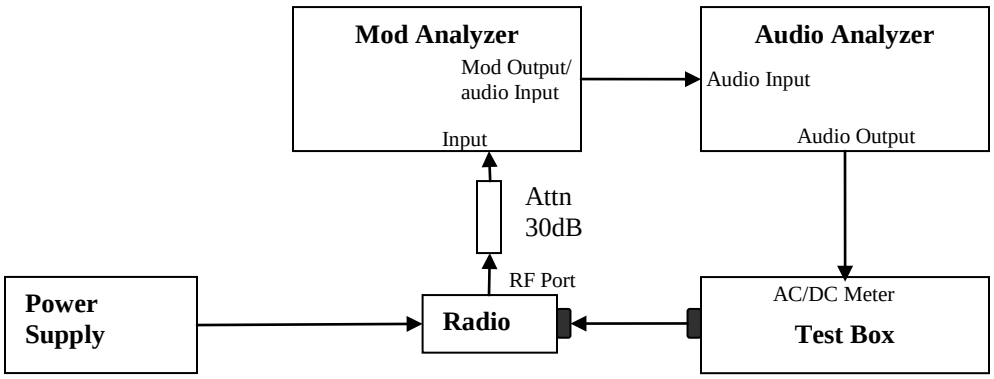
Frequency / Channel Spacing	467.7750 MHz / 0 12. kHz			
Voltage, V	7.5			
Temperature, °C	Frequency, MHz	Frequency Stability, PPM	Spec (low) PPM	Spec (high) PPM
-30	467.775000	0.000	-0.500	0.500
-20	467.775020	0.043	-0.500	0.500
-10	467.775040	0.086	-0.500	0.500
0	467.775030	0.064	-0.500	0.500
10	467.775020	0.043	-0.500	0.500
20	467.775020	0.043	-0.500	0.500
30	467.775000	0.000	-0.500	0.500
40	467.774990	-0.021	-0.500	0.500
50	467.774990	-0.021	-0.500	0.500
60	467.775010	0.021	-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

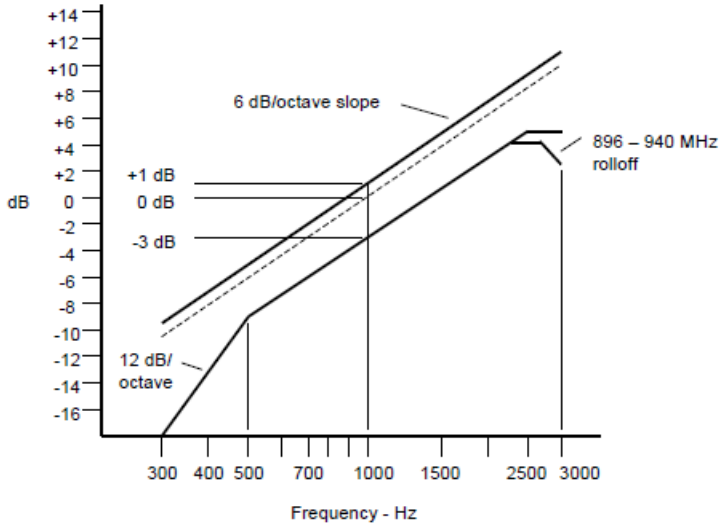


1) The DUT transmitter output port was connected to Modulation Analyzer.
2) Path loss for the measurement included.
3) Set the audio bandwidth filter to 15 kHz and 50 kHz.
4) Transmit the radio and set the audio analyzer to 1 kHz audio frequency and 20% of the maximum deviation.
5) On audio analyzer,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

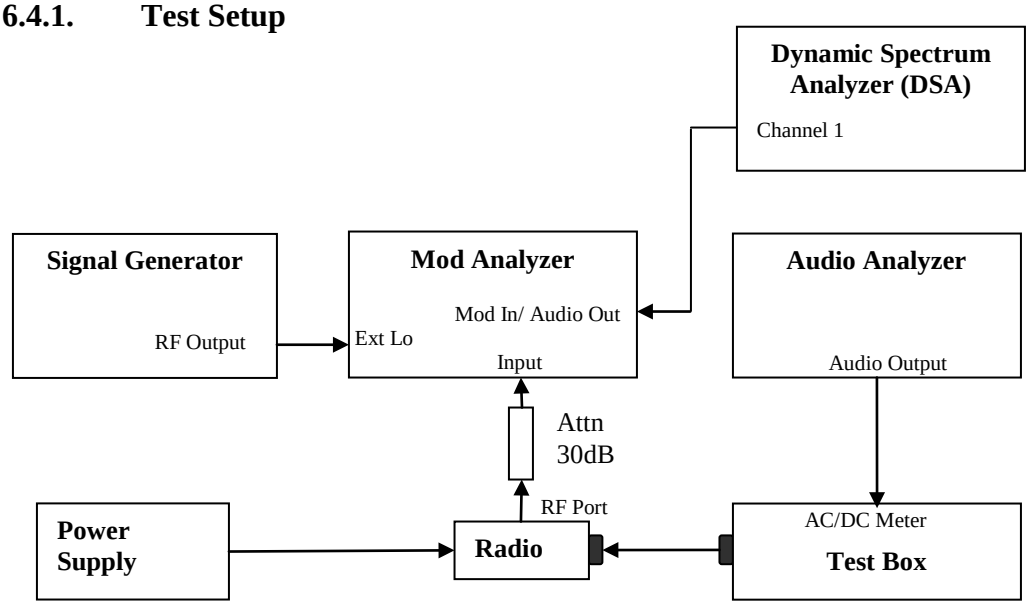


Note:

- *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

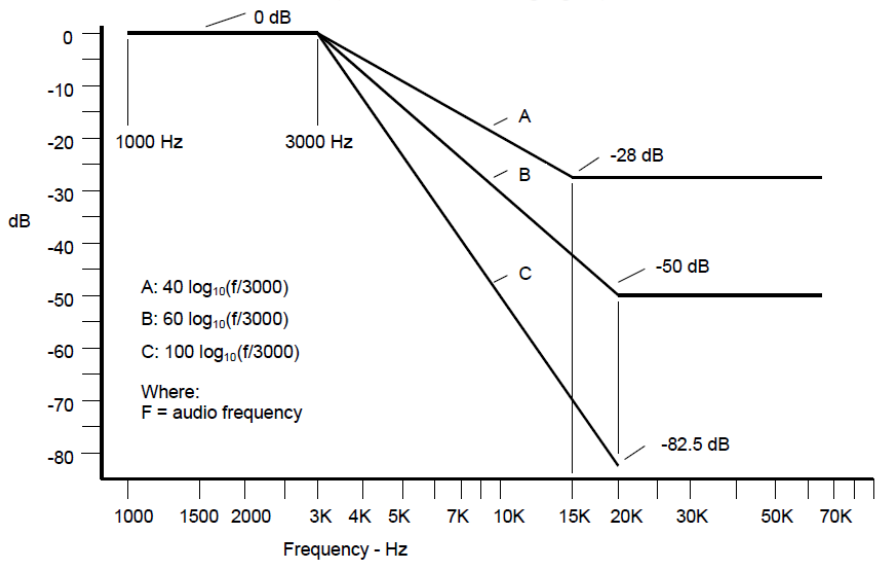


1) The DUT transmitter output port was connected to Modulation Analyzer.
2) Path loss for the measurement included.
3) Press 23.1SPCL on modulation analyzer to enable the external LO from Sigen.
4) Set the Sigen frequency to Fc + 1.5 MHz, RF output level to 0dBm without modulation.
5) Transmit the radio and set the audio analyzer to 1 kHz audio frequency and 60% of the maximum 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.

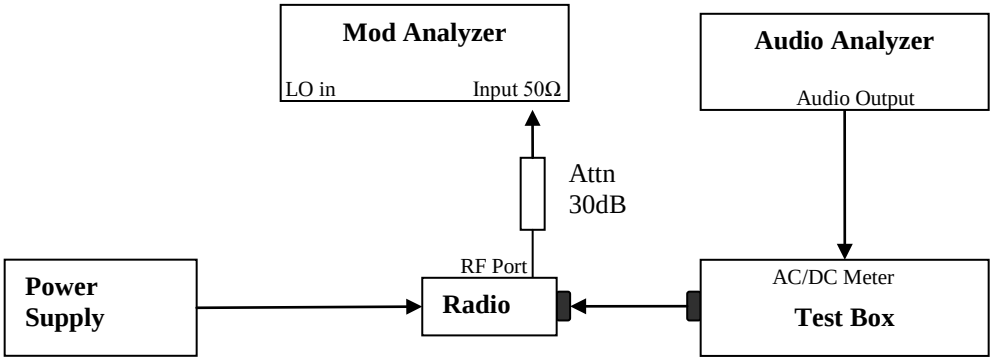
c) For equipment operating on channels between 896 MHz through 901 MHz, between 935 MHz through 940 MHz, and 12.5 or 15 kHz spaced channels in the frequency range 138-174 MHz and 406-512 MHz.

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 maximum 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

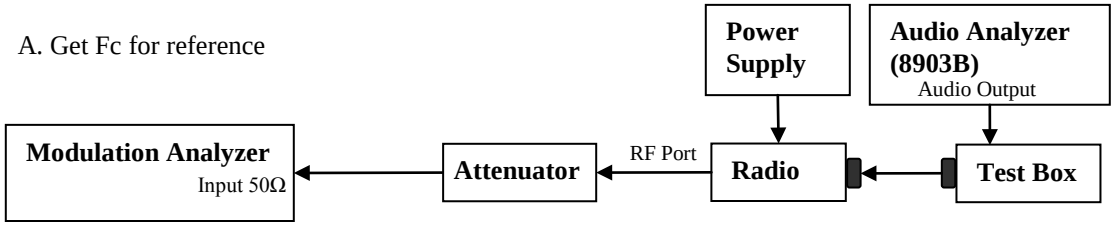
6.5.3. Test Limit

Modulation shall not exceed 100 percent if amplitude modulation is employed.

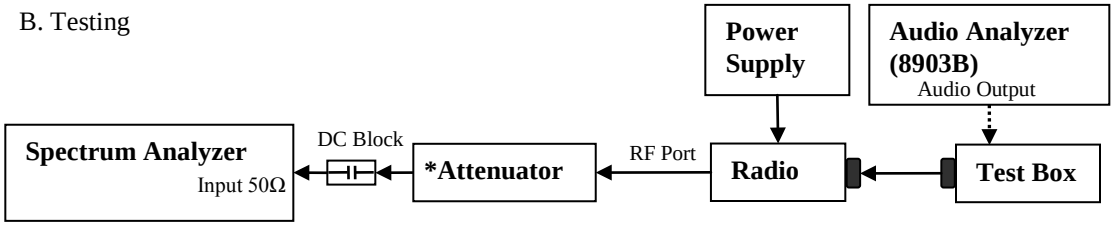
6.6. Occupied Bandwidth

6.6.1. Test Setup (Analog)

A. Get Fc for reference



B. Testing

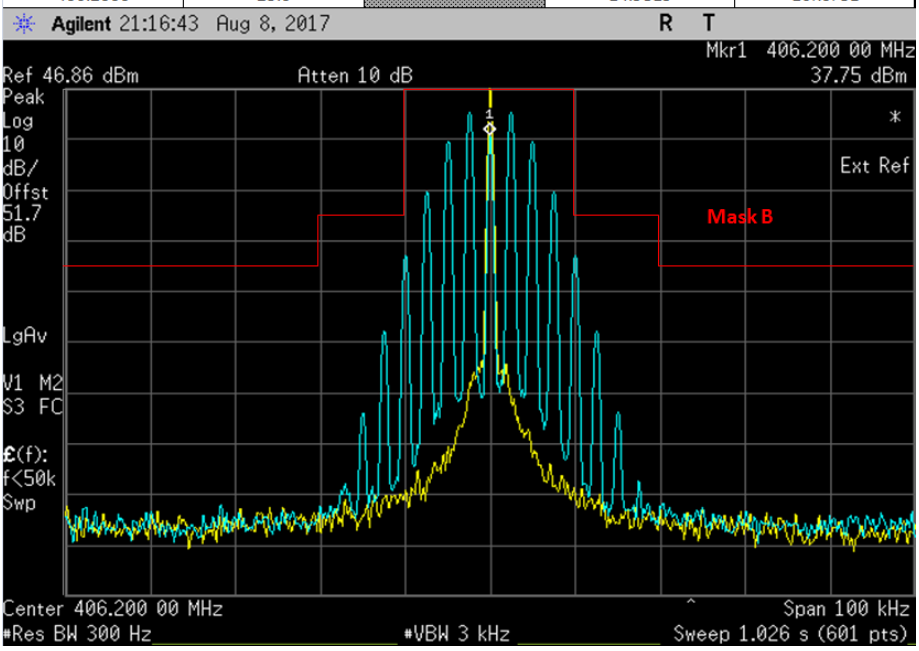


1) The DUT transmitter output port was connected to Modulation Analyzer.
2) Set the audio bandwidth filter to 15 kHz low pass filter and 50 kHz high pass filter.
3) Transmit the radio and set the audio analyzer to 2.5 kHz audio frequency and 50% of the rated deviation. Up the amplitude by 16 dB. Dekey the DUT.
4) Path loss for the measurement included.
5) Select the Occupied Bandwidth measurement for 99% 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 to 100 KHz 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.

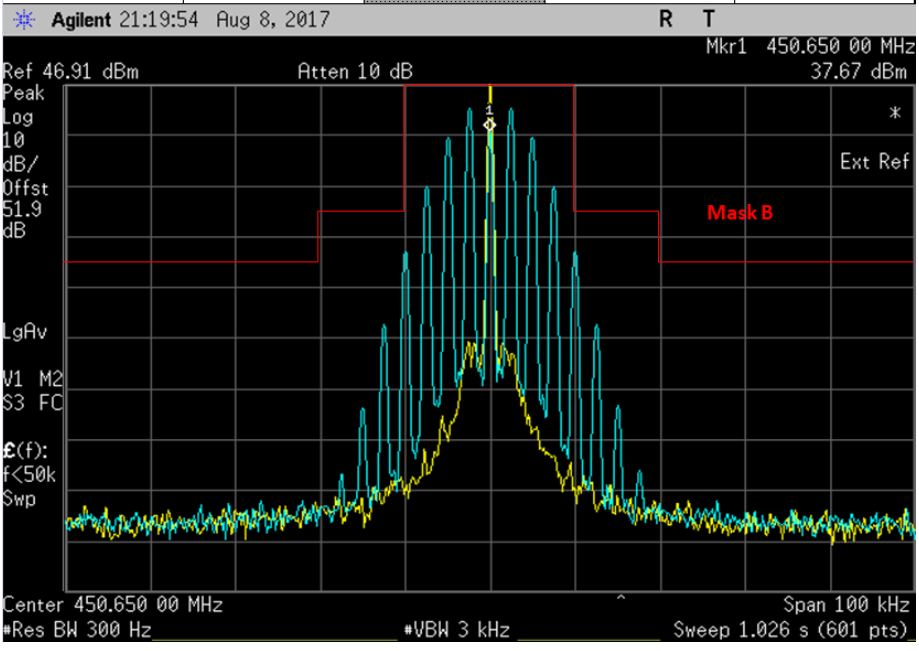
* Only HPF added for Mask 80.211 measurement with attenuator.

6.6.2. Test Result (Analog)

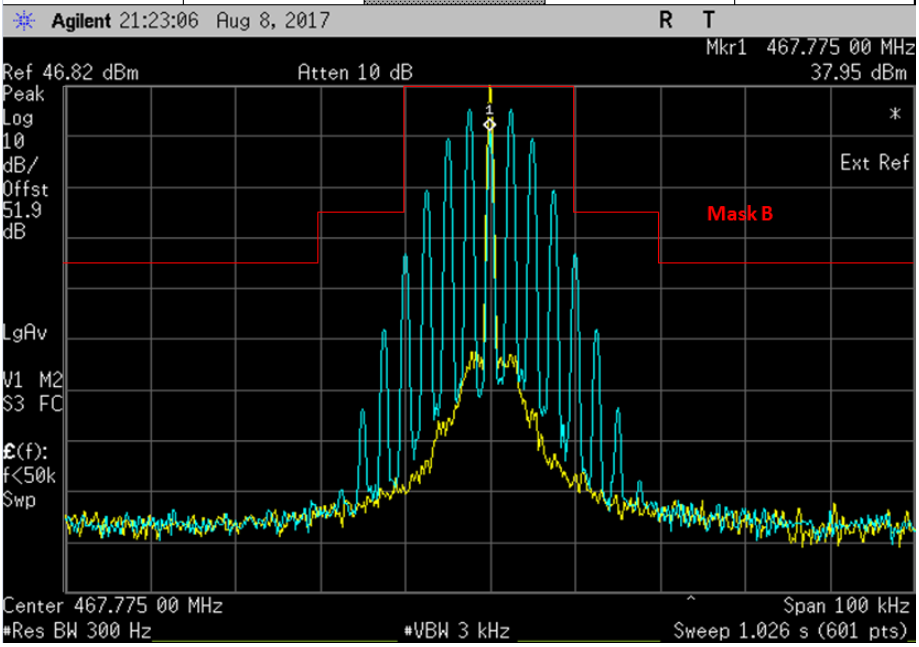
Modulation			Rules Part	
Analog Voice			RSS 119	
Channel Frequency (MHz)	**Channel Spacing (kHz)**		**99% OCB (kHz)**	**Emission Designator**
406.2000	25.0		14.9819	16K0F3E



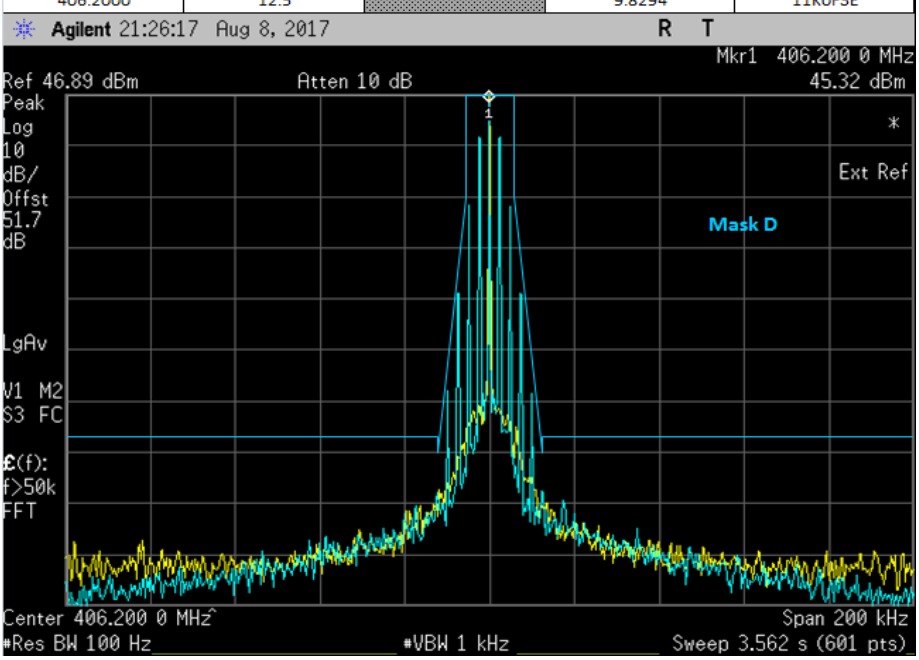
Modulation			Rules Part	
Analog Voice			FCC Part 74 / RSS 119	
Channel Frequency (MHz)	**Channel Spacing (kHz)**		**99% OCB (kHz)**	**Emission Designator**
450.6500	25.0		14.9931	16K0F3E



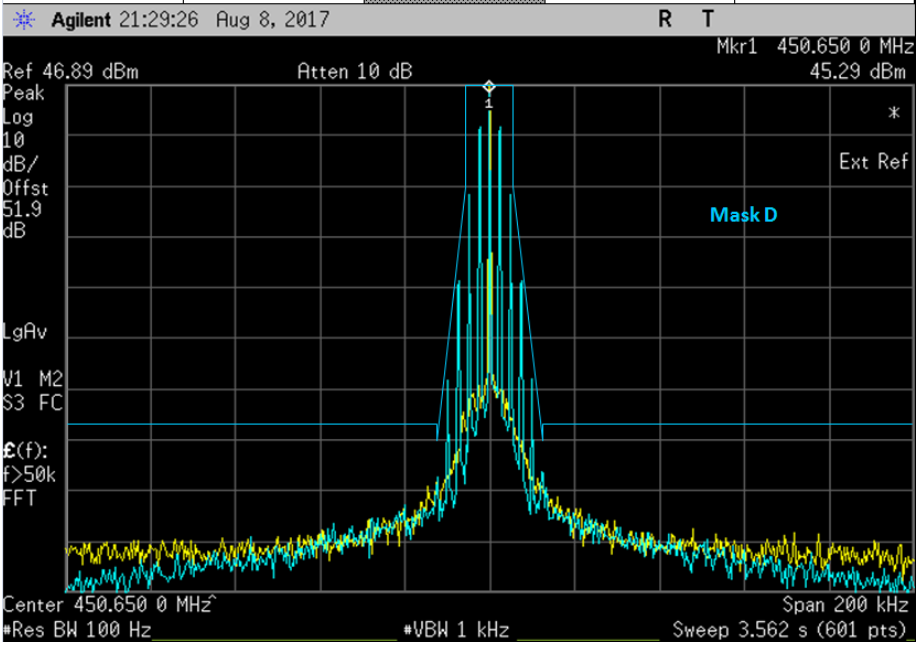
Modulation			Rules Part	
Analog Voice			FCC Part 80 / RSS 119	
Channel Frequency (MHz)	**Channel Spacing (kHz)**		**99% OCB (kHz)**	**Emission Designator**
467.7750	25.0		14.9661	16K0F3E



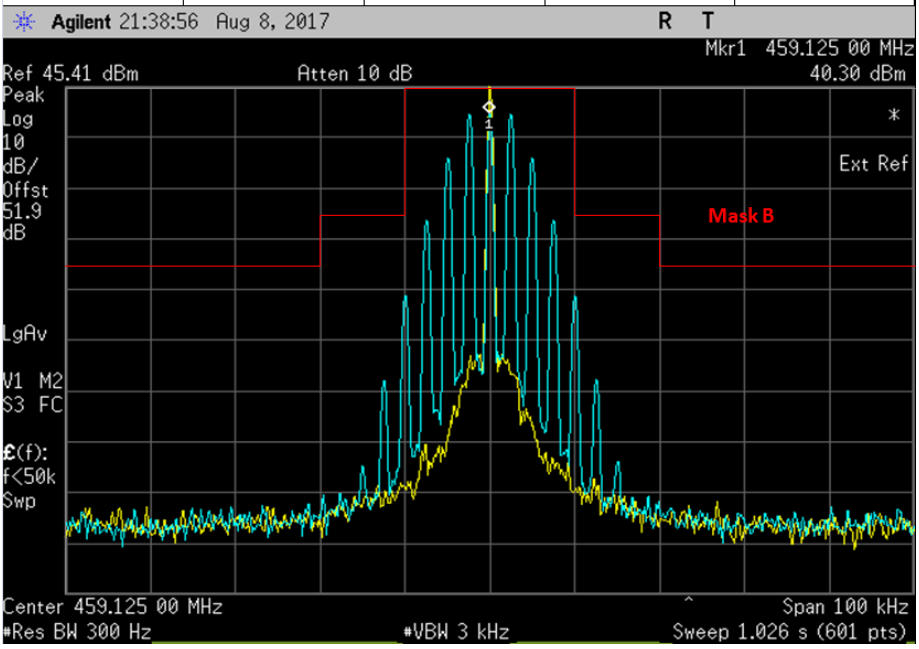
Modulation			Rules Part Mask	
Analog Voice			FCC Part 90 / RSS 119	
Channel Frequency (MHz)	**Channel Spacing (kHz)**		**99% OCB (kHz)**	**Emission Designator**
406.2000	12.5		9.8294	11K0F3E



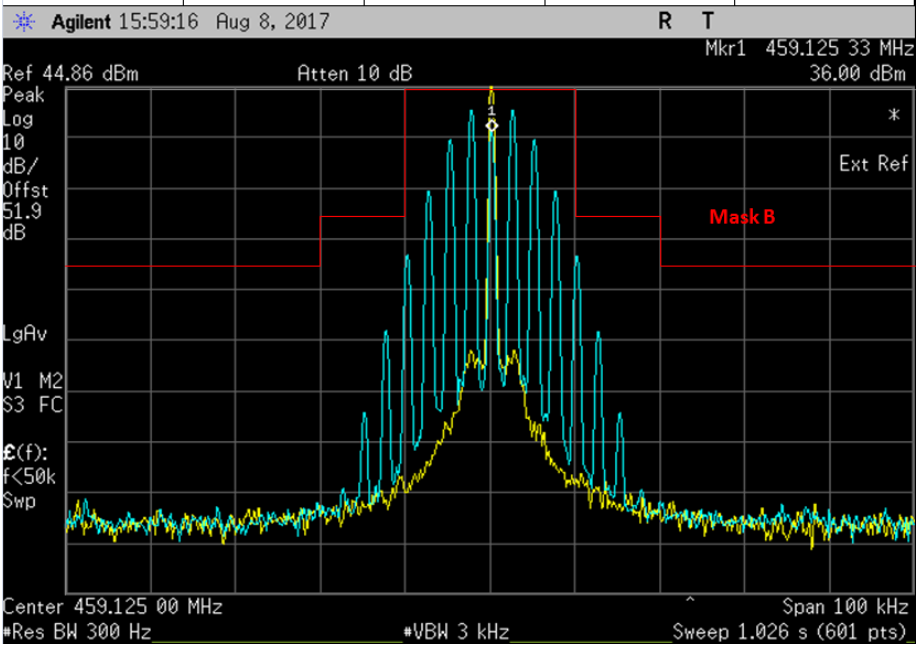
Modulation			Rules Part	
Analog Voice			FCC Part 74,90 / RSS 119	
Channel Frequency (MHz)	**Channel Spacing (kHz)**		**99% OCB (kHz)**	**Emission Designator**
450.6500	12.5		9.8442	11K0F3E



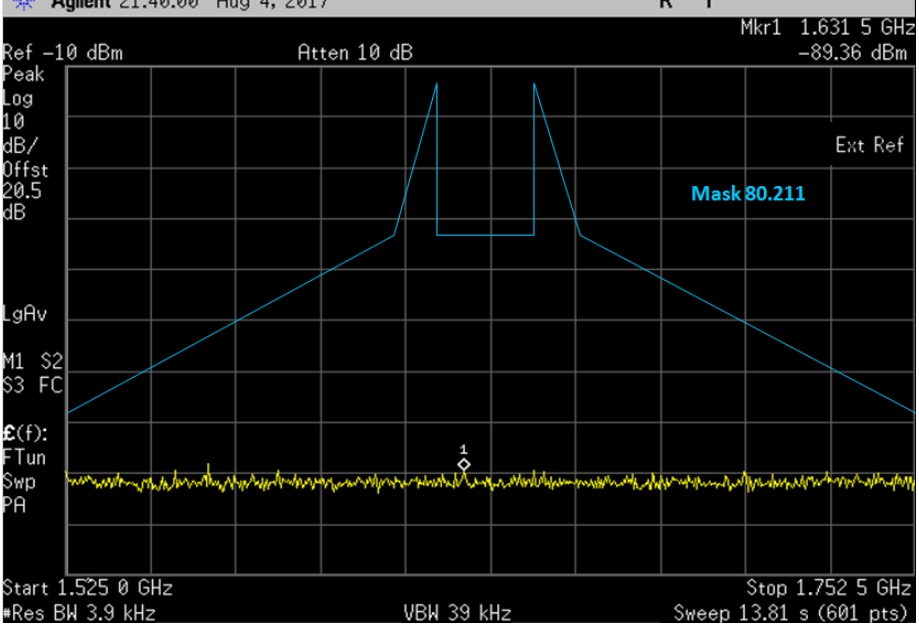
Modulation			Rules Part	
Analog Voice			FCC Part 22.359(b)	
Channel Frequency (MHz)	**Channel Spacing (kHz)**	**-26 dB Point (kHz)**	**99% OCB (kHz)**	**Emission Designator**
459.1250	20.0	15.3896	10.3705	16K0F3E



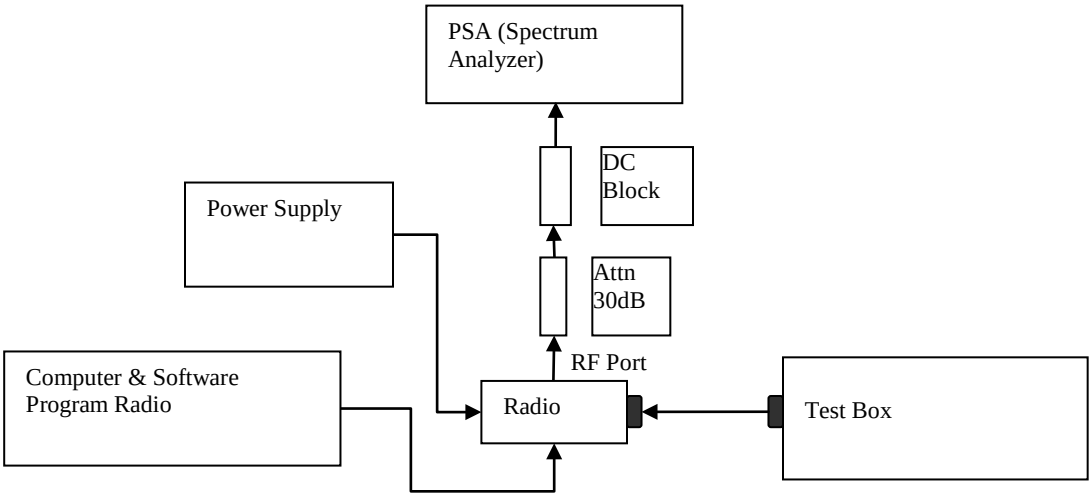
Modulation		Rules Part		
Analog Voice		FCC Part 22.359(b)		
Channel Frequency (MHz)	**Channel Spacing (kHz)**	**-26 dB Point (kHz)**	**99% OCB (kHz)**	**Emission Designator**
459.1250	25.0	15.5356	14.9697	16K0F3E



Modulation		Rules Part		
Analog Voice		FCC Part 80.211(c)		
Channel Frequency (MHz)	**Channel Spacing (kHz)**		**99% OCB (kHz)**	**Emission Designator**
467.7750	25.0		14.9661	16K0F3E



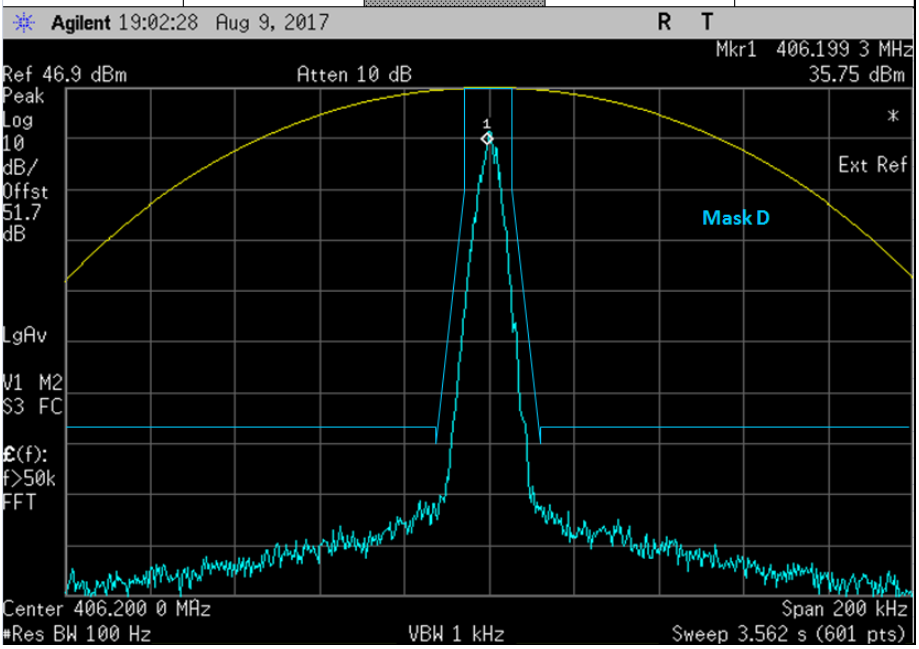
6.6.3. Test Setup (Digital)



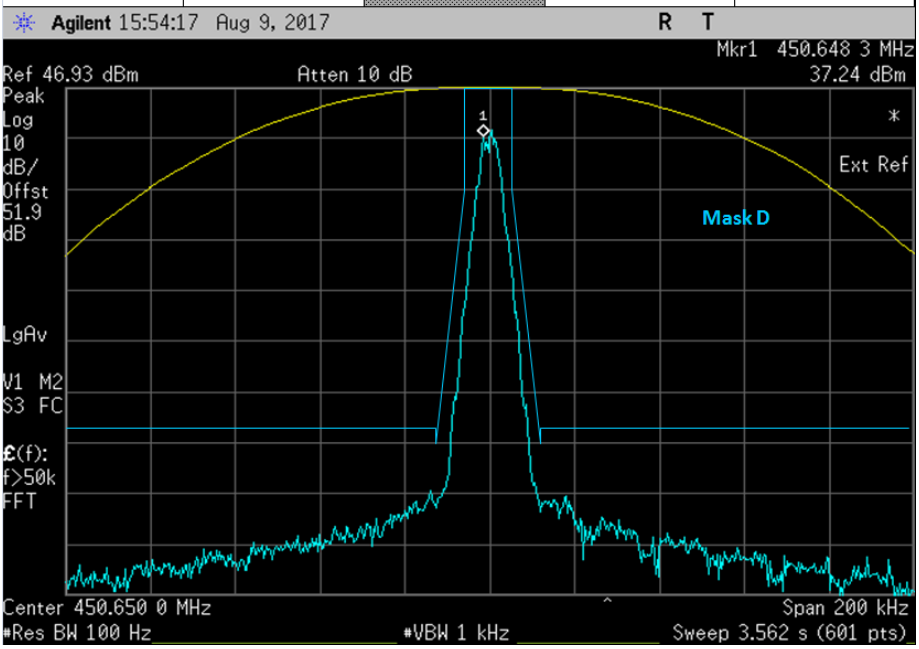
1) Program and set radio to operate in desire test frequency and digital mode with modulation. (4FSK, C4FM, CQPSK or other digital modulation form).
2) Path loss for the measurement included.
3) Select the Occupied Bandwidth measurement for 99% Bandwidth Measurement.
4) Key in the Fc and RBW (1 ~ 5 % 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 to 100 KHz and Resolution Bandwidth (according to FCC/ ISED standard).
8) Capture the screen shot as modulated signal.

6.6.4. Test Result (Digital)

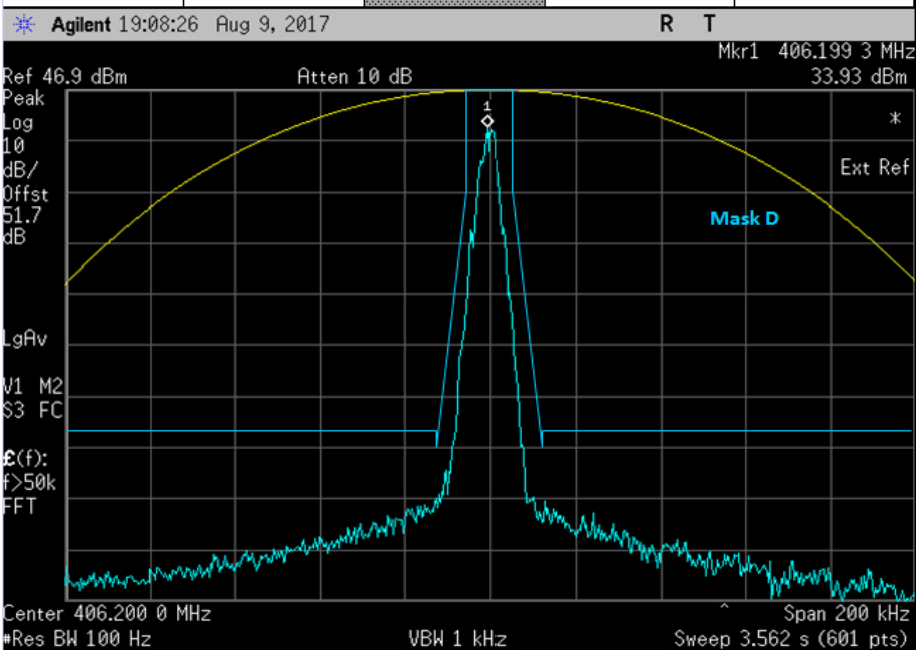
Modulation			Rules Part	
4FSK Data			FCC Part 90 / RSS 119	
Channel Frequency (MHz)	**Channel Spacing (kHz)**		**99% OCB (kHz)**	**Emission Designator**
406.2000	12.5		7.4628	7K60F1D



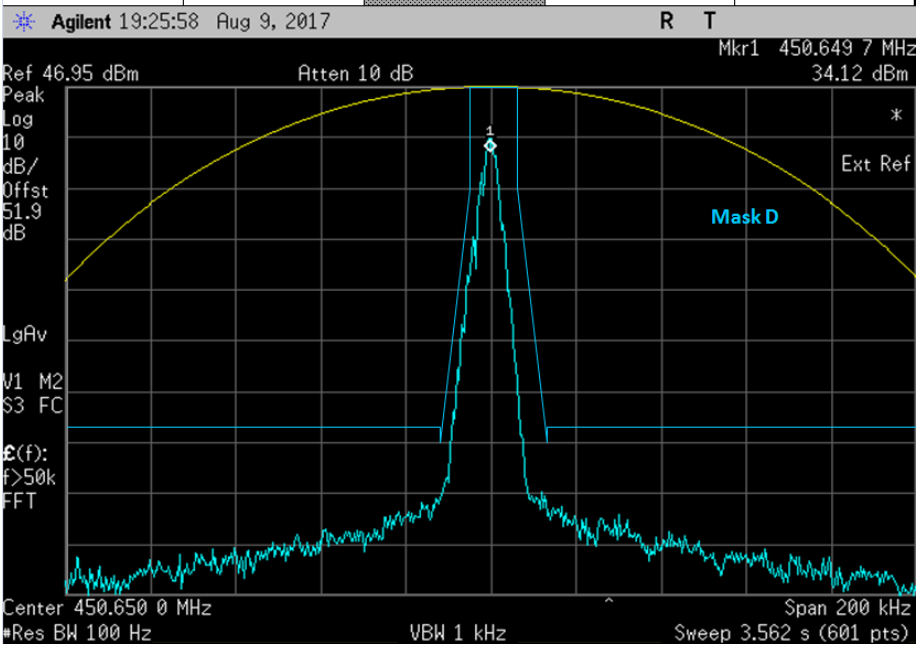
Modulation			Rules Part	
4FSK Data			FCC Part 74,90 / RSS 119	
Channel Frequency (MHz)	**Channel Spacing (kHz)**		**99% OCB (kHz)**	**Emission Designator**
450.6500	12.5		6.618	7K60F1D



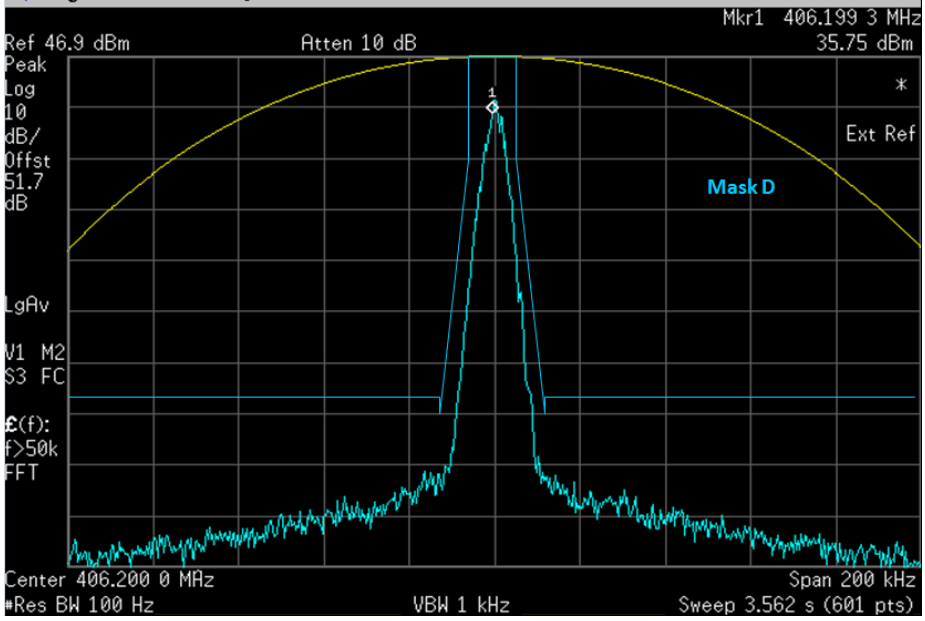
Modulation			Rules Part Mask	
4FSK Voice			FCC Part 90 / RSS 119	
Channel Frequency (MHz)	**Channel Spacing (kHz)**		**99% OCB (kHz)**	**Emission Designator**
406.2000	12.5		6.6368	7K60F1E



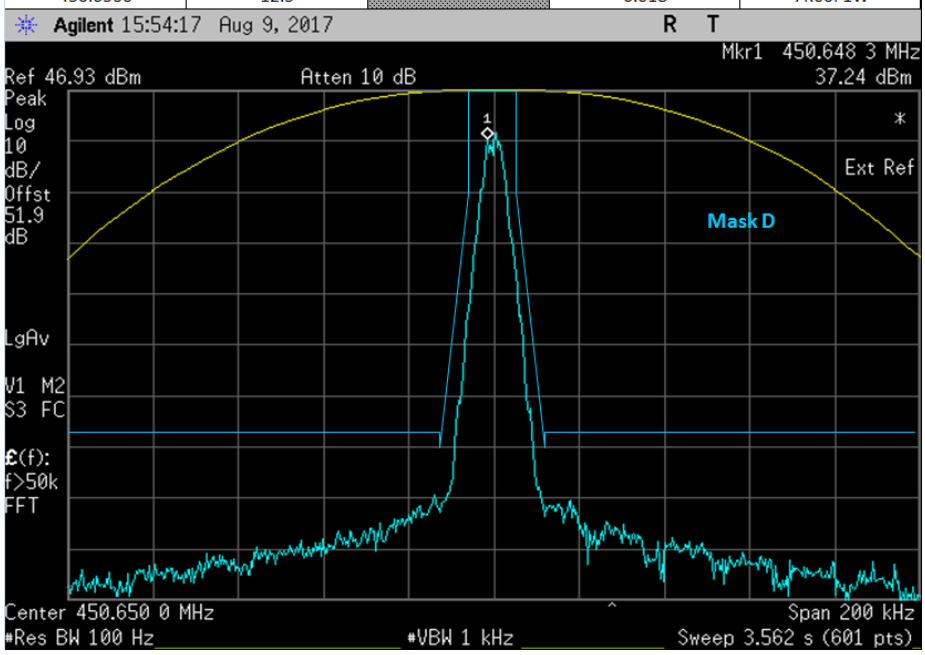
Modulation			Rules Part	
4FSK Voice			FCC Part 74,90 / RSS 119	
Channel Frequency (MHz)	**Channel Spacing (kHz)**		**99% OCB (kHz)**	**Emission Designator**
450.6500	12.5		7.4001	7K60F1E



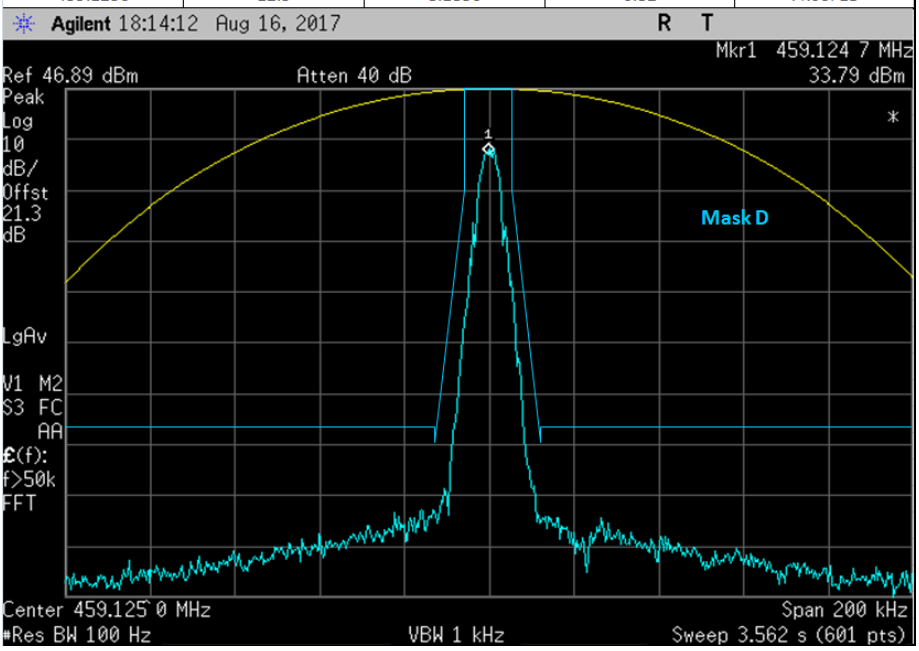
Modulation			Rules Part	
4FSK Data+Voice			FCC Part 90 / RSS 119	
Channel Frequency (MHz)	**Channel Spacing (kHz)**		**99% OCB (kHz)**	**Emission Designator**
406.2000	12.5		7.4628	7K60F1W



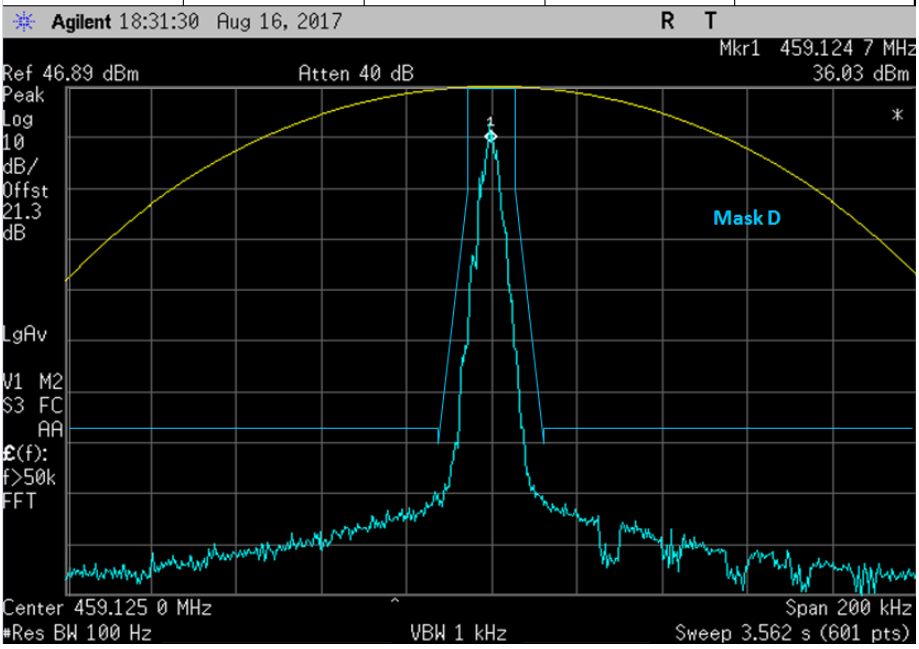
Modulation			Rules Part	
4FSK Data+Voice			FCC Part 90 / RSS 119	
Channel Frequency (MHz)	**Channel Spacing (kHz)**		**99% OCB (kHz)**	**Emission Designator**
450.6500	12.5		6.618	7K60F1W



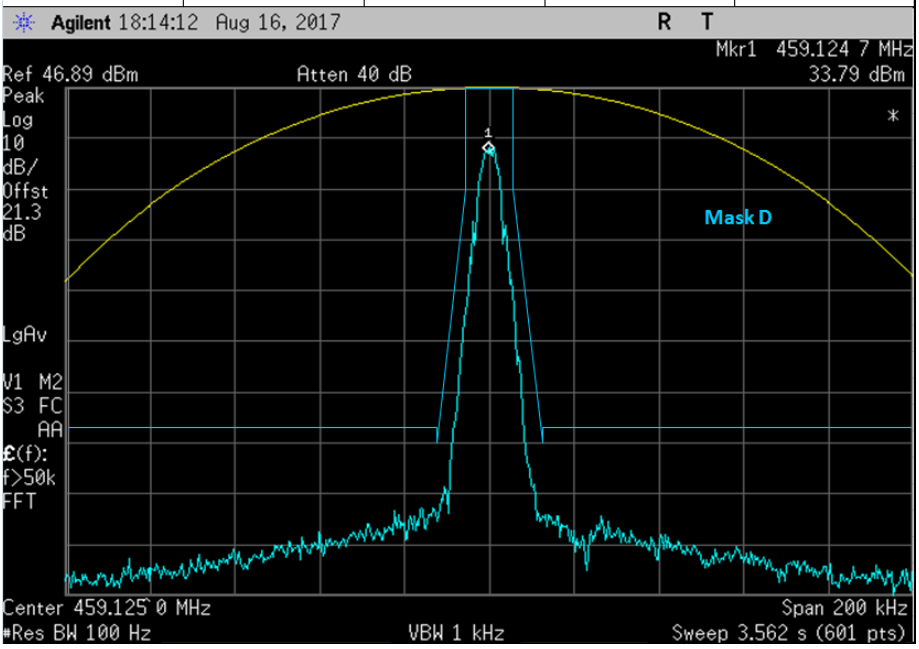
Modulation		Rules Part		
4FSK Data		FCC Part 90 / 22		
Channel Frequency (MHz)	**Channel Spacing (kHz)**	**-26 dB Point (kHz)**	**99% OCB (kHz)**	**Emission Designator**
459.1250	12.5	8.1856	6.82	7K60F1D



Modulation		Rules Part		
4FSK Voice		FCC Part 90 / 22		
Channel Frequency (MHz)	**Channel Spacing (kHz)**	**-26 dB Point (kHz)**	**99% OCB (kHz)**	**Emission Designator**
459.1250	12.5	8.5194	7.0523	7K60F1E



Modulation		Rules Part Mask		
4FSK Data+Voice		FCC Part 90 / 22		
Channel Frequency (MHz)	**Channel Spacing (kHz)**	**-26 dB Point (kHz)**	**99% OCB (kHz)**	**Emission Designator**
459.1250	12.5	8.1856	6.82	7K60F1W



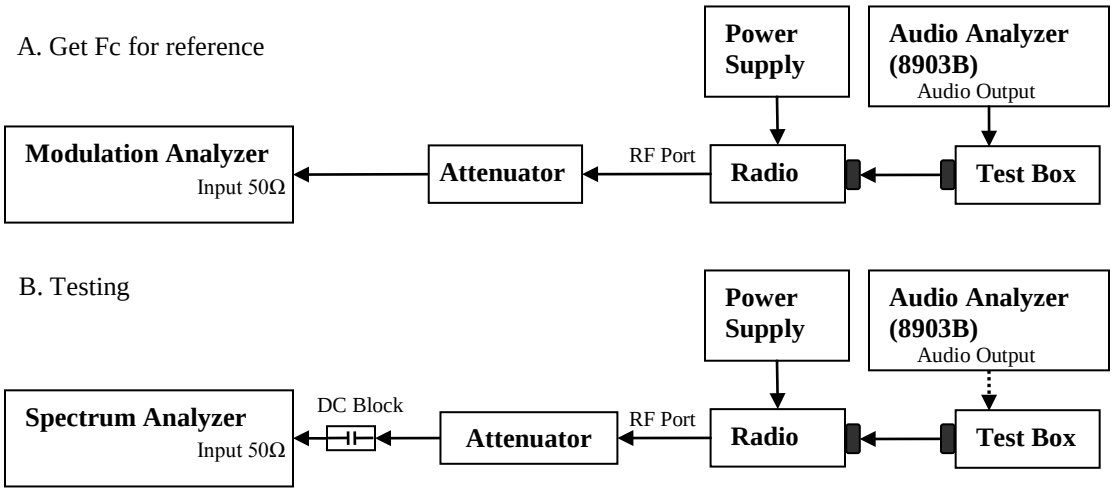
***Note: Emission designators 7K60FXD and 7K60FXE utilizes the same test pattern as 7K60F1E, 7K60F1D and 7K60F1W, and are therefore identical. Hence, only the latter 3 plots are shown.**

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)

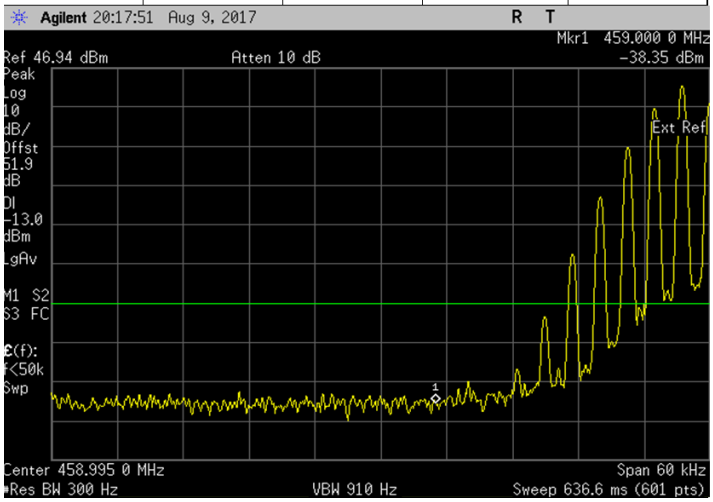
6.7.1. Test Setup (Analog)



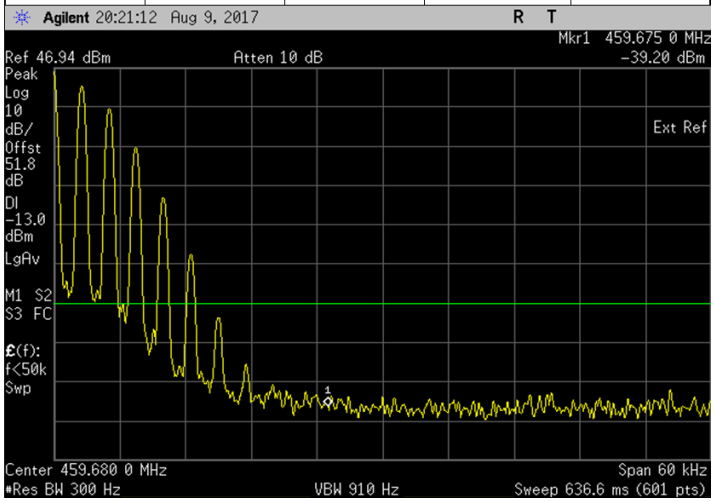
1) The DUT transmitter output port was connected to Modulation Analyzer.
2) Set the audio bandwidth filter to 15 kHz low pass filter and 50 kHz high pass filter.
3) Path loss for the measurement included.
4) Select the Occupied Bandwidth measurement for 99% and 26dB Emissions Bandwidth Measurement.
5) Key in the Fc and RBW= 100Hz.
6) Transmit the DUT and record the occupied Bandwidth frequencies.
7) Preset the spectrum analyzer for band edge measurement.
8) The band edges of lowest and highest channels were measured.
9) The center frequency of spectrum is the band edge frequency, span is 60 kHz and RBW is at least 1% of Emission Bandwidth.
10) Save the screen shot as modulated signal.
11) Remove the audio tone from audio analyzer to capture unmodulated signal.

6.7.2. Test Result (Analog)

Modulation	Rules Part Mask			
Analog Voice	FCC Part 22.359(b)			
Channel Frequency	**Channel Spacing**	**-26dB OCB**	**99% OCB**	**Emission**
459.0250	25.0	15.5428	14.9751	16K0F3E

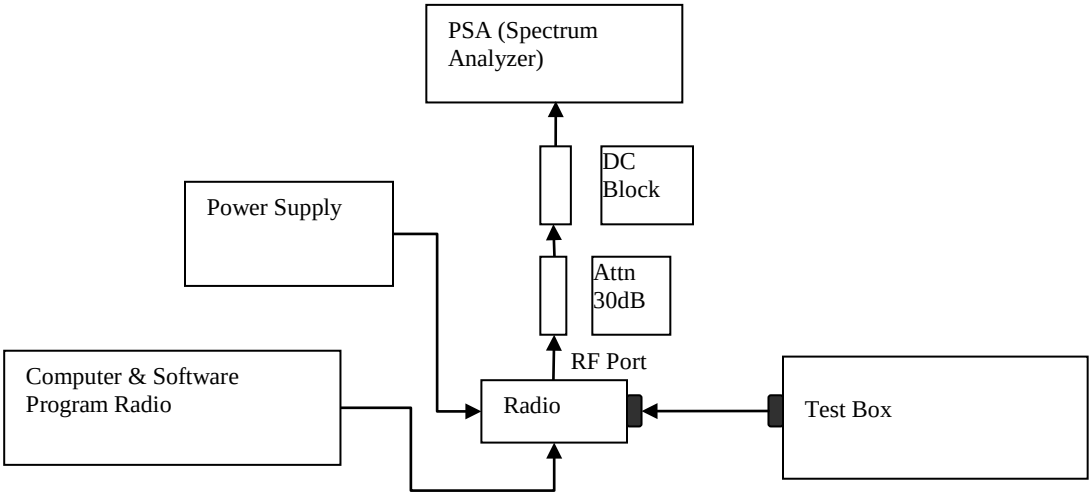


Modulation	Rules Part Mask			
Analog Voice	FCC Part 22.359(b)			
Channel Frequency	**Channel Spacing**	**-26dB OCB**	**99% OCB**	**Emission Designator**
459.6500	25.0	15.5454	14.9786	16K0F3E



***Note: As 16K0F3E presented the worst case, only this data will be shown.**

6.7.3. Test Setup (Digital)

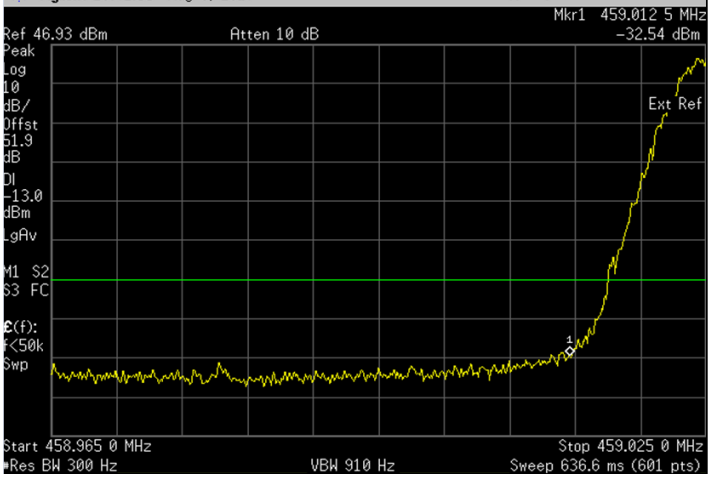


1) Program and set radio to operate in desire test frequency and digital mode with modulation. (4FSK**, C4FM or other digital modulation form).
2) Path loss for the measurement included.
3) Select the Occupied Bandwidth measurement for 99% and 26dB Emissions Bandwidth Measurement.
4) Key in the Fc and RBW= 100Hz.
5) Transmit radio record the occupied Bandwidth frequencies.
6) Preset the spectrum analyzer for band edge measurement.
7) The band edges of lowest and highest channels were measured.
8) The center frequency of spectrum is the band edge frequency, span is 60 kHz and RBW is at least 1% of Emission Bandwidth.
9) Save the screen shot.

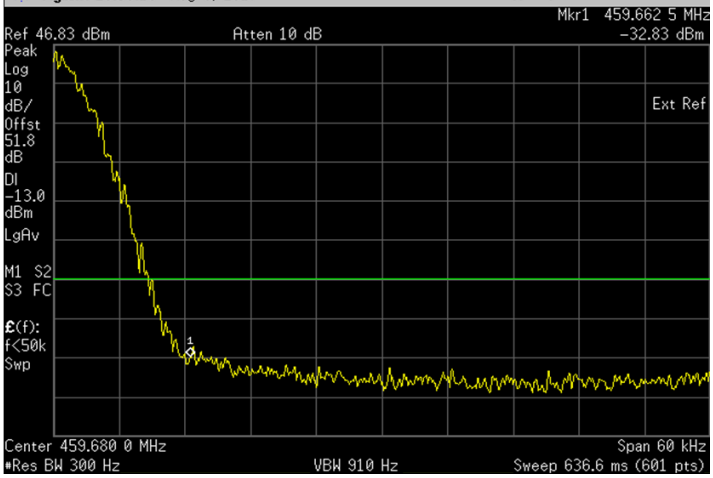
*Note: Test patterns for all digital emissions (7K60F1E, 7K60F1D, 7K60F1W, 7K60FXE, 7K60FXW) are identical, hence only 7K60F1D is shown.

6.7.4. Test Result (Digital)

Modulation	Rules Part Mask			
4FSK Data	FCC Part 22.359(b)			
Channel Frequency	**Channel Spacing**	**-26dB OCB**	**99% OCB**	**Emission**
459.0250	12.5	7.4150	7.0895	7K60F1D



Modulation	Rules Part Mask			
4FSK Data	FCC Part 22.359(b)			
Channel Frequency	**Channel Spacing**	**-26dB OCB**	**99% OCB**	**Emission Designator**
459.6500	25.0	8.2880	6.7468	7K60F1D

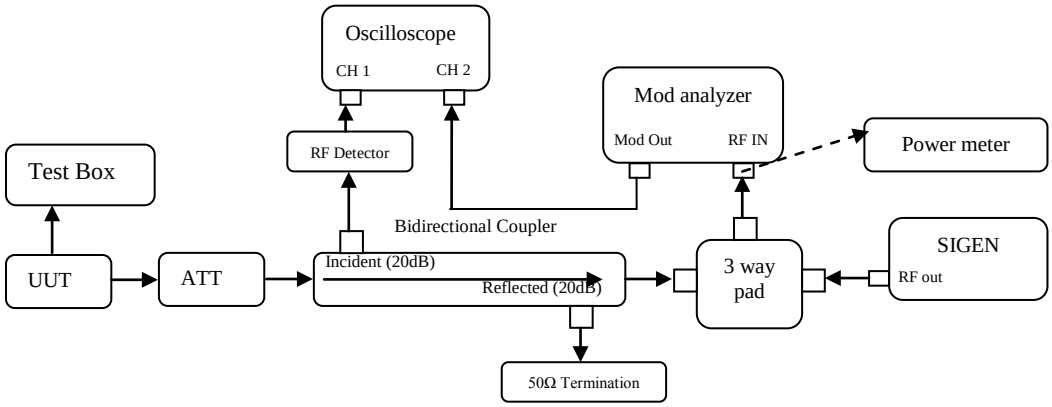


6.7.5. Test Limit

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

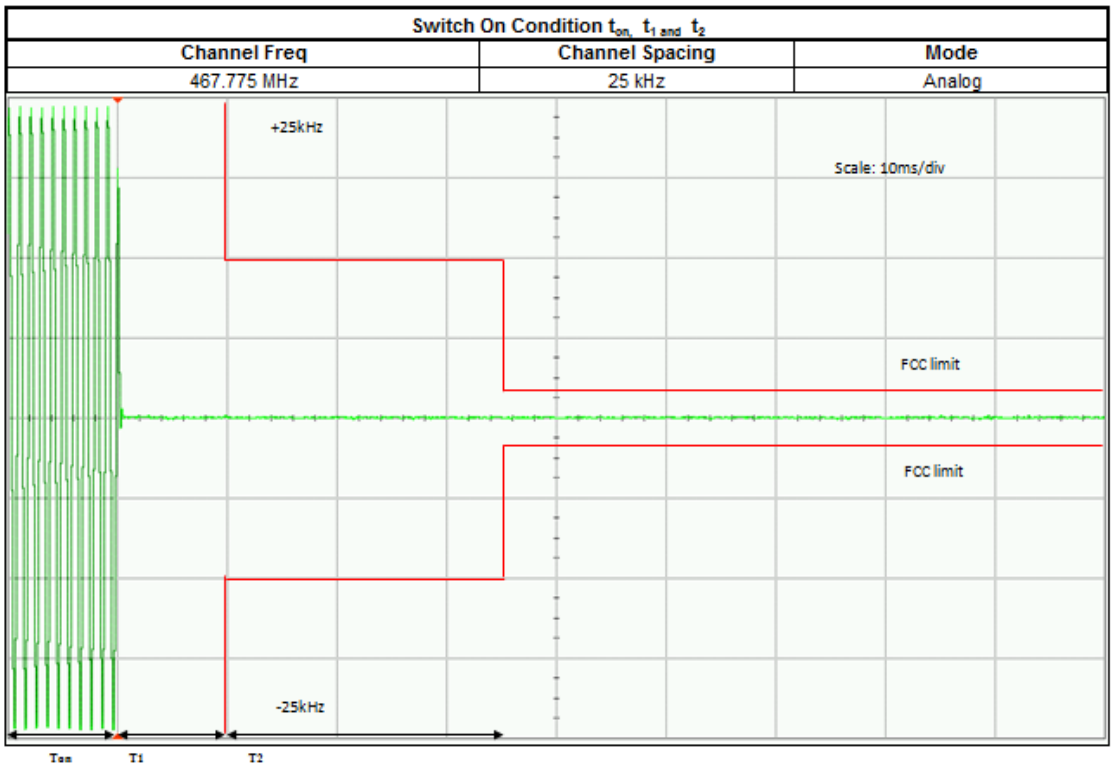
6.8.1. Test Setup



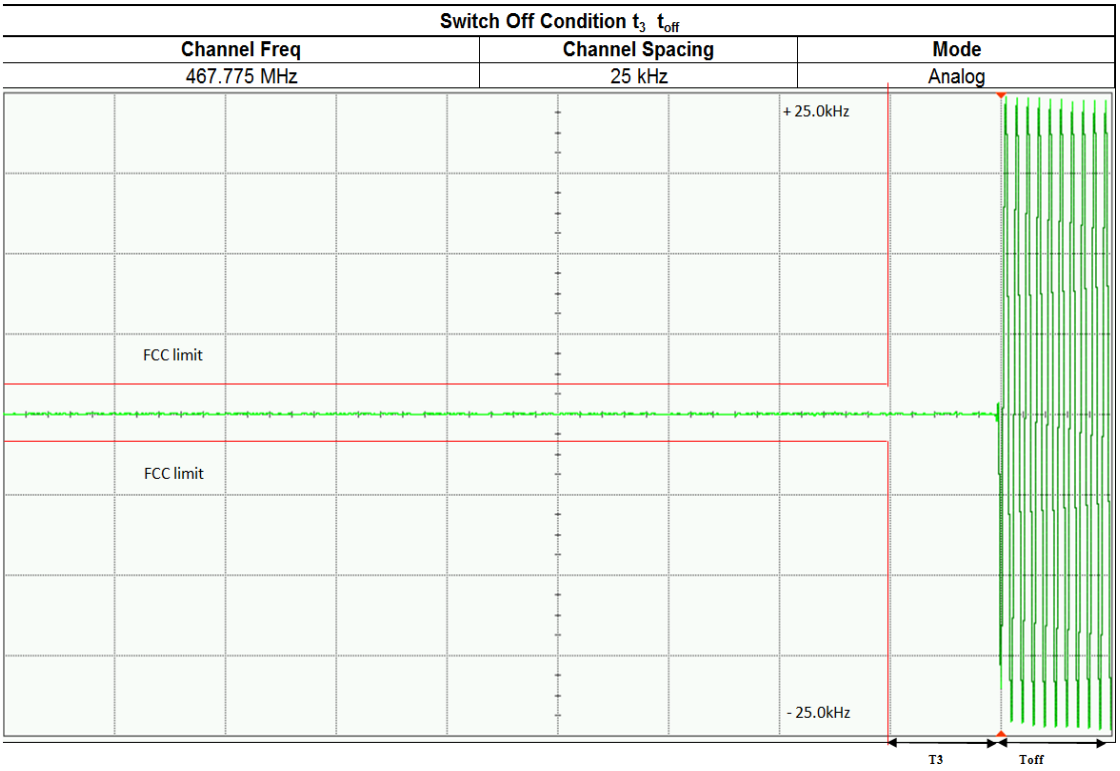
1) Connect the setup as figure above.
2) Path loss for the measurement included.
3) Set on Sigen with the assigned center frequency, internal 1 kHz FM tone.
   FM Deviation: Analog 25kHz Channel Spacing = 25 kHz
   Analog 12.5 kHz Channel Spacing = 12.5 kHz
   C4FM = 12.5 kHz
4) Turn on 50 kHz high pass 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 UUT is keying up.
6) Note the power level on power meter and dekey the UUT.
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) Set the horizontal sweep rate on the storage oscilloscope to 10 milliseconds per division and adjust the display to continuously view the 1000 Hz. Adjust the vertical amplitude control of the oscilloscope to display the 1000 Hz at □4 divisions vertically centered on the display.
10) Reduce 30dB attenuation and transmit the radio to get the trigger line.
11) Capture the screen shot for key-up (rising edge) and de-key (falling edge) mode.

6.8.2. Test Result

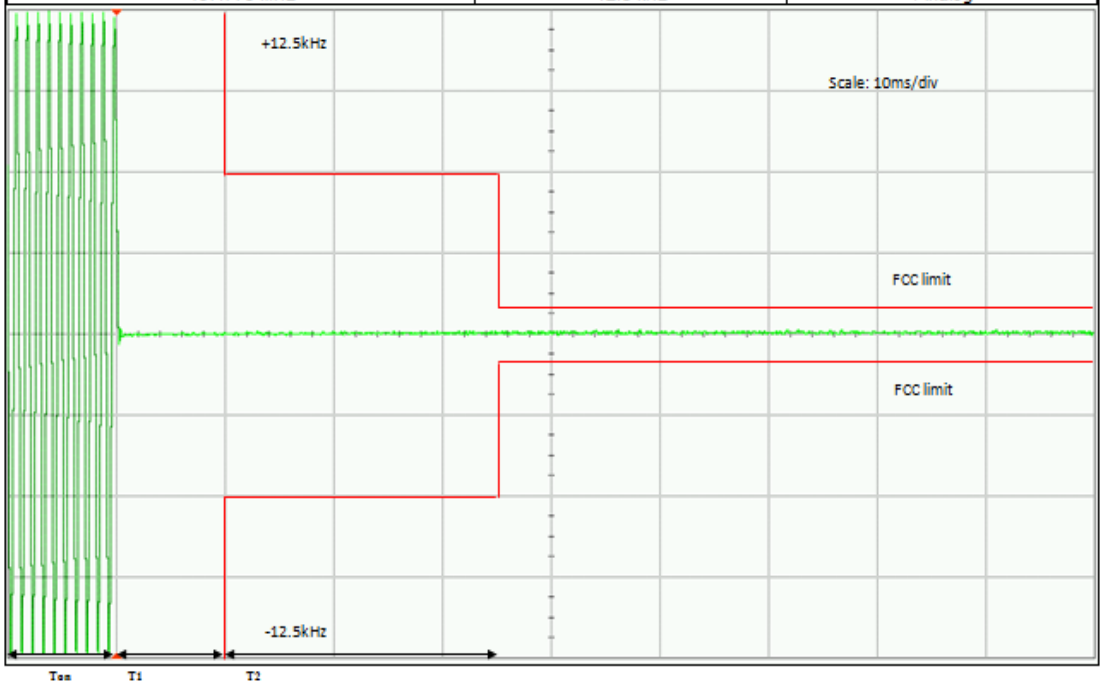
Not for FCC review



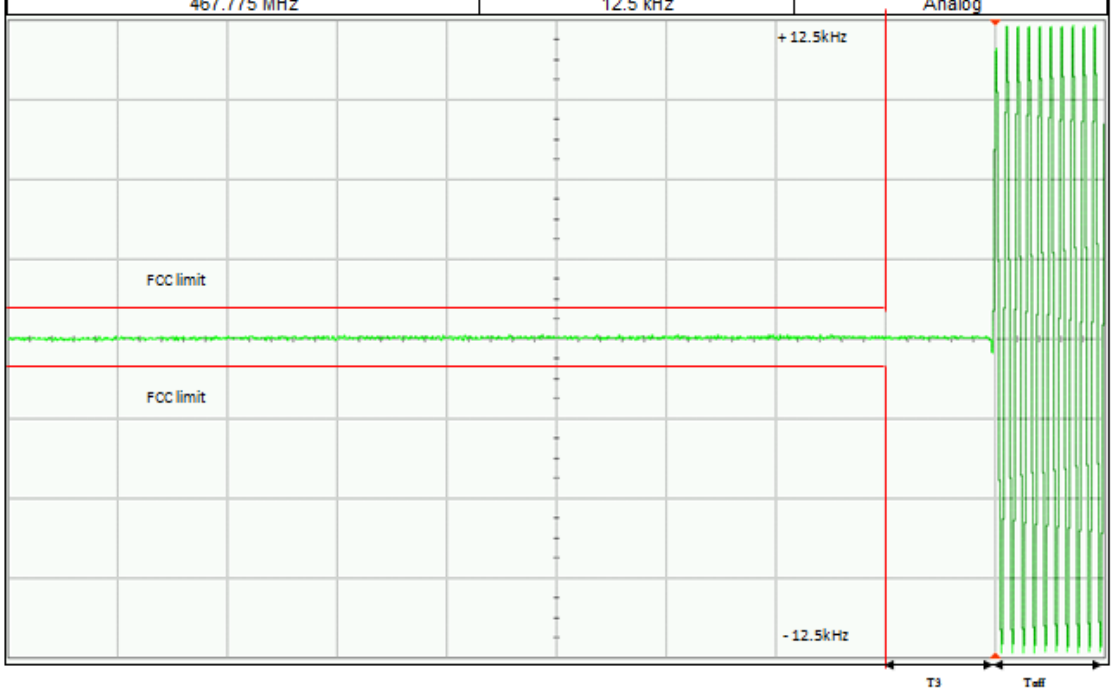
Not for FCC review



Switch On Condition t_{on}, t_1 and t_2		
Channel Freq	**Channel Spacing**	**Mode**
467.775 MHz	12.5 kHz	Analog



Switch Off Condition t_s t_{off}		
Channel Freq	**Channel Spacing**	**Mode**
467.775 MHz	12.5 kHz	Analog



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.

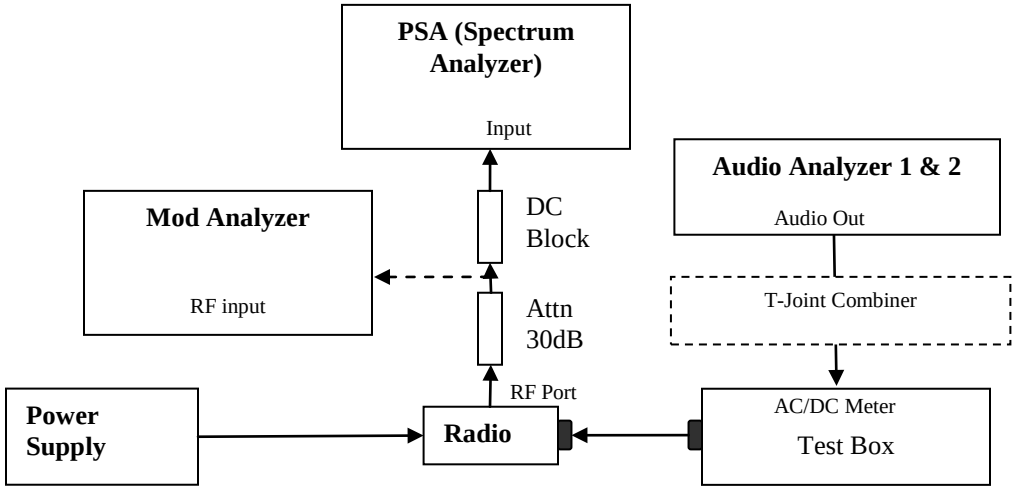
[2] During the time from the end of t_2 to the beginning of t_3, the frequency difference must not exceed the limits specified in §90.213.

[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)

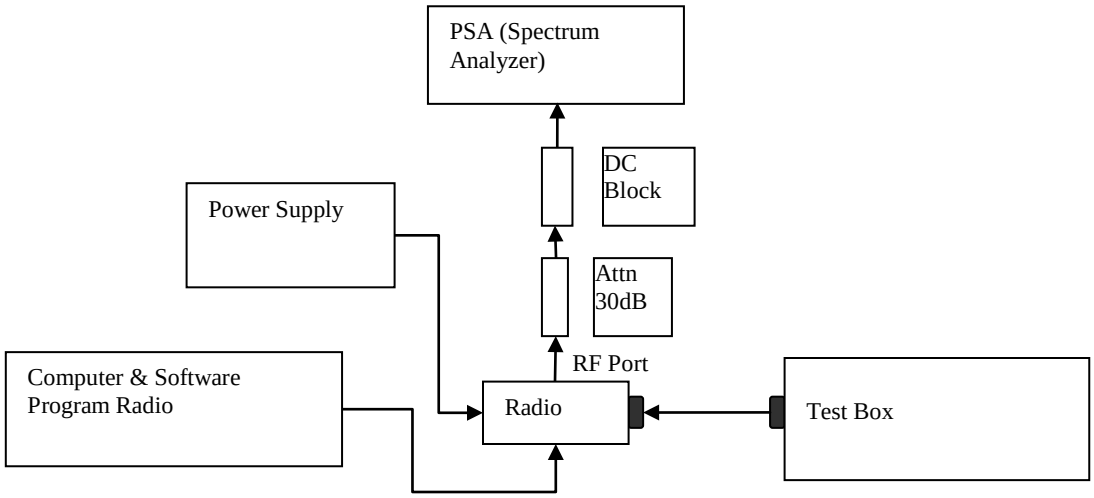


1) The DUT transmitter output port was connected to modulation analyzer.
2) Path loss for the measurement included.
3) Transmit the radio and turn on 1st audio analyzer with audio frequency 650Hz, 50% rated deviation, and record the amplitude value as AmpT1.
4) Turn off Audio analyzer 1 and turn on audio analyzer 2, set the audio frequency to 2.2 kHz and 50% deviation. Record the amplitude as AmpT2.
5) Turn both audio analyzers ON and up 10dB amplitude level.
6) Connect the output to PSA and set to assigned center frequency.
7) Set Span, RBW and VBW as shown in FCC rules part 90.543.
8) Transmit the radio and record the ACP 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, CQPSK or other digital modulation form).
2) Path loss for the measurement included.
3) Prepare setup as per picture.
4) Turn on the ACP Measurement – Press Measure, ACP.
5) Set Span, RBW and VBW as shown in FCC rules part 90.543.
6) Transmit the radio and record the ACP 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

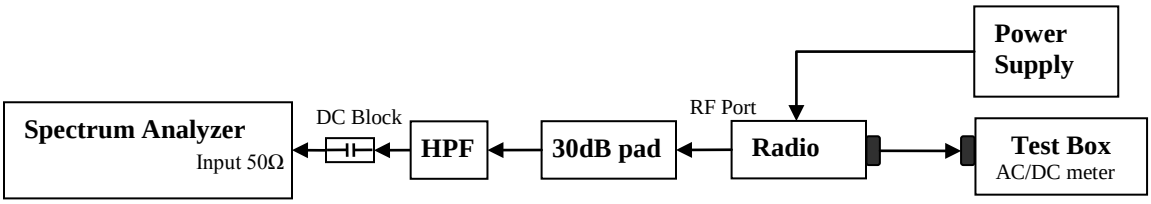
Offset from center frequency (kHz)	Measurement bandwidth (kHz)	Maximum ACP (dBc)
9.375	6.25	−40
15.625	6.25	−60
21.875	6.25	−60
37.5	25	−60
62.5	25	−65
87.5	25	−65
150	100	−65
250	100	−65
350.00	100	−65
>400 kHz to 12 MHz	30 (s)	−80
12 MHz to paired receive band	30 (s)	−80
In the paired receive band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

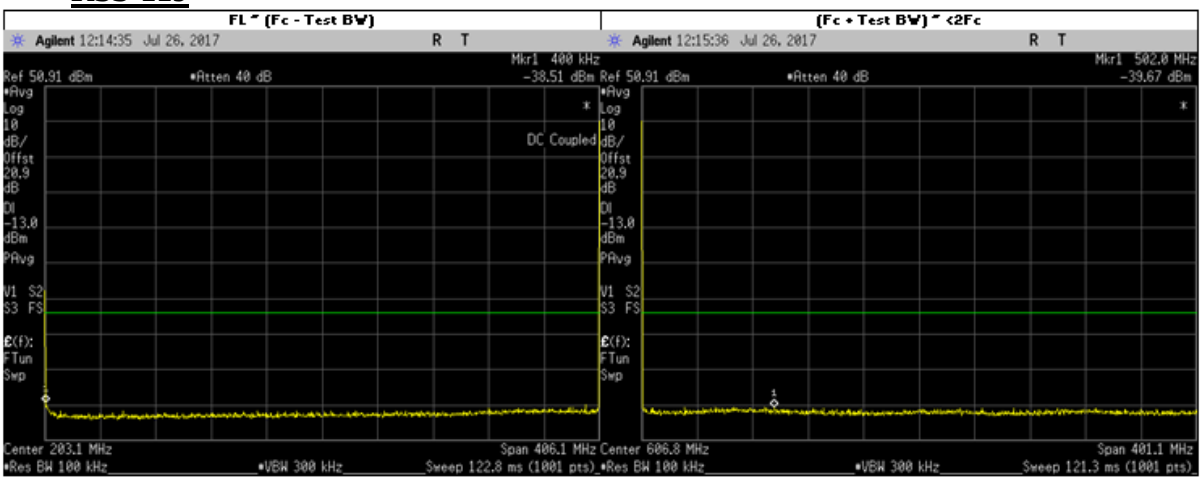
6.10.1. Test Setup

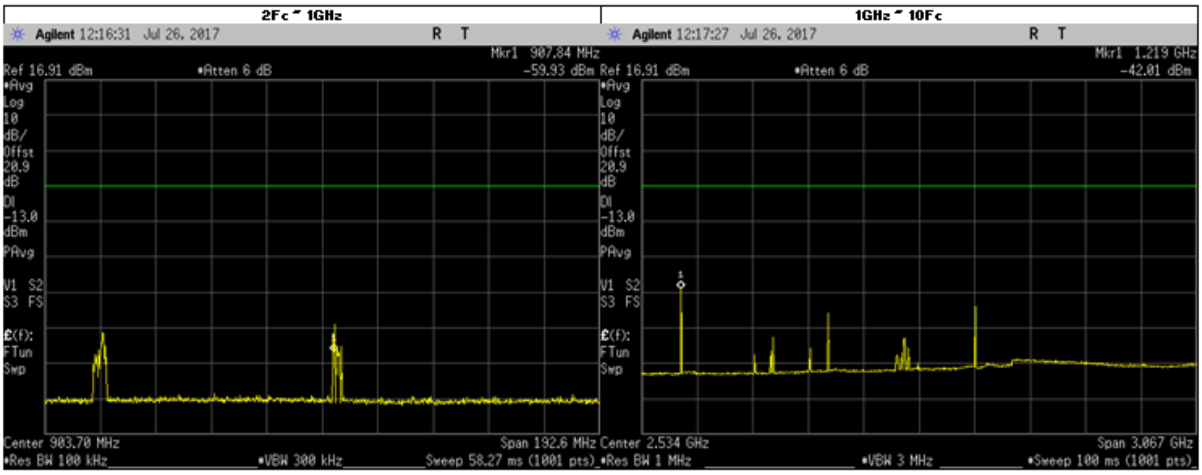


1) The DUT transmitter output port was connected to Spectrum Analyzer with above setup.
2) Program and set radio to operate in desire test frequency and mode. (Analog / digital modulation form).
3) Adjust the PSA RBW = 100kHz for spur emission below 1GHz, and 1MHz for spur emission above 1GHz.
4) Set the Ref offset from the pathloss offset calibration file.
5) Adjust the center frequency of the spectrum analyzer for incremental coverage of the range from:
   (a) The lowest radio frequency to Fc – Test BW
   (b) Fc + Test BW to Freq < 2Fc.
6) Record the levels of spurious emissions and dekey the UUT.
7) Turn On HPF path and Key up the UUT.
8) Adjust the PSA Freq for incremental coverage of range from 2Fc to 10Fc.
9) The levels recorded are the absolute levels of conducted spurious emissions in dBm.

6.10.2. Test Result (Analog)

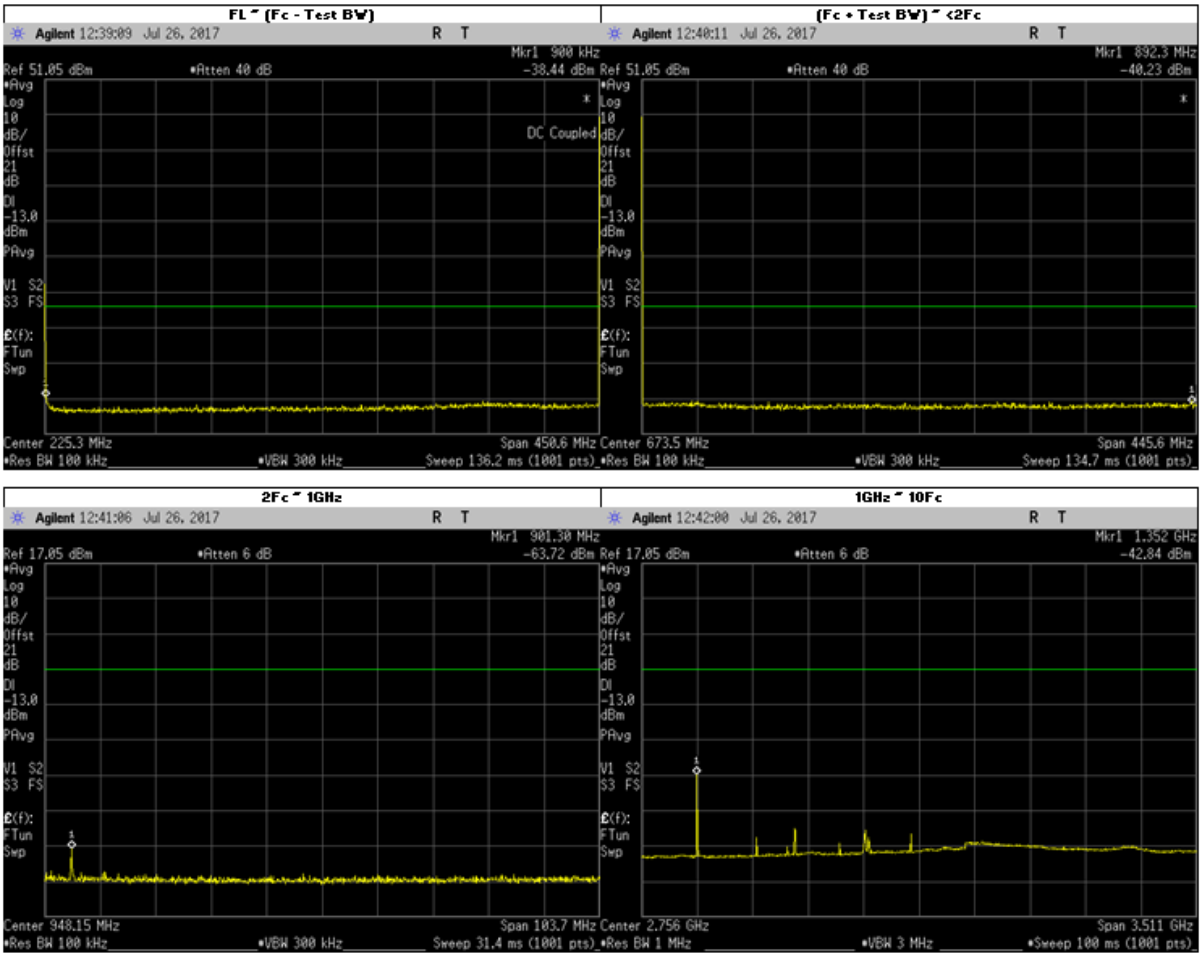
Analog: 406.2 MHz, 25 kHz Channel Spacing, Max Power (Not for FCC review)
RSS-119





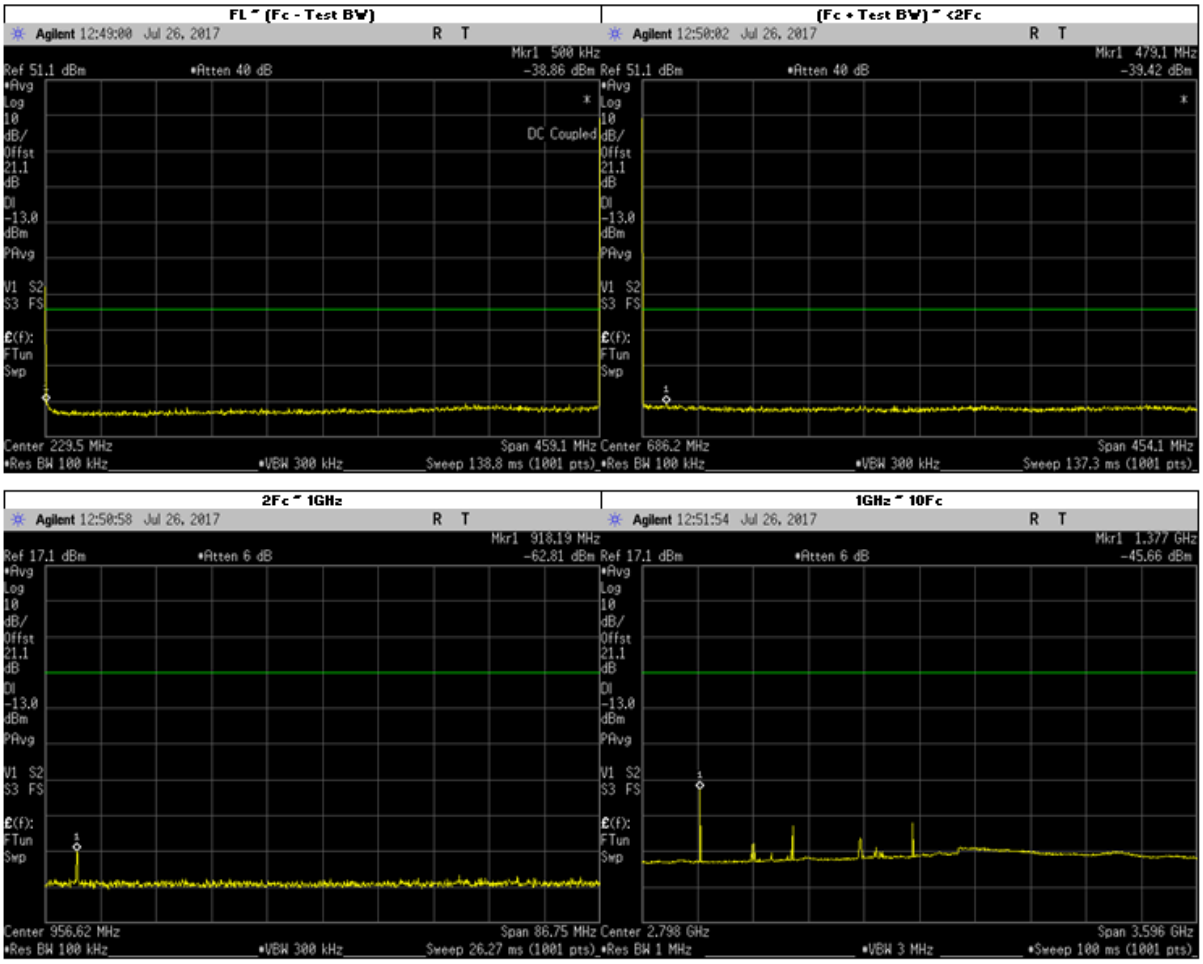
Frequency Range	Highest Spur Freq (MHz)	Spurious Level (dBm)	Failing Limit (dBm)	Remark
FL ~ (Fc - Test BW)	0.4147 395.1897 1.2262 383.8292 385.8579	-38.51 -38.89 -39.20 -39.62 -39.66	-13	Pass
(Fc + Test BW) ~ <2Fc	502.0334 495.2207 437.5136 459.5545 473.1798	-39.67 -39.75 -39.76 -39.79 -39.79	-13	Pass
2Fc ~ 1GHz	907.8368 827.6028 907.4519 908.6064 910.3381 812.4000	-59.93 -54.46 -54.73 -58.17 -58.30 -72.46	-13	Pass
1GHz ~ 10Fc	1219.0000 1220.6030 1726.1530 2452.3060 2473.7530 1218.6000 1624.8000 2031.0000 2437.2000 2843.4000 3249.6000 3655.8000 4062.0000	-42.01 -55.62 -55.75 -56.01 -58.68 -46.72 -61.01 -56.60 -60.56 -57.93 -62.47 -63.90 -63.46	-13	Pass

Analog: 450.65 MHz, 25 kHz Channel Spacing, Max Power Part 74 and RSS-119



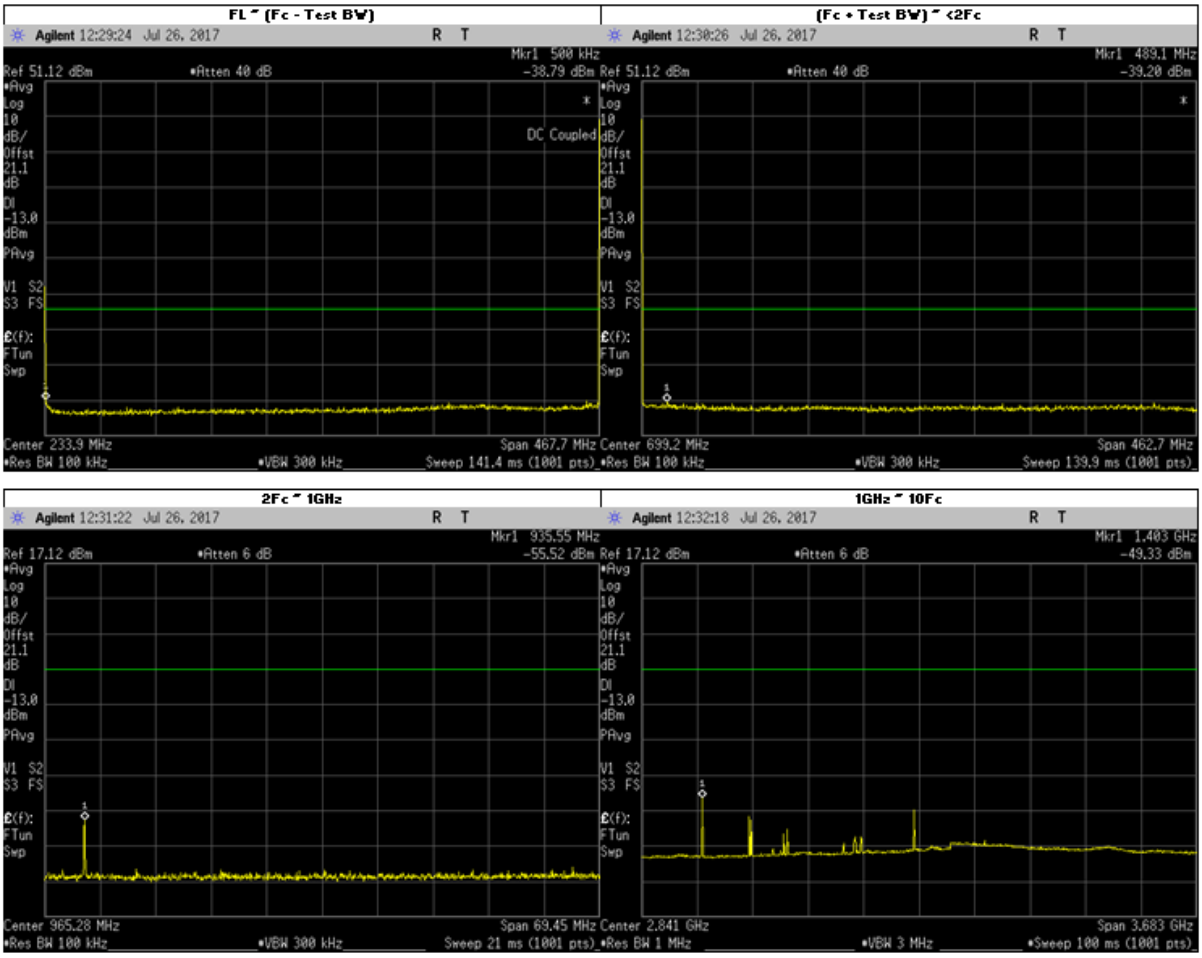
Frequency Range	Highest Spur Freq (MHz)	Spurious Level (dBm)	Failing Limit (dBm)	Remark
FL ~ (Fc - Test BW)	0.9093 355.6149 359.2160 376.7712 2.2597	-38.44 -39.67 -39.77 -39.95 -40.01	-13	Pass
(Fc + Test BW) ~ <2Fc	892.2937 490.7701 495.6668 777.8906 552.2006	-39.21 -39.61 -39.67 -39.69 -39.80	-13	Pass
2Fc ~ 1GHz	901.3762 897.4396 907.4884 903.1374 896.6108 901.3000	-63.72 -69.94 -70.06 -70.42 -70.54 -64.79	-13	Pass
1GHz ~ 10Fc	1964.6980 1971.7140 2417.2290 2701.3760 1726.1540 1351.9500 1802.6000 2253.2500 2703.9000 3154.5500 3605.2000 4055.8500 4506.5000	-57.85 -58.33 -58.50 -59.38 -60.41 -49.21 -64.98 -62.87 -62.89 -61.65 -63.57 -63.41 -64.40	-13	Pass

Analog: 459.125 MHz, 25 kHz Channel Spacing, Max Power
Part 22



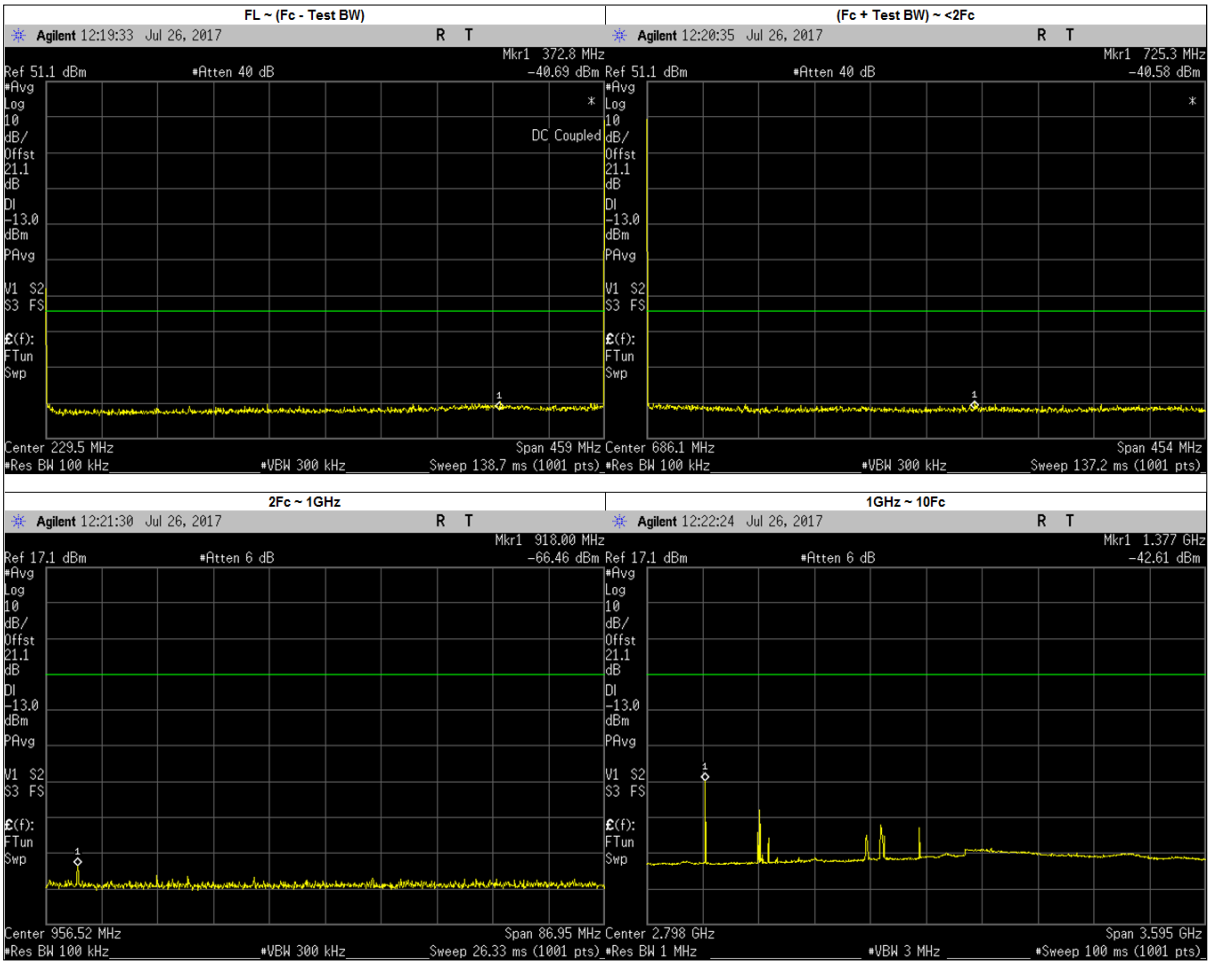
Frequency Range	Highest Spur Freq (MHz)	Spurious Level (dBm)	Failing Limit (dBm)	Remark
FL ~ (Fc - Test BW)	0.4676 1.3848 347.6283 384.3163 357.7175	-38.86 -39.16 -39.46 -39.67 -39.69	-13	Pass
(Fc + Test BW) ~ <2Fc	479.1408 463.2643 465.9860 871.5175 489.5740	-39.42 -39.73 -39.84 -39.88 -39.89	-13	Pass
2Fc ~ 1GHz	918.1898 977.9008 987.0005 996.8801 995.4068 918.2500	-62.81 -69.62 -69.88 -70.03 -70.28 -63.27	-13	Pass
1GHz ~ 10Fc	1977.2030 2411.9140 1725.7170 1711.3460 3065.7780 1377.3750 1836.5000 2295.6250 2754.7500 3213.8750 3673.0000 4132.1250 4591.2500	-55.86 -59.24 -60.67 -61.02 -61.72 -46.47 -63.60 -65.01 -58.85 -61.88 -63.58 -63.53 -64.71	-13	Pass

Analog: 467.775 MHz, 25 kHz Channel Spacing, Max Power
Part 80 and RSS-119



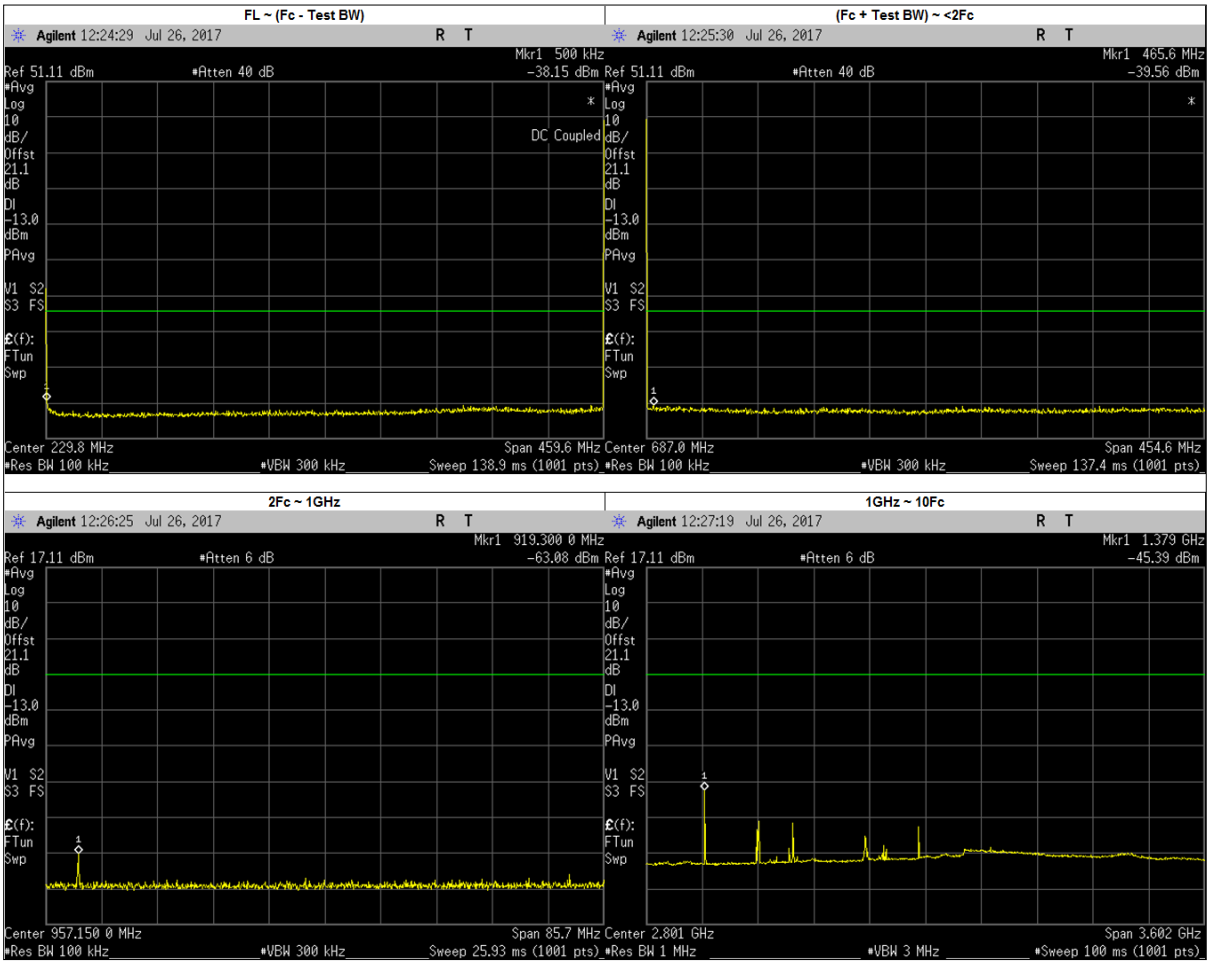
Frequency Range	Highest Spur Freq (MHz)	Spurious Level (dBm)	Failing Limit (dBm)	Remark
FL ~ (Fc - Test BW)	0.4762 456.5044 1.4107 339.6939 458.3734	-38.79 -39.08 -39.37 -39.60 -39.80	-13	Pass
(Fc + Test BW) ~ <2Fc	489.0956 894.4940 513.5951 543.1795 518.6800	-39.20 -39.35 -39.64 -39.71 -39.76	-13	Pass
2Fc ~ 1GHz	935.5540 996.6003 941.9978 994.0333 952.6130 935.5500	-55.52 -68.89 -69.43 -69.52 -69.57 -55.96	-13	Pass
1GHz ~ 10Fc	1403.0190 1713.7400 1724.7770 2802.7450 1967.5960 1403.3250 1871.1000 2338.8750 2806.6500 3274.4250 3742.2000 4209.9750 4677.7500	-49.33 -54.36 -55.58 -55.96 -58.07 -49.43 -63.56 -61.98 -53.32 -61.44 -63.71 -64.01 -64.63	-13	Pass

Analog: 459.025 MHz, 25 kHz Channel Spacing, Max Power
Part 22



Frequency Range	Highest Spur Frequency (MHz)	Spurious Level (MHz)	Failing Limit (dBm)	Results
FL ~ (Fc - Test BW)	372.7701 0.4675 447.0472 349.8450 354.8885	-38.41 -38.77 -38.85 -38.86 -38.87	-13	PASS
(Fc + Test BW) ~ <2Fc	725.2949 464.0705 469.0591 538.9004 742.0750	-38.62 -39.00 -39.01 -39.11 -39.24	-13	PASS
2Fc ~ 1GHz	918.0012 930.3358 935.1132 945.4500 963.8649 918.0500	-66.46 -69.03 -69.44 -69.66 -69.90 -67.91	-13	PASS
1GHz ~ 10Fc	1725.5150 2501.3130 1714.7400 2411.5220 2526.4550 1377.0750 1836.1000 2295.1250 2754.1500 3213.1750 3672.2000 4131.2250 4590.2500	-50.90 -55.02 -56.98 -57.83 -58.19 -42.92 -64.25 -64.88 -59.11 -61.60 -63.63 -63.42 -64.71	-13	PASS

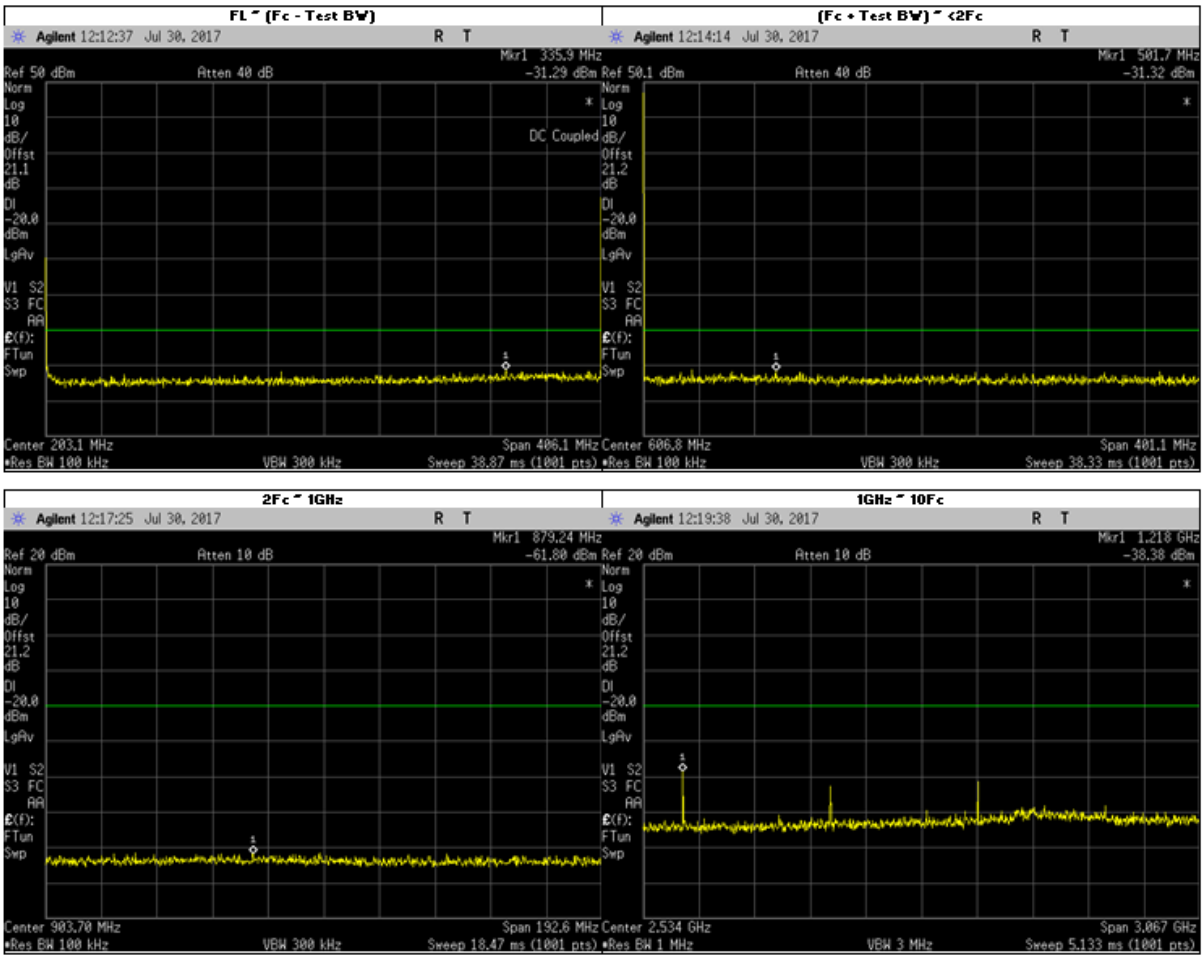
Analog: 459.65 MHz, 25 kHz Channel Spacing, Max Power
Part 22



Frequency Range	Highest Spur Frequency (MHz)	Spurious Level (MHz)	Failing Limit (dBm)	Results
FL ~ (Fc - Test BW)	0.4681 343.4346 448.5742 349.4032 370.0638	-38.16 -39.41 -39.48 -39.76 -39.85	-13	PASS
(Fc + Test BW) ~ <2Fc	465.6106 476.9641 828.4677 486.5010 717.2036	-39.56 -39.67 -39.74 -39.75 -39.8	-13	PASS
2Fc ~ 1GHz	919.3512 994.6063 988.3564 954.1107 981.1648 919.3000	-66.59 -68.74 -69.72 -69.79 -70.16 -64.49	-13	PASS
1GHz ~ 10Fc	1723.1780 1946.2480 2755.7760 1712.3850 2410.3780 1378.9500 1838.6000 2298.2500 2757.9000 3217.5500 3677.2000 4136.8500 4596.5000	-53.92 -54.45 -55.43 -56.22 -58.08 -51.43 -63.96 -64.81 -60.50 -61.75 -63.77 -63.58 -64.82	-13	PASS

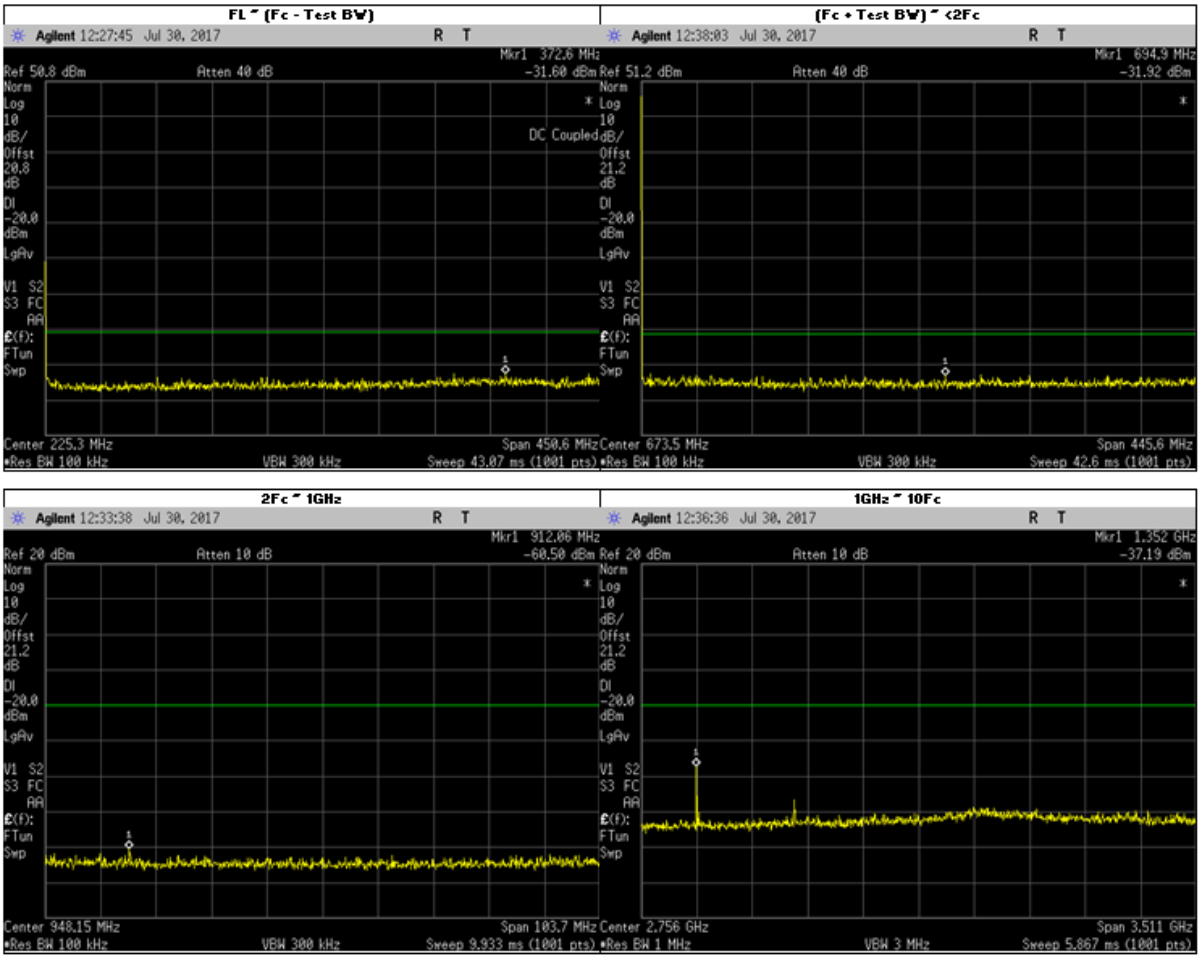
6.10.3. Test Result (Digital)

<u>Digital:</u> 406.2 MHz, 12.5 kHz Channel Spacing, Max Power
<u>Part 90 and RSS-119</u>



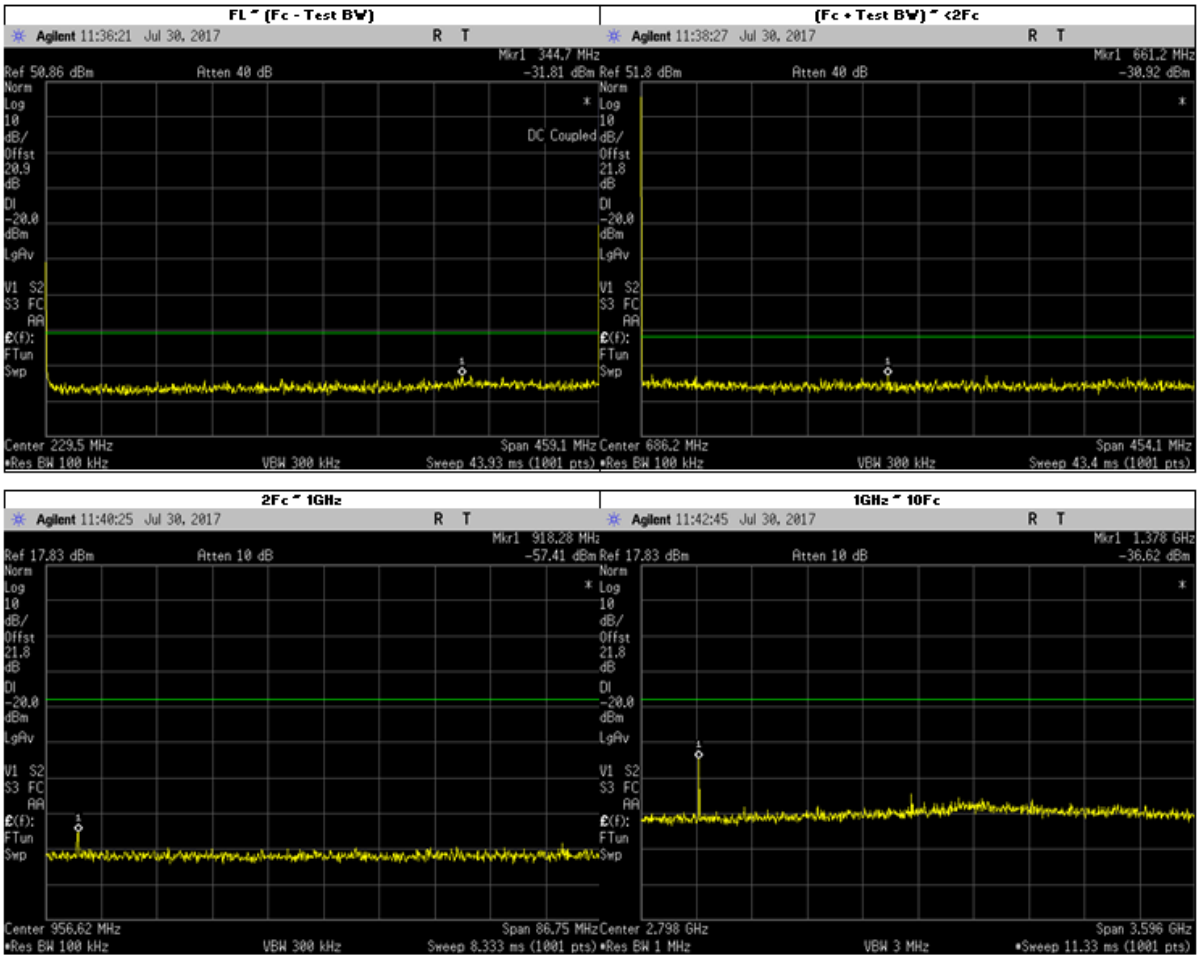
Frequency Range	Highest Spur Freq (MHz)	Spurious Level (dBm)	Failing Limit (dBm)	Remark
FL ~ (Fc - Test BW)	335.8947 172.2364 377.7230 1.2683 347.6716	-31.29 -31.63 -31.66 -31.75 -31.76	-20	Pass
(Fc + Test BW) ~ <2Fc	501.7118 778.0697 470.0249 433.1237 645.3056	-31.32 -31.55 -31.65 -31.93 -31.97	-20	Pass
2Fc ~ 1GHz	879.2398 831.0898 835.5196 859.4020 867.2986 812.4000	-61.80 -61.85 -61.87 -61.88 -61.93 -62.12	-20	Pass
1GHz ~ 10Fc	1218.2570 2843.7670 2031.0120 3546.1100 3211.8070 1218.6000 1624.8000 2031.0000 2437.2000 2843.4000 3249.6000 3655.8000 4062.0000	-38.38 -41.43 -42.56 -48.06 -48.25 -52.66 -53.28 -52.12 -51.22 -52.37 -50.06 -51.69 -52.20	-20	Pass

Digital: 450.65 MHz, 12.5 kHz Channel Spacing, Max Power
Part 74, 90 and RSS-119



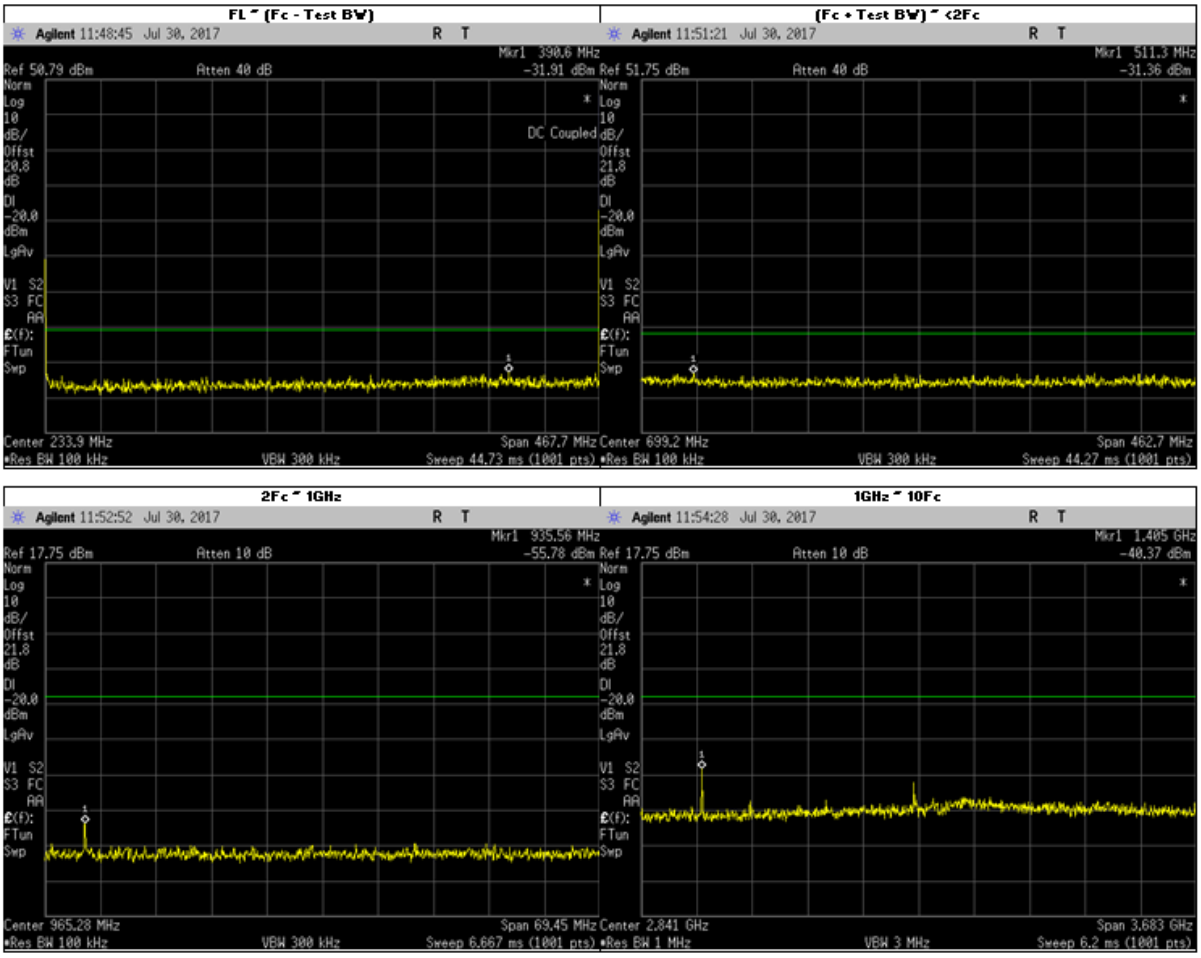
Frequency Range	Highest Spur Freq (MHz)	Spurious Level (dBm)	Failing Limit (dBm)	Remark
FL ~ (Fc - Test BW)	372.6462 331.1910 439.7856 0.9012 449.6988	-31.60 -31.65 -31.74 -32.22 -32.39	-20	Pass
(Fc + Test BW) ~ <2Fc	694.8888 825.4496 548.2864 506.4000 473.4256	-31.92 -31.96 -32.01 -32.11 -32.14	-20	Pass
2Fc ~ 1GHz	912.0624 906.5663 897.9592 990.6670 897.3370 901.3000	-60.50 -61.62 -61.65 -62.01 -62.13 -64.78	-20	Pass
1GHz ~ 10Fc	1351.6000 1969.5360 1966.0250 3100.0780 3145.7210 1351.9500 1802.6000 2253.2500 2703.9000 3154.5500 3605.2000 4055.8500 4506.5000	-37.19 -46.48 -46.68 -48.68 -48.82 -53.79 -52.93 -51.08 -51.39 -49.73 -51.07 -51.79 -52.36	-20	Pass

Digital: 459.125 MHz, 12.5 kHz Channel Spacing, Max Power
Part 22 and 90



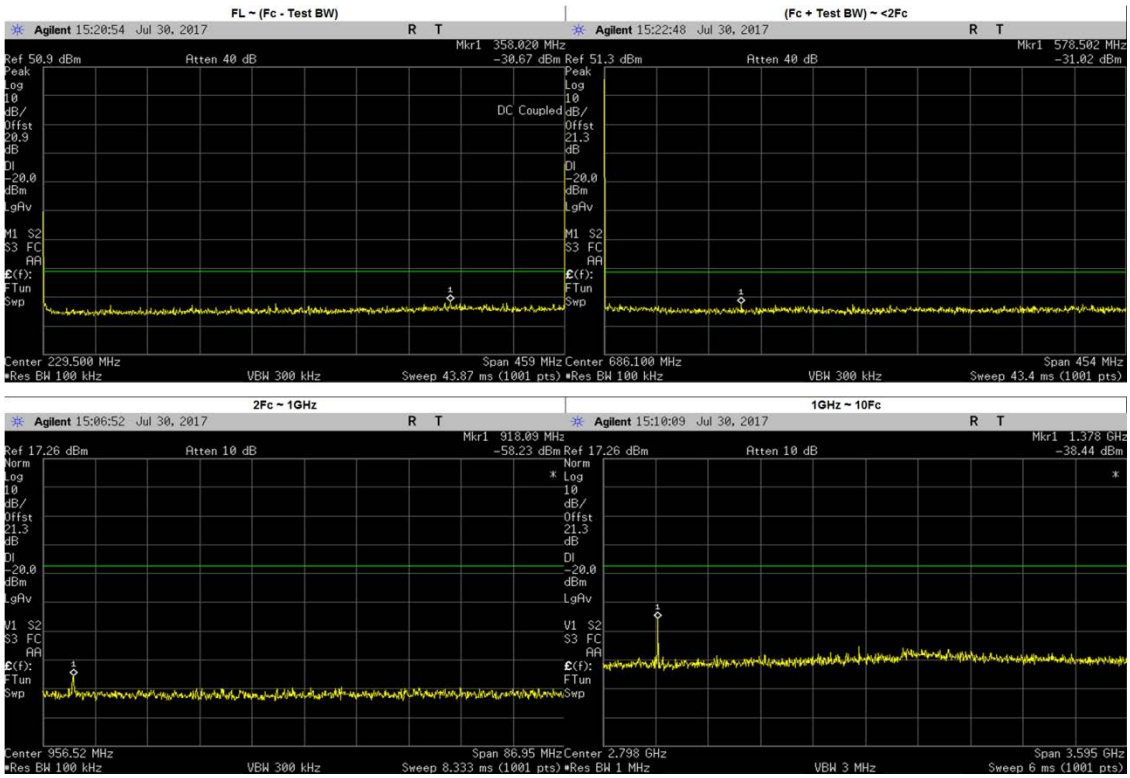
Frequency Range	Highest Spur Freq (MHz)	Spurious Level (dBm)	Failing Limit (dBm)	Remark
FL ~ (Fc - Test BW)	344.7341 352.0797 1.3273 378.7075 345.6523	-31.81 -31.98 -32.41 -32.46 -32.53	-20	Pass
(Fc + Test BW) ~ <2Fc	661.2245 742.0543 742.5084 504.1059 857.8498	-30.92 -31.07 -31.30 -31.32 -31.53	-20	Pass
2Fc ~ 1GHz	918.2765 918.1898 918.3633 993.9225 977.4400 918.2500	-57.41 -57.55 -59.48 -60.61 -61.44 -64.05	-20	Pass
1GHz ~ 10Fc	1377.5800 2754.8480 3060.5080 3211.5400 3538.7760 1377.3750 1836.5000 2295.6250 2754.7500 3213.8750 3673.0000 4132.1250 4591.2500	-36.62 -46.61 -47.75 -48.09 -48.23 -53.87 -53.28 -52.32 -52.21 -49.81 -50.80 -50.91 -52.70	-20	Pass

Digital: 467.775 MHz, 12.5 kHz Channel Spacing, Max Power Part 90 and RSS-119



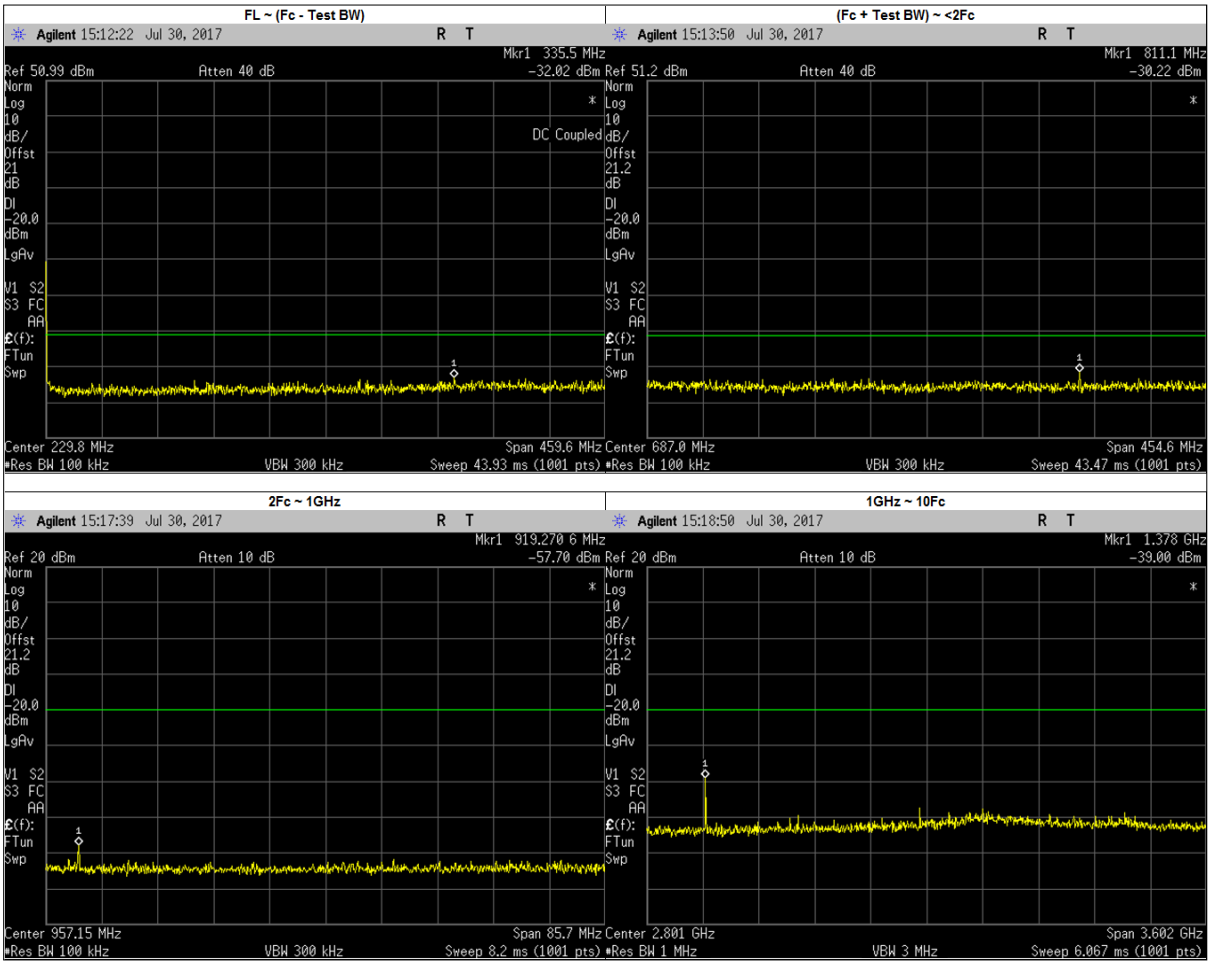
Frequency Range	Highest Spur Freq (MHz)	Spurious Level (dBm)	Failing Limit (dBm)	Remark
FL ~ (Fc - Test BW)	390.5795 464.0084 384.4994 369.5330 1.9208	-31.91 -32.20 -32.53 -32.53 -32.61	-20	Pass
(Fc + Test BW) ~ <2Fc	511.3438 845.8759 895.3848 882.4292 498.3882	-31.36 -31.40 -31.52 -31.57 -31.57	-20	Pass
2Fc ~ 1GHz	935.5554 935.4860 935.6249 985.7678 976.8782 935.5500	-55.78 -56.05 -57.10 -61.50 -61.69 -62.75	-20	Pass
1GHz ~ 10Fc	1404.6300 1400.9470 2807.8530 2804.1700 3312.4240 1403.3250 1871.1000 2338.8750 2806.6500 3274.4250 3742.2000 4209.9750 4677.7500	-40.37 -43.19 -44.29 -48.38 -48.48 -53.13 -51.99 -52.40 -51.26 -49.07 -49.90 -51.09 -53.56	-20	Pass

Digital: 459.025 MHz, 12.5 kHz Channel Spacing, Max Power Part 22



Frequency Range	Highest Spur Frequency (MHz)	Spurious Level (MHz)	Failing Limit (dBm)	Results
FL ~ (Fc - Test BW)	358.0200 352.9710 391.9860 407.5920 1.3770	-30.67 -30.98 -31.13 -31.20 -31.26	-20	PASS
(Fc + Test BW) ~ <2Fc	578.5020 463.6400 792.7900 523.1140 473.1740	-31.02 -31.03 -31.07 -31.12 -31.17	-20	PASS
2Fc ~ 1GHz	918.0881 918.0012 918.1751 962.6935 917.9142 918.0500	-58.23 -58.39 -59.94 -62.03 -62.19 -63.65	-20	PASS
1GHz ~ 10Fc	1377.9750 1374.3800 2754.8600 3056.8400 3085.6000 1377.0750 1836.1000 2295.1250 2754.1500 3213.1750 3672.2000 4131.2250 4590.2500	-38.44 -47.84 -48.08 -48.58 -48.71 -55.44 -54.08 -52.78 -48.08 -49.33 -51.89 -53.48 -51.56	-20	PASS

Digital: 459.65 MHz, 12.5 kHz Channel Spacing, Max Power
Part 22



Frequency Range	Highest Spur Frequency (MHz)	Spurious Level (MHz)	Failing Limit (dBm)	Results
FL ~ (Fc - Test BW)	335.5080 393.8772 456.3828 257.8356 388.3620	-32.02 -32.21 -32.58 -32.58 -32.65	-20	PASS
(Fc + Test BW) ~ <2Fc	811.1058 859.2934 611.0818 640.1762 511.0698	-30.22 -32.00 -32.05 -32.21 -32.33	-20	PASS
2Fc ~ 1GHz	919.2706 919.3563 919.1849 917.8137 967.6054 919.3000	-57.70 -58.06 -61.25 -61.81 -61.83 -62.76	-20	PASS
1GHz ~ 10Fc	1378.2100 2757.7760 3161.2000 3197.2200 3074.7520 1378.9500 1838.6000 2298.2500 2757.9000 3217.5500 3677.2000 4136.8500 4596.5000	-39.00 -47.34 -47.62 -48.41 -48.54 -53.21 -53.28 -53.25 -52.83 -49.24 -51.32 -52.06 -52.93	-20	PASS

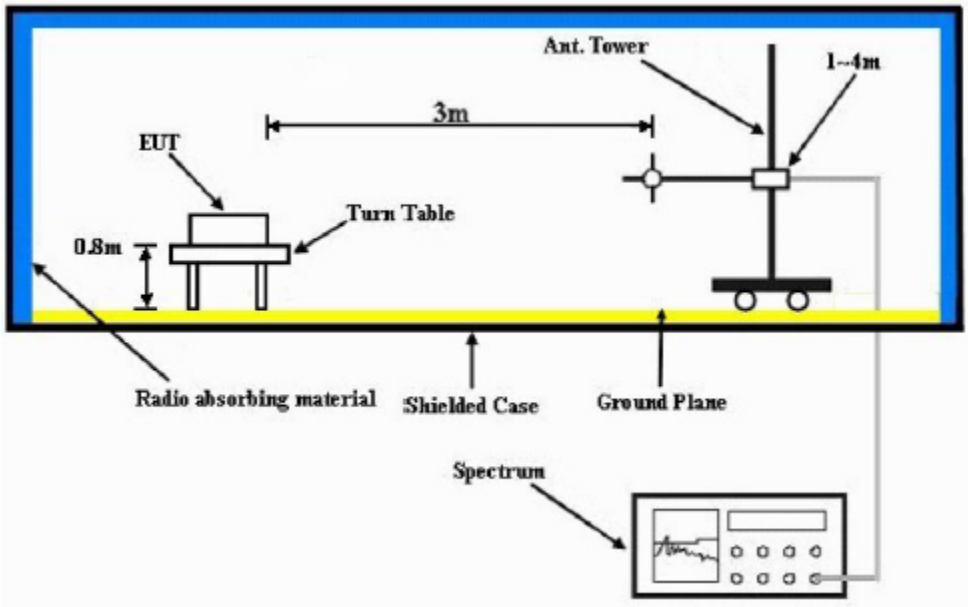
6.10.4. Test Limit

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

Channel Spacing	Part 22	Part 24D	Part 74	Part 80	Part 90
12.5kHz	43 + log10(P) (-13 dBm)	43 + log10(P) (-13 dBm)	43 + log10(P) (-13 dBm)	Not Applicable	50 + log10(P) (-20 dBm)
25kHz		Not Applicable		43 + log10(P) (-13 dBm)	Not Applicable

6.11. Radiated Spurious Emission

6.11.1. Test Setup



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

6.11.2. Test Result (Analog)

SAC Transmitter Radiated Emission

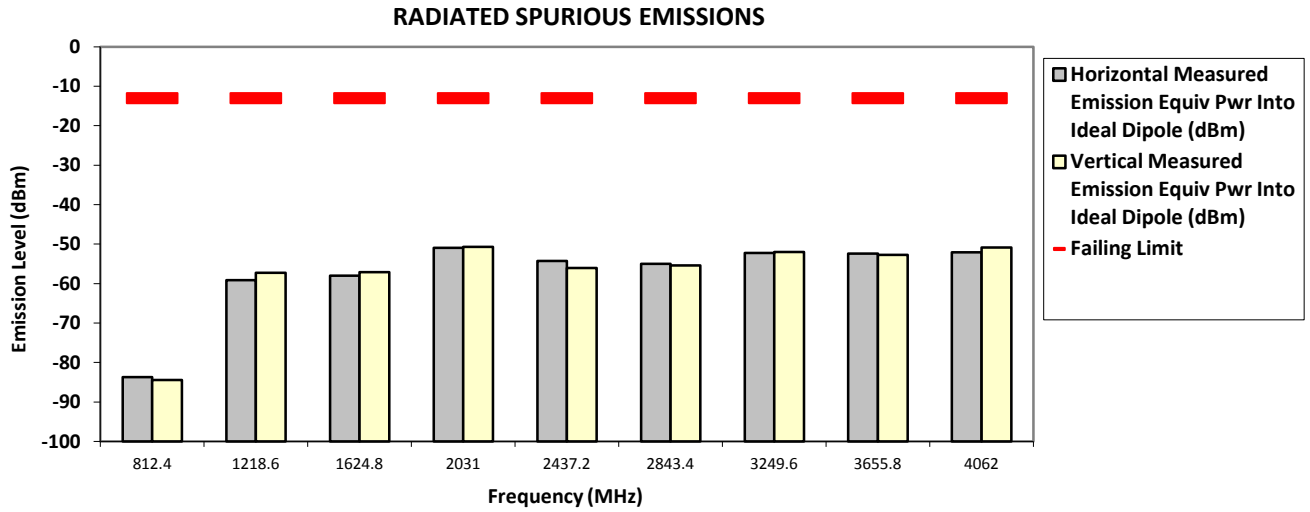
Model Number: AAM28QPN9RA1AN **S/N: 511TTMK601** **SR:09082-EMC-00002**

Battery Part No: NA **Accy Part No: 690-RMN5127C-3, HKN4192**

Test Mode: TX Analog

406.200000 MHz **25 kHz** **48.000 Watt(s) /Max Power**

Frequency (MHz)	Limit	Horizontal Measured Emission Equiv Pwr Into Ideal Dipole (dBm)	Vertical Measured Emission Equiv Pwr Into ideal Dipole (dBm)
812.4000	-13.0000	-83.7064 **	-84.3998 **
1218.6000	-13.0000	-59.0871 **	-57.3034 **
1624.8000	-13.0000	-57.9680 **	-57.1193 **
2031.0000	-13.0000	-50.9700 *	-50.7300 *
2437.2000	-13.0000	-54.2544 **	-56.0343 **
2843.4000	-13.0000	-54.9646 **	-55.4356 **
3249.6000	-13.0000	-52.2672 **	-52.0234 **
3655.8000	-13.0000	-52.4337 **	-52.7249 **
4062.0000	-13.0000	-52.0434 **	-50.8449 **



The data presented here was taken using the substitution method as found in the TIA/EIA-603E document.

Motorola Penang EMC Lab - Test Performed by: Nazrin&Qawiman **Wed, Aug 09, 2017**

Industry Canada: 109AK

Remarks: ** Indicates the spurious emission could not be detected due to noise limitations or ambient.

***Pursuant to CFR 47 Part 2.1057 (c), emissions attenuated more than 20 dB below the permissible limit are not reported**

Temp(Deg): 23.2 Hum(%RH): 70.3

System MU: 5.01 dB

Remarks:

Passed Results	**Marginal Results**	**Failed Results**

SAC Transmitter Radiated Emission

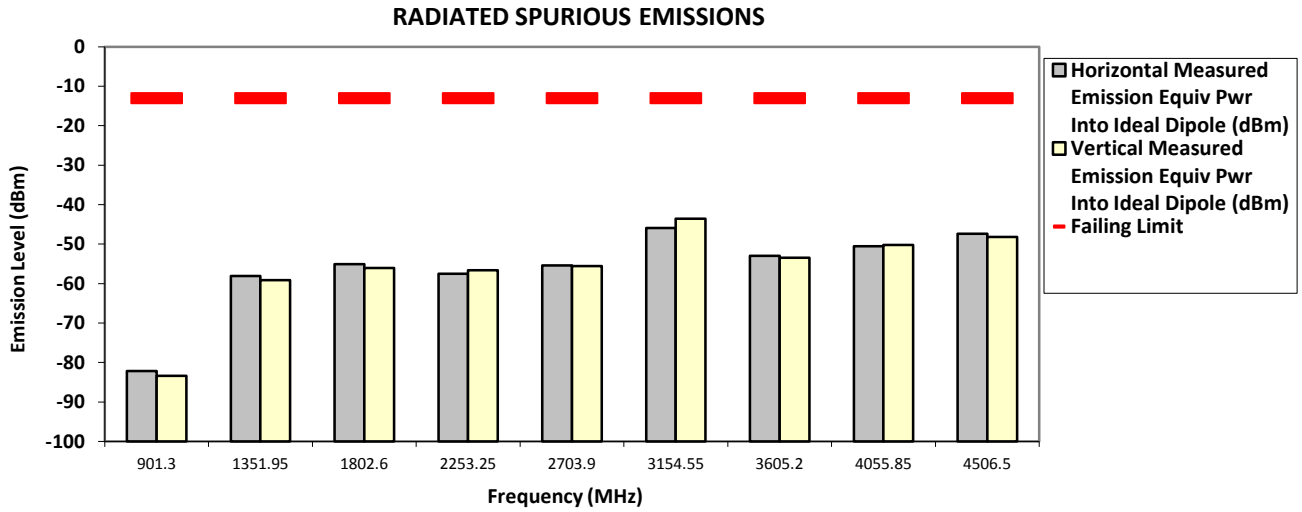
Model Number: AAM28QPN9RA1AN **S/N: 511TTMK601** **SR:09082-EMC-00002**

Battery Part No: NA **Accy Part No: 690-RMN5127C-3, HKN4192**

Test Mode: TX Analog

450.650000 MHz **25 kHz** **48.000 Watt(s) /Max Power**

Frequency (MHz)	Limit	Horizontal Measured Emission Equiv Pwr Into Ideal Dipole (dBm)	Vertical Measured Emission Equiv Pwr Into ideal Dipole (dBm)
901.3000	-13.0000	-82.1608 **	-83.3538 **
1351.9500	-13.0000	-58.1021 **	-59.1590 **
1802.6000	-13.0000	-55.0853 **	-56.0157 **
2253.2500	-13.0000	-57.4835 **	-56.5827 **
2703.9000	-13.0000	-55.4237 **	-55.5514 **
3154.5500	-13.0000	-45.9500 *	-43.5700 *
3605.2000	-13.0000	-52.9963 **	-53.4449 **
4055.8500	-13.0000	-50.5178 **	-50.1974 **
4506.5000	-13.0000	-47.3890 **	-48.2072 **



The data presented here was taken using the substitution method as found in the TIA/EIA-603E document.

Motorola Penang EMC Lab - Test Performed by: Nazrin&Qawiman **Wed, Aug 09, 2017**

Industry Canada: 109AK

Remarks: ** Indicates the spurious emission could not be detected due to noise limitations or ambient.

***Pursuant to CFR 47 Part 2.1057 (c), emissions attenuated more than 20 dB below the permissible limit are not reported**

Temp(Deg): 23.2 Hum(%RH): 70.3

System MU: 5.01 dB

Remarks:

Passed Results	**Marginal Results**	**Failed Results**

SAC Transmitter Radiated Emission

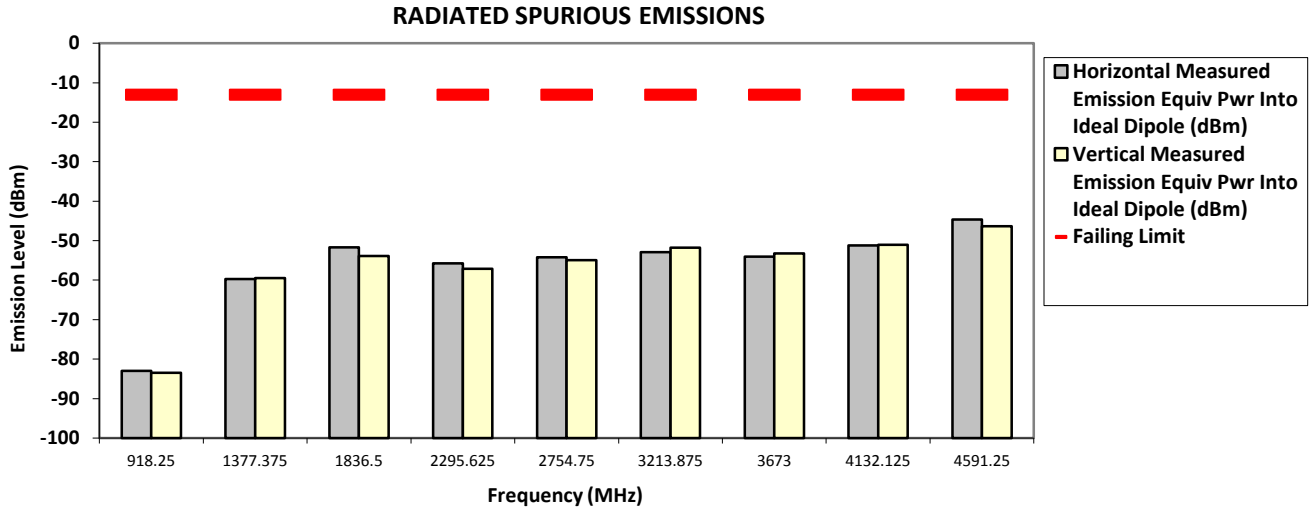
Model Number: AAM28QPN9RA1AN **S/N: 511TTMK601** **SR:09082-EMC-00002**

Battery Part No: NA **Accy Part No: 690-RMN5127C-3, HKN4192**

Test Mode: TX Analog

459.125000 MHz **25 kHz** **48.000 Watt(s) /Max Power**

Frequency (MHz)	Limit	Horizontal Measured Emission Equiv Pwr Into Ideal Dipole (dBm)	Vertical Measured Emission Equiv Pwr Into ideal Dipole (dBm)
918.2500	-13.0000	-82.9955 **	-83.5123 **
1377.3750	-13.0000	-59.6994 **	-59.4617 **
1836.5000	-13.0000	-51.6700 *	-53.8700 *
2295.6250	-13.0000	-55.7141 **	-57.1154 **
2754.7500	-13.0000	-54.1988 **	-54.9212 **
3213.8750	-13.0000	-52.9272 **	-51.7503 **
3673.0000	-13.0000	-54.0321 **	-53.2249 **
4132.1250	-13.0000	-51.2176 **	-51.0249 **
4591.2500	-13.0000	-44.6500 *	-46.3500 *



The data presented here was taken using the substitution method as found in the TIA/EIA-603E document.

Motorola Penang EMC Lab - Test Performed by: Nazrin&Qawiman **Wed, Aug 09, 2017**

Industry Canada: 109AK

Remarks: ** Indicates the spurious emission could not be detected due to noise limitations or ambient.

***Pursuant to CFR 47 Part 2.1057 (c), emissions attenuated more than 20 dB below the permissible limit are not reported**

Temp(Deg): 23.2 Hum(%RH): 70.3

System MU: 5.01 dB

Remarks:

Passed Results	**Marginal Results**	**Failed Results**

SAC Transmitter Radiated Emission

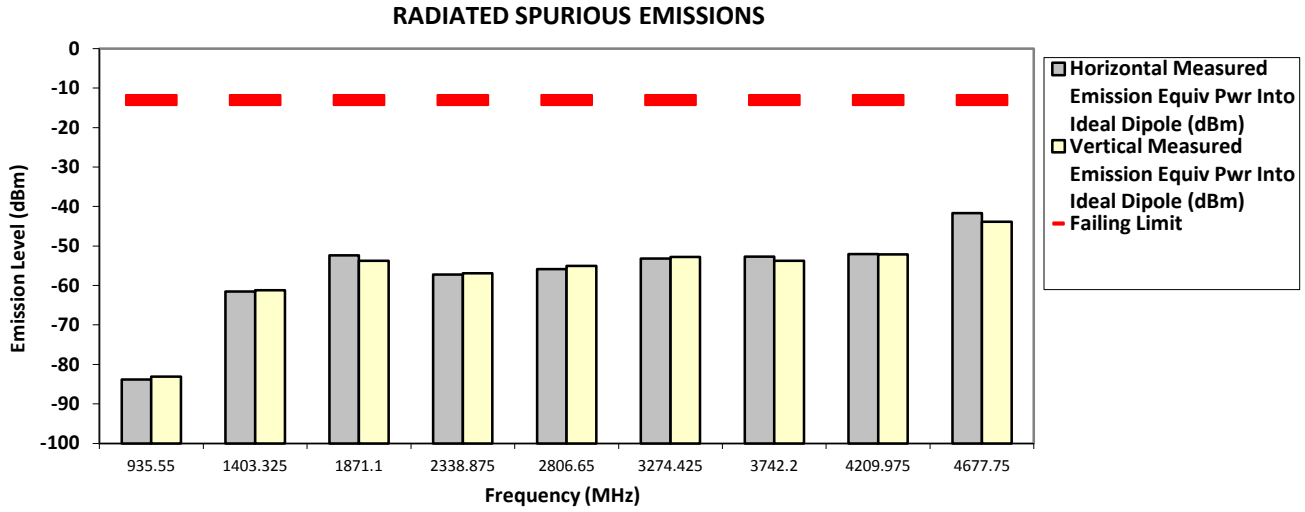
Model Number: AAM28QPN9RA1AN **S/N: 511TTMK601** **SR:09082-EMC-00002**

Battery Part No: NA **Accy Part No: 690-RMN5127C-3, HKN4192**

Test Mode: TX Analog

467.775000 MHz **25 kHz** **48.000 Watt(s) /Max Power**

Frequency (MHz)	Limit	Horizontal Measured Emission Equiv Pwr Into Ideal Dipole (dBm)	Vertical Measured Emission Equiv Pwr Into ideal Dipole (dBm)
935.5500	-13.0000	-83.8376 **	-83.1342 **
1403.3250	-13.0000	-61.5633 **	-61.1919 **
1871.1000	-13.0000	-52.4100 *	-53.7500 *
2338.8750	-13.0000	-57.2459 **	-56.9123 **
2806.6500	-13.0000	-55.8792 **	-55.0800 **
3274.4250	-13.0000	-53.1877 **	-52.7928 **
3742.2000	-13.0000	-52.6728 **	-53.7280 **
4209.9750	-13.0000	-52.0726 **	-52.1321 **
4677.7500	-13.0000	-41.7100 *	-43.8700 *



The data presented here was taken using the substitution method as found in the TIA/EIA-603E document.

Motorola Penang EMC Lab - Test Performed by: Nazrin&Qawiman **Wed, Aug 09, 2017**

Industry Canada: 109AK

Remarks: ** Indicates the spurious emission could not be detected due to noise limitations or ambient.

***Pursuant to CFR 47 Part 2.1057 (c), emissions attenuated more than 20 dB below the permissible limit are not reported**

Temp(Deg): 23.2 Hum(%RH): 70.3

System MU: 5.01 dB

Remarks:

Passed Results	**Marginal Results**	**Failed Results**

SAC Transmitter Radiated Emission

Model Number: AAM28QPN9RA1AN **S/N: 511TTMK601** **SR:09082-EMC-00002**

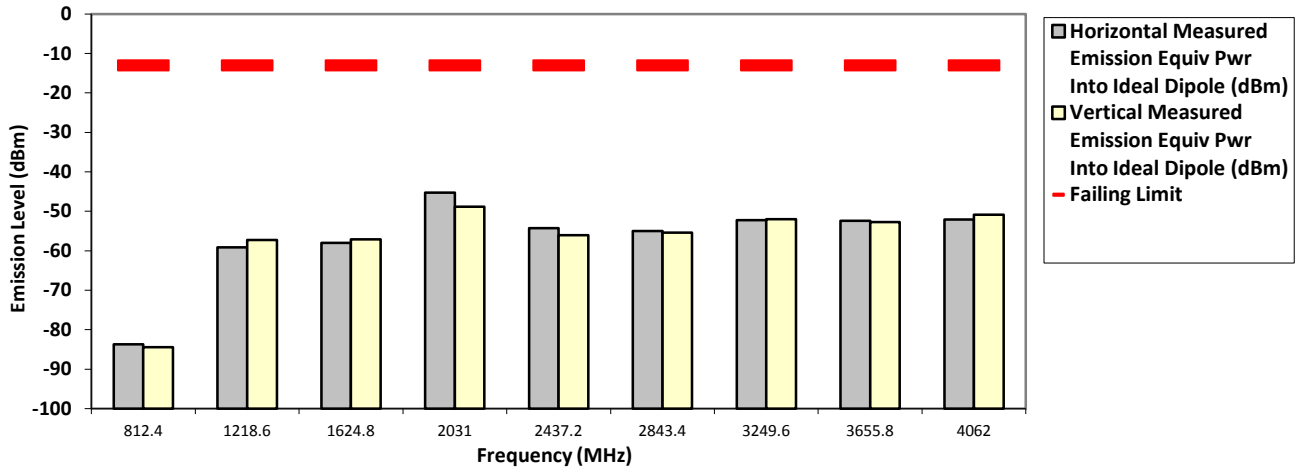
Battery Part No: NA **Accy Part No: 690-RMN5127C-3, HKN4192**

Test Mode: TX Analog

406.200000 MHz **25 kHz** **48.000 Watt(s) /Max Power**

Frequency (MHz)	Limit	Horizontal Measured Emission Equiv Pwr Into Ideal Dipole (dBm)	Vertical Measured Emission Equiv Pwr Into ideal Dipole (dBm)
812.4000	-13.0000	-83.7064 **	-84.3998 **
1218.6000	-13.0000	-59.0871 **	-57.3034 **
1624.8000	-13.0000	-57.9680 **	-57.1193 **
2031.0000	-13.0000	-45.2500 *	-48.8600 *
2437.2000	-13.0000	-54.2544 **	-56.0343 **
2843.4000	-13.0000	-54.9646 **	-55.4356 **
3249.6000	-13.0000	-52.2672 **	-52.0234 **
3655.8000	-13.0000	-52.4337 **	-52.7249 **
4062.0000	-13.0000	-52.0434 **	-50.8449 **

RADIATED SPURIOUS EMISSIONS



The data presented here was taken using the substitution method as found in the ANSI C63.26 document.

Motorola Penang EMC Lab - Test Performed by: Nazrin&Qawiman **Wed, Aug 09, 2017**

Industry Canada: 109AK

Remarks: ** Indicates the spurious emission could not be detected due to noise limitations or ambient.

***Pursuant to CFR 47 Part 2.1057 (c), emissions attenuated more than 20 dB below the permissible limit are not reported**

Temp(Deg): 23.2 Hum(%RH): 70.3

System MU: 5.01 dB

Remarks:

Passed Results	**Marginal Results**	**Failed Results**

SAC Transmitter Radiated Emission

Model Number: AAM28QPN9RA1AN **S/N: 511TTMK601** **SR:09082-EMC-00002**

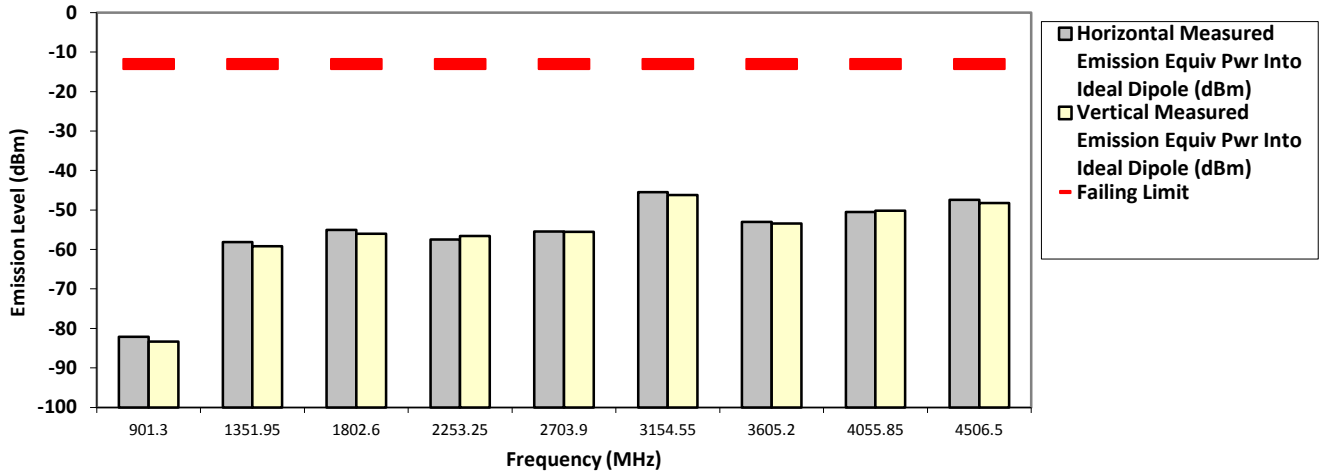
Battery Part No: NA **Accy Part No: 690-RMN5127C-3, HKN4192**

Test Mode: TX Analog

450.650000 MHz **25 kHz** **48.000 Watt(s) /Max Power**

Frequency (MHz)	Limit	Horizontal Measured Emission Equiv Pwr Into Ideal Dipole (dBm)	Vertical Measured Emission Equiv Pwr Into ideal Dipole (dBm)
901.3000	-13.0000	-82.1608 **	-83.3538 **
1351.9500	-13.0000	-58.1021 **	-59.1590 **
1802.6000	-13.0000	-55.0853 **	-56.0157 **
2253.2500	-13.0000	-57.4835 **	-56.5827 **
2703.9000	-13.0000	-55.4237 **	-55.5514 **
3154.5500	-13.0000	-45.4700 *	-46.1800 *
3605.2000	-13.0000	-52.9963 **	-53.4449 **
4055.8500	-13.0000	-50.5178 **	-50.1974 **
4506.5000	-13.0000	-47.3890 **	-48.2072 **

RADIATED SPURIOUS EMISSIONS



The data presented here was taken using the substitution method as found in the ANSI C63.26 document.

Motorola Penang EMC Lab - Test Performed by: Nazrin&Qawiman **Wed, Aug 09, 2017**

Industry Canada: 109AK

Remarks: ** Indicates the spurious emission could not be detected due to noise limitations or ambient.

***Pursuant to CFR 47 Part 2.1057 (c), emissions attenuated more than 20 dB below the permissible limit are not reported**

Temp(Deg): 23.2 Hum(%RH): 70.3

System MU: 5.01 dB

Remarks: Passed Results | **Marginal Results** | **Failed Results**

SAC Transmitter Radiated Emission

Model Number: AAM28QPN9RA1AN **S/N: 511TTMK601** **SR:09082-EMC-00002**

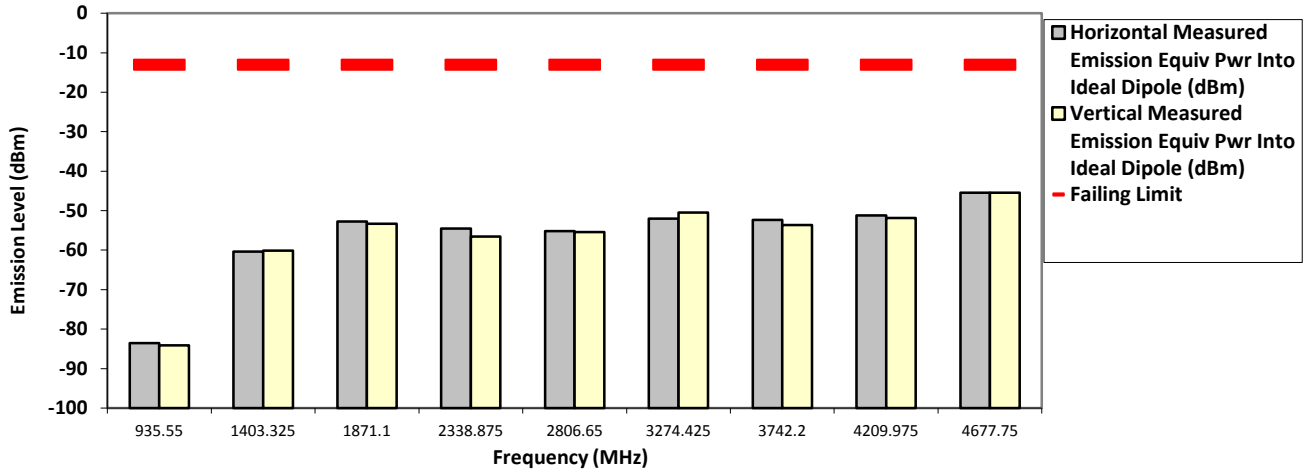
Battery Part No: NA **Accy Part No: 690-RMN5127C-3, HKN4192**

Test Mode: TX Analog

467.775000 MHz **25 kHz** **48.000 Watt(s) /Max Power**

Frequency (MHz)	Limit	Horizontal Measured Emission Equiv Pwr Into Ideal Dipole (dBm)	Vertical Measured Emission Equiv Pwr Into ideal Dipole (dBm)
935.5500	-13.0000	-83.5252 **	-84.1185 **
1403.3250	-13.0000	-60.3715 **	-60.1396 **
1871.1000	-13.0000	-52.7700 *	-53.3400 *
2338.8750	-13.0000	-54.5643 **	-56.5542 **
2806.6500	-13.0000	-55.1598 **	-55.4104 **
3274.4250	-13.0000	-51.9813 **	-50.4795 **
3742.2000	-13.0000	-52.3810 **	-53.6192 **
4209.9750	-13.0000	-51.2036 **	-51.8978 **
4677.7500	-13.0000	-45.4200 *	-45.4200 *

RADIATED SPURIOUS EMISSIONS



The data presented here was taken using the substitution method as found in the ANSI C63.26 document.

Motorola Penang EMC Lab - Test Performed by: Nazrin&Qawiman **Wed, Aug 09, 2017**

Industry Canada: 109AK

Remarks: ** Indicates the spurious emission could not be detected due to noise limitations or ambient.

***Pursuant to CFR 47 Part 2.1057 (c), emissions attenuated more than 20 dB below the permissible limit are not reported**

Temp(Deg): 23.2 Hum(%RH): 70.3

System MU: 5.01 dB

Remarks:

Passed Results	**Marginal Results**	**Failed Results**

6.11.3. Test Result (Digital)

SAC Transmitter Radiated Emission

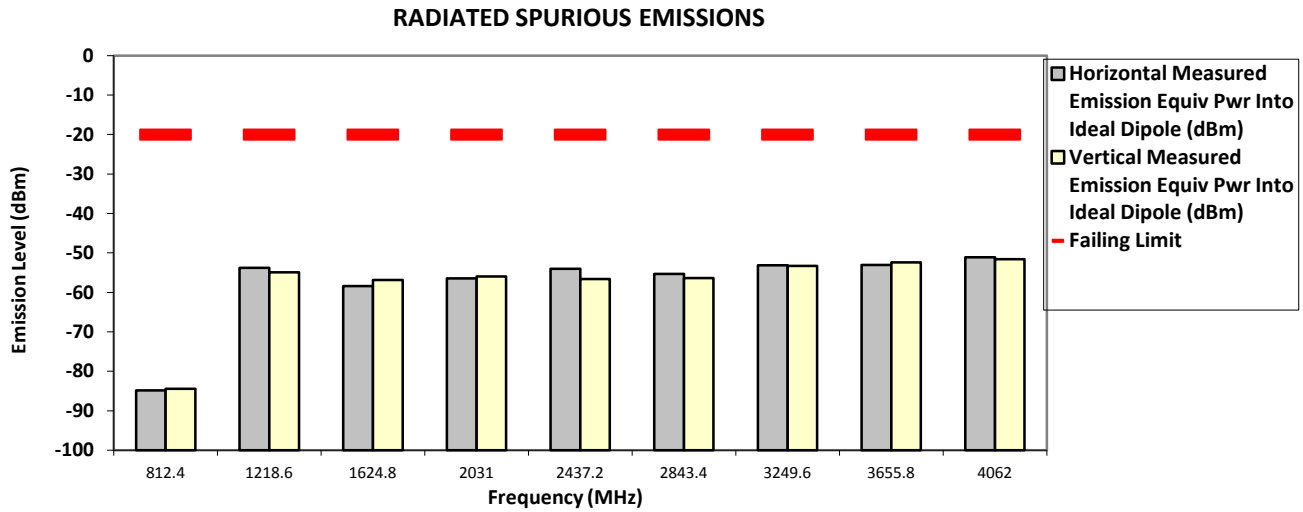
Model Number: AAM28QPN9RA1AN **S/N: 511TTMK601** **SR:09082-EMC-00002**

Battery Part No: NA **Accy Part No: 690-RMN5127C-3, HKN4192**

Test Mode: TX PCR Digital 4FSK

406.200000 MHz **12.5 kHz** **48.000 Watt(s) /Max Power**

Frequency (MHz)	Limit	Horizontal Measured Emission Equiv Pwr Into Ideal Dipole (dBm)	Vertical Measured Emission Equiv Pwr Into ideal Dipole (dBm)
812.4000	-20.0000	-84.8559 **	-84.4153 **
1218.6000	-20.0000	-53.7900 *	-54.9000 *
1624.8000	-20.0000	-58.4263 **	-56.8401 **
2031.0000	-20.0000	-56.4541 **	-55.9990 **
2437.2000	-20.0000	-53.9977 **	-56.5744 **
2843.4000	-20.0000	-55.3334 **	-56.3821 **
3249.6000	-20.0000	-53.1209 **	-53.2684 **
3655.8000	-20.0000	-53.0490 **	-52.3832 **
4062.0000	-20.0000	-51.1031 **	-51.5530 **



The data presented here was taken using the substitution method as found in the TIA/EIA-603E document.

Motorola Penang EMC Lab - Test Performed by: Nazrin&Qawiman **Wed, Aug 09, 2017**

Industry Canada: 109AK

Remarks: ** Indicates the spurious emission could not be detected due to noise limitations or ambient.

***Pursuant to CFR 47 Part 2.1057 (c), emissions attenuated more than 20 dB below the permissible limit are not reported**

Temp(Deg): 23.2 Hum(%RH): 70.3

System MU: 5.01 dB

Remarks:

Passed Results	Marginal Results	Failed Results

SAC Transmitter Radiated Emission

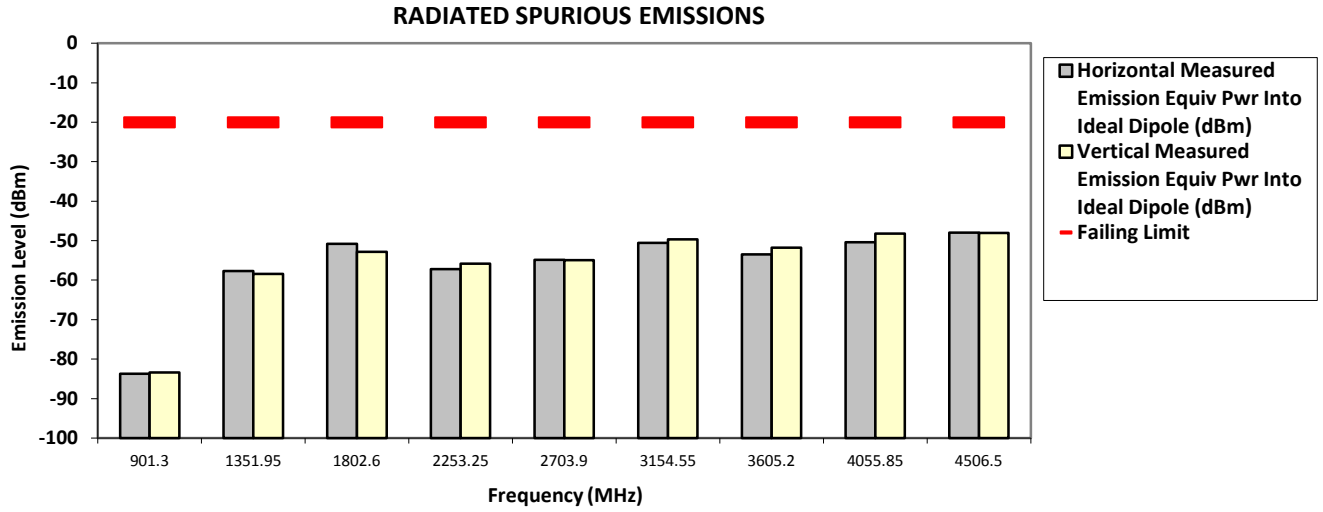
Model Number: AAM28QPN9RA1AN **S/N: 511TTMK601** **SR:09082-EMC-00002**

Battery Part No: NA **Accy Part No: 690-RMN5127C-3, HKN4192**

Test Mode: TX PCR Digital 4FSK

450.650000 MHz **12.5 kHz** **48.000 Watt(s) /Max Power**

Frequency (MHz)	Limit	Horizontal Measured Emission Equiv Pwr Into Ideal Dipole (dBm)	Vertical Measured Emission Equiv Pwr Into ideal Dipole (dBm)
901.3000	-20.0000	-83.6871 **	-83.3969 **
1351.9500	-20.0000	-57.6768 **	-58.3929 **
1802.6000	-20.0000	-50.8200 *	-52.8300 *
2253.2500	-20.0000	-57.1940 **	-55.8293 **
2703.9000	-20.0000	-54.8710 **	-54.9053 **
3154.5500	-20.0000	-50.5889 **	-49.7019 **
3605.2000	-20.0000	-53.4533 **	-51.7783 **
4055.8500	-20.0000	-50.3776 **	-48.1799 **
4506.5000	-20.0000	-47.9480 **	-48.0562 **



The data presented here was taken using the substitution method as found in the TIA/EIA-603E document.

Motorola Penang EMC Lab - Test Performed by: Nazrin&Qawiman **Wed, Aug 09, 2017**

Industry Canada: 109AK

Remarks: ** Indicates the spurious emission could not be detected due to noise limitations or ambient.

***Pursuant to CFR 47 Part 2.1057 (c), emissions attenuated more than 20 dB below the permissible limit are not reported**

Temp(Deg): 23.2 Hum(%RH): 70.3

System MU: 5.01 dB

Remarks:

Passed Results	**Marginal Results**	**Failed Results**

SAC Transmitter Radiated Emission

Model Number: AAM28QPN9RA1AN **S/N: 511TTMK601** **SR:09082-EMC-00002**

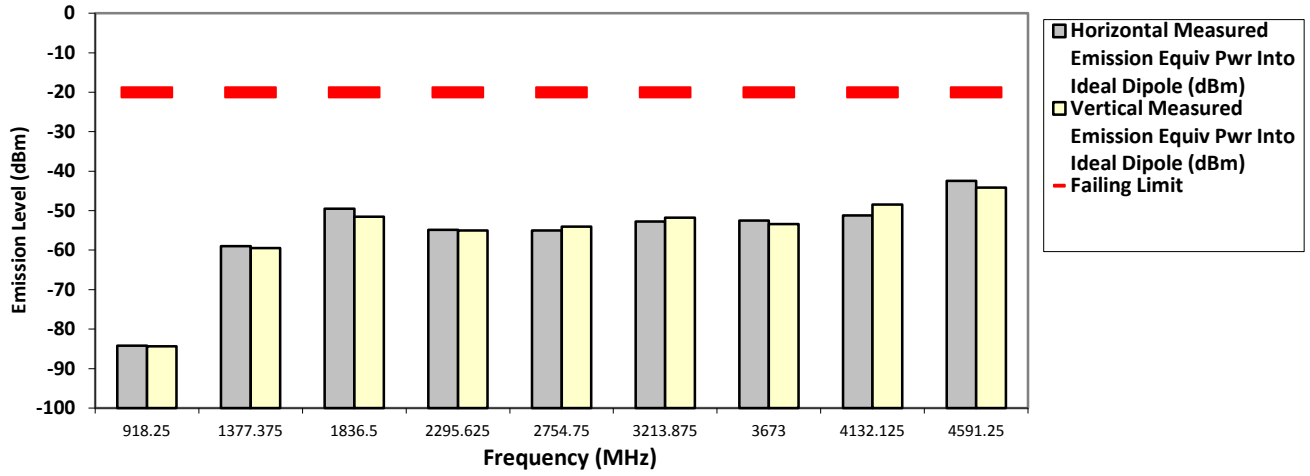
Battery Part No: NA **Accy Part No: 690-RMN5127C-3, HKN4192**

Test Mode: TX PCR Digital 4FSK

459.125000 MHz **12.5 kHz** **48.000 Watt(s) /Max Power**

Frequency (MHz)	Limit	Horizontal Measured Emission Equiv Pwr Into Ideal Dipole (dBm)	Vertical Measured Emission Equiv Pwr Into ideal Dipole (dBm)
918.2500	-20.0000	-84.2001 **	-84.3251 **
1377.3750	-20.0000	-59.0210 **	-59.4527 **
1836.5000	-20.0000	-49.5000 *	-51.5400 *
2295.6250	-20.0000	-54.8898 **	-55.0121 **
2754.7500	-20.0000	-55.0300 **	-54.0123 **
3213.8750	-20.0000	-52.7342 **	-51.8039 **
3673.0000	-20.0000	-52.5449 **	-53.3967 **
4132.1250	-20.0000	-51.1722 **	-48.4322 **
4591.2500	-20.0000	-42.4400 *	-44.1400 *

RADIATED SPURIOUS EMISSIONS



The data presented here was taken using the substitution method as found in the TIA/EIA-603E document.

Motorola Penang EMC Lab - Test Performed by: Nazrin&Qawiman **Wed, Aug 09, 2017**

Industry Canada: 109AK

Remarks: ** Indicates the spurious emission could not be detected due to noise limitations or ambient.

***Pursuant to CFR 47 Part 2.1057 (c), emissions attenuated more than 20 dB below the permissible limit are not reported**

Temp(Deg): 23.2 Hum(%RH): 70.3

System MU: 5.01 dB

Remarks:

Passed Results	**Marginal Results**	**Failed Results**

SAC Transmitter Radiated Emission

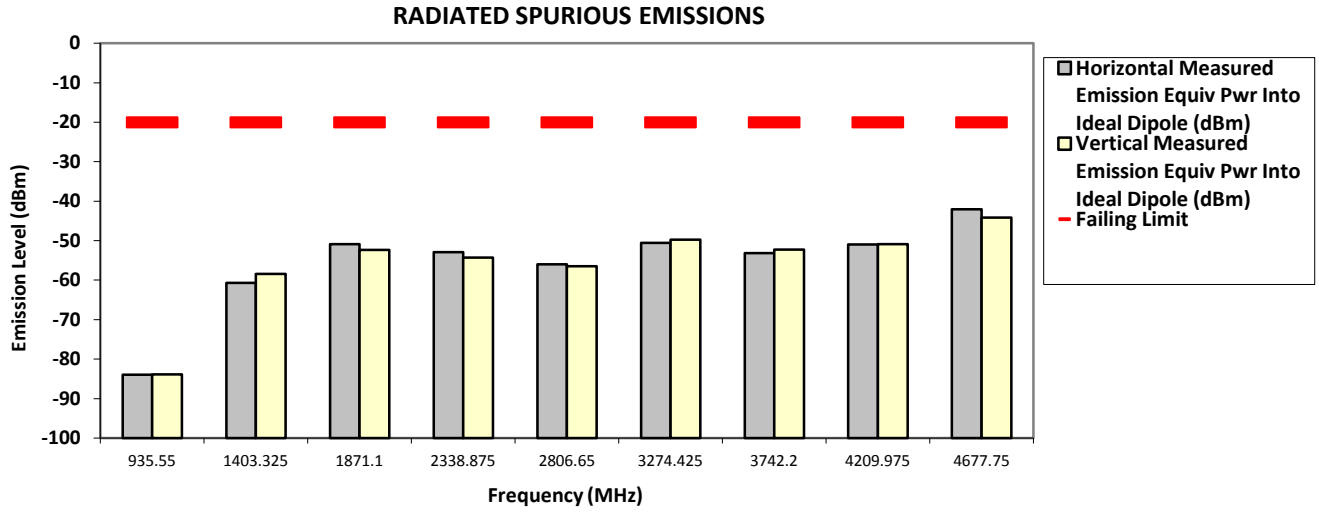
Model Number: AAM28QPN9RA1AN **S/N: 511TTMK601** **SR:09082-EMC-00002**

Battery Part No: NA **Accy Part No: 690-RMN5127C-3, HKN4192**

Test Mode: TX PCR Digital 4FSK

467.775000 MHz **12.5 kHz** **48.000 Watt(s) /Max Power**

Frequency (MHz)	Limit	Horizontal Measured Emission Equiv Pwr Into Ideal Dipole (dBm)	Vertical Measured Emission Equiv Pwr Into ideal Dipole (dBm)
935.5500	-20.0000	-83.9230 **	-83.9062 **
1403.3250	-20.0000	-60.6978 **	-58.4377 **
1871.1000	-20.0000	-50.8600 *	-52.3700 *
2338.8750	-20.0000	-52.9063 **	-54.2580 **
2806.6500	-20.0000	-55.9837 **	-56.5135 **
3274.4250	-20.0000	-50.5401 **	-49.7689 **
3742.2000	-20.0000	-53.1900 **	-52.2858 **
4209.9750	-20.0000	-50.9639 **	-50.8696 **
4677.7500	-20.0000	-42.0200 *	-44.1700 *



The data presented here was taken using the substitution method as found in the TIA/EIA-603E document.

Motorola Penang EMC Lab - Test Performed by: Nazrin&Qawiman **Wed, Aug 09, 2017**

Industry Canada: 109AK

Remarks: ** Indicates the spurious emission could not be detected due to noise limitations or ambient.

***Pursuant to CFR 47 Part 2.1057 (c), emissions attenuated more than 20 dB below the permissible limit are not reported**

Temp(Deg): 23.2 Hum(%RH): 70.3

System MU: 5.01 dB

Remarks: Passed Results | **Marginal Results** | **Failed Results**

SAC Transmitter Radiated Emission

Model Number: AAM28QPN9RA1AN **S/N: 511TTMK601** **SR:09082-EMC-00002**

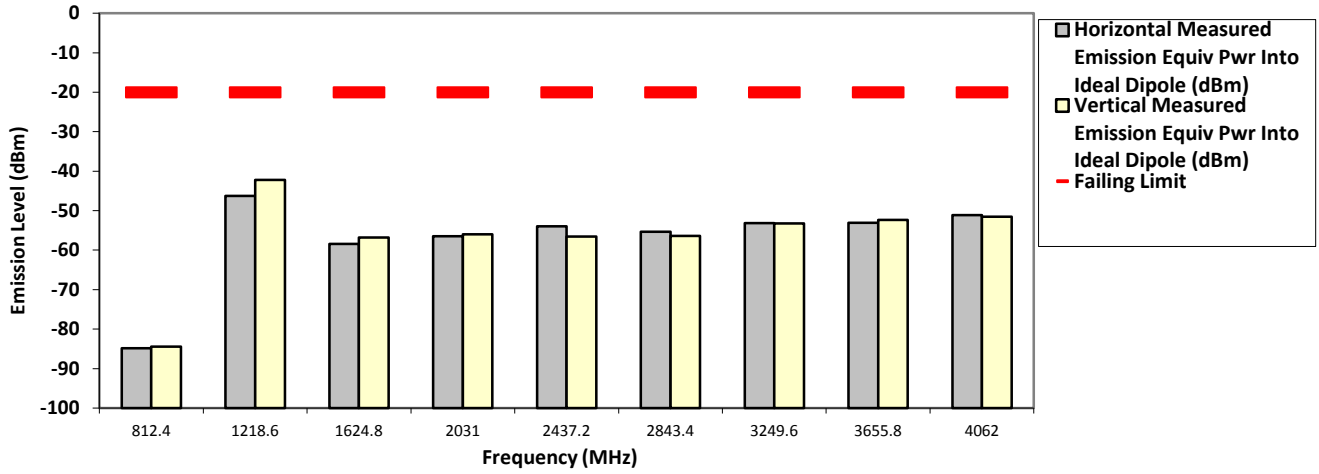
Battery Part No: NA **Accy Part No: 690-RMN5127C-3, HKN4192**

Test Mode: TX PCR Digital 4FSK

406.200000 MHz **12.5 kHz** **48.000 Watt(s) /Max Power**

Frequency (MHz)	Limit	Horizontal Measured Emission Equiv Pwr Into Ideal Dipole (dBm)	Vertical Measured Emission Equiv Pwr Into ideal Dipole (dBm)
812.4000	-20.0000	-84.8559 **	-84.4153 **
1218.6000	-20.0000	-46.2700 *	-42.2300 *
1624.8000	-20.0000	-58.4263 **	-56.8401 **
2031.0000	-20.0000	-56.4541 **	-55.9990 **
2437.2000	-20.0000	-53.9977 **	-56.5744 **
2843.4000	-20.0000	-55.3334 **	-56.3821 **
3249.6000	-20.0000	-53.1209 **	-53.2684 **
3655.8000	-20.0000	-53.0490 **	-52.3832 **
4062.0000	-20.0000	-51.1031 **	-51.5530 **

RADIATED SPURIOUS EMISSIONS



The data presented here was taken using the substitution method as found in the ANSI C63.26 document.

Motorola Penang EMC Lab - Test Performed by: Nazrin&Qawiman **Wed, Aug 09, 2017**

Industry Canada: 109AK

Remarks: ** Indicates the spurious emission could not be detected due to noise limitations or ambient.

***Pursuant to CFR 47 Part 2.1057 (c), emissions attenuated more than 20 dB below the permissible limit are not reported**

Temp(Deg): 23.2 Hum(%RH): 70.3

System MU: 5.01 dB

Remarks:

Passed Results	**Marginal Results**	**Failed Results**

SAC Transmitter Radiated Emission

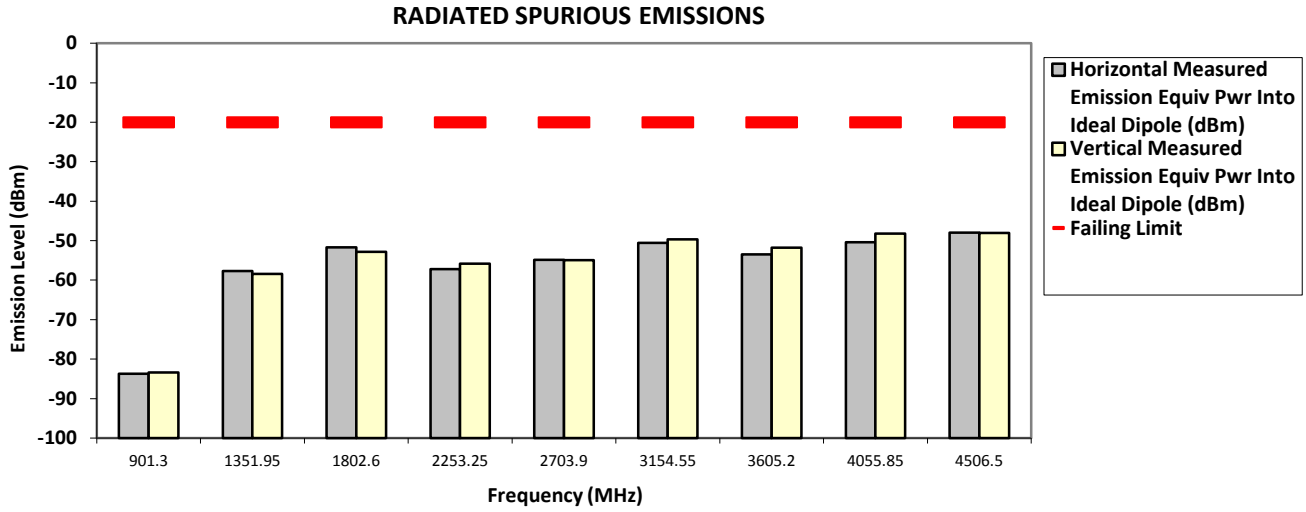
Model Number: AAM28QPN9RA1AN **S/N: 511TTMK601** **SR:09082-EMC-00002**

Battery Part No: NA **Accy Part No: 690-RMN5127C-3, HKN4192**

Test Mode: TX PCR Digital 4FSK

450.650000 MHz **12.5 kHz** **48.000 Watt(s) /Max Power**

Frequency (MHz)	Limit	Horizontal Measured Emission Equiv Pwr Into Ideal Dipole (dBm)	Vertical Measured Emission Equiv Pwr Into ideal Dipole (dBm)
901.3000	-20.0000	-83.6871 **	-83.3969 **
1351.9500	-20.0000	-57.6768 **	-58.3929 **
1802.6000	-20.0000	-51.7100 *	-52.8200 *
2253.2500	-20.0000	-57.1940 **	-55.8293 **
2703.9000	-20.0000	-54.8710 **	-54.9053 **
3154.5500	-20.0000	-50.5889 **	-49.7019 **
3605.2000	-20.0000	-53.4533 **	-51.7783 **
4055.8500	-20.0000	-50.3776 **	-48.1799 **
4506.5000	-20.0000	-47.9480 **	-48.0562 **



The data presented here was taken using the substitution method as found in the ANSI C63.26 document.

Motorola Penang EMC Lab - Test Performed by: Nazrin&Qawiman **Wed, Aug 09, 2017**

Industry Canada: 109AK

Remarks: ** Indicates the spurious emission could not be detected due to noise limitations or ambient.

***Pursuant to CFR 47 Part 2.1057 (c), emissions attenuated more than 20 dB below the permissible limit are not reported**

Temp(Deg): 23.2 Hum(%RH): 70.3

System MU: 5.01 dB

Remarks:

Passed Results	**Marginal Results**	**Failed Results**

SAC Transmitter Radiated Emission

Model Number: AAM28QPN9RA1AN **S/N: 511TTMK601** **SR:09082-EMC-00002**

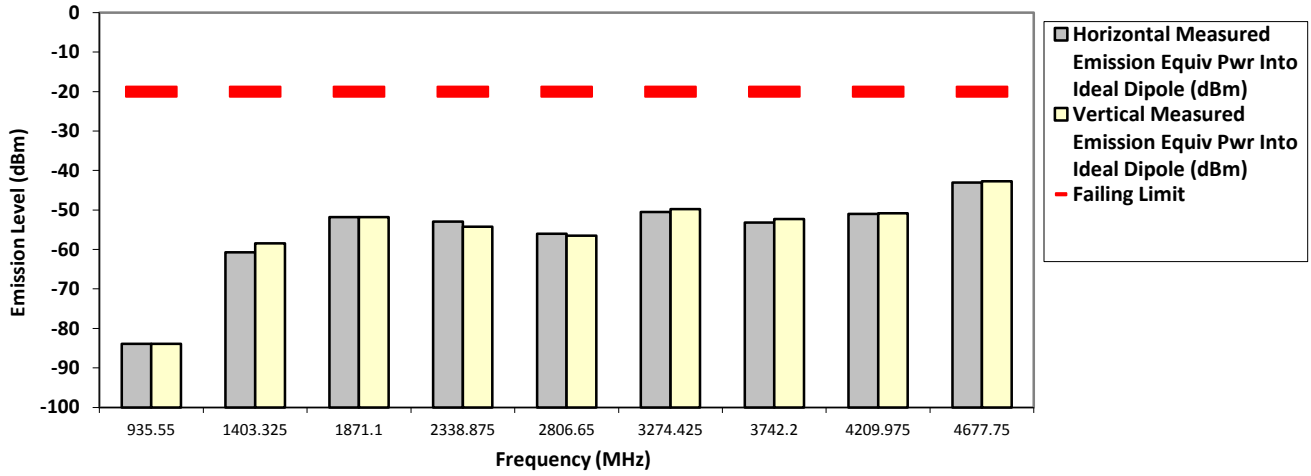
Battery Part No: NA **Accy Part No: 690-RMN5127C-3, HKN4192**

Test Mode: TX PCR Digital 4FSK

467.775000 MHz **12.5 kHz** **48.000 Watt(s) /Max Power**

Frequency (MHz)	Limit	Horizontal Measured Emission Equiv Pwr Into Ideal Dipole (dBm)	Vertical Measured Emission Equiv Pwr Into ideal Dipole (dBm)
935.5500	-20.0000	-83.9230 **	-83.9062 **
1403.3250	-20.0000	-60.6978 **	-58.4377 **
1871.1000	-20.0000	-51.8400 *	-51.7900 *
2338.8750	-20.0000	-52.9063 **	-54.2580 **
2806.6500	-20.0000	-55.9837 **	-56.5135 **
3274.4250	-20.0000	-50.5401 **	-49.7689 **
3742.2000	-20.0000	-53.1900 **	-52.2858 **
4209.9750	-20.0000	-50.9639 **	-50.8696 **
4677.7500	-20.0000	-43.0600 *	-42.6900 *

RADIATED SPURIOUS EMISSIONS



The data presented here was taken using the substitution method as found in the ANSI C63.26 document.

Motorola Penang EMC Lab - Test Performed by: Nazrin&Qawiman **Wed, Aug 09, 2017**

Industry Canada: 109AK

Remarks: ** Indicates the spurious emission could not be detected due to noise limitations or ambient.

***Pursuant to CFR 47 Part 2.1057 (c), emissions attenuated more than 20 dB below the permissible limit are not reported**

Temp(Deg): 23.2 Hum(%RH): 70.3

System MU: 5.01 dB

Remarks:

Passed Results	**Marginal Results**	**Failed Results**

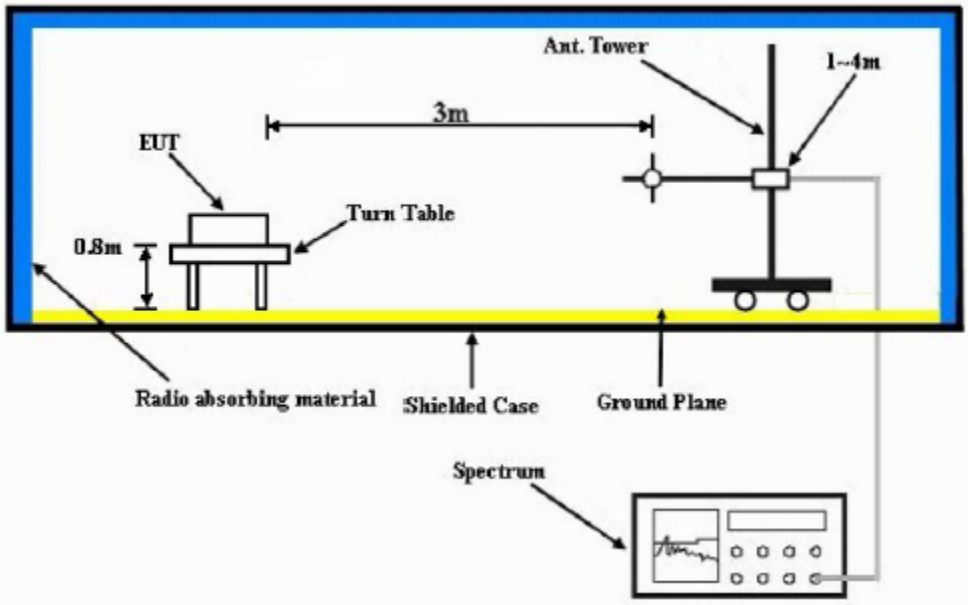
6.11.4. Test Limit

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

Channel Spacing	Part 22	Part 24D	Part 74	Part 80	Part 90
12.5kHz	43 + log10(P) (-13 dBm)	43 + log10(P) (-13 dBm)	43 + log10(P) (-13 dBm)	Not Applicable	50 + log10(P) (-20 dBm)
25kHz		Not Applicable		43 + log10(P) (-13 dBm)	Not Applicable

6.12. Effective Radiated Power (ERP) / GNSS (EIRP for 1559 - 1610MHz)

6.12.1. Test Setup



1) The spectrum setting for Equivalent Isotropically Radiated Power (EIRP) is RBW = 100 kHz, VBW = 300 kHz. Detector Mode is RMS.
2) In the semi-anechoic chamber, setup as illustrated above the EUT placed on the 0.8m height of Turn Table, rotated the table 45 degree each interval to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum polar radiated power for each degree interval. The “Read Value” is the spectrum reading of maximum power value.
3) The substitution antenna is substituted for EUT at the same position and signals generator (S.G) export the CW signal to the substitution antenna via a TX cable. The receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum radiation power. Record the power level of maximum radiation power from spectrum. So, the Measured substitution value = Ref level of S.G + TX cables loss – Substituted Antenna Gain.
4) EIRP = “Read Value” + Measured substitution value + 2.15.

6.12.2. Test Result

Not Applicable

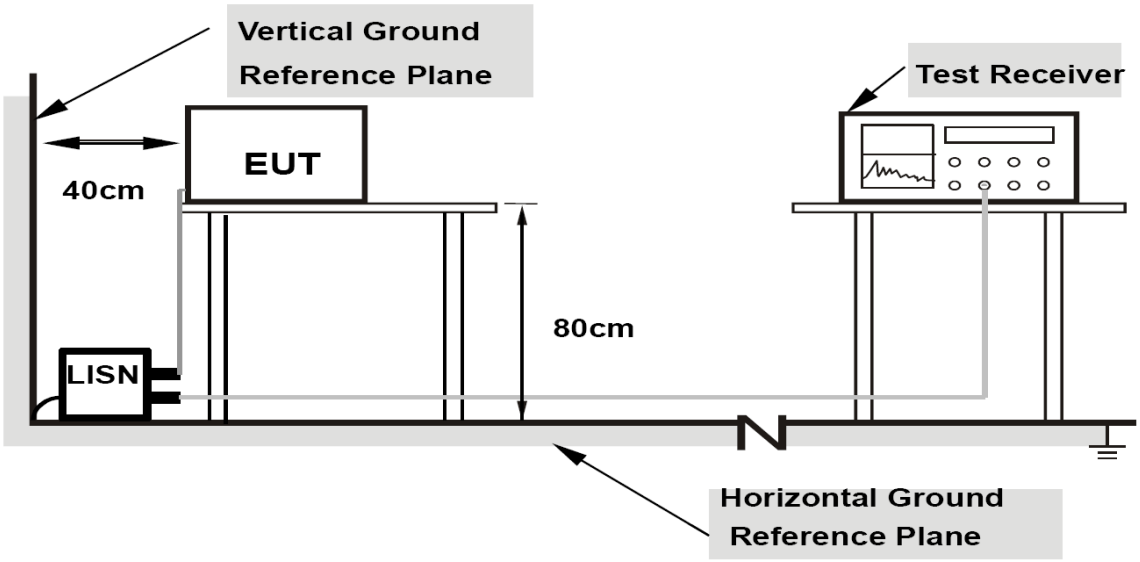
6.12.3. Test Limit

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

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

6.13. AC Power Line Conducted Spur Emissions

6.13.1. Test Setup



1) Tests were conducted for both Receive and Transmit Mode of the EUT.
2) The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm / 50 µH of coupling impedance for the measuring instrument.
3) Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
4) The frequency range from 150 kHz to 30 MHz was measured.

6.13.2. Test Result

Not Applicable

6.13.3. Test Limit

For AC Power Line Conducted Test Limit can be Class A or B depends on product classification.

Limits for conducted disturbance at the mains ports of class A ITE

Frequency range MHz	Limits dB(µV)	
	Quasi-peak	Average
0,15 to 0,50	79	66
0,50 to 30	73	60
NOTE The lower limit shall apply at the transition frequency.		

Limits for conducted disturbance at the mains ports of class B ITE

Frequency range MHz	Limits dB(µV)	
	Quasi-peak	Average
0,15 to 0,50	66 to 56	56 to 46
0,50 to 5	56	46
5 to 30	60	50
NOTE 1 The lower limit shall apply at the transition frequencies. NOTE 2 The limit decreases linearly with the logarithm of the frequency in the range 0,15 MHz to 0,50 MHz.		