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.C

Date/s Tested	:	04-MAY-2021 - 11-MAY-2021
Report Issue Date	:	21-JUN-2021
Manufacturer	:	Motorola Solutions Malaysia SDN BHD
Manufacturer Address	:	Plot 2A, Medan Bayan Lepas, Mukim 12 SWD, 11900 Bayan Lepas, Penang, Malaysia
Requestor	:	POH LIM NG
Product Type	:	Portable
Product Version (PMN)	:	MTP8550Ex
Model Number (HVIN)	:	AZH17PCH6TZ5AN
Frequency Band	:	350-470MHz
Max RF Output Power	:	1.55 Watts (MSPD), 0.537 Watt (TEDS)
Applicant Name	:	Motorola Solutions Inc
Applicant Address	:	8000 West Sunrise Boulevard, Fort Lauderdale, Florida 33322
ISED Registrations	:	MY0001
FCC Registrations	:	461337
Firmware Version (FVIN)	:	R36.000.9426

The equipment was tested accordance to the requirement listed below:

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

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Prepared By:

Putri Nur Sarah Sofia
Test Personnel

Approved Signatory:

Vincent Foong Chuen Kit
Responsible Engineer

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Report Revision History

Revision History	Description	Date	Originator
Rev. A	Initial Report	28-May-2021	Putri Nur Sarah Sofia
Rev. B	Added “NOT FOR FCC REVIEW” for relevant plots	18-Aug-2021	Vincent Foong
Rev. C	Added detailed description for OBW	07-Sep-2021	Vincent Foong

1.0 General Information

EUT Description:

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

The EUT contains following accessory devices and data cable:

Item	Brand	Model or P/N
BATT IMPRES LIION IECEX/ATEX IP66/67 1250T	MOTOROLA	NNTN8570C

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
Part 90	RSS-119	RF Power Output	Pass		123TXB0410
Part 90	RSS-119	Frequency Stability	Pass		123TXB0410
-	-	Audio Frequency Response	NA		
-	-	Audio Low Pass Filter Response	NA		
-	-	Modulation limiting	NA		
Part 90	RSS-119	Occupied Bandwidth	Pass	22K0D1E/D/W - 21.0691 kHz	123TXB0410
-	-	Band Edge Conducted Spurious Emission	NA		
Part 90	RSS-119	Transient Frequency Behavior	NA		123TXB0410
Part 90	RSS-119	Adjacent Channel Power	Pass		123TXB0410
Part 90	RSS-119	Conducted Spurious Emissions	Pass	Highest Spur: -29.32dBm (noise floor)	123TXB0410
Part 90	RSS-119	Radiated Spurious Emission	Pass	Highest Spur: -46.93dBm (noise floor)	123TXF0821
-	-	GNSS (EIRP for 1559 – 1610MHz)	NA		
-	-	Effective Radiated Power (ERP)	NA		

NA → **Not Applicable**

3.0 Measurement Uncertainty

Measurement	Frequency	Expended Uncertainty (k=1.96) (±)
AC Power Line Conducted Spurious Emission	150kHz ~ 30MHz	3.48 dB
Radiated Emissions up to 1 GHz	30MHz ~ 1000MHz	5.88 dB
Radiated Emissions above 1 GHz	1GHz ~ 18GHz	5.84 dB
	18GHz ~ 40GHz	6.02 dB
Conducted Spurious Emissions	9kHz ~ 12.75GHz	2.82 dB
Frequency Stability	9kHz ~ 12.75GHz	0.0085 ppm
Audio Frequency Response / Low Pass Filter Response	300Hz – 20kHz	4.09 %
Modulation Limiting	300Hz – 3kHz	1.15 %
Occupied Bandwidth	9kHz ~ 12.75GHz	2.82 dB
Band Edge Conducted Spurious Emission	9kHz ~ 12.75GHz	2.82 dB
Transient Frequency Behavior	9kHz ~ 12.75GHz	5.4 ms
Adjacent Channel Power	9kHz ~ 12.75GHz	2.82 dB

4.0 Equipment List

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

Description	Model	Serial Number	Calibration Date	Calibration Due Date
CHAMBER	SH-641	92009188	08-Mar-21	08-Mar-22
DSA Dynamic Signal Analyzer	35670A	MY42507095	19-Jun-20	19-Jun-21
ANALYZER AUDIO	8903B	3514A15797	28-Oct-21	28-Oct-21
POWER METER	E4416A	MY45102699	26-Jun-20	26-Jun-21
POWER SENSOR	E9301B	MY41498918	12-Aug-20	12-Aug-21
POWER SUPPLY	6032A	US38323921	27-Nov-20	27-Nov-21
SIGNAL GENERATOR	2042	119718/063	24-Jun-20	24-Jun-21
ANALYZER MODULATION	8901B	3122A03662	08-Jul-20	08-Jul-21
N to N RF Cable # 1	M17/128-RG400	NA	NA	NA
BNC to N RF Cable # 1	RG 58	NA	NA	NA
BNC to BNC RF Cable # 1	RG 58	NA	NA	NA
BNC to BNC RF Cable # 2	RG 58	NA	NA	NA
BNC to BNC RF Cable # 3	RG 58	NA	NA	NA
BNC to BNC RF Cable # 4	RG 58	NA	NA	NA
BNC to BNC RF Cable # 5	RG 58	NA	NA	NA
BNC to BNC RF Cable # 6	RG 58	NA	NA	NA
BNC to BNC RF Cable # 7	RG 58	NA	NA	NA
N to SMA RF Cable # 1	RG 58	NA	NA	NA
N to SMA RF Cable # 2	RG 58	NA	NA	NA
N to SMA RF Cable # 3	RG 58	NA	NA	NA
Aeroflex Attenuator 30dB	49-30-34-LIM	NA	NA	NA

FCC Transient ATE #1: (SW version: FCC Transient ATE_R1.1.3)

Description	Model	Serial Number	Calibration Date	Calibration Due Date
SWITCH CONTROL UNIT	3488A	2719A36210	CNR	CNR
ATTENUATOR / SWITCH DRIVER	11713A	2508A10141	CNR	CNR
POWER METER	E4418B	MY45104923	20-Feb-21	20-Feb-22
POWER SUPPLY	6033A	3004A05137	4-Aug-20	4-Aug-21
SIGNAL GENERATOR	8657A	3250A05137	19-Jun-20	19-Jun-21
STEP ATTENUATOR	8494G	MY42143006	12-Jun-20	12-Jun-21
STEP ATTENUATOR	8496G	MY42143012	13-Jun-20	13-Jun-21
OSCILLOSCOPE	MSO8104A	MY45002372	26-Jun-20	26-Jun-21
ANALYZER MODULATION	8901B	3438A05093	23-Jun-20	23-Jun-21
ANALYZER AUDIO	8903B	3011A10318	28-Oct-20	28-Oct-21
ANALYZER AUDIO	8903B	3011A08952	29-Jul-20	29-Jul-21
SPECTRUM ANAYLYZER	E4440A	MY46181974	2-Aug-20	2-Aug-21
N to N RF Cable # 1	SF126/11N/11N	NA	NA	NA
N to N RF Cable # 2	M17/128-RG400	NA	NA	NA
N to N RF Cable # 3	M17/128-RG400	NA	NA	NA
N to N RF Cable # 4	M17/128-RG400	NA	NA	NA
N to N RF Cable # 5	M17/128-RG400	NA	NA	NA
N to N RF Cable # 6	M17/128-RG400	NA	NA	NA
N to N RF Cable # 7	M17/128-RG400	NA	NA	NA
N to N RF Cable # 8	M17/128-RG400	NA	NA	NA
N to N RF Cable # 9	M17/128-RG400	NA	NA	NA
BNC to BNC RF Cable # 1	RG 58	NA	NA	NA
BNC to BNC RF Cable # 2	RG 58	NA	NA	NA
BNC to BNC RF Cable # 3	RG 58	NA	NA	NA
BNC to BNC RF Cable # 4	RG 58	NA	NA	NA
BNC to BNC RF Cable # 5	RG 58	NA	NA	NA
BNC to BNC RF Cable # 6	RG 58	NA	NA	NA
BNC to N RF Cable # 1	RG 58	NA	NA	NA
Aeroflex Attenuator 10dB	49-10-43-LIM	NA	NA	NA
Aeroflex Attenuator 10dB	33-10-34-LIM	NA	NA	NA
SWITCH CONTROL UNIT	3488A	2719A36210	CNR	CNR

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

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

EMC Chamber 1

DESCRIPTION	MODEL	SERIAL NUMBER	CALIBRATION DATE	CALIBRATION DUE DATE
DRG HORN FREQ.	SAS-571	719	20-Aug-19	20-Aug-21
DRG HORN FREQ.	SAS-571	566	22-Oct-19	22-Oct-21
POWER SUPPLY	6031A	MY41000626	23-Jul-20	23-Jul-21
SIGNAL GENERATOR	SMB 100A	181117	8-Nov-18	8-Nov-21
EMI TEST RECEIVER	ESW44	101750	15-Jan-21	15-Jan-22
EMI TEST RECEIVER	ESIB26	827769/009	11-Mar-21	11-Mar-22
5m SEMI-ANECHOIC CHAMBER	S800-HX	J2308	No Cal. Req'd	No Cal. Req'd
BILOG ANTENNA	CBL6112B	30991	20-Aug-20	20-Aug-21
BILOG ANTENNA	CBL6112B	2950	8-Jul-19	8-Jul-21
DATA LOGGER	SDL500	A.016776	4-Jun-20	4-Jun-21
SYSTEM CONTROLLER	SC104V	050806-1	No Cal. Req'd	No Cal. Req'd
TURNTABLE FLUSH MOUNT 2M	FM2011	NA	No Cal. Req'd	No Cal. Req'd
ANTENNA POSITIONING TOWER	TLT2	NA	No Cal. Req'd	No Cal. Req'd
BROAD-BAND HORN ANTENNA	BBHA9170	BBHA9170143	15-Jul-20	15-Jul-21
18 - 40GHz PREAMPLIFIER	MITEQ Hi GAIN SUCOFLEX	2006313	No Cal. Req'd	No Cal. Req'd
PREAMPLIFIER	PAM-0118	269	24-May-19	24-May-22
LOOP ANTENNA	6502	00208416	15-Sep-20	15-Sep-21
TEST SOFTWARE	EMC_FCC_IC_BLUETOOTH_RE_TEST			
VERSION	EMC_FCC_RE_v1.6.2			

5.0 Test Condition

5.1. Transmitter Test Conditions

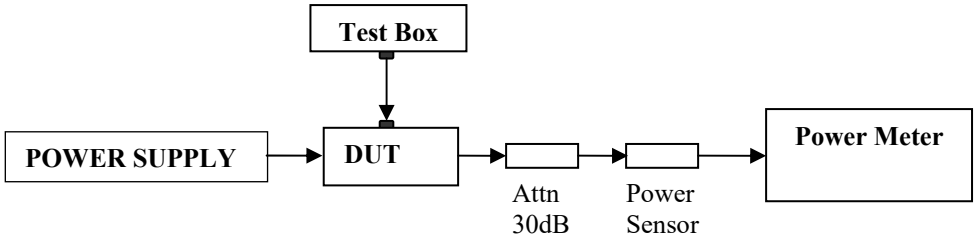
Test Item, (Channel Spacing)	Power (W)	Modulation	Test Frequency (MHz)	Tested By	Environmental conditions
RF Output Power	**Low & Max**	**Analog**	**406.125, 418.0125, 429.975, 450.025, 460.025, 469.9875**	**Putri**	**23.4°C, 50%RH**
Frequency Stability	**Max**	**Analog**	**418.0125, 460.025**	**Putri**	**25.1°C, 54.3%RH, 60.3°C, 50%RH, -30.1°C, 51.2%RH**
Audio Frequency Response (12.5kHz / 25kHz)	**Max**	**Analog**	**NA**		
Audio Low Pass Filter Response (12.5kHz / 25kHz)	**Max**	**Analog**	**NA**		
Modulation limiting (12.5kHz / 25kHz)	**Max**	**Analog**	**NA**		
Occupied Bandwidth (12.5kHz / 20kHz / 25kHz)	**Max**	**Analog, C4FM, Phase II**	**406.125, 418.0125, 429.975, 450.025, 460.025, 469.9875**	**Putri**	**23.4°C, 50%RH**
Band Edge Conducted Spurious Emissions (Part 22) (12.5kHz / 20kHz / 25kHz)	**Max**	**Analog, C4FM, Phase II**	**NA**		
Transient Frequency Behavior *(UHF & VHF Band)* (12.5kHz / 25kHz)	**Max**	**Analog, C4FM, Phase II**	**418.0125, 460.025**	**Putri**	**23.4°C, 50%RH**
Adjacent Channel Power *(700MHz Band)* (12.5kHz / 25kHz)	**Max**	**Analog, C4FM, Phase II**	**406.125, 418.0125, 429.975, 450.025, 460.025, 469.9875**	**Pu tri**	**23.4°C, 50%RH**
Conducted Spurious Emissions- (12.5kHz / 25kHz)	**Low / Max**	**Analog, C4FM, Phase II**	**406.125, 418.0125, 429.975, 450.025, 460.025, 469.9875**	**Putri**	**23.4°C, 50%RH**
Radiated Spurious Emission (12.5kHz / 25kHz)	**Low / Max**	**Analog, C4FM, Phase II**	**406.125, 418.0125, 429.975, 450.025, 460.025, 469.9875**	**Qawiman & Nazrin**	**23.3 Hum(%RH): 69.6**
GNSS (EIRP for 1559 - 1610MHz) (12.5kHz / 25kHz)	**Max**	**Analog**	**NA**		
Effective Radiated Power (ERP) (12.5kHz / 25kHz)	**Max**	**Analog**	**NA**		

NA → Not Applicable

6.0 Transmitter Test Parameters

6.1. RF Output Power

6.1.1. Test Setup



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

6.1.2. Test Result

PI/4DQPSK

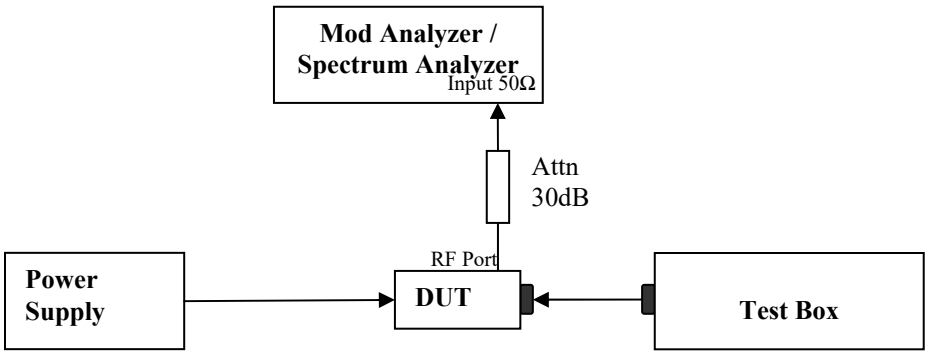
Temperature	25˚C		
Voltage (V)	7.8V		
Frequency (MHz)	Max Power (W)	Current (A)	Remarks
406.12500	1.51	1.25	Not for FCC review
418.01250	1.52	1.26	Not for FCC review
429.97500	1.53	1.25	Not for FCC review
450.02500	1.54	1.25	
460.02500	1.53	1.26	
469.98750	1.53	1.30	

16QAM

Temperature	25˚C		
Voltage (V)	7.8V		
Frequency (MHz)	Max Power (W)	Current (A)	Remarks
406.12500	0.50	0.87	Not for FCC review
418.01250	0.51	0.82	Not for FCC review
429.97500	0.52	0.87	Not for FCC review
450.02500	0.52	0.82	
460.02500	0.53	0.89	
469.98750	0.53	0.83	

6.2. Frequency Stability

6.2.1. Test Setup



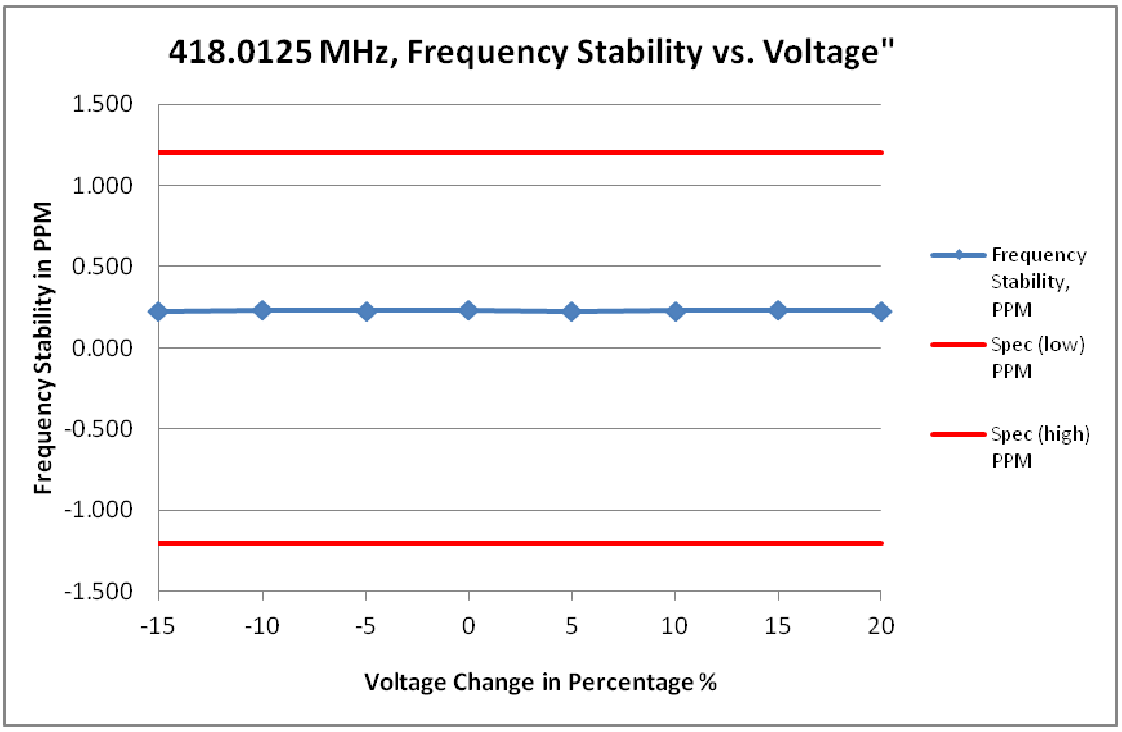
1) The DUT transmitter output port was connected to Modulation / Spectrum Analyzer.
2) Path loss for the measurement included.
3) Transmit the DUT and record the freq in MCF_{MHz}.
4) Test in 2 conditions:
   - Temperature: The frequency of the transmitter was measured from -30°C to 50°C.
   - Supply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

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

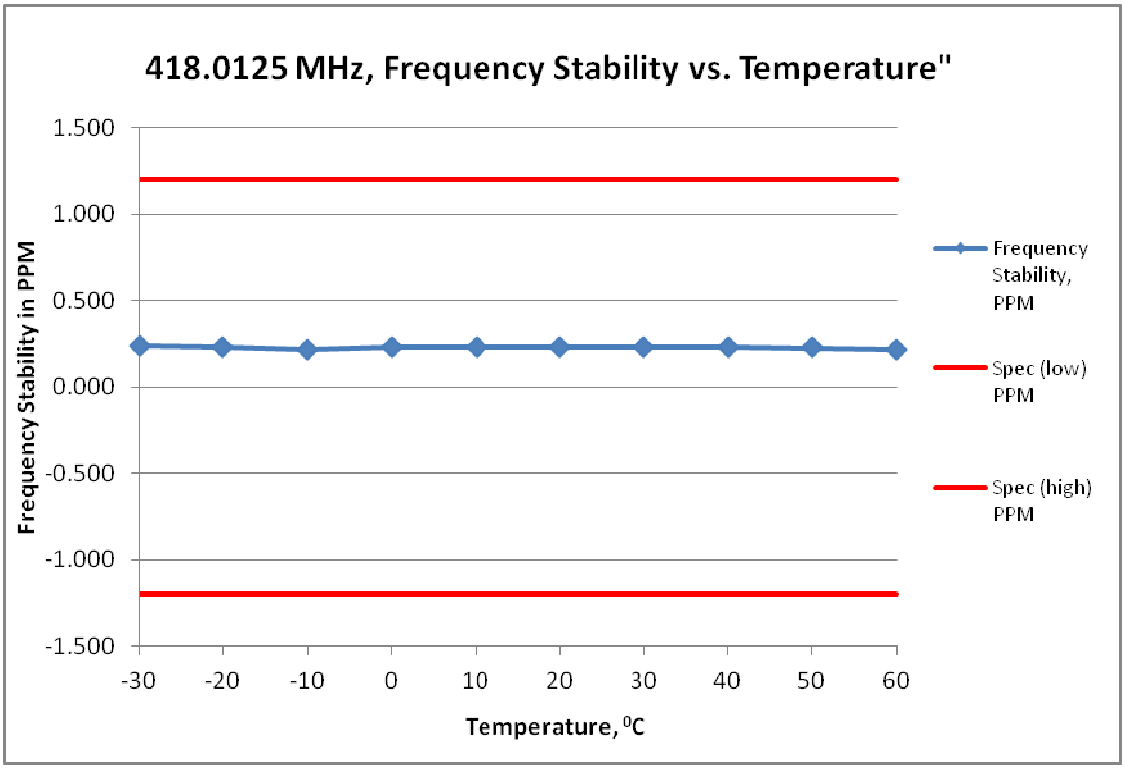
Where: MCF_{MHz} is the Measured Carrier Frequency in MHz
ACF_{MHz} is the Assigned Carrier Frequency in MHz

6.2.2. Test Result



(i) Frequency Stability VS Voltage

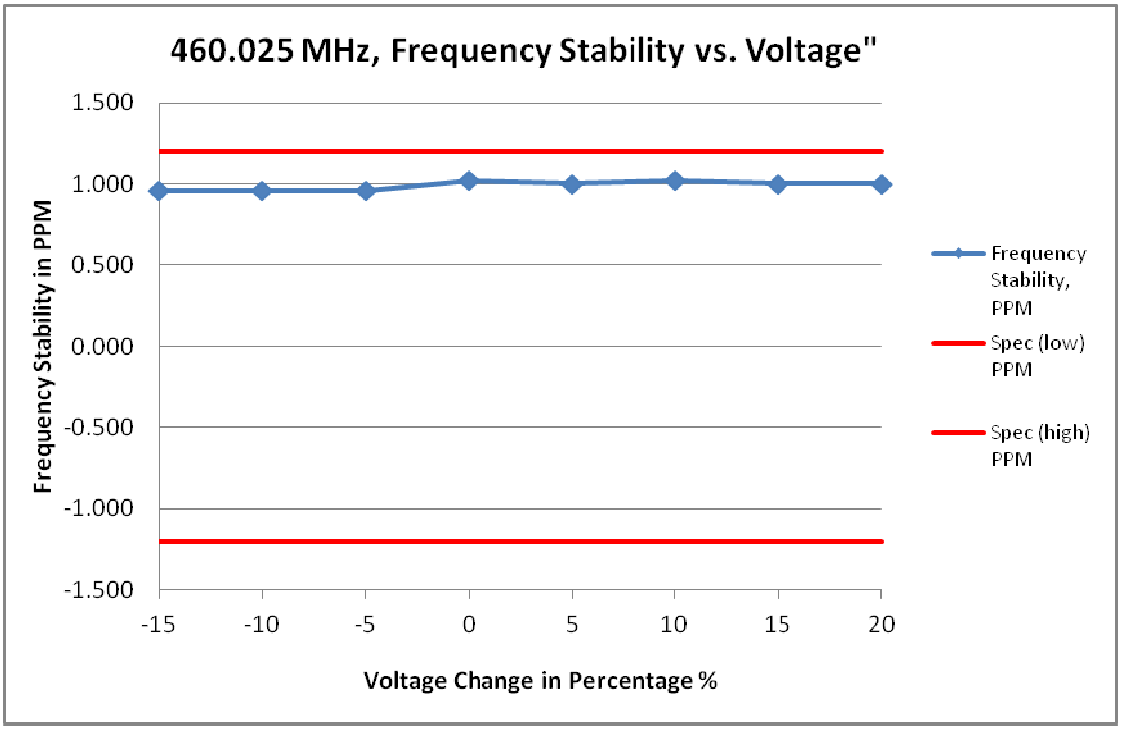
Frequency / Channel Spacing	418.0125 MHz / 25 kHz				
Temperature, ^{0}C	25				
Voltage %	Voltage, V	Frequency, MHz	Frequency Stability, PPM	Spec (low) PPM	Spec (high) PPM
-15	6.460	418.012594	0.225	-1.200	1.200
-10	6.840	418.012598	0.234	-1.200	1.200
-5	7.220	418.012596	0.230	-1.200	1.200
0	7.600	418.012597	0.232	-1.200	1.200
5	7.980	418.012594	0.225	-1.200	1.200
10	8.360	418.012596	0.230	-1.200	1.200
15	8.740	418.012597	0.232	-1.200	1.200
20	9.120	418.012596	0.230	-1.200	1.200



(ii) Frequency Stability VS temperature

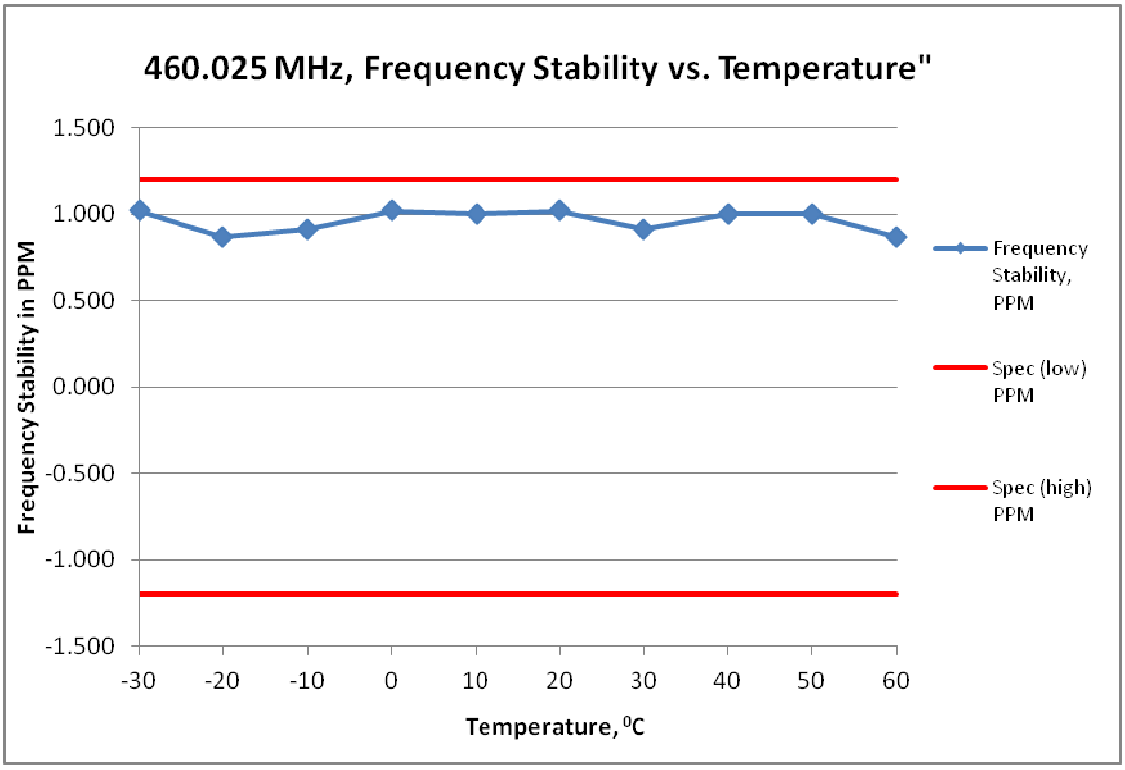
Frequency / Channel Spacing	418.0125 MHz / 25 kHz			
Voltage, V	7.6			
Temperature, °C	Frequency, MHz	Frequency Stability, PPM	Spec (low) PPM	Spec (high) PPM
-30	418.012599	0.237	-1.200	1.200
-20	418.012960	0.230	-1.200	1.200
-10	418.012590	0.215	-1.200	1.200
0	418.012960	0.230	-1.200	1.200
10	418.012596	0.230	-1.200	1.200
20	418.012597	0.231	-1.200	1.200
30	418.012960	0.230	-1.200	1.200
40	418.012970	0.232	-1.200	1.200
50	418.012950	0.227	-1.200	1.200
60	418.012590	0.215	-1.200	1.200

NOT FOR FCC REVIEW



(i) Frequency Stability VS Voltage

Frequency / Channel Spacing	460.0250 MHz / 25 kHz				
Temperature, ^{0}C	25				
Voltage %	Voltage, V	Frequency, MHz	Frequency Stability, PPM	Spec (low) PPM	Spec (high) PPM
-15	6.460	460.025440	0.956	-1.200	1.200
-10	6.840	460.025440	0.956	-1.200	1.200
-5	7.220	460.025450	0.956	-1.200	1.200
0	7.600	460.025470	1.020	-1.200	1.200
5	7.980	460.025460	1.000	-1.200	1.200
10	8.360	460.025470	1.020	-1.200	1.200
15	8.740	460.025460	1.000	-1.200	1.200
20	9.120	460.025460	1.000	-1.200	1.200



(ii) Frequency Stability VS temperature

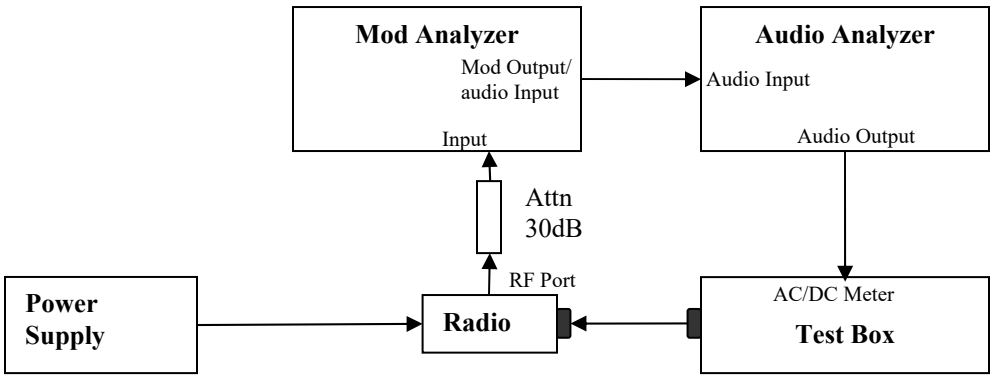
Frequency / Channel Spacing	460.0250 MHz / 25 kHz			
Voltage, V	7.6			
Temperature, °C	Frequency, MHz	Frequency Stability, PPM	Spec (low) PPM	Spec (high) PPM
-30	460.025470	1.020	-1.200	1.200
-20	460.025400	0.870	-1.200	1.200
-10	460.025420	0.913	-1.200	1.200
0	460.025470	1.020	-1.200	1.200
10	460.025460	1.000	-1.200	1.200
20	460.025470	1.020	-1.200	1.200
30	460.025420	0.913	-1.200	1.200
40	460.025460	1.000	-1.200	1.200
50	460.025460	1.000	-1.200	1.200
60	460.025400	0.870	-1.200	1.200

6.2.3. Test Limit

As per manufacturer declared spec +/- 1.2ppm

6.3. Audio Frequency Response

6.3.1. Test Setup

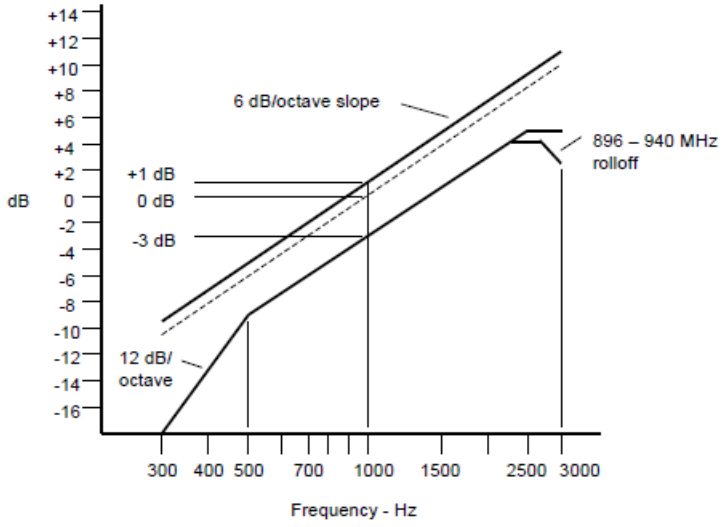


1) The DUT transmitter output port was connected to Modulation Analyzer.
2) Path loss for the measurement included.
3) Set the audio bandwidth filter to 15 kHz and 50 kHz.
4) Transmit the radio and set the audio analyzer to 1 kHz audio frequency and 20% of the Full rated system deviation.
5) On audio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

6.3.2. Test Result

Not Applicable.

6.3.3. Test Limit

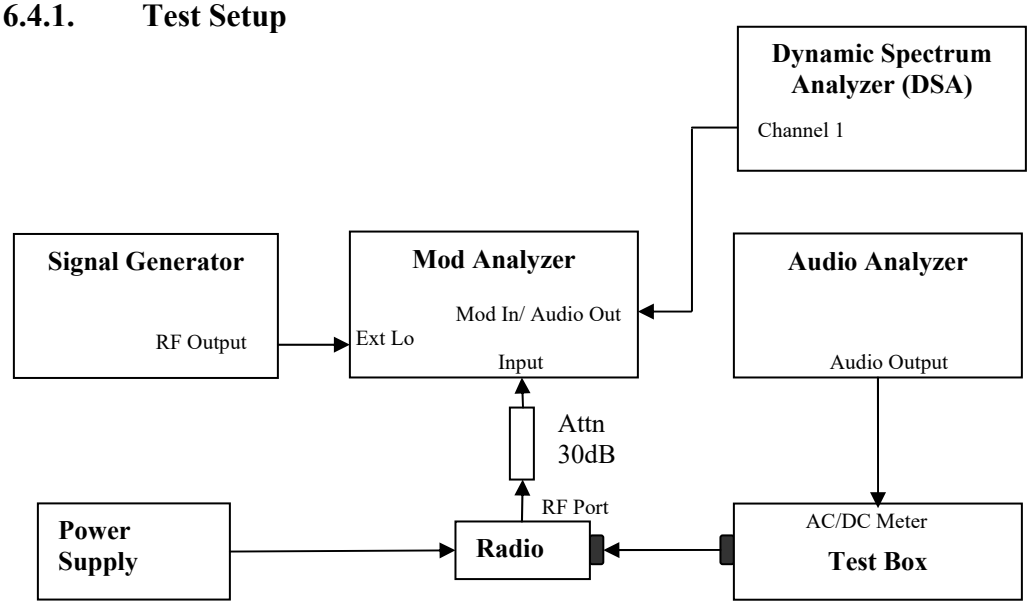


Note:

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

6.4. Audio Low Pass Filter Response

6.4.1. Test Setup

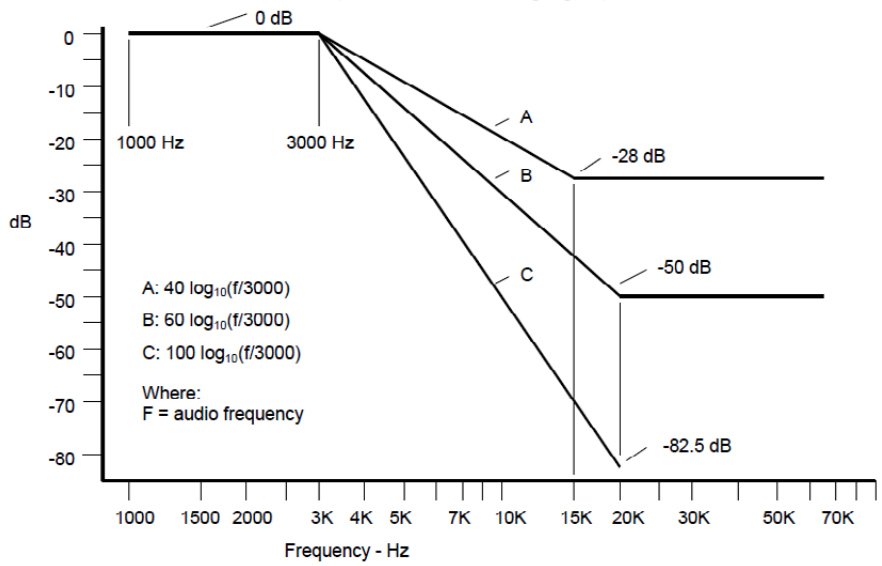


1) The DUT transmitter output port was connected to Modulation Analyzer.
2) Path loss for the measurement included.
3) Press 23.1SPCL on modulation analyzer to enable the external LO from Sigen.
4) Set the Sigen frequency to Fc + 1.5 MHz, RF output level to 0dBm without modulation.
5) Transmit the radio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

6.4.2. Test Result

Not Applicable.

6.4.3. Test Limit



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

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

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

where: f is the audio frequency in Hz.

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

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

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

where: f is the audio frequency in Hz.

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

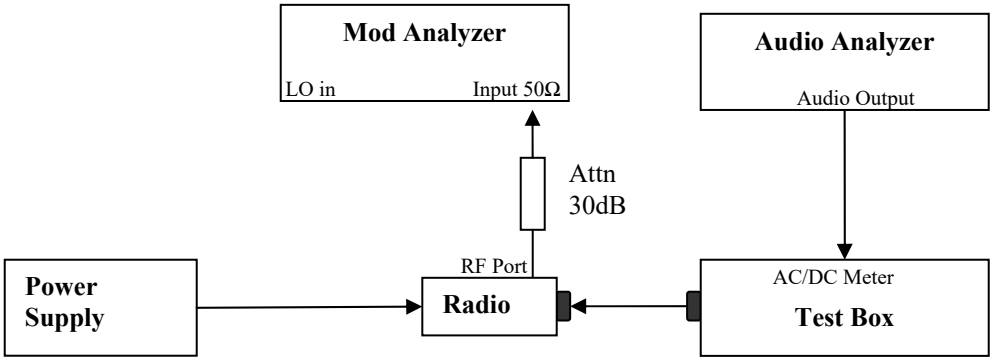
c) For equipment operating on channels between 896 MHz through 901 MHz, between 935 MHz through 940 MHz, and 12.5 or 15 kHz spaced channels in the frequency range 138-174 MHz and 406-512 MHz.

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

where: f is the audio frequency in Hz.

6.5. Modulation Limiting

6.5.1. Test Setup



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

6.5.2. Test Result

Not Applicable.

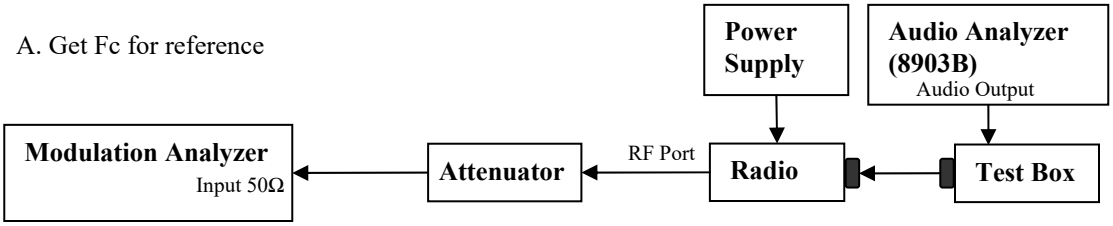
6.5.3. Test Limit

Modulation Limiting shall not exceed 100 percent.

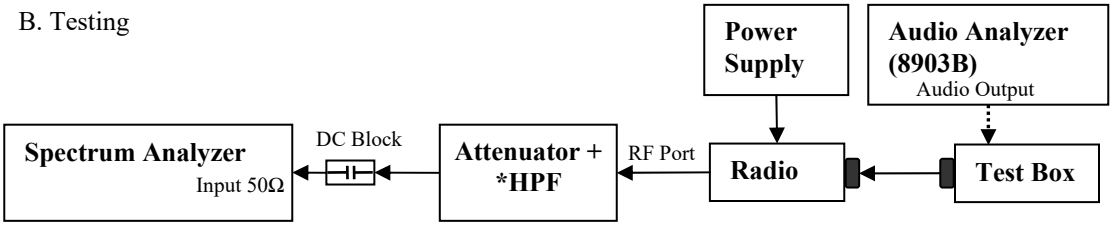
6.6. Occupied Bandwidth

6.6.1. Test Setup (Analog)

A. Get Fc for reference



B. Testing



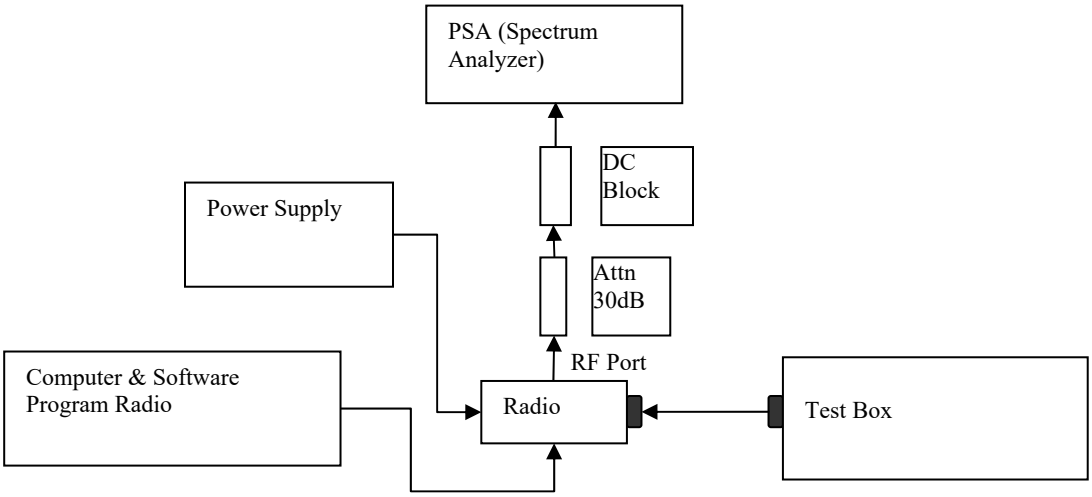
1) The DUT transmitter output port was connected to Modulation Analyzer.
2) Set the audio bandwidth filter to 15 kHz low pass filter and 50 kHz high pass filter.
3) Transmit the radio and set the audio analyzer to 2.5 kHz audio frequency and 50% of the rated deviation. Up the amplitude by 16 dB. Dekey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

* Only HPF added for Mask 80.211 measurement with attenuator.
* 99% Bandwidth measurement is computed by the spectrum analyzer and is consistent with the C63.26 5.4.4 method.

6.6.2. Test Result (Analog)

Not Applicable.

6.6.3. Test Setup (Digital)



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

* 99% Bandwidth measurement is computed by the spectrum analyzer and is consistent with the C63.26 5.4.4 method.

*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.
- For TETRA, data between D1D/E/W are the same, therefore only measurements with D1W will be shown.

6.6.4. Test Result (Digital)

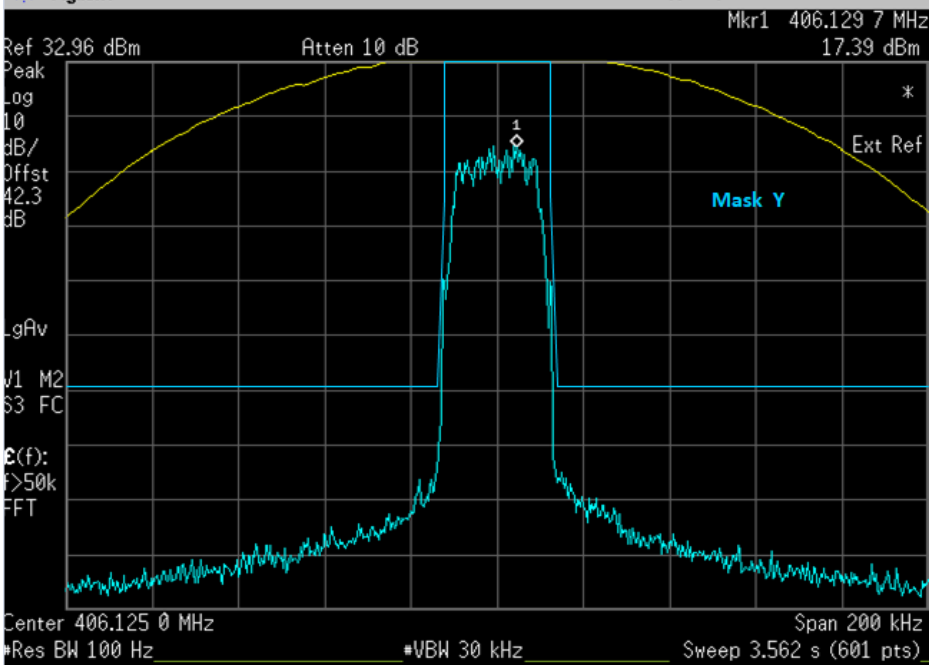
Digital (12.5 kHz Channelization, Digital Voice):
Emission Designator 22K0D1D/E/W

The 99% energy rule (title 47CFR 2.989) was used for digital mode and is more accurate than Carson's rule. It basically states that 99% of the modulation energy falls within X kHz, in this case, 22 kHz. The emission mask was obtained from 47CFR 90.210(d).

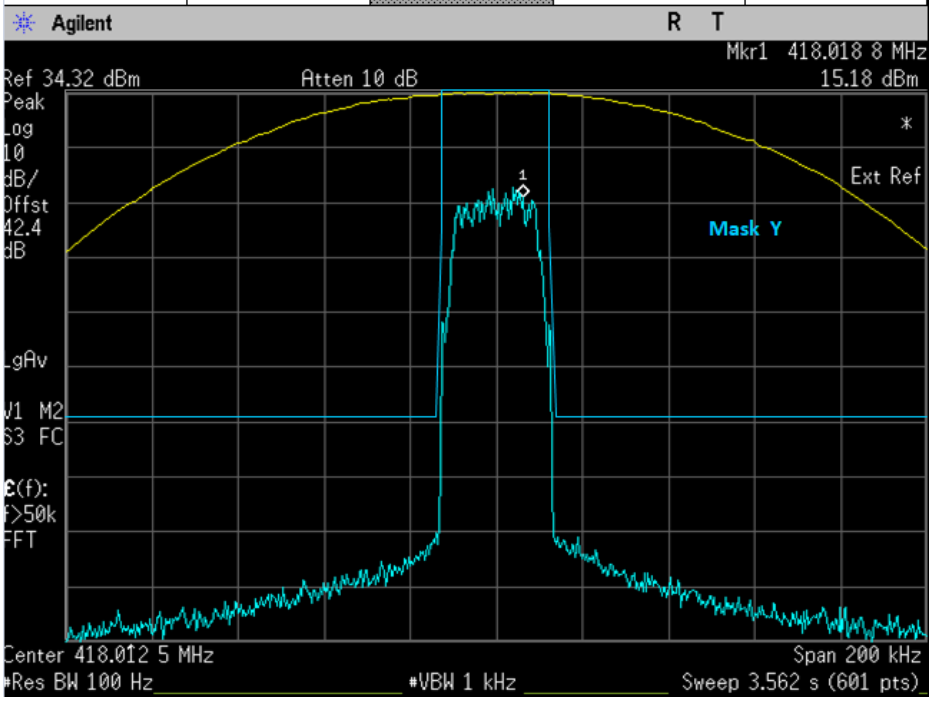
D1D/E/W portion of the designator indicates digital data/voice/voice+data.

Therefore, the entire designator for 25 kHz channelization digital voice is 22K0D1D/E/W

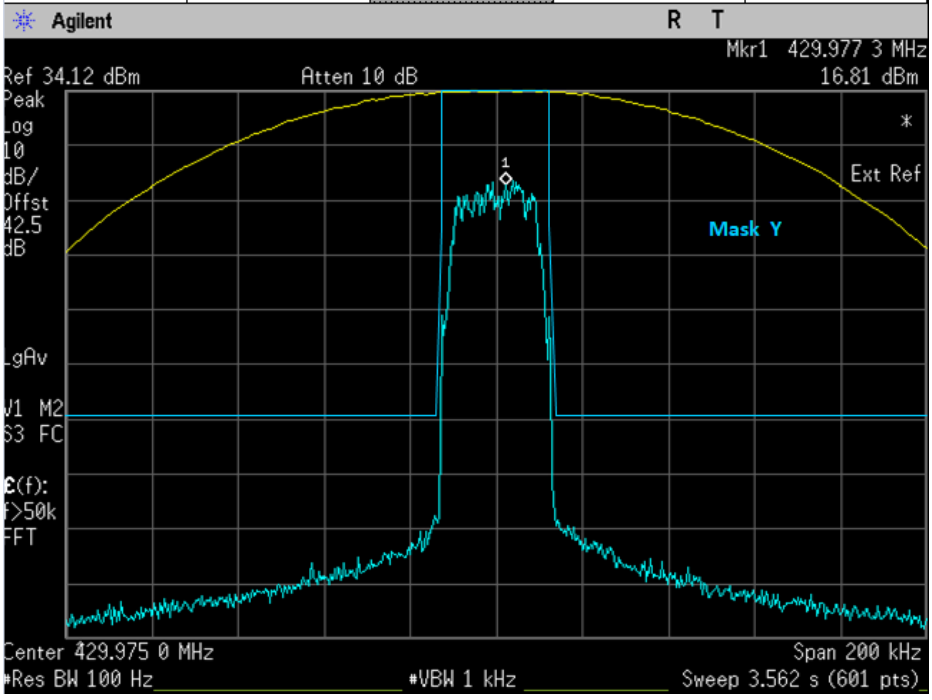
Modulation			Rules Part	
π4 / DQPSK			RSS 119	
Channel Frequency (MHz)	**Channel Spacing (kHz)**		**99% OCB (kHz)**	**Emission Designator**
406.1250	25.0		20.4262	22K0D1W



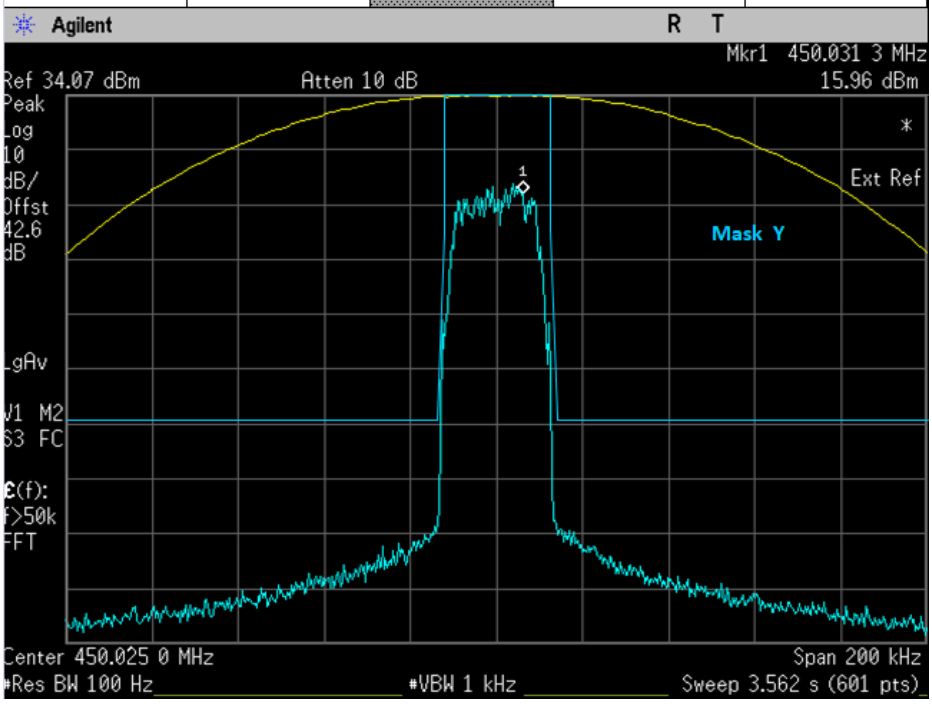
Modulation	Rules Part			
π4 / DQPSK	RSS 119			
Channel Frequency (MHz)	**Channel Spacing (kHz)**		**99% OCB (kHz)**	**Emission Designator**
418.0125	25.0		20.4262	22K0D1W



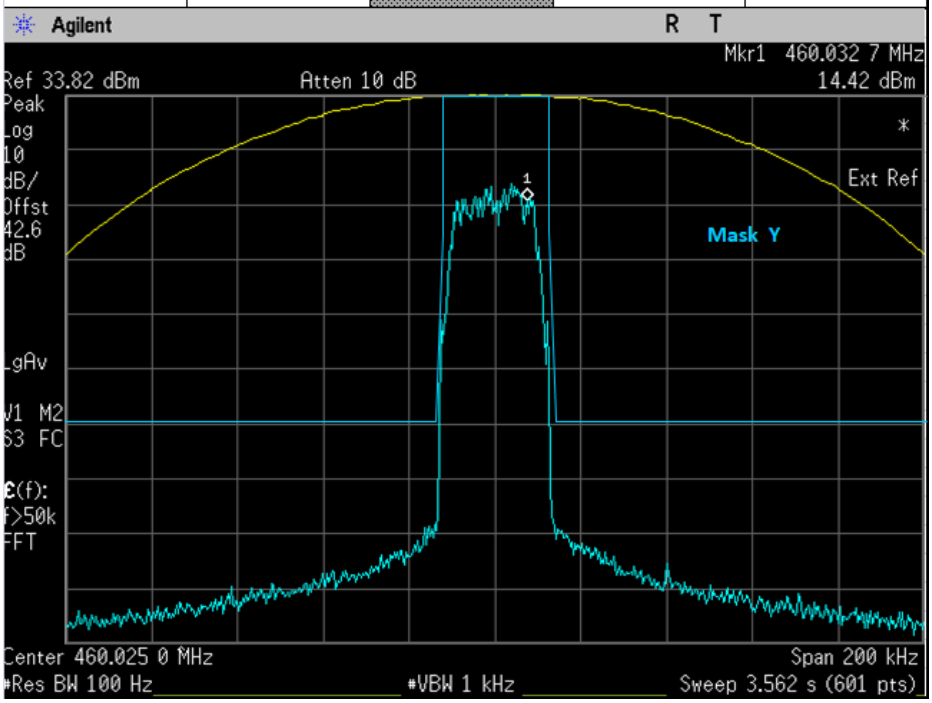
Modulation	Rules Part			
π4 / DQPSK	RSS 119			
Channel Frequency (MHz)	**Channel Spacing (kHz)**		**99% OCB (kHz)**	**Emission Designator**
429.9750	25.0		20.4344	22K0D1W



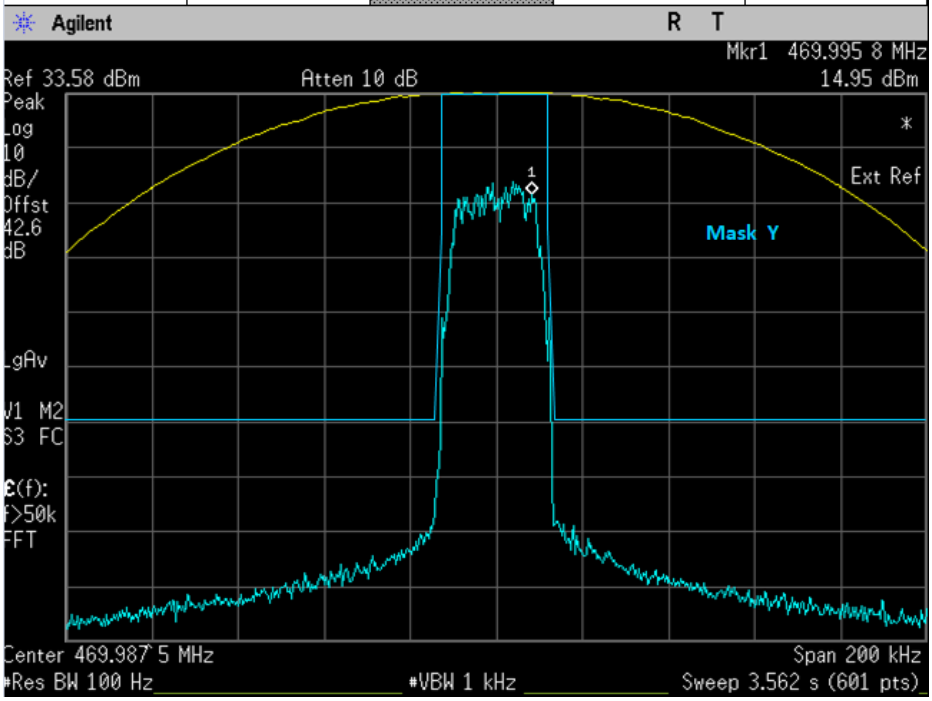
Modulation			Rules Part	
π4 / DQPSK			Part 90 / RSS 119	
Channel Frequency (MHz)	**Channel Spacing (kHz)**		**99% OCB (kHz)**	**Emission Designator**
450.0250	25.0		20.4344	22K0D1W



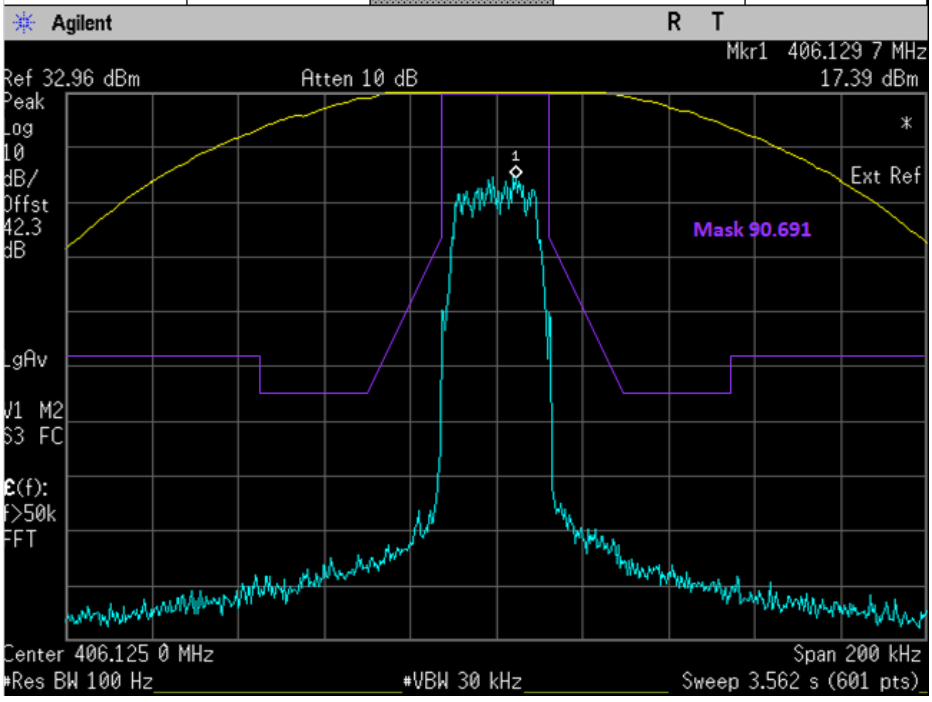
Modulation			Rules Part	
π4 / DQPSK			Part 90 / RSS 119	
Channel Frequency (MHz)	**Channel Spacing (kHz)**		**99% OCB (kHz)**	**Emission Designator**
460.0250	25.0		20.3239	22K0D1W



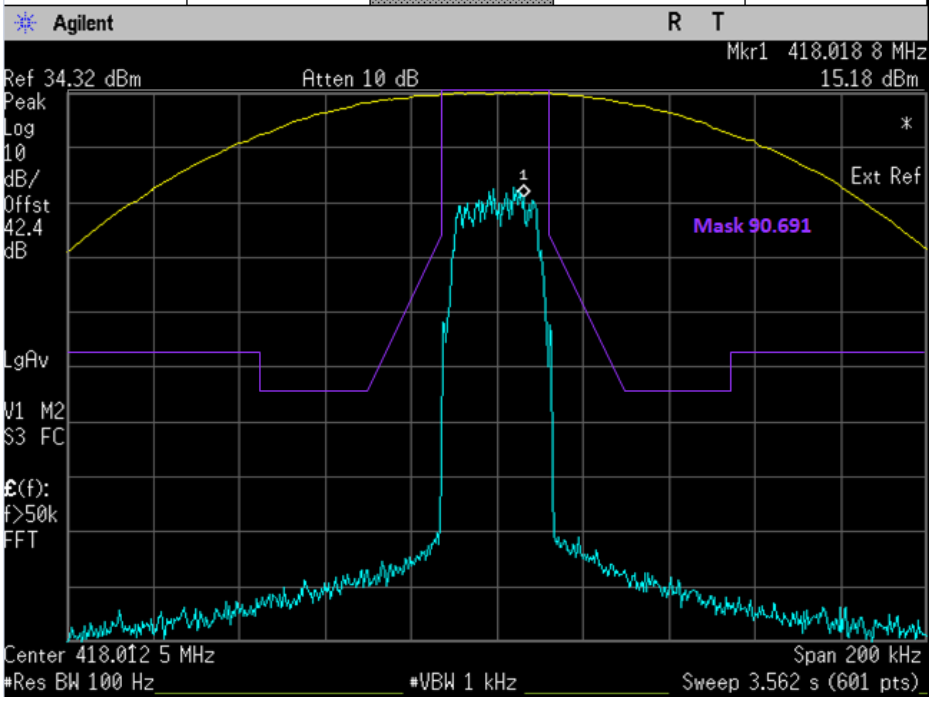
Modulation	Rules Part			
π4 / DQPSK	Part 90 / RSS 119			
Channel Frequency (MHz)	**Channel Spacing (kHz)**		**99% OCB (kHz)**	**Emission Designator**
469.9875	25.0		20.4675	22K0D1W



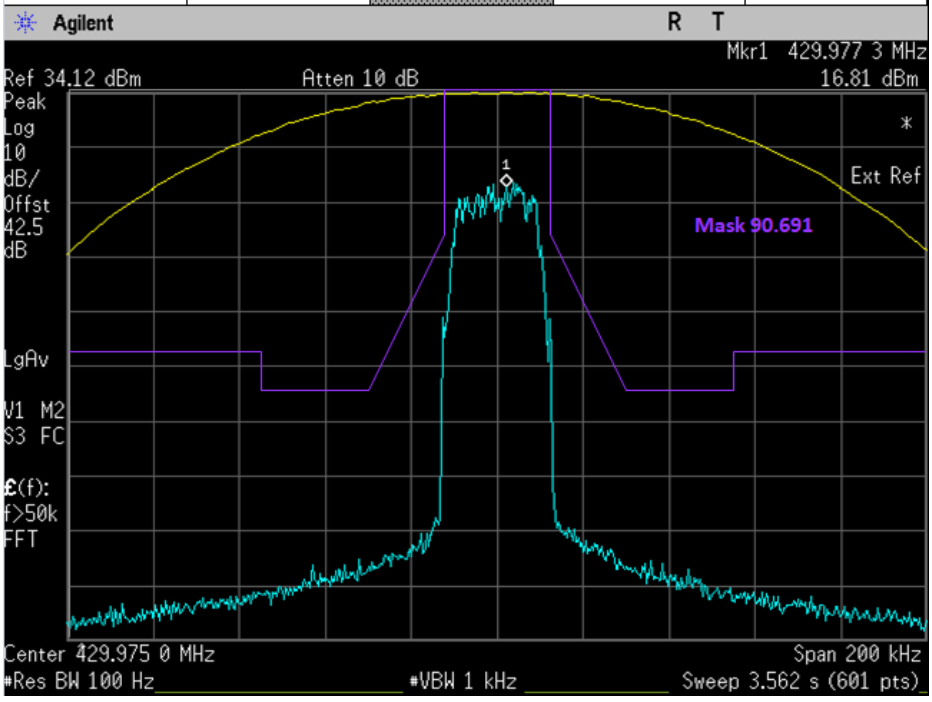
Modulation	Rules Part			
π4 / DQPSK	RSS 119			
Channel Frequency (MHz)	**Channel Spacing (kHz)**		**99% OCB (kHz)**	**Emission Designator**
406.1250	25.0		20.4262	22K0D1W



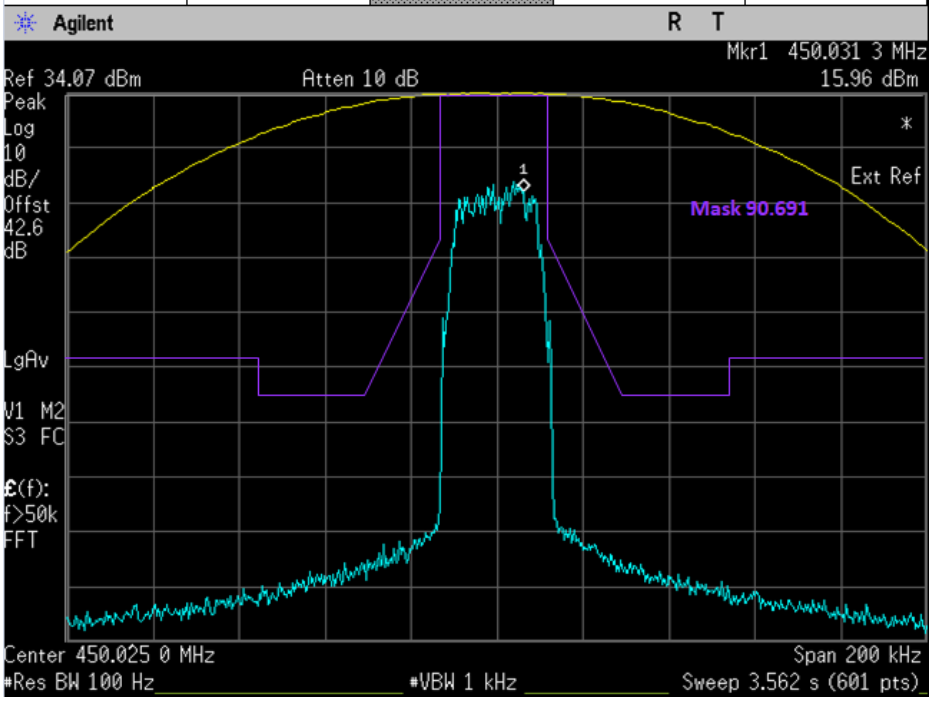
Modulation	Rules Part			
π4 / DQPSK	RSS 119			
Channel Frequency (MHz)	**Channel Spacing (kHz)**		**99% OCB (kHz)**	**Emission Designator**
418.0125	25.0		20.4262	22K0D1W



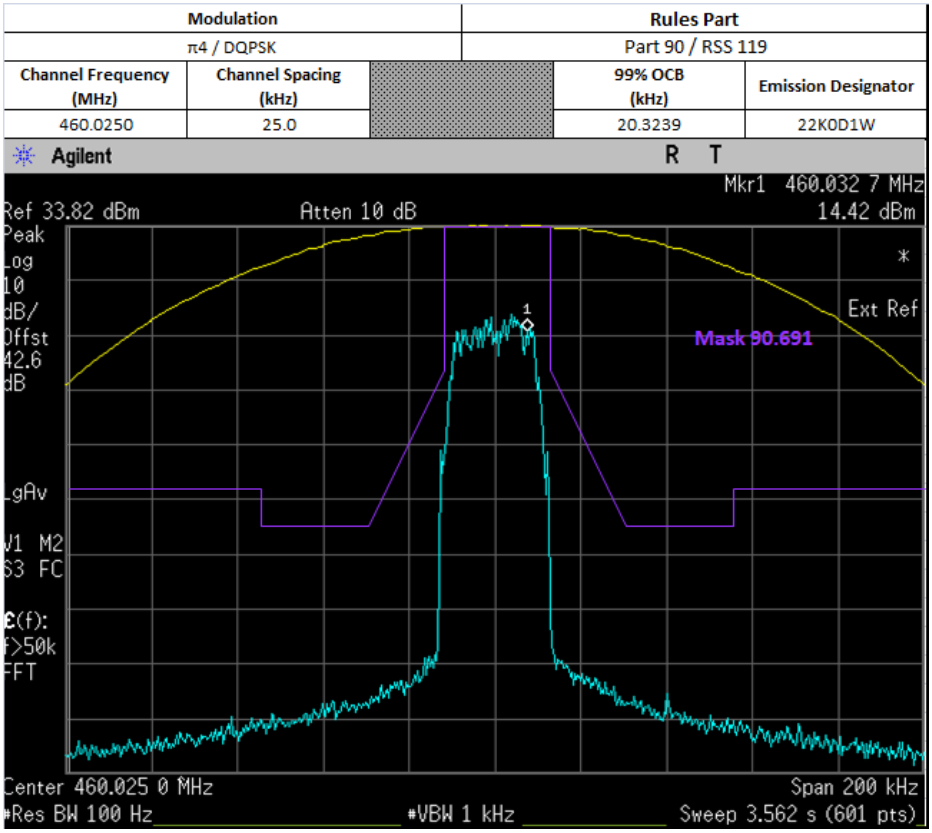
Modulation	Rules Part			
π4 / DQPSK	RSS 119			
Channel Frequency (MHz)	**Channel Spacing (kHz)**		**99% OCB (kHz)**	**Emission Designator**
429.9750	25.0		20.4344	22K0D1W



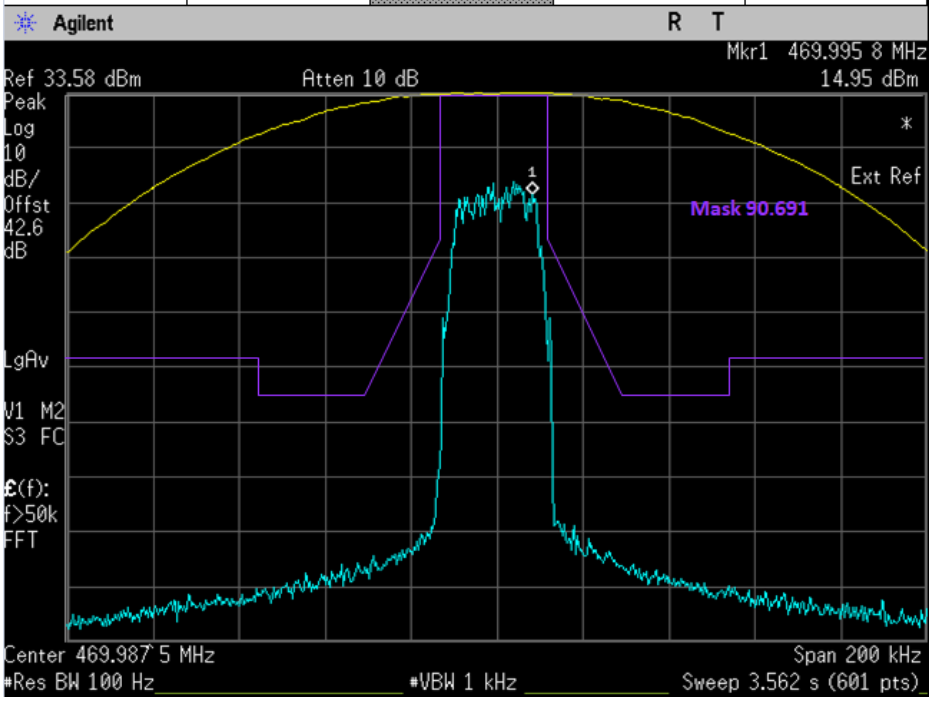
Modulation			Rules Part	
π4 / DQPSK			Part 90 / RSS 119	
Channel Frequency (MHz)	**Channel Spacing (kHz)**		**99% OCB (kHz)**	**Emission Designator**
450.0250	25.0		20.4344	22K0D1W



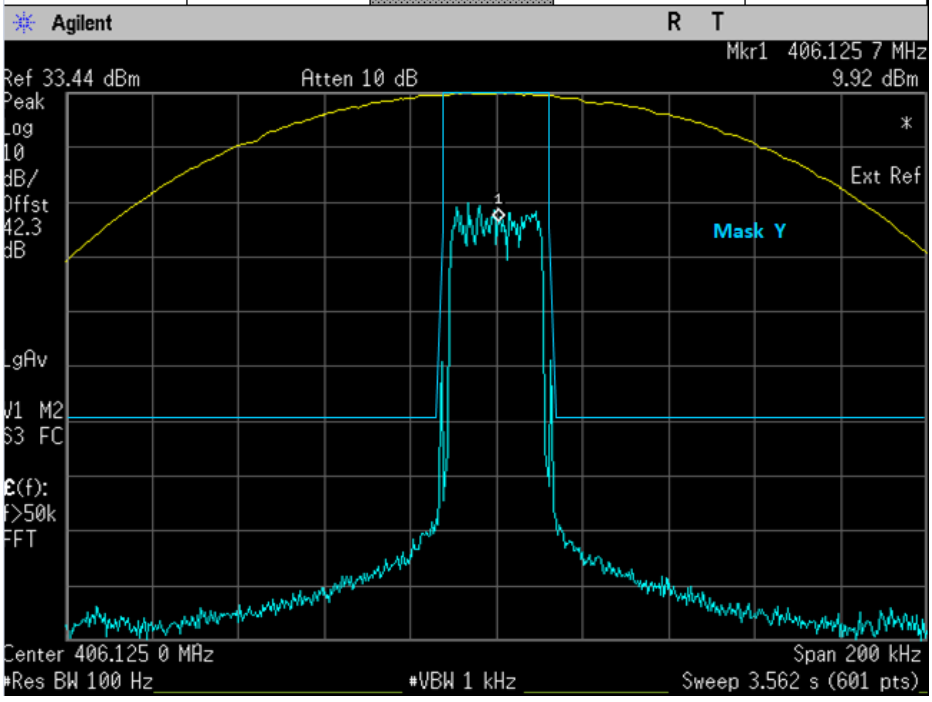
Modulation			Rules Part	
π4 / DQPSK			Part 90 / RSS 119	
Channel Frequency (MHz)	**Channel Spacing (kHz)**		**99% OCB (kHz)**	**Emission Designator**
460.0250	25.0		20.3239	22K0D1W



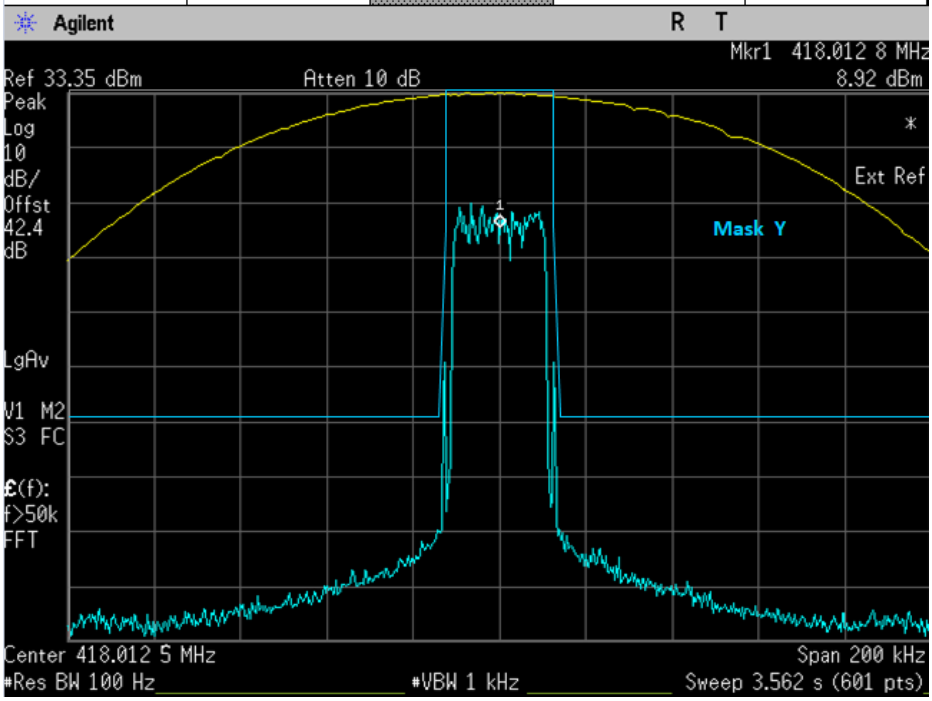
Modulation	Rules Part			
π4 / DQPSK	Part 90 / RSS 119			
Channel Frequency (MHz)	**Channel Spacing (kHz)**		**99% OCB (kHz)**	**Emission Designator**
469.9875	25.0		20.4675	22K0D1W



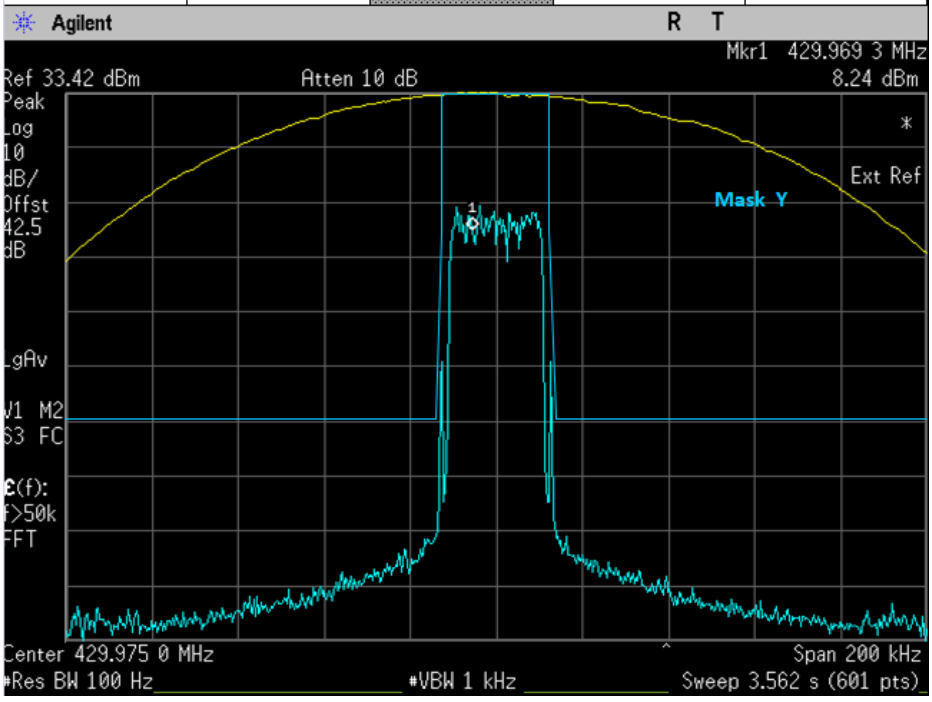
Modulation	Rules Part			
16QAM	RSS 119			
Channel Frequency (MHz)	**Channel Spacing (kHz)**		**99% OCB (kHz)**	**Emission Designator**
406.1250	25.0		21.0691	22K0D1W



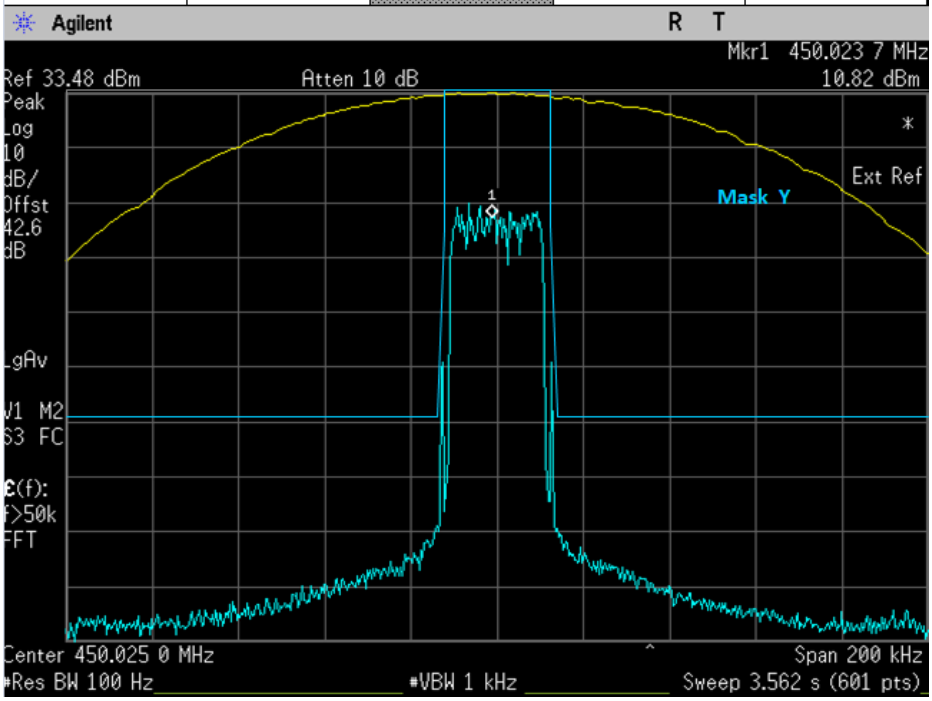
Modulation			Rules Part	
16QAM			RSS 119	
Channel Frequency (MHz)	Channel Spacing (kHz)		99% OCB (kHz)	Emission Designator
418.0125	25.0		21.0406	22K0D1W



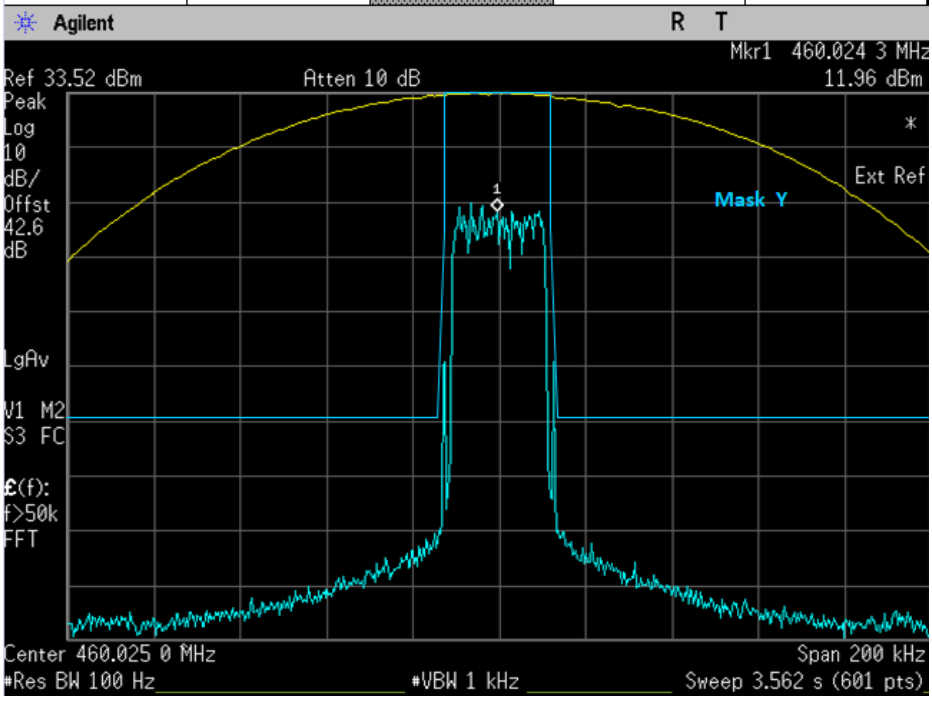
Modulation			Rules Part	
16QAM			RSS 119	
Channel Frequency (MHz)	Channel Spacing (kHz)		99% OCB (kHz)	Emission Designator
429.9750	25.0		21.0588	22K0D1W



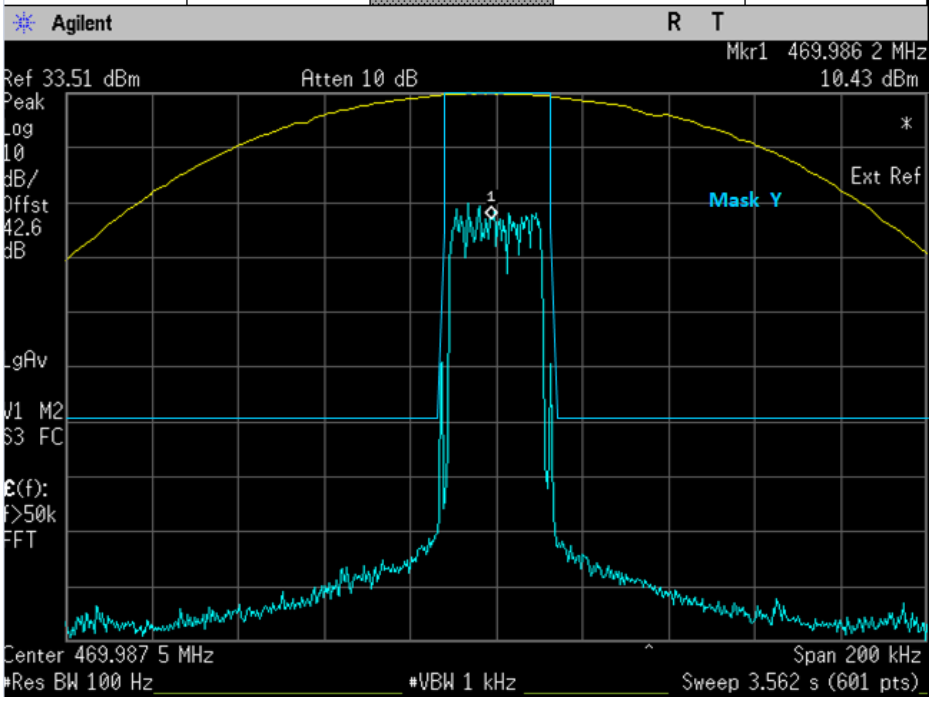
Modulation			Rules Part	
16QAM			Part 90 / RSS 119	
Channel Frequency (MHz)	**Channel Spacing (kHz)**		**99% OCB (kHz)**	**Emission Designator**
450.0250	25.0		21.0407	22K0D1W



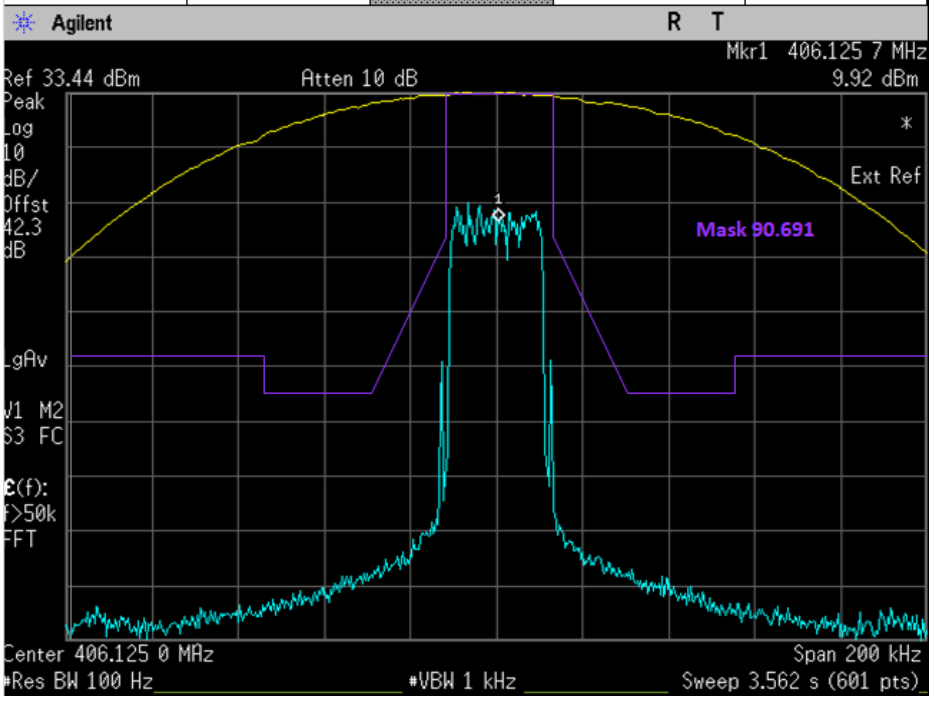
Modulation			Rules Part	
16QAM			Part 90 / RSS 119	
Channel Frequency (MHz)	**Channel Spacing (kHz)**		**99% OCB (kHz)**	**Emission Designator**
460.0250	25.0		21.0474	22K0D1W



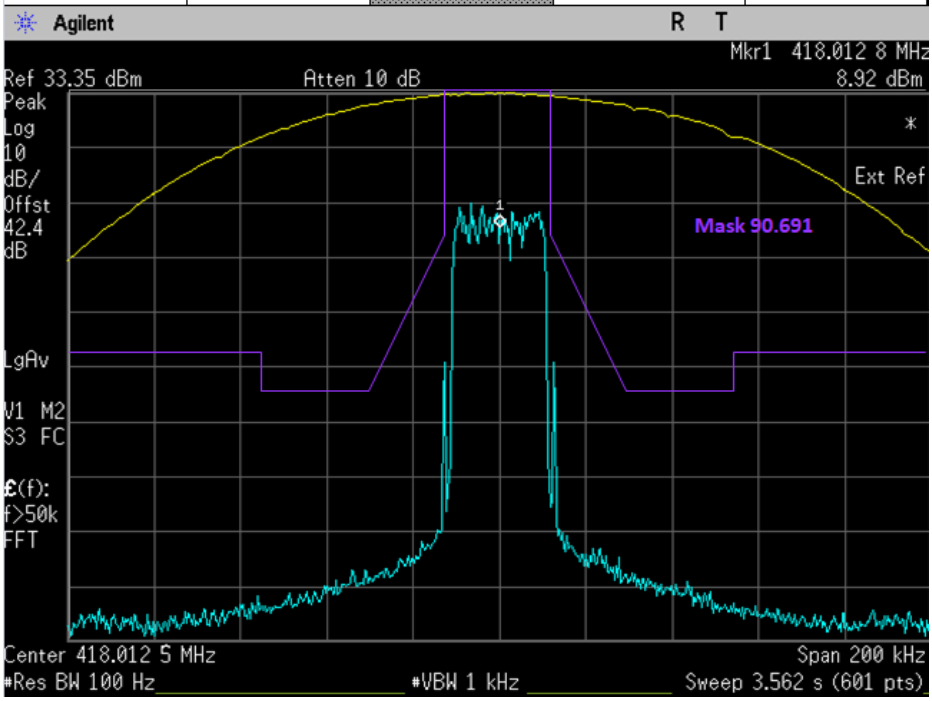
Modulation			Rules Part	
16QAM			Part 90 / RSS 119	
Channel Frequency (MHz)	**Channel Spacing (kHz)**		**99% OCB (kHz)**	**Emission Designator**
469.9875	25.0		21.0360	22K0D1W



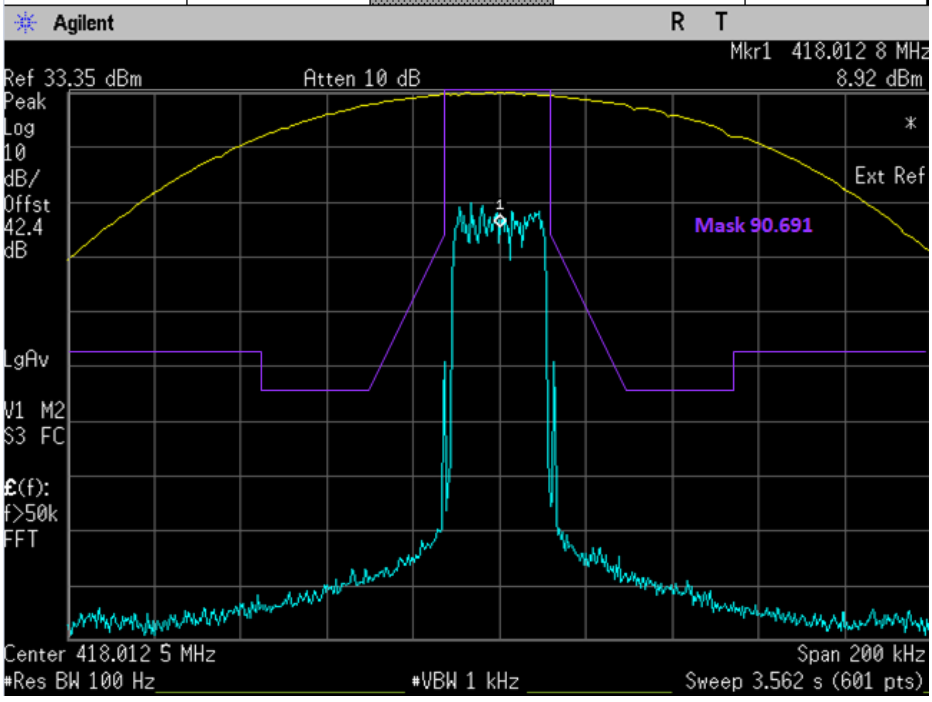
Modulation			Rules Part	
16QAM			RSS 119	
Channel Frequency (MHz)	**Channel Spacing (kHz)**		**99% OCB (kHz)**	**Emission Designator**
406.1250	25.0		21.0691	22K0D1W



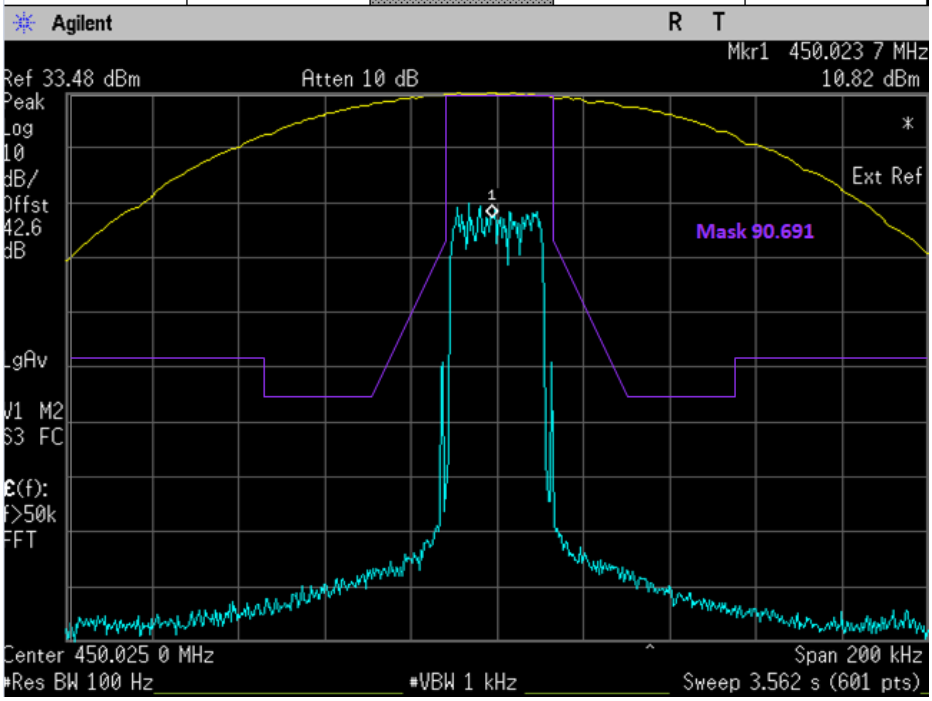
Modulation			Rules Part	
16QAM			RSS 119	
Channel Frequency (MHz)	Channel Spacing (kHz)		99% OCB (kHz)	Emission Designator
418.0125	25.0		21.0406	22K0D1W



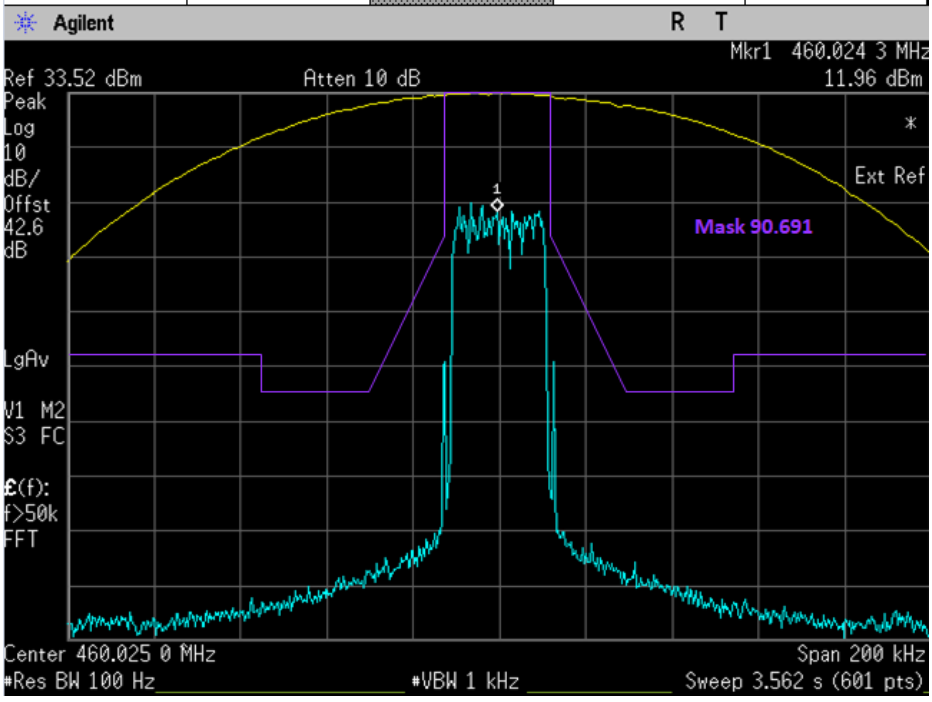
Modulation			Rules Part	
16QAM			RSS 119	
Channel Frequency (MHz)	Channel Spacing (kHz)		99% OCB (kHz)	Emission Designator
418.0125	25.0		21.0406	22K0D1W



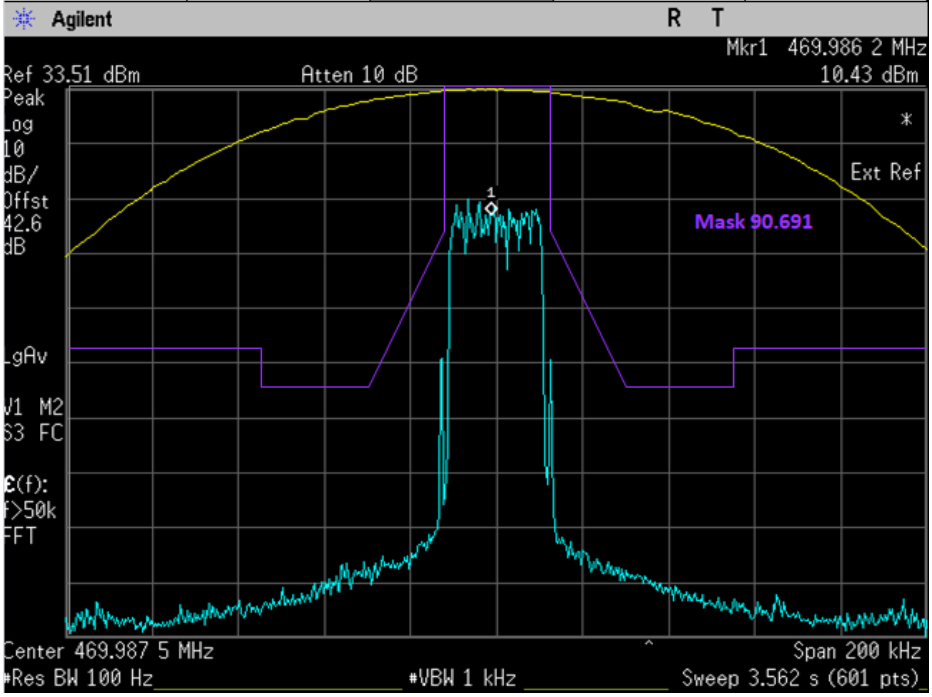
Modulation			Rules Part	
16QAM			Part 90 / RSS 119	
Channel Frequency (MHz)	**Channel Spacing (kHz)**		**99% OCB (kHz)**	**Emission Designator**
450.0250	25.0		21.0407	22K0D1W



Modulation			Rules Part	
16QAM			Part 90 / RSS 119	
Channel Frequency (MHz)	**Channel Spacing (kHz)**		**99% OCB (kHz)**	**Emission Designator**
460.0250	25.0		21.0474	22K0D1W



Modulation			Rules Part	
16QAM			Part 90 / RSS 119	
Channel Frequency (MHz)	Channel Spacing (kHz)		99% OCB (kHz)	Emission Designator
469.9875	25.0		21.0360	22K0D1W



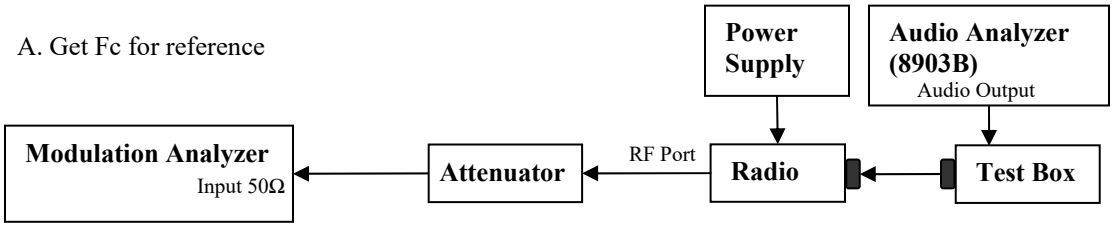
6.6.5. Test Limit

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

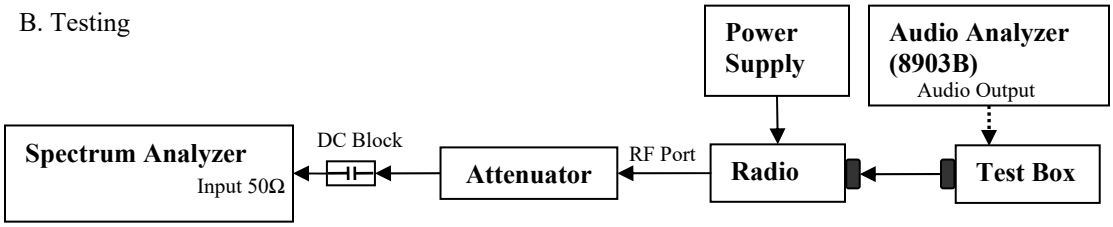
6.7. Band Edge Conducted Spurious Emission (Part 22)

6.7.1. Test Setup (Analog)

A. Get Fc for reference



B. Testing



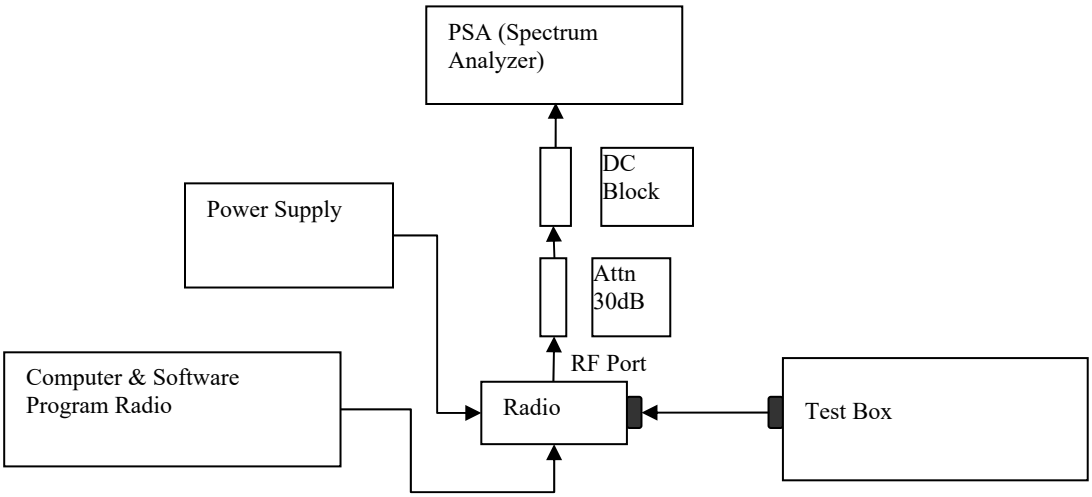
1) The DUT transmitter output port was connected to Modulation Analyzer.
2) Set the audio bandwidth filter to 15 kHz low pass filter and 50 kHz high pass filter.
3) Transmit the radio and set the audio analyzer to 2.5 kHz audio frequency and 50% of the rated deviation. Up the amplitude by 16 dB. Dekey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

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

6.7.2. Test Result (Analog)

Not Applicable.

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)

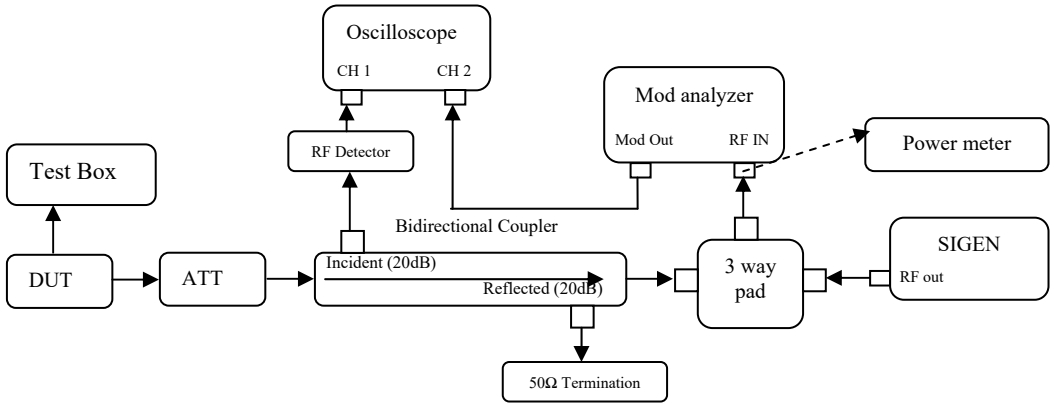
Not Applicable.

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

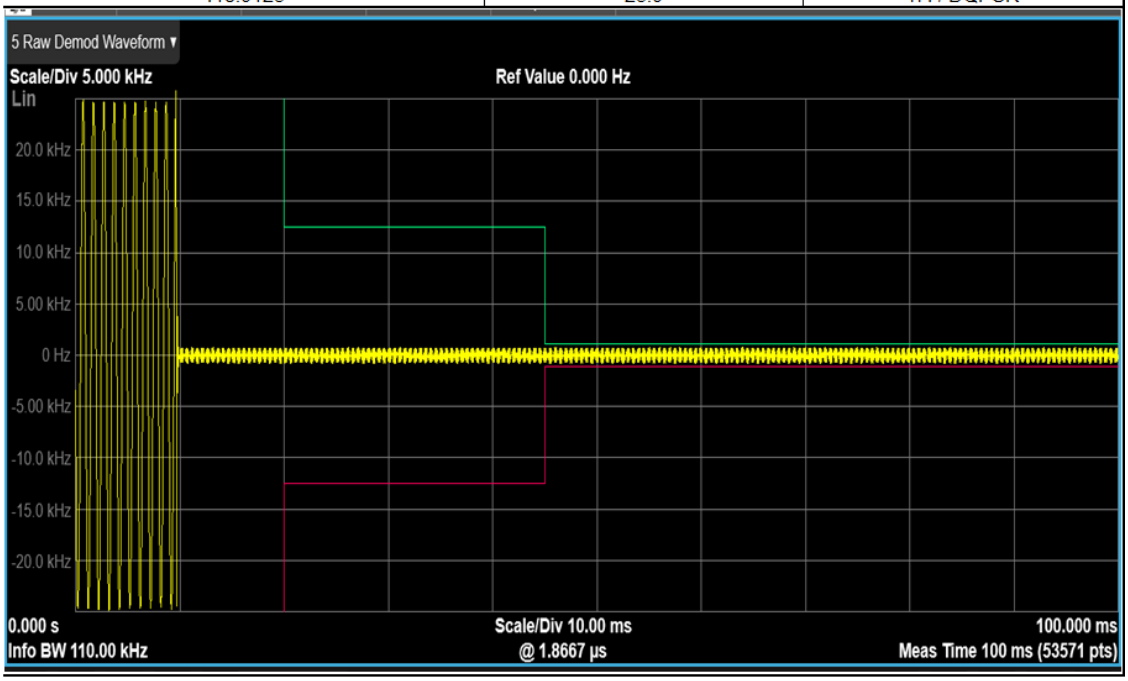
6.8.1. Test Setup



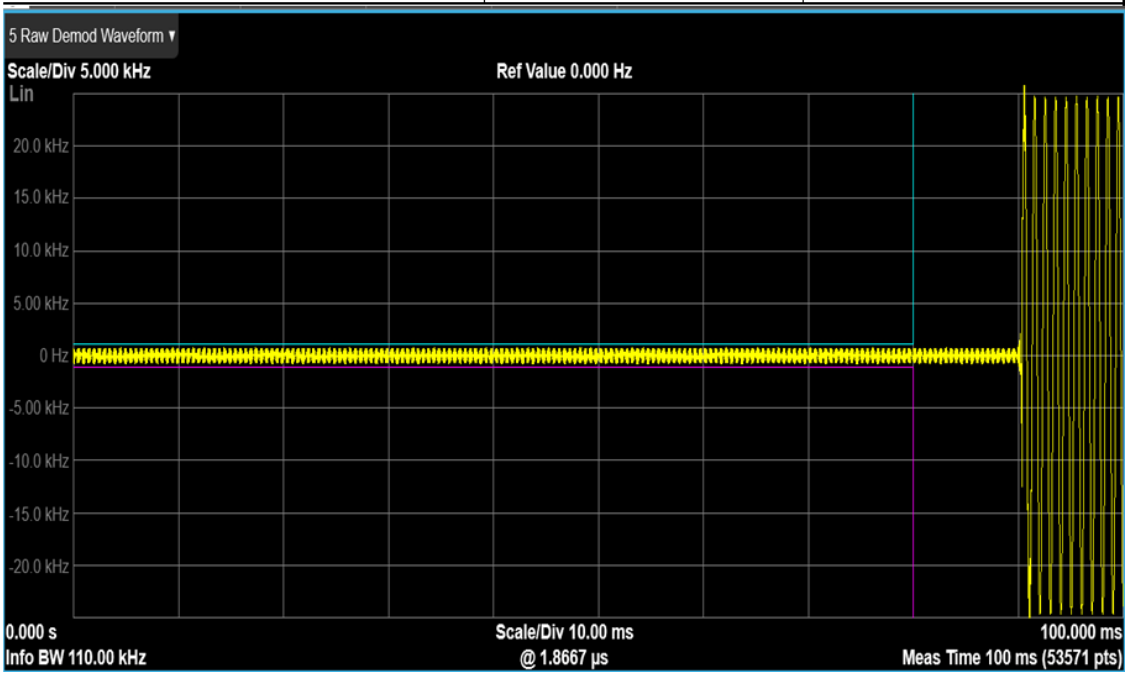
1) Connect the setup as figure above.
2) Path loss for the measurement included.
3) Set on Sigen with the assigned center frequency, internal 1 kHz FM tone.
   FM Deviation: Analog 25kHz Channel Spacing = 25 kHz
   Analog 12.5 kHz Channel Spacing = 12.5 kHz
   C4FM = 12.5 kHz
4) Turn on 50 kHz high pass 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
418.0125	25.0	π4 / DQPSK

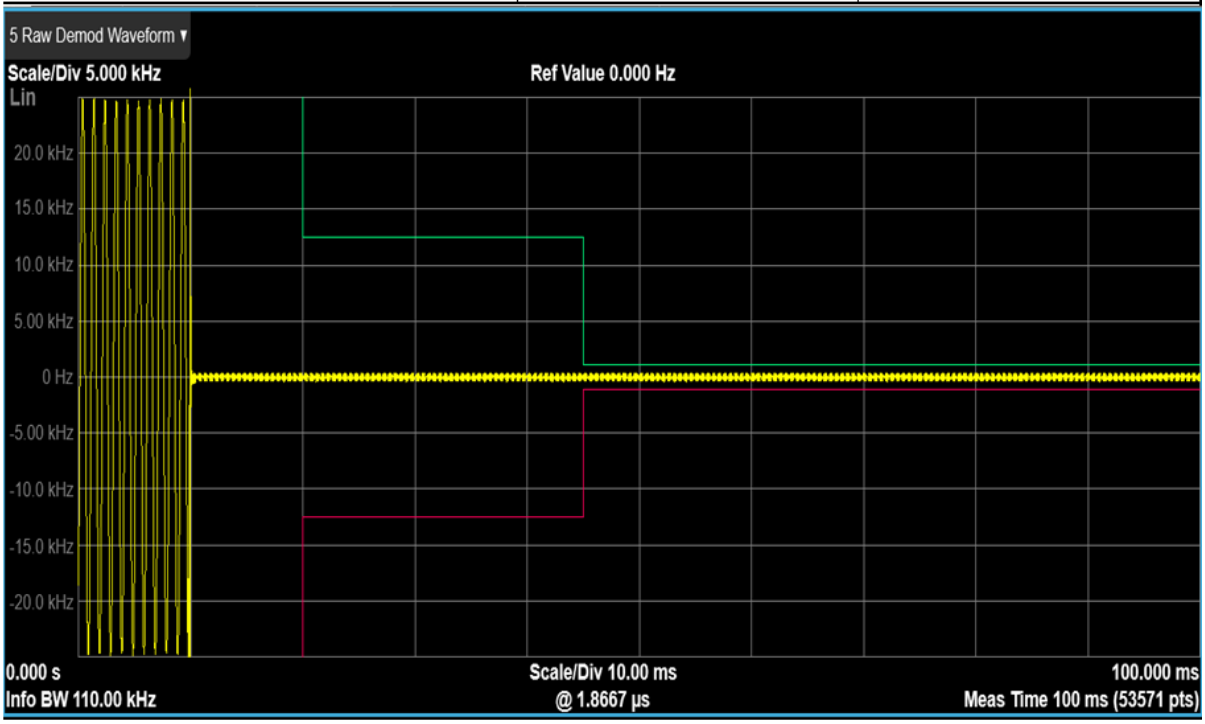


Switch Off Condition t_3 t_{off}		
Channel Frequency (MHz)	Channel Spacing (kHz)	Mode
418.0125	25.0	π4 / DQPSK

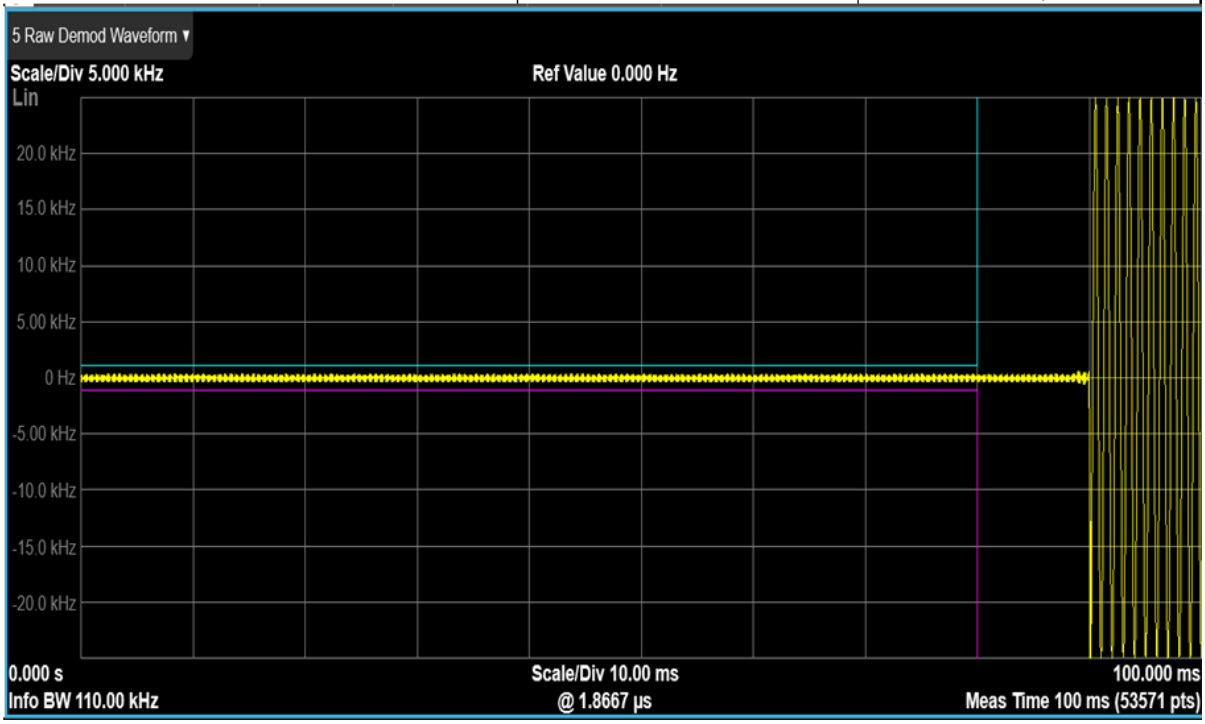


NOT FOR FCC REVIEW

Switch On Condition t_{on}, t_1 and t_2		
Channel Frequency (MHz)	**Channel Spacing (kHz)**	**Mode**
460.0250	25.0	π4 / DQPSK



Switch Off Condition t_3 t_{off}		
Channel Frequency (MHz)	**Channel Spacing (kHz)**	**Mode**
460.0250	25.0	π4 / DQPSK



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.

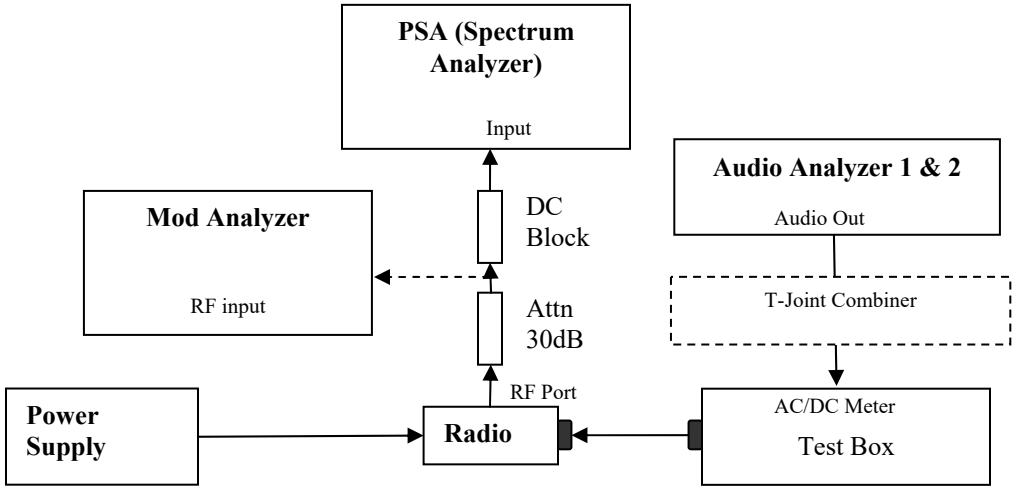
[2] During the time from the end of t_2 to the beginning of t_3, the frequency difference must not exceed the limits specified in §90.213.

[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)

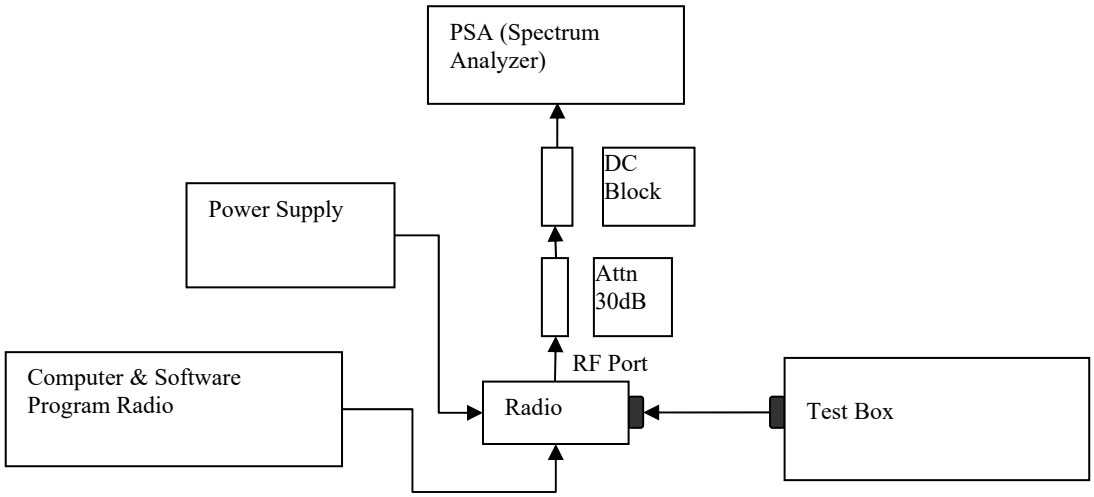


1) The DUT transmitter output port was connected to modulation analyzer.
2) Transmit the radio and turn on 1st audio analyzer with audio frequency 650Hz, 50% rated deviation, and record the amplitude value as AmpT1.
3) Turn off Audio analyzer 1 and turn on audio analyzer 2, set the audio frequency to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

Mode	π4 / DQPSK			
Frequency, MHz	406.125			
Channel Spacing, kHz	25			
Offset (kHz)	Meas BW (kHz)	Lower	Upper	Spec (dB)
25.000	18	-71.710	-70.710	-55
50.000	18	-73.280	-71.310	-65
75.000	18	-73.830	-72.400	-65

Mode	π4 / DQPSK			
Frequency, MHz	418.0125			
Channel Spacing, kHz	25			
Offset (kHz)	Meas BW (kHz)	Lower	Upper	Spec (dB)
25.000	18	-80.450	-78.420	-55
50.000	18	-84.600	-85.050	-65
75.000	18	-87.240	-87.790	-65

Mode	π4 / DQPSK			
Frequency, MHz	429.975			
Channel Spacing, kHz	25			
Offset (kHz)	Meas BW (kHz)	Lower	Upper	Spec (dB)
25.000	18	-79.910	-79.700	-55
50.000	18	-84.590	-84.570	-65
75.000	18	-88.310	-87.820	-65

Mode	π4 / DQPSK			
Frequency, MHz	450.025			
Channel Spacing, kHz	25			
Offset (kHz)	Meas BW (kHz)	Lower	Upper	Spec (dB)
25.000	18	-80.620	-79.310	-55
50.000	18	-84.110	-84.520	-65
75.000	18	-88.200	-88.800	-65

Mode	**π4 / DQPSK**			
Frequency, MHz	**460.025**			
Channel Spacing, kHz	**25**			
Offset (kHz)	**Meas BW (kHz)**	Lower	Upper	**Spec (dB)**
25.000	18	-80.490	-79.390	-55
50.000	18	-84.760	-84.800	-65
75.000	18	-87.910	-87.830	-65

Mode	**π4 / DQPSK**			
Frequency, MHz	**469.9875**			
Channel Spacing, kHz	**25**			
Offset (kHz)	**Meas BW (kHz)**	Lower	Upper	**Spec (dB)**
25.000	18	-79.960	-79.370	-55
50.000	18	-85.250	-84.900	-65
75.000	18	-88.030	-88.680	-65

Mode	16QAM			
Frequency, MHz	406.125			
Channel Spacing, kHz	25			
Offset (kHz)	Meas BW (kHz)	Lower	Upper	Spec (dB)
25.000	18	-80.370	-80.190	-55
50.000	18	-88.520	-88.690	-65
75.000	18	-91.250	-91.280	-65

Mode	16QAM			
Frequency, MHz	418.0125			
Channel Spacing, kHz	25			
Offset (kHz)	Meas BW (kHz)	Lower	Upper	Spec (dB)
25.000	18	-82.040	-81.500	-55
50.000	18	-88.720	-87.450	-65
75.000	18	-91.360	-91.140	-65

Mode	16QAM			
Frequency, MHz	429.975			
Channel Spacing, kHz	25			
Offset (kHz)	Meas BW (kHz)	Lower	Upper	Spec (dB)
25.000	18	-82.270	-82.700	-55
50.000	18	-88.050	-89.300	-65
75.000	18	-91.240	-91.270	-65

Mode	16QAM			
Frequency, MHz	450.025			
Channel Spacing, kHz	25			
Offset (kHz)	Meas BW (kHz)	Lower	Upper	Spec (dB)
25.000	18	-82.940	-82.160	-55
50.000	18	-88.390	-87.730	-65
75.000	18	-91.430	-91.230	-65

Mode	**16QAM**			
Frequency, MHz	**460.025**			
Channel Spacing, kHz	**25**			
Offset (kHz)	**Meas BW (kHz)**	Lower	Upper	**Spec (dB)**
25.000	18	-82.260	-81.910	-55
50.000	18	-87.740	-87.820	-65
75.000	18	-91.250	-91.060	-65

Mode	**16QAM**			
Frequency, MHz	**469.9875**			
Channel Spacing, kHz	**25**			
Offset (kHz)	**Meas BW (kHz)**	Lower	Upper	**Spec (dB)**
25.000	18	-82.500	-82.660	-55
50.000	18	-87.920	-88.230	-65
75.000	18	-91.130	-91.120	-65

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

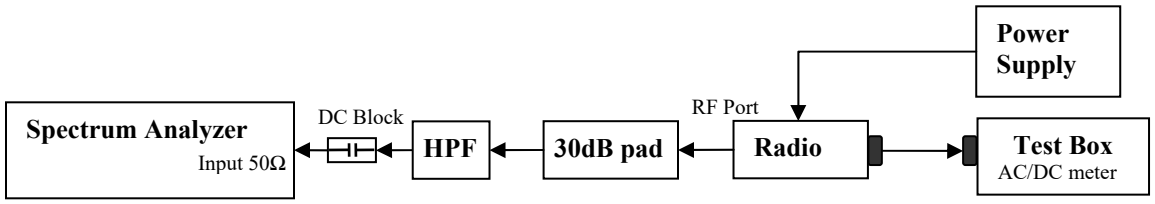
Offset from center frequency (kHz)	Measurement bandwidth (kHz)	Maximum ACP (dBc)
9.375	6.25	−40
15.625	6.25	−60
21.875	6.25	−60
37.5	25	−60
62.5	25	−65
87.5	25	−65
150	100	−65
250	100	−65
350.00	100	−65
>400 kHz to 12 MHz	30 (s)	−80
12 MHz to paired receive band	30 (s)	−80
In the paired receive band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



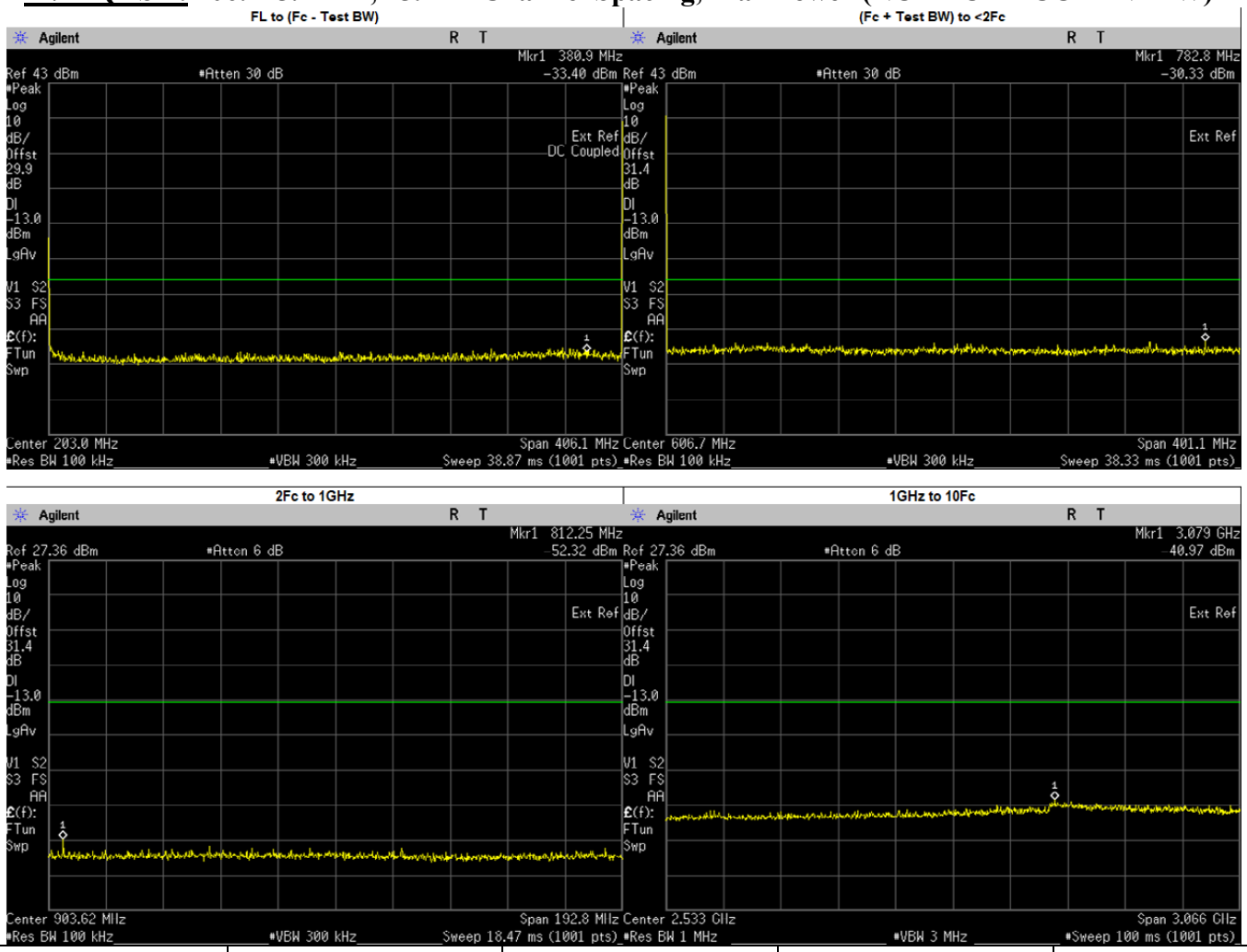
1) The DUT transmitter output port was connected to Spectrum Analyzer with above setup.
2) Program and set radio to operate in desire test frequency and mode. (Analog / digital modulation form).
3) Path loss for the measurement included.
4) Set the PSA Resolution Bandwidth as per rules part.
5) Set the 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)

Not Applicable.

6.10.3. Test Result (Digital)

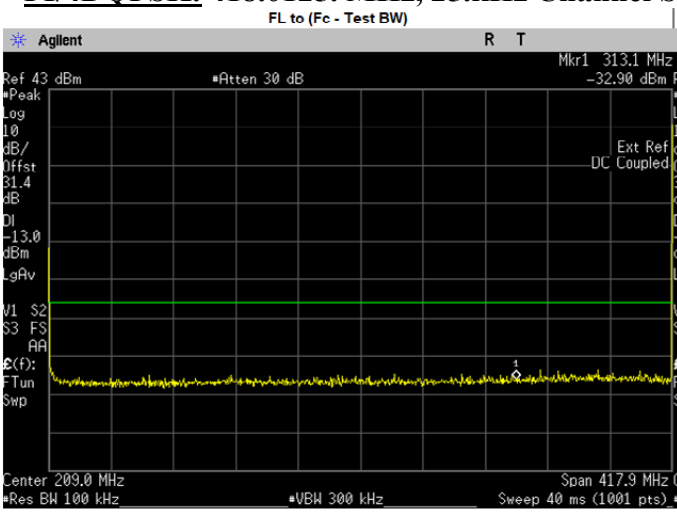
PI/4DQPSK: 406.125. MHz, 25.kHz Channel Spacing, Max Power (NOT FOR FCC REVIEW)



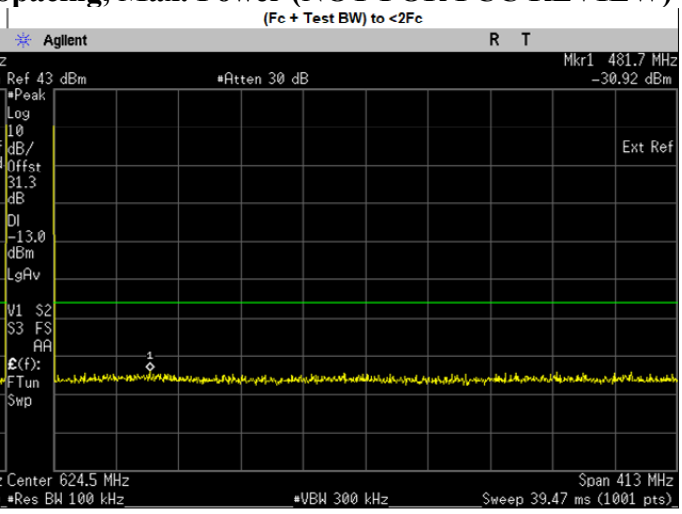
Frequency Range	Highest Spur Frequency (MHz)	Spurious Level (dBm)	Failing Limit (dBm)	Results
FL to (Fc - Test BW)	380.9000	-33.3960	-13.00	PASS
(Fc + Test BW) to <2Fc	782.7848	-30.3400	-13.00	PASS
2Fc to 1GHz	812.2500	-52.3200	-13.00	PASS
1GHz to 10Fc	3078.9180	-40.9700	-13.00	PASS
	1218.3750	-45.9565	-13.00	PASS
	1624.5000	-46.4610	-13.00	PASS
	2030.6250	-46.2028	-13.00	PASS
	2436.7500	-45.2662	-13.00	PASS
	2842.8750	-44.0149	-13.00	PASS
	3249.0000	-43.1914	-13.00	PASS
	3655.1250	-44.0794	-13.00	PASS
	4061.2500	-44.1371	-13.00	PASS

PI/4DQPSK: 418.0125. MHz, 25.kHz Channel Spacing, Max. Power (NOT FOR FCC REVIEW)

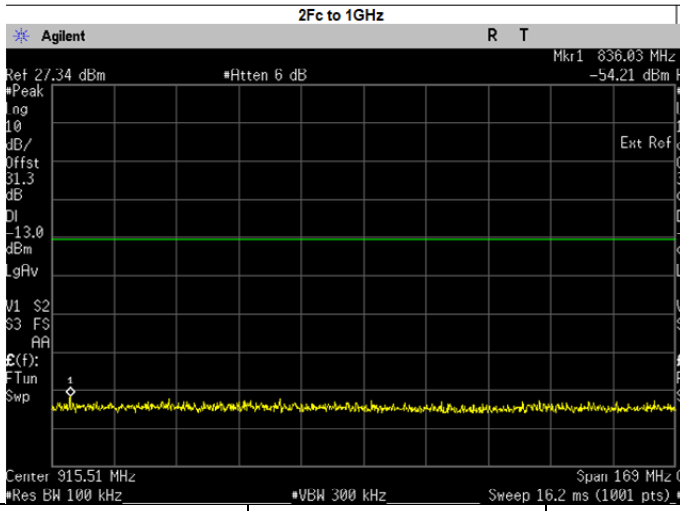
FL to (Fc - Test BW)



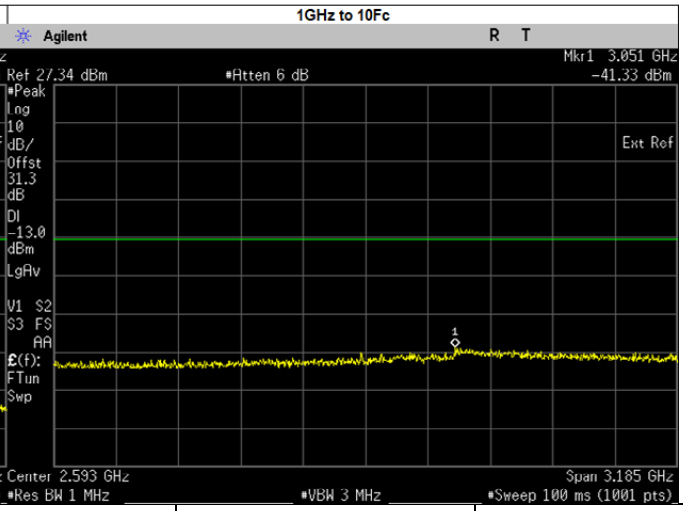
(Fc + Test BW) to <2Fc



2Fc to 1GHz



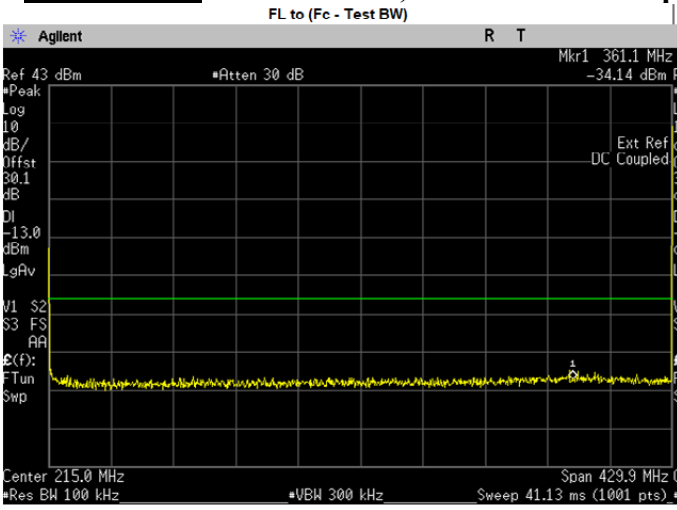
1GHz to 10Fc



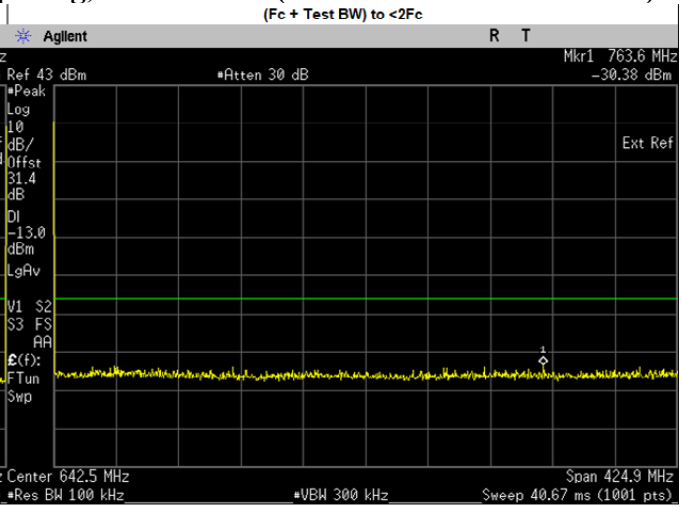
Frequency Range	Highest Spur Frequency (MHz)	Spurious Level (dBm)	Failing Limit (dBm)	Results
FL to (Fc - Test BW)	313.1000	-32.8990	-13.00	PASS
(Fc + Test BW) to <2Fc	481.6635	-30.9200	-13.00	PASS
2Fc to 1GHz	836.0250	-54.2100	-13.00	PASS
1GHz to 10Fc	3051.2200	-41.3300	-13.00	PASS
	1254.0370	-46.0464	-13.00	PASS
	1672.0500	-45.4032	-13.00	PASS
	2090.0620	-45.2970	-13.00	PASS
	2508.0750	-45.2768	-13.00	PASS
	2926.0880	-43.9832	-13.00	PASS
	3344.1000	-43.8583	-13.00	PASS
	3762.1130	-43.3308	-13.00	PASS
	4180.1250	-43.9257	-13.00	PASS

PI/4DQPSK: 429.975. MHz, 25.kHz Channel Spacing, Max. Power (NOT FOR FCC REVIEW)

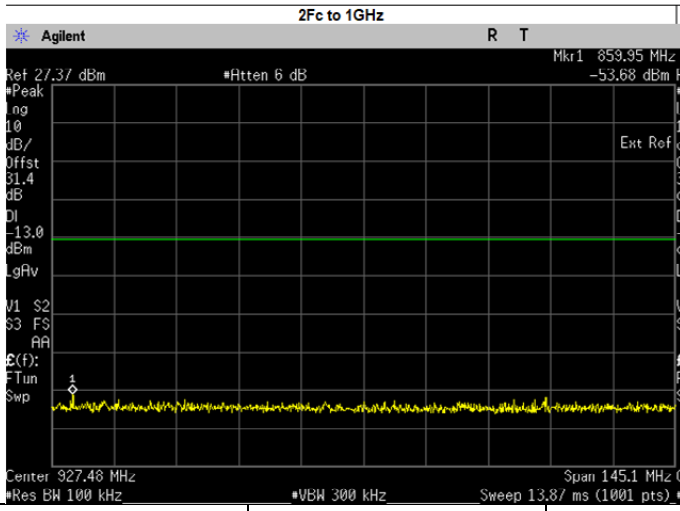
FL to (Fc - Test BW)



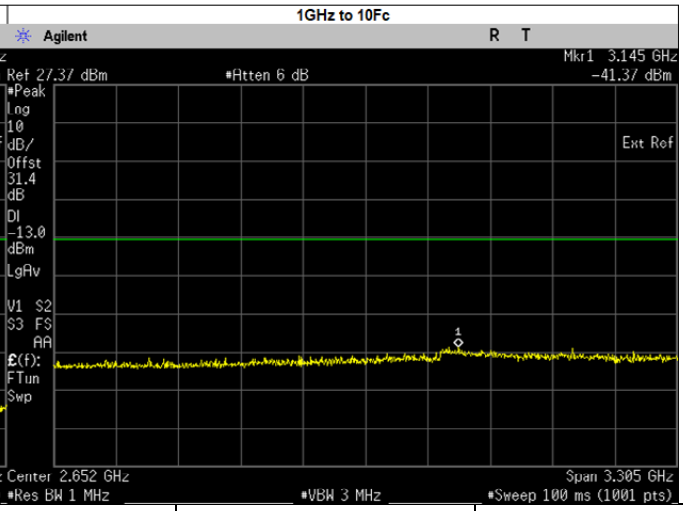
(Fc + Test BW) to <2Fc



2Fc to 1GHz

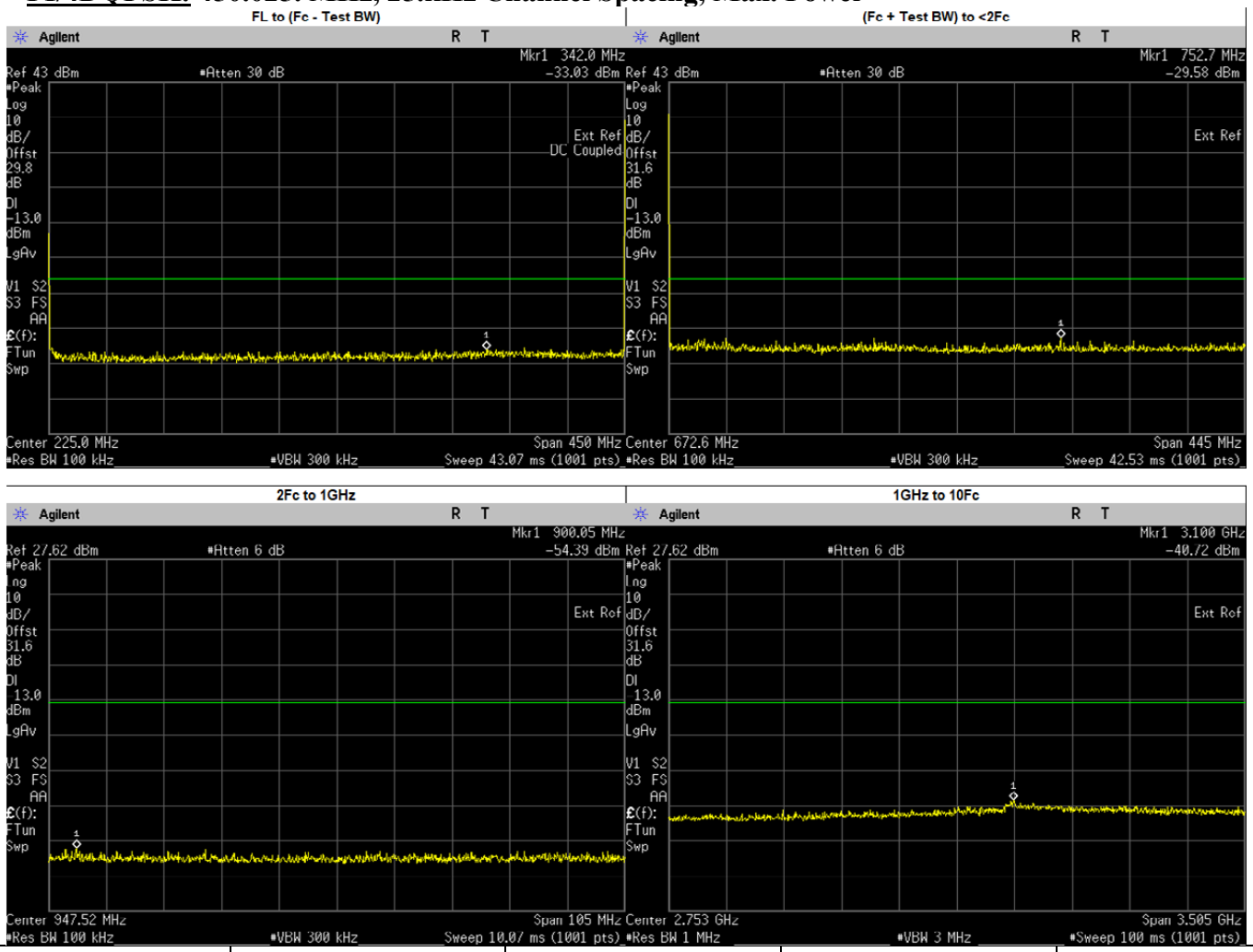


1GHz to 10Fc



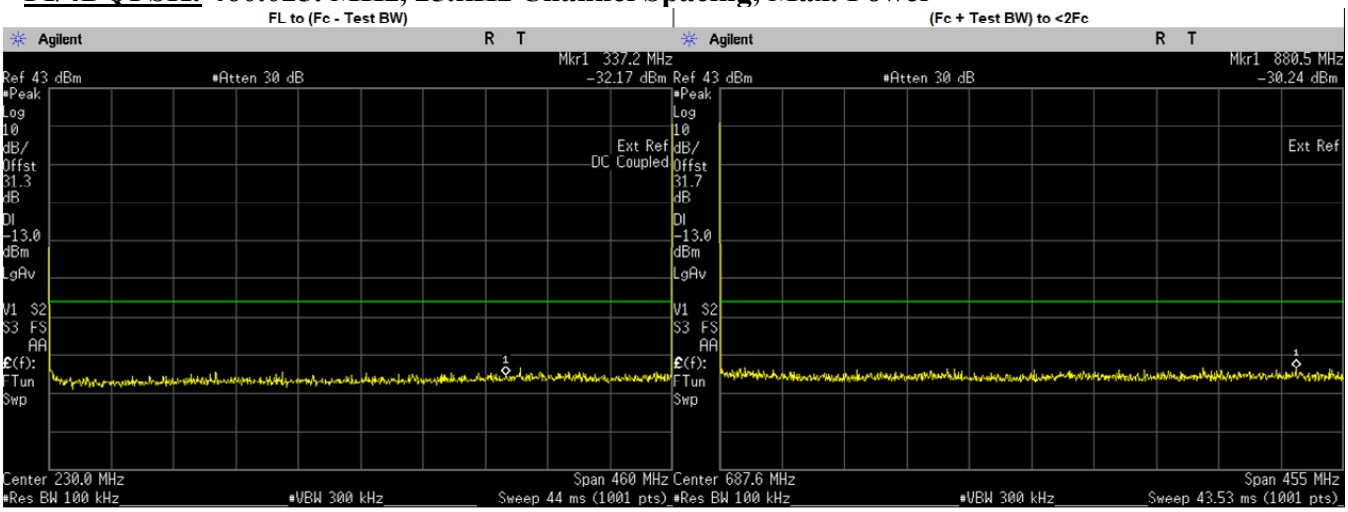
Frequency Range	Highest Spur Frequency (MHz)	Spurious Level (dBm)	Failing Limit (dBm)	Results
FL to (Fc - Test BW)	361.1000	-34.1420	-13.00	PASS
(Fc + Test BW) to <2Fc	763.5923	-30.3800	-13.00	PASS
2Fc to 1GHz	859.9500	-53.6800	-13.00	PASS
1GHz to 10Fc	3144.7830	-41.3700	-13.00	PASS
	1289.9250	-46.4613	-13.00	PASS
	1719.9000	-45.7887	-13.00	PASS
	2149.8750	-45.1125	-13.00	PASS
	2579.8500	-45.0297	-13.00	PASS
	3009.8250	-44.2935	-13.00	PASS
	3439.8000	-43.6962	-13.00	PASS
	3869.7750	-43.5502	-13.00	PASS
	4299.7500	-43.6874	-13.00	PASS

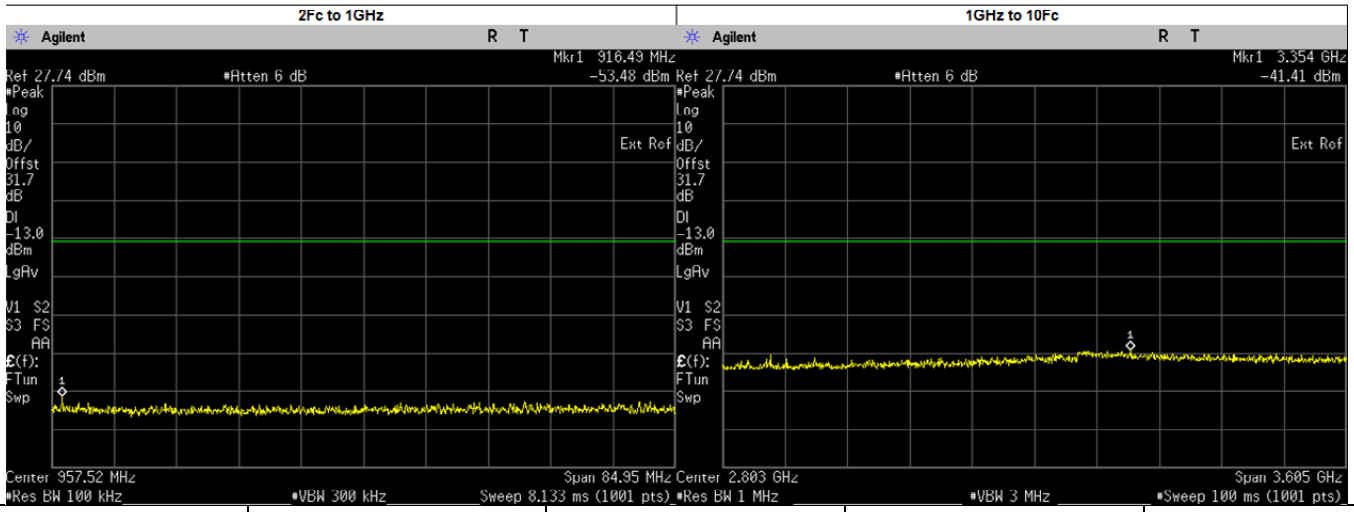
PI/4DQPSK: 450.025. MHz, 25.kHz Channel Spacing, Max. Power



Frequency Range	Highest Spur Frequency (MHz)	Spurious Level (dBm)	Failing Limit (dBm)	Results
FL to (Fc - Test BW)	342.0000	-33.0320	-13.00	PASS
(Fc + Test BW) to <2Fc	752.6602	-29.5700	-13.00	PASS
2Fc to 1GHz	900.0500	-54.6151	-13.00	PASS
1GHz to 10Fc	3099.6450	-40.7200	-13.00	PASS
	1350.0750	-45.8935	-13.00	PASS
	1800.1000	-45.2834	-13.00	PASS
	2250.1250	-45.3074	-13.00	PASS
	2700.1500	-44.6328	-13.00	PASS
	3150.1750	-42.5797	-13.00	PASS
	3600.2000	-43.4986	-13.00	PASS
	4050.2250	-44.4834	-13.00	PASS
	4500.2500	-44.6401	-13.00	PASS

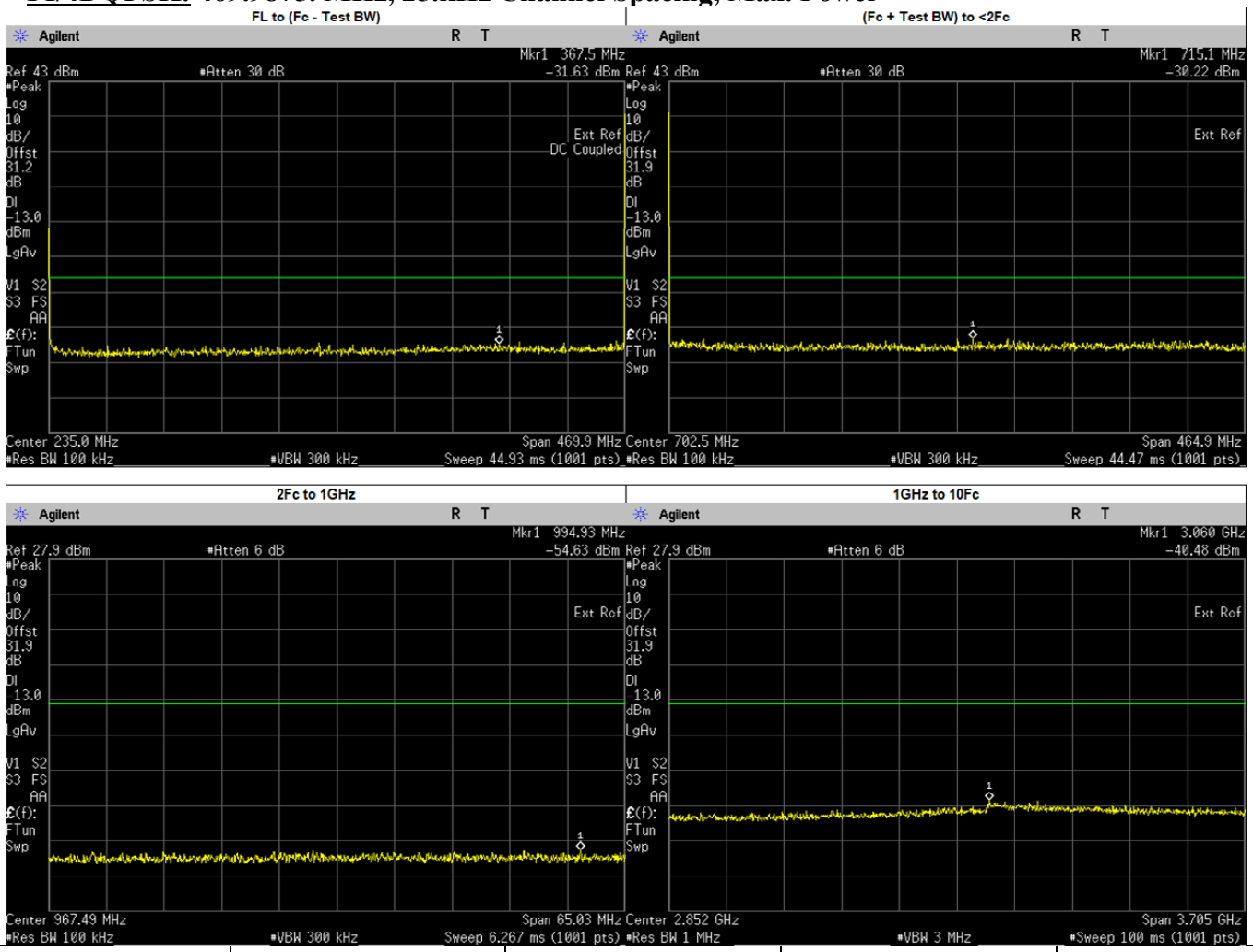
PI/4DQPSK: 460.025. MHz, 25.kHz Channel Spacing, Max. Power





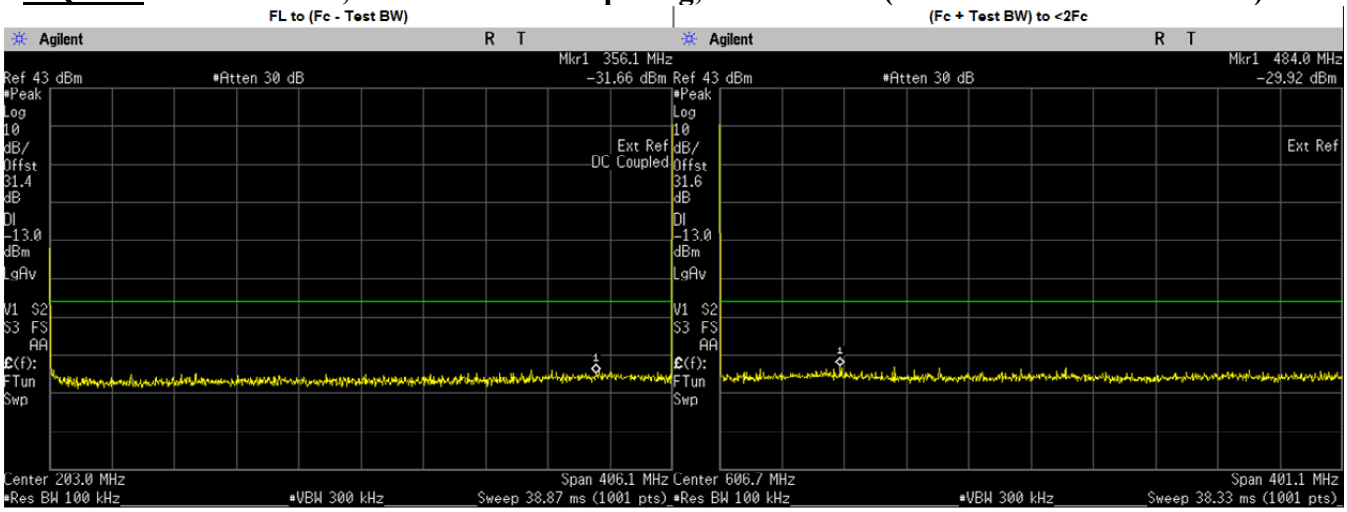
Frequency Range	Highest Spur Frequency (MHz)	Spurious Level (dBm)	Failing Limit (dBm)	Results
FL to (Fc - Test BW)	337.2000	-32.1660	-13.00	PASS
(Fc + Test BW) to <2Fc	880.4724	-30.2400	-13.00	PASS
2Fc to 1GHz	916.4941	-53.4800	-13.00	PASS
	920.0500	-55.3393	-13.00	PASS
1GHz to 10Fc	3354.2280	-41.4100	-13.00	PASS
	1380.0750	-45.9326	-13.00	PASS
	1840.1000	-45.2045	-13.00	PASS
	2300.1250	-45.0239	-13.00	PASS
	2760.1500	-43.5971	-13.00	PASS
	3220.1750	-42.1262	-13.00	PASS
	3680.2000	-42.7550	-13.00	PASS
	4140.2250	-43.6101	-13.00	PASS
	4600.2500	-44.1512	-13.00	PASS

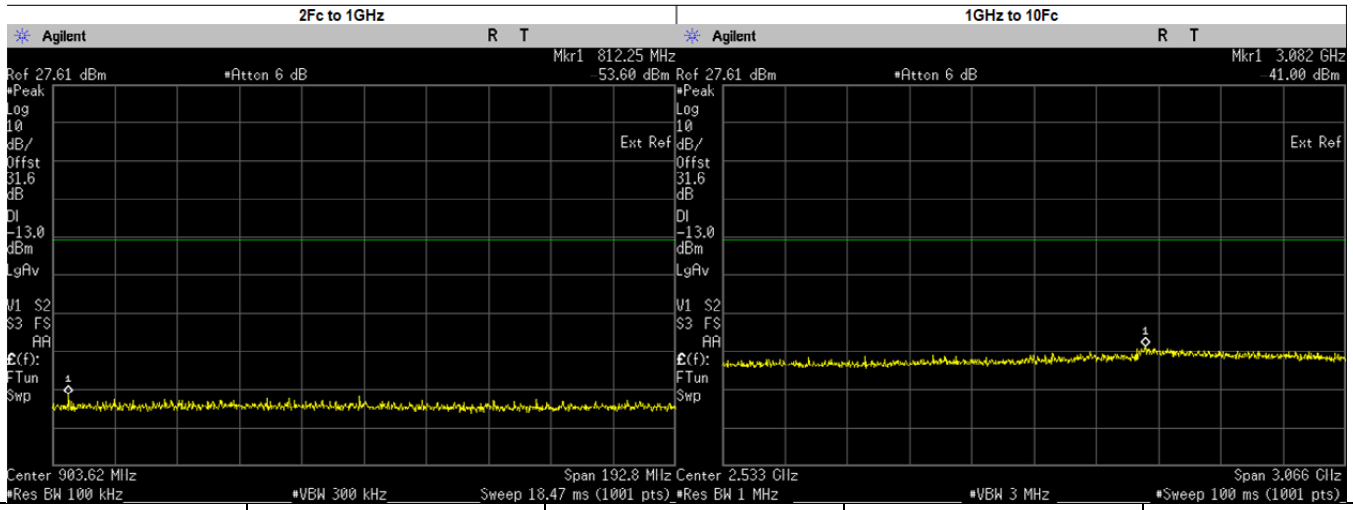
PI/4DQPSK: 469.9875. MHz, 25.kHz Channel Spacing, Max. Power



Frequency Range	Highest Spur Frequency (MHz)	Spurious Level (dBm)	Failing Limit (dBm)	Results
FL to (Fc - Test BW)	367.5000	-31.6270	-13.00	PASS
(Fc + Test BW) to <2Fc	715.0628	-30.2200	-13.00	PASS
2Fc to 1GHz	994.9280	-54.6300	-13.00	PASS
	939.9750	-55.6826	-13.00	PASS
1GHz to 10Fc	3059.9100	-40.4800	-13.00	PASS
	1409.9630	-45.4322	-13.00	PASS
	1879.9500	-45.5803	-13.00	PASS
	2349.9370	-44.4149	-13.00	PASS
	2819.9250	-44.1771	-13.00	PASS
	3289.9120	-42.9268	-13.00	PASS
	3759.9000	-43.7149	-13.00	PASS
	4229.8870	-43.8950	-13.00	PASS
	4699.8750	-44.4803	-13.00	PASS

16QAM: 406.125. MHz, 25.kHz Channel Spacing, Max. Power (NOT FOR FCC REVIEW)

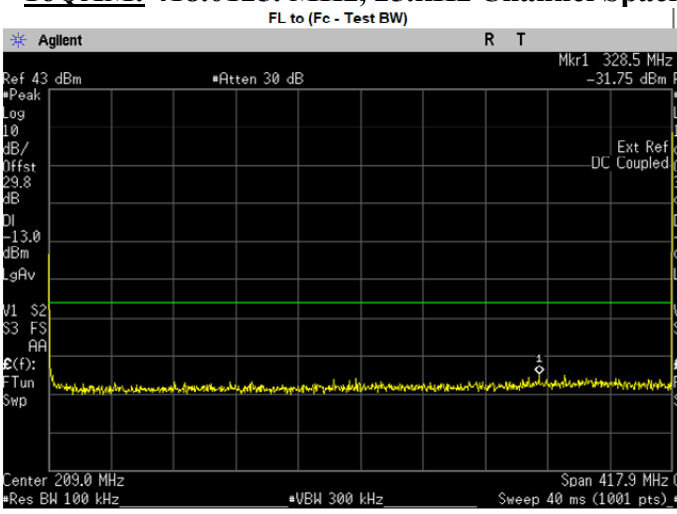




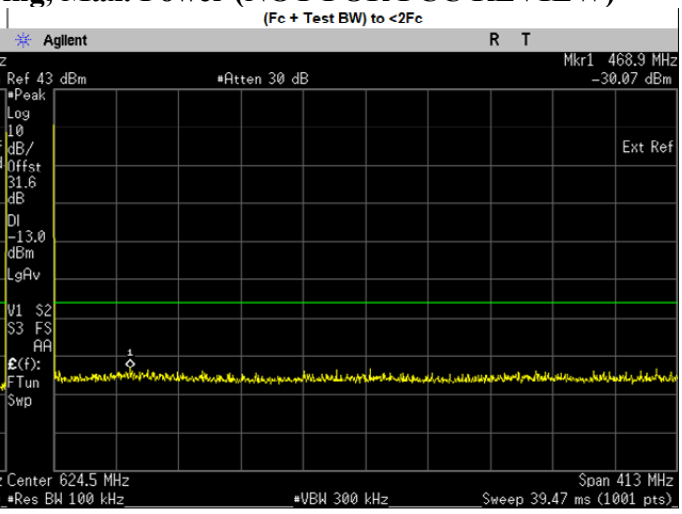
Frequency Range	Highest Spur Frequency (MHz)	Spurious Level (dBm)	Failing Limit (dBm)	Results
FL to (Fc - Test BW)	356.1000	-31.6640	-13.00	PASS
(Fc + Test BW) to <2Fc	483.9881	-29.9200	-13.00	PASS
2Fc to 1GHz	902.2758	-54.1100	-13.00	PASS
	812.2500	-53.8453	-13.00	PASS
1GHz to 10Fc	3081.9840	-41.0000	-13.00	PASS
	1218.3750	-46.0681	-13.00	PASS
	1624.5000	-44.9798	-13.00	PASS
	2030.6250	-44.9185	-13.00	PASS
	2436.7500	-45.5320	-13.00	PASS
	2842.8750	-43.9817	-13.00	PASS
	3249.0000	-42.7175	-13.00	PASS
	3655.1250	-43.6139	-13.00	PASS
	4061.2500	-43.9518	-13.00	PASS

16QAM: 418.0125. MHz, 25.kHz Channel Spacing, Max. Power (NOT FOR FCC REVIEW)

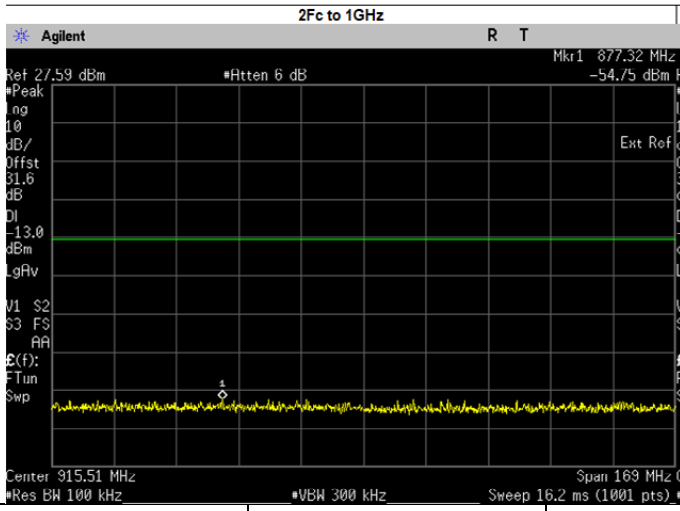
FL to (Fc - Test BW)



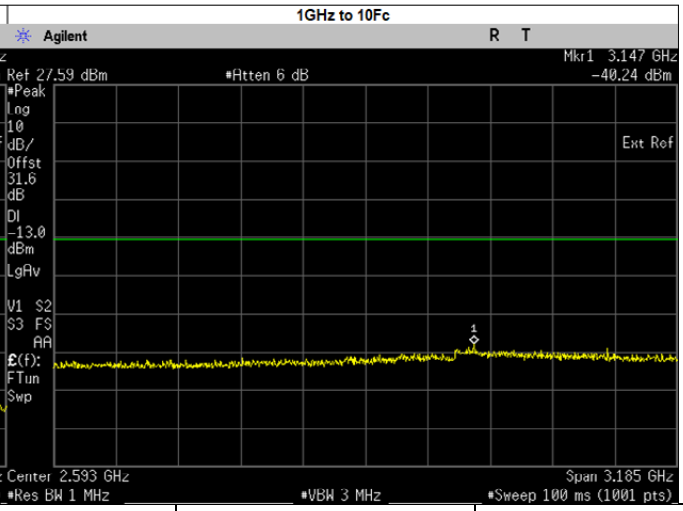
(Fc + Test BW) to <2Fc



2Fc to 1GHz



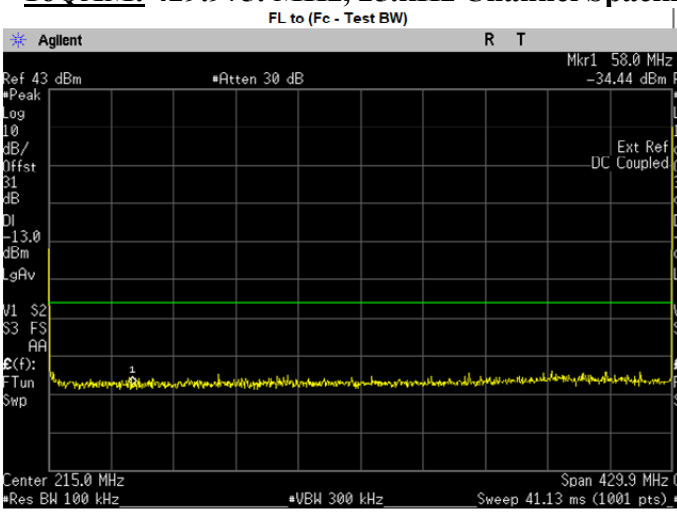
1GHz to 10Fc



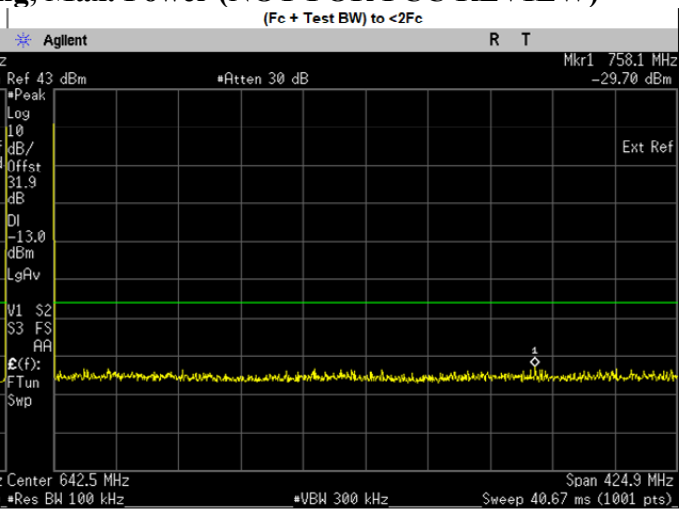
Frequency Range	Highest Spur Frequency (MHz)	Spurious Level (dBm)	Failing Limit (dBm)	Results
FL to (Fc - Test BW)	328.5000	-31.7500	-13.00	PASS
(Fc + Test BW) to <2Fc	468.8618	-30.0700	-13.00	PASS
2Fc to 1GHz	877.3242	-54.7500	-13.00	PASS
	836.0250	-55.2939	-13.00	PASS
1GHz to 10Fc	3146.7740	-40.2400	-13.00	PASS
	1254.0370	-45.8075	-13.00	PASS
	1672.0500	-45.2744	-13.00	PASS
	2090.0620	-45.6493	-13.00	PASS
	2508.0750	-44.5882	-13.00	PASS
	2926.0880	-43.7138	-13.00	PASS
	3344.1000	-43.0630	-13.00	PASS
	3762.1130	-43.1842	-13.00	PASS
	4180.1250	-44.5300	-13.00	PASS

16QAM: 429.975. MHz, 25.kHz Channel Spacing, Max. Power (NOT FOR FCC REVIEW)

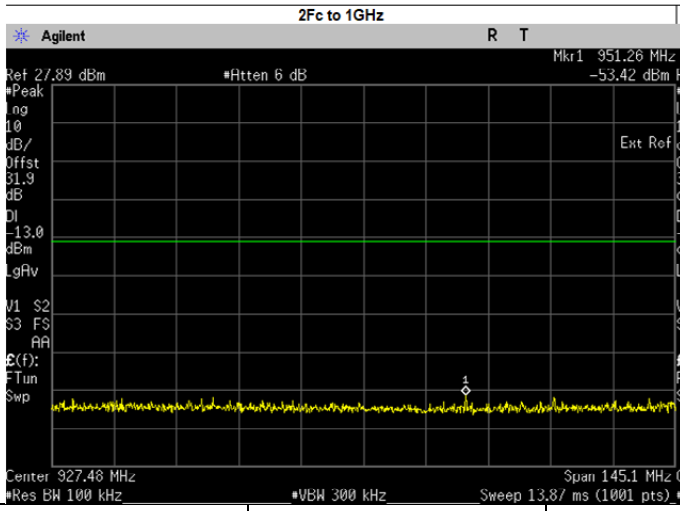
FL to (Fc - Test BW)



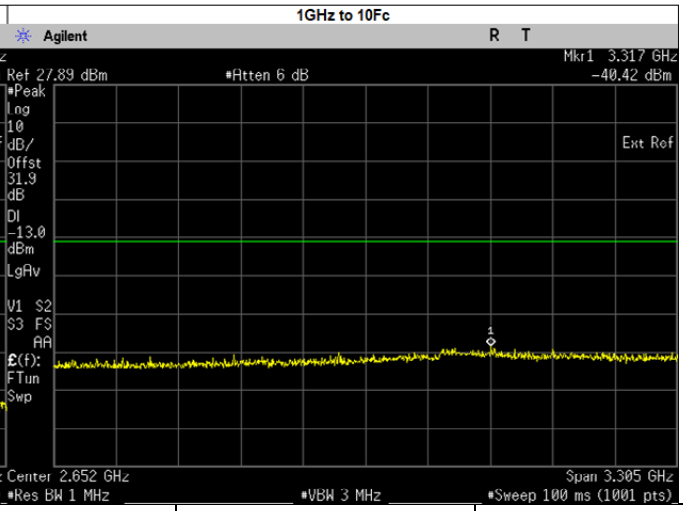
(Fc + Test BW) to <2Fc



2Fc to 1GHz



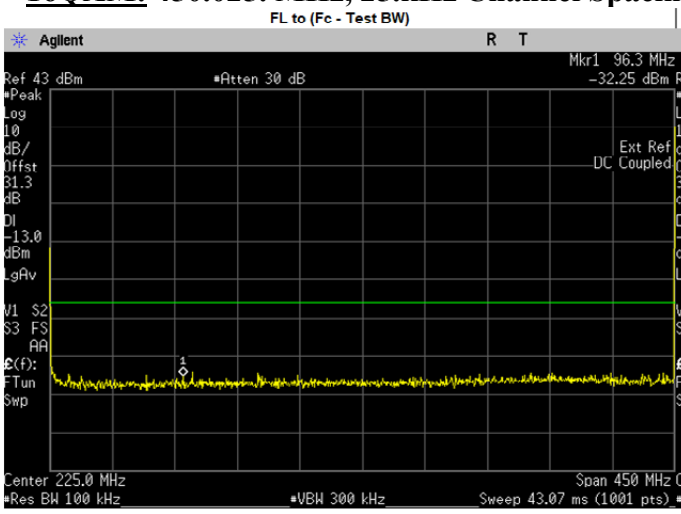
1GHz to 10Fc



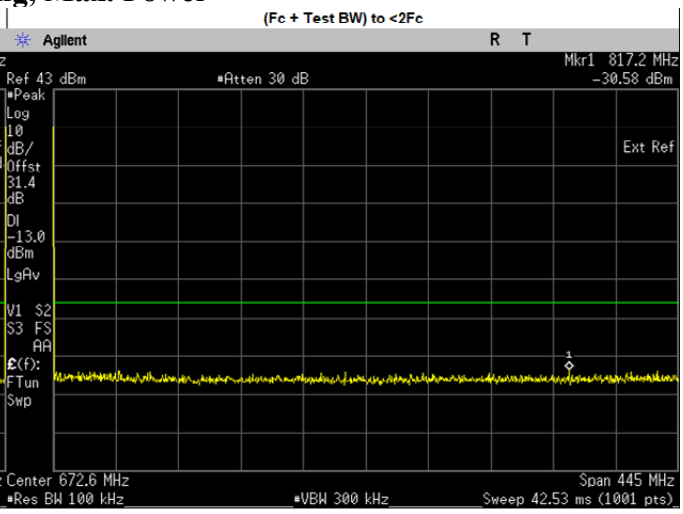
Frequency Range	Highest Spur Frequency (MHz)	Spurious Level (dBm)	Failing Limit (dBm)	Results
FL to (Fc - Test BW)	58.0000	-34.4380	-13.00	PASS
(Fc + Test BW) to <2Fc	758.0684	-29.7000	-13.00	PASS
2Fc to 1GHz	951.2632	-53.4200	-13.00	PASS
	859.9500	-54.7946	-13.00	PASS
1GHz to 10Fc	3316.6300	-40.4200	-13.00	PASS
	1289.9250	-45.3148	-13.00	PASS
	1719.9000	-45.6338	-13.00	PASS
	2149.8750	-45.3555	-13.00	PASS
	2579.8500	-44.4564	-13.00	PASS
	3009.8250	-43.7634	-13.00	PASS
	3439.8000	-42.7533	-13.00	PASS
	3869.7750	-43.3652	-13.00	PASS
	4299.7500	-44.1575	-13.00	PASS

16QAM: 450.025. MHz, 25.kHz Channel Spacing, Max. Power

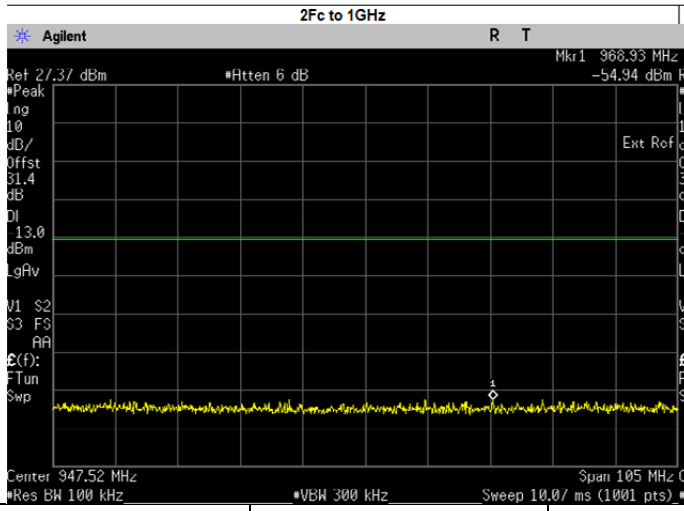
FL to (Fc - Test BW)



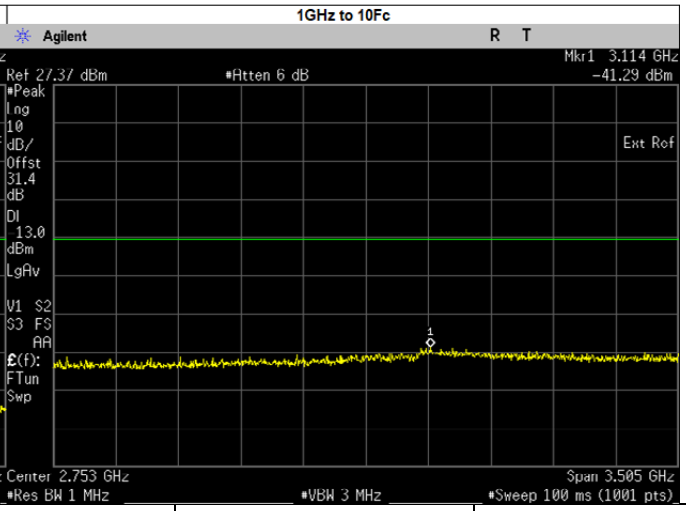
(Fc + Test BW) to <2Fc



2Fc to 1GHz



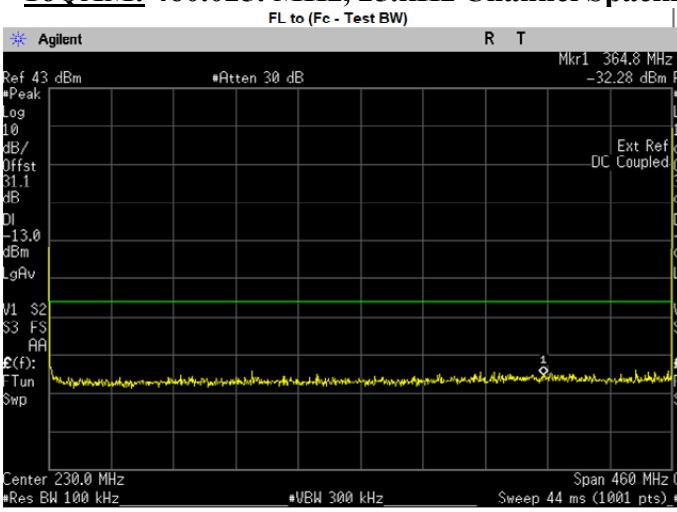
1GHz to 10Fc



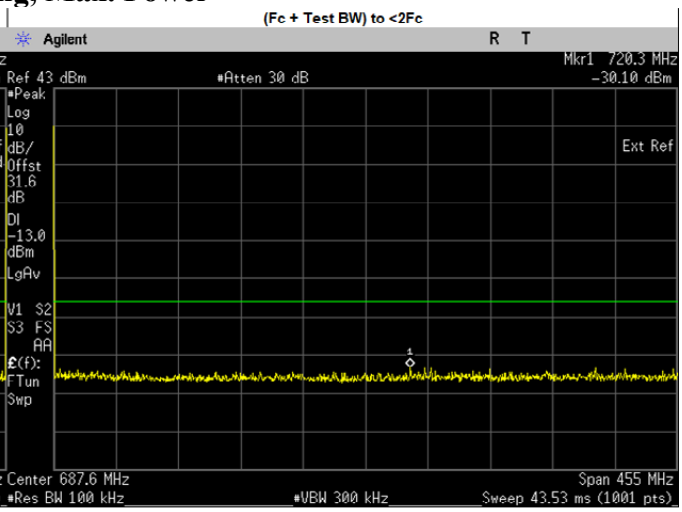
Frequency Range	Highest Spur Frequency (MHz)	Spurious Level (dBm)	Failing Limit (dBm)	Results
FL to (Fc - Test BW)	96.3000	-32.2530	-13.00	PASS
(Fc + Test BW) to <2Fc	817.1806	-30.5900	-13.00	PASS
2Fc to 1GHz	968.9348	-54.9400	-13.00	PASS
	900.0500	-56.7879	-13.00	PASS
1GHz to 10Fc	3113.6660	-41.2900	-13.00	PASS
	1350.0750	-46.0420	-13.00	PASS
	1800.1000	-44.9124	-13.00	PASS
	2250.1250	-45.3844	-13.00	PASS
	2700.1500	-43.9395	-13.00	PASS
	3150.1750	-42.7315	-13.00	PASS
	3600.2000	-43.2397	-13.00	PASS
	4050.2250	-43.9502	-13.00	PASS
	4500.2500	-44.7337	-13.00	PASS

16QAM: 460.025. MHz, 25.kHz Channel Spacing, Max. Power

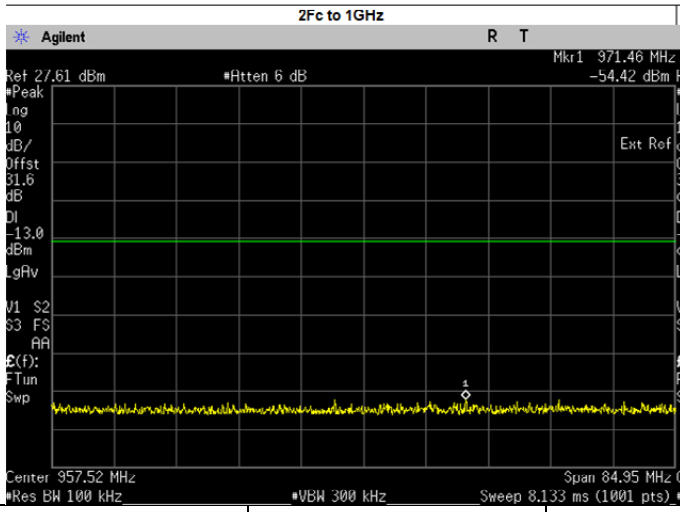
FL to (Fc - Test BW)



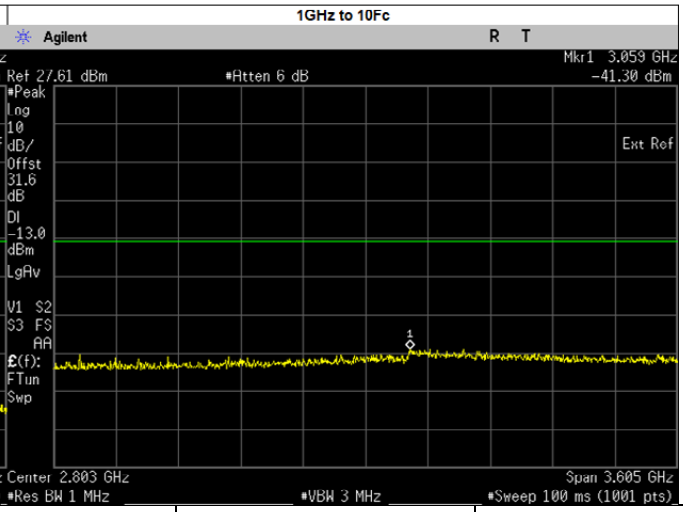
(Fc + Test BW) to <2Fc



2Fc to 1GHz



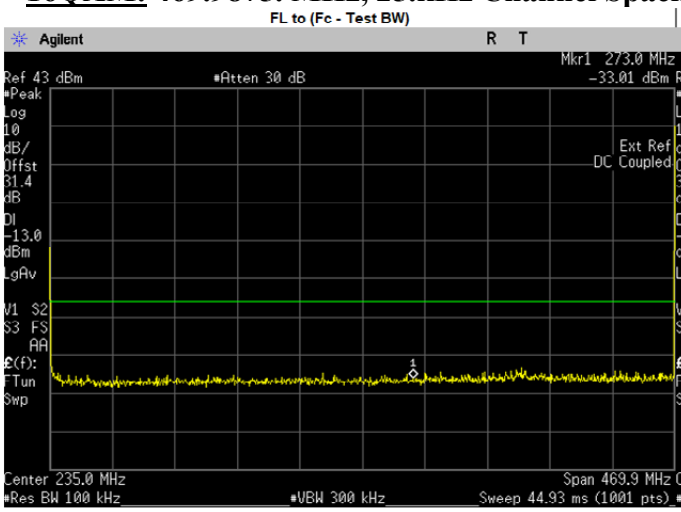
1GHz to 10Fc



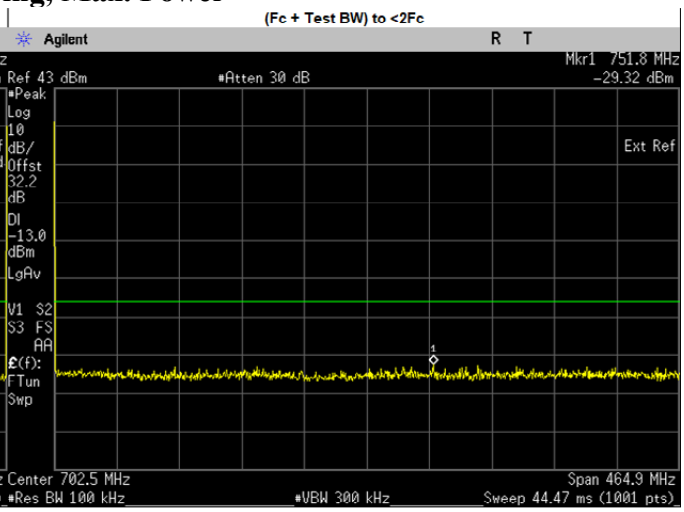
Frequency Range	Highest Spur Frequency (MHz)	Spurious Level (dBm)	Failing Limit (dBm)	Results
FL to (Fc - Test BW)	364.8000	-32.2790	-13.00	PASS
(Fc + Test BW) to <2Fc	720.3236	-30.1000	-13.00	PASS
2Fc to 1GHz	971.4568	-54.4200	-13.00	PASS
	920.0500	-56.1601	-13.00	PASS
1GHz to 10Fc	3058.5980	-41.3000	-13.00	PASS
	1380.0750	-45.1135	-13.00	PASS
	1840.1000	-46.1036	-13.00	PASS
	2300.1250	-45.0390	-13.00	PASS
	2760.1500	-44.2746	-13.00	PASS
	3220.1750	-42.6349	-13.00	PASS
	3680.2000	-43.5486	-13.00	PASS
	4140.2250	-44.2297	-13.00	PASS
	4600.2500	-44.1828	-13.00	PASS

16QAM: 469.9875. MHz, 25.kHz Channel Spacing, Max. Power

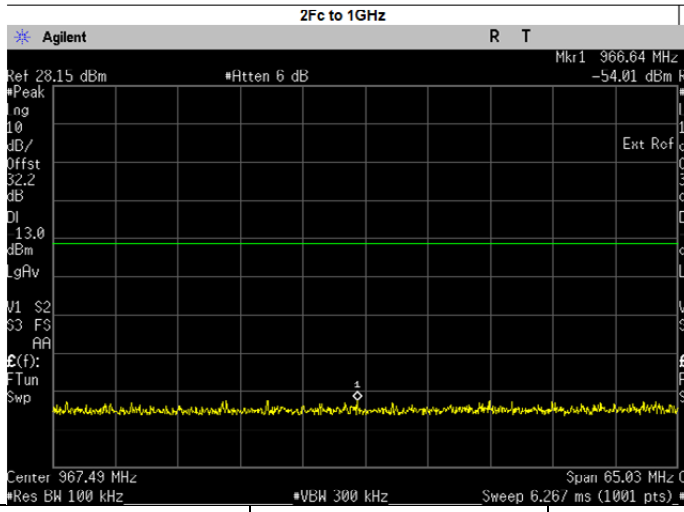
FL to (Fc - Test BW)



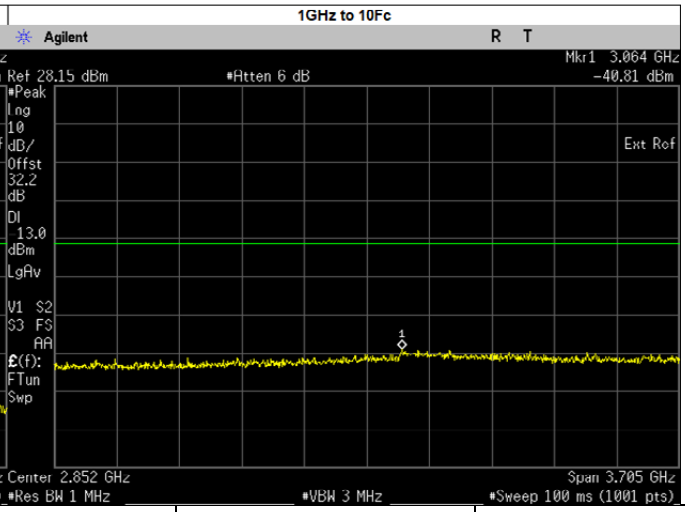
(Fc + Test BW) to <2Fc



2Fc to 1GHz



1GHz to 10Fc



Frequency Range	Highest Spur Frequency (MHz)	Spurious Level (dBm)	Failing Limit (dBm)	Results
FL to (Fc - Test BW)	273.0000	-33.0070	-13.00	PASS
(Fc + Test BW) to <2Fc	751.7923	-29.3200	-13.00	PASS
2Fc to 1GHz	966.6422	-54.0100	-13.00	PASS
	939.9750	-56.3217	-13.00	PASS
1GHz to 10Fc	3063.6150	-40.8100	-13.00	PASS
	1409.9630	-45.5300	-13.00	PASS
	1879.9500	-44.3530	-13.00	PASS
	2349.9370	-44.2471	-13.00	PASS
	2819.9250	-43.6596	-13.00	PASS
	3289.9120	-42.1005	-13.00	PASS
	3759.9000	-43.7066	-13.00	PASS
	4229.8870	-43.6536	-13.00	PASS
	4699.8750	-43.5515	-13.00	PASS

6.10.4. Test Limit

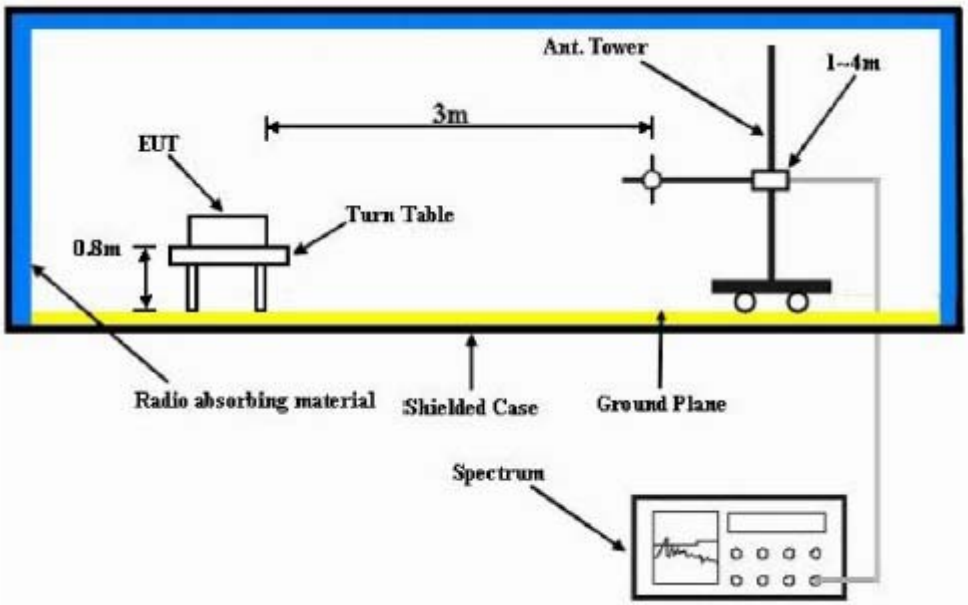
Table below summarized the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least

Channel Spacing	Part 22	Part 24D	Part 74	Part 80	Part 90 (UHF, VHF, 800, 900)	Part 90 (700)
12.5kHz	43 + log10(P) (-13 dBm)	43 + log10(P) (-13 dBm)	43 + log10(P) (-13 dBm)	Not Applicable	50 + log10(P) (-20 dBm)	43 + log10(P) (-13 dBm)
25kHz		Not Applicable		43 + log10(P) (-13 dBm)	43 + log10(P) (-13 dBm)	43 + log10(P) (-13 dBm)

Channel Spacing	RSS 134	RSS 182	RSS 119 (UHF, VHF, 800, 900)	RSS 119 (700)
12.5kHz	43 + log10(P) (-13 dBm)	Not Applicable	50 + log10(P) (-20 dBm)	43 + log10(P) (-13 dBm)
25kHz	Not Applicable	43 + log10(P) (-13 dBm)	43 + log10(P) (-13 dBm)	43 + log10(P) (-13 dBm)

6.11. Radiated Spurious Emission

6.11.1. Test Setup



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

6.11.2. Test Result (Analog)

Not Applicable.

6.11.3. Test Result (Digital)

SAC Transmitter Radiated Emission:

Model Number: AZH17PCH6TZ5AN **S/N: 123TXF0821** **SR:02827-EMC-00025**

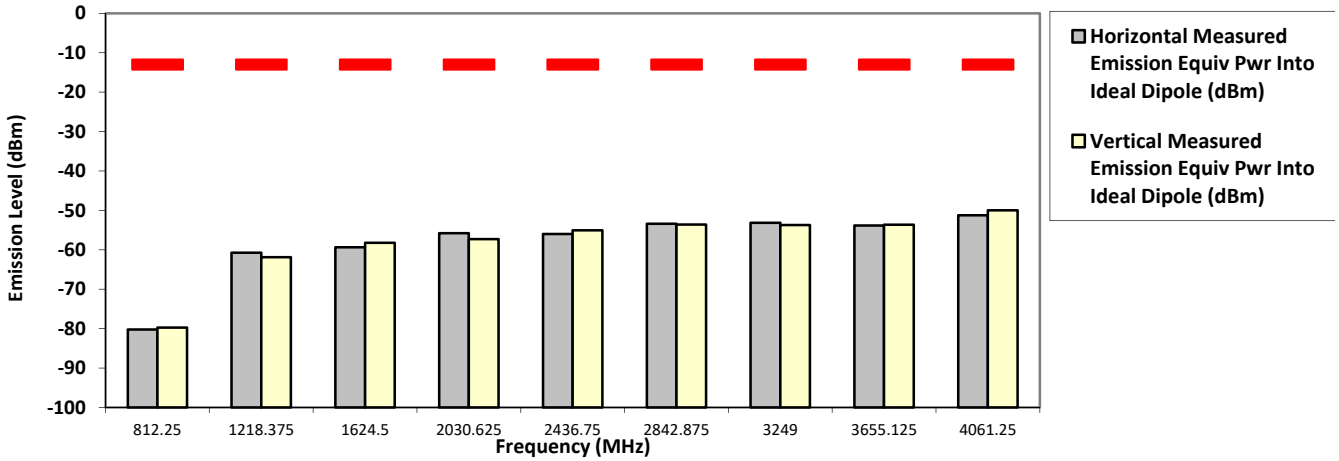
Battery Part No: NNTN8570C **Accy Part No: NA**

Test Mode: TX Tetra (PI/4QPSK)

406.125000 MHz **25 kHz** **1.550 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)
812.2500	-13.0000	-80.2135 **	-79.7347 **
1218.3750	-13.0000	-60.7417 **	-61.8856 **
1624.5000	-13.0000	-59.3610 **	-58.2385 **
2030.6250	-13.0000	-55.7712 **	-57.2729 **
2436.7500	-13.0000	-55.9940 **	-55.0767 **
2842.8750	-13.0000	-53.4005 **	-53.6141 **
3249.0000	-13.0000	-53.1604 **	-53.7368 **
3655.1250	-13.0000	-53.8355 **	-53.6387 **
4061.2500	-13.0000	-51.2502 **	-49.9730 **

RADIATED SPURIOUS EMISSIONS



The data presented here was taken using the substitution method as found in the ANSI C63.26-2015 document.

Motorola Penang EMC Lab - Test Performed by : Qawiman&Nazrin **Mon, 24 May, 2021**

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): 23.3 Hum(%RH): 69.6

System MU: 4.03 dB

Remarks:

Passed Results	Marginal Results	Failed Results

NOT FOR FCC REVIEW

SAC Transmitter Radiated Emission:

Model Number: AZH17PCH6TZ5AN **S/N: 123TXF0821** **SR:02827-EMC-00025**

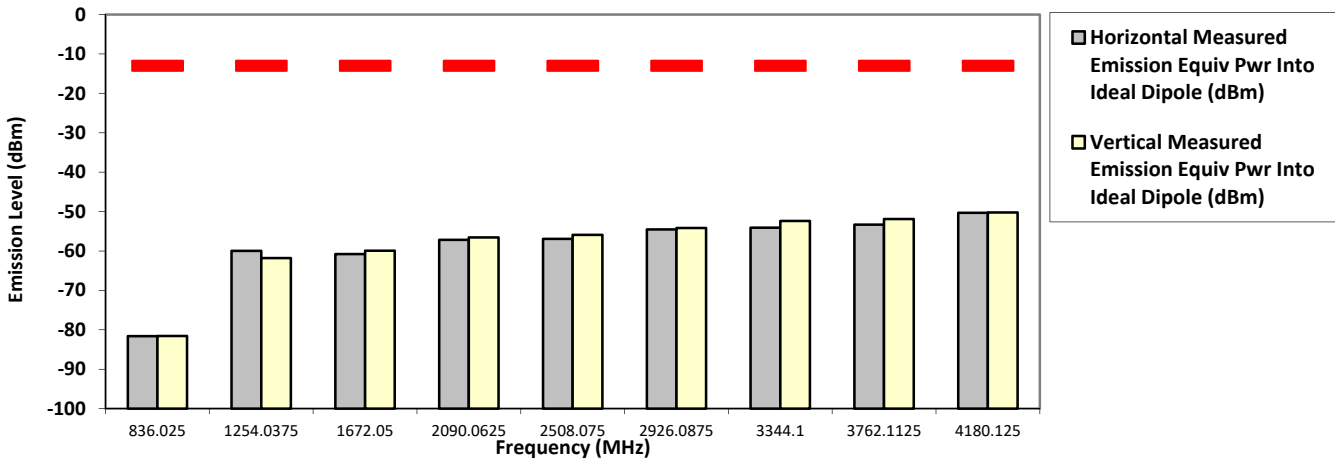
Battery Part No: NNTN8570C **Accy Part No: NA**

Test Mode: TX Tetra (PI/4QPSK)

418.012500 MHz **25 kHz** **1.550 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)
836.0250	-13.0000	-81.5973 **	-81.5626 **
1254.0375	-13.0000	-59.9821 **	-61.8173 **
1672.0500	-13.0000	-60.7776 **	-59.9144 **
2090.0625	-13.0000	-57.1755 **	-56.5622 **
2508.0750	-13.0000	-56.9130 **	-55.8947 **
2926.0875	-13.0000	-54.5500 **	-54.1676 **
3344.1000	-13.0000	-54.0981 **	-52.3607 **
3762.1125	-13.0000	-53.3000 **	-51.8995 **
4180.1250	-13.0000	-50.2945 **	-50.2240 **

RADIATED SPURIOUS EMISSIONS



The data presented here was taken using the substitution method as found in the ANSI C63.26-2015 document.

Motorola Penang EMC Lab - Test Performed by : Qawiman&Nazrin **Mon, 24 May, 2021**

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): 23.3 Hum(%RH): 69.6

System MU: 4.03 dB

Remarks:

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

NOT FOR FCC REVIEW

SAC Transmitter Radiated Emission:

Model Number: AZH17PCH6TZ5AN **S/N: 123TXF0821** **SR:02827-EMC-00025**

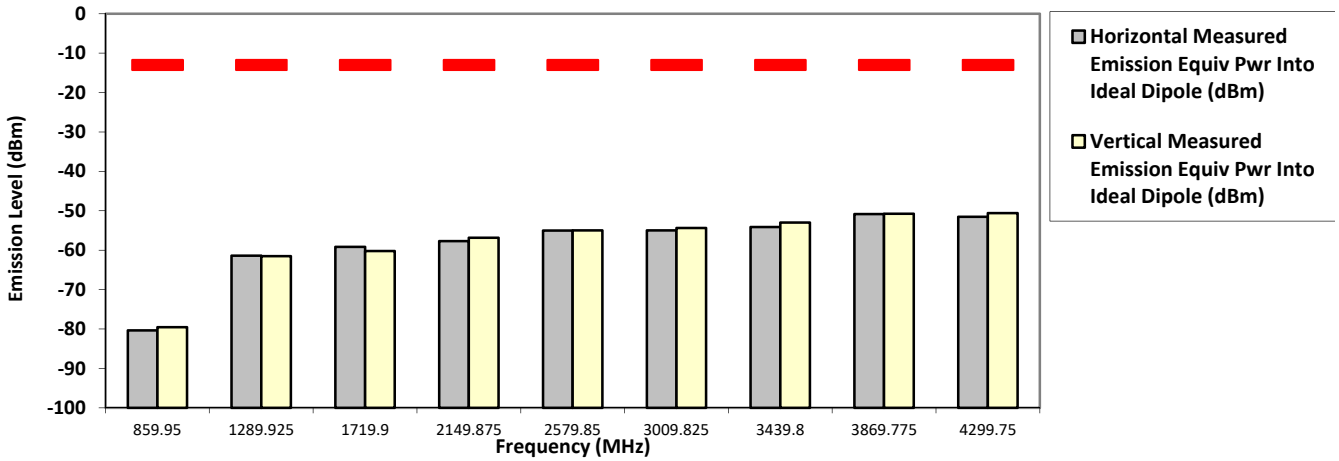
Battery Part No: NNTN8570C **Accy Part No: NA**

Test Mode: TX Tetra (PI/4QPSK)

429.975000 MHz **25 kHz** **1.550 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)
859.9500	-13.0000	-80.3683 **	-79.5506 **
1289.9250	-13.0000	-61.3854 **	-61.5200 **
1719.9000	-13.0000	-59.1532 **	-60.2024 **
2149.8750	-13.0000	-57.7024 **	-56.8493 **
2579.8500	-13.0000	-55.0210 **	-54.9734 **
3009.8250	-13.0000	-54.9679 **	-54.3600 **
3439.8000	-13.0000	-54.1386 **	-52.9834 **
3869.7750	-13.0000	-50.8416 **	-50.7533 **
4299.7500	-13.0000	-51.5278 **	-50.6137 **

RADIATED SPURIOUS EMISSIONS



The data presented here was taken using the substitution method as found in the ANSI C63.26-2015 document.

Motorola Penang EMC Lab - Test Performed by : Qawiman&Nazrin **Mon, 24 May, 2021**

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): 23.3 Hum(%RH): 69.6

System MU: 4.03 dB

Remarks:

Passed Results	Marginal Results	Failed Results

NOT FOR FCC REVIEW

SAC Transmitter Radiated Emission:

Model Number: AZH17PCH6TZ5AN **S/N: 123TXF0821** **SR:02827-EMC-00025**

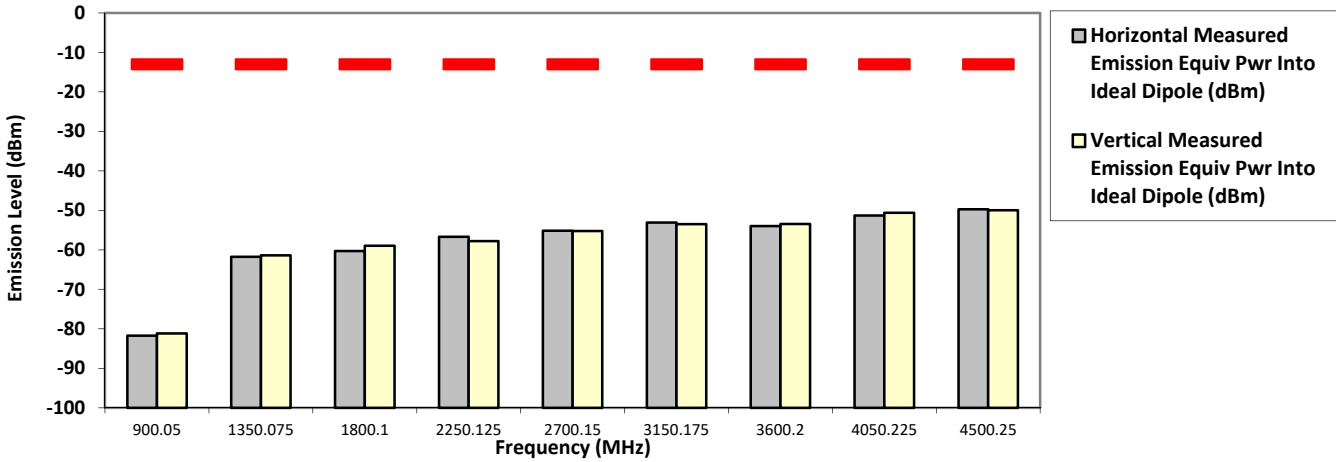
Battery Part No: NNTN8570C **Accy Part No: NA**

Test Mode: TX Tetra (PI/4QPSK)

450.025000 MHz **25 kHz** **1.550 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)
900.0500	-13.0000	-81.7439 **	-81.1869 **
1350.0750	-13.0000	-61.7552 **	-61.3789 **
1800.1000	-13.0000	-60.3201 **	-58.9467 **
2250.1250	-13.0000	-56.6996 **	-57.8021 **
2700.1500	-13.0000	-55.1520 **	-55.2325 **
3150.1750	-13.0000	-53.0811 **	-53.5074 **
3600.2000	-13.0000	-53.9772 **	-53.4394 **
4050.2250	-13.0000	-51.2885 **	-50.6357 **
4500.2500	-13.0000	-49.7353 **	-49.9533 **

RADIATED SPURIOUS EMISSIONS



The data presented here was taken using the substitution method as found in the ANSI C63.26-2015 document.

Motorola Penang EMC Lab - Test Performed by : Qawiman&Nazrin **Mon, 24 May, 2021**

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): 23.3 Hum(%RH): 69.6

System MU: 4.03 dB

Remarks:

Passed Results	Marginal Results	Failed Results

SAC Transmitter Radiated Emission:

Model Number: AZH17PCH6TZ5AN **S/N: 123TXF0821** **SR:02827-EMC-00025**

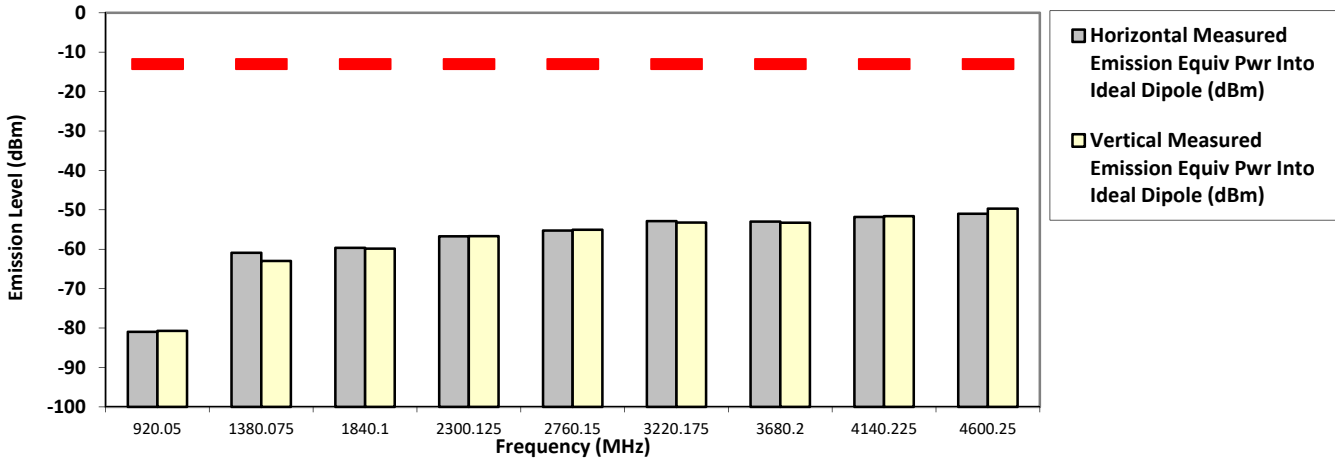
Battery Part No: NNTN8570C **Accy Part No: NA**

Test Mode: TX Tetra (PI/4QPSK)

460.025000 MHz **25 kHz** **1.550 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)
920.0500	-13.0000	-80.9447 **	-80.7339 **
1380.0750	-13.0000	-60.8983 **	-62.9692 **
1840.1000	-13.0000	-59.6540 **	-59.8708 **
2300.1250	-13.0000	-56.7142 **	-56.6750 **
2760.1500	-13.0000	-55.2582 **	-55.0792 **
3220.1750	-13.0000	-52.8832 **	-53.2144 **
3680.2000	-13.0000	-52.9770 **	-53.2850 **
4140.2250	-13.0000	-51.8143 **	-51.6145 **
4600.2500	-13.0000	-51.0070 **	-49.7072 **

RADIATED SPURIOUS EMISSIONS



The data presented here was taken using the substitution method as found in the ANSI C63.26-2015 document.

Motorola Penang EMC Lab - Test Performed by : Qawiman&Nazrin **Mon, 24 May, 2021**

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): 23.3 Hum(%RH): 69.6

System MU: 4.03 dB

Remarks:

Passed Results	Marginal Results	Failed Results

SAC Transmitter Radiated Emission:

Model Number: AZH17PCH6TZ5AN **S/N: 123TXF0821** **SR:02827-EMC-00025**

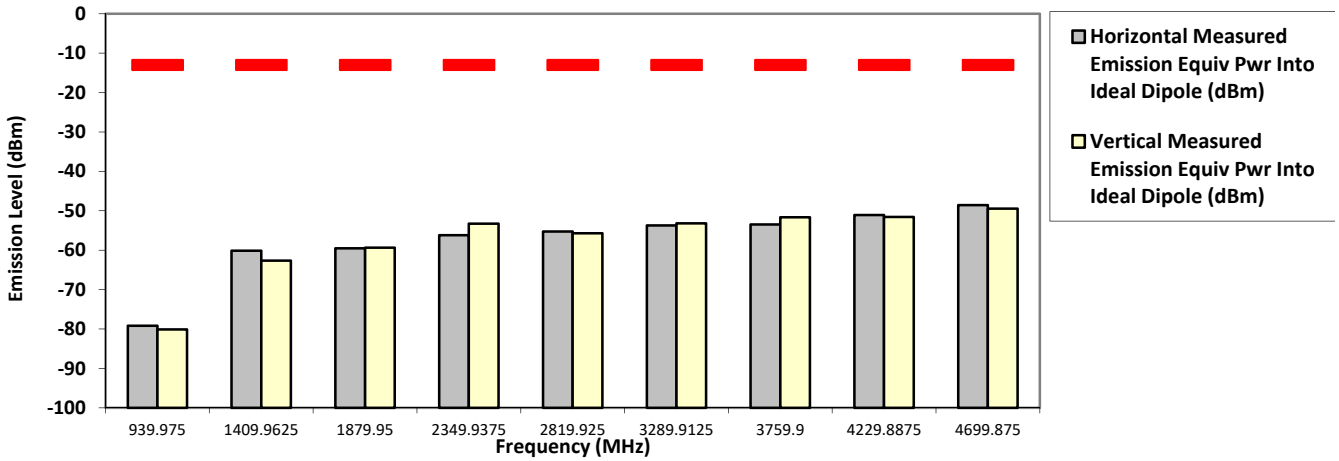
Battery Part No: NNTN8570C **Accy Part No: NA**

Test Mode: TX Tetra (PI/4QPSK)

469.987500 MHz **25 kHz** **1.550 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)
939.9750	-13.0000	-79.1868 **	-80.1160 **
1409.9625	-13.0000	-60.1451 **	-62.6369 **
1879.9500	-13.0000	-59.5124 **	-59.3588 **
2349.9375	-13.0000	-56.1961 **	-53.2706 **
2819.9250	-13.0000	-55.2537 **	-55.7145 **
3289.9125	-13.0000	-53.7255 **	-53.1722 **
3759.9000	-13.0000	-53.4832 **	-51.6487 **
4229.8875	-13.0000	-51.0949 **	-51.5882 **
4699.8750	-13.0000	-48.5724 **	-49.4647 **

RADIATED SPURIOUS EMISSIONS



The data presented here was taken using the substitution method as found in the ANSI C63.26-2015 document.

Motorola Penang EMC Lab - Test Performed by : Qawiman&Nazrin **Tue, 25 May, 2021**

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): 23.3 Hum(%RH): 69.6

System MU: 4.03 dB

Remarks:

Passed Results	Marginal Results	Failed Results

SAC Transmitter Radiated Emission:

Model Number: AZH17PCH6TZ5AN **S/N: 123TXF0821** **SR:02827-EMC-00025**

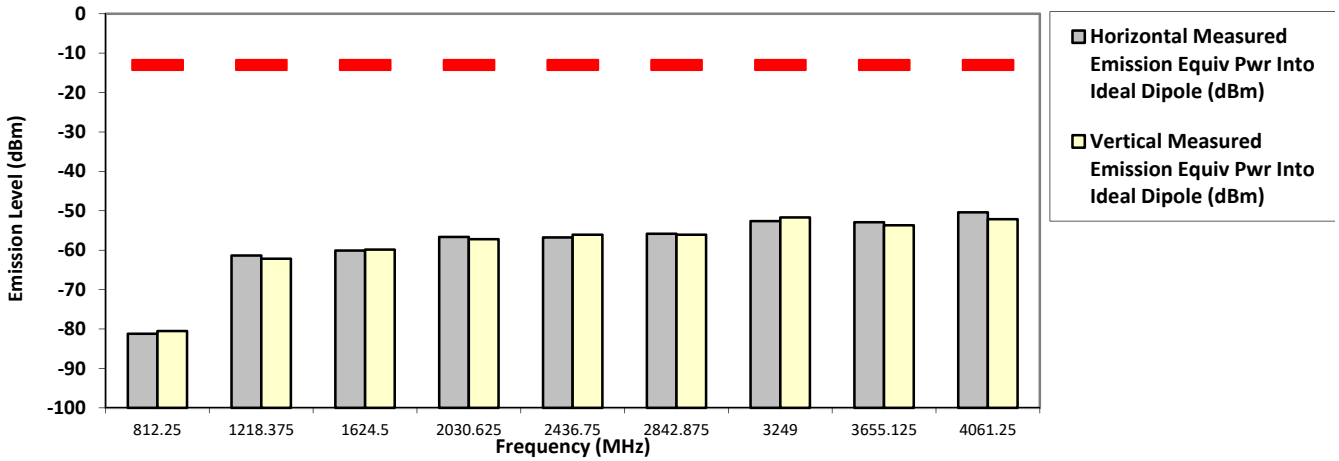
Battery Part No: NNTN8570C **Accy Part No: NA**

Test Mode: TX Tetra (QAM16)

406.125000 MHz **25 kHz** **0.537 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)
812.2500	-13.0000	-81.2185 **	-80.5068 **
1218.3750	-13.0000	-61.3511 **	-62.1554 **
1624.5000	-13.0000	-60.1007 **	-59.8457 **
2030.6250	-13.0000	-56.6242 **	-57.2201 **
2436.7500	-13.0000	-56.7809 **	-56.0571 **
2842.8750	-13.0000	-55.8315 **	-56.0821 **
3249.0000	-13.0000	-52.6302 **	-51.6987 **
3655.1250	-13.0000	-52.9182 **	-53.6726 **
4061.2500	-13.0000	-50.4110 **	-52.1481 **

RADIATED SPURIOUS EMISSIONS



The data presented here was taken using the substitution method as found in the ANSI C63.26-2015 document.

Motorola Penang EMC Lab - Test Performed by : Qawiman&Nazrin **Mon, 24 May, 2021**

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): 23.3 Hum(%RH): 69.6

System MU: 4.03 dB

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

NOT FOR FCC REVIEW

SAC Transmitter Radiated Emission:

Model Number: AZH17PCH6TZ5AN **S/N: 123TXF0821** **SR:02827-EMC-00025**

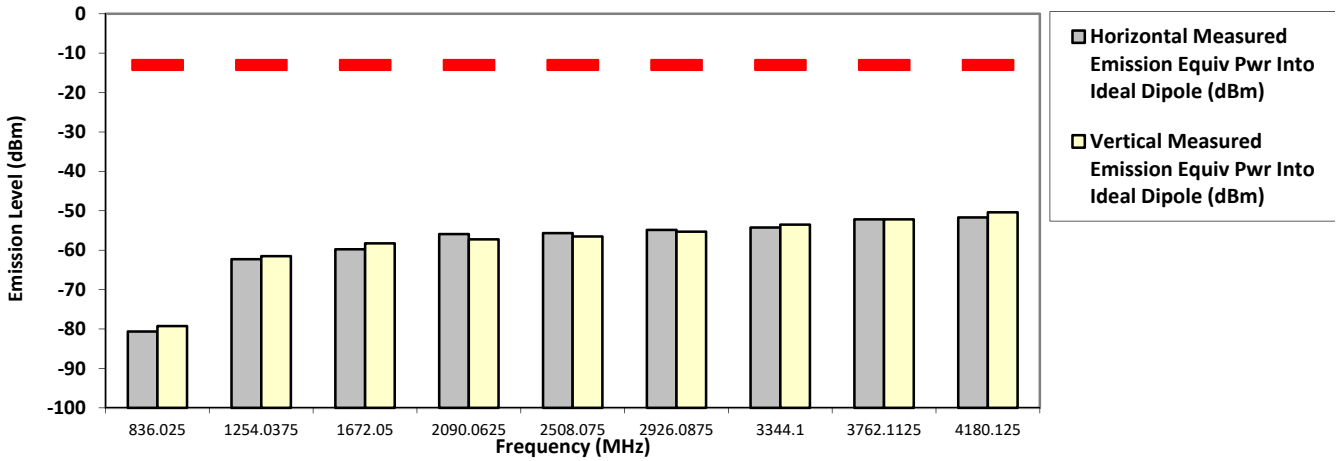
Battery Part No: NNTN8570C **Accy Part No: NA**

Test Mode: TX Tetra (QAM16)

418.012500 MHz **25 kHz** **0.537 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)
836.0250	-13.0000	-80.6514 **	-79.2616 **
1254.0375	-13.0000	-62.2754 **	-61.5235 **
1672.0500	-13.0000	-59.7753 **	-58.2509 **
2090.0625	-13.0000	-55.9289 **	-57.2339 **
2508.0750	-13.0000	-55.6492 **	-56.5048 **
2926.0875	-13.0000	-54.8433 **	-55.3126 **
3344.1000	-13.0000	-54.2412 **	-53.4974 **
3762.1125	-13.0000	-52.1934 **	-52.1599 **
4180.1250	-13.0000	-51.6964 **	-50.3908 **

RADIATED SPURIOUS EMISSIONS



The data presented here was taken using the substitution method as found in the ANSI C63.26-2015 document.

Motorola Penang EMC Lab - Test Performed by : Qawiman&Nazrin **Mon, 24 May, 2021**

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): 23.3 Hum(%RH): 69.6

System MU: 4.03 dB

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

NOT FOR FCC REVIEW

SAC Transmitter Radiated Emission:

Model Number: AZH17PCH6TZ5AN **S/N: 123TXF0821** **SR:02827-EMC-00025**

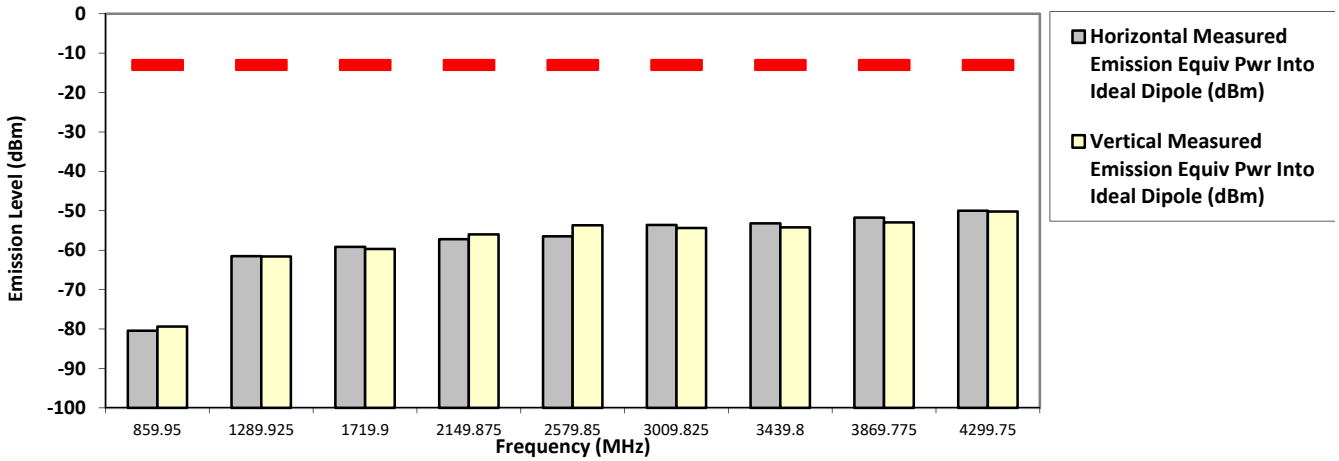
Battery Part No: NNTN8570C **Accy Part No: NA**

Test Mode: TX Tetra (QAM16)

429.975000 MHz **25 kHz** **0.537 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)
859.9500	-13.0000	-80.4404 **	-79.3756 **
1289.9250	-13.0000	-61.5024 **	-61.5904 **
1719.9000	-13.0000	-59.1536 **	-59.6707 **
2149.8750	-13.0000	-57.2072 **	-55.9977 **
2579.8500	-13.0000	-56.4971 **	-53.6983 **
3009.8250	-13.0000	-53.5993 **	-54.3809 **
3439.8000	-13.0000	-53.1979 **	-54.1971 **
3869.7750	-13.0000	-51.7484 **	-52.9371 **
4299.7500	-13.0000	-49.9838 **	-50.1779 **

RADIATED SPURIOUS EMISSIONS



The data presented here was taken using the substitution method as found in the ANSI C63.26-2015 document.

Motorola Penang EMC Lab - Test Performed by : Qawiman&Nazrin **Mon, 24 May, 2021**

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): 23.3 Hum(%RH): 69.6

System MU: 4.03 dB

Remarks:

Passed Results	Marginal Results	Failed Results

NOT FOR FCC REVIEW

SAC Transmitter Radiated Emission:

Model Number: AZH17PCH6TZ5AN **S/N: 123TXF0821** **SR:02827-EMC-00025**

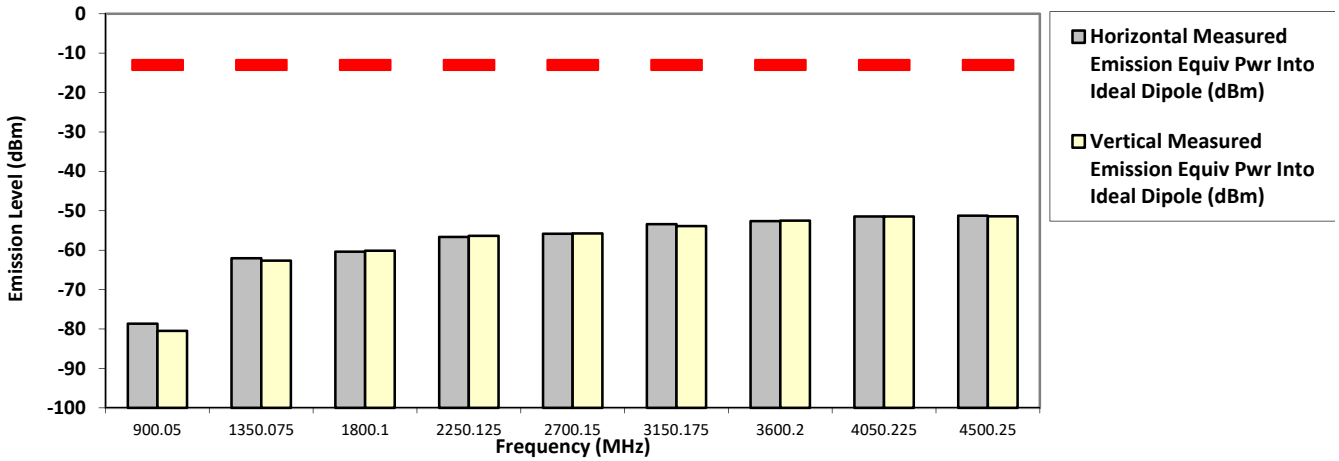
Battery Part No: NNTN8570C **Accy Part No: NA**

Test Mode: TX Tetra (QAM16)

450.025000 MHz **25 kHz** **0.537 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)
900.0500	-13.0000	-78.6323 **	-80.4805 **
1350.0750	-13.0000	-62.0323 **	-62.6700 **
1800.1000	-13.0000	-60.3595 **	-60.1486 **
2250.1250	-13.0000	-56.6451 **	-56.3605 **
2700.1500	-13.0000	-55.8130 **	-55.7532 **
3150.1750	-13.0000	-53.3895 **	-53.8893 **
3600.2000	-13.0000	-52.6302 **	-52.5204 **
4050.2250	-13.0000	-51.4315 **	-51.4523 **
4500.2500	-13.0000	-51.2636 **	-51.4009 **

RADIATED SPURIOUS EMISSIONS



The data presented here was taken using the substitution method as found in the ANSI C63.26-2015 document.

Motorola Penang EMC Lab - Test Performed by : Qawiman&Nazrin **Mon, 24 May, 2021**

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): 23.3 Hum(%RH): 69.6

System MU: 4.03 dB

Remarks:

Passed Results	Marginal Results	Failed Results

SAC Transmitter Radiated Emission:

Model Number: AZH17PCH6TZ5AN **S/N: 123TXF0821** **SR:02827-EMC-00025**

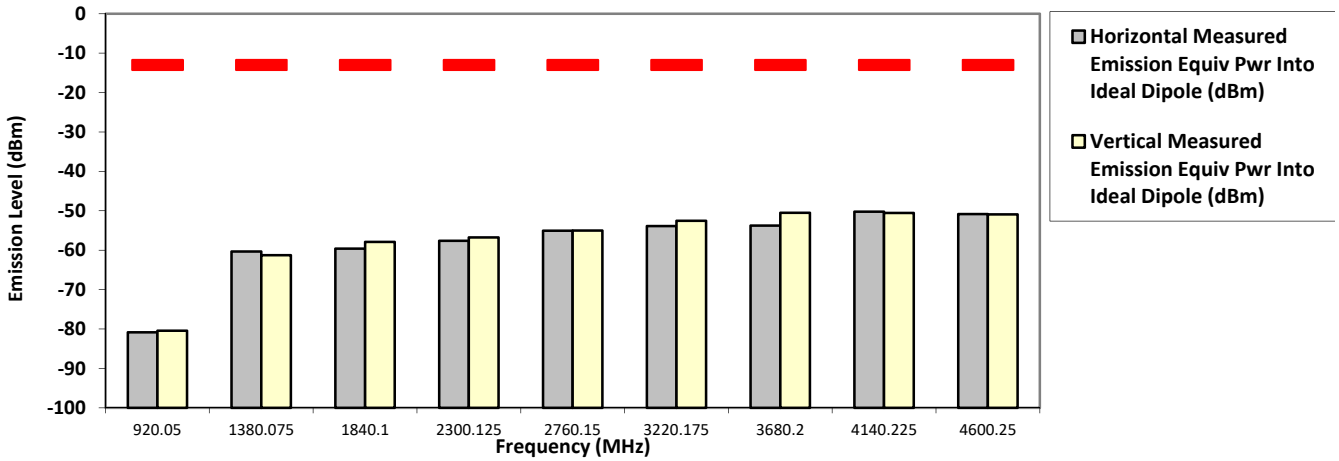
Battery Part No: NNTN8570C **Accy Part No: NA**

Test Mode: TX Tetra (QAM16)

460.025000 MHz **25 kHz** **0.537 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)
920.0500	-13.0000	-80.8480 **	-80.4505 **
1380.0750	-13.0000	-60.3260 **	-61.2818 **
1840.1000	-13.0000	-59.6008 **	-57.8965 **
2300.1250	-13.0000	-57.6224 **	-56.7603 **
2760.1500	-13.0000	-55.0794 **	-55.0393 **
3220.1750	-13.0000	-53.8647 **	-52.5527 **
3680.2000	-13.0000	-53.7564 **	-50.5295 **
4140.2250	-13.0000	-50.2486 **	-50.5659 **
4600.2500	-13.0000	-50.8286 **	-50.9083 **

RADIATED SPURIOUS EMISSIONS



The data presented here was taken using the substitution method as found in the ANSI C63.26-2015 document.

Motorola Penang EMC Lab - Test Performed by : Qawiman&Nazrin **Mon, 24 May, 2021**

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): 23.3 Hum(%RH): 69.6

System MU: 4.03 dB

Remarks:

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

SAC Transmitter Radiated Emission:

Model Number: AZH17PCH6TZ5AN **S/N: 123TXF0821** **SR:02827-EMC-00025**

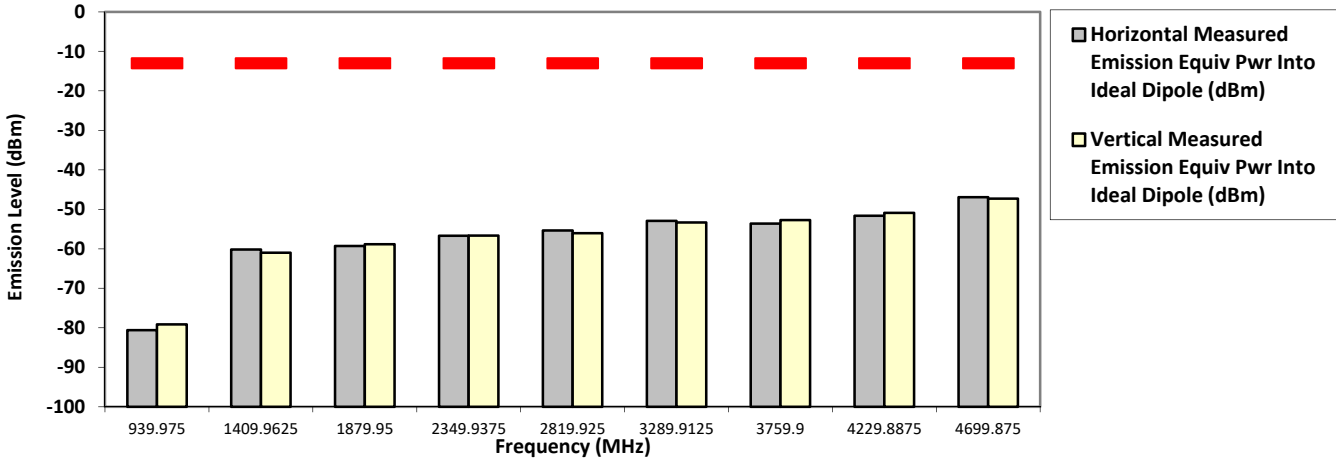
Battery Part No: NNTN8570C **Accy Part No: NA**

Test Mode: TX Tetra (QAM16)

469.987500 MHz **25 kHz** **0.537 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)
939.9750	-13.0000	-80.6085 **	-79.1511 **
1409.9625	-13.0000	-60.1761 **	-61.0092 **
1879.9500	-13.0000	-59.3082 **	-58.8600 **
2349.9375	-13.0000	-56.6848 **	-56.6479 **
2819.9250	-13.0000	-55.3470 **	-56.0525 **
3289.9125	-13.0000	-52.9340 **	-53.3459 **
3759.9000	-13.0000	-53.6316 **	-52.7132 **
4229.8875	-13.0000	-51.6207 **	-50.8854 **
4699.8750	-13.0000	-46.9343 **	-47.2904 **

RADIATED SPURIOUS EMISSIONS



The data presented here was taken using the substitution method as found in the ANSI C63.26-2015 document.

Motorola Penang EMC Lab - Test Performed by : Qawiman&Nazrin **Tue, 25 May, 2021**

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): 23.3 Hum(%RH): 69.6

System MU: 4.03 dB

Remarks:

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

6.11.4. Test Limit

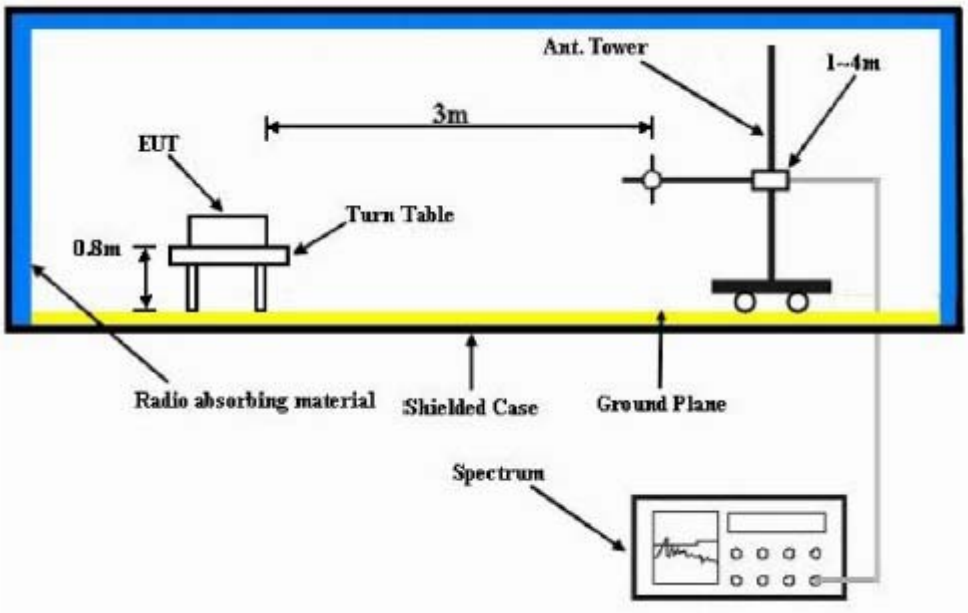
Table below summarized the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least

Channel Spacing	Part 22	Part 24D	Part 74	Part 80	Part 90 (UHF, VHF, 800, 900)	Part 90 (700)
12.5kHz	43 + log10(P) (-13 dBm)	43 + log10(P) (-13 dBm)	43 + log10(P) (-13 dBm)	Not Applicable	50 + log10(P) (-20 dBm)	43 + log10(P) (-13 dBm)
25kHz		Not Applicable		43 + log10(P) (-13 dBm)	43 + log10(P) (-13 dBm)	43 + log10(P) (-13 dBm)

Channel Spacing	RSS 134	RSS 182	RSS 119 (UHF, VHF, 800, 900)	RSS 119 (700)
12.5kHz	43 + log10(P) (-13 dBm)	Not Applicable	50 + log10(P) (-20 dBm)	43 + log10(P) (-13 dBm)
25kHz	Not Applicable	43 + log10(P) (-13 dBm)	43 + log10(P) (-13 dBm)	43 + log10(P) (-13 dBm)

6.12. Effective Radiated Power (ERP)

6.12.1. Test Setup



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

6.12.2. Test Result

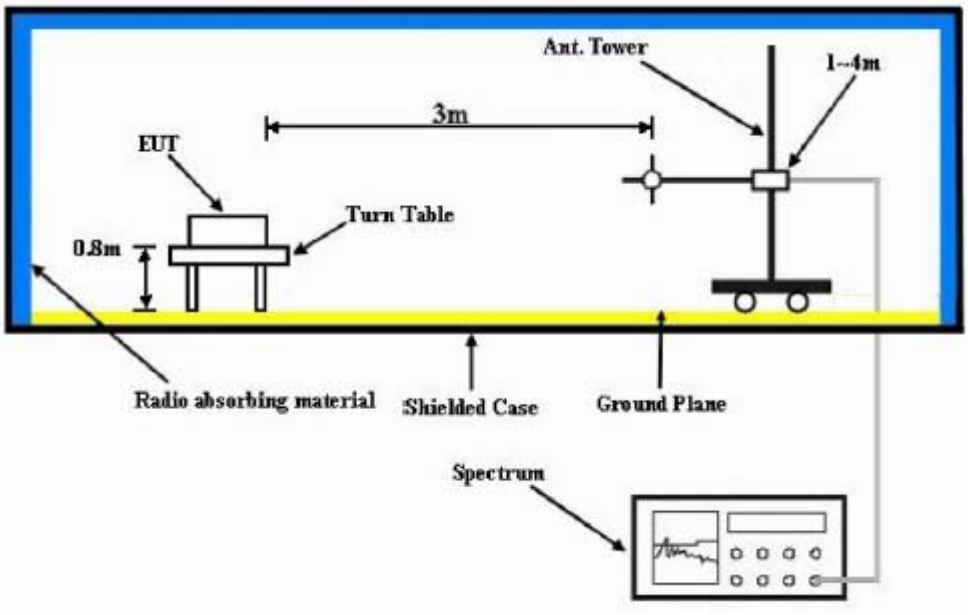
Not Applicable.

6.12.3. Test Limit

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

6.13. GNSS (EIRP for 1559 - 1610MHz)

6.13.1. Test Setup



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

6.13.1. Test Result

Not Applicable.

6.13.2. Test Limit

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

~ End of Test Report ~