ELECTROMAGNETIC EMISSIONS
CLASS II PERMISSIVE CHANGE TEST REPORT

Testing Laboratory 3702

Applicant:	Cisco Systems Inc. 125 West Tasman Dr, Bldg. P, San Jose, California, 95134 USA
Manufacturer:	Cisco Systems Inc. 125 West Tasman Dr, Bldg. P, San Jose, California, 95134 USA
Product Name:	FM4500EMB-HW
Brand Name:	Cisco Fluidmesh FM4500 EMBEDDED
Model No.:	FM4500EMB
Model Difference:	N/A
Report Number:	ER/2021/A0115
FCC ID	R5SX500E
Date of EUT Received:	October 28, 2021
Date of Test:	March 1, 2022 ~ April 6, 2022
Issue Date:	May 19, 2022

Approved By _____

Blue Yang

We hereby certify that:

The above equipment was tested by SGS Taiwan Ltd. Central RF Lab The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.26:2015 and the energy emitted by the sample EUT comply with FCC rule part §90 Subpart Y.

The results of this report relate only to the sample identified in this report.

Revision History

Report Number	Revision	Description	Issue Date	Revised By	Remark
ER/2021/A0115	00	Original	May 5, 2022	Violetta Tang	*
ER/2021/A0115	01	Revise typo of the product description on page 4	May 19, 2022	Violetta Tang	

Note:

1、 The remark "*" indicates modification of the report upon requests from certification body.

Table of Contents

1 GENERAL INFORMATION

1.1 Product Description

Product Name:	FM4500EMB-HW
Brand Name:	Cisco Fluidmesh FM4500 EMBEDDED
Model No.:	FM4500EMB
Model Difference:	N/A
Hardware Version:	N/A
Firmware Version:	N/A
EUT Series No.:	3500170840 / 3500171248
Class II Permissive Change:	FM4500EMB module INSTALLED IN FM3500, FM4500
Host Information:	Product Name: FM3500ENDO-HW Brand Name: Cisco Fluidmesh FM3500 ENDO Model Name: FM3500, FM4500 Model Differences as below. 1. Some passive components of the DCIN circuit are mounted on PCB in FM4500 model. 2. Antenna connectors are different: RPSMA on FM3500, QMA on FM4500. 3. Bottom part of FM4500 enclosure has M12 connectors instead of RJ45 ports: M12 DCIN port is added on FM4500.
Power Supply:	56Vdc

1.2 RF Specification

WLAN 4.9GHz:

Wi-Fi	Frequency Range	Channels	Rated Power (dBm)	Modulation Technology	Test Mode
11j (20MHz)	4960~4980	2	22.51	OFDM	Mode 1 & 3
11j (20MHz)	4960~4980	2	15.16	OFDM	Mode 2 & 4
Modulation type		64QAM, 16QAM, QPSK, BPSK for OFDM			
Data Rate		802.11 j_20MHz: 6 – 54Mbps			
Type of Emission		20MHz=17M7W7D			

Note: For the detailed of test mode, please refer to section 4.5 in this report.

1.3 Antenna Designation

Antenna Type	Supplier	Antenna Part No.	Freq. (MHz)	Peak Antenna Gain (dBi)	Directional Gain (dBi)
Direction	Fluidmesh	FM-TUBE	4960~4980	14.60	17.61
Omnidirection	Fluidmesh	FM-SHARK-DUAL	4960~4980	13.00	16.01
Direction	Fluidmesh	FM-HORN-90	4960~4980	10.00	13.01
Omnidirection	Fluidmesh	FM-OMNI-5-V	4960~4980	4.00	7.52
Omnidirection	Fluidmesh	FM-OMNI-5-H	4960~4980	5.00	
Omnidirection	MP Antenna LTD.	08-ANT-0985	4960~4980	3.00	6.01

Note:

1. Pre-scanned was done on the above antennas, measurements were demonstrated by using the antenna with the highest gain as the worst case scenarios.
2. Antenna information is provided by the applicant.

1.4 Test Methodology of Applied Standards

FCC Part 90, Subpart Y
FCC KDB 662911 D01 Multiple Transmitter Output v02r01
FCC KDB 971168 D01 Power Meas License Digital Systems v03r01
ANSI C63.26:2015

1.5 Test Facility

Laboratory	Test Site Address	Test Site Name	FCC Designation number	IC CAB identifier
SGS Taiwan Ltd. Central RF Lab. (TAF code 3702)	No.134, Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan.	SAC 1	TW0027	TW3702
		SAC 3		
		Conduction 1		
		Conducted 1		
		Conducted 2		
		Conducted 3		
		Conducted 4		
		Conducted 5		
		Conducted 6		
	No.2, Keji 1st Rd., Guishan District, Taoyuan City, Taiwan 333	Conduction A	TW0028	
		SAC C		
		SAC D		
		SAC G		
		Conducted A		
		Conducted B		
		Conducted C		
		Conducted D		
		Conducted E		
		Conducted F		
		Conducted G		
Note: Test site name is remarked on the equipment list in each section of this report as an indication where measurements occurred in specific test site and address.				

1.6 Special Accessories

There are no special accessories used while test was conducted.

1.7 Equipment Modifications

There was no modification incorporated into the EUT.

2 SYSTEM TEST CONFIGURATION

2.1 EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

2.2 EUT Exercise

An engineering test mode (software/firmware) that applicant provided was utilized to manipulate the EUT into transmit, selection of the test channel, and modulation scheme.

2.3 Test Procedure

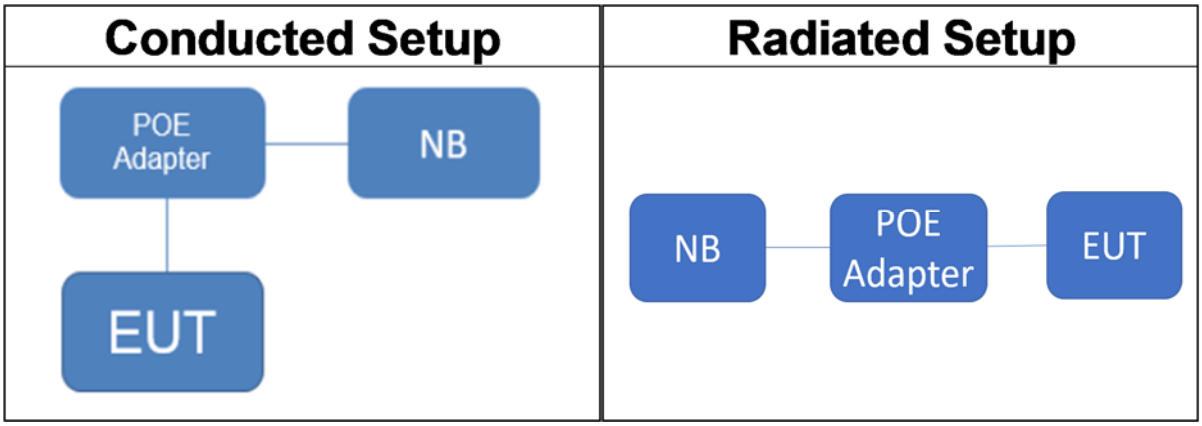
2.3.1 Conducted Measurement at Antenna Port

The EUT is placed on a table which is 0.8 m above ground plane. A low loss of RF cable was used to connect the antenna port of EUT to measurement equipment.

2.3.2 Radiated Emissions (ERP/EIRP)

The EUT is placed on a turn table, for emission measurements below 1 GHz is 0.8 m above ground plane, for emission measurements above 1 GHz, the table height shall be 1.5 m. The turn table shall rotate 360 degrees to determine the position of maximum emis-sion level. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both Horizontal and Vertical. In order to find out the max. emission, the relative positions of this hand-held transmitter (EUT) was rotated through three orthogonal axes and measurement procedures for electric field radiated emissions above 1 GHz the EUT measurement is to be made “while keeping the antenna in the ‘cone of radiation’ from that area and pointed at the area both in azimuth and elevation, with polarization oriented for maximum response.” is still within the 3dB illumination BW of the measurement antenna.

2.4 Test Configuration



2.5 Control Unit(s)

Conducted Emission Test Site: Conducted 2					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
POE Adapter	Fluidmesh	POE29U-1AT(PL)	PHI242904KX	N/A	N/A
Test Software	SGS	Radio Test Software	Ver. 21	N.C.R	N.C.R
Notebook	Lenovo	T440P	PC-089AH5	N/A	N/A

Radiated Emission Test Site: SAC 3					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Test Software	audix	e3	Ver. 9 210322	N.C.R	N.C.R
Notebook	Lenovo	L430	R9-WGNK5 13/01	N/A	N/A
POE Adapter	PHIHONG	POE29U1AT(PL)	PHI242904KM	N/A	N/A

3 SUMMARY OF TEST RESULTS

FCC Rules	Description Of Test	Result
2.1049 ; §90.209	Emission Bandwidth	Compliant
§90.1215(a)	Maximum Transmitter Power	Compliant
§90.1215(a)(b)	Peak Power Spectral Density	Compliant
§90.210(L) (M)	Transmit Spectrum Mask	Compliant
2.1051; §90.210(L)(M)	Transmitter Conducted Unwanted Emissions	Compliant
2.1053; §90.210(L)(M)	Transmitter Radiated Unwanted Emissions	Compliant
2.1055; §90.213	Frequency Stability	Compliant
§90.1215(e)	Peak Excursion	Compliant

4 DESCRIPTION OF TEST MODES

4.1 Operated in 802.11j Band

2 channels are provided for 20M

CHANNEL	FREQUENCY (MHz)
192	4960
196	4980

4.2 The Worst Test Modes and Channel Details

1. The EUT has been tested under operating condition.
2. Test program used to control the EUT for staying in continuous transmitting and receiving mode is programmed.
3. Investigation has been done on all the possible configurations for searching the worst case.
   The given UE is pre-scanned among below modes.

Modulation	Transmission Chain				Single Transmission Spatial	Multiple Transmission Spatial
☒ OFDM	☒ Ch0	☒ Ch1	☐ Ch2	☐ Ch3	☐ 1TX	☒ 2TX

4. Therefore, below summary is the modes of test configuration that yield the highest reading and generate the highest emission chosen to carry out the relevantly mandatory test items.

4.3 Radiated Emission Test:

RADIATED EMISSION TEST (BELOW 1 GHz)						
MODE	FREQUENCY BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)	ANTENNA PORT
802.11j	4960~4980	192 to 196	192,196	OFDM	6	MIMO

RADIATED EMISSION TEST (ABOVE 1 GHz)						
MODE	FREQUENCY BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)	ANTENNA PORT
802.11j	4960~4980	192 to 196	192,196	OFDM	6	MIMO

Note: The field strength of radiation emission was measured as EUT three orthogonal plans, E1 / E2 / H, are positioned to pre-scan the emission generating the highest one. The worst position is tested, and recorded.

4.4 Antenna Port Conducted Mesurement:

CONDUCTED TEST						
MODE	FREQUENCY BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)	ANTENNA PORT
802.11j	4960~4980	192 to 196	192,196	OFDM	6	MIMO

4.5 Test mode:

Mode 1: Point-to-point and point-to-multipoint operations with FM-TUBE antenna.
Mode 2: Non-point-to-point and non-point-to-multipoint operations with FM-TUBE antenna.
Mode 3: Point-to-point and point-to-multipoint operations with FM-SHARK-DUAL antenna.
Mode 4: Non-point-to-point and non-point-to-multipoint operations with FM-SHARK-DUAL antenna.

5 MEASUREMENT UNCERTAINTY

Test Items	Uncertainty		
Power Density	+/-	1.62	dB
RF Power Output	+/-	1	dB
ERP/ EIRP measurement	+/-	3	dB
	+/-	3	dB
Emission Bandwidth	+/-	1.53	Hz
Out of Band Emissions at Antenna Terminals and Band Edge	+/-	1.68	dB
Peak to Average Ratio	+/-	1	dB
Frequency Stability vs. Temperature	+/-	1.53	Hz
Frequency Stability vs. Voltage	+/-	1.53	Hz
Temperature	+/-	0.4	°C
Humidity	+/-	3.5	%
DC / AC Power Source	+/-	1	%

Radiated Spurious Emission Measurement Uncertainty				
Polarization: Vertical	**+/-**	**2.64**	**dB**	9kHz~30MHz
	+/-	**4.93**	**dB**	30MHz - 1000MHz
	+/-	**4.81**	**dB**	1GHz - 18GHz
	+/-	**4.52**	**dB**	18GHz - 40GHz
Polarization: Horizontal	**+/-**	**2.64**	**dB**	9kHz~30MHz
	+/-	**4.45**	**dB**	30MHz - 1000MHz
	+/-	**4.81**	**dB**	1GHz - 18GHz
	+/-	**4.52**	**dB**	18GHz - 40GHz

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

6 MEASUREMENT EQUIPMENT USED

6.1 Conducted Measurement

Conducted Emission Test Site: Conducted 2					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
EXA Spectrum Analyzer	KEYSIGHT	N9010B	MY60240503	12/09/2021	12/08/2022
Temperature Chamber	Giant Force	GTH-150-40-CP-AR	MAA0512-018	05/19/2021	05/18/2022
AC Power Source	Gwinstek	APS-7050E	GEV171679	09/28/2021	09/27/2022
Attenuator	Mini-Circuit	BW-S10W2+	4	12/14/2021	12/13/2022
DC Block	Mini-Circuits	BLK-18-S+	1	12/14/2021	12/13/2022

6.2 Radiated Measurement

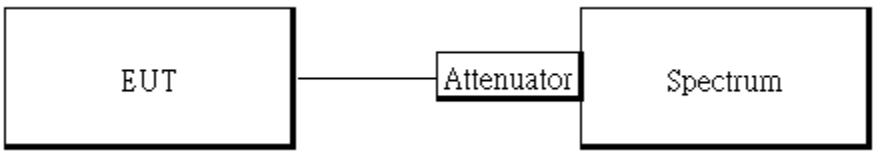
Radiated Emission Test Site: SAC 3					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Bi-log Antenna	SCHWARZBECK	VULB9168	378	08/20/2021	08/19/2022
Horn Antenna	SCHWARZBECK	BBHA9120D	1441	09/27/2021	09/26/2022
Horn Antenna	SCHWARZBECK	BBHA9170	184	12/16/2021	12/15/2022
Bi-log Antenna	SCHWARZBECK	VULB9168	300	10/19/2021	10/18/2022
Horn Antenna	SCHWARZBECK	BBHA9120D	603	05/18/2021	05/17/2022
Horn Antenna	SCHWARZBECK	BBHA9170	185	08/02/2021	08/01/2022
PXA Spectrum Analyzer	Agilent	N9030A	MY53120760	04/27/2021	04/26/2022
Signal Generator	R&S	SMBV100A	263084	01/11/2022	01/10/2023
Pre-Amplifier	HP	8449B	3008A00578	12/16/2021	12/15/2022
Pre-Amplifier	HP	8447D	2944A07676	12/16/2021	12/15/2022
Pre-Amplifier	EMC Instruments	EMC184045B	980135	10/27/2021	10/26/2022
High Pass Filter	WI	WHKX7.0/18G-8SS	45	12/14/2021	12/13/2022
Coaxial Cable	Huber Suhner	SUCOFLEX 102	MY2636/2	12/16/2021	12/15/2022
Coaxial Cable	Huber Suhner	SUCOFLEX 104	340057/4	12/16/2021	12/15/2022
Coaxial Cable	Huber Suhner	SUCOFLEX 104PEA	800052/2	12/16/2021	12/15/2022
Coaxial Cable	Huber Suhner	SUCOFLEX 102	MY2621/2	12/16/2021	12/15/2022
Coaxial Cable	Huber Suhner	SUCOFLEX 102	MY2617/2	12/16/2021	12/15/2022
Coaxial Cable	Huber Suhner	SUCOFLEX 104	160125	12/16/2021	12/15/2022
Coaxial Cable	Huber Suhner	SUCOFLEX 106	76096/6	12/16/2021	12/15/2022
Coaxial Cable	Huber Suhner	SUCOFLEX 102	MY2630/2	12/16/2021	12/15/2022
Coaxial Cable	Huber Suhner	SUCOFLEX 102	MY22962/2	12/16/2021	12/15/2022
Coaxial Cable	Huber Suhner	SUCOFLEX 102	SN 520430/2	12/16/2021	12/15/2022
Site Cal	SGS	SAC 3	N/A	01/01/2022	12/31/2022

7 EMISSION BANDWIDTH & OCCUPIED BANDWIDTH MEASUREMENT

7.1 Standard Applicable

According to FCC Part 90 §90.209. No Limit required.

7.2 Test Set-up



7.3 Measurement Procedure

1. Place the EUT on the table and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the Antenna port to the.
3. 26dB Bandwidth Measurement: Set the spectrum analyzer as 1% of emission BW Sweep=auto, Detector = Peak, Trace Mode = Max Hold, Manually readjust RBW until the RBW/EBW ratio is 1% based on.
4. Mark the peak frequency and -26dB (upper and lower) frequency.
5. Repeat the procedures as list above until all test default channels (low, middle, and high) are completed.

7.4 Measurement Results

7.4.1 Test mode: Mode 1

Ch0			
CH	Frequency (MHz)	99% BW (MHz)	26dB BW (MHz)
192	4960	17.607	19.87
196	4980	17.612	19.81

Ch1			
CH	Frequency (MHz)	99% BW (MHz)	26dB BW (MHz)
192	4960	17.59	20.01
196	4980	17.618	20.09

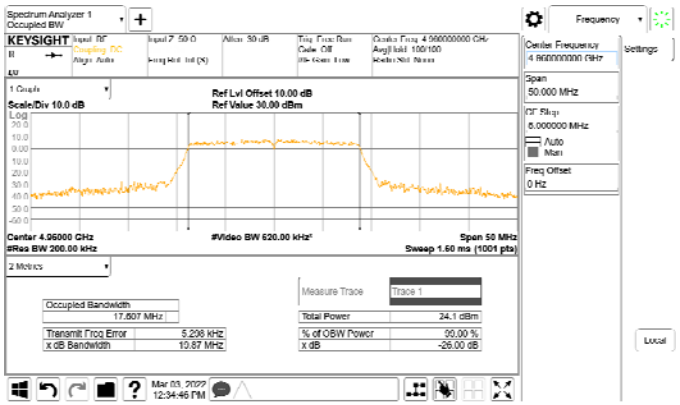
7.4.2 Test mode: Mode 2

Ch0			
CH	Frequency (MHz)	99% BW (MHz)	26dB BW (MHz)
192	4960	17.588	19.9
196	4980	17.615	19.88

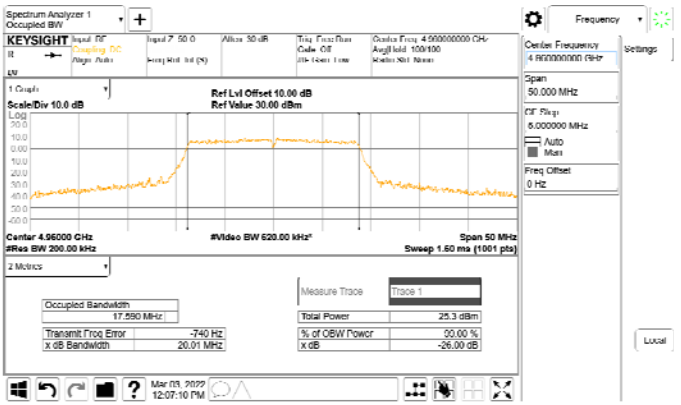
Ch1			
CH	Frequency (MHz)	99% BW (MHz)	26dB BW (MHz)
192	4960	17.626	20.07
196	4980	17.484	19.32

Test mode: Mode 1

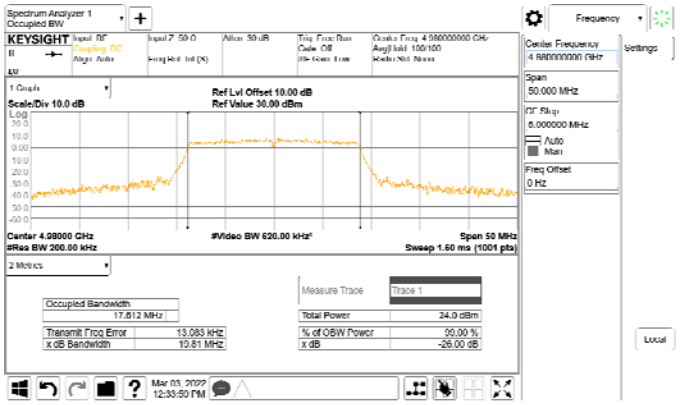
Bandwidth_Chain0_4960MHz



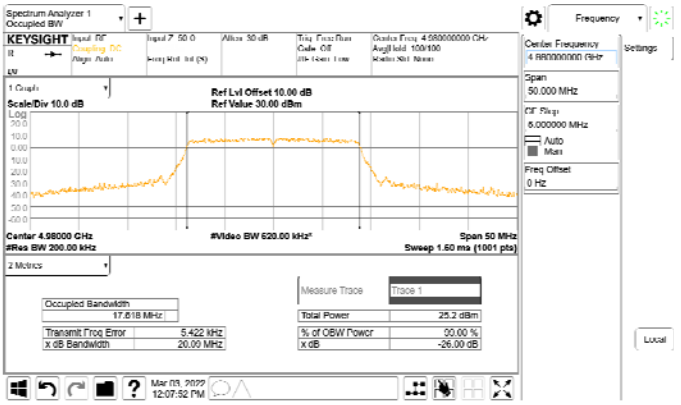
Bandwidth_Chain1_4960MHz



Bandwidth_Chain0_4980MHz

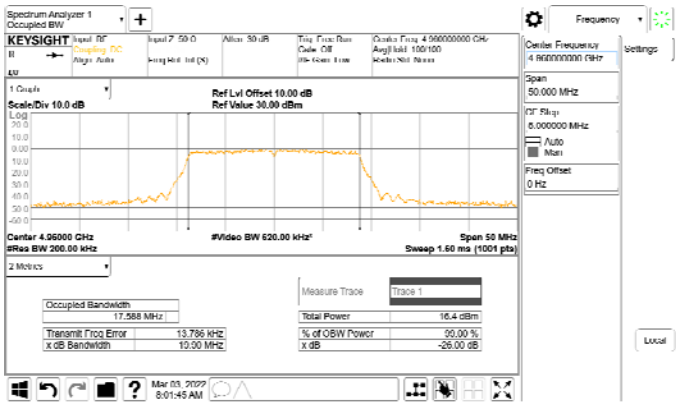


Bandwidth_Chain1_4980MHz

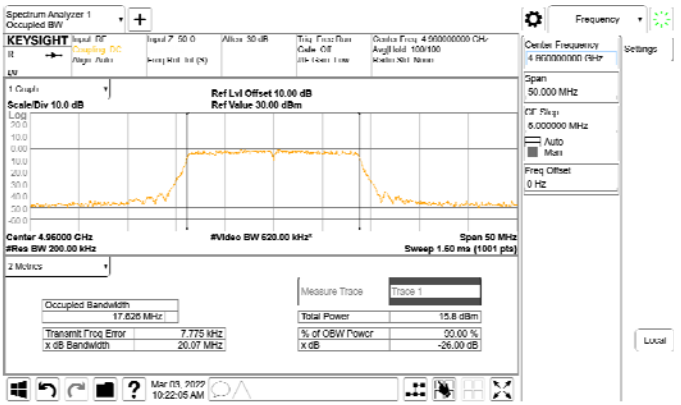


Test mode: Mode 2

Bandwidth_Chain0_4960MHz

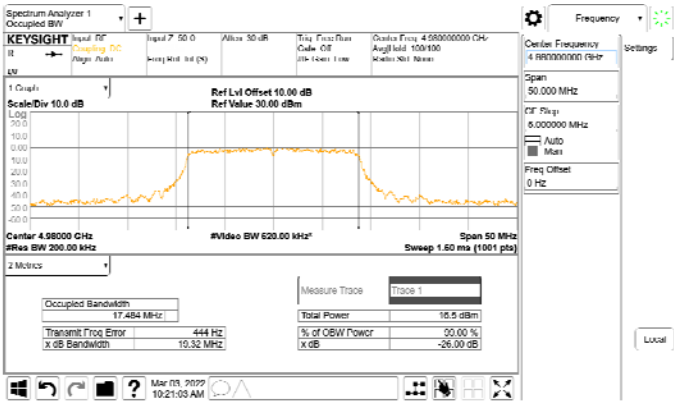


Bandwidth_Chain1_4960MHz



Bandwidth_Chain0_4980MHz

Bandwidth_Chain1_4980MHz



8 THE MAXIMUM OUTPUT POWER MEASUREMENT

8.1 Standard Applicable

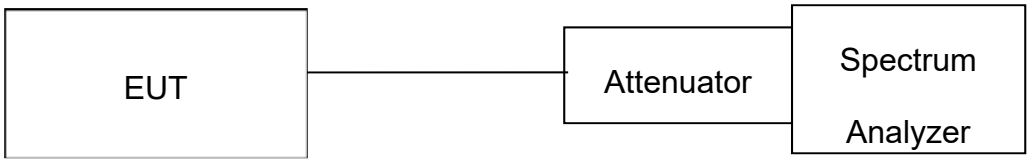
According to FCC Part 90 §90.1215

Channel Bandwidth (MHz)	Low Power Device Peak Transmitter Power (dBm)	High Power Device Peak Transmitter Power (dBm)
1	7	20
5	14	27
10	17	30
15	18.8	31.8
20	20	33

(a) High power devices are also limited to a peak power spectral density of 21 dBm per one MHz. High power devices using channel bandwidths other than those listed above are permitted; however, they are limited to peak power spectral density of 21 dBm/MHz. If transmitting antennas of directional gain greater than 9 dBi are used, both the maximum conducted output power and the peak power spectral density should be reduced by the amount in decibels that the directional gain of the antenna exceeds 9 dBi. However, high power point-to-point and point-to-multipoint operations (both fixed and temporary-fixed rapid deployment) may employ transmitting antennas with directional gain up to 26 dBi without any corresponding reduction in the maximum conducted output power or spectral density. Corresponding reduction in the maximum conducted output power and peak power spectral density should be the amount in decibels that the directional gain of the antenna exceeds 26 dBi.

(b) Low power devices are also limited to a peak power spectral density of 8 dBm per one MHz. Low power devices using channel bandwidths other than those listed above are permitted; however,they are limited to a peak power spectral density of 8 dBm/MHz. If transmitting an tennas of directional gain greater than 9 dBi are used, both the maximum conducted output power and the peak power spectral density should be reduced by the amount in decibels that the directional gain of the antenna exceeds 9 dBi.

8.2 Test Set-up



8.3 Measurement Procedure

1. Set the Spectrum analyzer to Channel Power Function
2. Set the RBW = 1% to 5% of the OBW
3. Set the VBW ≥ 3 x RBW.
4. Set the span ≥ 2 x to 3 x RBW.
5. Sweep time = auto couple.
6. Detector = RMS.
7. Ensure that the number of measurement points ≥ span/RBW
8. Trace mode = max hold.
9. Allow trace to fully stabilize.
10. Use the peak marker function to determine the maximum amplitude level.

8.4 Measurement Results

8.4.1 Test Mode: Mode 1

802.11j_2TX								
CH	Frequency (MHz)	Data Rate	Power set	Avg. POWER (dBm)		TOTAL POWER (dBm)	Conducted Power LIMIT (dBm)	RESULT
				CH 0	CH 1			
192	4960	3	17	19.37	19.58	22.49	33	PASS
196	4980	3	17	19.38	19.61	**22.51**	33	PASS

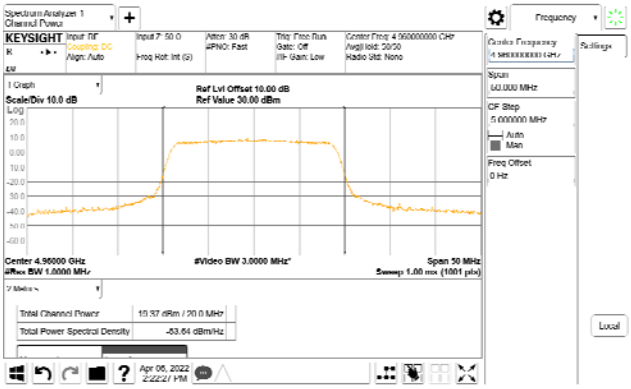
8.4.2 Test Mode: Mode 2

802.11j_2TX								
CH	Frequency (MHz)	Data Rate	Power set	Avg. POWER (dBm)		TOTAL POWER (dBm)	Conducted Power LIMIT (dBm)	RESULT
				CH 0	CH 1			
192	4960	6	9	12.09	12.15	15.13	24.39	PASS
196	4980	6	9	12.12	12.17	**15.16**	24.39	PASS

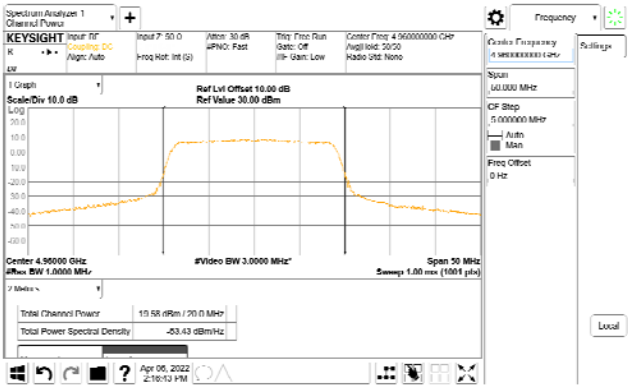
Note: Power LIMIT=33-(17.61-9)=24.39

Test Mode: Mode 1

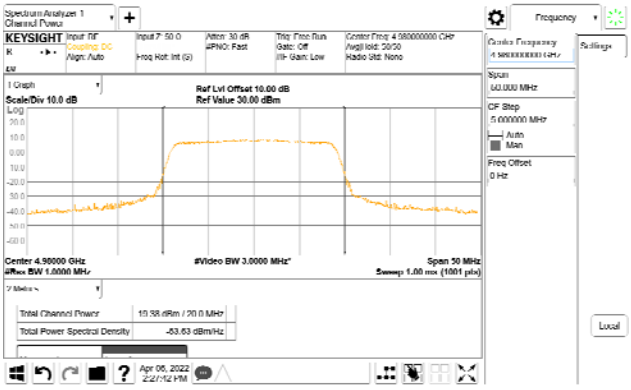
Output power_Chain0_4960MHz



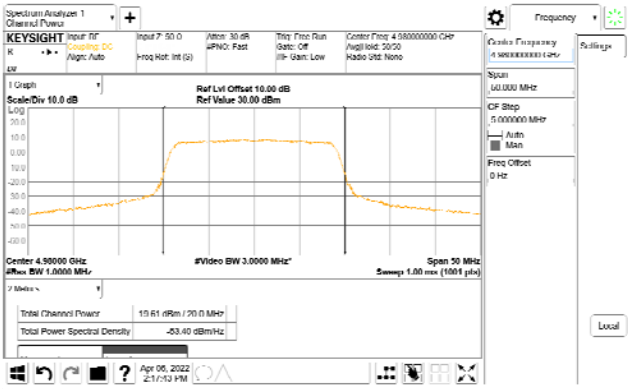
Output power_Chain1_4960MHz



Output power_Chain0_4980MHz

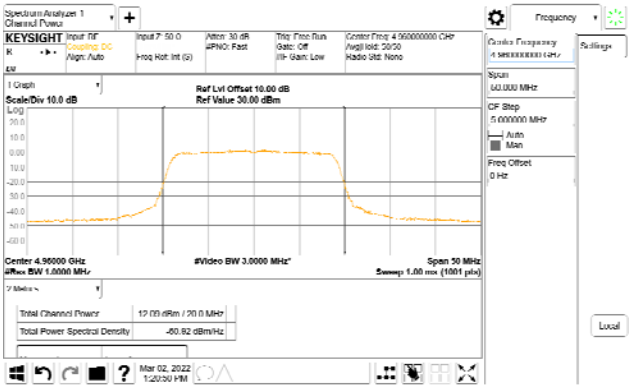


Output power_Chain1_4980MHz

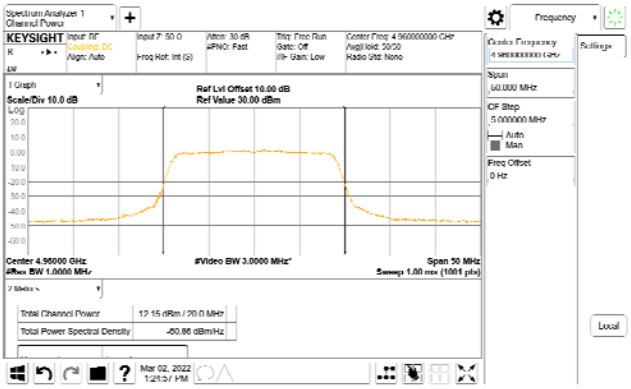


Test Mode: Mode 2

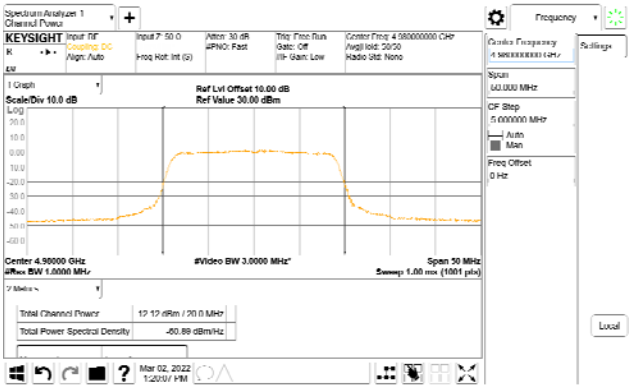
Output power_Chain0_4960MHz



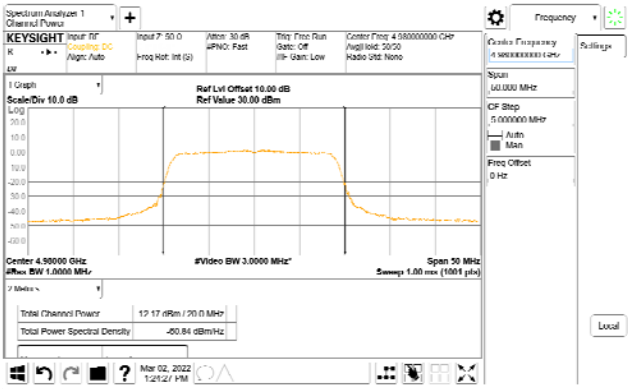
Output power_Chain1_4960MHz



Output power_Chain0_4980MHz



Output power_Chain1_4980MHz



9 POWER SPECTRAL DENSITY

9.1 Standard Applicable

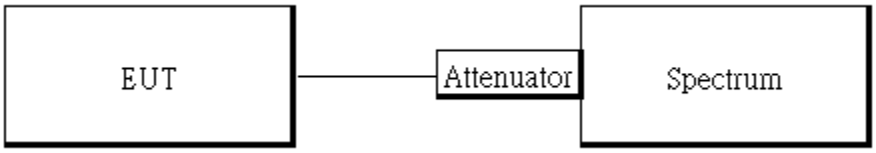
According to FCC Part 90 §90.1215 Power limits.

(1) High power devices are also limited to a peak power spectral density of 21 dBm per one MHz. High power devices using channel bandwidths other than those listed above are permitted; however, they are limited to peak power spectral density of 21 dBm/MHz. If transmitting antennas of directional gain greater than 9 dBi are used, both the maximum conducted output power and the peak power spectral density should be reduced by the amount in decibels that the directional gain of the antenna exceeds 9 dBi. However, high power point-to-point and point-to-multipoint operations (both fixed and temporary-fixed rapid deployment) may employ transmitting antennas with directional gain up to 26 dBi without any corresponding reduction in the maximum conducted output power or spectral density. Corresponding reduction in the maximum conducted output power and peak power spectral density should be the amount in decibels that the directional gain of the antenna exceeds 26 dBi.

(2) Low power devices are also limited to a peak power spectral density of 8 dBm per one MHz.

Low power devices using channel bandwidths other than those listed above are permitted; however,they are limited to a peak power spectral density of 8 dBm/MHz. If transmitting antennas of directional gain greater than 9 dBi are used, both the maximum conducted output power and the peak power spectral density should be reduced by the amount in decibels that the directional gain of the antenna exceeds 9 dBi.

9.2 Test Set-up



9.3 Measurement Procedure

1. Set the analyzer center frequency to the OBW center frequency.
2. The testing follows the Measurement Procedure of ANSI C63.26 - 2015.
3. Set the span to 1.5 times the OBW bandwidth.
4. Set the RBW to the specified reference bandwidth (often 1 MHz).
5. Set the VBW ≥ 3 × RBW.
6. Set the number of points in sweep ≥ span / RBW.
   NOTE: This requirement is applicable only to final measurement. It can be violated for preliminary (pre-scan) measurements when necessary for wide span measurements.
7. Detector = peak.
8. Trace mode = max hold.
9. Allow trace to fully stabilize.
10. Use the peak marker function to determine the maximum amplitude level within the specified reference bandwidth (PSD).

9.4 Measurement Results

9.4.1 Test Mode: Mode 1

POWER DENSITY 802.11j MODE						
Frequency (MHz)	Ch0 meas PSD (dBm/MHz)	Ch1 meas PSD (dBm/MHz)	Duty Factor (dB)	Total Corr'd PSD(dBm/MHz)	Limit (dBm/MHz)	Margin (dB)
4960	16.37	16.39	0.00	19.39	21.00	-1.61
4980	16.03	16.29	0.00	19.17	21.00	-1.83

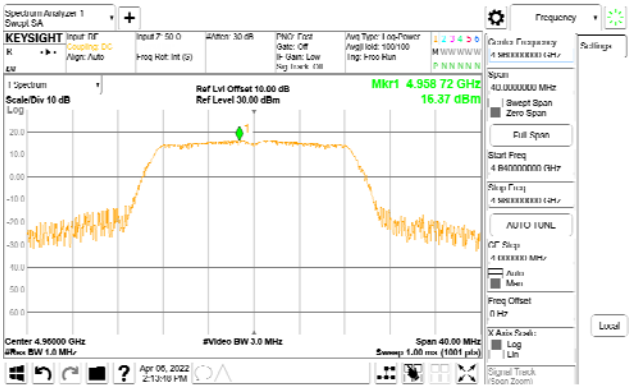
9.4.2 Test Mode: Mode 2

POWER DENSITY 802.11j MODE						
Frequency (MHz)	Ch0 meas PSD (dBm/MHz)	Ch1 meas PSD (dBm/MHz)	Duty Factor (dB)	Total Corr'd PSD(dBm/MHz)	Limit (dBm/MHz)	Margin (dB)
4960	9.10	9.14	0.00	12.13	12.39	-0.26
4980	9.02	9.11	0.00	12.08	12.39	-0.31

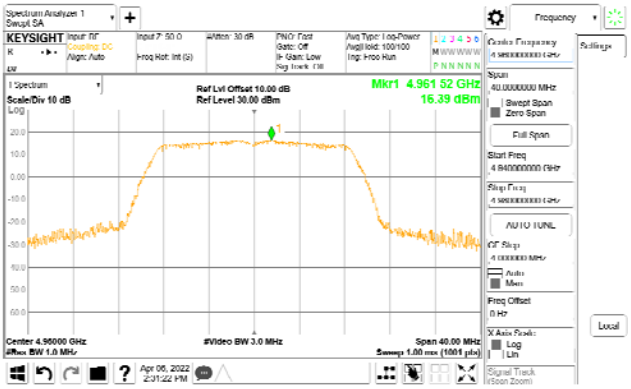
Note: Limit=21-(17.61-9)=12.39

Test Mode: Mode 1

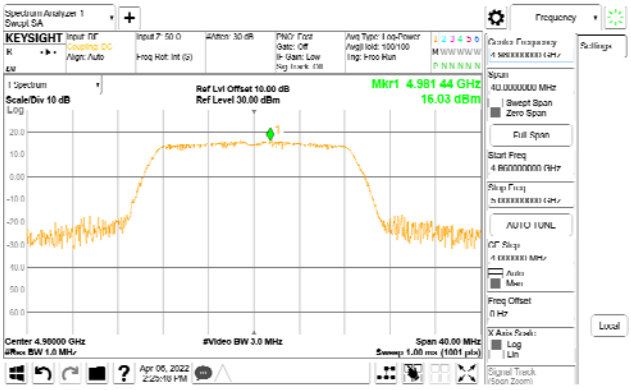
Power Density_Chain0_ 4960MHz



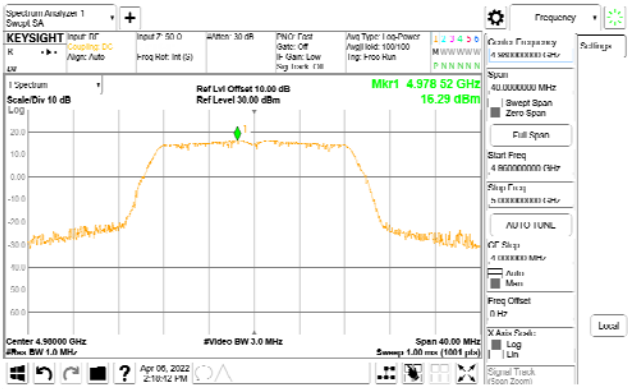
Power Density_Chain1_ 4960MHz



Power Density_Chain0_ 4980MHz

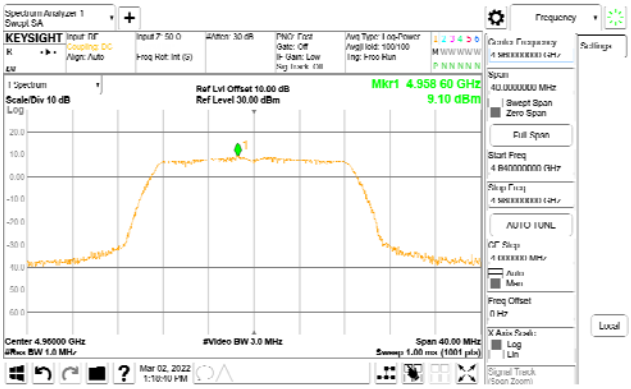


Power Density_Chain1_ 4980MHz

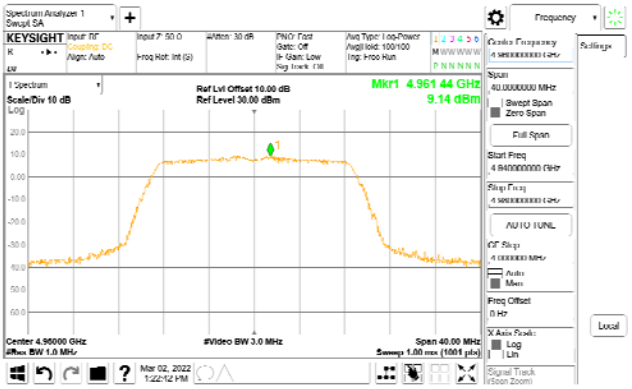


Test Mode: Mode 2

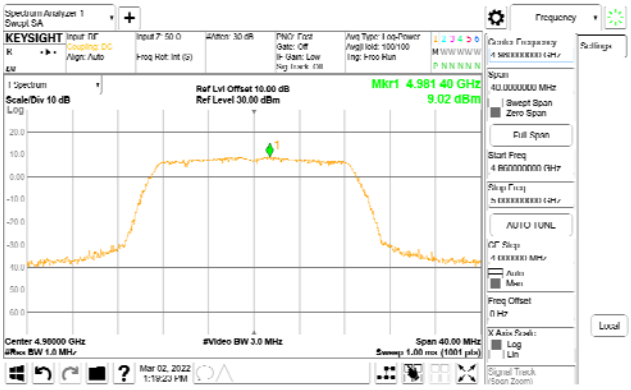
Power Density_Chain0_ 4960MHz



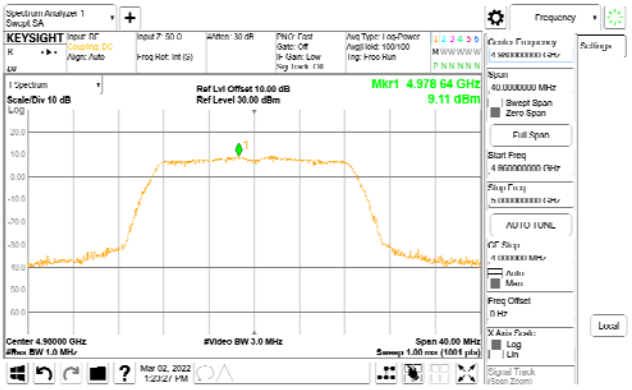
Power Density_Chain1_ 4960MHz



Power Density_Chain0_ 4980MHz



Power Density_Chain1_ 4980MHz



10 TRANSMIT SPECTRUM MASK

10.1 Standard Applicable

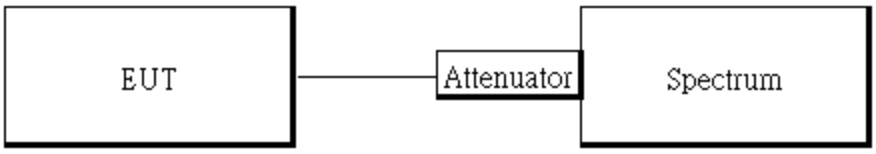
According to FCC Part 90 §90.210 with FCC 04-265

(Emissions Mask L for low power, Emissions Mask M for high power)

Authorized Bandwidth (BW)	Low-power Transmitter	High-power Transmitter
0 - 45 %	0dB	0dB
45 - 50 %	219 log (% of (BW) / 45) dB	568 log (% of (BW) / 45) dB
50 - 55 %	10 + 242 log (% of BW / 50) dB	26 + 145 log (% of BW / 50) dB
55 - 100 %	20 + 31 log (% of (BW)/ 55) dB	32 + 31 log (% of (BW)/ 55) dB
100 - 150 %	28 + 68 log (% of (BW) / 100) dB	40 + 57 log (% of (BW) / 100) dB
Above 150 %	50 dB	50 dB or 55 + 10 log (P) dB, Whichever is the lesser attenuation

Note: The zero dB reference is measured relative to the highest average power of the fundamental emissionmeasured across the designated channel bandwidth using a resolution bandwidth of at least one percent of the occupied bandwidth of the fundamental emission and a video bandwidth of 30 The power spectral density is the power measured within the resolution bandwidth of the measurement

10.2 Test Set-up



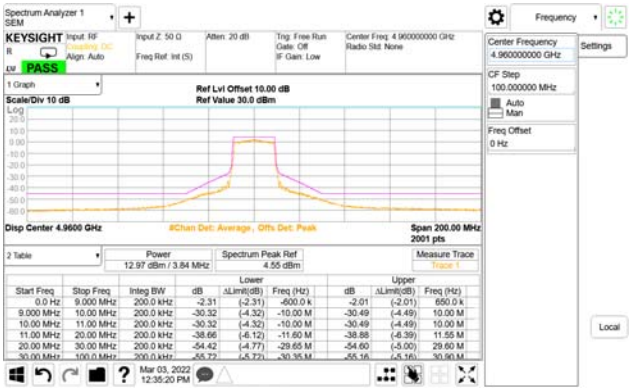
10.3 Measurement Procedure

The zero dB reference is measured relative to the highest average power of the fundamental emission measured across the designated channel bandwidth using a resolution bandwidth of at least one percent of the occupied bandwidth of the fundamental emission and a video bandwidth of 30 kHz.

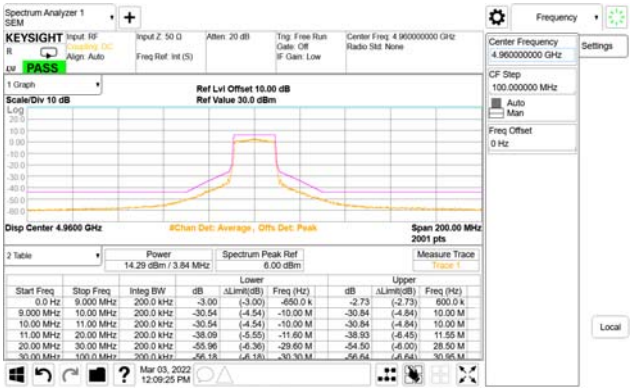
10.4 Measurement Results

10.4.1 Test Mode: Mode 1

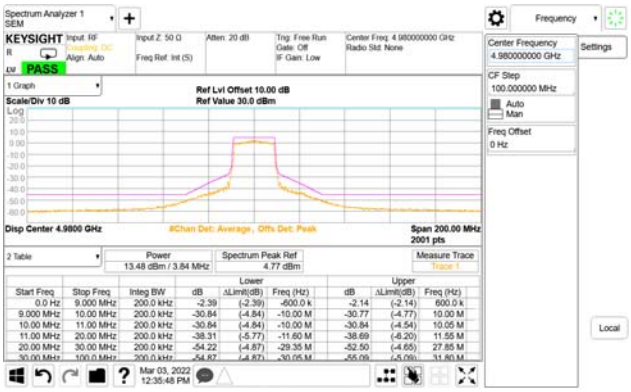
Emission Mask_Chain0_4960MHz



Emission Mask_Chain1_4960MHz



Emission Mask_Chain0_4980MHz



Emission Mask_Chain1_4980MHz