

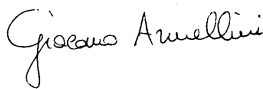




PRIMA

RICERCA & SVILUPPO

RAPPORTO DI PROVA / TEST REPORT

Rif./Ref.No. FCCTR_160556-0	Data / Date: 27/06/2016	Pagine / Pages :64
Scopo delle prove / Test object :	Prove di tipo in accordo a / Type test according to FCC Cfr 47 part 15 - §15.247 d)	
Richiedente / Applicant :	TECNIPLAST S.p.A. Via I Maggio, 6 – 21010 Buguggiate (VA) – ITALY Tel. +39 0332 809740	
Persona di riferimento / Applicant's referee :	Mrs Manuela Maffe (manuela.maffe@tecniplast.it) Mr. Alessandro Rigamonti (Alessandro.rigamonti@tecniplast.it)	
Marchio commerciale / Trade mark :		
Fabbricante / Manufacturer :	Tecniplast S.p.A.	
Prodotto / Product :	IVC Air Handling Units	
Modello / Model :	WiFLOW	
Data ricevimento campioni / Date of test sample receipt:	08/04/2016	
Campioni verificati / No. of tested samples	1	
Data verifiche / Testing date :	from 08 to 29 April 2016	
Sito di prova / Testing site :	Prima Ricerca & Sviluppo Via Campagna - 92 I-22020 FALOPPIO (CO)	
Esito delle valutazioni / Assessment results :	CONFORME/ COMPLIANT	
Verifiche effettuate da / Verifications carried out by :	Enrico BANFI Tecnico Laboratorio EMC e RADIO/ EMC and RADIO Laboratory Engineer	
Approvato / Approved by :	Giacomo ARMELLINI Responsabile Laboratorio EMC e RADIO/ EMC and RADIO Laboratory Manager	

I risultati delle prove riportati nel presente rapporto di prova si riferiscono solo ai campioni esaminati. / The test results reported in this test report shall refer only to the samples tested

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PRIMARICERCA & SVILUPPO

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0 RELEASE CONTROL RECORD

TEST REPORT NUMBER	REASON OF CHANGE	DATE OF ISSUE
FCCTR_160556-0	Original release	27/06/2016

1 TECHNICAL INFORMATION OF EQUIPMENT UNDER TEST (EUT)

1.1 EUT Identification

DESCRIPTION :	IVC Air Handling Units
MODEL:	WiFLOW
TRADEMARK:	 TECNIPLAST <i>Innovation through passion™</i>
S/N:	Not present
MANUFACTURER:	Tecniplast S.p.A.
COUNTRY OF MANUFACTURER:	Italy
MODULE MANUFACTURER:	OGEMRAY TECHNOLOGY (HK) CO., LIMITED
DESCRIPTION	USB Wireless Module
MODULE NAME	GWF-3M08
MODULE FCC ID	QR4WF5370M08
ANTENNA TYPE:	Pulse Electronics Corporation mod. W1030 Gain 2 dBi
EUT DIMENSIONS :	See Photographic documentation
EUT STANDING:	Floor

1.2 EUT Technical Data

POWER SUPPLY NOMINAL VOLTAGE:	115V~ 60Hz
NOMINAL POWER OR ABSORBING CURRENT :	not declared
TYPICAL USAGE :	RADIO EQUIPMENT
TYPE:	INTENTIONAL RADIATOR

1.3 EUT ports identification

This section contains descriptions of all ports, the length and the type of the cable provided by manufacturer needed for the tests. Moreover it is specified if the ports are ever or optionally connected.

Port	Description	Connector	Max cable length
Enclosure	Metallic	Screw	---
AC mains input/output ports	115V~ 60Hz	Power supply cable with a plug	3mt
DC mains input/output ports	Port not present	-----	-----
Signals / Control Ports	LAN Port	RJ45	3mt
Telecommunication port	Port not present	-----	-----

Note: During the tests all cables must be what provided the manufacturer or the same that used in the real employment of the EUT.

1.4 Modifications incorporated in E.U.T.

The following items are the modifications introduced in the equipment under test :

- None

1.5 Auxiliary equipment

- None

1.6 Test overview

The appliance is classified as “Intentional radiator” in conformity to FCC Part 15 Subpart C § 15.247.
The application is mainly as IVC Air Handling Units for laboratory use.
The EUT is a radio equipment wich contains one Radio Module (see section 1.1.) that is already certified.

This Test Report is related to the request for permissive change Class II for OGEMRAY TECHNOLOGY (HK) CO., LIMITED USB Wireless Module mod. GWF-3M08 FCCID: QR4WF5370M08 due to the following modifications:

Use of the external antenna

Antenna Type: W1030 (Reverse SMA (male))
Manufacturer: Pulse Electronics Corporation
Description: Antenna 2.4GHz R-SMA BLACK 3”
Gain: 2dBi

Assessment of radiated spurious emission has been performed

2 REFERENCE STANDARD

CODE OF FEDERAL REGULATIONS	
Title 47 Part 15 Subpart A	Radio frequency devices - General
Title 47 Part 15 Subpart C § 15.247 d)	Radio frequency devices – Intentional Radiators Operation within the bands 902-928 MHz, 2400-2483.5 MHz, 5725-5875 MHz, and 24.0-24.25 GHz
ANSI C63.4 (2014)	American National Standard for Methods of Measuring of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz – 40 GHz

In the following table there are the operating conditions adopted during tests identified by an indicator (#..) at which has been referred the item “Operating condition of the equipment under test”

3 OPERATING TEST MODES AND CONDITIONS

OPERATING CONDITION	DESCRIPTION
#1	Wlan continuous modulated transmission

4 SUMMARY OF TEST RESULTS

Port		Phenomena	Reference Standard	Operating condition	Result
1	Enclosure	RF radiated Spurious Emissions	Title 47 Part 15 Subpart C § 15.247 d)	#1	Within the limit
		Band Edge	Title 47 Part 15 Subpart C § 15.247 d)	#1	Within the limit

5 TEST RESULTS

RF RADIATED SPURIOUS EMISSIONS	8
BAND-EDGE	58

**TEST
1.**

RF RADIATED SPURIOUS EMISSIONS

**REFERENCE
DOCUMENT**

Title 47 Part 15 Subpart C § 15.247 d)

- **TEST SETUP:** In according to manufacturer specifications
- **TEST LOCATION:** Semi-anechoic chamber (CISPR 16-1 :1993)
Siemens+Matsushita type B84117-D6019-T232
Measure distance 3 meters
- **TEST EQUIPMENT USED FOR TEST:** EMI receiver Rohde & Schwarz Mod. ESU40
Chase Antenna Mod. CBL 6111 C
R&S Antenna HL050
- **TESTED PORT:** Enclosure
- **FREQUENCY RANGE:** 30MHz-to 10th armhonics
- **MEASUREMENT DISTANCE :** 3mt
- **EMISSION LIMITS:** Acc. to Section 15.249 of reference document
- **UNCERTAINTY OF MEASURE:** Level of confidence = 95%
Degree of freedom = 10
Coverage factor $k_p = 2,28$
Combined uncertainty = 4,49 dB

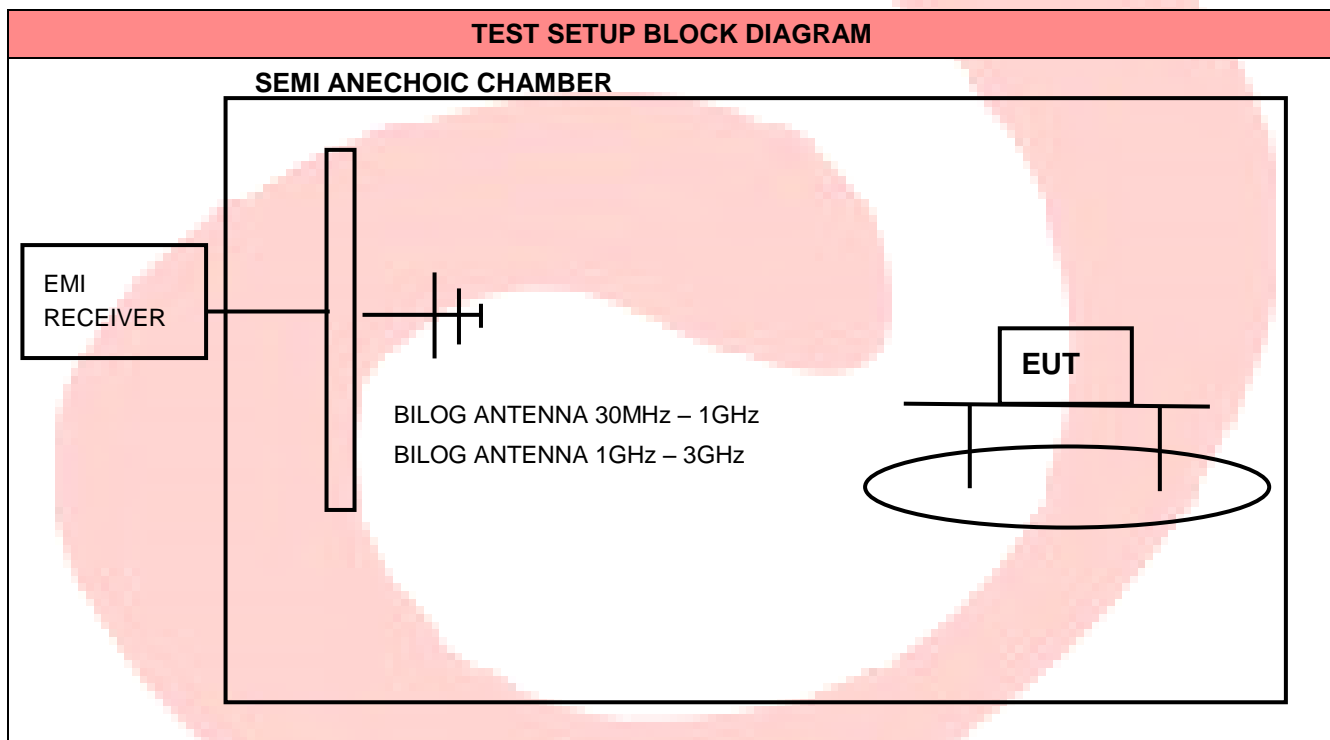
TEST CONDITIONS:	MEASURED
Ambient temperature : 15 - 35 °C	24 ±3 °C
Ambient humidity : 25 - 75 %rH	40 ± 5 %rH
Pressure : 85 - 106 kPa (860 mbar - 1060 mbar)	950 ± 50 mbar
Voltage :	115V~ 60Hz

OPERATING CONDITION (Rif. Section. 3) : #1

RESULT: WITHIN THE LIMITS

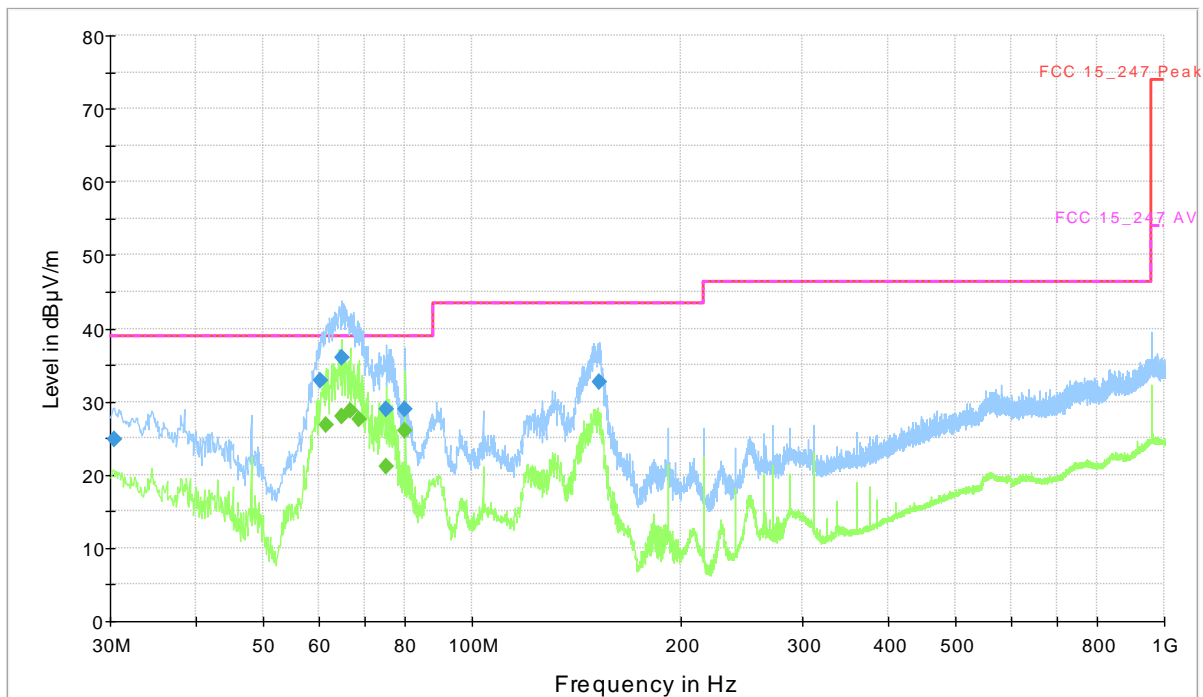
DESCRIPTION

According to §15,247(d), In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits, If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB, Attenuation below the general limits specified in Sec, 15,209(a) is not required, In addition, radiated emissions which fall in the restricted bands, as defined in Sec, 15,205(a), must also comply with the radiated emission limits specified in Sec, 15,209(a) (see Sec, 15,205(c)),



MODE	b
CHANNEL	1
FREQ. RANGE	30MHz – 1GHz
POLARIZATION	Vertical
OPERATING CONDITION	#1

FCC_15_247_RADIATED_SPURIOUS_VERTICAL

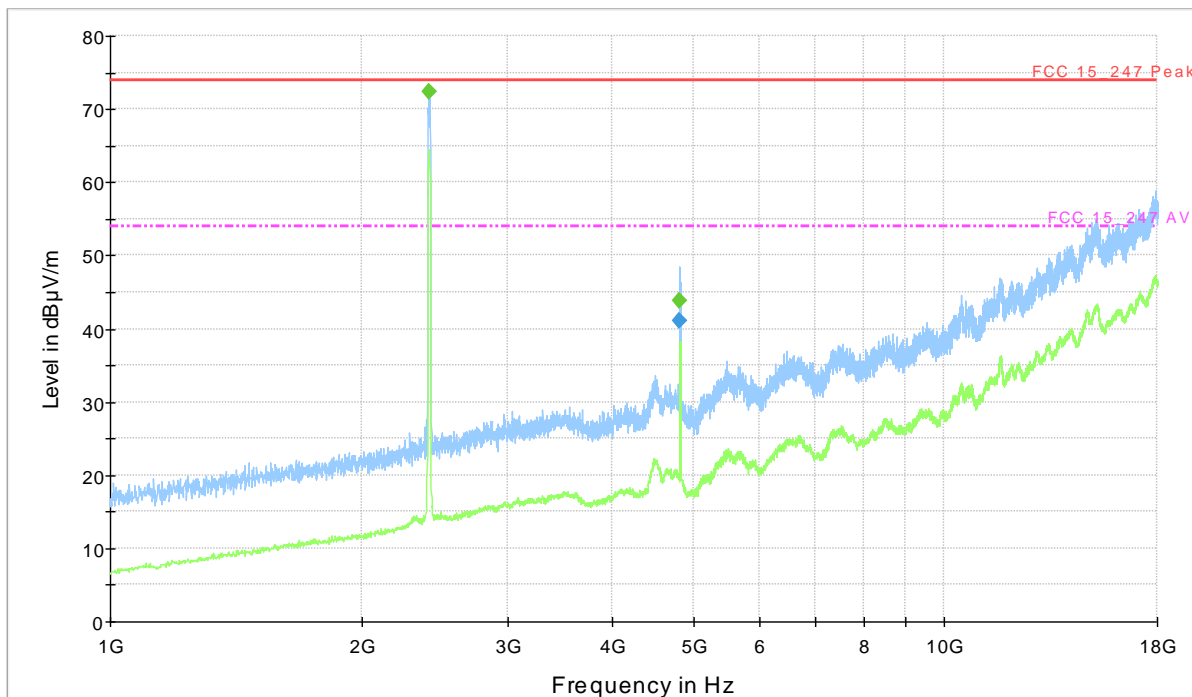


Final Result - Quasi Peak

Frequency (MHz)	QuasiPeak (dBµV/m)	Height (cm)	Polarization	Azimuth (deg)	Margin (dB)	Limit (dBµV/m)
30.388000	24.9	103.0	V	0.0	14.10	39.00
60.361000	32.9	103.0	V	0.0	6.10	39.00
64.726000	36.0	103.0	V	0.0	3.00	39.00
75.105000	29.0	103.0	V	0.0	10.00	39.00
79.955000	29.0	103.0	V	88.0	10.00	39.00
152.996000	32.6	103.0	V	0.0	10.90	43.50

MODE	b
CHANNEL	1
FREQ. RANGE	1GHz – 18GHz
POLARIZATION	Vertical
OPERATING CONDITION	#1

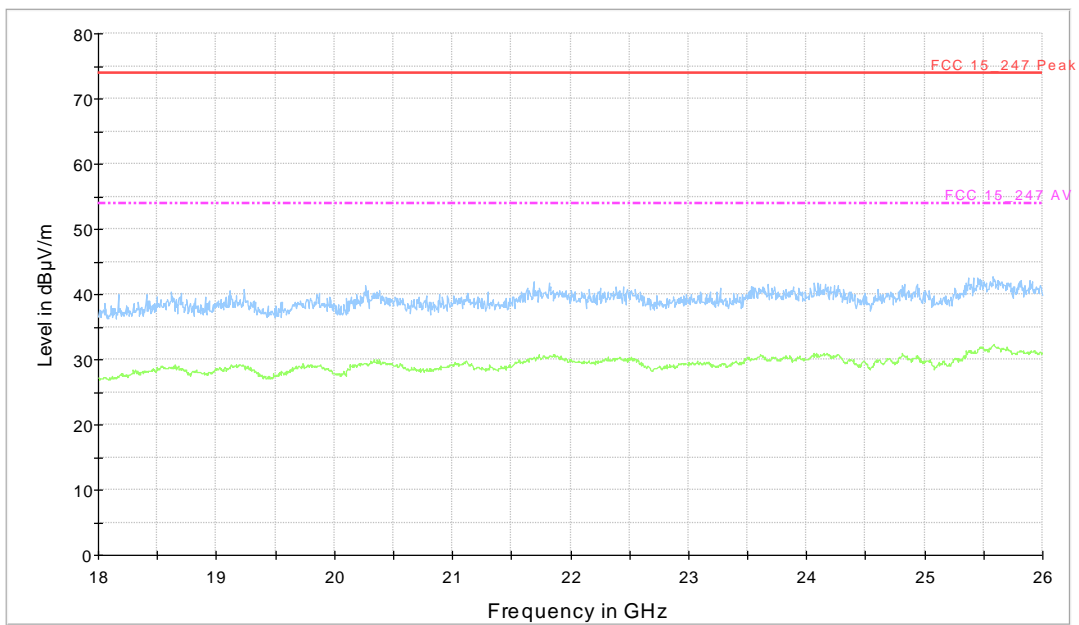
FCC_15_247_RADIATED_SPURIOUS_VERTICAL



Final Result - Average

Frequency (MHz)	Average (dBµV/m)	Height (cm)	Polarization	Azimuth (deg)	Margin (dB)	Limit (dBµV/m)
2416.100000	72.4	103.0	V	180.0	-18.40	54.00
4823.300000	43.9	103.0	V	180.0	10.10	54.00

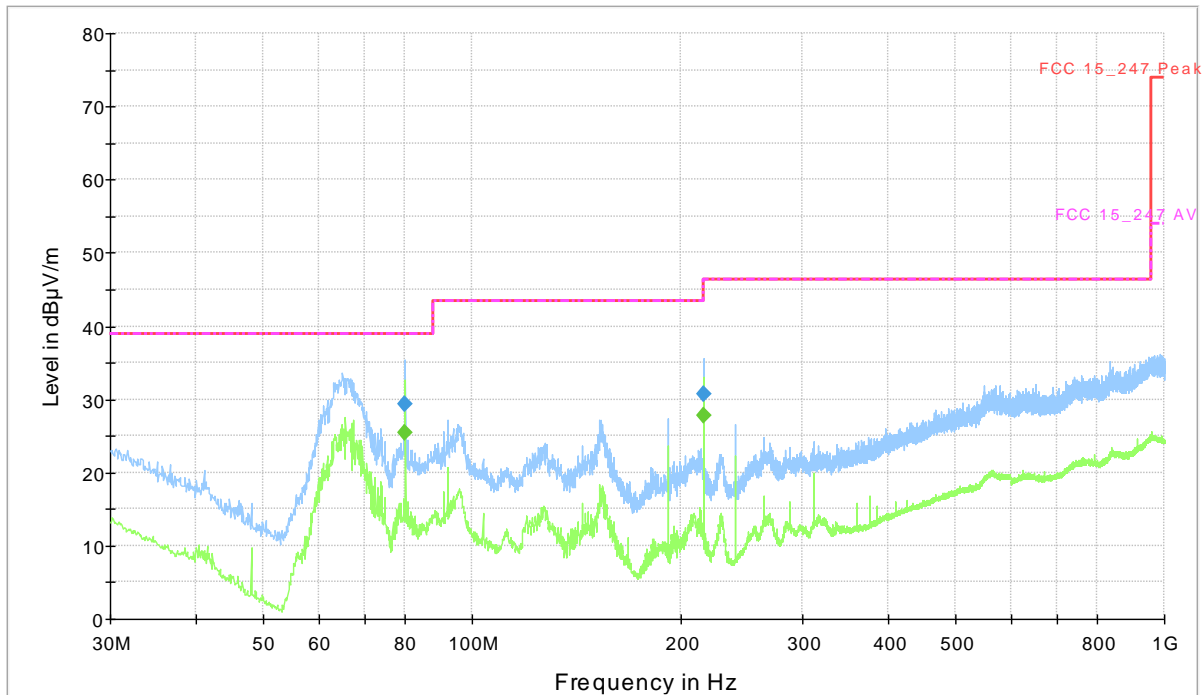
MODE	b
CHANNEL	1
FREQ. RANGE	18GHz-26GHz
POLARIZATION	Vertical
OPERATING CONDITION	#1



Blue trace Peak detector, Green trace average detector

MODE	b
CHANNEL	1
FREQ. RANGE	30MHz – 1GHz
POLARIZATION	Horizontal
OPERATING CONDITION	#1

FCC_15_247_RADIATED_SPURIOUS_HORIZONTAL

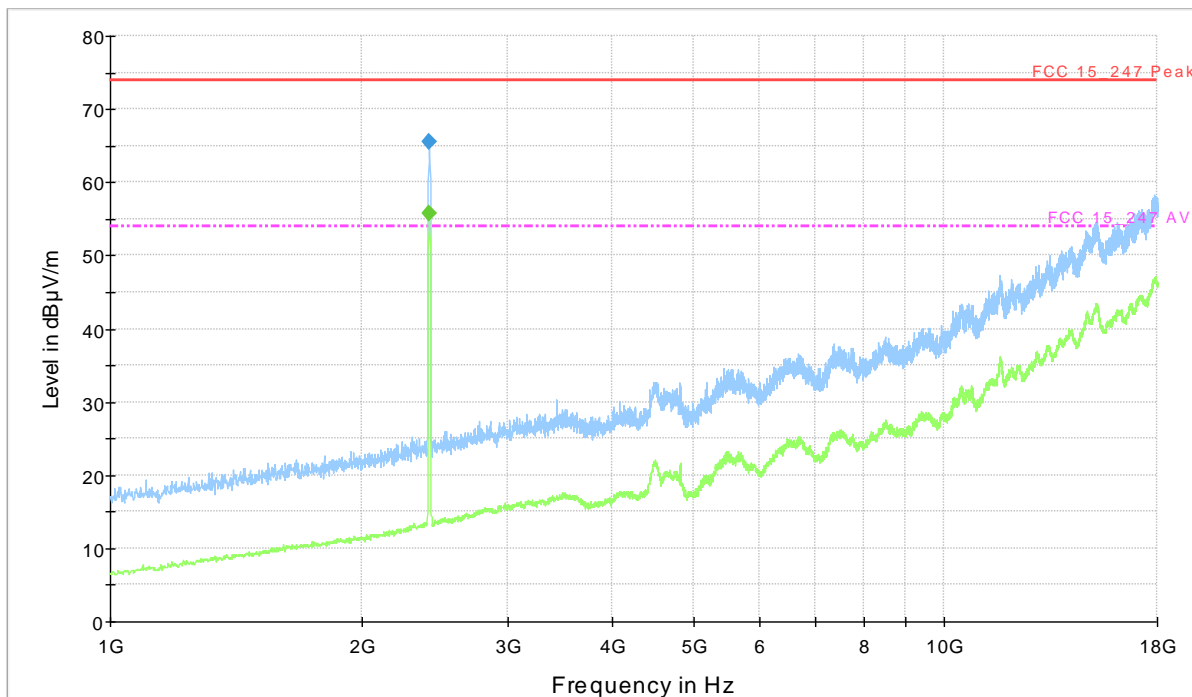


Final Result - Quasi Peak

Frequency (MHz)	QuasiPeak (dBµV/m)	Height (cm)	Polarization	Azimuth (deg)	Margin (dB)	Limit (dBµV/m)
79.955000	29.4	259.0	H	268.0	9.60	39.00
215.949000	30.6	103.0	H	89.0	12.90	43.50

MODE	b
CHANNEL	1
FREQ. RANGE	1GHz – 18GHz
POLARIZATION	Horizontal
OPERATING CONDITION	#1

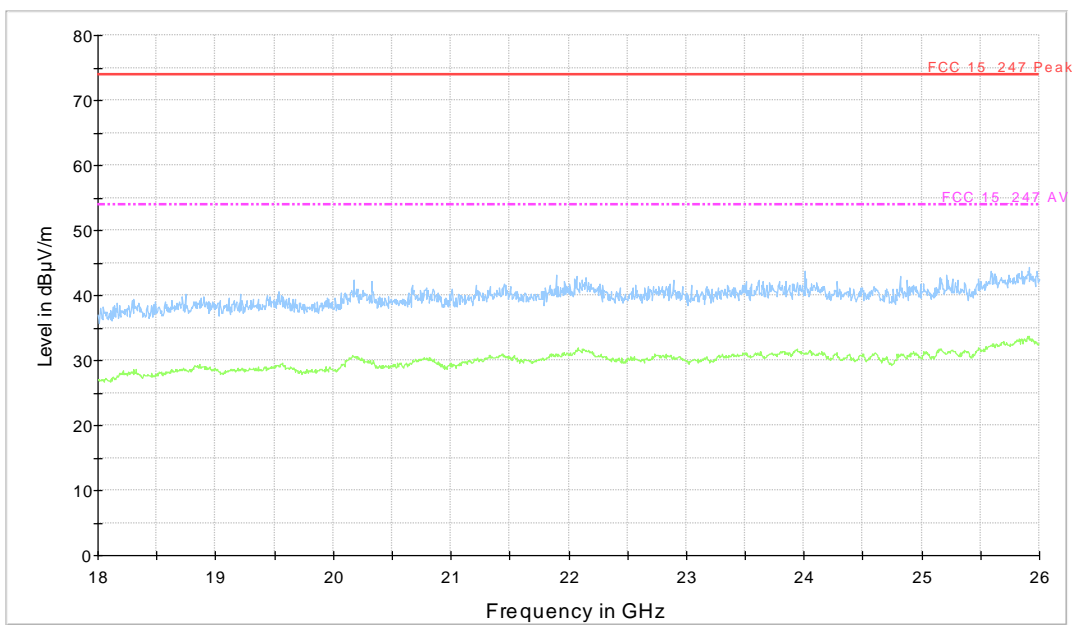
FCC_15_247_RADIATED_SPURIOUS_HORIZONTAL



Final Result - Average

Frequency (MHz)	Average (dBµV/m)	Height (cm)	Polarization	Azimuth (deg)	Margin (dB)	Limit (dBµV/m)
2414.400000	55.7	103.0	H	0.0	32.30	54.00

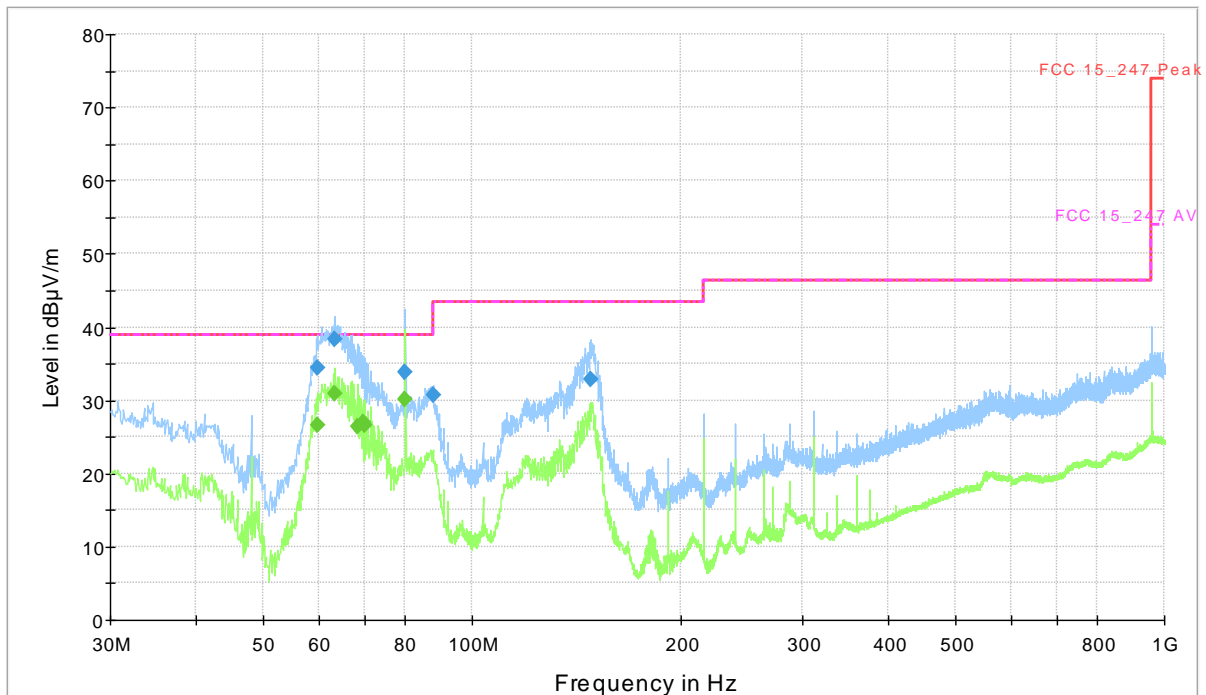
MODE	b
CHANNEL	1
FREQ. RANGE	18GHz-26GHz
POLARIZATION	Horizontal
OPERATING CONDITION	#1



Blue trace Peak detector, Green trace average detector

MODE	b
CHANNEL	11
FREQ. RANGE	30MHz – 1GHz
POLARIZATION	Vertical
OPERATING CONDITION	#1

FCC_15_247_RADIATED_SPURIOUS_VERTICAL

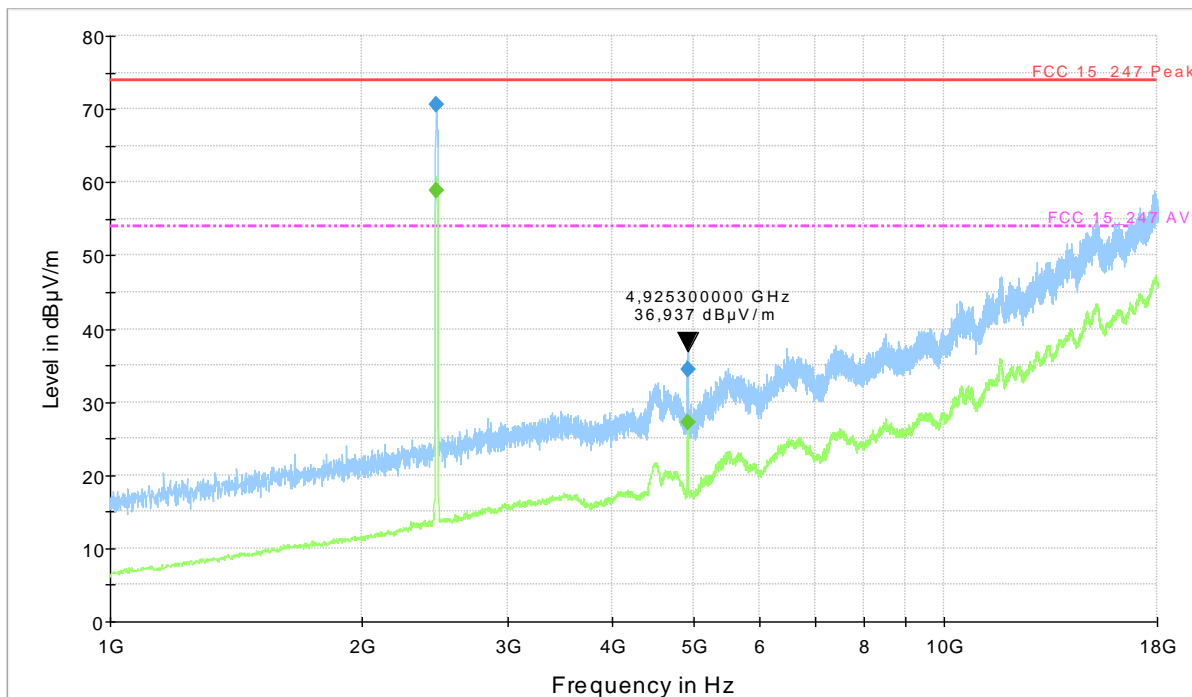


Final Result - Quasi Peak

Frequency (MHz)	QuasiPeak (dBµV/m)	Height (cm)	Polarization	Azimuth (deg)	Margin (dB)	Limit (dBµV/m)
59.682000	34.4	103.0	V	0.0	4.60	39.00
63.368000	38.3	103.0	V	88.0	0.70	39.00
79.955000	33.9	103.0	V	0.0	5.10	39.00
87.812000	30.7	103.0	V	0.0	8.30	39.00
148.728000	32.8	103.0	V	0.0	10.70	43.50

MODE	b
CHANNEL	11
FREQ. RANGE	1GHz – 18GHz
POLARIZATION	Vertical
OPERATING CONDITION	#1

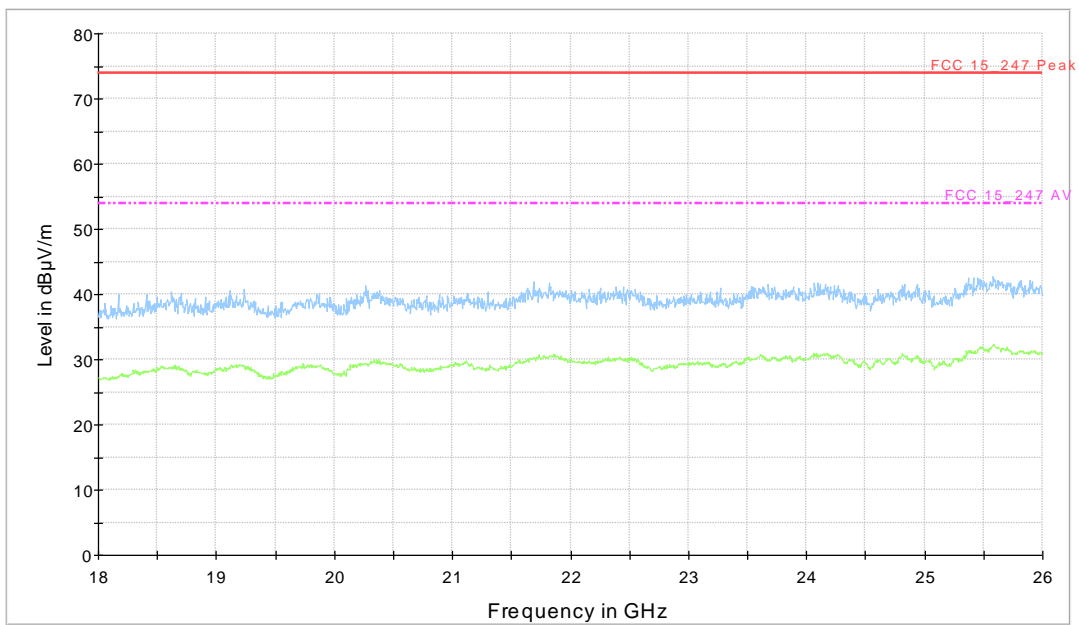
FCC_15_247_RADIATED_SPURIOUS_VERTICAL



Final Result - Average

Frequency (MHz)	Average (dBµV/m)	Height (cm)	Polarization	Azimuth (deg)	Margin (dB)	Limit (dBµV/m)
2456.900000	58.8	259.0	V	0.0	32.20	54.00
4921.900000	27.1	259.0	V	0.0	26.90	54.00

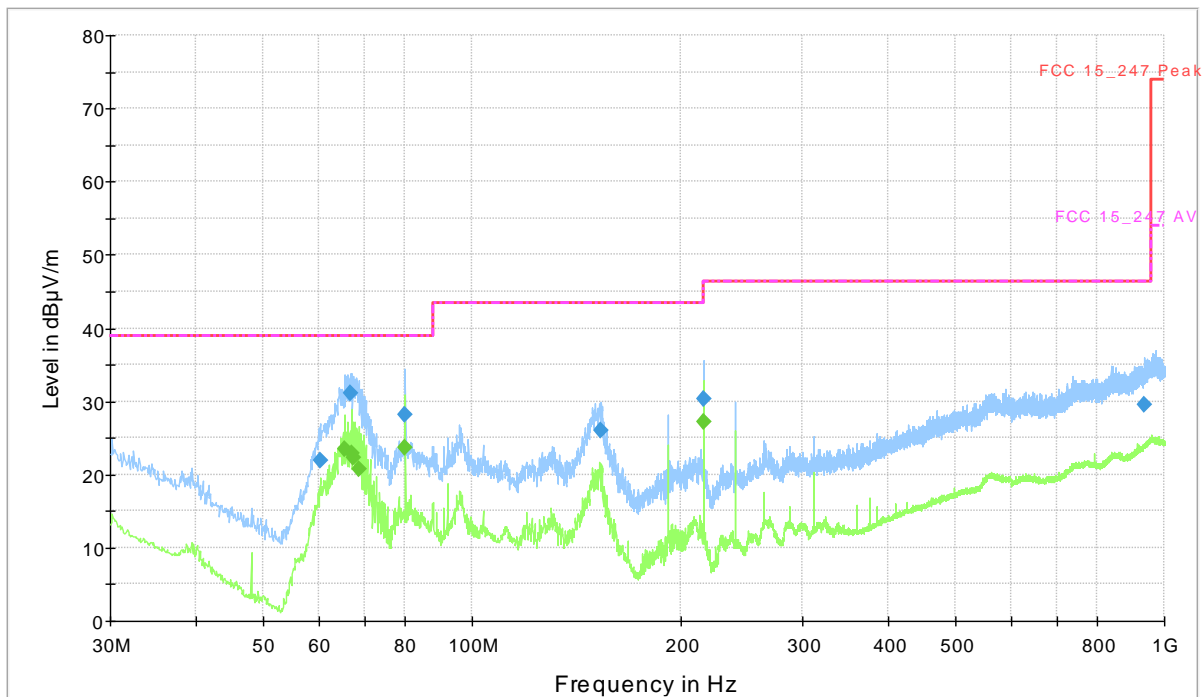
MODE	b
CHANNEL	11
FREQ. RANGE	18GHz-26GHz
POLARIZATION	Vertical
OPERATING CONDITION	#1



Blue trace Peak detector, Green trace average detector

MODE	b
CHANNEL	11
FREQ. RANGE	30MHz – 1GHz
POLARIZATION	Horizontal
OPERATING CONDITION	#1

FCC_15_247_RADIATED_SPURIOUS_HORIZONTAL

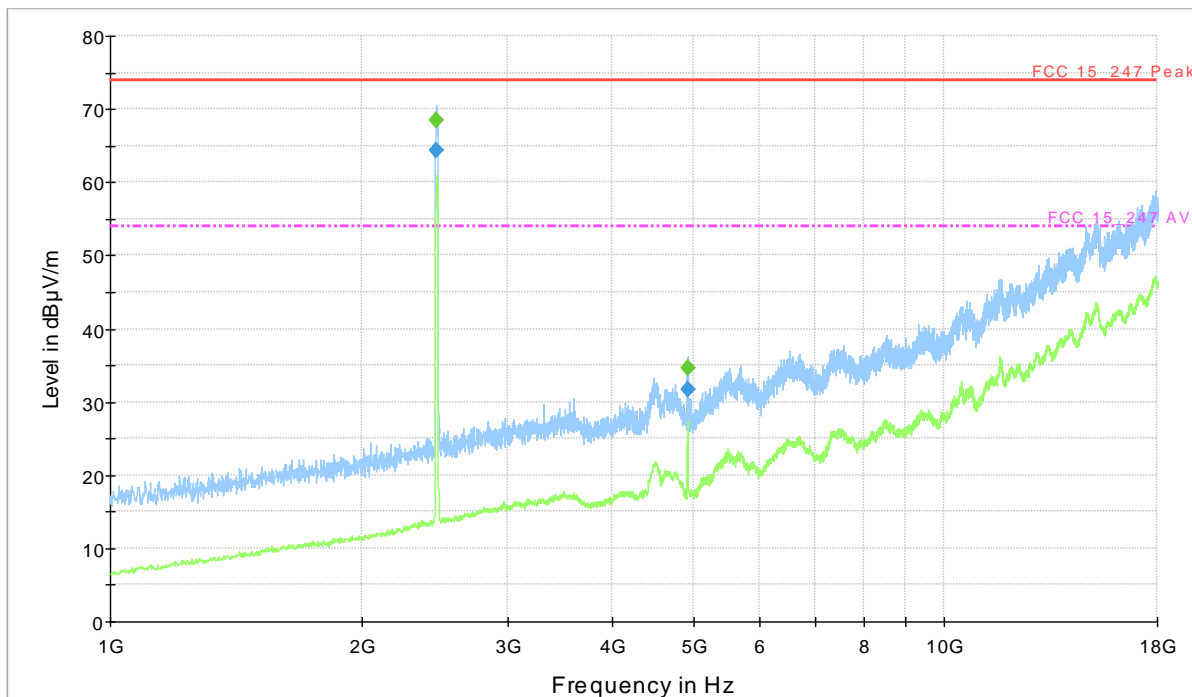


Final Result - Quasi Peak

Frequency (MHz)	QuasiPeak (dBµV/m)	Height (cm)	Polarization	Azimuth (deg)	Margin (dB)	Limit (dBµV/m)
60.264000	21.9	102.0	H	268.0	17.10	39.00
66.860000	31.1	259.0	H	89.0	7.90	39.00
79.955000	28.1	259.0	H	268.0	10.90	39.00
153.772000	26.1	259.0	H	268.0	17.40	43.50
215.949000	30.2	103.0	H	89.0	13.30	43.50
933.943000	29.5	103.0	H	89.0	16.90	46.40

MODE	b
CHANNEL	11
FREQ. RANGE	1GHz – 18GHz
POLARIZATION	Horizontal
OPERATING CONDITION	#1

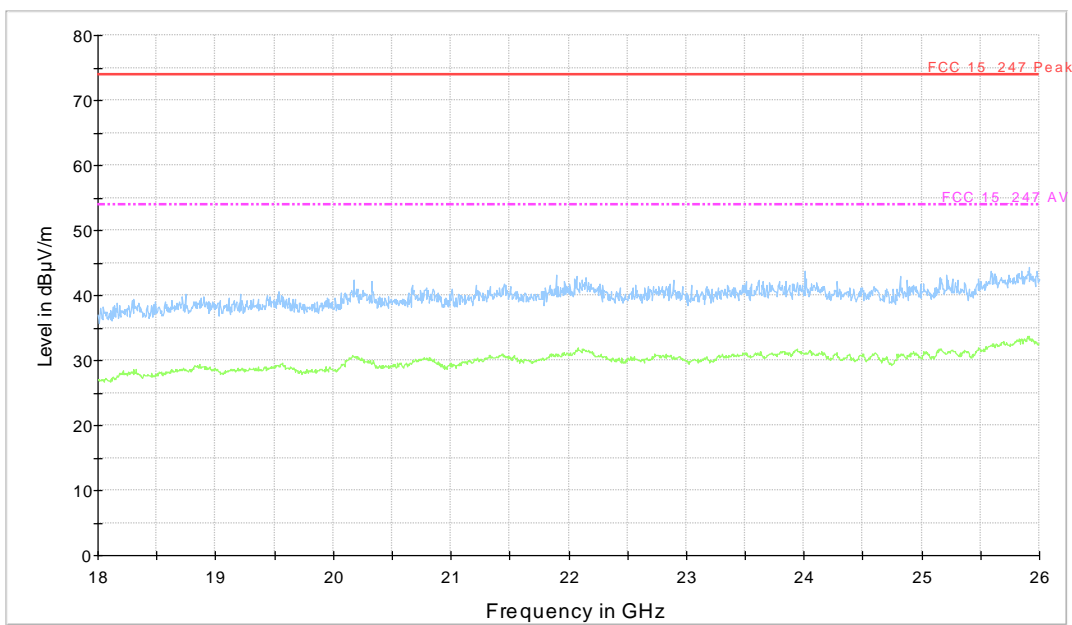
FCC_15_247_RADIATED_SPURIOUS_HORIZONTAL



Final Result - Average

Frequency (MHz)	Average (dBµV/m)	Height (cm)	Polarization	Azimuth (deg)	Margin (dB)	Limit (dBµV/m)
2460.300000	68.4	259.0	H	180.0	-14.40	54.00
4921.900000	34.6	259.0	H	180.0	19.40	54.00

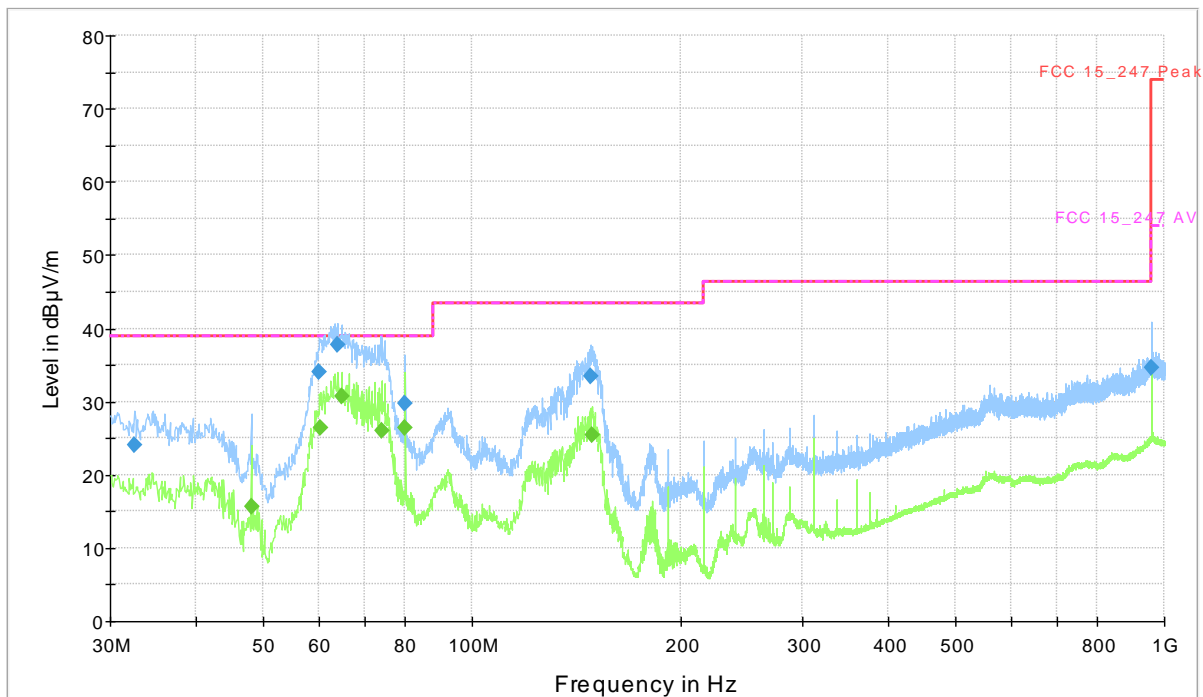
MODE	b
CHANNEL	11
FREQ. RANGE	18GHz-26GHz
POLARIZATION	Horizontal
OPERATING CONDITION	#1



Blue trace Peak detector, Green trace average detector

MODE	g
CHANNEL	1
FREQ. RANGE	30MHz – 1GHz
POLARIZATION	Vertical
OPERATING CONDITION	#1

FCC_15_247_RADIATED_SPURIOUS_VERTICAL

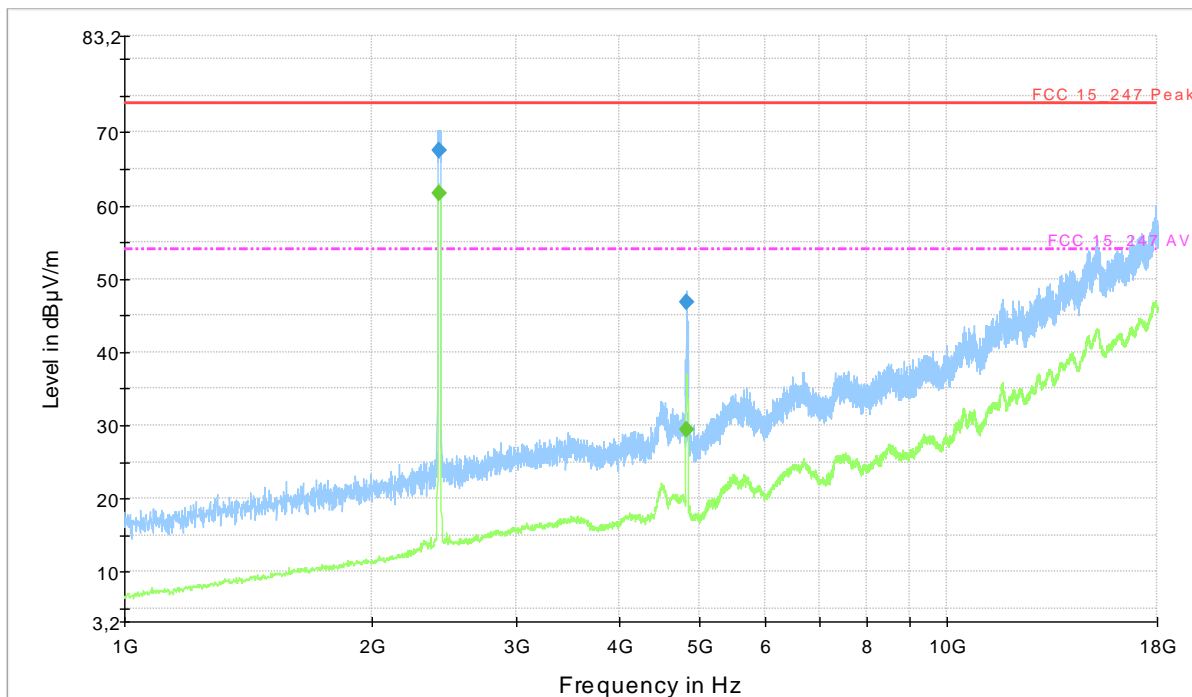


Final Result - Quasi Peak

Frequency (MHz)	QuasiPeak (dBµV/m)	Height (cm)	Polarization	Azimuth (deg)	Margin (dB)	Limit (dBµV/m)
32.522000	24.0	103.0	V	268.0	15.00	39.00
60.167000	34.0	103.0	V	0.0	5.00	39.00
63.950000	37.8	103.0	V	0.0	1.20	39.00
79.955000	29.8	103.0	V	268.0	9.20	39.00
148.146000	33.4	103.0	V	0.0	10.10	43.50
959.939000	34.6	103.0	V	268.0	11.80	46.40

MODE	g
CHANNEL	1
FREQ. RANGE	1GHz – 18GHz
POLARIZATION	Vertical
OPERATING CONDITION	#1

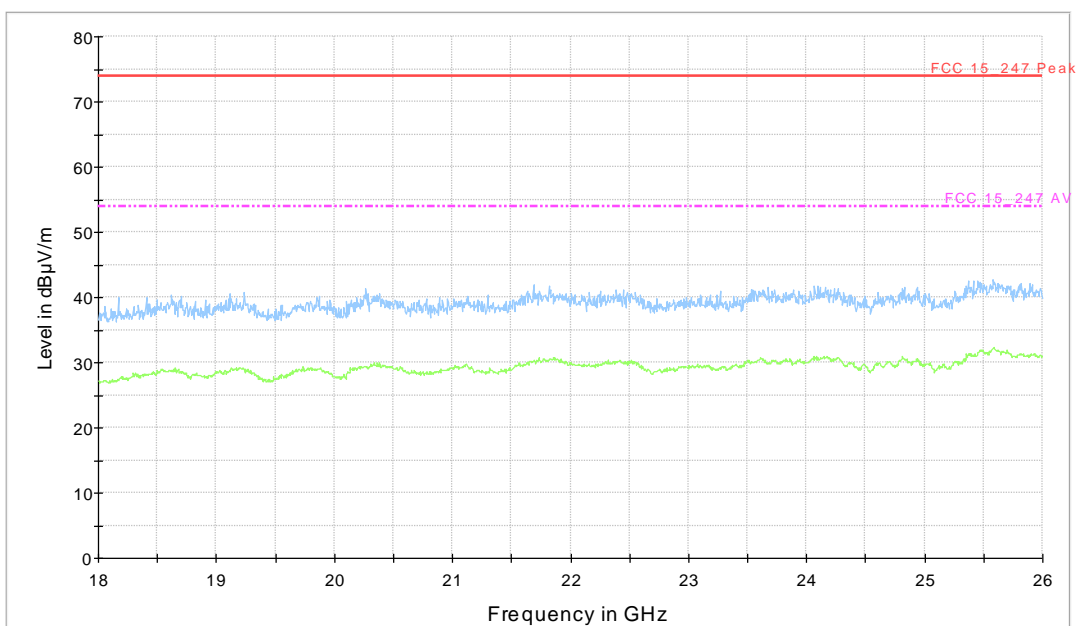
FCC_15_247_RADIATED_SPURIOUS_VERTICAL



Final Result - Average

Frequency (MHz)	Average (dBµV/m)	Height (cm)	Polarization	Azimuth (deg)	Margin (dB)	Limit (dBµV/m)
2412.700000	61.8	259.0	V	180.0	32.20	54.00
4825.000000	29.4	259.0	V	180.0	26.60	54.00

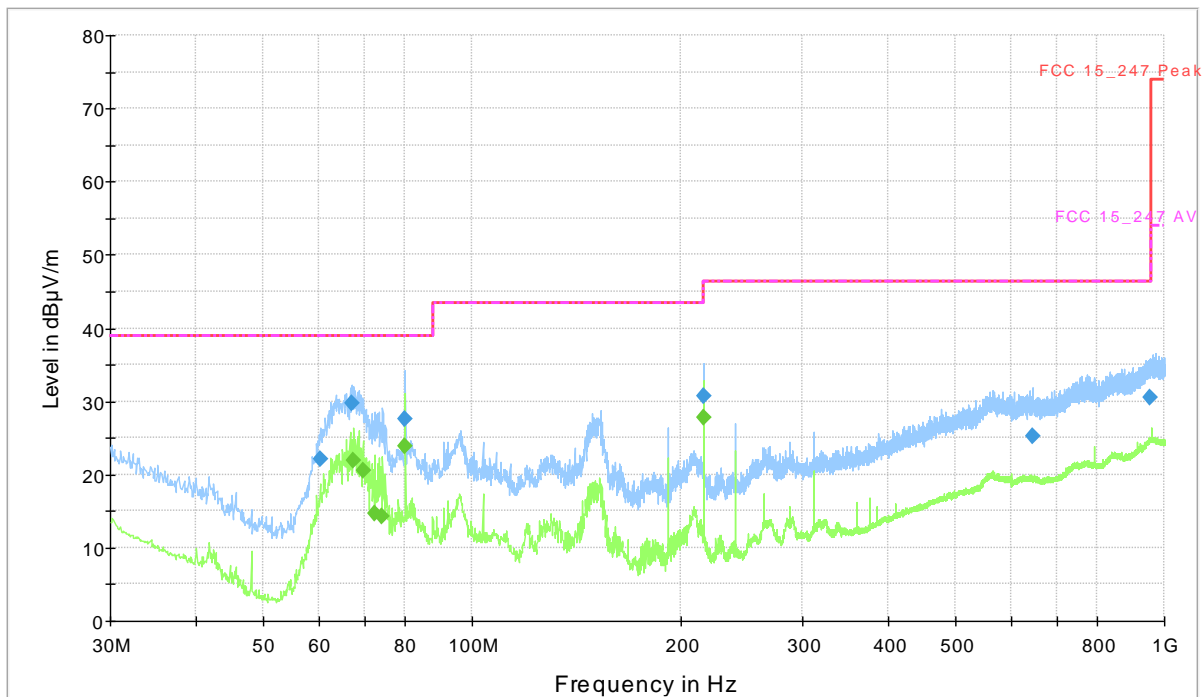
MODE	g
CHANNEL	1
FREQ. RANGE	18GHz-26GHz
POLARIZATION	Vertical
OPERATING CONDITION	#1



Blue trace Peak detector, Green trace average detector

MODE	g
CHANNEL	1
FREQ. RANGE	30MHz – 1GHz
POLARIZATION	Horizontal
OPERATING CONDITION	#1

FCC_15_247_RADIATED_SPURIOUS_HORIZONTAL

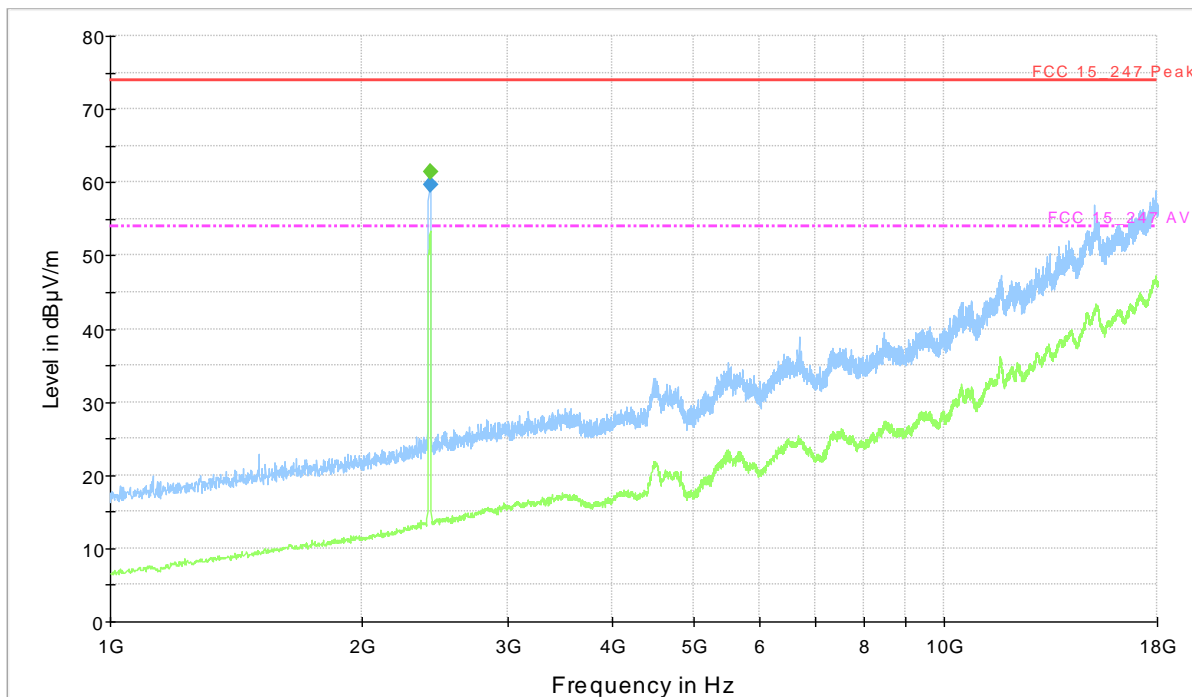


Final Result - Quasi Peak

Frequency (MHz)	QuasiPeak (dBµV/m)	Height (cm)	Polarization	Azimuth (deg)	Margin (dB)	Limit (dBµV/m)
60.264000	22.1	259.0	H	89.0	16.90	39.00
66.957000	29.7	258.0	H	268.0	9.30	39.00
79.955000	27.7	258.0	H	268.0	11.30	39.00
215.949000	30.7	103.0	H	89.0	12.80	43.50
644.495000	25.2	100.0	H	268.0	21.20	46.40
955.089000	30.5	259.0	H	89.0	15.90	46.40

MODE	g
CHANNEL	1
FREQ. RANGE	1GHz – 18GHz
POLARIZATION	Horizontal
OPERATING CONDITION	#1

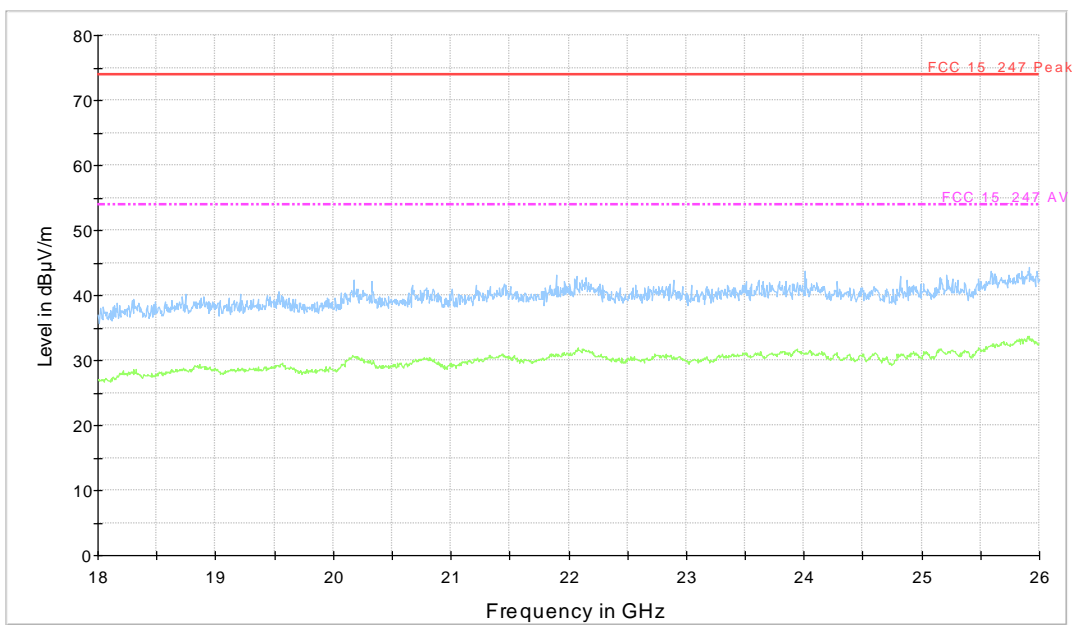
FCC_15_247_RADIATED_SPURIOUS_HORIZONTAL



Final Result - Average

Frequency (MHz)	Average (dBµV/m)	Height (cm)	Polarization	Azimuth (deg)	Margin (dB)	Limit (dBµV/m)
2417.800000	61.5	259.0	H	269.0	-7.50	54.00

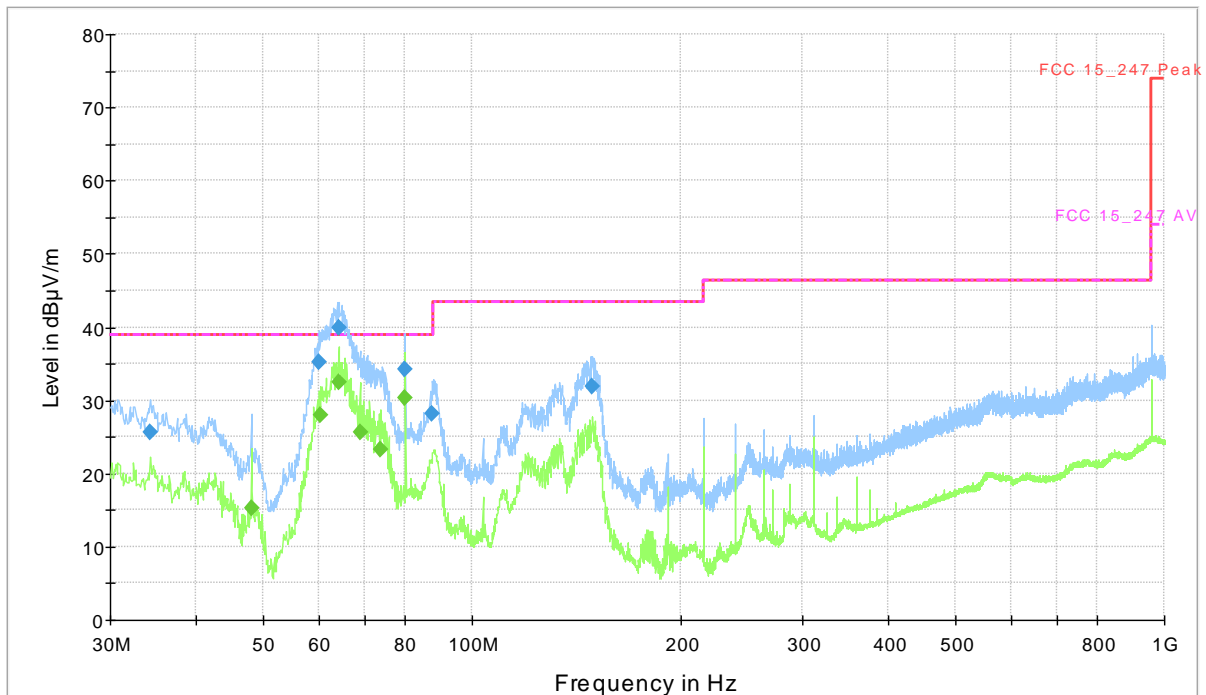
MODE	g
CHANNEL	1
FREQ. RANGE	18GHz-26GHz
POLARIZATION	Horizontal
OPERATING CONDITION	#1



Blue trace Peak detector, Green trace average detector

MODE	g
CHANNEL	11
FREQ. RANGE	30MHz – 1GHz
POLARIZATION	Vertical
OPERATING CONDITION	#1

FCC_15_247_RADIATED_SPURIOUS_VERTICAL

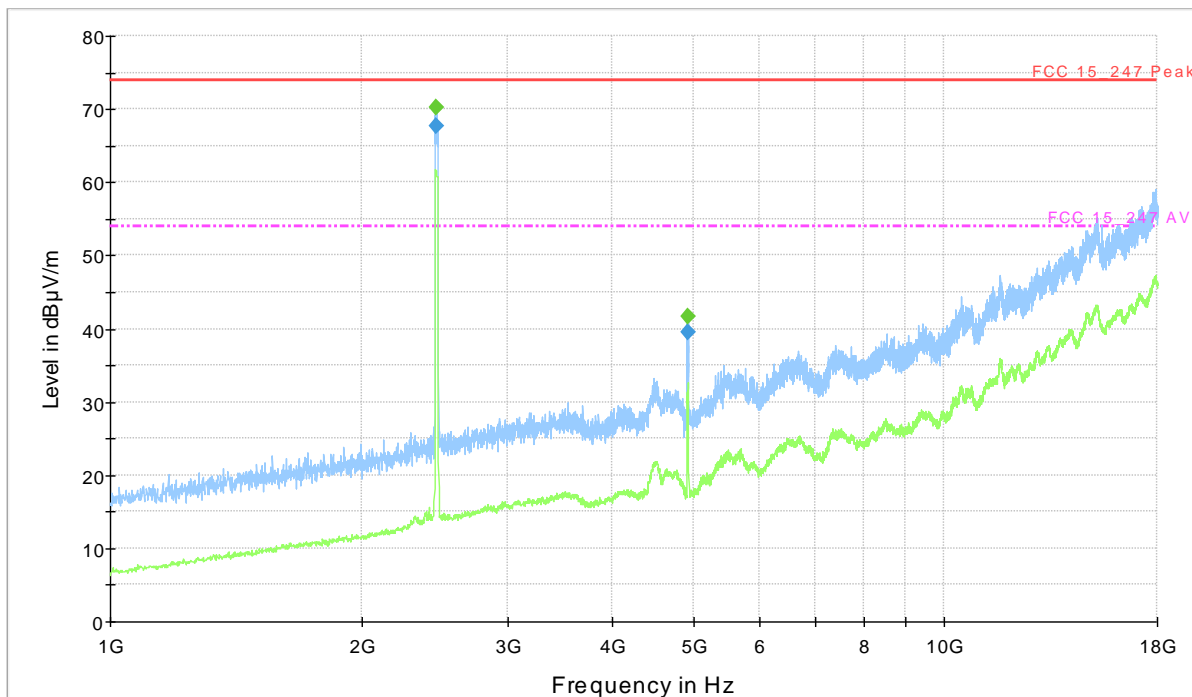


Final Result - Quasi Peak

Frequency (MHz)	QuasiPeak (dBµV/m)	Height (cm)	Polarization	Azimuth (deg)	Margin (dB)	Limit (dBµV/m)
34.268000	25.7	103.0	V	269.0	13.30	39.00
60.070000	35.3	103.0	V	2.0	3.70	39.00
64.144000	39.9	103.0	V	2.0	-0.90	39.00
79.955000	34.3	103.0	V	2.0	4.70	39.00
87.715000	28.2	103.0	V	2.0	10.80	39.00
149.019000	32.0	103.0	V	2.0	11.50	43.50

MODE	g
CHANNEL	11
FREQ. RANGE	1GHz – 18GHz
POLARIZATION	Vertical
OPERATING CONDITION	#1

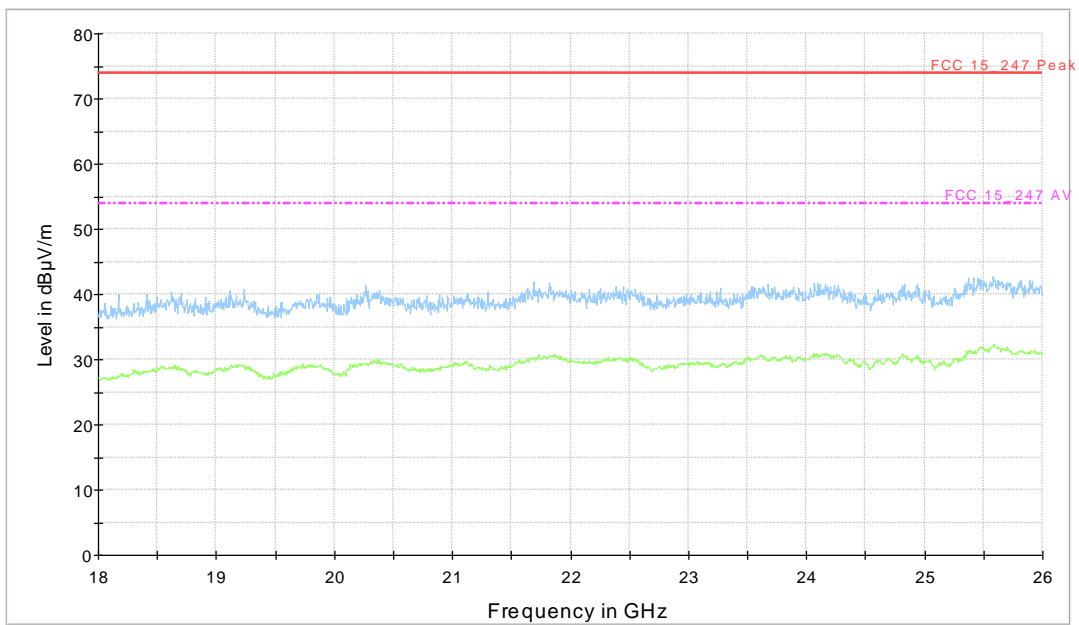
FCC_15_247_RADIATED_SPURIOUS_VERTICAL



Final Result - Average

Frequency (MHz)	Average (dBµV/m)	Height (cm)	Polarization	Azimuth (deg)	Margin (dB)	Limit (dBµV/m)
2460.300000	70.3	103.0	V	180.0	-16.30	54.00
4921.900000	41.6	103.0	V	180.0	12.40	54.00

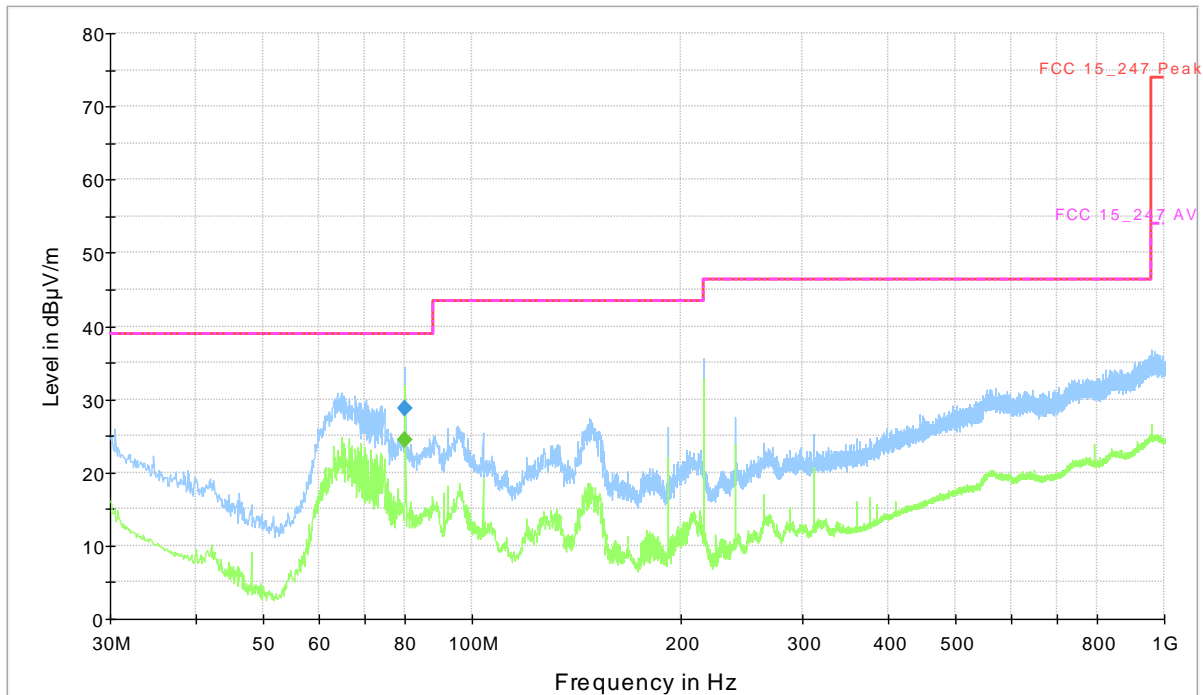
MODE	g
CHANNEL	11
FREQ. RANGE	18GHz-26GHz
POLARIZATION	Vertical
OPERATING CONDITION	#1



Blue trace Peak detector, Green trace average detector

MODE	g
CHANNEL	11
FREQ. RANGE	30MHz – 1GHz
POLARIZATION	Horizontal
OPERATING CONDITION	#1

FCC_15_247_RADIATED_SPURIOUS_HORIZONTAL

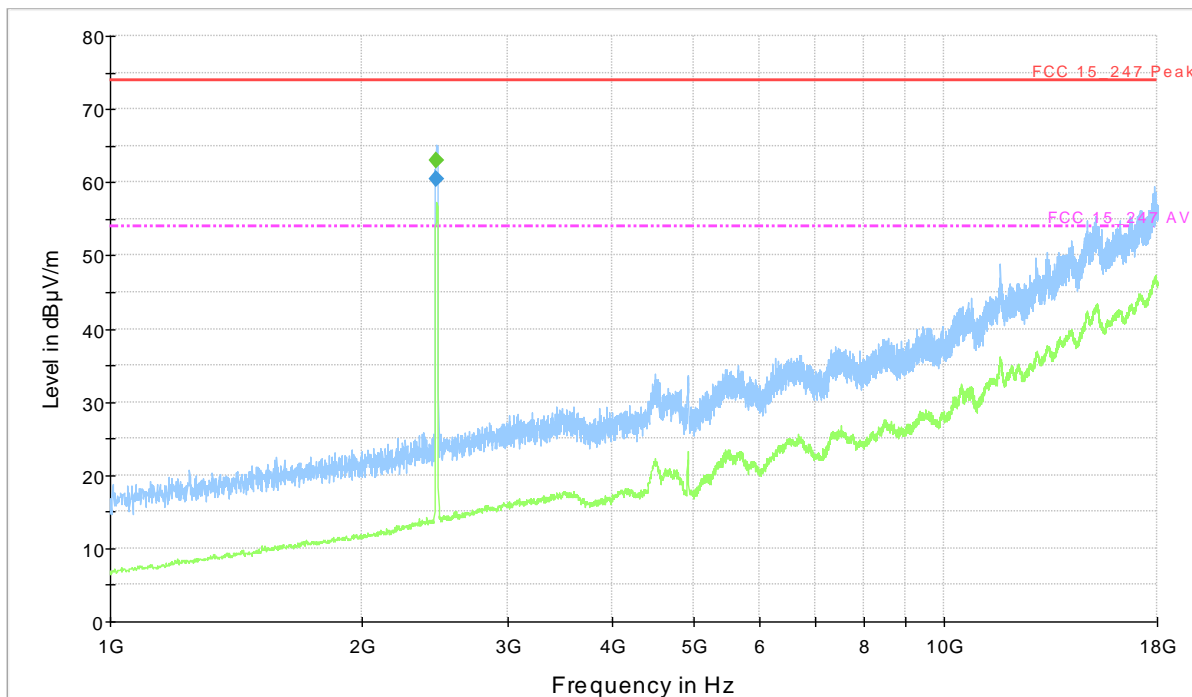


Final Result - Quasi Peak

Frequency (MHz)	QuasiPeak (dBµV/m)	Height (cm)	Polarization	Azimuth (deg)	Margin (dB)	Limit (dBµV/m)
79.955000	28.8	259.0	H	269.0	10.20	39.00

MODE	g
CHANNEL	11
FREQ. RANGE	1GHz – 18GHz
POLARIZATION	Horizontal
OPERATING CONDITION	#1

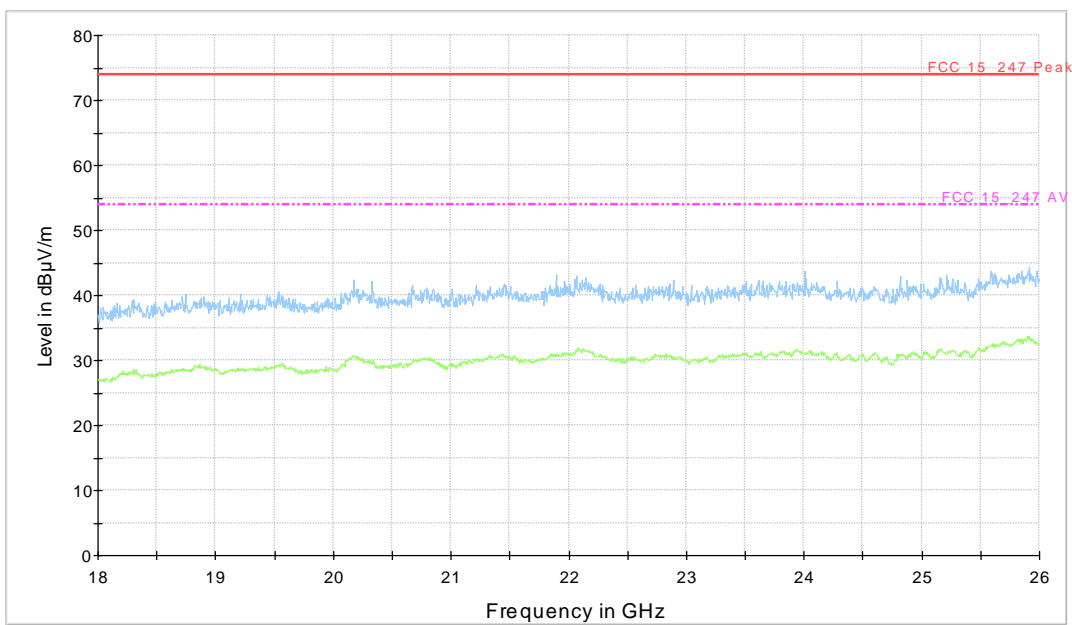
FCC_15_247_RADIATED_SPURIOUS_HORIZONTAL



Final Result - Average

Frequency (MHz)	Average (dBµV/m)	Height (cm)	Polarization	Azimuth (deg)	Margin (dB)	Limit (dBµV/m)
2458.600000	63.0	259.0	H	180.0	-9.00	54.00

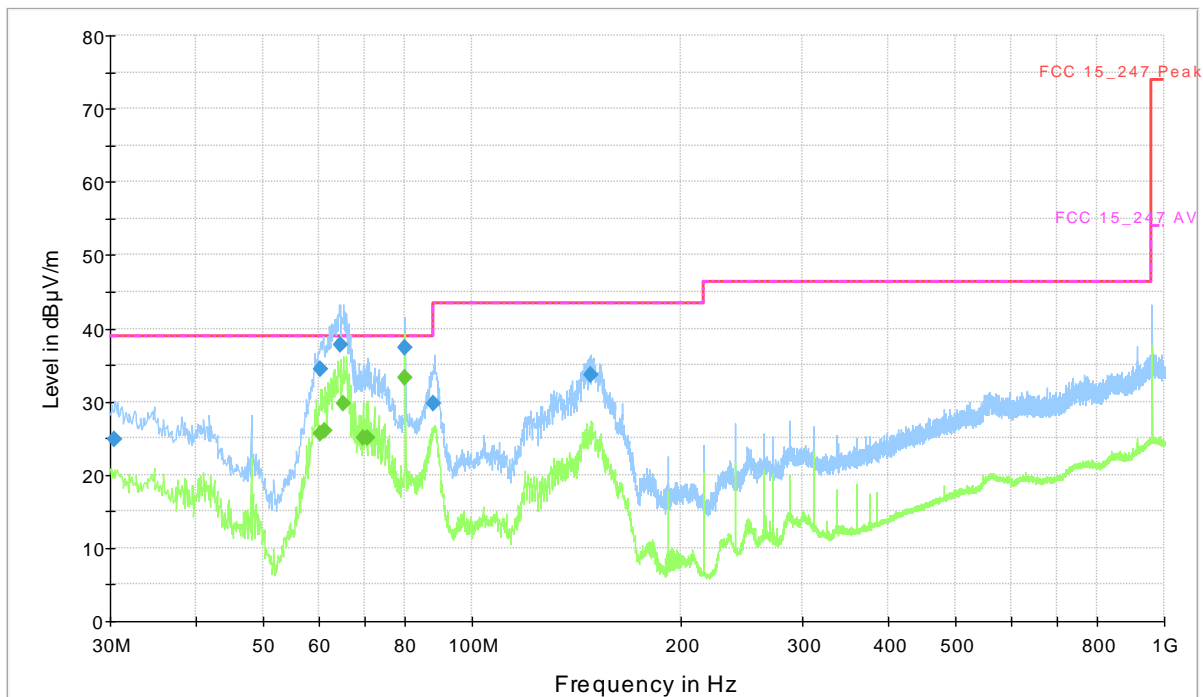
MODE	g
CHANNEL	11
FREQ. RANGE	18GHz-26GHz
POLARIZATION	Horizontal
OPERATING CONDITION	#1



Blue trace Peak detector, Green trace average detector

MODE	n 20
CHANNEL	1
FREQ. RANGE	30MHz – 1GHz
POLARIZATION	Vertical
OPERATING CONDITION	#1

FCC_15_247_RADIATED_SPURIOUS_VERTICAL

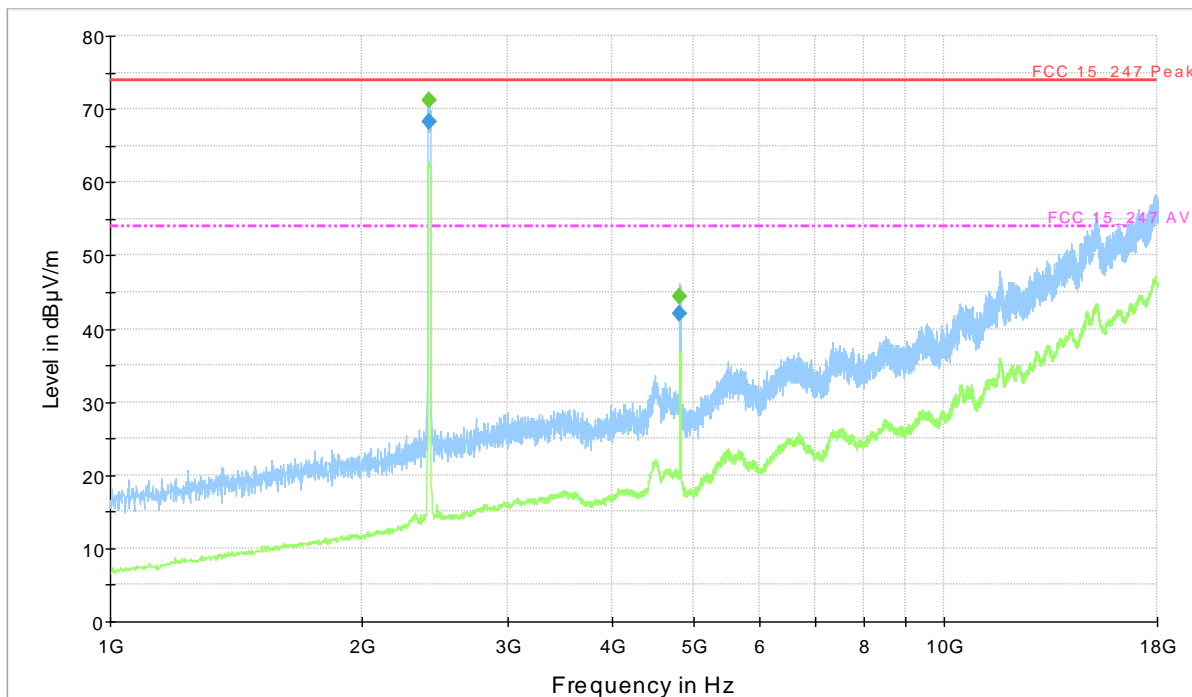


Final Result - Quasi Peak

Frequency (MHz)	QuasiPeak (dBµV/m)	Height (cm)	Polarization	Azimuth (deg)	Margin (dB)	Limit (dBµV/m)
30.485000	24.8	101.0	V	88.0	14.20	39.00
60.361000	34.5	103.0	V	0.0	4.50	39.00
64.435000	37.7	103.0	V	0.0	1.30	39.00
79.955000	37.3	103.0	V	0.0	1.70	39.00
87.909000	29.7	103.0	V	0.0	9.30	39.00
148.631000	33.6	103.0	V	0.0	9.90	43.50

MODE	n 20
CHANNEL	1
FREQ. RANGE	1GHz – 18GHz
POLARIZATION	Vertical
OPERATING CONDITION	#1

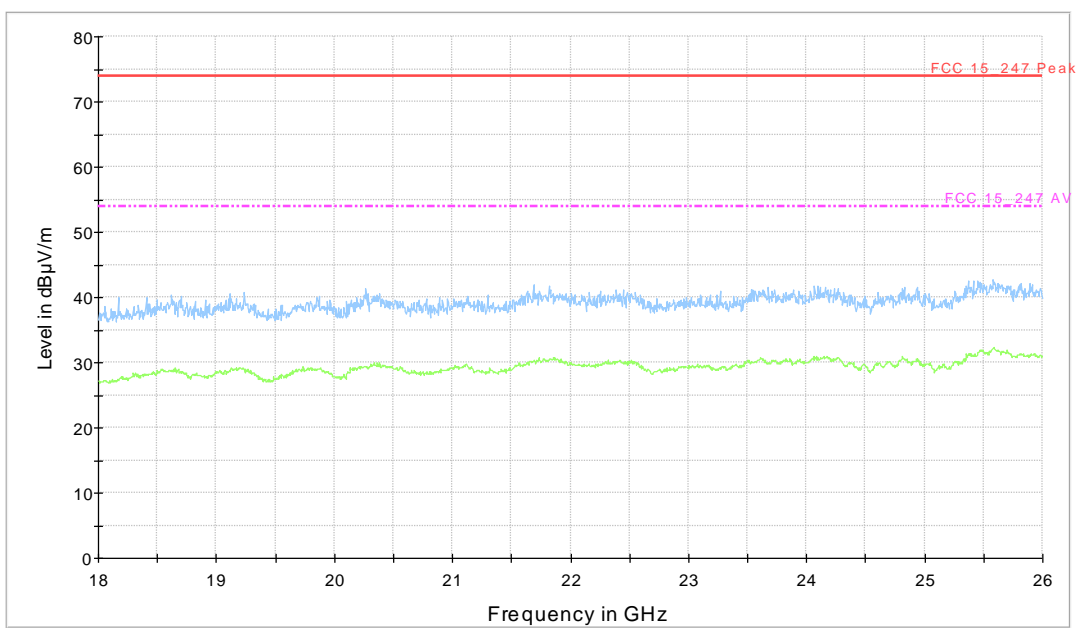
FCC_15_247_RADIATED_SPURIOUS_VERTICAL



Final Result - Average

Frequency (MHz)	Average (dBµV/m)	Height (cm)	Polarization	Azimuth (deg)	Margin (dB)	Limit (dBµV/m)
2416.100000	71.2	103.0	V	180.0	-17.20	54.00
4819.900000	44.3	259.0	V	180.0	9.70	54.00

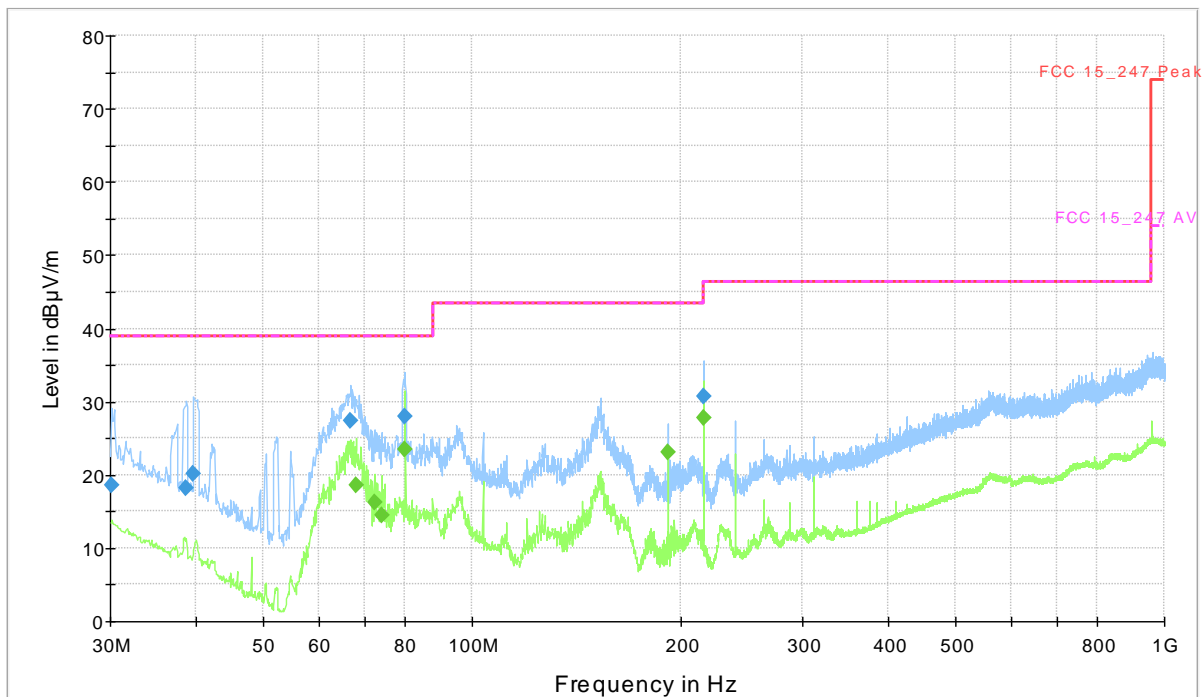
MODE	n 20
CHANNEL	1
FREQ. RANGE	18GHz-26GHz
POLARIZATION	Vertical
OPERATING CONDITION	#1



Blue trace Peak detector, Green trace average detector

MODE	n 20
CHANNEL	1
FREQ. RANGE	30MHz – 1GHz
POLARIZATION	Horizontal
OPERATING CONDITION	#1

FCC_15_247_RADIATED_SPURIOUS_HORIZONTAL

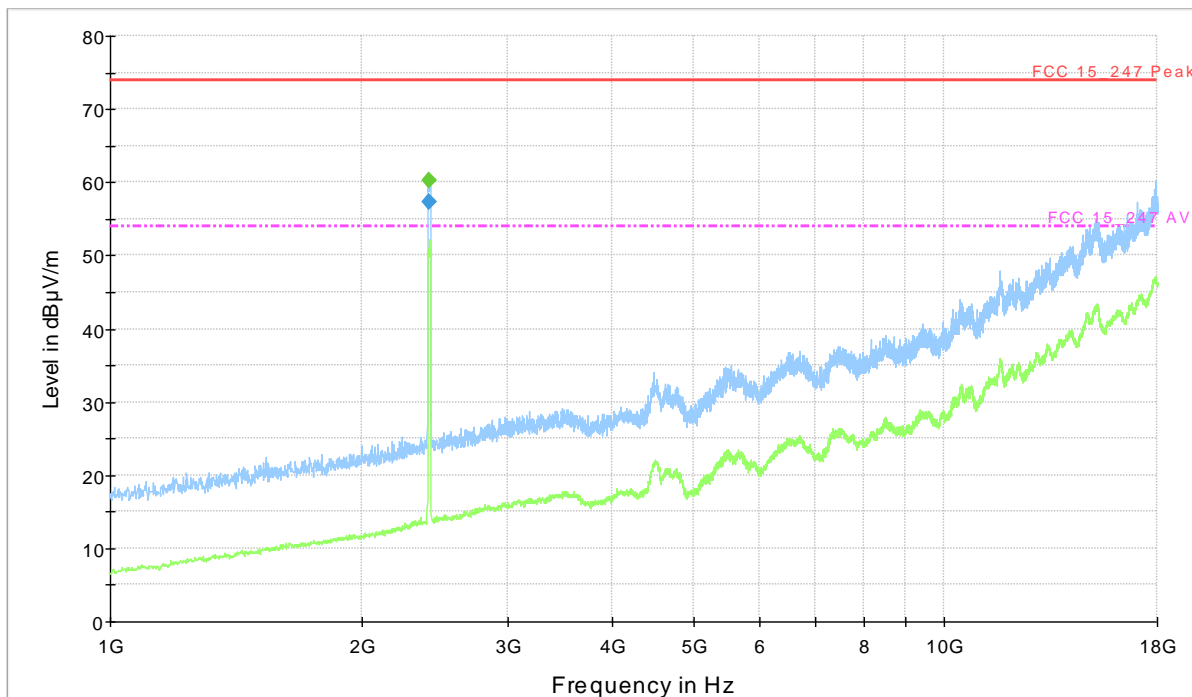


Final Result - Quasi Peak

Frequency (MHz)	QuasiPeak (dBµV/m)	Height (cm)	Polarization	Azimuth (deg)	Margin (dB)	Limit (dBµV/m)
30.097000	18.6	103.0	H	88.0	20.40	39.00
38.633000	18.3	102.0	H	268.0	20.70	39.00
39.603000	20.2	103.0	H	0.0	18.80	39.00
66.860000	27.4	259.0	H	268.0	11.60	39.00
79.955000	28.0	259.0	H	268.0	11.00	39.00
215.949000	30.7	103.0	H	88.0	12.80	43.50

MODE	n 20
CHANNEL	1
FREQ. RANGE	1GHz – 18GHz
POLARIZATION	Horizontal
OPERATING CONDITION	#1

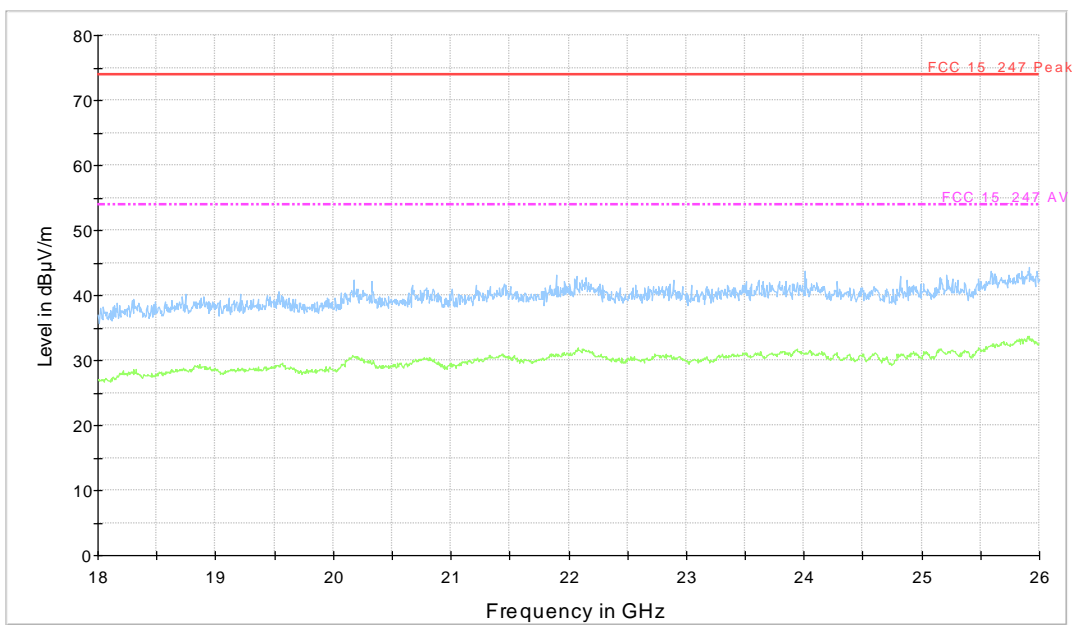
FCC_15_247_RADIATED_SPURIOUS_HORIZONTAL



Final Result - Average

Frequency (MHz)	Average (dBµV/m)	Height (cm)	Polarization	Azimuth (deg)	Margin (dB)	Limit (dBµV/m)
2412.700000	60.2	259.0	H	270.0	-6.20	54.00

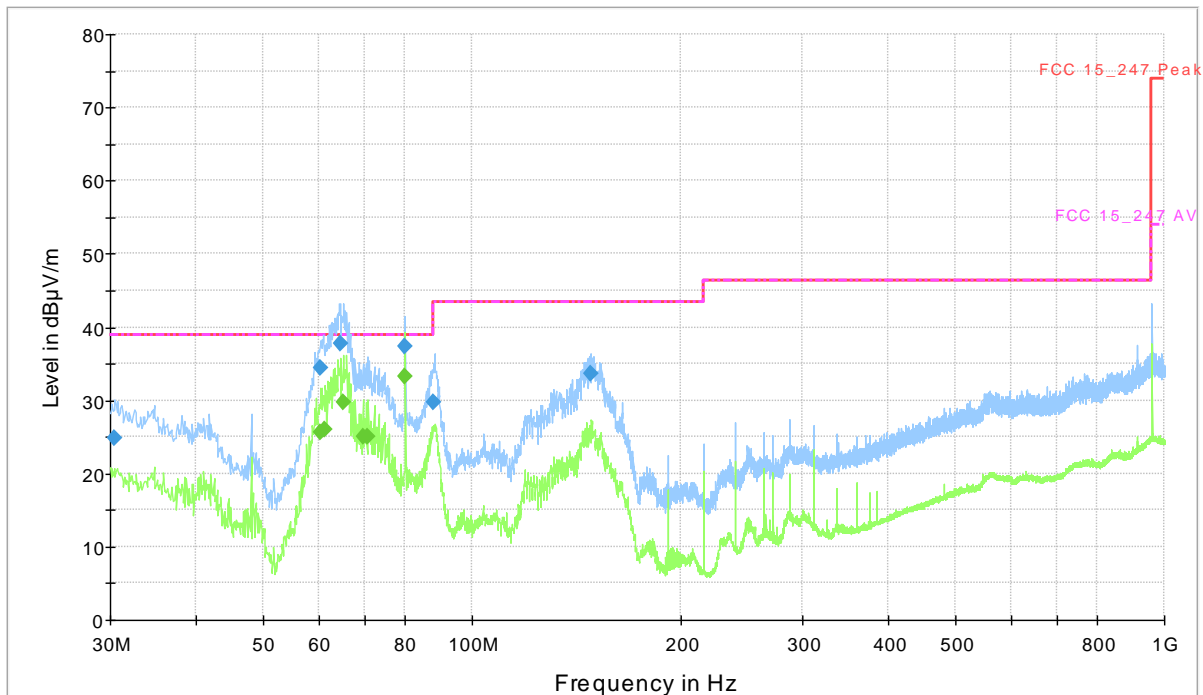
MODE	n 20
CHANNEL	1
FREQ. RANGE	18GHz-26GHz
POLARIZATION	Horizontal
OPERATING CONDITION	#1



Blue trace Peak detector, Green trace average detector

MODE	n 20
CHANNEL	11
FREQ. RANGE	30MHz – 1GHz
POLARIZATION	Vertical
OPERATING CONDITION	#1

FCC_15_247_RADIATED_SPURIOUS_VERTICAL

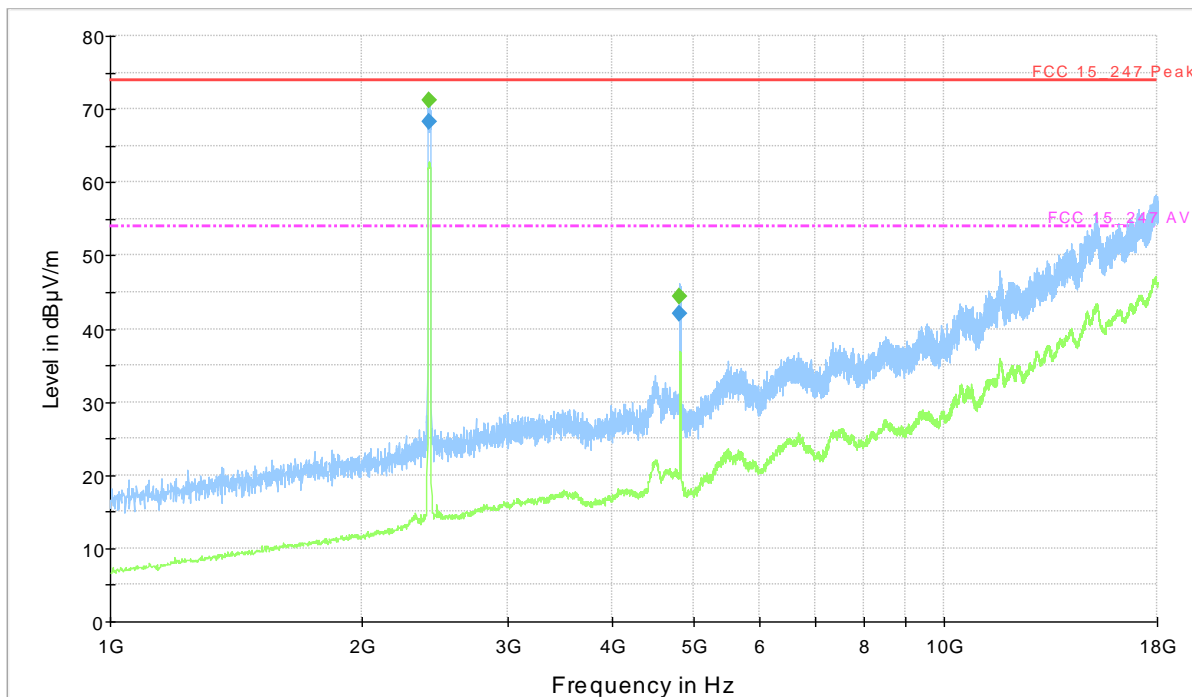


Final Result - Quasi Peak

Frequency (MHz)	QuasiPeak (dBµV/m)	Height (cm)	Polarization	Azimuth (deg)	Margin (dB)	Limit (dBµV/m)
30.485000	24.8	101.0	V	88.0	14.20	39.00
60.361000	34.5	103.0	V	0.0	4.50	39.00
64.435000	37.7	103.0	V	0.0	1.30	39.00
79.955000	37.3	103.0	V	0.0	1.70	39.00
87.909000	29.7	103.0	V	0.0	9.30	39.00
148.631000	33.6	103.0	V	0.0	9.90	43.50

MODE	n 20
CHANNEL	11
FREQ. RANGE	1GHz – 18GHz
POLARIZATION	Vertical
OPERATING CONDITION	#1

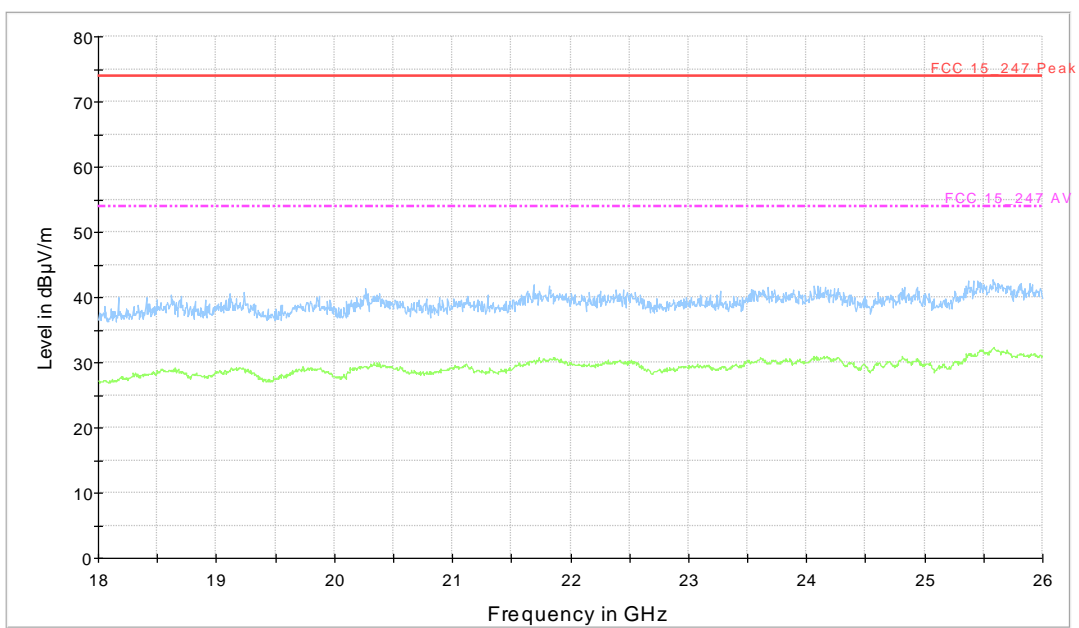
FCC_15_247_RADIATED_SPURIOUS_VERTICAL



Final Result - Average

Frequency (MHz)	Average (dBµV/m)	Height (cm)	Polarization	Azimuth (deg)	Margin (dB)	Limit (dBµV/m)
2416.100000	71.2	103.0	V	180.0	-17.20	54.00
4819.900000	44.3	259.0	V	180.0	9.70	54.00

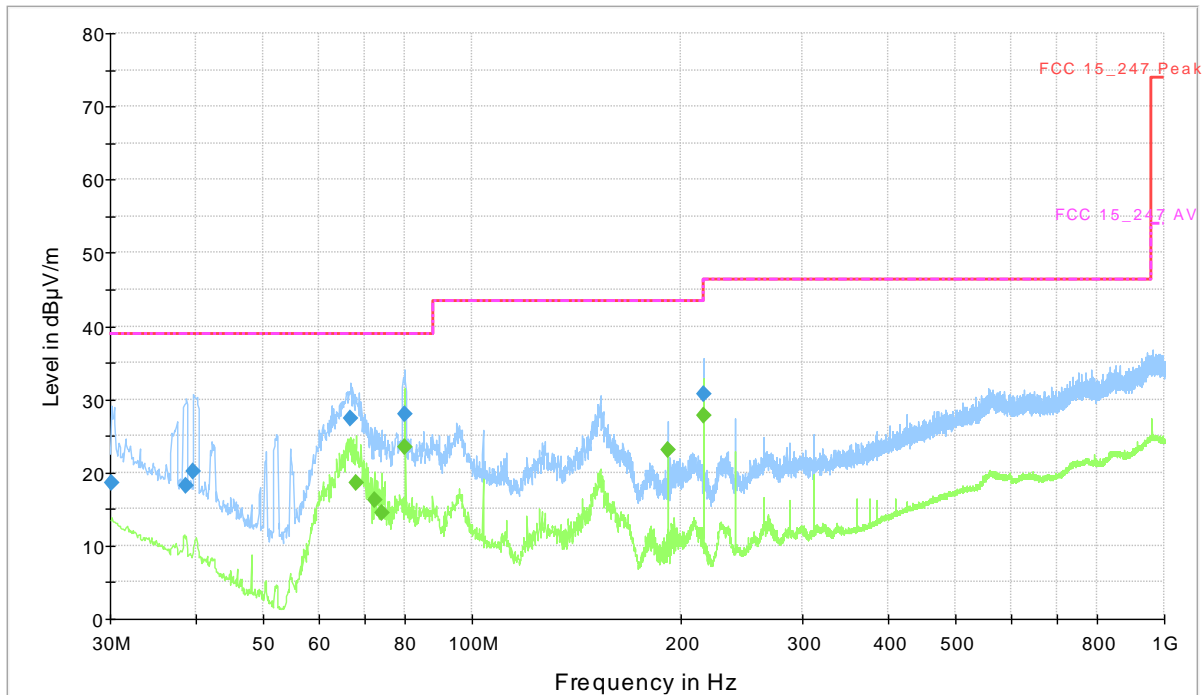
MODE	n 20
CHANNEL	11
FREQ. RANGE	18GHz-26GHz
POLARIZATION	Vertical
OPERATING CONDITION	#1



Blue trace Peak detector, Green trace average detector

MODE	n 20
CHANNEL	11
FREQ. RANGE	30MHz – 1GHz
POLARIZATION	Horizontal
OPERATING CONDITION	#1

FCC_15_247_RADIATED_SPURIOUS_HORIZONTAL

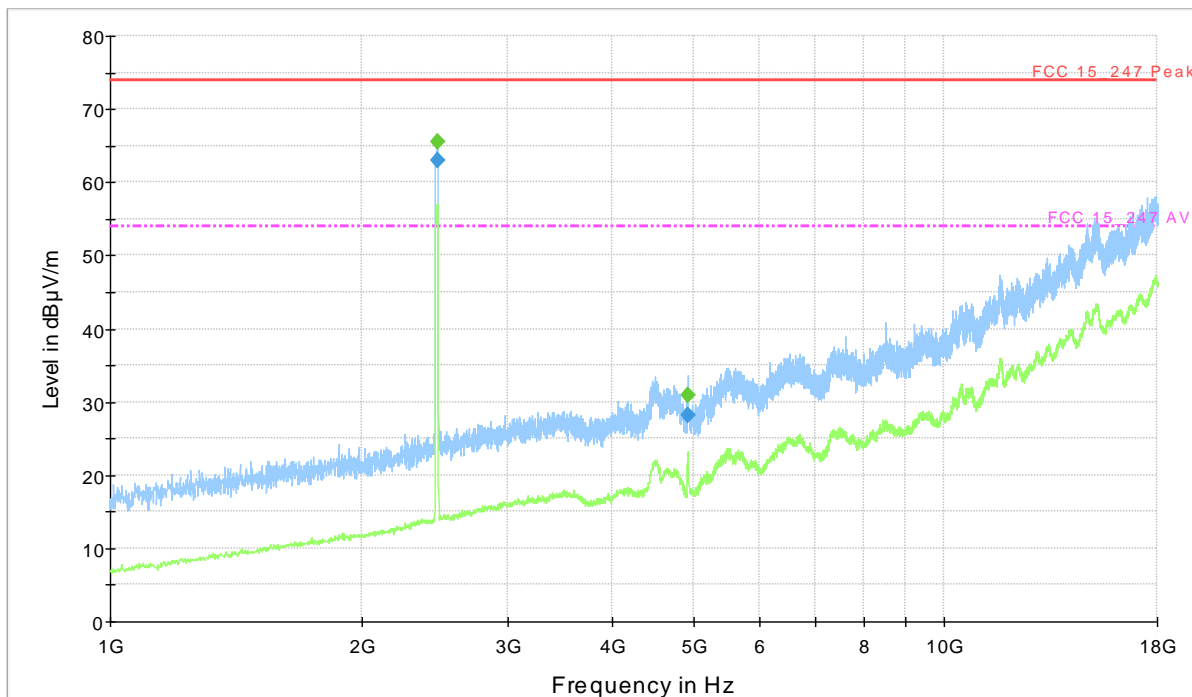


Final Result - Quasi Peak

Frequency (MHz)	QuasiPeak (dBµV/m)	Height (cm)	Polarization	Azimuth (deg)	Margin (dB)	Limit (dBµV/m)
30.097000	18.6	103.0	H	88.0	20.40	39.00
38.633000	18.3	102.0	H	268.0	20.70	39.00
39.603000	20.2	103.0	H	0.0	18.80	39.00
66.860000	27.4	259.0	H	268.0	11.60	39.00
79.955000	28.0	259.0	H	268.0	11.00	39.00
215.949000	30.7	103.0	H	88.0	12.80	43.50

MODE	n 20
CHANNEL	11
FREQ. RANGE	1GHz – 18GHz
POLARIZATION	Horizontal
OPERATING CONDITION	#1

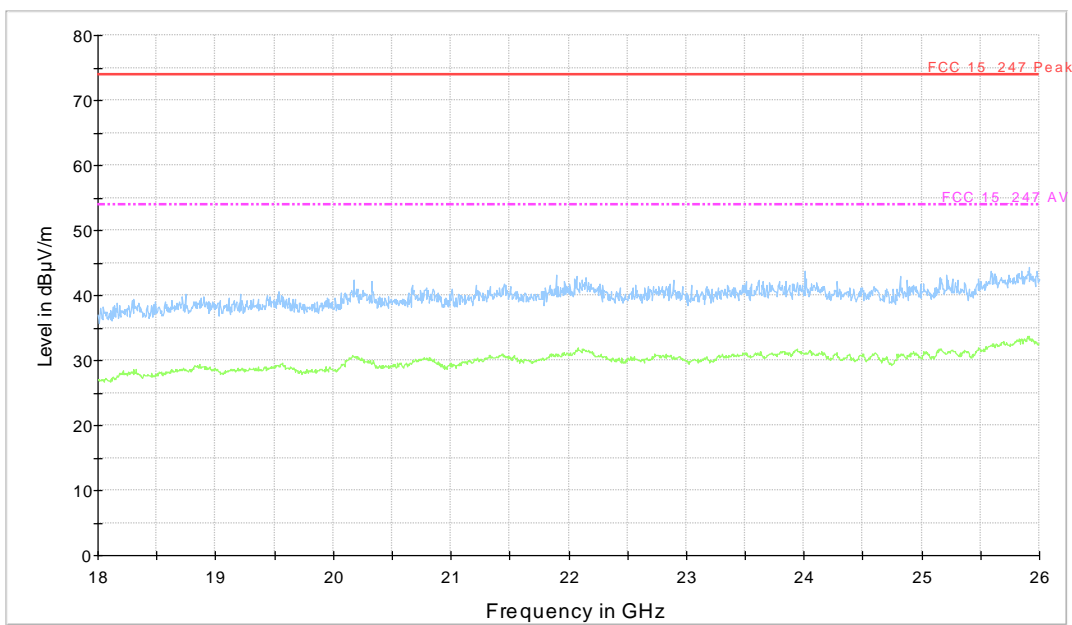
FCC_15_247_RADIATED_SPURIOUS_HORIZONTAL



Final Result - Average

Frequency (MHz)	Average (dBµV/m)	Height (cm)	Polarization	Azimuth (deg)	Margin (dB)	Limit (dBµV/m)
2465.400000	65.5	259.0	H	180.0	-11.50	54.00
4921.900000	30.9	259.0	H	180.0	23.10	54.00

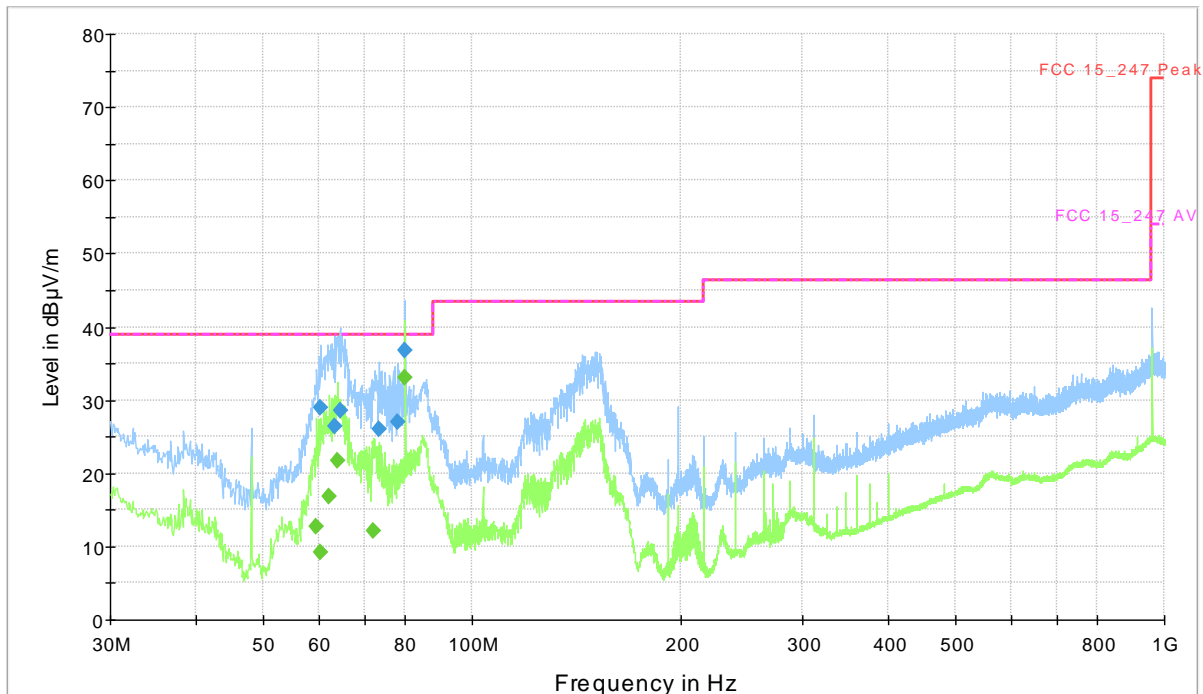
MODE	n 20
CHANNEL	11
FREQ. RANGE	18GHz-26GHz
POLARIZATION	Horizontal
OPERATING CONDITION	#1



Blue trace Peak detector, Green trace average detector

MODE	n 40
CHANNEL	1
FREQ. RANGE	30MHz – 1GHz
POLARIZATION	Vertical
OPERATING CONDITION	#1

FCC_15_247_RADIATED_SPURIOUS_VERTICAL

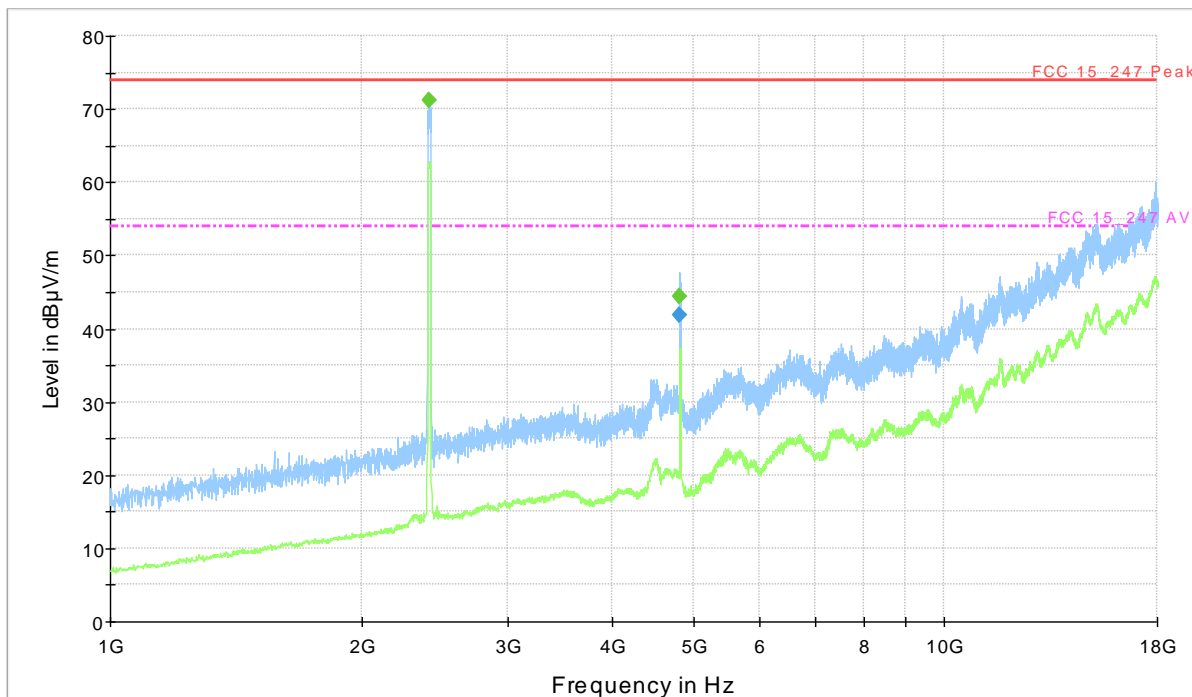


Final Result - Quasi Peak

Frequency (MHz)	QuasiPeak (dBµV/m)	Height (cm)	Polarization	Azimuth (deg)	Margin (dB)	Limit (dBµV/m)
60.458000	28.9	259.0	V	0.0	10.10	39.00
63.368000	26.5	259.0	V	0.0	12.50	39.00
64.435000	28.6	259.0	V	0.0	10.40	39.00
73.359000	26.0	103.0	V	0.0	13.00	39.00
78.015000	26.9	103.0	V	0.0	12.10	39.00
79.955000	36.8	103.0	V	0.0	2.20	39.00

MODE	n 40
CHANNEL	1
FREQ. RANGE	1GHz – 18GHz
POLARIZATION	Vertical
OPERATING CONDITION	#1

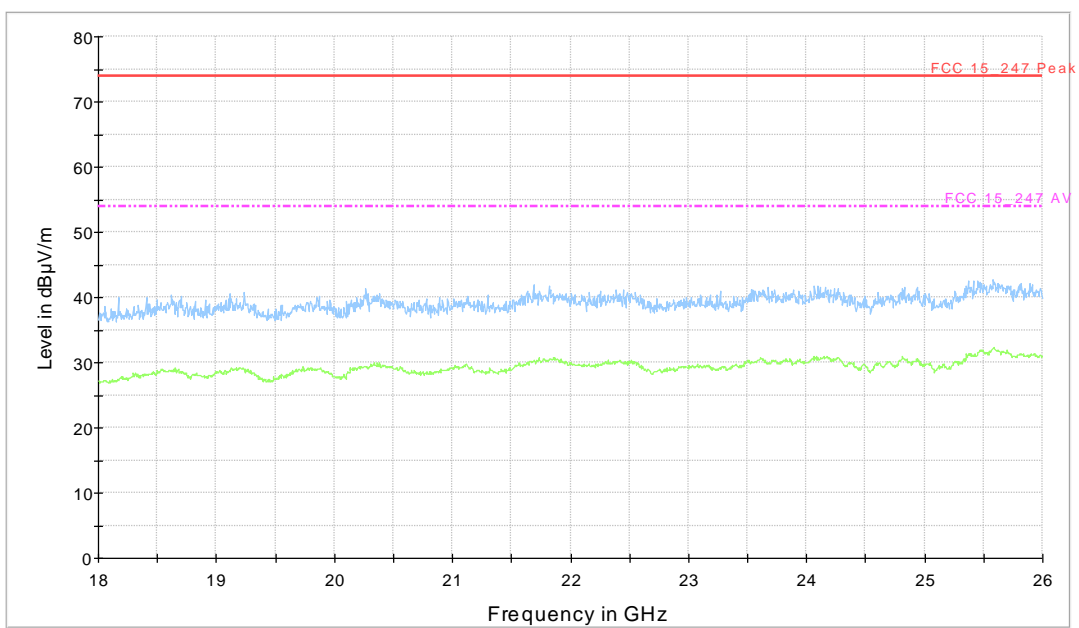
FCC_15_247_RADIATED_SPURIOUS_VERTICAL



Final Result - Average

Frequency (MHz)	Average (dBµV/m)	Height (cm)	Polarization	Azimuth (deg)	Margin (dB)	Limit (dBµV/m)
2412.700000	71.2	103.0	V	180.0	-17.20	54.00
4823.300000	44.4	259.0	V	180.0	9.60	54.00

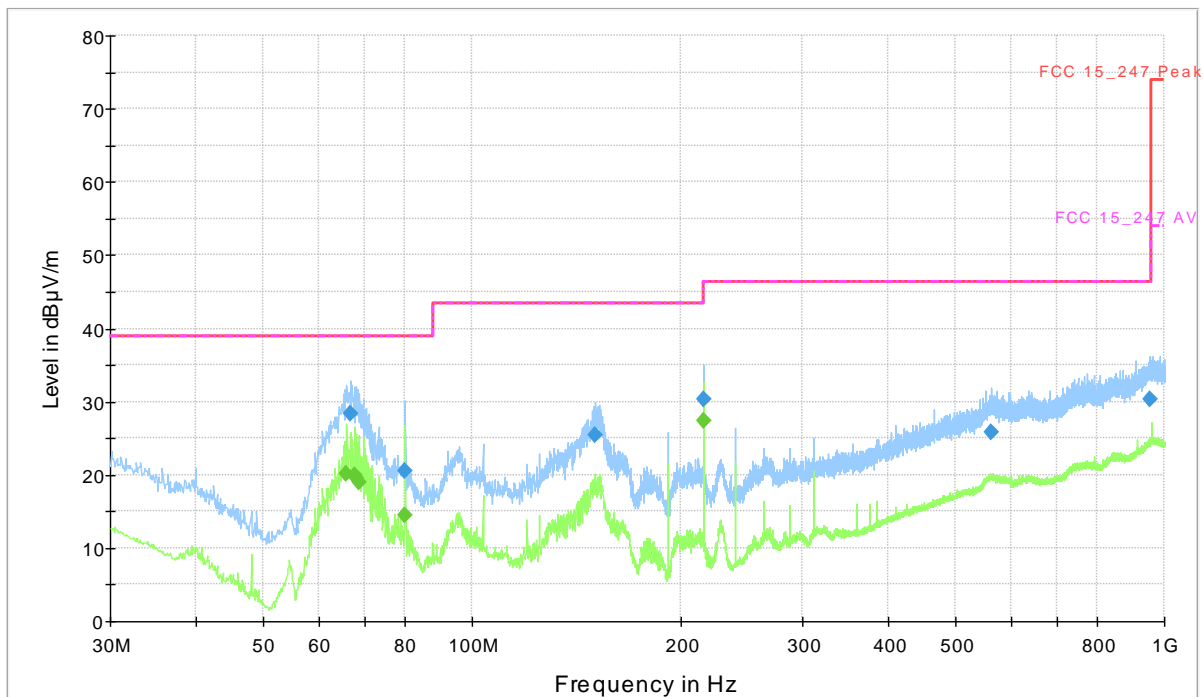
MODE	n 40
CHANNEL	1
FREQ. RANGE	18GHz-26GHz
POLARIZATION	Vertical
OPERATING CONDITION	#1



Blue trace Peak detector, Green trace average detector

MODE	n 40
CHANNEL	1
FREQ. RANGE	30MHz – 1GHz
POLARIZATION	Horizontal
OPERATING CONDITION	#1

FCC_15_247_RADIATED_SPURIOUS_HORIZONTAL

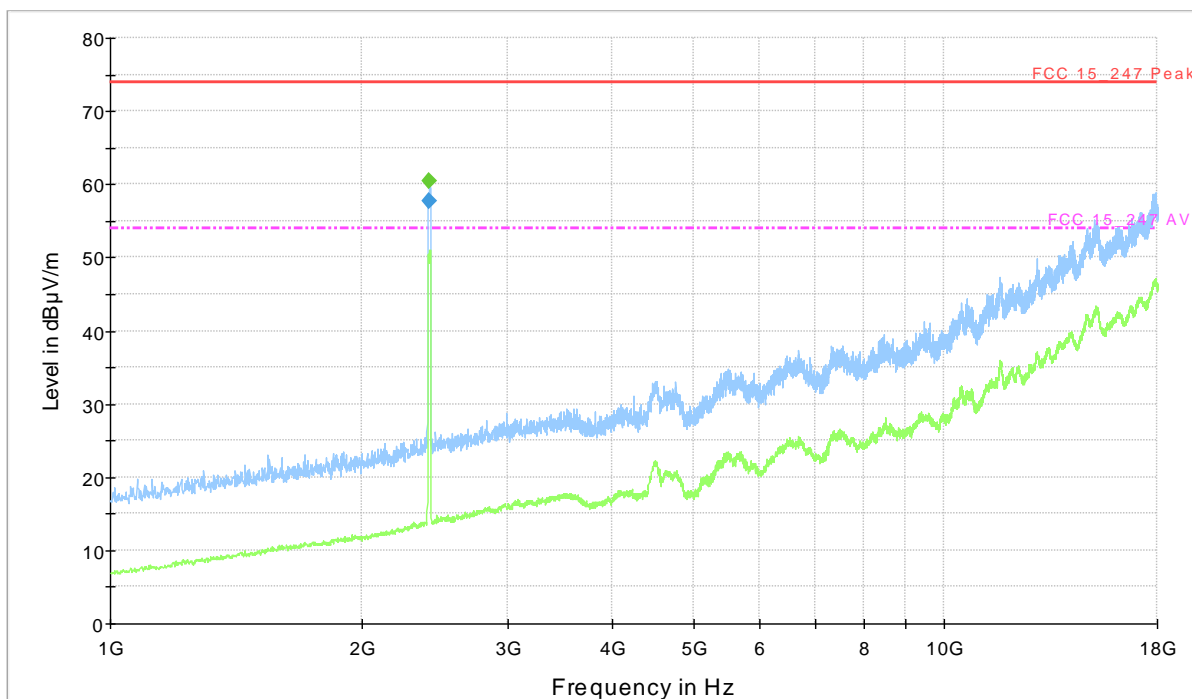


Final Result - Quasi Peak

Frequency (MHz)	QuasiPeak (dBµV/m)	Height (cm)	Polarization	Azimuth (deg)	Margin (dB)	Limit (dBµV/m)
66.763000	28.4	259.0	H	89.0	10.60	39.00
79.955000	20.6	259.0	H	89.0	18.40	39.00
150.862000	25.4	259.0	H	89.0	18.10	43.50
215.949000	30.4	103.0	H	89.0	13.10	43.50
562.627000	25.7	103.0	H	89.0	20.70	46.40
951.791000	30.3	259.0	H	89.0	16.10	46.40

MODE	n 40
CHANNEL	1
FREQ. RANGE	1GHz – 18GHz
POLARIZATION	Horizontal
OPERATING CONDITION	#1

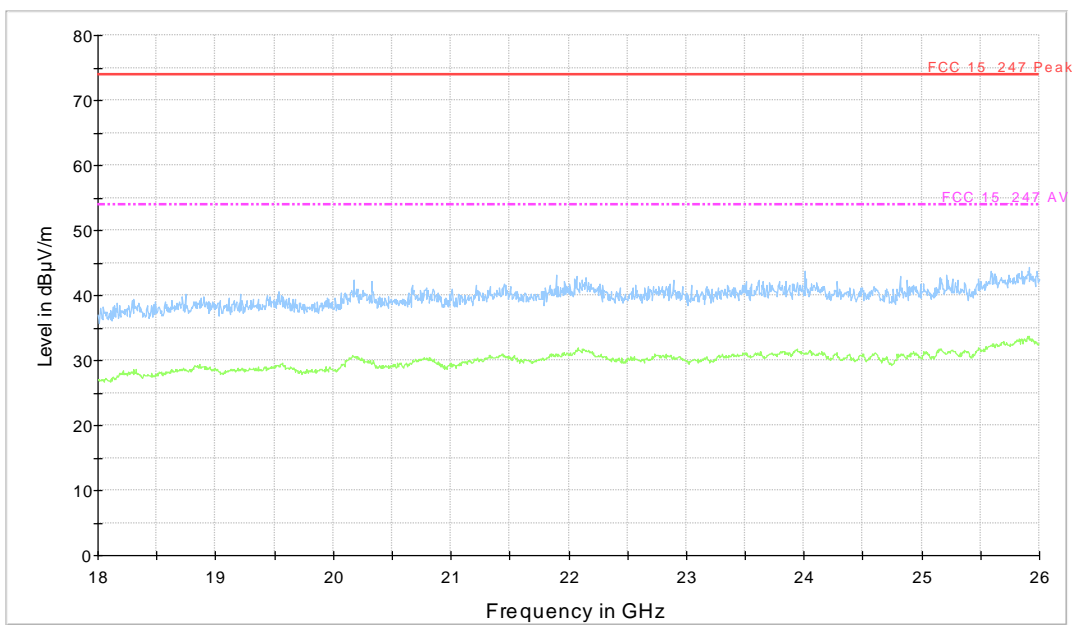
FCC_15_247_RADIATED_SPURIOUS_HORIZONTAL



Final Result - Average

Frequency (MHz)	Average (dBµV/m)	Height (cm)	Polarization	Azimuth (deg)	Margin (dB)	Limit (dBµV/m)
2416.100000	60.4	102.0	H	1.0	-6.40	54.00

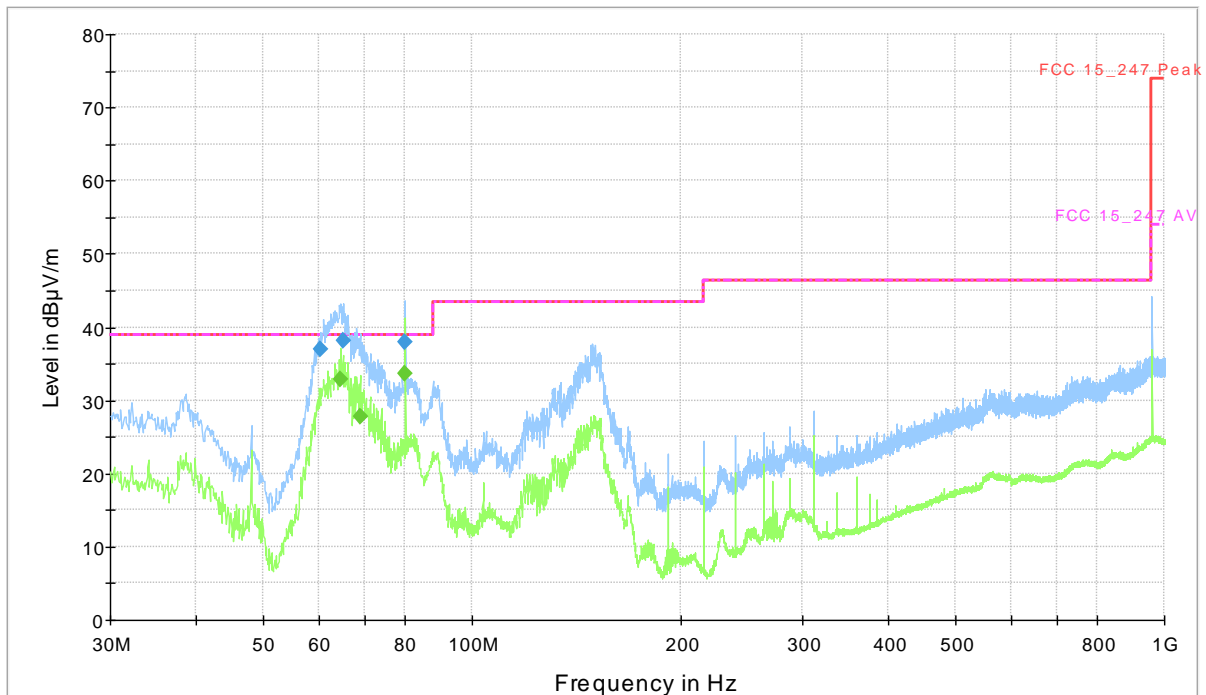
MODE	n 40
CHANNEL	1
FREQ. RANGE	18GHz-26GHz
POLARIZATION	Horizontal
OPERATING CONDITION	#1



Blue trace Peak detector, Green trace average detector

MODE	n 40
CHANNEL	11
FREQ. RANGE	30MHz – 1GHz
POLARIZATION	Vertical
OPERATING CONDITION	#1

FCC_15_247_RADIATED_SPURIOUS_VERTICAL

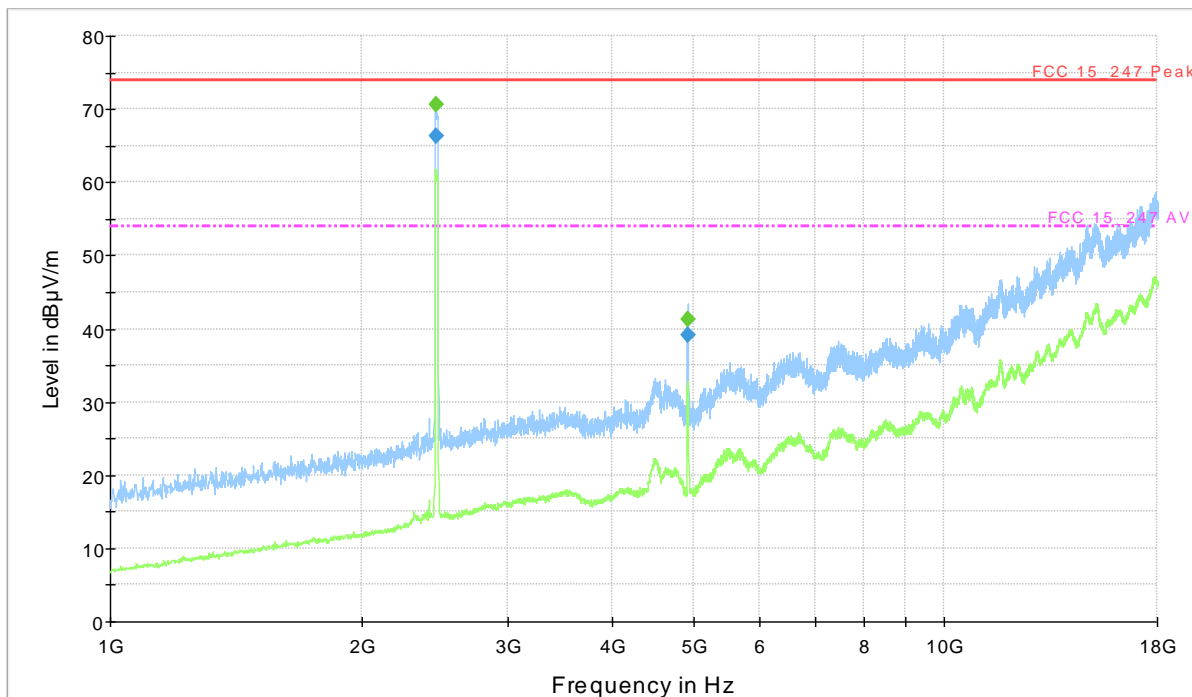


Final Result - Quasi Peak

Frequency (MHz)	QuasiPeak (dBµV/m)	Height (cm)	Polarization	Azimuth (deg)	Margin (dB)
60.361000	36.9	103.0	V	2.0	2.10
65.114000	38.2	103.0	V	2.0	0.80
79.955000	38.0	103.0	V	2.0	1.00
9547.600000	34.6	101.0	V	178.0	39.40
15257.900000	50.9	259.0	V	90.0	23.10
17920.100000	55.0	103.0	V	1.0	19.00

MODE	n 40
CHANNEL	11
FREQ. RANGE	1GHz – 18GHz
POLARIZATION	Vertical
OPERATING CONDITION	#1

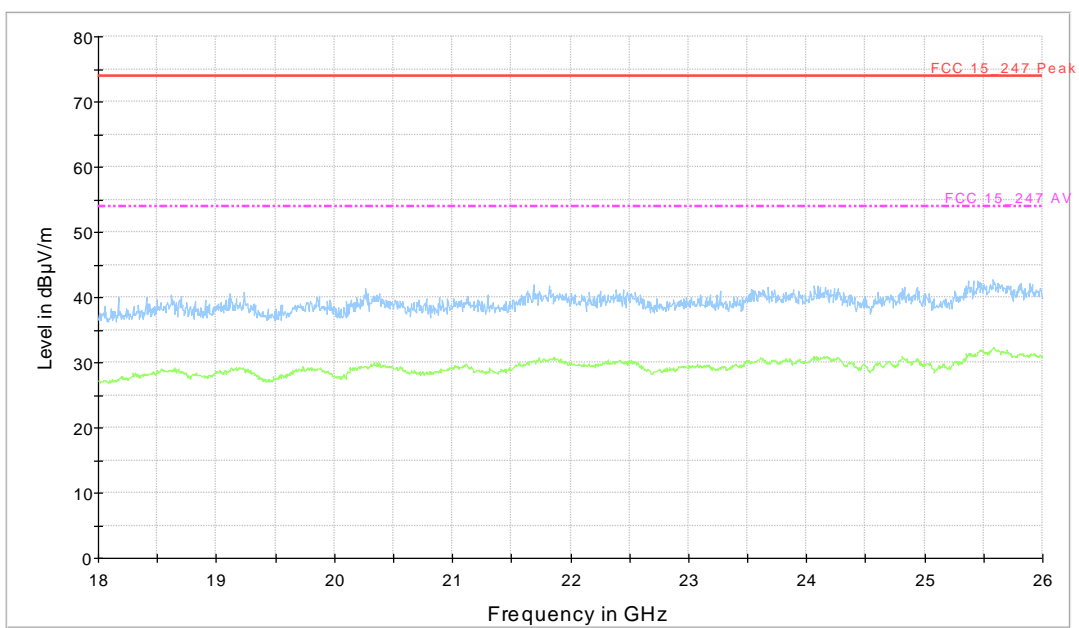
FCC_15_247_RADIATED_SPURIOUS_VERTICAL



Final Result - Average

Frequency (MHz)	Average (dBµV/m)	Height (cm)	Polarization	Azimuth (deg)	Margin (dB)	Limit (dBµV/m)
2456.900000	70.5	103.0	V	180.0	-16.50	54.00
4921.900000	41.3	103.0	V	180.0	12.70	54.00

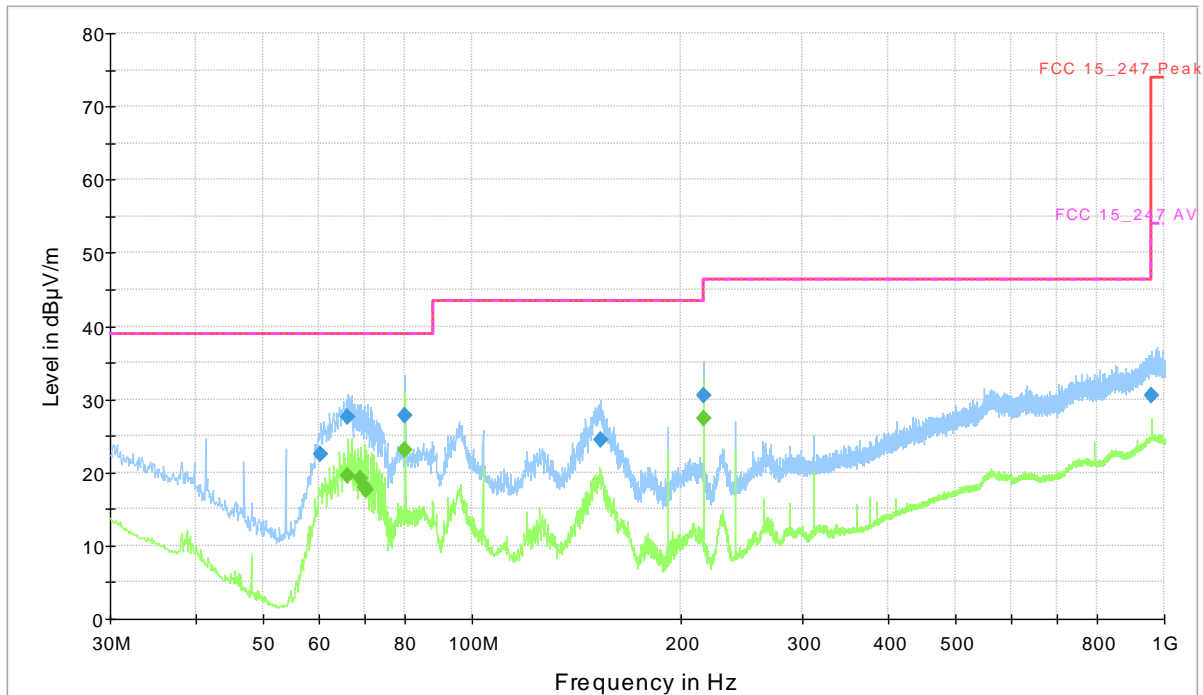
MODE	n 40
CHANNEL	11
FREQ. RANGE	18GHz-26GHz
POLARIZATION	Vertical
OPERATING CONDITION	#1



Blue trace Peak detector, Green trace average detector

MODE	n 40
CHANNEL	11
FREQ. RANGE	30MHz – 1GHz
POLARIZATION	Horizontal
OPERATING CONDITION	#1

FCC_15_247_RADIATED_SPURIOUS_HORIZONTAL

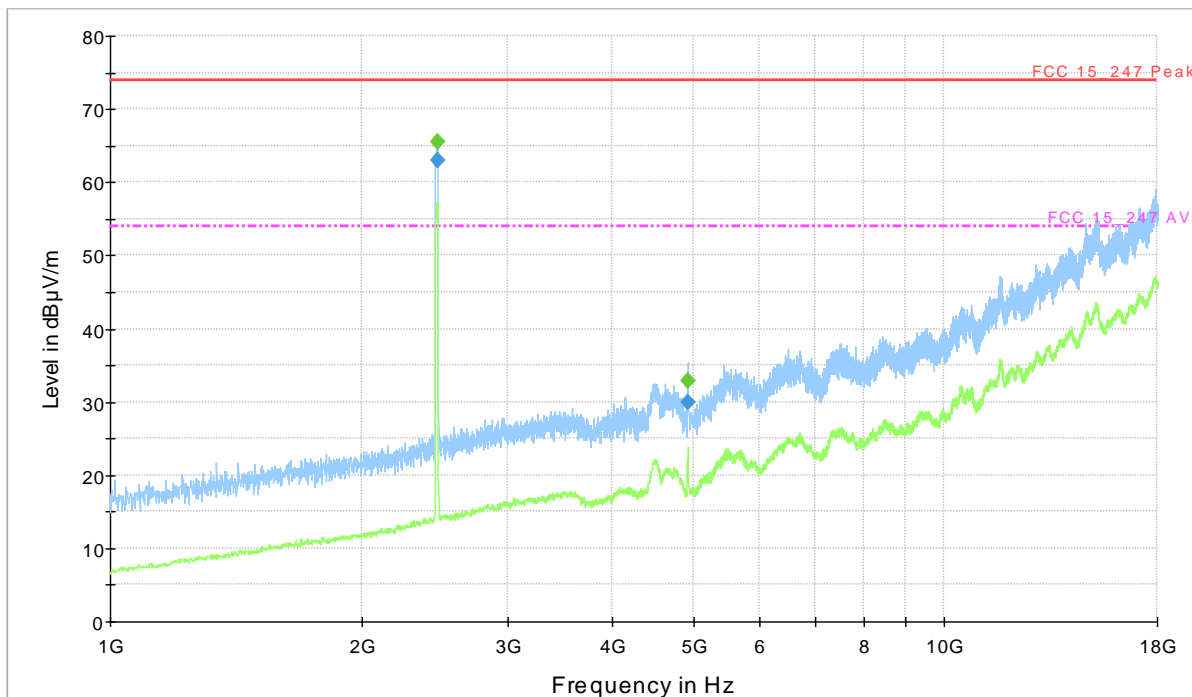


Final Result - Quasi Peak

Frequency (MHz)	QuasiPeak (dBµV/m)	Height (cm)	Polarization	Azimuth (deg)	Margin (dB)	Limit (dBµV/m)
60.458000	22.5	259.0	H	269.0	16.50	39.00
66.181000	27.5	259.0	H	269.0	11.50	39.00
79.955000	27.7	259.0	H	269.0	11.30	39.00
153.481000	24.5	259.0	H	88.0	19.00	43.50
215.949000	30.4	103.0	H	88.0	13.10	43.50
957.029000	30.5	103.0	H	0.0	15.90	46.40

MODE	n 40
CHANNEL	11
FREQ. RANGE	1GHz – 18GHz
POLARIZATION	Horizontal
OPERATING CONDITION	#1

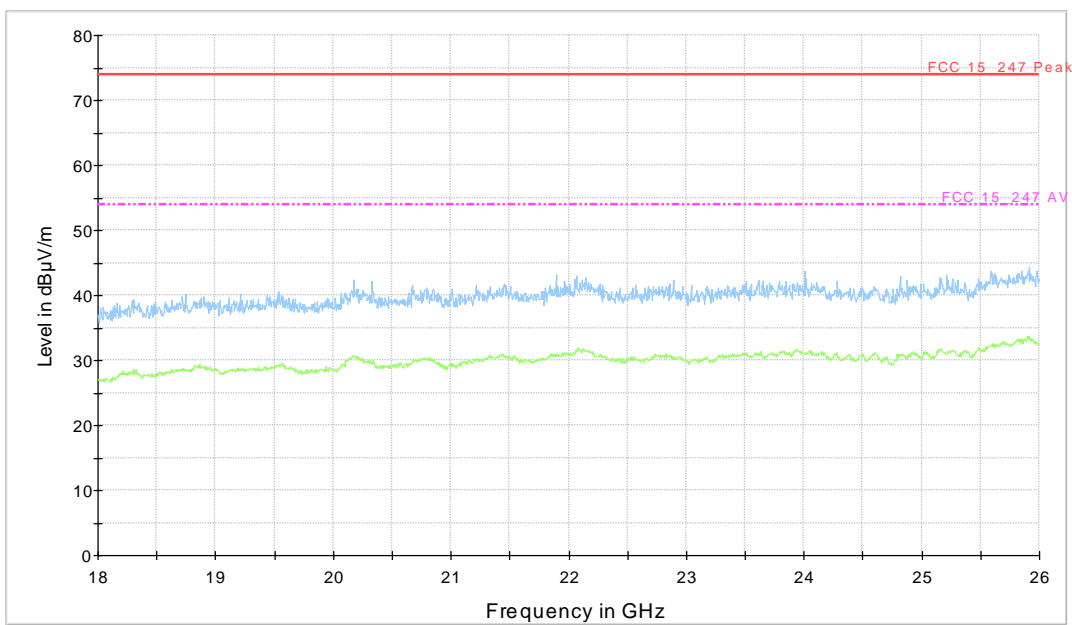
FCC_15_247_RADIATED_SPURIOUS_HORIZONTAL



Final Result - Average

Frequency (MHz)	Average (dBµV/m)	Height (cm)	Polarization	Azimuth (deg)	Margin (dB)	Limit (dBµV/m)
2465.400000	65.5	257.0	H	180.0	-11.50	54.00

MODE	n 40
CHANNEL	11
FREQ. RANGE	18GHz-26GHz
POLARIZATION	Horizontal
OPERATING CONDITION	#1



Blue trace Peak detector, Green trace average detector

**TEST
2.**

Band-Edge

REFERENCE DOCUMENT Title 47 Part 15 Subpart C § 15.247 d)

TEST SETUP	In according to ref std
TEST LOCATION	Radio test area
TYPE OF MEASUREMENT	CONDUCTED
TEST EQUIPMENT	Spectrum Analyzer Rohde&Schwarz mod. FSP40 SYSTEM DC POWER SUPPLY HP mod. 6623A
TEST PERFORMED BY	Enrico Banfi
TESTING DATE	28-29/11/2013

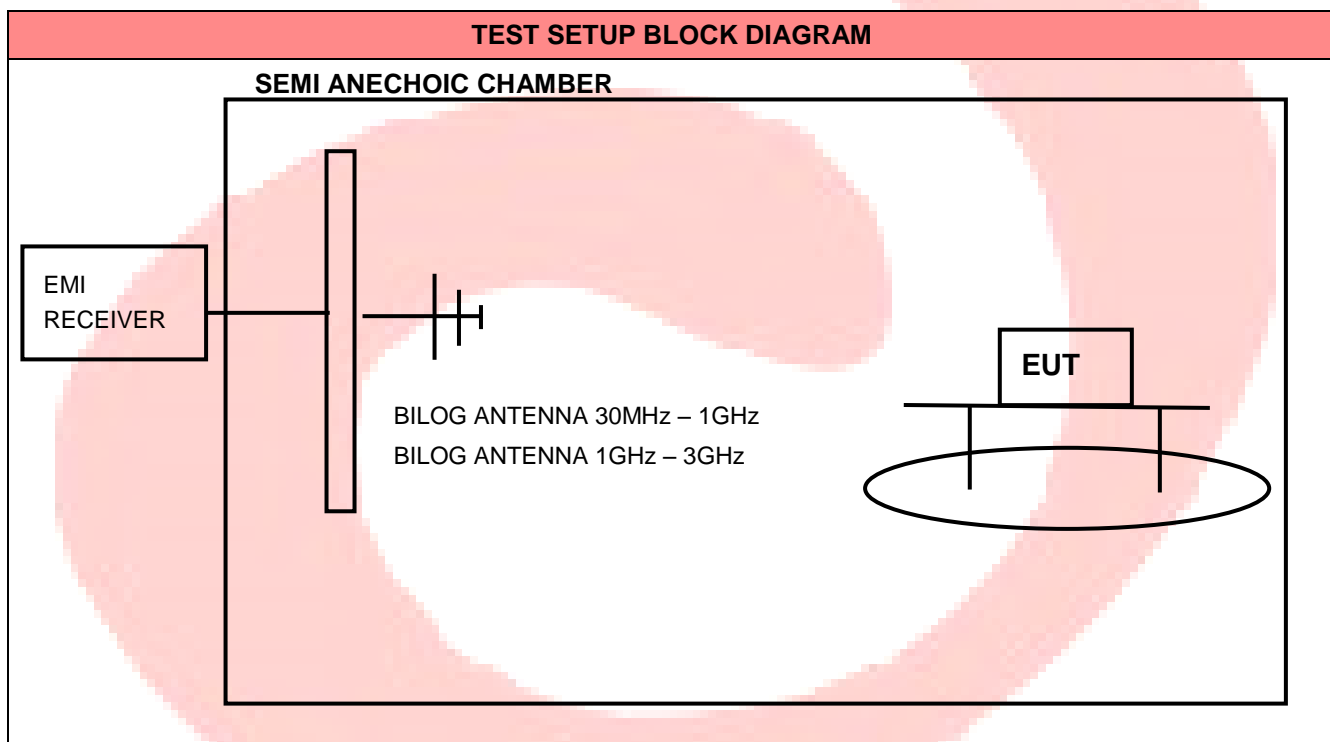
TEST CONDITIONS:	MEASURED
Ambient temperature : 23°C ± 5°C	24°C
Ambient humidity : 25 - 75 %rH	45%
Pressure : 85 - 106 kPa (860 mbar - 1060 mbar)	960mbar

OPERATING CONDITION	#1
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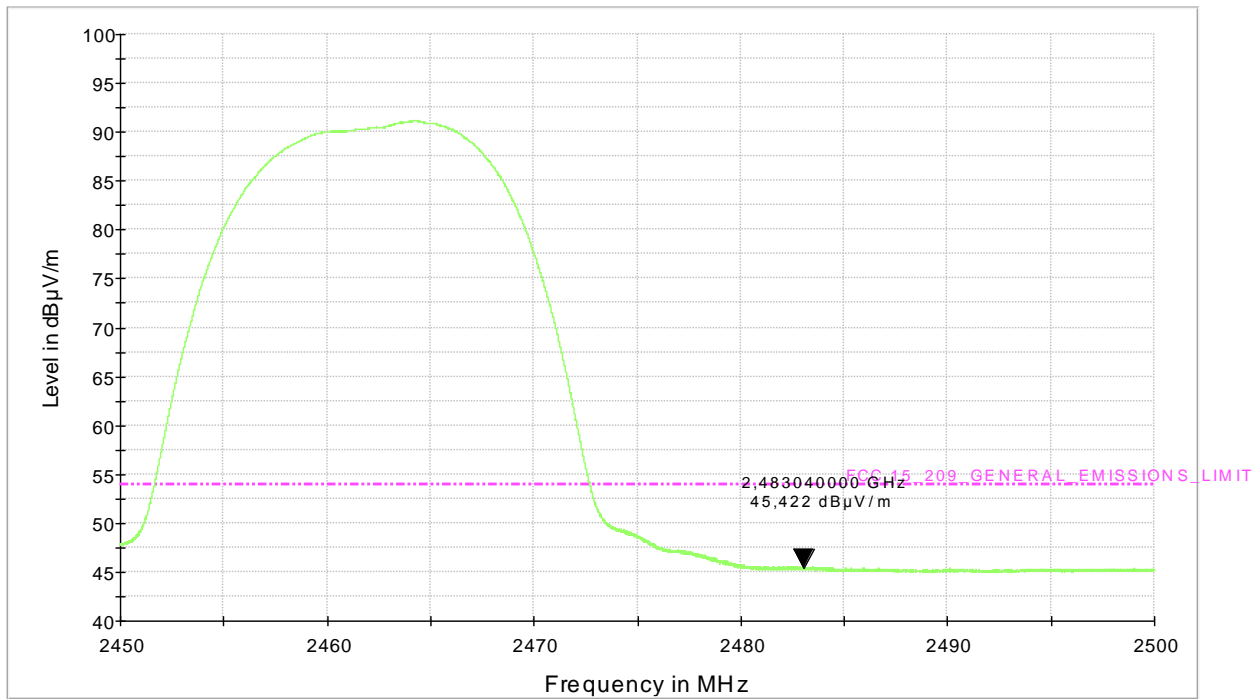
TEST RESULT	WITHIN THE LIMITS
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DESCRIPTION

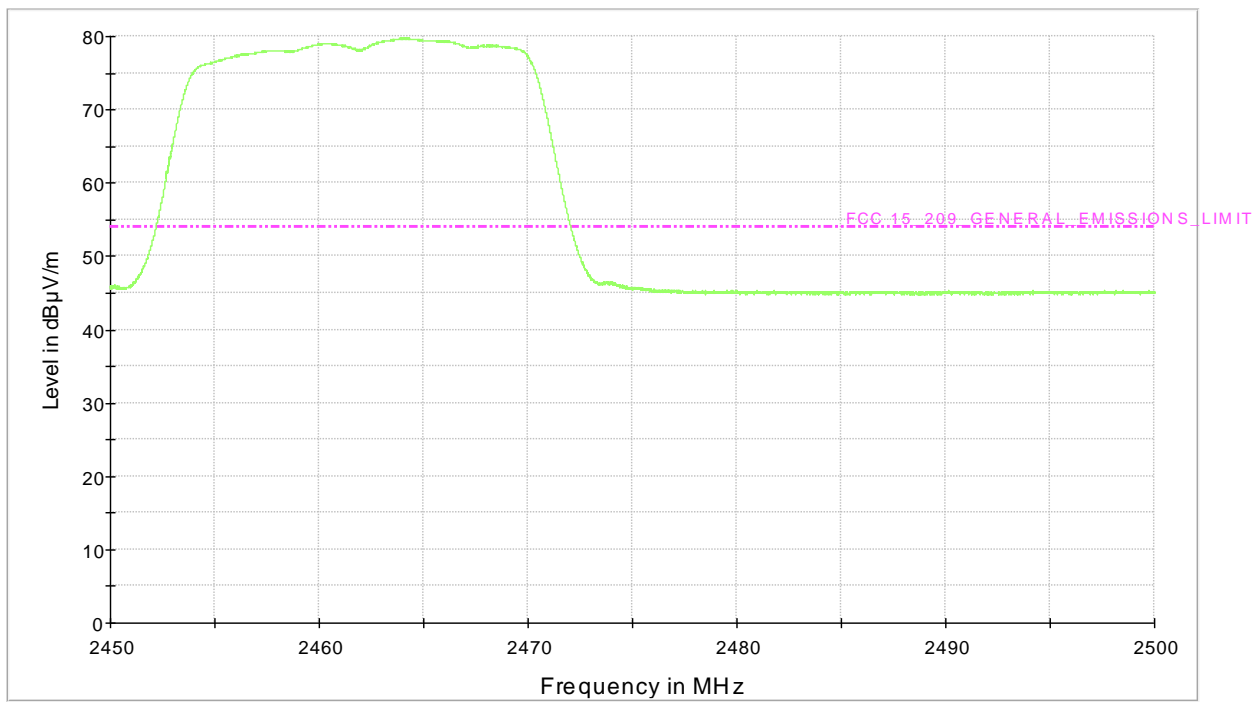
According to §15,247(d), In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits, If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB, Attenuation below the general limits specified in Sec, 15,209(a) is not required, In addition, radiated emissions which fall in the restricted bands, as defined in Sec, 15,205(a), must also comply with the radiated emission limits specified in Sec, 15,209(a) (see Sec, 15,205(c)),



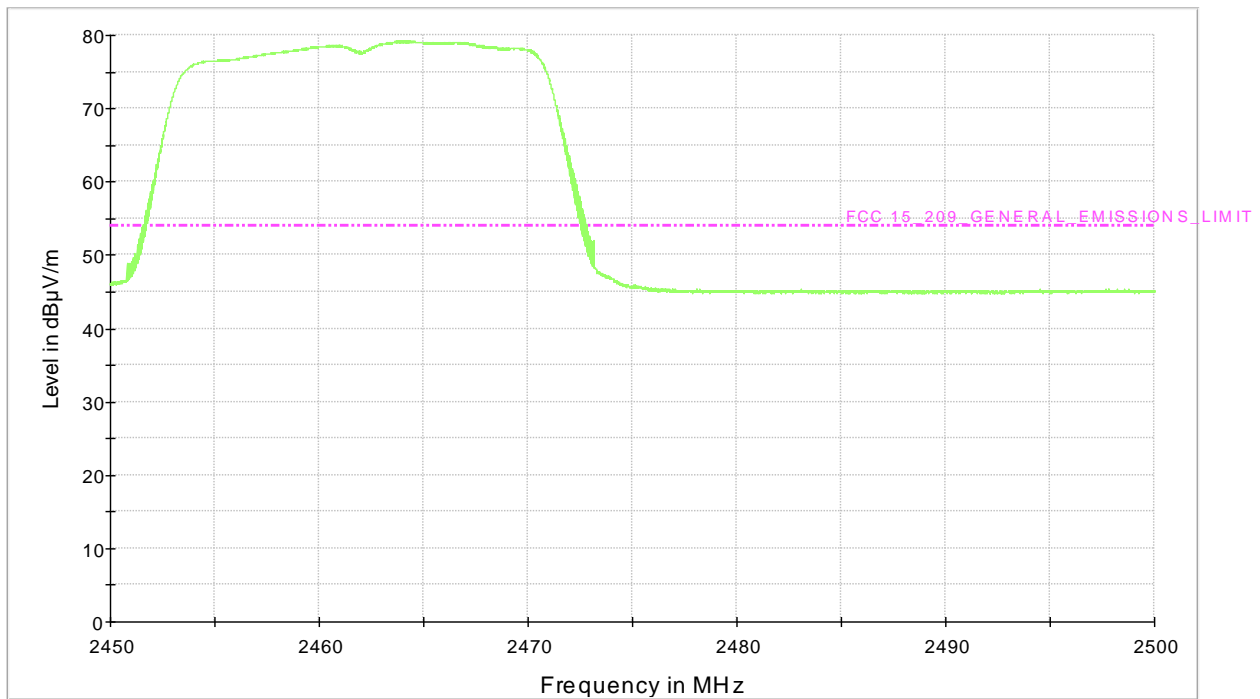
MODE	b
CHANNEL	11
OPERATING CONDITION	#1



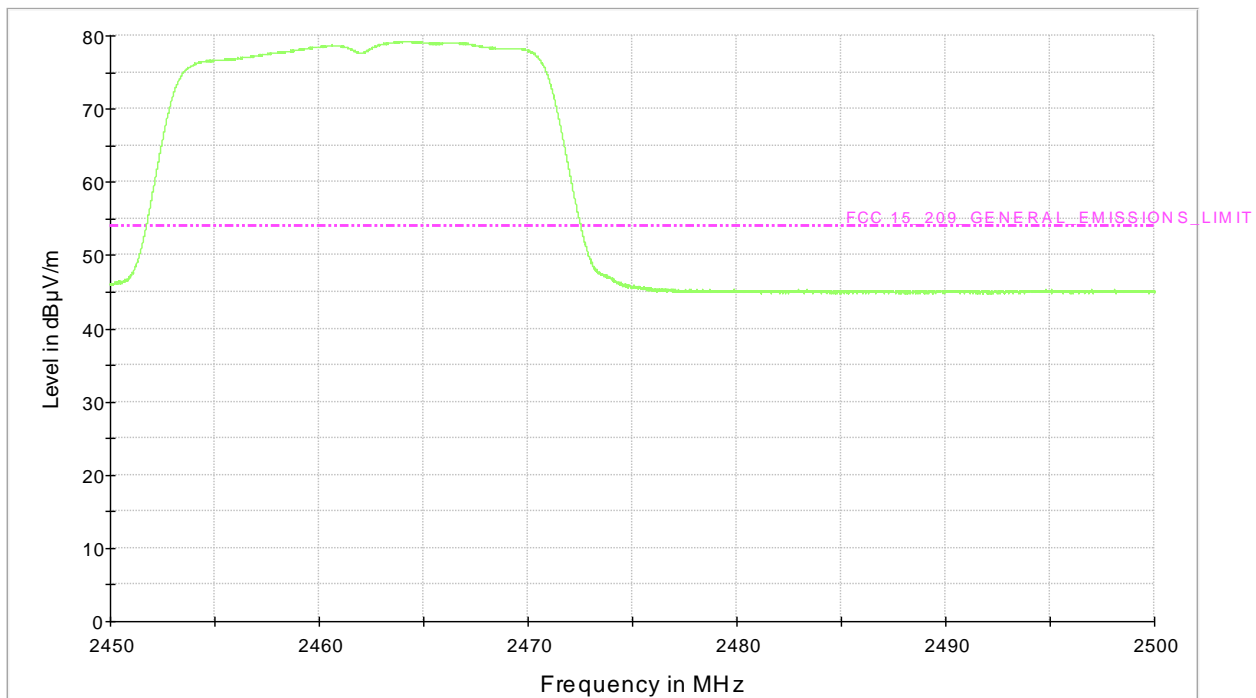
MODE	g
CHANNEL	11
OPERATING CONDITION	#1



MODE	n 20
CHANNEL	11
OPERATING CONDITION	#1



MODE	n 40
CHANNEL	11
OPERATING CONDITION	#1



6 LIST OF EQUIPMENT USED

EQUIPMENT	MANUFACTURER	MODEL	SERIAL Nr.	CAL. DUE
EMI TEST RECEIVER 20Hz - 40GHz	Rohde & Schwarz	ESU40	100111	May 2017
RF SEMI-ANECHOIC CHAMBER (CSSA)	Siemens	B83117-D6019-T232	003-005-134/94C	Jan 2017
BILOG ANTENNA	Chase	CBL6111C	2717	May 2018
LOG PERIODIC ANTENNA BROAD BAND 1-26,5GHz	Rohde & Schwarz	HL050	100437	Jun 2016
SPECTRUM ANALYZER	Rohde & Schwarz	FSP40	100038	Jun 2016
TUNABLE NOTCH FILTER	Wainwright	WRCT2200/2500-5/40- 10SK	5	Nov 2016
HIGH PASS FILTER	Wainwright	WHNX 2,8/18G-10SS	1	Nov 2016