Report No.: RZA2009-1264_15C-WiFi

TESTING
No. L2264

Part 15C

TEST REPORT

Product Name	GSM/GPRS Mobile Phone
Model	W001
FCC ID	XUT-W001
Client	Shenzhen Hongjiayuan Communication Technology CO.,LTD.

TA Technology (Shanghai) Co., Ltd.

GENERAL SUMMARY

Product Name	GSM/GPRS Mobile Phone	**Model**	W001
FCC ID	XUT-W001	**Report No.**	RZA2009-1264_15C-WiFi
Client	Shenzhen Hongjiayuan Communication Technology CO.,LTD.		
Manufacturer	Shenzhen Hongjiayuan Communication Technology CO.,LTD.		
Reference Standard(s)	**FCC Part 15 Subpart C: (2008)** **15.205** Restricted bands of operation**;** **15.209** Radiated emission limits; general requirements; **15.247** Operation within the bands 902-928 MHz, 2400-2483.5 MHz, and 5725-5850MHz. **ANSI C63.4** Methods of Measurement of Radio-Noise Emission from Low-Voltage Electrical and Electronic Equipment in the Range of 9 KHz to 40GHz.(2003) **DA00-705** Filing and Frequency Measurement Guidelines For Frequency Hopping Spread Spectrum System.(2000)		
Conclusion	This portable wireless equipment has been measured in all cases requested by the relevant standards. Test results in Chapter 2 of this test report are below limits specified in the relevant standards. General Judgment: **Pass** (Stamp) **Date of issue: December 11th, 2009**		
Comment	The test result only responds to the measured sample.		

Approved by Yang Weizhong **Revised by** Song Ming **Performed by** Liu Wei

TABLE OF CONTENT

1. General Information

1.1. Notes of the test report

TA Technology (Shanghai) Co., Ltd. guarantees the reliability of the data presented in this test report, which is the results of measurements and tests performed for the items under test on the date and under the conditions stated in this test report and is based on the knowledge and technical facilities available at TA Technology (Shanghai) Co., Ltd. at the time of execution of the test.

TA Technology (Shanghai) Co., Ltd. is liable to the client for the maintenance by its personnel of the confidentiality of all information related to the items under test and the results of the test. This report only refers to the item that has undergone the test.

This report standalone dose not constitute or imply by its own an approval of the product by the certification Bodies or competent Authorities. This report cannot be used partially or in full for publicity and/or promotional purposes without previous written approval of **TA Technology (Shanghai) Co., Ltd.** and the Accreditation Bodies, if it applies.

1.2. Testing laboratory

Company:	TA Technology (Shanghai) Co., Ltd.
Address:	No.145, Jintang Rd, Tangzhen Industry Park, Pudong
City:	Shanghai
Post code:	201210
Country:	P. R. China
Contact:	Yang Weizhong
Telephone:	+86-021-50791141/2/3
Fax:	+86-021-50791141/2/3-8000
Website:	http://www.ta-shanghai.com
E-mail:	yangweizhong@ta-shanghai.com

1.3. Applicant Information

Company:	Shenzhen Hongjiayuan Communication Technology CO.,LTD.
Address:	Room 2406,Block A of Electronic Science and Technology Building,No.2070,Shennan Zhong Road,Futian District,Shenzhen City,Guangdong Province,China
City:	Shenzhen
Postal Code:	/
Country:	P.R. China
Contact:	Cong Chen
Telephone:	+86 755 33366555
Fax:	+86 755 33366565

1.4. Manufacturer Information

Company:	Shenzhen Hongjiayuan Communication Technology CO.,LTD.
Address:	Room 2406,Block A of Electronic Science and Technology Building,No.2070,Shennan Zhong Road,Futian District,Shenzhen City,Guangdong Province,China
City:	Shenzhen
Postal Code:	/
Country:	P.R. China
Telephone:	+86 755 33366555
Fax:	+86 755 33366565

1.5. Information of EUT

General information

Device type:	Portable device
Name of EUT:	GSM/GPRS Mobile Phone
Device operating configurations:	
IMEI or SN:	355002800004837
Network Standards:	IEEE802.11b, IEEE802.11g
Test modulation:	DSSS OFDM CCK
Antenna type:	Internal antenna
Power supply:	Battery or Charger (AC adaptor)
Date Rate:	802.11b: 1, 2, 5.5, 11Mbps 802.11g:6, 9, 12, 18, 24, 36, 48, 54 Mbps
Max Conducted Power	13.68dBm
Extreme Voltage:	Minimum: 3.5V Maximum: 4.2V
Extreme Temperature:	Lowest: -10°C Highest: +55°C
Operating frequency range(s)	2400MHz~ 2483.5 MHz
Hardware version:	E706_V1.2
Software version:	E706_JJF2IPH18.01.0

Auxiliary equipment details

AE1: Battery	
Model:	W001
Manufacture:	Shenzhen Hongjiayuan Communication Technology CO.,LTD
IMEI or SN:	/
AE2: Travel Adaptor	
Model:	HY-SW0500500X
Manufacture:	Shenzhen HanYuXun Electronics CO.,LTD
IMEI or SN:	/

Equipment Under Test (EUT) is GSM/GPRS Mobile Phone with integrated antenna. It consists of mobile phone, battery and adaptor (see ANNEX A) and the detail about these is in chapter 1.5 in this report. The EUT supports WIFI.

The sample under test was selected by the Client.

Components list please refer to documents of the manufacturer.

1.6. Test Date

The test is performed from October 20, 2009 to December 11, 2009.

2. Test Information

2.1. Summary of test results

Number	Summary of measurements of results	Clause in FCC rules	Verdict
1	Peak Power Output –Conducted	15.247(b)(3)	PASS
2	Minimum 6dB bandwidth	15.247(a)(2)	PASS
3	Band Edges compliance	15.247(d)	PASS
4	Spurious Radiated Emissions in the restricted band	15.247(d),15.205,15.209	PASS
5	Power spectral Density	15.247(e)	PASS
6	Conducted Spurious Emission	15.247	PASS
7	Radiates Emission	15.247(d),15.205,15.209	PASS
8	Conducted Emissions	15.207,15.107	PASS

2.2. Peak Power Output –Conducted

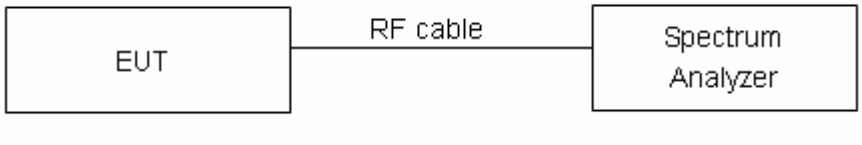
Ambient condition

Temperature	Relative humidity	Pressure
24°C	50%	101.5kPa

Methods of Measurement

During the process of the testing, The EUT was connected to the spectrum analyzer through an external attenuator and a known loss cable. The EUT is max power transmission with proper modulation. These measurements have been tested at following channels: 1, 6, and 11.

Test Setup



Limits

Rule Part 15.247 (b) (3) specifies that " For systems using digital modulation in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands: 1 Watt.”

Peak Output Power	≤ 1W (30dBm)

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor k = 2. U= 0.44 dB.

Test Results

Network Standards	Channel	Carrier Frequency (MHz)	Peak Output Power (dBm)	Conclusion
802.11b	CH1	2412	12.22	PASS
	CH6	2437	13.48	
	CH11	2462	13.68	
802.11g	CH1	2412	7.49	PASS
	CH6	2437	8.45	
	CH11	2462	9.22	

2.3. Occupied Bandwidth (6dB)

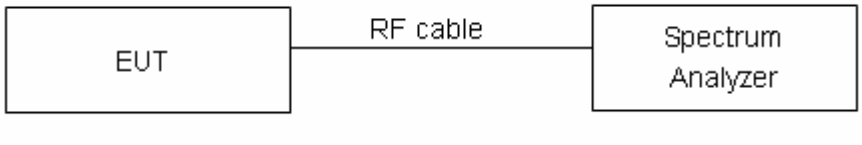
Ambient condition

Temperature	Relative humidity	Pressure
24°C	50%	101.5kPa

Method of Measurement

The EUT was connected to the spectrum analyzer through an external attenuator (20dB) and a known loss cable. RBW and VBW are set to 100 kHz on spectrum analyzer.

Test Setup



Limits

Rule Part 15.247 (a) (2) specifies that “Systems using digital modulation techniques may operate in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.”

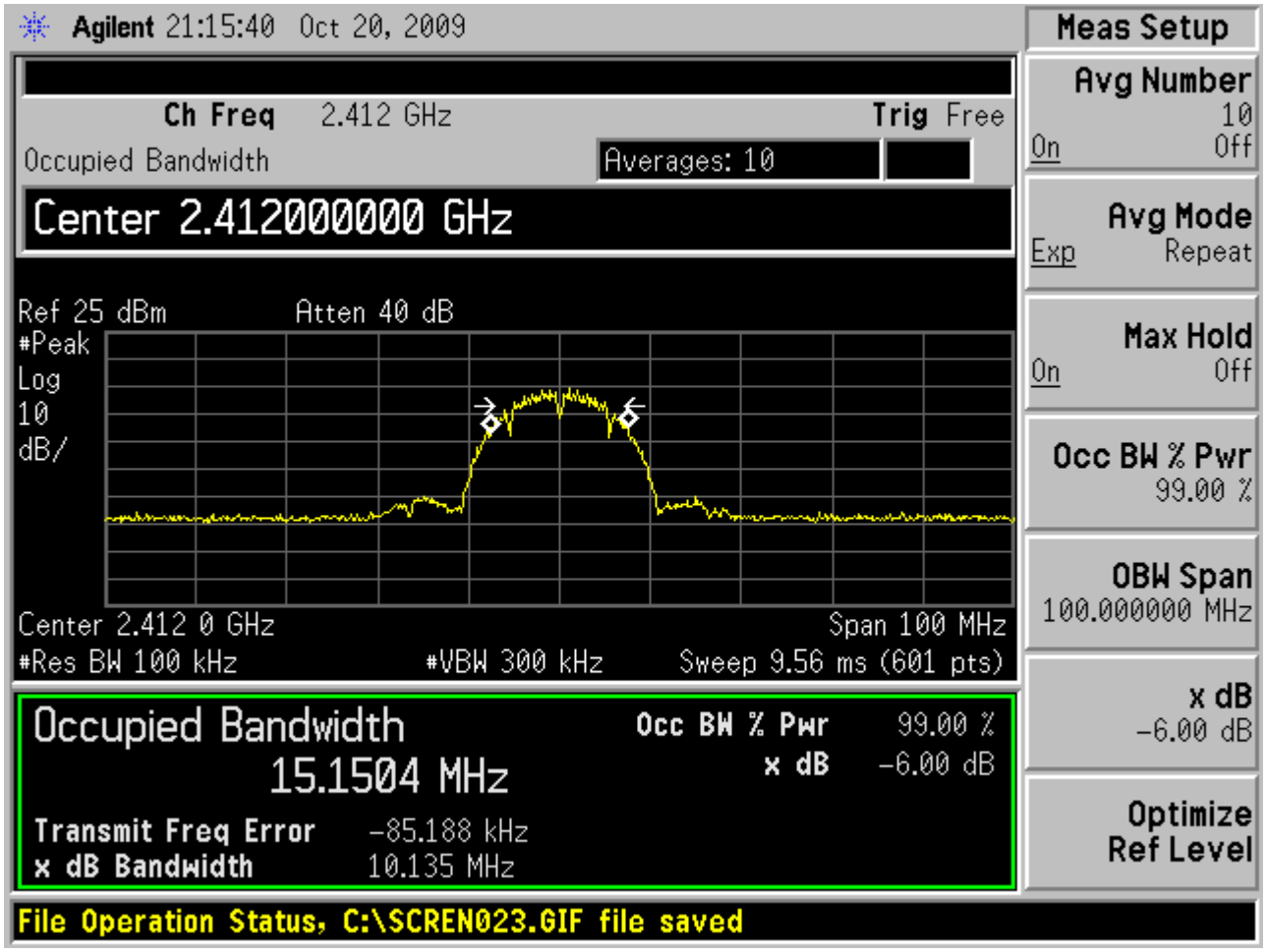
minimum 6 dB bandwidth	≥ 500 kHz

Measurement Uncertainty

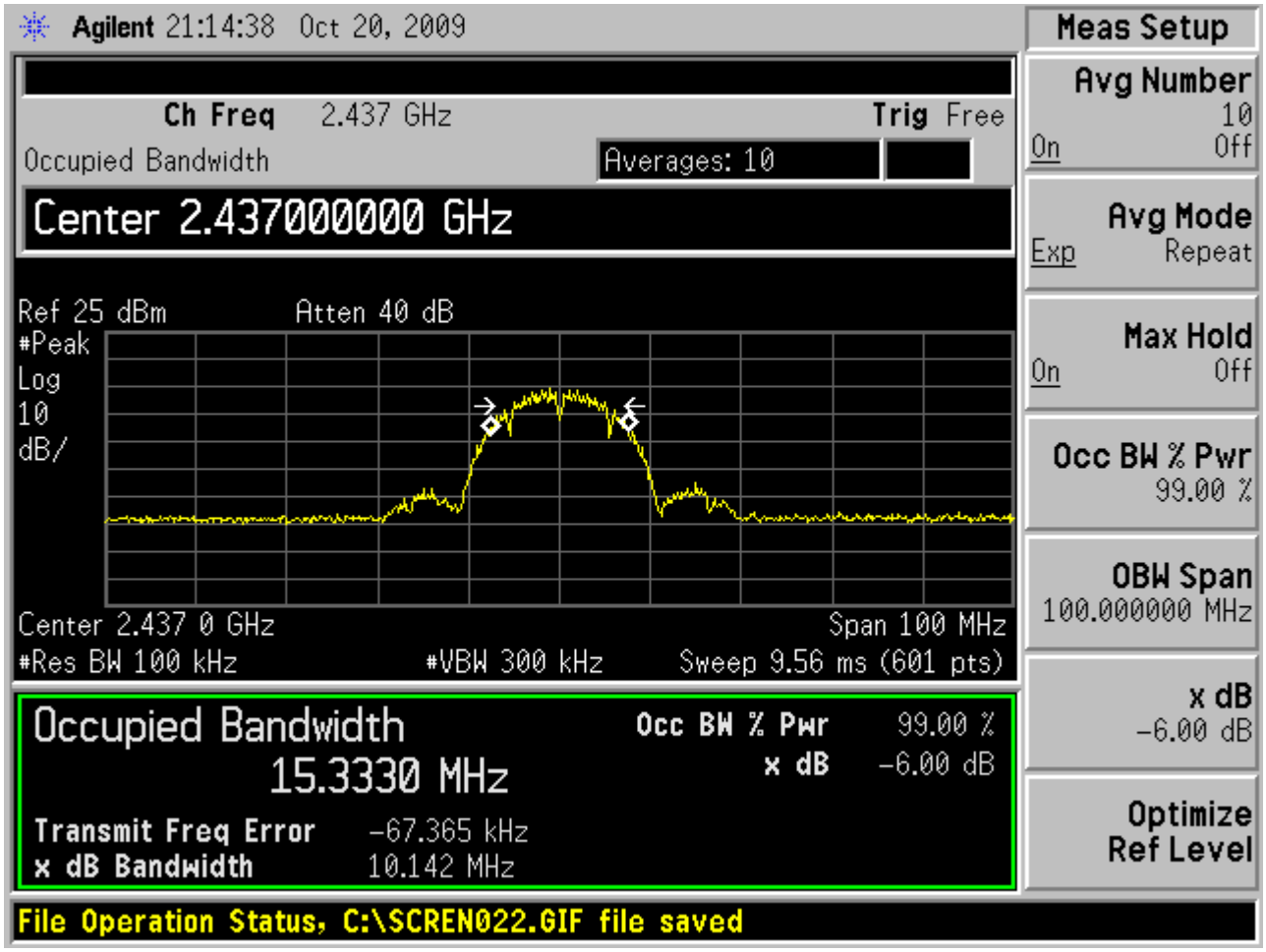
The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor *k* = 2. U= 936 Hz.

Test Results:

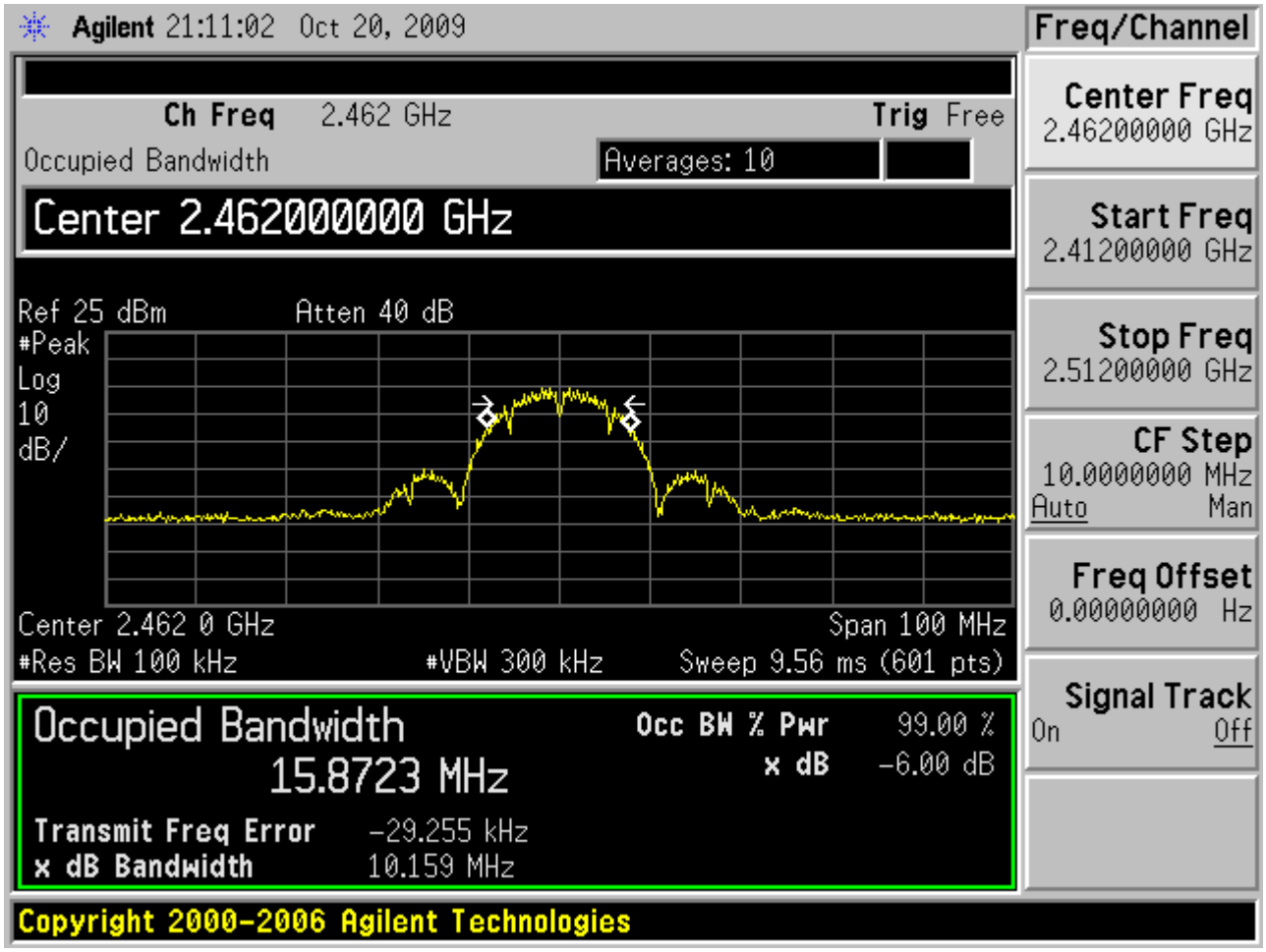
Network Standards	Bit Rate	Carrier frequency (MHz)	Minimum 6 dB bandwidth (MHz)	Conclusion
802.11b	1Mbps	2412	10.135	PASS
		2437	10.142	PASS
		2462	10.159	PASS
802.11g	6Mbps	2412	15.773	PASS
		2437	15.483	PASS
		2462	15.534	PASS



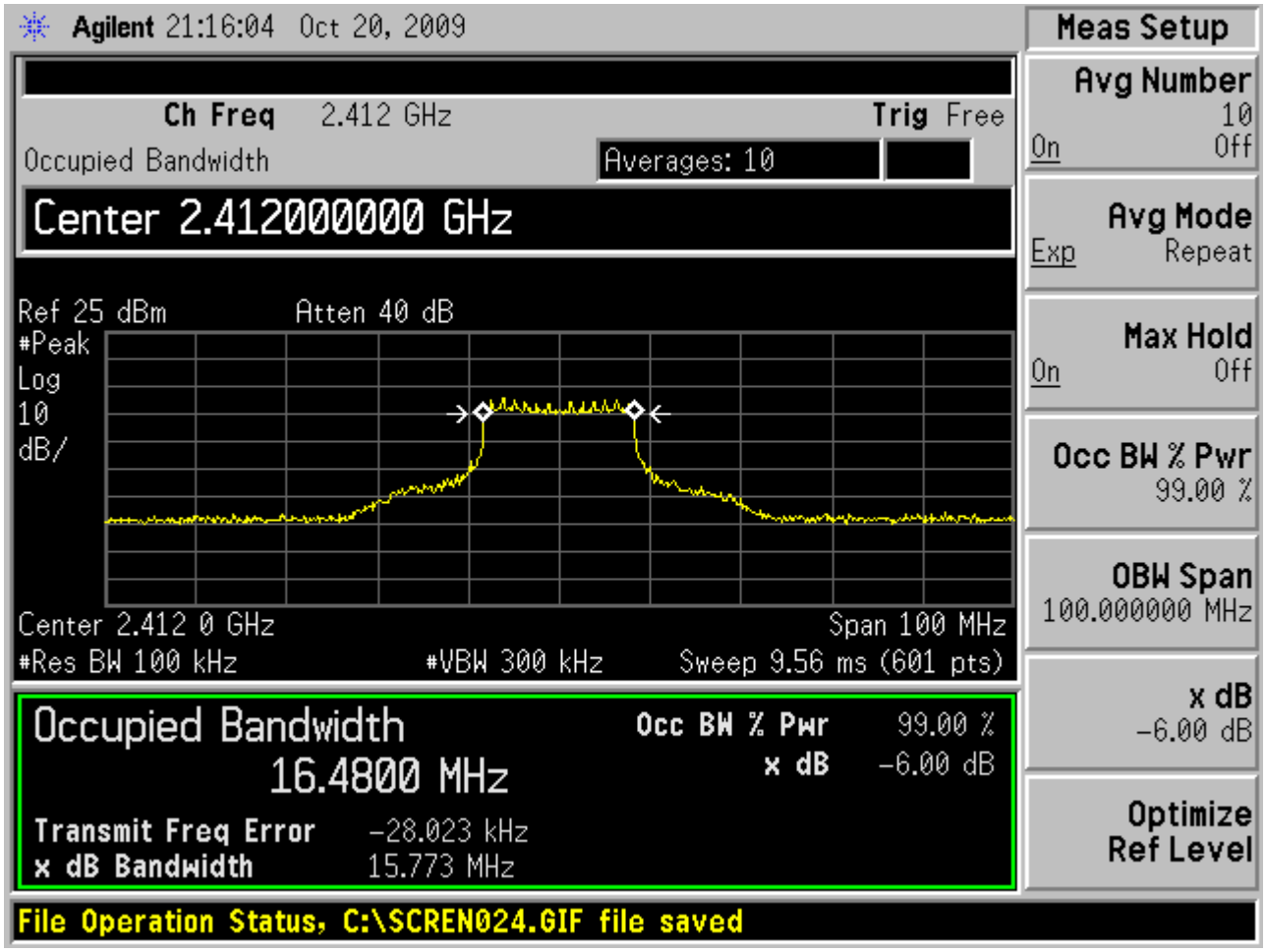
802.11b, Bit Rate 1 MHz, Carrier frequency (MHz): 2412



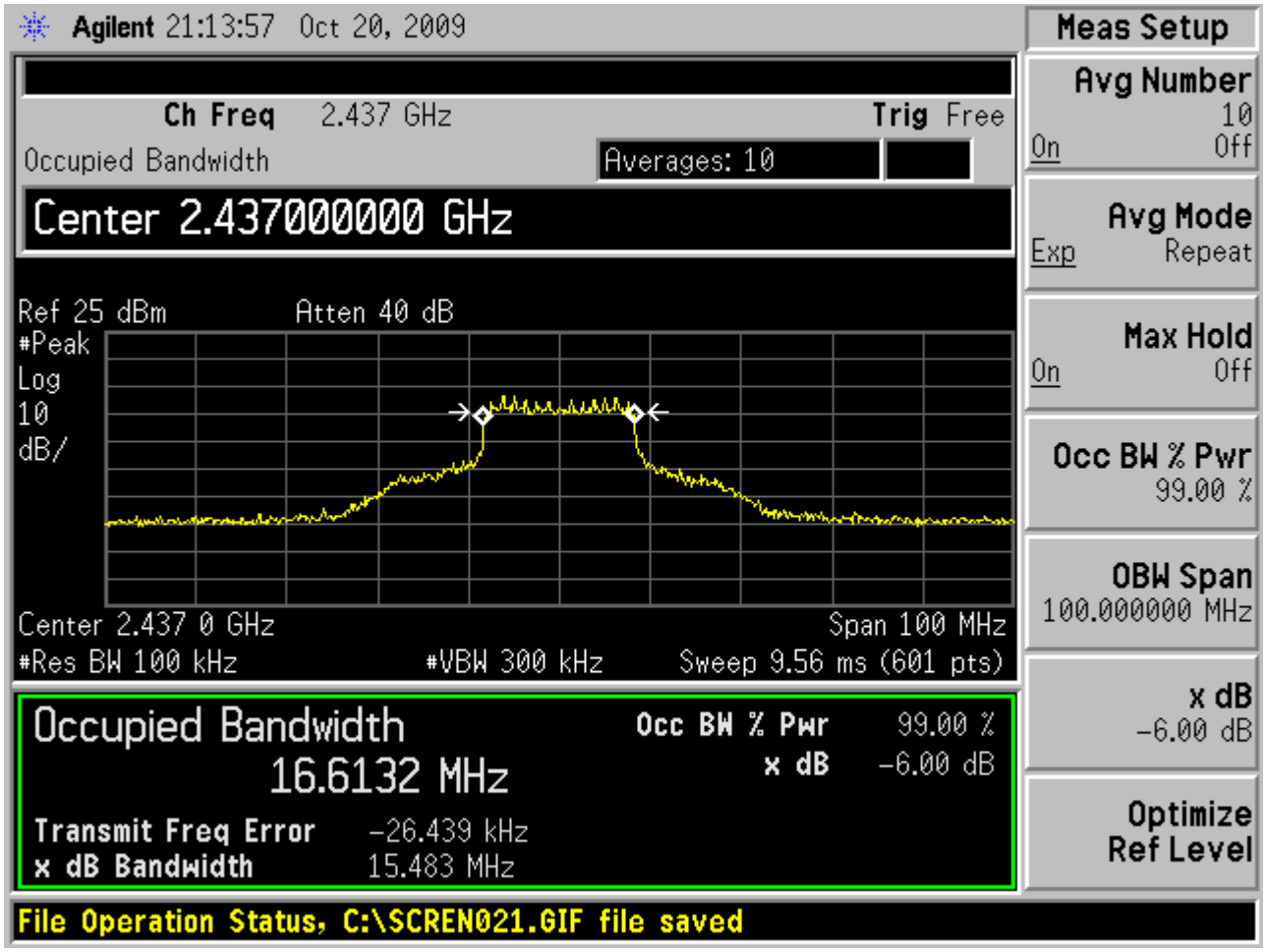
802.11b, Bit Rate 1 MHz, Carrier frequency (MHz): 2437



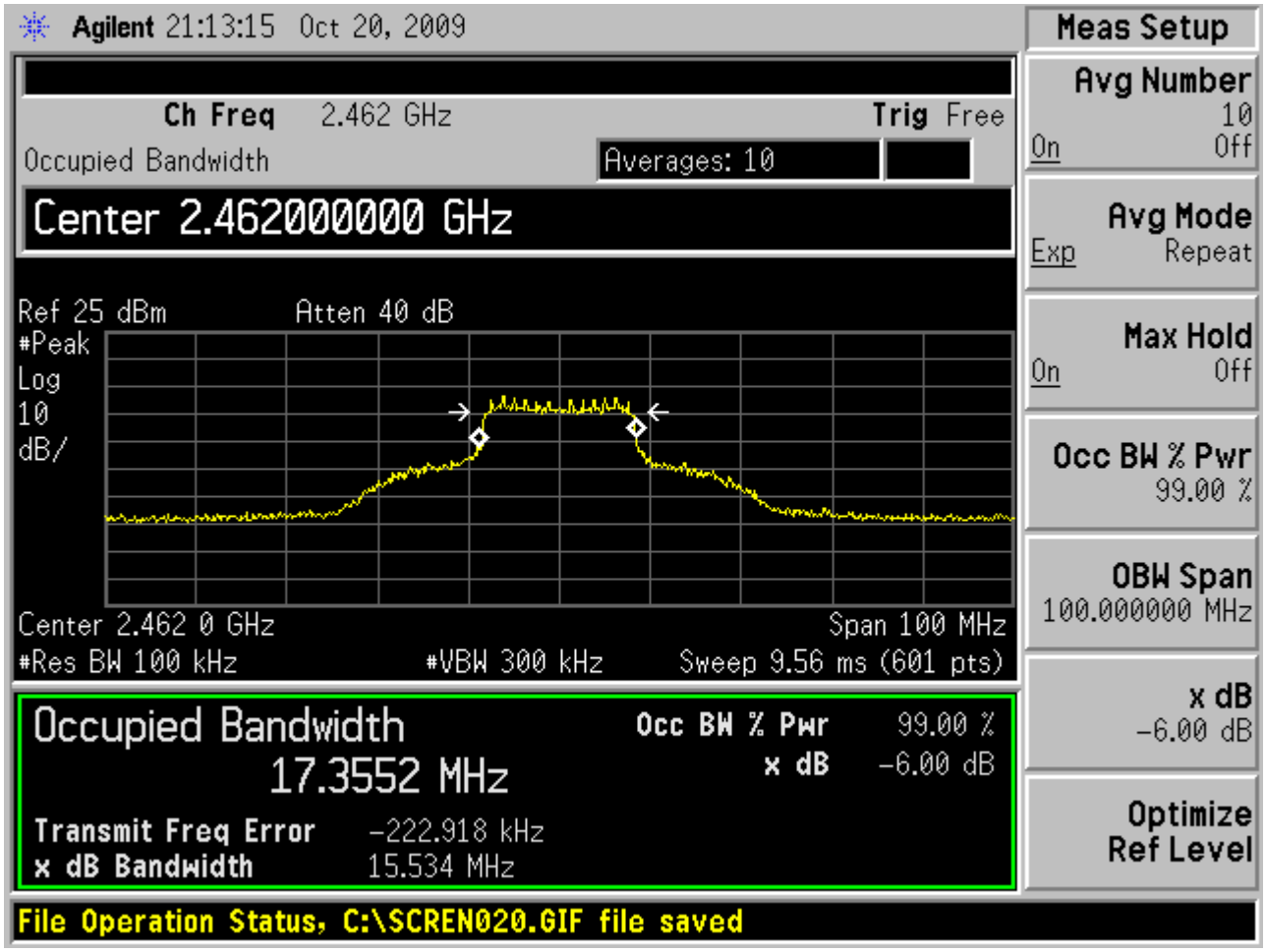
802.11b, Bit Rata 1 MHz, Carrier frequency (MHz):2462



802.11g, Bit Rate 6 MHz, Carrier frequency (MHz): 2412



802.11g, Bit Rate 6 MHz, Carrier frequency (MHz): 2437



802.11g, Bit Rata 6 MHz, Carrier frequency (MHz):2462

2.4. Band Edge Compliance

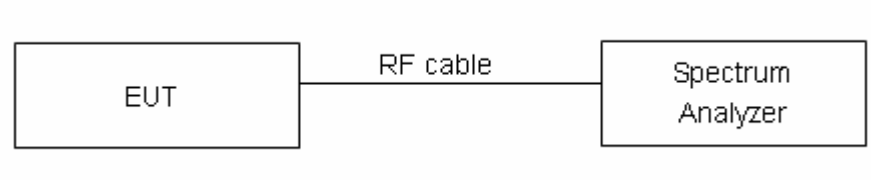
Ambient condition

Temperature	Relative humidity	Pressure
24°C	50%	101.5kPa

Method of Measurement

The EUT was connected to the spectrum analyzer through an external attenuator (20dB) and a known loss cable the band edge of the lowest and highest channels were measured. The peak detector is used and RBW is set to 1MHz on spectrum analyzer. Spectrum analyzer plots are included on the following pages.

Test Setup



Limits

Rule Part 15.247(d) specifies that “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.”

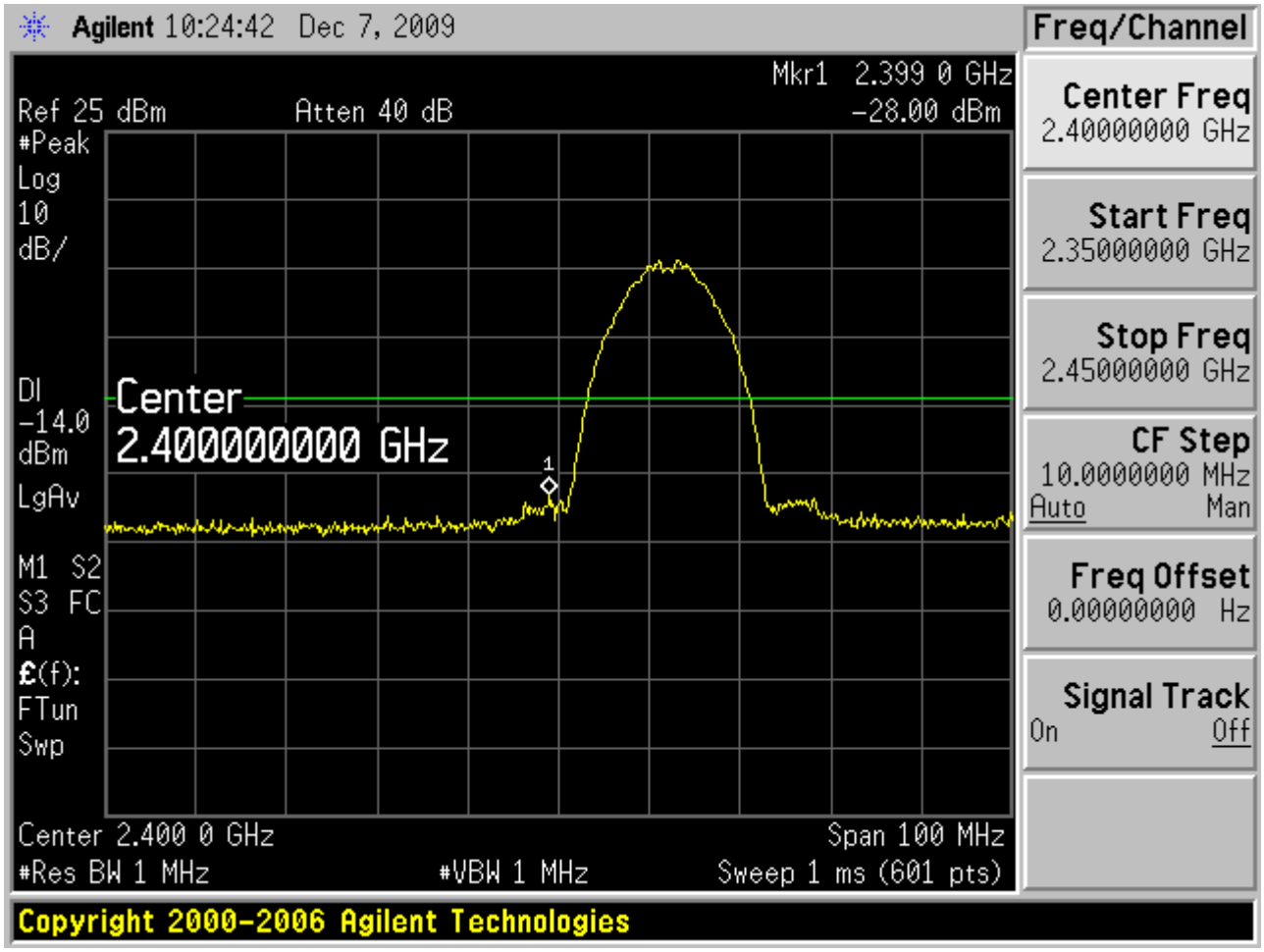
Limit	⩾20 dB

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor *k* = 1.96.

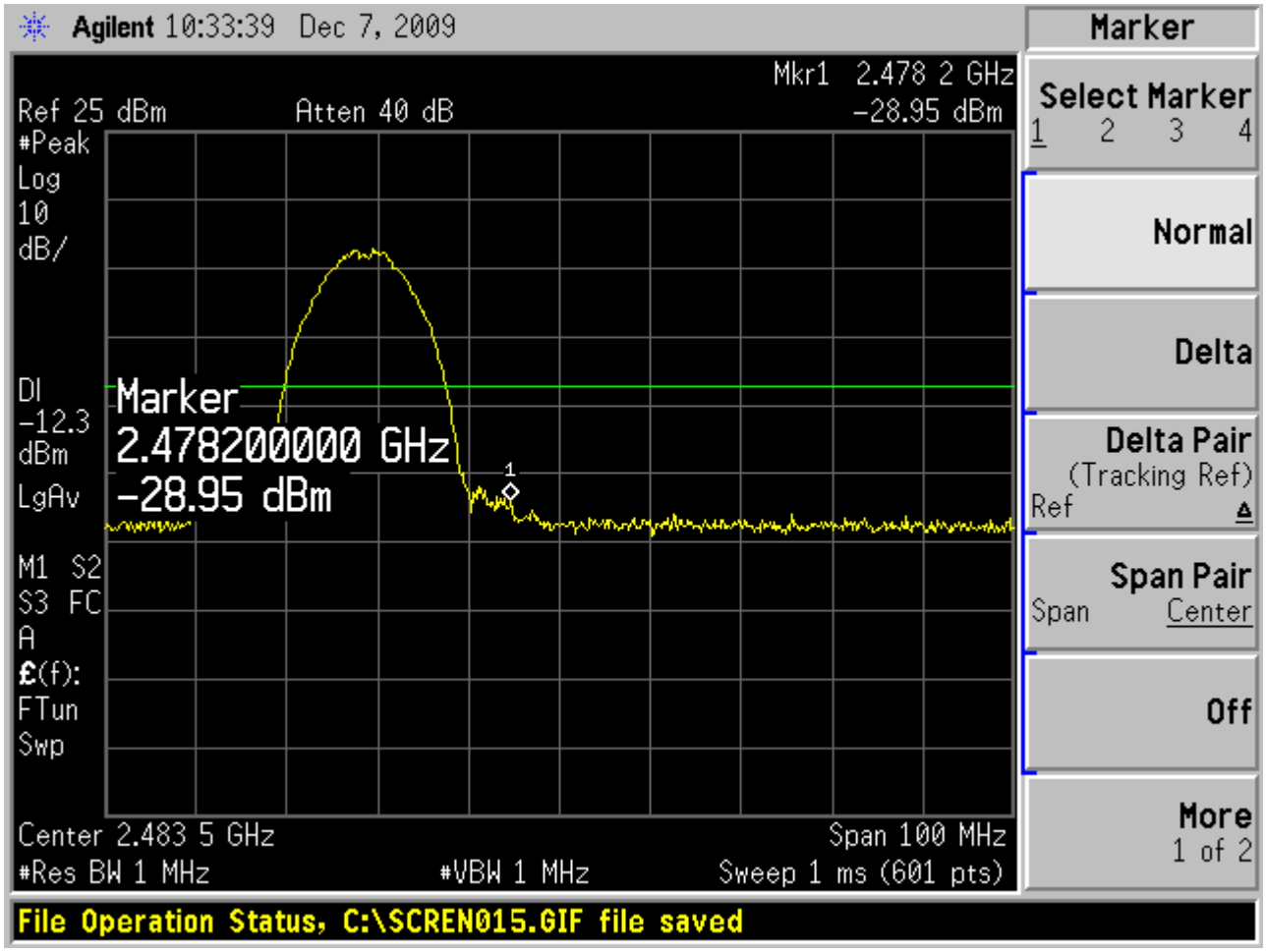
Frequency	Uncertainty
2GHz-3GHz	1.407 dB

Test Results:

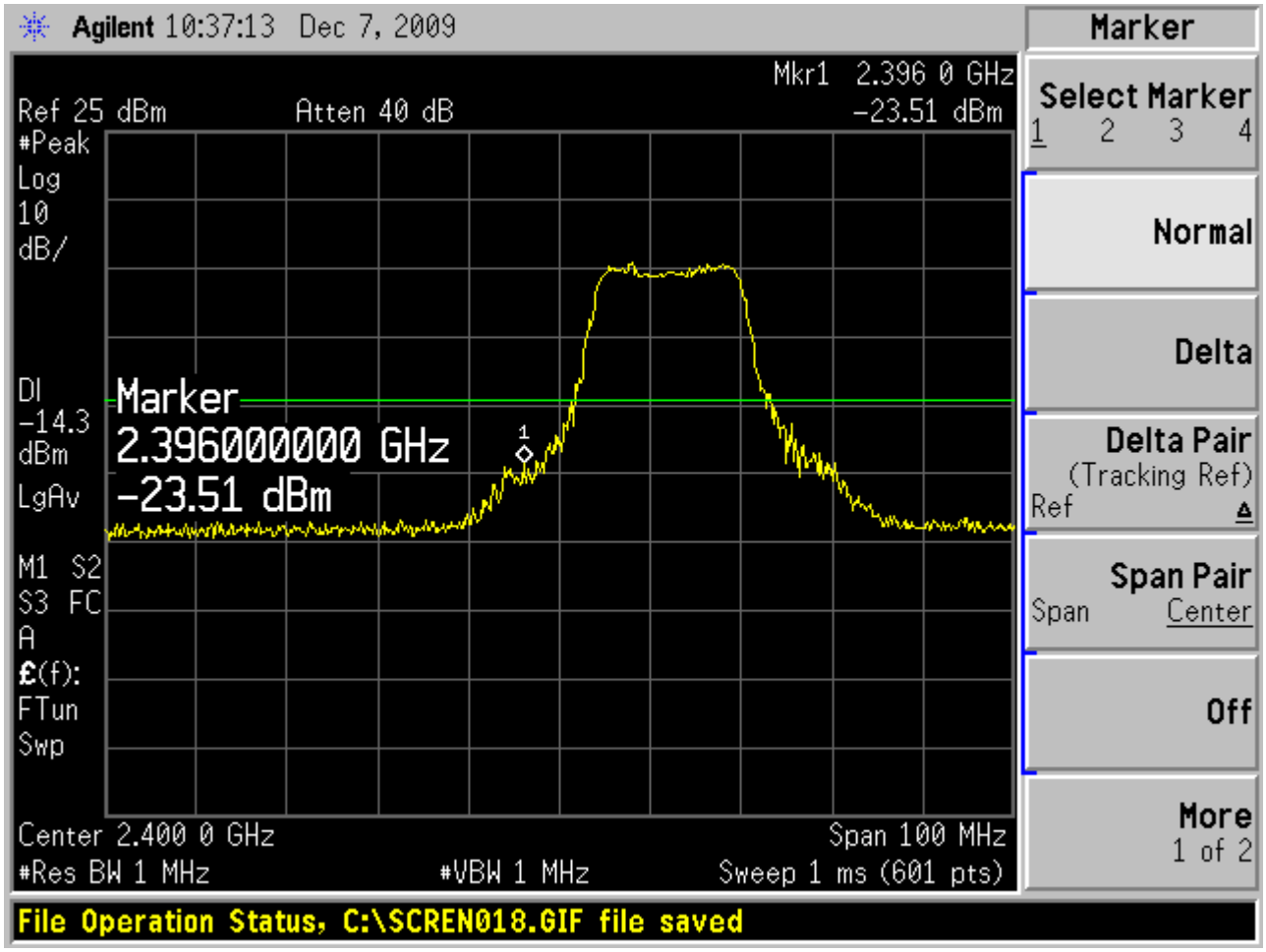


802.11b, Bit Rata 1 MHz, Carrier frequency (MHz):2412

Channel No.: 1

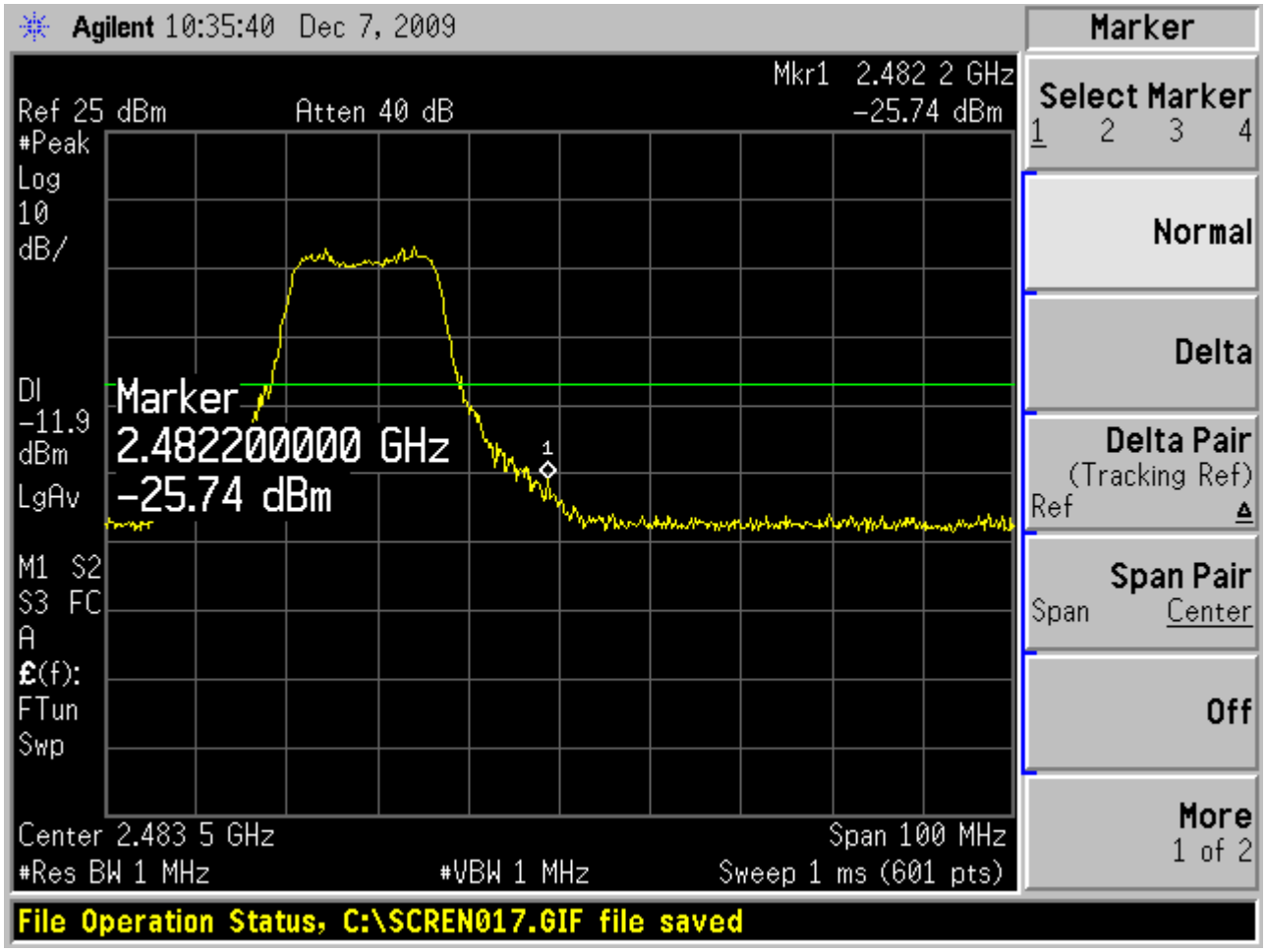


802.11b, Bit Rata 1 MHz, Carrier frequency (MHz):2462
Channel No.: 11



802.11g, Bit Rata 6 MHz, Carrier frequency (MHz):2412

Channel No.: 1



802.11g, Bit Rata 6 MHz, Carrier frequency (MHz):2462

Channel No.: 11

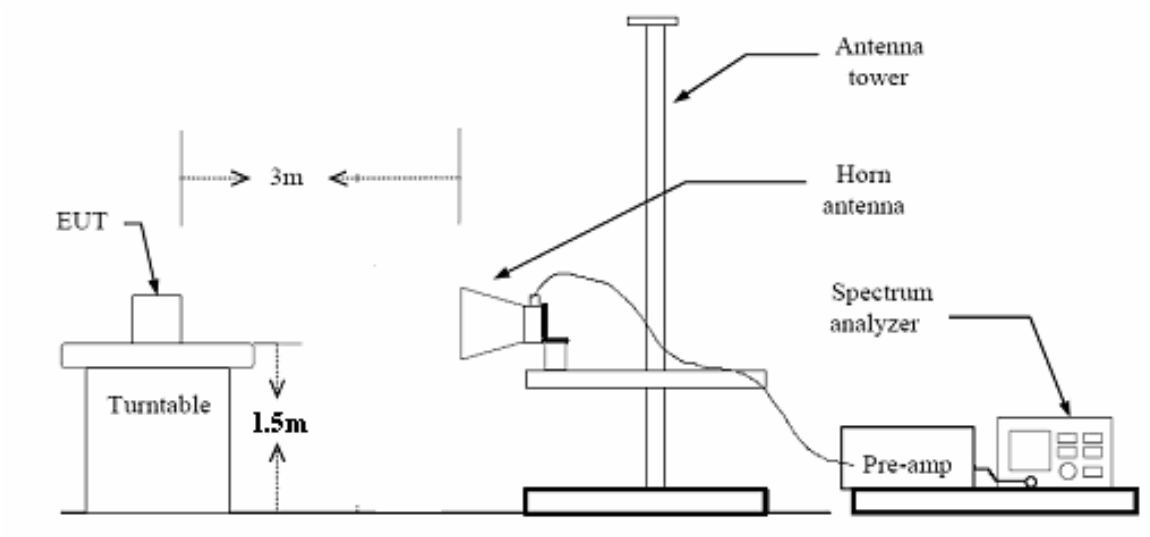
2.5. Spurious Radiated Emissions in the restricted band

Ambient condition

Temperature	Relative humidity	Pressure
24°C	55%	101.5kPa

The Equipment Under Test (EUT) was set up on a non-conductive table in the semi-anechoic chamber. The test was performed at the distance of 3 m between the EUT and the receiving antenna. The turntable shall be rotated from 0 to 360 degrees for detecting the maximum of radiated spurious signal level. The measurements shall be repeated with orthogonal polarization of the test antenna. The data of cable loss and antenna factor has been calibrated in full testing frequency range before the testing.

Test setup



Limits

Rule Part 15.247(d) specifies that “In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a) (see § 15.205(c)).”

Limit in restricted band

Frequency of emission (MHz)	Field strength(uV/m)	Field strength(dBuV/m)
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

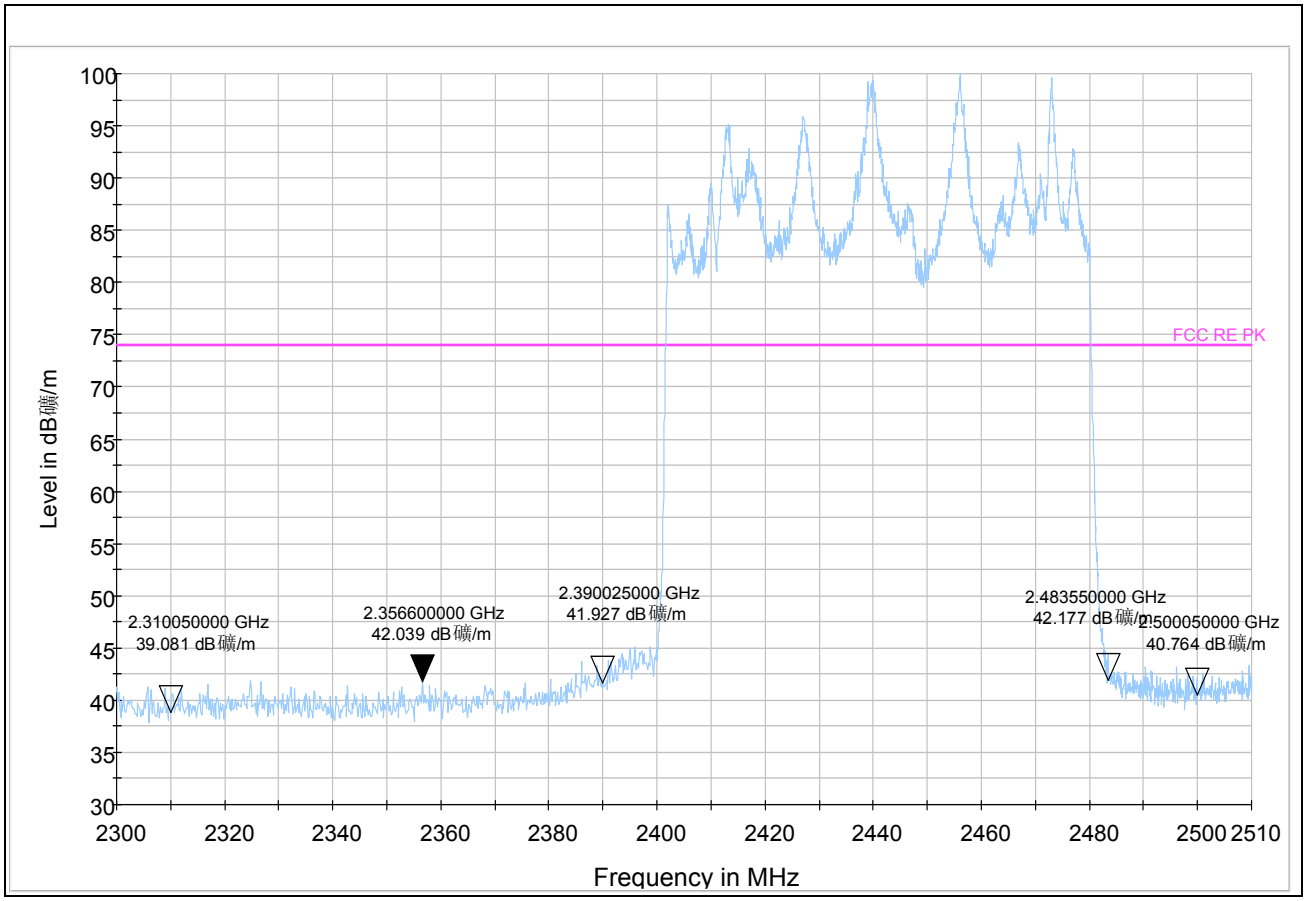
§15.35(b)
There is also a limit on the radio frequency emissions, as measured using instrumentation with a peak detector function, corresponding to 20 dB above the maximum permitted average limit.

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor k = 1.96. U=3.92 dB.

Test Results:

802.11b: Peak

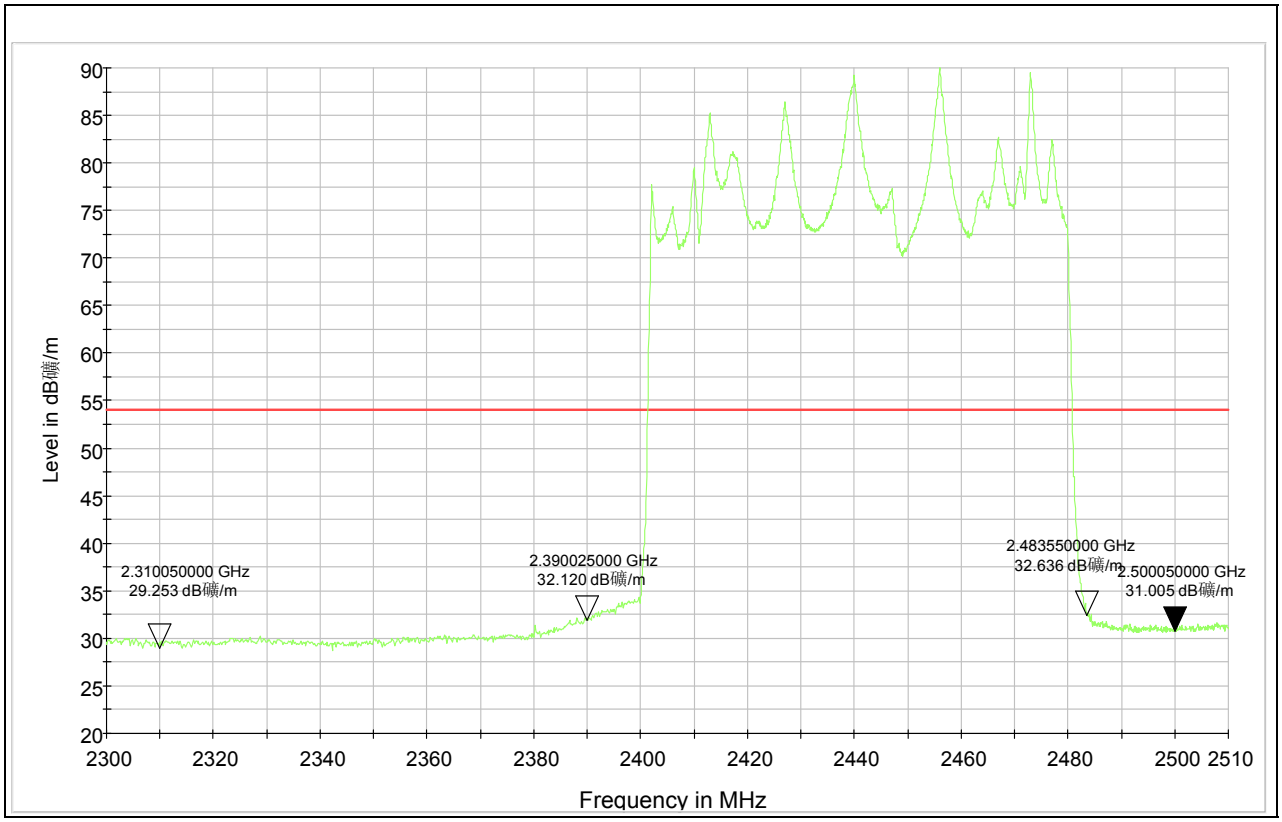


Note: The signal beyond the limit is carrier

Channel 1

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Margin (dB)	Limit (dBuV/m)
2310.050000	39.1	150.0	Vertical	135.0	34.9	74
2356.600000	42.0	150.0	Vertical	90.0	32.0	74
2390.025000	41.9	150.0	Vertical	0.0	32.1	74
2483.550000	42.2	150.0	Vertical	180.0	31.8	74
2500.050000	40.8	150.0	Vertical	225.0	33.2	74

802.11b: Average

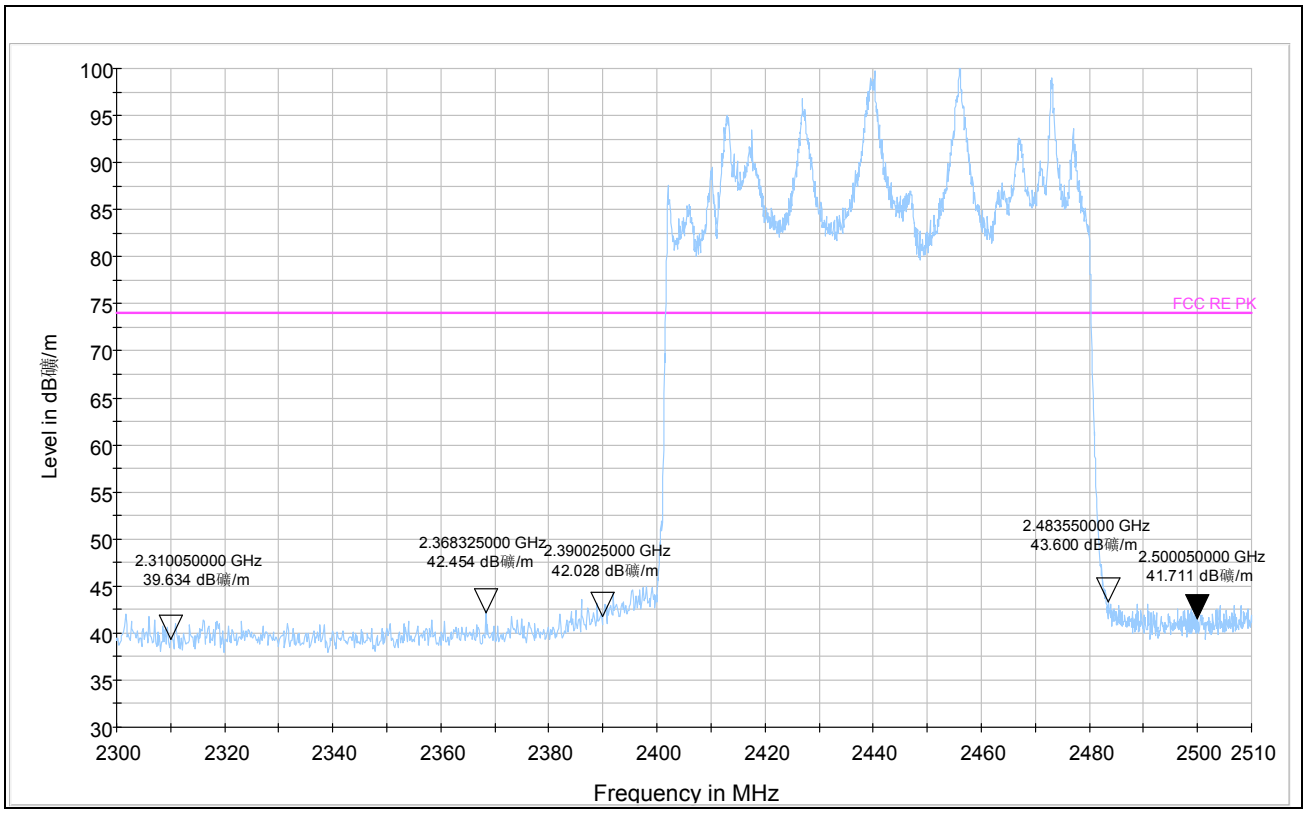


Note: The signal beyond the limit is carrier

Channel 1

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Margin (dB)	Limit (dBuV/m)
2310.050000	29.3	150.0	Vertical	90.0	24.7	54
2390.025000	32.1	150.0	Vertical	180.0	21.9	54
2483.550000	32.6	150.0	Vertical	135.0	21.4	54
2500.050000	31.0	150.0	Vertical	270.0	23.0	54

802.11b: Peak

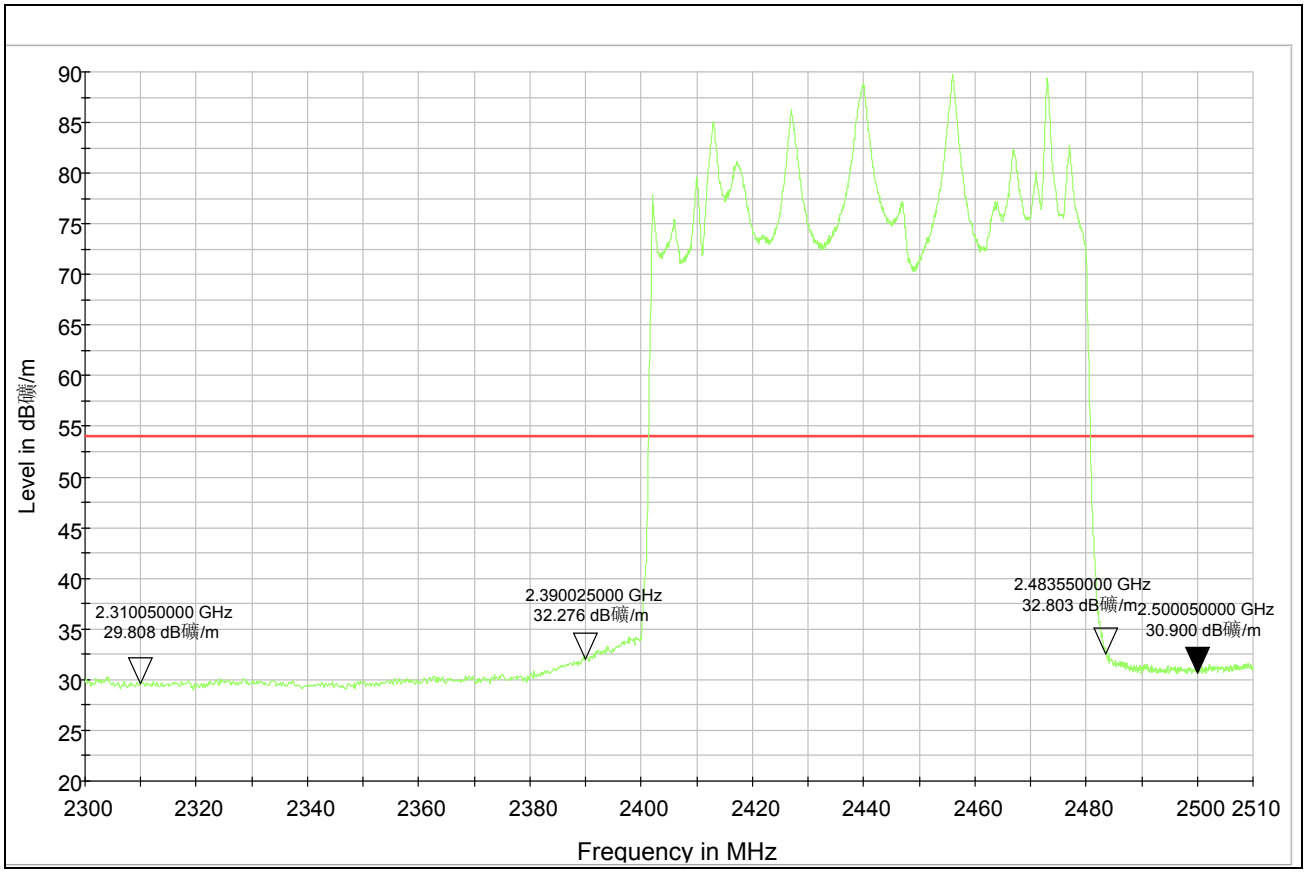


Note: The signal beyond the limit is carrier

Channel 6

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Margin (dB)	Limit (dBuV/m)
2310.050000	39.6	150.0	Vertical	90.0	34.4	74
2368.325000	42.5	150.0	Vertical	180.0	31.5	74
2390.025000	42.0	150.0	Vertical	135.0	32.0	74
2483.550000	43.6	150.0	Vertical	90.0	30.4	74
2500.050000	41.7	150.0	Vertical	225.0	32.3	74

802.11b: Average

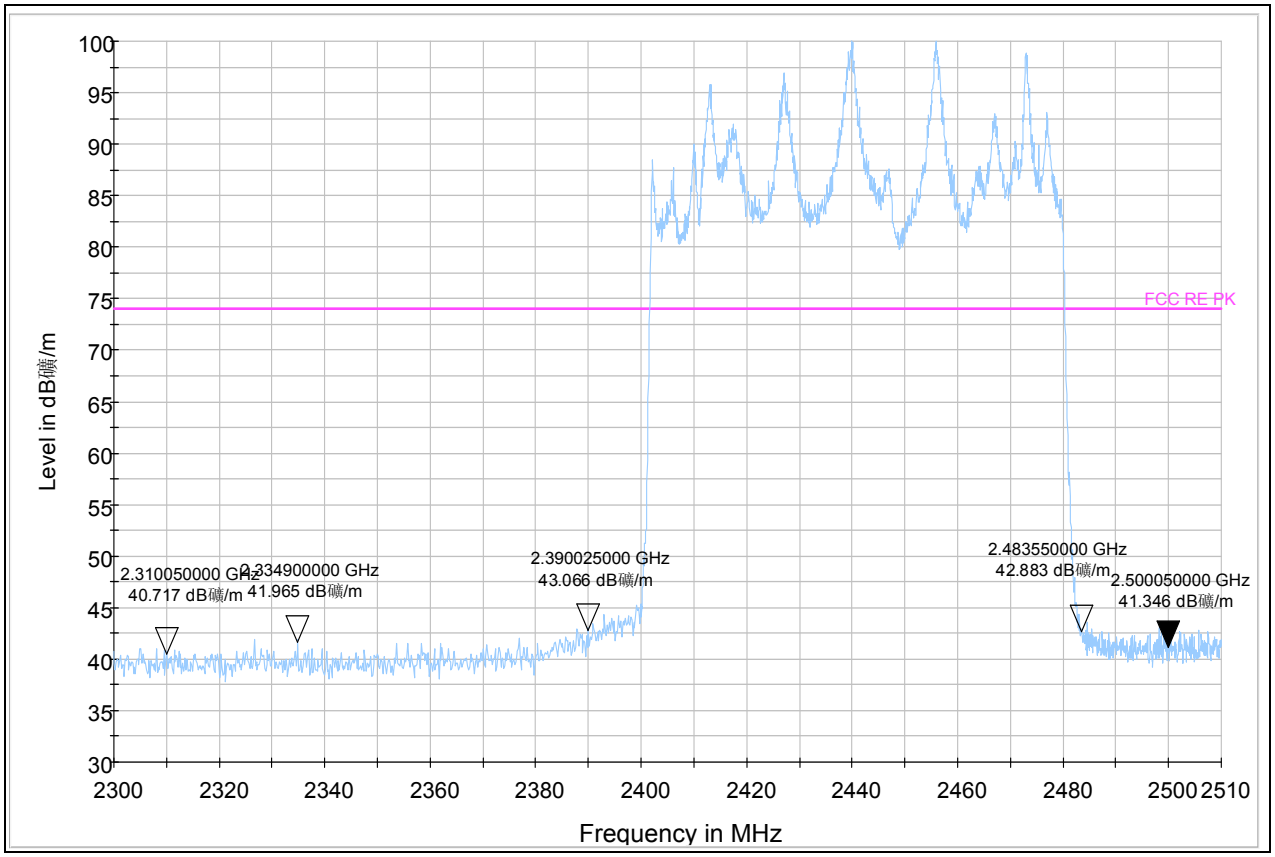


Note: The signal beyond the limit is carrier

Channel 6

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Margin (dB)	Limit (dBuV/m)
2310.050000	29.8	150.0	Vertical	180.0	24.2	54
2390.025000	32.3	150.0	Vertical	135.0	21.7	54
2483.550000	32.8	150.0	Vertical	225.0	21.2	54
2500.050000	30.9	150.0	Vertical	90.0	23.1	54

802.11b: Peak

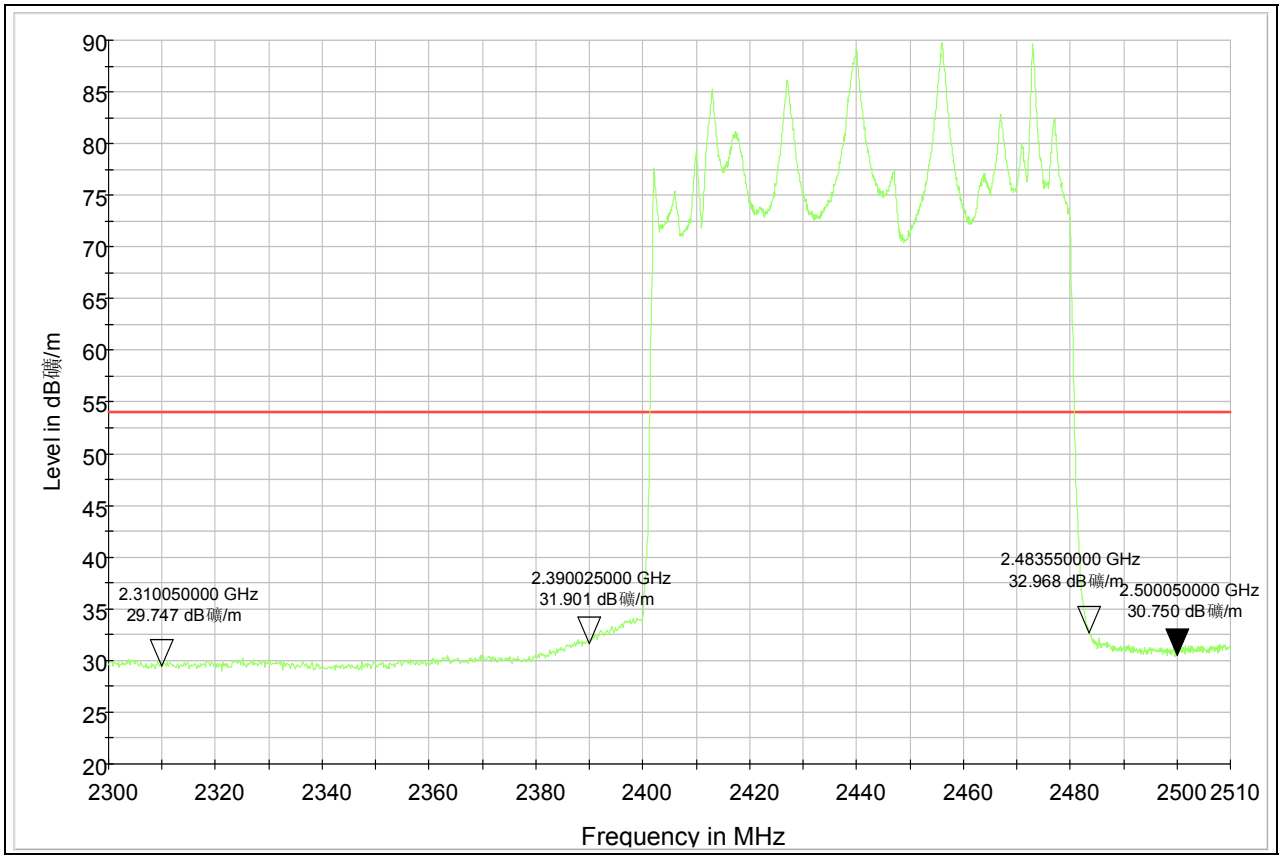


Note: The signal beyond the limit is carrier

Channel 11

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Margin (dB)	Limit (dBuV/m)
2310.050000	40.7	150.0	Vertical	45.0	33.3	74
2334.900000	42.0	150.0	Vertical	180.0	32.0	74
2390.025000	43.1	150.0	Vertical	180.0	30.9	74
2483.550000	42.9	150.0	Vertical	135.0	31.1	74
2500.050000	41.3	150.0	Vertical	225.0	32.7	74

802.11b: Average

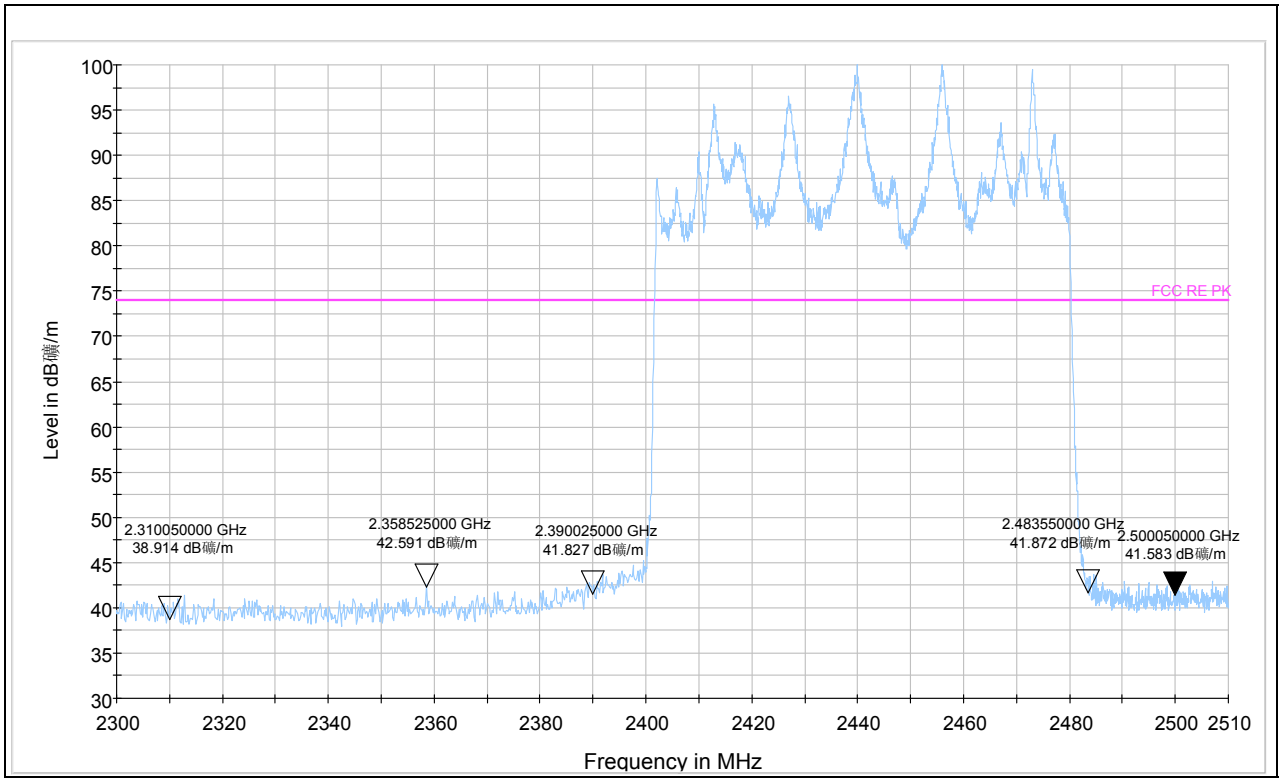


Note: The signal beyond the limit is carrier

Channel 11

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Margin (dB)	Limit (dBuV/m)
2310.050000	29.7	150.0	Vertical	180.0	24.3	54
2390.025000	31.9	150.0	Vertical	45.0	22.1	54
2483.550000	33.0	150.0	Vertical	270.0	21.0	54
2500.050000	30.8	150.0	Vertical	135.0	23.2	54

802.11g: Peak

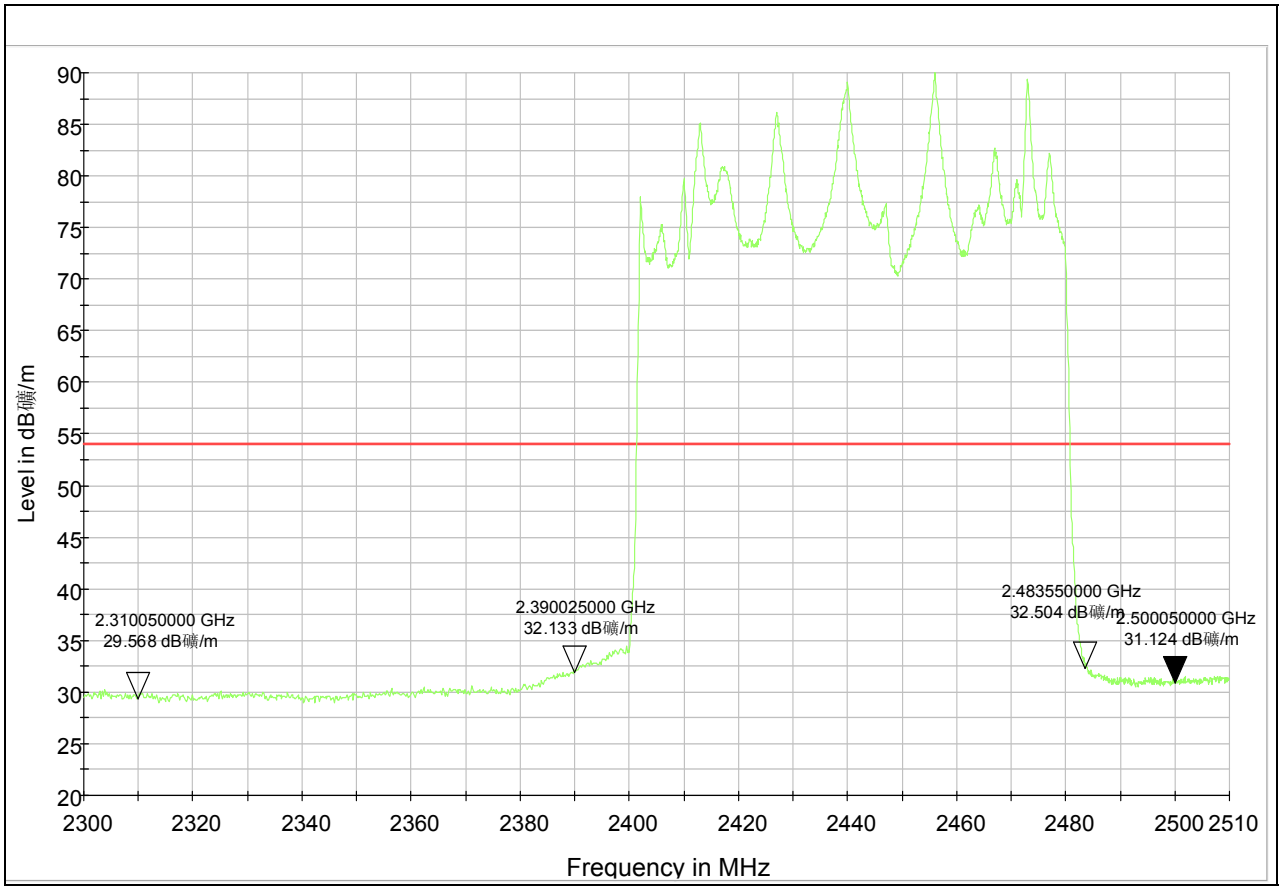


Note: The signal beyond the limit is carrier

Channel 1

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Margin (dB)	Limit (dBuV/m)
2310.050000	38.9	150.0	Vertical	180.0	35.1	74
2358.525000	42.6	150.0	Vertical	270.0	31.4	74
2390.025000	41.8	150.0	Vertical	0.0	32.2	74
2483.550000	41.9	150.0	Vertical	45.0	32.1	74
2500.050000	41.6	150.0	Vertical	90.0	32.4	74

802.11g: Average

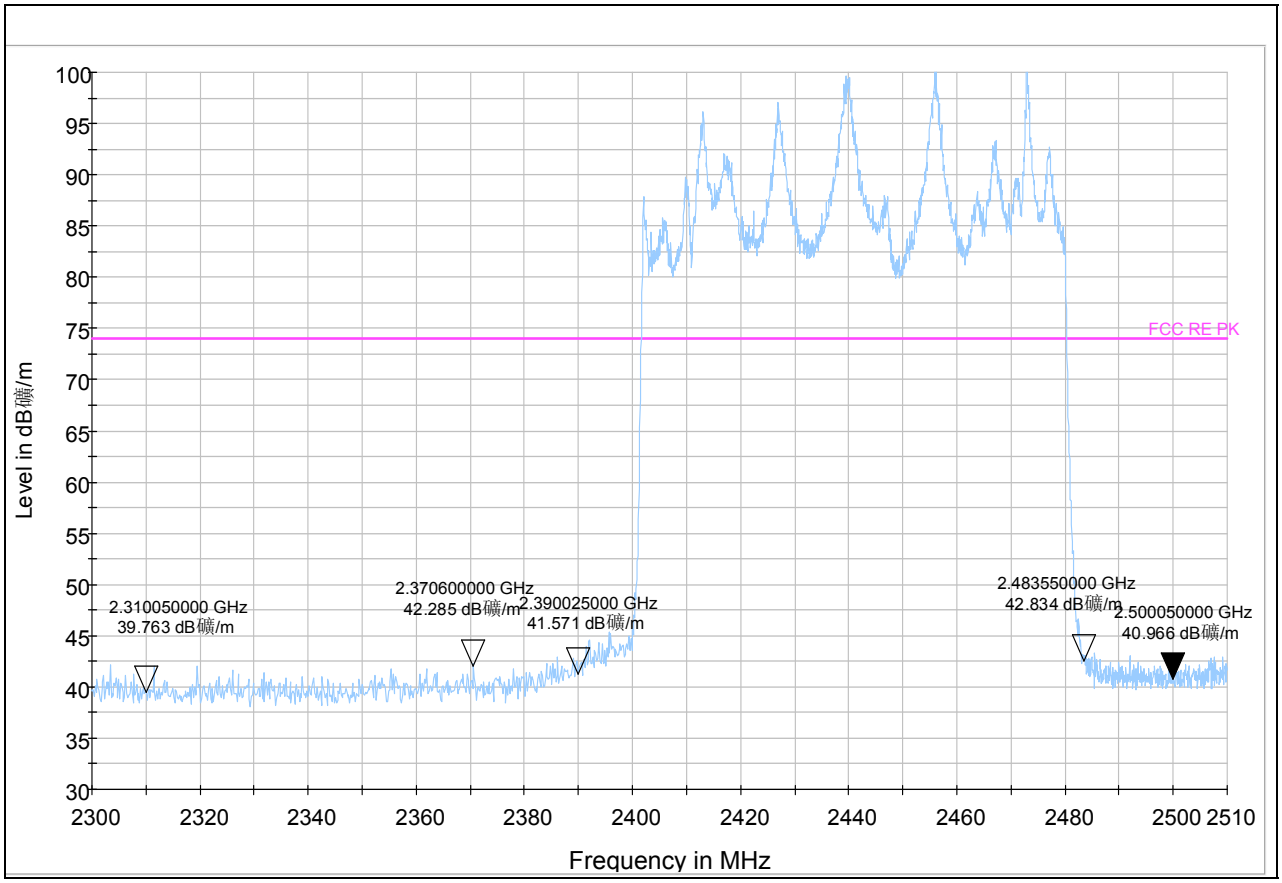


Note: The signal beyond the limit is carrier

Channel 1

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Margin (dB)	Limit (dBuV/m)
2310.050000	29.6	150.0	Vertical	90.0	24.4	54
2390.025000	32.1	150.0	Vertical	135.0	21.9	54
2483.550000	32.5	150.0	Vertical	180.0	21.5	54
2500.050000	31.1	150.0	Vertical	225.0	22.9	54

802.11 g: Peak

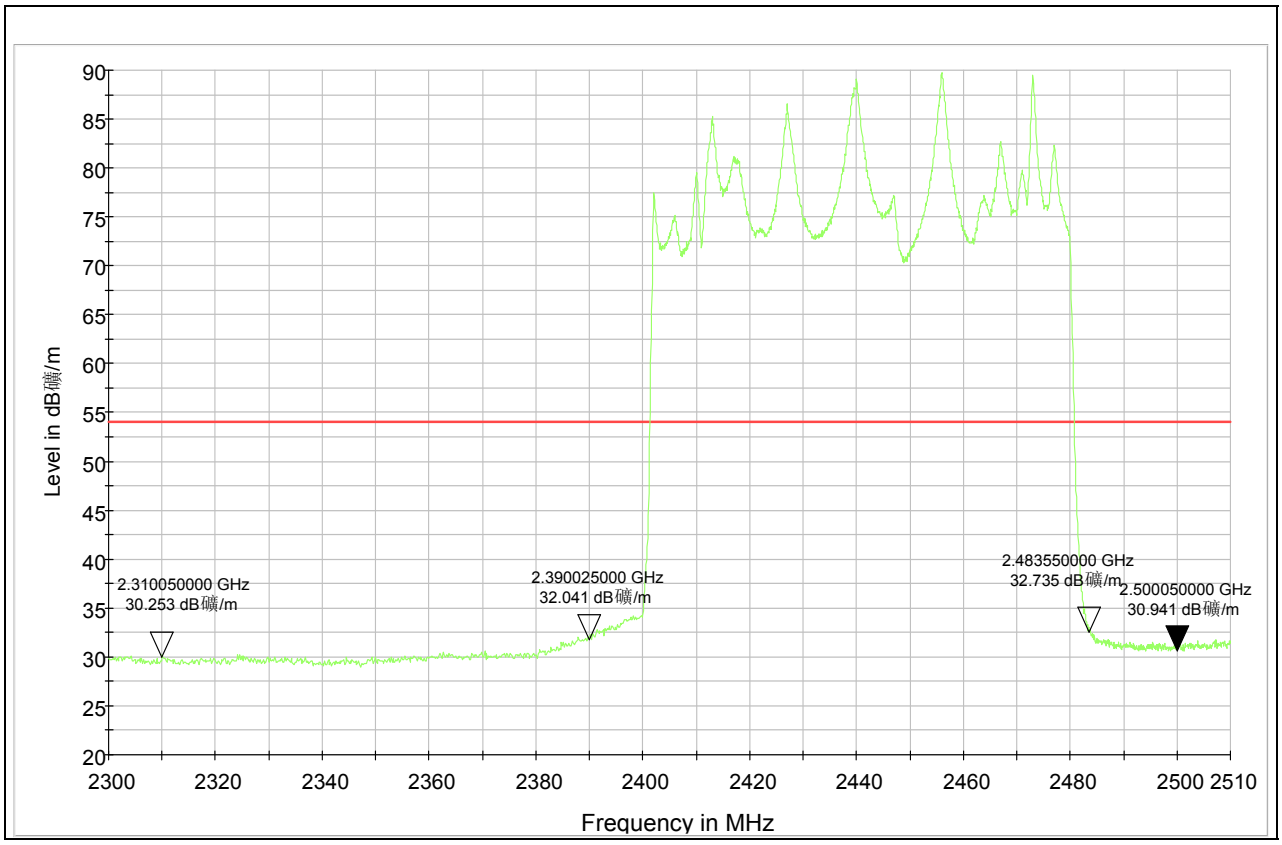


Note: The signal beyond the limit is carrier

Channel 6

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Margin (dB)	Limit (dBuV/m)
2310.050000	39.8	150.0	Vertical	45.0	34.2	74
2370.600000	42.3	150.0	Vertical	0.0	31.7	74
2390.025000	41.6	150.0	Vertical	180.0	32.4	74
2483.550000	42.8	150.0	Vertical	180.0	31.2	74
2500.050000	41.0	150.0	Vertical	225.0	33.0	74

802.11g: Average

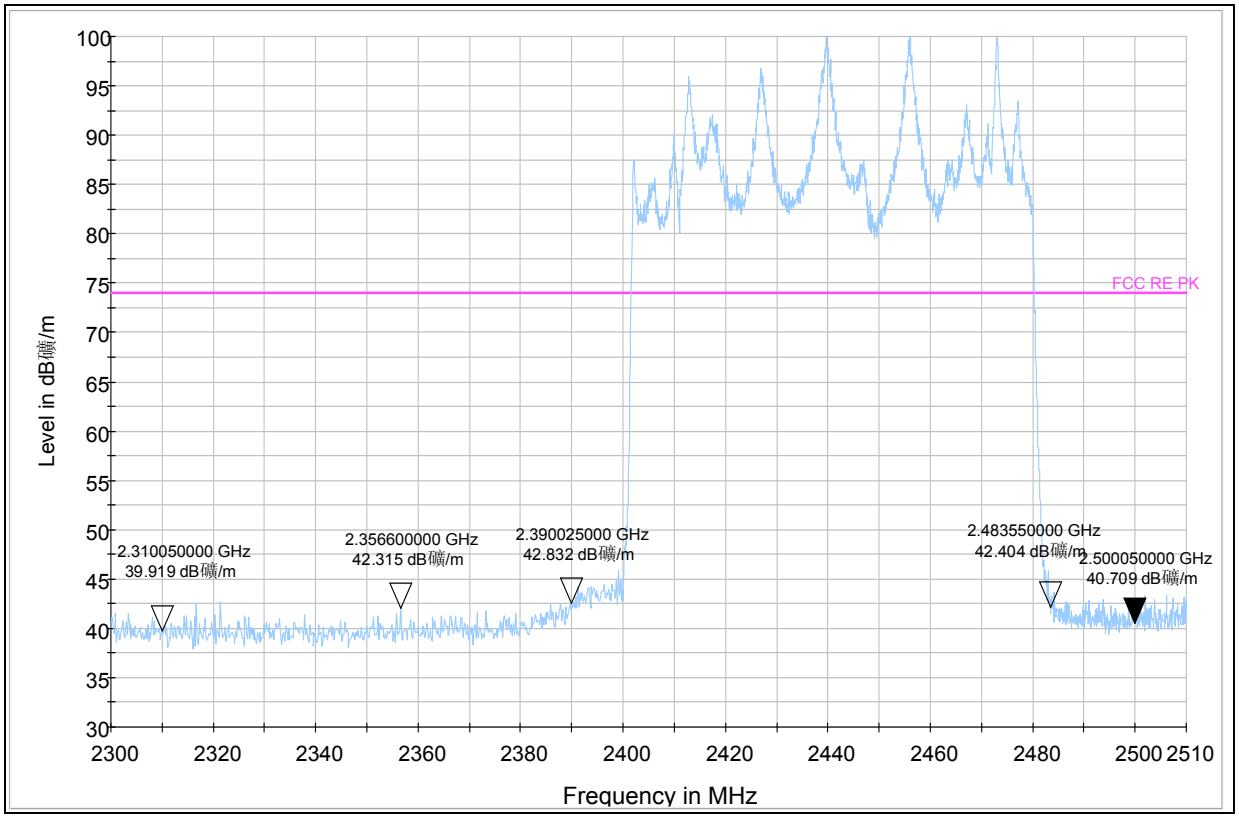


Note: The signal beyond the limit is carrier

Channel 6

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Margin (dB)	Limit (dBuV/m)
2310.050000	30.3	150.0	Vertical	90.0	23.7	54
2390.025000	32.0	150.0	Vertical	180.0	22.0	54
2483.550000	32.7	150.0	Vertical	135.0	21.3	54
2500.050000	30.9	150.0	Vertical	225.0	23.1	54

802.11 g: Peak

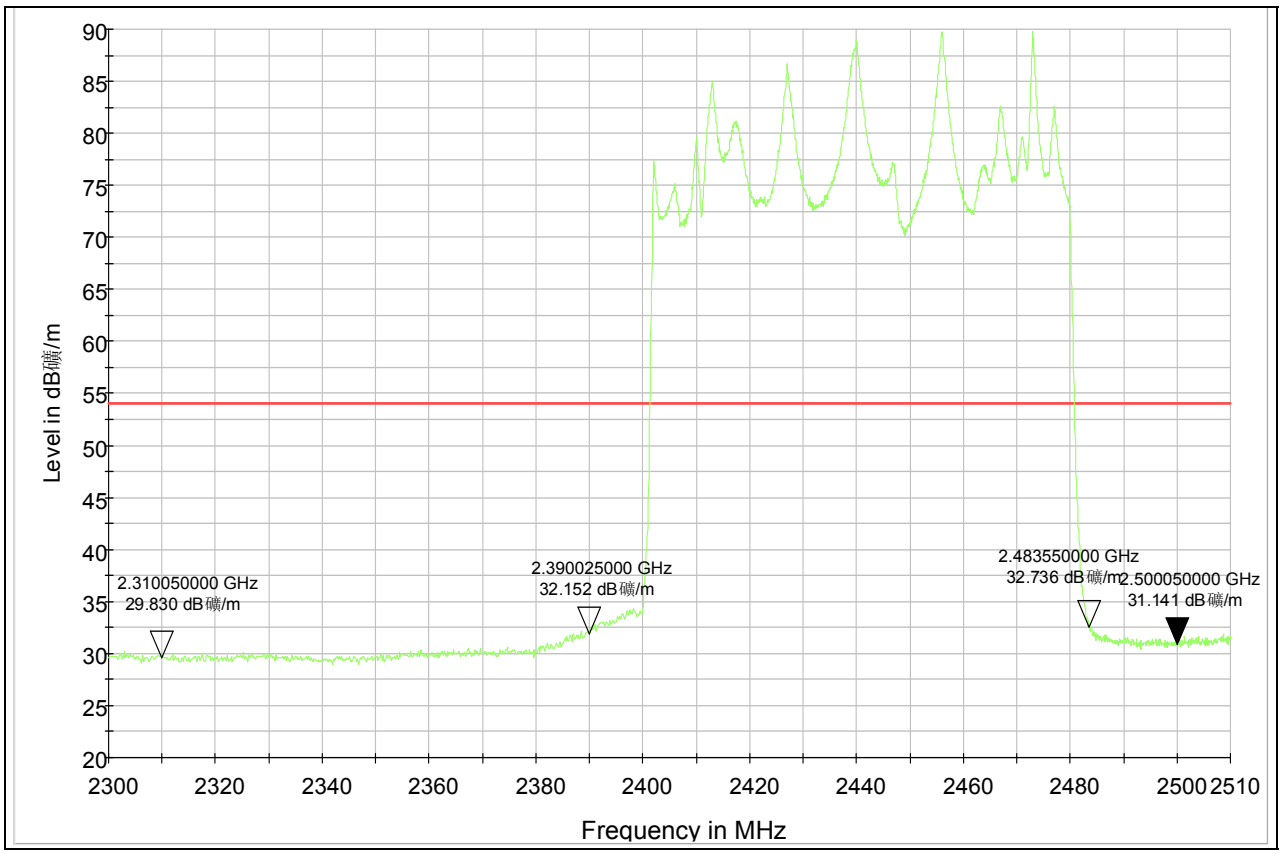


Note: The signal beyond the limit is carrier

Channel 11

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Margin (dB)	Limit (dBuV/m)
2310.050000	39.9	150.0	Vertical	90.0	34.1	74
2356.600000	42.3	150.0	Vertical	45.0	31.7	74
2390.025000	42.8	150.0	Vertical	180.0	31.2	74
2483.550000	42.4	150.0	Vertical	270.0	31.6	74
2500.050000	40.7	150.0	Vertical	135.0	33.3	74

802.11g: Average



Note: The signal beyond the limit is carrier

Channel 11

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Margin (dB)	Limit (dBuV/m)
2310.050000	29.8	150.0	Vertical	90.0	24.2	54
2390.025000	32.2	150.0	Vertical	180.0	21.8	54
2483.550000	32.7	150.0	Vertical	225.0	21.3	54
2500.050000	31.1	150.0	Vertical	135.0	22.9	54

2.6. Power Spectral Density

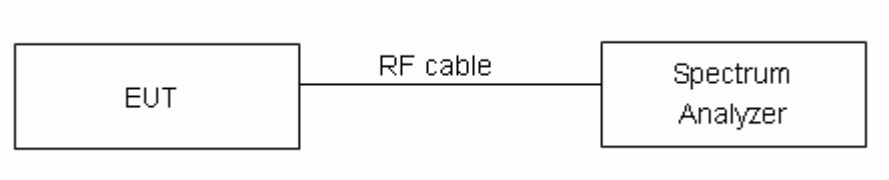
Ambient condition

Temperature	Relative humidity	Pressure
24°C	50%	101.5kPa

Method of Measurement

The EUT was connected to the spectrum analyzer through an external attenuator (20dB) and a known loss cable. RBW is set to 3 kHz and VBW is set to 30 kHz on spectrum analyzer. Set the sweep time=span/3KHz. The peak power spectral density is recorded.

Test setup



Limits

Rule Part 15.247(e) specifies that" For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission. ‘’

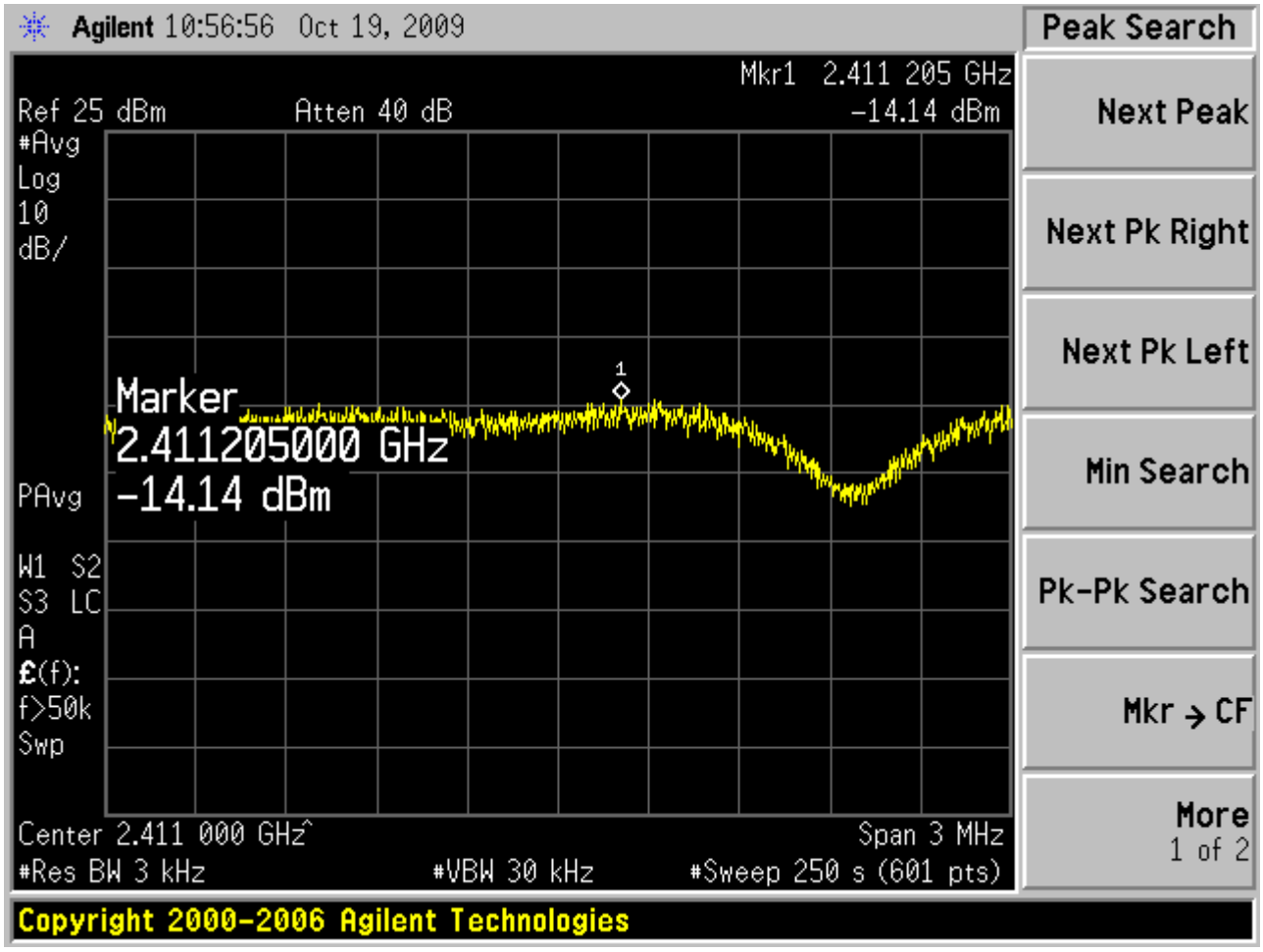
Limits	≤ 8 dBm / 3kHz

Measurement Uncertainty

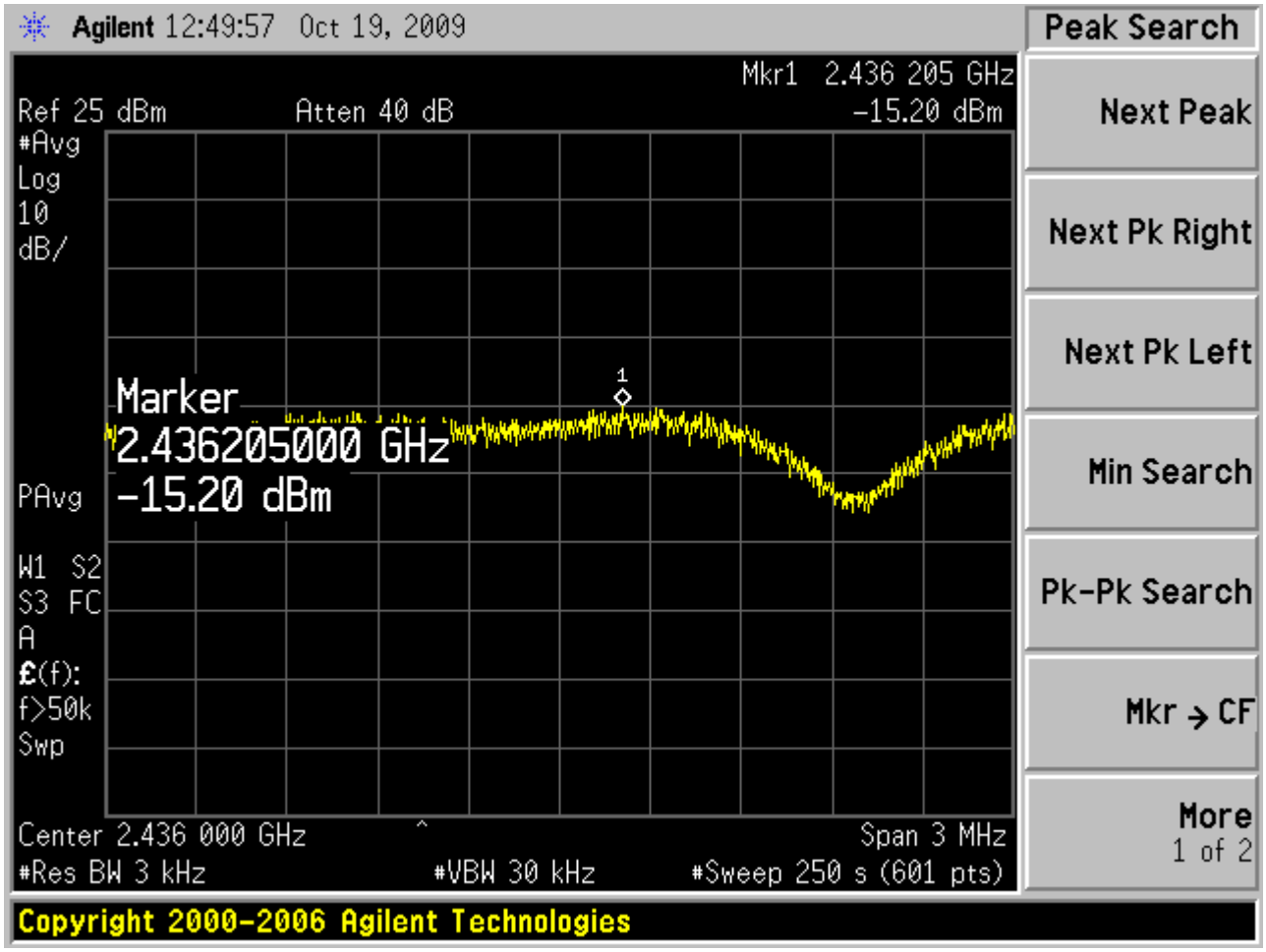
The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor k = 2. U= 0.75dB.

Test Results:

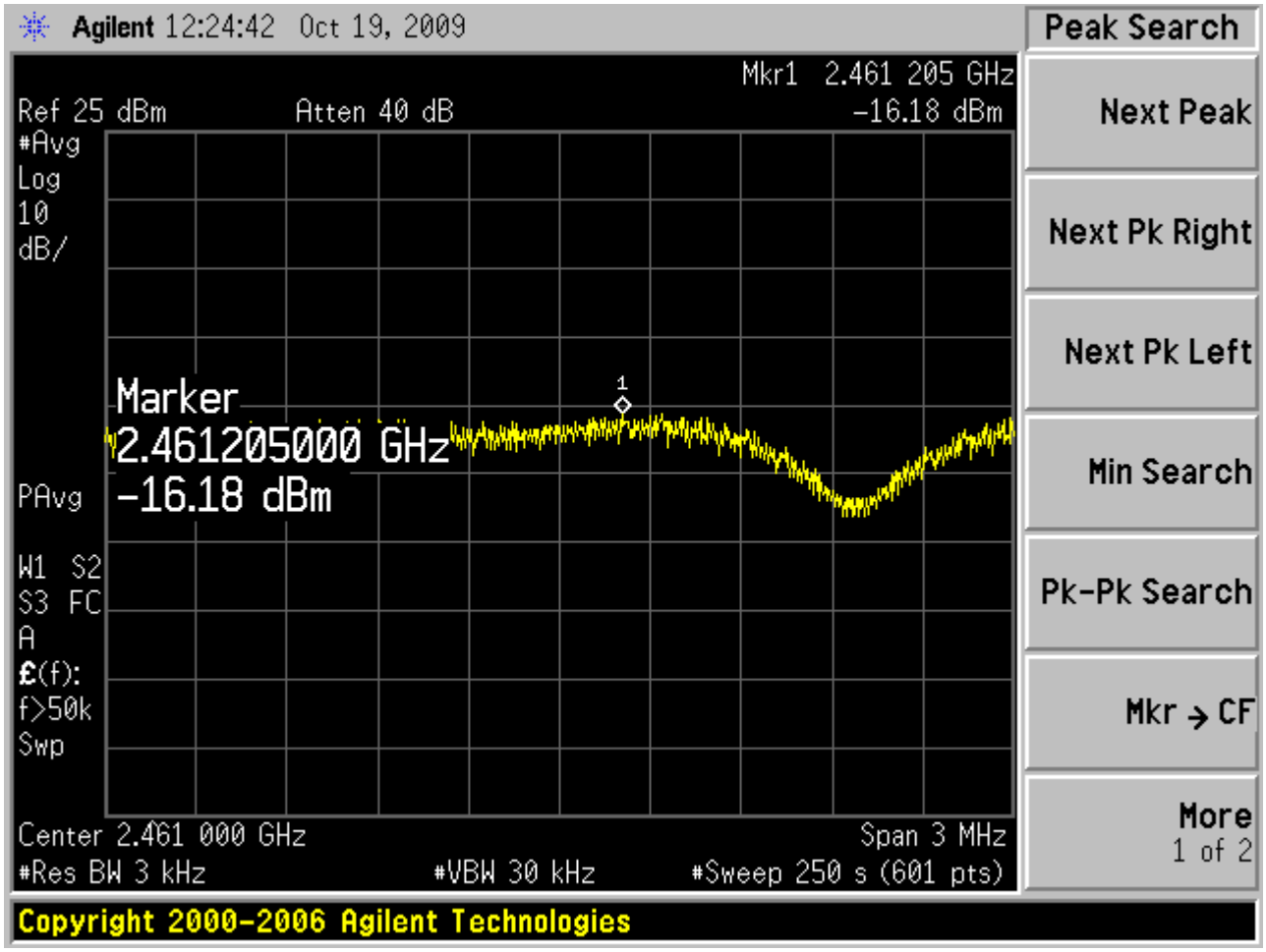
Network Standards	Bit Rate	Carrier frequency (MHz)	Power Spectral Density dBm / 3kHz	Conclusion
802.11b	1Mbps	2412	-14.14	PASS
		2437	-15.20	PASS
		2462	-16.18	PASS
802.11g	6Mbps	2412	-19.67	PASS
		2437	-20.78	PASS
		2462	-21.64	PASS



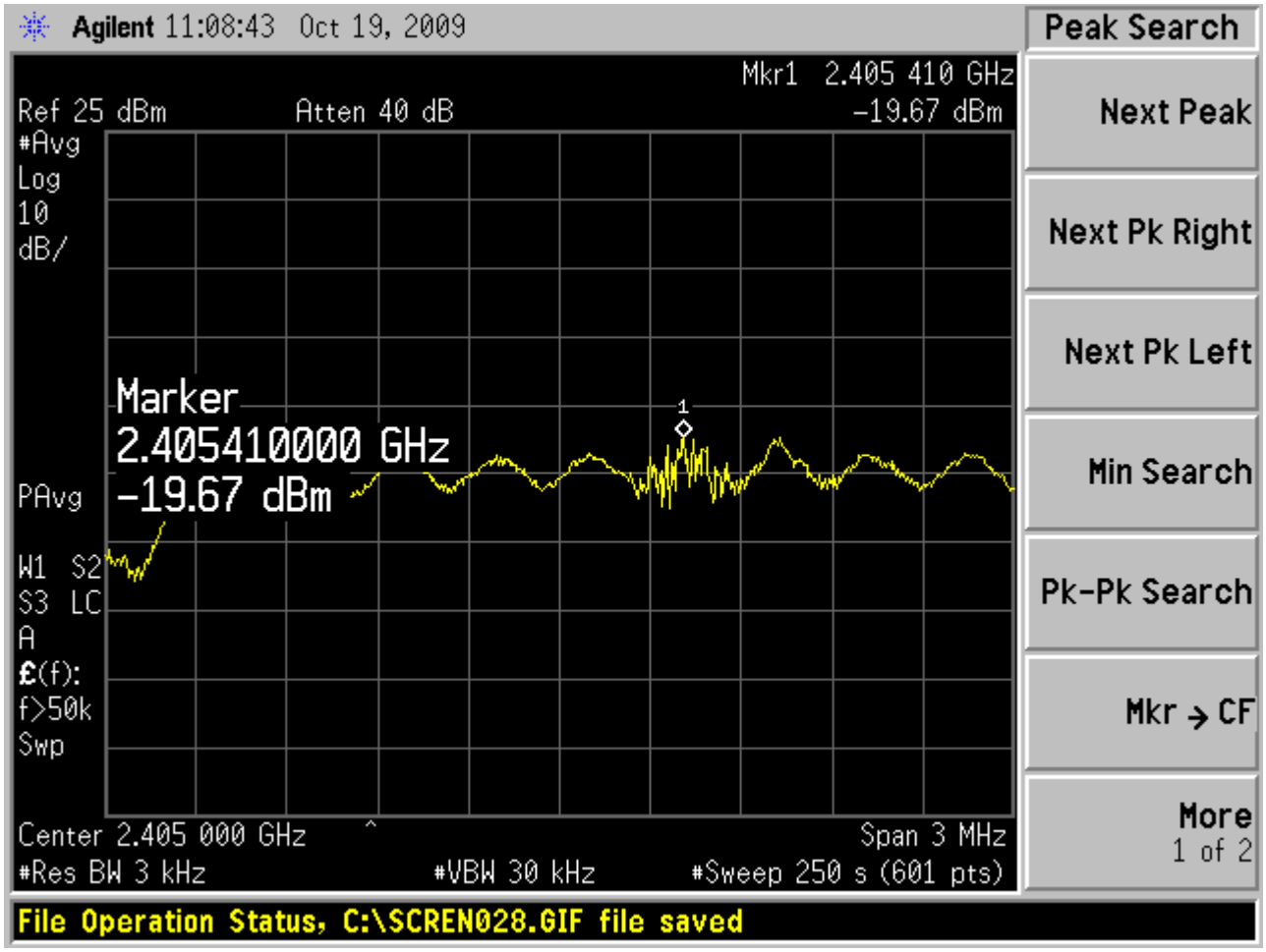
802.11b, Bit Rata 1 MHz, Carrier frequency (MHz):2412



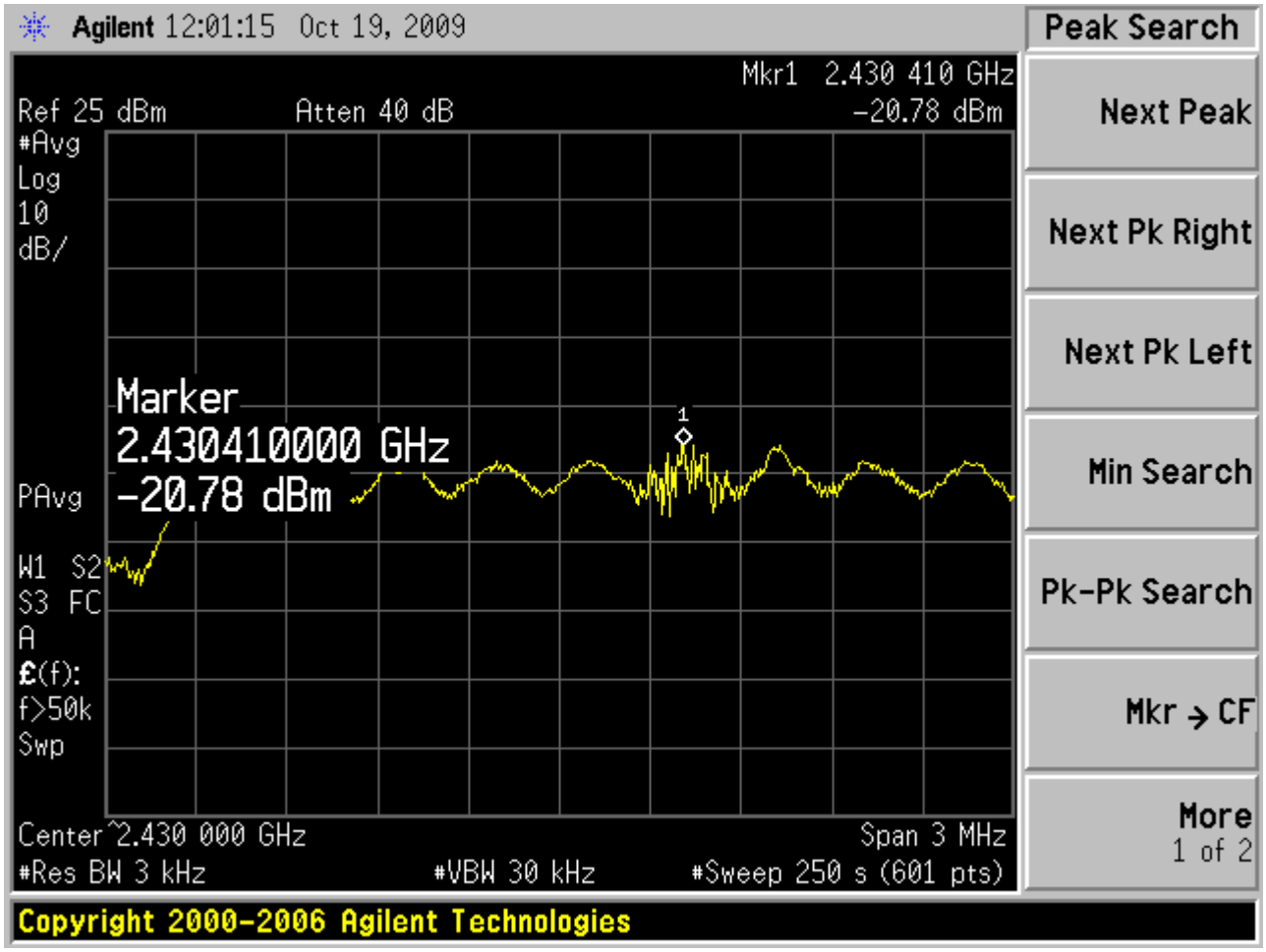
802.11b, Bit Rata 1 MHz, Carrier frequency (MHz):2437



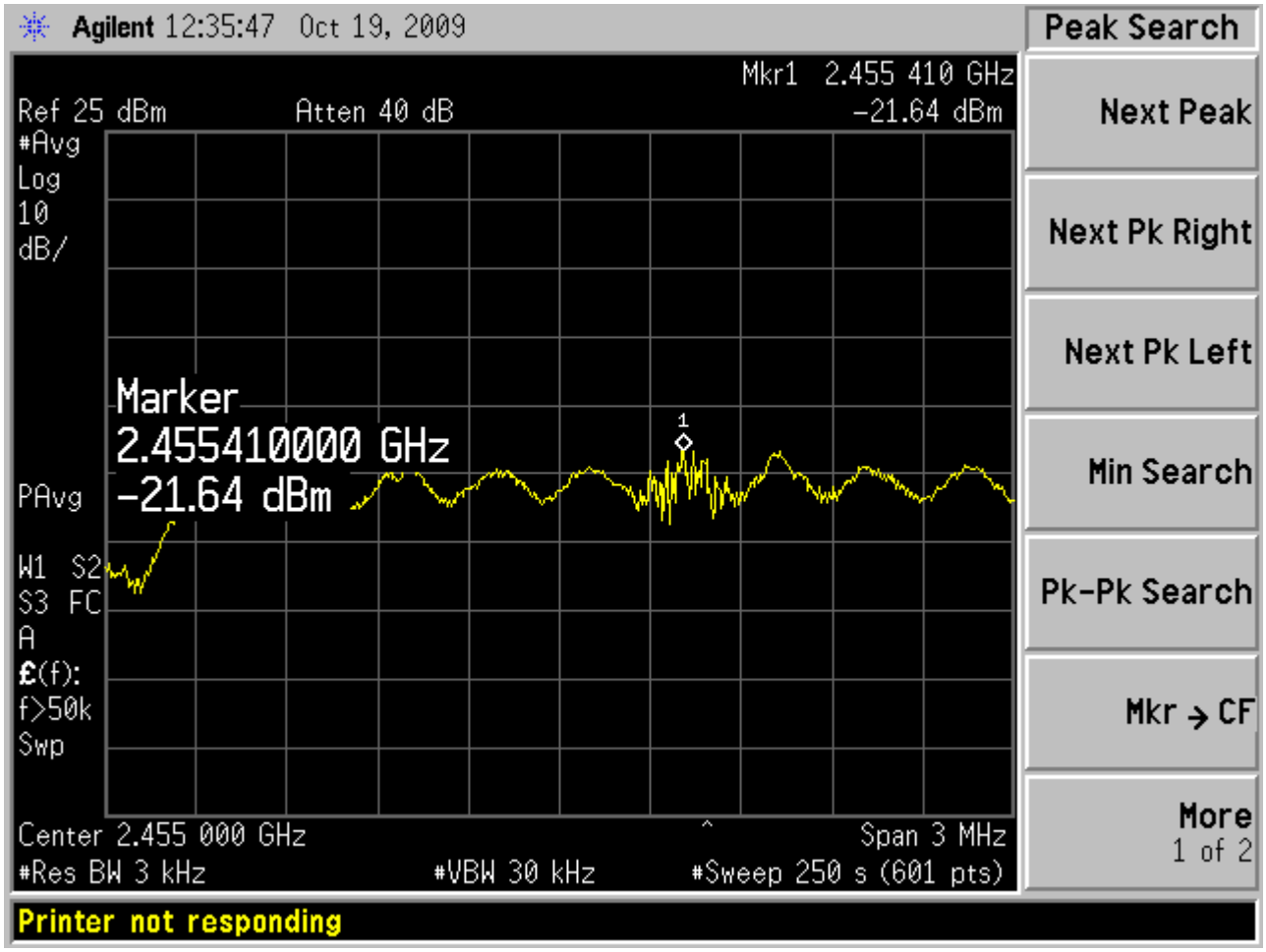
802.11b, Bit Rata 1 MHz, Carrier frequency (MHz):2462



802.11g, Bit Rata 6 MHz, Carrier frequency (MHz):2412



802.11g, Bit Rata 6 MHz, Carrier frequency (MHz):2437



802.11g, Bit Rata 6 MHz, Carrier frequency (MHz):2462

2.7. Spurious RF Conducted Emissions

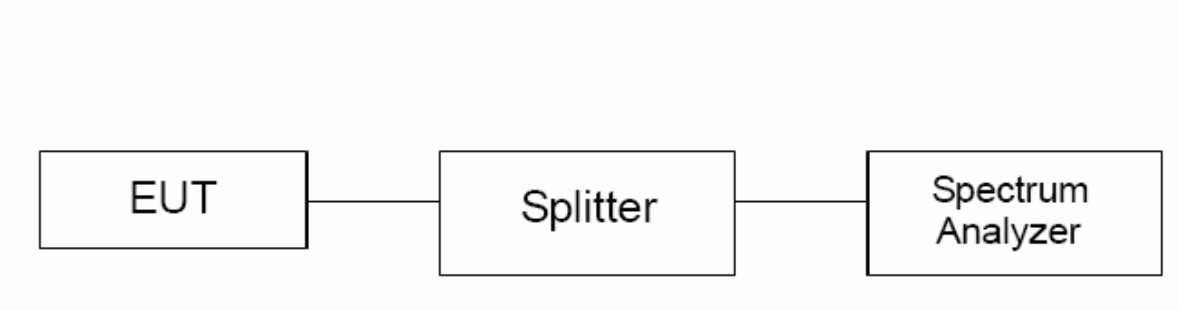
Ambient condition

Temperature	Relative humidity	Pressure
24°C	55%	101.5kPa

Method of Measurement

The EUT was connected to the spectrum analyzer and Bluetooth test set via a power splitter with a known loss. The spectrum analyzer scans from 30MHz to 26.5GHz. The peak detector is used.

Test setup



Limits

Rule Part 15.247(d) pacifies that “In any 100 kHz bandwidth outside the frequency band in which the spread spectrum 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.”

Network Standards	Bit Rate	Carrier frequency (MHz)	Reference value (dBm)	Limit
802.11b	1Mbps	2412	13.10	≤-6.9
		2437	13.02	≤-6.98
		2462	13.53	≤-6.47
802.11g	6Mbps	2412	9.54	≤-10.46
		2437	9.72	≤-10.28
		2462	9.57	≤-10.43

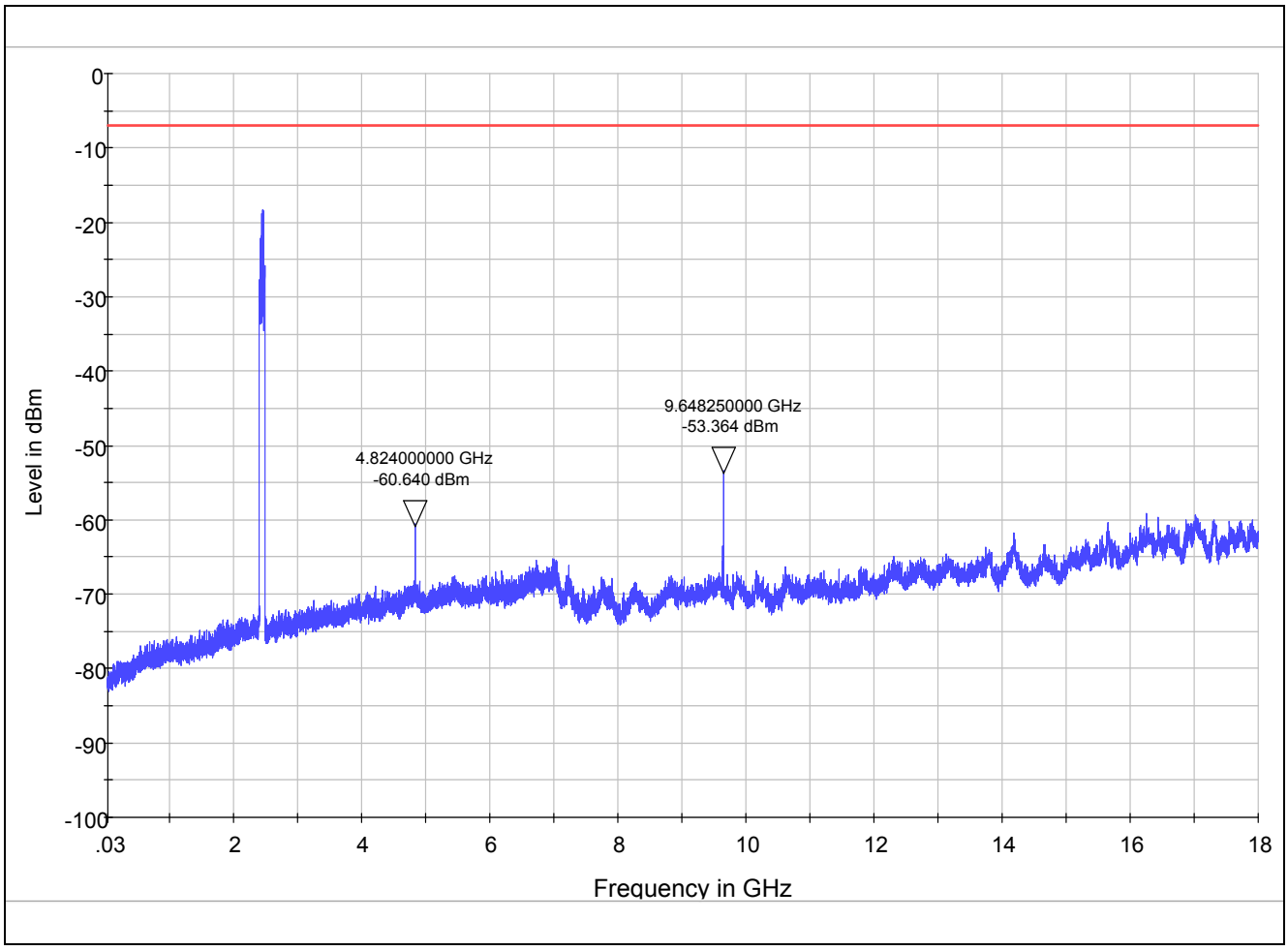
Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor *k* = 1.96.

Frequency	Uncertainty
100kHz-2GHz	0.684 dB
2GHz-26.5GHz	1.407 dB

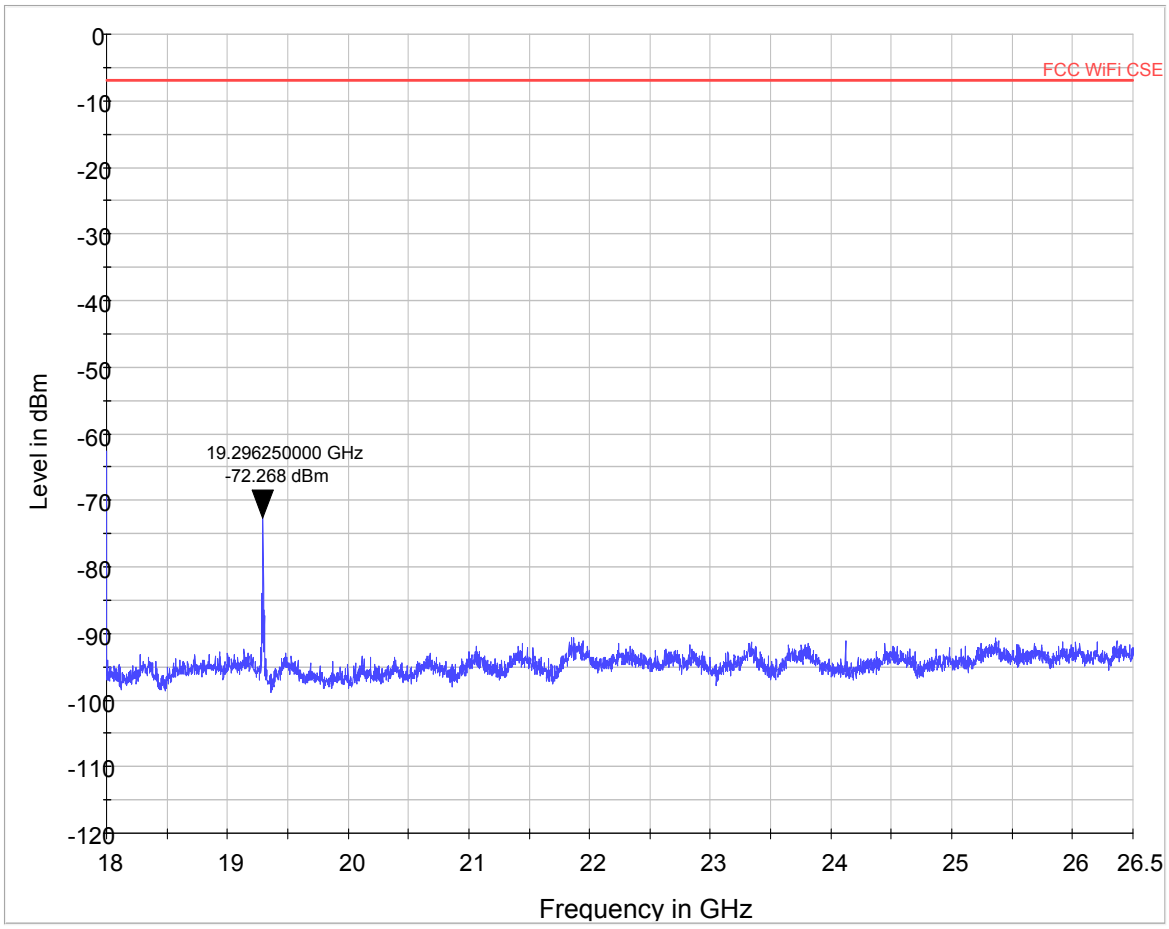
Test Results:

802.11b CH1



Note: The signal beyond the limit is carrier

Spurious RF conducted emissions from 30MHz to 18GHz

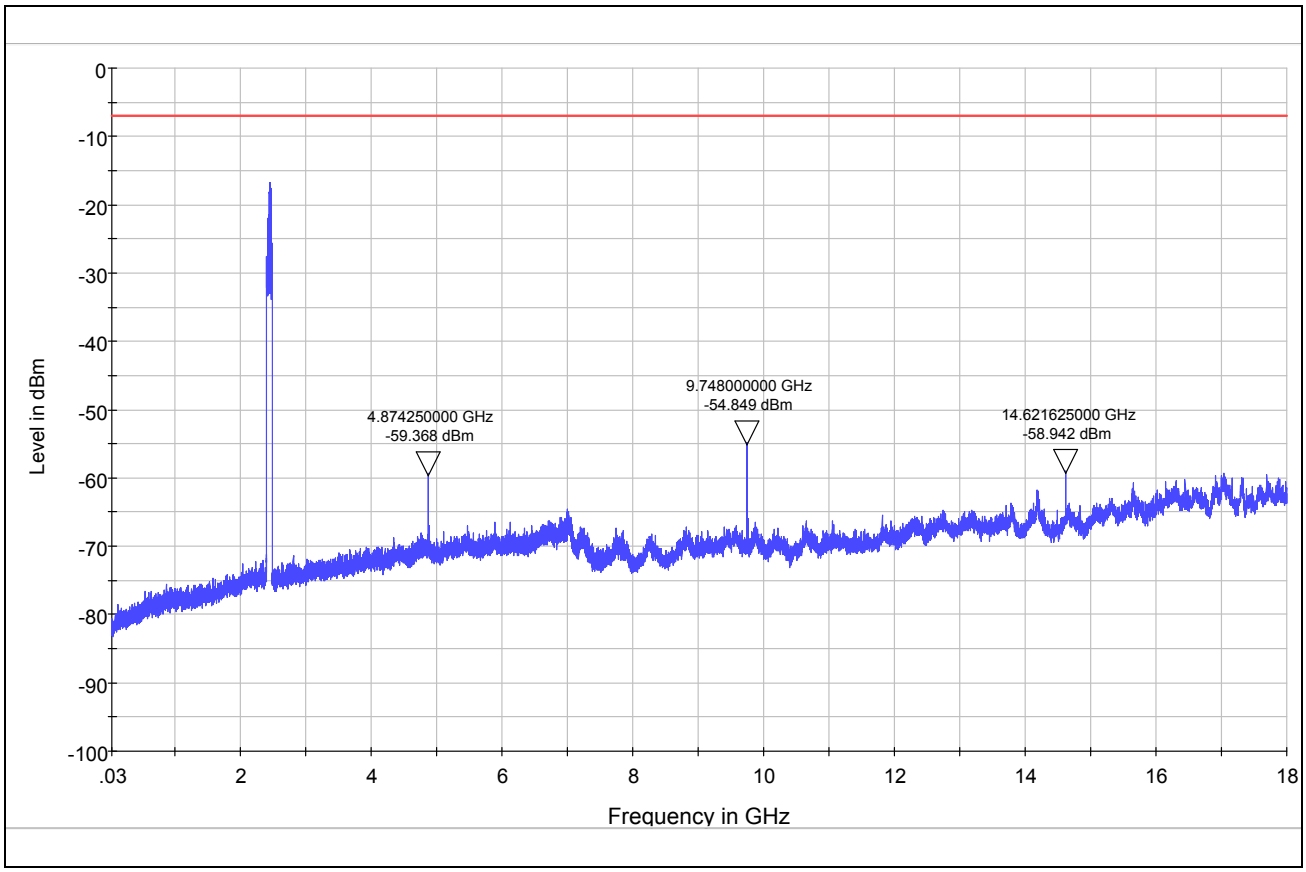


Spurious RF conducted emissions from 18GHz to 26.5GHz

Harmonic	TX ch.1 Frequency (MHz)	Level (dBm)	Limit (dBm)
2	4824	-60.64	-6.90
3	7206	Nf	-6.90
4	9648.25	-53.364	-6.90
5	12010	Nf	-6.90
6	14412	Nf	-6.90
7	16814	Nf	-6.90
8	1929.625	-72.268	-6.90
9	21618	Nf	-6.90
10	24020	Nf	-6.90
Nf: noise floor			

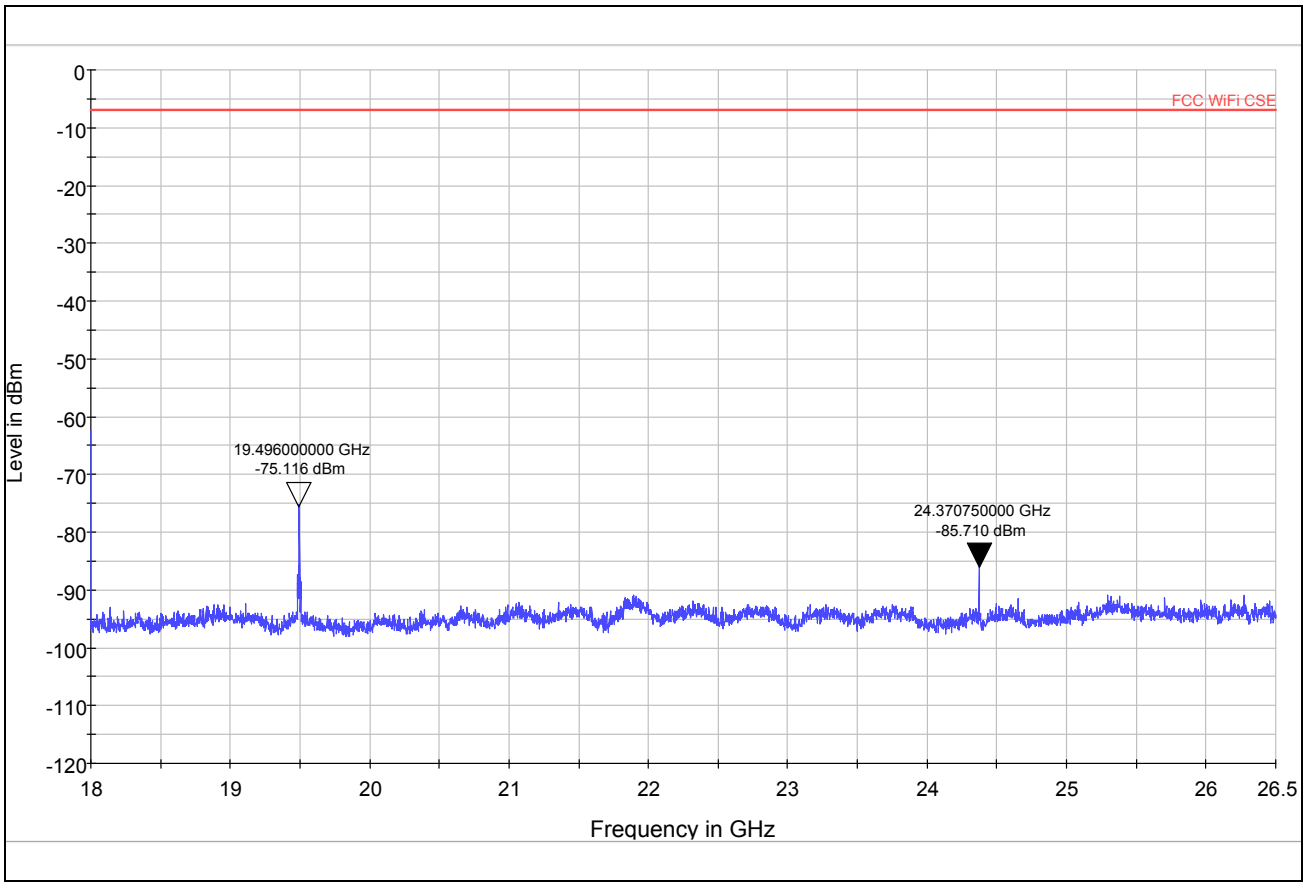
Note: The other Spurious RF conducted emissions level is no more than noise floor.

802.11b CH6



Note: The signal beyond the limit is carrier

Spurious RF conducted emissions from 30MHz to 18GHz

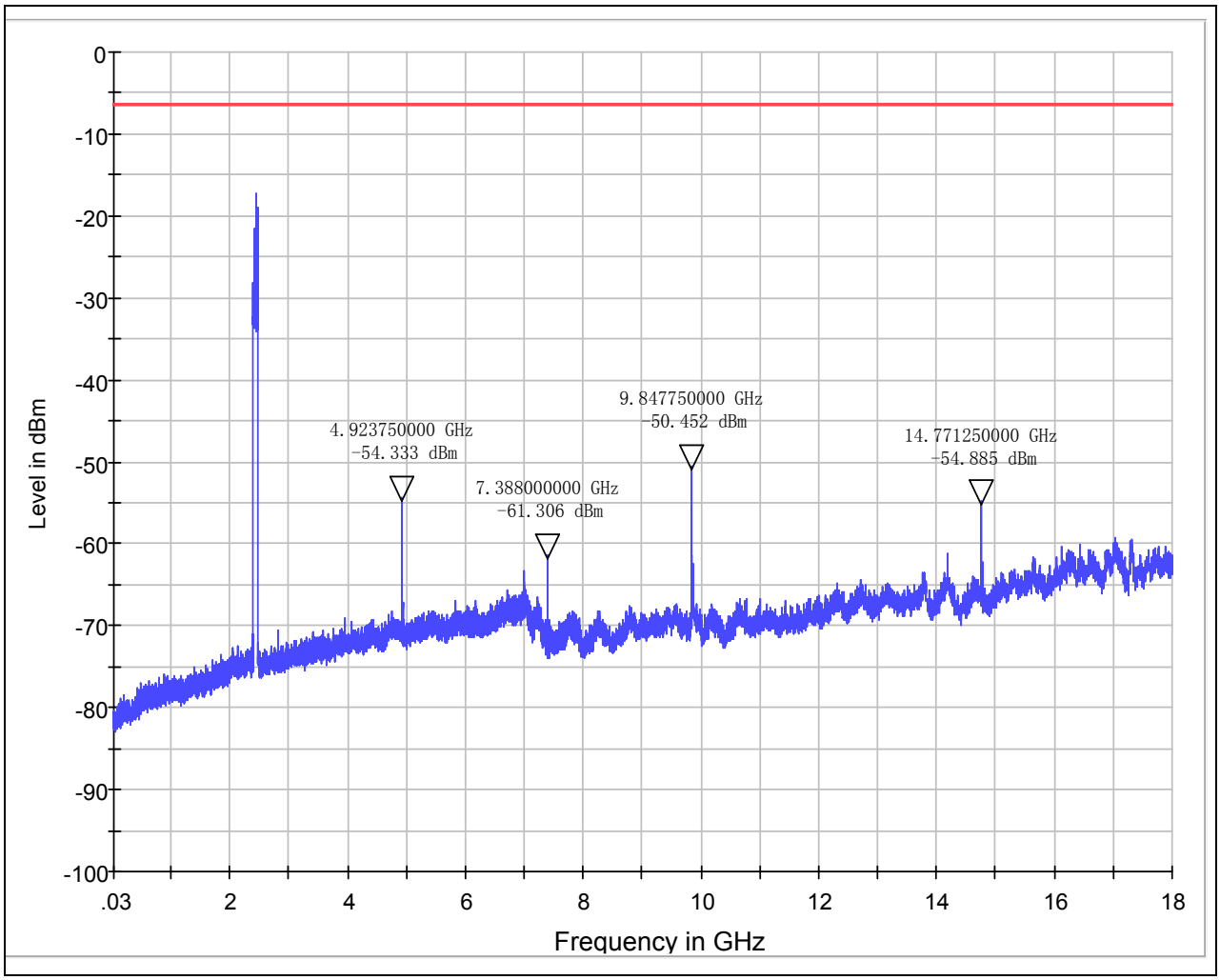


Spurious RF conducted emissions from 18GHz to 26.5GHz

Harmonic	TX ch.6 Frequency (MHz)	Level (dBm)	Limit (dBm)
2	4874.25	-59.368	-6.98
3	7206	Nf	-6.98
4	9748	-57.849	-6.98
5	12010	Nf	-6.98
6	14624.625	-58.942	-6.98
7	16814	Nf	-6.98
8	19496	-75.116	-6.98
9	21618	Nf	-6.98
10	24370.75	-85.71	-6.98
Nf: noise floor			

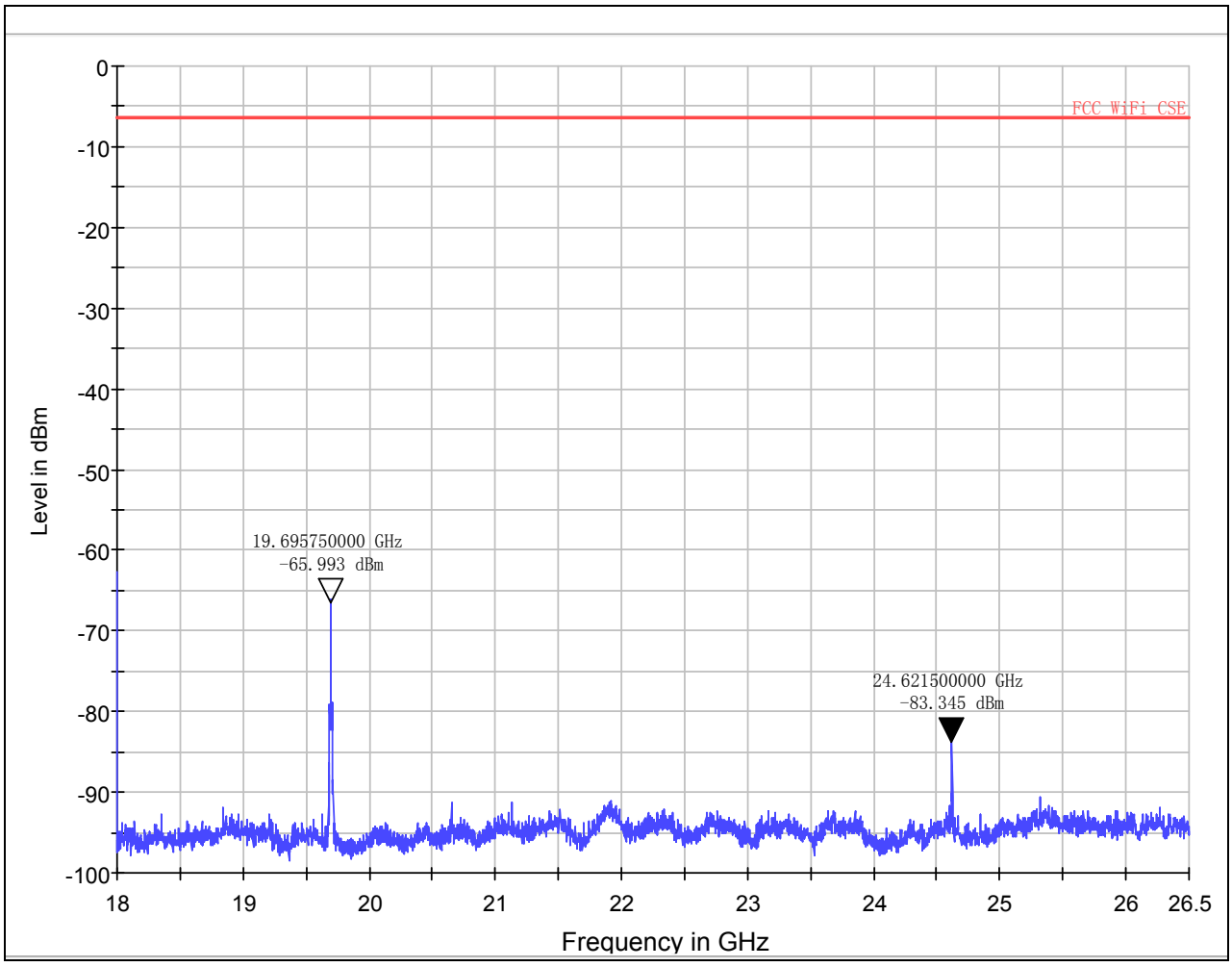
Note: The other Spurious RF conducted emissions level is no more than noise floor.

802.11b CH11



Note: The signal beyond the limit is carrier

Spurious RF conducted emissions from 30MHz to 18GHz

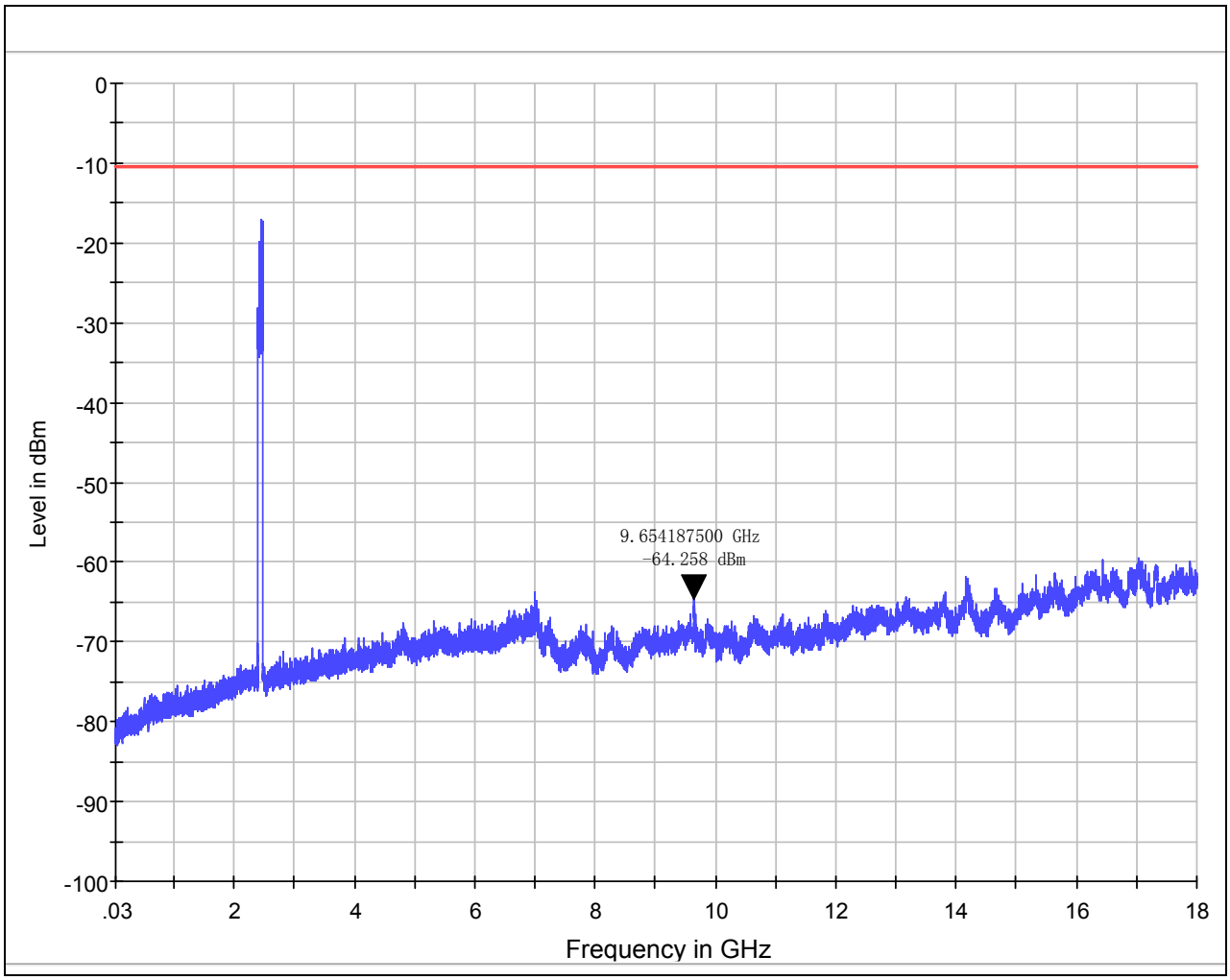


Spurious RF conducted emissions from 18GHz to 26.5GHz

Harmonic	TX ch.11 Frequency (MHz)	Level (dBm)	Limit (dBm)
2	4923.75	-54.333	-6.47
3	7388.00	-61.306	-6.47
4	9474.75	-50.452	-6.47
5	12010	Nf	-6.47
6	14771.25	-54.885	-6.47
7	16814	Nf	-6.47
8	19695.75	-65.993	-6.47
9	21618	Nf	-6.47
10	24621.5	-83.345	-6.47
Nf: noise floor			

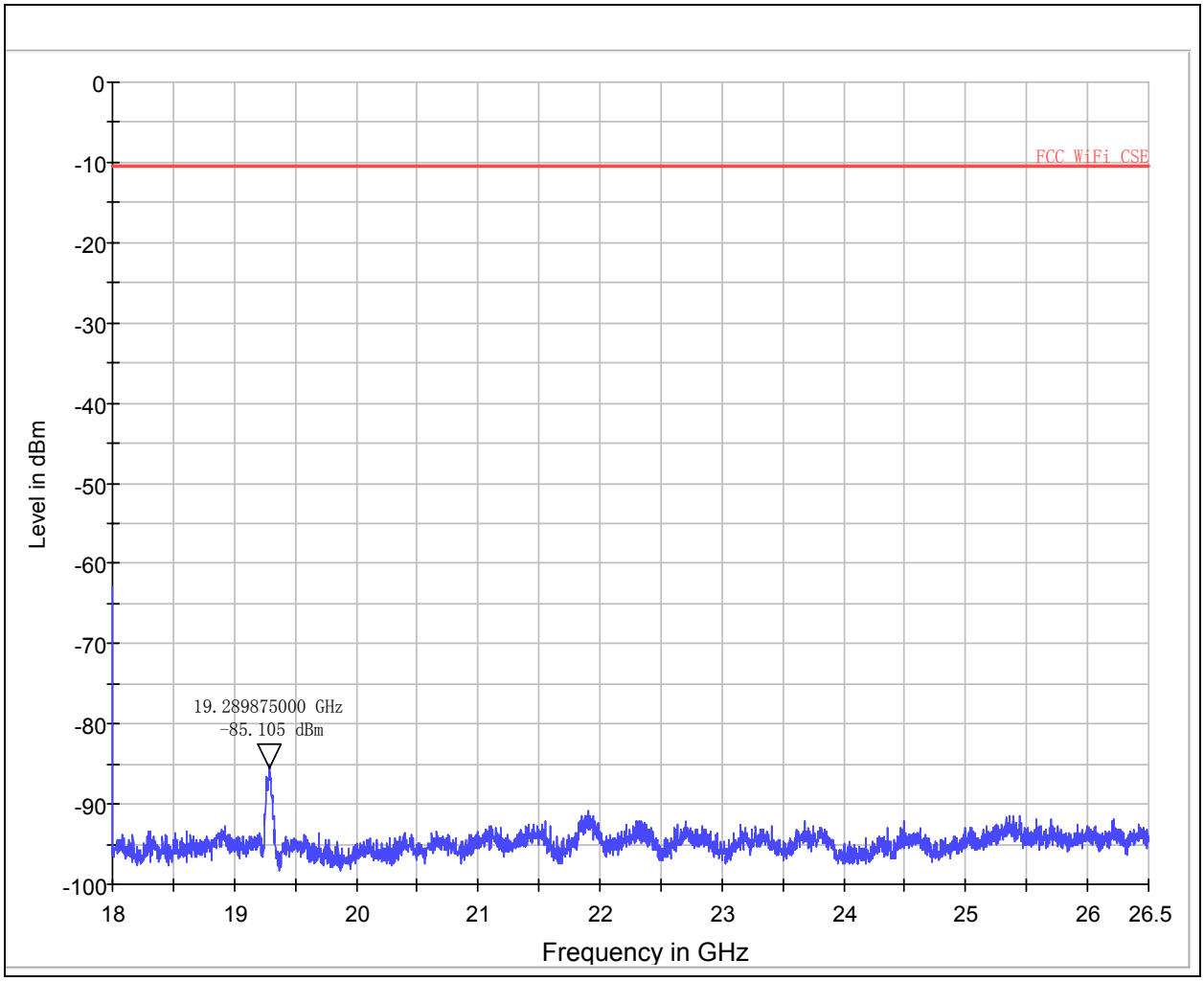
Note: The other Spurious RF conducted emissions level is no more than noise floor.

802.11g CH1



Note: The signal beyond the limit is carrier

Spurious RF conducted emissions from 30MHz to 18GHz

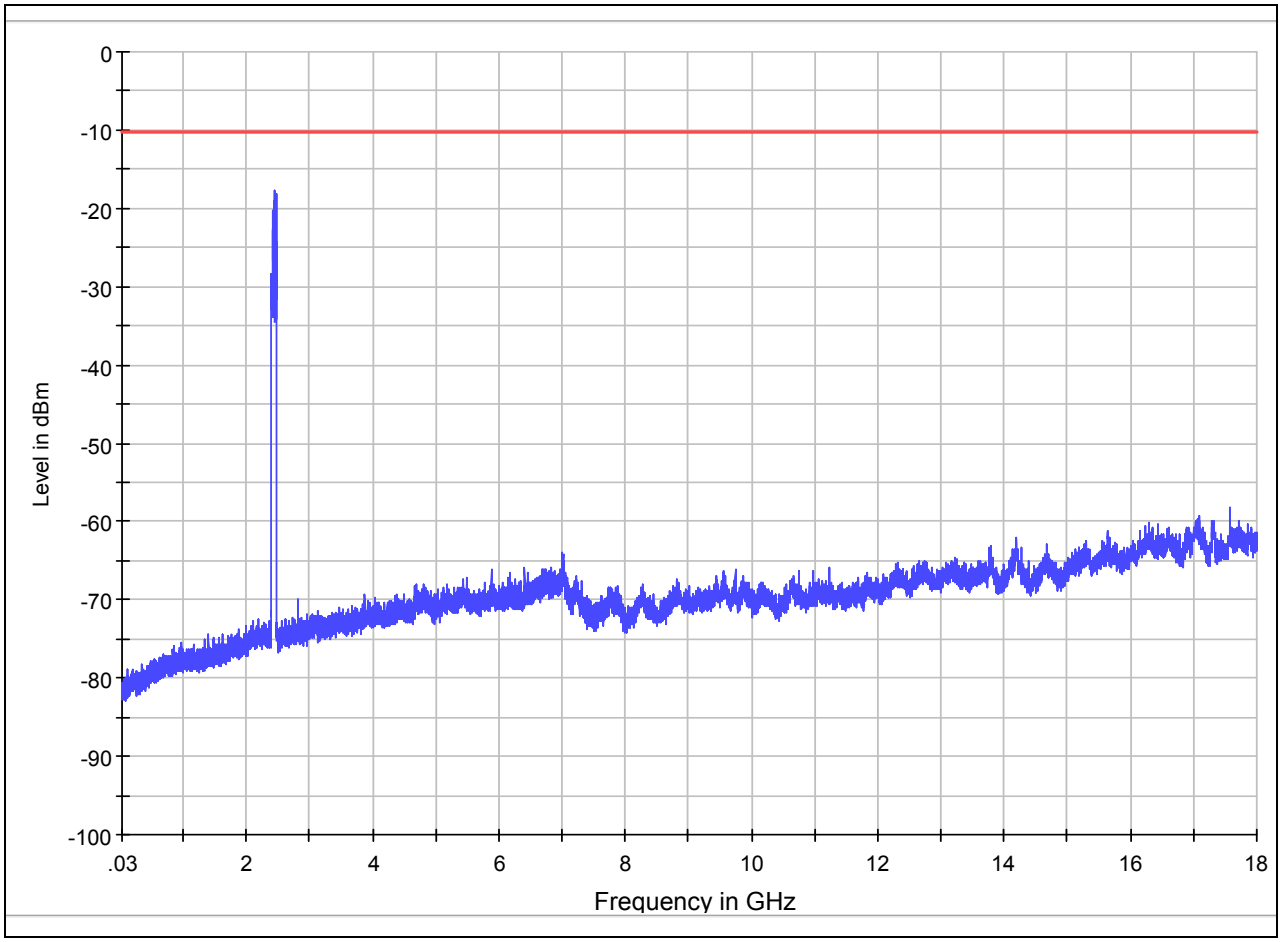


Spurious RF conducted emissions from 18GHz to 26.5GHz

Harmonic	TX ch.1 Frequency (MHz)	Level (dBm)	Limit (dBm)
2	4804	Nf	-10.46
3	7206	Nf	-10.46
4	9654	-64.258	-10.46
5	12010	Nf	-10.46
6	14412	Nf	-10.46
7	16814	Nf	-10.46
8	19289	-85.105	-10.46
9	21618	Nf	-10.46
10	24020	Nf	-10.46
Nf: noise floor			

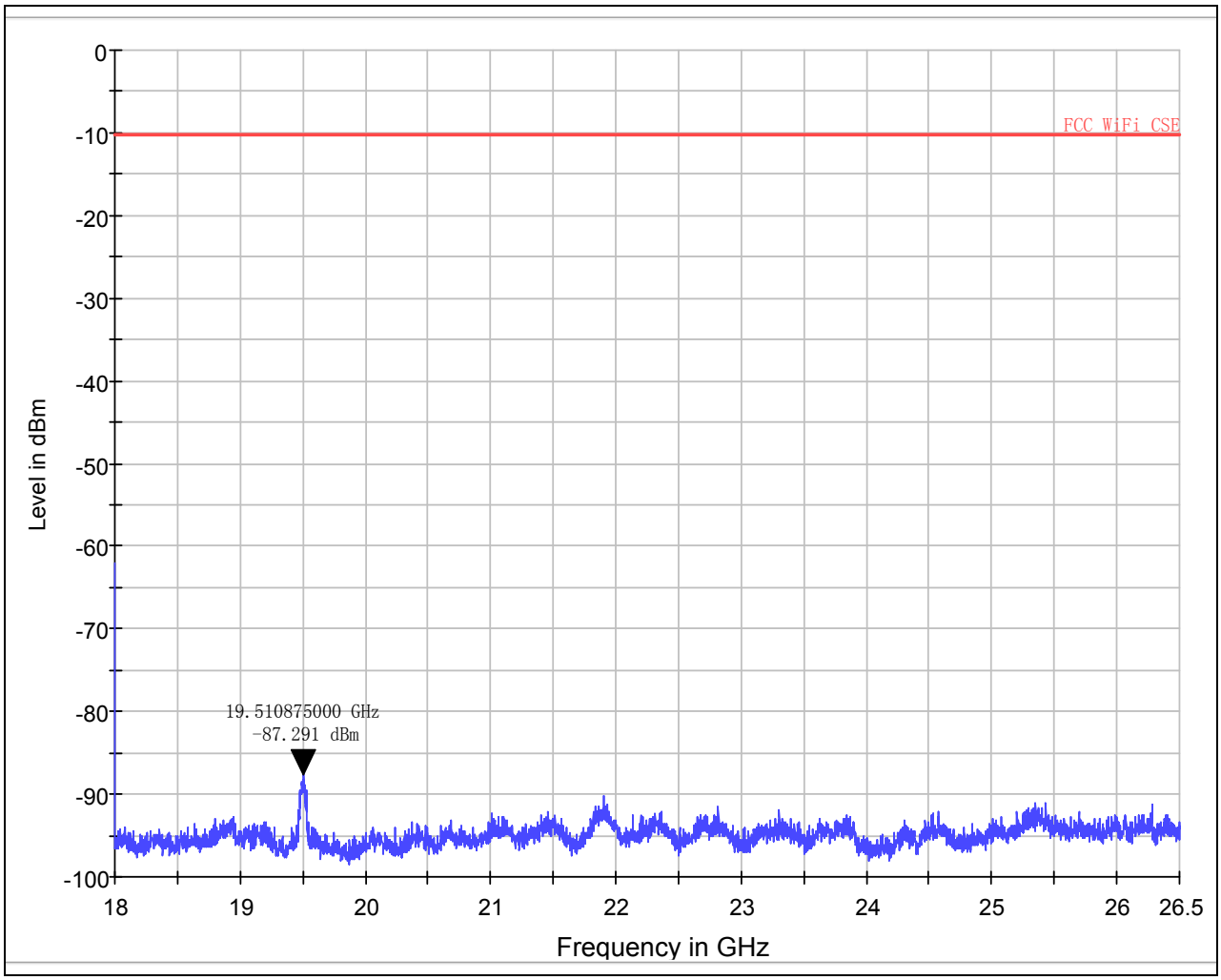
Note: The other Spurious RF conducted emissions level is no more than noise floor.

802.11g CH6



Note: The signal beyond the limit is carrier

Spurious RF conducted emissions from 30MHz to 18GHz

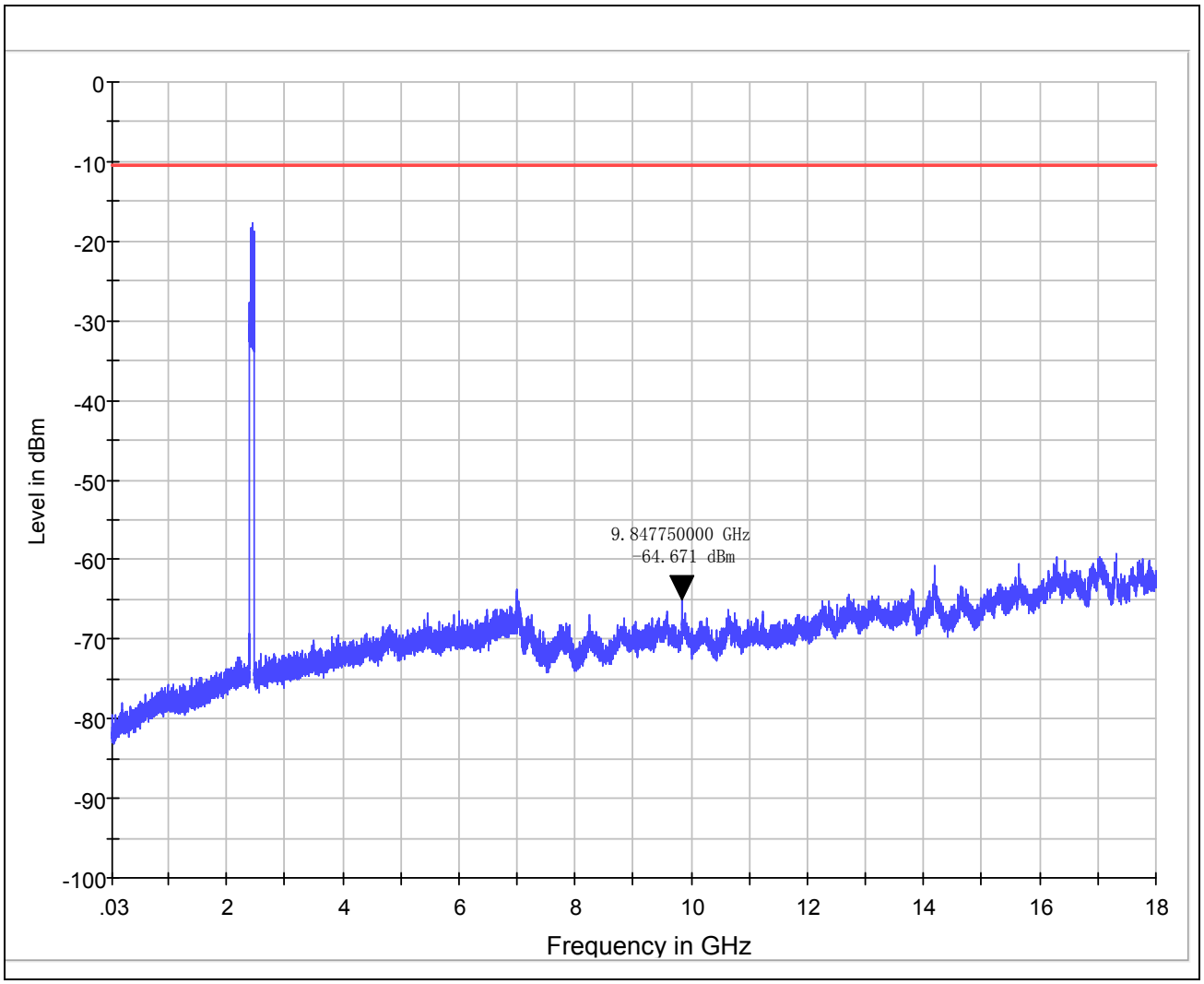


Spurious RF conducted emissions from 18GHz to 26.5GHz

Harmonic	TX ch.6 Frequency (MHz)	Level (dBm)	Limit (dBm)
2	4804	Nf	-10.28
3	7206	Nf	-10.28
4	9608	Nf	-10.28
5	12010	Nf	-10.28
6	14412	Nf	-10.28
7	16814	Nf	-10.28
8	19511	-87.291	-10.28
9	21618	Nf	-10.28
10	24020	Nf	-10.28
Nf: noise floor			

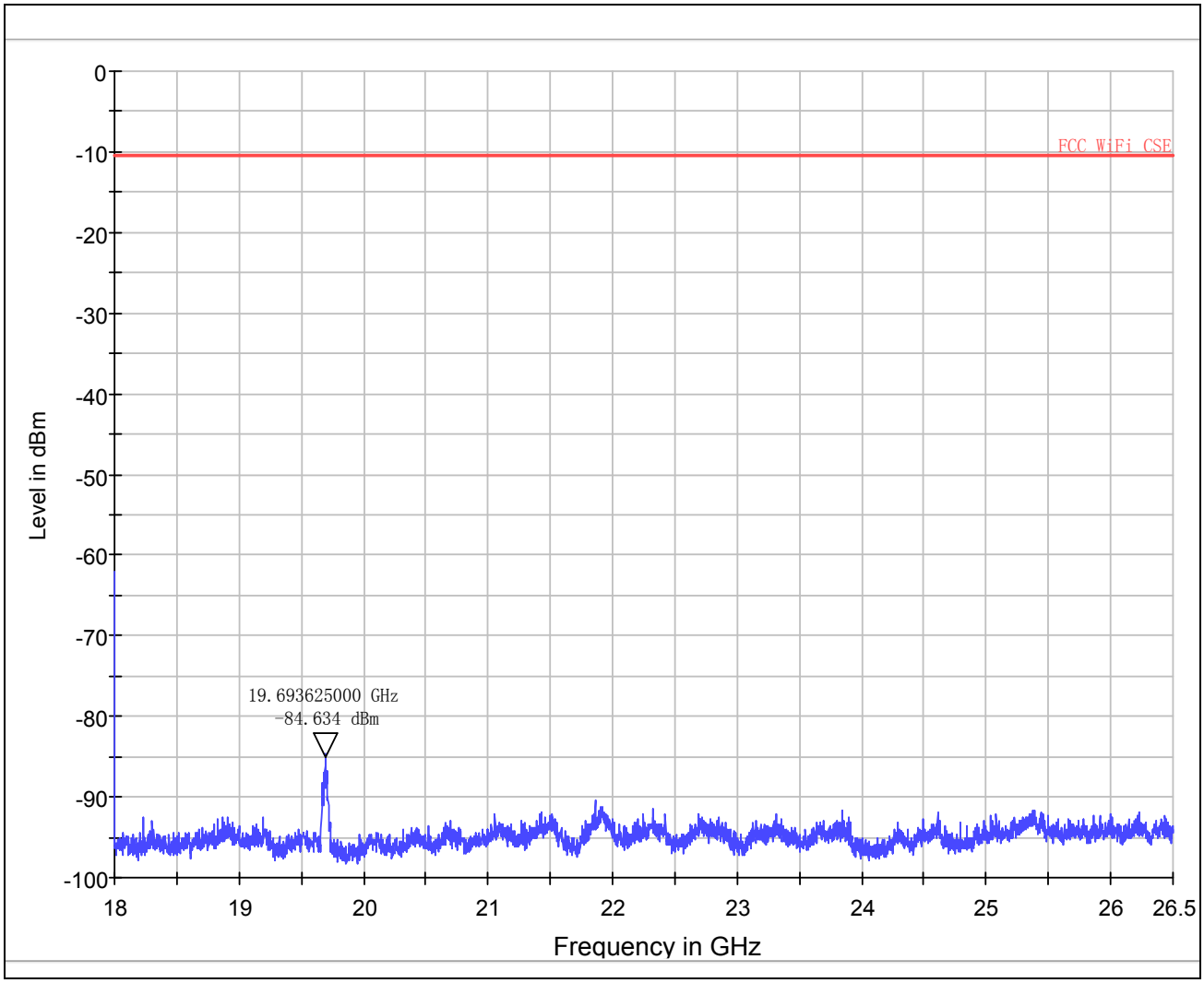
Note: The other Spurious RF conducted emissions level is no more than noise floor.

802.11g CH11



Note: The signal beyond the limit is carrier

Spurious RF conducted emissions from 30MHz to 18GHz



Spurious RF conducted emissions from 18GHz to 26.5GHz

Harmonic	TX ch.11 Frequency (MHz)	Level (dBm)	Limit (dBm)
2	4804	Nf	-10.43
3	7206	Nf	-10.43
4	9848	-64.671	-10.43
5	12010	Nf	-10.43
6	14412	Nf	-10.43
7	16814	Nf	-10.43
8	19694	-84.634	-10.43
9	21618	Nf	-10.43
10	24020	Nf	-10.43
Nf: noise floor			

Note: The other Spurious RF conducted emissions level is no more than noise floor.

2.8. Radiates Emission

Ambient condition

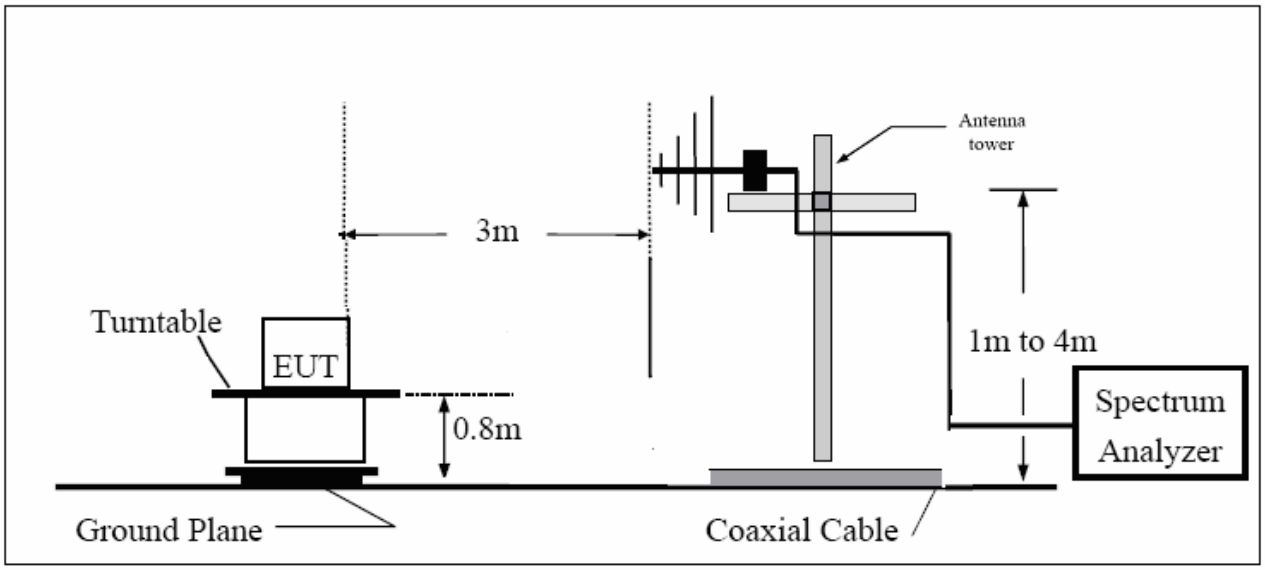
Temperature	Relative humidity	Pressure
25°C	58%	101.5kPa

Method of Measurement

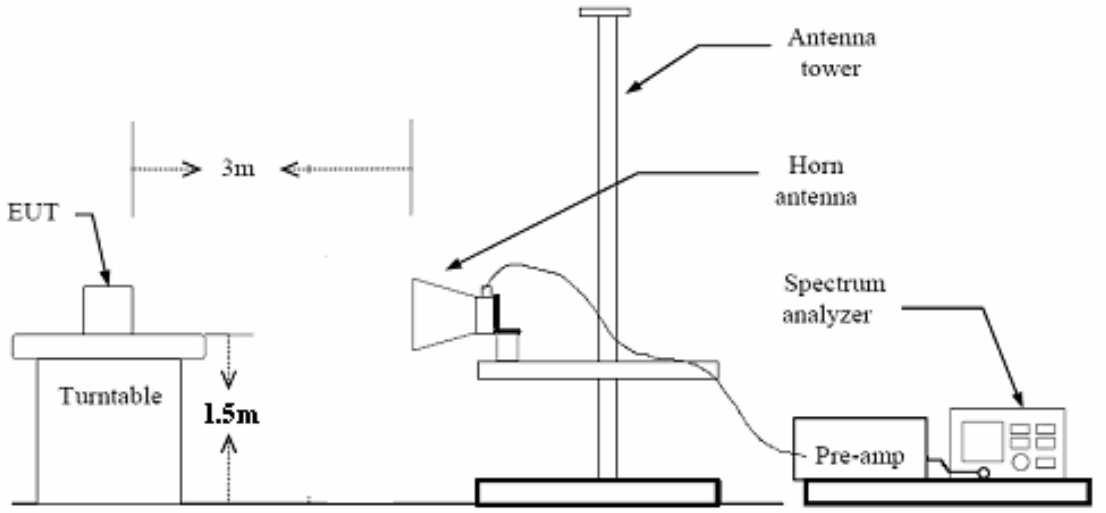
The test set-up was made in accordance to the general provisions of ANSI C63.4-2003. The Equipment Under Test (EUT) was set up on a non-conductive table in the semi-anechoic chamber. The test was performed at the distance of 3 m between the EUT and the receiving antenna. The radiated emissions measurements were made in a typical installation configuration. Sweep the whole frequency band through the range from 30MHz to 26GHz During the test, the height of receive antenna shall be moved from 1 to 4 meters, and the antenna shall be performed under horizontal and vertical polarization. The turntable shall be rotated from 0 to 360 degrees for detecting the maximum of radiated spurious signal level. The measurements shall be repeated with orthogonal polarization of the test antenna. The data of cable loss and antenna factor has been calibrated in full testing frequency range before the testing.

Test setup

Below 1GHz



Above 1GHz



Limits

Rule Part 15.247(d) specifies that “In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a) (see § 15.205(c)).”

Limit in restricted band

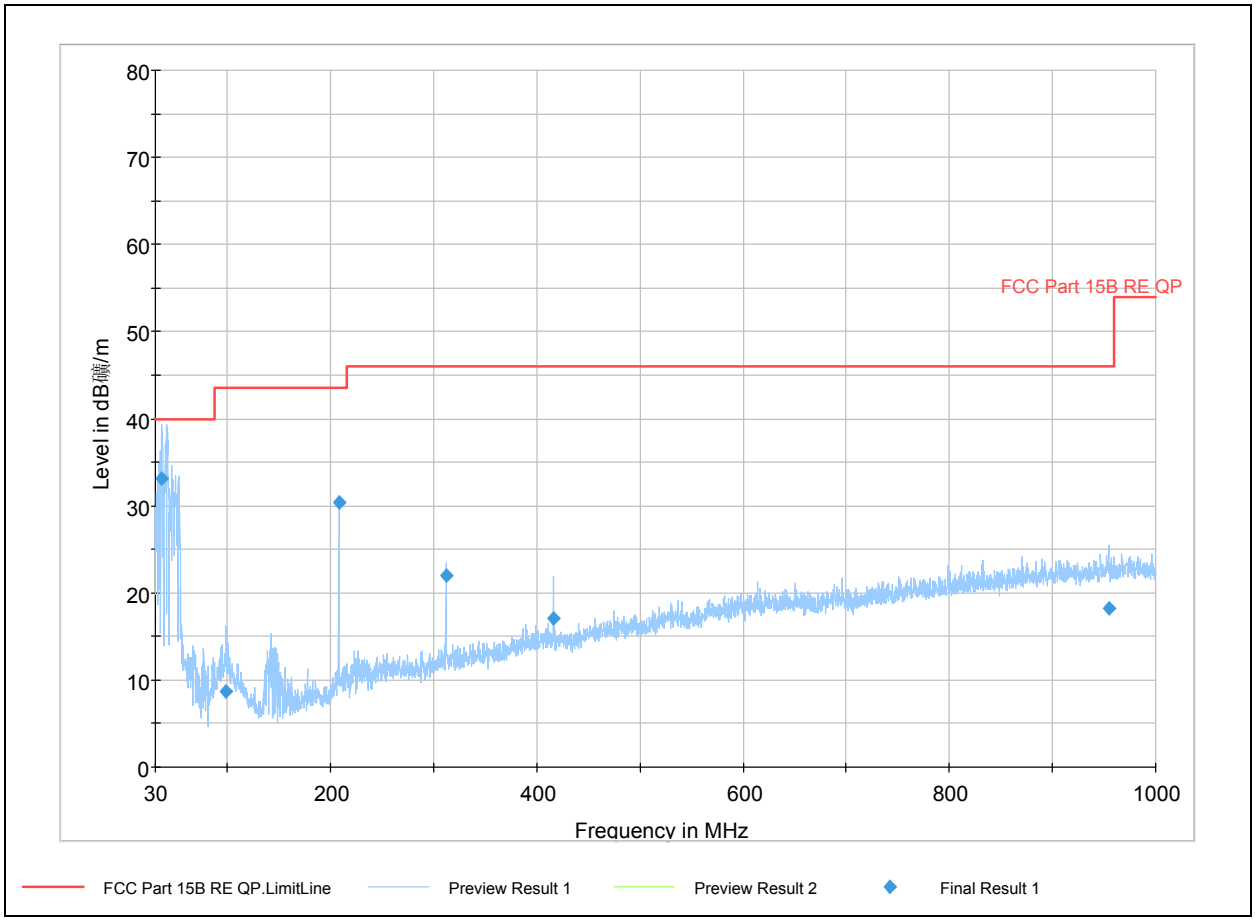
Frequency of emission (MHz)	Field strength(uV/m)	Field strength(dBuV/m)
30-88	100	40
88-216	150	43.5
216-960	200	46
Above960	500	54

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor *k* = 1.96. U=3.92 dB.

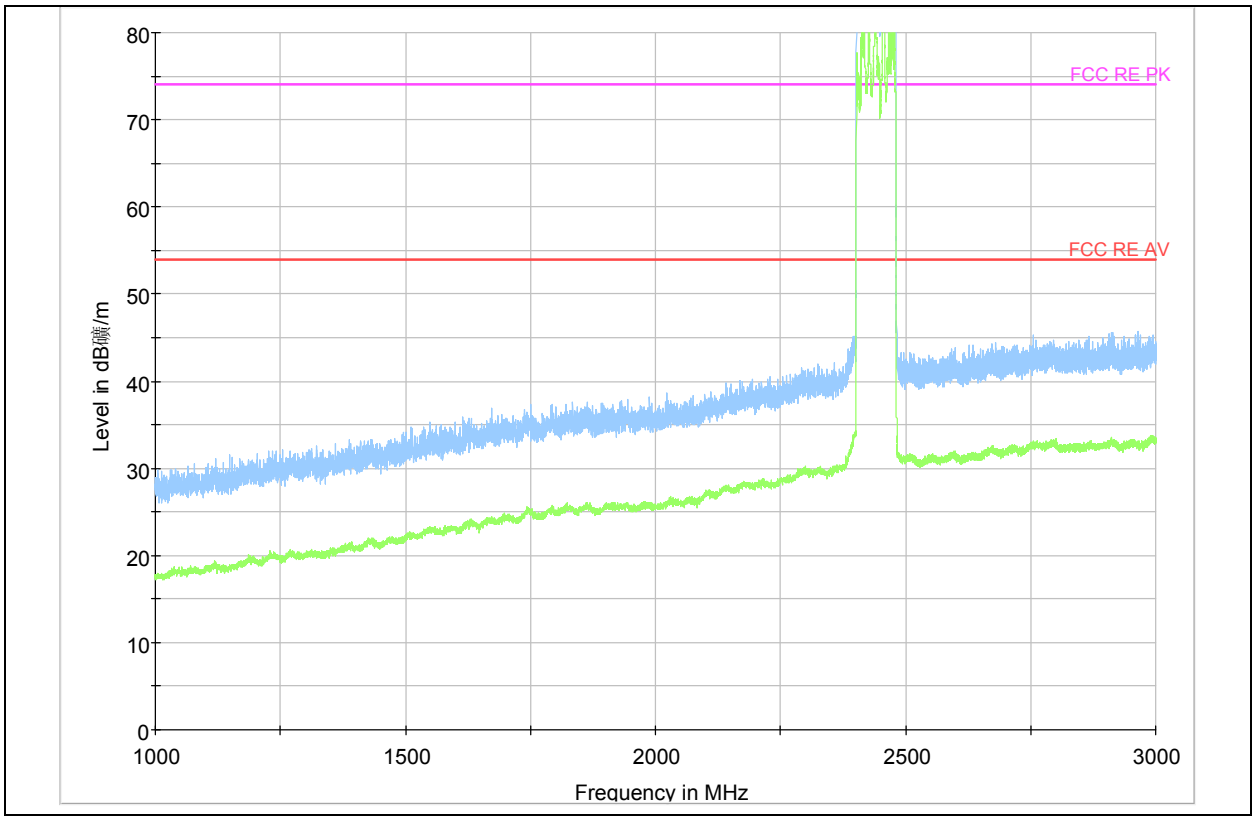
Test result

802.11b CH1



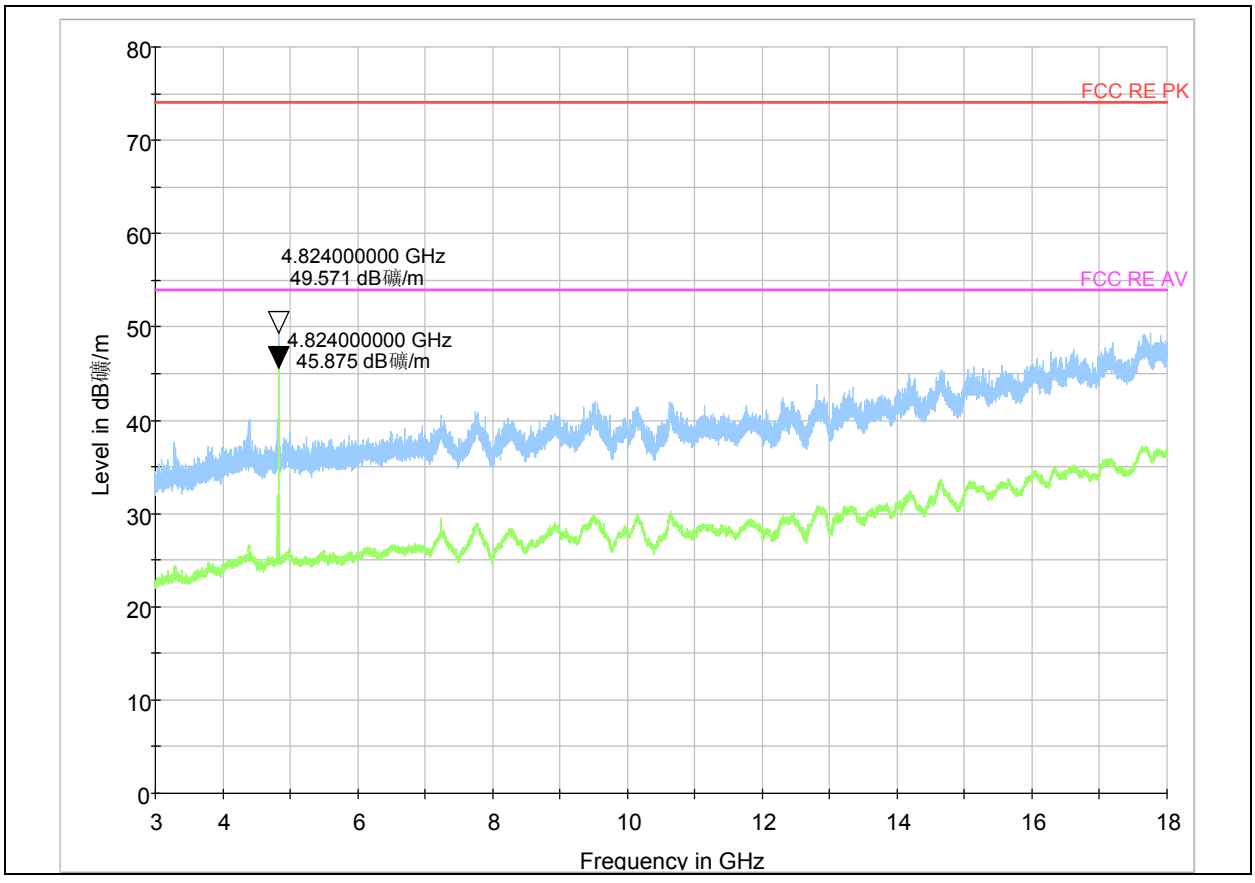
Radiates Emission from 30MHz to 1GHz

Frequency (MHz)	Quasi-Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Margin (dB)	Limit (dBuV/m)
36.062500	33.1	100.0	Vertical	180.0	6.9	40.0
98.870000	8.7	100.0	Vertical	45.0	34.8	43.5
207.995000	30.4	100.0	Vertical	45.0	13.1	43.5
312.027500	22.0	100.0	Vertical	17.0	24.0	46.0
416.060000	17.0	124.0	Vertical	164.0	29.0	46.0
954.410000	18.2	125.0	Vertical	15.0	27.8	46.0

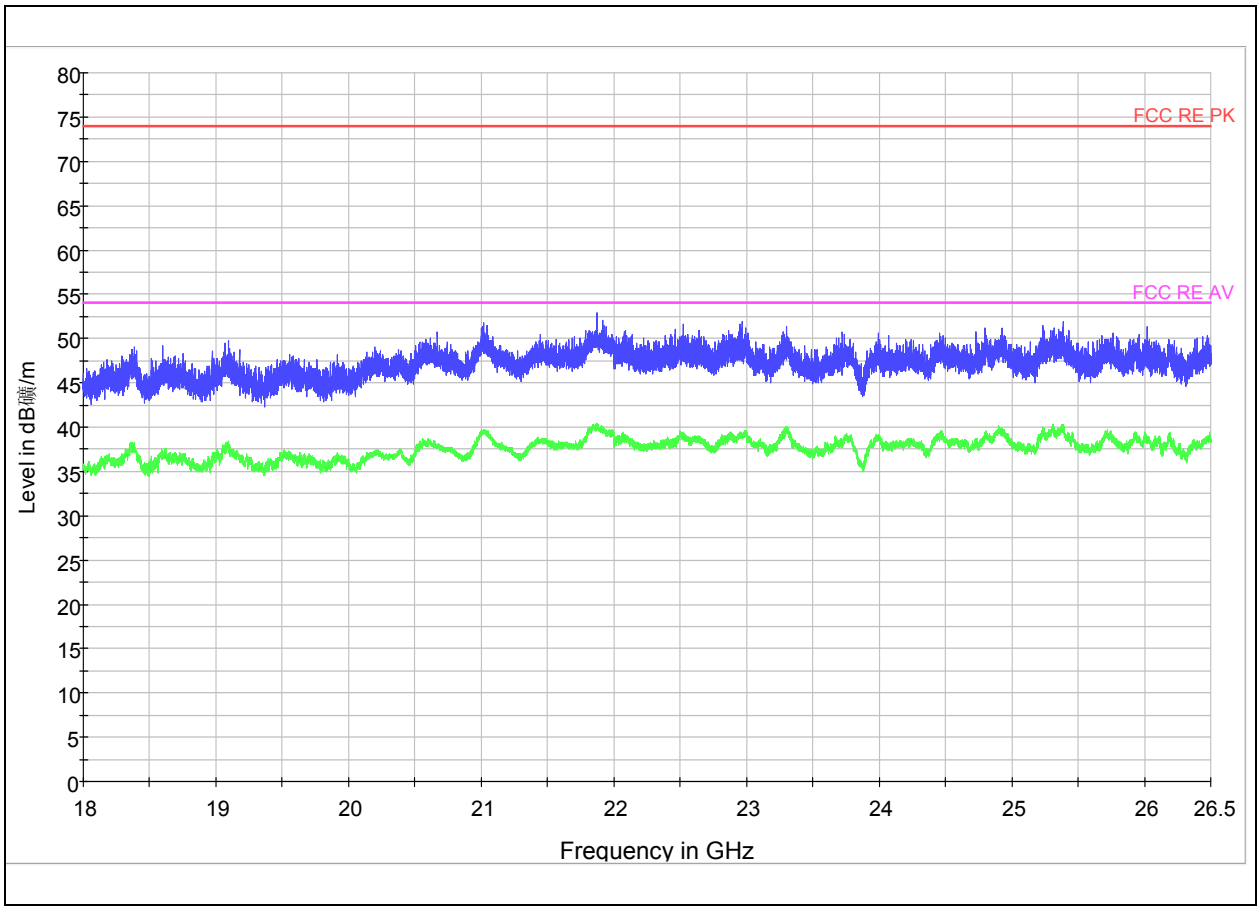


Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 3GHz



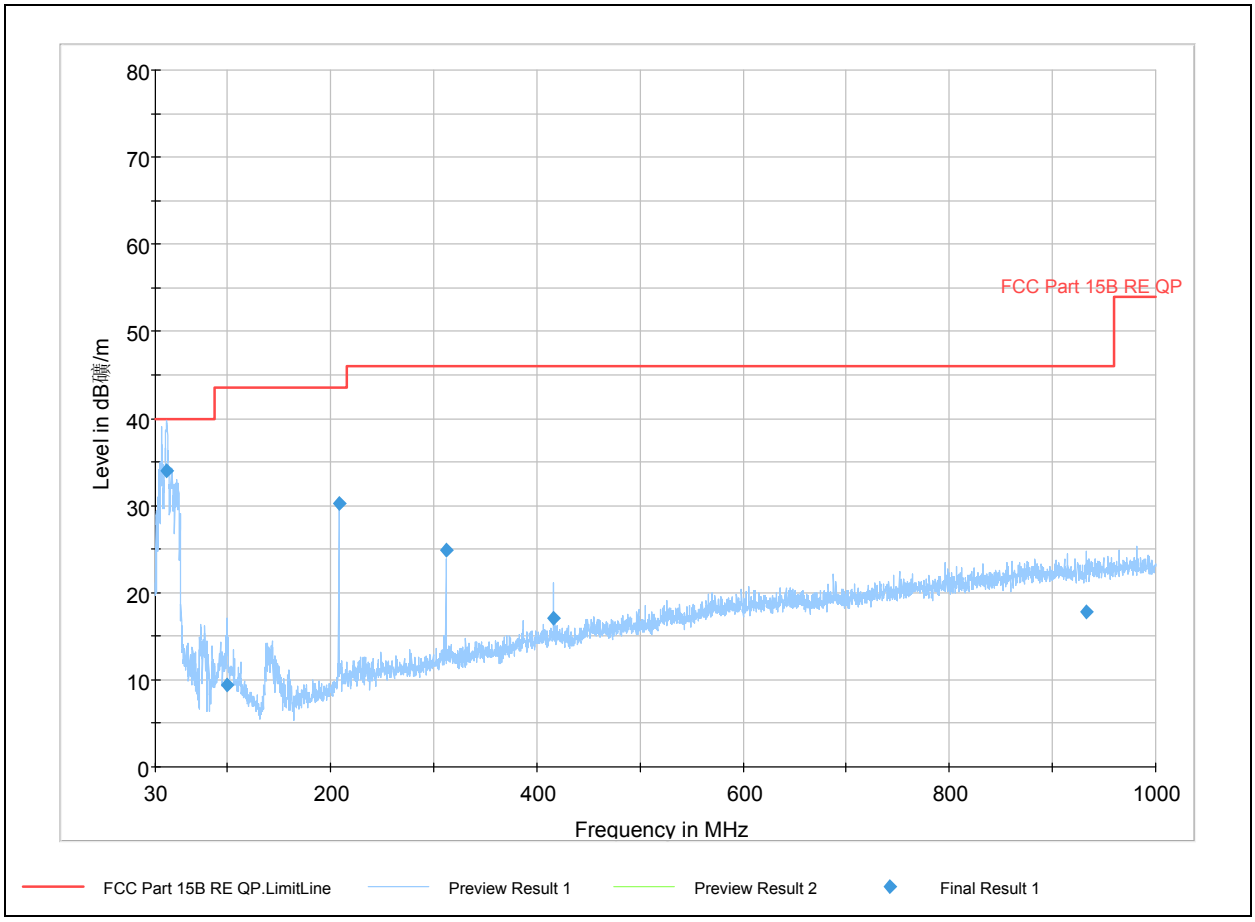
Radiates Emission from 3GHz to 18GHz



Radiates Emission from 18GHz to 26.5GHz

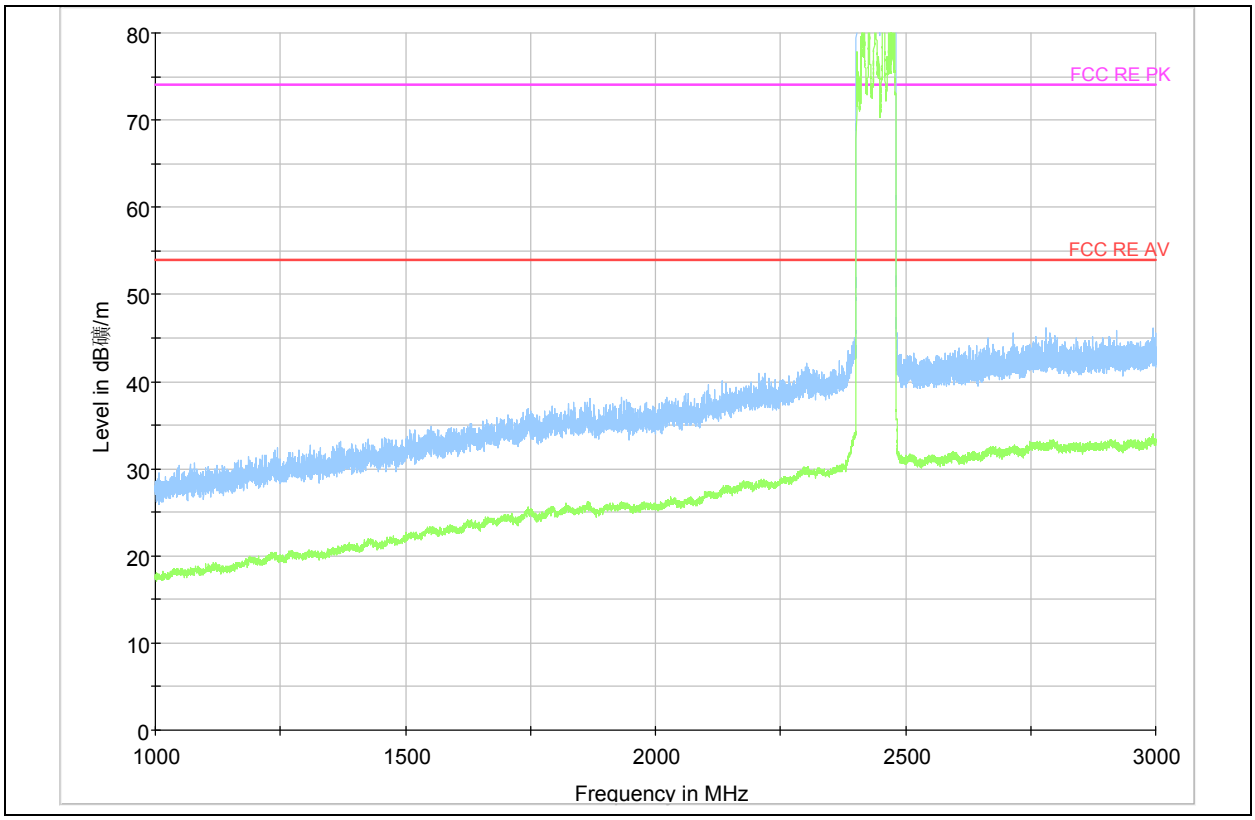
Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Turntable Azimuth(degree)	Polarization
4824	49.571	74	24.429	PK	45	Vertical
4824	45.875	54	8.125	AV	45	Vertical

802.11b CH6



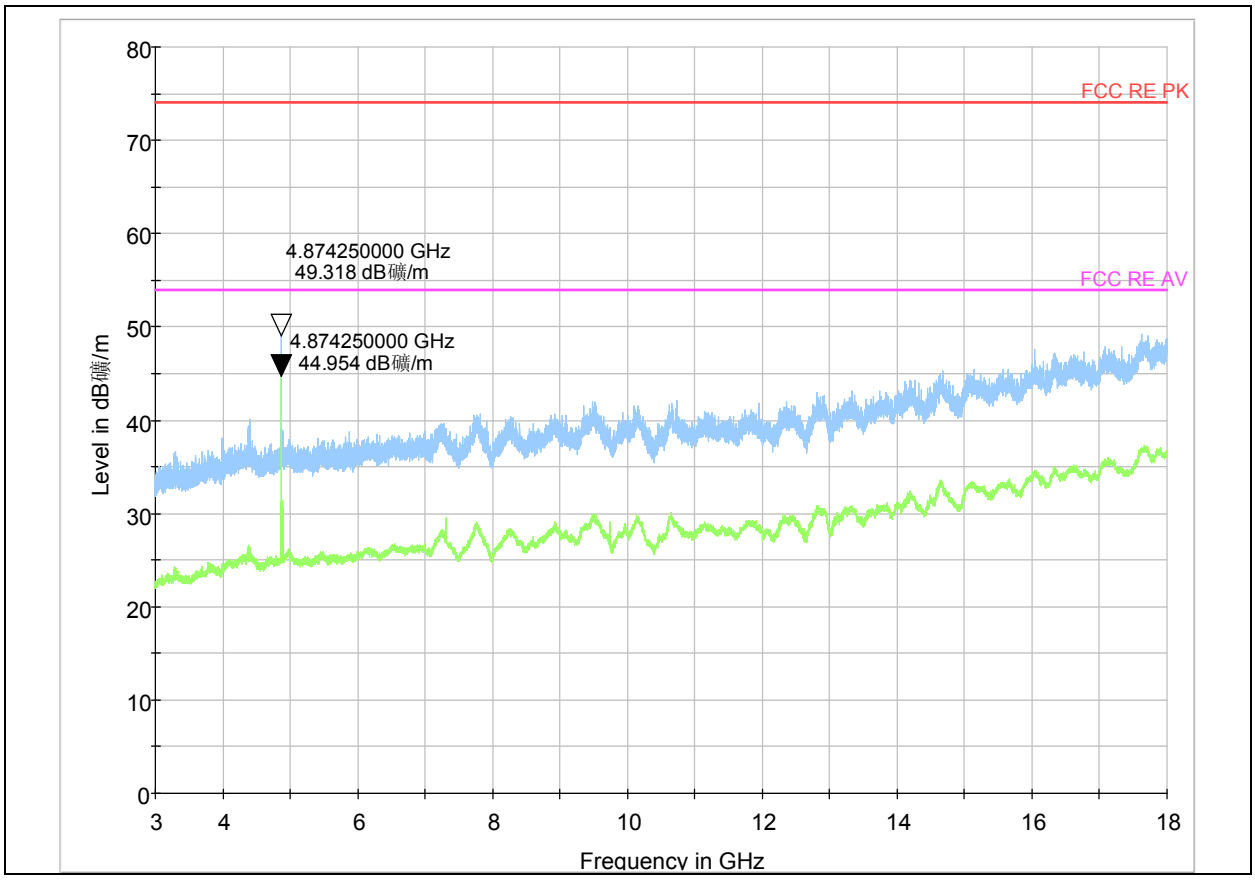
Radiates Emission from 30MHz to 1GHz

Frequency (MHz)	QuasiPeak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Margin (dB)	Limit (dBuV/m)
41.155000	33.9	100.0	Vertical	128.0	6.1	40.0
99.355000	9.5	100.0	Vertical	45.0	34.0	43.5
207.995000	30.3	100.0	Vertical	178.0	13.2	43.5
312.027500	24.9	100.0	Vertical	24.0	21.1	46.0
416.060000	17.1	123.0	Vertical	165.0	28.9	46.0
932.585000	17.8	100.0	Vertical	12.0	28.2	46.0

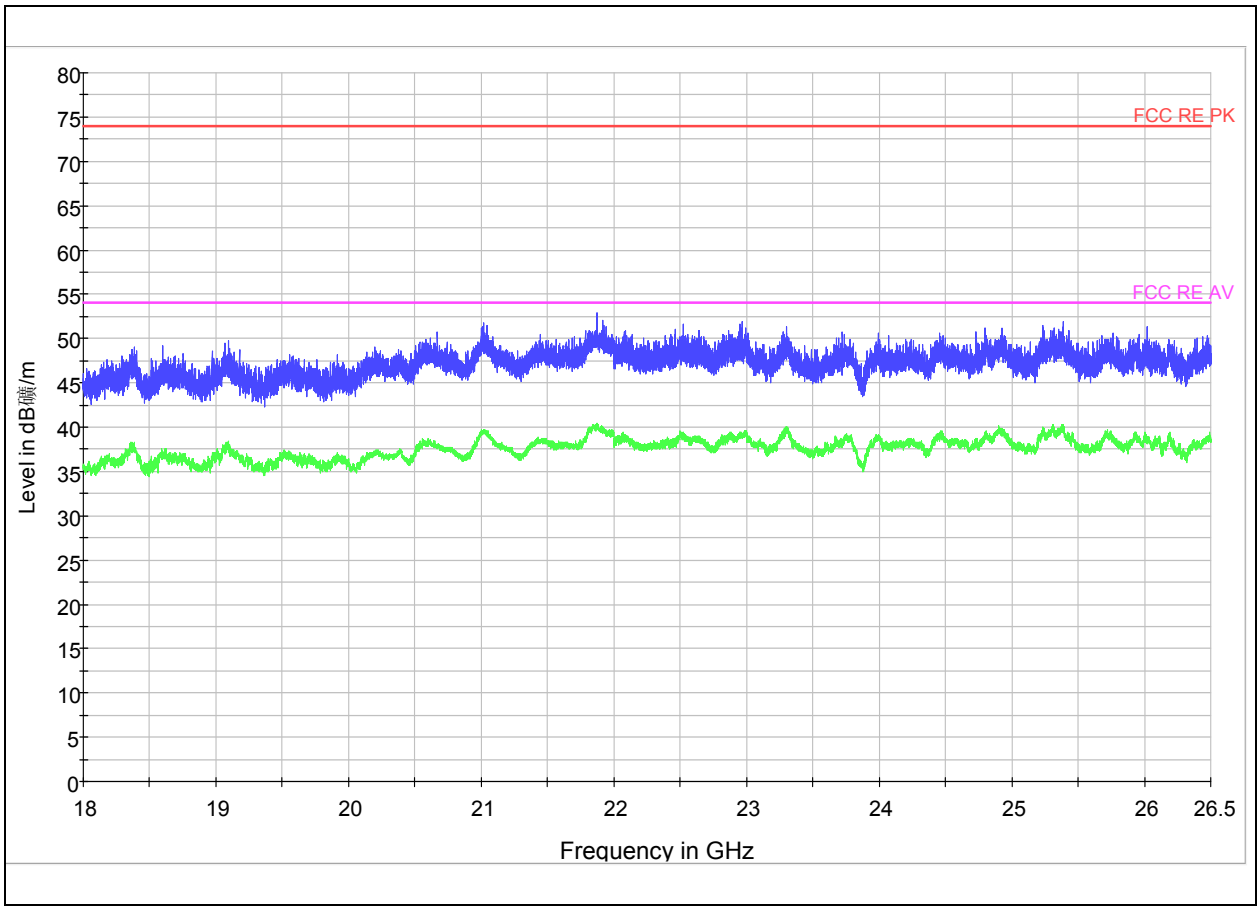


Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 3 GHz



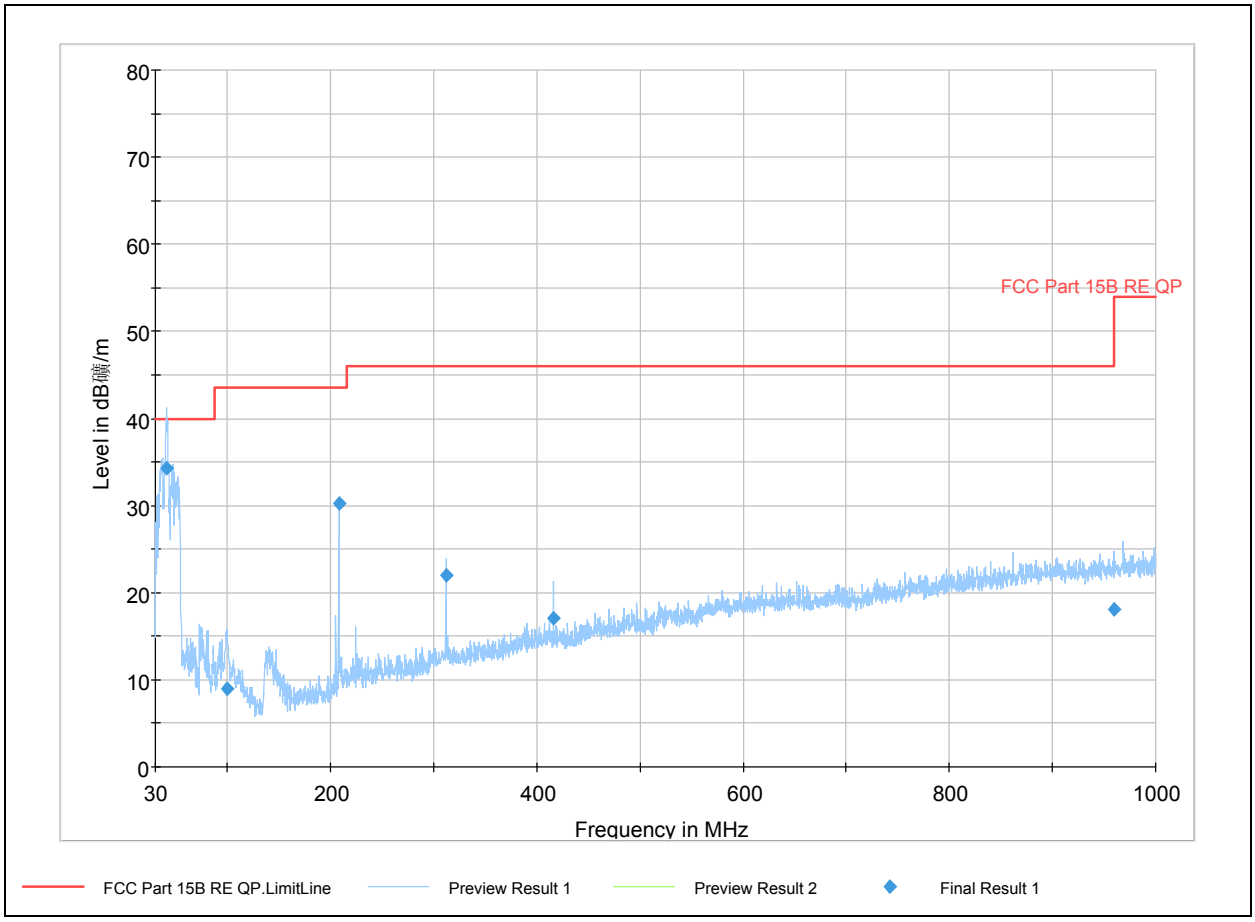
Radiates Emission from 3GHz to 18GHz



Radiates Emission from 18GHz to 26.5GHz

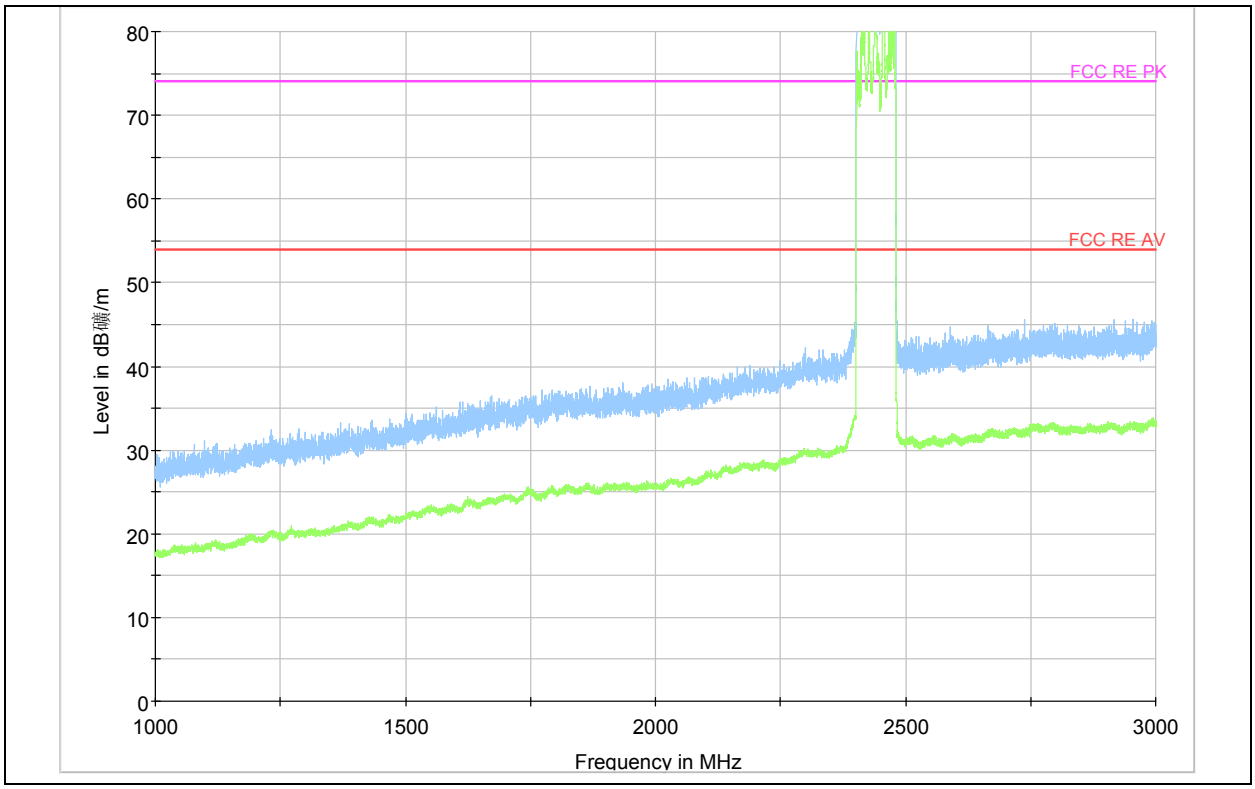
Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Turntable Azimuth(degree)	Polarization
4874.25	49.318	74	24.682	PK	135	Vertical
4874.25	44.954	54	9.046	AV	135	Vertical

802.11b CH11



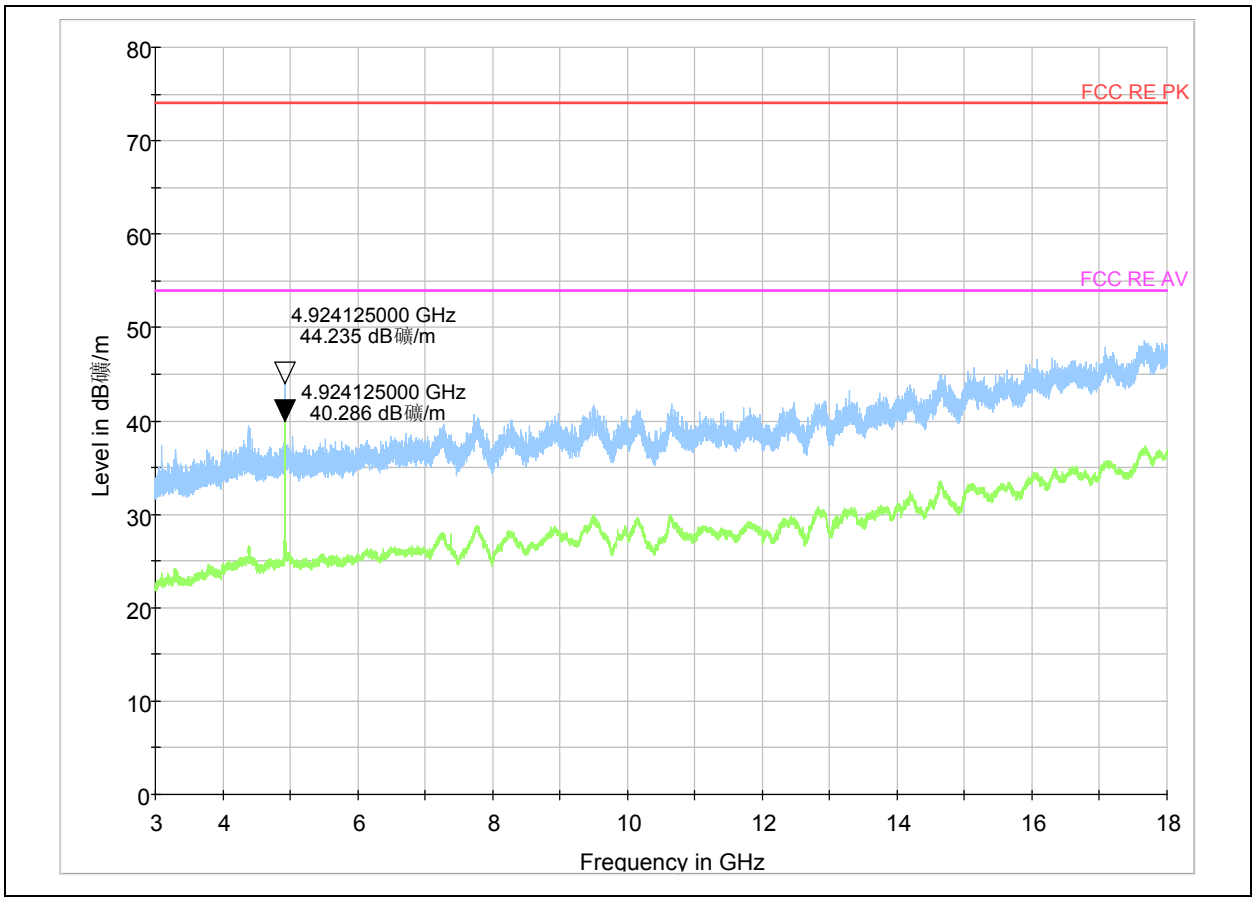
Radiates Emission from 30MHz to 1GHz

Frequency (MHz)	QuasiPeak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Margin (dB)	Limit (dBuV/m)
41.155000	34.3	100.0	Vertical	220.0	5.7	40.0
99.597500	9.0	100.0	Vertical	76.0	34.5	43.5
207.995000	30.2	100.0	Vertical	184.0	13.3	43.5
312.027500	22.0	100.0	Vertical	17.0	24.0	46.0
416.060000	17.0	123.0	Vertical	166.0	29.0	46.0
959.260000	18.1	100.0	Vertical	162.0	27.9	46.0

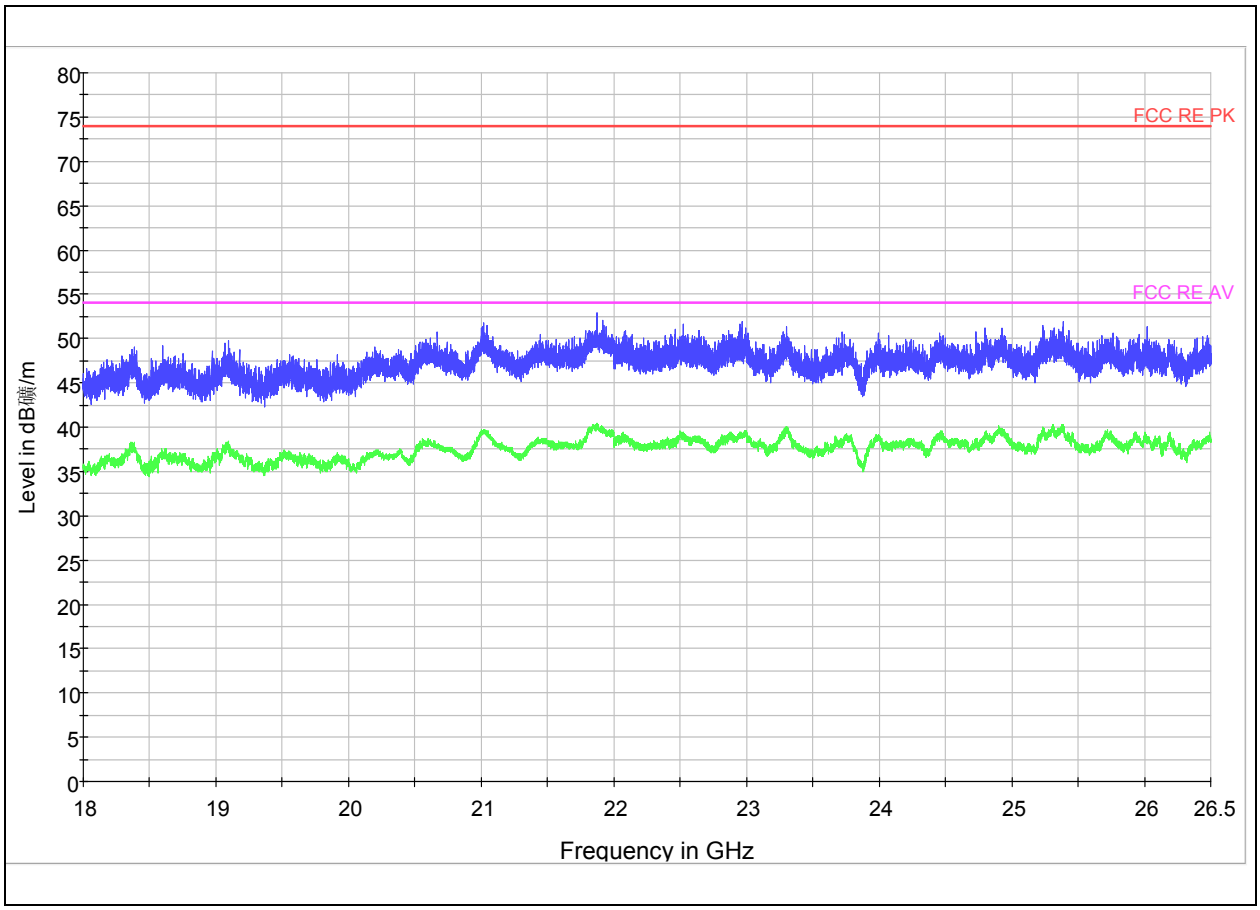


Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 3GHz



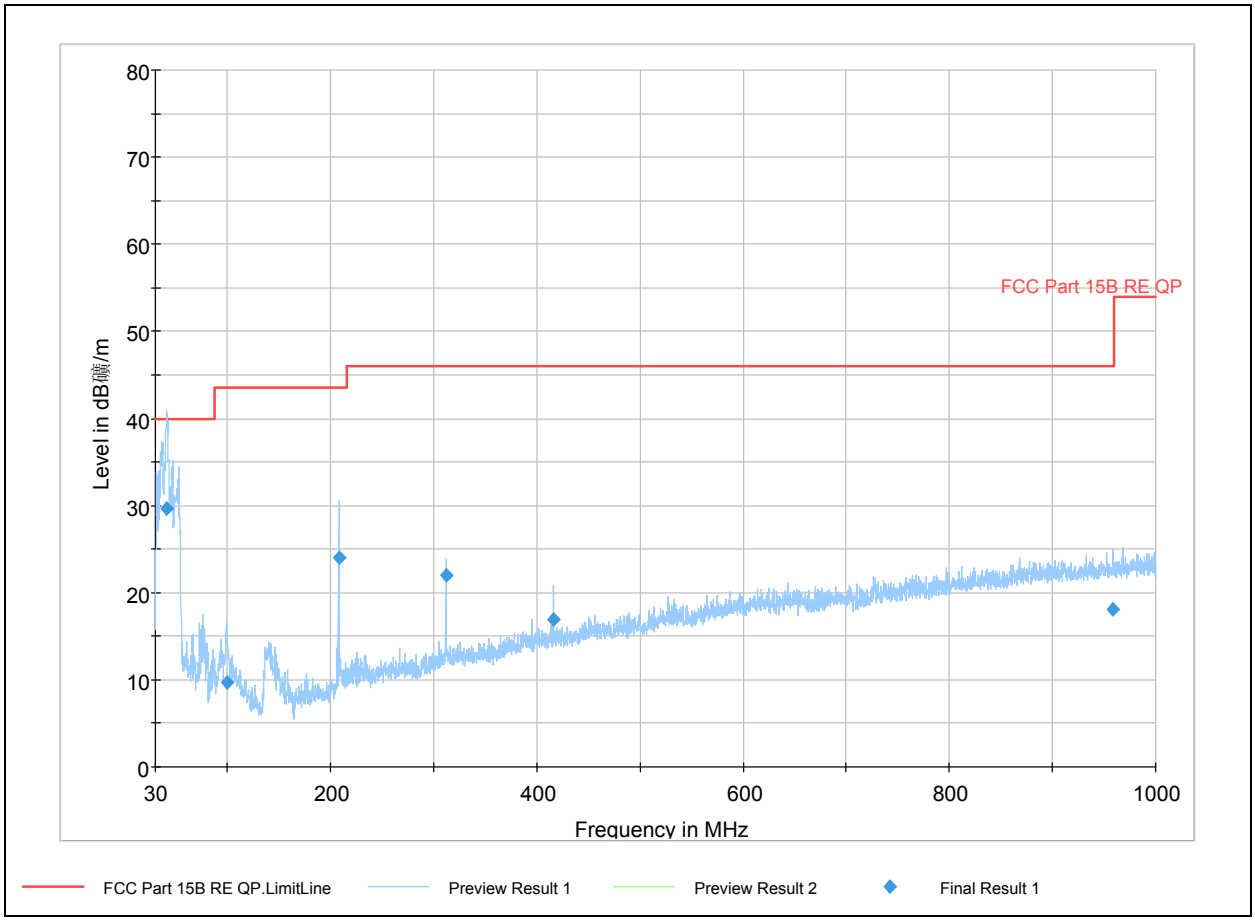
Radiates Emission from 3GHz to 18GHz



Radiates Emission from 18GHz to 26.5GHz

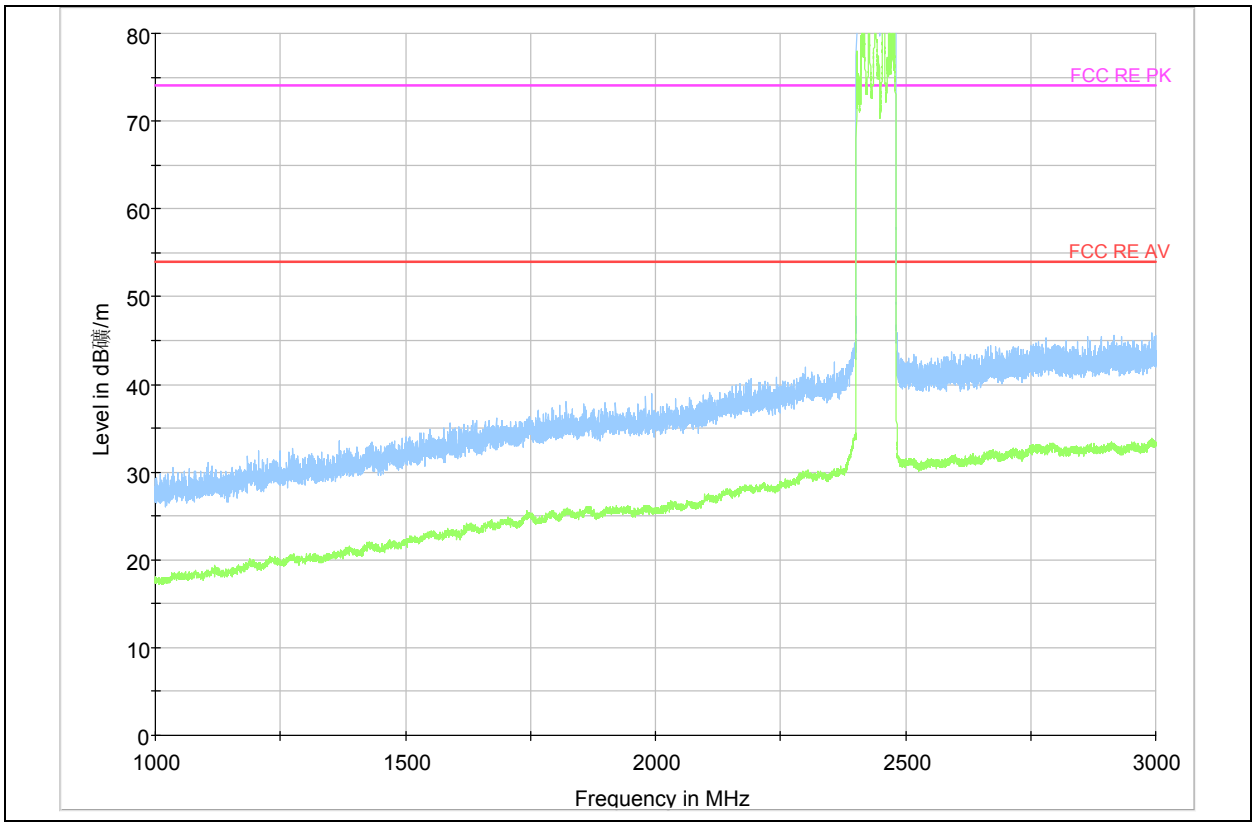
Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Turntable Azimuth(degree)	Polarization
4924.125	44.235	74	29.765	PK	0	Vertical
4924.125	40.286	54	13.714	AV	0	Vertical

802.11g CH1



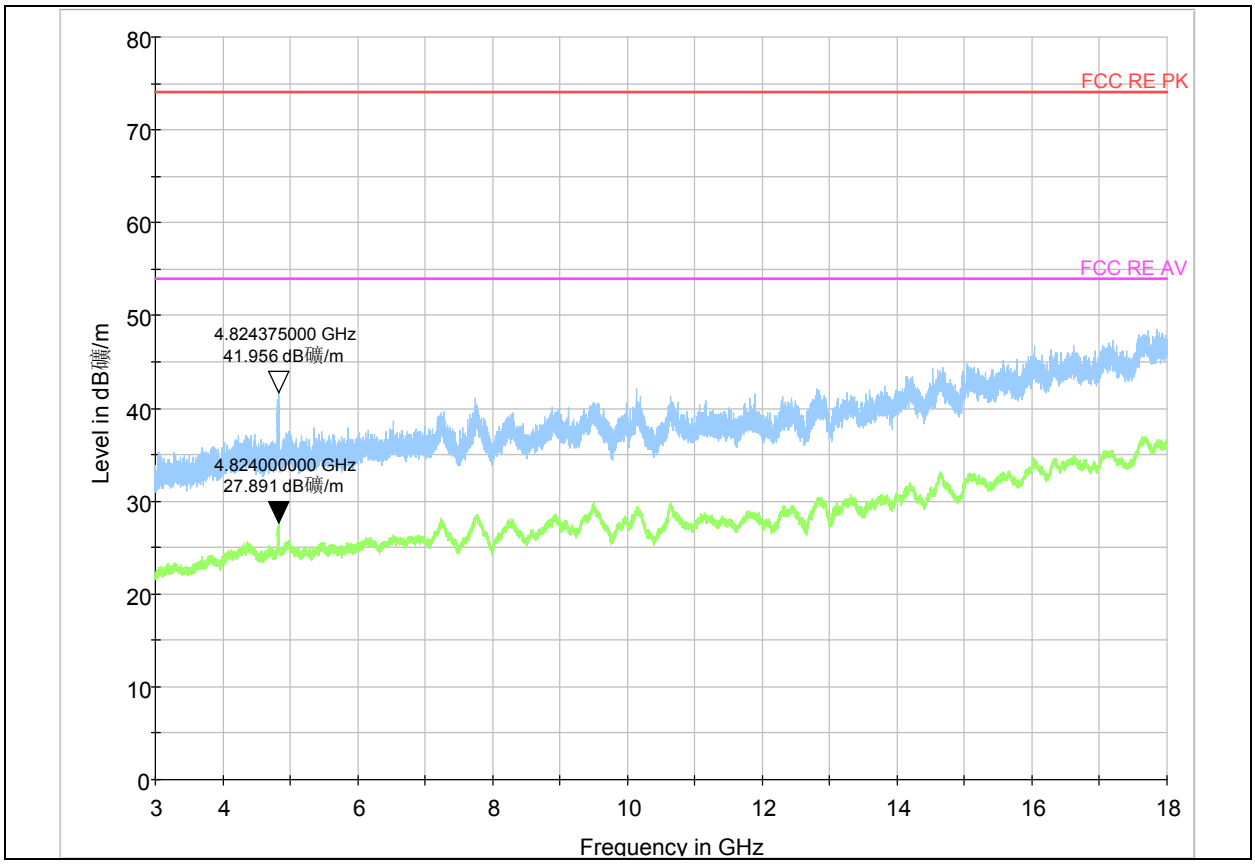
Radiates Emission from 30MHz to 1GHz

Frequency (MHz)	QuasiPeak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Margin (dB)	Limit (dBuV/m)
41.397500	29.6	100.0	Vertical	225.0	10.4	40.0
99.112500	9.7	100.0	Vertical	90.0	33.8	43.5
207.995000	24.0	100.0	Vertical	177.0	19.5	43.5
312.027500	22.0	100.0	Vertical	19.0	24.0	46.0
416.060000	16.9	123.0	Vertical	165.0	29.1	46.0
959.017500	18.1	125.0	Vertical	45.0	27.9	46.0

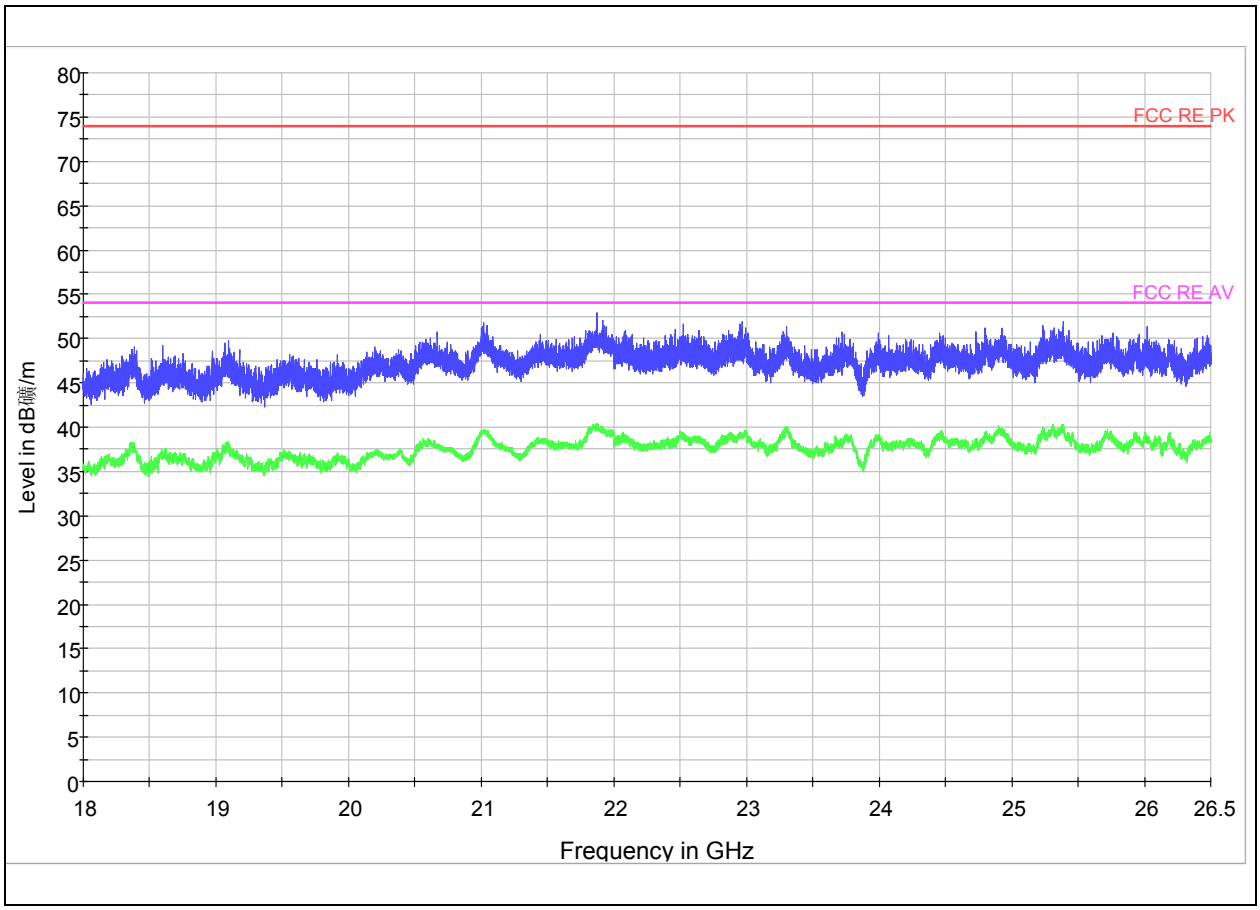


Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 3GHz



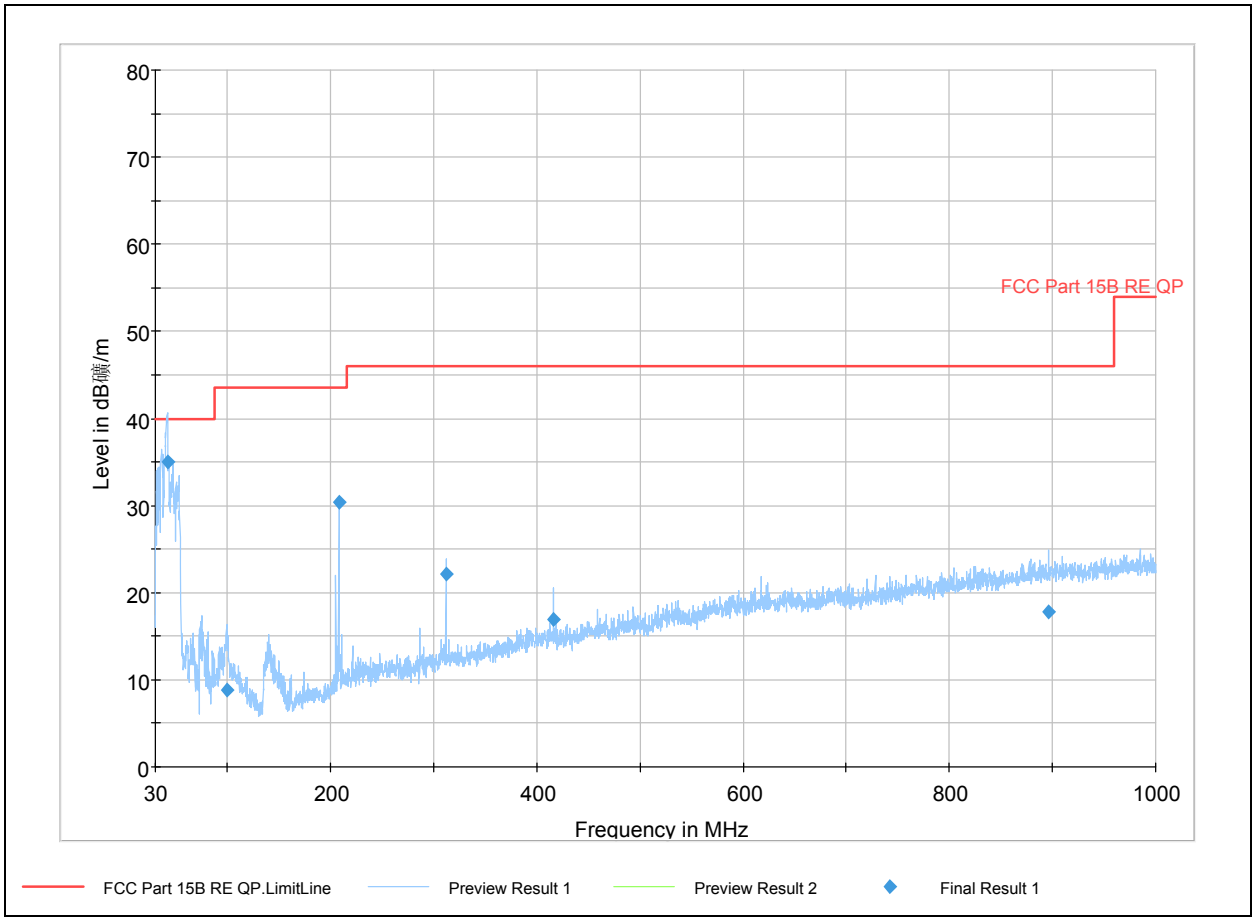
Radiates Emission from 3GHz to 18GHz



Radiates Emission from 18GHz to 26.5GHz

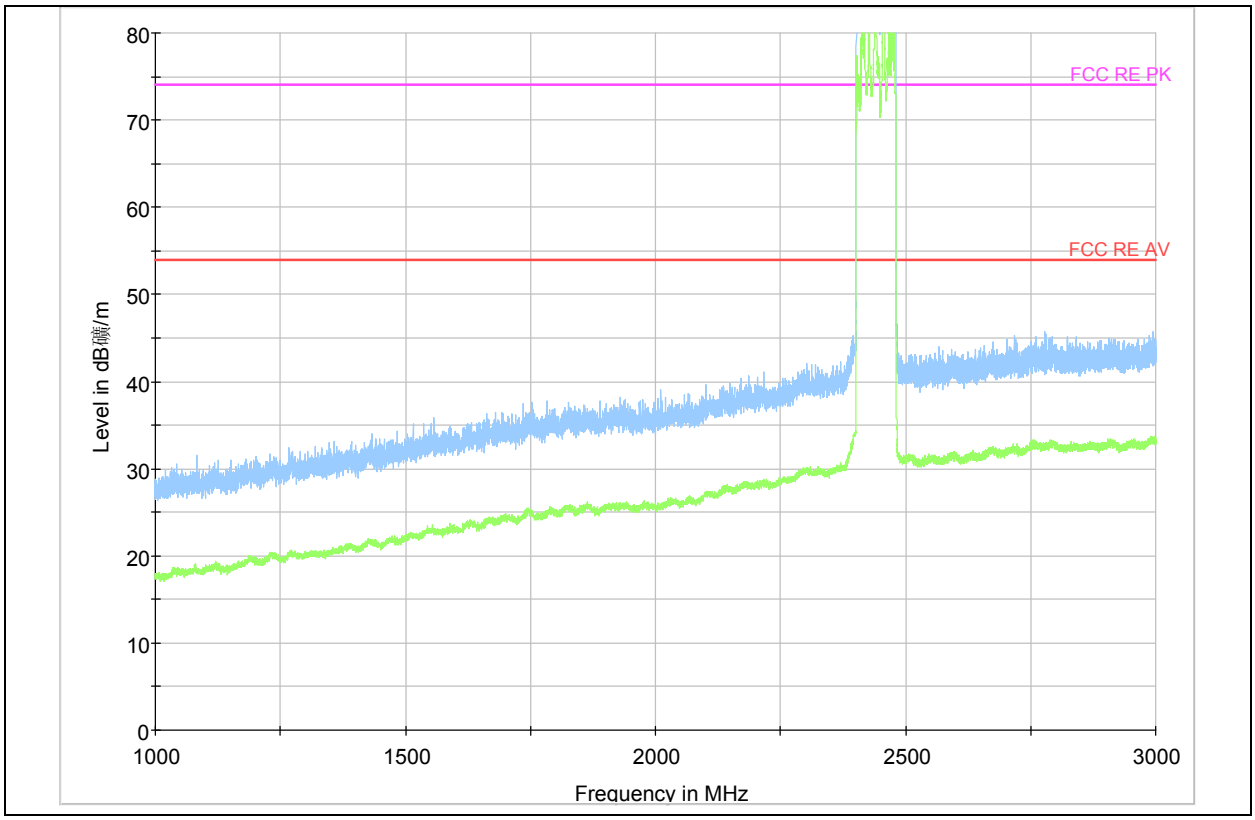
Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Turntable Azimuth(degree)	Polarization
4824.375	41.956	74	32.044	PK	135	Vertical
4824.000	27.891	54	26.109	AV	135	Vertical

802.11g CH6



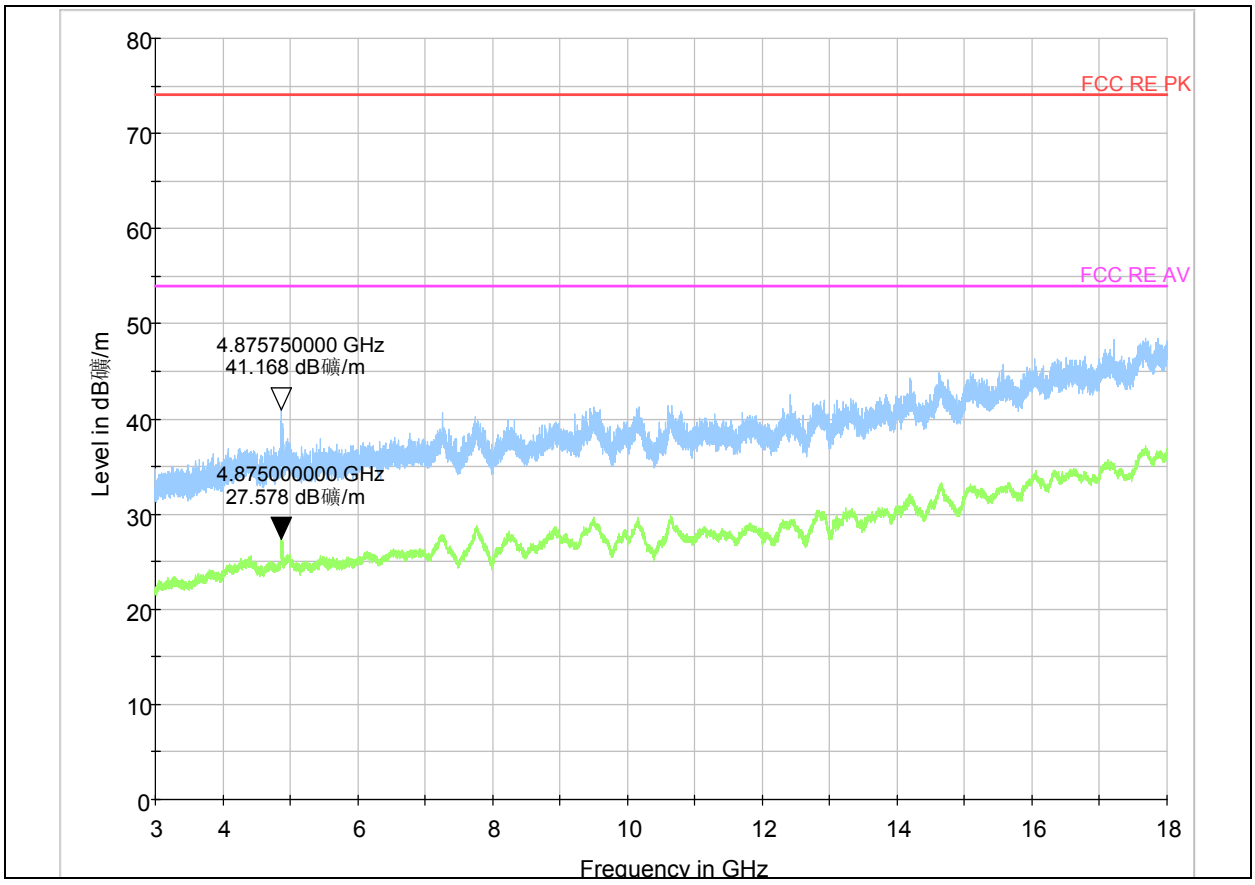
Radiates Emission from 30MHz to 1GHz

Frequency (MHz)	QuasiPeak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Margin (dB)	Limit (dBuV/m)
41.640000	35.0	100.0	Vertical	204.0	5.0	40.0
99.112500	8.8	100.0	Vertical	45.0	34.7	43.5
207.995000	30.4	100.0	Vertical	174.0	13.1	43.5
312.027500	22.1	100.0	Vertical	17.0	23.9	46.0
416.060000	17.0	123.0	Vertical	161.0	29.0	46.0
895.967500	17.8	125.0	Vertical	141.0	28.2	46.0

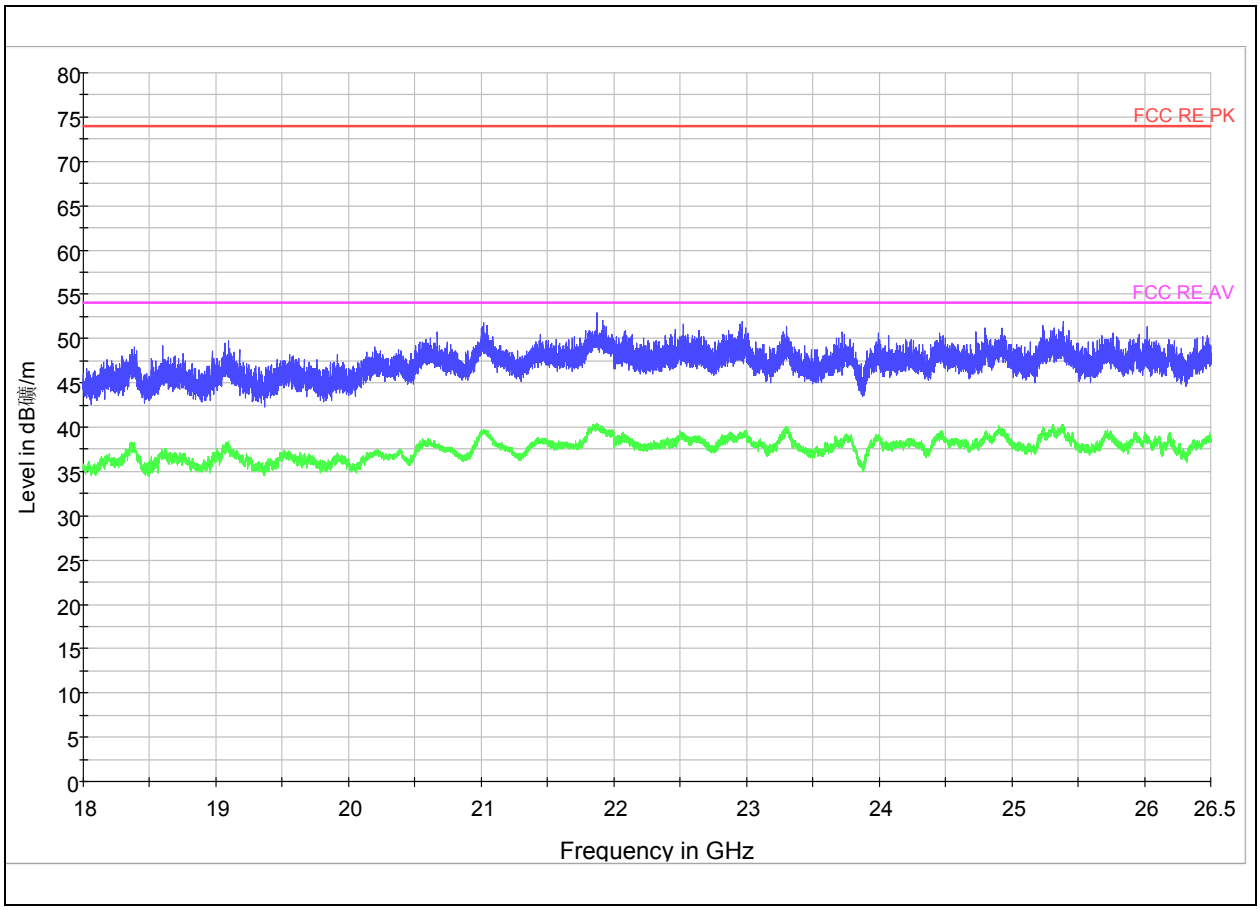


Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 3GHz



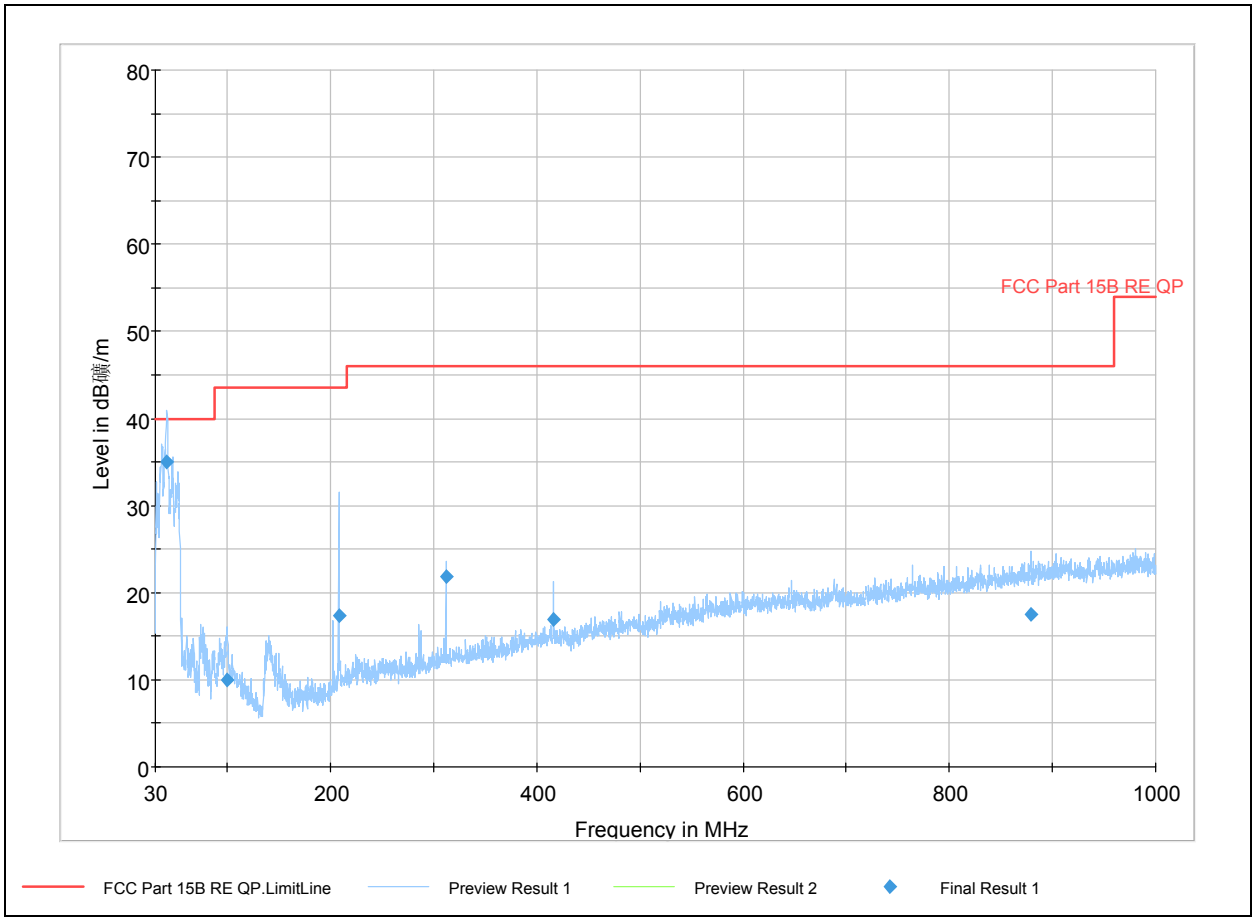
Radiates Emission from 3GHz to 18GHz



Radiates Emission from 18GHz to 26.5GHz

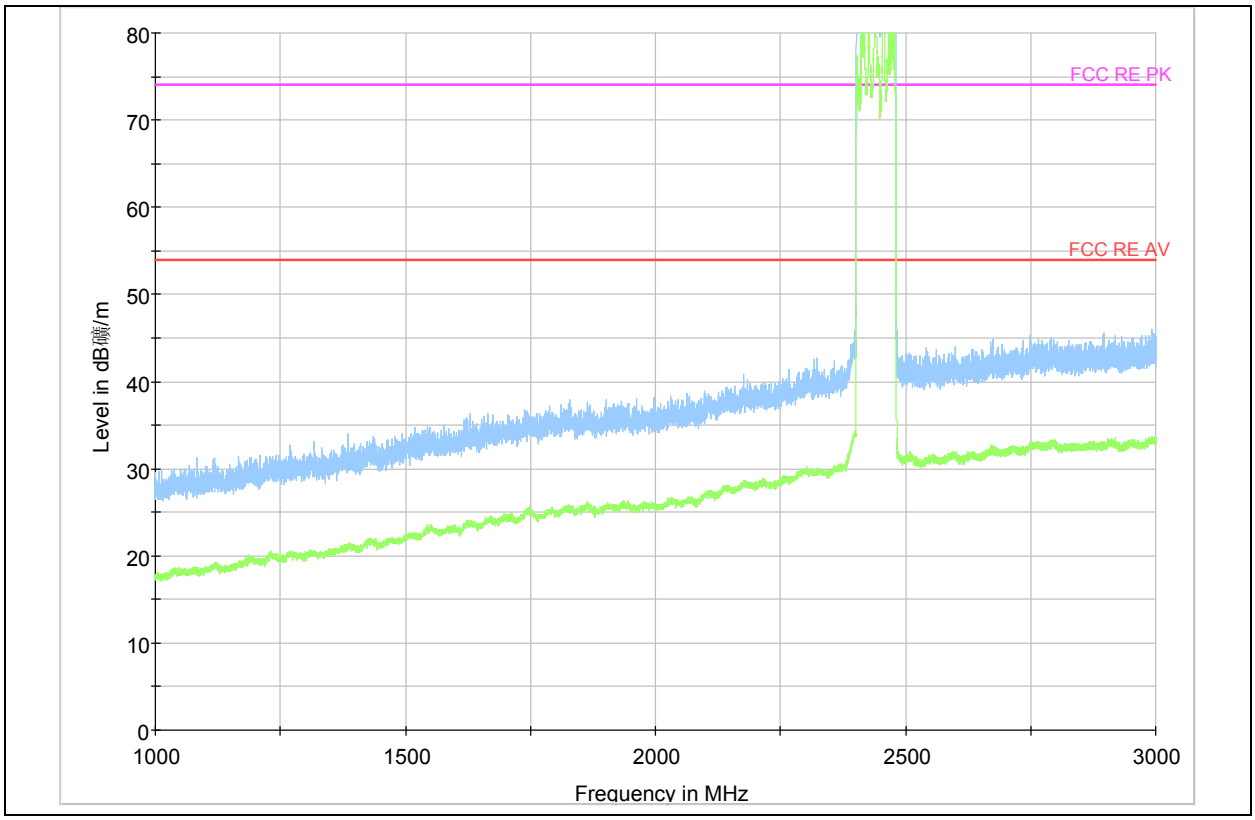
Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Turntable Azimuth(degree)	Polarization
4875.75	41.168	74	32.832	PK	45	Vertical
4875.00	27.578	54	26.422	AV	45	Vertical

802.11g CH11



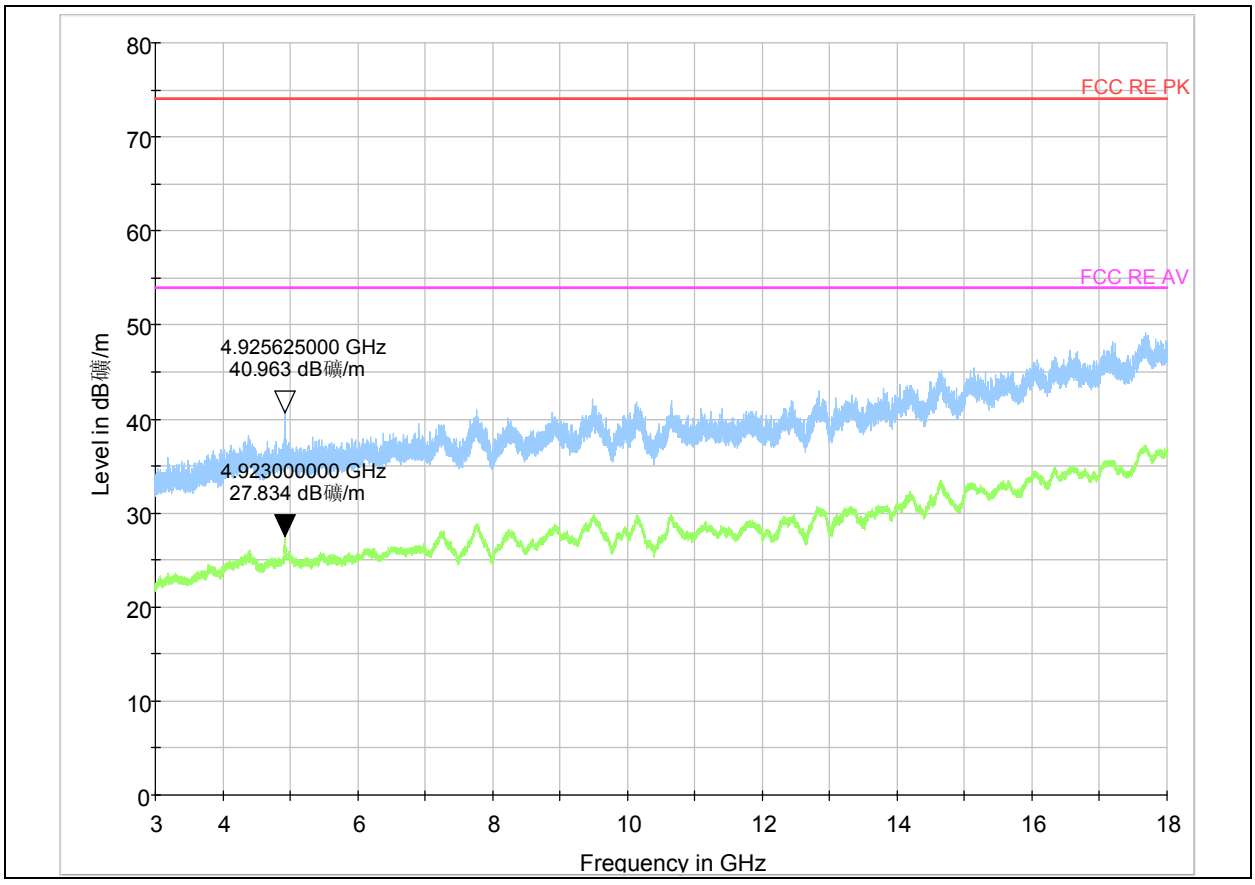
Radiates Emission from 30MHz to 1GHz

Frequency (MHz)	QuasiPeak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Margin (dB)	Limit (dBuV/m)
41.397500	35.0	125.0	Vertical	135.0	5.0	40.0
99.597500	9.9	100.0	Vertical	69.0	33.6	43.5
207.752500	17.4	100.0	Vertical	189.0	26.1	43.5
312.027500	21.9	100.0	Vertical	25.0	24.2	46.0
416.060000	16.9	124.0	Vertical	166.0	29.1	46.0
878.750000	17.5	100.0	Vertical	135.0	28.5	46.0

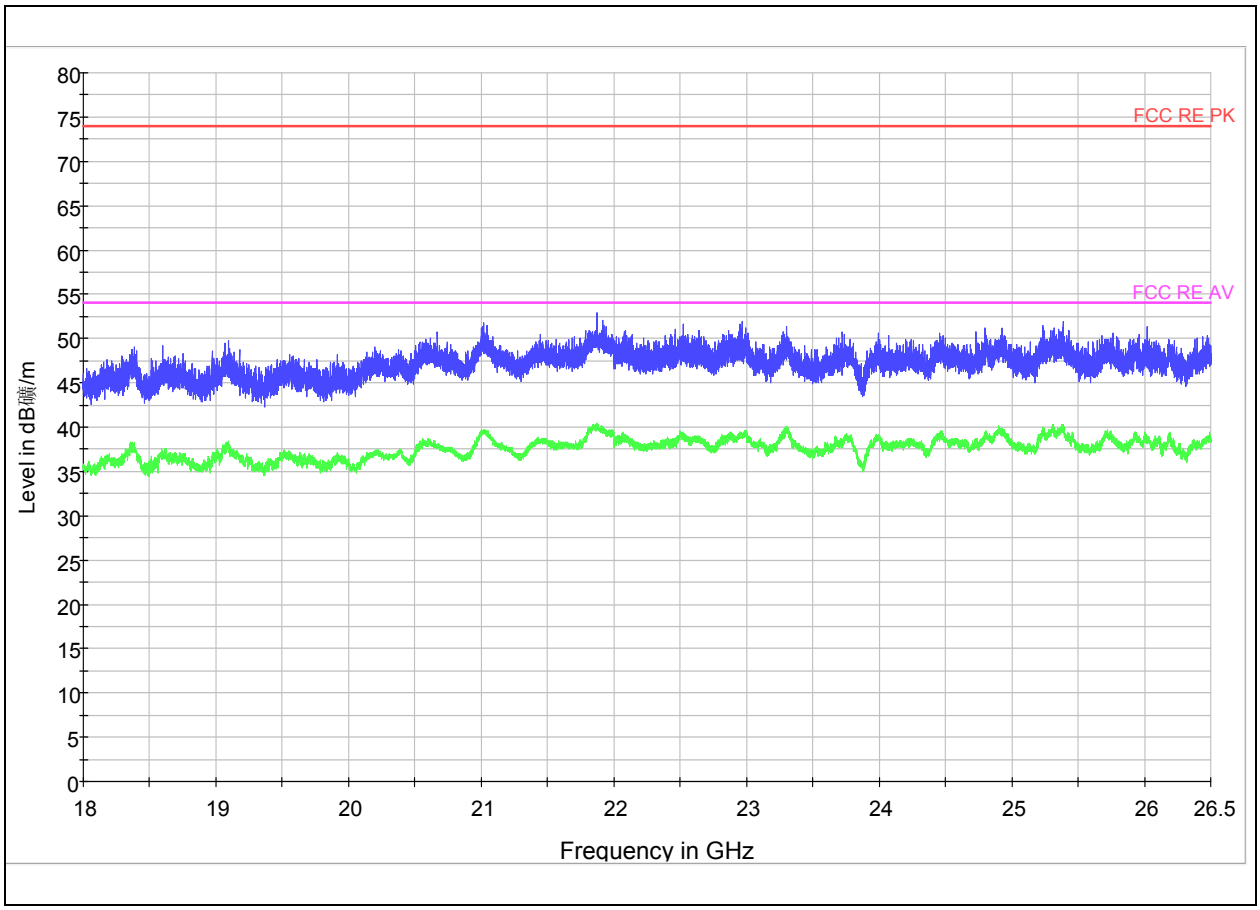


Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 3GHz



Radiates Emission from 3GHz to 18GHz



Radiates Emission from 18GHz to 26.5GHz

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Turntable Azimuth(degree)	Polarization
4925.625	40.963	74	33.037	PK	45	Vertical
4923.000	27.834	54	26.166	AV	45	Vertical

2.9. Conducted Emissions

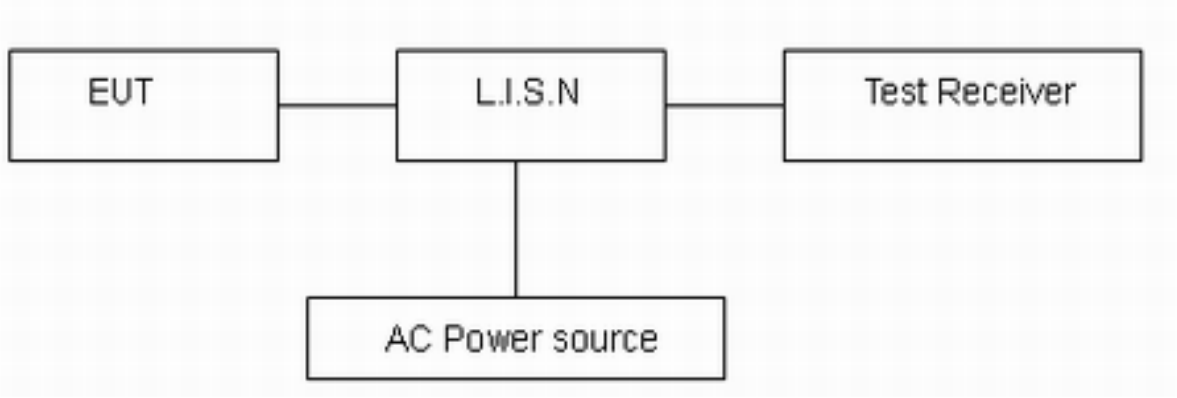
Ambient condition

Temperature	Relative humidity	Pressure
25°C	58%	101.5kPa

Method of Measurement

The EUT IS placed on a non-metallic table of 80cm height above the horizontal metal reference ground plane. During the test, the EUT was operating in its typical mode. The test method is according to ANSIC63.4-2003.Connect the AC power line of the EUT to the LISN Use EMI receiver to detect the average and Quasi-peak value. The measurement result should include both L line and N line.

Test setup



Note: AC Power source is used to change the voltage from 220V/50Hz to 110V/60Hz.

Limits

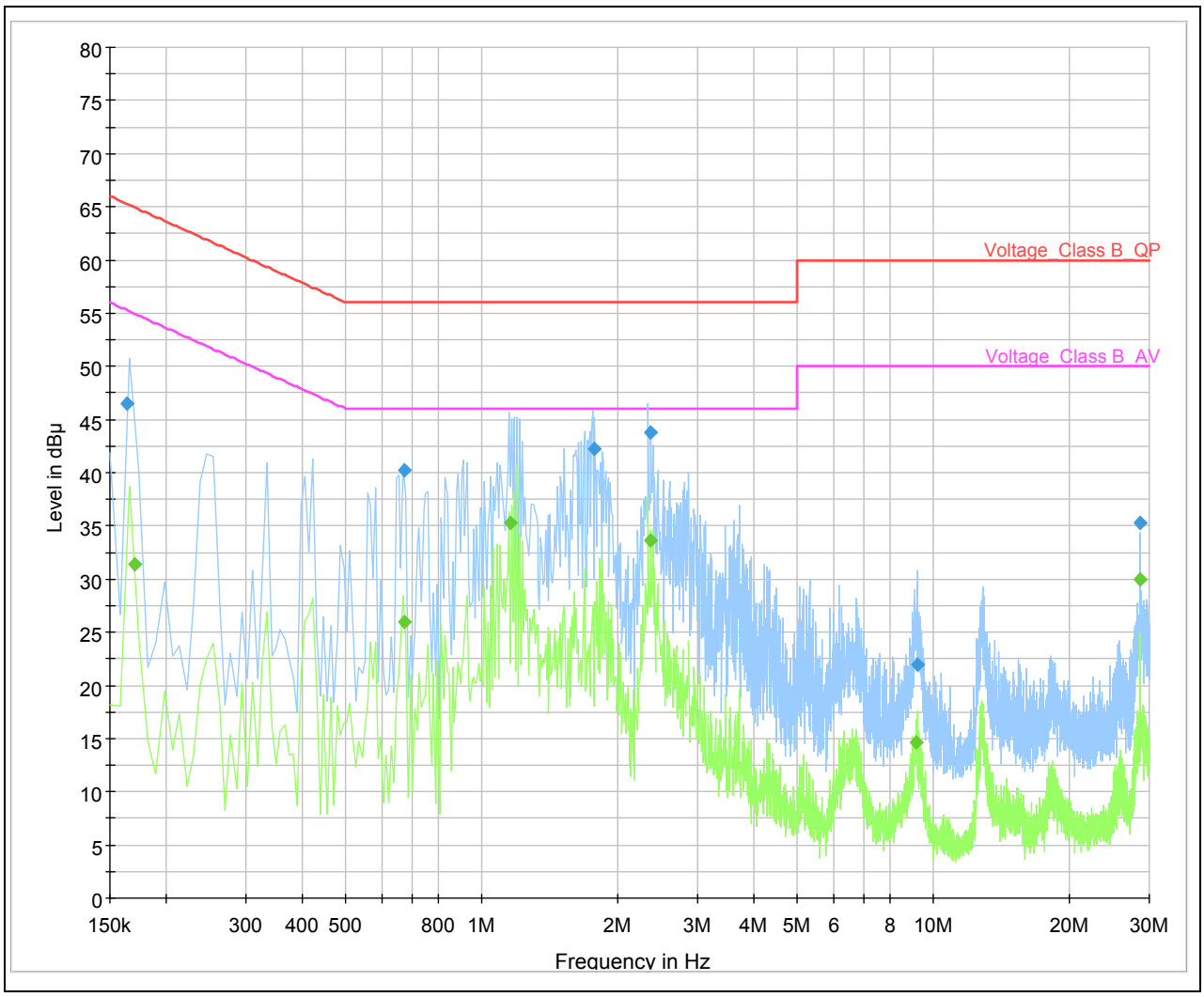
Frequency (MHz)	Conducted Limits(dBμV)	
	Quasi-peak	Average
0.15 - 0.5	66 to 56 *	56 to 46*
0.5 - 5	56	46
5 - 30	60	50
*: Decreases with the logarithm of the frequency.		

Measurement Uncertainty

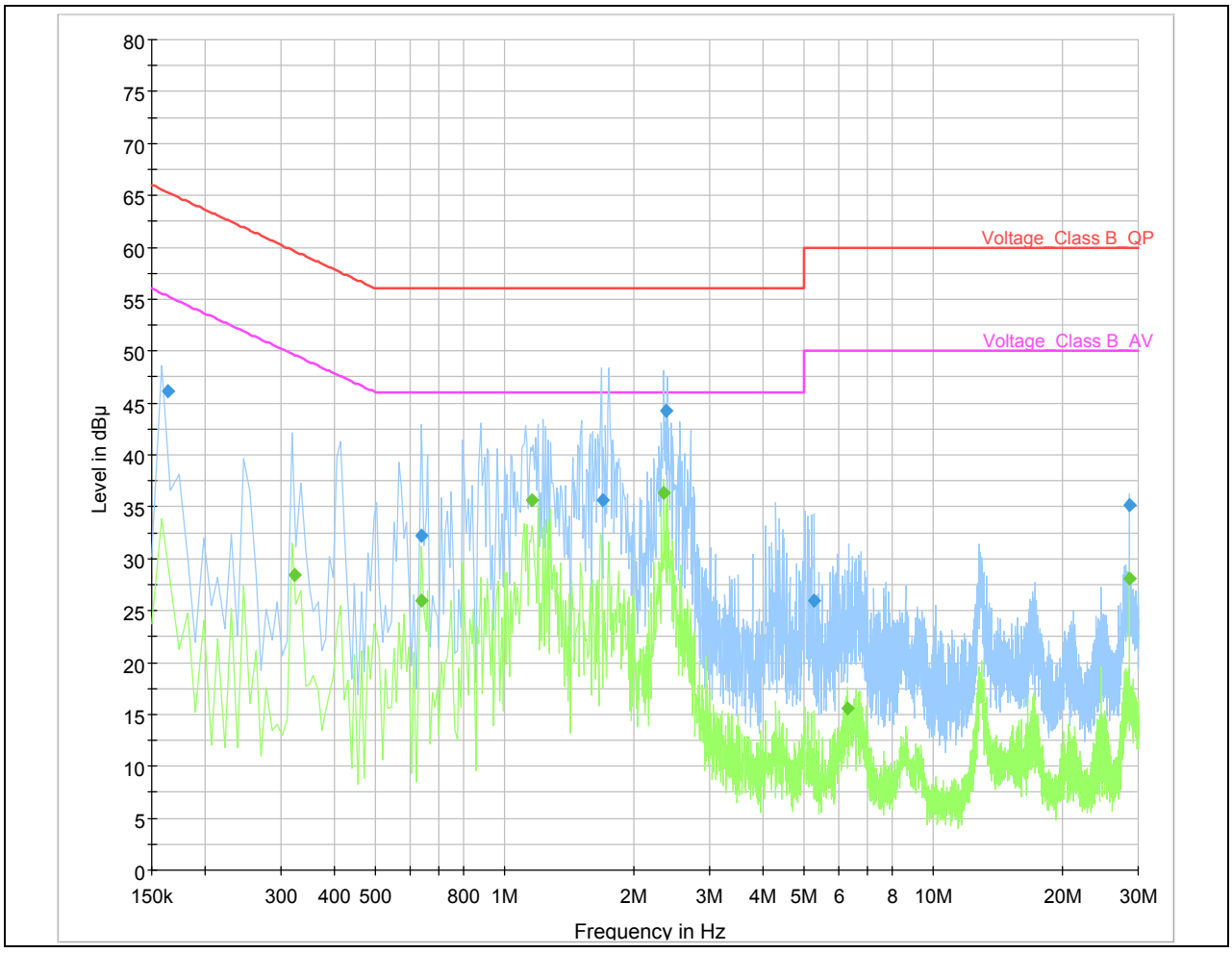
The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor *k* = 1.96. U= 2.69 dB.

Test Results:

802.11b CH1



L Line

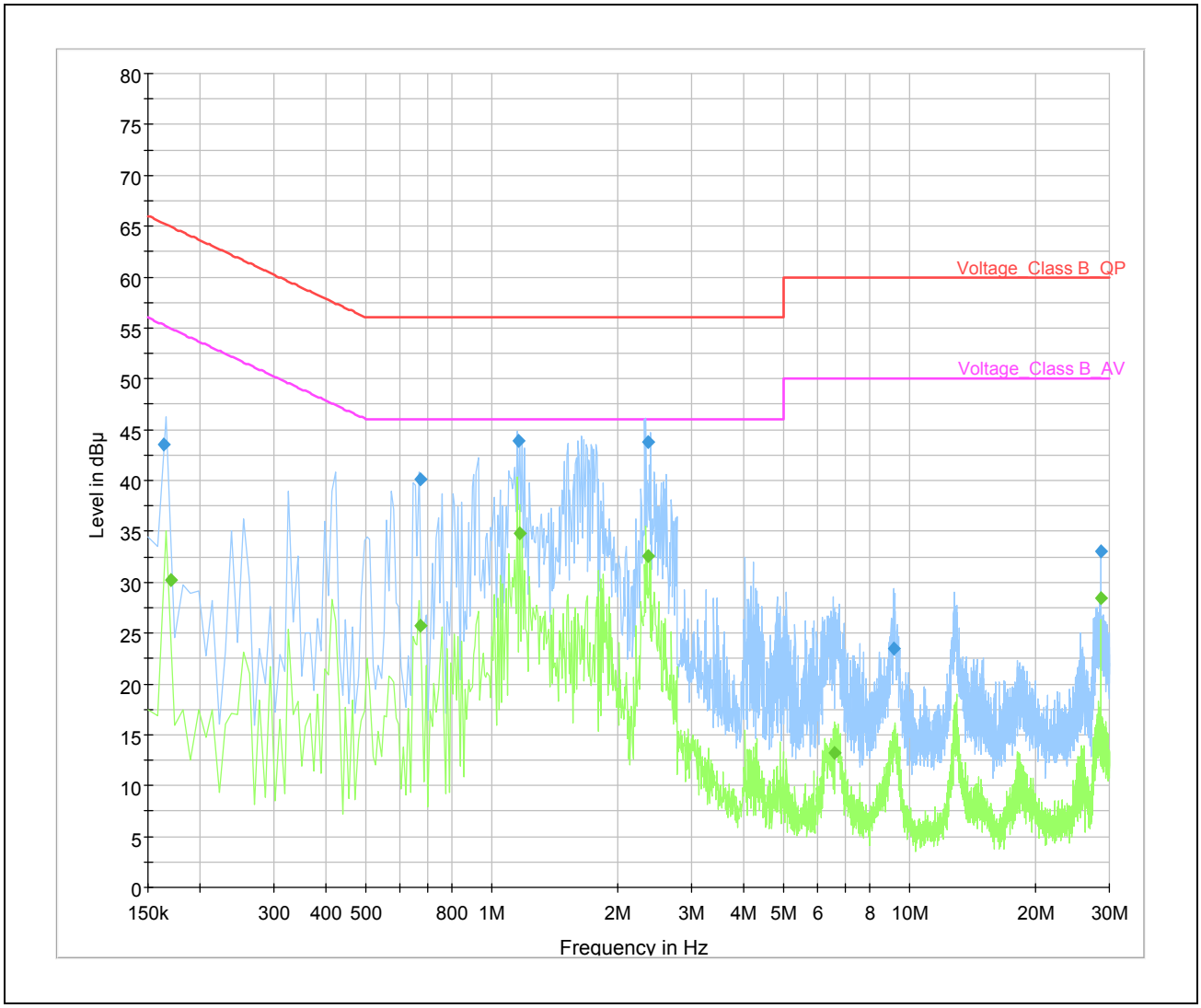


N Line

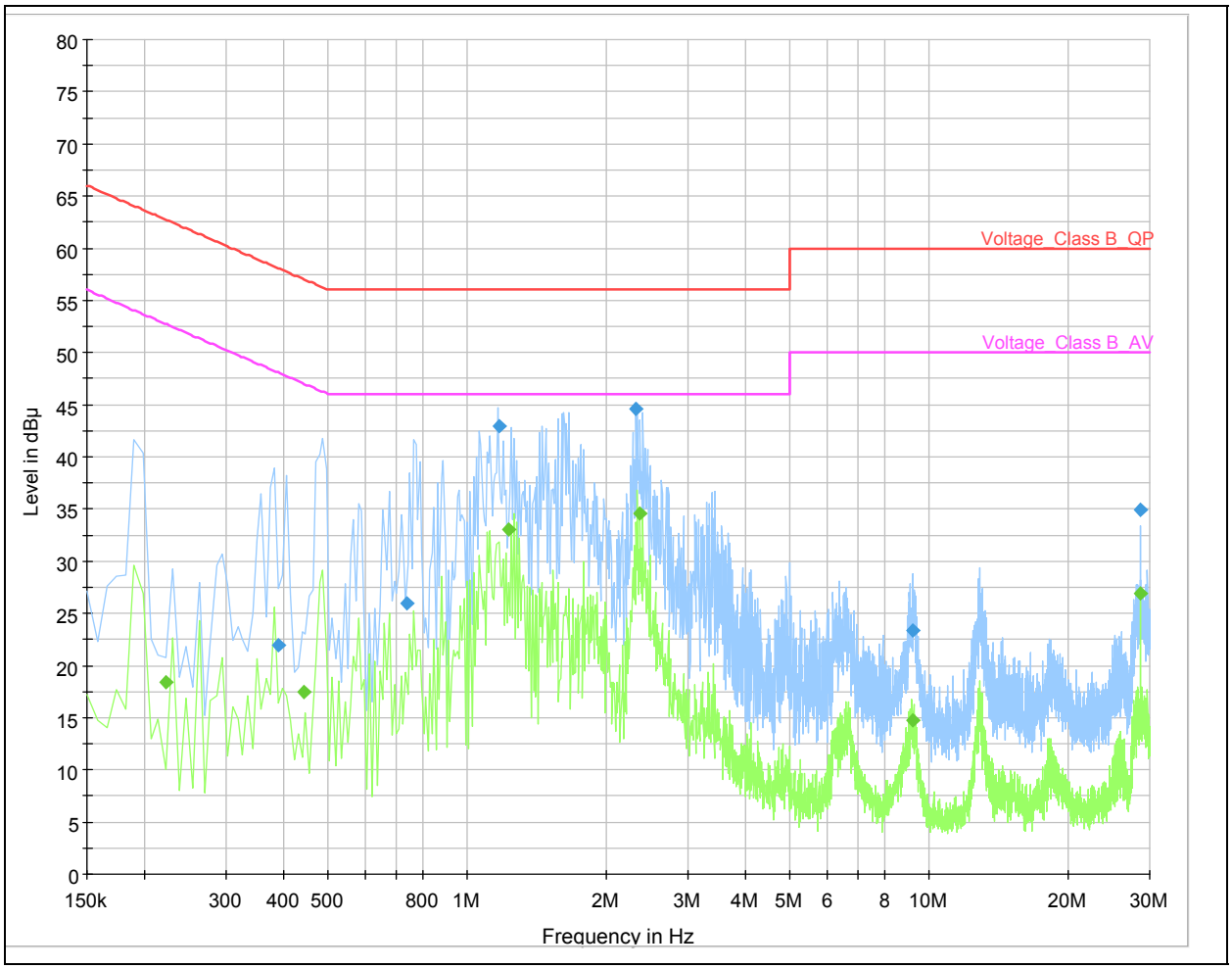
Conducted Emission from 150 KHz to 30 MHz

Frequency (MHz)	Detector	Line	Level (dBµV)	Limit (dBµV)	Margin (dB)
0.637000	Average	N	26.0	46.0	20.0
1.153000	Average	N	35.6	46.0	10.4
1.153000	Average	L	35.3	46.0	10.7
2.351000	Average	N	36.3	46.0	9.7
2.367000	Average	L	33.6	46.0	12.4
28.673000	Average	L	30.0	50.0	20.0
0.164000	Quasi-peak	L	46.5	65.3	18.8
0.164000	Quasi-peak	N	46.1	65.3	19.2
0.675000	Quasi-peak	L	40.3	56.0	15.7
1.767000	Quasi-peak	L	42.2	56.0	13.8
2.367000	Quasi-peak	L	43.8	56.0	12.2
2.381000	Quasi-peak	N	44.3	56.0	11.7

802.11b CH6



L Line

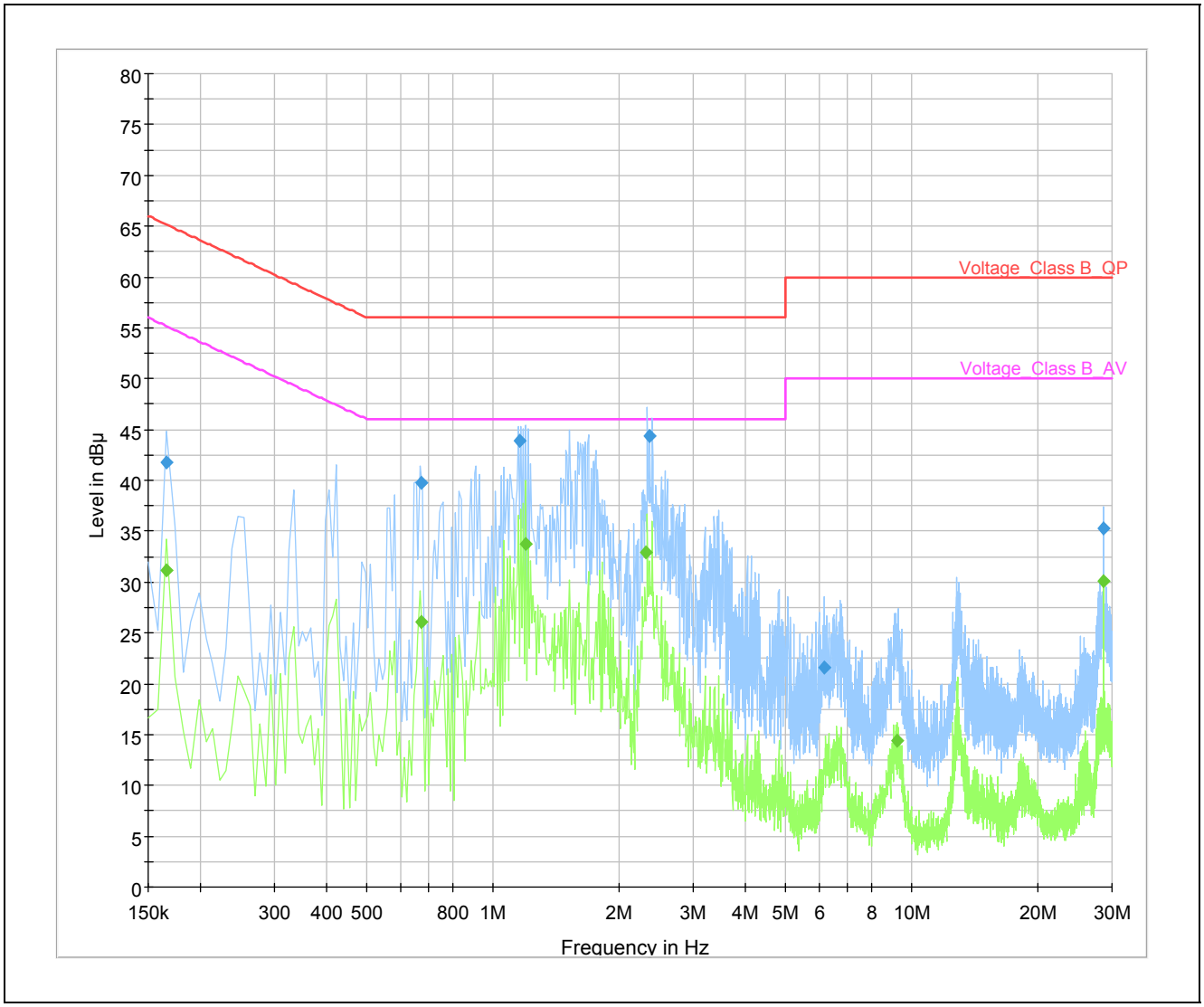


N Line

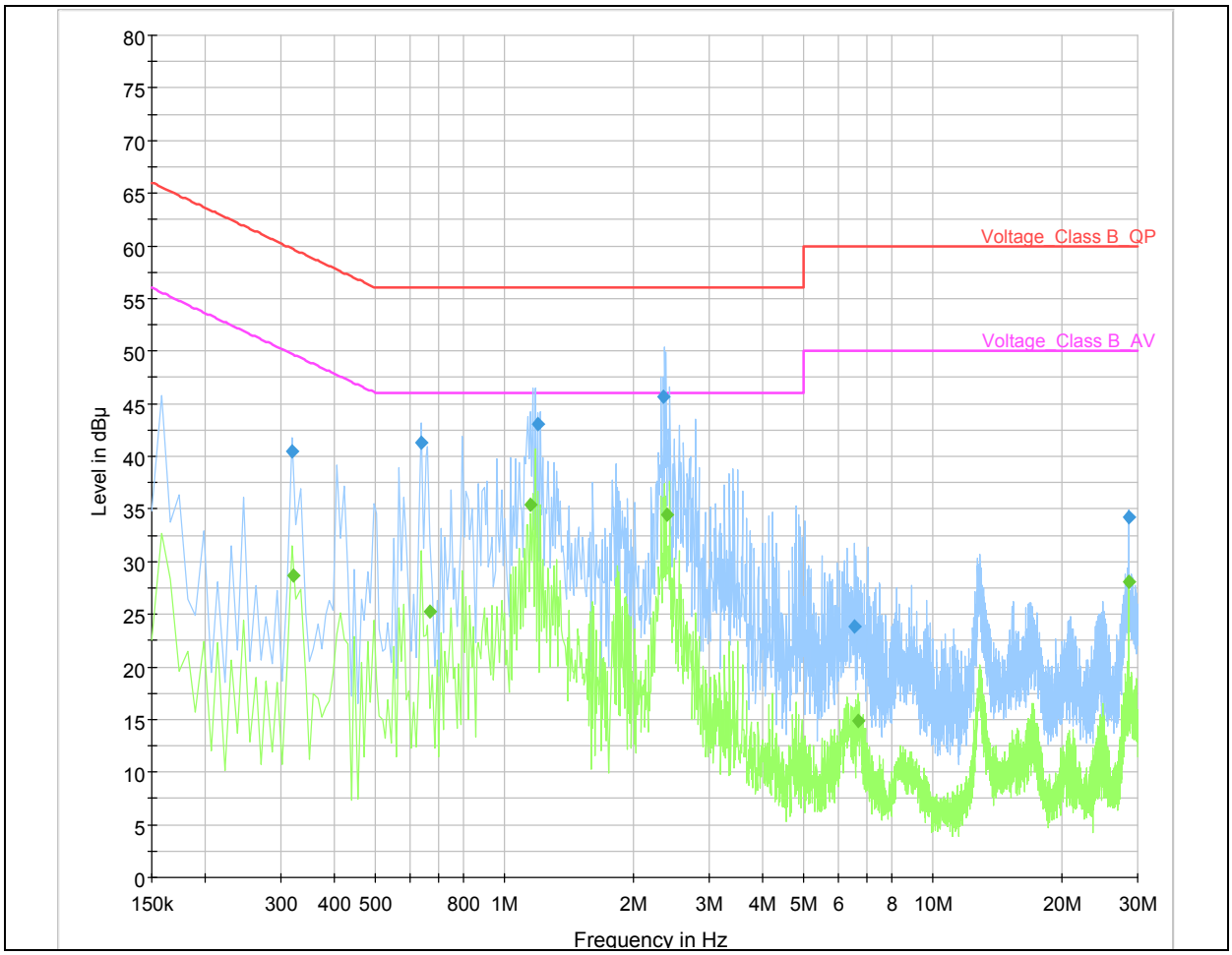
Conducted Emission from 150 KHz to 30 MHz

Frequency (MHz)	Detector	Line	Level (dBµV)	Limit (dBµV)	Margin (dB)
0.673000	Average	L	25.7	46.0	20.3
1.167000	Average	L	34.8	46.0	11.2
1.229000	Average	N	33.1	46.0	12.9
2.363000	Average	L	32.6	46.0	13.4
2.367000	Average	N	34.5	46.0	11.5
28.671000	Average	L	28.4	50.0	21.6
0.164000	Quasi-peak	L	43.6	65.3	21.7
0.675000	Quasi-peak	L	40.2	56.0	15.8
1.153000	Quasi-peak	L	43.9	56.0	12.1
1.169000	Quasi-peak	N	42.9	56.0	13.1
2.319000	Quasi-peak	N	44.6	56.0	11.4
2.367000	Quasi-peak	L	43.8	56.0	12.2

802.11b CH11



L Line

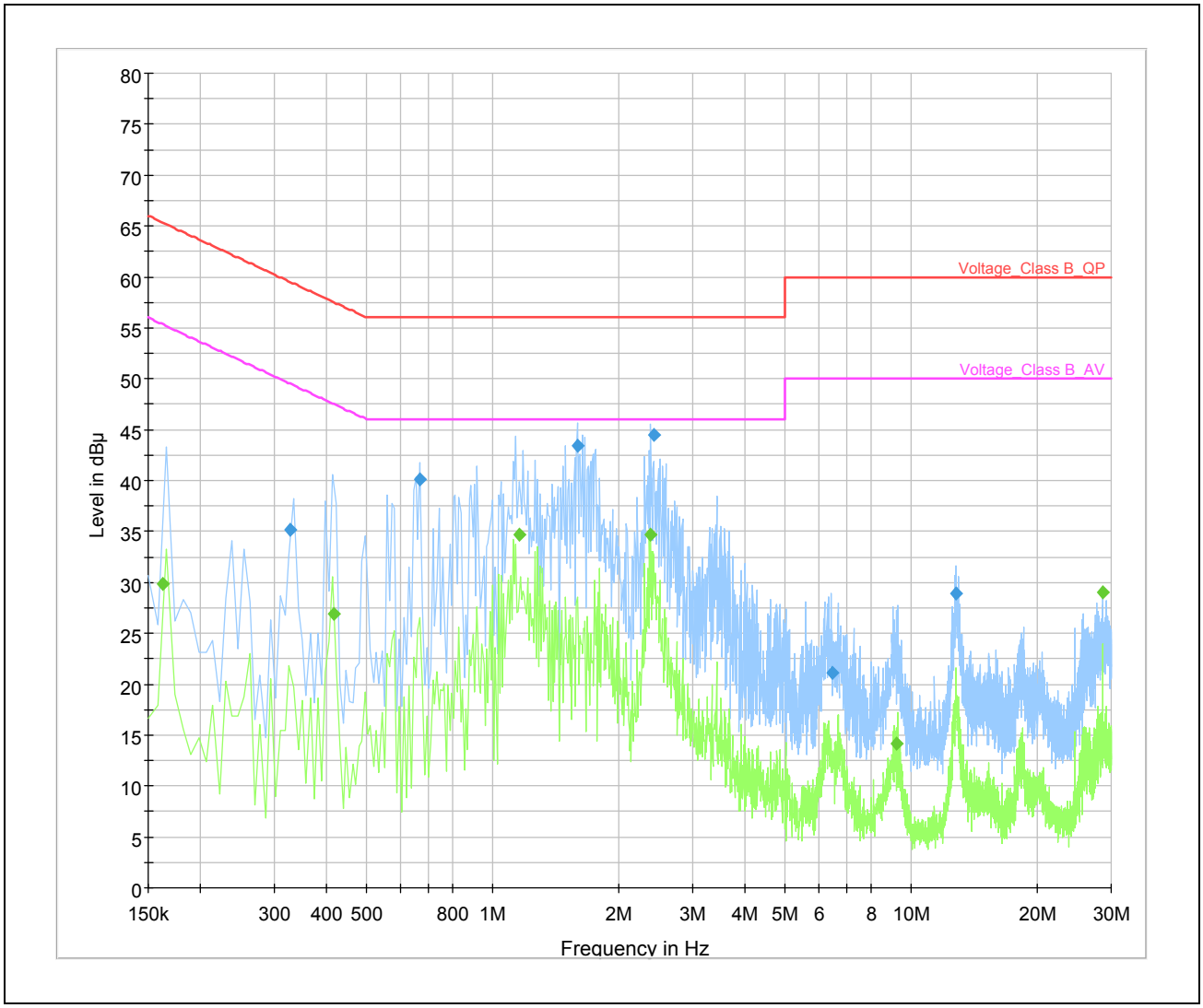


N Line

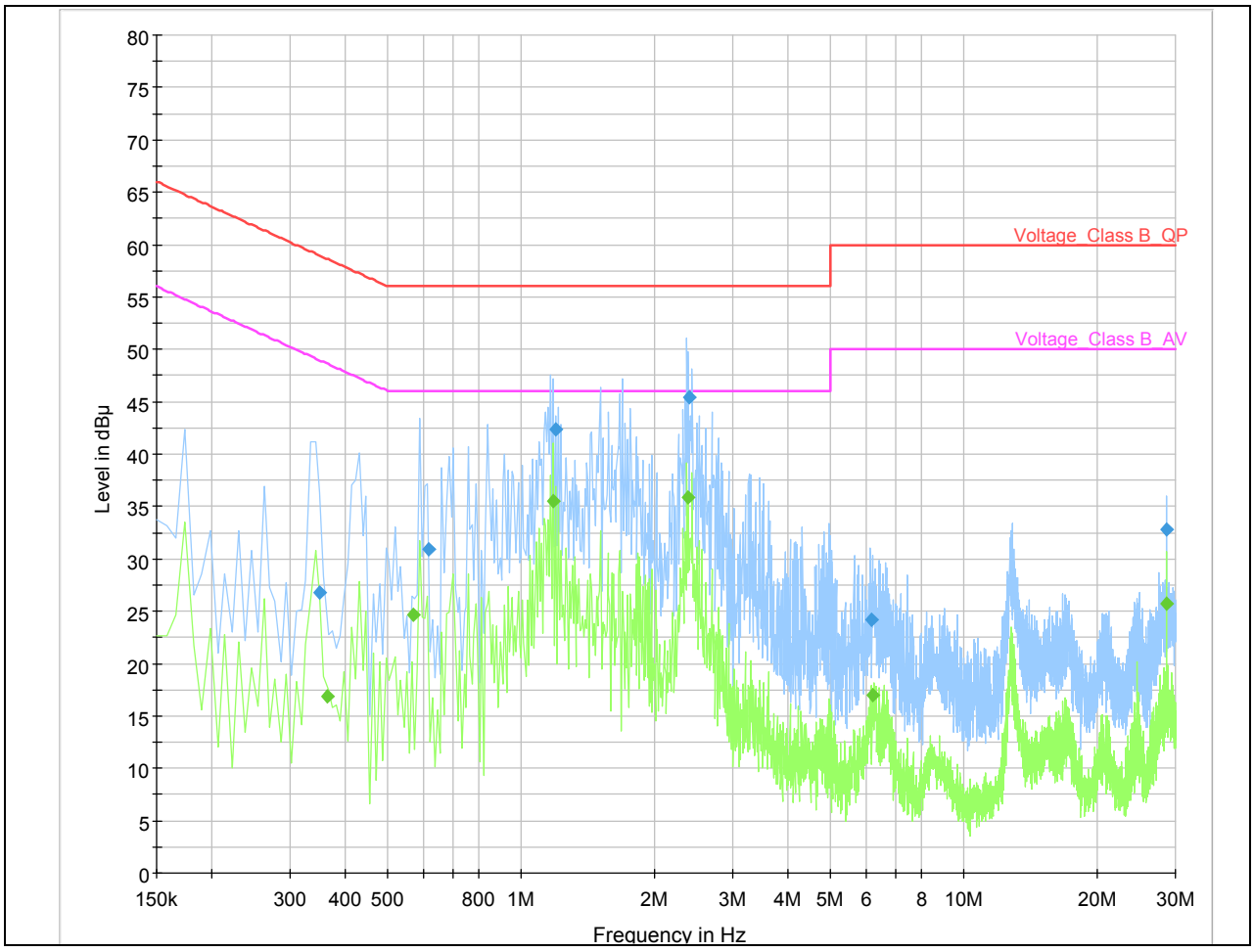
Conducted Emission from 150 KHz to 30 MHz

Frequency (MHz)	Detector	Line	Level (dBµV)	Limit (dBµV)	Margin (dB)
0.671000	Average	L	26.1	46.0	19.9
1.151000	Average	N	35.3	46.0	10.7
1.197000	Average	L	33.8	46.0	12.2
2.321000	Average	L	32.9	46.0	13.1
2.397000	Average	N	34.4	46.0	11.6
28.673000	Average	L	30.1	50.0	19.9
0.637000	Quasi-peak	N	41.4	56.0	14.6
0.673000	Quasi-peak	L	39.8	56.0	16.2
1.153000	Quasi-peak	L	43.9	56.0	12.1
1.199000	Quasi-peak	N	43.1	56.0	12.9
2.349000	Quasi-peak	N	45.7	56.0	10.3
2.367000	Quasi-peak	L	44.4	56.0	11.6

802.11g CH1



L Line

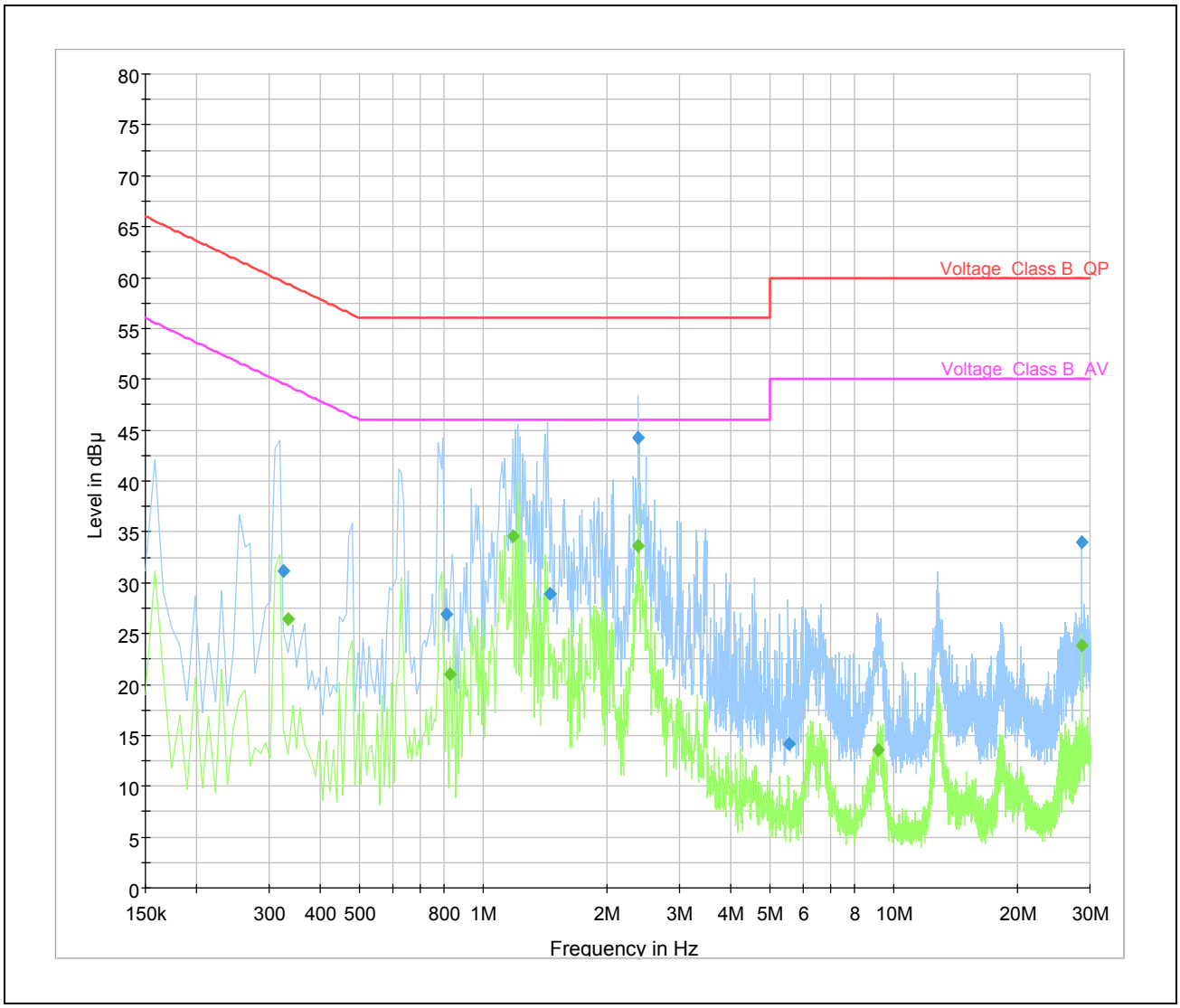


N Line

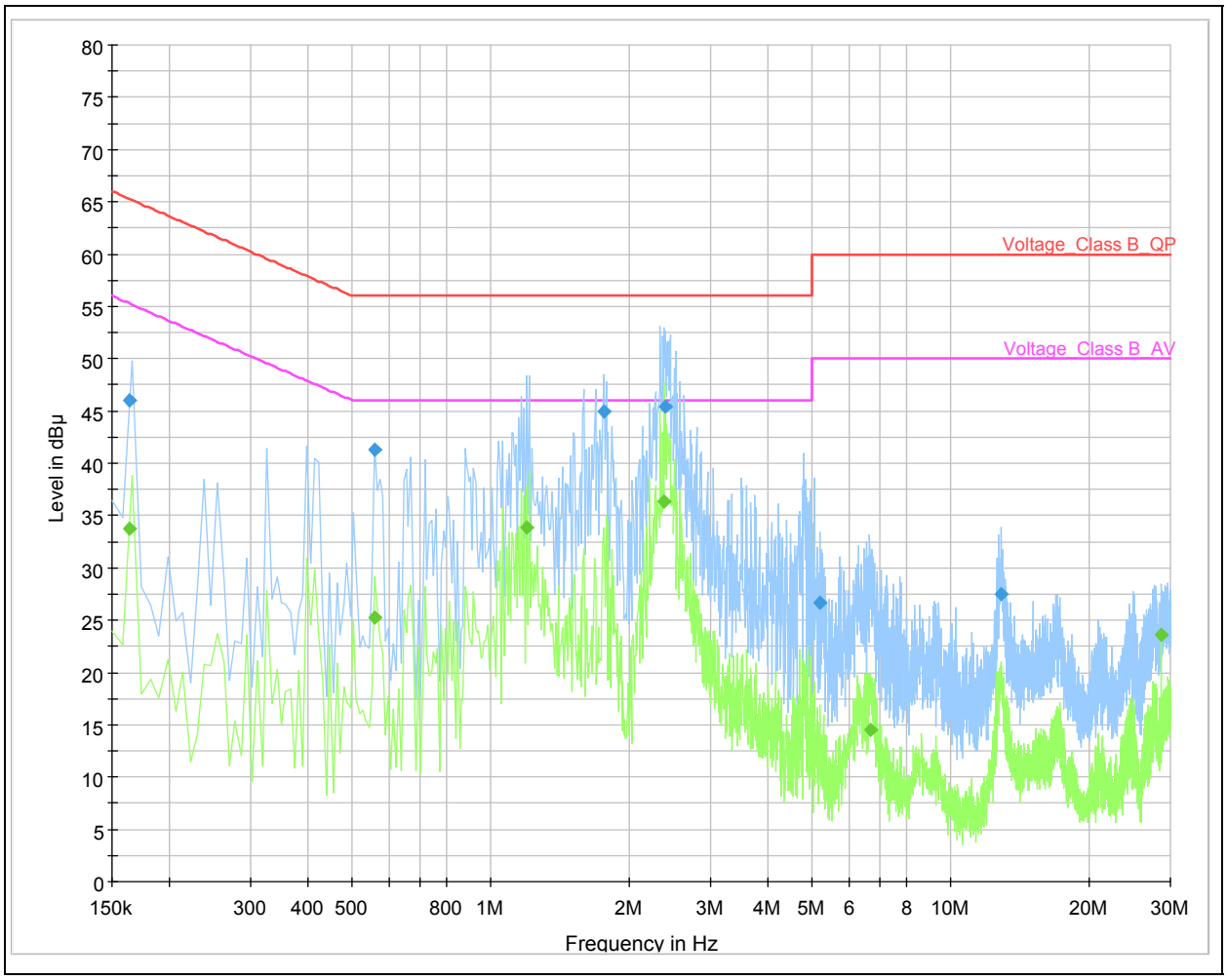
Conducted Emission from 150 KHz to 30 MHz

Frequency (MHz)	Detector	Line	Level (dBµV)	Limit (dBµV)	Margin (dB)
0.417000	Average	L	26.9	47.5	20.6
1.153000	Average	L	34.7	46.0	11.3
1.183000	Average	N	35.5	46.0	10.5
2.381000	Average	L	34.6	46.0	11.4
2.383000	Average	N	35.9	46.0	10.1
28.673000	Average	L	29.0	50.0	21.0
0.327000	Quasi-peak	L	35.1	59.5	24.4
0.669000	Quasi-peak	L	40.1	56.0	15.9
1.197000	Quasi-peak	N	42.4	56.0	13.6
1.589000	Quasi-peak	L	43.4	56.0	12.6
2.399000	Quasi-peak	N	45.4	56.0	10.6
2.427000	Quasi-peak	L	44.5	56.0	11.5

802.11g CH6



L Line

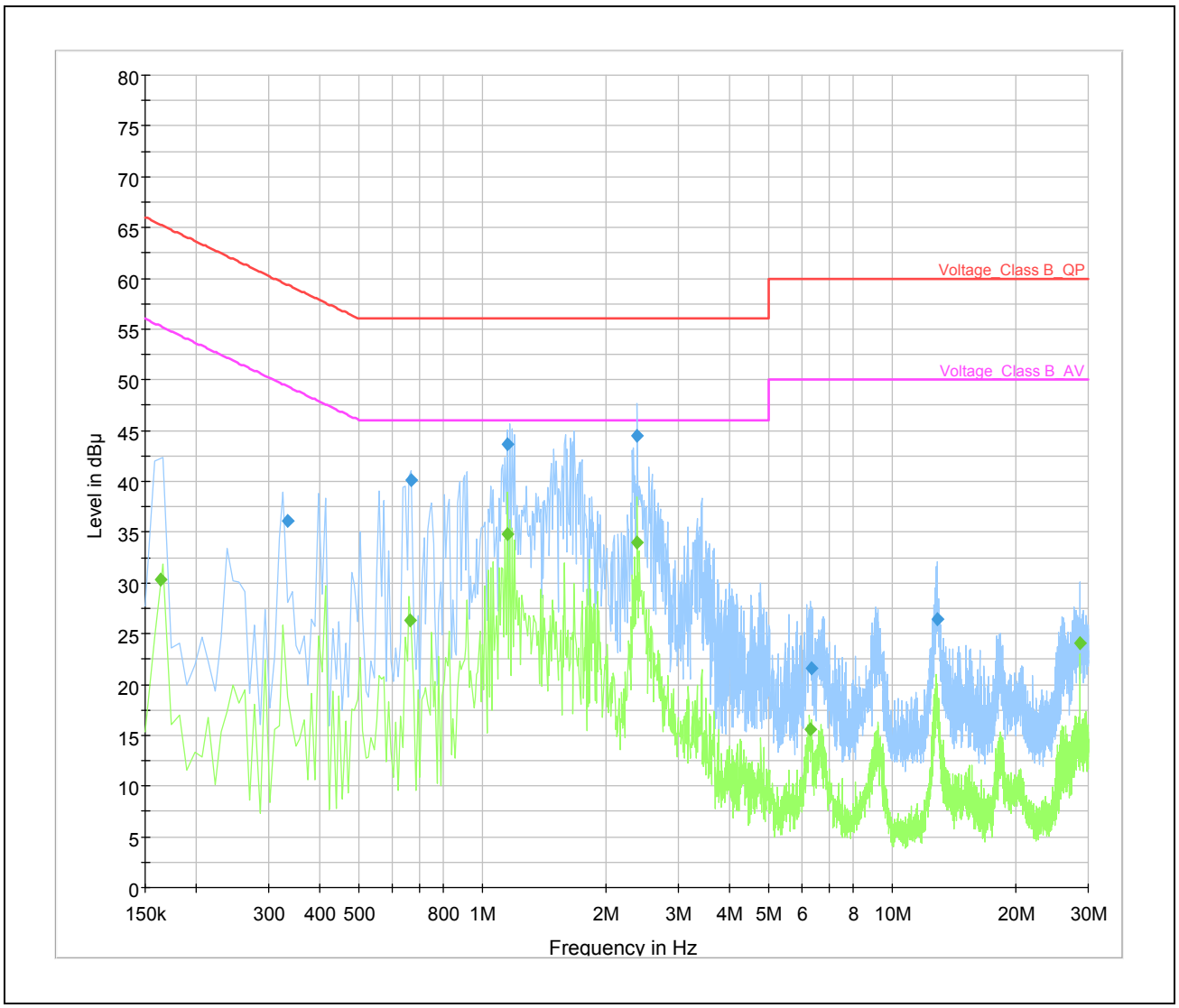


N Line

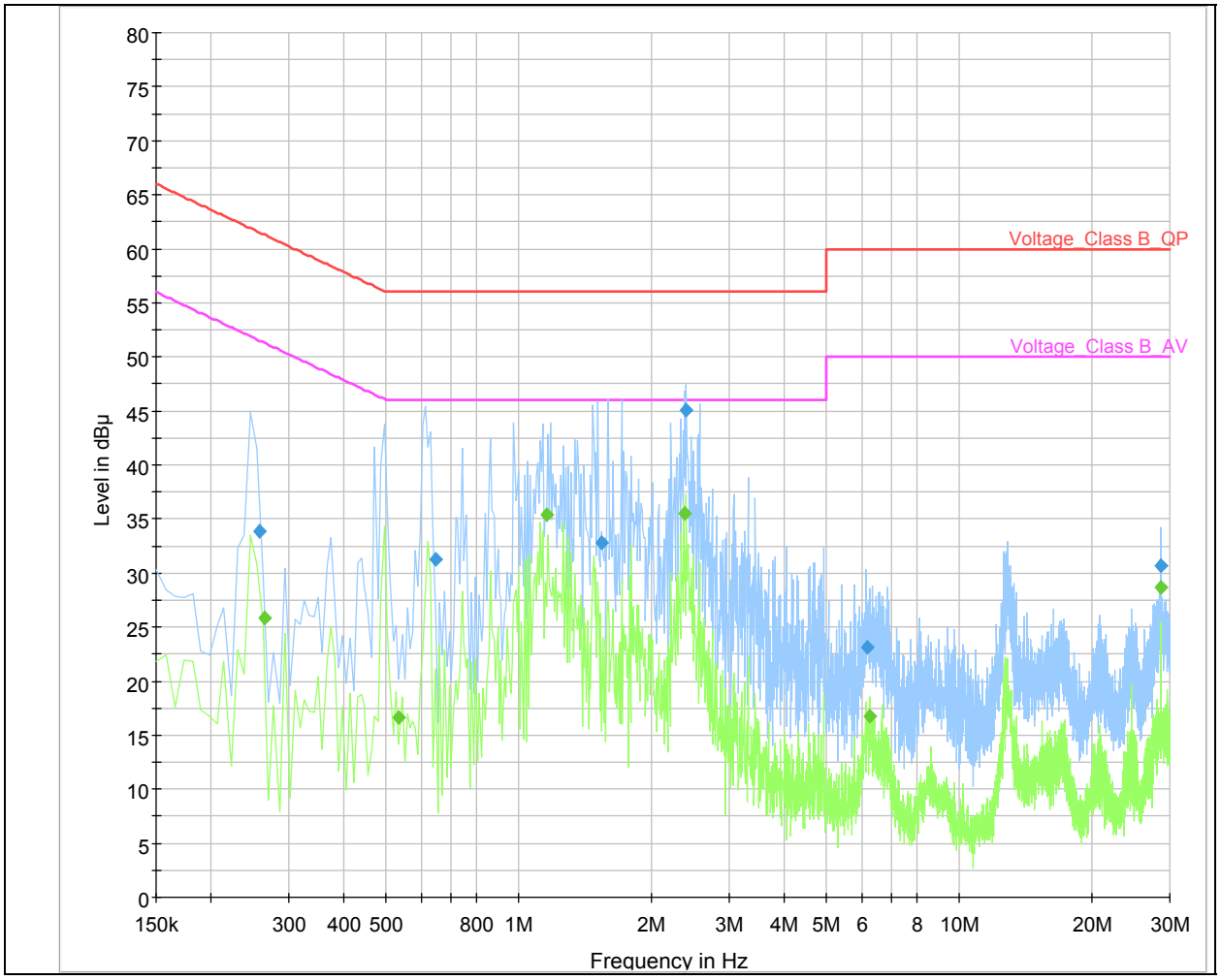
Conducted Emission from 150 KHz to 30 MHz

Frequency (MHz)	Detector	Line	Level (dBµV)	Limit (dBµV)	Margin (dB)
0.164000	Average	N	33.8	55.3	21.5
0.557000	Average	N	25.2	46.0	20.8
1.183000	Average	L	34.6	46.0	11.4
1.199000	Average	N	33.9	46.0	12.2
2.381000	Average	N	36.3	46.0	9.7
2.381000	Average	L	33.7	46.0	12.3
0.164000	Quasi-peak	N	46.1	65.3	19.2
0.559000	Quasi-peak	N	41.3	56.0	14.7
1.759000	Quasi-peak	N	45.0	56.0	11.0
2.379000	Quasi-peak	L	44.2	56.0	11.8
2.397000	Quasi-peak	N	45.4	56.0	10.6
28.673000	Quasi-peak	L	34.0	60.0	26.0

802.11g CH11



L Line



N Line

Conducted Emission from 150 KHz to 30 MHz

Frequency (MHz)	Detector	Line	Level (dBµV)	Limit (dBµV)	Margin (dB)
0.663000	Average	L	26.4	46.0	19.6
1.151000	Average	L	34.8	46.0	11.2
1.153000	Average	N	35.5	46.0	10.5
2.379000	Average	L	33.9	46.0	12.1
2.383000	Average	N	35.5	46.0	10.5
28.673000	Average	N	28.6	50.0	21.4
0.335000	Quasi-peak	L	36.1	59.3	23.2
0.669000	Quasi-peak	L	40.1	56.0	15.9
1.151000	Quasi-peak	L	43.6	56.0	12.4
1.545000	Quasi-peak	N	32.8	56.0	23.2
2.381000	Quasi-peak	L	44.5	56.0	11.5
2.395000	Quasi-peak	N	45.0	56.0	11.0

2. Main Test Instruments

No.	Name	Type	Manufacturer	Serial Number	Calibration Date	Valid Period
01	Signal Analyzer	FSV	R&S	100815	2009-06-29	One year
02	Signal generator	SMR27	R&S	1606.6000.02	2009-06-29	One year
04	Spectrum Analyzer	E4445A	Agilent	MY46181146	2009-06-08	One year
05	EMI Test Receiver	ESCI	R&S	100948	2009-07-02	One year
06	Trilog Antenna	VULB 9163	SCHWARZBECK	9163-391	2009-05-14	One year
07	Horn Antenna	HF907	R&S	100125	2009-07-20	One year
08	AC Power Source	AFC-11005G	APC	F309040118	2009-07-25	One year
09	Power Splitter	11667A	Agilent	52960	NA	NA
10	Semi-Anechoic Chamber	9.6*6.7*6.6m	ETS-Lindgren	NA	NA	NA
11	EMI test software	ES-K1	R&S	NA	NA	NA

*******END OF REPORT BODY*******

ANNEX A: EUT Appearance and Test Setup

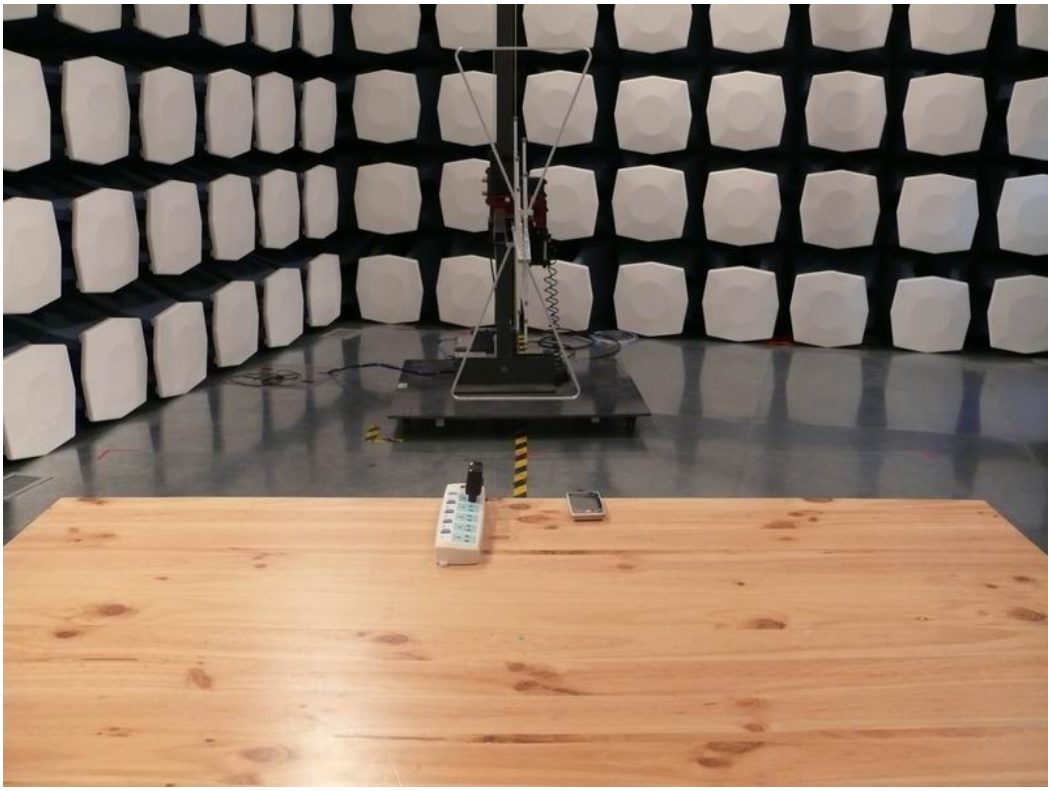
A.1 EUT Appearance

Picture 1-1 EUT

Picture 1-2 EUT

Picture 1 EUT

A.2 Test Setup



Picture 2 Radiated Emission Test Setup