



中国认可
国际互认
检测
TESTING
CNAS L2264

RF TEST REPORT

Applicant TP-LINK TECHNOLOGIES CO., LTD.
FCC ID TE7T2UHP
Brand TP-LINK
Product AC600 High Power Wireless Dual Band
USB Adapter
Model Archer T2UHP
Report No. RXA1608-0178RF05R1
Issue Date December 5, 2016

TA Technology (Shanghai) Co., Ltd. tested the above equipment in accordance with the requirements in **FCC CFR47 Part 15C (2016)**. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

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Summary of measurement results

Number	Summary of measurements of results	Clause in FCC rules	Verdict
1	conducted output power	15.247(b)(3)	PASS
2	6 dB bandwidth	15.247(a)(2)	PASS
3	Maximum power spectral density	15.247(e)	PASS
4	Band Edge	15.247(d)	PASS
5	Spurious RF Conducted Emissions	15.247(d)	PASS
6	Radiated Emissions in restricted frequency bands	15.247(d),15.205,15.209	PASS
7	Radiated Emissions	15.247(d),15.205,15.209	PASS
8	Conducted Emissions	15.207	PASS

Date of Testing: August 28, 2016~ September 29, 2016 and November 30,2016~December 4,2016



1. Test Laboratory

1.1. Notes of the test report

This report shall not be reproduced in full or partial, without the written approval of **TA technology (shanghai) co., Ltd.** The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein .Measurement Uncertainties were not taken into account and are published for informational purposes only. This report is written to support regulatory compliance of the applicable standards stated above. This report must not be used by the client to claim product certification, approval, or endorsement by CNAS or any government agencies.

1.2. Test facility

CNAS (accreditation number: L2264)

TA Technology (Shanghai) Co., Ltd. has obtained the accreditation of China National Accreditation Service for Conformity Assessment (CNAS).

FCC (recognition number is 428261)

TA Technology (Shanghai) Co., Ltd. has been listed on the US Federal Communications Commission list of test facilities recognized to perform electromagnetic emissions measurements.

IC (recognition number is 8510A)

TA Technology (Shanghai) Co., Ltd. has been listed by industry Canada to perform electromagnetic emission measurement.

VCCI (recognition number is C-4595, T-2154, R-4113, G-766)

TA Technology (Shanghai) Co., Ltd. has been listed by industry Japan to perform electromagnetic emission measurement.

A2LA (Certificate Number: 3857.01)

TA Technology (Shanghai) Co., Ltd. has been listed by American Association for Laboratory Accreditation to perform electromagnetic emission measurement.



1.3. Testing Location

Company: TA Technology (Shanghai) Co., Ltd.
Address: No.145, Jintang Rd, Tangzhen Industry Park, Pudong
City: Shanghai
Post code: 201201
Country: P. R. China
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Fax: +86-021-50791141/2/3-8000
Website: <http://www.ta-shanghai.com>
E-mail: xukai@ta-shanghai.com

2. General Description of Equipment under Test

Client Information

Applicant	TP-LINK TECHNOLOGIES CO., LTD.
Applicant address	Building 24 (floors 1,3,4,5) and 28 (floors1-4) Central Science and Technology Park,Shennan Rd, Nanshan, Shenzhen,China
Manufacturer	TP-LINK TECHNOLOGIES CO., LTD.
Manufacturer address	Building 24 (floors 1,3,4,5) and 28 (floors1-4) Central Science and Technology Park,Shennan Rd, Nanshan, Shenzhen,China

General information

EUT Description	
Model:	Archer T2UHP
SN:	/
Power Supply:	USB Power Supply
Antenna Type:	External Antenna
Antenna Gain:	3.00 dBi
additional beamforming gain:	0 dB
Test Mode:	802.11b 802.11g, 802.11n(HT20/HT40);
Modulation Type:	802.11b: DSSS; 802.11g/n(HT20/HT40): OFDM
Max. Conducted Power	Wi-Fi 2.4G : 19.41dBm
Operating Frequency Range(s)	2400 ~ 2483.5 MHz
EUT Accessory	
USB Cable	100cm Cable, Shielded
Note: The information of the EUT is declared by the manufacturer. Please refer to the specifications or user manual for details.	



3. Applied Standards

According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

Test standards

- **FCC CFR47 Part 15C (2016) Radio Frequency Devices**
- **ANSI C63.10 (2013)**
- **KDB 558074 D01 DTS Meas Guidance v03r05**

4. Test Configuration

Test Mode

The EUT was programmed to be in continuously transmitting mode and the transmit duty cycle is not less than 98%.

The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application.

The radiated emission was measured in the following position: EUT stand-up position (Z axis), lie-down position (X, Y axis). The worst emission was found in stand-up position (Z axis) and the worst case was recorded.

In order to find the worst case condition, Pre-tests are needed at the presence of different data rate. Preliminary tests have been done on all configurations for confirming worst case. Data rate below means worst-case rate of each test item.

Worst-case data rates are shown as following table.

Band	Data Rate
802.11b	1 Mbps
802.11g	6 Mbps
802.11n HT20	MCS0
802.11n HT40	MCS0

5. Test Case Results

5.1. Conducted Output Power

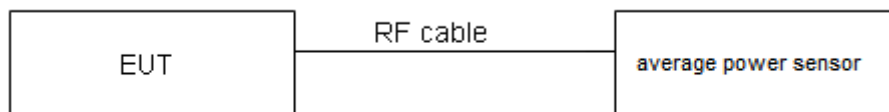
Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Methods of Measurement

During the process of the testing, The EUT was connected to average power meter with a known loss. The EUT is max power transmission with proper modulation. The average detector is used. We use Maximum average Conducted Output Power Level Method in KDB 558074 D01 for this test.

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: 1 Watt."

Output Power	≤ 1W (30dBm)
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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

	Power Index				
Packet Type	CH1	CH2	CH6	CH10	CH11
802.11b	13	13	14	13	13
802.11g	0F	13	13	13	0F
802.11n HT20	0D	13	14	13	0E
Packet Type	CH3	CH4	CH6	CH8	CH9
802.11n HT40	0D	13	13	13	0C

Network Standards	Carrier frequency (MHz)	Output Power (dBm)	Limit (dBm)	Conclusion
802.11b	2412	19.41	30	PASS
	2417	18.99	30	PASS
	2437	19.24	30	PASS
	2457	18.90	30	PASS
	2462	19.31	30	PASS
802.11g	2412	18.52	30	PASS
	2417	19.26	30	PASS
	2437	19.25	30	PASS
	2457	18.80	30	PASS
	2462	18.24	30	PASS
802.11n HT20	2412	17.61	30	PASS
	2417	19.18	30	PASS
	2437	19.38	30	PASS
	2457	18.97	30	PASS
	2462	17.71	30	PASS
802.11n HT40	2422	17.37	30	PASS
	2427	18.57	30	PASS
	2437	18.90	30	PASS
	2447	18.47	30	PASS
	2452	16.58	30	PASS

5.2. 6dB Bandwidth

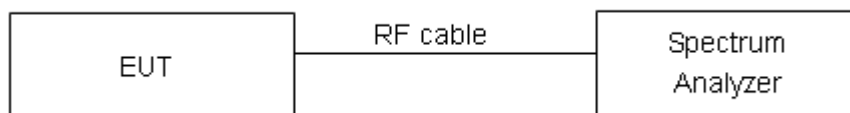
Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~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 100 kHz; VBW is set to 300 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 bands. The minimum 6 dB bandwidth shall be at least 500 kHz.”

minimum 6 dB bandwidth	≥ 500 kHz
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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	Carrier frequency (MHz)	Minimum 6 dB bandwidth (MHz)	Limit(kHz)	Conclusion
802.11b	2412	10.10	500	PASS
	2437	10.10	500	PASS
	2462	10.09	500	PASS
802.11g	2412	16.53	500	PASS
	2437	16.62	500	PASS
	2462	16.52	500	PASS
802.11n HT20	2412	17.69	500	PASS
	2437	17.80	500	PASS
	2462	17.70	500	PASS
802.11n HT40	2422	36.51	500	PASS
	2437	36.53	500	PASS
	2452	36.50	500	PASS



802.11b, Carrier frequency (MHz): 2412



802.11g, Carrier frequency (MHz): 2412



802.11b, Carrier frequency (MHz): 2437



802.11g, Carrier frequency (MHz): 2437



802.11b, Carrier frequency (MHz): 2462

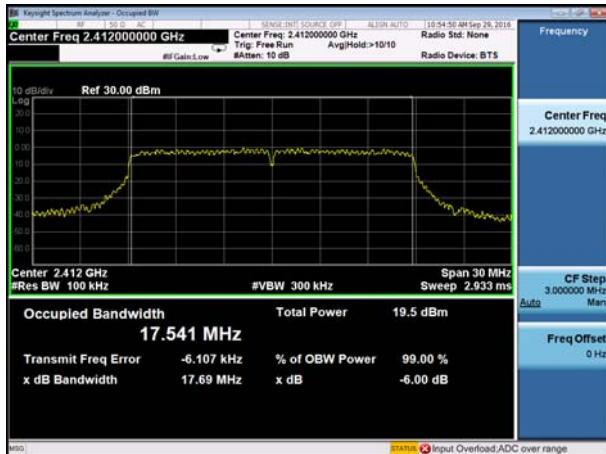


802.11g, Carrier frequency (MHz): 2462





802.11n(HT20), Carrier frequency (MHz): 2412



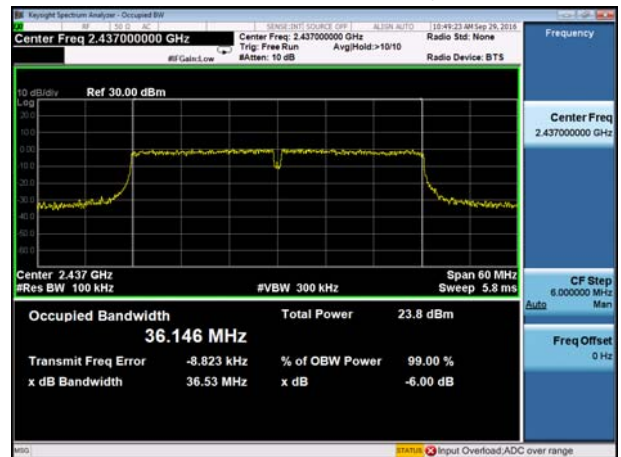
802.11n(HT40), Carrier frequency (MHz): 2422



802.11n(HT20), Carrier frequency (MHz): 2437



802.11n(HT40), Carrier frequency (MHz): 2437



802.11n(HT20), Carrier frequency (MHz):2462



802.11n(HT40), Carrier frequency (MHz):2452



5.3. Band Edge

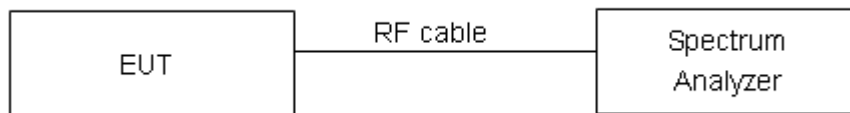
Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~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 100 kHz and VBW is set to 300 kHz 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, provided the transmitter demonstrates compliance with the peak conducted power limits.”

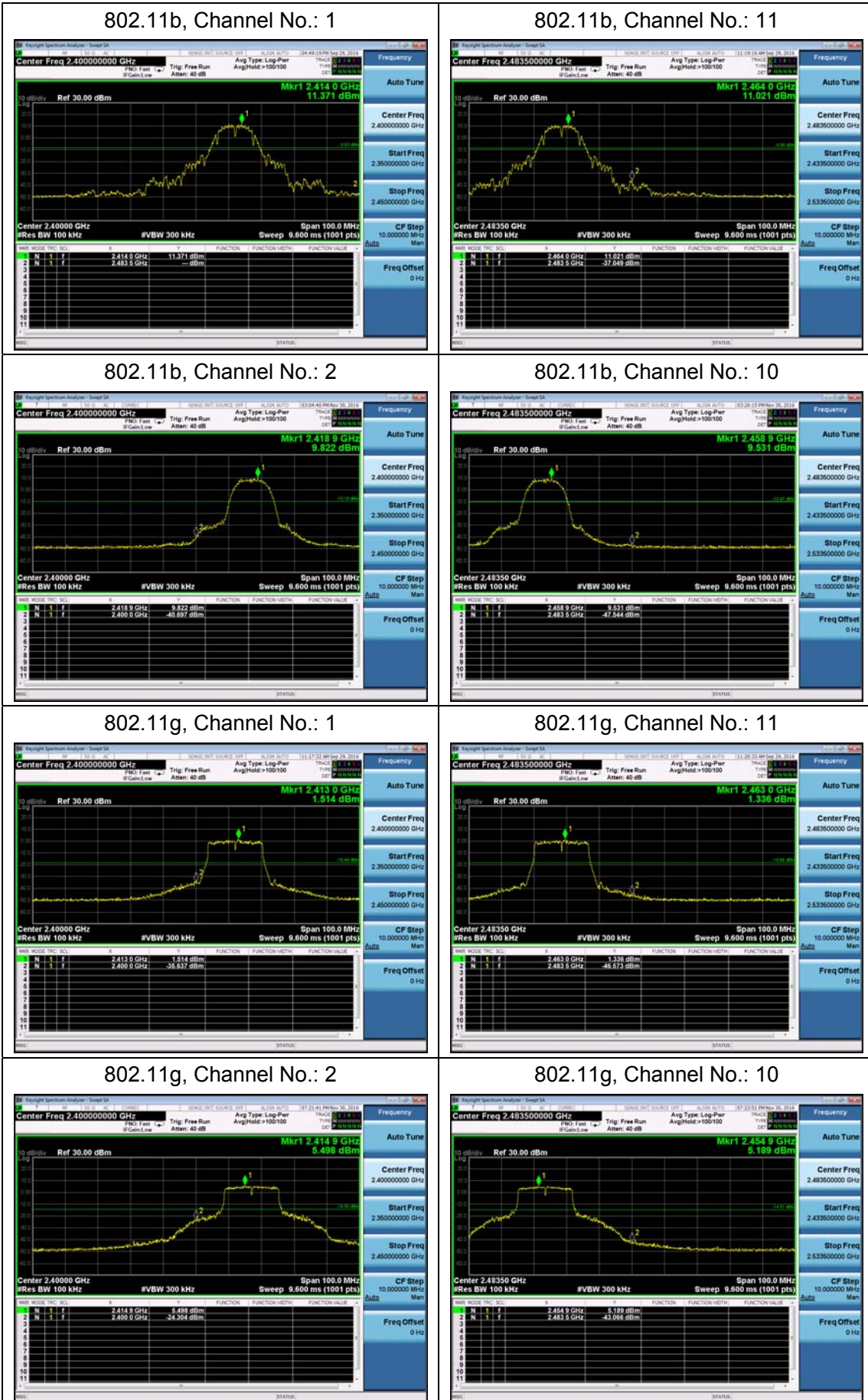
Measurement Uncertainty

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

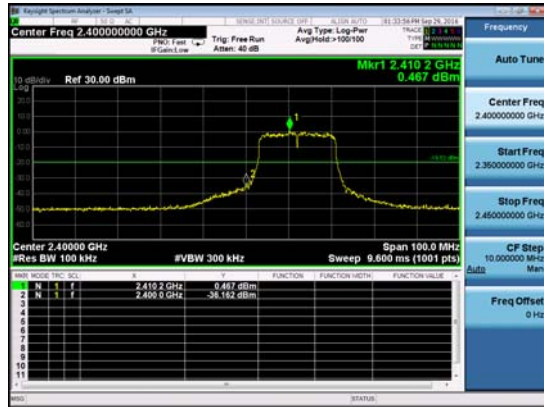


Test Results: PASS

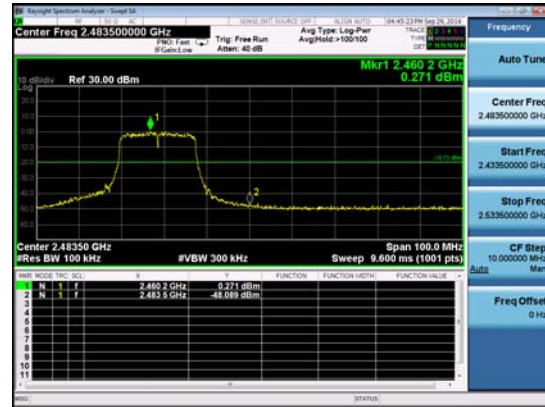




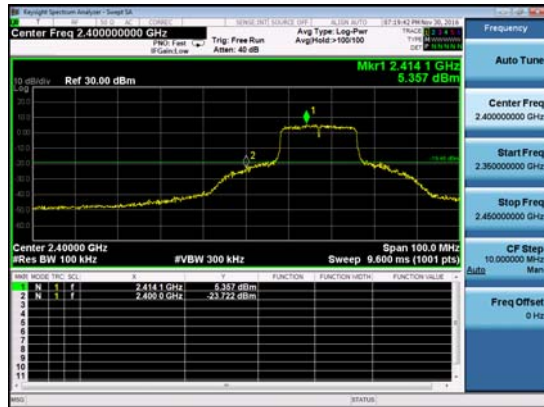
802.11n(HT20), Channel No.: 1



802.11n(HT20), Channel No.: 11



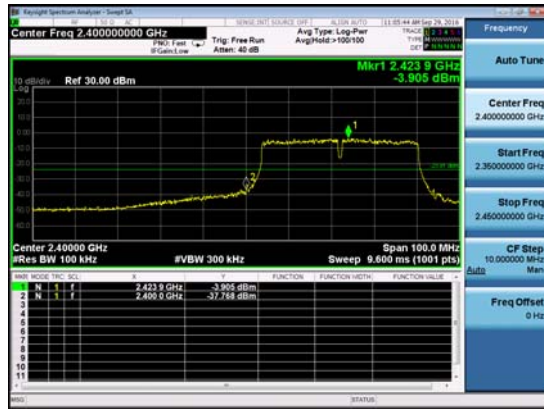
802.11n(HT20), Channel No.: 2



802.11n(HT20), Channel No.: 10



802.11n(HT40), Channel No.: 3



802.11n(HT40), Channel No.: 9



802.11n(HT40), Channel No.: 4



802.11n(HT40), Channel No.: 8



5.4. Power Spectral Density

Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

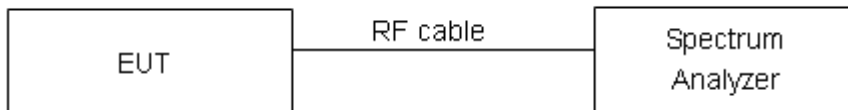
Method of Measurement

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 10 kHz for Wi-Fi 2.4G on spectrum analyzer.

Set the span to 1.5 times the DTS channel bandwidth. Sweep time = auto couple. Trace mode = max hold. 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. ”

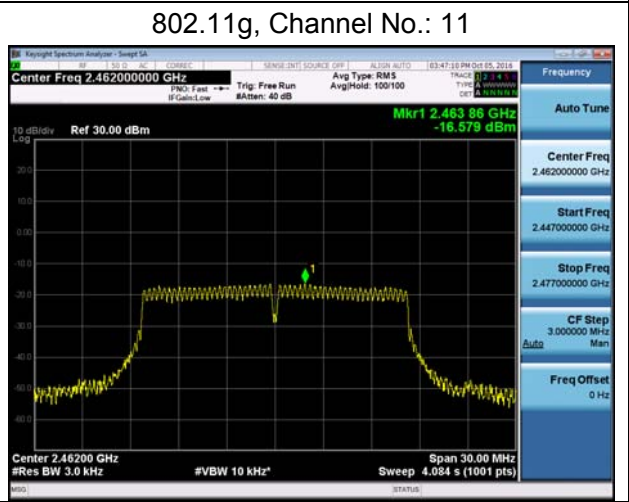
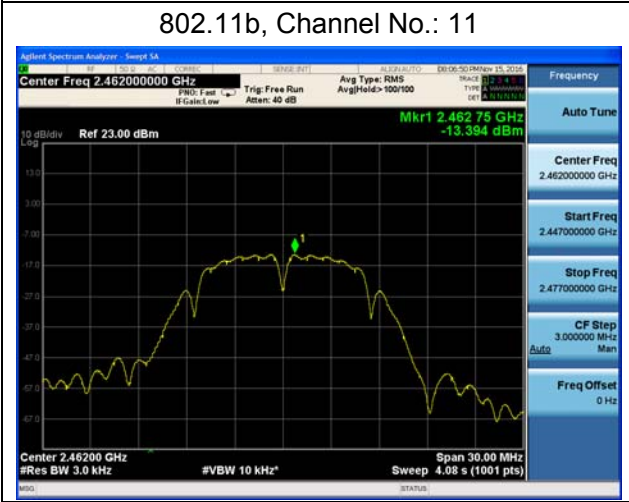
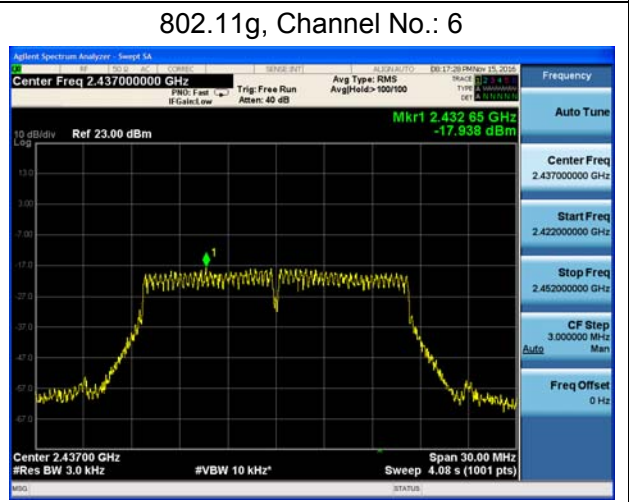
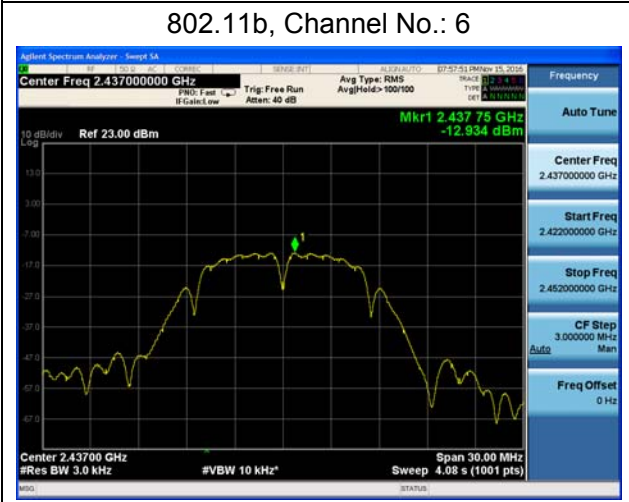
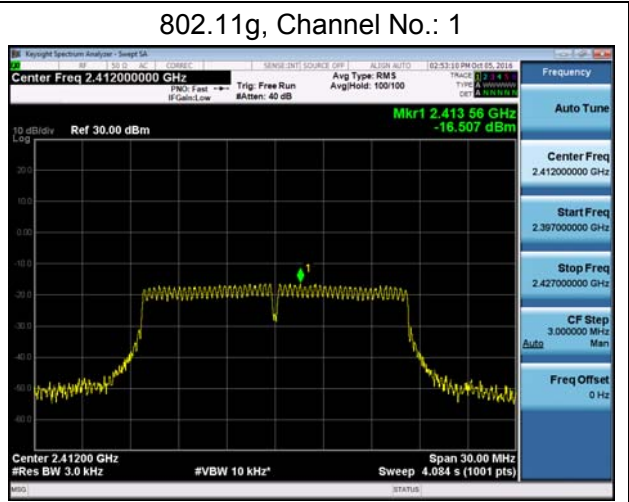
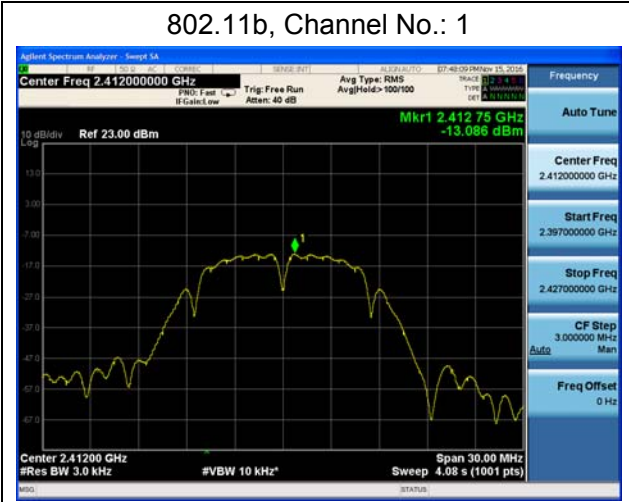
Limits	≤ 8 dBm / 3kHz
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Measurement Uncertainty

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

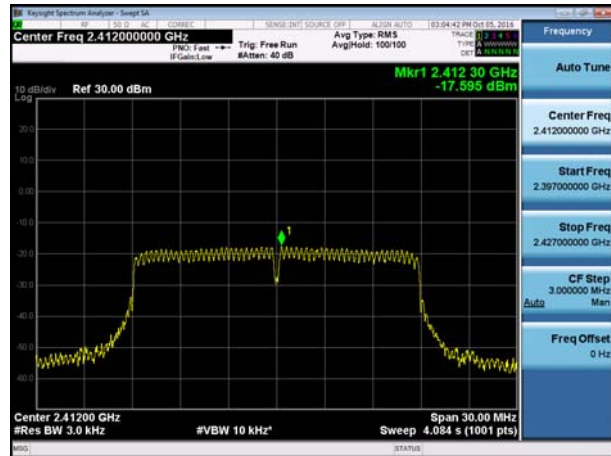
**Test Results:**

Network Standards	Channel Number	Power Spectral Density (dBm / 3kHz)	Limit (dBm / 3kHz)	Conclusion
802.11b	1	-13.086	8	PASS
	6	-12.934	8	PASS
	11	-13.394	8	PASS
802.11g	1	-16.507	8	PASS
	6	-17.938	8	PASS
	11	-16.579	8	PASS
802.11n HT20	1	-17.595	8	PASS
	6	-17.522	8	PASS
	11	-17.414	8	PASS
802.11n HT40	3	-21.276	8	PASS
	6	-18.617	8	PASS
	9	-21.782	8	PASS

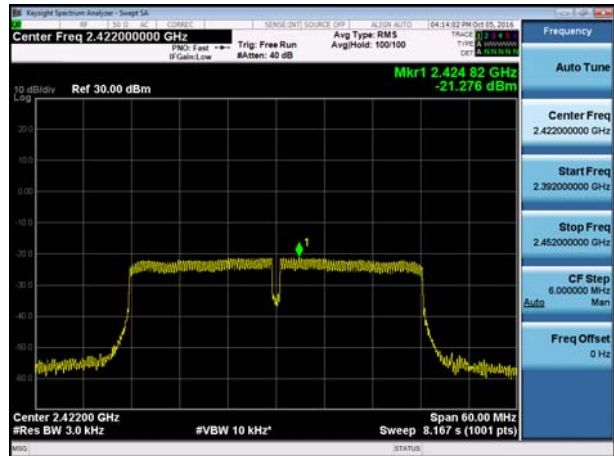




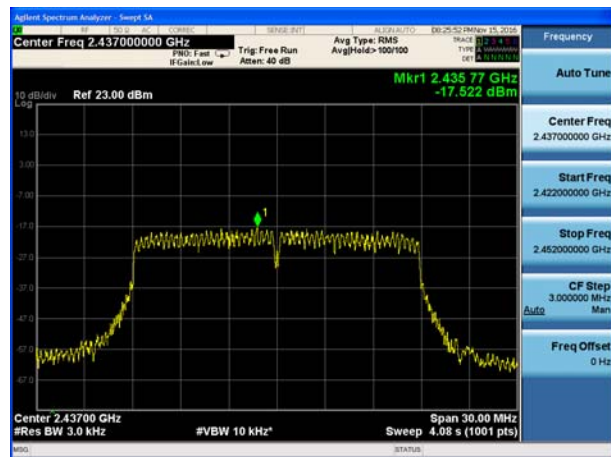
802.11n(HT20), Channel No. 1



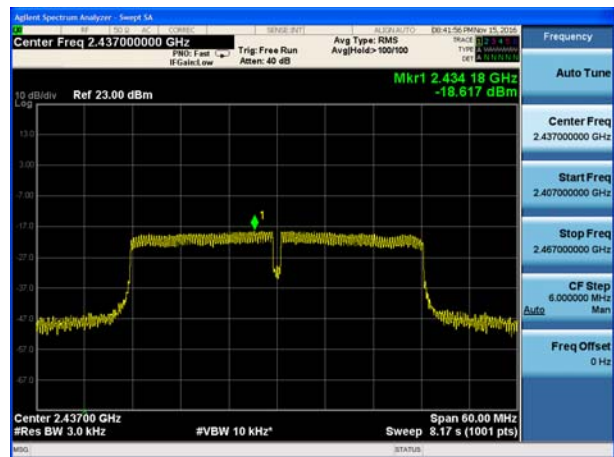
802.11n(HT40), Channel No. 3



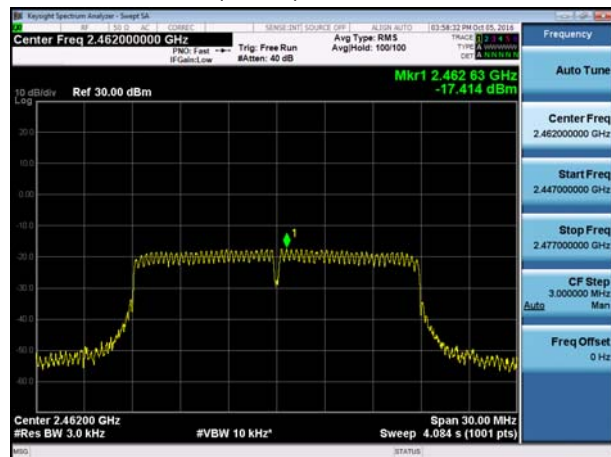
802.11n(HT20), Channel No. 6



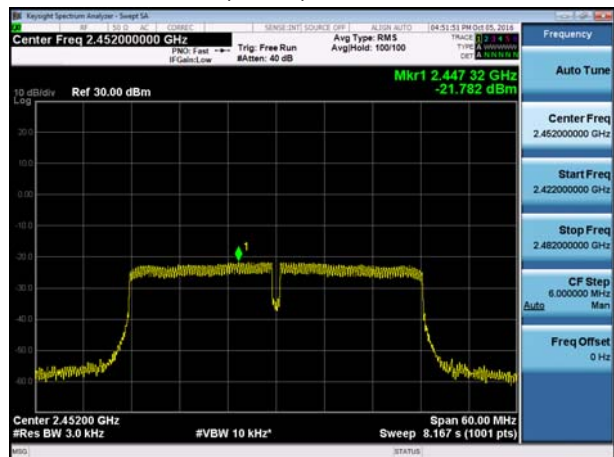
802.11n(HT40), Channel No. 6



802.11n(HT20), Channel No. 11



802.11n(HT40), Channel No. 9



5.5. Spurious RF Conducted Emissions

Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Method of Measurement

The EUT was connected to the spectrum analyzer with a known loss. The spectrum analyzer scans from 30MHz to the 10th harmonic of the carrier. The peak detector is used. RBW and VBW are set to 100 kHz, Sweep is set to ATUO.

The test is in transmitting mode.

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	Carrier frequency (MHz)	Reference value (dBm)	Limit
802.11b	2412	2.719	-17.281
	2437	-6.929	-26.929
	2462	-3.301	-23.301
802.11g	2412	-0.943	-20.943
	2437	-11.178	-31.178
	2462	-5.648	-25.648
802.11n HT20	2412	-2.859	-22.859
	2437	-11.708	-31.708
	2462	-6.448	-26.448
802.11n HT40	2422	-7.365	-27.365
	2437	-14.058	-34.058
	2452	-11.072	-31.072

**Measurement Uncertainty**

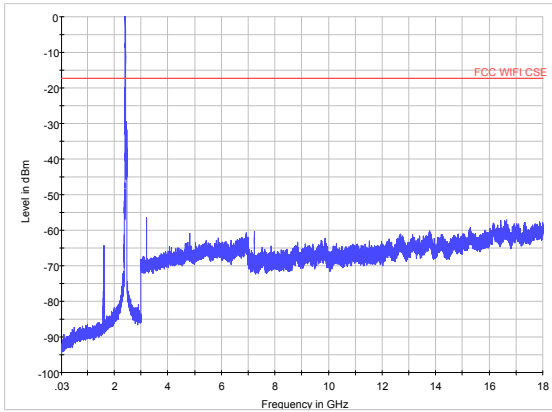
The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 1.96$.

Frequency	Uncertainty
100kHz-2GHz	0.684 dB
2GHz-26GHz	1.407 dB

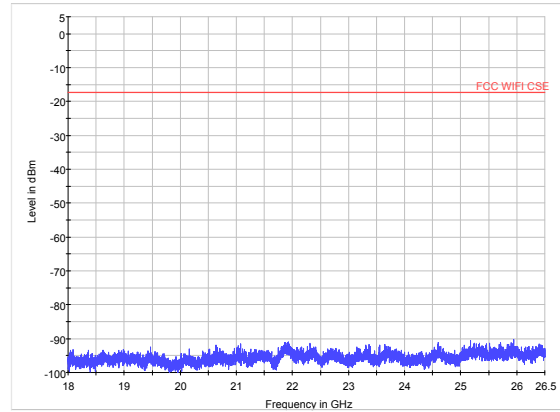


Test Results:

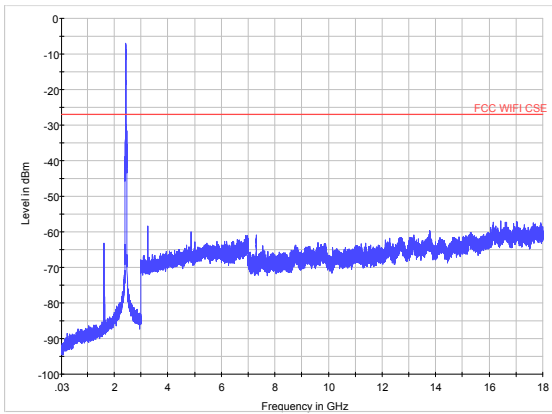
If disturbances were found more than 20dB below limit line, the mark is not required for the EUT.
The signal beyond the limit is carrier.



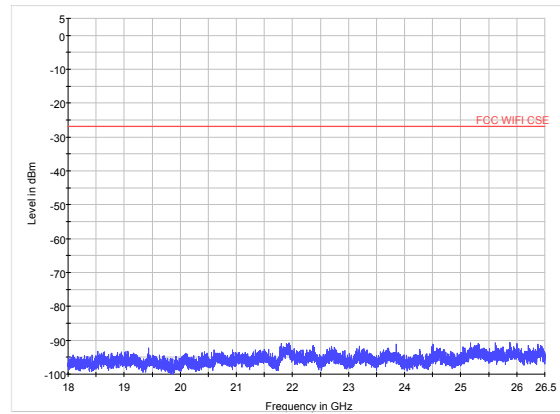
802.11b CH1 30MHz to 18GHz



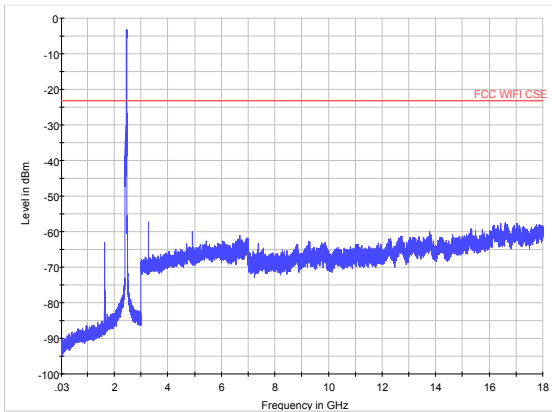
802.11b CH1 18GHz to 26.5GHz



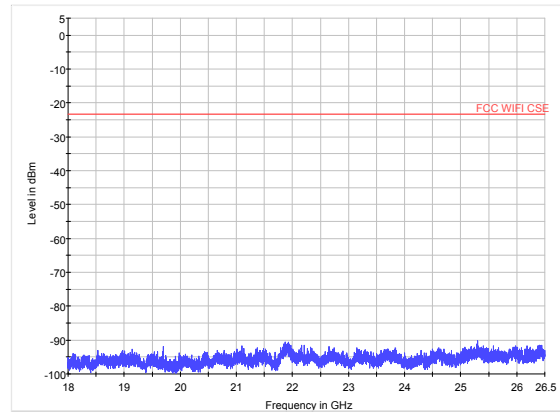
802.11b CH6 30MHz to 18GHz



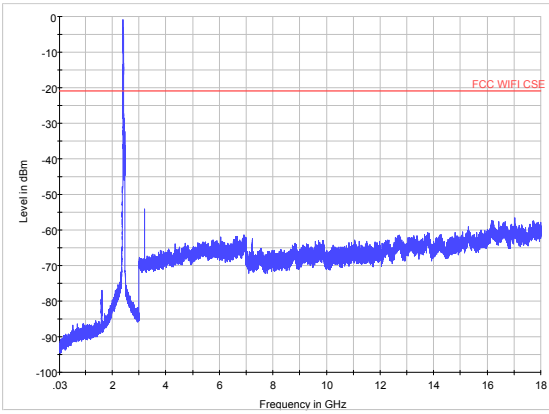
802.11b CH6 18GHz to 26.5GHz



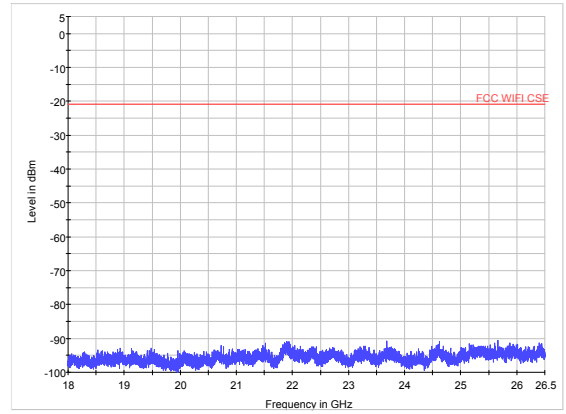
802.11b CH11 30MHz to 18GHz



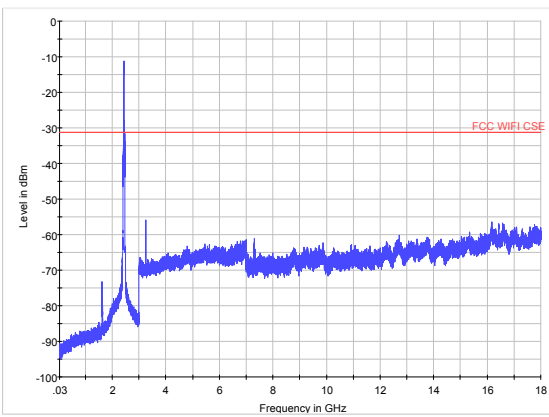
802.11b CH11 18GHz to 26.5GHz



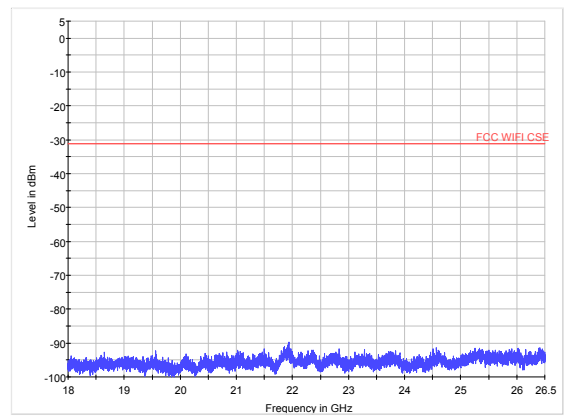
802.11g CH1 30MHz to 18GHz



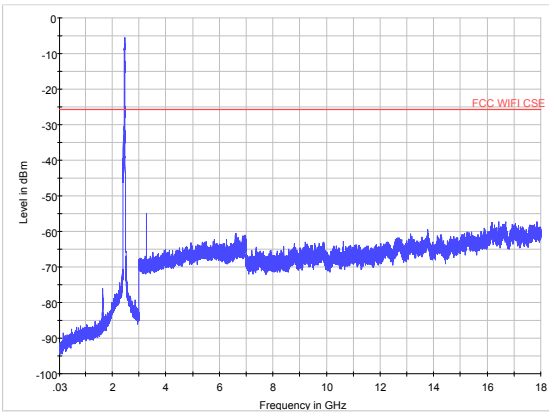
802.11g CH1 18GHz to 26.5GHz



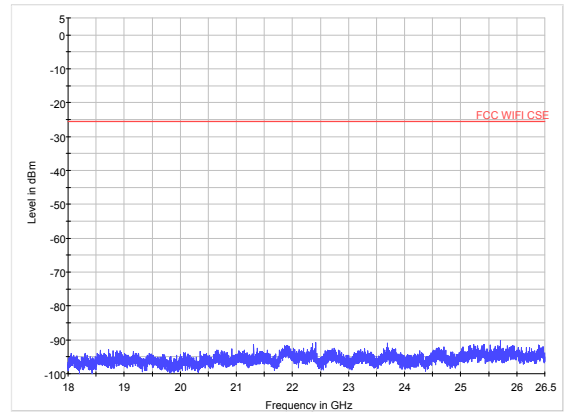
802.11g CH6 30MHz to 18GHz



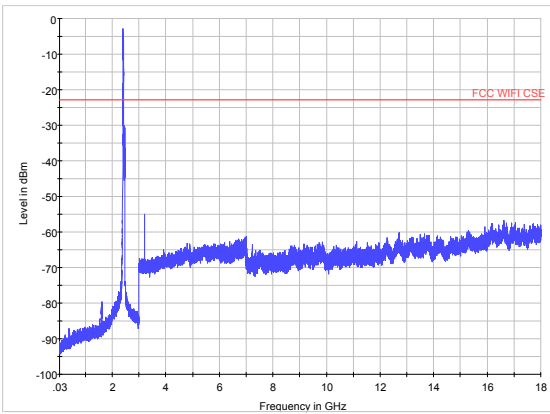
802.11g CH6 18GHz to 26.5GHz



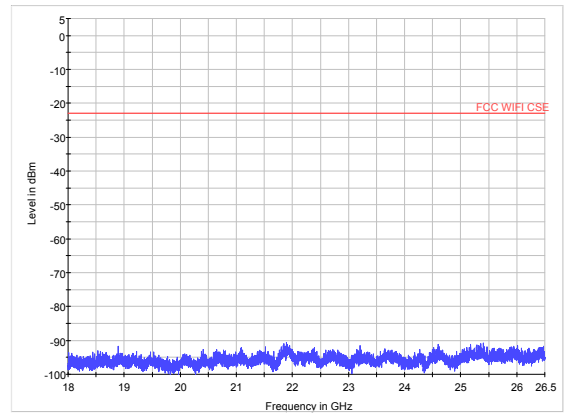
802.11g CH11 30MHz to 18GHz



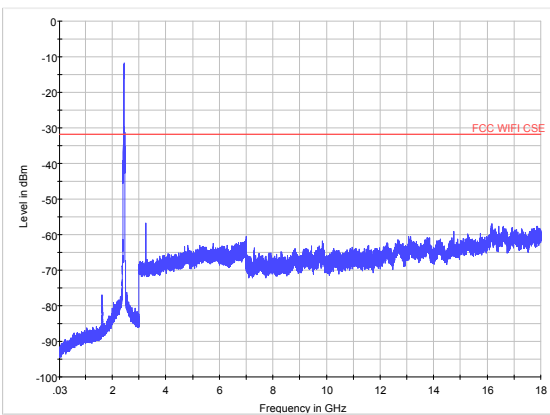
802.11g CH11 18GHz to 26.5GHz



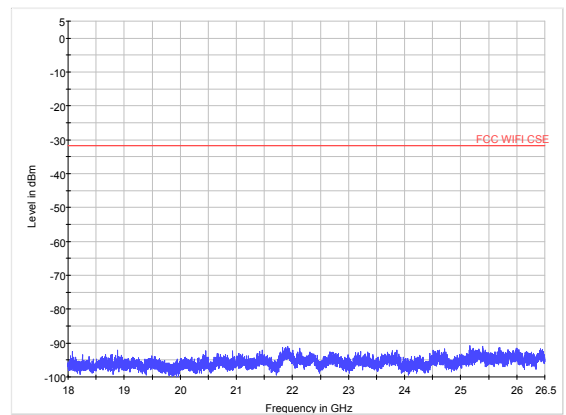
802.11n (HT20) CH1 30MHz to 18GHz



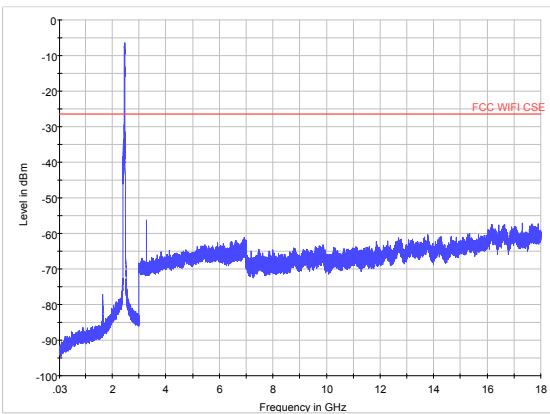
802.11n (HT20) CH1 18GHz to 26.5GHz



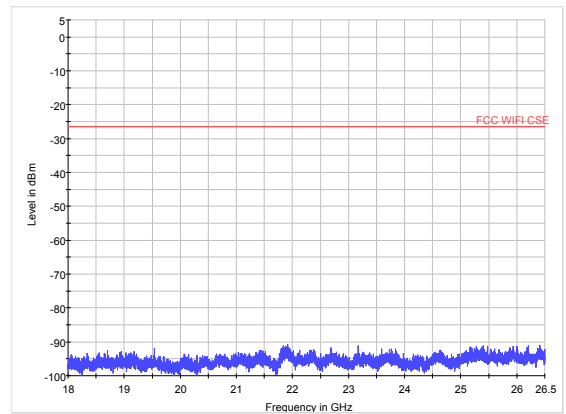
802.11n (HT20) CH6 30MHz to 18GHz



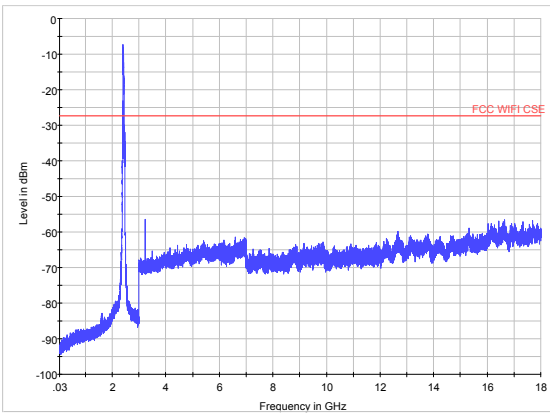
802.11n (HT20) CH6 18GHz to 26.5GHz



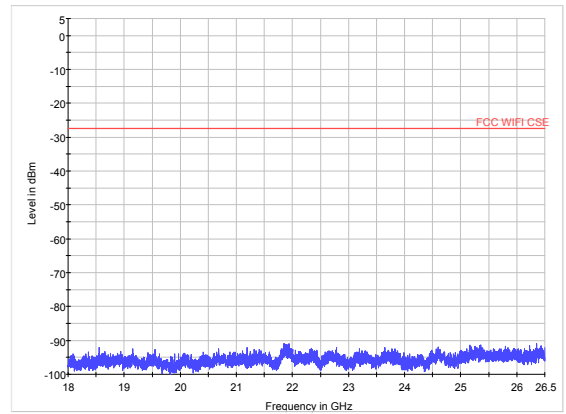
802.11n (HT20) CH11 30MHz to 18GHz



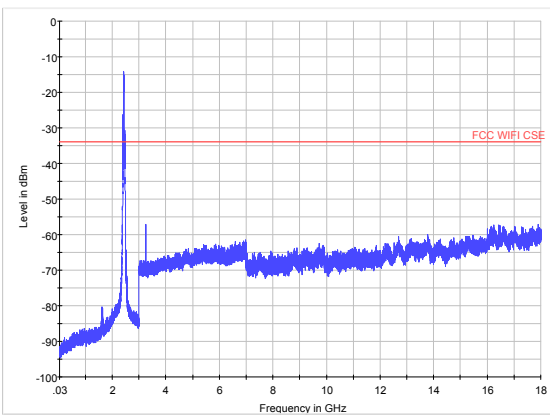
802.11n (HT20) CH11 18GHz to 26.5GHz



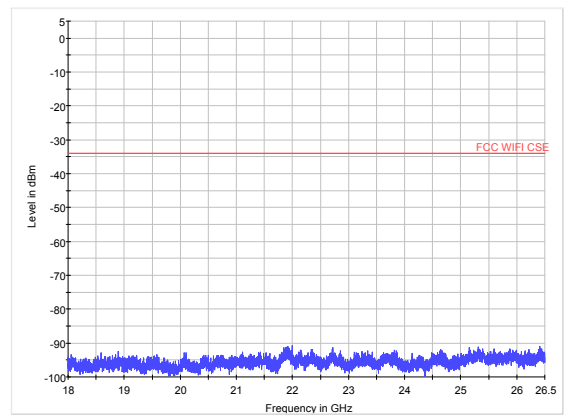
802.11n (HT40) CH3 30MHz to 18GHz



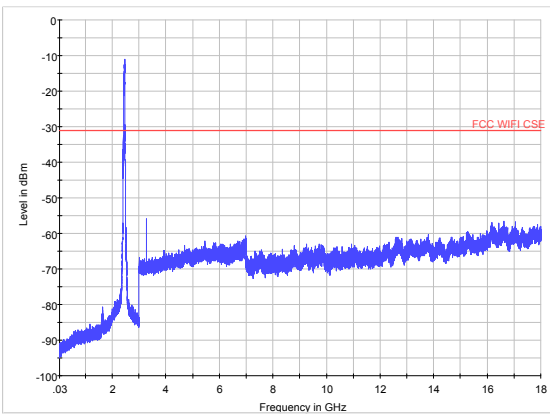
802.11n (HT40) CH3 18GHz to 26.5GHz



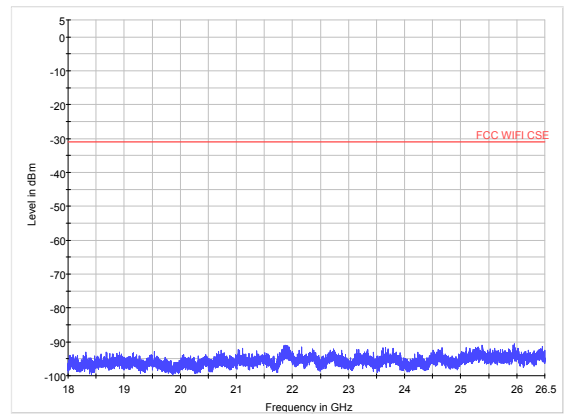
802.11n (HT40) CH6 30MHz to 18GHz



802.11n (HT40) CH6 18GHz to 26.5GHz



802.11n (HT40) CH9 30MHz to 18GHz



802.11n (HT40) CH9 18GHz to 26.5GHz

5.6. Radiated Emissions in the Restricted Band

Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Method of Measurement

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. RBW is set to 100kHz. The data of cable loss and antenna factor has been calibrated in full testing frequency range before the testing. Sweep the whole frequency band through the range from 9kHz to the 10th harmonic of the carrier, and the emissions less than 20 dB below the permissible value are reported.

Set the spectrum analyzer in the following:

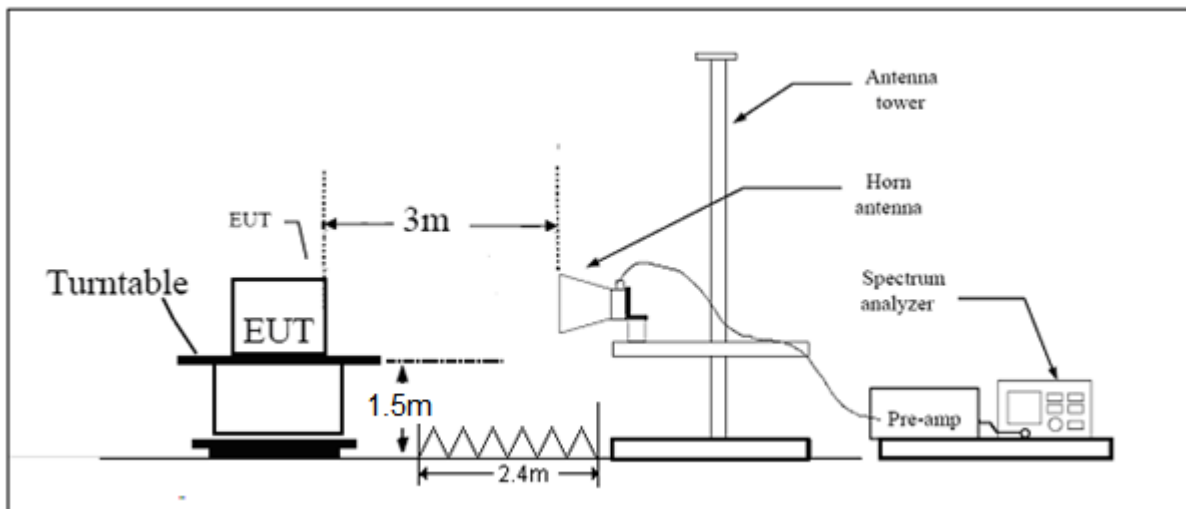
- (a) PEAK: RBW=VBW=1MHz / Sweep=AUTO
- (b) AVERAGE: RBW=1MHz / VBW=1MHz / Sweep=AUTO

This setting method can refer to **KDB 558074**.

The field strength of spurious emission was measured in the following position: EUT stand-up position (Z axis), lie-down position (X, Y axis). The worst emission was found in stand-up position (Y axis) and the antenna is vertical.

The test is in transmitting mode.

Test setup



Note: Area side: 2.4mX3.6m

Limits

Spurious Radiated Emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
¹ 0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2690 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	(²)
13.36 - 13.41			

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

§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.

Peak Limit=74 dBuV/m

Average Limit=54 dBuV/m

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 1.96$, $U = 3.55$ dB.

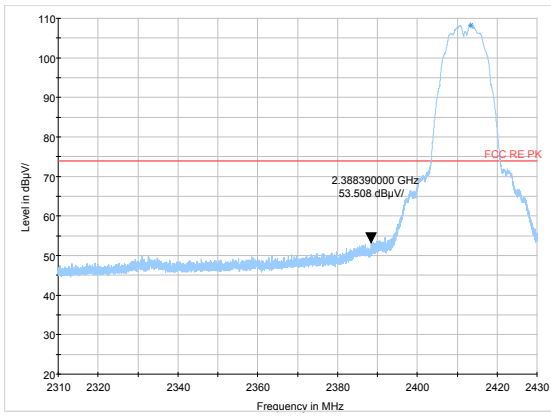


Test Results:

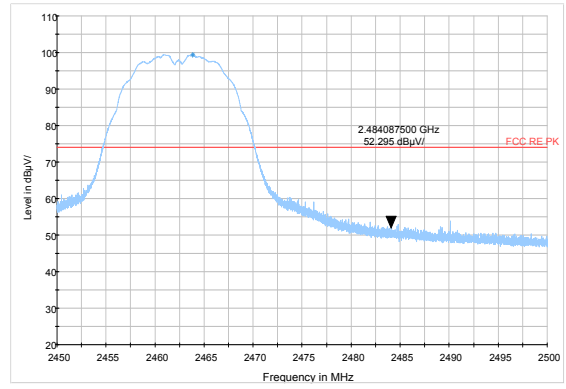
PASS

The signal beyond the limit is carrier.

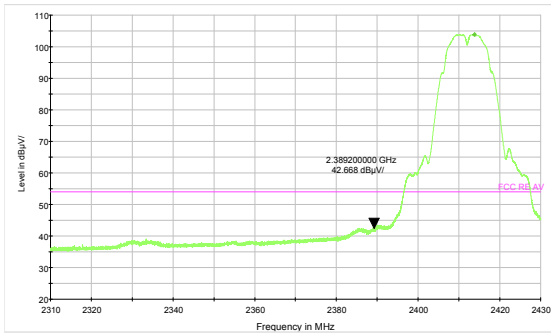
802.11b-Channel 1: Peak



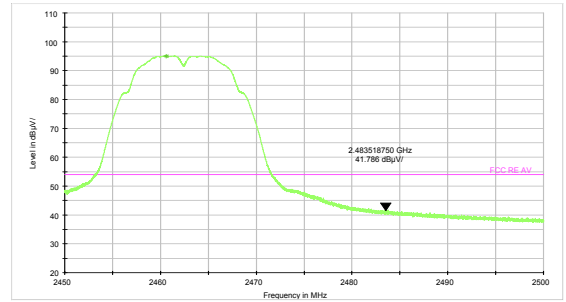
802.11b-Channel 11: Peak



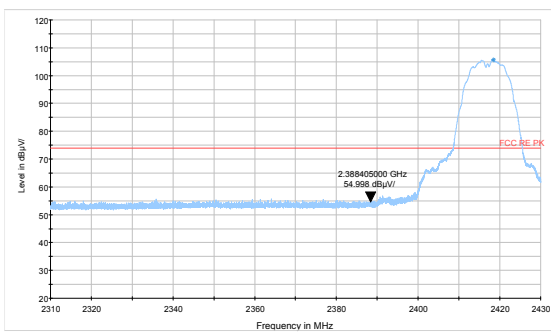
802.11b-Channel 1: Average



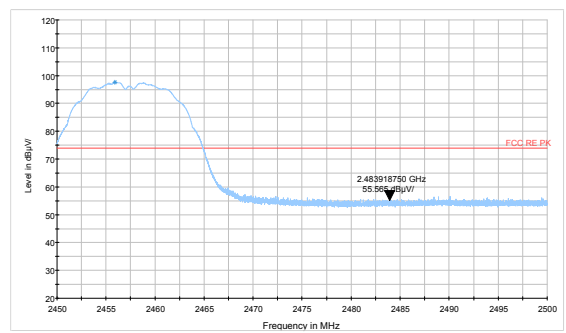
802.11b-Channel 11: Average



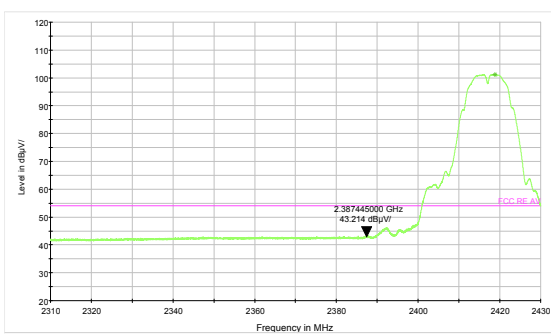
802.11b-Channel 2: Peak



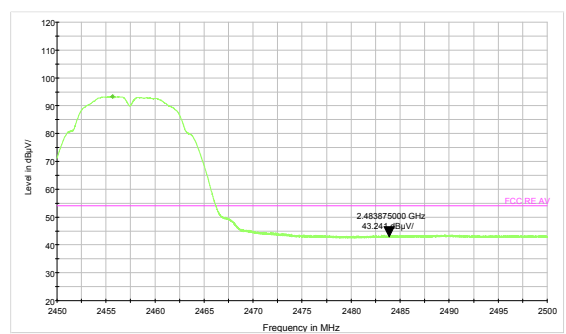
802.11b-Channel 10: Peak



802.11b-Channel 2: Average

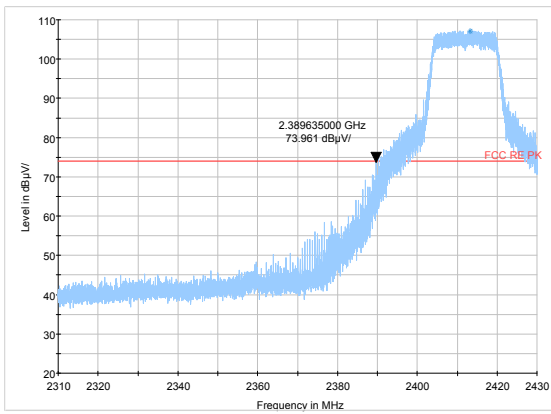


802.11b-Channel 10: Average

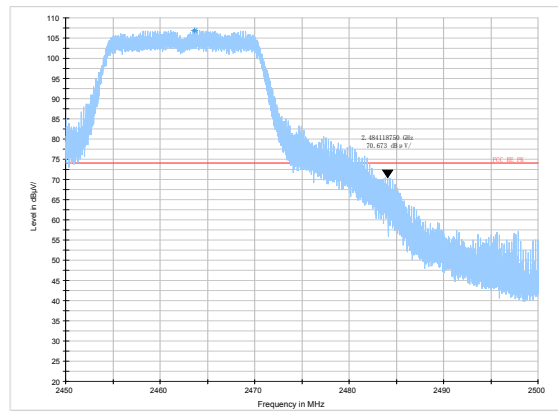




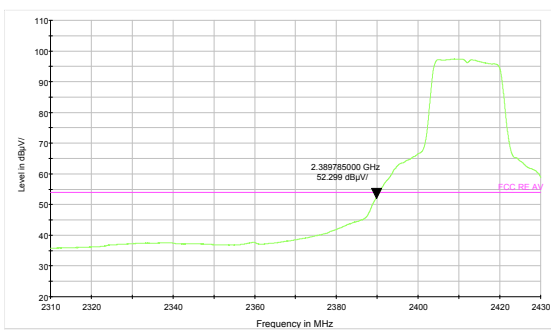
802.11g-Channel 1: Peak



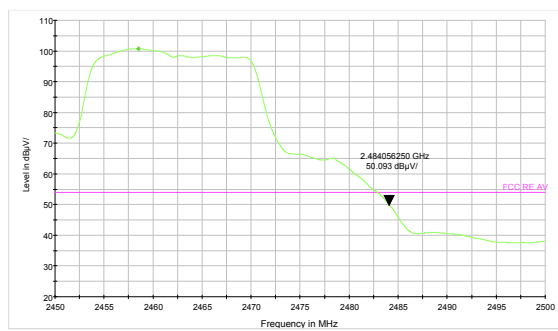
802.11g-Channel 11: Peak



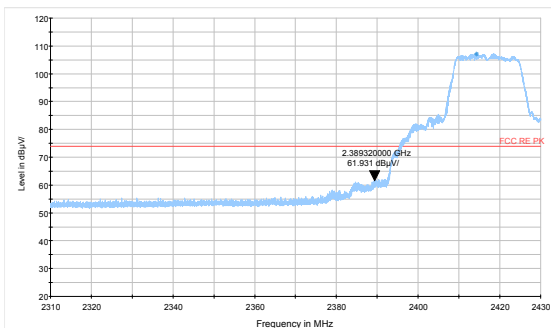
802.11g-Channel 1: Average



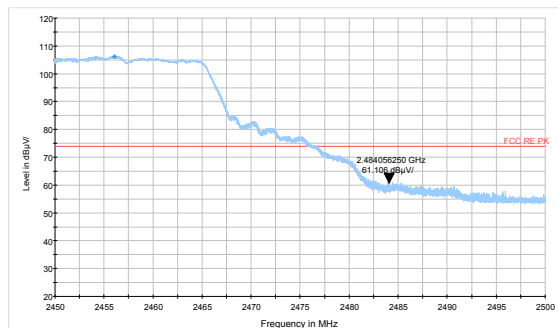
802.11g-Channel 11: Average



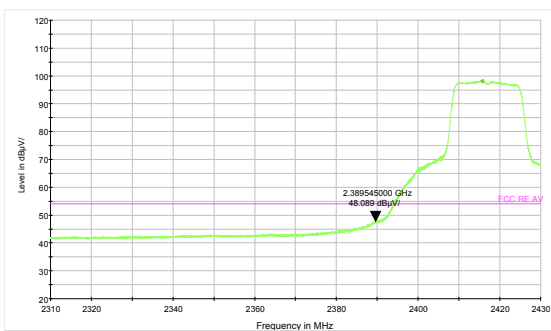
802.11g-Channel 2: Peak



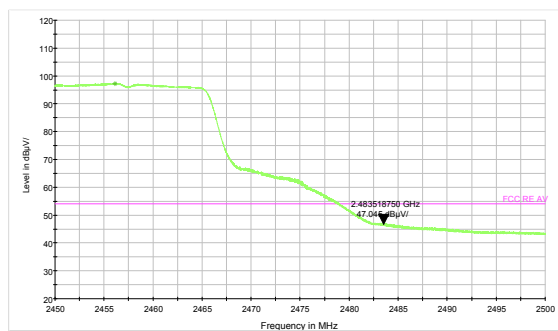
802.11g-Channel 10: Peak



802.11g-Channel 2: Average

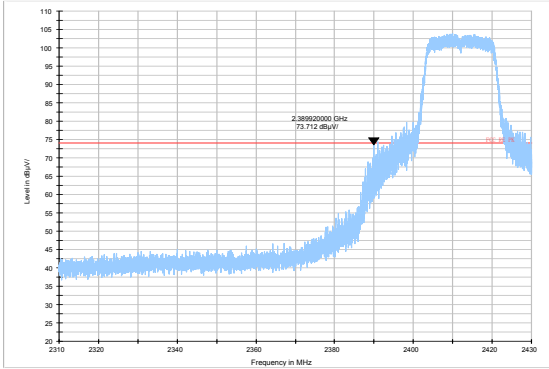


802.11g-Channel 10: Average

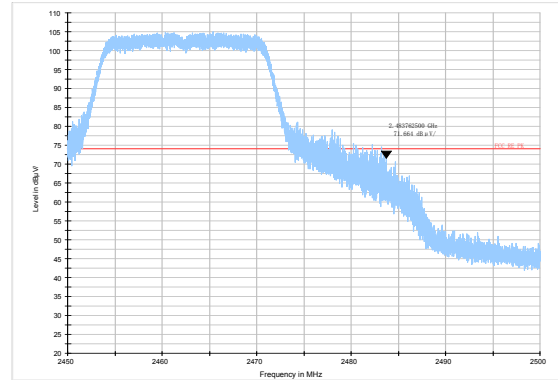




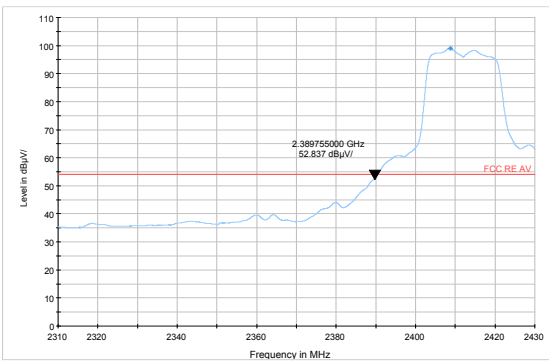
802.11n HT20 -Channel 1: Peak



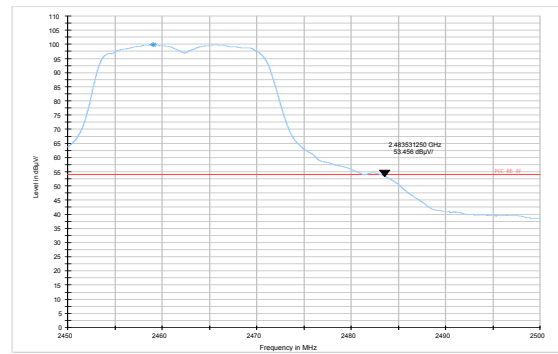
802.11n HT20-Channel 11: Peak



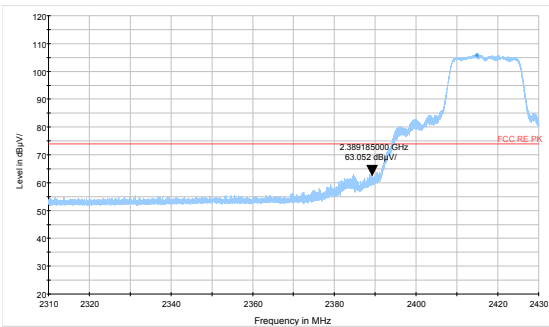
802.11n HT20-Channel 1: Average



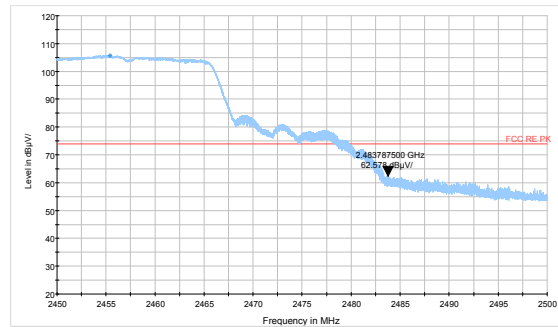
802.11n HT20-Channel 11: Average



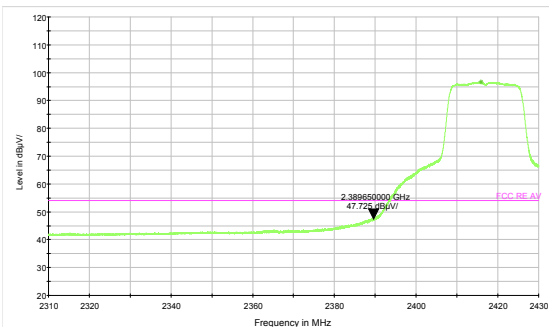
802.11n HT20 -Channel 2: Peak



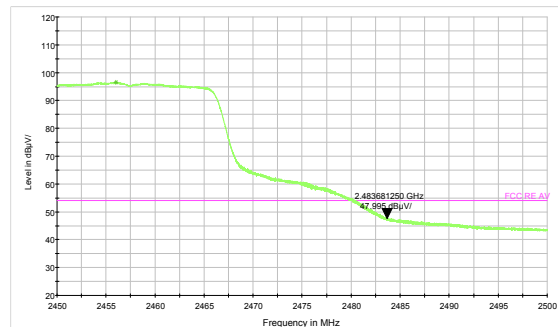
802.11n HT20-Channel 10: Peak



802.11n HT20-Channel 2: Average

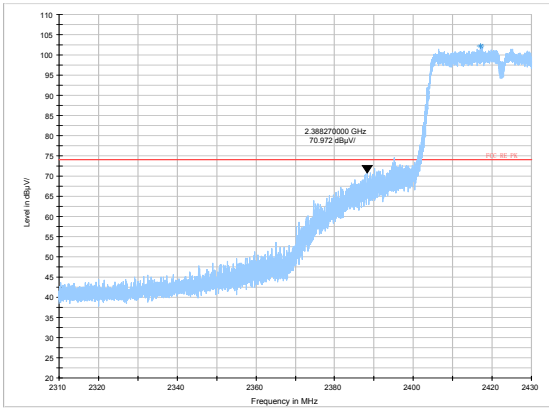


802.11n HT20-Channel 10: Average

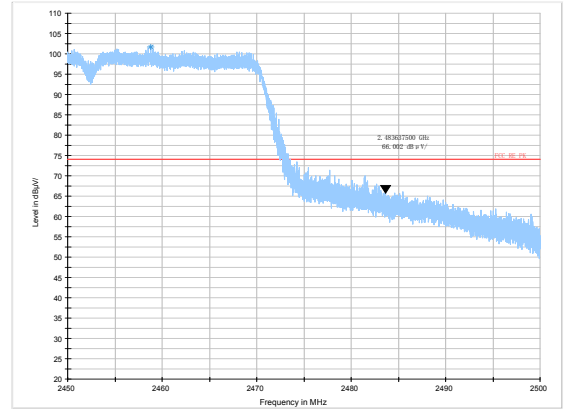




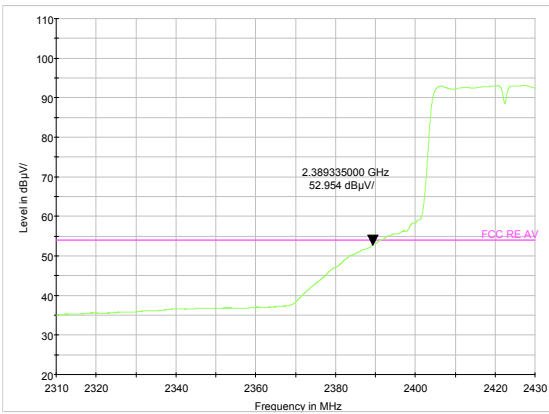
802.11n HT40 -Channel 3: Peak



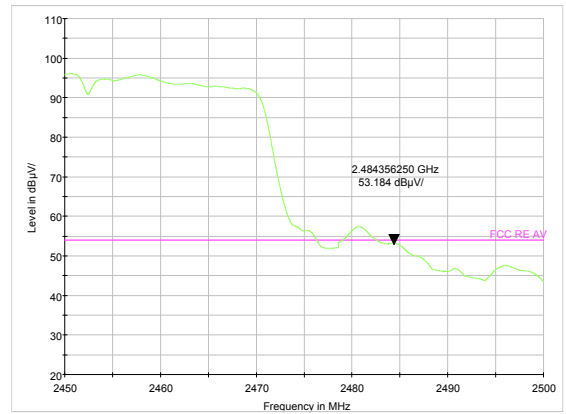
802.11n HT40-Channel 9: Peak



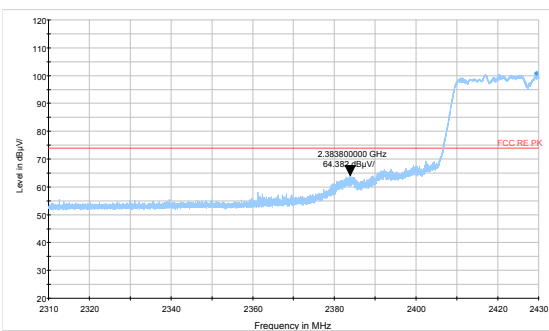
802.11n HT40-Channel 3: Average



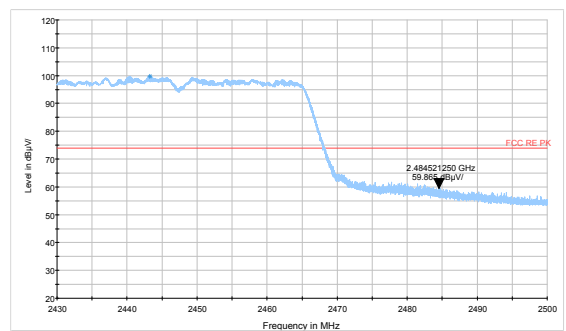
802.11n HT40-Channel 9: Average



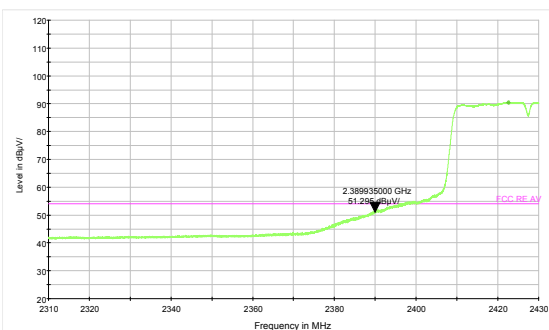
802.11n HT40 -Channel 4: Peak



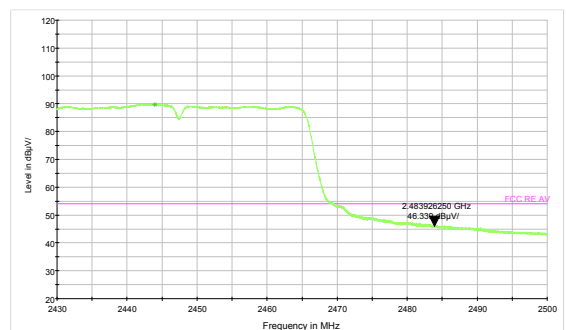
802.11n HT40-Channel 8: Peak



802.11n HT40-Channel 4: Average



802.11n HT40-Channel 8: Average



5.7. Radiates Emission

Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	102.5kPa

Method of Measurement

The test set-up was made in accordance to the general provisions of ANSI C63.10-2013. 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 9 kHz to the 10th harmonic of the carrier, and the emissions less than 20 dB below the permissible value are reported.

During the test, below 30MHz, the center of the loop shall be 1 meters; above 30MHz, 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.

Set the spectrum analyzer in the following:

Below 1GHz (detector: Peak and Quasi-Peak)

RBW=100 kHz / VBW=300 kHz / Sweep=AUTO

Above 1GHz (detector: Peak):

(a) PEAK: RBW=1MHz VBW=3MHz/ Sweep=AUTO

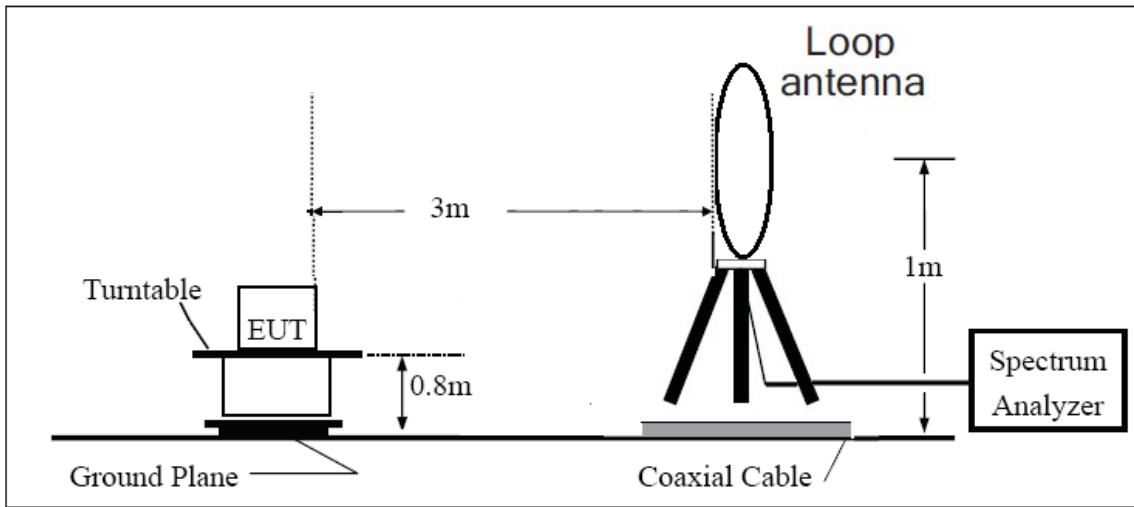
(b) AVERAGE: RBW=1MHz / VBW=3MHz / Sweep=AUTO

The radiated emission was measured in the following position: EUT stand-up position (Z axis), lie-down position (X, Y axis). The worst emission was found in stand-up position (Z axis) and the worst case was recorded.

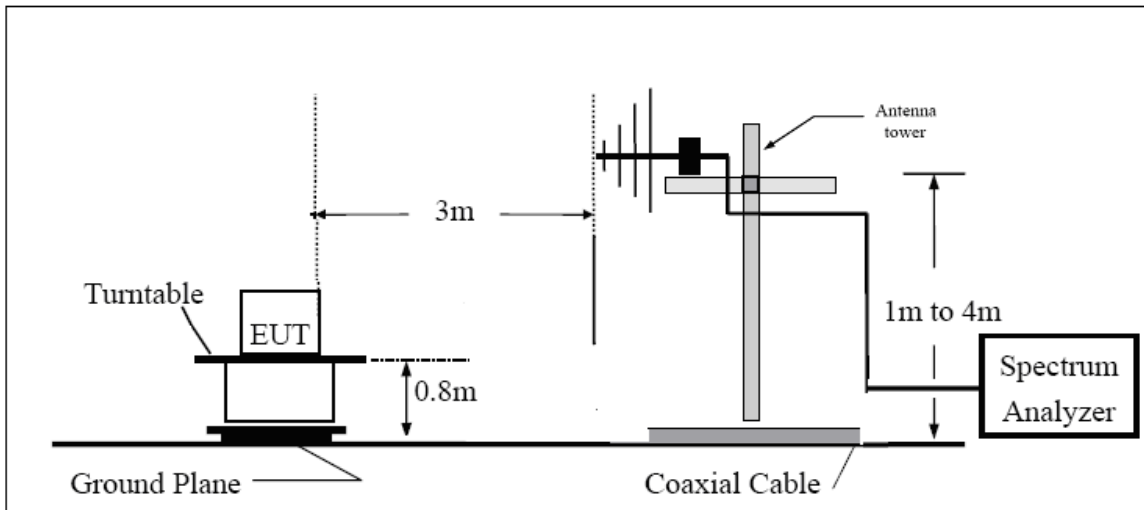
The test is in transmitting mode.

Test setup

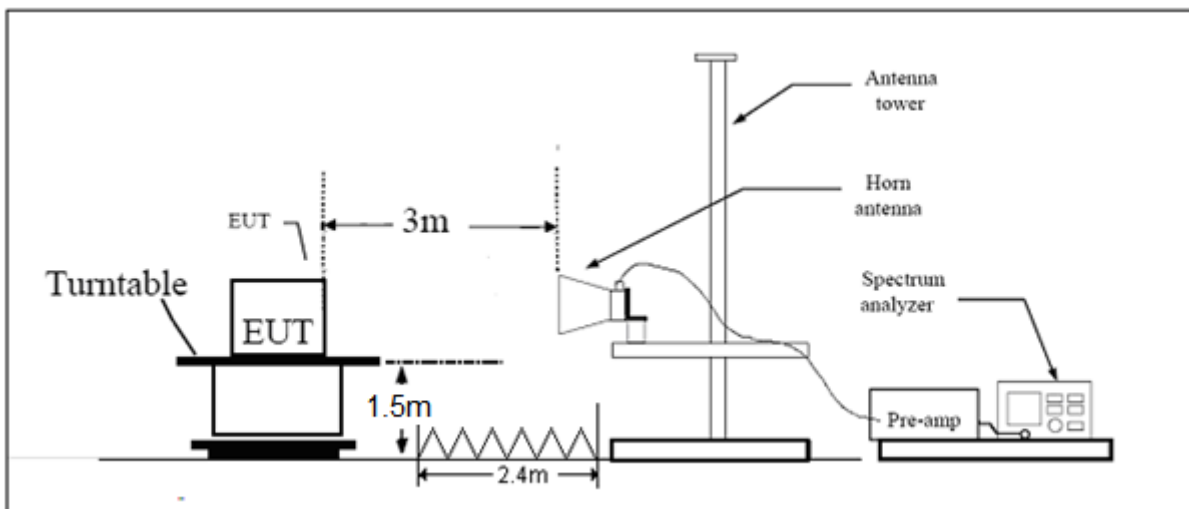
9KHz~~~ 30MHz



30MHz~~~ 1GHz



Above 1GHz



Note: Area side:2.4mX3.6m

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)
0.009–0.490	2400/F(kHz)	/
0.490–1.705	24000/F(kHz)	/
1.705–30.0	30	/
30-88	100	40
88-216	150	43.5
216-960	200	46
Above960	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 $k = 1.96$.

Frequency	Uncertainty
9KHz-30MHz	3.55 dB
30MHz-200MHz	4.19 dB
200MHz-1GHz	3.63 dB
Above 1GHz	3.68 dB



Test result

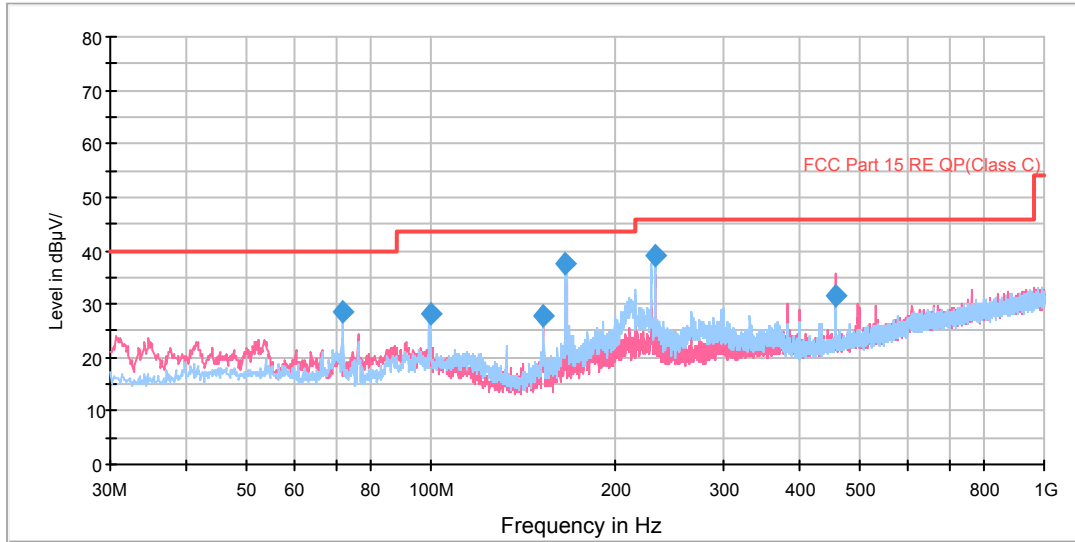
Sweep from 9 kHz to 30MHz, and the emissions more than 20 dB below the permissible value are not reported.

The following graphs display the maximum values of horizontal and vertical by software.

For above 1GHz, Blue trace uses the peak detection, Green trace uses the average detection.

802.11b CH1

FCC RE 0.03-1GHz QP Class C



Radiates Emission from 30MHz to 1GHz

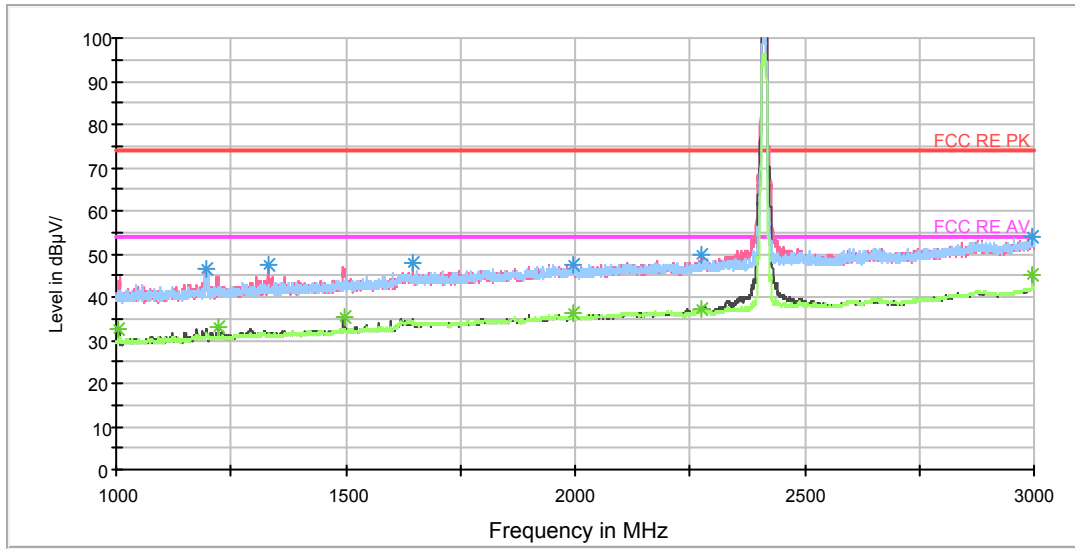
Frequency (MHz)	Quasi-Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
71.992500	28.7	225.0	H	332.0	37.3	8.6	11.3	40.0
99.757500	28.1	189.0	H	311.0	41.3	13.2	15.4	43.5
152.260000	27.6	216.0	H	266.0	36.9	9.3	15.9	43.5
166.002500	37.7	216.0	H	256.0	47.7	10.0	5.8	43.5
232.371250	38.9	125.0	H	98.0	52.3	13.4	7.1	46.0
456.598750	31.6	114.0	V	185.0	50.6	19.0	14.4	46.0

Remark: 1. Quasi-Peak = Reading value + Correction factor

2. Correction Factor = Antenna factor+ Insertion loss (cable loss+amplifier gain)

3. Margin = Limit – Quasi-Peak

RE 1G-3GHz PK+AV



Note: The signal beyond the limit is carrier.
Radiates Emission from 1GHz to 3GHz

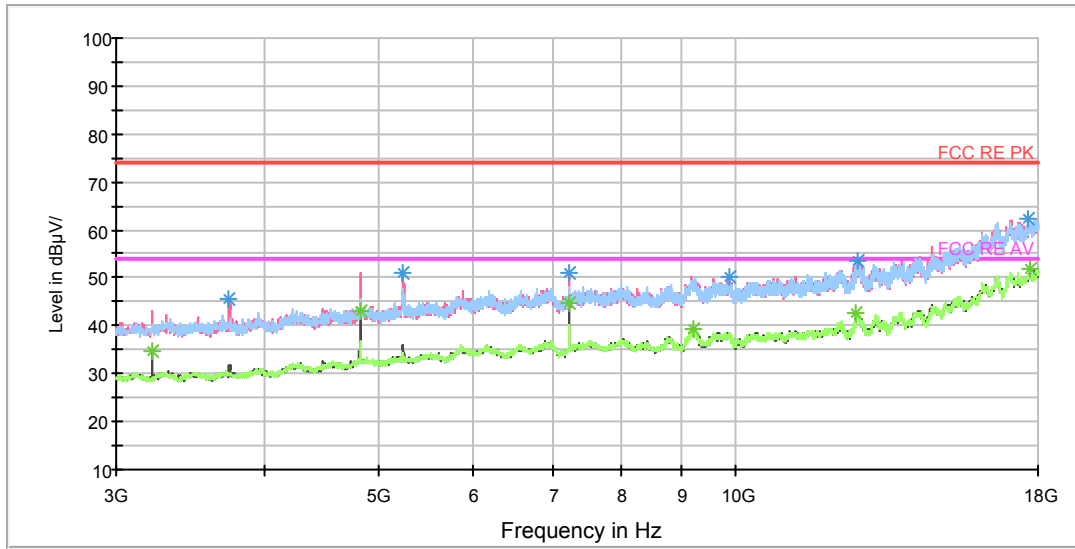
Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1196.500000	46.5	102.0	V	182.0	54.7	-8.2	27.5	74
1333.500000	47.4	102.0	V	318.0	54.8	-7.4	26.6	74
1647.250000	48.1	102.0	V	182.0	53.1	-5.0	25.9	74
1994.500000	47.5	102.0	H	251.0	50.7	-3.2	26.5	74
2275.250000	49.6	102.0	V	261.0	51.1	-1.5	24.4	74
2995.500000	53.9	102.0	V	0.0	56.2	2.3	20.1	74

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1004.750000	32.7	102.0	V	113.0	42.0	-9.3	21.3	54
1222.500000	32.9	102.0	V	205.0	40.7	-7.8	21.1	54
1498.500000	35.2	102.0	V	0.0	41.9	-6.7	18.8	54
1994.000000	36.1	102.0	V	0.0	39.3	-3.2	17.9	54
2274.250000	37.2	102.0	V	341.0	38.7	-1.5	16.8	54
2994.750000	45.1	102.0	V	0.0	47.4	2.3	8.9	54

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

RE 3-18GHz PK+AV



Radiates Emission from 3GHz to 18GHz

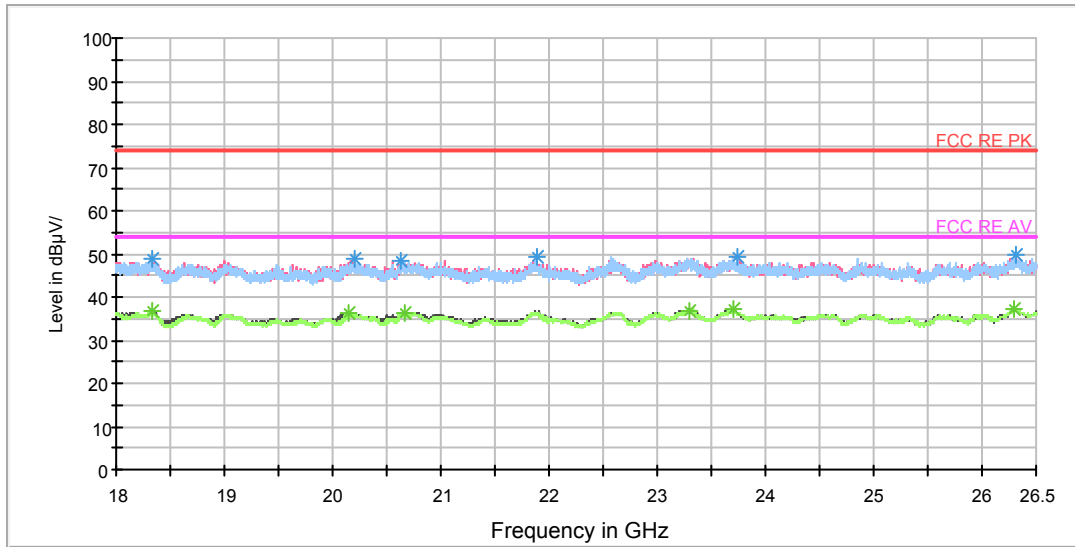
Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
3735.000000	45.4	102.0	V	359.0	47.1	-1.7	28.6	74
5242.500000	51.2	102.0	V	0.0	53.3	2.1	22.8	74
7237.500000	50.9	102.0	V	206.0	57.8	6.9	23.1	74
9866.250000	50.3	102.0	V	0.0	60.7	10.4	23.7	74
12658.125000	53.7	102.0	V	279.0	67.6	13.9	20.3	74
17656.875000	62.1	102.0	V	0.0	86.5	24.4	11.9	74

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
3215.625000	34.5	102.0	V	102.0	37.3	-2.8	19.5	54
4822.500000	42.9	102.0	V	89.0	44.2	1.3	11.1	54
7237.500000	44.6	102.0	V	206.0	51.5	6.9	9.4	54
9219.375000	39.4	102.0	V	329.0	49.3	9.9	14.6	54
12645.000000	42.6	102.0	H	59.0	57.0	14.4	11.4	54
17707.500000	51.8	102.0	H	112.0	76.5	24.7	2.2	54

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

RE 18-26.5GHz PK+AV



Radiates Emission from 18GHz to 26.5GHz

Frequency (MHz)	Peak (dBuV/m)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
18329.375000	48.9	H	183.0	52.1	-3.2	25.1	74
20212.125000	48.7	H	138.0	54.6	-5.9	25.3	74
20638.187500	48.6	H	0.0	55.1	-6.5	25.4	74
21882.375000	49.3	H	116.0	57.3	-8.0	24.7	74
23740.687500	49.5	H	294.0	55.4	-5.9	24.5	74
26306.625000	49.7	V	243.0	55.1	-5.4	24.3	74

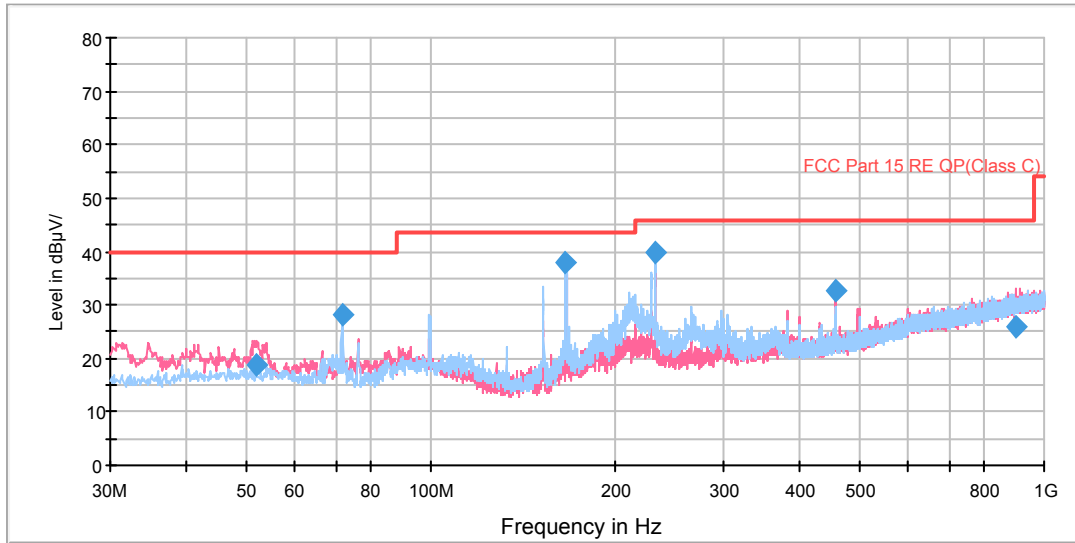
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

Frequency (MHz)	Average (dBuV/m)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
18332.562500	36.6	H	8.0	39.8	-3.2	17.4	54
20145.187500	36.2	V	308.0	42.0	-5.8	17.8	54
20674.312500	36.4	V	111.0	43.0	-6.6	17.6	54
23293.375000	37.0	V	0.0	43.0	-6.0	17.0	54
23699.250000	37.0	V	308.0	42.9	-5.9	17.0	54
26296.000000	37.2	V	0.0	42.6	-5.4	16.8	54

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

802.11b CH6

FCC RE 0.03-1GHz QP Class C

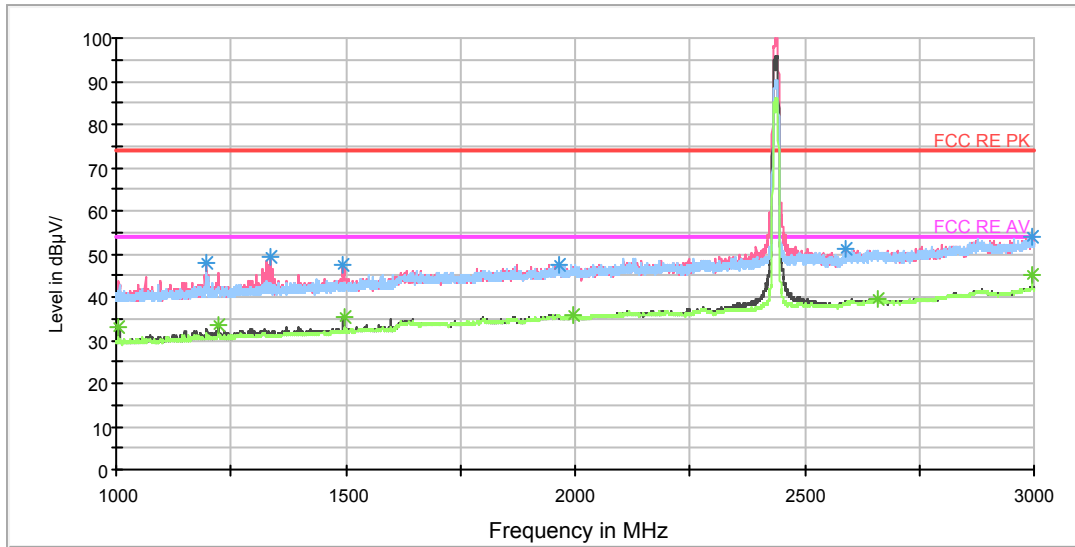


Radiates Emission from 30MHz to 1GHz

Frequency (MHz)	Quasi-Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
52.023750	18.9	100.0	V	122.0	31.8	12.9	21.1	40.0
71.992500	28.1	225.0	H	336.0	36.7	8.6	11.9	40.0
166.001250	37.8	225.0	H	256.0	47.8	10.0	5.7	43.5
232.371250	39.8	125.0	H	104.0	53.2	13.4	6.2	46.0
458.336250	32.7	114.0	V	178.0	51.7	19.0	13.3	46.0
896.818750	26.0	125.0	V	97.0	51.5	25.5	20.0	46.0

- Remark:**
1. Quasi-Peak = Reading value + Correction factor
 2. Correction Factor = Antenna factor+ Insertion loss (cable loss+amplifier gain)
 3. Margin = Limit – Quasi-Peak

RE 1G-3GHz PK+AV



Note: The signal beyond the limit is carrier.
Radiates Emission from 1GHz to 3GHz

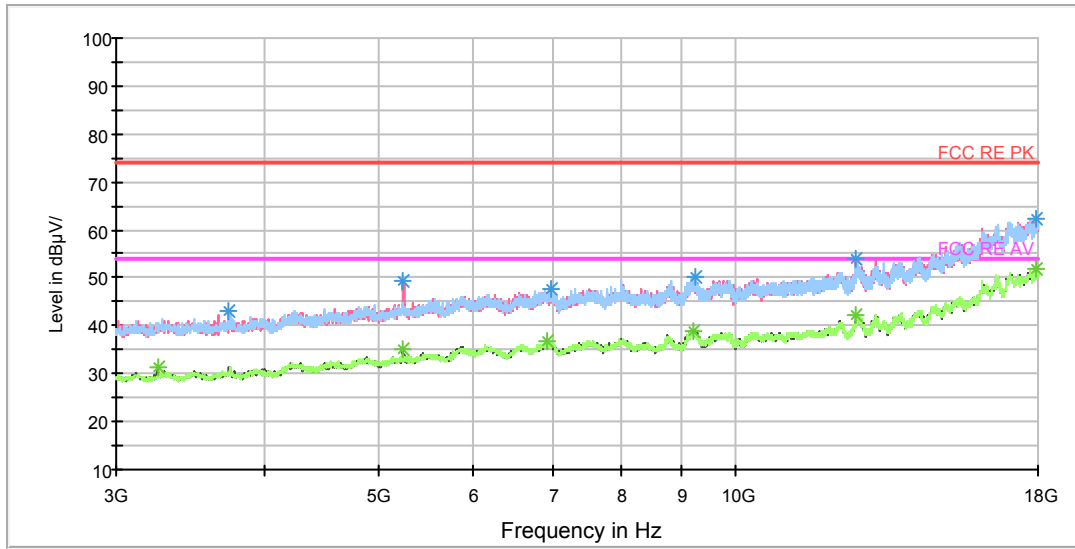
Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1194.750000	47.8	102.0	V	133.0	56.0	-8.2	26.2	74
1336.250000	49.4	102.0	V	226.0	56.8	-7.4	24.6	74
1494.500000	47.6	102.0	V	0.0	54.3	-6.7	26.4	74
1966.000000	47.7	102.0	H	159.0	51.1	-3.4	26.3	74
2590.000000	51.1	102.0	V	87.0	51.1	0.0	22.9	74
2994.000000	54.1	102.0	V	0.0	56.4	2.3	19.9	74

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1005.250000	33.1	102.0	V	121.0	42.4	-9.3	20.9	54
1223.000000	33.4	102.0	V	38.0	41.2	-7.8	20.6	54
1497.250000	35.6	102.0	V	0.0	42.3	-6.7	18.4	54
1995.500000	35.9	102.0	V	352.0	39.1	-3.2	18.1	54
2660.500000	39.7	102.0	V	341.0	40.0	0.3	14.3	54
2995.000000	45.0	102.0	V	0.0	47.3	2.3	9.0	54

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

RE 3-18GHz PK+AV



Radiates Emission from 3GHz to 18GHz

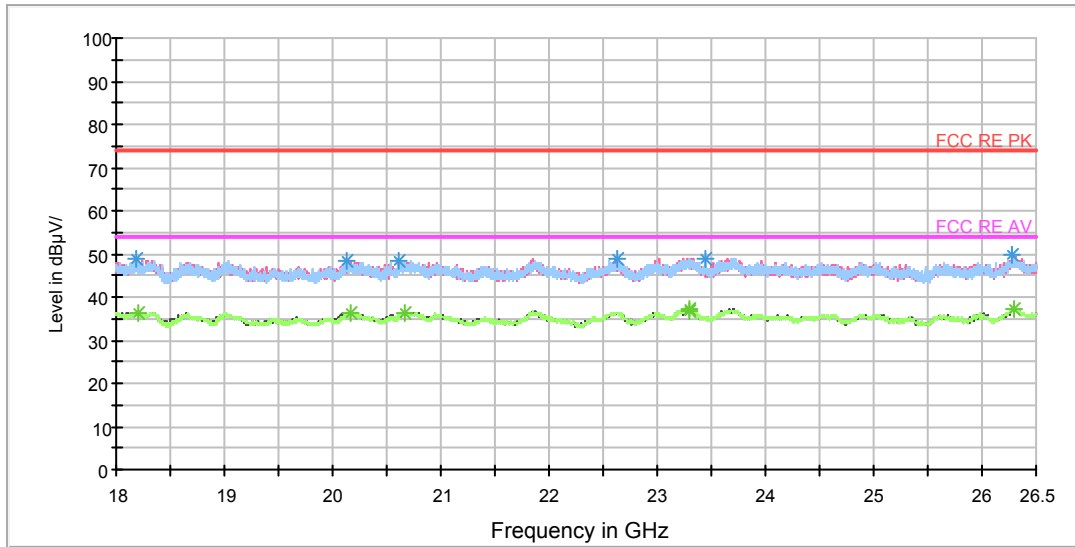
Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
3735.000000	43.2	102.0	V	0.0	44.9	-1.7	30.8	74
5235.000000	49.3	102.0	V	0.0	51.4	2.1	24.7	74
6990.000000	47.7	102.0	V	231.0	54.2	6.5	26.3	74
9236.250000	50.2	102.0	V	356.0	60.1	9.9	23.8	74
12635.625000	53.8	102.0	V	310.0	67.9	14.1	20.2	74
17913.750000	62.4	102.0	V	245.0	88.0	25.6	11.6	74

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
3249.375000	31.5	102.0	V	310.0	34.0	-2.5	22.5	54
5240.625000	35.1	102.0	V	0.0	37.2	2.1	18.9	54
6933.750000	36.8	102.0	V	0.0	43.0	6.2	17.2	54
9202.500000	39.0	102.0	H	183.0	49.2	10.2	15.0	54
12652.500000	42.4	102.0	V	0.0	56.5	14.1	11.6	54
17913.750000	51.8	102.0	V	245.0	77.4	25.6	2.2	54

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

RE 18-26.5GHz PK+AV



Radiates Emission from 18GHz to 26.5GHz

Frequency (MHz)	Peak (dBuV/m)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
18189.125000	49.0	V	286.0	51.6	-2.6	25.0	74
20128.187500	48.6	H	73.0	54.4	-5.8	25.4	74
20619.062500	48.4	V	0.0	54.9	-6.5	25.6	74
22620.812500	49.0	V	0.0	55.7	-6.7	25.0	74
23437.875000	49.1	H	50.0	55.0	-5.9	24.9	74
26282.187500	49.9	V	132.0	55.3	-5.4	24.1	74

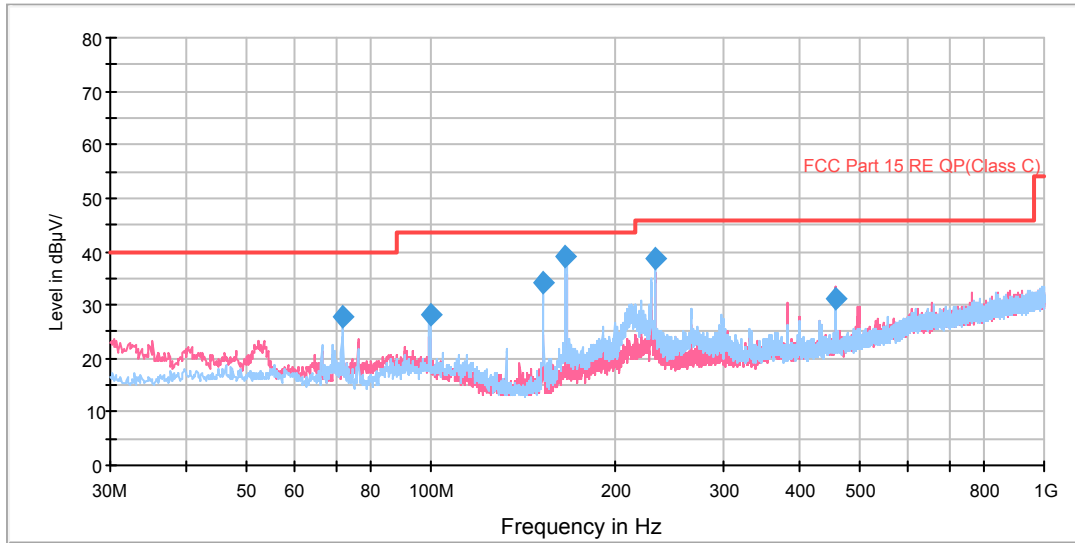
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

Frequency (MHz)	Average (dBuV/m)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
18196.562500	36.5	V	154.0	39.1	-2.6	17.5	54
20165.375000	36.5	H	73.0	42.3	-5.8	17.5	54
20658.375000	36.4	V	221.0	43.0	-6.6	17.6	54
23293.375000	37.0	V	42.0	43.0	-6.0	17.0	54
23305.062500	37.2	H	0.0	43.2	-6.0	16.8	54
26294.937500	37.3	V	17.0	42.7	-5.4	16.7	54

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

802.11b CH11

FCC RE 0.03-1GHz QP Class C

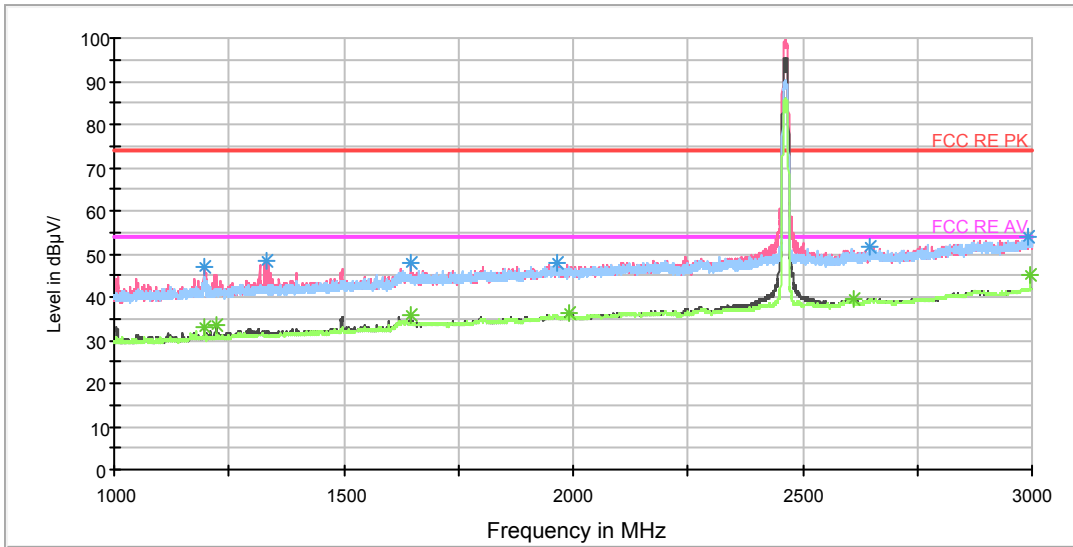


Radiates Emission from 30MHz to 1GHz

Frequency (MHz)	Quasi-Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
71.992500	27.8	225.0	H	338.0	36.4	8.6	12.2	40.0
99.758750	28.3	189.0	H	324.0	41.5	13.2	15.2	43.5
152.745000	34.2	200.0	H	57.0	43.5	9.3	9.3	43.5
166.005000	38.9	225.0	H	248.0	48.9	10.0	4.6	43.5
232.366250	38.8	125.0	H	97.0	52.2	13.4	7.2	46.0
458.376250	31.0	202.0	V	351.0	50.0	19.0	15.0	46.0

- Remark: 1. Quasi-Peak = Reading value + Correction factor
 2. Correction Factor = Antenna factor+ Insertion loss(cable loss+amplifier gain)
 3. Margin = Limit – Quasi-Peak

RE 1G-3GHz PK+AV



Note: The signal beyond the limit is carrier.
Radiates Emission from 1GHz to 3GHz

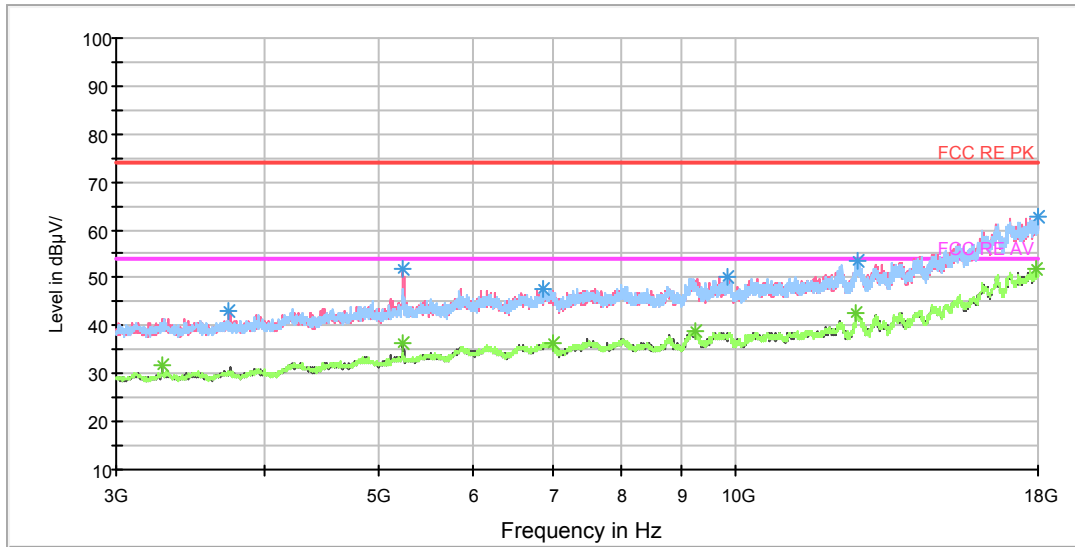
Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1197.750000	47.0	102.0	V	38.0	55.2	-8.2	27.0	74
1331.000000	48.2	102.0	V	215.0	55.6	-7.4	25.8	74
1646.750000	47.9	102.0	V	111.0	52.9	-5.0	26.1	74
1965.500000	48.0	102.0	H	0.0	51.4	-3.4	26.0	74
2644.250000	51.6	102.0	V	293.0	51.9	0.3	22.4	74
2990.500000	54.1	102.0	V	157.0	56.3	2.2	19.9	74

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1198.000000	33.0	102.0	V	259.0	41.2	-8.2	21.0	54
1222.750000	33.3	102.0	V	157.0	41.1	-7.8	20.7	54
1646.750000	35.8	102.0	V	111.0	40.8	-5.0	18.2	54
1992.500000	36.1	102.0	V	0.0	39.4	-3.3	17.9	54
2611.500000	39.3	102.0	V	0.0	39.4	0.1	14.7	54
2994.750000	45.0	102.0	V	63.0	47.3	2.3	9.0	54

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

RE 3-18GHz PK+AV



Radiates Emission from 3GHz to 18GHz

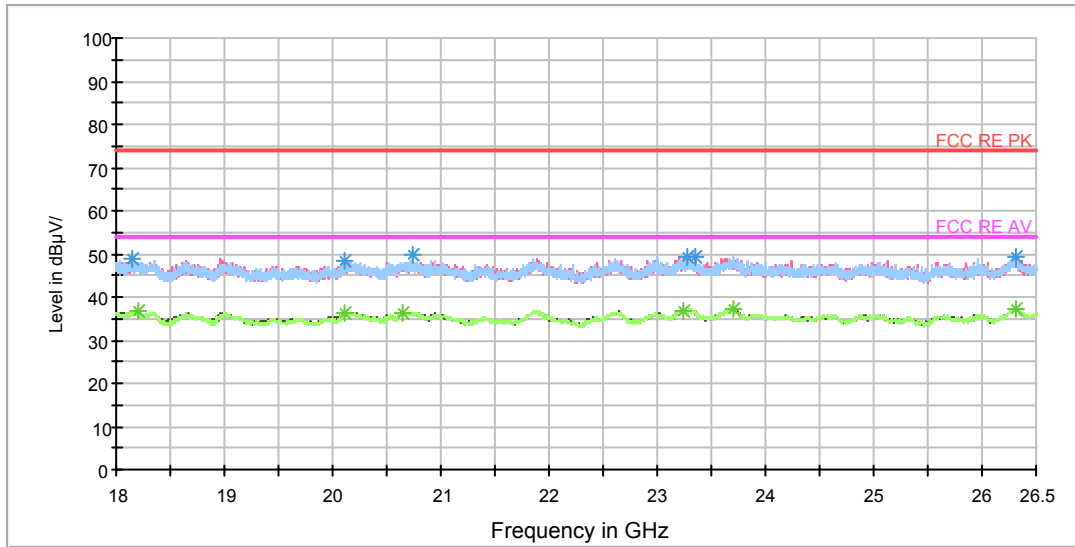
Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
3736.875000	43.3	102.0	V	53.0	45.0	-1.7	30.7	74
5231.250000	51.7	102.0	V	0.0	53.8	2.1	22.3	74
6885.000000	47.8	102.0	V	225.0	53.9	6.1	26.2	74
9853.125000	50.1	102.0	H	27.0	60.4	10.3	23.9	74
12680.625000	53.6	102.0	H	193.0	67.9	14.3	20.4	74
17998.125000	62.7	102.0	V	0.0	88.1	25.4	11.3	74

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
3283.125000	31.8	102.0	V	348.0	33.9	-2.1	22.2	54
5235.000000	36.5	102.0	V	0.0	38.6	2.1	17.5	54
7003.125000	36.6	102.0	H	54.0	43.1	6.5	17.4	54
9238.125000	39.0	102.0	H	41.0	48.9	9.9	15.0	54
12650.625000	42.6	102.0	H	67.0	56.7	14.1	11.4	54
17917.500000	51.8	102.0	H	107.0	77.5	25.7	2.2	54

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

RE 18-26.5GHz PK+AV



Radiates Emission from 18GHz to 26.5GHz

Frequency (MHz)	Peak (dBuV/m)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
18154.062500	48.9	H	0.0	51.4	-2.5	25.1	74
20116.500000	48.2	V	201.0	54.0	-5.8	25.8	74
20739.125000	49.7	H	0.0	56.5	-6.8	24.3	74
23284.875000	49.5	V	332.0	55.5	-6.0	24.5	74
23356.062500	49.3	V	0.0	55.2	-5.9	24.7	74
26305.562500	49.4	H	0.0	54.8	-5.4	24.6	74

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

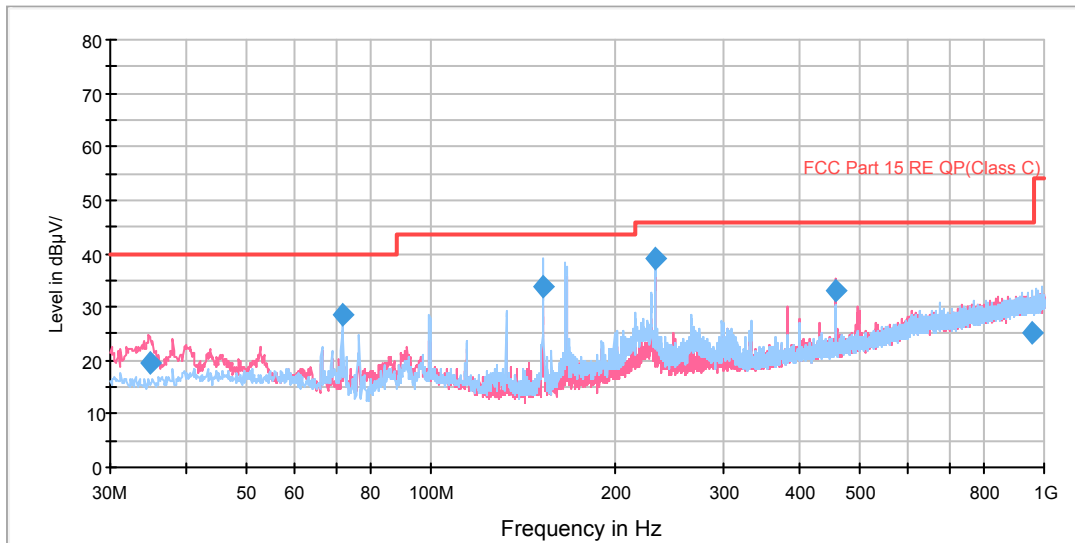
Frequency (MHz)	Average (dBuV/m)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
18196.562500	36.6	H	91.0	39.2	-2.6	17.4	54
20113.312500	36.3	V	267.0	42.1	-5.8	17.7	54
20653.062500	36.4	V	155.0	43.0	-6.6	17.6	54
23247.687500	36.9	V	289.0	42.9	-6.0	17.1	54
23703.500000	37.1	H	0.0	43.0	-5.9	16.9	54
26310.875000	37.3	H	271.0	42.7	-5.4	16.7	54

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)



802.11g CH1

FCC RE 0.03-1GHz QP Class C

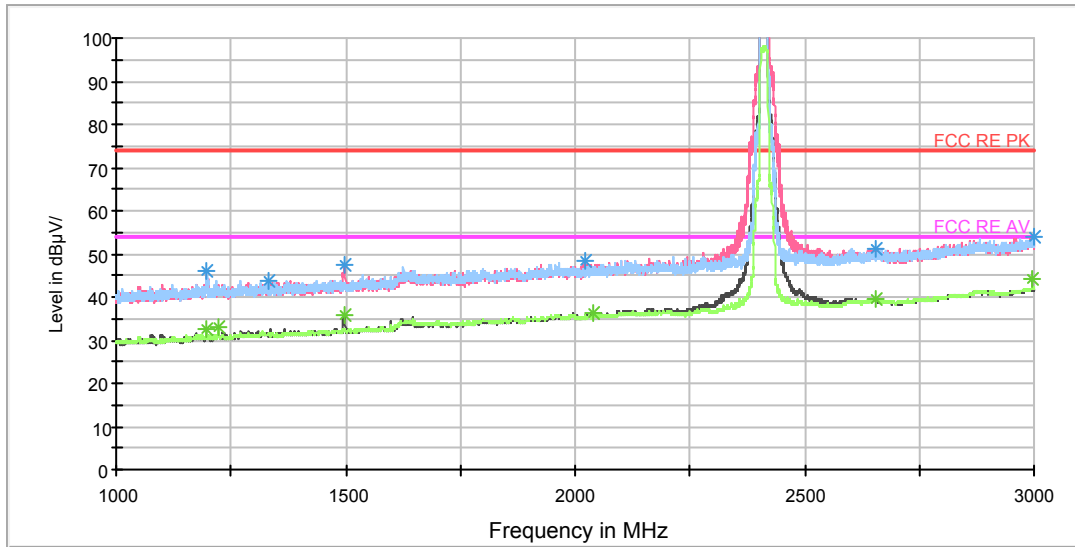


Radiates Emission from 30MHz to 1GHz

Frequency (MHz)	Quasi-Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
34.848750	19.4	100.0	V	190.0	31.3	11.9	20.6	40.0
71.992500	28.6	225.0	H	344.0	37.2	8.6	11.4	40.0
152.260000	33.9	200.0	H	72.0	43.2	9.3	9.6	43.5
232.366250	39.0	125.0	H	106.0	52.4	13.4	7.0	46.0
458.376250	32.9	114.0	V	174.0	51.9	19.0	13.1	46.0
957.485000	25.3	100.0	H	17.0	51.5	26.2	20.7	46.0

- Remark: 1. Quasi-Peak = Reading value + Correction factor
 2. Correction Factor = Antenna factor+ Insertion loss(cable loss+amplifier gain)
 3. Margin = Limit – Quasi-Peak

RE 1G-3GHz PK+AV



Note: The signal beyond the limit is carrier.
Radiates Emission from 1GHz to 3GHz

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1198.500000	45.9	102.0	H	21.0	54.1	-8.2	28.1	74
1330.500000	43.9	102.0	H	10.0	51.3	-7.4	30.1	74
1497.500000	47.2	102.0	V	0.0	53.9	-6.7	26.8	74
2023.250000	48.2	102.0	V	0.0	51.7	-3.5	25.8	74
2998.500000	53.7	102.0	H	45.0	56.0	2.3	20.3	74
2653.000000	51.2	102.0	V	0.0	51.6	0.4	22.8	74

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1198.000000	32.6	102.0	V	65.0	40.8	-8.2	21.4	54
1222.750000	33.1	102.0	V	39.0	40.9	-7.8	20.9	54
1497.750000	35.7	102.0	V	0.0	42.4	-6.7	18.3	54
2041.000000	36.4	102.0	V	0.0	39.6	-3.2	17.6	54
2994.750000	44.4	102.0	V	0.0	46.7	2.3	9.6	54
2655.000000	39.6	102.0	V	95.0	40.0	0.4	14.4	54

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)