CERTIFICATION TEST REPORT

FCC CFR47 PART 15 SUBPART C

Test Report File No.	13-IST-0831		■ Basic	☐ Alternate
Date of Receipt	October 25, 2013	**Begin of test date**	November 11, 2013	
Date of Issue	November 25, 2013	**End of test date**	November 20, 2013	

Kind of Product	2-channel Wi-Fi black box
Basic Model(s)	MD-8500P
FCC ID	2AA4DMD-8500P

Applicant	MI DONG Electronics & Telecommunication Co., LTD.
Address	(Yangjae-dong, #402 bethel B/D), 23, Dongsan-ro,
	Seocho-gu, Seoul, Korea
Manufacturer	MI DONG Electronics & Telecommunication Co., LTD.
Address	(Yangjae-dong, #402 bethel B/D), 23, Dongsan-ro,
	Seocho-gu, Seoul, Korea

Test Result ■ **Positive** ☐ **Negative**

Tested By

B.O.KO

Reviewed By

S.J.CHO

Comment(s)

- Investigations requested : Measurement to the relevant clauses of FCC rules and regulations Part 15 Subpart C.
- The test report is consists of 59 pages.
- The test result only responds to the tested sample.
- It is not allowed to copy this report even partly without the allowance of IST Co., Ltd.
- This equipment as for has been shown to be capable of continued compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in ANSI C63.4 I assume full responsibility for accuracy and completeness of these data.

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INFORMATION OF TEST LABORATORY

EMC LABORATORY of IST Co., Ltd.
400-19, Singal-dong, Giheung-gu, Yongin-si,
Gyeonggi-do, 446-599, Korea

TEL : +82 31 326 6700 FAX : +82 31 326 6797

KOLAS Testing No. : KT118
RRA Designation No. : KR0018
FCC Registration No. : 400603
VCCI Member No. : 1739

PRODUCT INFORMATION

2-channel Wi-Fi black box

Product's Specification	
Size	92 x 61 x 32 mm(Main body) 53.6 x 27 x 24.5 mm(Rear camera)
Front Camera	Full HD (1920 x 1080) / 120 degrees
Rear camera	HD (1280 x 720) / 110 degrees
Audio	Embedded microphone
Video output	Stereo jack (3-pole)
Acceleration Sensor	3-axis acceleration sensor
GPS	SIRF-IV class(optional)
Working voltage	DC 12V / 24V
Power consumption	Max 4.3 W
Working temperature	-20℃ to 70℃
Keeping temperature	-40℃ to 85℃

Wi-Fi Specification	
Standard	IEEE 802.11b/g/n
Main chipset	RTL8188CUS
Frequency range	2.4 GHz ~ 2.4835 GHz (ISM band)
Interface	USB 2.0
Data Rate	11n : 7~150 Mbps(Auto sense) 11g : 6/9/12/18/24/36/48/54 Mbps(Auto sense) 11b : 1/2/3/5.5/6/9/11 Mbps(Auto sense)
Modulation type	OFDM/CCK
Antenna	PIFA type(Micro strip Antenna)

Note: All the testing were performed according to the procedures in

FCC CFR47 PART 15 SUBPART C

Measurement Uncertainty

Conducted Emissions	U = 2.98 [dB] (Confidence level approximately 95 %, k = 2)
Radiated Emissions (Antenna - Horizontal)	U = 3.83 [dB] (Confidence level approximately 95 %, k = 2)
Radiated Emissions (Antenna - Verical)	U = 4.50 [dB] (Confidence level approximately 95 %, k = 2)

SUMMARY

WLAN(2412 MHz ~ 2462 MHz)

Applied Standard : FCC CRF Part 15 Subpart C

Standard Section	Description	result	remark
15.207	AC Conducted Emission	-	Not Applicable *see the note
15.209	Field Strength of Harmonics	Pass	Meet the requirements
15.247(b)	Peak Power Output	Pass	Meet the requirements
15.247(d)	Conducted Band Edges	Pass	Meet the requirements
	Conducted Spurious Emission	Pass	Meet the requirements
	Radiated Band Edges	Pass	Meet the requirements
	Radiated Spurious Emission	Pass	Meet the requirements
15.247(a)(2)	6dB Bandwidth	Pass	Meet the requirements
15.247(e)	Power Spectral Density	Pass	Meet the requirements
15.203 & 15.247(b)	Antenna requirement	-	Meet the requirements

***Note: The EUT use battery in Vehicle.**

Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the Following standards:

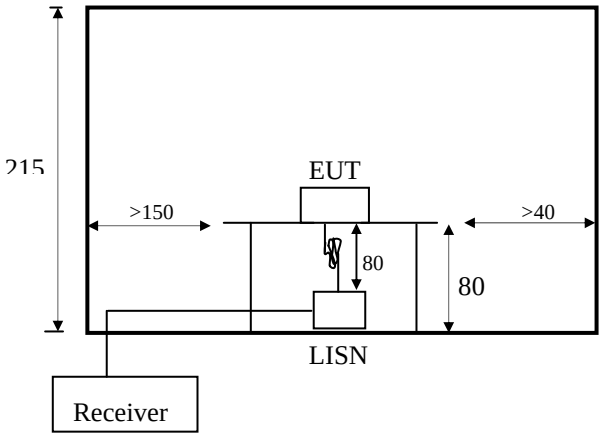
- ✧ FCC Part 15 Subpart C § 15.247
- ✧ FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v03r01
- ✧ FCC TCB Workshop 2013, April 9.
- ✧ ANSI C63.4-2003 and ANSI C63.10-2009

Conducted Emissions:

The measurement were performed over the frequency range of 0.15 MHz to 30 MHz using a 50 Ω/50 uH LISN as the input transducer to a Spectrum Analyzer or a Field Intensity Meter. The measurements were made with the detector set for "Peak" amplitude within a bandwidth of 10 kHz or for "quasi-peak" & "Average" within a bandwidth of 9 KHz.

-Procedure of Test

The line-conducted facility is located inside a shielded room No.1. A 1 m X 1.5 m wooden table 80 cm height is placed 40 cm away from the vertical wall and 1.5 m away from the other wall of the shielded room. The R/S ESCI and Hyup-Rip KNW-407 LISN are bonded to bottom of the shielded room. The EUT is located on the wooden table with distance more than 80 cm from the LISN and powered from the EMCO LISN .The peripheral equipment is powered from the other LISN. Power to the LISNs are filtered by a noise cut power line filters. All electrical cables are shielded by braided tinned steel tubing with inner ϕ 1.2 cm. If the EUT is a DC-powered device, power will be derived from the source power supply it normally will be powered from and this supply lines will be connected to the EMCO LISN. All interconnecting cables more than 1m were shortened by non-inductive bundling to a 1m length. Sufficient time for the EUT, support equipment, and test equipment was allowed in order for them to warm up to their normal operating conditions. The RF output of the LISN was connected to the R/S receiver to determine the frequency producing the maximum emission from the EUT. The frequency producing the maximum level was reexamined using Quasi-Peak mode by manual measurement, after scanned by automatic Peak mode for frequency range from 0.15 to 30 MHz. The bandwidth of the receiver was set to 10 kHz. The EUT, peripheral equipment, and interconnecting cables were arranged and manipulated to maximize each EME emission.



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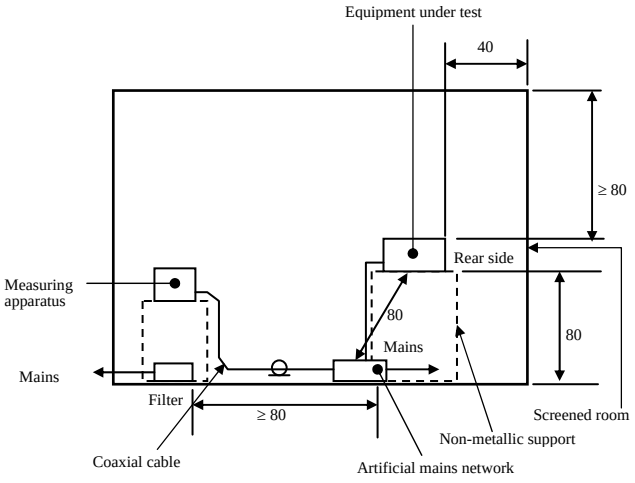


< Concept Drawing >

Limits

According to §15.207(a) except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 μH/50 ohms line impedance stabilization network(LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

Frequency Range (MHz)	Limits	
	Quasi-peak	Average
0.15 to 0.50	66 to 56*	56 to 46*
0.50 to 5	56	46
5 to 30	60	50

* Decreases with the logarithm of the frequency.

Test specification.

According to FCC CFR Title 47 Part 15 Subpart C Section 15.207

Conducted Emissions

[Not Applicable]

◆ Test Equipment Used

Model Name	Description	Manufacturer	Calibration Date	Serial No.
ESCI	Test Receiver	Rohde & Schwarz	May. 10, 2014	100374
ESH2-Z5	LISN	Rohde & Schwarz	May. 10, 2014	842966/007
ESH3-Z2	Pulse Limiter	Rohde & Schwarz	May. 10, 2014	357.8810.52

◆ Test Accessories Used

Equipment	Type	Brand	Serial No.

Connecting Interface Cables :

◆ Test Conditions

Temperature () ℃

Humidity () % R.H.

Atomosphere () mbar

◆ Test Date

◆ Test Area

Peak Power Output

◆ Test Equipment

The following test equipment are used during the test:

Item	Equipment	Manufacturer	Model no/Serial No.	Last Cal.
1	Power Meter	Agilent	N1911A / MY53280018	Oct. 08, 2013
2	Wideband Power Sensor	Agilent	N1921A / MY52300024	Oct. 08, 2013
3	RF ROOM			

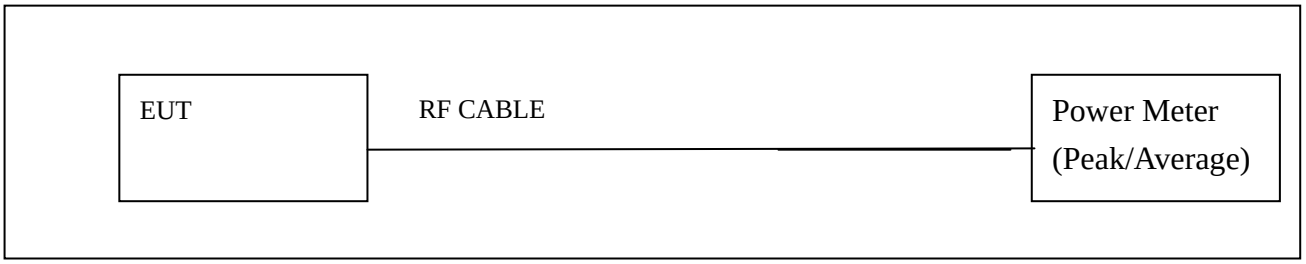
Note : All equipment upon which need to calibrated are with calibration period of 1 year.

◆ Limits

The maximum peak output power of the intentional radiator shall not exceed the following :

1. According to ∮15.247(b)(3), for systems using digital modulation in the bands of 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz : 1Watt.
2. According to ∮15.247(b)(4), the conducted output power limit specified in paragraph(b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph(c) of this section, is transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs(b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi

◆ Test Setup



◆ Test Procedure

1.The transmitter output is connected to the Spectrum analyzer. The Power meter is set to the Average power detection.

2. The testing follows the Measurement Procedure FCC KDB No. 558074 D01 DTS Meas. Guidance v03r01

Peak Power Test result

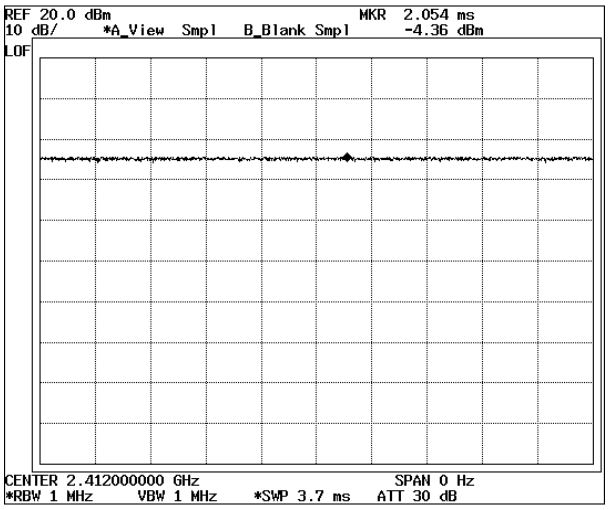
Product	MD-8500P
Test Method	Measurement using an RF Peak/average power meter
Test Mode	Transmit
Test Site	RF Room
Measurement Method	Conducted

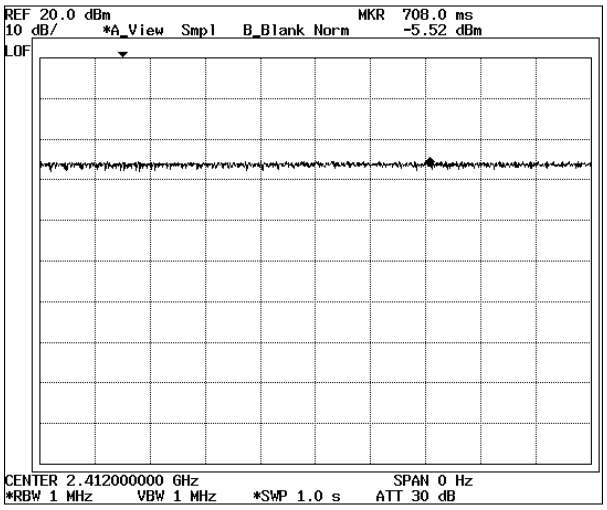
Test voltage : 12Vdc

802.11b Mode		Rate (Mbps)	Measure Power (dBm)		Limit (dBm)
Frequency (MHz)	Channel No.		Peak	Average	
2412	1	11 Mbps	2.72	1.02	1Watt=30dBm
2437	6	11 Mbps	2.64	0.87	1Watt=30dBm
2462	11	11 Mbps	2.45	0.11	1Watt=30dBm

Note : Measurement Power = reading level + correct factor + Duty Cycle.
Tested data rate is worst case.
Duty Cycle is 100%.
Refer duty cycle data plots.

[Duty Cycle data plots]





802.11g Mode		Rate (Mbps)	Measure Power (dBm)		Limit (dBm)
Frequency (MHz)	Channel No.		Peak	Average	
2412	1	54 Mbps	5.47	-3.23	1Watt=30dBm
2437	6	54 Mbps	4.82	-3.36	1Watt=30dBm
2462	11	54 Mbps	4.73	-3.62	1Watt=30dBm

Note : Measurement Power = reading level + correct factor + Duty Cycle.
Tested data rate is worst case.
Duty Cycle is 100%

802.11n Mode		Rate (Mbps)	Measure Power (dBm)		Limit (dBm)
Frequency (MHz)	Channel No.		Peak	Average	
2412	1	MCS7	4.85	-3.15	1Watt=30dBm
2437	6	MCS7	4.82	-3.21	1Watt=30dBm
2462	11	MCS7	4.93	-3.77	1Watt=30dBm

Note : Measurement Power = reading level + correct factor + Duty Cycle
Tested data rate is worst case.
Duty Cycle is 100%.

Test voltage : 24Vdc

802.11b Mode		Rate (Mbps)	Measure Power (dBm)		Limit (dBm)
Frequency (MHz)	Channel No.		Peak	Average	
2412	1	11 Mbps	2.82	0.33	1Watt=30dBm
2437	6	11 Mbps	2.85	0.27	1Watt=30dBm
2462	11	11 Mbps	2.37	-0.17	1Watt=30dBm

Note : Measurement Power = reading level + correct factor + Duty Cycle.
Tested data rate is worst case.
Duty Cycle is 100%.

802.11g Mode		Rate (Mbps)	Measure Power (dBm)		Limit (dBm)
Frequency (MHz)	Channel No.		Peak	Average	
2412	1	54 Mbps	5.64	-3.72	1Watt=30dBm
2437	6	54 Mbps	5.23	-3.88	1Watt=30dBm
2462	11	54 Mbps	5.44	-4.27	1Watt=30dBm

Note : Measurement Power = reading level + correct factor + Duty Cycle.
Tested data rate is worst case.
Duty Cycle is 100%

802.11n Mode		Rate (Mbps)	Measure Power (dBm)		Limit (dBm)
Frequency (MHz)	Channel No.		Peak	Average	
2412	1	MCS7	4.68	-4.39	1Watt=30dBm
2437	6	MCS7	4.85	-4.21	1Watt=30dBm
2462	11	MCS7	4.77	-4.41	1Watt=30dBm

Note : Measurement Power = reading level + correct factor + Duty Cycle
Tested data rate is worst case.
Duty Cycle is 100%.

Conducted Spurious Emissions & Band Edge

◆ TEST Equipment

The following test equipment are used during the test:

Item	Equipment	Manufacturer	Model no/Serial No.	Last Cal.
1	Spectrum Analyzer	ADVANTEST	R3273 / 95090431	Oct. 07, 2013
2	RF ROOM			

Note : 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to RRL, KRISS, KTL and HCT.

◆ Limits

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, based on either an RF conducted or a radiated measurement.

Attenuation below the general limits specified in section 15.209(a) is not required. In addition, radiated emission which fall in the restricted bands, as defined in section 15.205(a), must also comply with the radiated emission limits specified in section 15.209(a)(see Section 15.205(c)).

◆ Test Setup

◆ Test Procedure

1.The transmitter output is connected to the Spectrum analyzer. The Spectrum analyzer is set to the peak power detection.

2. The testing follows the Measurement Procedure FCC KDB No. 558074 D01 DTS Meas. Guidance v03r01

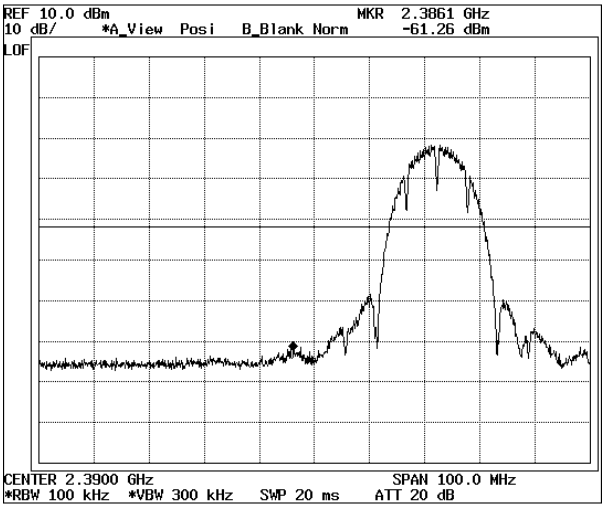
Band Edge Test result

Product	MD-8500P
Test Item	Band Edge
Test Mode	Transmit Low/High
Test Site	RF Room
Measurement Method	Conducted

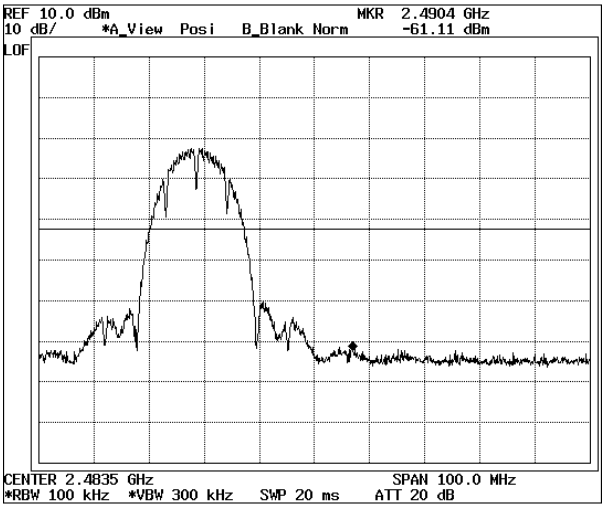
Test voltage : 12Vdc

● **802.11b**

Low (2412 MHz)



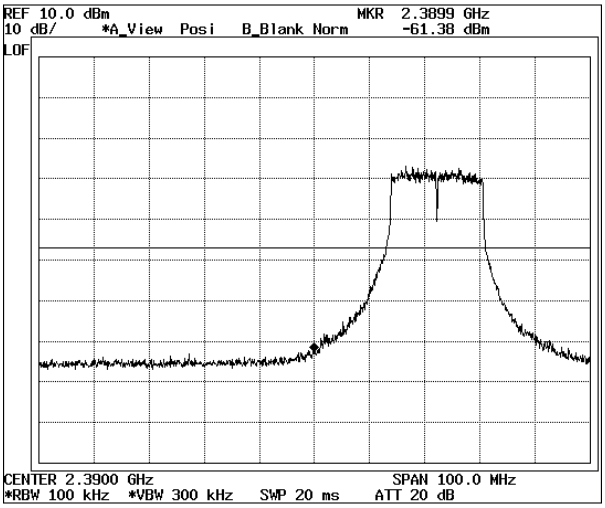
High (2462 MHz)



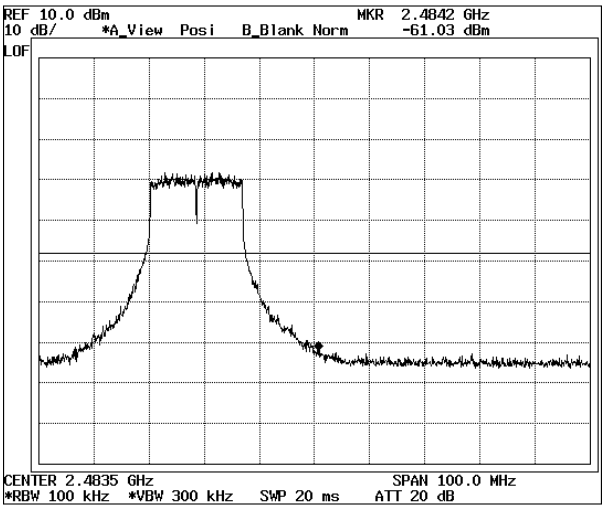
Note : Measurement level = reading level + correct factor

● 802.11g

Low (2412 MHz)



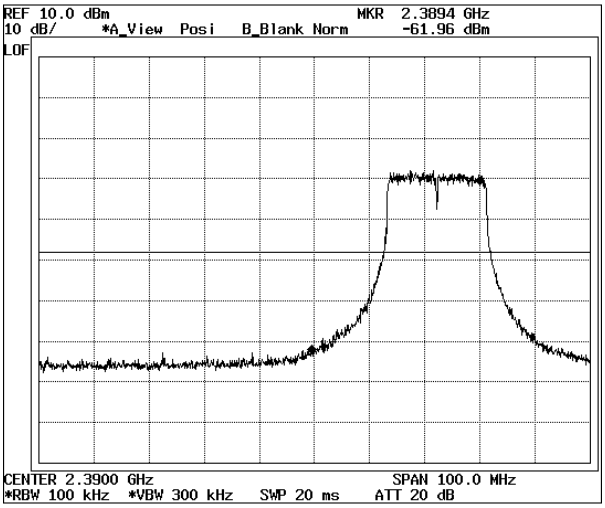
High (2462 MHz)



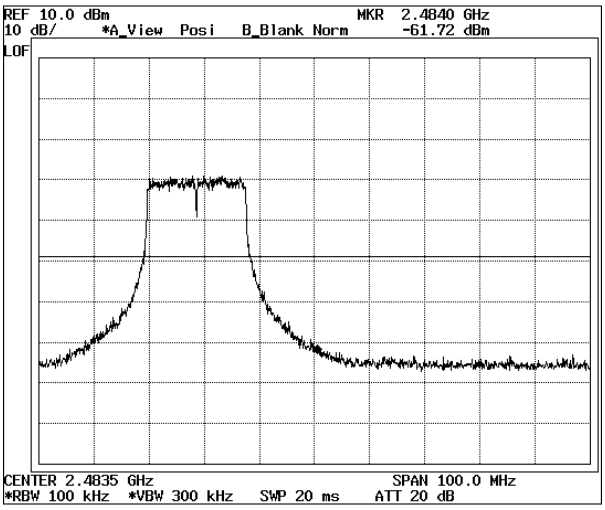
Note : Measurement level = reading level + correct factor

● 802.11n

Low (2412 MHz)



High (2462 MHz)

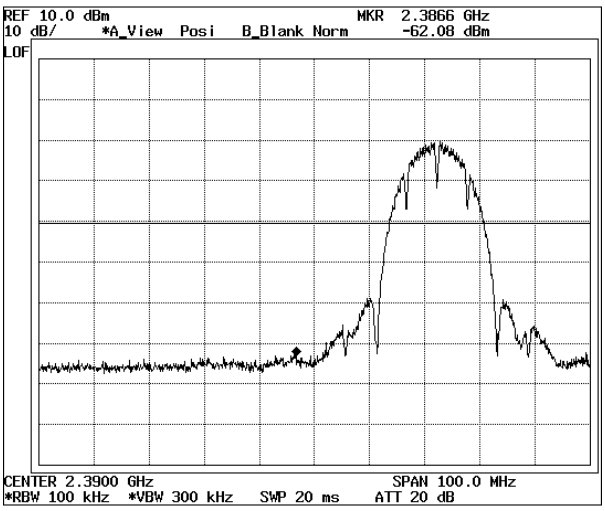


Note : Measurement level = reading level + correct factor

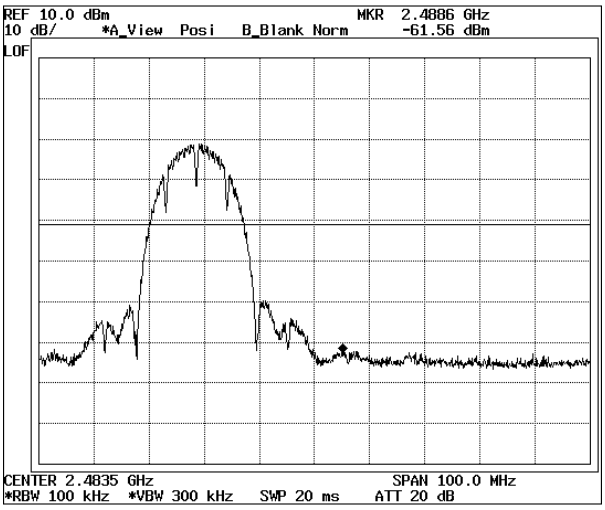
Test voltage : 24Vdc

● **802.11b**

Low (2412 MHz)



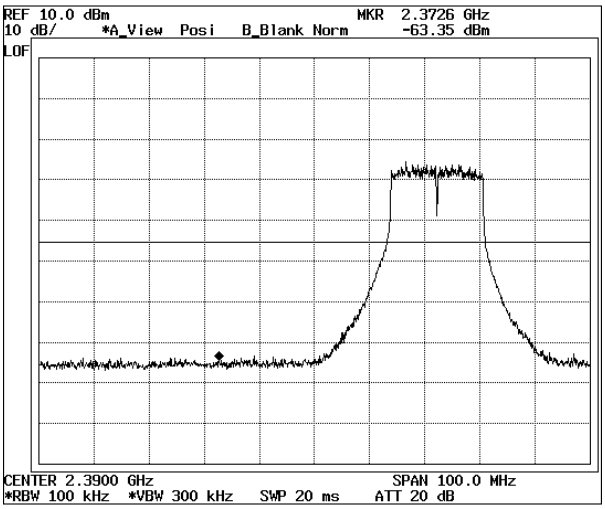
High (2462 MHz)



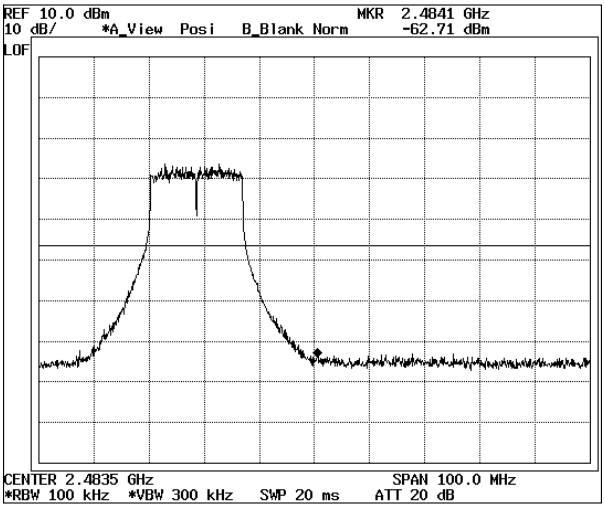
Note : Measurement level = reading level + correct factor

● 802.11g

Low (2412 MHz)



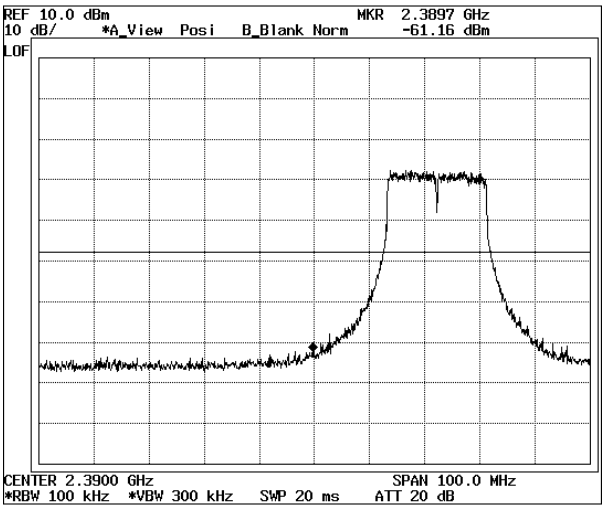
High (2462 MHz)



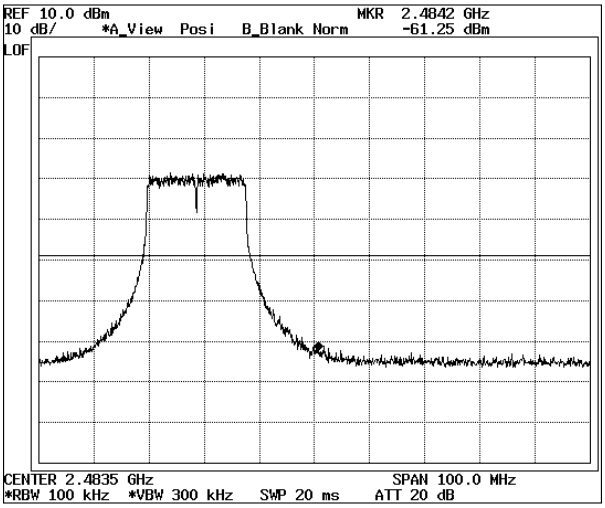
Note : Measurement level = reading level + correct factor

● 802.11n

Low (2412 MHz)



High (2462 MHz)



Note : Measurement level = reading level + correct factor

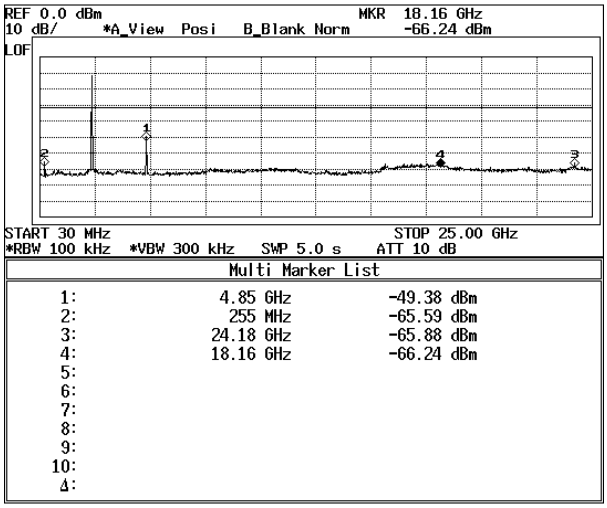
Spurious Emission Test result

Product	MD-8500P
Test Item	Spurious (30 MHz ~ 25 GHz)
Test Mode	Transmit Low/Mid/High
Test Site	RF Room
Measurement Method	Conducted

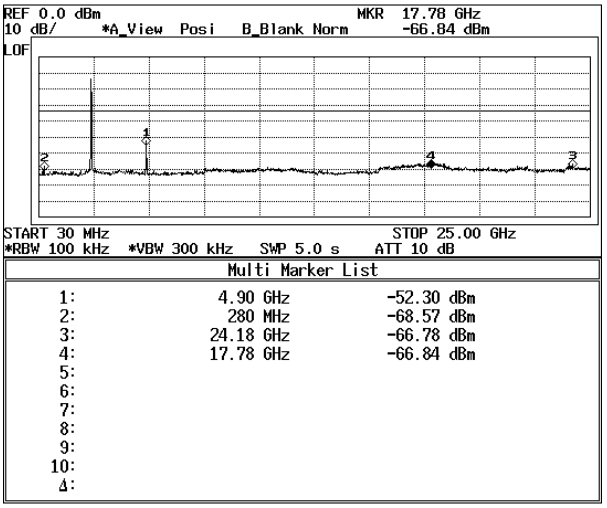
Test voltage : 12Vdc

● **802.11b**

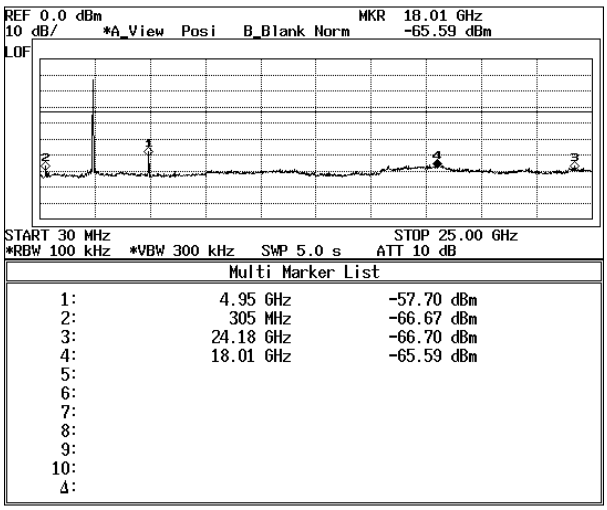
Low(2412 MHz)



Mid(2437 MHz)



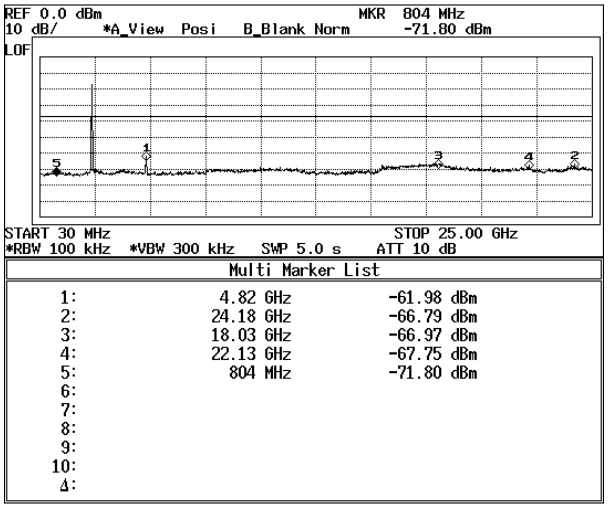
High(2462 MHz)



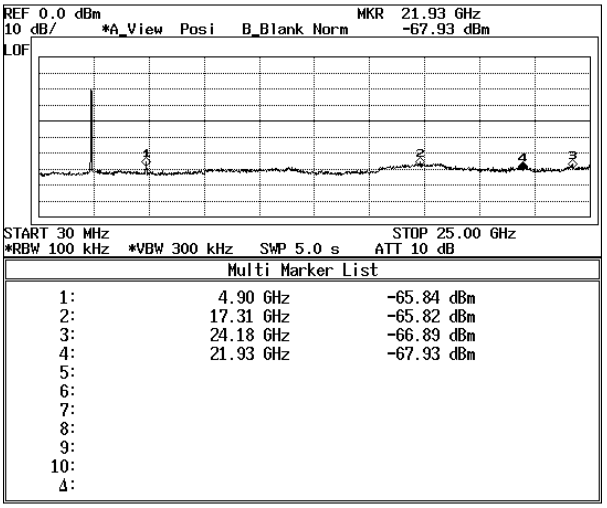
Note : Measurement level = reading level + correct factor

● 802.11g

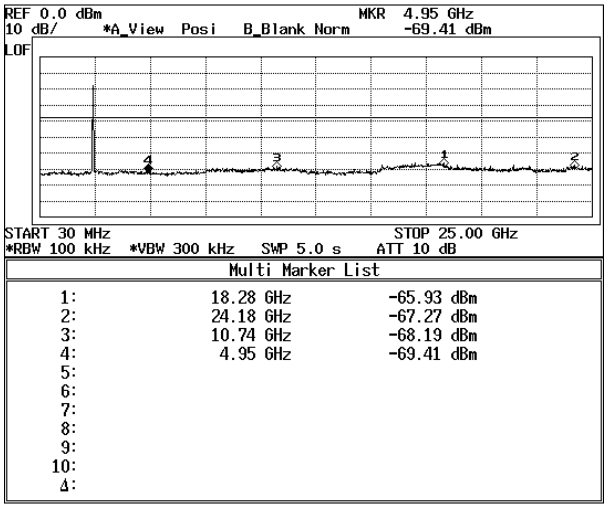
Low(2412 MHz)



Mid(2437 MHz)



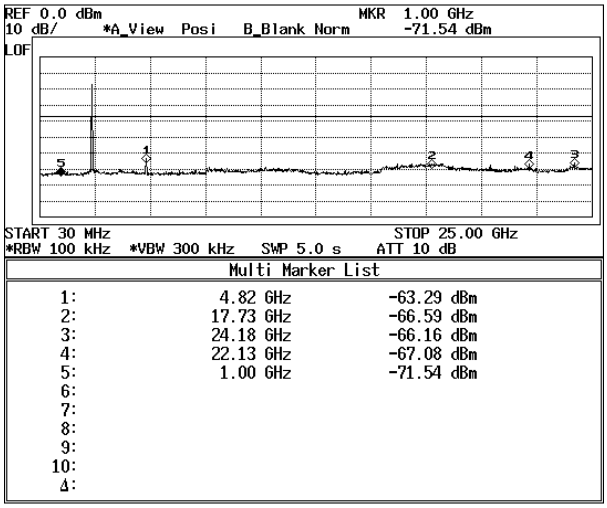
High(2462 MHz)



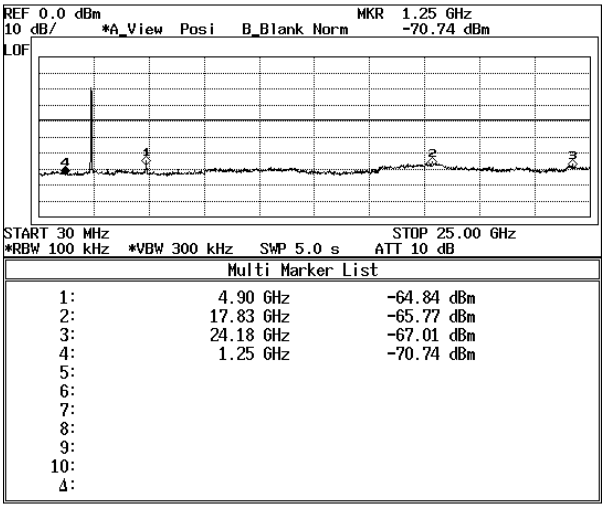
Note : Measurement level = reading level + correct factor

● 802.11n

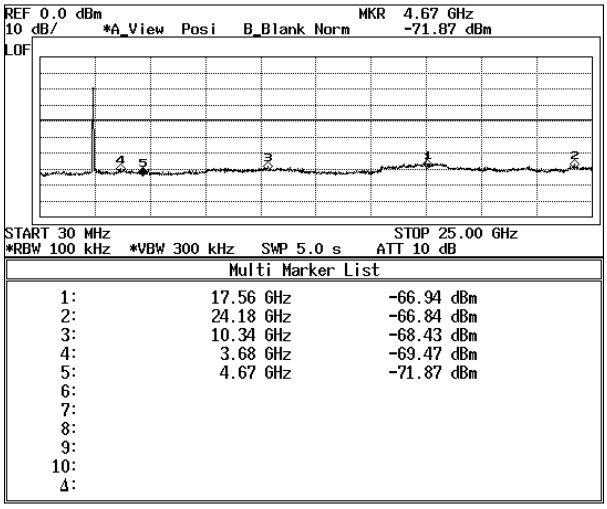
Low(2412 MHz)



Mid(2437 MHz)



High(2462 MHz)

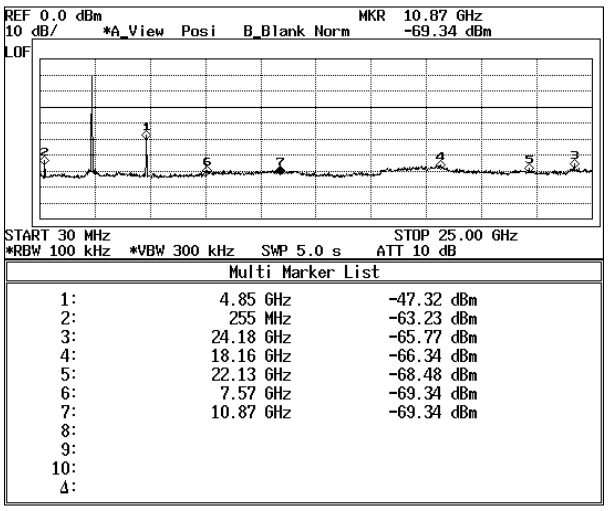


Note : Measurement level = reading level + correct factor

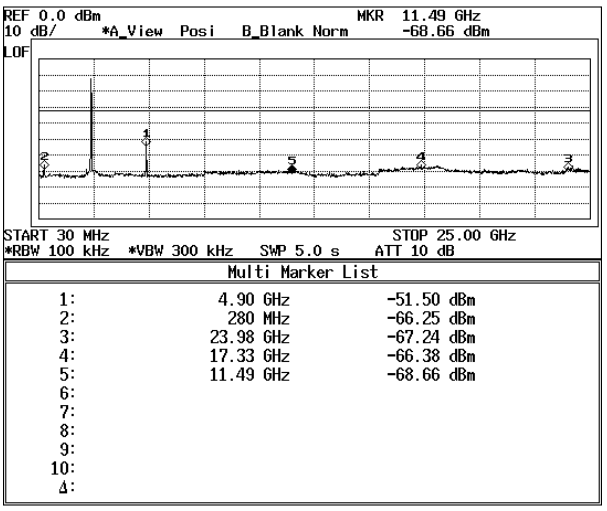
Test voltage : 24Vdc

● **802.11b**

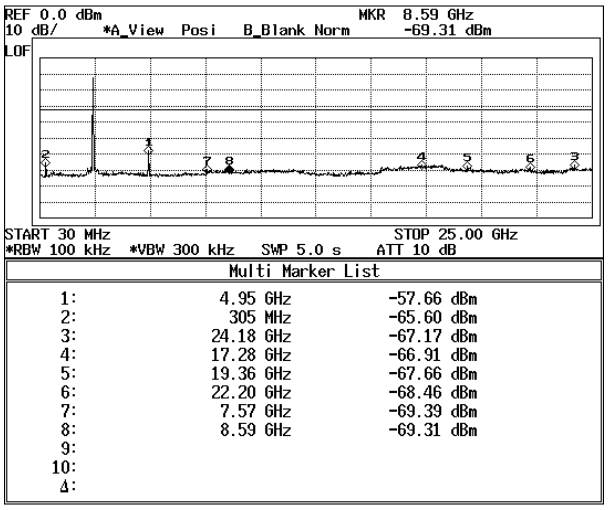
Low(2412 MHz)



Mid(2437 MHz)



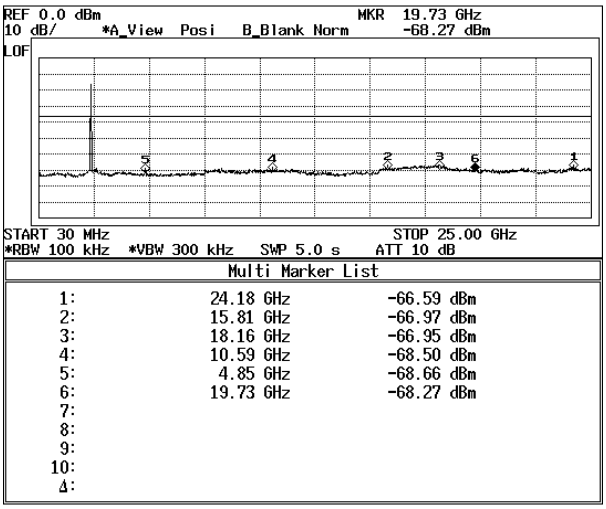
High(2462 MHz)



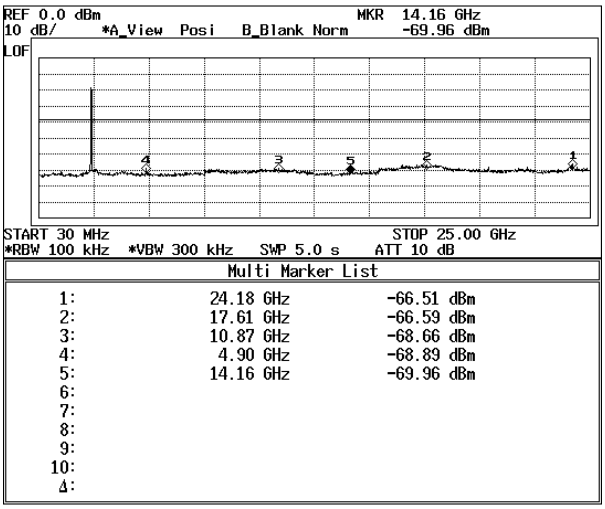
Note : Measurement level = reading level + correct factor

● 802.11g

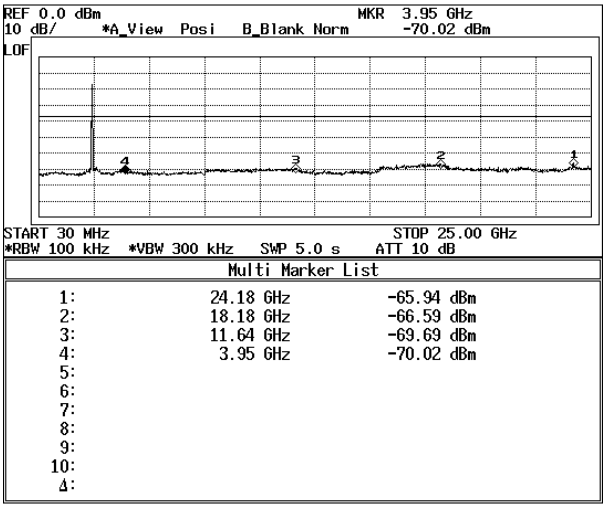
Low(2412 MHz)



Mid(2437 MHz)



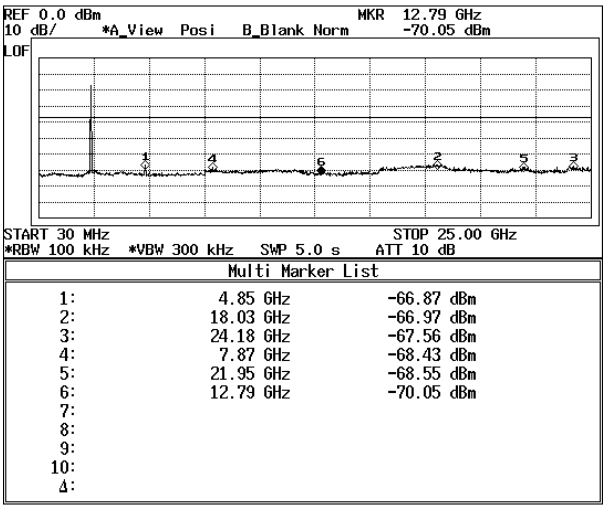
High(2462 MHz)



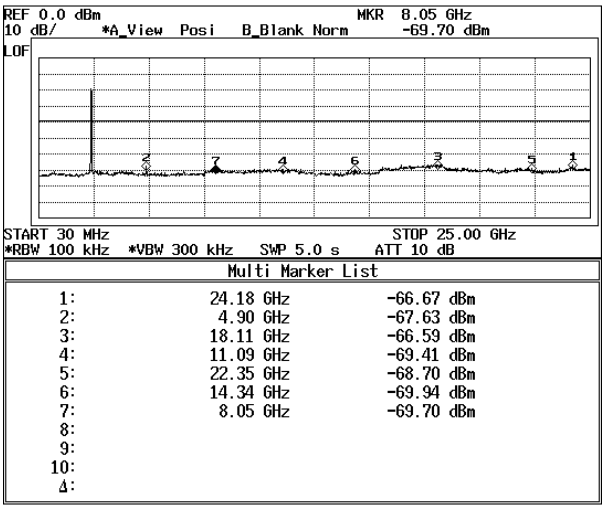
Note : Measurement level = reading level + correct factor

● 802.11n

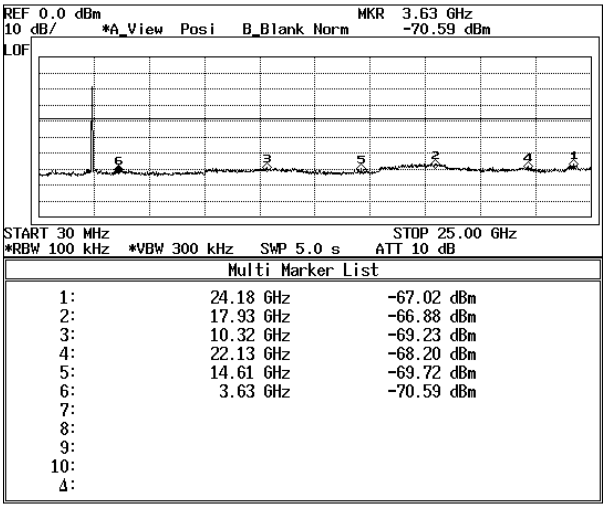
Low(2412 MHz)



Mid(2437 MHz)



High(2462 MHz)



Note : Measurement level = reading level + correct factor

6dB BandWidth

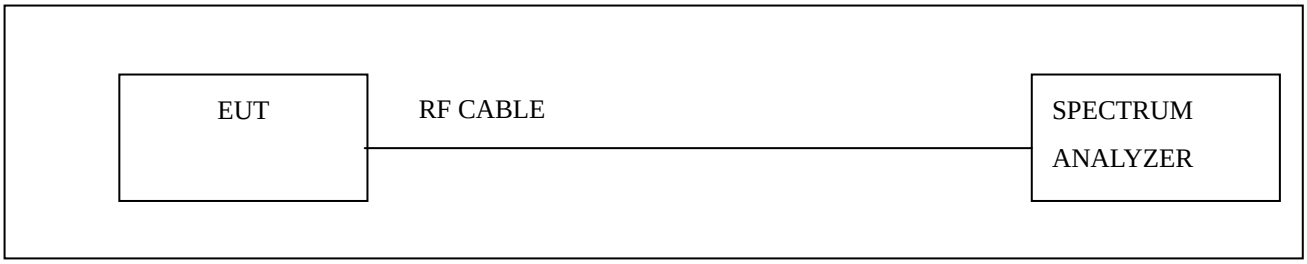
◆ Test Equipment

The following test equipment are used during the test:

Item	Equipment	Manufacturer	Model no/Serial No.	Last Cal.
1	Spectrum Analyzer	ADVANTEST	R3273 / 95090431	Oct.10, 2013
2	RF ROOM			

Note : All equipment upon which need to calibrated are with calibration period of 1 year.

◆ Test Setup



◆ Limits

(a) Operation under the provisions of this Section is limited to frequency hopping and digitally modulated intentional radiators that comply with the following provisions :

(2) 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.

◆ Test Procedure

1. The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v03r01 and TCB Workshop 2013, April 9.
2. The RF output of EUT was connected to the spectrum analyzer by a low loss cable. The path loss was compensated to the results for each measurement.
3. Make the measurement with the spectrum analyzer`s resolution bandwidth (RBW) = 1-5% of the emission bandwidth (EBW). Set the Video bandwidth (VBW) > 3 *RBW. In order to make an accurate measurement. The 6dB bandwidth must be greater than 500 KHz
4. The marker-delta reading at this point is the 6dB bandwidth of the emission.

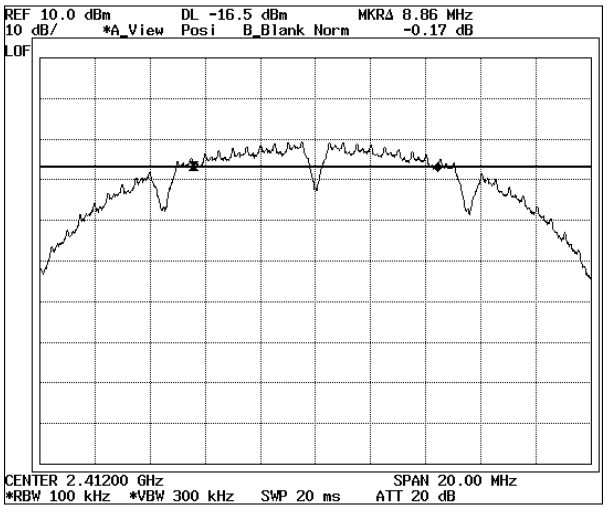
Test result

Product	MD-8500P
Test Item	6dB Bandwidth
Test Mode	Transmit Low/Mid/High
Test Site	RF Room
Measurement Method	Conducted

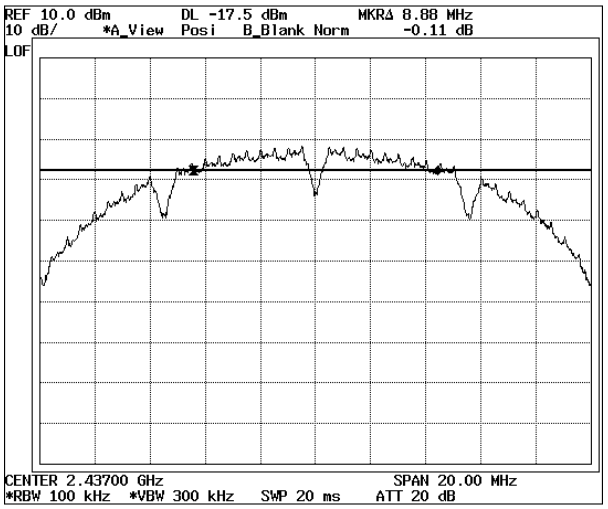
Test voltage : 12Vdc

802.11b				
Channel No.	Frequency (MHz)	Measure Level (MHz)	Limit (KHz)	Result
Low	2412	8.86	>500	Pass
Mid	2437	8.88	>500	Pass
High	2462	8.86	>500	Pass

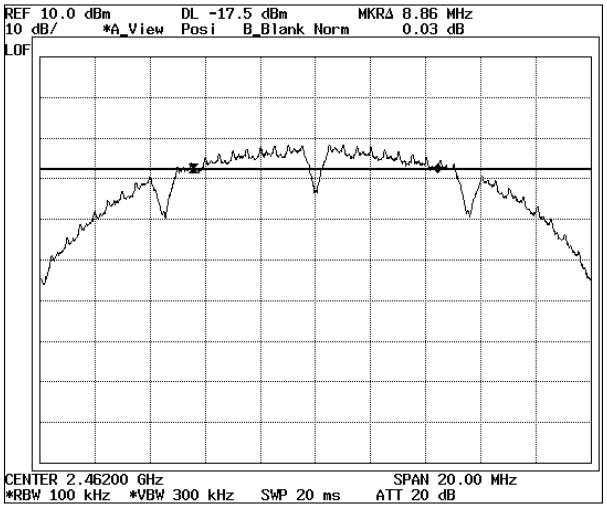
Low(2412 MHz)



Mid(2437 MHz)

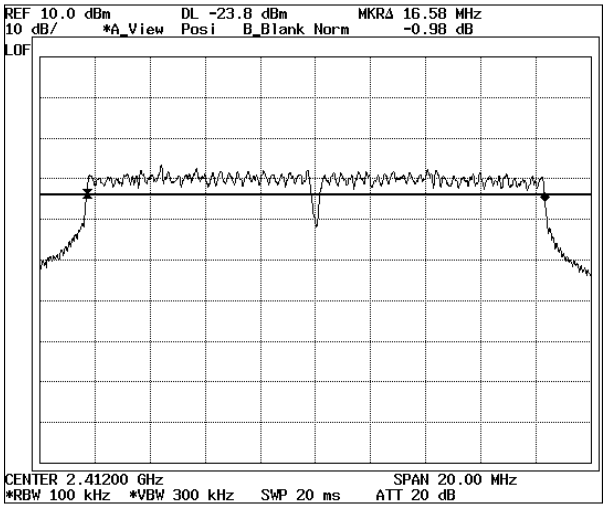


High(2462 MHz)

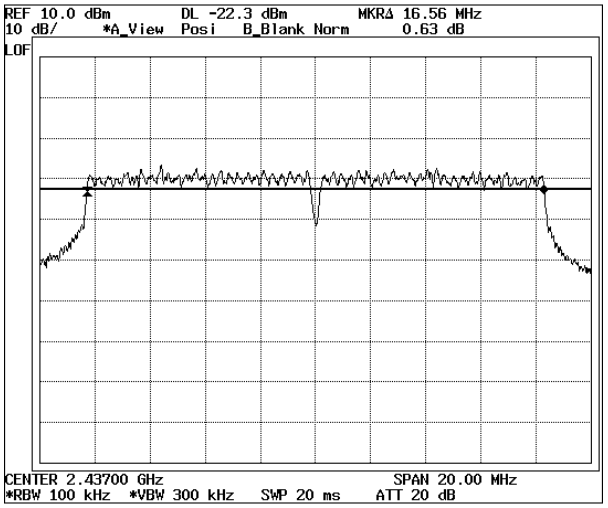


802.11g				
Channel No.	Frequency (MHz)	Measure Level (MHz)	Limit (KHz)	Result
Low	2412	16.58	>500	Pass
Mid	2437	16.56	>500	Pass
High	2462	16.58	>500	Pass

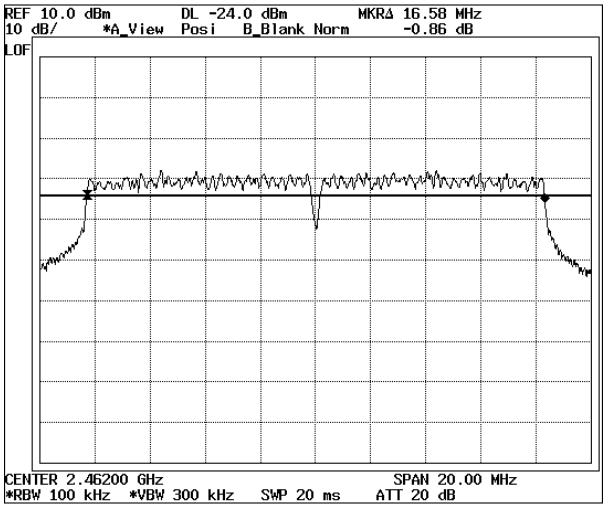
Low(2412 MHz)



Mid(2437 MHz)



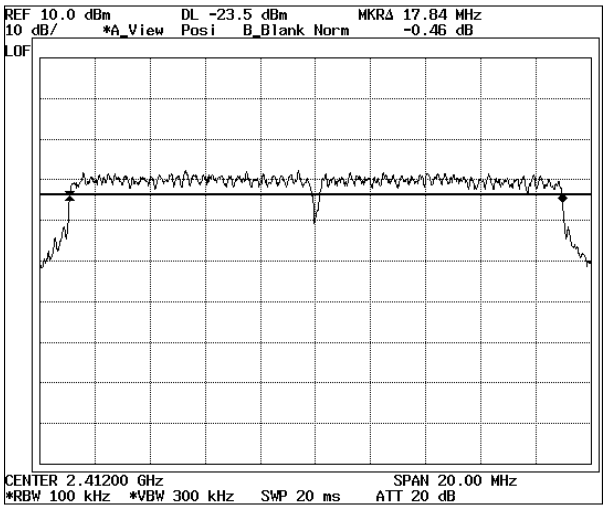
High(2462 MHz)



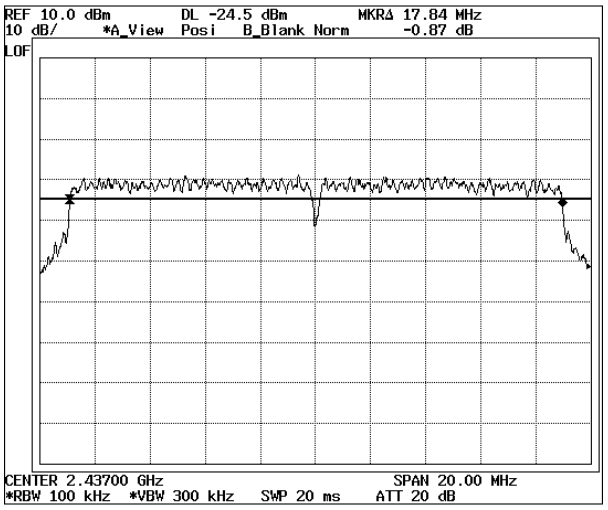
Note : Measurement level = reading level + correct factor

802.11n				
Channel No.	Frequency (MHz)	Measure Level (MHz)	Limit (KHz)	Result
Low	2412	17.84	>500	Pass
Mid	2437	17.84	>500	Pass
High	2462	17.84	>500	Pass

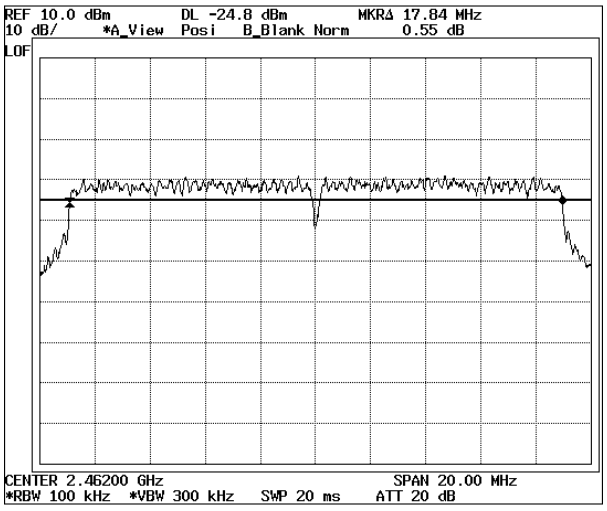
Low(2412 MHz)



Mid(2437 MHz)



High(2462 MHz)

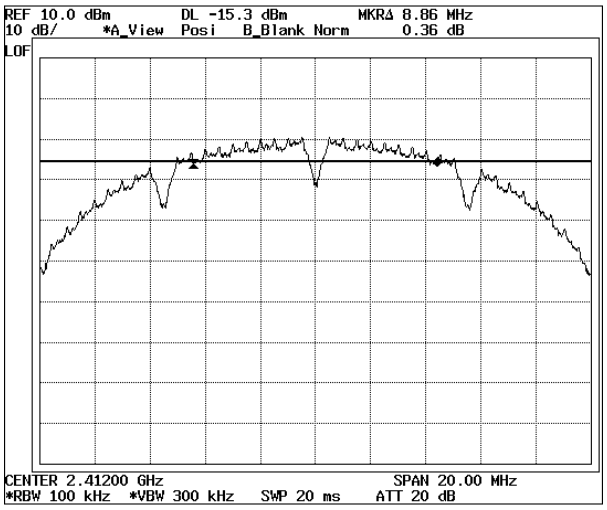


Note : Measurement level = reading level + correct factor

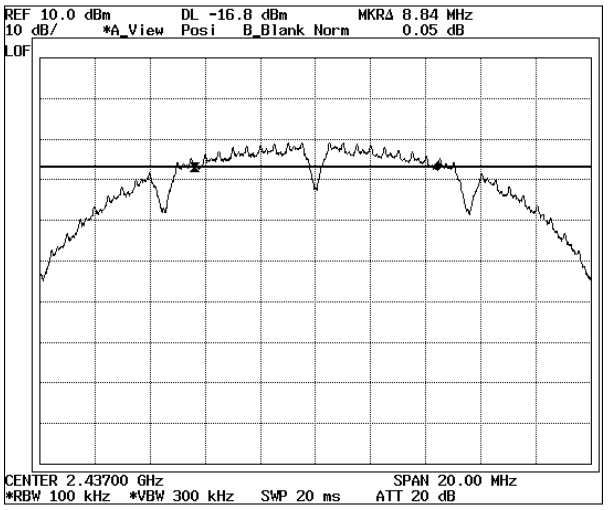
Test voltage : 24Vdc

802.11b				
Channel No.	Frequency (MHz)	Measure Level (MHz)	Limit (KHz)	Result
Low	2412	8.86	>500	Pass
Mid	2437	8.84	>500	Pass
High	2462	8.86	>500	Pass

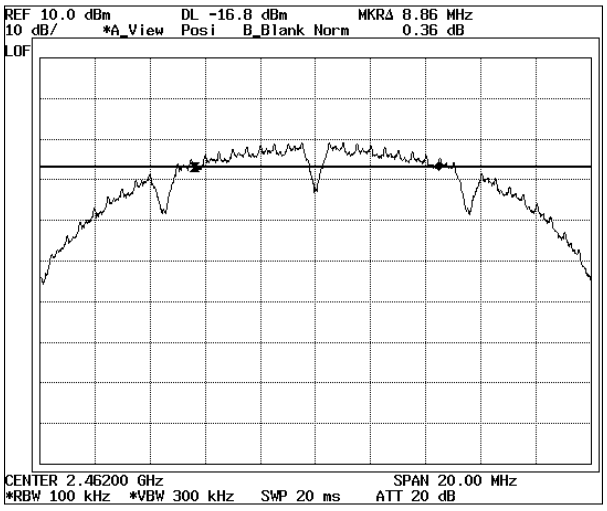
Low(2412 MHz)



Mid(2437 MHz)

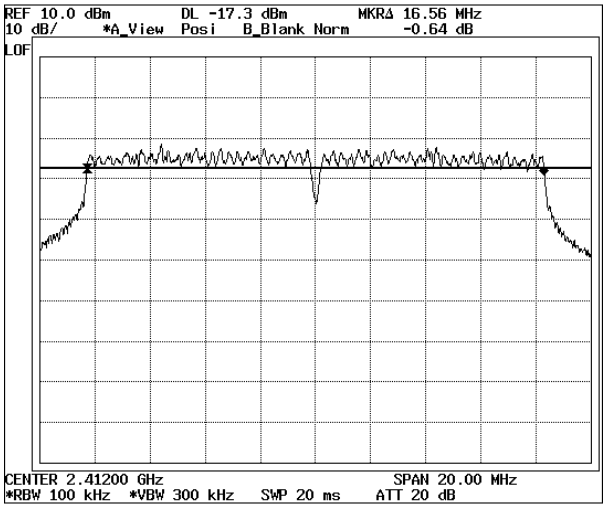


High(2462 MHz)

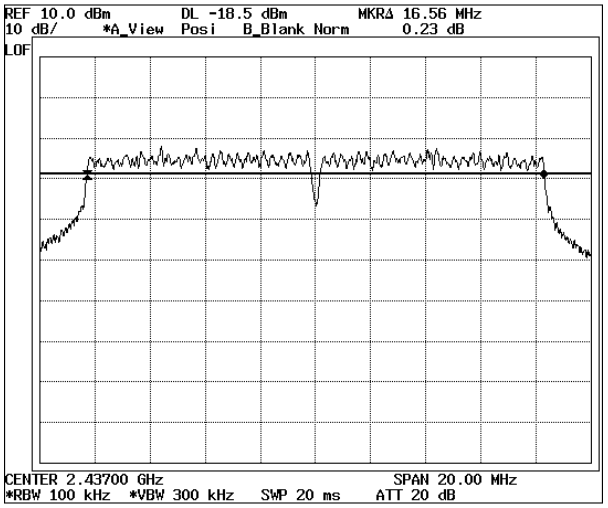


802.11g				
Channel No.	Frequency (MHz)	Measure Level (MHz)	Limit (KHz)	Result
Low	2412	16.56	>500	Pass
Mid	2437	16.56	>500	Pass
High	2462	16.56	>500	Pass

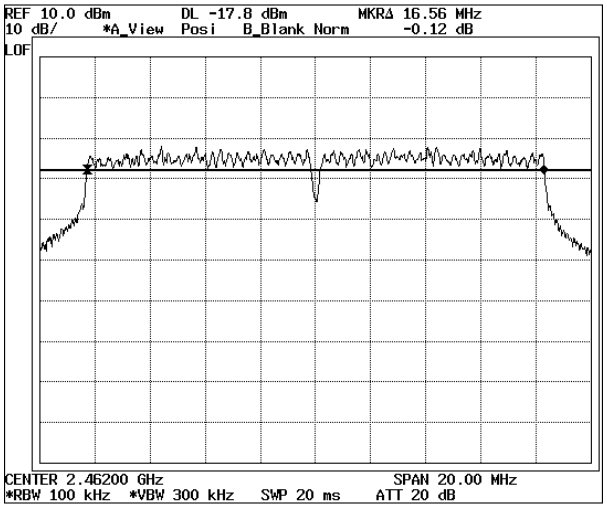
Low(2412 MHz)



Mid(2437 MHz)



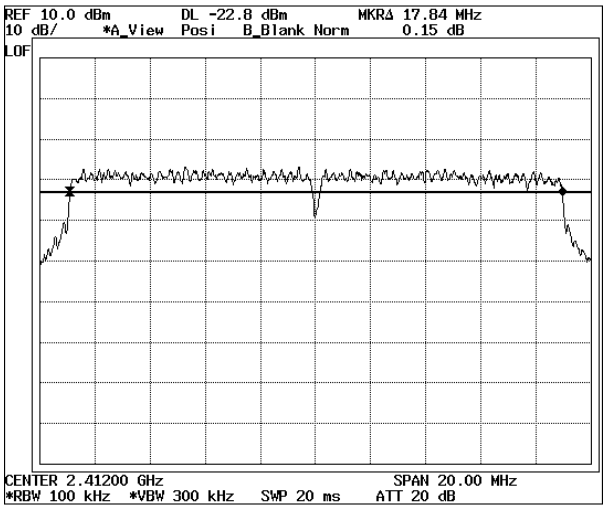
High(2462 MHz)



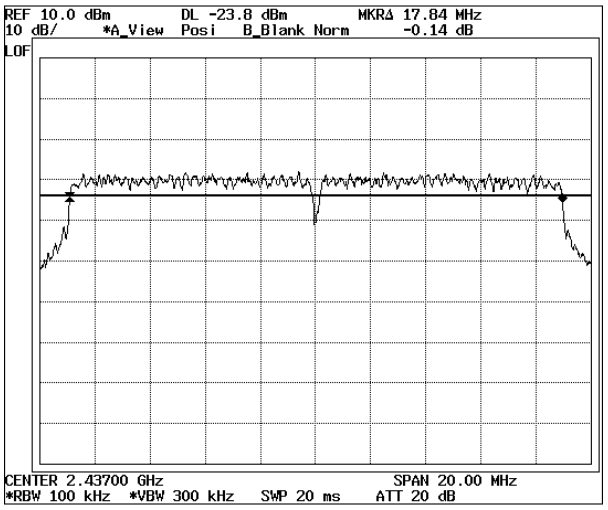
Note : Measurement level = reading level + correct factor

802.11n				
Channel No.	Frequency (MHz)	Measure Level (MHz)	Limit (KHz)	Result
Low	2412	17.84	>500	Pass
Mid	2437	17.84	>500	Pass
High	2462	17.84	>500	Pass

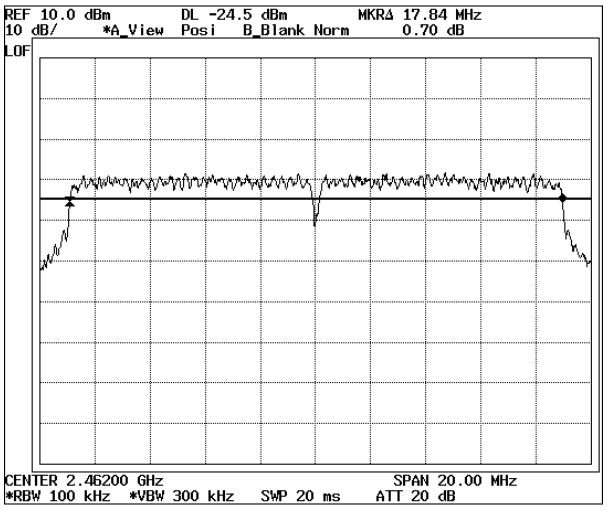
Low(2412 MHz)



Mid(2437 MHz)



High(2462 MHz)



Note : Measurement level = reading level + correct factor

Power Spectral Density

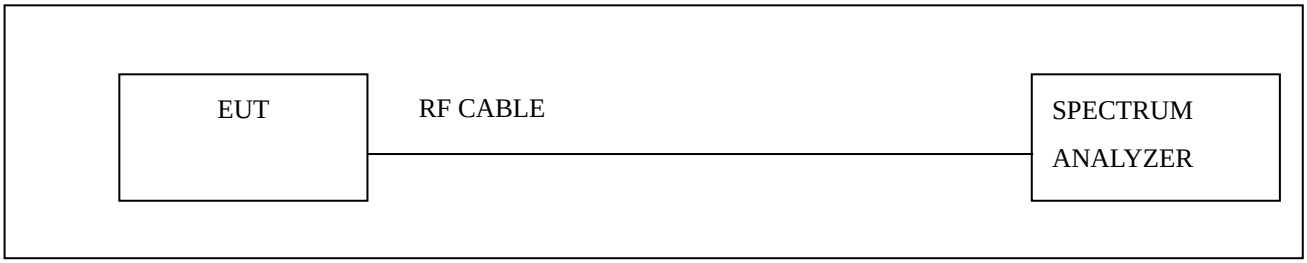
◆ Test Equipment

The following test equipment are used during the test:

Item	Equipment	Manufacturer	Model no/Serial No.	Last Cal.
1	Spectrum Analyzer	ADVANTEST	R3273 / 95090431	Oct. 10, 2013
2	RF ROOM			

Note : All equipment upon which need to calibrated are with calibration period of 1 year.

◆ Test Setup



◆ Limits

Section 15.247 (e) 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. This power spectral density shall be determined in accordance with the provisions of paragraph (v) of this section. The same method of determining the conducted output power shall be used to determine the power spectral density.

◆ Test Procedure

The Measurement Procedure PKPSD was set according to the FCC KDB 558074 D01 DTS Meas. Guidance v03r01. Use the peak marker function to determine the maximum power level in any 3 kHz band segment within the fundamental RBW.

(VBW ≥3 xRBW, Sweep time = auto couple, Trace mode = Max hold)

Antenna output of the EUT was coupled directly to spectrum analyzer; if an external attenuator and/or cable was used, these losses are compensated for with the analyzer OFFSET function.

Limit: The Power Density does not exceed 8dBm/ 3 kHz.

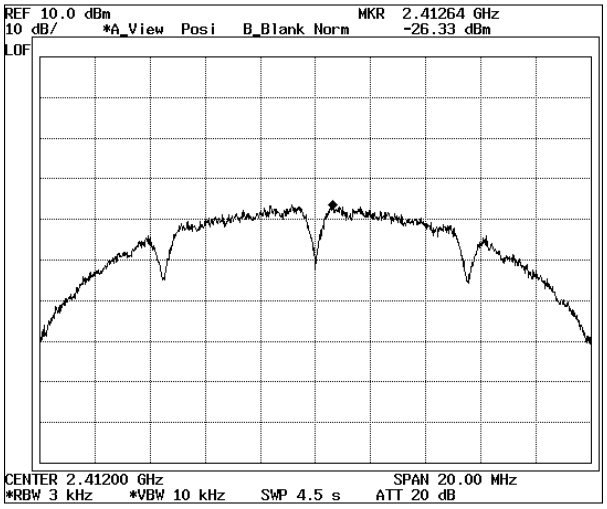
Test result

Product	MD-8500P
Test Item	Power Spectral Density
Test Mode	Transmit Low/Mid/High
Test Site	RF Room
Measurement Method	Conducted

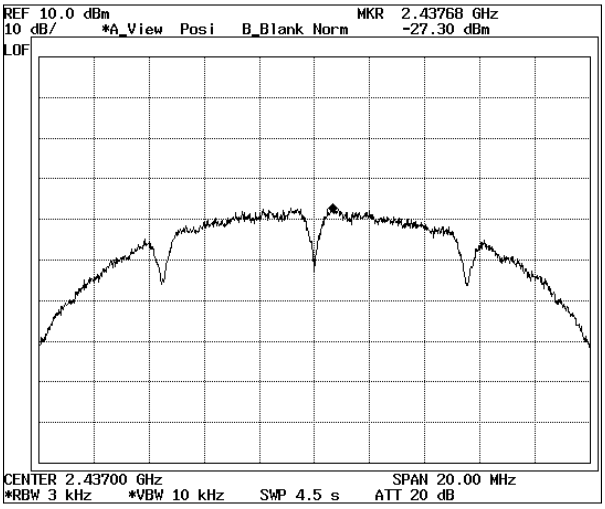
Test voltage : 12Vdc

802.11b				
Channel	Frequency (MHz)	PSD/3KHz (dBm)	Limit (dBm)	Result
Low	2412	-26.33	< 8	Pass
Mid	2437	-27.30	< 8	Pass
High	2462	-26.88	< 8	Pass

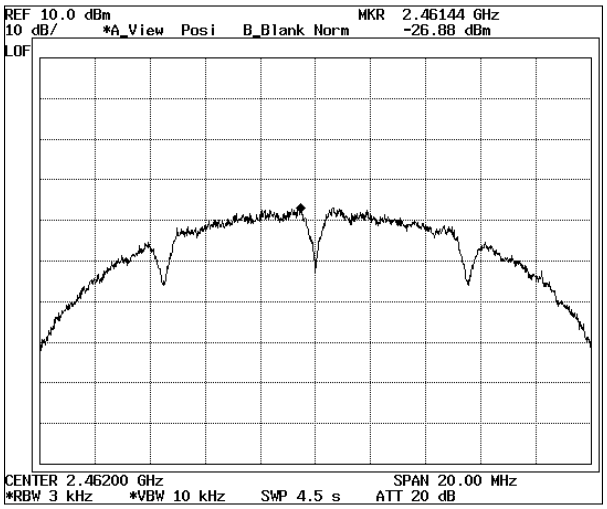
Low(2412 MHz)



Mid(2442 MHz)

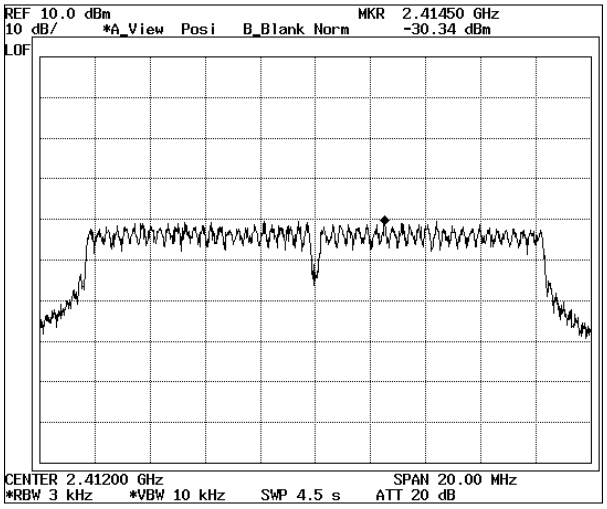


High(2462 MHz)

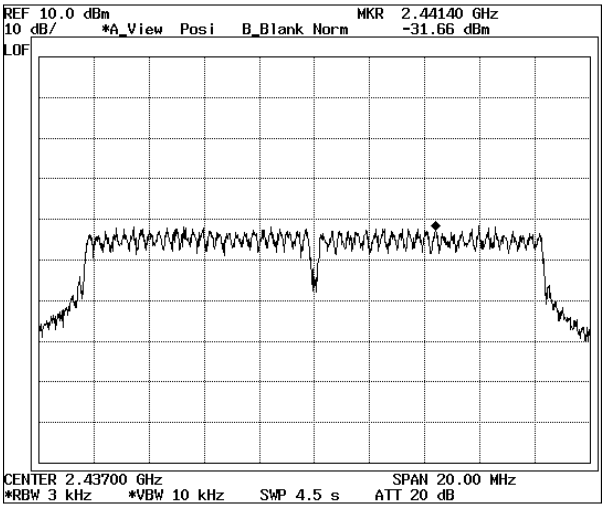


802.11g				
Channel	Frequency (MHz)	PSD/3KHz (dBm)	Limit (dBm)	Result
Low	2412	-30.34	< 8	Pass
Mid	2437	-31.66	< 8	Pass
High	2462	-31.89	< 8	Pass

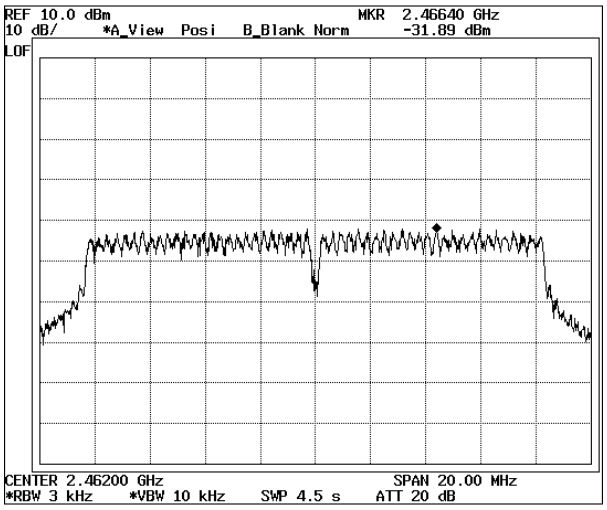
Low(2412 MHz)



Mid(2442 MHz)



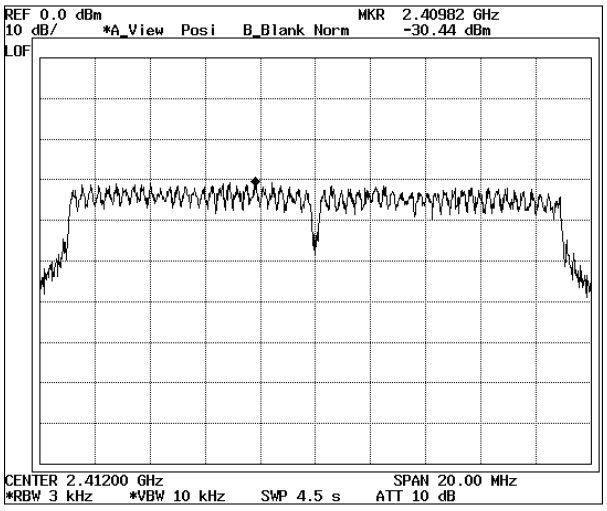
High(2462 MHz)



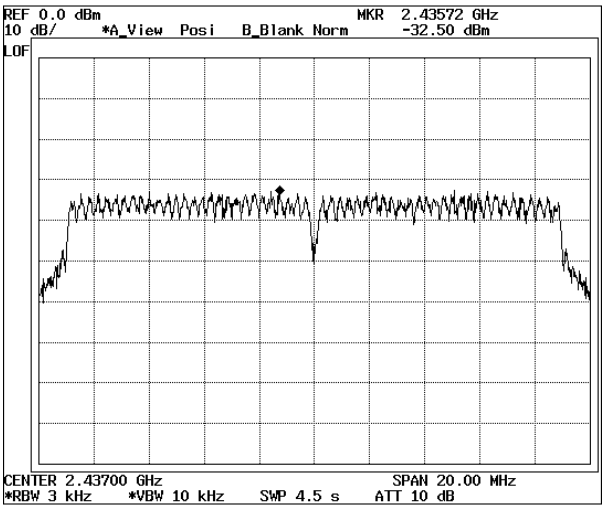
Note : Measurement level = reading level + correct factor

802.11n				
Channel	Frequency (MHz)	PSD/3KHz (dBm)	Limit (dBm)	Result
Low	2412	-30.44	< 8	Pass
Mid	2437	-32.50	< 8	Pass
High	2462	-30.87	< 8	Pass

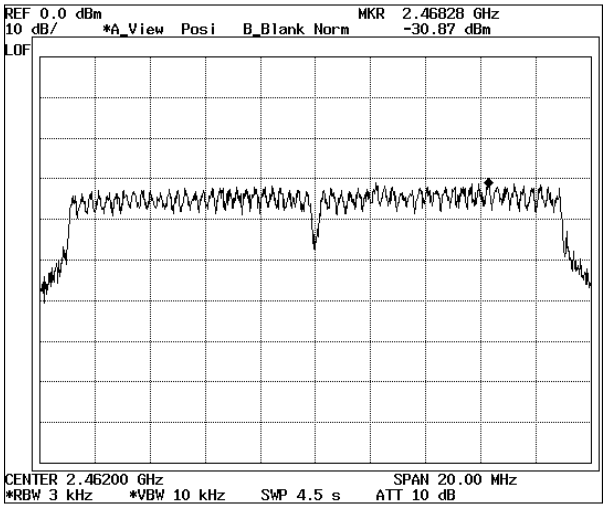
Low(2412 MHz)



Mid(2437 MHz)



High(2462 MHz)

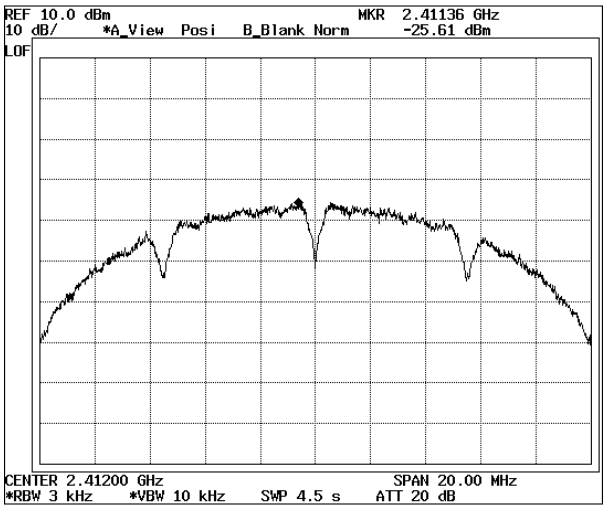


Note : Measurement level = reading level + correct factor

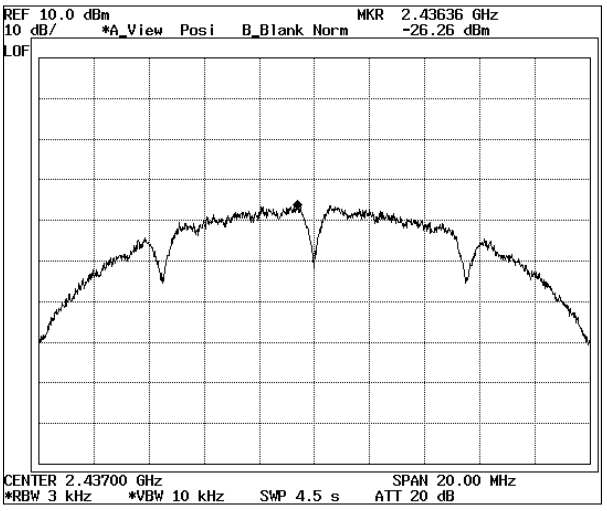
Test voltage : 24Vdc

802.11b				
Channel	Frequency (MHz)	PSD/3KHz (dBm)	Limit (dBm)	Result
Low	2412	-25.61	< 8	Pass
Mid	2437	-26.26	< 8	Pass
High	2462	-26.33	< 8	Pass

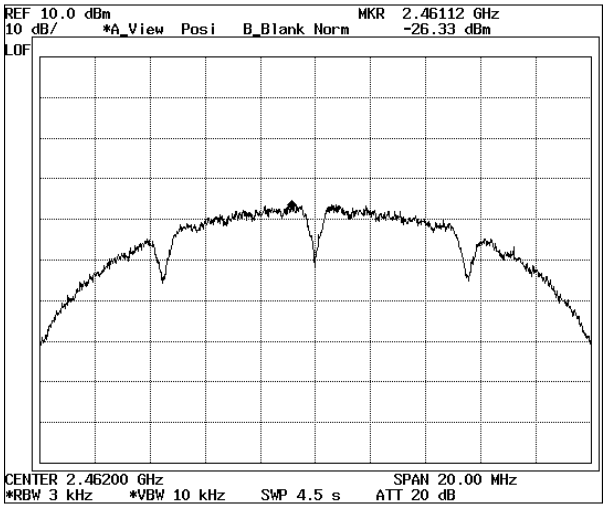
Low(2412 MHz)



Mid(2442 MHz)

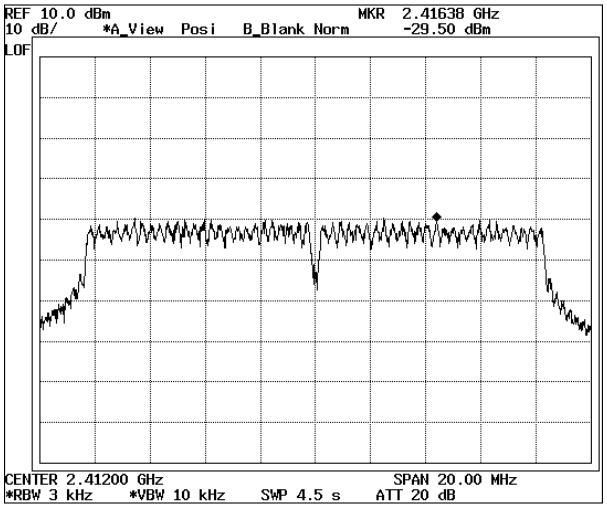


High(2462 MHz)

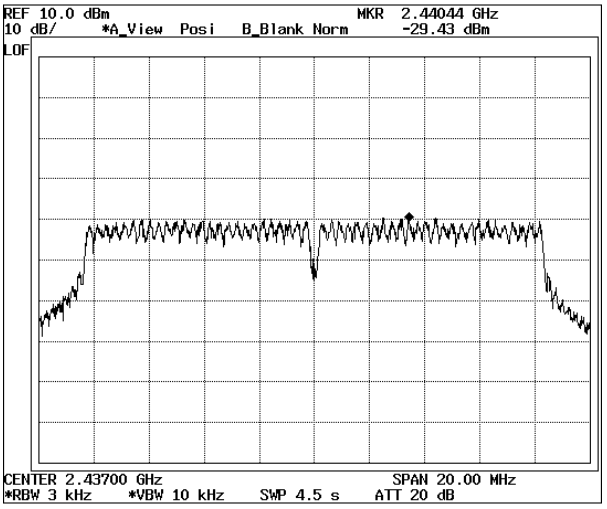


802.11g				
Channel	Frequency (MHz)	PSD/3KHz (dBm)	Limit (dBm)	Result
Low	2412	-29.50	< 8	Pass
Mid	2437	-29.43	< 8	Pass
High	2462	-28.83	< 8	Pass

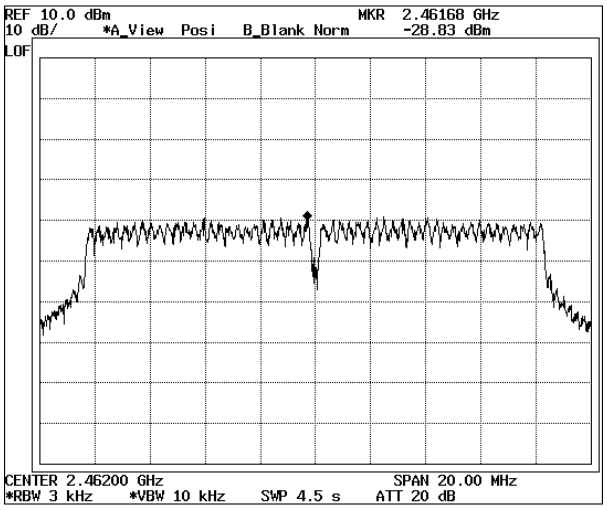
Low(2412 MHz)



Mid(2442 MHz)



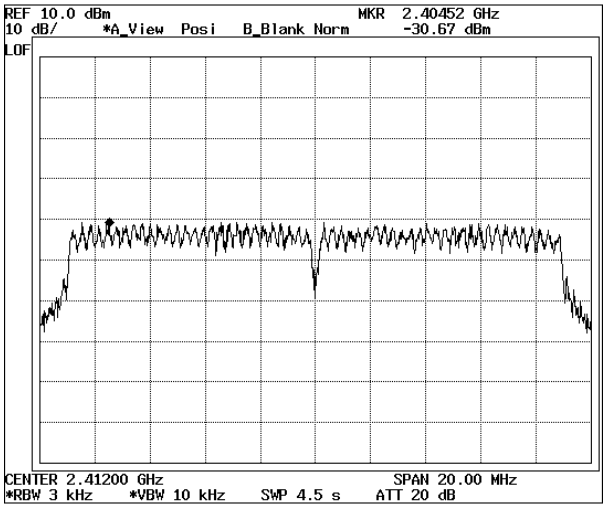
High(2462 MHz)



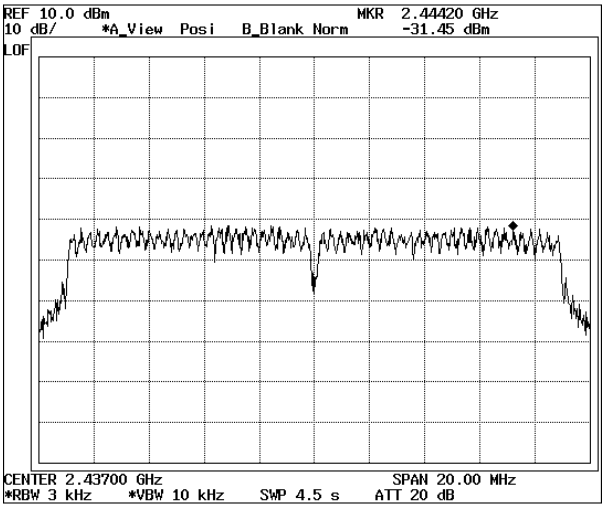
Note : Measurement level = reading level + correct factor

802.11n				
Channel	Frequency (MHz)	PSD/3KHz (dBm)	Limit (dBm)	Result
Low	2412	-30.67	< 8	Pass
Mid	2437	-31.45	< 8	Pass
High	2462	-31.59	< 8	Pass

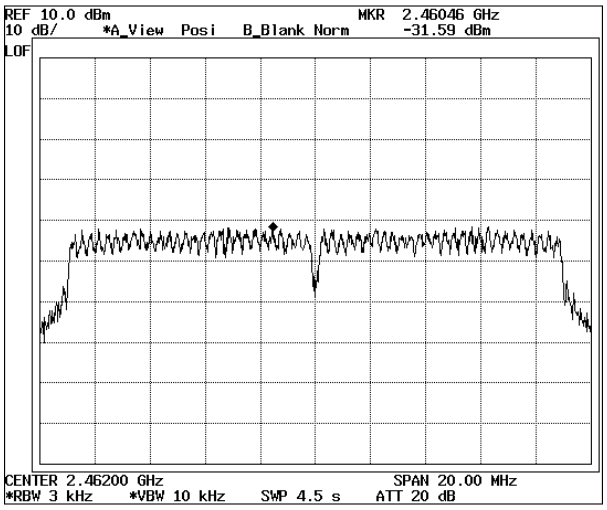
Low(2412 MHz)



Mid(2437 MHz)



High(2462 MHz)



Note : Measurement level = reading level + correct factor

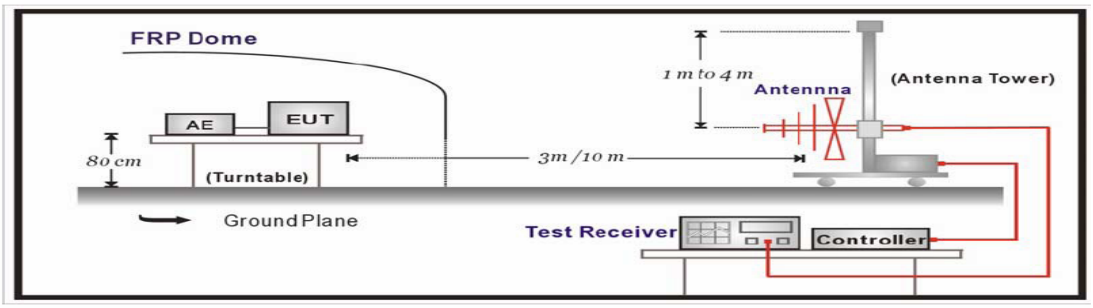
Radiated Emissions:

The measurement was performed over the frequency range of 30MHz to 1GHz using antenna as the input transducer to a Spectrum analyzer or a Field Intensity Meter. The measurement was made with the detector set for "quasi-peak" within a bandwidth of 120kHz.

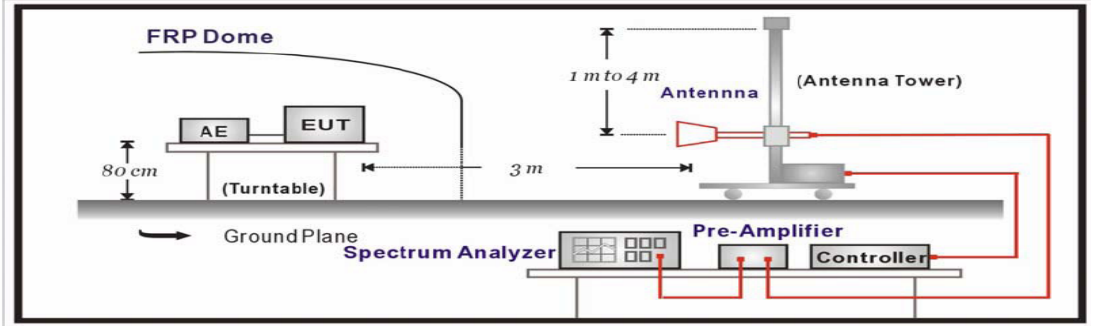
Procedure of Test

Preliminary measurements were made at 3 meter using bi-log antennas, and spectrum analyzer to determine the frequency producing the max. emission in anechoic chamber. Appropriate precaution was taken to ensure that all emission from the EUT were maximized and investigated. The system configuration, mode of operation, turn-table azimuth and height with respect to the antenna were noted for each frequency found. The spectrum was scanned from 30MHz to 1000MHz using bi-log antenna. Above 1GHz, linearly polarized double ridge horn antennas were used. Final measurements were made at open site with 3-meters test distance using bi-log antenna or horn antenna. The OATS have been verified in regular for its normalized site attenuation. The test equipment was placed on a wooden table. Sufficient time for the EUT, peripheral equipment, and test equipment was allowed in order for them to warm up to their normal operating condition. Each frequency found during pre-scan measurements was re-examined by manual. The detector function was set to CISPR quasi-peak mode and the bandwidth of the receiver was set to 120kHz or 1MHz depending on the frequency of type of signal. The EUT, peripheral equipment and interconnecting cables were re-configured to the set-up producing the max. emission for the frequency and were placed on top of a 0.8-meter high nonmetallic 1 x 1.5 meter table. The EUT, peripheral equipment, and interconnecting cables were re-arranged and manipulated to maximize each emission. The turntable containing the system was rotated; the antenna height was varied 1 to 4 meters and stopped at the azimuth or height producing the maximum emission. Each emission was maximized by: varying the mode of operation to the EUT and/or peripheral equipment and changing the polarity of the antenna, whichever determined the worst-case emission.(The bandwidth below 1GHz setting on the field strength meter is 120KHz and above 1GHz is 1MHz.)

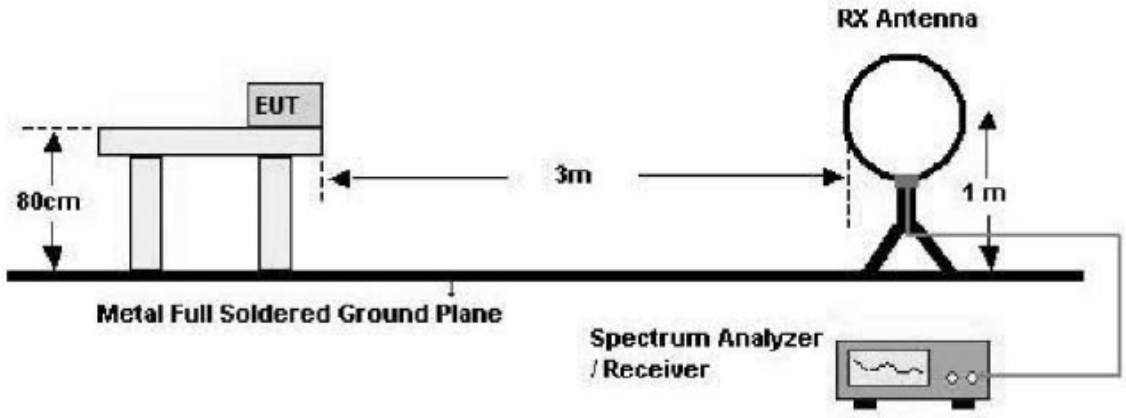
Under 1GHz Test Setup:



Above 1GHz Test Setup:



Below 30 MHz



Limits

Emissions radiated outside of the specified frequency bands, except for harmonics, Shall be attenuated by at least 20dB below the level of the fundamental or to the General radiated emission limits in paragraph 15.209, whichever is the lesser attenuation:

FCC Part 15 Subpart C Section 15.209 Limits		
Frequency(MHz)	μV/meter	dBμV/meter(3m)
0.009-0.490	2400/F(KHz) at 300 m	20log 2400/F(KHz)+80
0.490-1.705	24000/F(KHz)at 30m	20log 24000/F(KHz)+40
1.705-30	30 at 30 m	49.5
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

Remarks :

1. RF Voltage(dBuv)=20log RF Voltage(uV)
2. dBuV/m = ERP(dBm)+106.92 dB + 20log(10m/3m) + 2.15dB(conversion Factor for E.I.R.P)
3. In the Above Table, the tighter limit applies at the band edges.
4. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

Test specification.

According to FCC CFR Title 47 Part 15 Subpart C Section 15.209

Radiated Spurious Emission & Radiated Restricted Band Edge

[Applicable]

◆ Test Equipment Used

Name	Type	Manufacturer	Calibration. Date	Serial Number
ESCS30	EMI Receiver	Rohde & Schwarz	May. 10, 2014	100171
ESCI7	EMI Receiver	Rohde & Schwarz	July. 16, 2014	100872
SPECTRUM ANALYZER	R3273	ADVANTEST	May. 09, 2014	110600587
Loop Antenna	HFH2-Z2	Rohde & Schwarz	Oct. 26, 2014	8620771017
Log-bicon Antenna	VULB9161SE	Schwarz beck	March. 28, 2014	3047
HORN-Antenna	3115	EMCO	Oct. 25, 2015	9012-3602
HORN-Antenna	HF906	Rohde & Schwarz	Oct. 25, 2015	100530
PRE AMPLIFIER	8449B OPT H02	Rohde & Schwarz	Oct. 08, 2014	3008A0530

Note : 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to RRL, KRISS, KTL and HCT.

2. The calibration interval of horn ant. and loop ant. is 24 months

Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any) from the measured reading. For the limit is employed average value, therefore the peak value can be transferred to average value by subtracting the duty factor. The basic equation with a sample calculation is as follows:

Peak = Reading + Corrected Factor

Where Corr. Factor = Antenna Factor + Cable Factor - Amplifier Gain (if any)

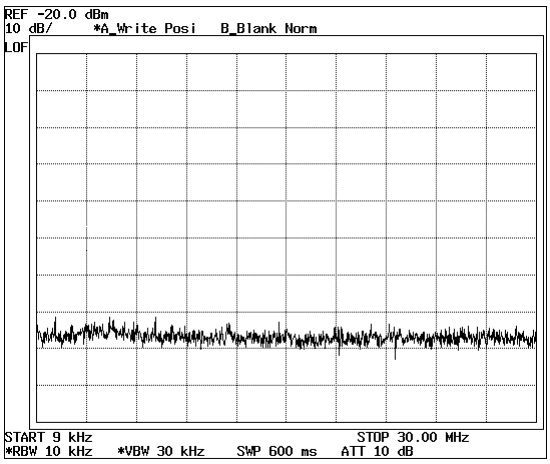
Pre-scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, packet types and antenna ports(if EUT with antenna diversity architecture), and X,Y,Z Axis.

Radiated Spurious Emission Result

[Applicable]

Spurious Emissions Test (Below 30Hz) :

Test Plot : 9KHz to 30MHz



Note : The reading of emissions are attenuated more than 20 dB below the permissible limits and the field strength is too small to be measured.

Spurious Emissions Test (Below 1GHz) :

EUT	MD-8500P	PROBE	Below 1 GHz
POWER	12 Vdc	NOTE	WLAN mode

Frequency MHz	Reading dBuV	P (H,V)	Ant. Factor dB	Cable Loss dB	Limit dBuV	Total dBuV	Margin dB
45.523	15.20	V	12.15	1.15	40.00	28.50	-11.50
111.485	16.90	V	10.64	1.78	43.50	29.32	-14.18
*148.347	23.10	H	12.89	2.03	43.50	38.02	-5.48
185.203	19.40	V	11.06	2.27	43.50	32.73	-10.77
222.064	20.10	H	10.48	2.55	46.00	33.13	-12.87
296.755	19.70	H	12.78	2.89	46.00	35.37	-10.63
370.472	21.20	V	14.70	3.20	46.00	39.10	-6.90

Note :

1. *Remark "*" means that the data is the worst emission level.*
2. *All reading levels are Quasi-peak value.*
3. *Measurement level = reading level + correct factor*

EUT	MD-8500P	PROBE	Below 1 GHz
POWER	24 Vdc	NOTE	WLAN mode

Frequency MHz	Reading dBuV	P (H,V)	Ant. Factor dB	Cable Loss dB	Limit dBuV	Total dBuV	Margin dB
45.521	14.80	V	12.15	1.15	40.00	28.10	-11.90
73.653	16.70	V	9.33	1.44	40.00	27.47	-12.53
148.342	19.70	H	12.89	2.03	43.50	34.62	-8.88
185.205	20.90	H	11.06	2.27	43.50	34.23	-9.27
222.064	22.60	H	10.48	2.55	46.00	35.63	-10.37
296.757	18.90	H	12.78	2.89	46.00	34.57	-11.43
*370.471	19.90	V	14.70	3.20	46.00	37.80	-8.20

Note :

1. *Remark "*" means that the data is the worst emission level.*
2. *All reading levels are Quasi-peak value.*
3. *Measurement level = reading level + correct factor*

Spurious Emissions Test (Above 1GHz) :

☒ Pre-scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, packet types and antenna ports(if EUT with antenna diversity architecture), and X,Y,Z Axis.

● **802.11b**

EUT	MD-8500P	PROBE	Above 1 GHz
POWER	12Vdc	CHANNEL	1 Channel (2412 MHz)
MODE	802.11b		

Test Data

Frequency GHz	Reading dBuV		P	Limit dBuV		Margin dB	
	Peak	AV		Peak	AV	Peak	AV
1.012	47.47	36.73	V	74.00	54.00	26.53	17.27
1.755	51.46	44.67	V	74.00	54.00	22.54	9.33
3.219	43.72	31.63	V	74.00	54.00	30.28	22.37
5.193	46.22	34.22	V	74.00	54.00	27.78	19.78
1.053	41.22	36.05	H	74.00	54.00	32.78	17.95
1.755	48.35	41.27	H	74.00	54.00	25.65	12.73
4.876	46.62	31.98	H	74.00	54.00	27.38	22.02
5.972	46.61	34.58	H	74.00	54.00	27.39	19.42

EUT	MD-8500P	PROBE	Above 1 GHz
POWER	12Vdc	CHANNEL	6 Channel (2437 MHz)
MODE	802.11b		

Test Data

Frequency GHz	Reading dBuV		P	Limit dBuV		Margin dB	
	Peak	AV		Peak	AV	Peak	AV
1.012	47.13	37.47	V	74.00	54.00	26.87	16.53
1.187	44.98	39.80	V	74.00	54.00	29.02	14.20
5.055	49.57	36.29	V	74.00	54.00	24.43	17.71
1.022	46.52	38.13	H	74.00	54.00	27.48	15.87
1.324	48.52	30.10	H	74.00	54.00	25.48	23.90
4.887	51.17	39.93	H	74.00	54.00	22.83	14.07
7.315	52.59	39.63	H	74.00	54.00	21.41	14.37

EUT	MD-8500P	PROBE	Above 1 GHz
POWER	12Vdc	NOTE	11 Channel (2462 MHz)
MODE	802.11b		

Test Data

Frequency GHz	Reading dBuV		P	Limit dBuV		Margin dB	
	Peak	AV		Peak	AV	Peak	AV
1.052	48.01	36.06	V	74.00	54.00	25.99	17.94
1.865	42.54	30.89	V	74.00	54.00	31.46	23.11
3.194	48.33	41.58	V	74.00	54.00	25.67	12.42
1.022	50.01	38.42	H	74.00	54.00	23.99	15.58
4.902	49.02	34.18	H	74.00	54.00	24.98	19.82
5.562	47.12	35.78	H	74.00	54.00	26.88	18.22

Note : Reading(dBuv) : Measurement Level + Ant Factor + Cable Loss - Amp Gain

● 802.11g

EUT	MD-8500P	PROBE	Above 1 GHz
POWER	12Vdc	CHANNEL	1 Channel (2412 MHz)
MODE	802.11g		

Test Data

Frequency GHz	Reading dBuV		P	Limit dBuV		Margin dB	
	Peak	AV		Peak	AV	Peak	AV
1.862	45.23	37.44	V	74.00	54.00	28.77	16.56
3.273	47.32	40.71	V	74.00	54.00	26.68	13.29
4.812	54.79	45.39	V	74.00	54.00	19.21	8.61
7.891	53.17	41.82	V	74.00	54.00	20.83	12.18
1.336	47.41	35.37	H	74.00	54.00	26.59	18.63
2.127	45.68	33.83	H	74.00	54.00	28.32	20.17
3.329	46.97	41.54	H	74.00	54.00	27.03	12.46
4.814	53.29	44.62	H	74.00	54.00	20.71	9.38

EUT	MD-8500P	PROBE	Above 1 GHz
POWER	12Vdc	CHANNEL	6 Channel (2437 MHz)
MODE	802.11g		

Test Data

Frequency GHz	Reading dBuV		P	Limit dBuV		Margin dB	
	Peak	AV		Peak	AV	Peak	AV
1.873	43.68	29.37	V	74.00	54.00	30.32	24.63
2.127	46.25	39.81	V	74.00	54.00	27.75	14.19
4.832	53.47	44.63	V	74.00	54.00	20.53	9.37
1.013	47.23	38.87	H	74.00	54.00	26.77	15.13
2.127	45.12	34.26	H	74.00	54.00	28.88	19.74
3.198	44.78	40.36	H	74.00	54.00	29.22	13.64

EUT	MD-8500P	PROBE	Above 1 GHz
POWER	12Vdc	NOTE	11 Channel (2462 MHz)
MODE	802.11b		

Test Data

Frequency GHz	Reading dBuV		P	Limit dBuV		Margin dB	
	Peak	AV		Peak	AV	Peak	AV
1.882	38.34	26.82	V	74.00	54.00	35.66	27.18
3.217	45.13	35.72	V	74.00	54.00	28.87	18.28
4.844	51.58	43.32	V	74.00	54.00	22.42	10.68
5.966	50.78	42.48	V	74.00	54.00	23.22	11.52
1.055	49.12	39.47	H	74.00	54.00	24.88	14.53
1.829	37.56	24.90	H	74.00	54.00	36.44	29.10
4.845	53.71	45.29	H	74.00	54.00	20.29	8.71
8.236	54.79	42.82	H	74.00	54.00	19.21	11.18

Note : Reading(dBuv) : Measurement Level + Ant Factor + Cable Loss - Amp Gain

● 802.11n

EUT	MD-8500P	PROBE	Above 1 GHz
POWER	12Vdc	CHANNEL	1 Channel (2412 MHz)
MODE	802.11n		

Test Data

Frequency GHz	Reading dBuV		P	Limit dBuV		Margin dB	
	Peak	AV		Peak	AV	Peak	AV
1.327	42.78	29.78	V	74.00	54.00	31.22	24.22
1.872	43.36	30.82	V	74.00	54.00	30.64	23.18
3.173	47.41	36.41	V	74.00	54.00	26.59	17.59
5.581	49.87	37.12	V	74.00	54.00	24.13	16.88
1.425	42.99	29.13	H	74.00	54.00	31.01	24.87
1.863	41.28	31.32	H	74.00	54.00	32.72	22.68
4.825	55.27	45.53	H	74.00	54.00	18.73	8.47
5.654	49.16	40.37	H	74.00	54.00	24.84	13.63
7.289	51.53	39.28	H	74.00	54.00	22.47	14.72

EUT	MD-8500P	PROBE	Above 1 GHz
POWER	12Vdc	CHANNEL	6 Channel (2437 MHz)
MODE	802.11n		

Test Data

Frequency GHz	Reading dBuV		P	Limit dBuV		Margin dB	
	Peak	AV		Peak	AV	Peak	AV
1.857	45.72	33.41	V	74.00	54.00	28.28	20.59
4.834	56.31	46.12	V	74.00	54.00	17.69	7.88
5.728	49.85	38.53	V	74.00	54.00	24.15	15.47
1.428	40.24	30.74	H	74.00	54.00	33.76	23.26
1.859	43.28	32.86	H	74.00	54.00	30.72	21.14
3.188	46.28	37.78	H	74.00	54.00	27.72	16.22
4.839	55.48	44.36	H	74.00	54.00	18.52	9.64

EUT	MD-8500P	PROBE	Above 1 GHz
POWER	12Vdc	NOTE	11 Channel (2462 MHz)
MODE	802.11n		

Test Data

Frequency GHz	Reading dBuV		P	Limit dBuV		Margin dB	
	Peak	AV		Peak	AV	Peak	AV
1.864	44.28	31.24	V	74.00	54.00	29.72	22.76
5.193	50.15	39.41	V	74.00	54.00	23.85	14.59
5.754	51.39	38.76	V	74.00	54.00	22.61	15.24
1.422	39.42	31.65	H	74.00	54.00	34.58	22.35
2.135	47.23	34.09	H	74.00	54.00	26.77	19.91
4.853	56.28	43.74	H	74.00	54.00	17.72	10.26
5.976	49.81	40.32	H	74.00	54.00	24.19	13.68

Note : Reading(dBuv) : Measurement Level + Ant Factor + Cable Loss - Amp Gain

● 802.11b

EUT	MD-8500P	PROBE	Above 1 GHz
POWER	24Vdc	CHANNEL	1 Channel (2412 MHz)
MODE	802.11b		

Test Data

Frequency GHz	Reading dBuV		P	Limit dBuV		Margin dB	
	Peak	AV		Peak	AV	Peak	AV
1.052	46.72	37.45	V	74.00	54.00	27.28	16.55
1.759	51.24	45.67	V	74.00	54.00	22.76	8.33
4.863	50.12	39.47	V	74.00	54.00	23.88	14.53
5.972	45.32	35.69	V	74.00	54.00	28.68	18.31
1.755	49.15	40.68	H	74.00	54.00	24.85	13.32
1.875	39.97	28.15	H	74.00	54.00	34.03	25.85
3.226	46.21	35.02	H	74.00	54.00	27.79	18.98

EUT	MD-8500P	PROBE	Above 1 GHz
POWER	24Vdc	CHANNEL	6 Channel (2437 MHz)
MODE	802.11b		

Test Data

Frequency GHz	Reading dBuV		P	Limit dBuV		Margin dB	
	Peak	AV		Peak	AV	Peak	AV
1.756	48.57	39.17	V	74.00	54.00	25.43	14.83
4.882	52.69	40.38	V	74.00	54.00	21.31	13.62
5.931	49.28	37.94	V	74.00	54.00	24.72	16.06
1.012	46.96	35.42	H	74.00	54.00	27.04	18.58
3.232	49.25	40.11	H	74.00	54.00	24.75	13.89
4.889	55.39	42.83	H	74.00	54.00	18.61	11.17
7.228	53.58	41.62	H	74.00	54.00	20.42	12.38

EUT	MD-8500P	PROBE	Above 1 GHz
POWER	24Vdc	NOTE	11 Channel (2462 MHz)
MODE	802.11b		

Test Data

Frequency GHz	Reading dBuV		P	Limit dBuV		Margin dB	
	Peak	AV		Peak	AV	Peak	AV
1.025	39.75	29.46	V	74.00	54.00	34.25	24.54
1.875	45.39	36.24	V	74.00	54.00	28.61	17.76
5.932	49.52	36.74	V	74.00	54.00	24.48	17.26
1.323	42.63	31.25	H	74.00	54.00	31.37	22.75
2.134	45.34	35.28	H	74.00	54.00	28.66	18.72
4.902	57.23	42.76	H	74.00	54.00	16.77	11.24

Note : Reading(dBuv) : Measurement Level + Ant Factor + Cable Loss - Amp Gain

● 802.11g

EUT	MD-8500P	PROBE	Above 1 GHz
POWER	24Vdc	CHANNEL	1 Channel (2412 MHz)
MODE	802.11g		

Test Data

Frequency GHz	Reading dBuV		P	Limit dBuV		Margin dB	
	Peak	AV		Peak	AV	Peak	AV
1.862	46.28	38.51	V	74.00	54.00	27.72	15.49
4.826	59.31	44.86	V	74.00	54.00	14.69	9.14
7.687	50.26	41.68	V	74.00	54.00	23.74	12.32
1.059	48.78	40.69	H	74.00	54.00	25.22	13.31
2.127	42.21	31.92	H	74.00	54.00	31.79	22.08
3.369	47.93	35.64	H	74.00	54.00	26.07	18.36
4.827	60.58	45.92	H	74.00	54.00	13.42	8.08

EUT	MD-8500P	PROBE	Above 1 GHz
POWER	24Vdc	CHANNEL	6 Channel (2437 MHz)
MODE	802.11g		

Test Data

Frequency GHz	Reading dBuV		P	Limit dBuV		Margin dB	
	Peak	AV		Peak	AV	Peak	AV
1.873	42.87	30.94	V	74.00	54.00	31.13	23.06
3.827	47.21	39.78	V	74.00	54.00	26.79	14.22
4.838	58.19	45.94	V	74.00	54.00	15.81	8.06
1.015	46.48	38.74	H	74.00	54.00	27.52	15.26
2.128	46.84	35.93	H	74.00	54.00	27.16	18.07
4.838	59.23	47.81	H	74.00	54.00	14.77	6.19

EUT	MD-8500P	PROBE	Above 1 GHz
POWER	24Vdc	NOTE	11 Channel (2462 MHz)
MODE	802.11g		

Test Data

Frequency GHz	Reading dBuV		P	Limit dBuV		Margin dB	
	Peak	AV		Peak	AV	Peak	AV
1.879	40.86	30.15	V	74.00	54.00	33.14	23.85
3.254	46.55	35.89	V	74.00	54.00	27.45	18.11
4.846	55.47	42.39	V	74.00	54.00	18.53	11.61
5.972	49.98	39.46	V	74.00	54.00	24.02	14.54
1.128	43.16	39.36	H	74.00	54.00	30.84	14.64
1.853	38.47	30.12	H	74.00	54.00	35.53	23.88
4.846	57.32	44.67	H	74.00	54.00	16.68	9.33
9.112	52.14	41.79	H	74.00	54.00	21.86	12.21

Note : Reading(dBuv) : Measurement Level + Ant Factor + Cable Loss - Amp Gain

● 802.11n

EUT	MD-8500P	PROBE	Above 1 GHz
POWER	24Vdc	CHANNEL	1 Channel (2412 MHz)
MODE	802.11n		

Test Data

Frequency GHz	Reading dBuV		P	Limit dBuV		Margin dB	
	Peak	AV		Peak	AV	Peak	AV
1.335	40.98	28.94	V	74.00	54.00	33.02	25.06
1.851	44.14	30.85	V	74.00	54.00	29.86	23.15
3.165	45.21	34.47	V	74.00	54.00	28.79	19.53
5.213	49.36	35.45	V	74.00	54.00	24.64	18.55
1.352	41.89	30.63	H	74.00	54.00	32.11	23.37
1.851	45.58	31.47	H	74.00	54.00	28.42	22.53
4.824	58.24	45.45	H	74.00	54.00	15.76	8.55

EUT	MD-8500P	PROBE	Above 1 GHz
POWER	24Vdc	CHANNEL	6 Channel (2437 MHz)
MODE	802.11n		

Test Data

Frequency GHz	Reading dBuV		P	Limit dBuV		Margin dB	
	Peak	AV		Peak	AV	Peak	AV
1.862	44.28	30.58	V	74.00	54.00	29.72	23.42
4.841	59.31	47.49	V	74.00	54.00	14.69	6.51
5.932	48.59	36.68	V	74.00	54.00	25.41	17.32
1.348	40.86	31.52	H	74.00	54.00	33.14	22.48
1.855	46.32	32.27	H	74.00	54.00	27.68	21.73
3.174	47.74	36.82	H	74.00	54.00	26.26	17.18
4.841	59.76	46.88	H	74.00	54.00	14.24	7.12

EUT	MD-8500P	PROBE	Above 1 GHz
POWER	24Vdc	NOTE	11 Channel (2462 MHz)
MODE	802.11n		

Test Data

Frequency GHz	Reading dBuV		P	Limit dBuV		Margin dB	
	Peak	AV		Peak	AV	Peak	AV
1.885	46.86	34.72	V	74.00	54.00	27.14	19.28
4.912	60.58	48.93	V	74.00	54.00	13.42	5.07
5.938	47.79	38.95	V	74.00	54.00	26.21	15.05
1.423	44.47	31.78	H	74.00	54.00	29.53	22.22
2.125	45.98	34.28	H	74.00	54.00	28.02	19.72
4.913	61.47	48.45	H	74.00	54.00	12.53	5.55

Note : Reading(dBuv) : Measurement Level + Ant Factor + Cable Loss - Amp Gain

Radiated Restricted Band Edge Result

● 802.11b

EUT	MD-8500P	PROBE	Above 1 GHz
POWER	12Vdc	NOTE	1 Channel (2412 MHz)
MODE	802.11b		

Test Data

Frequency GHz	Reading dBuV		P	Limit dBuV		Margin dB	
	Peak	AV		Peak	AV	Peak	AV
2.385	45.35	35.41	V	74.00	54.00	28.65	18.59
2.385	50.29	45.34	H	74.00	54.00	23.71	8.66
2.357	42.82	31.74	V	74.00	54.00	31.18	22.26
2.356	45.21	31.82	H	74.00	54.00	28.79	22.18

EUT	MD-8500P	PROBE	Above 1 GHz
POWER	12Vdc	NOTE	11 Channel (2462 MHz)
MODE	802.11b		

Test Data

Frequency GHz	Reading dBuV		P	Limit dBuV		Margin dB	
	Peak	AV		Peak	AV	Peak	AV
2.487	44.93	33.63	V	74.00	54.00	29.07	20.37
2.486	51.47	43.94	H	74.00	54.00	22.53	10.06

Note : Reading(dBuv) : Measurement Level + Ant Factor + Cable Loss - Amp Gain

● 802.11g

EUT	MD-8500P	PROBE	Above 1 GHz
POWER	12Vdc	NOTE	1 Channel (2412 MHz)
MODE	802.11g		

Test Data

Frequency GHz	Reading dBuV		P	Limit dBuV		Margin dB	
	Peak	AV		Peak	AV	Peak	AV
2.390	50.32	38.14	V	74.00	54.00	23.68	15.86
2.391	60.01	46.47	H	74.00	54.00	13.99	7.53

EUT	MD-8500P	PROBE	Above 1 GHz
POWER	12Vdc	NOTE	11 Channel (2462 MHz)
MODE	802.11g		

Test Data

Frequency GHz	Reading dBuV		P	Limit dBuV		Margin dB	
	Peak	AV		Peak	AV	Peak	AV
2.484	52.85	38.55	V	74.00	54.00	21.15	15.45
2.484	65.23	47.86	H	74.00	54.00	8.77	6.14

Note : Reading(dBuv) : Measurement Level + Ant Factor + Cable Loss - Amp Gain

● 802.11n

EUT	MD-8500P	PROBE	Above 1 GHz
POWER	12Vdc	NOTE	1 Channel (2412 MHz)
MODE	802.11n		

Test Data

Frequency GHz	Reading dBuV		P	Limit dBuV		Margin dB	
	Peak	AV		Peak	AV	Peak	AV
2.390	47.72	36.37	V	74.00	54.00	26.28	17.63
2.390	55.31	44.48	H	74.00	54.00	18.69	9.52

EUT	MD-8500P	PROBE	Above 1 GHz
POWER	12Vdc	NOTE	11 Channel (2462 MHz)
MODE	802.11n		

Test Data

Frequency GHz	Reading dBuV		P	Limit dBuV		Margin dB	
	Peak	AV		Peak	AV	Peak	AV
2.485	52.54	38.02	V	74.00	54.00	21.46	15.98
2.485	59.34	42.71	H	74.00	54.00	14.66	11.29

Note : Reading(dBuv) : Measurement Level + Ant Factor + Cable Loss - Amp Gain

● 802.11b

EUT	MD-8500P	PROBE	Above 1 GHz
POWER	24Vdc	NOTE	1 Channel (2412 MHz)
MODE	802.11b		

Test Data

Frequency GHz	Reading dBuV		P	Limit dBuV		Margin dB	
	Peak	AV		Peak	AV	Peak	AV
2.386	45.22	36.69	V	74.00	54.00	28.78	17.31
2.386	52.34	40.42	H	74.00	54.00	21.66	13.58

EUT	MD-8500P	PROBE	Above 1 GHz
POWER	24Vdc	NOTE	11 Channel (2462 MHz)
MODE	802.11b		

Test Data

Frequency GHz	Reading dBuV		P	Limit dBuV		Margin dB	
	Peak	AV		Peak	AV	Peak	AV
2.488	45.87	36.41	V	74.00	54.00	28.13	17.59
2.488	55.14	42.23	H	74.00	54.00	18.86	11.77

Note : Reading(dBuv) : Measurement Level + Ant Factor + Cable Loss - Amp Gain

● 802.11g

EUT	MD-8500P	PROBE	Above 1 GHz
POWER	24Vdc	NOTE	1 Channel (2412 MHz)
MODE	802.11g		

Test Data

Frequency GHz	Reading dBuV		P	Limit dBuV		Margin dB	
	Peak	AV		Peak	AV	Peak	AV
2.393	50.02	41.42	V	74.00	54.00	23.98	12.58
2.393	63.25	45.79	H	74.00	54.00	10.75	8.21

EUT	MD-8500P	PROBE	Above 1 GHz
POWER	24Vdc	NOTE	11 Channel (2462 MHz)
MODE	802.11g		

Test Data

Frequency GHz	Reading dBuV		P	Limit dBuV		Margin dB	
	Peak	AV		Peak	AV	Peak	AV
2.484	49.14	35.54	V	74.00	54.00	24.86	18.46
2.484	56.89	41.62	H	74.00	54.00	17.11	12.38

Note : Reading(dBuv) : Measurement Level + Ant Factor + Cable Loss - Amp Gain

● 802.11n

EUT	MD-8500P	PROBE	Above 1 GHz
POWER	24Vdc	NOTE	1 Channel (2412 MHz)
MODE	802.11n		

Test Data

Frequency GHz	Reading dBuV		P	Limit dBuV		Margin dB	
	Peak	AV		Peak	AV	Peak	AV
2.390	50.03	36.48	V	74.00	54.00	23.97	17.52
2.390	57.82	42.45	H	74.00	54.00	16.18	11.55

EUT	MD-8500P	PROBE	Above 1 GHz
POWER	24Vdc	NOTE	11 Channel (2462 MHz)
MODE	802.11n		

Test Data

Frequency GHz	Reading dBuV		P	Limit dBuV		Margin dB	
	Peak	AV		Peak	AV	Peak	AV
2.488	52.39	38.93	V	74.00	54.00	21.61	15.07
2.488	58.43	43.87	H	74.00	54.00	15.57	10.13

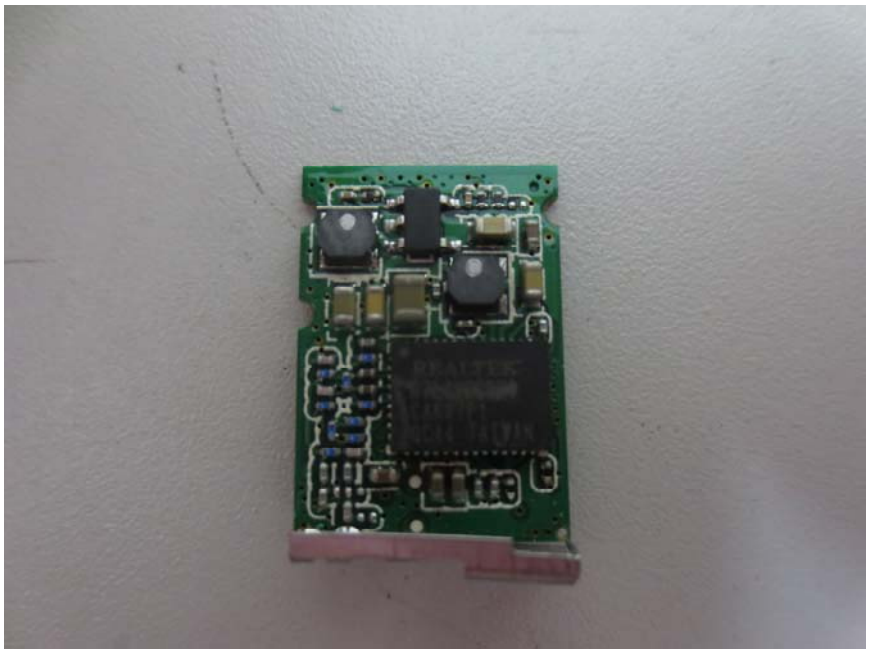
Note : Reading(dBuv) : Measurement Level + Ant Factor + Cable Loss - Amp Gain

Antenna requirements

According to FCC 47 CFR 15.203

"an intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can be used with the device. The use of a permanently attached or an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section"

* the antenna of this EUT is a unique(Fixed Inverted F Antenna).



* the EUT complies with the requirement of 15.203