

# TEST REPORT

**Reference No.**..... : WTX23X07151824W001  
**FCC ID** ..... : 2A3SYMBL01  
**Applicant** ..... : Hesung Innovation Limited  
**Address** ..... : Room 803, Chevalier House, 45-51 Chatham Road South, Tsim Sha Tsui,  
Kowloon, Hong Kong, 999077  
**Manufacturer** ..... : Guangdong Migair Electric Science and Technology Industrial Company  
Limited Beijiao First Branch  
**Address** ..... : No.6 Huancun Road, Guangjiao, Beijiao Town, Shunde, Foshan,  
Guangdong, 528311  
**Product Name** ..... : WiFi Module  
**Model No.**..... : MBL01  
**Standards** ..... : FCC Part 15.247  
**Date of Receipt sample** .... : 2023-07-12  
**Date of Test**..... : 2023-07-12 to 2023-08-04  
**Date of Issue** ..... : 2023-08-04  
**Test Report Form No.** ..... : WTX\_Part 15\_247W  
**Test Result**..... : **Pass**

Remarks:

The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of approver.

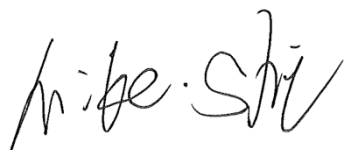
**Prepared By:**

**Waltek Testing Group (Shenzhen) Co., Ltd.**

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Mike Shi

Approved by:



Silin Chen

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**Report version**

Version No.	Date of issue	Description
Rev.00	2023-08-04	Original
/	/	/

## 1. GENERAL INFORMATION

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### 1.1 Product Description for Equipment Under Test (EUT)

General Description of EUT	
Product Name:	WiFi Module
Trade Name:	
Model No.:	MBL01
Adding Model(s):	/
Rated Voltage:	DC5V
Power Adapter Model:	/
<i>Note: The test data is gathered from a production sample provided by the manufacturer.</i>	

Technical Characteristics of EUT	
Support Standards:	802.11b, 802.11g, 802.11n
Frequency Range:	2412-2462MHz for 802.11b/g/n(HT20)
RF Output Power:	18.87dBm (Conducted)
Type of Modulation:	DBPSK,BPSK,DQPSK,QPSK,16QAM,64QAM
Quantity of Channels:	11 for 802.11b/g/n(HT20)
Channel Separation:	5MHz
Type of Antenna:	Integral Antenna
Antenna Gain:	Antenna 1:2.99dBi Antenna 2:4.55dBi Antenna 3:4.7dBi Antenna 4:3.64dBi Antenna 5: 2.64dBi

## 1.2 Test Standards

The tests were performed according to following standards:

**FCC Rules Part 15.247:** Frequency Hopping, Direct Spread Spectrum and Hybrid Systems that are in operation within the bands of 902-928MHz, 2400-2483.5MHz, and 5725-5850MHz.

**558074 D01 15.247 Meas Guidance v05r02:** Guidance for Compliance Measurements on Digital Transmission System, Frequency Hopping Spread Spectrum System, and Hybrid System Devices Operating under section 15.247 of the Fcc rules.

**ANSI C63.10-2013:** American National Standard for Testing Unlicensed Wireless Devices.

**Maintenance of compliance** is the responsibility of the manufacturer. Any modification of the product, which result in lowering the emission, should be checked to ensure compliance has been maintained.

## 1.3 Test Methodology

All measurements contained in this report were conducted with ANSI C63.10-2013, KDB 558074 D01 15.247 Meas Guidance v05r02.

The equipment under test (EUT) was configured to measure its highest possible emission level. The test modes were adapted accordingly in reference to the Operating Instructions.

## 1.4 Test Facility

### Address of the test laboratory

Laboratory: Waltek Testing Group (Shenzhen) Co., Ltd.

Address: 1/F., Room 101, Building 1, Hongwei Industrial Park, Liuxian 2nd Road, Block 70 Bao'an District, Shenzhen, Guangdong, China

### FCC – Registration No.: 125990

Waltek Testing Group (Shenzhen) Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files. The Designation Number is CN5010, and Test Firm Registration Number is 125990.

### Industry Canada (IC) Registration No.: 11464A

The 3m Semi-anechoic chamber of Waltek Testing Group (Shenzhen) Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 11464A and the CAB identifier is CN0057.

## 1.5 EUT Setup and Test Mode

The EUT was operated in the engineering mode to fix the Tx frequency that was for the purpose of the measurements. All testing shall be performed under maximum output power condition, with a duty cycle equal to 100%, and to measure its highest possible emissions level, more detailed description as follows:

Test Mode List		
Test Mode	Description	Remark
TM1	802.11b (worst case)	Low:2412MHz, Middle:2437MHz,High:2462MHz Test for ANT1 model:HTF001S
TM2	802.11b (worst case)	Low:2412MHz, Middle:2437MHz,High:2462MHz Test for ANT2 model:HAF004S
TM3	802.11b (worst case)	Low:2412MHz, Middle:2437MHz,High:2462MHz Test for ANT3 model:HAF001S
TM4	802.11b (worst case)	Low:2412MHz, Middle:2437MHz,High:2462MHz Test for ANT4 model:HTF007S
TM5	802.11b (worst case)	Low:2412MHz, Middle:2437MHz,High:2462MHz Test for ANT5 model:HTF005S

Test Conditions	
Temperature:	22~25 °C
Relative Humidity:	45~55 %.
ATM Pressure:	1019 mbar

EUT Cable List and Details			
Cable Description	Length (m)	Shielded/Unshielded	With / Without Ferrite
/	/	/	/

Special Cable List and Details			
Cable Description	Length (m)	Shielded/Unshielded	With / Without Ferrite
/	/	/	/

Auxiliary Equipment List and Details			
Description	Manufacturer	Model	Serial Number
Notebook	Lenovo	E445	EB12648265

## 1.6 Measurement Uncertainty

Measurement uncertainty		
Parameter	Conditions	Uncertainty
RF Output Power	Conducted	$\pm 0.42\text{dB}$
Occupied Bandwidth	Conducted	$\pm 1.5\%$
Power Spectral Density	Conducted	$\pm 1.8\text{dB}$
Conducted Spurious Emission	Conducted	$\pm 2.17\text{dB}$
Conducted Emissions	Conducted	9-150kHz $\pm 3.74\text{dB}$
		0.15-30MHz $\pm 3.34\text{dB}$
Transmitter Spurious Emissions	Radiated	30-200MHz $\pm 4.52\text{dB}$
		0.2-1GHz $\pm 5.56\text{dB}$
		1-6GHz $\pm 3.84\text{dB}$
		6-26GHz $\pm 3.92\text{dB}$

## 1.7 Test Equipment List and Details

Fixed asset Number	Description	Manufacturer	Model	Serial No.	Cal Date	Due. Date
WTXE1041A 1001	Communication Tester	Rohde & Schwarz	CMW500	148650	2023-02-25	2024-02-24
WTXE1005A 1005	Spectrum Analyzer	Agilent	N9020A	US471401 02	2023-02-25	2024-02-24
WTXE1084A 1001	Spectrum Analyzer	Agilent	N9020A	MY543205 48	2023-02-25	2024-02-24
WTXE1004A 1-001	Spectrum Analyzer	Rohde & Schwarz	FSP40	100612	2023-02-25	2024-02-24
<input type="checkbox"/> Chamber A: Below 1GHz						
WTXE1005A 1003	Spectrum Analyzer	Rohde & Schwarz	FSP30	836079/03 5	2023-02-25	2024-02-24
WTXE1007A 1001	EMI Test Receiver	Rohde & Schwarz	ESVB	825471/00 5	2023-02-25	2024-02-24
WTXE1007A 1001	Amplifier	HP	8447F	2805A034 75	2023-02-25	2024-02-24
WTXE1010A 1007	Loop Antenna	Schwarz beck	FMZB 1516	9773	2021-03-20	2024-03-19
WTXE1010A 1006	Broadband Antenna	Schwarz beck	VULB9163	9163-333	2023-03-20	2026-03-19
<input type="checkbox"/> Chamber A: Above 1GHz						
WTXE1005A 1003	Spectrum Analyzer	Rohde & Schwarz	FSP30	836079/03 5	2023-02-25	2024-02-24
WTXE1007A 1001	EMI Test Receiver	Rohde & Schwarz	ESVB	825471/00 5	2023-02-25	2024-02-24
WTXE1065A 1001	Amplifier	C&D	PAP-1G18	14918	2023-02-25	2024-02-24
WTXE1010A 1005	Horn Antenna	ETS	3117	00086197	2021-03-19	2024-03-18
WTXE1010A 1010	DRG Horn Antenna	A.H. SYSTEMS	SAS-574	571	2021-03-19	2024-03-18
WTXE1003A 1001	Pre-amplifier	Schwarzbeck	BBV 9721	9721-031	2023-02-25	2024-02-24
<input type="checkbox"/> Chamber B: Below 1GHz						
WTXE1010A 1006	Trilog Broadband Antenna	Schwarz beck	VULB9163(B)	9163-635	2021-04-09	2024-04-08
WTXE1010A 1007	Loop Antenna	Schwarz beck	FMZB 1516	9773	2021-03-20	2024-03-19



WTXE1038A 1001	Amplifier	Agilent	8447D	2944A101 79	2023-02-25	2024-02-24
WTXE1001A 1002	EMI Test Receiver	Rohde & Schwarz	ESPI	101391	2023-02-25	2024-02-24
<input checked="" type="checkbox"/> Chamber C:Below 1GHz						
WTXE1093A 1001	EMI Test Receiver	Rohde & Schwarz	ESIB 26	100401	2023-02-25	2024-02-24
WTXE1010A 1013-1	Trilog Broadband Antenna	Schwarz beck	VULB 9168	1194	2021-05-28	2024-05-27
WTXE1010A 1007	Loop Antenna	Schwarz beck	FMZB 1516	9773	2021-03-20	2024-03-19
WTXE1007A 1002	Amplifier	HP	8447F	2944A038 69	2023-02-25	2024-02-24
<input checked="" type="checkbox"/> Chamber C: Above 1GHz						
WTXE1093A 1001	EMI Test Receiver	Rohde & Schwarz	ESIB 26	100401	2023-02-25	2024-02-24
WTXE1103A 1005	Horn Antenna	POAM	RTF-11A	LP228060 221	2023-03-10	2026-03-09
WTXE1103A 1006	Amplifier	Tonscend	TAP01018050	AP22E806 235	2023-02-25	2024-02-24
WTXE1010A 1010	DRG Horn Antenna	A.H. SYSTEMS	SAS-574	571	2021-03-19	2024-03-18
WTXE1003A 1001	Pre-amplifier	Schwarzbeck	BBV 9721	9721-031	2023-02-25	2024-02-24
<input checked="" type="checkbox"/> Conducted Room 1#						
WTXE1001A 1001	EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2023-02-25	2024-02-24
WTXE1002A 1001	Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100911	2023-02-25	2024-02-24
WTXE1003A 1001	AC LISN	Schwarz beck	NSLK8126	8126-224	2023-02-25	2024-02-24
<input type="checkbox"/> Conducted Room 2#						
WTXE1001A 1004	EMI Test Receiver	Rohde & Schwarz	ESPI	101259	2023-02-25	2024-02-24
WTXE1003A 1003	LISN	Rohde & Schwarz	ENV 216	100097	2023-02-25	2024-02-24

<b>Software List</b>			
<b>Description</b>	<b>Manufacturer</b>	<b>Model</b>	<b>Version</b>
EMI Test Software (Radiated Emission)*	Farad	EZ-EMC	RA-03A1
EMI Test Software (Conducted Emission)*	Farad	EZ-EMC	RA-03A1

\*Remark: indicates software version used in the compliance certification testing.

## 2. SUMMARY OF TEST RESULTS

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FCC Rules	Description of Test Item	Result
§15.203; §15.247(b)(4)(i)	Antenna Requirement	Compliant
§15.205	Restricted Band of Operation	N/A
§15.207(a)	Conducted Emission	N/A
§15.247(e)	Power Spectral Density	N/A
§15.247(a)(2)	DTS Bandwidth	N/A
§15.247(b)(3)	RF Output Power	N/A t
§15.209(a)	Radiated Emission	Compliant
§15.247(d)	Band Edge (Out of Band Emissions)	N/A

Class II Permissive Change: The device added five antennas that can be selected.

Note: Report is for Class II Permissive Change only. Updated test data include Antenna Requirement, Radiated Emission. Other test data refer to the original report WTX21F11126549E003, The original FCC ID issue date: 12/15/2021.

### **3. Antenna Requirement**

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#### **3.1 Standard Applicable**

According to FCC Part 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.

#### **3.2 Evaluation Information**

This product has an integral antenna, fulfill the requirement of this section.

## 4. Field Strength of Spurious Emissions

### 4.1 Standard Applicable

According to §15.247(d), in any 100kHz 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 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30dB instead of 20dB. Attenuation below the general limits specified in §15.209(a) is not required. 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).

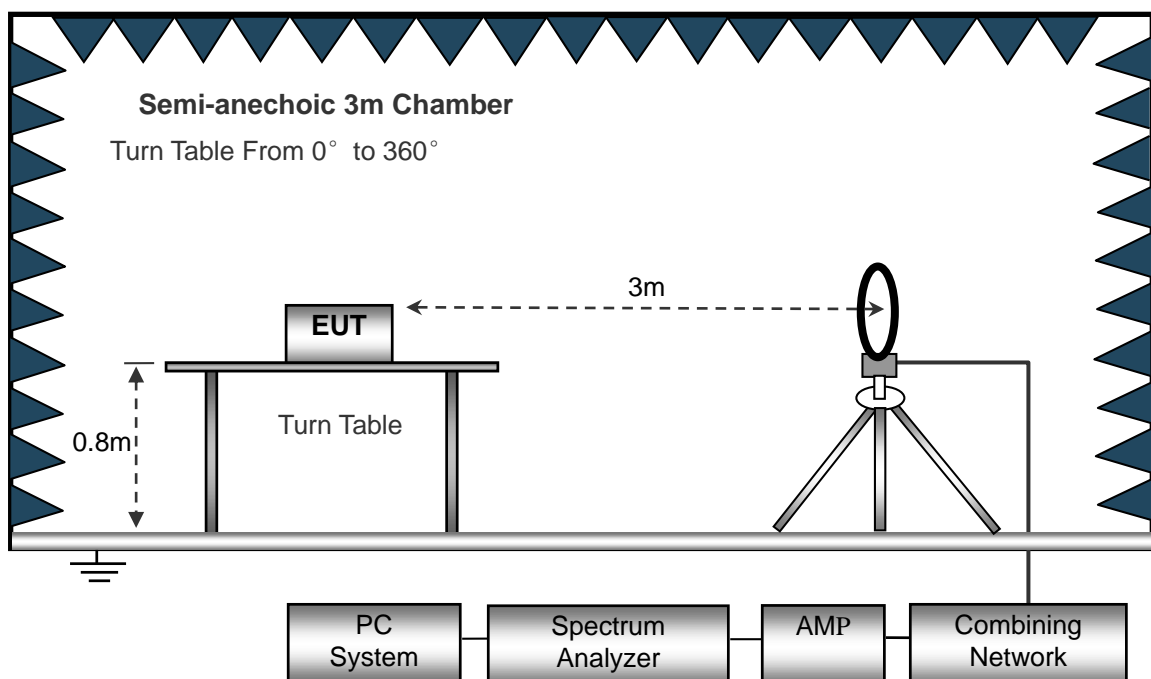
The emission limit in this paragraph is based on measurement instrumentation employing an average detector. The provisions in §15.35 for limiting peak emissions apply. Spurious Radiated Emissions measurements starting below or at the lowest crystal frequency.

### 4.2 Test Procedure

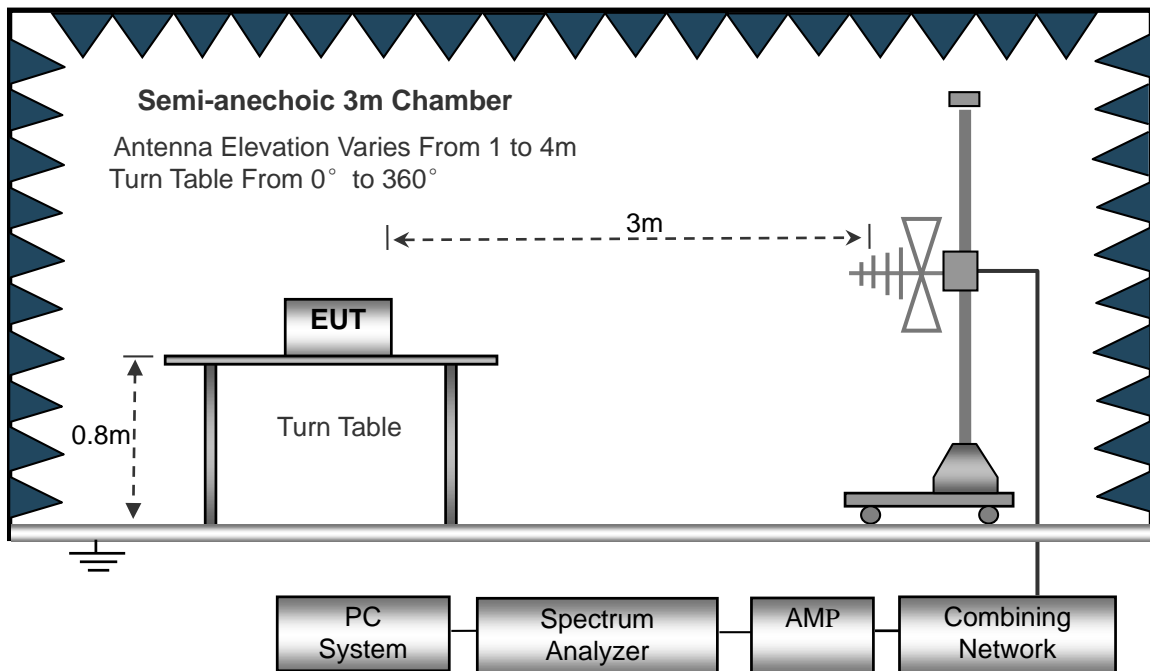
The setup of EUT is according with per ANSI C63.10-2013 measurement procedure. The specification used was with the FCC Part 15.205 15.247(a) and FCC Part 15.209 Limit.

The external I/O cables were draped along the test table and formed a bundle 30 to 40cm long in the middle. The spacing between the peripherals was 10cm.

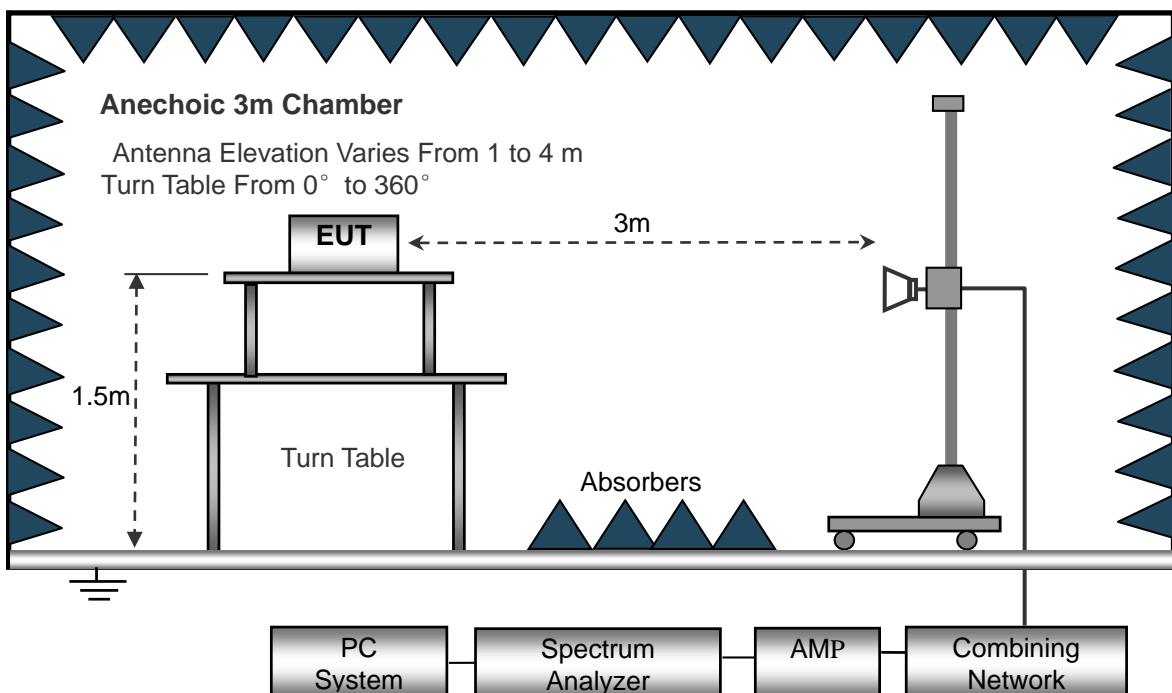
The test setup for emission measurement below 30MHz.



The test setup for emission measurement from 30MHz to 1GHz.



The test setup for emission measurement above 1GHz.



Frequency :9kHz-30MHz	Frequency :30MHz-1GHz	Frequency :Above 1GHz
RBW=10KHz,	RBW=120KHz,	RBW=1MHz,
VBW =30KHz	VBW=300KHz	VBW=3MHz(Peak), 10Hz(AV)
Sweep time= Auto	Sweep time= Auto	Sweep time= Auto
Trace = max hold	Trace = max hold	Trace = max hold
Detector function = peak	Detector function = peak, QP	Detector function = peak, AV

### 4.3 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and the Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

$$\text{Corr. Ampl.} = \text{Indicated Reading} + \text{Ant. Factor} + \text{Cable Loss} - \text{Ampl. Gain}$$

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -6dB $\mu$ V means the emission is 6dB $\mu$ V below the maximum limit. The equation for margin calculation is as follows:

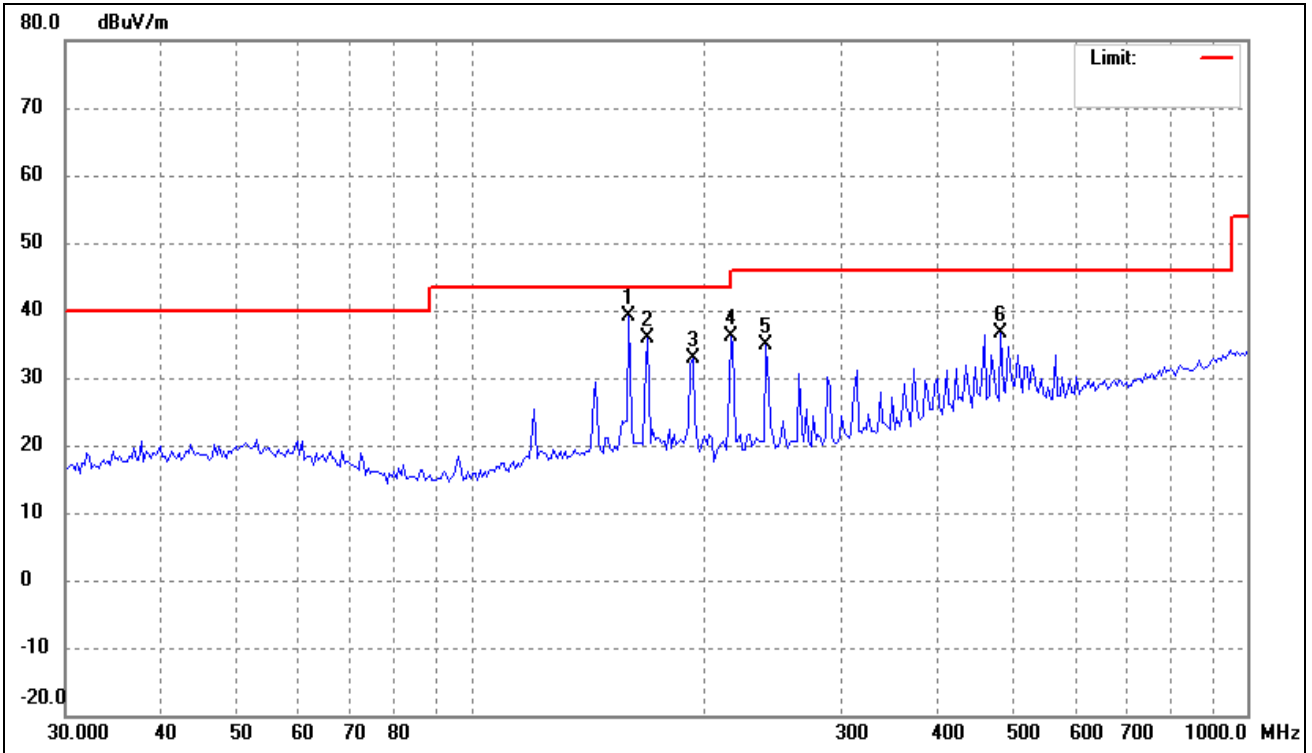
$$\text{Margin} = \text{Corr. Ampl.} - \text{FCC Part 15 Limit}$$

### 4.4 Summary of Test Results/Plots

*Note: 1. This EUT was tested in 3 orthogonal positions and the worst case position data was reported. All test modes (different data rate and different modulation) are performed, but only the worst case(802.11b\_11Mbps) is recorded in this report.*

➤ Spurious Emissions Below 1GHz

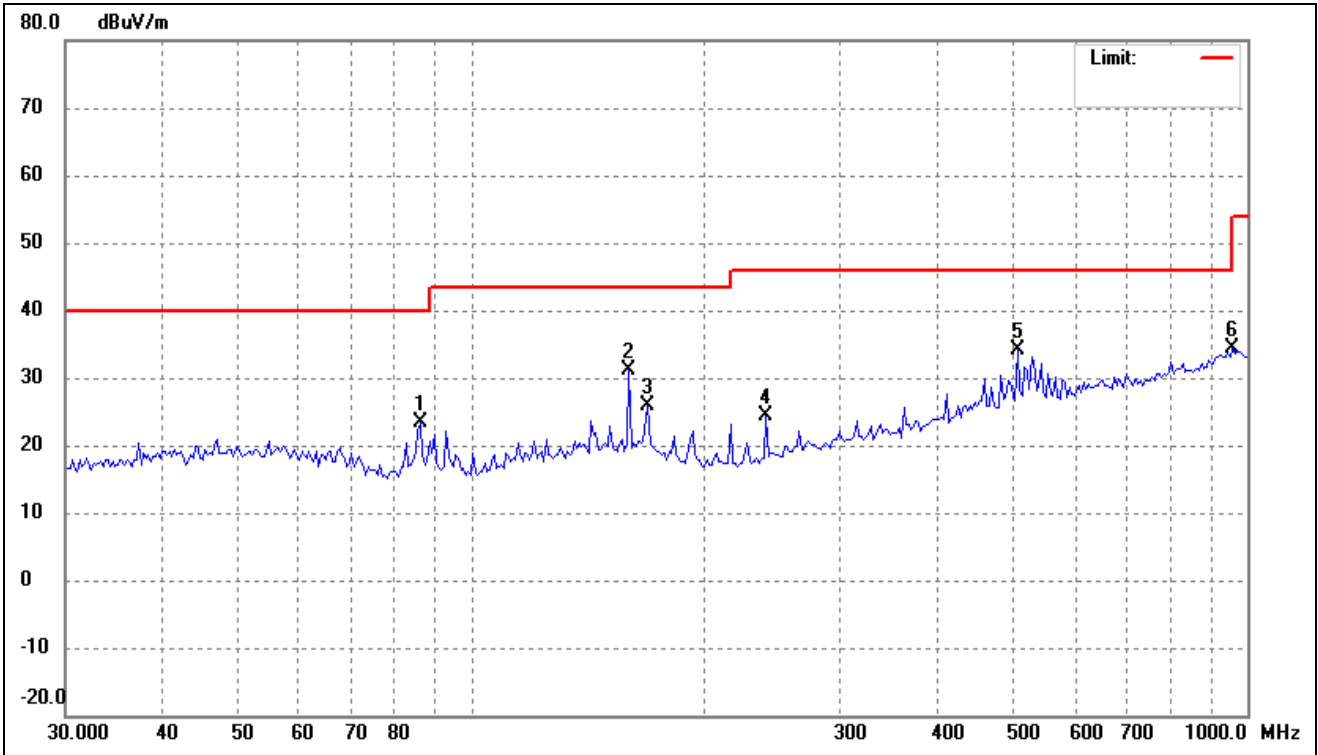
802.11b_11Mbps(worst case)			
Test mode:	TM1	Polarity:	Horizontal



No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (-)	Height (cm)	Remark
1	159.7586	47.69	-8.61	39.08	43.50	-4.42	-	-	peak
2	168.9970	44.61	-8.85	35.76	43.50	-7.74	-	-	peak
3	193.1366	44.45	-11.60	32.85	43.50	-10.65	-	-	peak
4	216.1197	48.19	-12.12	36.07	46.00	-9.93	-	-	peak
5	240.1442	45.32	-10.54	34.78	46.00	-11.22	-	-	peak
6	481.5112	40.70	-4.15	36.55	46.00	-9.45	-	-	peak

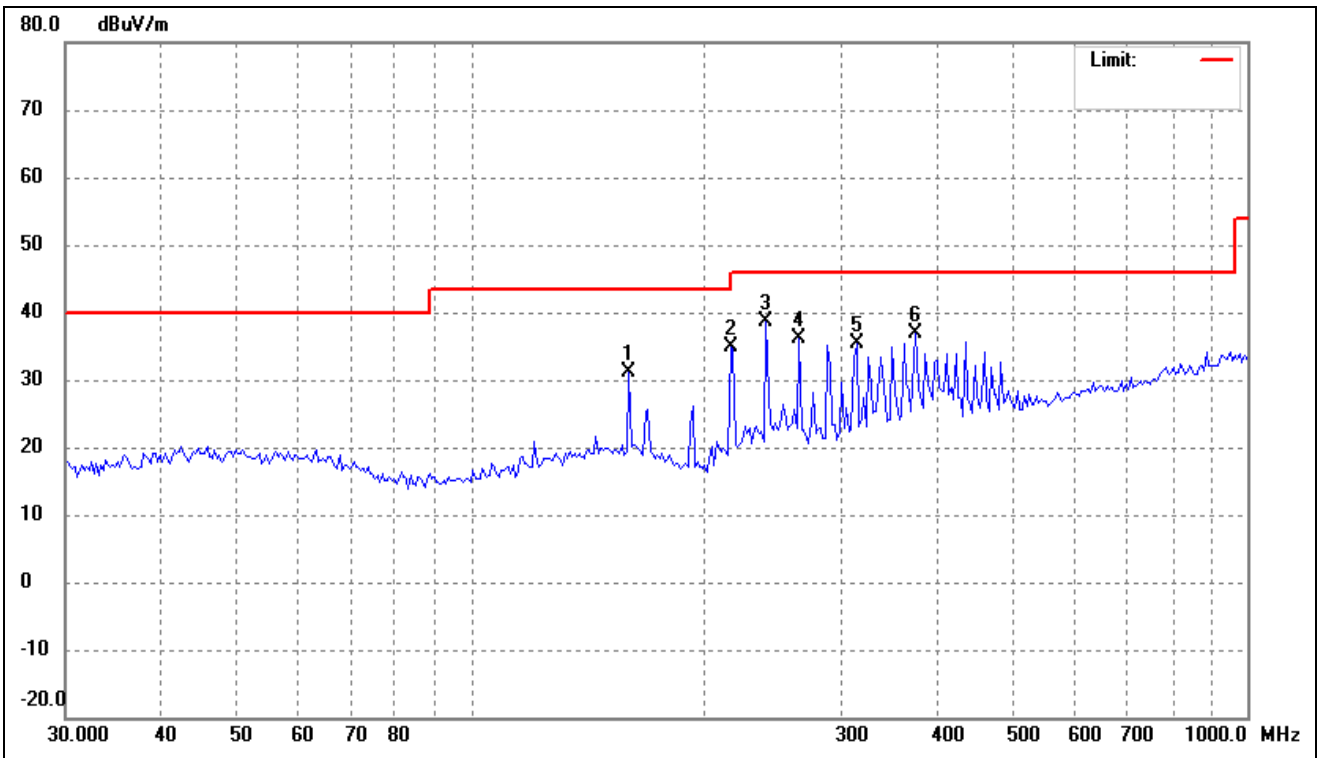


802.11b_11Mbps(worst case)			
Test mode:	TM1	Polarity:	Vertical



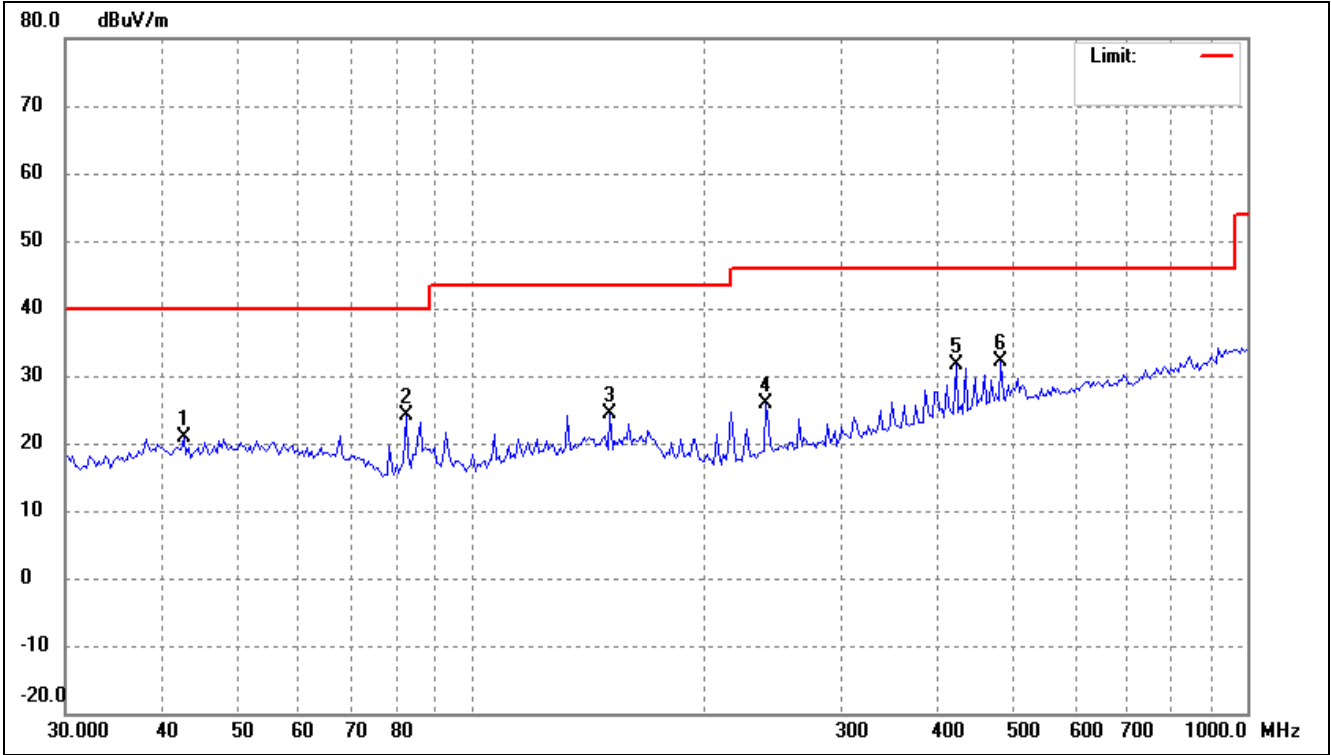
No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (-)	Height (cm)	Remark
1	86.0796	36.47	-13.04	23.43	40.00	-16.57	-	-	peak
2	159.7586	39.71	-8.61	31.10	43.50	-12.40	-	-	peak
3	168.9970	34.78	-8.85	25.93	43.50	-17.57	-	-	peak
4	240.1442	35.04	-10.54	24.50	46.00	-21.50	-	-	peak
5	505.7891	38.03	-3.80	34.23	46.00	-11.77	-	-	peak
6	958.7135	32.06	2.26	34.32	46.00	-11.68	-	-	peak

802.11b_11Mbps(worst case)			
Test mode:	TM2	Polarity:	Horizontal



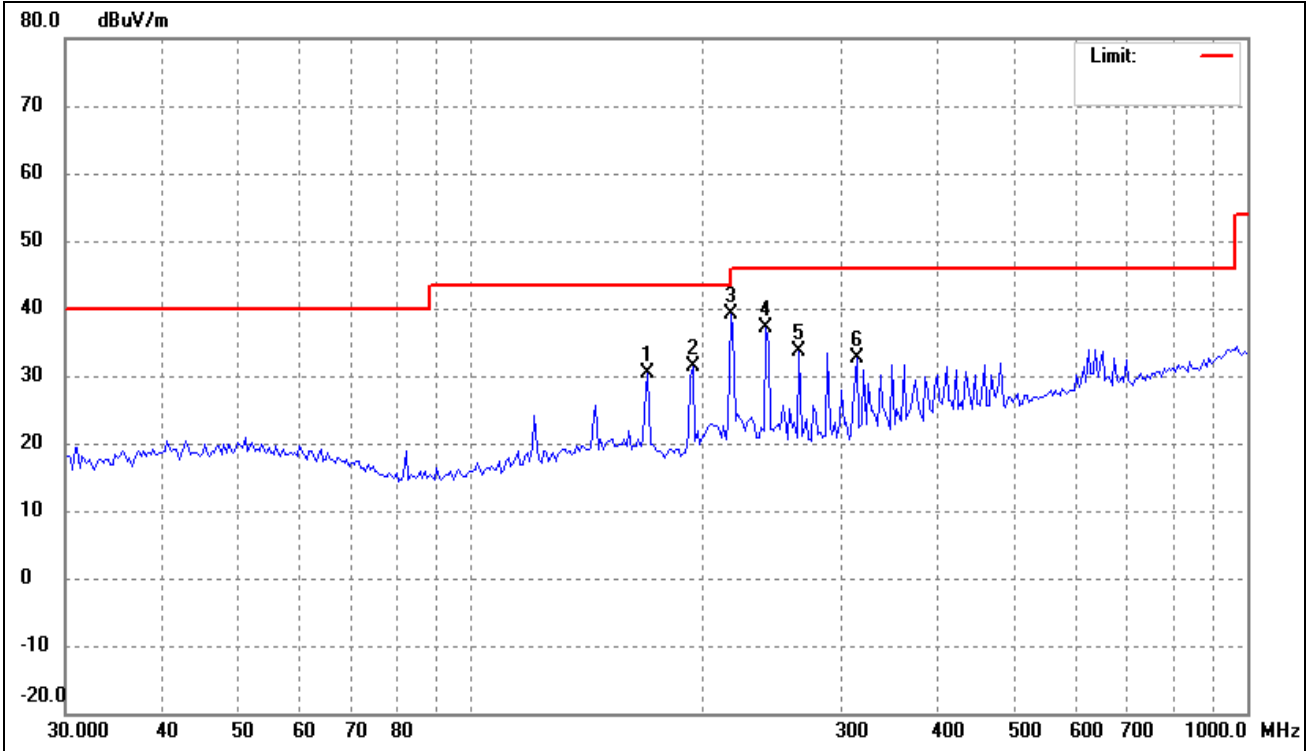
No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (-)	Height (cm)	Remark
1	159.7586	39.78	-8.61	31.17	43.50	-12.33	-	-	peak
2	216.1197	47.04	-12.12	34.92	46.00	-11.08	-	-	peak
3	240.1442	49.20	-10.54	38.66	46.00	-7.34	-	-	peak
4	264.9709	45.65	-9.55	36.10	46.00	-9.90	-	-	peak
5	313.6483	43.30	-7.87	35.43	46.00	-10.57	-	-	peak
6	373.8862	43.42	-6.50	36.92	46.00	-9.08	-	-	peak

802.11b_11Mbps(worst case)			
Test mode:	TM2	Polarity:	Vertical



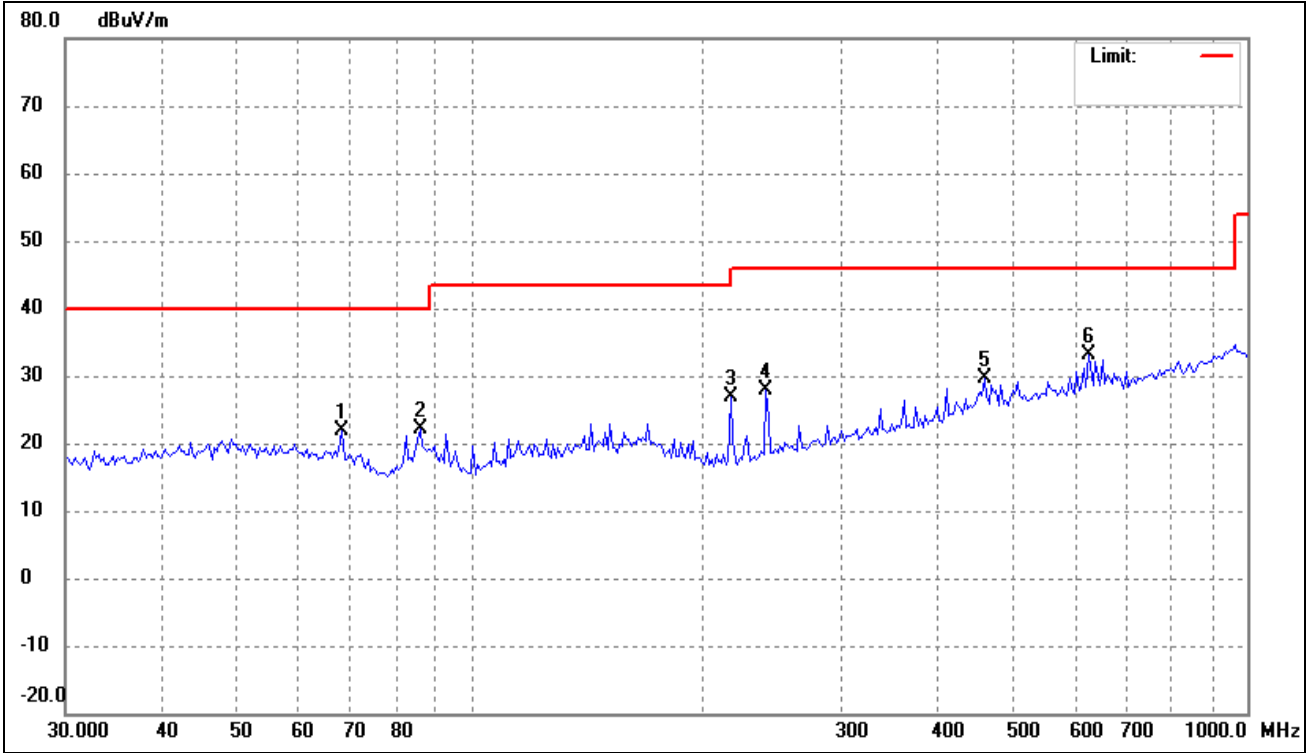
No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (-)	Height (cm)	Remark
1	42.6299	29.44	-8.48	20.96	40.00	-19.04	-	-	peak
2	82.5257	37.01	-13.00	24.01	40.00	-15.99	-	-	peak
3	151.0252	32.99	-8.61	24.38	43.50	-19.12	-	-	peak
4	240.1442	36.37	-10.54	25.83	46.00	-20.17	-	-	peak
5	421.3287	37.11	-5.38	31.73	46.00	-14.27	-	-	peak
6	481.5112	36.33	-4.15	32.18	46.00	-13.82	-	-	peak

802.11b_11Mbps(worst case)			
Test mode:	TM3	Polarity:	Horizontal



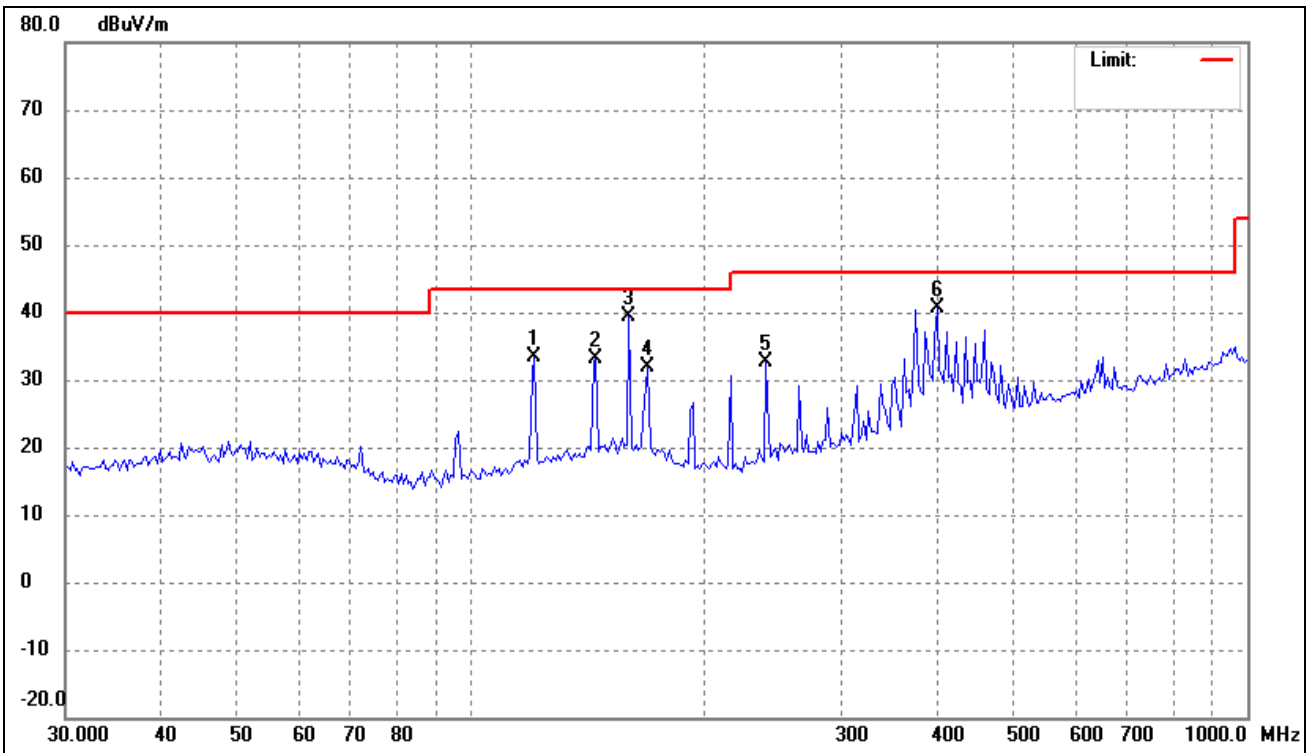
No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (-)	Height (cm)	Remark
1	168.9970	39.19	-8.85	30.34	43.50	-13.16	-	-	peak
2	193.1366	43.09	-11.60	31.49	43.50	-12.01	-	-	peak
3	216.1197	51.27	-12.12	39.15	46.00	-6.85	-	-	peak
4	240.1442	47.58	-10.54	37.04	46.00	-8.96	-	-	peak
5	264.9709	43.06	-9.55	33.51	46.00	-12.49	-	-	peak
6	313.6483	40.43	-7.87	32.56	46.00	-13.44	-	-	peak

802.11b_11Mbps(worst case)			
Test mode:	TM3	Polarity:	Vertical



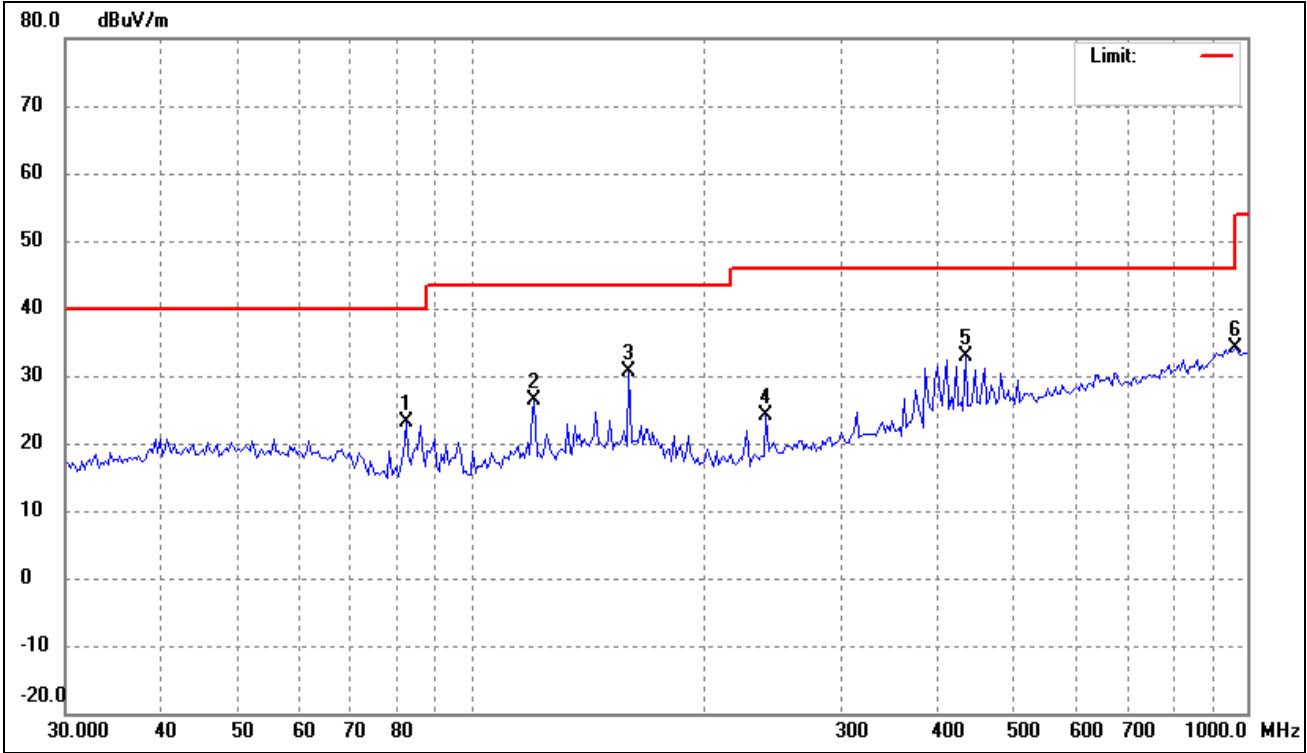
No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (-)	Height (cm)	Remark
1	68.2636	32.26	-10.45	21.81	40.00	-18.19	-	-	peak
2	86.0796	35.08	-13.04	22.04	40.00	-17.96	-	-	peak
3	216.1197	39.01	-12.12	26.89	46.00	-19.11	-	-	peak
4	240.1442	38.42	-10.54	27.88	46.00	-18.12	-	-	peak
5	458.3987	34.01	-4.47	29.54	46.00	-16.46	-	-	peak
6	624.4897	34.66	-1.41	33.25	46.00	-12.75	-	-	peak

802.11b_11Mbps(worst case)			
Test mode:	TM4	Polarity:	Horizontal



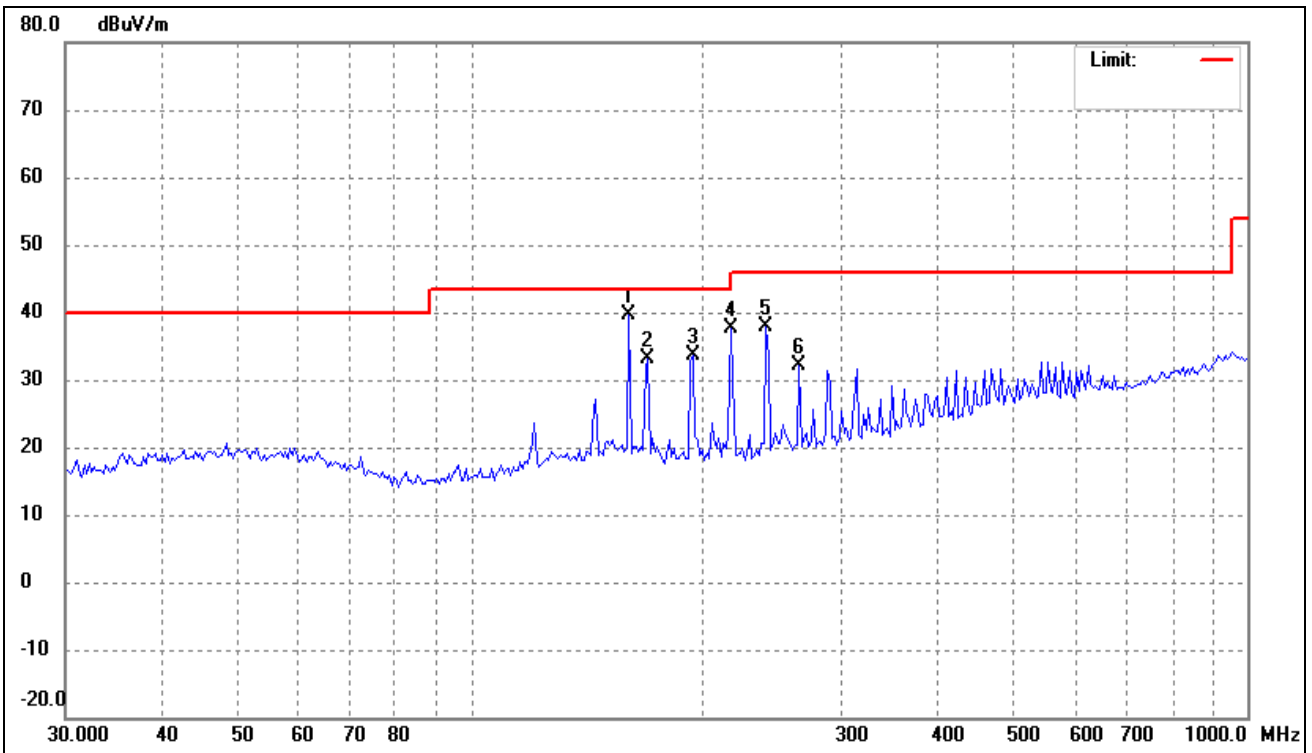
No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (-)	Height (cm)	Remark
1	120.6118	43.92	-10.49	33.43	43.50	-10.07	-	-	peak
2	144.7899	42.19	-9.03	33.16	43.50	-10.34	-	-	peak
3	159.7586	48.04	-8.61	39.43	43.50	-4.07	-	-	peak
4	168.9970	40.77	-8.85	31.92	43.50	-11.58	-	-	peak
5	240.1442	43.13	-10.54	32.59	46.00	-13.41	-	-	peak
6	398.2962	46.67	-5.99	40.68	46.00	-5.32	-	-	peak

802.11b_11Mbps(worst case)			
Test mode:	TM4	Polarity:	Vertical



No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (-)	Height (cm)	Remark
1	82.5257	36.05	-13.00	23.05	40.00	-16.95	-	-	peak
2	120.6118	36.80	-10.49	26.31	43.50	-17.19	-	-	peak
3	159.7586	39.23	-8.61	30.62	43.50	-12.88	-	-	peak
4	240.1442	34.77	-10.54	24.23	46.00	-21.77	-	-	peak
5	433.3397	38.00	-5.05	32.95	46.00	-13.05	-	-	peak
6	965.4742	31.85	2.27	34.12	54.00	-19.88	-	-	peak

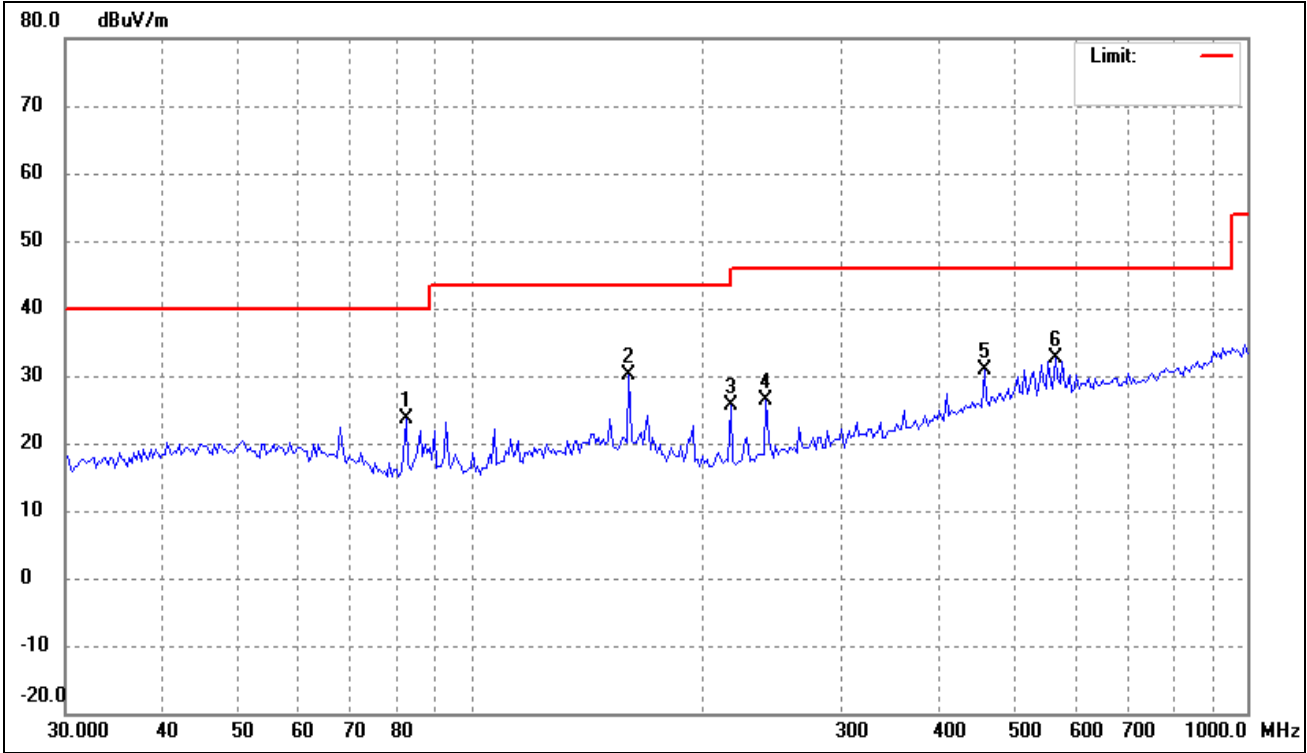
802.11b_11Mbps(worst case)			
Test mode:	TM5	Polarity:	Horizontal



No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (-)	Height (cm)	Remark
1	159.7586	48.30	-8.61	39.69	43.50	-3.81	-	-	peak
2	168.9970	41.88	-8.85	33.03	43.50	-10.47	-	-	peak
3	193.1366	45.12	-11.60	33.52	43.50	-9.98	-	-	peak
4	216.1197	49.69	-12.12	37.57	46.00	-8.43	-	-	peak
5	240.1442	48.49	-10.54	37.95	46.00	-8.05	-	-	peak
6	264.9709	41.60	-9.55	32.05	46.00	-13.95	-	-	peak



802.11b_11Mbps(worst case)			
Test mode:	TM5	Polarity:	Vertical



No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (-)	Height (cm)	Remark
1	82.5257	36.60	-13.00	23.60	40.00	-16.40	-	-	peak
2	159.7586	38.67	-8.61	30.06	43.50	-13.44	-	-	peak
3	216.1197	37.65	-12.12	25.53	46.00	-20.47	-	-	peak
4	240.1442	37.03	-10.54	26.49	46.00	-19.51	-	-	peak
5	458.3987	35.27	-4.47	30.80	46.00	-15.20	-	-	peak
6	565.9776	35.13	-2.47	32.66	46.00	-13.34	-	-	peak

Remark: '-' Means' the test Degree and Height are not recorded by the test software and only show the worst case in the test report.

- Spurious Emissions Above 1GHz
- Test Mode: 802.11b\_11Mbps (worst case)
- Test mode:TM1

Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Polar H/V	Detector
Low Channel-2412MHz							
4824.00	59.05	-4.50	54.55	74	-19.45	H	PK
4824.00	47.83	-4.50	43.33	54	-10.67	H	AV
7236.00	50.11	1.14	51.25	74	-22.75	H	PK
7236.00	42.44	1.14	43.58	54	-10.42	H	AV
4824.00	59.81	-4.50	55.31	74	-18.69	V	PK
4824.00	52.22	-4.50	47.72	54	-6.28	V	AV
7236.00	47.75	1.14	48.89	74	-25.11	V	PK
7236.00	41.32	1.14	42.46	54	-11.54	V	AV
Middle Channel-2437MHz							
4874.00	58.14	-4.47	53.67	74	-20.33	H	PK
4874.00	47.04	-4.47	42.57	54	-11.43	H	AV
7311.00	54.52	1.47	55.99	74	-18.01	H	PK
7311.00	44.97	1.47	46.44	54	-7.56	H	AV
4874.00	60.70	-4.47	56.23	74	-17.77	V	PK
4874.00	51.17	-4.47	46.70	54	-7.30	V	AV
7311.00	46.67	1.47	48.14	74	-25.86	V	PK
7311.00	41.30	1.47	42.77	54	-11.23	V	AV
High Channel-2462MHz							
4924.00	56.83	-4.44	52.39	74	-21.61	H	PK
4924.00	51.38	-4.44	46.94	54	-7.06	H	AV
7386.00	53.97	1.79	55.76	74	-18.24	H	PK
7386.00	44.78	1.79	46.57	54	-7.43	H	AV
4924.00	57.92	-4.44	53.48	74	-20.52	V	PK
4924.00	50.17	-4.44	45.73	54	-8.27	V	AV
7386.00	50.81	1.79	52.60	74	-21.40	V	PK
7440.00	42.07	1.79	43.86	54	-10.14	V	AV

➤ Test mode:TM2

Frequency	Reading	Correct	Result	Limit	Margin	Polar	Detector
(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	H/V	
Low Channel-2412MHz							
4824.00	57.90	-4.50	53.40	74	-20.60	H	PK
4824.00	48.27	-4.50	43.77	54	-10.23	H	AV
7236.00	51.23	1.14	52.37	74	-21.63	H	PK
7236.00	45.03	1.14	46.17	54	-7.83	H	AV
4824.00	59.10	-4.50	54.60	74	-19.40	V	PK
4824.00	51.72	-4.50	47.22	54	-6.78	V	AV
7236.00	46.65	1.14	47.79	74	-26.21	V	PK
7236.00	39.80	1.14	40.94	54	-13.06	V	AV
Middle Channel-2437MHz							
4874.00	58.75	-4.47	54.28	74	-19.72	H	PK
4874.00	49.04	-4.47	44.57	54	-9.43	H	AV
7311.00	54.73	1.47	56.20	74	-17.80	H	PK
7311.00	45.64	1.47	47.11	54	-6.89	H	AV
4874.00	59.32	-4.47	54.85	74	-19.15	V	PK
4874.00	50.78	-4.47	46.31	54	-7.69	V	AV
7311.00	44.72	1.47	46.19	74	-27.81	V	PK
7311.00	41.18	1.47	42.65	54	-11.35	V	AV
High Channel-2462MHz							
4924.00	58.96	-4.44	54.52	74	-19.48	H	PK
4924.00	49.22	-4.44	44.78	54	-9.22	H	AV
7386.00	53.69	1.79	55.48	74	-18.52	H	PK
7386.00	44.69	1.79	46.48	54	-7.52	H	AV
4924.00	59.13	-4.44	54.69	74	-19.31	V	PK
4924.00	51.09	-4.44	46.65	54	-7.35	V	AV
7386.00	46.59	1.79	48.38	74	-25.62	V	PK
7440.00	43.76	1.79	45.55	54	-8.45	V	AV

➤ Test mode:TM3

Frequency	Reading	Correct	Result	Limit	Margin	Polar	Detector
(MHz)	(dBUV/m)	dB/m	(dBUV/m)	(dBUV/m)	(dB)	H/V	
Low Channel-2412MHz							
4824.00	56.38	-4.50	51.88	74	-22.12	H	PK
4824.00	46.06	-4.50	41.56	54	-12.44	H	AV
7236.00	51.57	1.14	52.71	74	-21.29	H	PK
7236.00	44.20	1.14	45.34	54	-8.66	H	AV
4824.00	60.16	-4.50	55.66	74	-18.34	V	PK
4824.00	51.27	-4.50	46.77	54	-7.23	V	AV
7236.00	47.75	1.14	48.89	74	-25.11	V	PK
7236.00	42.55	1.14	43.69	54	-10.31	V	AV
Middle Channel-2437MHz							
4874.00	58.86	-4.47	54.39	74	-19.61	H	PK
4874.00	48.57	-4.47	44.10	54	-9.90	H	AV
7311.00	53.89	1.47	55.36	74	-18.64	H	PK
7311.00	43.76	1.47	45.23	54	-8.77	H	AV
4874.00	59.75	-4.47	55.28	74	-18.72	V	PK
4874.00	50.33	-4.47	45.86	54	-8.14	V	AV
7311.00	47.05	1.47	48.52	74	-25.48	V	PK
7311.00	43.37	1.47	44.84	54	-9.16	V	AV
High Channel-2462MHz							
4924.00	57.89	-4.44	53.45	74	-20.55	H	PK
4924.00	47.21	-4.44	42.77	54	-11.23	H	AV
7386.00	53.16	1.79	54.95	74	-19.05	H	PK
7386.00	44.90	1.79	46.69	54	-7.31	H	AV
4924.00	58.90	-4.44	54.46	74	-19.54	V	PK
4924.00	51.36	-4.44	46.92	54	-7.08	V	AV
7386.00	46.91	1.79	48.70	74	-25.30	V	PK
7440.00	41.93	1.79	43.72	54	-10.28	V	AV

➤ Test mode:TM4

Frequency	Reading	Correct	Result	Limit	Margin	Polar	Detector
(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	H/V	
Low Channel-2412MHz							
4824.00	58.41	-4.50	53.91	74	-20.09	H	PK
4824.00	47.87	-4.50	43.37	54	-10.63	H	AV
7236.00	49.31	1.14	50.45	74	-23.55	H	PK
7236.00	42.22	1.14	43.36	54	-10.64	H	AV
4824.00	59.08	-4.50	54.58	74	-19.42	V	PK
4824.00	50.81	-4.50	46.31	54	-7.69	V	AV
7236.00	47.99	1.14	49.13	74	-24.87	V	PK
7236.00	42.38	1.14	43.52	54	-10.48	V	AV
Middle Channel-2437MHz							
4874.00	57.21	-4.47	52.74	74	-21.26	H	PK
4874.00	46.69	-4.47	42.22	54	-11.78	H	AV
7311.00	53.94	1.47	55.41	74	-18.59	H	PK
7311.00	46.29	1.47	47.76	54	-6.24	H	AV
4874.00	60.63	-4.47	56.16	74	-17.84	V	PK
4874.00	52.15	-4.47	47.68	54	-6.32	V	AV
7311.00	45.74	1.47	47.21	74	-26.79	V	PK
7311.00	41.16	1.47	42.63	54	-11.37	V	AV
High Channel-2462MHz							
4924.00	57.46	-4.44	53.02	74	-20.98	H	PK
4924.00	51.43	-4.44	46.99	54	-7.01	H	AV
7386.00	53.81	1.79	55.60	74	-18.40	H	PK
7386.00	45.28	1.79	47.07	54	-6.93	H	AV
4924.00	56.90	-4.44	52.46	74	-21.54	V	PK
4924.00	50.40	-4.44	45.96	54	-8.04	V	AV
7386.00	51.61	1.79	53.40	74	-20.60	V	PK
7440.00	42.27	1.79	44.06	54	-9.94	V	AV

➤ Test mode:TM5

Frequency	Reading	Correct	Result	Limit	Margin	Polar	Detector
(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	H/V	
Low Channel-2412MHz							
4824.00	57.58	-4.50	53.08	74	-20.92	H	PK
4824.00	47.14	-4.50	42.64	54	-11.36	H	AV
7236.00	49.99	1.14	51.13	74	-22.87	H	PK
7236.00	45.24	1.14	46.38	54	-7.62	H	AV
4824.00	58.89	-4.50	54.39	74	-19.61	V	PK
4824.00	52.09	-4.50	47.59	54	-6.41	V	AV
7236.00	45.83	1.14	46.97	74	-27.03	V	PK
7236.00	40.69	1.14	41.83	54	-12.17	V	AV
Middle Channel-2437MHz							
4874.00	58.13	-4.47	53.66	74	-20.34	H	PK
4874.00	48.18	-4.47	43.71	54	-10.29	H	AV
7311.00	55.29	1.47	56.76	74	-17.24	H	PK
7311.00	45.85	1.47	47.32	54	-6.68	H	AV
4874.00	60.67	-4.47	56.20	74	-17.80	V	PK
4874.00	51.93	-4.47	47.46	54	-6.54	V	AV
7311.00	46.13	1.47	47.60	74	-26.40	V	PK
7311.00	41.99	1.47	43.46	54	-10.54	V	AV
High Channel-2462MHz							
4924.00	58.91	-4.44	54.47	74	-19.53	H	PK
4924.00	49.41	-4.44	44.97	54	-9.03	H	AV
7386.00	52.65	1.79	54.44	74	-19.56	H	PK
7386.00	44.97	1.79	46.76	54	-7.24	H	AV
4924.00	59.90	-4.44	55.46	74	-18.54	V	PK
4924.00	52.65	-4.44	48.21	54	-5.79	V	AV
7386.00	46.84	1.79	48.63	74	-25.37	V	PK
7440.00	43.76	1.79	45.55	54	-8.45	V	AV

Note: Testing is carried out with frequency rang 9kHz to the tenth harmonics, other than listed in the table above are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

## APPENDIX PHOTOGRAPHS

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Please refer to "ANNEX"

\*\*\*\* END OF REPORT \*\*\*\*