

# FCC Test Report

## (Class II Permissive Change)

Product Name	WLAN Module
Model No.	3165D2W
FCC ID.	YE3600-3165D2W

Applicant	DT Research, Inc.
Address	3RD FL NO 36 WUQUAN 7TH RD WUGU DISTRICT, NEW TAIPEI, Taiwan

Date of Receipt	Mar. 10, 2020
Issued Date	Jun. 05, 2020
Report No.	2030232R-E3032110140
Report Version	V1.0



The test results relate only to the samples tested.

The test results shown in the test report are traceable to the national/international standard through the calibration report of the equipment and evaluated measurement uncertainty herein.

This report must not be used to claim product endorsement by TAF or any agency of the government.

The test report shall not be reproduced without the written approval of DEKRA Testing and Certification Co., Ltd.

Measurement uncertainties evaluated for each testing system and associated connections are given here to provide the system information for reference. Compliance determinations do not take into account measurement uncertainties for each testing system, but are based on the results of the compliance measurement.

# Test Report

Issued Date: Jun. 05, 2020

Report No.: 2030232R-E3032110140



Product Name	WLAN Module
Applicant	DT Research, Inc.
Address	3RD FL NO 36 WUQUAN 7TH RD WUGU DISTRICT, NEW TAIPEI, Taiwan
Manufacturer	INTEL CORPORATION SAS
Model No.	3165D2W
FCC ID.	YE3600-3165D2W
EUT Rated Voltage	AC 100-240V, 50/60Hz
EUT Test Voltage	AC 120V/60Hz
Trade Name	DT Research, Inc.
Applicable Standard	FCC CFR Title 47 Part 15 Subpart C ANSI C63.4: 2014, ANSI C63.10: 2013
Test Result	Complied

Documented By :



( Senior Adm. Specialist / Rita Huang )

Tested By :



( Engineer / Yunche Chen )

Approved By :



( Director / Vincent Lin )

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## 1. GENERAL INFORMATION

### 1.1. EUT Description

Product Name	WLAN Module
Trade Name	DT Research, Inc.
Model No.	3165D2W
FCC ID.	YE3600-3165D2W
Frequency Range	802.11b/g/n-20: 2412-2462 MHz, 802.11n-40: 2422-2452 MHz 802.11a/n-20: 5180-5320 MHz, 5500-5700 MHz, 5745-5825MHz 802.11n-40: 5190-5310 MHz, 5510-5670 MHz, 5755-5795MHz 802.11ac-20MHz: 5720MHz, 802.11ac-40MHz: 5710MHz 802.11ac-80 MHz: 5210-5290 MHz, 5530-5610 MHz, 5775MHz BT : 2402-2480 MHz
Number of Channels	802.11b/g/n-20: 11CH, 802.11n-40: 7CH 802.11a/n-20: 24CH, 802.11n-40: 11CH 802.11ac-20:1CH, 802.11ac40:1CH, 802.11ac-80:6CH BT: 79, BLE: 40
Data Rate	802.11b: 1-11Mbps, 802.11a/g: 6-54Mbps, 802.11n: up to 150Mbps 802.11ac-80MHz: up to 433.3Mbps, BT : 3Mbps , BLE : 1Mbps
Channel Separation	802.11b/g/n-20/n-40:5MHz; 802.11a/n/ac-20:20MHz 802.11n/ac-40:40MHz; 802.11ac-80:80MHz BT : 1 MHz; BLE: 2 MHz
Type of Modulation	802.11b:DSSS, DBPSK, DQPSK, CCK 802.11a/g/n/ac: OFDM, BPSK, QPSK, 16QAM, 64QAM, 256QAM FHSS: GFSK(1Mbps) / $\pi$ /4DQPSK(2Mbps) / 8DPSK(3Mbps)
Antenna Type	PIFA Antenna
Channel Control	Auto
Antenna Gain	Refer to the table "Antenna List"
Power Adapter	MFR: Chicony, M/N: A17-065N1A Input: AC 100-240V~1.8A, 50-60Hz Output: DC 20V $\approx$ 3.25A/15V $\approx$ 3A/9V $\approx$ 2A/5V $\approx$ 2A Cable Out: Non-Shielded, 1.8m

**Antenna List**

No.	Manufacturer	Part No.	Antenna Type	Peak Gain
1.	YiJia	YJW01.139.016.301A (Main) YJW01.139.016.302A (Aux)	PIFA Antenna	2.5dBi for 2.4 GHz 2.8dBi for 5.150-5.250 GHz 2.3dBi for 5.250-5.350 GHz 2.8dBi for 5.470-5.725 GHz 2.7dBi for 5.725-5.850 GHz
2	YiJia	YJW01.139.016.303A (RFID)	Ceramic Antenna	1dBi for 902-927 MHz

Note: The antenna of EUT is conform to FCC 15.203

## 1.2. Test Summary

### Part 15C Requirement

Requirement – Test Item	Result
Spurious emissions	Pass

Note:

1. The EUT is an WLAN Module, contains functions on 2.4G and 5G band WLAN with Bluetooth (V5.0 and V3.0+HS, V2.1+EDR) combo card module and RFID transceiver.
2. These tests were conducted on a sample for the purpose of demonstrating compliance of transmitter with Part 15 Subpart C Paragraph 15.247 for spread spectrum devices.
3. Regarding to the operation frequency, the lowest, middle and highest frequency are selected to perform the test.
4. This device contains the certified FCC ID: YE3600-3165D2W and FCC ID: QV5MERCURY6E-M, This is a WLAN/BT Combo Card and RFID.
5. The consider Co-Location based on KDB 996369 D02 Question 1 and KDB 996369 D04 for Radiated Spurious Emission & SAR testing.
6. Since the antenna gain and output power are both smaller than the original certification, the final product complies with the KDB 178919 Section II.B) ERP/EIRP rules.
7. The final test results meets all the applicable FCC rules, including FCC Part 15C.
8. The identification of test sample is DT362GL.
9. This is to request a Class II permissive change for FCC ID: YE3600-3165D2W, originally granted on 03/23/2020

The major change filed under this application is:

#1: Additional Chassis added, DT Research, Inc., Model number: DT362GL.

#2: Reduce the Output Power through firmware, and SAR measurement were evaluated.

(Only reduce Wi-Fi Output Power, Bluetooth Output Power haven't changes).

Test Mode (Simultaneous Transmit)	(1) Select adjacent operating bands. Mode 1: RFID (902.75MHz)+ WiFi 802.11n20 (2462MHz) Mode 2: RFID (915.25MHz)+Wi-Fi 802.11n40 (5190MHz) Mode 3: RFID (927.25MHz)+BT EDR 1Mbps (2480MHz) (2) Select higher power channel from each pair of simultaneous transmission Mode 4: RFID (915.25MHz)+2.4GHz WLAN(802.11n20 2437MHz) Mode 5: RFID (915.25MHz)+5GHz WLAN(802.11a 5280MHz) Mode 6: RFID (915.25MHz)+2.4GHz BT(1Mbps 2441MHz)
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### 1.3. Operational Description

The EUT is an WLAN Module, This is the final product certification; the tablet provides. The while in case of this final product the co-location issue simultaneously considered. According to KDB 996369 D02 Question 1 and KDB 996369 D04, the Radiated spurious emission and SAR should be tested.

This device provided of four kinds of transmitting speed 1, 2, 5.5 and 11Mbps, the device of RF carrier is DBPSK, DQPSK and CCK (IEEE 802.11b). The device provided of eight kinds of transmitting speed 6, 9, 12, 18, 24, 36, 48 and 54Mbps, the device of RF carrier is BPSK, QPSK, 16QAM and 64QAM (IEEE 802.11g).

The device provided of eight kinds of transmitting speed 7.2, ~72.2Mbps in 802.11n(20M-BW) mode and 15~150 Mbps in 802.11n(40M-BW) mode, the device of RF carrier is BPSK, QPSK, 16QAM and 64QAM (IEEE 802.11n). The IEEE 802.11n is Multiple In, Single Out (MISO) technology to support 1(Transmit) \* 2(Receive) MISO technology.

The device provided of eight kinds of transmitting speed 6, 9, 12, 18, 24, 36, 48 and 54Mbps, the device of RF carrier is BPSK, QPSK, 16QAM and 64QAM (IEEE 802.11a).

The device provided of eight kinds of transmitting speed 7.2, ~72.2Mbps in 802.11n(20M-BW) mode and 15~150 Mbps in 802.11n(40M-BW) mode and the device provided of ten kinds of transmitting speed 32.5~433.3Mbps in 802.11ac(80M-BW) mode, the device of RF carrier is BPSK, QPSK, 16QAM, 64QAM and 256QAM (IEEE 802.11n/ac), the IEEE 802.11n/ac is Multiple In, Single Out (MISO) technology to support 1(Transmit) \* 2(Receive) MISO technology.

The number of the channels is 40 in Bluetooth V5.0 mode. This device provides a kind of transmitting speed and modulation, GFSK(1Mbps). The antenna is PIFA Antenna.

The system receivers have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shift frequencies in synchronization with the transmitted signals.

Frequency hopping spread spectrum systems are not required to employ all available hopping channels during each transmission. The transmitter is presented with a continuous data stream. In addition, a system employing short transmission bursts must comply with the definition of a frequency hopping system and must distribute its 40 channels.

This equipment includes WLAN、Bluetooth, which can not transmit signals simultaneously.

The EUT is a with built-in UHF RFID reader (FCC ID: QV5MERCURY6E-M). the UHF RFID reader uses Frequency hopping system. The number of the channels is 50 in 902.75-927.25MHz. The antenna is circular antenna and the modulation type is PR-ASK.



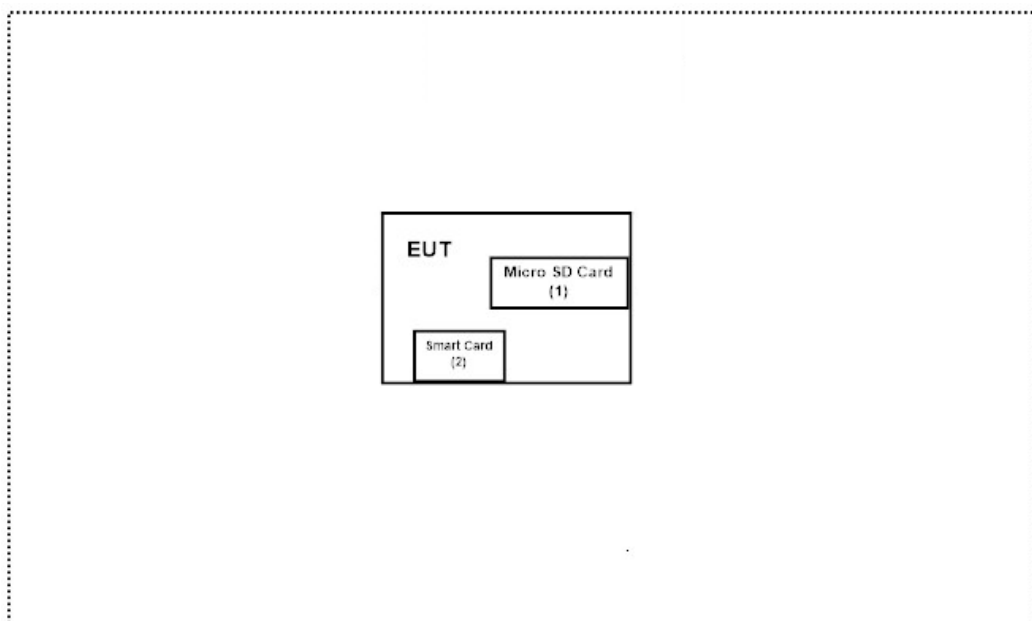
### 1.4. Tested System Details

The types for all equipment, plus descriptions of all cables used in the tested system (including inserted cards) are:

Product	Manufacturer	Model No.	Serial No.	Power Cord	
1	Micro SD Card 1GB	SanDisk	N/A	0801002841D2N	N/A
2	Smart Card	Transcend	N/A	N/A	N/A

Signal Cable Type	Signal cable Description
	N/A

### 1.5. Configuration of Tested System



### 1.6. EUT Exercise Software

- (1) Setup the EUT as shown on 1.4
- (2) Execute software “DRTU V1.7.7-01556” on the EUT.
- (3) Configure the test mode, the test channel, and the data rate.
- (4) Start the continuous transmission.
- (5) Verify that the EUT works properly.

## 1.7. Test Facility

Ambient conditions in the laboratory:

Performed Item	Items	Required	Actual
Radiated Emission	Temperature (°C)	10~40 °C	23.1 °C
	Humidity (%RH)	10~90 %	62.1 %

**USA : FCC Registration Number: TW3023**

**Canada : IC Registration Number: 4075A**

Site Description: Accredited by TAF  
Accredited Number: 3023

Test Laboratory: DEKRA Testing and Certification Co., Ltd  
Address: No.5-22, Ruishukeng, Linkou Dist., New Taipei City 24451,  
Taiwan, R.O.C.  
Phone number: 886-2-8601-3788  
Fax number: 886-2-8601-3789  
Email address: [info.tw@dekra.com](mailto:info.tw@dekra.com)  
Website: <http://www.dekra.com.tw>

## 1.8. List of Test Item and Equipment

### For Radiated measurements /Site3/CB8

	Equipment	Manufacturer	Model No.	Serial No.	Cali. Date	Due. Date
	Test Receiver	R&S	ESR7	101602	2019/12/16	2020/12/15
X	Signal Analyzer	R&S	FSV40	101869	2019/07/04	2020/07/03
	Loop Antenna	Teseq	HLA6121	37133	2019/10/15	2021/10/14
	Bilog Antenna	Schaffner Chase	CBL6112B	2916	2020/01/20	2021/01/19
	Coaxial Cable	DEKRA	L1907-001C	280280.F141.1000D	2019/07/10	2020/07/09
X	Amplifier	EMCI	EMC001330	980254	2019/08/22	2020/08/21
X	Horn Antenna	ETS-LINDGREN	3117	00228113	2020/05/02	2021/05/01
X	Coaxial Cable	DEKRA	L1907-002C	280280.F141.1000D	2019/07/10	2020/07/09
X	Amplifier	EMCI	EMC05820SE	980362	2019/06/26	2020/06/25
X	Amplifier	EMCI	EMC051845SE	980632	2019/08/08	2020/08/07
X	Horn Antenna	Com-Power	AH-1840	101101	2019/10/31	2020/10/30
X	Amplifier + Cable	EMCI	EMC184045SE	980369	2020/04/15	2021/04/14
	Bilog Antenna	Schaffner Chase	CBL6112B	2925	2020/02/20	2021/02/19
	Coaxial Cable	DEKRA	L1907-003C	00100A1B3A120M	2019/07/10	2020/07/09
	Amplifier	EMCI	EMC001330	980255	2019/06/28	2020/06/27
X	Filter	MICRO-TRONICS	BRM50702	G270	2019/08/08	2020/08/07
X	Filter	MICRO-TRONICS	BRM50716	G196	2019/08/08	2020/08/07

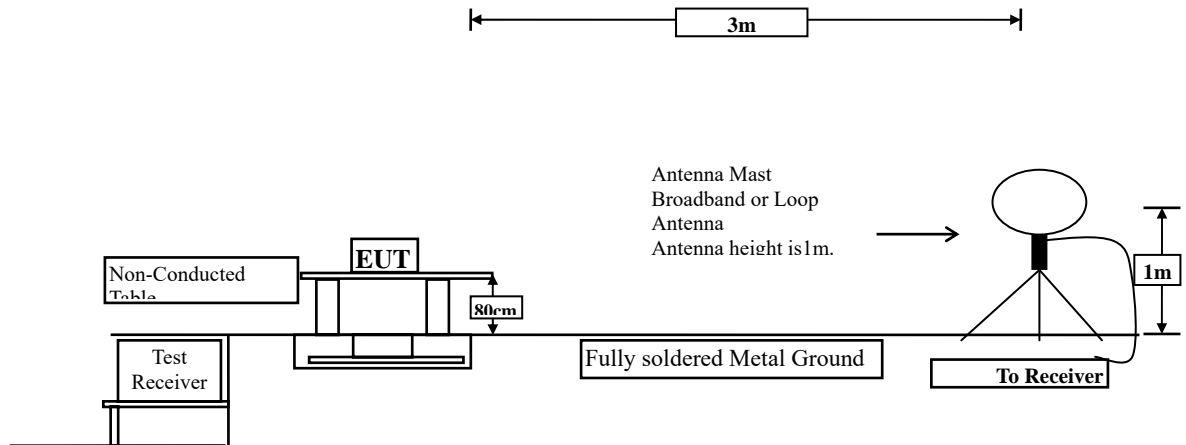
Note:

1. Loop Antenna is calibrated every two years, the other equipments are calibrated every one year.
2. The test instruments marked with "X" are used to measure the final test results.
3. Test Software version : DEKRA Test SystemV1.1.

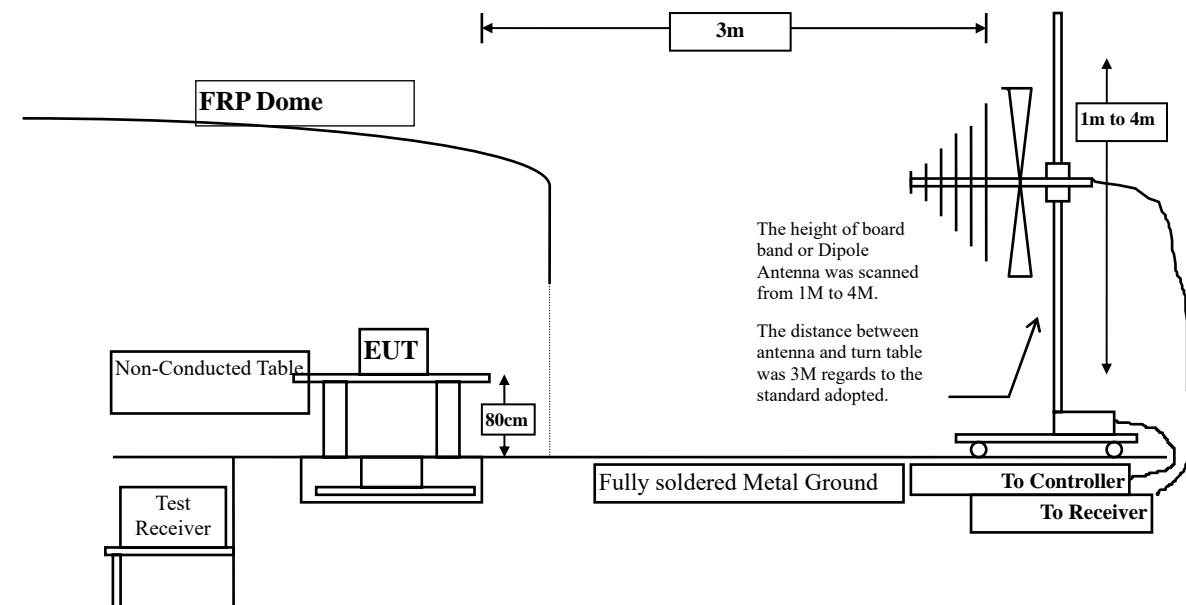
## 2. Radiated Emission

### 2.1. Test Setup

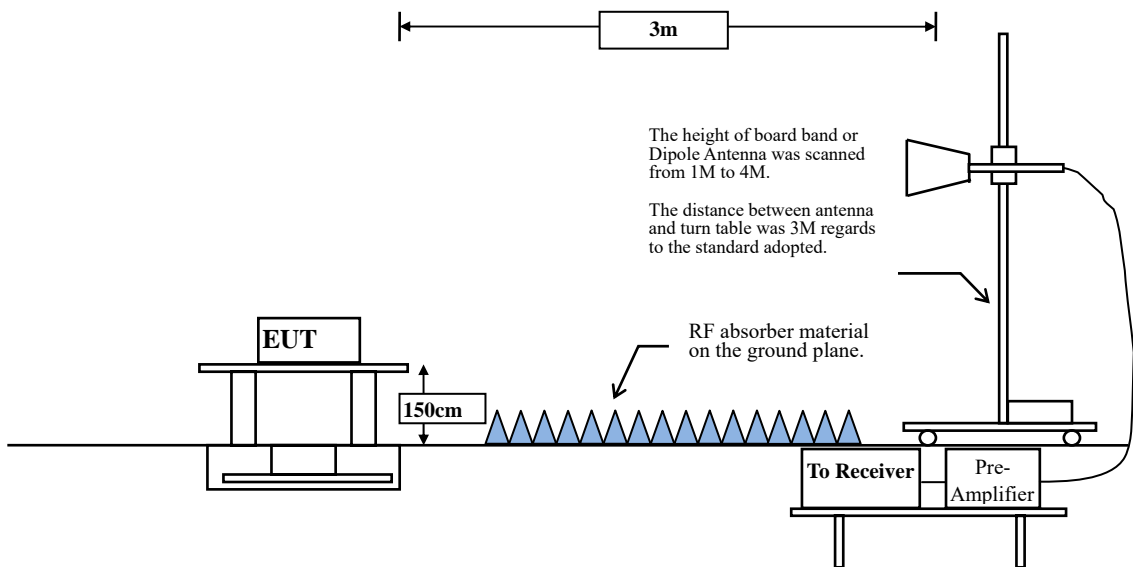
Under 30MHz



Below 1GHz



Above 1GHz



## 2.2. Limits

### ➤ General Radiated Emission 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.

<b>FCC Part 15 Subpart C Paragraph 15.209 Limits</b>		
Frequency MHz	Field strength (microvolts/meter)	Measurement distance (meter)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

- Remarks:
1. RF Voltage (dBuV) = 20 log RF Voltage (uV)
  2. In the Above Table, the tighter limit applies at the band edges.
  3. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

The final test results meets all the applicable FCC rules, including FCC Part 15C

### 2.3. Test Procedure

The EUT was setup according to ANSI C63.10: 2013 and tested according to DTS test procedure of KDB558074 for compliance to FCC 47CFR 15.247 requirements.

Measuring the frequency range below 1GHz, the EUT is placed on a turn table which is 0.8 meter above ground, when measuring the frequency range above 1GHz, the EUT is placed on a turn table which is 1.5 meter above ground.

The turn table is rotated 360 degrees to determine the position of the maximum emission level.

The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna is scanned between 1 meter and 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.10: 2013 on radiated measurement.

The resolution bandwidth below 30MHz setting on the field strength meter is 9kHz and 30MHz~1GHz is 120kHz and above 1GHz is 1MHz.

Radiated emission measurements below 30MHz are made using Loop Antenna and 30MHz~1GHz are made using broadband Bilog antenna and above 1GHz are made using Horn Antennas.

The measurement is divided into the Preliminary Measurement and the Final Measurement.

The suspected frequencies are searched for in Preliminary Measurement with the measurement antenna kept pointed at the source of the emission both in azimuth and elevation, with the polarization of the antenna oriented for maximum response. The antenna is pointed at an angle towards the source of the emission, and the EUT is rotated in both height and polarization to maximize the measured emission. The emission is kept within the illumination area of the 3 dB bandwidth of the antenna.

The worst radiated emission is measured in the Open Area Test Site on the Final Measurement.

The measurement frequency range from 9kHz - 10th Harmonic of fundamental was investigated.

## 2.4. Uncertainty

± 4.08 dB above 1GHz

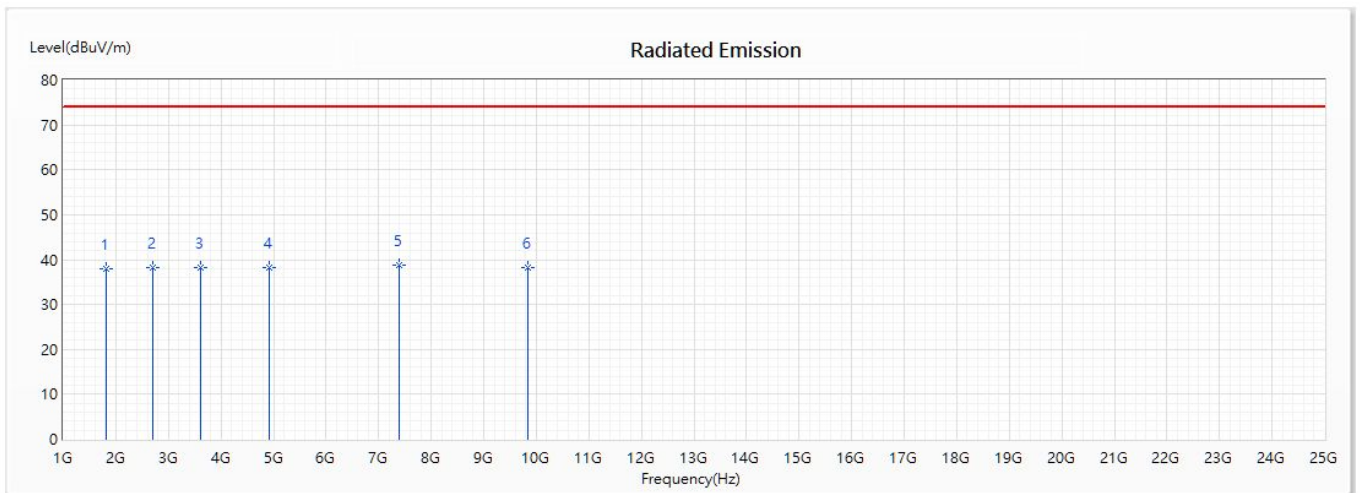
± 4.22 dB below 1GHz



## 2.5. Test Result of Radiated Emission

Product : WLAN Module  
 Test Item : Harmonic Radiated Emission  
 Test Site : CB3-1  
 Test date : 2020/06/03  
 Test Mode : Mode 1: RFID (902.75MHz)+ WiFi 802.11n20 (2462MHz)

### Horizontal



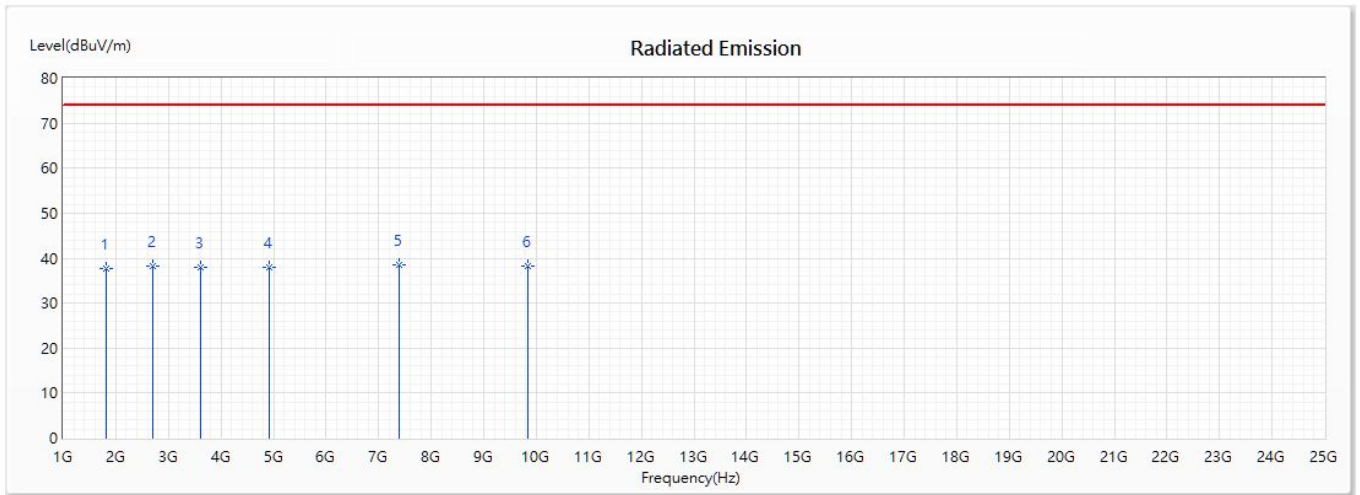
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	1805.5	37.88	74.00	-36.12	55.78	-17.90	PK
2	2708.25	38.35	74.00	-35.65	53.09	-14.74	PK
3	3611	38.18	74.00	-35.82	49.57	-11.39	PK
4	4924	38.12	74.00	-35.88	49.36	-11.24	PK
* 5	7386	38.65	74.00	-35.35	52.75	-14.10	PK
6	9848	38.23	74.00	-35.77	51.67	-13.44	PK

### Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : WLAN Module  
 Test Item : Harmonic Radiated Emission  
 Test Site : CB3-1  
 Test date : 2020/06/03  
 Test Mode : Mode 1: RFID (902.75MHz)+ WiFi 802.11n20 (2462MHz)

Vertical



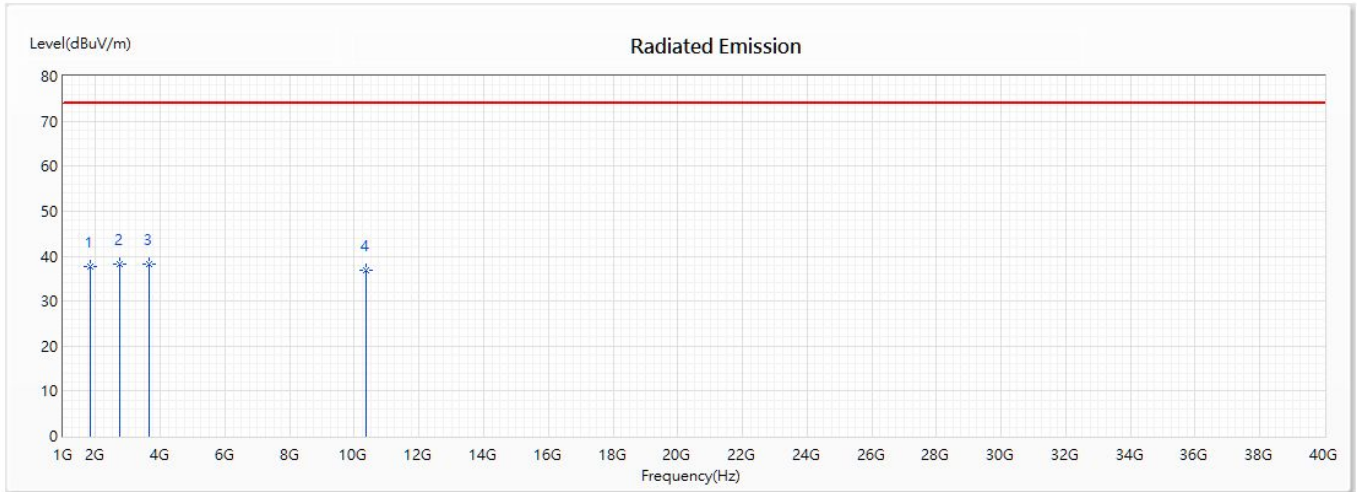
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	1805.5	37.56	74.00	-36.44	55.46	-17.90	PK
2	2708.25	38.22	74.00	-35.78	52.96	-14.74	PK
3	3611	38.03	74.00	-35.97	49.42	-11.39	PK
4	4924	38.03	74.00	-35.97	49.27	-11.24	PK
* 5	7386	38.53	74.00	-35.47	52.63	-14.10	PK
6	9848	38.11	74.00	-35.89	51.55	-13.44	PK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : WLAN Module  
 Test Item : Harmonic Radiated Emission  
 Test Site : CB3-1  
 Test date : 2020/06/03  
 Test Mode : Mode 2: RFID (915.25MHz)+Wi-Fi 802.11n40 (5190MHz)

Horizontal



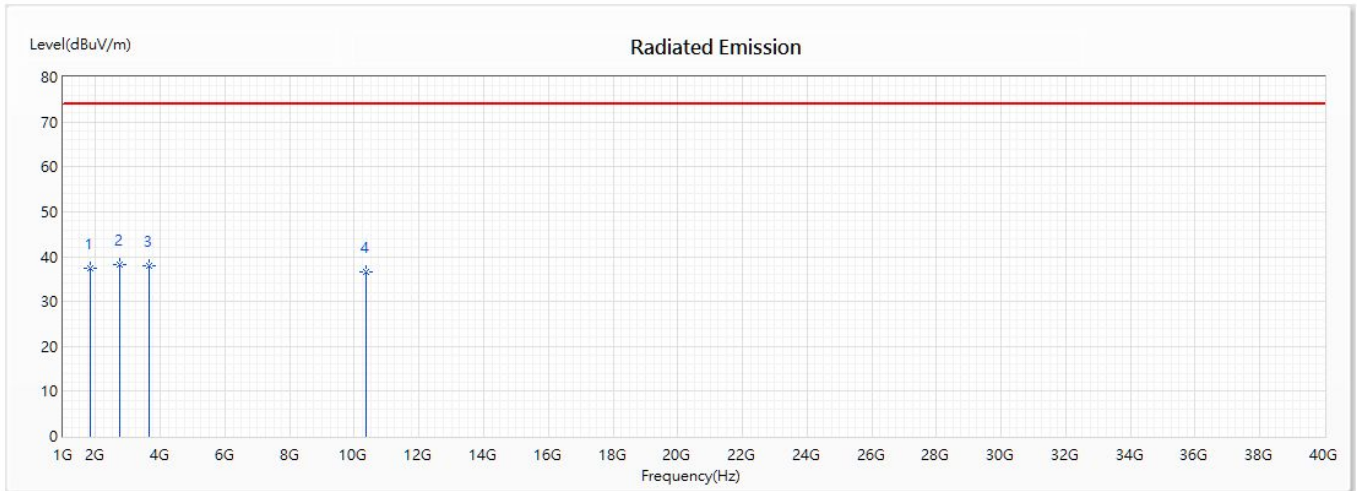
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	1830.5	37.67	74.00	-36.33	55.30	-17.63	PK
* 2	2745.75	38.25	74.00	-35.75	52.97	-14.72	PK
3	3661	38.15	74.00	-35.85	49.26	-11.11	PK
4	10380	36.83	74.00	-37.17	48.61	-11.78	PK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : WLAN Module  
 Test Item : Harmonic Radiated Emission  
 Test Site : CB3-1  
 Test date : 2020/06/03  
 Test Mode : Mode 2: RFID (915.25MHz)+Wi-Fi 802.11n40 (5190MHz)

Vertical



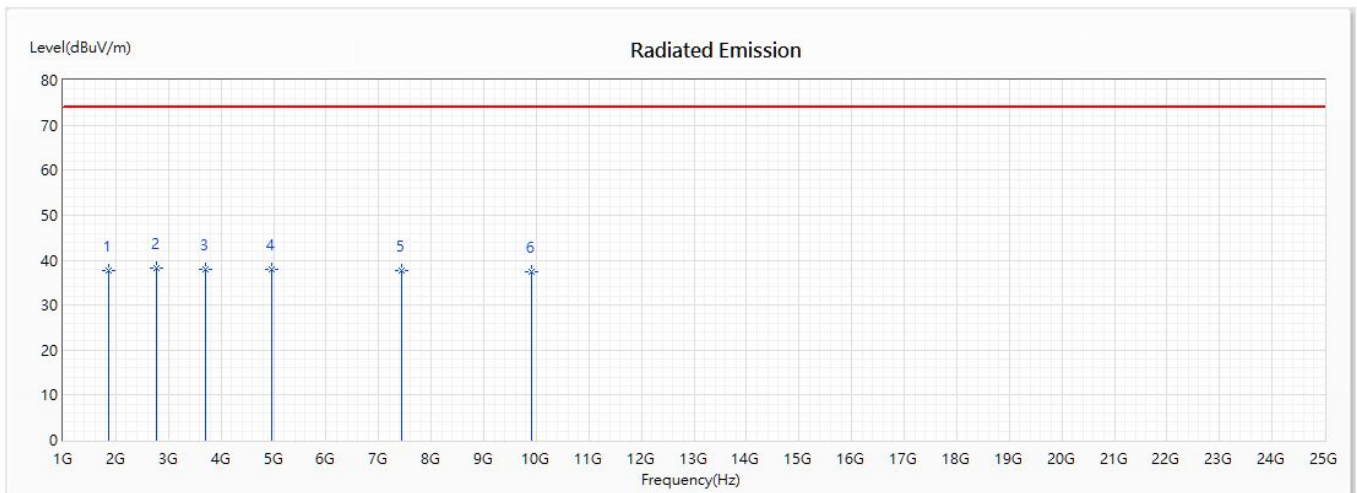
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	1830.5	37.41	74.00	-36.59	55.04	-17.63	PK
* 2	2745.75	38.12	74.00	-35.88	52.84	-14.72	PK
3	3661	37.95	74.00	-36.05	49.06	-11.11	PK
4	10380	36.72	74.00	-37.28	48.50	-11.78	PK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : WLAN Module  
 Test Item : Harmonic Radiated Emission  
 Test Site : CB3-1  
 Test date : 2020/06/03  
 Test Mode : Mode 3: RFID (927.25MHz)+BT EDR 1Mbps (2480MHz)

Horizontal



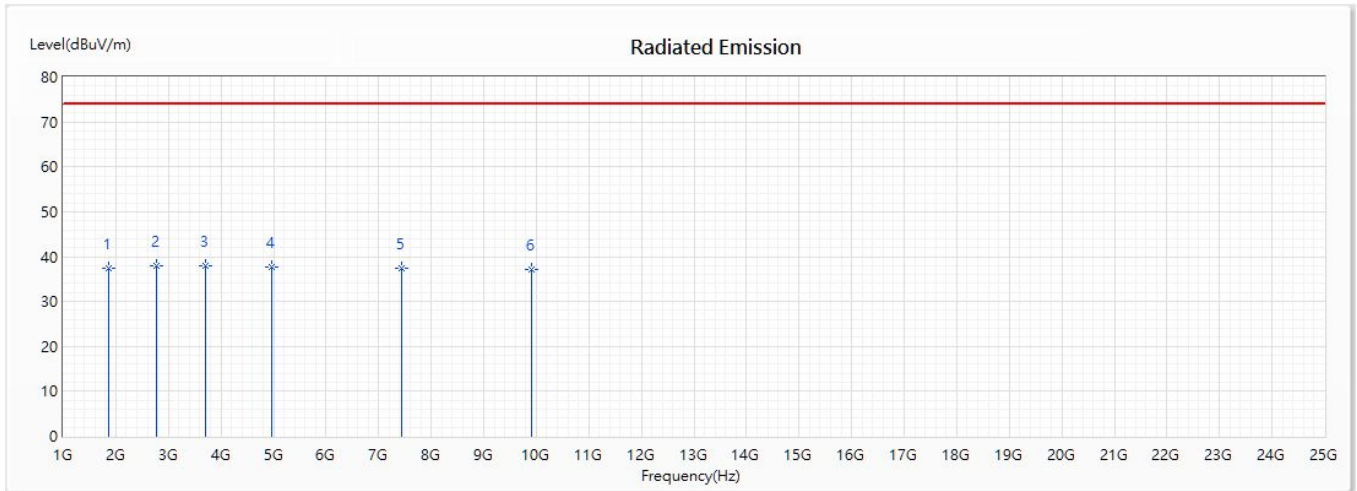
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	1854.5	37.65	74.00	-36.35	54.96	-17.31	PK
* 2	2781.75	38.17	74.00	-35.83	52.71	-14.54	PK
3	3709	37.93	74.00	-36.07	48.78	-10.85	PK
4	4960	37.93	74.00	-36.07	48.82	-10.89	PK
5	7440	37.68	74.00	-36.32	52.30	-14.62	PK
6	9920	37.47	74.00	-36.53	51.70	-14.23	PK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : WLAN Module  
 Test Item : Harmonic Radiated Emission  
 Test Site : CB3-1  
 Test date : 2020/06/03  
 Test Mode : Mode 3: RFID (927.25MHz)+BT EDR 1Mbps (2480MHz)

Vertical



No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	1854.5	37.47	74.00	-36.53	54.78	-17.31	PK
* 2	2781.75	37.85	74.00	-36.15	52.39	-14.54	PK
3	3709	37.85	74.00	-36.15	48.70	-10.85	PK
4	4960	37.69	74.00	-36.31	48.58	-10.89	PK
5	7440	37.47	74.00	-36.53	52.09	-14.62	PK
6	9920	37.23	74.00	-36.77	51.46	-14.23	PK

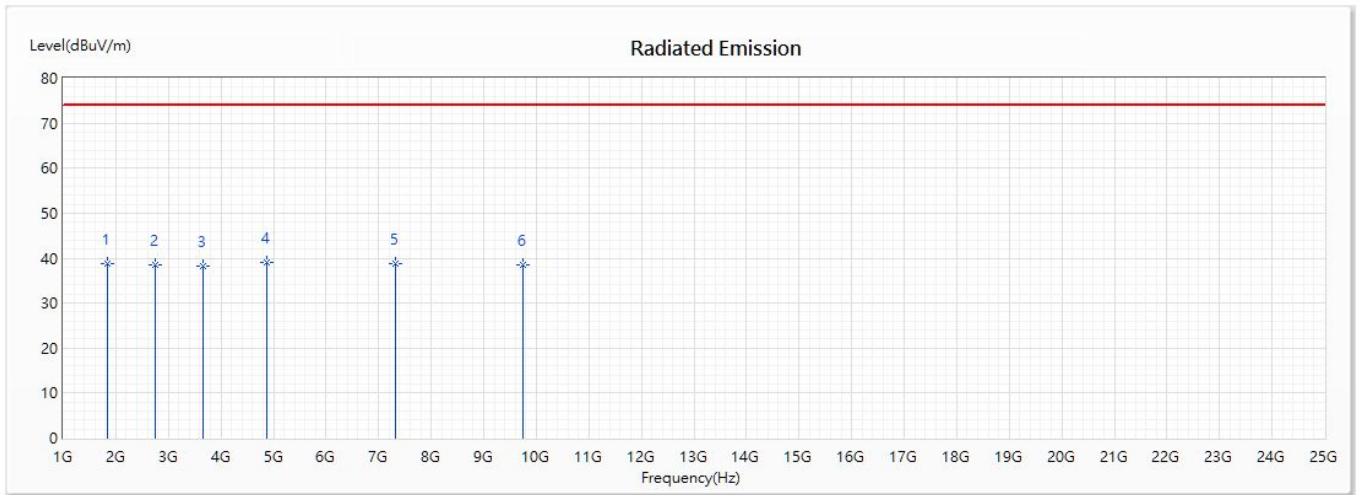
Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.



Product : WLAN Module  
 Test Item : Harmonic Radiated Emission  
 Test Site : CB3-1  
 Test date : 2020/06/03  
 Test Mode : Mode 4: RFID (915.25MHz)+2.4GHz WLAN(802.11n20 2437MHz)

Horizontal



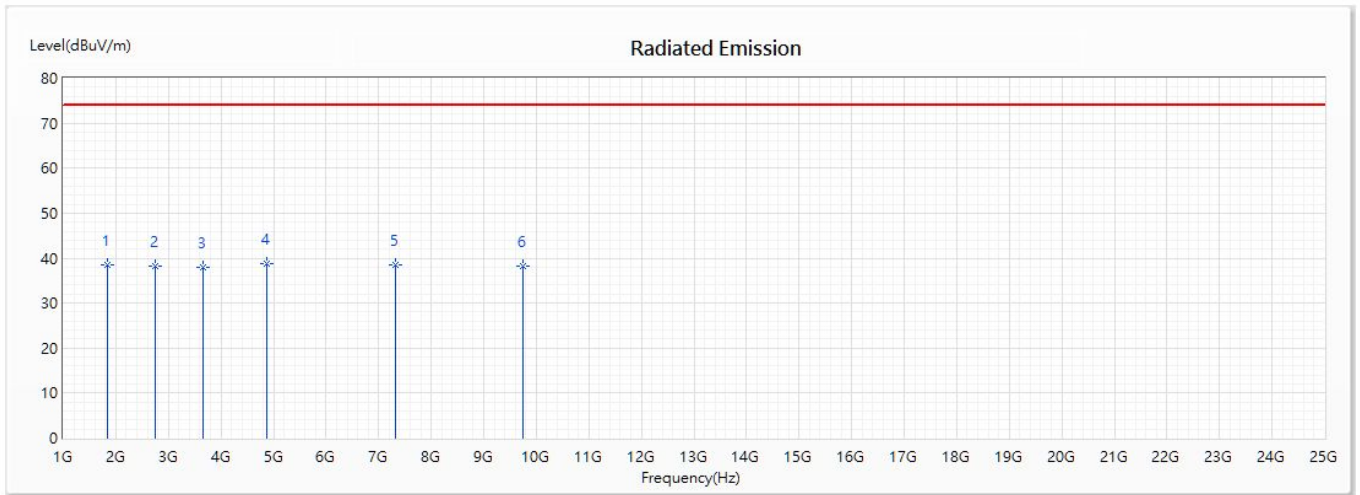
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	1830.5	38.78	74.00	-35.22	56.41	-17.63	PK
2	2745.75	38.53	74.00	-35.47	53.25	-14.72	PK
3	3661	38.18	74.00	-35.82	49.29	-11.11	PK
* 4	4874	39.03	74.00	-34.97	50.67	-11.64	PK
5	7311	38.79	74.00	-35.21	52.27	-13.48	PK
6	9748	38.53	74.00	-35.47	50.92	-12.39	PK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : WLAN Module  
 Test Item : Harmonic Radiated Emission  
 Test Site : CB3-1  
 Test date : 2020/06/03  
 Test Mode : Mode 4: RFID (915.25MHz)+2.4GHz WLAN(802.11n20 2437MHz)

Vertical



No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	1830.5	38.62	74.00	-35.38	56.25	-17.63	PK
2	2745.75	38.35	74.00	-35.65	53.07	-14.72	PK
3	3661	38.07	74.00	-35.93	49.18	-11.11	PK
* 4	4874	38.75	74.00	-35.25	50.39	-11.64	PK
5	7311	38.55	74.00	-35.45	52.03	-13.48	PK
6	9748	38.31	74.00	-35.69	50.70	-12.39	PK

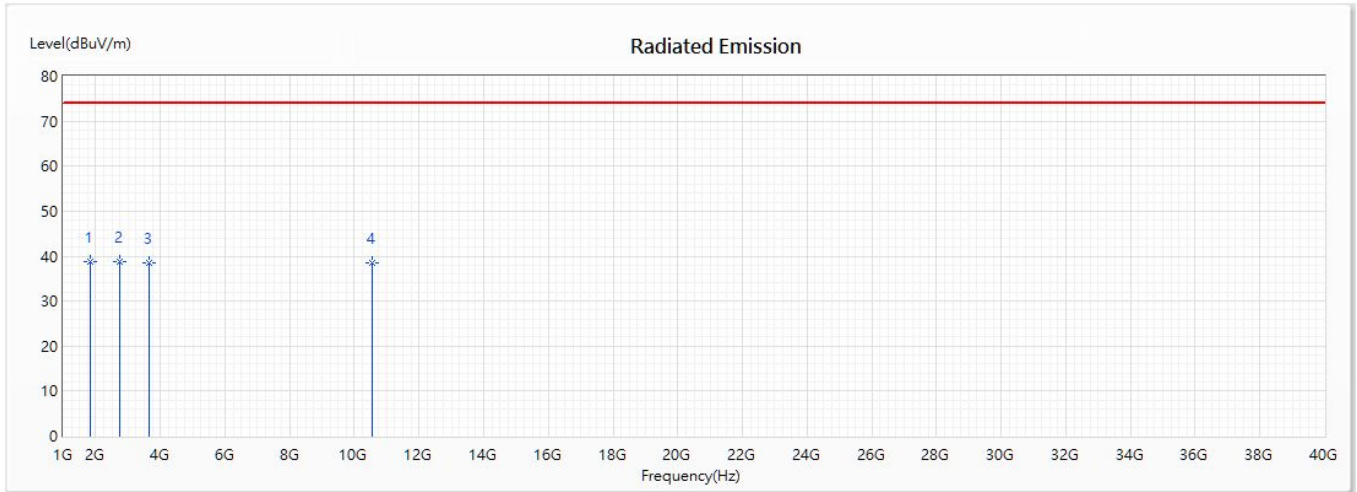
Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.



Product : WLAN Module  
 Test Item : Harmonic Radiated Emission  
 Test Site : CB3-1  
 Test date : 2020/06/03  
 Test Mode : Mode 5: RFID (915.25MHz)+5GHz WLAN(802.11a 5280MHz)

Horizontal



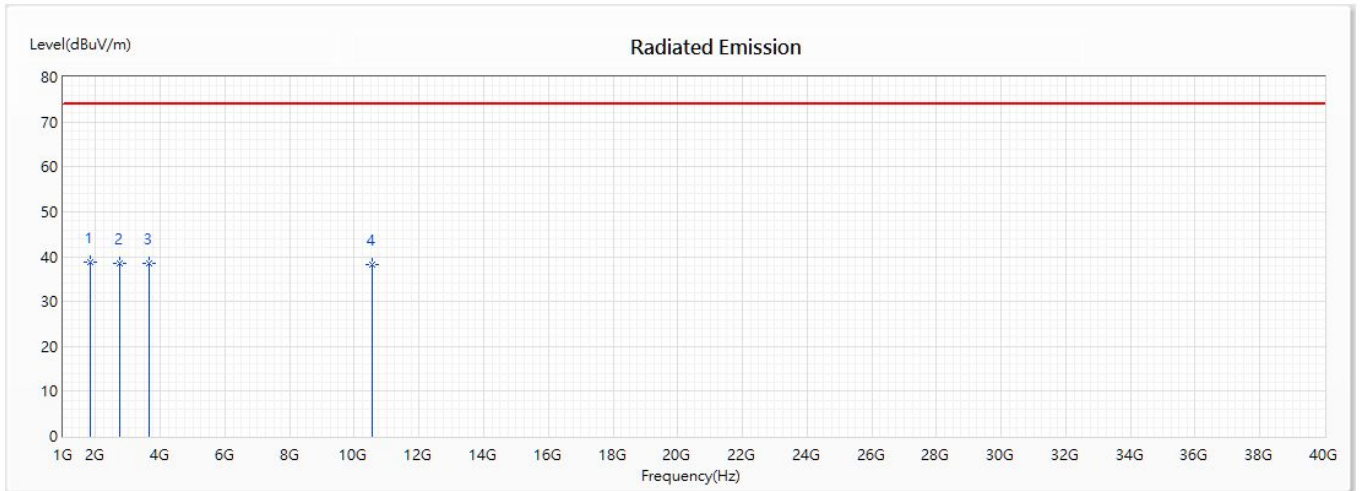
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	1830.5	38.89	74.00	-35.11	56.52	-17.63	PK
2	2745.75	38.68	74.00	-35.32	53.40	-14.72	PK
3	3661	38.42	74.00	-35.58	49.53	-11.11	PK
4	10560	38.56	74.00	-35.44	51.91	-13.35	PK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : WLAN Module  
 Test Item : Harmonic Radiated Emission  
 Test Site : CB3-1  
 Test date : 2020/06/03  
 Test Mode : Mode 5: RFID (915.25MHz)+5GHz WLAN(802.11a 5280MHz)

Vertical



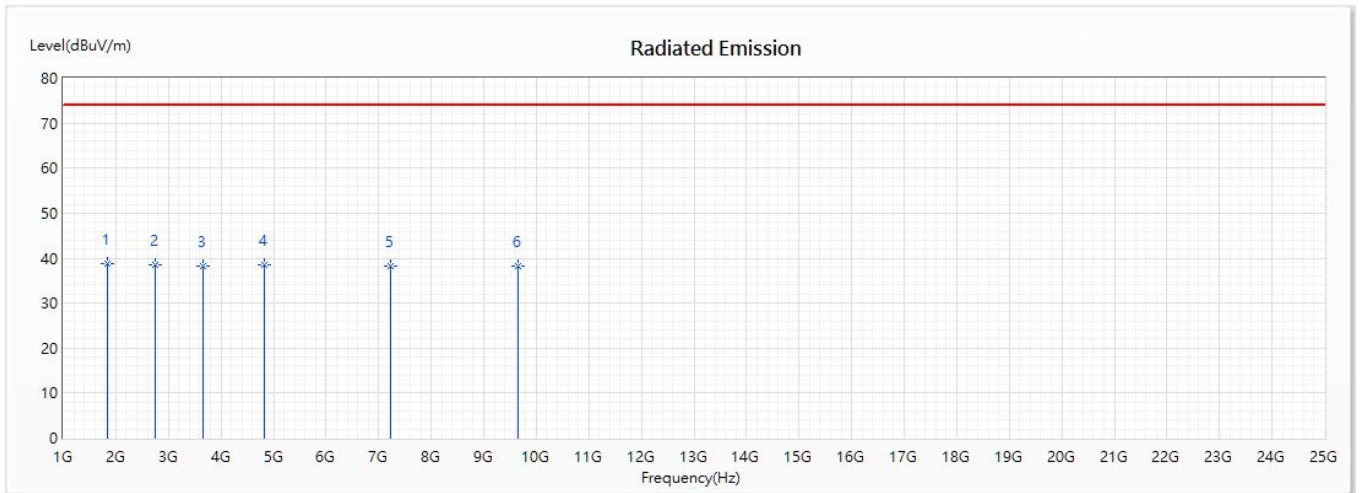
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	1830.5	38.75	74.00	-35.25	56.38	-17.63	PK
2	2745.75	38.55	74.00	-35.45	53.27	-14.72	PK
3	3661	38.39	74.00	-35.61	49.50	-11.11	PK
4	10560	38.25	74.00	-35.75	51.60	-13.35	PK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : WLAN Module  
 Test Item : Harmonic Radiated Emission  
 Test Site : CB3-1  
 Test date : 2020/06/03  
 Test Mode : Mode 6: RFID (915.25MHz)+2.4GHz BT(1Mbps 2441MHz)

Horizontal



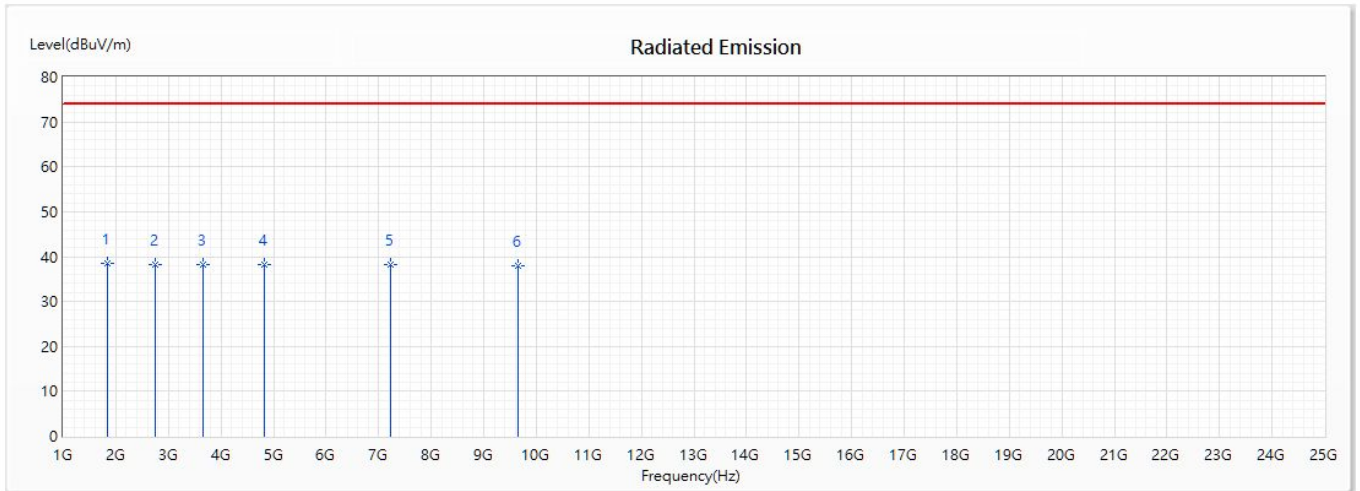
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	1830.5	38.66	74.00	-35.34	56.29	-17.63	PK
2	2745.75	38.45	74.00	-35.55	53.17	-14.72	PK
3	3661	38.32	74.00	-35.68	49.43	-11.11	PK
4	4822	38.52	74.00	-35.48	50.52	-12.00	PK
5	7233	38.28	74.00	-35.72	51.25	-12.97	PK
6	9644	38.09	74.00	-35.91	51.23	-13.14	PK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : WLAN Module  
 Test Item : Harmonic Radiated Emission  
 Test Site : CB3-1  
 Test date : 2020/06/03  
 Test Mode : Mode 6: RFID (915.25MHz)+2.4GHz BT(1Mbps 2441MHz)

Vertical



No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	1830.5	38.47	74.00	-35.53	56.10	-17.63	PK
2	2745.75	38.27	74.00	-35.73	52.99	-14.72	PK
3	3661	38.15	74.00	-35.85	49.26	-11.11	PK
4	4822	38.36	74.00	-35.64	50.36	-12.00	PK
5	7233	38.19	74.00	-35.81	51.16	-12.97	PK
6	9644	37.97	74.00	-36.03	51.11	-13.14	PK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

### **3. EMI Reduction Method During Compliance Testing**

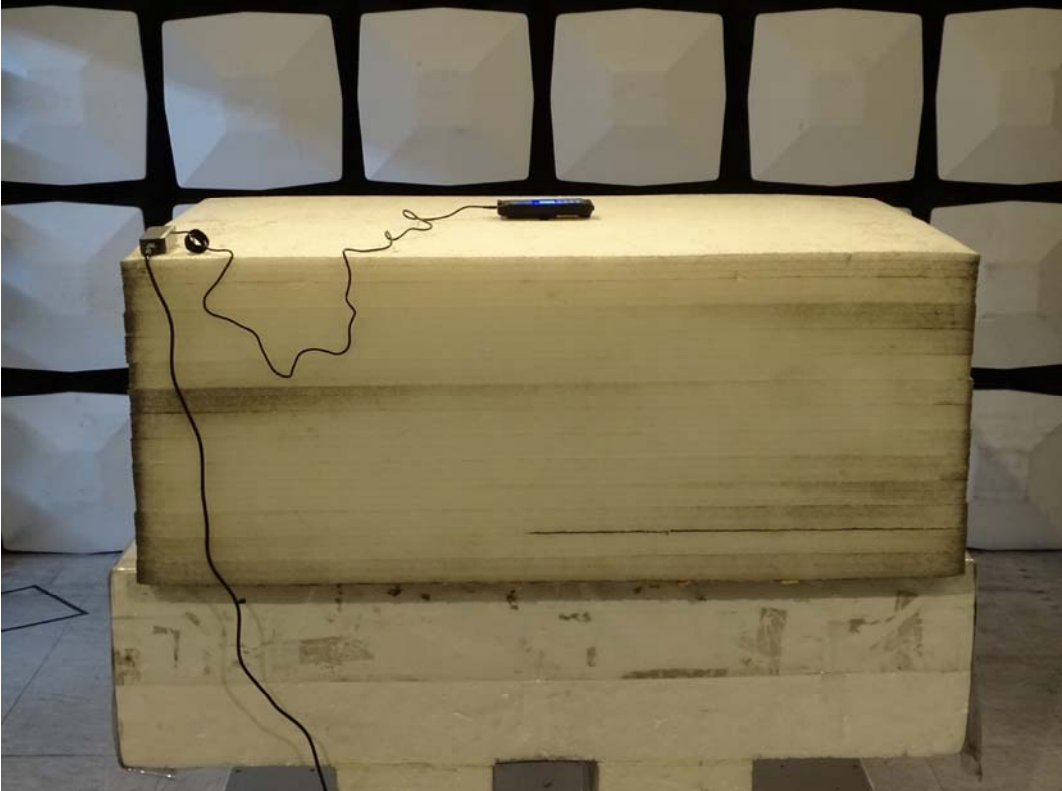
No modification was made during testing.

**Attachment 1: EUT Test Setup Photographs**

Front View of Radiated Test (Horn)



Back View of Radiated Test (Horn)





Front View of Radiated Test (Horn)



Back View of Radiated Test (Horn)

