FCC C2PC Test Report

FCC ID	:	**I88WX3310-B0**
Equipment	:	**Dual-Band Wireless AX Gigabit Access Point / Extender**
Model No.	:	**WX3310-B0**
Brand Name	:	**ZYXEL**
Applicant	:	**Zyxel Communications Corporation**
Address	:	**No.2 Industry East RD. IX, Hsinchu Science Park, Hsinchu 30075, Taiwan, R.O.C**
Standard	:	**47 CFR FCC Part 15.247**
Received Date	:	**Oct. 06, 2020**
Tested Date	:	**Oct. 12 ~ Oct. 13, 2020**

We, International Certification Corp., would like to declare that the tested sample has been evaluated and in compliance with the requirement of the above standards. The test results contained in this report refer exclusively to the product. It may be duplicated completely for legal use with the approval of the applicant. It shall not be reproduced except in full without the written approval of our laboratory.

Reviewed by: **Approved by:**

Along Chen / Assistant Manager **Gary Chang / Manager**

Testing Laboratory 2732

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Release Record

Report No.	Version	Description	Issued Date
FR020306-01AC	Rev. 01	Initial issue	Oct. 26, 2020

Summary of Test Results

FCC Rules	Test Items	Measured	Result
15.247(d) 15.209	Radiated Emissions	[dBuV/m at 3m]: 2390.00MHz 53.90 (Margin -0.10dB) – AV	Pass

Declaration of Conformity:
The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.
Comments and Explanations:
The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

1 General Description

1.1 Information

This report is issued as a FCC Class II Permissive Change.
The modification is only concerned with changing shielding frame therefore only radiated emission is performed for this C2PC.

1.1.1 Specification of the Equipment under Test (EUT)

RF General Information					
Frequency Range (MHz)	**IEEE Std. 802.11**	**Ch. Freq. (MHz)**	**Channel Number**	**Transmit Chains (N_{TX})**	**Data Rate / MCS**
2400-2483.5	b	2412-2462	1-11 [11]	2	1-11 Mbps
2400-2483.5	g	2412-2462	1-11 [11]	2	6-54 Mbps
2400-2483.5	n (HT20)	2412-2462	1-11 [11]	2	MCS 0-15
2400-2483.5	n (HT40)	2422-2452	3-9 [7]	2	MCS 0-15
2400-2483.5	ax (HE20)	2412-2462	1-11 [11]	2	MCS 0-11
2400-2483.5	ax (HE40)	2422-2452	3-9 [7]	2	MCS 0-11
Note 1: RF output power specifies that Maximum Conducted (Average) Output Power. Note 2: Chip feature : DSSS-DBPSK, DQPSK, CCK modulation OFDM/OFDMA- BPSK, QPSK, 16QAM, 64QAM, 256QAM and 1024 QAM modulation. Note 3: Operating modes of this device are listed as above table.					

1.1.2 Antenna Details

Ant. No.	Model	Type	Connector	Antenna Gain (dBi)
1	Ant1(RFPCA242309IMLB901)	PIFA	ipex	0
2	Ant2 (RFPCA242311IMLB901)	PIFA	ipex	0

1.1.3 Power Supply Type of Equipment under Test (EUT)

Power Supply Type	12Vdc from AC adapter

1.1.4 Accessories

Accessories		
No.	**Equipment**	**Description**
1	AC adapter	Brand: MNC Model: MAUS-1201501801 I/P: 100-240Vac, 50/60Hz, 0.5A O/P: 12Vdc, 1.5A Power Line: DC 1.5m non-shielded without core
2	RJ45 cable	1.5m non-shielded without core

1.1.5 Channel List

Frequency band (MHz)		2400~2483.5	
802.11a / n HT20 / ax HE20		802.11n HT40 / ax HE40	
Channel	**Frequency(MHz)**	**Channel**	**Frequency(MHz)**
1	2412	3	2422
2	2417	4	2427
3	2422	5	2432
4	2427	6	2437
5	2432	7	2442
6	2437	8	2447
7	2442	9	2452
8	2447	---	---
9	2452	---	---
10	2457	---	---
11	2462	---	---

1.1.6 Power Index of Test Tool

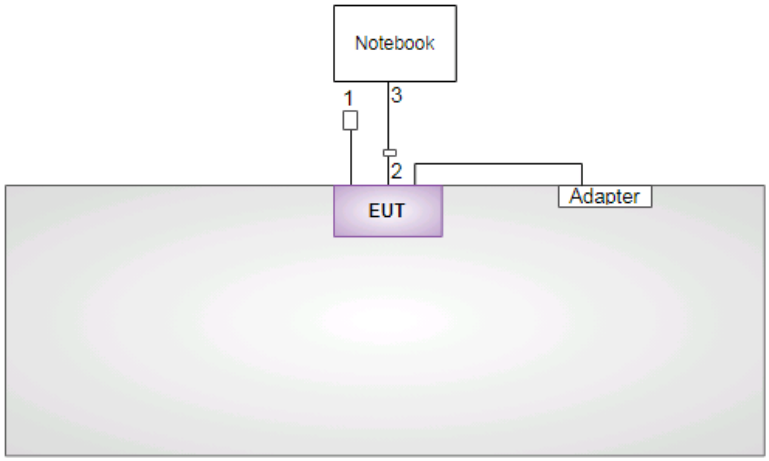
Modulation Mode	Test Frequency (MHz)	Power Index
11b	2412	98
11b	2437	98
11b	2462	98
11g	2412	76
11g	2437	104
11g	2462	76
ax (HE20)	2412	74
ax (HE20)	2437	100
ax (HE20)	2462	72
ax (HE40)	2422	66
ax (HE40)	2437	80
ax (HE40)	2452	66

1.2 Local Support Equipment List

Support Equipment List					
No.	**Equipment**	**Brand**	**Model**	**FCC ID**	**Remarks**
1	RJ45	ICC	RJ45-1.3m	---	---
2	RJ45	ICC	RJ45-10m	---	---
3	RJ45	ICC	RJ45-1.3m	---	---
4	Notebook	DELL	Latitude E6440	DoC	---

1.3 Test Setup Chart

Test Setup Diagram



No.	Signal cable / Length (m)
1	RJ45, 1.3m non-shielded with load
2	RJ45, 1.5m non-shielded
3	RJ45, 10m non-shielded

1.4 The Equipment List

Test Item	Radiated Emission				
Test Site	966 chamber1 / (03CH01-WS)				
Instrument	**Manufacturer**	**Model No.**	**Serial No.**	**Calibration Date**	**Calibration Until**
Spectrum Analyzer	R&S	FSV40	101498	Dec. 17, 2019	Dec. 16, 2020
Receiver	R&S	ESR3	101657	Feb. 14, 2020	Feb. 13, 2021
Bilog Antenna	SCHWARZBECK	VULB9168	VULB9168-522	Jul. 10, 2020	Jul. 09, 2021
Horn Antenna 1G-18G	SCHWARZBECK	BBHA 9120 D	BBHA 9120 D 1096	Dec. 12, 2019	Dec. 11, 2020
Horn Antenna 18G-40G	SCHWARZBECK	BBHA 9170	BBHA 9170517	Nov. 15, 2019	Nov. 14, 2020
Loop Antenna	R&S	HFH2-Z2	100330	Nov. 13, 2019	Nov. 12, 2020
Loop Antenna Cable	KOAX KABEL	101354-BW	101354-BW	Oct. 06, 2020	Oct. 05, 2021
Preamplifier	EMC	EMC02325	980225	Jul. 03, 2020	Jul. 02, 2021
Preamplifier	Agilent	83017A	MY39501308	Sep. 26, 2020	Sep. 25, 2021
Preamplifier	EMC	EMC184045B	980192	Jul. 21, 2020	Jul. 20, 2021
RF Cable	EMC	EMC104-SM-SM-8000	181106	Oct. 06, 2020	Oct. 05, 2021
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16019/4	Oct. 06, 2020	Oct. 05, 2021
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16014/4	Oct. 06, 2020	Oct. 05, 2021
LF cable 1M	EMC	EMCCFD400-NM-NM-1000	160502	Oct. 06, 2020	Oct. 05, 2021
LF cable 3M	Woken	CFD400NL-LW	CFD400NL-001	Oct. 06, 2020	Oct. 05, 2021
LF cable 11M	EMC	EMCCFD400-NW-NW-11000	200801	Oct. 06, 2020	Oct. 05, 2021
Measurement Software	AUDIX	e3	6.120210g	NA	NA
Note: Calibration Interval of instruments listed above is one year.					

1.5 Test Standards

47 CFR FCC Part 15.247
ANSI C63.10-2013

1.6 Reference Guidance

FCC KDB 558074 D01 15.247 Meas Guidance v05r02
FCC KDB 662911 D01 Multiple Transmitter Output v02r01

1.7 Deviation from Test Standard and Measurement Procedure

None

1.8 Measurement Uncertainty

The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2)

Measurement Uncertainty	
Parameters	**Uncertainty**
Radiated emission ≤ 1GHz	±3.41 dB
Radiated emission > 1GHz	±4.59 dB

2 Test Configuration

2.1 Testing Facility

Test Laboratory	International Certification Corp.
Test Site	03CH01-WS
Address of Test Site	No. 3-1, Lane 6, Wen San 3rd St., Kwei Shan District, Tao Yuan City 333, Taiwan, R.O.C.

- FCC Designation No.: TW2732
- FCC site registration No.: 181692
- ISED#: 10807A
- CAB identifier: TW2732

2.2 The Worst Test Modes and Channel Details

Test item	Modulation Mode	Test Frequency (MHz)	Data Rate (Mbps) / MCS	Test Configuration
Radiated Emissions ≤1GHz	11g	2437	6 Mbps	---
Radiated Emissions >1GHz	11b 11g ax HE20 ax HE40	2412 / 2437 / 2462 2412 / 2437 / 2462 2412 / 2437 / 2462 2422 / 2437 / 2452	1 Mbps 6 Mbps MCS 0 MCS 0	---

3 Transmitter Test Results

3.1 Unwanted Emissions into Restricted Frequency Bands

3.1.1 Limit of Unwanted Emissions into Restricted Frequency Bands

Restricted Band Emissions Limit			
Frequency Range (MHz)	**Field Strength (uV/m)**	**Field Strength (dBuV/m)**	**Measure Distance (m)**
0.009~0.490	2400/F(kHz)	48.5 - 13.8	300
0.490~1.705	24000/F(kHz)	33.8 - 23	30
1.705~30.0	30	29	30
30~88	100	40	3
88~216	150	43.5	3
216~960	200	46	3
Above 960	500	54	3

Note 1:
Qusai-Peak value is measured for frequency below 1GHz except for 9–90 kHz, 110–490 kHz frequency band. Peak and average value are measured for frequency above 1GHz. The limit on average radio frequency emission is as above table. The limit on peak radio frequency emissions is 20 dB above the maximum permitted average emission limit
Note 2:
Measurements may be performed at a distance other than what is specified provided. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor as below, Frequency at or above 30 MHz: 20 dB/decade Frequency below 30 MHz: 40 dB/decade.

3.1.2 Test Procedures

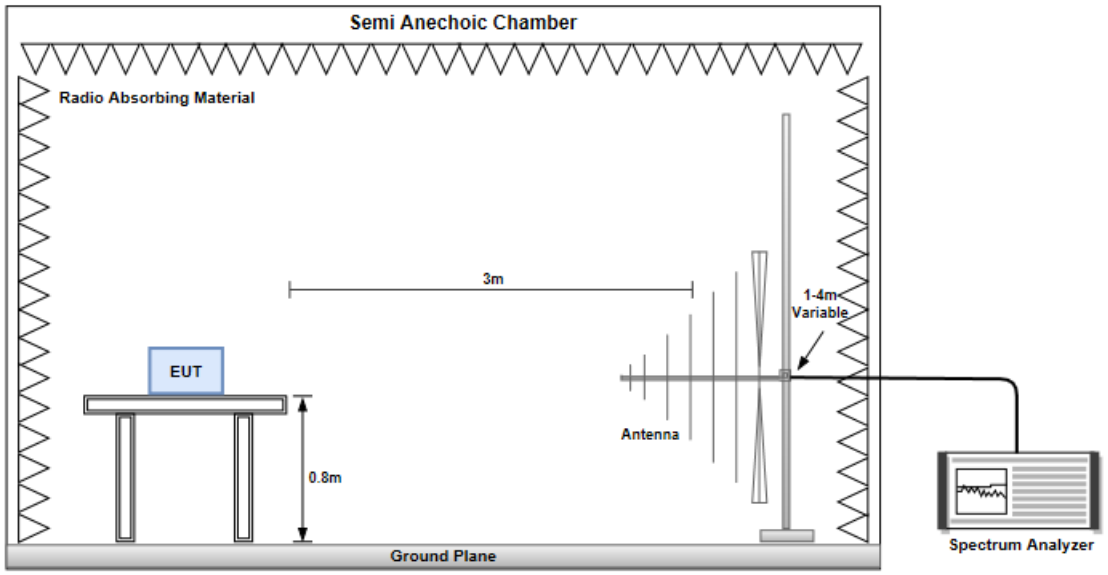
1. Measurement is made at a semi-anechoic chamber that incorporates a turntable allowing a EUT rotation of 360°. A continuously-rotating, remotely-controlled turntable is installed at the test site to support the EUT and facilitate determination of the direction of maximum radiation for each EUT emission frequency. The EUT is placed at test table. For emissions testing at or below 1 GHz, the table height is 80 cm above the reference ground plane. For emission measurements above 1 GHz, the table height is 1.5 m
2. Measurement is made with the antenna positioned in both the horizontal and vertical planes of polarization. The measurement antenna is varied in height (1m ~ 4m) above the reference ground plane to obtain the maximum signal strength. Distance between EUT and antenna is 3 m.
3. This investigation is performed with the EUT rotated 360°, the antenna height scanned between 1 m and 4 m, and the antenna rotated to repeat the measurements for both the horizontal and vertical antenna polarizations.

Note:

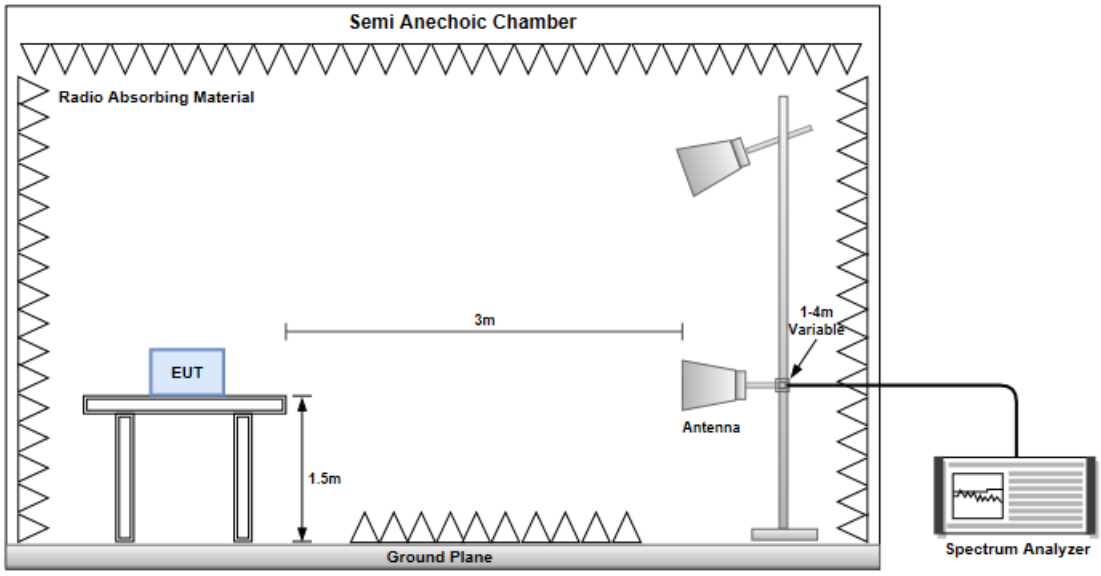
1. 120kHz measurement bandwidth of test receiver and Quasi-peak detector is for radiated emission below 1GHz.
2. RBW=1MHz, VBW=3MHz and Peak detector is for peak measured value of radiated emission above 1GHz.
3. RBW=1MHz, VBW=1/T and Peak detector is for average measured value of radiated emission above 1GHz.

3.1.3 Test Setup

Radiated Emissions below 1 GHz



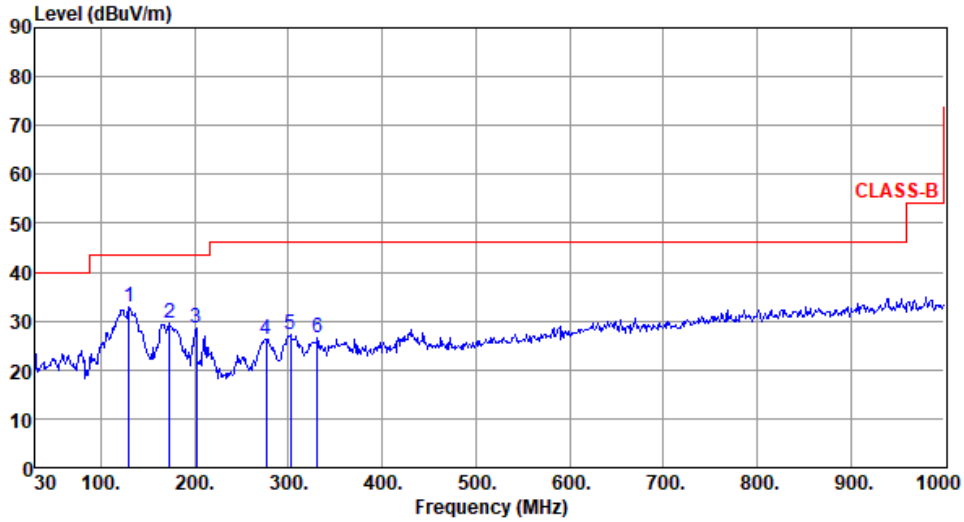
Radiated Emissions above 1 GHz



3.1.4 Transmitter Radiated Unwanted Emissions (Below 1GHz)

Modulation	11g	Test Freq. (MHz)	2437
Polarization	Horizontal		

Test By :Akun Chung Temperature(℃):23 Humidity(%):69

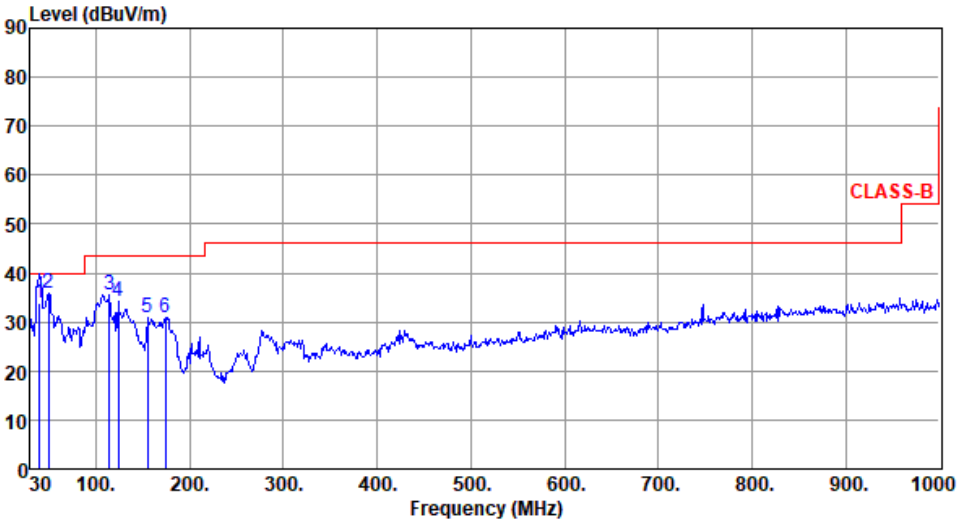


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	129.91	32.80	43.50	-10.70	42.63	-9.83	Peak	---	---
2	173.56	29.52	43.50	-13.98	39.17	-9.65	Peak	---	---
3	201.69	28.48	43.50	-15.02	40.52	-12.04	Peak	---	---
4	276.38	26.26	46.00	-19.74	35.16	-8.90	Peak	---	---
5	302.57	27.25	46.00	-18.75	35.45	-8.20	Peak	---	---
6	330.70	26.73	46.00	-19.27	34.00	-7.27	Peak	---	---

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).
Note 3: All spurious emissions below 30MHz are more than 20 dB below the limit.

Modulation	11g	Test Freq. (MHz)	2437
Polarization	Vertical		

Test By :Akun Chung Temperature(℃):23 Humidity(%):69



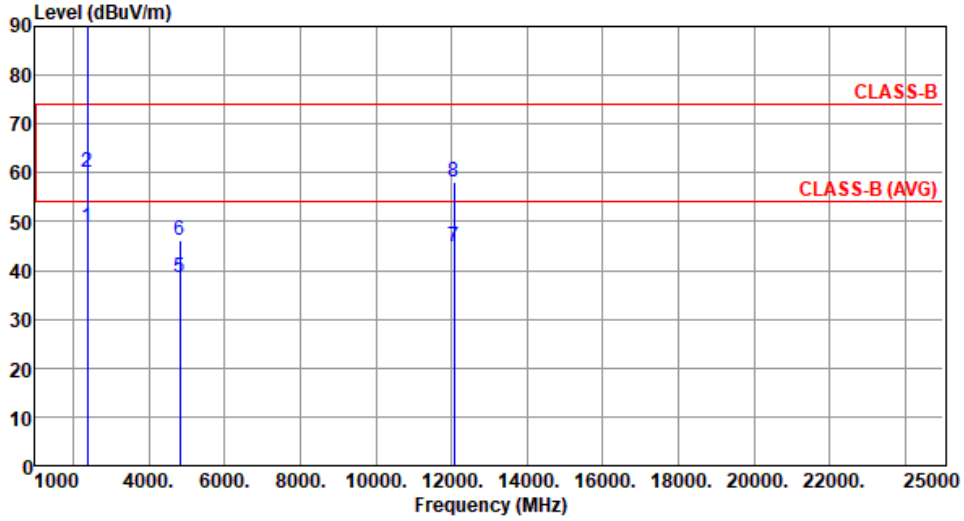
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	39.75	33.89	40.00	-6.11	42.39	-8.50	QP	100	61
2	49.40	35.81	40.00	-4.19	44.20	-8.39	Peak	---	---
3	114.39	35.67	43.50	-7.83	46.87	-11.20	Peak	---	---
4	124.09	34.31	43.50	-9.19	44.73	-10.42	Peak	---	---
5	155.13	30.88	43.50	-12.62	39.67	-8.79	Peak	---	---
6	174.53	30.90	43.50	-12.60	40.64	-9.74	Peak	---	---

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).
Note 3: All spurious emissions below 30MHz are more than 20 dB below the limit.

3.1.5 Transmitter Radiated Unwanted Emissions (Above 1GHz) for 11b

Modulation	11b	Test Freq. (MHz)	2412
Polarization	Horizontal		

Test By :Akun Chung Temperature(℃):23 Humidity(%):69

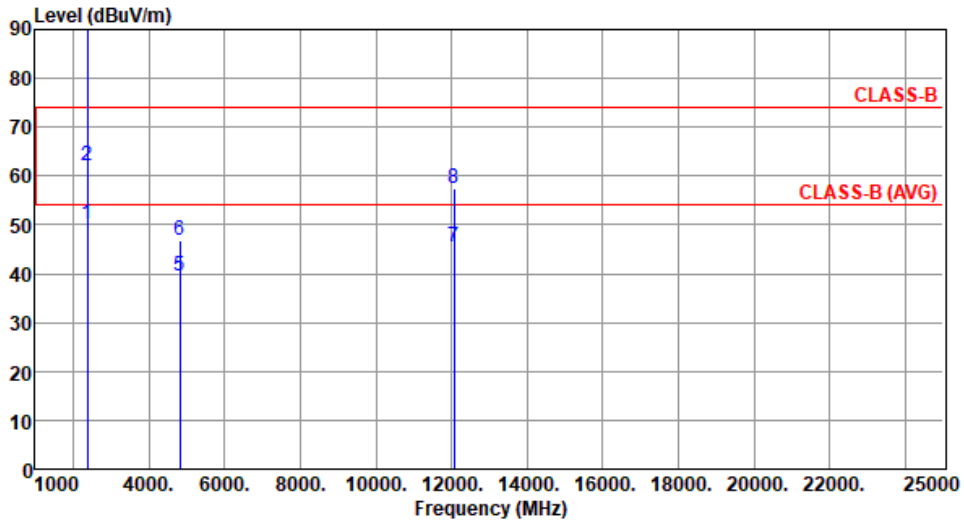


		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1		2390.00	48.78	54.00	-5.22	51.58	-2.80	Average	141	304
2		2390.00	59.99	74.00	-14.01	62.79	-2.80	Peak	141	304
3	*	2412.00	114.13			117.03	-2.90	Average	285	185
4	*	2412.00	116.53			119.43	-2.90	Peak	285	185
5		4824.00	38.64	54.00	-15.36	35.04	3.60	Average	174	352
6		4824.00	46.04	74.00	-27.96	42.44	3.60	Peak	174	352
7		12060.00	44.97	54.00	-9.03	31.12	13.85	Average	111	8
8		12060.00	58.24	74.00	-15.76	44.39	13.85	Peak	111	8

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).
Note 3:"*" is Peak / Average value of fundamental frequency

Modulation	11b	Test Freq. (MHz)	2412
Polarization	Vertical		

Test By :Akun Chung Temperature(℃):23 Humidity(%):69

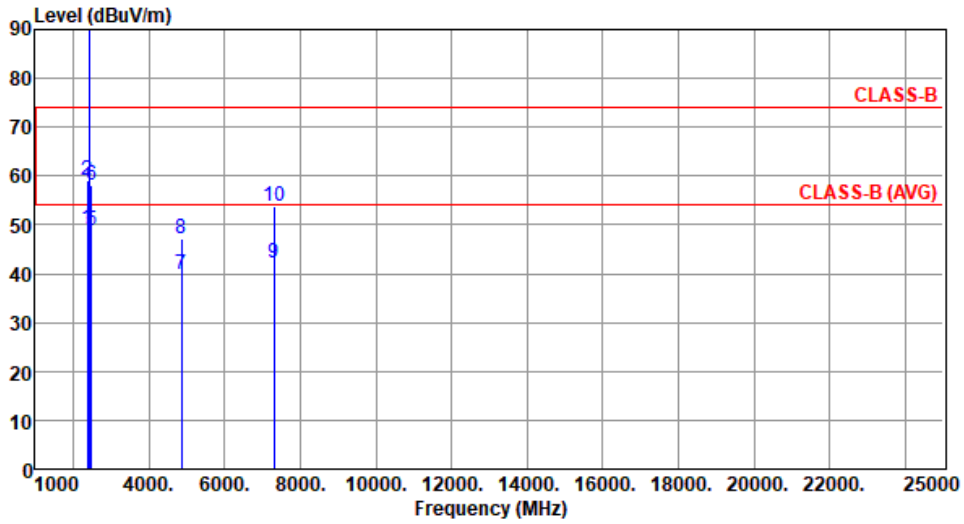


		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1		2390.00	50.27	54.00	-3.73	53.07	-2.80	Average	100	221
2		2390.00	61.95	74.00	-12.05	64.75	-2.80	Peak	100	221
3	*	2412.00	114.65			117.55	-2.90	Average	100	221
4	*	2412.00	116.88			119.78	-2.90	Peak	100	221
5		4824.00	39.45	54.00	-14.55	35.85	3.60	Average	133	359
6		4824.00	46.91	74.00	-27.09	43.31	3.60	Peak	133	359
7		12060.00	45.60	54.00	-8.40	31.75	13.85	Average	243	25
8		12060.00	57.50	74.00	-16.50	43.65	13.85	Peak	243	25

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).
Note 3:"*" is Peak / Average value of fundamental frequency

Modulation	11b	Test Freq. (MHz)	2437
Polarization	Horizontal		

Test By :Akun Chung Temperature(℃):23 Humidity(%):69

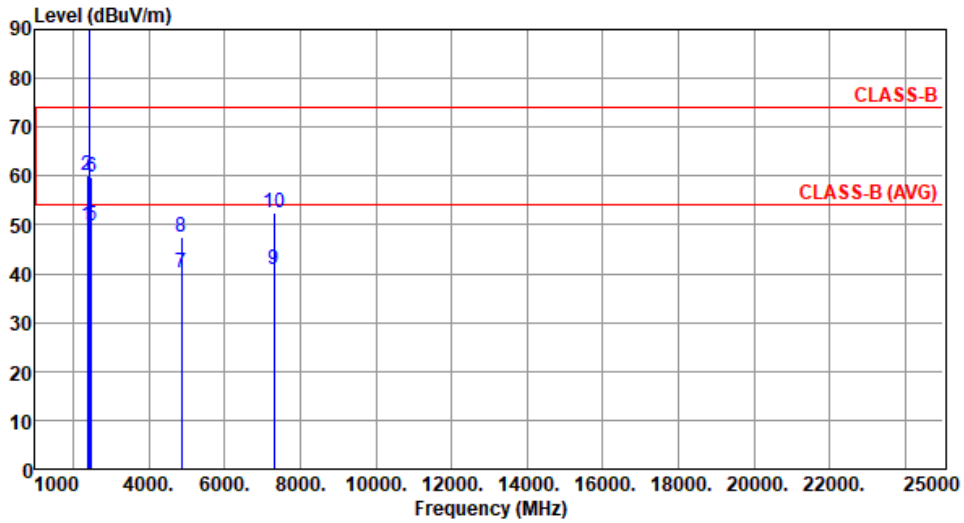


		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1		2390.00	49.15	54.00	-4.85	51.95	-2.80	Average	220	184
2		2390.00	59.05	74.00	-14.95	61.85	-2.80	Peak	220	184
3	*	2437.00	114.65			117.66	-3.01	Average	220	184
4	*	2437.00	115.93			118.94	-3.01	Peak	220	184
5		2483.50	48.72	54.00	-5.28	51.75	-3.03	Average	220	184
6		2483.50	58.19	74.00	-15.81	61.22	-3.03	Peak	220	184
7		4874.00	39.94	54.00	-14.06	36.30	3.64	Average	172	335
8		4874.00	47.18	74.00	-26.82	43.54	3.64	Peak	172	335
9		7311.00	42.17	54.00	-11.83	32.90	9.27	Average	137	308
10		7311.00	53.82	74.00	-20.18	44.55	9.27	Peak	137	308

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).
Note 3:"*" is Peak / Average value of fundamental frequency

Modulation	11b	Test Freq. (MHz)	2437
Polarization	Vertical		

Test By :Akun Chung Temperature(℃):23 Humidity(%):69

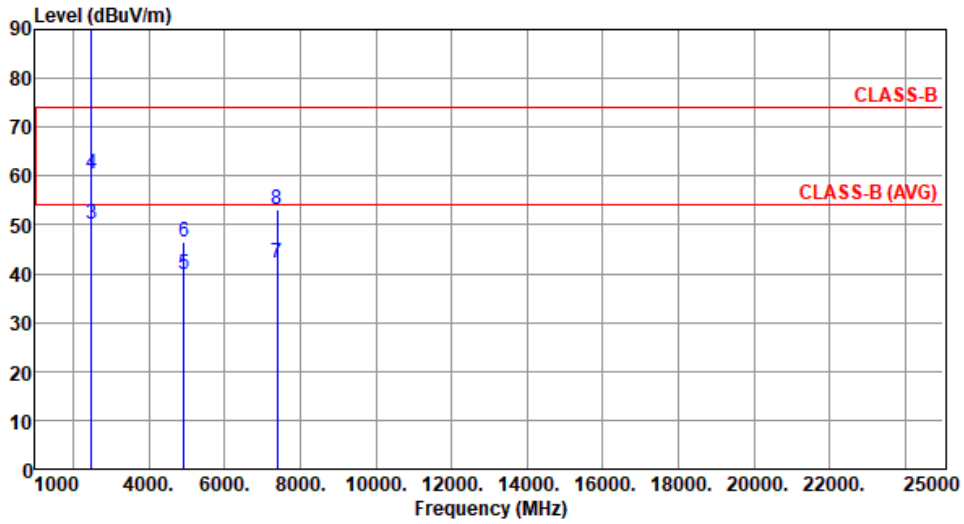


		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1		2390.00	49.68	54.00	-4.32	52.48	-2.80	Average	120	73
2		2390.00	60.04	74.00	-13.96	62.84	-2.80	Peak	120	73
3	*	2437.00	113.99			117.00	-3.01	Average	120	73
4	*	2437.00	116.30			119.31	-3.01	Peak	120	73
5		2483.50	49.82	54.00	-4.18	52.85	-3.03	Average	120	73
6		2483.50	59.74	74.00	-14.26	62.77	-3.03	Peak	120	73
7		4874.00	40.31	54.00	-13.69	36.67	3.64	Average	128	358
8		4874.00	47.62	74.00	-26.38	43.98	3.64	Peak	128	358
9		7311.00	40.92	54.00	-13.08	31.65	9.27	Average	367	161
10		7311.00	52.53	74.00	-21.47	43.26	9.27	Peak	367	161

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).
Note 3:"*" is Peak / Average value of fundamental frequency

Modulation	11b	Test Freq. (MHz)	2462
Polarization	Horizontal		

Test By :Akun Chung Temperature(℃):23 Humidity(%):69

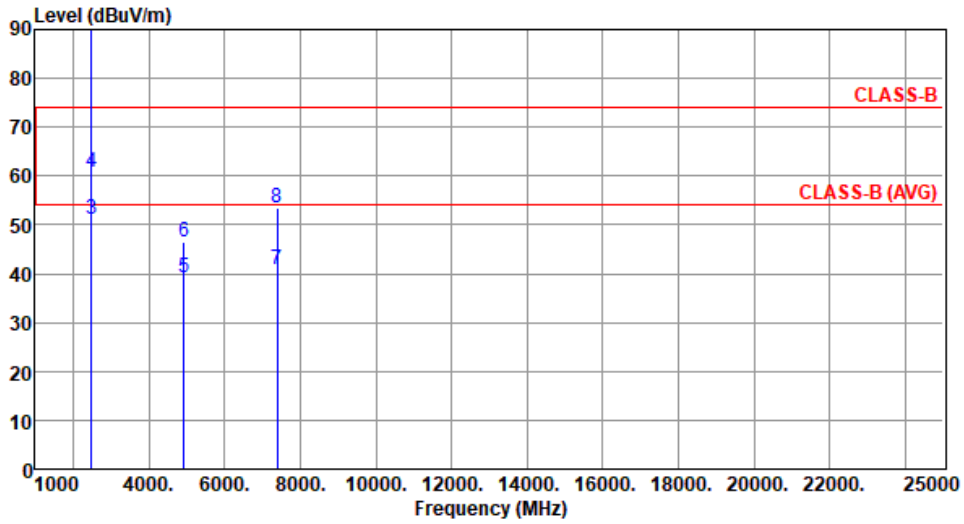


		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	*	2462.00	113.20			116.26	-3.06	Average	217	187
2	*	2462.00	115.59			118.65	-3.06	Peak	217	187
3		2483.50	50.27	54.00	-3.73	53.30	-3.03	Average	217	187
4		2483.50	60.60	74.00	-13.40	63.63	-3.03	Peak	217	187
5		4924.00	39.76	54.00	-14.24	36.07	3.69	Average	168	354
6		4924.00	46.57	74.00	-27.43	42.88	3.69	Peak	168	354
7		7386.00	42.10	54.00	-11.90	33.03	9.07	Average	118	20
8		7386.00	53.17	74.00	-20.83	44.10	9.07	Peak	118	20

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).
Note 3:"*" is Peak / Average value of fundamental frequency

Modulation	11b	Test Freq. (MHz)	2462
Polarization	Vertical		

Test By :Akun Chung Temperature(℃):23 Humidity(%):69



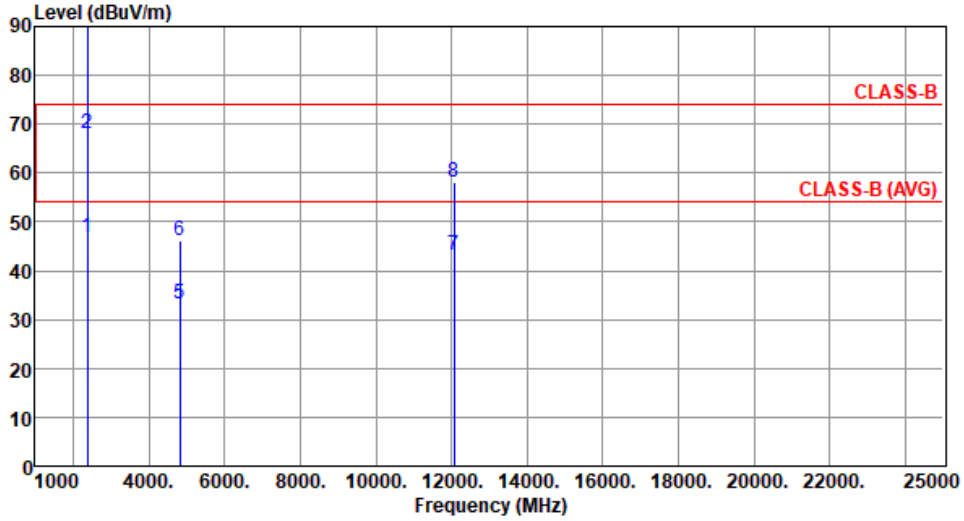
		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	*	2462.00	114.27			117.33	-3.06	Average	110	70
2	*	2462.00	116.38			119.44	-3.06	Peak	110	70
3		2483.50	51.09	54.00	-2.91	54.12	-3.03	Average	116	70
4		2483.50	60.82	74.00	-13.18	63.85	-3.03	Peak	116	70
5		4924.00	39.08	54.00	-14.92	35.39	3.69	Average	161	357
6		4924.00	46.65	74.00	-27.35	42.96	3.69	Peak	161	357
7		7386.00	40.97	74.00	-33.03	31.90	9.07	Peak	114	356
8		7386.00	53.33	74.00	-20.67	44.26	9.07	Peak	114	356

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).
Note 3:"*" is Peak / Average value of fundamental frequency

3.1.6 Transmitter Radiated Unwanted Emissions (Above 1GHz) for 11g

Modulation	11g	Test Freq. (MHz)	2412
Polarization	Horizontal		

Test By :Akun Chung Temperature(℃):23 Humidity(%):69

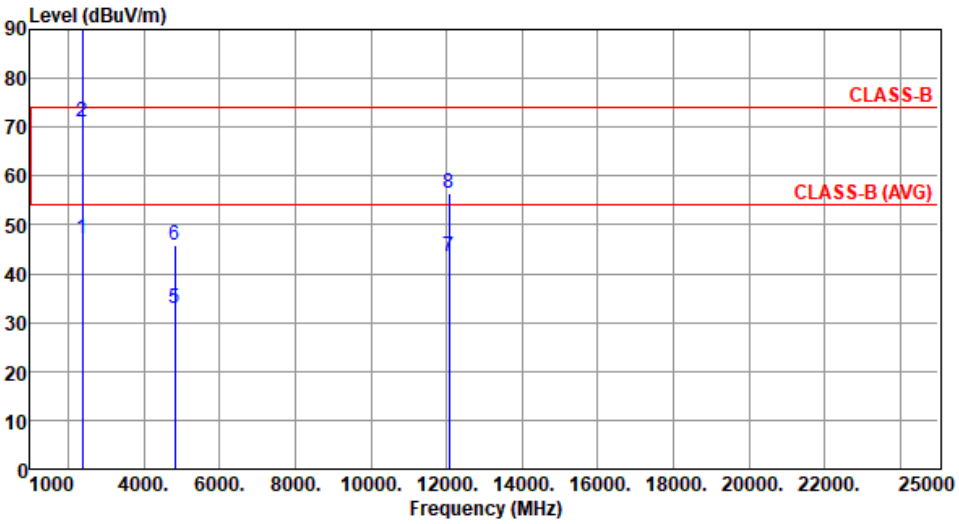


		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1		2390.00	46.75	54.00	-7.25	49.55	-2.80	Average	272	217
2		2390.00	68.05	74.00	-5.95	70.85	-2.80	Peak	272	217
3	*	2412.00	103.76			106.66	-2.90	Average	272	217
4	*	2412.00	112.28			115.18	-2.90	Peak	272	217
5		4824.00	33.19	54.00	-20.81	29.59	3.60	Average	100	332
6		4824.00	46.17	74.00	-27.83	42.57	3.60	Peak	100	332
7		12060.00	43.33	54.00	-10.67	29.48	13.85	Average	185	335
8		12060.00	58.23	74.00	-15.77	44.38	13.85	Peak	185	335

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).
Note 3:"*" is Peak / Average value of fundamental frequency

Modulation	11g	**Test Freq. (MHz)**	2412
Polarization	Vertical		

Test By :Akun Chung Temperature(℃):23 Humidity(%):69

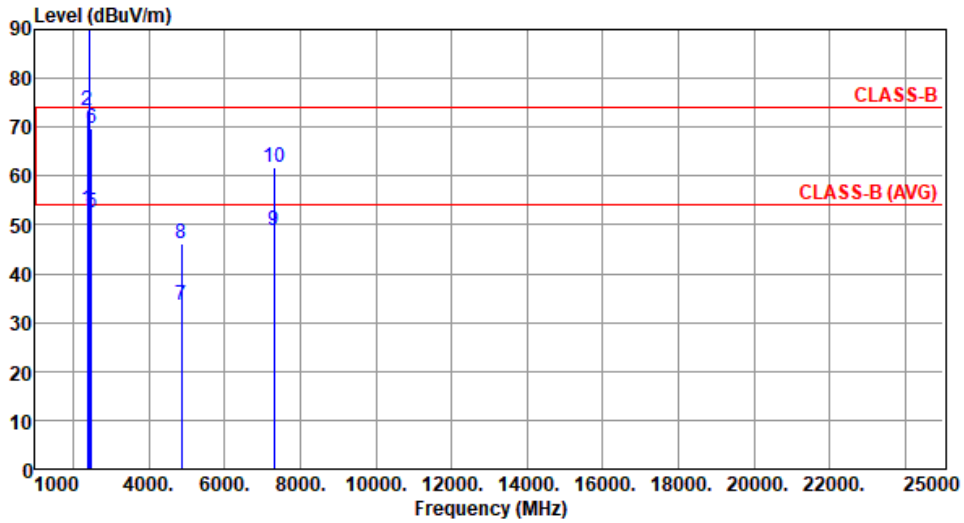


		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1		2390.00	47.01	54.00	-6.99	49.81	-2.80	Average	102	221
2		2390.00	71.15	74.00	-2.85	73.95	-2.80	Peak	102	221
3	*	2412.00	102.31			105.21	-2.90	Average	113	221
4	*	2412.00	111.96			114.86	-2.90	Peak	113	221
5		4824.00	32.93	54.00	-21.07	29.33	3.60	Average	100	335
6		4824.00	45.94	74.00	-28.06	42.34	3.60	Peak	100	335
7		12060.00	43.54	54.00	-10.46	29.69	13.85	Average	100	195
8		12060.00	56.62	74.00	-17.38	42.77	13.85	Peak	100	195

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).
Note 3:"*" is Peak / Average value of fundamental frequency

Modulation	11g	Test Freq. (MHz)	2437
Polarization	Horizontal		

Test By :Akun Chung Temperature(℃):23 Humidity(%):69

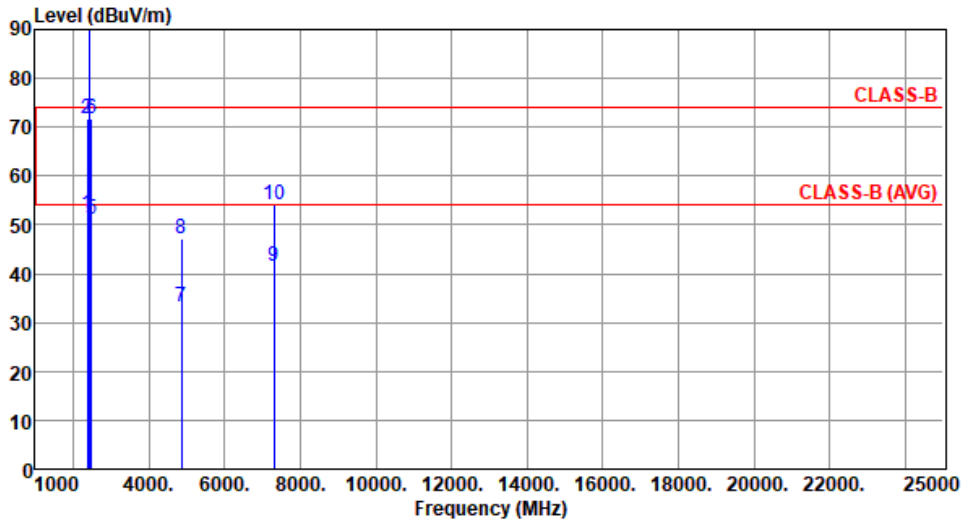


		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1		2390.00	53.03	54.00	-0.97	55.83	-2.80	Average	242	217
2		2390.00	73.36	74.00	-0.64	76.16	-2.80	Peak	242	217
3	*	2437.00	110.03			113.04	-3.01	Average	242	217
4	*	2437.00	119.40			122.41	-3.01	Peak	242	217
5		2483.50	52.48	54.00	-1.52	55.51	-3.03	Average	242	217
6		2483.50	69.82	74.00	-4.18	72.85	-3.03	Peak	242	217
7		4874.00	33.41	54.00	-20.59	29.77	3.64	Average	187	336
8		4874.00	46.21	74.00	-27.79	42.57	3.64	Peak	187	336
9		7311.00	48.89	54.00	-5.11	39.62	9.27	Average	184	330
10		7311.00	61.90	74.00	-12.10	52.63	9.27	Peak	184	330

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).
Note 3:"*" is Peak / Average value of fundamental frequency

Modulation	11g	Test Freq. (MHz)	2437
Polarization	Vertical		

Test By :Akun Chung Temperature(℃):23 Humidity(%):69

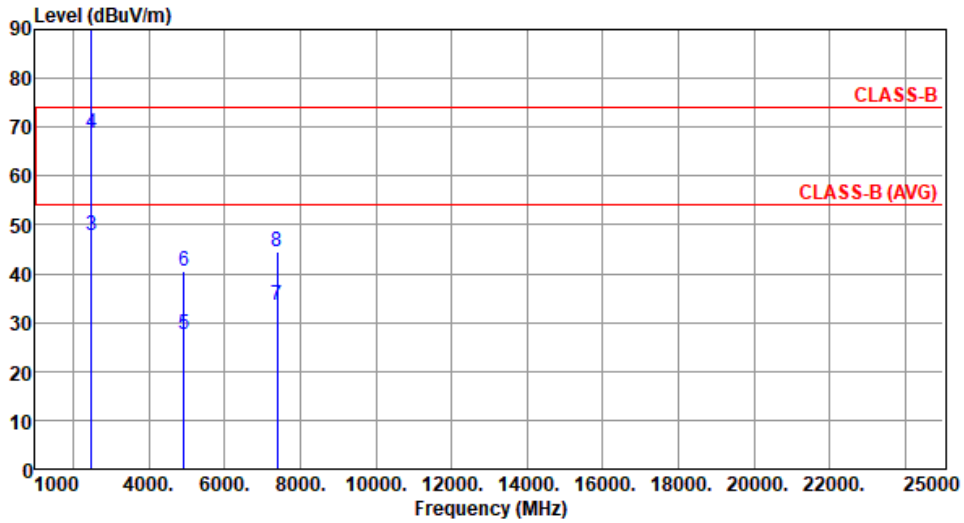


		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1		2390.00	52.02	54.00	-1.98	54.82	-2.80	Average	109	267
2		2390.00	71.80	74.00	-2.20	74.60	-2.80	Peak	109	267
3	*	2437.00	109.38			112.39	-3.01	Average	109	267
4	*	2437.00	119.04			122.05	-3.01	Peak	109	267
5		2483.50	51.01	54.00	-2.99	54.04	-3.03	Average	109	267
6		2483.50	71.74	74.00	-2.26	74.77	-3.03	Peak	109	267
7		4874.00	33.10	54.00	-20.90	29.46	3.64	Average	176	337
8		4874.00	47.00	74.00	-27.00	43.36	3.64	Peak	176	337
9		7311.00	41.59	54.00	-12.41	32.32	9.27	Average	100	191
10		7311.00	54.10	74.00	-19.90	44.83	9.27	Peak	100	191

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).
Note 3:"*" is Peak / Average value of fundamental frequency

Modulation	11g	Test Freq. (MHz)	2462
Polarization	Horizontal		

Test By :Akun Chung Temperature(℃):23 Humidity(%):69

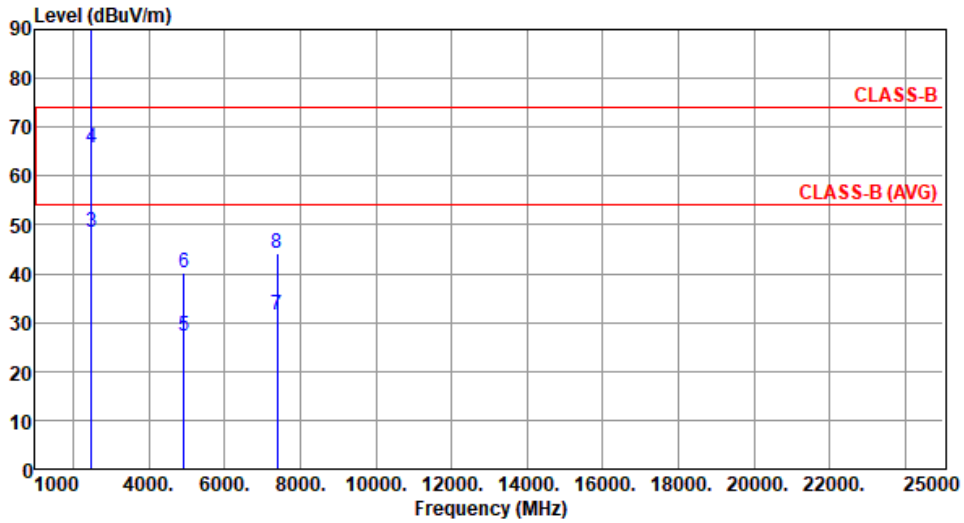


		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	*	2462.00	103.27			106.33	-3.06	Average	254	202
2	*	2462.00	112.02			115.08	-3.06	Peak	254	202
3		2483.50	47.69	54.00	-6.31	50.72	-3.03	Average	197	302
4		2483.50	68.66	74.00	-5.34	71.69	-3.03	Peak	197	302
5		4924.00	27.49	54.00	-26.51	29.66	-2.17	Average	100	335
6		4924.00	40.67	74.00	-33.33	42.84	-2.17	Peak	100	335
7		7386.00	33.68	54.00	-20.32	31.89	1.79	Average	100	331
8		7386.00	44.54	74.00	-29.46	42.75	1.79	Peak	100	331

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).
Note 3:"*" is Peak / Average value of fundamental frequency

Modulation	11g	Test Freq. (MHz)	2462
Polarization	Vertical		

Test By :Akun Chung Temperature(℃):23 Humidity(%):69



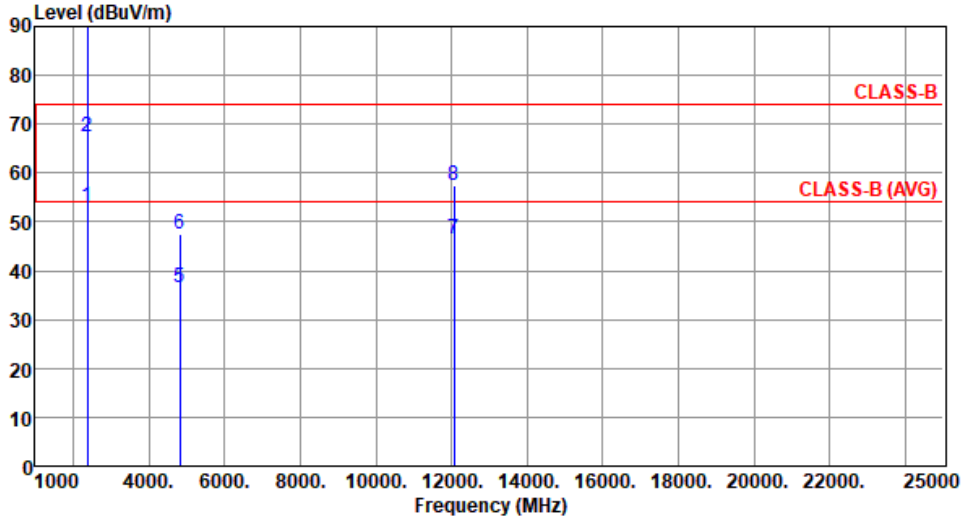
		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	*	2462.00	102.76			105.82	-3.06	Average	105	278
2	*	2462.00	111.77			114.83	-3.06	Peak	105	278
3		2483.50	48.38	54.00	-5.62	51.41	-3.03	Average	115	65
4		2483.50	65.65	74.00	-8.35	68.68	-3.03	Peak	115	65
5		4924.00	27.20	54.00	-26.80	29.37	-2.17	Average	100	335
6		4924.00	40.25	74.00	-33.75	42.42	-2.17	Peak	100	335
7		7386.00	31.42	54.00	-22.58	29.63	1.79	Average	100	191
8		7386.00	44.23	74.00	-29.77	42.44	1.79	Peak	100	191

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).
Note 3:"*" is Peak / Average value of fundamental frequency

3.1.7 Transmitter Radiated Unwanted Emissions (Above 1GHz) for ax HE20

Modulation	ax HE20	Test Freq. (MHz)	2412
Polarization	Horizontal		

Test By :Akun Chung Temperature(℃):23 Humidity(%):69

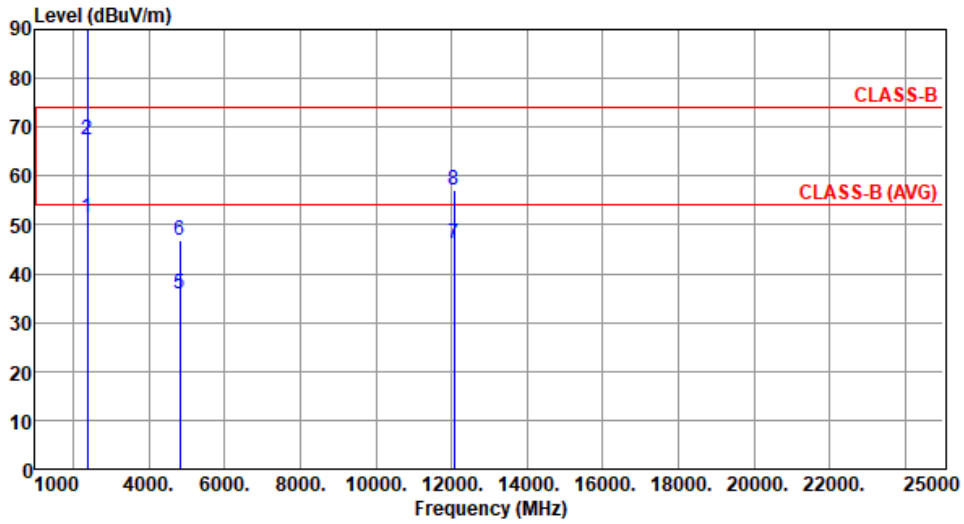


		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1		2390.00	53.12	54.00	-0.88	55.92	-2.80	Average	236	218
2		2390.00	67.49	74.00	-6.51	70.29	-2.80	Peak	236	218
3	*	2412.00	103.30			106.20	-2.90	Average	236	218
4	*	2412.00	112.81			115.71	-2.90	Peak	236	218
5		4824.00	36.40	54.00	-17.60	32.80	3.60	Average	100	261
6		4824.00	47.47	74.00	-26.53	43.87	3.60	Peak	100	261
7		12060.00	46.62	54.00	-7.38	32.77	13.85	Average	100	30
8		12060.00	57.58	74.00	-16.42	43.73	13.85	Peak	100	30

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).
Note 3:"*" is Peak / Average value of fundamental frequency

Modulation	ax HE20	Test Freq. (MHz)	2412
Polarization	Vertical		

Test By :Akun Chung Temperature(℃):23 Humidity(%):69

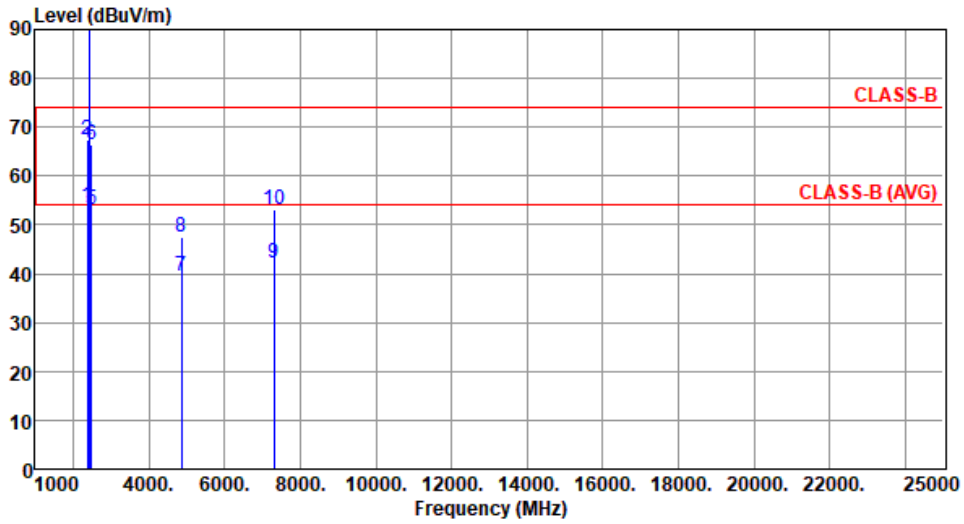


		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1		2390.00	51.57	54.00	-2.43	54.37	-2.80	Average	121	256
2		2390.00	67.25	74.00	-6.75	70.05	-2.80	Peak	121	256
3	*	2412.00	102.34			105.24	-2.90	Average	121	256
4	*	2412.00	111.07			113.97	-2.90	Peak	121	256
5		4824.00	35.98	54.00	-18.02	32.38	3.60	Average	100	153
6		4824.00	46.95	74.00	-27.05	43.35	3.60	Peak	100	153
7		12060.00	46.21	54.00	-7.79	32.36	13.85	Average	100	303
8		12060.00	57.24	74.00	-16.76	43.39	13.85	Peak	100	303

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).
Note 3:"*" is Peak / Average value of fundamental frequency

Modulation	ax HE20	Test Freq. (MHz)	2437
Polarization	Horizontal		

Test By :Akun Chung Temperature(℃):23 Humidity(%):69

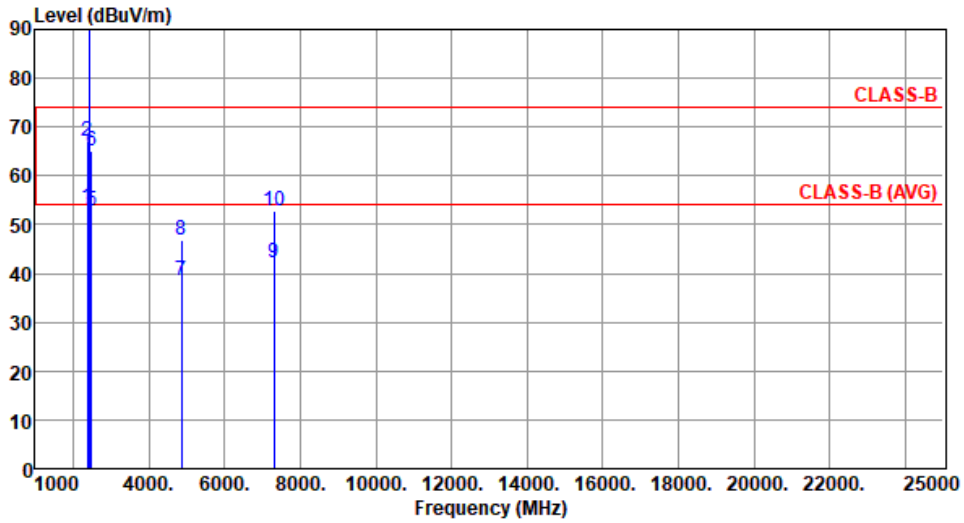


		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1		2390.00	53.90	54.00	-0.10	56.70	-2.80	Average	237	204
2		2390.00	67.54	74.00	-6.46	70.34	-2.80	Peak	237	204
3	*	2437.00	109.35			112.36	-3.01	Average	228	204
4	*	2437.00	118.19			121.20	-3.01	Peak	228	204
5		2483.50	53.17	54.00	-0.83	56.20	-3.03	Average	219	204
6		2483.50	66.29	74.00	-7.71	69.32	-3.03	Peak	219	204
7		4874.00	39.36	54.00	-14.64	35.72	3.64	Average	100	265
8		4874.00	47.51	74.00	-26.49	43.87	3.64	Peak	100	265
9		7311.00	42.25	54.00	-11.75	32.98	9.27	Average	100	22
10		7311.00	53.04	74.00	-20.96	43.77	9.27	Peak	100	22

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).
Note 3:"*" is Peak / Average value of fundamental frequency

Modulation	ax HE20	Test Freq. (MHz)	2437
Polarization	Vertical		

Test By :Akun Chung Temperature(℃):23 Humidity(%):69

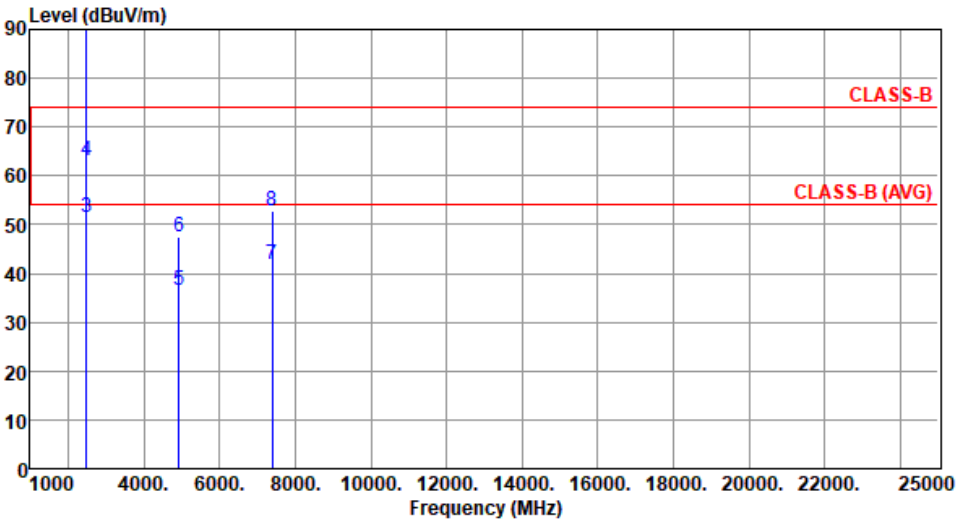


		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1		2390.00	53.34	54.00	-0.66	56.14	-2.80	Average	111	268
2		2390.00	67.09	74.00	-6.91	69.89	-2.80	Peak	111	268
3	*	2437.00	108.32			111.33	-3.01	Average	111	268
4	*	2437.00	118.57			121.58	-3.01	Peak	111	268
5		2483.50	52.79	54.00	-1.21	55.82	-3.03	Average	111	268
6		2483.50	65.09	74.00	-8.91	68.12	-3.03	Peak	111	268
7		4874.00	38.37	54.00	-15.63	34.73	3.64	Average	100	157
8		4874.00	46.93	74.00	-27.07	43.29	3.64	Peak	100	157
9		7311.00	42.05	54.00	-11.95	32.78	9.27	Average	187	324
10		7311.00	52.65	74.00	-21.35	43.38	9.27	Peak	187	324

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).
Note 3:"*" is Peak / Average value of fundamental frequency

Modulation	ax HE20	Test Freq. (MHz)	2462
Polarization	Horizontal		

Test By :Akun Chung Temperature(℃):23 Humidity(%):69

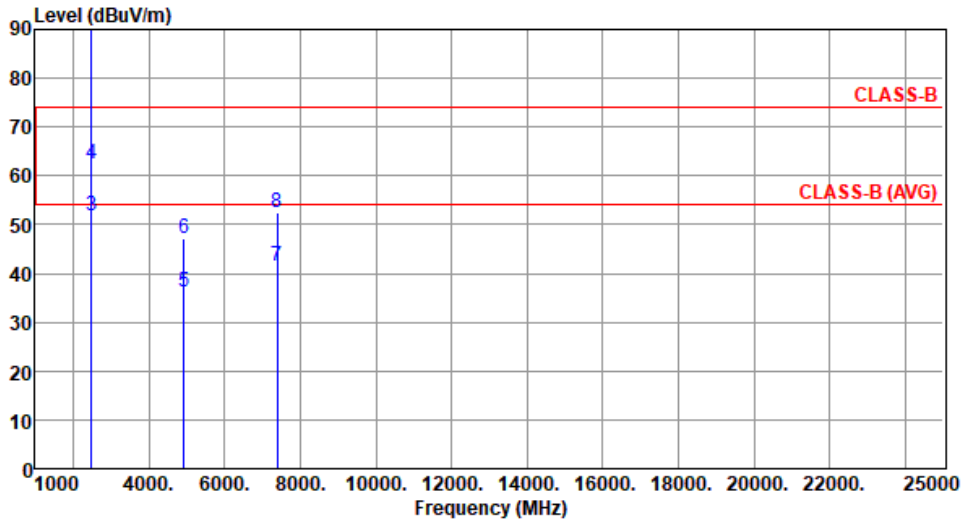


		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	*	2462.00	102.47			105.53	-3.06	Average	223	207
2	*	2462.00	110.88			113.94	-3.06	Peak	223	207
3		2483.50	51.38	54.00	-2.62	54.41	-3.03	Average	223	207
4		2483.50	63.03	74.00	-10.97	66.06	-3.03	Peak	223	207
5		4924.00	36.54	54.00	-17.46	32.85	3.69	Average	100	268
6		4924.00	47.58	74.00	-26.42	43.89	3.69	Peak	100	268
7		7386.00	41.75	54.00	-12.25	32.68	9.07	Average	100	26
8		7386.00	52.91	74.00	-21.09	43.84	9.07	Peak	100	26

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).
Note 3:"*" is Peak / Average value of fundamental frequency

Modulation	ax HE20	Test Freq. (MHz)	2462
Polarization	Vertical		

Test By :Akun Chung Temperature(℃):23 Humidity(%):69



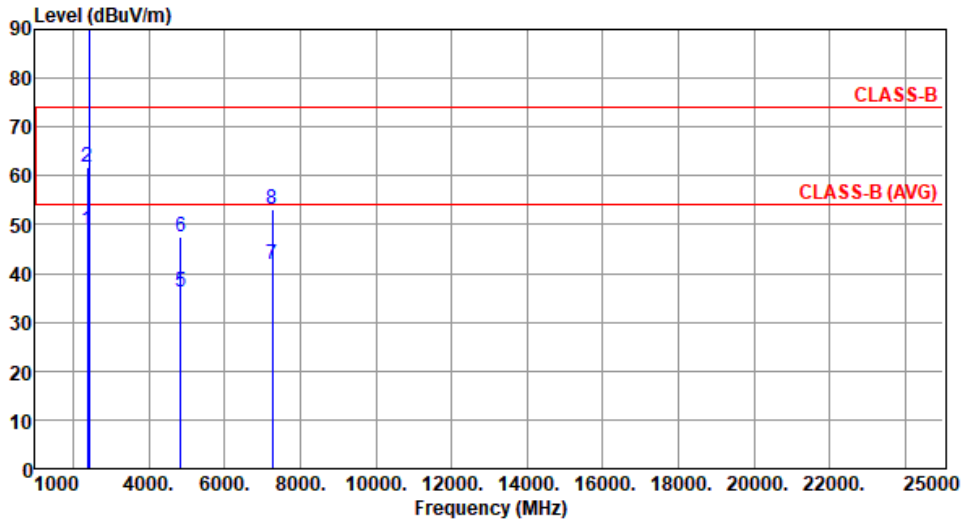
		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	*	2462.00	101.62			104.68	-3.06	Average	100	280
2	*	2462.00	111.14			114.20	-3.06	Peak	100	280
3		2483.50	51.72	54.00	-2.28	54.75	-3.03	Average	100	280
4		2483.50	62.60	74.00	-11.40	65.63	-3.03	Peak	100	280
5		4924.00	36.12	54.00	-17.88	32.43	3.69	Average	100	152
6		4924.00	47.12	74.00	-26.88	43.43	3.69	Peak	100	152
7		7386.00	41.45	54.00	-12.55	32.38	9.07	Average	100	332
8		7386.00	52.46	74.00	-21.54	43.39	9.07	Peak	100	332

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).
Note 3:"*" is Peak / Average value of fundamental frequency

3.1.8 Transmitter Radiated Unwanted Emissions (Above 1GHz) for ax HE40

Modulation	ax HE40	Test Freq. (MHz)	2422
Polarization	Horizontal		

Test By :Akun Chung Temperature(℃):23 Humidity(%):69

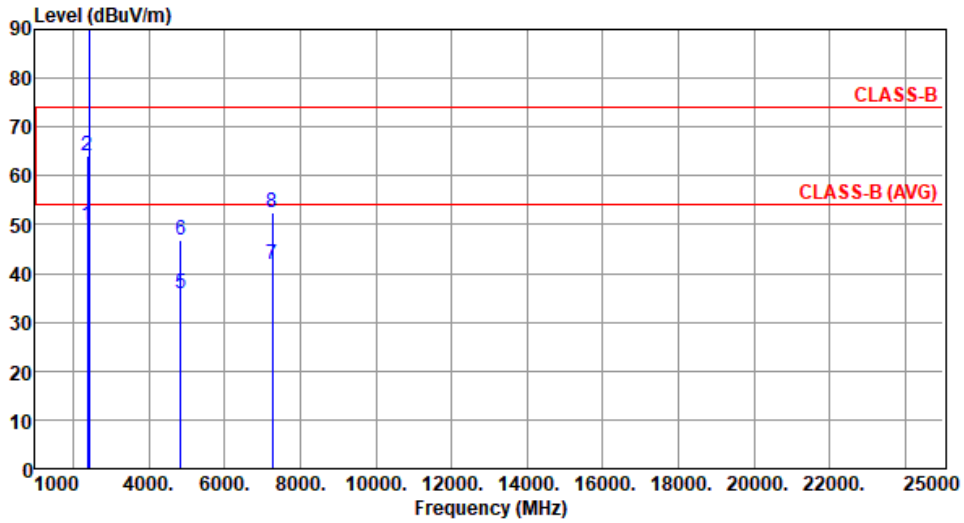


		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1		2390.00	48.88	54.00	-5.12	51.68	-2.80	Average	237	218
2		2390.00	61.64	74.00	-12.36	64.44	-2.80	Peak	237	218
3	*	2422.00	98.19			101.13	-2.94	Average	237	218
4	*	2422.00	107.42			110.36	-2.94	Peak	237	218
5		4844.00	36.31	54.00	-17.69	32.66	3.65	Average	100	267
6		4844.00	47.33	74.00	-26.67	43.68	3.65	Peak	100	267
7		7266.00	42.00	54.00	-12.00	32.67	9.33	Average	100	25
8		7266.00	53.02	74.00	-20.98	43.69	9.33	Peak	100	25

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).
Note 3:"*" is Peak / Average value of fundamental frequency

Modulation	ax HE40	Test Freq. (MHz)	2422
Polarization	Vertical		

Test By :Akun Chung Temperature(℃):23 Humidity(%):69

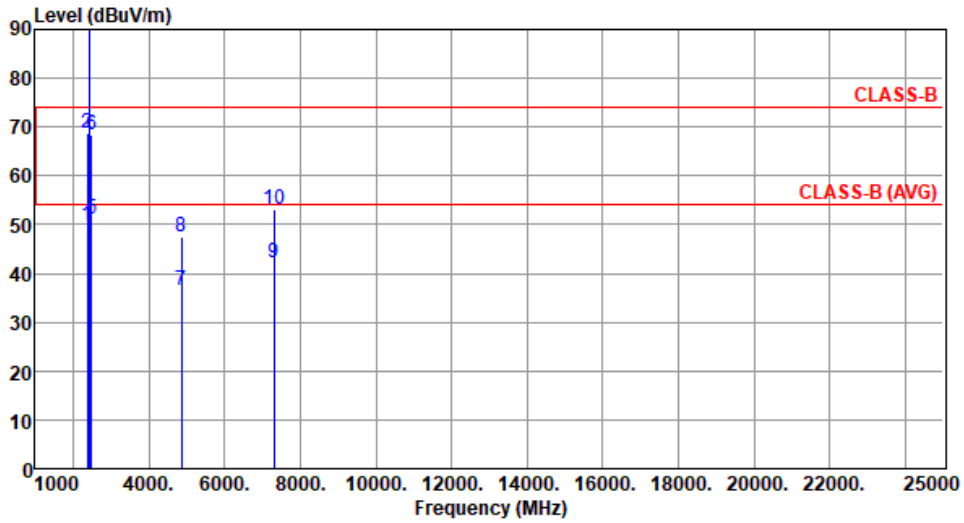


		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1		2390.00	49.82	54.00	-4.18	52.62	-2.80	Average	115	267
2		2390.00	64.26	74.00	-9.74	67.06	-2.80	Peak	115	267
3	*	2422.00	97.92			100.86	-2.94	Average	115	267
4	*	2422.00	107.31			110.25	-2.94	Peak	115	267
5		4844.00	35.99	54.00	-18.01	32.34	3.65	Average	100	153
6		4844.00	46.94	74.00	-27.06	43.29	3.65	Peak	100	153
7		7266.00	41.70	54.00	-12.30	32.37	9.33	Average	100	332
8		7266.00	52.63	74.00	-21.37	43.30	9.33	Peak	100	332

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).
Note 3:"*" is Peak / Average value of fundamental frequency

Modulation	ax HE40	Test Freq. (MHz)	2437
Polarization	Horizontal		

Test By :Akun Chung Temperature(℃):23 Humidity(%):69

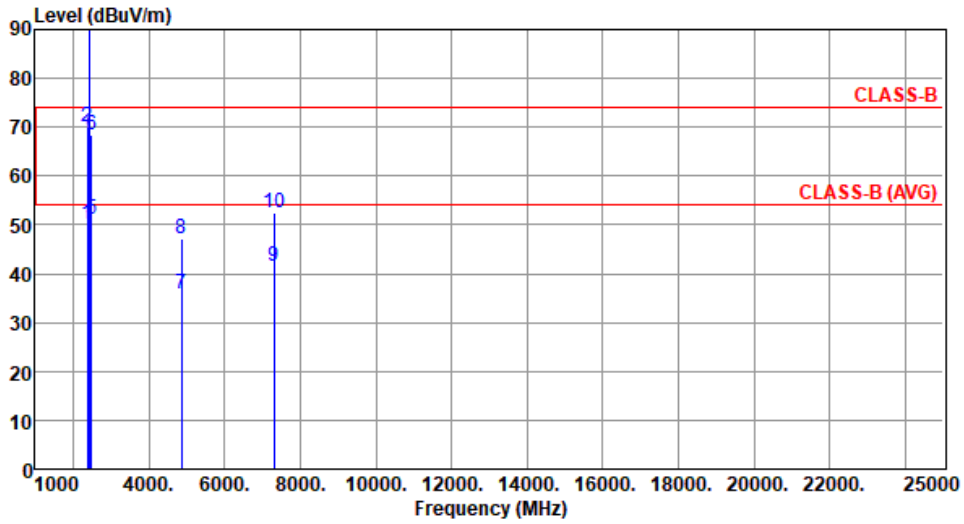


		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1		2390.00	49.81	54.00	-4.19	52.61	-2.80	Average	231	221
2		2390.00	68.75	74.00	-5.25	71.55	-2.80	Peak	231	221
3	*	2437.00	101.28			104.29	-3.01	Average	231	221
4	*	2437.00	110.11			113.12	-3.01	Peak	231	221
5		2483.50	51.01	54.00	-2.99	54.04	-3.03	Average	231	221
6		2483.50	68.31	74.00	-5.69	71.34	-3.03	Peak	231	221
7		4874.00	36.48	54.00	-17.52	32.84	3.64	Average	100	263
8		4874.00	47.49	74.00	-26.51	43.85	3.64	Peak	100	263
9		7311.00	42.01	54.00	-11.99	32.74	9.27	Average	100	23
10		7311.00	53.07	74.00	-20.93	43.80	9.27	Peak	100	23

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).
Note 3:"*" is Peak / Average value of fundamental frequency

Modulation	ax HE40	Test Freq. (MHz)	2437
Polarization	Vertical		

Test By :Akun Chung Temperature(℃):23 Humidity(%):69

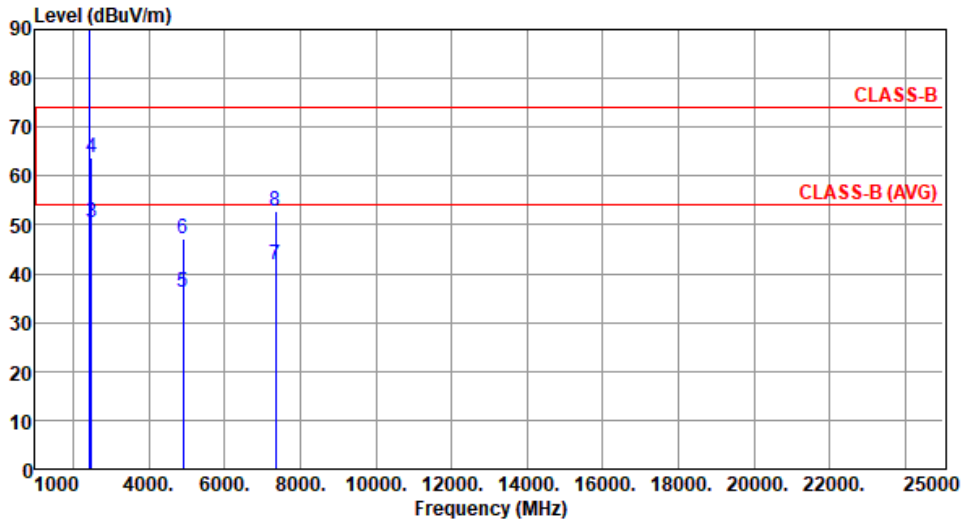


		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1		2390.00	50.12	54.00	-3.88	52.92	-2.80	Average	111	265
2		2390.00	70.17	74.00	-3.83	72.97	-2.80	Peak	111	265
3	*	2437.00	100.72			103.73	-3.01	Average	111	265
4	*	2437.00	110.04			113.05	-3.01	Peak	111	265
5		2483.50	51.09	54.00	-2.91	54.12	-3.03	Average	111	265
6		2483.50	68.54	74.00	-5.46	71.57	-3.03	Peak	111	265
7		4874.00	35.94	54.00	-18.06	32.30	3.64	Average	100	155
8		4874.00	47.03	74.00	-26.97	43.39	3.64	Peak	100	155
9		7311.00	41.66	54.00	-12.34	32.39	9.27	Average	100	330
10		7311.00	52.61	74.00	-21.39	43.34	9.27	Peak	100	330

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).
Note 3:"*" is Peak / Average value of fundamental frequency

Modulation	ax HE40	Test Freq. (MHz)	2452
Polarization	Horizontal		

Test By :Akun Chung Temperature(℃):23 Humidity(%):69

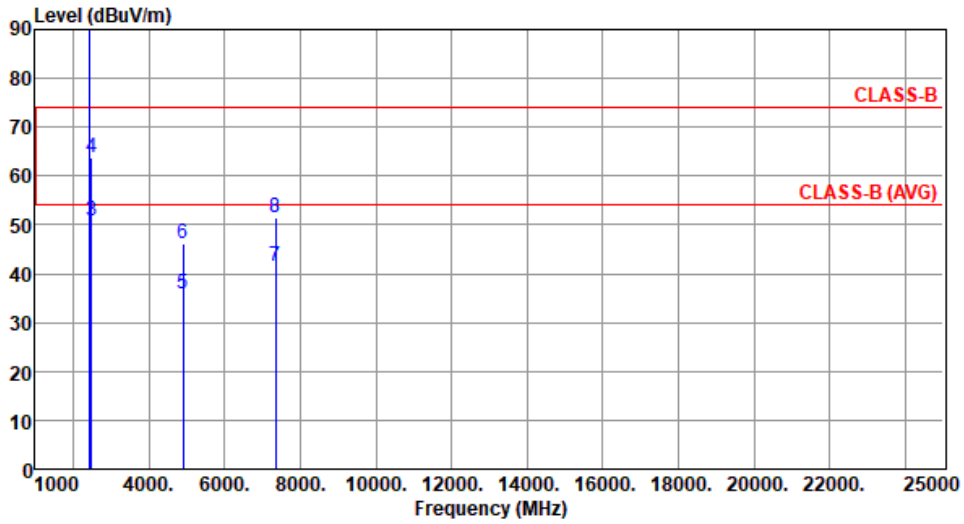


		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	*	2452.00	97.51			100.58	-3.07	Average	222	203
2	*	2452.00	105.72			108.79	-3.07	Peak	222	203
3		2483.50	50.47	54.00	-3.53	53.50	-3.03	Average	222	203
4		2483.50	63.80	74.00	-10.20	66.83	-3.03	Peak	222	203
5		4904.00	36.24	54.00	-17.76	32.61	3.63	Average	100	269
6		4904.00	47.28	74.00	-26.72	43.65	3.63	Peak	100	269
7		7356.00	41.75	54.00	-12.25	32.67	9.08	Average	100	28
8		7356.00	52.78	74.00	-21.22	43.70	9.08	Peak	100	28

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).
Note 3:"*" is Peak / Average value of fundamental frequency

Modulation	ax HE40	Test Freq. (MHz)	2452
Polarization	Vertical		

Test By :Akun Chung Temperature(℃):23 Humidity(%):69



		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	*	2452.00	96.63			99.70	-3.07	Average	123	267
2	*	2452.00	106.70			109.77	-3.07	Peak	123	267
3		2483.50	50.82	54.00	-3.18	53.85	-3.03	Average	123	69
4		2483.50	63.86	74.00	-10.14	66.89	-3.03	Peak	123	69
5		4904.00	35.95	54.00	-18.05	32.32	3.63	Average	100	151
6		4904.00	46.09	74.00	-27.91	42.46	3.63	Peak	100	151
7		7356.00	41.38	54.00	-12.62	32.30	9.08	Average	100	330
8		7356.00	51.38	74.00	-22.62	42.30	9.08	Peak	100	330

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).
Note 3:"*" is Peak / Average value of fundamental frequency

4 Test laboratory information

Established in 2012, ICC provides foremost EMC & RF Testing and advisory consultation services by our skilled engineers and technicians. Our services employ a wide variety of advanced edge test equipment and one of the widest certification extents in the business.

International Certification Corp (EMC and Wireless Communication Laboratory), it is our definitive objective is to institute long term, trust-based associations with our clients. The expectation we set up with our clients is based on outstanding service, practical expertise and devotion to a certified value structure. Our passion is to grant our clients with best EMC / RF services by oriented knowledgeable and accommodating staff.

Our Test sites are located at Linkou District and Kwei Shan District. Location map can be found on our website http://www.icertifi.com.tw.

Linkou	**Kwei Shan**	**Kwei Shan Site II**
Tel: 886-2-2601-1640	Tel: 886-3-271-8666	Tel: 886-3-271-8640
No. 30-2, Ding Fwu Tsuen, Lin Kou District, New Taipei City, Taiwan, R.O.C.	No. 3-1, Lane 6, Wen San 3rd St., Kwei Shan District, Tao Yuan City 333, Taiwan, R.O.C.	No. 14-1, Lane 19, Wen San 3rd St., Kwei Shan District, Tao Yuan City 333, Taiwan, R.O.C.

If you have any suggestion, please feel free to contact us as below information.

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Email: ICC_Service@icertifi.com.tw

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