



# **FCC Co-Location Test Report**

FCC ID	:	MXF-W1700K
Equipment	:	Wi-Fi 7 Router
Model No.	:	W1700K
Brand Name	:	Q Fiber
Applicant	:	Gemtek Technology Co., Ltd.
Address	:	No. 15-1 Zhonghua Road, Hsinchu Industrial Park, Hukou, Hsinchu, Taiwan, 30352.
Standard	:	47 CFR FCC Part 15.247 47 CFR FCC Part 15.407
<b>Received Date</b>	:	Jun. 27, 2023
Tested Date	:	Jul. 22 ~ Aug. 11, 2023

We, International Certification Corporation, 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 shall not be reproduced except in full without the written approval of our laboratory.

Reviewed by:

Approved by:

Along Chew/ Assistant Manager Gary Chang / Manager



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Appendix A. Unwanted Emissions Into Restricted Frequency Bands



# **Release Record**

Report No.	Version	Description	Issued Date
FR362704CO	Rev. 01	Initial issue	Sep. 19, 2023



# **Summary of Test Results**

FCC Rules	Test Items	Measured	Result
15.247(d)			
15.407(b)	Radiated Emissions	[dBuV/m at 3m]: 31.94MHz 36.83 (Margin -3.17dB) - PK	Pass
15.209			

#### 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

### 1.1.1 Specification of the Equipment under Test (EUT)

WLAN	
Operating Frequency	802.11b/g/n/ax/be: 2412 MHz ~ 2462 MHz 802.11a/n/ac/ax/be: 5180 MHz ~ 5240 MHz, 5745 ~ 5825 MHz, 5925 MHz ~ 6425 MHz; 6425 MHz ~ 6525 MHz; 6525 MHz ~ 6875 MHz; 6875 MHz ~ 7125 MHz
Modulation Type	802.11b: DSSS (DBPSK / DQPSK / CCK) 802.11a/g/n/ac/ax/be: OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM / 1024QAM / 4096QAM)
вт	
Operating Frequency	2402 MHz ~ 2480 MHz
Modulaton Type	Bluetooth LE: GFSK



### 1.1.2 Antenna Details

### WiFi 2.4G / 5G

Ant. No.	Brand Model		Туре	Connector	Operating Frequencies (MHz) / Antenna Gain (dBi)		
NO.					2400~2483.5	5150~5250	5725~5850
1	Gemtek	WAPE-269BE_Dual_Ant1	PIFA	UFL	1.13	2.45	1.32
2	Gemtek	WAPE-269BE_Dual_Ant2	PIFA	UFL	1.49	3.28	1.57
3	Gemtek	WAPE-269BE_Dual_Ant3	PIFA	UFL	1.67	3.66	2.9
4	Gemtek	WAPE-269BE_Dual_Ant4	PIFA	UFL	1.69	2.9	3.6

#### WiFi 6G

Ant.	Brand Model		Туре	Connector	Operating Frequencies (MHz) / Gain (dBi)			
No.	Dialia	moder	туре	Connector	5925~6425	6425~6525	6525~6875	6875~7125
1	Gemtek	WAPE-269BE_6E_Ant1	PIFA	UFL	1.06	1.01	1.22	1.09
2	Gemtek	WAPE-269BE_6E_Ant2	PIFA	UFL	1.85	2.46	2.59	1.97
3	Gemtek	WAPE-269BE_6E_Ant3	PIFA	UFL	2.9	2.01	2.76	2.71
4	Gemtek	WAPE-269BE_6E_Ant4	PIFA	UFL	2.39	2.69	3.3	1.46

BLE

Α	nt. No.	Туре	Connector	Gain (dBi)
	1	PIFA	NA	2.94

### **1.1.3** Power Supply Type of Equipment under Test (EUT)

Power Supply Type	12Vdc from adapter
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# 1.2 The Equipment List

Test Item	Radiated Emission below 1GHz						
Test Site	966 chamber1 / (03Cl	H01-WS)					
Tested Date	Aug. 02, 2023						
Instrument	Brand	Model No.	Serial No.	Calibration Date	Calibration Until		
Receiver	R&S	ESR3	101657	Mar. 03, 2023	Mar. 02, 2024		
Loop Antenna	R&S	HFH2-Z2	100330	Nov. 01, 2022	Oct. 31, 2023		
Bilog Antenna	SCHWARZBECK	VULB9168	VULB9168-522	Jul. 31, 2023	Jul. 30, 2024		
Preamplifier	EMC	EMC02325	980225	Jun. 28, 2023	Jun. 27, 2024		
Loop Antenna Cable	KOAX KABEL	101354-BW	101354-BW	Oct. 04, 2022	Oct. 03, 2023		
LF cable 3M	Woken	CFD400NL-LW	CFD400NL-001	Oct. 04, 2022	Oct. 03, 2023		
LF cable 11M	EMC	EMCCFD400-NW-N W-11000	200801	Oct. 04, 2022	Oct. 03, 2023		
LF cable 1M	EMC	EMCCFD400-NM-N M-1000	160502	Oct. 04, 2022	Oct. 03, 2023		
Measurement Software	AUDIX	e3	6.120210g	NA	NA		
Note: Calibration Inter	val of instruments liste	d above is one year.					

Test Item	Radiated Emission above 1GHz						
Test Site	966 chamber1 / (03Cl	⊣01-WS)					
Tested Date	Jul. 22 ~ Jul. 24, 2023						
Instrument	Brand	Model No.	Serial No.	Calibration Date	Calibration Until		
Spectrum Analyzer	R&S	FSV40	101498	Nov. 21, 2022	Nov. 20, 2023		
Horn Antenna 1G-18G	SCHWARZBECK	BBHA 9120 D	BBHA 9120 D 1096	Nov. 25, 2022	Nov. 24, 2023		
Horn Antenna 18G-40G	SCHWARZBECK	BBHA 9170	BBHA 9170517	Oct. 27, 2022	Oct. 26, 2023		
Preamplifier	EMC	EMC118A45SE	980898	Jul. 14, 2023	Jul. 13, 2024		
Preamplifier	EMC	EMC184045SE	980903	Jul. 17, 2023	Jul. 16, 2024		
RF Cable	EMC	EMC104-35M-35M- 8000	210920	Oct. 04, 2022	Oct. 03, 2023		
RF Cable	EMC	EMC104-35M-35M- 3000	210922	Oct. 04, 2022	Oct. 03, 2023		
HIGHPASS FILTER 7.5-18G	warison	WFIL-H7500-18000 F	WRIA9FWC2B2	Oct. 06, 2022	Oct. 05, 2023		
Attenuator	Pasternack	PE7005-10	10-1	Oct. 06, 2022	Oct. 05, 2023		
Measurement Software	AUDIX	e3	6.120210g	NA	NA		



Test Item	RF Conducted				
Test Site	(TH01-WS)				
Tested Date	Aug. 11, 2023				
Instrument	Brand	Model No.	Serial No.	Calibration Date	Calibration Until
Spectrum Analyzer	R&S	FSV40	101910	Apr. 14, 2023	Apr. 13, 2024
Power Meter	Anritsu	ML2495A	1241002	Nov. 23, 2022	Nov. 22, 2023
Power Sensor	Anritsu	MA2411B	1207366	Nov. 23, 2022	Nov. 22, 2023



### 1.3 Test Standards

47 CFR FCC Part 15.247 47 CFR FCC Part 15.407 ANSI C63.10-2013

### **1.4** Reference Guidance

FCC KDB 558074 D01 15.247 Meas Guidance v05r02 FCC KDB 662911 D01 Multiple Transmitter Output v02r01 FCC KDB 412172 D01 Determining ERP and EIRP v01r01 FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01

### **1.5** Deviation from Test Standard and Measurement Procedure

None

### **1.6 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
Unwanted Emission ≤ 1GHz	±3.41 dB
Unwanted Emission > 1GHz	±4.59 dB



# 2 Test Configuration

# 2.1 Testing Facility

Test Laboratory	International Certification Corporation
Test Site	03CH01-WS, TH01-WS
Address of Test Site	No.3-1, Lane 6, Wen San 3rd St., Kwei Shan Dist., Tao Yuan City 33381, Taiwan (R.O.C.)
ECC Designation No :	T\\//2722

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
Unwanted Emissions	Test Mode1: 2.4G 11be EHT20 CH6 + 5G 11a CH149 + 6G 11be EHT320 CH31 Test Mode2: BLE CH39 + 5G 11a CH157 + 6G 11be EHT320 CH31
Conducted Emissions	Test Mode1: 2.4G 11be EHT20 CH6 + 5G 11a CH149 + 6G 11be EHT320 CH31
NOTE: The selected chan	nel is the maximum power channel of Wi-Fi mode + BT.



# **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.

	Un-restricted band emissions above 1GHz Limit
Operating Band	Limit
5.15 - 5.25 GHz	e.i.r.p27 dBm [68.2 dBuV/m@3m]
5.25 - 5.35 GHz	e.i.r.p27 dBm [68.2 dBuV/m@3m]
5.47 - 5.725 GHz	e.i.r.p27 dBm [68.2 dBuV/m@3m]
5.725 - 5.850 GHz	All emissions shall be limited to a level of $-27$ dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.
performed in the n equipment. When be extrapolated to	ay be performed at a distance other than the limit distance provided they are not ear field and the emissions to be measured can be detected by the measurement performing measurements at a distance other than that specified, the results shall the specified distance using an extrapolation factor of 20 dB/decade (inverse of field-strength measurements, inverse of linear distance-squared for power-density

measurements).



	Un-restricted band emissions above	1GHz Limit
Operating Band	PK Limit	AV Limit
5.925 – 7.125 GHz	e.i.r.p7 dBm [88.2 dBuV/m@3m]	e.i.r.p27 dBm [68.2 dBuV/m@3m]
performed in the ne equipment. When be extrapolated to	the specified distance using an extrapola	ed can be detected by the measurement other than that specified, the results shall

### 3.1.2 Test Procedures

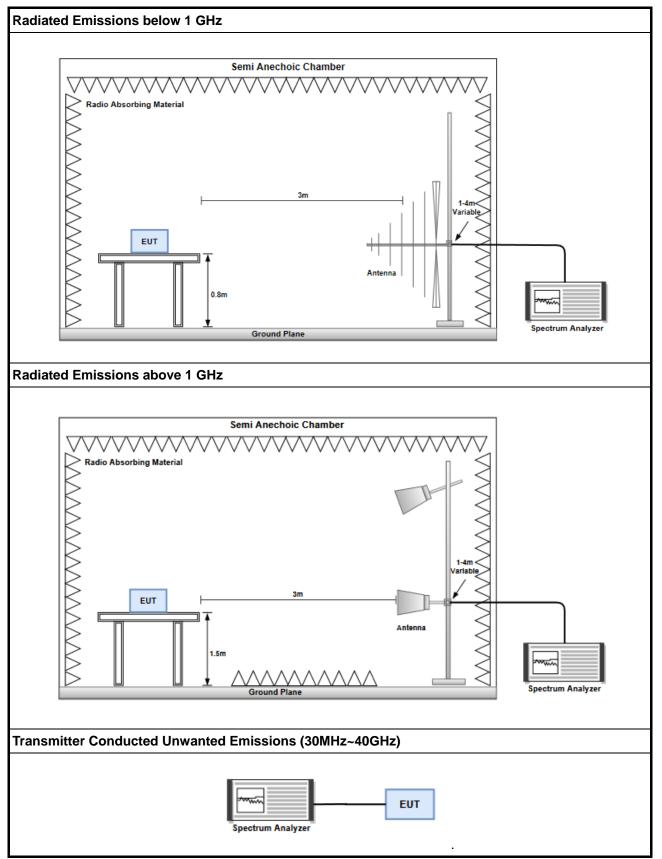
- Measurement is made at a semi-anechoic chamber that incorporates a turntable allowing a EUT rotation of 360°. A continuously-rotating, remotely-controlled turntable is installed at the test site to support the EUT and facilitate determination of the direction of maximum radiation for each EUT emission 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.
- 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





### 3.1.4 Test Results

Refer to Appendix A.



# 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 Corporation (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 <u>http://www.icertifi.com.tw</u>.

#### Linkou

Tel: 886-2-2601-1640 No.30-2, Ding Fwu Tsuen, Lin Kou District, New Taipei City, Taiwan (R.O.C.)

#### Kwei Shan

Tel: 886-3-271-8666 No.3-1, Lane 6, Wen San 3rd St., Kwei Shan Dist., Tao Yuan City 33381, Taiwan (R.O.C.) No.2-1, Lane 6, Wen San 3rd St., Kwei Shan Dist., Tao Yuan City 33381, Taiwan (R.O.C.)

#### Kwei Shan Site II

Tel: 886-3-271-8640 No.14-1, Lane 19, Wen San 3rd St., Kwei Shan Dist., Tao Yuan City 33381, Taiwan (R.O.C.)

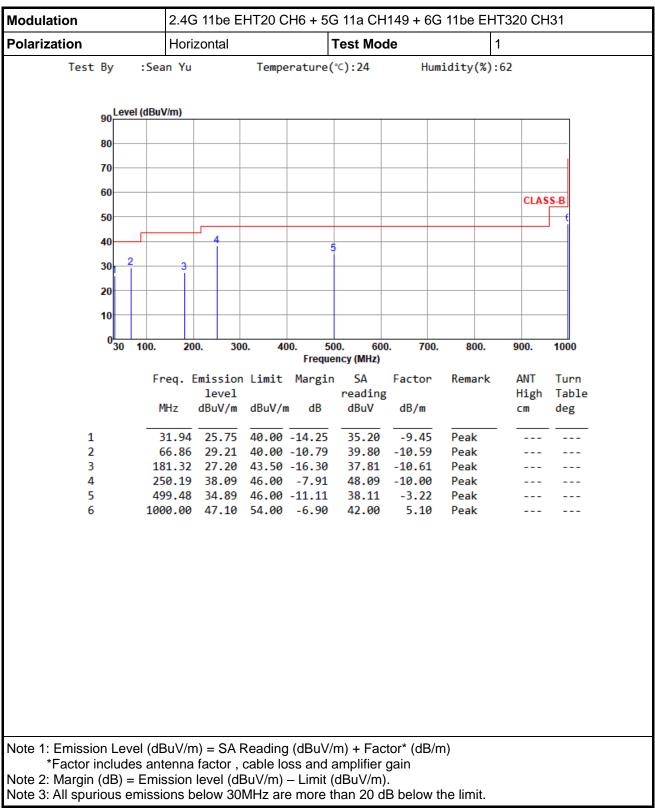
If you have any suggestion, please feel free to contact us as below information.

Tel: 886-3-271-8666 Fax: 886-3-318-0345 Email: ICC\_Service@icertifi.com.tw

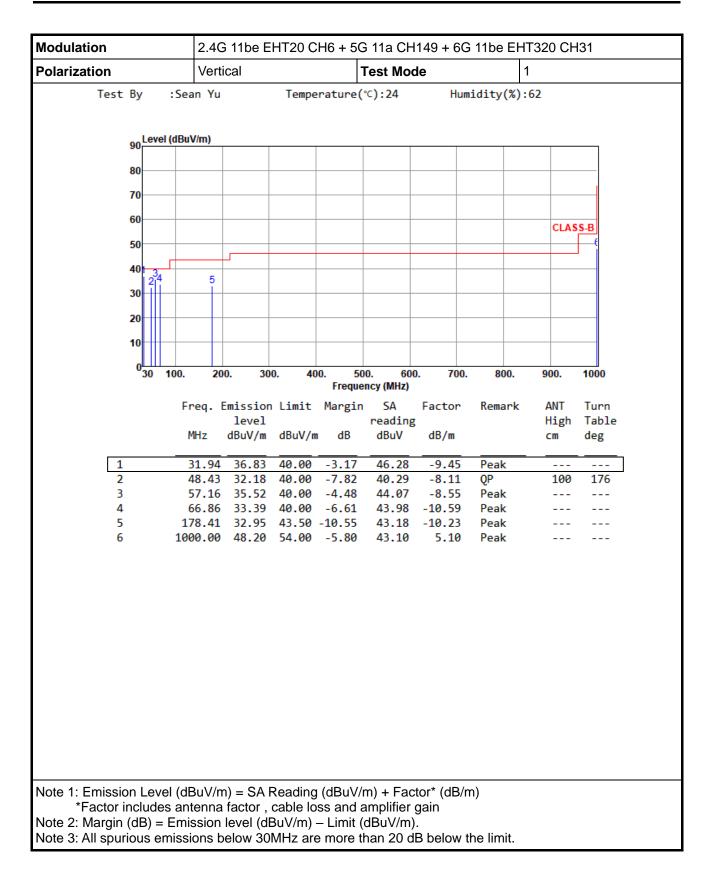
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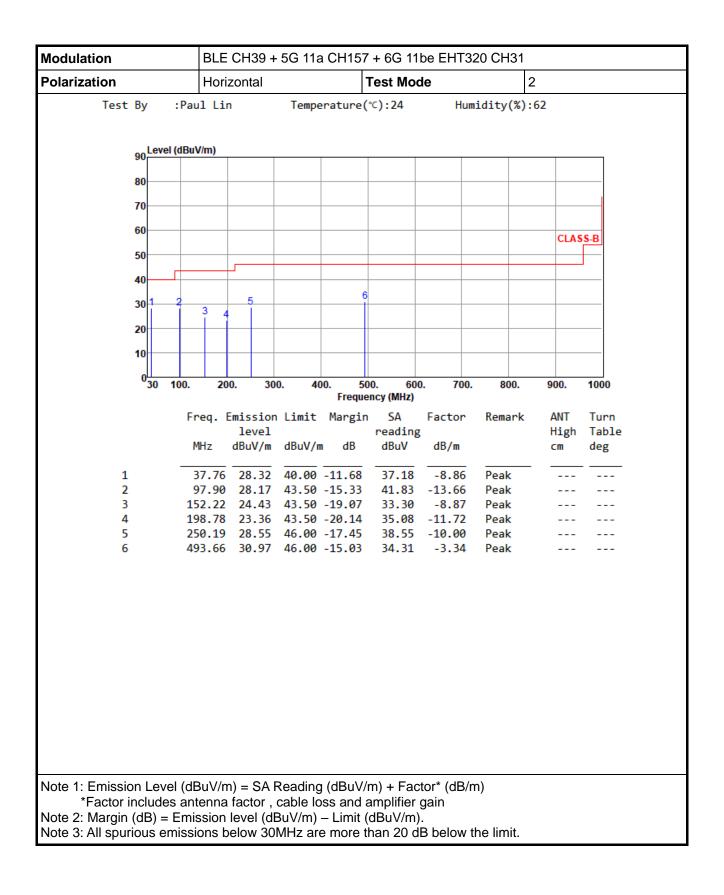
### Unwanted Emissions (Below 1GHz)



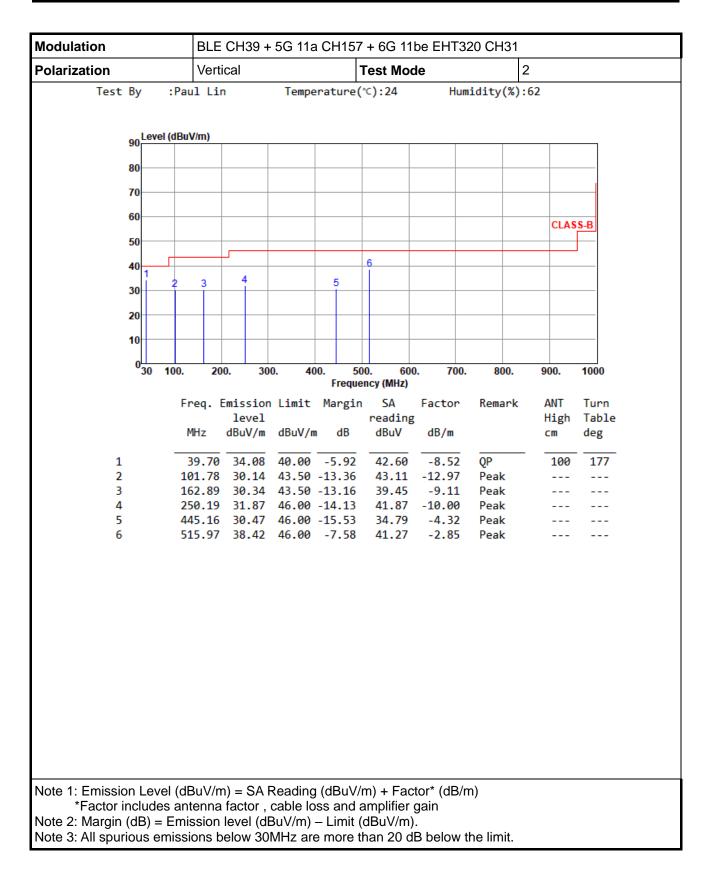






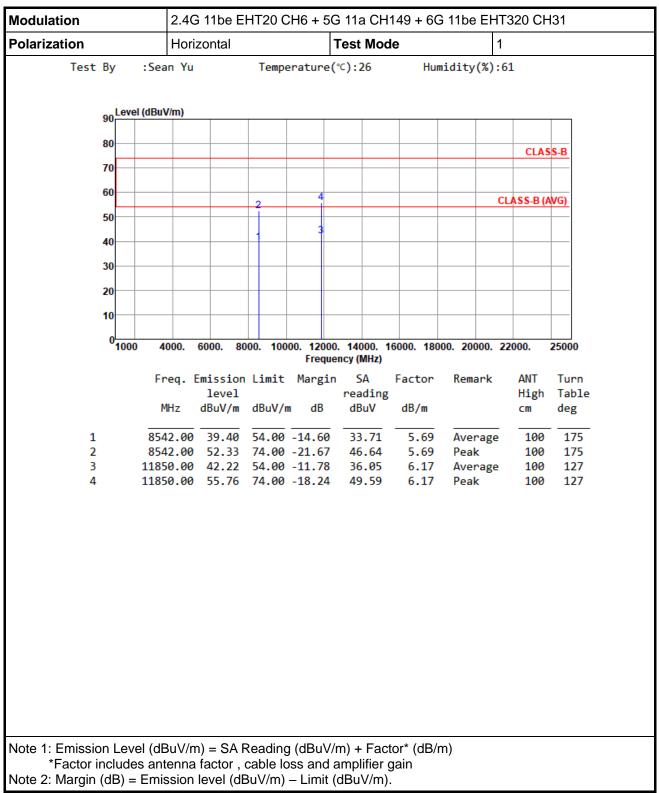








### **Unwanted Emissions (Above 1GHz)**





		2.40 1	.4G 11be EHT20 CH6 + 5G 11a CH149 + 6G 11be EHT320 CH31										
olarization		Vertical			Test Mode 1								
Test By	:Sean			Tempe	erature	(℃):2	26		Humid	ity(	<b>%):6</b> 1	L	
90 Lev	el (dBuV/ı	m)											
80												CI 46	
70												CLAS	<u>S-B</u>
60													
				2	4						CL	ASS-B (A	VG)
50					3								
40													
30													
20													
10													
0 <mark>000000</mark>	0 400	00. 60	00 00	00 100	00. 1200	0 140	00 1	6000	10000	2000	0 22	000	25000
100	0 400	<i>i</i> 0. 00	00. 00	00. 100		ency (I			10000.	2000	0. 22	000.	23000
			level		Margi	rea	ding	Facto		Reman	۰k	ANT High	Turn Table
	MH	z at	suv/m	dBuV/n	ı dB	aB	uV	dB/ı	m			CM	deg
1 2					-14.66		.65 .83	5.		Avera Peak	-	100 100	176 176
3					-11.66		.05	5. 6.		Avera		100	241
4	11850	.00 5	55.10	74.00	-18.90	48	.93	6.3		Peak		100	241



