



# **FCC Co-Location Test Report**

FCC ID	:	MXF-W1701K
Equipment	:	Tri-Band AP
Model No.	:	W1701K
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	:	Aug. 10 ~ Aug. 22, 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



# **Table of Contents**

1	GENERAL DESCRIPTION	5
1.1	Information	
1.2	The Equipment List	7
1.3	Test Standards	9
1.4	Reference Guidance	9
1.5	Deviation from Test Standard and Measurement Procedure	-
1.6	Measurement Uncertainty	
2	TEST CONFIGURATION	10
2.1	Testing Facility	10
2.2	The Worst Test Modes and Channel Details	10
3	TRANSMITTER TEST RESULTS	11
3.1	Unwanted Emissions into Restricted Frequency Bands	11
4	TEST LABORATORY INFORMATION	15

Appendix A. Unwanted Emissions Into Restricted Frequency Bands



# **Release Record**

Report No.	Version	Description	Issued Date
FR362701CO	Rev. 01	Initial issue	Sep. 25, 2023



# **Summary of Test Results**

FCC Rules	Test Items	Measured	Result
15.247(d)			
15.407(b)	Radiated Emissions	[dBuV/m at 3m]: 5265.00MHz 53.51 (Margin -0.49dB) - AV	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	<i>N</i> LAN						
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 Type802.11b: DSSS (DBPSK / DQPSK / CCK) 802.11a/g/n/ac/ax/be: OFDM (BPSK / QPSK / 16QAM / 64QAM / 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	WREM-129AX_Dual_Ant1	PIFA	NA	1.01	1.21	1.43	
2	Gemtek	WREM-129AX_Dual_Ant2	PIFA	UFL	1.06	1.17	2.06	
3	Gemtek	WREM-129AX_Dual_Ant3	PIFA	UFL	1.09	1.39	2.81	
4	Gemtek	WREM-129AX_Dual_Ant4	PIFA	UFL	1.03	2.58	1.37	

#### WiFi 6G

Ant.	Brand	Model	Туре	Connector	Operating Frequencies (MHz) / Gain (dBi)			
No.					5925~6425	6425~6525	6525~6875	6875~7125
1	Gemtek	WREM-129AX_6E_Ant1	PIFA	UFL	1.39	1.29	2.84	1.02
2	Gemtek	WREM-129AX_6E_Ant2	PIFA	UFL	4.01	1.25	2.29	2.91
3	Gemtek	WREM-129AX_6E_Ant3	PIFA	UFL	1.03	1.22	1.35	3.03
4	Gemtek	WREM-129AX_6E_Ant4	PIFA	UFL	1.08	1.09	1.68	1.06
5	Gemtek	WREM-129AX_6E_Ant5	PIFA	UFL	4.41	4.49	4.57	4.6

BLE

Ant. No.	Туре	Connector	Gain (dBi)
1	PIFA	NA	2.4

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

Power Supply Type	12Vdc from Internal Power source
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# 1.2 The Equipment List

Test Item	Radiated Emission						
Test Site	966 chamber1 / (03CH01-WS) Aug. 10 ~ Aug. 21, 2023						
Tested Date							
Instrument	Brand	Model No.	Serial No.	Calibration Date	Calibration Until		
Receiver	R&S	ESR3	101657	Mar. 03, 2023	Mar. 02, 2024		
Spectrum Analyzer	R&S	FSV40	101498	Nov. 21, 2022	Nov. 20, 2023		
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		
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	EMC02325	980225	Jun. 28, 2023	Jun. 27, 2024		
Preamplifier	EMC	EMC118A45SE	980898	Jul. 14, 2023	Jul. 13, 2024		
Preamplifier	EMC	EMC184045SE	980903	Jul. 17, 2023	Jul. 16, 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		
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 3.1-18G	WHK	WHK3.1/18G-10SS	39	Oct. 06, 2022	Oct. 05, 2023		
HIGHPASS FILTER 7-18G	K&L	11SH10-7000/T1800 0-O/OP	18	Oct. 06, 2022	Oct. 05, 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		



H01-WS)				
g. 22, 2023				
Brand	Model No.	Serial No.	Calibration Date	Calibration Until
R&S	FSV40	101910	Apr. 14, 2023	Apr. 13, 2024
Anritsu	ML2495A	1241002	Nov. 23, 2022	Nov. 22, 2023
Anritsu	MA2411B	1207366	Nov. 23, 2022	Nov. 22, 2023
Pasternack	PE7005-10	10-2	Oct. 06, 2022	Oct. 05, 2023
	Brand R&S Anritsu Anritsu	BrandModel No.R&SFSV40AnritsuML2495AAnritsuMA2411B	BrandModel No.Serial No.R&SFSV40101910AnritsuML2495A1241002AnritsuMA2411B1207366	Brand Model No. Serial No. Calibration Date   R&S FSV40 101910 Apr. 14, 2023   Anritsu ML2495A 1241002 Nov. 23, 2022   Anritsu MA2411B 1207366 Nov. 23, 2022



## 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 :	TW/2732	

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 11g CH06 + 5G 11be EHT20 CH149 + 6G 11be EHT320 CH31 Test Mode2: BLE CH0 + 5G 11be EHT20 CH149 + 6G 11be EHT320 CH31	
Conducted Emissions	Test Mode1: 2.4G 11g CH06 + 5G 11be EHT20 CH149 + 6G 11be EHT320 CH31	
NOTE: The selected channel 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		
<b>Operating Band</b>	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 ba edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.	
Note 1: Measurements may be performed at a distance other than the limit distance provided they are not performed in the near field and the emissions to be measured can be detected by the measurement equipment. When performing measurements at a distance other than that specified, the results shal be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse of linear distance for 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]		
Note 1: Measurements may be performed at a distance other than the limit distance provided they are not performed in the near field and the emissions to be measured can be detected by the measurement equipment. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse of linear distance for field-strength measurements, inverse of linear distance-squared for power-density measurements).				

#### 3.1.2 Test Procedures

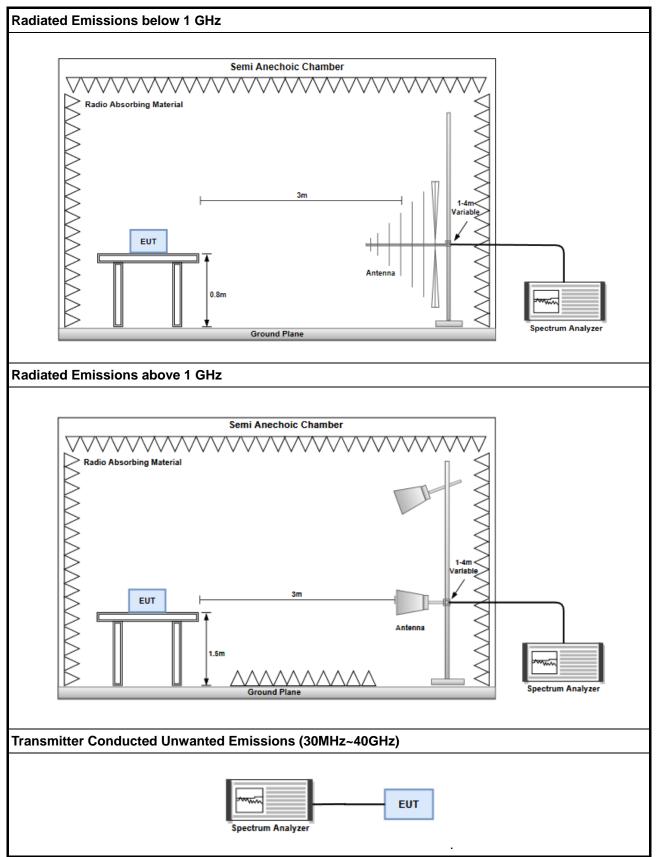
- Measurement is made at a semi-anechoic chamber that incorporates a turntable allowing a EUT rotation of 360°. A continuously-rotating, remotely-controlled turntable is installed at the test site to support the EUT and facilitate determination of the direction of maximum radiation for each EUT emission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

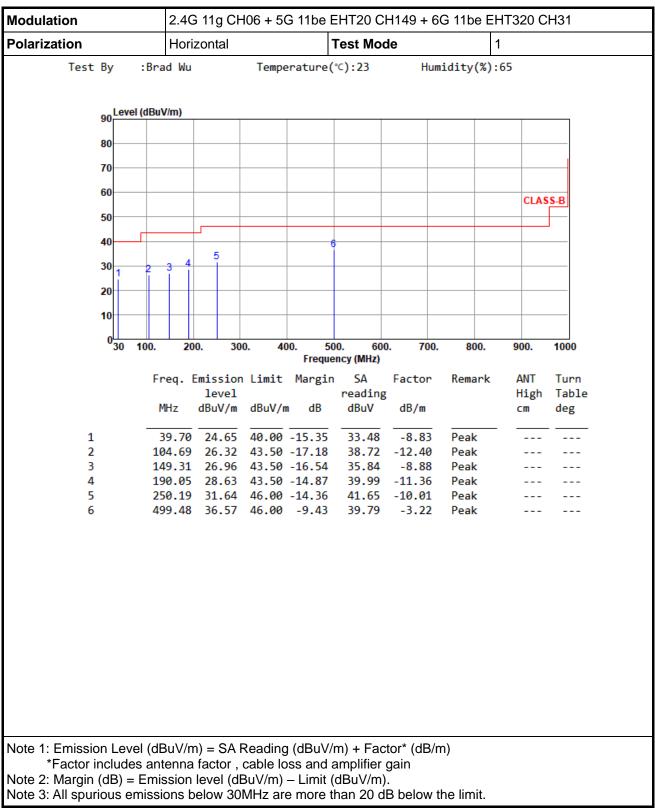
If you have any suggestion, please feel free to contact us as below information.

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

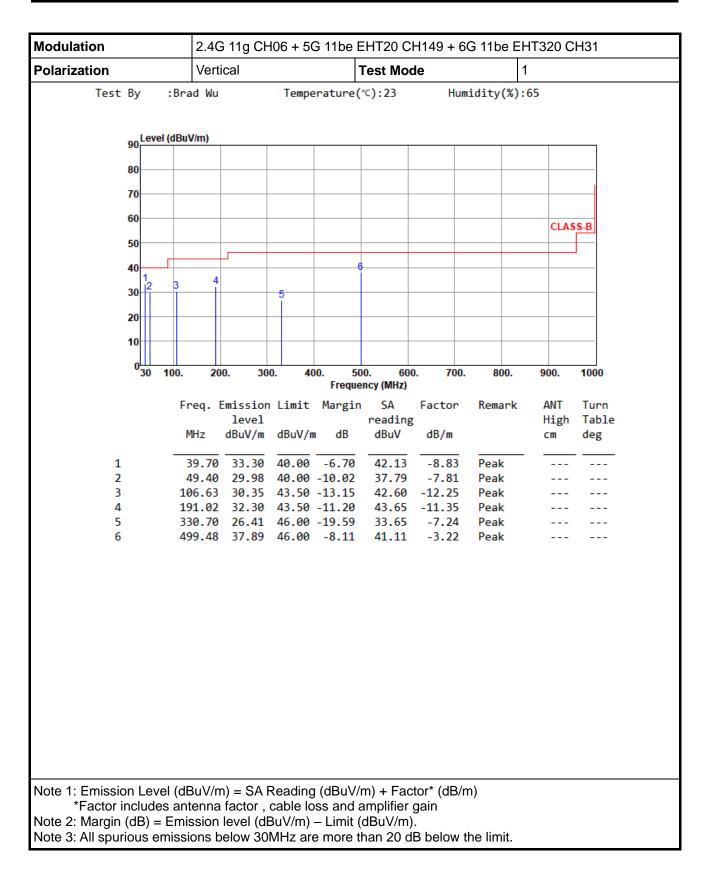
—END—



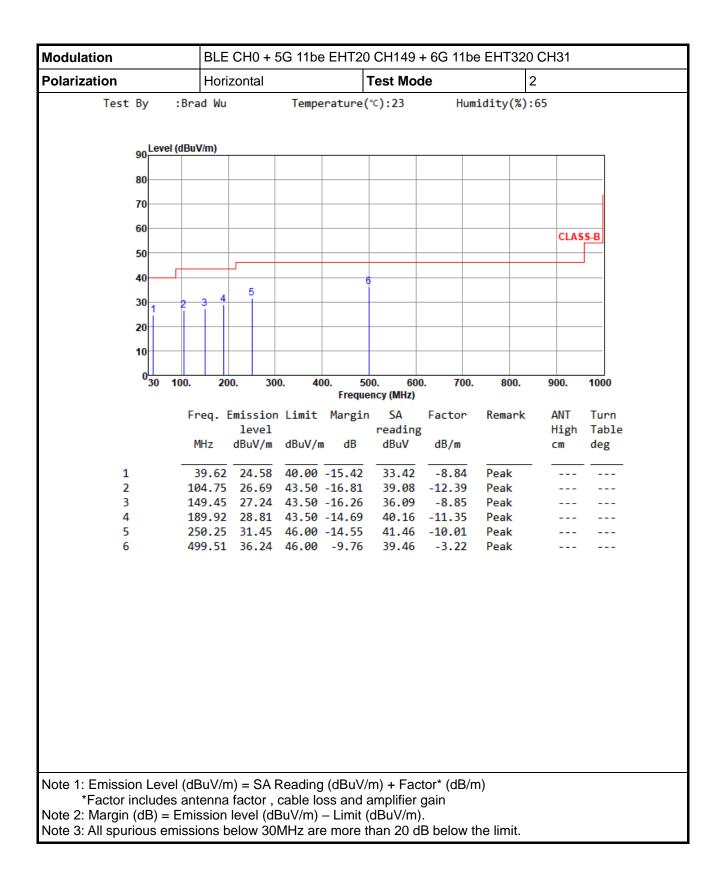
### Unwanted Emissions (Below 1GHz)



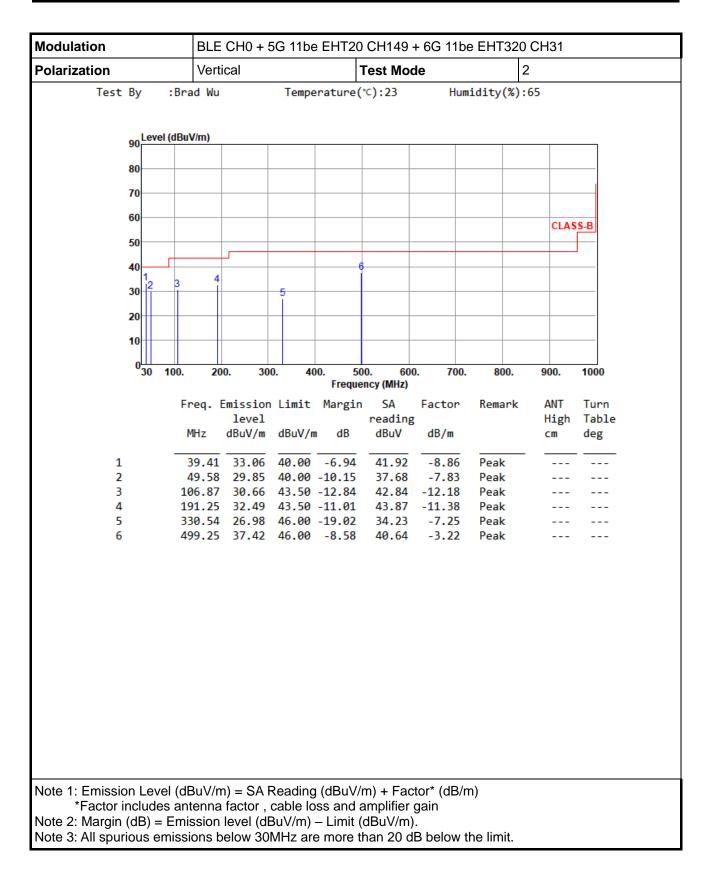














### Unwanted Emissions (Above 1GHz)

