





FCC Co-Location Test Report

FCC ID : SQG-SONAIF573

Equipment : Sona IF573 802.11ax Wi-Fi 6E Module with

Bluetooth 5.4

Model No. : Sona IF573

Brand Name : Laird Connectivity

Applicant : Laird Connectivity LLC

Address : W66N220 Commerce Court, Cedarburg, WI

53012 United States Of America

Standard : 47 CFR FCC Part 15.247

47 CFR FCC Part 15.407

Received Date : Jan. 17, 2023

Tested Date : Apr. 17 ~ Apr. 27, 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 Chen Assistant Manager Gary Chang / Mana

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Appendix A. Unwanted Emissions Into Restricted Frequency Bands



Release Record

Report No.	Version	Description	Issued Date
FR311701CO	Rev. 01	Initial issue	Jul. 28, 2023

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Summary of Test Results

FCC Rules	Test Items	Measured	Result
15.247(d)			
15.407(b)	Radiated Emissions	[dBuV/m at 3m]: 36.79MHz 36.95 (Margin -3.05dB) - QP	Pass
15.209		(s. g 5.0042) Q.	

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.

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1 General Description

1.1 Information

1.1.1 Product Details

The four configurations of the EUT are shown on the following:

Model Name	Part No.	Description
	453-00117	Module, Sona IF573, MIMO, MHF4
Conc IEE72	453-00118	Module, Sona IF573, MIMO, Trace Pin
Sona IF573	453-00119	Module, Sona IF573, MIMO, M.2, Key E, SDIO, UART
	453-00120	Module, Sona IF573, MIMO, M.2, Key E, PCIe, UART

1.1.2 Specification of the Equipment under Test (EUT)

WLAN	WLAN				
Operating Frequency	802.11b/g/n/ax: 2412 MHz ~ 2462 MHz 802.11a/n/ac/ax: 5180 MHz ~ 5240 MHz; 5260 MHz ~ 5320 MHz; 5500 MHz ~ 5720 MHz, 5745 MHz ~ 5825 MHz 802.11a/ax: 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: OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM / 1024QAM)				
ВТ					
Operating Frequency	2402 MHz ~ 2480 MHz				
Modulaton Type	Bluetooth LE: GFSK Bluetooth BR(1Mbps): GFSK Bluetooth EDR (2Mbps): π/4-DQPSK Bluetooth EDR (3Mbps): 8-DPSK				

1.1.3 Antenna Details

Ant. No.	Manufacturer	Model	Part Number	Туре	Connector	Operating Frequencies / Gain (dBi)		
						2.4GHz	5GHz	6GHz
1	JOYMAX	TWX-100B RSAX-2001	NA	Dipole	RP-SMA	2	4	4
2	Laird	FlexMIMO 6E	EFD2471A3 S-10MH4L	PIFA	MHF4L	2.2	3.8	3.3
3	Laird	Mini NanoBlade Flex 6 GHz	EMF2471A 3S-10MH4L	PCB Dipole	MHF4L	2.4	4.4	5.2
4	Laird	FlexPIFA 6E	EFB2471A3 S-10MH4L	PIFA	MHF4L	2.2	3.9	3.8

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1.1.4 Power Supply Type of Equipment under Test (EUT)

Power Supply Type	3.3Vdc from host
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1.2 The Equipment List

Test Item	Radiated Emission					
Test Site	966 chamber1 / (03CH01-WS)					
Tested Date	Apr. 17 ~ Apr. 27, 2023					
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	Aug. 03, 2022	Aug. 02, 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	EMC02325	980225	Jun. 28, 2022	Jun. 27, 2023	
Preamplifier	EMC	EMC118A45SE	980898	Jul. 16, 2022	Jul. 15, 2023	
Preamplifier	EMC	EMC184045SE	980903	Jul. 16, 2022	Jul. 15, 2023	
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 7.5-18G	warison	WFIL-H7500-18000 F	WRIA9FWC2B2	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	
LOWPASS FILTER	WI	WLKS5000-12SS	1	Oct. 06, 2022	Oct. 05, 2023	
HIGHPASS FILTER 3.1-18G	WHK	WHK3.1/18G-10SS	39	Oct. 06, 2022	Oct. 05, 2023	
Attenuator	woken	PE7013-10	10-1	Oct. 14, 2022	Oct. 13, 2023	
Measurement Software	AUDIX	e3	6.120210g	NA	NA	
Note: Calibration Inter	Note: Calibration Interval of instruments listed above is one year.					

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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		

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2 Test Configuration

2.1 Testing Facility

Test Laboratory International Certification Corporation				
Test Site	Test Site 03CH01-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.)			

FCC Designation No.: TW2732FCC site registration No.: 181692

➤ ISED#: 10807A

➤ CAB identifier: TW2732

2.2 The Worst Test Modes and Channel Details

Test item	Modulation Mode	Test Configuration
Unwanted Emissions	Mode 1: BLE 2Mbps 2440MHz + 5G 11ax HE20 5745MHz Mode 2: BLE 2Mbps 2440MHz + 6G 11ax HE80 6385MHz	

NOTE:

1. The selected channel is the maximum power channel of Wi-Fi & BT mode.

2. Test configurations are listed as below:

Configuration 1:

Laird part number: 453-00117 (SC module) with Dipole antenna (model: TWX-100BRSAX-2001)

Configuration 2:

Laird part number: 453-00117 (SC module) with PCB Dipole antenna (model: Mini NanoBlade Flex 6 GHz)

Configuration 3:

Laird part number: 453-00117 (SC module) with PIFA antenna (model: FlexPIFA 6E)

Configuration 4:

Laird part number: 453-00119 (ST M.2, SDIO Module) with Dipole antenna (model: TWX-100BRSAX-2001)

Configuration 5:

Laird part number: 453-00119 (ST M.2, SDIO Module) with PCB Dipole antenna (model: Mini NanoBlade Flex 6 GHz)

Configuration 6:

Laird part number: 453-00119 (ST M.2, SDIO Module) with PIFA antenna (model: FlexPIFA 6E)

Configuration 7:

Laird part number: 453-00120 (ST M.2, PCIe Module) with Dipole antenna (model: TWX-100BRSAX-2001)

Configuration 8:

Laird part number: 453-00120 (ST M.2, PCle Module) with PCB Dipole antenna (model: Mini NanoBlade Flex 6 GHz)

Configuration 9

Laird part number: 453-00120 (ST M.2, PCIe Module) with PIFA antenna (model: FlexPIFA 6E)

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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.						

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).

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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.

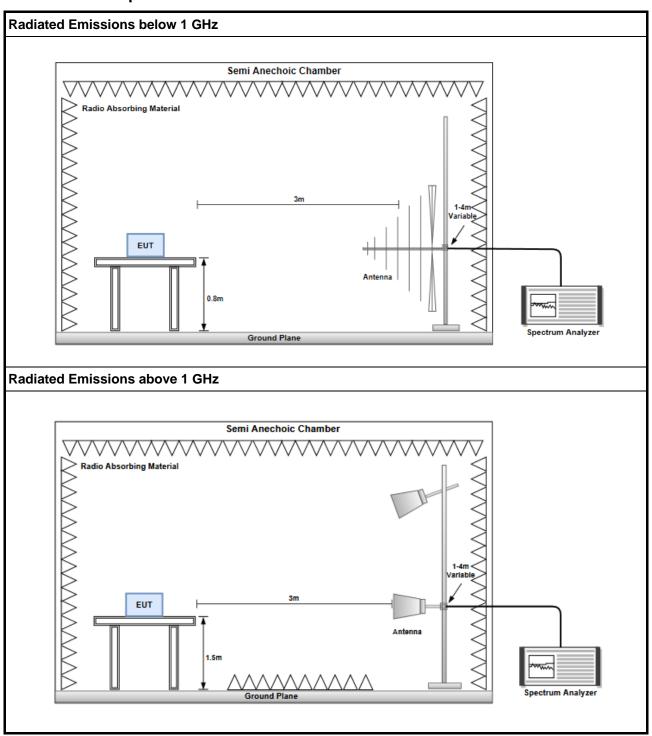
Note:

- 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.

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3.1.3 Test Setup



3.1.4 Test Results

Refer to Appendix A.

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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 http://www.icertifi.com.tw.

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

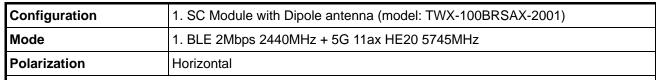
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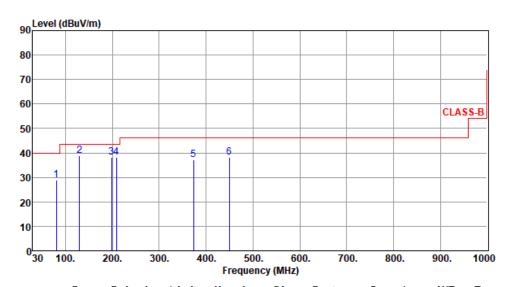


SC Module

Unwanted Emissions (Below 1GHz)



Test By :Brad Wu Temperature(°C):24 Humidity(%):64



	Freq.	Emission level	Limit	Margin	SA reading		Remark	ANT High	Turn Table
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m		cm	deg
1	80.44	28.86	40.00	-11.14	42.60	-13.74	Peak		
2	129.91	38.91	43.50	-4.59	49.23	-10.32	Peak		
3	198.78	38.32	43.50	-5.18	50.09	-11.77	Peak		
4	208.48	38.21	43.50	-5.29	50.15	-11.94	Peak		
5	373.38	37.14	46.00	-8.86	43.45	-6.31	Peak		
6	450.01	38.26	46.00	-7.74	42.48	-4.22	Peak		

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB/m)

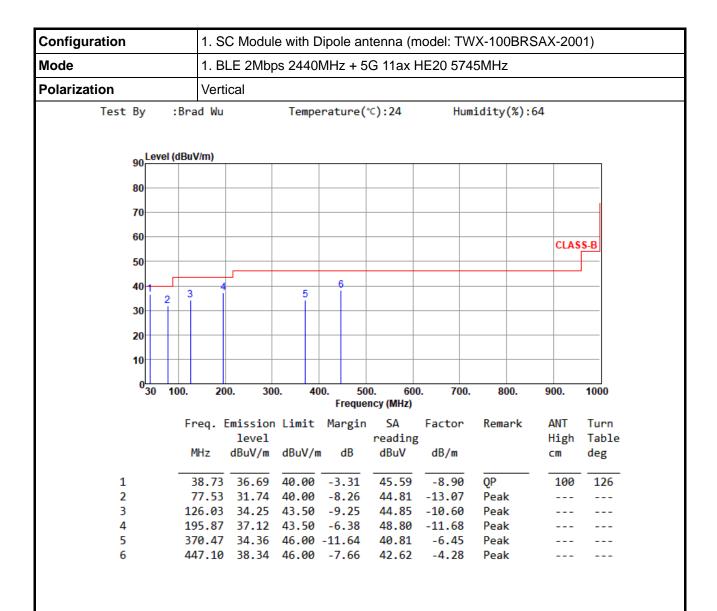
*Factor includes antenna factor, cable loss and amplifier gain

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.

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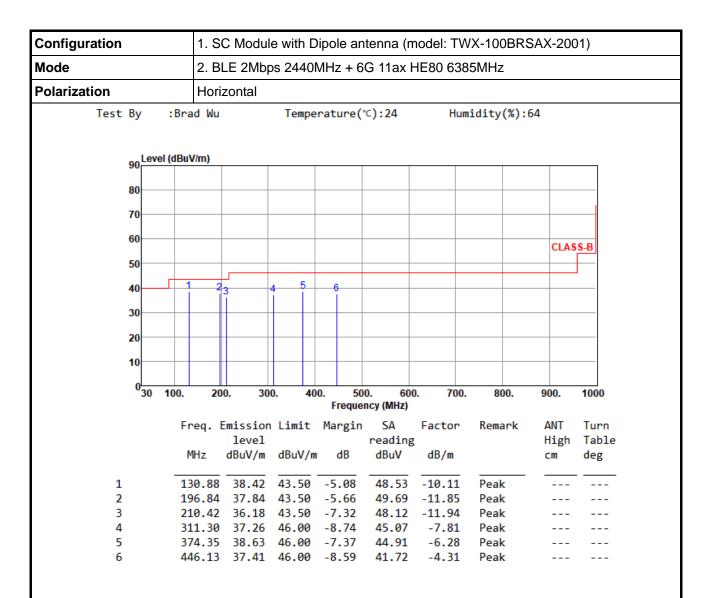
*Factor includes antenna factor, cable loss and amplifier gain

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.

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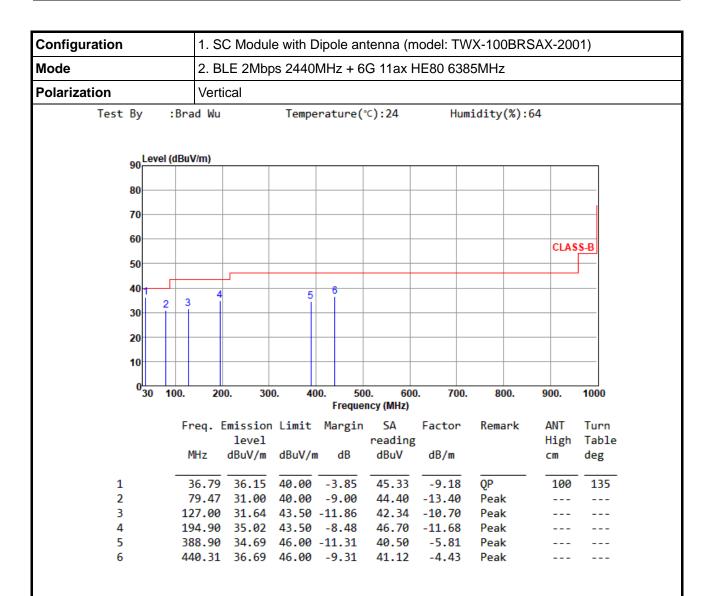
*Factor includes antenna factor, cable loss and amplifier gain

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.

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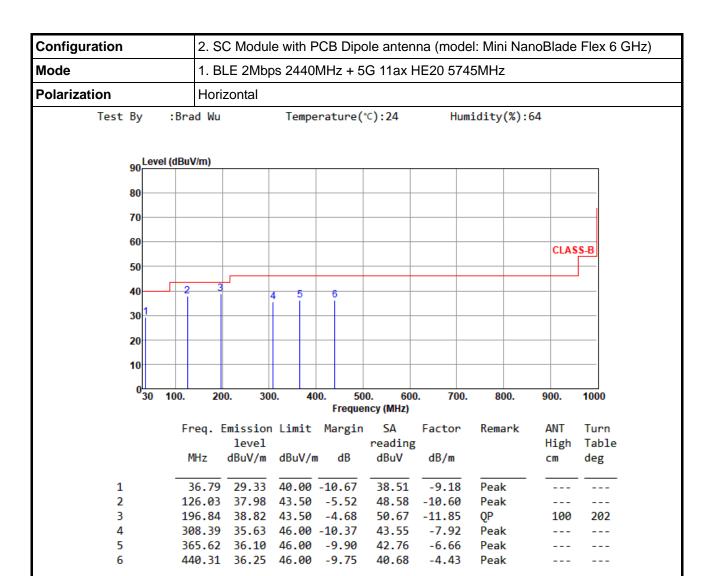
*Factor includes antenna factor, cable loss and amplifier gain

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.

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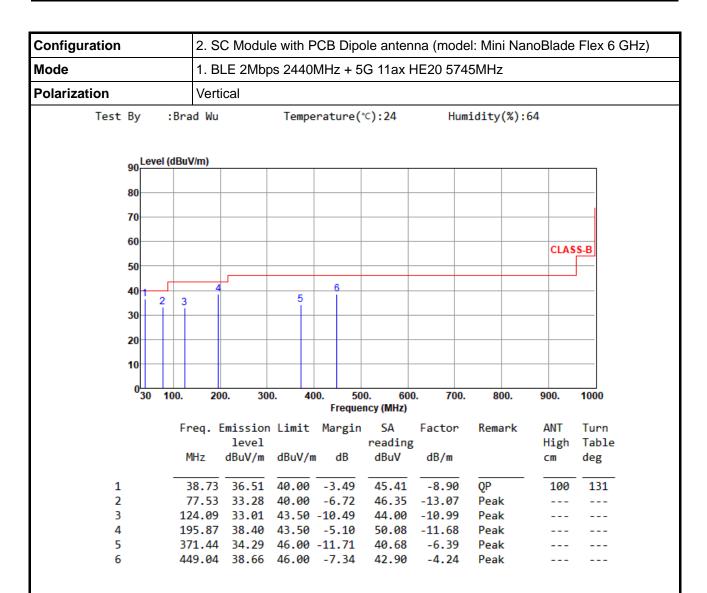
*Factor includes antenna factor, cable loss and amplifier gain

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.

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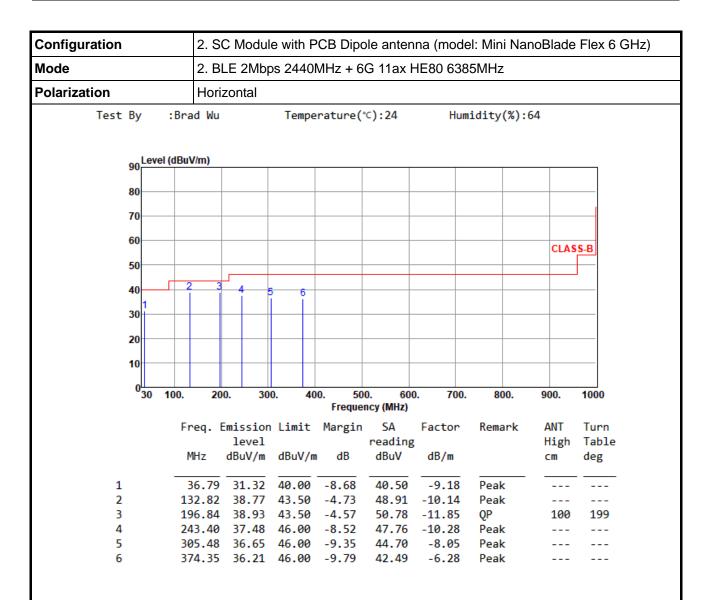
*Factor includes antenna factor, cable loss and amplifier gain

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.

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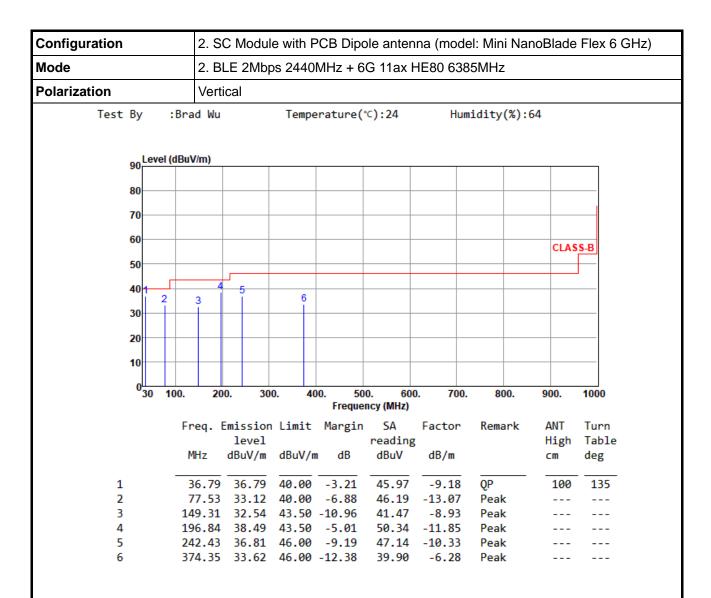
*Factor includes antenna factor, cable loss and amplifier gain

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.

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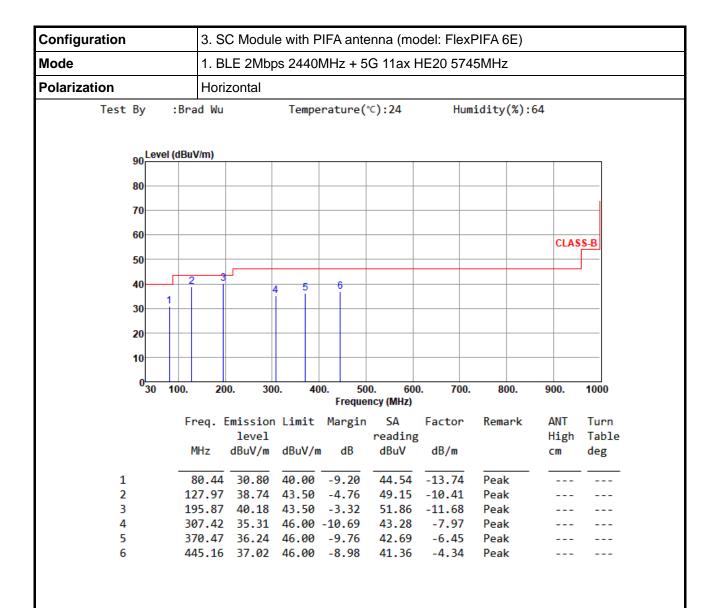
*Factor includes antenna factor, cable loss and amplifier gain

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.

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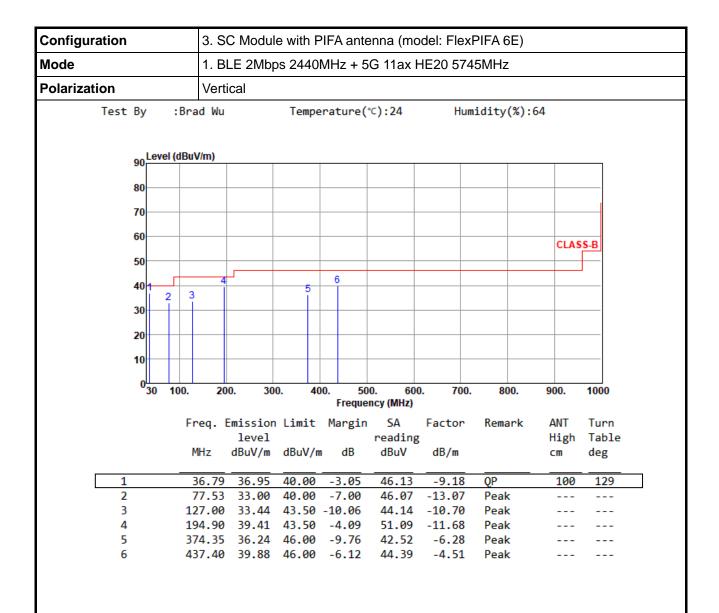
*Factor includes antenna factor, cable loss and amplifier gain

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.

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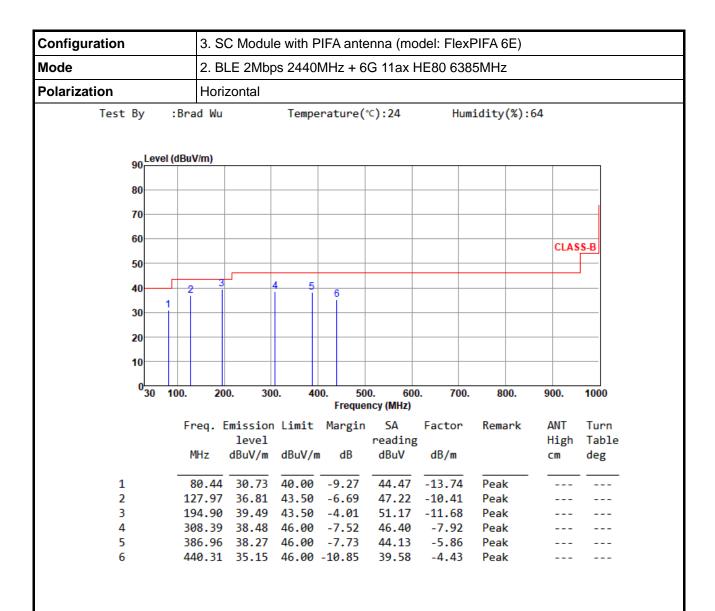
*Factor includes antenna factor, cable loss and amplifier gain

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.

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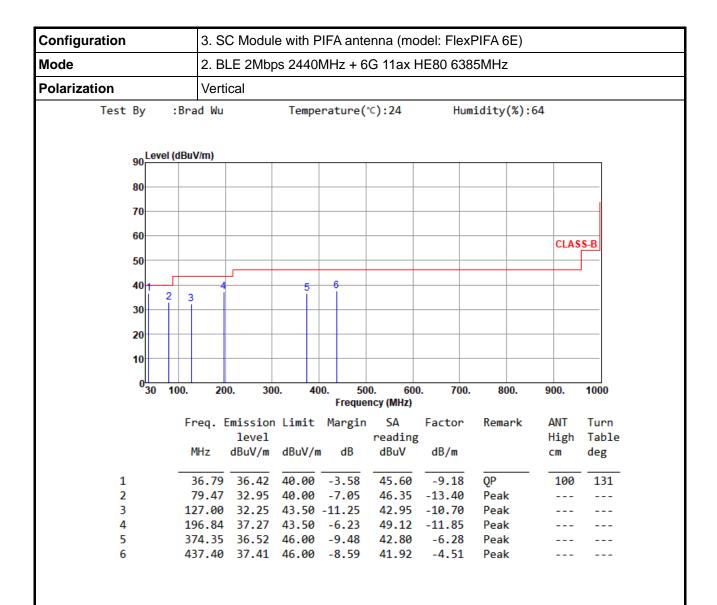
*Factor includes antenna factor, cable loss and amplifier gain

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.

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*Factor includes antenna factor, cable loss and amplifier gain

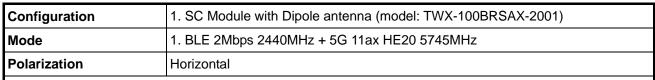
Note 2: Margin (dB) = Emission level (dBuV/m) - Limit (dBuV/m).

Note 3: All spurious emissions below 30MHz are more than 20 dB below the limit.

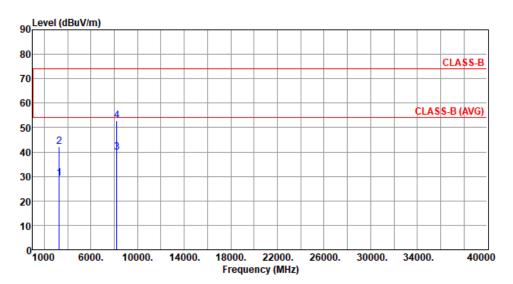
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Unwanted Emissions (Above 1GHz)



Test By :Brad Wu Temperature(°C):24 Humidity(%):62



	Freq.	Emission	Limit	Margin	SA	Factor	Remark	ANT	Turn
		level			reading			High	Table
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m		cm	deg
1	3265.00	29.33	54.00	-24.67	32.50	-3.17	Average	100	26
2	3265.00	42.19	74.00	-31.81	45.36	-3.17	Peak	100	26
3	8225.00	39.76	54.00	-14.24	34.51	5.25	Average	100	18
4	8225.00	52.88	74.00	-21.12	47.63	5.25	Peak	100	18

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB/m)

*Factor includes antenna factor, cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

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Configuration	1. SC Module	. SC Module with Dipole antenna (model: TWX-100BRSAX-2001)						
Mode	1. BLE 2Mbp	BLE 2Mbps 2440MHz + 5G 11ax HE20 5745MHz						
Polarization	Vertical							
Test By :Bra	ad Wu	Temper	rature(c):24	Н	umidity((%):62	
90 Level (dBu	V/m)							
80								ACCD
70							CI	ASS-B
60							CLASS-I	D (AVC)
50	4						CLASS-I	S (AVG)
40 2	3							
30								
20								
10								
0 1000 6	5000. 10000.	14000.	18000.	22000.	26000.	30000.	34000.	40000

	Freq.	Emission	Limit	Margin	SA	Factor	Remark	ANT	Turn
		level			reading			High	Table
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m		cm	deg
1	3265.00	29.26	54.00	-24.74	32.43	-3.17	Average	100	42
2	3265.00	41.77	74.00	-32.23	44.94	-3.17	Peak	100	42
3	8225.00	39.34	54.00	-14.66	34.09	5.25	Average	100	28
4	8225.00	52.61	74.00	-21.39	47.36	5.25	Peak	100	28

Frequency (MHz)

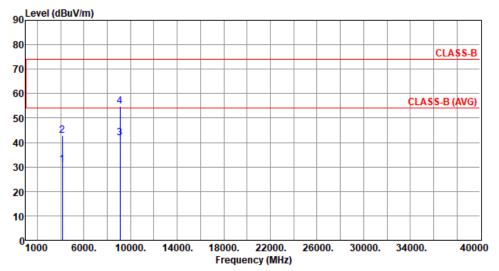
Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB/m) *Factor includes antenna factor, cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBuV/m) - Limit (dBuV/m).

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Configuration 1. SC Module with Dipole antenna (model: TWX-100BRSAX-2001)						
Mode	2. BLE 2Mbps 2440MHz + 6G 11ax HE80 6385MHz					
Polarization	Horizontal					



	Freq. MHz	Emission level dBuV/m		Ū	SA reading dBuV		Remark	ANT High cm	Turn Table deg
1	4145.00	30.78	54.00	-23.22	32.65	-1.87	Average	100	48
2	4145.00	42.90	74.00	-31.10	44.77	-1.87	Peak	100	48
3	9105.00	41.73	54.00	-12.27	35.61	6.12	Average	100	54
4	9105.00	54.96	74.00	-19.04	48.84	6.12	Peak	100	54

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB/m)

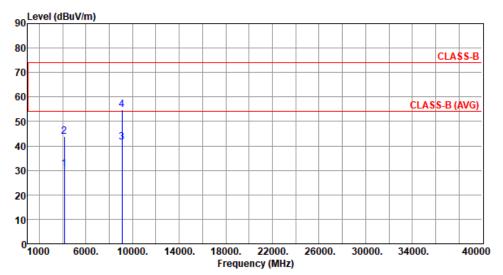
*Factor includes antenna factor, cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

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Configuration	1. SC Module with Dipole antenna (model: TWX-100BRSAX-2001)						
Mode	2. BLE 2Mbps 2440MHz + 6G 11ax HE80 6385MHz						
Polarization	Vertical						
Test Ry · Rns	ad blu Temperature(°C) · 24 Humidity(%) · 62						



	Freq.	Emission level dBuV/m		Ū	SA reading dBuV		Remark	ANT High cm	Turn Table deg
2 4	4145.00 9105.00	30.46 43.77 41.68 54.66	74.00 54.00	-30.23 -12.32	45.64	-1.87 -1.87 6.12 6.12	Average Peak Average Peak	100 100 100 100	36 36 22 22

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB/m)

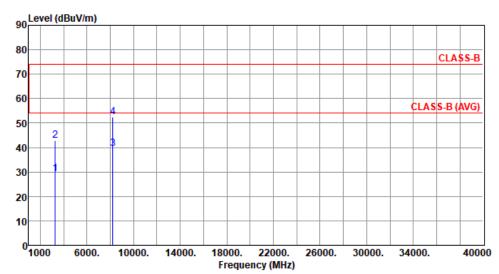
*Factor includes antenna factor, cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

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Configuration	2. SC Module with PCB Dipole antenna (model: Mini NanoBlade Flex 6 GHz)
Mode	1. BLE 2Mbps 2440MHz + 5G 11ax HE20 5745MHz
Polarization	Horizontal



	Freq.	Emission level	Limit	Margin	SA reading		Remark	ANT High	Turn Table
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m		cm	deg
1	3265.00	29.11	54.00	-24.89	32.28	-3.17	Average	100	43
2	3265.00	42.90	74.00	-31.10	46.07	-3.17	Peak	100	43
3	8225.00	39.46	54.00	-14.54	34.21	5.25	Average	100	29
4	8225.00	52.61	74.00	-21.39	47.36	5.25	Peak	100	29

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB/m)

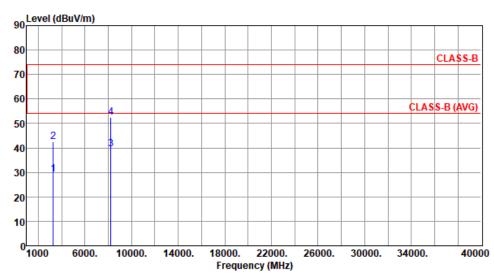
*Factor includes antenna factor, cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

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Configuration	. SC Module with PCB Dipole antenna (model: Mini NanoBlade Flex 6 GHz)					
Mode	. BLE 2Mbps 2440MHz + 5G 11ax HE20 5745MHz					
Polarization	Vertical					
Test By :Bra	d Wu Temperature(℃):24 Humidity(%):62					



	Freq.	Emission	Limit	Margin			Remark	ANT	Turn
		level			reading			High	Table
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m		cm	deg
4	7265 06	20.44	<u></u>	24.00				400	
1	3265.00	29.11	54.00	-24.89	32.28	-3.17	Average	100	39
2	3265.00	42.49	74.00	-31.51	45.66	-3.17	Peak	100	39
3	8225.00	39.45	54.00	-14.55	34.20	5.25	Average	100	48
4	8225.00	52.45	74.00	-21.55	47.20	5.25	Peak	100	48

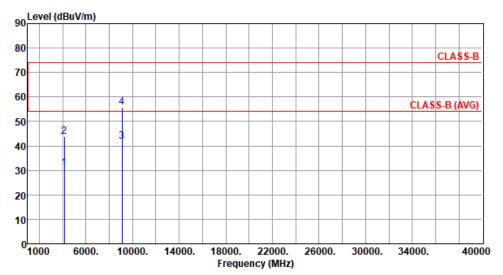
*Factor includes antenna factor, cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

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Configuration	2. SC Module with PCB Dipole antenna (model: Mini NanoBlade Flex 6 GHz)
Mode	2. BLE 2Mbps 2440MHz + 6G 11ax HE80 6385MHz
Polarization	Horizontal



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Ū	SA reading dBuV		Remark	ANT High cm	Turn Table deg
1 2 3 4	4145.00 9105.00	30.77 43.98 41.70 55.73	74.00 54.00	-30.02 -12.30	32.64 45.85 35.58 49.61	-1.87 -1.87 6.12 6.12	Average Peak Average Peak	100 100 100 100	28 28 33 33

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB/m)

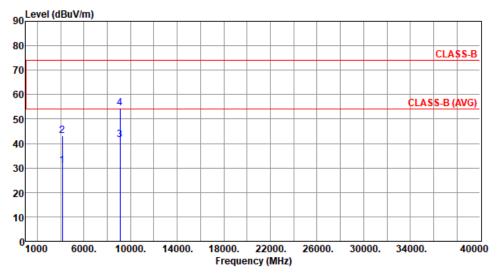
*Factor includes antenna factor, cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

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Configuration	2. SC Module with PCB Dipole antenna (model: Mini NanoBlade Flex 6 GHz)
Mode	2. BLE 2Mbps 2440MHz + 6G 11ax HE80 6385MHz
Polarization	Vertical



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Ü	SA reading dBuV		Remark	ANT High cm	Turn Table deg
1	4145.00	30.73	54.00	-23.27	32.60	-1.87	Average	100	29
2	4145.00	43.31	74.00	-30.69	45.18	-1.87	Peak	100	29
3	9105.00	41.36	54.00	-12.64	35.24	6.12	Average	100	51
4	9105.00	54.38	74.00	-19.62	48.26	6.12	Peak	100	51

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB/m)

*Factor includes antenna factor, cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

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Configuration	3. SC Module w	SC Module with PIFA antenna (model: FlexPIFA 6E)							
Mode	1. BLE 2Mbps 2	BLE 2Mbps 2440MHz + 5G 11ax HE20 5745MHz							
Polarization	Horizontal								
Test By :Bra	nd Wu T	emperature(°⊂):24	Humidity(%):62						
90 Level (dBu\	//m)								
80				CLA\$S-B					
70									
60	4		CLA	ASS-B (AVG)					
50									
40 2	3								
30									
20									
10									
01000 6	000. 10000. 14	000. 18000. 22000. Frequency (MHz)	26000. 30000. 34000	. 40000					

	MHz	dBuV/m	dBuV/m dB	dBuV	dB/m		cm	deg
1	3265.00	29.11	54.00 -24.89	32.28	-3.17	Average	100	36
2	3265.00	42.21	74.00 -31.79	45.38	-3.17	Peak	100	36
3	8225.00	39.38	54.00 -14.62	34.13	5.25	Average	100	15
4	8225.00	52.88	74.00 -21.12	47.63	5.25	Peak	100	15

SA

reading

Factor

Remark

ANT

High

Turn

Table

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB/m)

Freq. Emission Limit Margin

level

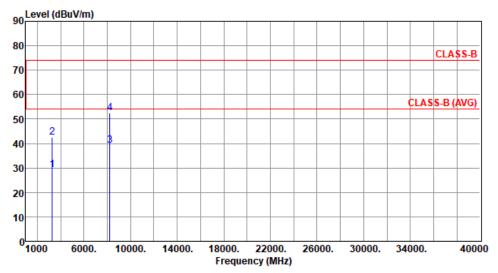
*Factor includes antenna factor, cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

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Configuration	3. SC Module with PIFA antenna (model: FlexPIFA 6E)
Mode	1. BLE 2Mbps 2440MHz + 5G 11ax HE20 5745MHz
Polarization	Vertical



	Freq.	Emission level	Limit	Margin	SA reading	Factor	Remark	ANT High	Turn Table
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m		cm	deg
1	3265.00	29.17	54.00	-24.83	32.34	-3.17	Average	100	44
2	3265.00	42.48	74.00	-31.52	45.65	-3.17	Peak	100	44
3	8225.00	39.25	54.00	-14.75	34.00	5.25	Average	100	38
4	8225.00	52.49	74.00	-21.51	47.24	5.25	Peak	100	38

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB/m)

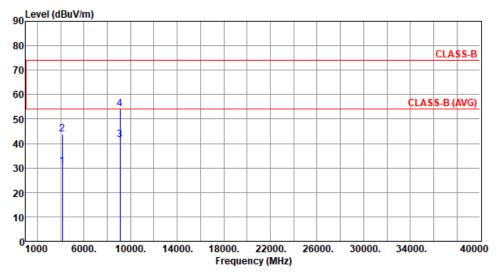
*Factor includes antenna factor, cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

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Configuration	3. SC Module with PIFA antenna (model: FlexPIFA 6E)
Mode	2. BLE 2Mbps 2440MHz + 6G 11ax HE80 6385MHz
Polarization	Horizontal



	Freq. MHz	Emission level dBuV/m		Ü	SA reading dBuV		Remark	ANT High cm	Turn Table deg
1		30.50					Average	100	23
2	4145.00	43.78	74.00	-30.22	45.65	-1.87	Peak	100	23
3	9105.00	41.63	54.00	-12.37	35.51	6.12	Average	100	28
4	9105.00	53.99	74.00	-20.01	47.87	6.12	Peak	100	28

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB/m)

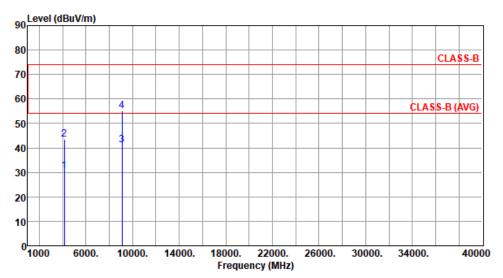
*Factor includes antenna factor, cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

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Configuration	3. SC Module with PIFA antenna (model: FlexPIFA 6E)				
Mode	2. BLE 2Mbps 2440MHz + 6G 11ax HE80 6385MHz				
Polarization	Vertical				



	Freq.	Emission	Limit	Margin	SA	Factor	Remark	ANT	Turn
	level				reading		High	Table	
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m		cm	deg
1	4145.00	30.55	54.00	-23.45	32.42	-1.87	Average	100	56
2	4145.00	43.64	74.00	-30.36	45.51	-1.87	Peak	100	56
3	9105.00	41.09	54.00	-12.91	34.97	6.12	Average	100	24
4	9105.00	55.01	74.00	-18.99	48.89	6.12	Peak	100	24

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB/m)

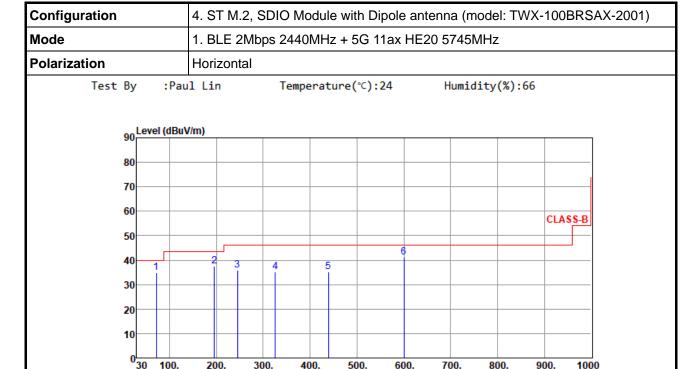
*Factor includes antenna factor, cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

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ST M.2, SDIO Module



	Freq.	level	Limit	Margin	reading		Kemark	ANI High	Table	
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m		cm	deg	
1	71.51	34.92	40.00	-5.08	46.33	-11.41	Peak			
2	195.57	37.41	43.50	-6.09	49.10	-11.69	Peak			
3	244.76	35.92	46.00	-10.08	46.11	-10.19	Peak			
4	325.34	35.16	46.00	-10.84	42.66	-7.50	Peak			
5	438.97	35.22	46.00	-10.78	39.69	-4.47	Peak			
6	600.36	41.08	46.00	-4.92	42.00	-0.92	Peak			

Frequency (MHz)

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB/m)

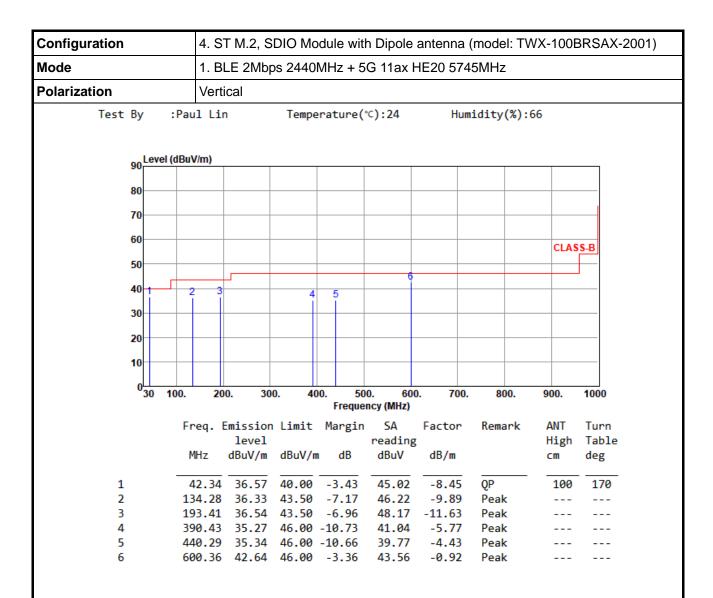
*Factor includes antenna factor, cable loss and amplifier gain

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.

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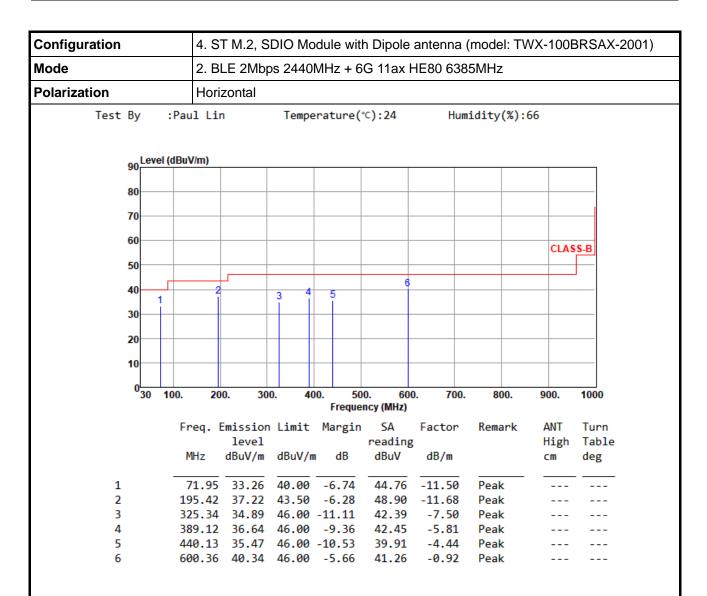
*Factor includes antenna factor, cable loss and amplifier gain

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.

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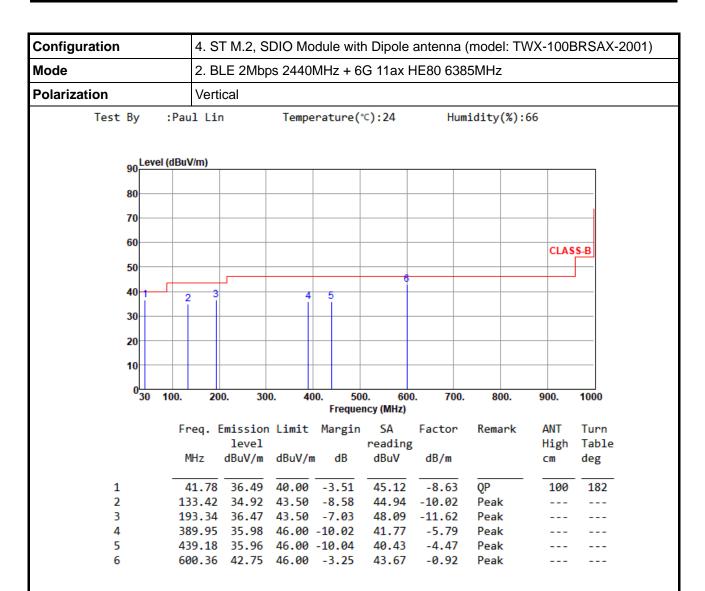
*Factor includes antenna factor, cable loss and amplifier gain

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.

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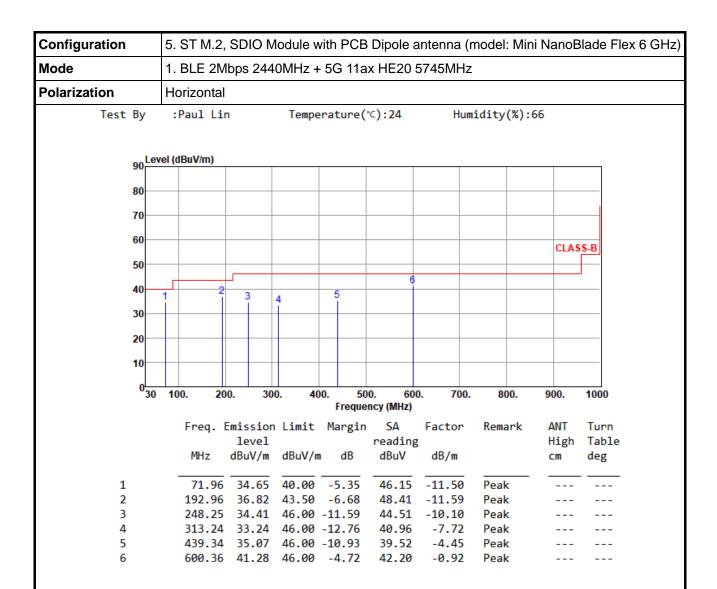
*Factor includes antenna factor, cable loss and amplifier gain

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.

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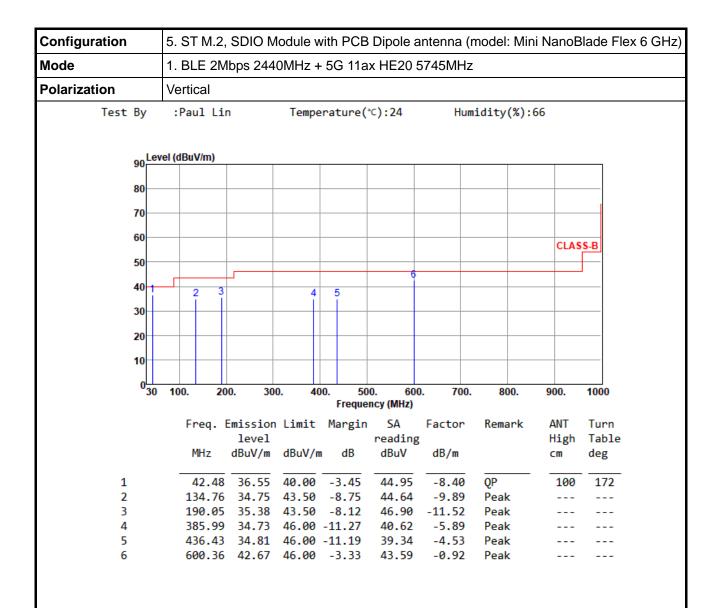
*Factor includes antenna factor, cable loss and amplifier gain

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.

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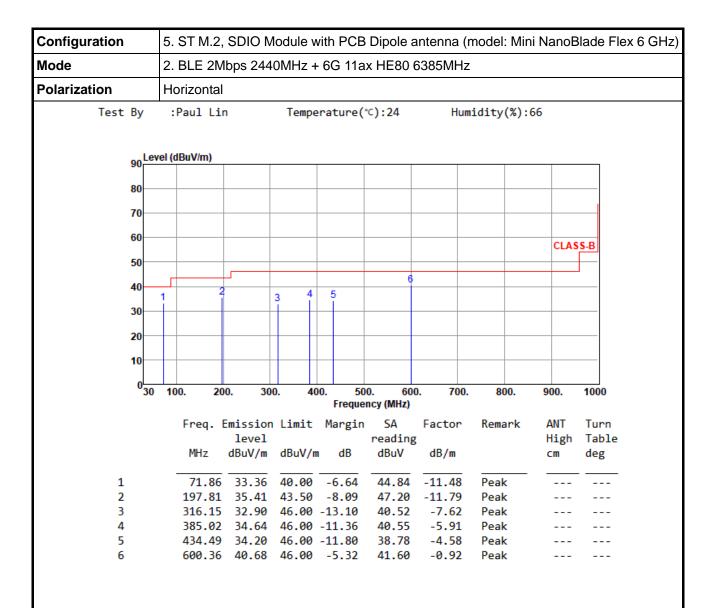
*Factor includes antenna factor, cable loss and amplifier gain

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.

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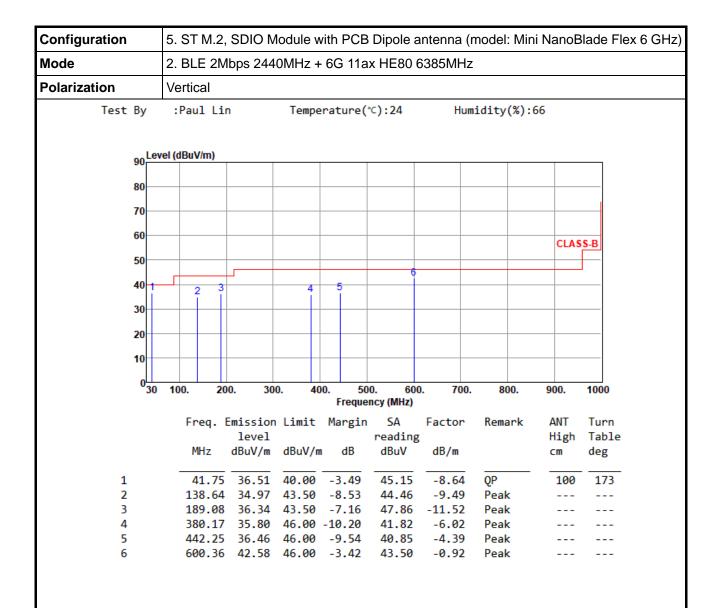
*Factor includes antenna factor, cable loss and amplifier gain

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.

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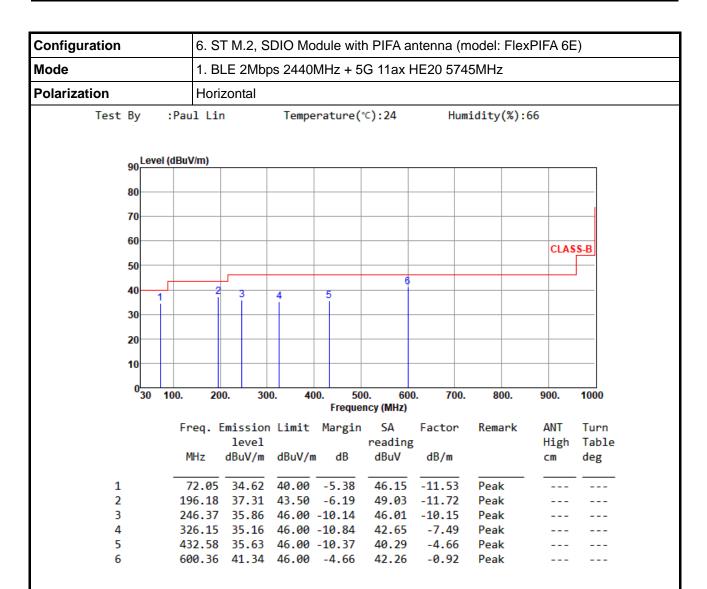
*Factor includes antenna factor, cable loss and amplifier gain

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.

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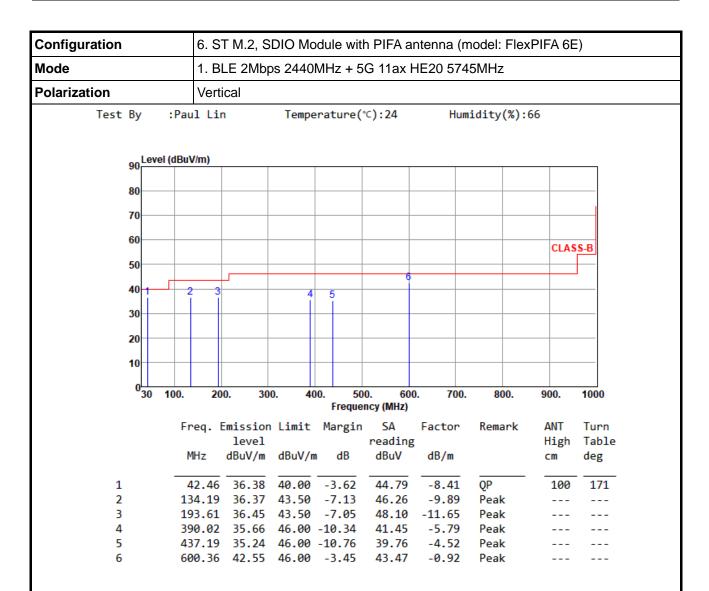
*Factor includes antenna factor, cable loss and amplifier gain

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.

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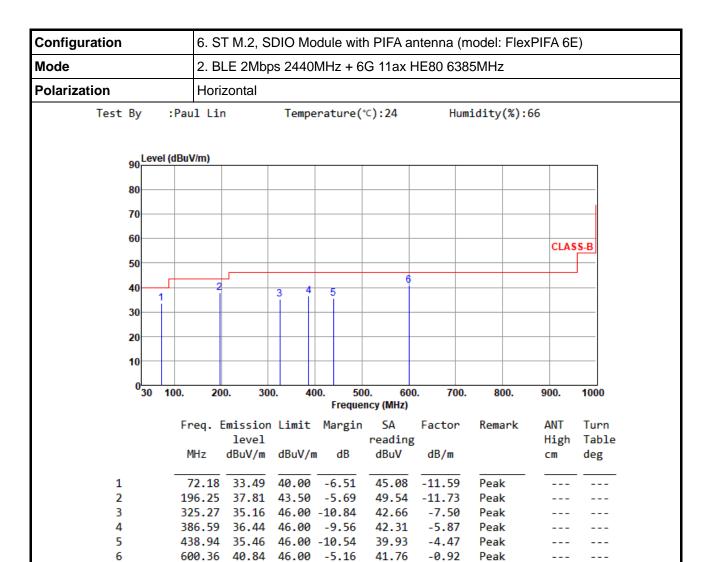
*Factor includes antenna factor, cable loss and amplifier gain

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.

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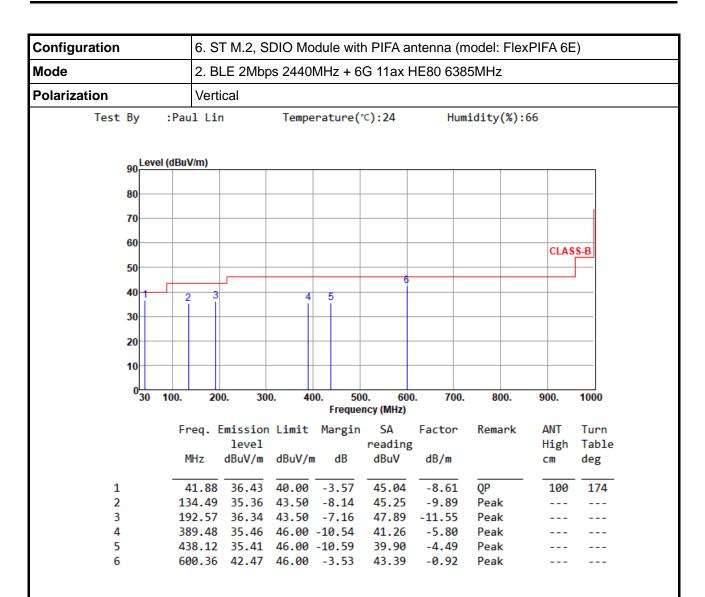
*Factor includes antenna factor, cable loss and amplifier gain

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.

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*Factor includes antenna factor, cable loss and amplifier gain

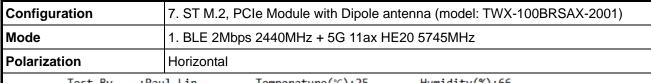
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Note 3: All spurious emissions below 30MHz are more than 20 dB below the limit.

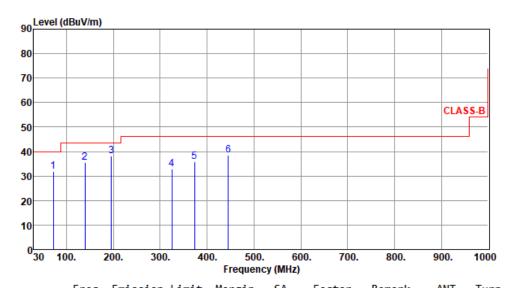
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ST M.2, PCIe Module



Test By :Paul Lin Temperature(°C):25 Humidity(%):66



	Freq.	level	Limit	Margin	SA reading	Factor	Kemark	ANI High	Table	
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m		cm	deg	
1	71.71	32.03	40.00	-7.97	43.48	-11.45	Peak			
2	139.61	35.49	43.50	-8.01	44.93	-9.44	Peak			
3	195.87	38.35	43.50	-5.15	50.03	-11.68	Peak			
4	324.88	32.99	46.00	-13.01	40.51	-7.52	Peak			
5	373.38	35.96	46.00	-10.04	42.27	-6.31	Peak			
6	445.16	38.41	46.00	-7.59	42.75	-4.34	Peak			

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB/m)

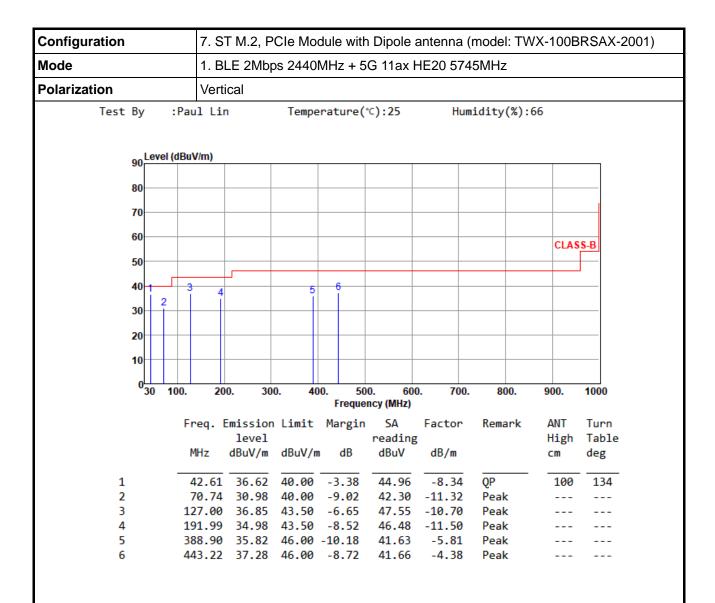
*Factor includes antenna factor, cable loss and amplifier gain

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.

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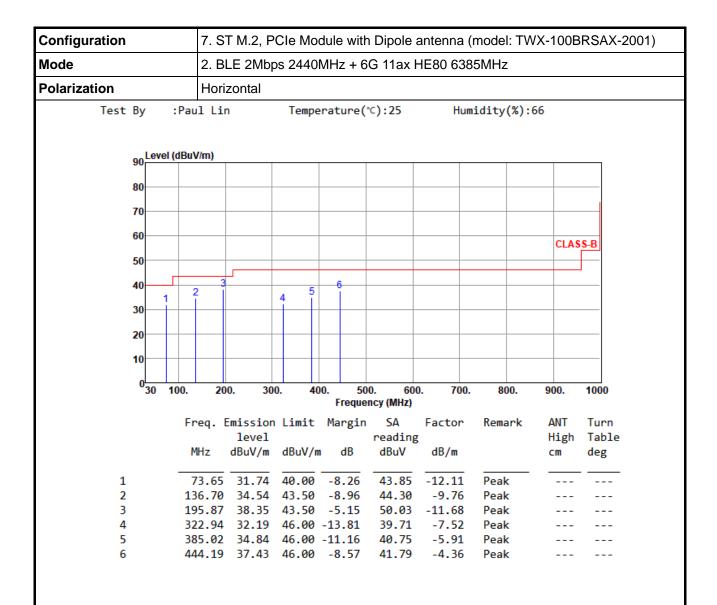
*Factor includes antenna factor, cable loss and amplifier gain

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.

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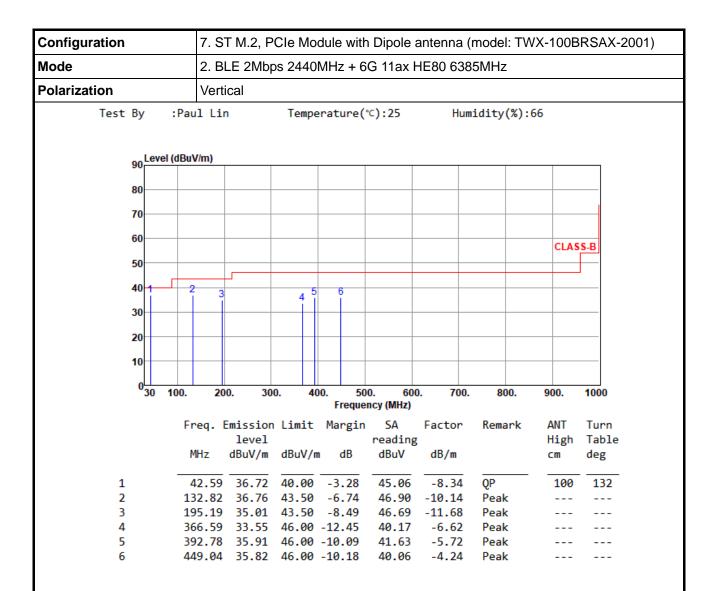
*Factor includes antenna factor, cable loss and amplifier gain

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.

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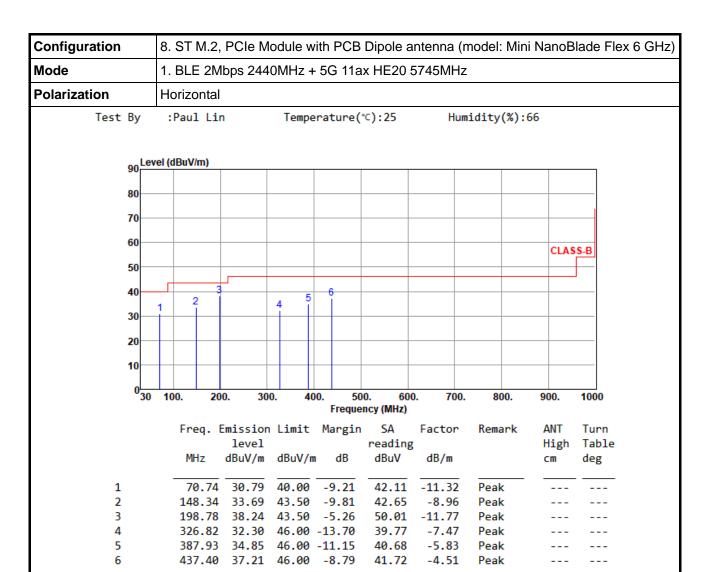
*Factor includes antenna factor, cable loss and amplifier gain

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.

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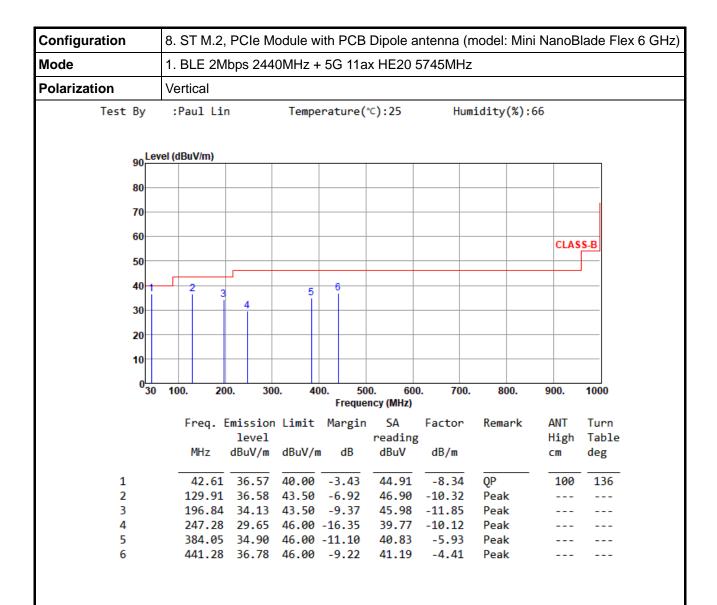
*Factor includes antenna factor, cable loss and amplifier gain

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.

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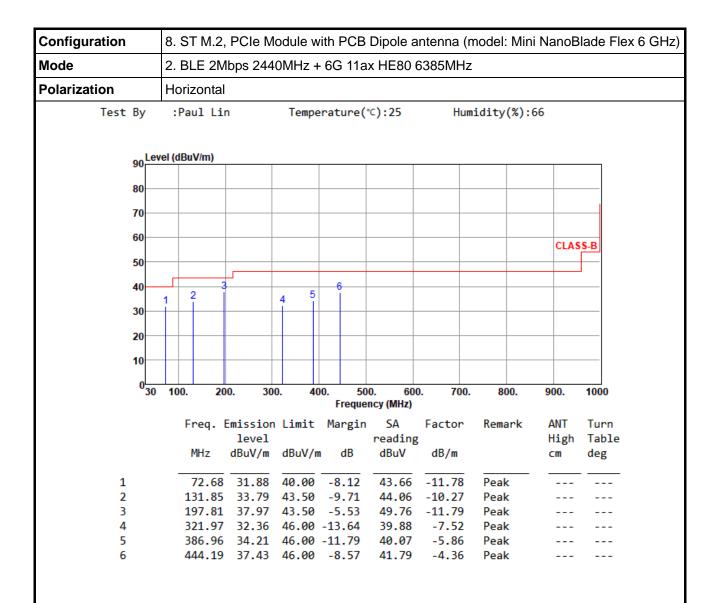
*Factor includes antenna factor, cable loss and amplifier gain

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.

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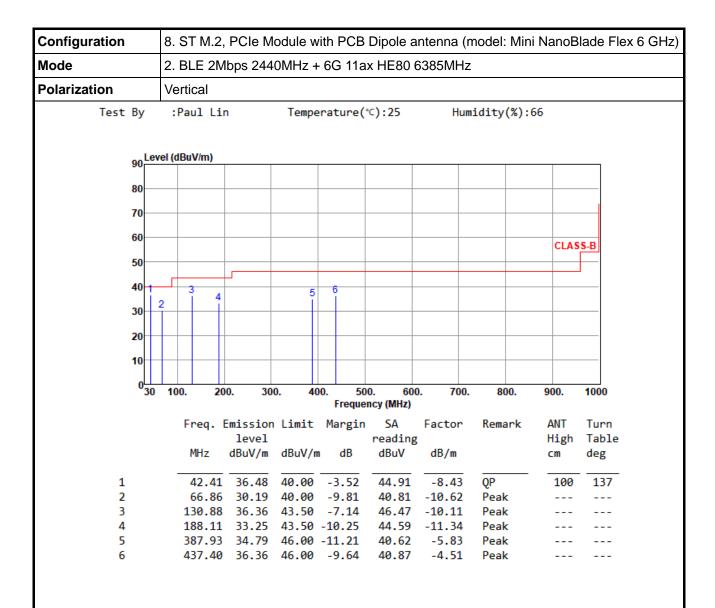
*Factor includes antenna factor, cable loss and amplifier gain

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.

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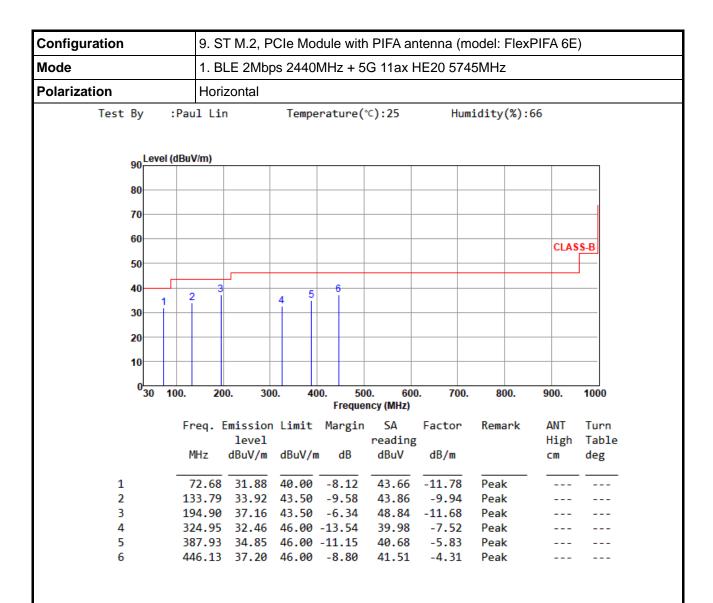
*Factor includes antenna factor, cable loss and amplifier gain

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.

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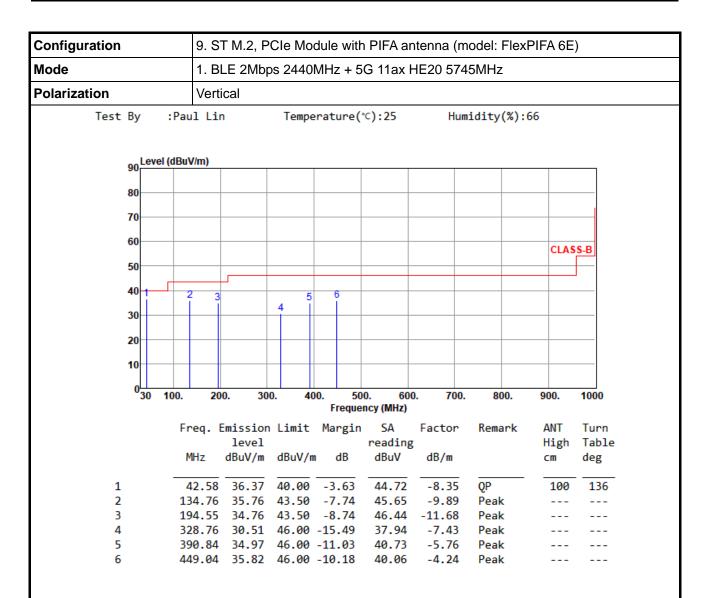
*Factor includes antenna factor, cable loss and amplifier gain

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.

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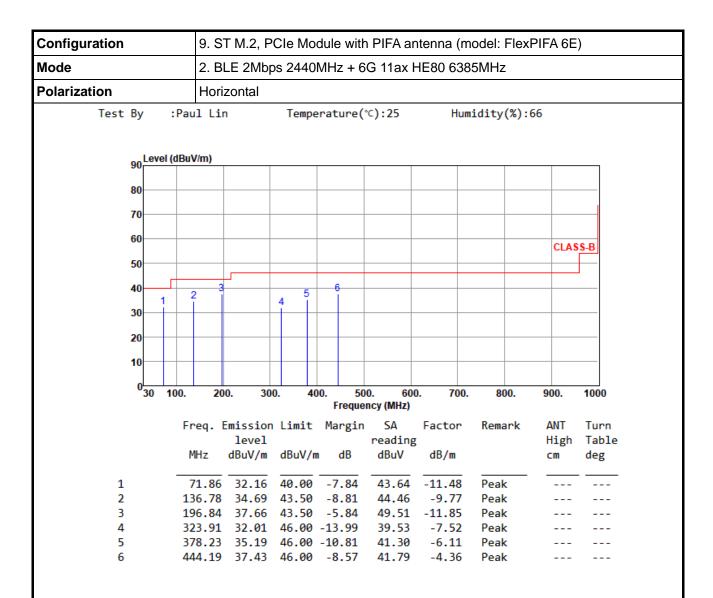
*Factor includes antenna factor, cable loss and amplifier gain

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.

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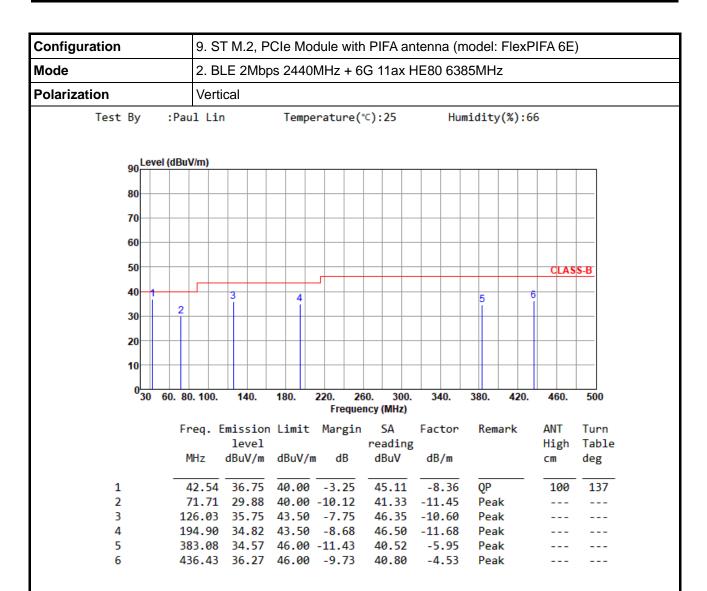
*Factor includes antenna factor, cable loss and amplifier gain

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.

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*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.

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