

TEST REPORT

CERTIFICATE OF CONFORMITY

Standard: 47 CFR FCC Part 15, Subpart C (Section 15.247)
Report No.: RFBHVI-WTW-P23120316B
FCC ID: N6C-IM100
Product: Embedded wireless module
Brand: Silex Technology
Model No.: IM-100
Received Date: 2024/11/22
Test Date: 2024/12/2 ~ 2024/12/11
Issued Date: 2025/1/8
Applicant: Silex Technology, Inc.
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Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
Hsin Chu Laboratory
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Test Location: E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan
FCC Registration / 723255 / TW2022
Designation Number:

Approved by:  , Date: 2025/1/8
May Chen / Manager

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Prepared by: Vito Lung / Specialist

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Release Control Record

Issue No.	Description	Date Issued
RFBHVI-WTW-P23120316B	Original release.	2025/1/8

1 Certificate

Product: Embedded wireless module

Brand: Silex Technology

Test Model: IM-100

Sample Status: Engineering sample

Applicant: Silex Technology, Inc.

Test Date: 2024/12/2 ~ 2024/12/11

Standard: 47 CFR FCC Part 15, Subpart C (Section 15.247)

Measurement ANSI C63.10-2013

procedure: KDB 558074 D01 15.247 Meas Guidance v05r02

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's RF characteristics under the conditions specified in this report.

2 Summary of Test Results

47 CFR FCC Part 15, Subpart C (Section 15.247)			
Standard / Clause	Test Item	Result	Remark
15.247(b)	RF Output Power	Pass	Meet the requirement of limit.
15.247(e)	Power Spectral Density	Pass	Meet the requirement of limit.
15.247(a)(2)	6 dB Bandwidth	N/A	Refer to Note 1 below
15.247(d)	Conducted Out of Band Emissions	N/A	Refer to Note 1 below
15.207	AC Power Conducted Emissions	N/A	Refer to Note 1 below
15.205 / 15.209 / 15.247(d)	6 dB Bandwidth	N/A	Refer to Note 1 below
15.205 / 15.209 / 15.247(d)	Conducted Out of Band Emissions	N/A	Refer to Note 1 below
15.203	Antenna Requirement	Pass	Antenna connector is ipex(MHF) not a standard connector.

Note:

1. RF Output Power and Power Spectral Density were performed for this addendum. The others testing data refer to original test report.
2. Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.
3. All spurious emissions have not increased from what was previously reported.

2.1 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

Measurement	Specification	Expanded Uncertainty (k=2) (±)
RF Output Power	-	1.1 dB
Power Spectral Density	-	1.3 dB

The other instruments specified are routine verified to remain within the calibrated levels, no measurement uncertainty is required to be calculated.

2.2 Supplementary Information

There is not any deviation from the test standards for the test method, and no modifications required for compliance.

3 General Information

3.1 General Description

Product	Embedded wireless module
Brand	Silex Technology
Test Model	IM-100
Status of EUT	Engineering sample
Power Supply Rating	3.3 Vdc from host equipment
Modulation Type	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in VHT mode 1024QAM for OFDMA in 11ax mode
Modulation Technology	DSSS, OFDM, OFDMA
Transfer Rate	802.11b: up to 11 Mbps 802.11g: up to 54 Mbps 802.11n: up to 72.2 Mbps 802.11ax: up to 143.4 Mbps
Operating Frequency	2.412 GHz ~ 2.462 GHz
Number of Channel	802.11b, 802.11g, 802.11n (HT20), 802.11ax (HE20): 11
Resource Unit (RU)	Single RU: 26-tone, 52-tone, 106-tone
Output Power	132.13 mW (21.21 dBm)

Note:

1. This report is prepared for FCC class II permissive change. The difference compared with the Report No.: RFBHVI-WTW-P23120316 as the following:
 - ◆ Downgrade WLAN 2.4GHz Power Setting.
2. According to above condition, only RF Output Power and Power Spectral Density test need to be performed. And all data are verified to meet the requirements.
3. There are Bluetooth and WLAN (2.4 GHz & 5 GHz) technology used for the EUT.
4. The product's WLAN 2.4G and WLAN 5G will not operate simultaneously.
5. Simultaneously transmission combination.

Combination	Technology	
1	WLAN (5 GHz)	Bluetooth

Note: The emission of the simultaneous operation has been evaluated and no non-compliance was found.

6. The EUT support OFDMA and Partial RU mode, therefore partial RU combination were investigated and the worst case scenario was identified.
7. The above EUT information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.

3.2 Antenna Description of EUT

1. The antenna information is listed as below.

Antenna No.	Brand	Model	Antenna Net Gain (dBi)	Frequency Range (GHz)	Antenna Type	Connector Type	Cable Length (mm)
1	Molex	146153	3.18	2.4~2.4835	Dipole	ipex(MHF)	50
			3.18	5.15~5.25			
			2.98	5.25~5.35			
			4.28	5.47~5.725			
			3.78	5.725~5.85			
2	Unictron	AA258	2.67	2.4~2.4835	Dipole	ipex(MHF)	50
			3.22	5.15~5.25			
			3.91	5.25~5.35			
			2.77	5.47~5.725			
			3.92	5.725~5.85			
3	Silex	SXANTFDB24A55-03	2.75	2.4~2.4835	Folded inverted-L	None (On-board)	NA
			1.82	5.15~5.25			
			1.82	5.25~5.35			
			2.82	5.47~5.725			
			2.99	5.725~5.85			

* Detail antenna specification please refer to antenna datasheet and/or antenna measurement report.

2. The EUT incorporates a SISO function:

2.4 GHz Band		
Modulation Mode	TX & RX Configuration	
802.11b	1Tx	1Rx
802.11g	1Tx	1Rx
802.11n (HT20)	1Tx	1Rx
802.11ax (HE20)	1Tx	1Rx
802.11ax (RU26/52/106)	1Tx	1Rx

Note:

The modulation and bandwidth are similar for 802.11n mode for 20 MHz, and 802.11ax mode for 20 MHz therefore the manufacturer will control the power for 802.11n mode is same as the 802.11ax mode or more lower than it and investigated worst case to representative mode in test report.

3.3 Channel List

11 channels are provided for 802.11b, 802.11g, 802.11n (HT20), 802.11ax (HE20):

Channel	Frequency	Channel	Frequency
1	2412 MHz	7	2442 MHz
2	2417 MHz	8	2447 MHz
3	2422 MHz	9	2452 MHz
4	2427 MHz	10	2457 MHz
5	2432 MHz	11	2462 MHz
6	2437 MHz		

3.4 Test Mode Applicability and Tested Channel Detail

Following channel(s) was (were) selected for the final test as listed below:

Test Item	EUT Configure Mode	Mode	Tested Channel	Modulation	Data Rate Parameter	RU/MRU Index
RF Output Power / Power Spectral Density	-	802.11b	1, 6, 11	DBPSK	1Mb/s	NA
		802.11g	1, 6, 11	BPSK	6Mb/s	NA
		802.11n (HT20)	1, 6, 11	BPSK	MCS0	NA
		802.11ax (HE20)	1, 6, 11	BPSK	MCS0	NA
		802.11ax (HE20) 26-tone RU	1, 6, 11	BPSK	MCS0	0, 0, 8
		802.11ax (HE20) 52-tone RU	1, 6, 11	BPSK	MCS0	37, 37, 40
		802.11ax (HE20) 106-tone RU	1, 6, 11	BPSK	MCS0	53, 53, 54

3.5 Duty Cycle of Test Signal

802.11b: Duty cycle = 8.624 ms / 8.632 ms x 100% = 99.9%

802.11g: Duty cycle = 1.433 ms / 1.447 ms x 100% = 99.0%

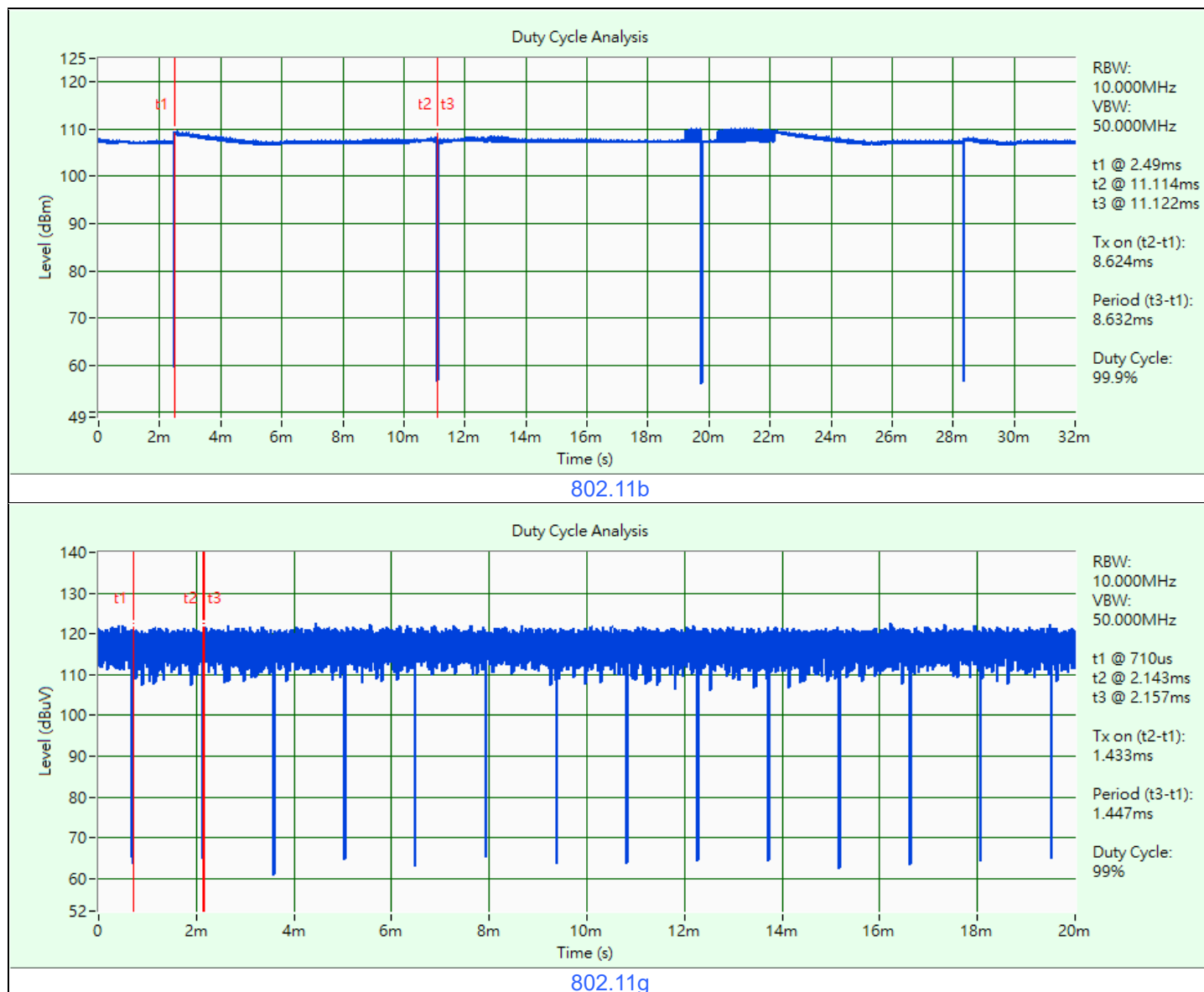
802.11n (HT20): Duty cycle = 1.341 ms / 1.355 ms x 100% = 99.0%

802.11ax (HE20): Duty cycle = 1.045 ms / 1.06 ms x 100% = 98.6%

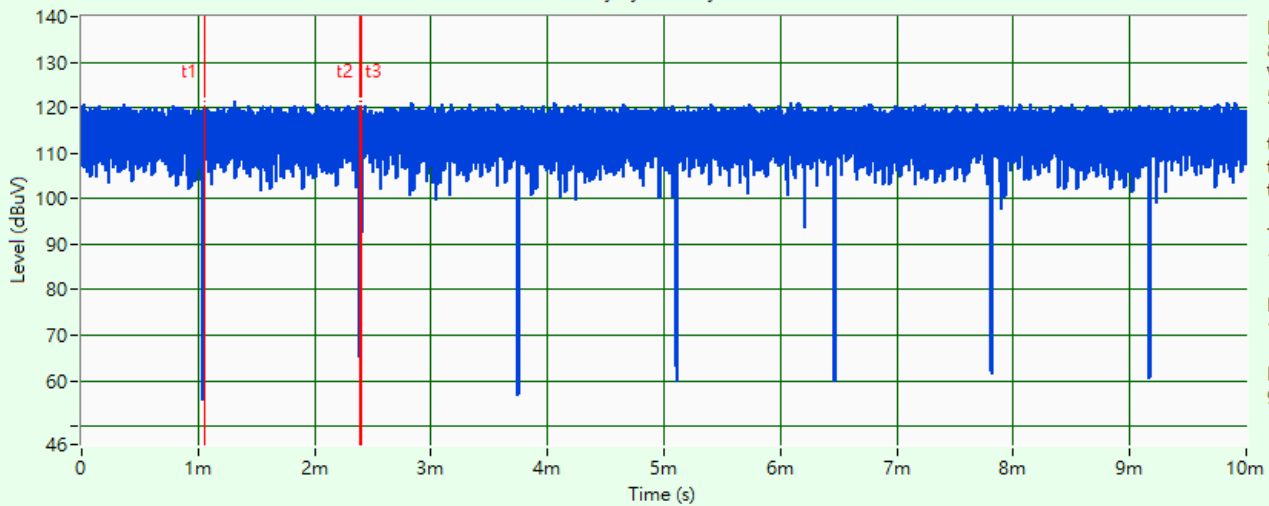
802.11ax (HE20) 26-tone RU: Duty cycle = 96.745 ms / 100 ms x 100% = 96.7%, duty factor = $10 * \log(1/\text{Duty cycle})$ = 0.14 dB

802.11ax (HE20) 52-tone RU: Duty cycle = 96.685 ms / 100 ms x 100% = 96.7%, duty factor = $10 * \log(1/\text{Duty cycle})$ = 0.15 dB

802.11ax (HE20) 106-tone RU: Duty cycle = 96.795 ms / 100 ms x 100% = 96.8%, duty factor = $10 * \log(1/\text{Duty cycle})$ = 0.14 dB

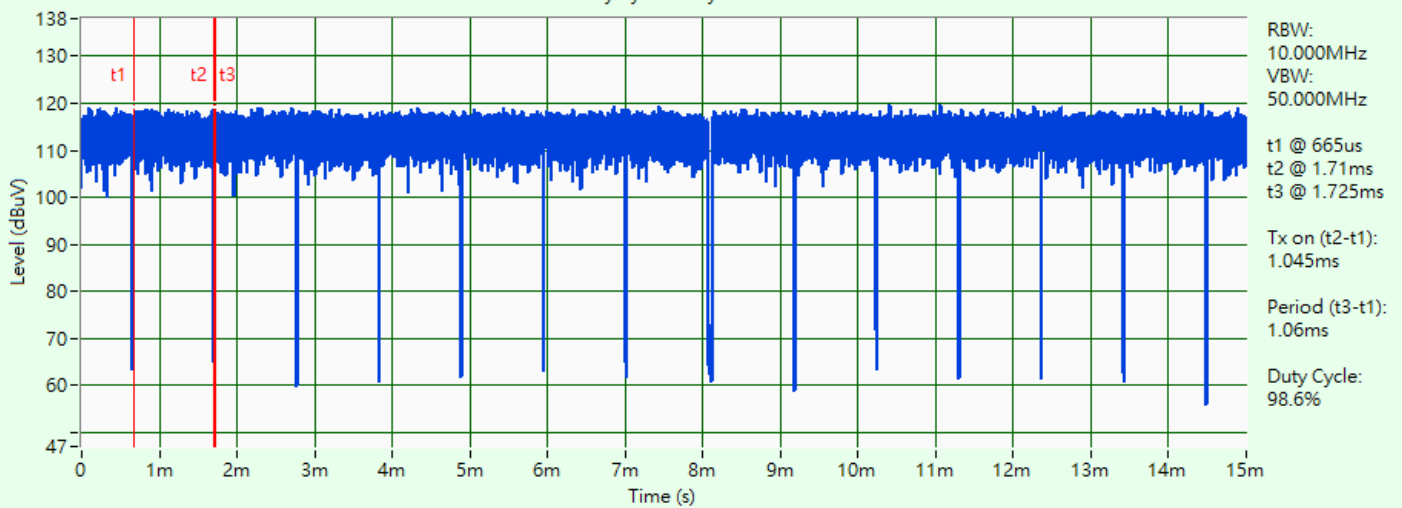


Duty Cycle Analysis



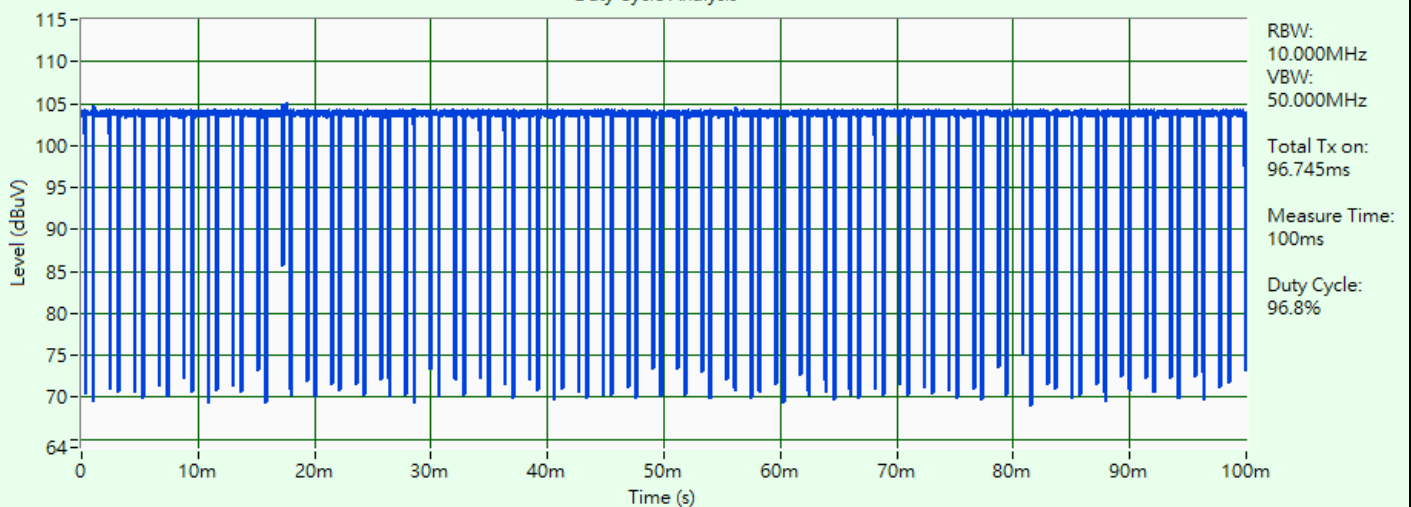
802.11n (HT20)

Duty Cycle Analysis



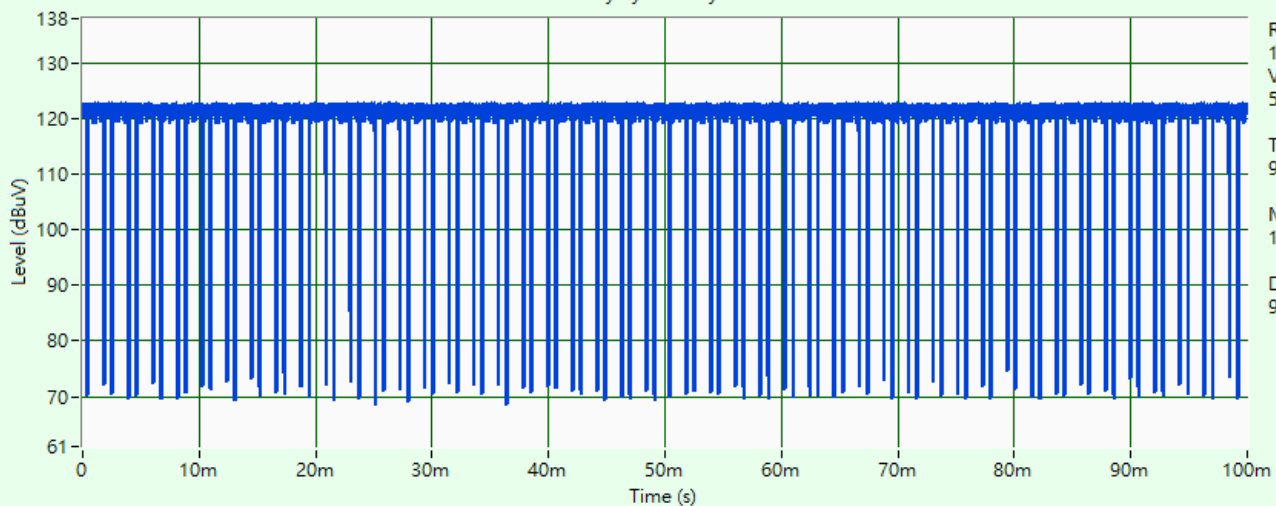
802.11ax (HE20)

Duty Cycle Analysis



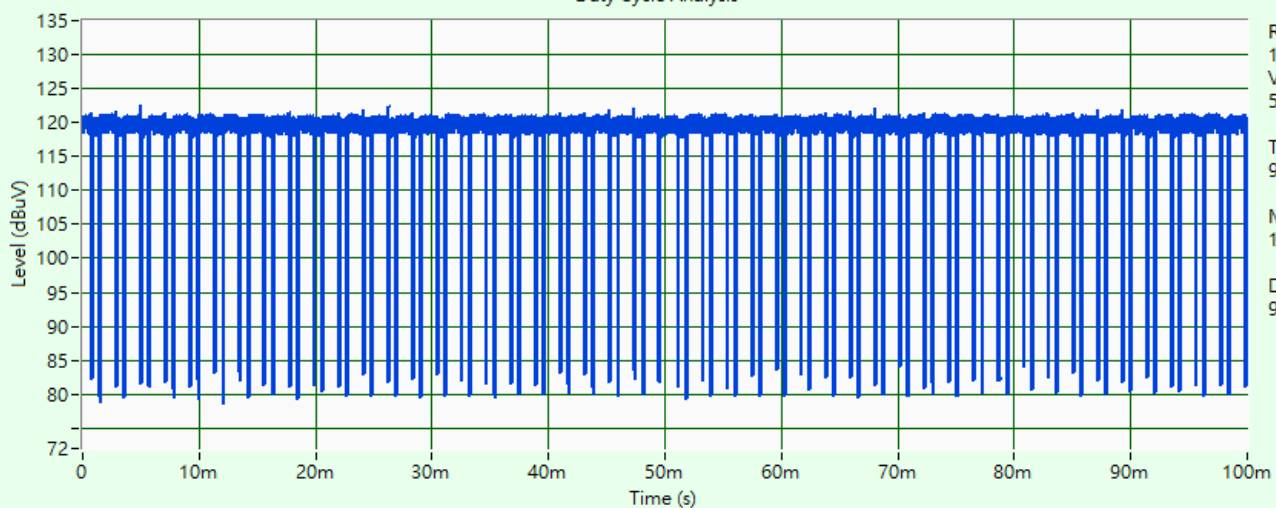
802.11ax (HE20) 26-tone RU

Duty Cycle Analysis



802.11ax (HE20) 52-tone RU

Duty Cycle Analysis



802.11ax (HE20) 106-tone RU

4 Test Instruments

The calibration interval of the all test instruments are 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

4.1 RF Output Power

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Pulse Power Sensor Anritsu	MA2411B	1726434	2024/6/7	2025/6/6
RF Power Meter Anritsu	ML2495A	1529002	2024/6/7	2025/6/6

Notes:

1. The test was performed in Oven room 2.
2. Tested Date: 2024/12/2

4.2 Power Spectral Density

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
MXA Signal Analyzer Keysight	N9020B	MY60112408	2024/3/7	2025/3/6
Software	ADT_RF Test Software V7.6.5.4	N/A	N/A	N/A

Notes:

1. The test was performed in Oven room 2.
2. Tested Date: 2024/12/2

5 Limits of Test Items

5.1 RF Output Power

For systems using digital modulation in the 2400–2483.5 MHz bands: 1 Watt (30 dBm)

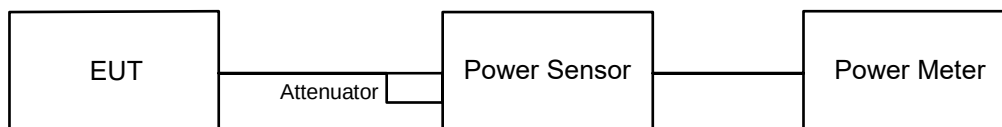
5.2 Power Spectral Density

The Maximum of Power Spectral Density Measurement is 8 dBm in any 3 kHz.

6 Test Arrangements

6.1 RF Output Power

6.1.1 Test Setup



6.1.2 Test Procedure

Peak Power:

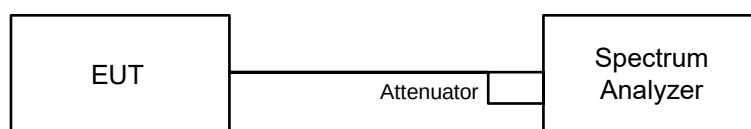
A peak power sensor was used on the output port of the EUT. A power meter was used to read the response of the peak power sensor. Record the power level.

Average Power:

Average power sensor was used to perform output power measurement, trigger and gating function of wide band power meter is enabled to measure max output power of TX on burst. Duty factor is not added to measured value.

6.2 Power Spectral Density

6.2.1 Test Setup



6.2.2 Test Procedure

- Set analyzer center frequency to DTS channel center frequency.
- Set the span to 1.5 times the DTS bandwidth.
- Set the RBW to: 3 kHz.
- Set the VBW $\geq 3 \times$ RBW.
- Detector = peak.
- Sweep time = auto couple.
- Trace mode = max hold.
- Allow trace to fully stabilize.
- Use the peak marker function to determine the maximum amplitude level within the RBW.

7 Test Results of Test Item

7.1 RF Output Power

Input Power:	3.3 Vdc	Environmental Conditions:	24°C, 63% RH	Tested By:	Katina Lu
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For Peak Power

802.11b

Chan.	Chan. Freq. (MHz)	Peak Power (mW)	Peak Power (dBm)	Power Limit (dBm)	Test Result
1	2412	65.013	18.13	30	Pass
6	2437	64.269	18.08	30	Pass
11	2462	67.764	18.31	30	Pass

Note: The antenna gain is 3.18 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11g

Chan.	Chan. Freq. (MHz)	Peak Power (mW)	Peak Power (dBm)	Power Limit (dBm)	Test Result
1	2412	66.834	18.25	30	Pass
6	2437	132.13	21.21	30	Pass
11	2462	69.343	18.41	30	Pass

Note: The antenna gain is 3.18 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11n (HT20)

Chan.	Chan. Freq. (MHz)	Peak Power (mW)	Peak Power (dBm)	Power Limit (dBm)	Test Result
1	2412	70.632	18.49	30	Pass
6	2437	121.899	20.86	30	Pass
11	2462	70.958	18.51	30	Pass

Note: The antenna gain is 3.18 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11ax (HE20)

Chan.	Chan. Freq. (MHz)	Peak Power (mW)	Peak Power (dBm)	Power Limit (dBm)	Test Result
1	2412	70.795	18.50	30	Pass
6	2437	126.474	21.02	30	Pass
11	2462	72.946	18.63	30	Pass

Note: The antenna gain is 3.18 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11ax (HE20) 26-tone RU

Chan.	Chan. Freq. (MHz)	Peak Power (mW)	Peak Power (dBm)	Power Limit (dBm)	Test Result
1	2412	46.881	16.71	30	Pass
6	2437	45.186	16.55	30	Pass
11	2462	52.481	17.20	30	Pass

Note: The antenna gain is 3.18 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11ax (HE20) 52-tone RU

Chan.	Chan. Freq. (MHz)	Peak Power (mW)	Peak Power (dBm)	Power Limit (dBm)	Test Result
1	2412	52.119	17.17	30	Pass
6	2437	52.36	17.19	30	Pass
11	2462	55.463	17.44	30	Pass

Note: The antenna gain is 3.18 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11ax (HE20) 106-tone RU

Chan.	Chan. Freq. (MHz)	Peak Power (mW)	Peak Power (dBm)	Power Limit (dBm)	Test Result
1	2412	53.58	17.29	30	Pass
6	2437	52.36	17.19	30	Pass
11	2462	51.88	17.15	30	Pass

Note: The antenna gain is 3.18 dBi < 6 dBi, so the output power limit shall not be reduced.

For Average Power

802.11b

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)
1	2412	35.81	15.54
6	2437	35.481	15.50
11	2462	36.559	15.63

802.11g

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)
1	2412	22.387	13.50
6	2437	39.994	16.02
11	2462	23.121	13.64

802.11n (HT20)

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)
1	2412	22.439	13.51
6	2437	40.926	16.12
11	2462	22.594	13.54

802.11ax (HE20)

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)
1	2412	22.646	13.55
6	2437	41.4	16.17
11	2462	23.605	13.73

802.11ax (HE20) 26-tone RU

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)
1	2412	7.798	8.92
6	2437	7.87	8.96
11	2462	7.674	8.85

802.11ax (HE20) 52-tone RU

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)
1	2412	10.186	10.08
6	2437	10.52	10.22
11	2462	10.093	10.04

802.11ax (HE20) 106-tone RU

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)
1	2412	10.765	10.32
6	2437	10.162	10.07
11	2462	10.765	10.32

7.2 Power Spectral Density

Input Power:	3.3 Vdc	Environmental Conditions:	24°C, 63% RH	Tested By:	Katina Lu
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802.11b

Chan.	Chan. Freq. (MHz)	PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Test Result
1	2412	-5.90	8	Pass
6	2437	-6.01	8	Pass
11	2462	-6.35	8	Pass

Note: The antenna gain is 3.18 dBi < 6 dBi, so the power density limit shall not be reduced.

802.11g

Chan.	Chan. Freq. (MHz)	PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Test Result
1	2412	-10.61	8	Pass
6	2437	-6.60	8	Pass
11	2462	-9.43	8	Pass

Note: The antenna gain is 3.18 dBi < 6 dBi, so the power density limit shall not be reduced.

802.11n (HT20)

Chan.	Chan. Freq. (MHz)	PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Test Result
1	2412	-10.72	8	Pass
6	2437	-7.60	8	Pass
11	2462	-11.25	8	Pass

Note: The antenna gain is 3.18 dBi < 6 dBi, so the power density limit shall not be reduced.

802.11ax (HE20)

Chan.	Chan. Freq. (MHz)	PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Test Result
1	2412	-11.42	8	Pass
6	2437	-8.42	8	Pass
11	2462	-11.05	8	Pass

Note: The antenna gain is 3.18 dBi < 6 dBi, so the power density limit shall not be reduced.

802.11ax (HE20) 26-tone RU

Chan.	Chan. Freq. (MHz)	PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Test Result
1	2412	-7.19	8	Pass
6	2437	-8.45	8	Pass
11	2462	-8.88	8	Pass

Note: The antenna gain is 3.18 dBi < 6 dBi, so the power density limit shall not be reduced.

802.11ax (HE20) 52-tone RU

Chan.	Chan. Freq. (MHz)	PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Test Result
1	2412	-10.17	8	Pass
6	2437	-10.15	8	Pass
11	2462	-10.91	8	Pass

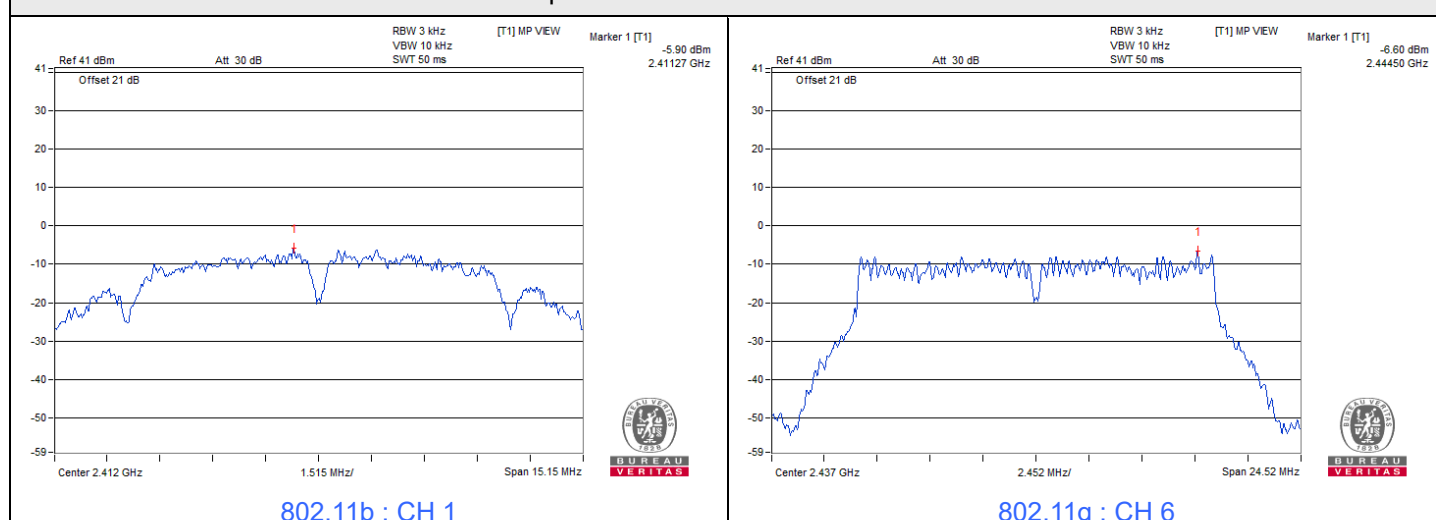
Note: The antenna gain is 3.18 dBi < 6 dBi, so the power density limit shall not be reduced.

802.11ax (HE20) 106-tone RU

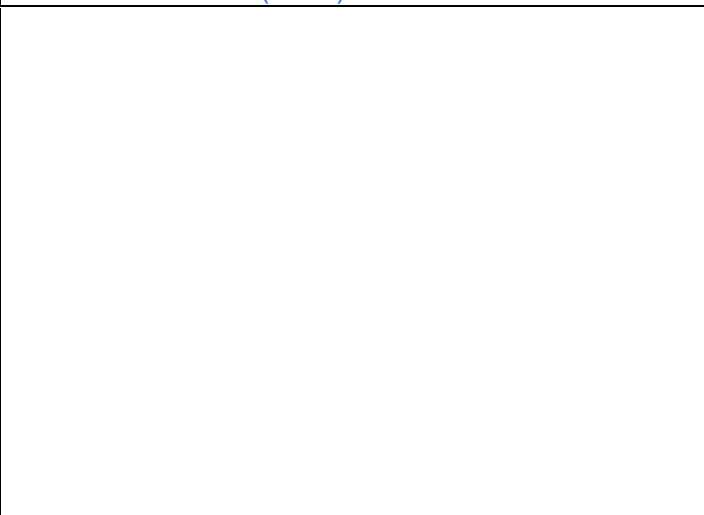
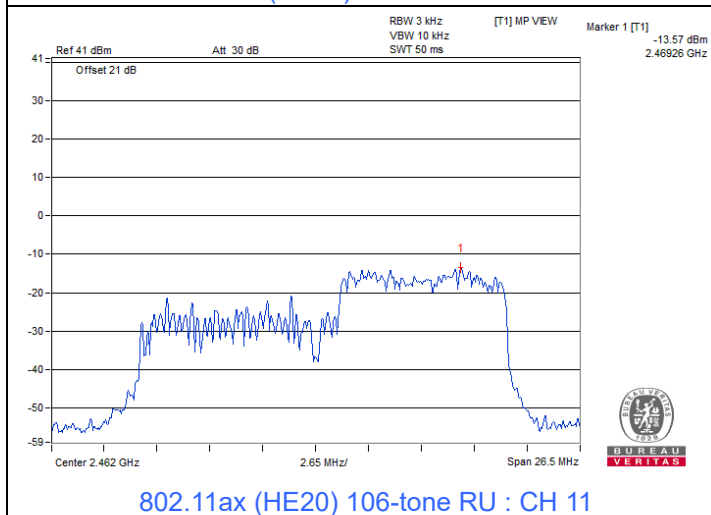
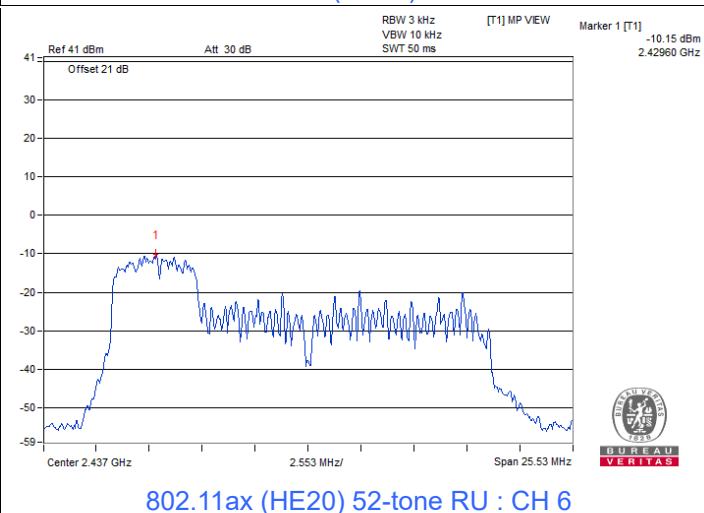
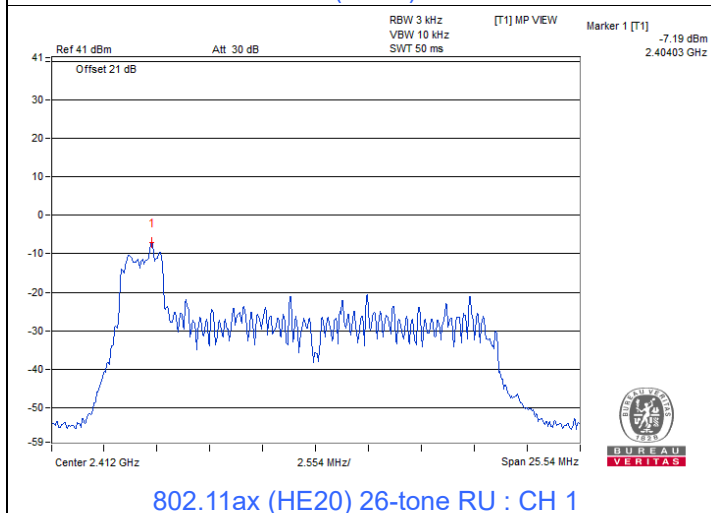
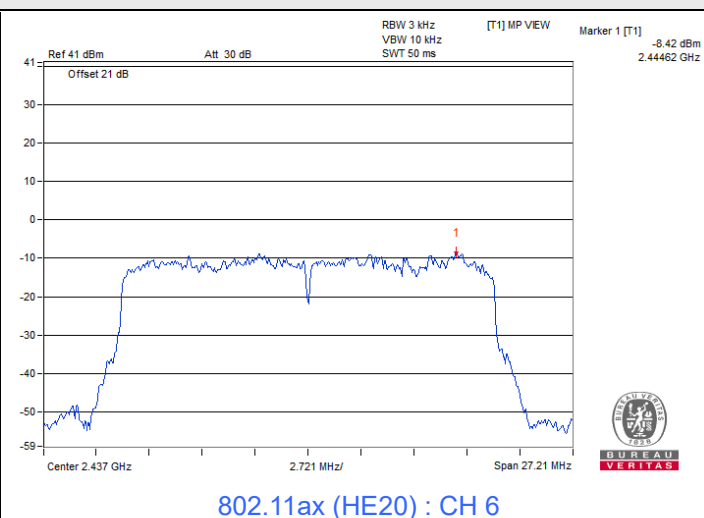
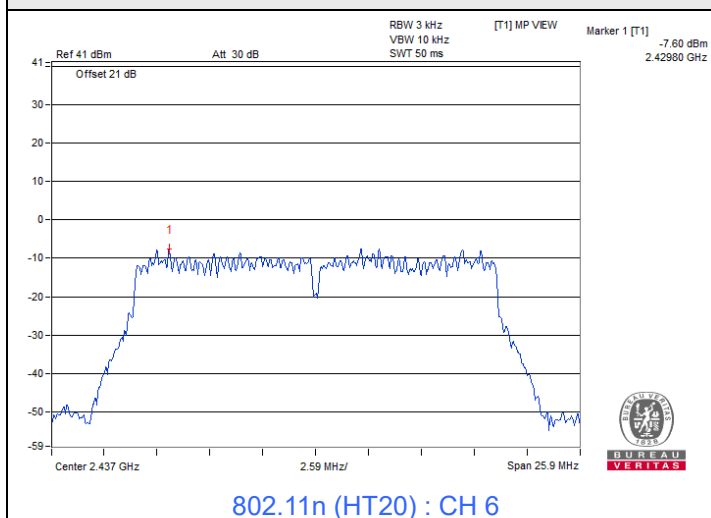
Chan.	Chan. Freq. (MHz)	PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Test Result
1	2412	-13.78	8	Pass
6	2437	-13.61	8	Pass
11	2462	-13.57	8	Pass

Note: The antenna gain is 3.18 dBi < 6 dBi, so the power density limit shall not be reduced.

Spectrum Plot of Maximum Value



Spectrum Plot of Maximum Value



8 Information of the Testing Laboratories

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are FCC recognized accredited test firms and accredited according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

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Web Site: <http://ee.bureauveritas.com.tw>

The address and road map of all our labs can be found in our web site also.

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