Certificate No.: 3745.01

FCC - TEST REPORT

Report Number	:	**708882102927-01**	Date of Issue:	April 19, 2024

Model	:	CB2S
Product Type	:	Wi-Fi and Bluetooth module
Applicant	:	Hangzhou Tuya Information Technology Co.,Ltd
Address	:	Room 301, Building 1, Huace Center, Xihu District, Hangzhou City, Zhejiang Province, China
Production Facility	:	Hangzhou Tuya Information Technology Co.,Ltd
Address	:	Room 301, Building 1, Huace Center, Xihu District, Hangzhou City, Zhejiang Province, China

Test Result	:	■ **Positive** ☐ **Negative**
Total pages including Appendices	:	27

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2 Details about the Test Laboratory

Details about the Test Laboratory
Test Site 1

Company name:	TÜV SÜD Certification and Testing (China) Co., Ltd. Shanghai Branch No.16 Lane, 1951 Du Hui Road, Shanghai 201108, P.R. China
Telephone:	+86 21 6141 0123
Fax:	+86 21 6140 8600
FCC Registration No.:	820234
FCC Designation Number:	CN1183
ISED CAB identifier	CN0101
IC Registration No.:	31668

3 Description of the Equipment under Test

Product:	Wi-Fi and Bluetooth module
Model no.:	CB2S
FCC ID:	2ANDL-CB2S
Options and accessories:	NA
Rating:	DC 3.0-3.6V
RF Transmission Frequency:	For 802.11b/g/n-HT20: 2412~2462 MHz For 802.11n-HT40: 2422~2452 MHz For 802.15.1:2402~2480 MHz
No. of Operated Channel:	2.4GHz WIFI: 11 for 802.11b/802.11g/802.11n(H20) 7 for 802.11n(H40) 2.4GHz BLE: 40
Modulation:	For 2.4GHz WIFI: Direct Sequence Spread Spectrum (DSSS) for 802.11b Orthogonal Frequency Division Multiplexing (OFDM) for 802.11g/n For 2.4GHz BLE: GFSK

Channel list:

802.11b/g/n(HT20)			
Ch	Fre(MHz)	Ch	Fre(MHz)
1	2412	7	2442
2	2417	8	2447
3	2422	9	2452
4	2427	10	2457
5	2432	11	2462
6	2437		

802.11n(HT40)			
Ch	Fre(MHz)	Ch	Fre(MHz)
3	2422	7	2442
4	2427	8	2447
5	2432	9	2452
6	2437		

Bluetooth Low Energy							
Ch	Fre(MHz)	Ch	Fre(MHz)	Ch	Fre(MHz)	Ch	Fre(MHz)
0	2402	10	2422	20	2442	30	2462
1	2404	11	2424	21	2444	31	2464
2	2406	12	2426	22	2446	32	2466
3	2408	13	2428	23	2448	33	2468
4	2410	14	2430	24	2450	34	2470
5	2412	15	2432	25	2452	35	2472
6	2414	16	2434	26	2454	36	2474

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7	2416	17	2436	27	2456	37	2476
8	2418	18	2438	28	2458	38	2478
9	2420	19	2440	29	2460	39	2480

Antenna Type:	PCB Antenna
Antenna Gain:	0 dBi
Description of the EUT:	The Equipment Under Test (EUT) is a low-power embedded Wi-Fi and Bluetooth module (5.1). We tested it and listed the worst data in this report.
Test sample no.:	SHA-800011-2 (Conducted sample), SHA-800011-1 (Radiated sample)

The sample's mentioned in this report is/are submitted/ supplied/ manufactured by client. The laboratory therefore assumes no responsibility for accuracy of information on the brand name, model number, origin of manufacture, consignment, antenna gain or any information supplied.

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4 Summary of Test Standards

Test Standards	
FCC Part 15 Subpart C 10-1-2023 Edition	PART 15 - RADIO FREQUENCY DEVICES Subpart C - Intentional Radiators

All the test methods were according to KDB 558074 D01 15.247 Measurement Guidance v05r02 and ANSI C63.10 (2013).

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5 Summary of Test Results

Technical Requirements						
FCC Part 15 Subpart C						
Test Condition		Pages	Test Site	Test Result		
				Pass	Fail	N/A
§15.207	Conducted emission AC power port	---	---	☒	☐	☐
§15.247 (b) (3)	Conducted peak output power	14-15	Site 1	☒	☐	☐
§15.247(a)(1)	20dB bandwidth and 99% Occupied Bandwidth	---	---	☐	☐	☒
§15.247(a)(1)	Carrier frequency separation	---	---	☐	☐	☒
§15.247(a)(1)(iii)	Number of hopping frequencies	---	---	☐	☐	☒
§15.247(a)(1)(iii)	Dwell Time - Average Time of Occupancy	---	---	☐	☐	☒
§15.247(a)(2)	6dB bandwidth and 99% Occupied Bandwidth	---	---	☒	☐	☐
§15.247(e)	Power spectral density	---	---	☒	☐	☐
§15.247(d)	Spurious RF conducted emissions	---	---	☒	☐	☐
§15.247(d)	Band edge	---	---	☒	☐	☐
§15.247(d) & §15.209	Spurious radiated emissions for transmitter	16-23	Site 1	☒	☐	☐
§15.203	Antenna requirement	See note 1		☒	☐	☐

Remark 1: N/A-Not Applicable.

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Note 1: The EUT uses an PCB antenna, which gain is 0 dBi. In accordance to §15.203, It is considered sufficiently to comply with the provisions of this section.

15.203 requirement: An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. 15.247(c) (1)(i) requirement: (i) Systems operating in the 2400-2483.5 MHz band that is used exclusively for fixed. Point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6dBi

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6 General Remarks

Remarks

NOTICE: This report is a SUPPLEMENT OF PROJECT 708882102927-00. So the report is not valid without the report of 708882102927-00.

This submittal(s) (test report) is intended for FCC ID: 2ANDL-CB2S, complies with Section 15.207, 15.209, 15.247 of the FCC Part 15, Subpart C Rules.

According to the client's declaration, the module optimizes and upgrades the antenna matching circuit. So in this test report only test data of “Conducted peak output power” and "Spurious radiated emissions for transmitter" was new data, other tests were referred from 708882102927-00, and the test data are still effective.

This report is only for the 2.4GHz Wi-Fi test report, for the 2.4GHz BLE test report please refer to 708882102926-01.

According to the client’s declaration, the “ILAC – A2LA Accredited” symbol is added to the report.

SUMMARY:

All tests according to the regulations cited on page 5 were
■ - Performed
☐ - **Not** Performed
The Equipment under Test
■ - **Fulfills** the general approval requirements.
☐ - **Does not** fulfill the general approval requirements.

Sample Received Date: March 27, 2024

Testing Start Date: April 7, 2024

Testing End Date: April 12, 2024

-TÜV SÜD Certification and Testing (China) Co., Ltd. Shanghai Branch

Reviewed by:	Prepared by:	Tested by:
Hui TONG	Wenqiang LU	Tianji XU
Review Engineer	Project Engineer	Test Engineer

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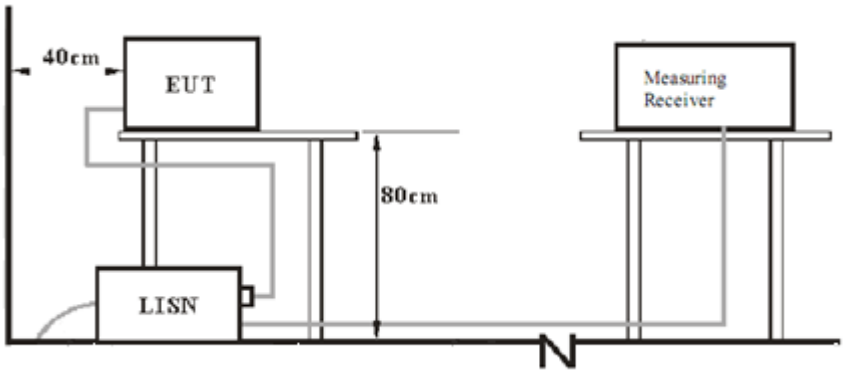
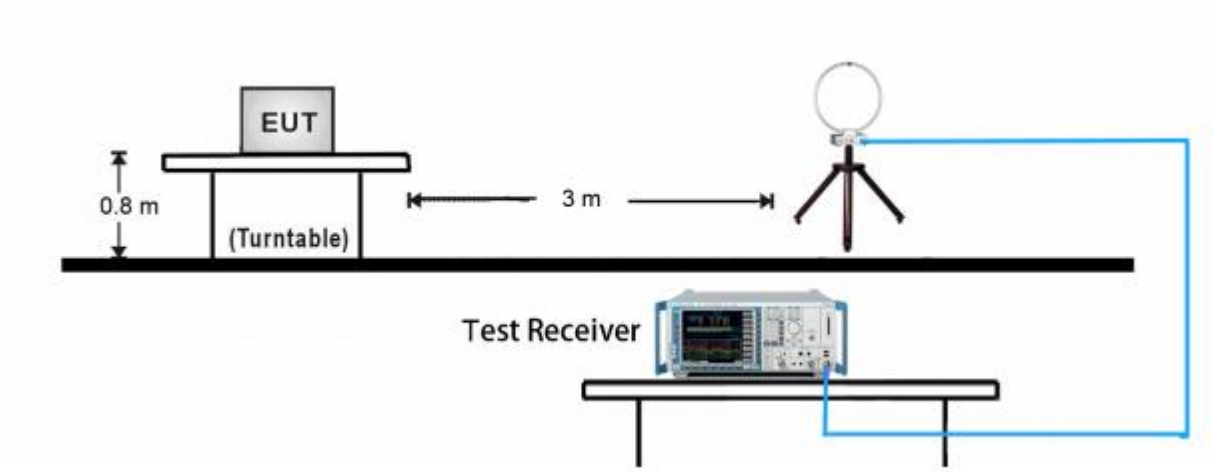
7 Test Setups

7.1 AC Power Line Conducted Emission test setups



7.2 Radiated test setups

9kHz ~ 30MHz Test Setup:



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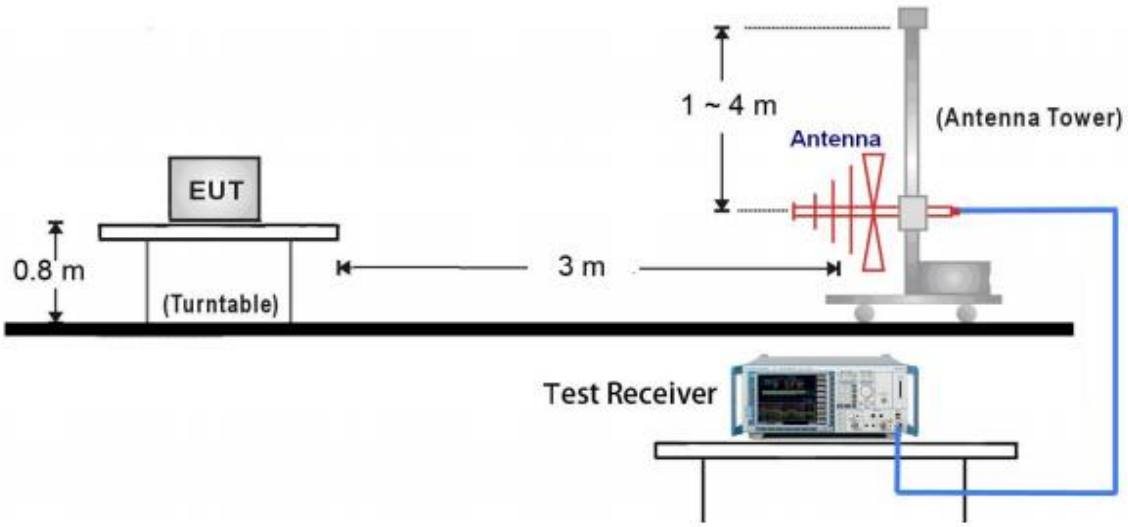
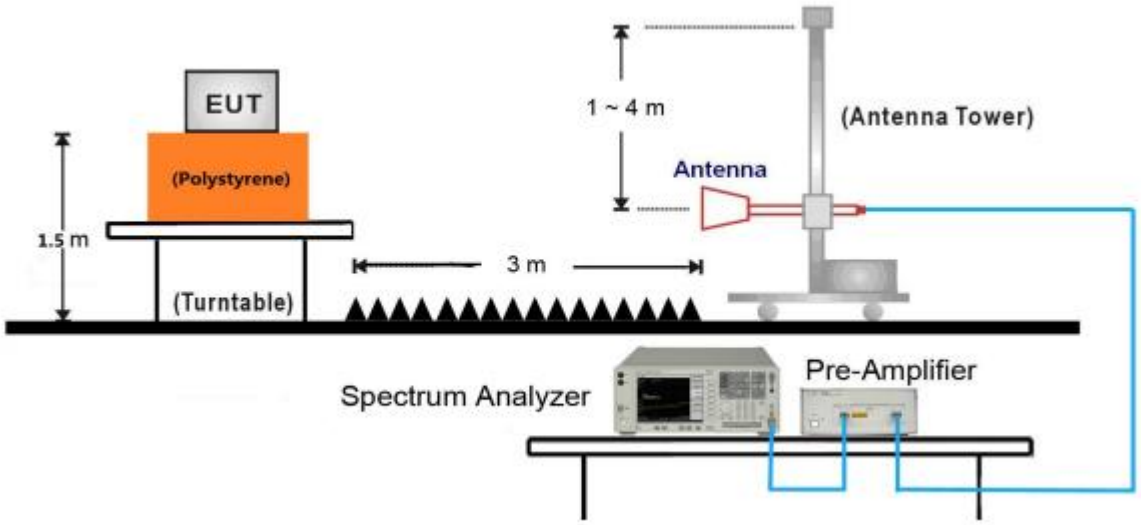
30MHz ~ 1GHz Test Setup:



1GHz ~ 18GHz Test Setup:



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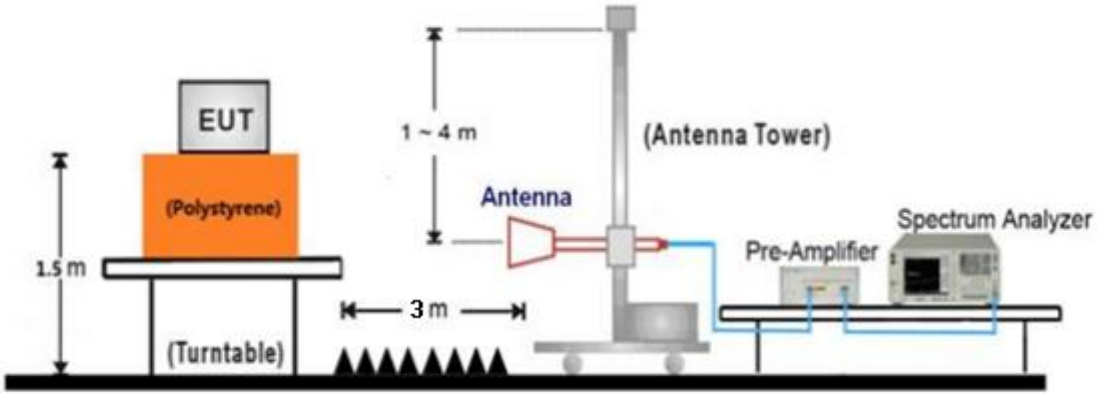
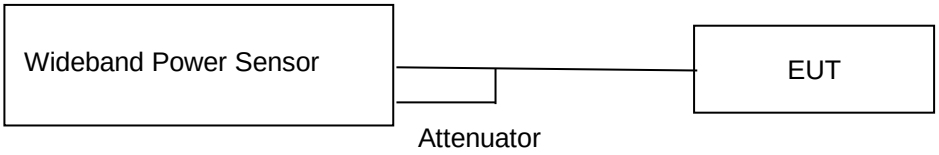
18GHz ~ 25GHz Test Setup:

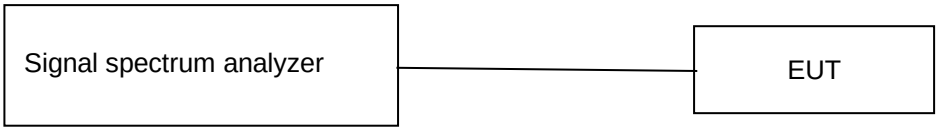


7.3 Conducted RF test setups

For Conducted peak output power



For other test items



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8 Systems test configuration

Auxiliary Equipment Used during Test:

DESCRIPTION	MANUFACTURER	MODEL NO.(SHIELD)	S/N(LENGTH)
Notebook	Lenove	E470	PF-OU5TS7 17/09

Test software: Wi-Fi test tool V1.4.2

The system was configured to channel 1(2412MHz), 6(2437MHz), and 11(2462MHz) for 802.11 b/g/n HT20 test and channel 3(2422MHz), 6(2437MHz), and 9(2452MHz) for 802.11n HT40.

Test Mode Applicability and Tested Channel Detail:

Mode	Tested Channel	Data Rate (Mbps)	Modulation	Index Value (Power level setting)
802.11b	1	1	CCK	default
	6	1	CCK	default
	11	1	CCK	default
802.11g	1	6	OFDM	default
	6	6	OFDM	default
	11	6	OFDM	default
802.11n HT20	1	MCS0	OFDM	default
	6	MCS0	OFDM	default
	11	MCS0	OFDM	default
802.11n HT40	3	MCS0	OFDM	default
	6	MCS0	OFDM	default
	9	MCS0	OFDM	default

Non-hopping mode: The system was configured to operate at a signal channel transmitting. The test software allows the configuration and operation at the worst-case duty and the highest transmit power.

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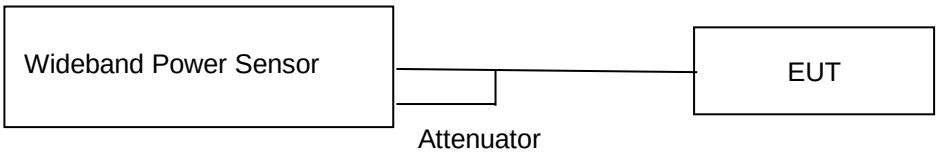
9 Technical Requirement

9.1 Conducted peak output power

Test Method

1) The EUT is configured to transmit continuously, or to transmit with a constant duty cycle.
2) At all times when the EUT is transmitting, it shall be transmitting at its maximum power control level.
3) The integration period of the power meter exceeds the repetition period of the transmitted signal by at least a factor of five.

4) Measure the peak power of the transmitter. This measurement is a peak over both the ON and OFF periods of the transmitter.



Wideband Power Sensor conducted test setup

Limits

According to §15.247 (b) (3), conducted peak output power limit as below:

	Frequency Range	Limit	Limit
	MHz	W	dBm
Conducted peak output power	2400-2483.5	≤1	≤30

Test result as below table

802.11b: 0 dBi			
Frequency (MHz)	Conducted Peak Output Power (dBm)		
	Result	limit	Verdict
2412MHz	18.01	≤30	Pass
2437MHz	17.82	≤30	Pass
2462MHz	18.75	≤30	Pass

802.11g: 0 dBi			
Frequency (MHz)	Conducted Peak Output Power (dBm)		
	Result	limit	Verdict
2412MHz	22.03	≤30	Pass
2437MHz	22.01	≤30	Pass
2462MHz	22.47	≤30	Pass

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802.11n(HT20): 0 dBi			
Frequency (MHz)	Conducted Peak Output Power (dBm)		
	Result	limit	Verdict
2412MHz	21.63	≤30	Pass
2437MHz	21.58	≤30	Pass
2462MHz	22.03	≤30	Pass

802.11n(HT40): 0 dBi			
Frequency (MHz)	Conducted Peak Output Power (dBm)		
	Result	limit	Verdict
2422MHz	21.18	≤30	Pass
2437MHz	20.85	≤30	Pass
2452MHz	21.05	≤30	Pass

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9.2 Spurious radiated emissions for transmitter

Test Method

1. The EUT was place on a turn table which is 1.5m above ground plane for above 1GHz and 0.8m above ground for below 1GHz at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
2. The EUT was set 3 meters away from the interference – receiving antenna, which was mounted on the top of a variable – height antenna tower.
3. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
5. Use the following spectrum analyzer settings According to C63.10

   1) Procedure for Unwanted Emissions Measurements Below 1000 MHz

   Span = wide enough to capture the peak level of the in-band emission and all spurious RBW = 100 kHz to 120kHz, VBW≥RBW for peak measurement, Sweep = auto, Detector function = peak, Trace = max hold.

   2) For Peak unwanted emissions Above 1GHz:

   Span = wide enough to capture the peak level of the in-band emission and all spurious RBW = 1MHz, VBW≥RBW for peak measurement, Sweep = auto, Detector function = peak, Trace = max hold.

   Procedures for average unwanted emissions measurements above 1GHz

   a) RBW = 1MHz.

   b) VBW \ [3 × RBW].

   c) Detector = RMS (power averaging), if [span / (# of points in sweep)] \ RBW / 2. Satisfying this condition can require increasing the number of points in the sweep or reducing the span. If the condition is not satisfied, then the detector mode shall be set to peak.

   d) Averaging type = power (i.e., rms) (As an alternative, the detector and averaging type may be set for linear voltage averaging. Some instruments require linear display mode to use linear voltage averaging. Log or dB averaging shall not be used.)

   e) Sweep time = auto.

   f) Perform a trace average of at least 100 traces if the transmission is continuous. If the transmission is not continuous, then the number of traces shall be increased by a factor of 1 / D, where D is the duty cycle. For example, with 50% duty cycle, at least 200 traces shall be averaged. (If a specific emission is demonstrated to be continuous—i.e., 100% duty cycle—then rather than turning ON and OFF with the transmit cycle, at least 100 traces shall be averaged.)

   g) If tests are performed with the EUT transmitting at a duty cycle less than 98%, then a correction factor shall be added to the measurement results prior to comparing with the emission limit, to compute the emission level that would have been measured had the test been performed at 100% duty cycle. The correction factor is computed as follows:

   1) If power averaging (rms) mode was used in the preceding step e), then the correction factor is [10 log (1 / D)], where D is the duty cycle. For example, if the transmit duty cycle was 50%, then 3 dB shall be added to the measured emission levels.

   2) If linear voltage averaging mode was used in the preceding step e), then the correction

factor is [20 log (1 / D)], where D is the duty cycle. For example, if the transmit duty cycle was 50%, then 6 dB shall be added to the measured emission levels.
3) If a specific emission is demonstrated to be continuous (100% duty cycle) rather than turning ON and OFF with the transmit cycle, then no duty cycle correction is required for that emission (AV) at frequency above 1GHz.

Limit

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the RF power that is produced shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided that the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under § 15.247(b)(3), the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general field strength limits specified in § 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a).

Frequency MHz	Field Strength µV/m	Field Strength dBµV/m	Detector	Measurement distance meters
0.009-0.490	2400/F(kHz)	48.5-13.8	AV	300
0.490-1.705	24000/F(kHz)	33.8-23.0	QP	30
1.705-30	30	29.5	QP	30
30-88	100	40	QP	3
88-216	150	43.5	QP	3
216-960	200	46	QP	3
960-1000	500	54	QP	3
Above 1000	500	54	AV	3
Above 1000	5000	74	PK	3

Note 1: Limit 3m(dBµV/m)=Limit 300m(dBµV/m)+40Log(300m/3m) (Below 30MHz)
Note 2: Limit 3m(dBµV/m)=Limit 30m(dBµV/m)+40Log(30m/3m) (Below 30MHz)

Spurious Radiated Emissions for Transmitter

According to C63.10, if the peak (or quasi-peak) measured value complies with the average limit, it is unnecessary to perform an average measurement, so AV emission value did not show in below table if the peak value complies with average limit.
Data of measurement within frequency range 9kHz-30MHz is the noise floor or attenuated more than 20dB below the permissible limits or the field strength is too small to be measured, so test data does not present in this report.

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Above 1GHz Transmitting spurious emission test result as below:

802.11 b
2412MHz

Frequency	Emission Level	Polarization	Limit	Detector	Margin	Result
MHz	dBuV/m		dBµV/m		dBµV/m	
2382.3	49.0	Horizontal	74.0	Peak	25	pass
4822.3	44.1	Horizontal	74.0	Peak	29.9	pass
2383.2	47.9	Vertical	74.0	Peak	26.1	pass
4824.4	43.7	Vertical	74.0	Peak	30.3	pass

2437MHz

Frequency	Emission Level	Polarization	Limit	Detector	Margin	Result
MHz	dBuV/m		dBµV/m		dBµV/m	
4875.4	44.4	Horizontal	74.0	Peak	29.6	pass
4873.8	45.2	Vertical	74.0	Peak	28.8	pass

2462MHz

Frequency	Emission Level	Polarization	Limit	Detector	Margin	Result
MHz	dBuV/m		dBµV/m		dBµV/m	
2483.6	49.5	Horizontal	74.0	Peak	24.5	pass
4924.3	44.3	Horizontal	74.0	Peak	29.7	pass
2483.8	49.9	Vertical	74.0	Peak	24.1	pass
4923.2	43.9	Vertical	74.0	Peak	30.1	pass

Remark:

(1) Emission level= Original Receiver Reading + Correct Factor
(2) Correct Factor = Antenna Factor + Cable Loss -Amplifier gain
(3) Margin = limit – Corrected Reading

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802.11 g
2412MHz

Frequency	Emission Level	Polarization	Limit	Detector	Margin	Result
MHz	dBuV/m		dBµV/m		dBµV/m	
2385.0	48.6	Horizontal	74.0	Peak	25.4	pass
4826.5	43.3	Horizontal	74.0	Peak	30.7	pass
2383.5	48.1	Vertical	74.0	Peak	25.9	pass
4824.4	43.3	Vertical	74.0	Peak	30.7	pass

2437MHz

Frequency	Emission Level	Polarization	Limit	Detector	Margin	Result
MHz	dBuV/m		dBµV/m		dBµV/m	
4874.9	44.2	Horizontal	74.0	Peak	29.8	pass
4873.3	43.9	Vertical	74.0	Peak	30.1	pass

2462MHz

Frequency	Emission Level	Polarization	Limit	Detector	Margin	Result
MHz	dBuV/m		dBµV/m		dBµV/m	
2483.7	50.2	Horizontal	74.0	Peak	23.8	pass
4927.0	42.7	Horizontal	74.0	Peak	31.3	pass
2483.5	50.4	Vertical	74.0	Peak	23.6	pass
4928.1	43.7	Vertical	74.0	Peak	30.3	pass

Remark:

(1) Emission level= Original Receiver Reading + Correct Factor
(2) Correct Factor = Antenna Factor + Cable Loss -Amplifier gain
(3) Margin = limit – Corrected Reading

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802.11 n20
2412MHz

Frequency	Emission Level	Polarization	Limit	Detector	Margin	Result
MHz	dBuV/m		dBµV/m		dBµV/m	
2385.6	50.8	Horizontal	74.0	Peak	23.2	pass
4824.4	44.8	Horizontal	74.0	Peak	29.2	pass
2385.6	48.3	Vertical	74.0	Peak	25.7	pass
4822.8	43.8	Vertical	74.0	Peak	30.2	pass

2437MHz

Frequency	Emission Level	Polarization	Limit	Detector	Margin	Result
MHz	dBuV/m		dBµV/m		dBµV/m	
4872.3	44.3	Horizontal	74.0	Peak	29.7	pass
4871.2	43.3	Vertical	74.0	Peak	30.7	pass

2462MHz

Frequency	Emission Level	Polarization	Limit	Detector	Margin	Result
MHz	dBuV/m		dBµV/m		dBµV/m	
2484.8	47.1	Horizontal	74.0	Peak	26.9	pass
4924.3	44.5	Horizontal	74.0	Peak	29.5	pass
2483.7	49.4	Vertical	74.0	Peak	24.6	pass
4925.9	45.8	Vertical	74.0	Peak	28.2	pass

Remark:

(1) Emission level= Original Receiver Reading + Correct Factor
(2) Correct Factor = Antenna Factor + Cable Loss -Amplifier gain
(3) Margin = limit – Corrected Reading

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802.11 n40

2422MHz

Frequency	Emission Level	Polarization	Limit	Detector	Margin	Result
MHz	dBuV/m		dBµV/m		dBµV/m	
2384.7	48.5	Horizontal	74.0	Peak	25.5	pass
4824.3	42.2	Horizontal	74.0	Peak	31.8	pass
2385.5	47.1	Vertical	74.0	Peak	26.9	pass
4826.6	43.5	Vertical	74.0	Peak	30.5	pass

2437MHz

Frequency	Emission Level	Polarization	Limit	Detector	Margin	Result
MHz	dBuV/m		dBµV/m		dBµV/m	
4871.2	43.7	Horizontal	74.0	Peak	30.3	pass
4873.8	44.2	Vertical	74.0	Peak	29.8	pass

2452MHz

Frequency	Emission Level	Polarization	Limit	Detector	Margin	Result
MHz	dBuV/m		dBµV/m		dBµV/m	
2483.6	48.2	Horizontal	74.0	Peak	26.8	pass
4924.8	45.3	Horizontal	74.0	Peak	28.7	pass
2484.0	47.2	Vertical	74.0	Peak	26.8	pass
4927.5	44.1	Vertical	74.0	Peak	29.9	pass

Remark:

(1) Emission level= Original Receiver Reading + Correct Factor

(2) Correct Factor = Antenna Factor + Cable Loss -Amplifier gain

(3) Margin = limit – Corrected Reading

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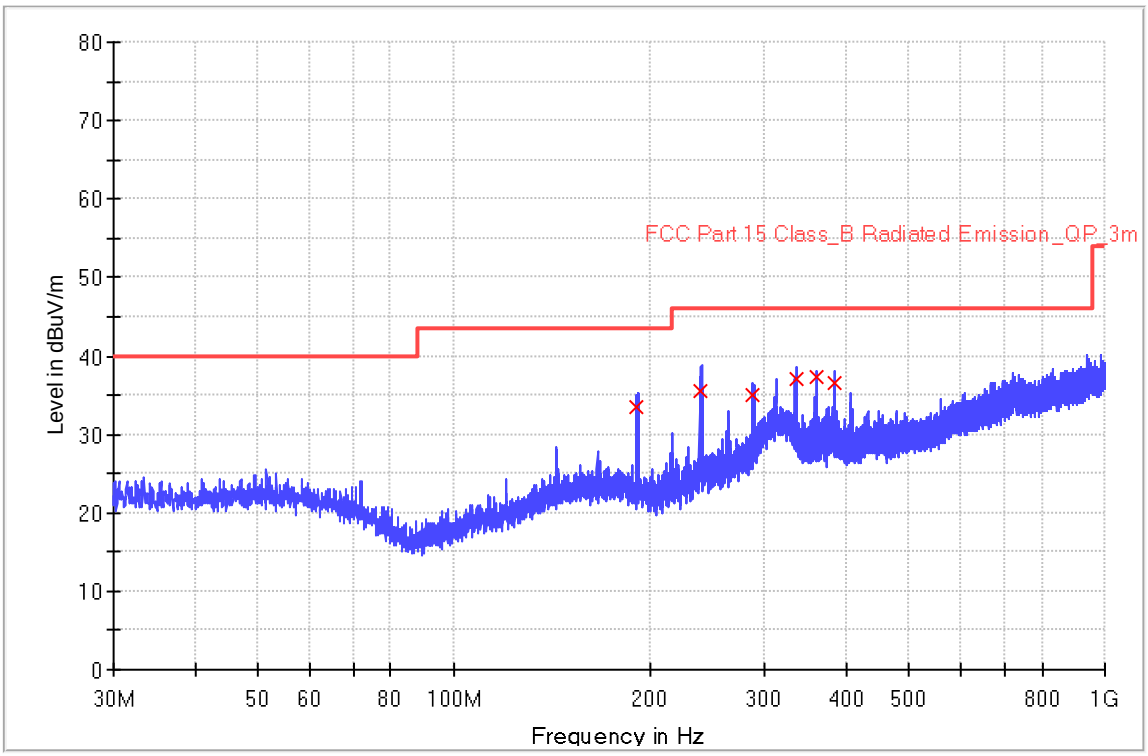
The worst case of Radiated Emission below 1GHz:

Site: 3 meter chamber	Time: 2024/04/08 - 12:23
Limit: FCC_Part15.209_RE(3m)	Engineer: Wenqiang LU
Probe: VULB9168	Polarity: Horizontal
EUT: Wi-Fi and Bluetooth module, Model no: CB2S	Power: 120VAC, 60Hz
Note: Transmit by at channel 2462MHz for 802.11g (worst case).	

RE_VULB9168_pre_Cont_30-1000



Limit and Margin

Frequency (MHz)	QuasiPeak (dBuV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dBuV/m)
191.000000	33.4	1000.0	120.000	100.0	H	54.0	18.5	10.1	43.5
239.440000	35.6	1000.0	120.000	125.0	H	92.0	19.5	10.4	46.0
287.280000	35.1	1000.0	120.000	302.0	H	186.0	21.2	10.9	46.0
336.000000	37.1	1000.0	120.000	100.0	H	15.0	22.6	8.9	46.0
360.000000	37.2	1000.0	120.000	118.0	H	332.0	23.0	8.8	46.0
383.960000	36.6	1000.0	120.000	200.0	H	224.0	23.8	9.4	46.0

Note 1: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB)
Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)
Note 2: The test trace is same as the ambient noise and the amplitude of the emissions are attenuated more than 20dB below the permissible (the test frequency range: 9kHz ~ 30MHz, 18GHz ~ 25GHz), therefore no data appear in the report.

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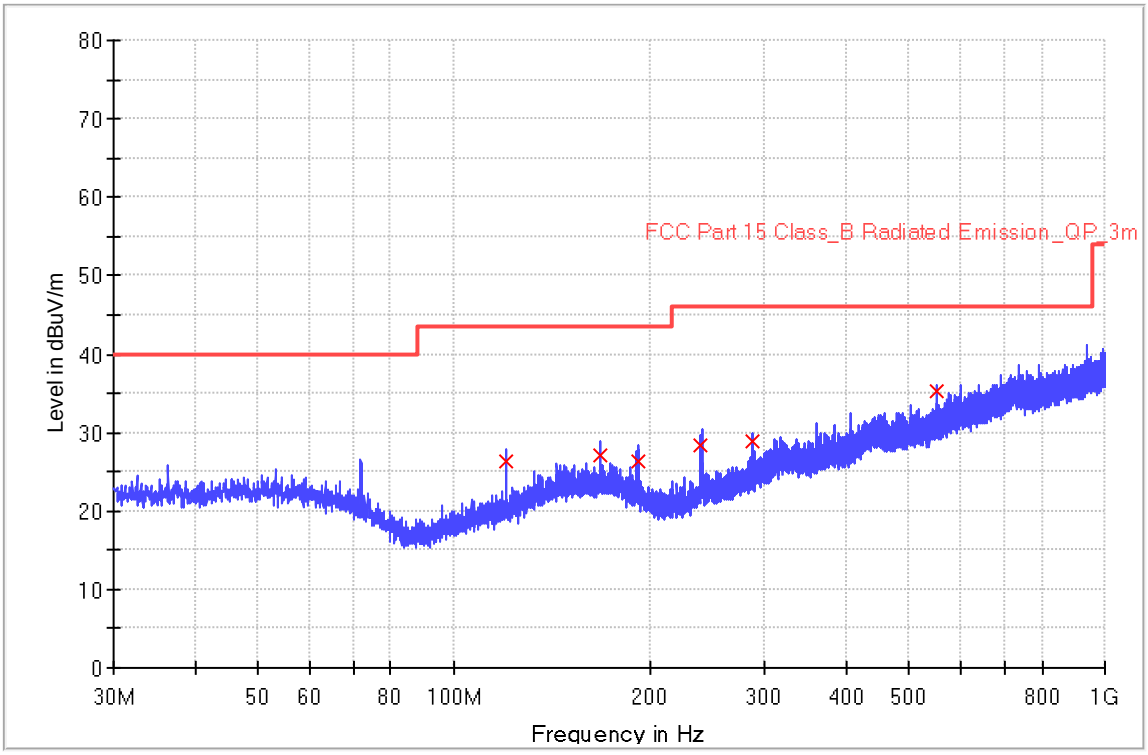
Site: 3 meter chamber	Time: 2024/04/08 - 13:11
Limit: FCC_Part15.209_RE(3m)	Engineer: Wenqiang LU
Probe: VULB9168	Polarity: Vertical
EUT: Wi-Fi and Bluetooth module, Model no: CB2S	Power: 120VAC, 60Hz
Note: Transmit by at channel 2462MHz for 802.11g (worst case).	

RE_VULB9168_pre_Cont_30-1000



Limit and Margin

Frequency (MHz)	QuasiPeak (dBuV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dBuV/m)
119.960000	26.3	1000.0	120.000	100.0	V	331.0	18.1	17.2	43.5
168.000000	27.1	1000.0	120.000	211.0	V	25.0	20.4	16.4	43.5
191.640000	26.3	1000.0	120.000	185.0	V	175.0	18.4	17.2	43.5
239.560000	28.4	1000.0	120.000	200.0	V	229.0	19.5	17.6	46.0
286.720000	28.9	1000.0	120.000	100.0	V	302.0	21.2	17.1	46.0
552.000000	35.2	1000.0	120.000	125.0	V	169.0	27.5	10.8	46.0

Note 1: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB)
Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)
Note 2: The test trace is same as the ambient noise and the amplitude of the emissions are attenuated more than 20dB below the permissible (the test frequency range: 9kHz ~ 30MHz, 18GHz ~ 25GHz), therefore no data appear in the report.

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10 Test Equipment List

List of Test Instruments
Test Site1

	DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL. DATE	CAL. DUE DATE
C	Signal spectrum analyzer	Agilent	N9020B	MY59050168	2024-2-19	2025-2-18
	Wideband power sensor	Rohde & Schwarz	NRP-Z81	105903	2024-2-19	2025-2-18
	10dB Attenuator	Aeroflex Weinschel	CG-4689	93459	2024-2-19	2025-2-18
RE	EMI Test Receiver	Rohde & Schwarz	ESR3	101906	2023-8-1	2024-7-31
	Signal Analyzer	Rohde & Schwarz	FSV40	101091	2023-8-1	2024-7-31
	Trilog Super Broadband Test Antenna	Schwarzbeck	VULB 9168	961	2021-9-23	2024-9-22
	Double-ridged waveguide horn antenna	Rohde & Schwarz	HF907	102393	2021-4-13	2024-4-12
	Pre-amplifier	Rohde & Schwarz	SCU-18D	19006451	2023-8-1	2024-7-31
	Loop antenna	Rohde & Schwarz	HFH2-Z2	100443	2023-6-15	2024-6-14
	Double Ridged Horn Antenna	ETS-Lindgren	3116C	00246076	2023-7-7	2026-7-6
	3m Semi-anechoic chamber	TDK	9X6X6	----	2021-5-8	2024-5-7

Measurement Software Information			
Test Item	Software	Manufacturer	Version
C	MTS 8310	MWRFtest	3.0.0.0
	Power Viewer	Rohde & Schwarz	V 11.0
RE	EMC 32	Rohde & Schwarz	V10.50.40

C - Conducted RF tests

- Conducted peak output power
- 6dB bandwidth and 99% Occupied Bandwidth
- Power spectral density*
- Spurious RF conducted emissions
- Band edge

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11 System Measurement Uncertainty

For a 95% confidence level, the measurement expanded uncertainties for defined systems, in accordance with the recommendations of ISO 17025 were:

Items	Extended Uncertainty
Conducted Disturbance at Mains Terminals	150kHz to 30MHz, LISN, 3.16dB
Radiated Disturbance	9kHz to 30MHz, 3.52dB 30MHz to 1GHz, 5.03dB (Horizontal) 5.12dB (Vertical) 1GHz to 18GHz, 5.49dB 18GHz to 40GHz, 5.63dB
RF Conducted Measurement	Power related： 1.16dB Frequency related： 6.00×10^{-8}

Measurement Uncertainty Decision Rule:

Determination of conformity with the specification limits is based on the decision rule according to IEC Guide 115: 2021, clause 4.4.3 and 4.5.1.

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12 Photographs of Test Set-ups

Refer to the < Test Setup photos >.

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13 Photographs of EUT

Refer to the < External Photos > & < Internal Photos >.

----------End of Test Report----------

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