Shenzhen CTL Testing Technology Co., Ltd.
Tel: +86-755-89486194 E-mail: ctl@ctl-lab.com

TEST REPORT

47 CFR Part 15, Subpart C 15.247

Report Reference No.....:	**CTL2408147031-WF02**
Compiled by: (position+printed name+signature)	Happy Guo (File administrators)
Tested by: (position+printed name+signature)	Jack Wang (Test Engineer)
Approved by: (position+printed name+signature)	Ivan Xie (Manager)

Product Name.....:	ROBOTIC POOL SKIMMER
Model/Type reference.....:	SKS2
List Model(s).....:	N/A
Trade Mark.....:	Aiper
FCC ID.....:	**2BD5N-SURFERS2**
Applicant's name.....:	**Shenzhen Aiper Intelligent Co.,Ltd.**
Address of applicant.....:	32nd floor, Block C, Phase 2 Galaxy World, Minle community, Minzhi street, Longhua district, Shenzhen, China
Test Firm.....:	**Shenzhen CTL Testing Technology Co., Ltd.**
Address of Test Firm.....:	Floor 1-A, Baisha Technology Park, No.3011, Shahexi Road, Nanshan District, Shenzhen, China 518055
Test specification.....:	
Standard.....:	**47 CFR Part 15, Subpart C 15.247:** Operation within the bands 902-928 MHz, 2400-2483.5 MHz and 5725-5850 MHz.
TRF Originator.....:	Shenzhen CTL Testing Technology Co., Ltd.
Master TRF.....:	Dated 2011-01
Date of receipt of test item.....:	October 23, 2024
Date of Test Date.....:	October 23, 2024-November 23, 2024
Date of Issue.....:	December 2, 2024
Result.....:	**Pass**

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TEST REPORT

Test Report No. :	CTL2408147031-WF02	December 2, 2024 Date of issue

Equipment under Test	:	ROBOTIC POOL SKIMMER
Sample No	:	CTL2408147031
Model /Type	:	SKS2
Listed Models	:	N/A
Applicant	:	**Shenzhen Aiper Intelligent Co.,Ltd.**
Address	:	32nd floor, Block C, Phase 2 Galaxy World, Minle community, Minzhi street, Longhua district, Shenzhen, China
Manufacturer	:	**Shenzhen Aiper Intelligent Co.,Ltd.**
Address	:	32nd floor, Block C, Phase 2 Galaxy World, Minle community, Minzhi street, Longhua district, Shenzhen, China

Test result	**Pass ***

* In the configuration tested, the EUT complied with the standards specified page 5.

The test results presented in this report relate only to the object tested.
This report shall not be reproduced, except in full, without the written approval of the issuing testing laboratory.

** Modified History **

Revisions	Description	Issued Data	Report No.	Remark
Version 1.0	Initial Test Report Release	December 2, 2024	CTL2408147031-WF02	Tracy Qi

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1. SUMMARY

1.1. TEST STANDARDS

The tests were performed according to following standards:
47 CFR Part 15, Subpart C 15.247: Frequency Hopping, Direct Spread Spectrum and Hybrid Systems that are in operation within the bands of 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz

ANSI C63.10: 2013: American National Standard for Testing Unlicensed Wireless Devices

KDB 558074 D01 v05r02: KDB558074 D01 15.247 Meas Guidance v05r02

1.2. Test Description

47 CFR Part 15, Subpart C 15.247		
47 CFR Part 15, Subpart C 15.207	AC Power Conducted Emission	PASS
47 CFR Part 15, Subpart C 15.247(a)(2)	6dB Bandwidth	PASS
47 CFR Part 15, Subpart C 15.247(d)	Spurious RF Conducted Emission	PASS
47 CFR Part 15, Subpart C 15.247(b)	Maximum Conducted Output Power	PASS
47 CFR Part 15, Subpart C 15.247(e)	Power Spectral Density	PASS
47 CFR Part 15, Subpart C 15.109/ 15.205/ 15.209	Radiated Emissions	PASS
47 CFR Part 15, Subpart C 15.247(d)	Band Edge	PASS
47 CFR Part 15, Subpart C 15.203/15.247 (b)	Antenna Requirement	PASS

1.3. Test Facility

1.3.1 Address of the test laboratory

Shenzhen CTL Testing Technology Co.,Ltd.
Floor 1-A, Baisha Technology Park, No.3011, Shahexi Road, Nanshan District, Shenzhen, China 518055

There is one 3m semi-anechoic chamber and two line conducted labs for final test. The Test Sites meet the requirements in documents ANSI C63.10 and CISPR 32/EN 55032 requirements.

1.3.2 Laboratory accreditation

The test facility is recognized, certified, or accredited by the following organizations:

CNAS-Lab Code: L7497

Shenzhen CTL Testing Technology Co., Ltd. has been assessed and proved to be in compliance with CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC 17025: 2017 General Requirements) for the Competence of Testing and Calibration Laboratories.

A2LA-Lab Cert. No. 4343.01

Shenzhen CTL Testing Technology Co., Ltd, EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025: 2017 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

IC Registration No.: 9618B

CAB identifier: CN0041

The 3m alternate test site of Shenzhen CTL Testing Technology Co., Ltd. EMC Laboratory has been registered by Innovation, Science and Economic Development Canada to test to Canadian radio equipment requirements with Registration No.: 9618B.

FCC-Registration No.: 399832

Designation No.: CN1216

Shenzhen CTL Testing Technology Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 399832.

1.4. Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to CISPR 16 - 4 “Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements“ and is documented in the Shenzhen CTL Testing Technology Co., Ltd. quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for CTL laboratory is reported:

Test	Measurement Uncertainty	Notes
Transmitter power conducted	±0.57 dB	(1)
Transmitter power Radiated	±2.20 dB	(1)
Conducted spurious emission 9KHz-40 GHz	±2.20 dB	(1)
Occupied Bandwidth	±0.01ppm	(1)
Radiated Emission9KHz~30MHz	±3.66dB	(1)
Radiated Emission 30~1000MHz	±4.10dB	(1)
Radiated Emission Above 1GHz	±4.32dB	(1)
20dB Emission Bandwidth	±1.9%	(1)
Carrier Frequency Separation	±1.9%	(1)
Maximum Power Spectral Density Level	±0.98 dB	(1)
Number of Hopping Channel	±1.9%	(1)
Time of Occupancy	±0.11%	(1)
Max Peak Conducted Output Power	±0.98 dB	(1)
Band-edge Spurious Emission	±1.21dB	(1)
Conducted RF Spurious Emission	9kHz-7GHz:±1.09dB 7GHz-26.5GHz: ±3.27dB	(1)
Conducted Disturbance0.15~30MHz	±2.96dB	(1)

(1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=1.96.

2. GENERAL INFORMATION

2.1. Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Normal Temperature:	25°C
Relative Humidity:	55 %
Air Pressure:	101 kPa

2.2. General Description of EUT

Product Name:	ROBOTIC POOL SKIMMER
Model/Type reference:	SKS2
Power supply:	AC100-240V~50/60Hz 0.4A Max from adapter or DC 10.8V from battery
Adapter information	Model: GQ12-126100-HU Input: 100-240V~50/60Hz 0.4A Max Outputi: 12.6V ⎓ 1.0A
2.4G Wi-Fi	
Supported type:	IEEE 802.11 b/g/n
Modulation:	IEEE 802.11 b: DSSS IEEE 802.11 g/IEEE 802.11 n(HT20)/IEEE 802.11 n(HT40): OFDM
Operation frequency:	IEEE 802.11 b/IEEE 802.11 g/IEEE 802.11 n(HT20): 2412MHz~2472MHz IEEE 802.11 n(HT40): 2422MHz~2462MHz
Channel number:	IEEE 802.11 b/IEEE 802.11 g/IEEE 802.11 n(HT20): 13 IEEE 802.11 n(HT40): 11
Channel separation:	5MHz
Antenna type:	FPC Antenna
Antenna gain:	1.06dBi

Note1: For more details, please refer to the user's manual of the EUT.
Note2: Antenna gain provided by the applicant.

2.3. Description of Test Modes and Test Frequency

The Applicant provides communication tools software to control the EUT for staying in continuous transmitting and receiving mode for testing.

There are 11 channels provided to the EUT and Channel 01/03/06/09/11 were selected for Wi-Fi test.

Operation Frequency Wi-Fi：

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

Note: The line display in grey were the channel selected for testing

Data Rate Used:

Preliminary tests were performed in different data rate to find the worst radiated emission. The data rate shown in the table below is the worst-case rate with respect to the specific test item. Investigation has been done on all the possible configurations for searching the worst cases. The following table is a list of the test modes shown in this test report.

Test Items	Mode	Data Rate	Channel
Maximum Conducted Output Power Power Spectral Density 6dB Bandwidth Spurious RF conducted emission Radiated Emission 9kHz~1GHz& Radiated Emission 1GHz~10th Harmonic	11b/DSSS	1 Mbps	1/6/11
	11g/OFDM	6 Mbps	1/6/11
	11n(20MHz)/OFDM	6.5Mbps	1/6/11
	11n(40MHz)/OFDM	13.5Mbps	3/6/9
Band Edge	11b/DSSS	1 Mbps	1/11
	11g/OFDM	6 Mbps	1/11
	11n(20MHz)/OFDM	6.5Mbps	1/11
	11n(40MHz)/OFDM	13.5Mbps	3/9

2.4. Equipments Used during the Test

Conducted Emission						
Test Equipment	Manufacturer	Model No.	Serial No.	Previous calibration	Last Cal.	Cal.Due
EMI Test Receiver	ROHDE & SCHWARZ	ESCI	1166.5950.03	2023/05/04	2024/04/30	2025/04/29
LISN	ROHDE & SCHWARZ	ESH2-Z5	860014/010	2023/05/04	2024/04/30	2025/04/29
Limitator	ROHDE & SCHWARZ	ESH3-Z2	100408	2023/05/04	2024/04/30	2025/04/29
Software:						
Name of Software:			Version:			
ES-K1			V1.71			

Radiated Emission						
Test Equipment	Manufacturer	Model No.	Serial No.	Previous calibration	Last Cal.	Cal.Due
Active Loop Antenna	Da Ze	ZN30900A	/	2021/05/13	2024/04/30	2025/04/29
Double cone logarithmic antenna	Schwarzbeck	VULB 9168	824	/	2023/02/13	2026/02/12
Horn Antenna	Sunol Sciences Corp.	DRH-118	A062013	/	2021/12/23	2024/12/22
Horn Antenna	Ocean Microwave	OBH100400	26999002	/	2021/12/22	2024/12/21
Amplifier	MRT-AP01M06	MRT	S-001	2023/05/04	2024/04/30	2025/04/29
Amplifier	Agilent	8449B	3008A02306	2023/05/04	2024/04/30	2025/04/29
Amplifier	Brief&Smart	LNA-4018	2104197	2023/05/05	2024/05/03	2025/05/02
EMI Test Receiver	ROHDE & SCHWARZ	ESCI	1166.5950.03	2023/05/04	2024/04/30	2025/04/29
Spectrum Analyzer	RS	FSP	1164.4391.38	2023/05/05	2024/05/03	2025/05/02
Software:						
Name of Software:			Version:			
EZ_EMC(Below 1GHz)			V1.1.4.2			
EZ_EMC(Above 1GHz)			V1.1.4.2			

RF Conducted						
Test Equipment	Manufacturer	Model No.	Serial No.	Previous calibration	Last Cal.	Cal.Due
Spectrum Analyzer	Keysight	N9020A	MY53420874	2023/05/04	2024/05/01	2025/04/30
Temperature/Humidity Meter	Ji Yu	MC501	/	2023/05/09	2024/05/04	2025/05/03
Software:						
Name of Software:			Version:			
TST-PASS			V2.0			

2.5. Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended to comply with Section 15.247 of the FCC Part 15, Subpart C Rules.

2.6. Modifications

No modifications were implemented to meet testing criteria.

3. TEST CONDITIONS AND RESULTS

3.1. Conducted Emissions Test

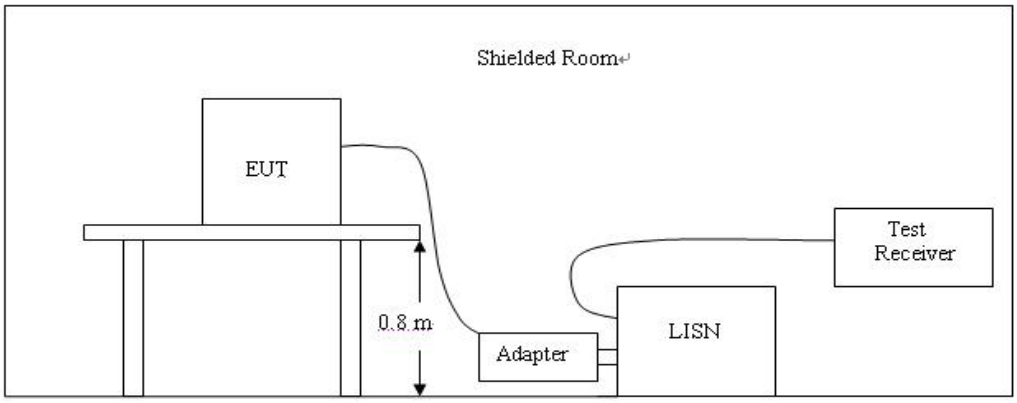
LIMIT

FCC CFR Title 47 Part 15 Subpart C Section 15.207

Frequency range (MHz)	Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

* Decreases with the logarithm of the frequency.

TEST CONFIGURATION



TEST PROCEDURE

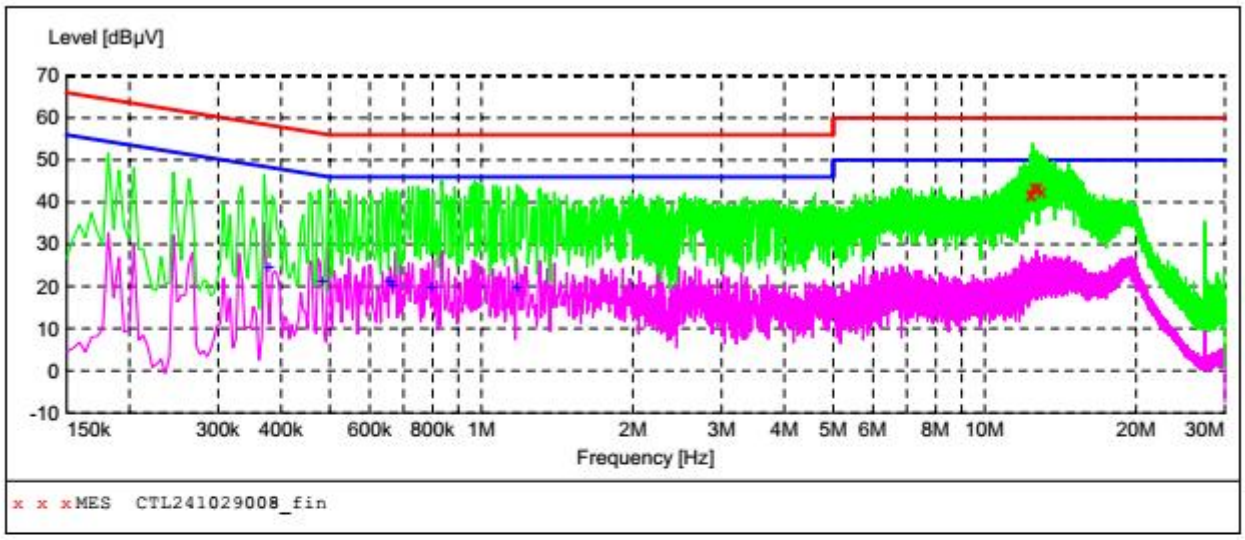
1. The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. The EUT is a a landing system; a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.10:2013.
2. Support equipment, if needed, was placed as per ANSI C63.10:2013.
3. All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10:2013.
4. The adapter received AC120V/60Hz power through a Line Impedance Stabilization Network (LISN) which supplied power source and was grounded to the ground plane.
5. All support equipments received AC power from a second LISN, if any.
6. The EUT test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
7. Analyzer / Receiver scanned from 150 KHz to 30MHz for emissions in each of the test modes.
8. During the above scans, the emissions were maximized by cable manipulation.

TEST RESULTS

Remark:802.11b/802.11g/802.11n(HT20)/802.11n(HT40) mode all have been tested ,only worse case is reported.

Test Mode	802.11b	Line:	L

SCAN TABLE: "Voltage (9K-30M)FIN"
Short Description: 150K-30M Voltage



MEASUREMENT RESULT: "CTL241029008_fin"

10/29/2024 9:22AM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
12.340500	41.80	10.9	60	18.2	QP	L1	GND
12.421500	42.30	10.9	60	17.7	QP	L1	GND
12.529500	43.60	10.9	60	16.4	QP	L1	GND
12.718500	43.50	10.9	60	16.5	QP	L1	GND
12.768000	43.50	11.0	60	16.5	QP	L1	GND
12.984000	42.50	11.0	60	17.5	QP	L1	GND

MEASUREMENT RESULT: "CTL241029008_fin2"

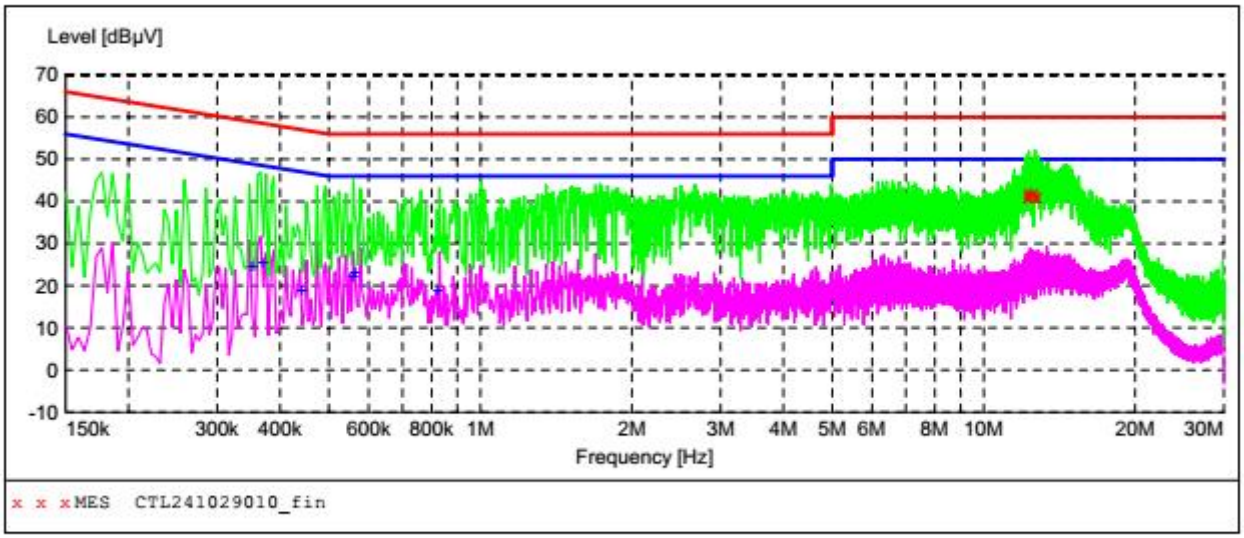
10/29/2024 9:22AM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.379500	24.50	10.0	48	23.8	AV	L1	GND
0.483000	21.00	10.0	46	25.3	AV	L1	GND
0.658500	21.30	10.0	46	24.7	AV	L1	GND
0.667500	20.30	10.0	46	25.7	AV	L1	GND
0.798000	20.00	10.0	46	26.0	AV	L1	GND
1.180500	19.90	10.1	46	26.1	AV	L1	GND

Test Mode	802.11b	Line:	N

SCAN TABLE: "Voltage (9K-30M)FIN"

Short Description: 150K-30M Voltage



MEASUREMENT RESULT: "CTL241029010_fin"

10/29/2024 9:27AM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
12.264000	41.20	10.9	60	18.8	QP	N	GND
12.277500	42.30	10.9	60	17.7	QP	N	GND
12.300000	41.10	10.9	60	18.9	QP	N	GND
12.579000	41.90	10.9	60	18.1	QP	N	GND
12.696000	41.30	10.9	60	18.7	QP	N	GND
12.786000	41.20	11.0	60	18.8	QP	N	GND

MEASUREMENT RESULT: "CTL241029010_fin2"

10/29/2024 9:27AM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.352500	24.70	10.0	49	24.2	AV	N	GND
0.370500	25.40	10.0	49	23.1	AV	N	GND
0.442500	18.70	10.0	47	28.3	AV	N	GND
0.559500	22.20	10.0	46	23.8	AV	N	GND
0.564000	23.20	10.0	46	22.8	AV	N	GND
0.825000	19.00	10.0	46	27.0	AV	N	GND

3.2. Radiated Emissions and Band Edge

Limit

For intentional device, according to § 15.209(a), the general requirement of field strength of radiated emission out of authorized band shall not exceed the following table at a 3 meters measurement distance.

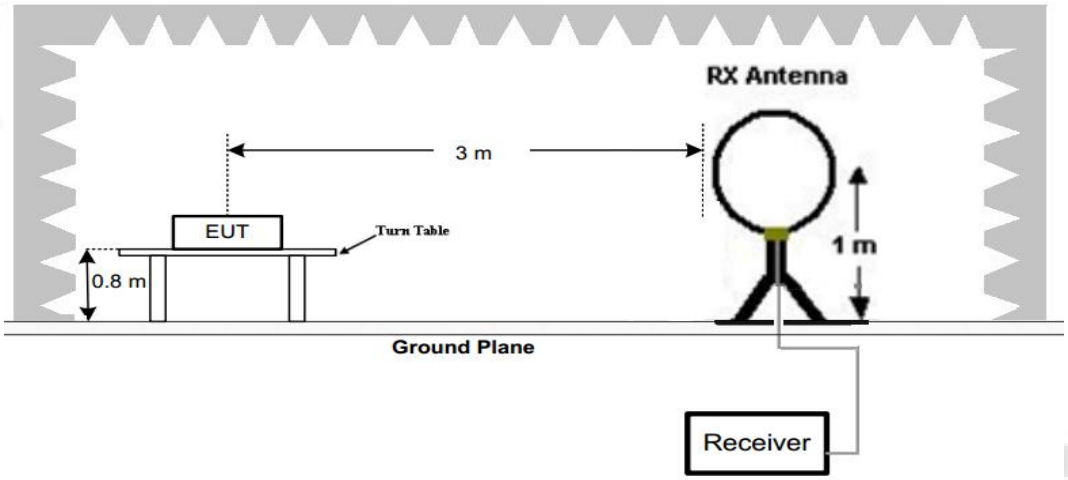
In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a)

Radiated emission limits

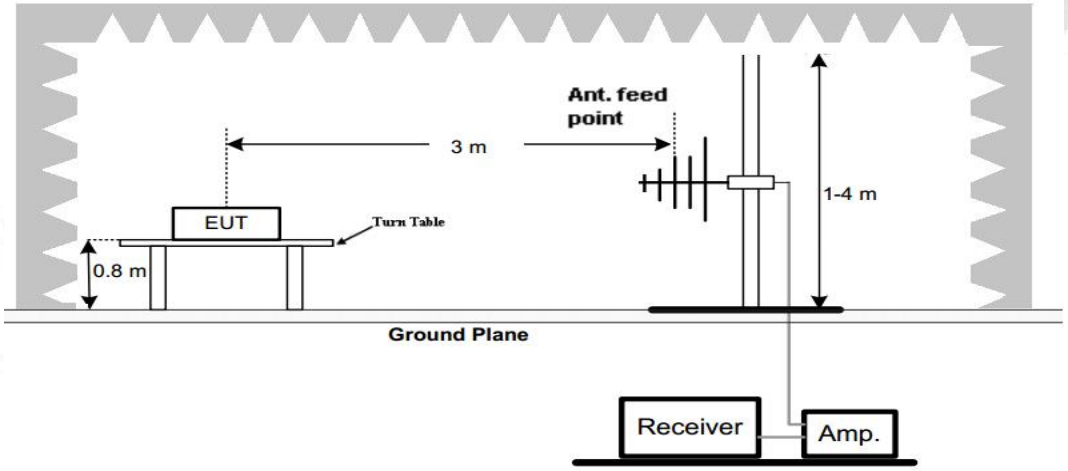
Frequency (MHz)	Distance (Meters)	Radiated (dBμV/m)	Radiated (μV/m)
0.009-0.49	3	20log(2400/F(KHz))+40log(300/3)	2400/F(KHz)
0.49-1.705	3	20log(24000/F(KHz))+ 40log(30/3)	24000/F(KHz)
1.705-30	3	20log(30)+ 40log(30/3)	30
30-88	3	40.0	100
88-216	3	43.5	150
216-960	3	46.0	200
Above 960	3	54.0	500

TEST CONFIGURATION

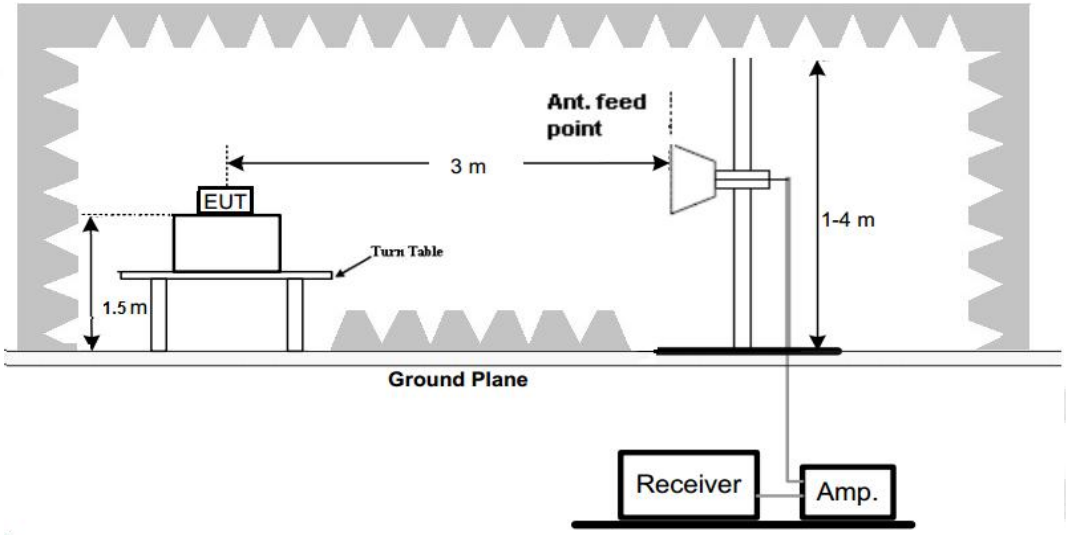
(A) Radiated Emission Test Set-Up, Frequency Below 30MHz



(B) Radiated Emission Test Set-Up, Frequency below 1000MHz



(C) Radiated Emission Test Set-Up, Frequency above 1000MHz



Test Procedure

1. Below 1GHz measurement the EUT is placed on a turntable which is 0.8m above ground plane, and above 1GHz measurement EUT was placed on a low permittivity and low loss tangent turn table which is 1.5m above ground plane.
2. Maximum procedure was performed by raising the receiving antenna from 1m to 4m and rotating the turn table from 0℃ to 360℃ to acquire the highest emissions from EUT
3. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
4. Repeat above procedures until all frequency measurements have been completed.
5. The EUT was pretested with 3 orientations placed on the table for the radiated emission measurement –X, Y, and Z-plane. The X-plane results were found as the worst case and were shown in this report.

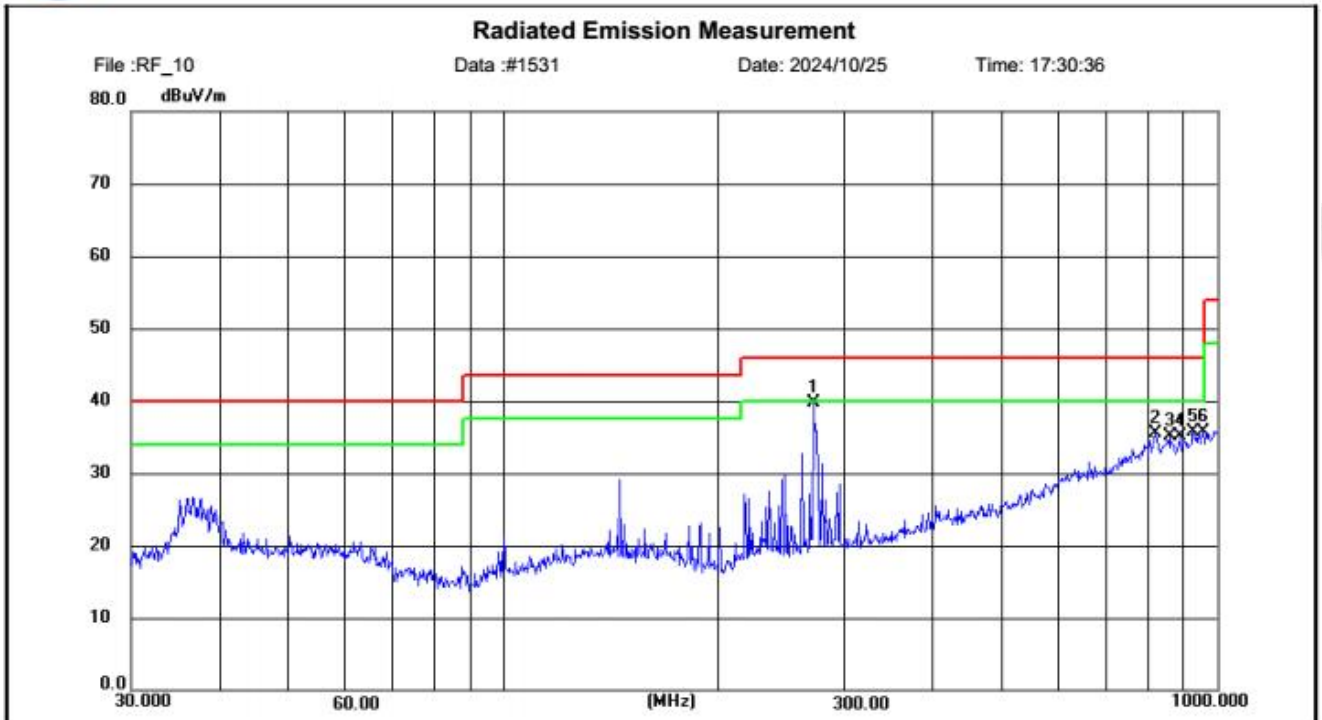
TEST RESULTS

Remark:
1. All three channels (lowest/middle/highest) of each mode were measured below 1GHz and recorded worst case at 802.11b low channel.
2. All three channels (lowest/middle/highest) of each mode were measured above1GHz and recorded worst case at 802.11b mode.
3. Radiated emission test from 9 KHz to 10th harmonic of fundamental was verified, Found the emission level are attenuated 20dB below the limits from 9 kHz to 30MHz, so it does not recorded in report.

For 30MHz-1GHz

Test mode:	Wi-Fi	Polarization:	Horizontal

Shenzhen CTL Testing Technology Co., Ltd
Tel: +86-755-89486194



Site LAB Chamber 2
Limit: FCC Part15 RE-Class C_30-1000MHz
EUT:
M/N: SKS2
Mode: Wi-Fi2.4G 2412MHz
Note: Shenzhen Aiper Intelligent Co.,Ltd.

Polarization: *Horizontal*
Power:
Distance: 3m

Temperature: 25(C)
Humidity: 50 %

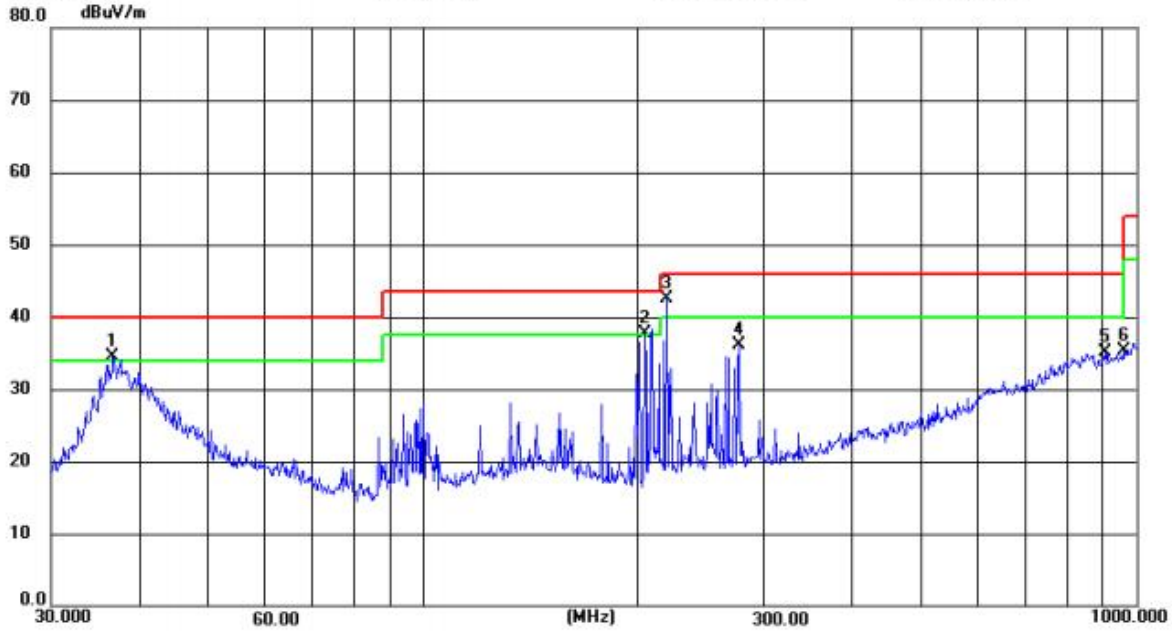
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	271.5625	25.55	14.08	39.63	46.00	6.37	peak	100	320	P	
2	821.7103	8.53	26.98	35.51	46.00	10.49	peak	100	36	P	
3	858.1523	7.57	27.45	35.02	46.00	10.98	peak	100	268	P	
4	890.3374	7.55	27.53	35.08	46.00	10.92	peak	100	26	P	
5	926.5681	7.46	28.17	35.63	46.00	10.37	peak	100	162	P	
6	956.6953	7.33	28.36	35.69	46.00	10.31	peak	100	15	P	

Test mode:	Wi-Fi	Polarization:	Vertical

Shenzhen CTL Testing Technology Co., Ltd
Tel: +86-755-89486194

Radiated Emission Measurement

File :RF_10 Data :#1532 Date: 2024/10/25 Time: 17:31:39



Site LAB Chamber 2
Limit: FCC Part15 RE-Class C_30-1000MHz
EUT:
M/N: SKS2
Mode: Wi-Fi2.4G 2412MHz
Note: Shenzhen Aiper Intelligent Co.,Ltd.

Polarization: *Vertical*
Power:
Distance: 3m

Temperature: 25(C)
Humidity: 50 %

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	36.7500	20.05	14.37	34.42	40.00	5.58	peak	100	218	P	
2	204.5961	25.74	12.00	37.74	43.50	5.76	peak	100	31	P	
3	219.2675	29.30	13.30	42.60	46.00	3.40	peak	100	103	P	
4	277.7015	21.63	14.46	36.09	46.00	9.91	peak	100	155	P	
5	904.8945	7.22	27.88	35.10	46.00	10.90	peak	100	51	P	
6	961.3192	6.91	28.42	35.33	54.00	18.67	peak	100	82	P	

For 1GHz to 25GHz

Note: 802.11b/802.11g/802.11n (HT20)/802.11n (HT40) all have been tested, only worse case 802.11b is reported

802.11b Mode (above 1GHz)

Horizontal

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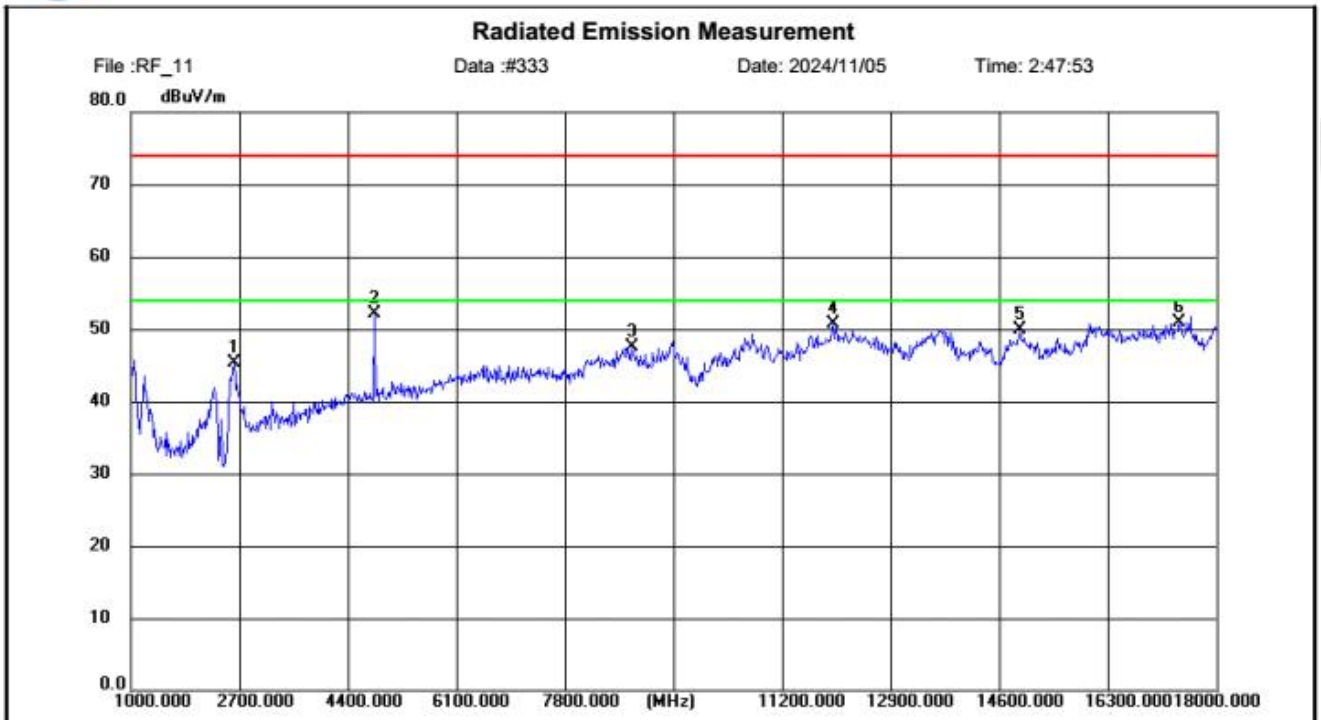

Site LAB Chamber 2
Limit: FCC Part15 RE-Class C_Above 1GHz_PK
EUT:
M/N: SKS2
Mode: Wi-Fi2.4G 2412MHz TX
Note: Shenzhen Aiper Intelligent Co.,Ltd.

Polarization: ***Horizontal***
Power:
Distance: 3m

Temperature: 25(C)
Humidity: 50 %

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	2617.125	61.36	-16.05	45.31	74.00	28.69	peak	150	127	P	
2	4822.875	60.09	-8.05	52.04	74.00	21.96	peak	150	200	P	
3	8862.500	48.17	-0.63	47.54	74.00	26.46	peak	150	231	P	
4	12011.750	48.54	2.21	50.75	74.00	23.25	peak	150	74	P	
5	14935.750	46.76	3.21	49.97	74.00	24.03	peak	150	106	P	
6	17424.125	42.01	8.85	50.86	74.00	23.14	peak	150	294	P	

Vertical

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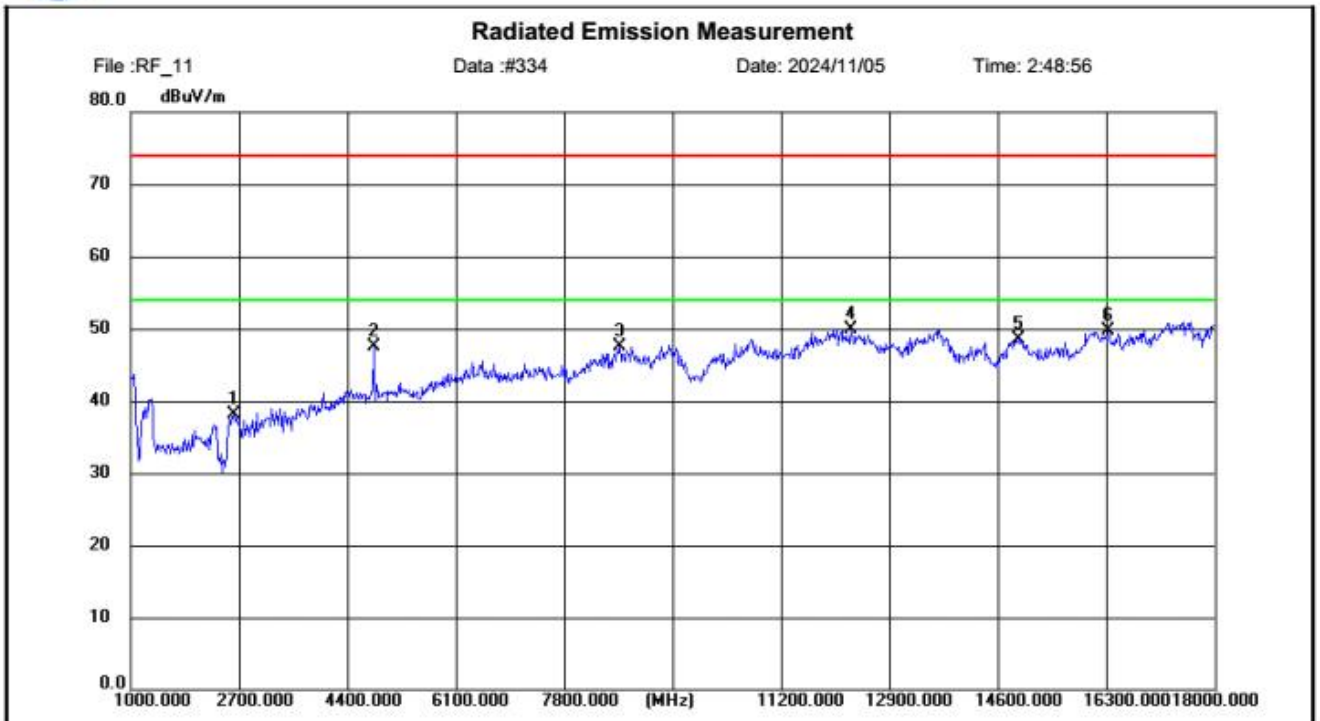

Site LAB Chamber 2
Limit: FCC Part15 RE-Class C_Above 1GHz_PK
EUT:
M/N: SKS2
Mode: Wi-Fi2.4G 2412MHz TX
Note: Shenzhen Aiper Intelligent Co.,Ltd.

Polarization: *Vertical*
Power:
Distance: 3m

Temperature: 25(C)
Humidity: 50 %

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	2623.500	54.18	-16.00	38.18	74.00	35.82	peak	150	98	P	
2	4822.875	55.52	-8.05	47.47	74.00	26.53	peak	150	118	P	
3	8671.250	48.91	-1.32	47.59	74.00	26.41	peak	150	129	P	
4	12290.125	47.80	2.18	49.98	74.00	24.02	peak	150	349	P	
5	14929.375	45.31	3.20	48.51	74.00	25.49	peak	150	13	P	
6	16346.750	44.02	5.65	49.67	74.00	24.33	peak	150	77	P	

REMARKS:

1. 18GHz-26GHz not recorded for no spurious point have a margin of less than 6 dB with respect to the limits.
2. PK detector measurement value is lower than the average limit. Therefore, there is no need to test AV detector measurements.

Results of Band Edges Test (Radiated)

Note: 802.11b/802.11g/802.11n (HT20)/802.11n (HT40) all have been tested, only worse case 802.11b is reported.

CH01	Horizontal

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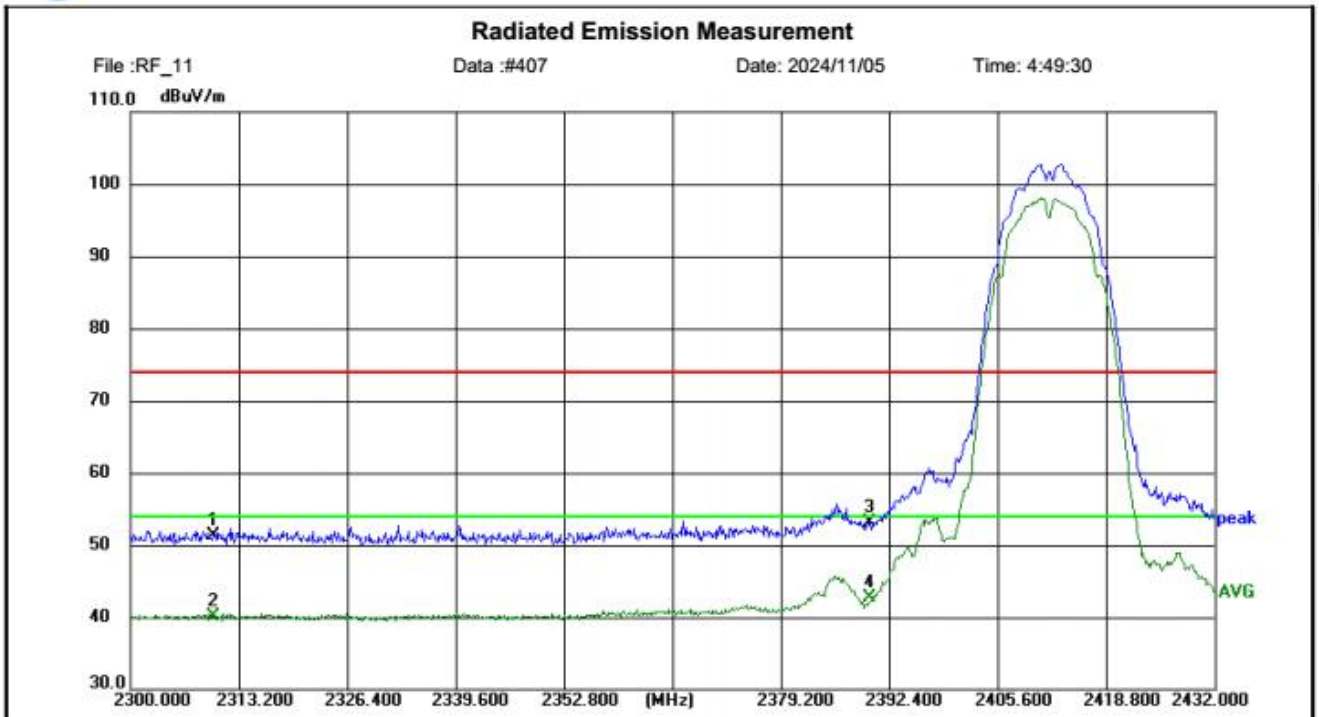

Site LAB Chamber 2
Limit: FCC Part 15 C
EUT:
M/N: SKS2
Mode: Wi-Fi2.4G 2412MHz
Note: Shenzhen Aiper Intelligent Co.,Ltd.

Polarization: *Horizontal*
Power:
Distance: 3m

Temperature: 25(C)
Humidity: 50 %

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	2310.000	41.65	9.69	51.34	74.00	22.66	peak	150	220	P	
2	2310.000	30.45	9.69	40.14	54.00	13.86	AVG	150	220	P	
3	2390.000	43.36	9.77	53.13	74.00	20.87	peak	150	251	P	
4	2390.000	32.88	9.77	42.65	54.00	11.35	AVG	150	251	P	

CH01	Vertical

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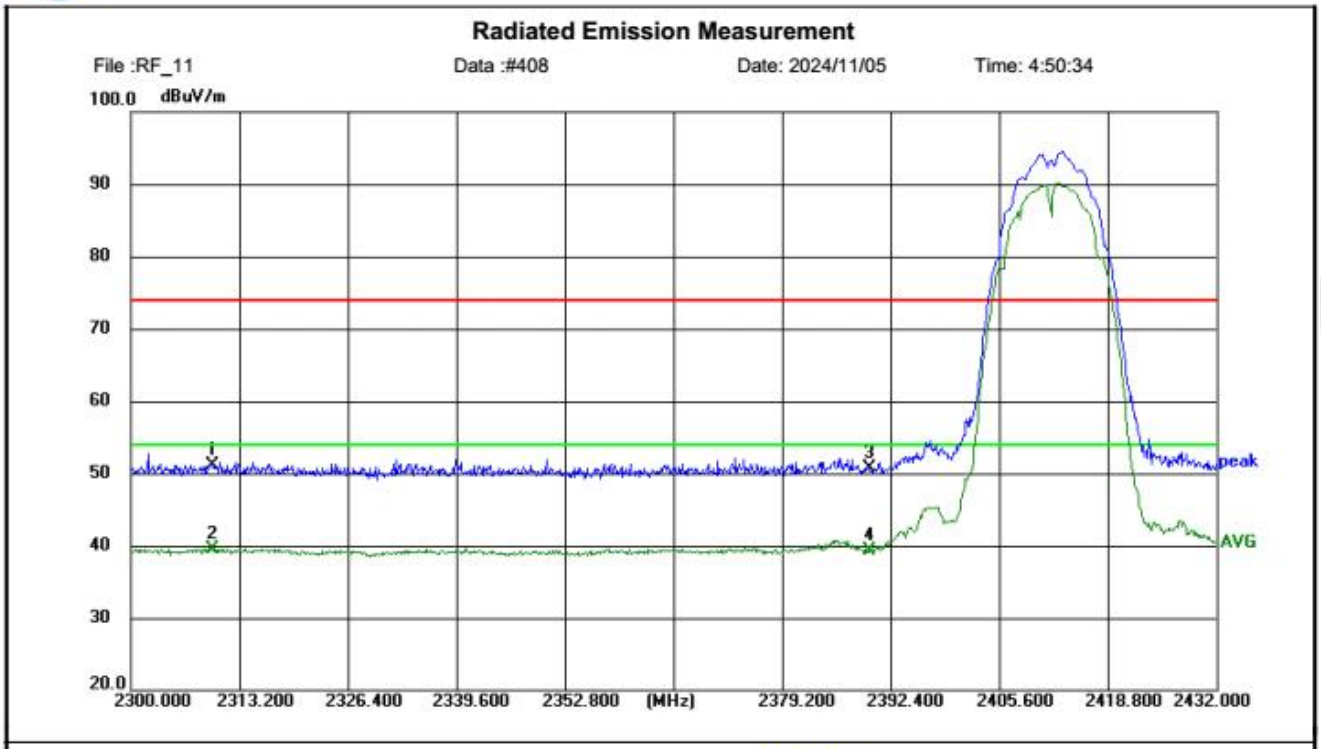

Site LAB Chamber 2
Limit: FCC Part 15 C
EUT:
M/N: SKS2
Mode: Wi-Fi2.4G 2412MHz
Note: Shenzhen Aiper Intelligent Co.,Ltd.

Polarization: *Vertical*
Power:
Distance: 3m

Temperature: 25(C)
Humidity: 50 %

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	2310.000	41.38	9.69	51.07	74.00	22.93	peak	150	123	P	
2	2310.000	29.76	9.69	39.45	54.00	14.55	AVG	150	123	P	
3	2390.000	40.91	9.77	50.68	74.00	23.32	peak	150	280	P	
4	2390.000	29.43	9.77	39.20	54.00	14.80	AVG	150	280	P	

CH11	Horizontal

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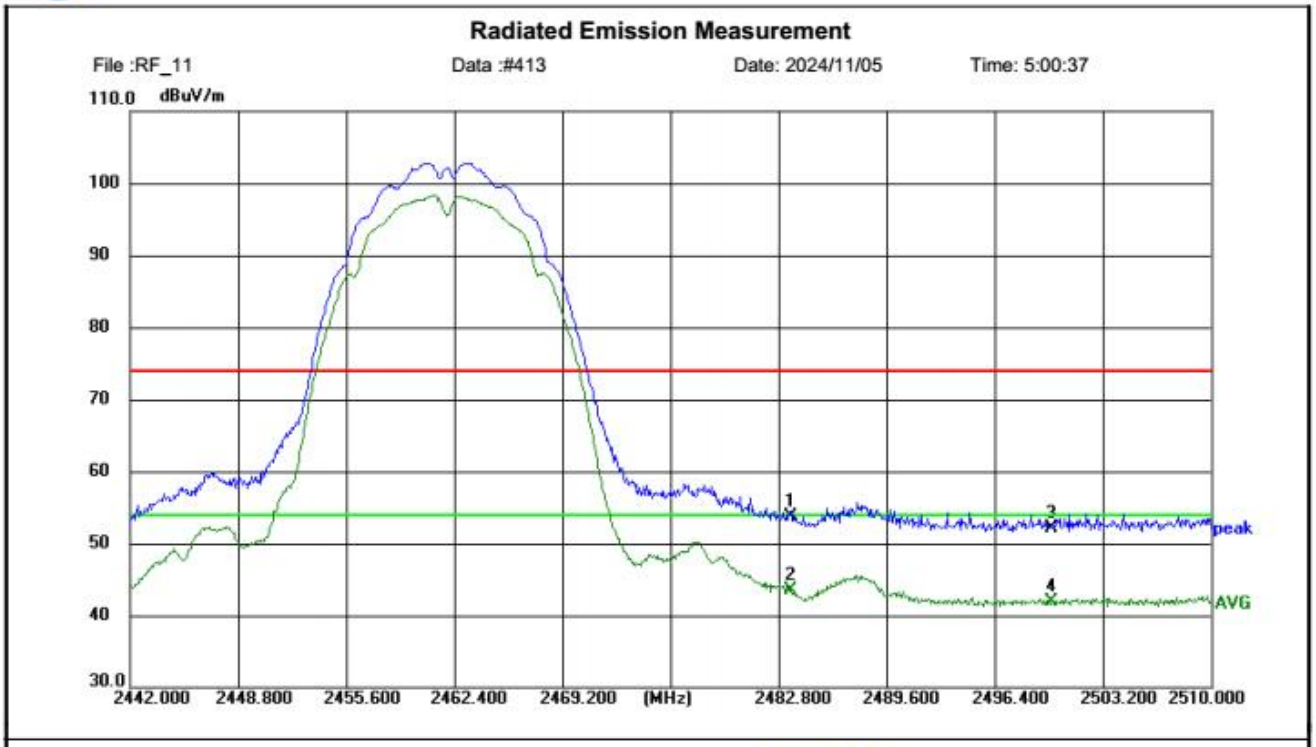

Site LAB Chamber 2
Limit: FCC Part 15 C
EUT:
M/N: SKS2
Mode: Wi-Fi2.4G 2462MHz
Note: Shenzhen Aiper Intelligent Co.,Ltd.

Polarization: *Horizontal*
Power:
Distance: 3m

Temperature: 25(C)
Humidity: 50 %

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	2483.500	43.86	9.93	53.79	74.00	20.21	peak	150	239	P	
2	2483.500	33.55	9.93	43.48	54.00	10.52	AVG	150	239	P	
3	2500.000	42.13	10.00	52.13	74.00	21.87	peak	150	223	P	
4	2500.000	31.88	10.00	41.88	54.00	12.12	AVG	150	223	P	

CH11	Vertical

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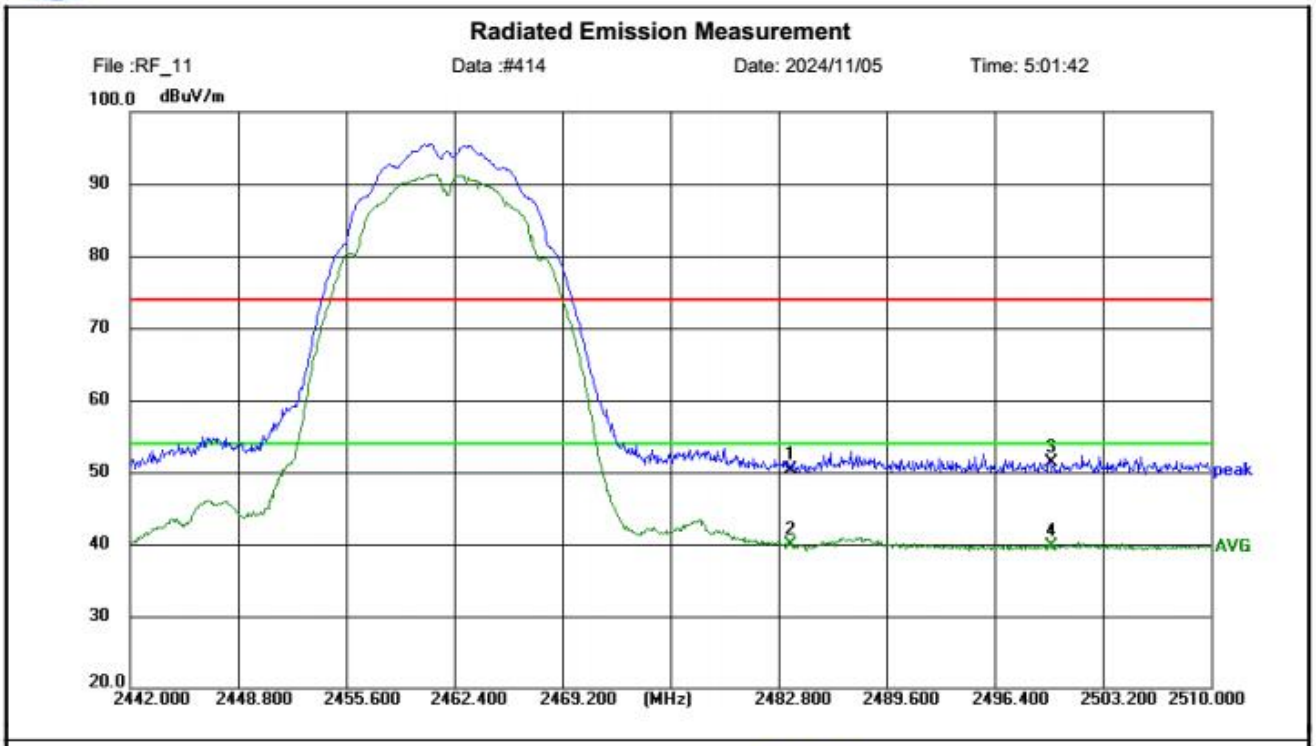
Tel: +86-755-89486194



Site LAB Chamber 2
Limit: FCC Part 15 C
EUT:
M/N: SKS2
Mode: Wi-Fi2.4G 2462MHz
Note: Shenzhen Aiper Intelligent Co.,Ltd.

Polarization: *Vertical*
Power:
Distance: 3m

Temperature: 25(C)
Humidity: 50 %

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	2483.500	40.29	9.93	50.22	74.00	23.78	peak	150	136	P	
2	2483.500	29.90	9.93	39.83	54.00	14.17	AVG	150	136	P	
3	2500.000	41.30	10.00	51.30	74.00	22.70	peak	150	295	P	
4	2500.000	29.66	10.00	39.66	54.00	14.34	AVG	150	295	P	

3.3. Maximum Conducted Output Power

Limit

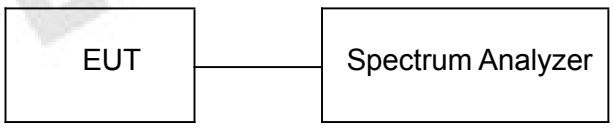
The Maximum Peak Output Power Measurement is 30dBm.

Test Procedure

Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum.

1. Measure the duty cycle D of the transmitter output signal as described in 11.6.
2. Set span to at least 1.5 times the OBW.
3. Set RBW = 1% to 5% of the OBW, not to exceed 1 MHz.
4. Set VBW ≥ [3 × RBW].
5. Number of points in sweep ≥ [2 × span / RBW]. (This gives bin-to-bin spacing ≤ RBW / 2, so that narrowband signals are not lost between frequency bins.)
6. Sweep time = auto.
7. Detector = RMS (i.e., power averaging), if available. Otherwise, use the sample detector mode.
8. Do not use sweep triggering. Allow the sweep to "free run."
9. Trace average at least 100 traces in power averaging (rms) mode; however, the number of traces to be averaged shall be increased above 100 as needed such that the average accurately represents the true average over the ON and OFF periods of the transmitter.
10. Compute power by integrating the spectrum across the OBW of the signal using the instrument's band power measurement function with band limits set equal to the OBW band edges. If the instrument does not have a band power function, then sum the spectrum levels (in power units) at intervals equal to the RBW extending across the entire OBW of the spectrum.
11. Add [10 log (1 / D)], where D is the duty cycle, to the measured power to compute the average power during the actual transmission times (because the measurement represents an average over both the ON and OFF times of the transmission). For example, add [10 log (1/0.25)] = 6 dB f the duty cycle is 25%.

Test Configuration



Test Results

Raw data reference to Section 3 of document No. CTL2408147031-WF02_2.4G Wi-Fi_Appendix.

3.4. Power Spectral Density

Limit

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

Test Procedure

12. Use this procedure when the maximum conducted output power in the fundamental emission is used to demonstrate compliance.
13. Set the RBW ≥ 3 kHz.
14. Set the VBW ≥ 3× RBW.
15. Set the span to 1.5 times the DTS channel bandwidth.
16. Detector = Average.
17. Sweep points = 40001
18. Trace mode = max hold.
19. Allow trace to fully stabilize.
20. Use the peak marker function to determine the maximum power level.
21. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.
22. The resulting PSD level must be 8dBm.

Test Configuration

Test Results

Raw data reference to Section 4 of document No. CTL2408147031-WF02_2.4G Wi-Fi_Appendix.

3.5. 6dB Bandwidth

Limit

For digital modulation systems, the minimum 6 dB bandwidth shall be at least 500 kHz

Test Procedure

The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with 100 KHz RBW and 300 KHz VBW. The 6dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6dB.

Test Configuration

Test Results

Raw data reference to Section 2 of document No. CTL2408147031-WF02_2.4G Wi-Fi_Appendix.

3.6. Out-of-band Emissions

Limit

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator 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 con-ducted or a radiated measurement, pro-vided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter com-plies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required.

Test Procedure

Connect the transmitter output to spectrum analyzer using a low loss RF cable, and set the spectrum analyzer to RBW=100 kHz, VBW= 300 kHz, peak detector , and max hold. Measurements utilizing these setting are made of the in-band reference level, bandedge and out-of-band emissions.

Test Configuration

Test Results

Raw data reference to Section 5 of document No. CTL2408147031-WF02_2.4G Wi-Fi_Appendix.

3.7. Antenna Requirement

Standard Applicable

For intentional device, according to FCC 47 CFR Section 15.203:

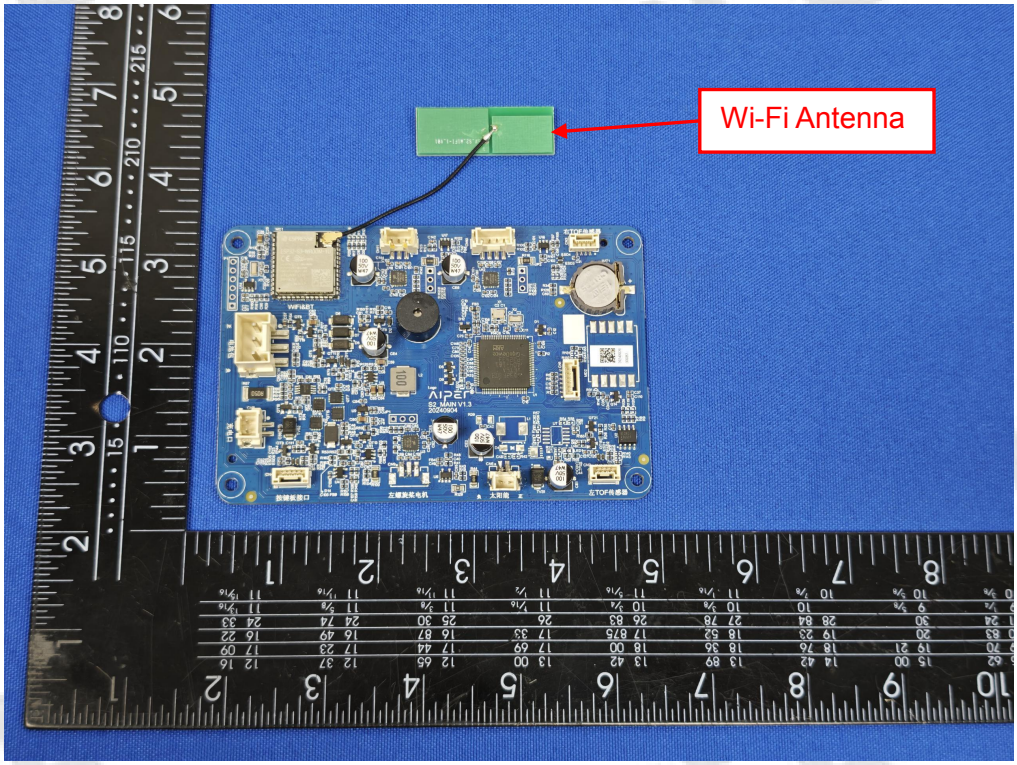
An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited

FCC CFR Title 47 Part 15 Subpart C Section 15.247(b) (4):

(4) The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Test Result:

The maximum gain of antenna was 1.06dBi.



4. Test Setup Photos of the EUT

Reference to the test report No. CTL2408147031-WF01.

5. Photos of the EUT

Reference to the test report No. CTL2408147031-WF01.

********** End of Report **********