



FCC PART 15.249

TEST REPORT

For

FUZHOU KINGWAY INFORMATION TECHNOLOGY CO., LTD

2nd Floor, Building 69, Area A, Pushang Industrial Park, Jinshan Industrial Concentration Area,

No.1, Hongjiang Road, Jianxin Town, Cangshan District, Fuzhou, China

FCC ID: 2A3J8-BKW-X1

Report Type: Original	Product Name: WIRELESS MICROPHONE SYSTEM
Report Number:	2407T68838E-RF-01
Report Date:	2024-08-23
Reviewed By:	Stein Peng
Approved By:	Miles Chen
Prepared By:	Bay Area Compliance Laboratories Corp. (Xiamen) Unit 102, No. 902 Meifeng South Road, Binhai West Avenue, Science and Technology Innovation Park, Torch High tech Zone Xiamen Tel: +86-592-3200111 www.baclcorp.com.cn

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REPORT REVISION HISTORY

Number of Revisions	Report No.	Version	Issue Date	Description
0	2407T68838E-RF-01	R1V1	2024-08-23	Initial Release

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

Applicant:	FUZHOU KINGWAY INFORMATION TECHNOLOGY CO., LTD
Tested Model:	BKW-X1
Series Models:	LG-03, BKW-X1P, BKW-X2
Product Name:	WIRELESS MICROPHONE SYSTEM
Power Supply:	DC 5V from USB port or DC 3.7V from battery
RF Function:	SRD
Operating Band/Frequency:	2402MHz, 2441MHz, 2480MHz
Channel Number:	3
Modulation Type:	GFSK
Antenna Type:	PCB
★Maximum Antenna Gain:	0 dBi
Note: 1. The maximum antenna gain is provided by the applicant. 2. All measurement and test data in this report was gathered from production sample serial number: 2M4Y-1 (Assigned by the BACL (Xiamen). The EUT supplied by the applicant was received on 2024-05-28)	

Objective

This test report is prepared for *FUZHOU KINGWAY INFORMATION TECHNOLOGY CO., LTD* in accordance with Part 2-Subpart J, and Part 15-Subparts A and C of the Federal Communication Commission rules.

The tests were performed in order to determine compliance with FCC Part 15, Subpart C, and section 15.203, 15.205, 15.207, 15.209, 15.215 and 15.249 rules.

Test Methodology

All measurements contained in this report were conducted with ANSI C63.10-2013, American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices.

Measurement Uncertainty

Item		U _{lab}
Conducted Emissions	150kHz-30MHz(LISN)	2.33dB
Radiated Disturbance	9kHz~30MHz	2.59 dB
	30MHz~200MHz	4.38 dB
	30MHz~1GHz	4.50 dB
	1GHz~6GHz	4.58 dB
	6GHz~18GHz	5.43dB
	18GHz~26.5GHz	5.47dB
Temperature		1°C
Humidity		5%
Occupy Bandwidth		0.10MHz

Note: The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval. Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty.

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Xiamen) to collect test data is located on the Unit 102, No. 902 Meifeng South Road, Binhai West Avenue, Science and Technology Innovation Park, Torch High tech Zone XiaMen.

Bay Area Compliance Laboratories Corp. (Xiamen) Lab is accredited to ISO/IEC 17025 by A2LA (Certificate Number: 7134.01) and the lab has been recognized as the FCC accredited lab under the KDB 974614 D01, FCC Registration No.: 485720, the FCC Designation No.: CN1384.

SYSTEM TEST CONFIGURATION

Test Mode and Voltage

The system was configured for testing in a typical mode (as normally used by a typical user).	
Test mode:	Test Model 1: Charging + Transmitting
Test voltage:	Test Mode 1: DC 5V from USB port or DC 3.7V from battery
Remark:	During all emission tests, the EUT was configured to measure its highest possible emission level and the worst case's test data was presented in this test report.

Justification

The system was configured in testing mode which was provided by manufacturer.

Channel List:

Channel	Frequency (MHz)
1	2402
2	2441
3	2480

EUT Exercise Software

Engineering Mode was provided by manufacturer.

Equipment Modifications

No modification was made to the EUT.

Support Equipment List and Details

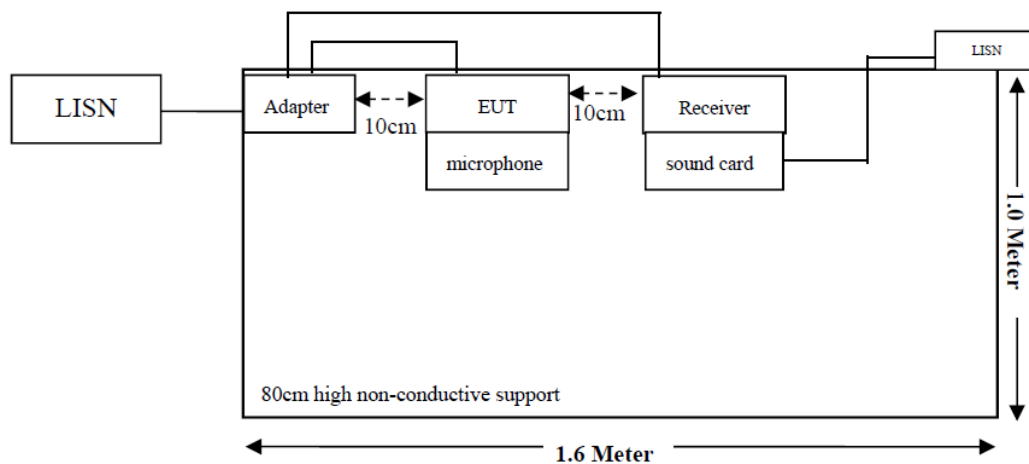
Manufacturer	Description	Model	Serial Number
SHENZHEN HONOR ELECTRONIC CO., LYD.	Switching adapter	ADS-12EA-05 05010E	/
Synido	sound card	LiveMix Solo	/
Synido	microphone	MS5	/
KINGWAY	Wireless microphone	BKW-X1	/

External I/O Cable

Cable Description	Length (m)	From Port	To Port
USB cable	0.5	EUT	Adapter

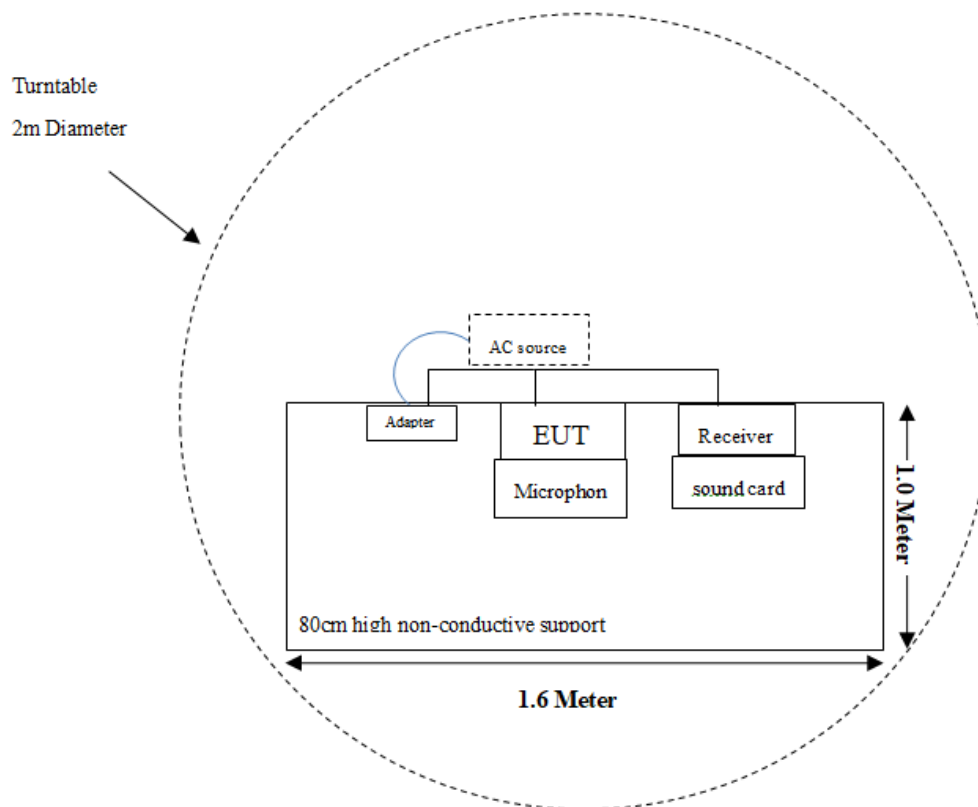
Block Diagram of Test Setup

For Conducted Emissions:

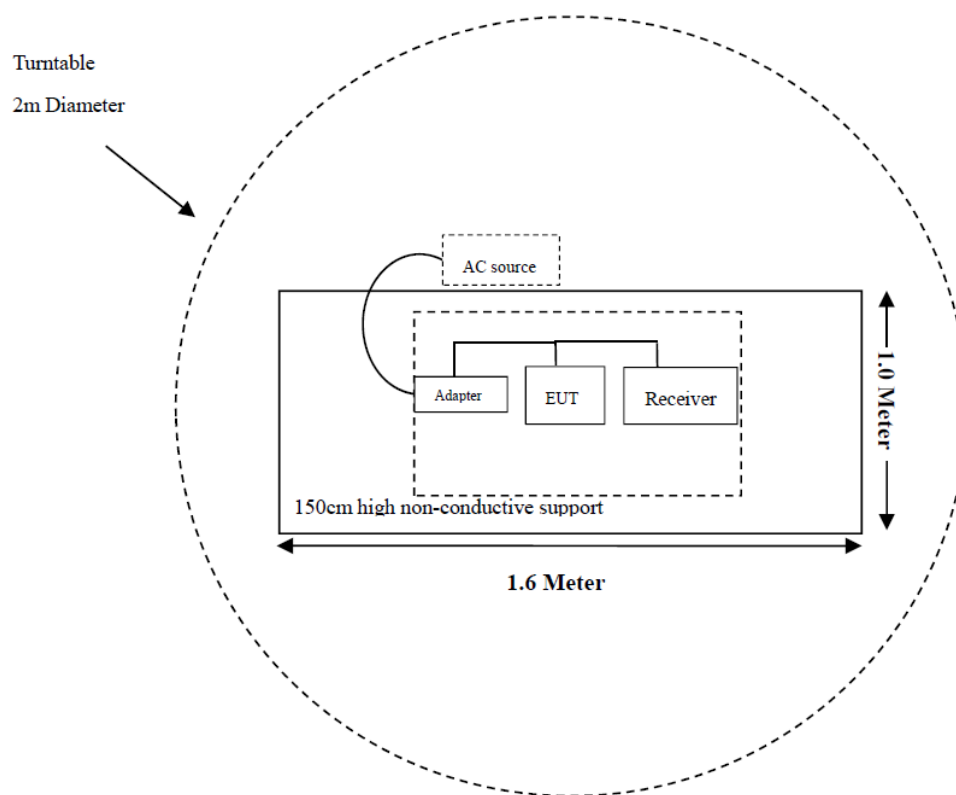


For Radiated Emissions:

Below 1GHz:



Above 1GHz



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§15.203	Antenna Requirement	Compliant
§15.207(a)	Conducted Emissions	Compliant
§15.205, §15.209, §15.249	Radiated Emissions& Out of Band Emission	Compliant
§15.231 (c)	20dB Emission Bandwidth	Compliant

TEST EQUIPMENT LIST

Test Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due Date
Radiated Emissions Below 1 GHz					
EMI Test Receiver	Rohde & Schwarz	ESR	103103	2024/03/29	2025/03/28
Loop Antenna	Rohde & Schwarz	HFH2-Z2	830749/001	2023/07/27	2026/07/26
Antenna	Sunol Sciences	JB6	A122022-5	2023/07/27	2026/07/26
Amplifier	Sonoma	310B	120903	2024/03/29	2025/03/28
Coaxial Cable	XINHANGWEIBO	XH400T-N-4M	CC002	2024/03/29	2025/03/28
Coaxial Cable	XINHANGWEIBO	XH460B-N-2M	CC006	2024/03/29	2025/03/28
Coaxial Cable	XINHANGWEIBO	XH460B-N-12M	CC007	2024/03/29	2025/03/28
Test Software	Audix	E3	18621a	N/A	N/A
Radiated Emissions Above 1 GHz					
Spectrum Analyzer	Rohde & Schwarz	FSV40-N	102051	2024/03/29	2025/03/28
Double Ridge Guide Horn Antenna	A.H.Systems	SAS-571	1980	2023/07/28	2026/07/27
Preamplifier	A.H.Systems	PAM-0118P	489	2024/03/29	2025/03/28
Coaxial Cable	XINHANGWEIBO	XH800A-N-6M	CC004	2024/03/29	2025/03/28
Coaxial Cable	XINHANGWEIBO	XH800A-N-1M	CC005	2024/03/29	2025/03/28
Test Software	Audix	E3	18621a	N/A	N/A
Conducted Emissions					
EMI Test Receiver	Rohde & Schwarz	ESR	103105	2024/03/29	2025/03/28
LISN	Rohde & Schwarz	ENV216	100129	2024/03/29	2025/03/28
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	0357.8810.54	2024/03/29	2025/03/28
Coaxial Cable	XINHANGWEIBO	XH400T-N-4M	CC001	2024/03/29	2025/03/28
Test Software	Audix	E3	18621a	N/A	N/A
RF Conducted Test					
Spectrum Analyzer	Rohde & Schwarz	FSU	100405	2024/03/29	2025/03/28

Statement of Traceability: Bay Area Compliance Laboratories Corp. (Xiamen) attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

FCC§15.203 - ANTENNA REQUIREMENT

Applicable Standard

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 shall be considered sufficient to comply with the provisions of this section.

Antenna Connected Construction

The EUT has a PCB which was permanently attached and the antenna gain is 0 dBi; fulfill the requirement of this section. Please refer to EUT photos.

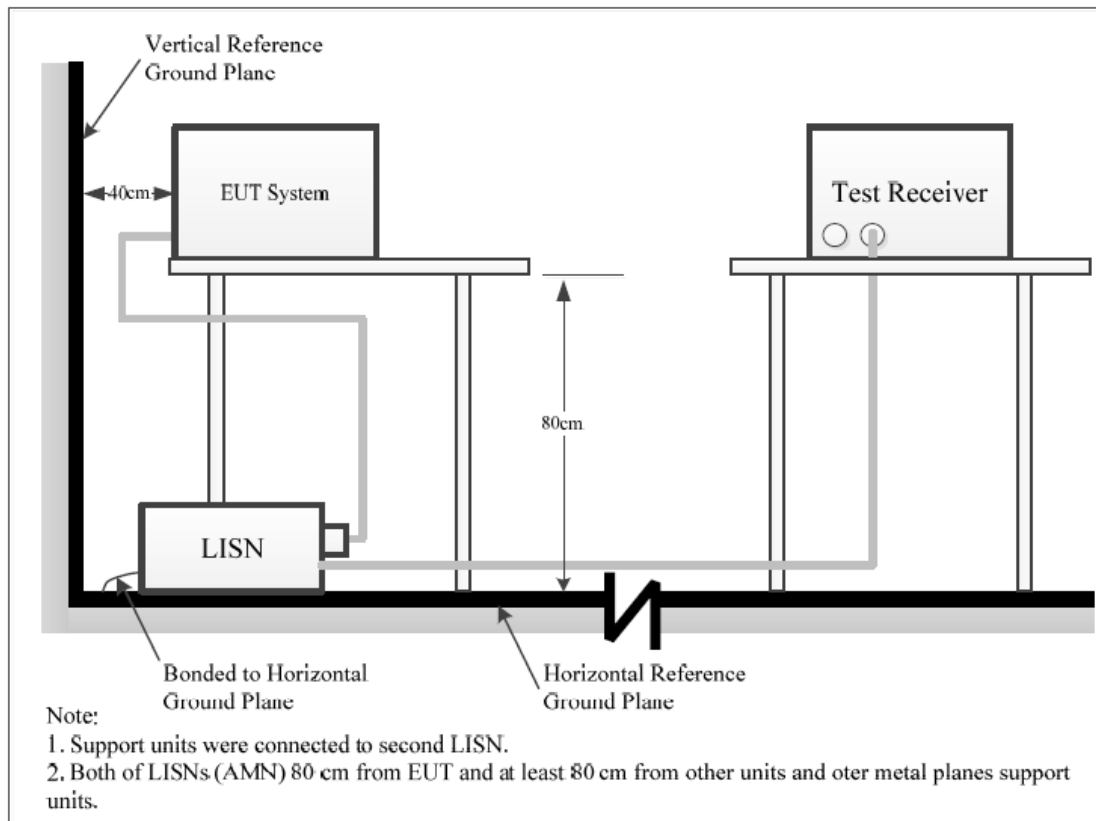
Result: Compliant.

FCC §15.207 (a) – AC LINE CONDUCTED EMISSIONS

Applicable Standard

FCC §15.207(a)

Test System Setup



The measurement procedure of EUT setup is according with ANSI C63.10-2013. The related limit was specified in FCC Part 15.207.

The spacing between the peripherals was 10 cm.

EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30 MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations:

Frequency Range	RBW	VBW
150 kHz - 30 MHz	9 kHz	30 kHz

Test Procedure

ANSI C63.10-2013 clause 6.2

During the conducted emission test, the EUT was connected to the outlet of the LISN.

Maximizing procedure was performed on the six (6) highest emissions of the EUT.

If the maximum peak value of the emissions is below the average limit, the QP value and average value measurement will not need to be performed and only record the maximum peak measured value to meet the requirements.

Level & Margin Calculation

The Level is calculated by adding LISN VDF (Voltage Division Factor), Cable Loss and Transient Limiter Attenuation from the Meter Reading. The basic equation is as follows:

Factor (dB) = LISN VDF (dB) + Cable Loss (dB) + Transient Limiter Attenuation (dB)
Level (dBμV) = Reading (dBμV) + Factor (dB)

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7dB means the emission is 7dB below the limit. The equation for margin calculation is as follows:

Margin (dB) = Limit (dBμV) – Level (dBμV)

Test Results Summary

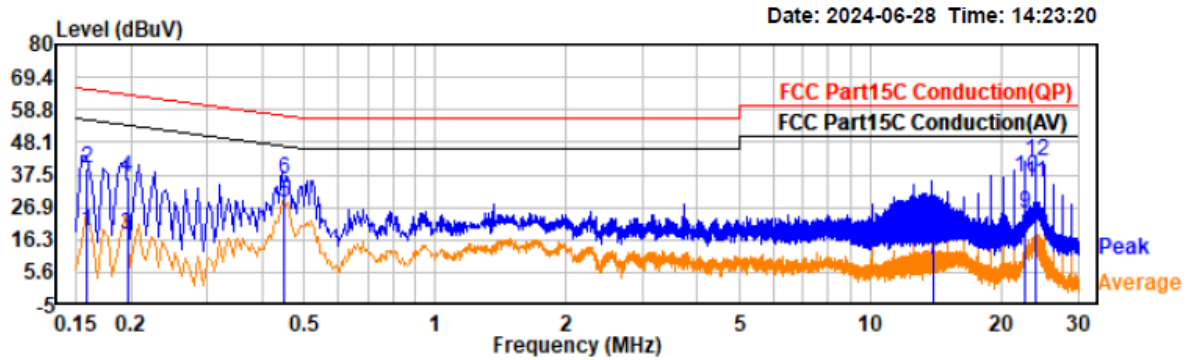
According to the recorded data in following table, the EUT complied with the FCC Title 47, FCC Part 15.207.

Test Data

Temperature:	23.5°C
Relative Humidity:	54 %
ATM Pressure:	99.8 kPa
Test Date:	2024-06-28
Test Engineer:	Stein Peng

Project No.: 2407T68838E-RF
Test Mode: Charge + Tx 2402MHz
EUT Model: BKW-X1

Temp/Humi: 23.5°C/54%
Tested by: Stein Peng
Power Source: AC 120V/60Hz

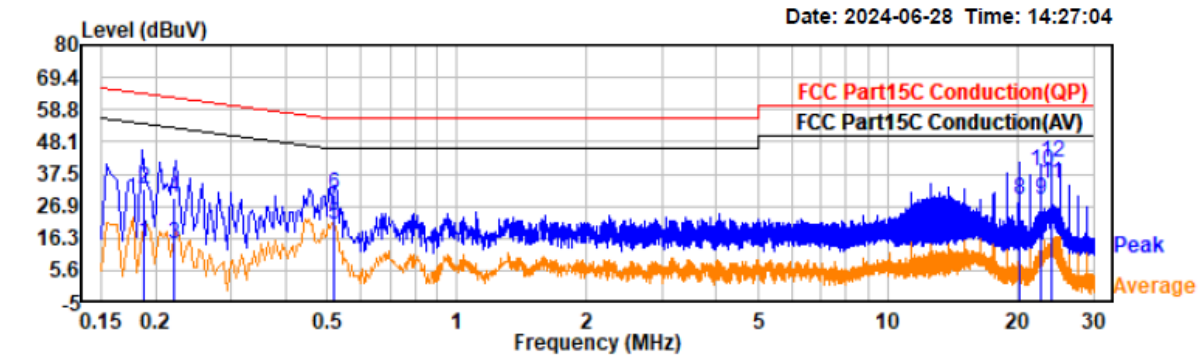


Trace: 1

Freq MHz	Reading dBuV	Factor dB	Result dBuV	Limit dBuV	Margin dB	Phase	Remark
0.16	-0.27	19.51	19.24	55.57	36.33	Line	Average
0.16	19.98	19.51	39.49	65.57	26.08	Line	QP
0.20	-1.59	19.51	17.92	53.77	35.85	Line	Average
0.20	17.21	19.51	36.72	63.77	27.05	Line	QP
0.45	9.01	19.60	28.61	46.87	18.26	Line	Average
0.45	16.40	19.60	36.00	56.87	20.87	Line	QP
13.88	-10.45	19.96	9.51	50.00	40.49	Line	Average
13.88	3.73	19.96	23.69	60.00	36.31	Line	QP
22.64	4.69	20.26	24.95	50.00	25.05	Line	Average
22.64	16.21	20.26	36.47	60.00	23.53	Line	QP
23.88	14.46	20.20	34.66	50.00	15.34	Line	Average
23.88	21.84	20.20	42.04	60.00	17.96	Line	QP

Project No.: 2407T68838E-RF
Test Mode: Charge + Tx 2402MHz
EUT Model: BKW-X1

Temp/Humi: 23.5°C/54%
Tested by: Stein Peng
Power Source: AC 120V/60Hz



Trace: 1

Freq MHz	Reading dBuV	Factor dB	Result dBuV	Limit dBuV	Margin dB	Phase	Remark
0.19	-4.41	19.47	15.06	54.15	39.09	Neutral	Average
0.19	12.85	19.47	32.32	64.15	31.83	Neutral	QP
0.22	-5.02	19.50	14.48	52.75	38.27	Neutral	Average
0.22	10.14	19.50	29.64	62.75	33.11	Neutral	QP
0.52	1.02	19.62	20.64	46.00	25.36	Neutral	Average
0.52	11.03	19.62	30.65	56.00	25.35	Neutral	QP
20.13	-7.57	19.87	12.30	50.00	37.70	Neutral	Average
20.13	9.18	19.87	29.05	60.00	30.95	Neutral	QP
22.63	8.44	20.27	28.71	50.00	21.29	Neutral	Average
22.63	17.97	20.27	38.24	60.00	21.76	Neutral	QP
23.89	14.29	20.22	34.51	50.00	15.49	Neutral	Average
23.89	21.29	20.22	41.51	60.00	18.49	Neutral	QP

FCC §15.205, §15.209, §15.249 - RADIATED EMISSIONS & OUT OF BAND EMISSION

Applicable Standard

As per FCC§15.249 (a), except as provided in paragraph (b) of this section, the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

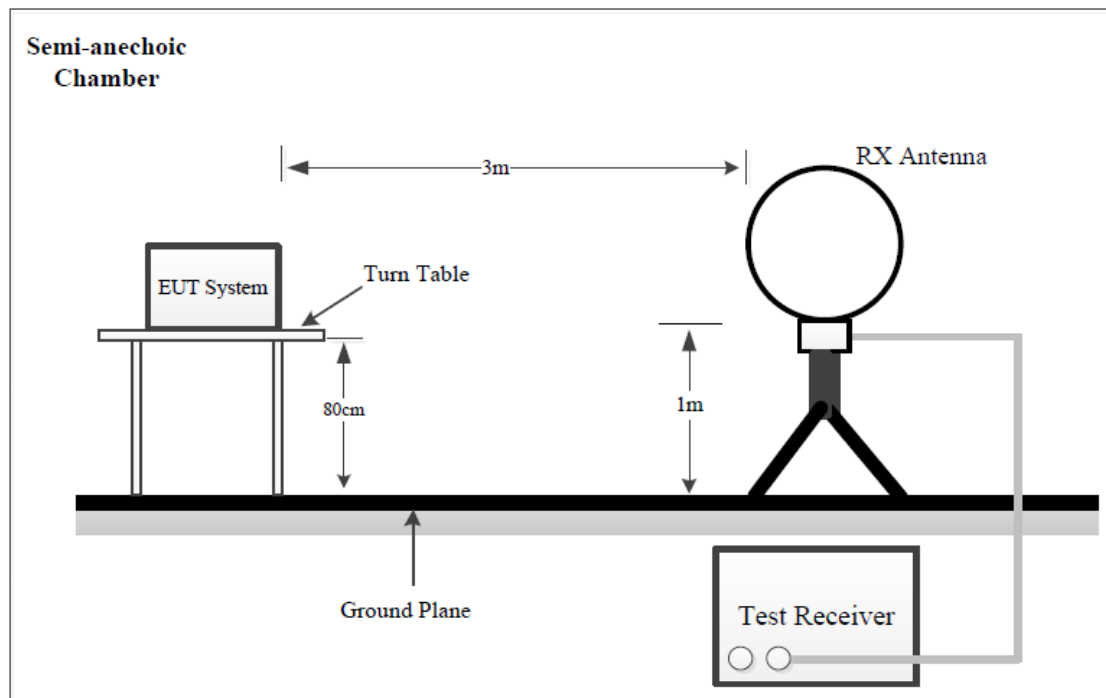
Fundamental frequency	Field strength of fundamental (millivolts/meter)	Field strength of harmonics (microvolts/meter)
902–928 MHz	50	500
2400–2483.5 MHz	50	500
5725–5875 MHz	50	500
24.0–24.25 GHz	250	2500

As per FCC§15.249 (c), Field strength limits are specified at a distance of 3 meters.

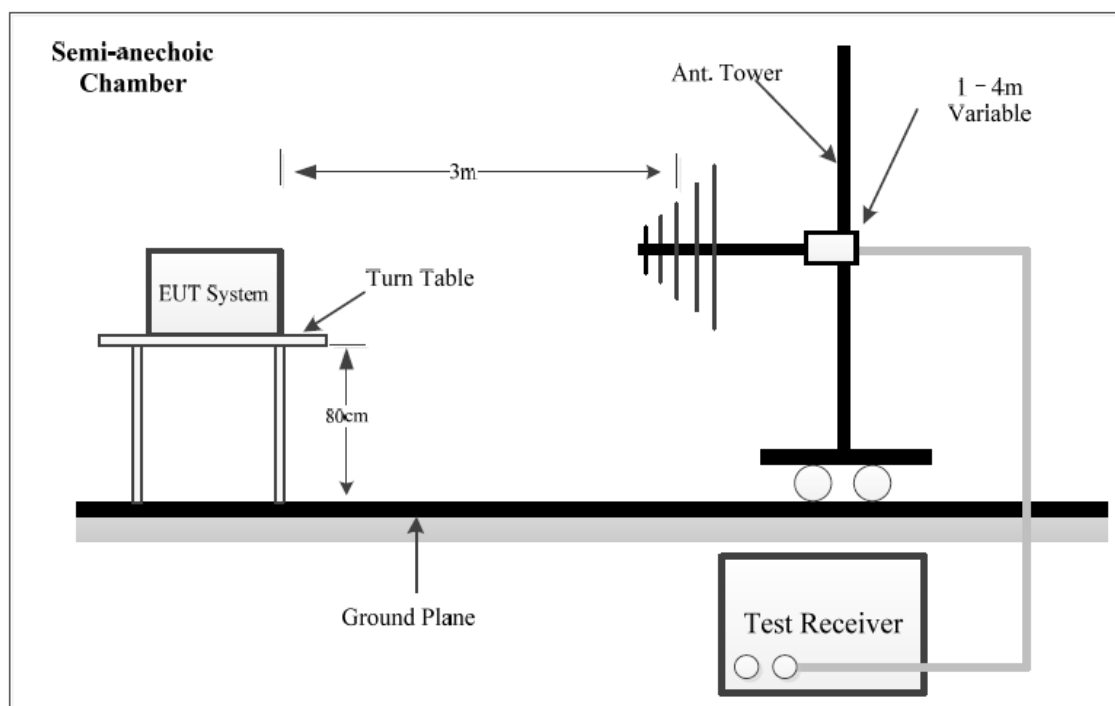
(d) Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in §15.209, whichever is the lesser attenuation.

Test System Setup

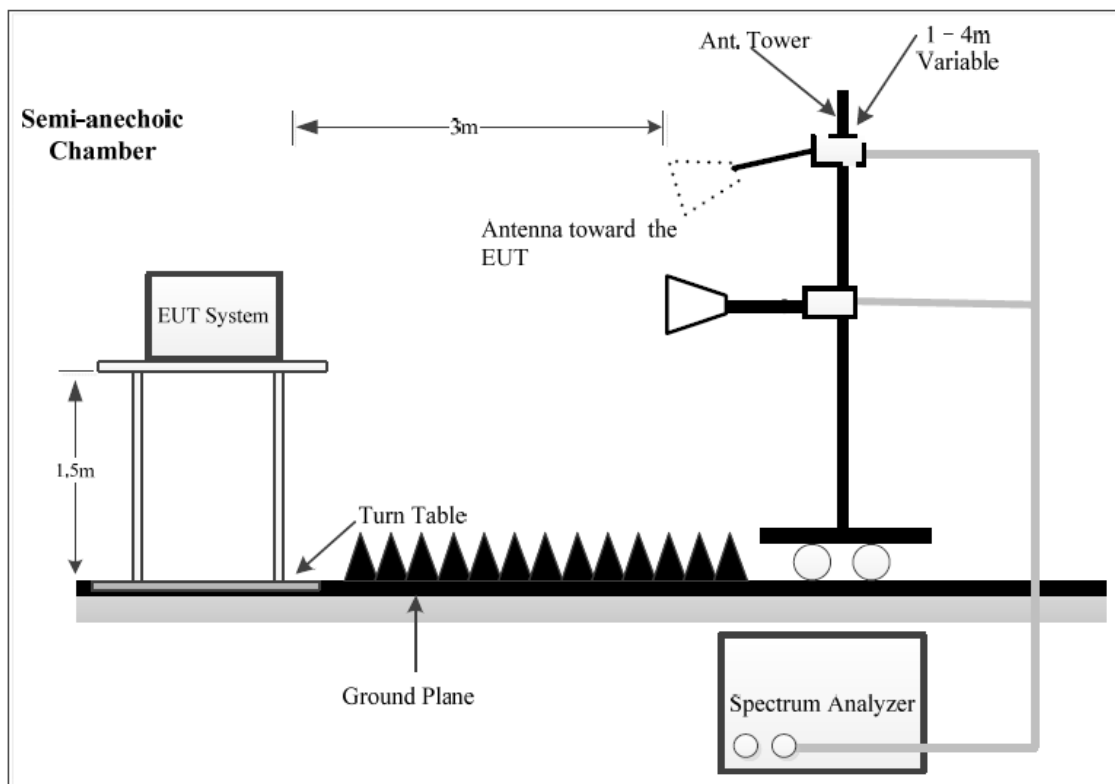
9 kHz-30MHz:



30MHz-1GHz:



Above 1GHz:



The radiated emission and out of band emission tests were performed in the 3 meters chamber test site, using the setup accordance with the ANSI C63.10-2013. The specification used was the FCC 15.209/15.205 and FCC 15.249 limits.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

EMI Test Receiver Setup

The system was investigated from 9 kHz to 25GHz.

During the radiated emission test, the EMI test Receiver was set with the following configurations:

Frequency Range	RBW	VBW	Measurement
9 kHz – 150 kHz	200Hz	1 kHz	PK
	200Hz	/	QP/AV
150 kHz – 30 MHz	10 kHz	30 kHz	PK
	9kHz	/	QP/AV
30 MHz – 1000 MHz	100 kHz	300 kHz	PK
	120kHz	/	QP
Above 1 GHz	1 MHz	3 MHz	PK
	1 MHz	10Hz	AV

Test Procedure

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

For each measurement antenna alignment, the EUT shall be rotated through 0° to 360° on a turntable. The report shall list the six emissions with the smallest margin relative to the limit, for each of the three antenna orientations (parallel, perpendicular, and ground parallel) unless the margin is greater than 20 dB, then the following statement shall be made: “all emissions were greater than 20 dB below the limit.”

If the measured peak level of the emissions that the measuring receiver reading level plus corrected factor is at least 10 dB below the QP emission limit, there's no need to record the measured QP level of the emissions in the report.

Level & Margin Calculation

The Level is calculated by adding the Antenna Factor and Cable Loss, and subtracting the Amplifier Gain from the Meter Reading. The basic equation is as follows:

Factor (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB) - Amplifier Gain (dB)

Level (dBμV/m) = Reading (dBμV) + Factor (dB/m)

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7dB means the emission is 7dB below the limit. The equation for margin calculation is as follows:

Margin (dB) = Limit (dBμV/m) – Level (dBμV/m)

Test Results Summary

According to the data in the following table, the EUT complied with the FCC Part 15.209 &15.205 & 15.249.

Test Data

Frequency Range:	Below 1 GHz	Above 1 GHz & OUT OF BAND EMISSION
Temperature:	23.5°C	23.4°C~23.7°C
Relative Humidity:	54 %	52 %~55%
ATM Pressure:	99.6 kPa~101.1 kPa	100.5kPa~101.1 kPa
Test Date:	2024-07-09~2024-07-10	2024-06-19~2024-08-22
Test Engineer:	Stein Peng	Stein Peng, Wlif Wu

Note: Pre-scan in the X, Y and Z axes of orientation, the worst case X-axis of orientation was recorded.

1) 9 kHz~30MHz

Pre-scan in parallel, ground-parallel and perpendicular of orientation of loop antenna, the amplitude of spurious emissions attenuated is more than 20 dB below the permissible value, which is not required to be report.

2) 30MHz~1GHz

Project No.: 2407T68838E-RF

Test Mode: Tx 2402MHz

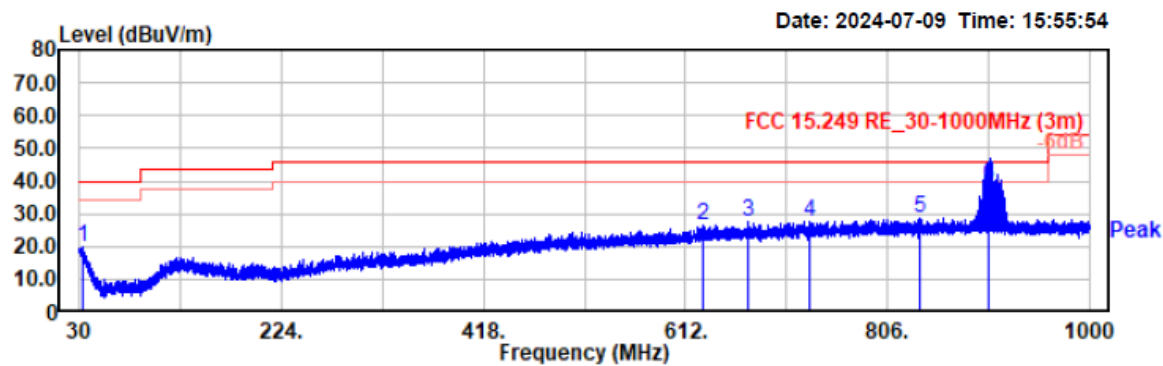
EUT Model: BKW-X1

Test distance: 3m

Temp/Humi: 23.5℃/54%

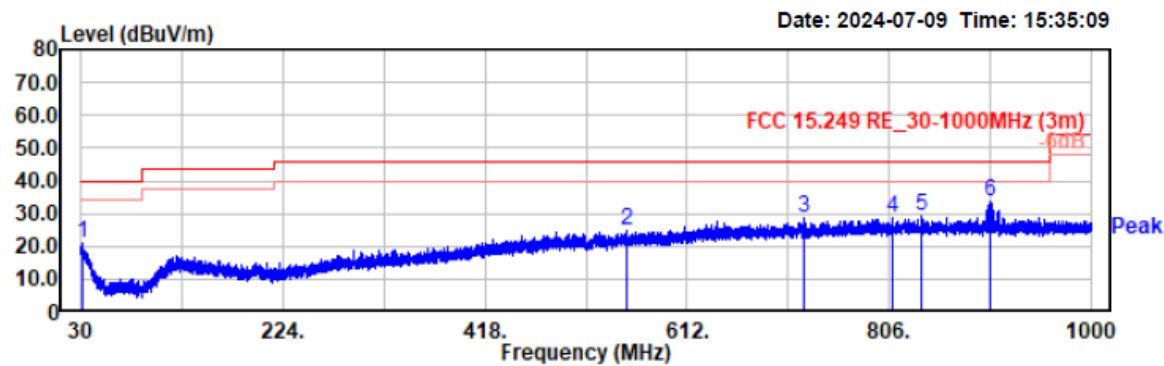
Tested by: Stein Peng

Power Source: DC 5V From USB Port



Project No.: 2407T68838E-RF
Test Mode: Tx 2402MHz
EUT Model: BKW-X1
Test distance: 3m

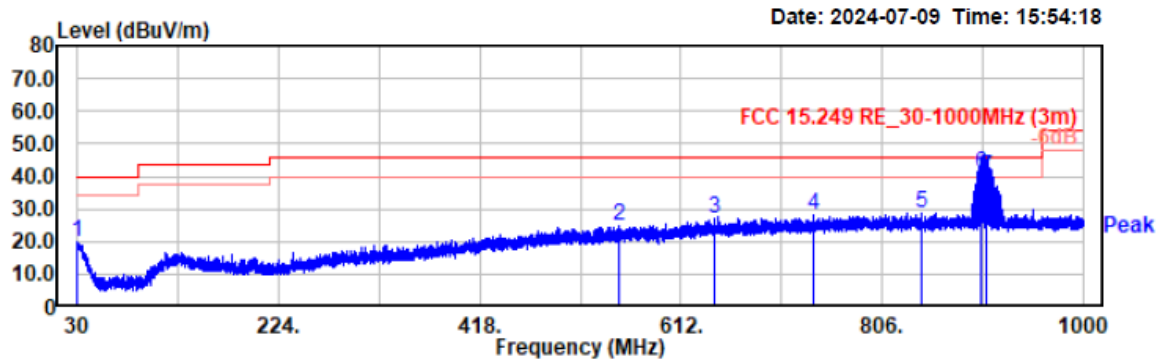
Temp/Humi: 23.5°C/54%
Tested by: Stein Peng
Power Source: DC 5V From USB Port



Freq MHz	Reading dBuV	Factor dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Polarity	Remark
30.78	26.53	-5.79	20.74	40.00	19.26	Vertical	Peak
553.41	27.28	-2.66	24.62	46.00	21.38	Vertical	Peak
724.33	28.52	0.06	28.58	46.00	17.42	Vertical	Peak
809.30	27.41	1.37	28.78	46.00	17.22	Vertical	Peak
836.75	27.20	1.79	28.99	46.00	17.01	Vertical	Peak
903.58	31.03	2.55	33.58	46.00	12.42	Vertical	Peak

Project No.: 2407T68838E-RF
Test Mode: Tx 2441MHz
EUT Model: BKW-X1
Test distance: 3m

Temp/Humi: 23.5°C/54%
Tested by: Stein Peng
Power Source: DC 5V From USB Port



Freq MHz	Reading dBuV	Factor dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Polarity	Remark
30.39	25.74	-5.70	20.04	40.00	19.96	Horizontal	Peak
553.02	27.48	-2.68	24.80	46.00	21.20	Horizontal	Peak
643.72	28.17	-1.05	27.12	46.00	18.88	Horizontal	Peak
739.65	27.74	0.32	28.06	46.00	17.94	Horizontal	Peak
843.73	27.12	1.82	28.94	46.00	17.06	Horizontal	Peak
901.84	38.43	2.55	40.98	46.00	5.02	Horizontal	QP
906.71	37.12	2.59	39.71	46.00	6.29	Horizontal	QP

Project No.: 2407T68838E-RF

Test Mode: Tx 2441MHz

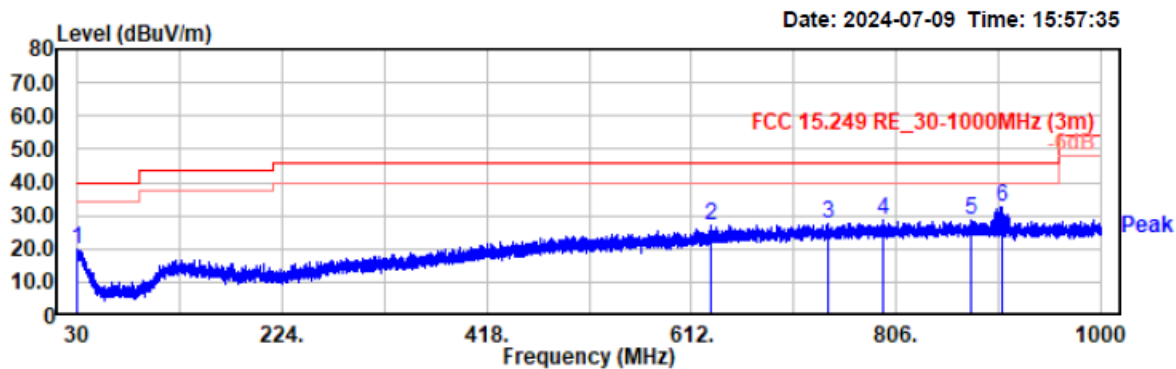
EUT Model: BKW-X1

Test distance: 3m

Temp/Humi: 23.5°C/54%

Tested by: Stein Peng

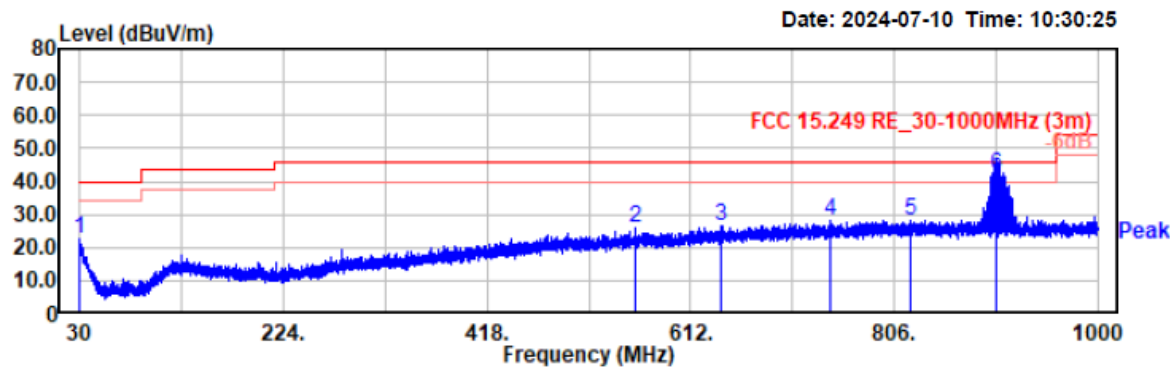
Power Source: DC 5V From USB Port



Freq MHz	Reading dBuV	Factor dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Polarity	Remark
30.10	25.38	-5.63	19.75	40.00	20.25	Vertical	Peak
631.21	28.63	-1.35	27.28	46.00	18.72	Vertical	Peak
741.79	27.48	0.37	27.85	46.00	18.15	Vertical	Peak
794.36	27.38	1.22	28.60	46.00	17.40	Vertical	Peak
877.88	26.33	2.31	28.64	46.00	17.36	Vertical	Peak
906.10	30.17	2.58	32.75	46.00	13.25	Vertical	Peak

Project No.: 2407T68838E-RF
Test Mode: Tx 2480MHz
EUT Model: BKW-X1
Test distance: 3m

Temp/Humi: 23.5°C/54%
Tested by: Stein Peng
Power Source: DC 5V From USB Port



Freq MHz	Reading dBuV	Factor dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Polarity	Remark
30.10	27.98	-5.63	22.35	40.00	17.65	Horizontal	Peak
559.91	28.56	-2.60	25.96	46.00	20.04	Horizontal	Peak
641.68	27.56	-1.10	26.46	46.00	19.54	Horizontal	Peak
744.50	27.71	0.43	28.14	46.00	17.86	Horizontal	Peak
821.62	26.44	1.63	28.07	46.00	17.93	Horizontal	Peak
903.87	39.48	2.55	42.03	46.00	3.97	Horizontal	QP

Project No.: 2407T68838E-RF

Test Mode: Tx 2480MHz

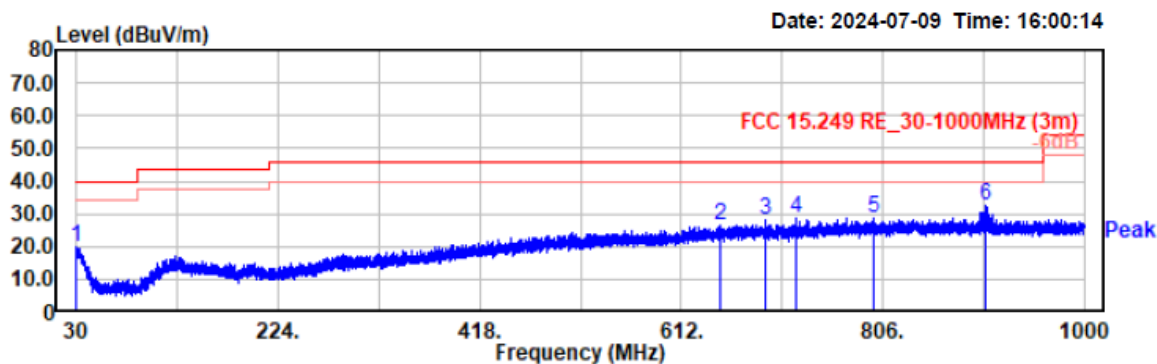
EUT Model: BKW-X1

Test distance: 3m

Temp/Humi: 23.5°C/54%

Tested by: Stein Peng

Power Source: DC 5V From USB Port

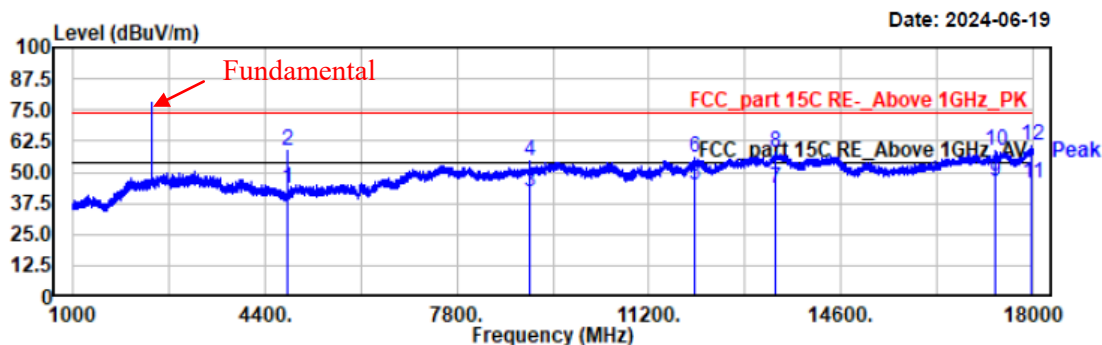


Freq MHz	Reading dBuV	Factor dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Polarity	Remark
30.39	25.74	-5.70	20.04	40.00	19.96	Vertical	Peak
649.93	27.46	-0.90	26.56	46.00	19.44	Vertical	Peak
692.32	28.40	-0.44	27.96	46.00	18.04	Vertical	Peak
722.10	28.86	0.05	28.91	46.00	17.09	Vertical	Peak
796.79	27.62	1.24	28.86	46.00	17.14	Vertical	Peak
904.36	30.16	2.56	32.72	46.00	13.28	Vertical	Peak

3) 1GHz~18 GHz

Project No.: 2407T68838E-RF
Test Mode: Tx 2402MHz
EUT Model: BKW-X1
Test distance: 3m

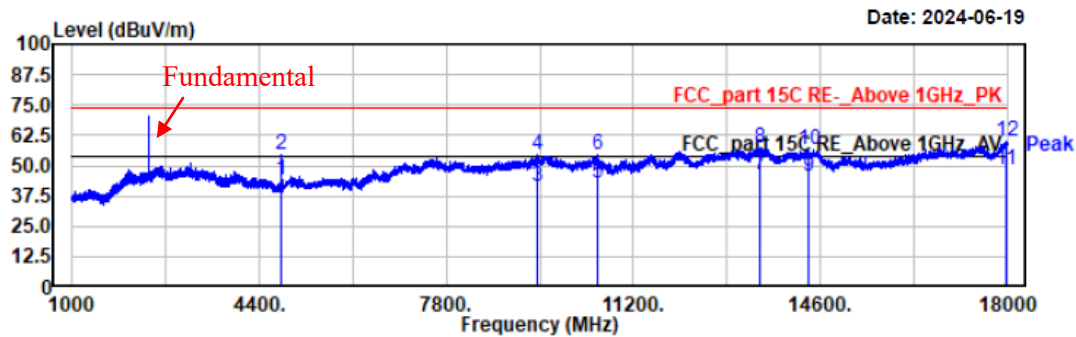
Temp/Humi/ATM: 23.7°C/52%
Tested by: Stein Peng
Power Source: DC 5V from USB Port



Freq MHz	Reading dBuV	Factor dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Polarity	Remark
4804.60	42.27	1.09	43.36	54.00	10.64	horizontal	Average
4804.60	57.67	1.09	58.76	74.00	15.24	horizontal	Peak
9102.20	32.02	10.37	42.39	54.00	11.61	horizontal	Average
9102.20	44.16	10.37	54.53	74.00	19.47	horizontal	Peak
12010.90	31.26	13.91	45.17	54.00	8.83	horizontal	Average
12010.90	42.23	13.91	56.14	74.00	17.86	horizontal	Peak
13437.20	27.36	16.08	43.44	54.00	10.56	horizontal	Average
13437.20	41.66	16.08	57.74	74.00	16.26	horizontal	Peak
17345.50	31.05	15.08	46.13	54.00	7.87	horizontal	Average
17345.50	43.32	15.08	58.40	74.00	15.60	horizontal	Peak
17981.30	28.26	17.05	45.31	54.00	8.69	horizontal	Average
17981.30	43.37	17.05	60.42	74.00	13.58	horizontal	Peak

Project No.: 2407T68838E-RF
Test Mode: Tx 2402MHz
EUT Model: BKW-X1
Test distance: 3m

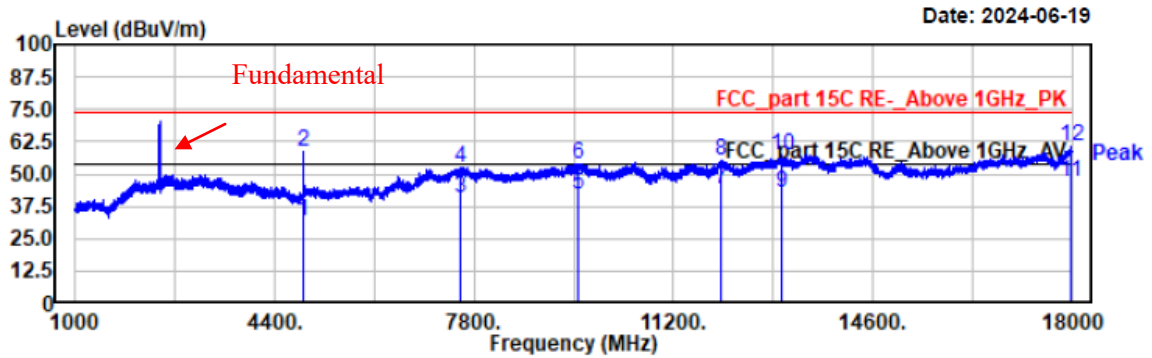
Temp/Humi/ATM: 23.7°C/52%/101.1kPa
Tested by: Stein Peng
Power Source: DC 5V from USB Port



Freq MHz	Reading dBuV	Factor dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Polarity	Remark
4804.60	43.06	1.09	44.15	54.00	9.85	vertical	Average
4804.60	53.62	1.09	54.71	74.00	19.29	vertical	Peak
9443.90	30.16	11.56	41.72	54.00	12.28	vertical	Average
9443.90	42.90	11.56	54.46	74.00	19.54	vertical	Peak
10554.00	31.26	11.56	42.82	54.00	11.18	vertical	Average
10554.00	43.15	11.56	54.71	74.00	19.29	vertical	Peak
13501.80	30.02	16.13	46.15	54.00	7.85	vertical	Average
13501.80	40.99	16.13	57.12	74.00	16.88	vertical	Peak
14392.60	31.02	14.62	45.64	54.00	8.36	vertical	Average
14392.60	41.86	14.62	56.48	74.00	17.52	vertical	Peak
17962.60	31.26	16.99	48.25	54.00	5.75	vertical	Average
17962.60	43.19	16.99	60.18	74.00	13.82	vertical	Peak

Project No.: 2407T68838E-RF
 Test Mode: Tx 2441MHz
 EUT Model: BKW-X1
 Test distance: 3m

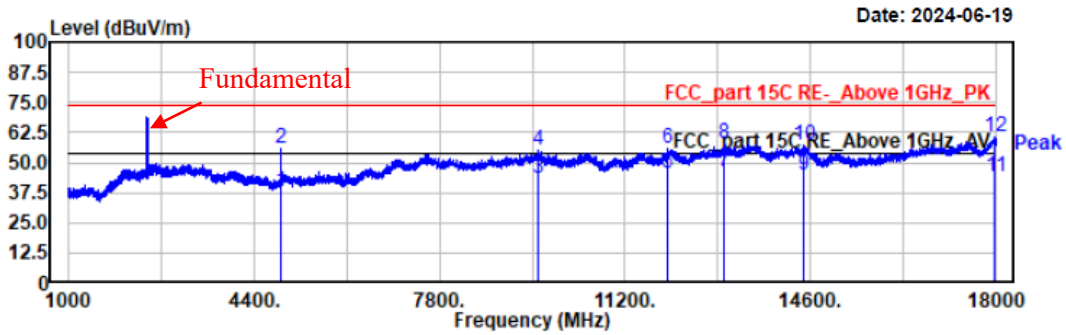
Temp/Humi/ATM: 23.7°C/52%/101.1kPa
 Tested by: Stein Peng
 Power Source: DC 5V from USB Port



Freq MHz	Reading dBuV	Factor dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Polarity	Remark
4882.10	29.65	2.06	31.71	54.00	22.29	horizontal	Average
4882.10	56.71	2.06	58.77	74.00	15.23	horizontal	Peak
7565.40	30.13	10.39	40.52	54.00	13.48	horizontal	Average
7565.40	42.34	10.39	52.73	74.00	21.27	horizontal	Peak
9574.80	30.16	11.97	42.13	54.00	11.87	horizontal	Average
9574.80	42.12	11.97	54.09	74.00	19.91	horizontal	Peak
12007.50	30.16	13.90	44.06	54.00	9.94	horizontal	Average
12007.50	41.48	13.90	55.38	74.00	18.62	horizontal	Peak
13044.50	27.36	15.74	43.10	54.00	10.90	horizontal	Average
13044.50	41.54	15.74	57.28	74.00	16.72	horizontal	Peak
17971.10	30.15	17.02	47.17	54.00	6.83	horizontal	Average
17971.10	43.74	17.02	60.76	74.00	13.24	horizontal	Peak

Project No.: 2407T68838E-RF
Test Mode: Tx 2441MHz
EUT Model: BKW-X1
Test distance: 3m

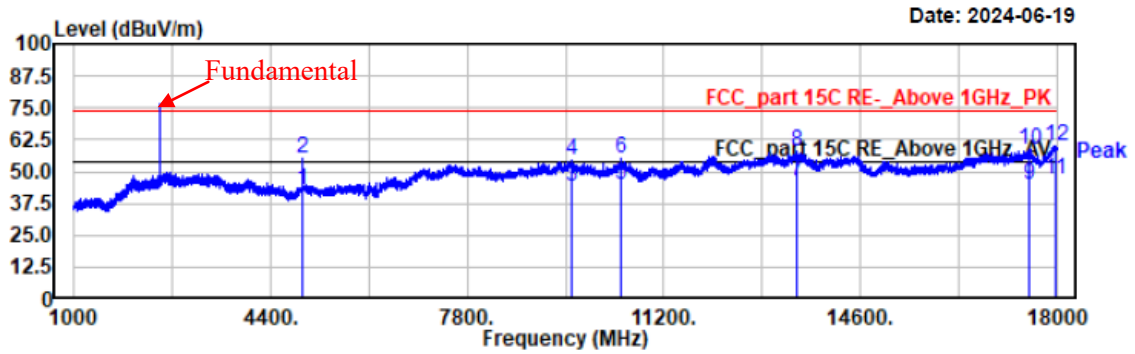
Temp/Humi/ATM: 23.7°C/52%/101.1kPa
Tested by: Stein Peng
Power Source: DC 5V from USB Port



Freq MHz	Reading dBuV	Factor dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Polarity	Remark
4882.10	35.75	2.10	37.85	54.00	16.15	vertical	Average
4882.10	53.99	2.10	56.09	74.00	17.91	vertical	Peak
9612.20	31.26	12.21	43.47	54.00	10.53	vertical	Average
9612.20	43.04	12.21	55.25	74.00	18.75	vertical	Peak
11971.80	31.47	13.79	45.26	54.00	8.74	vertical	Average
11971.80	42.13	13.79	55.92	74.00	18.08	vertical	Peak
13005.40	30.05	15.89	45.94	54.00	8.06	vertical	Average
13005.40	41.73	15.89	57.62	74.00	16.38	vertical	Peak
14479.30	30.16	14.41	44.57	54.00	9.43	vertical	Average
14479.30	42.78	14.41	57.19	74.00	16.81	vertical	Peak
17984.70	27.37	17.05	44.42	54.00	9.58	vertical	Average
17984.70	43.65	17.05	60.70	74.00	13.30	vertical	Peak

Project No.: 2407T68838E-RF
Test Mode: Tx 2480MHz
EUT Model: BKW-X1
Test distance: 3m

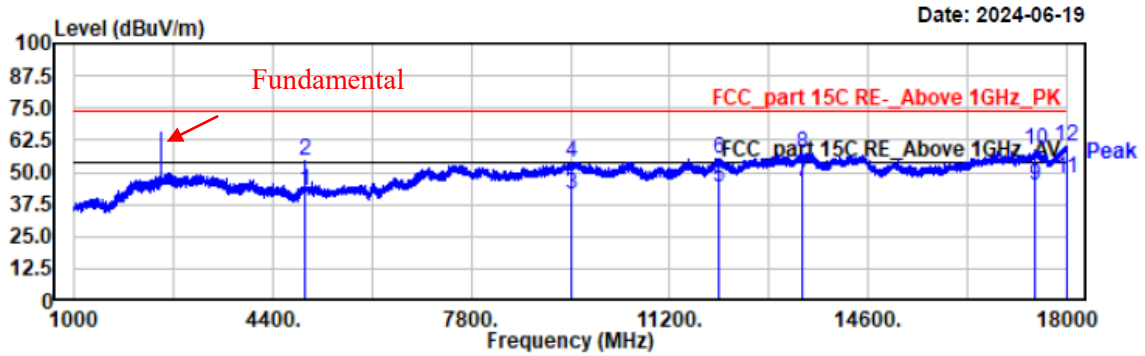
Temp/Humi/ATM: 23.7°C/52%/101.1kPa
Tested by: Stein Peng
Power Source: DC 5V from USB Port



Freq MHz	Reading dBuV	Factor dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Polarity	Remark
4959.30	40.23	2.86	43.09	54.00	10.91	horizontal	Average
4959.30	52.09	2.86	54.95	74.00	19.05	horizontal	Peak
9612.20	32.06	12.21	44.27	54.00	9.73	horizontal	Average
9612.20	42.13	12.21	54.34	74.00	19.66	horizontal	Peak
10470.70	33.26	11.67	44.93	54.00	9.07	horizontal	Average
10470.70	43.58	11.67	55.25	74.00	18.75	horizontal	Peak
13488.20	30.11	16.14	46.25	54.00	7.75	horizontal	Average
13488.20	41.99	16.14	58.13	74.00	15.87	horizontal	Peak
17520.60	30.25	14.73	44.98	54.00	9.02	horizontal	Average
17520.60	43.92	14.73	58.65	74.00	15.35	horizontal	Peak
17966.00	30.01	17.00	47.01	54.00	6.99	horizontal	Average
17966.00	43.06	17.00	60.06	74.00	13.94	horizontal	Peak

Project No.: 2407T68838E-RF
 Test Mode: Tx 2480MHz
 EUT Model: BKW-X1
 Test distance: 3m

Temp/Humi/ATM: 23.7°C/52%/101.1kPa
 Tested by: Stein Peng
 Power Source: DC 5V from USB Port

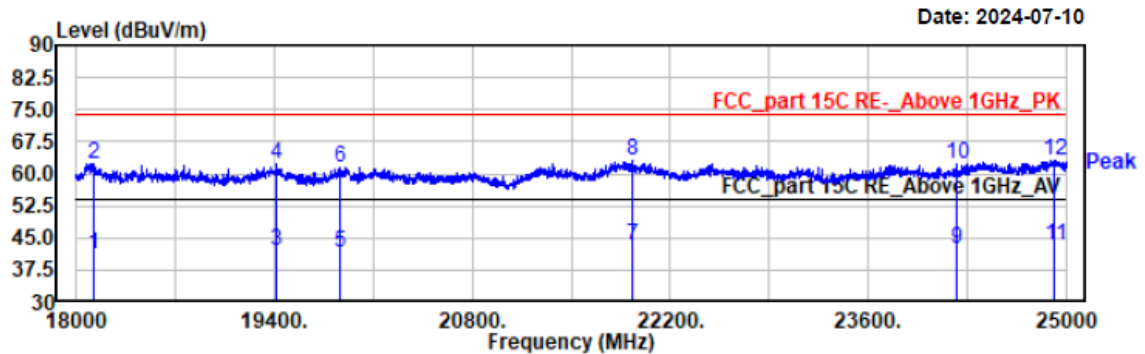


Freq MHz	Reading dBuV	Factor dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Polarity	Remark
4959.30	40.03	2.86	42.89	54.00	11.11	vertical	Average
4959.30	51.83	2.86	54.69	74.00	19.31	vertical	Peak
9506.80	30.25	11.40	41.65	54.00	12.35	vertical	Average
9506.80	42.59	11.40	53.99	74.00	20.01	vertical	Peak
12051.70	30.27	13.84	44.11	54.00	9.89	vertical	Average
12051.70	41.52	13.84	55.36	74.00	18.64	vertical	Peak
13461.00	30.13	16.10	46.23	54.00	7.77	vertical	Average
13461.00	41.45	16.10	57.55	74.00	16.45	vertical	Peak
17461.10	30.14	14.96	45.10	54.00	8.90	vertical	Average
17461.10	43.56	14.96	58.52	74.00	15.48	vertical	Peak
17991.50	30.22	17.07	47.29	54.00	6.71	vertical	Average
17991.50	43.16	17.07	60.23	74.00	13.77	vertical	Peak

4) 18 GHz~25 GHz

Project No.: 2407T68838E-RF
 Test Mode: Tx 2402MHz
 EUT Model: BKW-X1
 Test distance: 3m

Temp/Humi/ATM: 23.4°C/55%/101.1kPa
 Tested by: Stein Peng
 Power Source: DC 5V from USB Port



Freq MHz	Reading dBuV	Factor dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Polarity	Remark
18127.20	16.89	24.46	41.35	54.00	12.65	horizontal	Average
18127.20	37.92	24.46	62.38	74.00	11.62	horizontal	Peak
19418.40	17.81	24.24	42.05	54.00	11.95	horizontal	Average
19418.40	37.86	24.24	62.10	74.00	11.90	horizontal	Peak
19869.60	17.20	24.35	41.55	54.00	12.45	horizontal	Average
19869.60	37.27	24.35	61.62	74.00	12.38	horizontal	Peak
21928.80	17.05	26.01	43.06	54.00	10.94	horizontal	Average
21928.80	37.08	26.01	63.09	74.00	10.91	horizontal	Peak
24223.20	14.72	27.53	42.25	54.00	11.75	horizontal	Average
24223.20	34.82	27.53	62.35	74.00	11.65	horizontal	Peak
24916.80	15.25	27.96	43.21	54.00	10.79	horizontal	Average
24916.80	35.25	27.96	63.21	74.00	10.79	horizontal	Peak

Project No.: 2407T68838E-RF

Test Mode: Tx 2402MHz

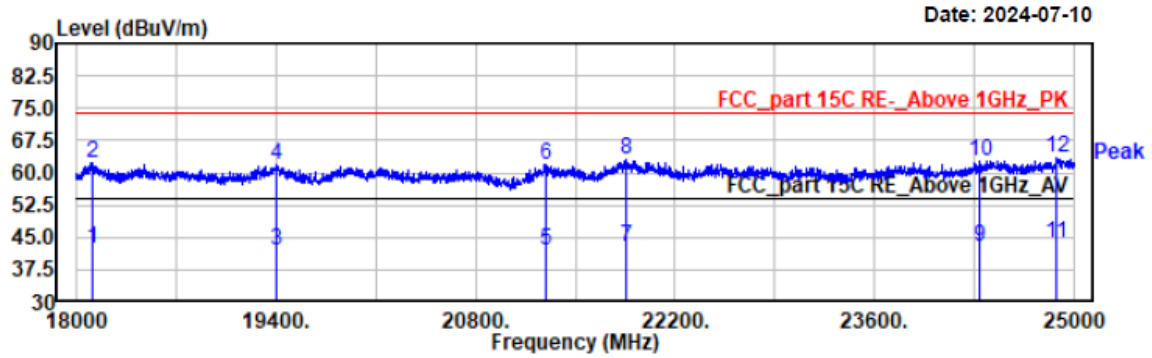
EUT Model: BKW-X1

Test distance: 3m

Temp/Humi/ATM: 23.4°C/55%/101.1kPa

Tested by: Stein Peng

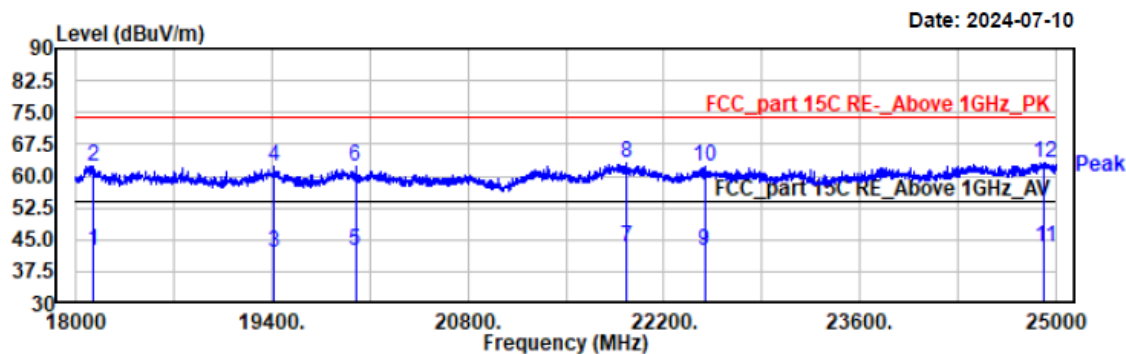
Power Source: DC 5V from USB Port



Freq MHz	Reading dBuV	Factor dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Polarity	Remark
18112.80	17.84	24.48	42.32	54.00	11.68	vertical	Average
18112.80	37.83	24.48	62.31	74.00	11.69	vertical	Peak
19404.00	17.70	24.22	41.92	54.00	12.08	vertical	Average
19404.00	37.75	24.22	61.97	74.00	12.03	vertical	Peak
21292.80	16.63	25.17	41.80	54.00	12.20	vertical	Average
21292.80	36.68	25.17	61.85	74.00	12.15	vertical	Peak
21859.20	17.12	25.89	43.01	54.00	10.99	vertical	Average
21859.20	37.21	25.89	63.10	74.00	10.90	vertical	Peak
24333.60	14.84	27.79	42.63	54.00	11.37	vertical	Average
24333.60	34.99	27.79	62.78	74.00	11.22	vertical	Peak
24878.40	15.53	27.98	43.51	54.00	10.49	vertical	Average
24878.40	35.36	27.98	63.34	74.00	10.66	vertical	Peak

Project No.: 2407T68838E-RF
 Test Mode: Tx 2441MHz
 EUT Model: BKW-X1
 Test distance: 3m

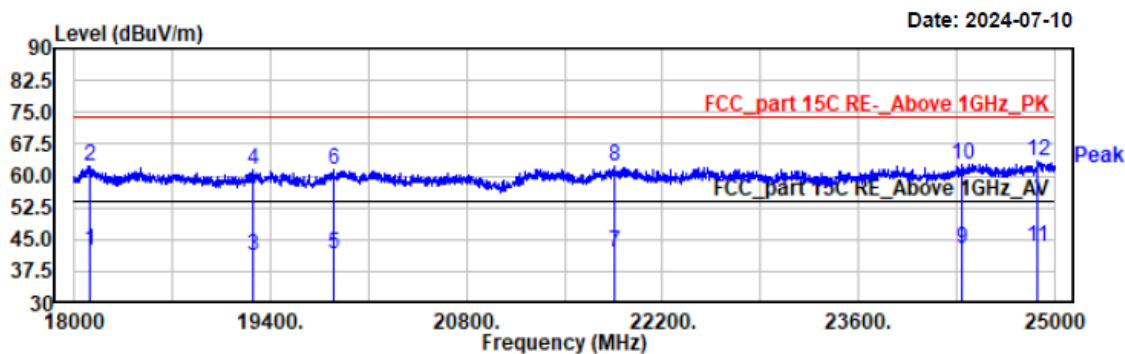
Temp/Humi/ATM: 23.4°C/55%/101.1kPa
 Tested by: Stein Peng
 Power Source: DC 5V from USB Port



Freq MHz	Reading dBuV	Factor dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Polarity	Remark
18127.20	18.25	24.12	42.37	54.00	11.63	horizontal	Average
18127.20	38.26	24.12	62.38	74.00	11.62	horizontal	Peak
19418.40	17.54	24.60	42.14	54.00	11.86	horizontal	Average
19418.40	37.50	24.60	62.10	74.00	11.90	horizontal	Peak
19996.80	17.72	24.66	42.38	54.00	11.62	horizontal	Average
19996.80	37.73	24.66	62.39	74.00	11.61	horizontal	Peak
21928.80	17.05	26.07	43.12	54.00	10.88	horizontal	Average
21928.80	37.02	26.07	63.09	74.00	10.91	horizontal	Peak
22490.40	16.15	26.21	42.36	54.00	11.64	horizontal	Average
22490.40	36.15	26.21	62.36	74.00	11.64	horizontal	Peak
24916.80	14.80	28.41	43.21	54.00	10.79	horizontal	Average
24916.80	34.80	28.41	63.21	74.00	10.79	horizontal	Peak

Project No.: 2407T68838E-RF
Test Mode: Tx 2441MHz
EUT Model: BKW-X1
Test distance: 3m

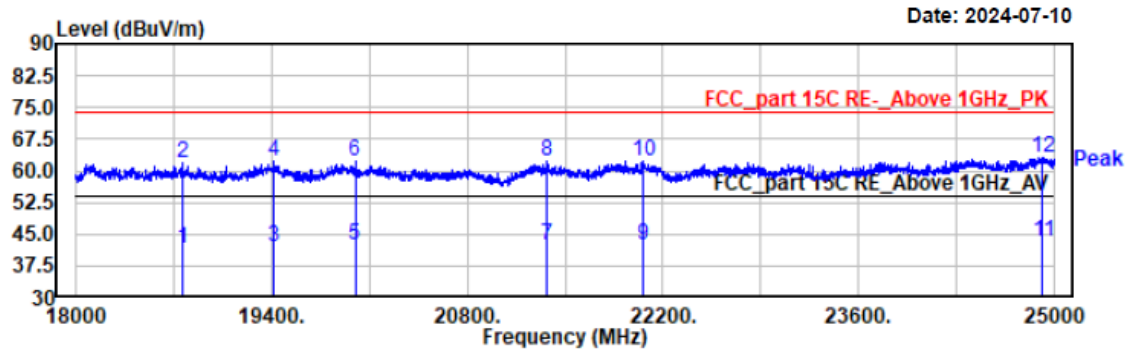
Temp/Humi/ATM: 23.4°C/55%/101.1kPa
Tested by: Stein Peng
Power Source: DC 5V from USB Port



Freq MHz	Reading dBuV	Factor dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Polarity	Remark
18112.80	18.10	24.12	42.22	54.00	11.78	vertical	Average
18112.80	38.19	24.12	62.31	74.00	11.69	vertical	Peak
19281.60	16.75	24.57	41.32	54.00	12.68	vertical	Average
19281.60	36.75	24.57	61.32	74.00	12.68	vertical	Peak
19850.40	16.76	24.64	41.40	54.00	12.60	vertical	Average
19850.40	36.86	24.64	61.50	74.00	12.50	vertical	Peak
21859.20	16.15	25.99	42.14	54.00	11.86	vertical	Average
21859.20	36.11	25.99	62.10	74.00	11.90	vertical	Peak
24333.60	14.57	28.25	42.82	54.00	11.18	vertical	Average
24333.60	34.53	28.25	62.78	74.00	11.22	vertical	Peak
24878.40	14.91	28.42	43.33	54.00	10.67	vertical	Average
24878.40	34.92	28.42	63.34	74.00	10.66	vertical	Peak

Project No.: 2407T68838E-RF
 Test Mode: Tx 2480MHz
 EUT Model: BKW-X1
 Test distance: 3m

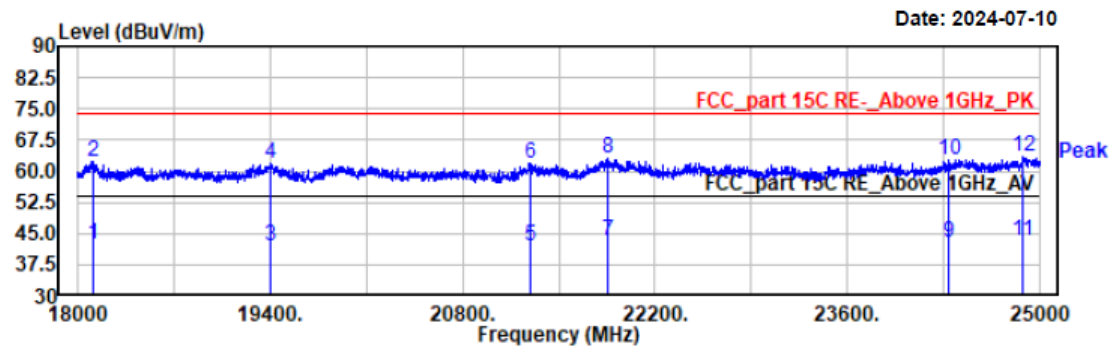
Temp/Humi/ATM: 23.4°C/55%/101.1kPa
 Tested by: Stein Peng
 Power Source: DC 5V from USB Port



Freq MHz	Reading dBuV	Factor dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Polarity	Remark
18760.80	17.31	24.46	41.77	54.00	12.23	horizontal	Average
18760.80	37.38	24.46	61.84	74.00	12.16	horizontal	Peak
19418.40	17.48	24.60	42.08	54.00	11.92	horizontal	Average
19418.40	37.50	24.60	62.10	74.00	11.90	horizontal	Peak
19996.80	17.70	24.66	42.36	54.00	11.64	horizontal	Average
19996.80	37.73	24.66	62.39	74.00	11.61	horizontal	Peak
21367.20	16.64	25.61	42.25	54.00	11.75	horizontal	Average
21367.20	36.61	25.61	62.22	74.00	11.78	horizontal	Peak
22063.20	16.25	25.99	42.24	54.00	11.76	horizontal	Average
22063.20	36.24	25.99	62.23	74.00	11.77	horizontal	Peak
24916.80	14.81	28.41	43.22	54.00	10.78	horizontal	Average
24916.80	34.80	28.41	63.21	74.00	10.79	horizontal	Peak

Project No.: 2407T68838E-RF
Test Mode: Tx 2480MHz
EUT Model: BKW-X1
Test distance: 3m

Temp/Humi/ATM: 23.4°C/55%/101.1kPa
Tested by: Stein Peng
Power Source: DC 5V from USB Port



Freq MHz	Reading dBuV	Factor dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Polarity	Remark
18112.80	18.17	24.12	42.29	54.00	11.71	vertical	Average
18112.80	38.19	24.12	62.31	74.00	11.69	vertical	Peak
19404.00	17.35	24.59	41.94	54.00	12.06	vertical	Average
19404.00	37.38	24.59	61.97	74.00	12.03	vertical	Peak
21292.80	16.24	25.62	41.86	54.00	12.14	vertical	Average
21292.80	36.23	25.62	61.85	74.00	12.15	vertical	Peak
21859.20	17.17	25.99	43.16	54.00	10.84	vertical	Average
21859.20	37.11	25.99	63.10	74.00	10.90	vertical	Peak
24333.60	14.57	28.25	42.82	54.00	11.18	vertical	Average
24333.60	34.53	28.25	62.78	74.00	11.22	vertical	Peak
24878.40	14.98	28.42	43.40	54.00	10.60	vertical	Average
24878.40	34.92	28.42	63.34	74.00	10.66	vertical	Peak

Fundamental Test & Out-of-band Emissions Test:

(Pre-scan in the X, Y and Z ax of orientation, the worst case X-axis of orientation was recorded.)

Note:

Factor (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB) - Amplifier Gain (dB)

Level (dBμV/m) = Reading (dBμV) + Factor (dB/m)

Margin (dB) = Limit (dBμV/m) - Level (dBμV/m)

Fundamental:

Frequency	Receiver	Rx	Factor	Level	Limit	Margin	Detector
	Reading	Antenna					
MHz	dBμV	Polar					
		H/V	dB/m	dBμV/m	dBμV/m	dB	
Low Channel: 2402MHz							
2402.00	73.84	H	3.83	77.67	114.00	36.33	PK
2402.00	66.24	V	3.83	70.07	114.00	43.93	PK
2402.00	52.69	H	3.83	56.52	94.00	37.48	AV
2402.00	50.16	V	3.83	53.99	94.00	40.01	AV
Middle Channel: 2441MHz							
2441.00	66.84	H	3.83	70.67	114.00	43.33	PK
2441.00	64.85	V	3.83	68.68	114.00	45.32	PK
2441.00	51.06	H	3.83	54.89	94.00	39.11	AV
2441.00	50.06	V	3.83	53.89	94.00	40.11	AV
High Channel: 2480MHz							
2480.00	72.36	H	4.35	76.71	114.00	37.29	PK
2480.00	61.13	V	4.35	65.48	114.00	48.52	PK
2480.00	58.36	H	4.35	62.71	94.00	31.29	AV
2480.00	50.49	V	4.35	54.84	94.00	39.16	AV

Out-of-band Emissions:

Project No.: 2407T68838E-RF

Test Mode: 2402MHz

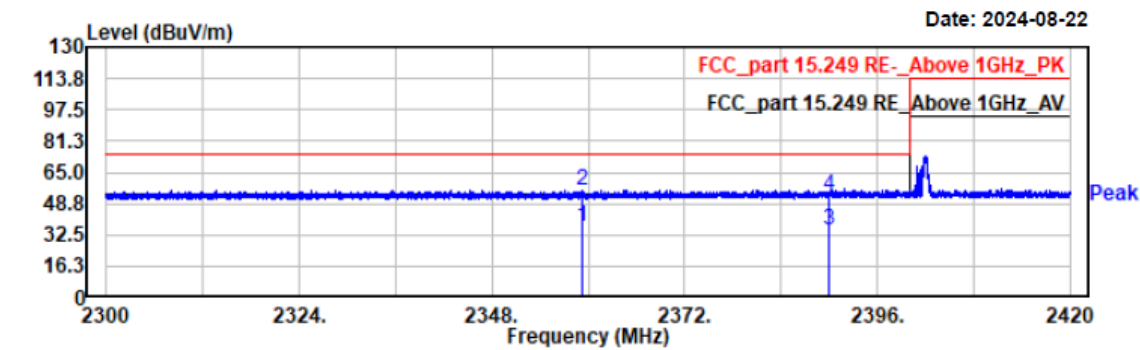
EUT Model: BKW-X1

Test distance: 3m

Temp/Humi/ATM: 23.5°C/54%/100.5kPa

Tested by: Wlif Wu

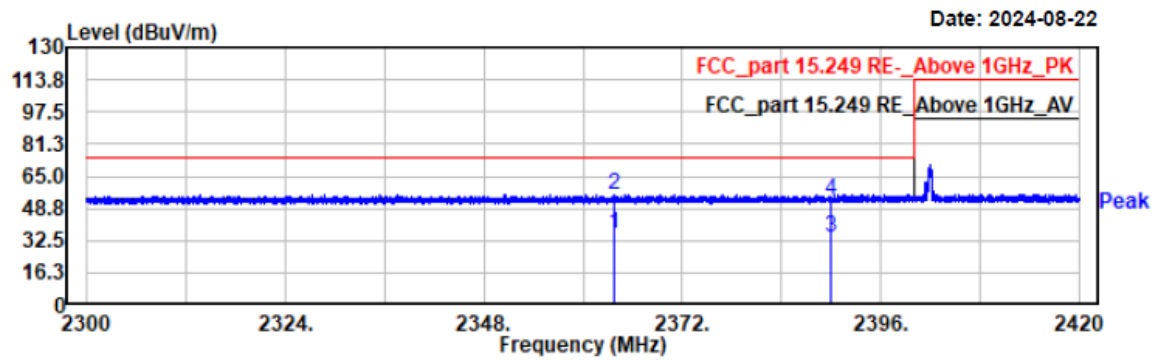
Power Source: AC 120V/60Hz



Freq MHz	Reading dBuV	Factor dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Polarity	Remark
2359.22	-0.12	36.53	36.41	54.00	17.59	horizontal	Average
2359.22	19.43	36.53	55.96	74.00	18.04	horizontal	Peak
2390.00	-2.33	36.93	34.60	54.00	19.40	horizontal	Average
2390.00	16.25	36.93	53.18	74.00	20.82	horizontal	Peak

Project No.: 2407T68838E-RF
Test Mode: 2402MHz
EUT Model: BKW-X1
Test distance: 3m

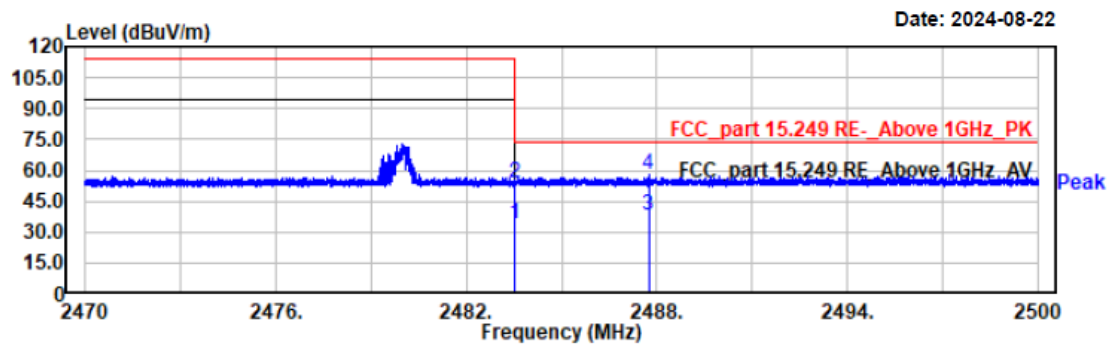
Temp/Humi/ATM: 23.5°C/54%/100.5kPa
Tested by: Wlif Wu
Power Source: AC 120V/60Hz



Freq MHz	Reading dBuV	Factor dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Polarity	Remark
2363.67	-1.14	36.59	35.45	54.00	18.55	vertical	Average
2363.67	19.19	36.59	55.78	74.00	18.22	vertical	Peak
2390.00	-3.15	36.93	33.78	54.00	20.22	vertical	Average
2390.00	16.39	36.93	53.32	74.00	20.68	vertical	Peak

Project No.: 2407T68838E-RF
Test Mode: 2480MHz
EUT Model: BKW-X1
Test distance: 3m

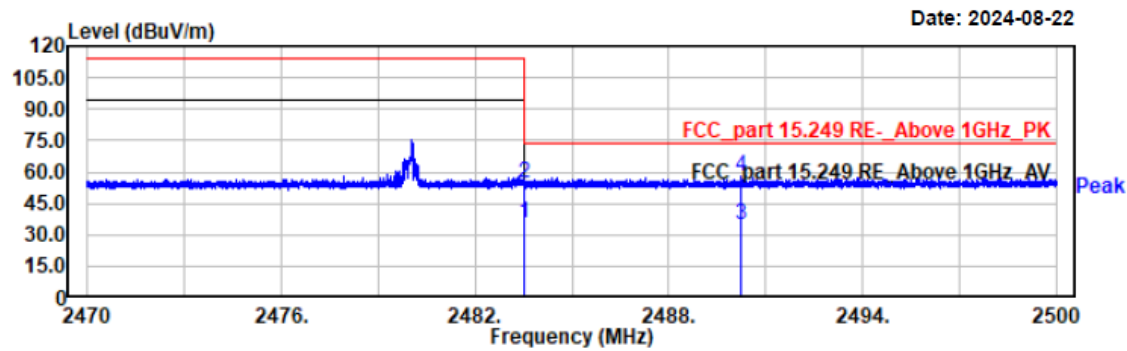
Temp/Humi/ATM: 23.5°C/54%/100.5kPa
Tested by: Wlif Wu
Power Source: AC 120V/60Hz



Freq MHz	Reading dBuV	Factor dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Polarity	Remark
2483.50	-4.19	37.75	33.56	54.00	20.44	horizontal	Average
2483.50	15.74	37.75	53.49	74.00	20.51	horizontal	Peak
2487.74	0.06	37.82	37.88	54.00	16.12	horizontal	Average
2487.74	20.32	37.82	58.14	74.00	15.86	horizontal	Peak

Project No.: 2407T68838E-RF
Test Mode: 2480MHz
EUT Model: BKW-X1
Test distance: 3m

Temp/Humi/ATM: 23.5°C/54%/100.5kPa
Tested by: Wlif Wu
Power Source: AC 120V/60Hz



Freq MHz	Reading dBuV	Factor dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Polarity	Remark
2483.50	-2.29	37.75	35.46	54.00	18.54	vertical	Average
2483.50	17.00	37.75	54.75	74.00	19.25	vertical	Peak
2490.24	-3.51	37.87	34.36	54.00	19.64	vertical	Average
2490.24	20.03	37.87	57.90	74.00	16.10	vertical	Peak

FCC §15.215(c) - 20dB EMISSION BANDWIDTH TESTING

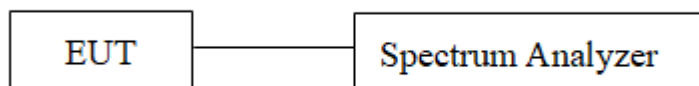
Applicable Standard

Intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§ 15.217 through 15.257 and in Subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated.

Test Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT on the test table without connection to measurement instrument. Turn on the EUT. Then set it to any one convenient frequency within its operating range. Set a reference level on the measuring instrument equal to the highest peak value.
3. Measure the frequency difference of two frequencies that were attenuated 20 dB from the reference level. Record the frequency difference as the emission bandwidth.
4. Repeat above procedures until all frequencies measured were complete.

Test Setup



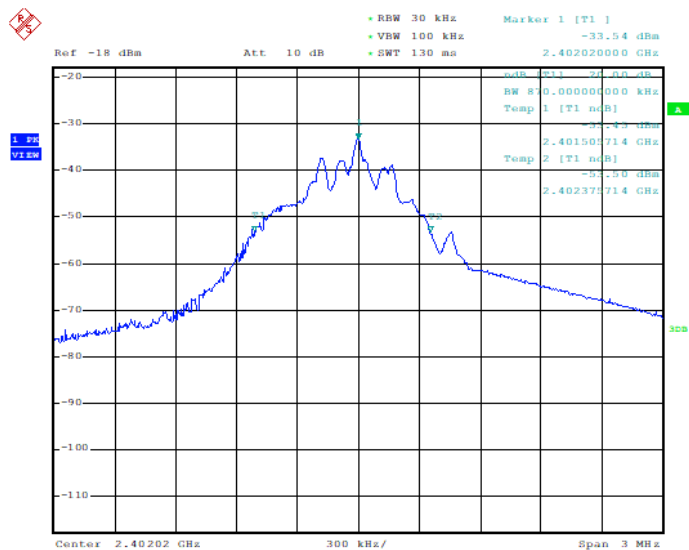
Test Data

Test Mode:	Charging + Transmitting	Test Engineer:	Ash Lin
Test Date:	2024-06-21	Test Voltage:	DC 5V from USB port
Test Distance:	3M	Test Frequency:	2402MHz, 2441MHz, 2480MHz
Ant. Polarity:	N/A	Environment:	Temp.: 23.6℃ Humi.: 55% Atm:99.8kPa

Test Result: Compliant.

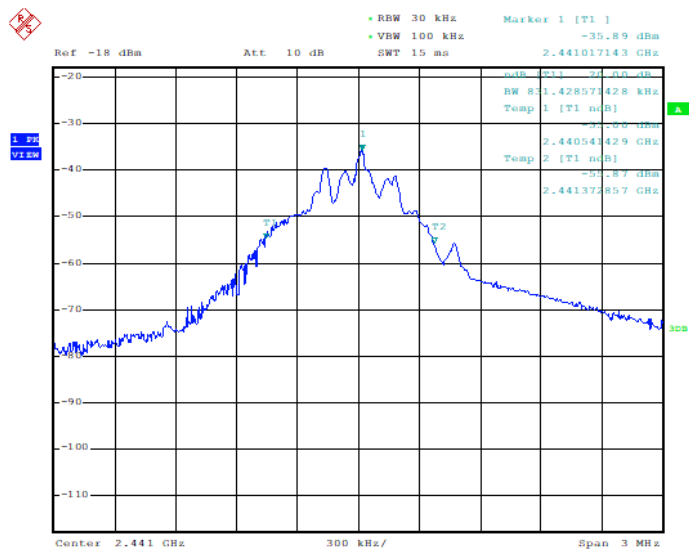
Channel	Frequency (MHz)	20 dB Bandwidth (kHz)
Low	2402	870.00
Middle	2441	831.43
High	2480	792.86

Low Channel



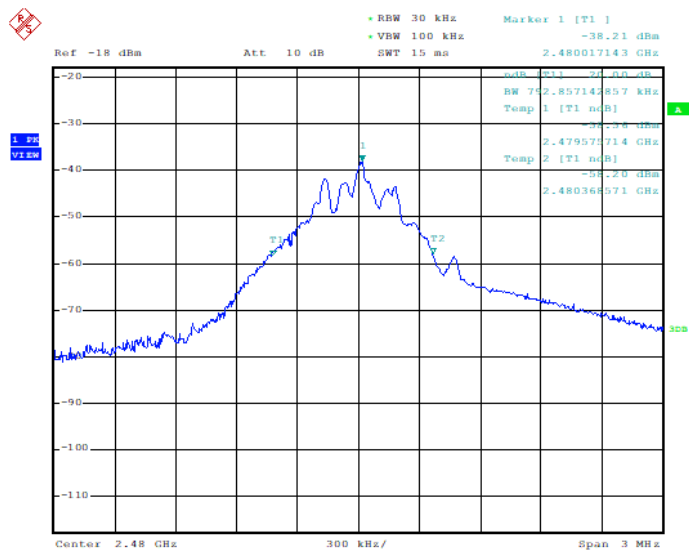
ProjectNo.:2407T68838E-RF Tester:Ash Lin
Date: 21.JUN.2024 17:12:25

Middle Channel



ProjectNo.:2407T68838E-RF Tester:Ash Lin
Date: 21.JUN.2024 17:18:55

High Channel



ProjectNo.:2407T68838E-RF Tester:Ash Lin
Date: 21.JUN.2024 17:20:14

EUT PHOTOGRAPHS

Please refer to the attachment 2407T68838E-RF-EXP EUT EXTERNAL PHOTOGRAPHS and 2407T68838E-RF-INP EUT INTERNAL PHOTOGRAPHS.

TEST SETUP PHOTOGRAPHS

Please refer to the attachment 2407T68838E-RF-TSP TEST SETUP PHOTOGRAPHS.

Declarations

1. Bay Area Compliance Laboratories Corp. (Xiamen) is not responsible for authenticity of any information provided by the applicant. Information from the applicant that may affect test results are marked with an asterisk “★”.
2. Unless otherwise stated, the results shown in this test report refer only to the sample(s) tested.
3. Unless required by the rule provided by the applicant or product regulations, then decision rule in this report did not consider the uncertainty.
4. The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor $k=2$ with the 95.45% confidence interval.
5. This report cannot be reproduced except in full, without prior written approval of Bay Area Compliance Laboratories Corp. (Xiamen).
6. This report is valid only with a valid digital signature. The digital signature may be available only under the adobe software above version 7.0.

******* END OF REPORT *******