



FCC TEST REPORT

FCC ID:2BFMV-S2-6

On Behalf of

Shenzhen Chaoying Photoelectric Co., Ltd.

Projector

Model No.: S2-6, S2-1, S2-2, S2-3, S2-4, S2-5, S2-7, S2-8, S2-9,
M1, M2, M3, M4, M5, M6, M7, M8, M9

Prepared for : Shenzhen Chaoying Photoelectric Co., Ltd.
Address : 7 / F, building 14, fuqingshan, Tangtou third industrial zone,
Tangtou community, Shiyan street, Bao'an District, Shenzhen

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China

Report Number : psi2503204-C01-R03
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TEST REPORT DECLARATION

Applicant : Shenzhen Chaoying Photoelectric Co., Ltd.
Address : 7 / F, building 14, fuqingshan, Tangtou third industrial zone, Tangtou community, Shiyan street, Bao'an District, Shenzhen
Manufacturer : Shenzhen Chaoying Photoelectric Co., Ltd.
Address : 7 / F, building 14, fuqingshan, Tangtou third industrial zone, Tangtou community, Shiyan street, Bao'an District, Shenzhen
EUT Description : Projector
(A) Model No. : S2-6, S2-1, S2-2, S2-3, S2-4, S2-5, S2-7, S2-8, S2-9, M1, M2, M3, M4, M5, M6, M7, M8, M9
(B) Trademark : N/A

Measurement Standard Used:

FCC CFR Title 47 Part 15 Subpart C Section 15.407

ANSI C63.10:2013, KDB 789033 D02 v01r02

Test Result: PASS

The device described above is tested by Shenzhen PSI Testing Co., Ltd. to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart E limits both conducted and radiated emissions. The test results are contained in this test report and Shenzhen PSI Testing Co., Ltd. is assumed of full responsibility for the accuracy and completeness of these tests.

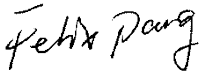
After the test, our opinion is that EUT compliance with the requirement of the above standards.

This report applies to above tested sample only. This report shall not be reproduced in parts without written approval of Shenzhen PSI Testing Co., Ltd.

Tested by (name + signature).....:

Felix Pang

Test Engineer


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Approved by (name + signature).....:

Simple Guan

Project Manager


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Date of issue.....:

January 5, 2025

Revision History

Revision	Issue Date	Revisions	Revised By
V0	April 16, 2025	Initial released Issue	Felix Pang



1 Test Summary

Test Item	Section in CFR 47	Result
Antenna requirement	Section 15.203 Section 7.1.4	PASS
AC Power Line Conducted Emission	Section 15.207 Section 7.2.4	PASS
Occupied bandwidth	Section 15.407 (e)	PASS
Maximum Conducted Output Power	Section 15.407(a)	PASS
Power Spectral Density	Section 15.407(a)	PASS
Undesirable Emission	Section 15.407(b)	PASS
Radiated Emission	Section 15.407(b)&15.209 Section 5.5	PASS
Band Edge	15.205, ANSI C63.10	PASS
Frequency Stability	15.407(f)	PASS

Remark:

1. Pass: The EUT complies with the essential requirements in the standard.
2. Frequency Stability: The manufacturer stated in the user's manual.
3. The conclusion of this test report is judged by actual test data without considering measurement uncertainty.
4. Measurement-method usage KDB 789033 D02 General UNII Test Procedures New Rules v02r01

1.1 Measurement Uncertainty

Item	Uncertainty
Uncertainty for Power Line Conducted Emissions Test	2.17dB
Uncertainty for Radiation Emission test in 3m chamber (below 30MHz)	3.5dB
Uncertainty for Radiation Emission test in 3m chamber (30MHz to 1GHz)	2.74dB(Polarize: V)
	2.76dB(Polarize: H)
Uncertainty for Radiation Emission test in 3m chamber (1GHz to 18GHz)	4.29dB(Polarize: V)
	4.82dB(Polarize: H)
Uncertainty for Radiation Emission test in 3m chamber (18GHz to 40GHz)	4.31dB(Polarize: V)
	4.30dB(Polarize: H)
Uncertainty for radio frequency	48.24KHz
Uncertainty for conducted RF Power	0.41dB
Uncertainty for Power Spectral Density	0.39 dB
Occupied-Bandwidth	968Hz
Conducted-Spurious Emission	1.26dB

2 General Information

2.1 General Description of EUT

EUT Name	: Projector
Model	: S2-6, S2-1, S2-2, S2-3, S2-4, S2-5, S2-7, S2-8, S2-9, M1, M2, M3, M4, M5, M6, M7, M8, M9
Diff	: All models covered in this report are the same with each other, except for different model No. and appearance (for color, silk-screen only) for trading purpose.
Test Voltage	: AC110V-240V 50/60Hz 1.5A

Radio Technology	: 5G WIFI
Operation frequency	: 802.11a/802.11ac20/802.11n(HT20): 5180-5240MHz 802.11ac40/802.11n(HT40): 5190-5230MHz 802.11ac80: 5210MHz
Channel separation	: 20MHz for 802.11a/802.11ac20/802.11n(HT20) 40MHz for 802.11ac40/ 802.11n(HT40) 80MHz for 802.11ac80
Modulation technology:	: IEEE 802.11n: OFDM (64QAM, 16QAM, QPSK, BPSK) IEEE 802.11a: OFDM (64QAM, 16QAM, QPSK, BPSK) IEEE 802.11ac: OFDM (64QAM, 16QAM, 256QAM, QPSK, BPSK)
Antenna Type	: FPCB antenna , Maximum Gain is 1.91dBi.
Software version	: N/A
Hardware version	: N/A
FVIN	
Note	: Antenna information is provided by applicant. Testing lab is not responsible for the accuracy of the information.

2.2 Test mode

Transmitting mode Keep the EUT in transmitting with modulation.
EUT was test with 99% duty cycle at its maximum power control level.

Remark: During the test, the test voltage was tuned from 85% to 115% of the nominal rated supply voltage, and found that the worst case was under the nominal rated supply condition. So the report just shows that condition's data.

2.3 Test Facility

Shenzhen PSI Testing Co., Ltd.

1-2/F., Building 5, Yudafu Industrial Park, No.10, Xingye West Road, Shajing Subdistrict, Bao'an District, Shenzhen, Guangdong, China

September 13, 2023 File on Federal Communication Commission
Registration Number: 916281

September 21, 2023 Certificated by IC
Registration Number: 31123
CAB identifier: CN0158

2.4 Description of Support Units

Accessories 1 :
Manufacturer :
Model :
Rating :

2.5 Deviation from Standards

None.

2.6 Abnormalities from Standard Conditions

None.

2.7 Other Information Requested by the Customer

None.

2.8 Additional instructions

Software (Used for test) from client

Channel	Power level
Lowest	Default
Middle	Default
Highest	Default

2.9 Test Conditions

Items	Required	Actual
Temperature range:	15-35℃	26℃
Humidity range:	25-75%	54%
Pressure range:	86-106kPa	101kPa

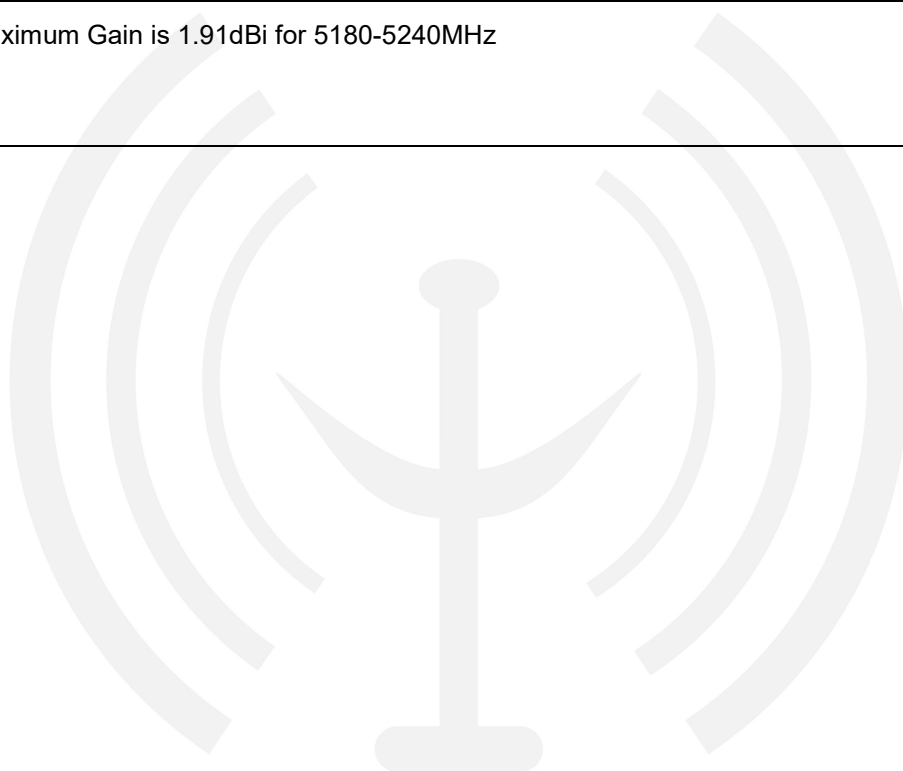
3 Test Instruments list

Item	Equipment	Manufacturer	Model No.	Serial No.	Firmware Version	Last Cal.	Cal. Interval
1.	9*6*6 anechoic chamber	SKET	9*6*6	N/A	/	2022.12.20	3 Year
2.	Test Receiver	Rohde&Schwarz	ESCI 7	101032/003	4.42 SP3	2024.12.18	1 Year
3.	L.I.S.N.#1	Rohde&Schwarz	ENV216	102282	/	2024.12.18	1 Year
4.	L.I.S.N.#2	RFT	NNB111	13835240	/	2024.12.18	1 Year
5.	Loop Antenna	Schwarz beck	FMZB 1519B	00128	/	2025.01.02	2 Year
6.	Bilog Antenna	Schwarz beck	VULB 9168	01448	/	2025.01.02	2 Year
7.	Spectrum Analyzer	Rohde&Schwarz	FSV-40N	101648	3.70	2024.12.18	1 Year
8.	Horn Antenna	Schwarz beck	BBHA 9120 D	02706	/	2025.01.02	2 Year
9.	Amplifier	SKET	LAPA_01G1 8G-45dB	SK20220329 01	/	2024.12.18	1 Year
10.	Horn Antenna	Schwarz beck	BBHA 9170	00946	/	2024.12.31	2 Year
11.	Amplifier	SKET	LNPA_0118 G-45	SK20200108 01	/	2024.12.18	1 Year
12.	RF Power Probe	Rohde&Schwarz	NRP-Z11	1138.3004.02 -1111533-Fz	/	2024.12.18	1 Year
13.	RF Sensor Unit	Tachoy	TR1029-2	20220428P0 08	/	2024.12.18	1 Year
14.	Spectrum Analyzer	Agilent	N9020A	MY51281067	A.14.03	2024.12.18	1 Year
15.	Temp. & Humid Chamber	Auchno	9606	/	/	2024.12.18	1 Year
16.	Regulated DC Power Supply	Xinouhua	ADC120V10 A	20221125163 8	/	2024.12.18	1 Year
For Test Software Information							
Item	Software Name	Manufacturer			Version		
RE	EZ EMC	Farad			PSI-3A1		
CE	EZ EMC	Farad			PSI-3A1		
RF	RTS	TACHOY			V1.0.0		

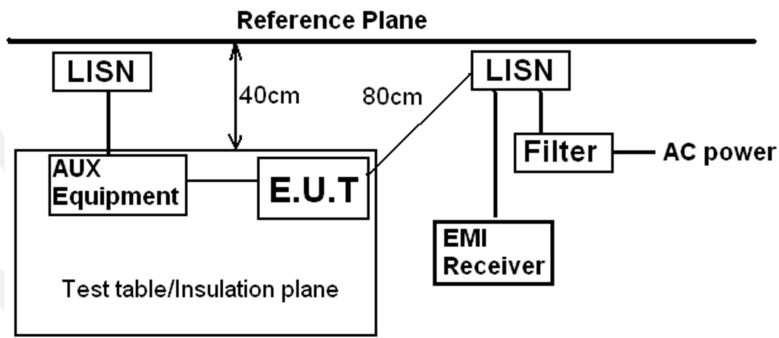
4 Test results and Measurement Data

4.1 Antenna requirement:

Standard requirement:	FCC Part15 C Section 15.203
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.	
E.U.T Antenna:	
FPCB antenna, Maximum Gain is 1.91dBi for 5180-5240MHz	



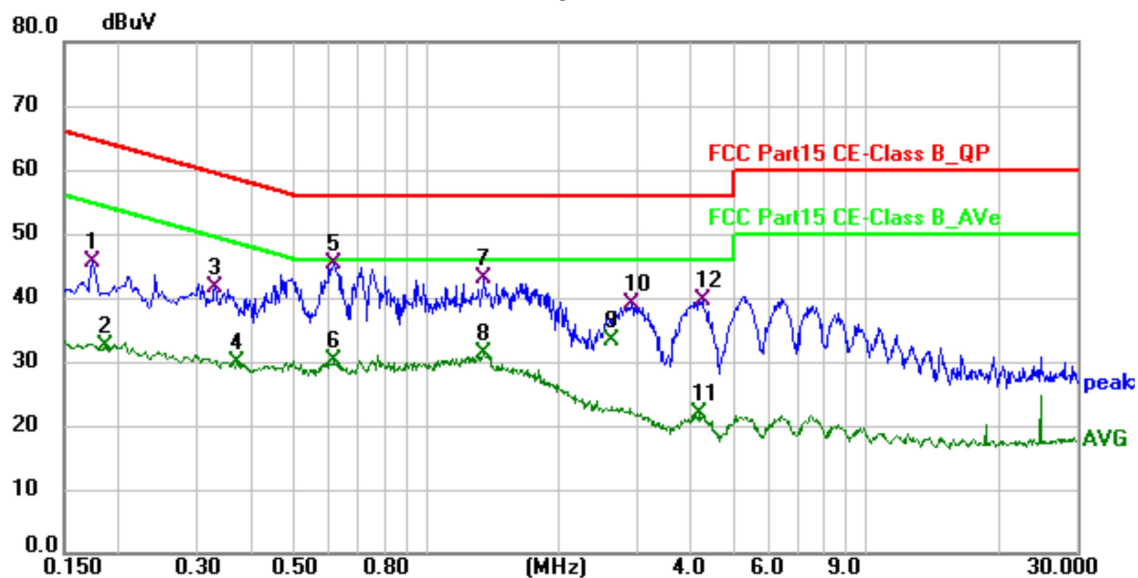
4.2 Conducted Emissions

Test Requirement:	FCC Part15 C Section 15.207		
Test Method:	ANSI C63.10:2013		
Test Frequency Range:	150KHz to 30MHz		
Class / Severity:	Class B		
Receiver setup:	RBW=9KHz, VBW=30KHz		
Limit:	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 procedure	The E.U.T and simulators are connected to the main power through a line impedance stabilization network(L.I.S.N.). The provide a 50ohm/50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refers to the block diagram of the test setup and photographs). Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10:2013 on conducted measurement.		
Test setup:	 Remark E.U.T: Equipment Under Test LISN: Line Impedance Stabilization Network Test table height=0.8m		
Test Instruments:	Refer to section 3.0 for details		
Test mode:	Refer to section 2.2 for details		
Test results:	Pass		

Measurement Data

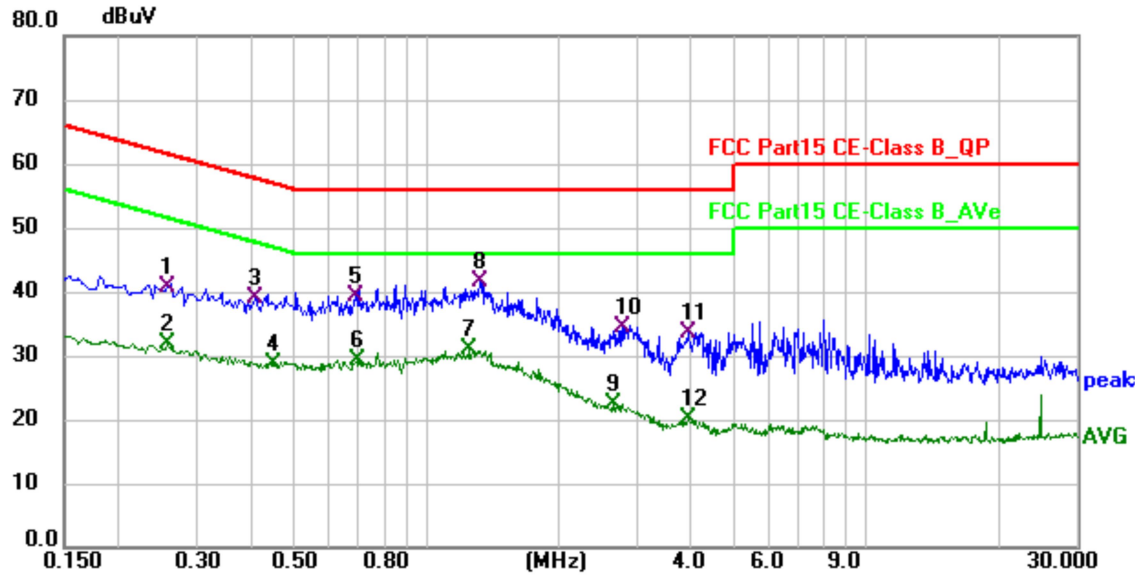
An initial pre-scan was performed on the line and neutral lines with peak detector. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission were detected.

Line:



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.174	24.80	20.69	45.49	64.77	-19.28	QP
2	0.186	11.68	20.67	32.35	54.21	-21.86	AVG
3	0.330	21.12	20.49	41.61	59.45	-17.84	QP
4	0.369	9.27	20.47	29.74	48.52	-18.78	AVG
5 *	0.614	24.85	20.35	45.20	56.00	-10.80	QP
6	0.618	9.70	20.35	30.05	46.00	-15.95	AVG
7	1.354	22.74	20.22	42.96	56.00	-13.04	QP
8	1.354	11.05	20.22	31.27	46.00	-14.73	AVG
9	2.642	13.08	20.14	33.22	46.00	-12.78	AVG
10	2.922	18.74	20.13	38.87	56.00	-17.13	QP
11	4.182	1.78	20.10	21.88	46.00	-24.12	AVG
12	4.226	19.46	20.10	39.56	56.00	-16.44	QP

Note: *:Maximum data x:Over limit !:over margin Level = Reading + Factor Margin = Level - Limit

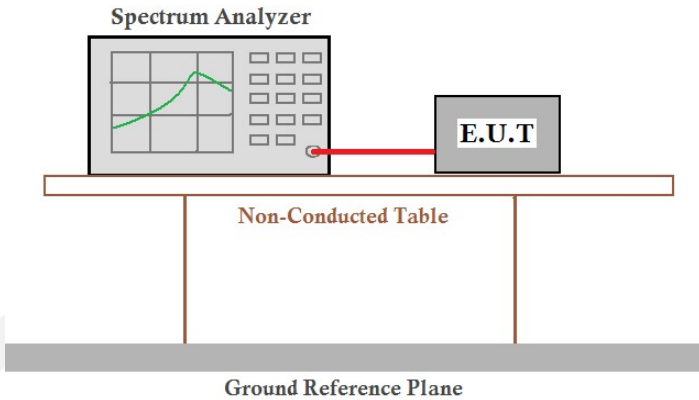
Neutral:

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.258	20.10	20.57	40.67	61.50	-20.83	QP
2	0.258	11.25	20.57	31.82	51.50	-19.68	AVG
3	0.408	18.51	20.44	38.95	57.69	-18.74	QP
4	0.446	8.33	20.42	28.75	46.95	-18.20	AVG
5	0.690	19.02	20.33	39.35	56.00	-16.65	QP
6	0.694	9.00	20.33	29.33	46.00	-16.67	AVG
7	1.254	10.82	20.23	31.05	46.00	-14.95	AVG
8 *	1.330	21.49	20.22	41.71	56.00	-14.29	QP
9	2.658	2.38	20.14	22.52	46.00	-23.48	AVG
10	2.786	14.23	20.13	34.36	56.00	-21.64	QP
11	3.926	13.55	20.11	33.66	56.00	-22.34	QP
12	3.962	-0.04	20.11	20.07	46.00	-25.93	AVG

Note: *:Maximum data x:Over limit !:over margin Level = Reading + Factor Margin = Level - Limit

All modes and channels have been tested and only the A 5180MHz mode with the worst data is listed.

4.3 Emission Bandwidth and 99% Occupied Bandwidth

Test Requirement:	FCC Part15 E Section 15.407
Test Method:	KDB 789033 D02 General UNII Test Procedures New Rules v02r01
Limit:	N/A
Test setup:	 The diagram illustrates the test setup. A Spectrum Analyzer is connected via a red cable to an E.U.T. (Equipment Under Test). Both are placed on a Non-Conducted Table. Below the table is a Ground Reference Plane. The Spectrum Analyzer screen shows a frequency spectrum with a peak.
Test procedure:	According to KDB 789033 D02 General UNII Test Procedures New Rules v02r01.
Test Instruments:	Refer to section 3.0 for details
Test mode:	Refer to section 2.2 for details
Test results:	Pass

Note: Note: Both antennas have been tested and only the worst data of antenna 1 is shown.

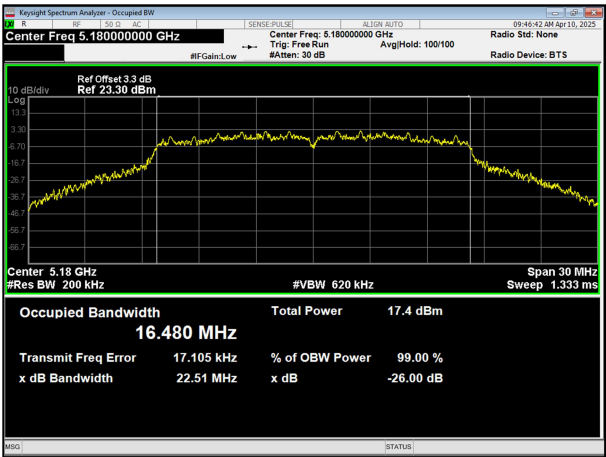
Measurement Data:

Band 1 (5150-5250 MHz):

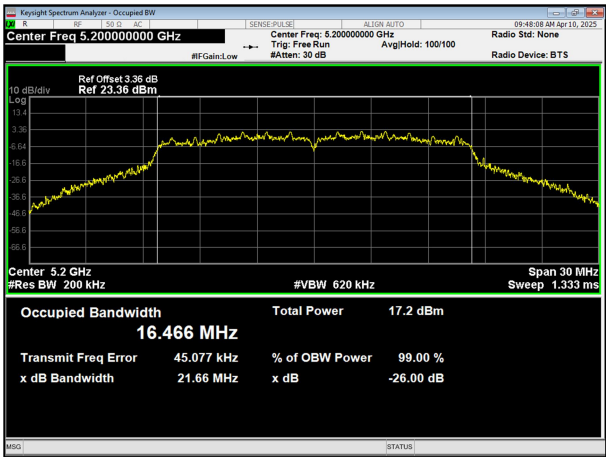
Condition	Antenna	Modulation	Frequency(MHz)	26dB_Emission_Bandwidth(MHz)	Occupied Bandwidth(MHz)
NVNT	ANT1	802.11a	5180.00	22.51	16.48
NVNT	ANT1	802.11a	5200.00	21.66	16.47
NVNT	ANT1	802.11a	5240.00	21.71	16.44
NVNT	ANT1	802.11n(HT20)	5180.00	22.42	17.61
NVNT	ANT1	802.11n(HT20)	5200.00	22.29	17.63
NVNT	ANT1	802.11n(HT20)	5240.00	22.20	17.58
NVNT	ANT1	802.11n(HT40)	5190.00	42.63	36.01
NVNT	ANT1	802.11n(HT40)	5230.00	41.78	35.96
NVNT	ANT1	802.11ac(VHT20)	5180.00	21.98	17.59
NVNT	ANT1	802.11ac(VHT20)	5200.00	21.60	17.58
NVNT	ANT1	802.11ac(VHT20)	5240.00	22.21	17.60
NVNT	ANT1	802.11ac(VHT40)	5190.00	42.92	36.01
NVNT	ANT1	802.11ac(VHT40)	5230.00	41.94	35.98
NVNT	ANT1	802.11ac(VHT80)	5210.00	82.61	75.08

Test plot

(802.11 a) plot on channel 36



(802.11 a) plot on channel 40



(802.11 a) plot on channel 48

