CFR 47 FCC PART 15 SUBPART E

TEST REPORT

For

Intelligent Control System

MODEL NUMBER: SuperX5 Pro

FCC ID:2A46G-SUPERX5PRO

REPORT NUMBER: 4791353869-1-RF-2

ISSUE DATE: September 5, 2024

Prepared for

Guangzhou Xaircraft Technology CO., LTD
Block C, No.115, Gaopu Road, Tianhe District, GuangzhouCity, Guangdong, P.R. 510663 China

Prepared by

UL Verification Services (Guangzhou) Co., Ltd, Song Shan Lake Branch

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Revision History

Rev.	Issue Date	Revisions	Revised By
V0	September 5, 2024	Initial Issue	

Summary of Test Results

Test Item	Clause	Limit/Requirement	Result
ON TIME AND DUTY CYCLE	ANSI C63.10-2013, Clause 12.2	None; for reporting purposes only.	Pass
6dB AND 26dB EMISSION BANDWIDTH AND 99% OCCUPIED BANDWIDTH	KDB 789033 D02 v02r01 Section C.1	FCC Part 15.407 (a)/(e),	Pass
CONDUCTED OUTPUT POWER	KDB 789033 D02 v02r01 Section E.2.d (Method SA-2)	FCC 15.407 (a)	Pass
POWER SPECTRAL DENSITY	KDB 789033 D02 v02r01 Section F	FCC 15.407 (a)	Pass
AC Power Line Conducted Emission	ANSI C63.10-2013, Clause 6.2.	FCC 15.207	N/A
Radiated Emissions and Band Edge Measurement	KDB 789033 D02 v02r01 Section G.3, G.4, G.5, and G.6	FCC 15.407 (b) FCC 15.209 FCC 15.205	Pass
FREQUENCY STABILITY	ANSI C63.10-2013,Clause 6.8	FCC 15.407 (g)	Pass
Dynamic Frequency Selection (Slave)	KDB 905462 D03 UNII Clients Without Radar Detection New Rules v01r02	FCC Part 15.407 (h),	N/A
Dynamic Frequency Selection (Master)	KDB 905462 D02 UNII DFS Compliance Procedures New Rules v02	FCC Part 15.407 (h),	N/A
Antenna Requirement	N/A	FCC 47 CFR Part 15.203/ 15.407(a)(1) (2),	Pass

Note:
1. N/A: In this whole report not applicable.

*This test report is only published to and used by the applicant, and it is not for evidence purpose in China.
*The measurement result for the sample received is <Pass> according to <CFR 47 FCC PART 15 SUBPART> when <Simple Acceptance> decision rule is applied.

CONTENTS

1. ATTESTATION OF TEST RESULTS

Applicant Information

Company Name:	Guangzhou Xaircraft Technology CO., LTD
Address:	Block C, No.115, Gaopu Road, Tianhe District, GuangzhouCity, Guangdong, P.R. 510663 China

Manufacturer Information

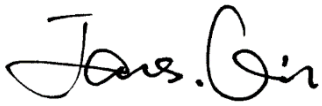
Company Name:	Guangzhou Xaircraft Technology CO., LTD
Address:	Block C, No.115, Gaopu Road, Tianhe District, GuangzhouCity, Guangdong, P.R. 510663 China

EUT Information

EUT Name:	Intelligent Control System
Model:	SuperX5 Pro
Sample Received Date:	June 4, 2024
Sample Status:	Normal
Sample ID:	7284012
Date of Tested:	June 26, 2024 to September 5, 2024

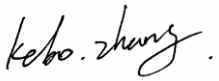
APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
CFR 47 FCC PART 15 SUBPART E	**Pass**

Prepared By:



James Qin
Project Engineer

Checked By:



Kebo Zhang
Senior Project Engineer

Approved By:

Stephen Guo
Operations Manager

2. TEST METHODOLOGY

All tests were performed in accordance with the standard CFR 47 FCC PART 15 SUBPART, ANSI C63.10-2013, CFR 47 FCC Part 2, KDB 789033 D02 v02r01, KDB414788 D01 Radiated Test Site v01, KDB 662911 D01 Multiple Transmitter Output v02r01, KDB 905462 D03 UNII clients without radar detection New Rules v01r02, KDB 905462 D04 Operational Modes for DFS Testing New Rules v01 and KDB 905462 D06 802 11 Channel Plans New Rules v02.

3. FACILITIES AND ACCREDITATION

Accreditation Certificate	**A2LA (Certificate No.: 4102.01)** UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. has been assessed and proved to be in compliance with A2LA. **FCC (FCC Designation No.: CN1187)** UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. Has been recognized to perform compliance testing on equipment subject to the Commission's Declaration of Conformity (DoC) and Certification rules **ISED (Company No.: 21320)** UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. has been registered and fully described in a report filed with ISED. The Company Number is 21320 and the test lab Conformity Assessment Body Identifier (CABID) is CN0046. **VCCI (Registration No.: G-20192, C-20153, T-20155 and R-20202)** UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. has been assessed and proved to be in compliance with VCCI, the Membership No. is 3793. Facility Name: Chamber D, the VCCI registration No. is G-20192 and R-20202 Shielding Room B, the VCCI registration No. is C-20153 and T-20155

Note 1:
All tests measurement facilities use to collect the measurement data are located at Building 10, Innovation Technology Park, No. 1, Li Bin Road, Song Shan Lake Hi-Tech Development Zone Dongguan, 523808, People's Republic of China.

Note 2:
The test anechoic chamber in UL Verification Services (Guangzhou) Co., Ltd.
Song Shan Lake Branch had been calibrated and compared to the open field sites and the test anechoic chamber is shown to be equivalent to or worst case from the open field site.

Note 3:
For below 30 MHz, lab had performed measurements at test anechoic chamber and comparing to measurements obtained on an open field site. And these measurements below 30 MHz had been correlated to measurements performed on an OFS.

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations and is traceable to recognized national standards.

4.2. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

Test Item	Uncertainty
Conduction emission	3.62 dB
Radiated Emission (Included Fundamental Emission) (9 kHz ~ 30 MHz)	2.2 dB
Radiated Emission (Included Fundamental Emission) (30 MHz ~ 1 GHz)	4.00 dB
Radiated Emission (Included Fundamental Emission) (1 GHz to 40 GHz)	5.78 dB (1 GHz ~ 18 GHz)
	5.23 dB (18 GHz ~ 26 GHz)
	5.37 dB (26 GHz ~ 40 GHz)
Duty Cycle	±0.028%
Emission Bandwidth and 99% Occupied Bandwidth	±0.0196%
Maximum Conducted Output Power	±0.766 dB
Maximum Power Spectral Density Level	±1.22 dB
Frequency Stability	±2.76%
Dynamic Frequency Selection	±1.01 dB
Conducted Band-edge Compliance	±1.328 dB
Conducted Unwanted Emissions In Non-restricted Frequency Bands	±0.746 dB (9 kHz ~ 1 GHz)
	±1.328dB (1 GHz ~ 26 GHz)
Note: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.	

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

EUT Name	Intelligent Control System
Model	SuperX5 Pro

5.2. CHANNEL LIST

UNII-3 (For Bandwidth=20MHz)		UNII-3 (For Bandwidth=40MHz)	
Channel	Frequency (MHz)	Channel	Frequency (MHz)
149	5745	151	5755
153	5765	159	5795
157	5785		
161	5805		
165	5825		

5.3. MAXIMUM POWER

UNII-3 BAND(FCC)

IEEE Std. 802.11	Frequency (MHz)	Maximum Average Conducted Power (dBm)
a	5725 ~ 5850	18.41
n HT20		21.90
n HT40		21.53

5.4. TEST CHANNEL CONFIGURATION

UNII-3 Test Channel Configuration		
IEEE Std.	Test Channel Number	Frequency
802.11a	CH 149(Low Channel), CH 157(MID Channel), CH 165(High Channel)	5745 MHz, 5785 MHz, 5825 MHz
802.11n HT20	CH 149(Low Channel), CH 157(MID Channel), CH 165(High Channel)	5745 MHz, 5785 MHz, 5825 MHz
802.11n HT40	CH 151(Low Channel), CH 159(High Channel)	5755MHz, 5795MHz

5.5. THE WORSE CASE POWER SETTING PARAMETER

The Worse Case Power Setting Parameter			
Test Software	ART2		
Mode	Freq(MHz)	Power setting	
		ANT1	ANT2
802.11a	5745	20.5	19.5
	5785	21	20
	5825	22.5	22
802.11n 20M	5745	20	
	5785	20	
	5825	21	
802.11n 40M	5755	20	
	5795	20	

WORSE CASE CONFIGURATIONS

The EUT was tested in the following configuration(s):

Controlled in test mode using a software application on the EUT supplied by customer. The application was used to enable a continuous transmission and to select the mode, test channels, bandwidth, data rates as required.

Test channels referring to section 5.4.

Maximum power setting referring to section 5.5.

Worst case Data Rates declared by the customer:

802.11a 20 mode: 6 Mbps
802.11n HT20 mode: MCS0
802.11n HT40 mode: MCS0

802.11a only support SISO mode.
802.11n HT20/HT40 support SISO and MIMO mode.

802.11a SISO mode, Antenna 1 and Antenna 2 has the same power setting, so only Antenna 1 worst case test data were recorded in the report.

802.11n SISO mode and MIMO mode have the same power setting, so only the worst case power mode(MIMO) will be record in the report.

The EUT has 2 separate antennas which correspond to 2 separate antenna ports. Core 1 and Core 2 correspond to antenna 1 and antenna 2 respectively.

The measured additional path loss was included in any path loss calculations for all RF cable used during tested.

Conducted output power, power spectral density tests separately on each port with all supported SISO & MIMO port combinations.

Radiated emissions tests were performed with the MIMO modes. These were found to be the worst modulation scheme with regards to emissions after preliminary investigations and, as this mode emits the highest conducted output power level, it was deemed to be the worst case.

5.6. DESCRIPTION OF AVAILABLE ANTENNAS

Antenna No.	Frequency Band	Antenna Type	Max Antenna Gain (dBi)
1	5150-5850	PCB antenna	3.99
2	5150-5850	PCB antenna	3.99

The EUT support Cyclic Shift Diversity(CDD) mode.

MIMO output power port and MIMO PSD port summing were performed in accordance with KDB 662911 D01. For the CDD results the Directional Gain was calculated in accordance with the following mothed.

For output power measurements:
Directional gain= G_{ANT+} Array Gain = 3.99 dBi
G_{ANT} : equal to the gain of the antenna having the highest gain
Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$

For power spectral density (PSD) measurements:
Directional gain= G_{ANT+} Array Gain = 7.00 dBi
Array Gain = 10 log(N_{ANT}/N_{SS}) dB.
N_{ANT} : number of transmit antennas
N_{SS} : number of spatial streams, The worst case directional gain will occur when $N_{SS} = 1$

IEE Std. 802.11	Transmit and Receive Mode	Description
802.11a	☒2TX, 2RX	ANT 1 and ANT 2 can be used as transmitting/receiving antenna.
802.11n HT20	☒2TX, 2RX	ANT 1 and ANT 2 can be used as transmitting/receiving antenna.
802.11n HT40	☒2TX, 2RX	ANT 1 and ANT 2 can be used as transmitting/receiving antenna.

5.7. SUPPORT UNITS FOR SYSTEM TEST

SUPPORT EQUIPMENT

Item	Equipment	Brand Name	Model Name	Remarks
1	Laptop	Lenovo	E42-80	R303U5AG
2	DC power supply	SophPower	ADC50-10D	50V 10A

I/O CABLES

Cable No	Port	Connector Type	Cable Type	Cable Length(m)	Remarks
1	RJ45	/	/	0.3	/

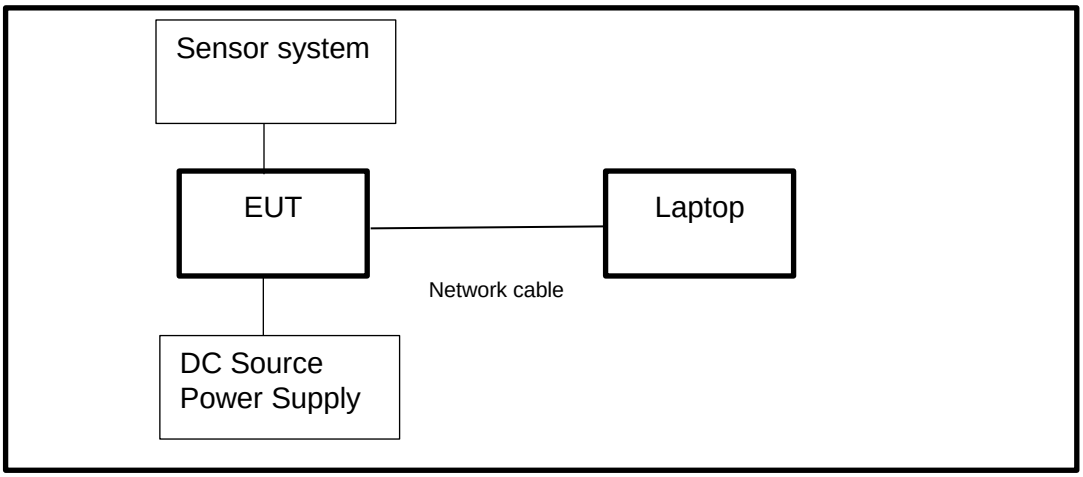
ACCESSORIES

Item	Accessory	Brand Name	Model Name	Description
1	GPS ant.	/	/	/
2	Cellular ant.	/	/	/
3	Sensor system	/	/	/
4	DC cable	/	/	/

TEST SETUP

The EUT can work in engineering mode with a software through a laptop.

5.8. SETUP DIAGRAM



6. MEASURING EQUIPMENT AND SOFTWARE USED

R&S TS 8997 Test System					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Due. Date
Power sensor, Power Meter	R&S	OSP120	100921	Mar.25,2024	Mar.24,2025
Vector Signal Generator	R&S	SMBV100A	261637	Oct.12, 2023	Oct.11, 2024
Signal Generator	R&S	SMB100A	178553	Oct.12, 2023	Oct.11, 2024
Signal Analyzer	R&S	FSV40	101118	Oct.12, 2023	Oct.11, 2024
Software					
Description	Manufacturer	Name	Version		
For R&S TS 8997 Test System	Rohde & Schwarz	EMC 32	10.60.10		

Tonsend RF Test System					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Due. Date
Wideband Radio Communication Tester	R&S	CMW500	155523	Oct.12, 2023	Oct.11, 2024
Wireless Connectivity Tester	R&S	CMW270	1201.0002N75-102	Sep.25, 2023	Sep.24, 2024
PXA Signal Analyzer	Keysight	N9030A	MY55410512	Oct.12, 2023	Oct.11, 2024
MXG Vector Signal Generator	Keysight	N5182B	MY56200284	Oct.12, 2023	Oct.11, 2024
MXG Vector Signal Generator	Keysight	N5172B	MY56200301	Oct.12, 2023	Oct.11, 2024
DC power supply	Keysight	E3642A	MY55159130	Oct.12, 2023	Oct.11, 2024
Temperature & Humidity Chamber	SANMOOD	SG-80-CC-2	2088	Oct.12, 2023	Oct.11, 2024
Attenuator	Aglient	8495B	2814a12853	Oct.12, 2023	Oct.11, 2024
RF Control Unit	Tonscend	JS0806-2	23B80620666	Mar.25,2024	Mar.24,2025
Software					
Description	Manufacturer	Name	Version		
Tonsend SRD Test System	Tonsend	JS1120-3 RF Test System	V3.2.22		

Radiated Emissions					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Due Date
MXE EMI Receiver	KESIGHT	N9038A	MY56400036	Oct.12, 2023	Oct.11, 2024
Hybrid Log Periodic Antenna	TDK	HLP-3003C	130959	Aug.02, 2021	Aug.01, 2024
Hybrid Log Periodic Antenna	TDK	HLP-3003C	130960	Jun. 28, 2024	Jun. 27, 2027
Preamplifier	HP	8447D	2944A09099	Oct.12, 2023	Oct.11, 2024
EMI Measurement Receiver	R&S	ESR26	101377	Oct.12, 2023	Oct.11, 2024
Horn Antenna	TDK	HRN-0118	130939	April 29, 2022	April 30, 2025
Preamplifier	TDK	PA-02-0118	TRS-305-00067	Oct.12, 2023	Oct.11, 2024
Horn Antenna	Schwarzbeck	BBHA9170	856	Feb 28, 2022	Feb 28, 2025
Preamplifier	TDK	PA-02-2	TRS-307-00003	Oct.12, 2023	Oct.11, 2024
Preamplifier	TDK	PA-02-3	TRS-308-00002	Oct.12, 2023	Oct.11, 2024
Loop antenna	Schwarzbeck	1519B	00008	Dec.14, 2021	Dec.13, 2024
Preamplifier	TDK	PA-02-001-3000	TRS-302-00050	Oct.12, 2023	Oct.11, 2024
Highpass Filter	Wainwright	WHKX10-5850-6500-1800-40SS	4	Oct.12, 2023	Oct.11, 2024
Band Reject Filter	Wainwright	WRCJV12-5695-5725-5850-5880-40SS	4	Oct.12, 2023	Oct.11, 2024
Software					
Description			Manufacturer	Name	Version
Test Software for Radiated Emissions			Farad	EZ-EMC	Ver. UL-3A1

Other Instrument					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Due Date
Temperature humidity probe	OMEGA	ITHX-SD-5	18470007	Oct.21, 2023	Oct.20, 2024
Barometer	Yiyi	Baro	N/A	Oct.19, 2023	Oct.18, 2024
Attenuator	Agilent	8495B	2814a12853	Oct.12, 2023	Oct.11, 2024

7. ANTENNA PORT TEST RESULTS

7.1. ON TIME AND DUTY CYCLE

LIMITS

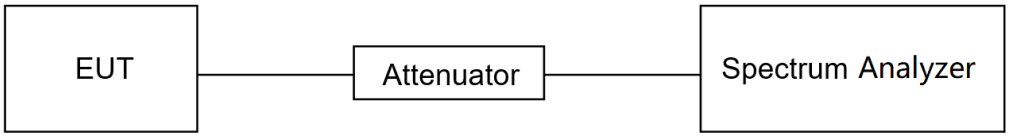
None; for reporting purposes only.

TEST PROCEDURE

Refer to KDB 789033 D02 General U-NII Test Procedures New Rules v02r01 section II.B.

The zero-span mode on a spectrum analyzer or EMI receiver, if the response time and spacing between bins on the sweep are sufficient to permit accurate measurements of the on and off times of the transmitted signal. Set the center frequency of the instrument to the center frequency of the transmission. Set RBW ≥ EBW if possible; otherwise, set RBW to the largest available value. Set VBW ≥ RBW. Set detector = peak or average. The zero-span measurement method shall not be used unless both RBW and VBW are > 50/T, where T is defined in II.B.1.a), and the number of sweep points across duration T exceeds 100. (For example, if VBW and/or RBW are limited to 3 MHz, then the zero-span method of measuring duty cycle shall not be used if T ≤ 16.7 microseconds.)

TEST SETUP



TEST ENVIRONMENT

Temperature	25.6℃	Relative Humidity	61.0%
Atmosphere Pressure	101kPa	Test Voltage	DC 24 V

TEST DATE / ENGINEER

Test Date	June 27, 2024	Test By	Bairong Liu

TEST RESULTS

Please refer to section "Test Data" - Appendix G

7.2. 6DB AND 26DB EMISSION BANDWIDTH AND 99% OCCUPIED BANDWIDTH

LIMITS

CFR 47 FCC Part15, Subpart E		
Test Item	Limit	Frequency Range (MHz)
6 dB Emission Bandwidth	The minimum 6 dB emission bandwidth shall be 500 kHz.	5725 ~ 5850

TEST PROCEDURE

Refer to KDB 789033 D02 General U-NII Test Procedures New Rules v02r01 section II.C1. for 26 dB Emission Bandwidth; section II.C2. for 6 dB Emission Bandwidth; section II.D. for 99 % Occupied Bandwidth.
Connect the EUT to the spectrum analyser and use the following settings:

Center Frequency	The center frequency of the channel under test
Detector	Peak
RBW	For 6 dB Emission Bandwidth: RBW=100 kHz For 26 dB Emission bandwidth: approximately 1 % of the EBW. For 99 % Occupied Bandwidth: approximately 1 % ~ 5 % of the OBW.
VBW	For 6 dB Bandwidth: ≥ 3*RBW For 26 dB Bandwidth: >3*RBW For 99 % Bandwidth: >3*RBW
Trace	Max hold
Sweep	Auto couple

a) Use the 99 % power bandwidth function of the instrument, allow the trace to stabilize and report the measured bandwidth.
b) Allow the trace to stabilize and measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6/26 dB relative to the maximum level measured in the fundamental emission.

Calculation for 99 % Bandwidth of UNII-3 Straddle Channel:

For Example: Fundamental Frequency: 5720 MHz

99 % OBW: 21.00 MHz

Turning Frequency: 5725 MHz

99 % Bandwidth of UNII-3 Band Portion = (5720+(21.00/2)-5725) = 5.50 MHz

Calculation for 6dB Bandwidth of UNII-3 Straddle Channel:

For Example: Fundamental frequency: 5720 MHz

6 dB BW: 16.44 MHz

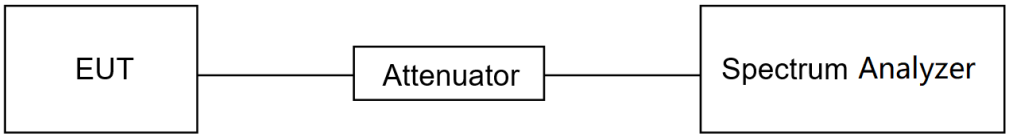
FL: 5711.76 MHz

FH: 5728.2 MHz

Turning Frequency: 5725 MHz

6 dB Bandwidth of UNII-3 band Portion = 5728.2-5725=3.2 MHz

TEST SETUP



TEST ENVIRONMENT

Temperature	15.6℃	Relative Humidity	61.0%
Atmosphere Pressure	101kPa	Test Voltage	DC 24 V

TEST DATE / ENGINEER

Test Date	June 27, 2024	Test By	Bairong Liu

TEST RESULTS

Please refer to section "Test Data" - Appendix A

7.3. CONDUCTED OUTPUT POWER

LIMITS

CFR 47 FCC Part15, Subpart E		
Test Item	Limit	Frequency Range (MHz)
Conducted Output Power	Shall not exceed 1 Watt (30 dBm).	5725 ~ 5850

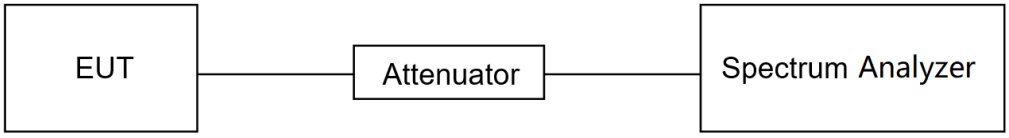
Note:
The above limits are based upon the maximum antenna gain does not exceed 6 dBi.
If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

TEST PROCEDURE

Refer to KDB 789033 D02 General U-NII Test Procedures New Rules v02r01 section II.E.

Method SA-2 (trace averaging across ON and OFF times of the EUT transmissions, followed by duty cycle correction.):
(a) Measure the duty cycle D of the transmitter output signal.
(b) Set span to encompass the entire 26 dB EBW or 99% OBW of the signal.
(c) Set RBW = 1 MHz.
(d) Set VBW $\geqslant$ 3 MHz.
(e) Number of points in sweep $\geqslant$ [2 $\times$ span / RBW]. (This gives bin-to-bin spacing $\leqslant$ RBW / 2, so that narrowband signals are not lost between frequency bins.)
(f) Sweep time = auto.
(g) Detector = RMS (i.e., power averaging), if available. Otherwise, use sample detector mode.
(h) Do not use sweep triggering. Allow the sweep to “free run.”
(i) 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.
j) Compute power by integrating the spectrum across the 26 dB EBW or 99% OBW of the signal using the instrument’s band power measurement function with band limits set equal to the EBW or OBW band edges. If the instrument does not have a band power function, then sum the spectrum levels (in power units) at 1 MHz intervals extending across the 26 dB EBW or 99% OBW of the spectrum.
k) 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 if the duty cycle is 25%.

TEST SETUP



TEST ENVIRONMENT

Temperature	25.6℃	Relative Humidity	61.0%
Atmosphere Pressure	101kPa	Test Voltage	DC 24 V

TEST DATE / ENGINEER

Test Date	June 27, 2024	Test By	Bairong Liu

TEST RESULTS

Please refer to section "Test Data" - Appendix D

7.4. POWER SPECTRAL DENSITY

LIMITS

CFR 47 FCC Part15, Subpart E		
Test Item	Limit	Frequency Range (MHz)
Power Spectral Density	30 dBm/500kHz	5725 ~ 5850

Note:
The above limits are based upon the maximum antenna gain does not exceed 6 dBi.
If transmitting antennas of directional gain greater than 6 dBi are used, maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

TEST PROCEDURE

Refer to KDB 789033 D02 General U-NII Test Procedures New Rules v02r01 section II.F.

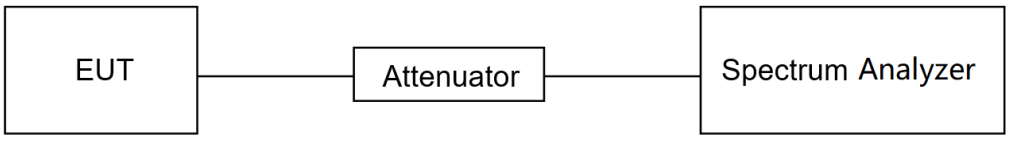
Connect the EUT to the spectrum analyzer and use the following settings:

For U-NII-3:

Center Frequency	The center frequency of the channel under test
Detector	RMS
RBW	500 kHz
VBW	≥3 × RBW
Span	Encompass the entire emissions bandwidth (EBW) of the signal
Trace	Average
Sweep time	Auto

Allow trace to fully stabilize and use the peak search function on the instrument to find the peak of the spectrum and record its value.
Add 10 log (1/x), where x is the duty cycle, to the peak of the spectrum, the result is the Maximum PSD over 1 MHz / 500 kHz reference bandwidth.

TEST SETUP



TEST ENVIRONMENT

Temperature	25.6℃	Relative Humidity	61.0%
Atmosphere Pressure	101kPa	Test Voltage	DC 24 V

TEST DATE / ENGINEER

Test Date	June 27, 2024	Test By	Bairong Liu

TEST RESULTS

Please refer to section "Test Data" - Appendix E

7.5. FREQUENCY STABILITY

LIMITS

The frequency of the carrier signal shall be maintained within band of operation.

TEST PROCEDURE

1. The EUT was placed inside an environmental chamber as the temperature in the chamber was varied between -10 °C ~ 40 °C (declared by customer).

2. The temperature was incremented by 10 °C intervals and the unit allowed to stabilize at each temperature before each measurement. The center frequency of the transmitting channel was evaluated at each temperature and the frequency deviation from the channel's center frequency was recorded.

3. The primary supply voltage is varied from 85 % to 115 % of the nominal value for non hand-carried battery and AC powered equipment. For hand-carried, battery-powered equipment, primary supply voltage is reduced to the battery operating end point which shall be specified by the manufacturer.

Connect the EUT to the spectrum analyzer and use the following settings:

Center Frequency	The center frequency of the channel under test
Detector	Peak
RBW	10 kHz
VBW	≥3 × RBW
Span	Encompass the entire emissions bandwidth (EBW) of the signal
Trace	Max hold
Sweep time	Auto

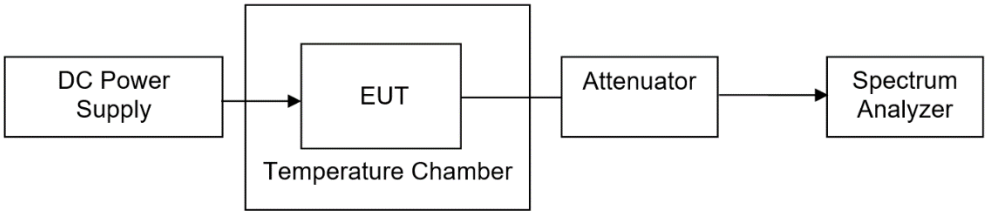
4. While maintaining a constant temperature inside the environmental chamber, turn the EUT on and record the operating frequency at startup, and at 2 minutes, 5minutes, and 10 minutes after the EUT is energized.

5. Allow the trace to stabilize, find the peak value of the power envelope and record the frequency, then calculated the frequency drift.

TEST ENVIRONMENT

	Normal Test Conditions	Extreme Test Conditions
Relative Humidity	20 % ~ 75 %	/
Atmospheric Pressure	100 kPa ~ 102 kPa	/
Temperature	T_N (Normal Temperature): 25.1 °C	T_L (Low Temperature): -10 °C
		T_H (High Temperature): 40 °C
Supply Voltage	V_N (Normal Voltage): DC 24 V	V_L (Low Voltage): DC 20.4 V
		V_H (High Voltage): DC 27.6 V

TEST SETUP



TEST ENVIRONMENT

Temperature	25.6℃	Relative Humidity	61.0%
Atmosphere Pressure	101kPa	Test Voltage	DC 24 V

TEST DATE / ENGINEER

Test Date	June 27, 2024	Test By	Bairong Liu

TEST RESULTS

Please refer to section "Test Data" - Appendix F

8. RADIATED TEST RESULTS

LIMITS

Refer to CFR 47 FCC §15.205, §15.209 and §15.407 (b).

Radiation Disturbance Test Limit for FCC (Class B) (9 kHz ~ 1 GHz)

Emissions radiated outside of the specified frequency bands above 30 MHz			
Frequency Range (MHz)	Field Strength Limit (uV/m) at 3 m	Field Strength Limit (dBuV/m) at 3 m	
		Quasi-Peak	
30 - 88	100	40	
88 - 216	150	43.5	
216 - 960	200	46	
Above 960	500	54	
Above 1000	500	Peak	Average
		74	54

FCC Emissions radiated outside of the specified frequency bands below 30 MHz		
Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30

FCC Restricted bands of operation refer to FCC §15.205 (a):

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
[1]0.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	([2])
13.36-13.41			

Note: [1]Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.
[2]Above 38.6c

Limits of unwanted/undesirable emission out of the restricted bands refer to CFR 47 FCC §15.407 (b)

LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1GHz)		
Frequency Range (MHz)	EIRP Limit	Field Strength Limit (dBuV/m) at 3 m
5150~5250 MHz	PK: -27 (dBm/MHz)	PK:68.2(dBμV/m)
5250~5350 MHz		
5470~5725 MHz		
5725~5850 MHz	PK: -27 (dBm/MHz) *1 PK: 10 (dBm/MHz) *2 PK: 15.6 (dBm/MHz) *3 PK: 27 (dBm/MHz) *4	PK: 68.2(dBμV/m) *1 PK: 105.2 (dBμV/m) *2 PK: 110.8(dBμV/m) *3 PK: 122.2 (dBμV/m) *4
Note: *1 beyond 75 MHz or more above of the band edge. *2 below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above. *3 below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above. *4 from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.		

TEST PROCEDURE

Below 30 MHz

The setting of the spectrum analyzer

RBW	200 Hz (From 9 kHz to 0.15 MHz)/ 9 kHz (From 0.15 MHz to 30 MHz)
VBW	200 Hz (From 9 kHz to 0.15 MHz)/ 9 kHz (From 0.15 MHz to 30 MHz)
Sweep	Auto

1. The testing follows the guidelines in ANSI C63.10-2013 clause 6.4.

2. The EUT was arranged to its worst case and then turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level. Both Horizontal, Face-on and Face-off polarizations of the antenna are set to make the measurement.

3. The EUT was placed on a turntable with 80 cm above ground.

4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a 1 m height antenna tower.

5. The radiated emission limits are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz Radiated emission limits in these three bands are based on measurements employing an average detector.

6. For measurement below 1 GHz, the initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak and average detector mode re-measured. If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak and average detector and reported.

7. Although these tests were performed other than open field site, adequate comparison measurements were confirmed against 30m open field site. Therefore sufficient tests were made to demonstrate that the alternative site produces results that correlate with the ones of tests made in an open field site based on KDB 414788.

8. The limits in CFR 47, Part 15, Subpart C, paragraph 15.209 (a), are identical to those in RSS-GEN Section 8.9, Table 6, since the measurements are performed in terms of magnetic field strength and converted to electric field strength levels (as reported in the table) using the free space impedance of 377Ω. For example, the measurement frequency X kHz resulted in a level of Y dBuV/m, which is equivalent to Y-51.5 = Z dBuA/m, which has the same margin, W dB, to the corresponding RSS-GEN Table 6 limit as it has to be 15.209(a) limit.

Below 1 GHz and above 30 MHz

The setting of the spectrum analyzer

RBW	120 kHz
VBW	300 kHz
Sweep	Auto
Detector	Peak/QP
Trace	Max hold

1. The testing follows the guidelines in ANSI C63.10-2013 clause 6.5.

2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

3. The EUT was placed on a turntable with 80 cm above ground.

4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.

5. For measurement below 1 GHz, the initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured. If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.

Above 1 GHz

The setting of the spectrum analyzer

RBW	1 MHz
VBW	PEAK: 3 MHz AVG: see note 6
Sweep	Auto
Detector	Peak
Trace	Max hold

1. The testing follows the guidelines in KDB 789033 D02 General U-NII Test Procedures New Rules v02r01 section II.G.3 ~ II.G.6.

2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

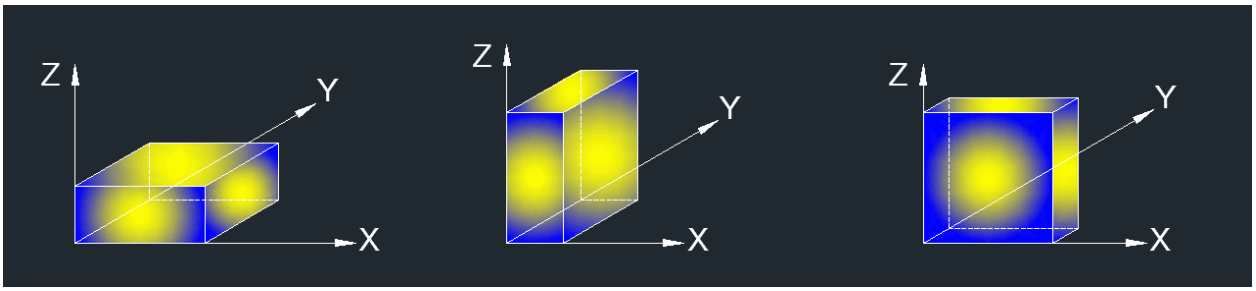
3. The EUT was placed on a turntable with 1.5 m above ground.

4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.

5. For measurement above 1 GHz, the emission measurement will be measured by the peak detector. This peak level, once corrected, must comply with the limit specified in Section 15.209.

6. For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 3 MHz for peak measurements and 1 MHz resolution bandwidth with 1/T video bandwidth with peak detector for average measurements. For the Duty Cycle please refer to clause 7.1. ON TIME AND DUTY CYCLE.

X axis, Y axis, Z axis positions:



Note 1: For all radiated test, EUT in each of three orthogonal axis emissions had been tested, but only the worst case (X axis) data recorded in the report.

Note 2: The EUT was fully exercised with external accessories during the test. In the case of multiple accessory external ports, an external accessory shall be connected to one of each type of port.

For Restricted Bandedge:
Note:
1. Measurement = Reading Level + Correct Factor.
2. If the peak values are less than the average limit of 54 dBuV/m, the average result is deemed to comply with average limit.
3. PK=Peak: Peak detector.
4. AV=Average: VBW=1/Ton, where: Ton is the transmitting duration.
5. For the transmitting duration, please refer to clause 7.1.
6. Only the worst data was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.
7. Both horizontal and vertical have been tested, only the worst data was recorded in the report.
8. All modes have been tested, but only the worst data was recorded in the report.

For Radiate Spurious emission (9 kHz ~ 30 MHz):
Note:
1. Measurement = Reading Level + Correct Factor.
2. If the peak values are less than the QP limit, the QP result is deemed to comply with QP limit.
3. All 3 polarizations (Horizontal, Face-on and Face-off) of the loop antenna had been tested, but only the worst data recorded in the report.
4. All modes have been tested, but only the worst data was recorded in the report.
5. dBuA/m= dBuV/m- 20Log10[120π] = dBuV/m- 51.5

For Radiate Spurious Emission (30 MHz ~ 1 GHz):
Note:
1. Result Level = Read Level + Correct Factor.
2. If the peak values are less than the QP limit, the QP result is deemed to comply with QP limit.
3. All modes have been tested, but only the worst data was recorded in the report.

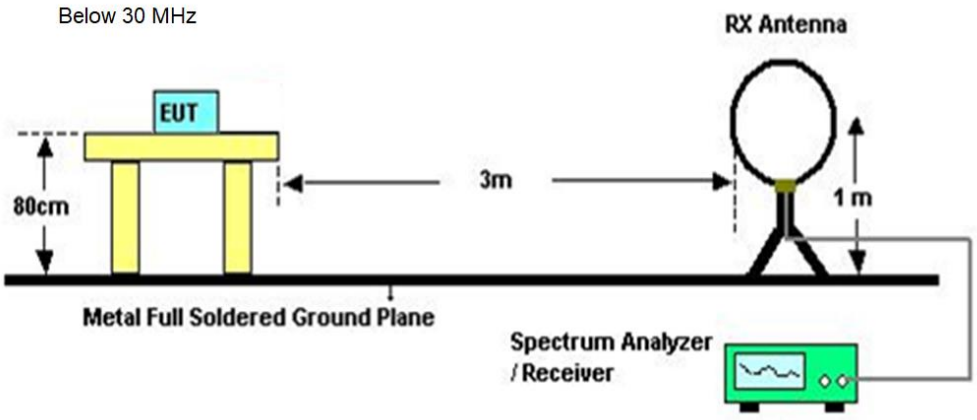
For Radiate Spurious Emission (1 GHz ~ 7 GHz):
1. Measurement = Reading Level + Correct Factor.
2. If the peak values are less than the average limit of 54 dBuV/m, the average result is deemed to comply with average limit.
3. Peak: Peak detector.
4. AVG: VBW=1/Ton, where: Ton is the transmitting duration.
5. For the transmitting duration, please refer to clause 7.1.
6. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for Band reject filter losses.
7. Proper operation of the transmitter prior to adding the filter to the measurement chain.
8. Since non-restricted band peak emissions are less than the average limit, they also comply with the -27 dBm/MHz (68.2 dBuV/m) limit.
9. All modes have been tested, but only the worst data was recorded in the report.

For Radiate Spurious Emission (7 GHz ~ 18 GHz):
Note:
1. Peak Result = Reading Level + Correct Factor.
2. If the peak values are less than the average limit of 54 dBuV/m, the average result is deemed to comply with average limit.
3. Peak: Peak detector.
4. AVG: VBW=1/Ton, where: Ton is the transmitting duration.
5. For the transmitting duration, please refer to clause 7.1.
6. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.
7. Proper operation of the transmitter prior to adding the filter to the measurement chain.
8. Since non-restricted band peak emissions are less than the average limit, they also comply with the -27 dBm/MHz (68.2 dBuV/m) limit.
9. All modes have been tested, but only the worst data was recorded in the report.

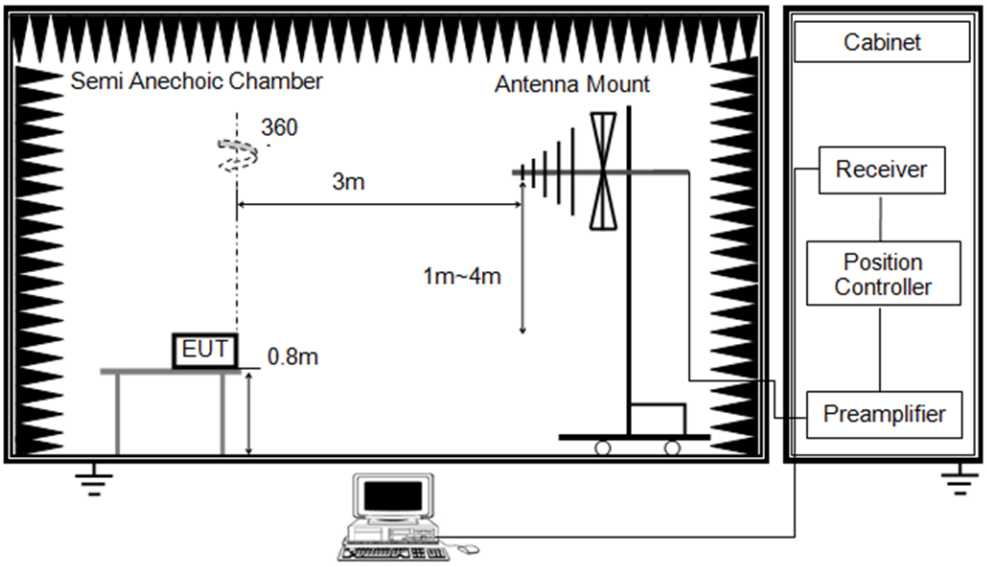
For Radiate Spurious emission (18 GHz ~ 26 GHz):
Note:
1. Measurement = Reading Level + Correct Factor.
2. If the peak values are less than the average limit of 54 dBuV/m, the average result is deemed to comply with average limit.
3. Peak: Peak detector.
4. All modes have been tested, but only the worst data was recorded in the report.

For Radiate Spurious emission (26 GHz ~ 40 GHz):
Note:
1. Measurement = Reading Level + Correct Factor.
2. If the peak values are less than the average limit of 54 dBuV/m, the average result is deemed to comply with average limit.
3. Peak: Peak detector.
4. All modes have been tested, but only the worst data was recorded in the report.

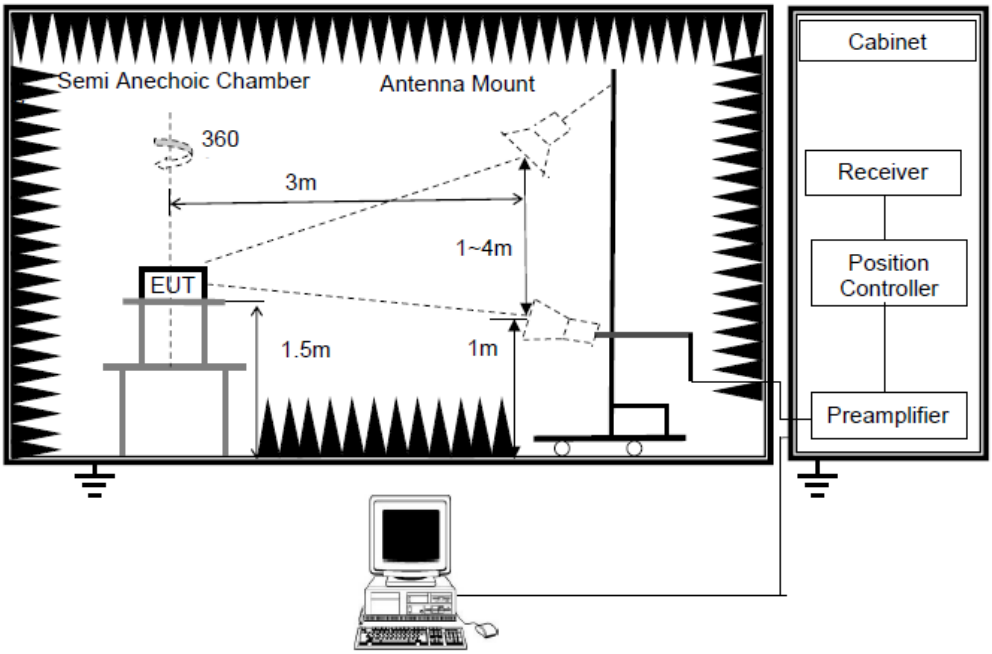
TEST SETUP



Below 1 GHz and above 30 MHz



Above 1GHz



TEST ENVIRONMENT

Temperature	23.8℃	Relative Humidity	56.2%
Atmosphere Pressure	101kPa	Test Voltage	

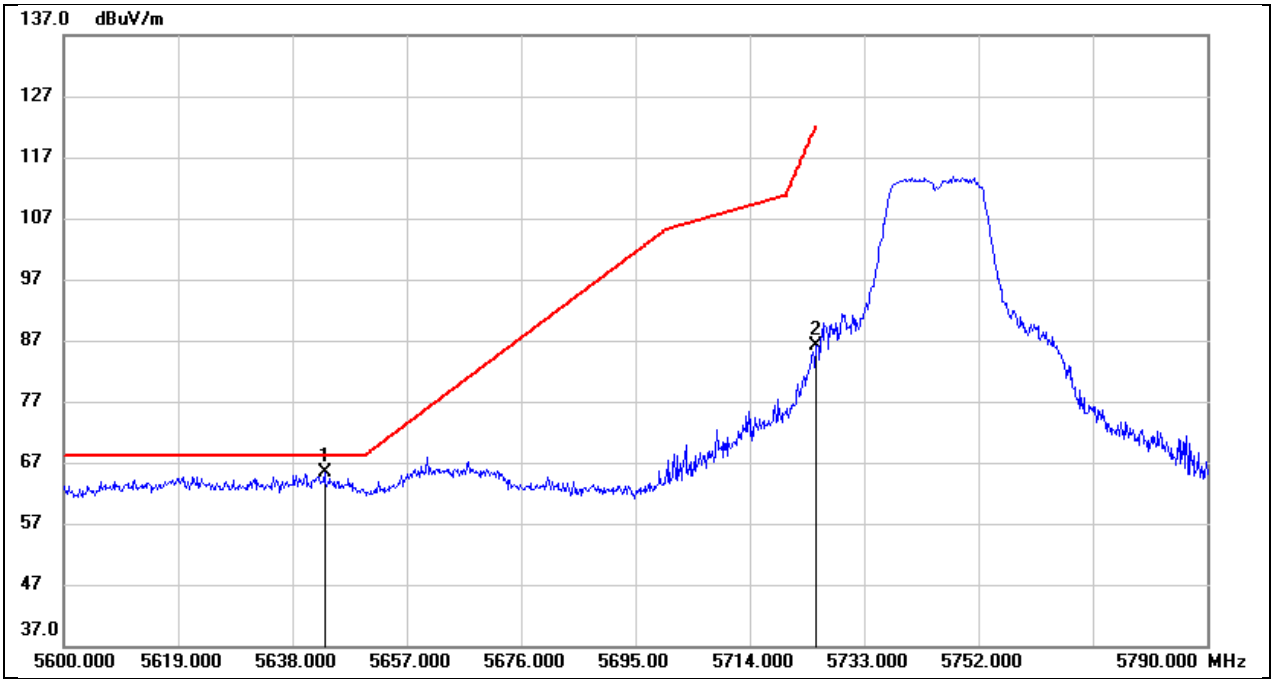
TEST DATE / ENGINEER

Test Date	September 4, 2024	Test By	Mason Wang

TEST RESULTS

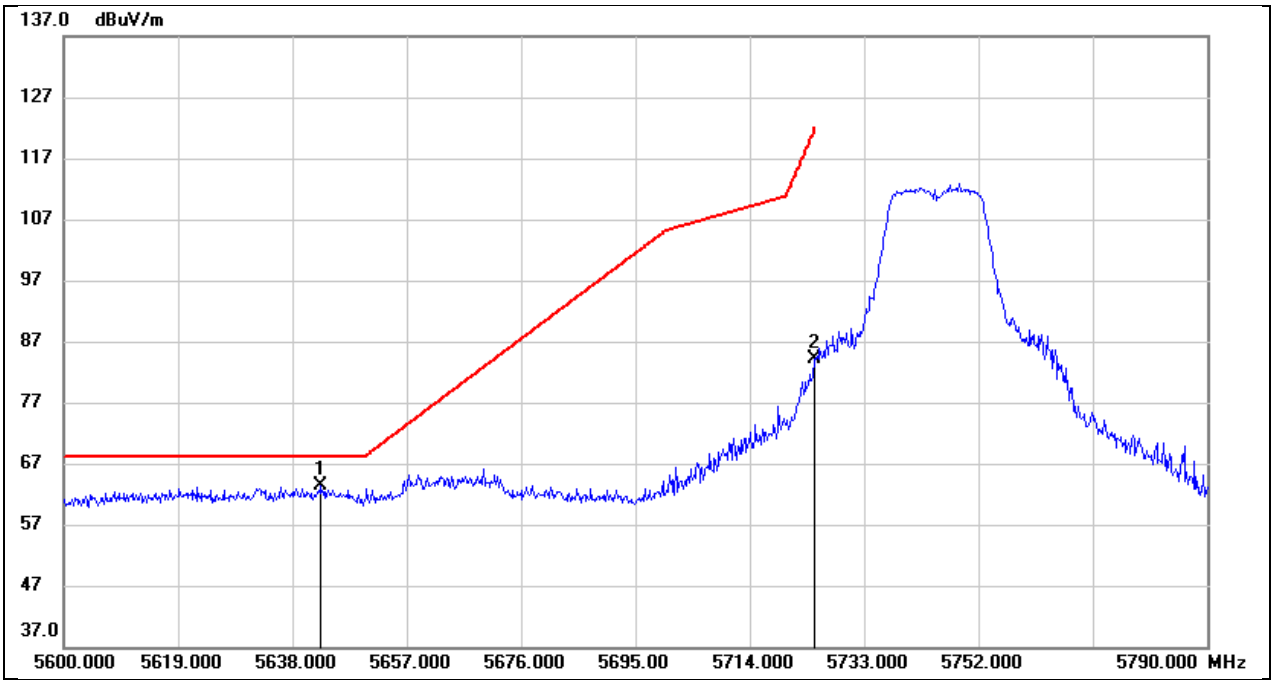
8.1. RESTRICTED BANDEDGE

Test Mode:	802.11a 20 PK	Frequency(MHz):	5745
Polarity:	Horizontal	Test Voltage:	DC 24V



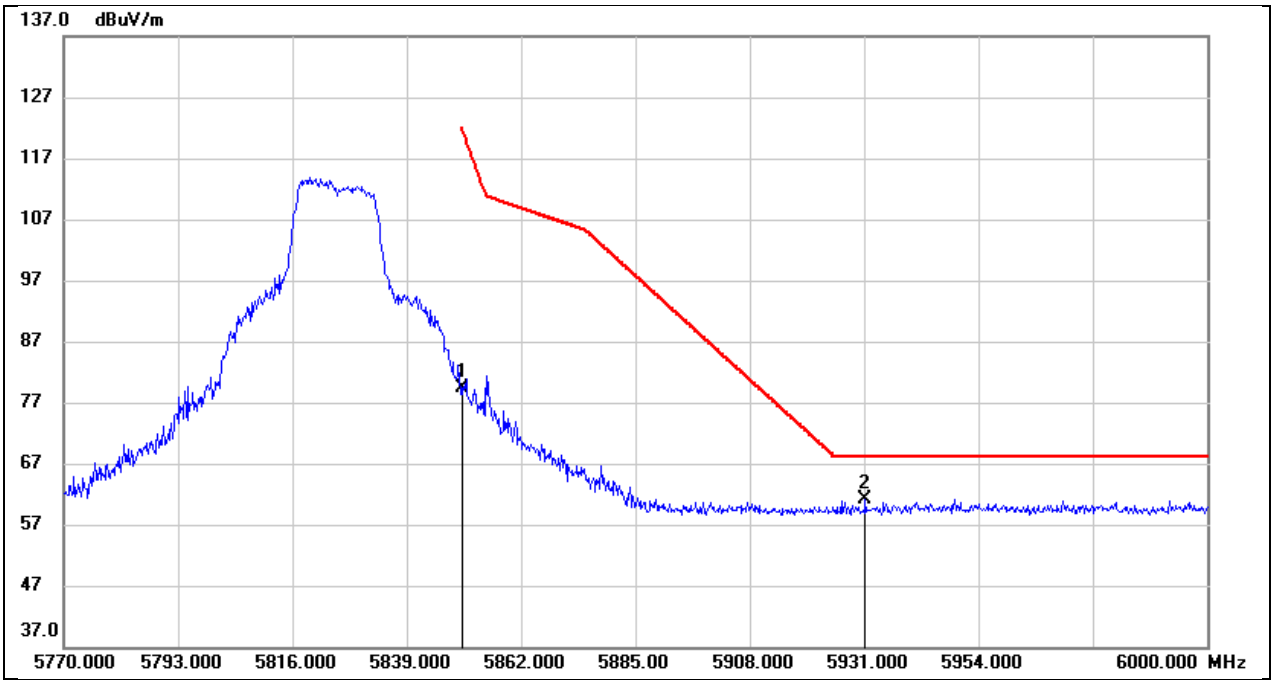
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5643.320	22.94	42.36	65.30	68.20	-2.90	peak
2	5725.000	43.83	42.28	86.11	122.20	-36.09	peak

Test Mode:	802.11a 20 PK	Frequency(MHz):	5745
Polarity:	Vertical	Test Voltage:	DC 24V



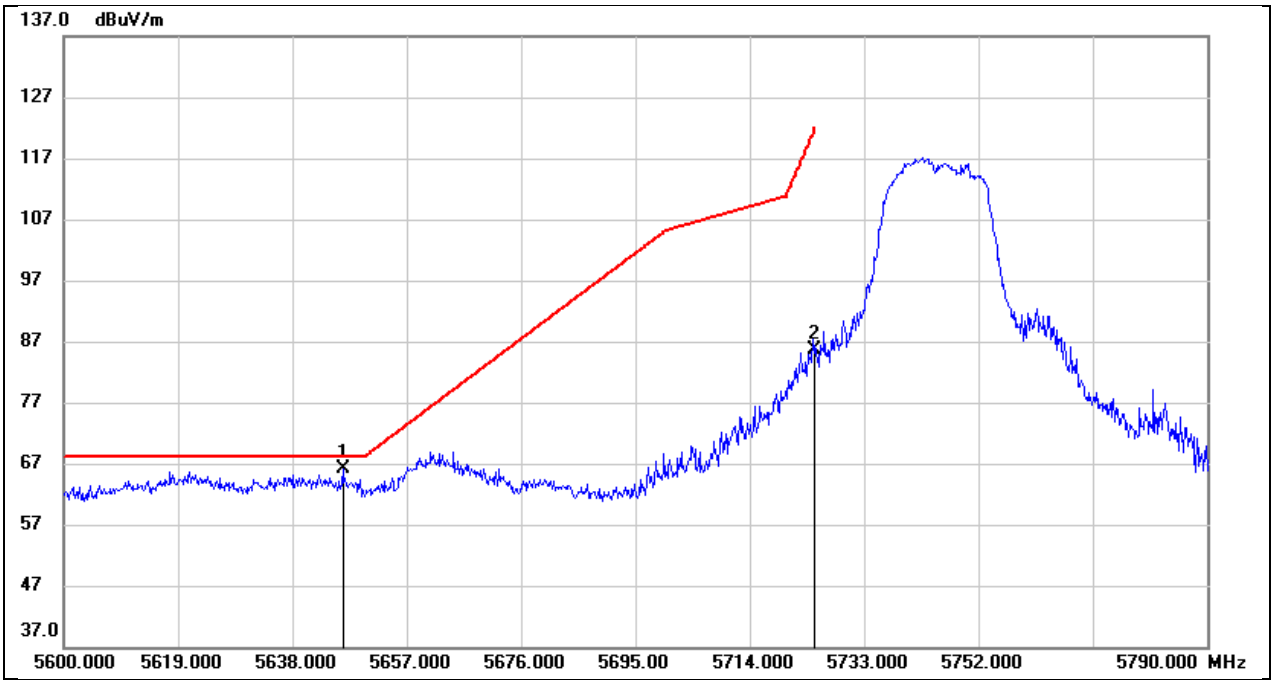
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5642.750	20.92	42.36	63.28	68.20	-4.92	peak
2	5725.000	41.75	42.28	84.03	122.20	-38.17	peak

Test Mode:	802.11a 20 PK	Frequency(MHz):	5825
Polarity:	Horizontal	Test Voltage:	DC 24V



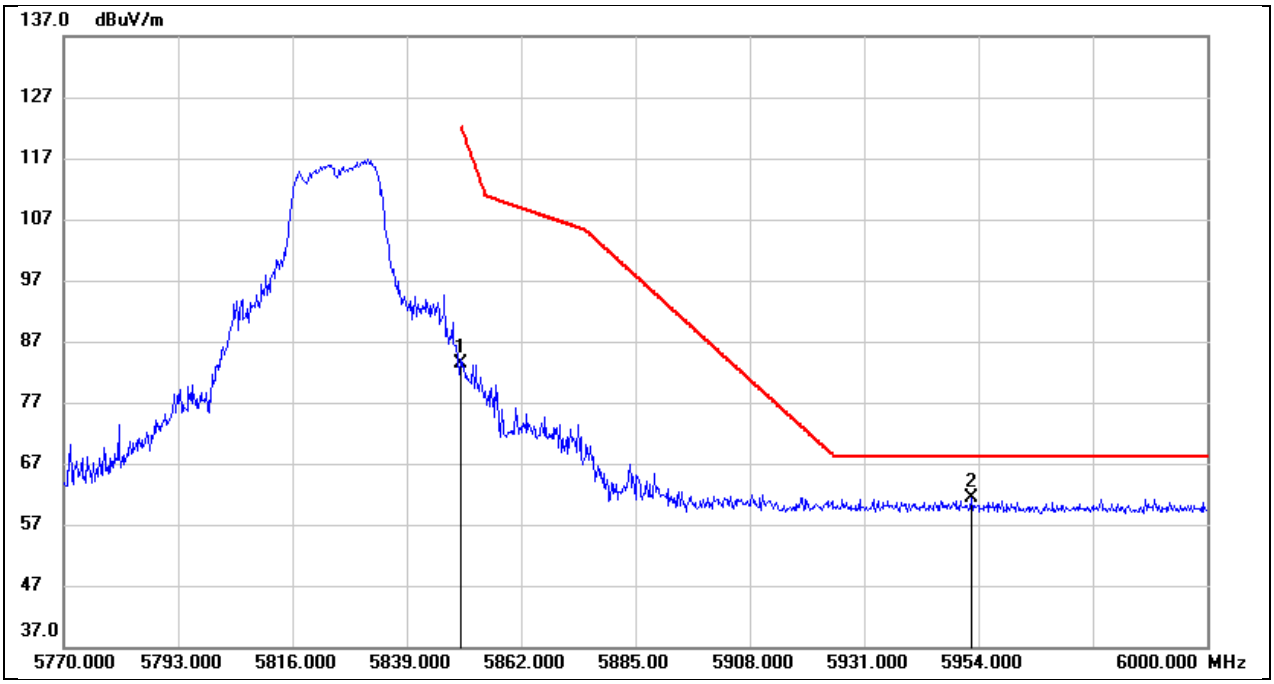
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5850.000	37.88	41.38	79.26	122.20	-42.94	peak
2	5931.230	19.26	41.80	61.06	68.20	-7.14	peak

Test Mode:	802.11n HT20 PK	Frequency(MHz):	5745
Polarity:	Horizontal	Test Voltage:	DC 24V



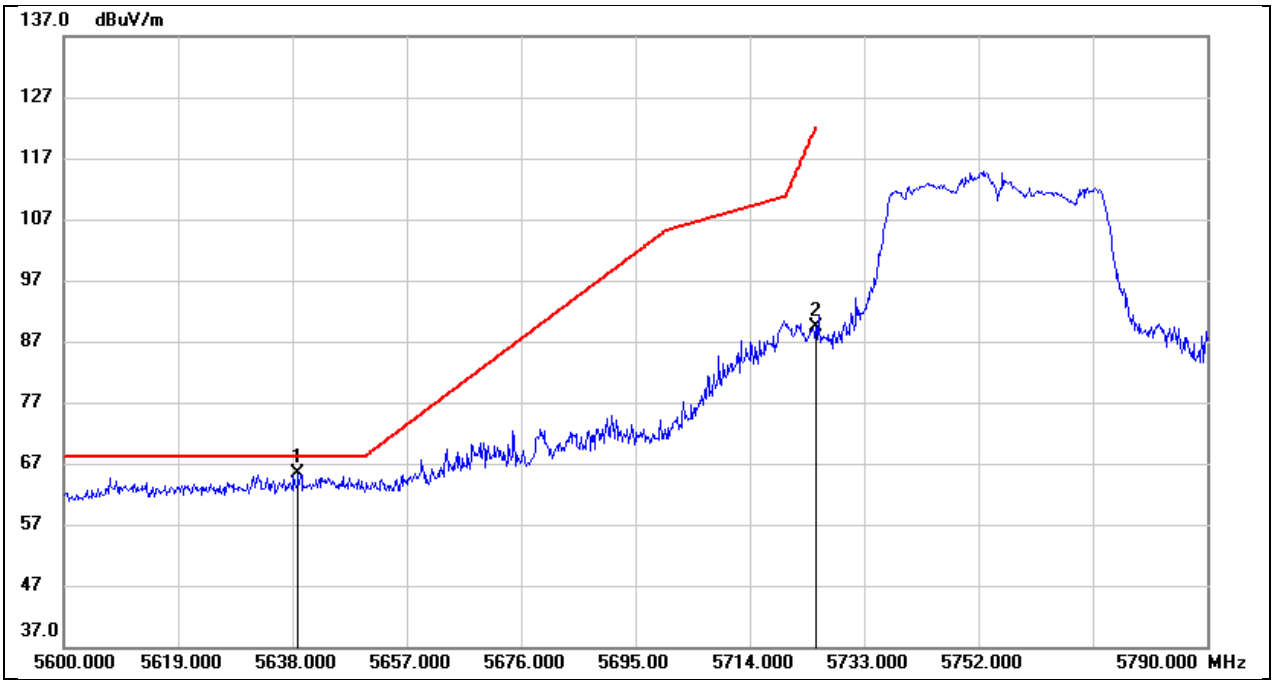
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5646.360	24.97	41.22	66.19	68.20	-2.01	peak
2	5725.000	44.41	41.17	85.58	122.20	-36.62	peak

Test Mode:	802.11n HT20 PK	Frequency(MHz):	5825
Polarity:	Horizontal	Test Voltage:	DC 24V



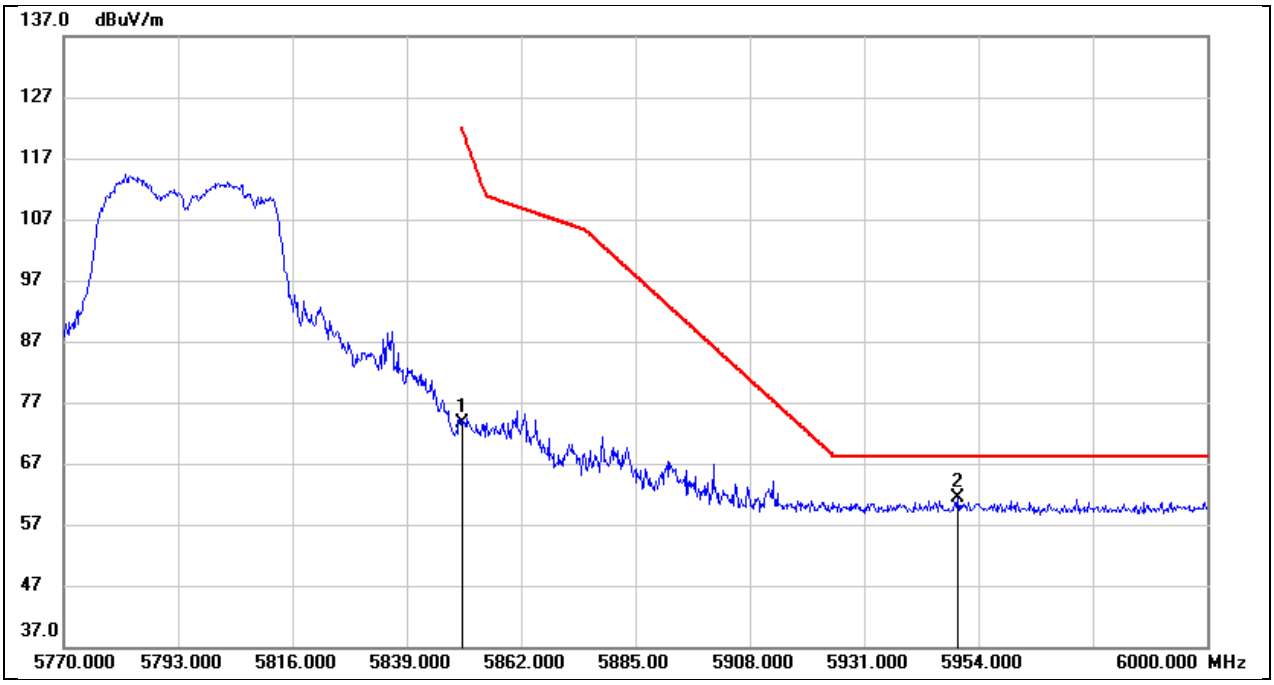
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5850.000	42.08	41.38	83.46	122.20	-38.74	peak
2	5952.620	19.40	41.90	61.30	68.20	-6.90	peak

Test Mode:	802.11n HT40 PK	Frequency(MHz):	5755
Polarity:	Horizontal	Test Voltage:	DC 24V



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5638.950	24.20	41.22	65.42	68.20	-2.78	peak
2	5725.000	48.15	41.17	89.32	122.20	-32.88	peak

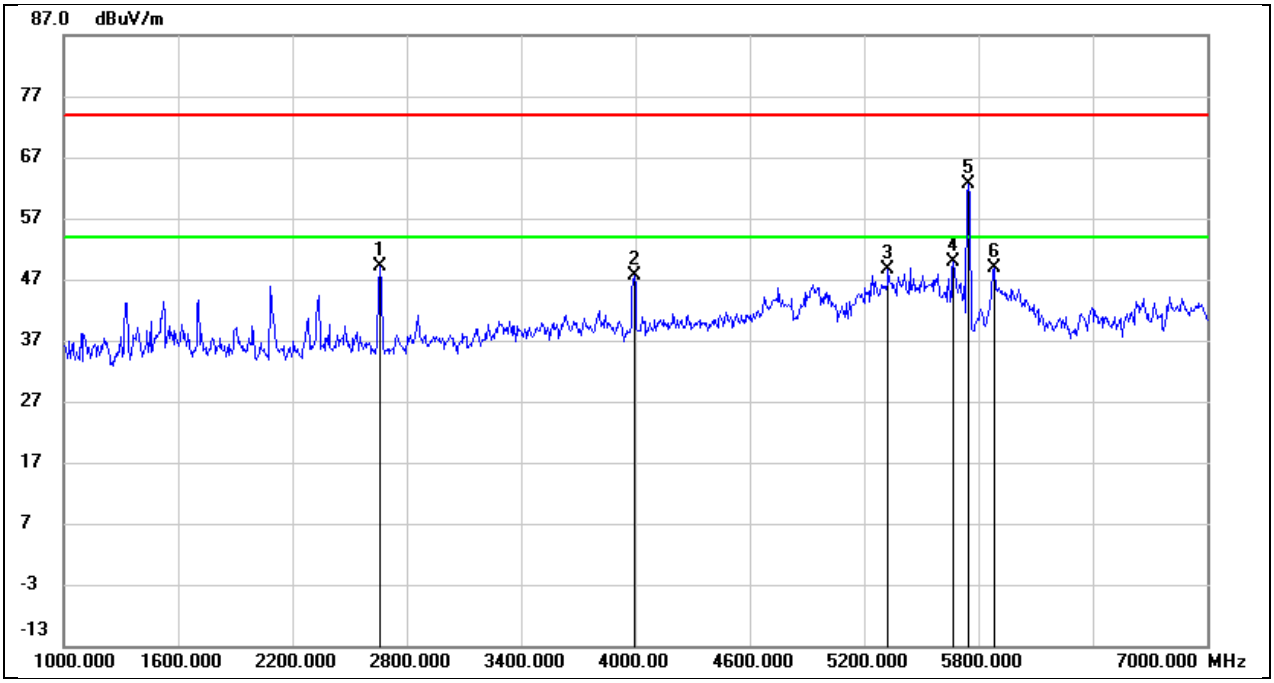
Test Mode:	802.11n HT40 PK	Frequency(MHz):	5795
Polarity:	Horizontal	Test Voltage:	DC 24V



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5850.000	32.37	41.38	73.75	122.20	-48.45	peak
2	5949.860	19.55	41.89	61.44	68.20	-6.76	peak

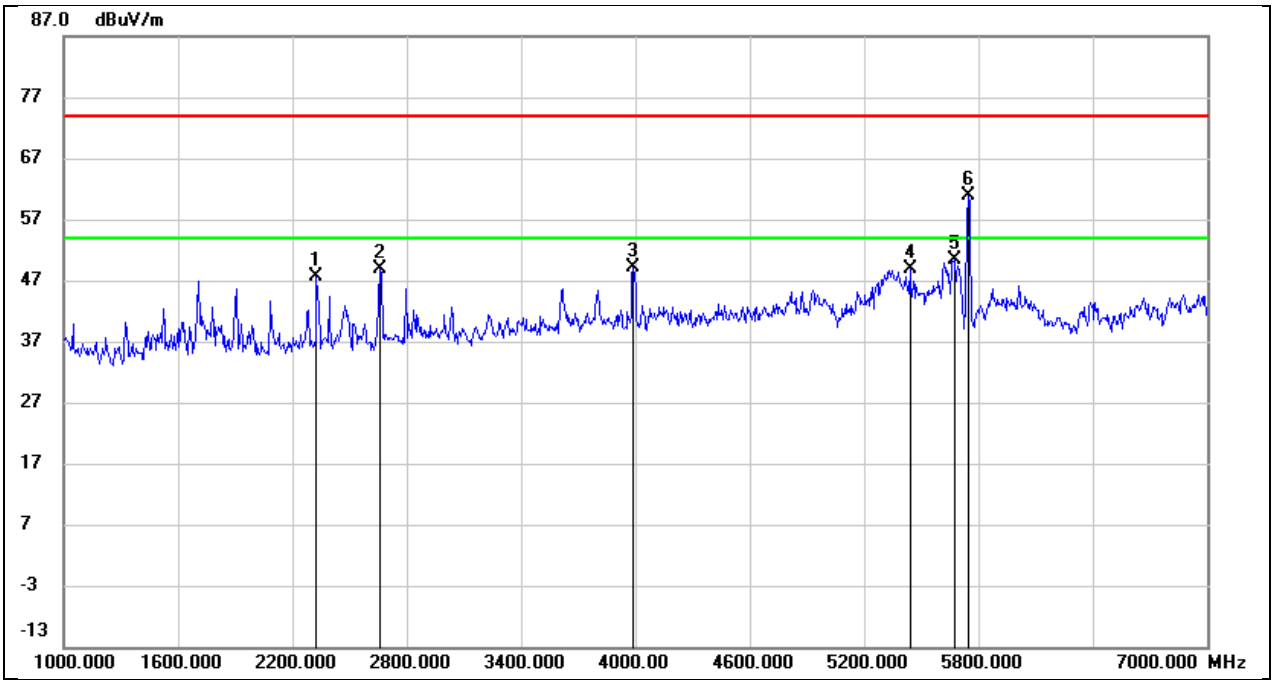
8.2. SPURIOUS EMISSIONS(1 GHZ~7 GHZ)

Test Mode:	802.11a 20	Frequency(MHz):	5745
Polarity:	Horizontal	Test Voltage:	DC 24V



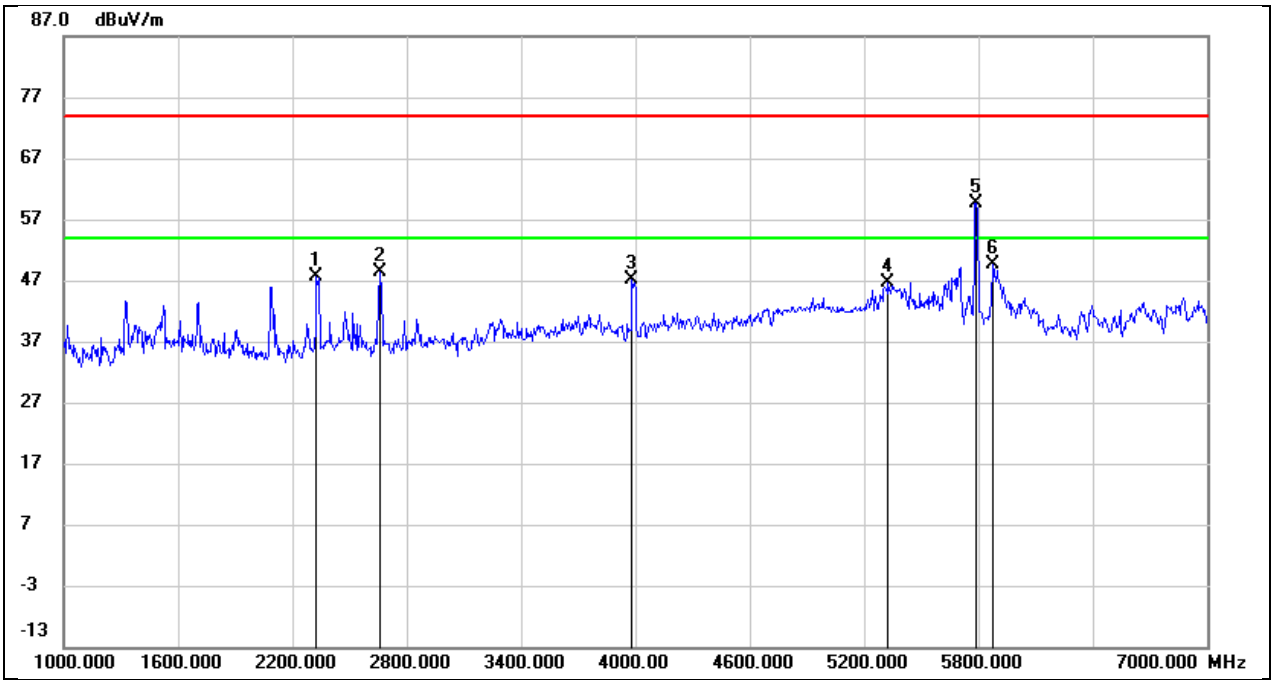
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2656.000	56.74	-7.50	49.24	74.00	-24.76	peak
2	3994.000	50.77	-3.08	47.69	74.00	-26.31	peak
3	5326.000	47.10	1.55	48.65	74.00	-25.35	peak
4	5668.000	47.18	2.80	49.98	74.00	-24.02	peak
5	5746.000	60.03	2.51	62.54	74.00	-11.46	peak
6	5884.000	46.08	2.76	48.84	74.00	-25.16	peak

Test Mode:	802.11a 20	Frequency(MHz):	5745
Polarity:	Vertical	Test Voltage:	DC 24V



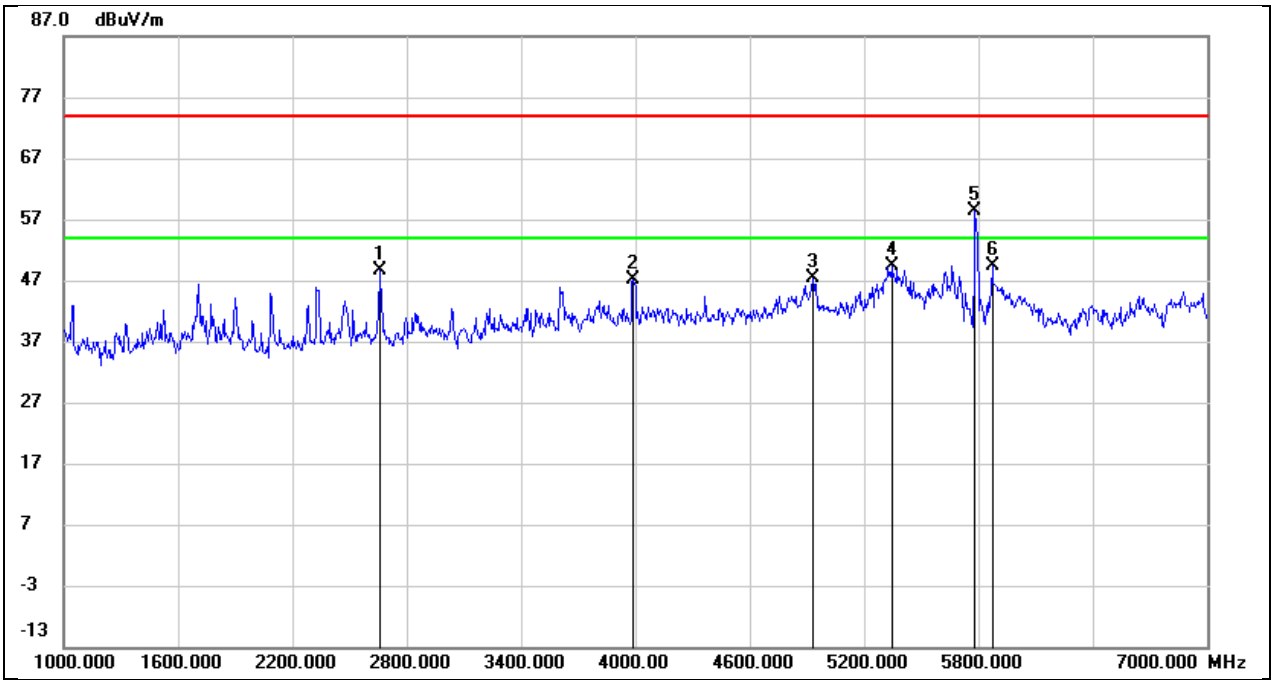
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2326.000	54.90	-7.20	47.70	74.00	-26.30	peak
2	2656.000	55.31	-6.55	48.76	74.00	-25.24	peak
3	3988.000	50.99	-1.97	49.02	74.00	-24.98	peak
4	5440.000	45.71	3.12	48.83	74.00	-25.17	peak
5	5674.000	46.49	3.91	50.40	74.00	-23.60	peak
6	5746.000	57.16	3.62	60.78	74.00	-13.22	peak

Test Mode:	802.11a 20	Frequency(MHz):	5785
Polarity:	Horizontal	Test Voltage:	DC 24V



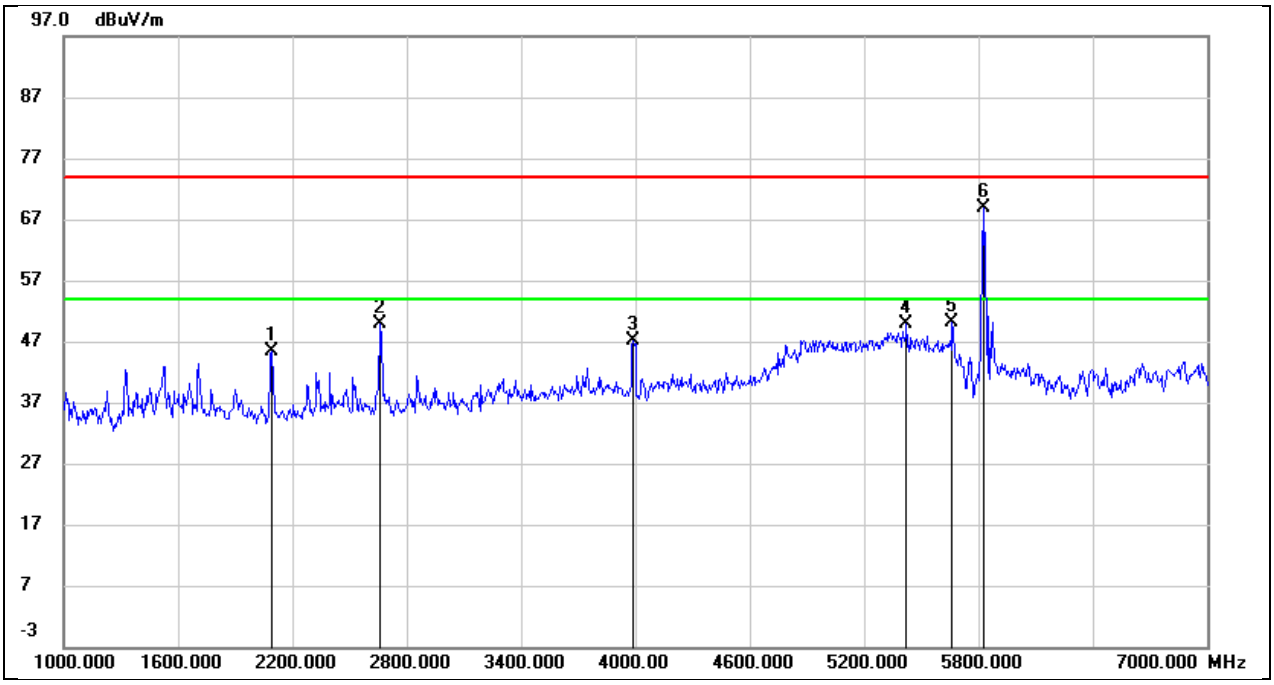
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2326.000	55.69	-8.04	47.65	74.00	-26.35	peak
2	2656.000	55.94	-7.50	48.44	74.00	-25.56	peak
3	3982.000	50.20	-3.05	47.15	74.00	-26.85	peak
4	5326.000	45.16	1.55	46.71	74.00	-27.29	peak
5	5788.000	57.38	2.36	59.74	74.00	-14.26	peak
6	5878.000	46.90	2.73	49.63	74.00	-24.37	peak

Test Mode:	802.11a 20	Frequency(MHz):	5785
Polarity:	Vertical	Test Voltage:	DC 24V



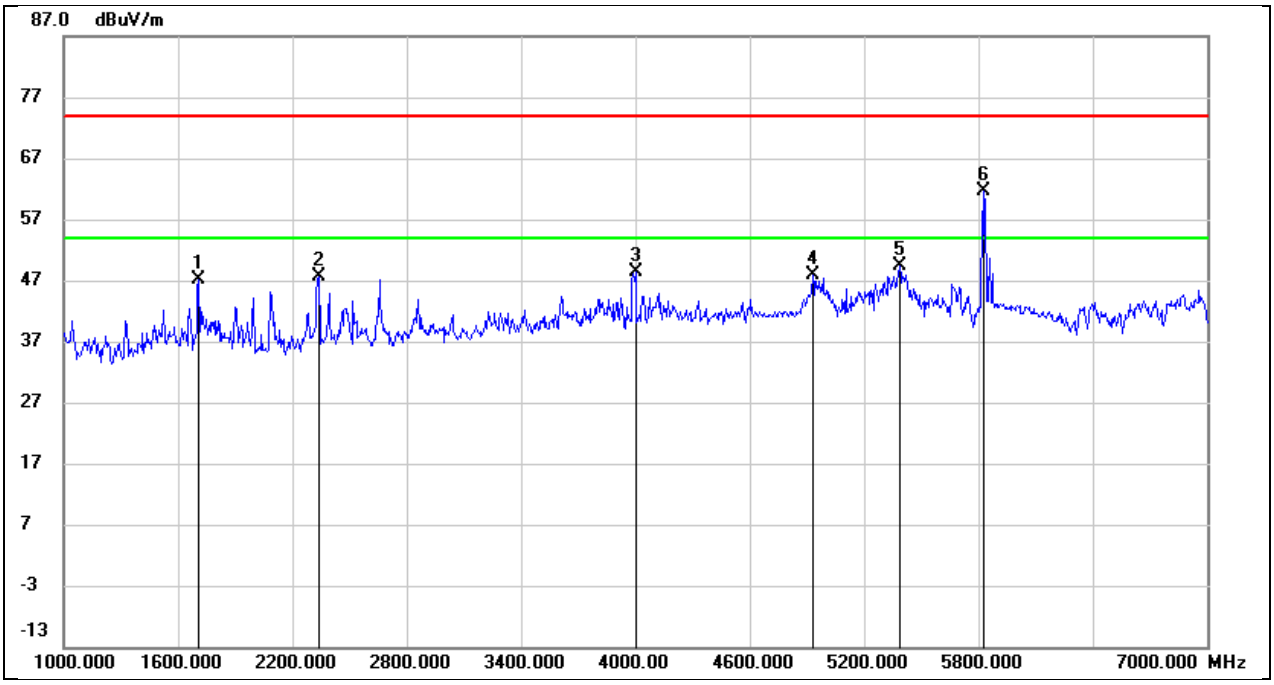
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2656.000	55.09	-6.55	48.54	74.00	-25.46	peak
2	3988.000	49.01	-1.97	47.04	74.00	-26.96	peak
3	4930.000	45.44	1.87	47.31	74.00	-26.69	peak
4	5344.000	46.64	2.77	49.41	74.00	-24.59	peak
5	5782.000	55.00	3.48	58.48	74.00	-15.52	peak
6	5872.000	45.51	3.76	49.27	74.00	-24.73	peak

Test Mode:	802.11a 20	Frequency(MHz):	5825
Polarity:	Horizontal	Test Voltage:	DC 24V



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2092.000	54.87	-9.51	45.36	74.00	-28.64	peak
2	2656.000	57.48	-7.50	49.98	74.00	-24.02	peak
3	3988.000	50.24	-3.07	47.17	74.00	-26.83	peak
4	5422.000	47.99	1.80	49.79	74.00	-24.21	peak
5	5662.000	47.41	2.82	50.23	74.00	-23.77	peak
6	5830.000	66.36	2.48	68.84	74.00	-5.16	peak

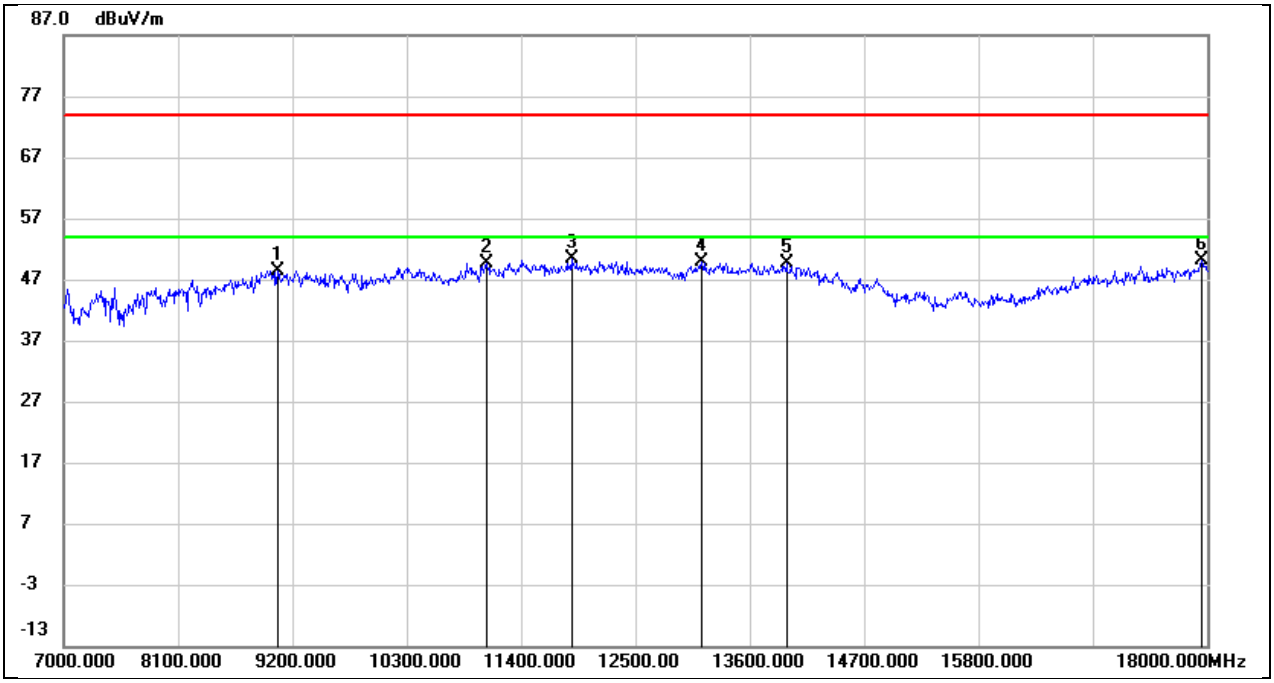
Test Mode:	802.11a 20	Frequency(MHz):	5825
Polarity:	Vertical	Test Voltage:	DC 24V



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1708.000	57.31	-10.08	47.23	74.00	-26.77	peak
2	2338.000	54.77	-7.12	47.65	74.00	-26.35	peak
3	4000.000	50.47	-1.99	48.48	74.00	-25.52	peak
4	4930.000	45.95	1.87	47.82	74.00	-26.18	peak
5	5386.000	46.57	2.83	49.40	74.00	-24.60	peak
6	5830.000	58.18	3.55	61.73	74.00	-12.27	peak

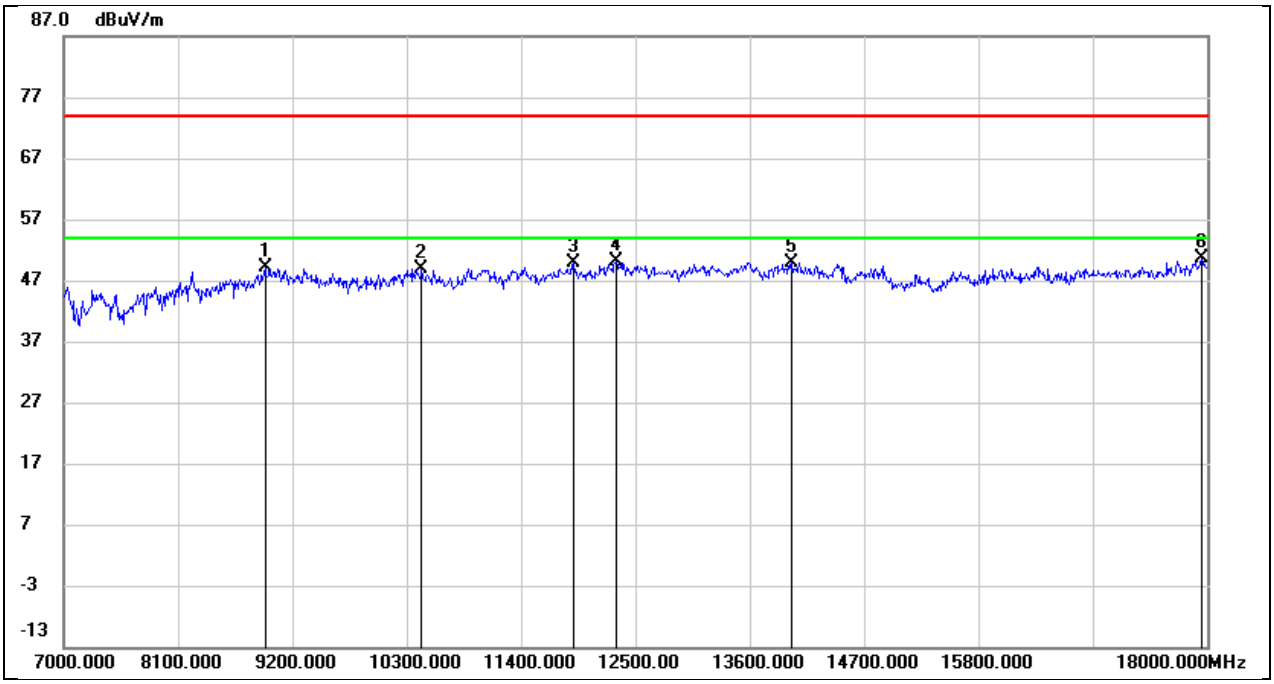
8.3. SPURIOUS EMISSIONS(7 GHZ~18 GHZ)

Test Mode:	802.11a 20	Frequency(MHz):	5745
Polarity:	Horizontal	Test Voltage:	DC 24V



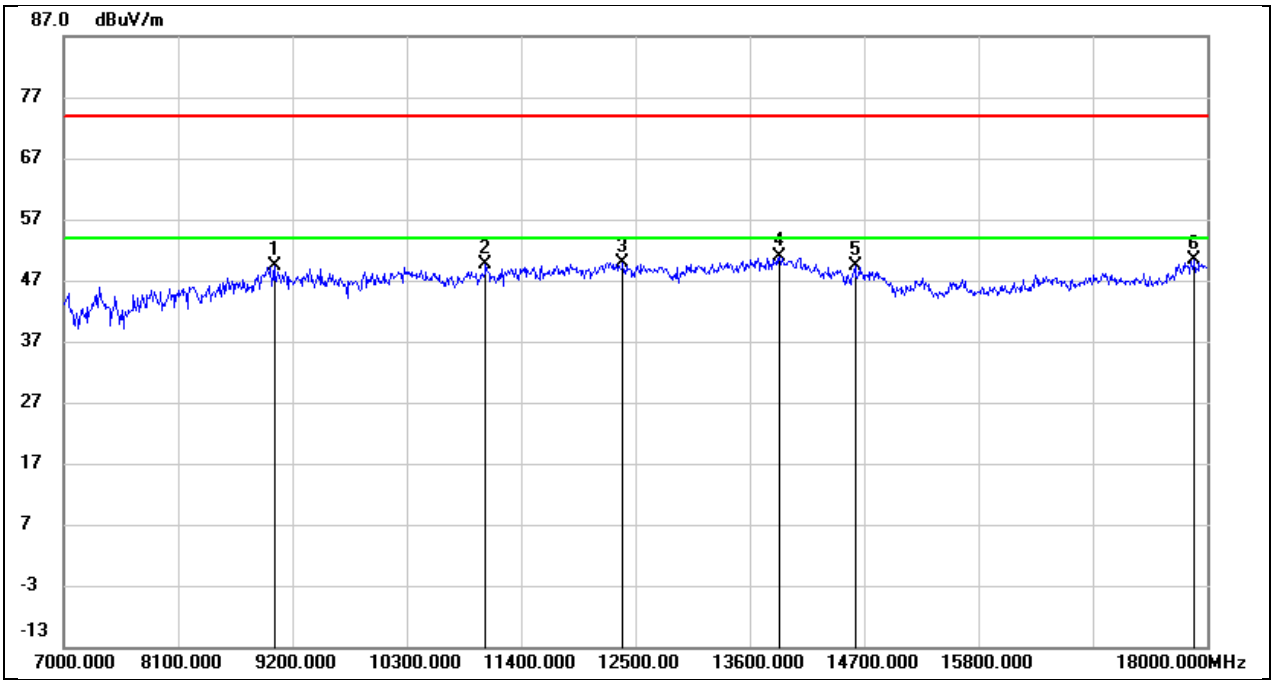
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	9057.000	37.03	11.45	48.48	74.00	-25.52	peak
2	11070.000	34.73	14.91	49.64	74.00	-24.36	peak
3	11884.000	32.86	17.47	50.33	74.00	-23.67	peak
4	13138.000	30.45	19.43	49.88	74.00	-24.12	peak
5	13952.000	27.26	22.39	49.65	74.00	-24.35	peak
6	17945.000	22.08	28.15	50.23	74.00	-23.77	peak

Test Mode:	802.11a 20	Frequency(MHz):	5745
Polarity:	Vertical	Test Voltage:	DC 24V



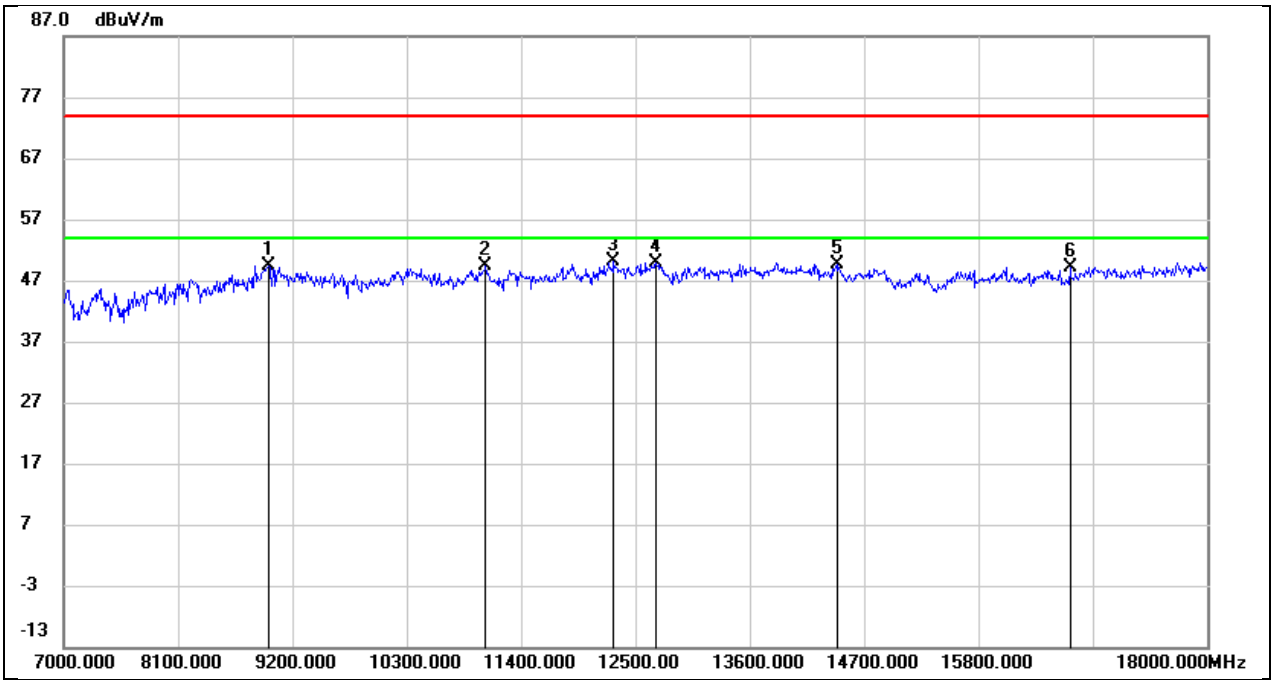
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	8936.000	37.72	11.44	49.16	74.00	-24.84	peak
2	10443.000	36.11	12.84	48.95	74.00	-25.05	peak
3	11906.000	33.52	16.40	49.92	74.00	-24.08	peak
4	12313.000	32.77	17.36	50.13	74.00	-23.87	peak
5	14007.000	29.09	20.85	49.94	74.00	-24.06	peak
6	17945.000	24.39	26.19	50.58	74.00	-23.42	peak

Test Mode:	802.11a 20	Frequency(MHz):	5785
Polarity:	Horizontal	Test Voltage:	DC 24V



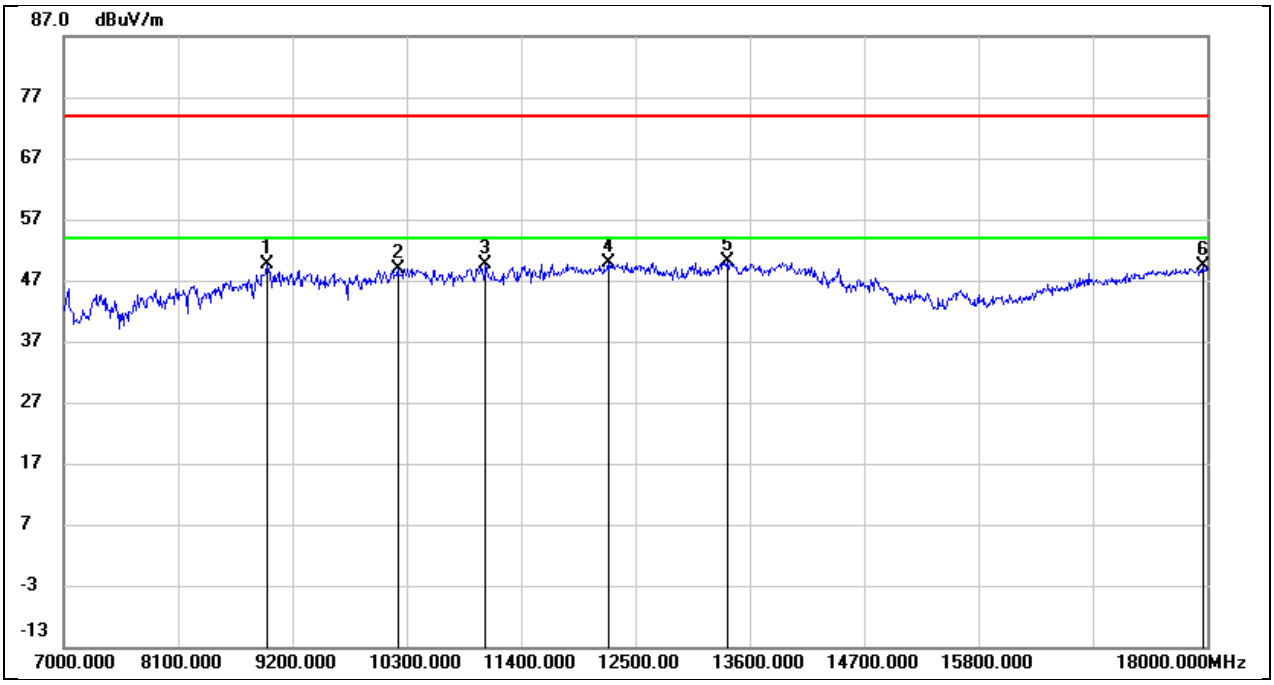
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	9024.000	37.74	11.75	49.49	74.00	-24.51	peak
2	11059.000	34.72	14.90	49.62	74.00	-24.38	peak
3	12379.000	31.37	18.49	49.86	74.00	-24.14	peak
4	13886.000	28.49	22.33	50.82	74.00	-23.18	peak
5	14612.000	29.57	19.90	49.47	74.00	-24.53	peak
6	17879.000	22.49	27.77	50.26	74.00	-23.74	peak

Test Mode:	802.11a 20	Frequency(MHz):	5785
Polarity:	Vertical	Test Voltage:	DC 24V



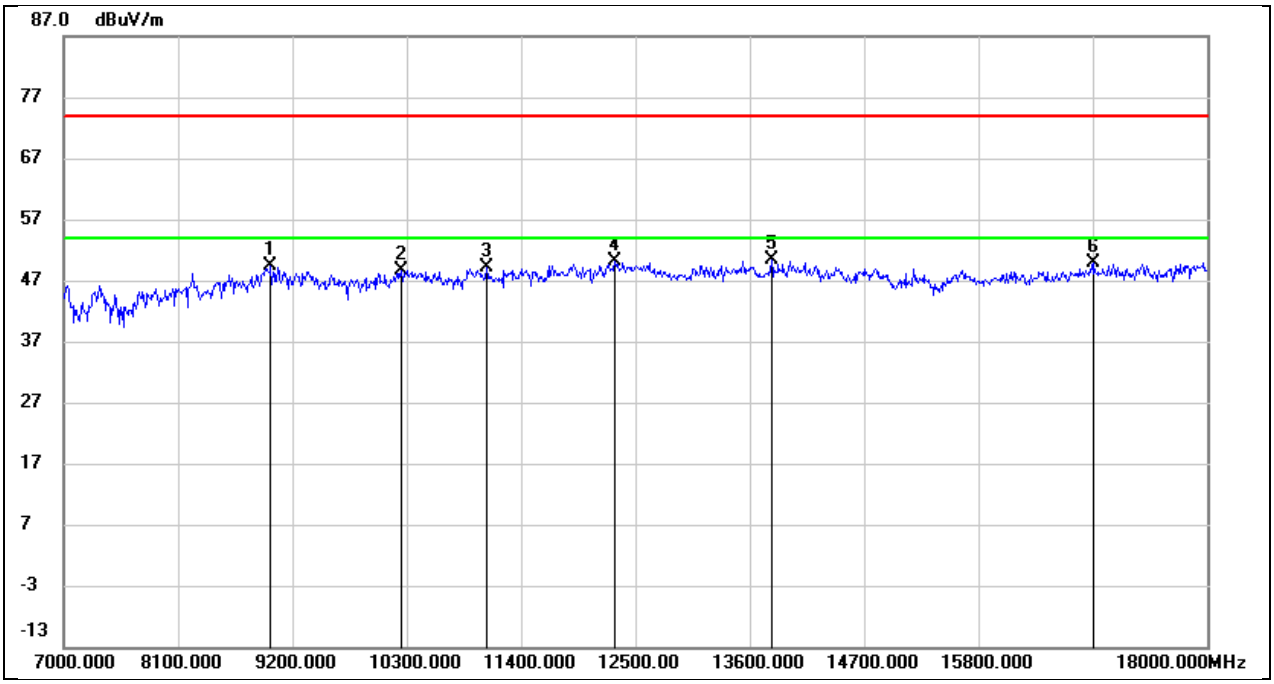
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	8969.000	37.42	11.92	49.34	74.00	-24.66	peak
2	11059.000	35.46	14.02	49.48	74.00	-24.52	peak
3	12291.000	32.84	17.30	50.14	74.00	-23.86	peak
4	12698.000	32.81	17.18	49.99	74.00	-24.01	peak
5	14436.000	29.45	20.15	49.60	74.00	-24.40	peak
6	16680.000	26.42	22.79	49.21	74.00	-24.79	peak

Test Mode:	802.11a 20	Frequency(MHz):	5825
Polarity:	Horizontal	Test Voltage:	DC 24V



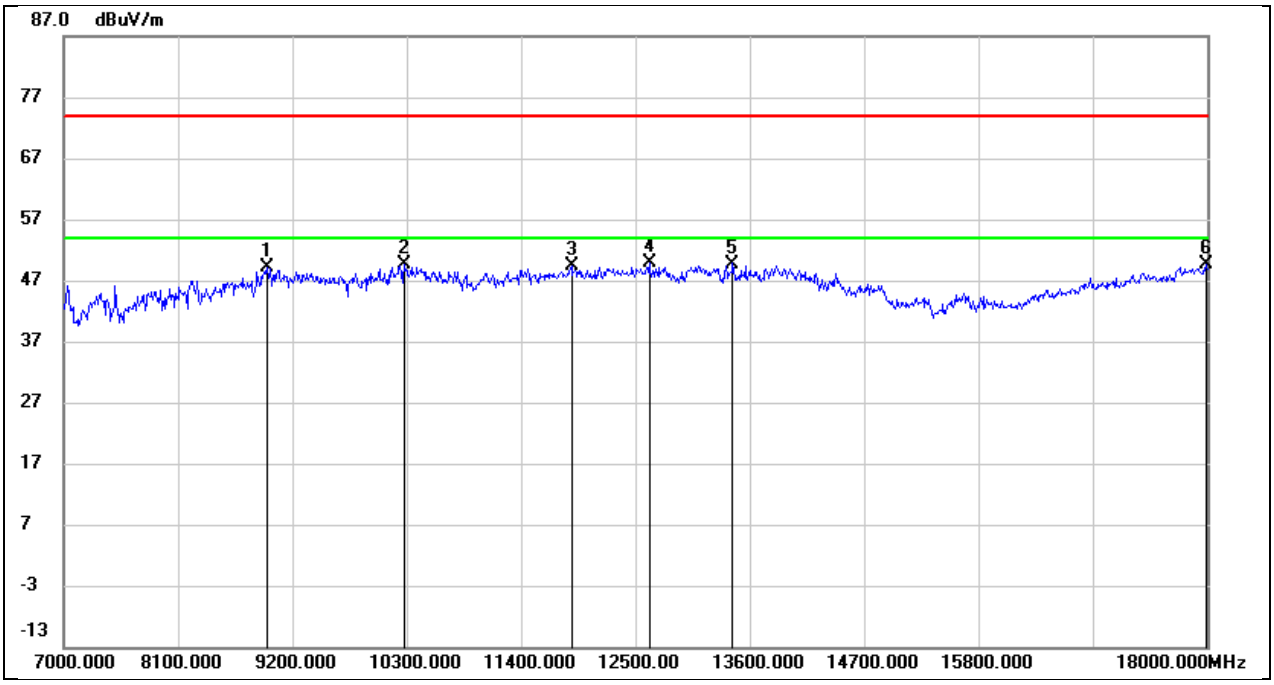
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	8958.000	38.33	11.34	49.67	74.00	-24.33	peak
2	10212.000	36.55	12.32	48.87	74.00	-25.13	peak
3	11059.000	34.79	14.90	49.69	74.00	-24.31	peak
4	12236.000	31.67	18.15	49.82	74.00	-24.18	peak
5	13380.000	29.51	20.71	50.22	74.00	-23.78	peak
6	17956.000	21.20	28.21	49.41	74.00	-24.59	peak

Test Mode:	802.11a 20	Frequency(MHz):	5825
Polarity:	Vertical	Test Voltage:	DC 24V



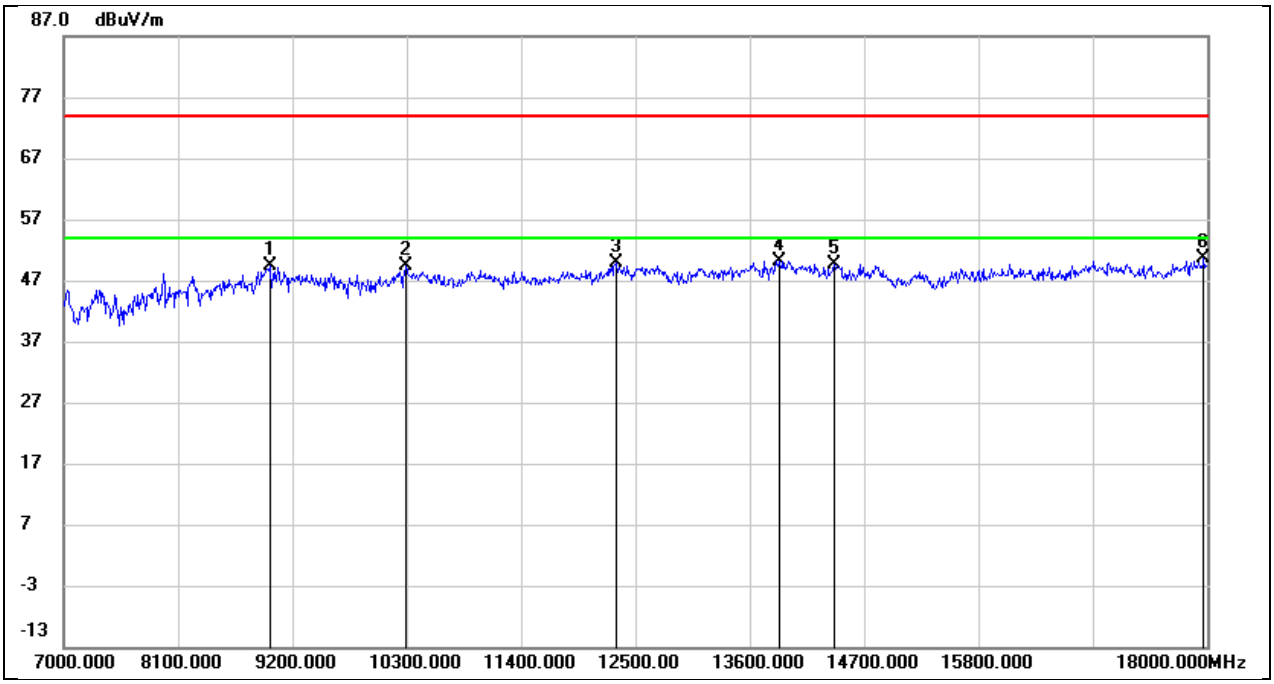
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	8991.000	37.06	12.23	49.29	74.00	-24.71	peak
2	10245.000	36.61	11.99	48.60	74.00	-25.40	peak
3	11070.000	35.16	14.02	49.18	74.00	-24.82	peak
4	12302.000	32.72	17.33	50.05	74.00	-23.95	peak
5	13809.000	29.76	20.61	50.37	74.00	-23.63	peak
6	16911.000	26.62	23.26	49.88	74.00	-24.12	peak

Test Mode:	802.11n HT20	Frequency(MHz):	5745
Polarity:	Horizontal	Test Voltage:	DC 24V



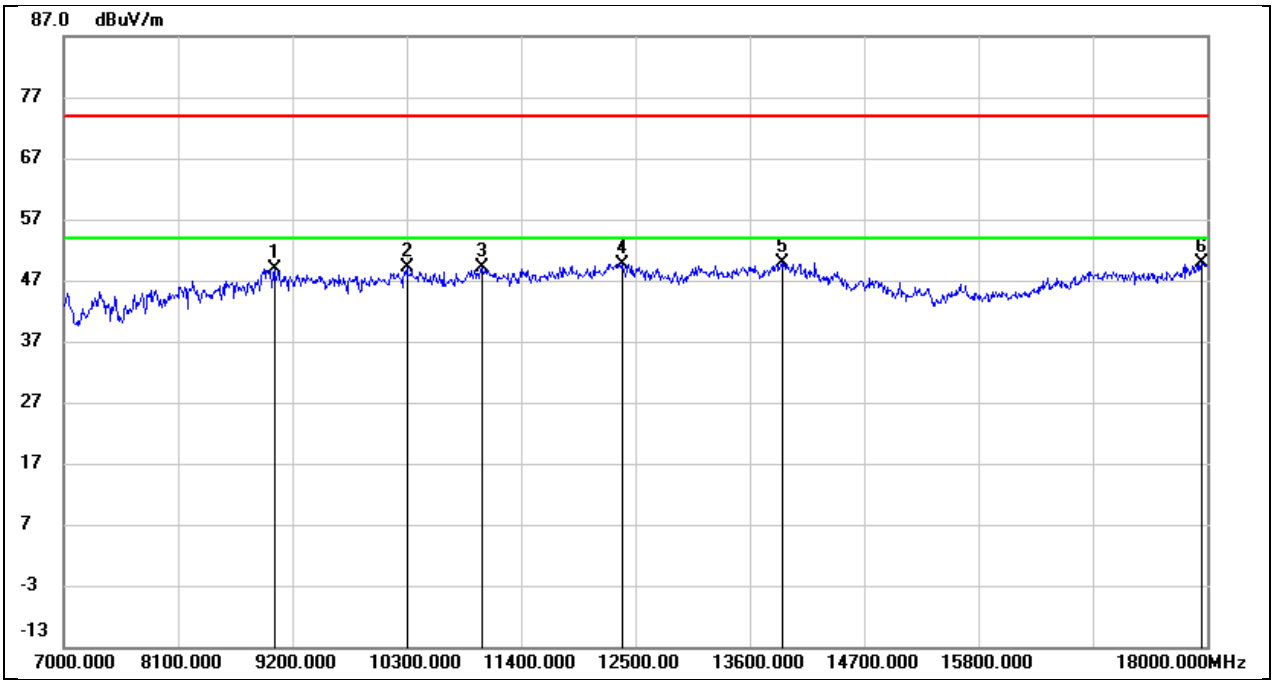
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	8958.000	37.67	11.34	49.01	74.00	-24.99	peak
2	10278.000	36.95	12.57	49.52	74.00	-24.48	peak
3	11884.000	31.82	17.47	49.29	74.00	-24.71	peak
4	12632.000	31.95	18.02	49.97	74.00	-24.03	peak
5	13435.000	28.83	20.92	49.75	74.00	-24.25	peak
6	17989.000	21.12	28.41	49.53	74.00	-24.47	peak

Test Mode:	802.11n HT20	Frequency(MHz):	5745
Polarity:	Vertical	Test Voltage:	DC 24V



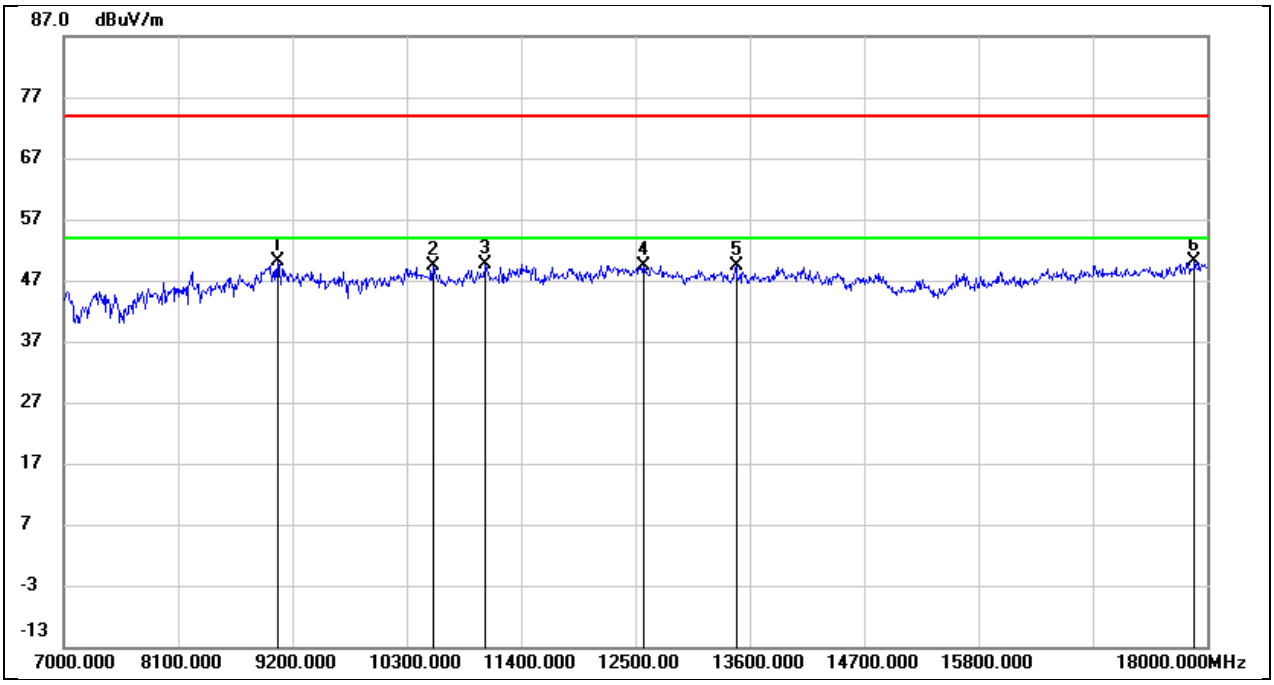
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	8980.000	37.29	12.07	49.36	74.00	-24.64	peak
2	10289.000	37.20	12.20	49.40	74.00	-24.60	peak
3	12313.000	32.53	17.36	49.89	74.00	-24.11	peak
4	13886.000	29.48	20.71	50.19	74.00	-23.81	peak
5	14414.000	29.50	20.18	49.68	74.00	-24.32	peak
6	17967.000	24.34	26.22	50.56	74.00	-23.44	peak

Test Mode:	802.11n HT20	Frequency(MHz):	5785
Polarity:	Horizontal	Test Voltage:	DC 24V



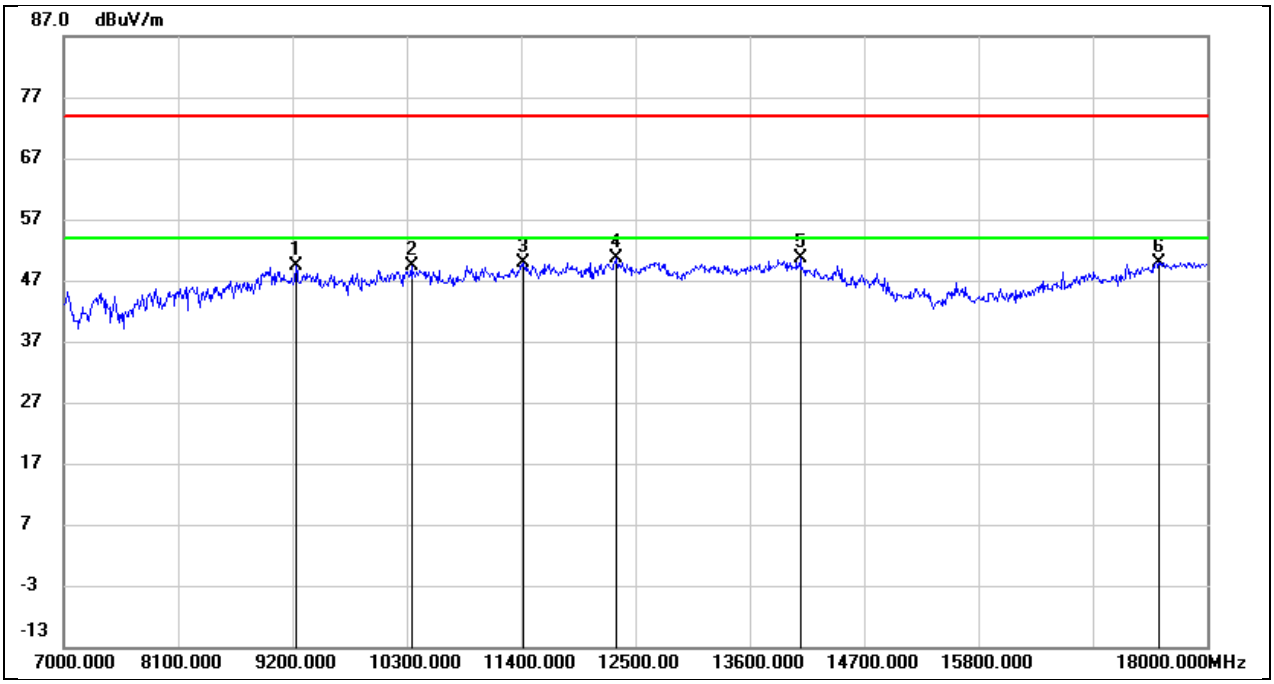
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	9024.000	37.16	11.75	48.91	74.00	-25.09	peak
2	10300.000	36.41	12.64	49.05	74.00	-24.95	peak
3	11026.000	34.32	14.84	49.16	74.00	-24.84	peak
4	12368.000	31.18	18.47	49.65	74.00	-24.35	peak
5	13919.000	27.55	22.36	49.91	74.00	-24.09	peak
6	17945.000	21.84	28.15	49.99	74.00	-24.01	peak

Test Mode:	802.11n HT20	Frequency(MHz):	5785
Polarity:	Vertical	Test Voltage:	DC 24V



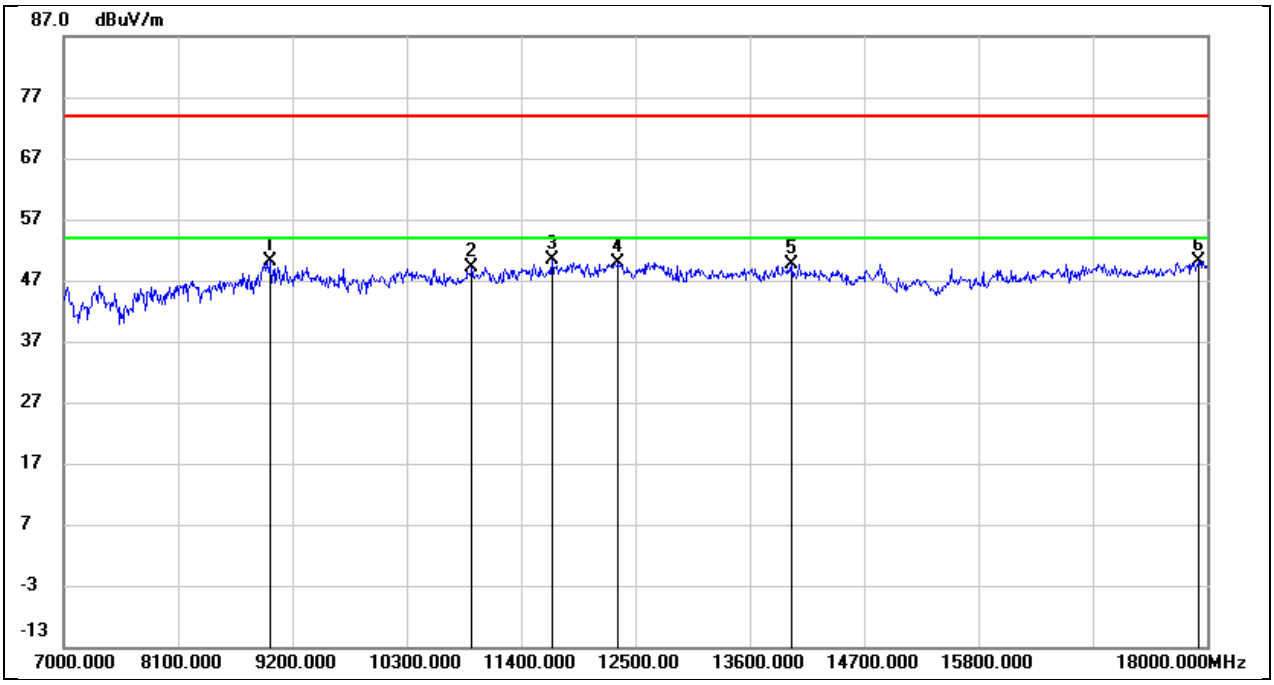
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	9057.000	38.42	11.81	50.23	74.00	-23.77	peak
2	10553.000	36.23	13.10	49.33	74.00	-24.67	peak
3	11059.000	35.71	14.02	49.73	74.00	-24.27	peak
4	12577.000	32.44	17.04	49.48	74.00	-24.52	peak
5	13468.000	30.06	19.34	49.40	74.00	-24.60	peak
6	17879.000	23.93	26.10	50.03	74.00	-23.97	peak

Test Mode:	802.11n HT20	Frequency(MHz):	5825
Polarity:	Horizontal	Test Voltage:	DC 24V



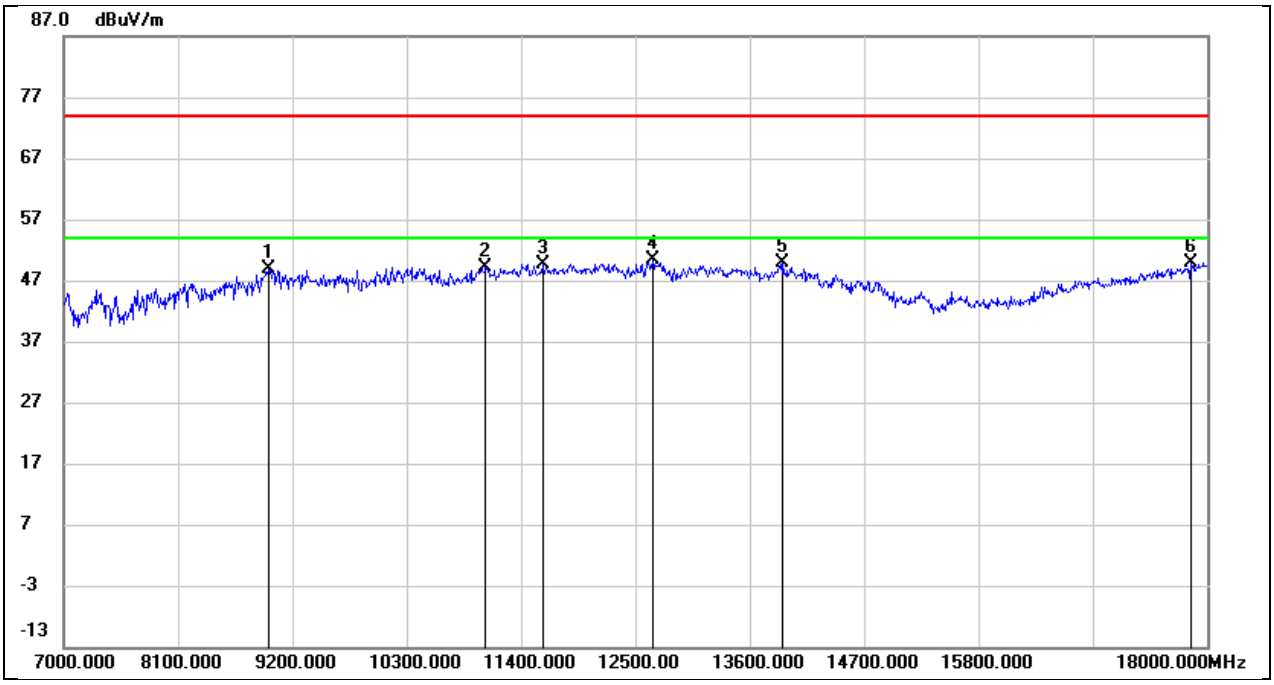
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	9233.000	39.20	10.24	49.44	74.00	-24.56	peak
2	10344.000	36.47	12.81	49.28	74.00	-24.72	peak
3	11422.000	33.51	16.37	49.88	74.00	-24.12	peak
4	12313.000	32.19	18.34	50.53	74.00	-23.47	peak
5	14084.000	28.40	22.20	50.60	74.00	-23.40	peak
6	17538.000	25.50	24.36	49.86	74.00	-24.14	peak

Test Mode:	802.11n HT20	Frequency(MHz):	5825
Polarity:	Vertical	Test Voltage:	DC 24V



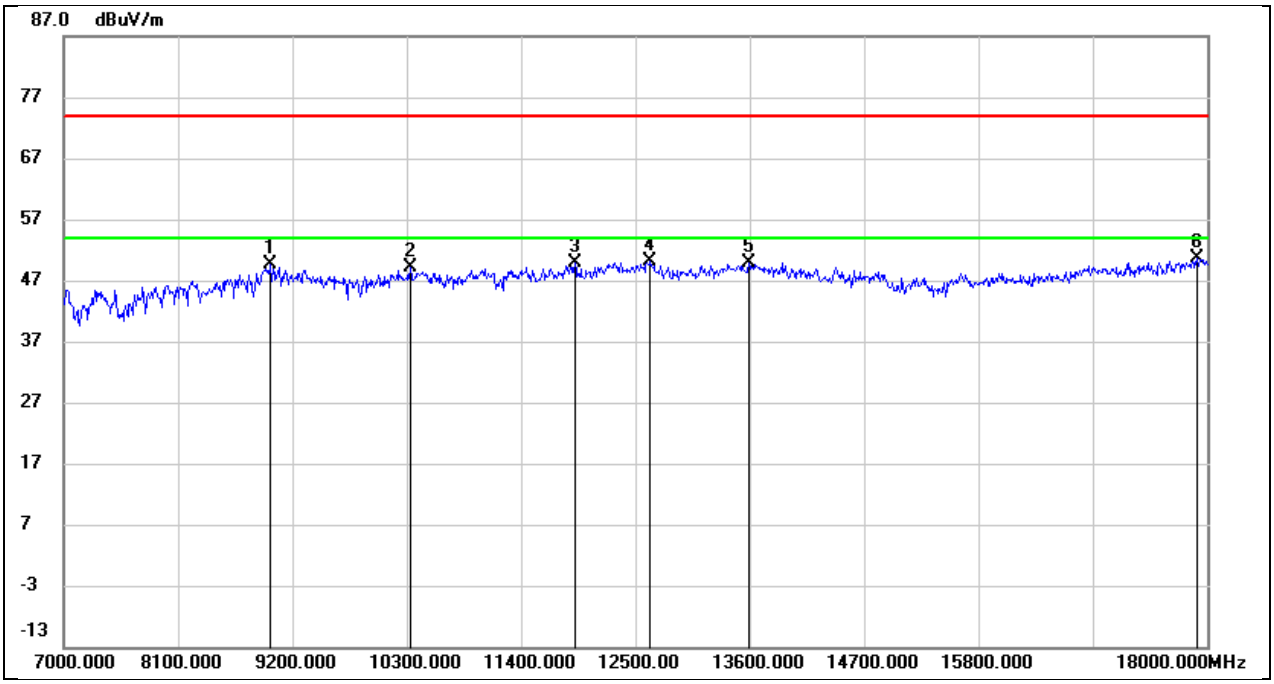
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	8980.000	37.94	12.07	50.01	74.00	-23.99	peak
2	10927.000	35.48	13.67	49.15	74.00	-24.85	peak
3	11697.000	34.83	15.53	50.36	74.00	-23.64	peak
4	12335.000	32.54	17.43	49.97	74.00	-24.03	peak
5	14007.000	28.79	20.85	49.64	74.00	-24.36	peak
6	17923.000	24.05	26.15	50.20	74.00	-23.80	peak

Test Mode:	802.11n HT40	Frequency(MHz):	5755
Polarity:	Horizontal	Test Voltage:	DC 24V



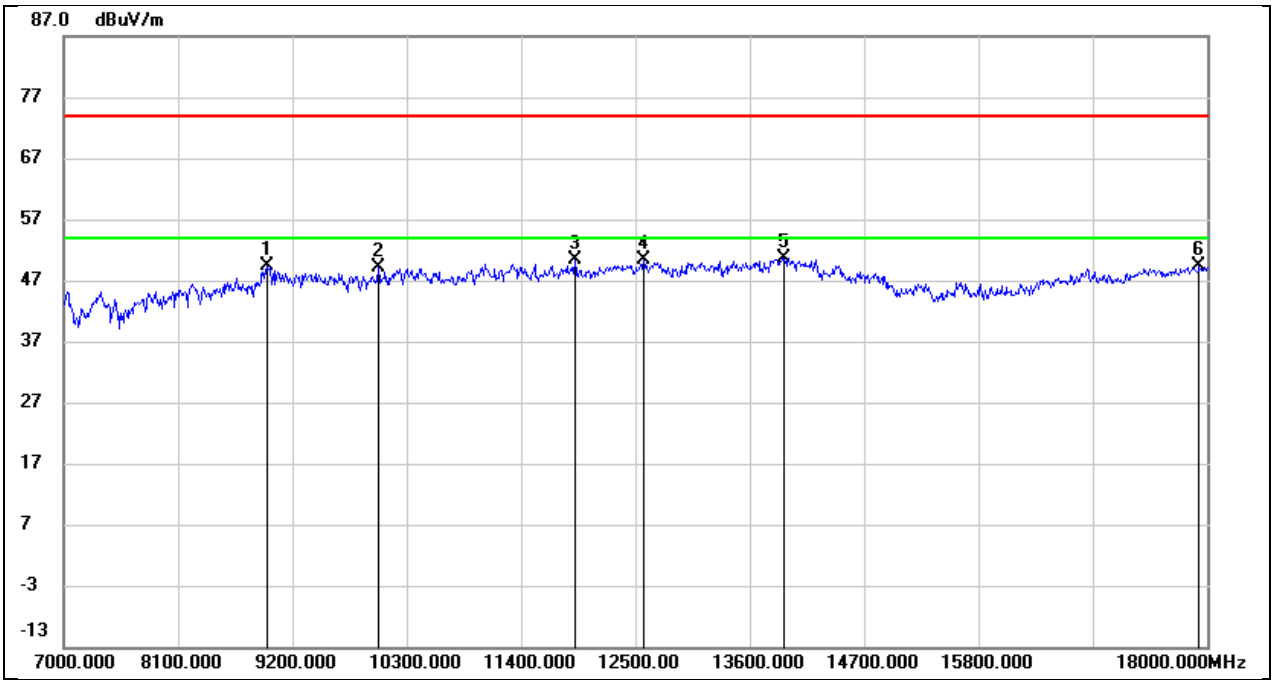
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	8969.000	37.39	11.50	48.89	74.00	-25.11	peak
2	11059.000	34.29	14.90	49.19	74.00	-24.81	peak
3	11609.000	33.05	16.68	49.73	74.00	-24.27	peak
4	12665.000	32.17	18.11	50.28	74.00	-23.72	peak
5	13919.000	27.51	22.36	49.87	74.00	-24.13	peak
6	17846.000	22.37	27.57	49.94	74.00	-24.06	peak

Test Mode:	802.11n HT40	Frequency(MHz):	5755
Polarity:	Vertical	Test Voltage:	DC 24V



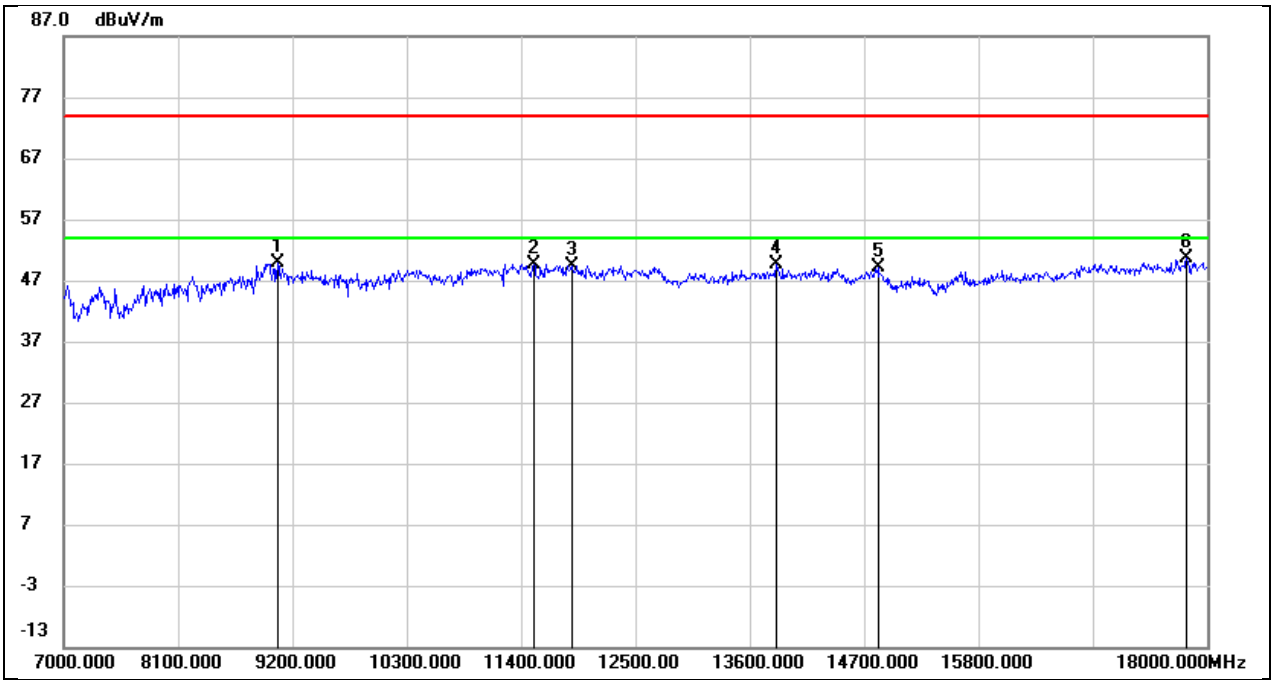
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	8991.000	37.37	12.23	49.60	74.00	-24.40	peak
2	10333.000	36.80	12.39	49.19	74.00	-24.81	peak
3	11917.000	33.37	16.45	49.82	74.00	-24.18	peak
4	12643.000	33.09	17.07	50.16	74.00	-23.84	peak
5	13589.000	30.37	19.47	49.84	74.00	-24.16	peak
6	17901.000	24.55	26.12	50.67	74.00	-23.33	peak

Test Mode:	802.11n HT40	Frequency(MHz):	5795
Polarity:	Horizontal	Test Voltage:	DC 24V



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	8958.000	38.09	11.34	49.43	74.00	-24.57	peak
2	10025.000	36.92	12.28	49.20	74.00	-24.80	peak
3	11917.000	32.66	17.61	50.27	74.00	-23.73	peak
4	12577.000	32.34	17.99	50.33	74.00	-23.67	peak
5	13930.000	28.21	22.37	50.58	74.00	-23.42	peak
6	17923.000	21.30	28.01	49.31	74.00	-24.69	peak

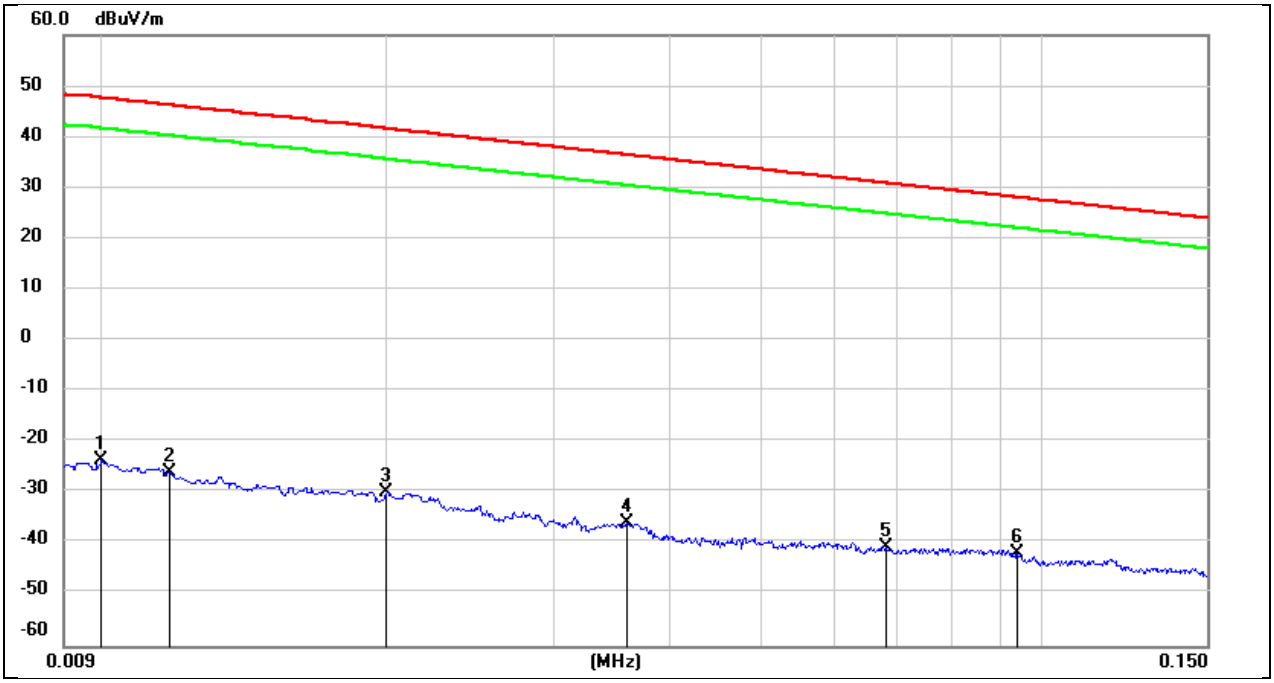
Test Mode:	802.11n HT40	Frequency(MHz):	5795
Polarity:	Vertical	Test Voltage:	DC 24V



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	9057.000	37.99	11.81	49.80	74.00	-24.20	peak
2	11521.000	34.60	15.12	49.72	74.00	-24.28	peak
3	11884.000	33.21	16.27	49.48	74.00	-24.52	peak
4	13853.000	28.88	20.67	49.55	74.00	-24.45	peak
5	14832.000	29.51	19.58	49.09	74.00	-24.91	peak
6	17802.000	24.60	25.99	50.59	74.00	-23.41	peak

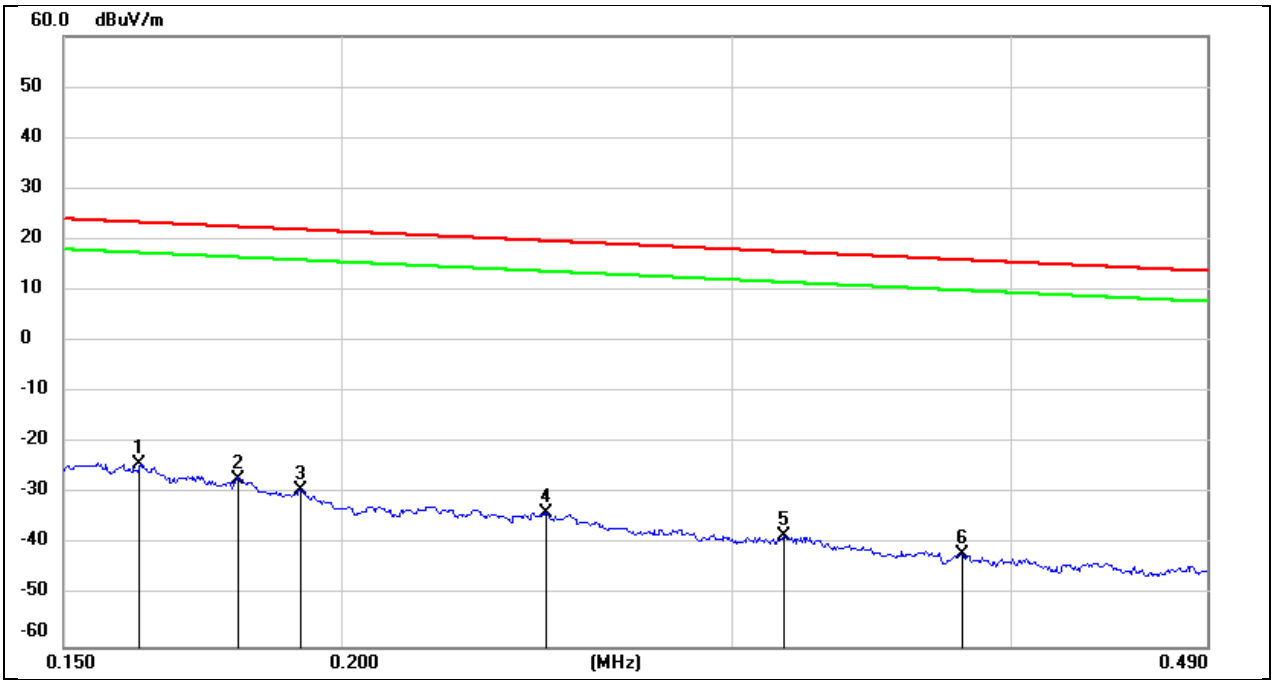
8.4. SPURIOUS EMISSIONS(9 KHZ~30 MHZ)

Test Mode:	802.11a 20	Frequency(MHz):	5745
Polarity:	Horizontal	Test Voltage:	DC 24 V



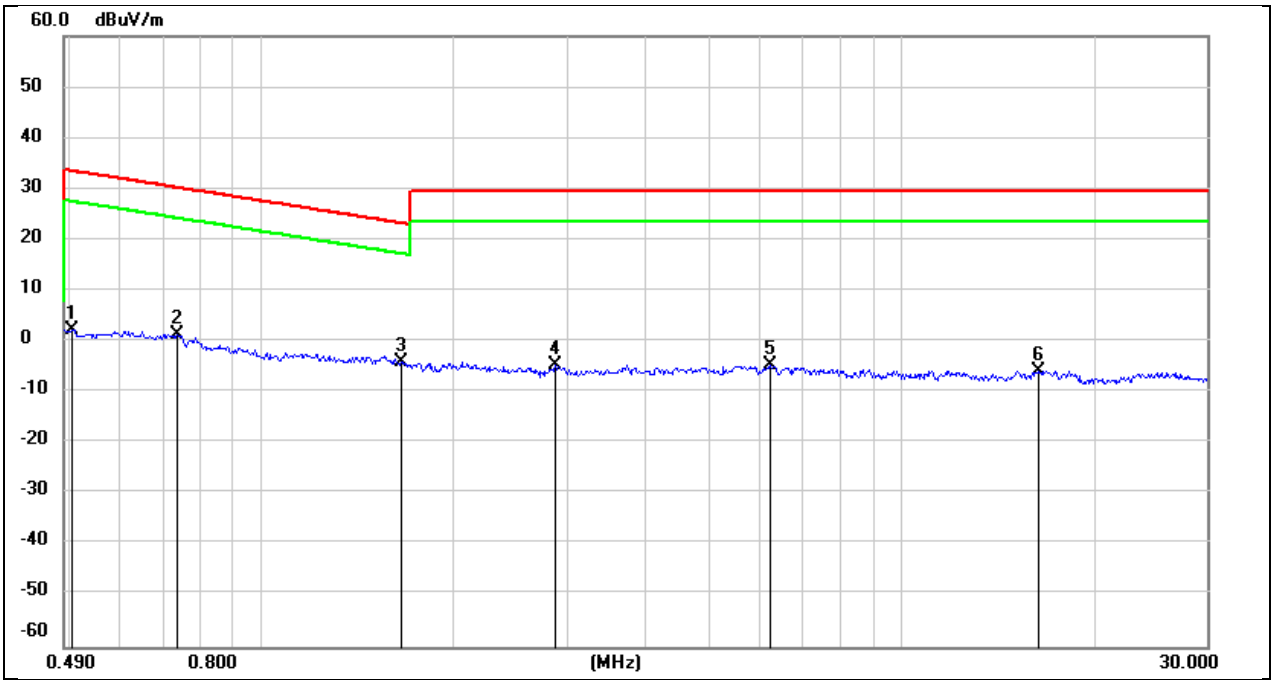
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	0.0100	77.72	-101.40	-23.68	47.60	-71.28	peak
2	0.0117	75.44	-101.39	-25.95	46.24	-72.19	peak
3	0.0200	71.36	-101.34	-29.98	41.58	-71.56	peak
4	0.0359	65.56	-101.42	-35.86	36.50	-72.36	peak
5	0.0680	61.04	-101.56	-40.52	30.95	-71.47	peak
6	0.0942	59.83	-101.75	-41.92	28.12	-70.04	peak

Test Mode:	802.11a 20	Frequency(MHz):	5745
Polarity:	Horizontal	Test Voltage:	DC 24 V



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	0.1621	77.42	-101.65	-24.23	23.41	-47.64	peak
2	0.1800	74.65	-101.68	-27.03	22.50	-49.53	peak
3	0.1917	72.54	-101.70	-29.16	21.95	-51.11	peak
4	0.2472	67.95	-101.80	-33.85	19.74	-53.59	peak
5	0.3163	63.70	-101.87	-38.17	17.60	-55.77	peak
6	0.3805	59.99	-101.94	-41.95	15.99	-57.94	peak

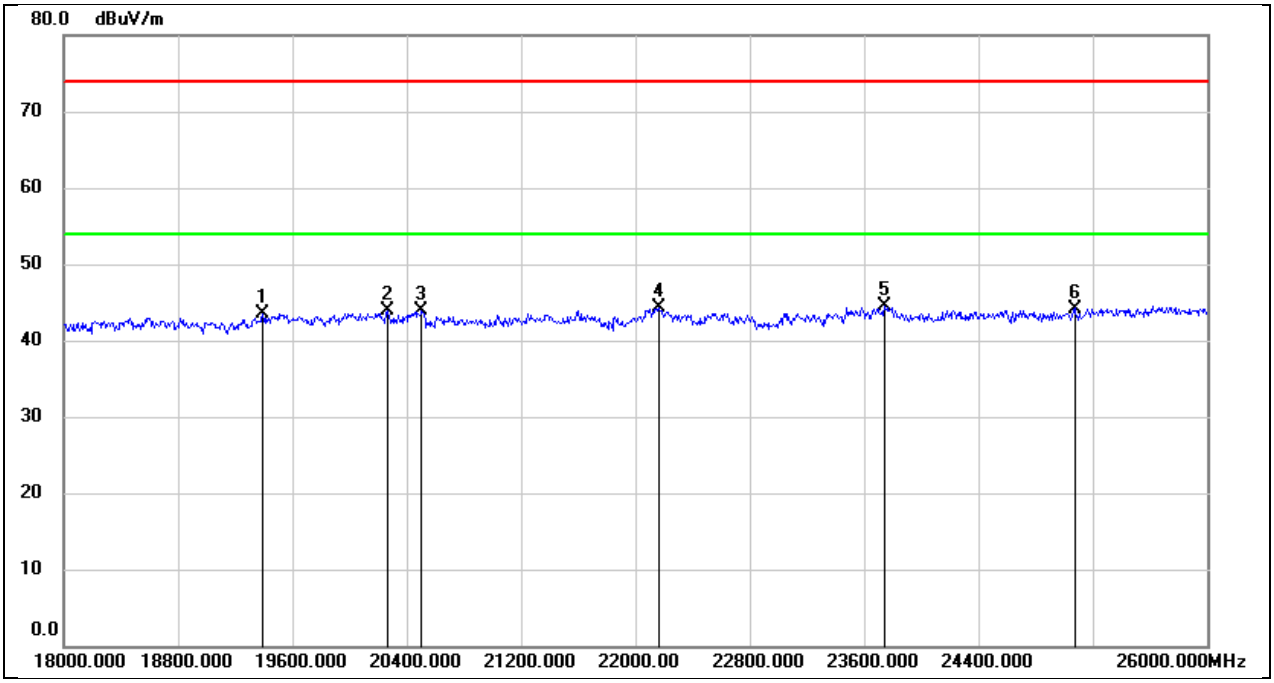
Test Mode:	802.11a 20	Frequency(MHz):	5745
Polarity:	Horizontal	Test Voltage:	DC 24 V



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	0.5039	64.43	-62.07	2.36	33.56	-31.20	peak
2	0.7364	63.37	-62.11	1.26	30.26	-29.00	peak
3	1.6491	58.05	-61.98	-3.93	23.26	-27.19	peak
4	2.8803	56.84	-61.60	-4.76	29.54	-34.30	peak
5	6.2445	56.63	-61.32	-4.69	29.54	-34.23	peak
6	16.3959	55.17	-60.96	-5.79	29.54	-35.33	peak

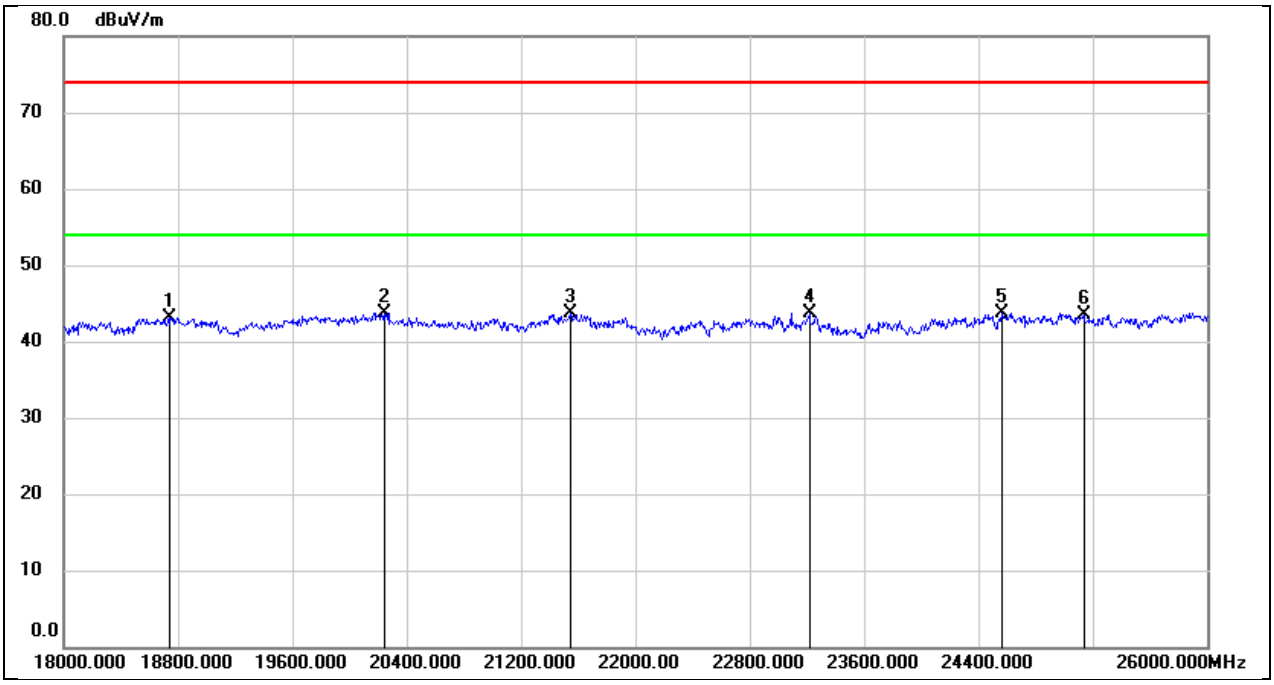
8.5. SPURIOUS EMISSIONS(18 GHZ~26 GHZ)

Test Mode:	802.11a 20	Frequency(MHz):	5745
Polarity:	Horizontal	Test Voltage:	DC 24 V



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	19392.000	49.12	-5.57	43.55	74.00	-30.45	peak
2	20264.000	49.47	-5.60	43.87	74.00	-30.13	peak
3	20504.000	49.21	-5.35	43.86	74.00	-30.14	peak
4	22160.000	48.58	-4.31	44.27	74.00	-29.73	peak
5	23744.000	47.65	-3.20	44.45	74.00	-29.55	peak
6	25072.000	46.17	-1.97	44.20	74.00	-29.80	peak

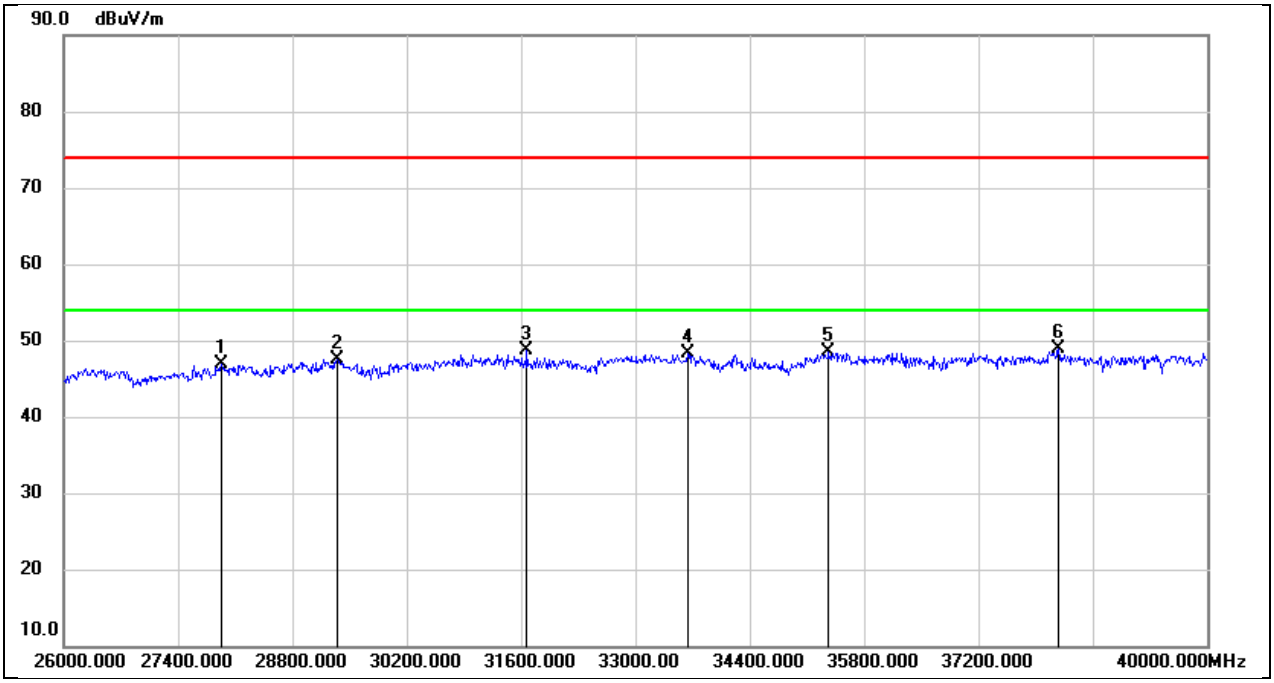
Test Mode:	802.11a 20	Frequency(MHz):	5745
Polarity:	Vertical	Test Voltage:	DC 24 V



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	18736.000	48.51	-5.41	43.10	74.00	-30.90	peak
2	20240.000	49.32	-5.61	43.71	74.00	-30.29	peak
3	21544.000	48.26	-4.63	43.63	74.00	-30.37	peak
4	23216.000	47.01	-3.38	43.63	74.00	-30.37	peak
5	24568.000	46.10	-2.33	43.77	74.00	-30.23	peak
6	25136.000	45.42	-1.87	43.55	74.00	-30.45	peak

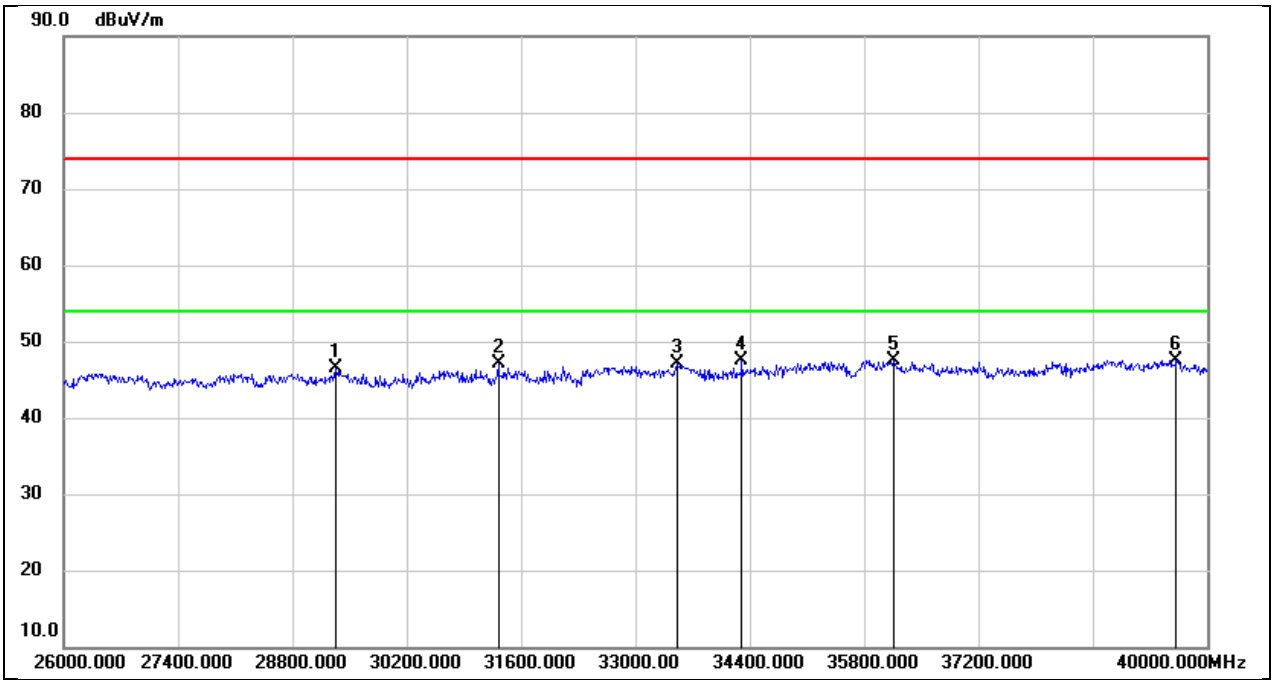
8.6. SPURIOUS EMISSIONS(26 GHZ~40 GHZ)

Test Mode:	802.11a 20	Frequency(MHz):	5745
Polarity:	Horizontal	Test Voltage:	DC 24 V



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	27932.000	50.92	-3.93	46.99	74.00	-27.01	peak
2	29346.000	48.38	-0.91	47.47	74.00	-26.53	peak
3	31670.000	49.86	-1.21	48.65	74.00	-25.35	peak
4	33644.000	47.81	0.42	48.23	74.00	-25.77	peak
5	35366.000	45.90	2.59	48.49	74.00	-25.51	peak
6	38180.000	45.14	3.69	48.83	74.00	-25.17	peak

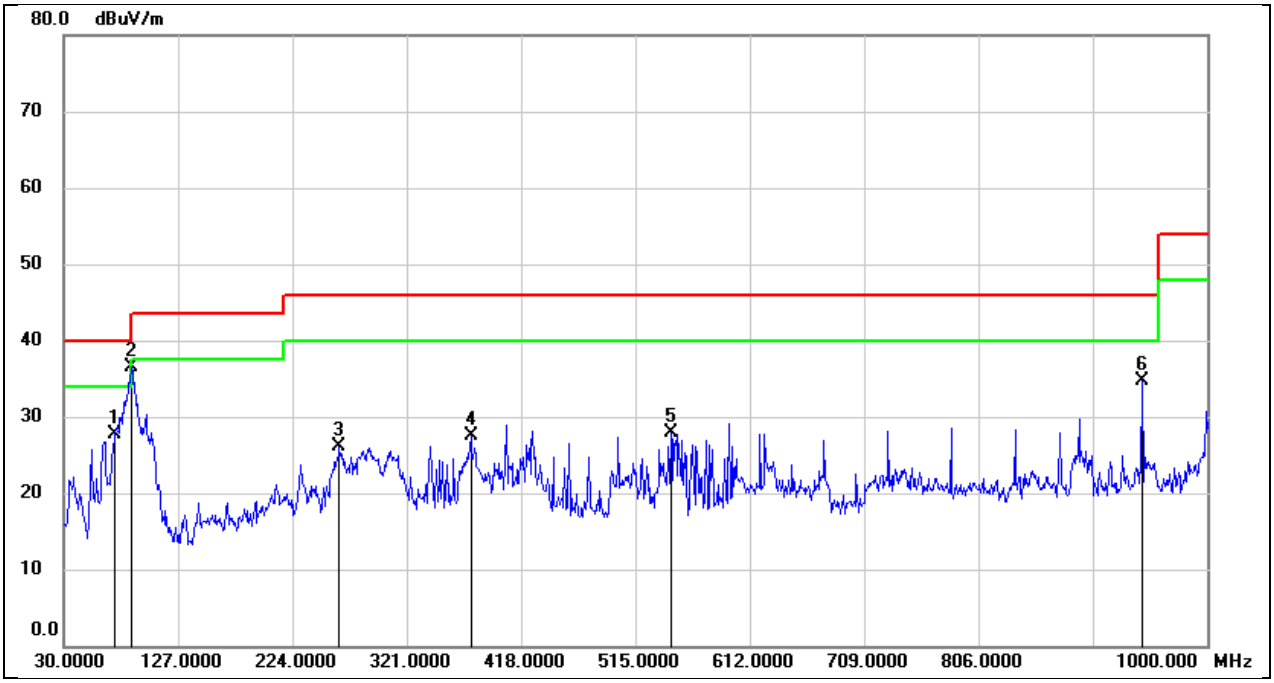
Test Mode:	802.11a 20	Frequency(MHz):	5745
Polarity:	Vertical	Test Voltage:	DC 24 V



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	29332.000	47.38	-0.93	46.45	74.00	-27.55	peak
2	31320.000	48.11	-0.93	47.18	74.00	-26.82	peak
3	33504.000	46.48	0.58	47.06	74.00	-26.94	peak
4	34302.000	46.45	1.10	47.55	74.00	-26.45	peak
5	36164.000	44.06	3.52	47.58	74.00	-26.42	peak
6	39622.000	42.65	4.92	47.57	74.00	-26.43	peak

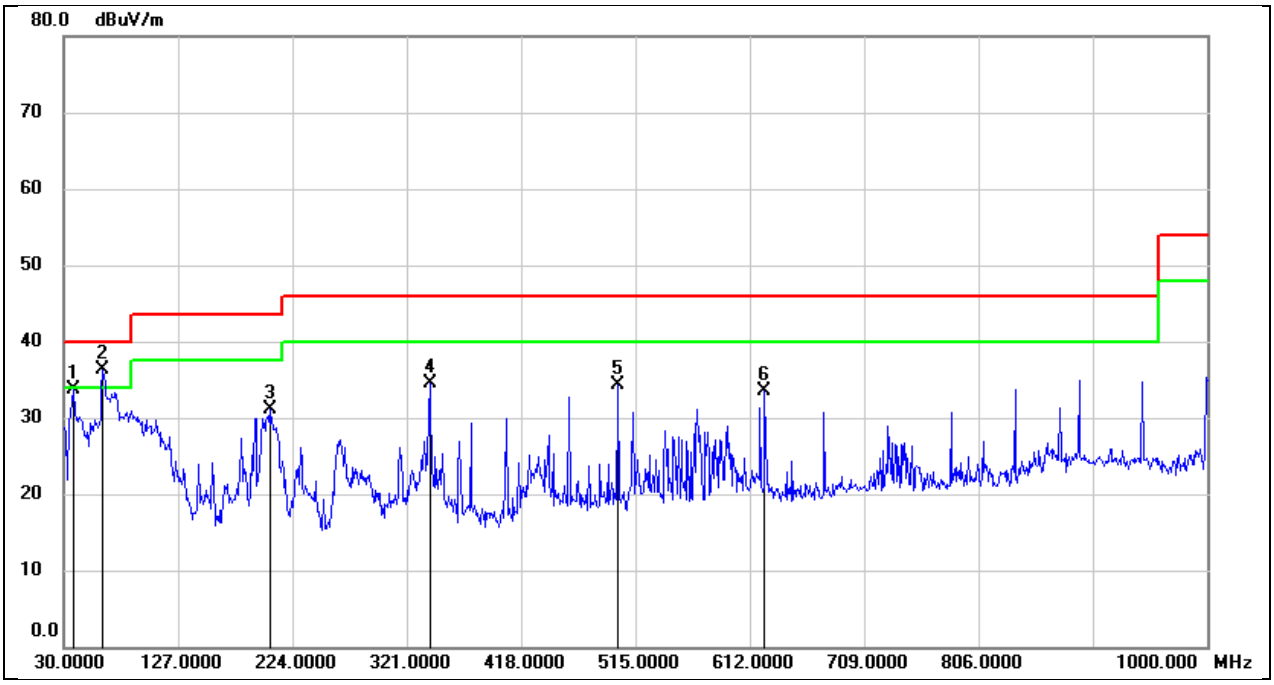
8.7. SPURIOUS EMISSIONS(30 MHZ~1 GHZ)

Test Mode:	802.11a 20	Frequency(MHz):	5180
Polarity:	Horizontal	Test Voltage:	DC24V



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	73.6500	43.35	-15.71	27.64	40.00	-12.36	QP
2	87.2300	53.22	-16.77	36.45	40.00	-3.55	QP
3	263.7700	39.76	-13.74	26.02	46.00	-19.98	QP
4	375.3200	37.34	-9.79	27.55	46.00	-18.45	QP
5	545.0700	35.34	-7.48	27.86	46.00	-18.14	QP
6	944.7100	36.31	-1.59	34.72	46.00	-11.28	QP

Test Mode:	802.11a 20	Frequency(MHz):	5180
Polarity:	Vertical	Test Voltage:	DC24V



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	37.7599	48.72	-15.09	33.63	40.00	-6.37	QP
2	62.9800	51.51	-15.25	36.26	40.00	-3.74	QP
3	204.6000	43.50	-12.39	31.11	43.50	-12.39	QP
4	340.4000	44.49	-9.97	34.52	46.00	-11.48	QP
5	500.4500	42.33	-8.07	34.26	46.00	-11.74	QP
6	624.6100	39.61	-6.19	33.42	46.00	-12.58	QP

9. ANTENNA REQUIREMENT

REQUIREMENT

DESCRIPTION

Pass

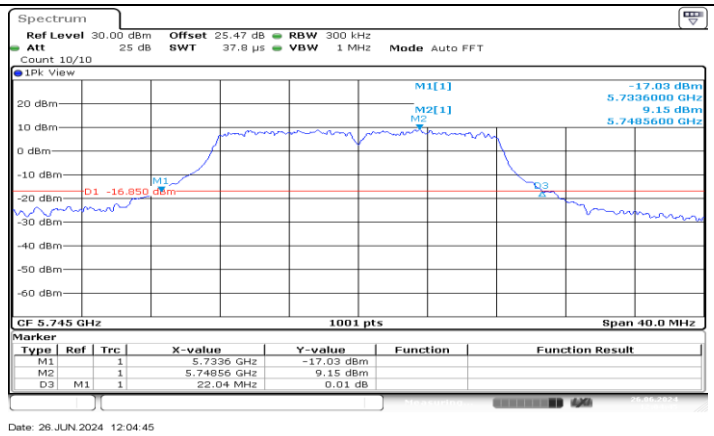
10. TEST DATA

10.1. APPENDIX A: EMISSION BANDWIDTH

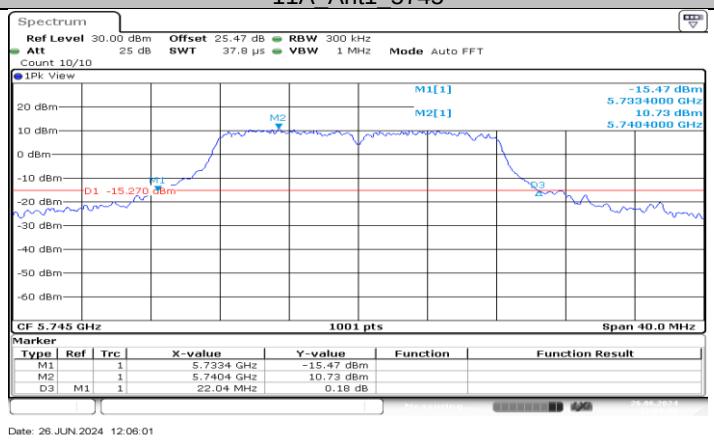
10.1.1. Test Result

Test Mode	Antenna	Frequency[MHz]	26db EBW [MHz]	FL[MHz]	FH[MHz]
11A	Ant1	5745	22.04	5733.60	5755.64
	Ant2	5745	22.04	5733.40	5755.44
	Ant1	5785	22.68	5773.36	5796.04
	Ant2	5785	22.32	5773.92	5796.24
	Ant1	5825	22.40	5813.36	5835.76
	Ant2	5825	21.92	5813.84	5835.76
11N20MIMO	Ant1	5745	22.76	5733.56	5756.32
	Ant2	5745	22.16	5733.88	5756.04
	Ant1	5785	23.16	5773.24	5796.40
	Ant2	5785	22.64	5773.76	5796.40
	Ant1	5825	22.40	5813.60	5836.00
	Ant2	5825	23.00	5813.84	5836.84
11N40MIMO	Ant1	5755	48.08	5729.72	5777.80
	Ant2	5755	46.72	5731.40	5778.12
	Ant1	5795	47.68	5770.68	5818.36
	Ant2	5795	50.72	5770.52	5821.24

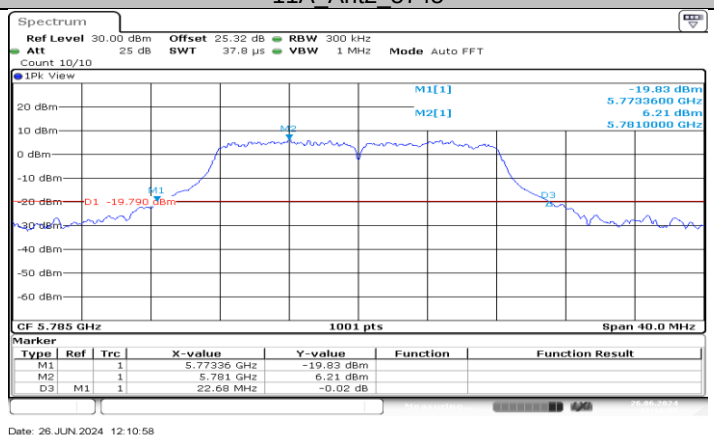
10.1.2. Test Graphs



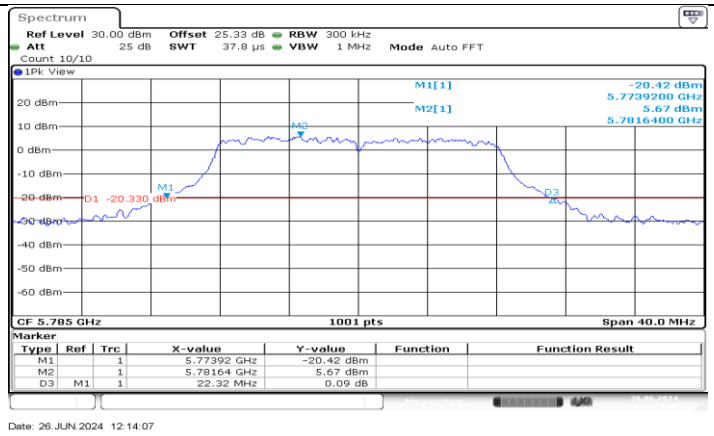
11A_Ant1_5745



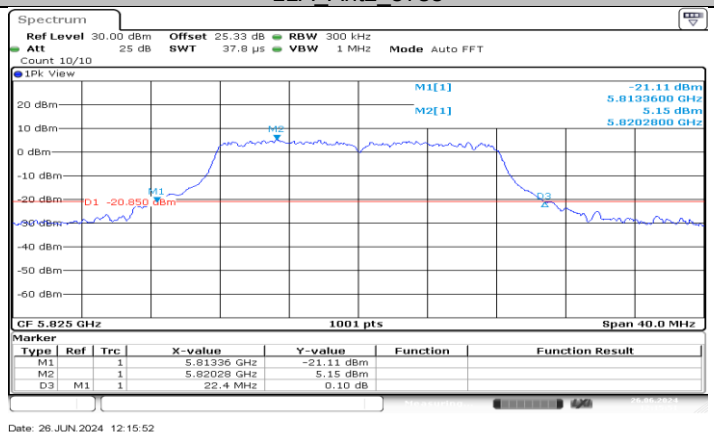
11A_Ant2_5745



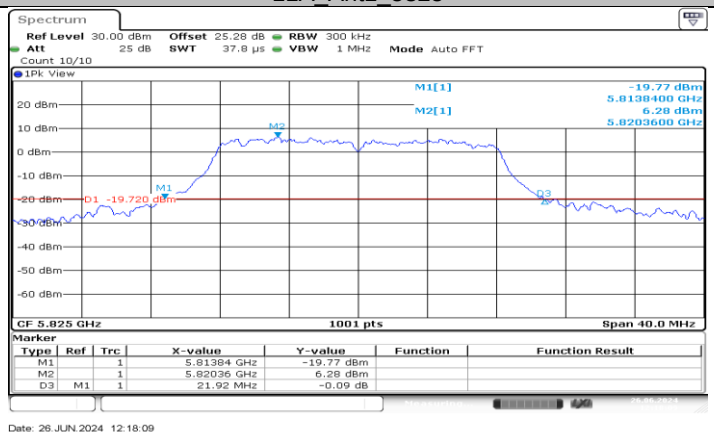
11A_Ant1_5785



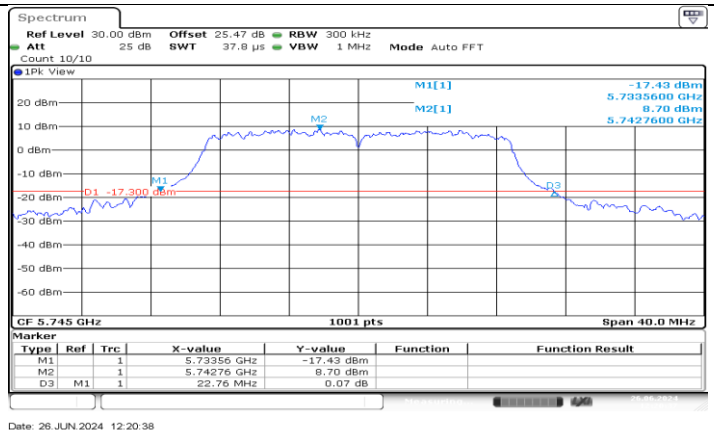
11A_Ant2_5785



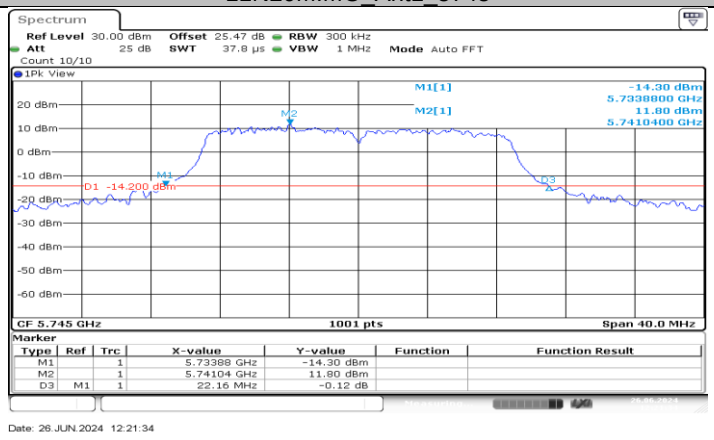
11A_Ant1_5825



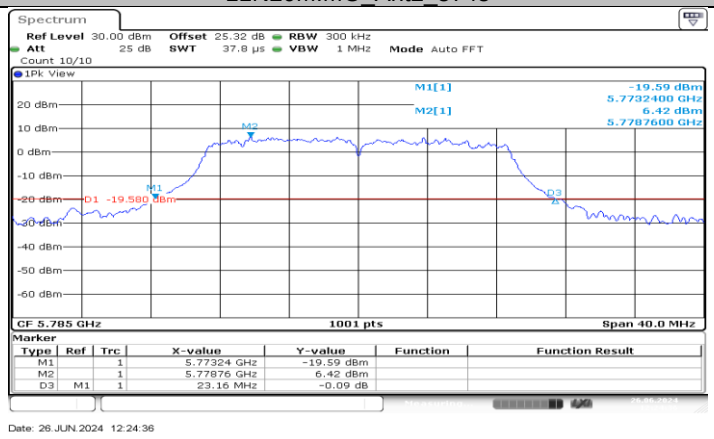
11A_Ant2_5825



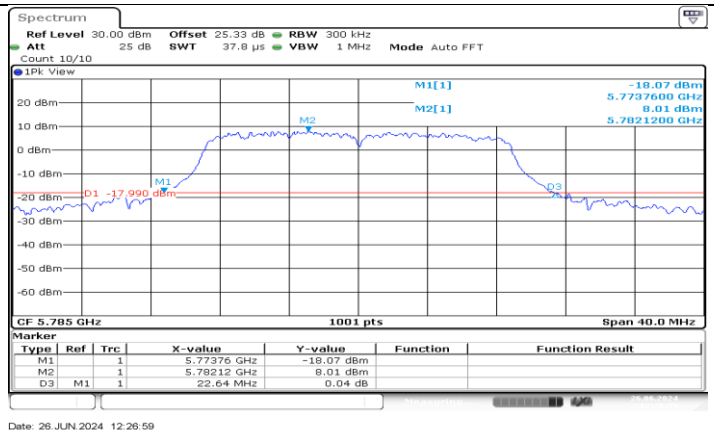
11N20MIMO_Ant1_5745



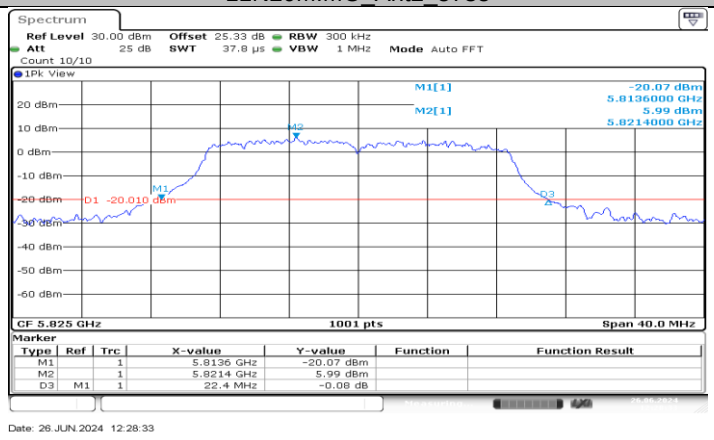
11N20MIMO_Ant2_5745



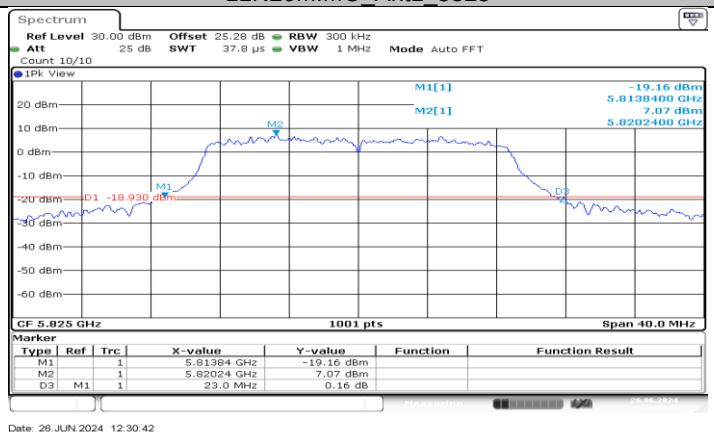
11N20MIMO_Ant1_5785



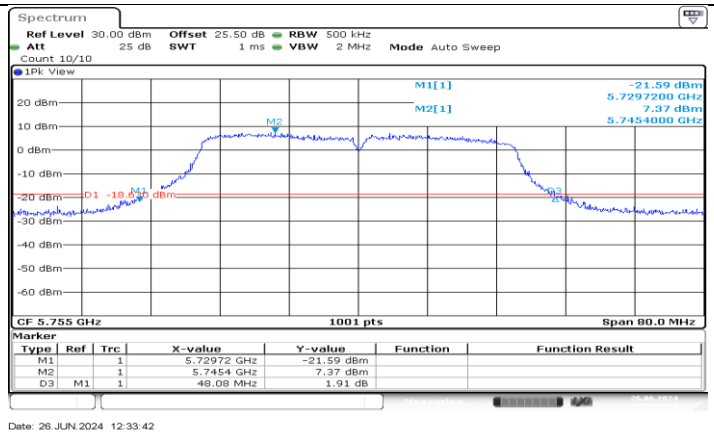
11N20MIMO_Ant2_5785



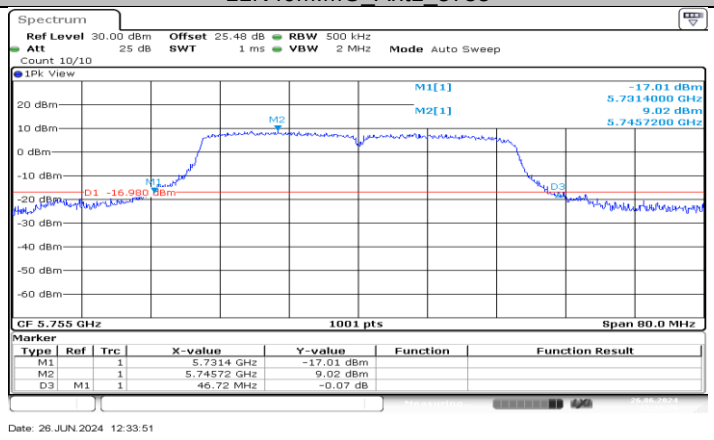
11N20MIMO_Ant1_5825



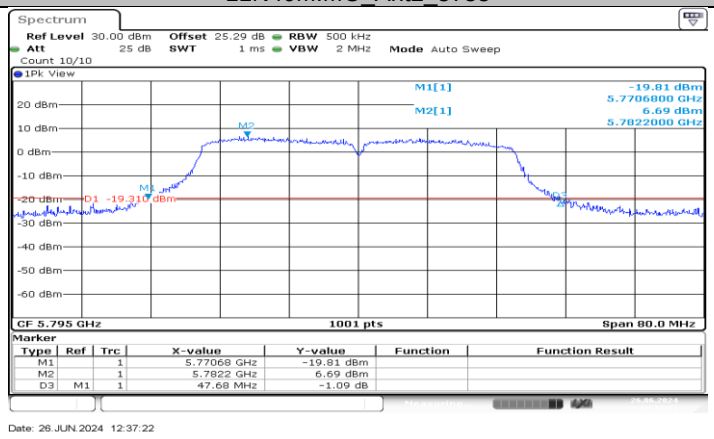
11N20MIMO_Ant2_5825



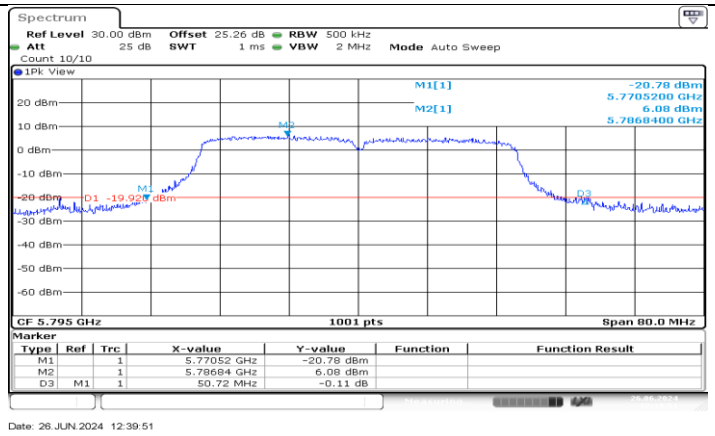
11N40MIMO_Ant1_5755



11N40MIMO_Ant2_5755



11N40MIMO_Ant1_5795



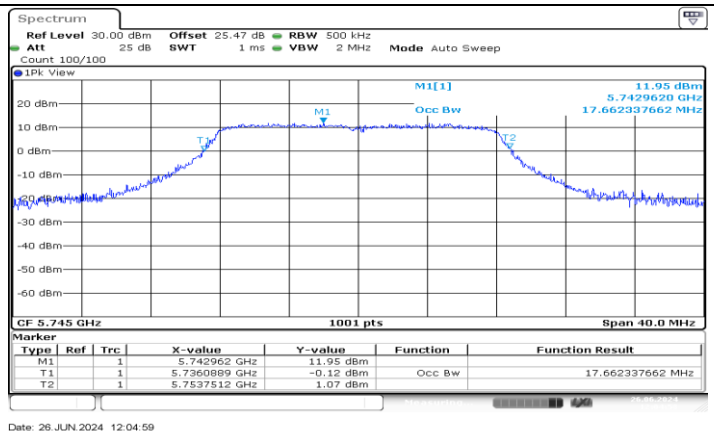
11N40MIMO_Ant2_5795

10.2. APPENDIX B: OCCUPIED CHANNEL BANDWIDTH

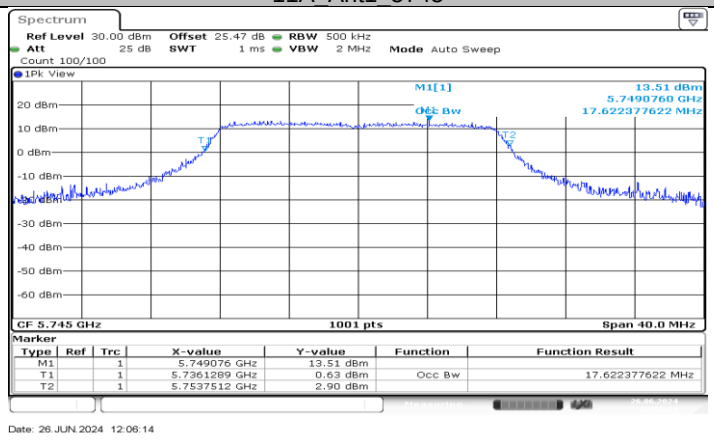
10.2.1. Test Result

Test Mode	Antenna	Frequency[MHz]	OCB [MHz]	FL[MHz]	FH[MHz]
11A	Ant1	5745	17.662	5736.0889	5753.7512
	Ant2	5745	17.622	5736.1289	5753.7512
	Ant1	5785	17.742	5776.0889	5793.8312
	Ant2	5785	17.822	5776.0090	5793.8312
	Ant1	5825	17.862	5816.0090	5833.8711
	Ant2	5825	18.821	5815.4895	5834.3107
11N20MIMO	Ant1	5745	18.581	5735.6893	5754.2707
	Ant2	5745	18.581	5735.6494	5754.2308
	Ant1	5785	18.701	5775.6094	5794.3107
	Ant2	5785	18.901	5775.4895	5794.3906
	Ant1	5825	18.901	5815.5295	5834.4306
	Ant2	5825	20.3	5814.6104	5834.9101
11N40MIMO	Ant1	5755	37.642	5735.8991	5773.5415
	Ant2	5755	37.722	5735.8192	5773.5415
	Ant1	5795	37.882	5775.8192	5813.7013
	Ant2	5795	38.761	5775.2597	5814.0210

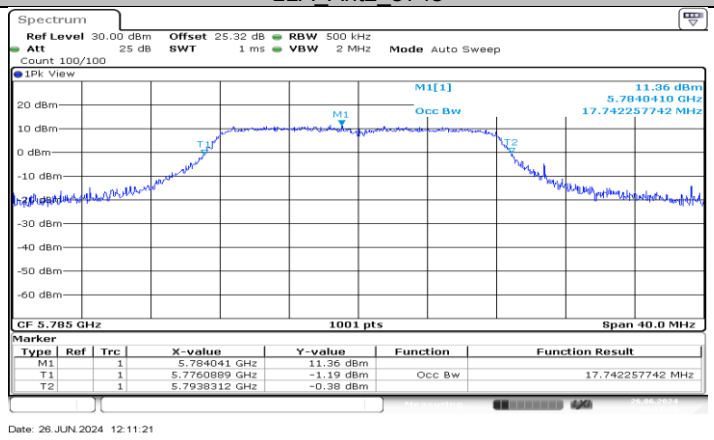
10.2.2. Test Graphs



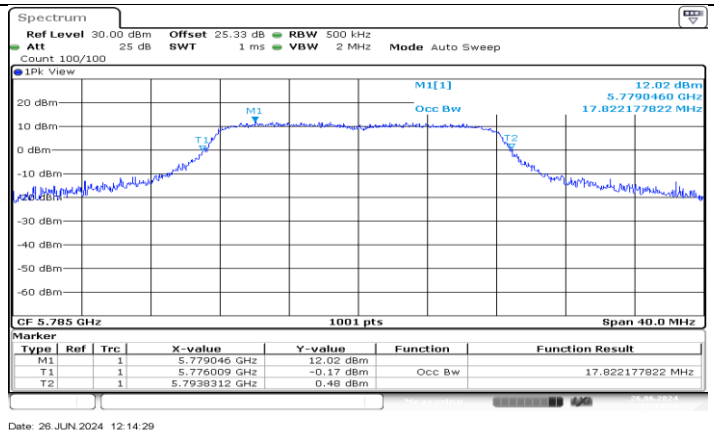
11A_Ant1_5745



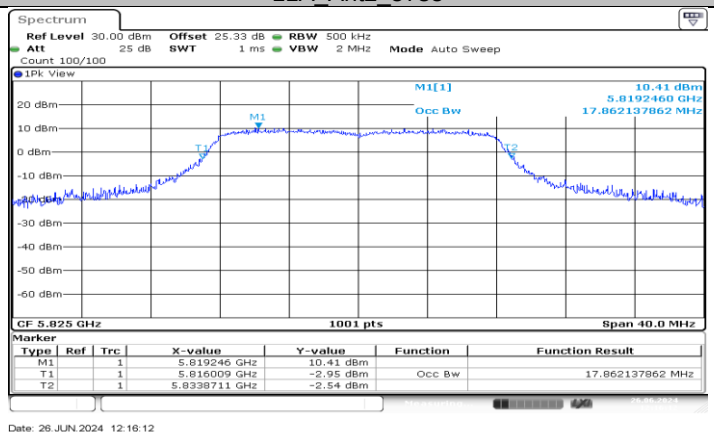
11A_Ant2_5745



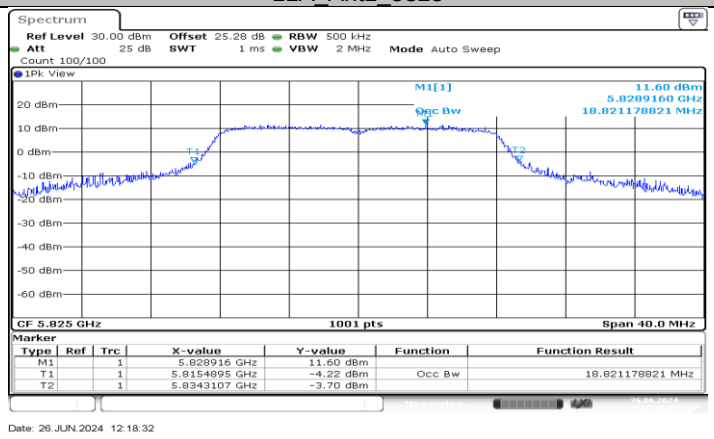
11A_Ant1_5785



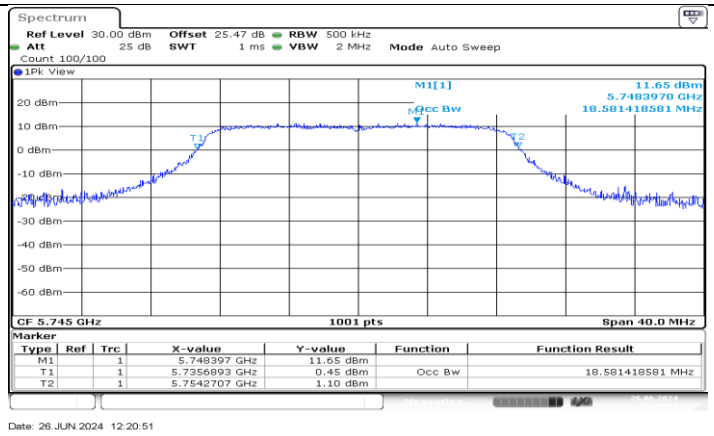
11A_Ant2_5785



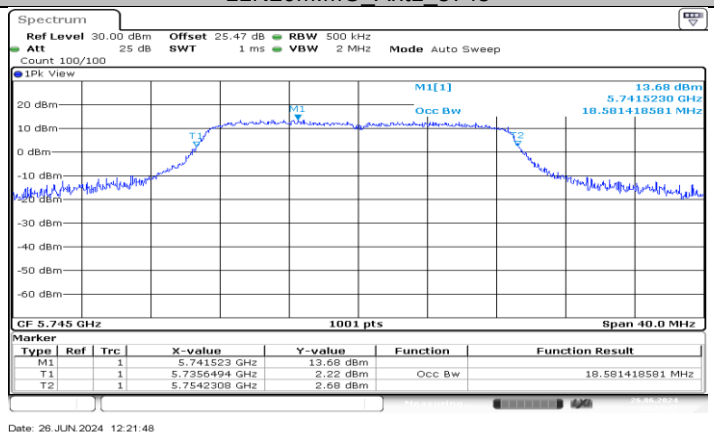
11A_Ant1_5825



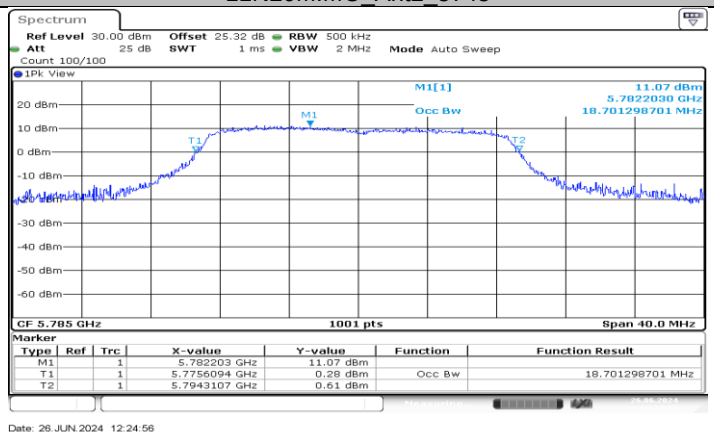
11A_Ant2_5825



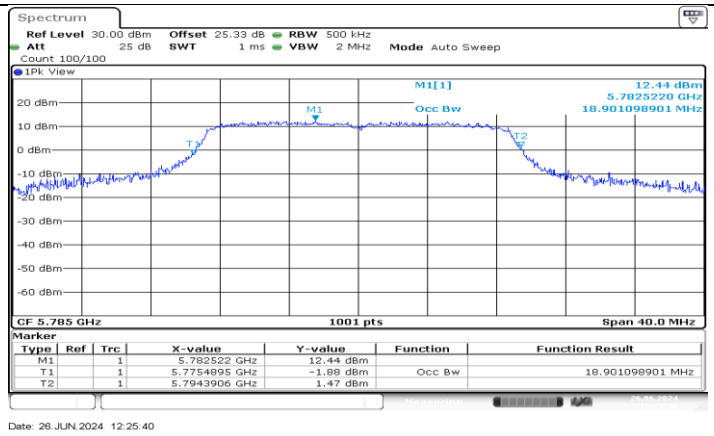
11N20MIMO_Ant1_5745



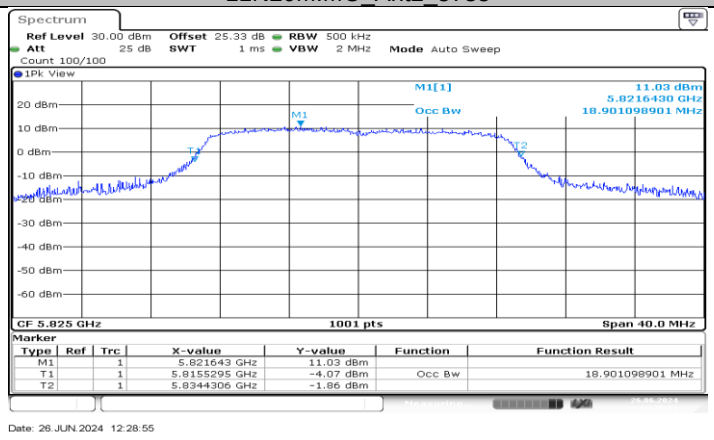
11N20MIMO_Ant2_5745



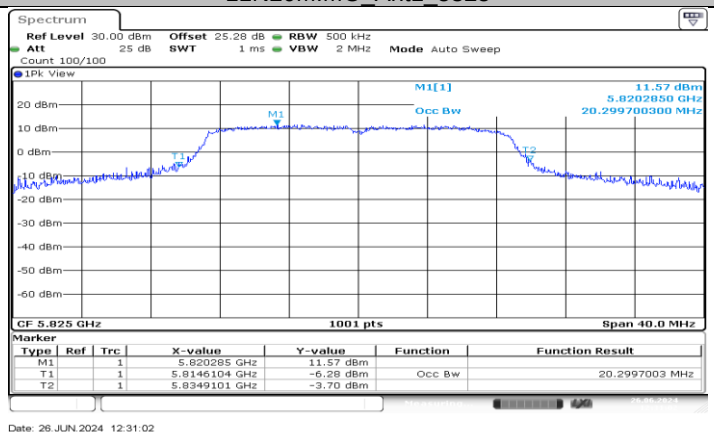
11N20MIMO_Ant1_5785



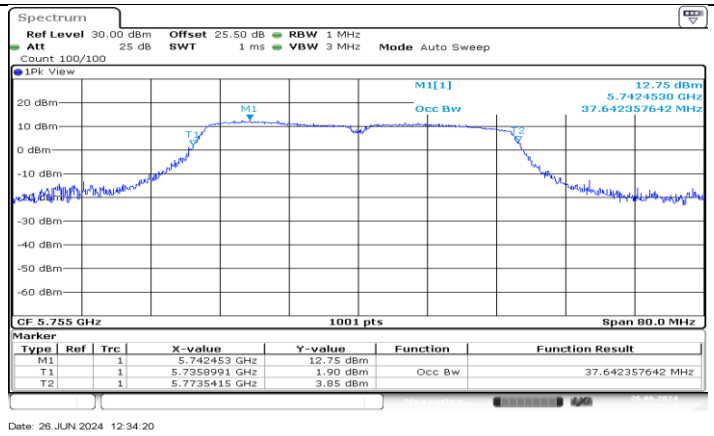
11N20MIMO_Ant2_5785



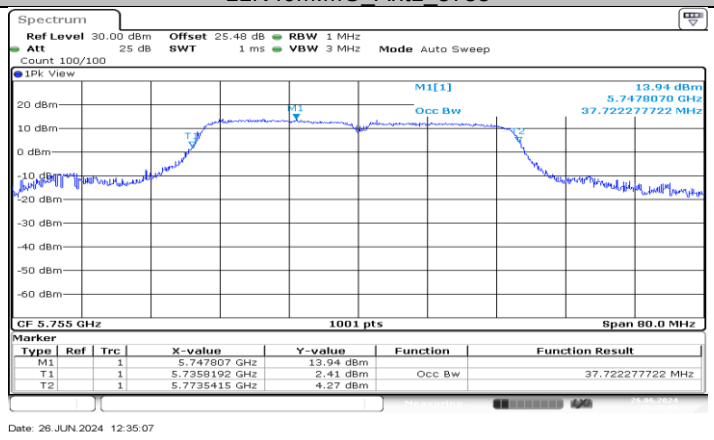
11N20MIMO_Ant1_5825



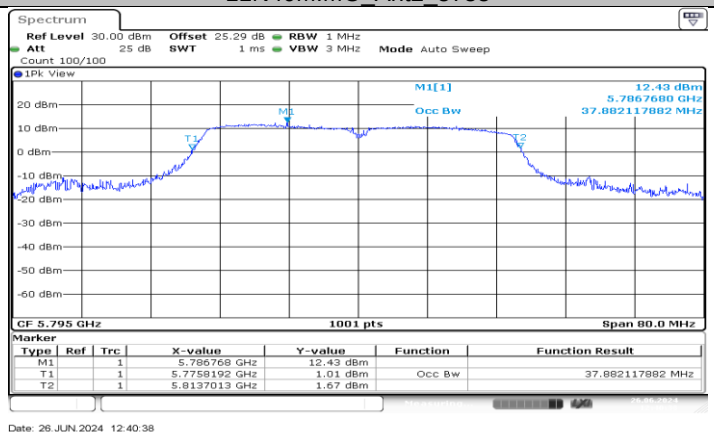
11N20MIMO_Ant2_5825



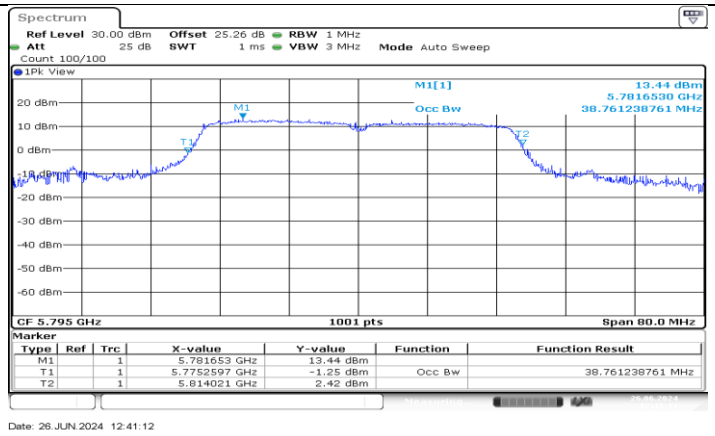
11N40MIMO_Ant1_5755



11N40MIMO_Ant2_5755



11N40MIMO_Ant1_5795



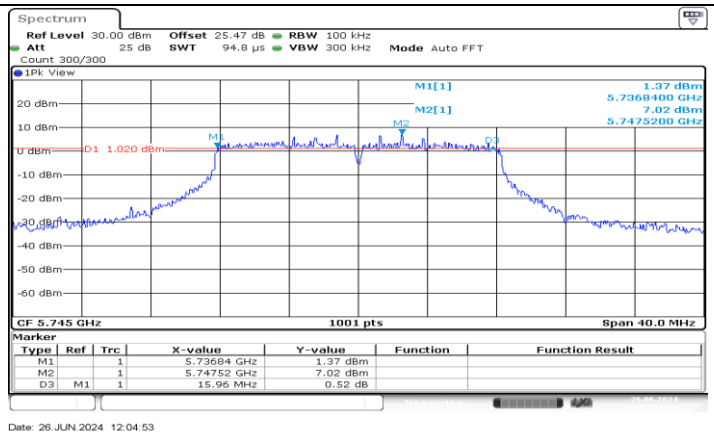
11N40MIMO_Ant2_5795

10.3. APPENDIX C: MIN EMISSION BANDWIDTH

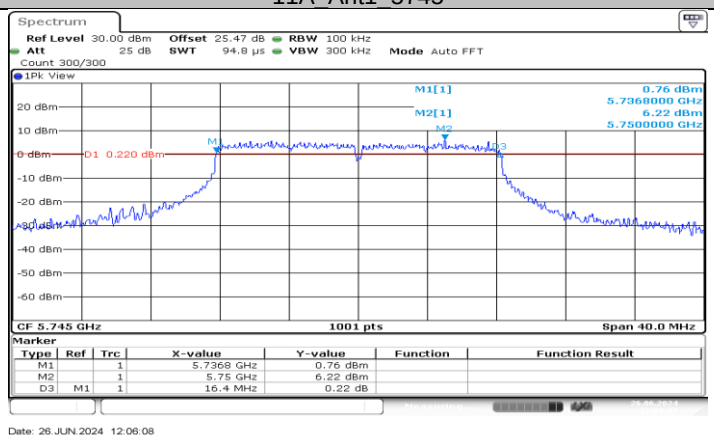
10.3.1. Test Result

Test Mode	Antenna	Frequency[MHz]	6db EBW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11A	Ant1	5745	15.96	5736.84	5752.80	≥0.5	PASS
	Ant2	5745	16.40	5736.80	5753.20	≥0.5	PASS
	Ant1	5785	16.36	5776.84	5793.20	≥0.5	PASS
	Ant2	5785	16.36	5776.84	5793.20	≥0.5	PASS
	Ant1	5825	16.32	5816.84	5833.16	≥0.5	PASS
	Ant2	5825	15.48	5817.12	5832.60	≥0.5	PASS
11N20MIMO	Ant1	5745	17.56	5736.24	5753.80	≥0.5	PASS
	Ant2	5745	16.56	5736.24	5752.80	≥0.5	PASS
	Ant1	5785	16.12	5776.48	5792.60	≥0.5	PASS
	Ant2	5785	16.04	5776.88	5792.92	≥0.5	PASS
	Ant1	5825	15.64	5816.88	5832.52	≥0.5	PASS
	Ant2	5825	15.48	5817.12	5832.60	≥0.5	PASS
11N40MIMO	Ant1	5755	35.68	5736.92	5772.60	≥0.5	PASS
	Ant2	5755	35.68	5736.92	5772.60	≥0.5	PASS
	Ant1	5795	35.36	5777.24	5812.60	≥0.5	PASS
	Ant2	5795	35.68	5776.92	5812.60	≥0.5	PASS

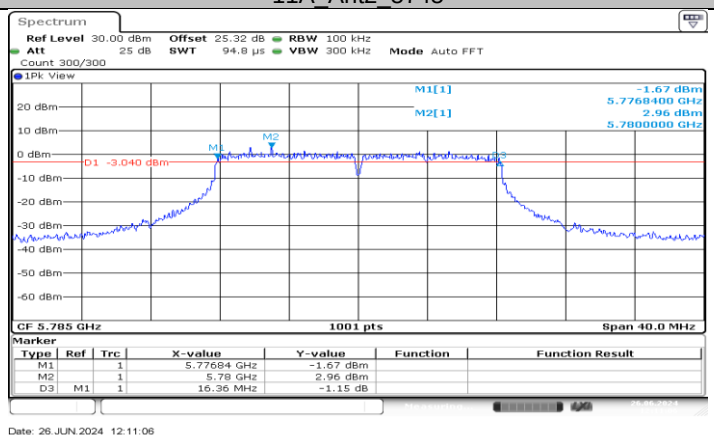
10.3.2. Test Graphs



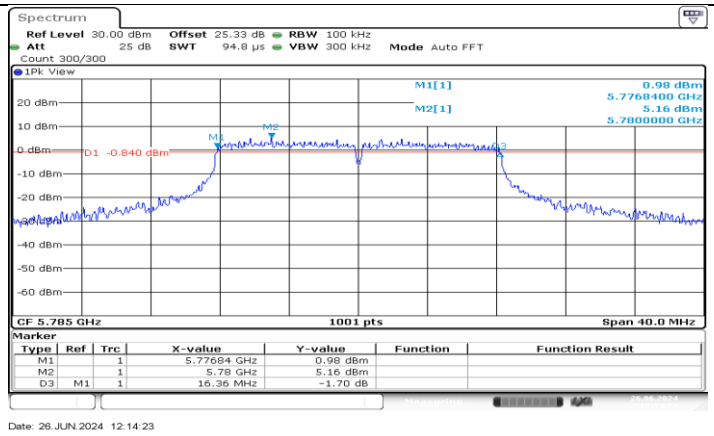
11A_Ant1_5745



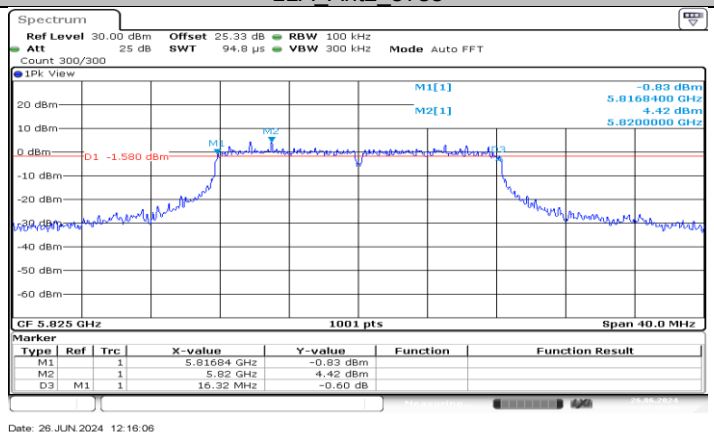
11A_Ant2_5745



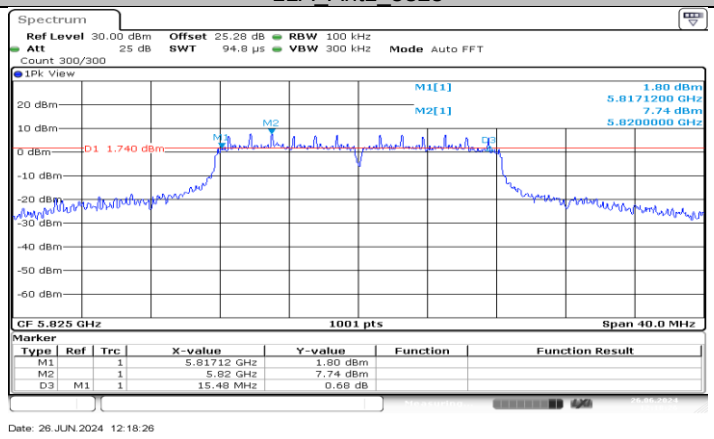
11A_Ant1_5785



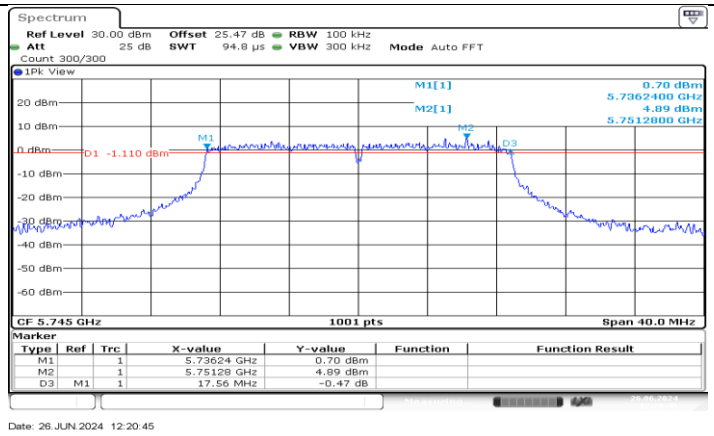
11A_Ant2_5785



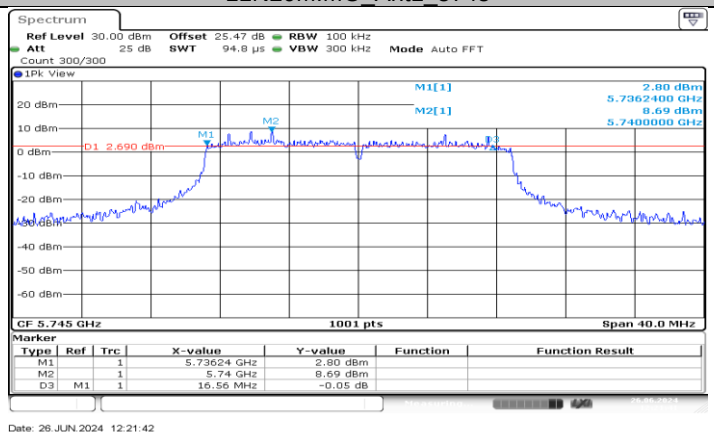
11A_Ant1_5825



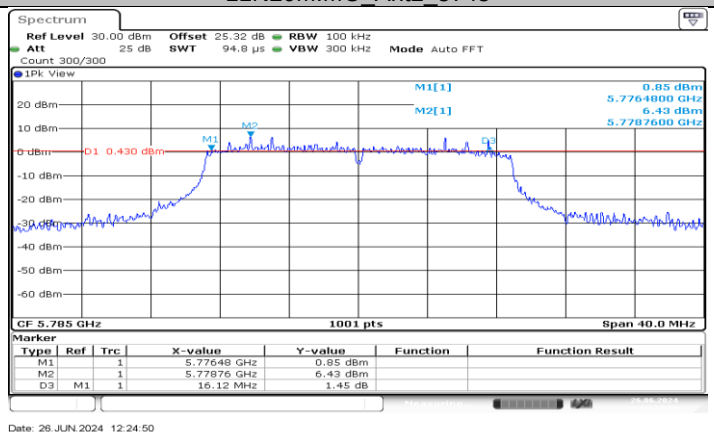
11A_Ant2_5825



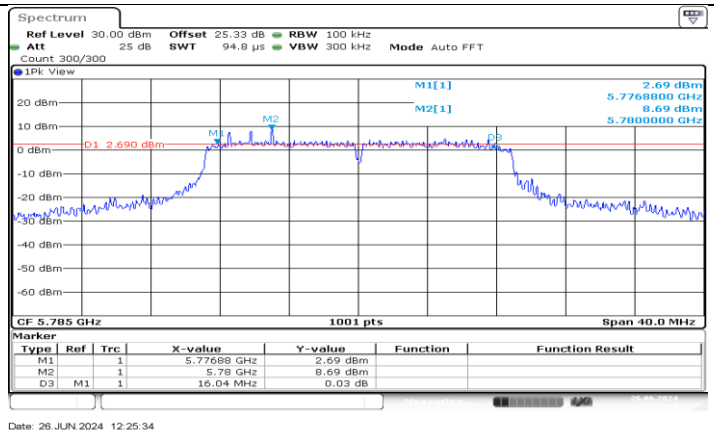
11N20MIMO_Ant1_5745



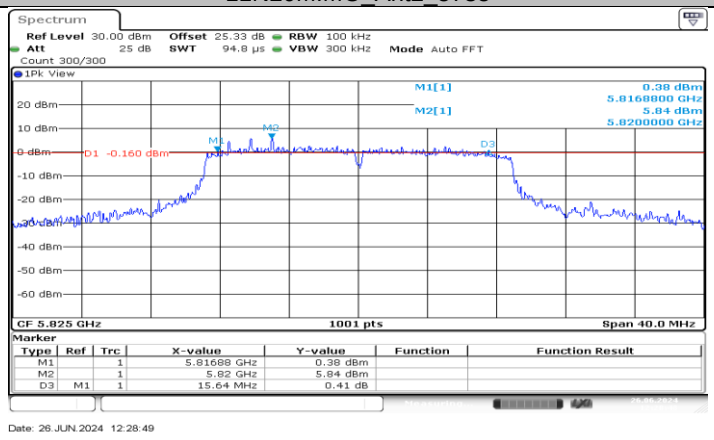
11N20MIMO_Ant2_5745



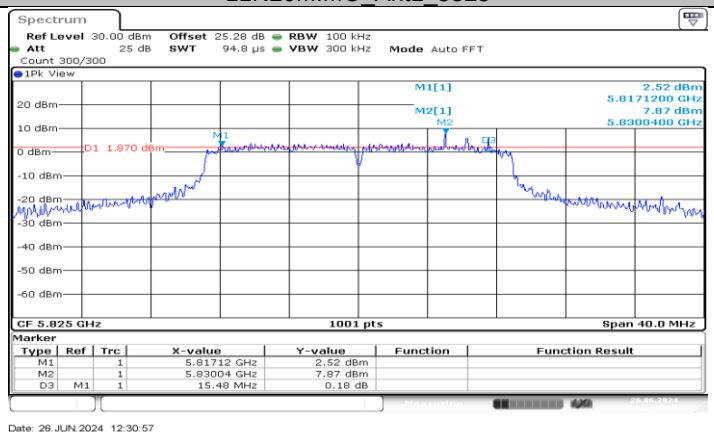
11N20MIMO_Ant1_5785



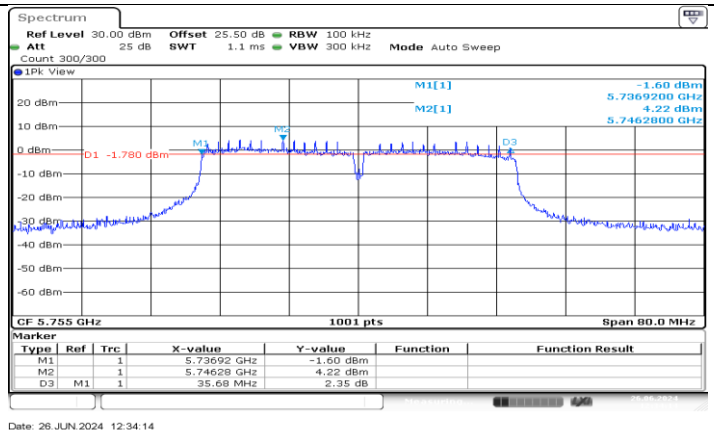
11N20MIMO_Ant2_5785



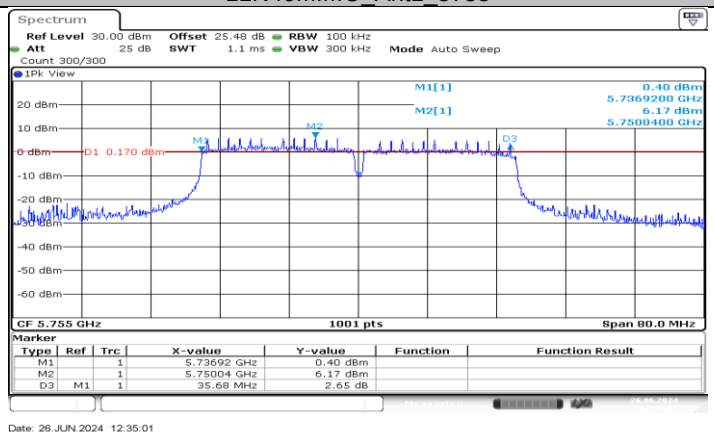
11N20MIMO_Ant1_5825



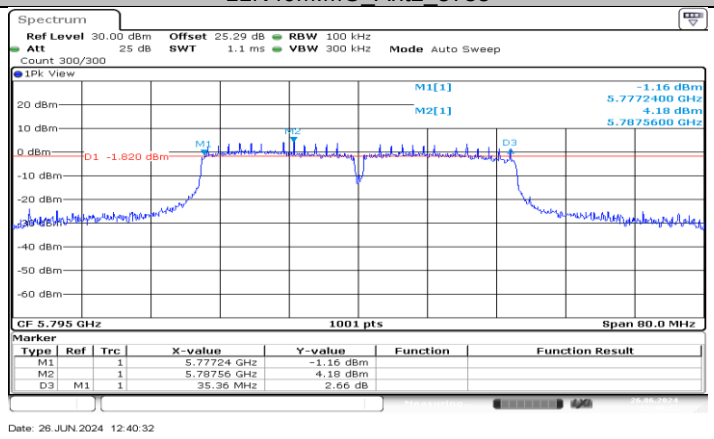
11N20MIMO_Ant2_5825



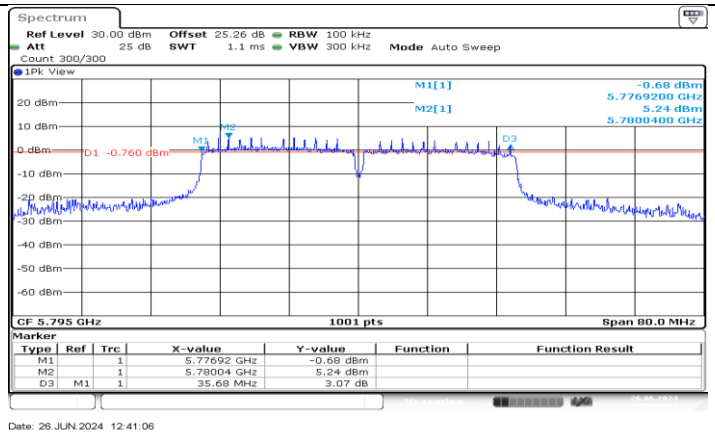
11N40MIMO_Ant1_5755



11N40MIMO_Ant2_5755



11N40MIMO_Ant1_5795



11N40MIMO_Ant2_5795

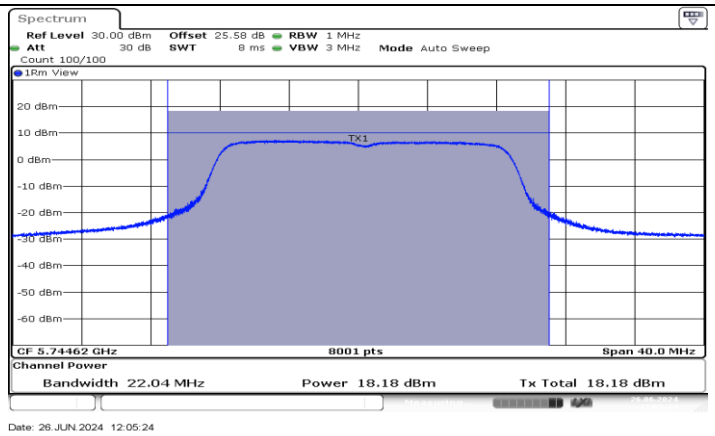
10.4. APPENDIX D: MAXIMUM CONDUCTED OUTPUT POWER

10.4.1. Test Result

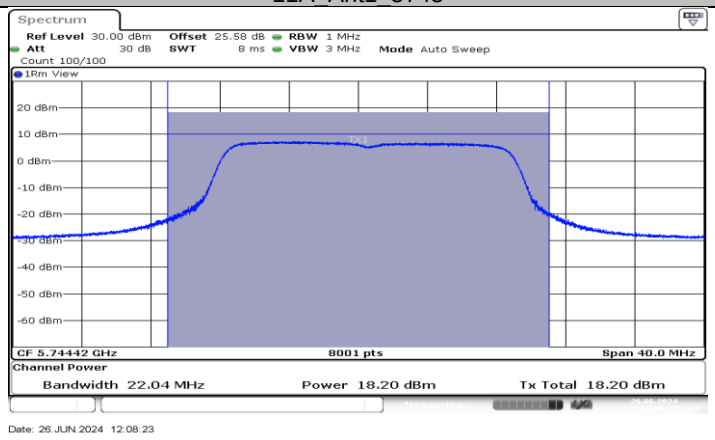
Test Mode	Antenna	Frequency[MHz]	Power [dBm]	FCC Limit [dBm]	Verdict
11A	Ant1	5745	18.18	≤30.00	PASS
	Ant2	5745	18.20	≤30.00	PASS
	Ant1	5785	18.01	≤30.00	PASS
	Ant2	5785	18.10	≤30.00	PASS
	Ant1	5825	18.41	≤30.00	PASS
	Ant2	5825	18.05	≤30.00	PASS
11N20MIMO	Ant1	5745	17.91	≤30.00	PASS
	Ant2	5745	19.69	≤30.00	PASS
	total	5745	21.90	≤30.00	PASS
	Ant1	5785	17.29	≤30.00	PASS
	Ant2	5785	18.76	≤30.00	PASS
	total	5785	21.10	≤30.00	PASS
	Ant1	5825	17.36	≤30.00	PASS
	Ant2	5825	18.16	≤30.00	PASS
	total	5825	20.79	≤30.00	PASS
11N40MIMO	Ant1	5755	17.61	≤30.00	PASS
	Ant2	5755	19.27	≤30.00	PASS
	total	5755	21.53	≤30.00	PASS
	Ant1	5795	17.31	≤30.00	PASS
	Ant2	5795	18.37	≤30.00	PASS
	total	5795	20.88	≤30.00	PASS

Note: 1. Conducted Power=Meas. Level+ Correction Factor
2. The Duty Cycle Factor (refer to section 7.1) had already compensated to the test data.

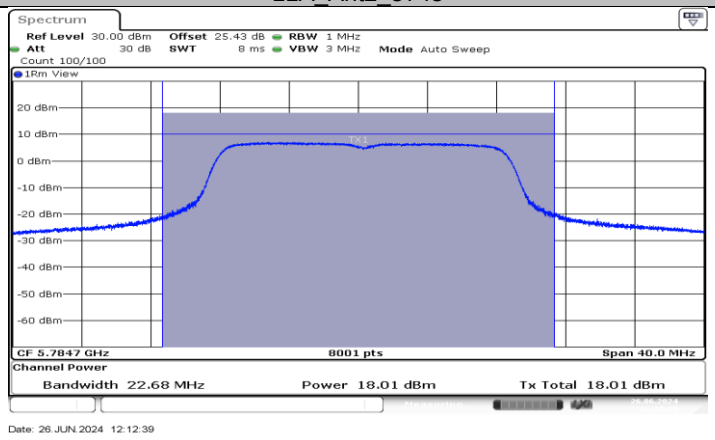
10.4.2. Test Graphs



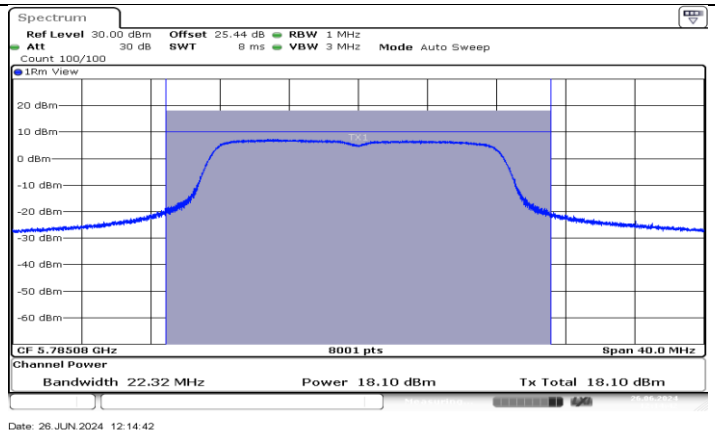
11A_Ant1_5745



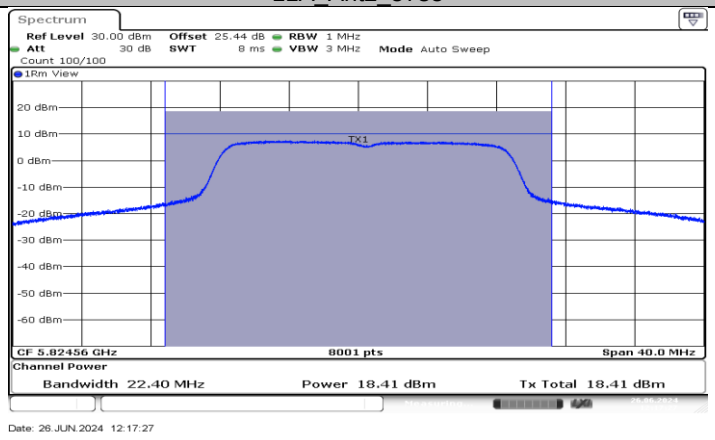
11A_Ant2_5745



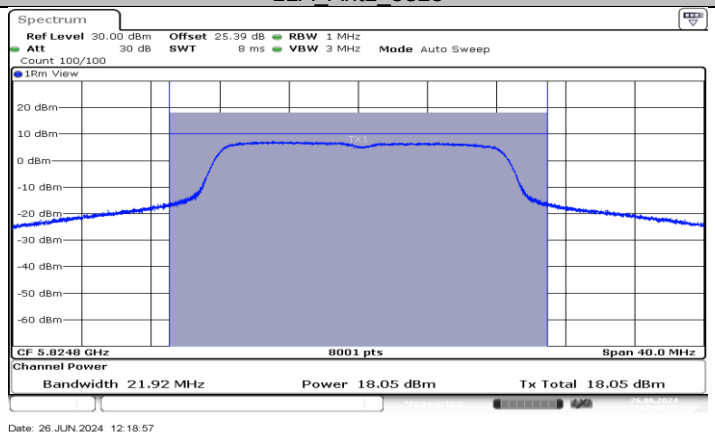
11A_Ant1_5785



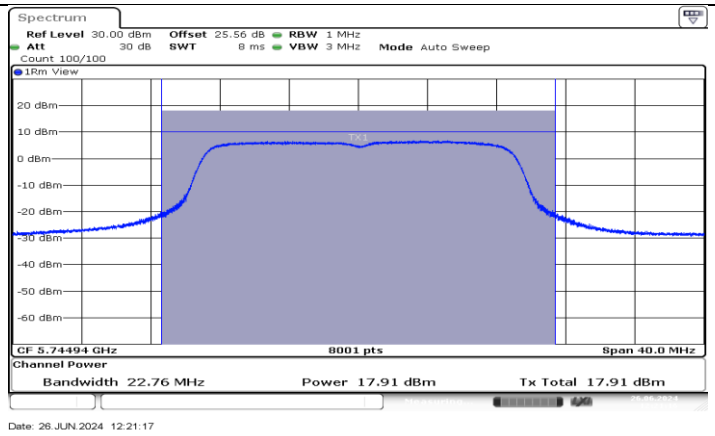
11A_Ant2_5785



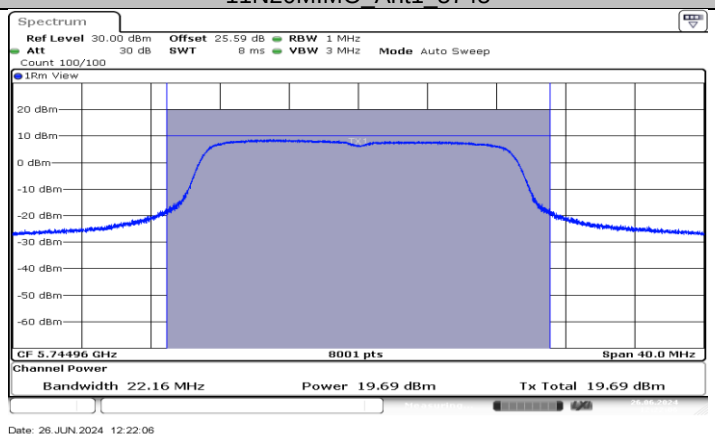
11A_Ant1_5825



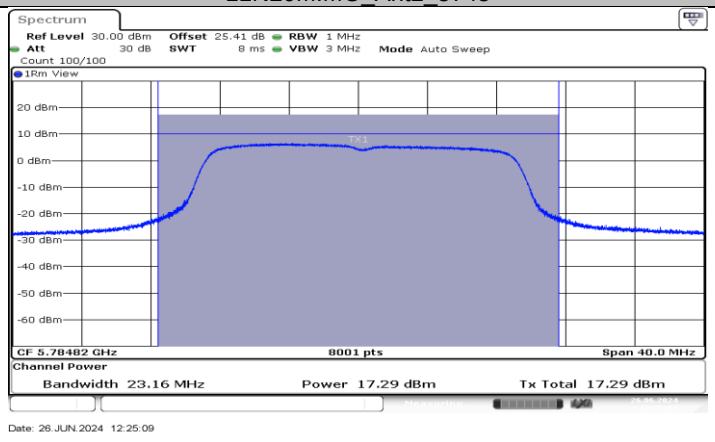
11A_Ant2_5825



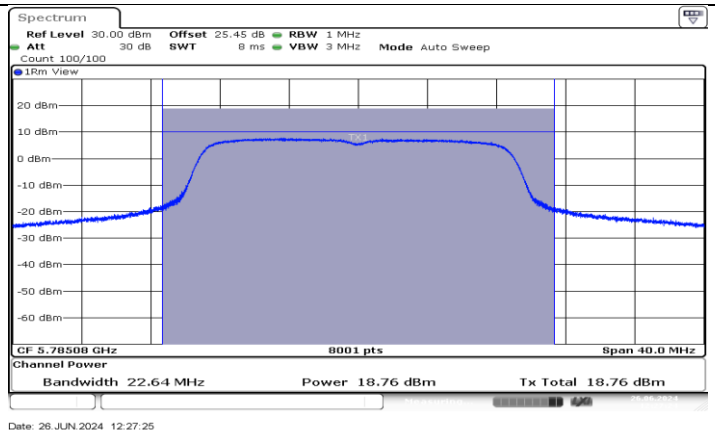
11N20MIMO_Ant1_5745



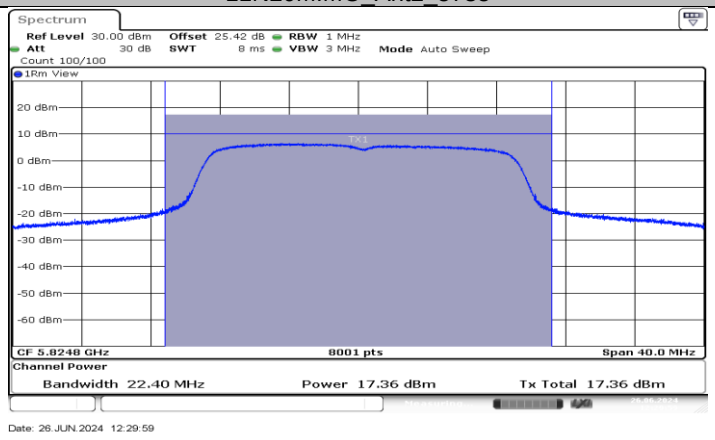
11N20MIMO_Ant2_5745



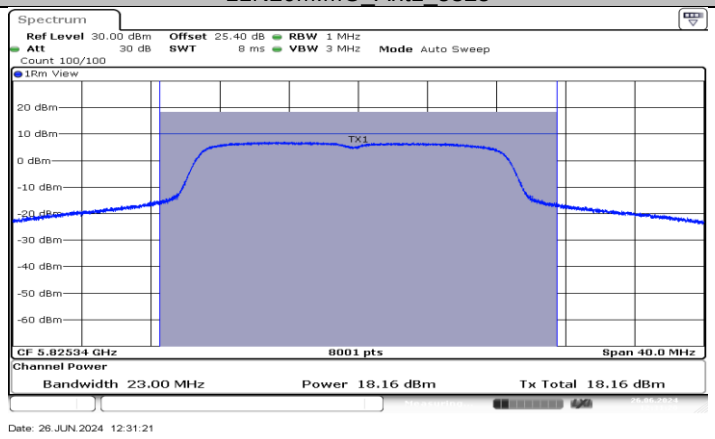
11N20MIMO_Ant1_5785



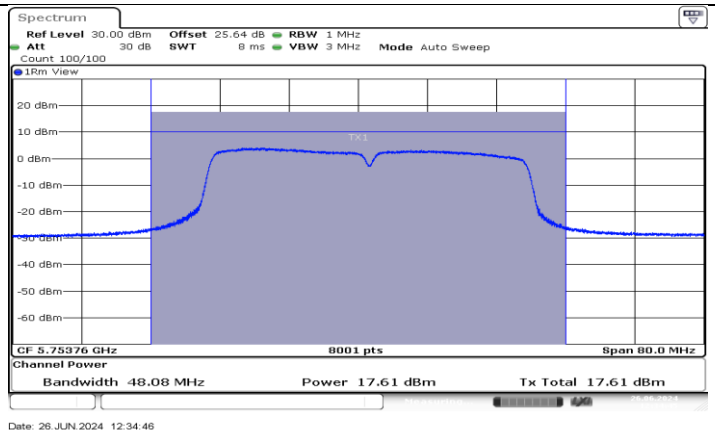
11N20MIMO_Ant2_5785



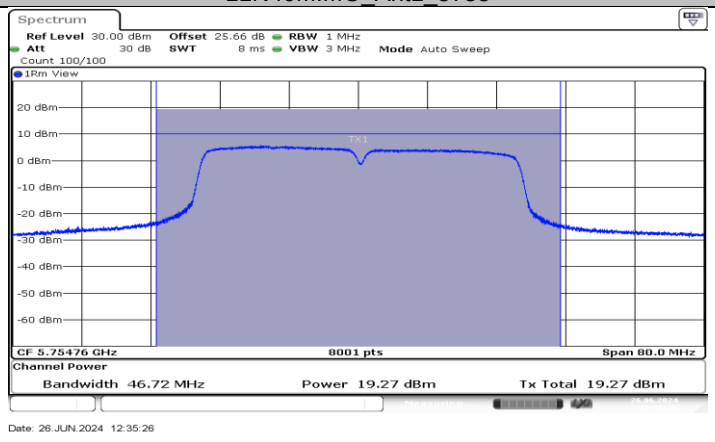
11N20MIMO_Ant1_5825



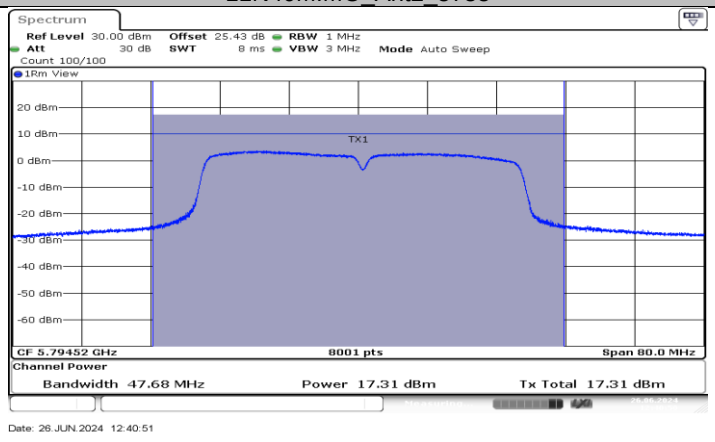
11N20MIMO_Ant2_5825



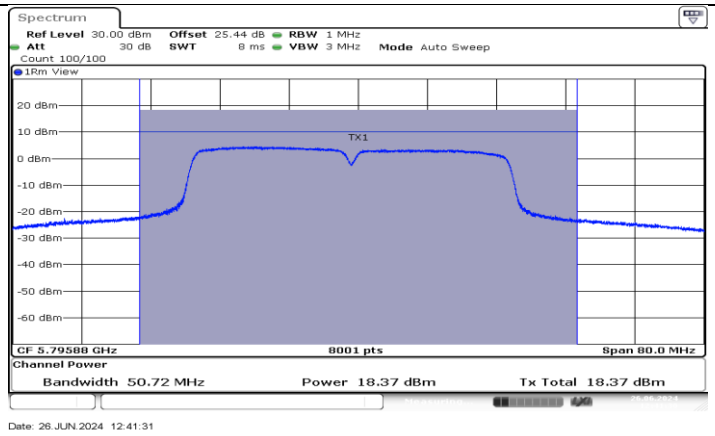
11N40MIMO_Ant1_5755



11N40MIMO_Ant2_5755



11N40MIMO_Ant1_5795



11N40MIMO_Ant2_5795

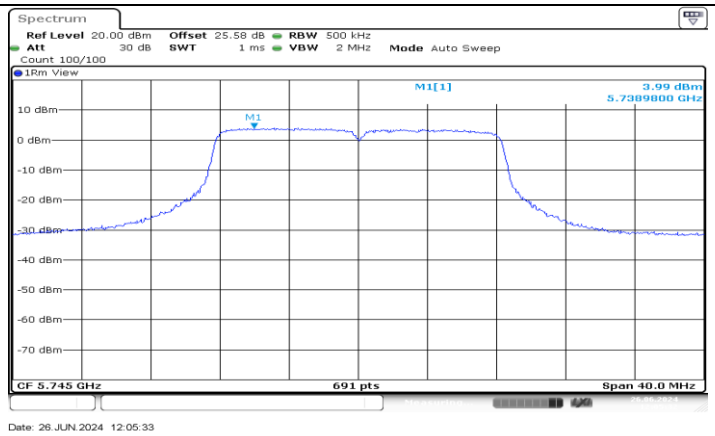
10.5. APPENDIX E: MAXIMUM POWER SPECTRAL DENSITY

10.5.1. Test Result

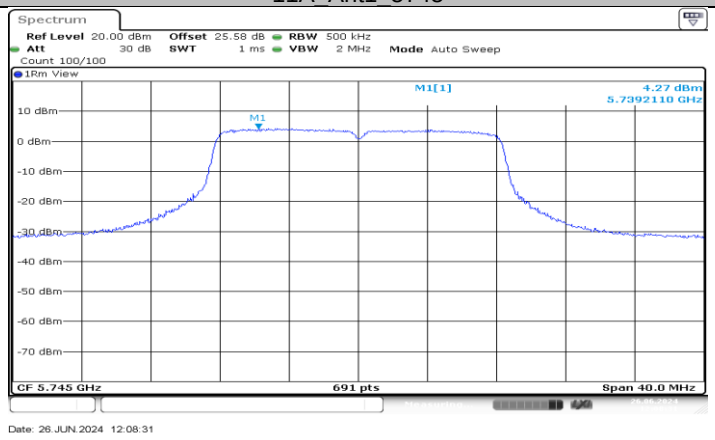
Test Mode	Antenna	Frequency [MHz]	Power [dBm/500 kHz]	Limit [dBm/500 kHz]	EIRP [dBm/500 kHz]	Limit [dBm/500 kHz]	Verdict
11A	Ant1	5745	3.99	≤30.00	7.98	---	PASS
	Ant2	5745	4.27	≤30.00	4.27	---	PASS
	Ant1	5785	4.03	≤30.00	8.02	---	PASS
	Ant2	5785	3.99	≤30.00	3.99	---	PASS
	Ant1	5825	4.43	≤30.00	8.42	---	PASS
	Ant2	5825	4.21	≤30.00	4.21	---	PASS
11N20MIMO	Ant1	5745	3.59	≤30.00	7.58	---	PASS
	Ant2	5745	5.59	≤30.00	5.59	---	PASS
	total	5745	7.71	≤30.00	9.71	---	PASS
	Ant1	5785	3.47	≤30.00	7.46	---	PASS
	Ant2	5785	4.52	≤30.00	4.52	---	PASS
	total	5785	7.04	≤30.00	9.24	---	PASS
	Ant1	5825	3.49	≤30.00	7.48	---	PASS
	Ant2	5825	4.02	≤30.00	4.02	---	PASS
	total	5825	6.77	≤30.00	9.10	---	PASS
11N40MIMO	Ant1	5755	1.13	≤30.00	5.12	---	PASS
	Ant2	5755	2.25	≤30.00	2.25	---	PASS
	total	5755	4.74	≤30.00	6.93	---	PASS
	Ant1	5795	0.54	≤30.00	4.53	---	PASS
	Ant2	5795	1.35	≤30.00	1.35	---	PASS
	total	5795	3.97	≤30.00	6.24	---	PASS

Note：1.The Result and Limit Unit is dBm/500 kHz in the band 5.725–5.85 GHz.
2.The Duty Cycle Factor and RBW Factor is compensated in the graph.

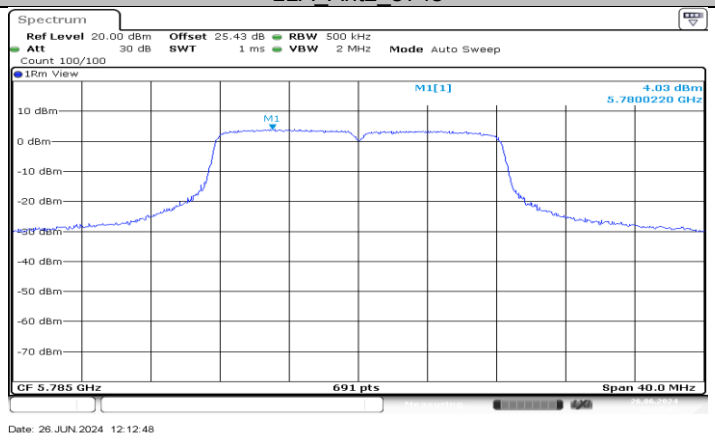
10.5.2. Test Graphs



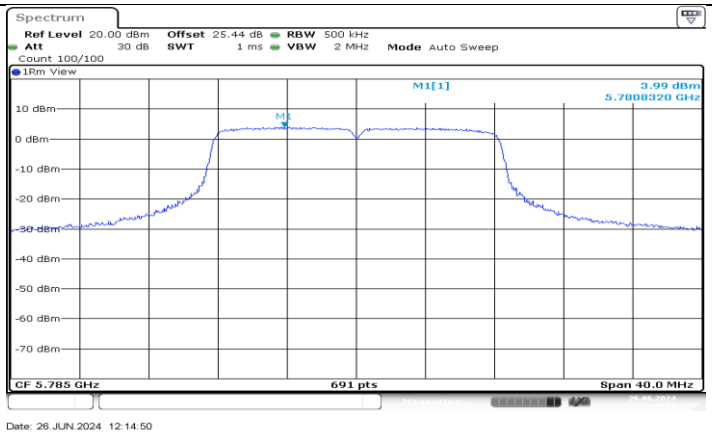
11A_Ant1_5745



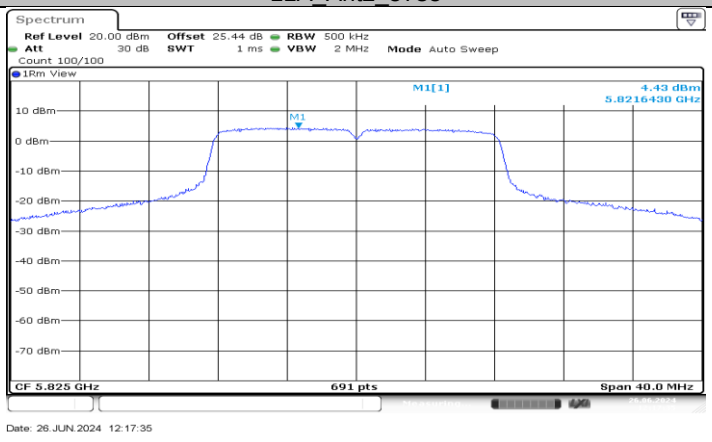
11A_Ant2_5745



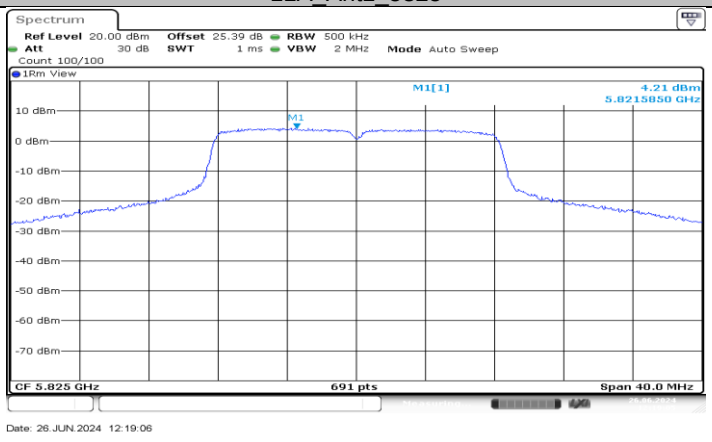
11A_Ant1_5785



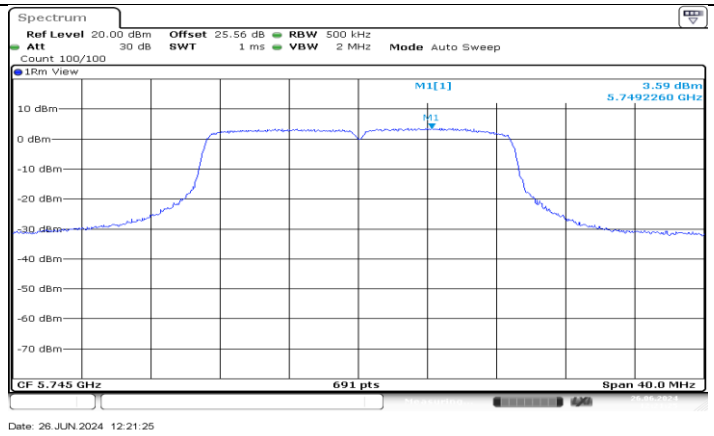
11A_Ant2_5785



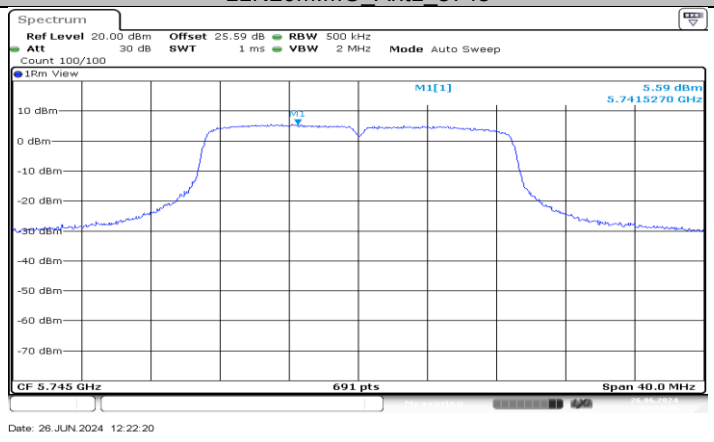
11A_Ant1_5825



11A_Ant2_5825



11N20MIMO_Ant1_5745



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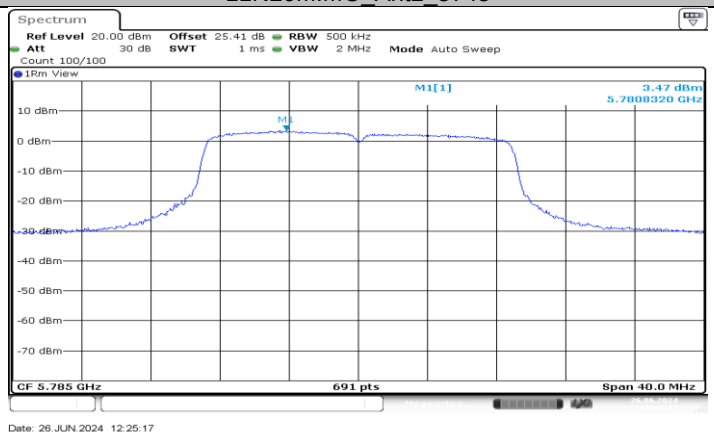

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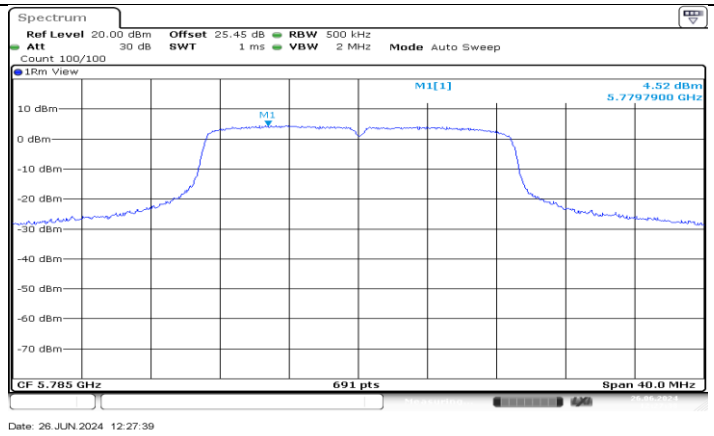

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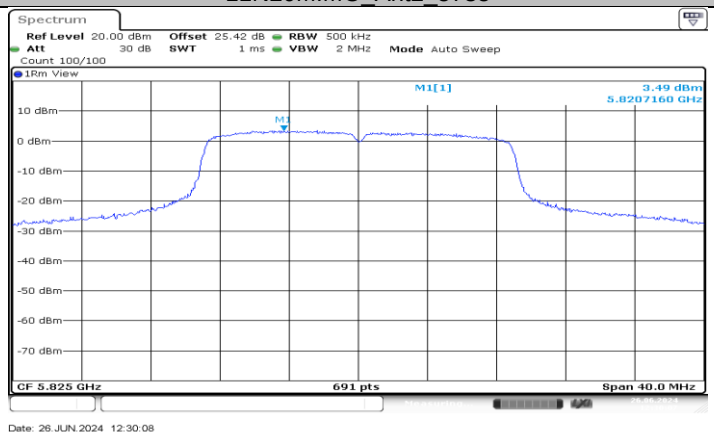

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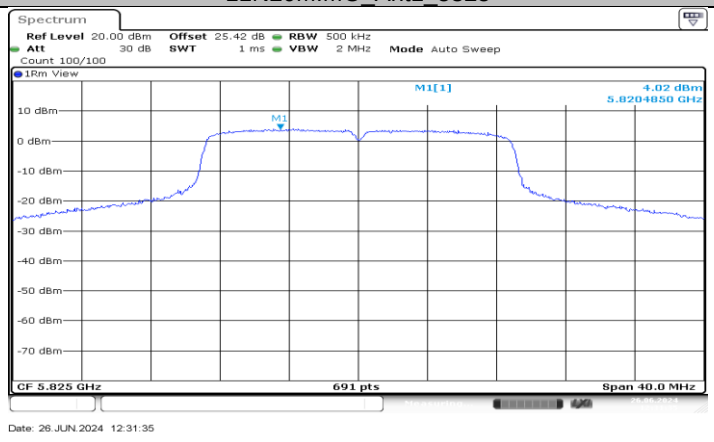

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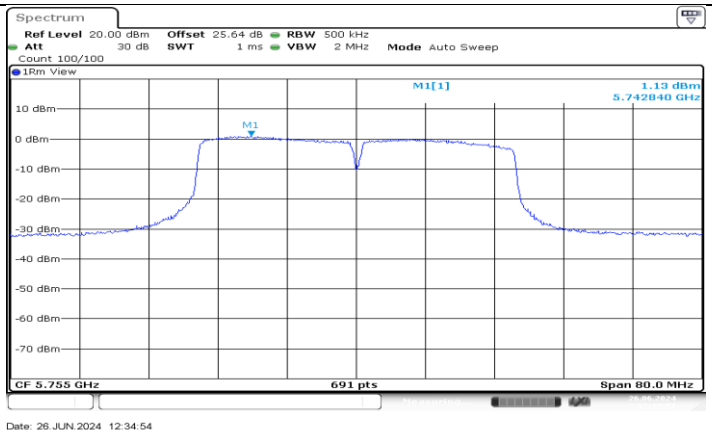

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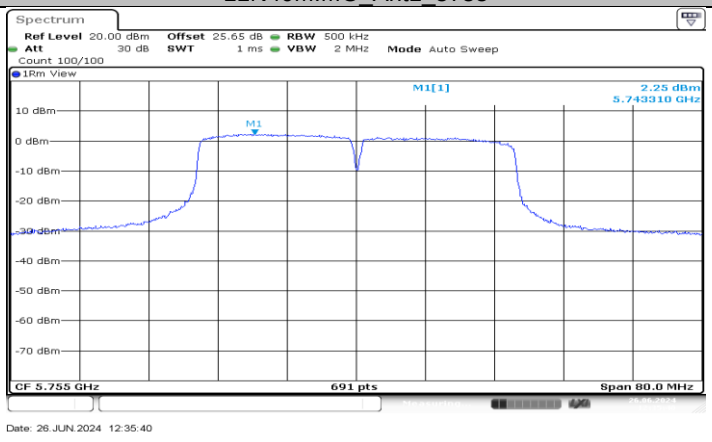

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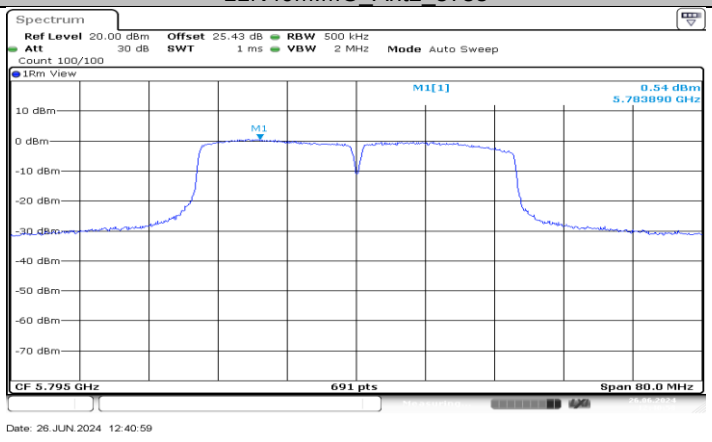

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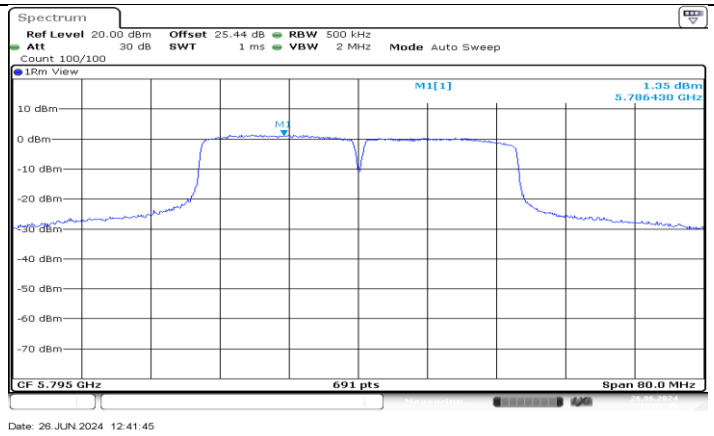


11N40MIMO_Ant2_5795

10.6. APPENDIX I: FREQUENCY STABILITY

10.6.1. Test Result

Frequency Error vs. Voltage									
802.11a:5825MHz									
Temp.	Volt.	0 Minute		2 Minute		5 Minute		10 Minute	
		Freq.Error (MHz)	Tolerance (ppm)	Freq.Error (MHz)	Tolerance (ppm)	Freq.Error (MHz)	Tolerance (ppm)	Freq.Error (MHz)	Tolerance (ppm)
TN	VL	5824.9943	-0.98	5824.9914	-1.48	5825.0153	2.62	5824.9896	-1.78
TN	VN	5824.9988	-0.21	5825.0224	3.84	5825.0079	1.35	5825.0165	2.83
TN	VH	5824.9795	-3.53	5824.9869	-2.25	5824.9897	-1.78	5825.0073	1.26
Frequency Error vs. Temperature									
802.11a:5200MHz									
Temp.	Volt.	0 Minute		2 Minute		5 Minute		10 Minute	
		Freq.Error (MHz)	Tolerance (ppm)	Freq.Error (MHz)	Tolerance (ppm)	Freq.Error (MHz)	Tolerance (ppm)	Freq.Error (MHz)	Tolerance (ppm)
40	VN	5825.0017	0.28	5825.0001	0.02	5825.0236	4.06	5824.9932	-1.16
30	VN	5824.9784	-3.70	5825.0199	3.41	5825.0021	0.37	5824.9950	-0.85
20	VN	5825.0017	0.30	5825.0161	2.76	5825.0017	0.29	5825.0153	2.63
10	VN	5824.9952	-0.82	5825.0090	1.55	5824.9886	-1.96	5825.0185	3.17
0	VN	5824.9806	-3.32	5824.9866	-2.30	5825.0048	0.82	5824.9787	-3.66
-10	VN	5824.9804	-3.36	5824.9801	-3.41	5824.9985	-0.25	5825.0007	0.12

Note:
1. All antennas, test modes and test channels have been tested, only the worst data record in the report.
2. For the detail Test Conditions, please refer to section 7.5 TEST ENVIRONMENT.

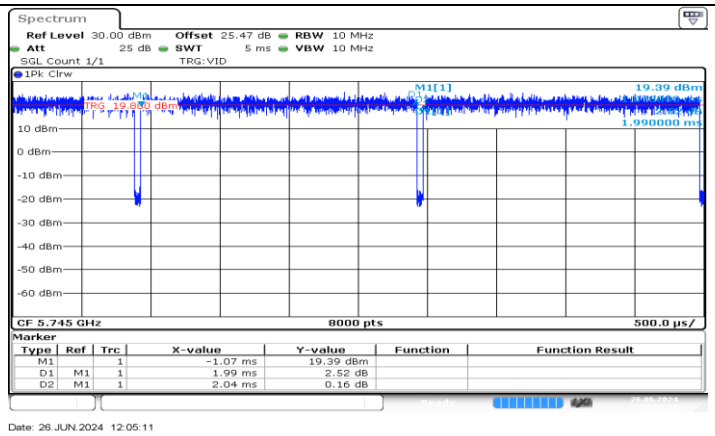
10.7. APPENDIX J: DUTY CYCLE

10.7.1. Test Result

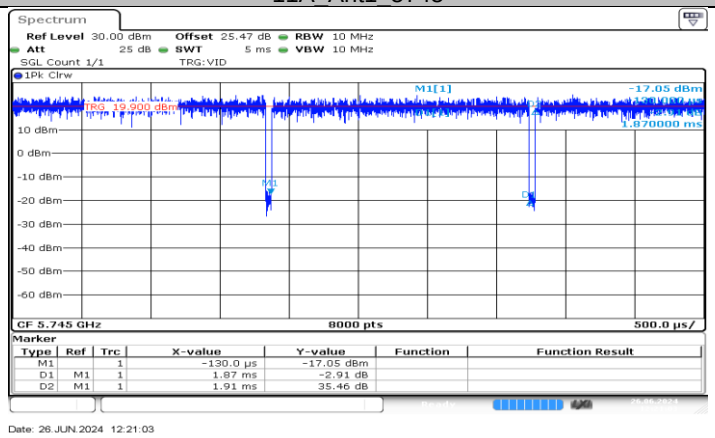
Test Mode	On Time (msec)	Period (msec)	Duty Cycle x (Linear)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	1/T Minimum VBW (kHz)	Final setting For VBW (kHz)
11A	1.99	2.04	0.9755	97.55	0.11	0.50	1
11N20MIMO	1.87	1.91	0.9791	97.91	0.09	0.53	1
11N40MIMO	0.92	0.95	0.9684	96.84	0.14	1.09	2

Note:
Duty Cycle Correction Factor=10log (1/x).
Where: x is Duty Cycle (Linear)
Where: T is On Time
If that calculated VBW is not available on the analyzer then the next higher value should be used.

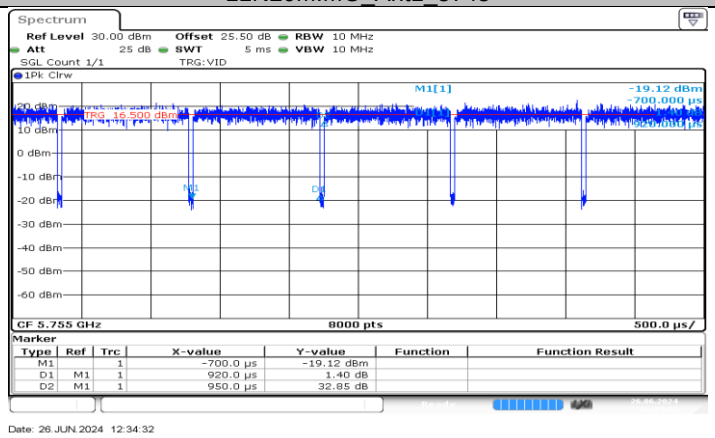
10.7.2. Test Graphs



11A_Ant1_5745



11N20MIMO_Ant1_5745



11N40MIMO_Ant1_5755

APPENDIX: PHOTOGRAPHS OF TEST CONFIGURATION

4791353869-1_Appendix_SetupPhoto_Intelligent Control System

APPENDIX: PHOTOGRAPHS OF THE EUT

4791353869-1_Appendix_EUTPhoto_External_intelligent Control System
4791353869-1_Appendix_EUTPhoto_Internal_Intelligent Control System